westonandsampson.com

55 Walkers Brook Drive, Suite 100
Reading, MA 01867
tel: 978.532.1900

Stormwater Management Permit

February 2021

HARRY LEE COLE SCHOOL
WSE PROJECT NO. ENG20-0865

PREPARED FOR:
TOWN OF BOXFORD

SUBMITTED TO:
BOXFORD CONSERVTION COMMISSION

55 Walkers Brook Drive, Suite 100, Reading, MA 01867
Tel: 978.532.1900

Harry Lee Cole School - Boxford
WSE Project No. ENG20-0865

February 4, 2021

Boxford Conservation Commission
7A Spofford Road
Boxford, MA 01921

Re: Stormwater Management Permit
Harry Lee Cole School

Dear Members of the Commission:

On behalf of the Town of Boxford, Weston & Sampson Engineers, Inc. is hereby enclosing one (1) copy of the Stormwater Management permit submittal (including (1) plan set) and one (1) digital copy has been emailed to dircons@town.boxford.ma.us to fulfill the requirements of the Town of Boxford Chapter 295 Stormwater Management Regulations Ch 295-5 submittal requirements. This submittal is a formal Stormwater Management permit for the improvements to the Harry Lee Cole School.

As part of the filing, we have attached the following:

Appendix A: Stormwater Report
Appendix B: SWPPP
Appendix C: Abutters Information
Project Plans

If you have any questions regarding this submittal, please contact me at (978) 532-1900.

Very truly yours,

WESTON & SAMPSON

Alexandra Gaspar
Environmental Scientist

Appendix A

Stormwater Report

Boxford, Massachusetts

Harry Lee Cole School

February 3, 2021

JOB NO: ENG20-0865

Weston & Sampson
55 Walkers Brook Drive, Suite 100
Reading, MA 01867
www.westonandsampson.com
Tel: 978-532-1900 Fax: 978-977-0100

Table of Contents

Stormwater Report

February 3, 2021

Applicant/Project Name:	Town of Boxford Harry Lee Cole School
Project Address:	26 Middleton Road, Boxford, MA
Application Prepared by:	
Firm:	Weston & Sampson, Inc.
Registered PE:	James Pearson

Below is an explanation concerning Standards 1-10 as they apply to the Harry Lee Cole School project:

General:

The project applicant, the Town of Boxford, proposes a redevelopment project at the Harry Lee Cole School located at 26 Middleton Road in Boxford to improve site access and traffic circulation. Site work will include, but is not limited to grading, drainage, paving and landscaping. The site is actively used as an elementary school for the town of Boxford and will remain in use over the duration of the project. The site is predominantly developed, with a large wooded area, which contains a drinking water well, placing part of the site under Zone I well head protection. Existing topography is relatively moderate across the site, with elevations ranging from 102-FT at the northeastern portion of the site to a low of approximately 91-FT to the southeast, along Main Street. NRCS soil mapping describes the site as being a mixture of Sudbury FSL (HSG-B) and Charlton-Hollis Rock Outcrop Complex (HSG-A). Test pits conducted across the site generally support the soil mapping and can be found in Attachment C of this report.

Standard 1: No New Untreated Discharges

The proposed project will create no new untreated discharges. Total impervious area will be increased in comparison with existing conditions by approximately 15,000-SF. All discharges from new impervious area as well as a large portion of existing impervious, will undergo treatment via street sweeping, deep sump hooded catch basins, and subsurface infiltration chambers or bio-retention areas. Additionally, subsurface detention chambers have been proposed to remove TSS from existing stormwater flows using proprietary treatment devices. As such, existing stormwater discharges will meet Standard 1 to the maximum extent practicable. HydroCAD modeling of the site is provided in Attachment D.

Standard 2: Peak Rate Attenuation

Existing and proposed conditions were modeled using HydroCAD computer software and Town of Boxford rainfall data. A table, summarizing peak discharges for the 2-Yr, 10-Yr, 25-Yr , 50-Yr and 100-Yr storm events can be found in Attachment D. The proposed design is such that peak runoff rates do not exceed pre-development rates, even in the 100-year storm scenario. Peak discharges will be managed by subsurface infiltration systems.

To ensure that the work incorporates the performance standards recommended in the DEP's Stormwater Management Policy, necessary erosion and sedimentation control measures will be utilized during construction, as depicted on the site plans.

Standard 3: Recharge

As a redevelopment, Standard 3 shall be met to the maximum extent practicable. Due to shallow estimated seasonal high groundwater on site, only a single infiltration BMP is being proposed for recharge on site. The BMP is designed to capture and infiltrate the required recharge volume for the contributing subcatchments. Supporting calculations can be found in Attachment E of this report.

Standard 4: Water Quality

Standard 4 shall be met to the maximum extent practicable. Treatment practices have been designed to capture the required water quality volume and provide treatment to remove greater than 80% of total suspended solids where able. The proposed stormwater management system will present an improvement over existing conditions.

During the project, appropriate BMPs will be used to minimize sedimentation and soil erosion.

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

This site is not considered a LUHPPL, as such, Standard 5 does not apply.

Standard 6: Critical Areas

There will be no new discharge to critical areas.

Standard 7: Redevelopments and Other Projects Subject to the Standards Only to the Maximum Extent Practicable

This is a redevelopment project. Stormwater standards 1, 2, 3 and 4 have been met to the maximum extent practicable.

<u>Standard 8: Construction Period Pollution Prevention and Erosion and Sediment Control</u>

A detailed Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan is included in Attachment G. To ensure that the work incorporates the performance standards recommended in the DEP's Stormwater Management Policy, necessary erosion and sedimentation control measures will be utilized during construction.

<u>Standard 9: Operation and Maintenance Plan</u>

An operations and maintenance plan is included in Attachment H.

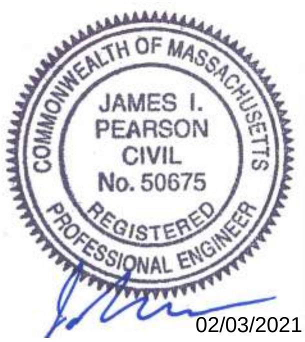
<u>Standard 10: Prohibition of Illicit Discharges</u>

An illicit discharge compliance statement has been included in Attachment I.

Registered Professional Engineer's Certification

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

Registered Professional Engineer Block and Signature

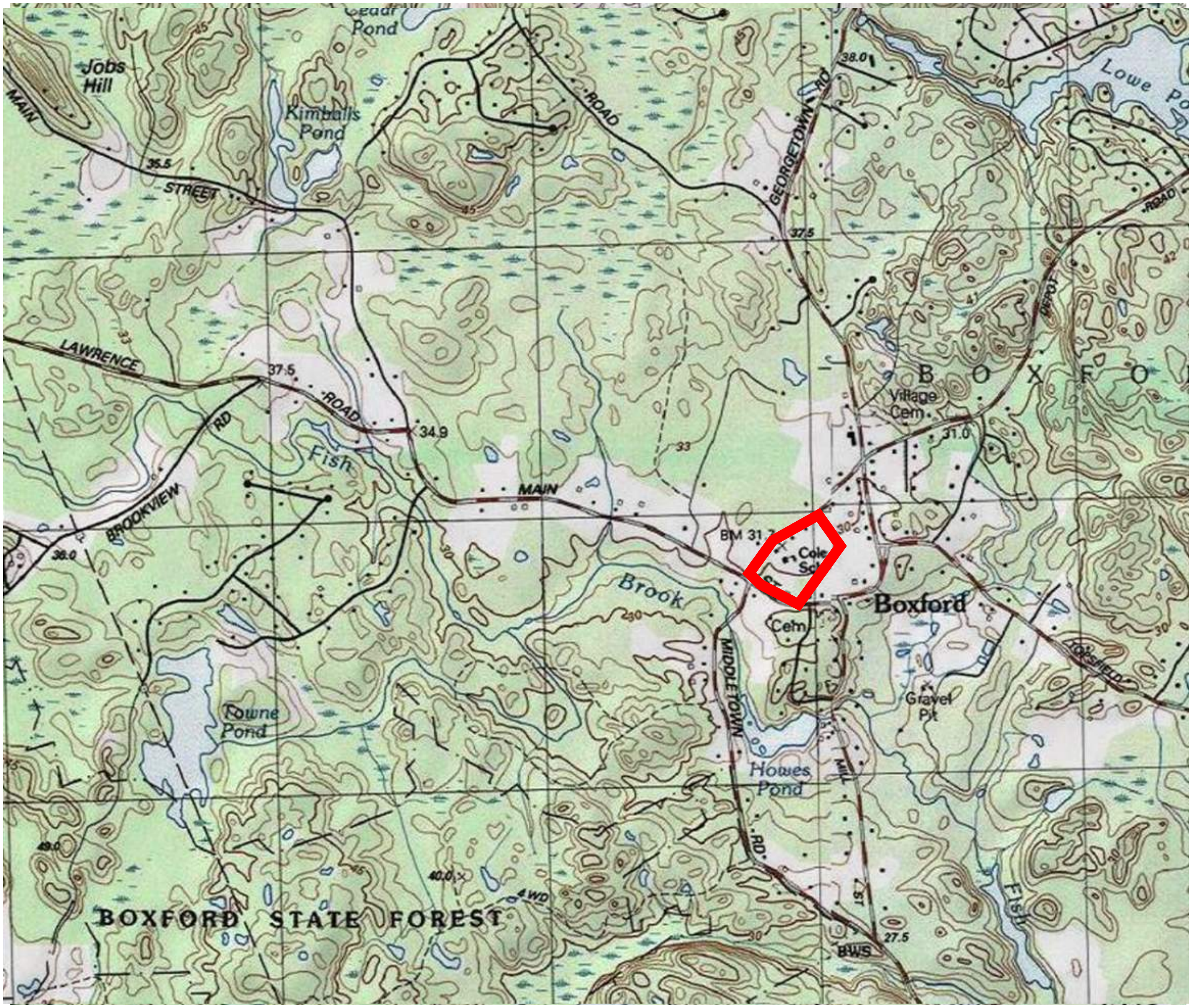


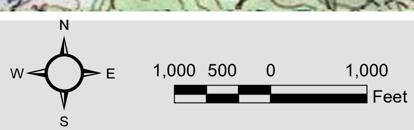
02/03/2021

2/3/2021

Signature and Date

Attachment A - Locus Map





Data Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs

Legend

Site Location

Attachment A

Locus Map
Harry Lee Cole School

USGS Topographic Map

Weston & Sampson

Attachment B - NRCS Soils Map, Soils Report, and HSG Classifications

Map Scale: 1:1,900 if printed on A portrait (8.5" x 11") sheet.

Meters: 0, 25, 50, 100, 150

Feet: 0, 50, 100, 200, 300

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

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

Soils

Soil 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: Essex County, Massachusetts, Northern Part
Survey Area Data: Version 16, Jun 9, 2020

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

Date(s) aerial images were photographed: Sep 13, 2019—Oct 5, 2019

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
260A	Sudbury fine sandy loam, 0 to 3 percent slopes	B	6.8	69.6%
711B	Charlton-Rock outcrop-Hollis complex, 3 to 8 percent slopes	A	3.0	30.4%
Totals for Area of Interest			**9.8**	**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

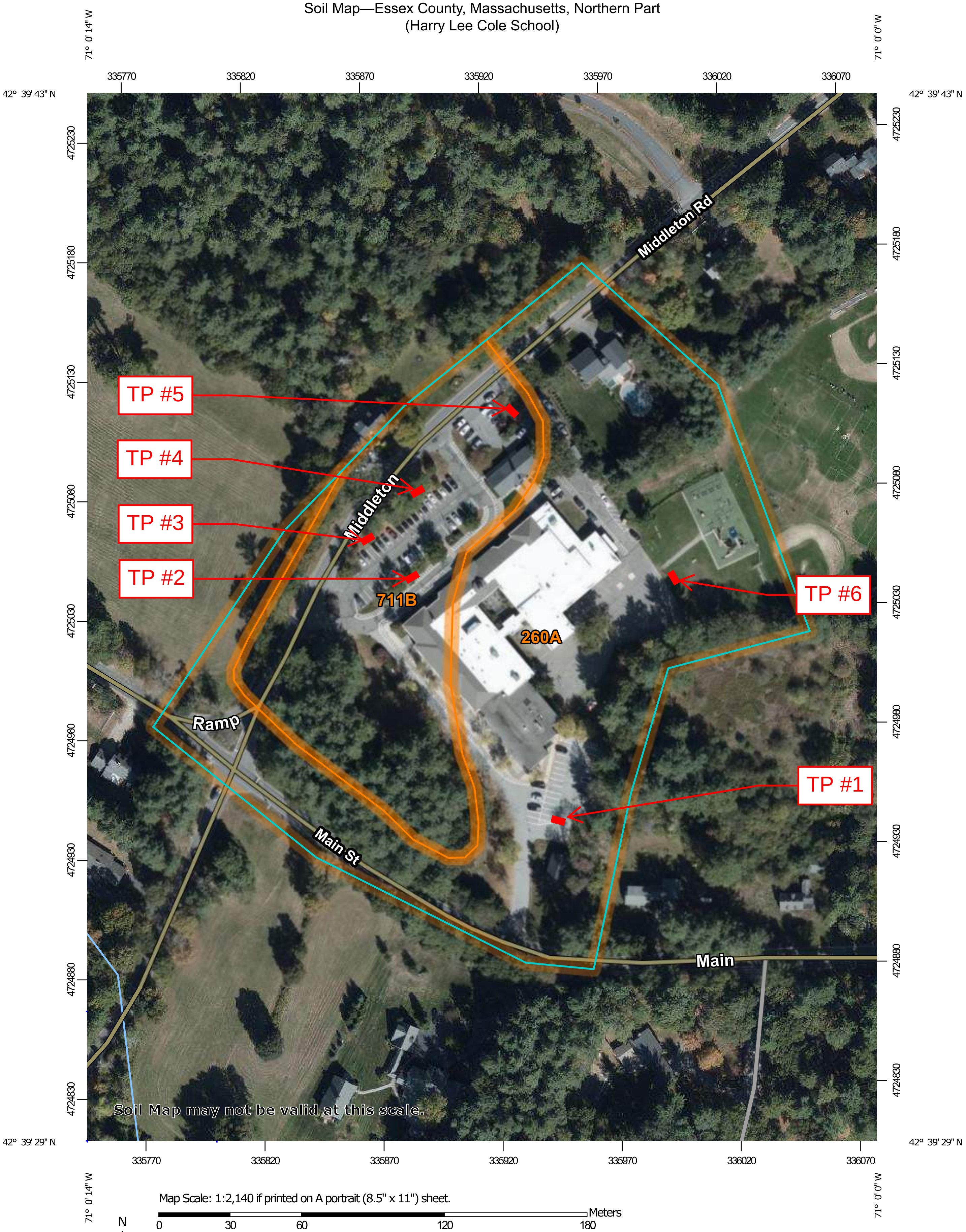
Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Attachment C - Test Pit Logs

Soil Map—Essex County, Massachusetts, Northern Part
(Harry Lee Cole School)



Map Scale: 1:2,140 if printed on A portrait (8.5" x 11") sheet.

Meters: 0, 30, 60, 120, 180
Feet: 0, 100, 200, 400, 600

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

TEST PIT LOG

PROJECT NAME/NO.	Harry Lee Cole School - ENG20-0865			**TEST PIT NUMBER**
LOCATION	Harry Lee Cole School, Boxford, MA			TP 1
CLIENT	Boxford, MA			GROUND SURFACE
CONTRACTOR	RE Thompson	FOREMAN:		ELEVATION see plan
OBSERVED BY	K. Elmy	DATE	1/20/21	DEPTH TO GROUNDWATER BELOW
CHECKED BY		DATE		SURFACE 48-in

DEPTH BELOW GROUND SURFACE (in.)	TEST PIT DIAGRAM AND SOIL DESCRIPTION
4"	Pavement
25"	Fill 10% Gravel & 10% Cobbles
29"	Ab - Dark Brown Sandy Loam (10YR 3/3) 10% Gravel & 10% Cobbles
35"	Bw - Dark Yellowish Brown Sandy Loam (10YR 4/6) 10% Gravel & 10% Cobbles
84"	C1 - Yellowish Brown Coarse Sand (10YR 5/4) 5% Gravel
	- End of Exploration -

NOTES:

1. Redox encountered at 48-in
2. Weeping at 75-in
3. PID = 0.0PPM

TEST PIT NUMBER

TP 1

WESTON & SAMPSON ENGINEERS, INC.

TEST PIT LOG

PROJECT NAME/NO.	Harry Lee Cole School - ENG20-0865			**TEST PIT NUMBER**	
LOCATION	Harry Lee Cole School, Boxford, MA			TP 1	
CLIENT	Boxford, MA			GROUND SURFACE	
CONTRACTOR	RE Thompson	FOREMAN:		ELEVATION	see plan
OBSERVED BY	K. Elmy	DATE	1/20/21	DEPTH TO GROUNDWATER BELOW	
CHECKED BY		DATE		SURFACE	48-in

DEPTH BELOW GROUND SURFACE (in.)	TEST PIT DIAGRAM AND SOIL DESCRIPTION
	

NOTES:

1. Redox encountered at 48-in
2. Weeping at 75-in
3. PID = 0.0PPM

TEST PIT NUMBER
TP 1

WESTON & SAMPSON ENGINEERS, INC.

TEST PIT LOG

PROJECT NAME/NO.	Harry Lee Cole School - ENG20-0865			**TEST PIT NUMBER**
LOCATION	Harry Lee Cole School, Boxford, MA			TP 2
CLIENT	Boxford, MA			GROUND SURFACE
CONTRACTOR	RE Thompson	FOREMAN:		ELEVATION see plan
OBSERVED BY	K. Elmy	DATE	1/20/21	DEPTH TO GROUNDWATER BELOW
CHECKED BY		DATE		SURFACE Not Observed

DEPTH BELOW GROUND SURFACE (in.)	TEST PIT DIAGRAM AND SOIL DESCRIPTION
12"	Ap - Dark Brown Sandy Loam (10YR 3/3) 5% Gravel & 5% Cobbles
14"	Bw - Dark Yellowish Brown Sandy Loam (10YR 4/6) 10% Gravel & 10% Cobbles
90"	C1 - Brownish Yellow Loamy Sand (10YR 6/6) 5% Gravel & 5% Cobbles
	- End of Exploration -

NOTES:

1. No Redox encountered
2. PID = 1.0PPM at 2-ft intervals
3. Buried telephone pole at 12-in

TEST PIT NUMBER

TP 2

WESTON & SAMPSON ENGINEERS, INC.

TEST PIT LOG

PROJECT NAME/NO.	Harry Lee Cole School - ENG20-0865			**TEST PIT NUMBER**	
LOCATION	Harry Lee Cole School, Boxford, MA			TP 2	
CLIENT	Boxford, MA			GROUND SURFACE	
CONTRACTOR	RE Thompson	FOREMAN:		ELEVATION	see plan
OBSERVED BY	K. Elmy	DATE	1/20/21	DEPTH TO GROUNDWATER BELOW	
CHECKED BY		DATE		SURFACE	Not Observed

DEPTH BELOW GROUND SURFACE (in.)	TEST PIT DIAGRAM AND SOIL DESCRIPTION
	

NOTES:

1. No Redox encountered
2. PID = 1.0PPM at 2-ft intervals
3. Buried telephone pole at 12-in

TEST PIT NUMBER
TP 2

WESTON & SAMPSON ENGINEERS, INC.

TEST PIT LOG

PROJECT NAME/NO.	Harry Lee Cole School - ENG20-0865			**TEST PIT NUMBER**
LOCATION	Harry Lee Cole School, Boxford, MA			TP 3
CLIENT	Boxford, MA			GROUND SURFACE
CONTRACTOR	RE Thompson	FOREMAN:		ELEVATION see plan
OBSERVED BY	K. Elmy	DATE	1/19/21	DEPTH TO GROUNDWATER BELOW
CHECKED BY		DATE		SURFACE Not Observed

DEPTH BELOW GROUND SURFACE (in.)	TEST PIT DIAGRAM AND SOIL DESCRIPTION
55"	PavementFill 10% Gravel & 10% Cobbles
66"	Ab - Dark Brown Sandy Loam (10YR 3/3) 10% Gravel & 10% Cobbles
76"	Bw - Dark Yellowish Brown Sandy Loam (10YR 4/6) 10% Gravel & 10% Cobbles
90"	C1 - Brownish Yellow Loamy Sand (10YR 6/6) 5% Gravel & 5% Cobbles
	- End of Exploration -

NOTES:

1. No Redox encountered
2. PID = 0.0PPM

TEST PIT NUMBER
TP 3

WESTON & SAMPSON ENGINEERS, INC.

TEST PIT LOG

PROJECT NAME/NO.	Harry Lee Cole School - ENG20-0865			**TEST PIT NUMBER**	
LOCATION	Harry Lee Cole School, Boxford, MA			TP 3	
CLIENT	Boxford, MA			GROUND SURFACE	
CONTRACTOR	RE Thompson	FOREMAN:		ELEVATION	see plan
OBSERVED BY	K. Elmy	DATE	1/19/21	DEPTH TO GROUNDWATER BELOW	
CHECKED BY		DATE		SURFACE	Not Observed

DEPTH BELOW GROUND SURFACE (in.)	TEST PIT DIAGRAM AND SOIL DESCRIPTION

NOTES:

1. No Redox encountered
2. PID = 0.0PPM

TEST PIT NUMBER

TP 3

WESTON & SAMPSON ENGINEERS, INC.

TEST PIT LOG

PROJECT NAME/NO.	Harry Lee Cole School - ENG20-0865			**TEST PIT NUMBER**
LOCATION	Harry Lee Cole School, Boxford, MA			TP 4
CLIENT	Boxford, MA			GROUND SURFACE
CONTRACTOR	RE Thompson	FOREMAN:		ELEVATION see plan
OBSERVED BY	K. Elmy	DATE	1/19/21	DEPTH TO GROUNDWATER BELOW
CHECKED BY		DATE		SURFACE Not Observed

DEPTH BELOW GROUND SURFACE (in.)	TEST PIT DIAGRAM AND SOIL DESCRIPTION
16"	Fill
20"	Ab - Dark Brown Sandy Loam (10YR 3/3) 10% Gravel & 10% Cobbles
25"	Bw - Dark Yellowish Brown Sandy Loam (10YR 4/4) 10% Gravel & 10% Cobbles
84"	C1 - Yellowish Brown Loamy Sand (10YR 5/6) 5% Gravel & 5% Cobbles
	- End of Exploration -

NOTES:

1. No Redox encountered
2. PID = 0.0PPM

TEST PIT NUMBER

TP 4

WESTON & SAMPSON ENGINEERS, INC.

TEST PIT LOG

PROJECT NAME/NO.	Harry Lee Cole School - ENG20-0865			**TEST PIT NUMBER**
LOCATION	Harry Lee Cole School, Boxford, MA			TP 4
CLIENT	Boxford, MA			GROUND SURFACE
CONTRACTOR	RE Thompson	FOREMAN:		ELEVATION see plan
OBSERVED BY	K. Elmy	DATE	1/19/21	DEPTH TO GROUNDWATER BELOW
CHECKED BY		DATE		SURFACE Not Observed

DEPTH BELOW GROUND SURFACE (in.)	TEST PIT DIAGRAM AND SOIL DESCRIPTION
	

NOTES:

1. No Redox encountered
2. PID = 0.0PPM

TEST PIT NUMBER

TP 4

WESTON & SAMPSON ENGINEERS, INC.

TEST PIT LOG

PROJECT NAME/NO.	Harry Lee Cole School - ENG20-0865			**TEST PIT NUMBER**
LOCATION	Harry Lee Cole School, Boxford, MA			TP 5
CLIENT	Boxford, MA			GROUND SURFACE
CONTRACTOR	RE Thompson	FOREMAN:		ELEVATION see plan
OBSERVED BY	K. Elmy	DATE	1/19/21	DEPTH TO GROUNDWATER BELOW
CHECKED BY		DATE		SURFACE Not Observed

DEPTH BELOW GROUND SURFACE (in.)	TEST PIT DIAGRAM AND SOIL DESCRIPTION
22"	Fill 10% Gravel & 10% Cobbles
28"	Ab - Dark Brown Sandy Loam (10YR 3/3) 10% Gravel & 10% Cobbles
38"	Bw - Dark Yellowish Brown Sandy Loam (10YR 4/6) 10% Gravel & 10% Cobbles
72"	C1 - Brown Loamy Sand (10YR 5/3) 5% Gravel & 5% Cobbles
	- End of Exploration -

NOTES:

1. No Redox encountered
2. PID = 0.0PPM

TEST PIT NUMBER
TP 5

WESTON & SAMPSON ENGINEERS, INC.

TEST PIT LOG

PROJECT NAME/NO.	Harry Lee Cole School - ENG20-0865			**TEST PIT NUMBER**
LOCATION	Harry Lee Cole School, Boxford, MA			TP 5
CLIENT	Boxford, MA			GROUND SURFACE
CONTRACTOR	RE Thompson	FOREMAN:		ELEVATION see plan
OBSERVED BY	K. Elmy	DATE	1/19/21	DEPTH TO GROUNDWATER BELOW
CHECKED BY		DATE		SURFACE Not Observed

DEPTH BELOW GROUND SURFACE (in.)	TEST PIT DIAGRAM AND SOIL DESCRIPTION
	

NOTES:

1. No Redox encountered
2. PID = 0.0PPM

TEST PIT NUMBER

TP 5

WESTON & SAMPSON ENGINEERS, INC.

TEST PIT LOG

PROJECT NAME/NO.	Harry Lee Cole School - ENG20-0865			**TEST PIT NUMBER**
LOCATION	Harry Lee Cole School, Boxford, MA			TP 6
CLIENT	Boxford, MA			GROUND SURFACE
CONTRACTOR	RE Thompson	FOREMAN:		ELEVATION see plan
OBSERVED BY	K. Elmy	DATE	1/19/21	DEPTH TO GROUNDWATER BELOW
CHECKED BY		DATE		SURFACE 46-in

DEPTH BELOW GROUND SURFACE (in.)	TEST PIT DIAGRAM AND SOIL DESCRIPTION
12"	Fill 10% Gravel & 10% Cobbles
20"	Ab - Dark Brown Sandy Loam (10YR 3/3) 10% Gravel & 10% Cobbles
27"	Bw - Dark Yellowish Brown Sandy Loam (10YR 4/6) 10% Gravel & 10% Cobbles
84"	C1 - Yellowish Brown Coarse Sand (10YR 5/4) 5% Gravel & 5% Cobbles
	- End of Exploration -

NOTES:

1. Redox encountered at 46-in
2. PID = 0.0PPM

TEST PIT NUMBER
TP 6

WESTON & SAMPSON ENGINEERS, INC.

TEST PIT LOG

PROJECT NAME/NO.	Harry Lee Cole School - ENG20-0865			**TEST PIT NUMBER**
LOCATION	Harry Lee Cole School, Boxford, MA			TP 6
CLIENT	Boxford, MA			GROUND SURFACE
CONTRACTOR	RE Thompson	FOREMAN:		ELEVATION see plan
OBSERVED BY	K. Elmy	DATE	1/19/21	DEPTH TO GROUNDWATER BELOW
CHECKED BY		DATE		SURFACE 46-in

DEPTH BELOW GROUND SURFACE (in.)	TEST PIT DIAGRAM AND SOIL DESCRIPTION
	

NOTES:

1. Redox encountered at 46-in
2. PID = 0.0PPM

TEST PIT NUMBER

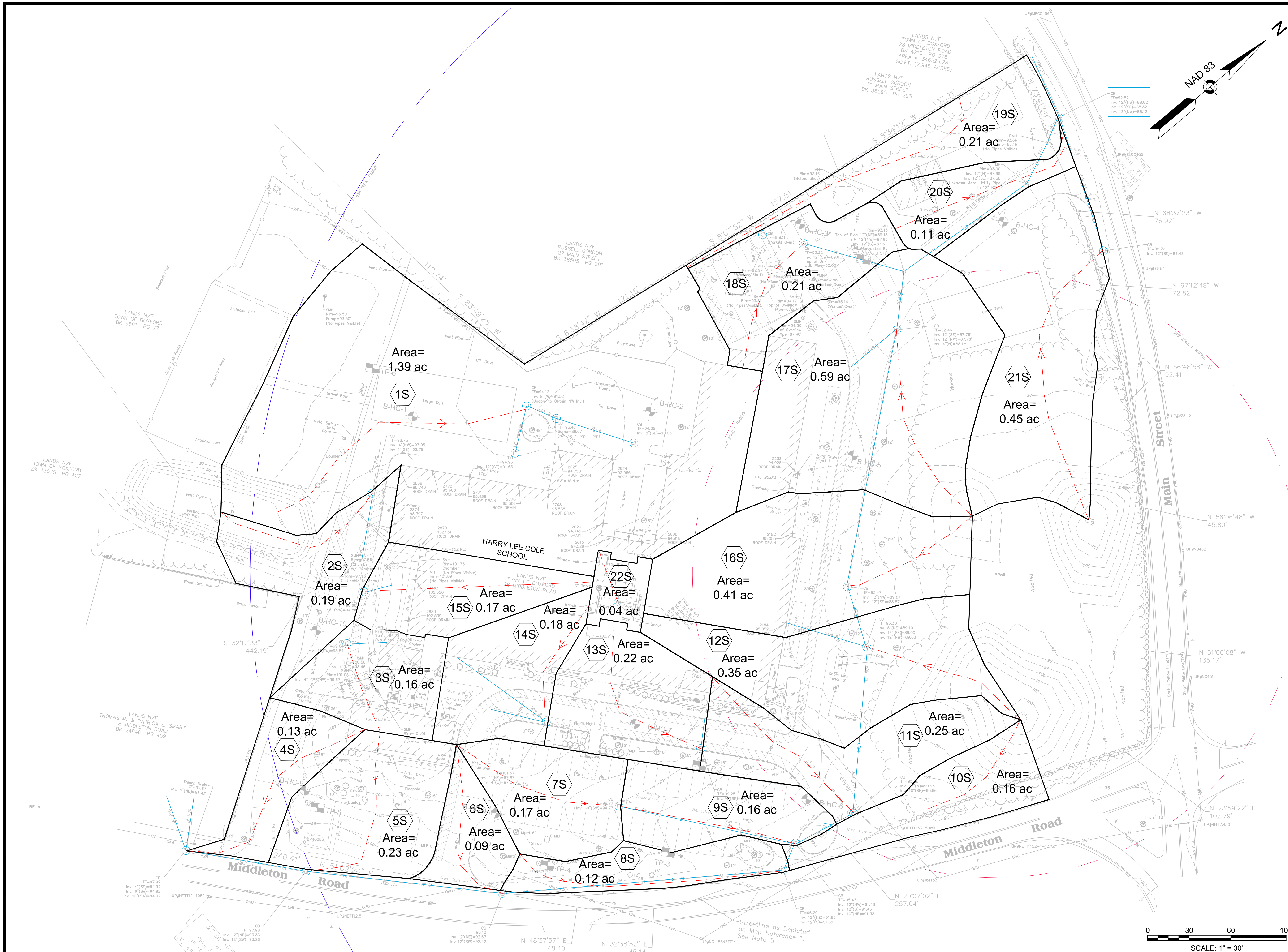
TP 6

WESTON & SAMPSON ENGINEERS, INC.

Attachment D - HydroCAD Reports

Harry Lee Cole School
Boxford, MA
Stormwater Discharge Summary Table
3-Feb-21

		Peak Discharge (cfs)		Runoff Volume (cf)	
Analysis Point	**24 Hr Storm**	**Pre**	**Post**	**Pre**	**Post**
1L	2yr	0.08	0.08	246	246
	10yr	0.15	0.15	469	469
	25yr	0.20	0.20	630	630
	50yr	0.26	0.26	826	826
	100yr	0.32	0.32	1,011	1,011
2L	2yr	3.81	3.43	11,837	11,031
	10yr	6.92	6.03	21,698	19,522
	25yr	9.09	7.87	28,791	25,632
	50yr	11.67	10.05	37,350	33,019
	100yr	14.03	12.08	45,358	39,947
4L	2yr	0.83	0.00	2,577	0
	10yr	1.49	0.00	4,680	0
	25yr	1.95	0.00	6,186	0
	50yr	2.49	0.00	7,999	0
	100yr	2.99	0.00	9,693	0
5L	2yr	4.02	3.65	13,869	12,118
	10yr	8.70	5.70	28,407	24,747
	25yr	12.30	7.70	39,650	34,880
	50yr	16.78	9.75	53,769	48,157
	100yr	21.05	15.41	67,366	61,378



Project:
BOXFORD PUBLIC SCHOOLS SITE RENOVATION PROJECT

TOWN OF BOXFORD
BOXFORD, MA 01921

Weston & Sampson

Weston & Sampson Engineers, Inc.
55 Walkers Brook Drive, Suite 100
Reading, MA 01867
978.532.1900 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

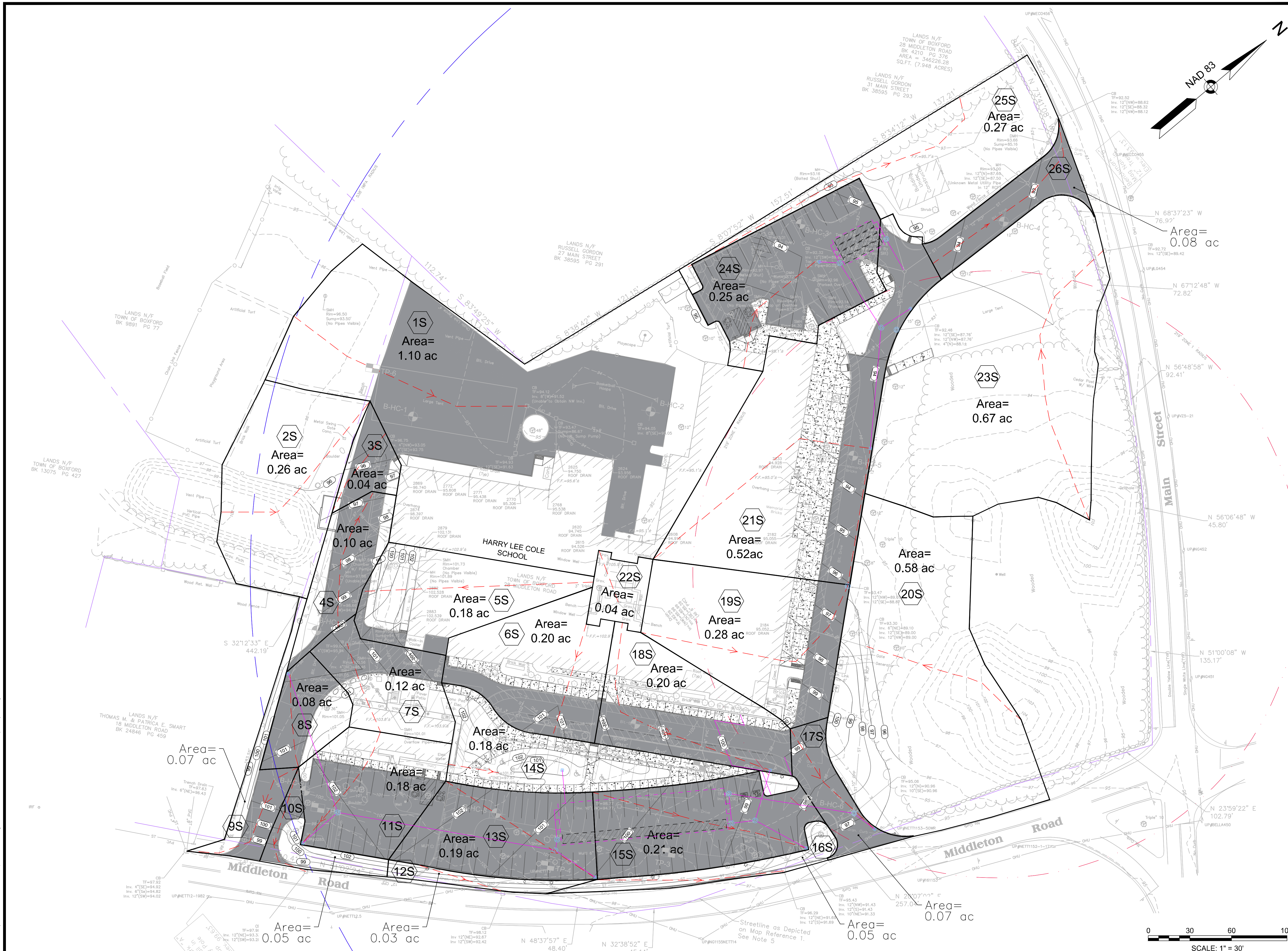
Issued For:
PERMITTING
NOT FOR CONSTRUCTION

Scale: AS NOTED
Date: FEBRUARY 3, 2021
Drawn By: CTK
Reviewed By: JIP
Approved By: JRF
W&S Project No.: ENG20-0865
W&S File No.:

Drawing Title:
PRE-DEVELOPMENT
HARRY LEE COLE
SCHOOL

Sheet Number:
FIG.1

Rev. 1.8 Date: 10/24/2019



Project:
BOXFORD PUBLIC SCHOOLS SITE RENOVATION PROJECT

TOWN OF BOXFORD
BOXFORD, MA 01921

Weston & Sampson

Weston & Sampson Engineers, Inc.
55 Walkers Brook Drive, Suite 100
Reading, MA 01867
978.532.1900 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

Seal:

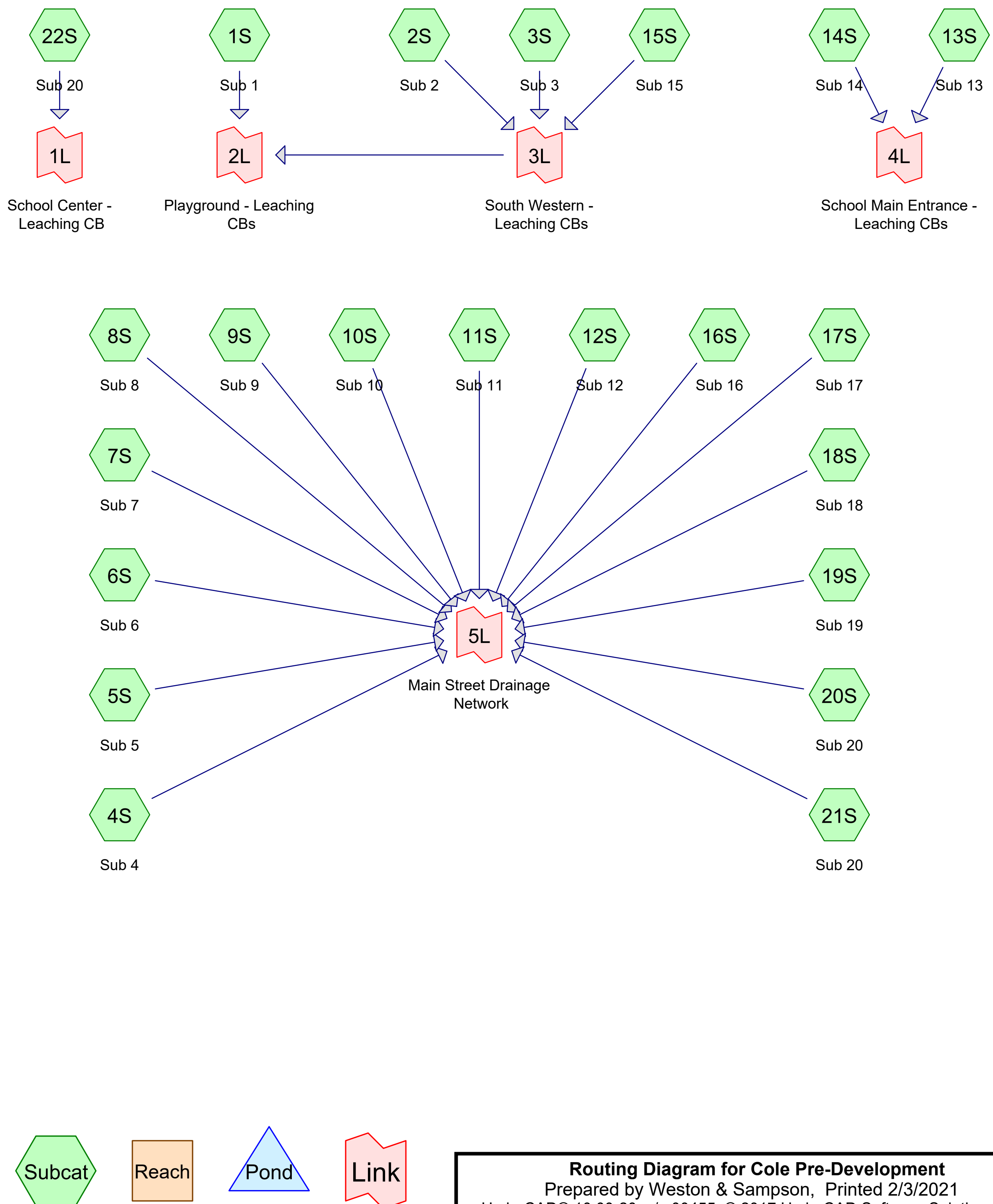
Issued For:
PERMITTING
NOT FOR CONSTRUCTION

Scale: AS NOTED
Date: FEBRUARY 3, 2021
Drawn By: CTK
Reviewed By: JIP
Approved By: JRF
W&S Project No.: ENG20-0865
W&S File No.:

Drawing Title:
POST-DEVELOPMENT HARRY LEE COLE SCHOOL

Sheet Number:
FIG.2

Rev. 1.8 Date: 10/24/2019



Routing Diagram for Cole Pre-Development
Prepared by Weston & Sampson, Printed 2/3/2021
HydroCAD® 10.00-20 s/n 00455 © 2017 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
30,889	39	>75% Grass cover, Good, HSG A (5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 16S)
54,511	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S, 4S, 17S, 19S, 20S, 21S, 22S)
41,681	98	Paved parking, HSG A (5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 16S)
54,941	98	Paved parking, HSG B (1S, 2S, 3S, 4S, 17S, 18S, 20S, 21S, 22S)
16,585	98	Roofs, HSG A (14S, 15S, 16S)
28,234	98	Roofs, HSG B (1S, 11S, 12S, 13S, 17S, 18S, 19S, 20S)
963	98	Unconnected roofs, HSG A (5S)
1,074	98	Unconnected roofs, HSG B (3S, 4S)
1,710	30	Woods, Good, HSG A (16S)
31,082	55	Woods, Good, HSG B (1S, 2S, 10S, 11S, 12S, 17S, 19S, 21S)
261,670	**78**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
91,828	HSG A	5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 16S
169,842	HSG B	1S, 2S, 3S, 4S, 10S, 11S, 12S, 13S, 17S, 18S, 19S, 20S, 21S, 22S
0	HSG C	
0	HSG D	
0	Other	
261,670		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Su Nu
30,889	54,511	0	0	0	85,400	>75% Grass cover, Good	
41,681	54,941	0	0	0	96,622	Paved parking	
16,585	28,234	0	0	0	44,819	Roofs	
963	1,074	0	0	0	2,037	Unconnected roofs	
1,710	31,082	0	0	0	32,792	Woods, Good	
91,828	**169,842**	**0**	**0**	**0**	**261,670**	**TOTAL AREA**	

Time span=1.00-36.00 hrs, dt=0.01 hrs, 3501 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Sub 1 Runoff Area=60,718 sf 65.69% Impervious Runoff Depth=1.67"
Tc=6.0 min CN=85 Runoff=2.73 cfs 8,463 cf

Subcatchment2S: Sub 2 Runoff Area=8,333 sf 50.87% Impervious Runoff Depth=1.26"
Tc=6.0 min CN=79 Runoff=0.28 cfs 876 cf

Subcatchment3S: Sub 3 Runoff Area=6,851 sf 83.29% Impervious Runoff Depth=2.26"
Tc=6.0 min CN=92 Runoff=0.41 cfs 1,288 cf

Subcatchment4S: Sub 4 Runoff Area=5,579 sf 56.68% Impervious Runoff Depth=1.46"
Tc=6.0 min CN=82 Runoff=0.22 cfs 678 cf

Subcatchment5S: Sub 5 Runoff Area=10,216 sf 63.31% Impervious Runoff Depth=1.08"
Tc=6.0 min CN=76 Runoff=0.29 cfs 922 cf

Subcatchment6S: Sub 6 Runoff Area=3,953 sf 66.10% Impervious Runoff Depth=1.20"
Tc=6.0 min CN=78 Runoff=0.12 cfs 395 cf

Subcatchment7S: Sub 7 Runoff Area=7,525 sf 80.97% Impervious Runoff Depth=1.83"
Tc=6.0 min CN=87 Runoff=0.37 cfs 1,145 cf

Subcatchment8S: Sub 8 Runoff Area=5,425 sf 8.94% Impervious Runoff Depth=0.02"
Tc=6.0 min CN=44 Runoff=0.00 cfs 10 cf

Subcatchment9S: Sub 9 Runoff Area=7,123 sf 95.91% Impervious Runoff Depth=2.65"
Tc=6.0 min CN=96 Runoff=0.47 cfs 1,573 cf

Subcatchment10S: Sub 10 Runoff Area=7,035 sf 17.21% Impervious Runoff Depth=0.28"
Tc=6.0 min CN=57 Runoff=0.02 cfs 162 cf

Subcatchment11S: Sub 11 Runoff Area=10,781 sf 36.84% Impervious Runoff Depth=0.64"
Tc=6.0 min CN=67 Runoff=0.15 cfs 571 cf

Subcatchment12S: Sub 12 Runoff Area=15,032 sf 40.52% Impervious Runoff Depth=0.64"
Tc=6.0 min CN=67 Runoff=0.21 cfs 796 cf

Subcatchment13S: Sub 13 Runoff Area=9,477 sf 83.23% Impervious Runoff Depth=1.91"
Tc=6.0 min CN=88 Runoff=0.49 cfs 1,506 cf

Subcatchment14S: Sub 14 Runoff Area=8,035 sf 75.82% Impervious Runoff Depth=1.60"
Tc=6.0 min CN=84 Runoff=0.35 cfs 1,071 cf

Subcatchment15S: Sub 15 Runoff Area=7,294 sf 84.44% Impervious Runoff Depth=1.99"
Tc=6.0 min CN=89 Runoff=0.39 cfs 1,210 cf

Subcatchment16S: Sub 16 Runoff Area=17,962 sf 66.90% Impervious Runoff Depth=1.20"
Tc=6.0 min CN=78 Runoff=0.57 cfs 1,797 cf

Subcatchment17S: Sub 17 Runoff Area=25,633 sf 39.90% Impervious Runoff Depth=1.03"
Tc=6.0 min CN=75 Runoff=0.67 cfs 2,193 cf

Subcatchment18S: Sub 18 Runoff Area=9,167 sf 100.00% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=98 Runoff=0.63 cfs 2,191 cf

Subcatchment19S: Sub 19 Runoff Area=8,937 sf 2.82% Impervious Runoff Depth=0.40"
Tc=6.0 min CN=61 Runoff=0.06 cfs 301 cf

Subcatchment20S: Sub 20 Runoff Area=4,936 sf 42.10% Impervious Runoff Depth=1.14"
Tc=6.0 min CN=77 Runoff=0.15 cfs 469 cf

Subcatchment21S: Sub 20 Runoff Area=19,722 sf 8.52% Impervious Runoff Depth=0.40"
Tc=6.0 min CN=61 Runoff=0.13 cfs 664 cf

Subcatchment22S: Sub 20 Runoff Area=1,936 sf 59.97% Impervious Runoff Depth=1.53"
Tc=6.0 min CN=83 Runoff=0.08 cfs 246 cf

Link 1L: School Center - Leaching CB Inflow=0.08 cfs 246 cf
Primary=0.08 cfs 246 cf

Link 2L: Playground - Leaching CBs Inflow=3.81 cfs 11,837 cf
Primary=3.81 cfs 11,837 cf

Link 3L: South Western - Leaching CBs Inflow=1.07 cfs 3,374 cf
Primary=1.07 cfs 3,374 cf

Link 4L: School Main Entrance - Leaching CBs Inflow=0.83 cfs 2,577 cf
Primary=0.83 cfs 2,577 cf

Link 5L: Main Street Drainage Network Inflow=4.02 cfs 13,869 cf
Primary=4.02 cfs 13,869 cf

Total Runoff Area = 261,670 sf Runoff Volume = 28,529 cf Average Runoff Depth = 1.31"
45.17% Pervious = 118,192 sf 54.83% Impervious = 143,478 sf

Summary for Subcatchment 1S: Sub 1

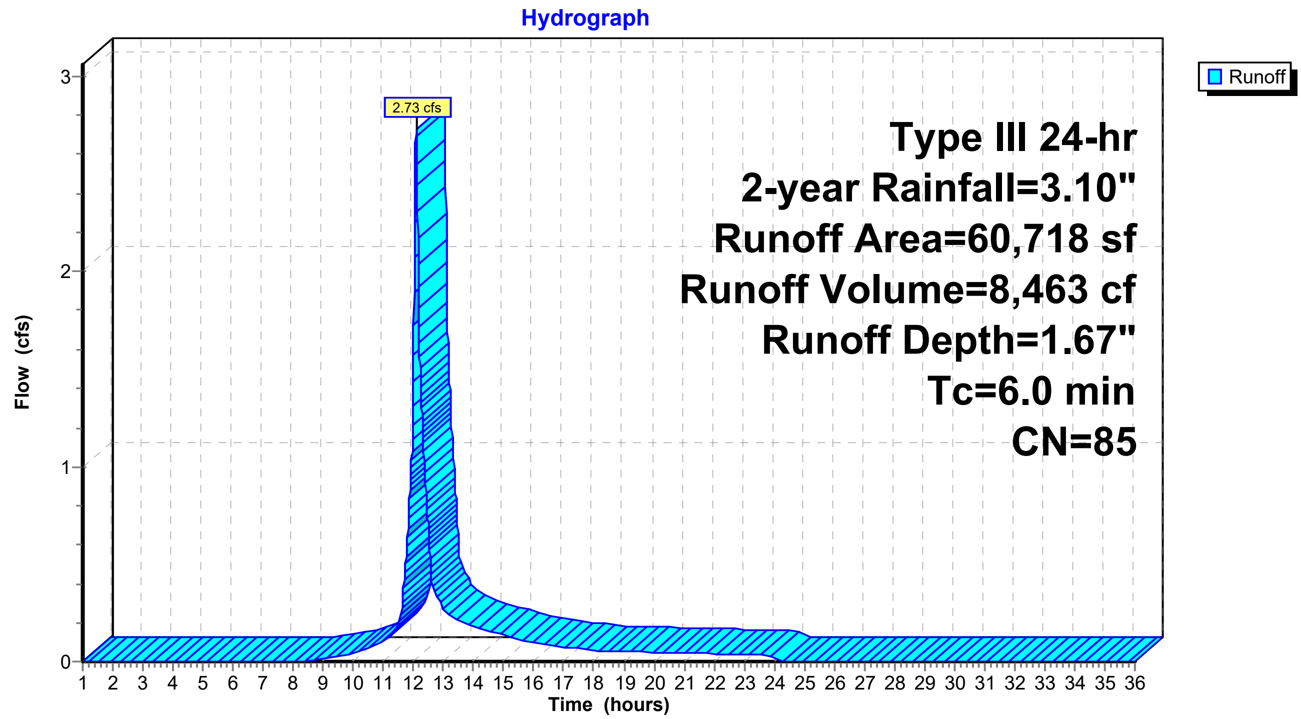
Runoff = 2.73 cfs @ 12.09 hrs, Volume= 8,463 cf, Depth= 1.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
16,123	98	Roofs, HSG B
1,042	55	Woods, Good, HSG B
19,793	61	>75% Grass cover, Good, HSG B
23,760	98	Paved parking, HSG B
60,718	85	Weighted Average
20,835		34.31% Pervious Area
39,883		65.69% Impervious Area

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

Subcatchment 1S: Sub 1



Summary for Subcatchment 2S: Sub 2

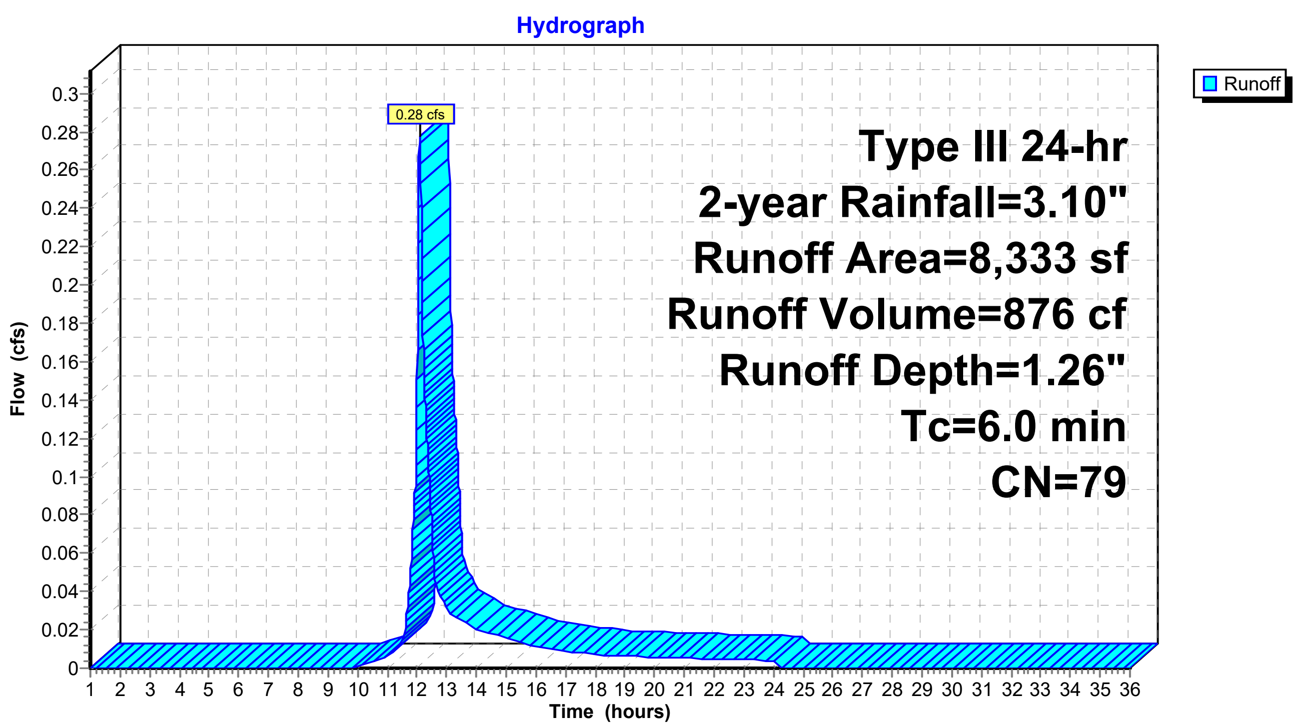
Runoff = 0.28 cfs @ 12.09 hrs, Volume= 876 cf, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
1,073	55	Woods, Good, HSG B
3,021	61	>75% Grass cover, Good, HSG B
4,239	98	Paved parking, HSG B
8,333	79	Weighted Average
4,094		49.13% Pervious Area
4,239		50.87% Impervious Area

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

Subcatchment 2S: Sub 2



Summary for Subcatchment 3S: Sub 3

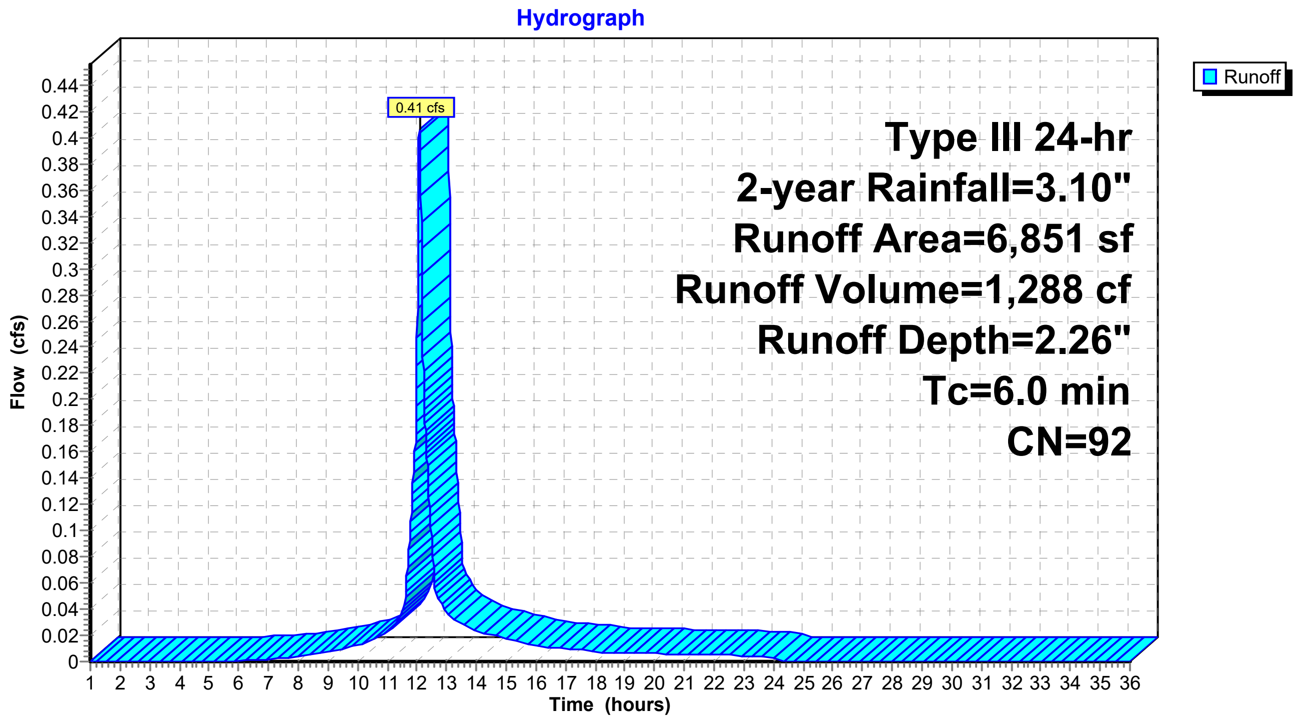
Runoff = 0.41 cfs @ 12.09 hrs, Volume= 1,288 cf, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
969	98	Unconnected roofs, HSG B
1,145	61	>75% Grass cover, Good, HSG B
4,737	98	Paved parking, HSG B
6,851	92	Weighted Average
1,145		16.71% Pervious Area
5,706		83.29% Impervious Area
969		16.98% Unconnected

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

Subcatchment 3S: Sub 3



Summary for Subcatchment 4S: Sub 4

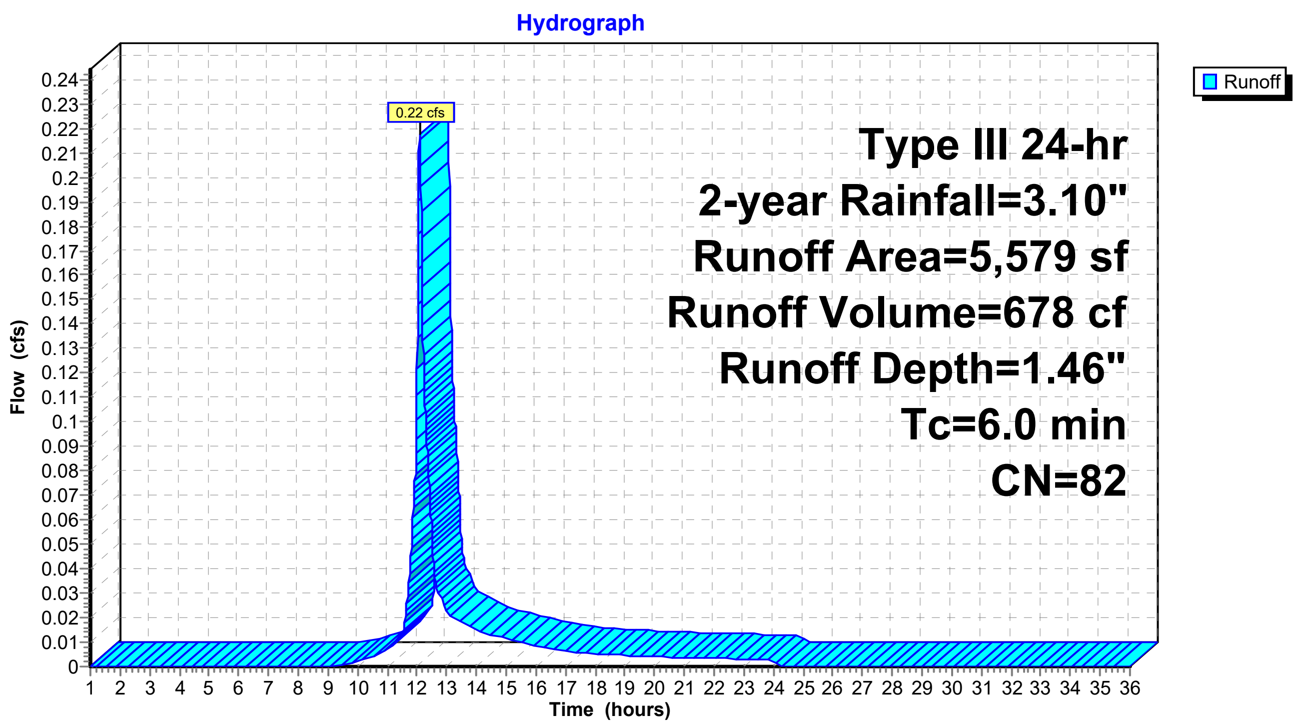
Runoff = 0.22 cfs @ 12.09 hrs, Volume= 678 cf, Depth= 1.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
105	98	Unconnected roofs, HSG B
2,417	61	>75% Grass cover, Good, HSG B
3,057	98	Paved parking, HSG B
5,579	82	Weighted Average
2,417		43.32% Pervious Area
3,162		56.68% Impervious Area
105		3.32% Unconnected

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

Subcatchment 4S: Sub 4



Summary for Subcatchment 5S: Sub 5

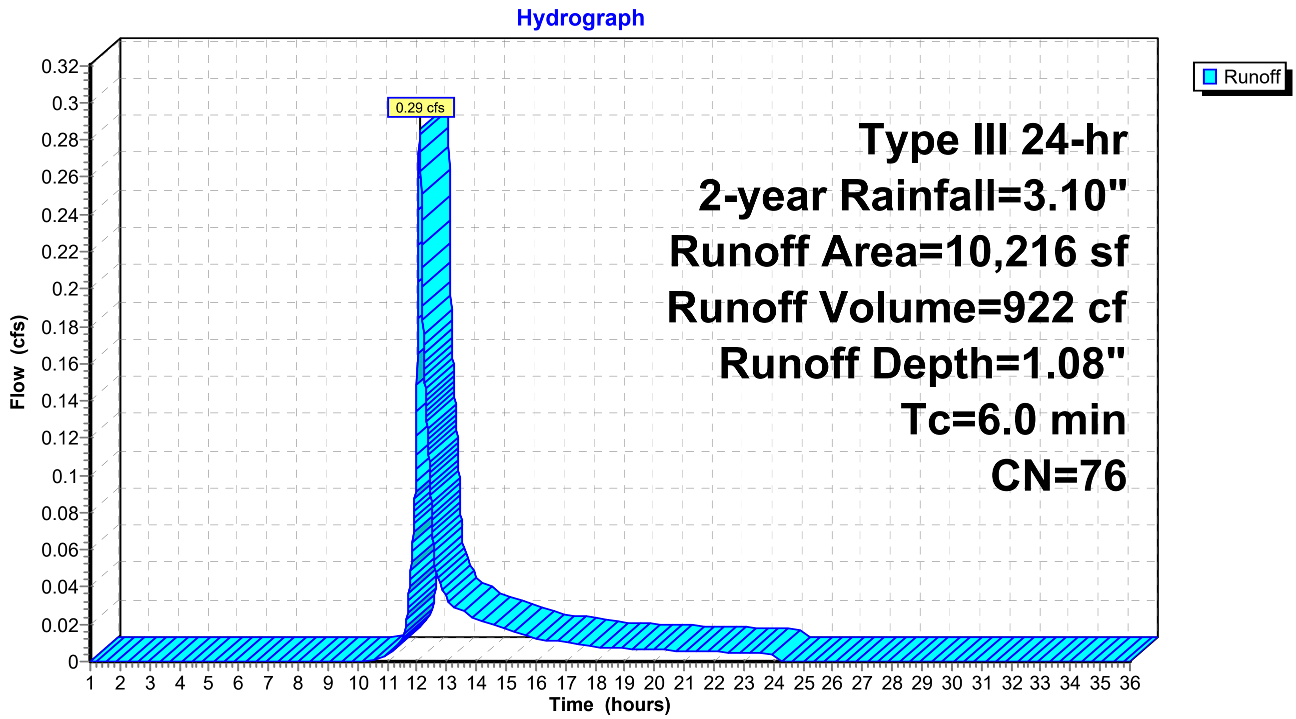
Runoff = 0.29 cfs @ 12.09 hrs, Volume= 922 cf, Depth= 1.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
963	98	Unconnected roofs, HSG A
3,748	39	>75% Grass cover, Good, HSG A
5,505	98	Paved parking, HSG A
10,216	76	Weighted Average
3,748		36.69% Pervious Area
6,468		63.31% Impervious Area
963		14.89% Unconnected

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

Subcatchment 5S: Sub 5



Summary for Subcatchment 6S: Sub 6

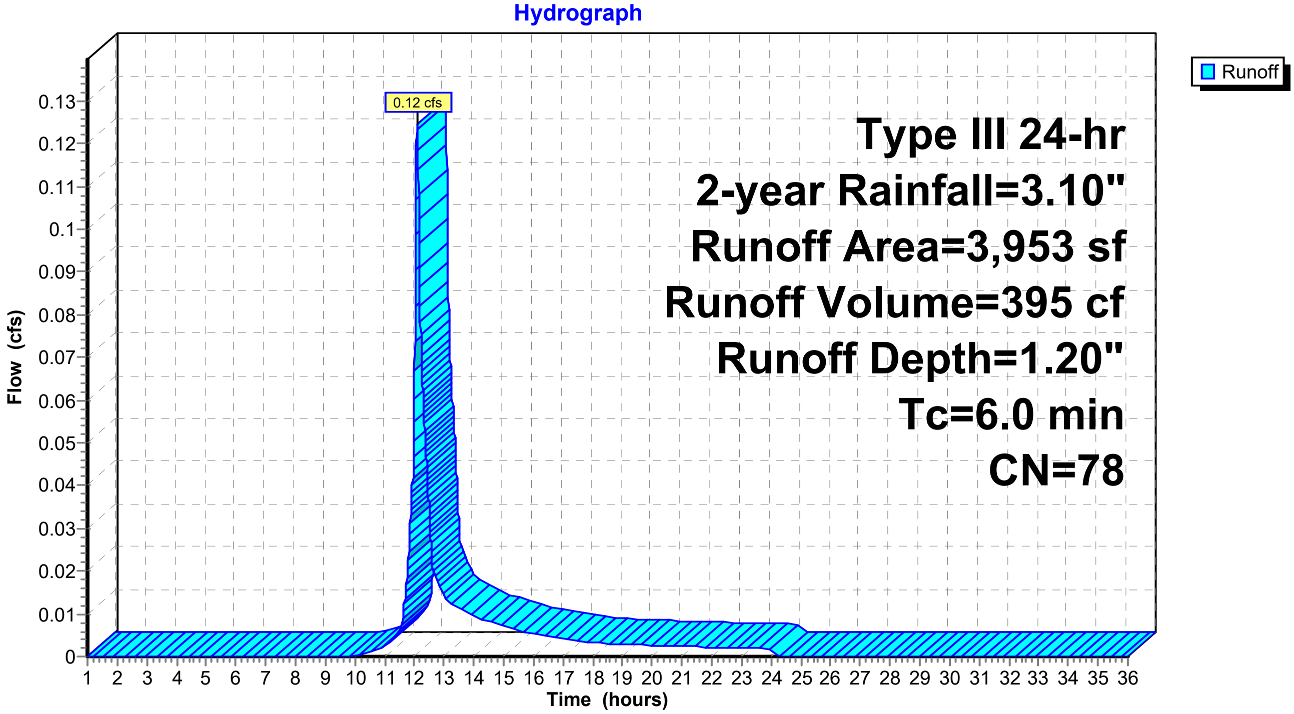
Runoff = 0.12 cfs @ 12.09 hrs, Volume= 395 cf, Depth= 1.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
1,340	39	>75% Grass cover, Good, HSG A
2,613	98	Paved parking, HSG A
3,953	78	Weighted Average
1,340		33.90% Pervious Area
2,613		66.10% Impervious Area

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

Subcatchment 6S: Sub 6



Summary for Subcatchment 7S: Sub 7

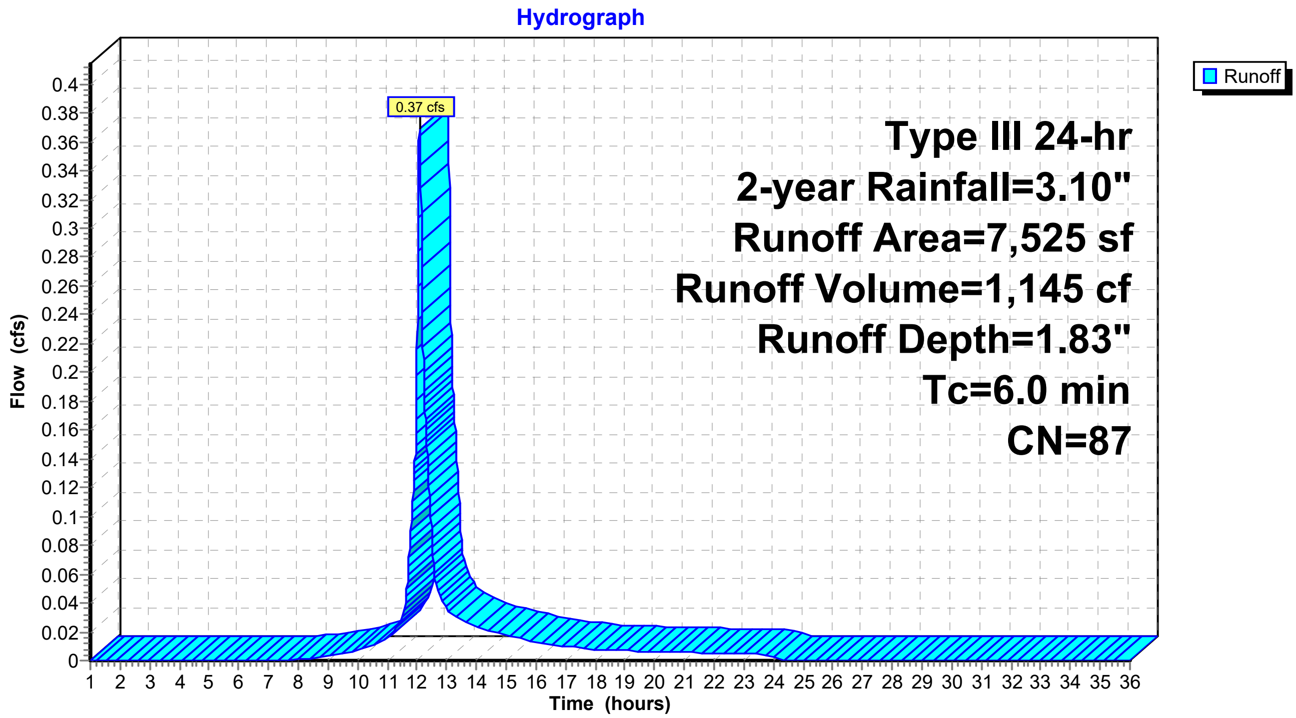
Runoff = 0.37 cfs @ 12.09 hrs, Volume= 1,145 cf, Depth= 1.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
1,432	39	>75% Grass cover, Good, HSG A
6,093	98	Paved parking, HSG A
7,525	87	Weighted Average
1,432		19.03% Pervious Area
6,093		80.97% Impervious Area

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

Subcatchment 7S: Sub 7



Summary for Subcatchment 8S: Sub 8

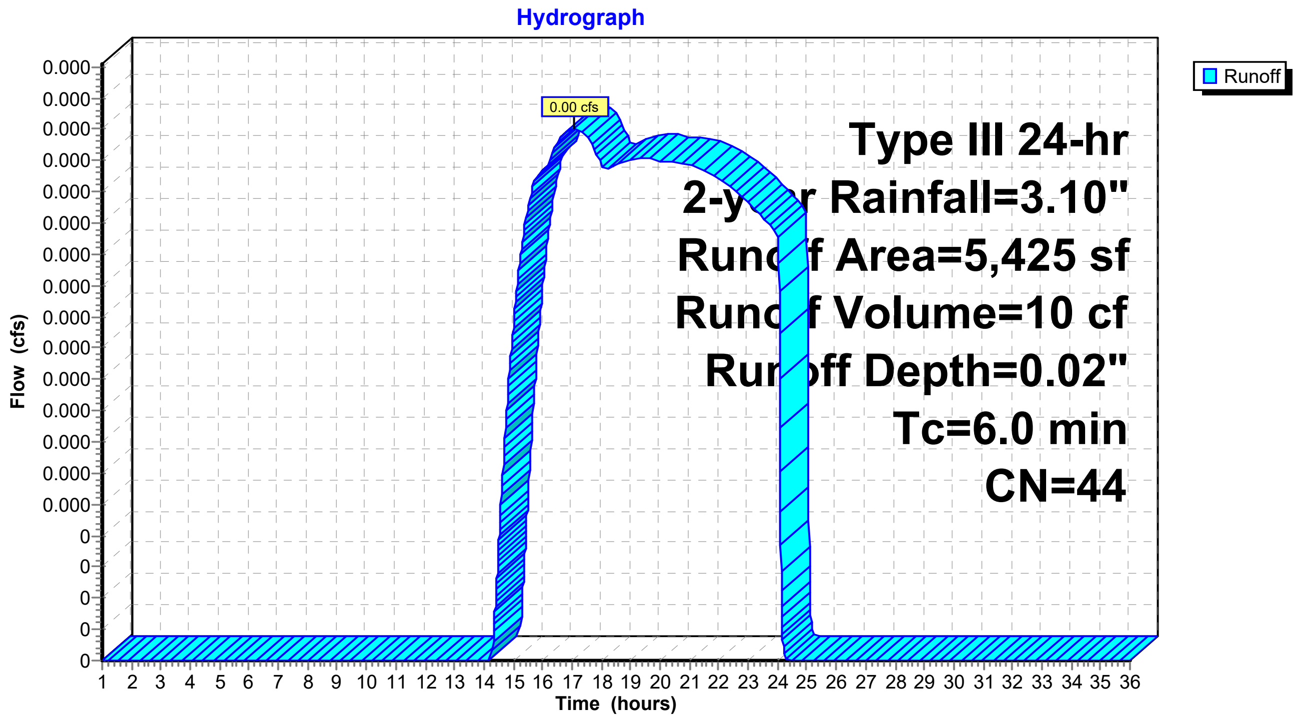
Runoff = 0.00 cfs @ 17.06 hrs, Volume= 10 cf, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
4,940	39	>75% Grass cover, Good, HSG A
485	98	Paved parking, HSG A
5,425	44	Weighted Average
4,940		91.06% Pervious Area
485		8.94% Impervious Area

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

Subcatchment 8S: Sub 8



Summary for Subcatchment 9S: Sub 9

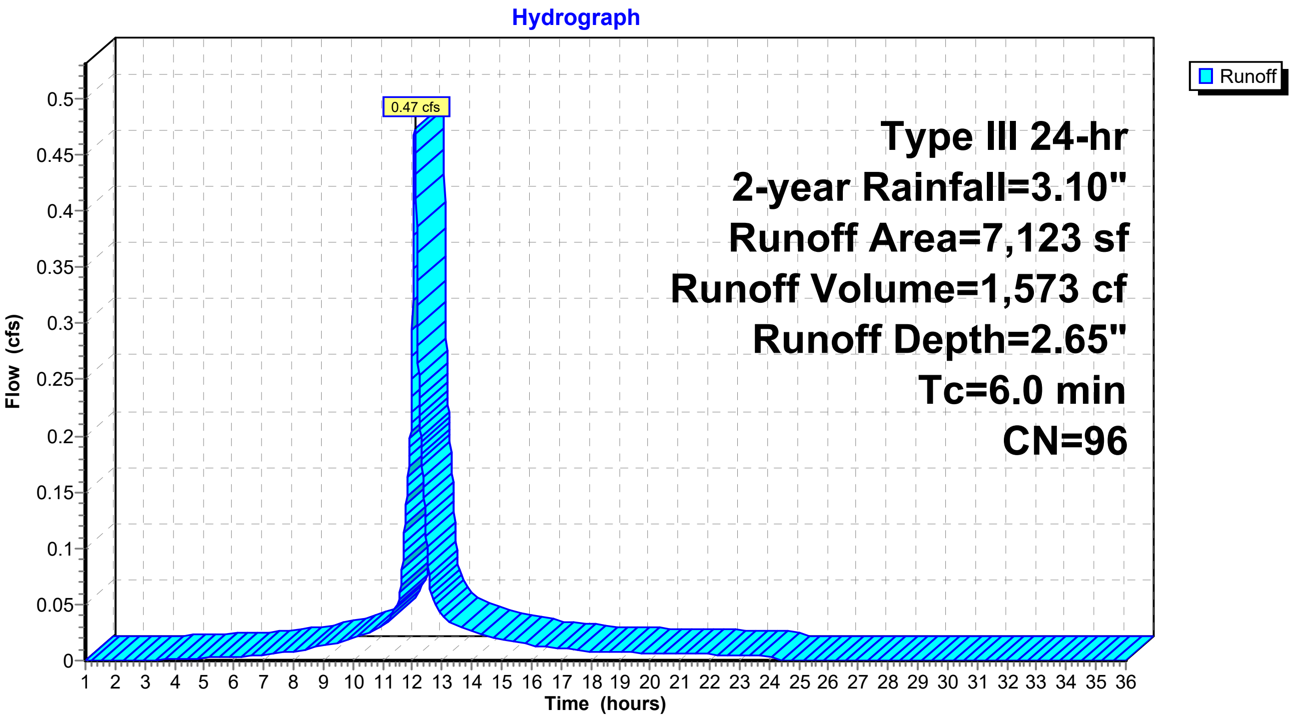
Runoff = 0.47 cfs @ 12.08 hrs, Volume= 1,573 cf, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
291	39	>75% Grass cover, Good, HSG A
6,832	98	Paved parking, HSG A
7,123	96	Weighted Average
291		4.09% Pervious Area
6,832		95.91% Impervious Area

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

Subcatchment 9S: Sub 9



Summary for Subcatchment 10S: Sub 10

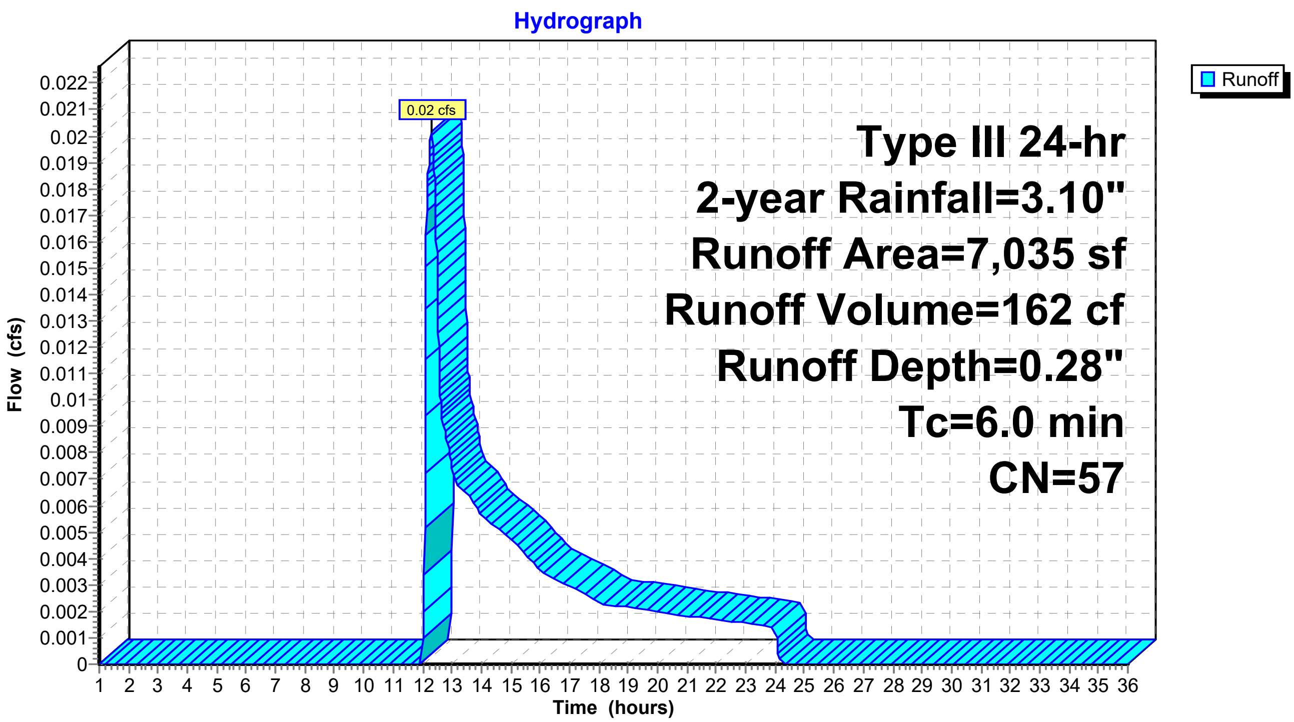
Runoff = 0.02 cfs @ 12.30 hrs, Volume= 162 cf, Depth= 0.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
2,302	39	>75% Grass cover, Good, HSG A
1,211	98	Paved parking, HSG A
3,522	55	Woods, Good, HSG B
7,035	57	Weighted Average
5,824		82.79% Pervious Area
1,211		17.21% Impervious Area

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

Subcatchment 10S: Sub 10



Summary for Subcatchment 11S: Sub 11

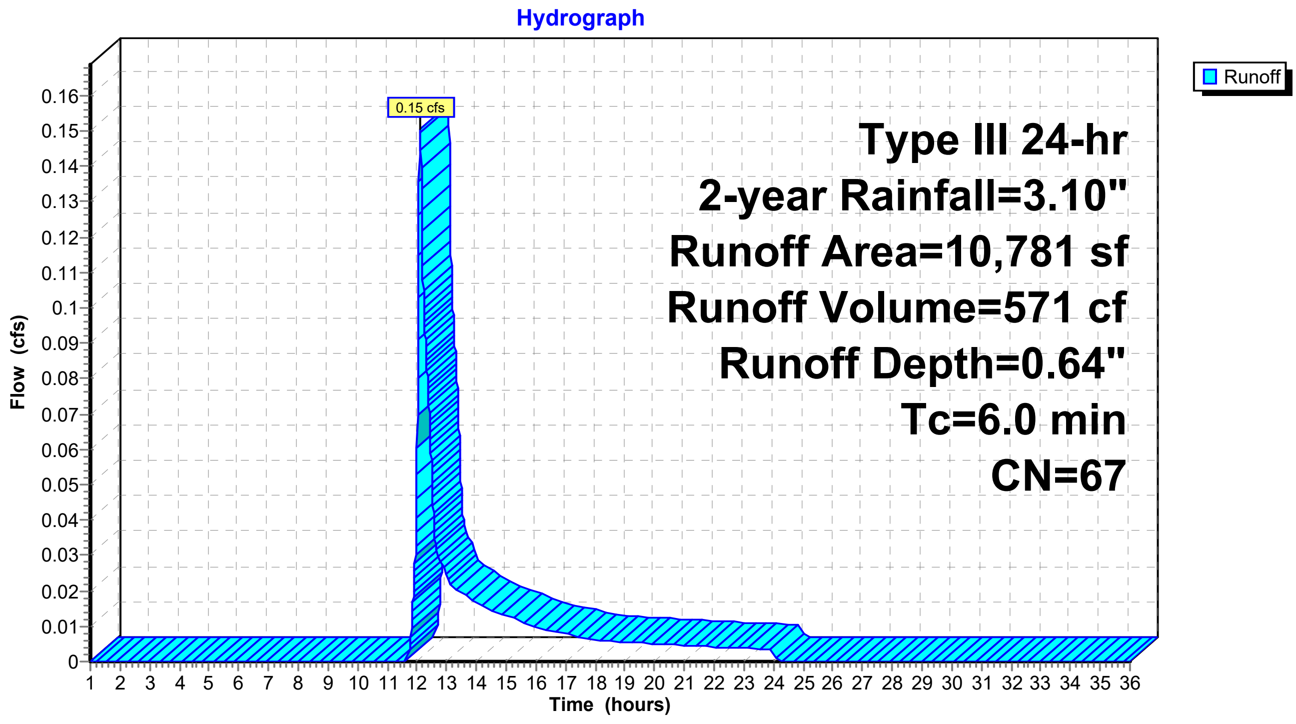
Runoff = 0.15 cfs @ 12.11 hrs, Volume= 571 cf, Depth= 0.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
2,901	39	>75% Grass cover, Good, HSG A
3,653	98	Paved parking, HSG A
319	98	Roofs, HSG B
3,908	55	Woods, Good, HSG B
10,781	67	Weighted Average
6,809		63.16% Pervious Area
3,972		36.84% Impervious Area

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

Subcatchment 11S: Sub 11



Summary for Subcatchment 12S: Sub 12

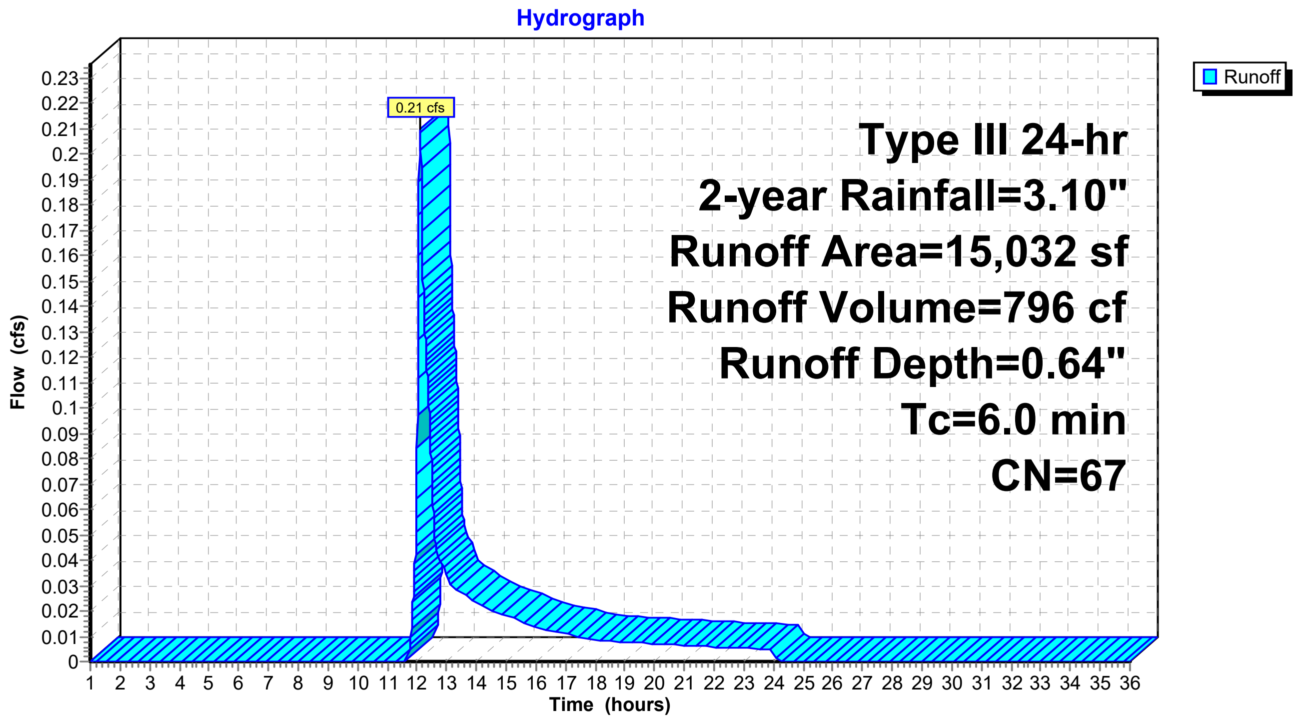
Runoff = 0.21 cfs @ 12.11 hrs, Volume= 796 cf, Depth= 0.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
5,033	39	>75% Grass cover, Good, HSG A
2,740	98	Paved parking, HSG A
3,351	98	Roofs, HSG B
3,908	55	Woods, Good, HSG B
15,032	67	Weighted Average
8,941		59.48% Pervious Area
6,091		40.52% Impervious Area

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

Subcatchment 12S: Sub 12



Summary for Subcatchment 13S: Sub 13

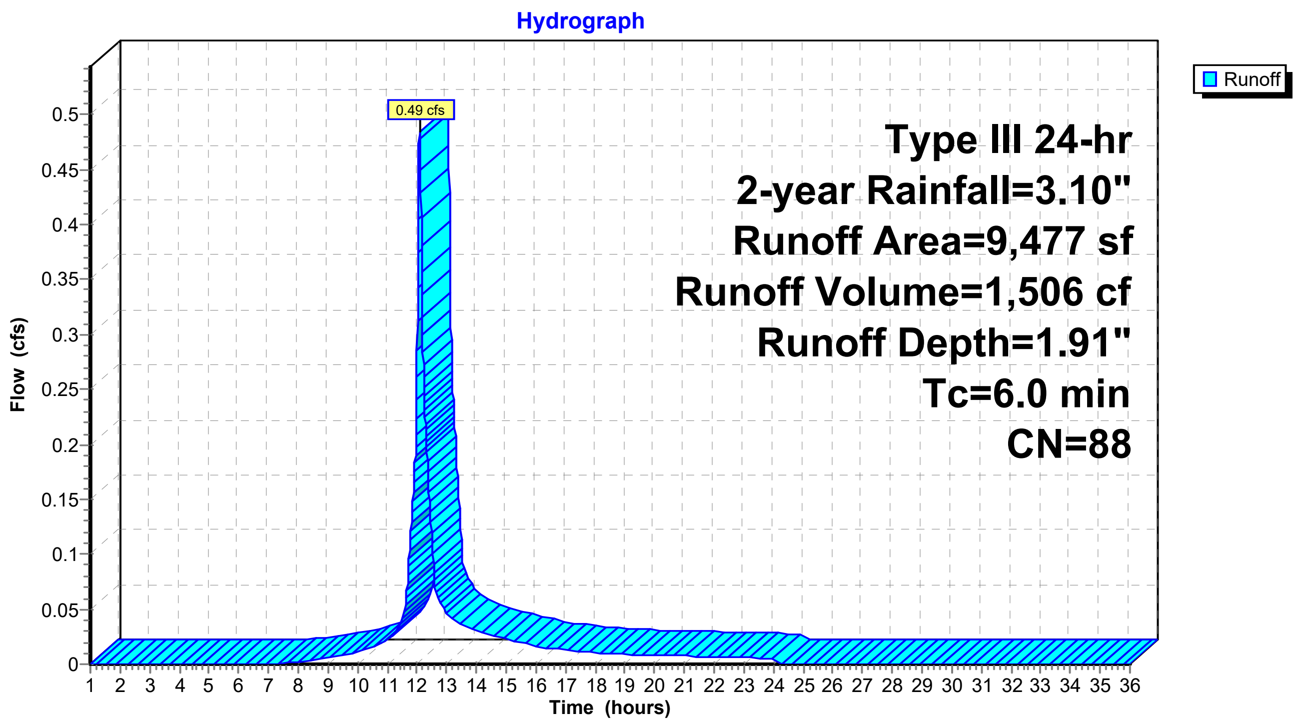
Runoff = 0.49 cfs @ 12.09 hrs, Volume= 1,506 cf, Depth= 1.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
1,589	39	>75% Grass cover, Good, HSG A
4,866	98	Paved parking, HSG A
3,022	98	Roofs, HSG B
9,477	88	Weighted Average
1,589		16.77% Pervious Area
7,888		83.23% Impervious Area

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

Subcatchment 13S: Sub 13



Summary for Subcatchment 14S: Sub 14

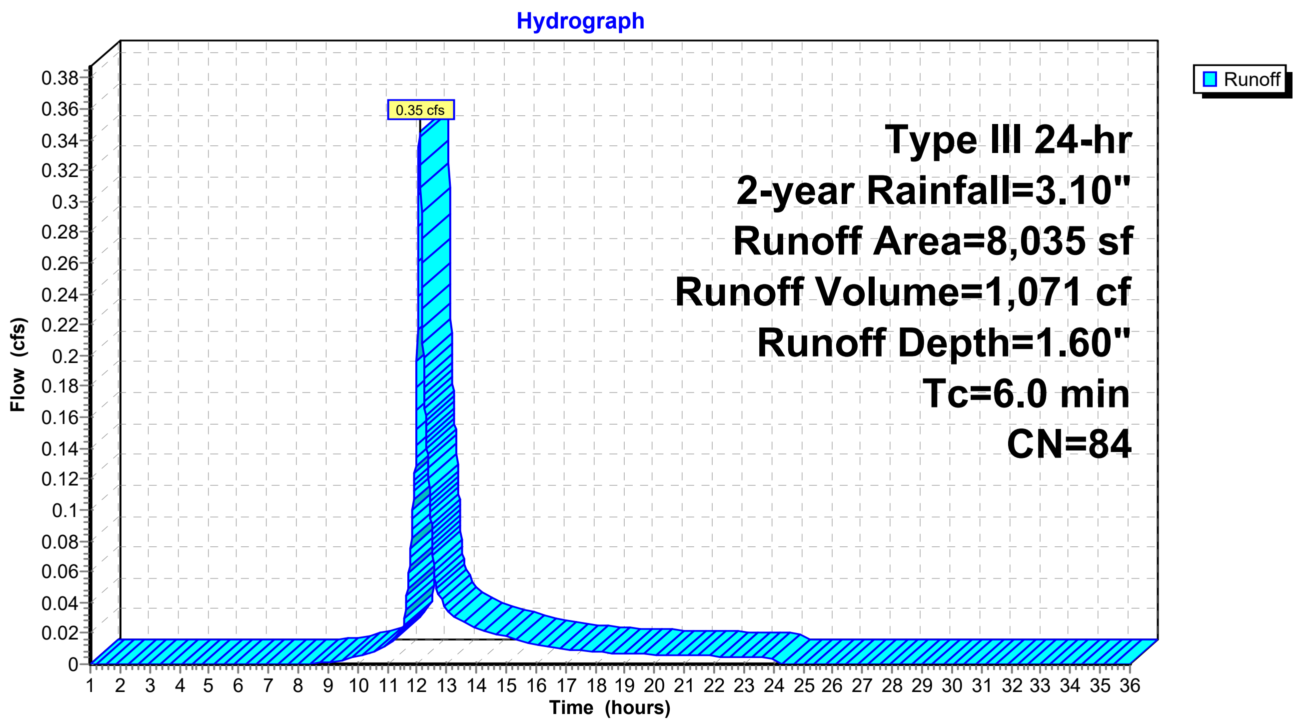
Runoff = 0.35 cfs @ 12.09 hrs, Volume= 1,071 cf, Depth= 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
1,943	39	>75% Grass cover, Good, HSG A
2,485	98	Paved parking, HSG A
3,607	98	Roofs, HSG A
8,035	84	Weighted Average
1,943		24.18% Pervious Area
6,092		75.82% Impervious Area

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

Subcatchment 14S: Sub 14



Summary for Subcatchment 15S: Sub 15

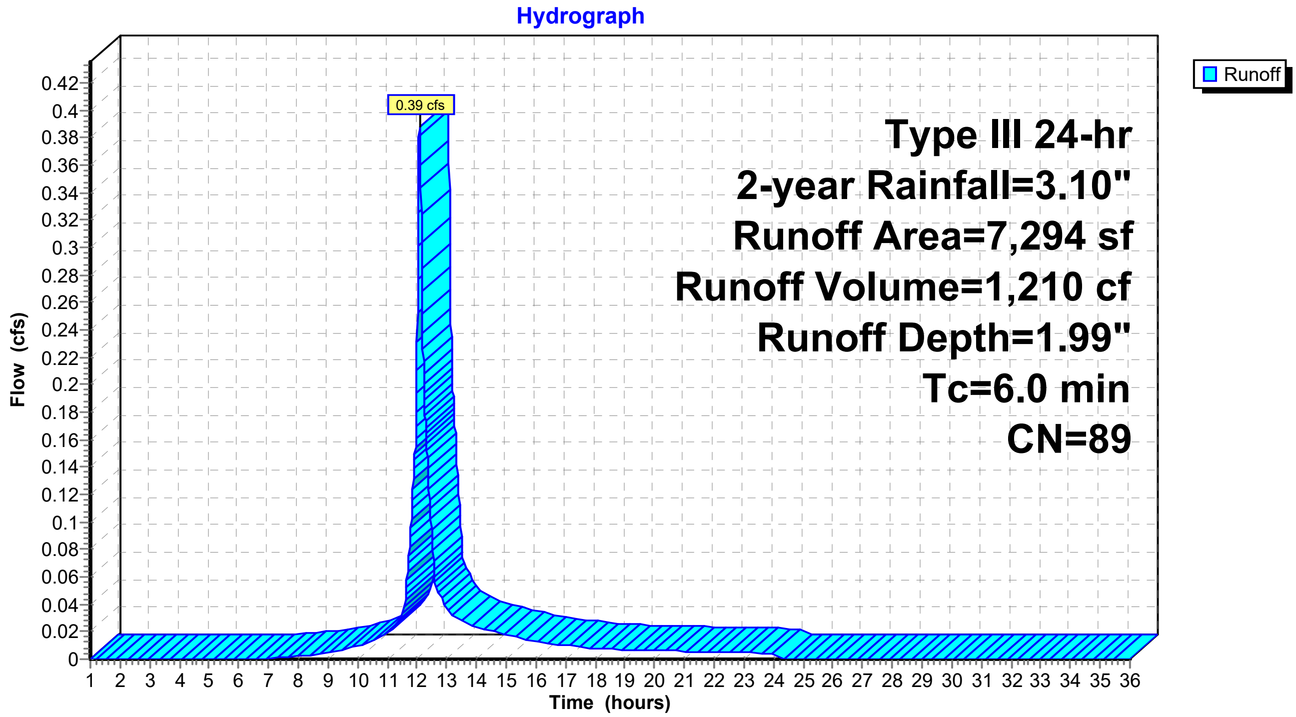
Runoff = 0.39 cfs @ 12.09 hrs, Volume= 1,210 cf, Depth= 1.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
1,135	39	>75% Grass cover, Good, HSG A
1,002	98	Paved parking, HSG A
5,157	98	Roofs, HSG A
7,294	89	Weighted Average
1,135		15.56% Pervious Area
6,159		84.44% Impervious Area

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

Subcatchment 15S: Sub 15



Summary for Subcatchment 16S: Sub 16

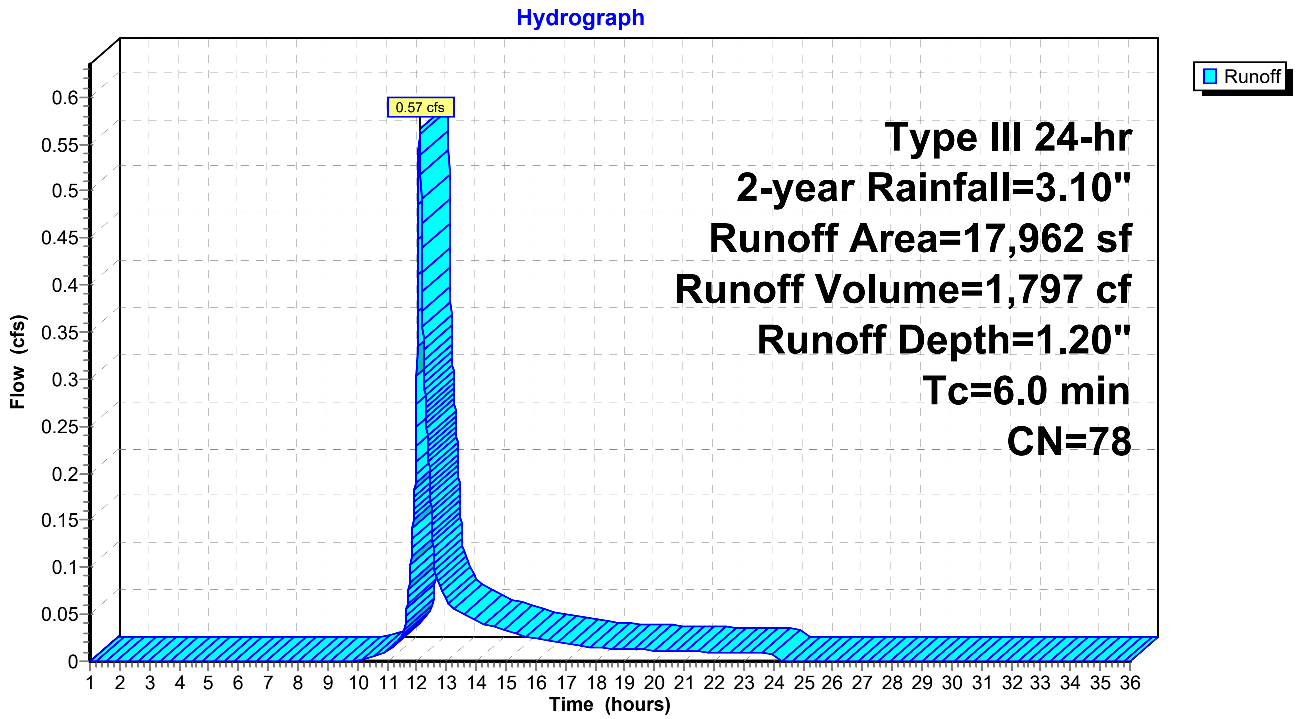
Runoff = 0.57 cfs @ 12.09 hrs, Volume= 1,797 cf, Depth= 1.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
4,235	39	>75% Grass cover, Good, HSG A
4,196	98	Paved parking, HSG A
7,821	98	Roofs, HSG A
1,710	30	Woods, Good, HSG A
17,962	78	Weighted Average
5,945		33.10% Pervious Area
12,017		66.90% Impervious Area

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

Subcatchment 16S: Sub 16



Summary for Subcatchment 17S: Sub 17

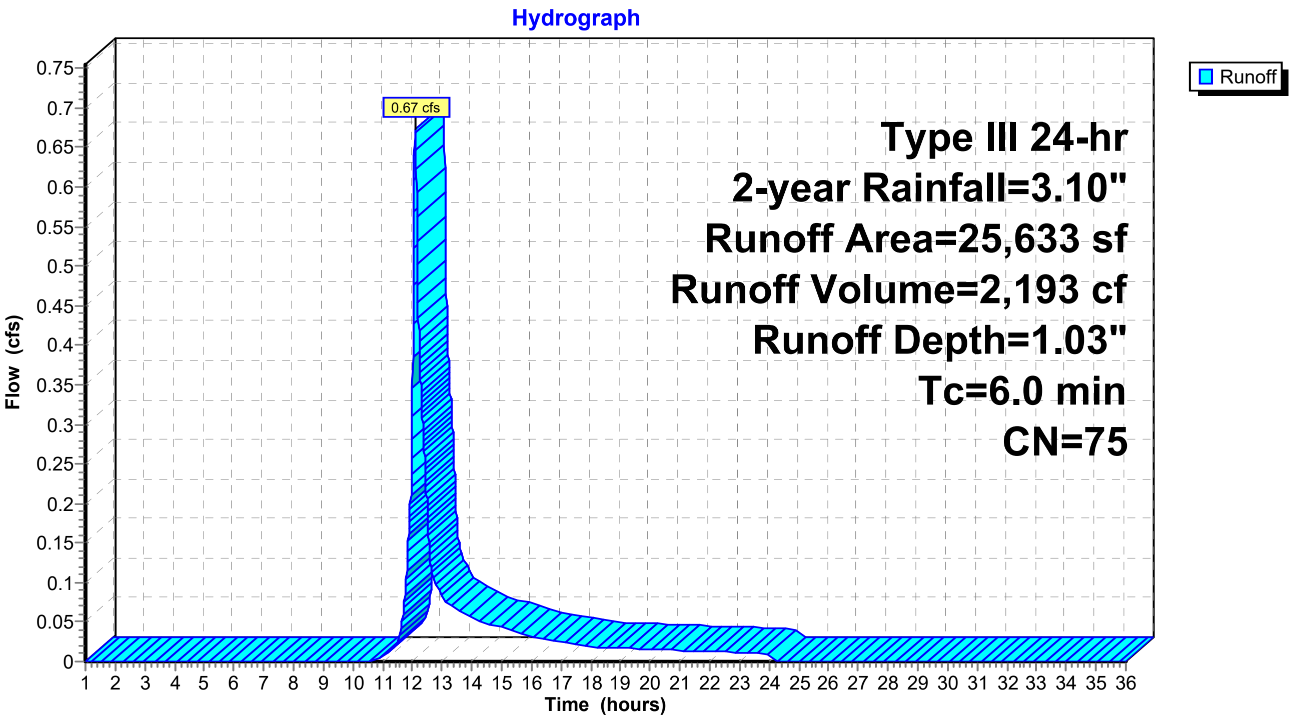
Runoff = 0.67 cfs @ 12.10 hrs, Volume= 2,193 cf, Depth= 1.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
10,866	61	>75% Grass cover, Good, HSG B
6,040	98	Paved parking, HSG B
4,188	98	Roofs, HSG B
4,539	55	Woods, Good, HSG B
25,633	75	Weighted Average
15,405		60.10% Pervious Area
10,228		39.90% Impervious Area

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

Subcatchment 17S: Sub 17



Summary for Subcatchment 18S: Sub 18

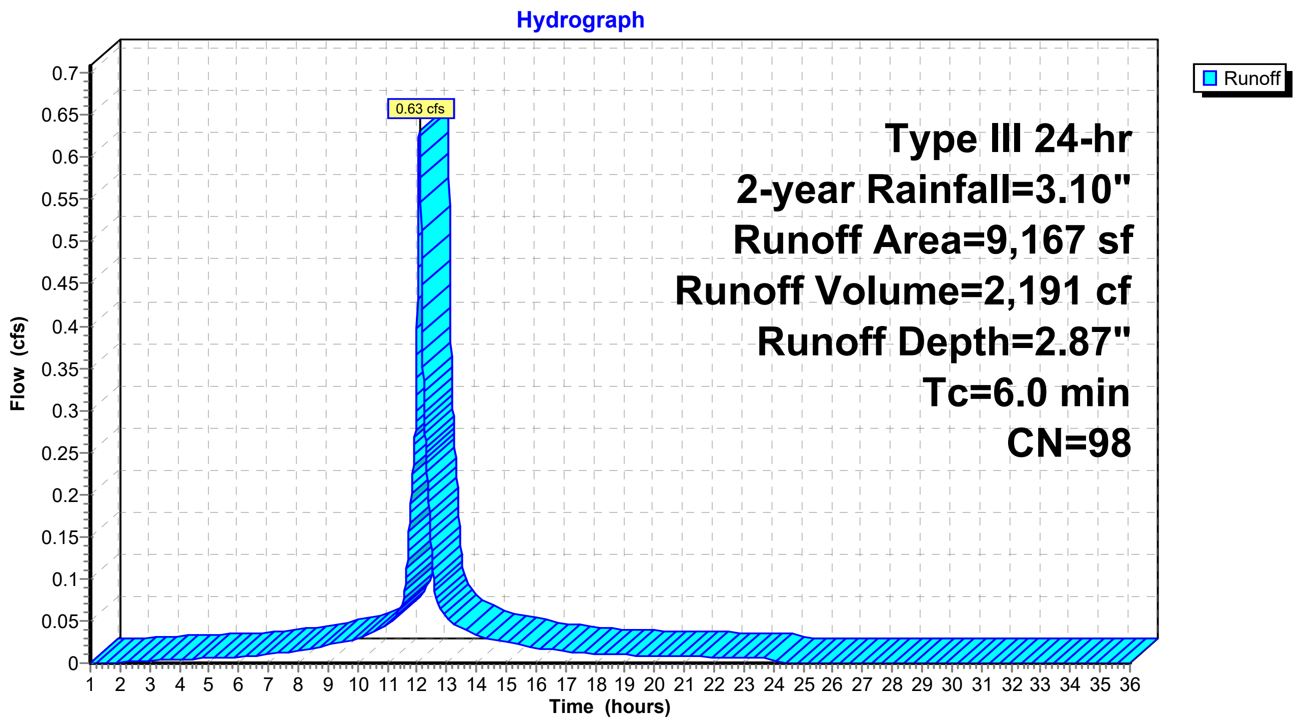
Runoff = 0.63 cfs @ 12.08 hrs, Volume= 2,191 cf, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
8,851	98	Paved parking, HSG B
316	98	Roofs, HSG B
9,167	98	Weighted Average
9,167		100.00% Impervious Area

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

Subcatchment 18S: Sub 18



Summary for Subcatchment 19S: Sub 19

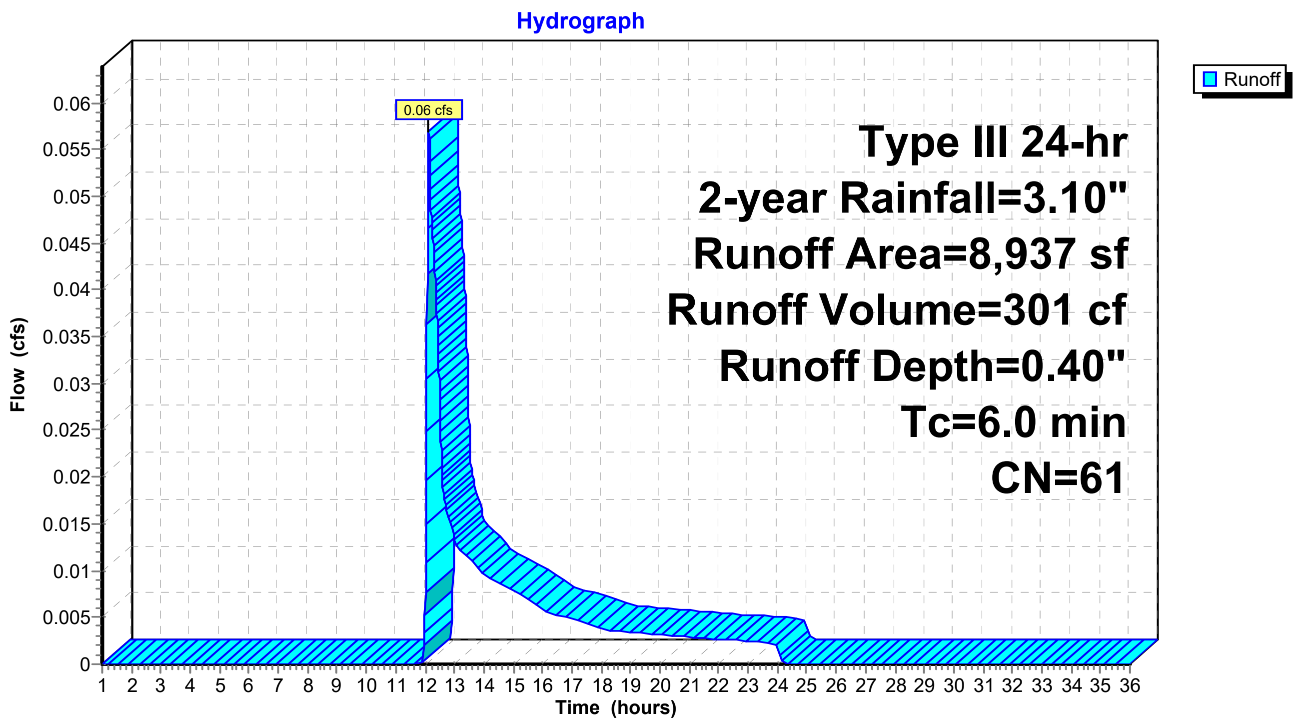
Runoff = 0.06 cfs @ 12.13 hrs, Volume= 301 cf, Depth= 0.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
7,246	61	>75% Grass cover, Good, HSG B
252	98	Roofs, HSG B
1,439	55	Woods, Good, HSG B
8,937	61	Weighted Average
8,685		97.18% Pervious Area
252		2.82% Impervious Area

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

Subcatchment 19S: Sub 19



Summary for Subcatchment 20S: Sub 20

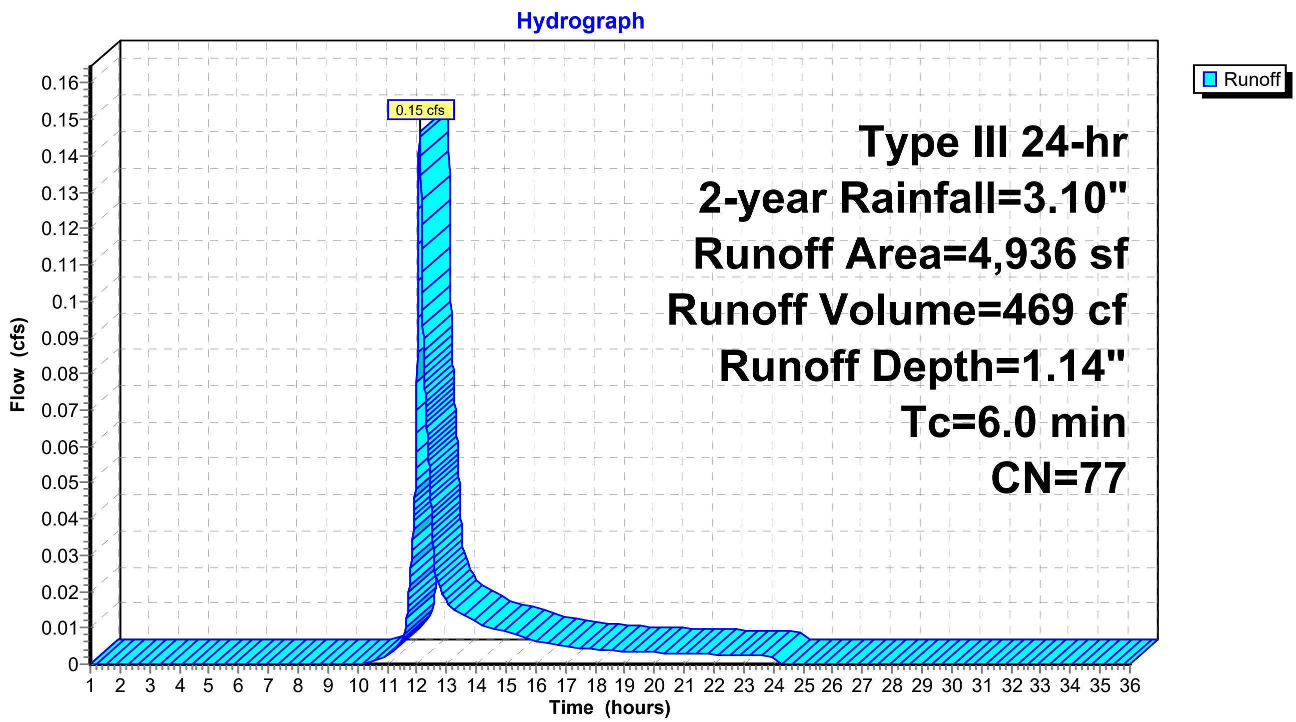
Runoff = 0.15 cfs @ 12.09 hrs, Volume= 469 cf, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
1,415	98	Paved parking, HSG B
2,858	61	>75% Grass cover, Good, HSG B
663	98	Roofs, HSG B
4,936	77	Weighted Average
2,858		57.90% Pervious Area
2,078		42.10% Impervious Area

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

Subcatchment 20S: Sub 20



Summary for Subcatchment 21S: Sub 20

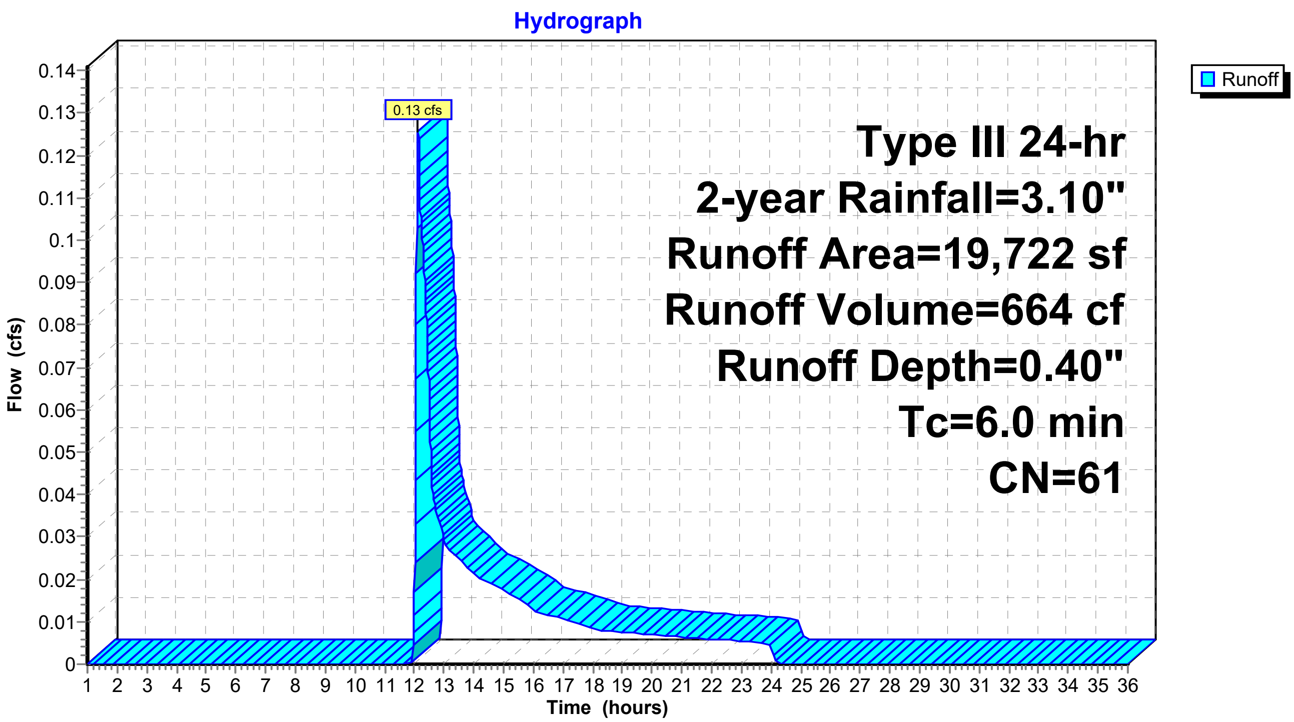
Runoff = 0.13 cfs @ 12.13 hrs, Volume= 664 cf, Depth= 0.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
1,681	98	Paved parking, HSG B
6,390	61	>75% Grass cover, Good, HSG B
11,651	55	Woods, Good, HSG B
19,722	61	Weighted Average
18,041		91.48% Pervious Area
1,681		8.52% Impervious Area

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

Subcatchment 21S: Sub 20



Summary for Subcatchment 22S: Sub 20

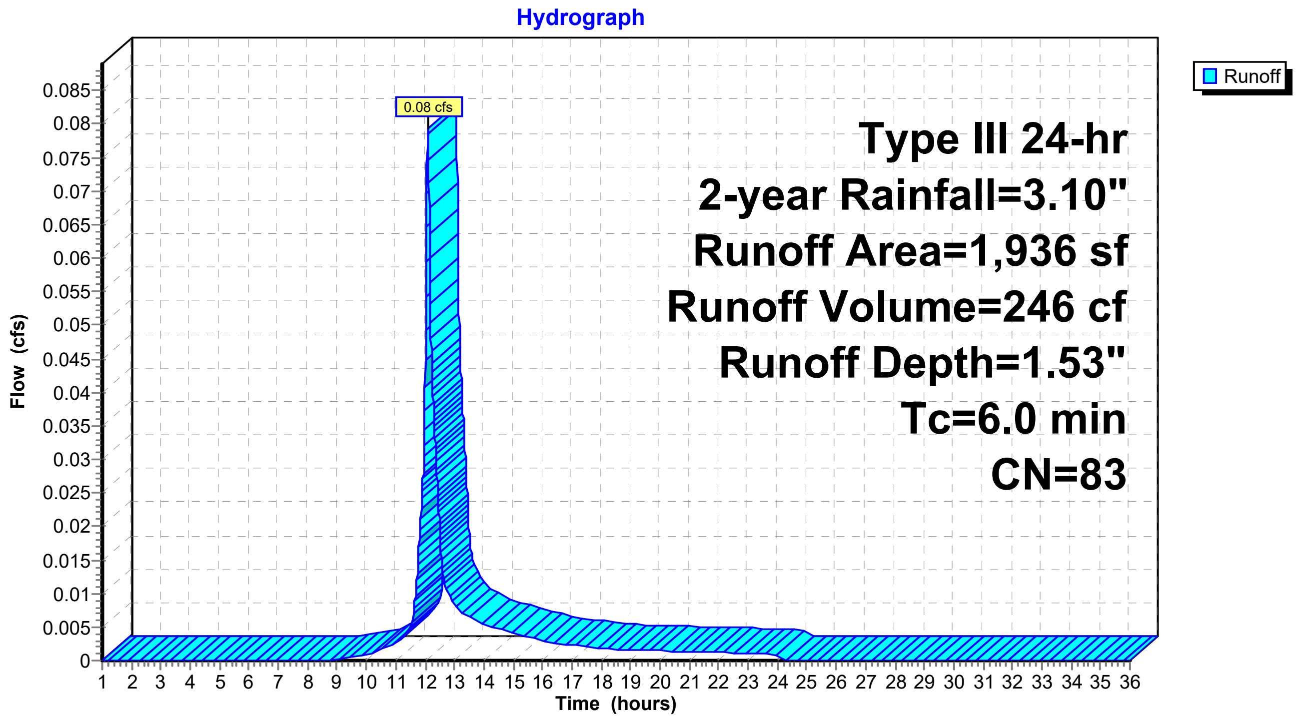
Runoff = 0.08 cfs @ 12.09 hrs, Volume= 246 cf, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
1,161	98	Paved parking, HSG B
775	61	>75% Grass cover, Good, HSG B
1,936	83	Weighted Average
775		40.03% Pervious Area
1,161		59.97% Impervious Area

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

Subcatchment 22S: Sub 20

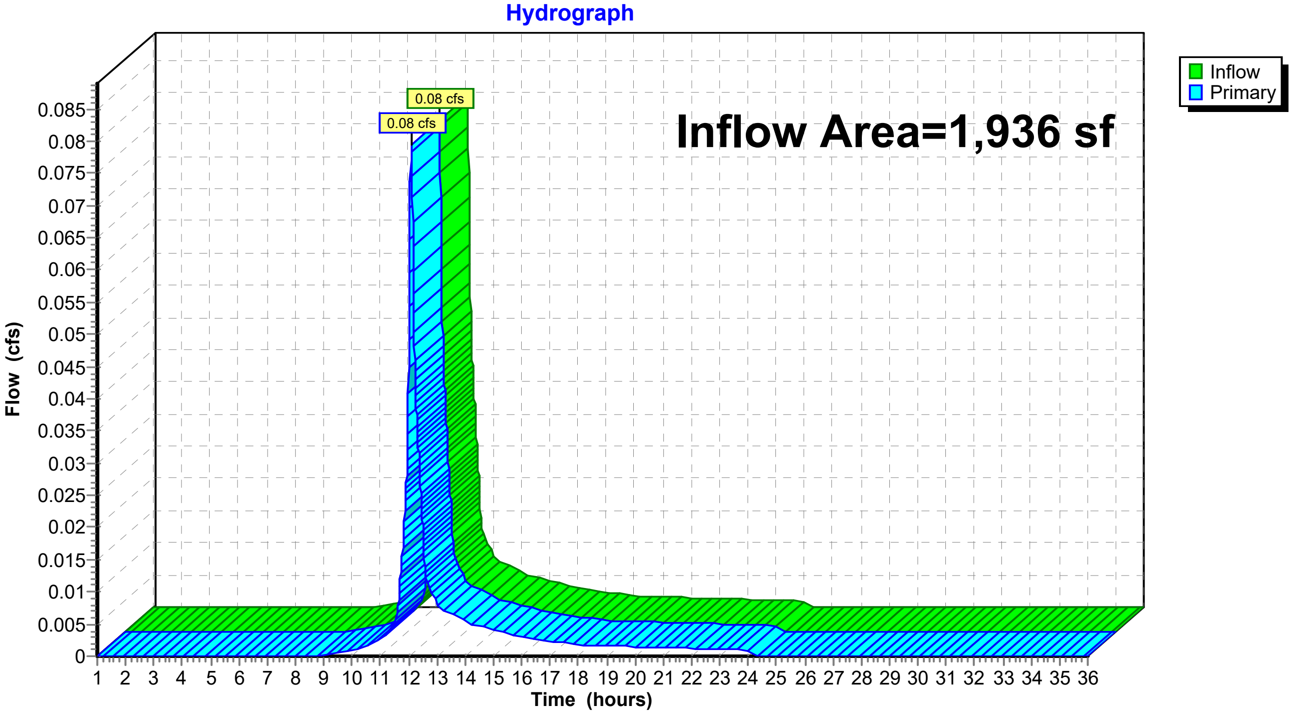


Summary for Link 1L: School Center - Leaching CB

Inflow Area =	1,936 sf,	59.97% Impervious,	Inflow Depth = 1.53"	for 2-year event
Inflow =	0.08 cfs @	12.09 hrs, Volume=	246 cf	
Primary =	0.08 cfs @	12.09 hrs, Volume=	246 cf,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

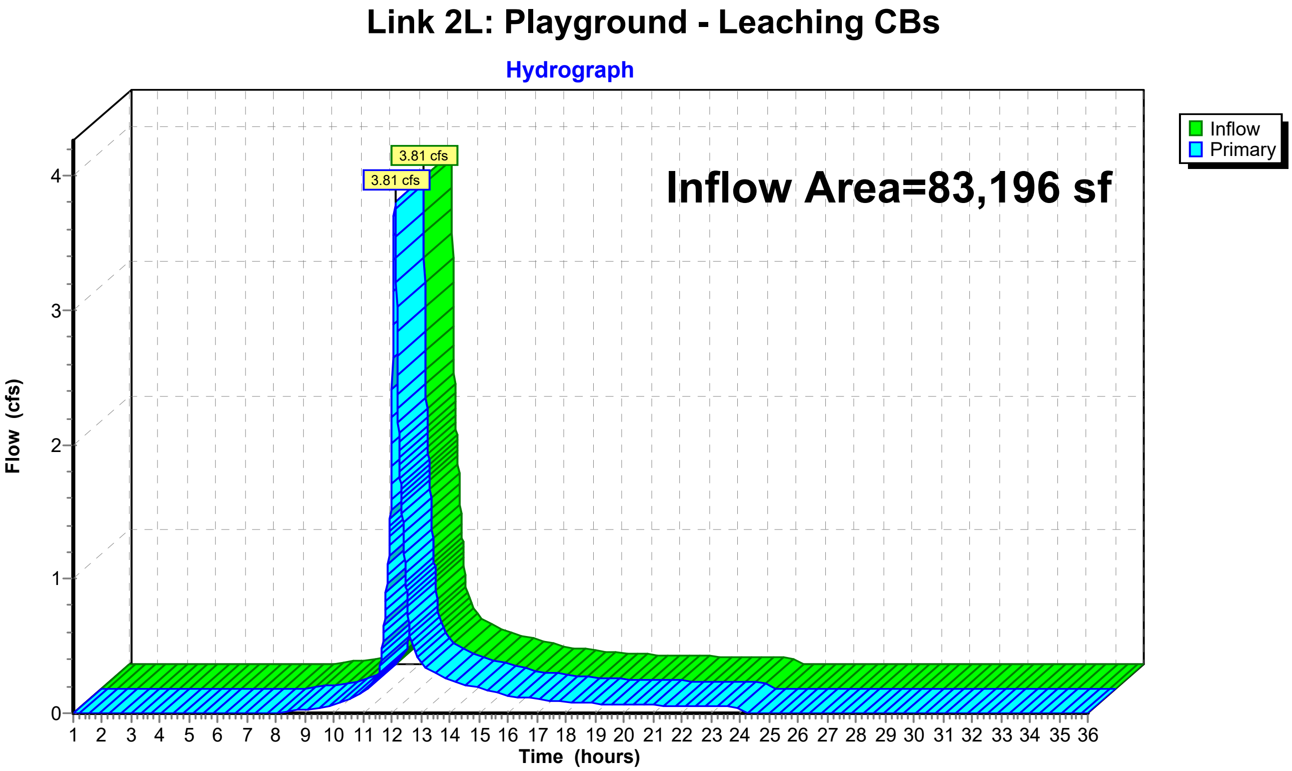
Link 1L: School Center - Leaching CB



Summary for Link 2L: Playground - Leaching CBs

Inflow Area =	83,196 sf,	67.30% Impervious,	Inflow Depth = 1.71"	for 2-year event	
Inflow =	3.81 cfs @	12.09 hrs,	Volume=	11,837 cf	
Primary =	3.81 cfs @	12.09 hrs,	Volume=	11,837 cf,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

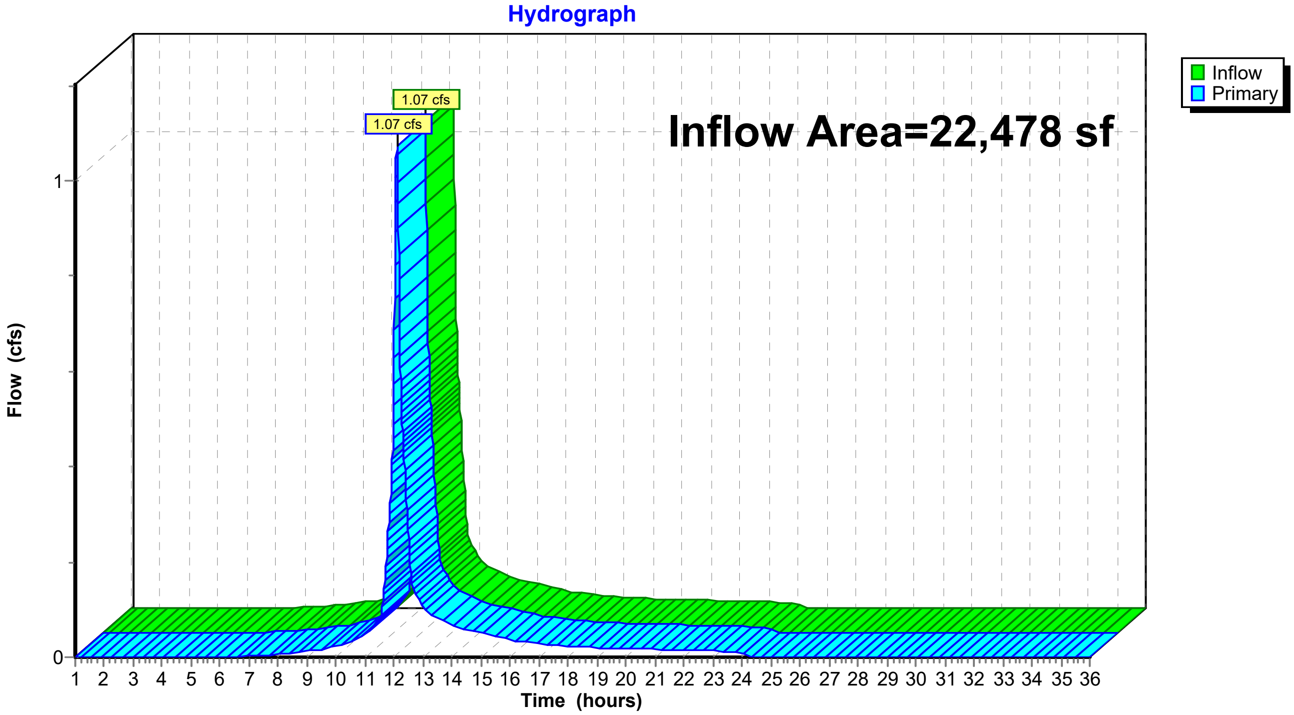


Summary for Link 3L: South Western - Leaching CBs

Inflow Area = 22,478 sf, 71.64% Impervious, Inflow Depth = 1.80" for 2-year event
Inflow = 1.07 cfs @ 12.09 hrs, Volume= 3,374 cf
Primary = 1.07 cfs @ 12.09 hrs, Volume= 3,374 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 3L: South Western - Leaching CBs

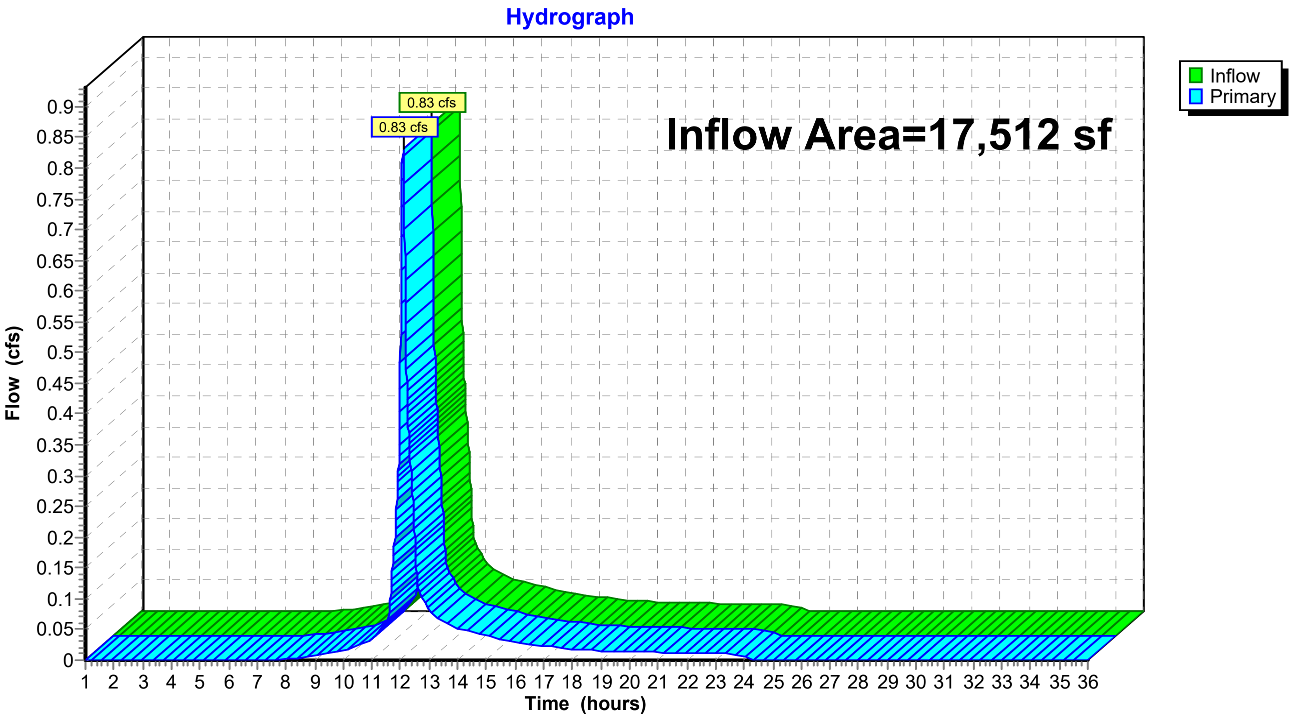


Summary for Link 4L: School Main Entrance - Leaching CBs

Inflow Area = 17,512 sf, 79.83% Impervious, Inflow Depth = 1.77" for 2-year event
Inflow = 0.83 cfs @ 12.09 hrs, Volume= 2,577 cf
Primary = 0.83 cfs @ 12.09 hrs, Volume= 2,577 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 4L: School Main Entrance - Leaching CBs

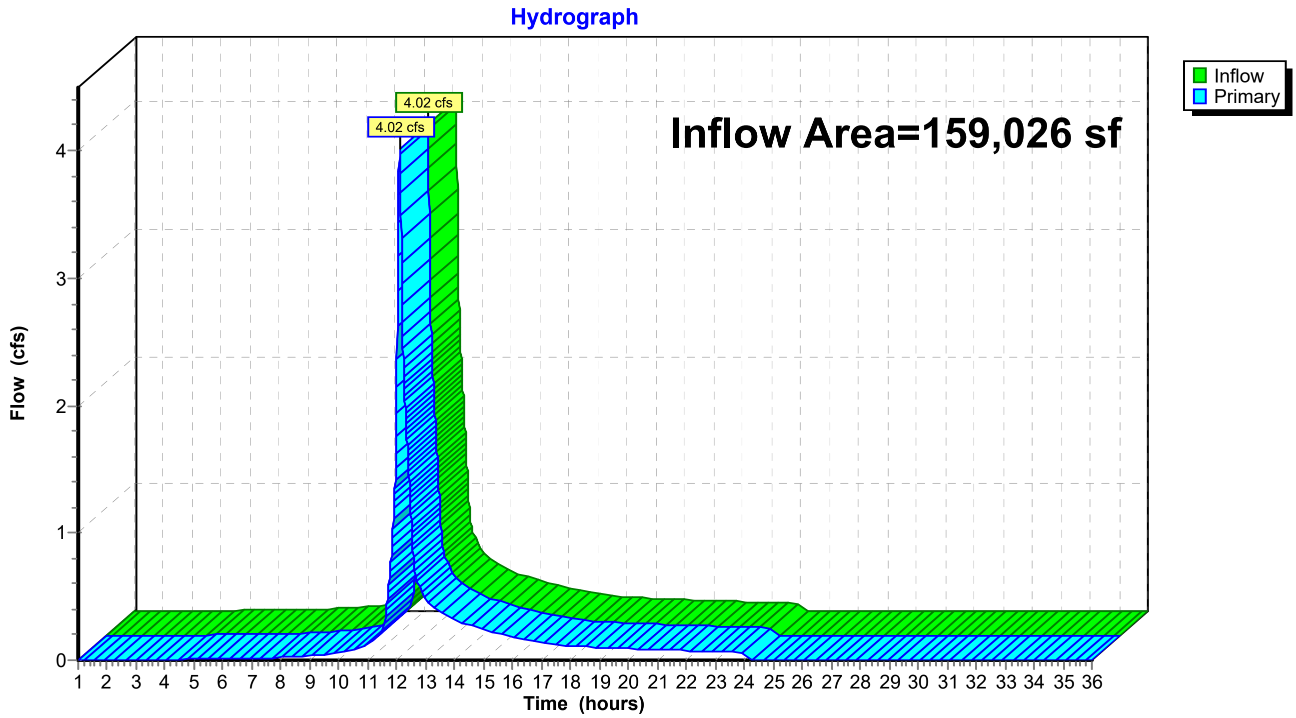


Summary for Link 5L: Main Street Drainage Network

Inflow Area = 159,026 sf, 45.50% Impervious, Inflow Depth = 1.05" for 2-year event
Inflow = 4.02 cfs @ 12.09 hrs, Volume= 13,869 cf
Primary = 4.02 cfs @ 12.09 hrs, Volume= 13,869 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 5L: Main Street Drainage Network



Time span=1.00-36.00 hrs, dt=0.01 hrs, 3501 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Sub 1 Runoff Area=60,718 sf 65.69% Impervious Runoff Depth=3.09"
Tc=6.0 min CN=85 Runoff=5.02 cfs 15,644 cf

Subcatchment2S: Sub 2 Runoff Area=8,333 sf 50.87% Impervious Runoff Depth=2.55"
Tc=6.0 min CN=79 Runoff=0.57 cfs 1,767 cf

Subcatchment3S: Sub 3 Runoff Area=6,851 sf 83.29% Impervious Runoff Depth=3.80"
Tc=6.0 min CN=92 Runoff=0.67 cfs 2,168 cf

Subcatchment4S: Sub 4 Runoff Area=5,579 sf 56.68% Impervious Runoff Depth=2.81"
Tc=6.0 min CN=82 Runoff=0.42 cfs 1,307 cf

Subcatchment5S: Sub 5 Runoff Area=10,216 sf 63.31% Impervious Runoff Depth=2.29"
Tc=6.0 min CN=76 Runoff=0.63 cfs 1,950 cf

Subcatchment6S: Sub 6 Runoff Area=3,953 sf 66.10% Impervious Runoff Depth=2.46"
Tc=6.0 min CN=78 Runoff=0.26 cfs 810 cf

Subcatchment7S: Sub 7 Runoff Area=7,525 sf 80.97% Impervious Runoff Depth=3.29"
Tc=6.0 min CN=87 Runoff=0.66 cfs 2,060 cf

Subcatchment8S: Sub 8 Runoff Area=5,425 sf 8.94% Impervious Runoff Depth=0.31"
Tc=6.0 min CN=44 Runoff=0.01 cfs 141 cf

Subcatchment9S: Sub 9 Runoff Area=7,123 sf 95.91% Impervious Runoff Depth=4.23"
Tc=6.0 min CN=96 Runoff=0.74 cfs 2,514 cf

Subcatchment10S: Sub 10 Runoff Area=7,035 sf 17.21% Impervious Runoff Depth=0.95"
Tc=6.0 min CN=57 Runoff=0.15 cfs 556 cf

Subcatchment11S: Sub 11 Runoff Area=10,781 sf 36.84% Impervious Runoff Depth=1.60"
Tc=6.0 min CN=67 Runoff=0.44 cfs 1,435 cf

Subcatchment12S: Sub 12 Runoff Area=15,032 sf 40.52% Impervious Runoff Depth=1.60"
Tc=6.0 min CN=67 Runoff=0.62 cfs 2,001 cf

Subcatchment13S: Sub 13 Runoff Area=9,477 sf 83.23% Impervious Runoff Depth=3.38"
Tc=6.0 min CN=88 Runoff=0.85 cfs 2,673 cf

Subcatchment14S: Sub 14 Runoff Area=8,035 sf 75.82% Impervious Runoff Depth=3.00"
Tc=6.0 min CN=84 Runoff=0.65 cfs 2,007 cf

Subcatchment15S: Sub 15 Runoff Area=7,294 sf 84.44% Impervious Runoff Depth=3.49"
Tc=6.0 min CN=89 Runoff=0.67 cfs 2,119 cf

Subcatchment16S: Sub 16 Runoff Area=17,962 sf 66.90% Impervious Runoff Depth=2.46"
Tc=6.0 min CN=78 Runoff=1.19 cfs 3,681 cf

Subcatchment17S: Sub 17	Runoff Area=25,633 sf 39.90% Impervious Runoff Depth=2.21" Tc=6.0 min CN=75 Runoff=1.52 cfs 4,717 cf
Subcatchment18S: Sub 18	Runoff Area=9,167 sf 100.00% Impervious Runoff Depth>4.46" Tc=6.0 min CN=98 Runoff=0.97 cfs 3,410 cf
Subcatchment19S: Sub 19	Runoff Area=8,937 sf 2.82% Impervious Runoff Depth=1.19" Tc=6.0 min CN=61 Runoff=0.26 cfs 888 cf
Subcatchment20S: Sub 20	Runoff Area=4,936 sf 42.10% Impervious Runoff Depth=2.37" Tc=6.0 min CN=77 Runoff=0.32 cfs 977 cf
Subcatchment21S: Sub 20	Runoff Area=19,722 sf 8.52% Impervious Runoff Depth=1.19" Tc=6.0 min CN=61 Runoff=0.56 cfs 1,960 cf
Subcatchment22S: Sub 20	Runoff Area=1,936 sf 59.97% Impervious Runoff Depth=2.90" Tc=6.0 min CN=83 Runoff=0.15 cfs 469 cf
Link 1L: School Center - Leaching CB	Inflow=0.15 cfs 469 cf Primary=0.15 cfs 469 cf
Link 2L: Playground - Leaching CBs	Inflow=6.92 cfs 21,698 cf Primary=6.92 cfs 21,698 cf
Link 3L: South Western - Leaching CBs	Inflow=1.90 cfs 6,054 cf Primary=1.90 cfs 6,054 cf
Link 4L: School Main Entrance - Leaching CBs	Inflow=1.49 cfs 4,680 cf Primary=1.49 cfs 4,680 cf
Link 5L: Main Street Drainage Network	Inflow=8.70 cfs 28,407 cf Primary=8.70 cfs 28,407 cf

Total Runoff Area = 261,670 sf Runoff Volume = 55,253 cf Average Runoff Depth = 2.53"
45.17% Pervious = 118,192 sf 54.83% Impervious = 143,478 sf

Summary for Subcatchment 1S: Sub 1

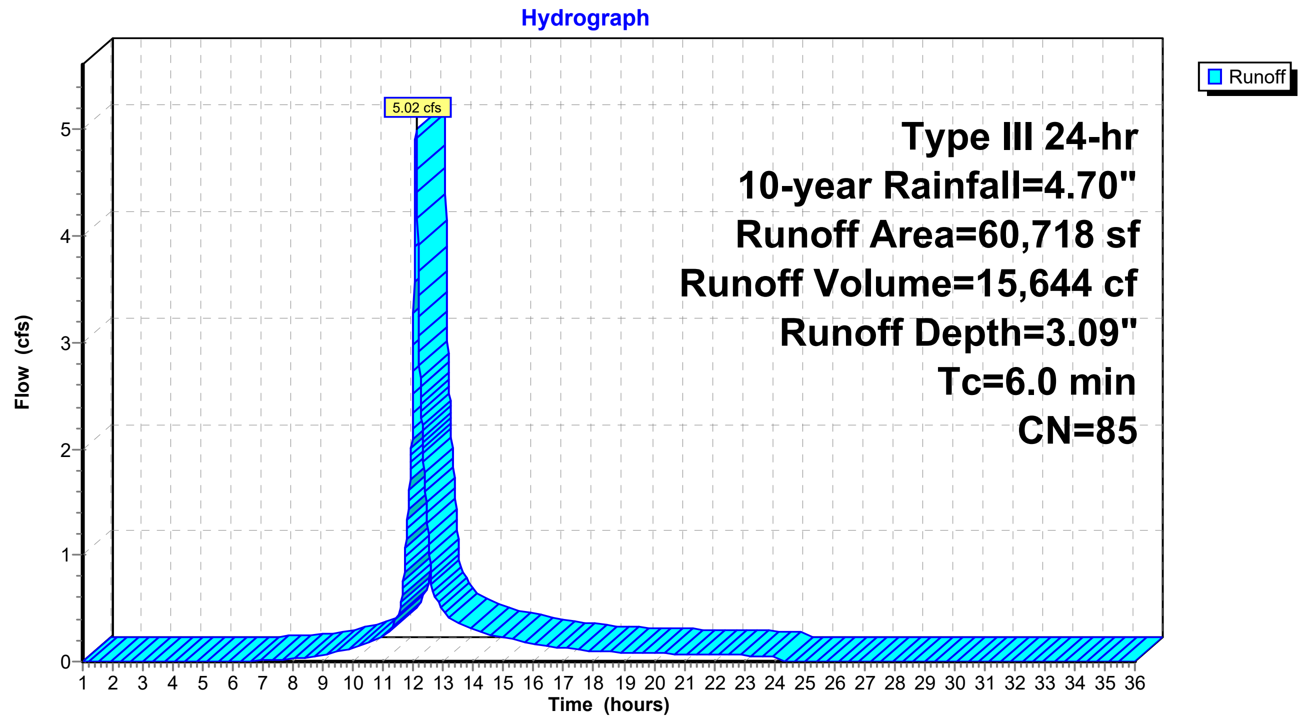
Runoff = 5.02 cfs @ 12.09 hrs, Volume= 15,644 cf, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
16,123	98	Roofs, HSG B
1,042	55	Woods, Good, HSG B
19,793	61	>75% Grass cover, Good, HSG B
23,760	98	Paved parking, HSG B
60,718	85	Weighted Average
20,835		34.31% Pervious Area
39,883		65.69% Impervious Area

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

Subcatchment 1S: Sub 1



Summary for Subcatchment 2S: Sub 2

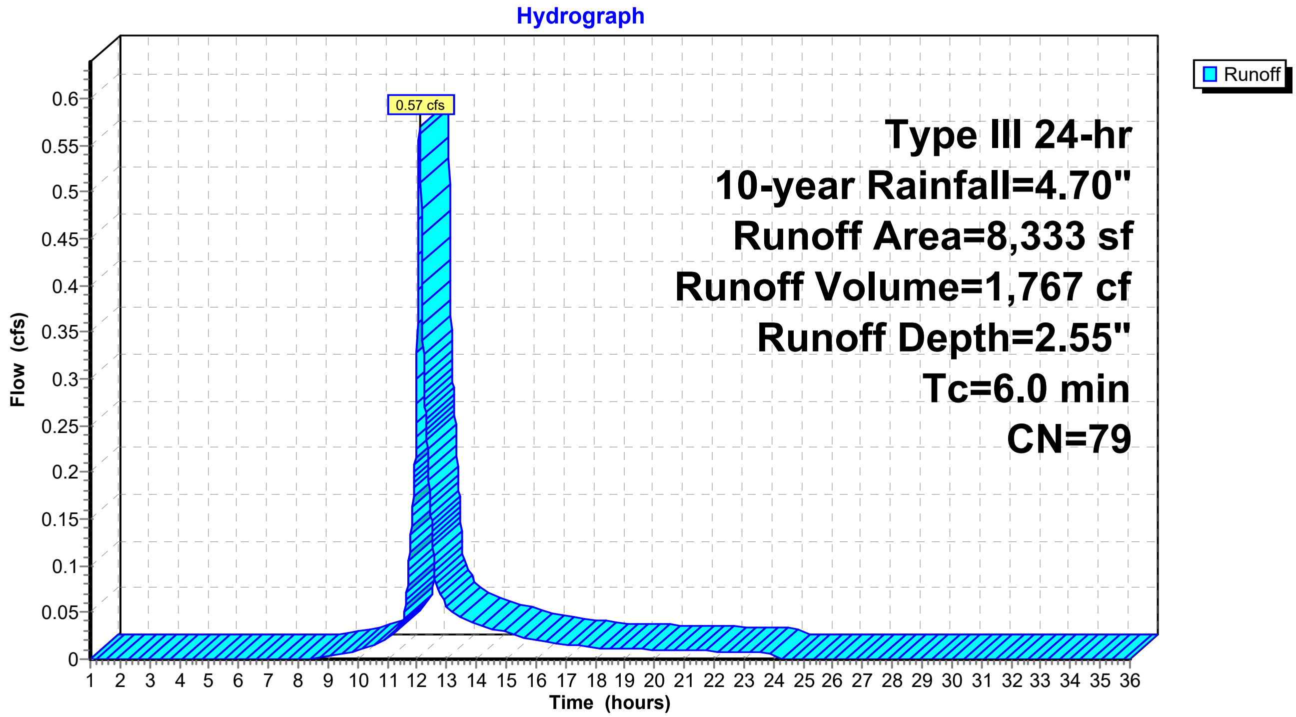
Runoff = 0.57 cfs @ 12.09 hrs, Volume= 1,767 cf, Depth= 2.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
1,073	55	Woods, Good, HSG B
3,021	61	>75% Grass cover, Good, HSG B
4,239	98	Paved parking, HSG B
8,333	79	Weighted Average
4,094		49.13% Pervious Area
4,239		50.87% Impervious Area

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

Subcatchment 2S: Sub 2



Summary for Subcatchment 3S: Sub 3

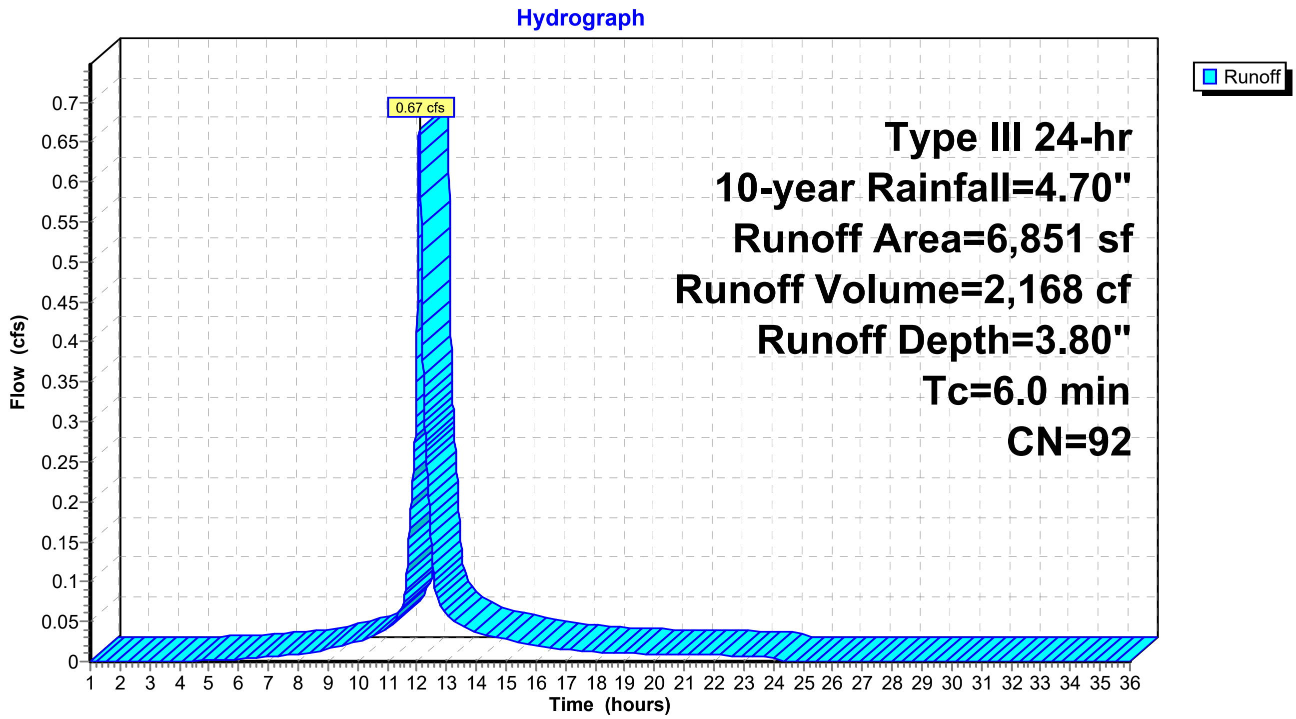
Runoff = 0.67 cfs @ 12.08 hrs, Volume= 2,168 cf, Depth= 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
969	98	Unconnected roofs, HSG B
1,145	61	>75% Grass cover, Good, HSG B
4,737	98	Paved parking, HSG B
6,851	92	Weighted Average
1,145		16.71% Pervious Area
5,706		83.29% Impervious Area
969		16.98% Unconnected

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

Subcatchment 3S: Sub 3



Summary for Subcatchment 4S: Sub 4

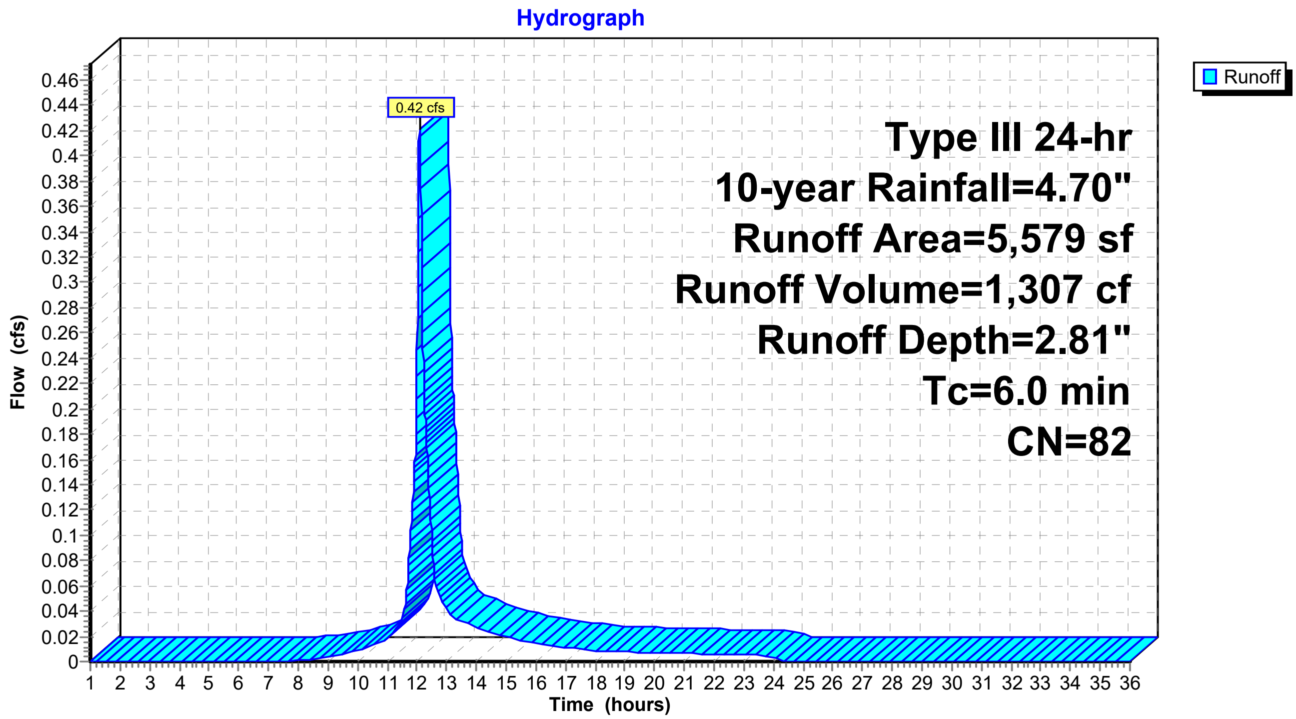
Runoff = 0.42 cfs @ 12.09 hrs, Volume= 1,307 cf, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
105	98	Unconnected roofs, HSG B
2,417	61	>75% Grass cover, Good, HSG B
3,057	98	Paved parking, HSG B
5,579	82	Weighted Average
2,417		43.32% Pervious Area
3,162		56.68% Impervious Area
105		3.32% Unconnected

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

Subcatchment 4S: Sub 4



Summary for Subcatchment 5S: Sub 5

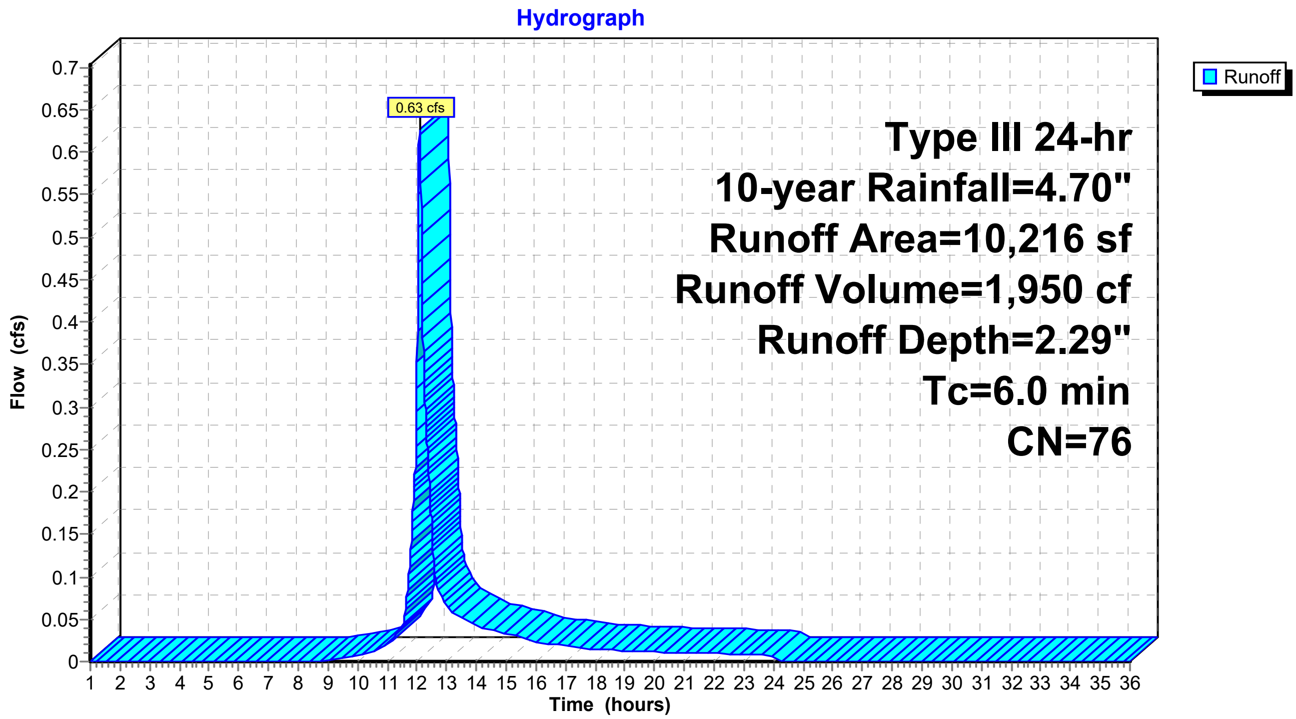
Runoff = 0.63 cfs @ 12.09 hrs, Volume= 1,950 cf, Depth= 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
963	98	Unconnected roofs, HSG A
3,748	39	>75% Grass cover, Good, HSG A
5,505	98	Paved parking, HSG A
10,216	76	Weighted Average
3,748		36.69% Pervious Area
6,468		63.31% Impervious Area
963		14.89% Unconnected

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

Subcatchment 5S: Sub 5



Summary for Subcatchment 6S: Sub 6

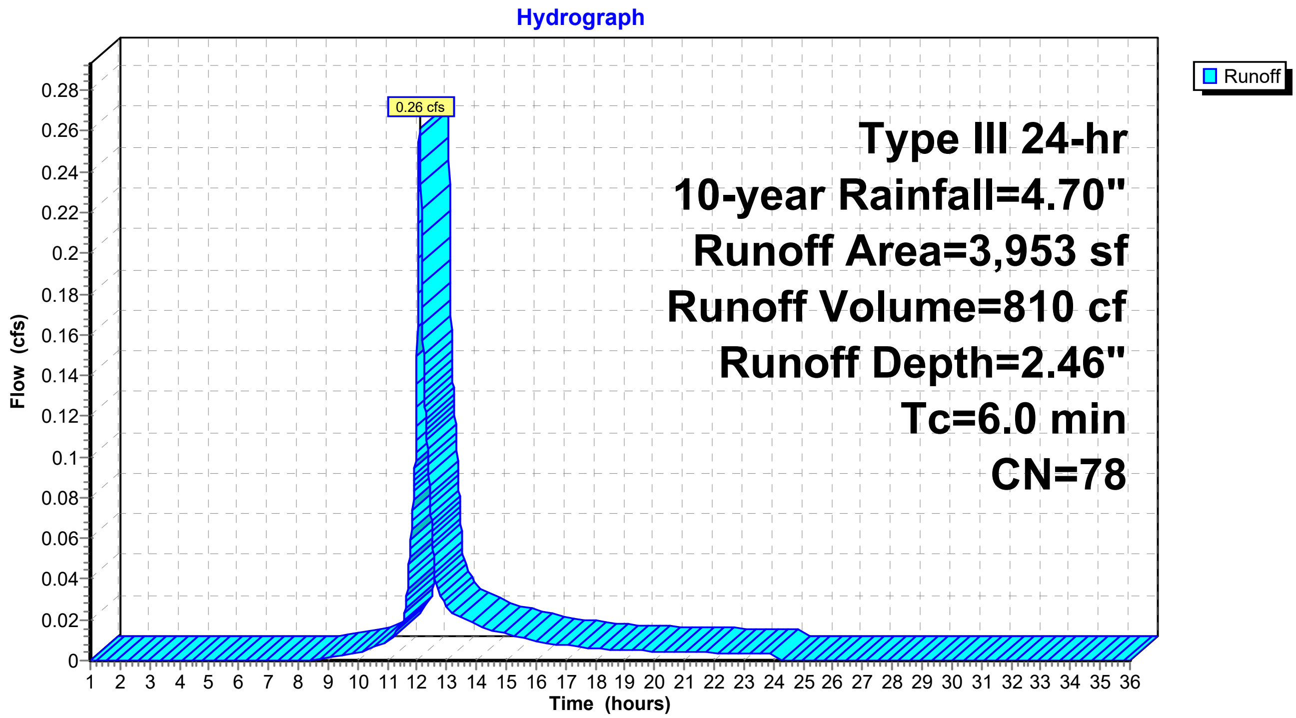
Runoff = 0.26 cfs @ 12.09 hrs, Volume= 810 cf, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
1,340	39	>75% Grass cover, Good, HSG A
2,613	98	Paved parking, HSG A
3,953	78	Weighted Average
1,340		33.90% Pervious Area
2,613		66.10% Impervious Area

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

Subcatchment 6S: Sub 6



Summary for Subcatchment 7S: Sub 7

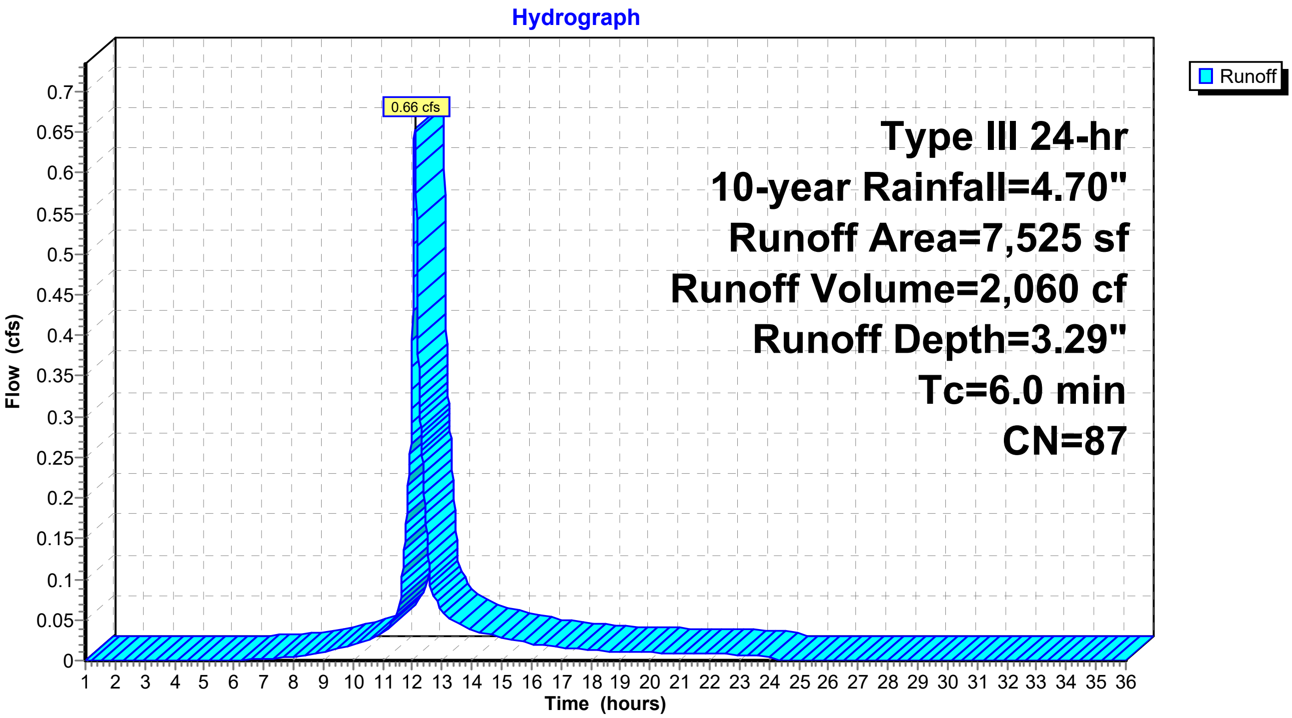
Runoff = 0.66 cfs @ 12.09 hrs, Volume= 2,060 cf, Depth= 3.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
1,432	39	>75% Grass cover, Good, HSG A
6,093	98	Paved parking, HSG A
7,525	87	Weighted Average
1,432		19.03% Pervious Area
6,093		80.97% Impervious Area

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

Subcatchment 7S: Sub 7



Summary for Subcatchment 8S: Sub 8

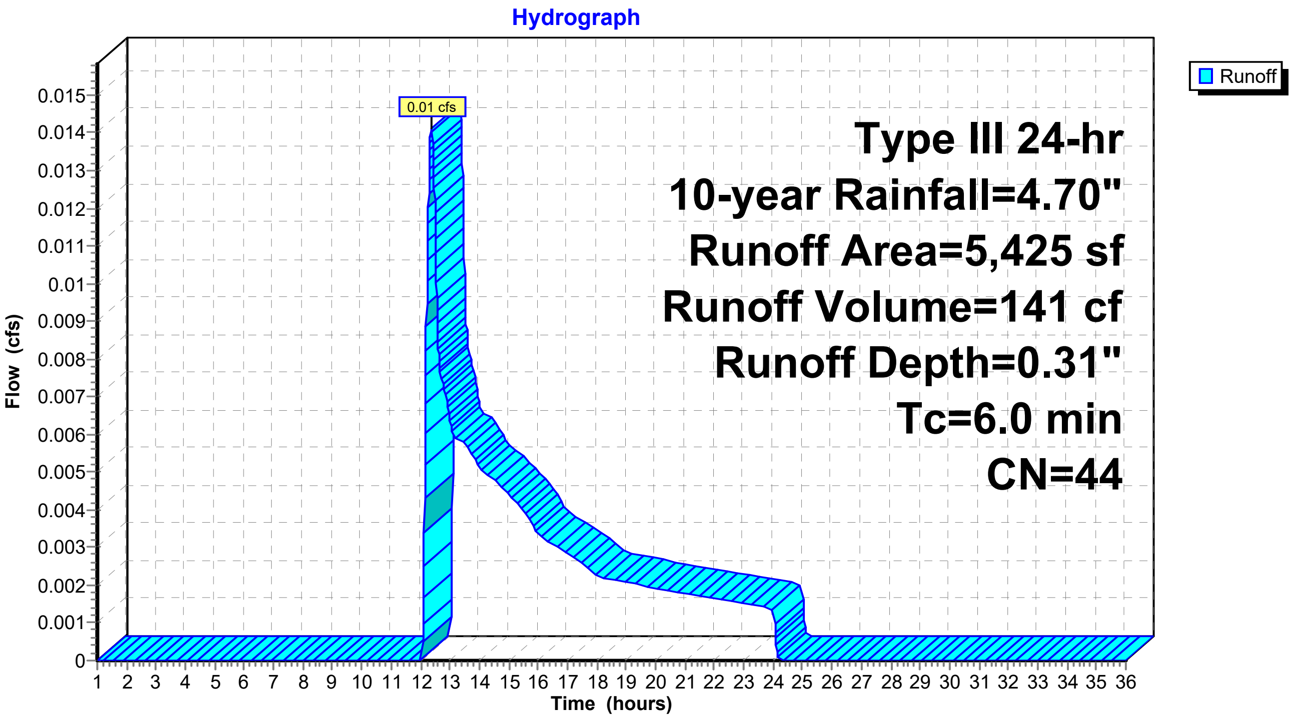
Runoff = 0.01 cfs @ 12.37 hrs, Volume= 141 cf, Depth= 0.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
4,940	39	>75% Grass cover, Good, HSG A
485	98	Paved parking, HSG A
5,425	44	Weighted Average
4,940		91.06% Pervious Area
485		8.94% Impervious Area

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

Subcatchment 8S: Sub 8



Summary for Subcatchment 9S: Sub 9

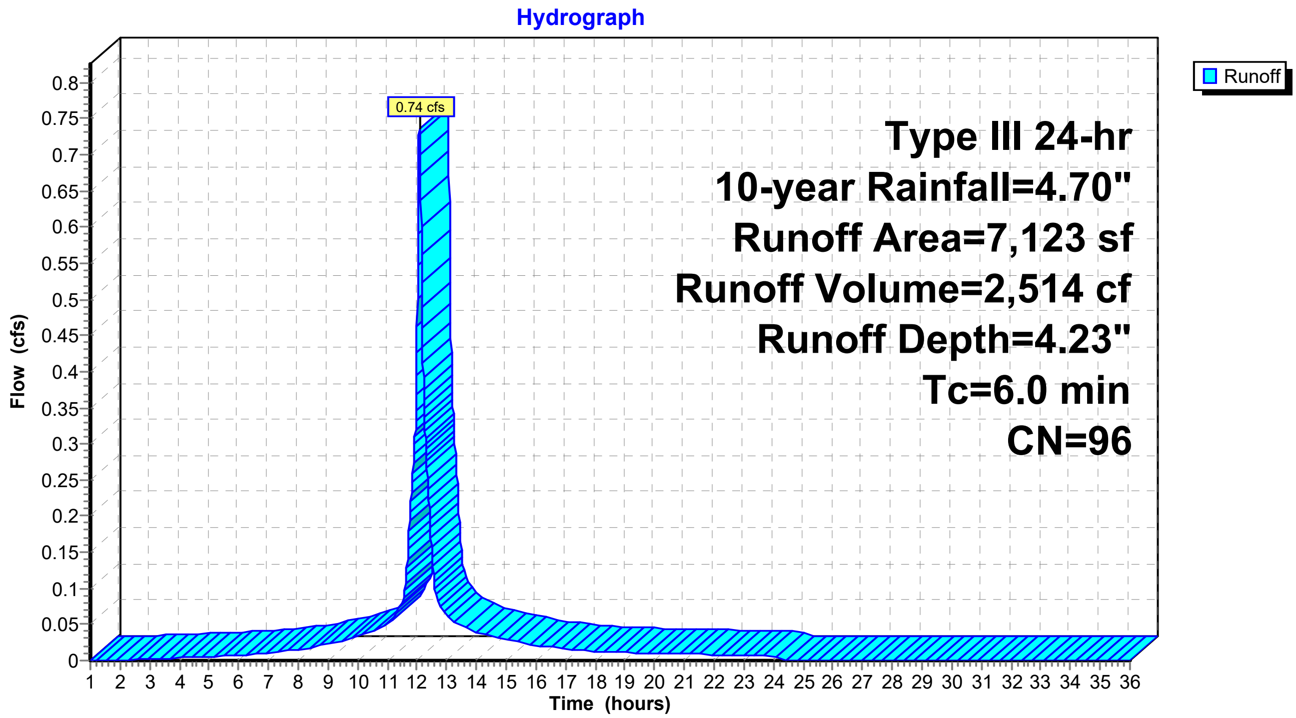
Runoff = 0.74 cfs @ 12.08 hrs, Volume= 2,514 cf, Depth= 4.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
291	39	>75% Grass cover, Good, HSG A
6,832	98	Paved parking, HSG A
7,123	96	Weighted Average
291		4.09% Pervious Area
6,832		95.91% Impervious Area

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

Subcatchment 9S: Sub 9



Summary for Subcatchment 10S: Sub 10

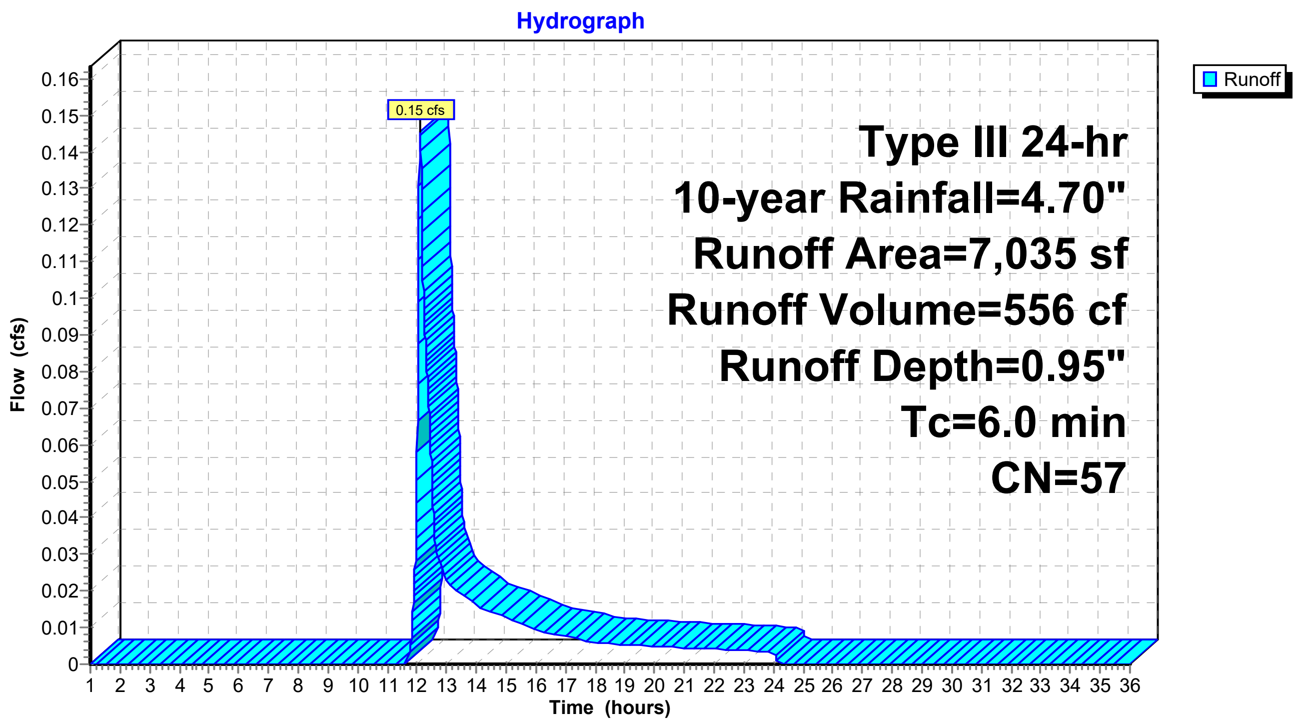
Runoff = 0.15 cfs @ 12.11 hrs, Volume= 556 cf, Depth= 0.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
2,302	39	>75% Grass cover, Good, HSG A
1,211	98	Paved parking, HSG A
3,522	55	Woods, Good, HSG B
7,035	57	Weighted Average
5,824		82.79% Pervious Area
1,211		17.21% Impervious Area

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

Subcatchment 10S: Sub 10



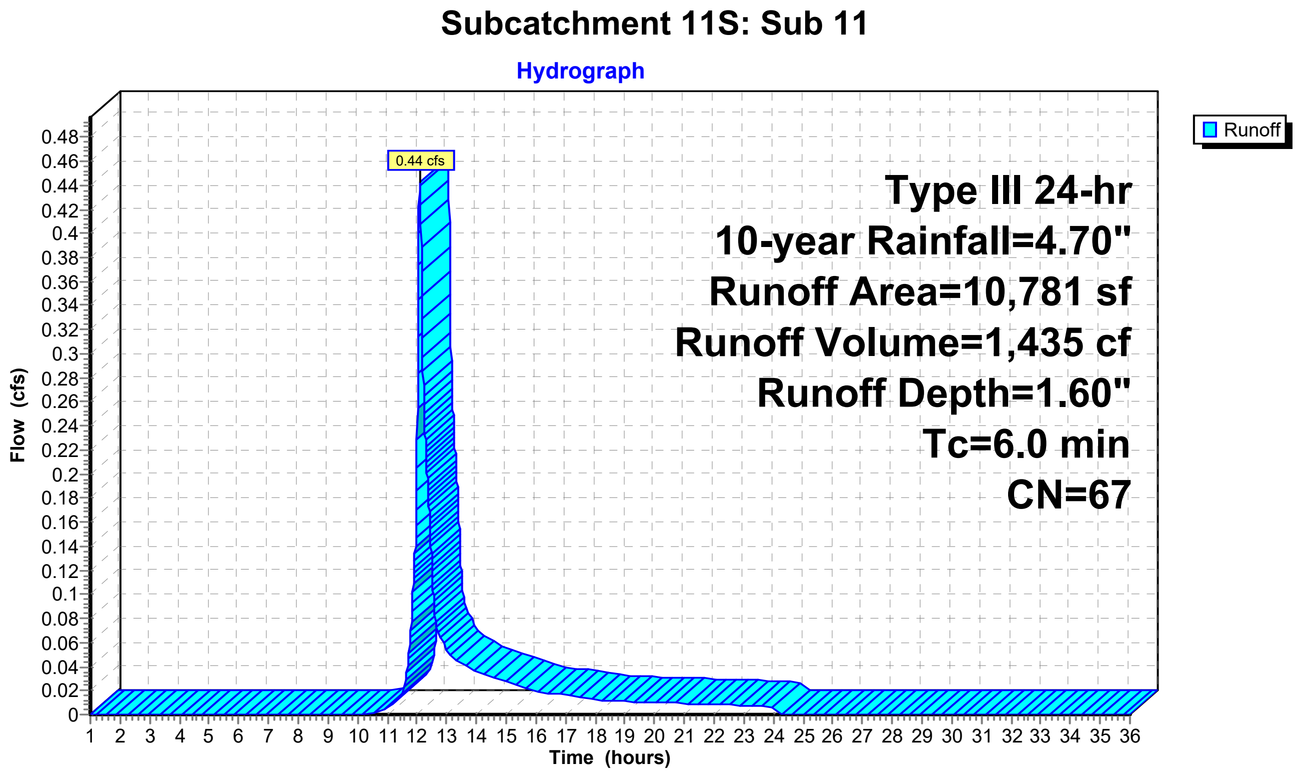
Summary for Subcatchment 11S: Sub 11

Runoff = 0.44 cfs @ 12.10 hrs, Volume= 1,435 cf, Depth= 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
2,901	39	>75% Grass cover, Good, HSG A
3,653	98	Paved parking, HSG A
319	98	Roofs, HSG B
3,908	55	Woods, Good, HSG B
10,781	67	Weighted Average
6,809		63.16% Pervious Area
3,972		36.84% Impervious Area

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



Summary for Subcatchment 12S: Sub 12

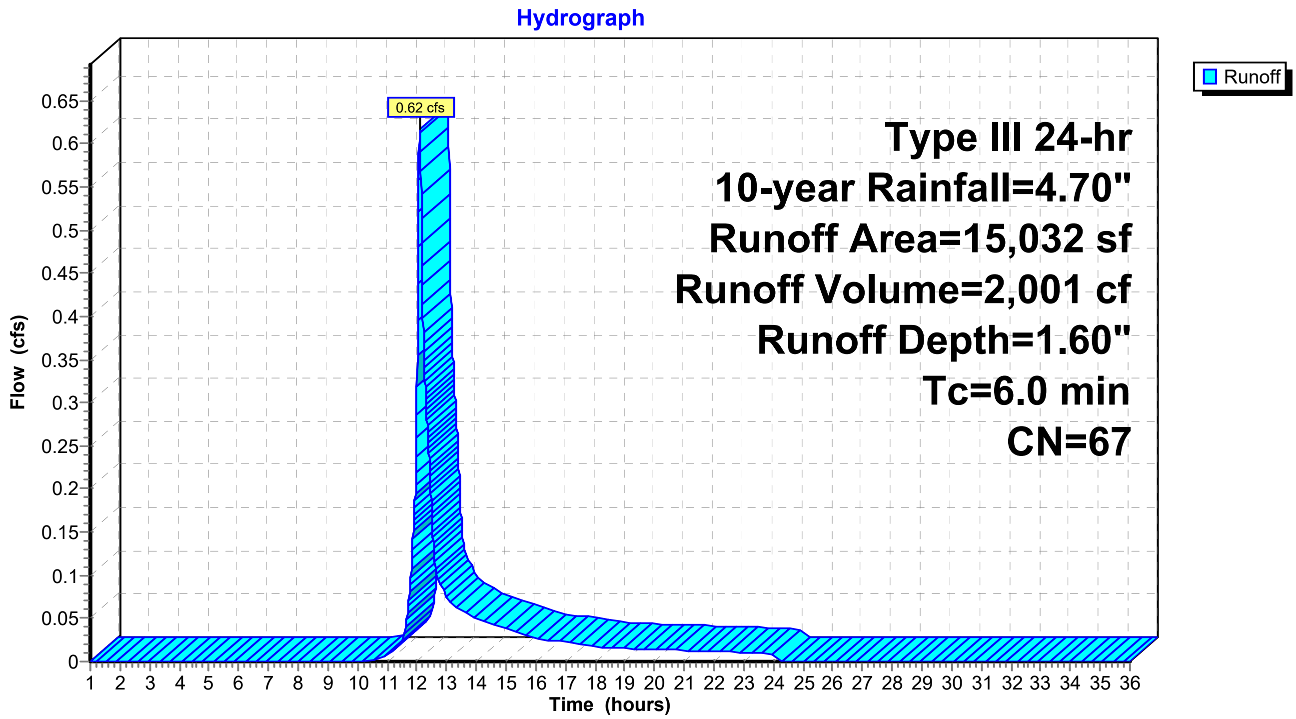
Runoff = 0.62 cfs @ 12.10 hrs, Volume= 2,001 cf, Depth= 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
5,033	39	>75% Grass cover, Good, HSG A
2,740	98	Paved parking, HSG A
3,351	98	Roofs, HSG B
3,908	55	Woods, Good, HSG B
15,032	67	Weighted Average
8,941		59.48% Pervious Area
6,091		40.52% Impervious Area

