FULLER ENGINEERING & LAND SURVEYING, LLC
525 John Street • Second Floor
Bridgeport, CT 06604
(203) 333-9465 (203) 336-1769 FAX

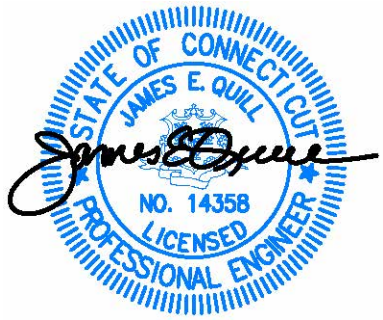
ENGINEERING REPORT

Project Name:

Madison Place
Luxury Townhouse Development
18 Powerhouse Road &
145 CT Route 32
Montville, CT

Information prepared for:

JNE Holdings, LLC
&
Town of Montville
Department of Public Works / Engineering Department



Dated: January 11 February 2025
Revised 31 March 2025

FULLER ENGINEERING & LAND SURVEYING, LLC
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STORMWATER STUDY

APPLICANT: JNE HOLDINGS, LLC

PROJECT LOCATION: WILTONS WAY 18 Powerhouse Road & 145 Route 32, Montville, Connecticut

INTRODUCTION

The proposed project consists of the merger of two parcels into one lot consisting of 110,146 S.F.:

145 CT Route 23
Site Area: 59,415 S.F.
One existing 4 family residential unit.

18 Powerhouse Road
Site Area 50,731 S.F.
One existing 2 family residential unit.

The proposed project is anticipated to be constructed in three phases.

DRAINAGE STUDY

NARRATIVE

The subject of this report is a 1.337-(disturbed area) acre portion of a parcel located at 145 Route 32 in Montville, constituting Phase 1 of the proposed project. The purpose of this report is to determine the existing and proposed runoffs resulting from the proposed site improvements in order to design a stormwater management system.

MODIFICATIONS TO THIS REPORT

The previous drainage report revised through March 7, 2025 analyzed the drainage areas into two separate phases. Based on comments from the Town Engineer, this report has been restructured into two overall drainage basins:

1. Basin 'A' - The largest watershed area which flows to the east and consists primarily of the proposed development
2. Basin 'B' - The smaller watershed area flowing toward CT Route 32.

The individual phase calculations have been eliminated from this report and replaced by analysis of Basins 'A', and 'B' individual watersheds. Basin 'A' now merges and analyzes Phase 1 and Phase 2 together through the 'Combined' portion of the analysis.

PRE-DEVELOPMENT CONDITIONS

The subject parcel is located on the west side of Route 32, at its intersection with Powerhouse Road. The lot currently contains buildings and a driveway. There are two watershed basins on the property, one draining to the west and Route 32 and the other to the east.

Existing soils at this location, as identified in the NRCS Soil Survey of Fairfield County, Connecticut, consist of Narragansett silt loam, 2 to 8 percent slopes, which has a Hydrologic classification of "B".

The existing runoff from a 100-Year rainfall event in Basin A is 10.90 c.f.s.
The existing runoff from a 100-Year rainfall event in Basin B is 3.06 c.f.s.

PROPOSED POST-DEVELOPMENT CONDITIONS

The following computations of the existing and proposed conditions runoff flows were derived from the HydroCAD computer software. HydroCAD follows the NRCS TR-20 procedure for computing stormwater runoff. Computations were performed for a 100-year storm event, which has a 2% chance of occurring in any given 12 month period.

CALCULATIONS

The following computations of the existing and proposed conditions runoff flows were derived from the HydroCAD computer software. HydroCAD follows the NRCS TR-20 procedure for computing stormwater runoff. Computations were performed for a 50-year storm event, which has a 2% chance of occurring in any given 12 month period.

BASIN 'A'

Existing Conditions (Basin A):

House	1,382 s.f.	CN 98
Driveway	1,696 s.f.	CN 98
Garage	764 s.f.	CN 98
Concrete Slab	246 s.f.	CN 98
Shed	373 s.f.	CN 98
Walks	221 s.f.	CN 98
House Basin B	200 s.f.	CN 98
Driveway Basin B	1,169 s.f.	CN 98
Lawn	2,223 s.f.	CN 69
Total	8,274 s.f.	

Weighted CN - 71

Proposed Conditions (Basin A):

Buildings	14,182 s.f.	CN 98
Driveway/Parking	16,150 s.f.	CN 98
Lawn	58,665 s.f.	CN 69
Total	88,997 s.f.	

Weighted CN - **79**

Groundwater Recharge Volume (GWV) Basin A:

Impervious area = 34.1 %

WQV = (0.3569 * 2.043 ac)/12 x 1.3 = 0.0789908 ac-ft = 3,440.8 ft^3

GWV = 3,440.8 * 0.25 = 860.2 ft^3

BASIN 'B'

Existing Conditions (Basin B):

House	1,659 s.f.	CN 98
Driveway	1,934 s.f.	CN 98
Gravel	836 s.f.	CN 85
Walks	196 s.f.	CN 98
Lawn	16,768 s.f.	CN 69
Total	21,393 s.f.	

Weighted CN - **75**

Proposed Conditions (Basin B):

House	1,659 s.f.	CN 98
Building	1,046 s.f.	CN 98
Driveway	1,271 s.f.	CN 98
Lawn	16,694 s.f.	CN 69
Total -	20,670 s.f.	

Weighted CN - **75**

SUMMARY Basin A:

	100 Year	50 Year	25Yr.	10Yr.	5Yr.	2Yr.
Existing Runoff :	10.90	9.19 c.f.s	7.53	5.43	3.97	2.36
Proposed Runoff :	12.83	11.07 c.f.s.	9.33	7.08	5.48	3.62
Runoff Retained:	4.03	3.59 c.f.s.	3.16	2.59	2.19	1.70
Areas Bypassing Retention Plus overflow:	8.57	7.40 c.f.s.	6.10	4.46	3.32	2.03

SUMMARY Basin B:

	100 Year	50 Year	25Yr.	10Yr.	5Yr.	2Yr.
Existing Runoff :	3.06	2.61 c.f.s	2.17	1.61	1.21	0.76
Proposed Runoff :	2.95	2.52 c.f.s.	2.10	1.55	1.17	0.74

CONCLUSION:

The increased runoff resulting from the proposed site improvements will be retained in an on-site retention system. The runoff from the driveway and the roof of the northern building in Basin A will be routed to a total of 268 linear feet of 48" concrete galleries. The galleries consist of two sets, the 108 linear feet to mitigate the Phase 1 of construction and the set of 160 linear feet for the remainder in Basin A. The increase in stormwater runoff is mitigated on-site.

This system will reduce the net peak run-off during a 100 Year (2%) rainfall event in Basin A to 5.21 c.f.s. from its current peak of 6.06 c.f.s.

The bottom of the eastern set of concrete galleries will be at elevation 98.6. No restrictive layer was found to an elevation of 97.0. The bottom of the western set of concrete galleries will be at elevation 93.9. No restrictive layer was found to an elevation of 92.0.

The proposed retention system in Basin A provides a total of 4,421 ft3 of storage, which will be adequate to maintain the net runoff during a 100 Year rainfall event, meets the Water Quality Volume and will provide groundwater recharge.

SOIL EROSION AND SEDIMENTATION CONTROL (All Phases)

For temporary condition or during construction a silt fence shall be provided along the property lines. Anti-tracking aprons shall be provided at all access routes from the site to the public road. A temporary diversion berm with stone check dams @ 50 ft o.c. shall be maintained and

relocated as required during construction. All planting areas shall be protected with slope stabilization measures.