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

Subcatchment 12S: Sub 12



Summary for Subcatchment 13S: Sub 13

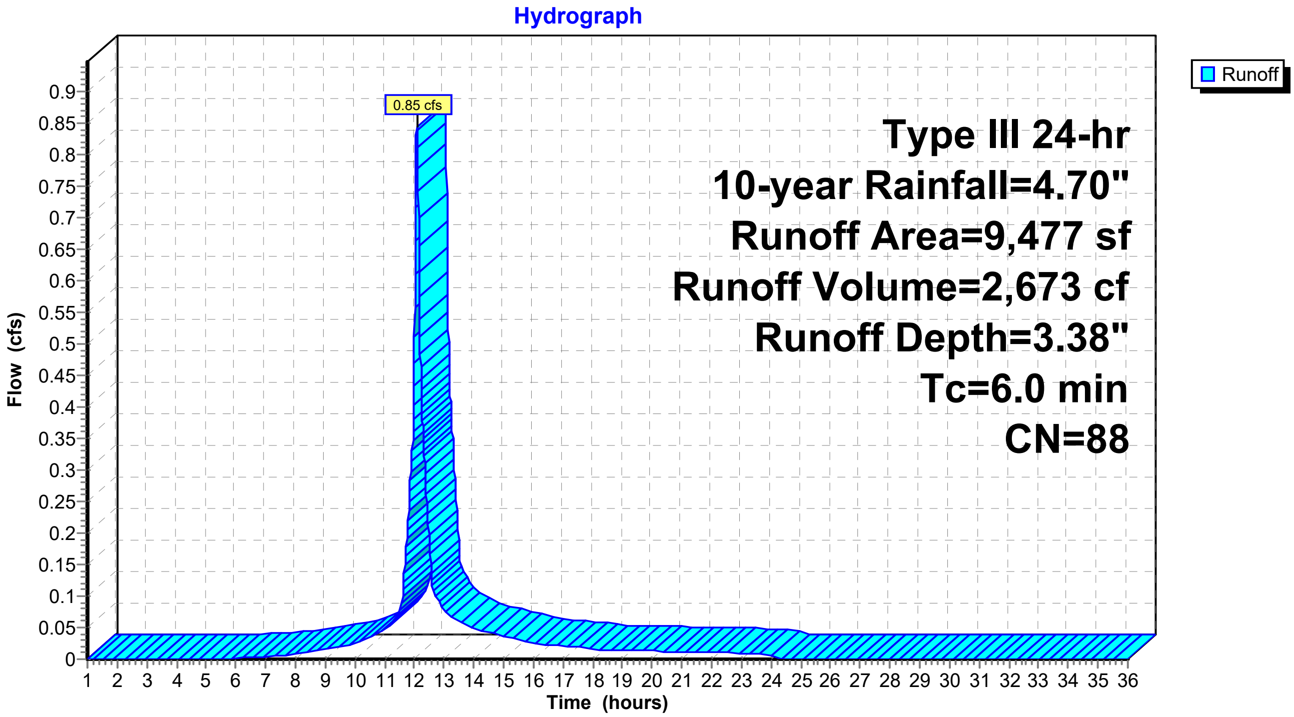
Runoff = 0.85 cfs @ 12.09 hrs, Volume= 2,673 cf, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
1,589	39	>75% Grass cover, Good, HSG A
4,866	98	Paved parking, HSG A
3,022	98	Roofs, HSG B
9,477	88	Weighted Average
1,589		16.77% Pervious Area
7,888		83.23% Impervious Area

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

Subcatchment 13S: Sub 13



Summary for Subcatchment 14S: Sub 14

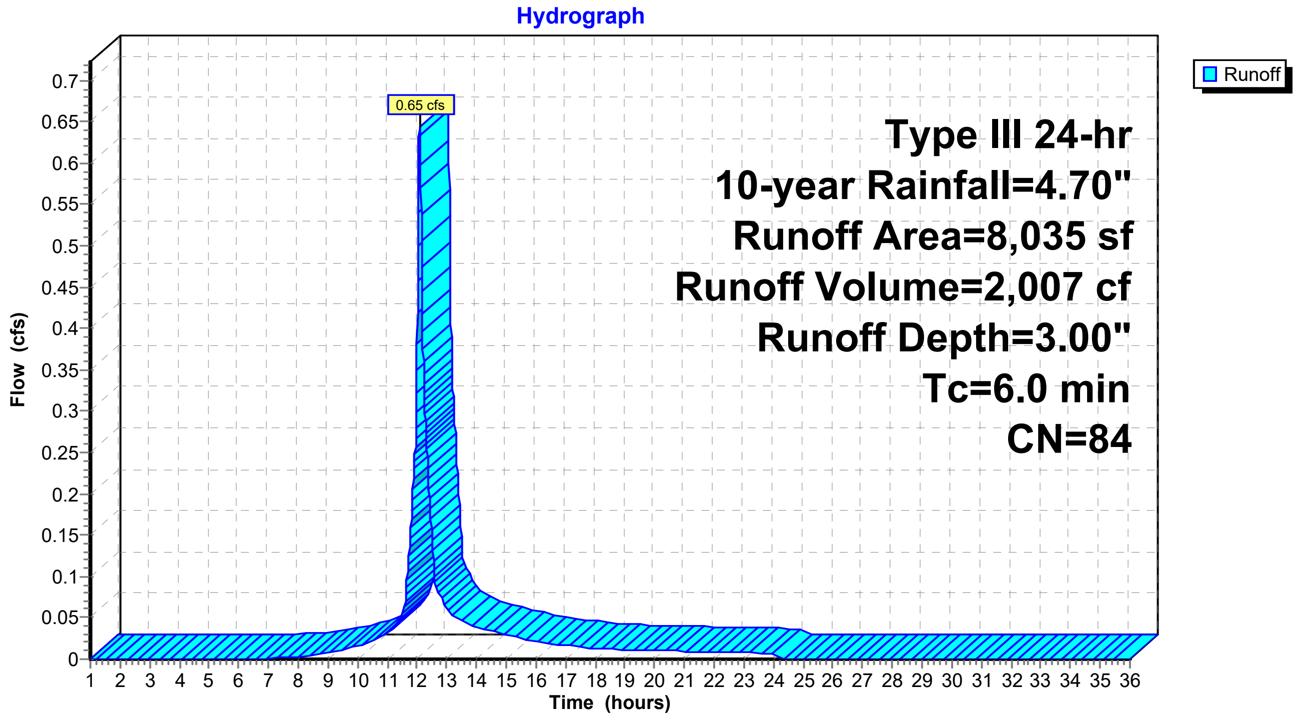
Runoff = 0.65 cfs @ 12.09 hrs, Volume= 2,007 cf, Depth= 3.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
1,943	39	>75% Grass cover, Good, HSG A
2,485	98	Paved parking, HSG A
3,607	98	Roofs, HSG A
8,035	84	Weighted Average
1,943		24.18% Pervious Area
6,092		75.82% Impervious Area

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

Subcatchment 14S: Sub 14



Summary for Subcatchment 15S: Sub 15

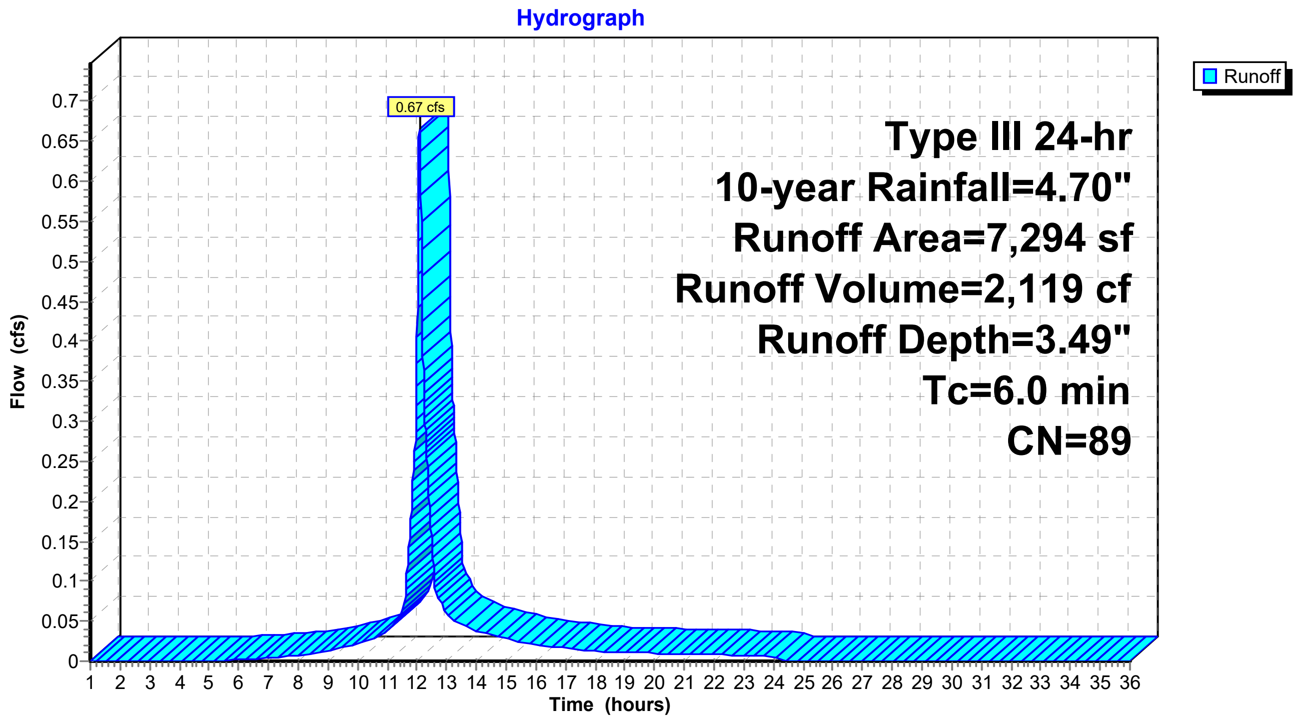
Runoff = 0.67 cfs @ 12.09 hrs, Volume= 2,119 cf, Depth= 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
1,135	39	>75% Grass cover, Good, HSG A
1,002	98	Paved parking, HSG A
5,157	98	Roofs, HSG A
7,294	89	Weighted Average
1,135		15.56% Pervious Area
6,159		84.44% Impervious Area

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

Subcatchment 15S: Sub 15



Summary for Subcatchment 16S: Sub 16

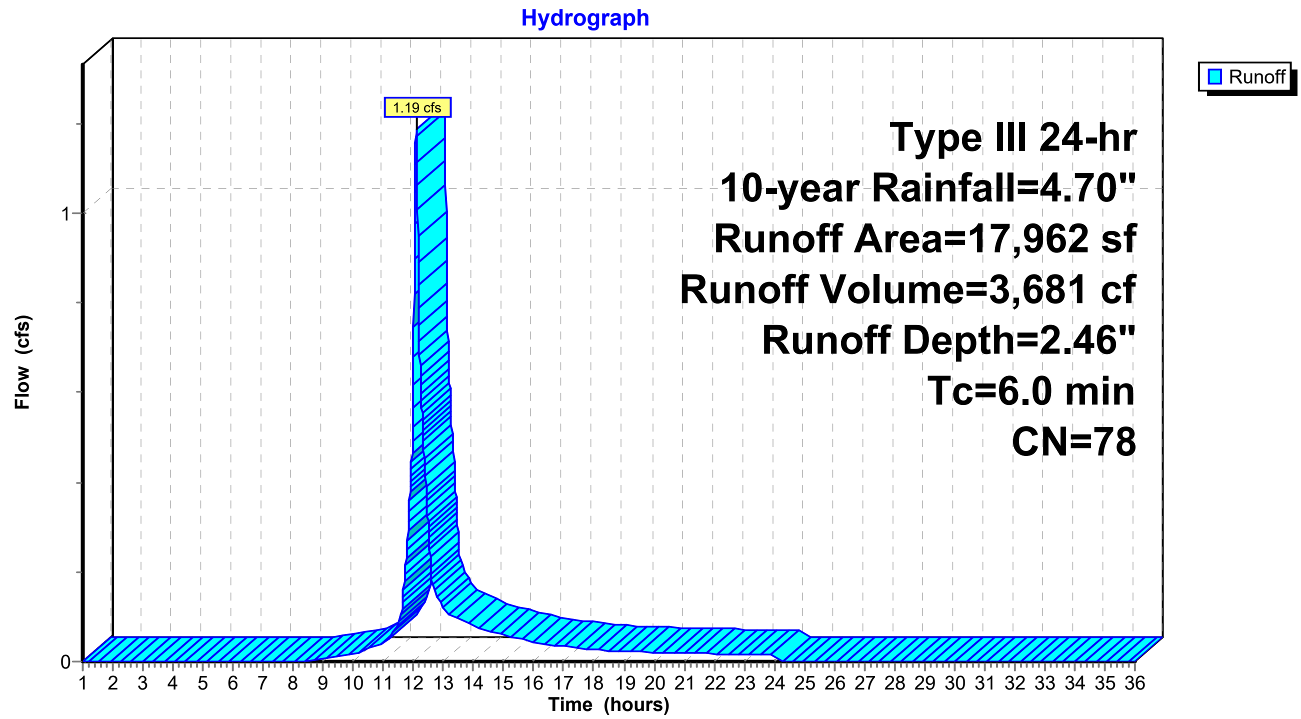
Runoff = 1.19 cfs @ 12.09 hrs, Volume= 3,681 cf, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
4,235	39	>75% Grass cover, Good, HSG A
4,196	98	Paved parking, HSG A
7,821	98	Roofs, HSG A
1,710	30	Woods, Good, HSG A
17,962	78	Weighted Average
5,945		33.10% Pervious Area
12,017		66.90% Impervious Area

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

Subcatchment 16S: Sub 16



Summary for Subcatchment 17S: Sub 17

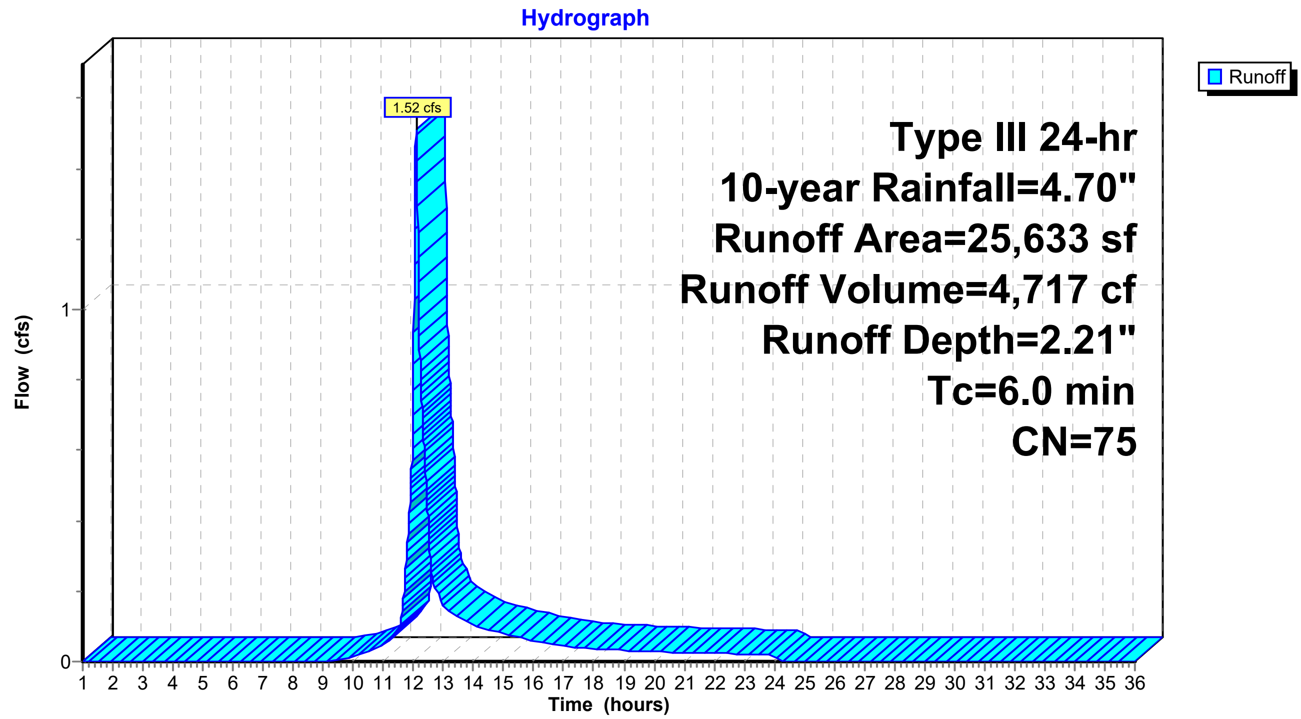
Runoff = 1.52 cfs @ 12.09 hrs, Volume= 4,717 cf, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
10,866	61	>75% Grass cover, Good, HSG B
6,040	98	Paved parking, HSG B
4,188	98	Roofs, HSG B
4,539	55	Woods, Good, HSG B
25,633	75	Weighted Average
15,405		60.10% Pervious Area
10,228		39.90% Impervious Area

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

Subcatchment 17S: Sub 17



Summary for Subcatchment 18S: Sub 18

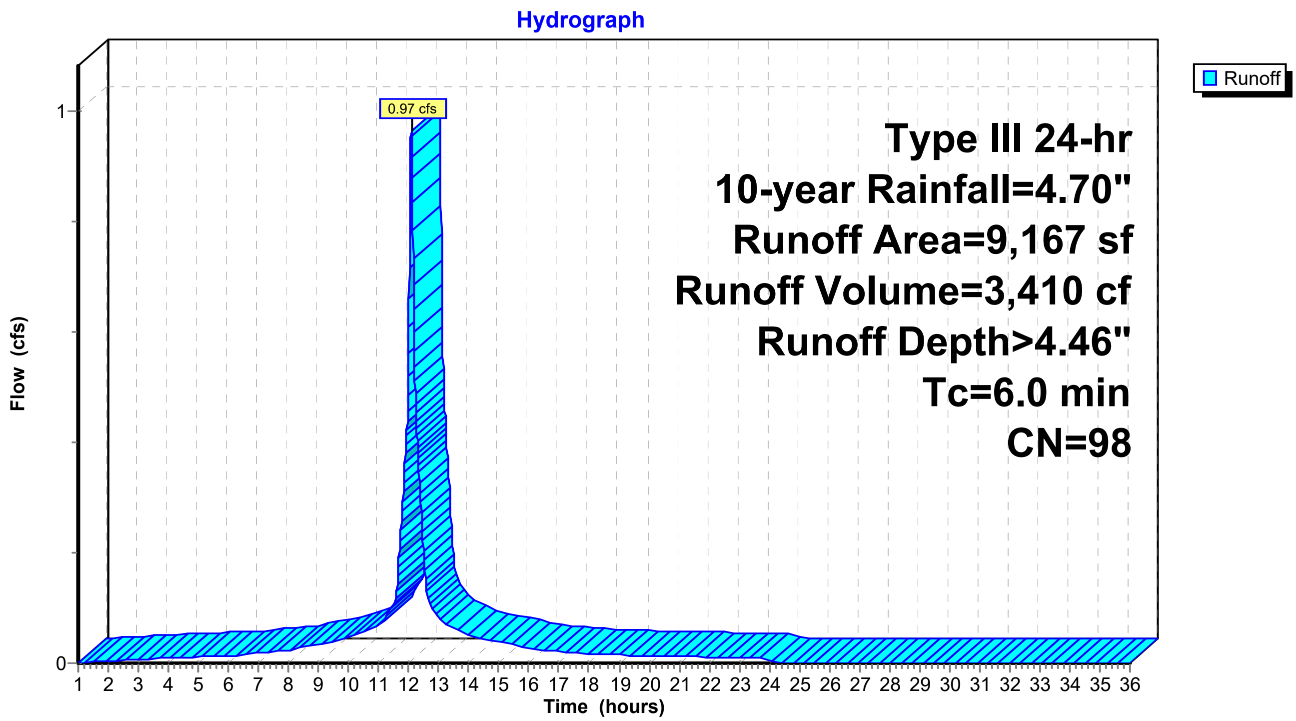
Runoff = 0.97 cfs @ 12.08 hrs, Volume= 3,410 cf, Depth> 4.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
8,851	98	Paved parking, HSG B
316	98	Roofs, HSG B
9,167	98	Weighted Average
9,167		100.00% Impervious Area

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

Subcatchment 18S: Sub 18



Summary for Subcatchment 19S: Sub 19

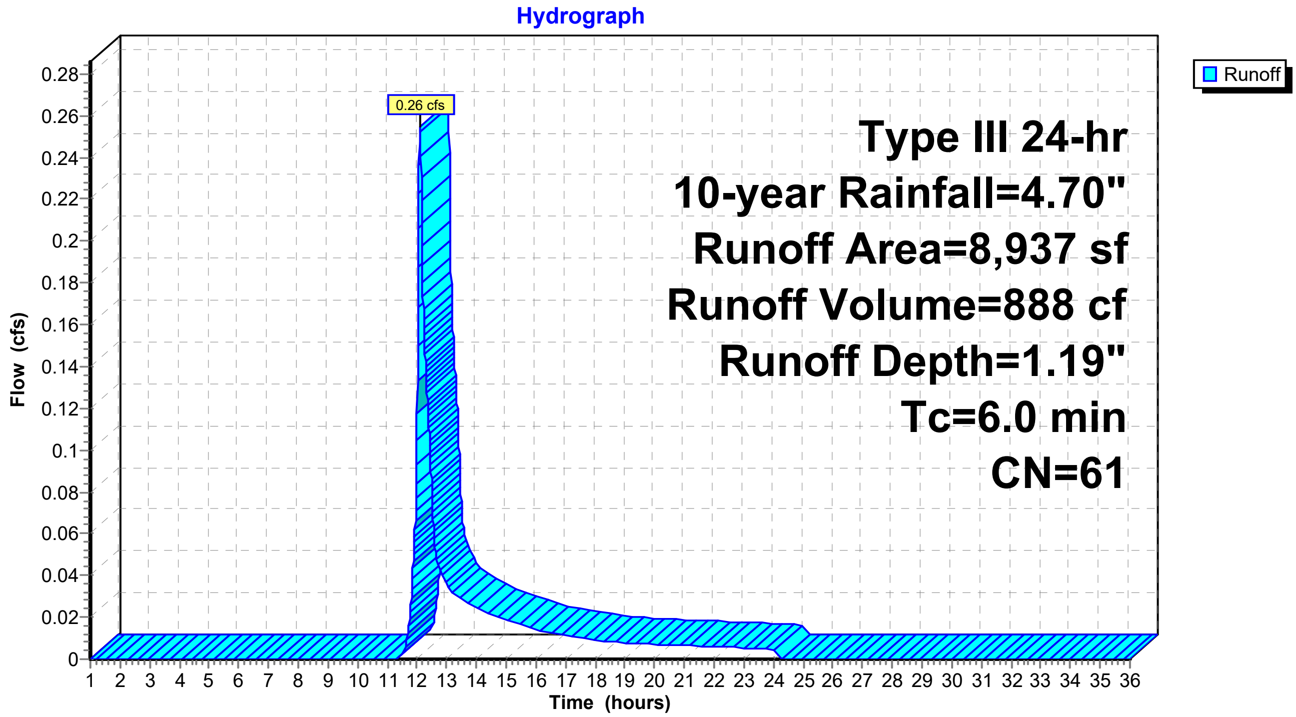
Runoff = 0.26 cfs @ 12.10 hrs, Volume= 888 cf, Depth= 1.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
7,246	61	>75% Grass cover, Good, HSG B
252	98	Roofs, HSG B
1,439	55	Woods, Good, HSG B
8,937	61	Weighted Average
8,685		97.18% Pervious Area
252		2.82% Impervious Area

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

Subcatchment 19S: Sub 19



Summary for Subcatchment 20S: Sub 20

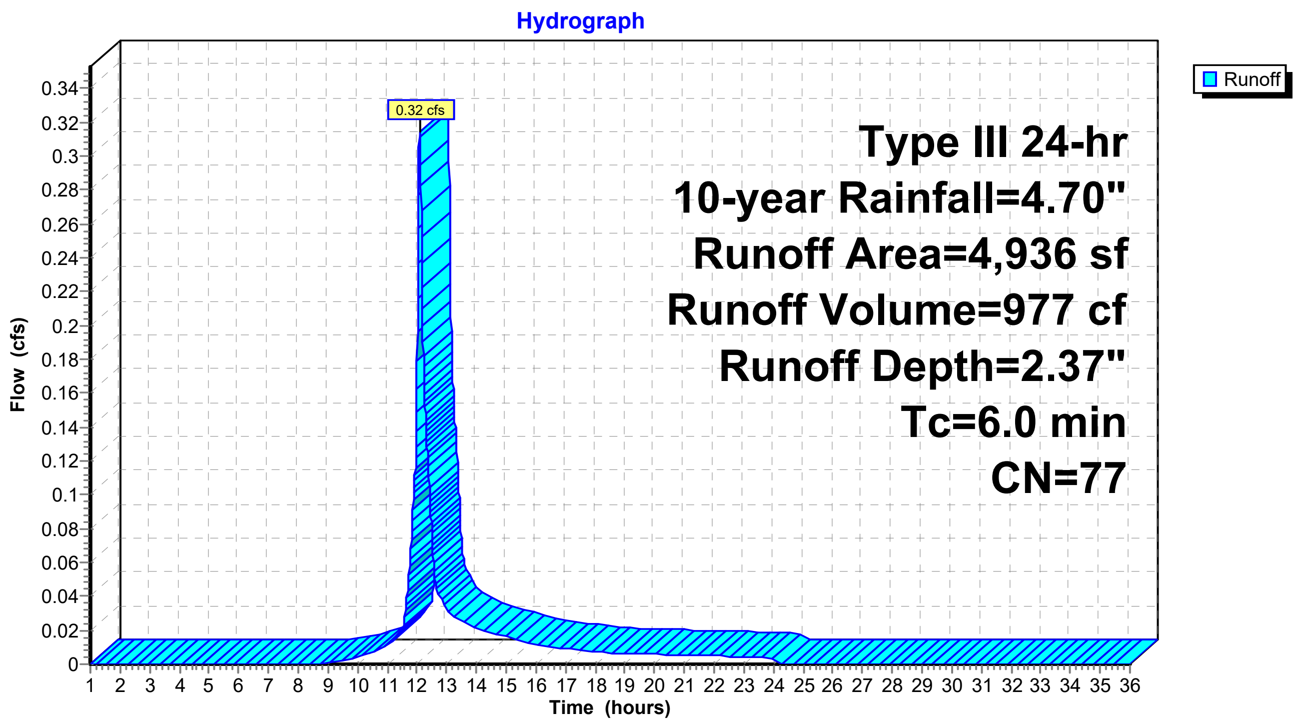
Runoff = 0.32 cfs @ 12.09 hrs, Volume= 977 cf, Depth= 2.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
1,415	98	Paved parking, HSG B
2,858	61	>75% Grass cover, Good, HSG B
663	98	Roofs, HSG B
4,936	77	Weighted Average
2,858		57.90% Pervious Area
2,078		42.10% Impervious Area

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

Subcatchment 20S: Sub 20



Summary for Subcatchment 21S: Sub 20

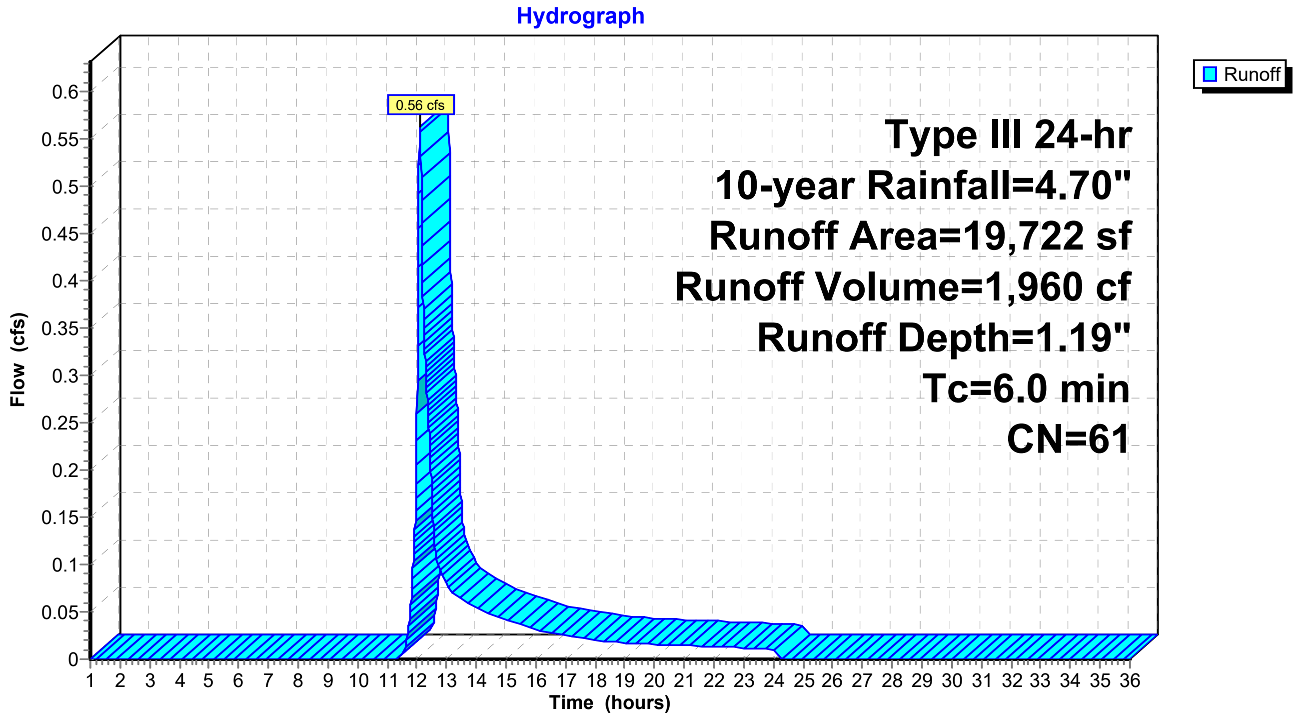
Runoff = 0.56 cfs @ 12.10 hrs, Volume= 1,960 cf, Depth= 1.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
1,681	98	Paved parking, HSG B
6,390	61	>75% Grass cover, Good, HSG B
11,651	55	Woods, Good, HSG B
19,722	61	Weighted Average
18,041		91.48% Pervious Area
1,681		8.52% Impervious Area

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

Subcatchment 21S: Sub 20



Summary for Subcatchment 22S: Sub 20

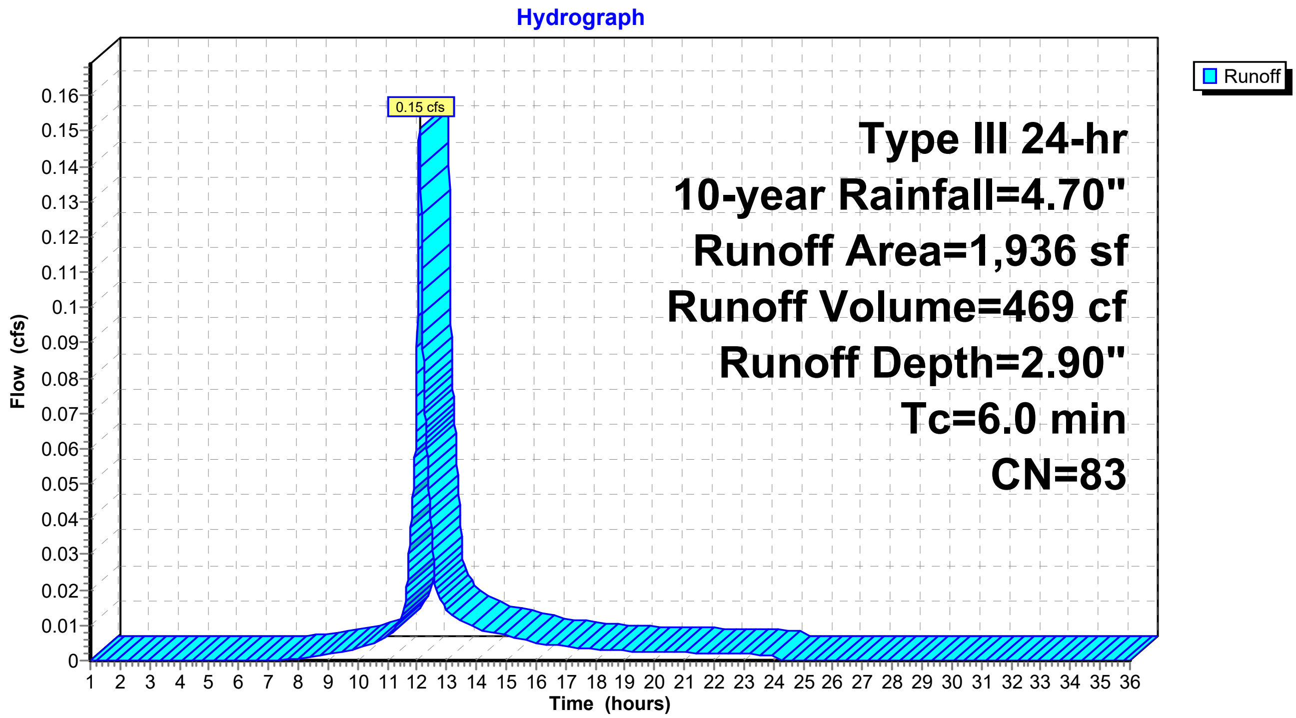
Runoff = 0.15 cfs @ 12.09 hrs, Volume= 469 cf, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
1,161	98	Paved parking, HSG B
775	61	>75% Grass cover, Good, HSG B
1,936	83	Weighted Average
775		40.03% Pervious Area
1,161		59.97% Impervious Area

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

Subcatchment 22S: Sub 20

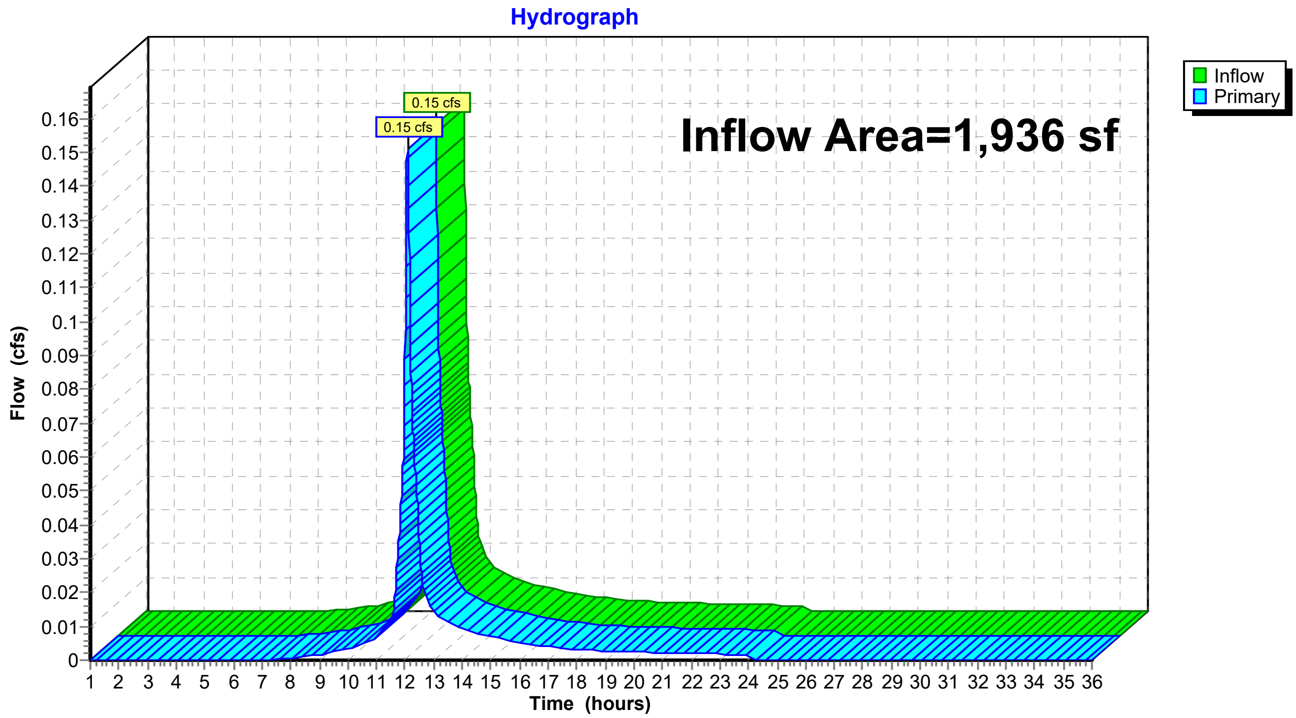


Summary for Link 1L: School Center - Leaching CB

Inflow Area = 1,936 sf, 59.97% Impervious, Inflow Depth = 2.90" for 10-year event
Inflow = 0.15 cfs @ 12.09 hrs, Volume= 469 cf
Primary = 0.15 cfs @ 12.09 hrs, Volume= 469 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

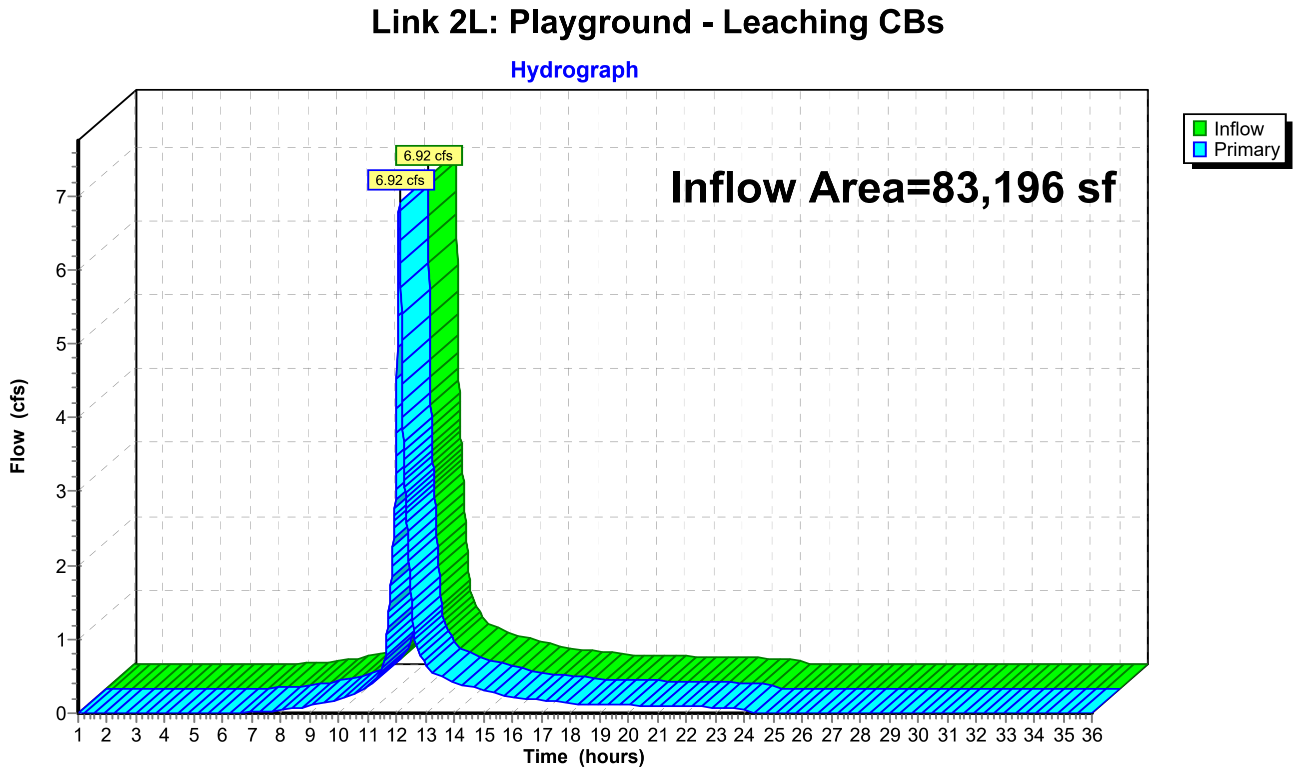
Link 1L: School Center - Leaching CB



Summary for Link 2L: Playground - Leaching CBs

Inflow Area = 83,196 sf, 67.30% Impervious, Inflow Depth = 3.13" for 10-year event
Inflow = 6.92 cfs @ 12.09 hrs, Volume= 21,698 cf
Primary = 6.92 cfs @ 12.09 hrs, Volume= 21,698 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

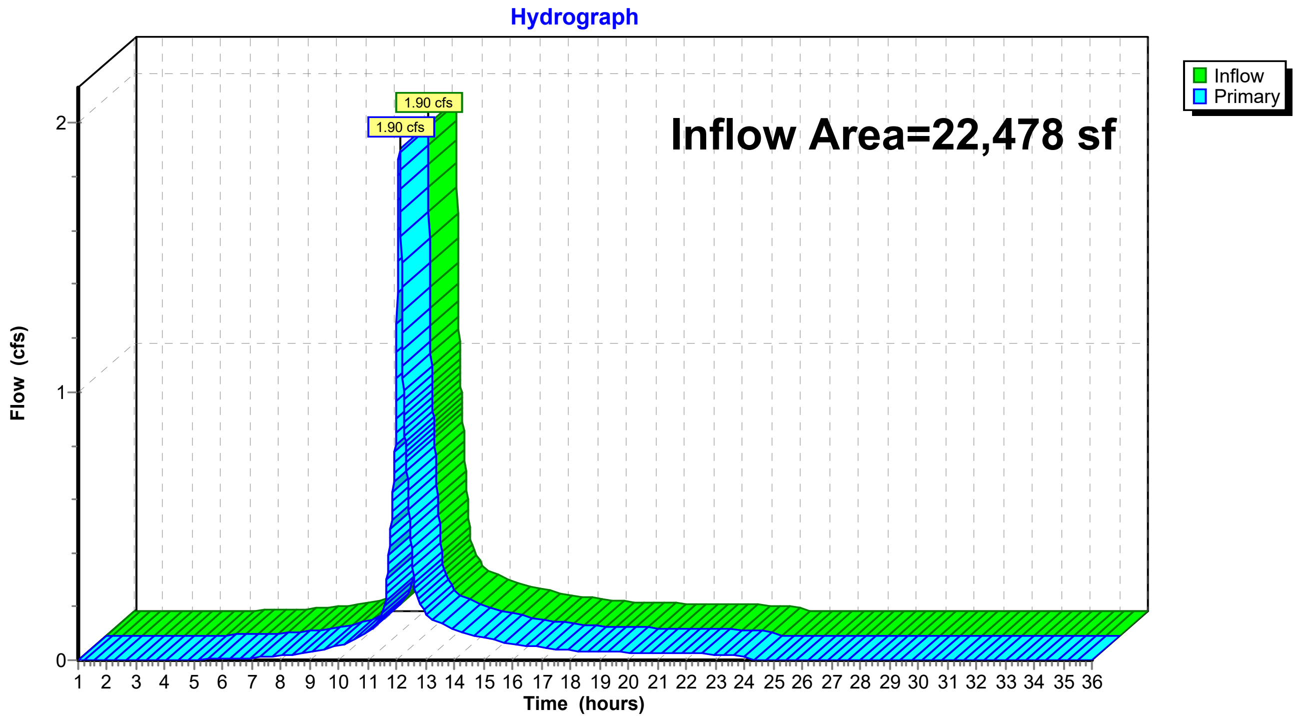


Summary for Link 3L: South Western - Leaching CBs

Inflow Area = 22,478 sf, 71.64% Impervious, Inflow Depth = 3.23" for 10-year event
Inflow = 1.90 cfs @ 12.09 hrs, Volume= 6,054 cf
Primary = 1.90 cfs @ 12.09 hrs, Volume= 6,054 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 3L: South Western - Leaching CBs

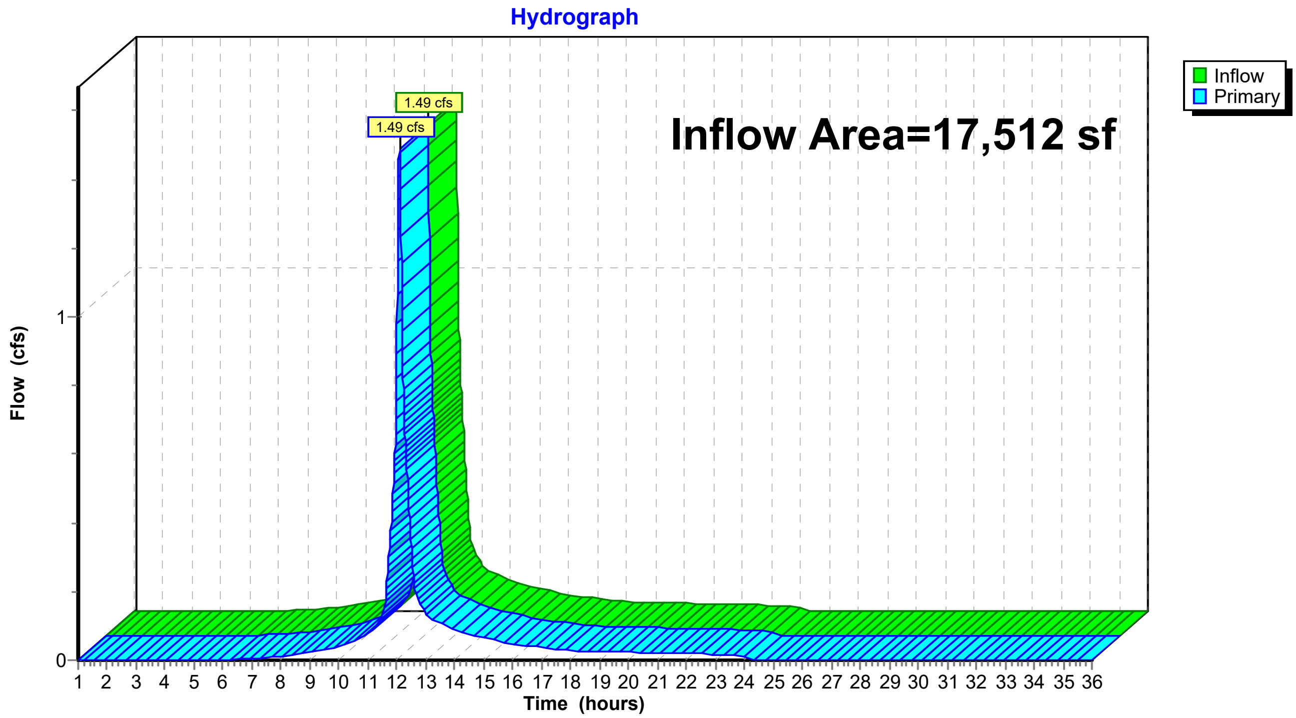


Summary for Link 4L: School Main Entrance - Leaching CBs

Inflow Area =	17,512 sf,	79.83% Impervious,	Inflow Depth = 3.21"	for 10-year event	
Inflow =	1.49 cfs @	12.09 hrs,	Volume=	4,680 cf	
Primary =	1.49 cfs @	12.09 hrs,	Volume=	4,680 cf,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 4L: School Main Entrance - Leaching CBs

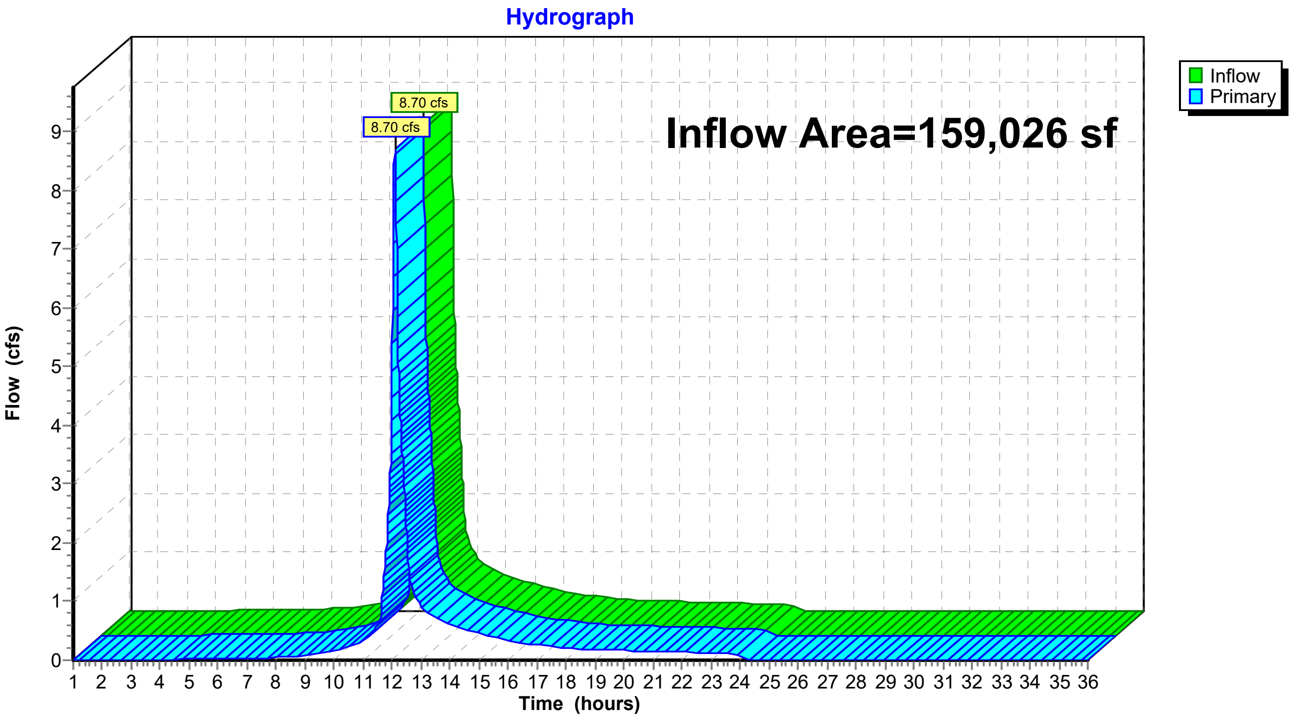


Summary for Link 5L: Main Street Drainage Network

Inflow Area =	159,026 sf,	45.50% Impervious,	Inflow Depth = 2.14"	for 10-year event
Inflow =	8.70 cfs @	12.09 hrs, Volume=	28,407 cf	
Primary =	8.70 cfs @	12.09 hrs, Volume=	28,407 cf,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 5L: Main Street Drainage Network



Time span=1.00-36.00 hrs, dt=0.01 hrs, 3501 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Sub 1 Runoff Area=60,718 sf 65.69% Impervious Runoff Depth=4.11"
Tc=6.0 min CN=85 Runoff=6.61 cfs 20,817 cf

Subcatchment2S: Sub 2 Runoff Area=8,333 sf 50.87% Impervious Runoff Depth=3.50"
Tc=6.0 min CN=79 Runoff=0.78 cfs 2,432 cf

Subcatchment3S: Sub 3 Runoff Area=6,851 sf 83.29% Impervious Runoff Depth=4.87"
Tc=6.0 min CN=92 Runoff=0.84 cfs 2,782 cf

Subcatchment4S: Sub 4 Runoff Area=5,579 sf 56.68% Impervious Runoff Depth=3.80"
Tc=6.0 min CN=82 Runoff=0.57 cfs 1,768 cf

Subcatchment5S: Sub 5 Runoff Area=10,216 sf 63.31% Impervious Runoff Depth=3.21"
Tc=6.0 min CN=76 Runoff=0.88 cfs 2,731 cf

Subcatchment6S: Sub 6 Runoff Area=3,953 sf 66.10% Impervious Runoff Depth=3.40"
Tc=6.0 min CN=78 Runoff=0.36 cfs 1,121 cf

Subcatchment7S: Sub 7 Runoff Area=7,525 sf 80.97% Impervious Runoff Depth=4.33"
Tc=6.0 min CN=87 Runoff=0.85 cfs 2,713 cf

Subcatchment8S: Sub 8 Runoff Area=5,425 sf 8.94% Impervious Runoff Depth=0.66"
Tc=6.0 min CN=44 Runoff=0.05 cfs 300 cf

Subcatchment9S: Sub 9 Runoff Area=7,123 sf 95.91% Impervious Runoff Depth=5.33"
Tc=6.0 min CN=96 Runoff=0.92 cfs 3,163 cf

Subcatchment10S: Sub 10 Runoff Area=7,035 sf 17.21% Impervious Runoff Depth=1.56"
Tc=6.0 min CN=57 Runoff=0.27 cfs 912 cf

Subcatchment11S: Sub 11 Runoff Area=10,781 sf 36.84% Impervious Runoff Depth=2.38"
Tc=6.0 min CN=67 Runoff=0.68 cfs 2,138 cf

Subcatchment12S: Sub 12 Runoff Area=15,032 sf 40.52% Impervious Runoff Depth=2.38"
Tc=6.0 min CN=67 Runoff=0.95 cfs 2,982 cf

Subcatchment13S: Sub 13 Runoff Area=9,477 sf 83.23% Impervious Runoff Depth=4.43"
Tc=6.0 min CN=88 Runoff=1.09 cfs 3,501 cf

Subcatchment14S: Sub 14 Runoff Area=8,035 sf 75.82% Impervious Runoff Depth=4.01"
Tc=6.0 min CN=84 Runoff=0.86 cfs 2,685 cf

Subcatchment15S: Sub 15 Runoff Area=7,294 sf 84.44% Impervious Runoff Depth=4.54"
Tc=6.0 min CN=89 Runoff=0.86 cfs 2,761 cf

Subcatchment16S: Sub 16 Runoff Area=17,962 sf 66.90% Impervious Runoff Depth=3.40"
Tc=6.0 min CN=78 Runoff=1.64 cfs 5,093 cf

Subcatchment17S: Sub 17 Runoff Area=25,633 sf 39.90% Impervious Runoff Depth=3.11"
Tc=6.0 min CN=75 Runoff=2.15 cfs 6,648 cf

Subcatchment18S: Sub 18 Runoff Area=9,167 sf 100.00% Impervious Runoff Depth>5.56"
Tc=6.0 min CN=98 Runoff=1.20 cfs 4,248 cf

Subcatchment19S: Sub 19 Runoff Area=8,937 sf 2.82% Impervious Runoff Depth=1.87"
Tc=6.0 min CN=61 Runoff=0.43 cfs 1,395 cf

Subcatchment20S: Sub 20 Runoff Area=4,936 sf 42.10% Impervious Runoff Depth=3.31"
Tc=6.0 min CN=77 Runoff=0.44 cfs 1,359 cf

Subcatchment21S: Sub 20 Runoff Area=19,722 sf 8.52% Impervious Runoff Depth=1.87"
Tc=6.0 min CN=61 Runoff=0.94 cfs 3,078 cf

Subcatchment22S: Sub 20 Runoff Area=1,936 sf 59.97% Impervious Runoff Depth=3.91"
Tc=6.0 min CN=83 Runoff=0.20 cfs 630 cf

Link 1L: School Center - Leaching CB Inflow=0.20 cfs 630 cf
Primary=0.20 cfs 630 cf

Link 2L: Playground - Leaching CBs Inflow=9.09 cfs 28,791 cf
Primary=9.09 cfs 28,791 cf

Link 3L: South Western - Leaching CBs Inflow=2.49 cfs 7,974 cf
Primary=2.49 cfs 7,974 cf

Link 4L: School Main Entrance - Leaching CBs Inflow=1.95 cfs 6,186 cf
Primary=1.95 cfs 6,186 cf

Link 5L: Main Street Drainage Network Inflow=12.30 cfs 39,650 cf
Primary=12.30 cfs 39,650 cf

Total Runoff Area = 261,670 sf Runoff Volume = 75,258 cf Average Runoff Depth = 3.45"
45.17% Pervious = 118,192 sf 54.83% Impervious = 143,478 sf

Summary for Subcatchment 1S: Sub 1

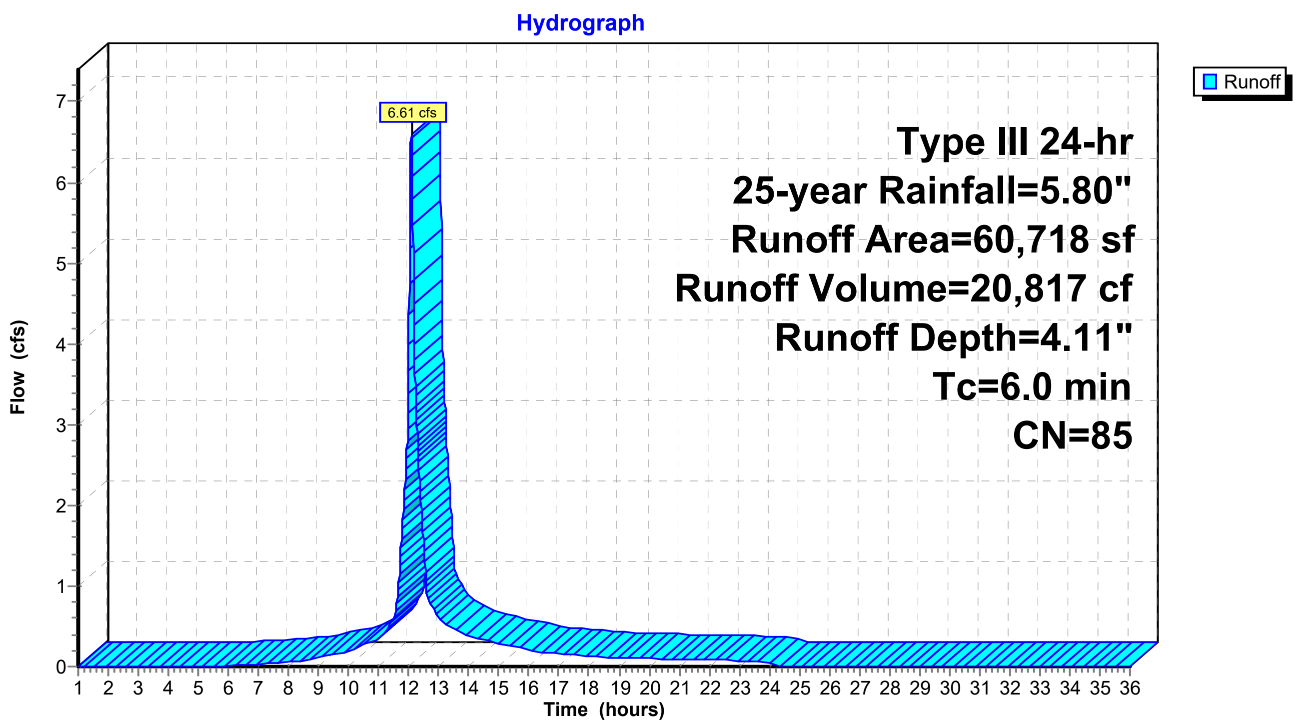
Runoff = 6.61 cfs @ 12.09 hrs, Volume= 20,817 cf, Depth= 4.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
16,123	98	Roofs, HSG B
1,042	55	Woods, Good, HSG B
19,793	61	>75% Grass cover, Good, HSG B
23,760	98	Paved parking, HSG B
60,718	85	Weighted Average
20,835		34.31% Pervious Area
39,883		65.69% Impervious Area

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

Subcatchment 1S: Sub 1



Summary for Subcatchment 2S: Sub 2

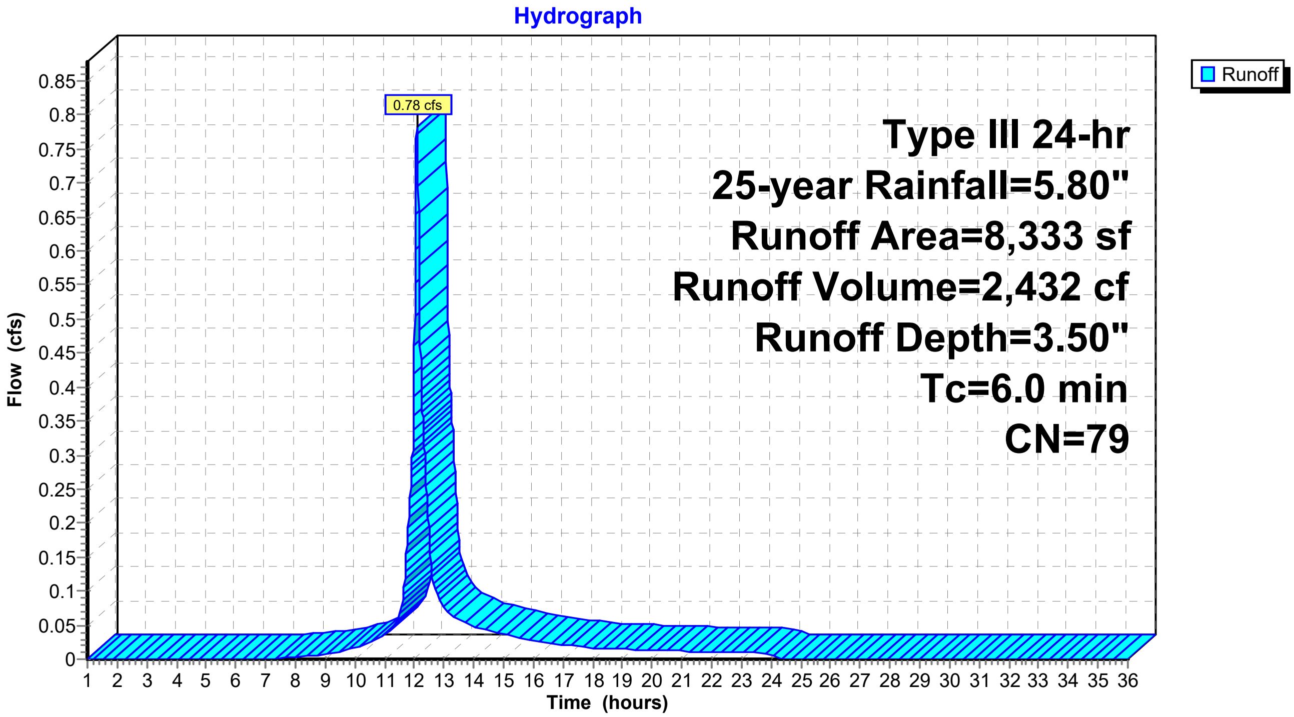
Runoff = 0.78 cfs @ 12.09 hrs, Volume= 2,432 cf, Depth= 3.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
1,073	55	Woods, Good, HSG B
3,021	61	>75% Grass cover, Good, HSG B
4,239	98	Paved parking, HSG B
8,333	79	Weighted Average
4,094		49.13% Pervious Area
4,239		50.87% Impervious Area

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

Subcatchment 2S: Sub 2



Summary for Subcatchment 3S: Sub 3

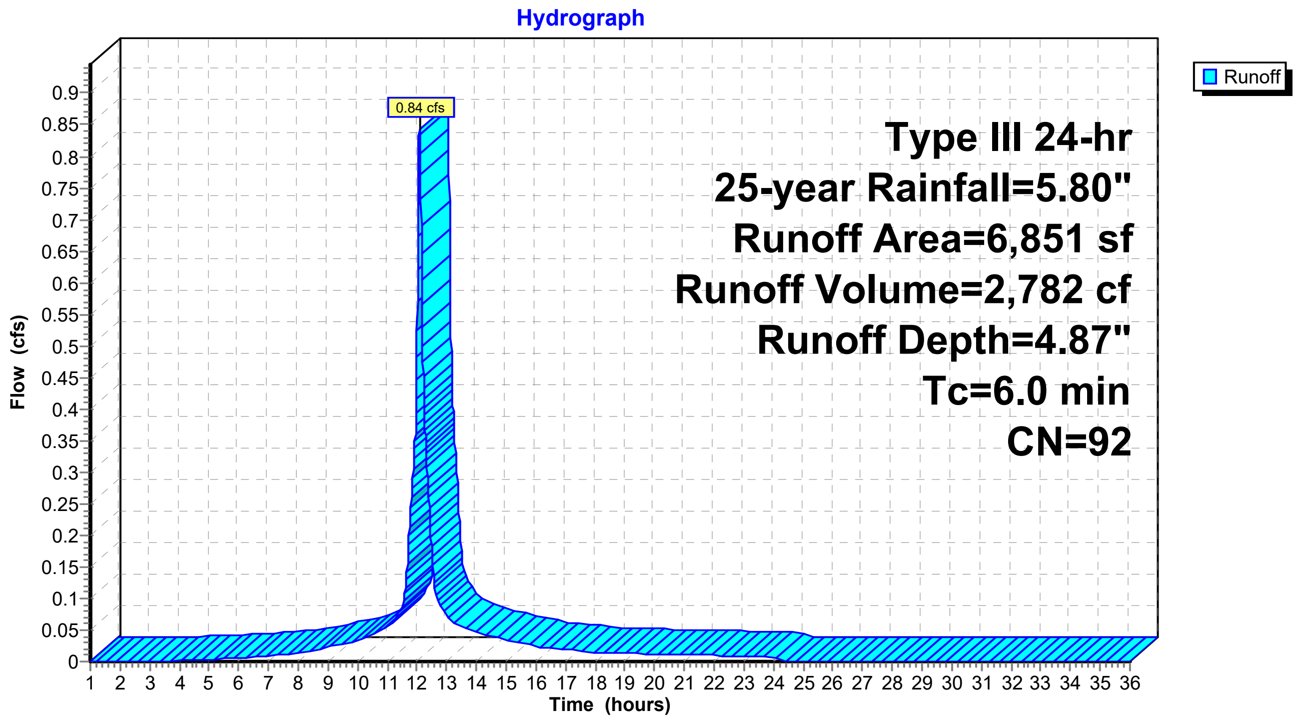
Runoff = 0.84 cfs @ 12.08 hrs, Volume= 2,782 cf, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
969	98	Unconnected roofs, HSG B
1,145	61	>75% Grass cover, Good, HSG B
4,737	98	Paved parking, HSG B
6,851	92	Weighted Average
1,145		16.71% Pervious Area
5,706		83.29% Impervious Area
969		16.98% Unconnected

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

Subcatchment 3S: Sub 3



Summary for Subcatchment 4S: Sub 4

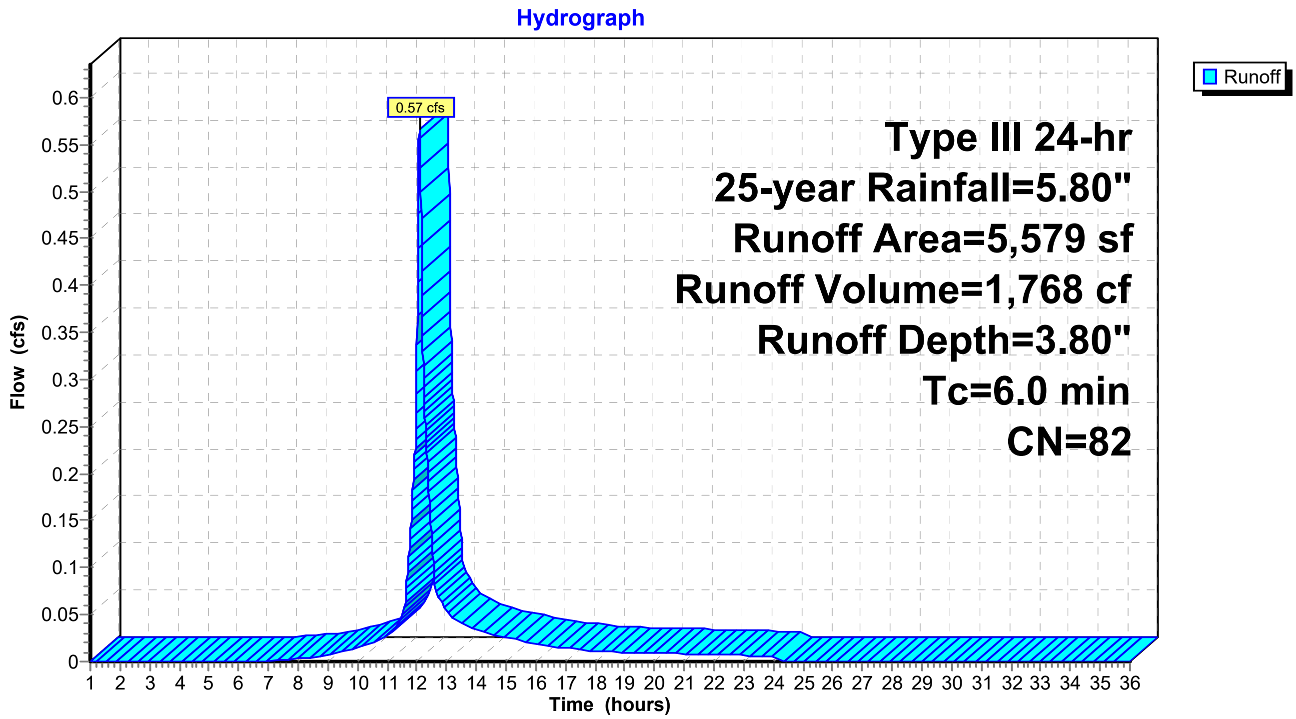
Runoff = 0.57 cfs @ 12.09 hrs, Volume= 1,768 cf, Depth= 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
105	98	Unconnected roofs, HSG B
2,417	61	>75% Grass cover, Good, HSG B
3,057	98	Paved parking, HSG B
5,579	82	Weighted Average
2,417		43.32% Pervious Area
3,162		56.68% Impervious Area
105		3.32% Unconnected

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

Subcatchment 4S: Sub 4



Summary for Subcatchment 5S: Sub 5

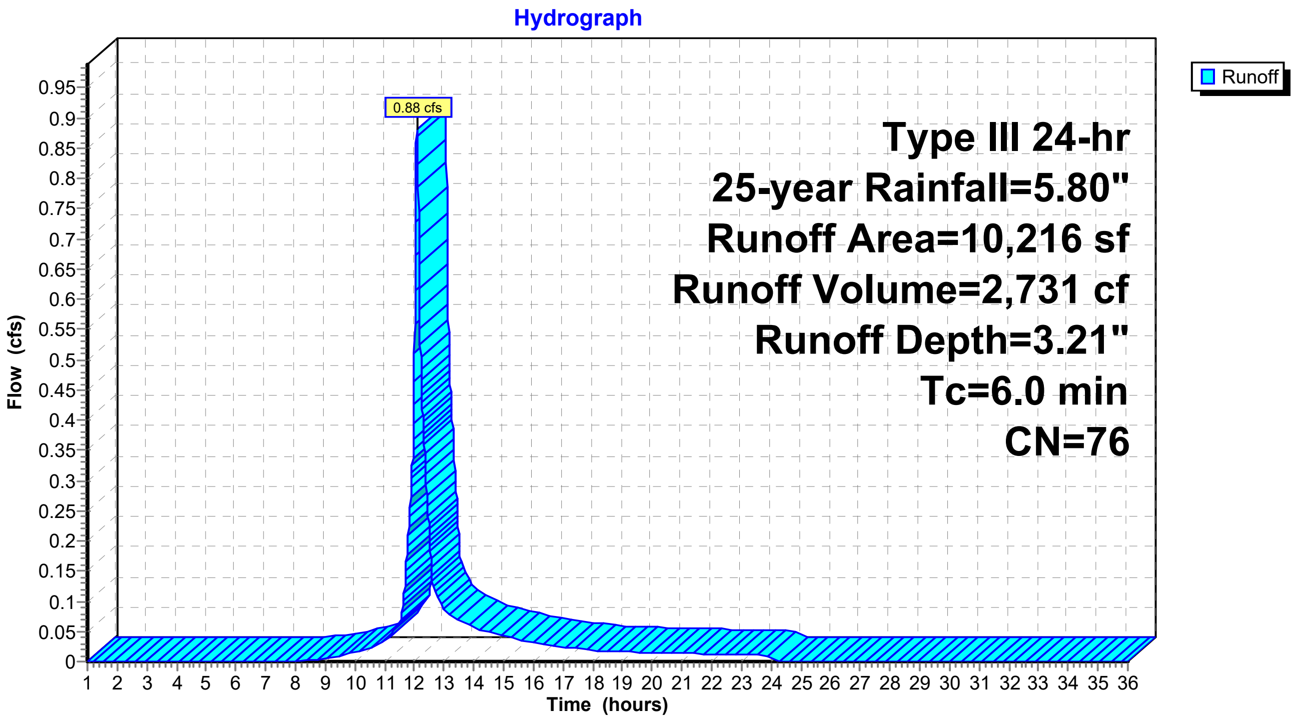
Runoff = 0.88 cfs @ 12.09 hrs, Volume= 2,731 cf, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
963	98	Unconnected roofs, HSG A
3,748	39	>75% Grass cover, Good, HSG A
5,505	98	Paved parking, HSG A
10,216	76	Weighted Average
3,748		36.69% Pervious Area
6,468		63.31% Impervious Area
963		14.89% Unconnected

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

Subcatchment 5S: Sub 5



Summary for Subcatchment 6S: Sub 6

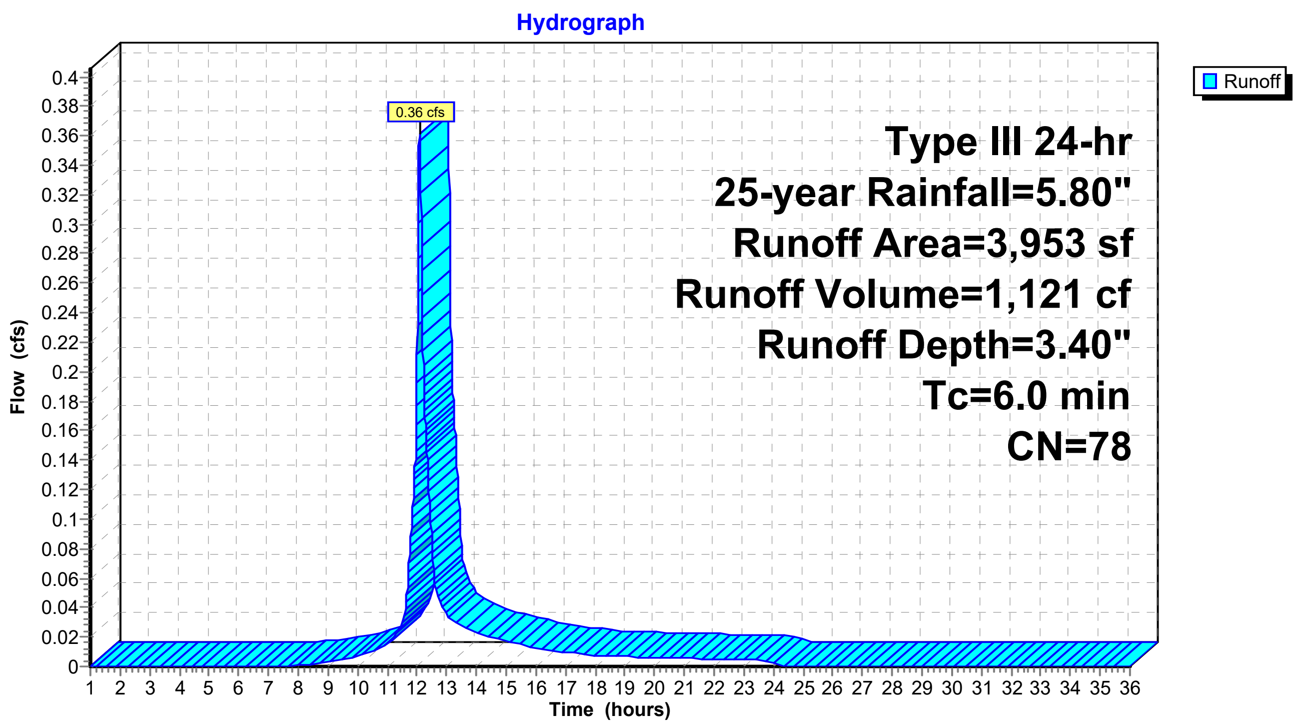
Runoff = 0.36 cfs @ 12.09 hrs, Volume= 1,121 cf, Depth= 3.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
1,340	39	>75% Grass cover, Good, HSG A
2,613	98	Paved parking, HSG A
3,953	78	Weighted Average
1,340		33.90% Pervious Area
2,613		66.10% Impervious Area

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

Subcatchment 6S: Sub 6



Summary for Subcatchment 7S: Sub 7

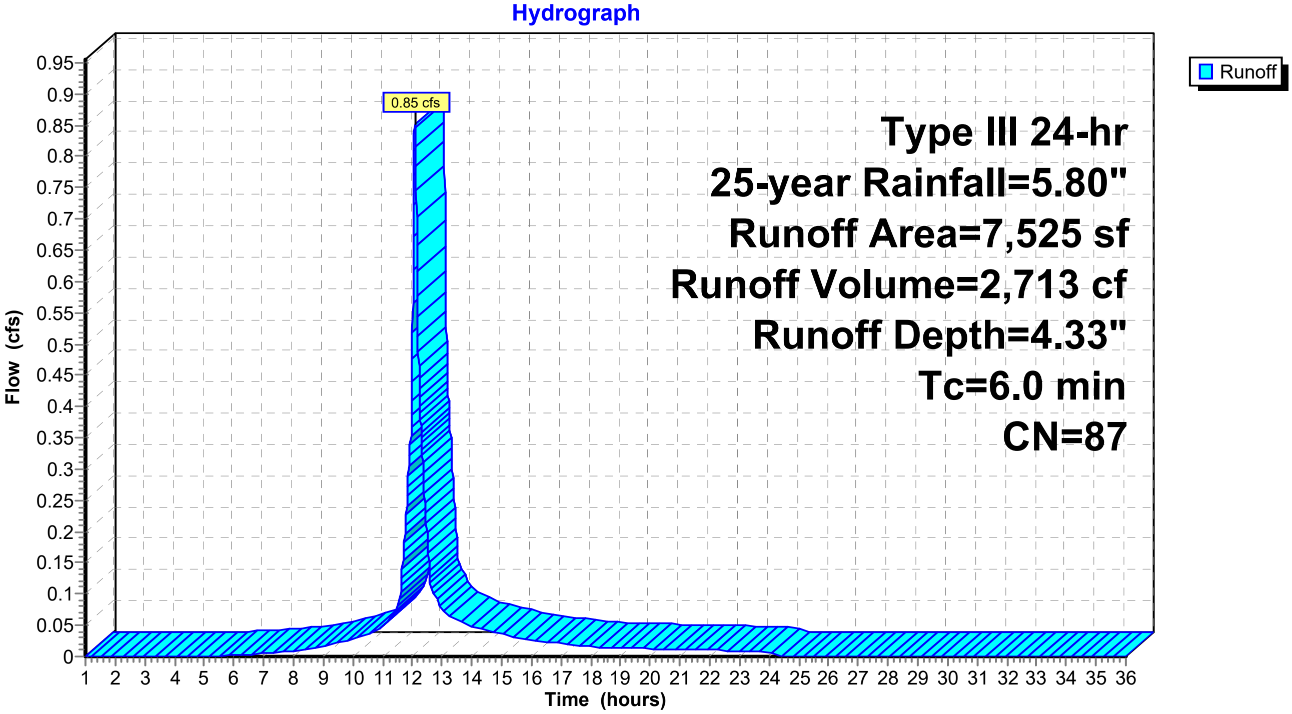
Runoff = 0.85 cfs @ 12.09 hrs, Volume= 2,713 cf, Depth= 4.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
1,432	39	>75% Grass cover, Good, HSG A
6,093	98	Paved parking, HSG A
7,525	87	Weighted Average
1,432		19.03% Pervious Area
6,093		80.97% Impervious Area

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

Subcatchment 7S: Sub 7



Summary for Subcatchment 8S: Sub 8

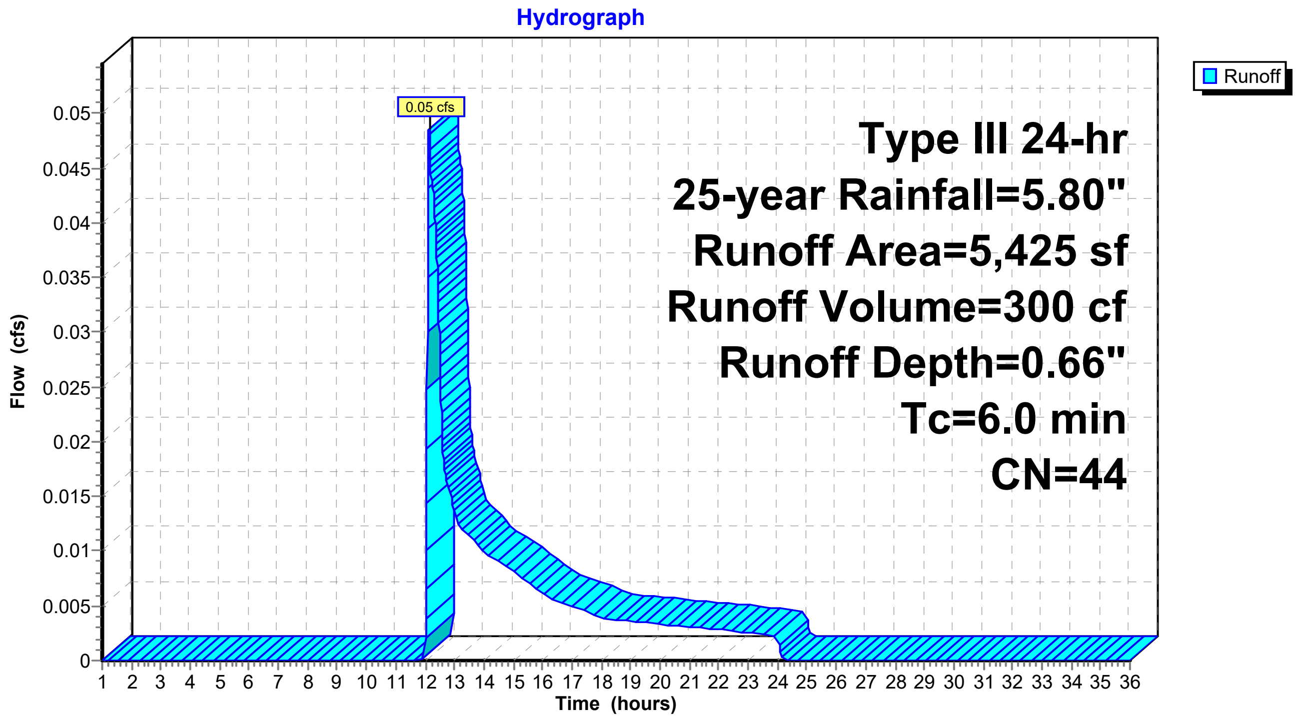
Runoff = 0.05 cfs @ 12.14 hrs, Volume= 300 cf, Depth= 0.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
4,940	39	>75% Grass cover, Good, HSG A
485	98	Paved parking, HSG A
5,425	44	Weighted Average
4,940		91.06% Pervious Area
485		8.94% Impervious Area

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

Subcatchment 8S: Sub 8



Summary for Subcatchment 9S: Sub 9

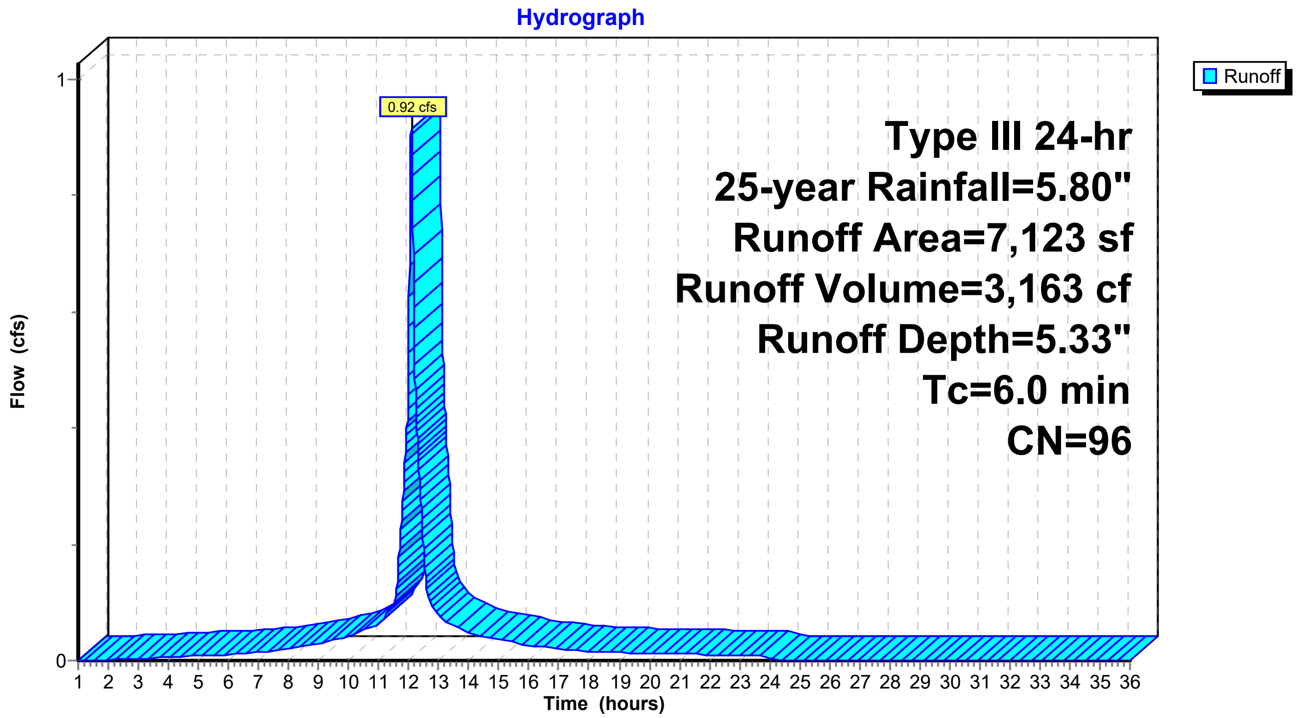
Runoff = 0.92 cfs @ 12.08 hrs, Volume= 3,163 cf, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
291	39	>75% Grass cover, Good, HSG A
6,832	98	Paved parking, HSG A
7,123	96	Weighted Average
291		4.09% Pervious Area
6,832		95.91% Impervious Area

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

Subcatchment 9S: Sub 9



Summary for Subcatchment 10S: Sub 10

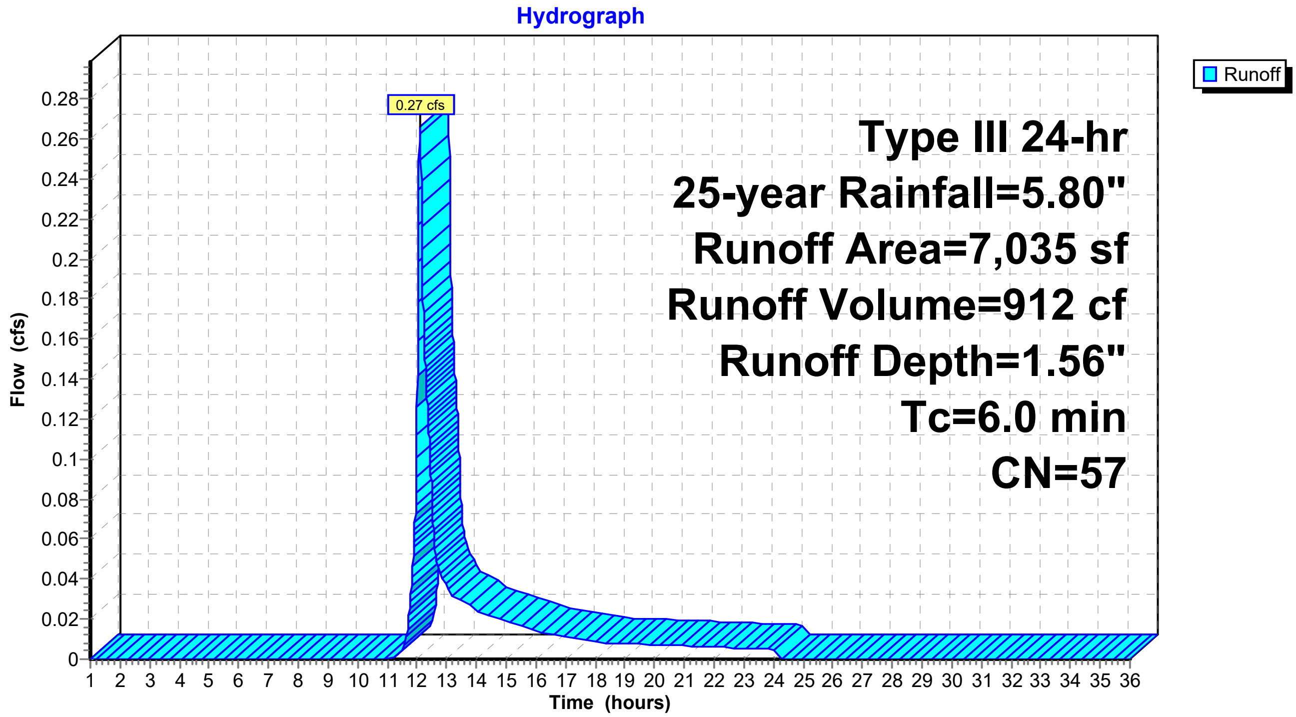
Runoff = 0.27 cfs @ 12.10 hrs, Volume= 912 cf, Depth= 1.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
2,302	39	>75% Grass cover, Good, HSG A
1,211	98	Paved parking, HSG A
3,522	55	Woods, Good, HSG B
7,035	57	Weighted Average
5,824		82.79% Pervious Area
1,211		17.21% Impervious Area

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

Subcatchment 10S: Sub 10



Summary for Subcatchment 11S: Sub 11

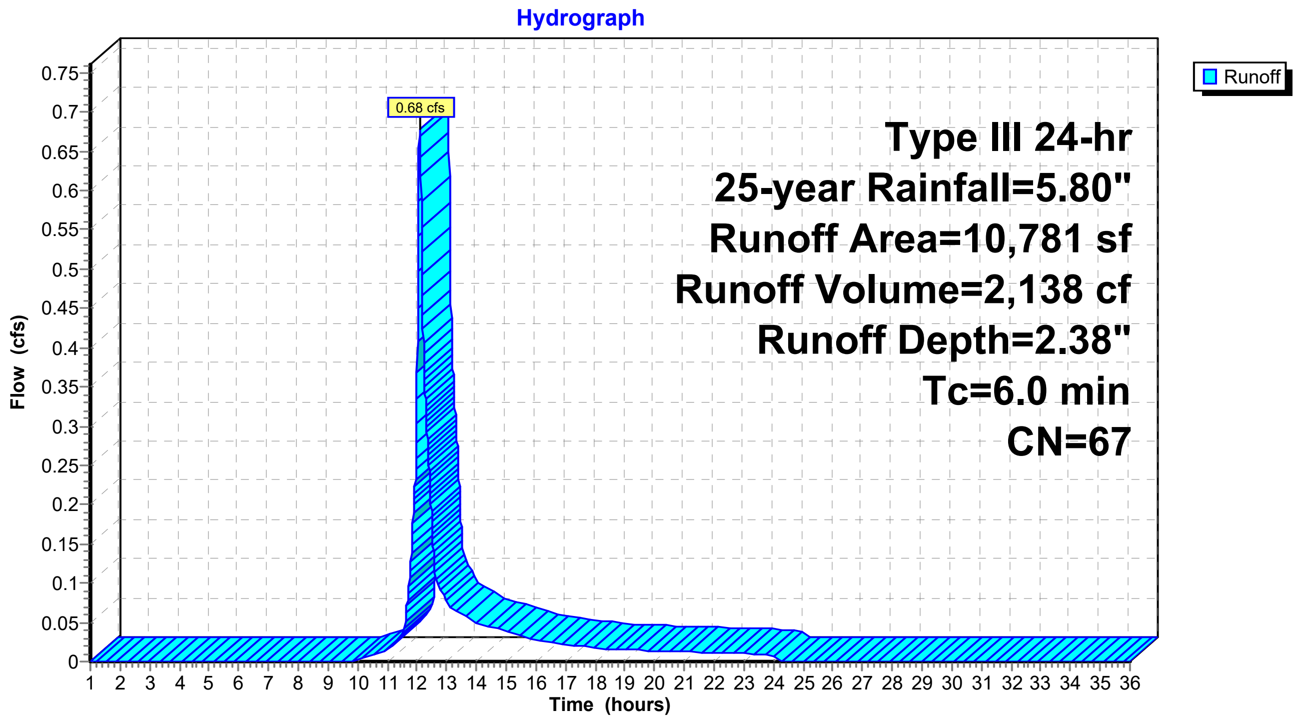
Runoff = 0.68 cfs @ 12.09 hrs, Volume= 2,138 cf, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
2,901	39	>75% Grass cover, Good, HSG A
3,653	98	Paved parking, HSG A
319	98	Roofs, HSG B
3,908	55	Woods, Good, HSG B
10,781	67	Weighted Average
6,809		63.16% Pervious Area
3,972		36.84% Impervious Area

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

Subcatchment 11S: Sub 11



Summary for Subcatchment 12S: Sub 12

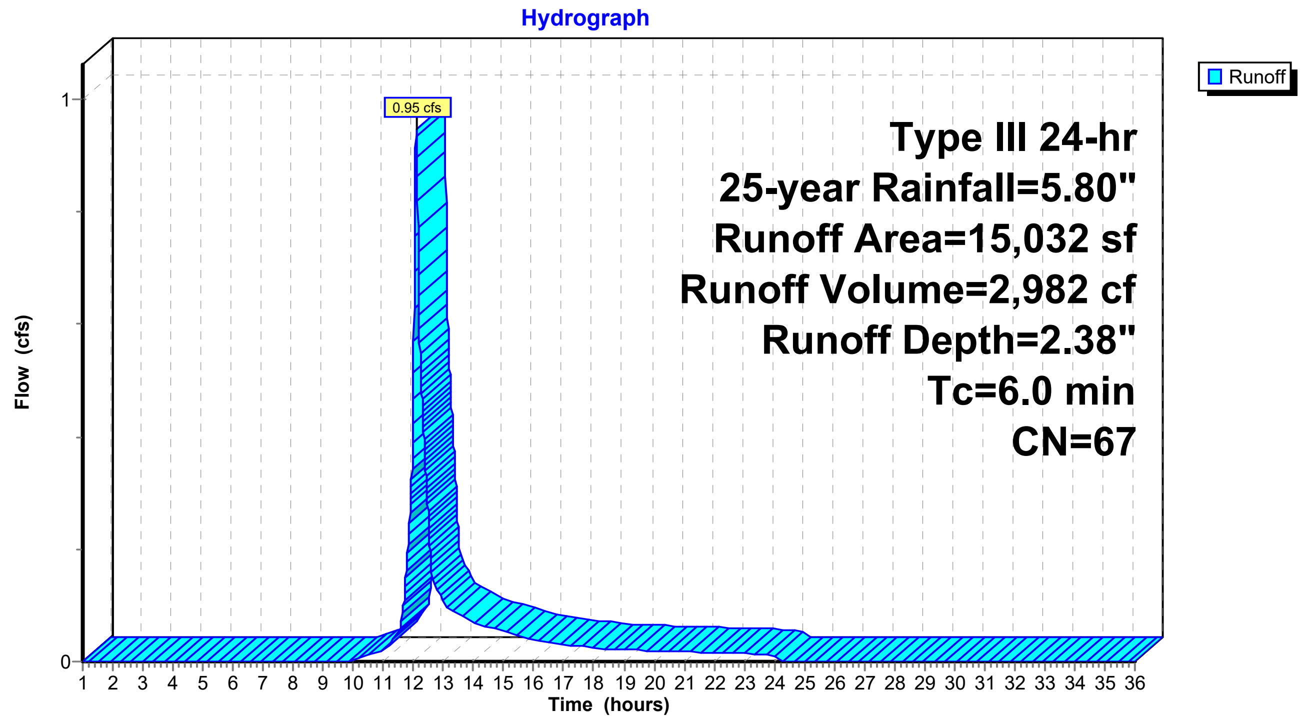
Runoff = 0.95 cfs @ 12.09 hrs, Volume= 2,982 cf, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
5,033	39	>75% Grass cover, Good, HSG A
2,740	98	Paved parking, HSG A
3,351	98	Roofs, HSG B
3,908	55	Woods, Good, HSG B
15,032	67	Weighted Average
8,941		59.48% Pervious Area
6,091		40.52% Impervious Area

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

Subcatchment 12S: Sub 12



Summary for Subcatchment 13S: Sub 13

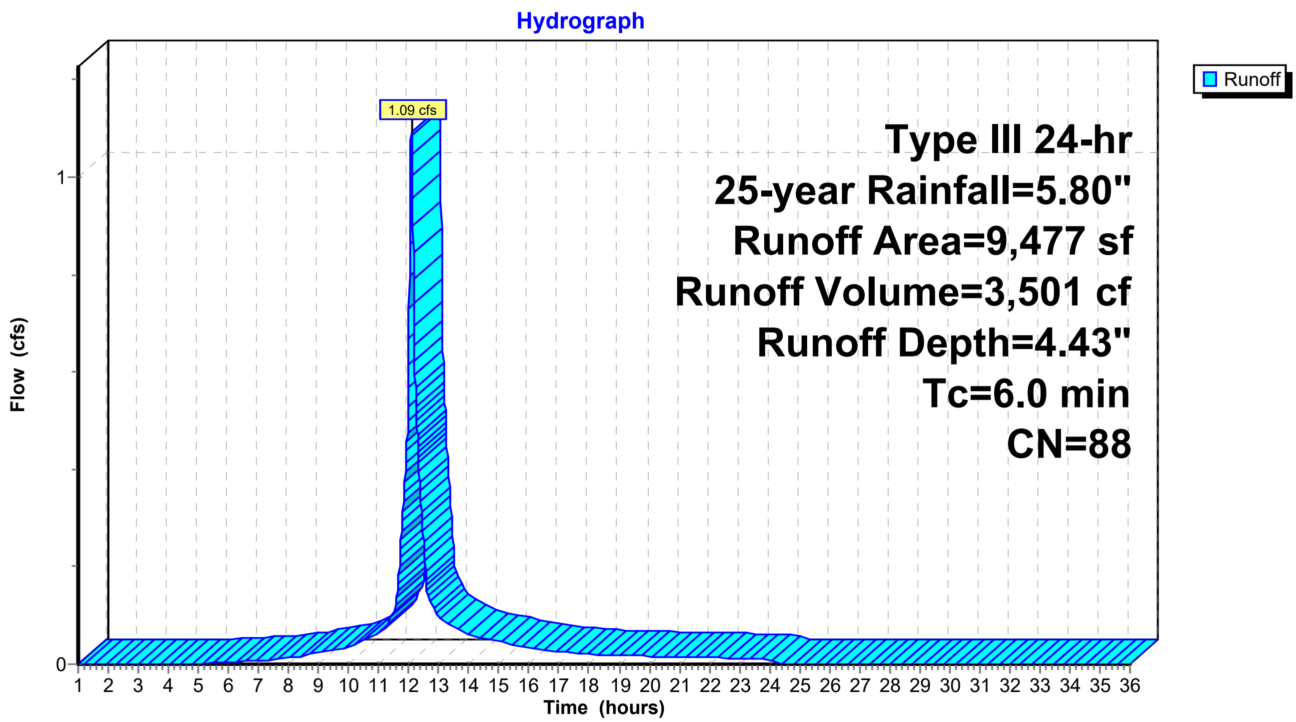
Runoff = 1.09 cfs @ 12.09 hrs, Volume= 3,501 cf, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
1,589	39	>75% Grass cover, Good, HSG A
4,866	98	Paved parking, HSG A
3,022	98	Roofs, HSG B
9,477	88	Weighted Average
1,589		16.77% Pervious Area
7,888		83.23% Impervious Area

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

Subcatchment 13S: Sub 13



Summary for Subcatchment 14S: Sub 14

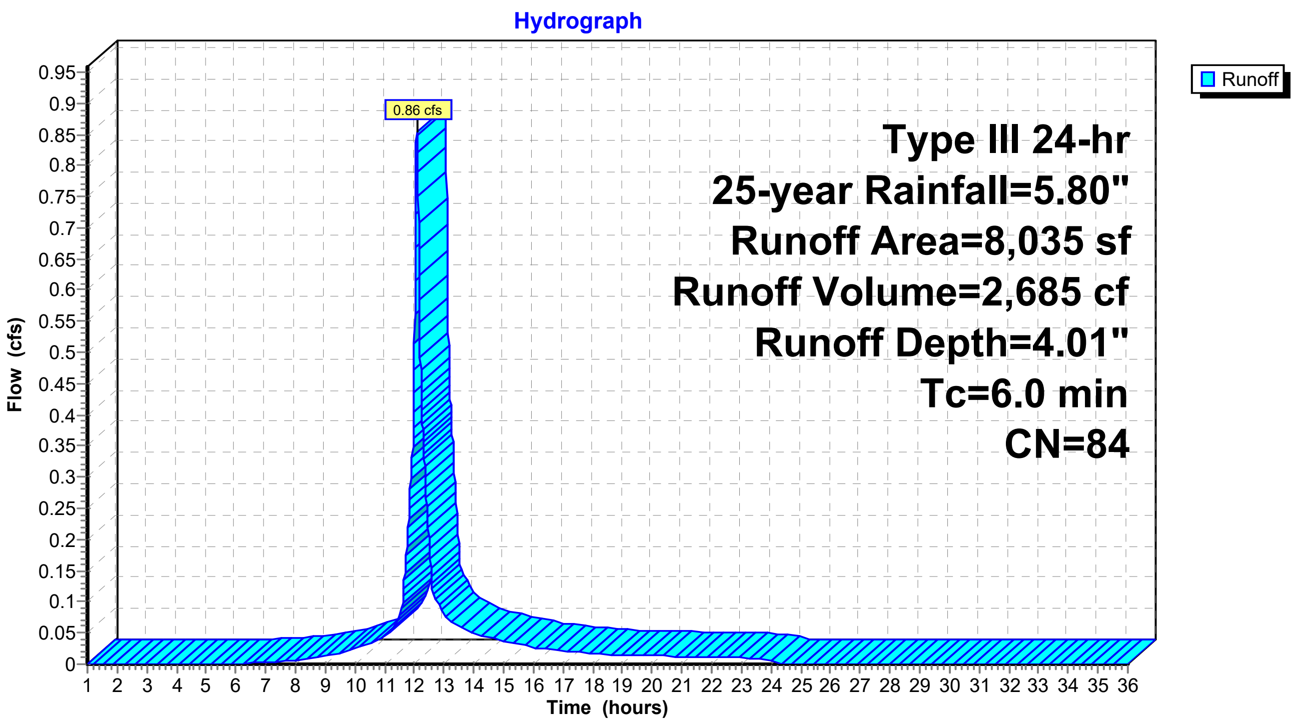
Runoff = 0.86 cfs @ 12.09 hrs, Volume= 2,685 cf, Depth= 4.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
1,943	39	>75% Grass cover, Good, HSG A
2,485	98	Paved parking, HSG A
3,607	98	Roofs, HSG A
8,035	84	Weighted Average
1,943		24.18% Pervious Area
6,092		75.82% Impervious Area

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

Subcatchment 14S: Sub 14



Summary for Subcatchment 15S: Sub 15

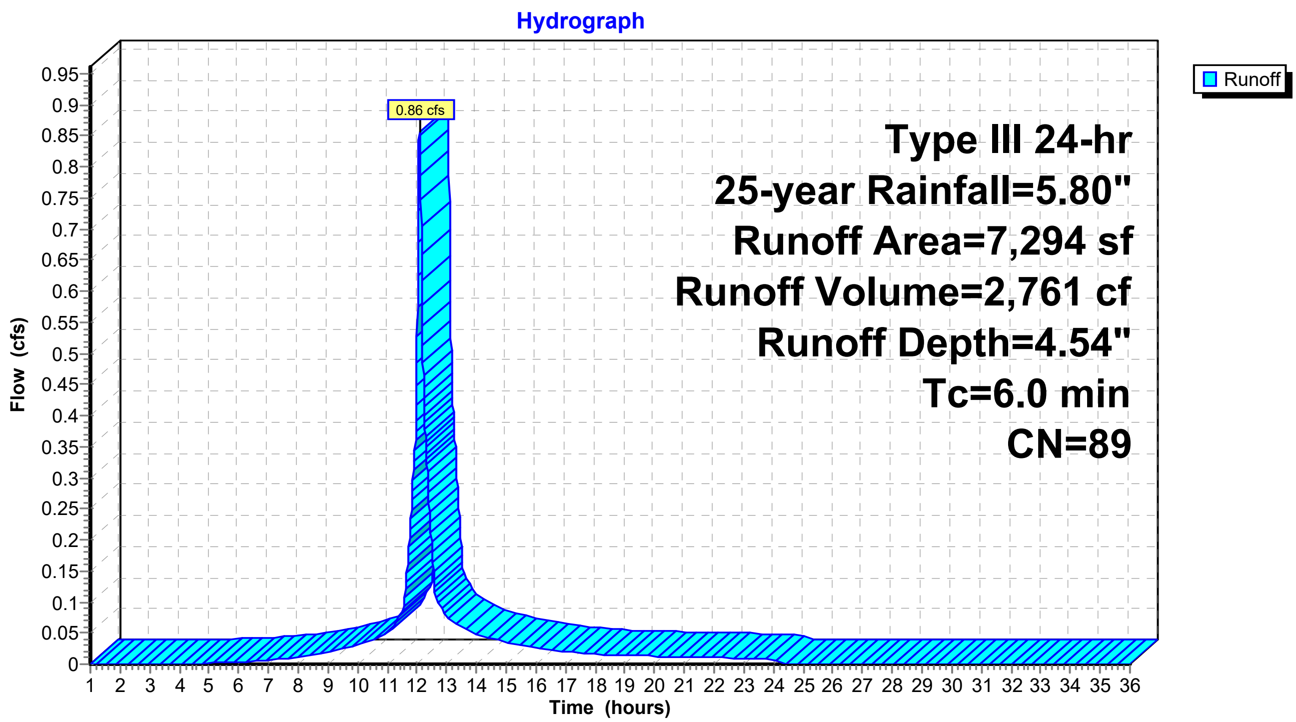
Runoff = 0.86 cfs @ 12.08 hrs, Volume= 2,761 cf, Depth= 4.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
1,135	39	>75% Grass cover, Good, HSG A
1,002	98	Paved parking, HSG A
5,157	98	Roofs, HSG A
7,294	89	Weighted Average
1,135		15.56% Pervious Area
6,159		84.44% Impervious Area

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

Subcatchment 15S: Sub 15



Summary for Subcatchment 16S: Sub 16

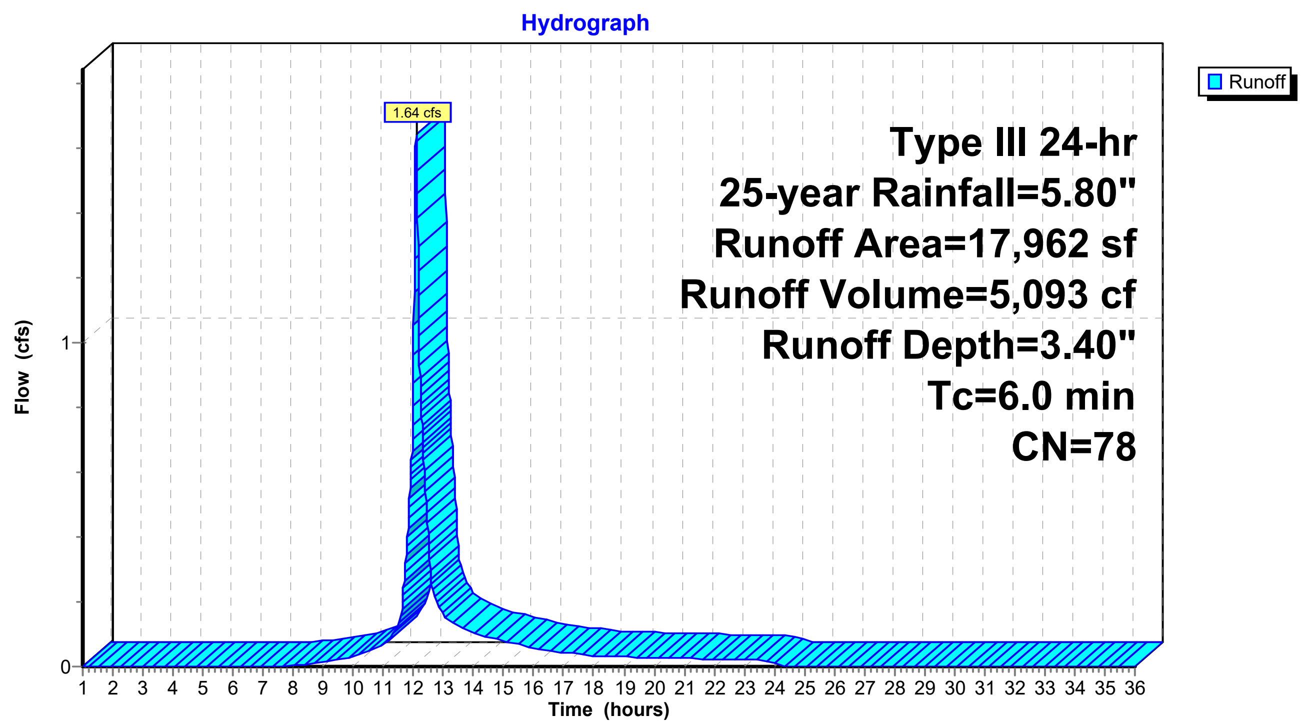
Runoff = 1.64 cfs @ 12.09 hrs, Volume= 5,093 cf, Depth= 3.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
4,235	39	>75% Grass cover, Good, HSG A
4,196	98	Paved parking, HSG A
7,821	98	Roofs, HSG A
1,710	30	Woods, Good, HSG A
17,962	78	Weighted Average
5,945		33.10% Pervious Area
12,017		66.90% Impervious Area

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

Subcatchment 16S: Sub 16



Summary for Subcatchment 17S: Sub 17

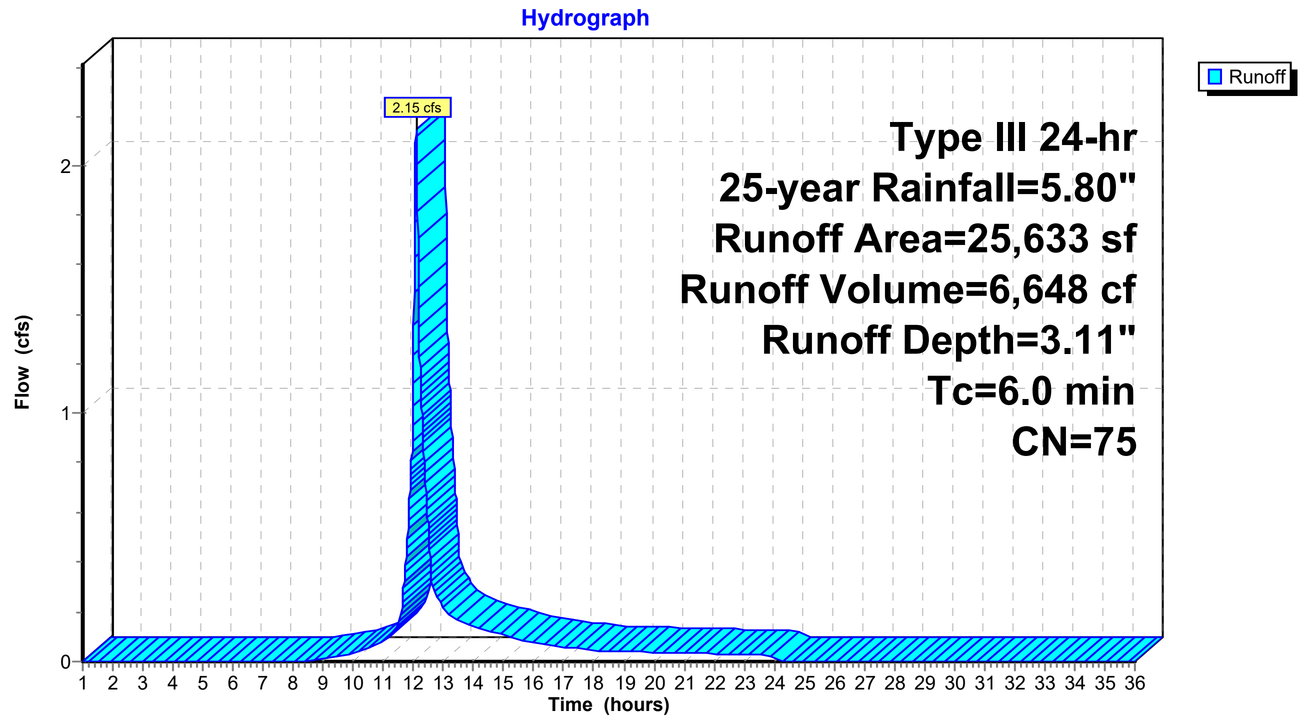
Runoff = 2.15 cfs @ 12.09 hrs, Volume= 6,648 cf, Depth= 3.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
10,866	61	>75% Grass cover, Good, HSG B
6,040	98	Paved parking, HSG B
4,188	98	Roofs, HSG B
4,539	55	Woods, Good, HSG B
25,633	75	Weighted Average
15,405		60.10% Pervious Area
10,228		39.90% Impervious Area

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

Subcatchment 17S: Sub 17



Summary for Subcatchment 18S: Sub 18

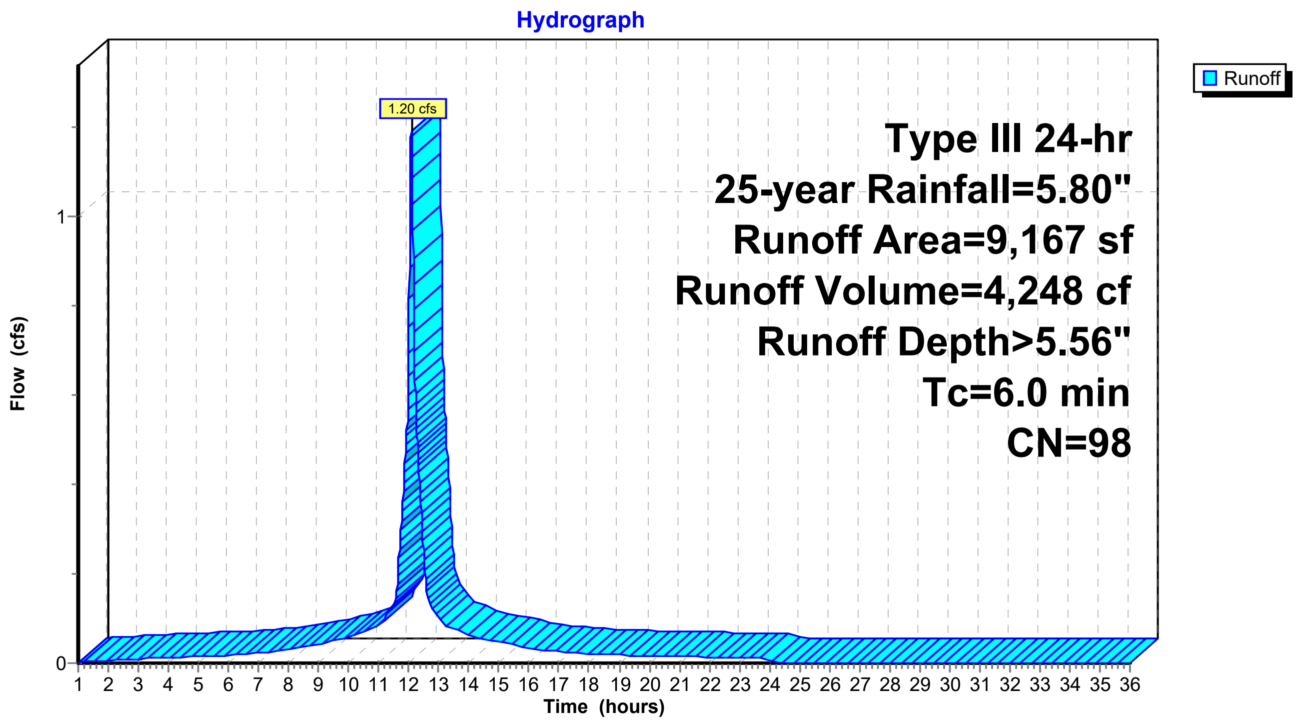
Runoff = 1.20 cfs @ 12.08 hrs, Volume= 4,248 cf, Depth> 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
8,851	98	Paved parking, HSG B
316	98	Roofs, HSG B
9,167	98	Weighted Average
9,167		100.00% Impervious Area

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

Subcatchment 18S: Sub 18



Summary for Subcatchment 19S: Sub 19

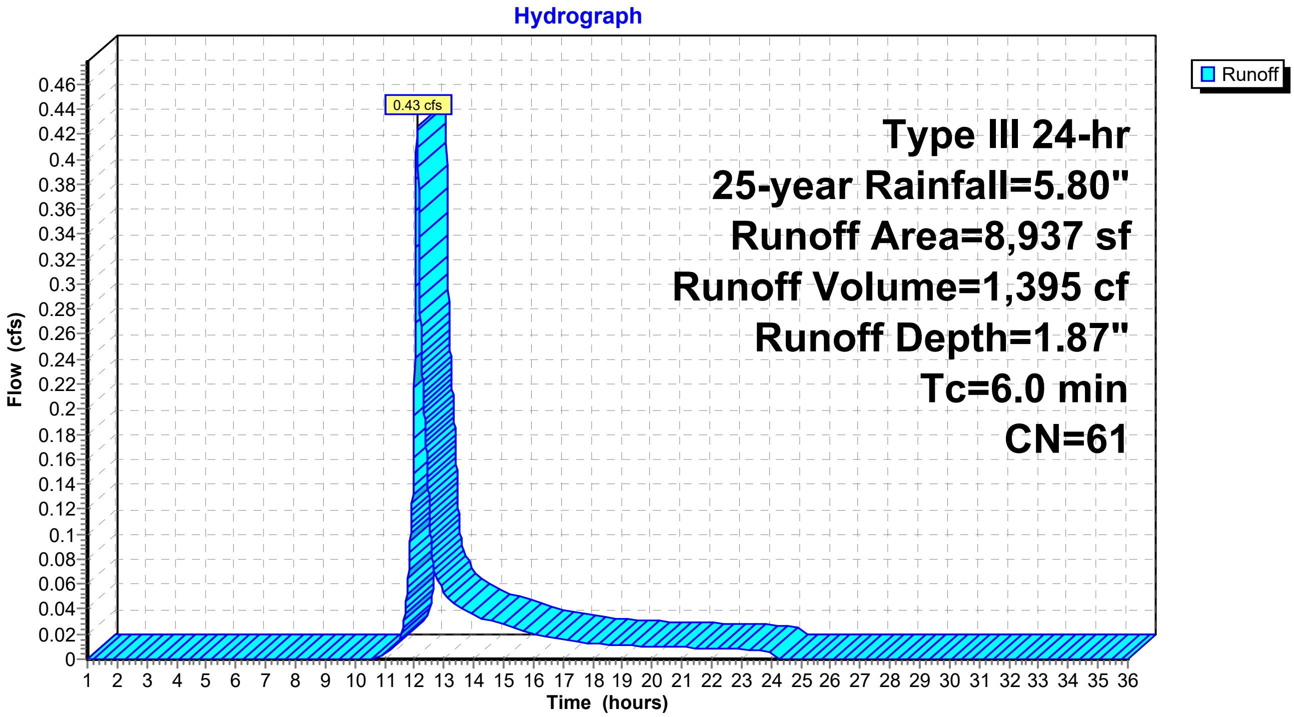
Runoff = 0.43 cfs @ 12.10 hrs, Volume= 1,395 cf, Depth= 1.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
7,246	61	>75% Grass cover, Good, HSG B
252	98	Roofs, HSG B
1,439	55	Woods, Good, HSG B
8,937	61	Weighted Average
8,685		97.18% Pervious Area
252		2.82% Impervious Area

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

Subcatchment 19S: Sub 19



Summary for Subcatchment 20S: Sub 20

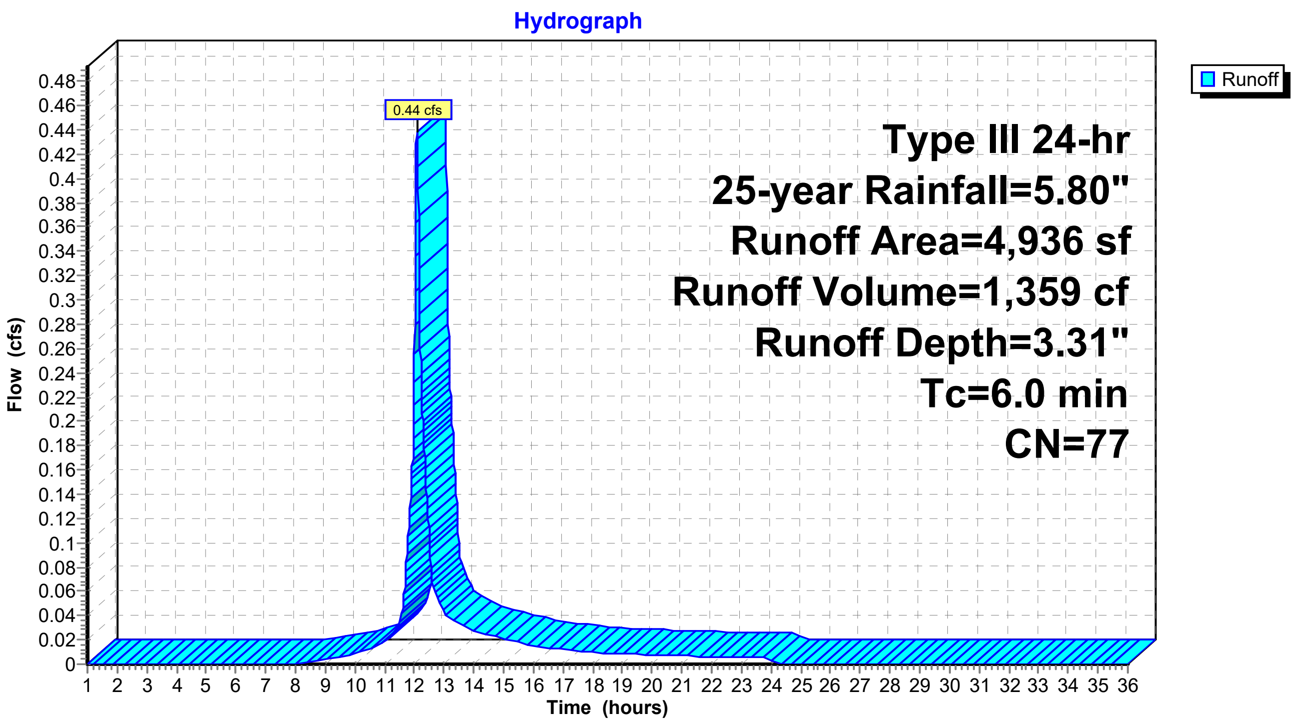
Runoff = 0.44 cfs @ 12.09 hrs, Volume= 1,359 cf, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
1,415	98	Paved parking, HSG B
2,858	61	>75% Grass cover, Good, HSG B
663	98	Roofs, HSG B
4,936	77	Weighted Average
2,858		57.90% Pervious Area
2,078		42.10% Impervious Area

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

Subcatchment 20S: Sub 20



Summary for Subcatchment 21S: Sub 20

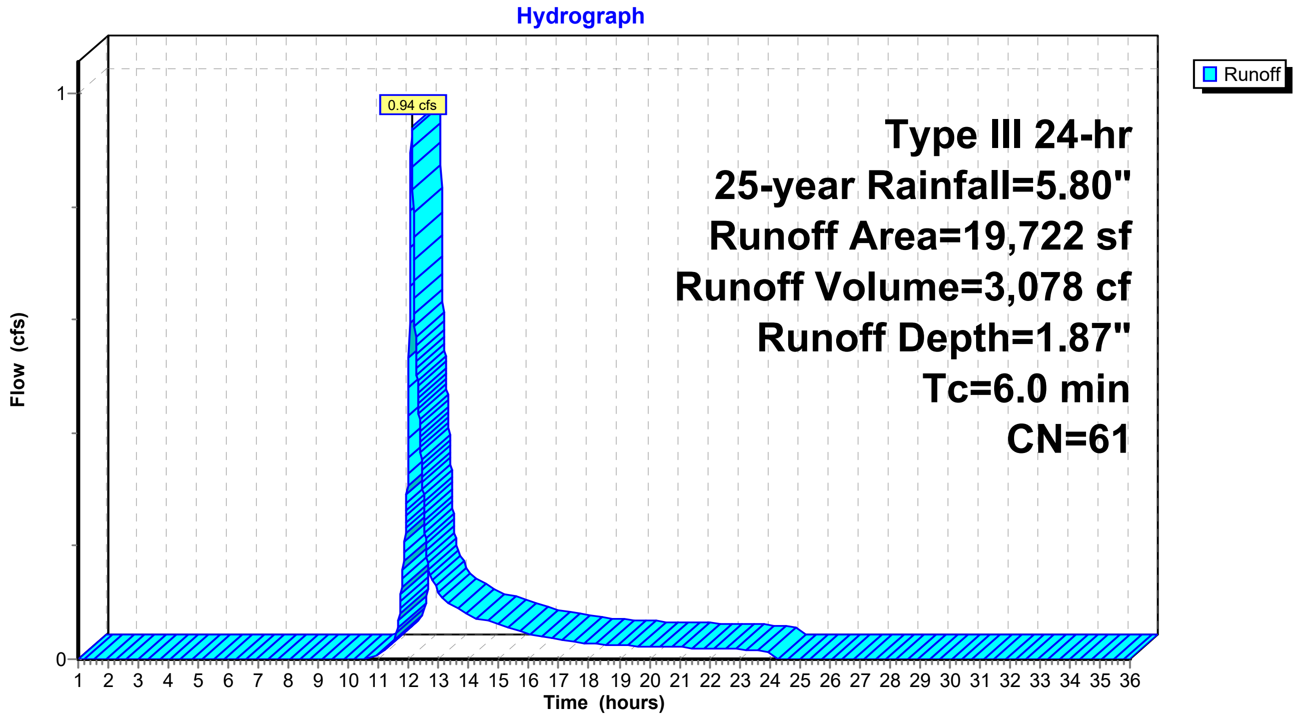
Runoff = 0.94 cfs @ 12.10 hrs, Volume= 3,078 cf, Depth= 1.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
1,681	98	Paved parking, HSG B
6,390	61	>75% Grass cover, Good, HSG B
11,651	55	Woods, Good, HSG B
19,722	61	Weighted Average
18,041		91.48% Pervious Area
1,681		8.52% Impervious Area

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

Subcatchment 21S: Sub 20



Summary for Subcatchment 22S: Sub 20

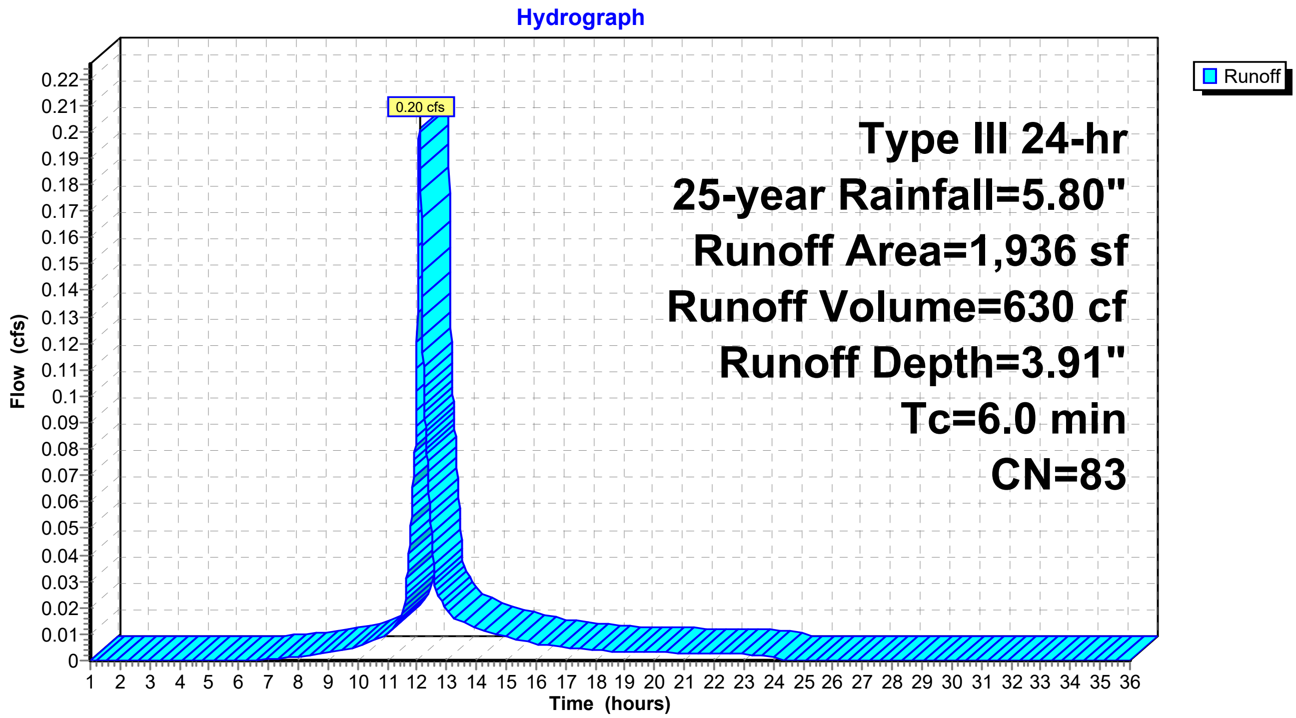
Runoff = 0.20 cfs @ 12.09 hrs, Volume= 630 cf, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
1,161	98	Paved parking, HSG B
775	61	>75% Grass cover, Good, HSG B
1,936	83	Weighted Average
775		40.03% Pervious Area
1,161		59.97% Impervious Area

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

Subcatchment 22S: Sub 20

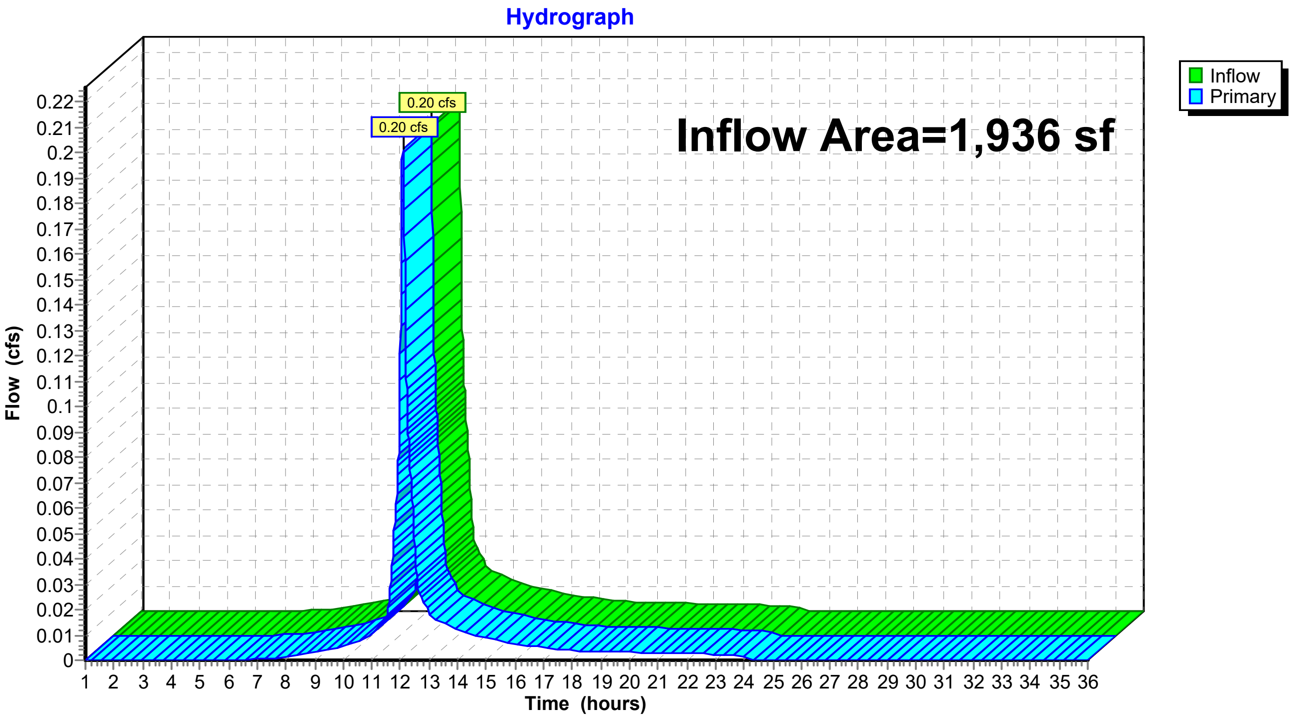


Summary for Link 1L: School Center - Leaching CB

Inflow Area =	1,936 sf,	59.97% Impervious,	Inflow Depth = 3.91"	for 25-year event
Inflow =	0.20 cfs @	12.09 hrs, Volume=	630 cf	
Primary =	0.20 cfs @	12.09 hrs, Volume=	630 cf,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

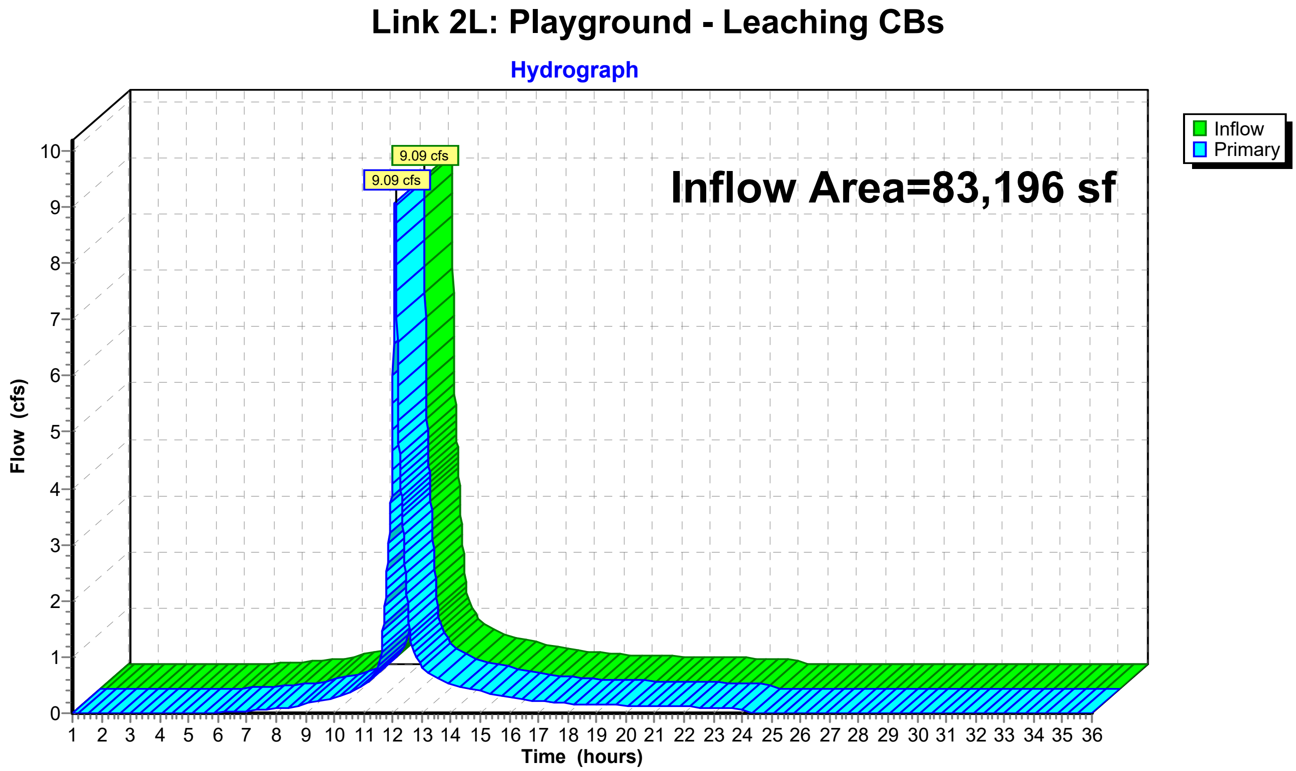
Link 1L: School Center - Leaching CB



Summary for Link 2L: Playground - Leaching CBs

Inflow Area =	83,196 sf,	67.30% Impervious,	Inflow Depth = 4.15"	for 25-year event
Inflow =	9.09 cfs @	12.09 hrs, Volume=	28,791 cf	
Primary =	9.09 cfs @	12.09 hrs, Volume=	28,791 cf,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

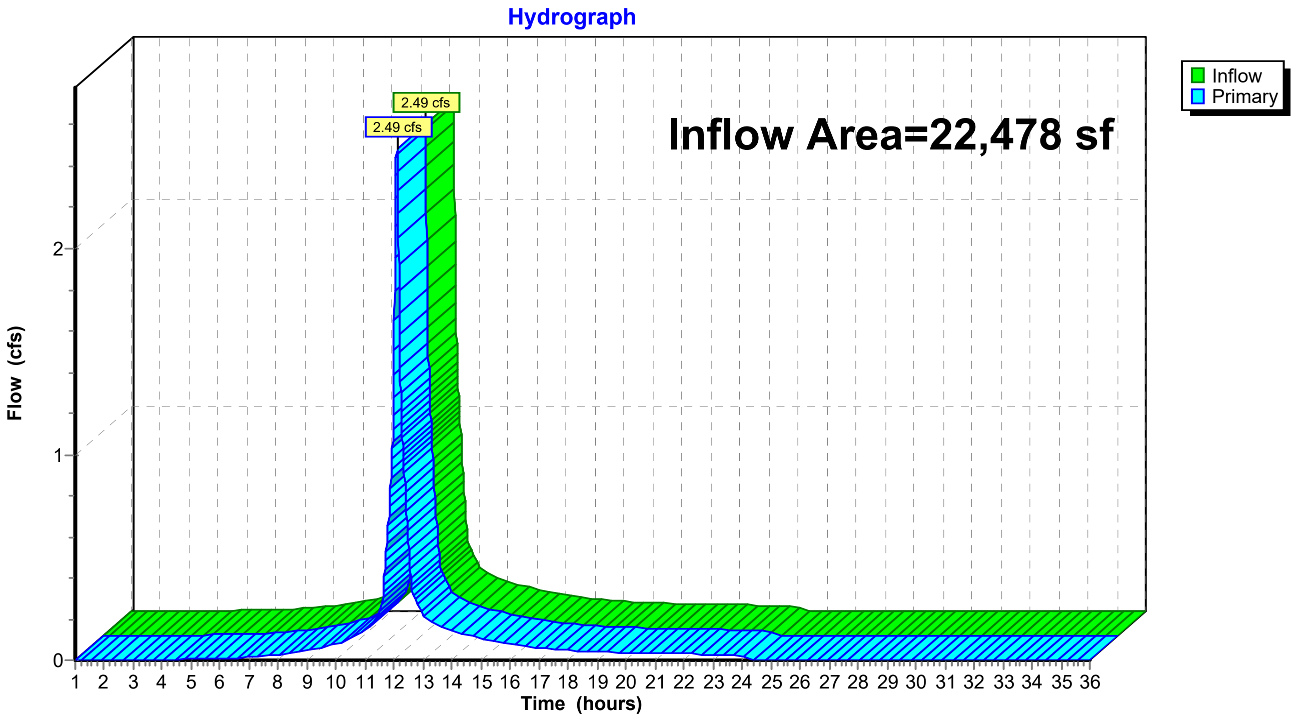


Summary for Link 3L: South Western - Leaching CBs

Inflow Area =	22,478 sf,	71.64% Impervious,	Inflow Depth = 4.26"	for 25-year event
Inflow =	2.49 cfs @	12.09 hrs, Volume=	7,974 cf	
Primary =	2.49 cfs @	12.09 hrs, Volume=	7,974 cf,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 3L: South Western - Leaching CBs

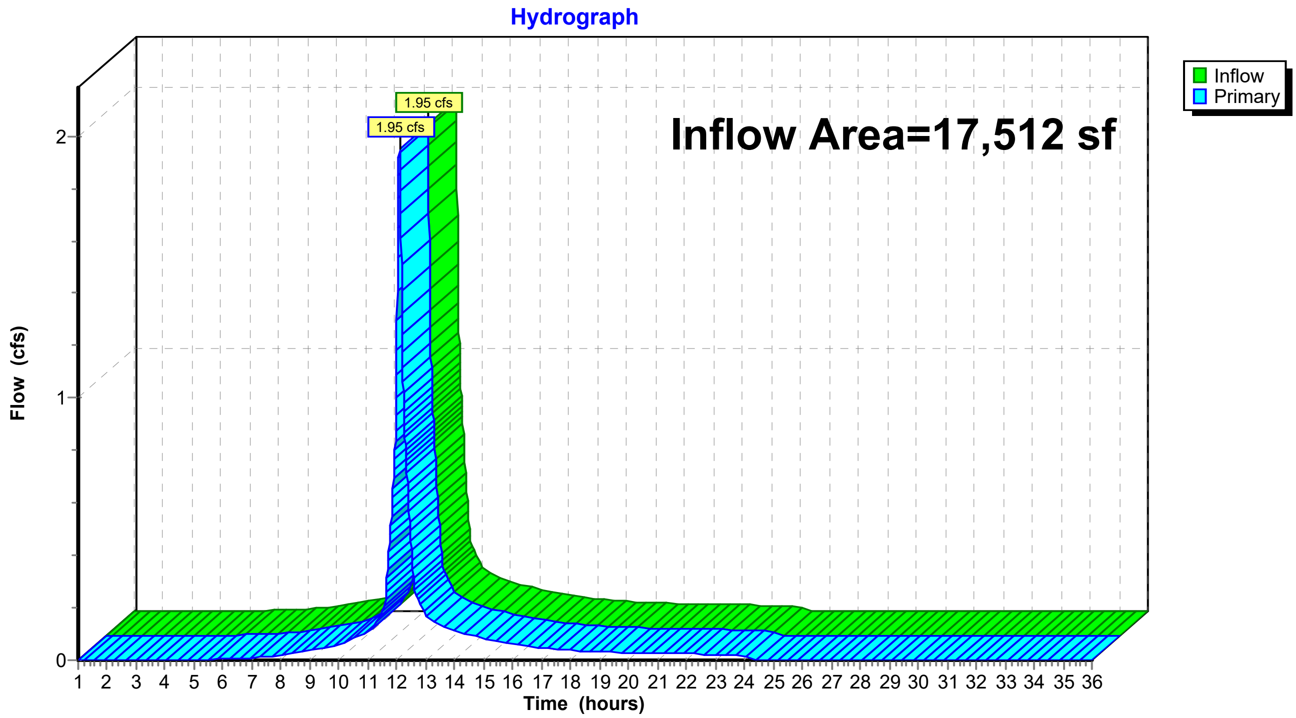


Summary for Link 4L: School Main Entrance - Leaching CBs

Inflow Area = 17,512 sf, 79.83% Impervious, Inflow Depth = 4.24" for 25-year event
Inflow = 1.95 cfs @ 12.09 hrs, Volume= 6,186 cf
Primary = 1.95 cfs @ 12.09 hrs, Volume= 6,186 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 4L: School Main Entrance - Leaching CBs

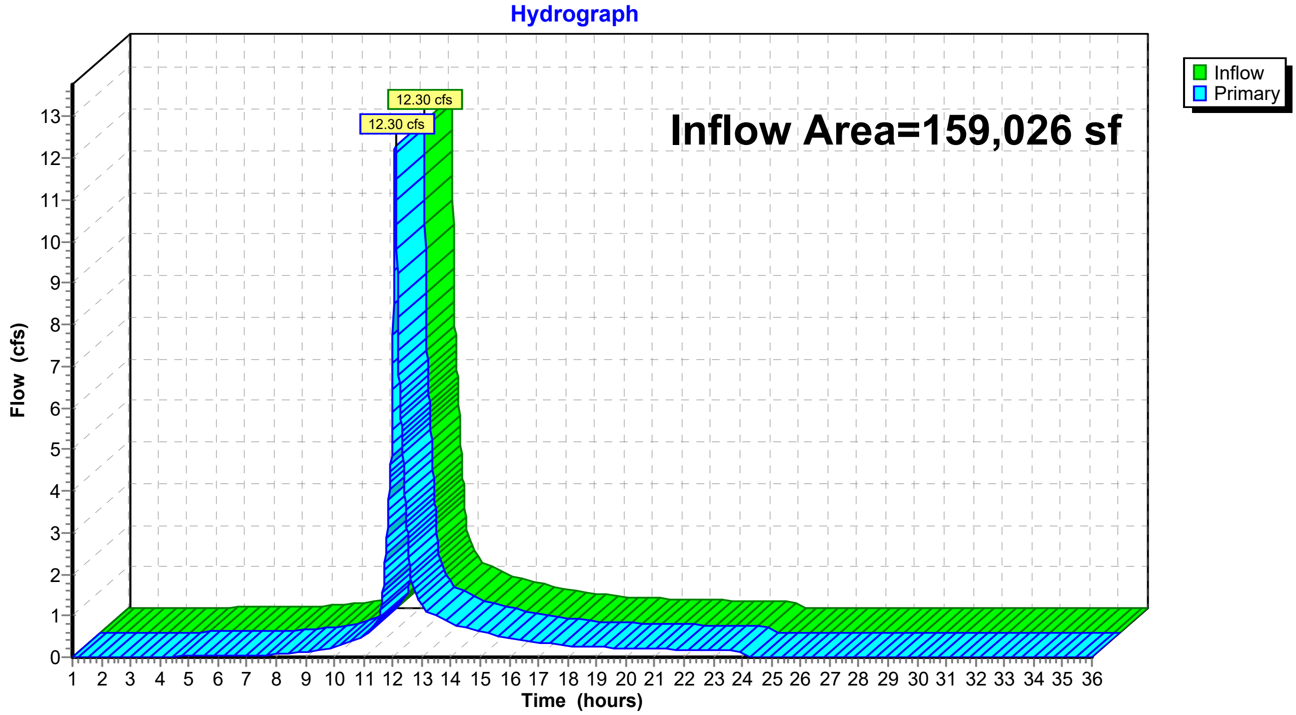


Summary for Link 5L: Main Street Drainage Network

Inflow Area = 159,026 sf, 45.50% Impervious, Inflow Depth > 2.99" for 25-year event
Inflow = 12.30 cfs @ 12.09 hrs, Volume= 39,650 cf
Primary = 12.30 cfs @ 12.09 hrs, Volume= 39,650 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 5L: Main Street Drainage Network



Time span=1.00-36.00 hrs, dt=0.01 hrs, 3501 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Sub 1 Runoff Area=60,718 sf 65.69% Impervious Runoff Depth=5.35"
Tc=6.0 min CN=85 Runoff=8.49 cfs 27,061 cf

Subcatchment2S: Sub 2 Runoff Area=8,333 sf 50.87% Impervious Runoff Depth=4.68"
Tc=6.0 min CN=79 Runoff=1.04 cfs 3,247 cf

Subcatchment3S: Sub 3 Runoff Area=6,851 sf 83.29% Impervious Runoff Depth=6.15"
Tc=6.0 min CN=92 Runoff=1.05 cfs 3,513 cf

Subcatchment4S: Sub 4 Runoff Area=5,579 sf 56.68% Impervious Runoff Depth=5.01"
Tc=6.0 min CN=82 Runoff=0.74 cfs 2,329 cf

Subcatchment5S: Sub 5 Runoff Area=10,216 sf 63.31% Impervious Runoff Depth=4.35"
Tc=6.0 min CN=76 Runoff=1.19 cfs 3,700 cf

Subcatchment6S: Sub 6 Runoff Area=3,953 sf 66.10% Impervious Runoff Depth=4.57"
Tc=6.0 min CN=78 Runoff=0.48 cfs 1,504 cf

Subcatchment7S: Sub 7 Runoff Area=7,525 sf 80.97% Impervious Runoff Depth=5.58"
Tc=6.0 min CN=87 Runoff=1.09 cfs 3,497 cf

Subcatchment8S: Sub 8 Runoff Area=5,425 sf 8.94% Impervious Runoff Depth=1.20"
Tc=6.0 min CN=44 Runoff=0.13 cfs 543 cf

Subcatchment9S: Sub 9 Runoff Area=7,123 sf 95.91% Impervious Runoff Depth=6.62"
Tc=6.0 min CN=96 Runoff=1.13 cfs 3,932 cf

Subcatchment10S: Sub 10 Runoff Area=7,035 sf 17.21% Impervious Runoff Depth=2.38"
Tc=6.0 min CN=57 Runoff=0.43 cfs 1,395 cf

Subcatchment11S: Sub 11 Runoff Area=10,781 sf 36.84% Impervious Runoff Depth=3.39"
Tc=6.0 min CN=67 Runoff=0.98 cfs 3,043 cf

Subcatchment12S: Sub 12 Runoff Area=15,032 sf 40.52% Impervious Runoff Depth=3.39"
Tc=6.0 min CN=67 Runoff=1.37 cfs 4,243 cf

Subcatchment13S: Sub 13 Runoff Area=9,477 sf 83.23% Impervious Runoff Depth=5.69"
Tc=6.0 min CN=88 Runoff=1.39 cfs 4,494 cf

Subcatchment14S: Sub 14 Runoff Area=8,035 sf 75.82% Impervious Runoff Depth=5.23"
Tc=6.0 min CN=84 Runoff=1.10 cfs 3,505 cf

Subcatchment15S: Sub 15 Runoff Area=7,294 sf 84.44% Impervious Runoff Depth=5.81"
Tc=6.0 min CN=89 Runoff=1.08 cfs 3,529 cf

Subcatchment16S: Sub 16 Runoff Area=17,962 sf 66.90% Impervious Runoff Depth=4.57"
Tc=6.0 min CN=78 Runoff=2.20 cfs 6,834 cf

Subcatchment17S: Sub 17 Runoff Area=25,633 sf 39.90% Impervious Runoff Depth=4.24"
Tc=6.0 min CN=75 Runoff=2.92 cfs 9,052 cf

Subcatchment18S: Sub 18 Runoff Area=9,167 sf 100.00% Impervious Runoff Depth>6.86"
Tc=6.0 min CN=98 Runoff=1.47 cfs 5,239 cf

Subcatchment19S: Sub 19 Runoff Area=8,937 sf 2.82% Impervious Runoff Depth=2.77"
Tc=6.0 min CN=61 Runoff=0.65 cfs 2,066 cf

Subcatchment20S: Sub 20 Runoff Area=4,936 sf 42.10% Impervious Runoff Depth=4.46"
Tc=6.0 min CN=77 Runoff=0.59 cfs 1,833 cf

Subcatchment21S: Sub 20 Runoff Area=19,722 sf 8.52% Impervious Runoff Depth=2.77"
Tc=6.0 min CN=61 Runoff=1.44 cfs 4,560 cf

Subcatchment22S: Sub 20 Runoff Area=1,936 sf 59.97% Impervious Runoff Depth=5.12"
Tc=6.0 min CN=83 Runoff=0.26 cfs 826 cf

Link 1L: School Center - Leaching CB Inflow=0.26 cfs 826 cf
Primary=0.26 cfs 826 cf

Link 2L: Playground - Leaching CBs Inflow=11.67 cfs 37,350 cf
Primary=11.67 cfs 37,350 cf

Link 3L: South Western - Leaching CBs Inflow=3.17 cfs 10,289 cf
Primary=3.17 cfs 10,289 cf

Link 4L: School Main Entrance - Leaching CBs Inflow=2.49 cfs 7,999 cf
Primary=2.49 cfs 7,999 cf

Link 5L: Main Street Drainage Network Inflow=16.78 cfs 53,769 cf
Primary=16.78 cfs 53,769 cf

Total Runoff Area = 261,670 sf Runoff Volume = 99,945 cf Average Runoff Depth = 4.58"
45.17% Pervious = 118,192 sf 54.83% Impervious = 143,478 sf

Summary for Subcatchment 1S: Sub 1

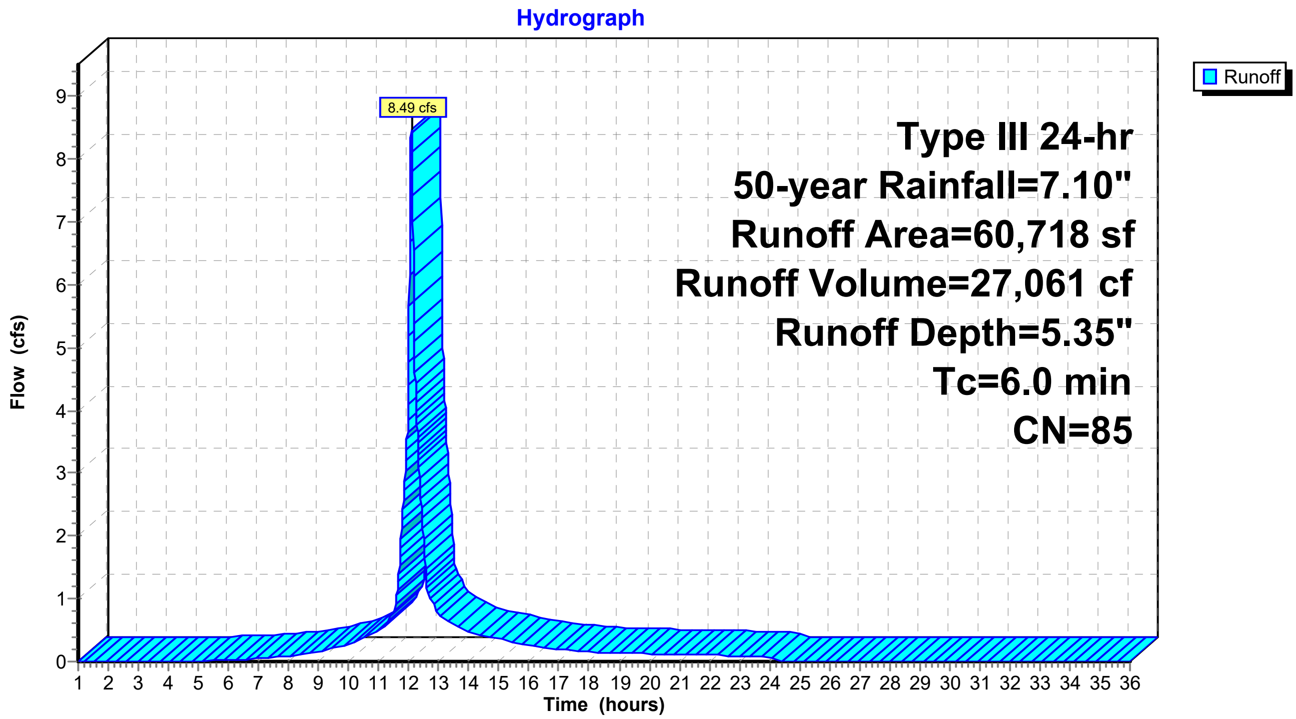
Runoff = 8.49 cfs @ 12.09 hrs, Volume= 27,061 cf, Depth= 5.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
16,123	98	Roofs, HSG B
1,042	55	Woods, Good, HSG B
19,793	61	>75% Grass cover, Good, HSG B
23,760	98	Paved parking, HSG B
60,718	85	Weighted Average
20,835		34.31% Pervious Area
39,883		65.69% Impervious Area

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

Subcatchment 1S: Sub 1



Summary for Subcatchment 2S: Sub 2

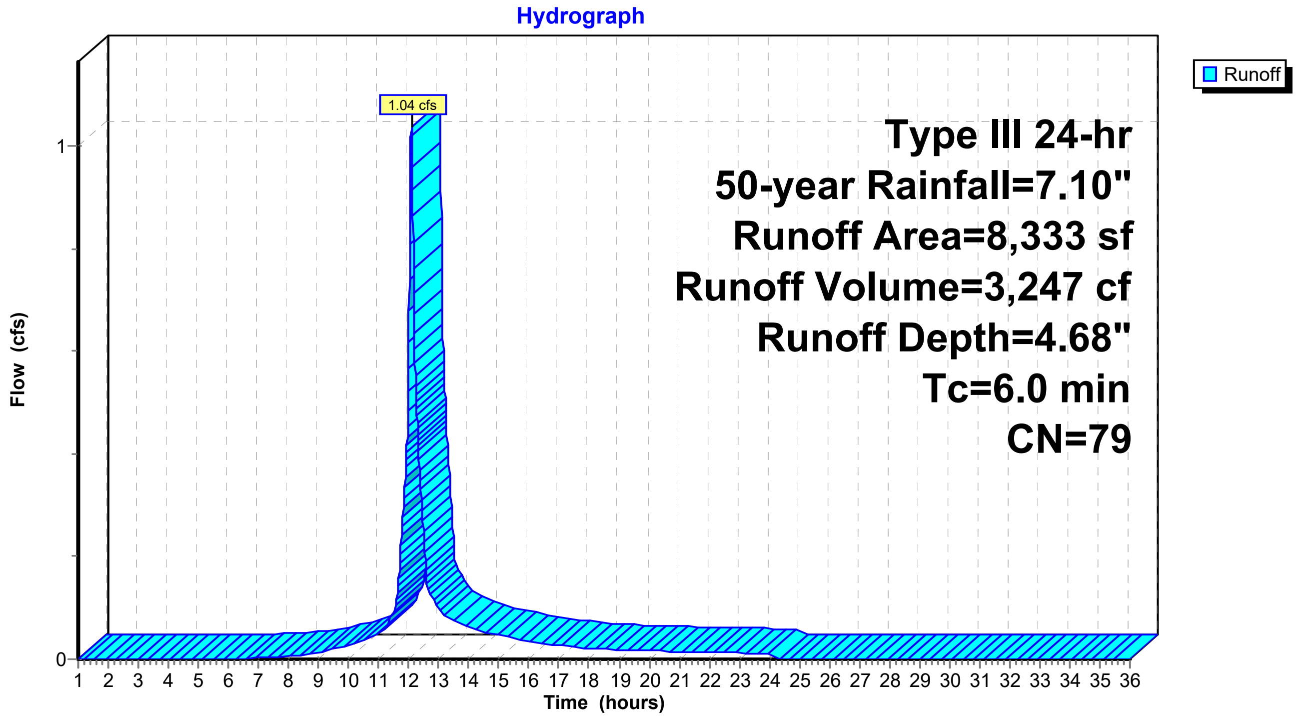
Runoff = 1.04 cfs @ 12.09 hrs, Volume= 3,247 cf, Depth= 4.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
1,073	55	Woods, Good, HSG B
3,021	61	>75% Grass cover, Good, HSG B
4,239	98	Paved parking, HSG B
8,333	79	Weighted Average
4,094		49.13% Pervious Area
4,239		50.87% Impervious Area

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

Subcatchment 2S: Sub 2



Summary for Subcatchment 3S: Sub 3

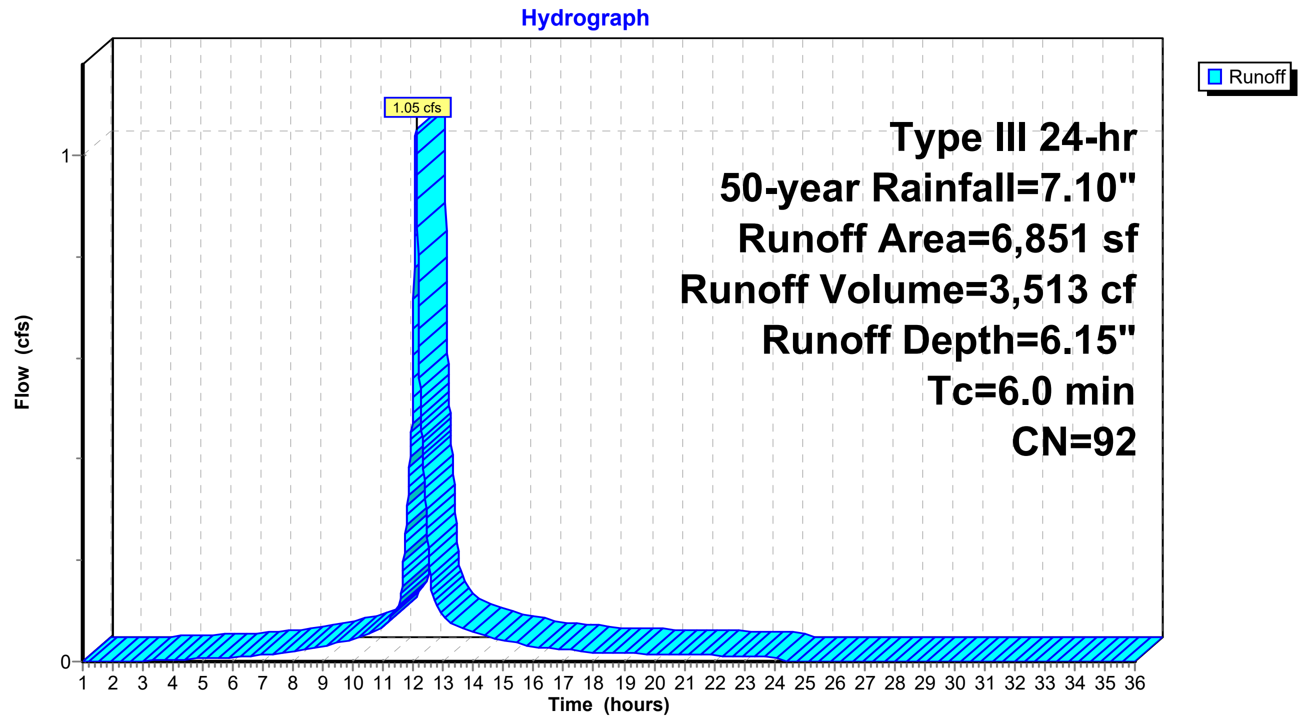
Runoff = 1.05 cfs @ 12.08 hrs, Volume= 3,513 cf, Depth= 6.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
969	98	Unconnected roofs, HSG B
1,145	61	>75% Grass cover, Good, HSG B
4,737	98	Paved parking, HSG B
6,851	92	Weighted Average
1,145		16.71% Pervious Area
5,706		83.29% Impervious Area
969		16.98% Unconnected

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

Subcatchment 3S: Sub 3



Summary for Subcatchment 4S: Sub 4

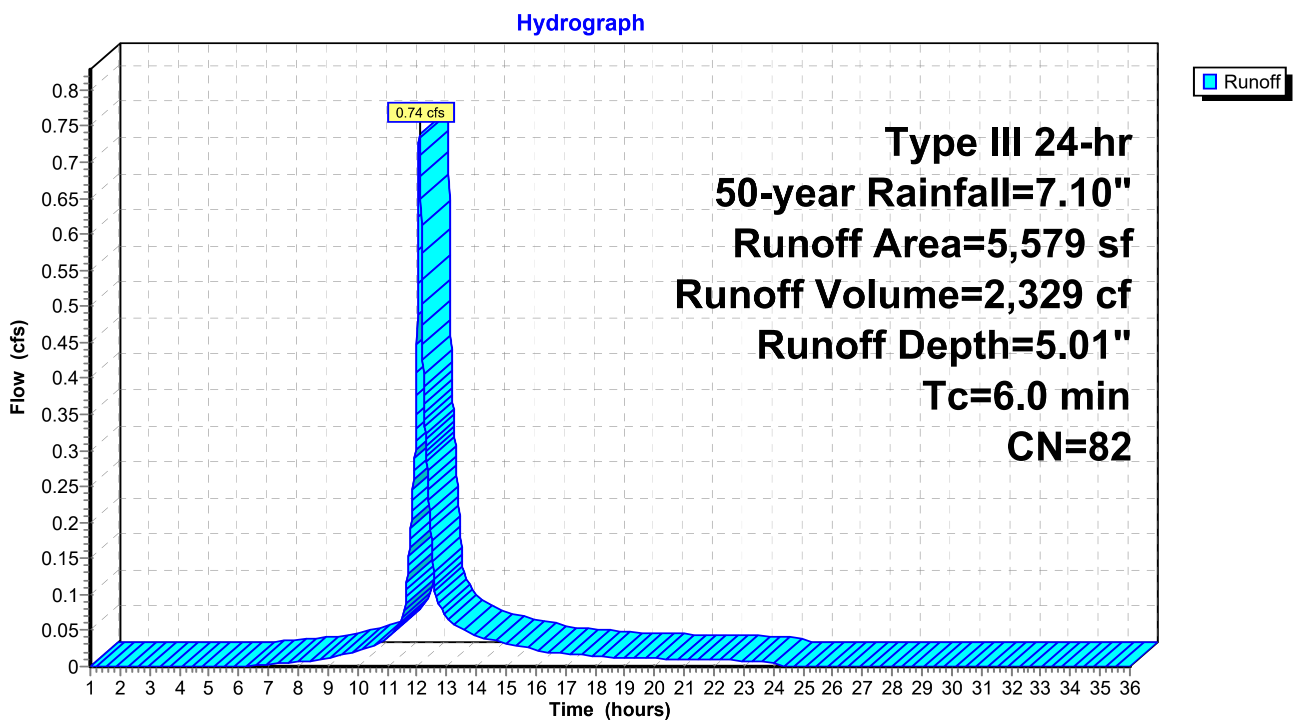
Runoff = 0.74 cfs @ 12.09 hrs, Volume= 2,329 cf, Depth= 5.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
105	98	Unconnected roofs, HSG B
2,417	61	>75% Grass cover, Good, HSG B
3,057	98	Paved parking, HSG B
5,579	82	Weighted Average
2,417		43.32% Pervious Area
3,162		56.68% Impervious Area
105		3.32% Unconnected

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

Subcatchment 4S: Sub 4



Summary for Subcatchment 5S: Sub 5

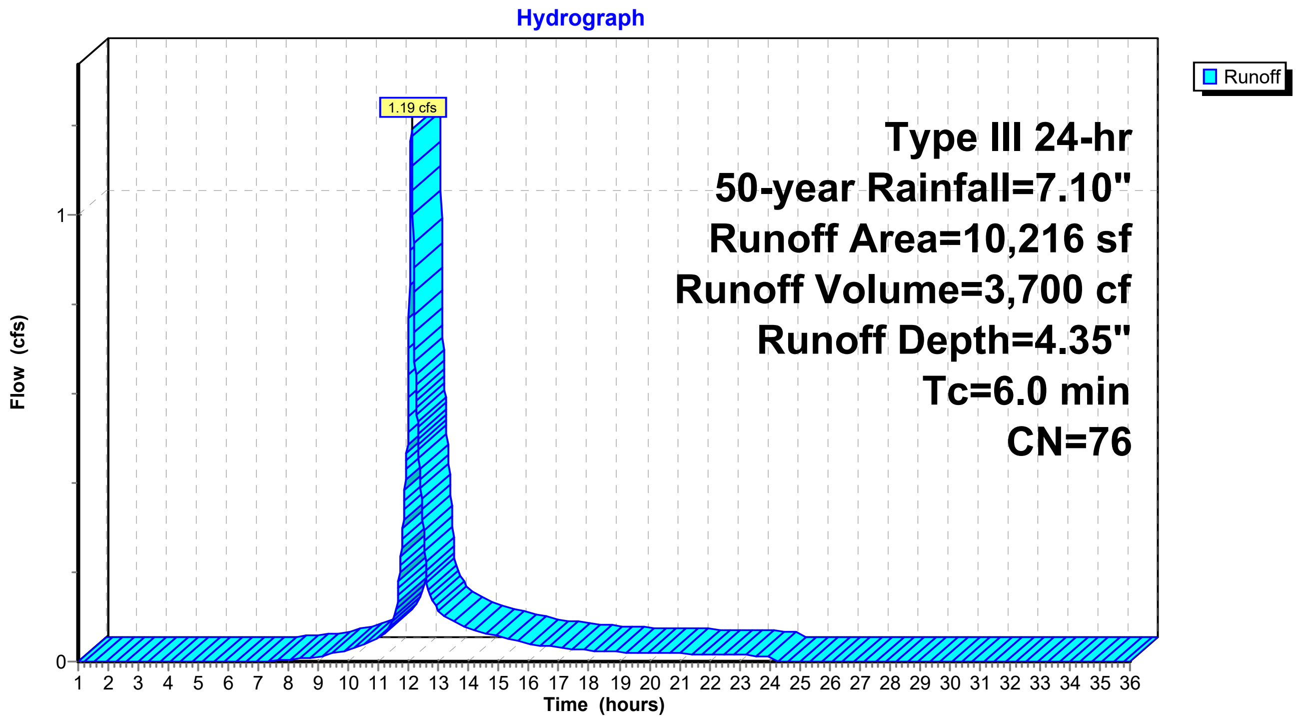
Runoff = 1.19 cfs @ 12.09 hrs, Volume= 3,700 cf, Depth= 4.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
963	98	Unconnected roofs, HSG A
3,748	39	>75% Grass cover, Good, HSG A
5,505	98	Paved parking, HSG A
10,216	76	Weighted Average
3,748		36.69% Pervious Area
6,468		63.31% Impervious Area
963		14.89% Unconnected

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

Subcatchment 5S: Sub 5



Summary for Subcatchment 6S: Sub 6

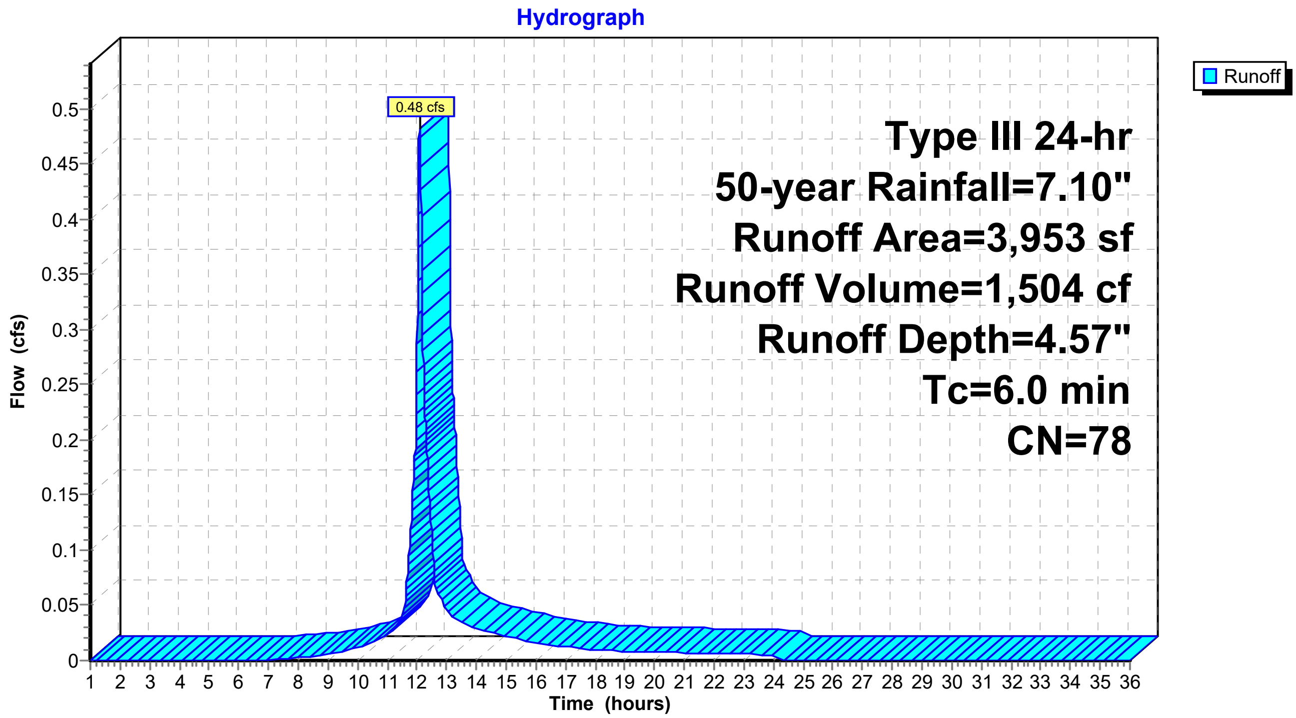
Runoff = 0.48 cfs @ 12.09 hrs, Volume= 1,504 cf, Depth= 4.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
1,340	39	>75% Grass cover, Good, HSG A
2,613	98	Paved parking, HSG A
3,953	78	Weighted Average
1,340		33.90% Pervious Area
2,613		66.10% Impervious Area

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

Subcatchment 6S: Sub 6



Summary for Subcatchment 7S: Sub 7

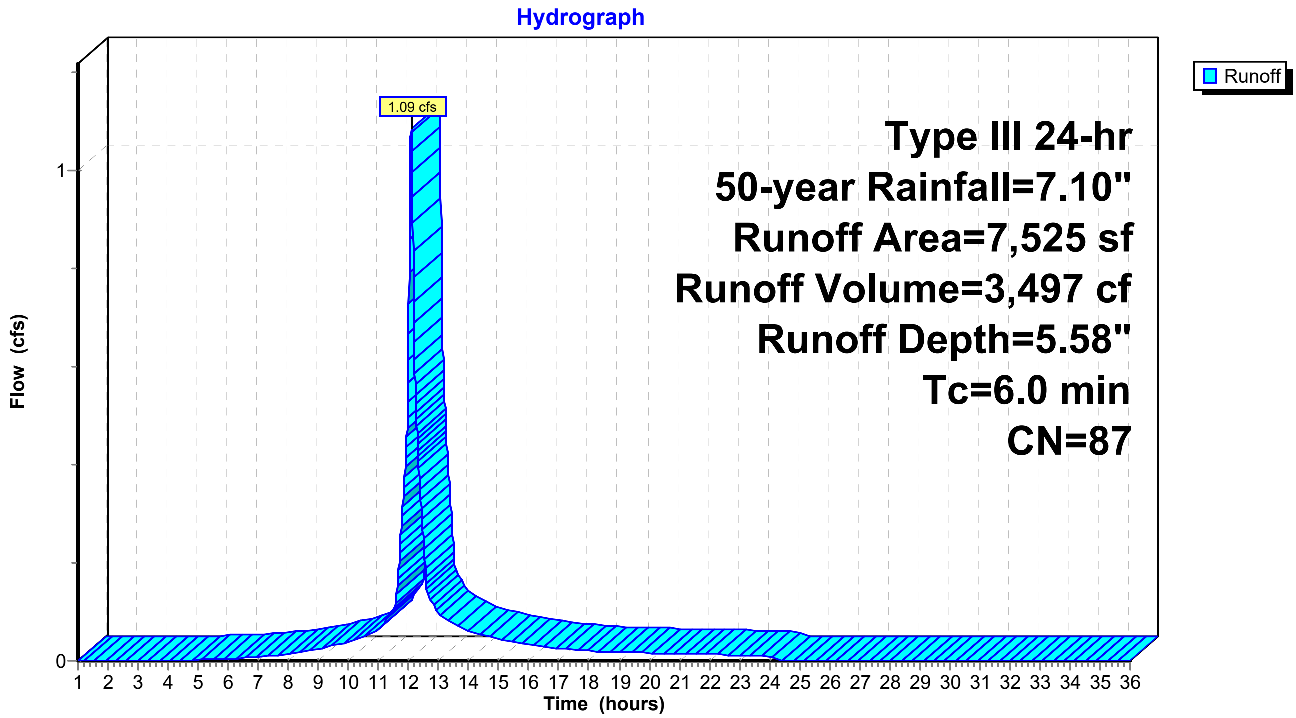
Runoff = 1.09 cfs @ 12.08 hrs, Volume= 3,497 cf, Depth= 5.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
1,432	39	>75% Grass cover, Good, HSG A
6,093	98	Paved parking, HSG A
7,525	87	Weighted Average
1,432		19.03% Pervious Area
6,093		80.97% Impervious Area

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

Subcatchment 7S: Sub 7



Summary for Subcatchment 8S: Sub 8

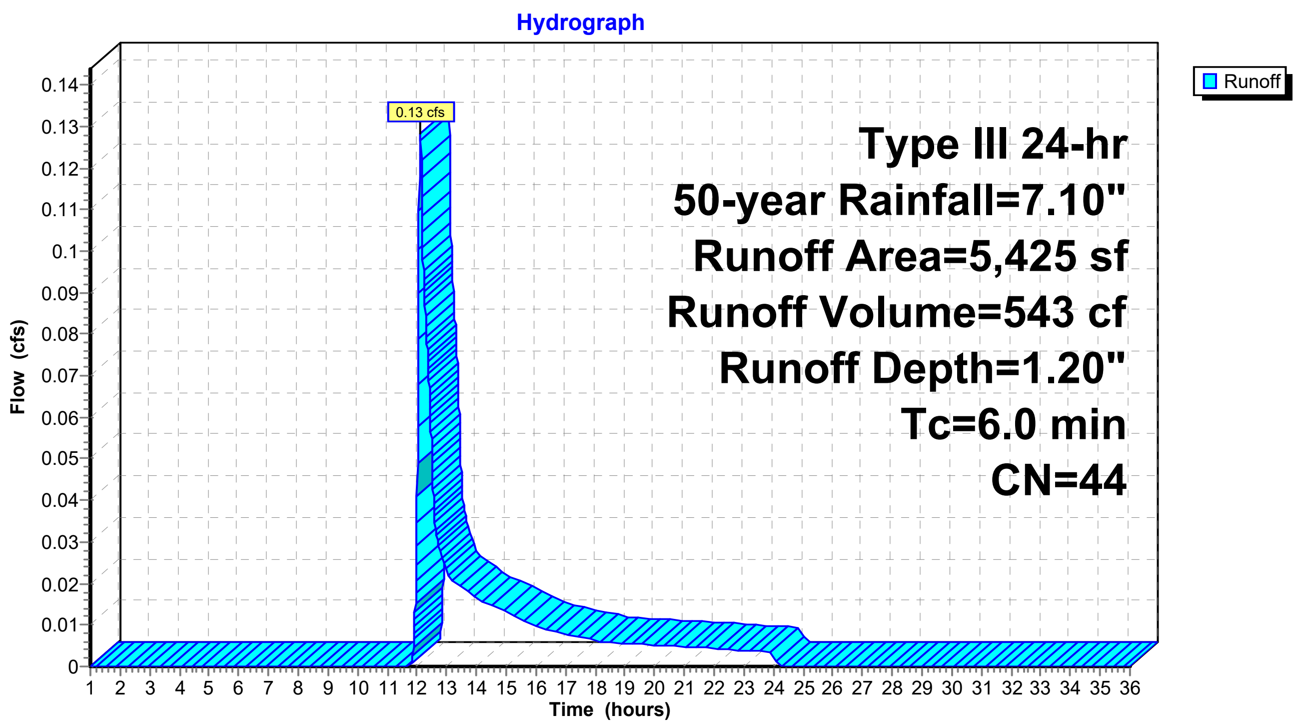
Runoff = 0.13 cfs @ 12.11 hrs, Volume= 543 cf, Depth= 1.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
4,940	39	>75% Grass cover, Good, HSG A
485	98	Paved parking, HSG A
5,425	44	Weighted Average
4,940		91.06% Pervious Area
485		8.94% Impervious Area

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

Subcatchment 8S: Sub 8



Summary for Subcatchment 9S: Sub 9

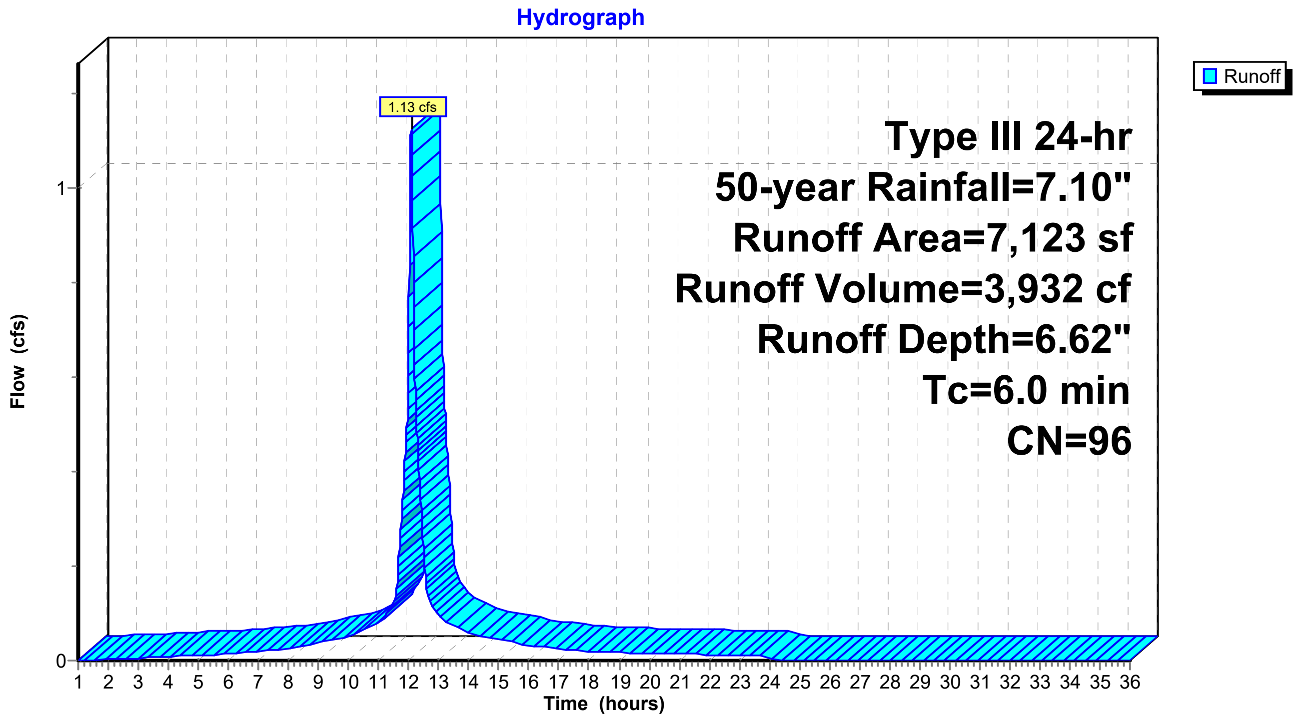
Runoff = 1.13 cfs @ 12.08 hrs, Volume= 3,932 cf, Depth= 6.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
291	39	>75% Grass cover, Good, HSG A
6,832	98	Paved parking, HSG A
7,123	96	Weighted Average
291		4.09% Pervious Area
6,832		95.91% Impervious Area

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

Subcatchment 9S: Sub 9



Summary for Subcatchment 10S: Sub 10

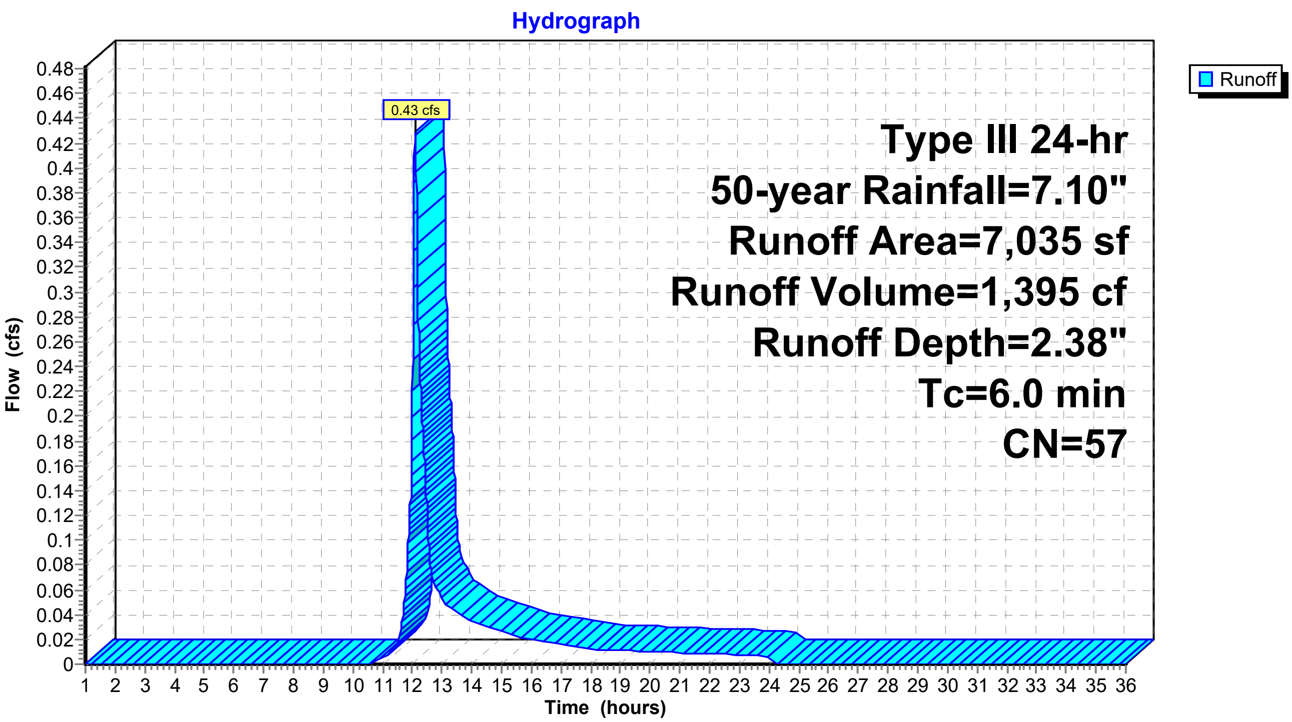
Runoff = 0.43 cfs @ 12.10 hrs, Volume= 1,395 cf, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
2,302	39	>75% Grass cover, Good, HSG A
1,211	98	Paved parking, HSG A
3,522	55	Woods, Good, HSG B
7,035	57	Weighted Average
5,824		82.79% Pervious Area
1,211		17.21% Impervious Area

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

Subcatchment 10S: Sub 10



Summary for Subcatchment 11S: Sub 11

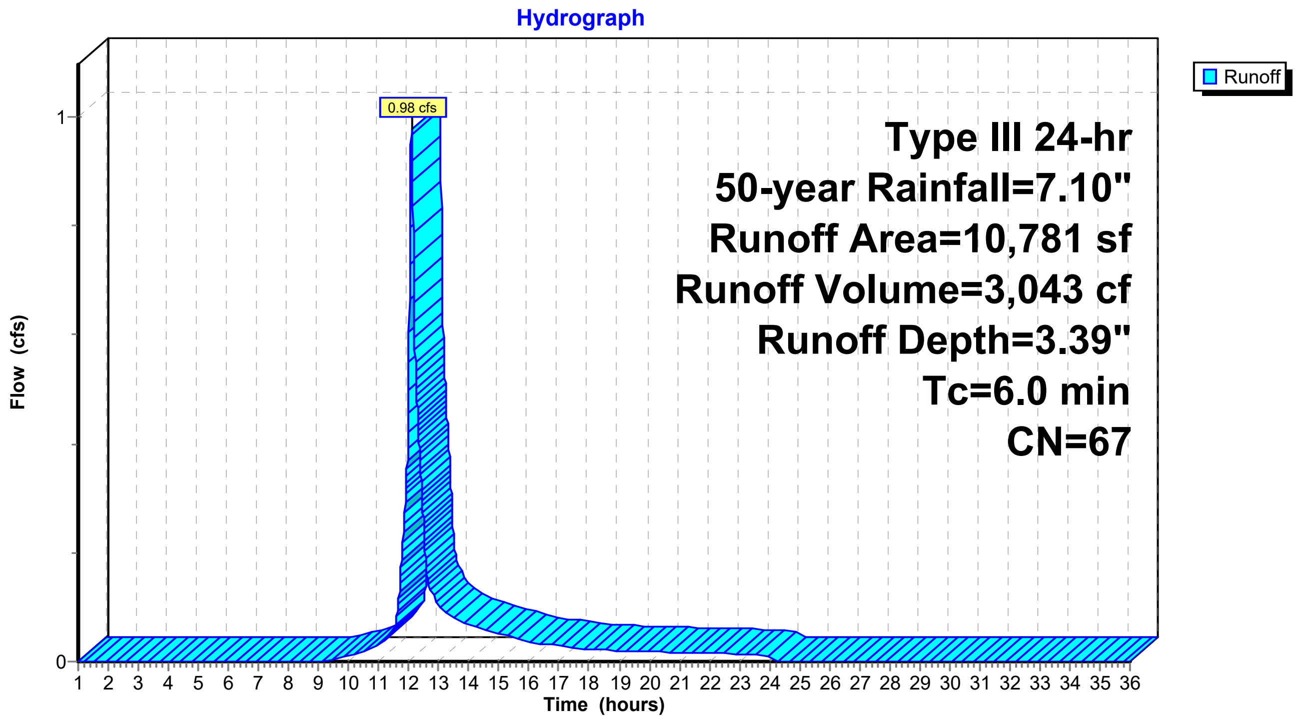
Runoff = 0.98 cfs @ 12.09 hrs, Volume= 3,043 cf, Depth= 3.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
2,901	39	>75% Grass cover, Good, HSG A
3,653	98	Paved parking, HSG A
319	98	Roofs, HSG B
3,908	55	Woods, Good, HSG B
10,781	67	Weighted Average
6,809		63.16% Pervious Area
3,972		36.84% Impervious Area

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

Subcatchment 11S: Sub 11



Summary for Subcatchment 12S: Sub 12

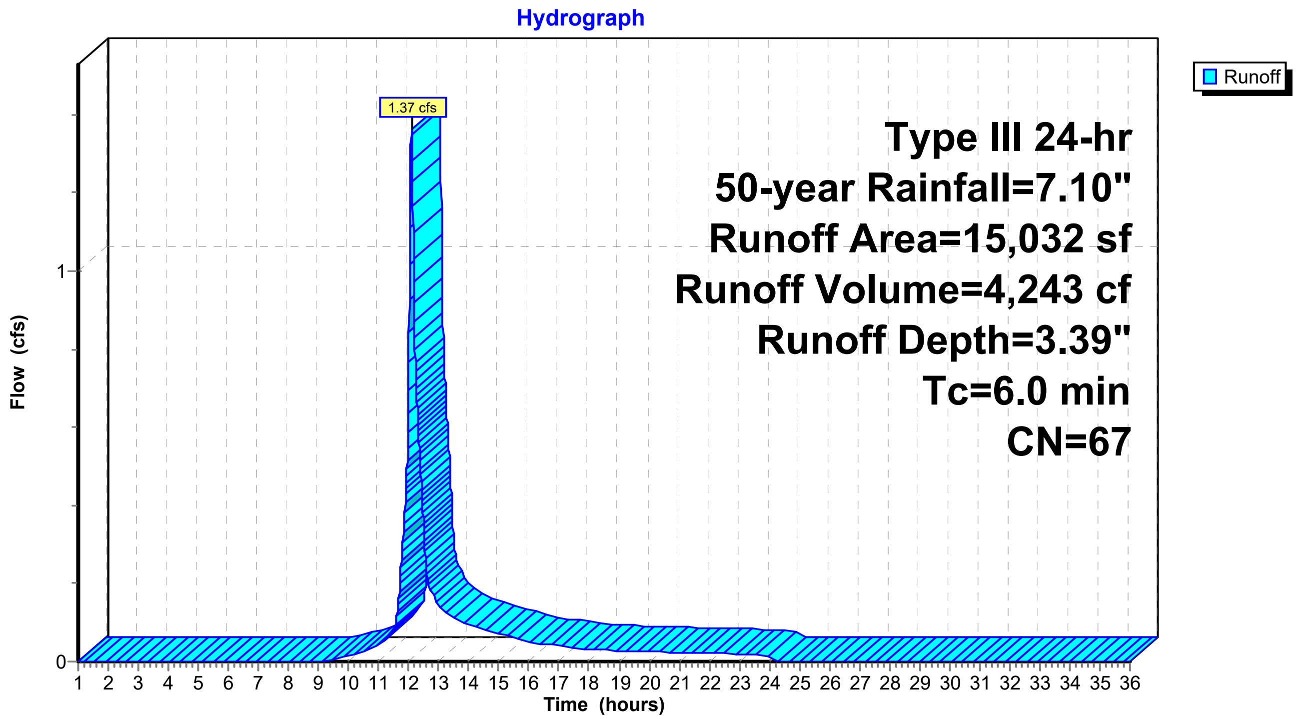
Runoff = 1.37 cfs @ 12.09 hrs, Volume= 4,243 cf, Depth= 3.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
5,033	39	>75% Grass cover, Good, HSG A
2,740	98	Paved parking, HSG A
3,351	98	Roofs, HSG B
3,908	55	Woods, Good, HSG B
15,032	67	Weighted Average
8,941		59.48% Pervious Area
6,091		40.52% Impervious Area

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

Subcatchment 12S: Sub 12



Summary for Subcatchment 13S: Sub 13

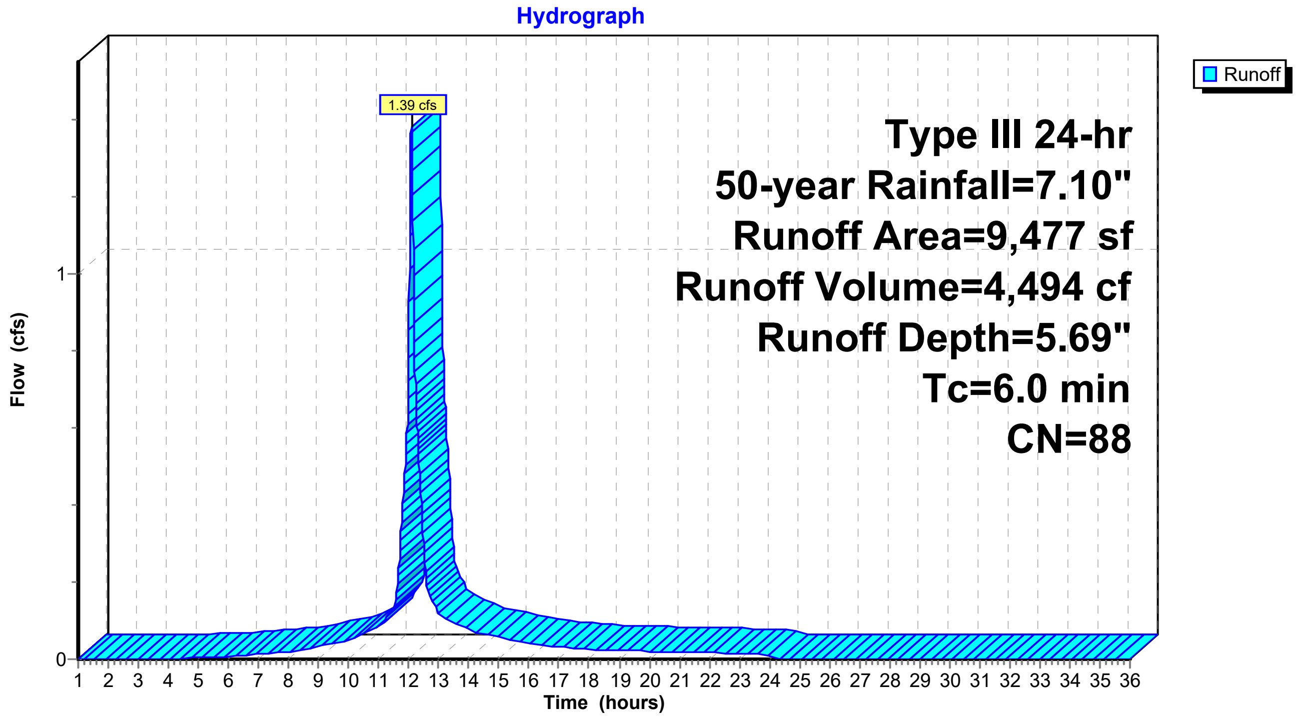
Runoff = 1.39 cfs @ 12.08 hrs, Volume= 4,494 cf, Depth= 5.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
1,589	39	>75% Grass cover, Good, HSG A
4,866	98	Paved parking, HSG A
3,022	98	Roofs, HSG B
9,477	88	Weighted Average
1,589		16.77% Pervious Area
7,888		83.23% Impervious Area

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

Subcatchment 13S: Sub 13



Summary for Subcatchment 14S: Sub 14

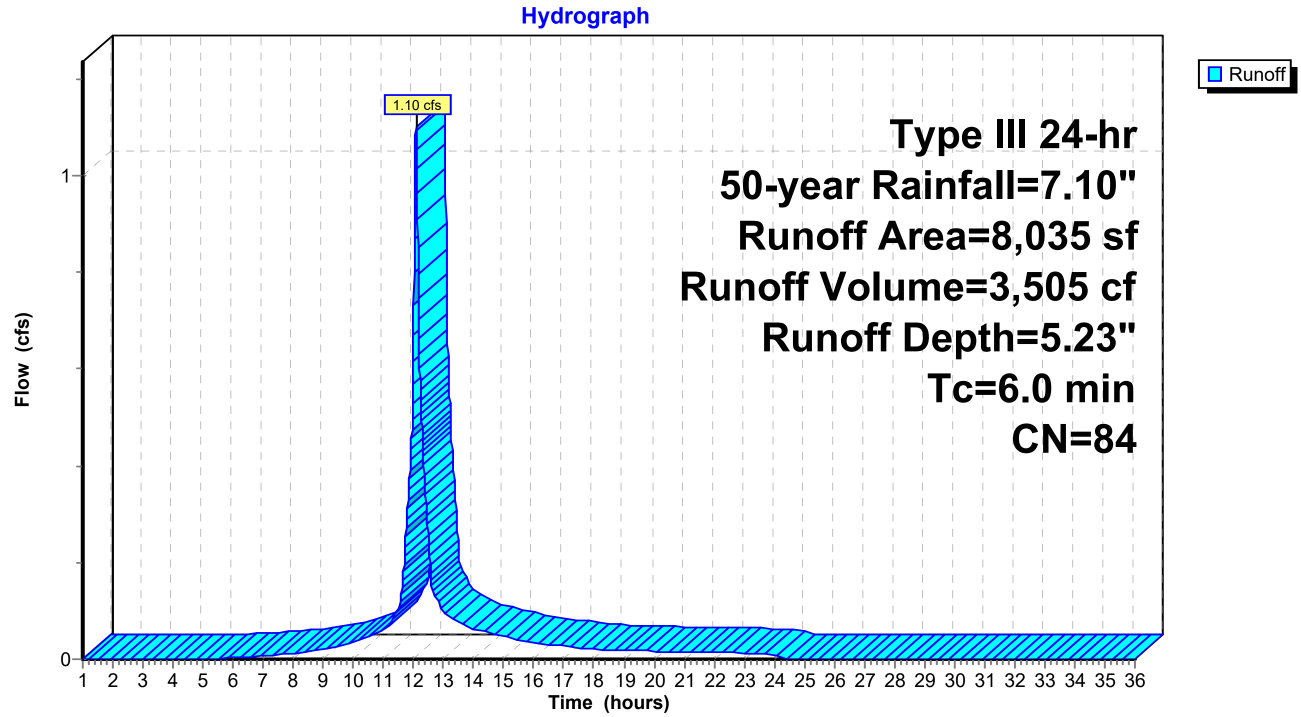
Runoff = 1.10 cfs @ 12.09 hrs, Volume= 3,505 cf, Depth= 5.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
1,943	39	>75% Grass cover, Good, HSG A
2,485	98	Paved parking, HSG A
3,607	98	Roofs, HSG A
8,035	84	Weighted Average
1,943		24.18% Pervious Area
6,092		75.82% Impervious Area

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

Subcatchment 14S: Sub 14



Summary for Subcatchment 15S: Sub 15

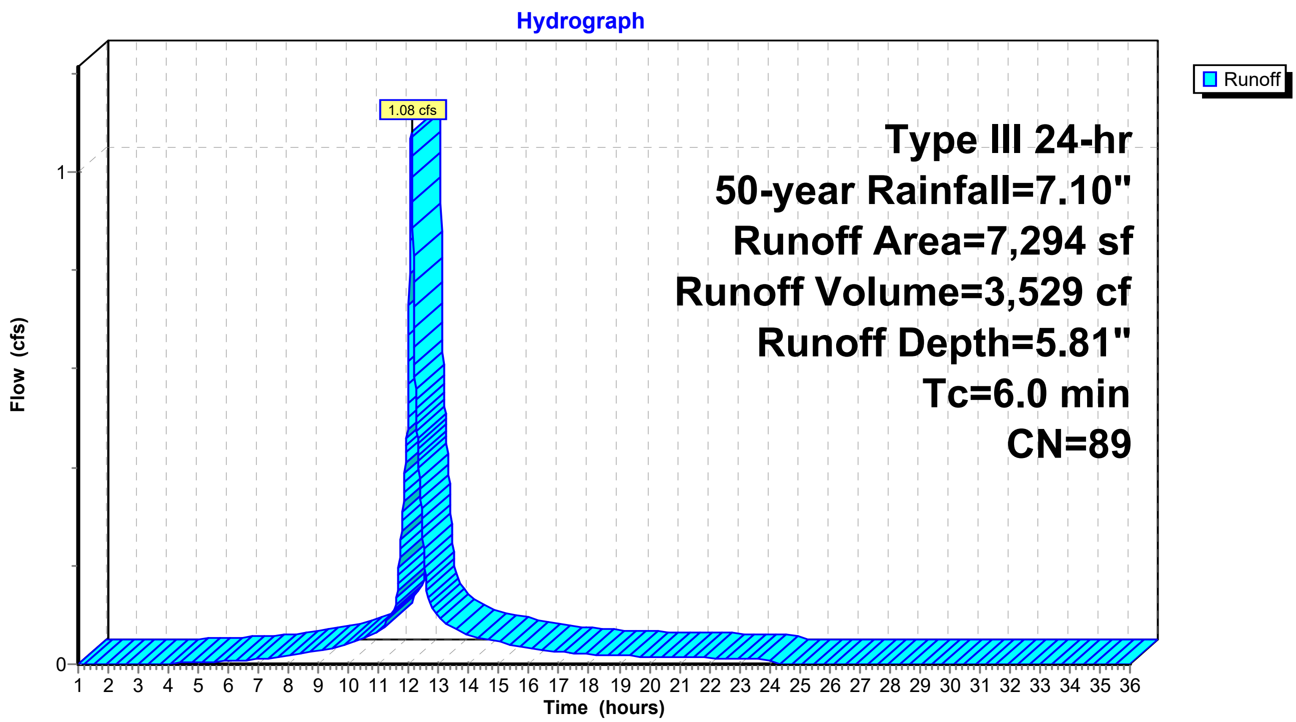
Runoff = 1.08 cfs @ 12.08 hrs, Volume= 3,529 cf, Depth= 5.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
1,135	39	>75% Grass cover, Good, HSG A
1,002	98	Paved parking, HSG A
5,157	98	Roofs, HSG A
7,294	89	Weighted Average
1,135		15.56% Pervious Area
6,159		84.44% Impervious Area

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

Subcatchment 15S: Sub 15



Summary for Subcatchment 16S: Sub 16

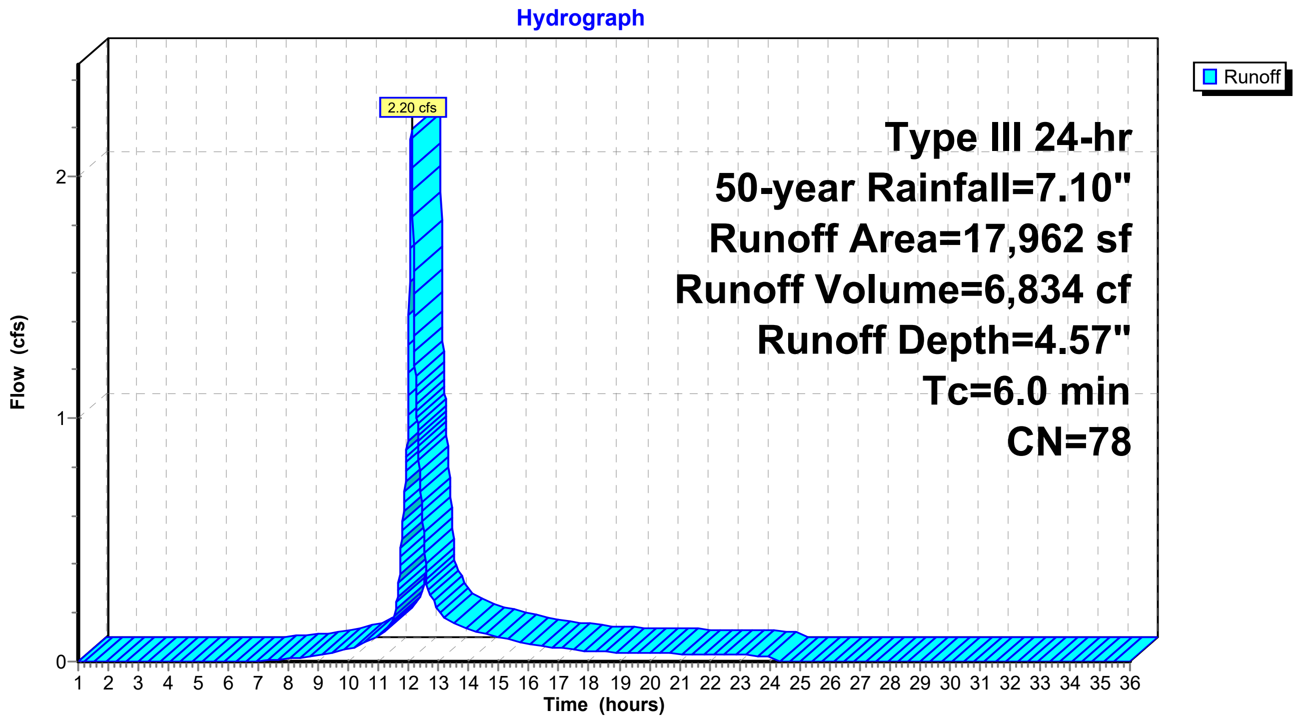
Runoff = 2.20 cfs @ 12.09 hrs, Volume= 6,834 cf, Depth= 4.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
4,235	39	>75% Grass cover, Good, HSG A
4,196	98	Paved parking, HSG A
7,821	98	Roofs, HSG A
1,710	30	Woods, Good, HSG A
17,962	78	Weighted Average
5,945		33.10% Pervious Area
12,017		66.90% Impervious Area

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

Subcatchment 16S: Sub 16



Summary for Subcatchment 17S: Sub 17

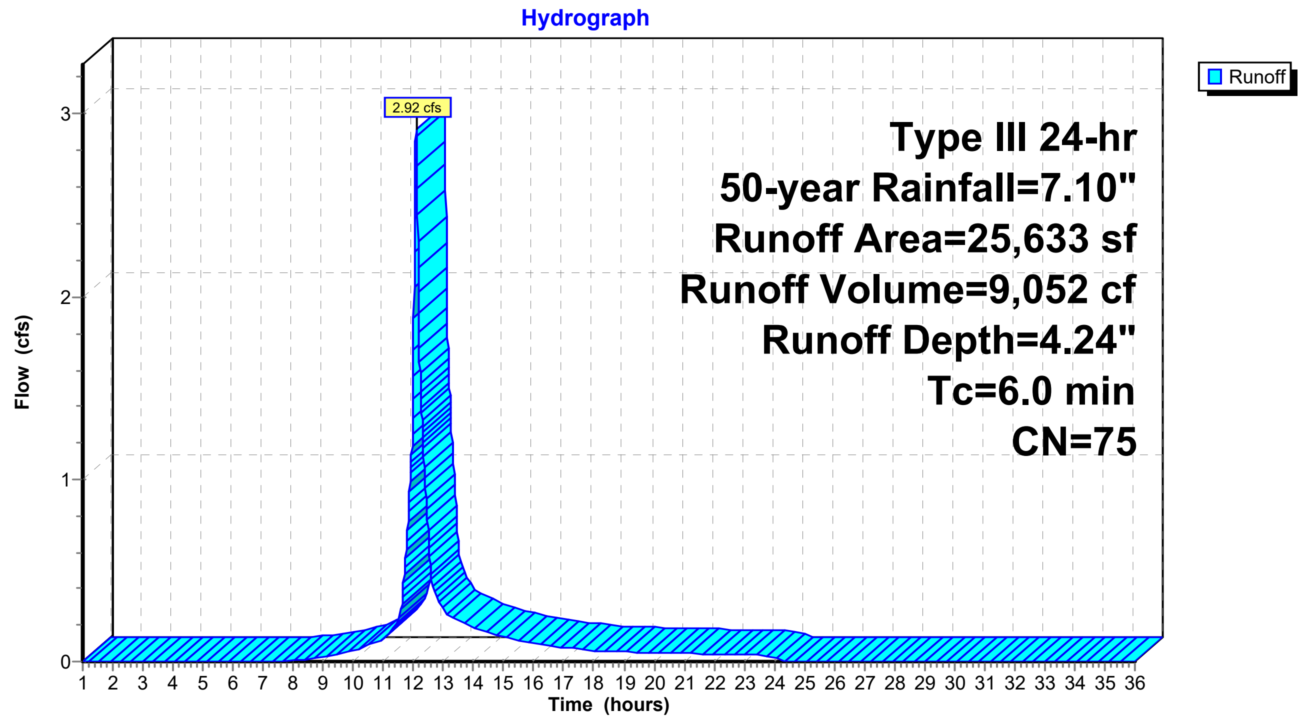
Runoff = 2.92 cfs @ 12.09 hrs, Volume= 9,052 cf, Depth= 4.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
10,866	61	>75% Grass cover, Good, HSG B
6,040	98	Paved parking, HSG B
4,188	98	Roofs, HSG B
4,539	55	Woods, Good, HSG B
25,633	75	Weighted Average
15,405		60.10% Pervious Area
10,228		39.90% Impervious Area

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

Subcatchment 17S: Sub 17



Summary for Subcatchment 18S: Sub 18

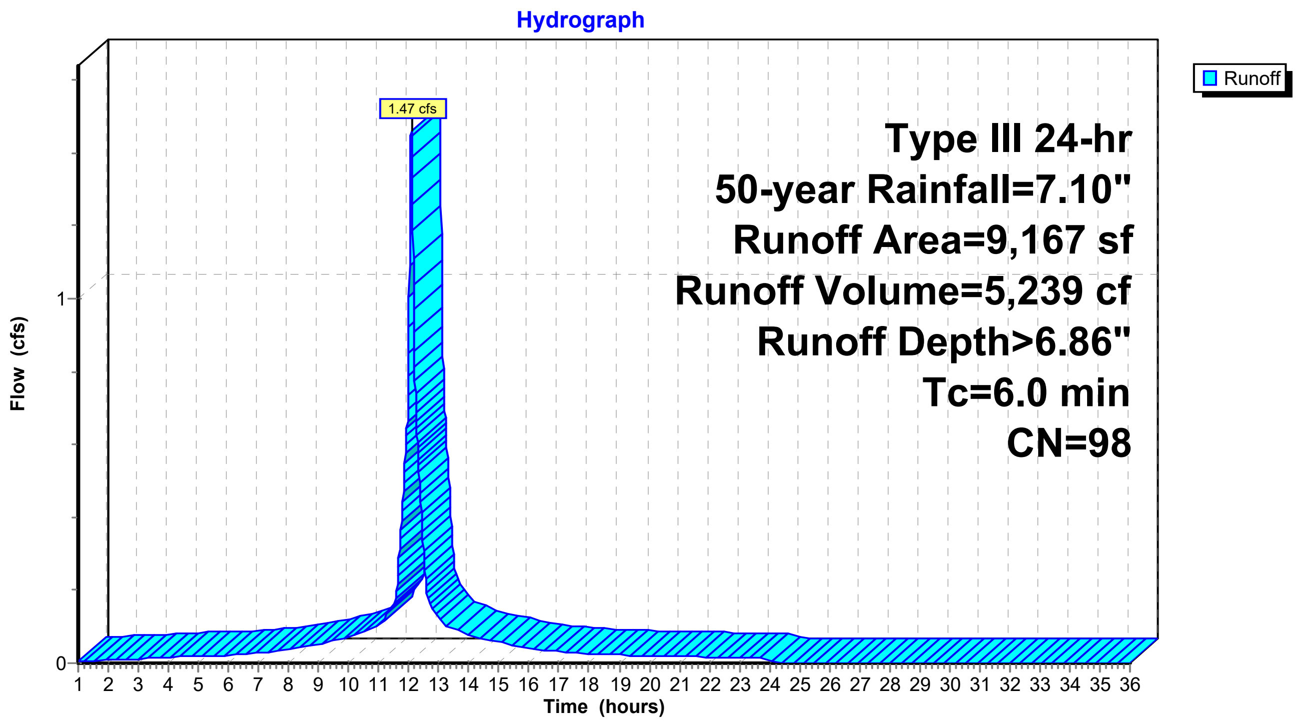
Runoff = 1.47 cfs @ 12.08 hrs, Volume= 5,239 cf, Depth> 6.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
8,851	98	Paved parking, HSG B
316	98	Roofs, HSG B
9,167	98	Weighted Average
9,167		100.00% Impervious Area

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

Subcatchment 18S: Sub 18



Summary for Subcatchment 19S: Sub 19

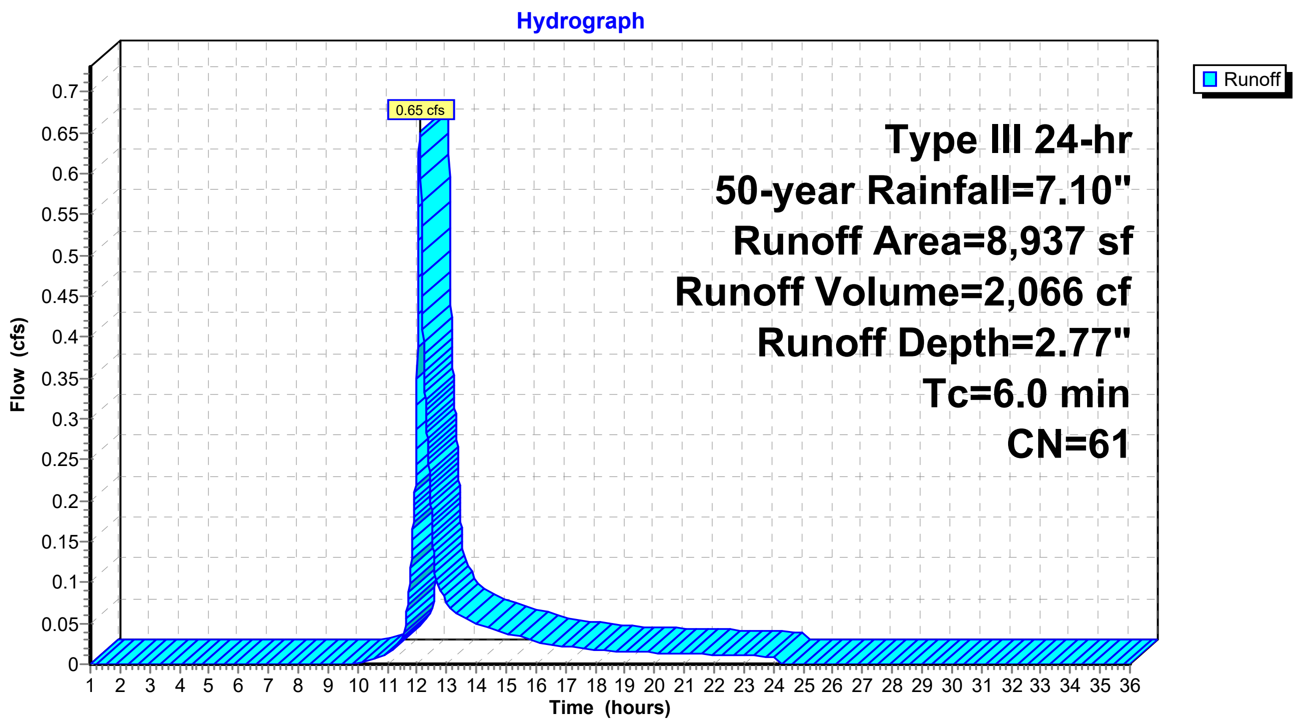
Runoff = 0.65 cfs @ 12.09 hrs, Volume= 2,066 cf, Depth= 2.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
7,246	61	>75% Grass cover, Good, HSG B
252	98	Roofs, HSG B
1,439	55	Woods, Good, HSG B
8,937	61	Weighted Average
8,685		97.18% Pervious Area
252		2.82% Impervious Area

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

Subcatchment 19S: Sub 19



Summary for Subcatchment 20S: Sub 20

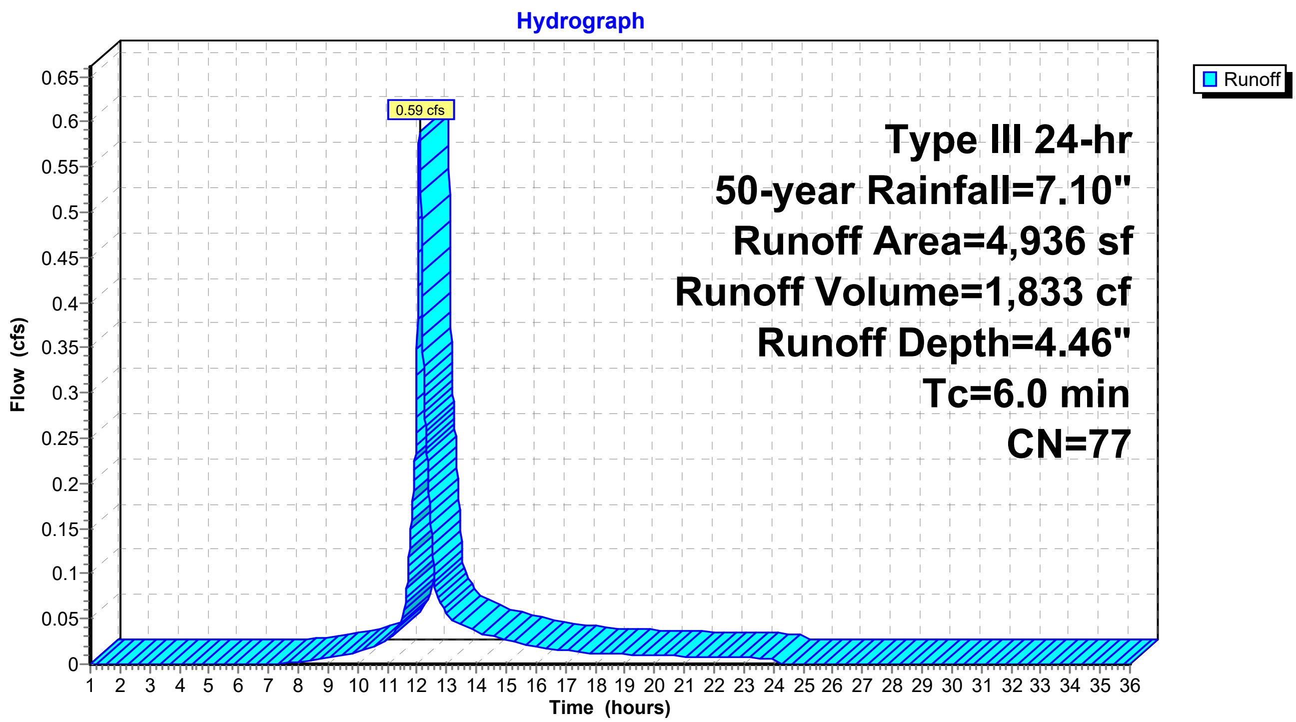
Runoff = 0.59 cfs @ 12.09 hrs, Volume= 1,833 cf, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
1,415	98	Paved parking, HSG B
2,858	61	>75% Grass cover, Good, HSG B
663	98	Roofs, HSG B
4,936	77	Weighted Average
2,858		57.90% Pervious Area
2,078		42.10% Impervious Area

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

Subcatchment 20S: Sub 20



Summary for Subcatchment 21S: Sub 20

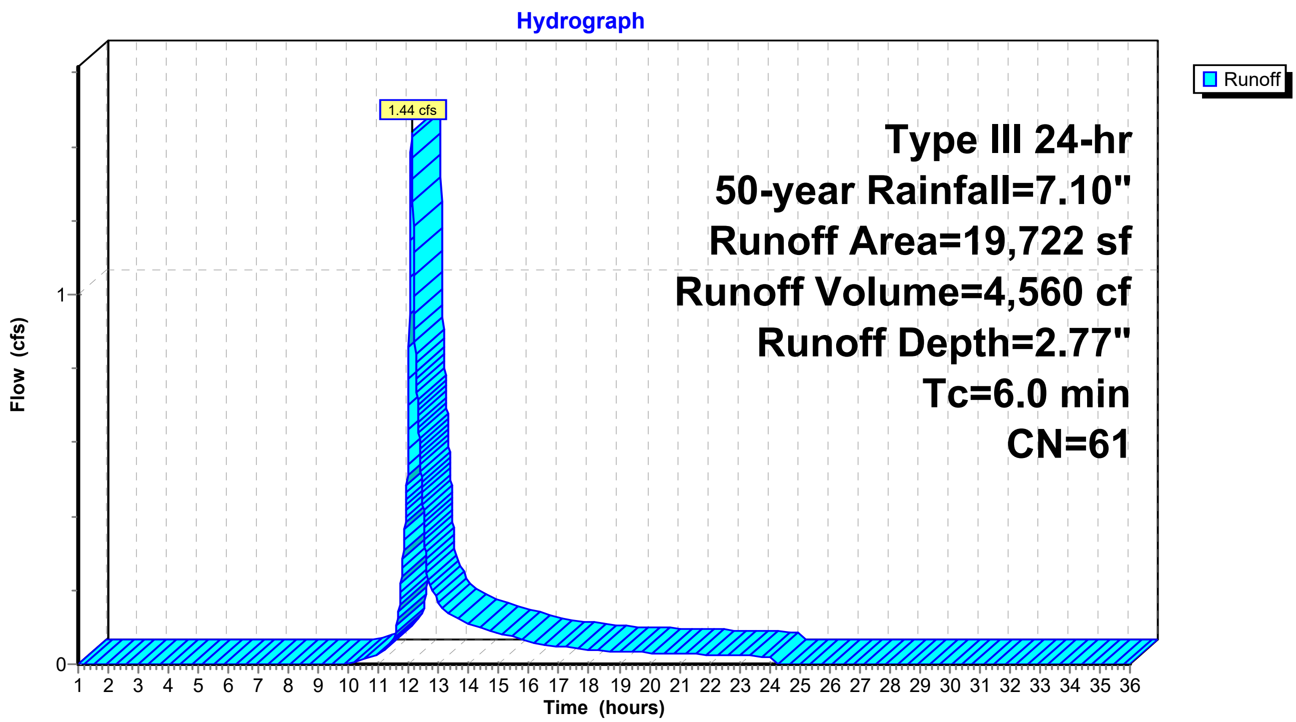
Runoff = 1.44 cfs @ 12.09 hrs, Volume= 4,560 cf, Depth= 2.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
1,681	98	Paved parking, HSG B
6,390	61	>75% Grass cover, Good, HSG B
11,651	55	Woods, Good, HSG B
19,722	61	Weighted Average
18,041		91.48% Pervious Area
1,681		8.52% Impervious Area

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

Subcatchment 21S: Sub 20



Summary for Subcatchment 22S: Sub 20

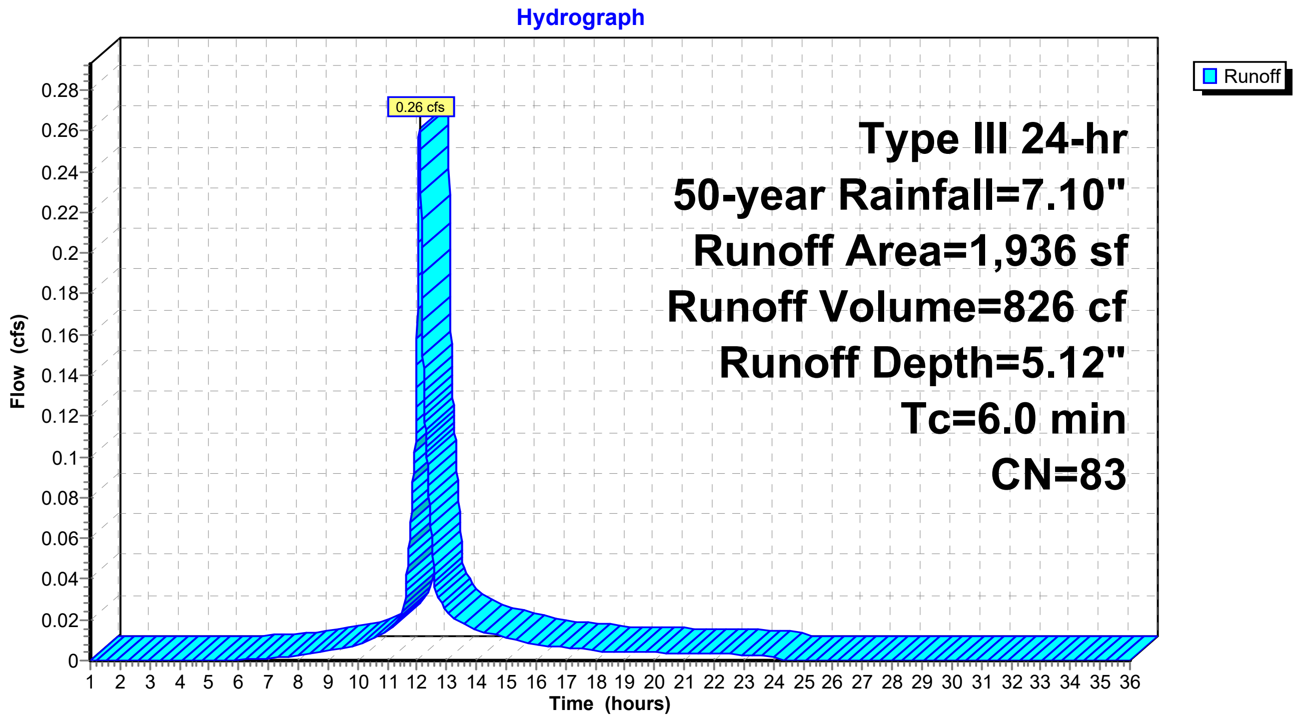
Runoff = 0.26 cfs @ 12.09 hrs, Volume= 826 cf, Depth= 5.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
1,161	98	Paved parking, HSG B
775	61	>75% Grass cover, Good, HSG B
1,936	83	Weighted Average
775		40.03% Pervious Area
1,161		59.97% Impervious Area

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

Subcatchment 22S: Sub 20

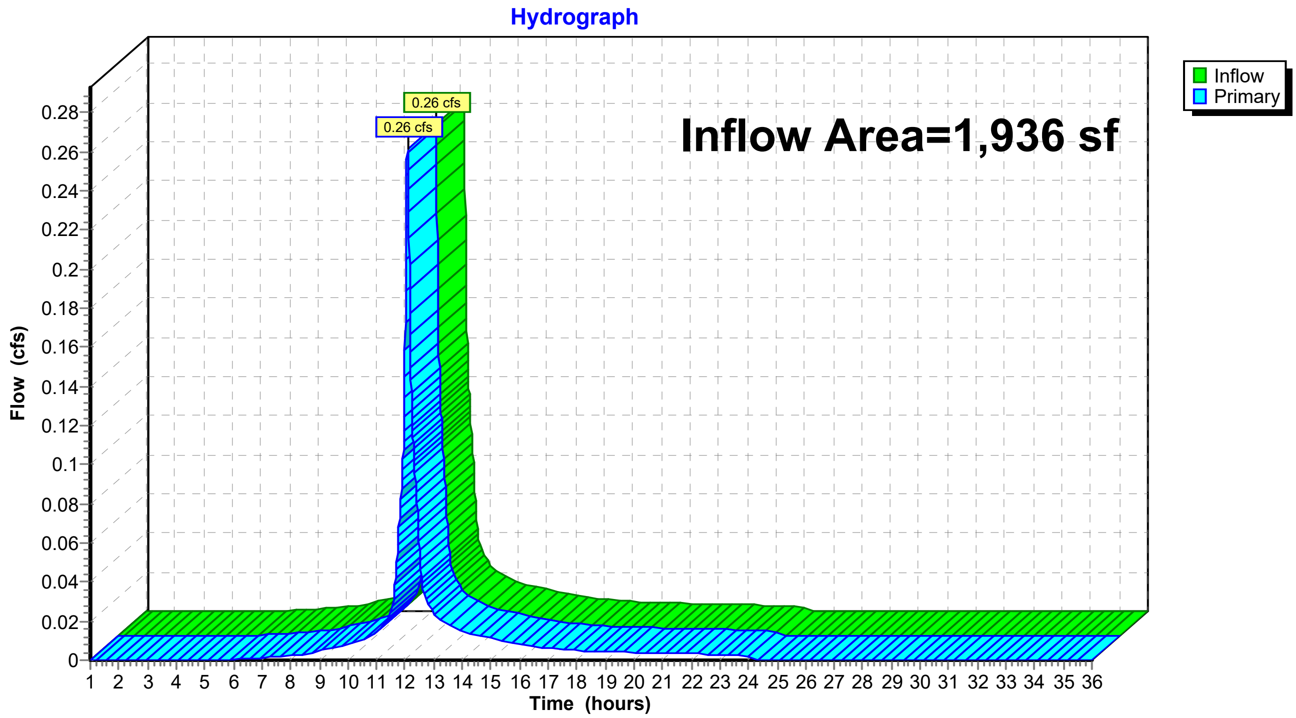


Summary for Link 1L: School Center - Leaching CB

Inflow Area = 1,936 sf, 59.97% Impervious, Inflow Depth = 5.12" for 50-year event
Inflow = 0.26 cfs @ 12.09 hrs, Volume= 826 cf
Primary = 0.26 cfs @ 12.09 hrs, Volume= 826 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

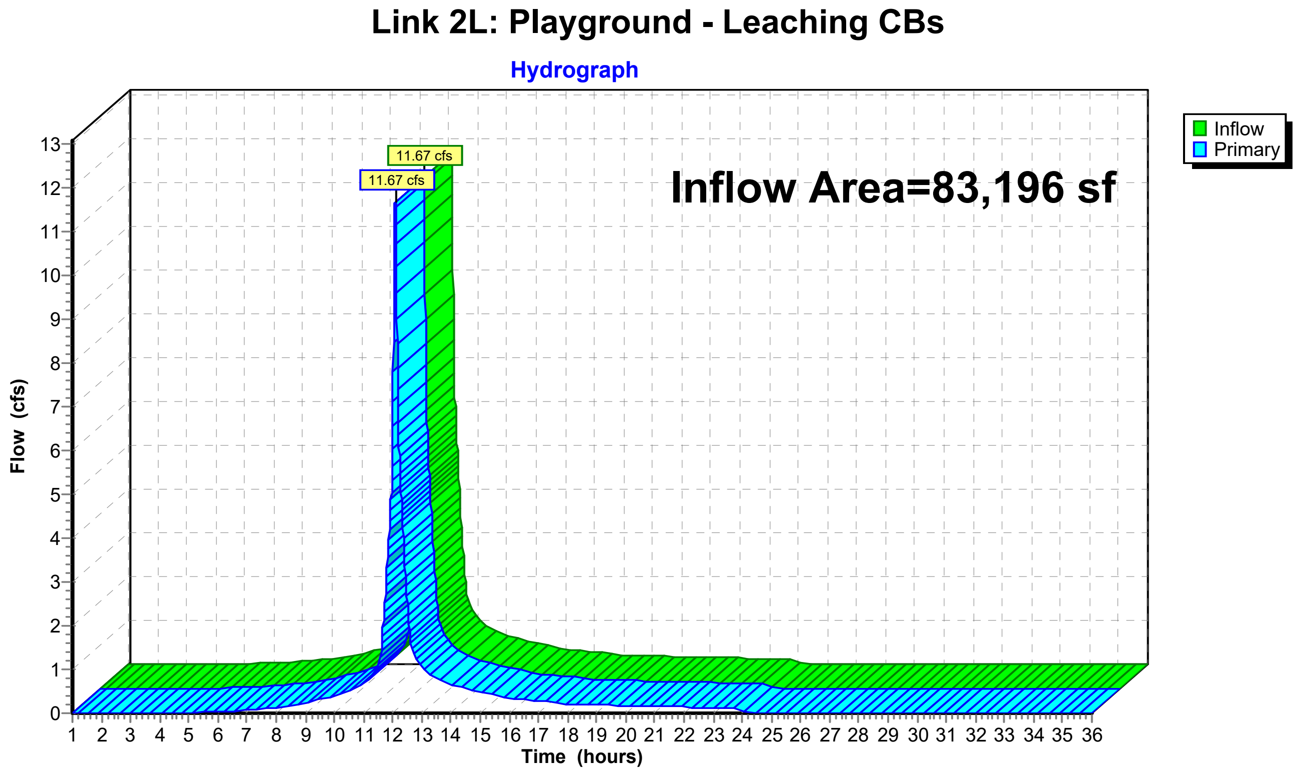
Link 1L: School Center - Leaching CB



Summary for Link 2L: Playground - Leaching CBs

Inflow Area = 83,196 sf, 67.30% Impervious, Inflow Depth = 5.39" for 50-year event
Inflow = 11.67 cfs @ 12.09 hrs, Volume= 37,350 cf
Primary = 11.67 cfs @ 12.09 hrs, Volume= 37,350 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

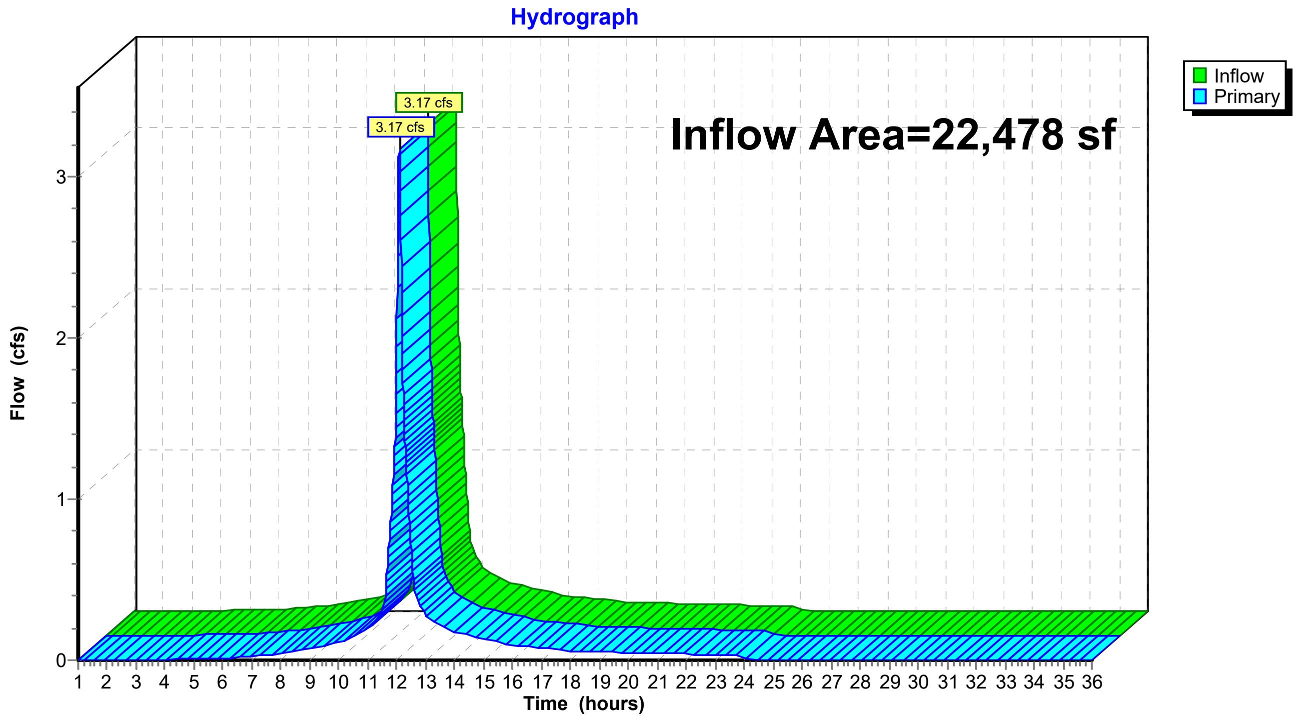


Summary for Link 3L: South Western - Leaching CBs

Inflow Area =	22,478 sf,	71.64% Impervious,	Inflow Depth = 5.49"	for 50-year event
Inflow =	3.17 cfs @	12.09 hrs, Volume=	10,289 cf	
Primary =	3.17 cfs @	12.09 hrs, Volume=	10,289 cf,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 3L: South Western - Leaching CBs

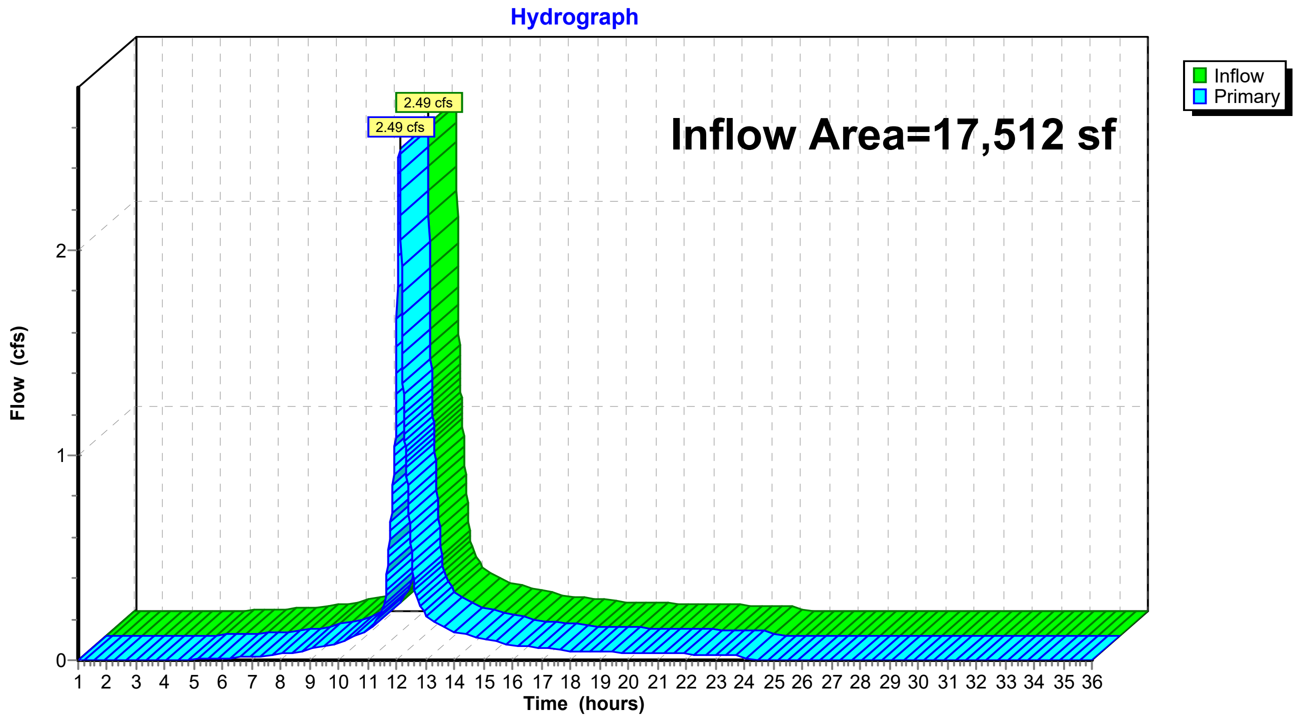


Summary for Link 4L: School Main Entrance - Leaching CBs

Inflow Area = 17,512 sf, 79.83% Impervious, Inflow Depth = 5.48" for 50-year event
Inflow = 2.49 cfs @ 12.09 hrs, Volume= 7,999 cf
Primary = 2.49 cfs @ 12.09 hrs, Volume= 7,999 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 4L: School Main Entrance - Leaching CBs

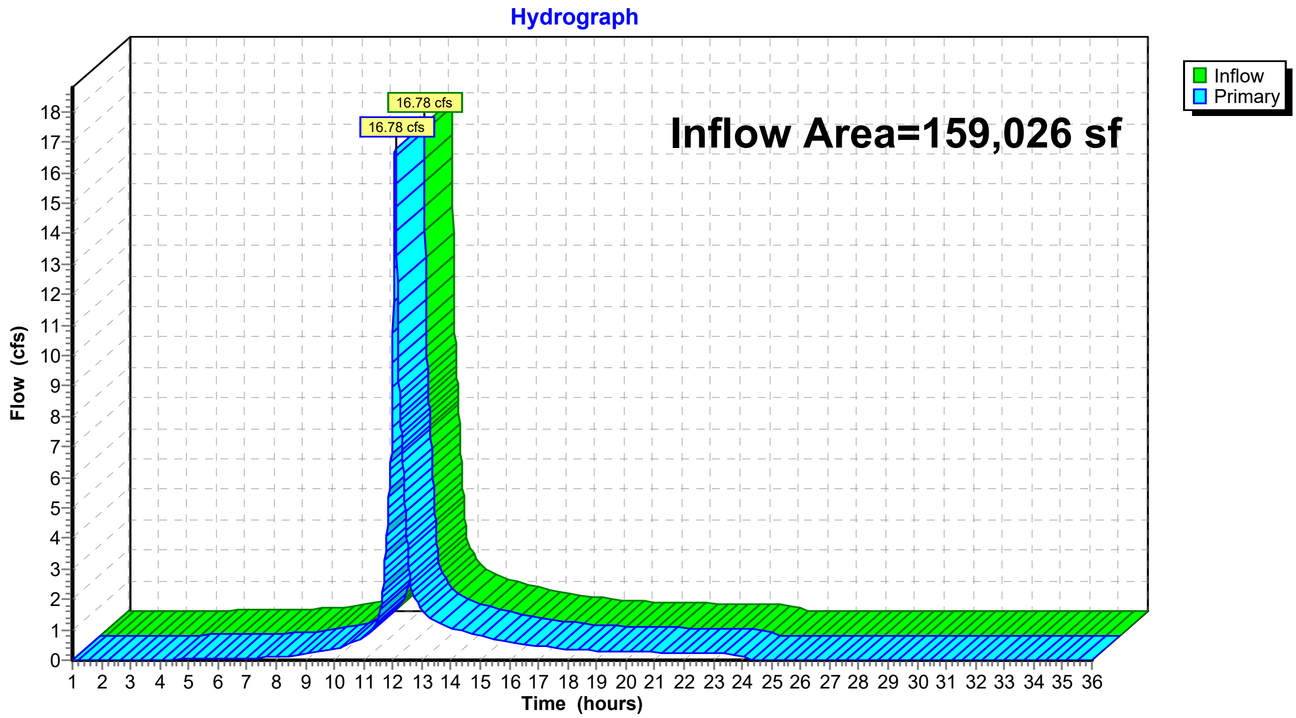


Summary for Link 5L: Main Street Drainage Network

Inflow Area = 159,026 sf, 45.50% Impervious, Inflow Depth > 4.06" for 50-year event
Inflow = 16.78 cfs @ 12.09 hrs, Volume= 53,769 cf
Primary = 16.78 cfs @ 12.09 hrs, Volume= 53,769 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 5L: Main Street Drainage Network



Time span=1.00-36.00 hrs, dt=0.01 hrs, 3501 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Sub 1 Runoff Area=60,718 sf 65.69% Impervious Runoff Depth=6.50"
Tc=6.0 min CN=85 Runoff=10.22 cfs 32,904 cf

Subcatchment2S: Sub 2 Runoff Area=8,333 sf 50.87% Impervious Runoff Depth=5.79"
Tc=6.0 min CN=79 Runoff=1.28 cfs 4,019 cf

Subcatchment3S: Sub 3 Runoff Area=6,851 sf 83.29% Impervious Runoff Depth=7.34"
Tc=6.0 min CN=92 Runoff=1.24 cfs 4,191 cf

Subcatchment4S: Sub 4 Runoff Area=5,579 sf 56.68% Impervious Runoff Depth=6.15"
Tc=6.0 min CN=82 Runoff=0.90 cfs 2,857 cf

Subcatchment5S: Sub 5 Runoff Area=10,216 sf 63.31% Impervious Runoff Depth=5.43"
Tc=6.0 min CN=76 Runoff=1.48 cfs 4,624 cf

Subcatchment6S: Sub 6 Runoff Area=3,953 sf 66.10% Impervious Runoff Depth=5.67"
Tc=6.0 min CN=78 Runoff=0.60 cfs 1,867 cf

Subcatchment7S: Sub 7 Runoff Area=7,525 sf 80.97% Impervious Runoff Depth=6.74"
Tc=6.0 min CN=87 Runoff=1.30 cfs 4,228 cf

Subcatchment8S: Sub 8 Runoff Area=5,425 sf 8.94% Impervious Runoff Depth=1.79"
Tc=6.0 min CN=44 Runoff=0.22 cfs 810 cf

Subcatchment9S: Sub 9 Runoff Area=7,123 sf 95.91% Impervious Runoff Depth=7.82"
Tc=6.0 min CN=96 Runoff=1.32 cfs 4,642 cf

Subcatchment10S: Sub 10 Runoff Area=7,035 sf 17.21% Impervious Runoff Depth=3.22"
Tc=6.0 min CN=57 Runoff=0.59 cfs 1,886 cf

Subcatchment11S: Sub 11 Runoff Area=10,781 sf 36.84% Impervious Runoff Depth=4.37"
Tc=6.0 min CN=67 Runoff=1.27 cfs 3,927 cf

Subcatchment12S: Sub 12 Runoff Area=15,032 sf 40.52% Impervious Runoff Depth=4.37"
Tc=6.0 min CN=67 Runoff=1.77 cfs 5,476 cf

Subcatchment13S: Sub 13 Runoff Area=9,477 sf 83.23% Impervious Runoff Depth=6.86"
Tc=6.0 min CN=88 Runoff=1.65 cfs 5,419 cf

Subcatchment14S: Sub 14 Runoff Area=8,035 sf 75.82% Impervious Runoff Depth=6.38"
Tc=6.0 min CN=84 Runoff=1.33 cfs 4,274 cf

Subcatchment15S: Sub 15 Runoff Area=7,294 sf 84.44% Impervious Runoff Depth=6.98"
Tc=6.0 min CN=89 Runoff=1.29 cfs 4,243 cf

Subcatchment16S: Sub 16 Runoff Area=17,962 sf 66.90% Impervious Runoff Depth=5.67"
Tc=6.0 min CN=78 Runoff=2.71 cfs 8,486 cf

Subcatchment17S: Sub 17 Runoff Area=25,633 sf 39.90% Impervious Runoff Depth=5.31"
Tc=6.0 min CN=75 Runoff=3.65 cfs 11,349 cf

Subcatchment18S: Sub 18 Runoff Area=9,167 sf 100.00% Impervious Runoff Depth>8.06"
Tc=6.0 min CN=98 Runoff=1.72 cfs 6,153 cf

Subcatchment19S: Sub 19 Runoff Area=8,937 sf 2.82% Impervious Runoff Depth=3.67"
Tc=6.0 min CN=61 Runoff=0.88 cfs 2,737 cf

Subcatchment20S: Sub 20 Runoff Area=4,936 sf 42.10% Impervious Runoff Depth=5.55"
Tc=6.0 min CN=77 Runoff=0.73 cfs 2,283 cf

Subcatchment21S: Sub 20 Runoff Area=19,722 sf 8.52% Impervious Runoff Depth=3.67"
Tc=6.0 min CN=61 Runoff=1.93 cfs 6,040 cf

Subcatchment22S: Sub 20 Runoff Area=1,936 sf 59.97% Impervious Runoff Depth=6.26"
Tc=6.0 min CN=83 Runoff=0.32 cfs 1,011 cf

Link 1L: School Center - Leaching CB Inflow=0.32 cfs 1,011 cf
Primary=0.32 cfs 1,011 cf

Link 2L: Playground - Leaching CBs Inflow=14.03 cfs 45,358 cf
Primary=14.03 cfs 45,358 cf

Link 3L: South Western - Leaching CBs Inflow=3.81 cfs 12,453 cf
Primary=3.81 cfs 12,453 cf

Link 4L: School Main Entrance - Leaching CBs Inflow=2.99 cfs 9,693 cf
Primary=2.99 cfs 9,693 cf

Link 5L: Main Street Drainage Network Inflow=21.05 cfs 67,366 cf
Primary=21.05 cfs 67,366 cf

Total Runoff Area = 261,670 sf Runoff Volume = 123,428 cf Average Runoff Depth = 5.66"
45.17% Pervious = 118,192 sf 54.83% Impervious = 143,478 sf

Summary for Subcatchment 1S: Sub 1

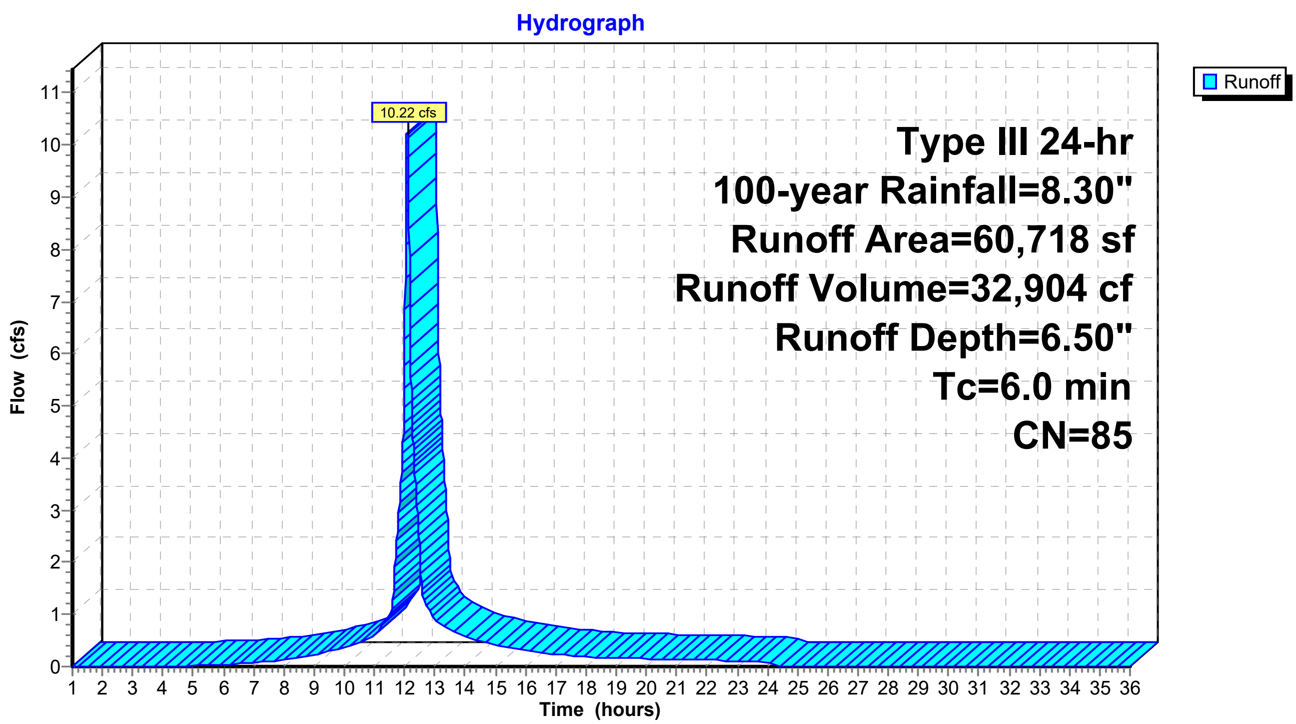
Runoff = 10.22 cfs @ 12.08 hrs, Volume= 32,904 cf, Depth= 6.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
16,123	98	Roofs, HSG B
1,042	55	Woods, Good, HSG B
19,793	61	>75% Grass cover, Good, HSG B
23,760	98	Paved parking, HSG B
60,718	85	Weighted Average
20,835		34.31% Pervious Area
39,883		65.69% Impervious Area

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

Subcatchment 1S: Sub 1



Summary for Subcatchment 2S: Sub 2

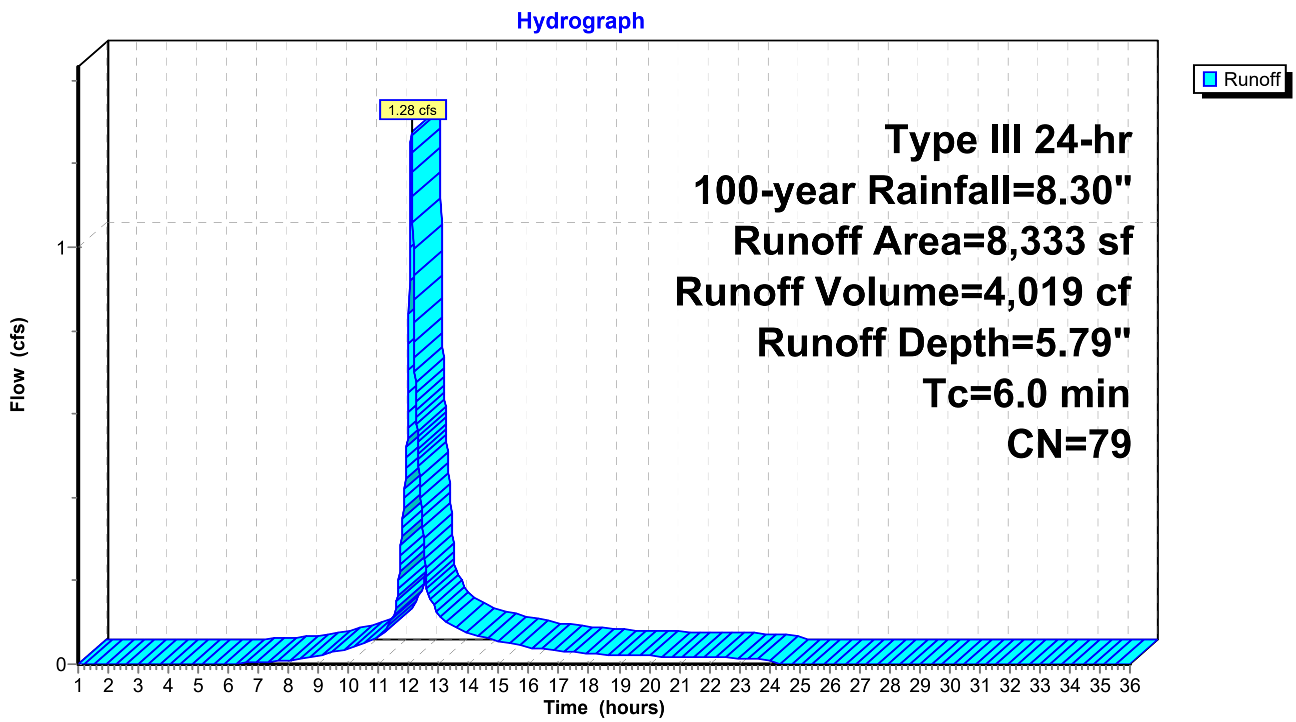
Runoff = 1.28 cfs @ 12.09 hrs, Volume= 4,019 cf, Depth= 5.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
1,073	55	Woods, Good, HSG B
3,021	61	>75% Grass cover, Good, HSG B
4,239	98	Paved parking, HSG B
8,333	79	Weighted Average
4,094		49.13% Pervious Area
4,239		50.87% Impervious Area

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

Subcatchment 2S: Sub 2



Summary for Subcatchment 3S: Sub 3

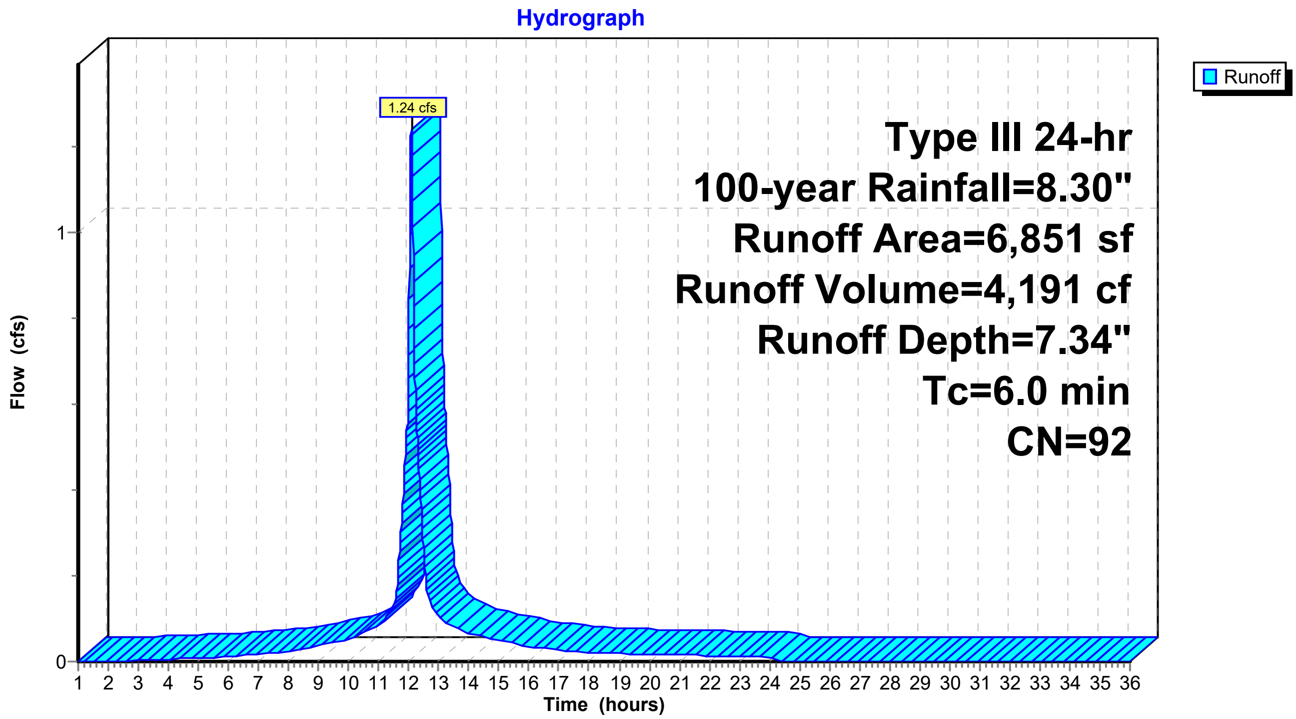
Runoff = 1.24 cfs @ 12.08 hrs, Volume= 4,191 cf, Depth= 7.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
969	98	Unconnected roofs, HSG B
1,145	61	>75% Grass cover, Good, HSG B
4,737	98	Paved parking, HSG B
6,851	92	Weighted Average
1,145		16.71% Pervious Area
5,706		83.29% Impervious Area
969		16.98% Unconnected

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

Subcatchment 3S: Sub 3



Summary for Subcatchment 4S: Sub 4

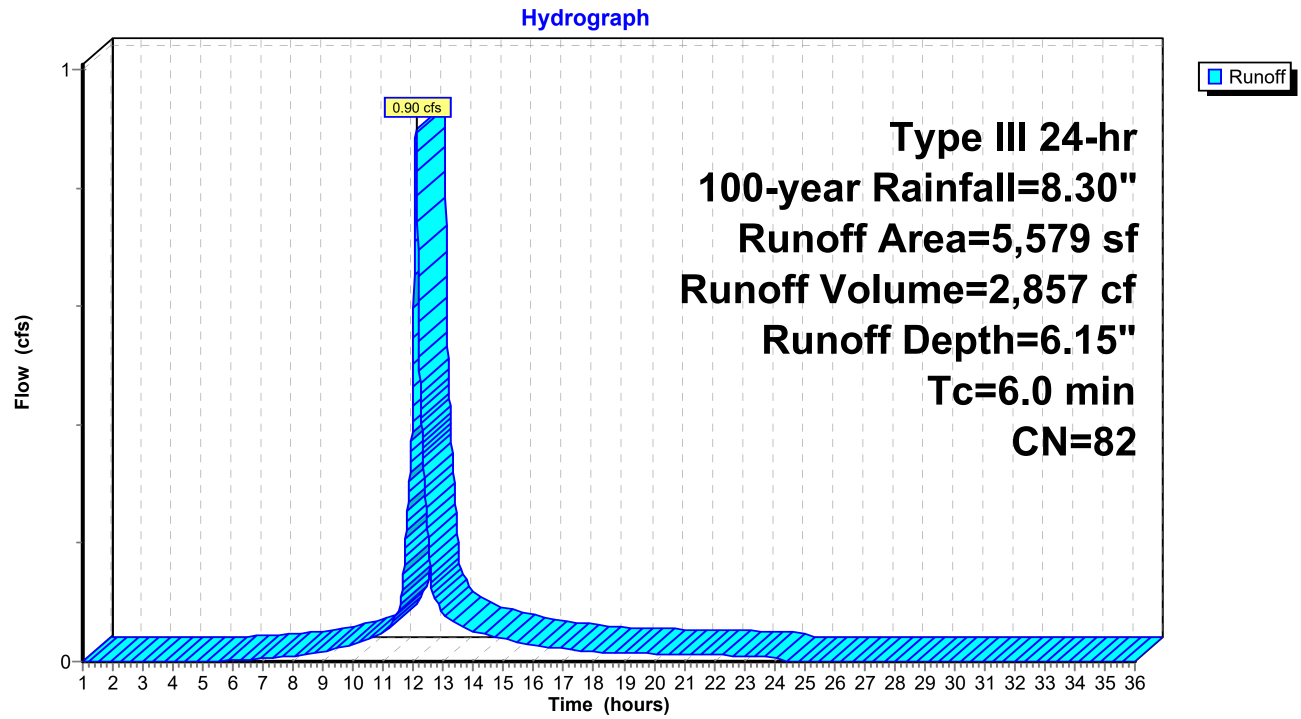
Runoff = 0.90 cfs @ 12.09 hrs, Volume= 2,857 cf, Depth= 6.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
105	98	Unconnected roofs, HSG B
2,417	61	>75% Grass cover, Good, HSG B
3,057	98	Paved parking, HSG B
5,579	82	Weighted Average
2,417		43.32% Pervious Area
3,162		56.68% Impervious Area
105		3.32% Unconnected

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

Subcatchment 4S: Sub 4



Summary for Subcatchment 5S: Sub 5

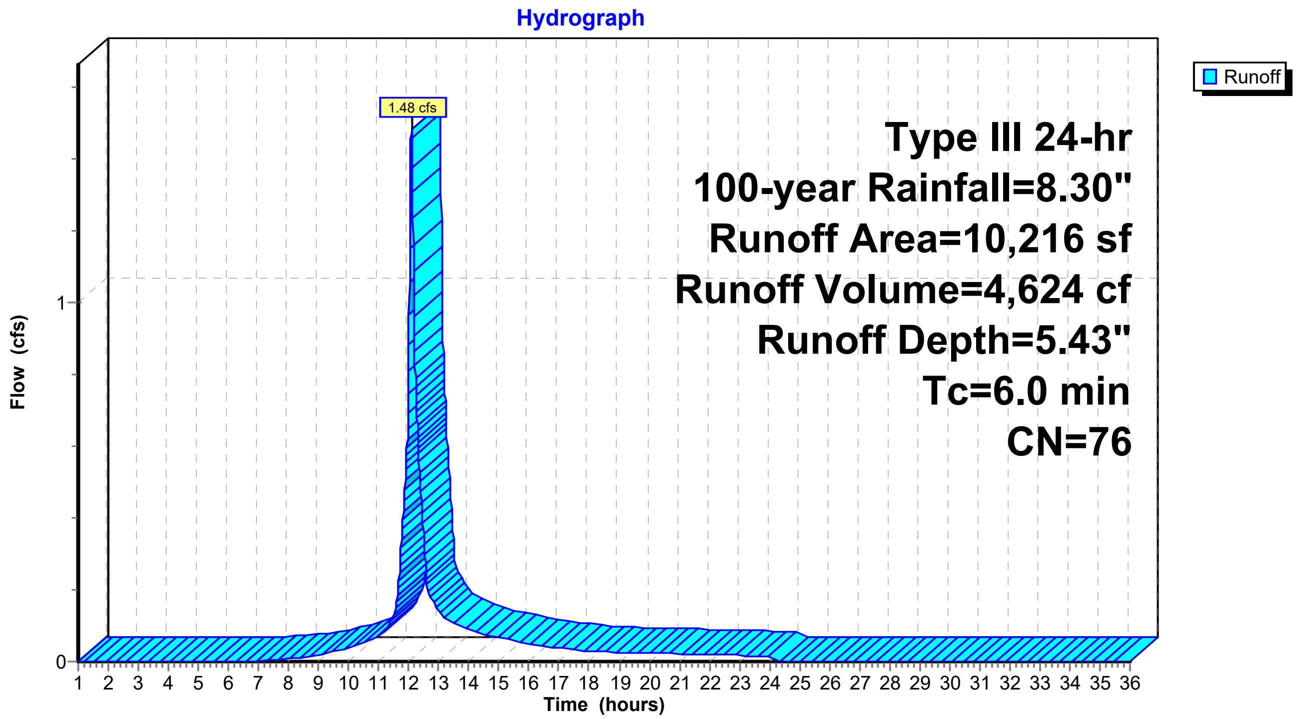
Runoff = 1.48 cfs @ 12.09 hrs, Volume= 4,624 cf, Depth= 5.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
963	98	Unconnected roofs, HSG A
3,748	39	>75% Grass cover, Good, HSG A
5,505	98	Paved parking, HSG A
10,216	76	Weighted Average
3,748		36.69% Pervious Area
6,468		63.31% Impervious Area
963		14.89% Unconnected

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

Subcatchment 5S: Sub 5



Summary for Subcatchment 6S: Sub 6

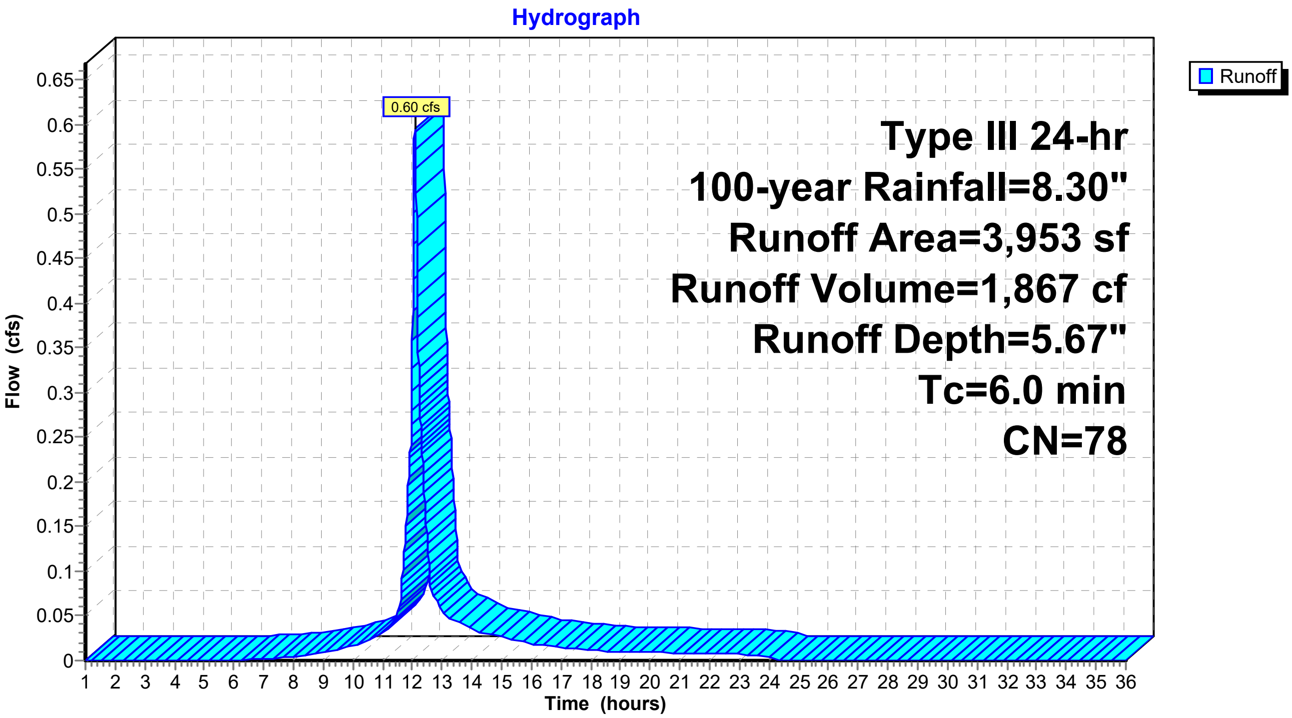
Runoff = 0.60 cfs @ 12.09 hrs, Volume= 1,867 cf, Depth= 5.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
1,340	39	>75% Grass cover, Good, HSG A
2,613	98	Paved parking, HSG A
3,953	78	Weighted Average
1,340		33.90% Pervious Area
2,613		66.10% Impervious Area

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

Subcatchment 6S: Sub 6



Summary for Subcatchment 7S: Sub 7

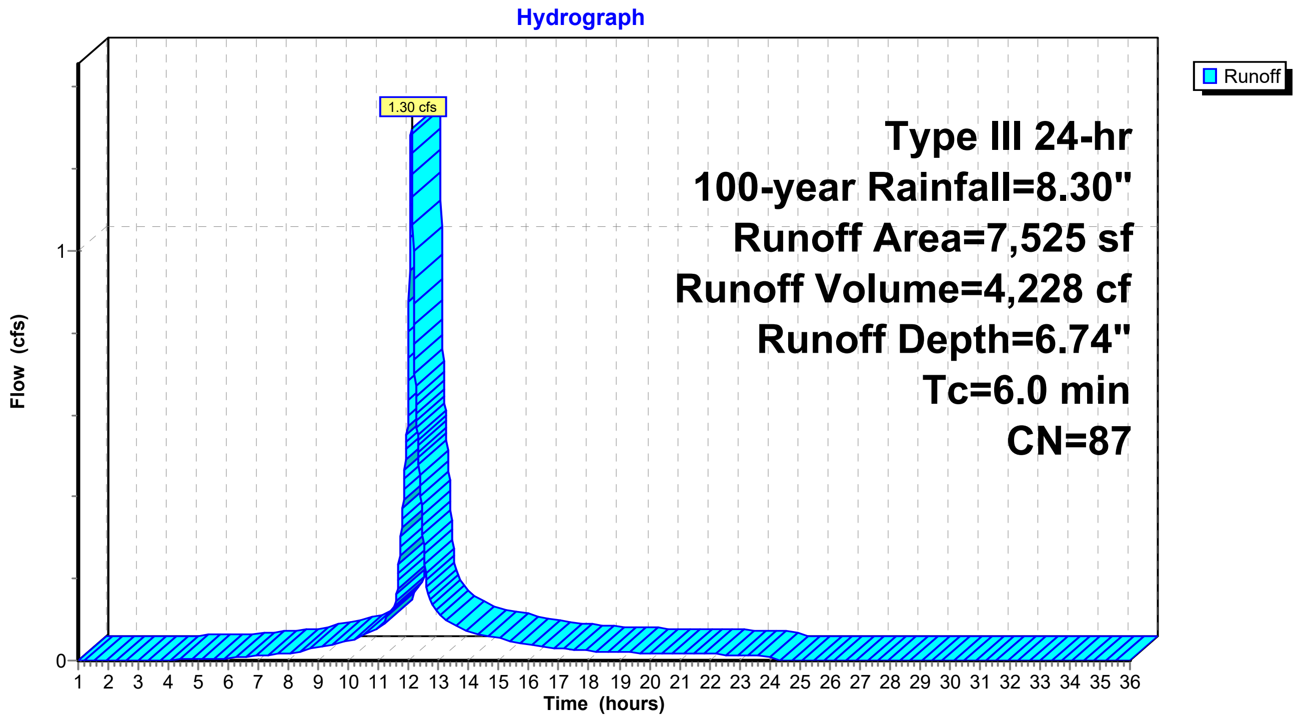
Runoff = 1.30 cfs @ 12.08 hrs, Volume= 4,228 cf, Depth= 6.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
1,432	39	>75% Grass cover, Good, HSG A
6,093	98	Paved parking, HSG A
7,525	87	Weighted Average
1,432		19.03% Pervious Area
6,093		80.97% Impervious Area

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

Subcatchment 7S: Sub 7



Summary for Subcatchment 8S: Sub 8

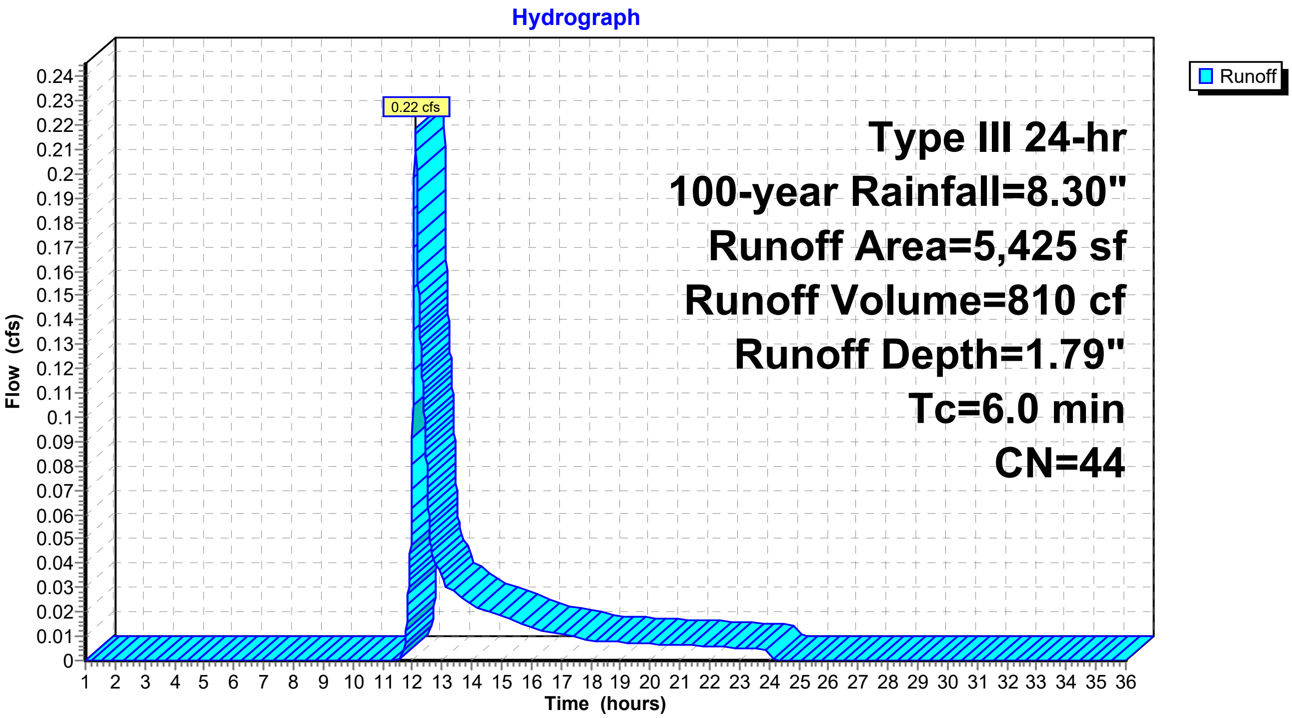
Runoff = 0.22 cfs @ 12.10 hrs, Volume= 810 cf, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
4,940	39	>75% Grass cover, Good, HSG A
485	98	Paved parking, HSG A
5,425	44	Weighted Average
4,940		91.06% Pervious Area
485		8.94% Impervious Area

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

Subcatchment 8S: Sub 8



Summary for Subcatchment 9S: Sub 9

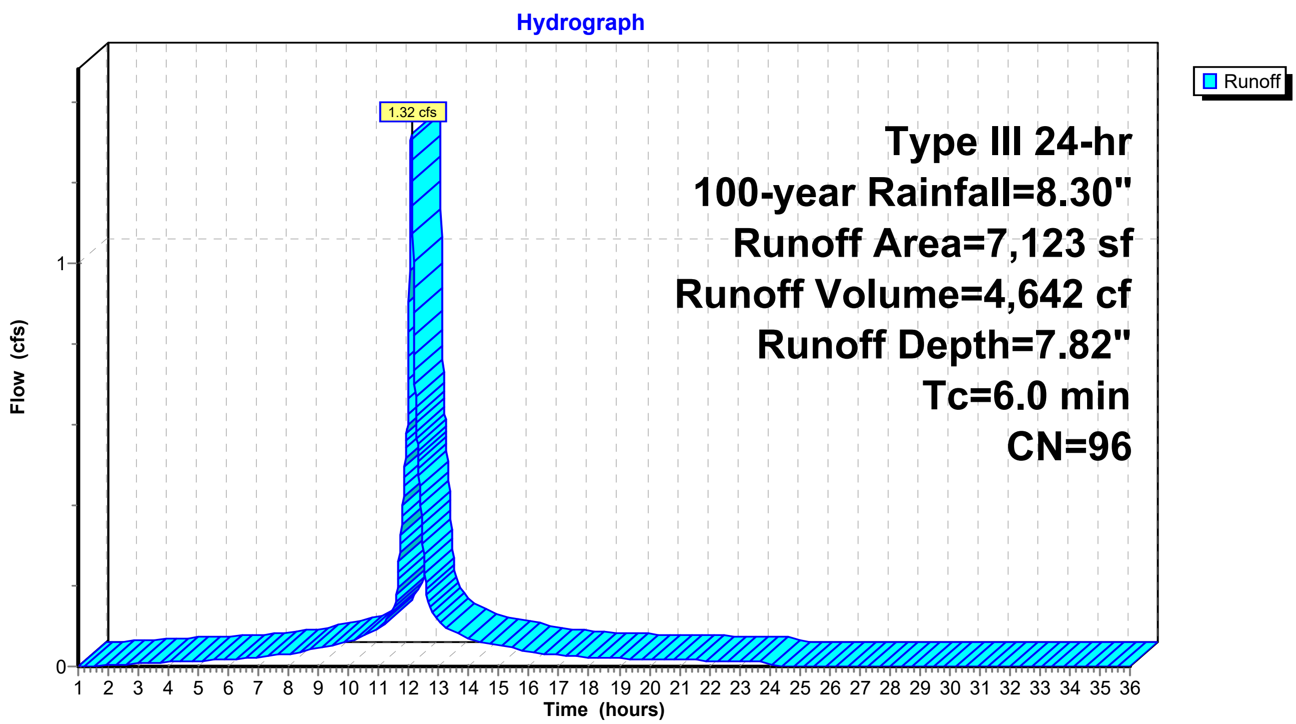
Runoff = 1.32 cfs @ 12.08 hrs, Volume= 4,642 cf, Depth= 7.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
291	39	>75% Grass cover, Good, HSG A
6,832	98	Paved parking, HSG A
7,123	96	Weighted Average
291		4.09% Pervious Area
6,832		95.91% Impervious Area

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

Subcatchment 9S: Sub 9



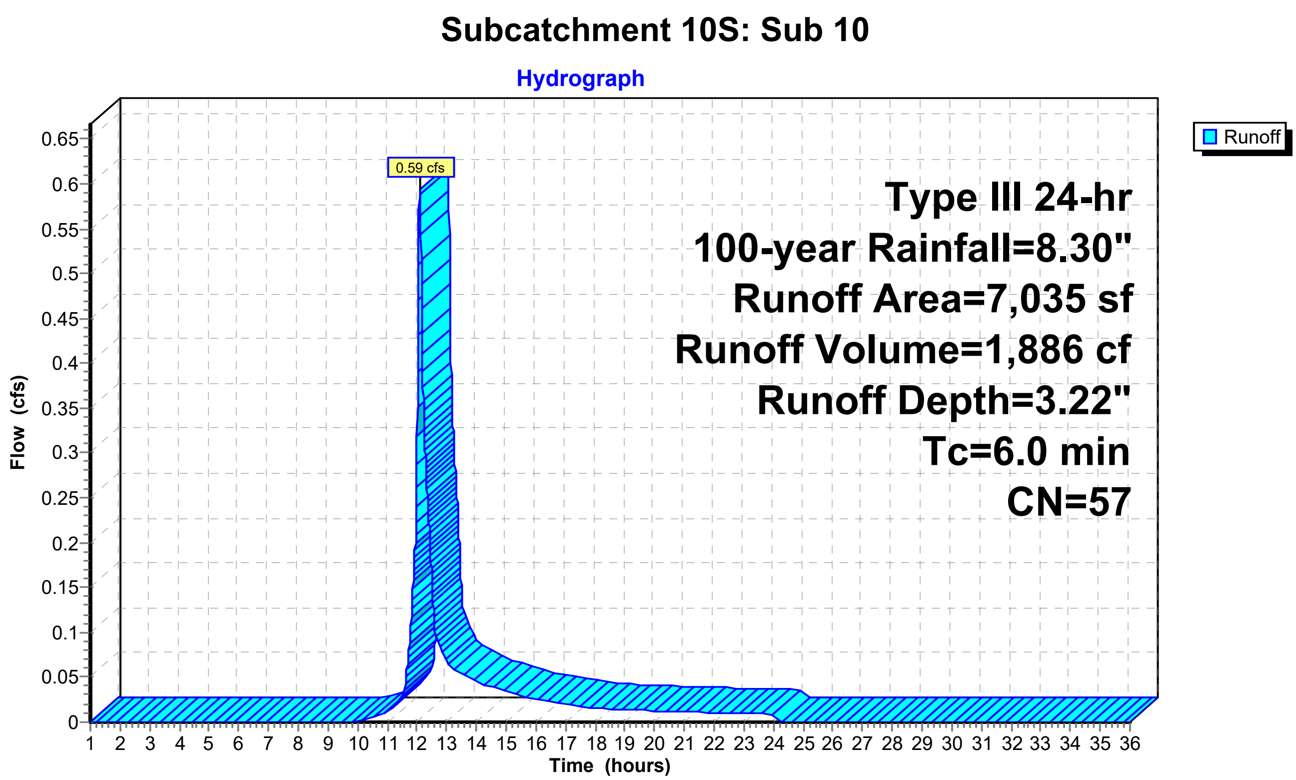
Summary for Subcatchment 10S: Sub 10

Runoff = 0.59 cfs @ 12.09 hrs, Volume= 1,886 cf, Depth= 3.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
2,302	39	>75% Grass cover, Good, HSG A
1,211	98	Paved parking, HSG A
3,522	55	Woods, Good, HSG B
7,035	57	Weighted Average
5,824		82.79% Pervious Area
1,211		17.21% Impervious Area

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



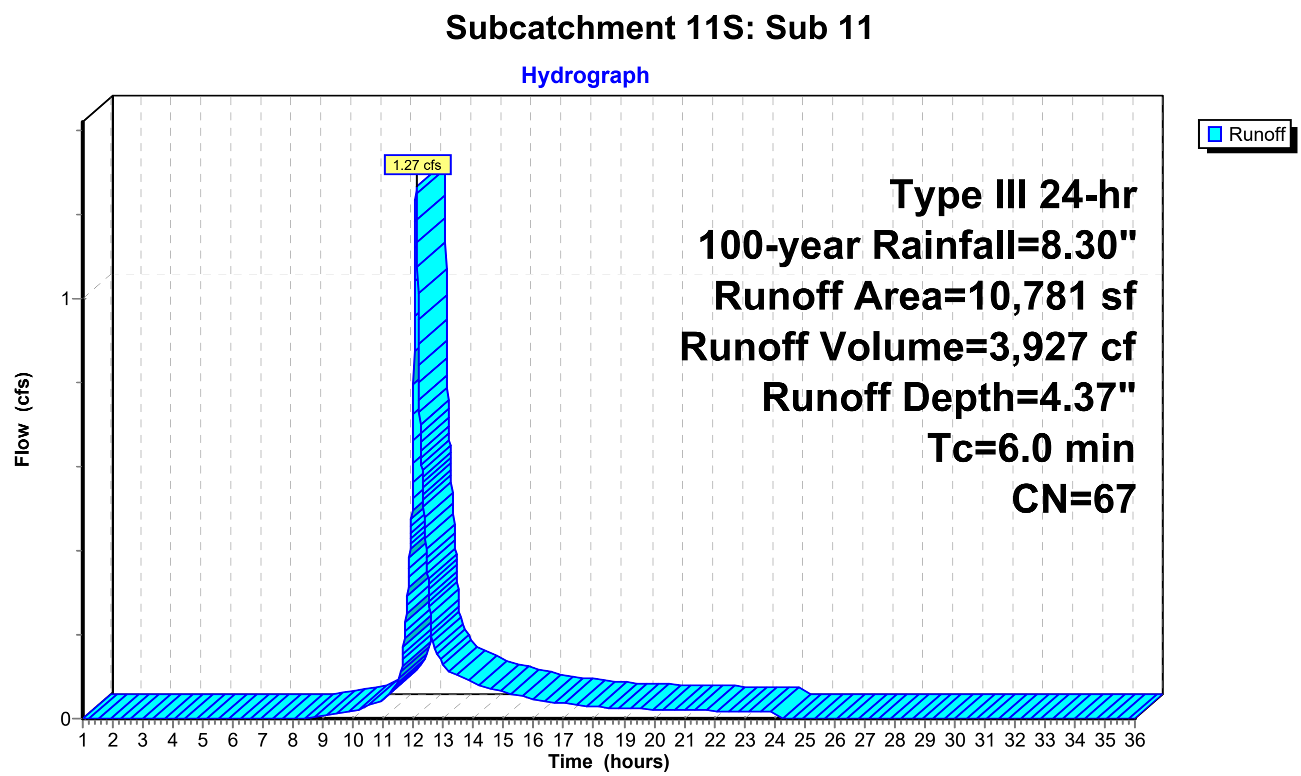
Summary for Subcatchment 11S: Sub 11

Runoff = 1.27 cfs @ 12.09 hrs, Volume= 3,927 cf, Depth= 4.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
2,901	39	>75% Grass cover, Good, HSG A
3,653	98	Paved parking, HSG A
319	98	Roofs, HSG B
3,908	55	Woods, Good, HSG B
10,781	67	Weighted Average
6,809		63.16% Pervious Area
3,972		36.84% Impervious Area

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



Summary for Subcatchment 12S: Sub 12

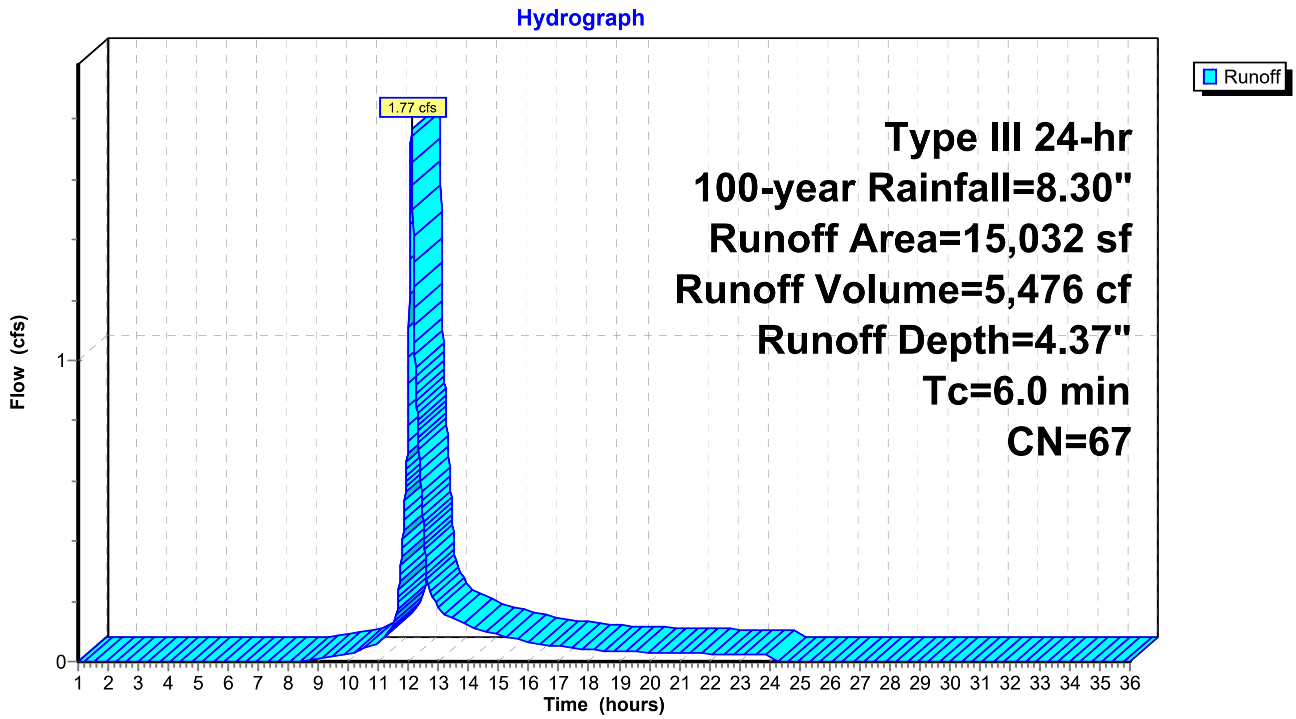
Runoff = 1.77 cfs @ 12.09 hrs, Volume= 5,476 cf, Depth= 4.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
5,033	39	>75% Grass cover, Good, HSG A
2,740	98	Paved parking, HSG A
3,351	98	Roofs, HSG B
3,908	55	Woods, Good, HSG B
15,032	67	Weighted Average
8,941		59.48% Pervious Area
6,091		40.52% Impervious Area

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

Subcatchment 12S: Sub 12



Summary for Subcatchment 13S: Sub 13

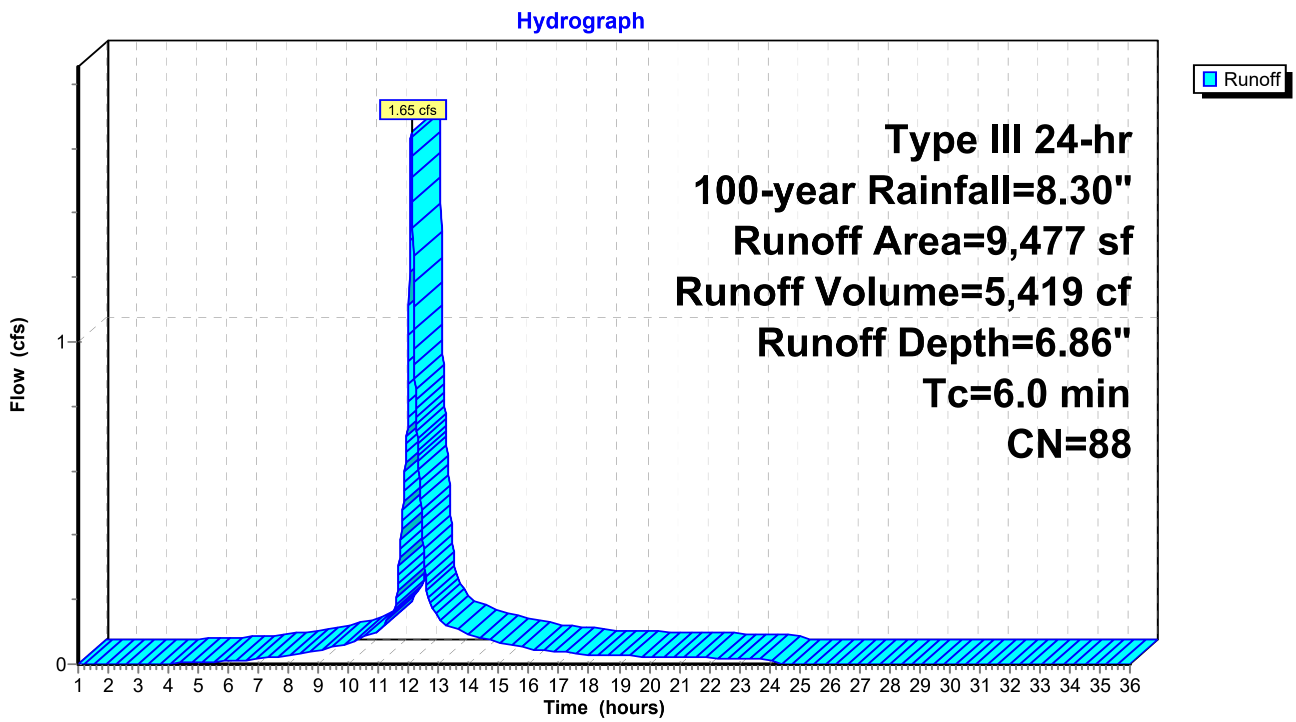
Runoff = 1.65 cfs @ 12.08 hrs, Volume= 5,419 cf, Depth= 6.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
1,589	39	>75% Grass cover, Good, HSG A
4,866	98	Paved parking, HSG A
3,022	98	Roofs, HSG B
9,477	88	Weighted Average
1,589		16.77% Pervious Area
7,888		83.23% Impervious Area

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

Subcatchment 13S: Sub 13



Summary for Subcatchment 14S: Sub 14

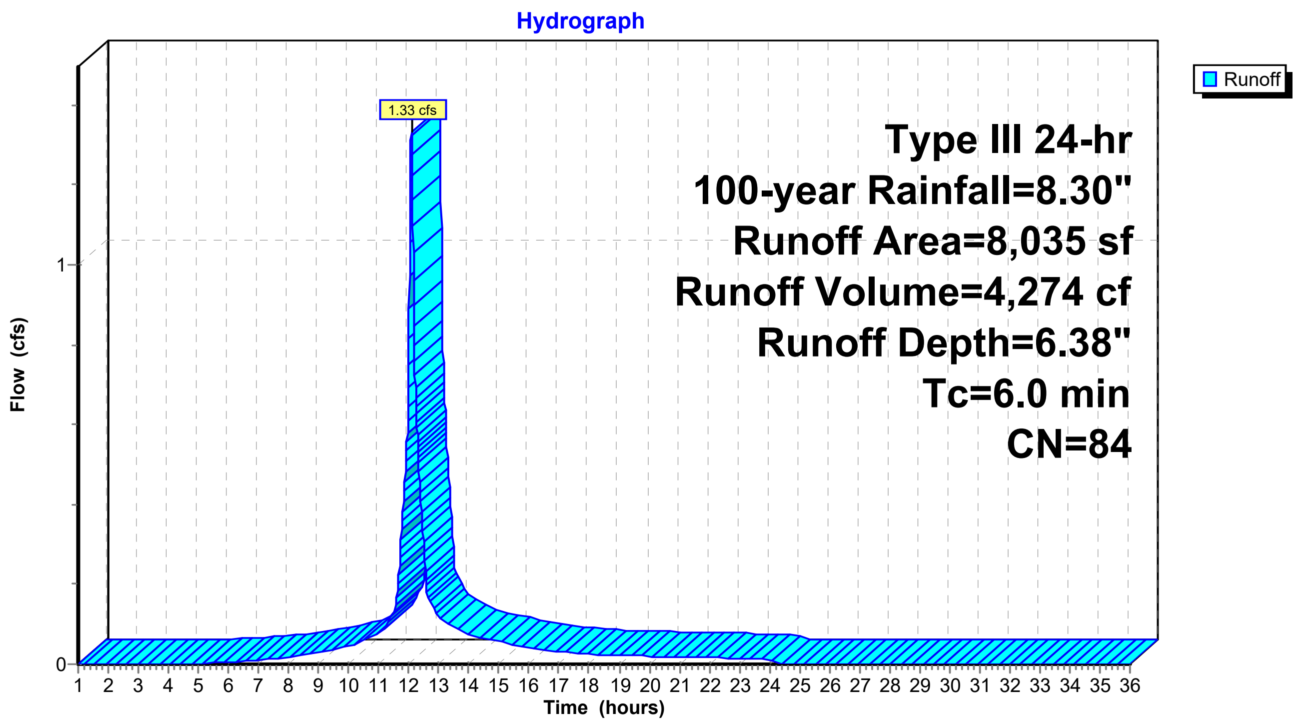
Runoff = 1.33 cfs @ 12.09 hrs, Volume= 4,274 cf, Depth= 6.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
1,943	39	>75% Grass cover, Good, HSG A
2,485	98	Paved parking, HSG A
3,607	98	Roofs, HSG A
8,035	84	Weighted Average
1,943		24.18% Pervious Area
6,092		75.82% Impervious Area

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

Subcatchment 14S: Sub 14



Summary for Subcatchment 15S: Sub 15

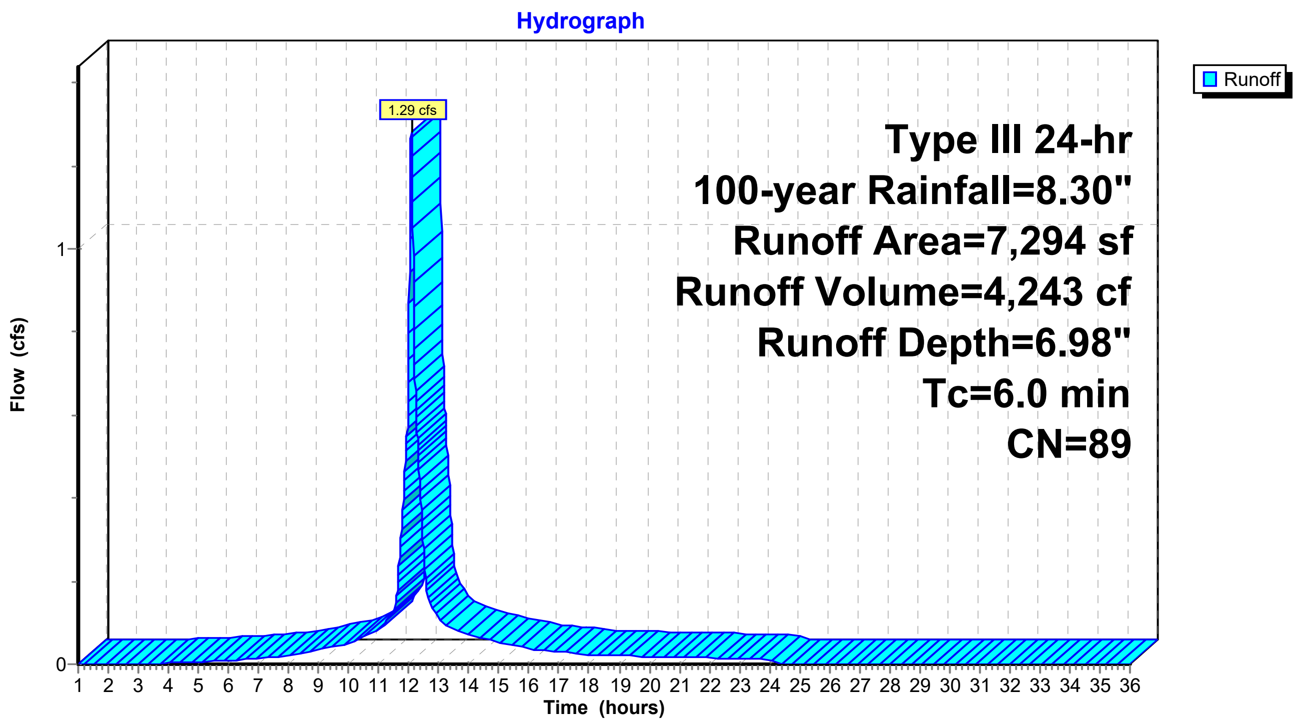
Runoff = 1.29 cfs @ 12.08 hrs, Volume= 4,243 cf, Depth= 6.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
1,135	39	>75% Grass cover, Good, HSG A
1,002	98	Paved parking, HSG A
5,157	98	Roofs, HSG A
7,294	89	Weighted Average
1,135		15.56% Pervious Area
6,159		84.44% Impervious Area

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

Subcatchment 15S: Sub 15



Summary for Subcatchment 16S: Sub 16

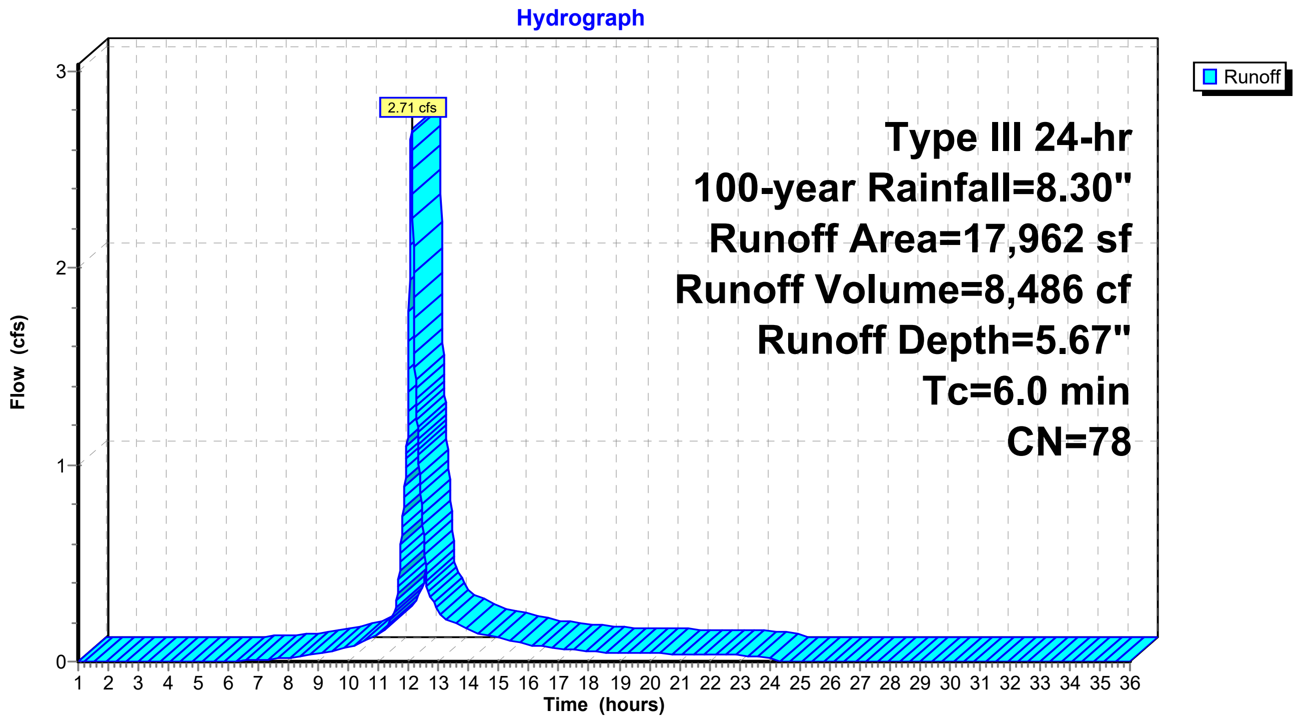
Runoff = 2.71 cfs @ 12.09 hrs, Volume= 8,486 cf, Depth= 5.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
4,235	39	>75% Grass cover, Good, HSG A
4,196	98	Paved parking, HSG A
7,821	98	Roofs, HSG A
1,710	30	Woods, Good, HSG A
17,962	78	Weighted Average
5,945		33.10% Pervious Area
12,017		66.90% Impervious Area

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

Subcatchment 16S: Sub 16



Summary for Subcatchment 17S: Sub 17

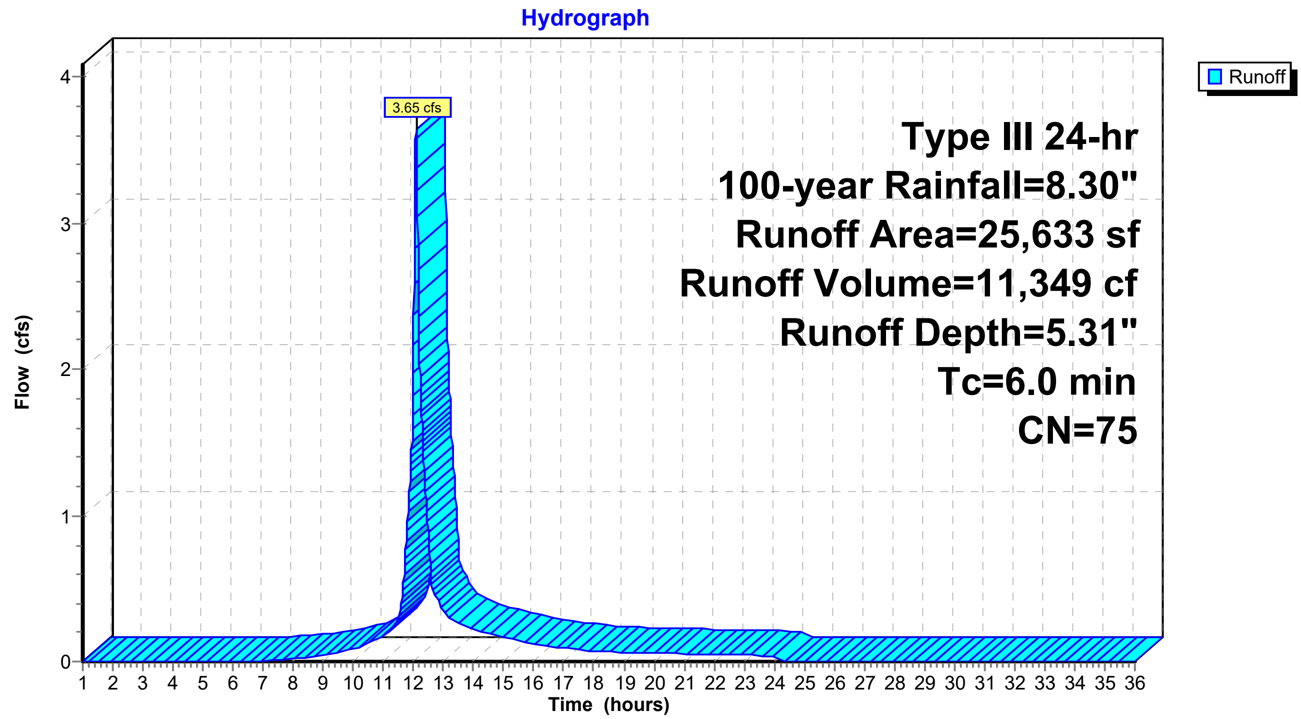
Runoff = 3.65 cfs @ 12.09 hrs, Volume= 11,349 cf, Depth= 5.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
10,866	61	>75% Grass cover, Good, HSG B
6,040	98	Paved parking, HSG B
4,188	98	Roofs, HSG B
4,539	55	Woods, Good, HSG B
25,633	75	Weighted Average
15,405		60.10% Pervious Area
10,228		39.90% Impervious Area

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

Subcatchment 17S: Sub 17



Summary for Subcatchment 18S: Sub 18

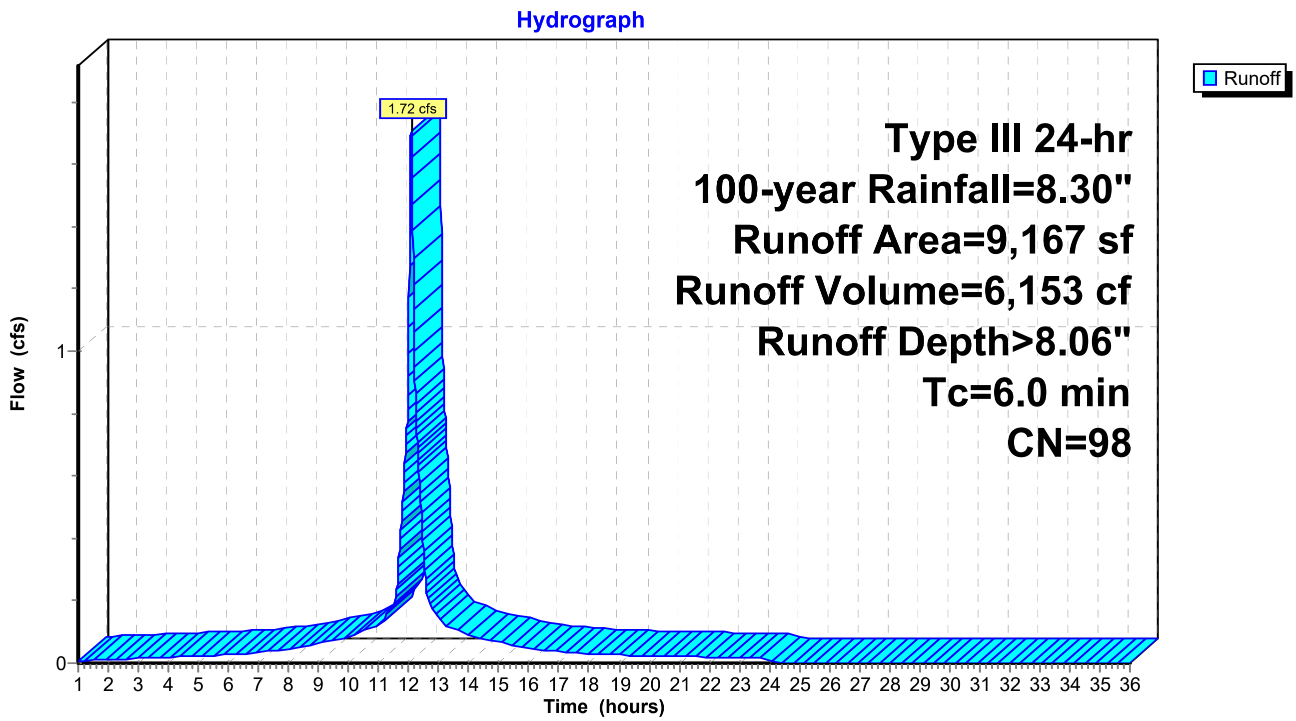
Runoff = 1.72 cfs @ 12.08 hrs, Volume= 6,153 cf, Depth> 8.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
8,851	98	Paved parking, HSG B
316	98	Roofs, HSG B
9,167	98	Weighted Average
9,167		100.00% Impervious Area

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

Subcatchment 18S: Sub 18



Summary for Subcatchment 19S: Sub 19

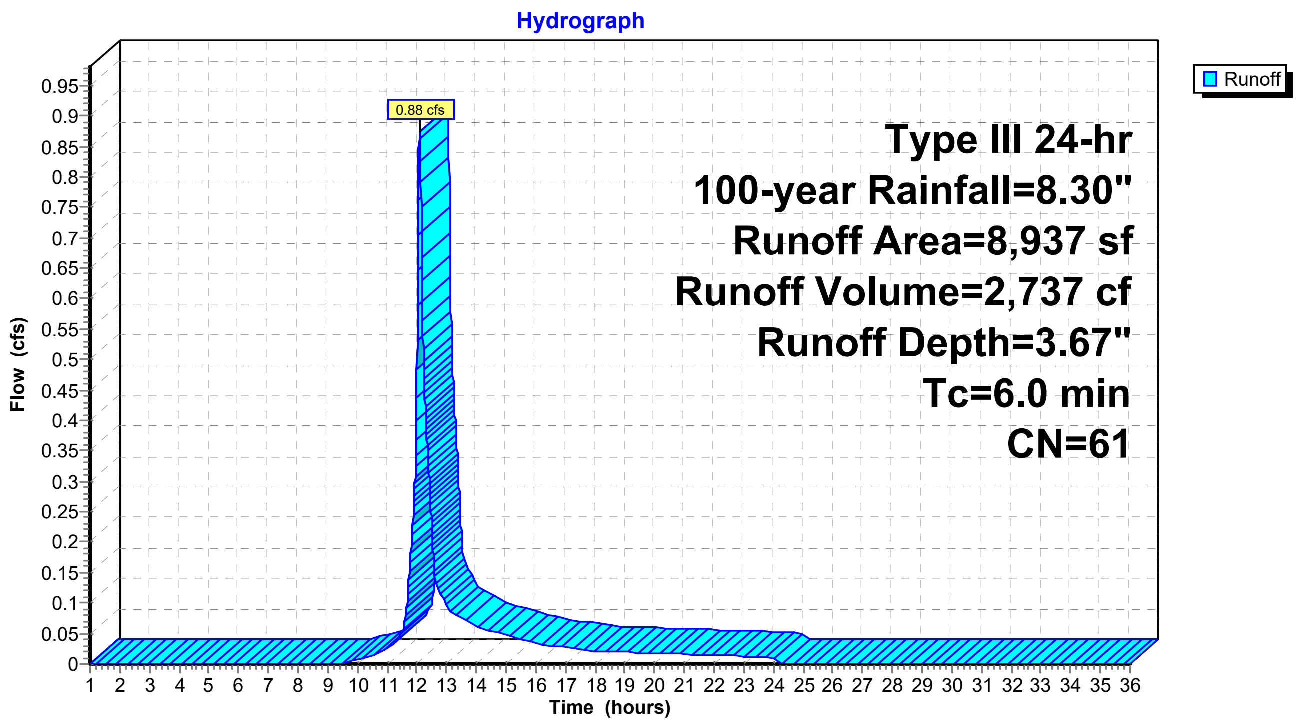
Runoff = 0.88 cfs @ 12.09 hrs, Volume= 2,737 cf, Depth= 3.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
7,246	61	>75% Grass cover, Good, HSG B
252	98	Roofs, HSG B
1,439	55	Woods, Good, HSG B
8,937	61	Weighted Average
8,685		97.18% Pervious Area
252		2.82% Impervious Area

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

Subcatchment 19S: Sub 19



Summary for Subcatchment 20S: Sub 20

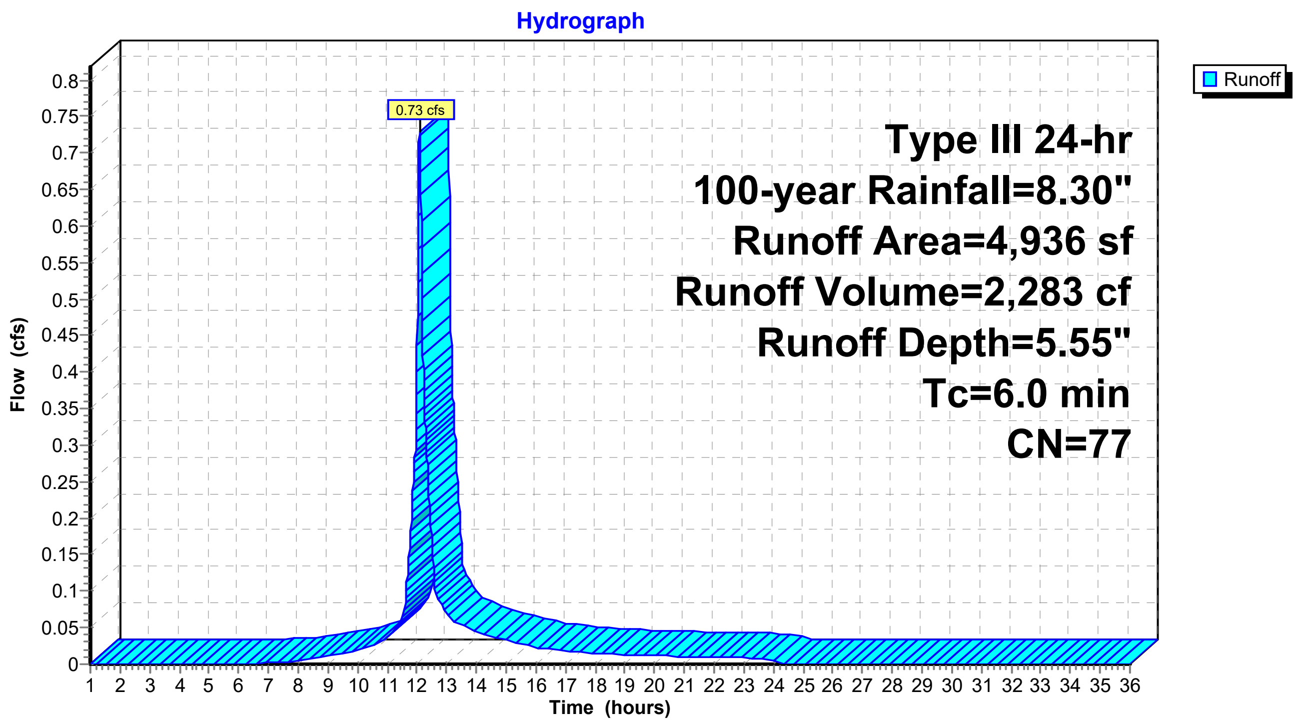
Runoff = 0.73 cfs @ 12.09 hrs, Volume= 2,283 cf, Depth= 5.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
1,415	98	Paved parking, HSG B
2,858	61	>75% Grass cover, Good, HSG B
663	98	Roofs, HSG B
4,936	77	Weighted Average
2,858		57.90% Pervious Area
2,078		42.10% Impervious Area

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

Subcatchment 20S: Sub 20



Summary for Subcatchment 21S: Sub 20

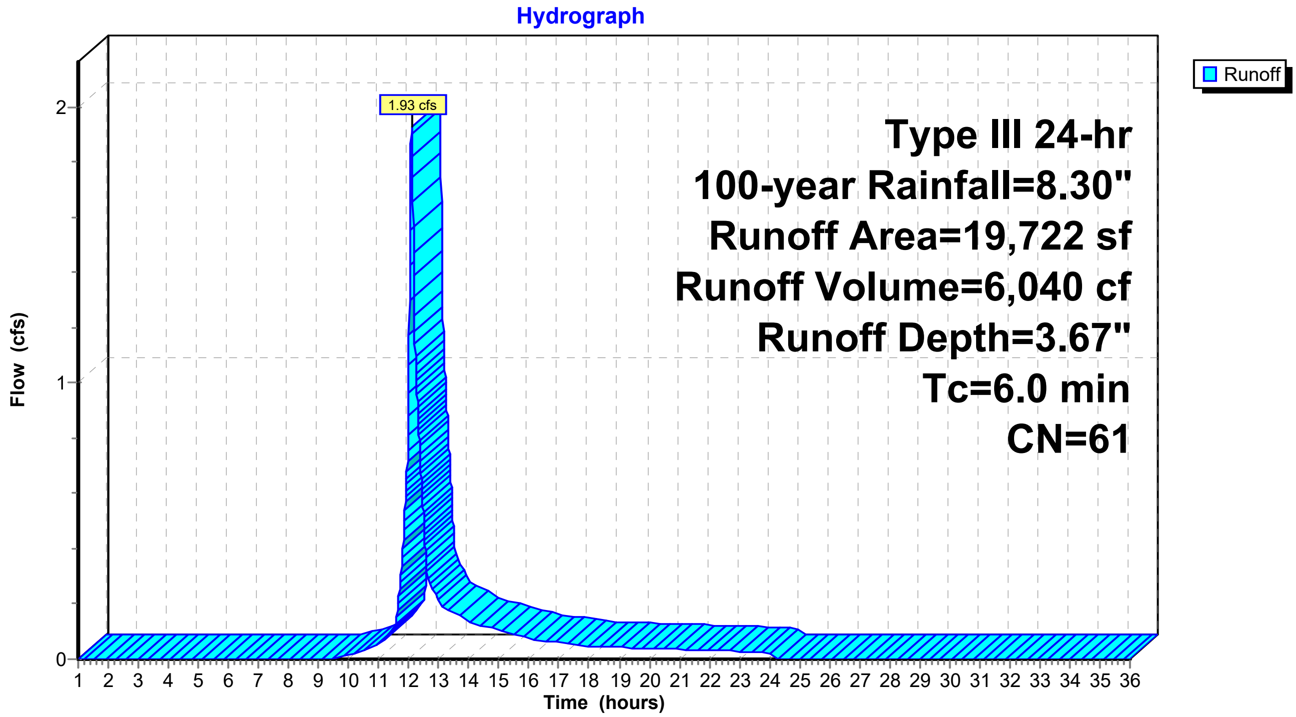
Runoff = 1.93 cfs @ 12.09 hrs, Volume= 6,040 cf, Depth= 3.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
1,681	98	Paved parking, HSG B
6,390	61	>75% Grass cover, Good, HSG B
11,651	55	Woods, Good, HSG B
19,722	61	Weighted Average
18,041		91.48% Pervious Area
1,681		8.52% Impervious Area

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

Subcatchment 21S: Sub 20



Summary for Subcatchment 22S: Sub 20

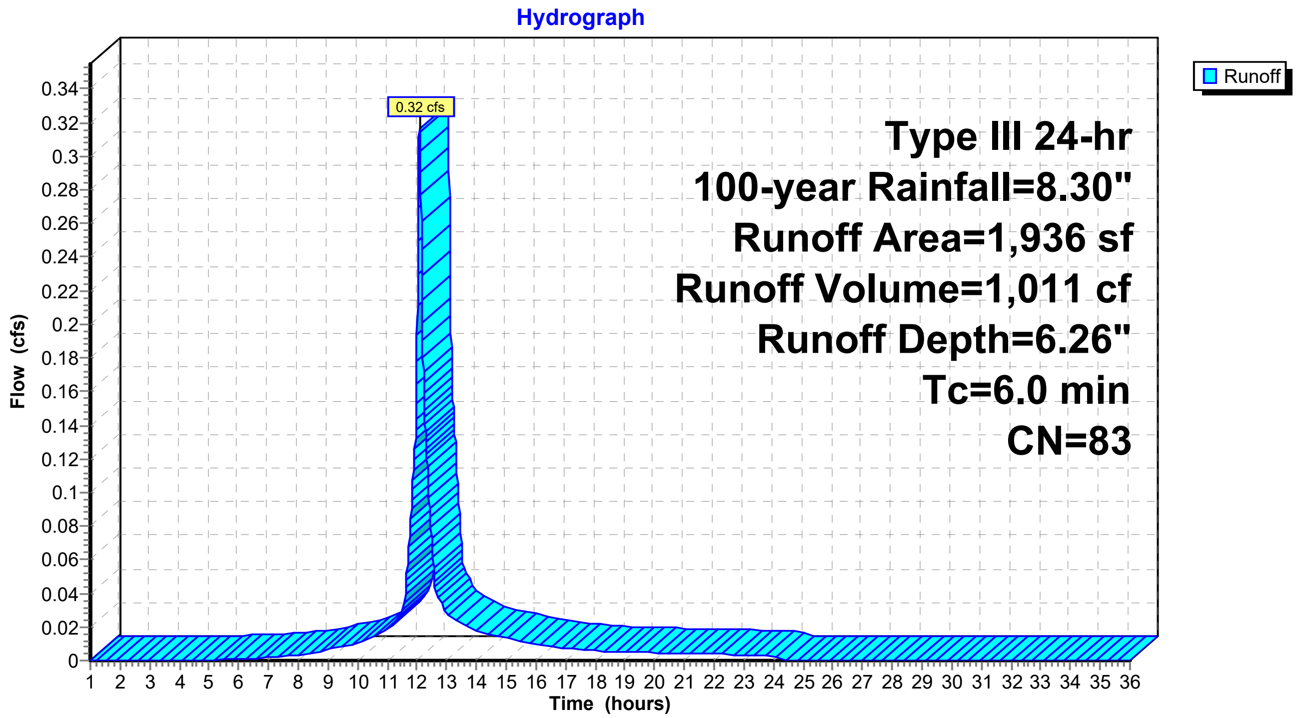
Runoff = 0.32 cfs @ 12.09 hrs, Volume= 1,011 cf, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
1,161	98	Paved parking, HSG B
775	61	>75% Grass cover, Good, HSG B
1,936	83	Weighted Average
775		40.03% Pervious Area
1,161		59.97% Impervious Area

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

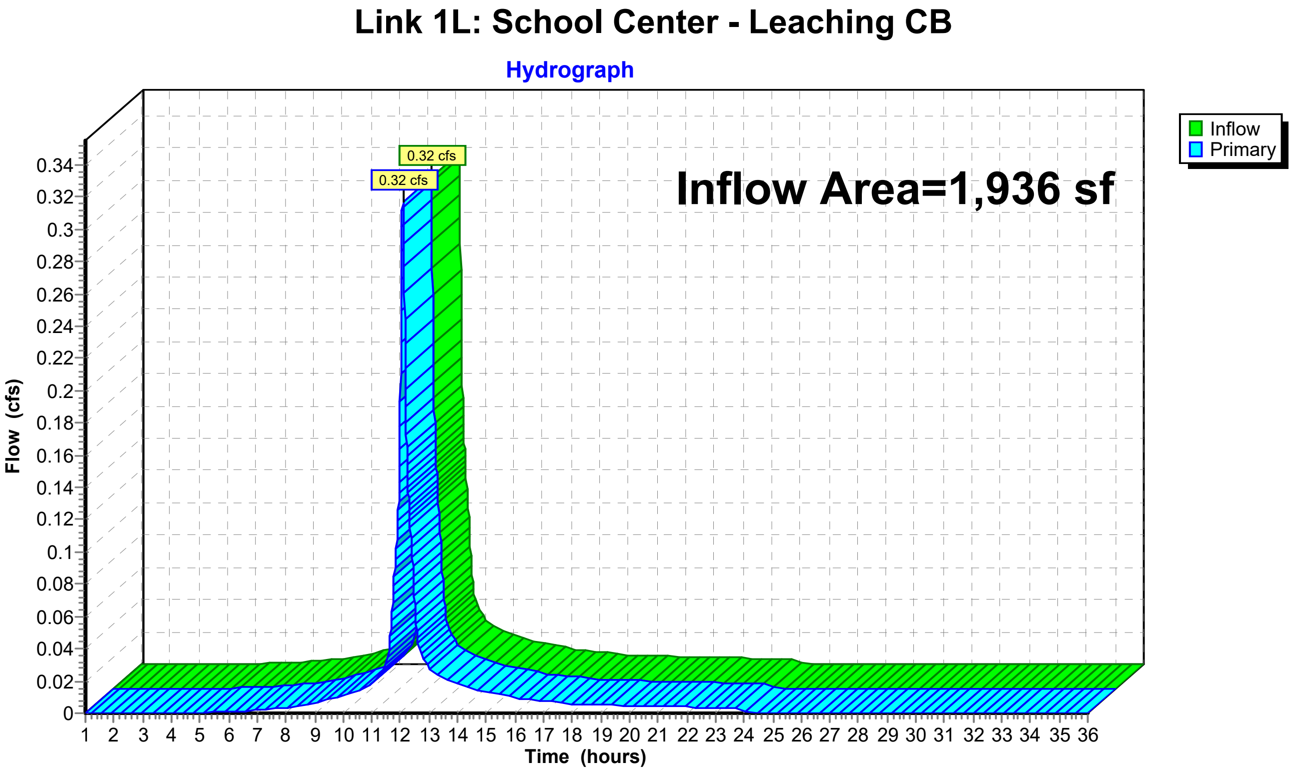
Subcatchment 22S: Sub 20



Summary for Link 1L: School Center - Leaching CB

Inflow Area =	1,936 sf,	59.97% Impervious,	Inflow Depth = 6.26"	for 100-year event
Inflow =	0.32 cfs @	12.09 hrs, Volume=	1,011 cf	
Primary =	0.32 cfs @	12.09 hrs, Volume=	1,011 cf,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

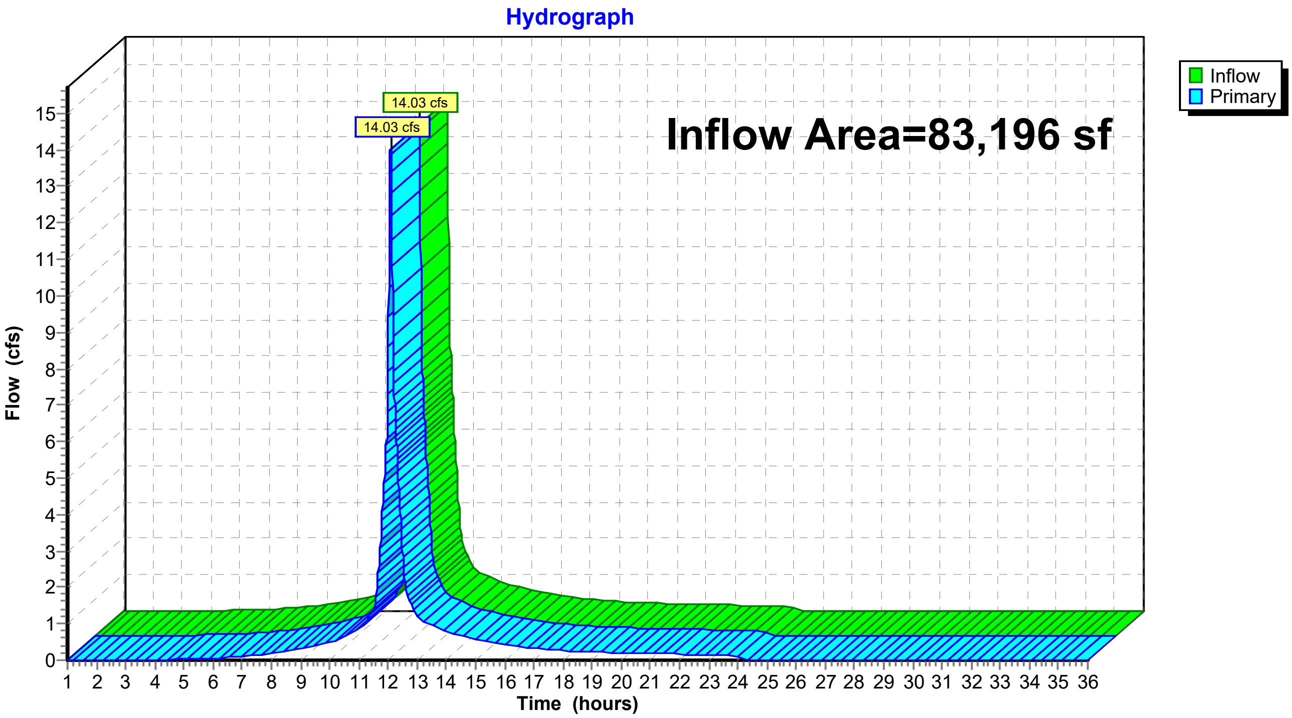


Summary for Link 2L: Playground - Leaching CBs

Inflow Area =	83,196 sf,	67.30% Impervious,	Inflow Depth = 6.54"	for 100-year event
Inflow =	14.03 cfs @	12.08 hrs, Volume=	45,358 cf	
Primary =	14.03 cfs @	12.08 hrs, Volume=	45,358 cf,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 2L: Playground - Leaching CBs

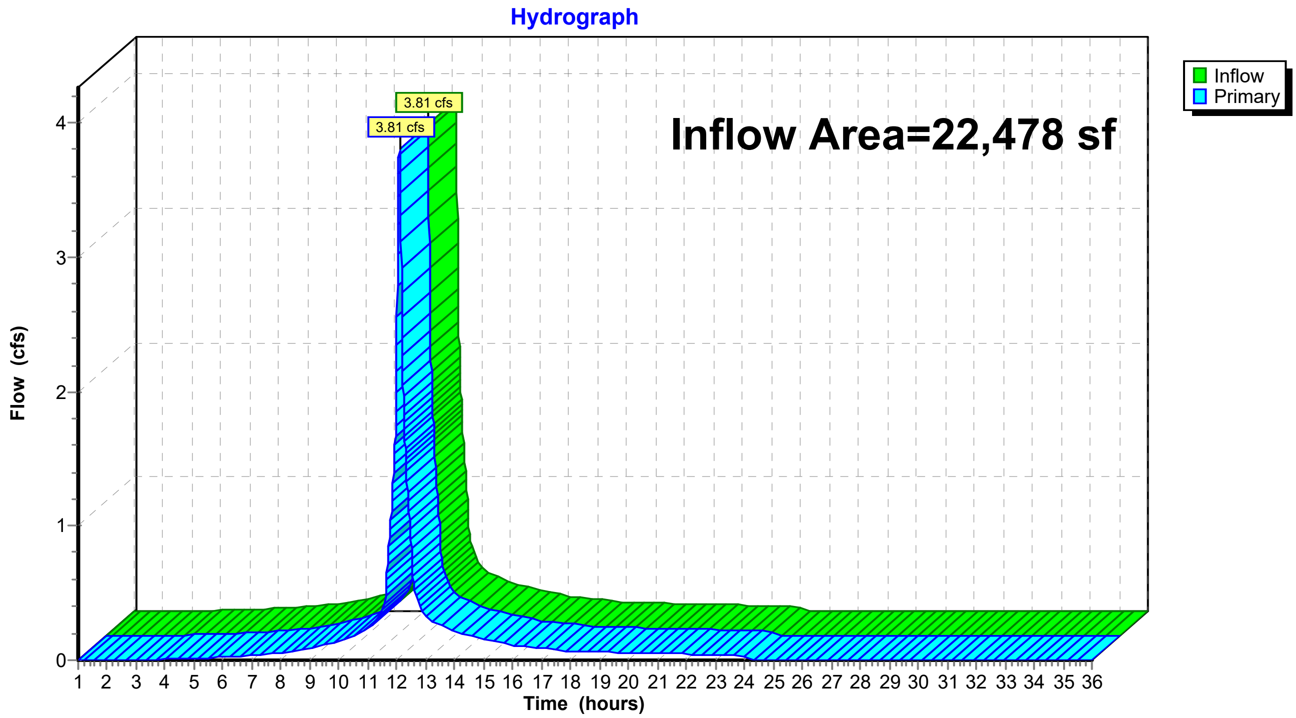


Summary for Link 3L: South Western - Leaching CBs

Inflow Area =	22,478 sf, 71.64% Impervious,	Inflow Depth = 6.65"	for 100-year event	
Inflow =	3.81 cfs @ 12.08 hrs,	Volume=	12,453 cf	
Primary =	3.81 cfs @ 12.08 hrs,	Volume=	12,453 cf,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 3L: South Western - Leaching CBs

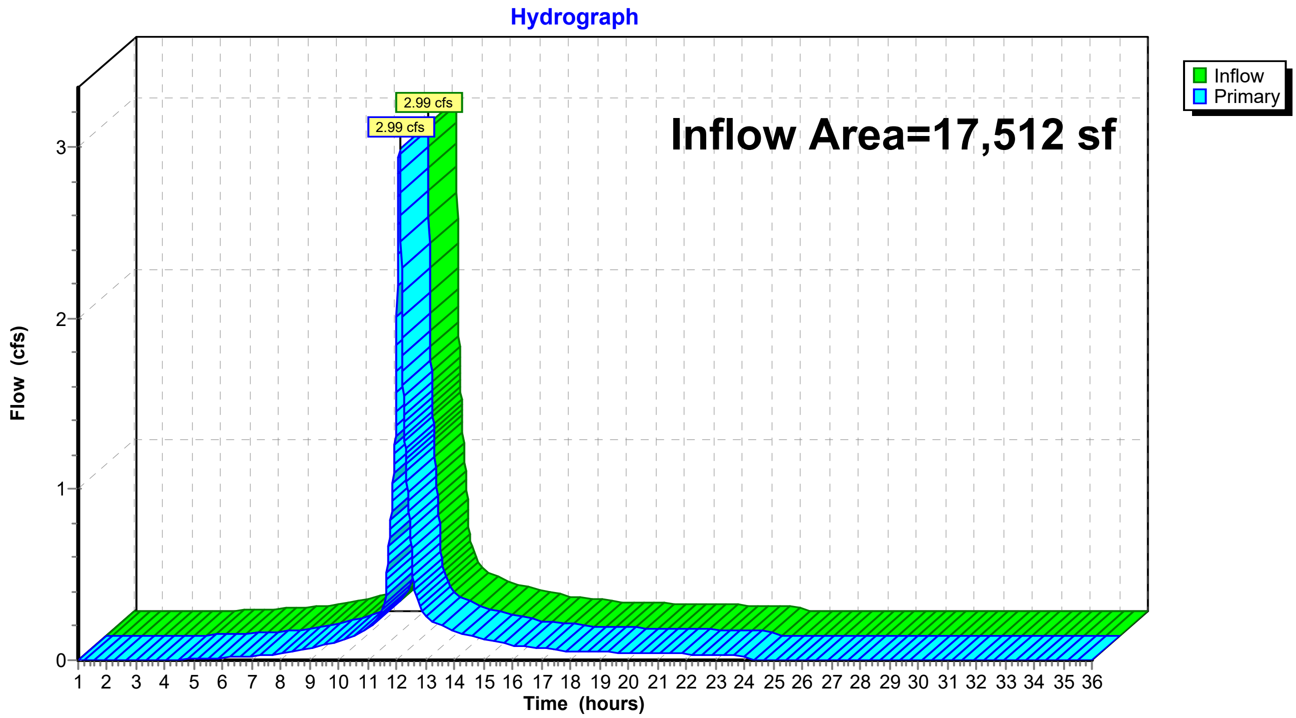


Summary for Link 4L: School Main Entrance - Leaching CBs

Inflow Area =	17,512 sf,	79.83% Impervious,	Inflow Depth = 6.64"	for 100-year event
Inflow =	2.99 cfs @	12.08 hrs, Volume=	9,693 cf	
Primary =	2.99 cfs @	12.08 hrs, Volume=	9,693 cf,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 4L: School Main Entrance - Leaching CBs

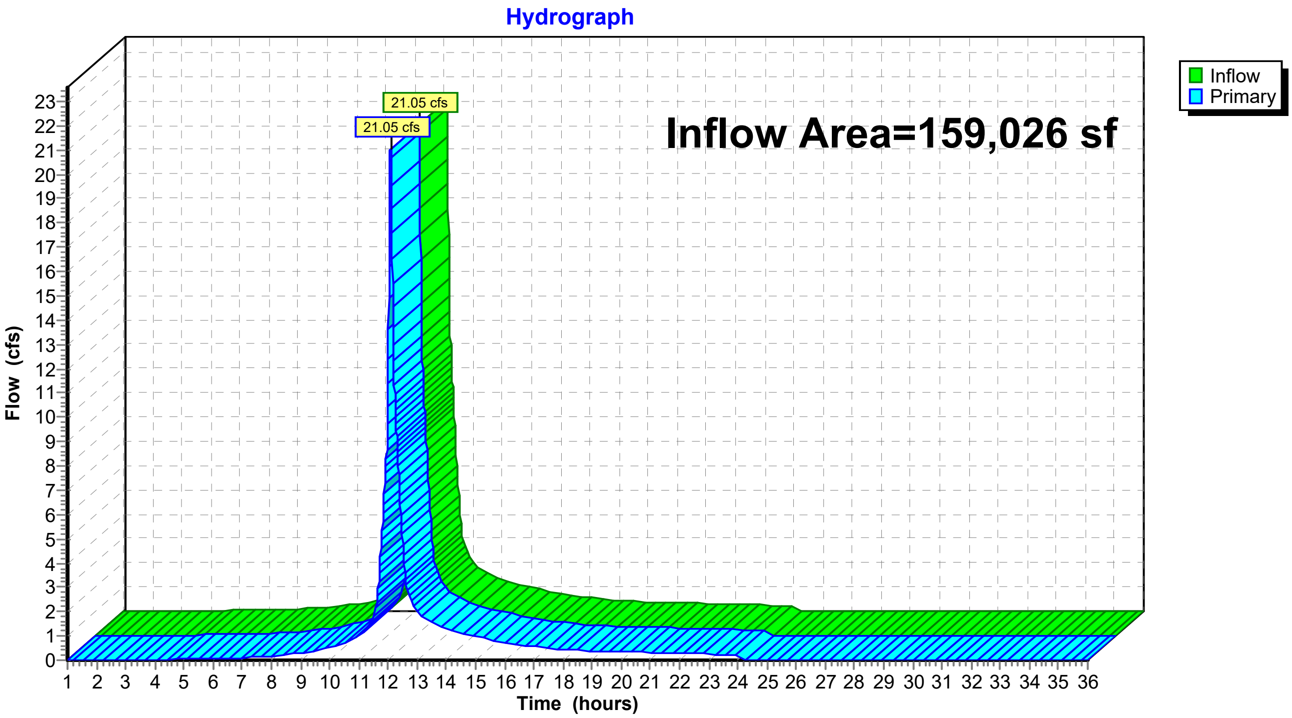


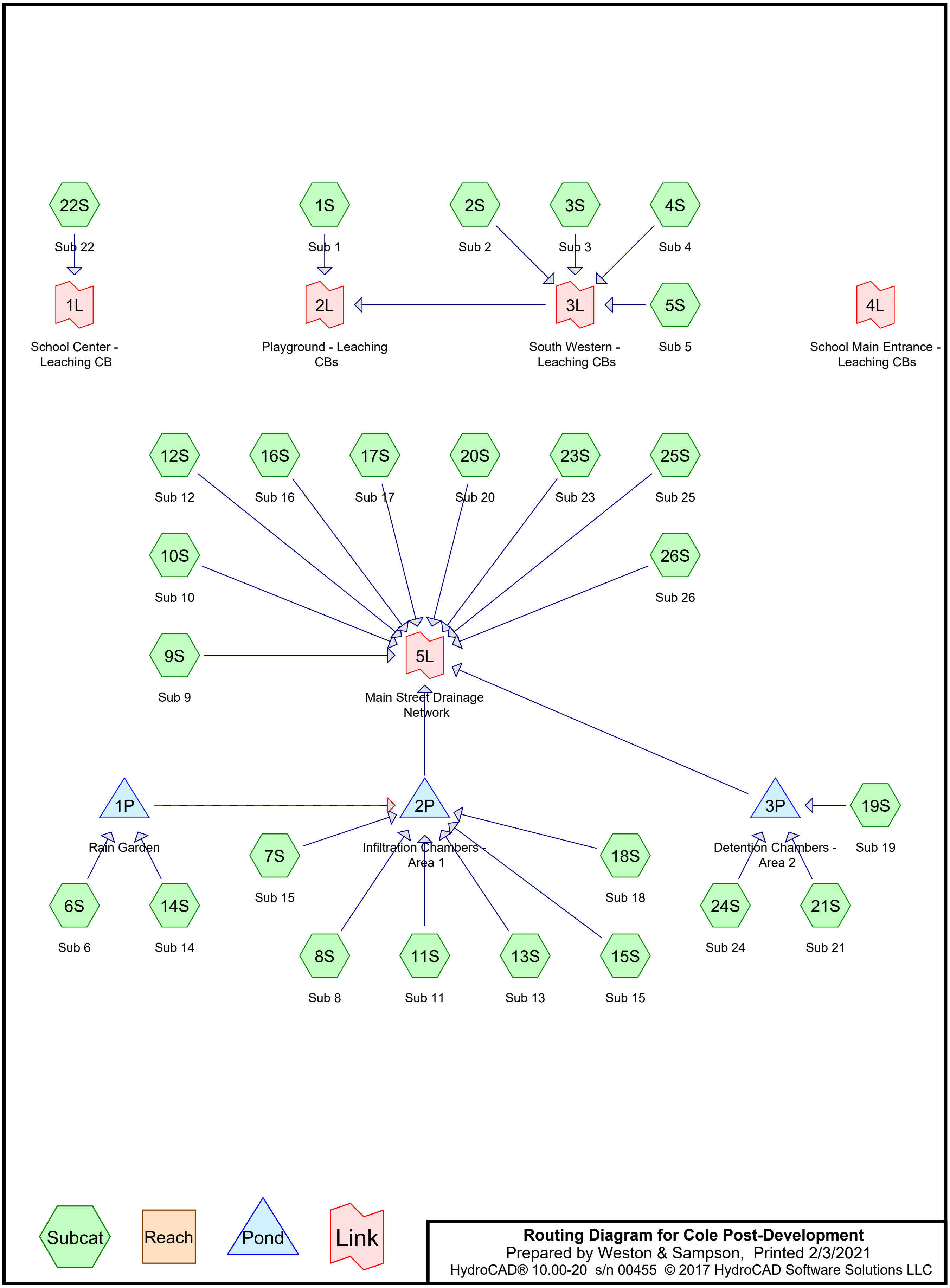
Summary for Link 5L: Main Street Drainage Network

Inflow Area =	159,026 sf,	45.50% Impervious,	Inflow Depth > 5.08"	for 100-year event
Inflow =	21.05 cfs @	12.09 hrs, Volume=	67,366 cf	
Primary =	21.05 cfs @	12.09 hrs, Volume=	67,366 cf, Atten= 0%,	Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 5L: Main Street Drainage Network





Routing Diagram for Cole Post-Development
Prepared by Weston & Sampson, Printed 2/3/2021
HydroCAD® 10.00-20 s/n 00455 © 2017 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
33,746	39	>75% Grass cover, Good, HSG A (6S, 7S, 9S, 10S, 11S, 12S, 14S, 16S, 18S, 20S, 25S)
37,033	61	>75% Grass cover, Good, HSG B (1S, 2S, 5S, 8S, 22S, 23S)
63,488	98	Paved parking, HSG A (6S, 7S, 9S, 10S, 11S, 13S, 14S, 15S, 18S, 19S, 21S, 26S)
47,517	98	Paved parking, HSG B (1S, 2S, 3S, 4S, 5S, 8S, 17S, 22S, 24S)
25,928	98	Roofs, HSG A (6S, 7S, 11S, 19S, 21S, 25S)
21,241	98	Roofs, HSG B (1S, 5S, 18S, 24S)
30,669	30	Woods, Good, HSG A (20S, 23S, 25S)
2,048	55	Woods, Good, HSG B (1S, 2S)
261,670	**77**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
153,831	HSG A	6S, 7S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 16S, 18S, 19S, 20S, 21S, 23S, 25S, 26S
107,839	HSG B	1S, 2S, 3S, 4S, 5S, 8S, 17S, 18S, 22S, 23S, 24S
0	HSG C	
0	HSG D	
0	Other	
261,670		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Su Nu
33,746	37,033	0	0	0	70,779	>75% Grass cover, Good	
63,488	47,517	0	0	0	111,005	Paved parking	
25,928	21,241	0	0	0	47,169	Roofs	
30,669	2,048	0	0	0	32,717	Woods, Good	
153,831	**107,839**	**0**	**0**	**0**	**261,670**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1P	92.75	92.25	23.8	0.0210	0.130	12.0	0.0	0.0
2	2P	91.50	91.06	87.6	0.0050	0.013	12.0	0.0	0.0
3	3P	89.00	88.88	25.0	0.0048	0.013	15.0	0.0	0.0

Time span=1.00-36.00 hrs, dt=0.01 hrs, 3501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Sub 1 Runoff Area=47,754 sf 74.52% Impervious Runoff Depth=1.91"
Tc=6.0 min CN=88 Runoff=2.45 cfs 7,590 cf

Subcatchment2S: Sub 2 Runoff Area=11,368 sf 2.40% Impervious Runoff Depth=0.40"
Tc=6.0 min CN=61 Runoff=0.07 cfs 383 cf

Subcatchment3S: Sub 3 Runoff Area=1,954 sf 100.00% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=98 Runoff=0.13 cfs 467 cf

Subcatchment4S: Sub 4 Runoff Area=4,312 sf 100.00% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=98 Runoff=0.30 cfs 1,031 cf

Subcatchment5S: Sub 5 Runoff Area=7,968 sf 87.10% Impervious Runoff Depth=2.35"
Tc=6.0 min CN=93 Runoff=0.49 cfs 1,560 cf

Subcatchment6S: Sub 6 Runoff Area=8,822 sf 93.69% Impervious Runoff Depth=2.45"
Tc=6.0 min CN=94 Runoff=0.56 cfs 1,799 cf

Subcatchment7S: Sub 15 Runoff Area=5,419 sf 88.41% Impervious Runoff Depth=2.16"
Tc=6.0 min CN=91 Runoff=0.31 cfs 977 cf

Subcatchment8S: Sub 8 Runoff Area=3,381 sf 68.83% Impervious Runoff Depth=1.75"
Tc=6.0 min CN=86 Runoff=0.16 cfs 493 cf

Subcatchment9S: Sub 9 Runoff Area=3,080 sf 63.08% Impervious Runoff Depth=1.08"
Tc=6.0 min CN=76 Runoff=0.09 cfs 278 cf

Subcatchment10S: Sub 10 Runoff Area=2,156 sf 34.97% Impervious Runoff Depth=0.37"
Tc=6.0 min CN=60 Runoff=0.01 cfs 66 cf

Subcatchment11S: Sub 11 Runoff Area=7,623 sf 94.74% Impervious Runoff Depth=2.55"
Tc=6.0 min CN=95 Runoff=0.50 cfs 1,618 cf

Subcatchment12S: Sub 12 Runoff Area=1,314 sf 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=39 Runoff=0.00 cfs 0 cf

Subcatchment13S: Sub 13 Runoff Area=8,127 sf 100.00% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=98 Runoff=0.56 cfs 1,942 cf

Subcatchment14S: Sub 14 Runoff Area=7,886 sf 47.69% Impervious Runoff Depth=0.64"
Tc=6.0 min CN=67 Runoff=0.11 cfs 418 cf

Subcatchment15S: Sub 15 Runoff Area=9,235 sf 100.00% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=98 Runoff=0.64 cfs 2,207 cf

Subcatchment16S: Sub 16 Runoff Area=2,299 sf 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=39 Runoff=0.00 cfs 0 cf

Subcatchment17S: Sub 17 Runoff Area=2,903 sf 100.00% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=98 Runoff=0.20 cfs 694 cf

Subcatchment18S: Sub 18 Runoff Area=8,910 sf 92.85% Impervious Runoff Depth=2.45"
Tc=6.0 min CN=94 Runoff=0.56 cfs 1,817 cf

Subcatchment19S: Sub 19 Runoff Area=11,994 sf 100.00% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=98 Runoff=0.83 cfs 2,866 cf

Subcatchment20S: Sub 20 Runoff Area=25,472 sf 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=34 Runoff=0.00 cfs 0 cf

Subcatchment21S: Sub 21 Runoff Area=22,553 sf 100.00% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=98 Runoff=1.56 cfs 5,390 cf

Subcatchment22S: Sub 22 Runoff Area=1,936 sf 59.97% Impervious Runoff Depth=1.53"
Tc=6.0 min CN=83 Runoff=0.08 cfs 246 cf

Subcatchment23S: Sub 23 Runoff Area=29,154 sf 0.00% Impervious Runoff Depth=0.02"
Tc=6.0 min CN=44 Runoff=0.00 cfs 56 cf

Subcatchment24S: Sub 24 Runoff Area=10,922 sf 100.00% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=98 Runoff=0.75 cfs 2,610 cf

Subcatchment25S: Sub 25 Runoff Area=11,571 sf 11.40% Impervious Runoff Depth=0.03"
Tc=6.0 min CN=45 Runoff=0.00 cfs 32 cf

Subcatchment26S: Sub 26 Runoff Area=3,557 sf 100.00% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=98 Runoff=0.25 cfs 850 cf

Pond 1P: Rain Garden Peak Elev=101.32' Storage=912 cf Inflow=0.66 cfs 2,216 cf
Primary=0.41 cfs 1,337 cf Secondary=0.00 cfs 0 cf Outflow=0.41 cfs 1,337 cf

Pond 2P: Infiltration Chambers - Area 1 Peak Elev=92.22' Storage=4,024 cf Inflow=2.73 cfs 10,392 cf
Discarded=0.23 cfs 10,388 cf Primary=0.00 cfs 3 cf Outflow=0.23 cfs 10,392 cf

Pond 3P: Detention Chambers - Area 2 Peak Elev=91.09' Storage=904 cf Inflow=3.14 cfs 10,867 cf
Outflow=3.11 cfs 10,138 cf

Link 1L: School Center - Leaching CB Inflow=0.08 cfs 246 cf
Primary=0.08 cfs 246 cf

Link 2L: Playground - Leaching CBs Inflow=3.43 cfs 11,031 cf
Primary=3.43 cfs 11,031 cf

Link 3L: South Western - Leaching CBs Inflow=0.98 cfs 3,440 cf
Primary=0.98 cfs 3,440 cf

Link 4L: School Main Entrance - Leaching CBs
Primary=0.00 cfs 0 cf

Link 5L: Main Street Drainage Network

Inflow=3.65 cfs 12,118 cf
Primary=3.65 cfs 12,118 cf

Total Runoff Area = 261,670 sf Runoff Volume = 35,391 cf Average Runoff Depth = 1.62"
39.55% Pervious = 103,496 sf 60.45% Impervious = 158,174 sf

Summary for Subcatchment 1S: Sub 1

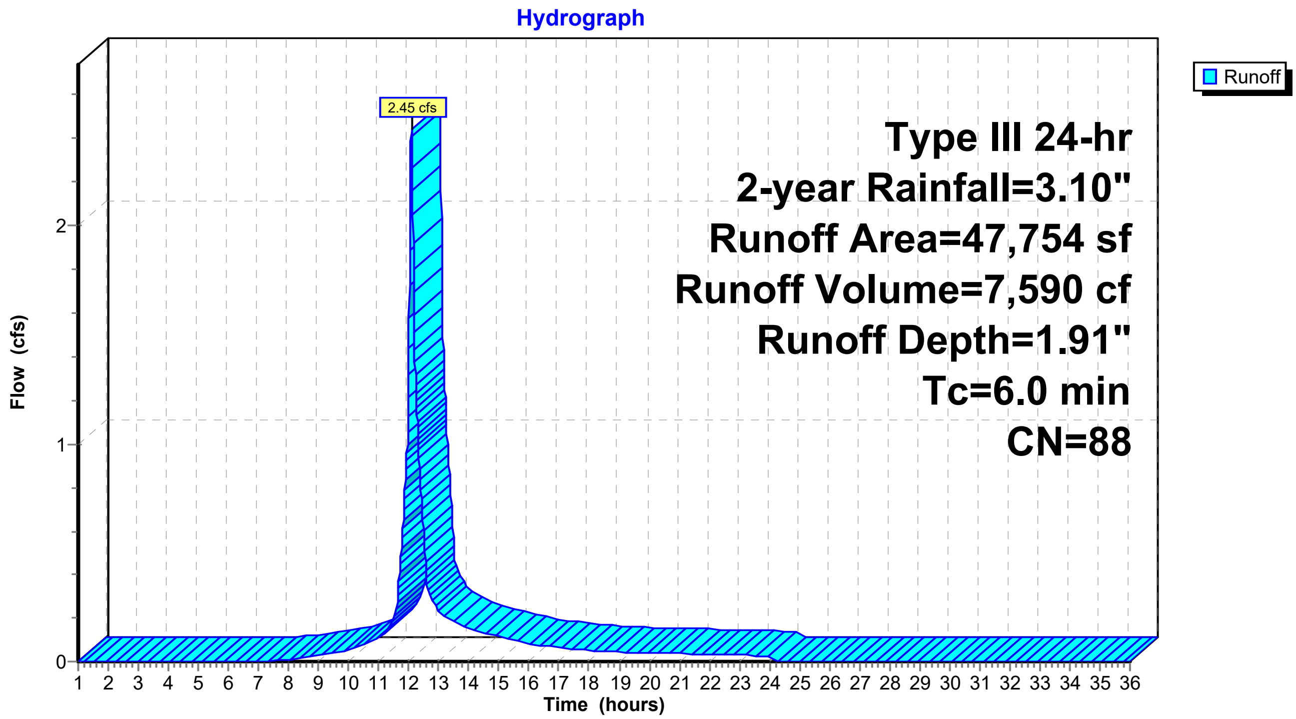
Runoff = 2.45 cfs @ 12.09 hrs, Volume= 7,590 cf, Depth= 1.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
13,390	98	Roofs, HSG B
975	55	Woods, Good, HSG B
11,191	61	>75% Grass cover, Good, HSG B
22,198	98	Paved parking, HSG B
47,754	88	Weighted Average
12,166		25.48% Pervious Area
35,588		74.52% Impervious Area

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

Subcatchment 1S: Sub 1



Summary for Subcatchment 2S: Sub 2

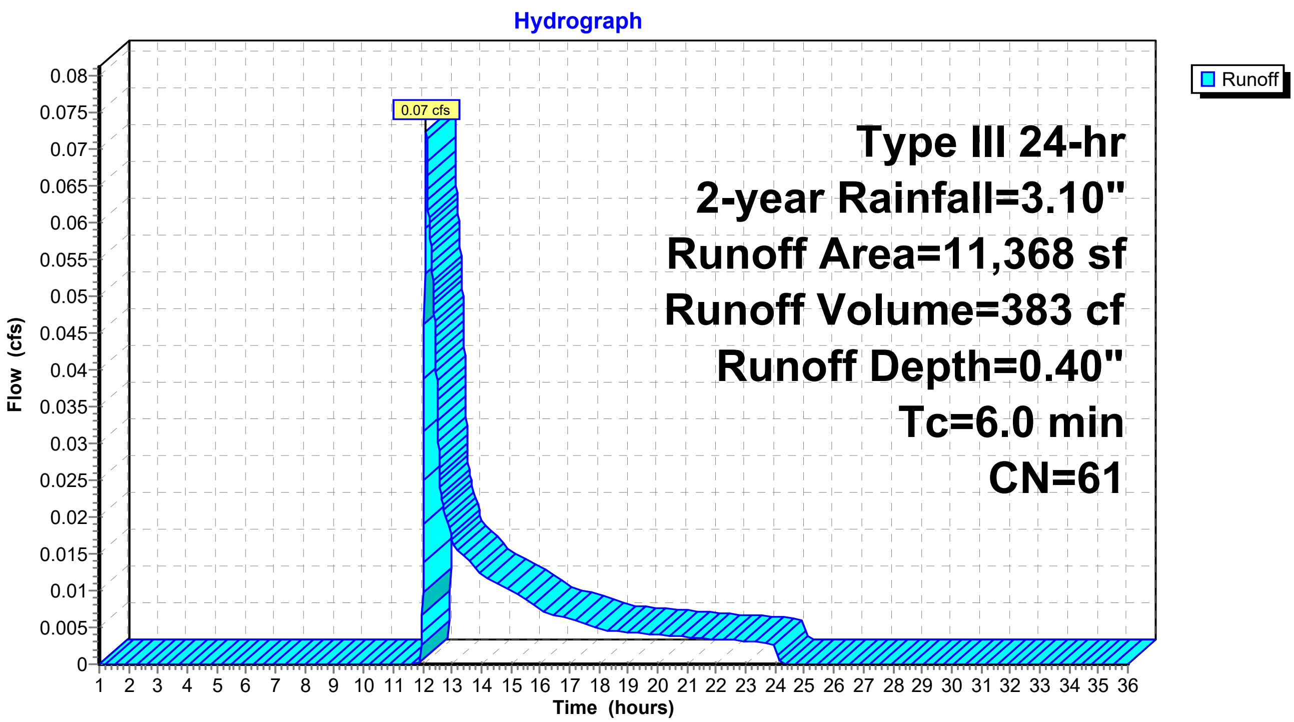
Runoff = 0.07 cfs @ 12.13 hrs, Volume= 383 cf, Depth= 0.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
1,073	55	Woods, Good, HSG B
10,022	61	>75% Grass cover, Good, HSG B
273	98	Paved parking, HSG B
11,368	61	Weighted Average
11,095		97.60% Pervious Area
273		2.40% Impervious Area

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

Subcatchment 2S: Sub 2



Summary for Subcatchment 3S: Sub 3

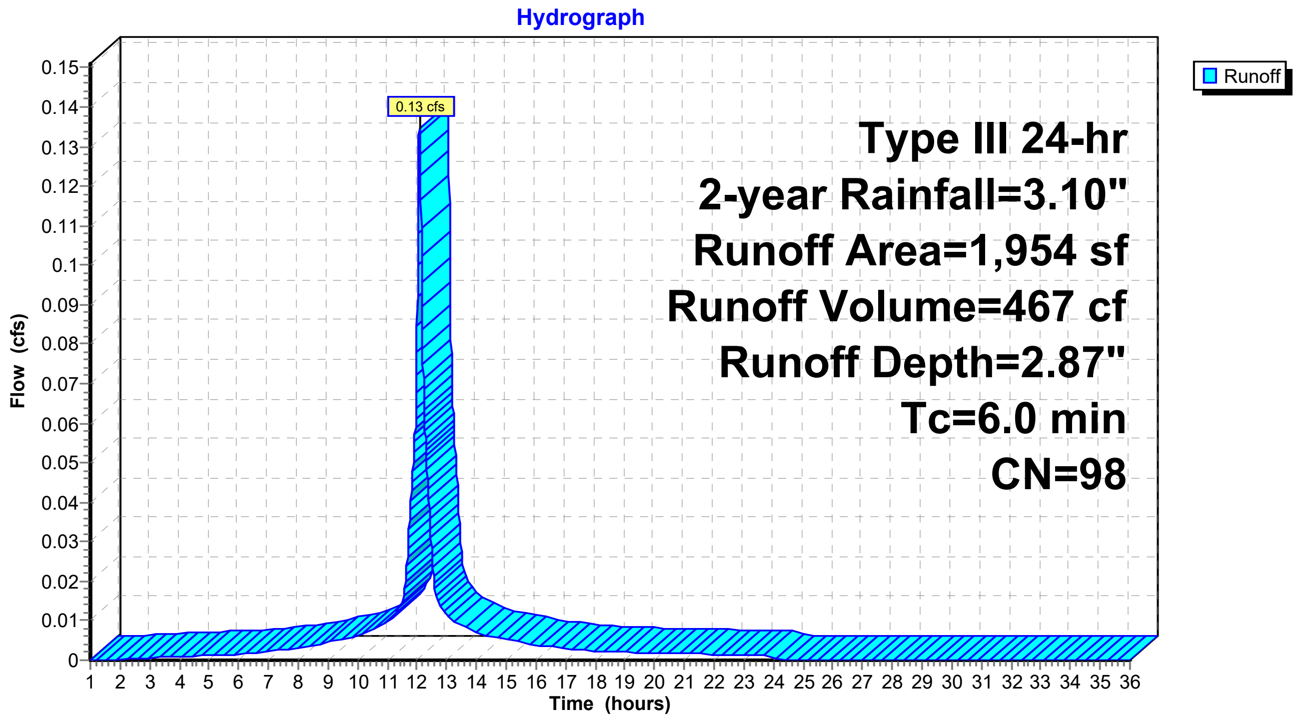
Runoff = 0.13 cfs @ 12.08 hrs, Volume= 467 cf, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
1,954	98	Paved parking, HSG B
1,954		100.00% Impervious Area

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

Subcatchment 3S: Sub 3



Summary for Subcatchment 4S: Sub 4

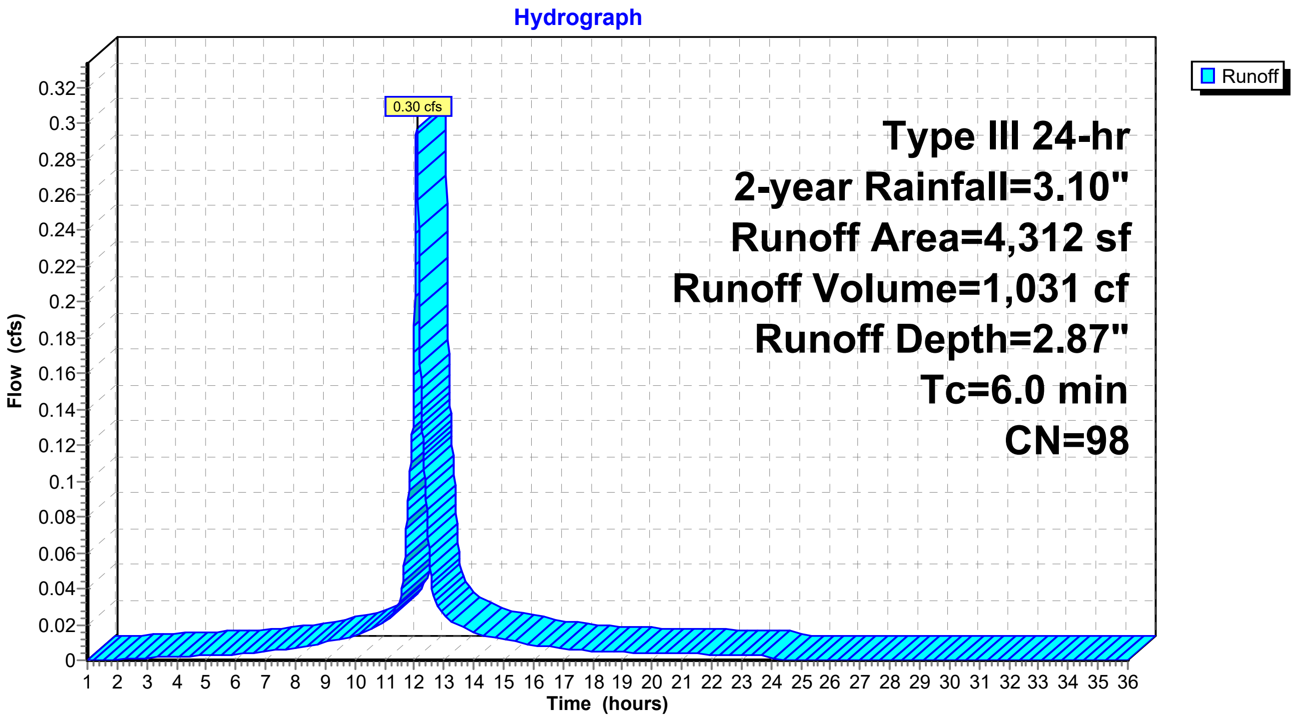
Runoff = 0.30 cfs @ 12.08 hrs, Volume= 1,031 cf, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
4,312	98	Paved parking, HSG B
4,312		100.00% Impervious Area

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

Subcatchment 4S: Sub 4



Summary for Subcatchment 5S: Sub 5

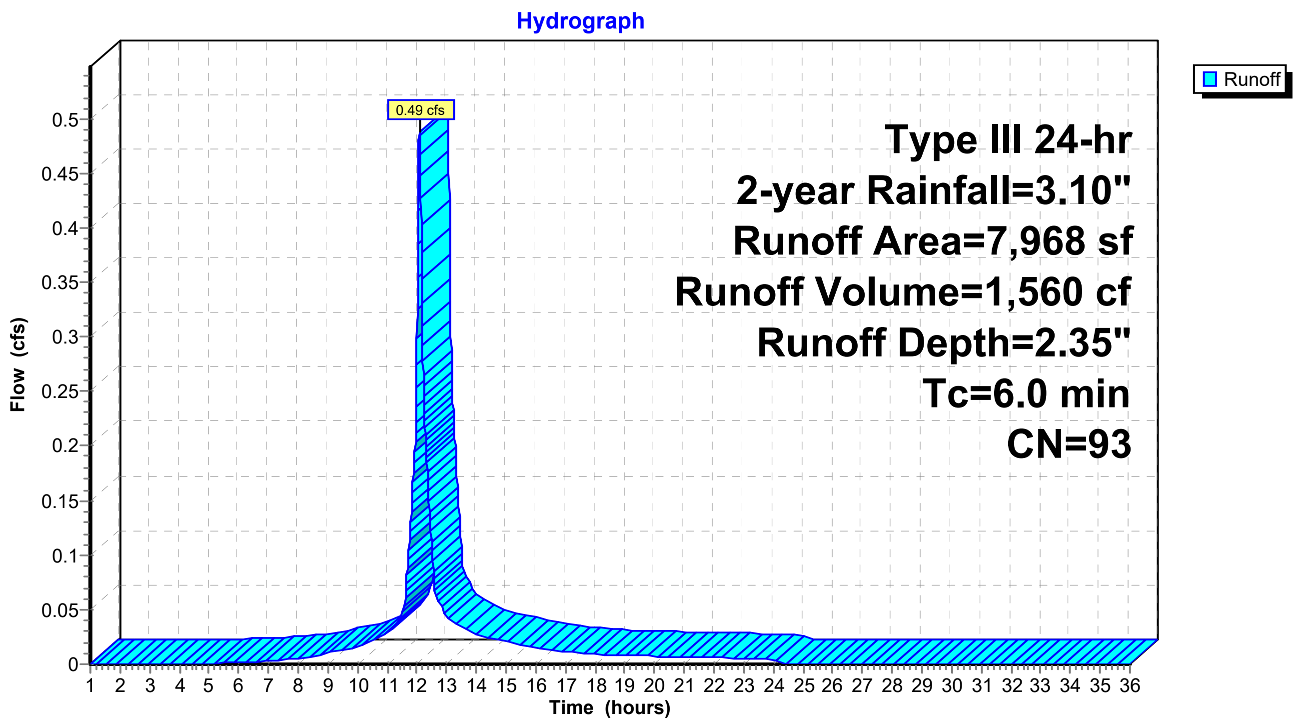
Runoff = 0.49 cfs @ 12.09 hrs, Volume= 1,560 cf, Depth= 2.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
5,157	98	Roofs, HSG B
1,028	61	>75% Grass cover, Good, HSG B
1,783	98	Paved parking, HSG B
7,968	93	Weighted Average
1,028		12.90% Pervious Area
6,940		87.10% Impervious Area

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

Subcatchment 5S: Sub 5



Summary for Subcatchment 6S: Sub 6

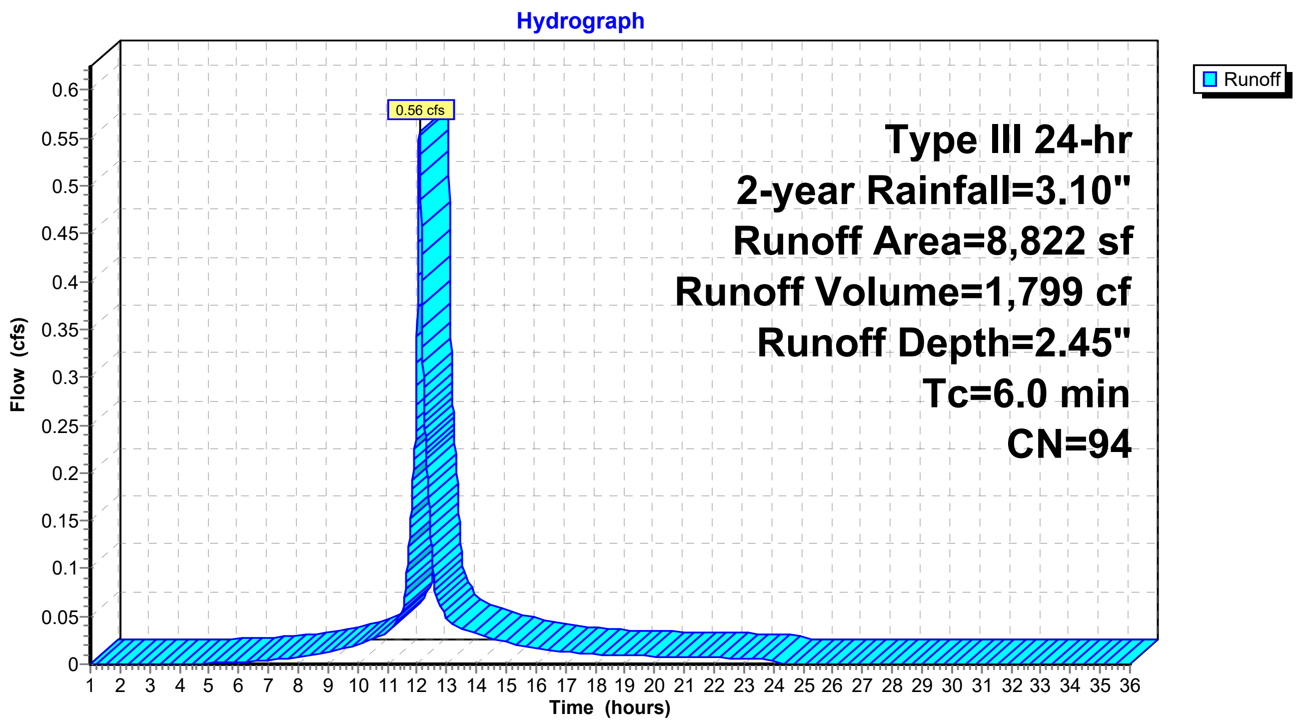
Runoff = 0.56 cfs @ 12.08 hrs, Volume= 1,799 cf, Depth= 2.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
557	39	>75% Grass cover, Good, HSG A
4,015	98	Paved parking, HSG A
4,250	98	Roofs, HSG A
8,822	94	Weighted Average
557		6.31% Pervious Area
8,265		93.69% Impervious Area

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

Subcatchment 6S: Sub 6



Summary for Subcatchment 7S: Sub 15

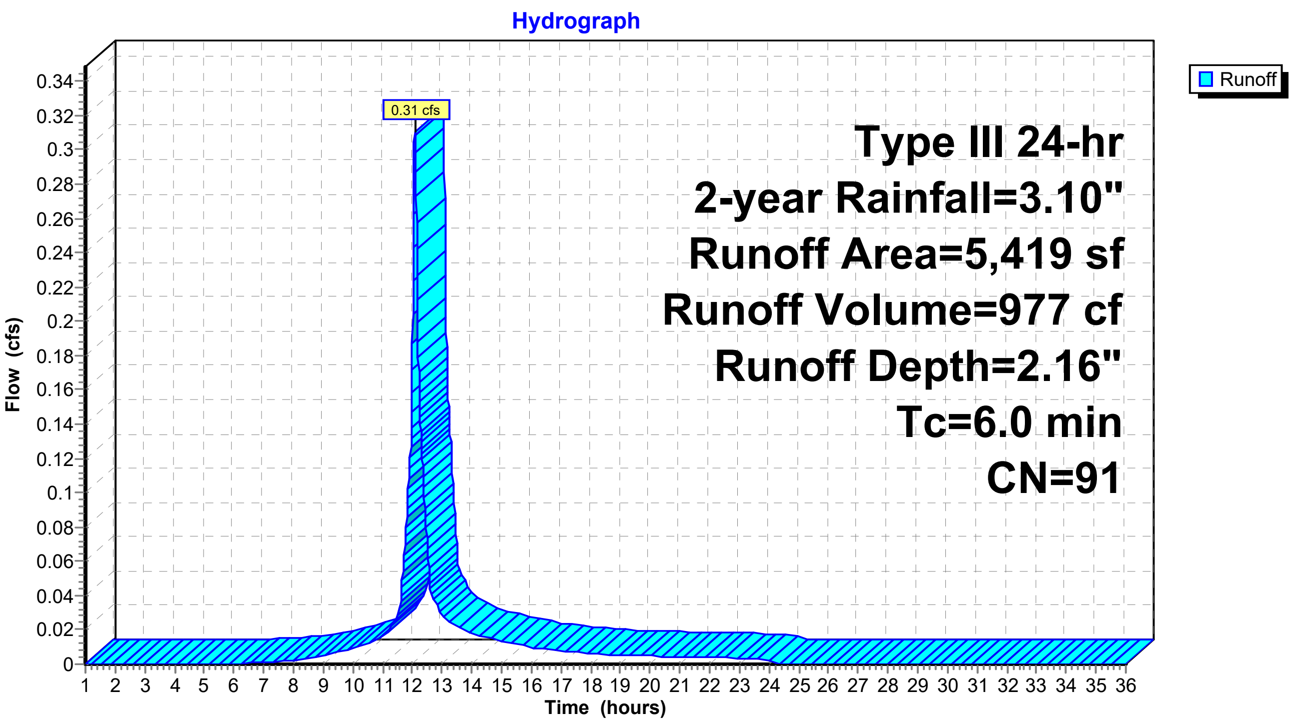
Runoff = 0.31 cfs @ 12.09 hrs, Volume= 977 cf, Depth= 2.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
628	39	>75% Grass cover, Good, HSG A
3,579	98	Paved parking, HSG A
1,212	98	Roofs, HSG A
5,419	91	Weighted Average
628		11.59% Pervious Area
4,791		88.41% Impervious Area