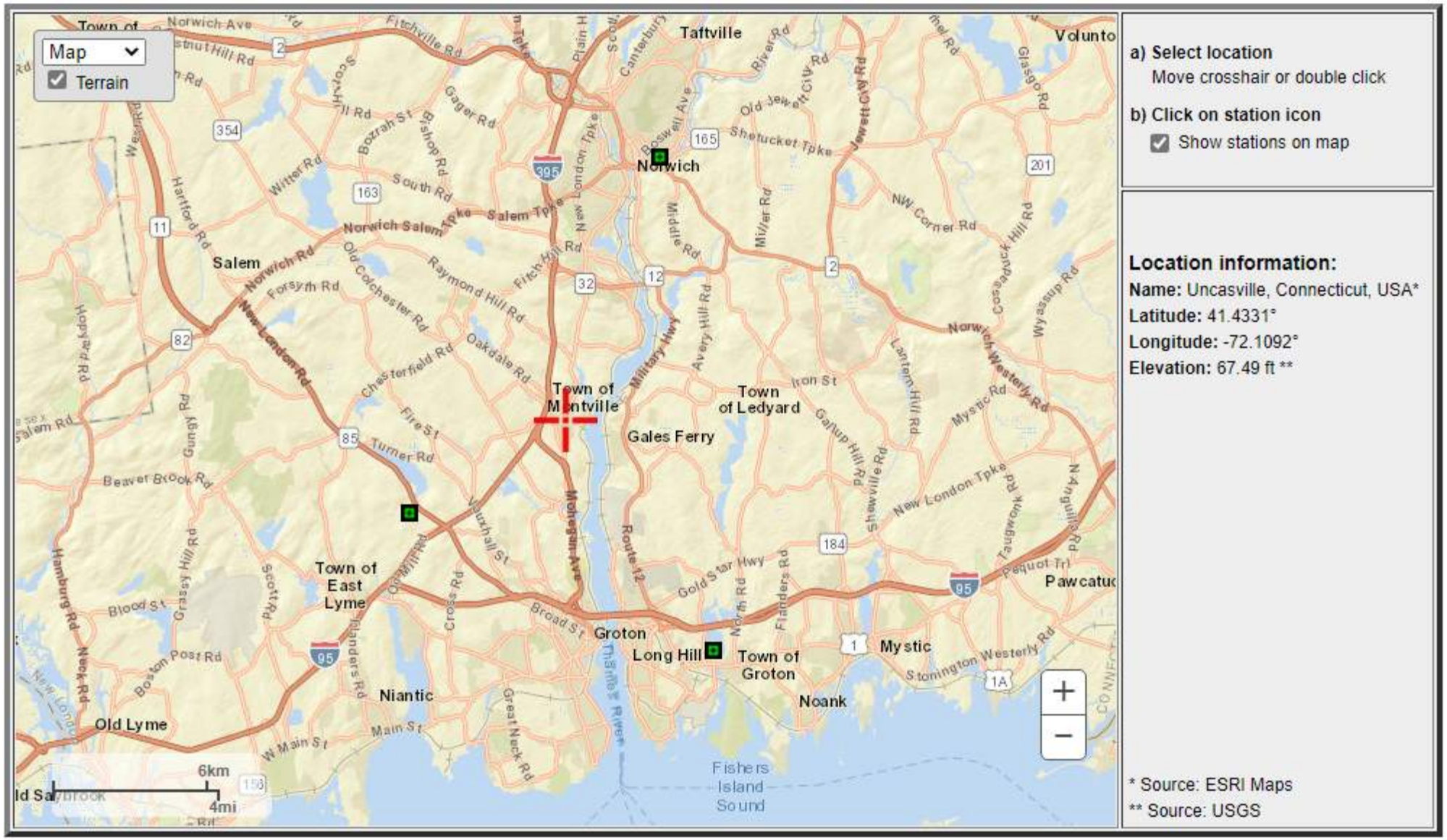
For permanent condition, all embankments, after being stabilized, shall be seeded to lawn or seed mixture as specified. Newly planted areas shall be covered with straw or erosion control blankets.