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

Subcatchment 7S: Sub 15



Summary for Subcatchment 8S: Sub 8

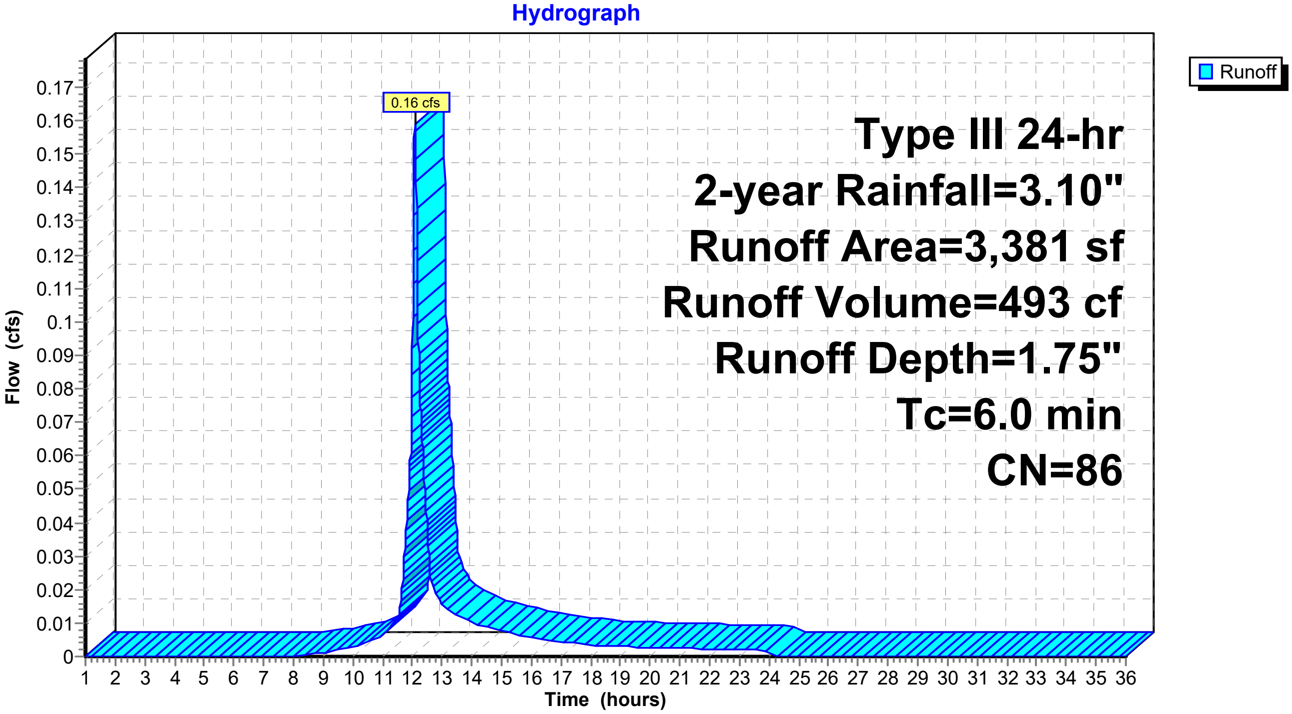
Runoff = 0.16 cfs @ 12.09 hrs, Volume= 493 cf, Depth= 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
2,327	98	Paved parking, HSG B
1,054	61	>75% Grass cover, Good, HSG B
3,381	86	Weighted Average
1,054		31.17% Pervious Area
2,327		68.83% Impervious Area

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

Subcatchment 8S: Sub 8



Summary for Subcatchment 9S: Sub 9

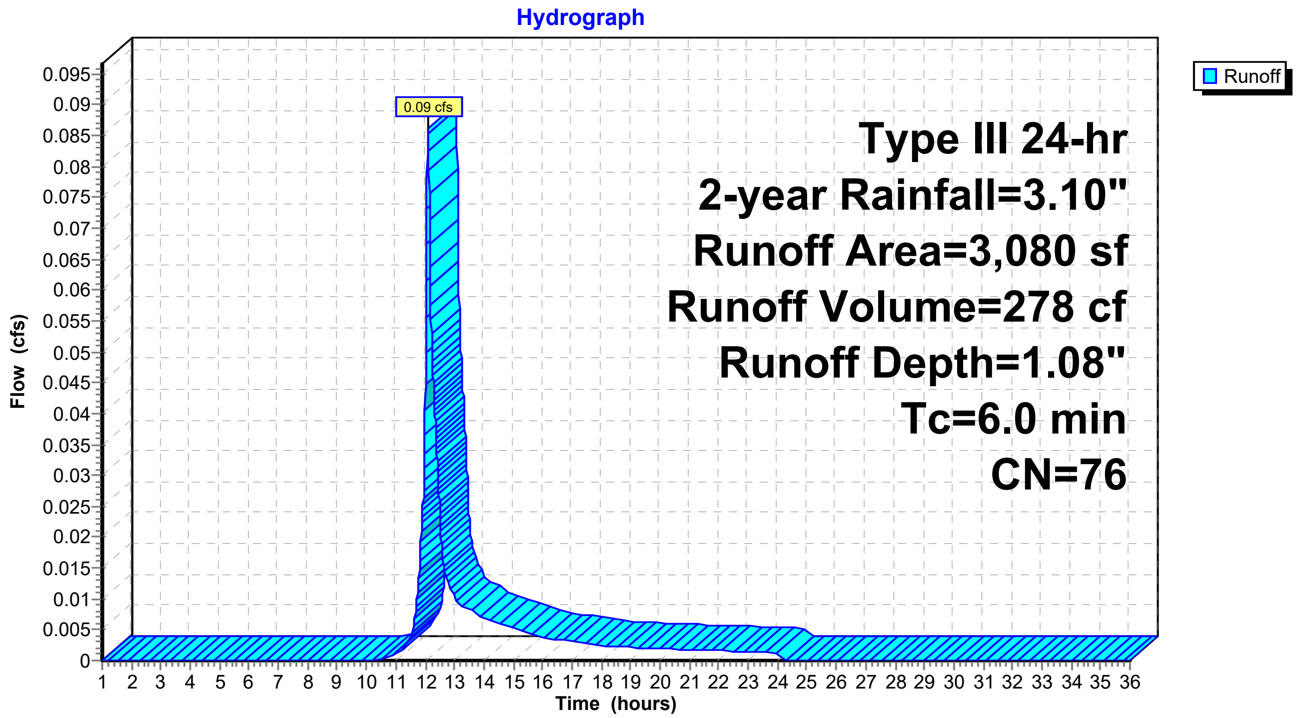
Runoff = 0.09 cfs @ 12.09 hrs, Volume= 278 cf, Depth= 1.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
1,137	39	>75% Grass cover, Good, HSG A
1,943	98	Paved parking, HSG A
3,080	76	Weighted Average
1,137		36.92% Pervious Area
1,943		63.08% Impervious Area

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

Subcatchment 9S: Sub 9



Summary for Subcatchment 10S: Sub 10

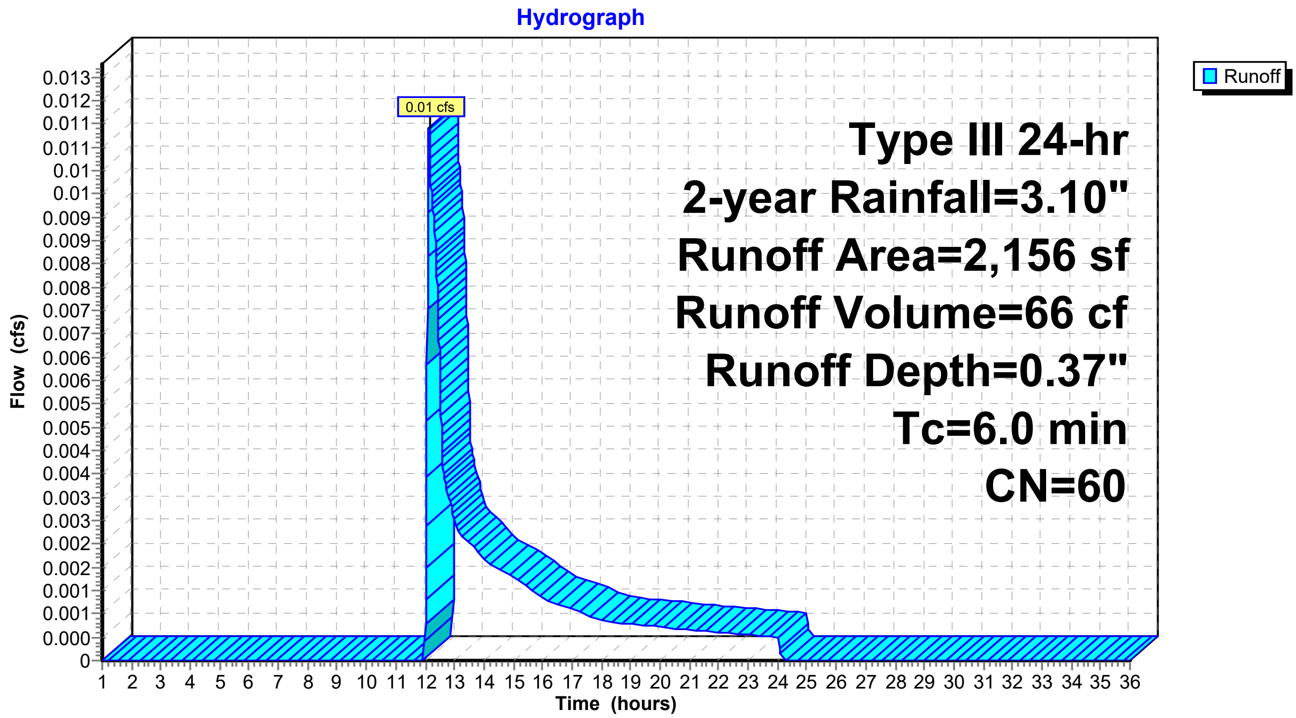
Runoff = 0.01 cfs @ 12.13 hrs, Volume= 66 cf, Depth= 0.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
1,402	39	>75% Grass cover, Good, HSG A
754	98	Paved parking, HSG A
2,156	60	Weighted Average
1,402		65.03% Pervious Area
754		34.97% Impervious Area

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

Subcatchment 10S: Sub 10



Summary for Subcatchment 11S: Sub 11

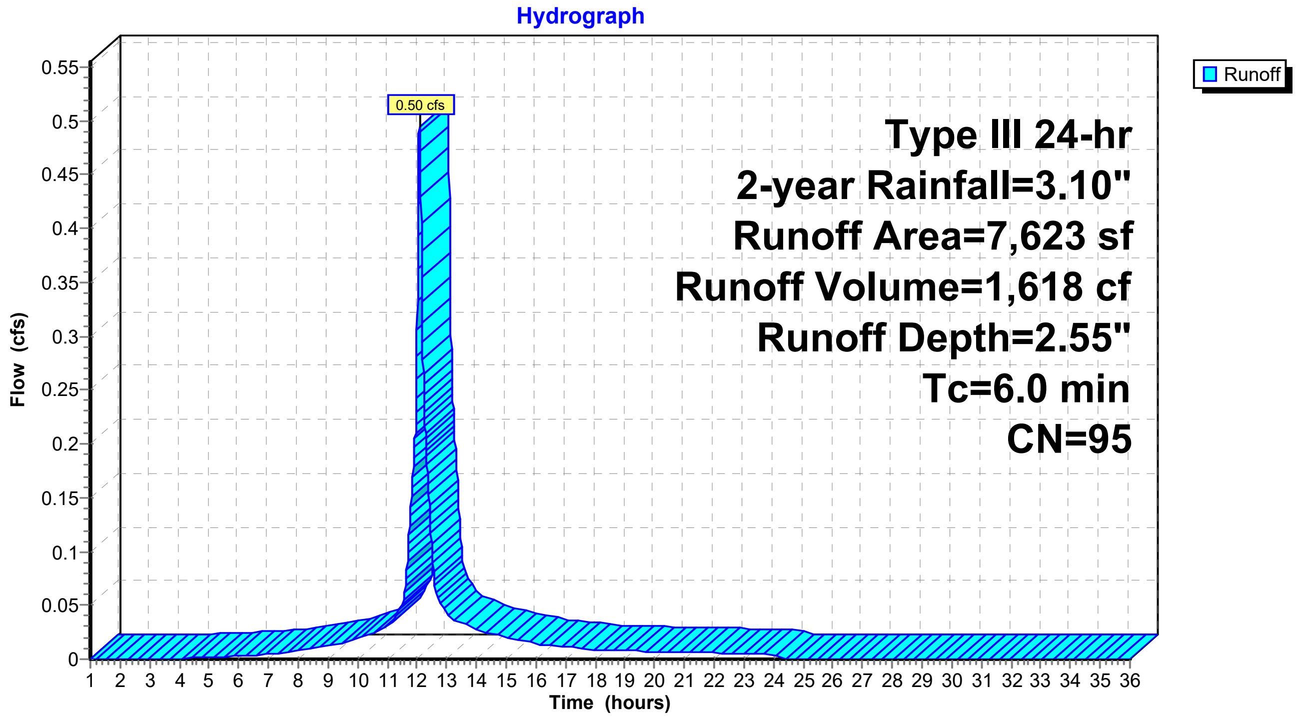
Runoff = 0.50 cfs @ 12.08 hrs, Volume= 1,618 cf, Depth= 2.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
401	39	>75% Grass cover, Good, HSG A
6,169	98	Paved parking, HSG A
1,053	98	Roofs, HSG A
7,623	95	Weighted Average
401		5.26% Pervious Area
7,222		94.74% Impervious Area

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

Subcatchment 11S: Sub 11



Summary for Subcatchment 12S: Sub 12

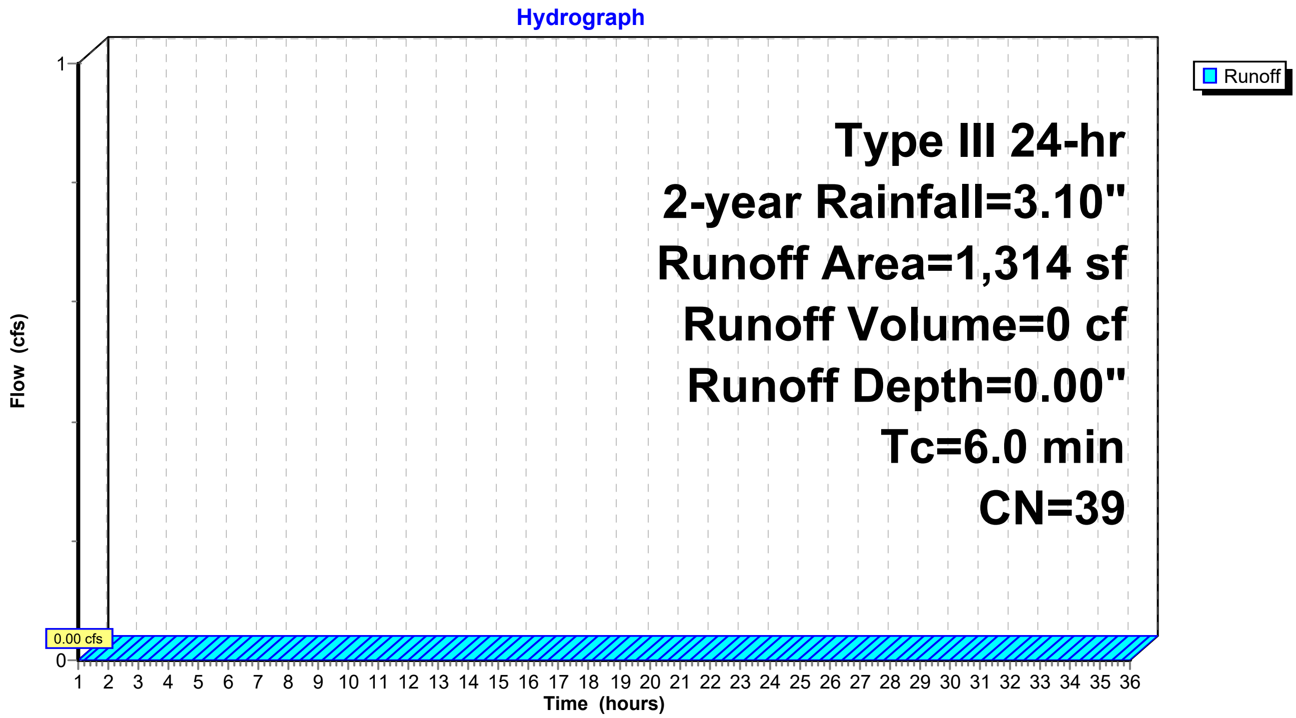
Runoff = 0.00 cfs @ 1.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
1,314	39	>75% Grass cover, Good, HSG A
1,314		100.00% Pervious Area

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

Subcatchment 12S: Sub 12



Summary for Subcatchment 13S: Sub 13

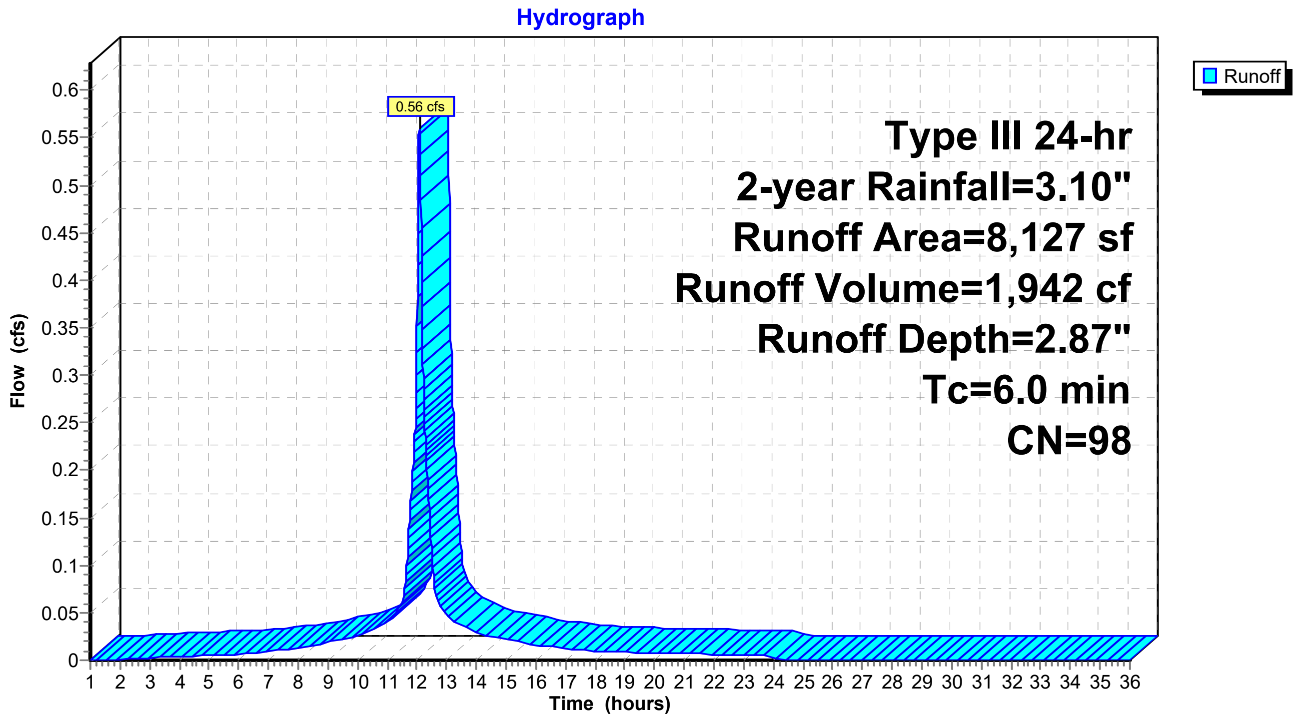
Runoff = 0.56 cfs @ 12.08 hrs, Volume= 1,942 cf, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
8,127	98	Paved parking, HSG A
8,127		100.00% Impervious Area

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

Subcatchment 13S: Sub 13



Summary for Subcatchment 14S: Sub 14

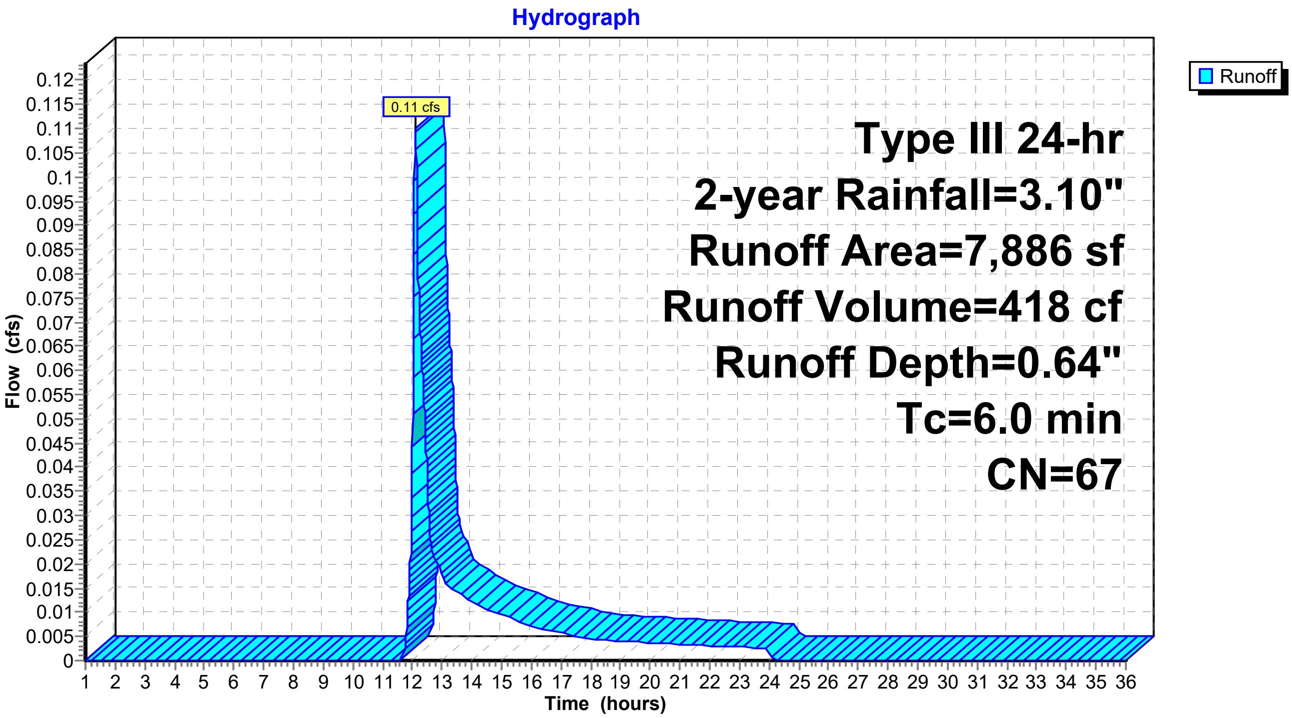
Runoff = 0.11 cfs @ 12.11 hrs, Volume= 418 cf, Depth= 0.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
4,125	39	>75% Grass cover, Good, HSG A
3,761	98	Paved parking, HSG A
7,886	67	Weighted Average
4,125		52.31% Pervious Area
3,761		47.69% Impervious Area

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

Subcatchment 14S: Sub 14



Summary for Subcatchment 15S: Sub 15

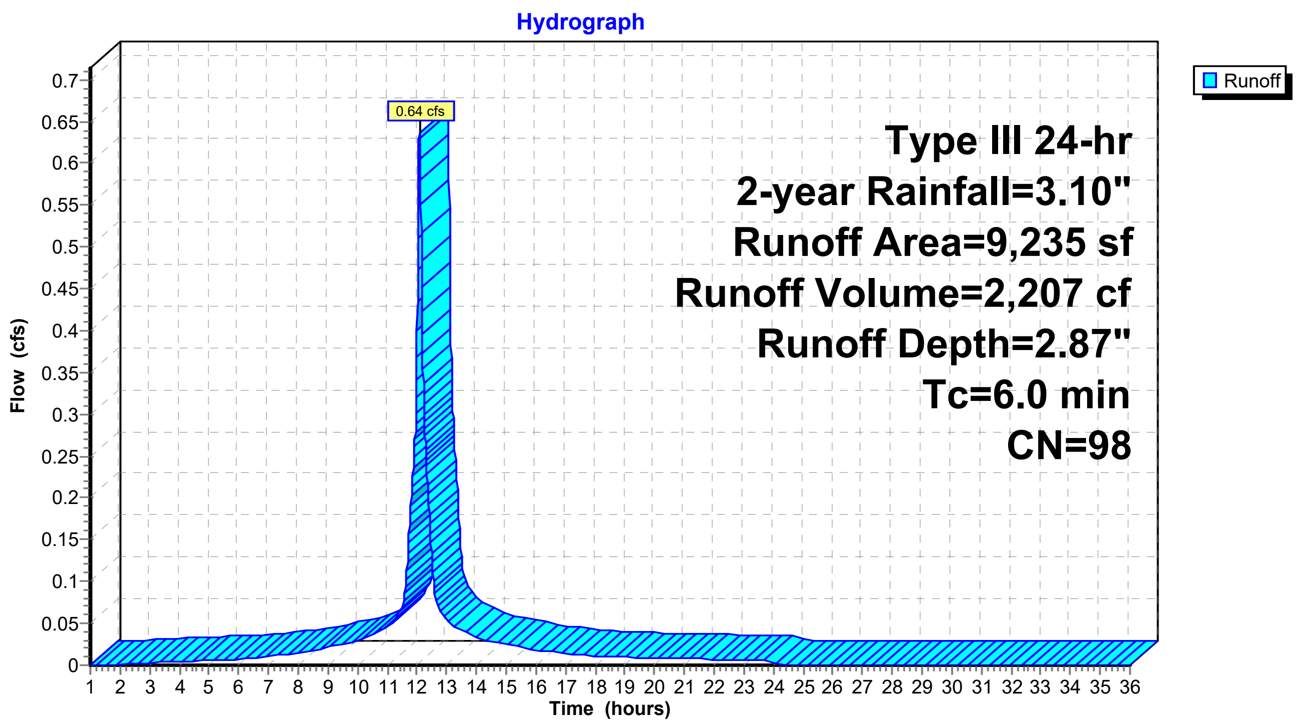
Runoff = 0.64 cfs @ 12.08 hrs, Volume= 2,207 cf, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
9,235	98	Paved parking, HSG A
9,235		100.00% Impervious Area

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

Subcatchment 15S: Sub 15



Summary for Subcatchment 16S: Sub 16

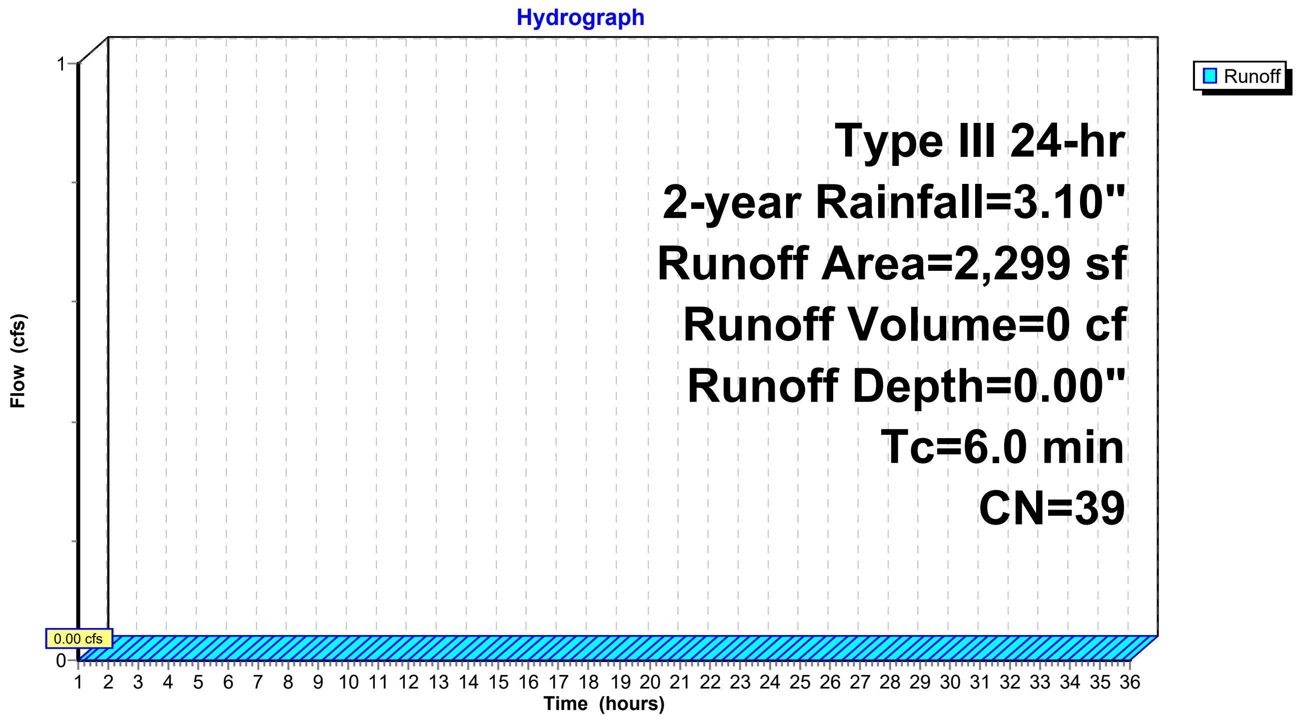
Runoff = 0.00 cfs @ 1.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
2,299	39	>75% Grass cover, Good, HSG A
2,299		100.00% Pervious Area

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

Subcatchment 16S: Sub 16



Summary for Subcatchment 17S: Sub 17

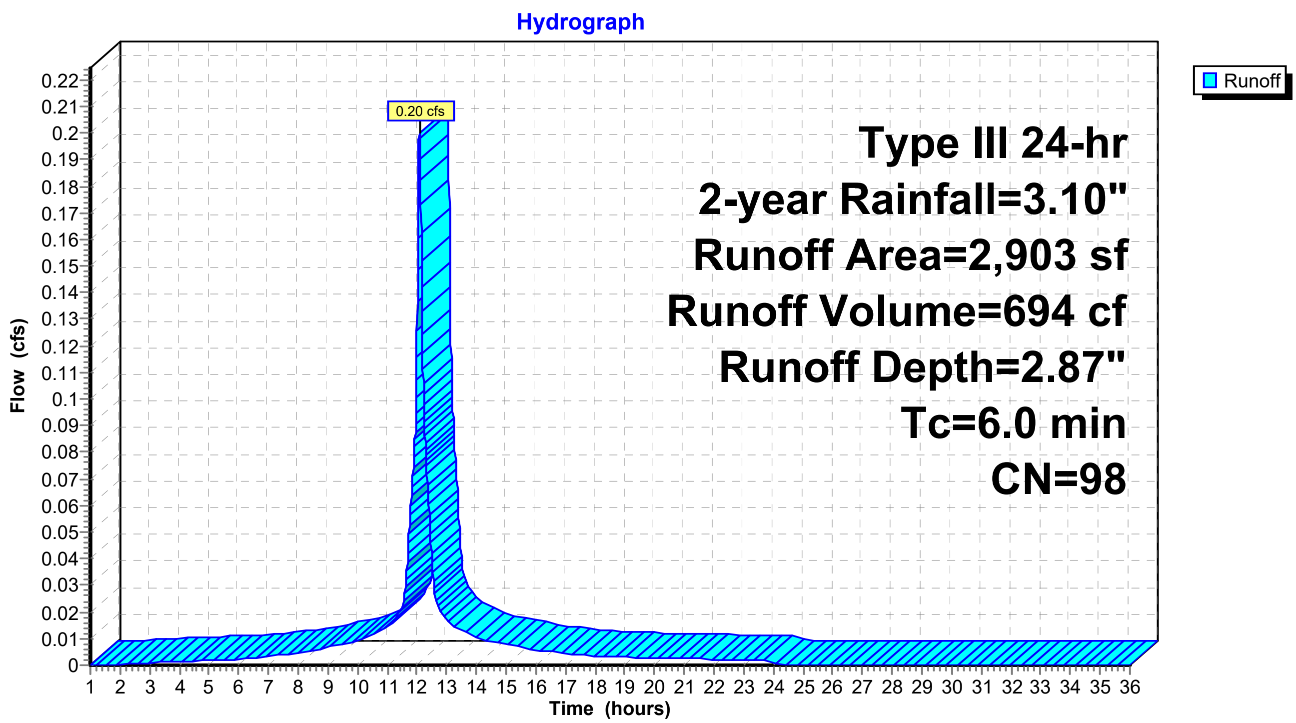
Runoff = 0.20 cfs @ 12.08 hrs, Volume= 694 cf, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
2,903	98	Paved parking, HSG B
2,903		100.00% Impervious Area

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

Subcatchment 17S: Sub 17



Summary for Subcatchment 18S: Sub 18

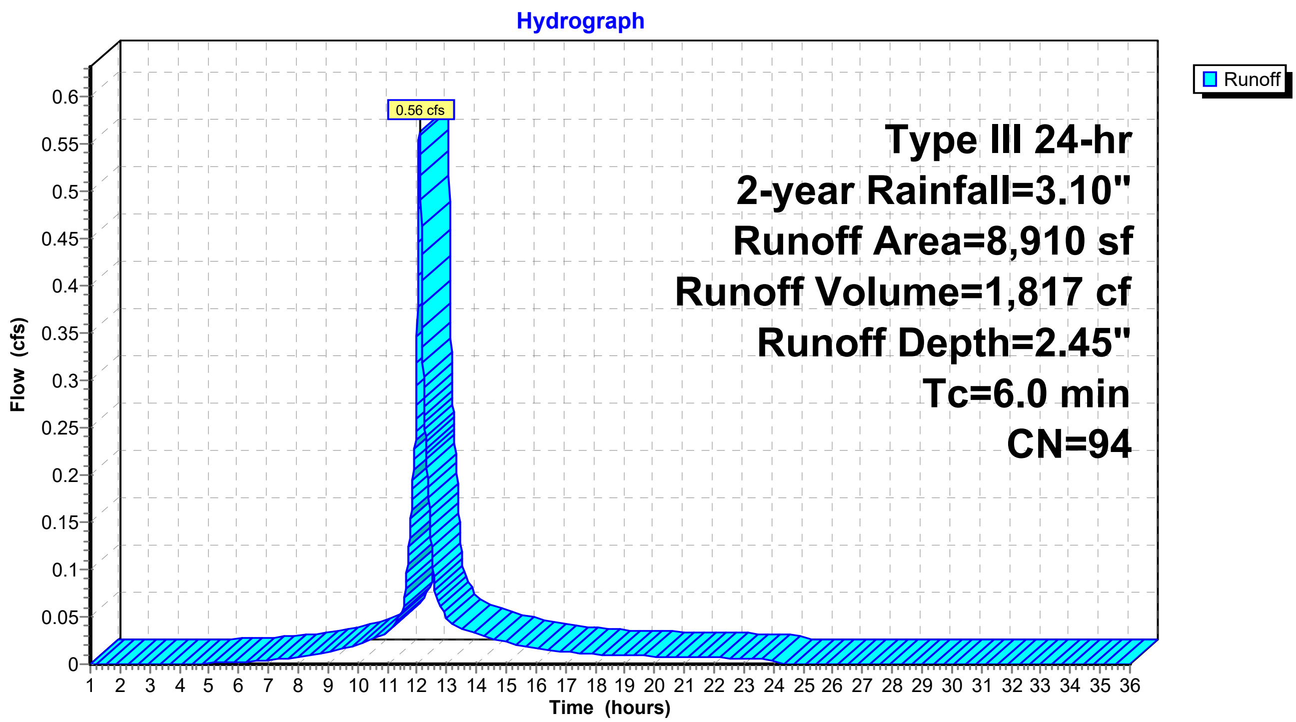
Runoff = 0.56 cfs @ 12.08 hrs, Volume= 1,817 cf, Depth= 2.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
637	39	>75% Grass cover, Good, HSG A
5,895	98	Paved parking, HSG A
2,378	98	Roofs, HSG B
8,910	94	Weighted Average
637		7.15% Pervious Area
8,273		92.85% Impervious Area

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

Subcatchment 18S: Sub 18



Summary for Subcatchment 19S: Sub 19

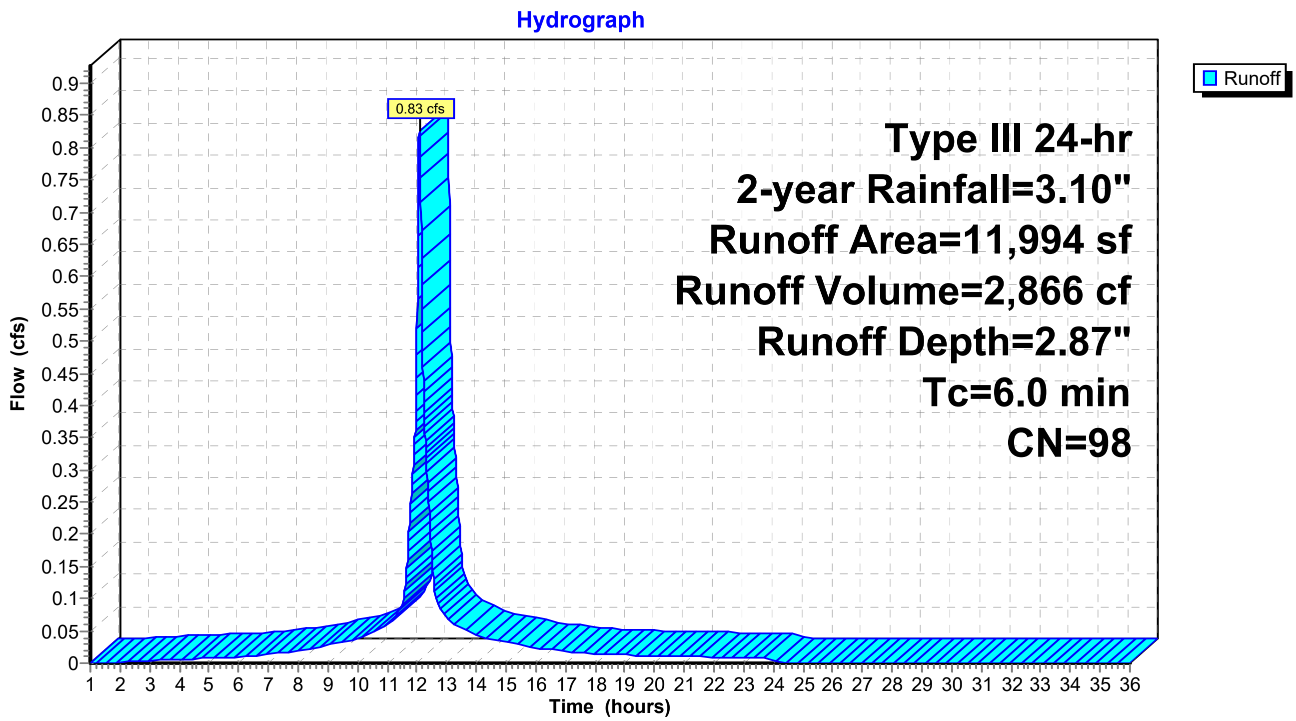
Runoff = 0.83 cfs @ 12.08 hrs, Volume= 2,866 cf, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
7,625	98	Roofs, HSG A
4,369	98	Paved parking, HSG A
11,994	98	Weighted Average
11,994		100.00% Impervious Area

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

Subcatchment 19S: Sub 19



Summary for Subcatchment 20S: Sub 20

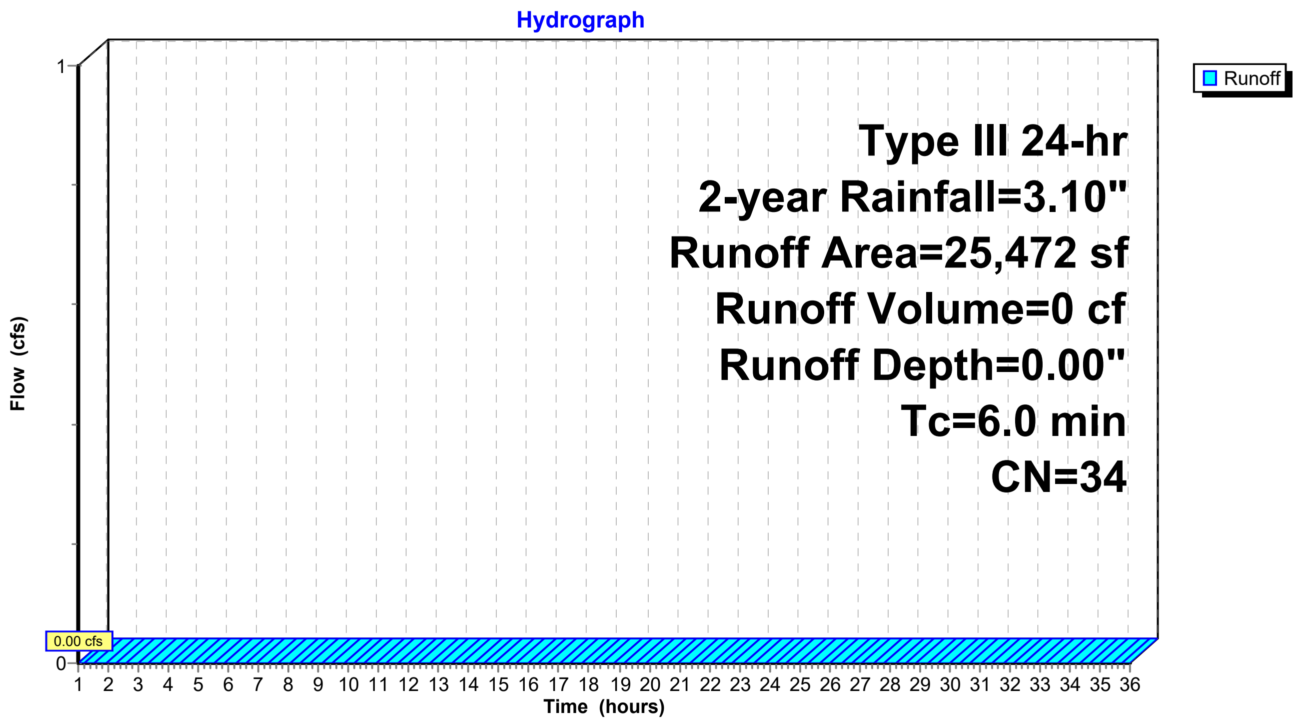
Runoff = 0.00 cfs @ 1.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
12,428	39	>75% Grass cover, Good, HSG A
13,044	30	Woods, Good, HSG A
25,472	34	Weighted Average
25,472		100.00% Pervious Area

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

Subcatchment 20S: Sub 20



Summary for Subcatchment 21S: Sub 21

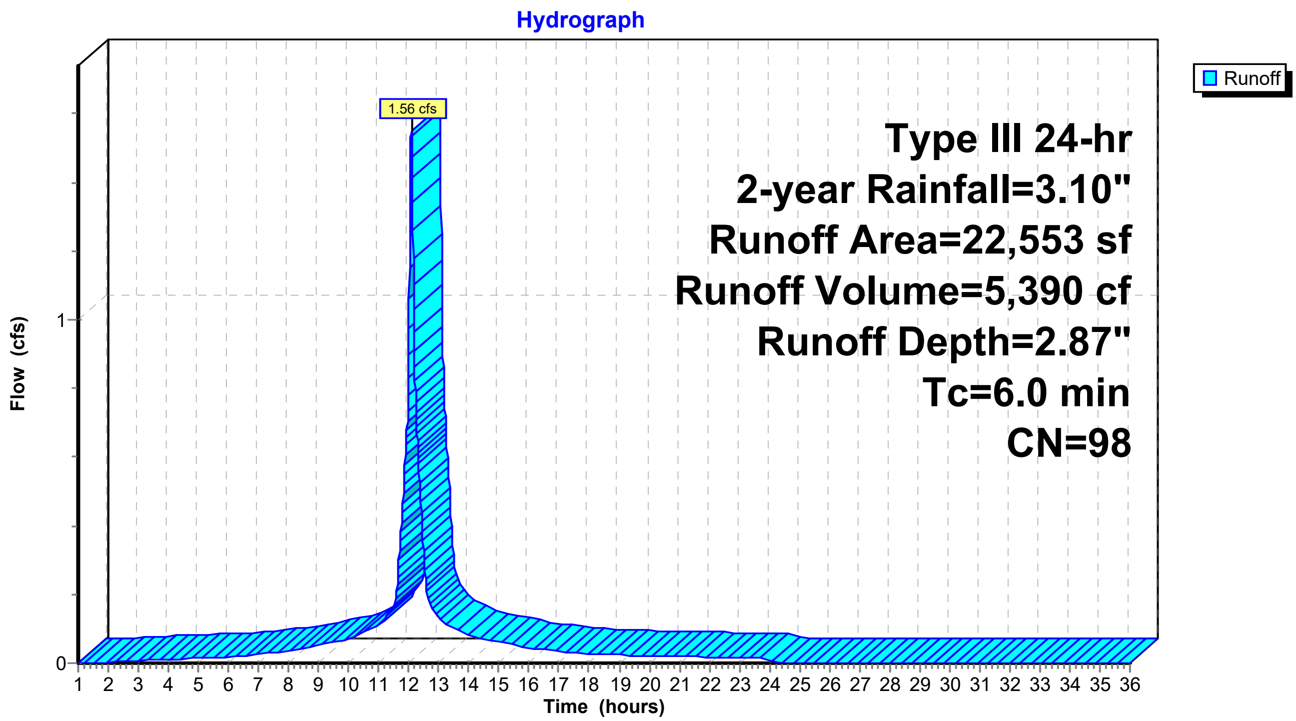
Runoff = 1.56 cfs @ 12.08 hrs, Volume= 5,390 cf, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
10,469	98	Roofs, HSG A
12,084	98	Paved parking, HSG A
22,553	98	Weighted Average
22,553		100.00% Impervious Area

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

Subcatchment 21S: Sub 21



Summary for Subcatchment 22S: Sub 22

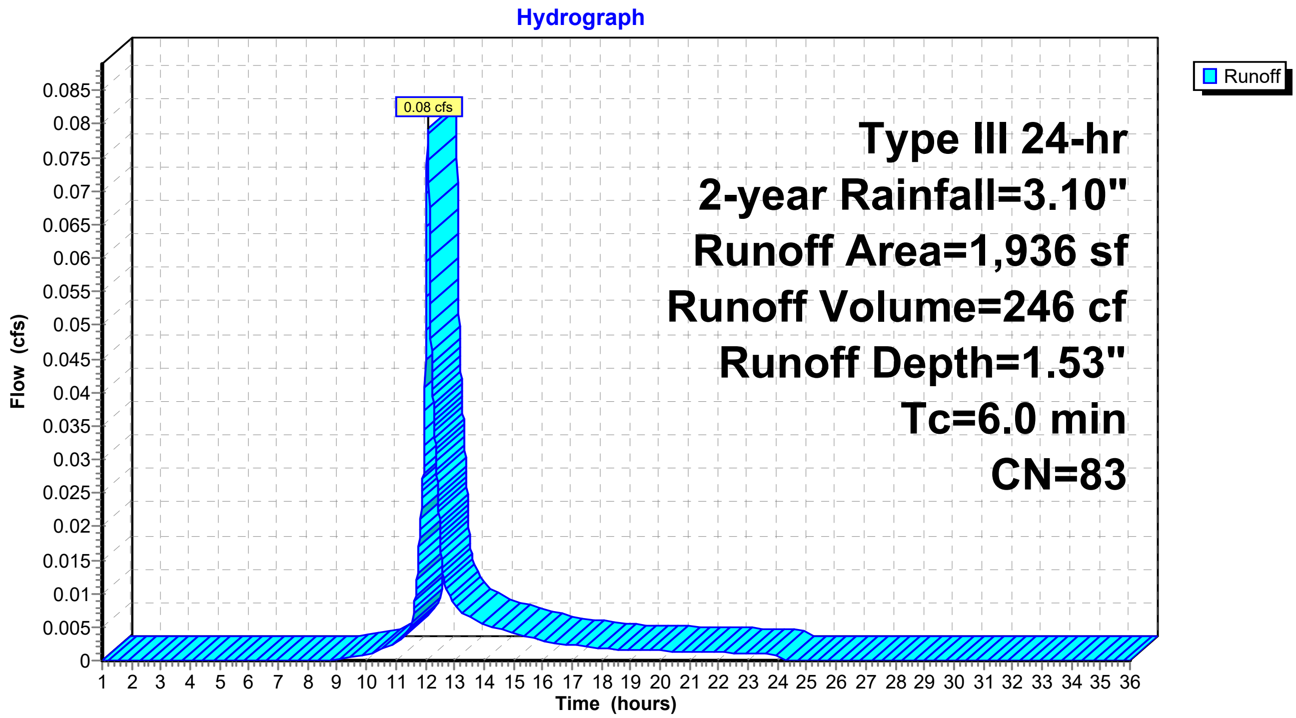
Runoff = 0.08 cfs @ 12.09 hrs, Volume= 246 cf, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
1,161	98	Paved parking, HSG B
775	61	>75% Grass cover, Good, HSG B
1,936	83	Weighted Average
775		40.03% Pervious Area
1,161		59.97% Impervious Area

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

Subcatchment 22S: Sub 22



Summary for Subcatchment 23S: Sub 23

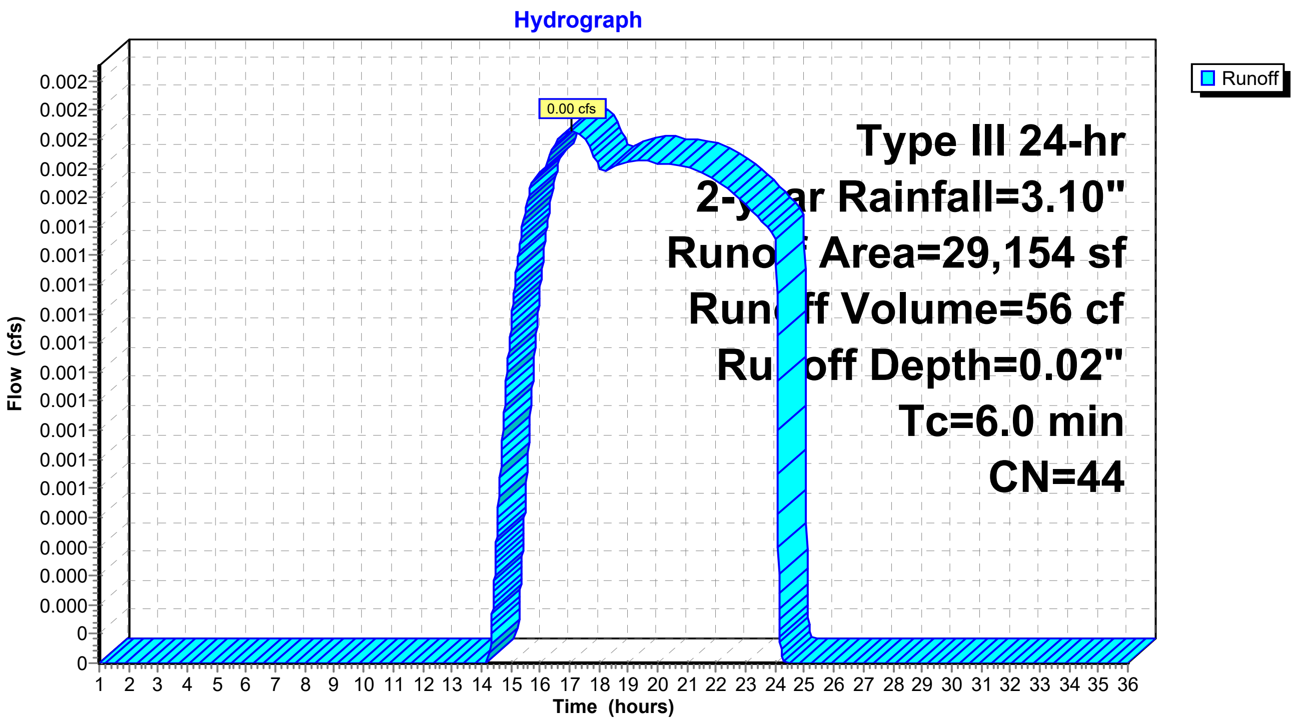
Runoff = 0.00 cfs @ 17.06 hrs, Volume= 56 cf, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
12,963	61	>75% Grass cover, Good, HSG B
16,191	30	Woods, Good, HSG A
29,154	44	Weighted Average
29,154		100.00% Pervious Area

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

Subcatchment 23S: Sub 23



Summary for Subcatchment 24S: Sub 24

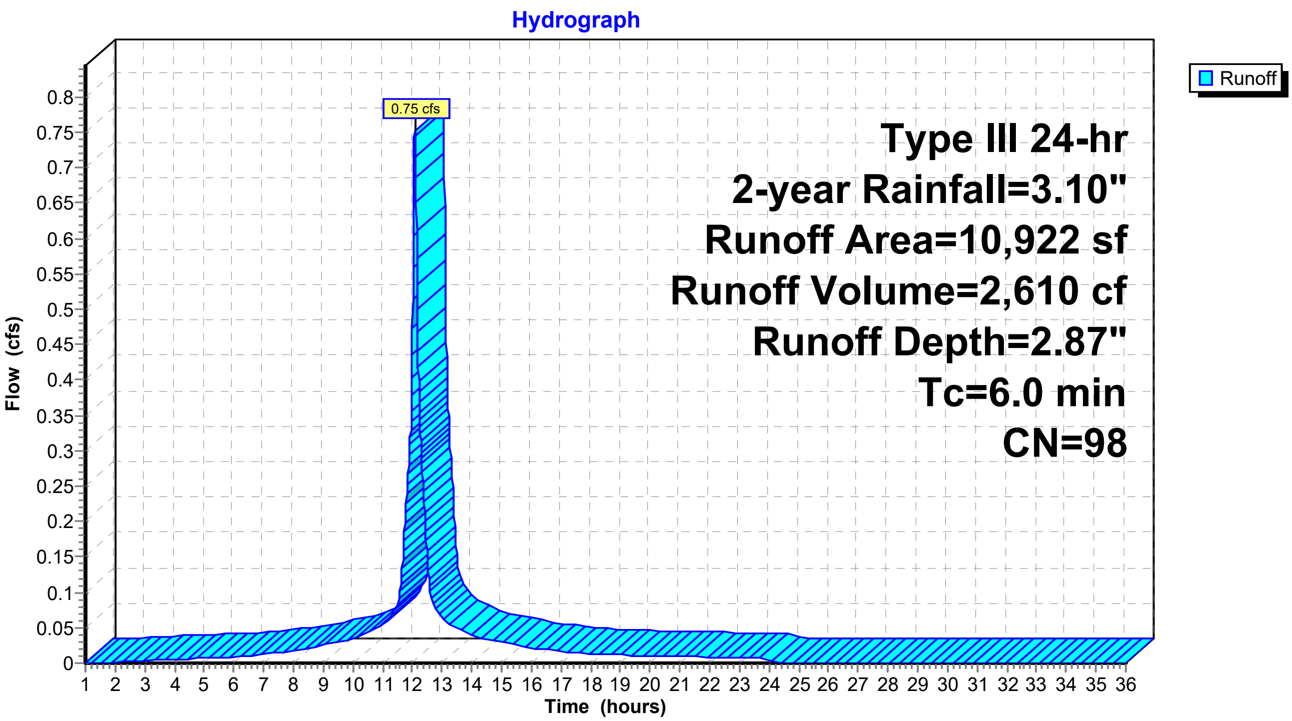
Runoff = 0.75 cfs @ 12.08 hrs, Volume= 2,610 cf, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
316	98	Roofs, HSG B
10,606	98	Paved parking, HSG B
10,922	98	Weighted Average
10,922		100.00% Impervious Area

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

Subcatchment 24S: Sub 24



Summary for Subcatchment 25S: Sub 25

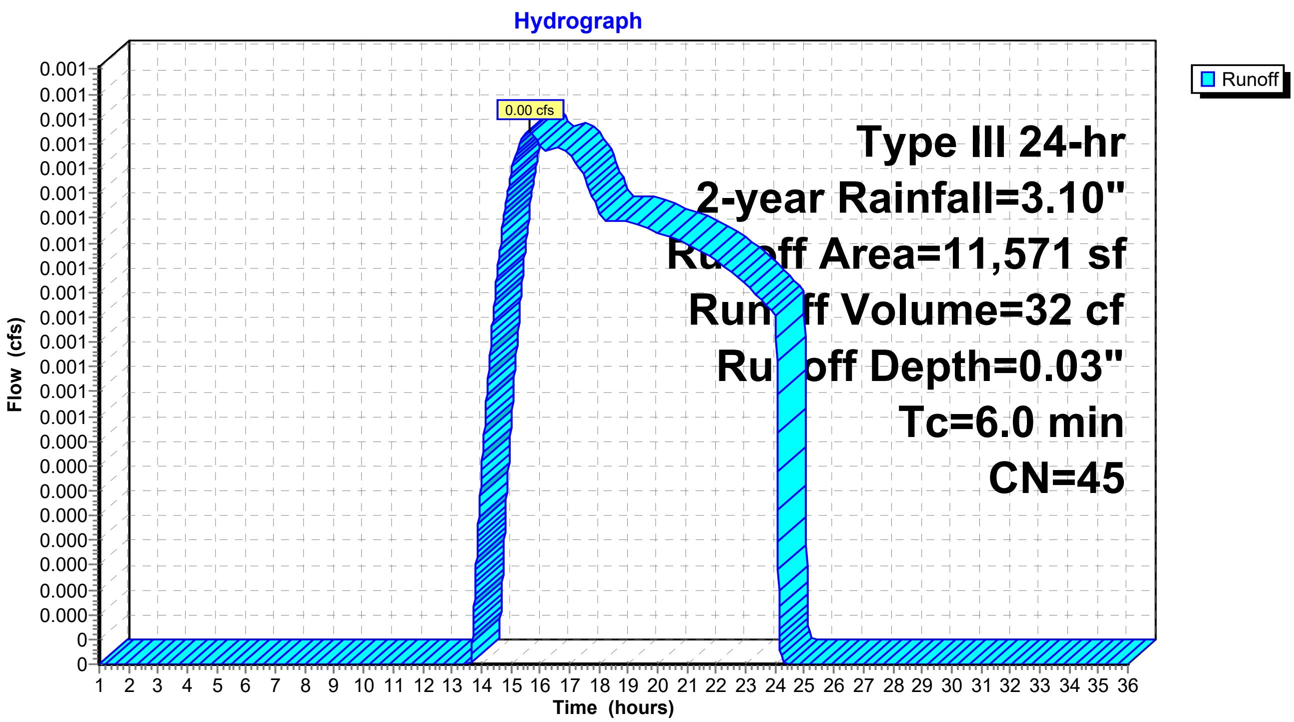
Runoff = 0.00 cfs @ 15.62 hrs, Volume= 32 cf, Depth= 0.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
8,818	39	>75% Grass cover, Good, HSG A
1,319	98	Roofs, HSG A
1,434	30	Woods, Good, HSG A
11,571	45	Weighted Average
10,252		88.60% Pervious Area
1,319		11.40% Impervious Area

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

Subcatchment 25S: Sub 25



Summary for Subcatchment 26S: Sub 26

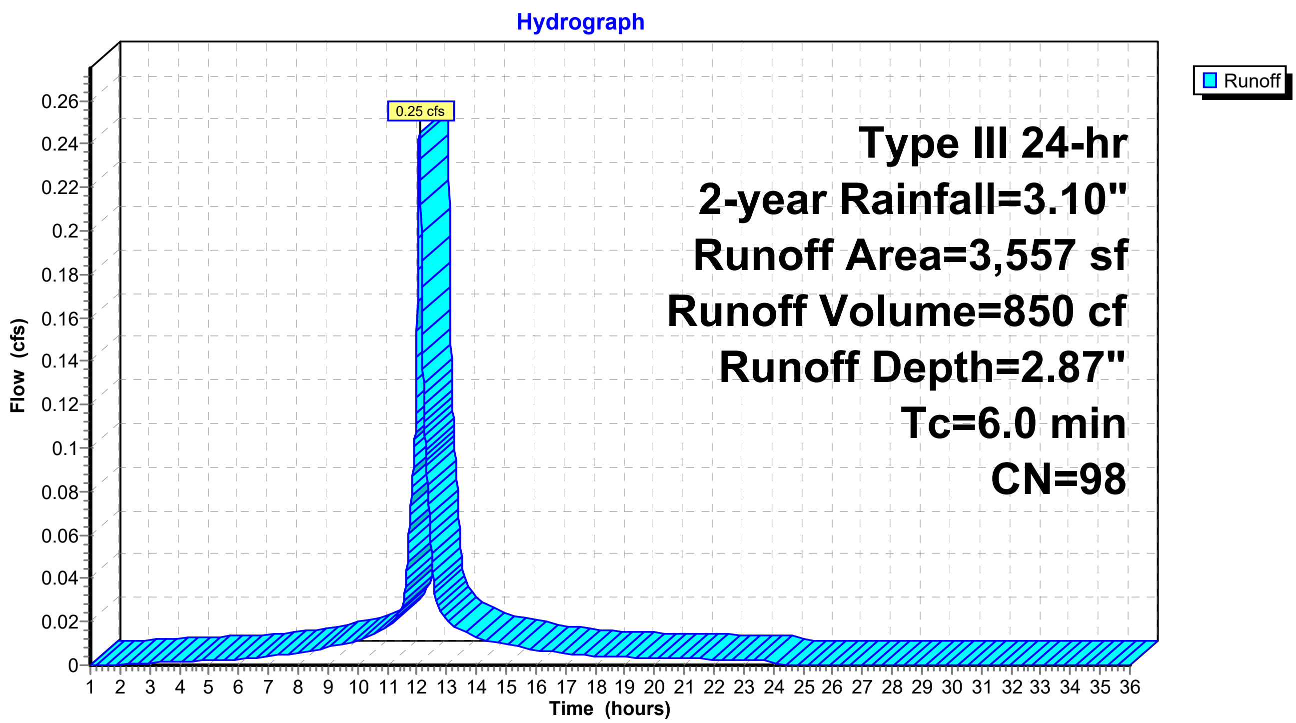
Runoff = 0.25 cfs @ 12.08 hrs, Volume= 850 cf, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
3,557	98	Paved parking, HSG A
3,557		100.00% Impervious Area

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

Subcatchment 26S: Sub 26



Summary for Pond 1P: Rain Garden

Inflow Area = 16,708 sf, 71.98% Impervious, Inflow Depth = 1.59" for 2-year event
Inflow = 0.66 cfs @ 12.09 hrs, Volume= 2,216 cf
Outflow = 0.41 cfs @ 12.19 hrs, Volume= 1,337 cf, Atten= 38%, Lag= 6.2 min
Primary = 0.41 cfs @ 12.19 hrs, Volume= 1,337 cf
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 101.32' @ 12.19 hrs Surf.Area= 467 sf Storage= 912 cf

Plug-Flow detention time= 202.8 min calculated for 1,337 cf (60% of inflow)
Center-of-Mass det. time= 91.4 min (898.7 - 807.3)

Volume	Invert	Avail.Storage	Storage Description
#1	97.24'	1,148 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

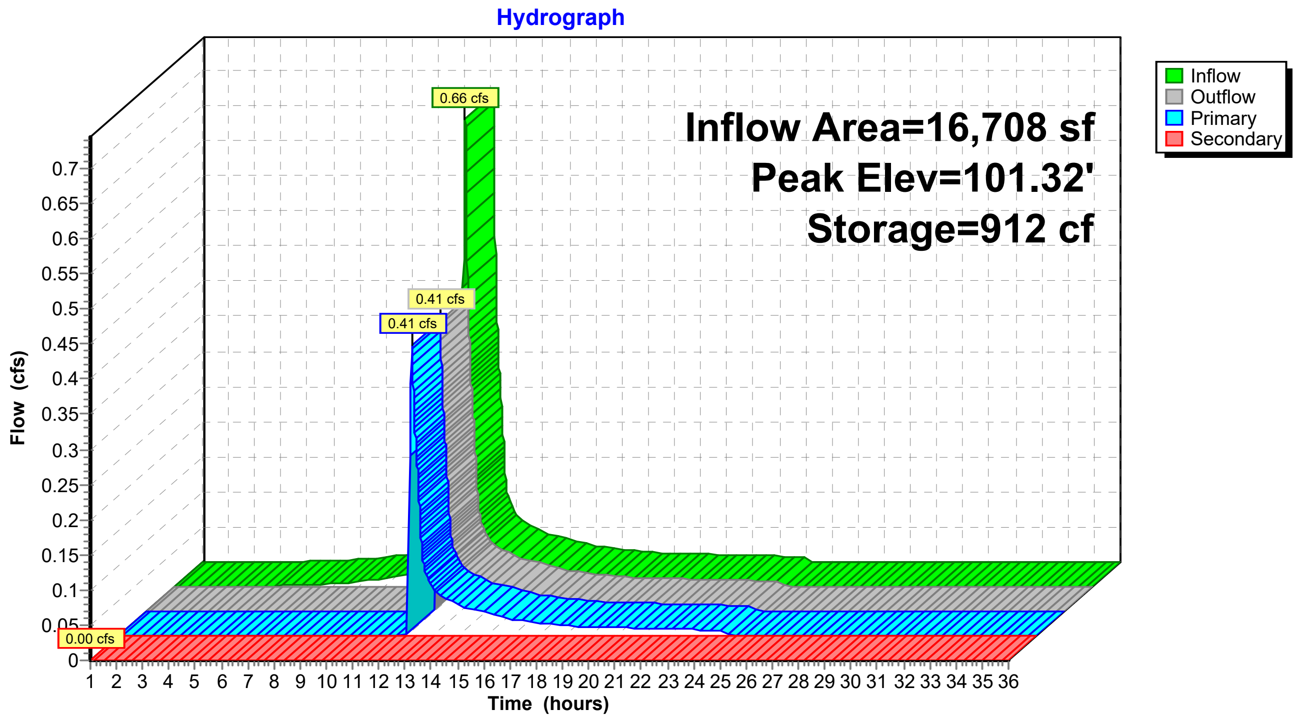
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.24	641	0.0	0	0
97.25	641	40.0	3	3
97.74	641	40.0	126	128
97.75	641	30.0	2	130
100.24	641	30.0	479	609
100.25	641	40.0	3	612
100.49	641	40.0	62	673
100.50	88	100.0	4	677
101.00	335	100.0	106	782
101.75	641	100.0	366	1,148

Device	Routing	Invert	Outlet Devices
#1	Device 2	101.25'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	92.75'	**12.0" Round Culvert** L= 23.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 92.75' / 92.25' S= 0.0210 '/' Cc= 0.900 n= 0.130, Flow Area= 0.79 sf
#3	Secondary	101.50'	**24.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.41 cfs @ 12.19 hrs HW=101.32' TW=91.70' (Dynamic Tailwater)
↑—**2=Culvert** (Passes 0.41 cfs of 2.05 cfs potential flow)
　↑—**1=Orifice/Grate** (Weir Controls 0.41 cfs @ 0.89 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=97.24' TW=90.50' (Dynamic Tailwater)
↑—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Rain Garden



Summary for Pond 2P: Infiltration Chambers - Area 1

```
Inflow Area =      59,403 sf, 87.54% Impervious,  Inflow Depth =  2.10"   for  2-year event
Inflow      =    2.73 cfs @  12.08 hrs,  Volume=        10,392 cf
Outflow     =    0.23 cfs @  13.57 hrs,  Volume=        10,392 cf,  Atten= 92%,  Lag= 89.4 min
Discarded   =    0.23 cfs @  13.57 hrs,  Volume=        10,388 cf
Primary     =    0.00 cfs @  13.57 hrs,  Volume=             3 cf
```

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 92.22' @ 13.57 hrs Surf.Area= 3,603 sf Storage= 4,024 cf

Plug-Flow detention time= 148.4 min calculated for 10,392 cf (100% of inflow)
Center-of-Mass det. time= 148.4 min (940.5 - 792.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	90.50'	5,063 cf	**29.92'W x 120.42'L x 5.50'H Field A** 19,814 cf Overall - 7,156 cf Embedded = 12,658 cf x 40.0% Voids
#2A	91.25'	7,156 cf	**ADS_StormTech MC-3500 d +Cap** x 64 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 4 Rows of 16 Chambers Cap Storage= +14.9 cf x 2 x 4 rows = 119.2 cf
		12,219 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	90.50'	**2.410 in/hr Exfiltration over Wetted area** Phase-In= 0.01'
#2	Primary	91.50'	**12.0" Round Culvert** L= 87.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 91.50' / 91.06' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	95.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 2	92.20'	**4.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.23 cfs @ 13.57 hrs HW=92.22' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.00 cfs @ 13.57 hrs HW=92.22' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Passes 0.00 cfs of 1.30 cfs potential flow)
  ├─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └─**4=Orifice/Grate** (Orifice Controls 0.00 cfs @ 0.52 fps)

Pond 2P: Infiltration Chambers - Area 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= +14.9 cf x 2 x 4 rows = 119.2 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

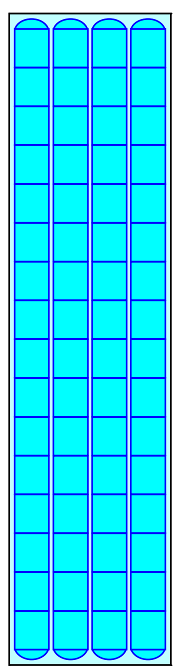
16 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 118.42' Row Length +12.0" End Stone x 2 = 120.42' Base Length
4 Rows x 77.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 29.92' Base Width
9.0" Base + 45.0" Chamber Height + 12.0" Cover = 5.50' Field Height

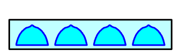
64 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 4 Rows = 7,156.1 cf Chamber Storage

19,814.1 cf Field - 7,156.1 cf Chambers = 12,658.0 cf Stone x 40.0% Voids = 5,063.2 cf Stone Storage

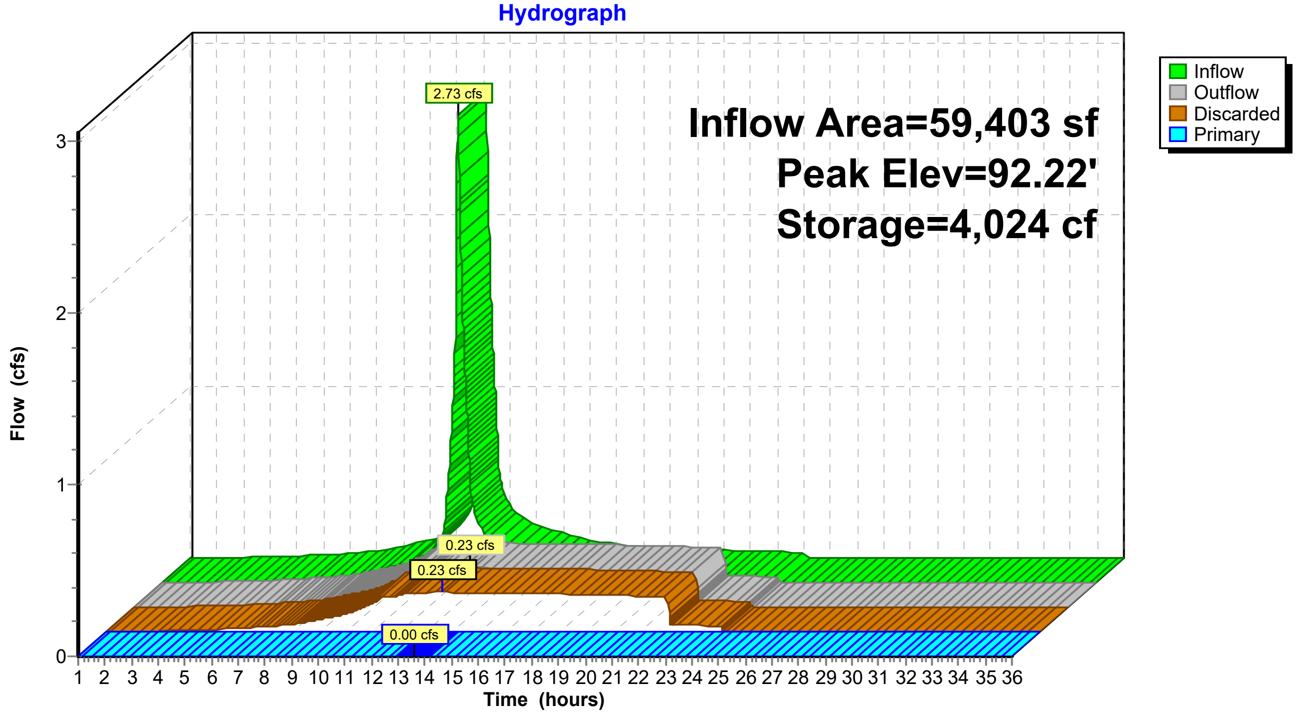
Chamber Storage + Stone Storage = 12,219.3 cf = 0.281 af
Overall Storage Efficiency = 61.7%
Overall System Size = 120.42' x 29.92' x 5.50'

64 Chambers
733.9 cy Field
468.8 cy Stone





Pond 2P: Infiltration Chambers - Area 1



Summary for Pond 3P: Detention Chambers - Area 2

Inflow Area = 45,469 sf,100.00% Impervious, Inflow Depth = 2.87" for 2-year event
Inflow = 3.14 cfs @ 12.08 hrs, Volume= 10,867 cf
Outflow = 3.11 cfs @ 12.09 hrs, Volume= 10,138 cf, Atten= 1%, Lag= 0.6 min
Primary = 3.11 cfs @ 12.09 hrs, Volume= 10,138 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 91.09' @ 12.09 hrs Surf.Area= 658 sf Storage= 904 cf

Plug-Flow detention time= 67.3 min calculated for 10,135 cf (93% of inflow)
Center-of-Mass det. time= 30.6 min (787.7 - 757.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	89.00'	627 cf	**20.50'W x 32.10'L x 3.50'H Field A** 2,303 cf Overall - 735 cf Embedded = 1,568 cf x 40.0% Voids
#2A	89.50'	735 cf	**ADS_StormTech SC-740 +Cap** x 16 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 4 Rows of 4 Chambers
		1,362 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	89.00'	**15.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.00' / 88.88' S= 0.0048 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	90.70'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=3.11 cfs @ 12.09 hrs HW=91.09' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 3.11 cfs of 5.64 cfs potential flow)
  └─**2=Sharp-Crested Rectangular Weir** (Weir Controls 3.11 cfs @ 2.04 fps)

Pond 3P: Detention Chambers - Area 2 - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

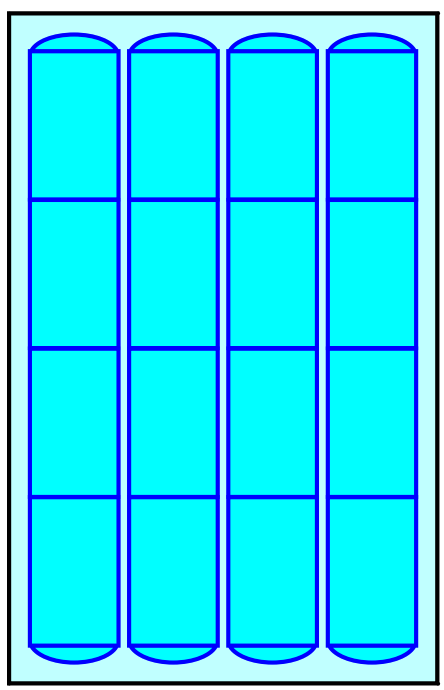
4 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 30.10' Row Length +12.0" End Stone x 2 = 32.10' Base Length
4 Rows x 51.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.50' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

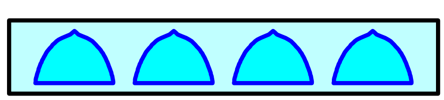
16 Chambers x 45.9 cf = 735.0 cf Chamber Storage

2,302.9 cf Field - 735.0 cf Chambers = 1,567.9 cf Stone x 40.0% Voids = 627.2 cf Stone Storage

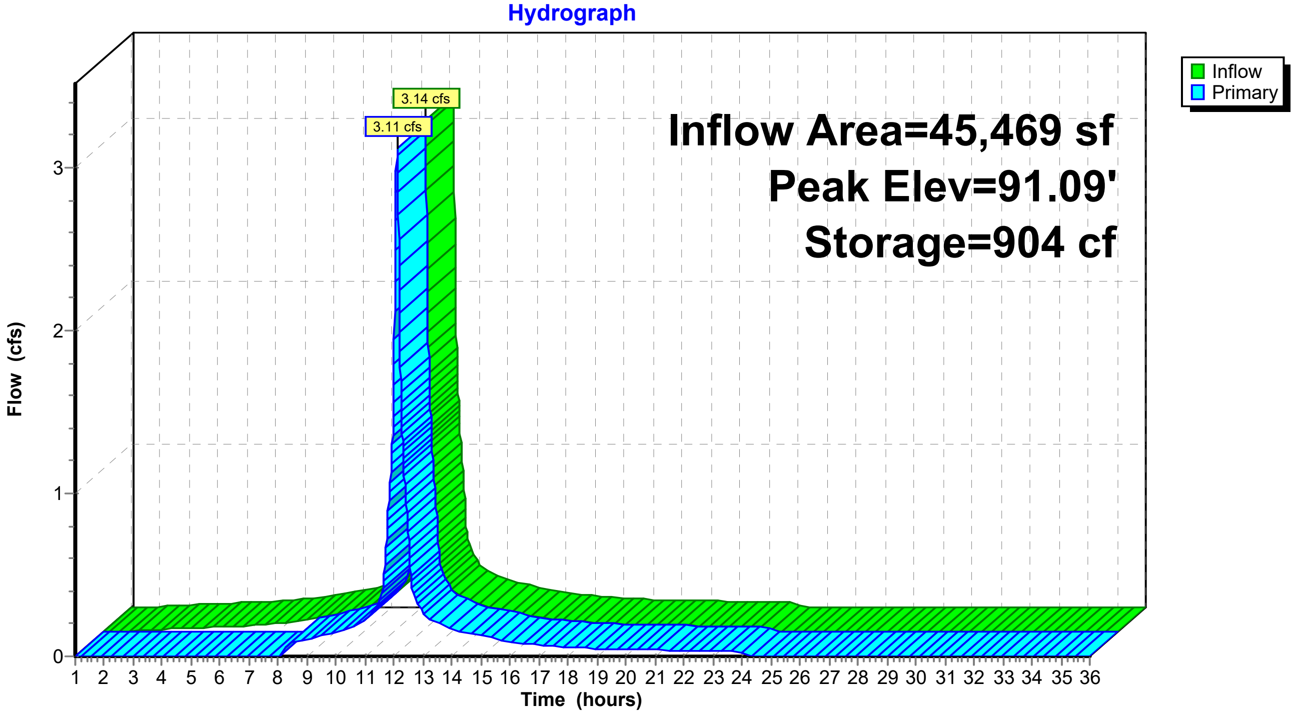
Chamber Storage + Stone Storage = 1,362.2 cf = 0.031 af
Overall Storage Efficiency = 59.2%
Overall System Size = 32.10' x 20.50' x 3.50'

16 Chambers
85.3 cy Field
58.1 cy Stone





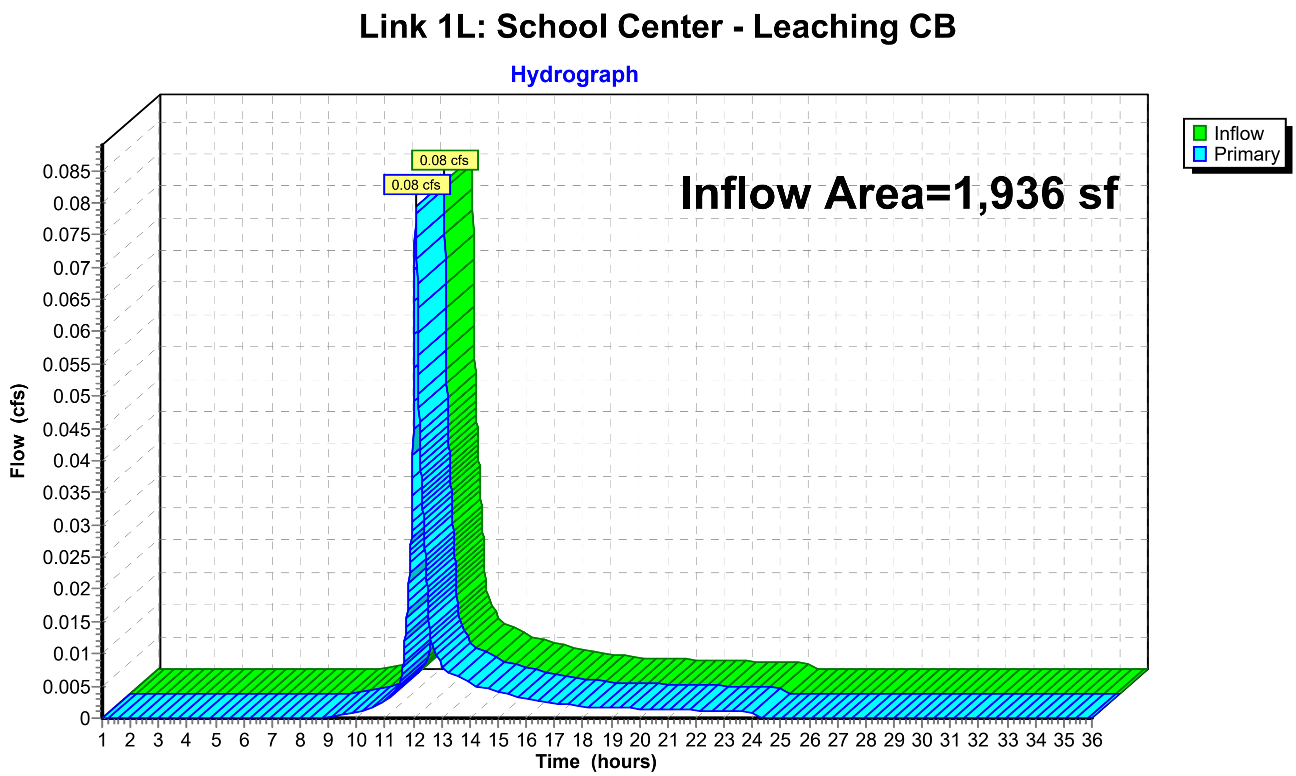
Pond 3P: Detention Chambers - Area 2



Summary for Link 1L: School Center - Leaching CB

Inflow Area = 1,936 sf, 59.97% Impervious, Inflow Depth = 1.53" for 2-year event
Inflow = 0.08 cfs @ 12.09 hrs, Volume= 246 cf
Primary = 0.08 cfs @ 12.09 hrs, Volume= 246 cf, Atten= 0%, Lag= 0.0 min

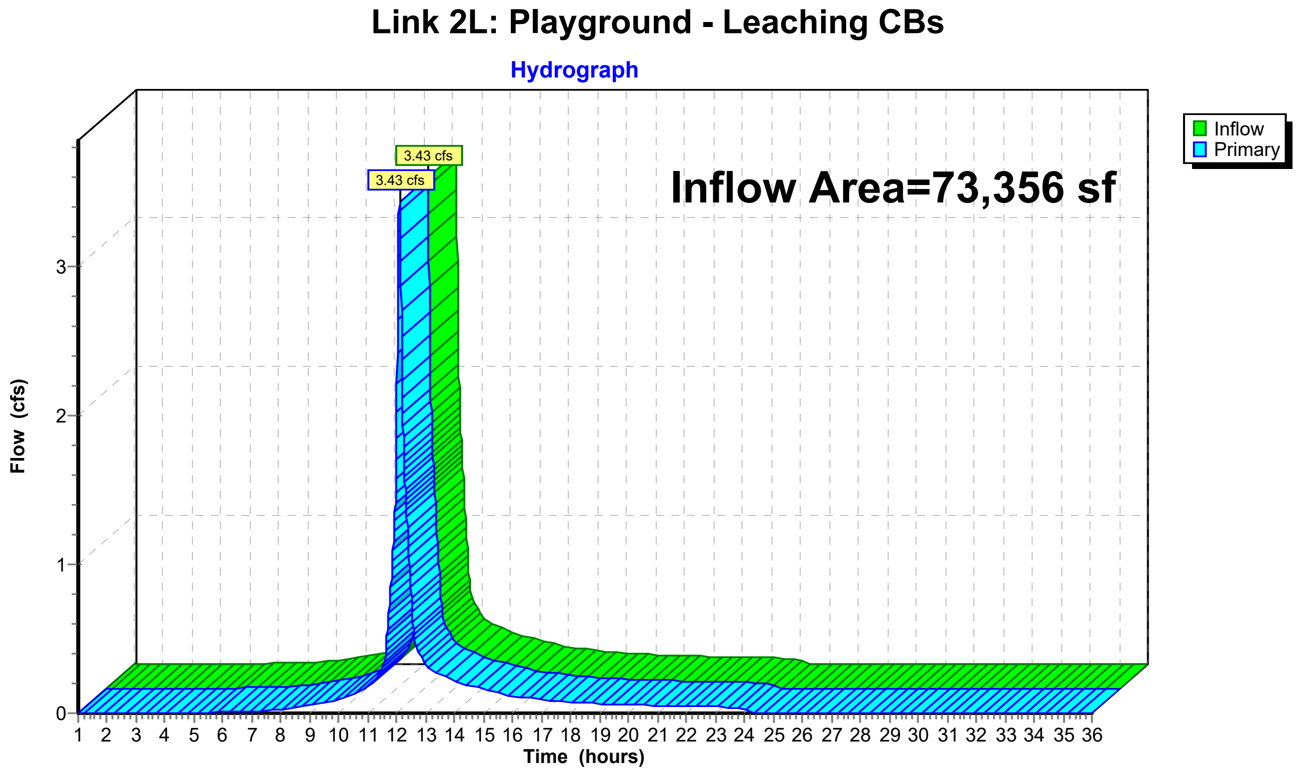
Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs



Summary for Link 2L: Playground - Leaching CBs

Inflow Area =	73,356 sf,	66.89% Impervious,	Inflow Depth = 1.80"	for 2-year event
Inflow =	3.43 cfs @	12.09 hrs, Volume=	11,031 cf	
Primary =	3.43 cfs @	12.09 hrs, Volume=	11,031 cf,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

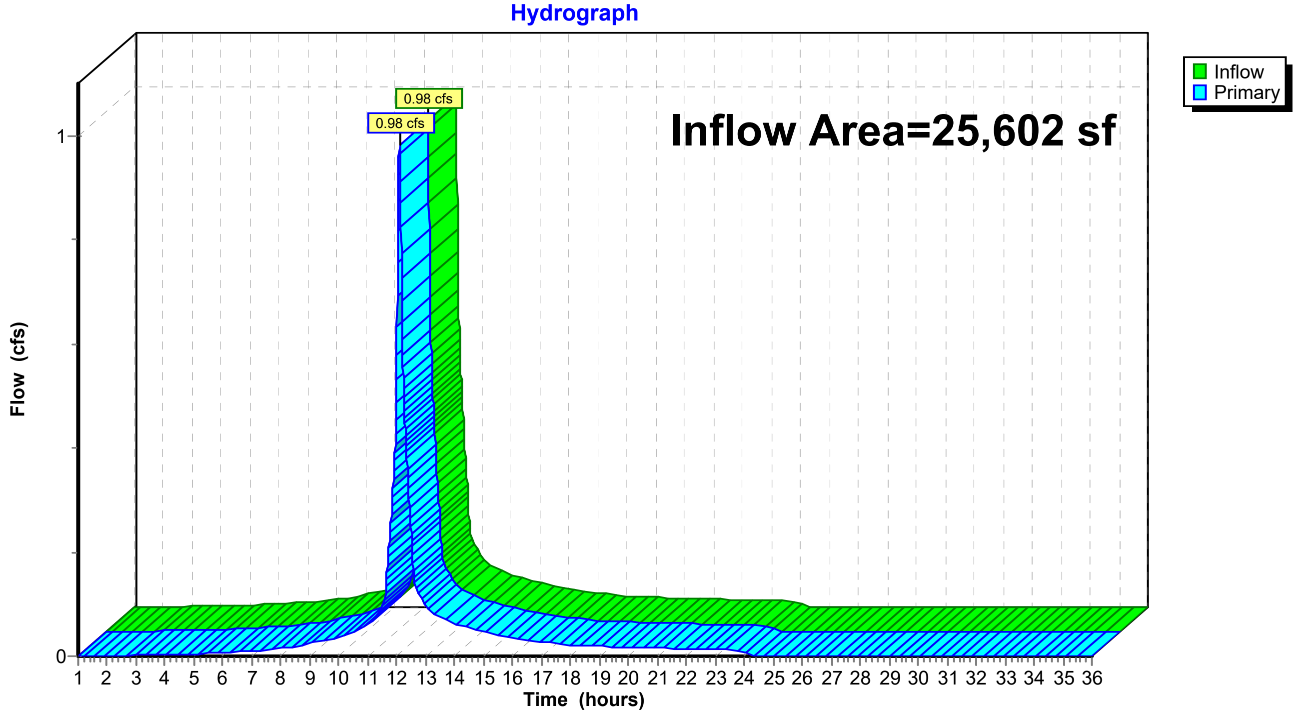


Summary for Link 3L: South Western - Leaching CBs

Inflow Area = 25,602 sf, 52.65% Impervious, Inflow Depth = 1.61" for 2-year event
Inflow = 0.98 cfs @ 12.09 hrs, Volume= 3,440 cf
Primary = 0.98 cfs @ 12.09 hrs, Volume= 3,440 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 3L: South Western - Leaching CBs

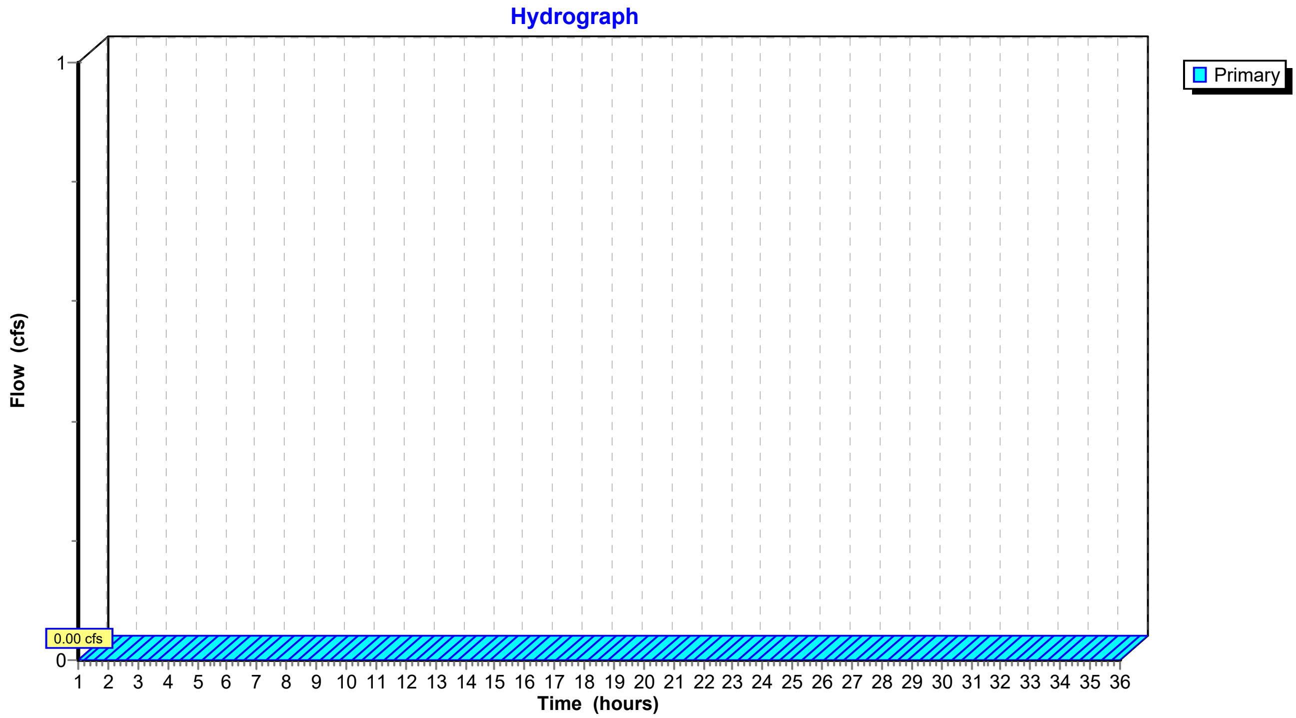


Summary for Link 4L: School Main Entrance - Leaching CBs

Primary = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 4L: School Main Entrance - Leaching CBs

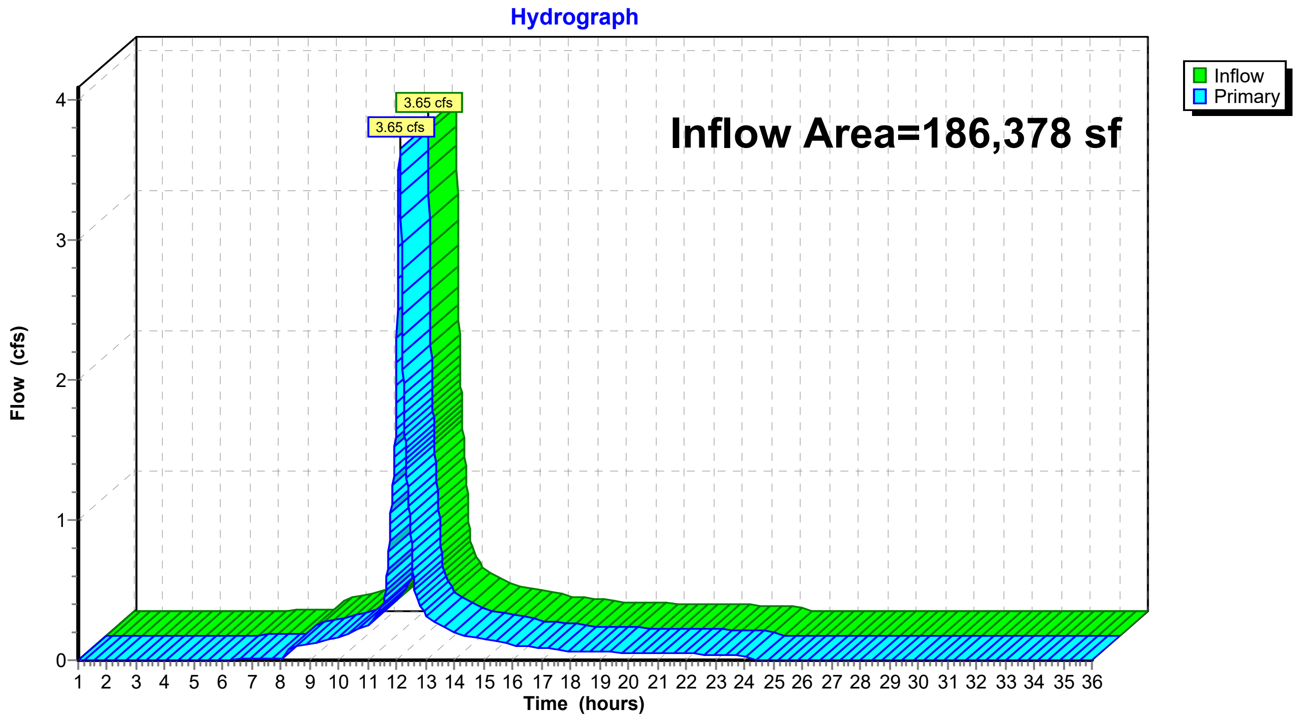


Summary for Link 5L: Main Street Drainage Network

Inflow Area = 186,378 sf, 57.92% Impervious, Inflow Depth = 0.78" for 2-year event
Inflow = 3.65 cfs @ 12.09 hrs, Volume= 12,118 cf
Primary = 3.65 cfs @ 12.09 hrs, Volume= 12,118 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 5L: Main Street Drainage Network



Time span=1.00-36.00 hrs, dt=0.01 hrs, 3501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Sub 1 Runoff Area=47,754 sf 74.52% Impervious Runoff Depth=3.38"
Tc=6.0 min CN=88 Runoff=4.26 cfs 13,470 cf

Subcatchment2S: Sub 2 Runoff Area=11,368 sf 2.40% Impervious Runoff Depth=1.19"
Tc=6.0 min CN=61 Runoff=0.32 cfs 1,130 cf

Subcatchment3S: Sub 3 Runoff Area=1,954 sf 100.00% Impervious Runoff Depth>4.46"
Tc=6.0 min CN=98 Runoff=0.21 cfs 727 cf

Subcatchment4S: Sub 4 Runoff Area=4,312 sf 100.00% Impervious Runoff Depth>4.46"
Tc=6.0 min CN=98 Runoff=0.45 cfs 1,604 cf

Subcatchment5S: Sub 5 Runoff Area=7,968 sf 87.10% Impervious Runoff Depth=3.90"
Tc=6.0 min CN=93 Runoff=0.79 cfs 2,592 cf

Subcatchment6S: Sub 6 Runoff Area=8,822 sf 93.69% Impervious Runoff Depth=4.01"
Tc=6.0 min CN=94 Runoff=0.89 cfs 2,950 cf

Subcatchment7S: Sub 15 Runoff Area=5,419 sf 88.41% Impervious Runoff Depth=3.69"
Tc=6.0 min CN=91 Runoff=0.52 cfs 1,667 cf

Subcatchment8S: Sub 8 Runoff Area=3,381 sf 68.83% Impervious Runoff Depth=3.19"
Tc=6.0 min CN=86 Runoff=0.29 cfs 898 cf

Subcatchment9S: Sub 9 Runoff Area=3,080 sf 63.08% Impervious Runoff Depth=2.29"
Tc=6.0 min CN=76 Runoff=0.19 cfs 588 cf

Subcatchment10S: Sub 10 Runoff Area=2,156 sf 34.97% Impervious Runoff Depth=1.13"
Tc=6.0 min CN=60 Runoff=0.06 cfs 203 cf

Subcatchment11S: Sub 11 Runoff Area=7,623 sf 94.74% Impervious Runoff Depth=4.12"
Tc=6.0 min CN=95 Runoff=0.78 cfs 2,619 cf

Subcatchment12S: Sub 12 Runoff Area=1,314 sf 0.00% Impervious Runoff Depth=0.14"
Tc=6.0 min CN=39 Runoff=0.00 cfs 16 cf

Subcatchment13S: Sub 13 Runoff Area=8,127 sf 100.00% Impervious Runoff Depth>4.46"
Tc=6.0 min CN=98 Runoff=0.86 cfs 3,023 cf

Subcatchment14S: Sub 14 Runoff Area=7,886 sf 47.69% Impervious Runoff Depth=1.60"
Tc=6.0 min CN=67 Runoff=0.32 cfs 1,050 cf

Subcatchment15S: Sub 15 Runoff Area=9,235 sf 100.00% Impervious Runoff Depth>4.46"
Tc=6.0 min CN=98 Runoff=0.97 cfs 3,435 cf

Subcatchment16S: Sub 16 Runoff Area=2,299 sf 0.00% Impervious Runoff Depth=0.14"
Tc=6.0 min CN=39 Runoff=0.00 cfs 27 cf

Subcatchment17S: Sub 17
Runoff Area=2,903 sf 100.00% Impervious Runoff Depth>4.46"
Tc=6.0 min CN=98 Runoff=0.31 cfs 1,080 cf

Subcatchment18S: Sub 18
Runoff Area=8,910 sf 92.85% Impervious Runoff Depth=4.01"
Tc=6.0 min CN=94 Runoff=0.90 cfs 2,979 cf

Subcatchment19S: Sub 19
Runoff Area=11,994 sf 100.00% Impervious Runoff Depth>4.46"
Tc=6.0 min CN=98 Runoff=1.27 cfs 4,461 cf

Subcatchment20S: Sub 20
Runoff Area=25,472 sf 0.00% Impervious Runoff Depth=0.03"
Tc=6.0 min CN=34 Runoff=0.00 cfs 70 cf

Subcatchment21S: Sub 21
Runoff Area=22,553 sf 100.00% Impervious Runoff Depth>4.46"
Tc=6.0 min CN=98 Runoff=2.38 cfs 8,389 cf

Subcatchment22S: Sub 22
Runoff Area=1,936 sf 59.97% Impervious Runoff Depth=2.90"
Tc=6.0 min CN=83 Runoff=0.15 cfs 469 cf

Subcatchment23S: Sub 23
Runoff Area=29,154 sf 0.00% Impervious Runoff Depth=0.31"
Tc=6.0 min CN=44 Runoff=0.08 cfs 758 cf

Subcatchment24S: Sub 24
Runoff Area=10,922 sf 100.00% Impervious Runoff Depth>4.46"
Tc=6.0 min CN=98 Runoff=1.15 cfs 4,063 cf

Subcatchment25S: Sub 25
Runoff Area=11,571 sf 11.40% Impervious Runoff Depth=0.35"
Tc=6.0 min CN=45 Runoff=0.04 cfs 339 cf

Subcatchment26S: Sub 26
Runoff Area=3,557 sf 100.00% Impervious Runoff Depth>4.46"
Tc=6.0 min CN=98 Runoff=0.38 cfs 1,323 cf

Pond 1P: Rain Garden
Peak Elev=101.40' Storage=949 cf Inflow=1.21 cfs 3,999 cf
Primary=1.20 cfs 3,120 cf Secondary=0.00 cfs 0 cf Outflow=1.20 cfs 3,120 cf

Pond 2P: Infiltration Chambers - Area 1
Peak Elev=93.30' Storage=7,071 cf Inflow=5.50 cfs 17,742 cf
Discarded=0.25 cfs 13,584 cf Primary=0.41 cfs 4,158 cf Outflow=0.65 cfs 17,742 cf

Pond 3P: Detention Chambers - Area 2
Peak Elev=91.22' Storage=959 cf Inflow=4.80 cfs 16,913 cf
Outflow=4.77 cfs 16,185 cf

Link 1L: School Center - Leaching CB
Inflow=0.15 cfs 469 cf
Primary=0.15 cfs 469 cf

Link 2L: Playground - Leaching CBs
Inflow=6.03 cfs 19,522 cf
Primary=6.03 cfs 19,522 cf

Link 3L: South Western - Leaching CBs
Inflow=1.77 cfs 6,053 cf
Primary=1.77 cfs 6,053 cf

Link 4L: School Main Entrance - Leaching CBs
Primary=0.00 cfs 0 cf

Link 5L: Main Street Drainage Network Inflow=5.70 cfs 24,747 cf
Primary=5.70 cfs 24,747 cf

Total Runoff Area = 261,670 sf Runoff Volume = 59,928 cf Average Runoff Depth = 2.75"
39.55% Pervious = 103,496 sf 60.45% Impervious = 158,174 sf

Summary for Subcatchment 1S: Sub 1

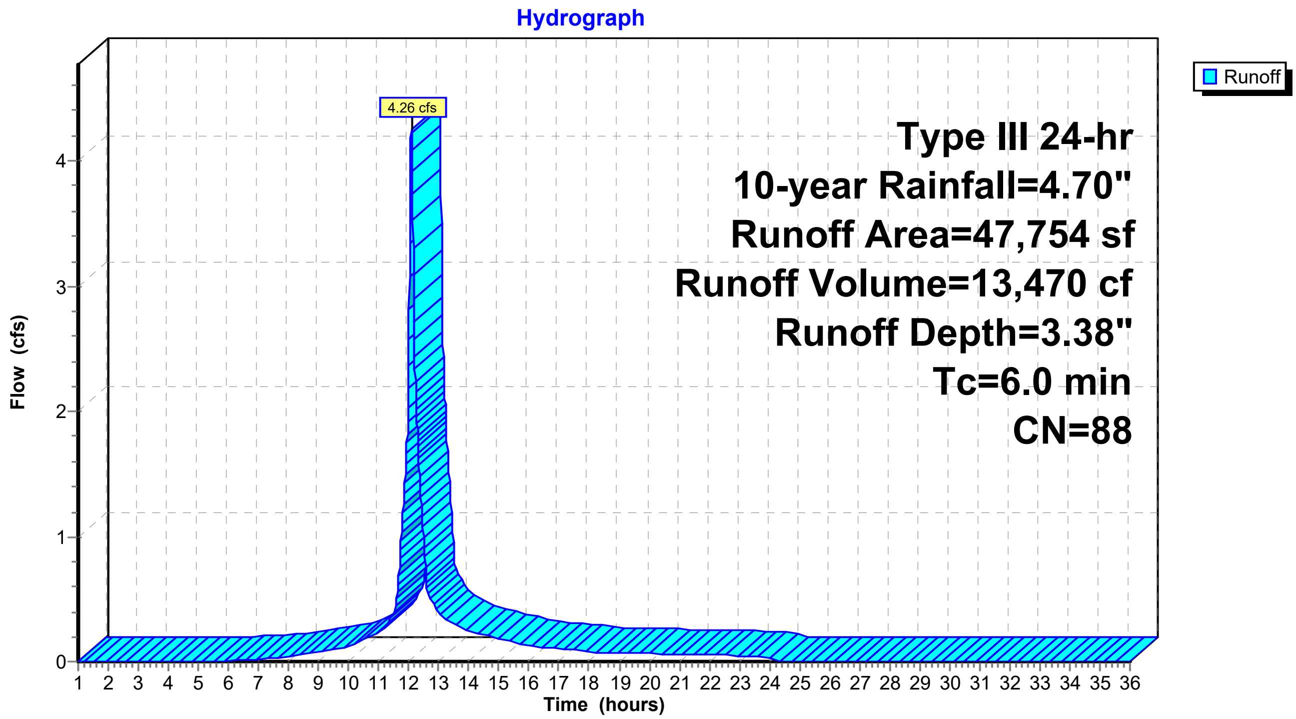
Runoff = 4.26 cfs @ 12.09 hrs, Volume= 13,470 cf, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
13,390	98	Roofs, HSG B
975	55	Woods, Good, HSG B
11,191	61	>75% Grass cover, Good, HSG B
22,198	98	Paved parking, HSG B
47,754	88	Weighted Average
12,166		25.48% Pervious Area
35,588		74.52% Impervious Area

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

Subcatchment 1S: Sub 1



Summary for Subcatchment 2S: Sub 2

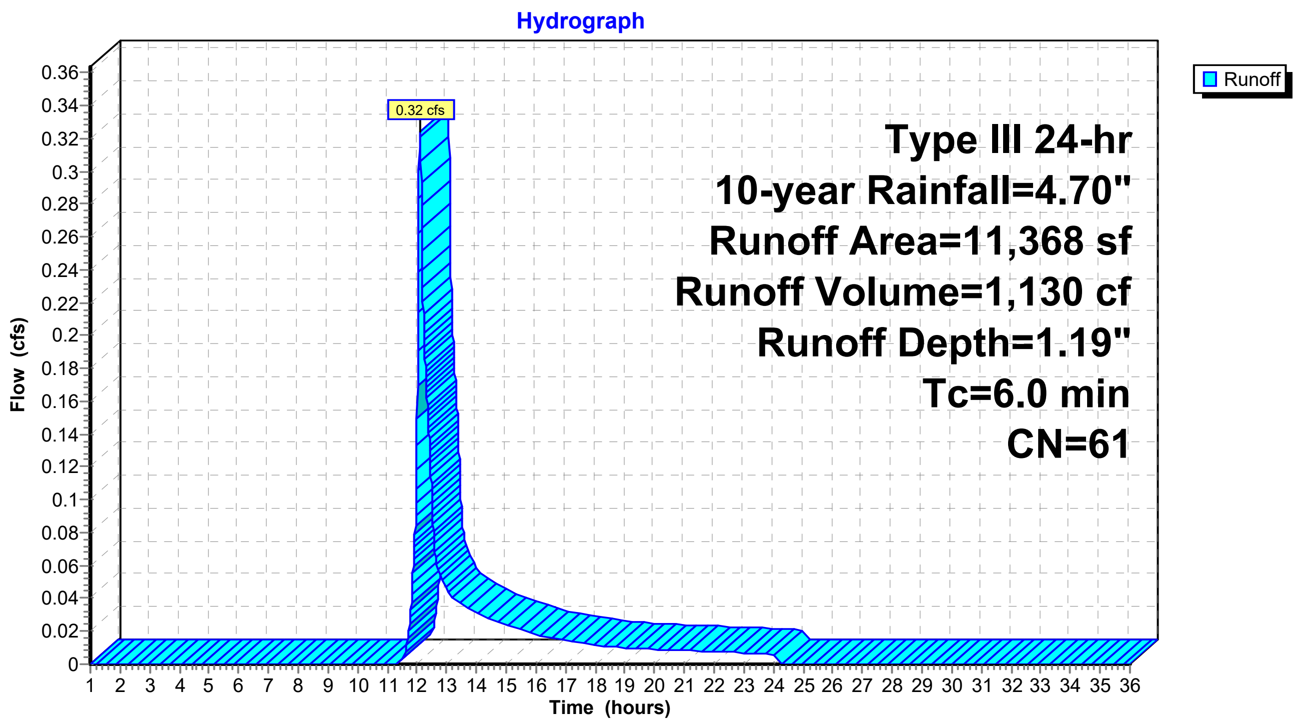
Runoff = 0.32 cfs @ 12.10 hrs, Volume= 1,130 cf, Depth= 1.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
1,073	55	Woods, Good, HSG B
10,022	61	>75% Grass cover, Good, HSG B
273	98	Paved parking, HSG B
11,368	61	Weighted Average
11,095		97.60% Pervious Area
273		2.40% Impervious Area

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

Subcatchment 2S: Sub 2



Summary for Subcatchment 3S: Sub 3

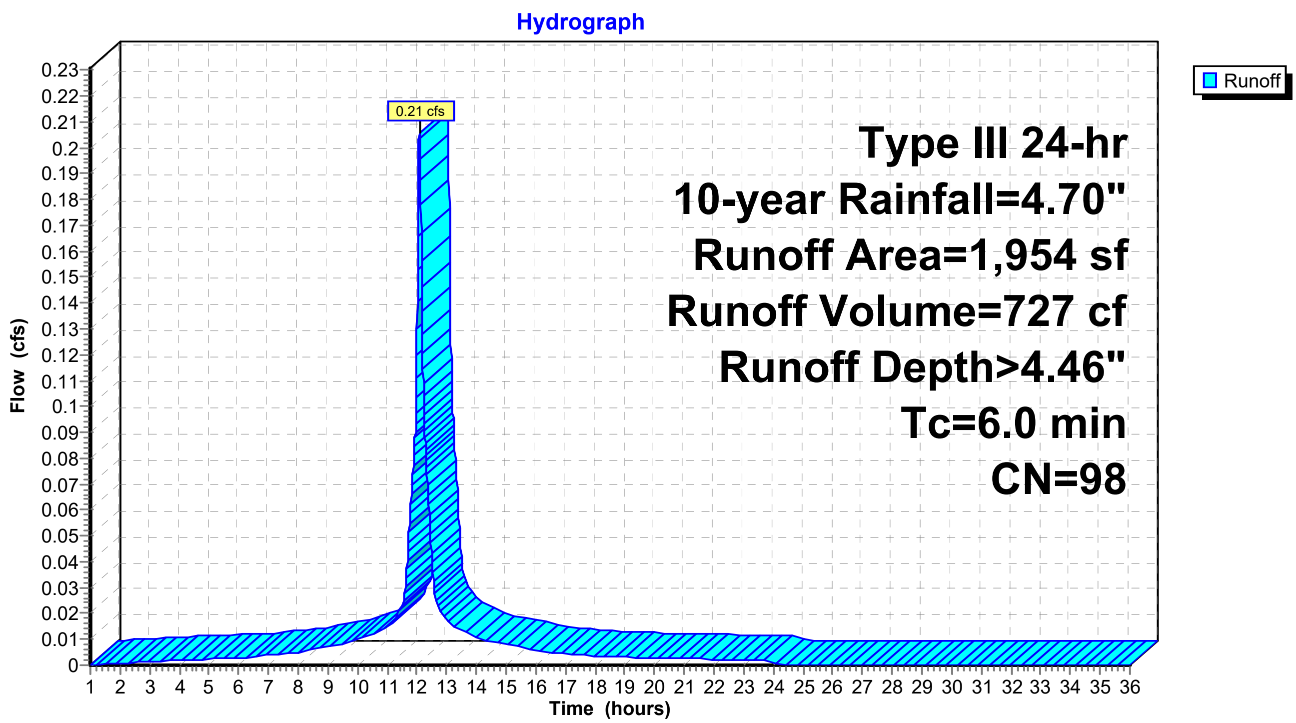
Runoff = 0.21 cfs @ 12.08 hrs, Volume= 727 cf, Depth> 4.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
1,954	98	Paved parking, HSG B
1,954		100.00% Impervious Area

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

Subcatchment 3S: Sub 3



Summary for Subcatchment 4S: Sub 4

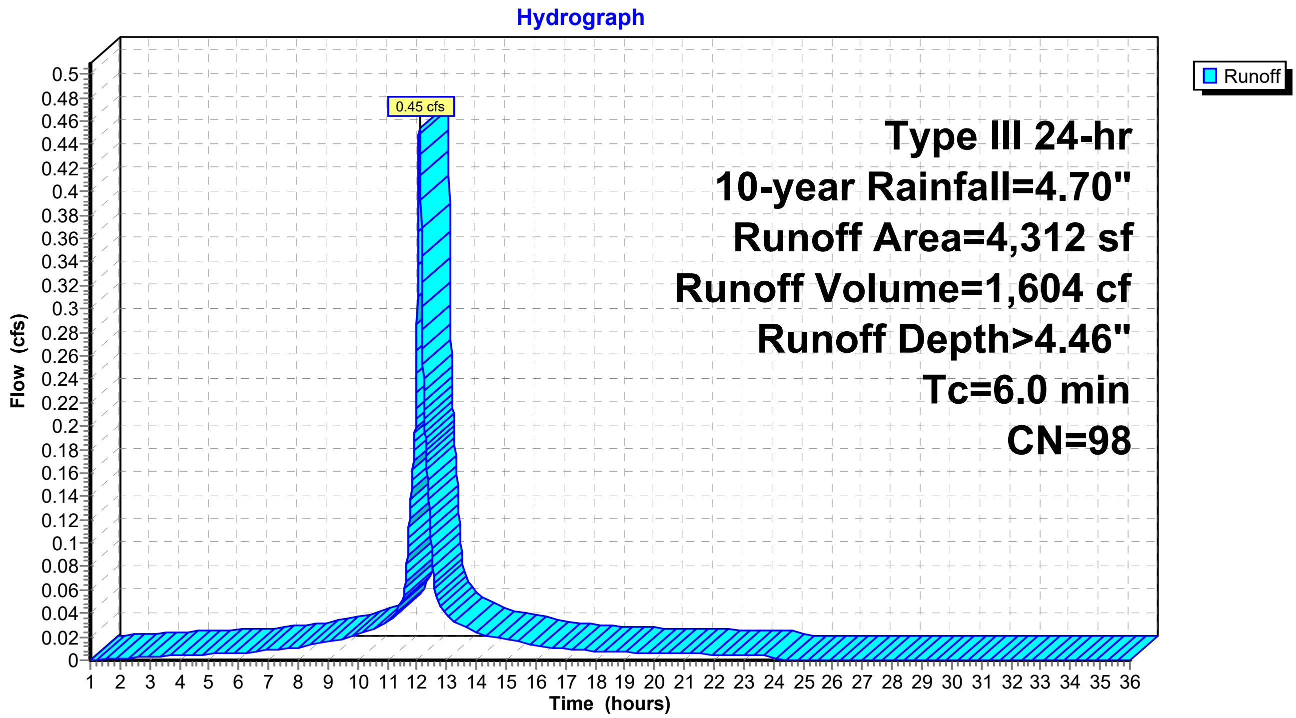
Runoff = 0.45 cfs @ 12.08 hrs, Volume= 1,604 cf, Depth> 4.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
4,312	98	Paved parking, HSG B
4,312		100.00% Impervious Area

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

Subcatchment 4S: Sub 4



Summary for Subcatchment 5S: Sub 5

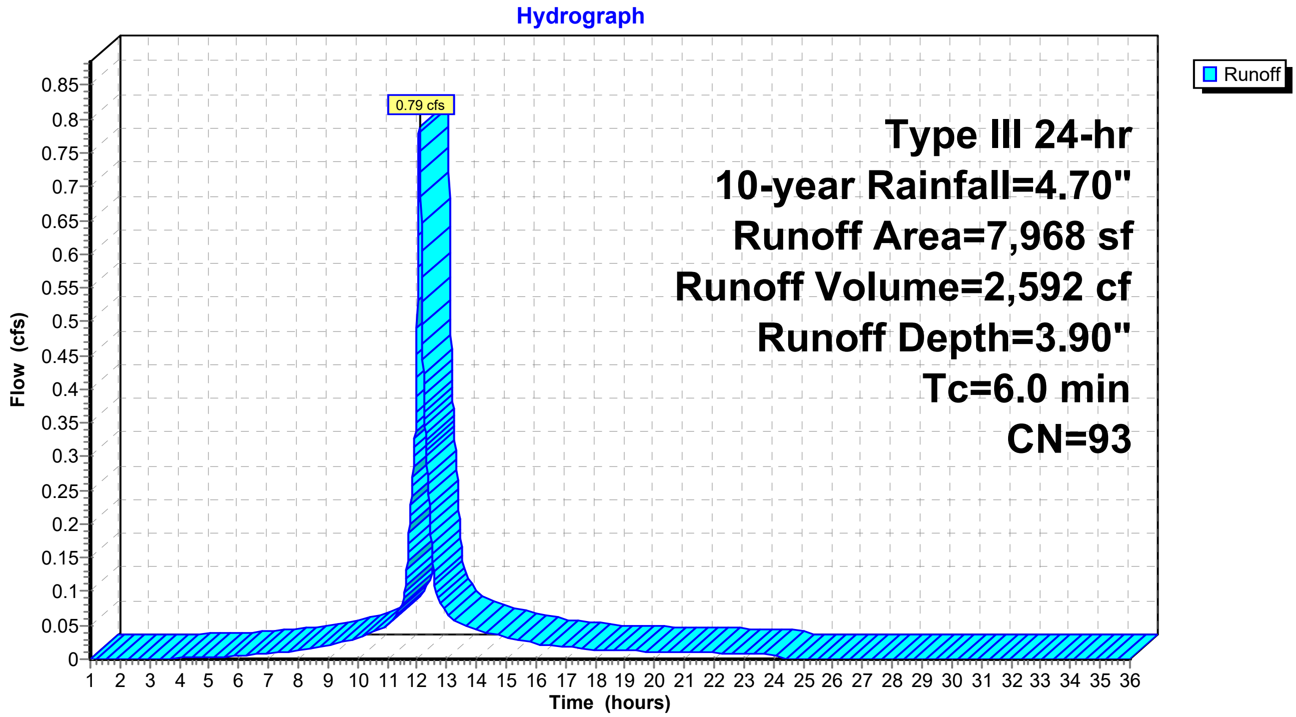
Runoff = 0.79 cfs @ 12.08 hrs, Volume= 2,592 cf, Depth= 3.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
5,157	98	Roofs, HSG B
1,028	61	>75% Grass cover, Good, HSG B
1,783	98	Paved parking, HSG B
7,968	93	Weighted Average
1,028		12.90% Pervious Area
6,940		87.10% Impervious Area

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

Subcatchment 5S: Sub 5



Summary for Subcatchment 6S: Sub 6

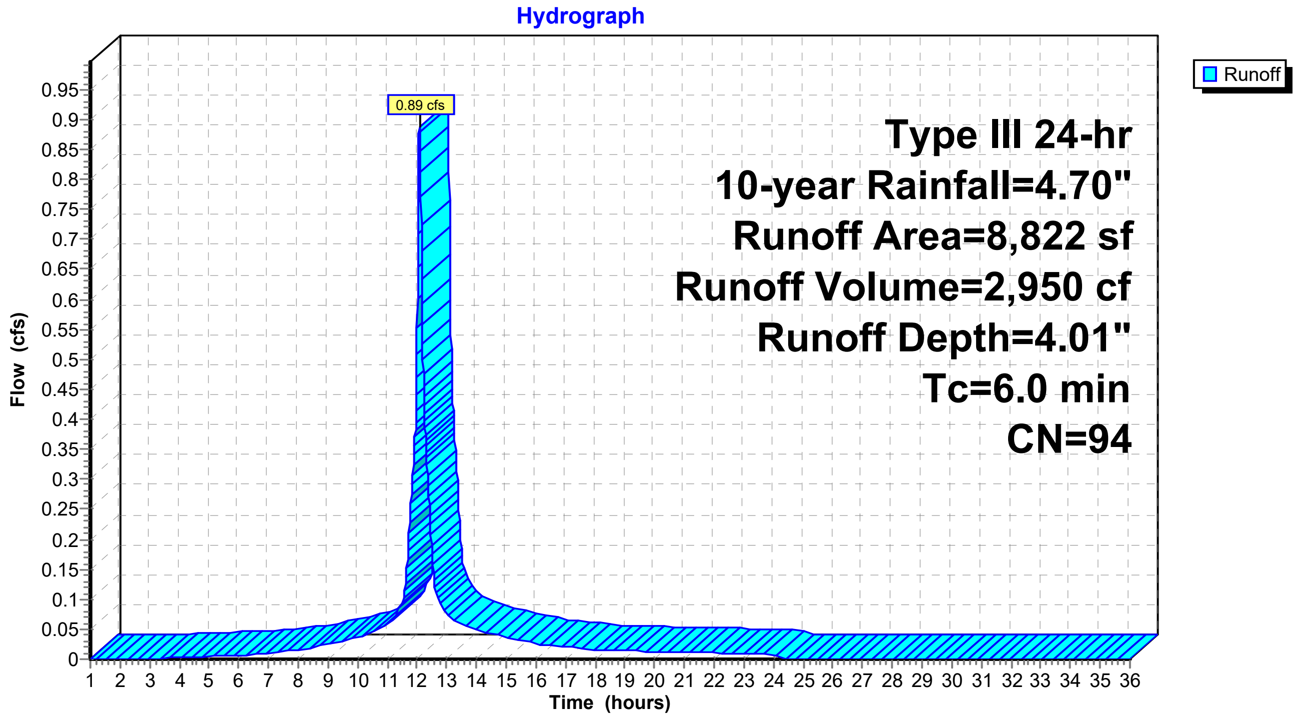
Runoff = 0.89 cfs @ 12.08 hrs, Volume= 2,950 cf, Depth= 4.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
557	39	>75% Grass cover, Good, HSG A
4,015	98	Paved parking, HSG A
4,250	98	Roofs, HSG A
8,822	94	Weighted Average
557		6.31% Pervious Area
8,265		93.69% Impervious Area

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

Subcatchment 6S: Sub 6



Summary for Subcatchment 7S: Sub 15

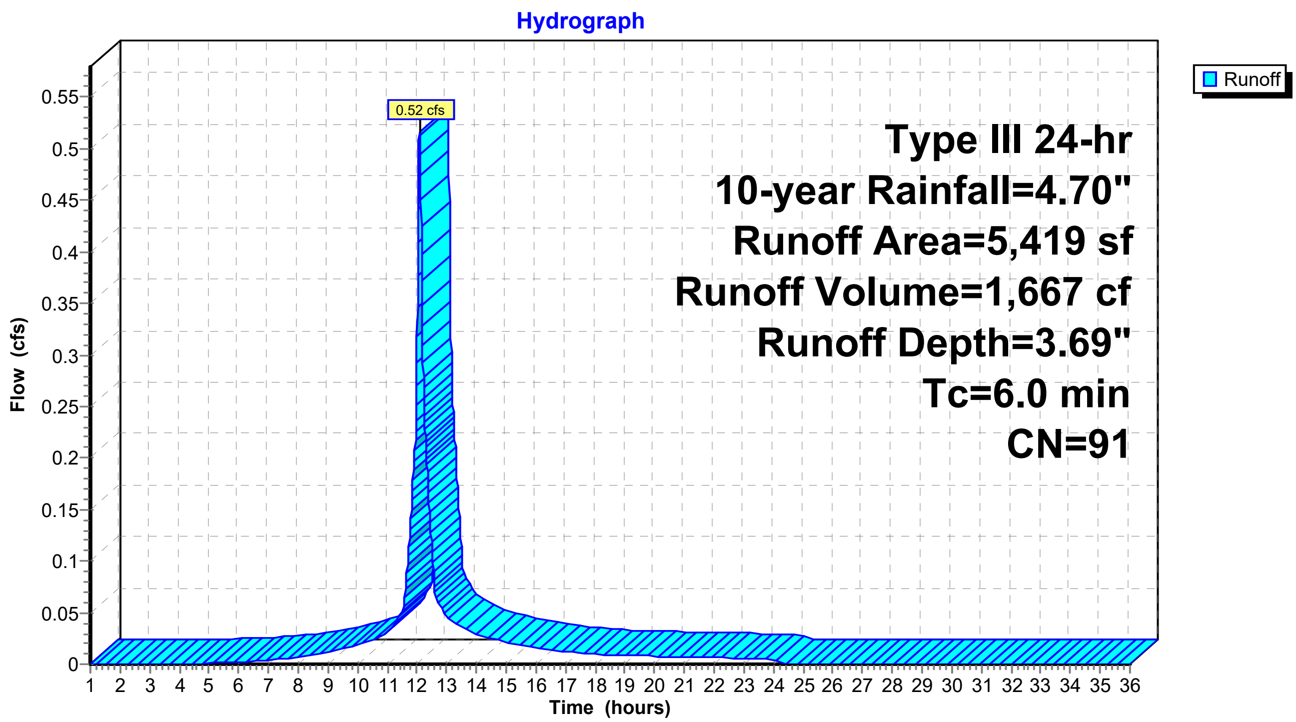
Runoff = 0.52 cfs @ 12.08 hrs, Volume= 1,667 cf, Depth= 3.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
628	39	>75% Grass cover, Good, HSG A
3,579	98	Paved parking, HSG A
1,212	98	Roofs, HSG A
5,419	91	Weighted Average
628		11.59% Pervious Area
4,791		88.41% Impervious Area

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

Subcatchment 7S: Sub 15



Summary for Subcatchment 8S: Sub 8

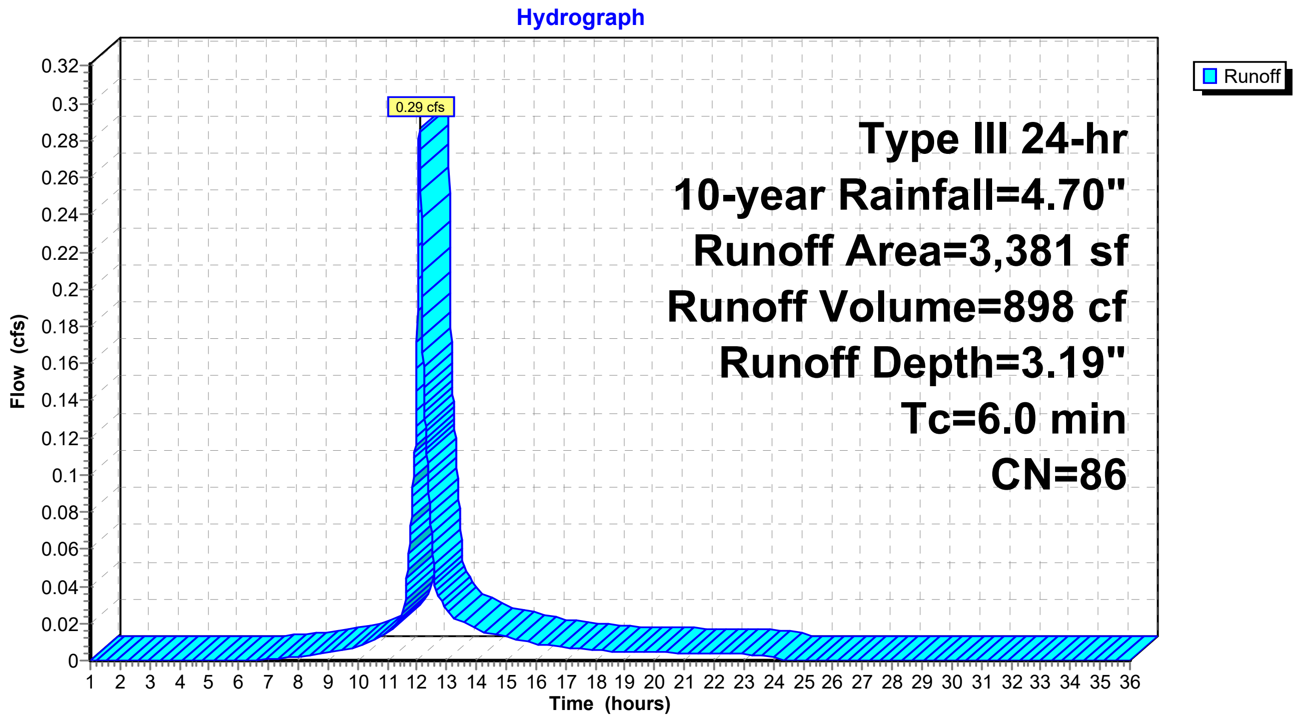
Runoff = 0.29 cfs @ 12.09 hrs, Volume= 898 cf, Depth= 3.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
2,327	98	Paved parking, HSG B
1,054	61	>75% Grass cover, Good, HSG B
3,381	86	Weighted Average
1,054		31.17% Pervious Area
2,327		68.83% Impervious Area

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

Subcatchment 8S: Sub 8



Summary for Subcatchment 9S: Sub 9

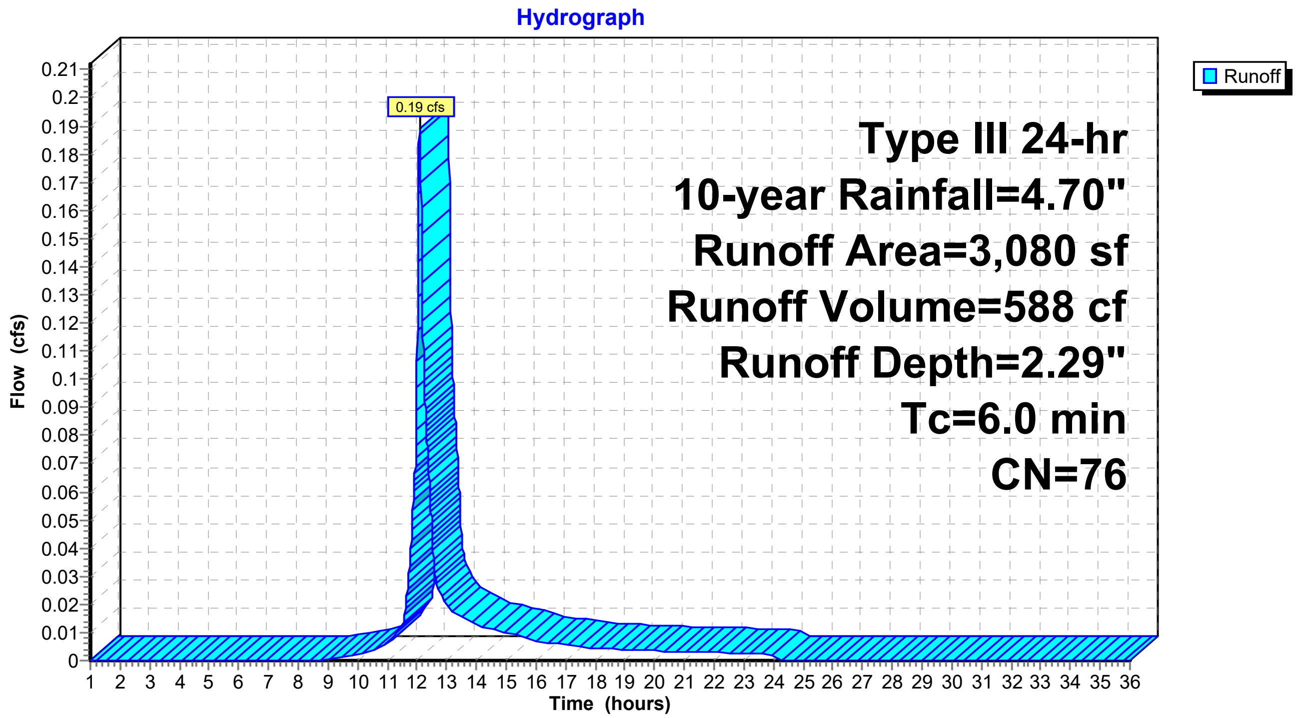
Runoff = 0.19 cfs @ 12.09 hrs, Volume= 588 cf, Depth= 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
1,137	39	>75% Grass cover, Good, HSG A
1,943	98	Paved parking, HSG A
3,080	76	Weighted Average
1,137		36.92% Pervious Area
1,943		63.08% Impervious Area

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

Subcatchment 9S: Sub 9



Summary for Subcatchment 10S: Sub 10

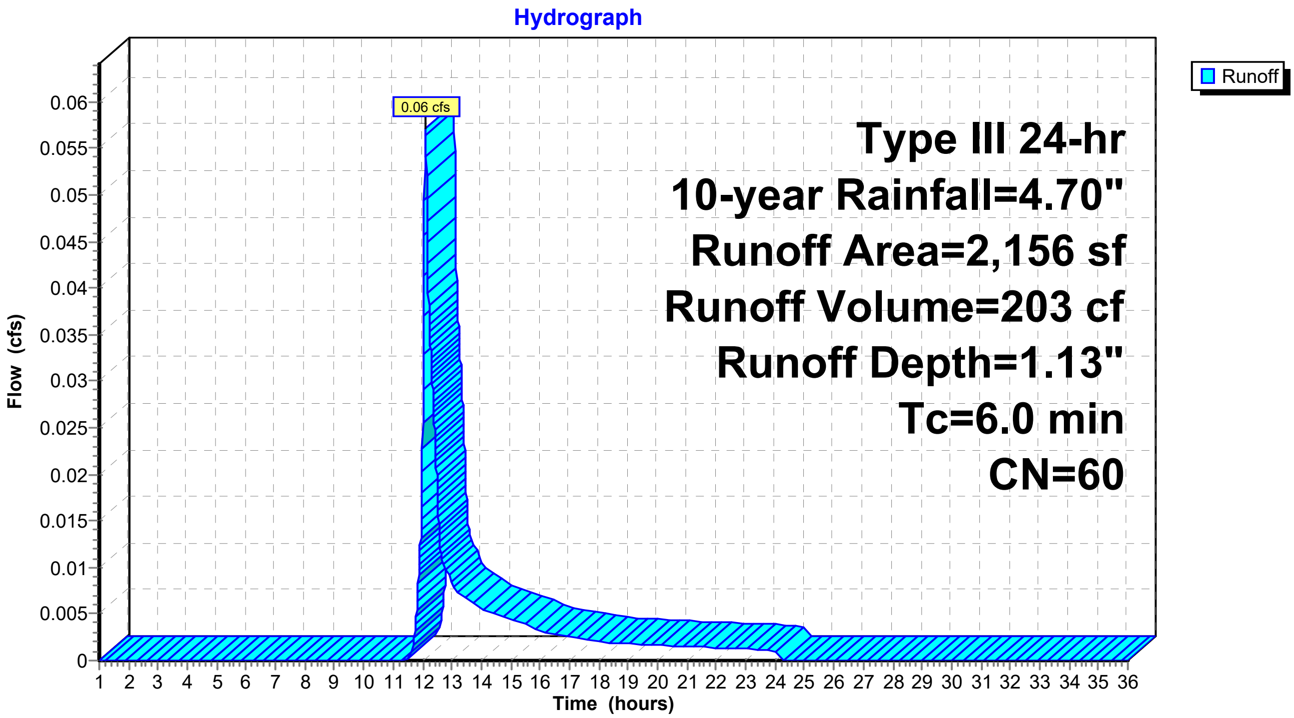
Runoff = 0.06 cfs @ 12.10 hrs, Volume= 203 cf, Depth= 1.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
1,402	39	>75% Grass cover, Good, HSG A
754	98	Paved parking, HSG A
2,156	60	Weighted Average
1,402		65.03% Pervious Area
754		34.97% Impervious Area

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

Subcatchment 10S: Sub 10



Summary for Subcatchment 11S: Sub 11

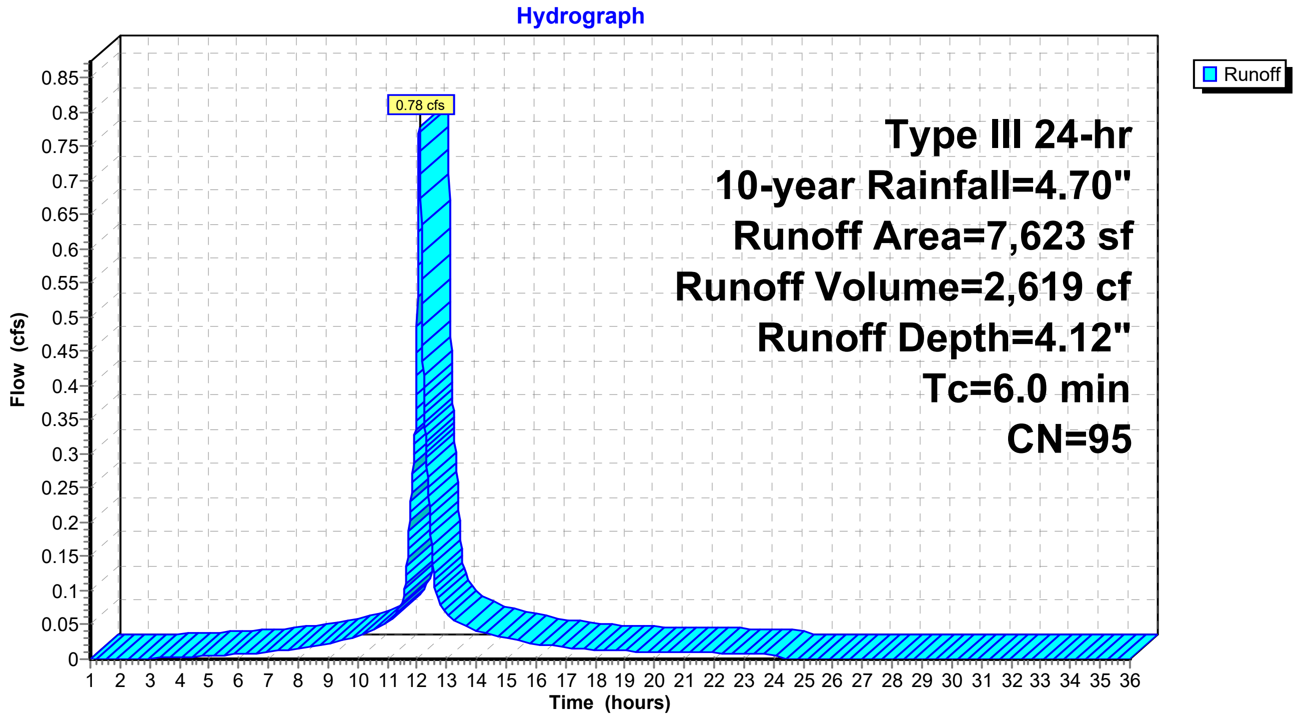
Runoff = 0.78 cfs @ 12.08 hrs, Volume= 2,619 cf, Depth= 4.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
401	39	>75% Grass cover, Good, HSG A
6,169	98	Paved parking, HSG A
1,053	98	Roofs, HSG A
7,623	95	Weighted Average
401		5.26% Pervious Area
7,222		94.74% Impervious Area

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

Subcatchment 11S: Sub 11



Summary for Subcatchment 12S: Sub 12

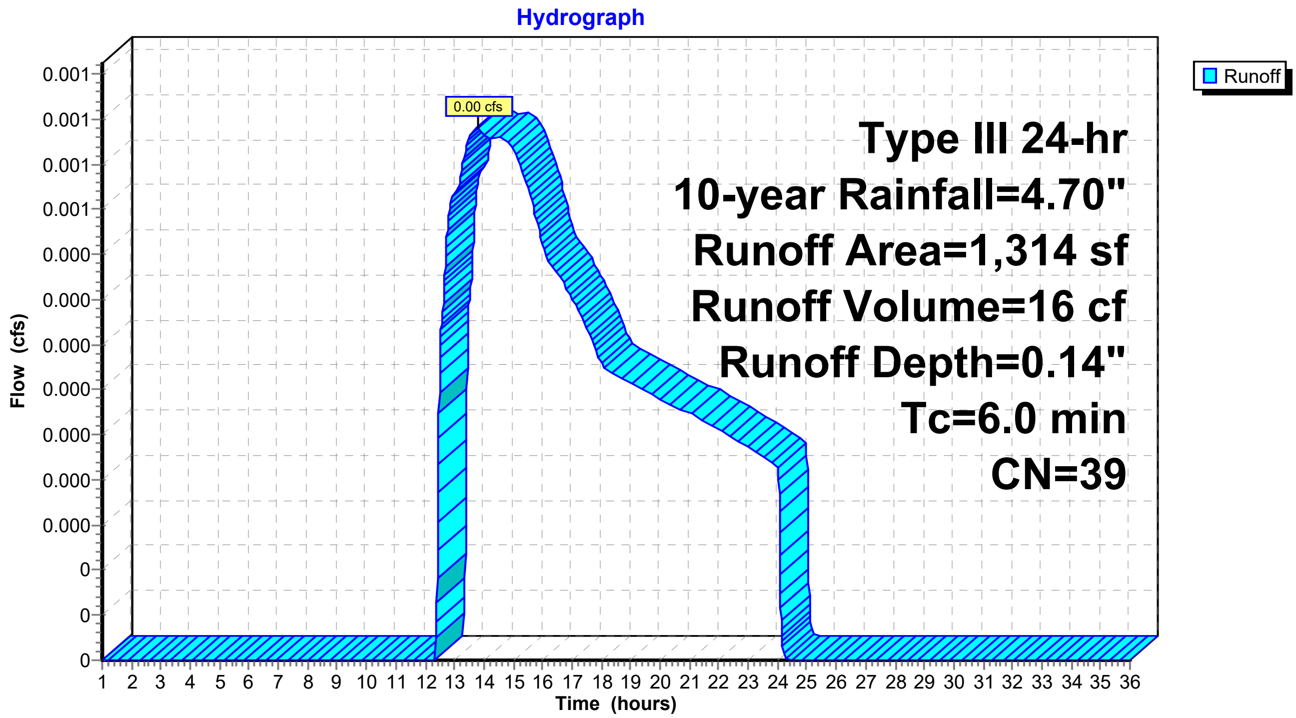
Runoff = 0.00 cfs @ 13.78 hrs, Volume= 16 cf, Depth= 0.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
1,314	39	>75% Grass cover, Good, HSG A
1,314		100.00% Pervious Area

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

Subcatchment 12S: Sub 12



Summary for Subcatchment 13S: Sub 13

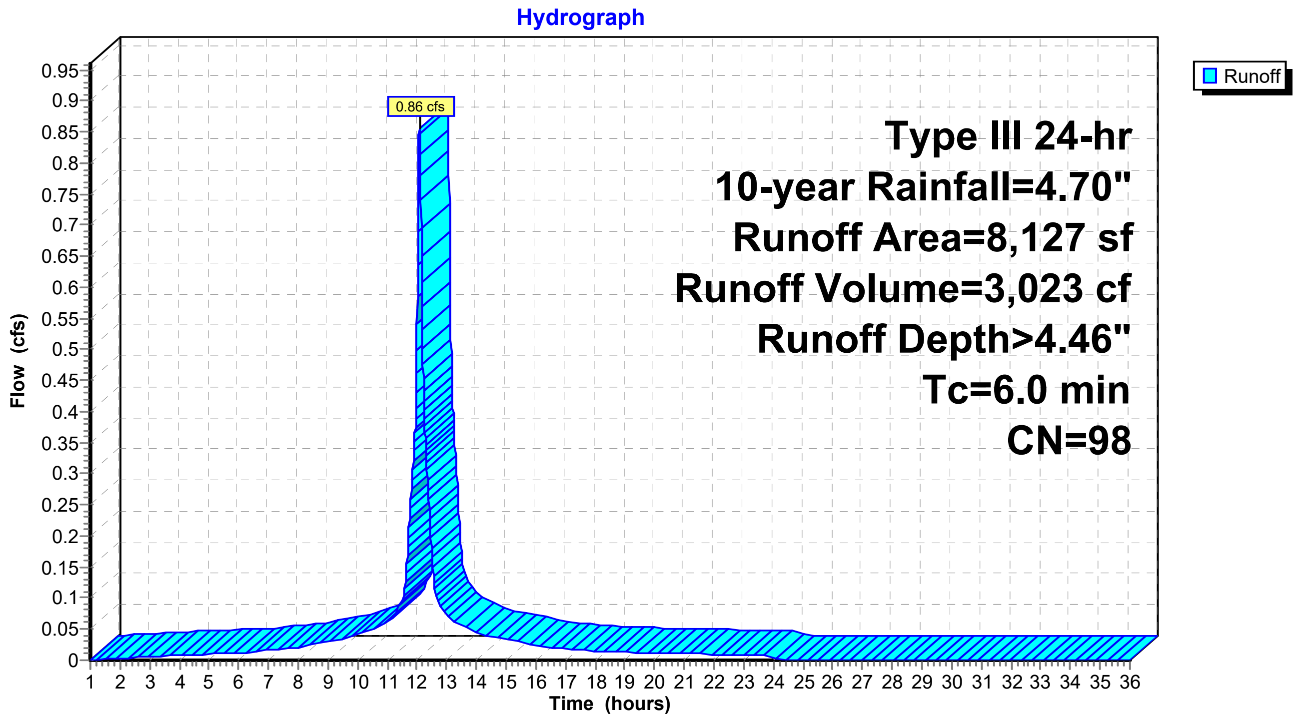
Runoff = 0.86 cfs @ 12.08 hrs, Volume= 3,023 cf, Depth> 4.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
8,127	98	Paved parking, HSG A
8,127		100.00% Impervious Area

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

Subcatchment 13S: Sub 13



Summary for Subcatchment 14S: Sub 14

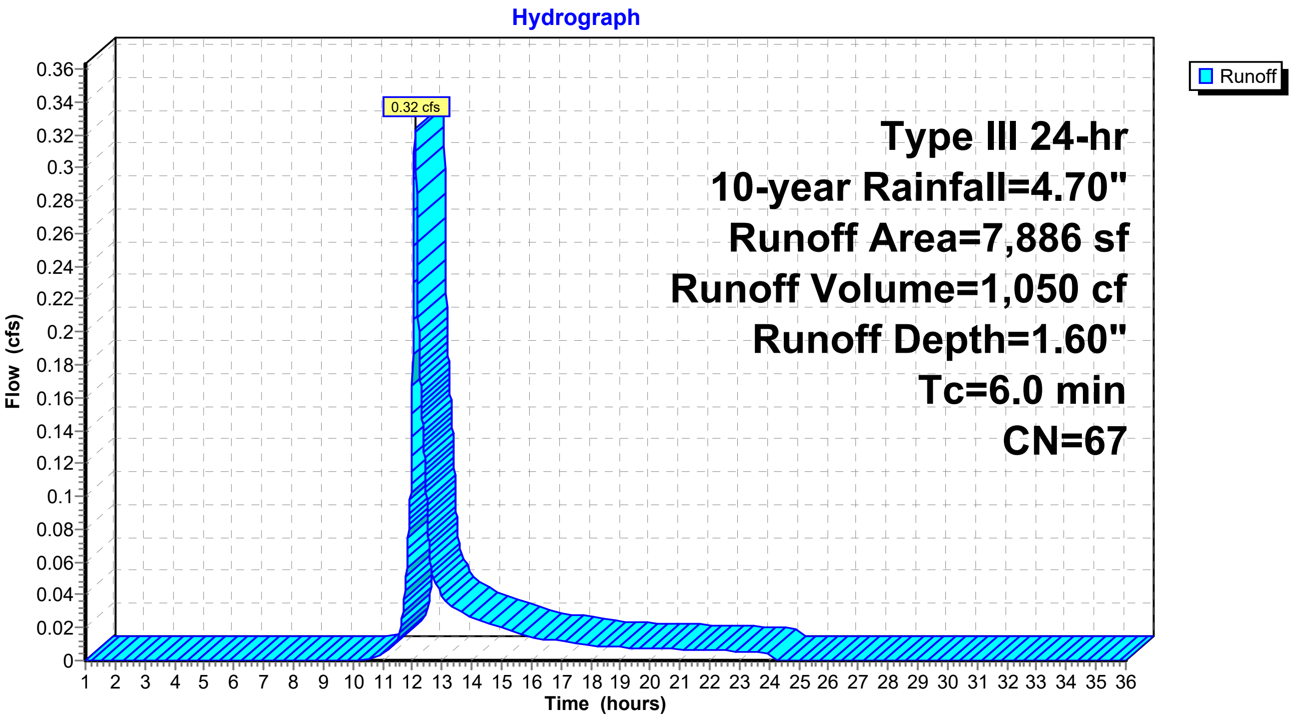
Runoff = 0.32 cfs @ 12.10 hrs, Volume= 1,050 cf, Depth= 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
4,125	39	>75% Grass cover, Good, HSG A
3,761	98	Paved parking, HSG A
7,886	67	Weighted Average
4,125		52.31% Pervious Area
3,761		47.69% Impervious Area

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

Subcatchment 14S: Sub 14



Summary for Subcatchment 15S: Sub 15

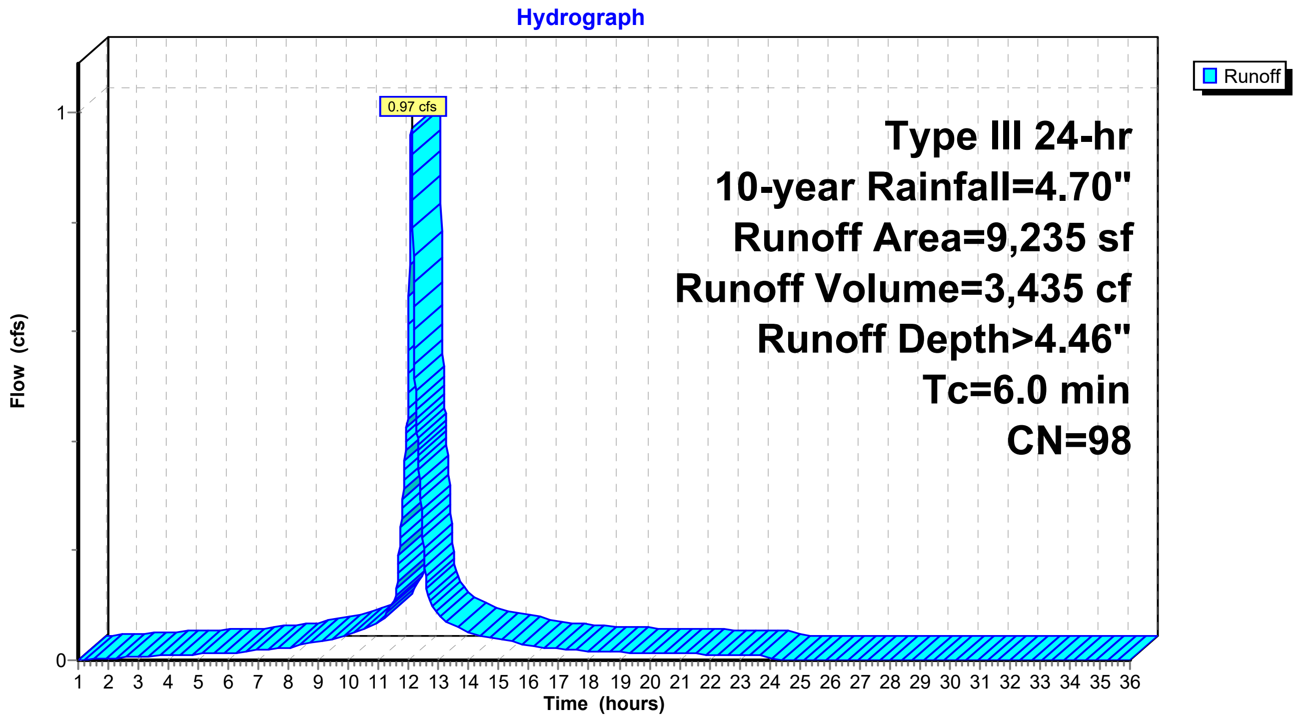
Runoff = 0.97 cfs @ 12.08 hrs, Volume= 3,435 cf, Depth> 4.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
9,235	98	Paved parking, HSG A
9,235		100.00% Impervious Area

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

Subcatchment 15S: Sub 15



Summary for Subcatchment 16S: Sub 16

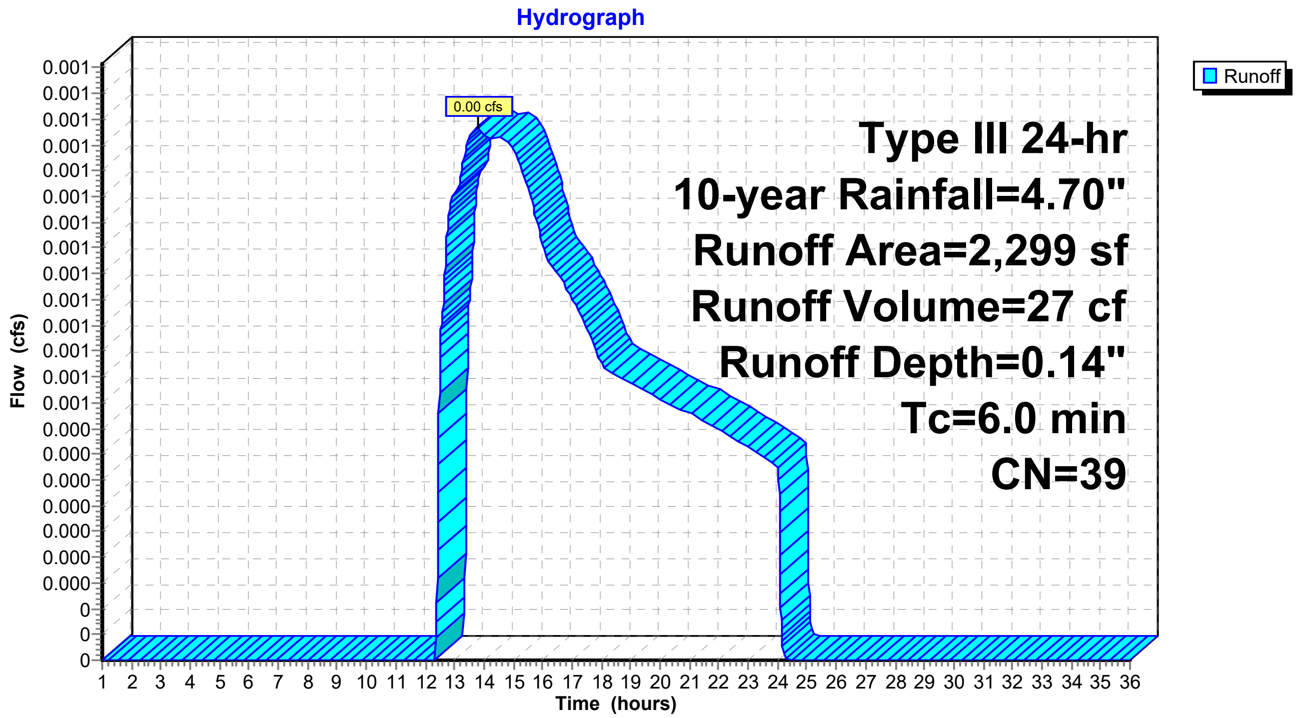
Runoff = 0.00 cfs @ 13.78 hrs, Volume= 27 cf, Depth= 0.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
2,299	39	>75% Grass cover, Good, HSG A
2,299		100.00% Pervious Area

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

Subcatchment 16S: Sub 16



Summary for Subcatchment 17S: Sub 17

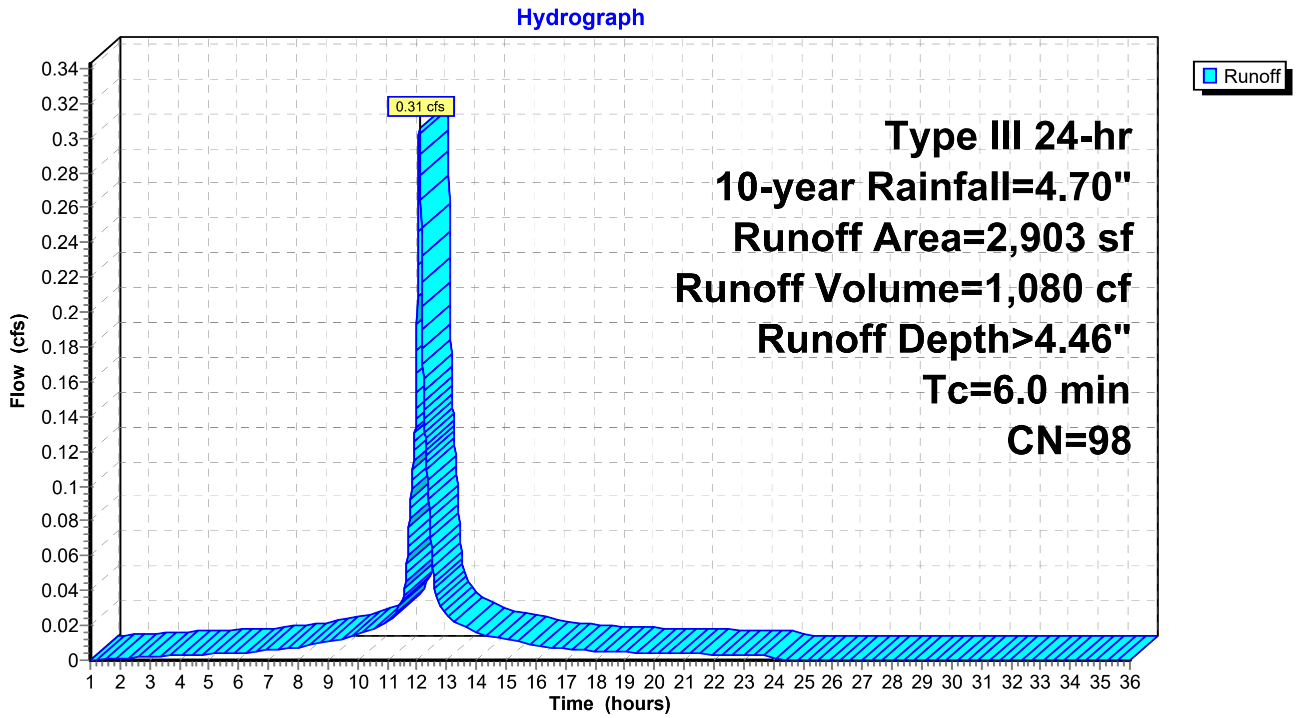
Runoff = 0.31 cfs @ 12.08 hrs, Volume= 1,080 cf, Depth> 4.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
2,903	98	Paved parking, HSG B
2,903		100.00% Impervious Area

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

Subcatchment 17S: Sub 17



Summary for Subcatchment 18S: Sub 18

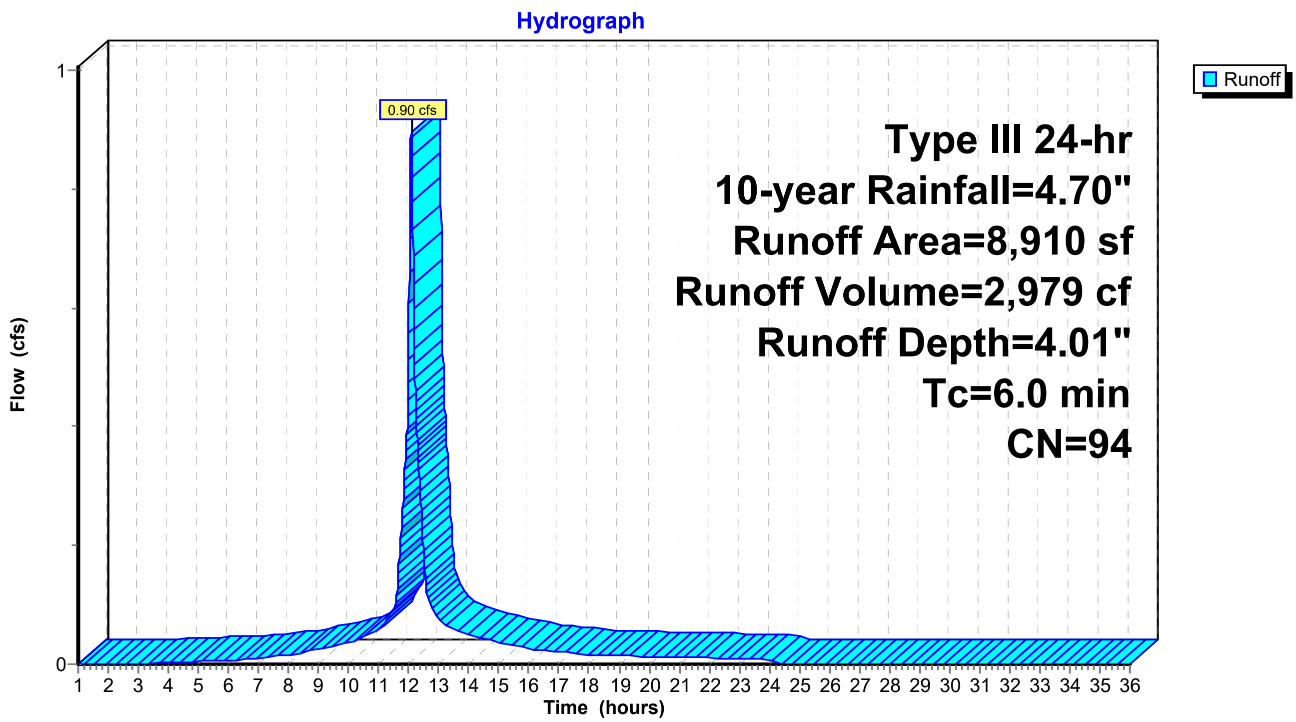
Runoff = 0.90 cfs @ 12.08 hrs, Volume= 2,979 cf, Depth= 4.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
637	39	>75% Grass cover, Good, HSG A
5,895	98	Paved parking, HSG A
2,378	98	Roofs, HSG B
8,910	94	Weighted Average
637		7.15% Pervious Area
8,273		92.85% Impervious Area

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

Subcatchment 18S: Sub 18



Summary for Subcatchment 19S: Sub 19

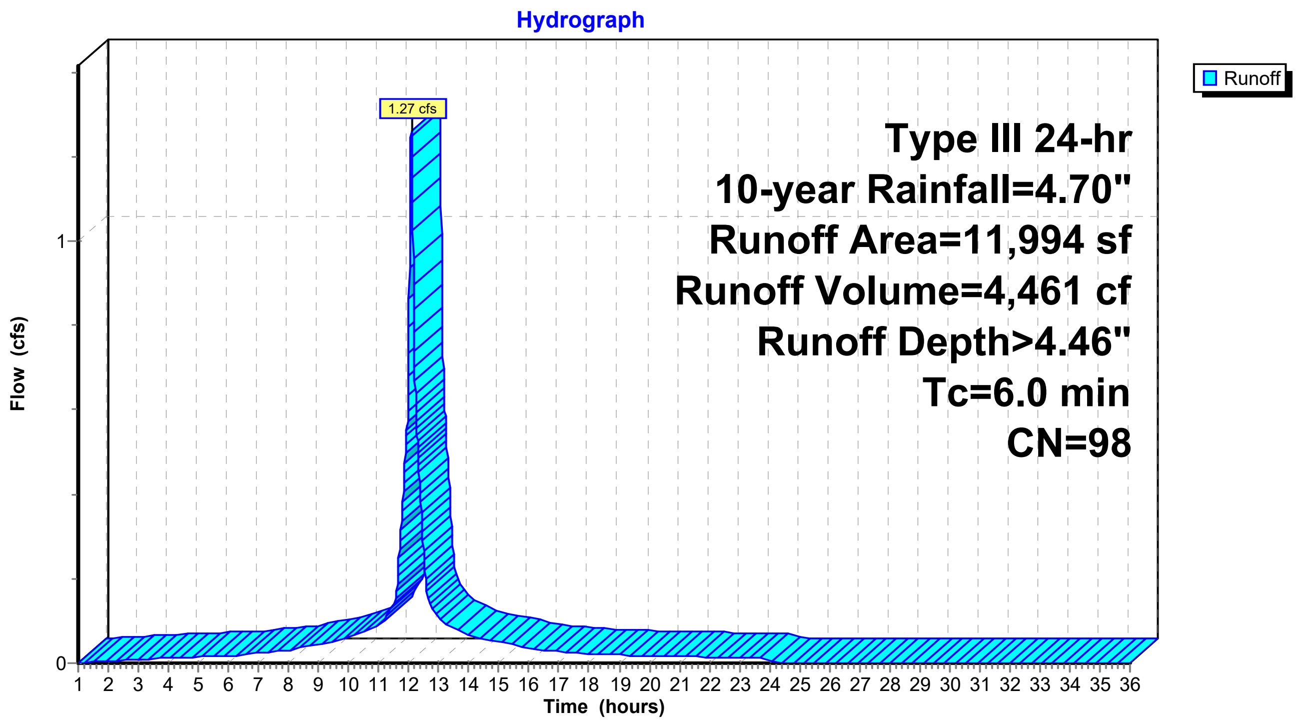
Runoff = 1.27 cfs @ 12.08 hrs, Volume= 4,461 cf, Depth> 4.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
7,625	98	Roofs, HSG A
4,369	98	Paved parking, HSG A
11,994	98	Weighted Average
11,994		100.00% Impervious Area

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

Subcatchment 19S: Sub 19



Summary for Subcatchment 20S: Sub 20

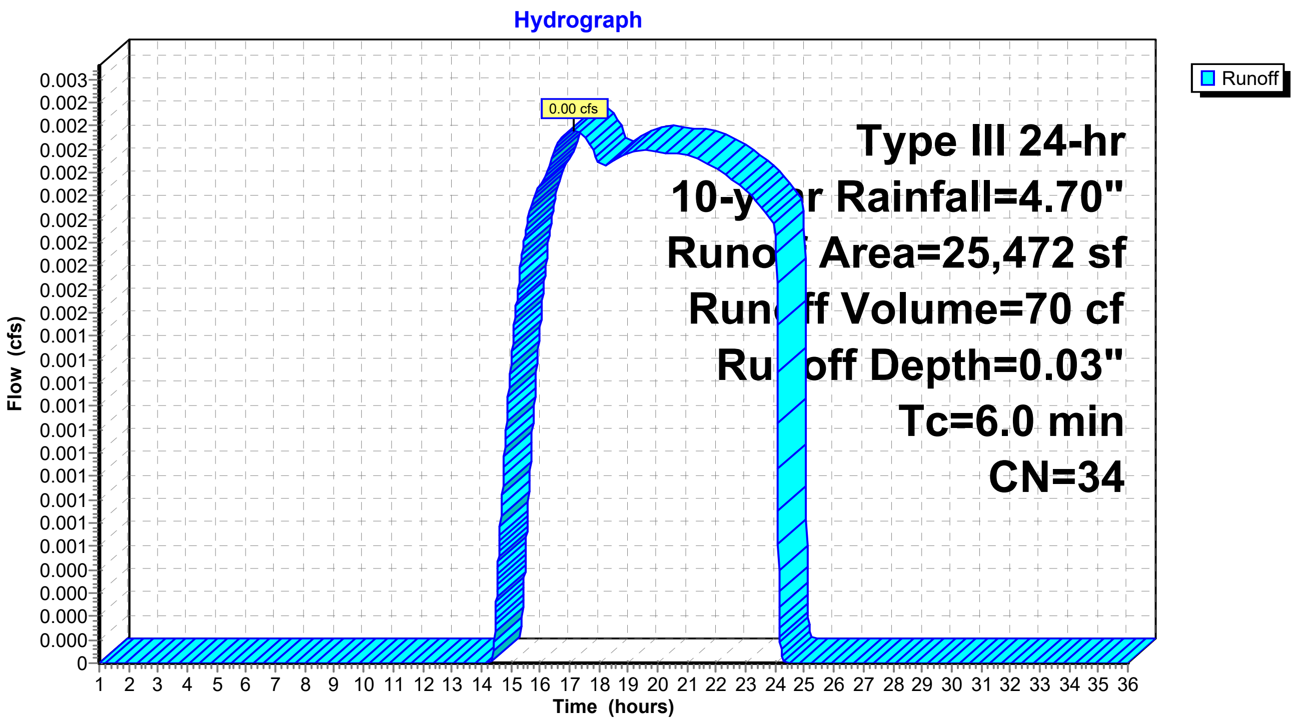
Runoff = 0.00 cfs @ 17.14 hrs, Volume= 70 cf, Depth= 0.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
12,428	39	>75% Grass cover, Good, HSG A
13,044	30	Woods, Good, HSG A
25,472	34	Weighted Average
25,472		100.00% Pervious Area

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

Subcatchment 20S: Sub 20



Summary for Subcatchment 21S: Sub 21

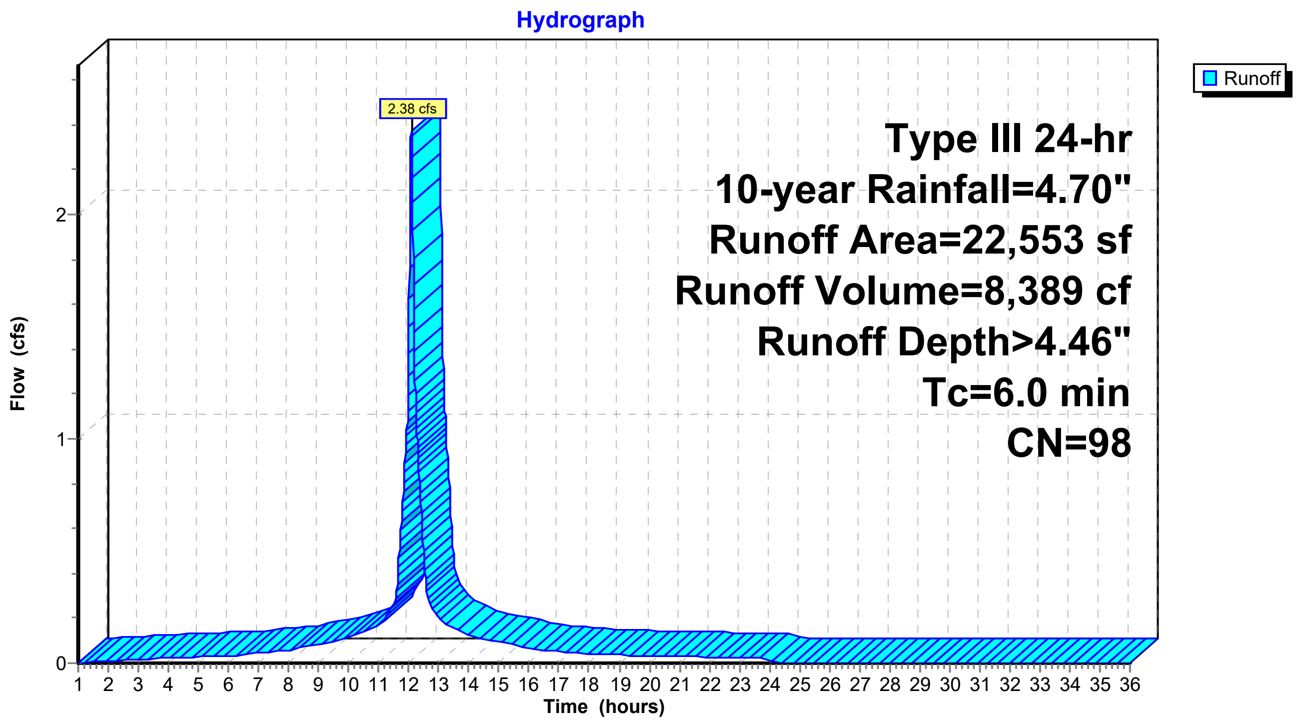
Runoff = 2.38 cfs @ 12.08 hrs, Volume= 8,389 cf, Depth> 4.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
10,469	98	Roofs, HSG A
12,084	98	Paved parking, HSG A
22,553	98	Weighted Average
22,553		100.00% Impervious Area

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

Subcatchment 21S: Sub 21



Summary for Subcatchment 22S: Sub 22

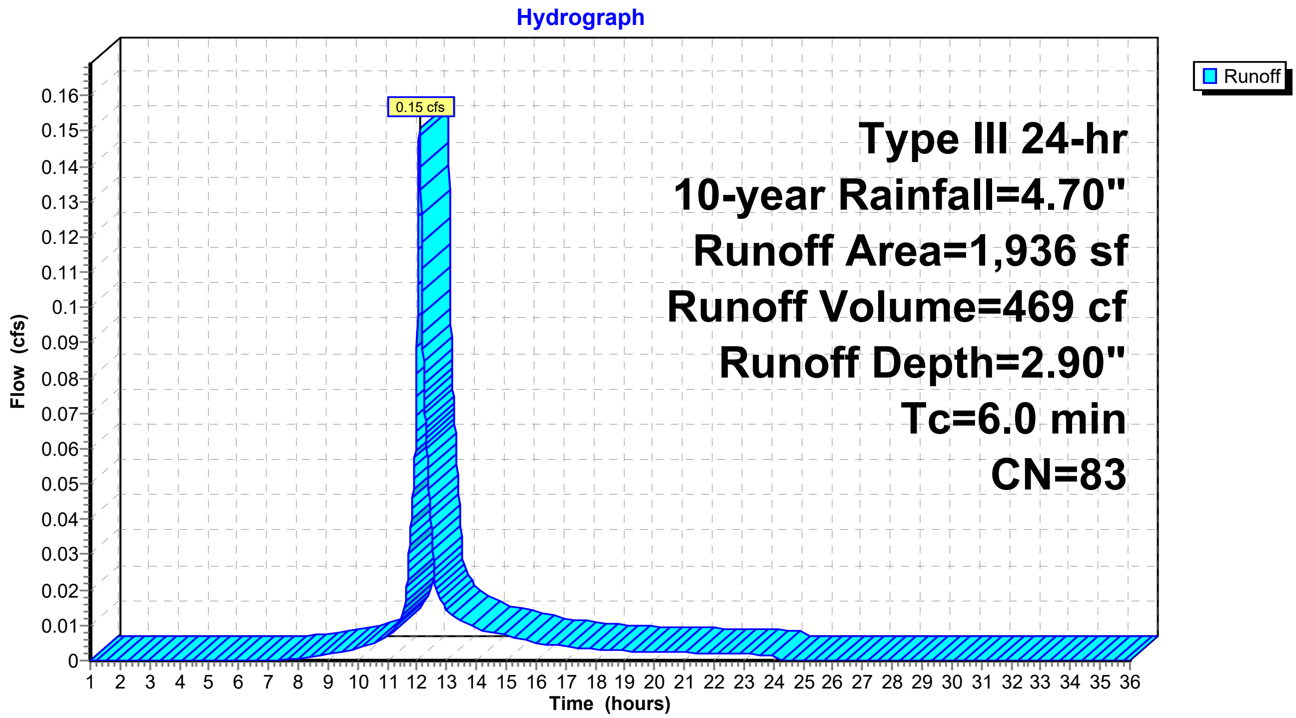
Runoff = 0.15 cfs @ 12.09 hrs, Volume= 469 cf, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
1,161	98	Paved parking, HSG B
775	61	>75% Grass cover, Good, HSG B
1,936	83	Weighted Average
775		40.03% Pervious Area
1,161		59.97% Impervious Area

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

Subcatchment 22S: Sub 22



Summary for Subcatchment 23S: Sub 23

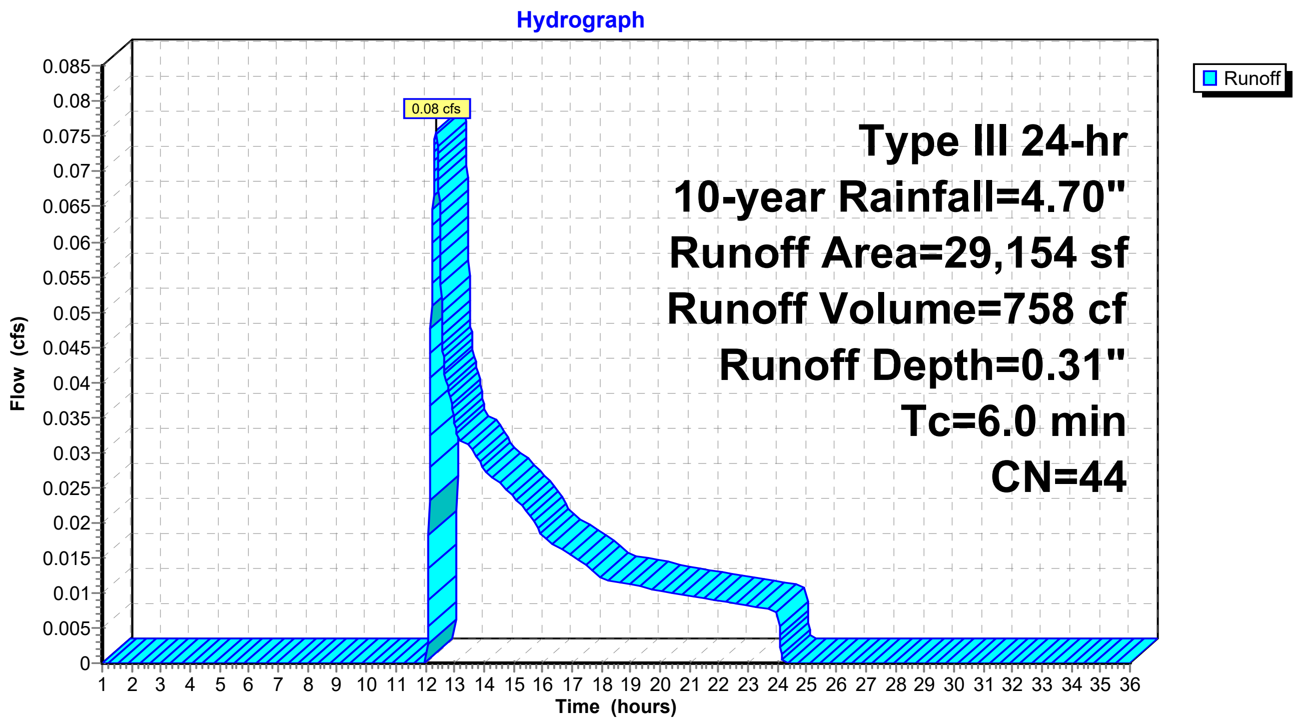
Runoff = 0.08 cfs @ 12.37 hrs, Volume= 758 cf, Depth= 0.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
12,963	61	>75% Grass cover, Good, HSG B
16,191	30	Woods, Good, HSG A
29,154	44	Weighted Average
29,154		100.00% Pervious Area

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

Subcatchment 23S: Sub 23



Summary for Subcatchment 24S: Sub 24

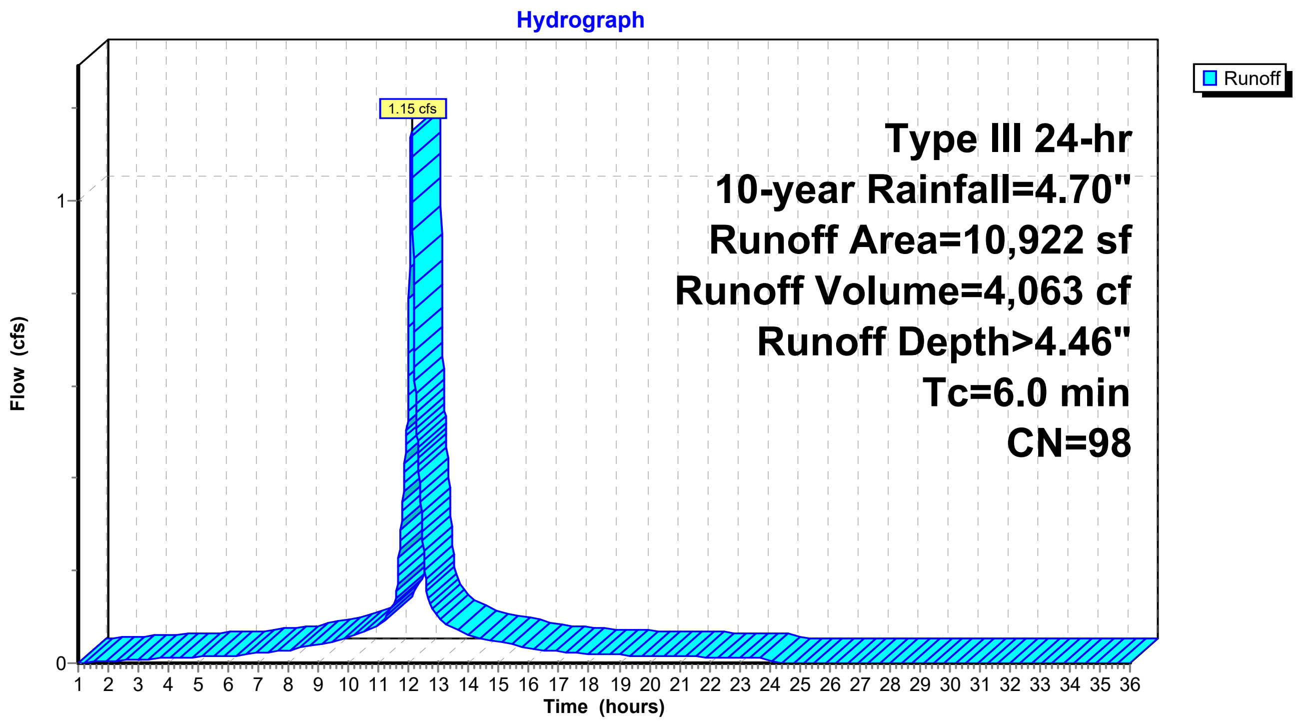
Runoff = 1.15 cfs @ 12.08 hrs, Volume= 4,063 cf, Depth> 4.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
316	98	Roofs, HSG B
10,606	98	Paved parking, HSG B
10,922	98	Weighted Average
10,922		100.00% Impervious Area

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

Subcatchment 24S: Sub 24



Summary for Subcatchment 25S: Sub 25

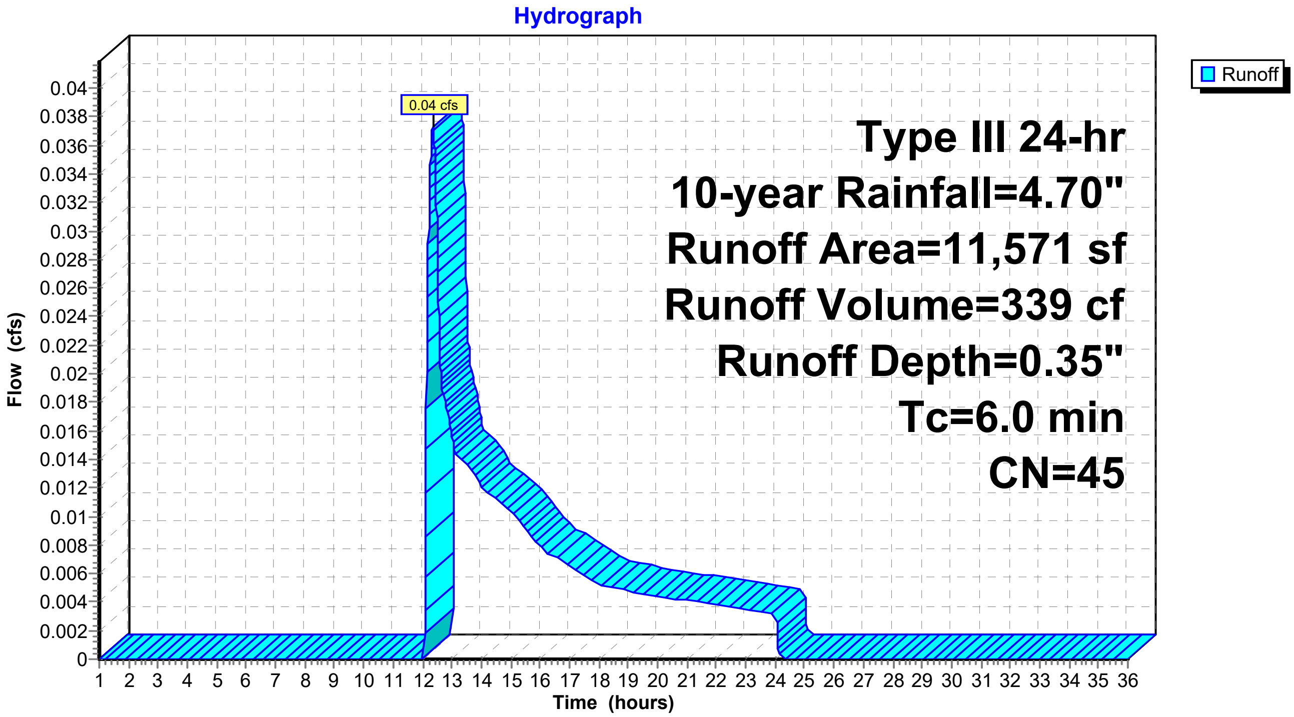
Runoff = 0.04 cfs @ 12.34 hrs, Volume= 339 cf, Depth= 0.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
8,818	39	>75% Grass cover, Good, HSG A
1,319	98	Roofs, HSG A
1,434	30	Woods, Good, HSG A
11,571	45	Weighted Average
10,252		88.60% Pervious Area
1,319		11.40% Impervious Area

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

Subcatchment 25S: Sub 25



Summary for Subcatchment 26S: Sub 26

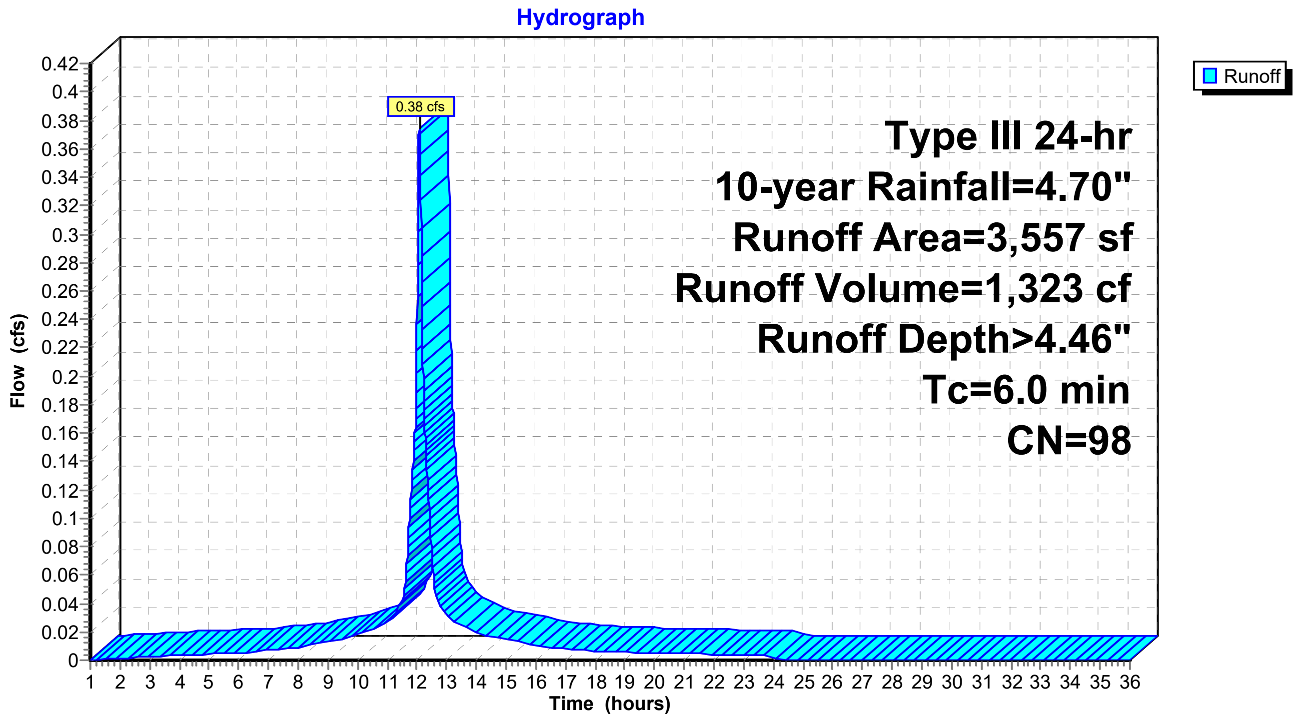
Runoff = 0.38 cfs @ 12.08 hrs, Volume= 1,323 cf, Depth> 4.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.70"

Area (sf)	CN	Description
3,557	98	Paved parking, HSG A
3,557		100.00% Impervious Area

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

Subcatchment 26S: Sub 26



Summary for Pond 1P: Rain Garden

Inflow Area = 16,708 sf, 71.98% Impervious, Inflow Depth = 2.87" for 10-year event
Inflow = 1.21 cfs @ 12.09 hrs, Volume= 3,999 cf
Outflow = 1.20 cfs @ 12.10 hrs, Volume= 3,120 cf, Atten= 1%, Lag= 0.7 min
Primary = 1.20 cfs @ 12.10 hrs, Volume= 3,120 cf
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 101.40' @ 12.10 hrs Surf.Area= 498 sf Storage= 949 cf

Plug-Flow detention time= 136.6 min calculated for 3,119 cf (78% of inflow)
Center-of-Mass det. time= 53.9 min (851.2 - 797.3)

Volume	Invert	Avail.Storage	Storage Description
#1	97.24'	1,148 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

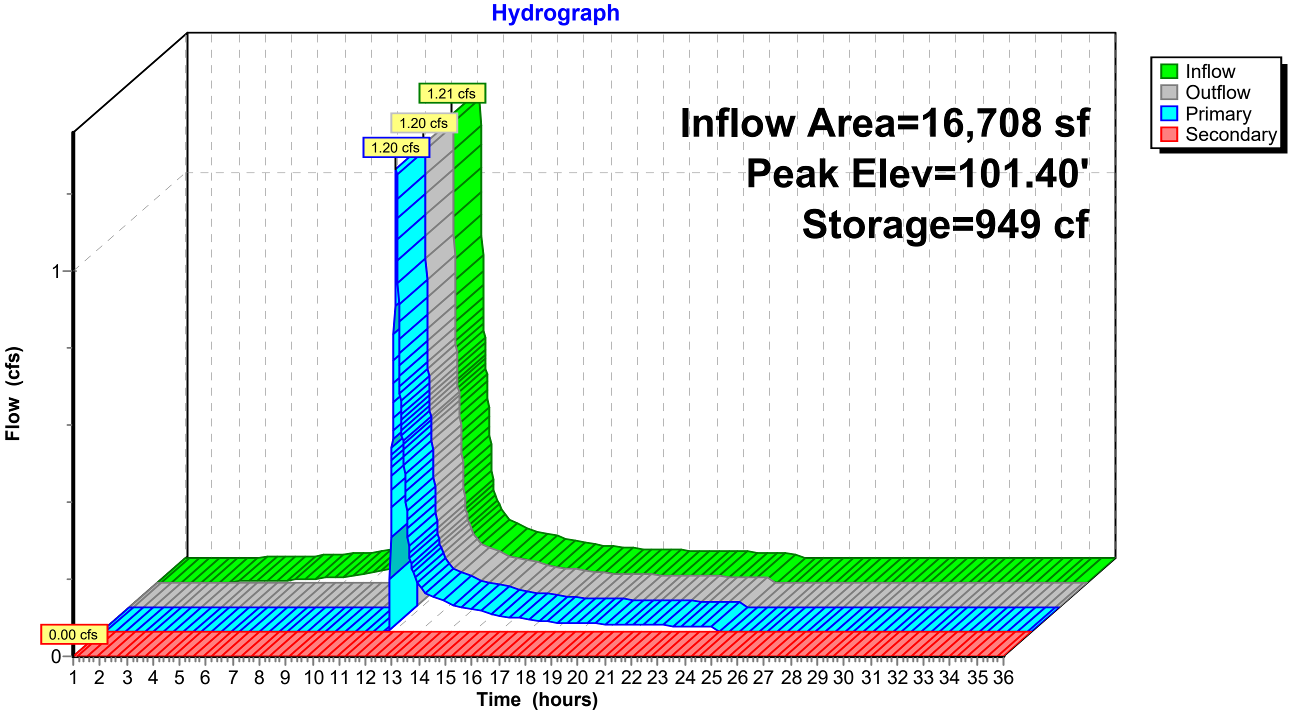
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.24	641	0.0	0	0
97.25	641	40.0	3	3
97.74	641	40.0	126	128
97.75	641	30.0	2	130
100.24	641	30.0	479	609
100.25	641	40.0	3	612
100.49	641	40.0	62	673
100.50	88	100.0	4	677
101.00	335	100.0	106	782
101.75	641	100.0	366	1,148

Device	Routing	Invert	Outlet Devices
#1	Device 2	101.25'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	92.75'	**12.0" Round Culvert** L= 23.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 92.75' / 92.25' S= 0.0210 '/' Cc= 0.900 n= 0.130, Flow Area= 0.79 sf
#3	Secondary	101.50'	**24.0' 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=1.20 cfs @ 12.10 hrs HW=101.40' TW=92.19' (Dynamic Tailwater)
└─**2=Culvert** (Passes 1.20 cfs of 2.06 cfs potential flow)
  └─**1=Orifice/Grate** (Weir Controls 1.20 cfs @ 1.27 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=97.24' TW=90.50' (Dynamic Tailwater)
└─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Rain Garden



Summary for Pond 2P: Infiltration Chambers - Area 1

```
Inflow Area =      59,403 sf, 87.54% Impervious,  Inflow Depth =  3.58"   for 10-year event
Inflow    =     5.50 cfs @  12.09 hrs,  Volume=        17,742 cf
Outflow   =     0.65 cfs @  12.70 hrs,  Volume=        17,742 cf,  Atten= 88%,  Lag= 36.9 min
Discarded =     0.25 cfs @  12.70 hrs,  Volume=        13,584 cf
Primary   =     0.41 cfs @  12.70 hrs,  Volume=         4,158 cf
```

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 93.30' @ 12.70 hrs Surf.Area= 3,603 sf Storage= 7,071 cf

Plug-Flow detention time= 154.1 min calculated for 17,742 cf (100% of inflow)
Center-of-Mass det. time= 154.1 min (935.3 - 781.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	90.50'	5,063 cf	**29.92'W x 120.42'L x 5.50'H Field A**
			19,814 cf Overall - 7,156 cf Embedded = 12,658 cf x 40.0% Voids
#2A	91.25'	7,156 cf	**ADS_StormTech MC-3500 d +Cap** x 64 Inside #1
			Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
			Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
			4 Rows of 16 Chambers
			Cap Storage= +14.9 cf x 2 x 4 rows = 119.2 cf
		12,219 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	90.50'	**2.410 in/hr Exfiltration over Wetted area** Phase-In= 0.01'
#2	Primary	91.50'	**12.0" Round Culvert**
			L= 87.6' CPP, projecting, no headwall, Ke= 0.900
			Inlet / Outlet Invert= 91.50' / 91.06' S= 0.0050 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	95.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 2	92.20'	**4.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.25 cfs @ 12.70 hrs HW=93.30' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.25 cfs)

Primary OutFlow Max=0.41 cfs @ 12.70 hrs HW=93.30' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Passes 0.41 cfs of 3.25 cfs potential flow)
  ├─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └─**4=Orifice/Grate** (Orifice Controls 0.41 cfs @ 4.65 fps)

Pond 2P: Infiltration Chambers - Area 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= +14.9 cf x 2 x 4 rows = 119.2 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

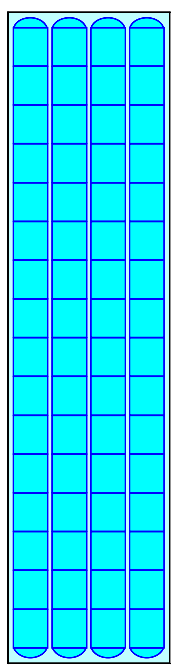
16 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 118.42' Row Length +12.0" End Stone x 2 = 120.42' Base Length
4 Rows x 77.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 29.92' Base Width
9.0" Base + 45.0" Chamber Height + 12.0" Cover = 5.50' Field Height

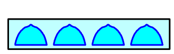
64 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 4 Rows = 7,156.1 cf Chamber Storage

19,814.1 cf Field - 7,156.1 cf Chambers = 12,658.0 cf Stone x 40.0% Voids = 5,063.2 cf Stone Storage

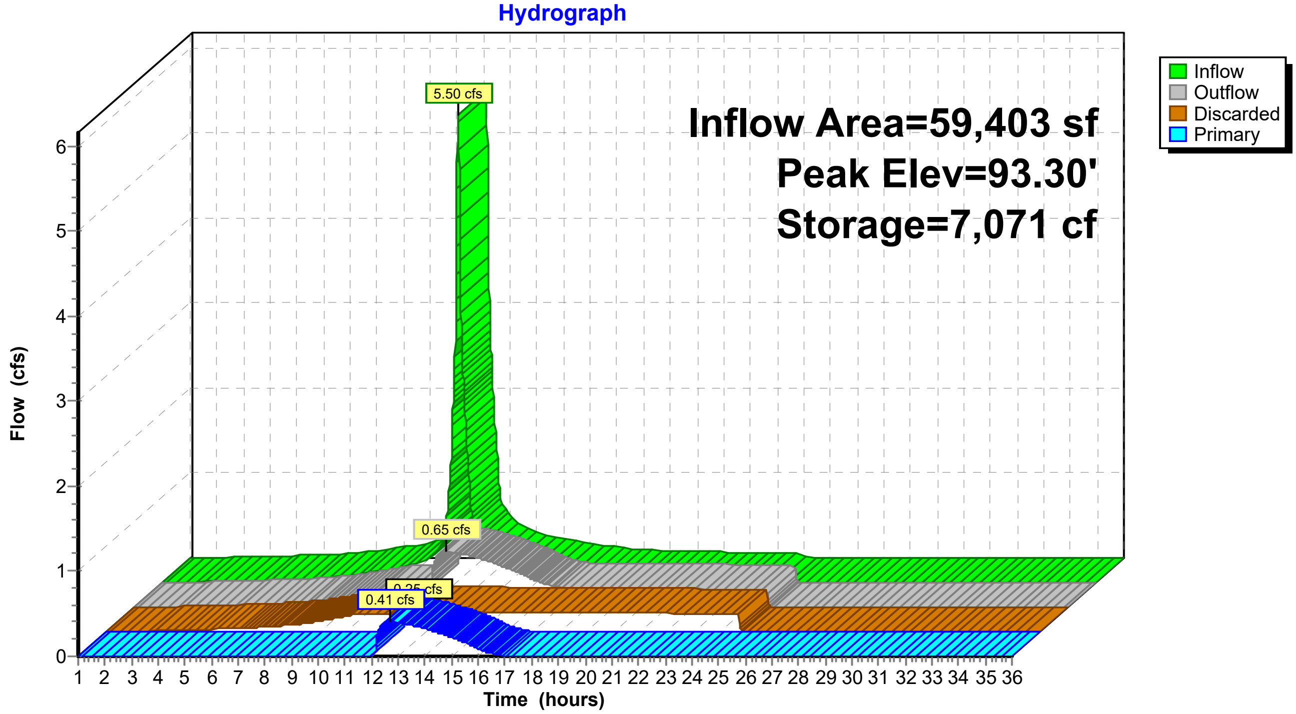
Chamber Storage + Stone Storage = 12,219.3 cf = 0.281 af
Overall Storage Efficiency = 61.7%
Overall System Size = 120.42' x 29.92' x 5.50'

64 Chambers
733.9 cy Field
468.8 cy Stone





Pond 2P: Infiltration Chambers - Area 1



Summary for Pond 3P: Detention Chambers - Area 2

Inflow Area = 45,469 sf,100.00% Impervious, Inflow Depth > 4.46" for 10-year event
Inflow = 4.80 cfs @ 12.08 hrs, Volume= 16,913 cf
Outflow = 4.77 cfs @ 12.09 hrs, Volume= 16,185 cf, Atten= 1%, Lag= 0.5 min
Primary = 4.77 cfs @ 12.09 hrs, Volume= 16,185 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 91.22' @ 12.09 hrs Surf.Area= 658 sf Storage= 959 cf

Plug-Flow detention time= 49.3 min calculated for 16,180 cf (96% of inflow)
Center-of-Mass det. time= 23.6 min (772.6 - 749.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	89.00'	627 cf	**20.50'W x 32.10'L x 3.50'H Field A** 2,303 cf Overall - 735 cf Embedded = 1,568 cf x 40.0% Voids
#2A	89.50'	735 cf	**ADS_StormTech SC-740 +Cap** x 16 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 4 Rows of 4 Chambers
		1,362 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	89.00'	**15.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.00' / 88.88' S= 0.0048 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	90.70'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=4.76 cfs @ 12.09 hrs HW=91.22' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 4.76 cfs of 5.89 cfs potential flow)
  └─**2=Sharp-Crested Rectangular Weir** (Weir Controls 4.76 cfs @ 2.36 fps)

Pond 3P: Detention Chambers - Area 2 - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

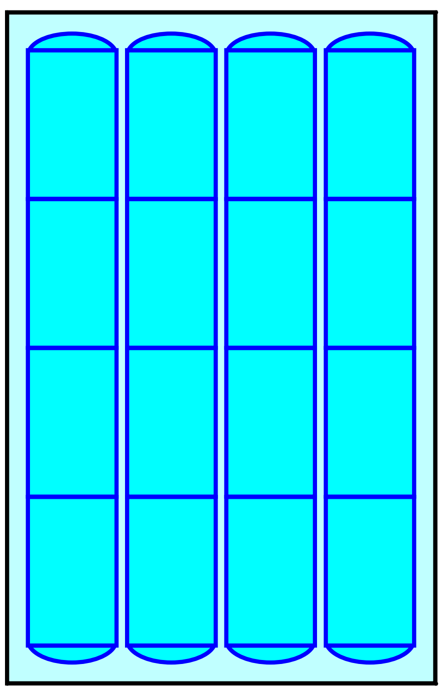
4 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 30.10' Row Length +12.0" End Stone x 2 = 32.10' Base Length
4 Rows x 51.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.50' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

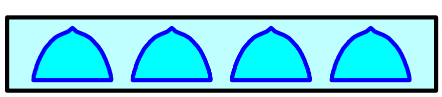
16 Chambers x 45.9 cf = 735.0 cf Chamber Storage

2,302.9 cf Field - 735.0 cf Chambers = 1,567.9 cf Stone x 40.0% Voids = 627.2 cf Stone Storage

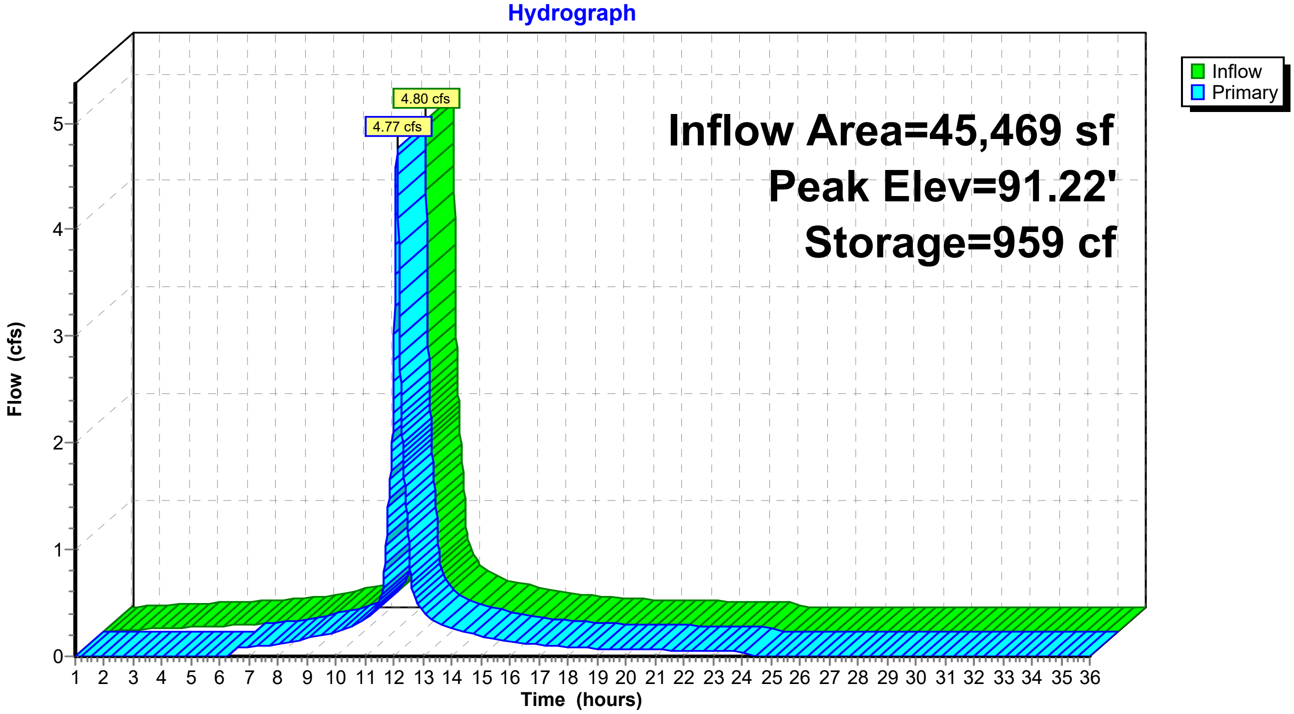
Chamber Storage + Stone Storage = 1,362.2 cf = 0.031 af
Overall Storage Efficiency = 59.2%
Overall System Size = 32.10' x 20.50' x 3.50'

16 Chambers
85.3 cy Field
58.1 cy Stone





Pond 3P: Detention Chambers - Area 2

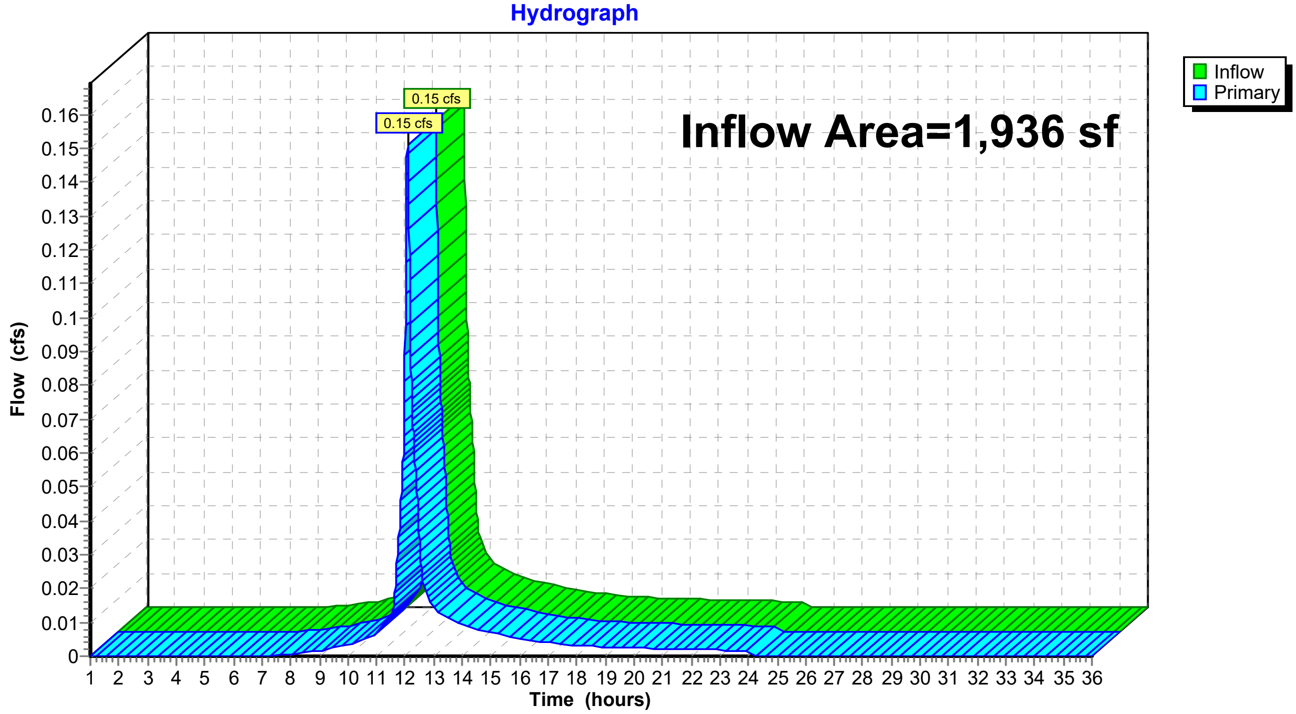


Summary for Link 1L: School Center - Leaching CB

Inflow Area =	1,936 sf,	59.97% Impervious,	Inflow Depth = 2.90"	for 10-year event
Inflow =	0.15 cfs @	12.09 hrs, Volume=	469 cf	
Primary =	0.15 cfs @	12.09 hrs, Volume=	469 cf,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 1L: School Center - Leaching CB

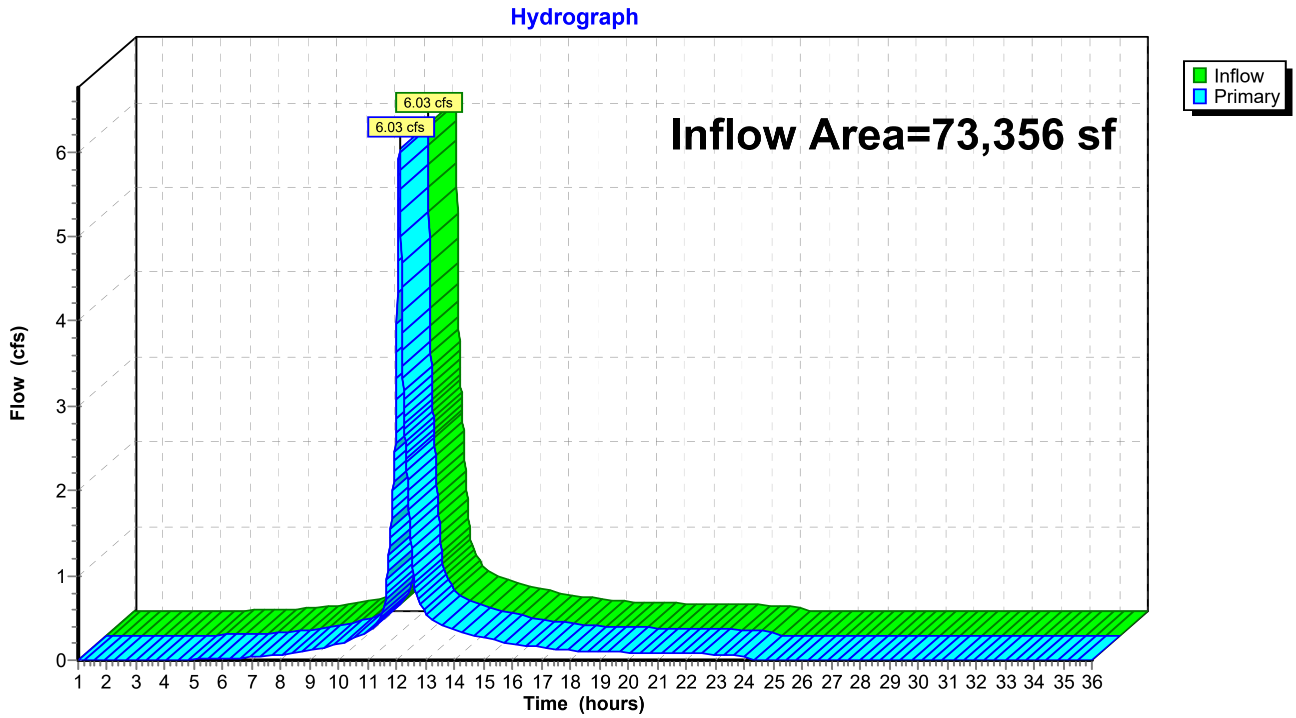


Summary for Link 2L: Playground - Leaching CBs

Inflow Area = 73,356 sf, 66.89% Impervious, Inflow Depth = 3.19" for 10-year event
Inflow = 6.03 cfs @ 12.09 hrs, Volume= 19,522 cf
Primary = 6.03 cfs @ 12.09 hrs, Volume= 19,522 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 2L: Playground - Leaching CBs

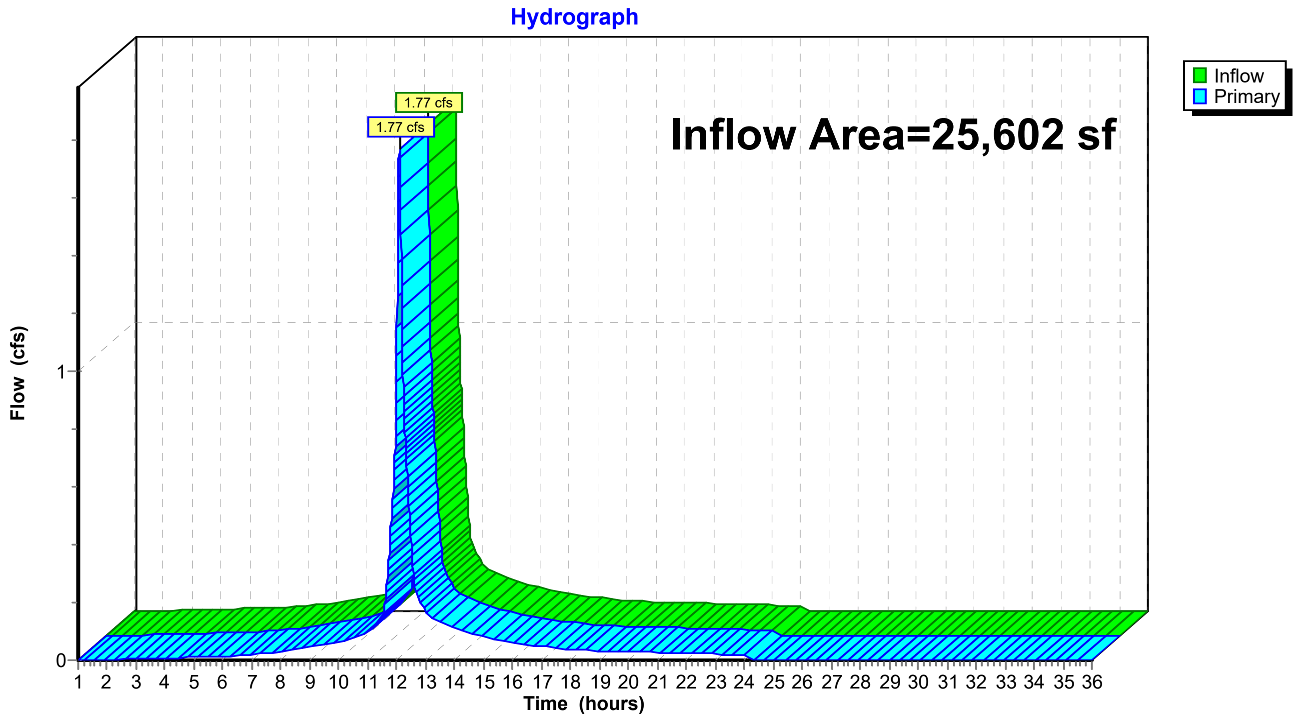


Summary for Link 3L: South Western - Leaching CBs

Inflow Area = 25,602 sf, 52.65% Impervious, Inflow Depth > 2.84" for 10-year event
Inflow = 1.77 cfs @ 12.09 hrs, Volume= 6,053 cf
Primary = 1.77 cfs @ 12.09 hrs, Volume= 6,053 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 3L: South Western - Leaching CBs

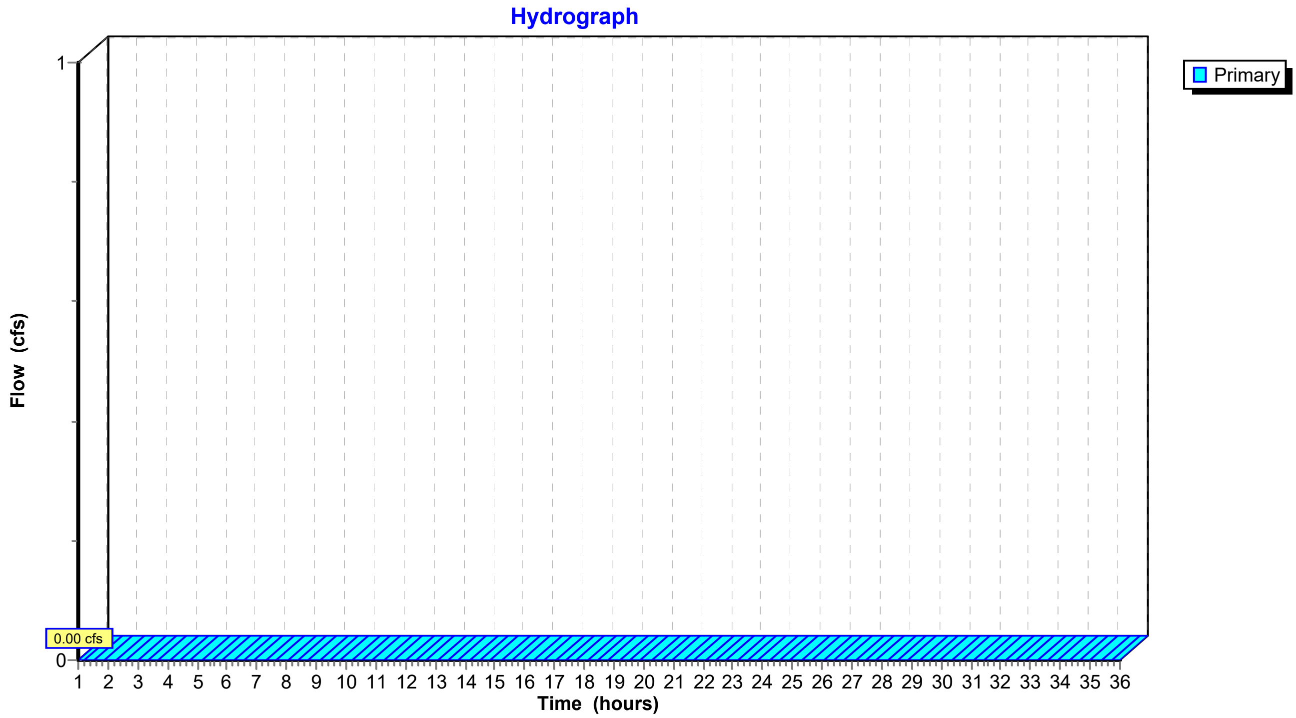


Summary for Link 4L: School Main Entrance - Leaching CBs

Primary = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 4L: School Main Entrance - Leaching CBs

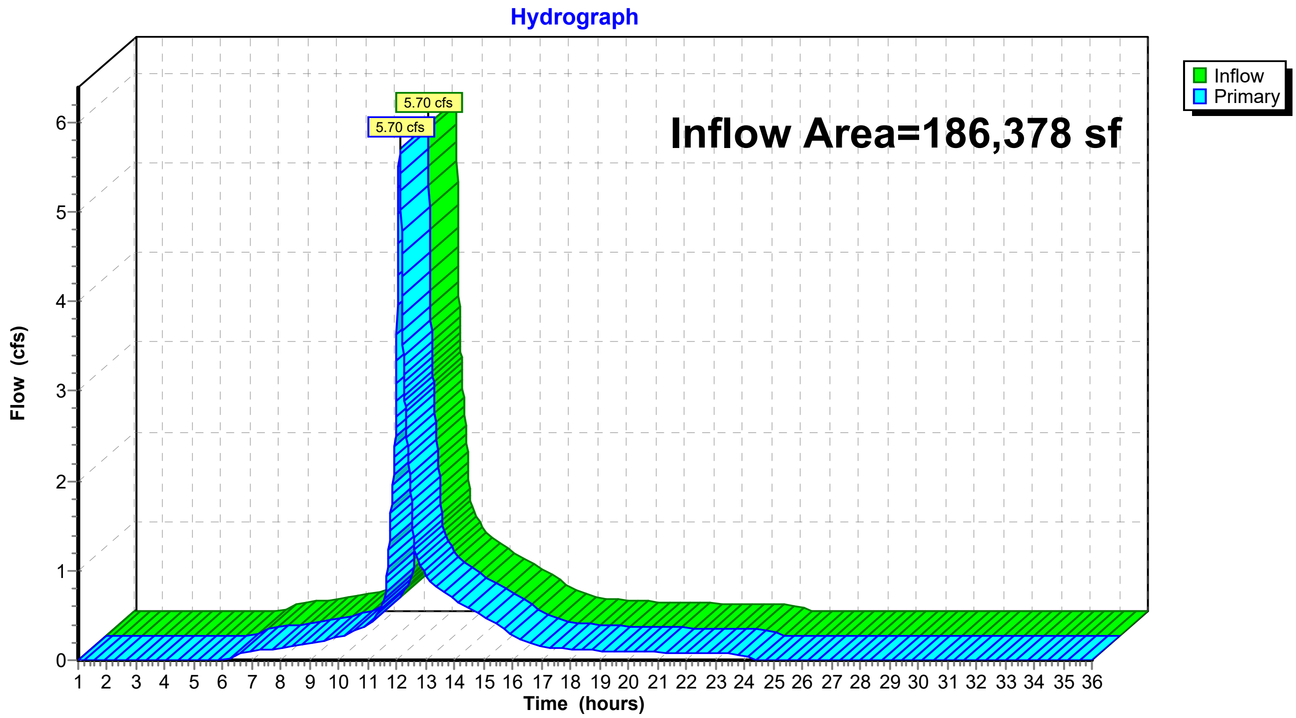


Summary for Link 5L: Main Street Drainage Network

Inflow Area = 186,378 sf, 57.92% Impervious, Inflow Depth = 1.59" for 10-year event
Inflow = 5.70 cfs @ 12.09 hrs, Volume= 24,747 cf
Primary = 5.70 cfs @ 12.09 hrs, Volume= 24,747 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 5L: Main Street Drainage Network



Time span=1.00-36.00 hrs, dt=0.01 hrs, 3501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Sub 1 Runoff Area=47,754 sf 74.52% Impervious Runoff Depth=4.43"
Tc=6.0 min CN=88 Runoff=5.52 cfs 17,643 cf

Subcatchment2S: Sub 2 Runoff Area=11,368 sf 2.40% Impervious Runoff Depth=1.87"
Tc=6.0 min CN=61 Runoff=0.54 cfs 1,774 cf

Subcatchment3S: Sub 3 Runoff Area=1,954 sf 100.00% Impervious Runoff Depth>5.56"
Tc=6.0 min CN=98 Runoff=0.25 cfs 906 cf

Subcatchment4S: Sub 4 Runoff Area=4,312 sf 100.00% Impervious Runoff Depth>5.56"
Tc=6.0 min CN=98 Runoff=0.56 cfs 1,998 cf

Subcatchment5S: Sub 5 Runoff Area=7,968 sf 87.10% Impervious Runoff Depth=4.99"
Tc=6.0 min CN=93 Runoff=1.00 cfs 3,310 cf

Subcatchment6S: Sub 6 Runoff Area=8,822 sf 93.69% Impervious Runoff Depth=5.10"
Tc=6.0 min CN=94 Runoff=1.11 cfs 3,748 cf

Subcatchment7S: Sub 15 Runoff Area=5,419 sf 88.41% Impervious Runoff Depth=4.76"
Tc=6.0 min CN=91 Runoff=0.66 cfs 2,150 cf

Subcatchment8S: Sub 8 Runoff Area=3,381 sf 68.83% Impervious Runoff Depth=4.22"
Tc=6.0 min CN=86 Runoff=0.38 cfs 1,189 cf

Subcatchment9S: Sub 9 Runoff Area=3,080 sf 63.08% Impervious Runoff Depth=3.21"
Tc=6.0 min CN=76 Runoff=0.27 cfs 823 cf

Subcatchment10S: Sub 10 Runoff Area=2,156 sf 34.97% Impervious Runoff Depth=1.79"
Tc=6.0 min CN=60 Runoff=0.10 cfs 322 cf

Subcatchment11S: Sub 11 Runoff Area=7,623 sf 94.74% Impervious Runoff Depth=5.21"
Tc=6.0 min CN=95 Runoff=0.97 cfs 3,312 cf

Subcatchment12S: Sub 12 Runoff Area=1,314 sf 0.00% Impervious Runoff Depth=0.39"
Tc=6.0 min CN=39 Runoff=0.00 cfs 43 cf

Subcatchment13S: Sub 13 Runoff Area=8,127 sf 100.00% Impervious Runoff Depth>5.56"
Tc=6.0 min CN=98 Runoff=1.06 cfs 3,766 cf

Subcatchment14S: Sub 14 Runoff Area=7,886 sf 47.69% Impervious Runoff Depth=2.38"
Tc=6.0 min CN=67 Runoff=0.50 cfs 1,564 cf

Subcatchment15S: Sub 15 Runoff Area=9,235 sf 100.00% Impervious Runoff Depth>5.56"
Tc=6.0 min CN=98 Runoff=1.20 cfs 4,280 cf

Subcatchment16S: Sub 16 Runoff Area=2,299 sf 0.00% Impervious Runoff Depth=0.39"
Tc=6.0 min CN=39 Runoff=0.01 cfs 75 cf

Subcatchment17S: Sub 17 Runoff Area=2,903 sf 100.00% Impervious Runoff Depth>5.56"
Tc=6.0 min CN=98 Runoff=0.38 cfs 1,345 cf

Subcatchment18S: Sub 18 Runoff Area=8,910 sf 92.85% Impervious Runoff Depth=5.10"
Tc=6.0 min CN=94 Runoff=1.13 cfs 3,786 cf

Subcatchment19S: Sub 19 Runoff Area=11,994 sf 100.00% Impervious Runoff Depth>5.56"
Tc=6.0 min CN=98 Runoff=1.56 cfs 5,559 cf

Subcatchment20S: Sub 20 Runoff Area=25,472 sf 0.00% Impervious Runoff Depth=0.17"
Tc=6.0 min CN=34 Runoff=0.01 cfs 366 cf

Subcatchment21S: Sub 21 Runoff Area=22,553 sf 100.00% Impervious Runoff Depth>5.56"
Tc=6.0 min CN=98 Runoff=2.94 cfs 10,452 cf

Subcatchment22S: Sub 22 Runoff Area=1,936 sf 59.97% Impervious Runoff Depth=3.91"
Tc=6.0 min CN=83 Runoff=0.20 cfs 630 cf

Subcatchment23S: Sub 23 Runoff Area=29,154 sf 0.00% Impervious Runoff Depth=0.66"
Tc=6.0 min CN=44 Runoff=0.26 cfs 1,610 cf

Subcatchment24S: Sub 24 Runoff Area=10,922 sf 100.00% Impervious Runoff Depth>5.56"
Tc=6.0 min CN=98 Runoff=1.42 cfs 5,062 cf

Subcatchment25S: Sub 25 Runoff Area=11,571 sf 11.40% Impervious Runoff Depth=0.72"
Tc=6.0 min CN=45 Runoff=0.13 cfs 697 cf

Subcatchment26S: Sub 26 Runoff Area=3,557 sf 100.00% Impervious Runoff Depth>5.56"
Tc=6.0 min CN=98 Runoff=0.46 cfs 1,649 cf

Pond 1P: Rain Garden Peak Elev=101.43' Storage=965 cf Inflow=1.61 cfs 5,312 cf
Primary=1.60 cfs 4,434 cf Secondary=0.00 cfs 0 cf Outflow=1.60 cfs 4,434 cf

Pond 2P: Infiltration Chambers - Area 1 Peak Elev=94.31' Storage=9,565 cf Inflow=6.98 cfs 22,916 cf
Discarded=0.26 cfs 15,311 cf Primary=0.59 cfs 7,606 cf Outflow=0.85 cfs 22,916 cf

Pond 3P: Detention Chambers - Area 2 Peak Elev=91.30' Storage=993 cf Inflow=5.93 cfs 21,073 cf
Outflow=5.90 cfs 20,344 cf

Link 1L: School Center - Leaching CB Inflow=0.20 cfs 630 cf
Primary=0.20 cfs 630 cf

Link 2L: Playground - Leaching CBs Inflow=7.87 cfs 25,632 cf
Primary=7.87 cfs 25,632 cf

Link 3L: South Western - Leaching CBs Inflow=2.35 cfs 7,988 cf
Primary=2.35 cfs 7,988 cf

Link 4L: School Main Entrance - Leaching CBs
Primary=0.00 cfs 0 cf

Link 5L: Main Street Drainage Network

Inflow=7.70 cfs 34,880 cf
Primary=7.70 cfs 34,880 cf

Total Runoff Area = 261,670 sf Runoff Volume = 78,060 cf Average Runoff Depth = 3.58"
39.55% Pervious = 103,496 sf 60.45% Impervious = 158,174 sf

Summary for Subcatchment 1S: Sub 1

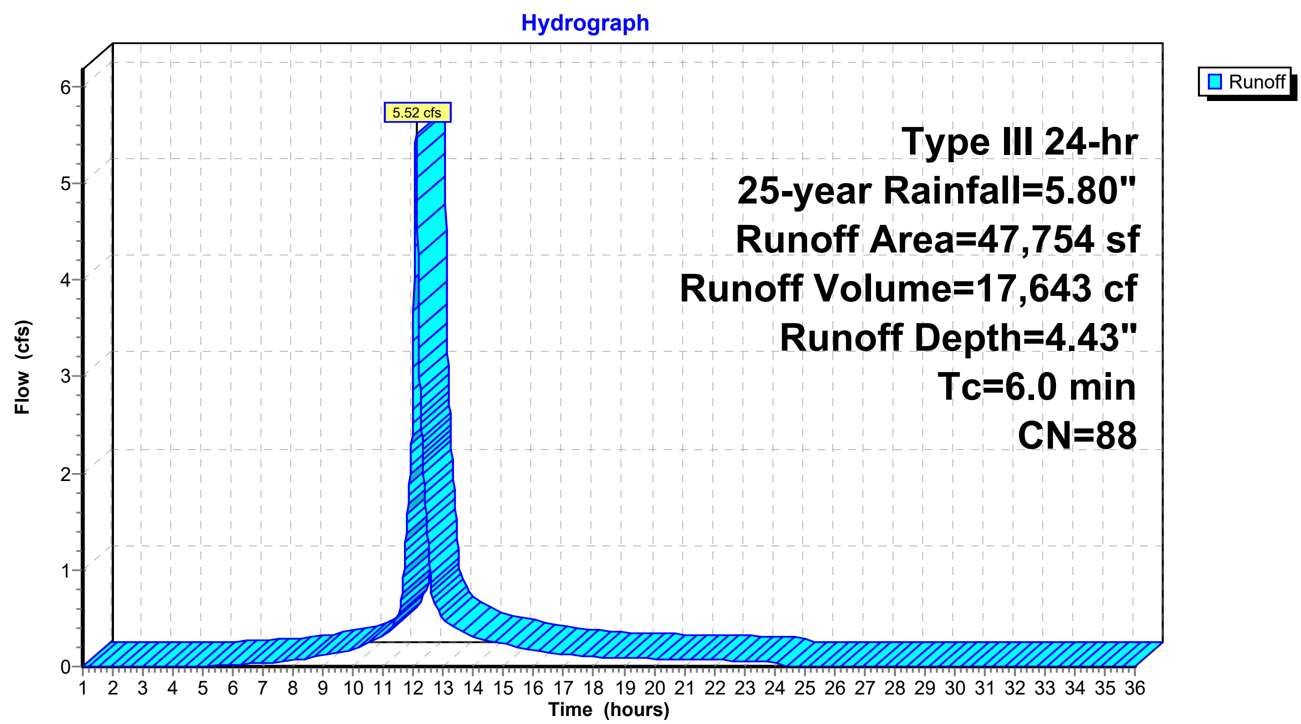
Runoff = 5.52 cfs @ 12.09 hrs, Volume= 17,643 cf, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
13,390	98	Roofs, HSG B
975	55	Woods, Good, HSG B
11,191	61	>75% Grass cover, Good, HSG B
22,198	98	Paved parking, HSG B
47,754	88	Weighted Average
12,166		25.48% Pervious Area
35,588		74.52% Impervious Area

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

Subcatchment 1S: Sub 1



Summary for Subcatchment 2S: Sub 2

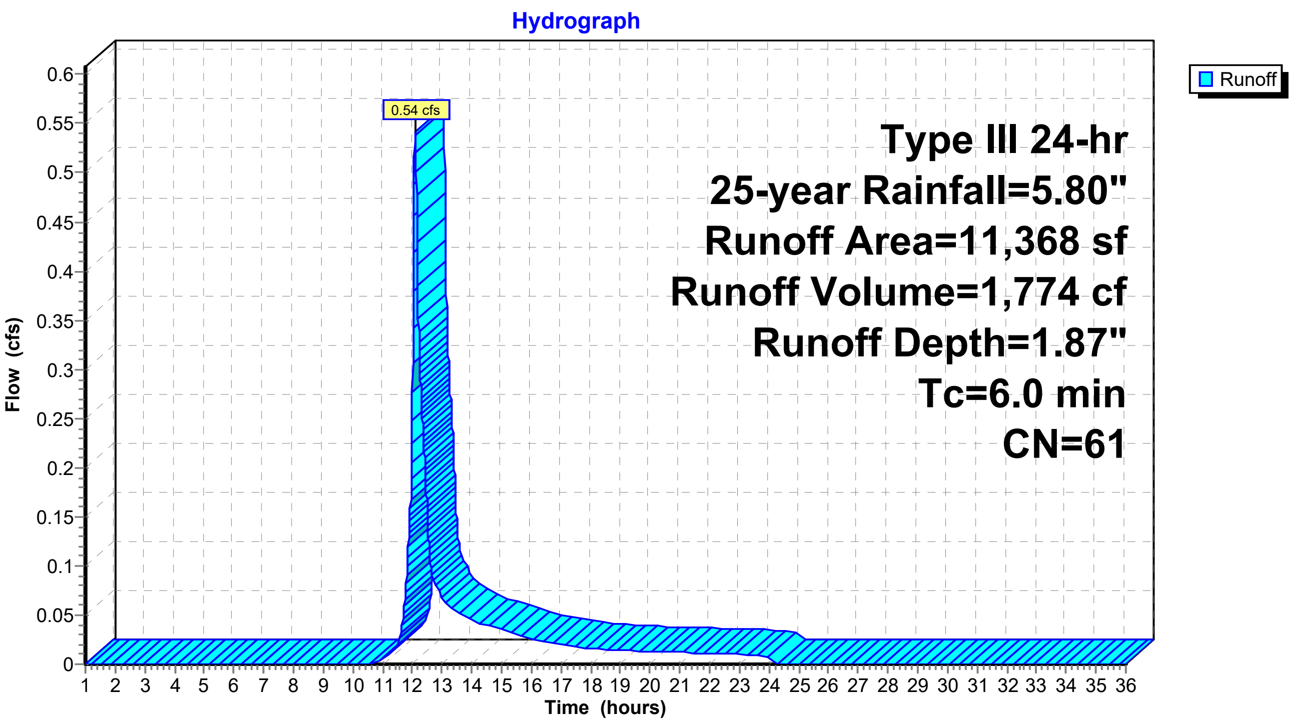
Runoff = 0.54 cfs @ 12.10 hrs, Volume= 1,774 cf, Depth= 1.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
1,073	55	Woods, Good, HSG B
10,022	61	>75% Grass cover, Good, HSG B
273	98	Paved parking, HSG B
11,368	61	Weighted Average
11,095		97.60% Pervious Area
273		2.40% Impervious Area

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

Subcatchment 2S: Sub 2



Summary for Subcatchment 3S: Sub 3

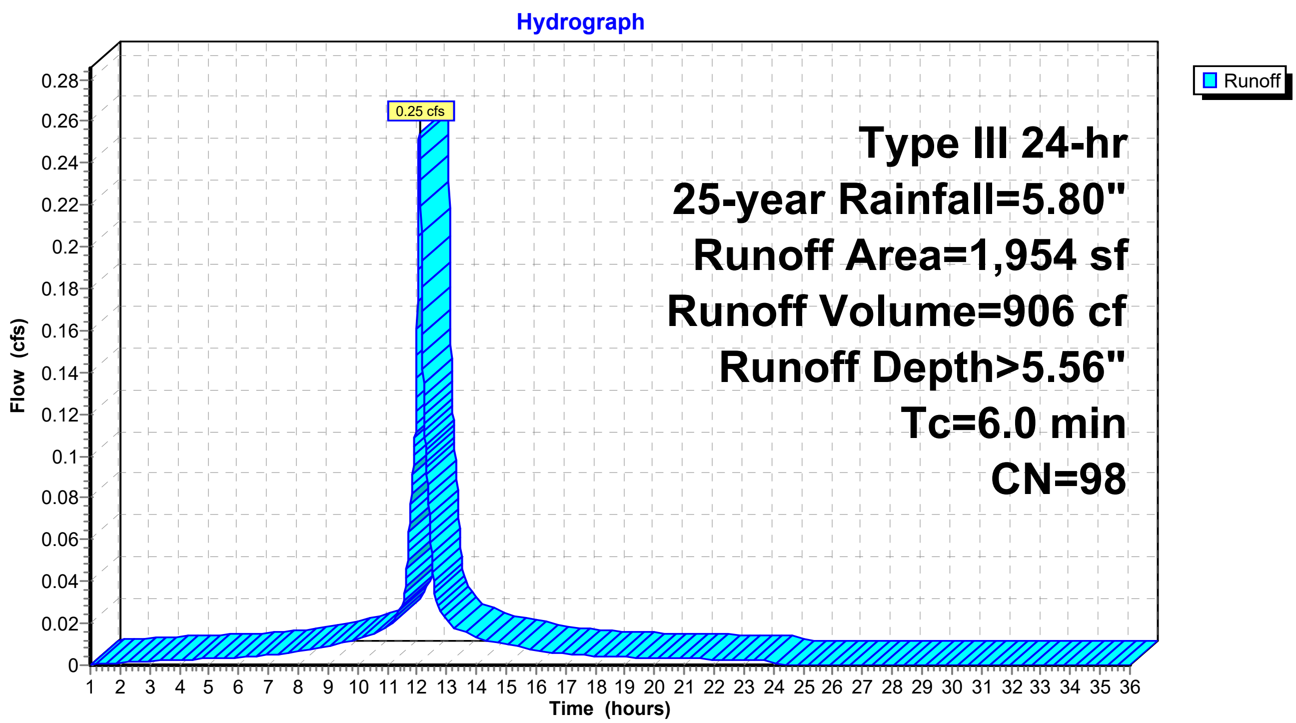
Runoff = 0.25 cfs @ 12.08 hrs, Volume= 906 cf, Depth> 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
1,954	98	Paved parking, HSG B
1,954		100.00% Impervious Area

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

Subcatchment 3S: Sub 3



Summary for Subcatchment 4S: Sub 4

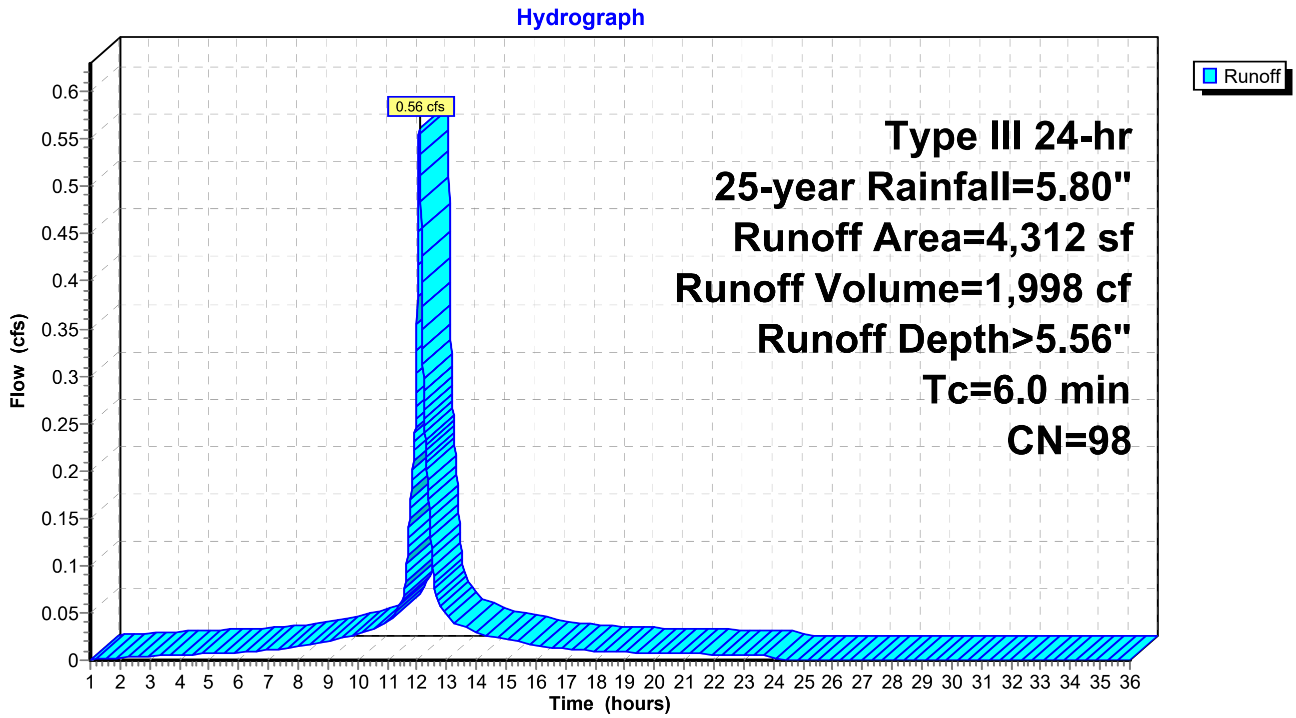
Runoff = 0.56 cfs @ 12.08 hrs, Volume= 1,998 cf, Depth> 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
4,312	98	Paved parking, HSG B
4,312		100.00% Impervious Area

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

Subcatchment 4S: Sub 4



Summary for Subcatchment 5S: Sub 5

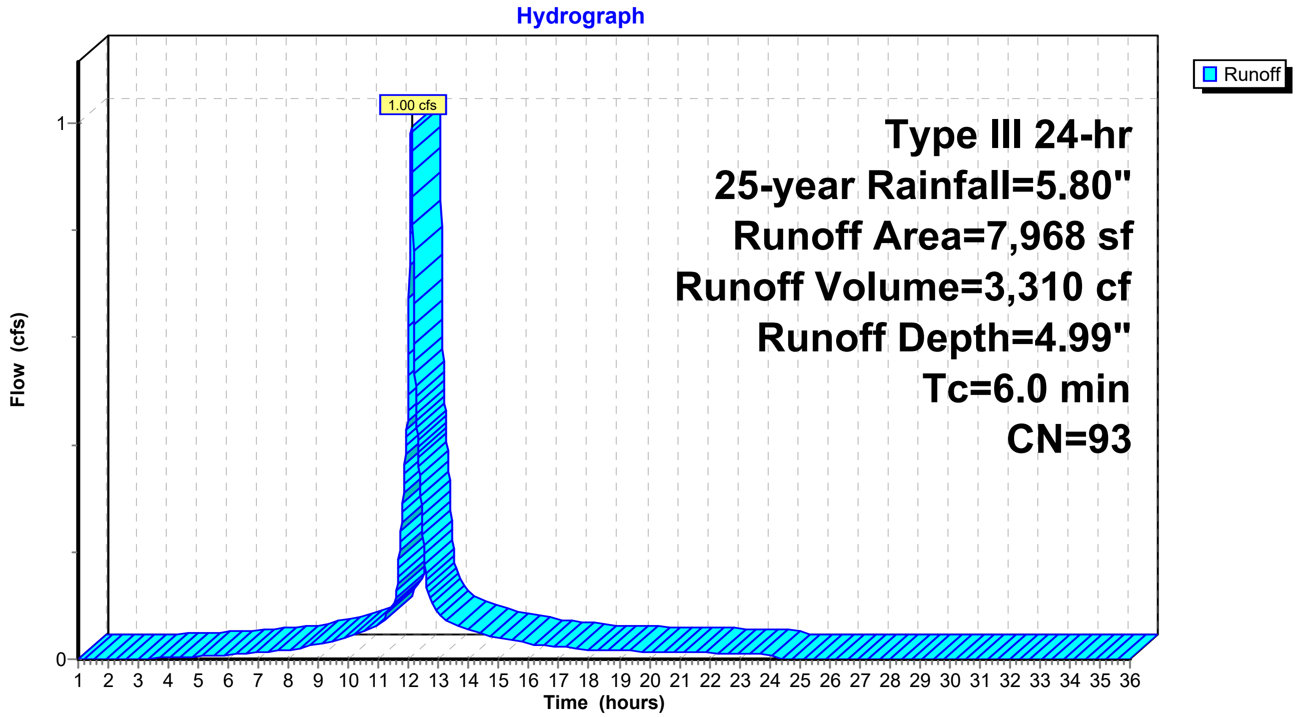
Runoff = 1.00 cfs @ 12.08 hrs, Volume= 3,310 cf, Depth= 4.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
5,157	98	Roofs, HSG B
1,028	61	>75% Grass cover, Good, HSG B
1,783	98	Paved parking, HSG B
7,968	93	Weighted Average
1,028		12.90% Pervious Area
6,940		87.10% Impervious Area

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

Subcatchment 5S: Sub 5



Summary for Subcatchment 6S: Sub 6

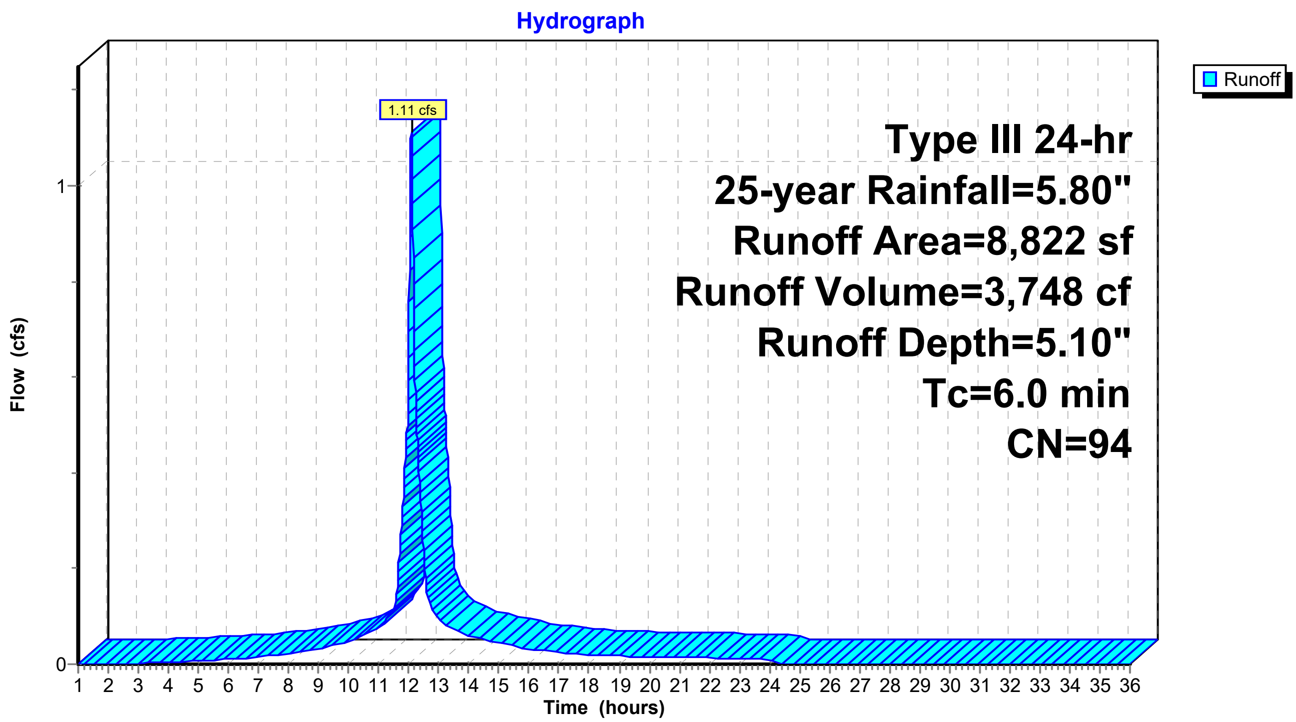
Runoff = 1.11 cfs @ 12.08 hrs, Volume= 3,748 cf, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
557	39	>75% Grass cover, Good, HSG A
4,015	98	Paved parking, HSG A
4,250	98	Roofs, HSG A
8,822	94	Weighted Average
557		6.31% Pervious Area
8,265		93.69% Impervious Area

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

Subcatchment 6S: Sub 6



Summary for Subcatchment 7S: Sub 15

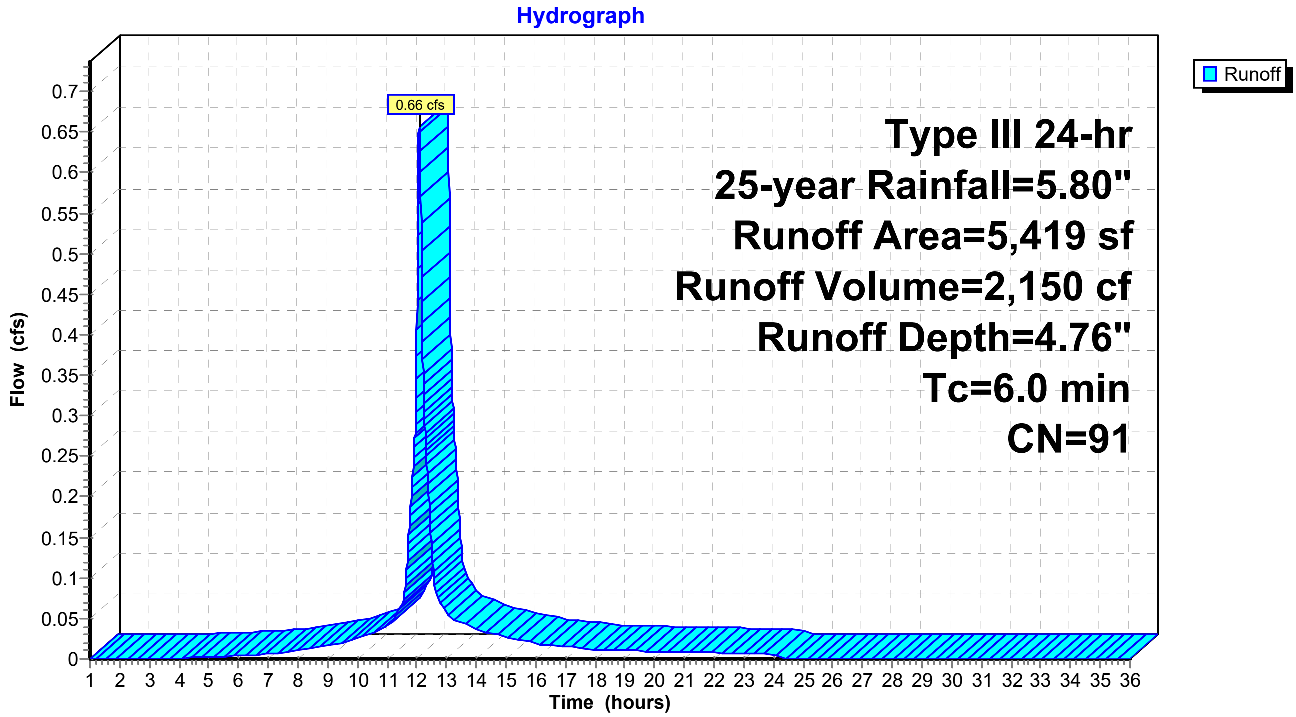
Runoff = 0.66 cfs @ 12.08 hrs, Volume= 2,150 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
628	39	>75% Grass cover, Good, HSG A
3,579	98	Paved parking, HSG A
1,212	98	Roofs, HSG A
5,419	91	Weighted Average
628		11.59% Pervious Area
4,791		88.41% Impervious Area

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

Subcatchment 7S: Sub 15



Summary for Subcatchment 8S: Sub 8

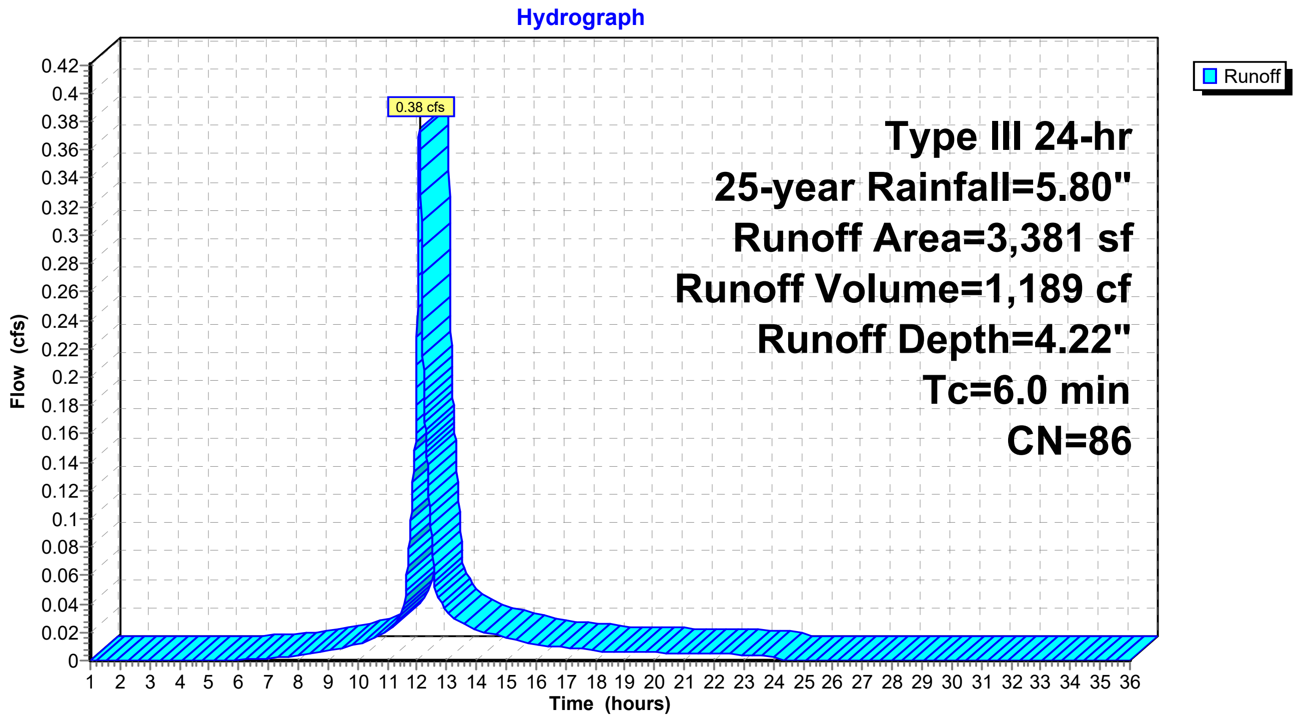
Runoff = 0.38 cfs @ 12.09 hrs, Volume= 1,189 cf, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
2,327	98	Paved parking, HSG B
1,054	61	>75% Grass cover, Good, HSG B
3,381	86	Weighted Average
1,054		31.17% Pervious Area
2,327		68.83% Impervious Area

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

Subcatchment 8S: Sub 8



Summary for Subcatchment 9S: Sub 9

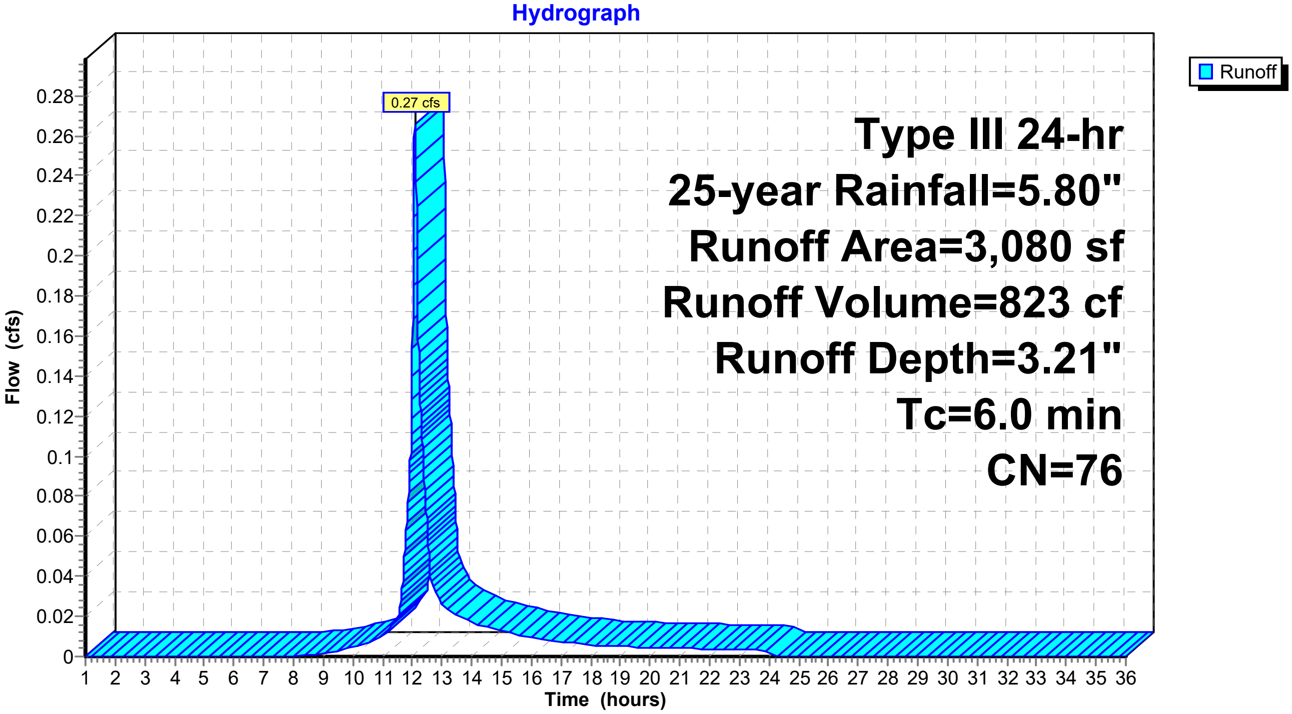
Runoff = 0.27 cfs @ 12.09 hrs, Volume= 823 cf, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
1,137	39	>75% Grass cover, Good, HSG A
1,943	98	Paved parking, HSG A
3,080	76	Weighted Average
1,137		36.92% Pervious Area
1,943		63.08% Impervious Area

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

Subcatchment 9S: Sub 9



Summary for Subcatchment 10S: Sub 10

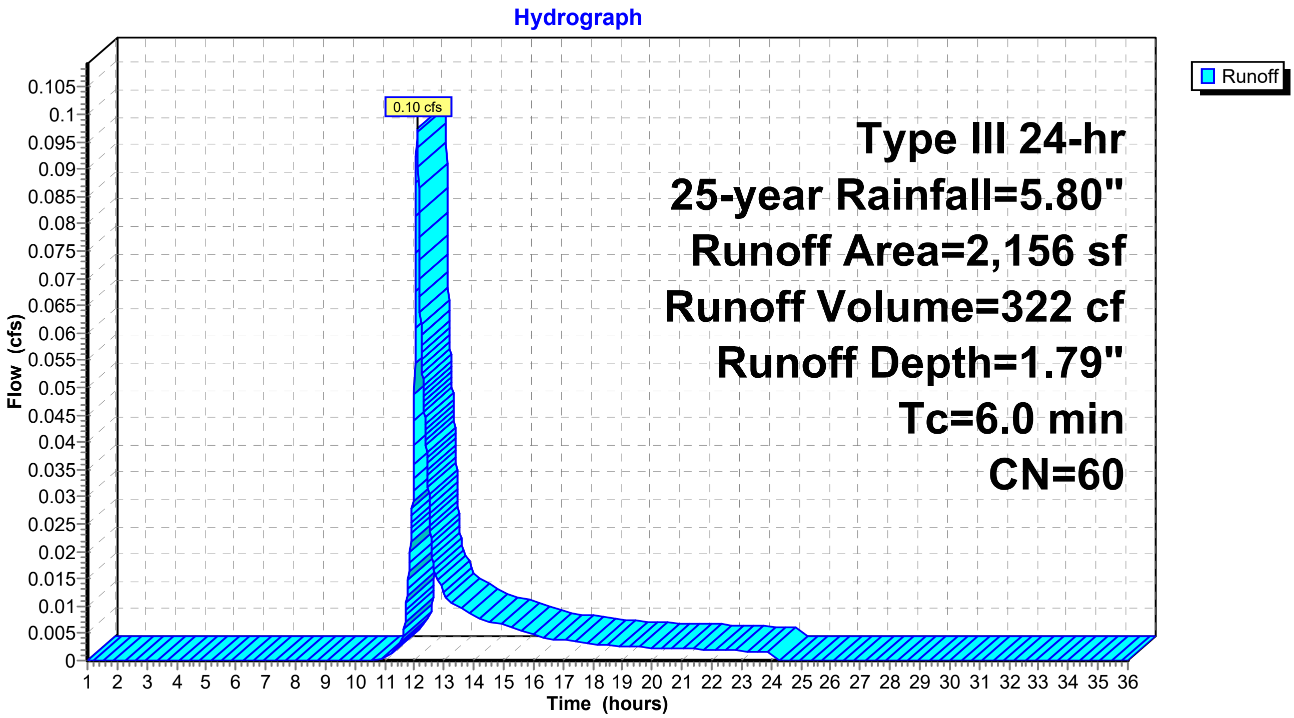
Runoff = 0.10 cfs @ 12.10 hrs, Volume= 322 cf, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
1,402	39	>75% Grass cover, Good, HSG A
754	98	Paved parking, HSG A
2,156	60	Weighted Average
1,402		65.03% Pervious Area
754		34.97% Impervious Area

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

Subcatchment 10S: Sub 10



Summary for Subcatchment 11S: Sub 11

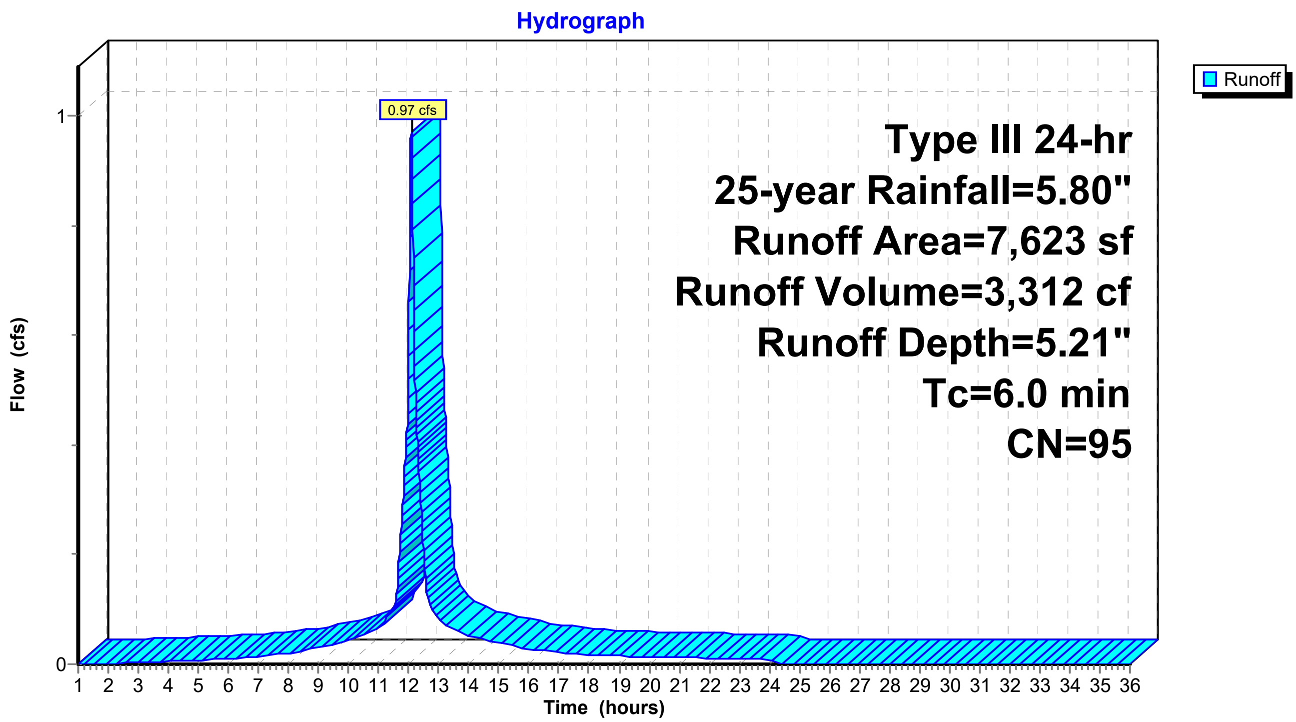
Runoff = 0.97 cfs @ 12.08 hrs, Volume= 3,312 cf, Depth= 5.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
401	39	>75% Grass cover, Good, HSG A
6,169	98	Paved parking, HSG A
1,053	98	Roofs, HSG A
7,623	95	Weighted Average
401		5.26% Pervious Area
7,222		94.74% Impervious Area

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

Subcatchment 11S: Sub 11



Summary for Subcatchment 12S: Sub 12

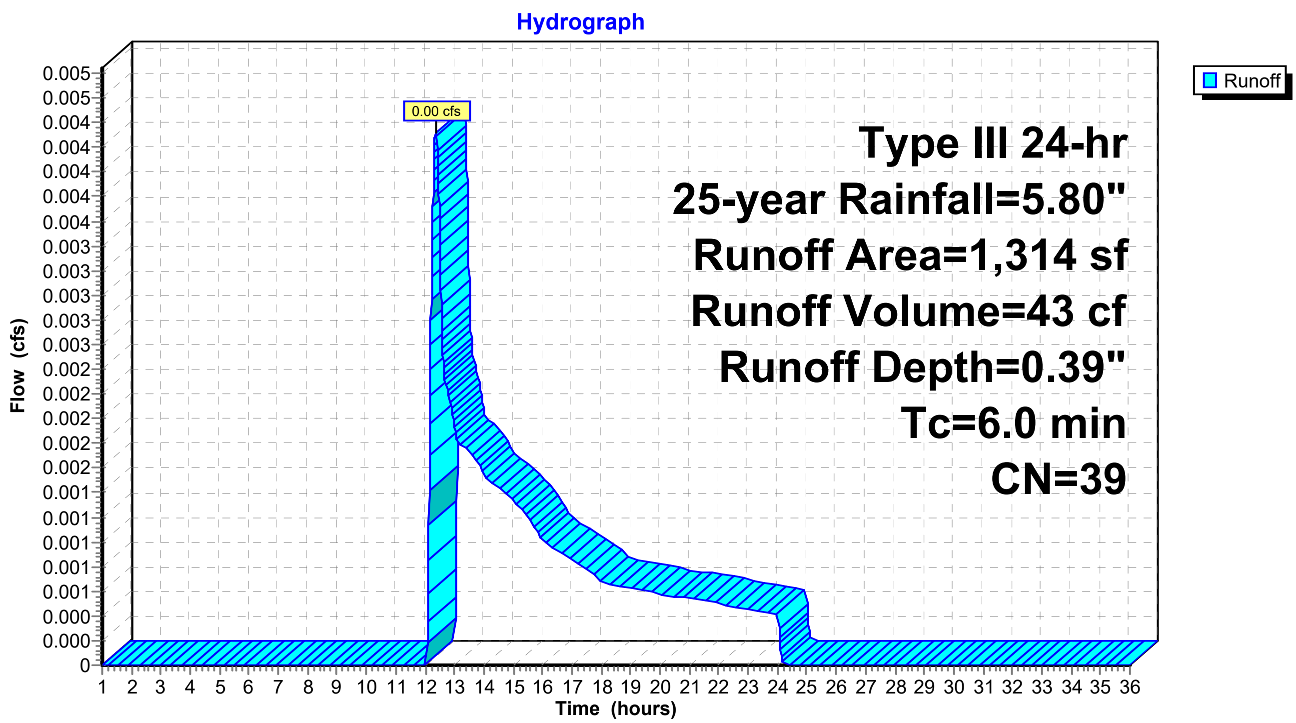
Runoff = 0.00 cfs @ 12.37 hrs, Volume= 43 cf, Depth= 0.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
1,314	39	>75% Grass cover, Good, HSG A
1,314		100.00% Pervious Area

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

Subcatchment 12S: Sub 12



Summary for Subcatchment 13S: Sub 13

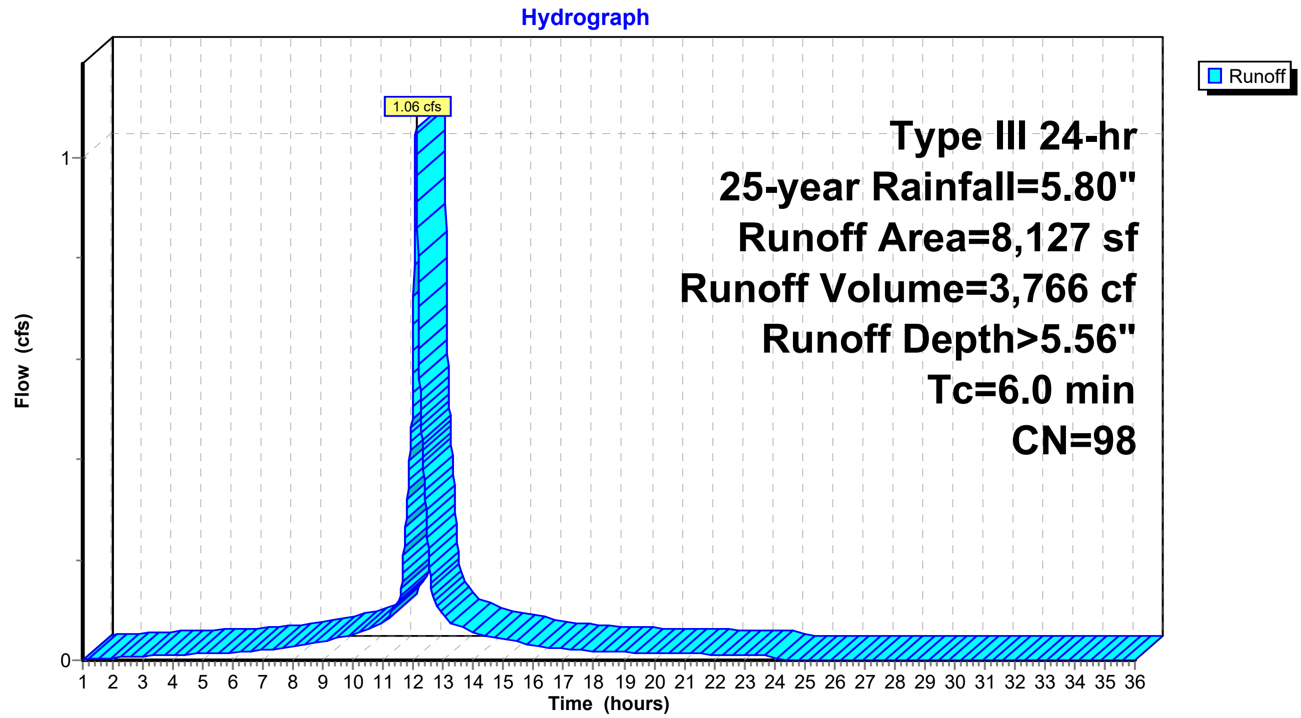
Runoff = 1.06 cfs @ 12.08 hrs, Volume= 3,766 cf, Depth> 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
8,127	98	Paved parking, HSG A
8,127		100.00% Impervious Area

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

Subcatchment 13S: Sub 13



Summary for Subcatchment 14S: Sub 14

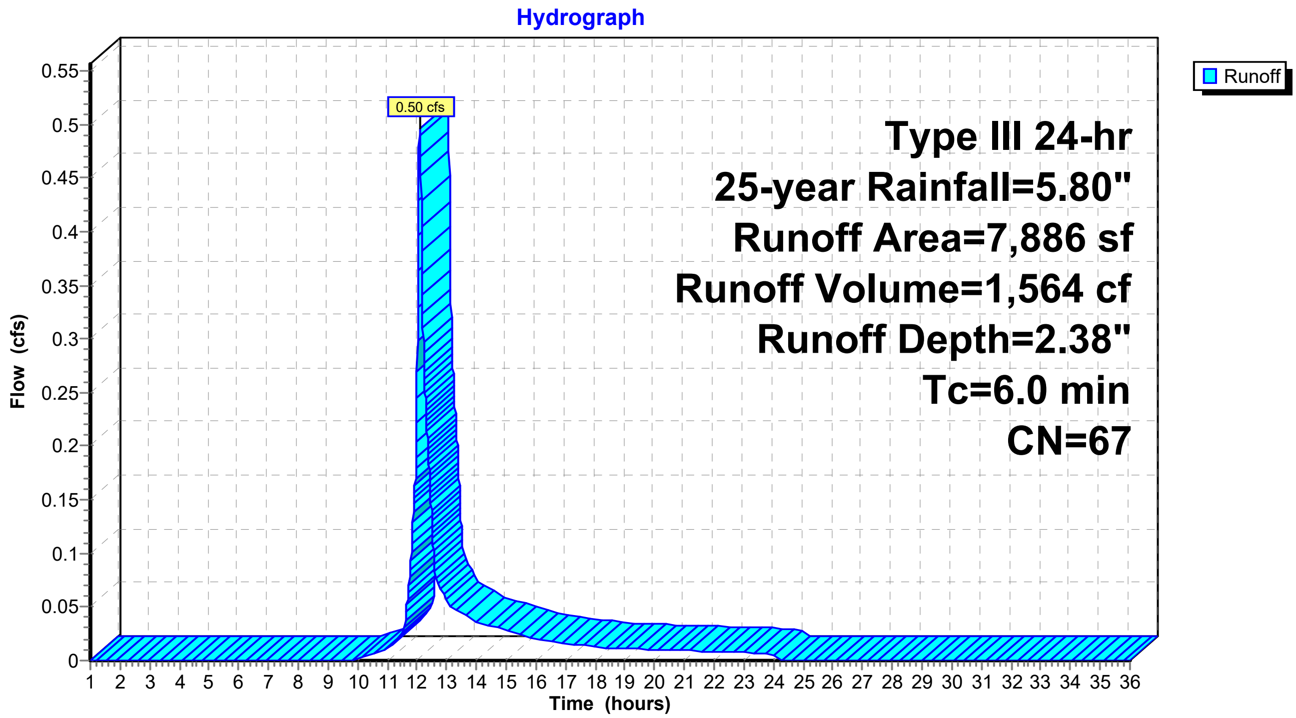
Runoff = 0.50 cfs @ 12.09 hrs, Volume= 1,564 cf, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
4,125	39	>75% Grass cover, Good, HSG A
3,761	98	Paved parking, HSG A
7,886	67	Weighted Average
4,125		52.31% Pervious Area
3,761		47.69% Impervious Area

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

Subcatchment 14S: Sub 14



Summary for Subcatchment 15S: Sub 15

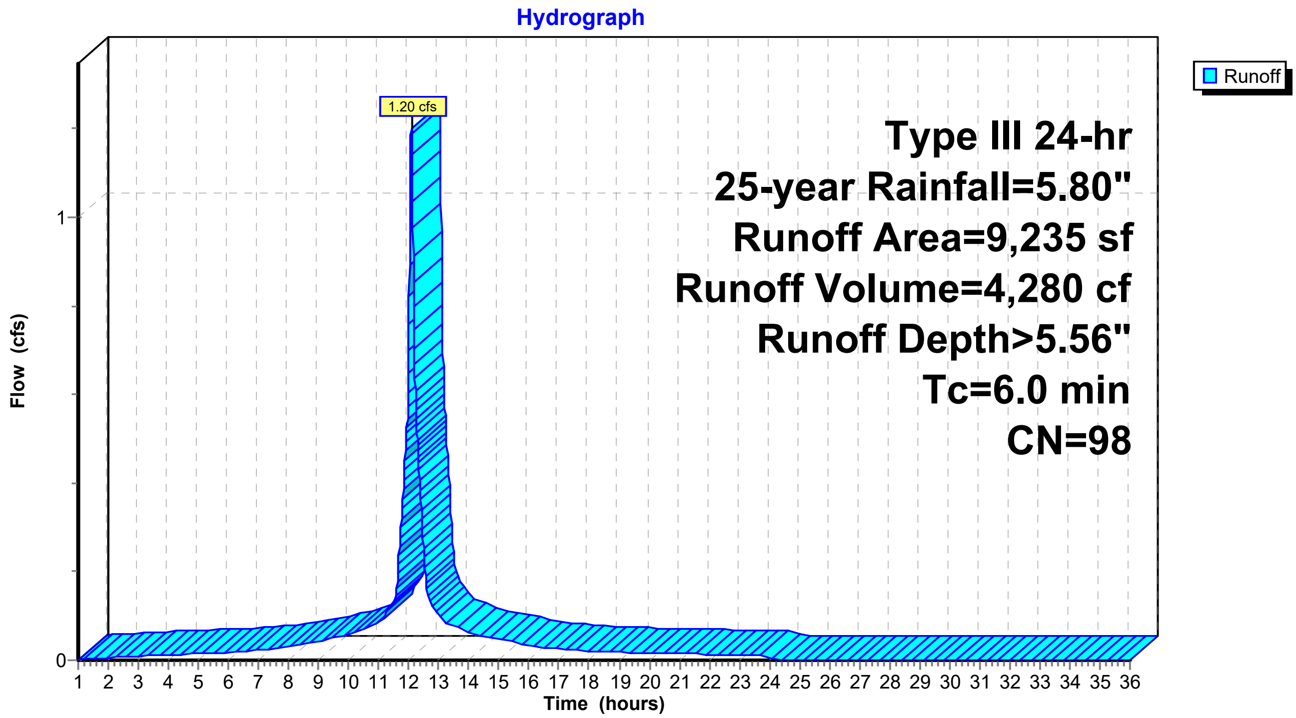
Runoff = 1.20 cfs @ 12.08 hrs, Volume= 4,280 cf, Depth> 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
9,235	98	Paved parking, HSG A
9,235		100.00% Impervious Area

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

Subcatchment 15S: Sub 15



Summary for Subcatchment 16S: Sub 16

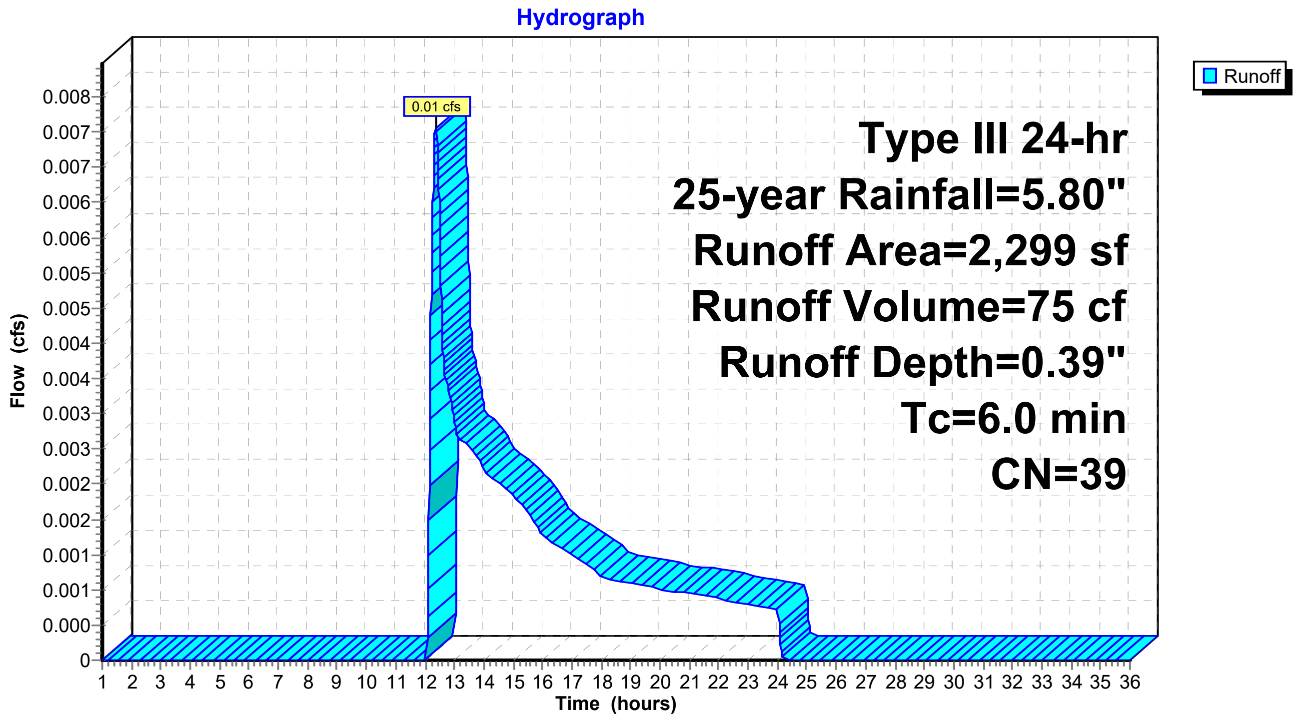
Runoff = 0.01 cfs @ 12.37 hrs, Volume= 75 cf, Depth= 0.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
2,299	39	>75% Grass cover, Good, HSG A
2,299		100.00% Pervious Area

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

Subcatchment 16S: Sub 16



Summary for Subcatchment 17S: Sub 17

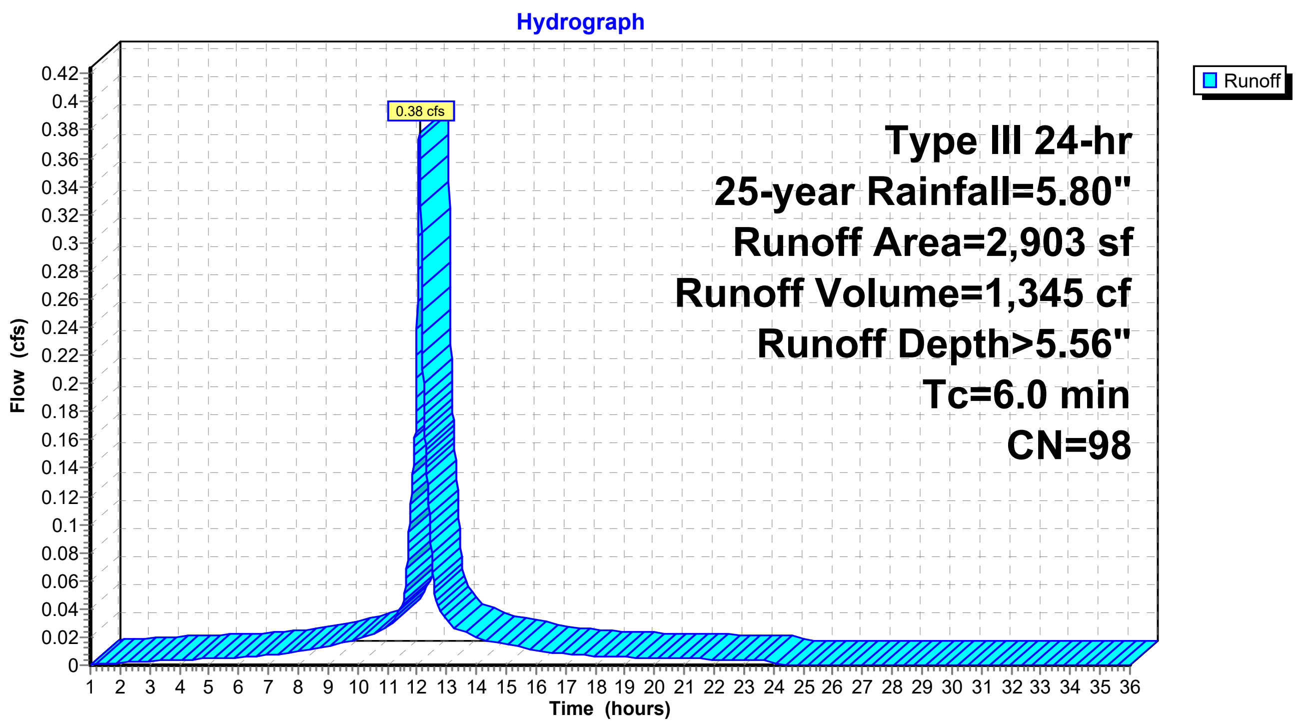
Runoff = 0.38 cfs @ 12.08 hrs, Volume= 1,345 cf, Depth> 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
2,903	98	Paved parking, HSG B
2,903		100.00% Impervious Area

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

Subcatchment 17S: Sub 17



Summary for Subcatchment 18S: Sub 18

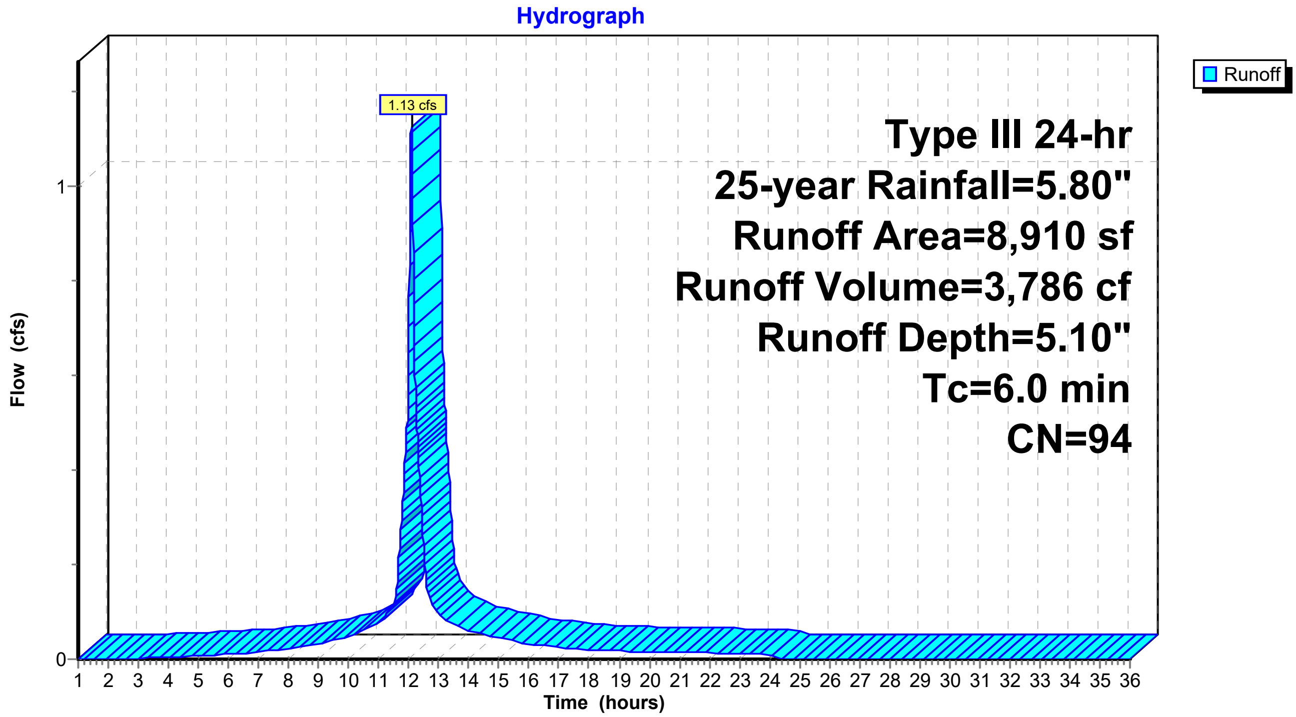
Runoff = 1.13 cfs @ 12.08 hrs, Volume= 3,786 cf, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
637	39	>75% Grass cover, Good, HSG A
5,895	98	Paved parking, HSG A
2,378	98	Roofs, HSG B
8,910	94	Weighted Average
637		7.15% Pervious Area
8,273		92.85% Impervious Area

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

Subcatchment 18S: Sub 18



Summary for Subcatchment 19S: Sub 19

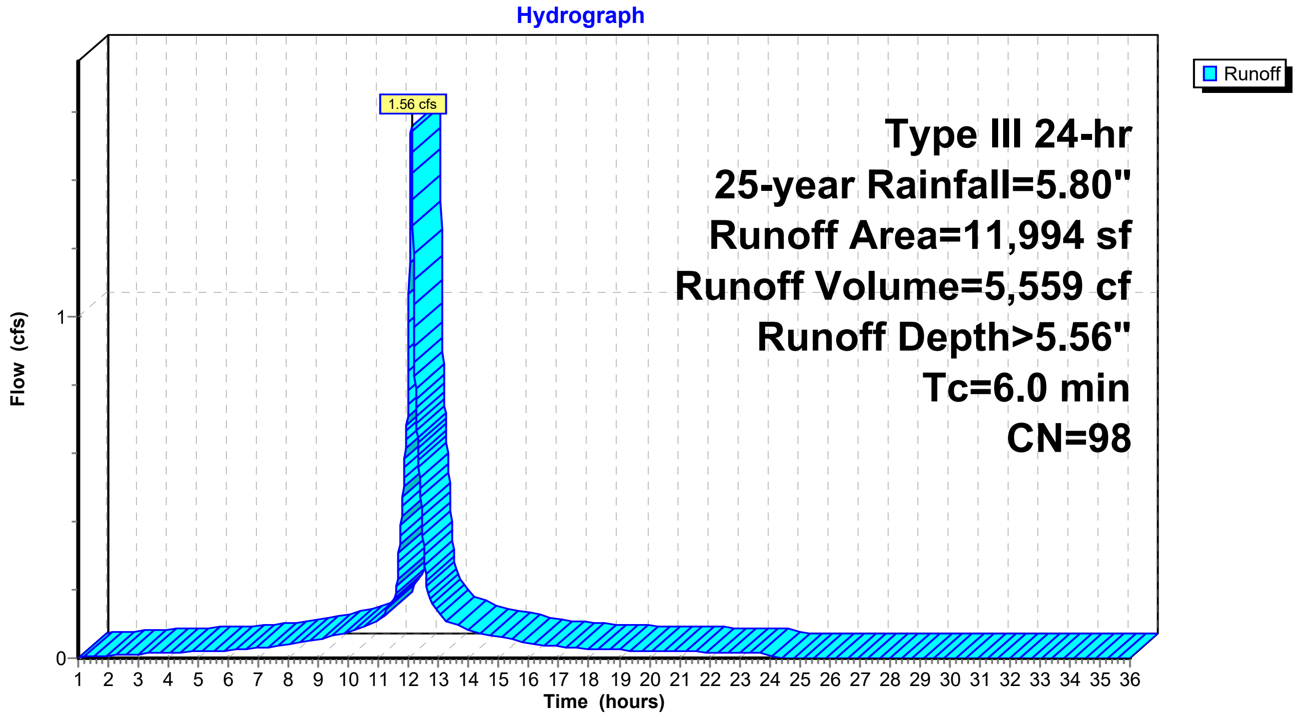
Runoff = 1.56 cfs @ 12.08 hrs, Volume= 5,559 cf, Depth> 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
7,625	98	Roofs, HSG A
4,369	98	Paved parking, HSG A
11,994	98	Weighted Average
11,994		100.00% Impervious Area

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

Subcatchment 19S: Sub 19



Summary for Subcatchment 20S: Sub 20

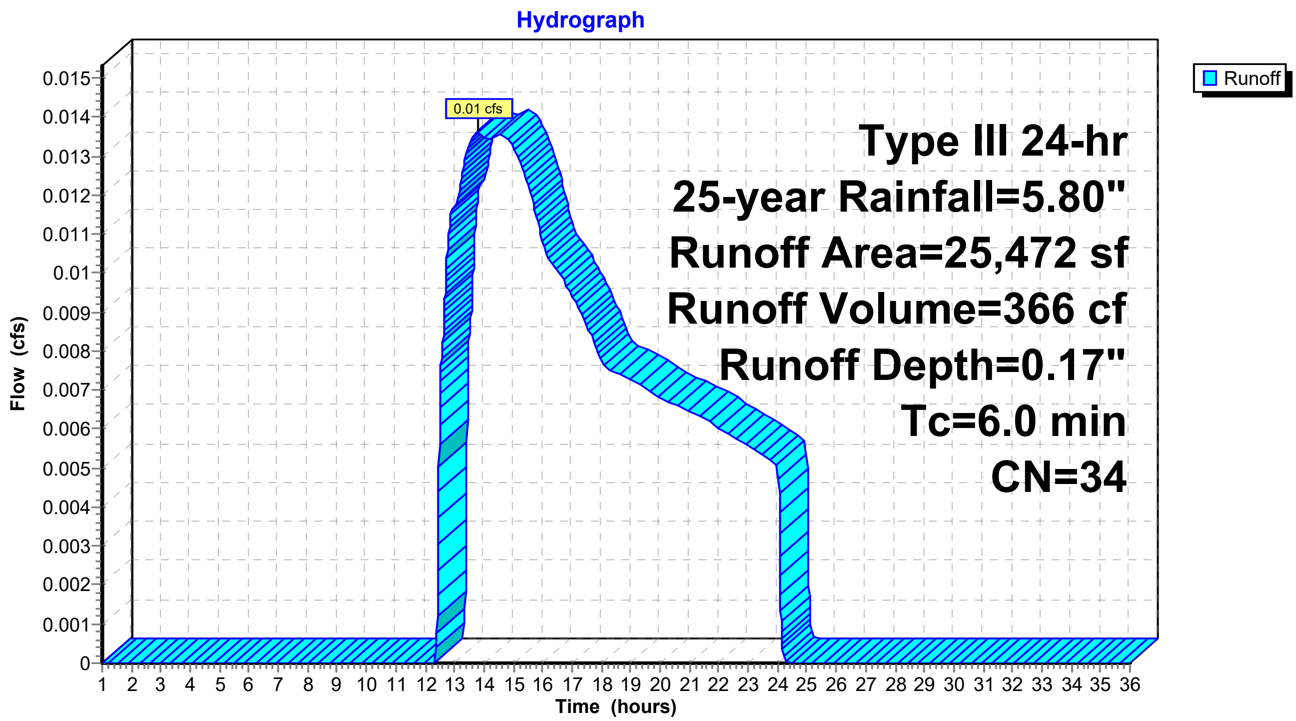
Runoff = 0.01 cfs @ 13.78 hrs, Volume= 366 cf, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
12,428	39	>75% Grass cover, Good, HSG A
13,044	30	Woods, Good, HSG A
25,472	34	Weighted Average
25,472		100.00% Pervious Area

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

Subcatchment 20S: Sub 20



Summary for Subcatchment 21S: Sub 21

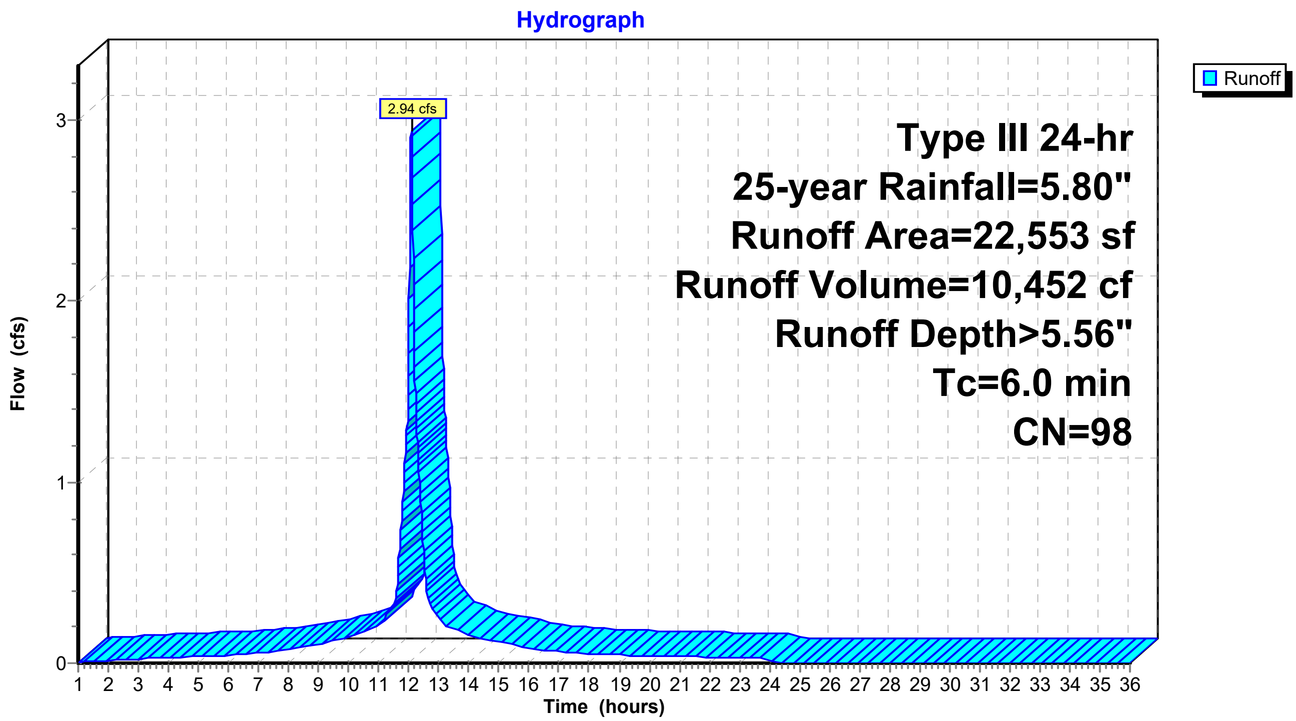
Runoff = 2.94 cfs @ 12.08 hrs, Volume= 10,452 cf, Depth> 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
10,469	98	Roofs, HSG A
12,084	98	Paved parking, HSG A
22,553	98	Weighted Average
22,553		100.00% Impervious Area

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

Subcatchment 21S: Sub 21



Summary for Subcatchment 22S: Sub 22

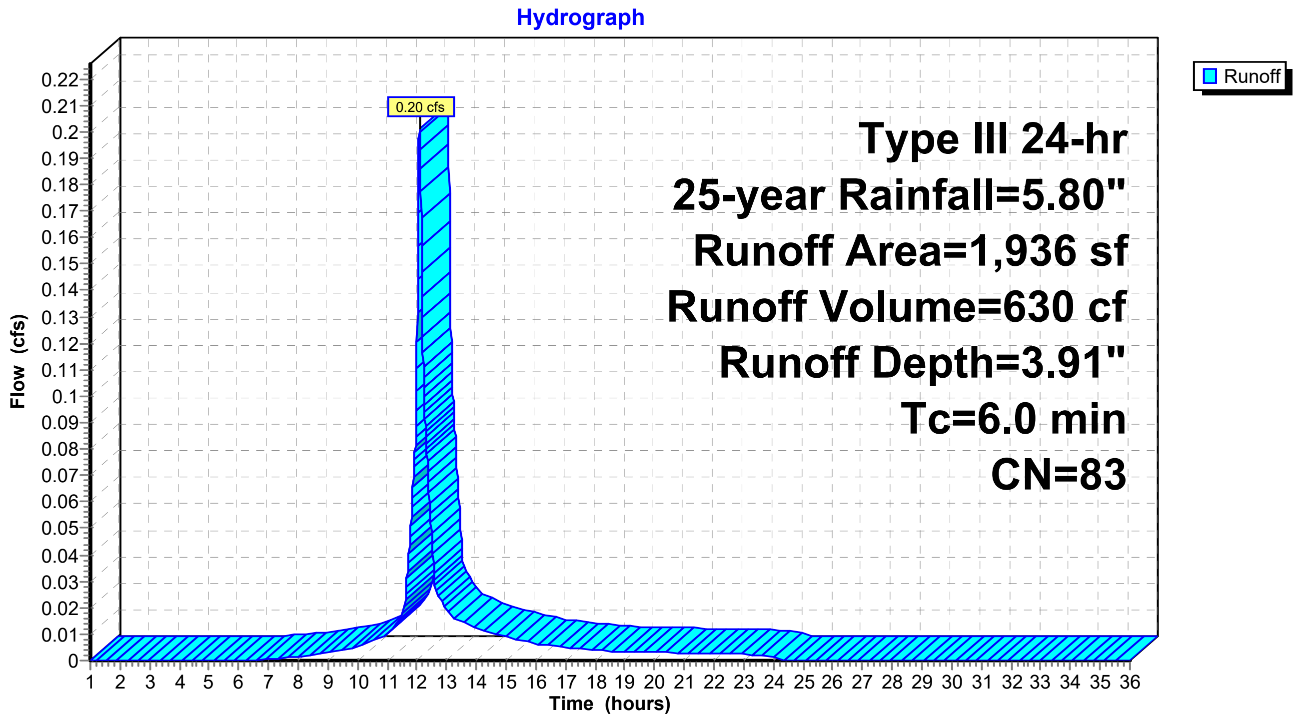
Runoff = 0.20 cfs @ 12.09 hrs, Volume= 630 cf, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
1,161	98	Paved parking, HSG B
775	61	>75% Grass cover, Good, HSG B
1,936	83	Weighted Average
775		40.03% Pervious Area
1,161		59.97% Impervious Area

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

Subcatchment 22S: Sub 22



Summary for Subcatchment 23S: Sub 23

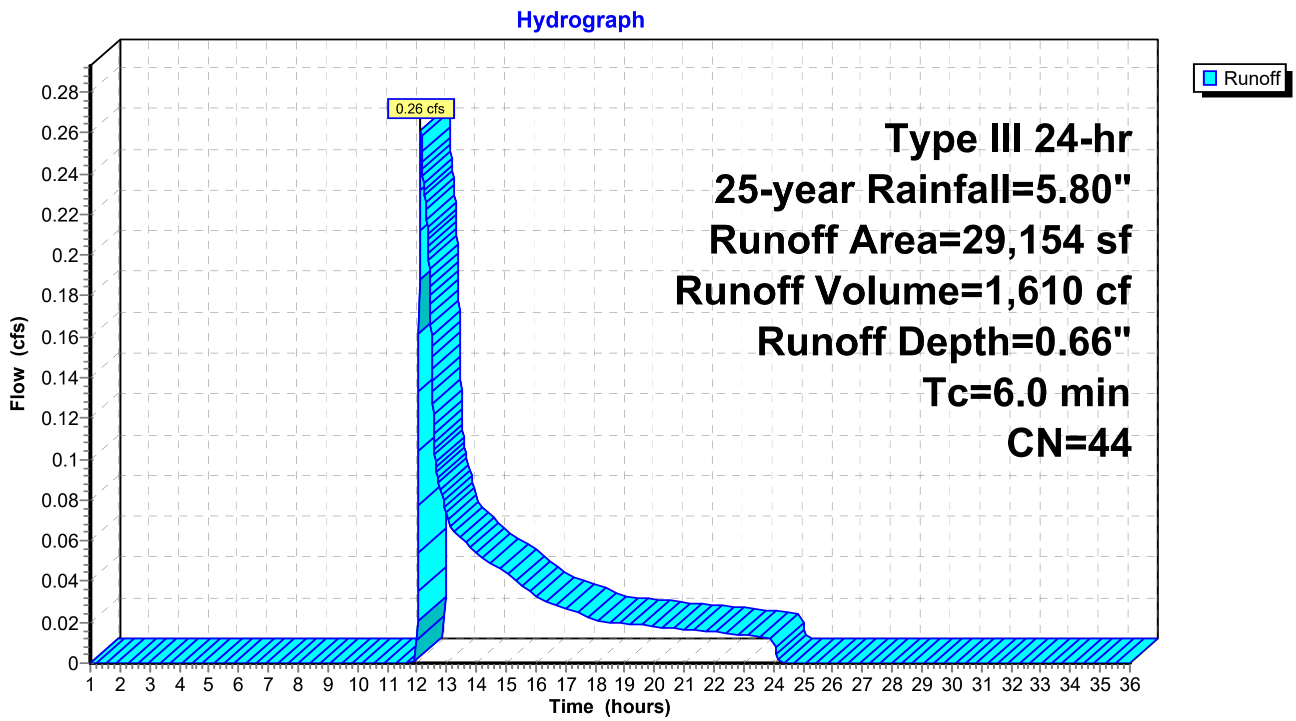
Runoff = 0.26 cfs @ 12.14 hrs, Volume= 1,610 cf, Depth= 0.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
12,963	61	>75% Grass cover, Good, HSG B
16,191	30	Woods, Good, HSG A
29,154	44	Weighted Average
29,154		100.00% Pervious Area

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

Subcatchment 23S: Sub 23



Summary for Subcatchment 24S: Sub 24

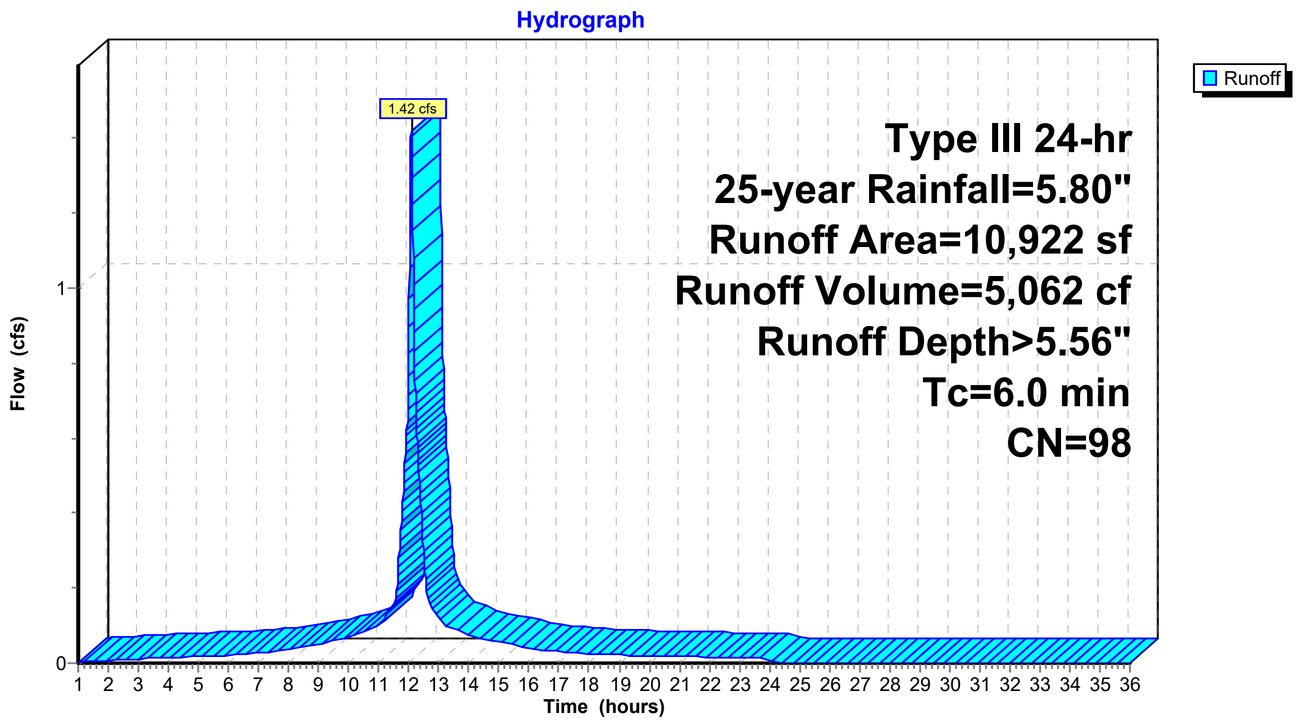
Runoff = 1.42 cfs @ 12.08 hrs, Volume= 5,062 cf, Depth> 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
316	98	Roofs, HSG B
10,606	98	Paved parking, HSG B
10,922	98	Weighted Average
10,922		100.00% Impervious Area

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

Subcatchment 24S: Sub 24



Summary for Subcatchment 25S: Sub 25

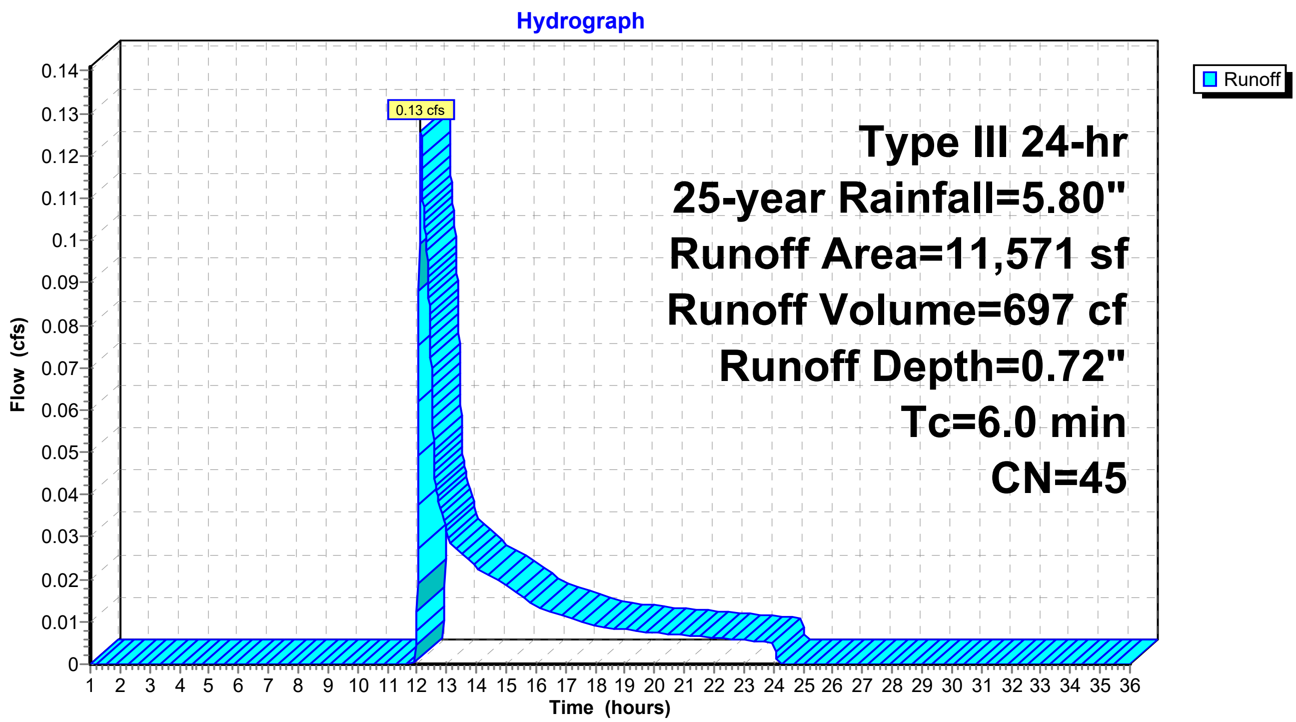
Runoff = 0.13 cfs @ 12.13 hrs, Volume= 697 cf, Depth= 0.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
8,818	39	>75% Grass cover, Good, HSG A
1,319	98	Roofs, HSG A
1,434	30	Woods, Good, HSG A
11,571	45	Weighted Average
10,252		88.60% Pervious Area
1,319		11.40% Impervious Area

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

Subcatchment 25S: Sub 25



Summary for Subcatchment 26S: Sub 26

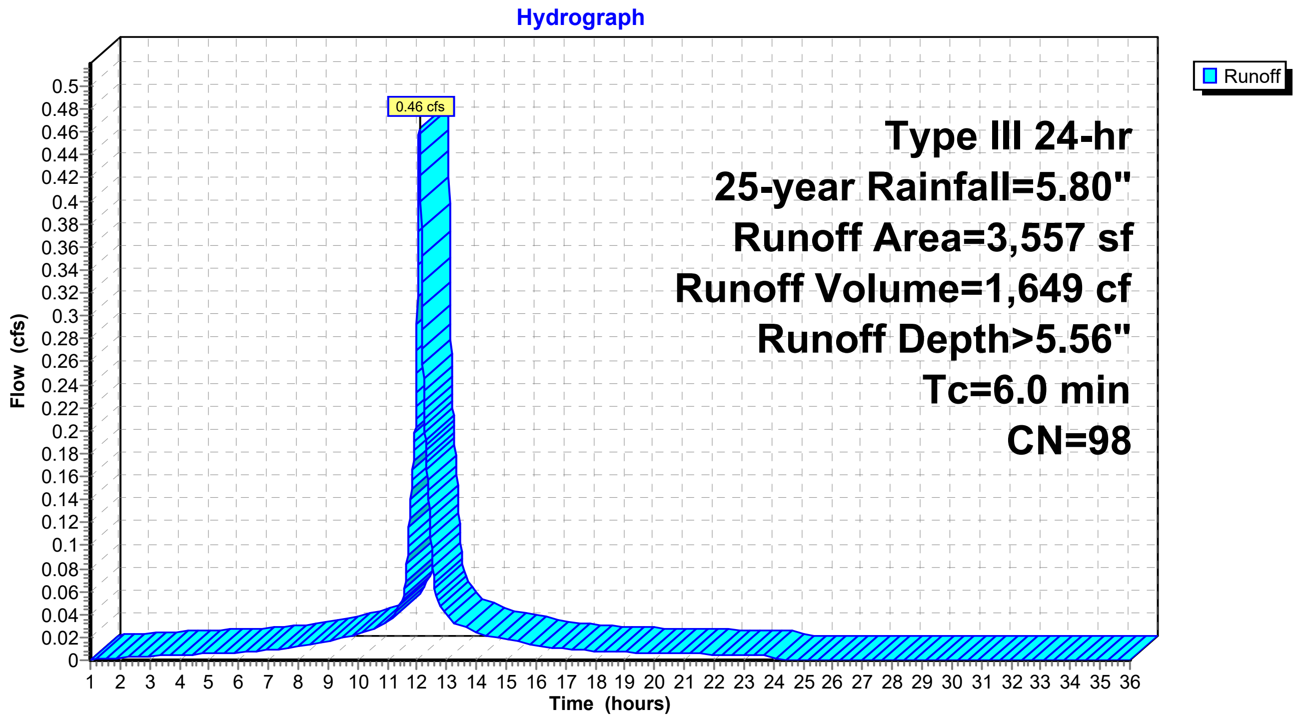
Runoff = 0.46 cfs @ 12.08 hrs, Volume= 1,649 cf, Depth> 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
3,557	98	Paved parking, HSG A
3,557		100.00% Impervious Area

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

Subcatchment 26S: Sub 26



Summary for Pond 1P: Rain Garden

Inflow Area = 16,708 sf, 71.98% Impervious, Inflow Depth = 3.82" for 25-year event
Inflow = 1.61 cfs @ 12.09 hrs, Volume= 5,312 cf
Outflow = 1.60 cfs @ 12.10 hrs, Volume= 4,434 cf, Atten= 1%, Lag= 0.7 min
Primary = 1.60 cfs @ 12.10 hrs, Volume= 4,434 cf
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 101.43' @ 12.10 hrs Surf.Area= 511 sf Storage= 965 cf

Plug-Flow detention time= 115.5 min calculated for 4,434 cf (83% of inflow)
Center-of-Mass det. time= 45.7 min (838.0 - 792.3)

Volume	Invert	Avail.Storage	Storage Description
#1	97.24'	1,148 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

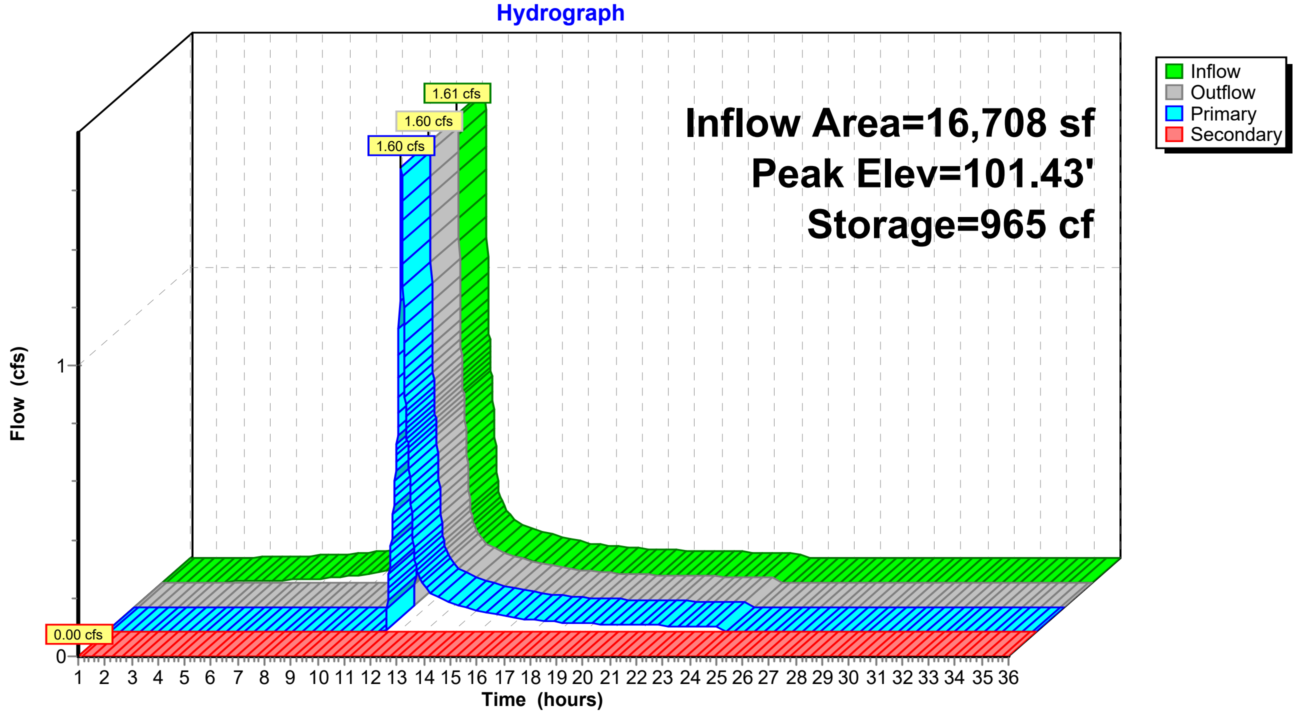
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.24	641	0.0	0	0
97.25	641	40.0	3	3
97.74	641	40.0	126	128
97.75	641	30.0	2	130
100.24	641	30.0	479	609
100.25	641	40.0	3	612
100.49	641	40.0	62	673
100.50	88	100.0	4	677
101.00	335	100.0	106	782
101.75	641	100.0	366	1,148

Device	Routing	Invert	Outlet Devices
#1	Device 2	101.25'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	92.75'	**12.0" Round Culvert** L= 23.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 92.75' / 92.25' S= 0.0210 '/' Cc= 0.900 n= 0.130, Flow Area= 0.79 sf
#3	Secondary	101.50'	**24.0' 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=1.59 cfs @ 12.10 hrs HW=101.43' TW=92.80' (Dynamic Tailwater)
└**2=Culvert** (Passes 1.59 cfs of 2.06 cfs potential flow)
  └**1=Orifice/Grate** (Weir Controls 1.59 cfs @ 1.39 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=97.24' TW=90.50' (Dynamic Tailwater)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Rain Garden



Summary for Pond 2P: Infiltration Chambers - Area 1

Inflow Area = 59,403 sf, 87.54% Impervious, Inflow Depth > 4.63" for 25-year event
Inflow = 6.98 cfs @ 12.09 hrs, Volume= 22,916 cf
Outflow = 0.85 cfs @ 12.67 hrs, Volume= 22,916 cf, Atten= 88%, Lag= 35.1 min
Discarded = 0.26 cfs @ 12.67 hrs, Volume= 15,311 cf
Primary = 0.59 cfs @ 12.67 hrs, Volume= 7,606 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 94.31' @ 12.67 hrs Surf.Area= 3,603 sf Storage= 9,565 cf

Plug-Flow detention time= 159.4 min calculated for 22,916 cf (100% of inflow)
Center-of-Mass det. time= 159.4 min (935.8 - 776.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	90.50'	5,063 cf	**29.92'W x 120.42'L x 5.50'H Field A** 19,814 cf Overall - 7,156 cf Embedded = 12,658 cf x 40.0% Voids
#2A	91.25'	7,156 cf	**ADS_StormTech MC-3500 d +Cap** x 64 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 4 Rows of 16 Chambers Cap Storage= +14.9 cf x 2 x 4 rows = 119.2 cf
		12,219 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	90.50'	**2.410 in/hr Exfiltration over Wetted area** Phase-In= 0.01'
#2	Primary	91.50'	**12.0" Round Culvert** L= 87.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 91.50' / 91.06' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	95.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 2	92.20'	**4.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.26 cfs @ 12.67 hrs HW=94.31' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.26 cfs)

Primary OutFlow Max=0.59 cfs @ 12.67 hrs HW=94.31' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Passes 0.59 cfs of 4.39 cfs potential flow)
  ├─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └─**4=Orifice/Grate** (Orifice Controls 0.59 cfs @ 6.72 fps)

Pond 2P: Infiltration Chambers - Area 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= +14.9 cf x 2 x 4 rows = 119.2 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

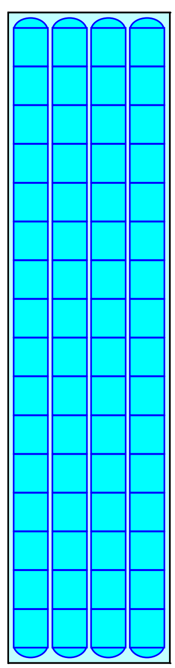
16 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 118.42' Row Length +12.0" End Stone x 2 = 120.42' Base Length
4 Rows x 77.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 29.92' Base Width
9.0" Base + 45.0" Chamber Height + 12.0" Cover = 5.50' Field Height

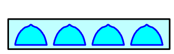
64 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 4 Rows = 7,156.1 cf Chamber Storage

19,814.1 cf Field - 7,156.1 cf Chambers = 12,658.0 cf Stone x 40.0% Voids = 5,063.2 cf Stone Storage

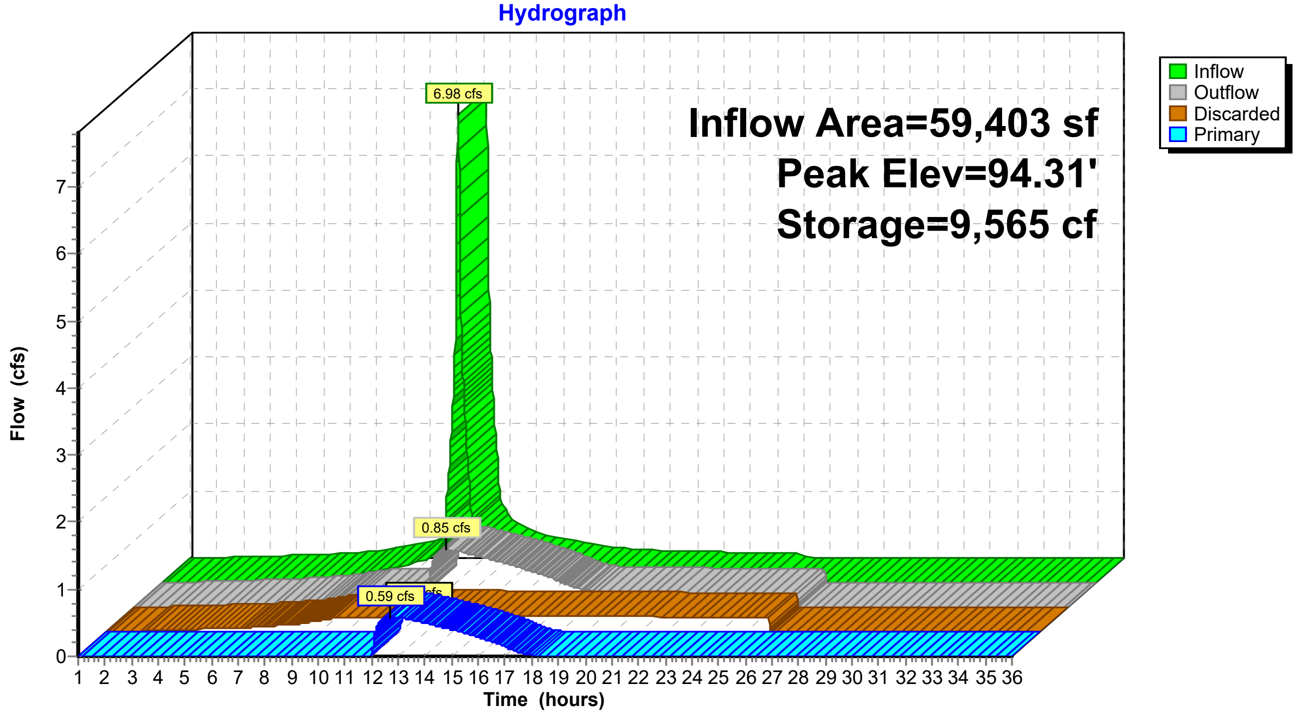
Chamber Storage + Stone Storage = 12,219.3 cf = 0.281 af
Overall Storage Efficiency = 61.7%
Overall System Size = 120.42' x 29.92' x 5.50'

64 Chambers
733.9 cy Field
468.8 cy Stone





Pond 2P: Infiltration Chambers - Area 1



Summary for Pond 3P: Detention Chambers - Area 2

Inflow Area = 45,469 sf,100.00% Impervious, Inflow Depth > 5.56" for 25-year event
Inflow = 5.93 cfs @ 12.08 hrs, Volume= 21,073 cf
Outflow = 5.90 cfs @ 12.09 hrs, Volume= 20,344 cf, Atten= 0%, Lag= 0.5 min
Primary = 5.90 cfs @ 12.09 hrs, Volume= 20,344 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 91.30' @ 12.09 hrs Surf.Area= 658 sf Storage= 993 cf

Plug-Flow detention time= 41.7 min calculated for 20,339 cf (97% of inflow)
Center-of-Mass det. time= 20.4 min (766.1 - 745.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	89.00'	627 cf	**20.50'W x 32.10'L x 3.50'H Field A** 2,303 cf Overall - 735 cf Embedded = 1,568 cf x 40.0% Voids
#2A	89.50'	735 cf	**ADS_StormTech SC-740 +Cap** x 16 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 4 Rows of 4 Chambers
		1,362 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	89.00'	**15.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.00' / 88.88' S= 0.0048 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	90.70'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=5.90 cfs @ 12.09 hrs HW=91.30' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 5.90 cfs of 6.04 cfs potential flow)
  └─**2=Sharp-Crested Rectangular Weir** (Weir Controls 5.90 cfs @ 2.53 fps)

Pond 3P: Detention Chambers - Area 2 - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

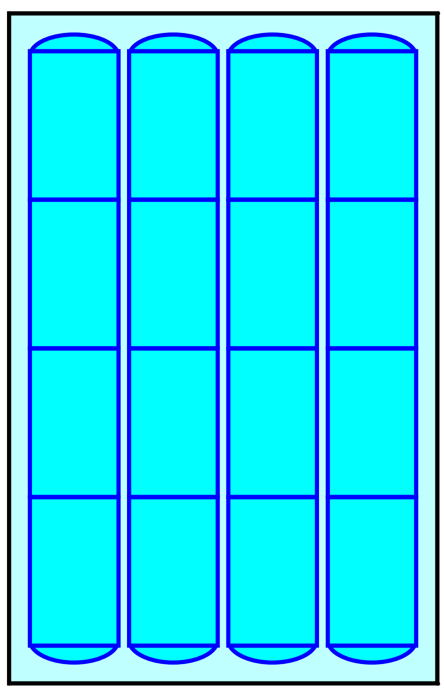
4 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 30.10' Row Length +12.0" End Stone x 2 = 32.10' Base Length
4 Rows x 51.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.50' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

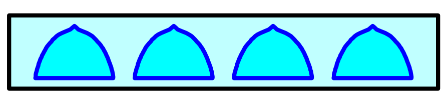
16 Chambers x 45.9 cf = 735.0 cf Chamber Storage

2,302.9 cf Field - 735.0 cf Chambers = 1,567.9 cf Stone x 40.0% Voids = 627.2 cf Stone Storage

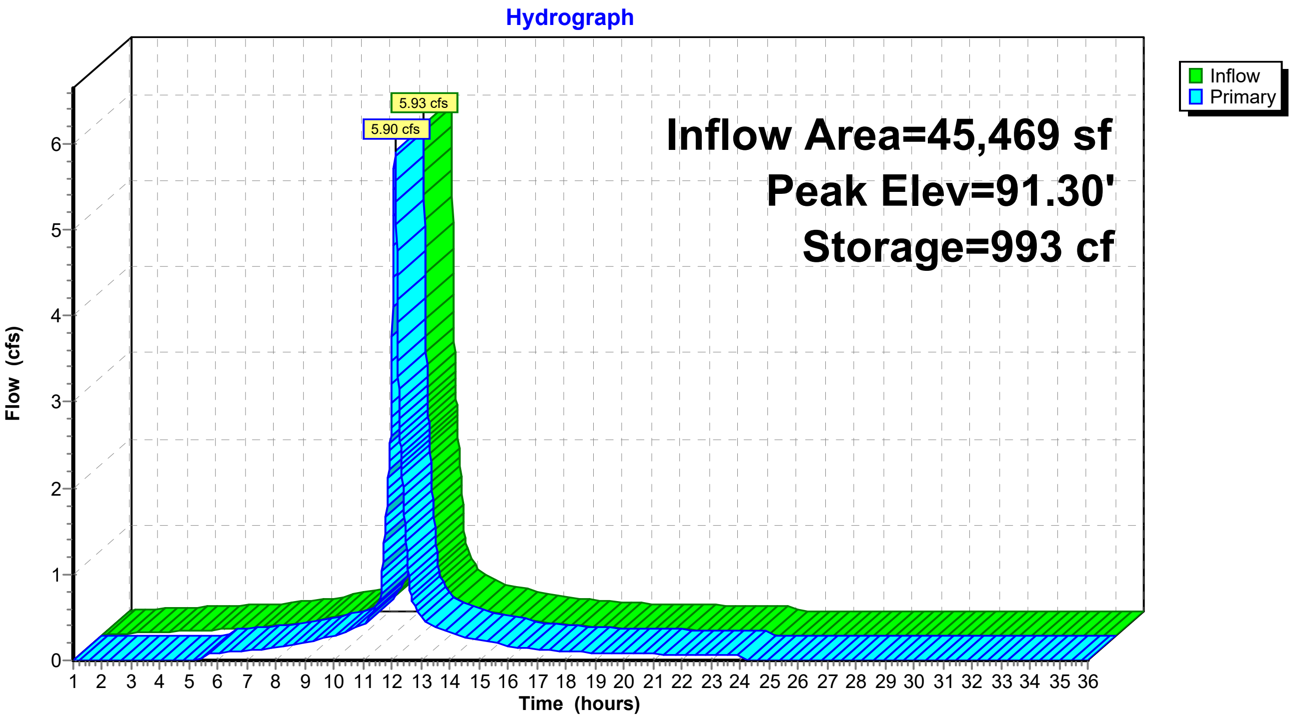
Chamber Storage + Stone Storage = 1,362.2 cf = 0.031 af
Overall Storage Efficiency = 59.2%
Overall System Size = 32.10' x 20.50' x 3.50'

16 Chambers
85.3 cy Field
58.1 cy Stone





Pond 3P: Detention Chambers - Area 2

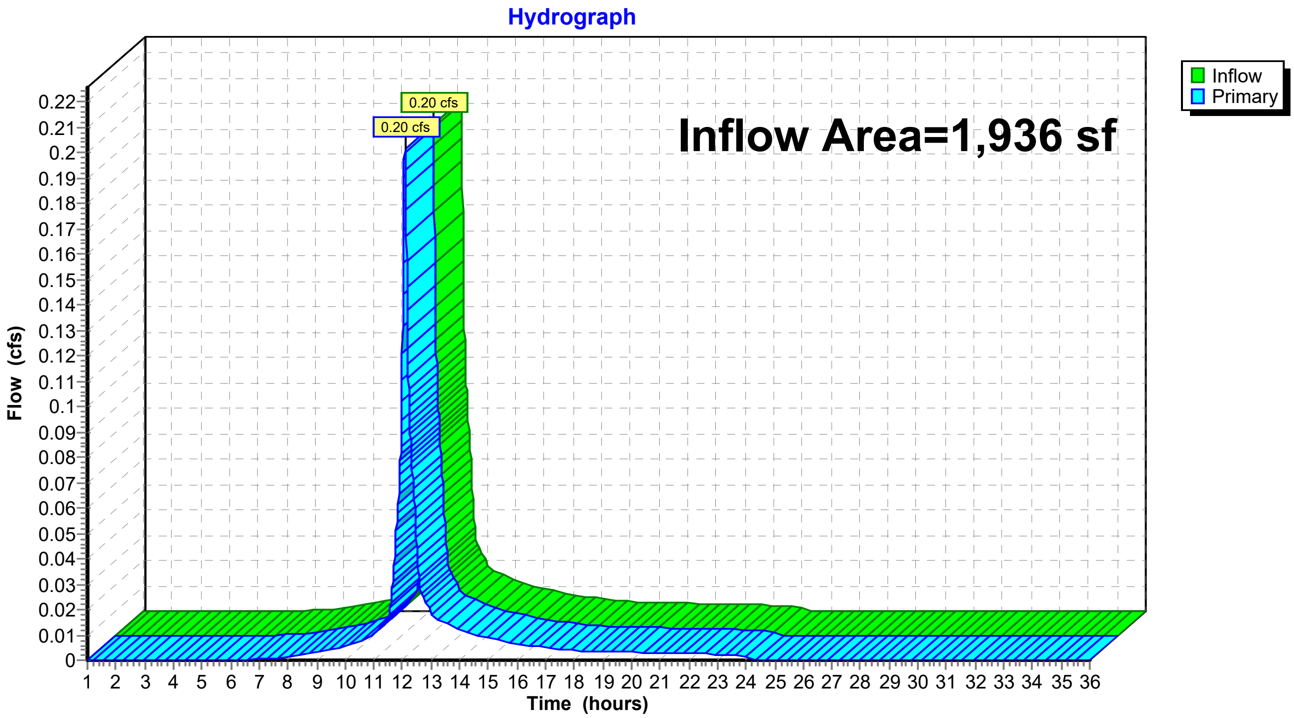


Summary for Link 1L: School Center - Leaching CB

Inflow Area = 1,936 sf, 59.97% Impervious, Inflow Depth = 3.91" for 25-year event
Inflow = 0.20 cfs @ 12.09 hrs, Volume= 630 cf
Primary = 0.20 cfs @ 12.09 hrs, Volume= 630 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 1L: School Center - Leaching CB

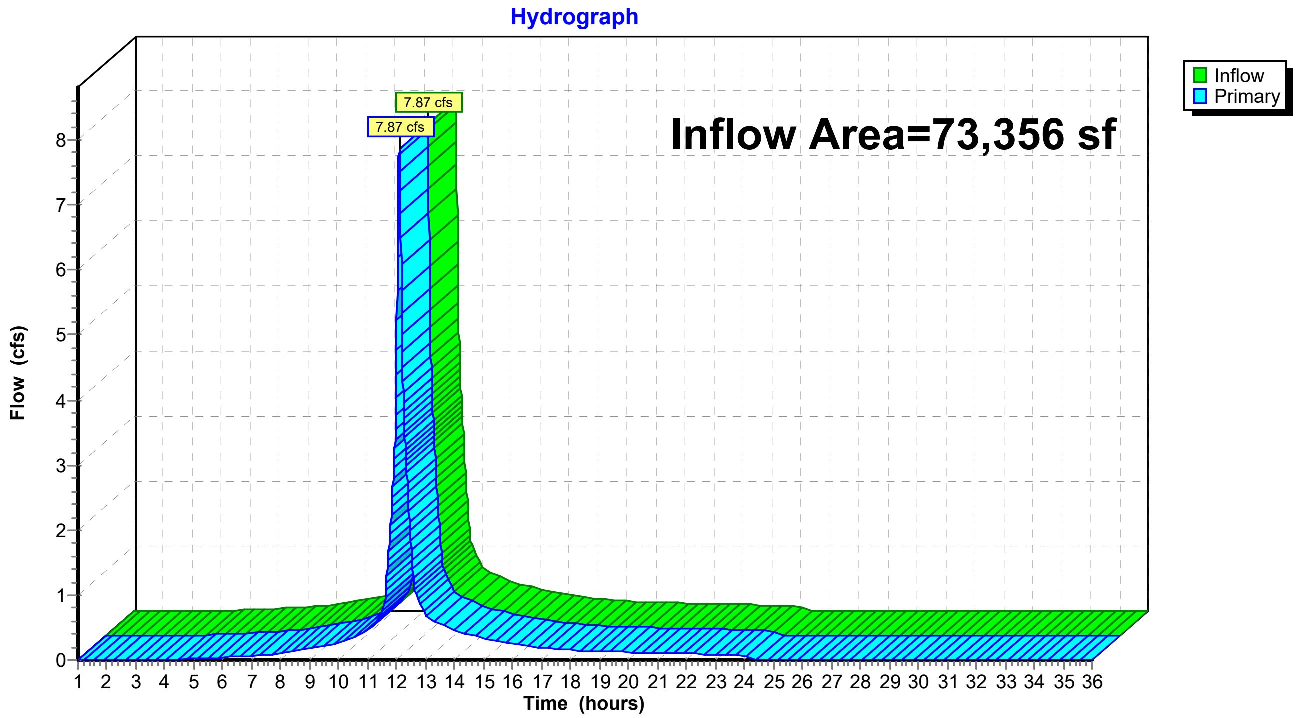


Summary for Link 2L: Playground - Leaching CBs

Inflow Area = 73,356 sf, 66.89% Impervious, Inflow Depth > 4.19" for 25-year event
Inflow = 7.87 cfs @ 12.09 hrs, Volume= 25,632 cf
Primary = 7.87 cfs @ 12.09 hrs, Volume= 25,632 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 2L: Playground - Leaching CBs

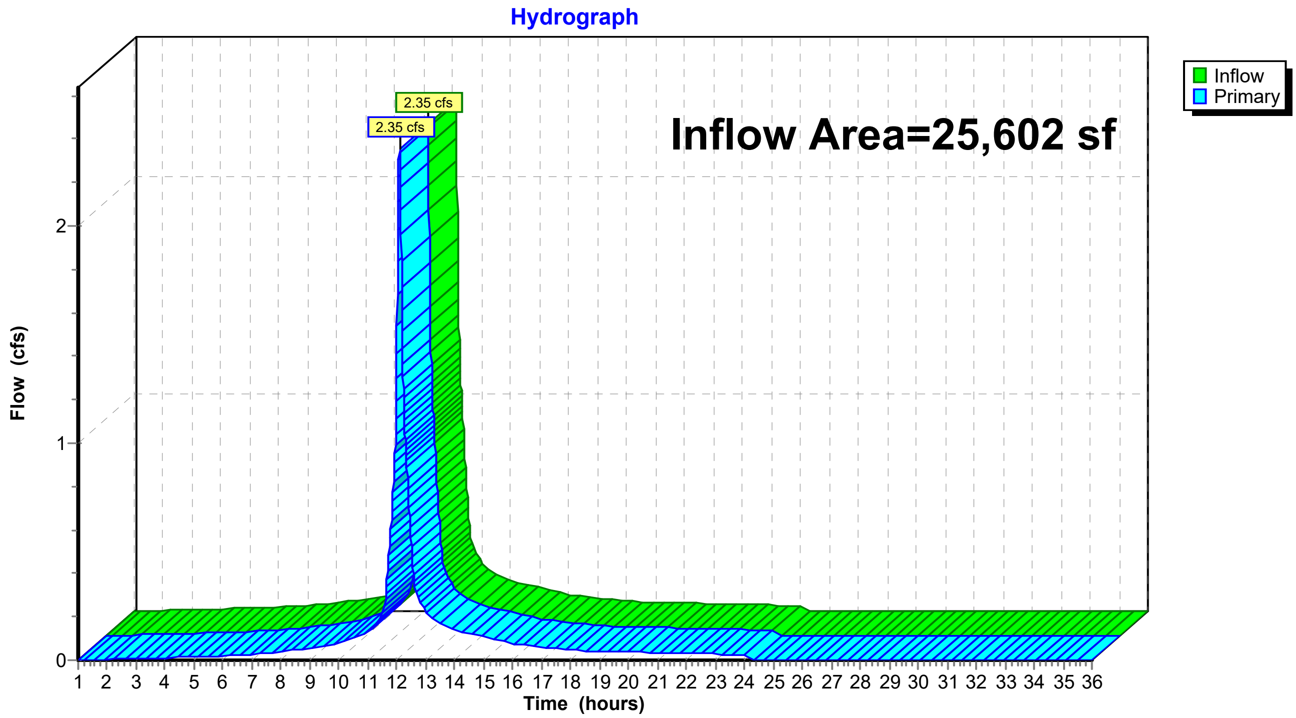


Summary for Link 3L: South Western - Leaching CBs

Inflow Area = 25,602 sf, 52.65% Impervious, Inflow Depth > 3.74" for 25-year event
Inflow = 2.35 cfs @ 12.09 hrs, Volume= 7,988 cf
Primary = 2.35 cfs @ 12.09 hrs, Volume= 7,988 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

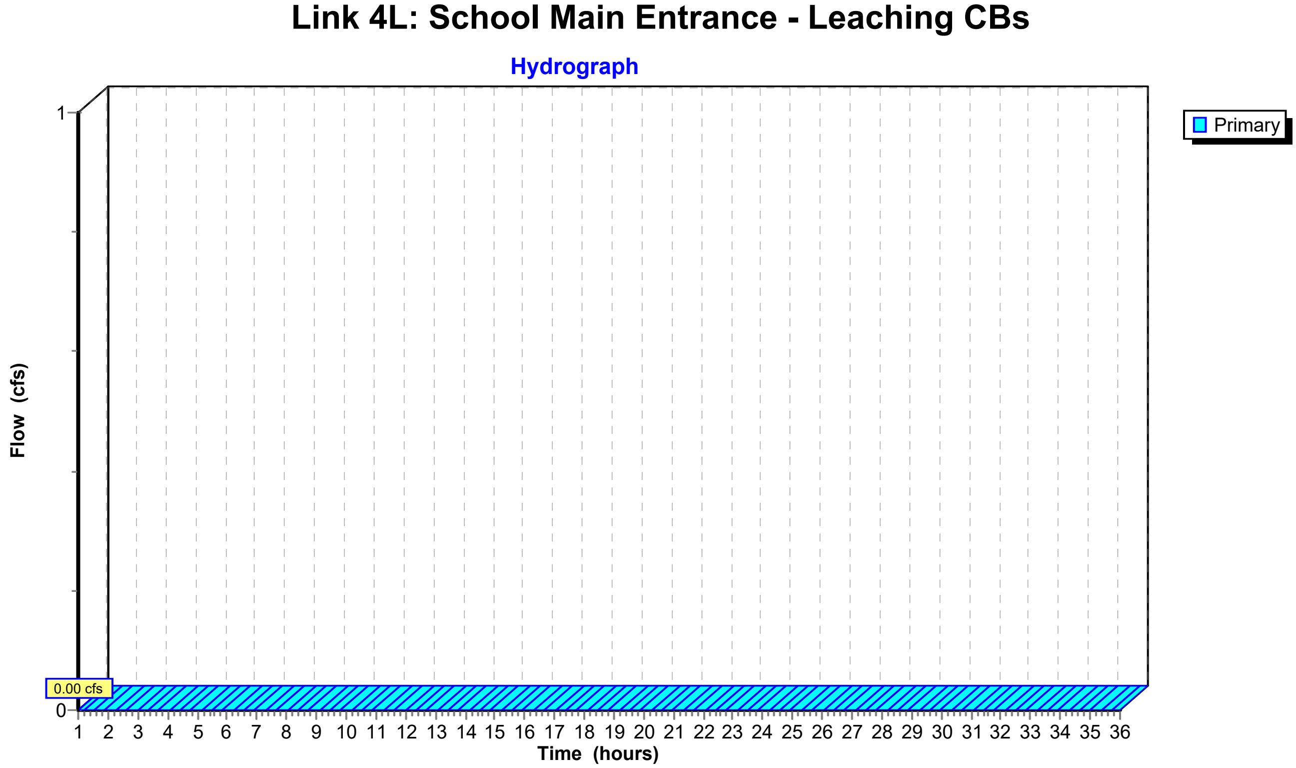
Link 3L: South Western - Leaching CBs



Summary for Link 4L: School Main Entrance - Leaching CBs

Primary = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

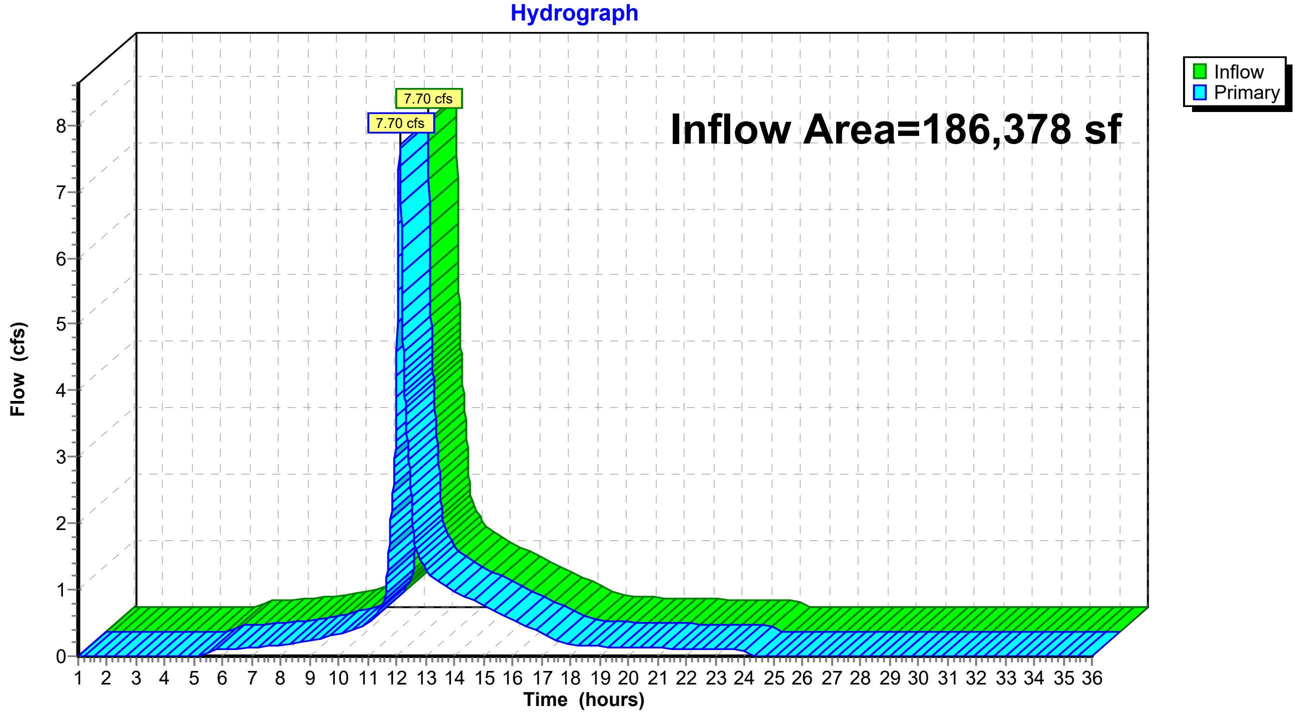


Summary for Link 5L: Main Street Drainage Network

Inflow Area = 186,378 sf, 57.92% Impervious, Inflow Depth > 2.25" for 25-year event
Inflow = 7.70 cfs @ 12.10 hrs, Volume= 34,880 cf
Primary = 7.70 cfs @ 12.10 hrs, Volume= 34,880 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 5L: Main Street Drainage Network



Time span=1.00-36.00 hrs, dt=0.01 hrs, 3501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Sub 1 Runoff Area=47,754 sf 74.52% Impervious Runoff Depth=5.69"
Tc=6.0 min CN=88 Runoff=6.99 cfs 22,646 cf

Subcatchment2S: Sub 2 Runoff Area=11,368 sf 2.40% Impervious Runoff Depth=2.77"
Tc=6.0 min CN=61 Runoff=0.83 cfs 2,628 cf

Subcatchment3S: Sub 3 Runoff Area=1,954 sf 100.00% Impervious Runoff Depth>6.86"
Tc=6.0 min CN=98 Runoff=0.31 cfs 1,117 cf

Subcatchment4S: Sub 4 Runoff Area=4,312 sf 100.00% Impervious Runoff Depth>6.86"
Tc=6.0 min CN=98 Runoff=0.69 cfs 2,464 cf

Subcatchment5S: Sub 5 Runoff Area=7,968 sf 87.10% Impervious Runoff Depth=6.27"
Tc=6.0 min CN=93 Runoff=1.24 cfs 4,163 cf

Subcatchment6S: Sub 6 Runoff Area=8,822 sf 93.69% Impervious Runoff Depth=6.39"
Tc=6.0 min CN=94 Runoff=1.38 cfs 4,696 cf

Subcatchment7S: Sub 15 Runoff Area=5,419 sf 88.41% Impervious Runoff Depth=6.04"
Tc=6.0 min CN=91 Runoff=0.82 cfs 2,726 cf

Subcatchment8S: Sub 8 Runoff Area=3,381 sf 68.83% Impervious Runoff Depth=5.46"
Tc=6.0 min CN=86 Runoff=0.48 cfs 1,539 cf

Subcatchment9S: Sub 9 Runoff Area=3,080 sf 63.08% Impervious Runoff Depth=4.35"
Tc=6.0 min CN=76 Runoff=0.36 cfs 1,116 cf

Subcatchment10S: Sub 10 Runoff Area=2,156 sf 34.97% Impervious Runoff Depth=2.67"
Tc=6.0 min CN=60 Runoff=0.15 cfs 481 cf

Subcatchment11S: Sub 11 Runoff Area=7,623 sf 94.74% Impervious Runoff Depth=6.51"
Tc=6.0 min CN=95 Runoff=1.20 cfs 4,132 cf

Subcatchment12S: Sub 12 Runoff Area=1,314 sf 0.00% Impervious Runoff Depth=0.80"
Tc=6.0 min CN=39 Runoff=0.01 cfs 88 cf

Subcatchment13S: Sub 13 Runoff Area=8,127 sf 100.00% Impervious Runoff Depth>6.86"
Tc=6.0 min CN=98 Runoff=1.30 cfs 4,645 cf

Subcatchment14S: Sub 14 Runoff Area=7,886 sf 47.69% Impervious Runoff Depth=3.39"
Tc=6.0 min CN=67 Runoff=0.72 cfs 2,226 cf

Subcatchment15S: Sub 15 Runoff Area=9,235 sf 100.00% Impervious Runoff Depth>6.86"
Tc=6.0 min CN=98 Runoff=1.48 cfs 5,278 cf

Subcatchment16S: Sub 16 Runoff Area=2,299 sf 0.00% Impervious Runoff Depth=0.80"
Tc=6.0 min CN=39 Runoff=0.02 cfs 154 cf

Subcatchment17S: Sub 17 Runoff Area=2,903 sf 100.00% Impervious Runoff Depth>6.86"
Tc=6.0 min CN=98 Runoff=0.46 cfs 1,659 cf

Subcatchment18S: Sub 18 Runoff Area=8,910 sf 92.85% Impervious Runoff Depth=6.39"
Tc=6.0 min CN=94 Runoff=1.39 cfs 4,743 cf

Subcatchment19S: Sub 19 Runoff Area=11,994 sf 100.00% Impervious Runoff Depth>6.86"
Tc=6.0 min CN=98 Runoff=1.92 cfs 6,855 cf

Subcatchment20S: Sub 20 Runoff Area=25,472 sf 0.00% Impervious Runoff Depth=0.46"
Tc=6.0 min CN=34 Runoff=0.09 cfs 971 cf

Subcatchment21S: Sub 21 Runoff Area=22,553 sf 100.00% Impervious Runoff Depth>6.86"
Tc=6.0 min CN=98 Runoff=3.61 cfs 12,890 cf

Subcatchment22S: Sub 22 Runoff Area=1,936 sf 59.97% Impervious Runoff Depth=5.12"
Tc=6.0 min CN=83 Runoff=0.26 cfs 826 cf

Subcatchment23S: Sub 23 Runoff Area=29,154 sf 0.00% Impervious Runoff Depth=1.20"
Tc=6.0 min CN=44 Runoff=0.69 cfs 2,916 cf

Subcatchment24S: Sub 24 Runoff Area=10,922 sf 100.00% Impervious Runoff Depth>6.86"
Tc=6.0 min CN=98 Runoff=1.75 cfs 6,242 cf

Subcatchment25S: Sub 25 Runoff Area=11,571 sf 11.40% Impervious Runoff Depth=1.28"
Tc=6.0 min CN=45 Runoff=0.31 cfs 1,238 cf

Subcatchment26S: Sub 26 Runoff Area=3,557 sf 100.00% Impervious Runoff Depth>6.86"
Tc=6.0 min CN=98 Runoff=0.57 cfs 2,033 cf

Pond 1P: Rain Garden Peak Elev=101.47' Storage=986 cf Inflow=2.09 cfs 6,922 cf
Primary=2.04 cfs 6,043 cf Secondary=0.00 cfs 0 cf Outflow=2.04 cfs 6,043 cf

Pond 2P: Infiltration Chambers - Area 1 Peak Elev=95.30' Storage=11,208 cf Inflow=8.72 cfs 29,106 cf
Discarded=0.28 cfs 16,864 cf Primary=2.82 cfs 12,242 cf Outflow=3.10 cfs 29,106 cf

Pond 3P: Detention Chambers - Area 2 Peak Elev=91.72' Storage=1,149 cf Inflow=7.27 cfs 25,987 cf
Outflow=6.75 cfs 25,259 cf

Link 1L: School Center - Leaching CB Inflow=0.26 cfs 826 cf
Primary=0.26 cfs 826 cf

Link 2L: Playground - Leaching CBs Inflow=10.05 cfs 33,019 cf
Primary=10.05 cfs 33,019 cf

Link 3L: South Western - Leaching CBs Inflow=3.06 cfs 10,373 cf
Primary=3.06 cfs 10,373 cf

Link 4L: School Main Entrance - Leaching CBs
Primary=0.00 cfs 0 cf

Link 5L: Main Street Drainage Network

Inflow=9.75 cfs 48,157 cf
Primary=9.75 cfs 48,157 cf

Total Runoff Area = 261,670 sf Runoff Volume = 100,474 cf Average Runoff Depth = 4.61"
39.55% Pervious = 103,496 sf 60.45% Impervious = 158,174 sf

Summary for Subcatchment 1S: Sub 1

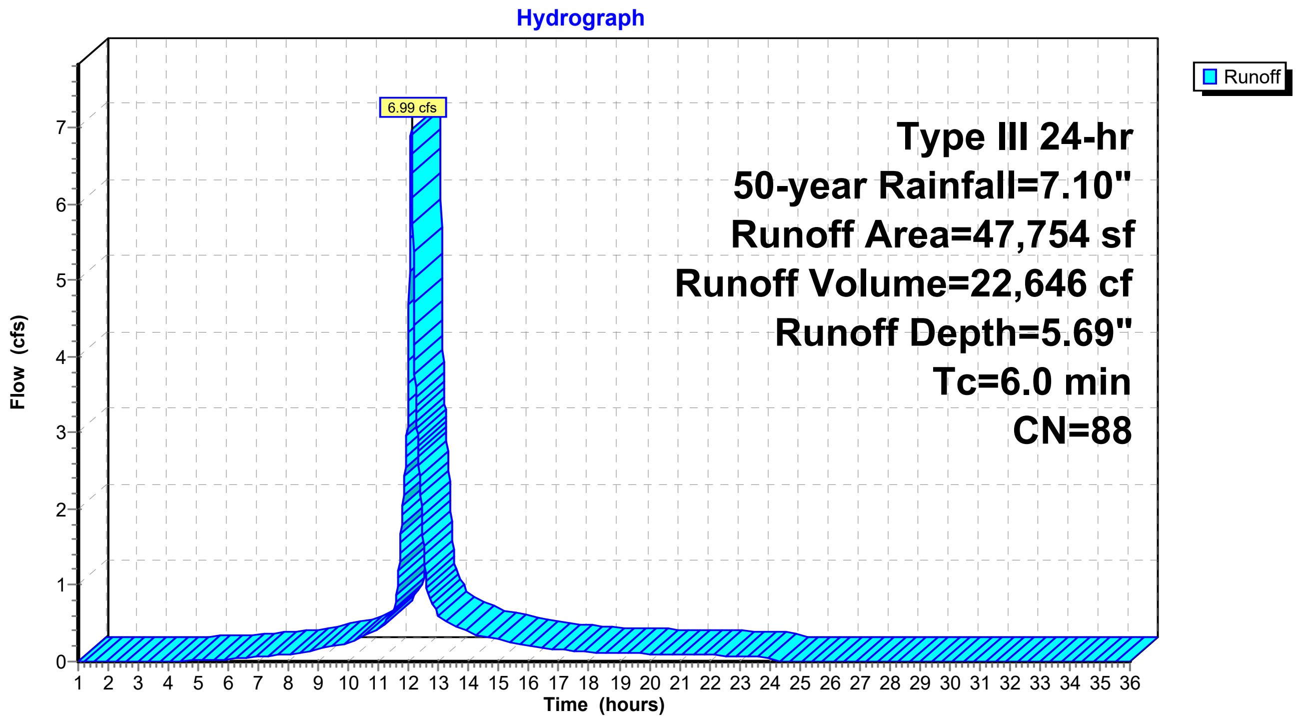
Runoff = 6.99 cfs @ 12.08 hrs, Volume= 22,646 cf, Depth= 5.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
13,390	98	Roofs, HSG B
975	55	Woods, Good, HSG B
11,191	61	>75% Grass cover, Good, HSG B
22,198	98	Paved parking, HSG B
47,754	88	Weighted Average
12,166		25.48% Pervious Area
35,588		74.52% Impervious Area

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

Subcatchment 1S: Sub 1



Summary for Subcatchment 2S: Sub 2

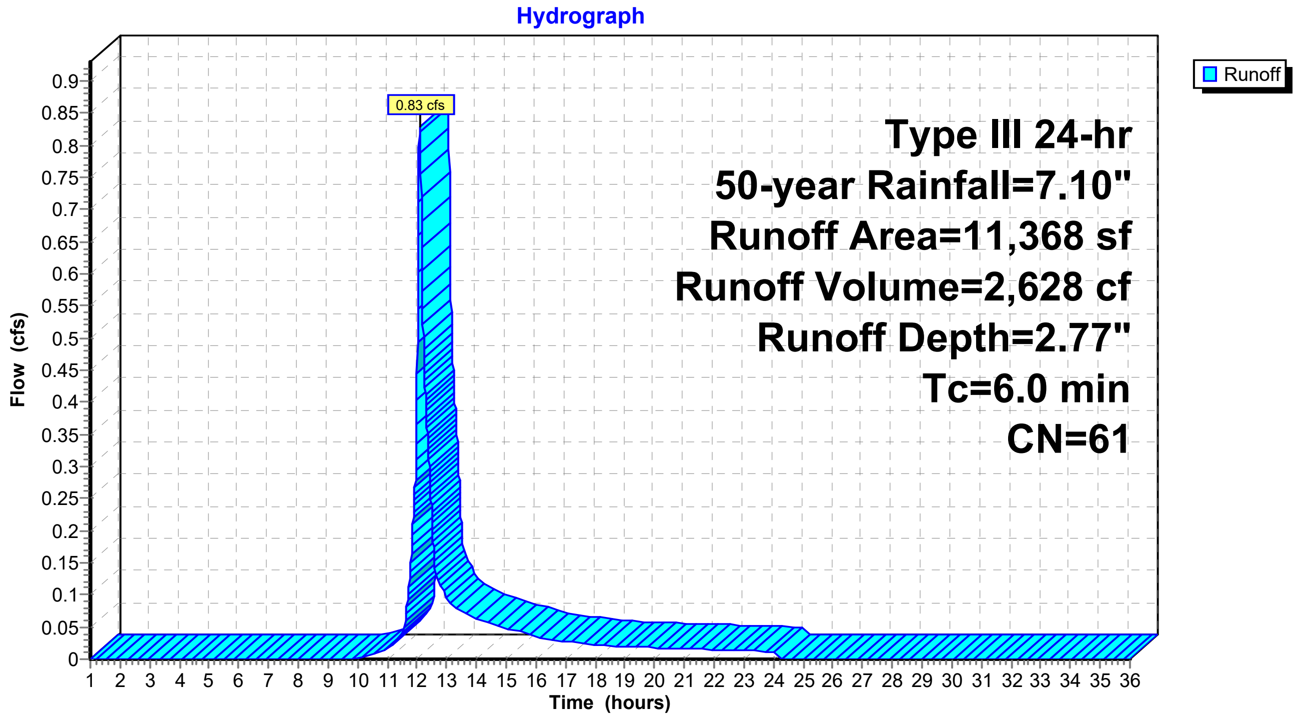
Runoff = 0.83 cfs @ 12.09 hrs, Volume= 2,628 cf, Depth= 2.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
1,073	55	Woods, Good, HSG B
10,022	61	>75% Grass cover, Good, HSG B
273	98	Paved parking, HSG B
11,368	61	Weighted Average
11,095		97.60% Pervious Area
273		2.40% Impervious Area

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

Subcatchment 2S: Sub 2



Summary for Subcatchment 3S: Sub 3

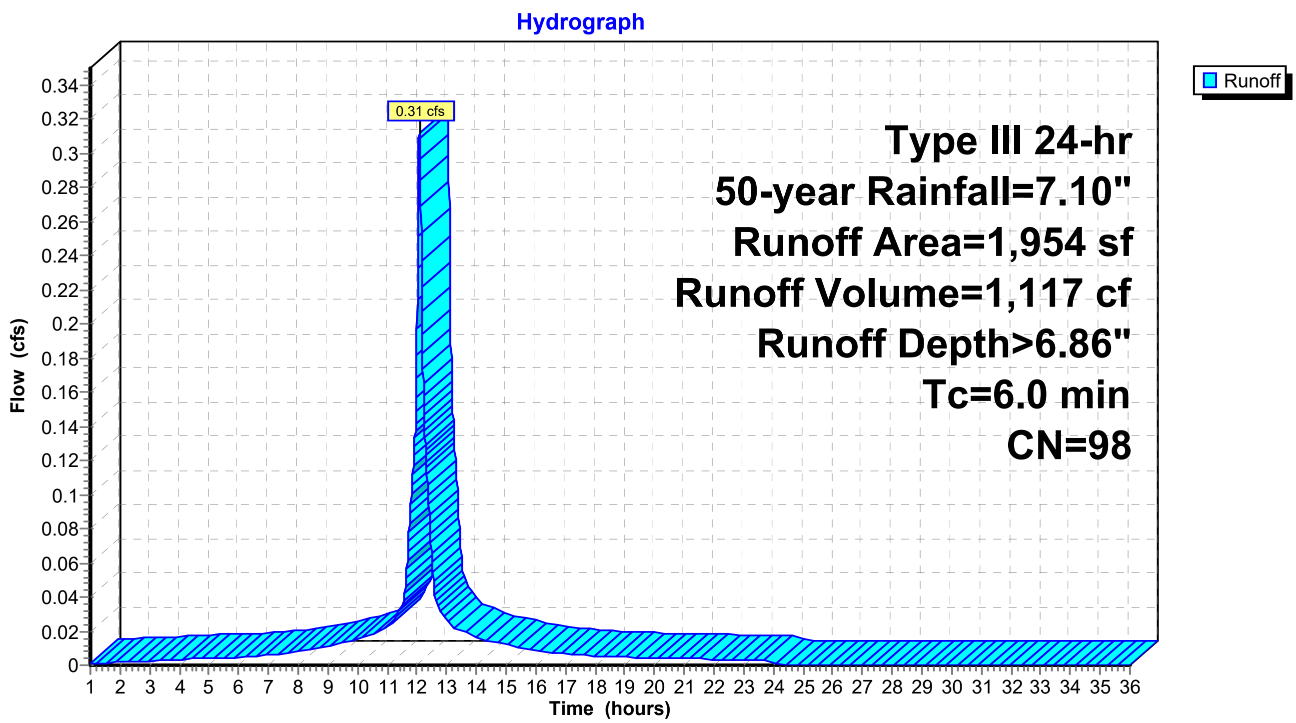
Runoff = 0.31 cfs @ 12.08 hrs, Volume= 1,117 cf, Depth> 6.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
1,954	98	Paved parking, HSG B
1,954		100.00% Impervious Area

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

Subcatchment 3S: Sub 3



Summary for Subcatchment 4S: Sub 4

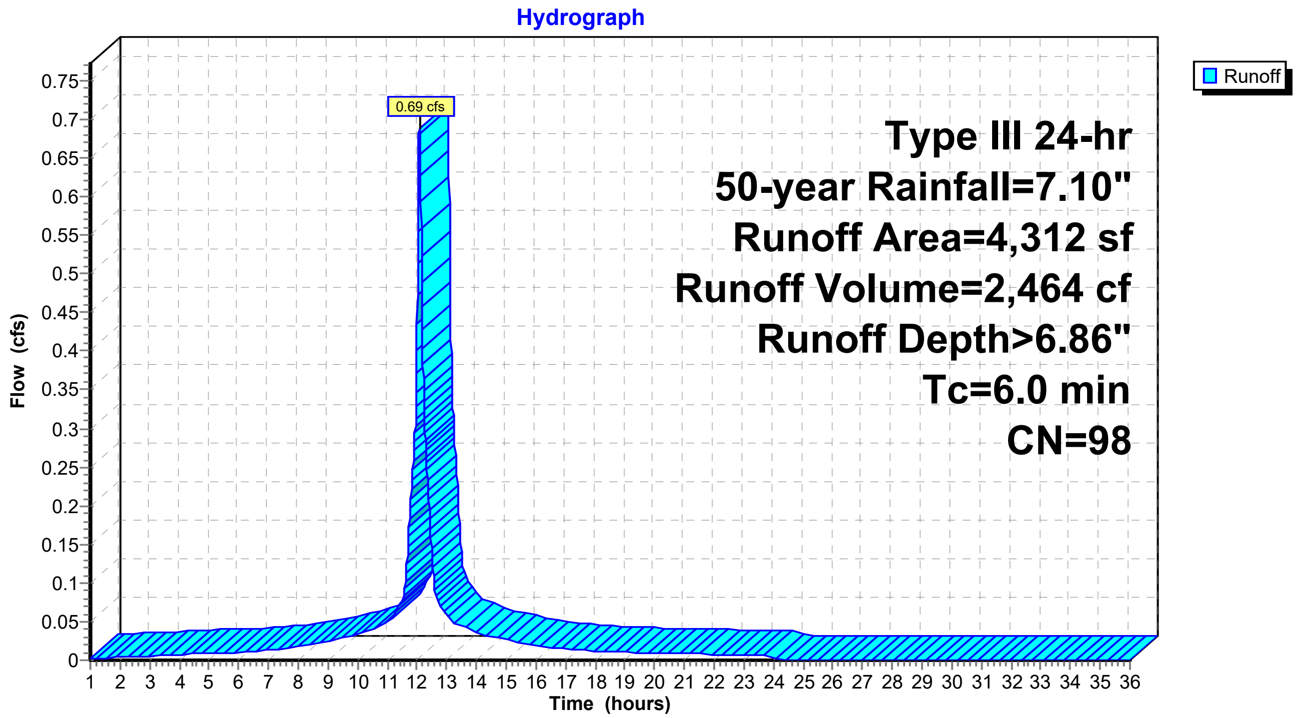
Runoff = 0.69 cfs @ 12.08 hrs, Volume= 2,464 cf, Depth> 6.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
4,312	98	Paved parking, HSG B
4,312		100.00% Impervious Area

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

Subcatchment 4S: Sub 4



Summary for Subcatchment 5S: Sub 5

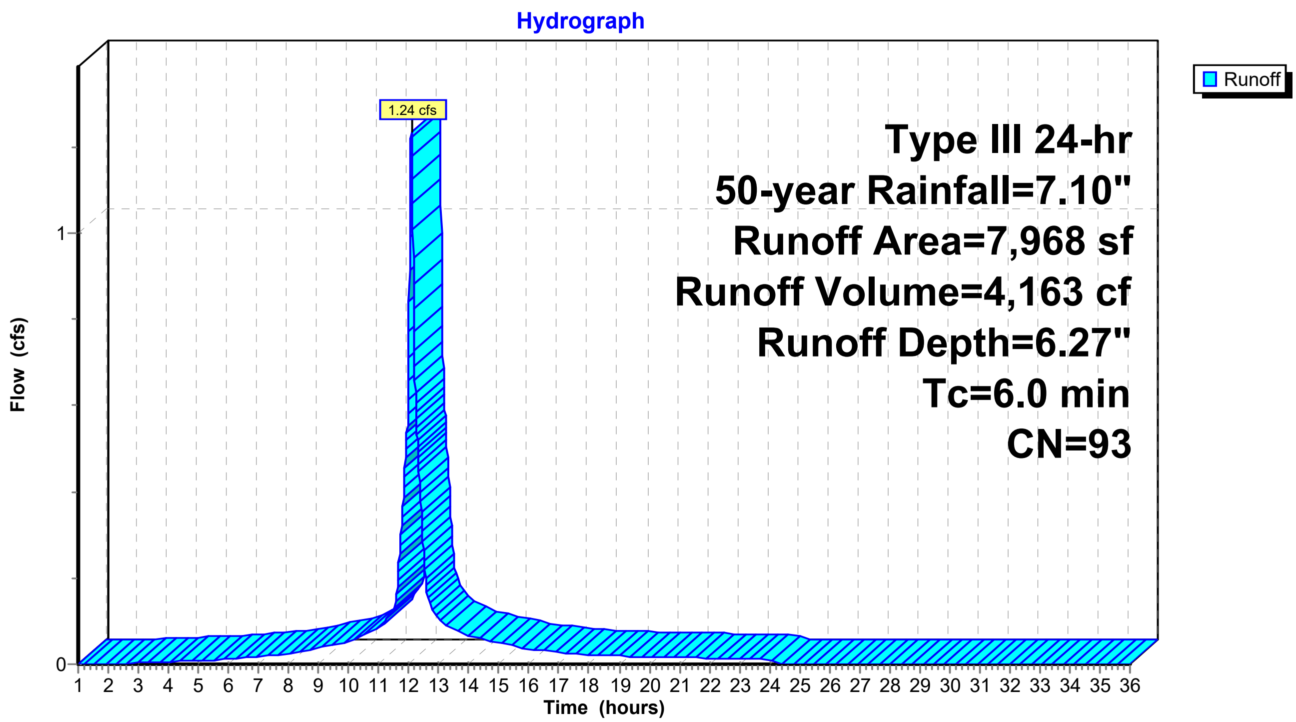
Runoff = 1.24 cfs @ 12.08 hrs, Volume= 4,163 cf, Depth= 6.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
5,157	98	Roofs, HSG B
1,028	61	>75% Grass cover, Good, HSG B
1,783	98	Paved parking, HSG B
7,968	93	Weighted Average
1,028		12.90% Pervious Area
6,940		87.10% Impervious Area