APPENDIX "A"

MONTVILLE PRECIPITATION FREQUENCY (PF) RAINFALL DATA

NOAA ATLAS 14 POINT PRECIPITATION FREQUENCY ESTIMATES: CT

#245 Norwich New London Road (CT State RTE. 32) Montville, CT



NOAA Atlas 14, Volume 10, Version 3
Location name: Uncasville, Connecticut, USA*
Latitude: 41.4331°, Longitude: -72.1092°
Elevation: 67.49 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.340** (0.266-0.427)	**0.406** (0.317-0.510)	**0.514** (0.400-0.648)	**0.604** (0.467-0.763)	**0.727** (0.545-0.952)	**0.820** (0.601-1.09)	**0.918** (0.654-1.26)	**1.03** (0.693-1.43)	**1.19** (0.770-1.70)	**1.32** (0.835-1.91)
10-min	**0.482** (0.377-0.605)	**0.576** (0.449-0.723)	**0.729** (0.567-0.918)	**0.856** (0.662-1.08)	**1.03** (0.772-1.35)	**1.16** (0.853-1.55)	**1.30** (0.926-1.78)	**1.46** (0.982-2.02)	**1.68** (1.09-2.40)	**1.87** (1.18-2.71)
15-min	**0.567** (0.443-0.712)	**0.677** (0.529-0.851)	**0.857** (0.667-1.08)	**1.01** (0.779-1.27)	**1.21** (0.908-1.59)	**1.37** (1.00-1.82)	**1.53** (1.09-2.10)	**1.71** (1.16-2.38)	**1.98** (1.28-2.83)	**2.20** (1.39-3.19)
30-min	**0.803** (0.627-1.01)	**0.958** (0.747-1.20)	**1.21** (0.942-1.53)	**1.42** (1.10-1.80)	**1.71** (1.28-2.24)	**1.93** (1.41-2.57)	**2.16** (1.54-2.96)	**2.42** (1.63-3.36)	**2.79** (1.81-3.99)	**3.10** (1.96-4.50)
60-min	**1.04** (0.811-1.30)	**1.24** (0.966-1.56)	**1.57** (1.22-1.97)	**1.84** (1.42-2.32)	**2.21** (1.66-2.89)	**2.49** (1.83-3.32)	**2.79** (1.99-3.82)	**3.12** (2.10-4.34)	**3.61** (2.34-5.15)	**4.01** (2.53-5.81)
2-hr	**1.36** (1.08-1.70)	**1.63** (1.28-2.03)	**2.05** (1.61-2.57)	**2.41** (1.88-3.02)	**2.90** (2.19-3.77)	**3.26** (2.41-4.31)	**3.65** (2.62-4.97)	**4.10** (2.78-5.65)	**4.75** (3.09-6.72)	**5.28** (3.36-7.59)
3-hr	**1.58** (1.25-1.96)	**1.89** (1.49-2.34)	**2.38** (1.88-2.96)	**2.79** (2.19-3.48)	**3.35** (2.54-4.34)	**3.78** (2.81-4.97)	**4.22** (3.05-5.73)	**4.74** (3.22-6.50)	**5.49** (3.59-7.74)	**6.12** (3.90-8.75)
6-hr	**2.01** (1.60-2.47)	**2.39** (1.90-2.94)	**3.00** (2.39-3.70)	**3.51** (2.78-4.35)	**4.22** (3.22-5.41)	**4.75** (3.55-6.19)	**5.30** (3.85-7.13)	**5.95** (4.07-8.08)	**6.89** (4.52-9.61)	**7.67** (4.91-10.9)
12-hr	**2.48** (2.00-3.02)	**2.94** (2.36-3.59)	**3.69** (2.96-4.52)	**4.31** (3.44-5.30)	**5.17** (3.98-6.58)	**5.81** (4.38-7.52)	**6.49** (4.74-8.65)	**7.28** (5.00-9.80)	**8.42** (5.55-11.6)	**9.37** (6.02-13.2)