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

Subcatchment 5S: Sub 5



Summary for Subcatchment 6S: Sub 6

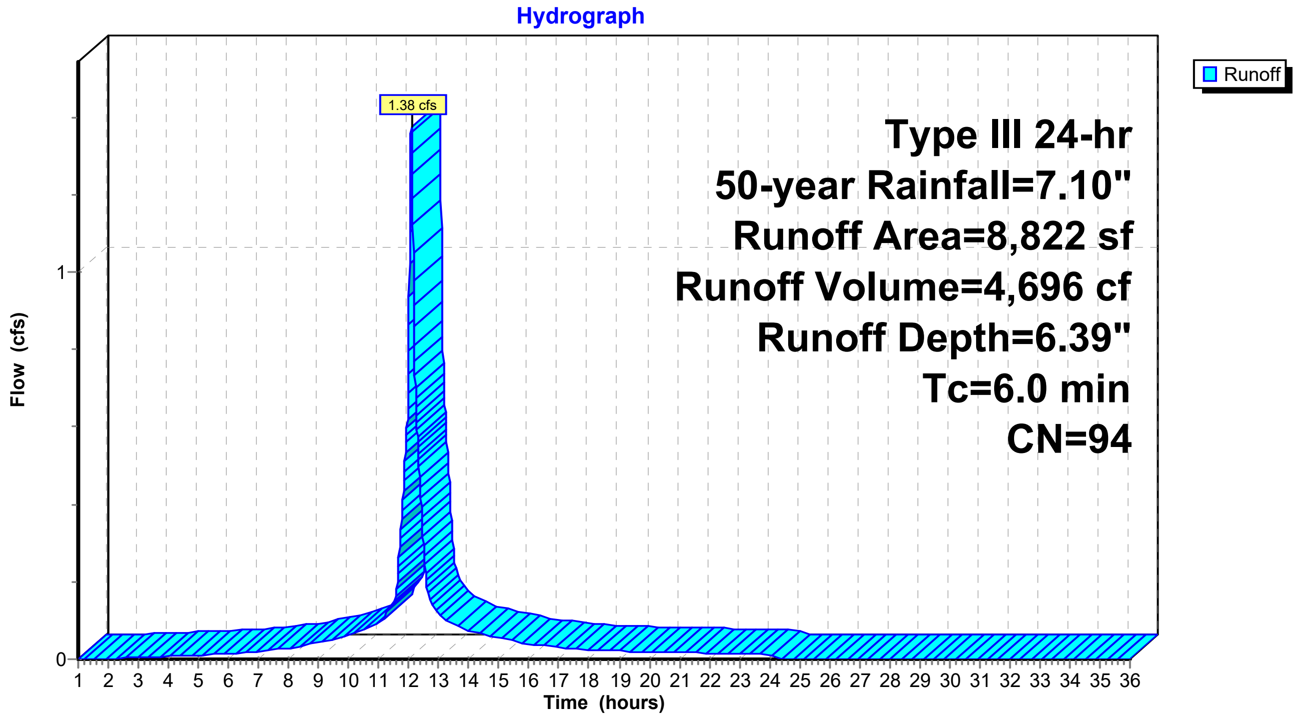
Runoff = 1.38 cfs @ 12.08 hrs, Volume= 4,696 cf, Depth= 6.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
557	39	>75% Grass cover, Good, HSG A
4,015	98	Paved parking, HSG A
4,250	98	Roofs, HSG A
8,822	94	Weighted Average
557		6.31% Pervious Area
8,265		93.69% Impervious Area

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

Subcatchment 6S: Sub 6



Summary for Subcatchment 7S: Sub 15

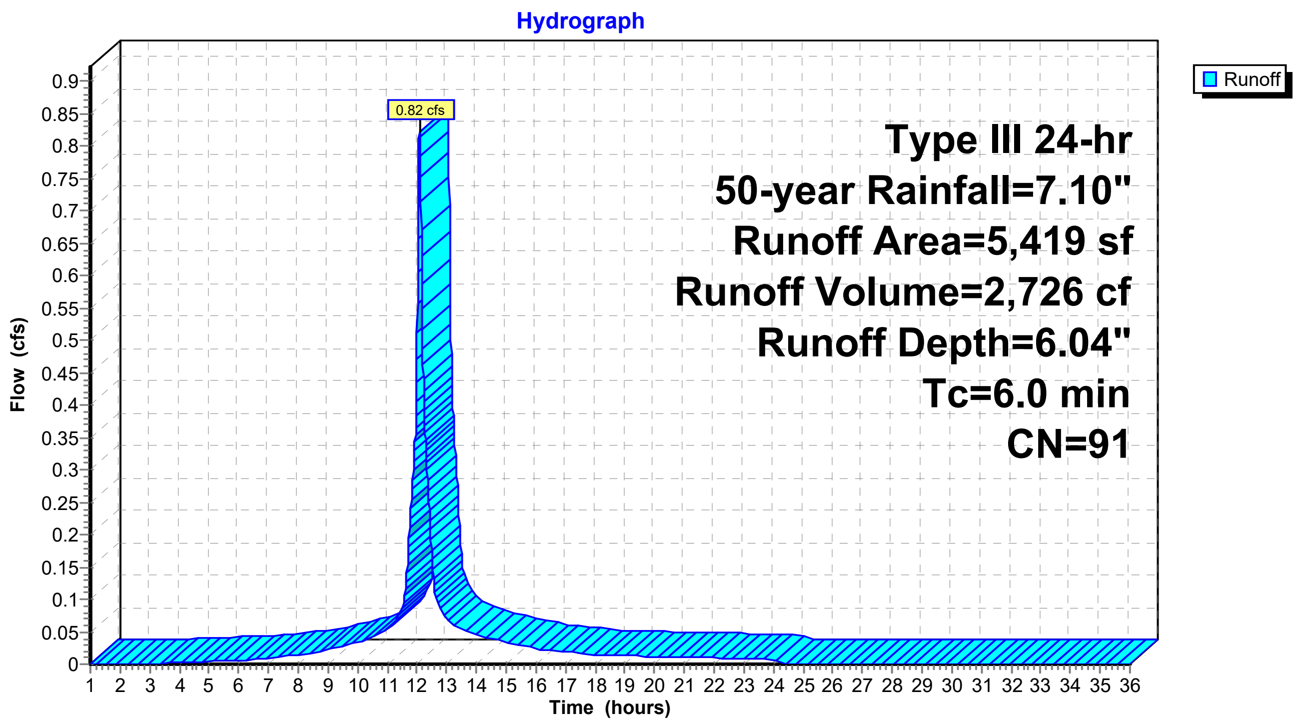
Runoff = 0.82 cfs @ 12.08 hrs, Volume= 2,726 cf, Depth= 6.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
628	39	>75% Grass cover, Good, HSG A
3,579	98	Paved parking, HSG A
1,212	98	Roofs, HSG A
5,419	91	Weighted Average
628		11.59% Pervious Area
4,791		88.41% Impervious Area

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

Subcatchment 7S: Sub 15



Summary for Subcatchment 8S: Sub 8

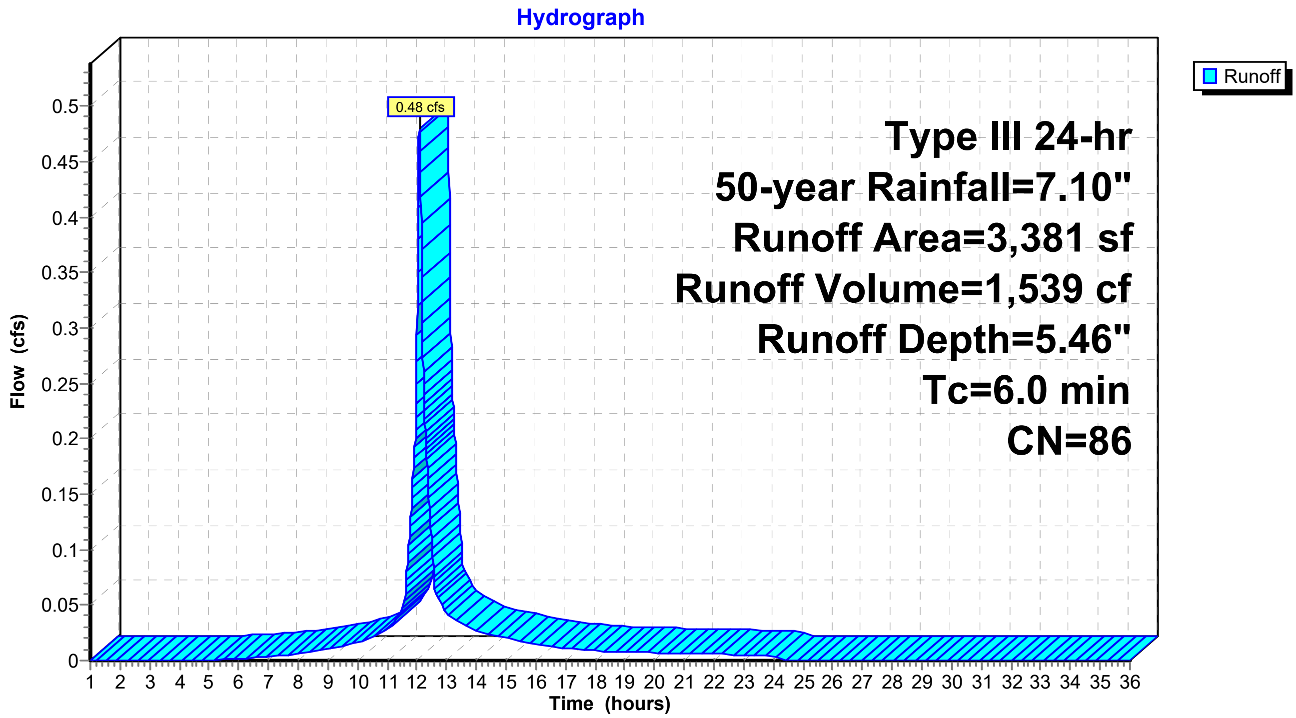
Runoff = 0.48 cfs @ 12.09 hrs, Volume= 1,539 cf, Depth= 5.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
2,327	98	Paved parking, HSG B
1,054	61	>75% Grass cover, Good, HSG B
3,381	86	Weighted Average
1,054		31.17% Pervious Area
2,327		68.83% Impervious Area

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

Subcatchment 8S: Sub 8



Summary for Subcatchment 9S: Sub 9

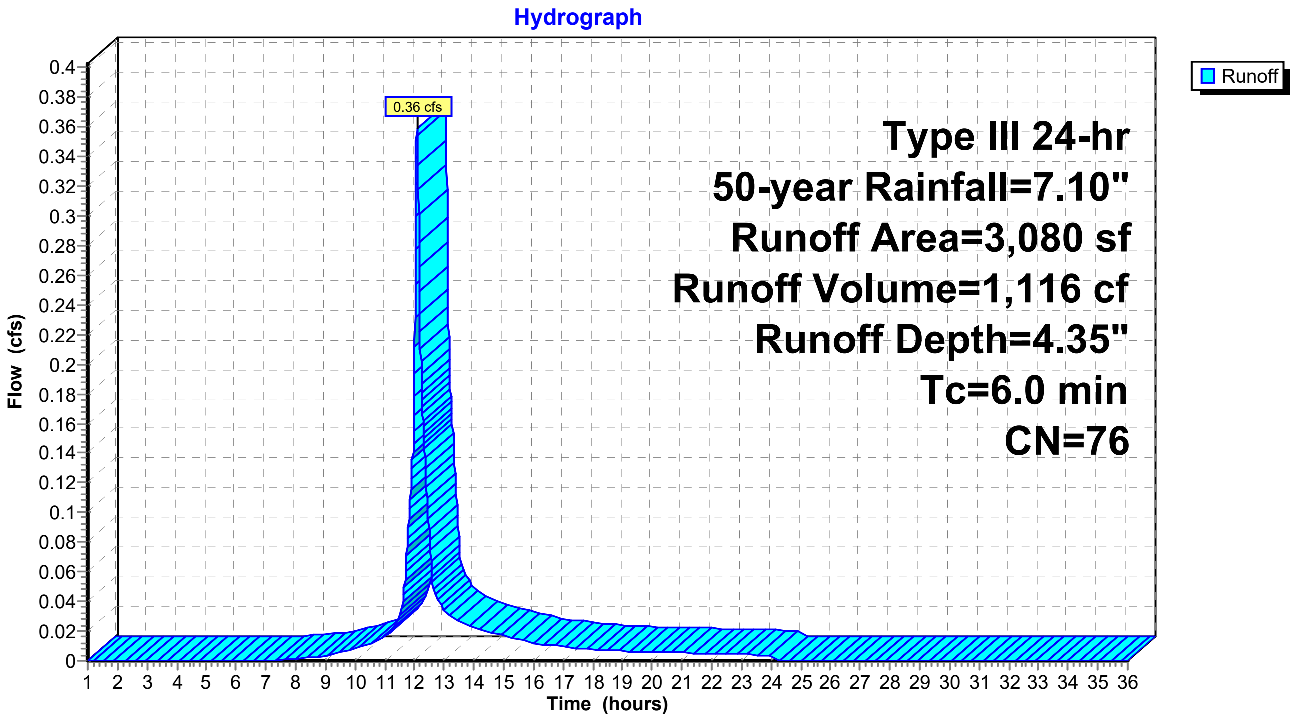
Runoff = 0.36 cfs @ 12.09 hrs, Volume= 1,116 cf, Depth= 4.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
1,137	39	>75% Grass cover, Good, HSG A
1,943	98	Paved parking, HSG A
3,080	76	Weighted Average
1,137		36.92% Pervious Area
1,943		63.08% Impervious Area

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

Subcatchment 9S: Sub 9



Summary for Subcatchment 10S: Sub 10

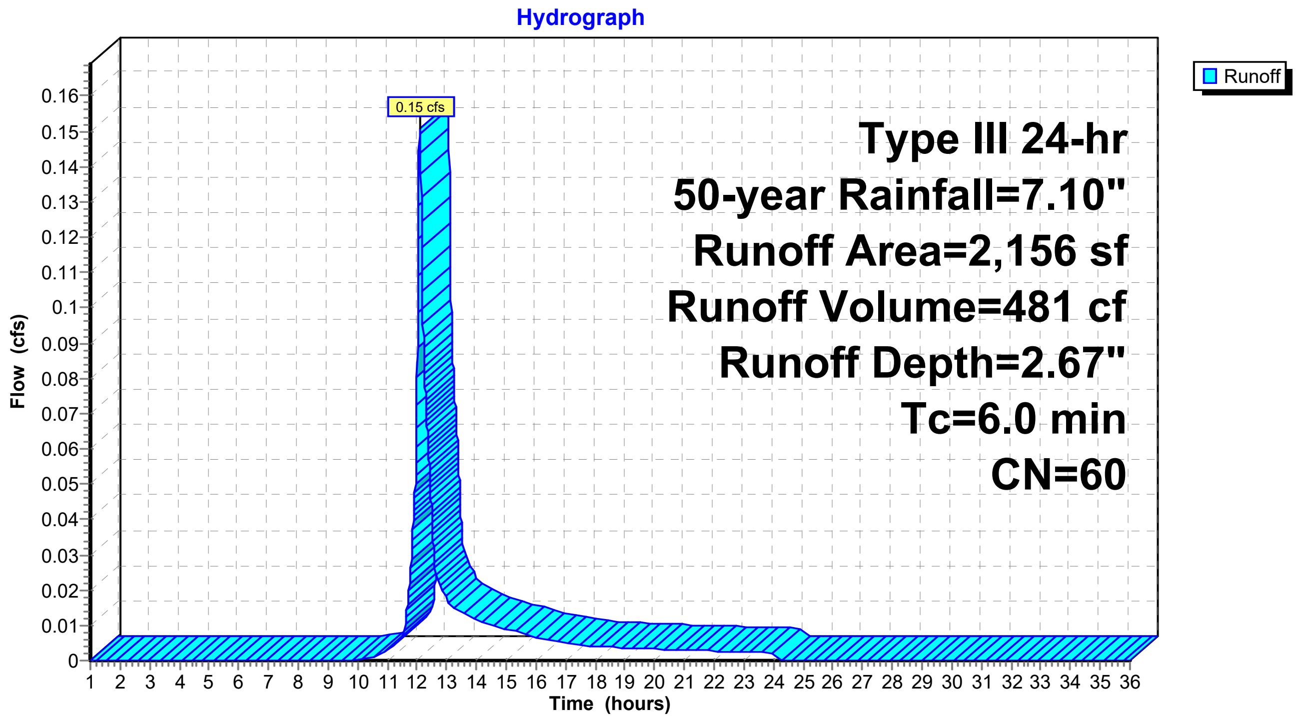
Runoff = 0.15 cfs @ 12.09 hrs, Volume= 481 cf, Depth= 2.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
1,402	39	>75% Grass cover, Good, HSG A
754	98	Paved parking, HSG A
2,156	60	Weighted Average
1,402		65.03% Pervious Area
754		34.97% Impervious Area

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

Subcatchment 10S: Sub 10



Summary for Subcatchment 11S: Sub 11

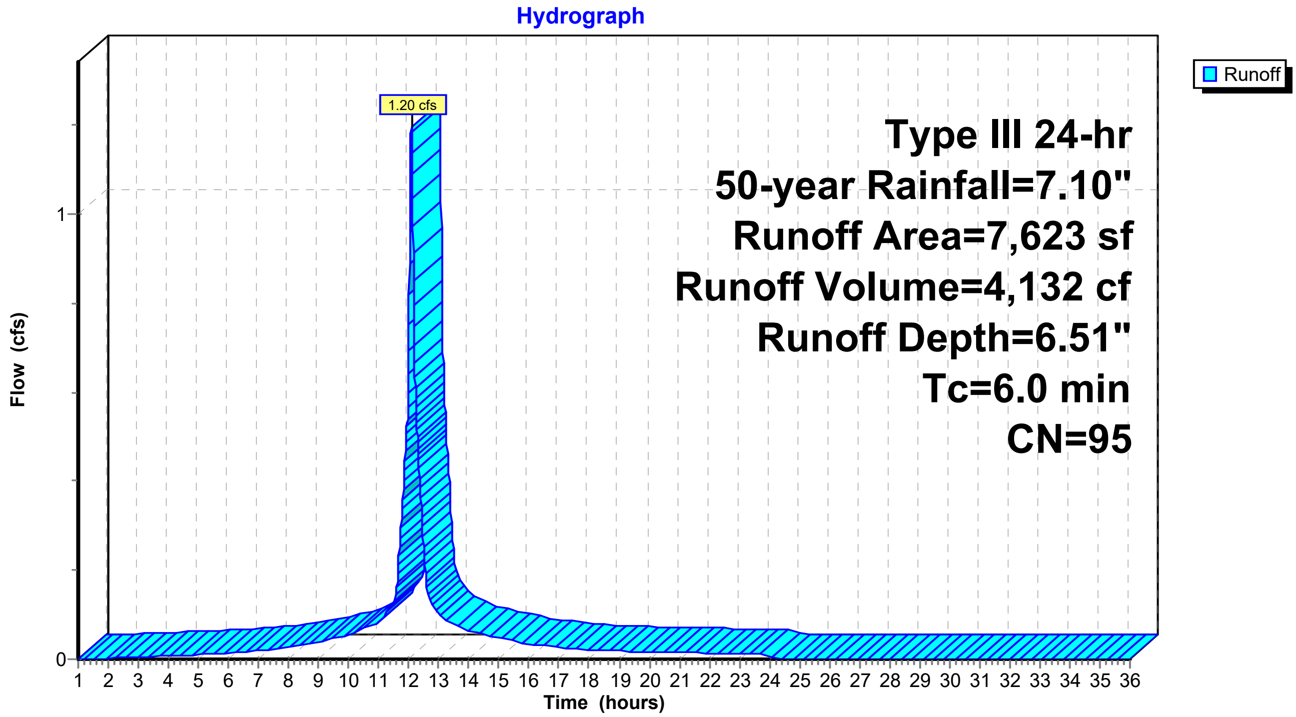
Runoff = 1.20 cfs @ 12.08 hrs, Volume= 4,132 cf, Depth= 6.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
401	39	>75% Grass cover, Good, HSG A
6,169	98	Paved parking, HSG A
1,053	98	Roofs, HSG A
7,623	95	Weighted Average
401		5.26% Pervious Area
7,222		94.74% Impervious Area

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

Subcatchment 11S: Sub 11



Summary for Subcatchment 12S: Sub 12

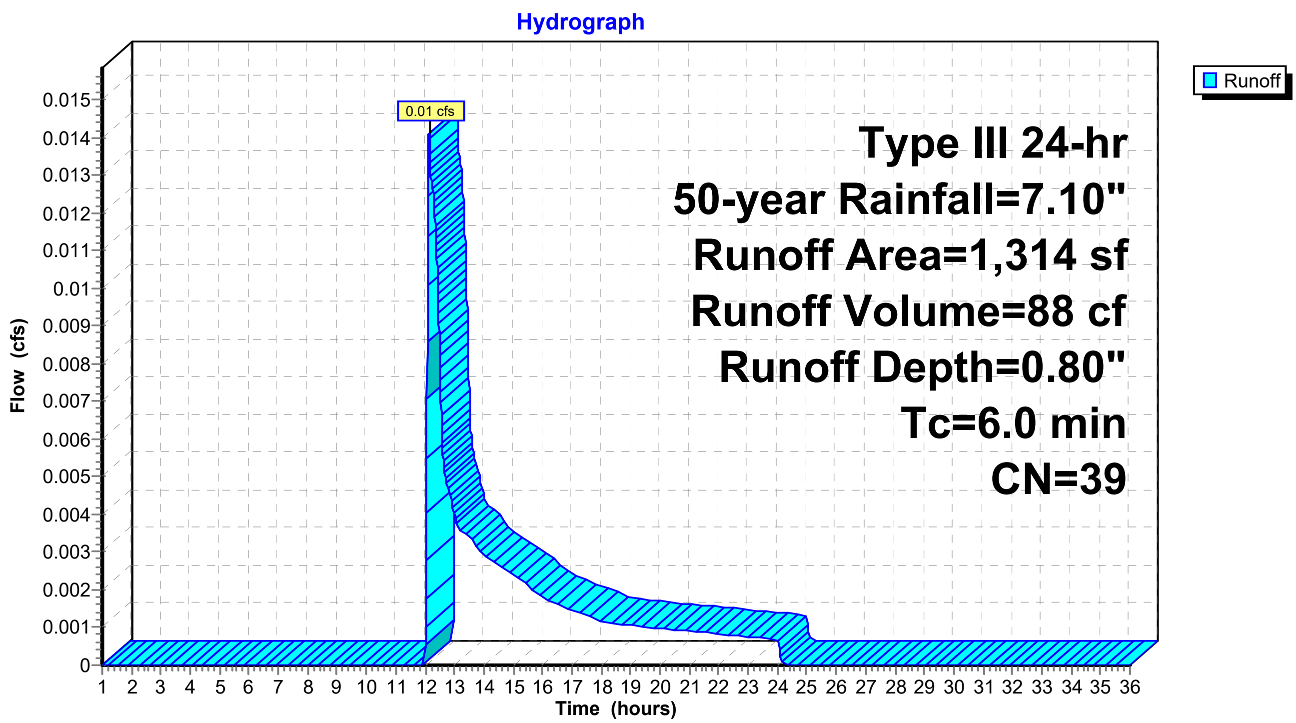
Runoff = 0.01 cfs @ 12.14 hrs, Volume= 88 cf, Depth= 0.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
1,314	39	>75% Grass cover, Good, HSG A
1,314		100.00% Pervious Area

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

Subcatchment 12S: Sub 12



Summary for Subcatchment 13S: Sub 13

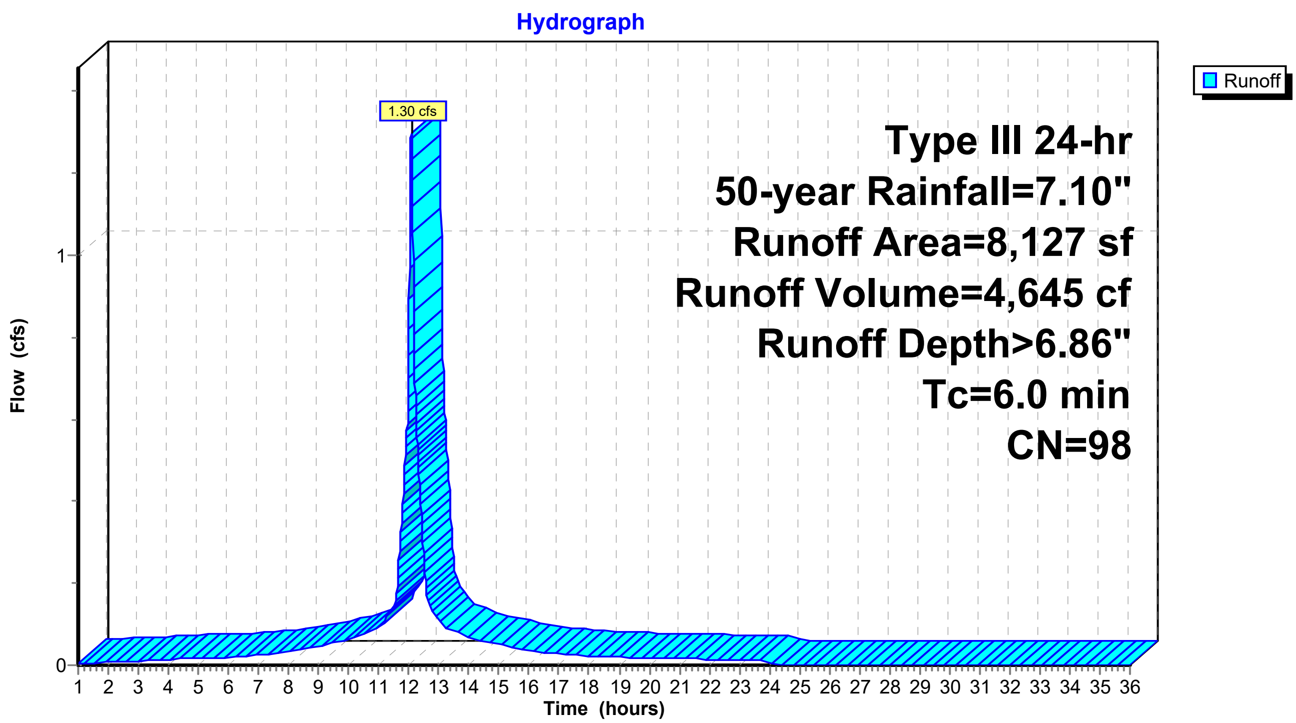
Runoff = 1.30 cfs @ 12.08 hrs, Volume= 4,645 cf, Depth> 6.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
8,127	98	Paved parking, HSG A
8,127		100.00% Impervious Area

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

Subcatchment 13S: Sub 13



Summary for Subcatchment 14S: Sub 14

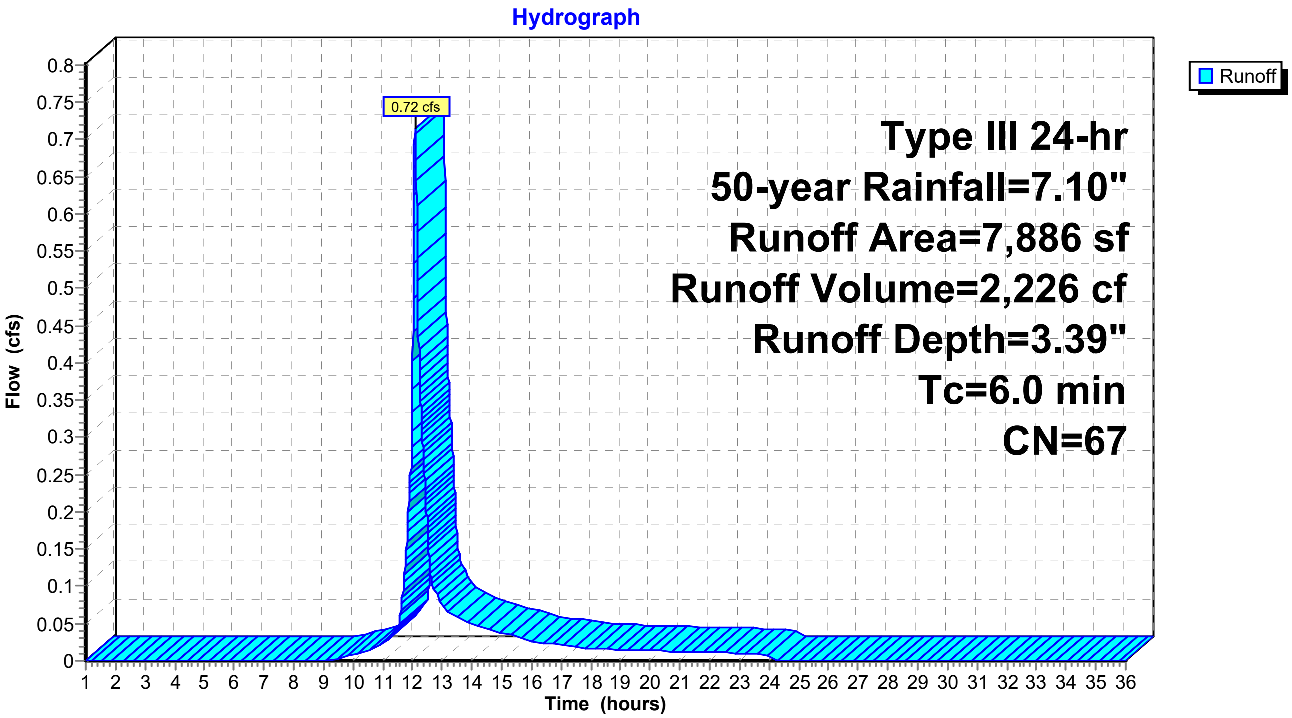
Runoff = 0.72 cfs @ 12.09 hrs, Volume= 2,226 cf, Depth= 3.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
4,125	39	>75% Grass cover, Good, HSG A
3,761	98	Paved parking, HSG A
7,886	67	Weighted Average
4,125		52.31% Pervious Area
3,761		47.69% Impervious Area

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

Subcatchment 14S: Sub 14



Summary for Subcatchment 15S: Sub 15

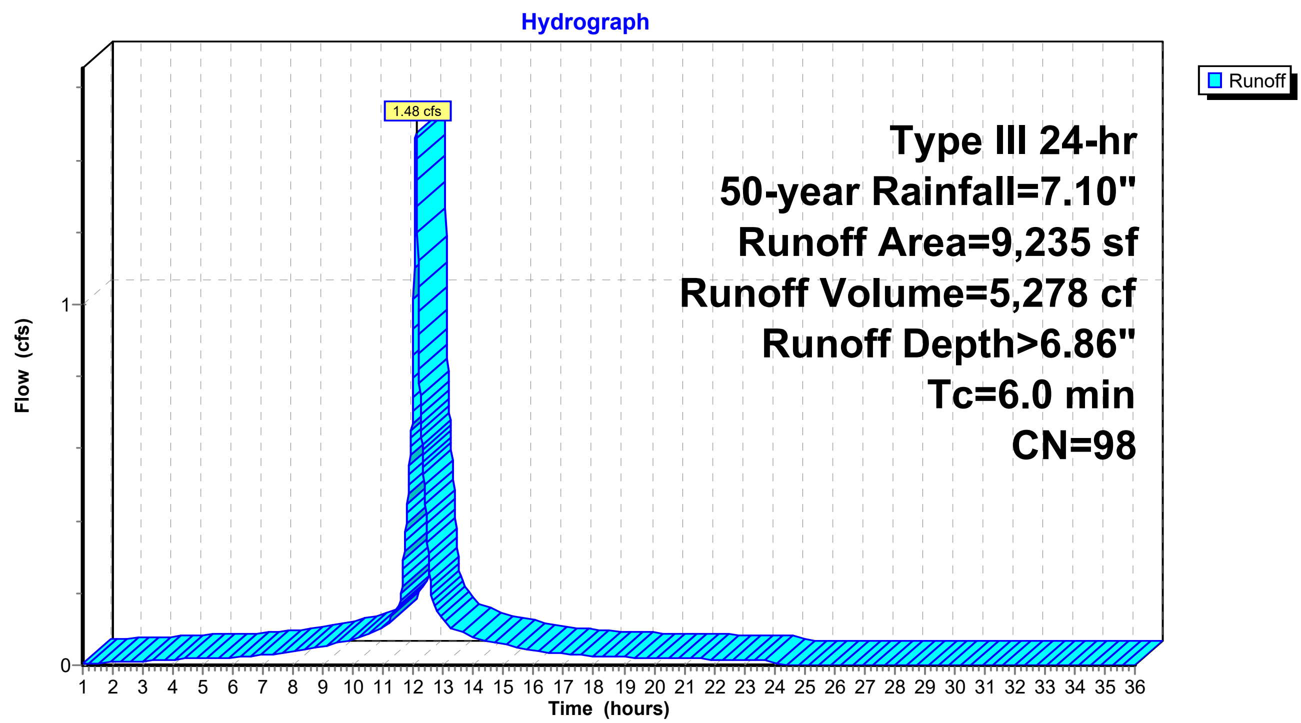
Runoff = 1.48 cfs @ 12.08 hrs, Volume= 5,278 cf, Depth> 6.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
9,235	98	Paved parking, HSG A
9,235		100.00% Impervious Area

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

Subcatchment 15S: Sub 15



Summary for Subcatchment 16S: Sub 16

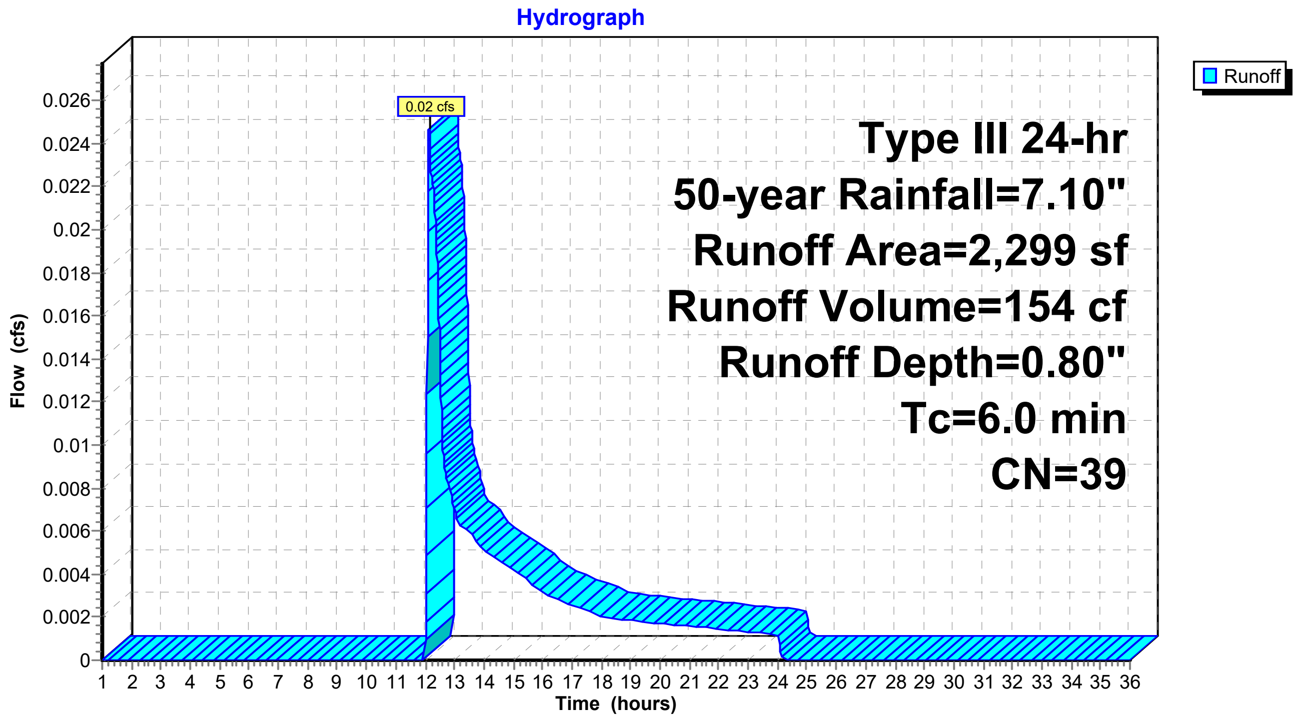
Runoff = 0.02 cfs @ 12.14 hrs, Volume= 154 cf, Depth= 0.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
2,299	39	>75% Grass cover, Good, HSG A
2,299		100.00% Pervious Area

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

Subcatchment 16S: Sub 16



Summary for Subcatchment 17S: Sub 17

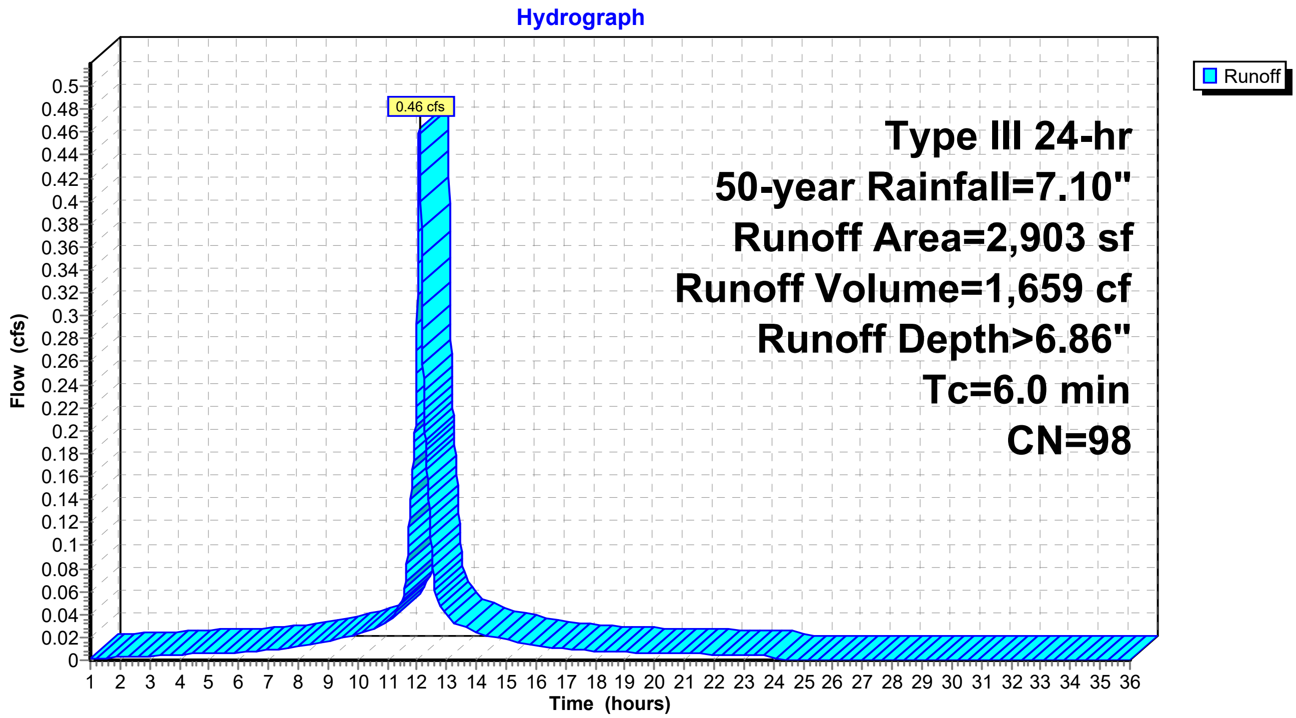
Runoff = 0.46 cfs @ 12.08 hrs, Volume= 1,659 cf, Depth> 6.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
2,903	98	Paved parking, HSG B
2,903		100.00% Impervious Area

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

Subcatchment 17S: Sub 17



Summary for Subcatchment 18S: Sub 18

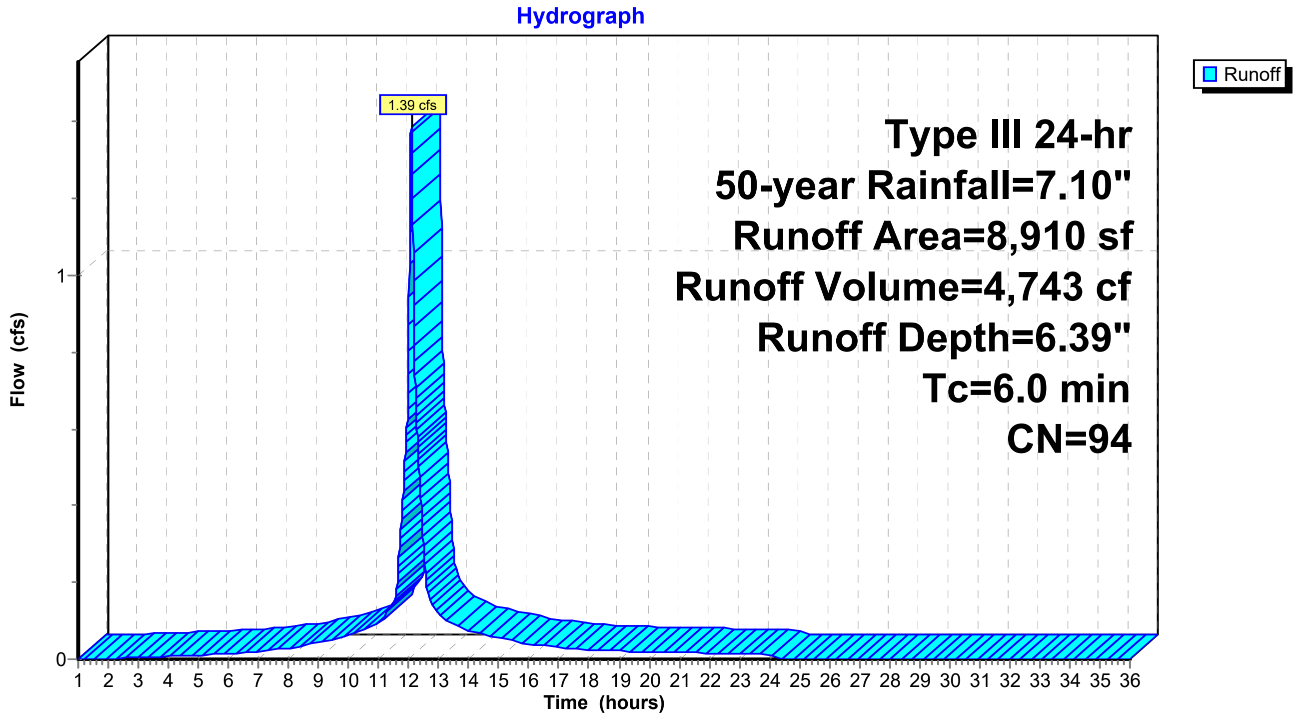
Runoff = 1.39 cfs @ 12.08 hrs, Volume= 4,743 cf, Depth= 6.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
637	39	>75% Grass cover, Good, HSG A
5,895	98	Paved parking, HSG A
2,378	98	Roofs, HSG B
8,910	94	Weighted Average
637		7.15% Pervious Area
8,273		92.85% Impervious Area

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

Subcatchment 18S: Sub 18



Summary for Subcatchment 19S: Sub 19

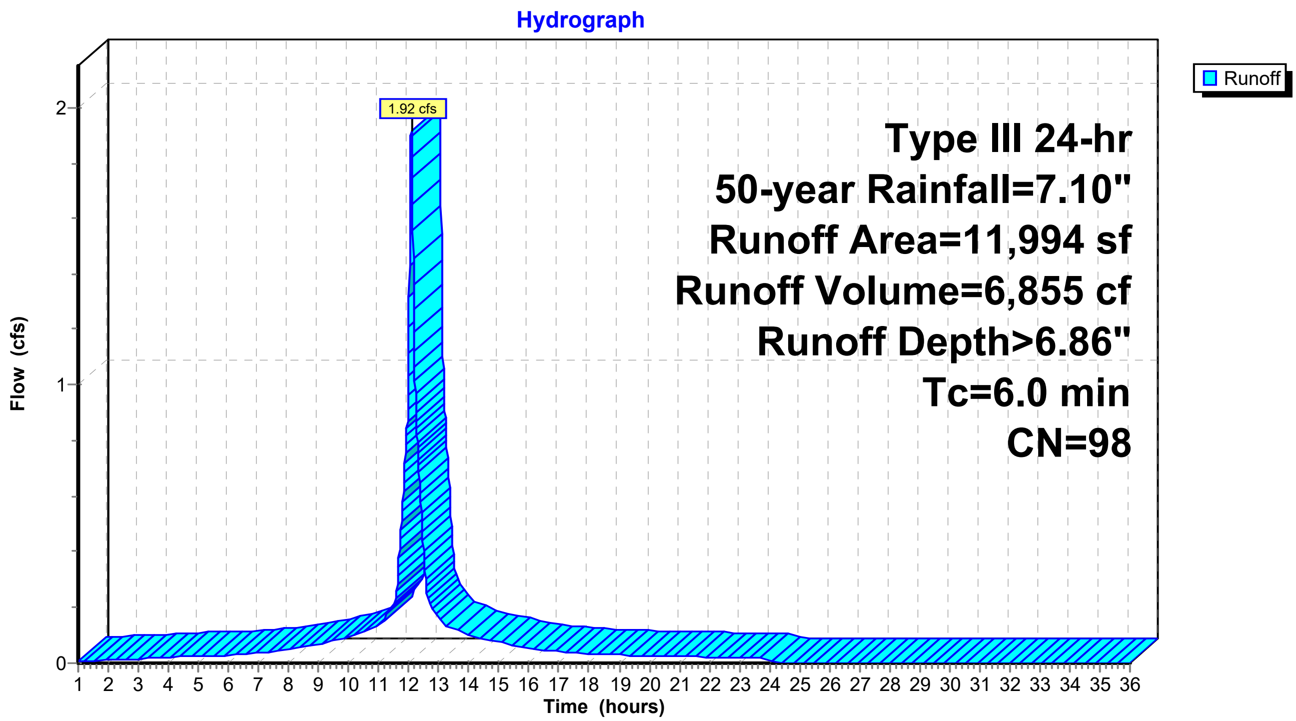
Runoff = 1.92 cfs @ 12.08 hrs, Volume= 6,855 cf, Depth> 6.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
7,625	98	Roofs, HSG A
4,369	98	Paved parking, HSG A
11,994	98	Weighted Average
11,994		100.00% Impervious Area

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

Subcatchment 19S: Sub 19



Summary for Subcatchment 20S: Sub 20

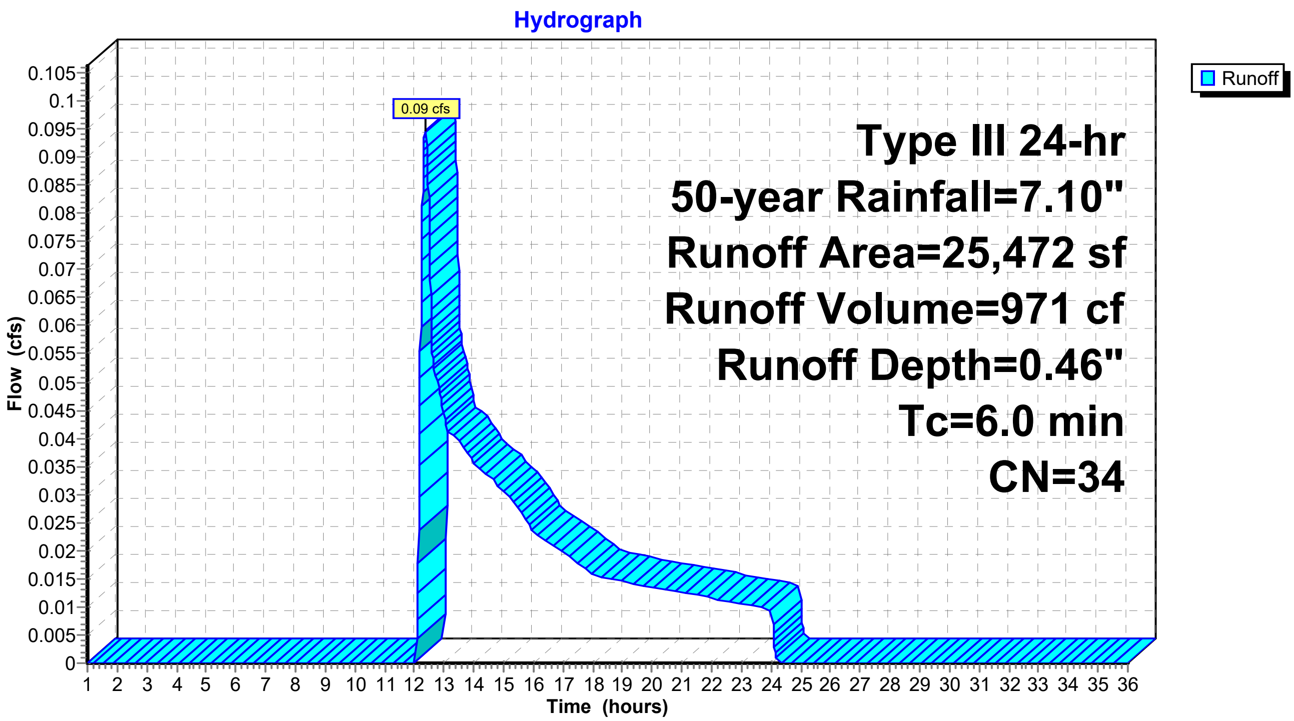
Runoff = 0.09 cfs @ 12.37 hrs, Volume= 971 cf, Depth= 0.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
12,428	39	>75% Grass cover, Good, HSG A
13,044	30	Woods, Good, HSG A
25,472	34	Weighted Average
25,472		100.00% Pervious Area

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

Subcatchment 20S: Sub 20



Summary for Subcatchment 21S: Sub 21

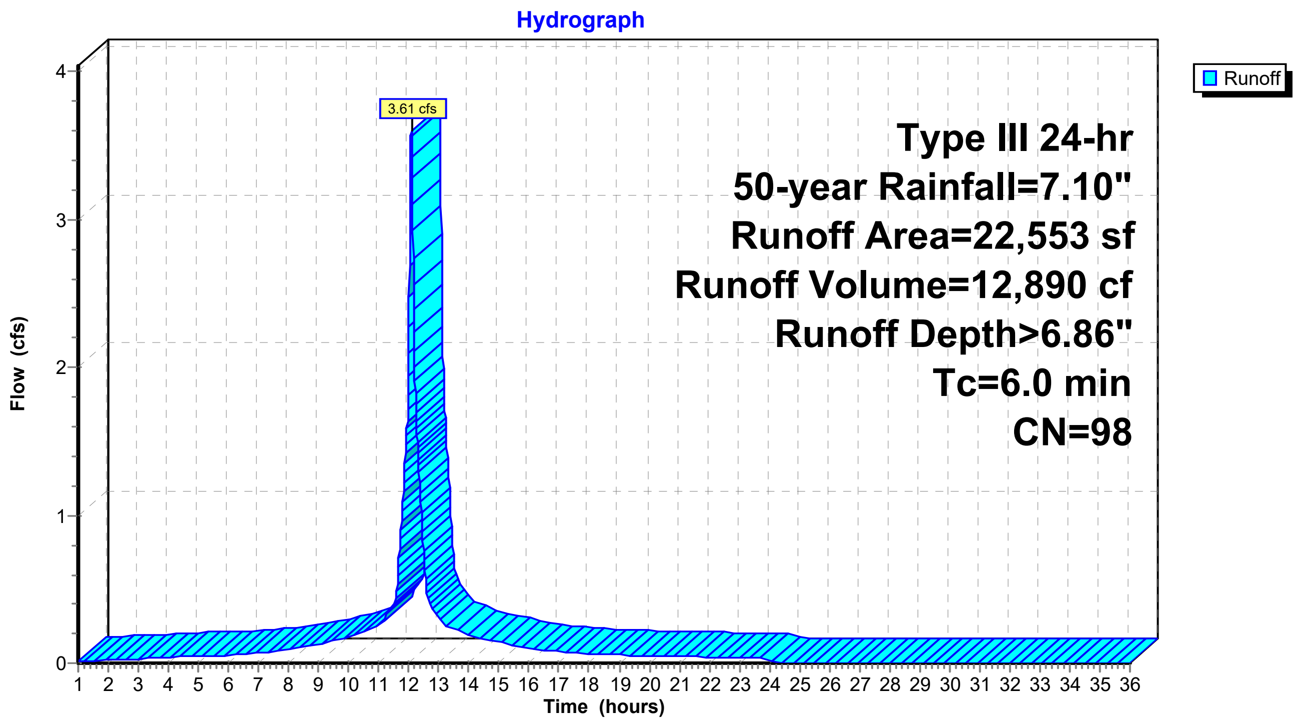
Runoff = 3.61 cfs @ 12.08 hrs, Volume= 12,890 cf, Depth> 6.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
10,469	98	Roofs, HSG A
12,084	98	Paved parking, HSG A
22,553	98	Weighted Average
22,553		100.00% Impervious Area

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

Subcatchment 21S: Sub 21



Summary for Subcatchment 22S: Sub 22

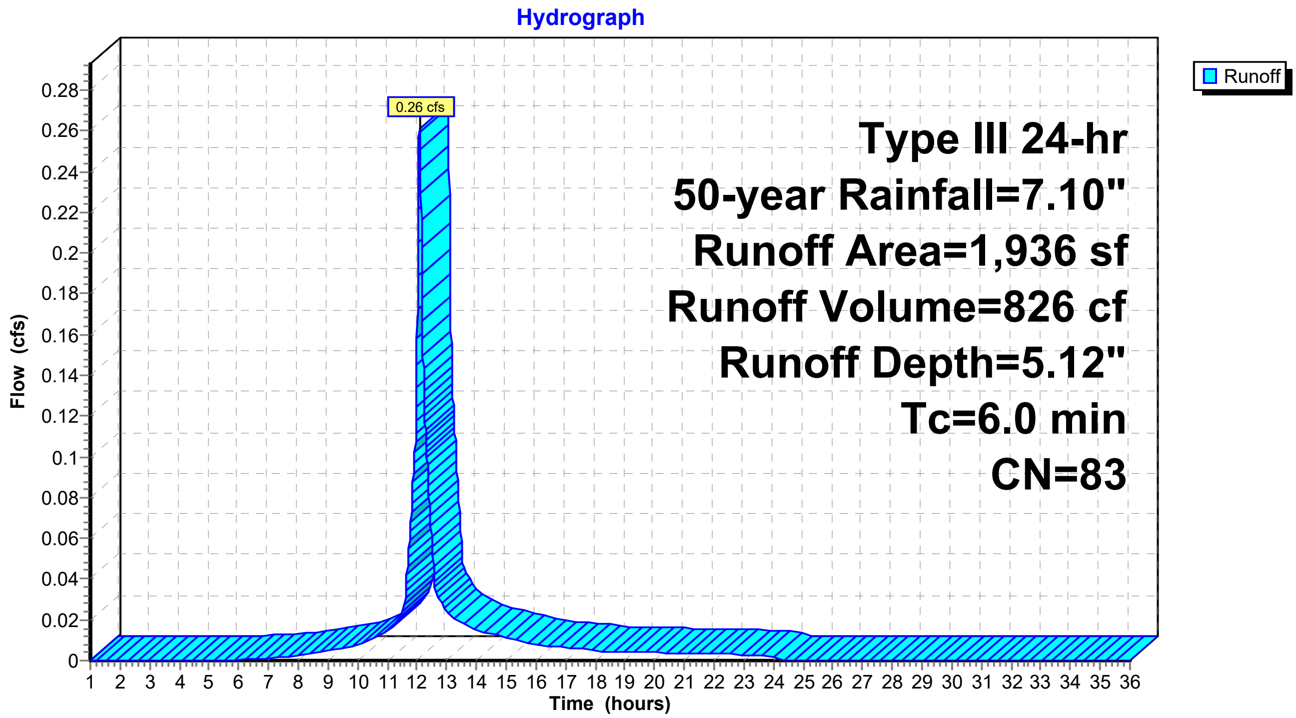
Runoff = 0.26 cfs @ 12.09 hrs, Volume= 826 cf, Depth= 5.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
1,161	98	Paved parking, HSG B
775	61	>75% Grass cover, Good, HSG B
1,936	83	Weighted Average
775		40.03% Pervious Area
1,161		59.97% Impervious Area

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

Subcatchment 22S: Sub 22



Summary for Subcatchment 23S: Sub 23

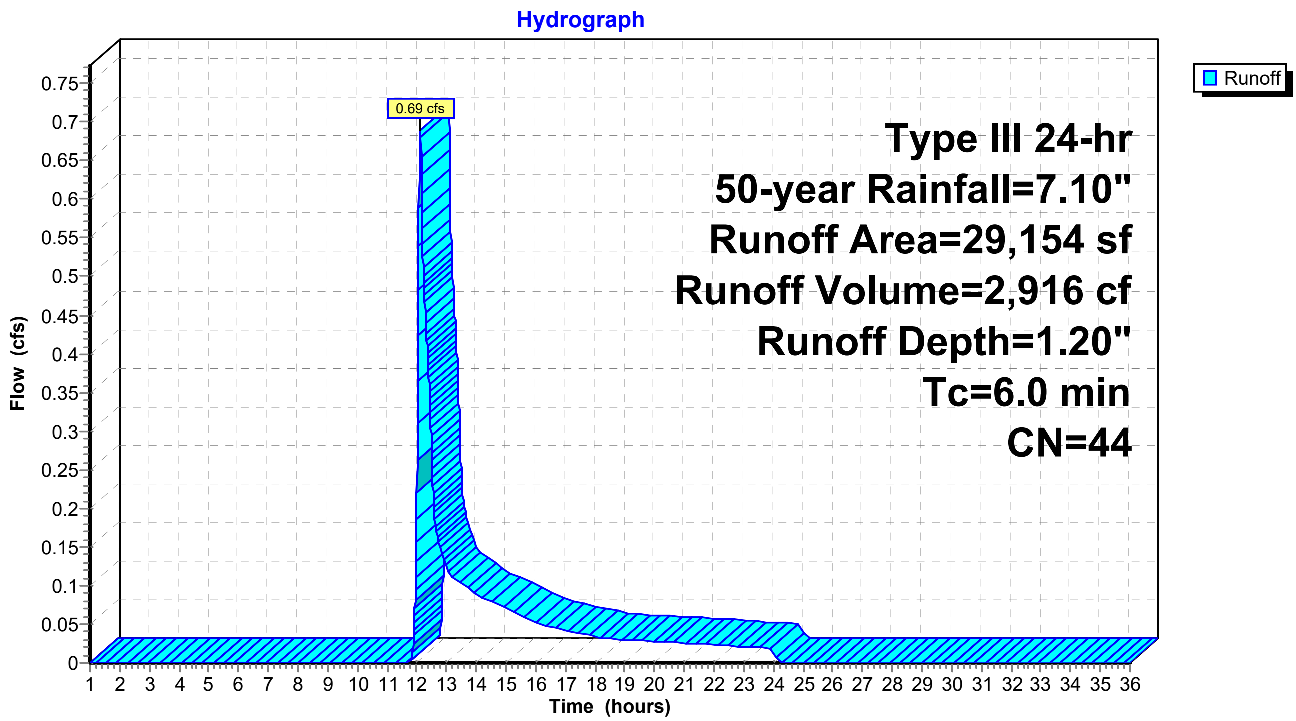
Runoff = 0.69 cfs @ 12.11 hrs, Volume= 2,916 cf, Depth= 1.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
12,963	61	>75% Grass cover, Good, HSG B
16,191	30	Woods, Good, HSG A
29,154	44	Weighted Average
29,154		100.00% Pervious Area

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

Subcatchment 23S: Sub 23



Summary for Subcatchment 24S: Sub 24

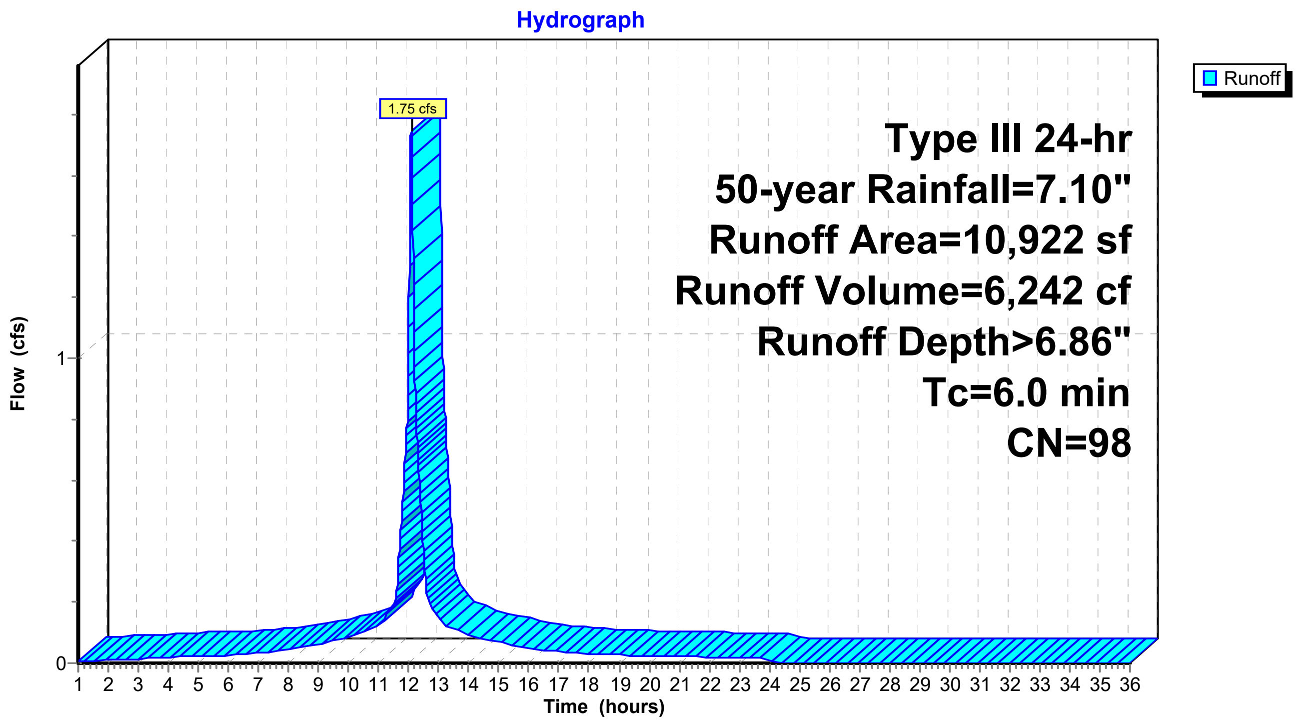
Runoff = 1.75 cfs @ 12.08 hrs, Volume= 6,242 cf, Depth> 6.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
316	98	Roofs, HSG B
10,606	98	Paved parking, HSG B
10,922	98	Weighted Average
10,922		100.00% Impervious Area

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

Subcatchment 24S: Sub 24



Summary for Subcatchment 25S: Sub 25

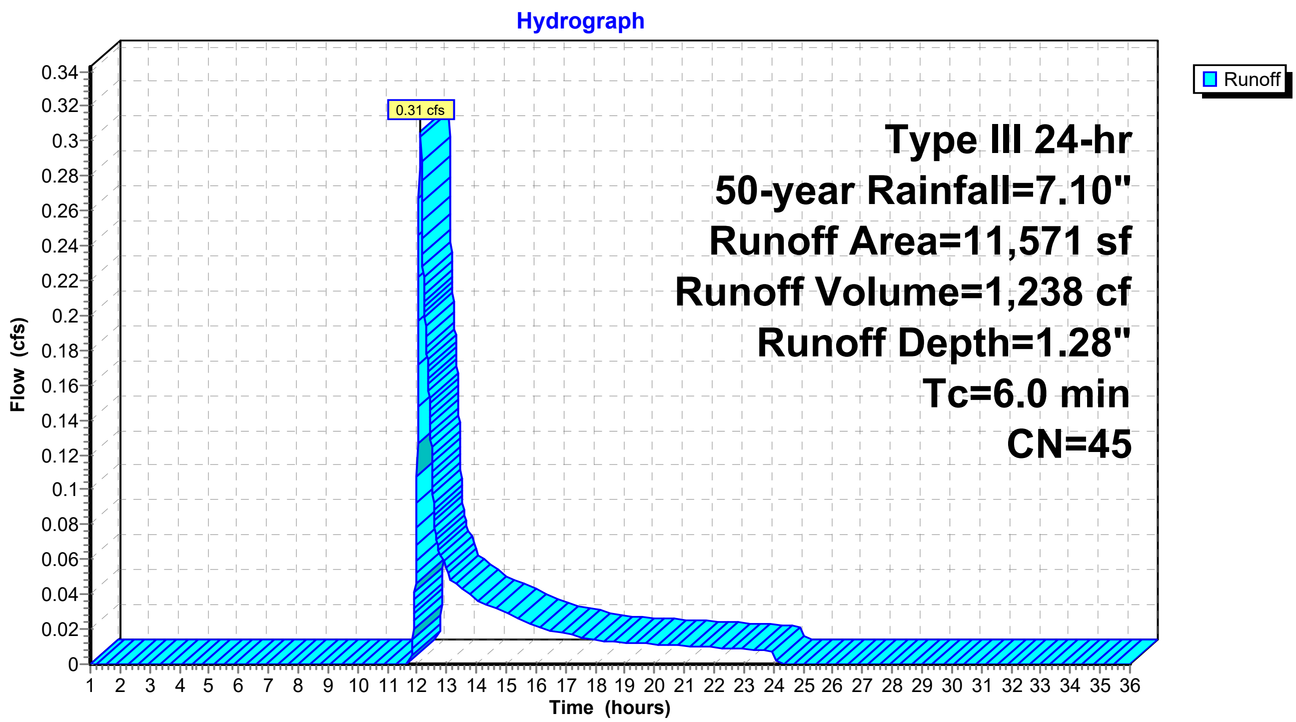
Runoff = 0.31 cfs @ 12.11 hrs, Volume= 1,238 cf, Depth= 1.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
8,818	39	>75% Grass cover, Good, HSG A
1,319	98	Roofs, HSG A
1,434	30	Woods, Good, HSG A
11,571	45	Weighted Average
10,252		88.60% Pervious Area
1,319		11.40% Impervious Area

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

Subcatchment 25S: Sub 25



Summary for Subcatchment 26S: Sub 26

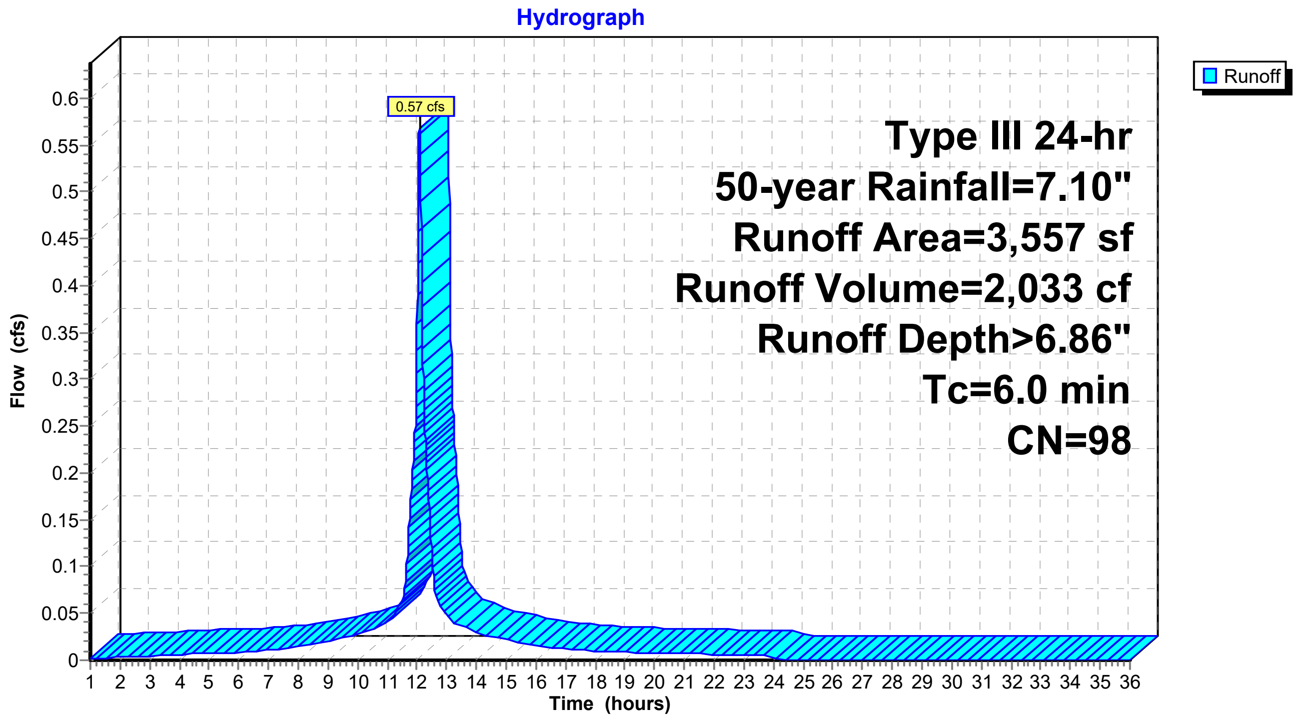
Runoff = 0.57 cfs @ 12.08 hrs, Volume= 2,033 cf, Depth> 6.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-year Rainfall=7.10"

Area (sf)	CN	Description
3,557	98	Paved parking, HSG A
3,557		100.00% Impervious Area

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

Subcatchment 26S: Sub 26



Summary for Pond 1P: Rain Garden

Inflow Area = 16,708 sf, 71.98% Impervious, Inflow Depth = 4.97" for 50-year event
Inflow = 2.09 cfs @ 12.09 hrs, Volume= 6,922 cf
Outflow = 2.04 cfs @ 12.09 hrs, Volume= 6,043 cf, Atten= 2%, Lag= 0.1 min
Primary = 2.04 cfs @ 12.09 hrs, Volume= 6,043 cf
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 101.47' @ 12.11 hrs Surf.Area= 527 sf Storage= 986 cf

Plug-Flow detention time= 98.5 min calculated for 6,043 cf (87% of inflow)
Center-of-Mass det. time= 39.8 min (827.4 - 787.6)

Volume	Invert	Avail.Storage	Storage Description
#1	97.24'	1,148 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

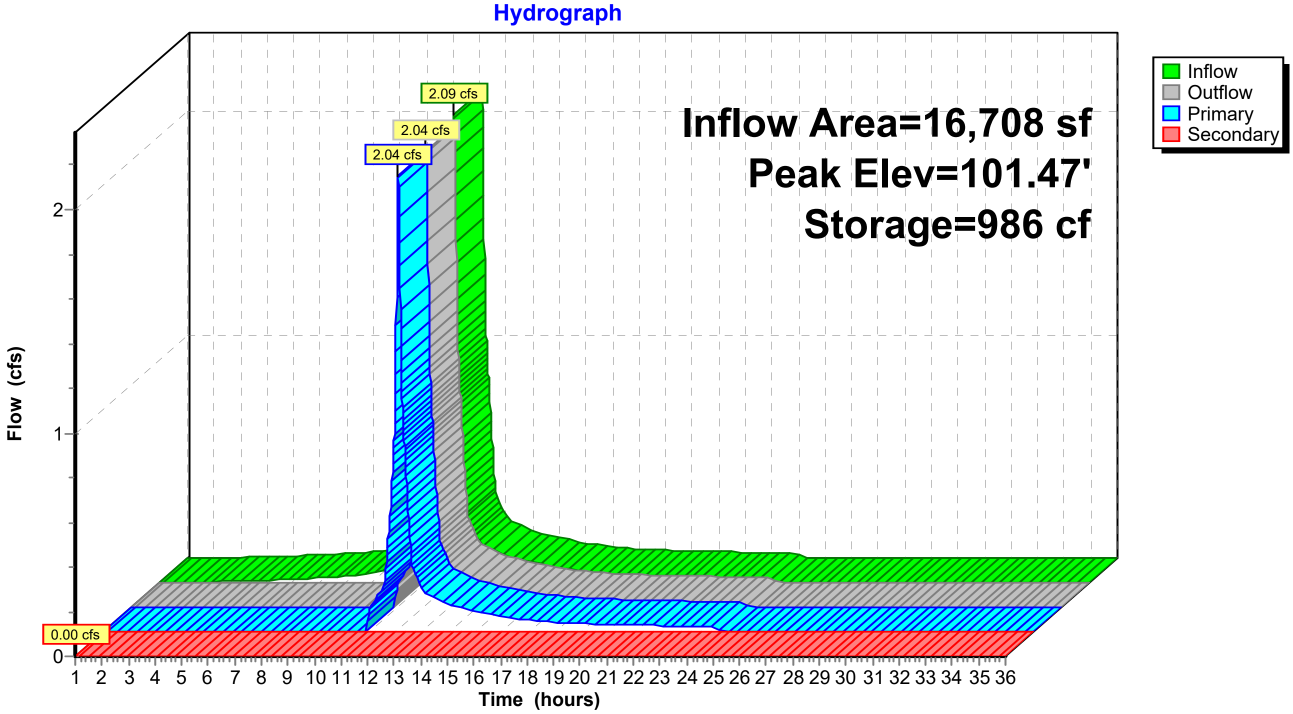
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.24	641	0.0	0	0
97.25	641	40.0	3	3
97.74	641	40.0	126	128
97.75	641	30.0	2	130
100.24	641	30.0	479	609
100.25	641	40.0	3	612
100.49	641	40.0	62	673
100.50	88	100.0	4	677
101.00	335	100.0	106	782
101.75	641	100.0	366	1,148

Device	Routing	Invert	Outlet Devices
#1	Device 2	101.25'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	92.75'	**12.0" Round Culvert** L= 23.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 92.75' / 92.25' S= 0.0210 '/' Cc= 0.900 n= 0.130, Flow Area= 0.79 sf
#3	Secondary	101.50'	**24.0' 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=2.03 cfs @ 12.09 hrs HW=101.47' TW=93.52' (Dynamic Tailwater)
└─**2=Culvert** (Outlet Controls 2.03 cfs @ 2.58 fps)
  └─**1=Orifice/Grate** (Passes 2.03 cfs of 2.08 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=97.24' TW=90.50' (Dynamic Tailwater)
└─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Rain Garden



Summary for Pond 2P: Infiltration Chambers - Area 1

Inflow Area = 59,403 sf, 87.54% Impervious, Inflow Depth > 5.88" for 50-year event
Inflow = 8.72 cfs @ 12.08 hrs, Volume= 29,106 cf
Outflow = 3.10 cfs @ 12.35 hrs, Volume= 29,106 cf, Atten= 64%, Lag= 16.0 min
Discarded = 0.28 cfs @ 12.35 hrs, Volume= 16,864 cf
Primary = 2.82 cfs @ 12.35 hrs, Volume= 12,242 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 95.30' @ 12.35 hrs Surf.Area= 3,603 sf Storage= 11,208 cf

Plug-Flow detention time= 152.9 min calculated for 29,098 cf (100% of inflow)
Center-of-Mass det. time= 152.9 min (925.0 - 772.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	90.50'	5,063 cf	**29.92'W x 120.42'L x 5.50'H Field A**
			19,814 cf Overall - 7,156 cf Embedded = 12,658 cf x 40.0% Voids
#2A	91.25'	7,156 cf	**ADS_StormTech MC-3500 d +Cap** x 64 Inside #1
			Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
			Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
			4 Rows of 16 Chambers
			Cap Storage= +14.9 cf x 2 x 4 rows = 119.2 cf
		12,219 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	90.50'	**2.410 in/hr Exfiltration over Wetted area** Phase-In= 0.01'
#2	Primary	91.50'	**12.0" Round Culvert**
			L= 87.6' CPP, projecting, no headwall, Ke= 0.900
			Inlet / Outlet Invert= 91.50' / 91.06' S= 0.0050 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	95.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 2	92.20'	**4.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.28 cfs @ 12.35 hrs HW=95.30' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.28 cfs)

Primary OutFlow Max=2.82 cfs @ 12.35 hrs HW=95.30' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Passes 2.82 cfs of 5.26 cfs potential flow)
  ├─**3=Sharp-Crested Rectangular Weir** (Weir Controls 2.10 cfs @ 1.79 fps)
  └─**4=Orifice/Grate** (Orifice Controls 0.72 cfs @ 8.24 fps)

Pond 2P: Infiltration Chambers - Area 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= +14.9 cf x 2 x 4 rows = 119.2 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

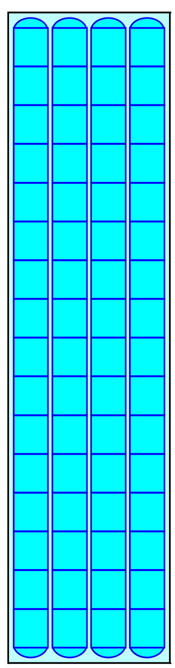
16 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 118.42' Row Length +12.0" End Stone x 2 = 120.42' Base Length
4 Rows x 77.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 29.92' Base Width
9.0" Base + 45.0" Chamber Height + 12.0" Cover = 5.50' Field Height

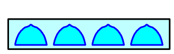
64 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 4 Rows = 7,156.1 cf Chamber Storage

19,814.1 cf Field - 7,156.1 cf Chambers = 12,658.0 cf Stone x 40.0% Voids = 5,063.2 cf Stone Storage

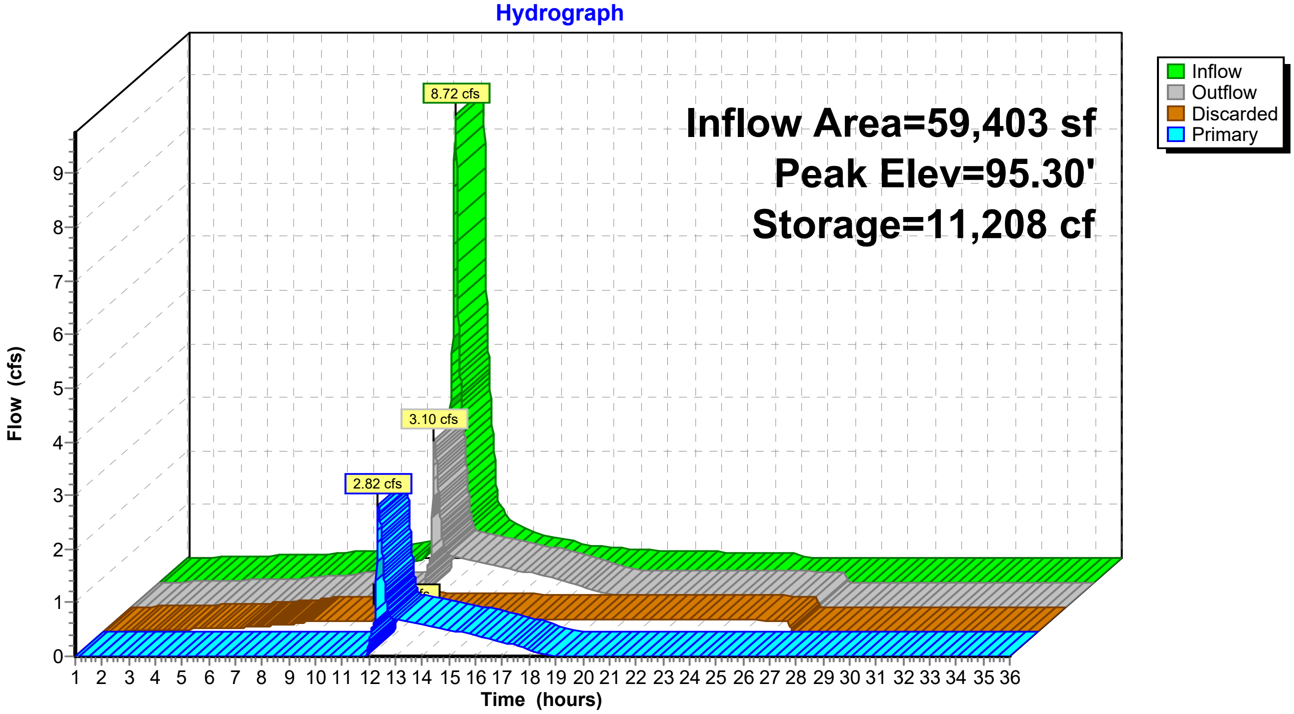
Chamber Storage + Stone Storage = 12,219.3 cf = 0.281 af
Overall Storage Efficiency = 61.7%
Overall System Size = 120.42' x 29.92' x 5.50'

64 Chambers
733.9 cy Field
468.8 cy Stone





Pond 2P: Infiltration Chambers - Area 1



Summary for Pond 3P: Detention Chambers - Area 2

Inflow Area = 45,469 sf,100.00% Impervious, Inflow Depth > 6.86" for 50-year event
Inflow = 7.27 cfs @ 12.08 hrs, Volume= 25,987 cf
Outflow = 6.75 cfs @ 12.12 hrs, Volume= 25,259 cf, Atten= 7%, Lag= 1.9 min
Primary = 6.75 cfs @ 12.12 hrs, Volume= 25,259 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 91.72' @ 12.12 hrs Surf.Area= 658 sf Storage= 1,149 cf

Plug-Flow detention time= 35.3 min calculated for 25,251 cf (97% of inflow)
Center-of-Mass det. time= 17.5 min (760.5 - 743.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	89.00'	627 cf	**20.50'W x 32.10'L x 3.50'H Field A**
			2,303 cf Overall - 735 cf Embedded = 1,568 cf x 40.0% Voids
#2A	89.50'	735 cf	**ADS_StormTech SC-740 +Cap** x 16 Inside #1
			Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
			Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
			4 Rows of 4 Chambers
		1,362 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	89.00'	**15.0" Round Culvert**
			L= 25.0' CPP, projecting, no headwall, Ke= 0.900
			Inlet / Outlet Invert= 89.00' / 88.88' S= 0.0048 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	90.70'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=6.74 cfs @ 12.12 hrs HW=91.71' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 6.74 cfs @ 5.49 fps)
  ↑—**2=Sharp-Crested Rectangular Weir** (Passes 6.74 cfs of 12.65 cfs potential flow)

Pond 3P: Detention Chambers - Area 2 - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

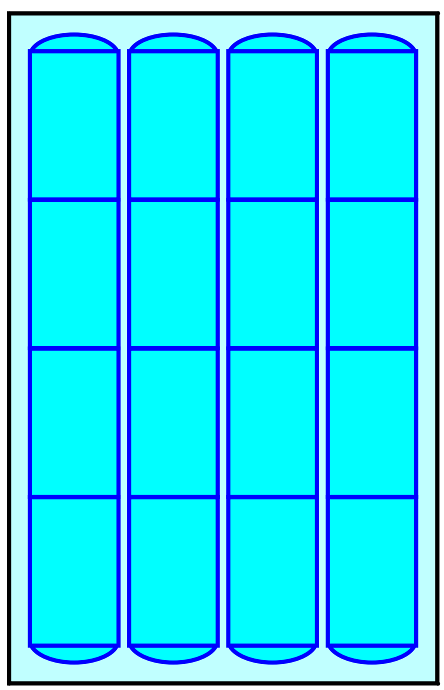
4 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 30.10' Row Length +12.0" End Stone x 2 = 32.10' Base Length
4 Rows x 51.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.50' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

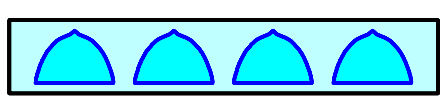
16 Chambers x 45.9 cf = 735.0 cf Chamber Storage

2,302.9 cf Field - 735.0 cf Chambers = 1,567.9 cf Stone x 40.0% Voids = 627.2 cf Stone Storage

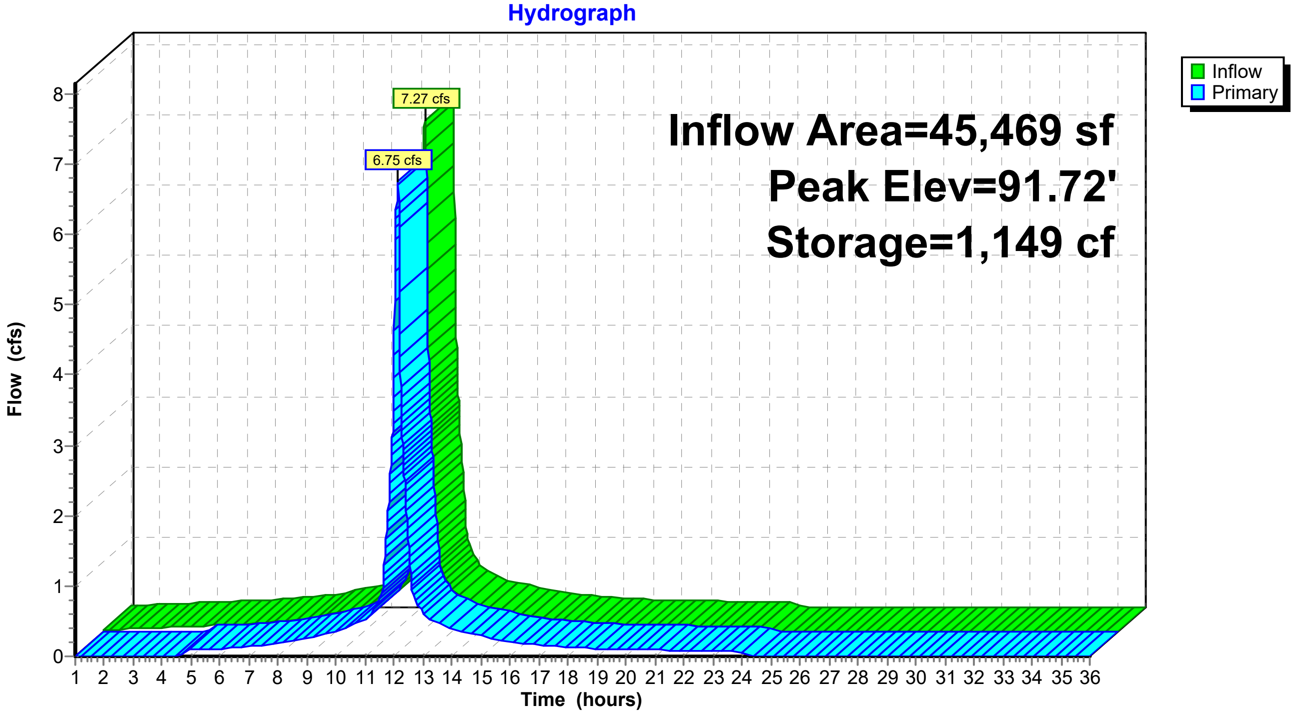
Chamber Storage + Stone Storage = 1,362.2 cf = 0.031 af
Overall Storage Efficiency = 59.2%
Overall System Size = 32.10' x 20.50' x 3.50'

16 Chambers
85.3 cy Field
58.1 cy Stone





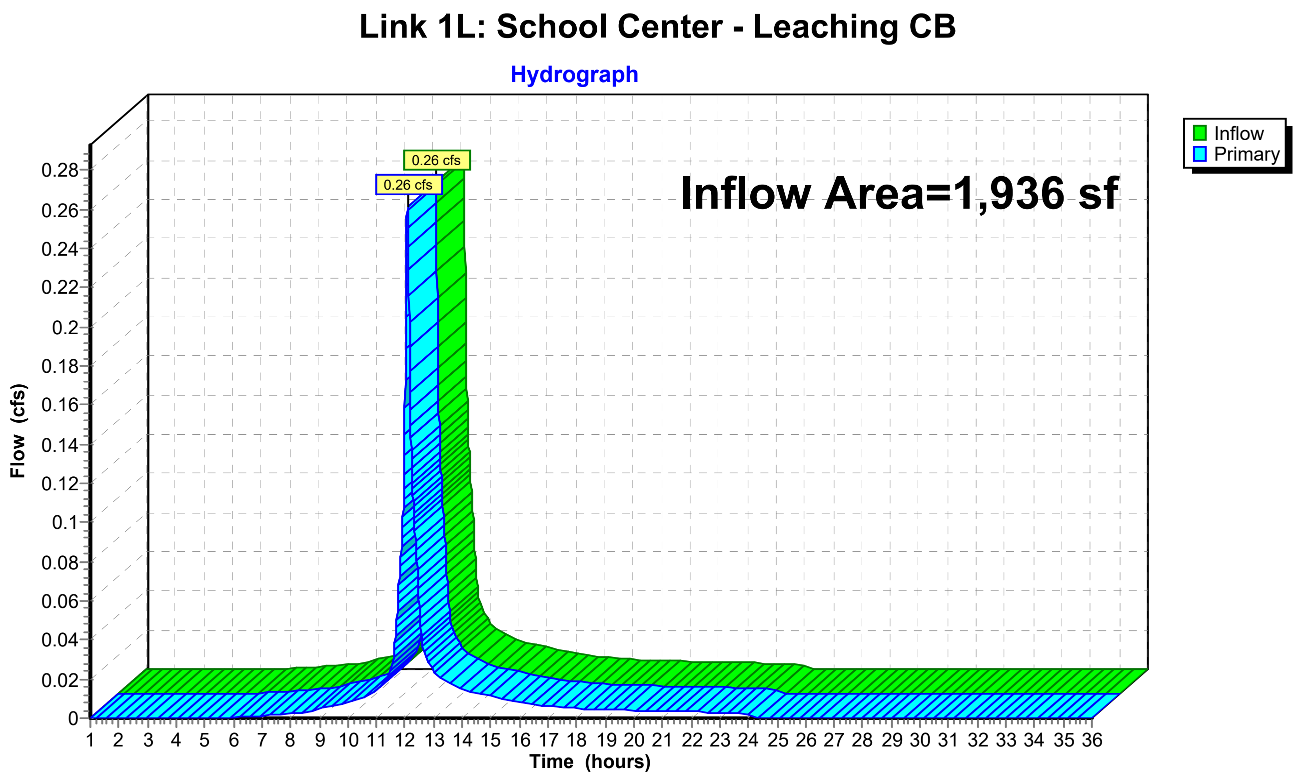
Pond 3P: Detention Chambers - Area 2



Summary for Link 1L: School Center - Leaching CB

Inflow Area = 1,936 sf, 59.97% Impervious, Inflow Depth = 5.12" for 50-year event
Inflow = 0.26 cfs @ 12.09 hrs, Volume= 826 cf
Primary = 0.26 cfs @ 12.09 hrs, Volume= 826 cf, Atten= 0%, Lag= 0.0 min

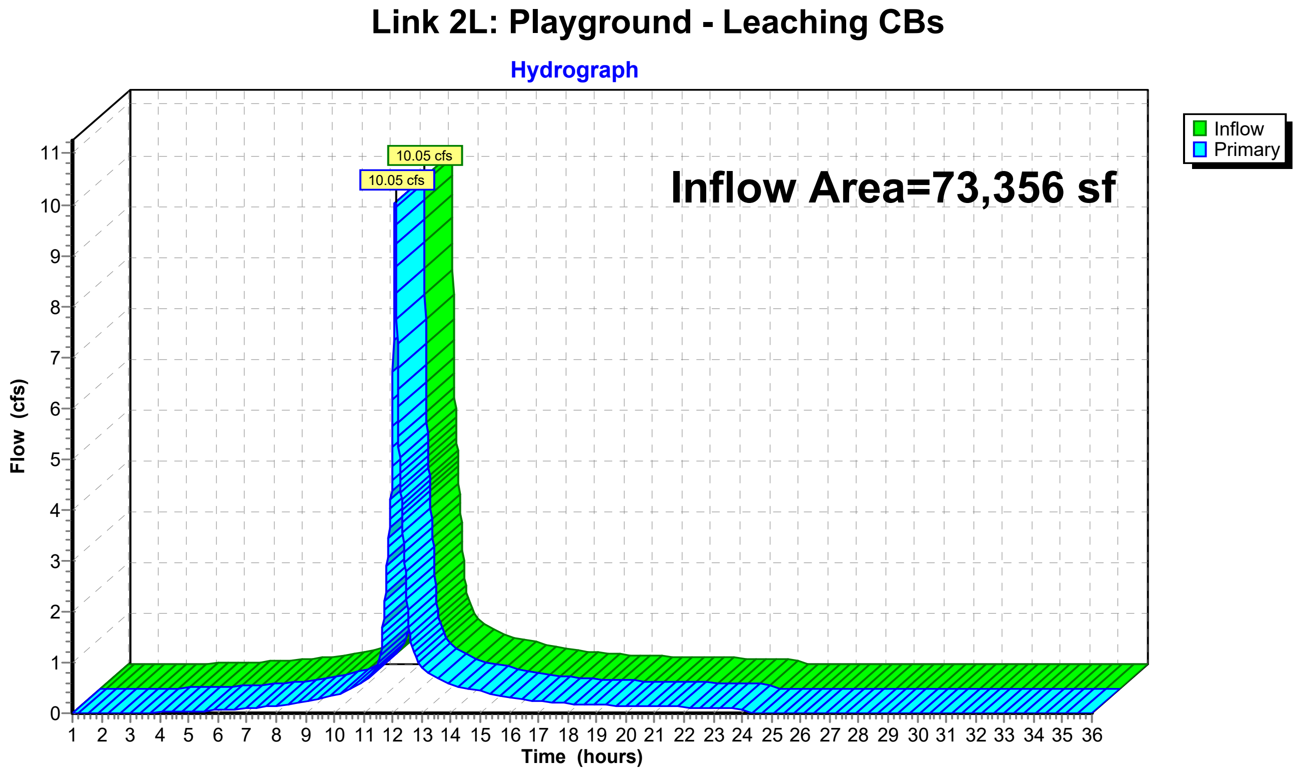
Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs



Summary for Link 2L: Playground - Leaching CBs

Inflow Area = 73,356 sf, 66.89% Impervious, Inflow Depth > 5.40" for 50-year event
Inflow = 10.05 cfs @ 12.09 hrs, Volume= 33,019 cf
Primary = 10.05 cfs @ 12.09 hrs, Volume= 33,019 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

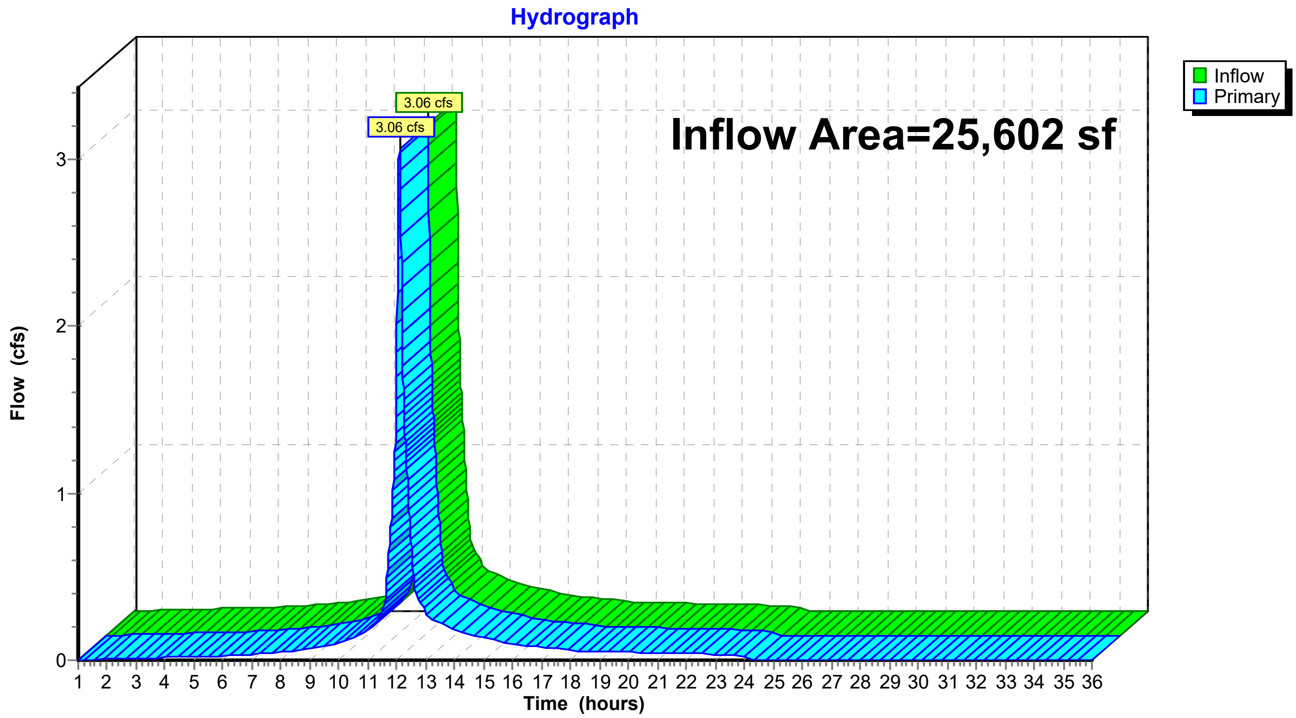


Summary for Link 3L: South Western - Leaching CBs

Inflow Area = 25,602 sf, 52.65% Impervious, Inflow Depth > 4.86" for 50-year event
Inflow = 3.06 cfs @ 12.09 hrs, Volume= 10,373 cf
Primary = 3.06 cfs @ 12.09 hrs, Volume= 10,373 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 3L: South Western - Leaching CBs

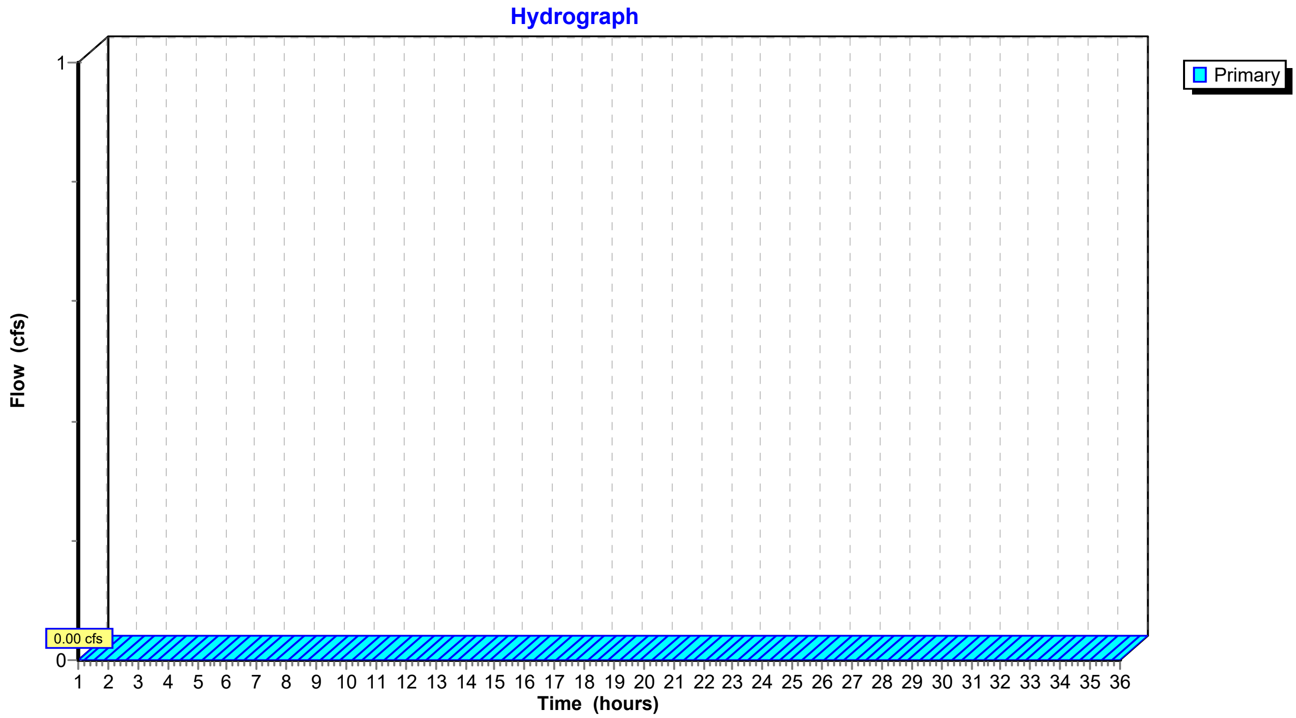


Summary for Link 4L: School Main Entrance - Leaching CBs

Primary = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 4L: School Main Entrance - Leaching CBs

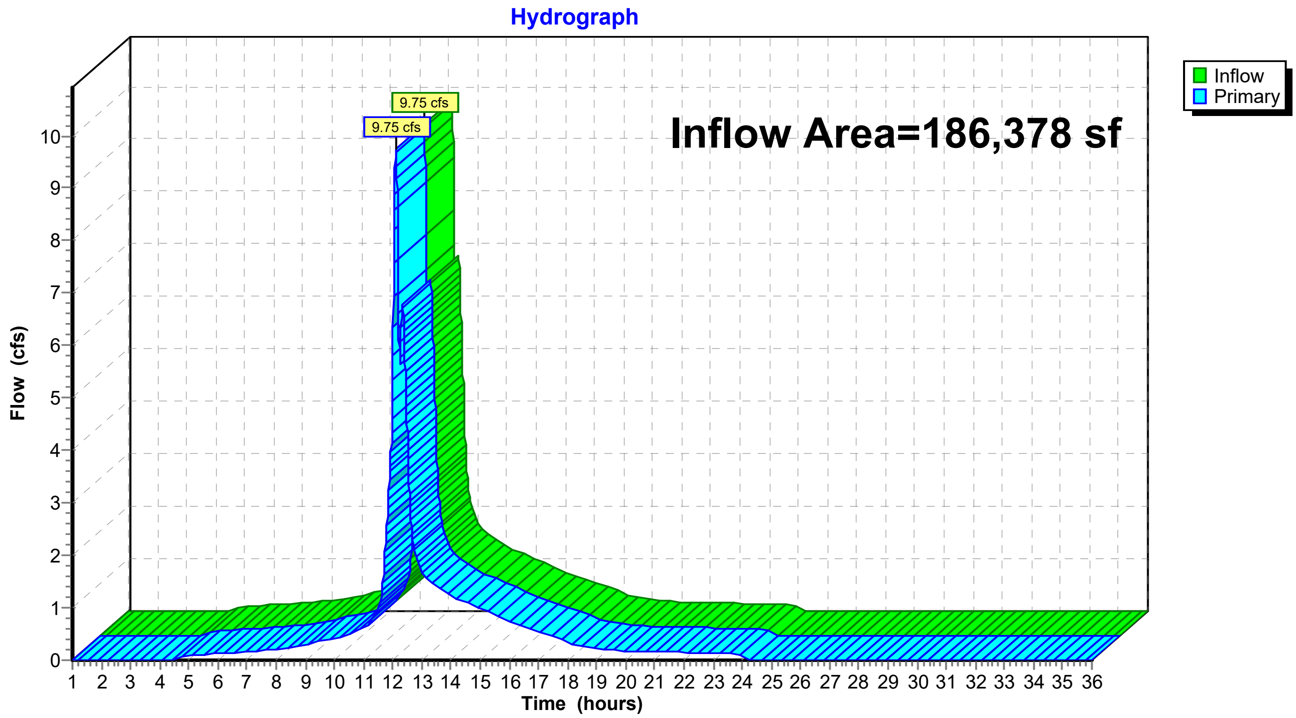


Summary for Link 5L: Main Street Drainage Network

Inflow Area = 186,378 sf, 57.92% Impervious, Inflow Depth > 3.10" for 50-year event
Inflow = 9.75 cfs @ 12.11 hrs, Volume= 48,157 cf
Primary = 9.75 cfs @ 12.11 hrs, Volume= 48,157 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 5L: Main Street Drainage Network



Time span=1.00-36.00 hrs, dt=0.01 hrs, 3501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Sub 1 Runoff Area=47,754 sf 74.52% Impervious Runoff Depth=6.86"
Tc=6.0 min CN=88 Runoff=8.34 cfs 27,306 cf

Subcatchment2S: Sub 2 Runoff Area=11,368 sf 2.40% Impervious Runoff Depth=3.67"
Tc=6.0 min CN=61 Runoff=1.11 cfs 3,481 cf

Subcatchment3S: Sub 3 Runoff Area=1,954 sf 100.00% Impervious Runoff Depth>8.06"
Tc=6.0 min CN=98 Runoff=0.37 cfs 1,312 cf

Subcatchment4S: Sub 4 Runoff Area=4,312 sf 100.00% Impervious Runoff Depth>8.06"
Tc=6.0 min CN=98 Runoff=0.81 cfs 2,894 cf

Subcatchment5S: Sub 5 Runoff Area=7,968 sf 87.10% Impervious Runoff Depth=7.46"
Tc=6.0 min CN=93 Runoff=1.46 cfs 4,954 cf

Subcatchment6S: Sub 6 Runoff Area=8,822 sf 93.69% Impervious Runoff Depth=7.58"
Tc=6.0 min CN=94 Runoff=1.62 cfs 5,573 cf

Subcatchment7S: Sub 15 Runoff Area=5,419 sf 88.41% Impervious Runoff Depth=7.22"
Tc=6.0 min CN=91 Runoff=0.97 cfs 3,261 cf

Subcatchment8S: Sub 8 Runoff Area=3,381 sf 68.83% Impervious Runoff Depth=6.62"
Tc=6.0 min CN=86 Runoff=0.58 cfs 1,866 cf

Subcatchment9S: Sub 9 Runoff Area=3,080 sf 63.08% Impervious Runoff Depth=5.43"
Tc=6.0 min CN=76 Runoff=0.45 cfs 1,394 cf

Subcatchment10S: Sub 10 Runoff Area=2,156 sf 34.97% Impervious Runoff Depth=3.56"
Tc=6.0 min CN=60 Runoff=0.20 cfs 640 cf

Subcatchment11S: Sub 11 Runoff Area=7,623 sf 94.74% Impervious Runoff Depth=7.70"
Tc=6.0 min CN=95 Runoff=1.41 cfs 4,892 cf

Subcatchment12S: Sub 12 Runoff Area=1,314 sf 0.00% Impervious Runoff Depth=1.29"
Tc=6.0 min CN=39 Runoff=0.03 cfs 141 cf

Subcatchment13S: Sub 13 Runoff Area=8,127 sf 100.00% Impervious Runoff Depth>8.06"
Tc=6.0 min CN=98 Runoff=1.52 cfs 5,455 cf

Subcatchment14S: Sub 14 Runoff Area=7,886 sf 47.69% Impervious Runoff Depth=4.37"
Tc=6.0 min CN=67 Runoff=0.93 cfs 2,873 cf

Subcatchment15S: Sub 15 Runoff Area=9,235 sf 100.00% Impervious Runoff Depth>8.06"
Tc=6.0 min CN=98 Runoff=1.73 cfs 6,199 cf

Subcatchment16S: Sub 16 Runoff Area=2,299 sf 0.00% Impervious Runoff Depth=1.29"
Tc=6.0 min CN=39 Runoff=0.05 cfs 246 cf

Subcatchment17S: Sub 17 Runoff Area=2,903 sf 100.00% Impervious Runoff Depth>8.06"
Tc=6.0 min CN=98 Runoff=0.54 cfs 1,949 cf

Subcatchment18S: Sub 18 Runoff Area=8,910 sf 92.85% Impervious Runoff Depth=7.58"
Tc=6.0 min CN=94 Runoff=1.64 cfs 5,628 cf

Subcatchment19S: Sub 19 Runoff Area=11,994 sf 100.00% Impervious Runoff Depth>8.06"
Tc=6.0 min CN=98 Runoff=2.24 cfs 8,051 cf

Subcatchment20S: Sub 20 Runoff Area=25,472 sf 0.00% Impervious Runoff Depth=0.82"
Tc=6.0 min CN=34 Runoff=0.23 cfs 1,738 cf

Subcatchment21S: Sub 21 Runoff Area=22,553 sf 100.00% Impervious Runoff Depth>8.06"
Tc=6.0 min CN=98 Runoff=4.22 cfs 15,139 cf

Subcatchment22S: Sub 22 Runoff Area=1,936 sf 59.97% Impervious Runoff Depth=6.26"
Tc=6.0 min CN=83 Runoff=0.32 cfs 1,011 cf

Subcatchment23S: Sub 23 Runoff Area=29,154 sf 0.00% Impervious Runoff Depth=1.79"
Tc=6.0 min CN=44 Runoff=1.18 cfs 4,353 cf

Subcatchment24S: Sub 24 Runoff Area=10,922 sf 100.00% Impervious Runoff Depth>8.06"
Tc=6.0 min CN=98 Runoff=2.04 cfs 7,331 cf

Subcatchment25S: Sub 25 Runoff Area=11,571 sf 11.40% Impervious Runoff Depth=1.90"
Tc=6.0 min CN=45 Runoff=0.51 cfs 1,829 cf

Subcatchment26S: Sub 26 Runoff Area=3,557 sf 100.00% Impervious Runoff Depth>8.06"
Tc=6.0 min CN=98 Runoff=0.67 cfs 2,388 cf

Pond 1P: Rain Garden Peak Elev=101.55' Storage=1,026 cf Inflow=2.55 cfs 8,446 cf
Primary=2.01 cfs 7,413 cf Secondary=0.58 cfs 154 cf Outflow=2.51 cfs 7,567 cf

Pond 2P: Infiltration Chambers - Area 1 Peak Elev=95.60' Storage=11,637 cf Inflow=10.33 cfs 34,868 cf
Discarded=0.29 cfs 17,960 cf Primary=5.50 cfs 16,908 cf Outflow=5.78 cfs 34,868 cf

Pond 3P: Detention Chambers - Area 2 Peak Elev=92.40' Storage=1,335 cf Inflow=8.51 cfs 30,521 cf
Outflow=7.77 cfs 29,793 cf

Link 1L: School Center - Leaching CB Inflow=0.32 cfs 1,011 cf
Primary=0.32 cfs 1,011 cf

Link 2L: Playground - Leaching CBs Inflow=12.08 cfs 39,947 cf
Primary=12.08 cfs 39,947 cf

Link 3L: South Western - Leaching CBs Inflow=3.74 cfs 12,641 cf
Primary=3.74 cfs 12,641 cf

Link 4L: School Main Entrance - Leaching CBs
Primary=0.00 cfs 0 cf

Link 5L: Main Street Drainage Network

Inflow=15.41 cfs 61,378 cf
Primary=15.41 cfs 61,378 cf

Total Runoff Area = 261,670 sf Runoff Volume = 121,903 cf Average Runoff Depth = 5.59"
39.55% Pervious = 103,496 sf 60.45% Impervious = 158,174 sf

Summary for Subcatchment 1S: Sub 1

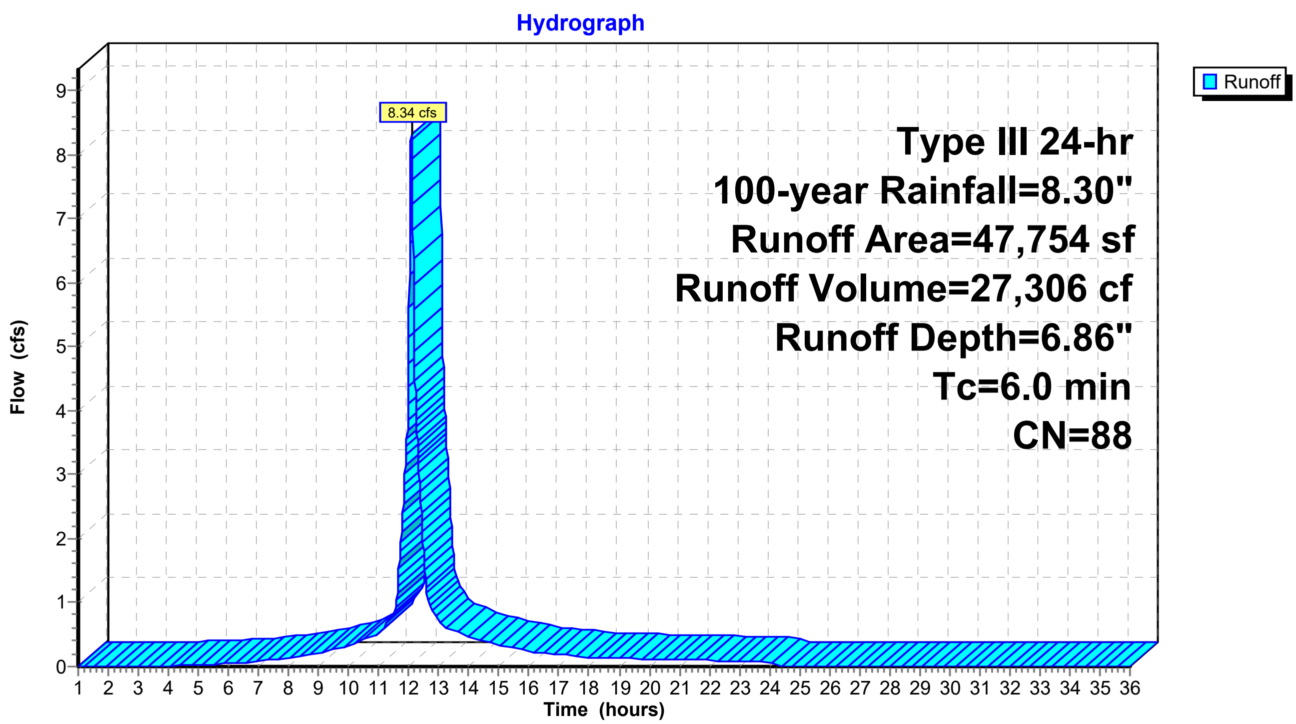
Runoff = 8.34 cfs @ 12.08 hrs, Volume= 27,306 cf, Depth= 6.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
13,390	98	Roofs, HSG B
975	55	Woods, Good, HSG B
11,191	61	>75% Grass cover, Good, HSG B
22,198	98	Paved parking, HSG B
47,754	88	Weighted Average
12,166		25.48% Pervious Area
35,588		74.52% Impervious Area

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

Subcatchment 1S: Sub 1



Summary for Subcatchment 2S: Sub 2

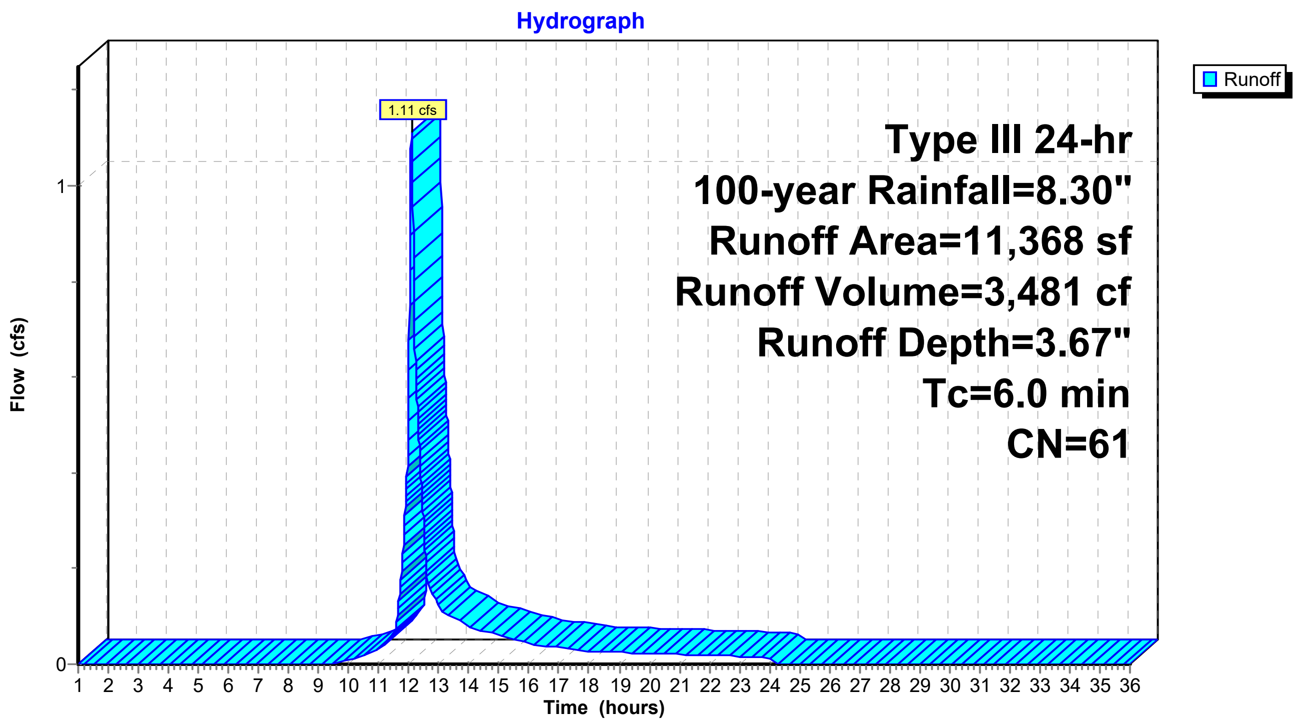
Runoff = 1.11 cfs @ 12.09 hrs, Volume= 3,481 cf, Depth= 3.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
1,073	55	Woods, Good, HSG B
10,022	61	>75% Grass cover, Good, HSG B
273	98	Paved parking, HSG B
11,368	61	Weighted Average
11,095		97.60% Pervious Area
273		2.40% Impervious Area

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

Subcatchment 2S: Sub 2



Summary for Subcatchment 3S: Sub 3

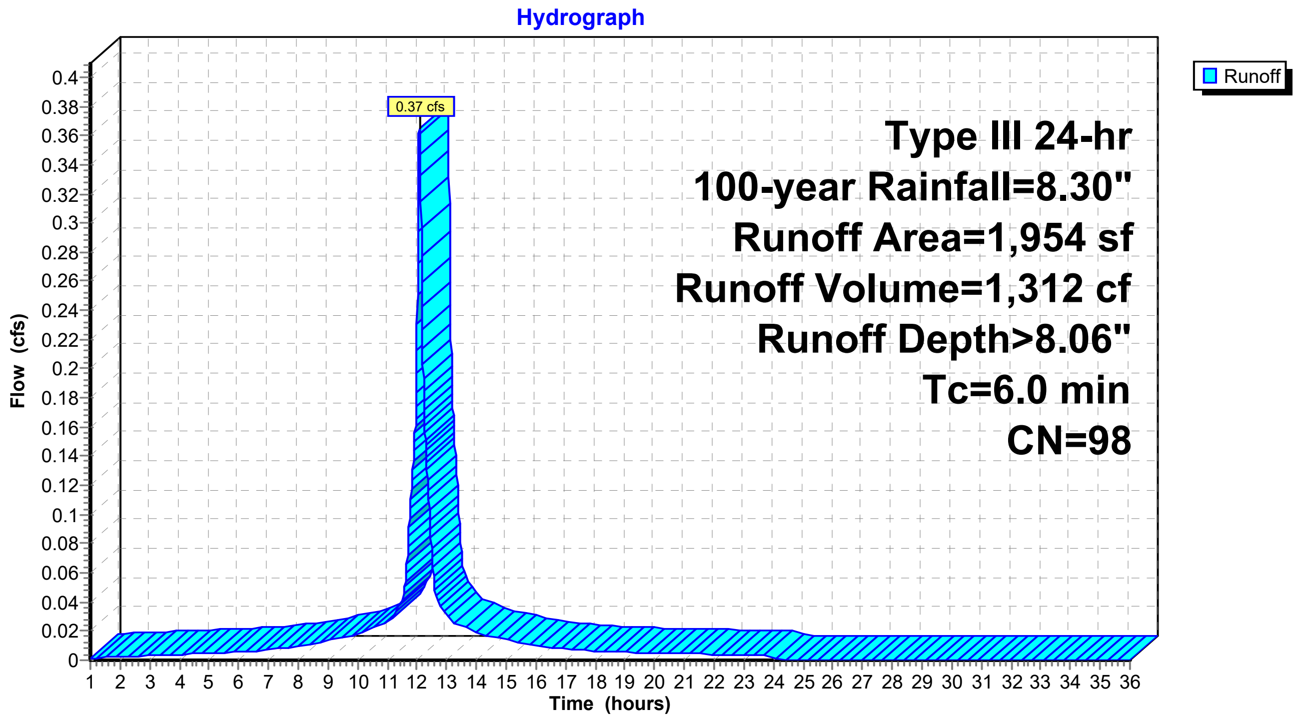
Runoff = 0.37 cfs @ 12.08 hrs, Volume= 1,312 cf, Depth> 8.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
1,954	98	Paved parking, HSG B
1,954		100.00% Impervious Area

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

Subcatchment 3S: Sub 3



Summary for Subcatchment 4S: Sub 4

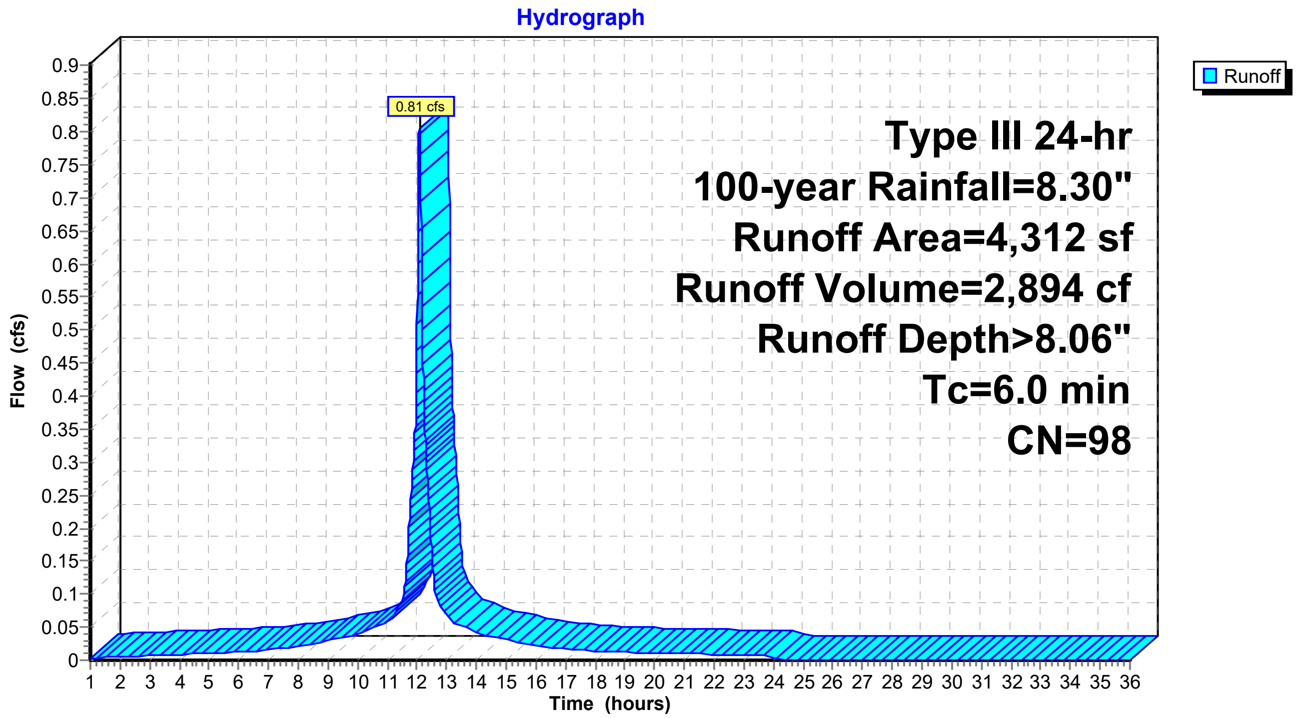
Runoff = 0.81 cfs @ 12.08 hrs, Volume= 2,894 cf, Depth> 8.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
4,312	98	Paved parking, HSG B
4,312		100.00% Impervious Area

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

Subcatchment 4S: Sub 4



Summary for Subcatchment 5S: Sub 5

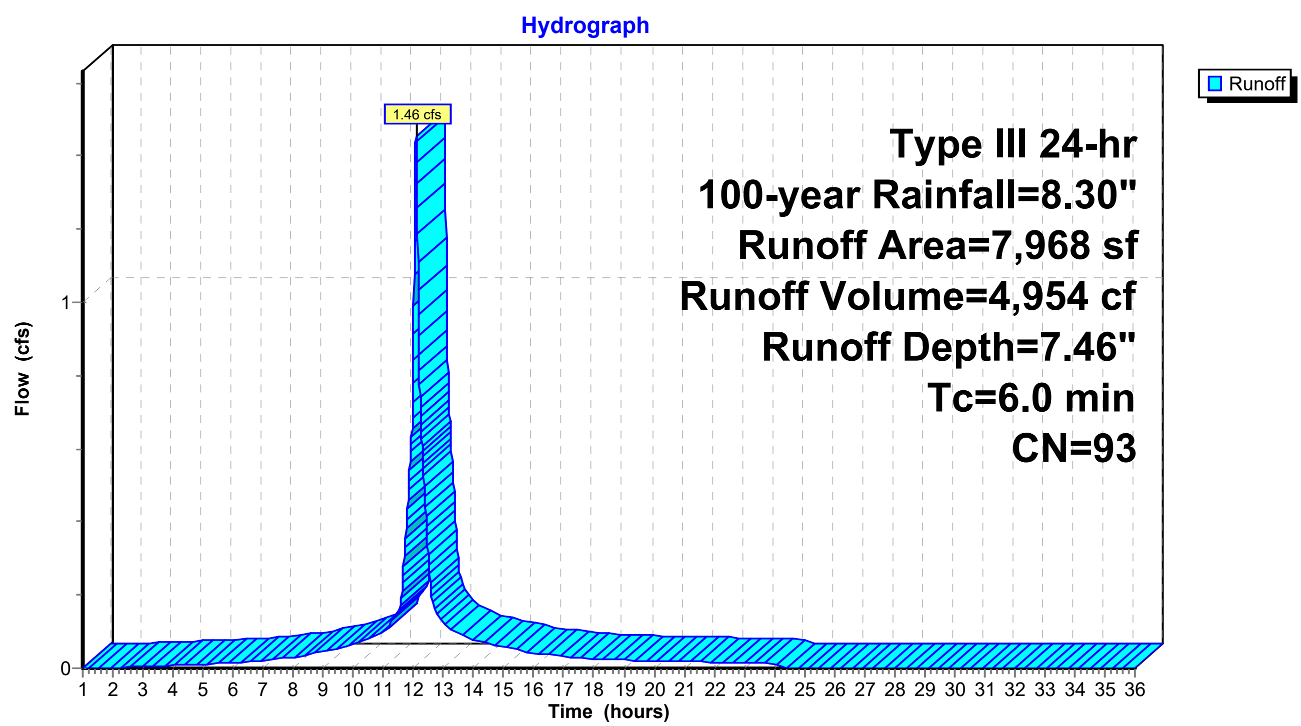
Runoff = 1.46 cfs @ 12.08 hrs, Volume= 4,954 cf, Depth= 7.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
5,157	98	Roofs, HSG B
1,028	61	>75% Grass cover, Good, HSG B
1,783	98	Paved parking, HSG B
7,968	93	Weighted Average
1,028		12.90% Pervious Area
6,940		87.10% Impervious Area

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

Subcatchment 5S: Sub 5



Summary for Subcatchment 6S: Sub 6

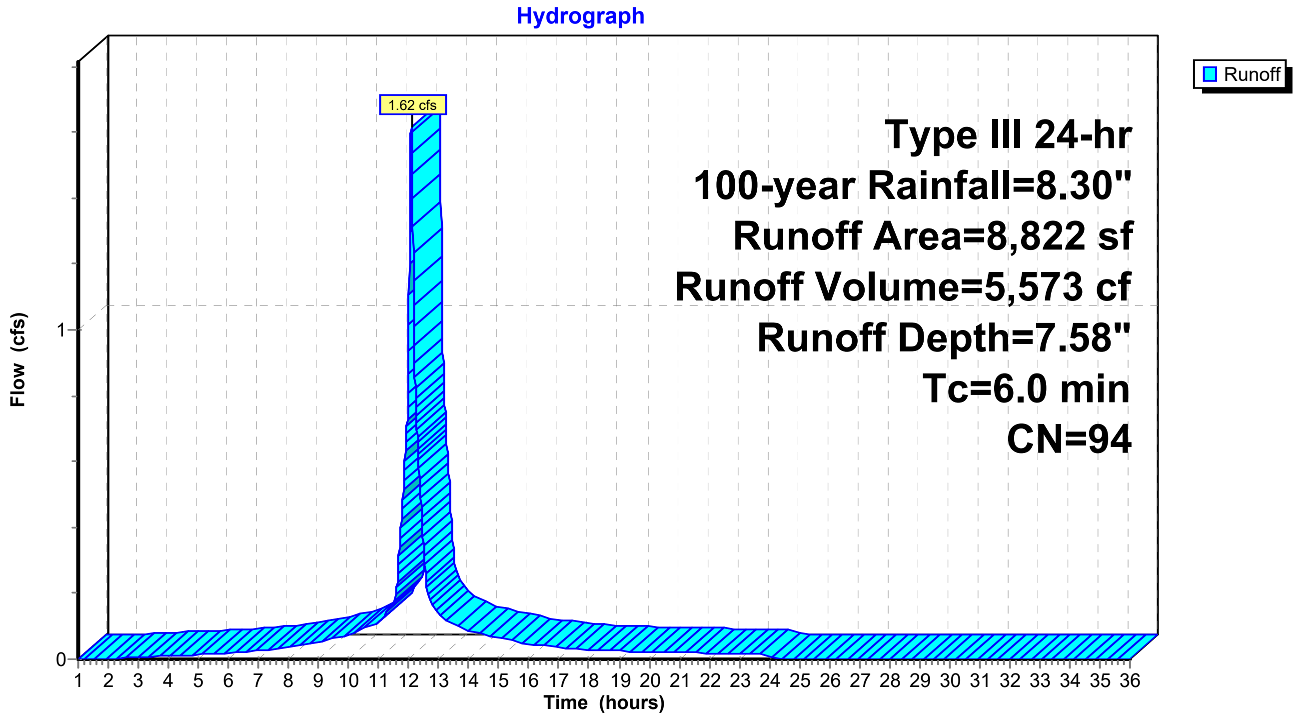
Runoff = 1.62 cfs @ 12.08 hrs, Volume= 5,573 cf, Depth= 7.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
557	39	>75% Grass cover, Good, HSG A
4,015	98	Paved parking, HSG A
4,250	98	Roofs, HSG A
8,822	94	Weighted Average
557		6.31% Pervious Area
8,265		93.69% Impervious Area

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

Subcatchment 6S: Sub 6



Summary for Subcatchment 7S: Sub 15

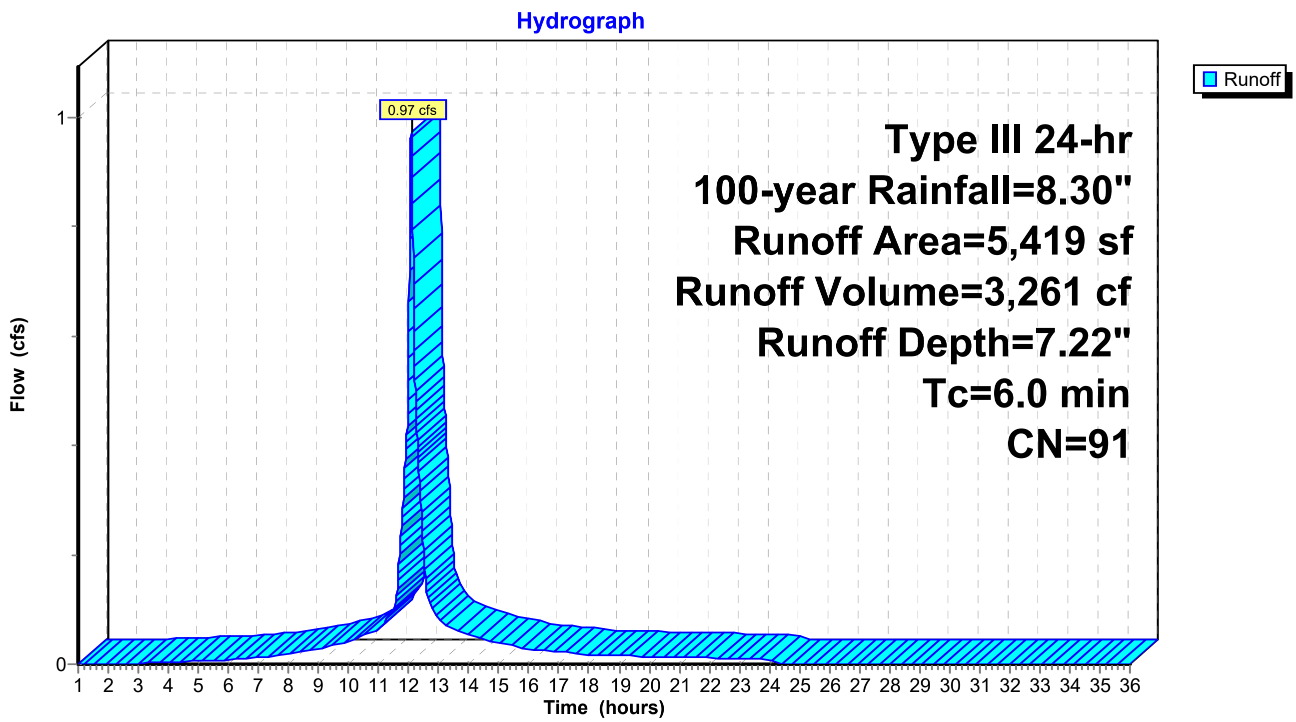
Runoff = 0.97 cfs @ 12.08 hrs, Volume= 3,261 cf, Depth= 7.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
628	39	>75% Grass cover, Good, HSG A
3,579	98	Paved parking, HSG A
1,212	98	Roofs, HSG A
5,419	91	Weighted Average
628		11.59% Pervious Area
4,791		88.41% Impervious Area

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

Subcatchment 7S: Sub 15



Summary for Subcatchment 8S: Sub 8

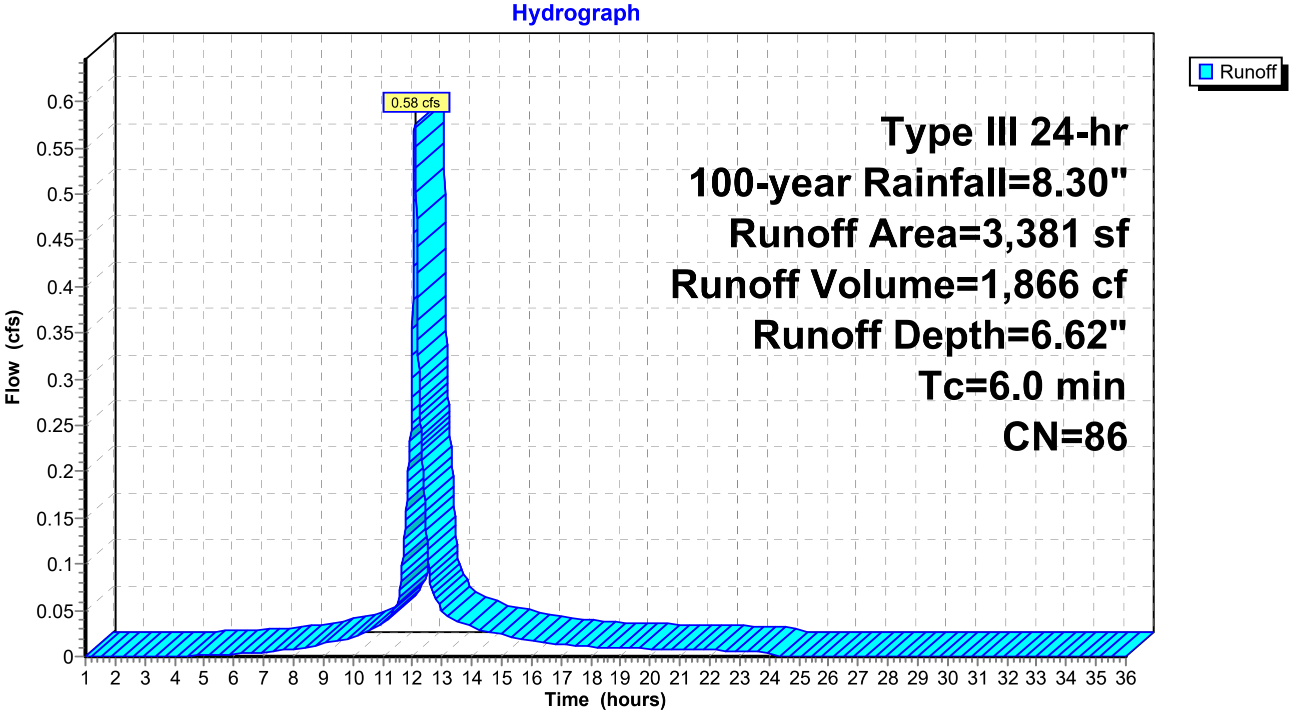
Runoff = 0.58 cfs @ 12.08 hrs, Volume= 1,866 cf, Depth= 6.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
2,327	98	Paved parking, HSG B
1,054	61	>75% Grass cover, Good, HSG B
3,381	86	Weighted Average
1,054		31.17% Pervious Area
2,327		68.83% Impervious Area

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

Subcatchment 8S: Sub 8



Summary for Subcatchment 9S: Sub 9

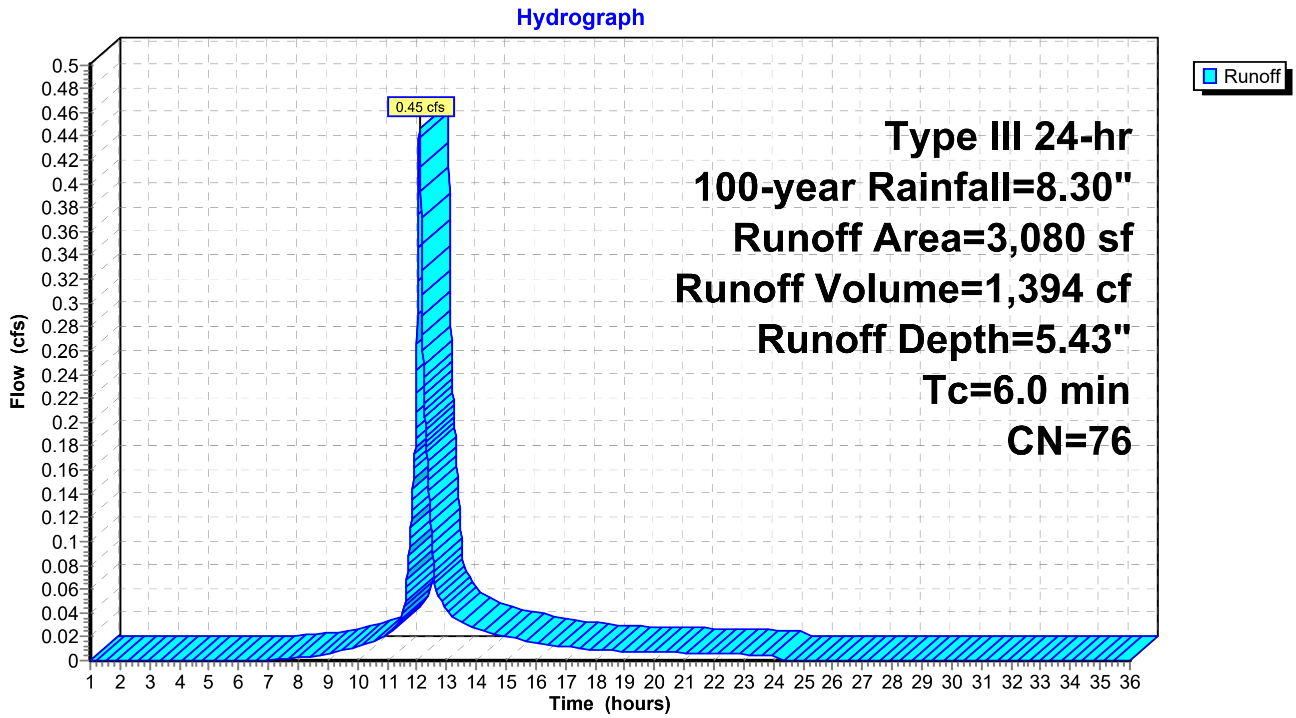
Runoff = 0.45 cfs @ 12.09 hrs, Volume= 1,394 cf, Depth= 5.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
1,137	39	>75% Grass cover, Good, HSG A
1,943	98	Paved parking, HSG A
3,080	76	Weighted Average
1,137		36.92% Pervious Area
1,943		63.08% Impervious Area

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

Subcatchment 9S: Sub 9



Summary for Subcatchment 10S: Sub 10

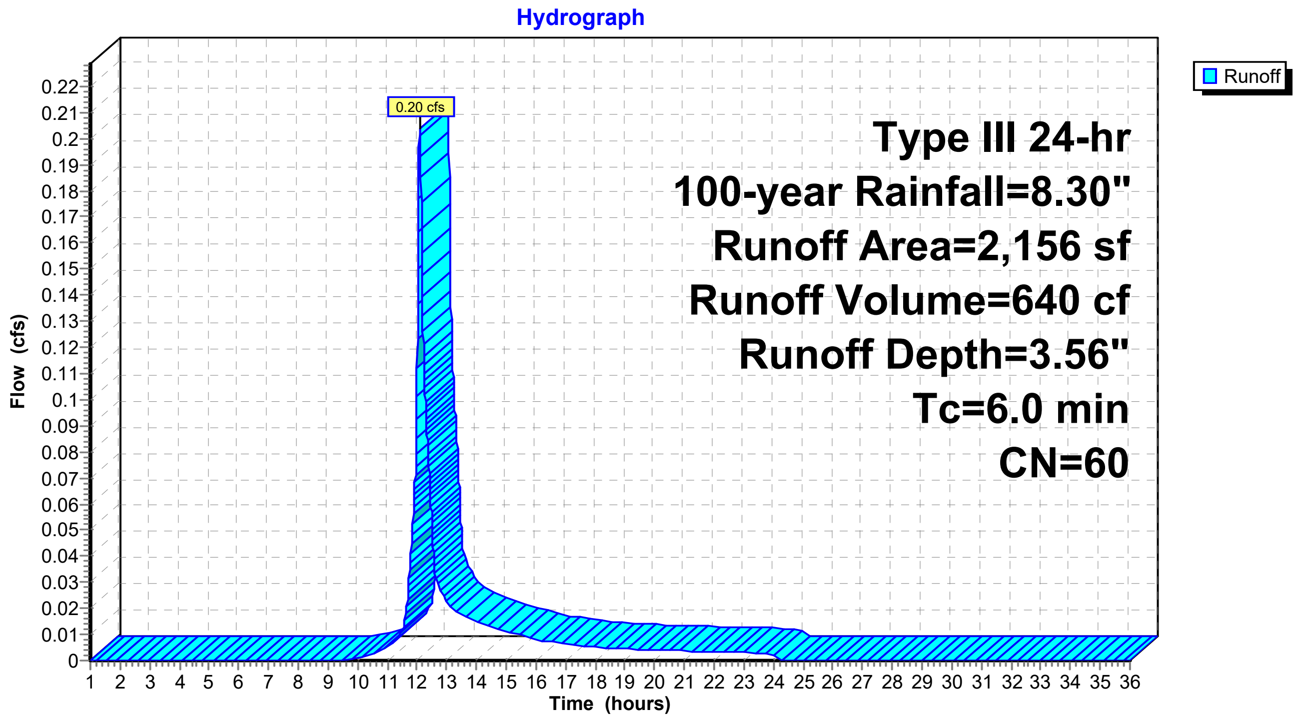
Runoff = 0.20 cfs @ 12.09 hrs, Volume= 640 cf, Depth= 3.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
1,402	39	>75% Grass cover, Good, HSG A
754	98	Paved parking, HSG A
2,156	60	Weighted Average
1,402		65.03% Pervious Area
754		34.97% Impervious Area

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

Subcatchment 10S: Sub 10



Summary for Subcatchment 11S: Sub 11

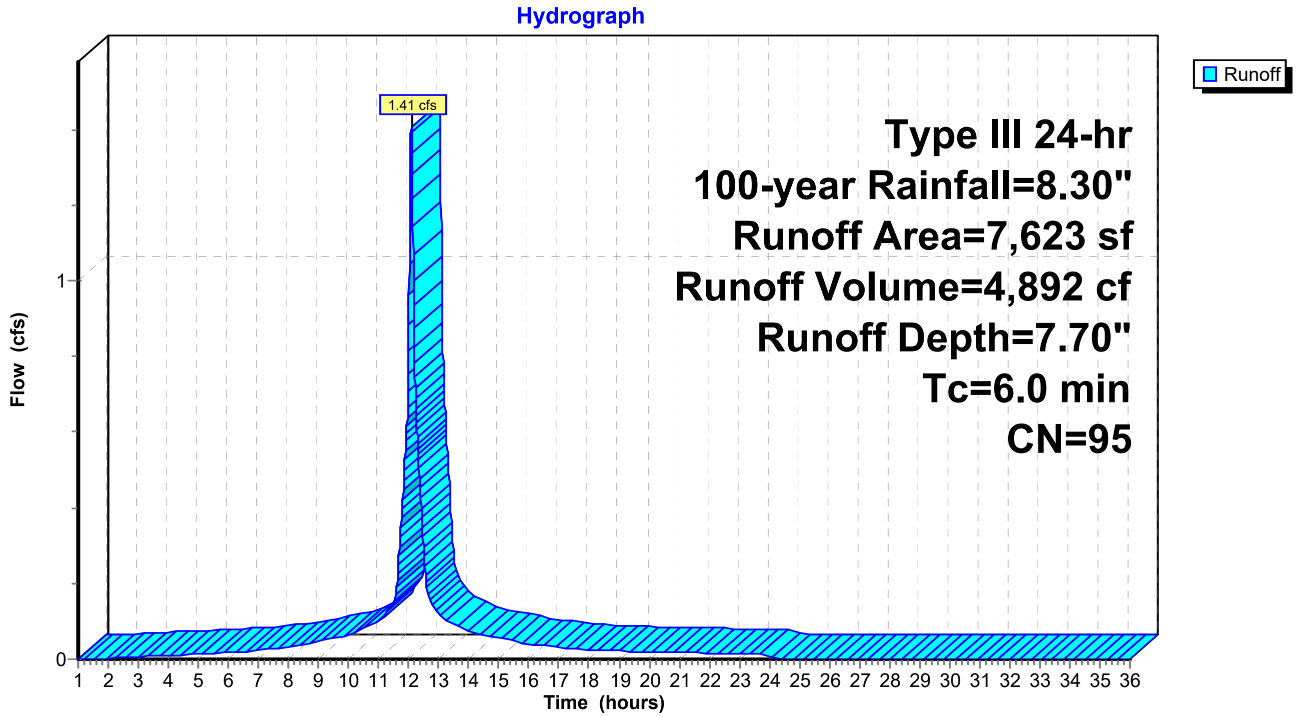
Runoff = 1.41 cfs @ 12.08 hrs, Volume= 4,892 cf, Depth= 7.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
401	39	>75% Grass cover, Good, HSG A
6,169	98	Paved parking, HSG A
1,053	98	Roofs, HSG A
7,623	95	Weighted Average
401		5.26% Pervious Area
7,222		94.74% Impervious Area

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

Subcatchment 11S: Sub 11



Summary for Subcatchment 12S: Sub 12

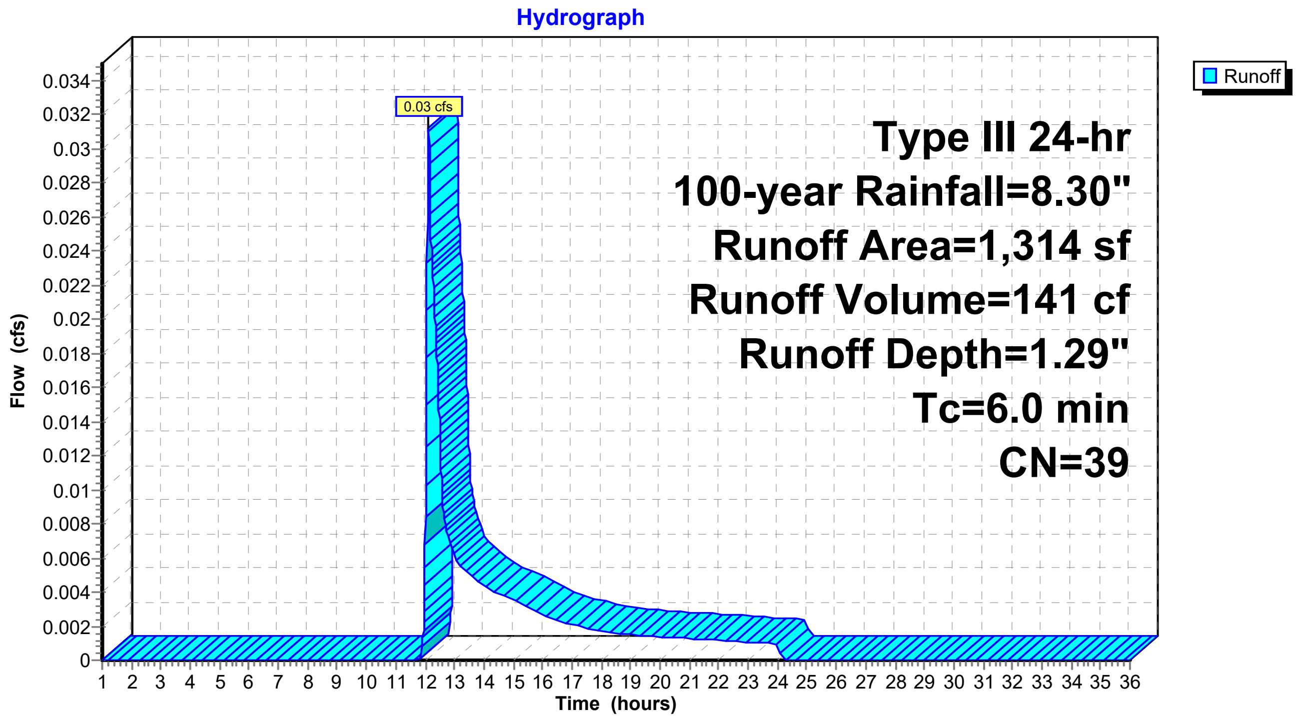
Runoff = 0.03 cfs @ 12.12 hrs, Volume= 141 cf, Depth= 1.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
1,314	39	>75% Grass cover, Good, HSG A
1,314		100.00% Pervious Area

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

Subcatchment 12S: Sub 12



Summary for Subcatchment 13S: Sub 13

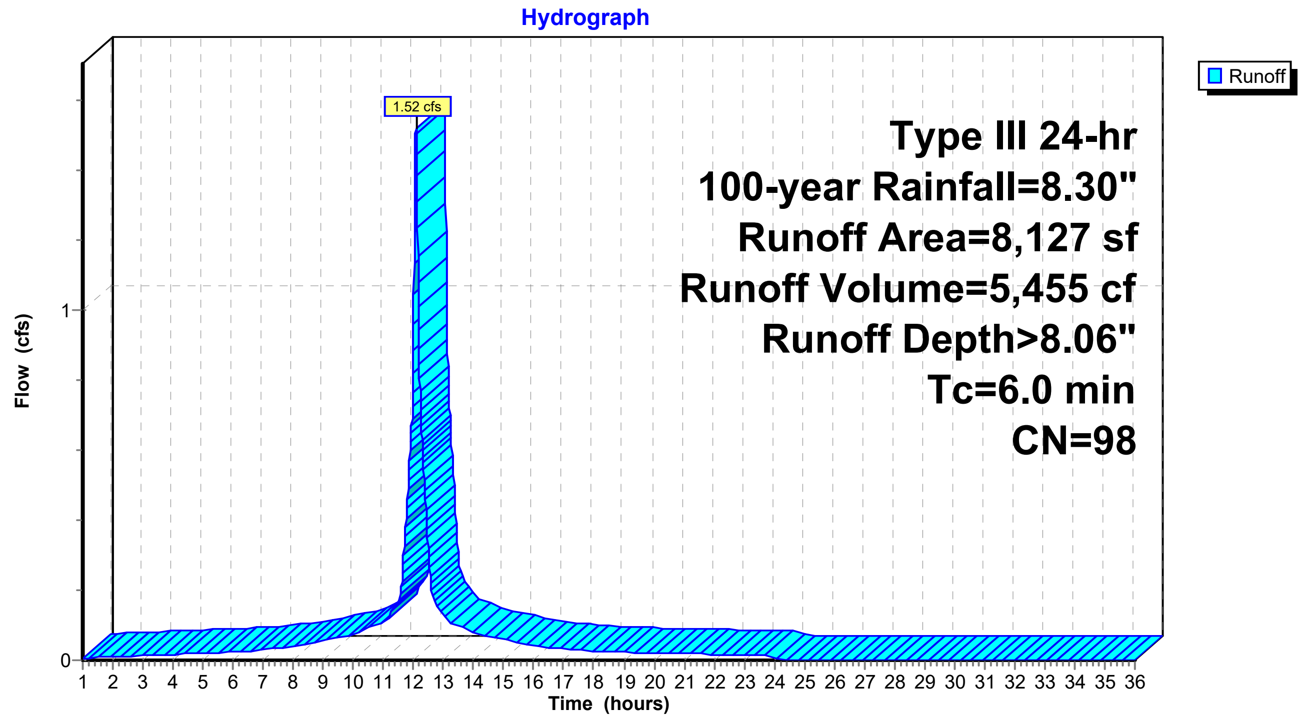
Runoff = 1.52 cfs @ 12.08 hrs, Volume= 5,455 cf, Depth> 8.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
8,127	98	Paved parking, HSG A
8,127		100.00% Impervious Area

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

Subcatchment 13S: Sub 13



Summary for Subcatchment 14S: Sub 14

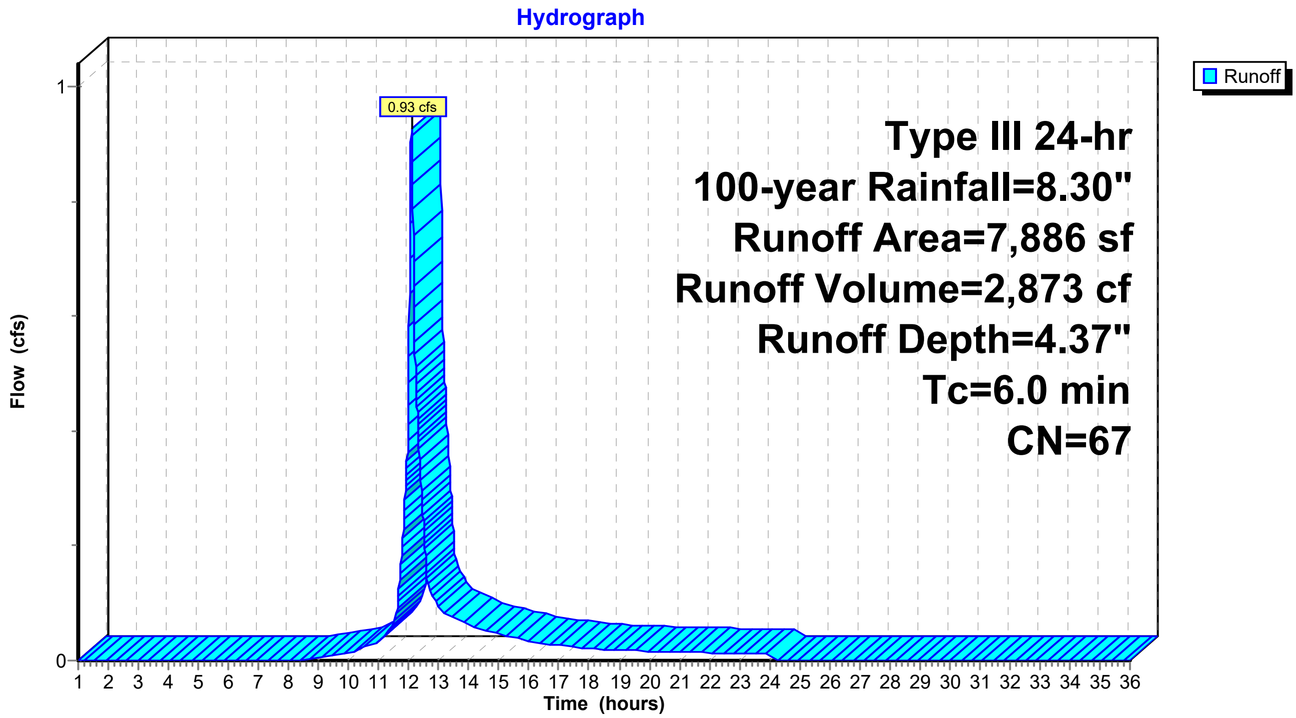
Runoff = 0.93 cfs @ 12.09 hrs, Volume= 2,873 cf, Depth= 4.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
4,125	39	>75% Grass cover, Good, HSG A
3,761	98	Paved parking, HSG A
7,886	67	Weighted Average
4,125		52.31% Pervious Area
3,761		47.69% Impervious Area

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

Subcatchment 14S: Sub 14



Summary for Subcatchment 15S: Sub 15

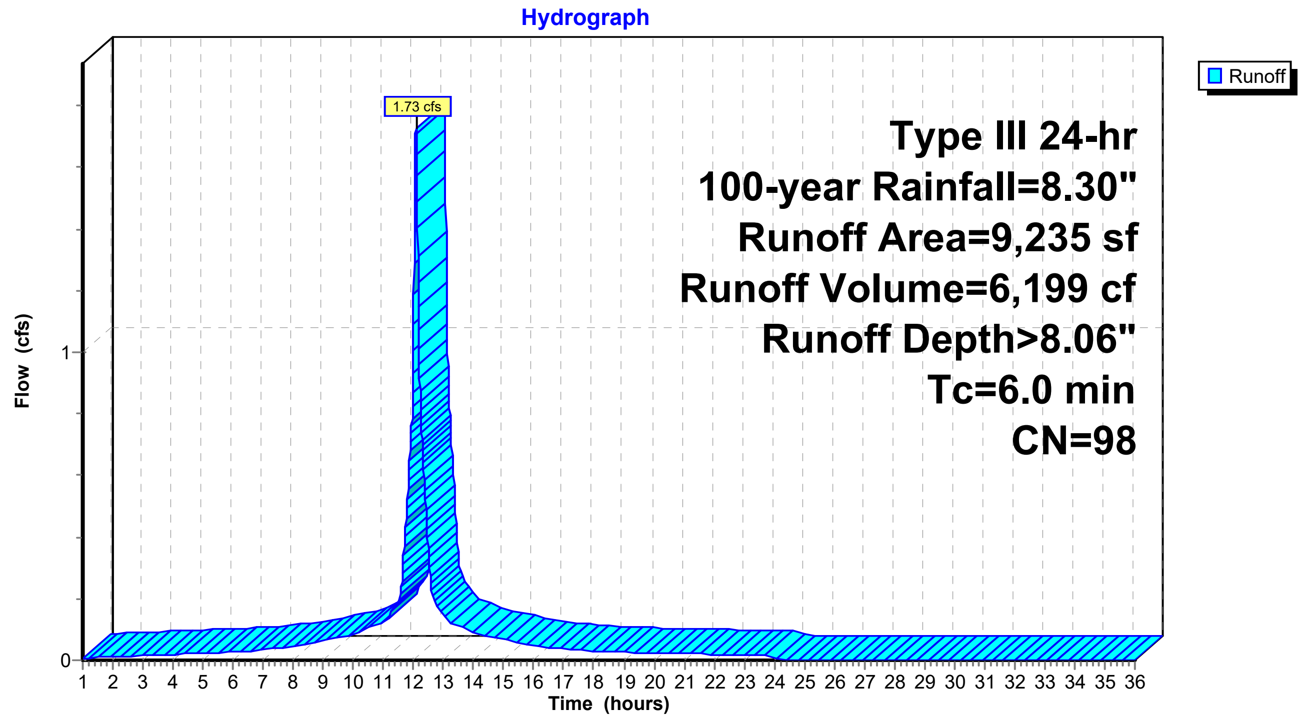
Runoff = 1.73 cfs @ 12.08 hrs, Volume= 6,199 cf, Depth> 8.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
9,235	98	Paved parking, HSG A
9,235		100.00% Impervious Area

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

Subcatchment 15S: Sub 15



Summary for Subcatchment 16S: Sub 16

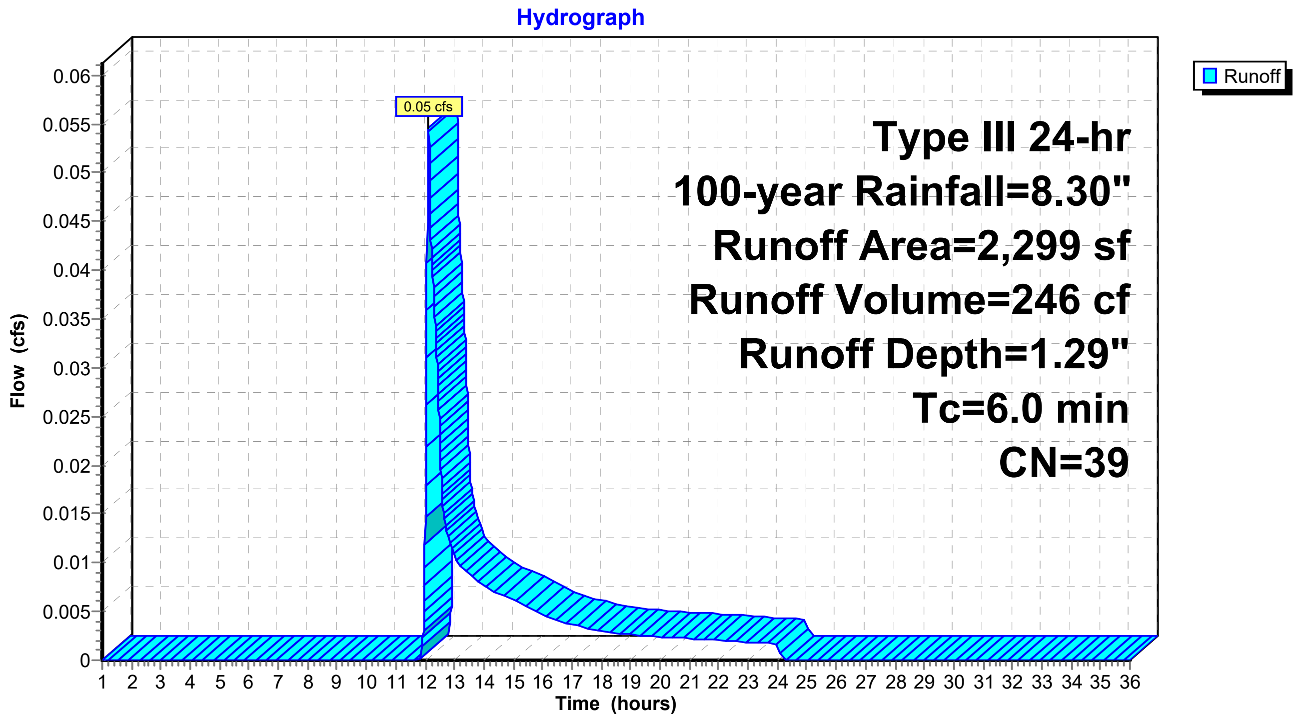
Runoff = 0.05 cfs @ 12.12 hrs, Volume= 246 cf, Depth= 1.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
2,299	39	>75% Grass cover, Good, HSG A
2,299		100.00% Pervious Area

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

Subcatchment 16S: Sub 16



Summary for Subcatchment 17S: Sub 17

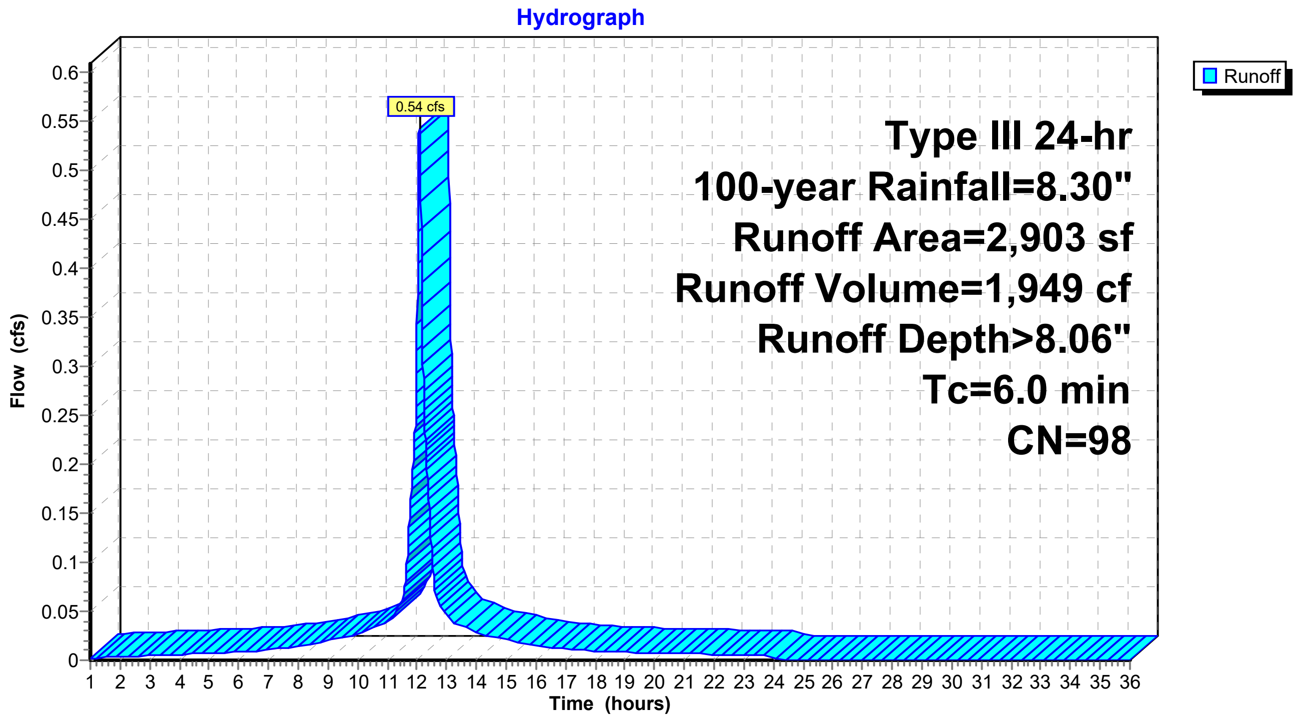
Runoff = 0.54 cfs @ 12.08 hrs, Volume= 1,949 cf, Depth> 8.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
2,903	98	Paved parking, HSG B
2,903		100.00% Impervious Area

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

Subcatchment 17S: Sub 17



Summary for Subcatchment 18S: Sub 18

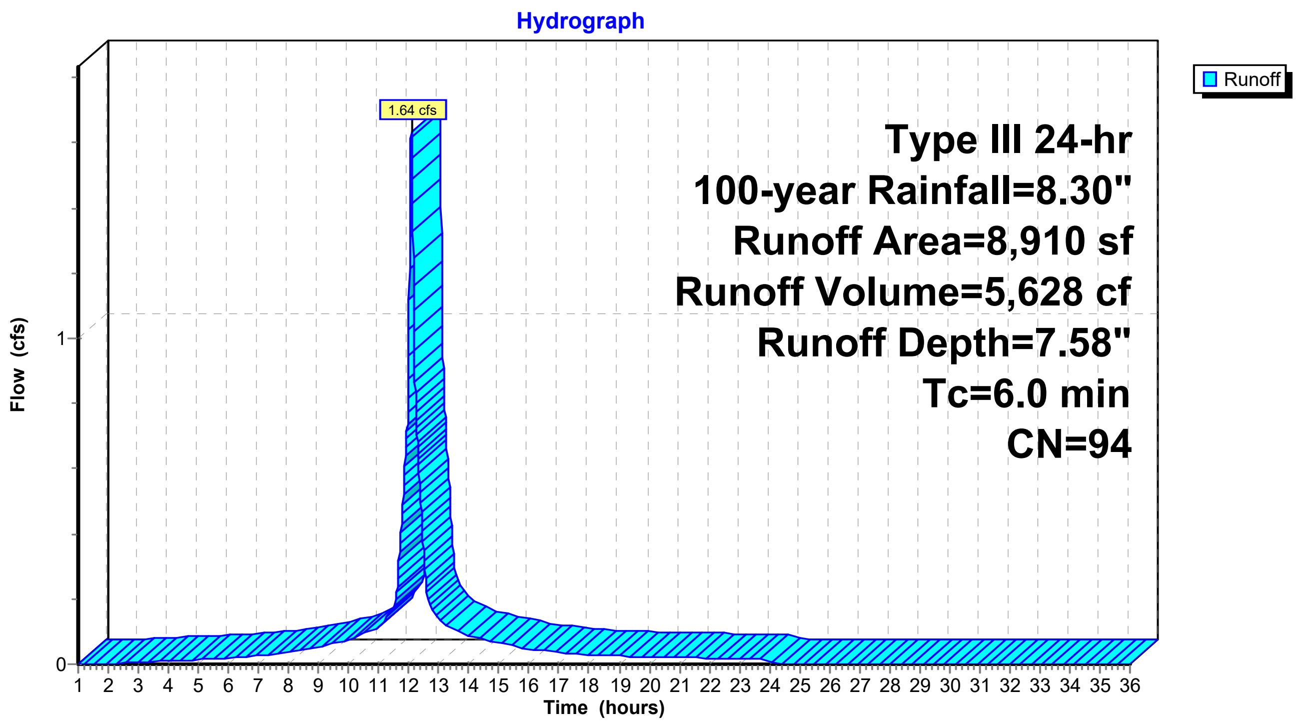
Runoff = 1.64 cfs @ 12.08 hrs, Volume= 5,628 cf, Depth= 7.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
637	39	>75% Grass cover, Good, HSG A
5,895	98	Paved parking, HSG A
2,378	98	Roofs, HSG B
8,910	94	Weighted Average
637		7.15% Pervious Area
8,273		92.85% Impervious Area

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

Subcatchment 18S: Sub 18



Summary for Subcatchment 19S: Sub 19

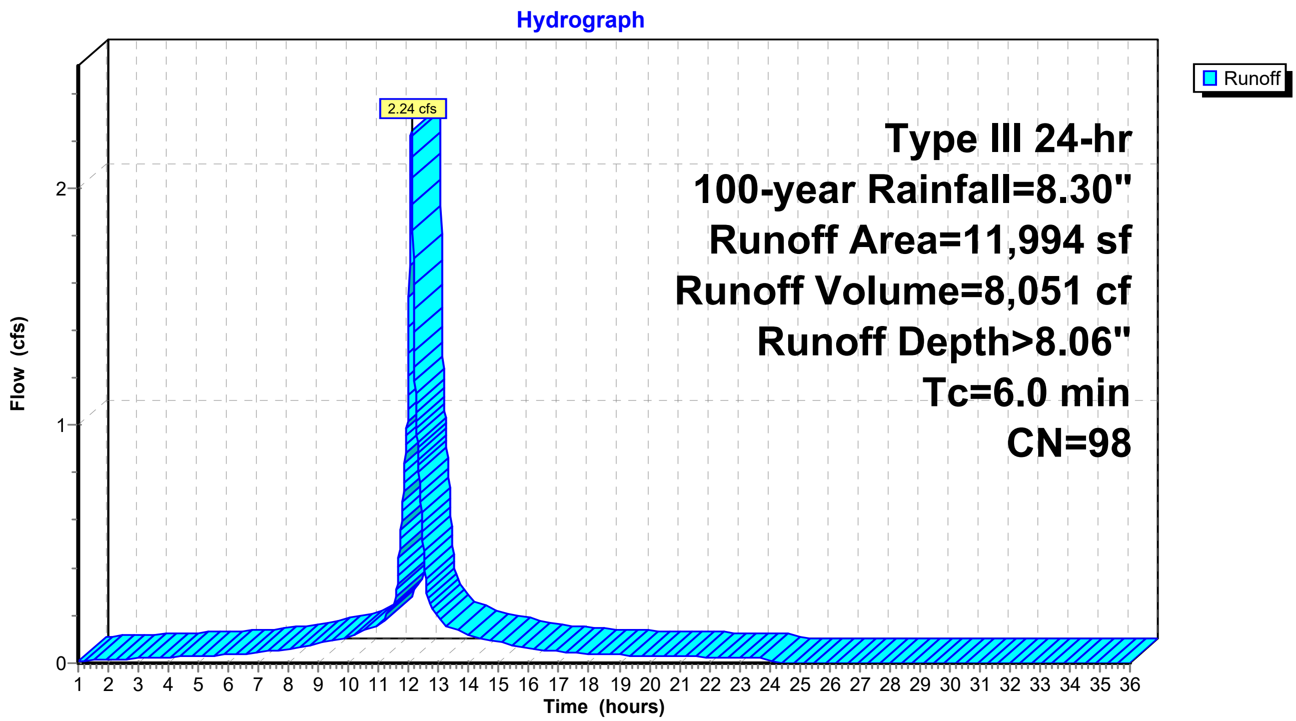
Runoff = 2.24 cfs @ 12.08 hrs, Volume= 8,051 cf, Depth> 8.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
7,625	98	Roofs, HSG A
4,369	98	Paved parking, HSG A
11,994	98	Weighted Average
11,994		100.00% Impervious Area

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

Subcatchment 19S: Sub 19



Summary for Subcatchment 20S: Sub 20

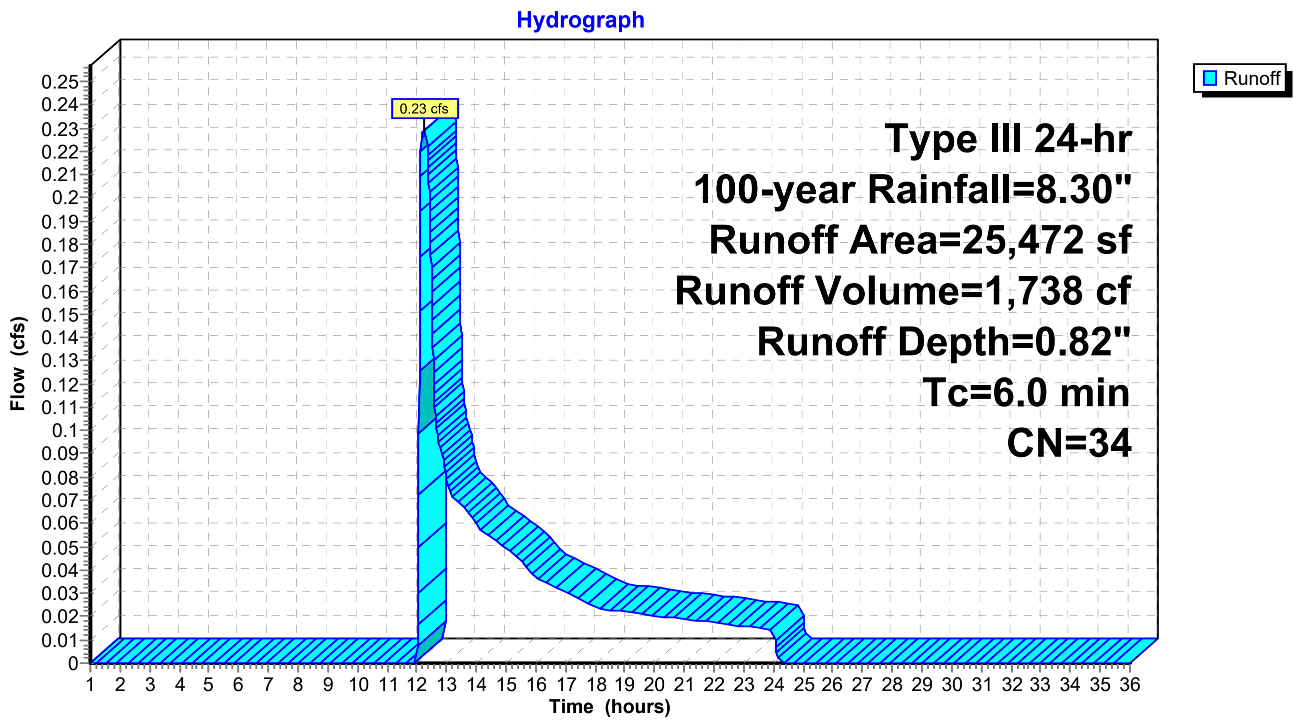
Runoff = 0.23 cfs @ 12.27 hrs, Volume= 1,738 cf, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
12,428	39	>75% Grass cover, Good, HSG A
13,044	30	Woods, Good, HSG A
25,472	34	Weighted Average
25,472		100.00% Pervious Area

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

Subcatchment 20S: Sub 20



Summary for Subcatchment 21S: Sub 21

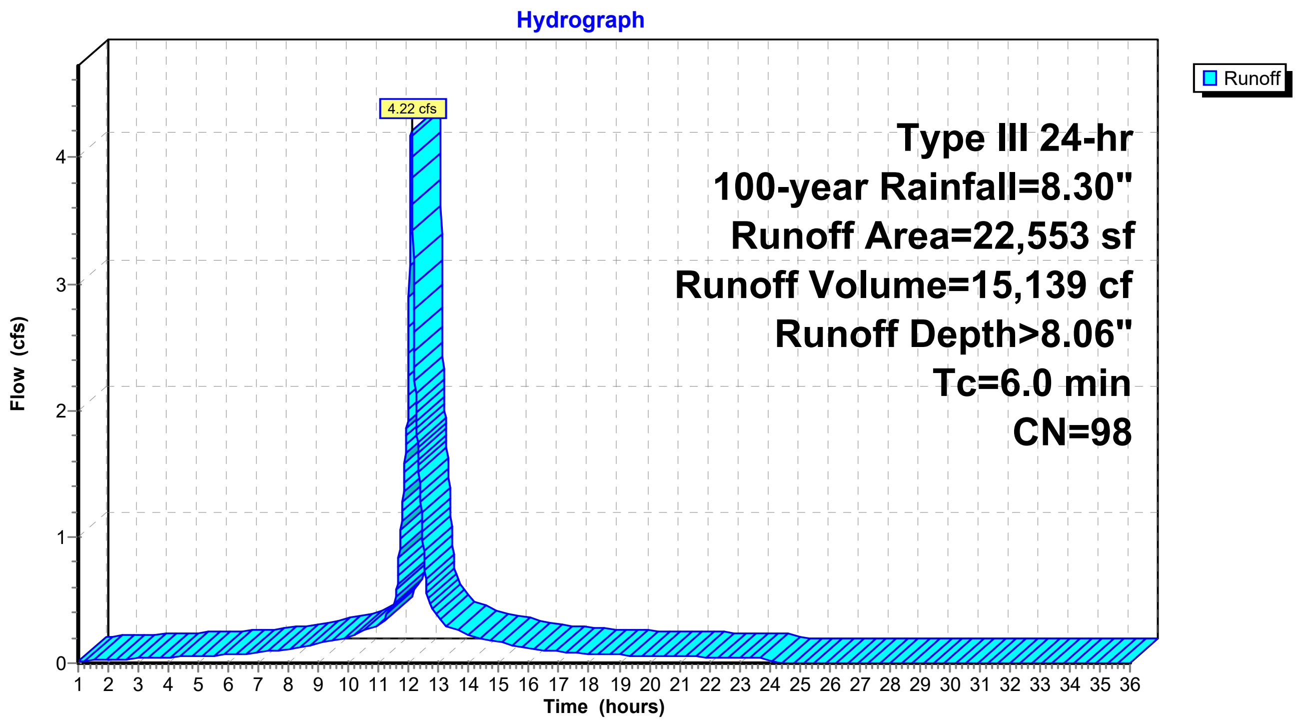
Runoff = 4.22 cfs @ 12.08 hrs, Volume= 15,139 cf, Depth> 8.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
10,469	98	Roofs, HSG A
12,084	98	Paved parking, HSG A
22,553	98	Weighted Average
22,553		100.00% Impervious Area

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

Subcatchment 21S: Sub 21



Summary for Subcatchment 22S: Sub 22

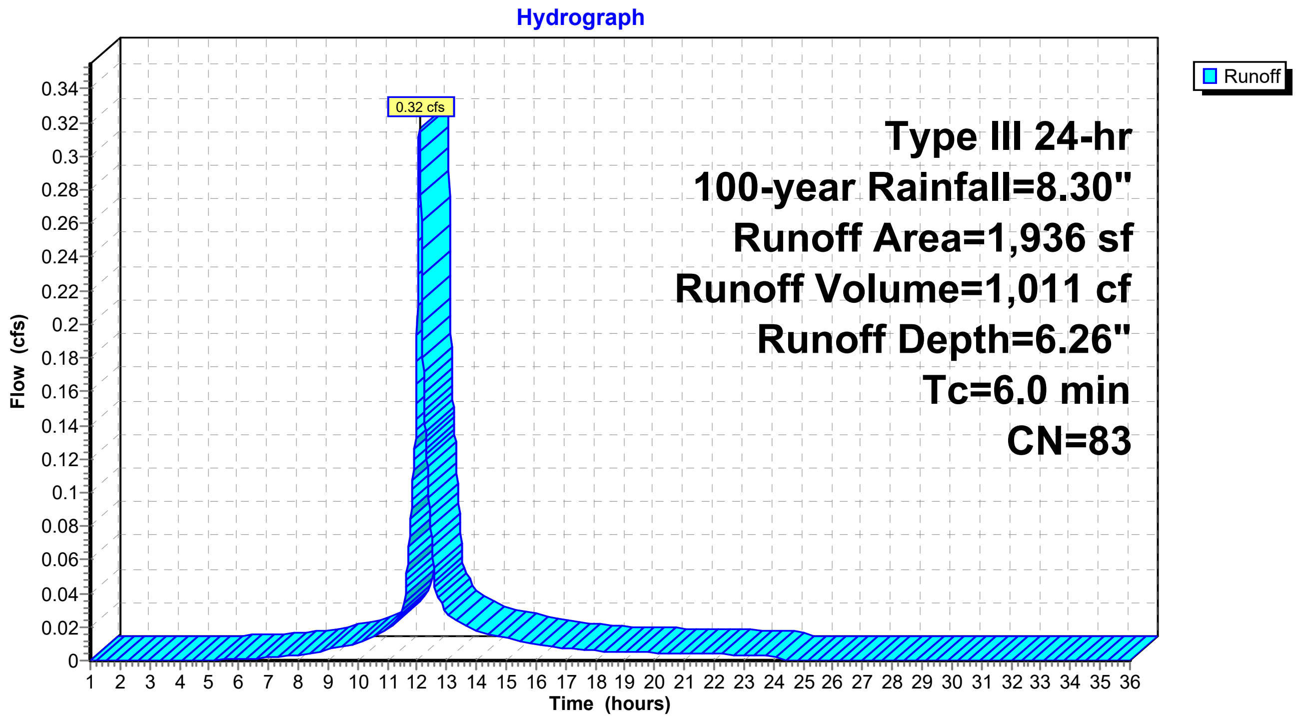
Runoff = 0.32 cfs @ 12.09 hrs, Volume= 1,011 cf, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
1,161	98	Paved parking, HSG B
775	61	>75% Grass cover, Good, HSG B
1,936	83	Weighted Average
775		40.03% Pervious Area
1,161		59.97% Impervious Area

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

Subcatchment 22S: Sub 22



Summary for Subcatchment 23S: Sub 23

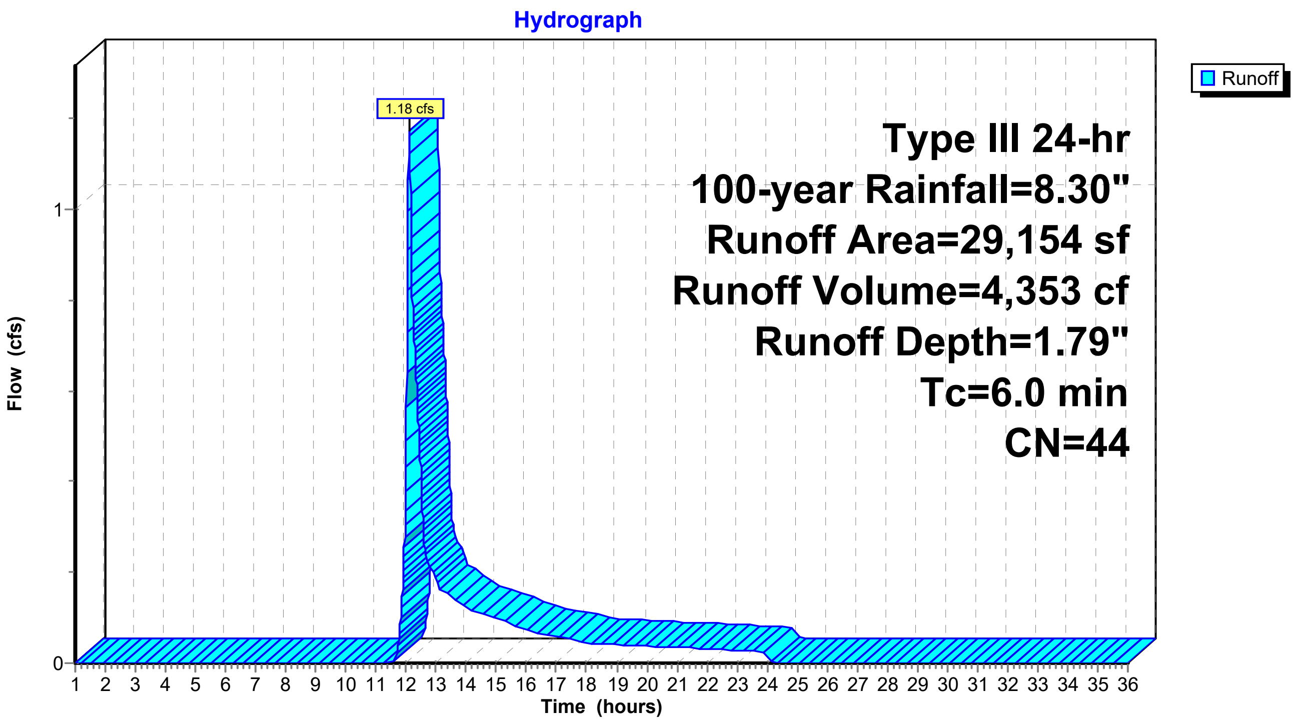
Runoff = 1.18 cfs @ 12.10 hrs, Volume= 4,353 cf, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
12,963	61	>75% Grass cover, Good, HSG B
16,191	30	Woods, Good, HSG A
29,154	44	Weighted Average
29,154		100.00% Pervious Area

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

Subcatchment 23S: Sub 23



Summary for Subcatchment 24S: Sub 24

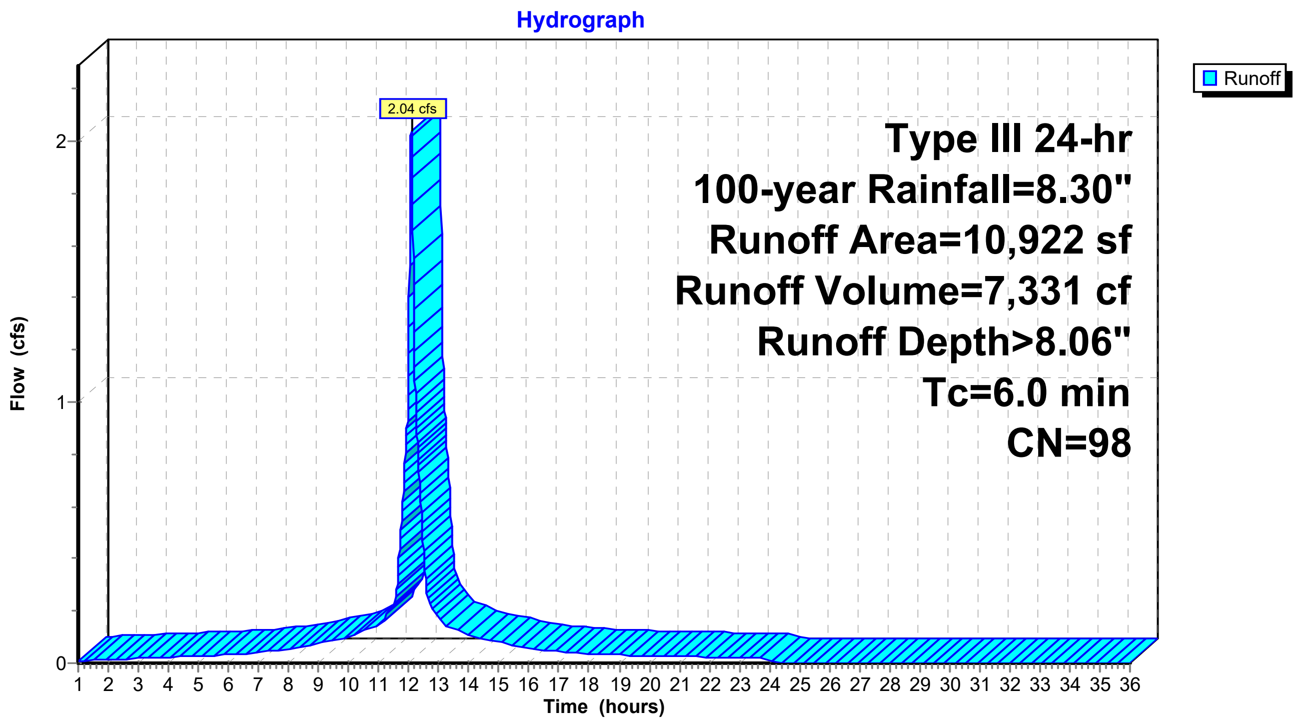
Runoff = 2.04 cfs @ 12.08 hrs, Volume= 7,331 cf, Depth> 8.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
316	98	Roofs, HSG B
10,606	98	Paved parking, HSG B
10,922	98	Weighted Average
10,922		100.00% Impervious Area

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

Subcatchment 24S: Sub 24



Summary for Subcatchment 25S: Sub 25

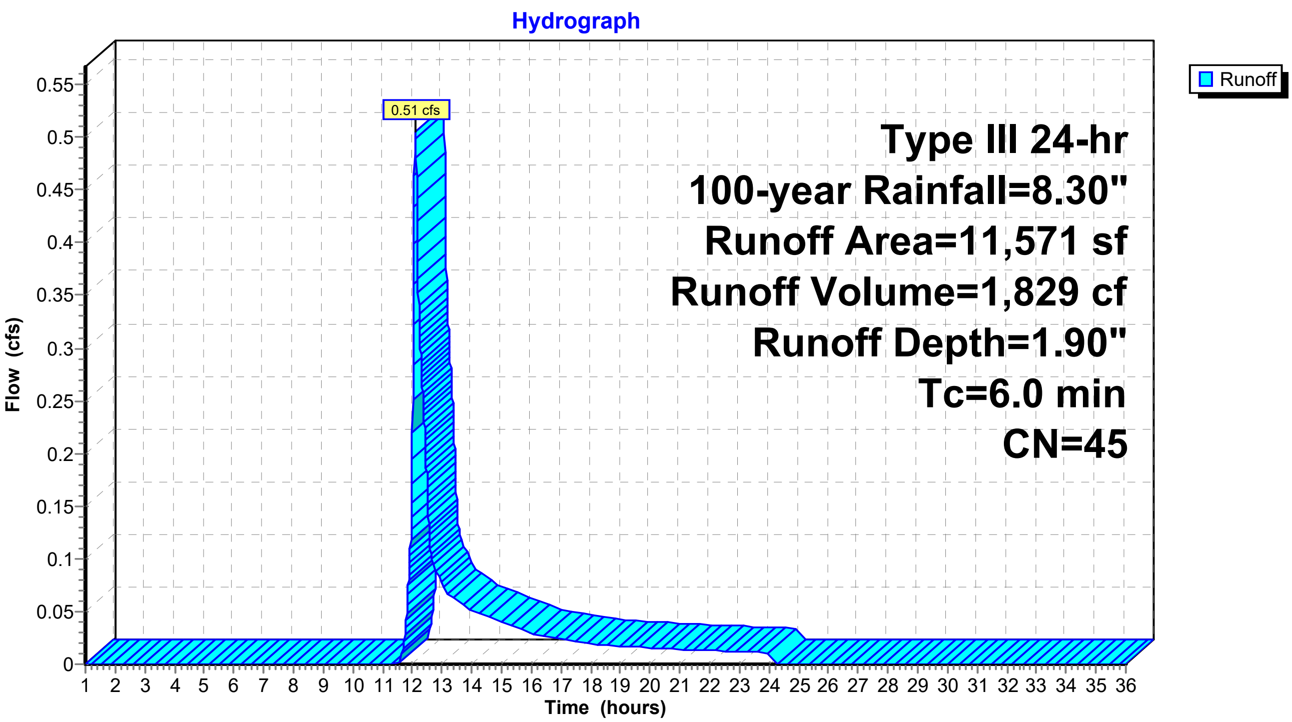
Runoff = 0.51 cfs @ 12.10 hrs, Volume= 1,829 cf, Depth= 1.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
8,818	39	>75% Grass cover, Good, HSG A
1,319	98	Roofs, HSG A
1,434	30	Woods, Good, HSG A
11,571	45	Weighted Average
10,252		88.60% Pervious Area
1,319		11.40% Impervious Area

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

Subcatchment 25S: Sub 25



Summary for Subcatchment 26S: Sub 26

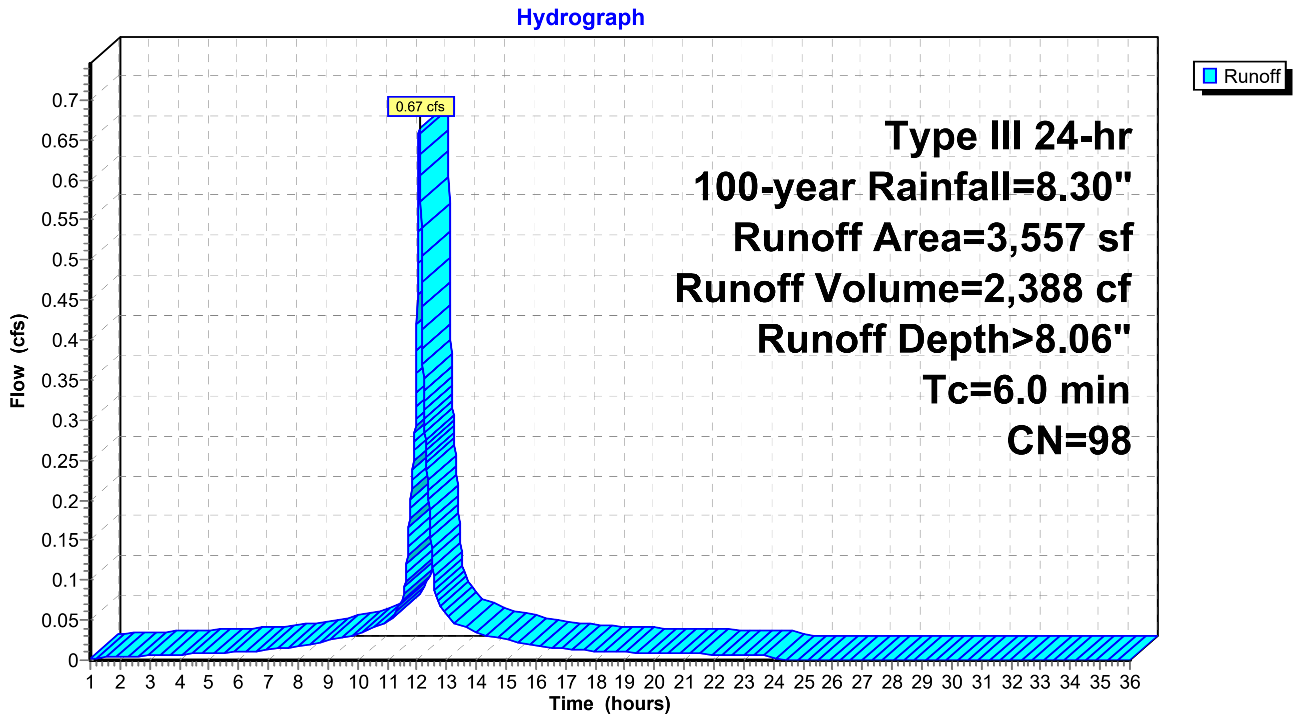
Runoff = 0.67 cfs @ 12.08 hrs, Volume= 2,388 cf, Depth> 8.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-year Rainfall=8.30"

Area (sf)	CN	Description
3,557	98	Paved parking, HSG A
3,557		100.00% Impervious Area

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

Subcatchment 26S: Sub 26



Summary for Pond 1P: Rain Garden

```
Inflow Area =      16,708 sf, 71.98% Impervious,  Inflow Depth =  6.07"   for 100-year event
Inflow      =    2.55 cfs @  12.09 hrs,  Volume=        8,446 cf
Outflow     =    2.51 cfs @  12.10 hrs,  Volume=        7,567 cf,  Atten= 2%,  Lag= 0.7 min
Primary     =    2.01 cfs @  12.05 hrs,  Volume=        7,413 cf
Secondary   =    0.58 cfs @  12.10 hrs,  Volume=          154 cf
```

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 101.55' @ 12.10 hrs Surf.Area= 558 sf Storage= 1,026 cf

Plug-Flow detention time= 87.0 min calculated for 7,567 cf (90% of inflow)
Center-of-Mass det. time= 35.9 min (819.9 - 784.0)

Volume	Invert	Avail.Storage	Storage Description
#1	97.24'	1,148 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

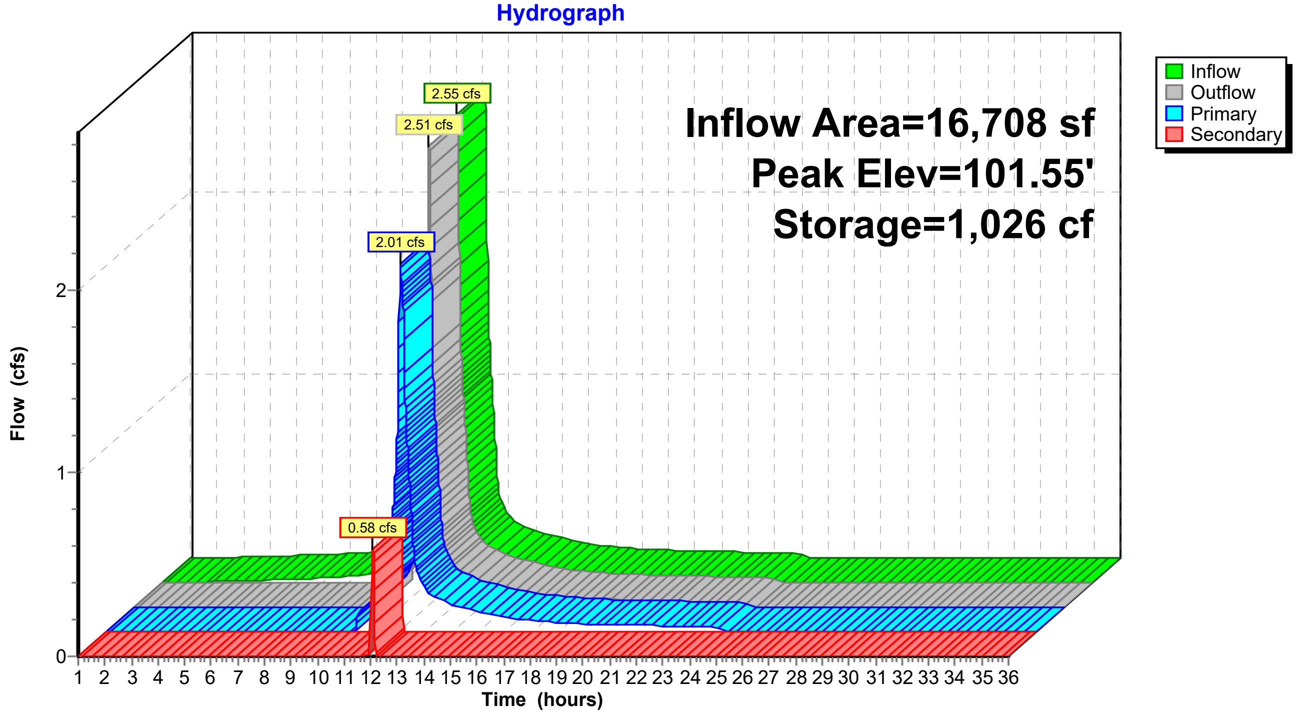
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.24	641	0.0	0	0
97.25	641	40.0	3	3
97.74	641	40.0	126	128
97.75	641	30.0	2	130
100.24	641	30.0	479	609
100.25	641	40.0	3	612
100.49	641	40.0	62	673
100.50	88	100.0	4	677
101.00	335	100.0	106	782
101.75	641	100.0	366	1,148

Device	Routing	Invert	Outlet Devices
#1	Device 2	101.25'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	92.75'	**12.0" Round Culvert** L= 23.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 92.75' / 92.25' S= 0.0210 '/' Cc= 0.900 n= 0.130, Flow Area= 0.79 sf
#3	Secondary	101.50'	**24.0' 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=1.99 cfs @ 12.05 hrs HW=101.48' TW=93.81' (Dynamic Tailwater)
└─**2=Culvert** (Outlet Controls 1.99 cfs @ 2.54 fps)
  └─**1=Orifice/Grate** (Passes 1.99 cfs of 2.22 cfs potential flow)

Secondary OutFlow Max=0.58 cfs @ 12.10 hrs HW=101.55' TW=94.58' (Dynamic Tailwater)
└─**3=Broad-Crested Rectangular Weir** (Weir Controls 0.58 cfs @ 0.53 fps)

Pond 1P: Rain Garden



Summary for Pond 2P: Infiltration Chambers - Area 1

```
Inflow Area =        59,403 sf,  87.54% Impervious,  Inflow Depth >  7.04"   for  100-year event
Inflow      =     10.33 cfs @  12.09 hrs,  Volume=         34,868 cf
Outflow     =      5.78 cfs @  12.21 hrs,  Volume=         34,868 cf,  Atten= 44%,  Lag= 7.5 min
Discarded   =      0.29 cfs @  12.21 hrs,  Volume=         17,960 cf
Primary     =      5.50 cfs @  12.21 hrs,  Volume=         16,908 cf
```

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 95.60' @ 12.21 hrs Surf.Area= 3,603 sf Storage= 11,637 cf

Plug-Flow detention time= 141.2 min calculated for 34,857 cf (100% of inflow)
Center-of-Mass det. time= 141.2 min (909.9 - 768.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	90.50'	5,063 cf	**29.92'W x 120.42'L x 5.50'H Field A**
			19,814 cf Overall - 7,156 cf Embedded = 12,658 cf x 40.0% Voids
#2A	91.25'	7,156 cf	**ADS_StormTech MC-3500 d +Cap** x 64 Inside #1
			Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
			Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
			4 Rows of 16 Chambers
			Cap Storage= +14.9 cf x 2 x 4 rows = 119.2 cf
		12,219 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	90.50'	**2.410 in/hr Exfiltration over Wetted area** Phase-In= 0.01'
#2	Primary	91.50'	**12.0" Round Culvert**
			L= 87.6' CPP, projecting, no headwall, Ke= 0.900
			Inlet / Outlet Invert= 91.50' / 91.06' S= 0.0050 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	95.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 2	92.20'	**4.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.29 cfs @ 12.21 hrs HW=95.60' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.29 cfs)

Primary OutFlow Max=5.50 cfs @ 12.21 hrs HW=95.60' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Barrel Controls 5.50 cfs @ 7.00 fps)
  ├─**3=Sharp-Crested Rectangular Weir** (Passes < 5.83 cfs potential flow)
  └─**4=Orifice/Grate** (Passes < 0.75 cfs potential flow)

Pond 2P: Infiltration Chambers - Area 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= +14.9 cf x 2 x 4 rows = 119.2 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

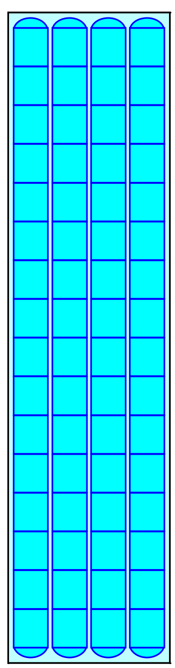
16 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 118.42' Row Length +12.0" End Stone x 2 = 120.42' Base Length
4 Rows x 77.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 29.92' Base Width
9.0" Base + 45.0" Chamber Height + 12.0" Cover = 5.50' Field Height

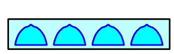
64 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 4 Rows = 7,156.1 cf Chamber Storage

19,814.1 cf Field - 7,156.1 cf Chambers = 12,658.0 cf Stone x 40.0% Voids = 5,063.2 cf Stone Storage

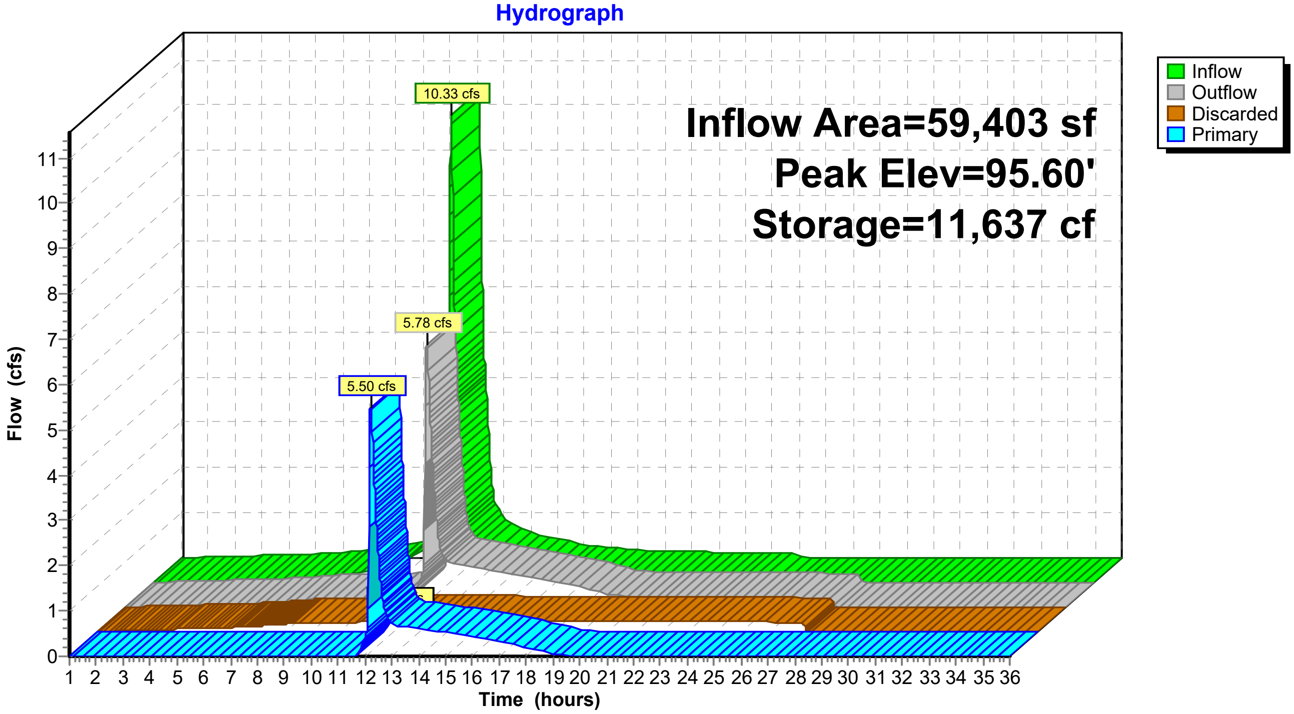
Chamber Storage + Stone Storage = 12,219.3 cf = 0.281 af
Overall Storage Efficiency = 61.7%
Overall System Size = 120.42' x 29.92' x 5.50'

64 Chambers
733.9 cy Field
468.8 cy Stone





Pond 2P: Infiltration Chambers - Area 1



Summary for Pond 3P: Detention Chambers - Area 2

Inflow Area =	45,469 sf,100.00% Impervious,	Inflow Depth > 8.06"	for 100-year event	
Inflow =	8.51 cfs @	12.08 hrs, Volume=	30,521 cf	
Outflow =	7.77 cfs @	12.12 hrs, Volume=	29,793 cf,	Atten= 9%, Lag= 2.2 min
Primary =	7.77 cfs @	12.12 hrs, Volume=	29,793 cf	

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 92.40' @ 12.12 hrs Surf.Area= 658 sf Storage= 1,335 cf

Plug-Flow detention time= 31.0 min calculated for 29,784 cf (98% of inflow)
Center-of-Mass det. time= 15.6 min (756.7 - 741.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	89.00'	627 cf	**20.50'W x 32.10'L x 3.50'H Field A** 2,303 cf Overall - 735 cf Embedded = 1,568 cf x 40.0% Voids
#2A	89.50'	735 cf	**ADS_StormTech SC-740 +Cap** x 16 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 4 Rows of 4 Chambers
		1,362 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	89.00'	**15.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 89.00' / 88.88' S= 0.0048 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	90.70'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=7.76 cfs @ 12.12 hrs HW=92.39' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 7.76 cfs @ 6.33 fps)
  └─**2=Sharp-Crested Rectangular Weir** (Passes 7.76 cfs of 26.41 cfs potential flow)

Pond 3P: Detention Chambers - Area 2 - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

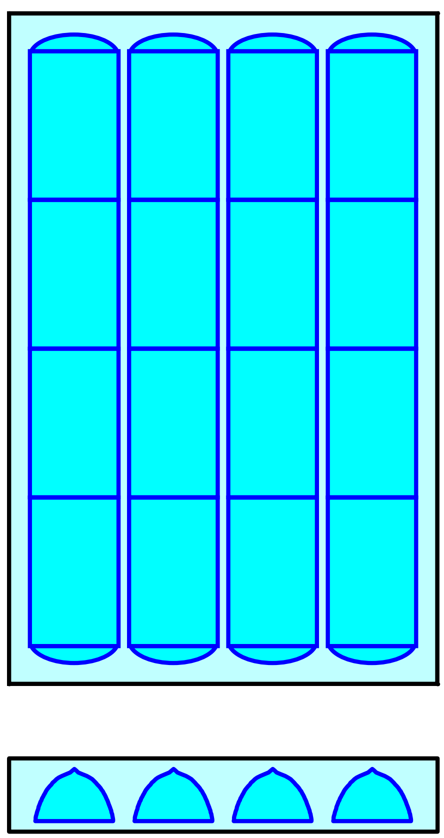
4 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 30.10' Row Length +12.0" End Stone x 2 = 32.10' Base Length
4 Rows x 51.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.50' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

16 Chambers x 45.9 cf = 735.0 cf Chamber Storage

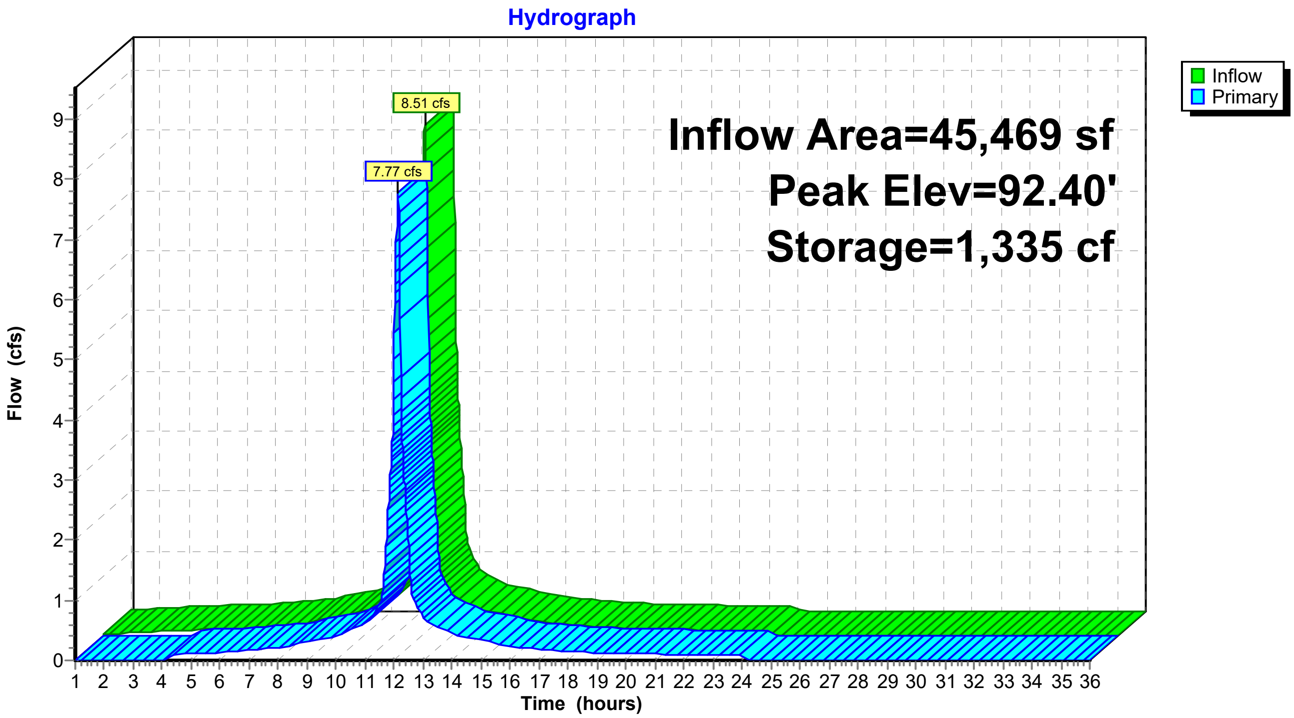
2,302.9 cf Field - 735.0 cf Chambers = 1,567.9 cf Stone x 40.0% Voids = 627.2 cf Stone Storage

Chamber Storage + Stone Storage = 1,362.2 cf = 0.031 af
Overall Storage Efficiency = 59.2%
Overall System Size = 32.10' x 20.50' x 3.50'

16 Chambers
85.3 cy Field
58.1 cy Stone



Pond 3P: Detention Chambers - Area 2

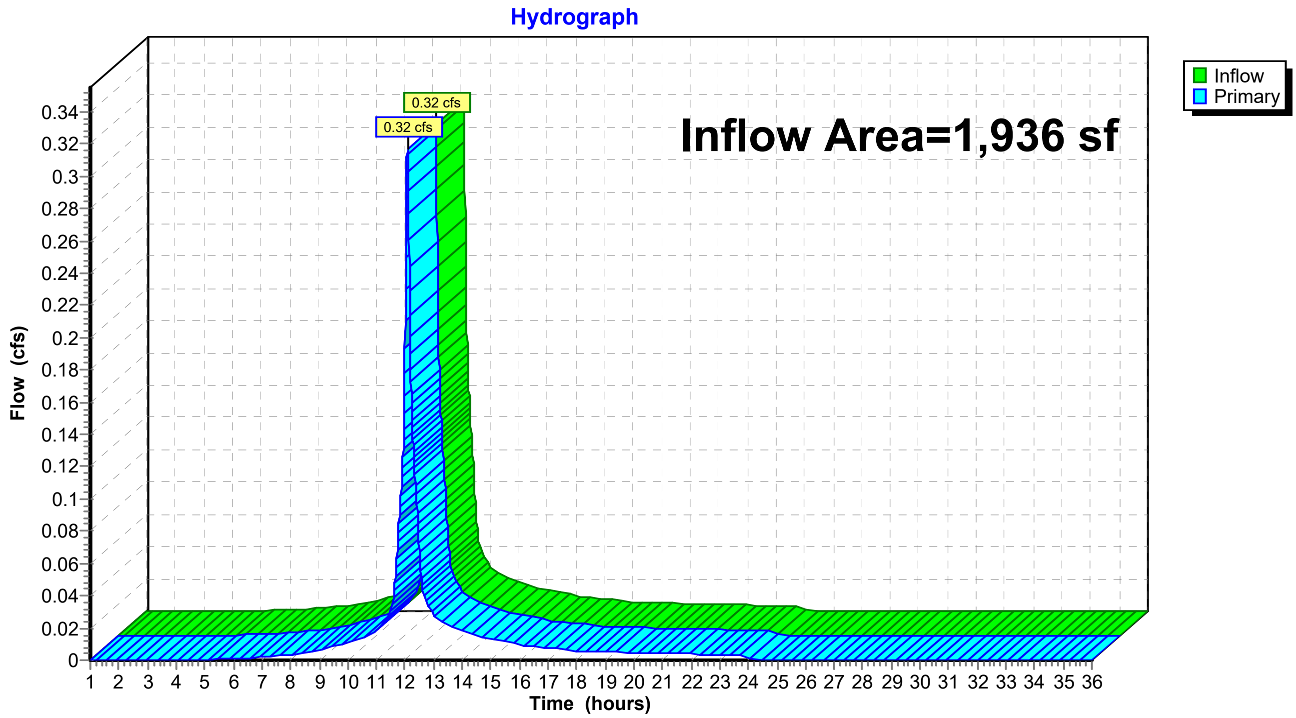


Summary for Link 1L: School Center - Leaching CB

Inflow Area = 1,936 sf, 59.97% Impervious, Inflow Depth = 6.26" for 100-year event
Inflow = 0.32 cfs @ 12.09 hrs, Volume= 1,011 cf
Primary = 0.32 cfs @ 12.09 hrs, Volume= 1,011 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 1L: School Center - Leaching CB

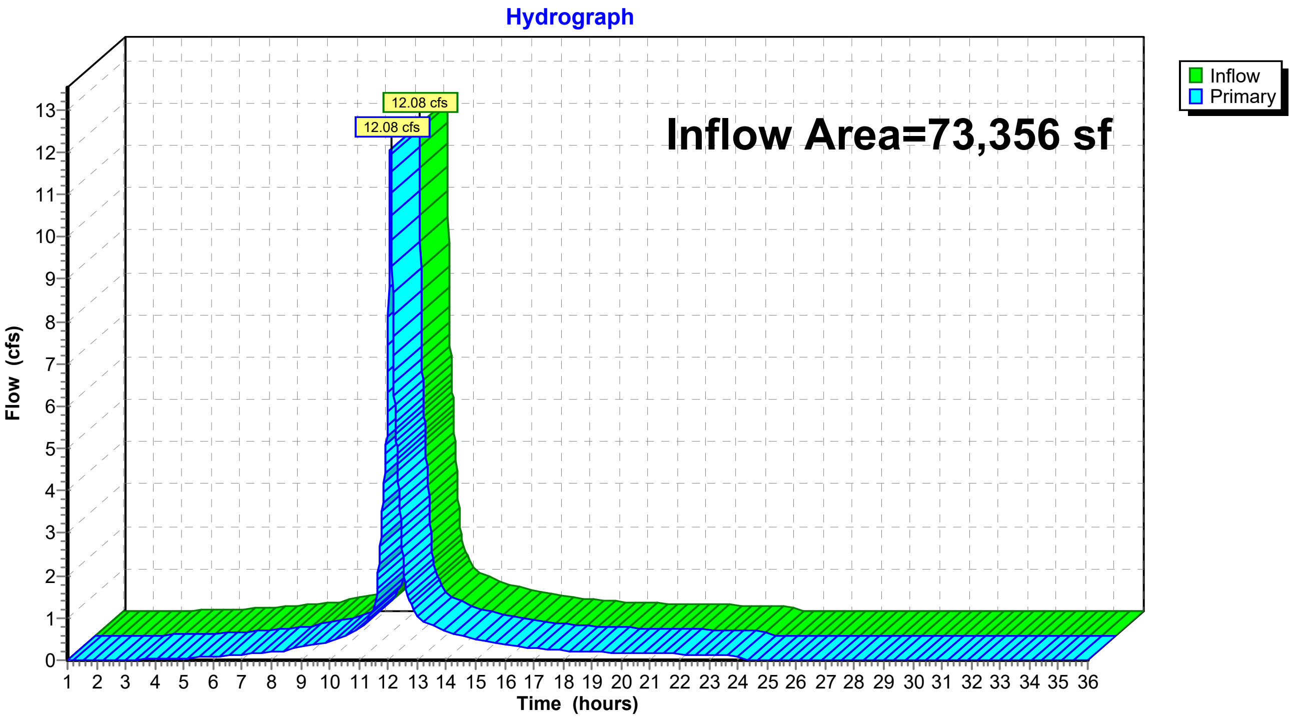


Summary for Link 2L: Playground - Leaching CBs

Inflow Area =	73,356 sf,	66.89% Impervious,	Inflow Depth > 6.53"	for 100-year event	
Inflow =	12.08 cfs @	12.08 hrs, Volume=	39,947 cf		
Primary =	12.08 cfs @	12.08 hrs, Volume=	39,947 cf,	Atten= 0%,	Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 2L: Playground - Leaching CBs

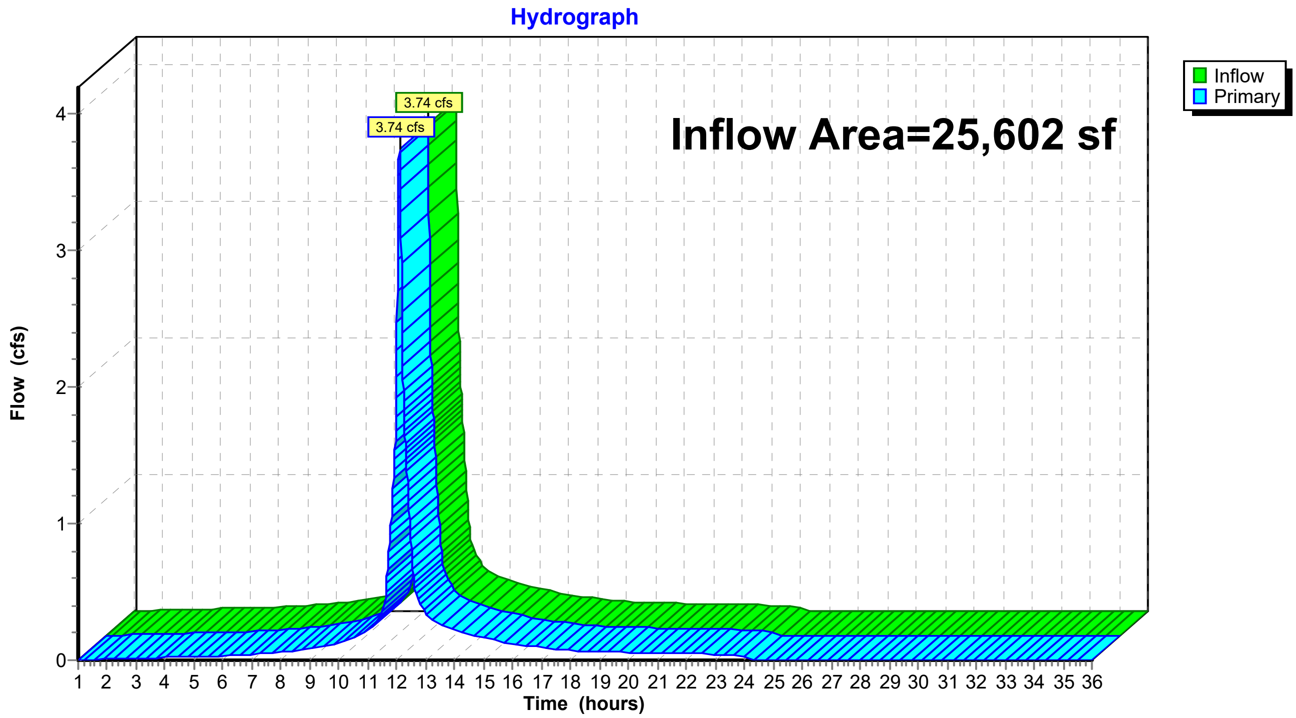


Summary for Link 3L: South Western - Leaching CBs

Inflow Area = 25,602 sf, 52.65% Impervious, Inflow Depth > 5.93" for 100-year event
Inflow = 3.74 cfs @ 12.09 hrs, Volume= 12,641 cf
Primary = 3.74 cfs @ 12.09 hrs, Volume= 12,641 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 3L: South Western - Leaching CBs

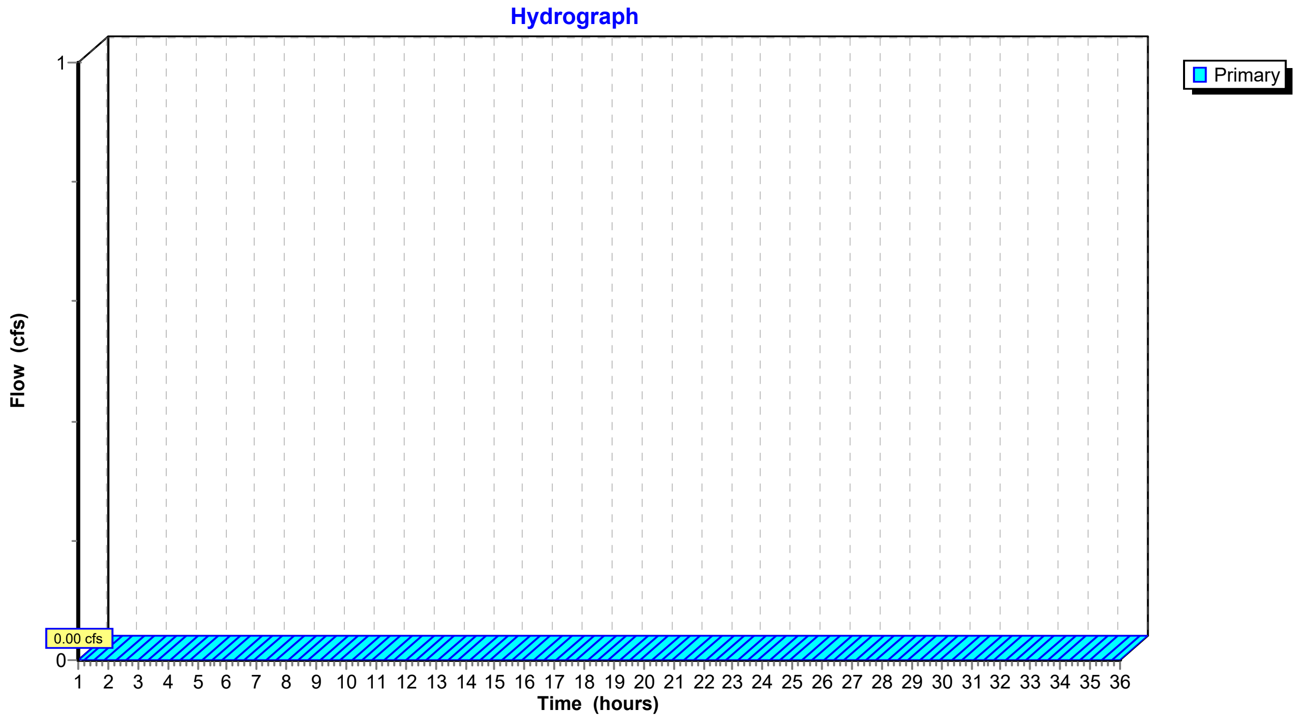


Summary for Link 4L: School Main Entrance - Leaching CBs

Primary = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 4L: School Main Entrance - Leaching CBs

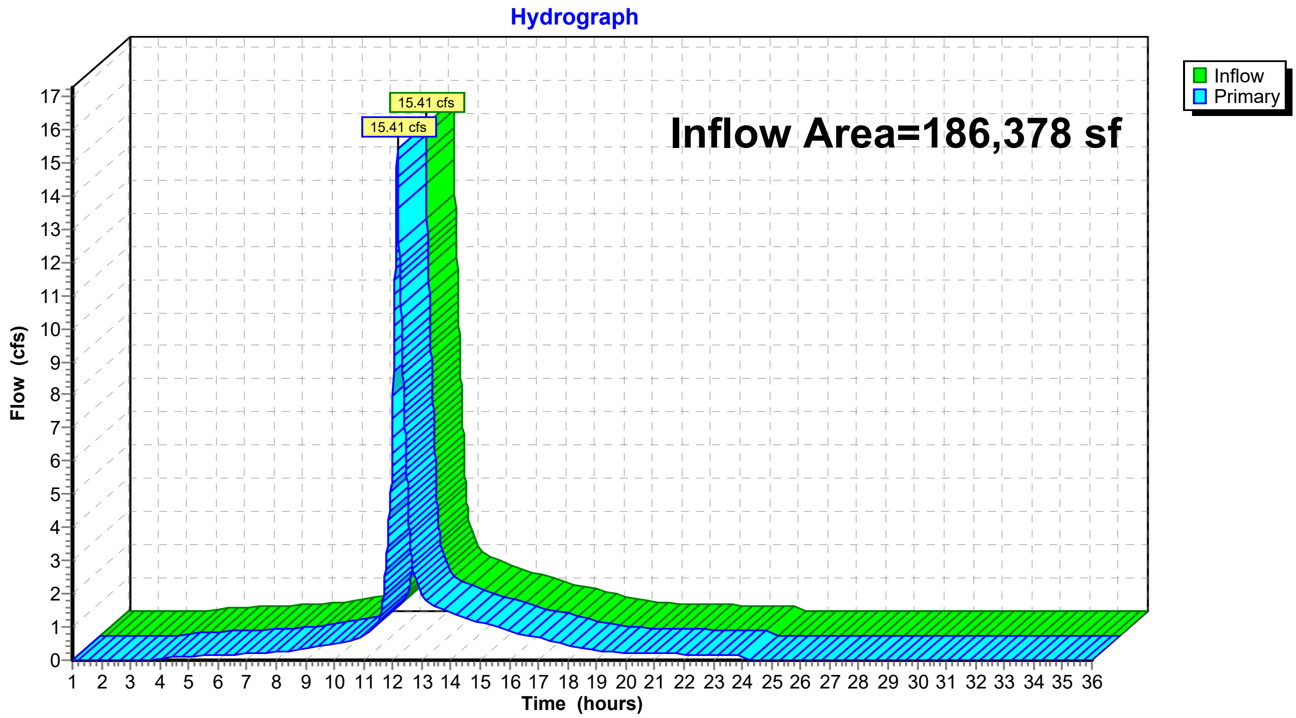


Summary for Link 5L: Main Street Drainage Network

Inflow Area = 186,378 sf, 57.92% Impervious, Inflow Depth > 3.95" for 100-year event
Inflow = 15.41 cfs @ 12.16 hrs, Volume= 61,378 cf
Primary = 15.41 cfs @ 12.16 hrs, Volume= 61,378 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Link 5L: Main Street Drainage Network



Attachment E - Calculations

INSTRUCTIONS:
1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Version 1, Automated: Mar. 4, 2008

Location: Chamber Areas 1 & 2

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Subsurface Infiltration Structure	0.80	1.00	0.80	0.20
	0.00	0.20	0.00	0.20
	0.00	0.20	0.00	0.20
	0.00	0.20	0.00	0.20
	0.00	0.20	0.00	0.20

Total TSS Removal = 80%

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: Harry Lee Cole School
Prepared By: Aaron Guzzaloca
Date: 2/3/2021

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed
1. From MassDEP Stormwater Handbook Vol. 1

Mass. Dept. of Environmental Protection

INSTRUCTIONS:
1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Version 1, Automated: Mar. 4, 2008

Location: Rain Garden

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Bioretention Area	**0.90**	**1.00**	**0.90**	**0.10**
	0.00	**0.10**	**0.00**	**0.10**
	0.00	**0.10**	**0.00**	**0.10**
	0.00	**0.10**	**0.00**	**0.10**
	0.00	**0.10**	**0.00**	**0.10**

Total TSS Removal = 90%

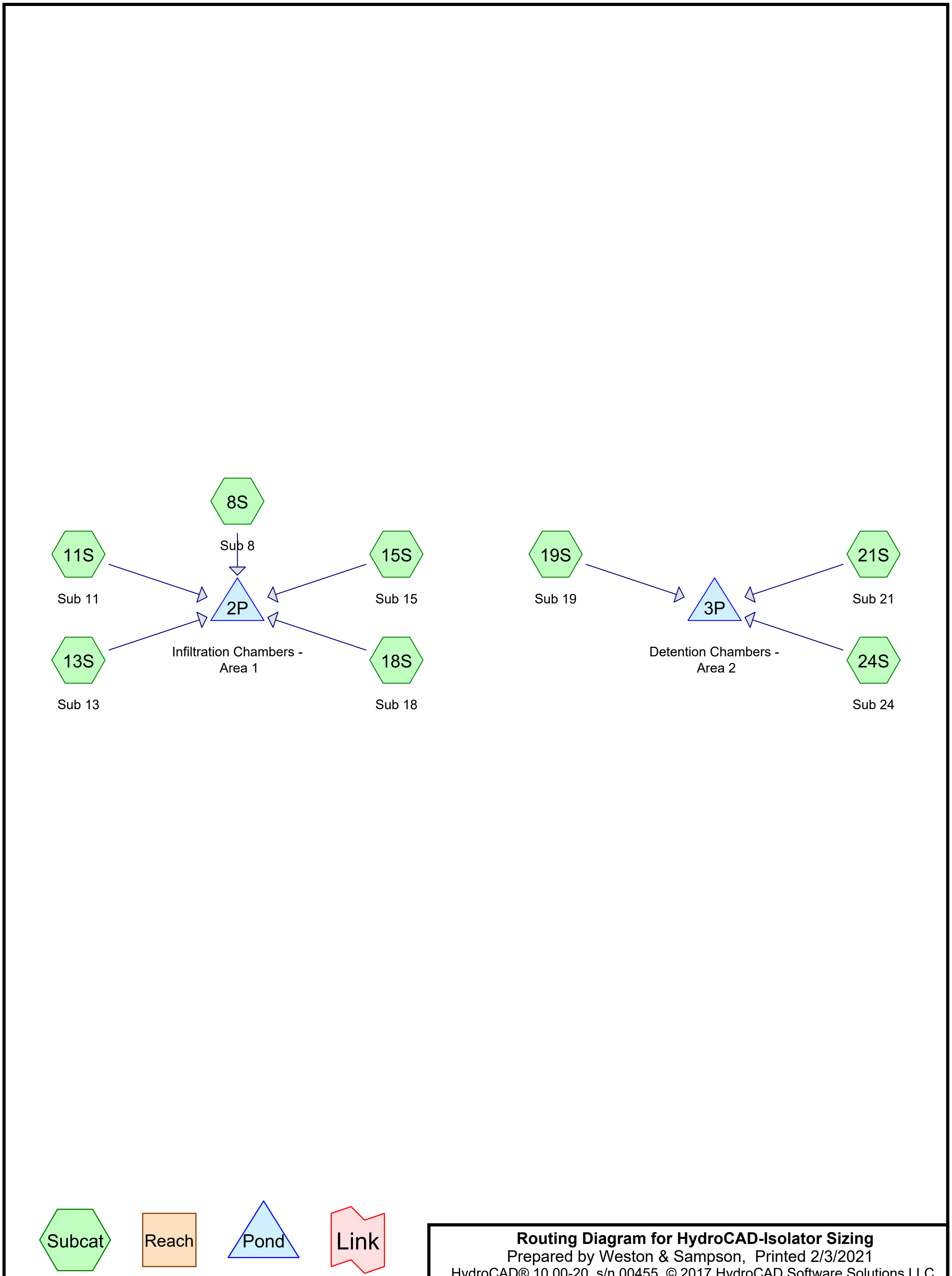
Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: **Harry Lee Cole School**
Prepared By: **Aaron Guazzaloca**
Date: **2/3/2021**

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet
must be used if Proprietary BMP Proposed
1. From MassDEP Stormwater Handbook Vol. 1

Mass. Dept. of Environmental Protection



Routing Diagram for HydroCAD-Isolator Sizing
Prepared by Weston & Sampson, Printed 2/3/2021
HydroCAD® 10.00-20 s/n 00455 © 2017 HydroCAD Software Solutions LLC

Summary for Subcatchment 8S: Sub 8

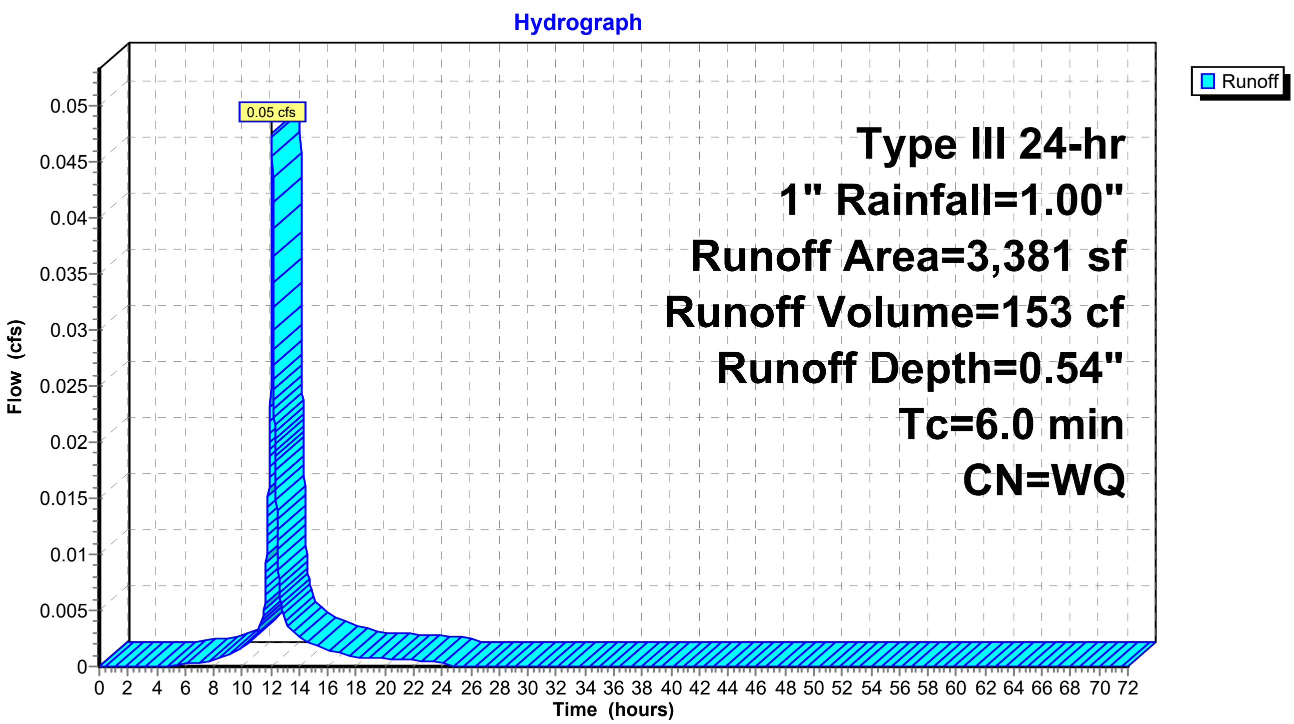
Runoff = 0.05 cfs @ 12.08 hrs, Volume= 153 cf, Depth= 0.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" Rainfall=1.00"

Area (sf)	CN	Description
2,327	98	Paved parking, HSG B
1,054	61	>75% Grass cover, Good, HSG B
3,381		Weighted Average
1,054		31.17% Pervious Area
2,327		68.83% Impervious Area

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

Subcatchment 8S: Sub 8



Summary for Subcatchment 11S: Sub 11

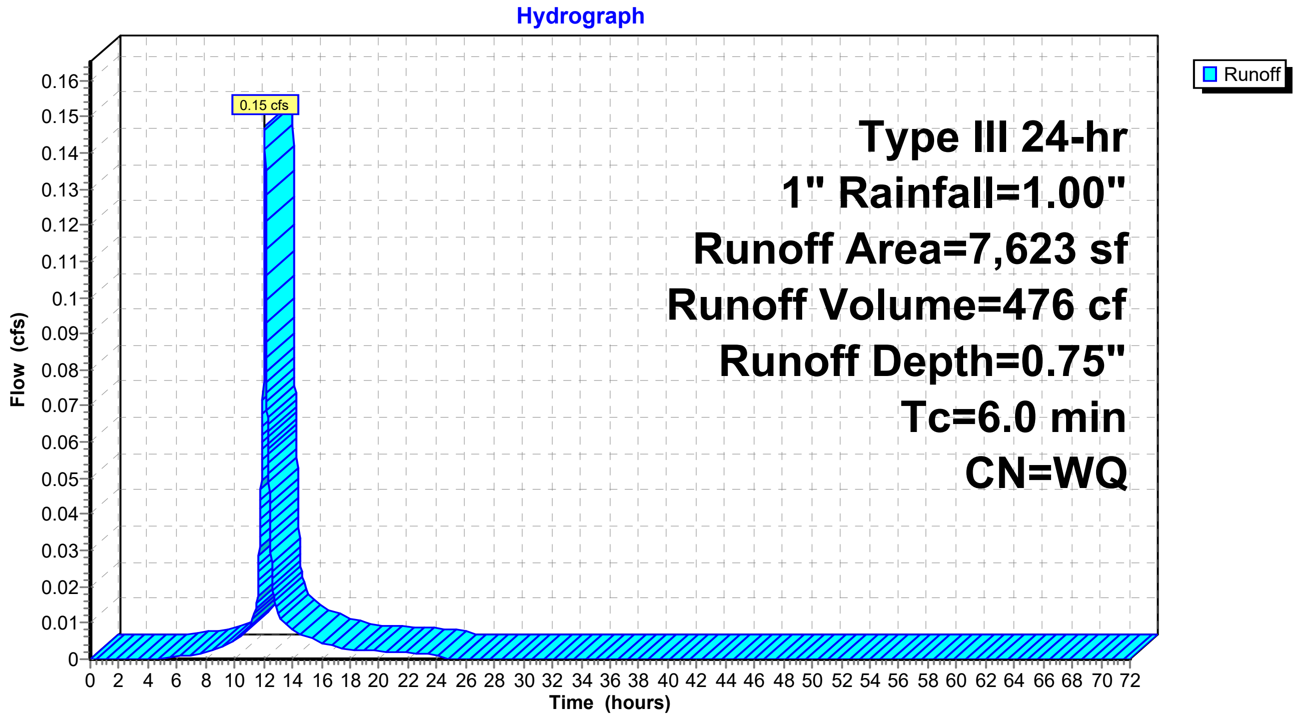
Runoff = 0.15 cfs @ 12.08 hrs, Volume= 476 cf, Depth= 0.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" Rainfall=1.00"

Area (sf)	CN	Description
401	39	>75% Grass cover, Good, HSG A
6,169	98	Paved parking, HSG A
1,053	98	Roofs, HSG A
7,623		Weighted Average
401		5.26% Pervious Area
7,222		94.74% Impervious Area

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

Subcatchment 11S: Sub 11



Summary for Subcatchment 13S: Sub 13

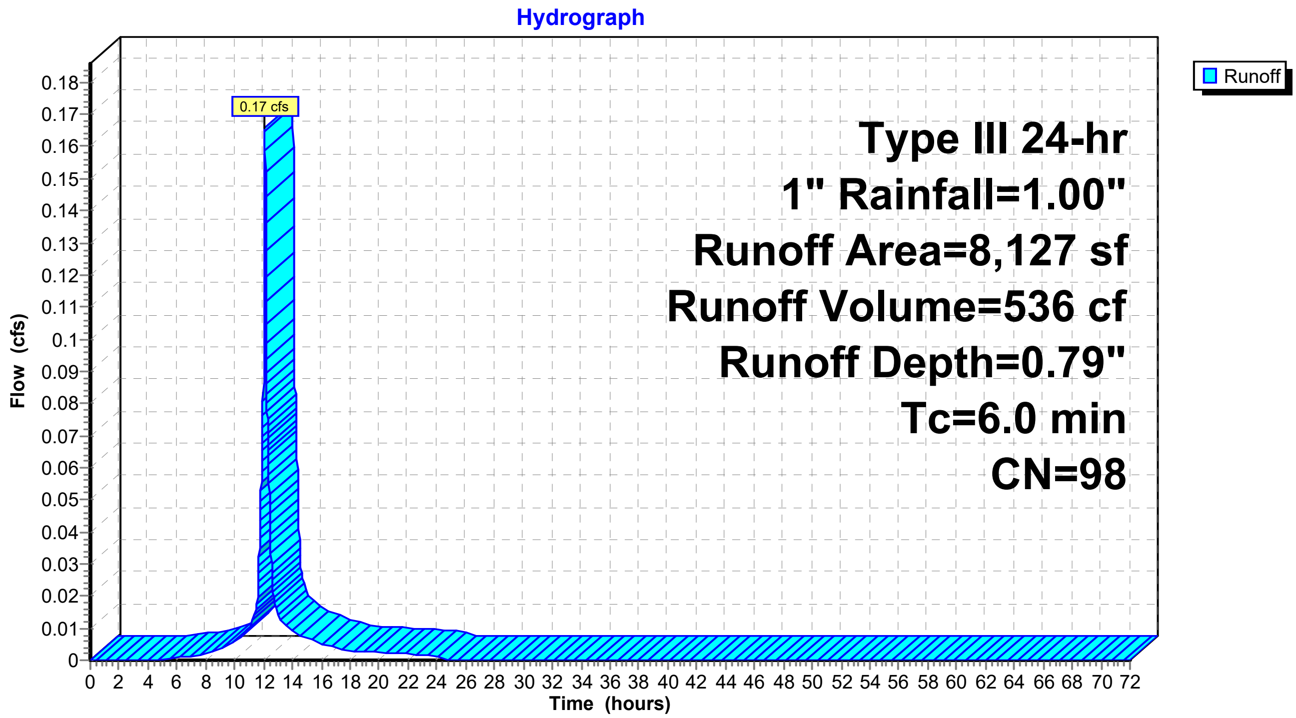
Runoff = 0.17 cfs @ 12.08 hrs, Volume= 536 cf, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" Rainfall=1.00"

Area (sf)	CN	Description
8,127	98	Paved parking, HSG A
8,127		100.00% Impervious Area

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

Subcatchment 13S: Sub 13



Summary for Subcatchment 15S: Sub 15

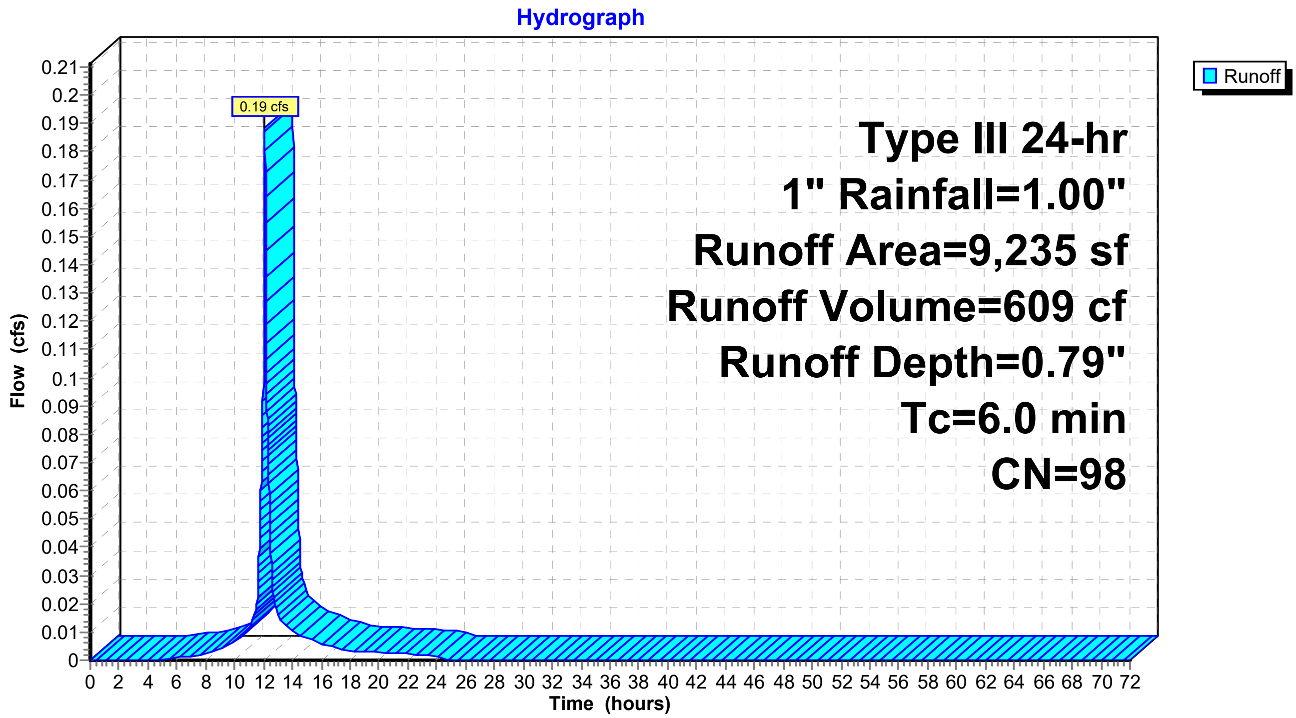
Runoff = 0.19 cfs @ 12.08 hrs, Volume= 609 cf, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" Rainfall=1.00"

Area (sf)	CN	Description
9,235	98	Paved parking, HSG A
9,235		100.00% Impervious Area

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

Subcatchment 15S: Sub 15



Summary for Subcatchment 18S: Sub 18

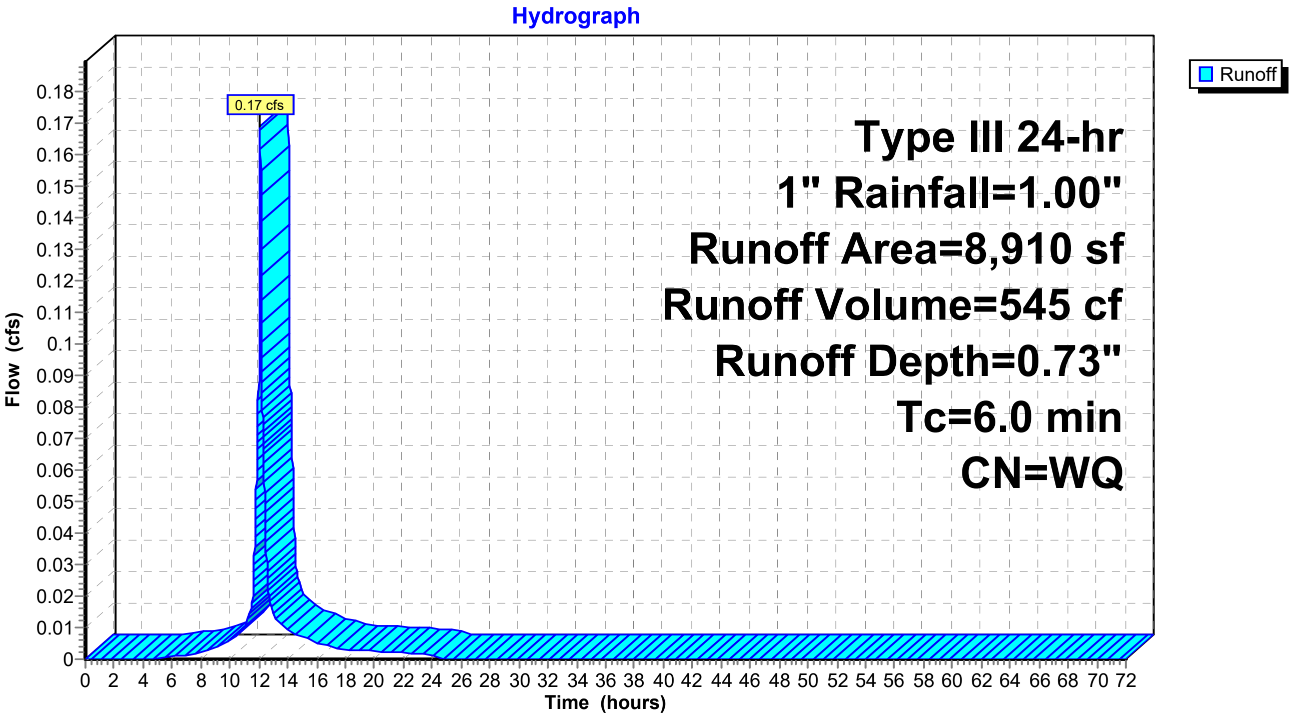
Runoff = 0.17 cfs @ 12.08 hrs, Volume= 545 cf, Depth= 0.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" Rainfall=1.00"

Area (sf)	CN	Description
637	39	>75% Grass cover, Good, HSG A
5,895	98	Paved parking, HSG A
2,378	98	Roofs, HSG B
8,910		Weighted Average
637		7.15% Pervious Area
8,273		92.85% Impervious Area

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

Subcatchment 18S: Sub 18



Summary for Subcatchment 19S: Sub 19

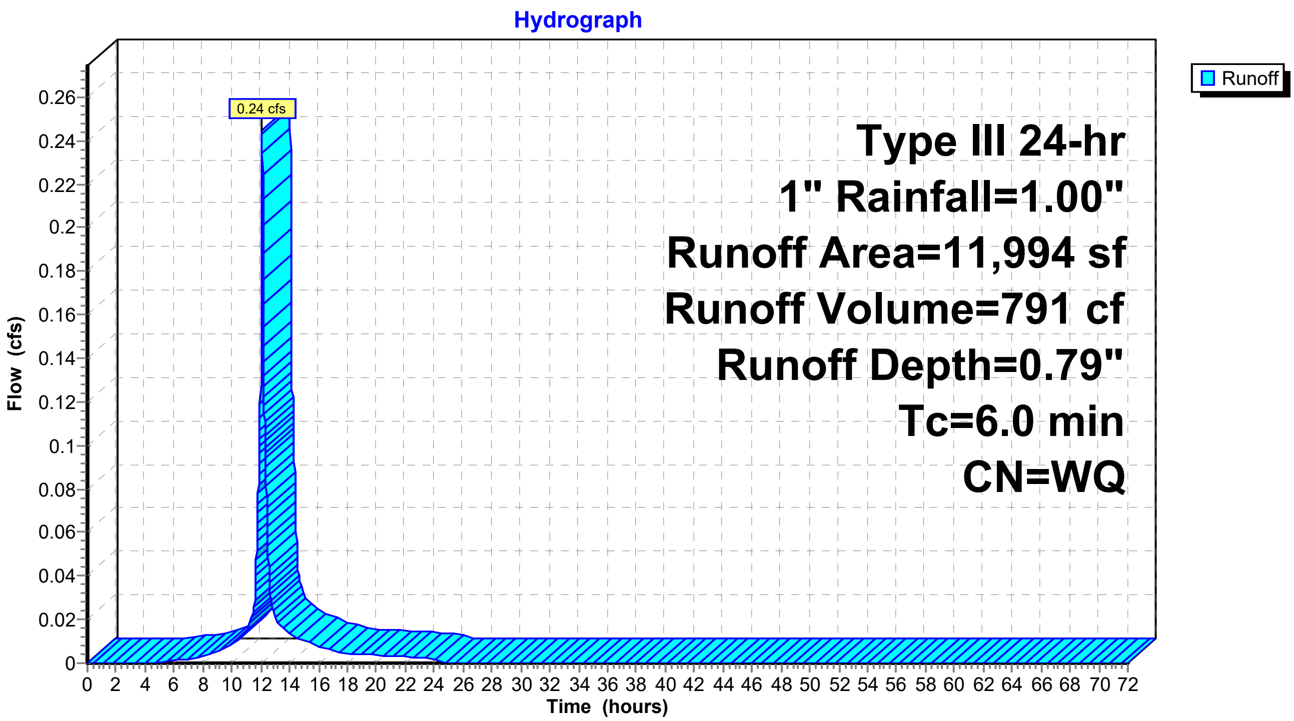
Runoff = 0.24 cfs @ 12.08 hrs, Volume= 791 cf, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" Rainfall=1.00"

Area (sf)	CN	Description
7,625	98	Roofs, HSG A
4,369	98	Paved parking, HSG A
11,994		Weighted Average
11,994		100.00% Impervious Area

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

Subcatchment 19S: Sub 19



Summary for Subcatchment 21S: Sub 21

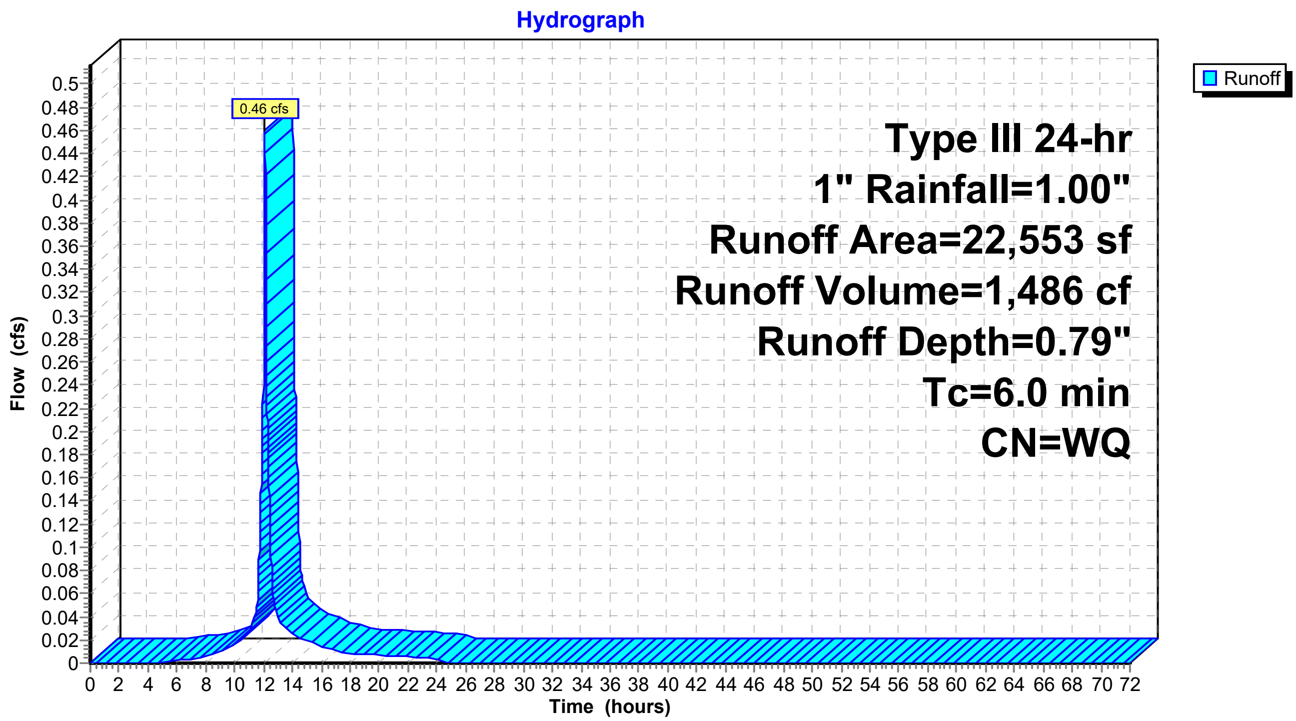
Runoff = 0.46 cfs @ 12.08 hrs, Volume= 1,486 cf, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" Rainfall=1.00"

Area (sf)	CN	Description
10,469	98	Roofs, HSG A
12,084	98	Paved parking, HSG A
22,553		Weighted Average
22,553		100.00% Impervious Area

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

Subcatchment 21S: Sub 21



Summary for Subcatchment 24S: Sub 24

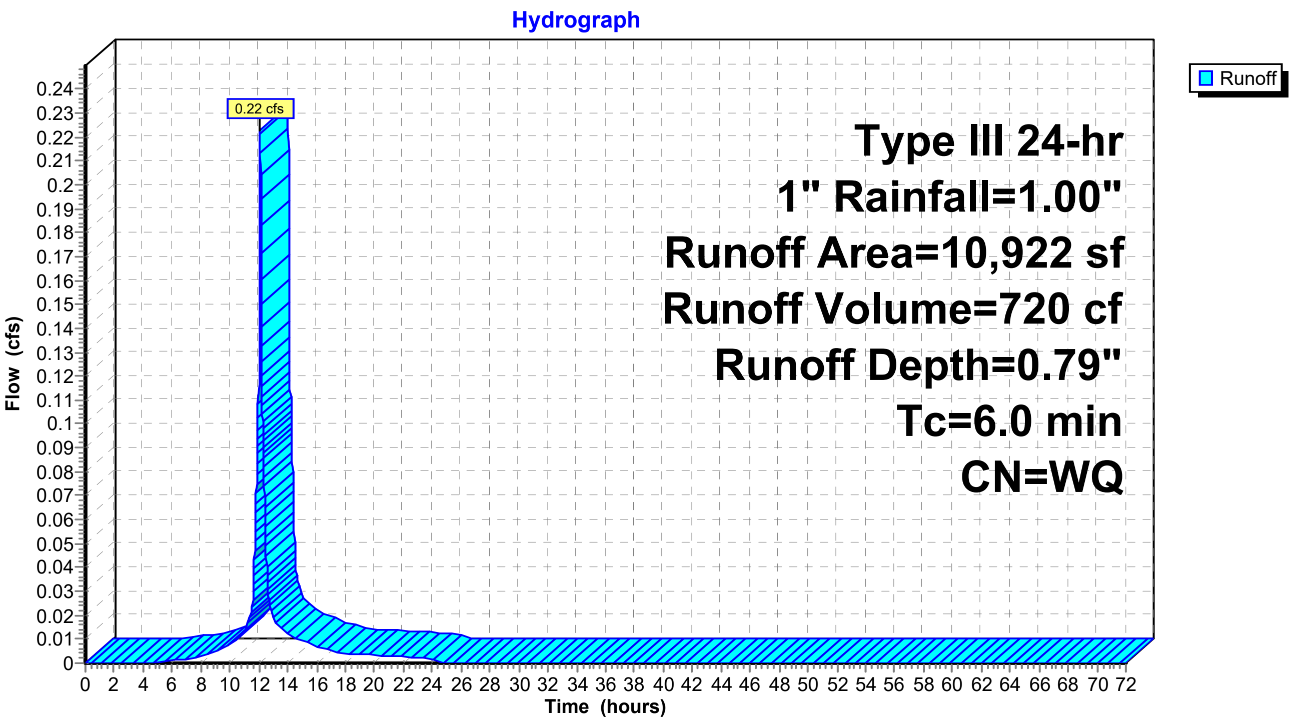
Runoff = 0.22 cfs @ 12.08 hrs, Volume= 720 cf, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" Rainfall=1.00"

Area (sf)	CN	Description
316	98	Roofs, HSG B
10,606	98	Paved parking, HSG B
10,922		Weighted Average
10,922		100.00% Impervious Area

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

Subcatchment 24S: Sub 24



Summary for Pond 2P: Infiltration Chambers - Area 1

Inflow Area = 37,276 sf, 94.39% Impervious, Inflow Depth = 0.75" for 1" event
Inflow = 0.72 cfs @ 12.08 hrs, Volume= 2,319 cf
Outflow = 0.30 cfs @ 12.01 hrs, Volume= 2,319 cf, Atten= 58%, Lag= 0.0 min
Discarded = 0.30 cfs @ 12.01 hrs, Volume= 2,319 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 91.10' @ 12.29 hrs Surf.Area= 1,014 sf Storage= 243 cf

Plug-Flow detention time= 3.4 min calculated for 2,319 cf (100% of inflow)
Center-of-Mass det. time= 3.4 min (791.3 - 787.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	90.50'	1,514 cf	**8.42'W x 120.42'L x 5.50'H Field A** 5,574 cf Overall - 1,789 cf Embedded = 3,785 cf x 40.0% Voids
#2A	91.25'	1,789 cf	**ADS_StormTech MC-3500 d +Cap** x 16 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap Cap Storage= +14.9 cf x 2 x 1 rows = 29.8 cf
		3,303 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	90.50'	**0.30 cfs Exfiltration at all elevations** Phase-In= 0.02'
#2	Primary	93.75'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Discarded OutFlow Max=0.30 cfs @ 12.01 hrs HW=90.57' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.30 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=90.50' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2P: Infiltration Chambers - Area 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= +14.9 cf x 2 x 1 rows = 29.8 cf

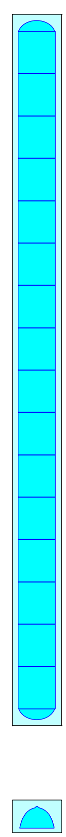
16 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 118.42' Row Length +12.0" End Stone x 2 = 120.42' Base Length
1 Rows x 77.0" Wide + 12.0" Side Stone x 2 = 8.42' Base Width
9.0" Base + 45.0" Chamber Height + 12.0" Cover = 5.50' Field Height

16 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 1 Rows = 1,789.0 cf Chamber Storage

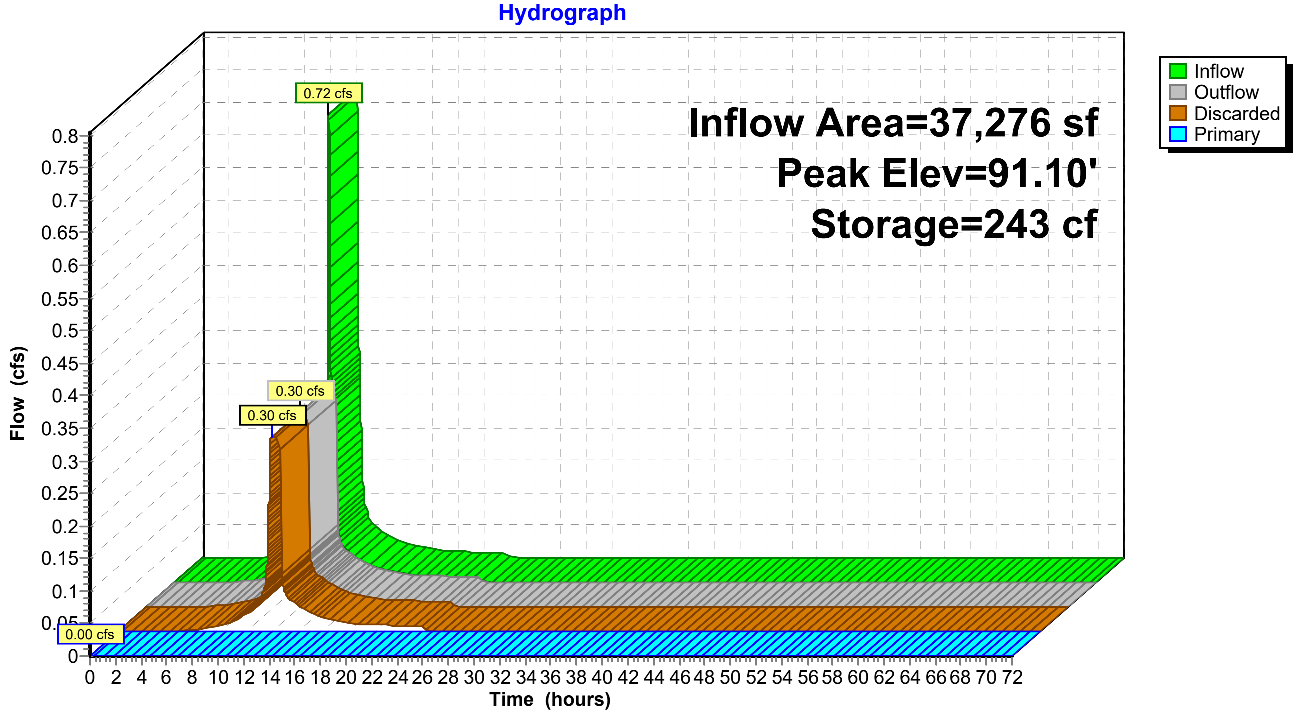
5,574.4 cf Field - 1,789.0 cf Chambers = 3,785.4 cf Stone x 40.0% Voids = 1,514.2 cf Stone Storage

Chamber Storage + Stone Storage = 3,303.2 cf = 0.076 af
Overall Storage Efficiency = 59.3%
Overall System Size = 120.42' x 8.42' x 5.50'

16 Chambers
206.5 cy Field
140.2 cy Stone



Pond 2P: Infiltration Chambers - Area 1



Summary for Pond 3P: Detention Chambers - Area 2

Inflow Area = 45,469 sf,100.00% Impervious, Inflow Depth = 0.79" for 1" event
Inflow = 0.93 cfs @ 12.08 hrs, Volume= 2,997 cf
Outflow = 0.20 cfs @ 11.78 hrs, Volume= 2,997 cf, Atten= 78%, Lag= 0.0 min
Discarded = 0.20 cfs @ 11.78 hrs, Volume= 2,997 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 90.61' @ 12.50 hrs Surf.Area= 658 sf Storage= 687 cf

Plug-Flow detention time= 17.8 min calculated for 2,996 cf (100% of inflow)
Center-of-Mass det. time= 17.8 min (805.6 - 787.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	89.00'	627 cf	**20.50'W x 32.10'L x 3.50'H Field A** 2,303 cf Overall - 735 cf Embedded = 1,568 cf x 40.0% Voids
#2A	89.50'	735 cf	**ADS_StormTech SC-740 +Cap** x 16 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 4 Rows of 4 Chambers
		1,362 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	89.00'	**0.20 cfs Exfiltration at all elevations** Phase-In= 0.02'
#2	Primary	90.70'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Discarded OutFlow Max=0.20 cfs @ 11.78 hrs HW=89.04' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.20 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=89.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: Detention Chambers - Area 2 - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

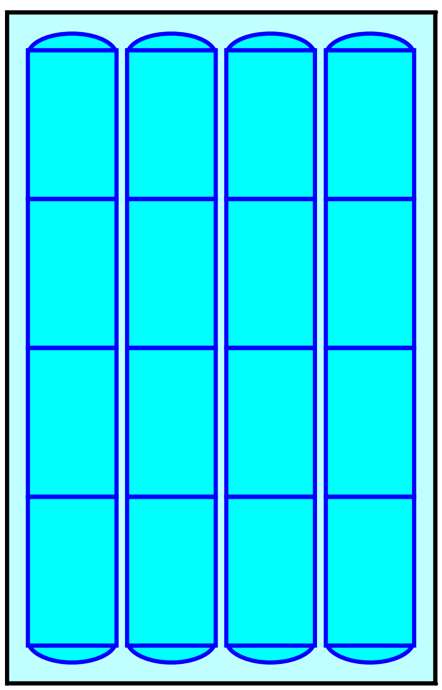
4 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 30.10' Row Length +12.0" End Stone x 2 = 32.10' Base Length
4 Rows x 51.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.50' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

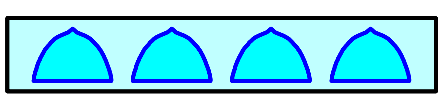
16 Chambers x 45.9 cf = 735.0 cf Chamber Storage

2,302.9 cf Field - 735.0 cf Chambers = 1,567.9 cf Stone x 40.0% Voids = 627.2 cf Stone Storage

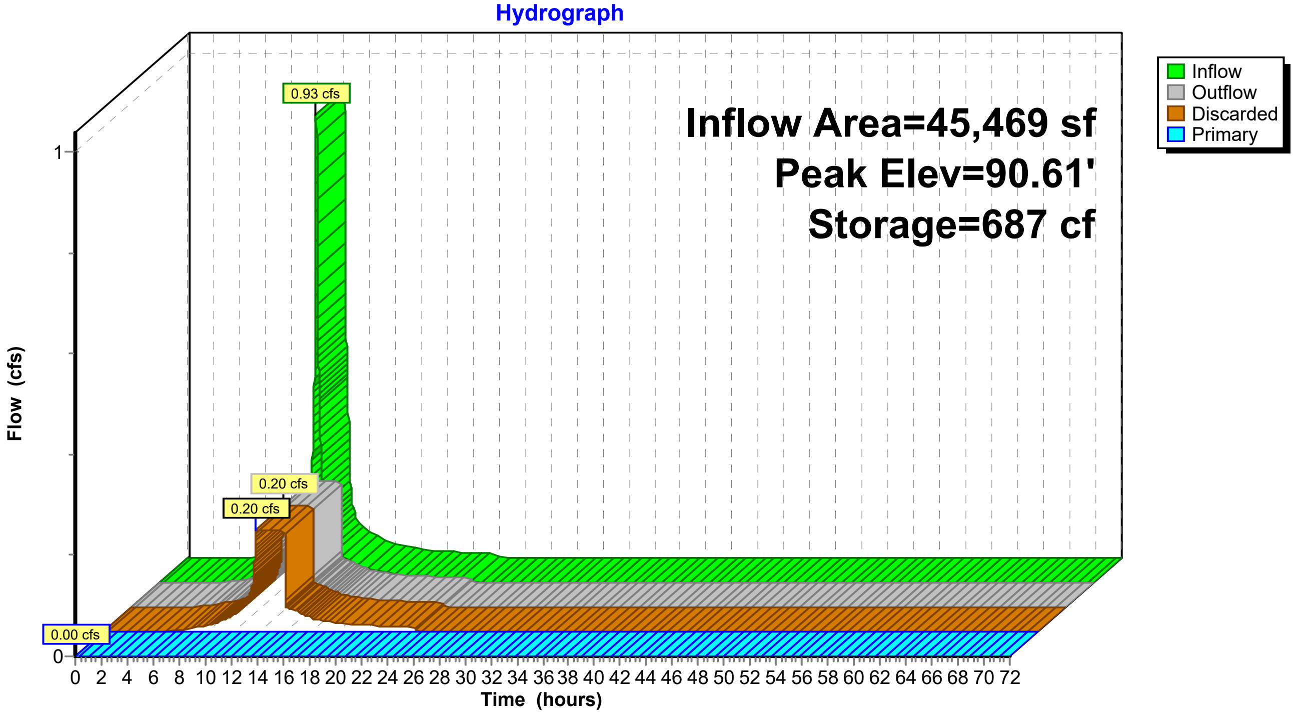
Chamber Storage + Stone Storage = 1,362.2 cf = 0.031 af
Overall Storage Efficiency = 59.2%
Overall System Size = 32.10' x 20.50' x 3.50'

16 Chambers
85.3 cy Field
58.1 cy Stone





Pond 3P: Detention Chambers - Area 2



StormTech
Detention • Retention • Recharge
Subsurface Stormwater Management℠

Technical Memo

Pages: 3

To: Ed Pisowicz

From: Ken Sanok, P.E.

Cc: Engineering Department, Technical Services, StormTech Regional Product Managers

Date: 03/5/2010

Subject: Design Guidance for the Isolator Row Weir

Isolator Row

The Isolator Row is typically designed to treat the "first flush" and offers the versatility to be sized on a volume basis or flow rate basis. While the "first flush" will have the highest TSS, nutrient and hydrocarbon loading the unique design of the Isolator Row system continues to filter throughout the entire storm event. An upstream manhole/diversion structure not only provides access to the Isolator Row but typically includes a high flow weir such that the stormwater flow rates or volumes that exceed the capacity of the Isolator Row chambers overtop the weir and discharge through a manifold to the remainder of the chamber bed. There are several methods to divert the "first flush" into the Isolator Row (weirs, varying pipe inverts, etc.). This memo addresses the design of a weir for the Isolator Row diversion structure.

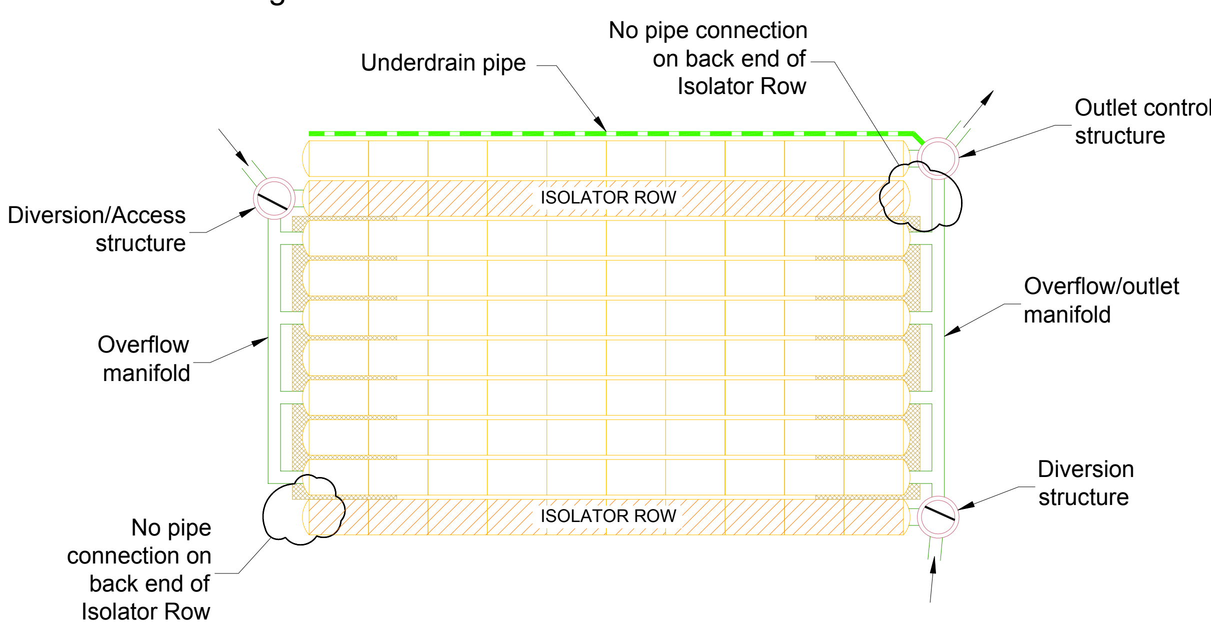


Figure 1 Typical StormTech Chamber Layout with Isolator Row

Structure Placement

The diversion/access structure must be placed directly in front of the Isolator Row and must be connected by a 24" pipe to the SC-740, DC-780 and MC-3500 chambers and a 12" pipe to the SC-310 chamber. The structure will typically have a weir installed and a minimum size of 48 inches is recommended to allow access to the Isolator Row. The design engineer may select a smaller size structure for shallow systems with low flow rates. The actual size of the structure will vary based on the weir design, pipe sizes, pipe angles and design flow rate.

Diversion Weir

The weir is situated to divert the runoff initially into the Isolator Row. The maximum weir crest elevation is determined by subtracting the head required to pass the peak flow from the maximum allowable water surface elevation. Typically the weir crest elevation ranges from the midpoint of the chamber up to the top of the chamber (see figure 2). The design of the weir is performed in several steps. The desired sized structure is drawn on the engineer's plans with the pipe connections. A weir is drawn in and the length is determined. The design engineer then determines the allowable water surface elevation over the weir crest in the structure (typically it is set at the same elevation as the top of the stone above the chambers). The weir crest elevation is then estimated. Start by assuming the elevation of the weir crest is at the same elevation as the top of the chambers. Thus the approach head (H) is the distance from the weir crest to the allowable water surface elevation.

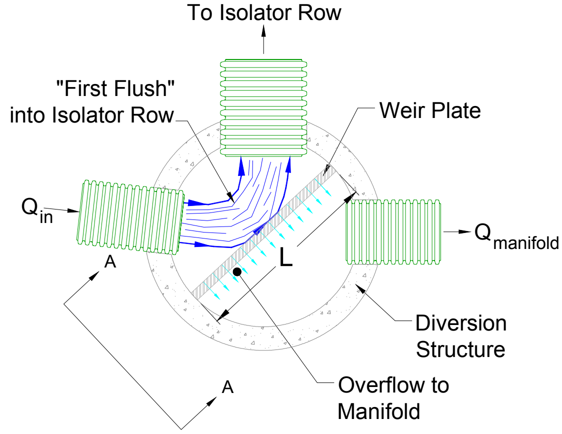


Figure 2A, Plan View of Diversion Structure

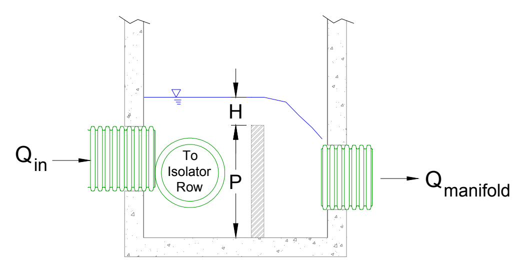


Figure 2B, Section A_A of Diversion Structure

The equation of a sharp crested weir can be written as follows [1]:

$$Q = C\sqrt{2g}\,LH^{3/2}$$

$$C = 0.40 + 0.05\frac{H}{P}$$

Q = flow rate (cfs)
C = discharge coefficient
L = length of weir (ft)
H = approach head on the crest (ft)
P = height of crest above channel bottom (ft)
g = gravity (32.2 ft/s^2)

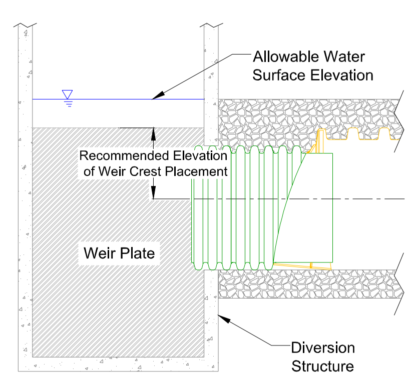


Figure 2C, Profile of Diversion Structure and Isolator Row

The flow over the weir can be calculated using these equations. This calculated flow is then compared to the design flow rate entering the structure. If this calculated flow is greater than the design flow rate then the weir is sufficient to pass the flows. If not, then the weir crest can be lowered and the calculations repeated. As mentioned previously StormTech recommends the weir crest be set between the top of the chamber and the midpoint of the chamber (see figure 2C). If the lowered crest cannot met the design flow rate a larger structure can be analyzed which allows for a longer weir crest.

Other Considerations

StormTech does not have any specifications for the material or structural design of the weir. It is the responsibility of the design engineer to ensure a material/design selected is adequate for the project design parameters. StormTech has found that aluminum weirs work well as the Isolator Row diversion weir.

Due to the confined nature of the structures it is possible that the weir will be suppressed and/or contracted. The design engineer must be aware of this and incorporate it into the design if deemed necessary.

[1] Cassidy, J.J, Chaudhry, M.H., and Roberson, J.A., Hydraulic Engineering, 1st ed., Houghton Mifflin, Boston, 1988

STATE OF MAINE
DEPARTMENT OF
ENVIRONMENTAL PROTECTION

PAUL R. LEPAGE
GOVERNOR

PAUL MERCER
COMMISSIONER

July 29, 2016

StormTech, A Division of ADS, Inc.
70 Inwood Road, Suite 3
Rocky Hill, CT 06067
ATTN: David Mailhot P.E.

Dear Mr. Mailhot,

This letter replaces the letter dated March 22, 2016. It includes a slight modification in section 1 to clarify sizing requirements.

The Stormtech Isolator Row was approved by the Department of Environmental Protection (Department) in September 2009 for use as a pre-treatment row before a subsurface underdrained filter system as described in Chapter 7.3 of Volume III of the Maine Stormwater Management Best Management Practice Manual. The sizing, installation, and maintenance criteria provided in this letter replace the ones given in Chapter 7.3 of Volume III of the Maine Stormwater Management BMP Manual. The Department still authorizes the use of the StormTech Isolator Row as a pre-treatment row meeting the requirements of the General Standards (Section 4.C.) of the Stormwater Management Rules (Chapter 500) provided the system is sized, installed, and maintained in accordance with the following provisions:

1. The number of chambers within the Isolator Row pre-treatment structure must treat, without overflowing, the one-year 24-hour peak flow from the structure's drainage area. To determine the number of chambers, the one-year peak flow rate must be divided by the specific flow rate of the chamber. The acceptable flow rate for each of the Isolator Row chamber sizes are as follow:

Chamber size	Flow Rate
SC-310	0.1 cfs
SC-740 or DC-780	0.2 cfs
MC-3500	0.3 cfs

   Additional pre-treatment rows may be added based on site conditions and chamber bed layout provided each row is provided with access manhole and control structures.
2. The Isolator Row must be part of a stormwater management system that conforms to all the requirements of Chapter 7.3 of the Stormwater Management Manual and be fitted with an overflow that bypasses the pretreatment Isolator Row only when the one-year 24-hour peak flow is exceeded, and discharges to a stable outlet or is directed to a detention system/structure that will provide necessary flood storage.
3. The Isolator Row shall be underlain with a bottom surface consisting of two layers of ADS 315 woven geotextile or equivalent; and be covered with one layer of ADS 601T non-woven geotextile or equivalent.
4. The Isolator Row does not provide for the removal of hydrocarbons and should be preceded by a device or practice that will serve this function if the area draining to the Isolator Row is

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7688 FAX: (207) 287-7826

BANGOR
106 HOGAN ROAD, SUITE 6
BANGOR, MAINE 04401
(207) 941-4570 FAX: (207) 941-4584

PORTLAND
312 CANCO ROAD
PORTLAND, MAINE 04103
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04769
(207) 764-0477 FAX: (207) 760-3143

web site: www.maine.gov/dep

a likely source of hydrocarbons (i.e. parking lots, roads, drive-through commercial enterprises).

5. The Isolator Row must include an access at both ends for the removal of accumulated sediment and debris.
6. The first year of system maintenance must be provided by the manufacturer to ensure that the system is operating according to the established specifications.
7. Prior to construction, a five-year binding inspection and maintenance contract must be provided for review and approval by the Department, and must be renewed before contract expiration. The contract will be with a professional with knowledge of erosion and stormwater control, including a detailed working knowledge of the proposed system.
8. The overall stormwater management design must meet all Department criteria and sizing specifications and will be reviewed and approved by the Department prior to use.
9. Each project must be reviewed and approved by the manufacturer for proposed use, layout and sizing of the pre-treatment row and for conformance with their design specifications.
10. The pre-treatment row must be installed under the manufacturer's representative supervision.
11. This approval is conditional to on-the-ground experience confirming that the StormTech Isolator Row system's pollutant removal efficiency is appropriate. The "permit shield" provision (Section 14) of the Chapter 500 rules will apply, and the Department will not require the replacement of the system if, with proper maintenance, pollutant removals do not satisfy the General Standard Best Management Practices.

We look forward to working with you as these stormwater management structures are installed on new projects. Questions concerning this decision should be directed to Marianne Hubert at (207) 215-6485 or Jeff Dennis at (207) 215-6376.

Sincerely,

Mark Bergeron, P.E.
Director
Bureau of Land Resources

Cc: Don Witherill, Maine DEP
Gregg Novick, Stormwater Compliance LLC
John Whitehouse, Advanced Drainage Systems, Inc.

Project:	Harry Lee Cole School	Project Number:	ENG20-0865
Location:	Boxford, MA	Prepared By:	AKG
Client:	Town of Boxford	Date:	February 3, 2021

Standard 3: Recharge Calculations (Static Method)

Area 1 Infiltration Chambers (2P)

Hydrologic Soils Group:	A	B	C	D		
Total Proposed Impervious Area (AC):	1.0856	0.1080	0.0000	0.0000	1.19	
Target Factor:	0.60	0.35	0.25	0.10		
Required Recharge Volume:	2,364	137	0	0	2,502	CF
Volume Below Lowest Outlet:					3,956	CF
Elevation of Lowest Invert:					92.20	
Determine Drawdown Time						
Saturated Hydraulic Conductivity (Rawls Rate):					2.41	IN/HR
Bottom Area of Infiltration Basin:					3,602	SF
Drawdown Time:					5.5	HRS

Boxford MA - Harry Lee Cole School
Water Quality Volume Calculation
February 3, 2021

<u>Required Water Quality Storage</u>
Proposed Paved Area sf x 1" x 1'/12"= Required WQ Storage CF

Location	Proposed Impervious Area (sqft)	Required WQ Storage (cf)	Provided WQ Storage (cf)	Description
Area 1	43,108	3,592	3,956	Southeast Parking Lot

Stage-Area-Storage for Pond 2P: Infiltration Chambers - Area 1

Elevation (feet)	Wetted (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Wetted (sq-ft)	Storage (cubic-feet)
90.50	3,603	0	91.54	3,915	1,971
90.52	3,609	29	91.56	3,921	2,032
90.54	3,615	58	91.58	3,927	2,093
90.56	3,621	86	91.60	3,933	2,154
90.58	3,627	115	91.62	3,939	2,215
90.60	3,633	144	91.64	3,945	2,275
90.62	3,639	173	91.66	3,951	2,336
90.64	3,645	202	91.68	3,957	2,397
90.66	3,651	231	91.70	3,963	2,457
90.68	3,657	259	91.72	3,969	2,518
90.70	3,663	288	91.74	3,975	2,579
90.72	3,669	317	91.76	3,981	2,639
90.74	3,675	346	91.78	3,987	2,700
90.76	3,681	375	91.80	3,993	2,760
90.78	3,687	403	91.82	3,999	2,820
90.80	3,693	432	91.84	4,005	2,881
90.82	3,699	461	91.86	4,011	2,941
90.84	3,705	490	91.88	4,017	3,001
90.86	3,711	519	91.90	4,024	3,061
90.88	3,717	548	91.92	4,030	3,121
90.90	3,723	576	91.94	4,036	3,181
90.92	3,729	605	91.96	4,042	3,241
90.94	3,735	634	91.98	4,048	3,301
90.96	3,741	663	92.00	4,054	3,361
90.98	3,747	692	92.02	4,060	3,421
91.00	3,753	721	92.04	4,066	3,480
91.02	3,759	749	92.06	4,072	3,540
91.04	3,765	778	92.08	4,078	3,600
91.06	3,771	807	92.10	4,084	3,659
91.08	3,777	836	92.12	4,090	3,719
91.10	3,783	865	92.14	4,096	3,778
91.12	3,789	893	92.16	4,102	3,837
91.14	3,795	922	92.18	4,108	3,897
91.16	3,801	951	92.20	4,114	3,956
91.18	3,807	980	92.22	4,120	4,015
91.20	3,813	1,009	92.24	4,126	4,074
91.22	3,819	1,038	92.26	4,132	4,133
91.24	3,825	1,066	92.28	4,138	4,192
91.26	3,831	1,112	92.30	4,144	4,251
91.28	3,837	1,173	92.32	4,150	4,309
91.30	3,843	1,235	92.34	4,156	4,368
91.32	3,849	1,296	92.36	4,162	4,427
91.34	3,855	1,358	92.38	4,168	4,485
91.36	3,861	1,420	92.40	4,174	4,544
91.38	3,867	1,481	92.42	4,180	4,602
91.40	3,873	1,542	92.44	4,186	4,660
91.42	3,879	1,604	92.46	4,192	4,718
91.44	3,885	1,665	92.48	4,198	4,777
91.46	3,891	1,726	92.50	4,204	4,835
91.48	3,897	1,787	92.52	4,210	4,893
91.50	3,903	1,849	92.54	4,216	4,951
91.52	3,909	1,910	92.56	4,222	5,008

VOLUME BELOW LOWEST OUTLET

Attachment F - Long Term Pollution Prevention Plan

Long Term Pollution Prevention Plan
Harry Lee Cole School
Boxford, MA

To meet the requirements of Standard 4 of the Massachusetts Stormwater Handbook, this Long Term Pollution Prevention Plan is provided to identify the proper procedures of practices for source control and pollution prevention.

Storage and Handling of Oil and other Hazardous Materials

Any hazardous materials that will be used ancillary to the school will be stored inside, or off site.

Spill Prevention/Response

Spill kits will be kept on site, and spills shall be cleaned up immediately. Spills of any hazardous material over 10 gallons will be reported to the Massachusetts Department of Environmental Protection within 24 hours.

Operation and Maintenance of Stormwater Control Structures

Included in Attachment H of this appendix is the Operation and Maintenance plan for this site, which includes street sweeping of the paved areas and periodic cleaning of stormwater structures. The town will be responsible for the implementation of the plan.

Landscaping

The landscaped areas will be maintained by the town. Use of fertilizers, herbicides, and pesticides shall be allowed for all vegetated areas on site. If kept on site, all chemicals shall be stored under cover. Any storage for fertilizers, herbicides and pesticides shall not be located within 100 feet of any wetland or within proximity to the stormwater management system where spills could enter the storm drain system.

Septic System

There will be no new onsite septic facilities. The sewer facilities currently in use for the existing building on site shall be retained.

Vehicle Washing

Vehicle washing shall not be performed on site. Vehicles can be rinsed with a high volume of water at low pressure. This is considered dust water by the DEP and accounts for what may be rinsed off of the vehicle when it rains. Pre-treatment BMP’s downstream of these activities will include deep-sump hooded catch basins.

Non-Hazardous Waste Management/Good Housekeeping Practices

All non-hazardous waste shall be stored in designated trash or recycling containers onsite for periodic collection by the local trash collector. The town shall have maintenance staff who monitor the site for the accumulation of trash. Any trash that is seen onsite shall immediately be collected and placed into designated trash or recycling containers. The town's maintenance staff shall inspect the site once per week at minimum.

Prohibition of Illicit Discharges

Illicit discharges to the onsite stormwater management system shall be strictly prohibited. Illicit discharges are defined as any direct or indirect non-stormwater discharge to the onsite stormwater system. Requirements related to Illicit Discharges are further detailed in the attached Illicit Discharge Compliance Statement.

De-icing & Snow Disposal

The operation will utilize salt and sand to treat the paved surfaces of the site during snow and ice events. Snow will be temporarily stored within peripheral areas of the site and allowed to melt and drain back to onsite stormwater systems. When needed, snow shall be removed from the site and disposed of in accordance with all local, state and federal regulations. Snow storage shall be prohibited within all wetlands and wetland buffer zones.

Winter Sand/Salt Use & Storage

Any sand and/or salt to be used for de-icing purposes shall be stored inside or under cover and stabilized to prevent the discharge into nearby wetlands or waterbodies.

Emergency Contact Information

Owner/Operator:
Tri-Town School Union
Stephen Clifford
Director of Facilities
26 Middleton Road
Boxford, MA 01921

Engineer:
James Pearson, P.E.
Weston & Sampson, Inc.
55 Walkers Brook Drive, Suite 100
Reading, MA 01867
978-532-1900

Attachment G - Construction Period Pollution and Erosion and Sedimentation Control Plan

Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan

SECTION 1: Introduction

The project applicant, the Town of Boxford, proposes a redevelopment project at the Harry Lee Cole School located at 26 Middleton Road in Boxford to improve site access and traffic circulation. Site work will include, but is not limited to grading, drainage, paving and landscaping. .

As part of this project, this "Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan" has been created to ensure that onsite erosion is prevented and sediment is controlled to prevent it from leaving the site.

SECTION 2: Construction Period Pollution Prevention Measures

Best Management Practices (BMPs) will be utilized as Construction Period Pollution Prevention Measures to reduce potential pollutants and prevent any off-site discharge. The objectives of the BMPs for construction activity are to minimize the disturbed areas, stabilize any disturbed areas, control the site perimeter and retain sediment. Both erosion and sedimentation controls and non-stormwater best management measures will be used to minimize site disturbance and ensure compliance with the performance standards of the WPA and Stormwater Standards. Measures will be taken to minimize the area disturbed by construction activities to reduce the potential for soil erosion and stormwater pollution problems. All pollution prevention and erosion control measures which are required on the site plans and in the SWPPP shall be followed along with the guidance in this document. In addition, good housekeeping measures will be followed for the day-to-day operation of the construction site under the control of the contractor to minimize the impact of construction. This section describes the control practices that will be in place during construction activities. All recommended control practices will comply with the standards set in the MA DEP Stormwater Policy Handbook.

2.1 Minimize Disturbed Area and Protect Natural Features and Soil

In order to minimize disturbed areas all work will be completed within well-defined work limits. These work limits are shown on the construction plans. The Contractor shall not disturb native vegetation in the undisturbed wooded area without prior approval from the Engineer. The Contractor will be responsible to make sure that all workers know the proper work limits and do not extend their work into the undisturbed areas. The protective measures are described in more detail in the following sections.

2.2 Control Stormwater Flowing onto and through the project

All construction areas adjacent to drainage features will be lined with compost filter tubes and silt fence. The tubes and silt fence will be inspected daily and accumulated silt will be removed as appropriate. In addition, any storage of material will require a second level of protection by surrounding the areas with another row of compost filter tubes. A stabilized construction entrance/exit is proposed so that equipment visiting the site can remove any accumulated dirt and mud from vehicles to prevent tracking the mud onto public roads.

2.3 Stabilize Soils

The Contractor shall limit the area of land which is exposed and free from vegetation during construction. In areas where the period of exposure will be greater than two (2) months, mulching, the use of erosion control mats, or other protective measures shall be provided as specified.

The Contractor shall take account of the conditions of the soil where erosion control seeding will take place to ensure that materials used for re-vegetation are adaptive to the sediment control.

Following the completion of construction, embankment areas will be finished with topsoil and seed. Slopes in excess of 3H:1V will be stabilized with erosion matting to prevent erosion during the interim period in which vegetation is being established. The overland areas of the proposed construction staging areas will also be re-seeded.

2.4 Proper storage and cover of any stockpiles

The location of the Contractor's storage areas for equipment and/or materials shall be upon cleared portions of the job site or areas to be cleared as a part of this project and shall require written approval of the Engineer.

Adequate measures for erosion and sediment control such as the placement of compost filter tubes around the downstream perimeter of stockpiles shall be employed to protect any downstream areas from siltation.

The Engineer may designate a particular area or areas where the Contractor may store materials used in his operations.

2.5 Perimeter Controls and Sediment Barriers

Erosion control lines as described in Section 5 will be utilized to ensure that no sedimentation occurs outside the perimeter of the work area.

2.6 Storm Drain Inlet Protection

Storm drain inlets will be protected from sediment.

2.7 Retain Sediment On-Site

The Contractor will be responsible to monitor all erosion control measures. Whenever necessary the Contractor will clear all sediment from the compost filter tubes and silt fence that have been silted up during construction. Daily monitoring should be conducted using the attached Monitoring Form.

The following good housekeeping practices will be followed on-site during the construction project.

2.8 Material Handling and Waste Management

All materials stored on-site will be stored in a neat, orderly manner in appropriate containers. All materials will be kept in their original containers with the original manufacturer's label. Substances will not be mixed with one another unless recommended by the manufacturer.

All waste materials will be collected and stored in a securely lidded metal container from a licensed management company. The waste and any construction debris from the site will be hauled off-site daily and disposed of properly. The contractor will be responsible for all waste removal. Manufacturer's recommendations for proper use and disposal will be followed for all materials. Sanitary waste will be collected from the portable units a minimum of once a week, by a licensed sanitary waste management contractor.

2.9 Designated Washout Areas

The Contractor shall perform washout into contained areas designated for that purpose to prevent cement-laden water from leaving the site.

2.10 Proper Equipment/Vehicle Fueling and Maintenance Practices

On-site vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the risk of leakage. To ensure that leaks on stored equipment do not contaminate the site, oil-absorbing mats will be placed under all equipment during storage. Regular fueling and service of the equipment may be performed using approved methods and with care taken to minimize chance of spills. Any petroleum products will be stored in tightly sealed containers that are clearly labeled.

2.11 Equipment/Vehicle Washing

The Contractor will be responsible to ensure that no equipment is washed on-site.

SECTION 3: Spill Prevention and Control Plan

The Contractor will be responsible for preventing spills in accordance with the project specifications and applicable federal, state and local regulations. The Contractor will identify a properly trained site employee, involved with the day-to-day site operations to be the spill prevention and cleanup coordinator. The name(s) of the responsible spill personnel will be posted on-site. Each employee will be instructed that all spills are to be reported to the spill prevention and cleanup coordinator.

3.1 Spill Control Equipment

Spill control/containment equipment will be kept in the Work Area. Materials and equipment necessary for spill cleanup will be kept either in the Work Area or in an otherwise accessible on-site location. Equipment and materials will include, but not be limited to, absorbent booms/mats, brooms, dust pans, mops, rags, gloves, goggles, sand, plastic and metal containers specifically for this purpose. It is the responsibility of the Contractor to ensure the inventory will be readily accessible and maintained.

3.2 Notification

All workers will be directed to inform the on-site supervisor of a spill event. The supervisor will assess the incident and initiate proper containment and response procedures immediately upon notification. Workers should avoid direct contact with spilled materials during the containment procedures. Primary notification of a spill should be made to the local Fire Department and Police Departments. Secondary Notification will be to the certified cleanup contractor if deemed necessary by Fire and/or Police personnel. The third level of notification is to the DEP. The specific cleanup contractor to be used will be identified by the Contractor prior to commencement of construction activities.

3.3 Spill Containment and Clean-Up Measures

Spills will be contained with granular sorbent material, sand, sorbent pads, booms or all of the above to prevent spreading. Certified cleanup contractors should complete spill cleanup. The material manufacturer’s recommended methods for spill cleanup will be clearly posted and on-site personnel will be made aware of the procedures and the location of the information and cleanup supplies.

3.4 Hazardous Materials Spill Report

The Contractor will report and record any spill. The spill report will present a description of the release, including the quantity and type of material, date of the spill, circumstances leading to the release, location of spill, response actions and personnel, documentation of notifications and corrective measures implemented to prevent reoccurrence.

This document does not relieve the Contractor of the Federal reporting requirements of 40 CFR Part 110, 40 CFR Part 117, 40 CFR Part 302 and the State requirements specified under the Massachusetts Contingency Plan (M.C.P) relating to spills or other releases of oils or hazardous substances. Where a release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR Part 110, 40 CFR Part 117 or 40 CFR Part 302, occurs during a twenty-four (24) hour period, the Contractor is required to comply with the response requirements of the above mentioned regulations. Spills of oil or hazardous material in excess of the reportable quantity will be reported to the National Response Center (NRC).

SECTION 4: Contact Information/Responsible Parties

Owner/Operator:
Tri-Town School Union
Stephen Clifford
Director of Facilities
26 Middleton Road
Boxford, MA 01921
978-887-0771

Engineer:
James Pearson, P.E.
Weston & Sampson, Inc.
55 Walkers Brook Drive, Suite 100
Reading, MA 01867
978-532-1900

Site Inspector:
TBD

Contractor:
TBD

SECTION 5: Erosion and Sedimentation Control

Erosion and Sedimentation Controls are shown on the project plans. A Stormwater Pollution Prevention Plan (SWPPP) will be required for this project in accordance with EPA regulations. The contractor shall refer to the SWPPP for additional requirements.

SECTION 6: Site Development Plans

A full set of site development plans are included with this submittal.

SECTION 7: Operation and Maintenance of Erosion Control

If there is a failure to the controls the Contractor, under the supervision of the Engineer, will be required to stop work until the failure is repaired.

Periodically throughout the work, whenever the Engineer deems it necessary, the sediment that has been deposited against the controls will be removed to ensure that the controls are working properly.

SECTION 8: Inspection Schedule

During construction the erosion and sedimentation controls will be inspected daily. Once the Contractor is selected, an on site inspector will be selected to work closely with the Engineer to insure that all erosion and sedimentation controls are in place and working properly. An Inspection Form is included.

Inspection Form

Inspected By:______________________________ Date: ________Time:________

YES	NO	DOES NOT APPLY	ITEM
			Do any erosion/siltation control measures require repair or clean out to maintain adequate function?
			Is there any evidence that sediment is leaving the site and entering the wetlands?
			Are any temporary soil stockpiles or construction materials located in non-approved areas?
			Are on-site construction traffic routes, parking, and storage of equipment and supplies located in areas not specifically designed for them?
			Is there any evidence that sediment is entering subsurface stormwater chamber systems?

Specific location, current weather conditions, and action to be taken:

____

____

____

____

____

____

Other Comments:

____

____

____

Pending the actions noted above I certify that the site is in compliance with the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan.

Signature:________________________________Date: ______________________

Attachment H - Operations and Maintenance Plan

1.0 Introduction

The following document has been written to comply with the stormwater guidelines set forth by the Massachusetts Department of Environmental Protection (MassDEP). The intent of these guidelines is to encourage Low Impact Development techniques to improve the quality of the stormwater runoff. These techniques, also known as Best Management Practices (BMPs) collect, store, and treat the runoff before discharging to adjacent environmental resources.

2.0 Purpose

This Operation and Maintenance Plan (O&M Plan) is intended to provide a mechanism for the consistent inspection and maintenance of each BMP installed on the project site. Included in this O&M Plan is a description of each BMP type and an inspection form for each BMP. The Town of Boxford is the owner and operator of the system and is responsible for its upkeep and maintenance. This work will be funded on an annual basis through the owner's operating budget.

In the event the Owner sells the property, it is the Owner's responsibility to transfer this plan as well as the design plans, shop drawings, as-built plans, and past three years of operation and maintenance records to the new property owner.

3.0 BMP Description and Locations

3.1 Street Sweeping

Street sweeping consists of using a sweeper machine to clean impervious areas of accumulated sediment, debris, and trash at paved areas.

3.2 Deep Sump Catch Basins

Deep sump catch basins utilizing catch basin hoods will be located throughout the site and used as pre-treatment before entering the infiltration systems or other Town stormwater infrastructure. The deep sump catch basins are designed to remove trash, debris, hydrocarbons, and coarse sediment from the stormwater runoff.

3.3 Stormtech Isolator Row

The subsurface chamber systems will contain a Stormtech Isolator Row for TSS removal. The Isolator Row consists of Stormtech stormwater chambers wrapped in geotextile fabric.

3.4 Stormtech Subsurface Chamber System

The subsurface chamber systems use infiltration or detention to mitigate peak runoff rates from the site. The structure also significantly mitigates TSS.

3.5 Outlet Control Structure

The outlet control structures are used to control discharges from captured stormwater. They release the water in a controlled manner to control peak discharges.

3.6 Drain Manholes

Drain Manholes will be located throughout the site and used to convey and redirect stormwater collected from deep sump catch basins. They allow for access, connection points, and change-in-direction points in the underground drainage system.

3.7 Bioretention Areas

Bioretention areas mitigate peak runoff rates and filter stormwater to provide treatment, significantly reducing TSS as well as phosphorus, nitrogen and heavy metals.

4.0 Inspection, Maintenance Checklist and Schedule

4.1 Street Sweeping

Street sweeping shall be performed on all impervious surfaces on a quarterly average, with sweeping performed primarily in the spring and fall. Street sweeping shall be performed using a high efficiency vacuum street sweeping machine or a regenerative air sweeper. A mechanical rotary broom sweeper may be used if sweeping is performed on a monthly basis.

In the event of contamination by a spill or other means, all street sweeping cleanings must be evaluated in accordance with the Hazardous Waste Regulations, 310 CMR 30.000 and handled as hazardous waste.

In the absence of evidence of contamination, street sweeping cleanings may be taken to a landfill or other facility permitted by MassDEP to accept Solid Waste without any prior approval by MassDEP. Please note that current MassDEP regulations prevent landfills from accepting materials that contain free-draining liquids.

4.2 Deep Sump Catch Basins and Outlet Control Structures

Inspect and/or clean catch basin and outlet control structures at least four times per year and at the end of foliage and snow removal seasons. Sediments must be removed whenever the depth of deposits is greater than or equal to one half the depth from the bottom of the invert of the lowest pipe in the basin. The structures should be cleaned a minimum of four times per year regardless of the amount of sediment in the basin. The site is considered a land use with a higher potential pollutant load, therefore if catch basins are found to be filled to capacity with sediment during a cleaning, the frequency of cleaning shall be increased. Catch basins and outlet control structures shall be cleaned with clamshell buckets or by hand tools where necessary. Catch basin hoods shall be inspected annually. Open and close the access hatch and flush or rod the anti-siphon device to ensure proper operation.

In the event of contamination by a spill or other means, all cleanings must be evaluated in accordance with the Hazardous Waste Regulations, 310 CMR 30.000 and handled as hazardous waste.

In the absence of evidence of contamination, catch basin cleanings may be taken to a landfill or other facility permitted by MassDEP to accept Solid Waste without any prior approval by MassDEP. Please note that current MassDEP regulations prevent landfills from accepting materials that contain free-draining liquids.

4.3 Stormtech Isolator Row

Stormtech Isolator Rows shall be inspected every six months for the first year, then timed thereafter based upon the depth of sediment build up witnessed in the previous inspections. Inspection ports shall be located strategically throughout the isolator row system. When sediment is observed, the depth shall be recorded with a stadia rod, and when that average depth across the chambers reaches 3-inches, the system shall be cleaned out.

Cleaning is performed through the Jet-vac process whereby the chambers are washed with a high-pressure water system and the captured pollutants are then vacuumed out.

Refer to the attached Stormtech Isolator Row Operations and Maintenance document for additional information.

4.4 Stormtech Subsurface Chamber System

Stormtech subsurface chambers shall be inspected every three months for the first year, then timed thereafter based upon the depth of sediment build up witnessed in the previous inspections. Inspection ports shall be located strategically throughout the isolator row system. When sediment is observed, the depth shall be recorded with a stadia rod, and when that average depth across the isolator row reached 3-inches, the system shall be cleaned out.

Cleaning is performed through the Jet-vac process whereby the isolator chambers are washed with a high-pressure water system and the captured pollutants are then vacuumed out.

Refer to the attached Stormtech Operations and Maintenance document for additional information.

4.5 Drain Manholes

Inspect and/or clean drain manholes at least four times per year while inspecting the catch basins. Remove all accumulated sediments and debris, and dispose of in accordance with local, state, and federal regulations. Drain Manholes shall be cleaned with clamshell buckets or by hand tools where necessary.

In the event of contamination by a spill or other means, all cleanings must be evaluated in accordance with the Hazardous Waste Regulations, 310 CMR 30.000 and handled as hazardous waste.

In the absence of evidence of contamination, manhole cleanings may be taken to a landfill or other facility permitted by MassDEP to accept Solid Waste without any prior approval by MassDEP. Please note that current MassDEP regulations prevent landfills from accepting materials that contain free-draining liquids.

4.6 Inspections and Record Keeping

- An inspection form should be filled out each and every time maintenance work is performed.

- A binder should be kept at the facility that contains all of the completed inspection forms and any other related materials.

- A review of all Operation & Maintenance actions should take place annually to ensure that these Stormwater BMPs are being taken care of in the manner illustrated in this Operation & Maintenance Plan.

- All operation and maintenance log forms for the last three years, at a minimum, shall be kept on site at the facility.

- The inspection and maintenance schedule may be refined in the future based on the findings and results of this operation and maintenance program or policy.

4.7 Bioretention Areas

Premature failure of bioretention areas is a significant problem caused by lack of regular maintenance. Careful attention must be paid while plantings are being established and seasonal landscaping maintenance is required thereafter. Maintenance shall be conducted in accordance with the following schedule:

Activity	Time of Year	Frequency
Inspect & remove trash	Year round	Monthly
Mulch	Spring	Annually
Remove dead vegetation	Fall or Spring	Annually
Replace dead vegetation	Spring	Annually
Prune	Spring or Fall	Annually
Replace entire media & all vegetation	Late Spring/early Summer	As needed*

*Paying careful attention to pretreatment and operation & maintenance can extend the life of the soil media

Basin inspection should include checking for rilling and other signs of erosion. When encountered, repairs shall be made immediately. Debris and litter should be removed while inspecting for erosion.

Care must be taken to maintain the plants in the basin. Salt use must be restricted where runoff flows to the bioretention areas to maintain the plantings.

5 Public Safety Features

The onsite stormwater basins will be shielded from public access by fencing.

6 Stormwater Management System Owner/Responsible Party

The stormwater management system shall be owned and maintained by the following party or its future designee/assigns:

Boxford Department of Public Works
Chris Olbrot – DPW Director
7A Spofford Road
Boxford, MA 01921

This operation and Maintenance Plan will be recorded with the registry of deeds so that current and future owners are aware of the requirement for proper operation and maintenance of the onsite stormwater system.

7 General Good Housekeeping Practices

All non-hazardous waste shall be stored in designated trash or recycling containers onsite for periodic collection by the local trash collector. The owner shall have maintenance staff who monitor the site for the accumulation of trash. Any trash that is seen onsite shall immediately be collected and placed into designated trash or recycling containers. The owner's maintenance staff shall make an inspection of the site once per week at minimum.

8 Estimated Operations and Maintenance Budget

The estimated budget for annual operations and maintenance of this stormwater system is $10,000 per year.

Harry Lee Cole School
Permanent BMP Inspection Checklist

Street Sweeping

Frequency:	Quarterly average, primarily in the spring and fall if using a high efficiency vacuum sweeper or regenerative air sweeper. Monthly, if using a mechanical rotary broom sweeper.
Location:	Parking Areas, Driveways and Roadway
Inspected By:	__________________ Date: _____________
Observations:	_____________________________________ _____________________________________ _____________________________________
Actions Taken:	_____________________________________ _____________________________________ _____________________________________
Instructions:	Sweep all impervious areas, including parking lots, driveways, and roadways using high efficiency vacuum street sweeping machine, regenerative air sweeper, or mechanical rotary broom sweeper. All trash, debris, and sediments should be disposed of in accordance with local, state, and federal regulations.

Deep Sump Catch Basins & Outlet Control Structures

Frequency: Inspect and clean deep sump catch basins and outlet control structures in March, June, September and December.

Structure Number: ____________________________________

Inspected By: __________________ Date: _____________

Observations: ____________________________________
____
____

Actions Taken: ____________________________________
____
____

Instructions: Clean units four times per year or whenever the depth of the deposits is greater than or equal to one half the depth from the bottom of the invert to the lowest pipe in the structure. Open and close hood and check anti-siphon vent for clogging.

Subsurface Chamber System & Isolator Row

Frequency: Inspect and clean chamber system and isolator row every six months for the first year and annually thereafter.

Structure Number: ____________________________________

Inspected By: __________________ Date: ____________

Observations: ____________________________________
____
____

Actions Taken: ____________________________________
____
____

Instructions: Clean the system whenever the depth of the deposits averages three inches in depth across the bottom of the chambers. Inspect chambers via manholes or inspection ports. Use reverse water jet to pull sediment back into manhole. Remove sediment, trash and debris as noted above.

Drain Manholes

Frequency: Inspect and clean drain manholes in March, June, September and December.

Structure Number: ____________________________________

Inspected By: __________________ Date: _____________

Observations: ____________________________________
____
____

Actions Taken: ____________________________________
____
____

Instructions: Clean units four times per year at a minimum, or whenever catch basins are inspected. Remove sediment and debris. All debris, and sediments should be disposed of in accordance with local, state, and federal regulations. Drain Manholes shall be cleaned with clamshell buckets or by hand tools where necessary.

Bioretention Area

Frequency: Inspect and clean monthly. Perform seasonal landscaping maintenance twice a year.

Structure Number: ________________________________

Inspected By: ________________ Date: ____________

Observations: ________________________________
____
____

Actions Taken: ________________________________
____
____

Instructions: Remove accumulated trash and debris. Remove sediment and re-mulch bare spots as needed in basin. Inspect pipe inlets for damage, erosion or blockage, remove blockage as needed, repair erosion where needed. Remove and replace dead vegetation and prune as needed. All trash, debris, and sediments should be disposed of in accordance with local, state, and federal regulations.

Attachment I – Illicit Discharge Compliance Statement

Illicit Discharge Compliance Statement

Section I – Purpose/Intent

The purpose of this document is to provide for the health, safety, and general welfare of the citizens of Massachusetts through the regulation of non-stormwater discharges into existing outstanding resource areas near the site to the maximum extent practicable, as required by federal and state law. This document establishes methods for controlling the introduction of pollutants into existing outstanding resource areas to comply with requirements of the National Pollutant Discharge Elimination System (NPDES) permit process.

Section II - Definitions

For the purposes of this statement, the following shall mean:

Best Management Practices (BMPs): Schedules of activities, prohibitions of practices, general good housekeeping practices, pollution prevention and educational practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants directly or indirectly to stormwater, receiving waters, or stormwater conveyance systems. BMPs also include treatment practices, operating procedures, and practices to control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw materials storage.

Clean Water Act: The federal Water Pollution Control Act (33 U.S.C § 1251 et seq.), and any subsequent amendments thereto.

Construction Activity: Activities subject to the Massachusetts Erosion and Sedimentation Control Act or NPDES Construction Permits. Such activities include but are not limited to clearing and grubbing, grading, excavating, and demolition.

Hazardous Materials: Any material, including any substance, waste, or combination thereof, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to, a substantial present or potential hazard to human health, safety, property, or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Illegal Connection: An illegal connection is defined as either of the following:

a. Any pipe, open channel, drain or conveyance, whether on the surface or subsurface, which allows an illicit discharge to enter the outstanding resource area including but not limited to any conveyances which allow any non-stormwater discharge including sewage, process wastewater, and wash water, regardless of whether said drain or connection has been previously allowed, permitted, or approved by an authorized enforcement agency; or

b. Any pipe, open channel, drain or conveyance connected to the Town of Boxford storm water treatment system which has not been documented in plans, maps, or equivalent records and approved by an authorized enforcement agency.

Illicit Discharge: Any direct or indirect non-stormwater discharge to the Town of Boxford stormwater treatment system, except as exempted in Section III of this ordinance.

Industrial Activity: Activities subject to NPDES Industrial Permits as defined in 40CFR, Section 122.26 (b) (14).

National Pollutant Discharge Elimination System (NPDES) Stormwater Discharge Permit: A permit issued by MassDEP under authority delegated pursuant to 33 USC § 1342 (b) that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group, or general area-wide basis.

Town of Boxford Stormwater Treatment System: Any facility, owned or maintained by the Town of Boxford, designed or used for collecting and/or conveying stormwater, including but not limited to roads with drainage systems, Town of Boxford streets, curbs, gutters, inlets, catch basins, piped storm drains, pumping facilities, infiltration, retention and detention basins, natural and man-made or altered drainage channels, reservoirs, and other drainage structures.

Non-Stormwater Discharge: Any discharge to the storm drain system that is not composed entirely of stormwater.

Person: Any individual, association, organization, partnership, firm, joint venture, public or private corporation, trust, estate, commission, board, public or private institution, utility, cooperative, city, county or other political subdivision of the State, interstate body, or any other legal entity.

Pollutant: Anything which causes or contributes to pollution. Pollutants may include, but are not limited to: paints, varnishes, and solvents; petroleum hydrocarbons; automotive fluids; cooking grease; detergents (biodegradable or otherwise); degreasers; cleaning chemicals; non-hazardous liquid and solid wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects and accumulations, so that same may cause or contribute to pollution; floatables; pesticides, herbicides, and fertilizers; liquid and solid wastes; sewage, fecal coliform and pathogens; dissolved and particulate metals; animal wastes; wastes and residues that result from constructing a building or structure; concrete and cement; and noxious or offensive matter of any kind.

Pollution: Contamination or other alteration of any water's physical, chemical, or biological properties by addition of any constituent including but not limited to a change in temperature, taste, color, turbidity, or odor of such waters, or the discharge of any liquid, gaseous, solid, radioactive, or other substance into any such waters as will or is likely to create a nuisance or render such waters harmful, detrimental, or injurious to the public health, safety, welfare, or environment, or to domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses, or to livestock, wild animals, birds, fish or other aquatic life.

Premises: Any building, lot, parcel of land, or portion of land whether improved or unimproved including adjacent sidewalks and parking strips.

Stormwater: Any surface flow, runoff, and drainage consisting entirely of water from any form of natural precipitation and resulting from such precipitation.

Wastewater: Any water or other liquid discharged from a facility, that has been used, as for washing, flushing, or in a manufacturing process, and so contains waste products.

Section III - Prohibitions

Prohibition of Illicit Discharges:

No person shall throw, drain, or otherwise discharge, cause or allow others under its control to throw, drain, or otherwise discharge into the Town of Boxford stormwater treatment system or watercourses any materials, including but not limited to, any pollutants or waters containing any pollutants, other than stormwater. The commencement, conduct or continuance of any illicit discharge to the storm drain system is prohibited except as described as follows:

1. Water line flushing performed by a government agency, other potable water sources, landscape irrigation or lawn watering, diverted stream flows, rising ground water, ground water infiltration to storm drains, uncontaminated pumped ground water, foundation or footing drains (not including active groundwater dewatering systems), crawl space pumps, air conditioning condensation, springs, natural riparian habitat or wetland flows, and any other water source not containing pollutants;

2. Discharges or flows from fire fighting, and other discharges specified in writing by the Town of Boxford as being necessary to protect public health and safety;

3. Dye testing is an allowable discharge, but requires notification to the Town of Boxford prior to the time of the test;

4. Any non-stormwater discharge permitted under an NPDES permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the Federal Environmental Protection Agency, provided that the discharger is in full compliance with all requirements of the permit, waiver, or order and other applicable laws and regulations, and provided that written approval has been granted for a discharge to the Town of Boxford stormwater treatment system.

Section IV - Industrial or Construction Activity Discharges

Any person subject to an industrial or construction activity NPDES stormwater discharge permit shall comply with all provisions of such permit. Proof of compliance with said permit may be required in a form acceptable to the Town of Boxford prior to allowing discharges to the Town of Boxford stormwater treatment system.

Section V - Notification of Spills and Accidental Discharges

Notwithstanding other requirements of law, as soon as any person responsible for a facility, activity or operation, or responsible for emergency response for a facility, activity or operation has information of any known or suspected release of pollutants or non-stormwater discharges from that facility, activity, or operation which are resulting or may result in illicit discharges or pollutants discharging into stormwater, the Town of Boxford stormwater treatment system, State Waters, or Waters of the U.S., said person shall take all necessary steps to ensure the discovery, containment, and cleanup of such release so as to minimize the effects of the discharge. In the event of such a release of hazardous materials, said person shall immediately notify emergency response agencies of the occurrence via emergency dispatch services. In the event of a release of non-hazardous materials, said person shall notify the Town of Boxford in person or by phone no later than the next business day, including the nature, quantity and time of occurrence of the discharge. Notifications in person or by phone shall be confirmed by written notice, via certified mail return receipt requested addressed to the Town of Boxford within three (3) business days of the initial notice. If the discharge of prohibited materials emanates from a commercial or industrial establishment, the owner or operator of such establishment shall also retain an on-site written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least three years.

IN WITNESS WHEREOF the parties hereto have executed copies of this Agreement on the ______ day of ____________________, ______.

____

Appendix B

Stormwater Pollution Prevention Plan (SWPPP)

For Construction Activities At:

Harry Lee Cole School
26 Middleton Road
Boxford, MA 01921

SWPPP Prepared For:

Town of Boxford

SWPPP Prepared By:

Weston & Sampson Engineers, Inc.
55 Walkers Brook Drive, Suite 100
Reading, MA 01867

SWPPP Preparation Date:

01/27/2021

Estimated Project Dates:

Project Start Date: Summer 2021

Project Completion Date: Fall 2021

Contents

SECTION 1: CONTACT INFORMATION/RESPONSIBLE PARTIES

1.1 Operator(s) / Subcontractor(s)

Operator(s):

To be determined

Subcontractor(s):

To be determined

Emergency 24-Hour Contact:

contractor to be determined

1.2 Stormwater Team

Stormwater Team		
Name and/or position, and contact	Responsibilities	I Have Read the CGP and Understand the Applicable Requirements
Contractor to be determined		☐ Yes Date:
James Pearson, PE 978-977-0110 pearsonj@wseinc.com	Engineering Consultant	☒ Yes Date1/03/2021

SECTION 2: SITE EVALUATION, ASSESSMENT, AND PLANNING

2.1 Project/Site Information

Project Name and Address

Project/Site Name: Harry Lee Cole School
Project Street/Location: 26 Middleton Road
Town: Boxford
State: Massachusetts
ZIP Code: 01921
County or Similar Subdivision: Essex County

Project Latitude/Longitude

Latitude:
42 °39'37.458 "N (degrees, minutes, seconds)

Longitude:
71 ° 0'6.791" W (degrees, minutes, seconds)

Latitude/longitude data source: ArcGIS

☐ Map ☐ GPS ☒ Other (please specify): ___ArcGIS______________________________

Horizontal Reference Datum:

☐ NAD 27 ☒ NAD 83 ☐ WGS 84

Additional Project Information

Are you requesting permit coverage as a "federal operator" as defined in Appendix A of the 2017 CGP? ☐ Yes ☒ No

Is the project/site located on Indian country lands, or located on a property of religious or cultural significance to an Indian tribe? ☐ Yes ☒ No

If yes, provide the name of the Indian tribe associated with the area of Indian country (including the name of Indian reservation if applicable), or if not in Indian country, provide the name of the Indian tribe associated with the property:

If you are conducting earth-disturbing activities in response to a public emergency, document the cause of the public emergency *(e.g., natural disaster, extreme flooding conditions)*, information substantiating its occurrence *(e.g., state disaster declaration)*, and a description of the construction necessary to reestablish effective public services:

2.2 Discharge Information

Does your project/site discharge stormwater into a Municipal Separate Storm Sewer System (MS4)?	☒ Yes	☐ No
Are there any waters of the U.S. within 50 feet of your project's earth disturbances?	☐ Yes	☒ No

For each point of discharge, provide a point of discharge ID (a unique 3-digit ID, e.g., 001, 002), the name of the first water of the U.S. that receives stormwater directly from the point of discharge and/or from the MS4 that the point of discharge discharges to, and the following receiving water information, if applicable:								
Point of Discharge ID	Name of receiving water:	Is the receiving water impaired (on the CWA 303(d) list)?	If yes, list the pollutants that are causing the impairment:	Has a TMDL been completed for this receiving waterbody?	If yes, list TMDL Name and ID:	Pollutant(s) for which there is a TMDL:	Is this receiving water designated as a Tier 2, Tier 2.5, or Tier 3 water?	If yes, specify which Tier (2, 2.5, or 3)?
[001]	Fish Brook(River Segment MA92-14)	☒ Yes ☐ No	Escherichia Coli (E. Coli)	☐ Yes ☒ No			☐ Yes ☒ No	
[002]		☐ Yes ☐ No		☐ Yes ☐ No			☐ Yes ☒ No	
[003]		☐ Yes ☐ No		☐ Yes ☐ No			☐ Yes ☐ No	
[004]		☐ Yes ☐ No		☐ Yes ☐ No			☐ Yes ☐ No	
[005]		☐ Yes ☐ No		☐ Yes ☐ No			☐ Yes ☐ No	
[006]		☐ Yes ☐ No		☐ Yes ☐ No			☐ Yes ☐ No	

2.3 Nature of the Construction Activities

General Description of Project
Provide a general description of the nature of your construction activities, including the age dates of past renovations for structures that are undergoing demolition:

Proposed improvements to Harry Lee Cole School include:

- Paving/grading improvements across the site
- Traffic flow improvements (including bus & parent drop/pick up lane routes)
- ADA compliance (the existing handicap parking spaces were never designed to any code and the existing handicap ramps are outdated) & address all comments from the MAAB Site Violation
- Increase Site Signage
- Increase parking areas/counts
- Relocate Sight lighting
- Incorporate green/LID stormwater BMPS on site

Size of Construction Site

Size of Property	~7 acres
Total Area Expected to be Disturbed by Construction Activities	4.5 acres
Maximum Area Expected to be Disturbed at Any One Time	.1 acres

Type of Construction Site *(check all that apply):*

☐ Single-Family Residential ☐ Multi-Family Residential ☒ Commercial ☐ Industrial
☐ Institutional ☐ Highway or Road ☐ Utility ☐ Other ____________________

Will there be demolition of any structure built or renovated before January 1, 1980?	☐ Yes ☒ No
If yes, do any of the structures being demolished have at least 10,000 square feet of floor space?	☐ Yes ☐ No ☒ N/A
Was the pre-development land use used for agriculture (see Appendix A for definition of "agricultural land")?	☐ Yes ☒ No

Pollutant-Generating Activities
List and describe all pollutant-generating activities and indicate for each activity the type of pollutant that will be generated. Take into account where potential spills and leaks could occur

that contribute pollutants to stormwater discharges, and any known hazardous or toxic substances, such as PCBs and asbestos, that will be disturbed during construction.

Pollutant-Generating Activity (e.g., paving operations; concrete, paint, and stucco washout and waste disposal; solid waste storage and disposal; and dewatering operations)	**Pollutants or Pollutant Constituents** (e.g., sediment, fertilizers, pesticides, paints, caulks, sealants, fluorescent light ballasts, contaminated substrates, solvents, fuels)
Cleared and graded areas	Soil erosion
Construction area	Vehicle fluids, solvents
Portable toilets	Sewage
Fuel tanks	Fuel oil, gasoline and other fuels
Staging areas	Soil erosion, fuel oil, gasoline, vehicle fluids, antifreeze/coolant, hydraulic oil/fluids
Waste storage in containers	Construction demolition debris, trash
Dewatering operations	Soil erosion, sediment

Construction Support Activities *(only provide if applicable)*
Describe any construction support activities for the project (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas):

All support activities will be within the already defined limits of work as shown on the plans accompanying this SWPPP.

Contact information for construction support activity:

Contractor to be determined

2.4 Sequence and Estimated Dates of Construction Activities

Sequence and Dates of Construction	
Clearing and Grubbing	July 2021
Initial Rough Grading	August 2021
Grading/Building Construction/Utilities	*September-December 2021*
Final Grading, Retaining Walls, Paving	January-April 2022
Final Site Stabilization and Landscaping	May 2022
Final Punch List	June 2022

2.5 *Authorized Non-Stormwater Discharges*

List of Authorized Non-Stormwater Discharges Present at the Site

Type of Authorized Non-Stormwater Discharge	Likely to be Present at Your Site?
Discharges from emergency fire-fighting activities	☐ Yes ☒ No
Fire hydrant flushings	☒ Yes ☐ No
Landscape irrigation	☒ Yes ☐ No
Waters used to wash vehicles and equipment	☐ Yes ☒ No
Water used to control dust	☒ Yes ☐ No
Potable water including uncontaminated water line flushings	☒ Yes ☐ No
External building washdown (soaps/solvents are not used and external surfaces do not contain hazardous substances)	☐ Yes ☒ No
Pavement wash waters	☐ Yes ☒ No
Uncontaminated air conditioning or compressor condensate	☒ Yes ☐ No
Uncontaminated, non-turbid discharges of ground water or spring water	☐ Yes ☒ No
Foundation or footing drains	☒ Yes ☐ No
Construction dewatering water	☒ Yes ☐ No

Water will be used to control dust throughout the extent of the work area during construction.

2.6 *Site Maps*

Site Map features are shown on the attached SWPPP Plans. As applicable to the project, the following features are shown on these maps:

- Boundaries of the property and of the locations where construction will occur, including:
  - ✓ Locations where earth-disturbing activities will occur, noting any phasing of construction activities;
  - ✓ Approximate slopes before and after major grading activities;
  - ✓ Designated points on the site where vehicles will exit onto paved roads;
  - ✓ Locations of structures and other impervious surfaces upon completion of construction; and
- Locations of all surface waters, including wetlands, that exists on or near site.
- The boundary lines of any natural buffer areas.
- Topography of the site, existing vegetative cover (e.g., forest, pasture, pavement, structures),
- Stormwater and allowable non-stormwater discharge locations, including:
  - ✓ Locations of any storm drain inlets on the site and in the immediate vicinity of the site; and
  - ✓ Locations where stormwater or allowable non-stormwater will be discharged to surface waters (including wetlands).
- Locations of stormwater control measures.

SECTION 3: DOCUMENTATION OF COMPLIANCE WITH OTHER FEDERAL REQUIREMENTS

3.1 Endangered Species Protection

Eligibility Criterion

Under which criterion listed in Appendix D are you eligible for coverage under this permit?

☒ **Criterion A**: No ESA-listed species and/or designated critical habitat present in action area. Using the process outlined in Appendix D of this permit, you certify that ESA-listed species and designated critical habitat(s) under the jurisdiction of the USFWS or NMFS are not likely to occur in your site's "action area" as defined in Appendix A of this permit.

Basis statement content/Supporting documentation: A basis statement supporting the selection of Criterion A should identify the USFWS and NMFS information sources used. Attaching aerial image(s) of the site to your NOI is helpful to EPA, USFWS, and NMFS in confirming eligibility under this criterion. Please Note: NMFS' jurisdiction includes ESA-listed marine and estuarine species that spawn in inland rivers. Check the applicable source(s) of information you relied upon:

☐ Specific communication with staff of the USFWS and/or NMFS.

☒ Species list from USFWS and/or NMFS. See the CGP ESA webpage, Step 2 for available websites. NHESP mapping as provided by MassDEP. SeeAppendix K for NHESP mapping.

☐ **Criterion B:** Eligibility requirements met by another operator under the 2017 CGP. The construction site's discharges and discharge-related activities were already addressed in another operator's valid certification of eligibility for your "action area" under eligibility Criterion A, C, D, E, or F of the 2017 CGP and you have confirmed that no additional ESA-listed species and/or designated critical habitat under the jurisdiction of USFWS and/or NMFS not considered in the that certification may be present or located in the "action area." To certify your eligibility under this criterion, there must be no lapse of NPDES permit coverage in the other CGP operator's certification. By certifying eligibility under this criterion, you agree to comply with any conditions upon which the other CGP operator's certification was based. You must include in your NOI the NPDES ID from the other 2017CGP operator's notification of authorization under this permit. If your certification is based on another 2017 CGP operator's certification under criterion C, you must provide EPA with the relevant supporting information required of existing dischargers in criterion C in your NOI form.

Basis statement content/Supporting documentation: A basis statement supporting the selection of Criterion B should identify the eligibility criterion of the other CGP NOI, the authorization date, and confirmation that the authorization is effective.

- ✓ Provide the 9-digit NPDES ID number from the other operator's NOI under the 2017 CGP: __ __ __ __ __ __ __ __ __
- ✓ Authorization date of the other 2017 CGP operator:
- ✓ Eligibility criterion of the other 2017 CGP operator: ☐A ☐C ☐D ☐E ☐F
- ✓ Provide a brief summary of the basis the other operator used for selecting criterion A, C, D, E, or F:

☐ **Criterion C:** Discharges not likely to adversely affect ESA-listed species and/or designated critical habitat. ESA-listed species and/or designated critical habitat(s) under the jurisdiction of the USFWS and/or NMFS are likely to occur in or near your site's "action area," and you certify to EPA that your site's discharges and discharge-related activities are not likely to adversely affect ESA-listed threatened or endangered species and/or designated critical habitat. This certification may include consideration of any stormwater controls and/or management practices you will adopt to ensure that your discharges and discharge-related activities are not likely to adversely affect ESA-listed species and/or designated critical habitat. To certify your eligibility under this criterion, indicate 1) the ESA-listed species and/or designated habitat located in your "action area" using the process outlined in Appendix D of this permit; 2) the distance between the site and the listed species and/or designated critical habitat in the action area (in miles); and 3) a rationale describing specifically how adverse effects to ESA-listed species will be avoided from the discharges and discharge-related activities. You must also include a copy of your site map from your SWPPP showing the upland and in-water extent of your "action area" with this NOI.

Basis statement content/Supporting documentation: A basis statement supporting the selection of Criterion C should identify the information resources and expertise (e.g., state or federal biologists) used to arrive at this conclusion. Any supporting documentation should explicitly state that both ESA-listed species and designated critical habitat under the jurisdiction of the USFWS and/or NMFS were considered in the evaluation.

☐ **Criterion D**: Coordination with USFWS and/or NMFS has successfully concluded.
Coordination between you and the USFWS and/or NMFS has concluded. The coordination must have addressed the effects of your site's discharges and discharge-related activities on ESA-listed species and/or designated critical habitat under the jurisdiction of USFWS and/or NMFS, and resulted in a written concurrence from USFWS and/or NMFS that your site's discharges and discharge-related activities are not likely to adversely affect listed species and/or critical habitat. You must include copies of the correspondence with the participating agencies in your SWPPP and this NOI.

Basis statement content/Supporting documentation: A basis statement supporting the selection of Criterion D should identify whether USFWS or NMFS or both agencies participated in coordination, the field office/regional office(s) providing that coordination, and the date that coordination concluded.

- ✓ Agency coordinated with: ☐USFWS ☐ NMFS
- ✓ Field/regional office(s) providing coordination:
- ✓ Date coordination concluded:
- ✓ Attach copies of any letters or other communication between you and the U.S. Fish & Wildlife Service or National Marine Fisheries Service concluding coordination activities.

☐ **Criterion E:** ESA Section 7 consultation has successfully concluded. Consultation between a Federal Agency and the USFWS and/or NMFS under section 7 of the ESA has concluded. The consultation must have addressed the effects of the construction site's discharges and discharge-related activities on ESA-listed species and/or designated critical habitat under the jurisdiction of USFWS and/or NMFS. To certify eligibility under this criterion, Indicate the result of the consultation:

☐ Biological opinion from USFWS and/or NMFS that concludes that the action in question (taking into account the effects of your site's discharges and discharge-related activities) is not likely to jeopardize the continued existence of listed species, nor the destruction or adverse modification of critical habitat; or

☐ Written concurrence from USFWS and/or NMFS with a finding that the site's discharges and discharge-related activities are not likely to adversely affect ESA-listed species and/or designated critical habitat. You must include copies of the correspondence between yourself and the USFWS and/or NMFS in your SWPPP and this NOI.

Basis statement content/Supporting documentation: A basis statement supporting the selection of Criterion E should identify the federal action agency(ies) involved, the field office/regional office(s) providing that consultation, any tracking numbers of identifiers associated with that consultation (e.g., IPaC number, PCTS number), and the date the consultation was completed.

- ✓ Federal agency(ies) involved:
- ✓ Field/regional office(s) providing consultation:
- ✓ Tracking numbers associated with consultation:
- ✓ Date consultation completed:
- ✓ Attach copies of any letters or other communication between you and the U.S. Fish & Wildlife Service or National Marine Fisheries Service concluding consultation.

☐ **Criterion F:** <u>Issuance of section 10 permit.</u> Potential take is authorized through the issuance of a permit under section 10 of the ESA by the USFWS and/or NMFS, and this authorization addresses the effects of the site's discharges and discharge-related activities on ESA-listed species and designated critical habitat. You must include copies of the correspondence between yourself and the participating agencies in your SWPPP and your NOI.

Basis statement content/Supporting documentation: A basis statement supporting the selection of Criterion F should identify whether USFWS or NMFS or both agencies provided a section 10 permit, the field office/regional office(s) providing permit(s), any tracking numbers of identifiers associated with that consultation (e.g., IPaC number, PCTS number), and the date the permit was granted.

- ✓ Agency providing section 10 permit: ☐USFWS ☐NMFS
- ✓ Field/regional office(s) providing permit:
- ✓ Tracking numbers associated with consultation:
- ✓ Date permit granted:
- ✓ Attach copies of any letters or other communication between you and the U.S. Fish & Wildlife Service or National Marine Fisheries Service.

3.2 Historic Preservation

Appendix E, Step 1

Do you plan on installing any of the following stormwater controls at your site? Check all that apply below, and proceed to Appendix E, Step 2.

☐ Dike

☐ Berm

☒ Catch Basin

☐ Pond

☐ Stormwater Conveyance Channel (e.g., ditch, trench, perimeter drain, swale, etc.)

☐ Culvert

☒ Other type of ground-disturbing stormwater control: rain garden, subsurface stormwater storage chambers

Appendix E, Step 2

If you answered yes in Step 1, have prior surveys or evaluations conducted on the site already determined that historic properties do not exist, or that prior disturbances at the site have precluded the existence of historic properties? ☐ YES ☒ NO

- If yes, no further documentation is required for Section 3.2 of the Template.
- If no, proceed to Appendix E, Step 3.

Appendix E, Step 3

If you answered no in Step 2, have you determined that your installation of subsurface earth-disturbing stormwater controls will have no effect on historic properties? ☐ YES ☒ NO

If yes, provide documentation of the basis for your determination.

If no, proceed to Appendix E, Step 4.

Appendix E, Step 4

If you answered no in Step 3, did the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Office (THPO), or other tribal representative (whichever applies) respond to you within 15 calendar days to indicate whether the subsurface earth disturbances caused by the installation of stormwater controls affect historic properties? ☐ YES ☒ NO

If no, no further documentation is required for Section 3.2 of the Template.

If yes, describe the nature of their response:

☐ Written indication that no historic properties will be affected by the installation of stormwater controls.

☐ Written indication that adverse effects to historic properties from the installation of stormwater controls can be mitigated by agreed upon actions.

☐ No agreement has been reached regarding measures to mitigate effects to historic properties from the installation of stormwater controls.

☐ Other:

3.3 Safe Drinking Water Act Underground Injection Control Requirements

Do you plan to install any of the following controls? Check all that apply below.

None of the following controls are planned to be installed as part of the project.

☐ Infiltration trenches (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system)

☐ Commercially manufactured pre-cast or pre-built proprietary subsurface detention vaults, chambers, or other devices designed to capture and infiltrate stormwater flow

☐ Drywells, seepage pits, or improved sinkholes (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system)

SECTION 4: EROSION AND SEDIMENT CONTROLS

In accordance with Parts 2.2 and 7.2.6 of the CGP, this section describes the erosion and sediment controls that will be installed and maintained at the site.

4.1 Natural Buffers or Equivalent Sediment Controls

Buffer Compliance Alternatives

Are there any waters of the U.S. within 50 feet of your project's earth disturbances? ☐ YES ☒ NO

(Note: If no, no further documentation is required for Part 4.1 in the SWPPP Template. Continue on to Part 4.2.)

Check the compliance alternative that you have chosen:

☐ (i) I will provide and maintain a 50-foot undisturbed natural buffer.

☐ (ii) I will provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by additional erosion and sediment controls, which in combination achieves the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.

☐ (iii) It is infeasible to provide and maintain an undisturbed natural buffer of any size, therefore I will implement erosion and sediment controls that achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.

☐ I qualify for one of the exceptions in Part 2.2.1.b. (If you have checked this box, provide information on the applicable buffer exception that applies, below.)

Buffer Exceptions

Which of the following exceptions to the buffer requirements applies to your site?

☐ There is no discharge of stormwater to the water of the U.S. that is located 50 feet from my construction disturbances.

☐ No natural buffer exists due to preexisting development disturbances that occurred prior to the initiation of planning for this project.

☐ For a "linear construction sites" (defined in Appendix A), site constraints (e.g., limited right-of-way) make it infeasible to meet any of the CGP Part 2.2.1.a compliance alternatives.

☐ The project qualifies as "small residential lot" construction (defined in Appendix A) (see Appendix G, Part G.3.2).

- ☐ For Alternative 1:
- ☐ For Alternative 2:

☐ Buffer disturbances are authorized under a CWA Section 404 permit.

☐ Buffer disturbances will occur for the construction of a water-dependent structure or water access area (e.g., pier, boat ramp, and trail

4.2 Perimeter Controls

General
In accordance with Part 2.2.3 and 7.2.6.b.ii of the CGP, sediment controls will be installed along those perimeter areas of the site that will receive stormwater from earth-disturbing activities and will be maintained.

Specific Perimeter Controls

Straw Wattles	
Description: Straw wattles shall be a tubular filter sock of mesh fabric. The fabric will have openings of between 1/8" to ¼" diameter. The mesh material will either photo degrade within one year or be made of nylon with a life expectancy of 24 months. The wattle shall be filled with a mix of composted leaf mulch, bark mulch and wood chips that have been composted for at least one year. The wattle will have a minimum diameter of 12-inches.	
Maintenance Requirements	Remove sediment before it has accumulated to one-half of the above-ground height of any perimeter control.
Design Specifications	See project plans

Silt fence	
Description: The silt fence shall consist of a 3-foot wide continuous length sediment control fabric, stitched to a mesh backing, and stapled to preweathered oak posts installed as shown on the drawings. The oak posts shall be 1-1/4-inches by 1-1/4-inches (Minimum Dimension) by 48-inches and shall be tapered. The bottom edge of the silt fence shall be buried as shown on the drawings.	
Maintenance Requirements	Remove sediment before it has accumulated to one-half of the above-ground height of any perimeter control.
Design Specifications	See project plans

Straw bales	
Description: Straw bales shall consist of certified seed free stems of agricultural grain and cereal crops and shall be free of grasses and legumes. Standard bales shall be 14-inches high, 18-inches wide and 36- to 40-inches long tied with polypropylene twine and weigh within 5 percent of 7 lbs. per cubic ft.	
Maintenance Requirements	Remove sediment before it has accumulated to one-half of the above-ground height of any perimeter control.
Design Specifications	See project plans

4.3 Sediment Track-Out

General
In accordance with Part 2.2.4 and 7.2.6.b.ii of the CGP, the track-out of sediment onto off-site streets, other paved areas, and sidewalks from the vehicles exiting the construction site will be minimized.

Specific Track-Out Controls

Entrance/exit points
Description: Vehicle use will be restricted to properly designed entrance/exit points.

Maintenance Requirements	At a minimum, where sediment has been tracked-out from the site onto the surface of off-site streets, other paved areas, and sidewalks, deposited sediment will be removed by the end of the same work day in which the track-out occurs or by the end of the next work day if track-out occurs on a non-work day. You must remove the track-out by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal. You are prohibited from hosing or sweeping tracked-out sediment into any stormwater conveyance (unless it is connected to a sediment basin, sediment trap, or similarly effective control), storm drain inlet, or surface water.
Design Specifications	See project plans

Stabilized Temporary Construction Entrance	
Description: 2-inch crushed stone placed at a depth of at least 8-inches over geotextile fabric	
Maintenance Requirements	To be inspected daily, the contractor will sediment or other materials tracked onto the street, as well as maintaining the entrance.
Design Specifications	See project plans

4.4 Stockpiled Sediment or Soil

General
In accordance with Parts 2.2.5 and 7.2.6 of the CGP, stormwater controls and other measures will be taken to minimize the discharge of sediment or soil particles from stockpiled sediment or soil. In addition, controls and procedures will be used to minimize exposure resulting from adding to or removing materials from the pile.

Specific Stockpile Controls

Maintenance Requirements

- Soil and/or sediment accumulated on pavement or other impervious surfaces will not be swept into any stormwater conveyance (unless it is connected to a sediment basin, sediment track, or similarly effective control), storm drain inlet, or surface water.
- Any stockpile slopes greater than or equal to 2.5:1 shall be protected with erosion control blanket.
- Silt fence and coir facine will be placed at the downgradient perimeter of stockpiles.

4.5 Minimize Dust

General
In accordance with Part 2.2.6 of the CGP, controls and procedures will be used to minimize the generation of dust.

Specific Dust Controls

Dust Control Description

- Dust will be controlled as needed using water.

4.6 Minimize Steep Slope Disturbances

General
During construction, no work on slopes is anticipated. The work will occur in fairly flat area consisting of driveways and parking lots.

4.7 Topsoil

Not applicable – no native topsoil, only disturbing parking lot/driveway area.

4.8 Soil Compaction

Because infiltration practices will be installed, Parts 2. 2.9 and 7.2.6 of the CGP will be adhered to by focusing large machinery traffic only to the areas required for such use.

4.9 Storm Drain Inlets

Stormwater runoff is designed to discharge to existing storm drain inlets on site.

4.10 Stormwater Conveyance Channels

Stormwater conveyance channels will be constructed as part of the construction period stormwater management for this project.

4.11 Chemical Treatment

Treatment chemicals will not be used at this site.

4.12 Dewatering Practices

Dewatering practices are expected to be implemented as part of the project. Either temporary earthen sedimentation basins or temporary basin created of star bales and filter fabric will be used to receive pumped water in excavated areas when needed. The location of these temporary basins will depend on the location of the area needing to be dewatered.

4.13 Other Stormwater Controls

Catch basin protection	
Description: To trap sediment and to prevent sediment from clogging drainage systems, catch basin protection in the form of a siltation sack (Siltsack as manufactured by ACF Environmental, Inc. or approved equal) shall be provided as approved by the Engineer.	
Maintenance Requirements	Remove sediment before it has accumulated to one-half of the above-ground height of any perimeter control.
Design Specifications	See project plans

Dust control	
Description: Watering of dry materials, including stockpiles.	
Installation	As needed
Maintenance Requirements	Not applicable
Design Specifications	Not applicable

4.14 Site Stabilization

Total Amount of Land Disturbance Occurring at Any One Time

☒ *Five Acres or less*

☐ *More than Five Acres*

Whenever earth disturbing activities have *permanently* or *temporarily ceased* on any portion of the site, soil stabilization measures must be initiated immediately (*as soon as practicable, but no later than the end of the next work day, following the day when the earth-disturbing activities have temporarily or permanently ceased*).

*Earth-disturbing activities have **permanently ceased** when clearing and excavation within any area of the construction site that will not include permanent structures has been completed.*

*Earth-disturbing activities have **temporarily ceased** when clearing, grading, and excavation within any area of the site that will not include permanent structures will not resume (i.e., the land will be idle) for a period of 14 or more calendar days, but such activities will resume in the future. The 14 calendar day timeframe begins counting as soon as you know that construction work on a portion of your site will be temporarily ceased. In circumstances where you experience unplanned or unanticipated delays in construction due to circumstances beyond your control (e.g., sudden work stoppage due to unanticipated problems associated with construction labor, funding, or other issues related to the ability to work on the site; weather conditions rendering the site unsuitable for the continuation of construction work) and you do not know at first how long the work stoppage will continue, the requirement to immediately initiate stabilization is triggered as soon as you know with reasonable certainty that work will be stopped for 14 or more additional calendar days.*

The following types of activities may be undertaken at the site to constitute the initiation of stabilization:

1. *prepping the soil for vegetative or non-vegetative stabilization;*
2. *applying mulch or other non-vegetative product to the exposed area;*
3. *seeding or planting the exposed area;*
4. *starting any of the activities in # 1 – 3 on a portion of the area to be stabilized, but not on the entire area; and*
5. *finalizing arrangements to have stabilization product fully installed in compliance with the applicable deadline for completing stabilization as noted in Part 2.2.14 of the CGP.*

This list of examples is not exhaustive.

Stabilization activities must be completed as soon as practicable, but no later than 14 calendar days after the initiation of soil stabilization measures. For vegetative stabilization, all activities (e.g. soil conditioning, application of seed or sod, planting of seedlings or other vegetation, application of fertilizer, and, as deemed appropriate, watering, etc.) necessary to initially seed or plant the area to be stabilized. For non-vegetative stabilization, the installation or application of all such non-vegetative measures.

Appendix H includes the Grading/Stabilization Activities log to document requirements in Part 2.2.14 of the CGP.

SECTION 5: POLLUTION PREVENTION STANDARDS

5.1 Potential Sources of Pollution

Potential Pollution Areas

Pollutant-Generating Activity	Pollutants or Pollutant Constituents (that could be discharged if exposed to stormwater)	Potential Problem/Solution
Construction area	vehicle fluids, solvents	Accidental releases of vehicle fluids, tracking of debris. To be addressed by sediment and erosion controls, good housekeeping, and careful material storage, handling, and disposal.
Portable Toilets	Sewage	Accidental spills of contents. Portable toilets shall be maintained and emptied as needed. Spills/leaks shall be reported to owner of unit(s).
Fuel Tanks	Fuel oil, gasoline and other fuels	Accidental spills. Follow procedures for spill prevention and response as detailed in Section 5.2.
Staging Areas	Soil erosion, fuel oil, gasoline, vehicle fluids, antifreeze/coolant, hydraulic oil/fluids, etc.	Accidental releases/spills. To be addressed by good housekeeping, and careful material storage, handling, and disposal.
Waste storage in Containers	Construction demolition debris, trash	Accidental releases of contents. To be addressed by good housekeeping practices. Any contents released shall be collected to avoid entrance into wetlands/ water bodies or transport off-site.
Dewatering operations	Soil erosion, sediment	Erosion of soils and turbid water from dewatering operations have the potential to discharge to wetlands. Sediment and erosion controls to address.

Potential Pollutant Descriptions

Material	Storm water Pollutants
Gasoline	Benzene, ethyl benzene, toluene, xylene, MTBE
Diesel fuel	Petroleum distillate, oil and grease, naphthalene, xylenes
Antifreeze/coolant	Ethylene glycol, propylene glycol, heavy metals (Cu, Pb, Zn)
Hydraulic fluid	Mineral Oil
Soil/sediments	Soil, sediment

5.2 Spill Prevention and Response

This section describes procedures to prevent and respond to leaks, spills, and other releases.

The following good housekeeping and material management practices will be followed to reduce the risk of spills or other accidental exposure of hazardous materials to storm water runoff:

- Store quantities of materials required for the project and not more,
- Store materials onsite in a neat, orderly manner in appropriate labeled containers,
- Store materials indoors or under cover,
- Follow manufacturers' recommendations for proper use and disposal of materials,
- Monitor all onsite vehicles for leaks and perform preventive maintenance to reduce the potential for leaks,
- Conduct vehicle fueling and maintenance activities in a controlled or covered area or off-site, when possible,
- Use drip pans or absorbents under or around leaky vehicles.
- Manufacturers' recommended methods for spill cleanup shall be clearly posted and site personnel will be made aware of the procedures and the location of the information and cleanup supplies.
- Adequate supplies of spill kit materials and equipment shall be kept in the hazardous material storage area and any on-site fueling and maintenance areas on-site. Spill kit equipment and materials shall include but not be limited to: spill pads, absorbent booms, brooms, dust pans, mops, rags, gloves, goggles, speedi-dri, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for this purpose.

If an emergency spill or release occurs, site personnel will report the spill or release to the Contractor's Site Health and Safety Officer (SHSO), the Resident Engineer, and/or site management and, as needed, evacuate the area.

All employees shall receive Awareness Level training as part of their hazard communication training. Only employees trained at the First Responder Operations Level of 29 CFR 1910.120(q) will be authorized to respond in a defensive manner to emergency spills or releases of fuel and other materials.

If a spill occurs, the SHSO and/or site management shall be contacted and the SHSO and/or site management with assistance from appropriately trained personnel will contain the spill. If necessary the SHSO and/or site management will contact an emergency response contractor and will also notify the

Engineer and all other authorities and agencies in accordance with state and local regulations. Absorptive materials and other supplies will be used as needed to clean up and prevent the spill from spreading. The source of the spill shall be eliminated immediately. Water shall not be used to wash the spill down. Recycled oil and oily wastes shall be disposed in accordance with all applicable federal, state, tribal, and local requirements.

In the event that an accident or some other incident, such as an explosion, a release to groundwater or the environment, or an exposure to toxic chemical levels as described in 310 CMR 40.1600, Revised Massachusetts Contingency Plan, occurs during the course of the project, notify the Massachusetts Department of Environmental Protection, (Northeast Region) in Wilmington **(978) 694-3200** and all other appropriate federal, state, and local authorities and agencies in accordance with 310 CMR 40.0333.

The local Fire Department should be notified of any releases or incidents at **911** for emergencies.

5.3 Fueling and Maintenance of Equipment or Vehicles

Discharges of fuels, oils, or other chemicals used in vehicle equipment operation and maintenance are prohibited.

If vehicle fueling and maintenance activities are completed onsite, an effective means of eliminating the discharge of spilled or leaked chemicals, including fuel, must be provided. Examples of effective controls include, but are not limited to, locating activities away from surface waters and stormwater inlets or conveyances, providing secondary containment *(e.g., spill berms, decks, spill containment pallets)* and cover where appropriate, and/or having spill kits readily available.

- Ensure adequate supplies are available at all times to handle spills, leaks, and disposal of used liquids;
- Use drip pans and absorbents under or around leaky vehicles;
- Dispose of or recycle oil and oily wastes in accordance with other federal, state, tribal, or local requirements;
- Clean up spills or contaminated surfaces immediately, using dry clean up measures where possible, and eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge; and
- Do not clean surfaces by hosing the area down.
- If applicable, the Operator shall comply with the Spill Prevention Control and Countermeasures (SPCC) requirements in 40 CFR 112 and Section 311 of the Clean Water Act.

5.4 Washing of Equipment and Vehicles

In accordance with CGP Parts 2.3.2 and 7.2.6, equipment and vehicle washing will not be conducted on this project site.

5.5 Storage, Handling, and Disposal of Building Products, Materials, and Wastes

In accordance with Parts 2.3.3 and 7.2.6 of the CGP, this section describes the storage, handing, and disposal of construction products, materials, and wastes.

5.5.1 Building Products

Building products, such as asphalt sealants, roofing materials, adhesives, concrete admixtures, etc., will be used as part of this project. Products will be stored in their original containers until used.

5.5.2 Pesticides, Herbicides, Insecticides, Fertilizers, and Landscape Materials

Pesticides, herbicides, insecticides, fertilizers, and landscape materials will not be used as part of this project.

5.5.3 Diesel Fuel, Oil, Hydraulic Fluids, Other Petroleum Products, and Other Chemicals

Chemicals will be stored in water-tight containers, which will be covered by plastic sheeting, temporary roofs, or other suitable means to prevent the products from being contacted by rainwater. If cover is not provided, then secondary containment (e.g., spill berms, decks, and spill containment pallets) shall be used, and spill kits shall be readily accessible.

Spills shall be cleaned up immediately in accordance with the Spill Prevention and Response Plan in Section 5.2 of this SWPPP.

5.5.4 Hazardous or Toxic Waste

No hazardous or toxic wastes will be used at this site for this project.

5.5.5 Construction and Domestic Waste

In accordance with Part 2.3.3 of the CGP, this section describes how construction and domestic waste (e.g. packaging materials, scrap construction materials, masonry products, timber, pipe and electrical cuttings, plastics, styrofoam, concrete, and other trash or building materials, etc.) will be managed.

At a minimum, on work days, waste will be cleaned up and disposed of in designated waste containers and any overflows from the container will be cleaned up immediately.

5.5.6 Sanitary Waste

In accordance with Part 2.3.3.f of the CGP, portable toilets will be positions so that they are secure and will not be tipped or knocked over.

5.6 Washing of Applicators and Containers used for Paint, Concrete or Other Materials

In accordance with Parts 2.3.4 and 7.2.6 of the CGP, if water from the washout and cleanout of paint, concrete, form release oils, curing compounds, and other construction materials will be discharged, these discharges will be eliminated, at a minimum through the following practices:

- Directing all washwater into a leak-proof container or leak-proof pit. The container or pit must be designed so that no overflows can occur due to inadequate sizing or precipitation.
- Handling washout or cleanout wastes as follows:
    - Do not dump liquid wastes in storm sewers (drainage system)
    - Dispose of liquid wastes properly; and
    - Remove and dispose of hardened concrete waste consistent with your handling of other construction wastes;

- Locate any washout or cleanout activities as far away as possible from surface waters and stormwater inlets or conveyances, and, to the extent practicable, designate areas to be used for these activities and conduct such activities only in these areas.

5.7 Fertilizers

In accordance with Parts 2.3.5 and 7.2.6 of the CGP, fertilizers will be applied at the site at a rate and in amounts consistent with manufacturer's specifications. The fertilizer will be applied at the appropriate time of year and not before heavy rains or to frozen grounds.

SECTION 6: INSPECTION, MAINTENANCE, AND CORRECTIVE ACTION

6.1 Inspection Personnel and Procedures

Personnel Responsible for Inspections

In accordance with Part 3.2, 4, 5 and 7.27, all personnel conducting inspections will be a "qualified person" (a person knowledgeable in the principles and practices of erosion and sediment controls and pollution prevention, who possesses the skills to assess conditions at the construction site that could impact stormwater quality, and the skills to assess the effectiveness of any stormwater controls selected and installed to meet the requirements of the CGP).

contractor and contact information to be determined

Inspection Schedule

Select the inspection frequency(ies) that applies, based on CGP Parts 4.2, 4.3, or 4.4

(Note: you may be subject to different inspection frequencies in different areas of the site. Check all that apply)

Standard Frequency:
☐ Every 7 days ☒ Every 14 days and within 24 hours of a 0.25" rain or the occurrence of runoff from snowmelt sufficient to cause a discharge
Increased Frequency (if applicable): (Not applicable)
For areas of sites discharging to sediment or nutrient-impaired waters or to waters designated as Tier 2, Tier 2.5, or Tier 3 ☐ Every 7 days and within 24 hours of a 0.25" rain
Reduced Frequency (if applicable) (Not applicable)
For stabilized areas ☐ Twice during first month, no more than 14 calendar days apart; then once per month after first month;
For stabilized areas on "linear construction sites" (not applicable) ☐ Twice during first month, no more than 14 calendar days apart; then once more within 24 hours of a 0.25" rain
For arid, semi-arid, or drought-stricken areas during seasonally dry periods or during drought (not applicable) ☐ Once per month and within 24 hours of a 0.25" rain Insert beginning and ending dates of the seasonally-defined dry period for your area or the valid period of drought: ▪ Beginning date of seasonally dry period: ▪ Ending date of seasonally dry period:
For frozen conditions where earth-disturbing activities are being conducted ☒ Once per month Insert beginning and ending dates of frozen conditions on your site: ▪ Beginning date of frozen conditions: December 1 ▪ Ending date of frozen conditions: March 15

Rain Gauge Location (if applicable)

The Spring Street weather station in Boxford, MA will be used (Station ID KMABOXFO37) as a rain gauging station for this project. Data are available online:
https://www.wunderground.com/dashboard/pws/KMABOXFO37?cm_ven=localwx_pwsdash

Winter Inspections

During frozen conditions, if earth-disturbing conditions are being conducted, site inspections can be changed to once a month. If no earth disturbing work is being conducted, erosion control inspections may be temporarily ceased and re-started after gaining permission from the Amesbury planning board.

Inspection Report Forms

A copy of the Inspection Report Forms is included in **Appendix D.**

6.2 Corrective Action

Corrective actions are actions you take to:

- Repair, modify, or replace any stormwater control used at the site;
- Clean up and properly dispose of spills, releases, or other deposits; or
- Remedy a permit violation.

In all circumstances, all reasonable steps to minimize or prevent the discharge of pollutants until a permanent solution is installed and made operational, including cleaning up any contaminated surfaces so that the material will not discharge in subsequent storm events, will be completed immediately (in the same day as the condition is found).

For any of the following conditions, a new or modified control will be installed and made operational, or repair will be completed, by **no later than 7 calendar days from the time of discovery.** If it is infeasible to complete the installation or repair within 7 calendar days, you must document in your records why it is infeasible to complete the installation or repair within the 7 calendar day timeframe and document your schedule for installing the stormwater control(s) and making it operational as soon as practicable after the 7-day timeframe.

- A required stormwater control was never installed, was installed incorrectly, or not in accordance with the requirements of the CGP; or
- You become aware that the stormwater controls you have installed and are maintaining are not effective enough for the discharge to meet applicable water quality standards or applicable requirements of the CGP. In this case, you must notify your EPA Regional Office by the end of the next work day. You are required to submit your notification through EPA's electronic NOI system, or "eNOI", at www.epa.gov/npdes/cgpenoi; or
- One of the prohibited discharges in Part 2.3.1 of the CGP is occurring or has occurred.

Where your corrective actions result in changes to any of the stormwater controls or procedures documented in your SWPPP, you must modify your SWPPP accordingly within 7 calendar days of completing corrective action work.

For each corrective action taken, a Corrective Action Report must be completed within 24 hours of discovering the occurrence. Within ***7 calendar days of discovering the occurrence of one of the triggering conditions at your site, you must complete a report of the following:***

- Any follow-up actions taken to review the design, installation, and maintenance of stormwater controls, including the dates such actions occurred;
- A summary of stormwater control modifications taken or to be taken, including a schedule of activities necessary to implement changes, and the date the modifications are completed or expected to be completed; and
- Notice of whether SWPPP modifications are required as a result of the condition identified or corrective action.

Signature Requirements. Each corrective action report must be signed and certified.

Personnel Responsible for Corrective Actions

Contractor and contact information to be determined

Corrective Action Forms

A copy of the Corrective Actions Forms is included in **Appendix E**.

6.3 Delegation of Authority

In accordance with Appendix I, Section 11 of the CGP, individuals or positions may be delegated authority to sign the inspection and corrective action reports.

Appendix J includes the delegation of authority and the names of the duly authorized representatives/positions.

SECTION 7: TRAINING

In accordance with Part 6 and Part 7.2.8 f the CGP, prior to the commencement of earth-disturbing activities or pollutant-generating activities, whichever occurs first, the following personnel will be trained to understand the requirements of the CGP and their specific responsibilities with respect to those requirements:

- Personnel who are responsible for the design, installation, maintenance, and/or repair of stormwater controls (including pollution prevention measures);
- Personnel responsible for the application and storage of treatment chemicals (if applicable);
- Personnel who are responsible for conducting inspections; and
- Personnel who are responsible for taking corrective actions

These personnel will be trained to understand the following if related to the scope of their job duties:

- The location of all stormwater controls on the site, and how they are to be maintained;
- The proper procedures to follow with respect to pollution prevention requirements; and
- When and how to conduct inspections, record applicable findings, and take corrective actions.

Documentation of training is included in **Appendix I.**

Quality Assurance

Excavation work in will be conducted in compliance with governing authority requirements which have jurisdiction over the work being conducted.

Testing & Inspection Service: During earthwork operations, a geotechnical consultant and testing laboratory will be hired by the contractor to conduct and analyze soil samples and inspection services for quality control purposes.

Test Reports: All test reports will be submitted by the contractor to the engineer. A copy of the reports will also be submitted to the property owner. These reports will include:
1. Gradation reports on each material to be used.
2. Moisture density curve for each type of fill and native soil encountered.
3. Field density test reports.

Quality Control

Quality Control Testing During Construction: A testing service will be retained by the contractor to investigate and test subgrades and fill layers. Test results from the service which confirm proper compaction and placement will be obtained before further construction work can occur.

Field density tests will be performed in accordance with ASTM D-2922 (nuclear method), using Troxler moisture-density gauge Model 3411B or 3401B or approved equal.
1. Foundation and Footing Subgrade: At least one (1) field density test for each 2,000 square feet of foundation slab will be conducted for each stratum of soil on which footings will be placed.
2. Paved Areas and Building Slab Subgrade: a minimum of one field density test of subgrade for every 2,000 square feet of paved area or building slab will be taken. In no case shall less than three tests be conducted.
3. Foundation Wall Backfill: A minimum of one field density tests, at bearing elevation of each 100 linear feet of wall will be conducted.
4. The contractor shall provide additional compaction and testing at no additional expense to owner if the engineer determines that, based on the supplied testing services reports and inspections, that subgrade or fills are below specified density.

Daily Personal Responsibilities and Operation Management Procedures

An on-site inspector will be selected to work closely with the engineer to insure that all erosion and sedimentation controls are in place and working properly. During construction, the erosion and sedimentation controls will be inspected daily. Section 6 of this SWPPP contains additional site inspection information.

Environmental Monitoring Plan

As part of the USEPA Nation Pollution Discharge Elimination System (NPDES) Construction General Permit (CGP), the site will be monitored for stormwater erosion issues at the construction site. The Best Management Practices (BMP's) installed to help prevent erosion, sedimentation and dust generation, will be monitored daily to ensure compliance with the CGP. Site monitoring is also discussed in the project stormwater report that was submitted to the Amesbury conservation commission as part of the wetlands Notice of Intent permit submittal.

Revegetation and Erosion Monitoring and Maintenance Plan

The applicant has submitted a landscape planting plan to the Amesbury planning board as part of their project review.

SECTION 8: CERTIFICATION AND NOTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: **Contractor to be determined** ____________ Title: ______________________________

Signature: ____ Date: ____________________

[Repeat as needed for multiple construction operators at the site.]

SWPPP APPENDICES

Attach the following documentation to the SWPPP:

Appendix A – Site Maps

Appendix B – Copy of 2017 CGP

Appendix C – NOI and EPA Authorization Email

Appendix D – Inspection Form

Appendix E – Corrective Action Form

Appendix F – SWPPP Amendment Log

Appendix G – Subcontractor Certifications/Agreements

Appendix H – Grading and Stabilization Activities Log

Appendix I – Training Log

Appendix J – Delegation of Authority

Appendix K – Endangered Species Documentation

Appendix L – Historic Preservation Documentation

Appendix A – Site Maps / Plans

So as not to duplicate information, site plans are included as Appendix E of the Earthwork Permit supplemental information package. The final SWPPP will include these plans.

Appendix B – Copy of 2017 CGP

National Pollutant Discharge Elimination System
General Permit for Discharges from
Construction Activities

In compliance with the provisions of the Clean Water Act, 33 U.S.C. §1251 et. seq., (hereafter CWA), as amended by the Water Quality Act of 1987, P.L. 100-4, "operators" of construction activities (defined in Appendix A) that meet the requirements of Part 1.1 of this National Pollutant Discharge Elimination System (NPDES) general permit, are authorized to discharge pollutants in accordance with the effluent limitations and conditions set forth herein. Permit coverage is required from the "commencement of construction activities" (see Appendix A) until one of the conditions for terminating CGP coverage has been met (see Part 8.2).

This permit becomes effective on **February 16, 2017**.

This permit and the authorization to discharge expire at 11:59pm, **February 16, 2022.**

Signed and issued this 11th day of January 2017

Deborah Szaro,
Acting Regional Administrator, EPA Region 1

Signed and issued this 11th day of January 2017

Javier Laureano, Ph.D.,
Director, Clean Water Division, EPA Region 2

Signed and issued this 11th day of January 2017

Jose C. Font,
Acting Director, Caribbean Environmental Protection Division, EPA Region 2.

Signed and issued this 11th day of January 2017

Dominique Lueckenhoff,
Acting Director, Water Protection Division, EPA Region 3

Signed and issued this 11th day of January 2017

César A. Zapata,
Deputy Director, Water Protection Division, EPA Region 4

Signed and issued this 11th day of January 2017

Christopher Korleski,
Director, Water Division, EPA Region 5

Signed and issued this 11th day of January 2017

William K. Honker, P.E.,
Director, Water Division, EPA Region 6

Signed and issued this 11th day of January 2017

Karen Flournoy,
Director, Water, Wetlands, and Pesticides Division, EPA Region 7

Signed and issued this 11th day of January 2017

Darcy O'Connor,
Assistant Regional Administrator, Office of Water Protection, EPA Region 8

Signed and issued this 11th day of January 2017

Kristin Gullatt
Deputy Director, Water Division, EPA Region 9

Signed and issued this 11th day of January 2017

Daniel D. Opalski,
Director, Office of Water and Watersheds, EPA Region 10

CONTENTS

1 HOW TO OBTAIN COVERAGE UNDER THE CONSTRUCTION GENERAL PERMIT (CGP)

To be covered under this permit, you must meet the eligibility conditions and follow the requirements for obtaining permit coverage in this Part.

1.1 ELIGIBILITY CONDITIONS

1.1.1 You are an "operator" of a construction site for which discharges will be covered under this permit. For the purposes of this permit and in the context of stormwater discharges associated with construction activity, an "operator" is any party associated with a construction project that meets either of the following two criteria:

a. The party has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications *(e.g., in most cases this is the owner of the site);* or

b. The party has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions *(e.g., they are authorized to direct workers at a site to carry out activities required by the permit; in most cases this is the general contractor (as defined in Appendix A) of the project)*.

Where there are multiple operators associated with the same project, all operators must obtain permit coverage.[1] Subcontractors generally are not considered operators for the purposes of this permit.

1.1.2 Your site's construction activities:

a. Will disturb one or more acres of land, or will disturb less than one acre of land but are part of a common plan of development or sale that will ultimately disturb one or more acres of land; or

b. Have been designated by EPA as needing permit coverage under 40 CFR 122.26(a)(1)(v) or 40 CFR 122.26(b)(15)(ii);

1.1.3 Your site is located in an area where EPA is the permitting authority (see Appendix B);

1.1.4 Discharges from your site are not:

a. Already covered by a different NPDES permit for the same discharge; or

b. In the process of having coverage under a different NPDES permit for the same discharge denied, terminated, or revoked.[2,3]

1.1.5 You are able to demonstrate that you meet one of the criteria listed in Appendix D with respect to the protection of species that are federally listed as endangered or threatened under the Endangered Species Act (ESA) and federally designated critical habitat;

[1] If the operator of a "construction support activity" (see Part 1.2.1c) is different than the operator of the main site, that operator must also obtain permit coverage. See Part 7.1 for clarification on the sharing of liability between and among operators on the same site and for conditions that apply to developing a SWPPP for multiple operators associated with the same site.

[2] Parts 1.1.4a and 1.1.4b do not include sites currently covered under the 2012 CGP that are in the process of obtaining coverage under this permit, nor sites covered under this permit that are transferring coverage to a different operator.

[3] Notwithstanding a site being made ineligible for coverage under this permit because it falls under the description of Parts 1.1.4a or 1.1.4b, above, EPA may waive the applicable eligibility requirement after specific review if it determines that coverage under this permit is appropriate.

1.1.6 You have completed the screening process in Appendix E relating to the protection of historic properties; and

1.1.7 You have complied with all requirements in Part 9 imposed by the applicable state, Indian tribe, or territory in which your construction activities and/or discharge will occur.

1.1.8 For "new sources" (as defined in Appendix A) only:

a. EPA has not, prior to authorization under this permit, determined that discharges from your site will cause, have the reasonable potential to cause, or contribute to an excursion above any applicable water quality standard. Where such a determination is made prior to authorization, EPA may notify you that an individual permit application is necessary. However, EPA may authorize your coverage under this permit after you have included appropriate controls and implementation procedures designed to bring your discharge into compliance with this permit, specifically the requirement to meet water quality standards. In the absence of information demonstrating otherwise, EPA expects that compliance with the requirements of this permit, including the requirements applicable to such discharges in Part 3, will result in discharges that will not cause, have the reasonable potential to cause, or contribute to an excursion above any applicable water quality standard.

b. Discharges from your site to a Tier 2, Tier 2.5, or Tier 3 water[4] will not lower the water quality of the applicable water. In the absence of information demonstrating otherwise, EPA expects that compliance with the requirements of this permit, including the requirements applicable to such discharges in Part 3.2, will result in discharges that will not lower the water quality of such waters.

1.1.9 If you plan to add "cationic treatment chemicals" (as defined in Appendix A) to stormwater and/or authorized non-stormwater prior to discharge, you may not submit your Notice of Intent (NOI) unless and until you notify your applicable EPA Regional Office (see Appendix L) in advance and the EPA Regional Office authorizes coverage under this permit after you have included appropriate controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will not lead to discharges that cause an exceedance of water quality standards.

1.2 TYPES OF DISCHARGES AUTHORIZED[5]

1.2.1 The following stormwater discharges are authorized under this permit provided that appropriate stormwater controls are designed, installed, and maintained (see Parts 2 and 3):

a. Stormwater discharges, including stormwater runoff, snowmelt runoff, and surface runoff and drainage, associated with construction activity under 40 CFR 122.26(b)(14) or 122.26(b)(15)(i);

---

[4] Note: Your site will be considered to discharge to a Tier 2, Tier 2.5, or Tier 3 water if the first water to which you discharge is identified by a state, tribe, or EPA as a Tier 2, Tier 2.5, or Tier 3 water. For discharges that enter a storm sewer system prior to discharge, the first water of the U.S. to which you discharge is the waterbody that receives the stormwater discharge from the storm sewer system. See list of Tier 2, Tier 2.5, and Tier 3 waters in Appendix F.

[5] See "Discharge" as defined in Appendix A. Note: Any discharges not expressly authorized in this permit cannot become authorized or shielded from liability under CWA section 402(k) by disclosure to EPA, state, or local authorities after issuance of this permit via any means, including the Notice of Intent (NOI) to be covered by the permit, the SWPPP, or during an inspection.

b. Stormwater discharges designated by EPA as needing a permit under 40 CFR 122.26(a)(1)(v) or 122.26(b)(15)(ii);

c. Stormwater discharges from construction support activities *(e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas)* provided that:

   i. The support activity is directly related to the construction site required to have permit coverage for stormwater discharges;

   ii. The support activity is not a commercial operation, nor does it serve multiple unrelated construction sites;

   iii. The support activity does not continue to operate beyond the completion of the construction activity at the site it supports; and

   iv. Stormwater controls are implemented in accordance with Part 2 and Part 3 for discharges from the support activity areas.

d. Stormwater discharges from earth-disturbing activities associated with the construction of staging areas and the construction of access roads conducted prior to active mining.

1.2.2 The following non-stormwater discharges associated with your construction activity are authorized under this permit provided that, with the exception of water used to control dust and to irrigate vegetation in stabilized areas, these discharges are not routed to areas of exposed soil on your site and you comply with any applicable requirements for these discharges in Parts 2 and 3:

a. Discharges from emergency fire-fighting activities;

b. Fire hydrant flushings;

c. Landscape irrigation;

d. Water used to wash vehicles and equipment, provided that there is no discharge of soaps, solvents, or detergents used for such purposes;

e. Water used to control dust;

f. Potable water including uncontaminated water line flushings;

g. External building washdown, provided soaps, solvents, and detergents are not used, and external surfaces do not contain hazardous substances (as defined in Appendix A) *(e.g., paint or caulk containing polychlorinated biphenyls (PCBs));*

h. Pavement wash waters, provided spills or leaks of toxic or hazardous substances have not occurred (unless all spill material has been removed) and where soaps, solvents, and detergents are not used. You are prohibited from directing pavement wash waters directly into any water of the U.S., storm drain inlet, or stormwater conveyance, unless the conveyance is connected to a sediment basin, sediment trap, or similarly effective control;

i. Uncontaminated air conditioning or compressor condensate;

j. Uncontaminated, non-turbid discharges of ground water or spring water;

k. Foundation or footing drains where flows are not contaminated with process materials such as solvents or contaminated ground water; and

l. Construction dewatering water discharged in accordance with Part 2.4.

1.2.3 Also authorized under this permit are discharges of stormwater listed above in Part 1.2.1, or authorized non-stormwater discharges listed above in Part 1.2.2, commingled with a discharge authorized by a different NPDES permit and/or a discharge that does not require NPDES permit authorization.

1.3 PROHIBITED DISCHARGES[6]

1.3.1 Wastewater from washout of concrete, unless managed by an appropriate control as described in Part 2.3.4;

1.3.2 Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds, and other construction materials;

1.3.3 Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance;

1.3.4 Soaps, solvents, or detergents used in vehicle and equipment washing or external building washdown; and

1.3.5 Toxic or hazardous substances from a spill or other release.

To prevent the above-listed prohibited non-stormwater discharges, operators must comply with the applicable pollution prevention requirements in Part 2.3.

1.4 SUBMITTING YOUR NOTICE OF INTENT (NOI)

All "operators" (as defined in Appendix A) associated with your construction site, who meet the Part 1.1 eligibility requirements, and who seek coverage under this permit, must submit to EPA a complete and accurate NOI in accordance with the deadlines in **Table 1** prior to commencing construction activities.

Exception: If you are conducting construction activities in response to a public emergency *(e.g., mud slides, earthquake, extreme flooding conditions, widespread disruption in essential public services)*, and the related work requires immediate authorization to avoid imminent endangerment to human health, public safety, or the environment, or to reestablish essential public services, you may discharge on the condition that a complete and accurate NOI is submitted within 30 calendar days after commencing construction activities (see Table 1) establishing that you are eligible for coverage under this permit. You must also provide documentation in your Stormwater Pollution Prevention Plan (SWPPP) to substantiate the occurrence of the public emergency.

1.4.1 Prerequisite for Submitting Your NOI

You must develop a SWPPP consistent with Part 7 before submitting your NOI for coverage under this permit.

1.4.2 How to Submit Your NOI

You must use EPA's NPDES eReporting Tool (NeT) to electronically prepare and submit your NOI for coverage under the 2017 CGP, unless you received a waiver from your EPA Regional Office.

To access NeT, go to https://www.epa.gov/npdes/stormwater-discharges-construction-activities#ereporting.

[6] EPA includes these prohibited non-stormwater discharges here as a reminder to the operator that the only non-stormwater discharges authorized by this permit are at Part 1.2.2. Any unauthorized non-stormwater discharges must be covered under an individual permit or alternative general permit.

Waivers from electronic reporting may be granted based on one of the following conditions:

a. If your operational headquarters is physically located in a geographic area (*i.e., ZIP code or census tract*) that is identified as under-served for broadband Internet access in the most recent report from the Federal Communications Commission; or

b. If you have limitations regarding available computer access or computer capability.

If the EPA Regional Office grants you approval to use a paper NOI, and you elect to use it, you must complete the form in Appendix J.

1.4.3 Deadlines for Submitting Your NOI and Your Official Date of Permit Coverage

Table 1 provides the deadlines for submitting your NOI and the official start date of your permit coverage, which differ depending on when you commence construction activities.

Table 1 NOI Submittal Deadlines and Official Start Date for Permit Coverage.

Type of Operator	**NOI Submittal Deadline**[7]	**Permit Authorization Date**[8]
Operator of a new site (*i.e., a site where construction activities commence on or after February 16, 2017*)	At least 14 calendar days before commencing construction activities.	14 calendar days after EPA notifies you that it has received a complete NOI, unless EPA notifies you that your authorization is delayed or denied.
Operator of an existing site *(i.e., a site with 2012 CGP coverage where construction activities commenced prior to February 16, 2017*)	No later than **May 17, 2017**.	
New operator of a permitted site (*i.e., an operator that through transfer of ownership and/or operation replaces the operator of an already permitted construction site that is either a "new site" or an "existing site"*)	At least 14 calendar days before the date the transfer to the new operator will take place.	
Operator of an "emergency-related project" (*i.e., a project initiated in response to a public emergency (e.g., mud slides, earthquake, extreme flooding conditions, disruption in essential public services), for which the related work requires immediate authorization to avoid imminent endangerment to human health or the environment, or to reestablish essential public services*)	No later than 30 calendar days after commencing construction activities.	You are considered provisionally covered under the terms and conditions of this permit immediately, and fully covered 14 calendar days after EPA notifies you that it has received a complete NOI, unless EPA notifies you that your authorization is delayed or denied.

[7] If you miss the deadline to submit your NOI, any and all discharges from your construction activities will continue to be unauthorized under the CWA until they are covered by this or a different NPDES permit. EPA may take enforcement action for any unpermitted discharges that occur between the commencement of construction activities and discharge authorization.

[8] Discharges are not authorized if your NOI is incomplete or inaccurate or if you are not eligible for permit coverage.

1.4.4 Modifying your NOI

If after submitting your NOI you need to correct or update any fields, you may do so by submitting a "Change NOI" form using NeT. Waivers from electronic reporting may be granted as specified in Part 1.4.1. If the EPA Regional Office has granted you approval to submit a paper NOI modification, you may indicate any NOI changes on the same NOI form in Appendix J.

When there is a change to the site's operator, the new operator must submit a new NOI, and the previous operator must submit a Notice of Termination (NOT) form as specified in Part 8.3.

1.4.5 Your Official End Date of Permit Coverage

Once covered under this permit, your coverage will last until the date that:

a. You terminate permit coverage consistent with Part 8; or
b. You receive permit coverage under a different NPDES permit or a reissued or replacement version of this permit after expiring on February 16, 2022; or
c. You fail to submit an NOI for coverage under a revised or replacement version of this permit before the deadline for existing construction sites where construction activities continue after this permit has expired.

1.5 REQUIREMENT TO POST A NOTICE OF YOUR PERMIT COVERAGE

You must post a sign or other notice of your permit coverage at a safe, publicly accessible location in close proximity to the construction site. The notice must be located so that it is visible from the public road that is nearest to the active part of the construction site, and it must use a font large enough to be readily viewed from a public right-of-way.[9] At a minimum, the notice must include:

a. The NPDES ID (*i.e., permit tracking number assigned to your NOI*);
b. A contact name and phone number for obtaining additional construction site information;
c. The Uniform Resource Locator (URL) for the SWPPP (if available), or the following statement: "If you would like to obtain a copy of the Stormwater Pollution Prevention Plan (SWPPP) for this site, contact the EPA Regional Office at [*include the appropriate CGP Regional Office contact information found at https://www.epa.gov/npdes/contact-us-stormwater#regional*];" and
d. The following statement "If you observe indicators of stormwater pollutants in the discharge or in the receiving waterbody, contact the EPA through the following website: https://www.epa.gov/enforcement/report-environmental-violations."

[9] If the active part of the construction site is not visible from a public road, then place the notice of permit coverage in a position that is visible from the nearest public road and as close as possible to the construction site.

2 TECHNOLOGY-BASED EFFLUENT LIMITATIONS

You must comply with the following technology-based effluent limitations in this Part for all authorized discharges.[10]

2.1 GENERAL STORMWATER CONTROL DESIGN, INSTALLATION, AND MAINTENANCE REQUIREMENTS

You must design, install, and maintain stormwater controls required in Parts 2.2 and 2.3 to minimize the discharge of pollutants in stormwater from construction activities. To meet this requirement, you must:

2.1.1 Account for the following factors in designing your stormwater controls:

a. The expected amount, frequency, intensity, and duration of precipitation;

b. The nature of stormwater runoff and run-on at the site, including factors such as expected flow from impervious surfaces, slopes, and site drainage features. You must design stormwater controls to control stormwater volume, velocity, and peak flow rates to minimize discharges of pollutants in stormwater and to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points; and

c. The soil type and range of soil particle sizes expected to be present on the site.

2.1.2 Design and install all stormwater controls in accordance with good engineering practices, including applicable design specifications.[11]

2.1.3 Complete installation of stormwater controls by the time each phase of construction activities has begun.

a. By the time construction activity in any given portion of the site begins, install and make operational any downgradient sediment controls (*e.g., buffers, perimeter controls, exit point controls, storm drain inlet protection*) that control discharges from the initial site clearing, grading, excavating, and other earth-disturbing activities.[12]

b. Following the installation of these initial controls, install and make operational all stormwater controls needed to control discharges prior to subsequent earth-disturbing activities.

---

[10] For each of the effluent limits in Part 2, as applicable to your site, you must include in your SWPPP (1) a description of the specific control(s) to be implemented to meet the effluent limit; (2) any applicable design specifications; (3) routine maintenance specifications; and (4) the projected schedule for its (their) installation/implementation. See Part 7.2.6.

[11] Design specifications may be found in manufacturer specifications and/or in applicable erosion and sediment control manuals or ordinances. Any departures from such specifications must reflect good engineering practices and must be explained in your SWPPP. You must also comply with any additional design and installation requirements specified for the effluent limits in Parts 2.2 and 2.3.

[12] Note that the requirement to install stormwater controls prior to each phase of construction activities for the site does not apply to the earth disturbance associated with the actual installation of these controls. Operators should take all reasonable actions to minimize the discharges of pollutants during the installation of stormwater controls.

2.1.4 Ensure that all stormwater controls are maintained and remain in effective operating condition during permit coverage and are protected from activities that would reduce their effectiveness.

a. Comply with any specific maintenance requirements for the stormwater controls listed in this permit, as well as any recommended by the manufacturer.[13]

b. If at any time you find that a stormwater control needs routine maintenance, you must immediately initiate the needed maintenance work, and complete such work by the close of the next business day.

c. If at any time you find that a stormwater control needs repair or replacement, you must comply with the corrective action requirements in Part 5.

2.2 EROSION AND SEDIMENT CONTROL REQUIREMENTS

You must implement erosion and sediment controls in accordance with the following requirements to minimize the discharge of pollutants in stormwater from construction activities.

2.2.1 Provide and maintain natural buffers and/or equivalent erosion and sediment controls when a water of the U.S. is located within 50 feet of the site's earth disturbances.

a. **Compliance Alternatives.** For any discharges to waters of the U.S. located within 50 feet of your site's earth disturbances, you must comply with one of the following alternatives:

   i. Provide and maintain a 50-foot undisturbed natural buffer; or

   ii. Provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by erosion and sediment controls that achieve, in combination, the sediment load reduction equivalent to a 50-foot undisturbed natural buffer; or

   iii. If infeasible to provide and maintain an undisturbed natural buffer of any size, implement erosion and sediment controls to achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.

   See Appendix G, Part G.2 for additional conditions applicable to each compliance alternative.

b. **Exceptions.** See Appendix G, Part G.2 for exceptions to the compliance alternatives.

2.2.2 Direct stormwater to vegetated areas and maximize stormwater infiltration and filtering to reduce pollutant discharges, unless infeasible.

2.2.3 Install sediment controls along any perimeter areas of the site that will receive pollutant discharges.[14]

a. Remove sediment before it has accumulated to one-half of the above-ground height of any perimeter control.

b. **Exception**. For areas at "linear construction sites" (as defined in Appendix A) where perimeter controls are infeasible *(e.g., due to a limited or restricted right-of-way),*

---

[13] Any departures from such maintenance recommendations made by the manufacturer must reflect good engineering practices and must be explained in your SWPPP.

[14] Examples of perimeter controls include filter berms, silt fences, vegetative strips, and temporary diversion dikes.

implement other practices as necessary to minimize pollutant discharges to perimeter areas of the site.

2.2.4 Minimize sediment track-out.

a. **Restrict vehicle use to properly designated exit points;**

b. Use appropriate stabilization techniques[15] at all points that exit onto paved roads.

   i. **Exception**: Stabilization is not required for exit points at linear utility construction sites that are used only episodically and for very short durations over the life of the project, provided other exit point controls[16] are implemented to minimize sediment track-out;

c. Implement additional track-out controls[17] as necessary to ensure that sediment removal occurs prior to vehicle exit; and

d. Where sediment has been tracked-out from your site onto paved roads, sidewalks, or other paved areas outside of your site, remove the deposited sediment by the end of the same business day in which the track-out occurs or by the end of the next business day if track-out occurs on a non-business day. Remove the track-out by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal. You are prohibited from hosing or sweeping tracked-out sediment into any stormwater conveyance, storm drain inlet, or water of the U.S.[18]

2.2.5 Manage stockpiles or land clearing debris piles composed, in whole or in part, of sediment and/or soil:

a. Locate the piles outside of any natural buffers established under Part 2.2.1 and away from any stormwater conveyances, drain inlets, and areas where stormwater flow is concentrated;

b. Install a sediment barrier along all downgradient perimeter areas;[19]

c. For piles that will be unused for 14 or more days, provide cover[20] or appropriate temporary stabilization (consistent with Part 2.2.14);

d. You are prohibited from hosing down or sweeping soil or sediment accumulated on pavement or other impervious surfaces into any stormwater conveyance, storm drain inlet, or water of the U.S.

---

[15] Examples of appropriate stabilization techniques include the use of aggregate stone with an underlying geotextile or non-woven filter fabric, and turf mats.

[16] Examples of other exit point controls include preventing the use of exit points during wet periods; minimizing exit point use by keeping vehicles on site to the extent possible; limiting exit point size to the width needed for vehicle and equipment usage; using scarifying and compaction techniques on the soil; and avoiding establishing exit points in environmentally sensitive areas (*e.g., karst areas; steep slopes)*.

[17] Examples of additional track-out controls include the use of wheel washing, rumble strips, and rattle plates.

[18] Fine grains that remain visible *(i.e., staining)* on the surfaces of off-site streets, other paved areas, and sidewalks after you have implemented sediment removal practices are not a violation of Part 2.2.4.

[19] Examples of sediment barriers include berms, dikes, fiber rolls, silt fences, sandbags, gravel bags, or straw bale.

[20] Examples of cover include tarps, blown straw and hydroseeding.

2.2.6 Minimize dust. On areas of exposed soil, minimize the generation of dust through the appropriate application of water or other dust suppression techniques.

2.2.7 Minimize steep slope disturbances. Minimize the disturbance of "steep slopes" (as defined in Appendix A).

2.2.8 Preserve native topsoil, unless infeasible.[21]

2.2.9 Minimize soil compaction.[22] In areas of your site where final vegetative stabilization will occur or where infiltration practices will be installed:

a. Restrict vehicle and equipment use in these locations to avoid soil compaction; and

b. Before seeding or planting areas of exposed soil that have been compacted, use techniques that rehabilitate and condition the soils as necessary to support vegetative growth.

2.2.10 Protect storm drain inlets.

a. Install inlet protection measures that remove sediment from discharges prior to entry into any storm drain inlet that carries stormwater flow from your site to a water of the U.S., provided you have authority to access the storm drain inlet;[23] and

b. Clean, or remove and replace, the protection measures as sediment accumulates, the filter becomes clogged, and/or performance is compromised. Where there is evidence of sediment accumulation adjacent to the inlet protection measure, remove the deposited sediment by the end of the same business day in which it is found or by the end of the following business day if removal by the same business day is not feasible.

2.2.11 Minimize erosion of stormwater conveyance channels and their embankments, outlets, adjacent streambanks, slopes, and downstream waters. Use erosion controls and velocity dissipation devices[24] within and along the length of any stormwater conveyance channel and at any outlet to slow down runoff to minimize erosion.

2.2.12 If you install a sediment basin or similar impoundment:

a. Situate the basin or impoundment outside of any water of the U.S. and any natural buffers established under Part 2.2.1;

b. Design the basin or impoundment to avoid collecting water from wetlands;

c. Design the basin or impoundment to provide storage for either:

---

[21] Stockpiling topsoil at off-site locations, or transferring topsoil to other locations, is an example of a practice that is consistent with the requirements in Part 2.2.8. Preserving native topsoil is not required where the intended function of a specific area of the site dictates that the topsoil be disturbed or removed. For example, some sites may be designed to be highly impervious after construction, and therefore little or no vegetation is intended to remain, or may not have space to stockpile native topsoil on site for later use, in which case, it may not be feasible to preserve topsoil.

[22] Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted.

[23] Inlet protection measures can be removed in the event of flood conditions or to prevent erosion.

[24] Examples of velocity dissipation devices include check dams, sediment traps, riprap, and grouted riprap at outlets.

ii. The calculated volume of runoff from a 2-year, 24-hour storm (see Appendix H); or

iii. 3,600 cubic feet per acre drained.

d. Utilize outlet structures that withdraw water from the surface of the sediment basin or similar impoundment, unless infeasible;[25]

e. Use erosion controls and velocity dissipation devices to prevent erosion at inlets and outlets; and

f. Remove accumulated sediment to maintain at least one-half of the design capacity and conduct all other appropriate maintenance to ensure the basin or impoundment remains in effective operating condition.

2.2.13 If using treatment chemicals (*e.g., polymers, flocculants, coagulants*):

a. **Use conventional erosion and sediment controls before and after the application of treatment chemicals.** Chemicals may only be applied where treated stormwater is directed to a sediment control *(e.g., sediment basin, perimeter control)* before discharge.

b. **Select appropriate treatment chemicals**. Chemicals must be appropriately suited to the types of soils likely to be exposed during construction and present in the discharges being treated *(i.e., the expected turbidity, pH, and flow rate of stormwater flowing into the chemical treatment system or area)*.

c. **Minimize discharge risk from stored chemicals.** Store all treatment chemicals in leak-proof containers that are kept under storm-resistant cover and surrounded by secondary containment structures *(e.g., spill berms, decks, spill containment pallets)*, or provide equivalent measures designed and maintained to minimize the potential discharge of treatment chemicals in stormwater or by any other means *(e.g., storing chemicals in a covered area, having a spill kit available on site and ensuring personnel are available to respond expeditiously in the event of a leak or spill)*.

d. **Comply with state/local requirements.** Comply with applicable state and local requirements regarding the use of treatment chemicals.

e. **Use chemicals in accordance with good engineering practices and specifications of the chemical provider/supplier.** Use treatment chemicals and chemical treatment systems in accordance with good engineering practices, and with dosing specifications and sediment removal design specifications provided by the provider/supplier of the applicable chemicals, or document in your SWPPP specific departures from these specifications and how they reflect good engineering practice.

f. **Ensure proper training.** Ensure that all persons who handle and use treatment chemicals at the construction site are provided with appropriate, product-specific training. Among other things, the training must cover proper dosing requirements.

g. **Perform additional measures specified by the EPA Regional Office for the authorized use of cationic chemicals.** If you have been authorized to use cationic chemicals at your site pursuant to Part 1.1.9, you must perform all additional measures as

[25] The circumstances in which it is infeasible to design outlet structures in this manner are rare. Exceptions may include areas with extended cold weather, where using surface outlets may not be feasible during certain time periods (although they must be used during other periods). If you determine that it is infeasible to meet this requirement, you must provide documentation in your SWPPP to support your determination, including the specific conditions or time periods when this exception will apply.

conditioned by your authorization to ensure that the use of such chemicals will not cause an exceedance of water quality standards.

2.2.14 Stabilize exposed portions of the site. Implement and maintain stabilization measures (e.g., seeding protected by erosion controls until vegetation is established, sodding, mulching, erosion control blankets, hydromulch, gravel) that minimize erosion from exposed portions of the site in accordance with Parts 2.2.14a and 2.2.14b.

a. **Stabilization Deadlines:**[26]

Total Amount of Land Disturbance Occurring At Any One Time[27]	**Deadline**
i. **Five acres or less (≤5.0)** **Note: this includes sites disturbing more than five acres (>5.0) total over the course of a project, but that limit disturbance at any one time *(i.e., phase the disturbance)* to five acres or less (≤5.0)**	• Initiate the installation of stabilization measures immediately[28] in any areas of exposed soil where construction activities have permanently ceased or will be temporarily inactive for 14 or more calendar days;[29] and • Complete the installation of stabilization measures as soon as practicable, but no later than 14 calendar days after stabilization has been initiated.[30]

[26] EPA may determine, based on an inspection carried out under Part 4.8 and corrective actions required under Part 5.3, that the level of sediment discharge on the site makes it necessary to require a faster schedule for completing stabilization. For instance, if sediment discharges from an area of exposed soil that is required to be stabilized are compromising the performance of existing stormwater controls, EPA may require stabilization to correct this problem.

[27] Limiting disturbances to five (5) acres or less at any one time means that at no time during the project do the cumulative earth disturbances exceed five (5) acres. The following examples would qualify as limiting disturbances at any one time to five (5) acres or less:

1. The total area of disturbance for a project is five (5) acres or less.
2. The total area of disturbance for a project will exceed five (5) acres, but the operator ensures that no more than five (5) acres will be disturbed at any one time through implementation of stabilization measures. In this way, site stabilization can be used to “free up” land that can be disturbed without exceeding the five (5)-acre cap to qualify for the 14-day stabilization deadline. For instance, if an operator completes stabilization of two (2) acres of land on a five (5)-acre disturbance, then two (2) additional acres could be disturbed while still qualifying for the longer 14-day stabilization deadline.

[28] The following are examples of activities that would constitute the immediate initiation of stabilization:

1. Prepping the soil for vegetative or non-vegetative stabilization as long as seeding, planting, and/or installation of non-vegetative stabilization products takes place as soon as practicable, but no later than one (1) calendar day of completing soil preparation;
2. Applying mulch or other non-vegetative product to the exposed area;
3. Seeding or planting the exposed area;
4. Starting any of the activities in # 1 – 3 on a portion of the entire area that will be stabilized; and
5. Finalizing arrangements to have stabilization product fully installed in compliance with the deadlines for completing stabilization.

[29] The requirement to initiate stabilization immediately is triggered as soon as you know that construction work on a portion of the site is temporarily ceased and will not resume for 14 or more days, or as soon as you know that construction work is permanently ceased. In the context of this provision, “immediately” means as soon as practicable, but no later than the end of the next business day, following the day when the construction activities have temporarily or permanently ceased.

[30] If vegetative stabilization measures are being implemented, stabilization is considered “installed” when all activities necessary to seed or plant the area are completed. If non-vegetative stabilization measures are being implemented, stabilization is considered “installed” when all such measures are implemented or applied.

Total Amount of Land Disturbance Occurring At Any One Time[27]	Deadline
ii. **More than five acres (>5.0)**	• Initiate the installation of stabilization measures immediately[31] in any areas of exposed soil where construction activities have permanently ceased or will be temporarily inactive for 14 or more calendar days;[32] and • Complete the installation of stabilization measures as soon as practicable, but no later than seven (7) calendar days after stabilization has been initiated.[33]

iii. **Exceptions:**

(a) Arid, semi-arid, and drought-stricken areas (as defined in Appendix A)**.** If it is the seasonally dry period or a period in which drought is occurring, and vegetative stabilization measures are being used:

(i) Immediately initiate and, within 14 calendar days of a temporary or permanent cessation of work in any portion of your site, complete the installation of temporary non-vegetative stabilization measures to the extent necessary to prevent erosion;

(ii) As soon as practicable, given conditions or circumstances on the site, complete all activities necessary to seed or plant the area to be stabilized; and

(iii) If construction is occurring during the seasonally dry period, indicate in your SWPPP the beginning and ending dates of the seasonally dry period and your site conditions. Also include the schedule you will follow for initiating and completing vegetative stabilization.

(b) Operators that are affected by unforeseen circumstances[34] that delay the initiation and/or completion of vegetative stabilization:

(i) Immediately initiate and, within 14 calendar days, complete the installation of temporary non-vegetative stabilization measures to prevent erosion;

(ii) Complete all soil conditioning, seeding, watering or irrigation installation, mulching, and other required activities related to the planting and initial establishment of vegetation as soon as conditions or circumstances allow it on your site; and

(iii) Document in the SWPPP the circumstances that prevent you from meeting the deadlines in Part 2.2.14a and the schedule you will follow for initiating and completing stabilization.

(c) Discharges to a sediment- or nutrient-impaired water or to a water that is identified by your state, tribe, or EPA as Tier 2, Tier 2.5, or Tier 3 for antidegradation purposes. Complete stabilization as soon as practicable, but no later than seven (7) calendar days after stabilization has been initiated.

[31] See footnote 27

[32] See footnote 28

[33] See footnote 29

[34] Examples include problems with the supply of seed stock or with the availability of specialized equipment and unsuitability of soil conditions due to excessive precipitation and/or flooding.

b. **Final Stabilization Criteria** (for any areas not covered by permanent structures)**:**

i. Establish uniform, perennial vegetation *(i.e., evenly distributed, without large bare areas)* that provides 70 percent or more of the cover that is provided by vegetation native to local undisturbed areas; and/or

ii. Implement permanent non-vegetative stabilization measures[35] to provide effective cover.

iii. **Exceptions:**

(a) **Arid, semi-arid, and drought-stricken areas** (as defined in Appendix A). Final stabilization is met if the area has been seeded or planted to establish vegetation that provides 70 percent or more of the cover that is provided by vegetation native to local undisturbed areas within three (3) years and, to the extent necessary to prevent erosion on the seeded or planted area, non-vegetative erosion controls have been applied that provide cover for at least three years without active maintenance.

(b) **Disturbed areas on agricultural land that are restored to their preconstruction agricultural use.** The Part 2.2.14b final stabilization criteria does not apply.

(c) **Areas that need to remain disturbed.** In limited circumstances, stabilization may not be required if the intended function of a specific area of the site necessitates that it remain disturbed, and only the minimum area needed remains disturbed *(e.g., dirt access roads, utility pole pads, areas being used for storage of vehicles, equipment, materials)*.

2.3 POLLUTION PREVENTION REQUIREMENTS[36]

You must implement pollution prevention controls in accordance with the following requirements to minimize the discharge of pollutants in stormwater and to prevent the discharge of pollutants from spilled or leaked materials from construction activities.

2.3.1 For equipment and vehicle fueling and maintenance:

a. Provide an effective means of eliminating the discharge of spilled or leaked chemicals, including fuels and oils, from these activities;[37]

---

[35] Examples of permanent non-vegetative stabilization measures include riprap, gravel, gabions, and geotextiles.

[36] Under this permit, you are not required to minimize exposure for any products or materials where the exposure to precipitation and to stormwater will not result in a discharge of pollutants, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use).

[37] Examples of effective means include:

- Locating activities away from waters of the U.S. and stormwater inlets or conveyances so that stormwater coming into contact with these activities cannot reach waters of the U.S.;
- Providing secondary containment (*e.g., spill berms, decks, spill containment pallets*) and cover where appropriate; and
- Having a spill kit available on site and ensuring personnel are available to respond expeditiously in the event of a leak or spill.

b. If applicable, comply with the Spill Prevention Control and Countermeasures (SPCC) requirements in 40 CFR part 112 and Section 311 of the CWA;

c. Ensure adequate supplies are available at all times to handle spills, leaks, and disposal of used liquids;

d. Use drip pans and absorbents under or around leaky vehicles;

e. Dispose of or recycle oil and oily wastes in accordance with other federal, state, tribal, or local requirements; and

f. Clean up spills or contaminated surfaces immediately, using dry clean up measures (do not clean contaminated surfaces by hosing the area down), and eliminate the source of the spill to prevent a discharge or a continuation of an ongoing discharge.

2.3.2 For equipment and vehicle washing:

a. Provide an effective means of minimizing the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other types of wash waters;[38]

b. Ensure there is no discharge of soaps, solvents, or detergents in equipment and vehicle wash water; and

c. For storage of soaps, detergents, or solvents, provide either (1) cover *(e.g., plastic sheeting, temporary roofs)* to minimize the exposure of these detergents to precipitation and to stormwater, or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas.

2.3.3 For storage, handling, and disposal of building products, materials, and wastes:

a. *For building materials and building products*[39], provide either (1) cover (*e.g., plastic sheeting, temporary roofs*) to minimize the exposure of these products to precipitation and to stormwater, or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas.

b. *For pesticides, herbicides, insecticides, fertilizers, and landscape materials:*

   i. In storage areas, provide either (1) cover (*e.g., plastic sheeting, temporary roofs*) to minimize the exposure of these chemicals to precipitation and to stormwater, or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas; and

   ii. Comply with all application and disposal requirements included on the registered pesticide, herbicide, insecticide, and fertilizer label (see also Part 2.3.5).

c. *For diesel fuel, oil, hydraulic fluids, other petroleum products, and other chemicals*:

   i. Store chemicals in water-tight containers, and provide either (1) cover *(e.g., plastic sheeting, temporary roofs)* to minimize the exposure of these containers to precipitation and to stormwater, or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas *(e.g., having a spill kit available on site and ensuring personnel are available to respond expeditiously in*

---

[38] Examples of effective means include locating activities away from waters of the U.S. and stormwater inlets or conveyances and directing wash waters to a sediment basin or sediment trap, using filtration devices, such as filter bags or sand filters, or using other similarly effective controls.

[39] Examples of building materials and building products typically present at construction sites include asphalt sealants, copper flashing, roofing materials, adhesives, concrete admixtures, and gravel and mulch stockpiles.

the event of a leak or spill), or provide secondary containment *(e.g., spill berms, decks, spill containment pallets)*; and

ii. Clean up spills immediately, using dry clean-up methods where possible, and dispose of used materials properly. You are prohibited from hosing the area down to clean surfaces or spills. Eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge.

d. *For hazardous or toxic wastes*:[40]

i. Separate hazardous or toxic waste from construction and domestic waste;

ii. Store waste in sealed containers, which are constructed of suitable materials to prevent leakage and corrosion, and which are labeled in accordance with applicable Resource Conservation and Recovery Act (RCRA) requirements and all other applicable federal, state, tribal, or local requirements;

iii. Store all outside containers within appropriately-sized secondary containment (*e.g., spill berms, decks, spill containment pallets*) to prevent spills from being discharged, or provide a similarly effective means designed to prevent the discharge of pollutants from these areas *(e.g., storing chemicals in a covered area, having a spill kit available on site);*

iv. Dispose of hazardous or toxic waste in accordance with the manufacturer's recommended method of disposal and in compliance with federal, state, tribal, and local requirements;

v. Clean up spills immediately, using dry clean-up methods, and dispose of used materials properly. You are prohibited from hosing the area down to clean surfaces or spills. Eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge; and

vi. Follow all other federal, state, tribal, and local requirements regarding hazardous or toxic waste.

e. *For construction and domestic wastes*:[41]

i. Provide waste containers *(e.g., dumpster, trash receptacle)* of sufficient size and number to contain construction and domestic wastes;

ii. Keep waste container lids closed when not in use and close lids at the end of the business day for those containers that are actively used throughout the day. For waste containers that do not have lids, provide either (1) cover *(e.g., a tarp, plastic sheeting, temporary roof)* to minimize exposure of wastes to precipitation, or (2) a similarly effective means designed to minimize the discharge of pollutants *(e.g., secondary containment)*;

iii. On business days, clean up and dispose of waste in designated waste containers; and

iv. Clean up immediately if containers overflow.

[40] Examples of hazardous or toxic waste that may be present at construction sites include paints, caulks, sealants, fluorescent light ballasts, solvents, petroleum-based products, wood preservatives, additives, curing compounds, and acids.

[41] Examples of construction and domestic waste include packaging materials, scrap construction materials, masonry products, timber, pipe and electrical cuttings, plastics, styrofoam, concrete, demolition debris; and other trash or building materials.

f. *For sanitary waste*, position portable toilets so that they are secure and will not be tipped or knocked over, and located away from waters of the U.S. and stormwater inlets or conveyances.

2.3.4 For washing applicators and containers used for stucco, paint, concrete, form release oils, curing compounds, or other materials:

a. Direct wash water into a leak-proof container or leak-proof and lined pit designed so that no overflows can occur due to inadequate sizing or precipitation;

b. Handle washout or cleanout wastes as follows:

   i. Do not dump liquid wastes in storm sewers or waters of the U.S.;

   ii. Dispose of liquid wastes in accordance with applicable requirements in Part 2.3.3; and

   iii. Remove and dispose of hardened concrete waste consistent with your handling of other construction wastes in Part 2.3.3; and

c. Locate any washout or cleanout activities as far away as possible from waters of the U.S. and stormwater inlets or conveyances, and, to the extent feasible, designate areas to be used for these activities and conduct such activities only in these areas.

2.3.5 For the application of fertilizers:

a. Apply at a rate and in amounts consistent with manufacturer's specifications, or document in the SWPPP departures from the manufacturer specifications where appropriate in accordance with Part 7.2.6.b.ix;

b. Apply at the appropriate time of year for your location, and preferably timed to coincide as closely as possible to the period of maximum vegetation uptake and growth;

c. Avoid applying before heavy rains that could cause excess nutrients to be discharged;

d. Never apply to frozen ground;

e. Never apply to stormwater conveyance channels; and

f. Follow all other federal, state, tribal, and local requirements regarding fertilizer application.

2.3.6 Emergency Spill Notification Requirements

Discharges of toxic or hazardous substances from a spill or other release are prohibited, consistent with Part 1.3.5. Where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR 110, 40 CFR 117, or 40 CFR 302 occurs during a 24-hour period, you must notify the National Response Center (NRC) at (800) 424-8802 or, in the Washington, DC metropolitan area, call (202) 267-2675 in accordance with the requirements of 40 CFR 110, 40 CFR 117, and 40 CFR 302 as soon as you have knowledge of the release. You must also, within seven (7) calendar days of knowledge of the release, provide a description of the release, the circumstances leading to the release, and the date of the release. State, tribal, or local requirements may necessitate additional reporting of spills or discharges to local emergency response, public health, or drinking water supply agencies.

2.4 CONSTRUCTION DEWATERING REQUIREMENTS

Comply with the following requirements to minimize the discharge of pollutants in ground water or accumulated stormwater that is removed from excavations, trenches, foundations, vaults, or other similar points of accumulation, in accordance with Part 1.2.2.[42]

2.4.1 Treat dewatering discharges with controls to minimize discharges of pollutants;[43]

2.4.2 Do not discharge visible floating solids or foam;

2.4.3 Use an oil-water separator or suitable filtration device (such as a cartridge filter) that is designed to remove oil, grease, or other products if dewatering water is found to contain these materials;

2.4.4 To the extent feasible, use vegetated, upland areas of the site to infiltrate dewatering water before discharge. You are prohibited from using waters of the U.S. as part of the treatment area;

2.4.5 At all points where dewatering water is discharged, comply with the velocity dissipation requirements of Part 2.2.11;

2.4.6 With backwash water, either haul it away for disposal or return it to the beginning of the treatment process; and

2.4.7 Replace and clean the filter media used in dewatering devices when the pressure differential equals or exceeds the manufacturer's specifications.

3 WATER QUALITY-BASED EFFLUENT LIMITATIONS

3.1 GENERAL EFFLUENT LIMITATION TO MEET APPLICABLE WATER QUALITY STANDARDS

Discharges must be controlled as necessary to meet applicable water quality standards. Discharges must also comply with any additional state or tribal requirements that are in Part 9.

In the absence of information demonstrating otherwise, EPA expects that compliance with the conditions in this permit will result in stormwater discharges being controlled as necessary to meet applicable water quality standards. If at any time you become aware, or EPA determines, that discharges are not being controlled as necessary to meet applicable water quality standards, you must take corrective action as required in Parts 5.1 and 5.2, and document the corrective actions as required in Part 5.4.

EPA may insist that you install additional controls (to meet the narrative water quality-based effluent limit above) on a site-specific basis, or require you to obtain coverage under an individual permit, if information in your NOI or from other sources indicates that your discharges are not controlled as necessary to meet applicable water quality

---

[42] Uncontaminated, clear (non-turbid) dewatering water can be discharged without being routed to a control.

[43] Appropriate controls include sediment basins or sediment traps, sediment socks, dewatering tanks, tube settlers, weir tanks, filtration systems (*e.g., bag or sand filters*), and passive treatment systems that are designed to remove sediment. Appropriate controls to use downstream of dewatering controls to minimize erosion include vegetated buffers, check dams, riprap, and grouted riprap at outlets.

standards. This includes situations where additional controls are necessary to comply with a wasteload allocation in an EPA-established or approved TMDL.

If during your coverage under a previous permit, you were required to install and maintain stormwater controls specifically to meet the assumptions and requirements of an EPA-approved or established TMDL (for any parameter) or to otherwise control your discharge to meet water quality standards, you must continue to implement such controls as part of your coverage under this permit.

3.2 DISCHARGE LIMITATIONS FOR SITES DISCHARGING TO SENSITIVE WATERS[44]

For any portion of the site that discharges to a sediment or nutrient-impaired water or to a water that is identified by your state, tribe, or EPA as Tier 2, Tier 2.5, or Tier 3 for antidegradation purposes, you must comply with the inspection frequency specified in 4.3 and you must comply with the stabilization deadline specified in Part 2.2.14.a.iii.(c).[45]

If you discharge to a water that is impaired for a parameter other than a sediment-related parameter or nutrients, EPA will inform you if any additional controls are necessary for your discharge to be controlled as necessary to meet water quality standards, including for it to be consistent with the assumptions of any available wasteload allocation in any applicable TMDL, or if coverage under an individual permit is necessary.

In addition, on a case-by-case basis, EPA may notify operators of new sites or operators of existing sites with increased discharges that additional analyses, stormwater controls, or other measures are necessary to comply with the applicable antidegradation requirements, or notify you that an individual permit application is necessary.

If you discharge to a water that is impaired for polychlorinated biphenyls (PCBs) and are engaging in demolition of any structure with at least 10,000 square feet of floor space built or renovated before January 1, 1980, you must:

---

[44] Sensitive waters include waters that are impaired and Tier 2, Tier 2.5, and Tier 3 waters.

"Impaired waters" are those waters identified by the state, tribe, or EPA as not meeting an applicable water quality standard and (1) requires development of a TMDL (pursuant to section 303(d) of the CWA; or (2) is addressed by an EPA-approved or established TMDL; or (3) is not in either of the above categories but the waterbody is covered by a pollution control program that meets the requirements of 40 CFR 130.7(b)(1). Your construction site will be considered to discharge to an impaired water if the first water of the U.S. to which you discharge is an impaired water for the pollutants contained in the discharge from your site. For discharges that enter a storm sewer system prior to discharge, the first water of the U.S. to which you discharge is the waterbody that receives the stormwater discharge from the storm sewer system. For assistance in determining whether your site discharges to impaired waters, EPA has developed a tool that is available both within the electronic NOI form in NeT, and at https://water.epa.gov/polwaste/npdes/stormwater/discharge.cfm.

Tiers 2, 2.5 and 3 refer to waters either identified by the state as high quality waters or Outstanding National Resource Waters under 40 CFR 131.12(a)(2) and (3). For the purposes of this permit, you are considered to discharge to a Tier 2, Tier 2.5, or Tier 3 water if the first water of the U.S. to which you discharge is identified by a state, tribe, or EPA as Tier 2, Tier 2.5, or Tier 3. For discharges that enter a storm sewer system prior to discharge, the water of the U.S. to which you discharge is the first water of the U.S. that receives the stormwater discharge from the storm sewer system. See list of Tier 2, Tier 2.5, and Tier 3 waters in Appendix F.

EPA may determine on a case-by-case basis that a site discharges to a sensitive water.

[45] If you qualify for any of the reduced inspection frequencies in Part 4.4, you may conduct inspections in accordance with Part 4.4 for any portion of your site that discharges to a sensitive water.

a. Implement controls[46] to minimize the exposure of PCB-containing building materials, including paint, caulk, and pre-1980 fluorescent lighting fixtures, to precipitation and to stormwater; and

b. Ensure that disposal of such materials is performed in compliance with applicable state, federal, and local laws.

4 SITE INSPECTION REQUIREMENTS

4.1 PERSON(S) RESPONSIBLE FOR INSPECTING SITE

The person(s) inspecting your site may be a person on your staff or a third party you hire to conduct such inspections. You are responsible for ensuring that the person who conducts inspections is a "qualified person."[47]

4.2 FREQUENCY OF INSPECTIONS.[48]

At a minimum, you must conduct a site inspection in accordance with one of the two schedules listed below, unless you are subject to the Part 4.3 site inspection frequency for discharges to sensitive waters or qualify for a Part 4.4 reduction in the inspection frequency:

4.2.1 At least once every seven (7) calendar days; *or*

4.2.2 Once every 14 calendar days *and* within 24 hours of the occurrence of a storm event of 0.25 inches or greater, or the occurrence of runoff from snowmelt sufficient to cause a discharge.[49] To determine if a storm event of 0.25 inches or greater has occurred on your site, you must either keep a properly maintained rain gauge on your site, or obtain the storm event information from a weather station that is representative of your location. For any day of rainfall during normal business hours that measures 0.25 inches or greater, you must record the total rainfall measured for that day in accordance with Part 4.7.1d.

4.3 INCREASE IN INSPECTION FREQUENCY FOR SITES DISCHARGING TO SENSITIVE WATERS.

For any portion of the site that discharges to a sediment or nutrient-impaired water or to a water that is identified by your state, tribe, or EPA as Tier 2, Tier 2.5, or Tier 3 for antidegradation purposes (see Part 3.2), instead of the inspection frequency specified in

---

[46] Examples of controls to minimize exposure of PCBs to precipitation and stormwater include separating work areas from non-work areas and selecting appropriate personal protective equipment and tools, constructing a containment area so that all dust or debris generated by the work remains within the protected area, using tools that minimize dust and heat (<212°F). For additional information, refer to Part 2.3.3 of the CGP Fact Sheet.

[47] A "qualified person" is a person knowledgeable in the principles and practice of erosion and sediment controls and pollution prevention, who possesses the appropriate skills and training to assess conditions at the construction site that could impact stormwater quality, and the appropriate skills and training to assess the effectiveness of any stormwater controls selected and installed to meet the requirements of this permit.

[48] Inspections are only required during the site's normal working hours.

[49] "Within 24 hours of the occurrence of a storm event" means that you must conduct an inspection within 24 hours once a storm event has produced 0.25 inches within a 24-hour period, even if the storm event is still continuing. Thus, if you have elected to inspect bi-weekly in accordance with Part 4.2.2 and there is a storm event at your site that continues for multiple days, and each day of the storm produces 0.25 inches or more of rain, you must conduct an inspection within 24 hours of the first day of the storm and within 24 hours after the end of the storm.

Part 4.2, you must conduct inspections in accordance with the following inspection frequencies:

Once every seven (7) calendar days *and* within 24 hours of the occurrence of a storm event of 0.25 inches or greater, or the occurrence of runoff from snowmelt sufficient to cause a discharge. To determine if a storm event of 0.25 inches or greater has occurred on your site, you must either keep a properly maintained rain gauge on your site, or obtain the storm event information from a weather station that is representative of your location. For any day of rainfall during normal business hours that measures 0.25 inches or greater, you must record the total rainfall measured for that day in accordance with Part 4.7.1d.

4.4 REDUCTIONS IN INSPECTION FREQUENCY

4.4.1 Stabilized areas.

a. You may reduce the frequency of inspections to twice per month for the first month, no more than 14 calendar days apart, then once per month in any area of your site where the stabilization steps in 2.2.14a have been completed. If construction activity resumes in this portion of the site at a later date, the inspection frequency immediately increases to that required in Parts 4.2 and 4.3, as applicable. You must document the beginning and ending dates of this period in your SWPPP.

b. **Exception.** For "linear construction sites" (as defined in Appendix A) where disturbed portions have undergone final stabilization at the same time active construction continues on others, you may reduce the frequency of inspections to twice per month for the first month, no more than 14 calendar days apart, in any area of your site where the stabilization steps in 2.2.14a have been completed. After the first month, inspect once more within 24 hours of the occurrence of a storm event of 0.25 inches or greater. If there are no issues or evidence of stabilization problems, you may suspend further inspections. If "wash-out" of stabilization materials and/or sediment is observed, following re-stabilization, inspections must resume at the inspection frequency required in Part 4.4.1a Inspections must continue until final stabilization is visually confirmed following a storm event of 0.25 inches or greater.

4.4.2 Arid, semi-arid, or drought-stricken areas (as defined in Appendix A). If it is the seasonally dry period or a period in which drought is occurring, you may reduce the frequency of inspections to once per month and within 24 hours of the occurrence of a storm event of 0.25 inches or greater. You must document that you are using this reduced schedule and the beginning and ending dates of the seasonally dry period in your SWPPP. To determine if a storm event of 0.25 inches or greater has occurred on your site, you must either keep a properly maintained rain gauge on your site, or obtain the storm event information from a weather station that is representative of your location. For any day of rainfall during normal business hours that measures 0.25 inches or greater, you must record the total rainfall measured for that day in accordance with Part 4.7.1d.

4.4.3 Frozen conditions:

a. If you are suspending construction activities due to frozen conditions, you may temporarily suspend inspections on your site until thawing conditions (as defined in Appendix A) begin to occur if:

i. Runoff is unlikely due to continuous frozen conditions that are likely to continue at your site for at least three (3) months based on historic seasonal averages. If unexpected weather conditions (such as above freezing temperatures or rain events) make discharges likely, you must immediately resume your regular inspection frequency as described in Parts 4.2 and 4.3, as applicable;

ii. Land disturbances have been suspended; and

iii. All disturbed areas of the site have been stabilized in accordance with Part 2.2.14a.

b. If you are still conducting construction activities during frozen conditions, you may reduce your inspection frequency to once per month if:

i. Runoff is unlikely due to continuous frozen conditions that are likely to continue at your site for at least three (3) months based on historic seasonal averages. If unexpected weather conditions (such as above freezing temperatures or rain events) make discharges likely, you must immediately resume your regular inspection frequency as described in Parts 4.2 and 4.3, as applicable; and

ii. Except for areas in which you are actively conducting construction activities, disturbed areas of the site have been stabilized in accordance with Part 2.2.14a.

You must document the beginning and ending dates of this period in your SWPPP.

4.5 AREAS THAT MUST BE INSPECTED

During your site inspection, you must at a minimum inspect the following areas of your site:

4.5.1 All areas that have been cleared, graded, or excavated and that have not yet completed stabilization consistent with Part 2.2.14a;

4.5.2 All stormwater controls (including pollution prevention controls) installed at the site to comply with this permit;[50]

4.5.3 Material, waste, borrow, and equipment storage and maintenance areas that are covered by this permit;

4.5.4 All areas where stormwater typically flows within the site, including drainageways designed to divert, convey, and/or treat stormwater;

4.5.5 All points of discharge from the site; and

4.5.6 All locations where stabilization measures have been implemented.

You are not required to inspect areas that, at the time of the inspection, are considered unsafe to your inspection personnel.

4.6 REQUIREMENTS FOR INSPECTIONS

During your site inspection, you must at a minimum:

4.6.1 Check whether all stormwater controls *(i.e., erosion and sediment controls and pollution prevention controls)* are properly installed, appear to be operational, and are working as intended to minimize pollutant discharges;

[50] This includes the requirement to inspect for sediment that has been tracked out from the site onto paved roads, sidewalks, or other paved areas consistent with Part 2.2.4.

4.6.2 Check for the presence of conditions that could lead to spills, leaks, or other accumulations of pollutants on the site;

4.6.3 Identify any locations where new or modified stormwater controls are necessary to meet the requirements of Parts 2 and/or 3;

4.6.4 Check for signs of visible erosion and sedimentation *(i.e., sediment deposits)* that have occurred and are attributable to your discharge at points of discharge and, if applicable, the banks of any waters of the U.S. flowing within or immediately adjacent to the site;

4.6.5 Identify any incidents of noncompliance observed;

4.6.6 If a discharge is occurring during your inspection:

a. Identify all discharge points at the site; and

b. Observe and document the visual quality of the discharge, and take note of the characteristics of the stormwater discharge, including color; odor; floating, settled, or suspended solids; foam; oil sheen; and other indicators of stormwater pollutants.

4.6.7 Based on the results of your inspection, complete any necessary maintenance under Part 2.1.4 and corrective action under Part 5.

4.7 INSPECTION REPORT

4.7.1 You must complete an inspection report within 24 hours of completing any site inspection. Each inspection report must include the following:

a. The inspection date;

b. Names and titles of personnel making the inspection;

c. A summary of your inspection findings, covering at a minimum the observations you made in accordance with Part 4.6, including any necessary maintenance or corrective actions;

d. If you are inspecting your site at the frequency specified in Part 4.2.2, Part 4.3, or Part 4.4.1b, and you conducted an inspection because of rainfall measuring 0.25 inches or greater, you must include the applicable rain gauge or weather station readings that triggered the inspection; and

e. If you determined that it is unsafe to inspect a portion of your site, you must describe the reason you found it to be unsafe and specify the locations to which this condition applies.

4.7.2 Each inspection report must be signed in accordance with Appendix I, Part I.11 of this permit.

4.7.3 You must keep a copy of all inspection reports at the site or at an easily accessible location, so that it can be made available at the time of an on-site inspection or upon request by EPA.

4.7.4 You must retain all inspection reports completed for this Part for at least three (3) years from the date that your permit coverage expires or is terminated.

4.8 INSPECTIONS BY EPA

You must allow EPA, or an authorized representative of EPA, to conduct the following activities at reasonable times. To the extent that you are utilizing shared controls that are not on site to comply with this permit, you must make arrangements for EPA to have access at all reasonable times to those areas where the shared controls are located.

4.8.1 Enter onto all areas of the site, including any construction support activity areas covered by this permit, any off-site areas where shared controls are utilized to comply with this permit, discharge locations, adjoining waterbodies, and locations where records are kept under the conditions of this permit;

4.8.2 Access and copy any records that must be kept under the conditions of this permit;

4.8.3 Inspect your construction site, including any construction support activity areas covered by this permit (see Part 1.2.1c), any stormwater controls installed and maintained at the site, and any off-site shared controls utilized to comply with this permit; and

4.8.4 Sample or monitor for the purpose of ensuring compliance.

5 CORRECTIVE ACTIONS

5.1 CONDITIONS TRIGGERING CORRECTIVE ACTION.

You must take corrective action to address any of the following conditions identified at your site:

5.1.1 A stormwater control needs repair or replacement (beyond routine maintenance required under Part 2.1.4); or

5.1.2 A stormwater control necessary to comply with the requirements of this permit was never installed, or was installed incorrectly; or

5.1.3 Your discharges are causing an exceedance of applicable water quality standards; or

5.1.4 A prohibited discharge has occurred (see Part 1.3).

5.2 CORRECTIVE ACTION DEADLINES

For any corrective action triggering conditions in Part 5.1, you must:

5.2.1 Immediately take all reasonable steps to address the condition, including cleaning up any contaminated surfaces so the material will not discharge in subsequent storm events;

5.2.2 When the problem does not require a new or replacement control or significant repair, the corrective action must be completed by the close of the next business day;

5.2.3 When the problem requires a new or replacement control or significant repair, install the new or modified control and make it operational, or complete the repair, by no later than seven (7) calendar days from the time of discovery. If it is infeasible to complete the installation or repair within seven (7) calendar days, you must document in your records why it is infeasible to complete the installation or repair within the 7-day timeframe and document your schedule for installing the stormwater control(s) and making it operational as soon as feasible after the 7-day timeframe. Where these actions result in changes to any of the stormwater controls or procedures documented in your SWPPP, you must modify your SWPPP accordingly within seven (7) calendar days of completing this work.

5.3 CORRECTIVE ACTION REQUIRED BY EPA

You must comply with any corrective actions required by EPA as a result of permit violations found during an inspection carried out under Part 4.8.

5.4 CORRECTIVE ACTION REPORT

For each corrective action taken in accordance with this Part, you must complete a report in accordance with the following:

5.4.1 Within 24 hours of identifying the corrective action condition, document the specific condition and the date and time it was identified.

5.4.2 Within 24 hours of completing the corrective action (in accordance with the deadlines in Part 5.2), document the actions taken to address the condition, including whether any SWPPP modifications are required.

5.4.3 Each corrective action report must be signed in accordance with Appendix I, Part I.11 of this permit.

5.4.4 You must keep a copy of all corrective action reports at the site or at an easily accessible location, so that it can be made available at the time of an on-site inspection or upon request by EPA.

5.4.5 You must retain all corrective action reports completed for this Part for at least three (3) years from the date that your permit coverage expires or is terminated.

6 STAFF TRAINING REQUIREMENTS

Each operator, or group of multiple operators, must assemble a "stormwater team" to carry out compliance activities associated with the requirements in this permit.

6.1 Prior to the commencement of construction activities, you must ensure that the following personnel[51] on the stormwater team understand the requirements of this permit and their specific responsibilities with respect to those requirements:

a. Personnel who are responsible for the design, installation, maintenance, and/or repair of stormwater controls (including pollution prevention controls);
b. Personnel responsible for the application and storage of treatment chemicals (if applicable);
c. Personnel who are responsible for conducting inspections as required in Part 4.1; and
d. Personnel who are responsible for taking corrective actions as required in Part 5.

[51] If the person requiring training is a new employee who starts after you commence construction activities, you must ensure that this person has the proper understanding as required above prior to assuming particular responsibilities related to compliance with this permit.

For emergency-related projects, the requirement to train personnel prior to commencement of construction activities does not apply, however, such personnel must have the required training prior to NOI submission.

6.2 You are responsible for ensuring that all activities on the site comply with the requirements of this permit. You are not required to provide or document formal training for subcontractors or other outside service providers, but you must ensure that such personnel understand any requirements of this permit that may be affected by the work they are subcontracted to perform.

6.3 At a minimum, members of the stormwater team must be trained to understand the following if related to the scope of their job duties *(e.g., only personnel responsible for conducting inspections need to understand how to conduct inspections*):

a. The permit deadlines associated with installation, maintenance, and removal of stormwater controls and with stabilization**;**

b. The location of all stormwater controls on the site required by this permit and how they are to be maintained;

c. The proper procedures to follow with respect to the permit's pollution prevention requirements; and

d. When and how to conduct inspections, record applicable findings, and take corrective actions.

6.4 Each member of the stormwater team must have easy access to an electronic or paper copy of applicable portions of this permit, the most updated copy of your SWPPP, and other relevant documents or information that must be kept with the SWPPP.

7 STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

7.1 GENERAL REQUIREMENTS

All operators associated with a construction site under this permit must develop a SWPPP consistent with the requirements in Part 7 prior to their submittal of the NOI.[52, 53] The SWPPP must be kept up-to-date throughout coverage under this permit.

[52] The SWPPP does not establish the effluent limits that apply to your site's discharges; these limits are established in this permit in Parts 2 and 3.

[53] You have the option of developing a group SWPPP where you are one of several operators at your site. For instance, if both the owner and the general contractor of the construction site are operators and thus are both required to obtain a permit, the owner may be the party undertaking SWPPP development, and the general contractor (or any other operator at the site) can choose to use this same SWPPP, as long as the SWPPP addresses the general contractor's (or other operator's) scope of construction work and functions to be performed under the SWPPP. Regardless of whether there is a group SWPPP or several individual SWPPPs, all operators would be jointly and severally liable for compliance with the permit.

Where there are multiple operators associated with the same site through a common plan of development or sale, operators may assign to themselves various permit-related functions under the SWPPP provided that each SWPPP, or a group SWPPP, documents which operator will perform each function under the SWPPP. However, dividing the functions to be performed under each SWPPP, or a single group SWPPP, does not relieve an individual operator from liability for complying with the permit should another operator fail to implement any measures that are necessary for that individual operator to comply with the permit, e.g., the installation and maintenance of any shared controls. In addition, all operators must ensure, either directly or through coordination with other operators, that their activities do not cause a violation and/or render any other operators' controls and/or any shared controls ineffective. All operators who rely on a shared control to comply with the permit are jointly and severally liable for violations of the permit resulting from the failure to properly install, operate and/or maintain the shared control.

If a SWPPP was prepared under a previous version of this permit, the operator must review and update the SWPPP to ensure that this permit's requirements are addressed prior to submitting an NOI for coverage under this permit.

7.2 SWPPP CONTENTS

At a minimum, the SWPPP must include the information specified in this Part and as specified in other parts of this permit.

7.2.1 All Site Operators. Include a list of all other operators who will be engaged in construction activities at the site, and the areas of the site over which each operator has control.

7.2.2 Stormwater Team. Identify the personnel (by name or position) that are part of the stormwater team, as well as their individual responsibilities, including which members are responsible for conducting inspections.

7.2.3 Nature of Construction Activities.[54] Include the following:

a. A description of the nature of your construction activities, including the age or dates of past renovations for structures that are undergoing demolition;
b. The size of the property (in acres or length in miles if a linear construction site);
c. The total area expected to be disturbed by the construction activities (to the nearest quarter acre or nearest quarter mile if a linear construction site);
d. A description of any on-site and off-site construction support activity areas covered by this permit (see Part 1.2.1c);
e. The maximum area expected to be disturbed at any one time, including on-site and off-site construction support activity areas;
f. A description and projected schedule for the following:
    i. Commencement of construction activities in each portion of the site, including clearing and grubbing, mass grading, demolition activities, site preparation (*i.e., excavating, cutting and filling*), final grading, and creation of soil and vegetation stockpiles requiring stabilization;
    ii. Temporary or permanent cessation of construction activities in each portion of the site;
    iii. Temporary or final stabilization of exposed areas for each portion of the site; and
    iv. Removal of temporary stormwater controls and construction equipment or vehicles, and the cessation of construction-related pollutant-generating activities.
g. A list and description of all pollutant-generating activities[55] on the site. For each pollutant-generating activity, include an inventory of pollutants or pollutant constituents (*e.g., sediment, fertilizers, pesticides, paints, caulks, sealants, fluorescent light ballasts, contaminated substrates, solvents, fuels*) associated with that activity, which could be discharged in stormwater from your construction site. You must take

[54] If plans change due to unforeseen circumstances or for other reasons, the requirement to describe the sequence and estimated dates of construction activities is not meant to "lock in" the operator to meeting these dates. When departures from initial projections are necessary, this should be documented in the SWPPP itself, or in associated records, as appropriate.

[55] Examples of pollutant-generating activities include paving operations; concrete, paint, and stucco washout and waste disposal; solid waste storage and disposal; and dewatering operations.

into account where potential spills and leaks could occur that contribute pollutants to stormwater discharges, and any known hazardous or toxic substances, such as PCBs and asbestos, that will be disturbed or removed during construction;

h. Business days and hours for the project;

i. If you are conducting construction activities in response to a public emergency (see Part 1.4), a description of the cause of the public emergency *(e.g., mud slides, earthquake, extreme flooding conditions, widespread disruption in essential public services)*, information substantiating its occurrence *(e.g., state disaster declaration or similar state or local declaration)*, and a description of the construction necessary to reestablish affected public services.

7.2.4 Site Map. Include a legible map, or series of maps, showing the following features of the site:

a. Boundaries of the property;

b. Locations where construction activities will occur, including:

   i. Locations where earth-disturbing activities will occur (note any phasing), including any demolition activities;

   ii. Approximate slopes before and after major grading activities (note any steep slopes (as defined in Appendix A));

   iii. Locations where sediment, soil, or other construction materials will be stockpiled;

   iv. Any water of the U.S. crossings;

   v. Designated points where vehicles will exit onto paved roads;

   vi. Locations of structures and other impervious surfaces upon completion of construction; and

   vii. Locations of on-site and off-site construction support activity areas covered by this permit (see Part 1.2.1c).

c. Locations of all waters of the U.S. within and one mile downstream of the site's discharge point. Also identify if any are listed as impaired, or are identified as a Tier 2, Tier 2.5, or Tier 3 water;

d. Areas of federally listed critical habitat within the site and/or at discharge locations;

e. Type and extent of pre-construction cover on the site (*e.g., vegetative cover, forest, pasture, pavement, structures*);

f. Drainage patterns of stormwater and authorized non-stormwater before and after major grading activities;

g. Stormwater and authorized non-stormwater discharge locations, including:

   i. Locations where stormwater and/or authorized non-stormwater will be discharged to storm drain inlets;[56] and

   ii. Locations where stormwater or authorized non-stormwater will be discharged directly to waters of the U.S.

h. Locations of all potential pollutant-generating activities identified in Part 7.2.3g;

[56] The requirement to show storm drain inlets in the immediate vicinity of the site on your site map only applies to those inlets that are easily identifiable from your site or from a publicly accessible area immediately adjacent to your site.

i. Locations of stormwater controls, including natural buffer areas and any shared controls utilized to comply with this permit; and

j. Locations where polymers, flocculants, or other treatment chemicals will be used and stored.

7.2.5 Non-Stormwater Discharges. Identify all authorized non-stormwater discharges in Part 1.2.2 that will or may occur.

7.2.6 Description of Stormwater Controls.

a. For each of the Part 2.2 erosion and sediment control effluent limits, Part 2.3 pollution prevention effluent limits, and Part 2.4 construction dewatering effluent limits, as applicable to your site, you must include the following:

   i. A description of the specific control(s) to be implemented to meet the effluent limit;

   ii. Any applicable stormwater control design specifications (including references to any manufacturer specifications and/or erosion and sediment control manuals/ordinances relied upon);[57]

   iii. Routine stormwater control maintenance specifications; and

   iv. The projected schedule for stormwater control installation/implementation.

b. You must also include any of the following additional information as applicable.

   i. **Natural buffers and/or equivalent sediment controls** (see Part 2.2.1 and Appendix G). You must include the following:

      (a) The compliance alternative to be implemented;

      (b) If complying with alternative 2, the width of natural buffer retained;

      (c) If complying with alternative 2 or 3, the erosion and sediment control(s) you will use to achieve an equivalent sediment reduction, and any information you relied upon to demonstrate the equivalency;

      (d) If complying with alternative 3, a description of why it is infeasible for you to provide and maintain an undisturbed natural buffer of any size;

      (e) For "linear construction sites" where it is infeasible to implement compliance alternative 1, 2, or 3, a rationale for this determination, and a description of any buffer width retained and/or supplemental erosion and sediment controls installed; and

      (f) A description of any disturbances that are exempt under Part 2.2.1 that occur within 50 feet of a water of the U.S.

   ii. **Perimeter controls for a "linear construction site"** (see Part 2.2.3). For areas where perimeter controls are not feasible, include documentation to support this determination and a description of the other practices that will be implemented to minimize discharges of pollutants in stormwater associated with construction activities.

   Note: Routine maintenance specifications for perimeter controls documented in the SWPPP must include the Part 2.2.3a requirement that sediment be removed

[57] Design specifications may be found in manufacturer specifications and/or in applicable erosion and sediment control manuals or ordinances. Any departures from such specifications must reflect good engineering practice and must be explained in the SWPPP.

before it has accumulated to one-half of the above-ground height of any perimeter control.

iii. **Sediment track-out controls** (see Parts 2.2.4b and 2.2.4c). Document the specific stabilization techniques and/or controls that will be implemented to remove sediment prior to vehicle exit.

iv. **Sediment basins** (see Part 2.2.12). In circumstances where it is infeasible to utilize outlet structures that withdraw water from the surface, include documentation to support this determination, including the specific conditions or time periods when this exception will apply.

v. **Treatment chemicals** (see Part 2.2.13), you must include the following:

(a) A listing of the soil types that are expected to be exposed during construction in areas of the project that will drain to chemical treatment systems. Also include a listing of soil types expected to be found in fill material to be used in these same areas, to the extent you have this information prior to construction;

(b) A listing of all treatment chemicals to be used at the site and why the selection of these chemicals is suited to the soil characteristics of your site;

(c) If the applicable EPA Regional Office authorized you to use cationic treatment chemicals for sediment control, include the specific controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will not lead to an exceedance of water quality standards;

(d) The dosage of all treatment chemicals to be used at the site or the methodology to be used to determine dosage;

(e) Information from any applicable Safety Data Sheet (SDS);

(f) Schematic drawings of any chemically enhanced stormwater controls or chemical treatment systems to be used for application of the treatment chemicals;

(g) A description of how chemicals will be stored consistent with Part 2.2.13c;

(h) References to applicable state or local requirements affecting the use of treatment chemicals, and copies of applicable manufacturer's specifications regarding the use of your specific treatment chemicals and/or chemical treatment systems; and

(i) A description of the training that personnel who handle and apply chemicals have received prior to permit coverage, or will receive prior to use of the treatment chemicals at your site.

vi. **Stabilization measures** (see Part 2.2.14). You must include the following:

(a) The specific vegetative and/or non-vegetative practices that will be used;

(b) The stabilization deadline that will be met in accordance with Part 2.2.14.a.i-ii;

(c) If complying with the deadlines for sites in arid, semi-arid, or drought-stricken areas, the beginning and ending dates of the seasonally dry period and the schedule you will follow for initiating and completing vegetative stabilization; and

(d) If complying with deadlines for sites affected by unforeseen circumstances that delay the initiation and/or completion of vegetative stabilization, document the circumstances and the schedule for initiating and completing stabilization.

vii. **Spill prevention and response procedures** (see Part 1.3.5 and Part 2.3). You must include the following:

(a) Procedures for expeditiously stopping, containing, and cleaning up spills, leaks, and other releases. Identify the name or position of the employee(s) responsible for detection and response of spills or leaks; and

(b) Procedures for notification of appropriate facility personnel, emergency response agencies, and regulatory agencies where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity consistent with Part 2.3.6 and established under either 40 CFR 110, 40 CFR 117, or 40 CFR 302, occurs during a 24-hour period. Contact information must be in locations that are readily accessible and available to all employees.

You may also reference the existence of Spill Prevention Control and Countermeasure (SPCC) plans developed for the construction activity under Part 311 of the CWA, or spill control programs otherwise required by an NPDES permit for the construction activity, provided that you keep a copy of that other plan on site.[58]

viii. **Waste management procedures** (see Part 2.3.3). Describe the procedures you will follow for handling, storing and disposing of all wastes generated at your site consistent with all applicable federal, state, tribal, and local requirements, including clearing and demolition debris, sediment removed from the site, construction and domestic waste, hazardous or toxic waste, and sanitary waste.

ix. **Application of fertilizers** (see Part 2.3.5). Document any departures from the manufacturer specifications where appropriate.

7.2.7 Procedures for Inspection, Maintenance, and Corrective Action. Describe the procedures you will follow for maintaining your stormwater controls, conducting site inspections, and, where necessary, taking corrective actions, in accordance with Part 2.1.4, Part 4, and Part 5 of this permit. Also include:

a. The inspection schedule you will follow, which is based on whether your site is subject to Part 4.2 or Part 4.3, or whether your site qualifies for any of the reduced inspection frequencies in Part 4.4;

b. If you will be conducting inspections in accordance with the inspection schedule in Part 4.2.2, Part 4.3, or Part 4.4.1b, the location of the rain gauge or the address of the weather station you will be using to obtain rainfall data;

c. If you will be reducing your inspection frequency in accordance with Part 4.4.1b, the beginning and ending dates of the seasonally defined arid period for your area or the valid period of drought;

d. If you will be reducing your inspection frequency in accordance with Part 4.4.3, the beginning and ending dates of frozen conditions on your site; and

e. Any maintenance or inspection checklists or other forms that will be used.

[58] Even if you already have an SPCC or other spill prevention plan in existence, your plans will only be considered adequate if they meet all of the requirements of this Part, either as part of your existing plan or supplemented as part of the SWPPP.

7.2.8 Staff Training. Include documentation that the required personnel were, or will be, trained in accordance with Part 6.

7.2.9 Compliance with Other Requirements.

a. **Threatened and Endangered Species Protection.** Include documentation required in Appendix D supporting your eligibility with regard to the protection of threatened and endangered species and designated critical habitat.

b. **Historic Properties.** Include documentation required in Appendix E supporting your eligibility with regard to the protection of historic properties.

c. **Safe Drinking Water Act Underground Injection Control (UIC) Requirements for Certain Subsurface Stormwater Controls.** If you are using any of the following stormwater controls at your site, document any contact you have had with the applicable state agency[59] or EPA Regional Office responsible for implementing the requirements for underground injection wells in the Safe Drinking Water Act and EPA's implementing regulations at 40 CFR 144 -147. Such controls would generally be considered Class V UIC wells:

i. Infiltration trenches (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system);

ii. Commercially manufactured pre-cast or pre-built proprietary subsurface detention vaults, chambers, or other devices designed to capture and infiltrate stormwater flow; and

iii. Drywells, seepage pits, or improved sinkholes (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system).

7.2.10 SWPPP Certification. You must sign and date your SWPPP in accordance with Appendix I, Part I.11.

7.2.11 Post-Authorization Additions to the SWPPP. Once you are authorized for coverage under this permit, you must include the following documents as part of your SWPPP:

a. A copy of your NOI submitted to EPA along with any correspondence exchanged between you and EPA related to coverage under this permit;

b. A copy of the acknowledgment letter you receive from NeT assigning your NPDES ID (*i.e., permit tracking number*);

c. A copy of this permit (an electronic copy easily available to the stormwater team is also acceptable).

7.3 ON-SITE AVAILABILITY OF YOUR SWPPP

You must keep a current copy of your SWPPP at the site or at an easily accessible location so that it can be made available at the time of an on-site inspection or upon request by EPA; a state, tribal, or local agency approving stormwater management plans; the operator of a storm sewer system receiving discharges from the site; or representatives of the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS).

[59] For state UIC program contacts, refer to the following EPA website: https://www.epa.gov/uic.

EPA may provide access to portions of your SWPPP to a member of the public upon request. Confidential Business Information (CBI) will be withheld from the public, but may not be withheld from EPA, USFWS, or NMFS.[60]

If an on-site location is unavailable to keep the SWPPP when no personnel are present, notice of the plan's location must be posted near the main entrance of your construction site.

7.4 SWPPP MODIFICATIONS

7.4.1 You must modify your SWPPP, including the site map(s), within seven (7) days of any of the following conditions:

a. Whenever new operators become active in construction activities on your site, or you make changes to your construction plans, stormwater controls, or other activities at your site that are no longer accurately reflected in your SWPPP. This includes changes made in response to corrective actions triggered under Part 5. You do not need to modify your SWPPP if the estimated dates in Part 7.2.3f change during the course of construction;

b. To reflect areas on your site map where operational control has been transferred (and the date of transfer) since initiating permit coverage;

c. If inspections or investigations by EPA or its authorized representatives determine that SWPPP modifications are necessary for compliance with this permit;

d. Where EPA determines it is necessary to install and/or implement additional controls at your site in order to meet the requirements of this permit, the following must be included in your SWPPP:

   i. A copy of any correspondence describing such measures and requirements; and

   ii. A description of the controls that will be used to meet such requirements.

e. To reflect any revisions to applicable federal, state, tribal, or local requirements that affect the stormwater controls implemented at the site; and

f. If applicable, if a change in chemical treatment systems or chemically enhanced stormwater control is made, including use of a different treatment chemical, different dosage rate, or different area of application.

7.4.2 You must maintain records showing the dates of all SWPPP modifications. The records must include the name of the person authorizing each change (see Part 7.2.10 above) and a brief summary of all changes.

7.4.3 All modifications made to the SWPPP consistent with Part 7.4 must be authorized by a person identified in Appendix I, Part I.11.b.

7.4.4 Upon determining that a modification to your SWPPP is required, if there are multiple operators covered under this permit, you must immediately notify any operators who may be impacted by the change to the SWPPP.

---

[60] Information covered by a claim of confidentiality will be disclosed by EPA only to the extent of, and by means of, the procedures set forth in 40 CFR Part 2, Subpart B. In general, submitted information protected by a business confidentiality claim may be disclosed to other employees, officers, or authorized representatives of the United States concerned with implementing the CWA. The authorized representatives, including employees of other executive branch agencies, may review CBI during the course of reviewing draft regulations.

8 HOW TO TERMINATE COVERAGE

Until you terminate coverage under this permit, you must comply with all conditions and effluent limitations in the permit. To terminate permit coverage, you must submit to EPA a complete and accurate Notice of Termination (NOT), which certifies that you have met the requirements for terminating in Part 8.

8.1 MINIMUM INFORMATION REQUIRED IN NOT

8.1.1 NPDES ID (*i.e., permit tracking number)* provided by EPA when you received coverage under this permit;

8.1.2 Basis for submission of the NOT (see Part 8.2);

8.1.3 Operator contact information;

8.1.4 Name of site and address (or a description of location if no street address is available); and

8.1.5 **NOT certification.**

8.2 CONDITIONS FOR TERMINATING CGP COVERAGE

You must terminate CGP coverage only if one or more of the following conditions has occurred:

8.2.1 You have completed all construction activities at your site and, if applicable, construction support activities covered by this permit (see Part 1.2.1c), and you have met the following requirements:

a. For any areas that (1) were disturbed during construction, (2) are not covered over by permanent structures, and (3) over which you had control during the construction activities, you have met the requirements for final vegetative or non-vegetative stabilization in Part 2.2.14b;

b. You have removed and properly disposed of all construction materials, waste and waste handling devices, and have removed all equipment and vehicles that were used during construction, unless intended for long-term use following your termination of permit coverage;

c. You have removed all stormwater controls that were installed and maintained during construction, except those that are intended for long-term use following your termination of permit coverage or those that are biodegradable; and

d. You have removed all potential pollutants and pollutant-generating activities associated with construction, unless needed for long-term use following your termination of permit coverage; or

8.2.2 You have transferred control of all areas of the site for which you are responsible under this permit to another operator, and that operator has submitted an NOI and obtained coverage under this permit; or

8.2.3 Coverage under an individual or alternative general NPDES permit has been obtained.

8.3 HOW TO SUBMIT YOUR NOT

You must use EPA's NPDES eReporting Tool (NeT) to electronically prepare and submit your NOT for the 2017 CGP.

To access NeT, go to https://www.epa.gov/npdes/stormwater-discharges-construction-activities#ereporting.

Waivers from electronic reporting may be granted as specified in Part 1.4.1. If the EPA Regional Office grants you approval to use a paper NOT, and you elect to use it, you must complete the form in Appendix K.

8.4 DEADLINE FOR SUBMITTING THE NOT

You must submit your NOT within 30 calendar days after any one of the conditions in Part 8.2 occurs.

8.5 EFFECTIVE DATE OF TERMINATION OF COVERAGE

Your authorization to discharge under this permit terminates at midnight of the calendar day that a complete NOT is submitted to EPA.

9 PERMIT CONDITIONS APPLICABLE TO SPECIFIC STATES, INDIAN COUNTRY LANDS, OR TERRITORIES

The provisions in this Part provide modifications or additions to the applicable conditions of this permit to reflect specific additional conditions required as part of the state or tribal CWA Section 401 certification process, or the Coastal Zone Management Act (CZMA) certification process, or as otherwise established by the permitting authority. The specific additional revisions and requirements only apply to activities in those specific states, Indian country, and areas in certain states subject to construction projects by Federal Operators. States, Indian country, and areas subject to construction by Federal Operators not included in this Part do not have any modifications or additions to the applicable conditions of this permit.

9.1 EPA REGION 1

9.1.1 NHR100000 State of New Hampshire

a. If you disturb 100,000 square feet or more of contiguous area, you must also apply for an Alteration of Terrain (AoT) permit from DES pursuant to RSA 485- A:17 and Env-Wq 1500. This requirement also applies to a lower disturbance threshold of 50,000 square feet or more when construction occurs within the protected shoreline under the Shoreland Water Quality Protection Act (see RSA 483-B and Env-Wq 1400). A permit application must also be filed if your project disturbs an area of greater than 2,500 square feet, is within 50 feet of any surface water, and has a flow path of 50 feet or longer disturbing a grade of 25 percent or greater. Project sites with disturbances smaller than those discussed above, that have the potential to adversely affect state surface waters, are subject to the conditions of an AoT General Permit by Rule.

b. You must determine that any excavation dewatering discharges are not contaminated before they will be authorized as an allowable non-stormwater discharge under this permit (see Part 1.2.2). The water is considered uncontaminated if there is no groundwater contamination within 1,000 feet of the groundwater dewatering location. Information on groundwater contamination can be generated over the Internet via the NHDES web site http://des.nh.gov/ by using the One Stop Data Mapper at http://des.nh.gov/onestop/gis.htm. If it is determined that the groundwater to be dewatered is near a remediation or other waste site you must apply for the Remediation General Permit (see https://www3.epa.gov/region1/npdes/rgp.html.)

c. You must treat any uncontaminated excavation dewatering discharges as necessary to remove suspended solids and turbidity. The discharges must be sampled at least once per week during weeks when discharges occur. Samples must be analyzed for total suspended solids (TSS) or turbidity and must meet monthly average and daily maximum limits of 50 milligrams per liter (mg/L) and 100 mg/L, respectively for TSS or 33 mg/l and 67 mg/l, respectively for turbidity. TSS (a.k.a. Residue, Nonfilterable) or turbidity sampling and analysis must be performed in accordance with Tables IB and II in 40 CFR 136.3 (http://www.ecfr.gov/cgi-bin/text-idx?SID=0243e3c4283cbd7d8257eb6afc7ce9a2&mc=true&node=se40.25.136_13&rgn=div8). Records of any sampling and analysis must be maintained and kept with the SWPPP for at least three years after final site stabilization.

d. Construction site owners and operators must consider opportunities for post-construction groundwater recharge using infiltration best management practices (BMPs) during site design and preparation of the SWPPP. If your construction site is in a town that is required to obtain coverage under the NPDES General Permit for discharges from Municipal Separate Storm Sewer Systems (MS4) you may be required to use such practices. The SWPPP must include a description of any on-site infiltration that will be installed as a post-construction stormwater management measure or reasons for not employing such measures such as 1) The facility is located in a wellhead protection area as defined in RSA 485- C:2; or 2) The facility is located in an area where groundwater has been reclassified to GAA, GAI or GA2 pursuant to RSA 485-C and Env-DW 901; or 3) Any areas that would be exempt from the groundwater recharge requirements contained in Env-Wq 1507.04(e), including all land uses or activities considered to be a "High-load Area" (see Env-Wq 1502.26). For design considerations for infiltration measures see Volume II of the NH Stormwater Manual.

e. Appendix F contains a list of Tier 2, or high quality waters. Although there is no official list of tier 2 waters, it can be assumed that all NH surface waters are tier 2 for turbidity unless 1) the surface water that you are proposing to discharge into is listed as impaired for turbidity in the states listing of impaired waters (see Surface Water Quality - Watershed Report Cards at http://des.nh.gov/organization/divisions/water/wmb/swqa/report_cards.htm) or 2) sampling upstream of the proposed discharge location shows turbidity values greater than 10 NTU. A single grab sample collected during dry weather (no precipitation within 48 hours) is acceptable.

f. To ensure compliance with RSA 485-C, RSA 485-A, RSA 485-A:13, I(a), Env-Wq 1700 and Env-Wq 302, the following information may be requested by NHDES. This information must be kept on site unless you receive a written request from NHDES that it be sent to the address shown in Part 9.1.4 (g).

   i. A site map required in Part 7.2.4, showing the type and location of all post-construction infiltration BMPs utilized at the facility or the reason(s) why none were installed;

   ii. A list of all non-stormwater discharges that occur at the facility, including their source locations and the control measures being used (see Part 1.2.2).

iii. Records of sampling and analysis of TSS required for construction dewatering discharges (see Part 9.1.4 (c)).

g. All required or requested documents must be sent to:

NH Department of Environmental Services, Wastewater Engineering Bureau,
Permits & Compliance Section
P.O. Box 95
Concord, NH 03302-0095

9.2 EPA REGION 3

9.2.1 DCR100000 District of Columbia

a. The permittee must comply with the District of Columbia Water Pollution Control Act of 1984, as amended, (D.C. Official Code §8-103.01 *et seq.*) and its implementing regulations in Title 21, Chapters 11 and 19 of the District of Columbia Municipal Regulations. Nothing in this permit will be construed to preclude the institution of any legal action or relieve the permitee from any responsibilities, liabilities, or penalties established pursuant to District of Columbia laws and regulations.

b. The permittee must comply with the District of Columbia Stormwater Management, and Soil Erosion and Sediment Control in Chapter 5 of Title 21 of the District of Columbia Municipal Regulations.

c. The permittee must comply with the District of Columbia Flood Management control in Chapter 31 of Title 20 of the District of Columbia Municipal Regulations.

d. The Department may request a copy of the Stormwater Pollution Prevention Plan (SWPPP) and the permittee is required to submit the SWPPP to the Department with 14 days of such request. The Department may conduct an inspection of any facility covered by this permit to ensure compliance with District's law requirements including water quality.

9.2.2 DER10F000 Areas in the State of Delaware subject to construction by a Federal Operator

a. Federal agencies engaging in construction activities must submit, to DNREC, a sediment and stormwater management (S&S) plan and obtain approval from DNREC in accordance with 7 Del. C. §4010, 7 DE Admin. Code 5101, and 7 DE Admin. Code 7201.

b. Federal agencies engaging in construction activities must provide for construction review by a certified construction reviewer in accordance with 7 Del. C. §§4010 & 4013 and 7 DE Admin. Code 5101, subsection 6.1.6.

c. Federal agencies engaging in construction activities must certify that all responsible personnel involved in the construction project will have attended the blue card training prior to initiation of any land disturbing activity – *see* 7 Del. C. §§ 4002 & 4014 and 7 DE Admin. Code 5101.

9.3 EPA REGION 5

9.3.1 MNR10I000 Indian country within the State of Minnesota

9.3.1.1 Fond du Lac Band of Lake Superior Chippewa. The following conditions apply only to discharges on the Fond du Lac Band of Lake Superior Chippewa Reservation:

a. A copy of the Stormwater Pollution Prevention Plan (SWPPP) must be submitted to the Office of Water Protection at least fifteen (15) days in advance of sending the Notice of Intent (NOI) to EPA. The SWPPP can be submitted electronically to richardgitar@FDLREZ.com or by hardcopy sent to:

   Fond du Lac Reservation
   Office of Water Protection
   1720 Big Lake Road
   Cloquet, MN 55720

   CGP applicants are encouraged to work with the FDL Office of Water Protection in the identification of all proposed receiving.

b. Copies of the Notice of Intent (NOI) and the Notice of Termination (NOT) must be sent to the Fond du Lac Office of Water Protection at the same time they are submitted to EPA.

c. The turbidity limit shall NOT exceed 10% of natural background within the receiving water(s) as determined by Office of Water Protection staff.

d. Turbidity sampling must take place within 24 hours of a ½-inch or greater rainfall event. The results of the sampling must be reported to the Office of Water Protection within 7 days of the sample collection. All sample reporting must include the date and time, location (GPS: UTM/Zone 15), and NTU. CGP applicants are encouraged to work with the Office of Water Protection in determining the most appropriate location(s) for sampling.

e. Receiving waters with open water must be sampled for turbidity prior to any authorized discharge as determined by Office of Water Protection staff. This requirement only applies to receiving waters in which no ambient turbidity data exists.

f. This Certification does not pertain to any new discharge to Outstanding Reservation Resource Waters (ORRW) as described in §105 b.3. of the Fond du Lac Water Quality Standards (Ordinance #12/98, as amended). Although additional waters may be designated in the future, currently Perch Lake, Rice Portage Lake, Miller Lake, Deadfish Lake, and Jaskari Lake are designated as ORRWs. New dischargers wishing to discharge to an ORRW must obtain an individual permit from EPA for stormwater discharges from large and small construction activities.

g. All work shall be carried out in such a manner as will prevent violations of water quality criteria as stated in the Water Quality Standards of the Fond du Lac Reservation, Ordinance 12/98, as amended. This includes, but is not limited to, the prevention of any discharge that causes a condition in which visible solids, bottom deposits, or turbidity impairs the usefulness of water of the Fond du Lac Reservation for any of the uses designated in the Water Quality Standards of the Fond du Lac Reservation. These uses include wildlife, aquatic life, warm water fisheries, cold water fisheries, subsistence fishing (netting), primary contact recreation, secondary contact recreation, cultural, wild rice areas, aesthetic waters, agriculture, navigation, and commercial.

h. Appropriate steps shall be taken to ensure that petroleum products or other chemical pollutants are prevented from entering waters of the Fond du Lac Reservation. All spills must be reported to the appropriate emergency management agency (National Response Center AND the State Duty Officer), and measures shall be taken immediately to prevent the pollution of waters of the Fond du Lac Reservation, including groundwater. The Fond du Lac Office of Water Protection must also be notified immediately of any spill regardless of size.

i. This certification does not authorize impacts to cultural, historical, or archeological features or sites, or properties that may be eligible for such listing.

9.3.1.2 Grand Portage Band of Lake Superior Chippewa. The following conditions apply only to discharges on the Grand Portage Band of Lake Superior Chippewa Reservation:

a. The CGP authorization is for construction activities that may occur within the exterior boundaries of the Grand Portage Reservation in accordance to the Grand Portage Land Use Ordinance. The CGP regulates stormwater discharges associated with construction sites of one acre or more in size. Only those activities specifically authorized by the CGP are authorized by this certification (the "Certification"). This Certification does not authorize impacts to cultural, historical, or archeological features or sites, or properties that may be eligible for listing as such.

b. All construction stormwater discharges authorized by the CGP must comply with the Water Quality Standards and Water Resources Ordinance, as well as Applicable Federal Standards (as defined in the Water Resources Ordinance). As such, appropriate steps must be taken to ensure that petroleum products or other chemical pollutants are prevented from entering the Waters of the Reservation (as defined in the Water Resources Ordinance). All spills must be reported to the appropriate emergency-management agency, and measures must be taken to prevent the pollution of the Waters of the Reservation, including groundwater.

c. The 2017 CGP requires inspections and monitoring reports of the construction site stormwater discharges by a qualified person. Monitoring and inspection reports must comply with the minimum requirements contained in the 2017 CGP. The monitoring plan must be prepared and incorporated into the Stormwater Pollution Prevention Plan (the "SWPPP"). A copy of the SWPPP must be submitted to the Board at least 30 days in advance of sending the requisite Notice of Intent to EPA. The SWPPP should be sent to:

   Grand Portage Environmental Resources Board
   P.O. Box 428
   Grand Portage, MN 55605

   Copies of the Notice of Intent and Notice of Termination required under the CGP must be submitted to the Board at the address above at the same time they are submitted to the EPA.

d. If requested by the Grand Portage Environmental Department, the permittee must provide additional information necessary for a case-by-case eligibility determination to assure compliance with the Water Quality Standards and any Applicable Federal Standards.

e. Discharges that the Board has determined to be or that may reasonably be expected to be contributing to a violation of Water Quality Standards or Applicable Federal Standards are not authorized by this Certification.

f. The Board retains full authority provided by the Water Resources Ordinance to ensure compliance with and to enforce the provisions of the Water Resource Ordinance and Water Quality Standards, Applicable Federal Standards, and these Certification conditions.

g. Appeals related to Board actions taken in accordance with any of the preceding conditions may be heard by the Grand Portage Tribal Court.

9.3.2 WIR10I000 Indian country within the State of Wisconsin, except the Sokaogon Chippewa (Mole Lake) Community

9.3.2.1 Bad River Band of Lake Superior Tribe of Chippewa Indians: The following conditions apply only to discharges on the Bad River Band of the Lake Superior Tribe of Chippewa Indians Reservation:

a. Only those activities specifically authorized by the CGP are authorized by this Certification. This Certification does not authorize impacts to cultural properties, or historical sites, or properties that may be eligible for listing as such.[61, 62]

b. Operators are not eligible to obtain authorization under the CGP for all new discharges to an Outstanding Tribal Resource Water (or Tier 3 water).[63] Outstanding Tribal Resource Waters, or Tier 3 waters, include the following: Kakagon Slough and the lower wetland reaches of its tributaries that support wild rice, Kakagon River, Bad River Slough, Honest John Lake, Bog Lake, a portion of Bad River, from where it enters the Reservation through the confluence with the White River, and Potato River.[64]

c. Projects utilizing cationic treatment chemicals[65] within the Bad River Reservation boundaries are not eligible for coverage under the CGP.[66]

d. All projects which are eligible for coverage under the CGP and are located within the exterior boundaries of the Bad River Reservation shall be implemented in such a manner that is consistent with the Tribe's Water Quality Standards (WQS).[67]

e. An operator proposing to discharge to an Outstanding Resource Water (or Tier 2.5 water) under the CGP must comply with the antidegradation provisions of the Tribe's WQS. Outstanding Resource Waters, or Tier 2.5 waters, include the following: a portion of Bad River, from downstream the confluence with the White River to Lake Superior, White River, Marengo River, Graveyard Creek, Bear Trap Creek, Wood Creek, Brunsweiler River, Tyler Forks, Bell Creek, and Vaughn Creek.[68] The antidegradation

[61] Bad River Band of Lake Superior Tribe of Chippewa Indians Water Quality Standards adopted by Resolution No. 7-6-11-441 (hereafter, Tribe's WQS).

[62] 36 C.F.R. § 800.16(l)(2).

[63] Tribe's WQS: See provisions E.3.ii. and E.4.iv.

[64] Tribe's WQS: See provision E.2.iii.

[65] See definition of cationic treatment chemicals in Appendix A of the CGP.

[66] Tribe's WQS: See provisions E.6.ii.a. and E.6.ii.c.

[67] See footnote 61.

[68] Tribe's WQS: See provision E.2.ii.

demonstration materials described in provision E.4.iii. must be submitted to the following address:

Bad River Tribe's Natural Resources Department
Attn: Water Resources Specialist
P.O. Box 39
Odanah, WI 54861

f. An operator proposing to discharge to an Exceptional Resource Water (or Tier 2 water) under the CGP must comply with the antidegradation provisions of the Tribe's WQS. Exceptional Resource Waters, or Tier 2 waters, include the following: any surface water within the exterior boundaries of the Reservation that is not specifically classified as an Outstanding Resource Water (Tier 2.5 water) or an Outstanding Tribal Resource Water (Tier 3 water).[69] The antidegradation demonstration materials described in provision E.4.ii. must be submitted to the following address:

Bad River Tribe's Natural Resources Department
Attn: Water Resources Specialist
P.O. Box 39
Odanah, WI 54861

g. A discharge to a surface water within the Bad River Reservation boundaries shall not cause or contribute to an exceedance of the turbidity criterion included in the Tribe's WQS, which states: Turbidity shall not exceed 5 NTU over natural background turbidity when the background turbidity is 50 NTU or less, or turbidity shall not increase more than 10% when the background turbidity is more than 50 NTU.[70]

h. All projects which are eligible for coverage under the CGP within the exterior boundaries of the Bad River Reservation must comply with the Bad River Reservation Wetland and Watercourse Protection Ordinance, or Chapter 323 of the Bad River Tribal Ordinances, including the erosion and sedimentation control, natural buffer, and stabilization requirements. Questions regarding Chapter 323 and requests for permit applications can be directed to the Wetlands Specialist in the Tribe's Natural Resources Department at (715) 682-7123 or wetlands@badriver-nsn.gov.

i. An operator of a project, which is eligible for coverage under the CGP, that would result in an allowable discharge under the CGP occurring within the exterior boundaries of the Bad River Reservation must notify the Tribe prior to the commencing earth-disturbing activities.[71, 72] The operator must submit a copy of the Notice of Intent (NOI) to the following addresses at the same time it is submitted to the U.S. EPA:

Bad River Tribe's Natural Resources Department
Attn: Water Resources Specialist
P.O. Box 39
Odanah, WI 54861

[69] Tribe's WQS: See provision E.2.i.

[70] Tribe's WQS: See provision E.7.iii.

[71] See footnote 61.

[72] See footnote 62.

Bad River Tribe's Natural Resources Department
Attn: Tribal Historic Preservation Officer (THPO)
P.O. Box 39
Odanah, WI 54861

The operator must also submit a copy of the Notice of Termination (NOT) to the above addresses at the same time it is submitted to the U.S. EPA.

j. The THPO must be provided 30 days to comment on the project.[73]

k. The operator must obtain THPO concurrence in writing. This written concurrence will outline measures to be taken to prevent or mitigate effects to historic properties. For more information regarding the specifics of the cultural resources process, see 36 CFR Part 800. A best practice for an operator is to consult with the THPO during the planning stages of an undertaking.[74]

l. An operator of a project, which is eligible for coverage under the CGP, that would result in an allowable discharge under the CGP occurring within the exterior boundaries of the Bad River Reservation must submit a copy of the Stormwater Pollution Prevention Plan (SWPPP) to the following address at the same time as submitting the NOI: [75]

Bad River Tribe's Natural Resources Department
Attn: Water Resources Specialist
P.O. Box 39
Odanah, WI 54861

m. Any corrective action reports that are required under the CGP must be submitted to the following address within one (1) working day of the report completion: [76]

Bad River Tribe's Natural Resources Department
P.O. Box 39
Odanah, WI 54861

n. An operator shall be responsible for meeting any additional permit requirements imposed by the U.S. EPA necessary to comply with the Tribe's antidegradation policies if the discharge point is located upstream of waters designated by the Tribe.[77]

9.3.2.2 Lac du Flambeau Band of Lake Superior Tribe of Chippewa Indians: The following conditions apply only to discharges on the Lac du Flambeau Band of the Lake Superior Tribe of Chippewa Indians Reservation:

a. A copy of the Stormwater Pollution Prevention Plan must be submitted to the following office, for the Traival environmental review process, at least thirty (30) days in advance of sending the Notice of Intent (NOI) to EPA:

Lac du Flambeau
Tribal Land Management

[73] 36 C.F.R. § 800.3(c)(4).

[74] 36 C.F.R. § 800.3(b).

[75] See footnote 61.

[76] See footnote 61.

[77] See footnote 61.

P.O. Box 279
Lac du Flambeau, WI 54538

CGP applicants are encouraged to work with the LdF Water Resources Program in the identification of all proposed receiving waters.

b. Copies of the NOI and the Notice of Termination (NOT) must be sent to the LdF Water Resources Program at the same time they are submitted to EPA.

c. All work shall be carried out in such a manner as will prevent violations of water quality criteria as stated in the Water Quality Standards of the Lac du Flambeau Reservation. This includes, but is not limited to, the prevention of any discharge that cause a condition in which visible solids, bottom deposits, or turbidity impairs the usefulness of water of the Lac du Flambeau Reservation for any of the uses designated in the Water Quality Standards of the Lac du Flambeau Reservation.

d. Appropriate steps shall be taken to ensure that petroleum products or other chemical pollutants are prevented from entering waters of the Lac du Flambeau Reservation. All spills must be reported to the appropriate emergency management agency, and measures shall be taken immediately to prevent the pollution of waters of the Lac du Flambeau reservation, including groundwater.

e. This certification does not authorize impacts to cultural, historical, or archeological features or sties, or properties that may be eligible for such listing.

f. Due to the significant ecological and cultural importance of the Lac du Flambeau Reservation, any operator requesting a permit for a point source discharge of pollutants (i.e., discharge) associated with the Stormwater Discharge will need a stormwater pollution prevention plan in place that does not violate Lac du Flambeau Water Quality Standards to protect Reservation Waters.

9.4 EPA REGION 6

9.4.1 NMR100000 State of New Mexico, except Indian country

a. If construction dewatering activities are anticipated at a site, permittees must complete the following steps:

   i. Investigative information must be documented in the facility SWPPP.

   ii. Refer to the GWQB Mapper at https://gis.web.env.nm.gov/GWQB/ AND the PSTB Mapper (Go Mapper) at https://gis.web.env.nm.gov/GoNM/ and check if the following sources are located within the noted distance from your anticipated construct site groundwater dewatering activity:

Project Location Relative to a Source of Potential Groundwater Contamination	***Constituents likely to be required for testing***
Within 0.5 mile of an open Leaking Underground Storage Tank (LUST) site	*BTEX (Benzene, Toluene, Ethylbenzene, and Xylene) plus additional parameters depending on site conditions.**

Project Location Relative to a Source of Potential Groundwater Contamination	***Constituents likely to be required for testing***
Within 0.5 mile of an open Voluntary Remediation site	*All parameters listed in Appendix A (or an alternate list approved by the NMED SWQB)***
Within 0.5 mile of an open RCRA Corrective Action Site	
Within 0.5 mile of an open Abatement Site	
Within 0.5 mile of an open Brownfield Site	
Within 1.0 mile or more of a Superfund site or National Priorities List (NPL) site with associated groundwater contamination.	

**For further assistance determining whether dewatering may encounter impacted groundwater, the permittee may contact the NMED Ground Water Quality Bureau at: 505-827-2965.*

***EPA approved-sufficiently sensitive methods must be used - approved methods are listed in 40 CFR Part 136.3.*

iii. If dewatering activities are anticipated, information on flow and potential to encounter impacted groundwater must be provided directly to NMED at the following address:

Program Manager, Point Source Regulation Section
NMED Surface Water Quality Bureau
PO Box 5469, Santa Fe, NM 87502

Information may also be emailed - the contact information for the program manager is located on the website at: www.env.nm.gov/swqb/PSR.

iv. Permittee must test the quality of the water being considered for discharge. Permittees must contact the Point Source Regulation Section Program Manager for information on constituents that must be monitored.

v. Permittee must send test result data to EPA Region 6 and the NMED Surface Water Quality Bureau. If the test data exceed standards, it cannot be discharged from the construction site into surface waters under this permit. Discharge to surface waters must be conducted under a separate NPDES individual permit to ensure proper treatment and disposal.

vi. If disposal will be to the ground surface or in an unlined pond, the permittee must submit an NO/ to the NMED Ground Water Quality Bureau.

b. Operators are not eligible to obtain authorization under this permit for all new and existing storm water discharges to outstanding national resource waters (ONRWs) (also referred to as "Tier 3" waters.)

i. Although state WQS provide for temporary and short-term degradation of water quality in an ONRW under very limited circumstances if approved by the Water Quality Control Commission as specified at 20.6.4.8.A NMAC, the approval process required for these activities does not lend itself for use for projects covered under this general permit. This condition is necessary to ensure that no degradation is allowed in ONRWs by requiring proposed storm water discharges to be reviewed under the individual permit process. Tier 3 waters are defined in Appendix F of the proposed permit.

c. Operators who intend to obtain authorization under this permit for new and existing storm water discharges from construction sites must satisfy the following condition: The SWPPP must include site-specific interim and permanent stabilization, managerial, and structural solids, erosion and sediment control best management practices (BMPs) and/or other controls that are designed to prevent to the maximum extent practicable an increase in the sediment yield and flow velocity from pre-construction, pre-development conditions to assure that applicable standards in 20.6.4.NMAC, including the antidegradation policy, or TMDL waste load allocations (WLAs) are met. This requirement applies to discharges both during construction and after construction operations have been completed. The SWPPP must identify and document the rationale for selecting these BMPs and/or other controls. The SWPPP must also describe design specifications, construction specifications, maintenance schedules (including a long term maintenance plan), criteria for inspections, and expected performance and longevity of these BMPs. For sites greater than 5 acres in size, BMP selection must be made based on the use of appropriate soil loss prediction models (i.e. SEDCAD, RUSLE, SEDIMOT, MULTISED, etc.) OR equivalent generally accepted (by professional erosion control specialists) soil loss prediction tools.

    i. For all sites, the operator(s) must demonstrate, and include documentation in the SWPPP, that implementation of the site-specific practices will assure that the applicable standards or TMDL WLAs are met, and will result in sediment yields and flow velocities that, to the maximum extent practicable, will not be greater than the sediment yield levels and flow velocities from preconstruction, pre-development conditions.

    ii. All SWPPPs must be prepared in accordance with good engineering practices by qualified (e.g. CPESC certified, engineers with appropriate training) erosion control specialists familiar with the use of soil loss prediction models and design of erosion and sediment control systems based on these models (or equivalent soil loss prediction tools). Qualifications of the preparer (e.g., professional certifications, description of appropriate training) must be documented in the SWPPP. The operator(s) must design, implement, and maintain BMPs in the manner specified in the SWPPP.

d. State regulations at 20.6.2.1203 NMAC state: *With respect to any discharge from any facility of oil or other water contaminant, in such quantity as may with reasonable probability injure or be detrimental to human health, animal or plant life, or property, or unreasonably interfere with the public welfare or the use of property, the following notifications and corrective actions are required*:

    i. As soon as possible after learning of such a discharge, but in no event more than twenty-four (24) hours thereafter, any person in charge of the facility shall orally notify the Chief of the Ground Water Quality Bureau of the department, or his counterpart in any constituent agency delegated responsibility for enforcement of these rules as ta any facility subject to such delegation.

    Permittees can call 505-827-9329 for emergencies at any time and 505-476-6000 for non-emergencies during business hours from 5am-5pm, Monday through Friday.

e. NMED does not allow permittees to use the Equivalent Analysis Waiver.

9.4.2 NMR10I000 Indian country within the State of New Mexico, except Navajo Reservation Lands that are covered under Arizona permit AZR10000I and Ute Mountain Reservation Lands that are covered under Colorado permit COR10000I.

9.4.2.1 Pueblo of Isleta. The following conditions apply only to discharges on the Pueblo of Isleta Reservation:

a. CGP at 1.3 Prohibited discharges: Stormwater discharges associated with construction activity that EPA or the Pueblo of Isleta, prior to authorization under this perm it, determines will cause, have the reasonable potential to cause, or may reasonably be expected to contribute to a violation or excursion of any applicable water quality standard, including the antidegradation policy, or the impairment of a designated use of receiving waters are not authorized by this permit.

b. CGP at 1.4.1 How to Submit Your NOI: The operator shall provide a copy of the Notice of Intent ("NOI") to the Pueblo of Isleta at the same time it is submitted to the U.S. Environmental Protection Agency, for projects occurring within the exterior boundaries of the Pueblo of Isleta. The operator shall also notify the Pueblo of Isleta when it has submitted the Notice of Termination ("NOT"). The NOI and NOT shall be sent to the Pueblo of Isleta at the following address:

   Water Quality Control Officer
   Pueblo of Isleta
   Environment Division
   PO Box 1270
   Isleta, NM 87022
   (505) 869-7565
   E-mail: POI36871@isletapueblo.com

   Overnight/Express Mail Delivery
   Pueblo of Isleta
   Environment Division
   6 Sagebrush St.
   Albuquerque, NM 87105

c. CGP at 1.5 Requirement to post a notice of your permit coverage: Amend to read: "You must post a sign or other notice of your permit coverage at a safe, publicly accessible location in close proximity to the construction site. The notice must be located so that it is visible from the public road or tribal road that is nearest to the active part of the construction site…"

d. CGP at 7.2.6 Description of stormwater controls: The SWPPP will be considered to be incomplete if the operator has not coordinated requirements under this Part with the Pueblo of Isleta Public Services Department.

e. CGP I.12.6.1 at pg.I-6 of 8. The Pueblo of Isleta requests notification within 10 hours (rather than 24 hrs.) if health or the environment become endangered.

f. CGP at I.12.2 Anticipated noncompliance: Amend to read: "You must give advance notice to EPA and the Pueblo of Isleta at the address indicated in 1.4.1(a) of any planned changes in the permitted facility or activity which may results in noncompliance with permit requirements."

g. CGP at I.12.6.1: Any noncompliance for projects within the exterior boundaries of the Pueblo of Isleta which may endanger health or the environment shall be reported directly to the EPA Regional Office [(see contacts at https://www.epa.gov/npdes/contact-us-stormwater#regional) I and to the Pueblo of Isleta Water Quality Control Officer. Any information must be provided orally with n 12 hours of the time you become aware of the circumstances. Other requirements of this Part for a written submission apply. Electronic communication (E-mail) shall be provided as soon as practical. Verbal notice shall be provided to:

Water Quality Control Officer
Pueblo of Isleta
E-mail: POI36871@isletapueblo.com
(505) 869-7565
(505) 263-5425 cellular
(505) 869-3030 Police Dispatch

h. CGP at 2.2 Erosion and sediment control requirements: Erosion and sediment controls shall be designed to retain sediment on-site.

i. CGP at 2.2 Under Sediment control requirements, Standard Permit Condition Duty to Mitigate Volumes of sediment at or over (five) 5 cubic yards must be removed and placed for disposal within a tribally approved sediment Disposal Site, located on Pueblo of Isleta lands. CGP 2.2 at pg. 8.

j. Under Minimize erosion, a permittee must secure permission from the Pueblo or affected Pueblo of Isleta land assignment owner if a dissipation device needs to be placed up- or down- elevation of a given construction site. CGP 2.2.11 at pg. 11.

k. CGP at 2.3.6 Emergency spill notification requirements: You must notify the Pueblo of Isleta Water Quality Control Officer and National Response Center (NRC) [at (800) 424-8802 or, in the Washington, DC metropolitan area, call (202) 267-2675 in accordance with the requirements of 40 CFR 110, 40 CFR 117, and 40 CFR 302] as soon as you have knowledge of the release. Verbal and electronic notice shall be provided as specified in I.12.6.1

l. CGP at C.3 Equivalent analysis waiver: Parties wishing to apply for an Equivalent Analysis Waiver (see Appendix D, Section C) must provide a copy of the waiver analysis to the Pueblo of Isleta Water Quality Control Officer at the address indicated in 1.4.1 (a).

9.4.2.2 Pueblo of Sandia. The following conditions apply only to discharges on the Pueblo of Sandia Reservation:

a. Only those activities specifically authorized by the CGP are authorized by the Pueblo of Sandia's Water Quality certification. The Pueblo of Sandia's Water Quality Certification does not authorize impact to cultural properties, historical sites or properties that may be eligible as such.

b. Copies of all Notices of Intent (NOI) submitted to the EPA must also be sent concurrently to the Pueblo of Sandia at the following address. Discharges are not authorized by this permit unless an accurate and complete NOI has been submitted to the Pueblo of Sandia, either by mail or electronically.

Regular U.S. Delivery Mail:
Pueblo of Sandia Environment Department
Attention: Scott Bulgrin, Water Quality Manager
481 Sandia Loop
Bernalillo, New Mexico 87004

Electronically:
sbulgrin@sandiapueblo.nsn.us

c. Any correspondences between the applicant and EPA related to analytical data, written reports, corrective action, enforcement, monitoring, or an adverse incident written reports should likewise be routed to the Pueblo of Sandia at the above address.

d. The Stormwater Pollution Prevention Plan (SWPPP) must be available to the Pueblo of Sandia Environment Department either electronically or hard copy upon request for review. The SWPPP must be made available at least fourteen (14) days before construction begins. The fourteen (14) day period will give Pueblo staff time to become familiar with the project site, prepare for construction site inspections, and determine compliance with the Pueblo of Sandia Water Quality Standards. Failure to provide a SWPPP to the Pueblo of Sandia may result in the delay or denial of the construction project.

e. If requested by the Pueblo of Sandia Environment Department, the permittee must provide additional information necessary for a case-by-case eligibility determination to assure compliance with the Pueblo of Sandia Water Quality Standards and/or applicable Federal Standards not authorized by this certification.

f. An "Authorization to Proceed Letter" with site specific mitigation requirements may be sent out to the permittee when a review of the NOI and SWPPP, on a case- by-case basis is completed by the Pueblo of Sandia Environment Department. This approval will allow the application to proceed if all mitigation requirements are met.

g. The Pueblo of Sandia will not allow Small construction Waivers (Appendix C) or the Rainfall Erosivity Waiver (Appendix C.1) to be granted for any small construction activities.

h. Before submitting a Notice of Termination (NOT) to the EPA, permittees must clearly demonstrate to the Pueblo of Sandia Environment Department through a site visit or documentation that requirements for site stabilization have been met and any temporary erosion control structures have been removed. A short letter stating the NOT is acceptable and all requirements have been met will be sent to the permittee to add to the permittee's NOT submission to EPA.

i. Copies of all NOT submitted to the EPA must also be sent concurrently to the Pueblo of Sandia through the mail or electronically.

  Regular U.S. Delivery Mail:
  Pueblo of Sandia Environment Department
  Attention: Scott Bulgrin, Water Quality Manager 481 Sandia Loop
  Bernalillo, New Mexico 87004

  Electronically:
  sbulgrin@sandiapueblo.nsn.us

j. The Pueblo of Sandia may require the permittee to perform water quality monitoring for pH, turbidity, and total suspended solids (TSS) during the permit term if the discharge is to a surface water leading to the Rio Grande for the protection of public health and the environment.

9.4.2.3 Pueblo of Santa Ana. The following conditions apply only to discharges on the Pueblo of Santa Ana Reservation:

a. The operator shall provide a copy of the Notice of Intent (NOI) to the Pueblo of Santa Ana (the Pueblo), at the same time it is submitted to the U.S. Environmental Protection Agency (EPA), for projects with discharges onto the lands of the Pueblo as defined in the Pueblo of Santa Ana Water Quality Standards.

b. The operator shall provide a copy of the Stormwater Pollution Prevention Plan (SWPPP), at the same time that an NOI is submitted to the EPA, to the Pueblo for projects with discharges onto the lands of the Pueblo as defined in the Pueblo of Santa Ana Water Quality Standards.

c. The operator shall provide a copy of the SWPPP, copies of inspections reports, and copies of corrective action reports to the Pueblo at the address below for review, upon request.

d. The NOI, SWPPP and Notice of Termination (NOT) shall be sent to the Pueblo at the following address:

Pueblo of Santa Ana Department of Natural Resources,
Attention: Water Quality Program Specialist
2 Dove Road
Santa Ana Pueblo, NM, 87004

e. Discharges are not authorized by this permit unless an accurate and complete NOI and SWPPP have been submitted to the Pueblo. Failure to provide an accurate and complete NOI and SWPPP may result in a denial of the discharge permit or groundbreaking or construction delay.

f. The operator will not proceed with site work until authorized by the Pueblo. The Pueblo requires review of the complete and final SWPPP by the Pueblo before authorization to proceed. The Pueblo will provide an "authorization to proceed" notice after review and approval of the SWPPP.

g. Before submitting a NOT, permittees must certify to the Pueblo's Department of Natural Resources in writing that requirements for site stabilization have been met, and any temporary erosion control structures have been removed. Documentation of the Pueblo's review that such requirements have been reviewed and met will be provided for the permittee to add to the permittee's NOT submission to EPA. Copies of all NOT submitted to the EPA must also be sent to the Pueblo at the address provided above.

9.4.2.4 Pueblo of Santa Clara. The following conditions apply only to discharges on the Pueblo of Santa Clara Reservation:

a. The operator must provide a copy of the Notice of Intent (NOI) and Notice of Termination (NOT) to the Santa Clara Pueblo Governor's Office at the same time it is provided to the US Environmental Protection Agency.

b. A copy of the Storm water Pollution Prevention Plan shall be made available to the Pueblo of Santa Clara staff upon request.

9.4.2.5 Pueblo of Tesuque. The following conditions apply only to discharges on the Pueblo of Tesuque Reservation:

a. The operator shall provide a copy of the Notice of Intent (NOI) to the Pueblo of Tesuque Governor’s Office and Environment Department at same time it is submitted to the Environmental Protection Agency, for projects occurring within the exterior boundaries of our tribal lands. The operator shall also notify the Pueblo of Tesuque Governor's Office and Environment Department when it submitted the Notice of Termination. The NOI and NOT shall be sent to the Pueblo of Tesuque Governor's Office and Environment Department at the following address:

Pueblo of Tesuque
Office of the Governor
Route 42 Box 360-T
Santa Fe, NM 87506 or
email: governor@pueblooftesuque.org

b. The operator shall also provide a copy of the Stormwater Pollution Prevention Plan, copies of inspections reports, and copies of corrective action reports to staff in the Pueblo of Tesuque Environment Department.

9.4.2.6 Taos Pueblo. The following conditions apply only to discharges on the Taos Pueblo Reservation:

a. The operator shall provide a copy of the Notice of Intent (NOI) to the Taos Pueblo Governor's Office, War Chief's Office and Environmental Office, at the same time it is submitted to the U.S. Environmental Protection Agency, for projects occurring within the exterior boundaries of Taos Pueblo. The operator shall also notify Taos Pueblo when it has submitted the Notice of Termination (NOT). The NOI and NOT shall be sent to the Taos Pueblo at the following addresses:

   i. Taos Pueblo Governor's Office
   P.O. Box 1846
   Taos NM 87571

   ii. Taos Pueblo War Chief's Office
   P.O. Box 2596
   Taos NM 87571

   iii. Environmental Office
   Attn: Program Manger
   P.O. Box 1846
   Taos NM 87571

b. Taos Pueblo requests that in the event Indian artifacts or human remains are inadvertently discovered on projects occurring near or on Taos Pueblo lands that consultation with the tribal Governor's Office occur at the earliest possible time.

c. The operator shall provide a copy of the Stormwater Pollution Prevention Plan, copies of inspections reports, and copies of corrective action reports to staff in the Taos Pueblo Environmental Office for review and copy, upon request.

9.4.2.7 Ohkay Owingeh. The following conditions apply only to discharges on the Ohkay Owingeh Reservation:

a. Prior to commencement of any construction activity on Ohkay Owingeh Lands requiring permit coverage under EPA's Construction General Permit, the operator(s) shall submit to Ohkay Owingeh Office of Environmental Affairs, a copy of the electronic "Notice of Intent," submitted to the Environmental Protection Agency, immediately following EPA's electronic notification that the NOI has been received. A copy of the Stormwater Pollution Prevention Plan(s) must be made available to the Ohkay Owingeh Office of Environmental Affairs upon the tribe's request either electronically or hard copy. Operator(s) shall also submit to Ohkay Owingeh Office of Environmental Affairs a copy of the electronic Notice of Termination (NOT) submitted to the Environmental Protection Agency. Documents shall be submitted to Ohkay Owingeh at the following address:

Ohkay Owingeh Office of Environment Affairs
Attention: Environmental Programs Manager
P.O. Box 717
Ohkay Owingeh, New Mexico 87566
Office # 505.852.4212
Fax # 505.852.1432
Electronic mail: naomi.archuleta@ohkay.org

b. Ohkay Owingeh will not allow the Rainfall Erosivity Waivers (see Appendix C) to be granted for any small construction activities.

c. All vegetation used to prevent soil loss, seeding or planting of the disturbed area(s) to meet the vegetative stabilization requirements must utilize native seeds/vegetation commonly known to the area. All temporary erosion control structures, such as silt fences must be removed as soon as stabilization requirements are met.

9.4.3 OKR10I000 Indian country within the State of Oklahoma

9.4.3.1 Pawnee Nation. The following conditions apply only to discharges within Pawnee Indian country:

a. Copies of the Notice of Intent (NOI) and Notice of Termination (NOT) must be provided to the Pawnee Nation at the same time it is submitted to the Environmental Protection Agency to the following address:

Pawnee Nation Department of Environmental Conservation and Safety
P.O. Box 470
Pawnee, OK 74058
Or email to mmatlock@pawneenation.org

b. The Storm Water Pollution Prevention Plan must be available to Departmental inspectors upon request.

c. The Department must be notified at 918.762.3655 immediately upon discovery of any noncompliance with any provision of the permit conditions.

9.4.4 OKR10F000 Discharges in the State of Oklahoma that are not under the authority of the Oklahoma Department of Environmental Quality, including activities associated with oil and gas exploration, drilling, operations, and pipelines (includes SIC Groups 13 and 46, and SIC codes 492 and 5171), and point source discharges associated with agricultural production, services, and silviculture (includes SIC Groups 01, 02, 07, 08, 09).

a. For activities located within the watershed of any Oklahoma Scenic River, including the Illinois River, Flint Creek, Barren Fork Creek, Upper Mountain Fork, Little Lee Creek, and Lee Creek or any water or watershed designated “ORW” in Oklahoma’s Water Quality Standards, this permit may only be used to authorize discharges from temporary construction activities. Certification is denied for any on-going activities such as sand and gravel mining or any other mineral mining.

b. For activities located within the watershed of any Oklahoma Scenic River, including the Illinois River, Flint Creek, Barren Fork Creek, Upper Mountain Fork, Little Lee Creek, and Lee Creek or any water or watershed designated “ORW” in Oklahoma’s Water Quality Standards, certification is denied for any discharges originating from support activities, including concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, or borrow areas.

c. In order to company with Oklahoma's Water Quality Standards, these conditions and restrictions also apply to any construction projects located wholly or partially on Indian Country lands within the State of Oklahoma.

9.5 EPA REGION 8

9.5.1 MTR10I000 Indian country within the State of Montana

9.5.1.1 The Confederated Salish and Kootenai Tribes of the Flathead Nation. The following conditions apply only to discharges on the Confederated Salish and Kootenai Tribes of the Flathead Nation Reservation:

a. Permittees must submit the Stormwater Pollution Prevention Plan (SWPPP) to the Confederated Salish and Kootenai Tribes at least 30 days before construction starts.

b. Before submitting the Notice of Termination (NOT), permittees must clearly demonstrate to an appointed Tribal staff person during an onsite inspection that requirements for site stabilization have been met.

c. The permittee must send a copy of the Notice of Intent (NOI) and the NOT to CSKT.

d. Permittees may submit their SWPPPs, NOIs and NOTs electronically to: clintf@cskt.org.

e. Written SWPPPs, NOIs and NOTs may be mailed to:

Clint Folden, Water Quality Regulatory Specialist
Confederated Salish and Kootenai Tribes
Natural Resources Department
P.O. Box 278
Pablo, MT 59855

9.6 EPA REGION 9

9.6.1 CAR10I000 Indian country within the State of California

9.6.1.1 Twenty-Nine Palms Band of Mission Indians. The following conditions apply only to discharges on the Twenty-Nine Palms Band of Mission Indians Reservation:

a. At the time the applicant submits its Notice of Intent (NOI) to the EPA, the applicant must concurrently submit written notification of the NOI and a copy of the Stormwater Pollution Prevention Plan (SWPPP) to the Twenty-Nine Palms Band of Mission Indians at the address below:

Tribal Environmental Coordinator
Twenty-Nine Palms Band of Mission Indians
46-200 Harrison Place
Coachella, CA 92236

b. The applicant must also concurrently submit to the Tribal Environmental Coordinator written notification of any other forms or information submitted to the EPA, including waivers, reporting, and Notice of Termination (NOT).

c. Permitted entities under the CGP must keep the Tribal EPA informed of authorized discharges under the CGP by submitting written information about the type, quantity, frequency and location, intended purpose, and potential human health and/or environmental effects of their activities. These requirements are pursuant to Section 4 of the Twenty-Nine Palms Band of Mission Indians Water Pollution Control Ordinance (022405A). This information may be submitted to Tribal EPA in the form of Stormwater Pollution Prevention Plans (SWPPPs), monitoring reports, or other reports as required under the CGP. Spills, leaks, or unpermitted discharges must be reported in writing to Tribal EPA within 24 hours of the incident.

9.6.2 GUR100000 Island of Guam. The following conditions apply only to discharges on the Island of Guam:

a. Any earth-moving operations which require a permit must be obtained from the Department of Public Works (DPW) with clearance approval from various Government of Guam Agencies including Guam EPA prior to the start of any earth-moving activity.

b. In the event that the construction sites are within the Guam Sole Source Aquifer, the construction site owner and operator must consider opportunities to facilitate groundwater recharge for construction and post-construction implementing infiltration Best Management Practices. Stormwater disposal systems shall be designed and operated within the boundaries of the project. Stormwater systems shall not be permitted within any Wellhead Protection Zone unless the discharge meets the Guam Water Quality Standards within the zone. Waters discharged within the identified category G-2 recharge zone shall receive treatment to the degree required to protect the drinking water quality prior to it entering the category G-1 resource zone.

c. All conditions and requirements set forth in the 22 Guam Administrative Rules and Regulations (GARR), Division II, Water Control, Chapter 10, Guam Soil Erosion and Sediment Control Regulations (GSESCR) that are more protective than the CGP regarding construction activities must be complied with.

d. All standards and requirements set forth in the 22 GARR, Division II, Water Control, Chapter 5, *Guam Water Quality Standards (GWQS) 2001 Revisions*, must be complied with to include reporting GWQS exceedance to Guam EPA.

e. All operators/owners of any property development or earth moving activities shall comply with the erosion control pre-construction and post-construction BMP design performance standards and criteria set forth in the 2006 CNMI and Guam Stormwater Management Manual.

f. All conditions and requirements regarding dewatering activities set forth in 22 Guam Administrative Rules and Regulations Chapter 7, Water Resources Development and Operating Regulations must be complied with to include securing permits with Guam EPA prior to the start of any dewatering activities.

g. If a project to be developed is covered under the Federal Stormwater Regulations (40 CFR Parts 122 & 123), a Notice of Intent (NOI) to discharge stormwater to the surface and marine waters of Guam must be submitted to the U.S. EPA and a copy furnished to Guam EPA, pursuant to Section 10, 104(B)(5)(d) 22GAR, Division II, Chapter 10.

h. Guam EPA shall apply the Buffer Requirements listed in Appendix G of the CGP NPDES Permit for construction activities as it pertains to Waters of the U.S. in Guam. Guam EPA shall also apply the same buffer requirements for sinkholes in Guam.

i. When Guam EPA, through its permit review process, identifies that the proposed construction activity is close proximity to marine waters, contractors and owners will be informed that any activity that may impair water quality are required to stop during peak coral spawning periods as per the Guam Coral Spawning Construction Moratoriums.

j. The Proposed Construction General Permit must set appropriate measures and conditions to protect Guam's Threatened and Endangered Species and Outstanding Resource Waters of exceptional recreational or ecological significance as determined by the Guam EPA Administrator as per *Guam Water Quality Standards 2001 Revisions,* §5102, Categories of Waters, D. Outstanding Resource Waters.

k. When Guam EPA through its permit review process identifies that proposed construction activity is in close proximity to any Section 303d impaired waters, which includes marine waters and surface waters, shall ensure that construction activity does not increase the impaired water's ambient parameters.

l. When Rainfall Erosivity and TMDL Waivers reflected in the CGP, Appendix C, are submitted to the U.S. EPA, Guam EPA will review waivers on a project by project basis.

m. Prior to submission of the Notice of Termination (NOT) to the U.S. EPA, permittees must clearly demonstration to Guam EPA that the project site has met all soil stabilization requirements and removal of any temporary erosion control as outlined in the GSESCR.

9.7 EPA REGION 10

9.7.1 IDR100000 State of Idaho, except Indian country

a. Idaho's Antidegradation Policy. The WQS contain an antidegradation policy providing three levels of protection to water bodies in Idaho (IDAPA 58.01.02.051).

   1. Tier I Protection. The first level of protection applies to all water bodies subject to Clean Water Act jurisdiction and ensures that existing uses of a water body and the level of water quality necessary to protect those existing uses will be maintained and protected (IDAPA 58.01.02.051.01; 58.01.02.052.01). Additionally, a Tier 1 review is performed for all new or reissued permits or licenses (IDAPA 58.01.02.052.05).
   2. Tier II Protection. The second level of protection applies to those water bodies considered high quality and ensures that no lowering of water quality will be allowed unless deemed necessary to accommodate important economic or social development (IDAPA 58.01.02.051.02; 58.01.02.052.08).
   3. Tier III Protection. The third level of protection applies to water bodies that have been designated outstanding resource waters and requires that activities not cause a lowering of water quality (IDAPA 58.01.02.051.03; 58.01.02.052.09).

   DEQ is employing a water body by water body approach to implementing Idaho's antidegradation policy. This approach means that any water body fully supporting its beneficial uses will be considered high quality (IDAPA 58.01.02.052.05.a). Any water body not fully supporting its beneficial uses will be provided Tier I protection for that use, unless specific circumstances warranting Tier II protection are met (IDAPA 58.01.02.052.05.c). The most recent federally approved Integrated Report and supporting data are used to determine support status and the tier of protection (IDAPA 58.01.02.052.05).

b. Pollutants of Concern. The primary pollutants of concern associated with stormwater discharges from construction activities are sediment, typically measured as total suspended solids and turbidity. Other potential pollutants include the following:

phosphorus, nitrogen, pesticides, organics, metals, PCBs, petroleum products, construction chemicals, and solid wastes.

c. Receiving Water Body Level of Protection. The CGP provides coverage to construction activities throughout the entire State of Idaho. Because of the statewide applicability, all of the jurisdictional waters within Idaho could potentially receive discharges either directly or indirectly from activities covered under the CGP. DEQ applies a water body by water body approach to determine the level of antidegradation a water body will receive.

All waters in Idaho that receive discharges from activities authorized under the CGP will receive, at minimum Tier I antidegradation protection because Idaho's antidegradation policy applies to all waters of the state. Water bodies that fully support their aquatic life or recreational uses are considered to be *high quality waters* and will receive Tier II antidegradation protection.

Although Idaho does not currently have any Tier III designated outstanding resource waters (ORWs) designated, it is possible for a water body to be designated as an ORW during the life of the CGP. Because of this potential, the antidegradation review also assesses whether the permit complies with the outstanding resource water requirements of Idaho's antidegradation policy.

To determine the support status of the receiving water body, persons filing a Notice of Intent (NOI) for coverage under this general permit must use the most recent EPA-approved Integrated Report, available on Idaho DEQ's website: http://www.deq.idaho.gov/water-quality/surface-water/monitoring-assessment/integrated-report/.

High quality waters are identified in Categories 1 and 2 of the Integrated Report. If a water body is in either Category 1 or 2, it is a Tier II water body.

Unassessed waters are identified as Category 3 of DEQ's Integrated Report. These waters require a case-by-case determination to be made by DEQ based on available information at the time of the application for permit coverage. If a water body is unassessed, the applicant is directed to contact DEQ for assistance in filing the NOI.

Impaired waters are identified in Categories 4 and 5 of the Integrated Report. Category 4(a) contains impaired waters for which a TMDL has been approved by EPA. Category 4(b) contains impaired waters for which controls other than a TMDL have been approved by EPA. Category 5 contains waters which have been identified as "impaired," for which a TMDL is needed. These waters are Tier I waters, for the use which is impaired. With the exception, if the aquatic life uses are impaired for any of these three pollutants—dissolved oxygen, pH, or temperature—and the biological or aquatic habitat parameters show a health, balanced biological community, then the water body shall receive Tier II protection, in addition to Tier I protection, for aquatic life uses (IDAPA 58.01.02.052.05.c.i.).

DEQ's webpage also has a link to the state's map-based Integrated Report which presents information from the Integrated Report in a searchable, map-based format: http://www.deq.idaho.gov/assistance-resources/maps-data/.

Water bodies can be in multiple categories for different causes. If assistance is needed in using these tools, or if additional information/clarification regarding the support status of the receiving water body is desired, the operator is directed to make contact with the appropriate DEQ regional office of the State office in the table below:

Regional and State Office	Address	Phone Number	Email
Boise	1445 N. Orchard Rd., Boise 83706	208-373-0550	Kati.carberry@deq.idaho.gov
Coeur d'Alene	2110 Ironwood Parkway, Coeur D'Alene 83814	208-769-1422	June.bergquist@deq.idaho.gov
Idaho Falls	900 N. Skyline, Suite B., Idaho Falls 83402	208-528-2650	Troy.saffle@deq.idaho.gov
Lewiston	1118 "F" St., Lewiston 83501	208-799-4370	Mark.sellet@deq.idaho.gov
Pocatello	444 Hospital way, #300 Pocatello 83201	208-236-6160	Lynn.vanevery@deq.idaho.gov
Twin Falls	650 Addison Ave., W., Suite 110, Twin Falls 83301	208-736-2190	Balthasar.buhidar@deq.idaho.gov
State Office	1410 N. Hilton Rd., Boise 83706	208-373-0502	Nicole.deinarowicz@deq.idaho.gov

d. *Turbidity Monitoring.* The permittee must conduct turbidity monitoring during construction activities and thereafter on days where there is a direct discharge of pollutants from an unstabilized portion of the site which is causing a visible plume to a water of the U.S.

A properly and regularly calibrated turbidimeter is required for measurements analyzed in the field (preferred method), but grab samples may be collected and taken to a laboratory for analysis. If the permittee can demonstrate that there will be no direct discharge from the construction site, then turbidity monitoring is not required. When monitoring is required, a sample must be taken at an undisturbed area immediately upstream of the project area to establish background turbidity levels for the monitoring event. Background turbidity, location, date and time must be recorded prior to monitoring downstream of the project area. A sample must also be taken immediately downstream from any point of discharge and *within* any visible plume. The turbidity, location, date and time must be recorded. The downstream sample must be taken immediately following the upstream sample in order to obtain meaningful and representative results.

Results from the compliance point sampling or observation[78] must be compared to the background levels to determine whether project activities are causing an exceedance of state WQS. If the downstream turbidity is 50 NTUs or more than the upstream turbidity, then the project is causing an exceedance of WQS. *Any exceedance of the turbidity standard must be reporting to the appropriate DEQ regional office within 24 hours. The following six (6) steps should be followed to ensure compliance with the turbidity standard:*

1. If a visible plume is observed, quantify the plume by collecting turbidity measurements from within the plume and compare the results to Idaho's instantaneous numeric turbidity criterion (50 NTU over the background).
2. If turbidity is less than 50 NTU instantaneously over the background turbidity; continue monitoring as long as the plume is visible. If turbidity exceeds background turbidity by more than 50 NTU instantaneously then stop all earth disturbing construction activities and proceed to step 3.
3. Take immediate action to address the cause of the exceedance. That may include inspection the condition of project BMPs. If the BMPs are functioning to their fullest capability, then the permittee must modify project activities and/or BMPs to correct the exceedance.
4. Notify the appropriate DEQ regional office within 24 hours.
5. Possibly increase monitoring frequency until state water quality standards are met.
6. Continue earth disturbing construction activities once turbidity readings return to within 50 NTU instantaneously and 25 NTU for more than ten consecutive days over the background turbidity.

Copies of daily logs for turbidity monitoring must be available to DEQ upon request. The report must describe all exceedances and subsequent actions taken, including the effectiveness of the action.

e. *Reporting of Discharges Containing Hazardous Materials or Petroleum Products.* All spills of hazardous material, deleterious material or petroleum products which may impact waters (ground and surface) of the state shall be immediately reported. Call 911 if immediate assistance is required to control, contain or clean up the spill. If no assistance is needed in cleaning up the spill, contact the appropriate DEQ regional office in the table below during normal working hours or Idaho State Communications Center after normal working hours. If the spilled volume is above federal reportable quantities, contact the National Repose Center.

For immediate assistance: Call 911

National Response Center: (800) 424-8802

Idaho State Communications Center: (208) 632-8000

[78] A visual observation is only acceptable to determine whether BMPs are functioning properly. If a plume is observed, the project may be causing an exceedance of WQS and the permittee must collect turbidity data and inspect the condition of the projects BMPs. If the BMPs appear to be functioning to their fullest capability and the turbidity is 50 NTUs or more than the upstream turbidity, then the permittee must modify the activity or implement additional BMPs (this may also include modifying existing BMPs).

Regional office	Toll Free Phone Number	Phone Number
Boise	888-800-3480	208-373-0321
Coeur d'Alene	877-370-0017	208-769-1422
Idaho Falls	800-232-4635	208-528-2650
Lewiston	977-547-3304	208-799-4370
Pocatello	888-655-6160	208-236-6160
Twin Falls	800-270-1663	208-736-2190

9.7.2 IDR10I000 Indian country within the State of Idaho, except Duck Valley Reservation lands (see Region 9)

9.7.2.1 Shoshone-Bannock Tribes. The following conditions apply only to discharges on the Shoshone-Bannock Reservation:

f. Each operator shall submit a signed hard copy of the Notice of Intent (NOI) to the Shoshone-Bannock Tribes Water Resources Department at the same time it is submitted electronically to the Environmental Protection Agency (EPA) and shall provide the Shoshone-Bannock Tribes Water Resources Department the acknowledgement of receipt of the NOI from the EPA within 7 calendar days of receipt from the EPA.

9.7.3 WAR10F000 Areas in the State of Washington, except those located on Indian country, subject to construction activity by a Federal Operator. The following conditions apply only to discharges on federal facilities in the State of Washington:

a. Discharges shall not cause or contribute to a violation of surface water quality standards (Chapter 173-201A WAC), groundwater quality standards (Chapter 173-200 WAC), sediment management standards (Chapter 173-204 WAC), and human health-based criteria in the National Toxics Rule (40 CFR Part 131.36). Discharges that are not in compliance with these standards are not authorized.

b. Prior to the discharge of stormwater and non-storm water to waters of the State, the Permittee must apply all known, available, and reasonable methods of prevention, control, and treatment (AKART). This includes the preparation and implementation of an adequate SWPPP, with all appropriate BMPs installed and maintained in accordance with the SWPPP and the terms and conditions of this permit.

c. Permittees who discharge to segments of waterbodies listed as impaired by the State of Washington under Section 303(d) of the Clean Water Act for turbidity, fine sediment, phosphorus, or pH must comply with the following numeric effluent limits:

Parameter Identified in 303{d) Listing	Parameter Sampled	Unit	Analytical Method	Numeric Effluent Limit
• Turbidity • Fine Sediment • Phosphorus	Turbidity	NTU	SM2130 or EPA 180.1	25 NTUs at the point where the stormwater is discharged from the site.
High pH	pH	Su	pH meter	In the range of 6.5 – 8.5

d. All references and requirements associated with Section 303(d) of the Clean Water Act mean the most current EPA approved listing of impaired waters that exists on February 16, 2017, or the date when the operator's complete permit application is received by EPA, whichever is later.

e. Discharges to waterbodies subject to an applicable Total Maximum Daily Load (TMDL) for turbidity, fine sediment, high pH, or phosphorus, shall be consistent with the assumptions and requirements of the TMDL.

   i. Where an applicable TMDL sets specific waste load allocations or requirements for discharges covered by this permit, discharges shall be consistent with any specific waste load allocations or requirements establish by the applicable TMDL.

   ii. Where an applicable TMDL has established a general waste load allocation for construction stormwater discharges, but no specific requirements have been identified, compliance with this permit will be assumed to be consistent with the approved TMDL.

   iii. Where an applicable TMDL has not specified a waste load allocation for construction stormwater discharges, but has not excluded these discharges, compliance with this permit will be assumed to be consistent with the approved TMDL.

   iv. Where an applicable TMDL specifically precludes or prohibits discharges from construction activity, the operator is not eligible for coverage under this permit.

   v. Applicable TMDL means a TMDL for turbidity, fine sediment, high pH, or phosphorus, which has been completed and approved by EPA prior to February 16, 2017, or prior to the date the operator's complete NOI is received by EPA, whichever is later.

9.7.4 WAR10I000 Indian country within the State of Washington

9.7.4.1 Confederated Tribes of the Colville Reservation. The following conditions apply only to discharges on the Colville Indian Reservation (CIR) and on other Tribal trust lands or allotments of the Confederated Tribes of the Colville Reservation:

a. A copy of the Stormwater Pollution Prevention Plan must be submitted to the following office at least thirty (30) days in advance of sending the Notice of Intent (NOI) to EPA:

   Environmental Trust Department
   Confederated Tribes of the Colville Reservation
   PO Box 150
   Nesepelem, WA 99155

b. Copies of the Notice of Intent (NOI) and Notice of Termination (NOT) must be sent to the ETD at the same time they are submitted to EPA.

c. Discharges to Omak Creek, the Okanogan River, and Columbia River downstream of Chief Joseph Dam may affect threatened or endangered species, and shall only be permitted in adherence with Appendix D of the CGP.

d. All work shall be carried out in such a manner as will prevent violations of water quality criteria as stated in Chapter 4-8 Water Quality Standards of the Colville Law and Order Code, as amended.

e. Appropriate steps shall be taken to ensure that petroleum products or other chemical pollutants are prevented from entering waters of the CIR. All spills must be reported to the appropriate emergency management agency and the ETD, and measures shall be taken immediately to prevent the pollution of waters of the CIR, including groundwater.

f. Stormwater site inspections shall be conducted at least once every 7 calendar days, within 24-hours of the occurrence of a rain event of 0.25 inches or greater in a 24-hour period, and daily during periods of saturated ground surface or snowmelt with accompanying surface runoff.

g. Results of discharge sampling must be reported to the ETD within 7 days of sample collection. All sample reporting must include the date and time, location, and individual performing the sampling.

h. Any corrective action reports that are required under the CGP must be submitted to the ETD at the above address within one (1) working day of the report completion.

i. This certification does not authorize impacts to cultural, historical, or archeological features or sites, or proprieties that may be eligible for such listing.

9.7.4.2 Lummi Nation. The following conditions apply only to discharges on the Lummi Reservation:

a. The Lummi Nation reserves the right to modify this 401 certification if the final version of the NPDES General Permit for Storm Water Discharges Associated with Construction Activity (CGP) on tribal lands in the State of Washington (Permit No. WAR10I000) is substantively different than the draft version of the proposed permit that was made available for public comments during April 2016. The Lummi Nation will determine if the final version of the NPDES CGP is substantively different than the draft version following review of the final version once the EPA makes it available.

b. This certification does not exempt and is provisional upon compliance with other applicable statutes and codes administered by federal and Lummi tribal agencies. Pursuant to Lummi Code of Laws (LCL) 17.05.020(a), the operator must also obtain a land use permit from the Lummi Planning Department as provided in Title 15 of the Lummi Code of Laws and regulations adopted thereunder.

c. Pursuant to LCL 17.05.020(a), each operator shall develop and submit a Storm Water Pollution Prevention Plan to the Lummi Water Resources Division for review and approval by the Water Resources Manager prior to beginning any discharge activities.

d. Pursuant to LCL Title 17, each operator shall be responsible for achieving compliance with the Water Quality Standards for Surface Waters of the Lummi Indian Reservation (Lummi Administrative Regulations [LAR] 17 LAR 07.010 through 17 LAR 07.210 together with supplements and amendments thereto).

e. Each operator shall submit a signed hard copy of the Notice of Intent (NOI) to the Lummi Water Resources Division at the same time it is submitted electronically to the Environmental Protection Agency (EPA) and shall provide the Lummi Water Resources Division the acknowledgement of receipt of the NOI from the EPA and the associated NPDES tracking number provided by the EPA within 7 calendar days of receipt from the EPA.

f. Each operator shall submit a signed hard copy of the Notice of Termination (NOT) to the Lummi Water Resources Division at the same time it is submitted electronically to the EPA and shall provide the Lummi Water Resources Division the EPA acknowledgement of receipt of the NOT.

g. Storm Water Pollution Prevention Plans, Notice of Intent, Notice of Termination and associated correspondence with the EPA shall be submitted to:

Lummi Natural Resources Department
ATTN: Water Resources Manager
2665 Kwina Road
Bellingham, WA 98226-9298

9.7.4.3 Makah Tribe. The following conditions apply only to discharges on the Makah Reservation:

a. The operator shall be responsible for achieving compliance with the Makah Tribe's Water Quality Standards.

b. The operator shall submit a Storm Water Pollution Prevention Plan to the Makah Tribe Water Quality Program and Makah Fisheries Habitat Division for review and approval at least thirty (30) days prior to beginning any discharge activities.

c. The operator shall submit a copy of the Notice of Intent to the Makah Tribe Water Quality Program and Makah Fisheries Habitat Division at the same time it is submitted to EPA.

d. Storm Water Pollution Prevention Plans and Notices of Intent shall be submitted to:

Aaron Parker
Makah Fisheries Management Water Quality Specialist
(360) 645-3162
Cell 206-356-0319
Aaron.parker@makah.com
PO Box 115
Neah Bay WA 98357

9.7.4.4 Puyallup Tribe of Indians. The following conditions apply only to discharges on the Puyallup Tribe of Indians Reservation:

a. Each permittee shall be responsible for achieving compliance with the Puyallup Tribe's Water Quality Standards, including antidegradation provisions. The Puyallup Natural Resources Department will conduct an antidegradation review for permitted activities that have the potential to lower water quality. The antidegradation review will be consistent with the Tribe's Antidegradation Implementation Procedures. The Tribe may also impose additional controls on a site-specific basis, or request EPA to require the operator obtain coverage under an individual permit, if information in the NOI or from other sources indicates that the operator's discharges are not controlled as necessary to meet applicable water quality standards.

b. The permittee shall be responsible for meeting any additional permit requirements imposed by EPA necessary to comply with the Puyallup Tribe's antidegradation policies if the discharge point is located within 1 linear mile upstream of waters designated by the Tribe.

c. Each permittee shall submit a copy of the Notice of Intent (NOI) to be covered by the general permit to Char Naylor (char.naylor@puyalluptribe.com) and Russ Ladley (russ.ladley@puyalluptribe.com) by email or at the address listed below at the same time it is submitted to EPA.

 Puyallup Tribe of Indians
 3009 E. Portland Avenue
 Tacoma, WA 98404
 ATTN: Russ Ladley and Char Naylor

d. All supporting documentation and certifications in the NOI related to coverage under the general permit for Endangered Species Act purposes shall be submitted to the Tribe's Resource Protection Manager (russ.ladley@puyalluptribe.com) and Char Naylor (char.naylor@puyalluptribe.com) for review.

e. If EPA requires coverage under an individual or alternative permit, the permittee shall submit a copy of the permit to Russ Ladley and Char Naylor at the address listed above.

f. The permittee shall submit all stormwater pollution prevention plans to Char Naylor for review and approval prior to beginning any activities resulting in a discharge to tribal waters.

g. The permittee shall conduct benchmark monitoring for turbidity (or transparency) and, in the event of significant concrete work or engineered soils, pH monitoring as well. Monitoring, benchmarks, and reporting requirements contained in Condition S.4. (pp.13-20) of the Washington State Construction Stormwater General Permit, effective January 1, 2016, shall apply, as applicable.

h. The permittee shall notify Char Naylor (253-680-5520) and Russ Ladley (253-680-5560) prior to conducting inspections at construction sites generating storm water discharged to tribal waters.

i. Treat dewatering discharges with controls necessary to minimize discharges of pollutants in order to minimize the discharge of pollutants to groundwater or surface waters from stormwater that is removed from excavations, trenches, foundations, vaults, or other storage areas. Examples of appropriate controls include sediment basins or sediment traps, sediment socks, dewatering tanks, tube settlers, weir tanks, and filtration systems (e.g., bag or sand filters) that are designed to remove sediment.

 To the extent feasible, utilize vegetated, upland areas of the site to infiltrate dewatering water before discharge. At all points where dewatering water is discharged, comply with the velocity dissipation requirements of Part 2.2.11 of EPA's 2016 General Construction Stormwater Permit. Examples of velocity dissipation devices include check dams, sediment traps, riprap, and grouted riprap at outlets.

j. The permittee shall provide and maintain natural buffers to the maximum extent possible (and/or equivalent erosion and sediment controls) when tribal waters are located within 100 feet of the site's earth disturbances. If infeasible to provide and maintain an undisturbed 100 foot natural buffer, erosion and sediment controls to achieve the sediment load reduction equivalent to a 100-foot undisturbed natural buffer shall be required.

9.7.4.5 Spokane Tribe of Indians. The following conditions apply only to discharges on the Spokane Tribe Reservation:

a. Pursuant to Tribal Law and Order Code (TLOC) Chapter 30 each operator shall be responsible for achieving compliance with the Surface Water Quality Standards of the Spokane Tribe. The operator shall notify the Spokane Tribe, Water Control Board (WCB) of any spills of hazardous material and;

b. Each operator shall submit a signed hard copy of the Notice of Intent (NOI) to the WCB at the same time it is submitted to EPA.

c. The permittee shall allow the Tribal Water Control Board or its designee to inspect and sample at the construction site as needed.

d. Each operator shall submit a signed copy of the Notice of Termination (NOT) to the WCB at the same time it is submitted to EPA.

The correspondence address for the Spokane Tribe Water Control Board is:

Water Control Board
c/o. Brian Crossley
P0 Box 480
Wellpinit WA 99040
(509)626-4409
crossley@spokanetribe.com

9.7.4.6 Swinomish Indian Tribal Community. The following conditions apply only to discharges on the Swinomish Reservation:

a. Owners and operators seeking coverage under this permit who intend to discharge to Regulated Surface Waters must submit a copy of the Notice of Intent (NOI) to the DEP at the same time the NOI is submitted to EPA.

b. Owners and operators seeking coverage under this permit must also submit a Stormwater Pollution Prevention Plan to the DEP for review and approval by DEP prior to beginning any discharge activities.

c. Owners and operators must also submit to the DEP Changes in NOI and/or Notices of Termination at the same time they are submitted to EPA.

9.7.4.7 Tulalip Tribes. The following conditions apply only to discharges on the Tulalip Reservation:

a. This certification does not exempt and is provisional upon compliance with other applicable statues and codes administered by federal and Tulalip tribal agencies. Pursuant to Tulalip Tribes code of law, the operator must also obtain a land use permit from the Tulalip Tribes Planning Department as provided in Title 7 of the Tulalip Tribal Code (http://www.codepublishing.com/WA/Tulalip/?Tulalip02/Tulalip0205.html).

b. Each CGP operator shall be responsible for achieving compliance with Tulalip Tribes Water Quality Standards.

c. Each CGP operator shall submit their Stormwater Pollution Prevention Plan (SWPPP) to the:

Tulalip Natural & Cultural Resources Department
Tulalip Tribes
6406 Marine Drive
Tulalip, WA 98271

Appendix C – Copy of NOI and EPA Authorization email

Appendix D – Copy of Inspection Form

General Information (see reverse for instructions)					
Name of Project		**CGP Tracking No.**		**Inspection Date**	
Inspector Name, Title & Contact Information					
Present Phase of Construction					
Inspection Location (if multiple inspections are required, specify location where this inspection is being conducted)					

Inspection Frequency *(Note: you may be subject to different inspection frequencies in different areas of the site. Check all that apply.)*

Standard Frequency: ☐ Weekly ☐ Every 14 days and within 24 hours of a 0.25" rain

Increased Frequency: ☐ Every 7 days and within 24 hours of a 0.25" rain (for areas of sites discharging to sediment or nutrient-impaired waters or to waters designated as Tier 2, Tier 2.5, or Tier 3)

Reduced Frequency:

- ☐ Once per month (for stabilized areas)
- ☐ Once per month and within 24 hours of a 0.25" rain (for arid, semi-arid, or drought-stricken areas during seasonally dry periods or during drought)
- ☐ Once per month (for frozen conditions where earth-disturbing activities are being conducted)

Was this inspection triggered by a 0.25" storm event? ☐ Yes ☐ No

If yes, how did you determined whether a 0.25" storm event has occurred?

☐ Rain gauge on site ☐ Weather station representative of site. Specify weather station source:

Total rainfall amount that triggered the inspection (in inches)**:**

Unsafe Conditions for Inspection

Did you determine that any portion of your site was unsafe for inspection per CGP Part 4.1.5? ☐ Yes ☐ No

If "yes", complete the following:

- Describe the conditions that prevented you from conducting the inspection in this location:

- Location(s) where conditions were found:

Instructions for Filling Out “General Information” Section

Name of Project
Enter the name for the project.

CGP Tracking No.
Enter the tracking number that was assigned to your NOI application for permit coverage.

Inspection Date
Enter the date you conducted the inspection.

Inspector Name, Title & Contact Information
Provide the name of the person(s) (either a member of your company’s staff or a contractor or subcontractor) that conducted this inspection. Provide the inspector’s name, title, and contact information as directed in the form.

Present Phase of Construction
If this project is being completed in more than one phase, indicate which phase it is currently in.

Inspection Location
If your project has multiple locations where you conduct separate inspections, specify the location where this inspection is being conducted. If only one inspection is conducted for your entire project, enter “Entire Site.” If necessary, complete additional inspection report forms for each separate inspection location.

Inspection Frequency
Check the box that describes the inspection frequency that applies to you. Note that you may be subject to different inspection frequencies in different areas of your site. If your project does not discharge to a “sensitive water” (i.e., a water impaired for sediment or nutrients, or listed as Tier 2, 2.5, or 3 by your state or tribe) and you are not affected by any of the circumstances described in CGP Part 4.1.4, then you can choose your frequency based on CGP Part 4.1.2 – either weekly, or every other week and within 24 hrs of a 0.25 in storm event. For any portion of your site that discharges to a sensitive water, your inspection frequency for that area is fixed under CGP Part 4.1.3 at weekly and within 24 hrs of a 0.25 inch storm event. If portions of your site are stabilized, are located in arid, semi-arid, or drought-stricken areas, or are subject to frozen conditions, consult CGP Part 4.1.4 for the applicable inspection frequency. Check all the inspection frequencies that apply to your project.

Was This Inspection Triggered by a 0.25 Inch Storm Event?
If you were required to conduct this inspection because of a 0.25 inch (or greater) rain event, indicate whether you relied on an on-site rain gauge or a nearby weather station (and where the weather station is located). Also, specify the total amount of rainfall for this specific storm event.

Unsafe Conditions for Inspection
Inspections are not required where a portion of the site or the entire site is subject to unsafe conditions. See CGP Part 4.1.5. These conditions should not regularly occur, and should not be consistently present on a site. Generally, unsafe conditions are those that render the site (or a portion of it) inaccessible or that would pose a significant probability of injury to applicable personnel. Examples could include severe storm or flood conditions, high winds, and downed electrical wires.

If your site, or a portion of it, is affected by unsafe conditions during the time of your inspection, provide a description of the conditions that prevented you from conducting the inspection and what parts of the site were affected. If the entire site was considered unsafe, specify the location as “Entire site”

Condition and Effectiveness of Erosion and Sediment (E&S) Controls (CGP Part 2.1) (see reverse for instructions)				
Type/Location of E&S Control **[Add an additional sheet if necessary]**	**Repairs or Other Maintenance Needed?***	**Corrective Action Required?***	**Date on Which Maintenance or Corrective Action First Identified?**	**Notes**
1.	☐Yes ☐No	☐Yes ☐No		
2.	☐Yes ☐No	☐Yes ☐No		
3.	☐Yes ☐No	☐Yes ☐No		
4.	☐Yes ☐No	☐Yes ☐No		
5.	☐Yes ☐No	☐Yes ☐No		
6.	☐Yes ☐No	☐Yes ☐No		
7.	☐Yes ☐No	☐Yes ☐No		
8.	☐Yes ☐No	☐Yes ☐No		
9.	☐Yes ☐No	☐Yes ☐No		
10.	☐Yes ☐No	☐Yes ☐No		

* **Note:** The permit differentiates between conditions requiring repairs and maintenance, and those requiring corrective action. The permit requires maintenance in order to keep controls in effective operating condition and requires repairs if controls are not operating as intended. Corrective actions are triggered only for specific, more serious conditions, which include: 1) A required stormwater control was never installed, was installed incorrectly, or not in accordance with the requirements in Part 2 and/or 3; 2) You become aware that the stormwater controls you have installed and are maintaining are not effective enough for the discharge to meet applicable water quality standards or applicable requirements in Part 3.1; 3) One of the prohibited discharges in Part 2.3.1 is occurring or has occurred; or 4) EPA requires corrective actions as a result of a permit violation found during an inspection carried out under Part 4.2. If a condition on your site requires a corrective action, you must also fill out a corrective action form found at www.epa.gov/npdes/stormwater/swppp. See Part 5 of the permit for more information.

Instructions for Filling Out the "Erosion and Sediment Control" Table

Type and Location of E&S Controls

Provide a list of all erosion and sediment (E&S) controls that your SWPPP indicates will be installed and implemented at your site. This list must include at a minimum all E&S controls required by CGP Part 2.1.2. Include also any natural buffers established under CGP Part 2.1.2.1. Buffer requirements apply if your project's earth-disturbing activities will occur within 50 feet of a surface water. You may group your E&S controls on your form if you have several of the same type of controls (e.g., you may group "Inlet Protection Measures", "Perimeter Controls", and "Stockpile Controls" together on one line), but if there are any problems with a specific control, you must separately identify the location of the control, whether repairs or maintenance or corrective action are necessary, and in the notes section you must describe the specifics about the problem you observed.

Repairs or Other Maintenance Needed?

Answer "yes" if the E&S control requires a repair of any kind (due to normal wear and tear, or as a result of damage) or requires maintenance in order for the control to continue operating effectively. At a minimum, maintenance is required in the following specific instances: (1) for perimeter controls, whenever sediment has accumulated to ½ or more the above-ground height of the control (CGP Part 2.1.2.2.b); (2) where sediment has been tracked-out onto the surface of off-site streets or other paved areas (CGP Part 2.1.2.3.d); (3) for inlet protection measures, when sediment accumulates, the filter becomes clogged, and/or performance is compromised (CGP Part 2.1.2.9.b); and (4) for sediment basins, as necessary to maintain at least ½ of the design capacity of the basin (CGP Part 2.1.3.2.b). Note: In many cases, "yes" answers are expected and indicate a project with an active operation and maintenance program. You should also answer "yes" if work to fix the problem is still ongoing from the previous inspection.

Corrective Action Needed?

Answer "yes" if during your inspection you found any of the following conditions to be present (CGP, Part 5.2.1): (1) a required E&S control was never installed, was installed incorrectly, or not in accordance with the corresponding CGP Part 2 or 3 requirement; (2) you become aware that the inadequacy of the E&S control has led to an exceedance of an applicable water quality standard; or (3) EPA requires corrective action for an E&S control as a result of a permit violation found during an inspection carried out under Part 4.2. If you answer "yes", you must take corrective action and complete a corrective action report, found at www.epa.gov/npdes/stormwater/swppp. Note: You should answer "yes" if work to fix the problem from a previous inspection is still ongoing.

Date on Which Maintenance or Corrective Action First Identified?

Provide the date on which the condition that triggered the need for maintenance or corrective action was first identified. If the condition was just discovered during this inspection, enter the inspection date. If the condition is a carryover from a previous inspection, enter the original date of the condition's discovery.

Notes

For each E&S control and the area immediately surrounding it, note whether the control is properly installed and whether it appears to be working to minimize sediment discharge. Describe any problem conditions you observed such as the following, and why you think they occurred as well as actions (e.g., repairs, maintenance, or corrective action) you will take or have taken to fix the problem:

1. Failure to install or to properly install a required E&S control
2. Damage or destruction to an E&S control caused by vehicles, equipment, or personnel, a storm event, or other event
3. Mud or sediment deposits found downslope from E&S controls
4. Sediment tracked out onto paved areas by vehicles leaving construction site
5. Noticeable erosion at discharge outlets or at adjacent streambanks or channels
6. Erosion of the site's sloped areas (e.g., formation of rills or gullies)
7. E&S control is no longer working due to lack of maintenance

For buffer areas, make note of whether they are marked off as required, whether there are signs of construction disturbance within the buffer, which is prohibited under the CGP, and whether there are visible signs of erosion resulting from discharges through the area.

If repairs, maintenance, or corrective action is required, briefly note the reason. If repairs, maintenance, or corrective action have been completed, make a note of the date it was completed and what was done. *If corrective action is required, note that you will need to complete a separate corrective action report describing the condition and your work to fix the problem.*

Condition and Effectiveness of Pollution Prevention (P2) Practices (CGP Part 2.3) (see reverse for instructions)				
Type/Location of P2 Practices [Add an additional sheet if necessary]	**Repairs or Other Maintenance Needed?***	**Corrective Action Required?***	**Date on Which Maintenance or Corrective Action First Identified?**	**Notes**
1.	☐Yes ☐No	☐Yes ☐No		
2.	☐Yes ☐No	☐Yes ☐No		
3.	☐Yes ☐No	☐Yes ☐No		
4.	☐Yes ☐No	☐Yes ☐No		
5.	☐Yes ☐No	☐Yes ☐No		
6.	☐Yes ☐No	☐Yes ☐No		
7.	☐Yes ☐No	☐Yes ☐No		
8.	☐Yes ☐No	☐Yes ☐No		
9.	☐Yes ☐No	☐Yes ☐No		
10.	☐Yes ☐No	☐Yes ☐No		

*** Note:** The permit differentiates between conditions requiring repairs and maintenance, and those requiring corrective action. The permit requires maintenance in order to keep controls in effective operating condition and requires repairs if controls are not operating as intended. Corrective actions are triggered only for specific, more serious conditions, which include: 1) A required stormwater control was never installed, was installed incorrectly, or not in accordance with the requirements in Part 2 and/or 3; 2) You become aware that the stormwater controls you have installed and are maintaining are not effective enough for the discharge to meet applicable water quality standards or applicable requirements in Part 3.1; 3) One of the prohibited discharges in Part 2.3.1 is occurring or has occurred; or 4) EPA requires corrective actions as a result of a permit violation found during an inspection carried out under Part 4.2. If a condition on your site requires a corrective action, you must also fill out a corrective action form found at www.epa.gov/npdes/stormwater/swppp. See Part 5 of the permit for more information.

Instructions for Filling Out the “Pollution Prevention (P2) Practice” Table

Type and Location of P2 Controls

Provide a list of all pollution prevention (P2) practices that are implemented at your site. This list must include all P2 practices required by Part 2.3.3, and those that are described in your SWPPP.

Repairs or Other Maintenance Needed?

Answer “yes” if the P2 practice requires a repair of any kind (due to normal wear and tear, or as a result of damage) or requires maintenance in order for the control to continue operating effectively. Note: In many cases, “yes” answers are expected and indicate a project with an active operation and maintenance program.

Corrective Action Needed?

Answer “yes” if during your inspection you found any of the following conditions to be present (CGP, Part 5.2.1): (1) a required P2 practice was never installed, was installed incorrectly, or not in accordance with the corresponding CGP Part 2 requirement; (2) you become aware that the inadequacy of the P2 practice has led to an exceedance of an applicable water quality standard; (3) one of the “prohibited discharges” listed in CGP Part 2.3.1 is occurring or has occurred, or (4) EPA requires corrective action for a P2 practice as a result of a permit violation found during an inspection carried out under Part 4.2. If you answer “yes”, you must take corrective action and complete a corrective action report (see www.epa.gov/npdes/stormwater/swppp). Note: You should answer “yes” if work to fix the problem from a previous inspection is still ongoing.

Date on Which Maintenance or Corrective Action First Identified?

Provide the date on which the condition that triggered the need for maintenance or corrective action was first identified. If the condition was just discovered during this inspection, enter the inspection date. If the condition is a carryover from a previous inspection, enter the original date of the condition’s discovery.

Notes

For each P2 control and the area immediately surrounding it, note whether the control is properly installed, whether it appears to be working to minimize or eliminate pollutant discharges, and whether maintenance or corrective action is required. Describe problem conditions you observed such as the following, and why you think they occurred, as well as actions you will take or have taken to fix the problem:

1. Failure to install or to properly install a required P2 control
2. Damage or destruction to a P2 control caused by vehicles, equipment, or personnel, or a storm event
3. Evidence of a spill, leak, or other type of pollutant discharge, or failure to have properly cleaned up a previous spill, leak, or other type of pollutant discharge
4. Spill response supplies are absent, insufficient, or not where they are supposed to be located
5. Improper storage, handling, or disposal of chemicals, building materials or products, fuels, or wastes
6. P2 practice is no longer working due to lack of maintenance

If repairs, maintenance, or corrective action is required, briefly note the reason. If repairs, maintenance, or corrective action have been completed, make a note of the date it was completed and what was done. *If corrective action is required, note that you will need to complete a separate corrective action report describing the condition and your work to fix the problem*.

Stabilization of Exposed Soil (CGP Part 2.2) (see reverse for instructions)			
Stabilization Area **[Add an additional sheet if necessary]**	**Stabilization Method**	**Have You Initiated Stabilization?**	**Notes**
1.		☐ YES ☐ NO If yes, provide date:	
2.		☐ YES ☐ NO If yes, provide date:	
3.		☐ YES ☐ NO If yes, provide date:	
4.		☐ YES ☐ NO If yes, provide date:	
5.		☐ YES ☐ NO If yes, provide date:	

Description of Discharges (CGP Part 4.1.6.6) (see reverse for instructions)	
Was a stormwater discharge or other discharge occurring from any part of your site at the time of the inspection? ☐ Yes ☐ No **If "yes", provide the following information for each point of discharge:**	
Discharge Location **[Add an additional sheet if necessary]**	**Observations**
1.	Describe the discharge: At points of discharge and the channels and banks of surface waters in the immediate vicinity, are there any visible signs of erosion and/or sediment accumulation that can be attributed to your discharge? ☐ Yes ☐ No If yes, describe what you see, specify the location(s) where these conditions were found, and indicate whether modification, maintenance, or corrective action is needed to resolve the issue:
2.	Describe the discharge: At points of discharge and the channels and banks of surface waters in the immediate vicinity, are there any visible signs of erosion and/or sediment accumulation that can be attributed to your discharge? ☐ Yes ☐ No If yes, describe what you see, specify the location(s) where these conditions were found, and indicate whether modification, maintenance, or corrective action is needed to resolve the issue:

Instructions for Filling Out the "Stabilization of Exposed Soil" Table

Stabilization Area
List all areas where soil stabilization is required to begin because construction work in that area has permanently stopped or temporarily stopped (i.e., work will stop for 14 or more days), and all areas where stabilization has been implemented.

Stabilization Method
For each area, specify the method of stabilization (e.g., hydroseed, sod, planted vegetation, erosion control blanket, mulch, rock).

Have You Initiated Stabilization
For each area, indicate whether stabilization has been initiated.

Notes
For each area where stabilization has been initiated, describe the progress that has been made, and what additional actions are necessary to complete stabilization. Note the effectiveness of stabilization in preventing erosion. If stabilization has been initiated but not completed, make a note of the date it is to be completed. If stabilization has been completed, make a note of the date it was completed. If stabilization has not yet been initiated, make a note of the date it is to be initiated, and the date it is to be completed.

Instructions for Filling Out the "Description of Discharges" Table

You are only required to complete this section if a discharge is occurring at the time of the inspection.

Was a Stormwater Discharge Occurring From Any Part of Your Site At The Time of the Inspection?
During your inspection, examine all points of discharge from your site, and determine whether a discharge is occurring. If there is a discharge, answer "yes" and complete the questions below regarding the specific discharge. If there is not a discharge, answer "no" and skip to the next page.

Discharge Location (repeat as necessary if there are multiple points of discharge)
Location of discharge. Specify the location on your site where the discharge is occurring. The location may be an outlet from a stormwater control or constructed stormwater channel, a discharge into a storm sewer inlet, or a specific point on the site. Be as specific as possible; it is recommended that you refer to a precise point on your site map.

Describe the discharge. Include a specific description of any noteworthy characteristics of the discharge such as color; odor; floating, settled, or suspended solids; foam; oil sheen; and other obvious pollution indicators.

Are there visible signs of erosion or sediment accumulation? At each point of discharge and the channel and streambank in the immediate vicinity, visually assess whether there are any obvious signs of erosion and/or sediment accumulation that can be attributed to your discharge. If you answer "yes", include a description in the space provided of the erosion and sediment deposition that you have found, specify where on the site or in the surface water it is found, and indicate whether modification, maintenance, or corrective action is needed to resolve the issue.

Contractor or Subcontractor Certification and Signature (see reverse for instructions)
"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." **Signature of Contractor or Subcontractor:** ______________________________ **Date:** **Printed Name and Affiliation:** ______________________________

Certification and Signature by Permittee (see reverse for instructions)
"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." **Signature of Permittee or** **"Duly Authorized Representative":** ______________________________ **Date:** **Printed Name and Affiliation:** ______________________________

Instructions for Signature/Certification

Each inspection report must be signed and certified to be considered complete.

Contractor or Subcontractor Signature and Certification
Where a contractor or subcontractor is relied on to carry out the inspection and complete the inspection report, you should require the inspector to sign and certify each report. Note that this does not relieve the permitted operator of the requirement to sign and certify the inspection report as well.

Signature and Certification by Permittee
At a minimum, the inspection report must be signed by either (1) the person who signed the NOI, or (2) a duly authorized representative of that person. The following requirements apply to scenarios (1) and (2):

If the signatory will be the person who signed the NOI for permit coverage, as a reminder, that person must be one of the following types of individuals:

- *For a corporation*: A responsible corporate officer. For the purpose of this subsection, a responsible corporate officer means: (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
- *For a partnership or sole proprietorship*: A general partner or the proprietor, respectively.
- *For a municipality, state, federal, or other public agency*: Either a principal executive officer or ranking elected official. For purposes of this subsection, a principal executive officer of a federal agency includes (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator of EPA).

If the signatory will be a duly authorized representative, the following requirements must be met:

- The authorization is made in writing by the person who signed the NOI (see above);
- The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and
- The signed and dated written authorization is included in the SWPPP. A copy must be submitted to EPA, if requested.

Appendix E – Copy of Corrective Action Form

Corrective Action Report Form – Field Version

Purpose
This Corrective Action Report Form is designed to assist you in preparing corrective action reports for EPA's 2012 Construction General Permit (CGP). If you are covered under EPA's 2012 CGP, this form will enable you to create a corrective action report that complies with the minimum reporting requirements of Part 5.4 of the permit.

You are only required to fill out this form if one of the corrective action triggering conditions in Part 5.2.1 or 5.3 occurs on your site. Routine maintenance and repairs are generally not considered to be a corrective action triggering condition. Corrective actions are triggered only for specific, more serious conditions that are identified below in the "Overview of Corrective Action Requirements."

If you are covered under a state CGP, this form may be helpful in developing a report that can be used for that permit; however it will need to be modified to meet the specific requirements of the permit. If your permitting authority requires you to use a specific corrective action report form, you should not use this form.

Notes
While EPA has made every effort to ensure the accuracy of all instructions and guidance contained in the Corrective Action Report Form, the actual obligations of regulated construction activities are determined by the relevant provisions of the permit, not by the form. In the event of a conflict between the Corrective Action Report Form and any corresponding provision of the 2012 CGP, you must abide by the requirements in the permit. EPA welcomes comments on the Corrective Action Report Form at any time and will consider those comments in any future revision of this document. You may contact EPA for CGP-related inquiries at cgp@epa.gov.

Overview of Corrective Action Requirements
Construction operators covered under the 2012 CGP are required to conduct corrective actions and report on progress made in correcting the problem condition(s) in accordance with the following requirements:

Corrective Action Triggering Conditions (Parts 5.2.1 and 5.3)
Corrective action is required whenever any of the following conditions occur at your site:
- A required stormwater control was never installed, was installed incorrectly, or not in accordance with the requirements in Part 2 and/or 3;
- The stormwater controls (e.g., erosion and sediment controls or pollution prevention controls) that have been installed and maintained are not effective enough for the discharge to meet applicable water quality standards or applicable requirements in Part 3.1 of the permit;
- A Part 2.3.1 prohibited discharge has occurred or is occurring; or
- Any corrective actions required by EPA as a result of permit violations found during an inspection carried out under Part 4.2.

Deadlines for Completing Corrective Actions (Part 5.2.1)
You must complete corrective action (e.g., installing and making operational any new or modified control, correcting errors in installation, preventing, mitigating, or cleaning up spills or leaks making repairs) by no later than 7 calendar days from the time of discovery of the condition. If infeasible to complete the installation or repair within 7 calendar days, you must document why it is infeasible and document your schedule for completing the corrective action as soon as practicable.

Deadlines for Documenting Corrective Actions in a Report (Part 5.4)
You are required to complete a corrective action report for each of corrective action you take in accordance with the following deadlines.
- Within 24 hours of discovering the occurrence of a corrective action triggering condition, you must document the following:
  - The condition identified at your site;

- The nature of the condition identified; and
- The date and time of the condition identified and how it was identified

- Within 7 calendar days of discovering a triggering condition, you must document the following:
  - Any follow-up actions taken to review the design, installation, and maintenance of stormwater controls, including the dates such actions occurred;
  - A summary of stormwater controls modifications taken or to be taken, including a schedule of activities necessary to implement changes, and the date the modifications are completed or expected to be completed; and
  - Notice of whether SWPPP modifications are required as a result of the condition identified or corrective action.

Instructions for Using This Report Form
This Field Version of the Corrective Action Report Form is intended to be used in the field and filled out by hand. If you will be filling out the Corrective Action Report Form electronically (i.e., you will be typing in your findings), please use the Electronic Version of the Corrective Action Report Form available at www.epa.gov/npdes/stormwater/swppp. The Electronic Version includes text fields with instructions for what to enter.

The following tips for using this form will help you ensure that the minimum permit requirements are met:

- **Review the corrective action requirements.** Before you fill out this corrective action report form, read the CGP's Part 5 corrective action requirements. This will ensure that you have a working understanding of the permit's underlying corrective action requirements.

- **Complete a separate report for each condition that triggers corrective action.** For each triggering condition on your site, you will need to fill out a separate corrective action report form.

- **Complete all required text fields.** Fill out all text fields. Only by filling out all fields will the form be compliant with the requirements of the permit. (Note: Where you do not need the number of rows provided in the corrective action report form, you leave those rows blank. Or, if you need more space to document your findings, you may add an additional sheet.)

- **Sign and certify each corrective action report.** Each corrective action report form must be signed and certified by the permittee to be considered complete. Where your corrective actions are carried out by a contractor or subcontractor, it is recommended that you also have the form signed and certified by the inspector, in addition to the signature and certification required of the permitted operator. The form includes a signature block for both parties.

- **Include the corrective action report form with your SWPPP.** Once your form is complete, make sure to include a copy of the corrective action report form in your SWPPP in accordance with Part 7.2.12.4 of the CGP.

- **Retain copies of all corrective action reports with your records.** You must retain copies of your corrective action reports in your records in accordance with the requirements in Part 5.4.4 of the 2012 CGP. These reports must be retained for at least 3 years from the date your permit coverage expires or is terminated.

Section-by-Section Instructions
You will find specific instructions corresponding to each section of the report form on the reverse side of each page. These instructions were written in order to provide you with more details in terms of what EPA expects to be documented in these reports.

Section A – Initial Report (CGP Part 5.4.1) (Complete this section <u>within 24 hours</u> of discovering the condition that triggered corrective action)					
Name of Project		**CGP Tracking No.**		**Today's Date**	
Date Problem First Discovered		**Time Problem First Discovered**			
Name and Contact Information of Individual Completing this Form					

What site conditions triggered the requirement to conduct corrective action *(check the box that applies)*:

- ☐ A required stormwater control was never installed, was installed incorrectly, or not in accordance with the requirements in Part 2 and/or 3
- ☐ The stormwater controls that have been installed and maintained are not effective enough for the discharge to meet applicable water quality standards or applicable requirements in Part 3.1 of the permit
- ☐ A Part 2.3.1 prohibited discharge has occurred or is occurring
- ☐ EPA requires corrective action as a result of permit violations found during an EPA inspection carried out under Part 4.2

Provide a description of the problem:

Deadline for completing corrective action (*Enter date that is either: (1) no more than 7 calendar days after the date you discovered the problem, or (2) if it is infeasible to complete work within the first 7 days, enter the date that is as soon as practicable following the 7th day)*:

If your estimated date of completion falls after the 7-day deadline, explain (1) why you believe it is infeasible to complete work within 7 days, and (2) why the date you have established for making the new or modified stormwater control operational is the soonest practicable timeframe:

Section B – Corrective Action Progress (CGP Part 5.4.2)

(Complete this section <u>no later than 7 calendar days</u> after discovering the condition that triggered corrective action)

Section B.1 – Why the Problem Occurred

Cause(s) of Problem **(Add an additional sheet if necessary)**	**How This Was Determined and the Date You Determined the Cause**
1.	**1.**
2.	**2.**

Section B.2 – Stormwater Control Modifications to be Implemented to Correct the Problem

List of Stormwater Control Modification(s) Needed to Correct Problem **(Add an additional sheet if necessary)**	**Date of Completion**	**SWPPP Update Necessary?**	**Notes**
1.		☐Yes ☐No If yes, provide date SWPPP modified:	
2.		☐Yes ☐No If yes, provide date SWPPP modified:	

Instructions for Filling Out the Initial Report (Section A)

You must complete Section A of the report form within 24 hours of discovering the condition that triggered corrective action

Name of Project
Enter the name for the project.

CGP Tracking No.
Enter the tracking number that was assigned to your NOI application for permit coverage.

Today's Date
Enter the date you completed this form.

Date/Time Problem First Discovered
Specify the date on which the triggering condition was first discovered. Also specify the time of the discovery.

Name/Contact Information
Provide the individual's name, title, and contact information as directed in the form.

Site Condition That Triggered Corrective Action
Under the CGP, corrective action is required when one of 3 triggering conditions occurs at your site. See CGP Parts 5.2.1 and 5.3. Check the box that corresponds to the condition that triggered this corrective action.

Description of the Site Condition
Provide a summary description of the condition you found that triggered corrective action under CGP Part 5.2.1 and the specific location where it was found. Be as specific as possible about the location; it is recommended that you refer to a precise point on your site map. If you have already provided this explanation in an inspection report, you can refer to that report.

Deadline for Completing Corrective Action
This deadline is fixed in CGP Part 5.2.1. For all projects, the deadline is either: (1) no more than 7 calendar days after the date you discovered the problem, or (2) if it is infeasible to complete work within the first 7 days, as soon as practicable following the 7th day. If your estimated date of completion falls after the 7-day deadline consistent with (2), above, explain (a) why you believe it is infeasible to complete work within 7 days, and (b) why the date you have established for making the new or modified stormwater control operational is the soonest practicable timeframe:

Instructions for Filling Out the Corrective Action Progress Table (Section B)

You must complete Section B of the report form no later than 7 calendar days after discovering the condition that triggered corrective action.

Section B.1 – Why the Problem Occurred
After you have had the opportunity to examine the problem more closely, provide details as to what you believe to be the cause of the problem, and specify the follow-up actions you took (along with the dates of such actions) to diagnose the problem. This is consistent with CGP Part 5.4.2.1.

Section B.2 – Stormwater Control Modifications to be Implemented
Provide a list of modifications you plan to make to your stormwater controls to correct the problem and the date you completed such work. Keep in mind that your work must be completed within the timeline specified in Section A for the completion of corrective action work.

Also, if a SWPPP modification is necessary consistent with Part 7.4.1.1 in order to reflect changes implemented at your site, indicate the date you modified your SWPPP. Keep in mind that SWPPP changes must be made within 7 days of discovering the problem that triggered this corrective action.

Space is provided for you to include additional notes or observations regarding the change that you implemented at your site to correct the problem.

Section C – Certification and Signature (CGP Part 5.4.3)
Section C.1 – Certification and Signature by Contractor or Subcontractor

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature of Contractor or Subcontractor: ____ **Date:**

Printed Name and Affiliation: ____

Section C.2 – Certification and Signature by Permittee

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature of Permittee or
"Duly Authorized Representative": ____ **Date:**

Printed Name and Affiliation: ____

Instructions for Signature and Certification (Section C)

Each corrective action report must be signed and certified to be considered complete.

Section C.1 – Contractor or Subcontractor Signature and Certification
Where a contractor or subcontractor is relied on to complete this report and the associated corrective action, you should require the individual(s) to sign and certify each report. Note that this does not relieve you of the requirement to sign and certify the report as well.

Section C.2 – Signature and Certification by Permittee
At a minimum, the corrective action report form must be signed by either (1) the person who signed the NOI, or (2) a duly authorized representative of that person. The following requirements apply to scenarios (1) and (2):

If the signatory will be the person who signed the NOI for permit coverage, as a reminder, that person must be one of the following types of individuals:

- *For a corporation*: A responsible corporate officer. For the purpose of this subsection, a responsible corporate officer means: (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
- *For a partnership or sole proprietorship*: A general partner or the proprietor, respectively.
- *For a municipality, state, federal, or other public agency*: Either a principal executive officer or ranking elected official. For purposes of this subsection, a principal executive officer of a federal agency includes (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator of EPA).

If the signatory will be a duly authorized representative, the following requirements must be met:

- The authorization is made in writing by the person who signed the NOI (see above);
- The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and
- The signed and dated written authorization is included in the SWPPP. A copy must be submitted to EPA, if requested.

Appendix F – SWPPP Amendment Log

No.	Description of the Amendment	Date of Amendment	Amendment Prepared by [Name(s) and Title]

Appendix G – Subcontractor Certifications/Agreements

SUBCONTRACTOR CERTIFICATION
STORMWATER POLLUTION PREVENTION PLAN

Project Number: ____

Project Title: 24 South Hunt Road, Amesbury, MA___________________________________

Operator(s): **contractor to be determined**____

As a subcontractor, you are required to comply with the Stormwater Pollution Prevention Plan (SWPPP) for any work that you perform on-site. Any person or group who violates any condition of the SWPPP may be subject to substantial penalties or loss of contract. You are encouraged to advise each of your employees working on this project of the requirements of the SWPPP. A copy of the SWPPP is available for your review at the office trailer.

Each subcontractor engaged in activities at the construction site that could impact stormwater must be identified and sign the following certification statement:

I certify under the penalty of law that I have read and understand the terms and conditions of the SWPPP for the above designated project and agree to follow the practices described in the SWPPP.

This certification is hereby signed in reference to the above named project:

Company: ____

Address: ____

Telephone Number: ____________________________

Type of construction service to be provided: ____

____

____

Signature: ________________________________

Title: ________________________________

Date: ________________________________

Appendix H – Grading and Stabilization Activities Log

Date Grading Activity Initiated	**Description of Grading Activity**	**Description of Stabilization Measure and Location**	**Date Grading Activity Ceased** (Indicate Temporary or Permanent)	**Date When Stabilization Measures Initiated**
			INSERT DATE ☐ Temporary ☐ Permanent	INSERT DATE
			INSERT DATE ☐ Temporary ☐ Permanent	INSERT DATE
			INSERT DATE ☐ Temporary ☐ Permanent	INSERT DATE
			INSERT DATE ☐ Temporary ☐ Permanent	INSERT DATE
			INSERT DATE ☐ Temporary ☐ Permanent	INSERT DATE
			INSERT DATE ☐ Temporary ☐ Permanent	INSERT DATE
			INSERT DATE ☐ Temporary ☐ Permanent	INSERT DATE
			INSERT DATE ☐ Temporary ☐ Permanent	INSERT DATE

Appendix I – SWPPP Training Log

Stormwater Pollution Prevention Training Log

Project Name: **26 Middleton Rd, Boxford, MA**

Project Location: **26 Middleton Rd, Boxford, MA**

Instructor's Name(s):

Instructor's Title(s):

Course Location: ______________________________ Date: ________________

Course Length (hours): ________________________

Stormwater Training Topic: *(check as appropriate)*

- ☐ **Sediment and Erosion Controls**
- ☐ **Stabilization Controls**
- ☐ **Pollution Prevention Measures**
- ☐ **Emergency Procedures**
- ☐ **Inspections/Corrective Actions**

Specific Training Objective:____

____

Attendee Roster: *(attach additional pages as necessary)*

No.	Name of Attendee	Company
1		
2		
3		
4		
5		
6		
7		
8		

Appendix J – Delegation of Authority Form

Delegation of Authority

I, ______________________ (name), hereby designate the person or specifically described position below to be a duly authorized representative for the purpose of overseeing compliance with environmental requirements, including the Construction General Permit (CGP), at the ___________________________________ construction site. The designee is authorized to sign any reports, stormwater pollution prevention plans and all other documents required by the permit.

_______________________________________ (name of person or position)
_______________________________________ (company)
_______________________________________ (address)
_______________________________________ (city, state, zip)
_______________________________________ (phone)

By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in Appendix I of EPA's CGP, and that the designee above meets the definition of a "duly authorized representative" as set forth in Appendix I.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: ____

Company: ____

Title: ____

Signature: ____

Date: ____

Appendix K – Endangered Species Documentation

<BOL>Path:</BOL> \\wse03.local\WSE\Depts\Water\Water Resources Group\GIS - Constraints Mapping\Boxford\Harry Lee Cole School & Spofford Pond School\26 Middleton Road\NHESP.mxd <BOL>User:</BOL> GasparA <BOL>Saved:</BOL> 3/18/2020 8:37:24 AM <BOL>Opened:</BOL> 1/27/2021 9:49:39 AM

N
W E
S
300 150 0 300
Feet

Data Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs

Legend

Harry Lee Cole School

NHESP Habitats

NHESP Estimated Habitats of Rare Wildlife

NHESP Priority Habitats of Rare Species

NHESP Certified Vernal Pools

NHESP Potential Vernal Pools

FIGURE 1

Harry Lee Cole School
Boxford, MA

NHESP Map

Weston & Sampson

Appendix L – Historic Properties Documentation

<BOL>Path:</BOL> \\wse03.local\WSE\Depts\Water\Water Resources Group\GIS - Constraints Mapping\Boxford\Harry Lee Cole School & Spofford Pond School\26 Middleton Road\NHESP.mxd <BOL>User:</BOL> GasparA <BOL>Saved:</BOL> 3/18/2020 8:37:24 AM <BOL>Opened:</BOL> 1/27/2021 9:52:33 AM

Data Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs

Legend

Harry Lee Cole School

State Registry of Historic Places

FIGURE 1

Harry Lee Cole School
Boxford, MA

Historic Places Map

Weston & Sampson

Appendix C

AFFIDAVIT OF SERVICE

Under the Town of Boxford Stormwater Management Regulations

I, Alexandra Gaspar, hereby certify under the Pains and Penalties of Perjury that on February 4, 2021 I gave notification to abutters in compliance with Chapter 295-5(D) of the Town of Boxford Stormwater Management Regulations, in connection with the following matter:

A Stormwater Management permit has been filed under the Town of Boxford Chapter 295 Stormwater Management Regulations by the Town of Boxford with the Boxford Conservation Commission on February 4, 2021 for property located at Harry Lee Cole School off of Middleton Road in Boxford.

The completed notification and a list of the abutters to whom it was given and their addresses, are attached to this Affidavit of Service.

February 4, 2021

Name: Alexandra Gaspar DATE

Title: Environmental Scientist

Organization: Weston & Sampson Engineers, Inc

Notification to Abutters Under the Town of Boxford Stormwater Management Regulations

In accordance with the Town of Boxford Stormwater Management Regulations Chapter 295-5 Section D, you are hereby notified of the following:

A. The name of the applicant is: Town of Boxford
28 Middleton Road
Boxford, MA 01921

B. The name of the owner is: Same as above

C. The applicant has filed a Stormwater Management Permit with the Boxford Conservation Commission seeking permission to alter an Area Subject to Protection under the Town of Boxford Stormwater Management Regulations (Chapter 295-5, Section D). The Work includes the parking lot improvements at the Harry Lee Cole School.

D. The address of the lot(s) where the activity is proposed: 28 Middleton Road, Boxford, MA 01921

E. Copies of the Notice of Intent may be examined by contacting the Boxford Conservation Commission at 7A Spofford Road Boxford, MA 01921, (978) 887-6000 ext.181 between the hours of 8:30 AM and 2:00 PM on Monday – Thursday. For more information call the Boxford Conservation Commission at (978) 887-6000 ext.181.

F. Information regarding the project, date, time and place of the public hearing may be obtained from Weston & Sampson Engineers, by contacting Alexandra Gaspar at 978-532-1900 between the hours of 8:00 – 5:00 on the following days of the week: Monday – Friday or the Boxford Conservation Commission at (978) 887-6000 ext.181. between the hours of 8:30 AM and 2:00 PM on Monday – Thursday.

NOTE: Notice of the public hearing, including its date, time, and place, will be published at least five (5) days prior to the hearing date in the Tri Town Transcript Newspaper.

NOTE: Notice of the meeting of the Conservation Commission, including its date, time and place will be posted in the Town Hall not less than forty-eight (48) hours in advance of the meeting.

NOTE: You also may contact your local Conservation Commission for more information about this application

32-01-21 - 28 MIDDLETON RD, BOXFORD ABUTTERS LIST
CONSERVATION 250'

Map/Lot	Location	Owner	Owner 2	Owner Address	Owner City/Town	Owner State	Zip Code
28-02-17-1	MIDDLETON RD	TOWN OF BOXFORD		7A SPOFFORD RD	BOXFORD	MA	01921
32-01-15	18 MIDDLETON RD	SMART THOMAS M	SMART PATRICA E	18 MIDDLETON RD	BOXFORD	MA	01921
32-01-16	24 MIDDLETON RD	BENSON DAVID F	BENSON PATRICIA N	24 MIDDLETON RD	BOXFORD	MA	01921
32-01-17	CARR WAY	TOWN OF BOXFORD		7A SPOFFORD RD	BOXFORD	MA	01921
32-01-20	29 MIDDLETON RD	LAROCHE MARK	MCGOVERN MARGARET	29 MIDDLETON RD	BOXFORD	MA	01921
32-01-21	28 MIDDLETON RD	TOWN OF BOXFORD		7A SPOFFORD RD	BOXFORD	MA	01921
32-01-22	27 MAIN ST	RUSSELL, GORDON		31 MAIN ST	BOXFORD	MA	01921
32-01-23	31 MAIN ST	RUSSELL, GORDON		31 MAIN ST	BOXFORD	MA	01921
32-01-24	25 MAIN ST	CUGINI DAVID J TE	RUDDY-CUGINI DENISE A	25 MAIN ST	BOXFORD	MA	01921
32-01-09	13 MAIN ST	ADAMS JOHN N TE	ADAMS MARGARET W	13 MAIN ST	BOXFORD	MA	01921
32-02-25	34 MAIN ST	LORANGER DANIEL D. TE	LORANGER ROSEMARY M.	34 MAIN ST	BOXFORD	MA	01921
32-02-06	40 MIDDLETON RD	TOWN OF BOXFORD		7A SPOFFORD RD	BOXFORD	MA	01921
32-02-07	3 MILL RUN RD	SADACCA TR, ROBERT A	SADACCA TR, JUDITH C	3 MILL RUN RD	BOXFORD	MA	01921
32-03-13	46 MAIN ST	OLDAKOWSKI PATRICIA A TR	46 MAIN STREE REALTY TRUST	PO BOX 341	BOXFORD	MA	01921
32-03-14	43 MIDDLETON RD	MULVEY EDWARD J JR	MULVEY CHERYL A	43 MIDDLETON RD	BOXFORD	MA	01921
32-03-26	COR MAIN & MIDDLETON RD	TOWN OF BOXFORD		7A SPOFFORD RD	BOXFORD	MA	01921

Kristin Hanlon

CERTIFIED COPY
1/26/2021