24-hr	**2.90** (2.36-3.51)	**3.46** (2.80-4.18)	**4.36** (3.53-5.30)	**5.12** (4.11-6.24)	**6.15** (4.77-7.77)	**6.93** (5.26-8.89)	**7.75** (5.71-10.3)	**8.71** (6.02-11.6)	**10.1** (6.71-13.9)	**11.3** (7.31-15.7)
2-day	**3.25** (2.66-3.89)	**3.91** (3.20-4.69)	**4.99** (4.06-6.00)	**5.88** (4.77-7.11)	**7.12** (5.57-8.92)	**8.03** (6.15-10.3)	**9.02** (6.71-11.9)	**10.2** (7.09-13.5)	**12.0** (7.97-16.3)	**13.5** (8.75-18.6)
3-day	**3.52** (2.90-4.20)	**4.23** (3.48-5.06)	**5.40** (4.43-6.47)	**6.37** (5.19-7.66)	**7.70** (6.06-9.62)	**8.69** (6.69-11.0)	**9.76** (7.29-12.8)	**11.0** (7.70-14.5)	**13.0** (8.66-17.5)	**14.6** (9.51-20.0)
4-day	**3.78** (3.12-4.50)	**4.53** (3.74-5.39)	**5.75** (4.73-6.87)	**6.77** (5.53-8.12)	**8.17** (6.45-10.2)	**9.21** (7.11-11.7)	**10.3** (7.73-13.5)	**11.7** (8.15-15.3)	**13.7** (9.16-18.4)	**15.4** (10.0-21.0)
7-day	**4.50** (3.75-5.33)	**5.32** (4.43-6.30)	**6.66** (5.52-7.90)	**7.77** (6.40-9.26)	**9.30** (7.38-11.5)	**10.4** (8.10-13.1)	**11.7** (8.75-15.1)	**13.1** (9.20-17.0)	**15.2** (10.2-20.3)	**17.0** (11.1-23.1)
10-day	**5.22** (4.37-6.15)	**6.08** (5.08-7.16)	**7.48** (6.22-8.83)	**8.64** (7.14-10.2)	**10.2** (8.16-12.5)	**11.4** (8.90-14.2)	**12.7** (9.55-16.3)	**14.2** (9.99-18.4)	**16.3** (11.0-21.6)	**18.0** (11.8-24.3)
20-day	**7.42** (6.26-8.66)	**8.33** (7.03-9.74)	**9.83** (8.25-11.5)	**11.1** (9.23-13.0)	**12.8** (10.2-15.4)	**14.1** (11.0-17.2)	**15.4** (11.5-19.3)	**16.8** (11.9-21.5)	**18.7** (12.7-24.6)	**20.1** (13.3-26.9)
30-day	**9.25** (7.85-10.7)	**10.2** (8.65-11.9)	**11.8** (9.92-13.7)	**13.0** (10.9-15.3)	**14.8** (11.9-17.7)	**16.2** (12.7-19.6)	**17.5** (13.1-21.7)	**18.9** (13.5-24.0)	**20.5** (14.0-26.8)	**21.7** (14.4-28.9)
45-day	**11.5** (9.82-13.3)	**12.5** (10.7-14.5)	**14.1** (12.0-16.4)	**15.5** (13.1-18.0)	**17.4** (14.0-20.7)	**18.9** (14.8-22.7)	**20.3** (15.2-24.8)	**21.5** (15.4-27.2)	**23.0** (15.7-29.9)	**24.0** (15.9-31.7)
60-day	**13.4** (11.5-15.4)	**14.4** (12.3-16.6)	**16.2** (13.8-18.7)	**17.6** (14.9-20.4)	**19.6** (15.8-23.1)	**21.1** (16.6-25.3)	**22.6** (16.9-27.5)	**23.8** (17.1-30.0)	**25.2** (17.3-32.6)	**26.1** (17.4-34.3)

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

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

Please refer to NOAA Atlas 14 document for more information.

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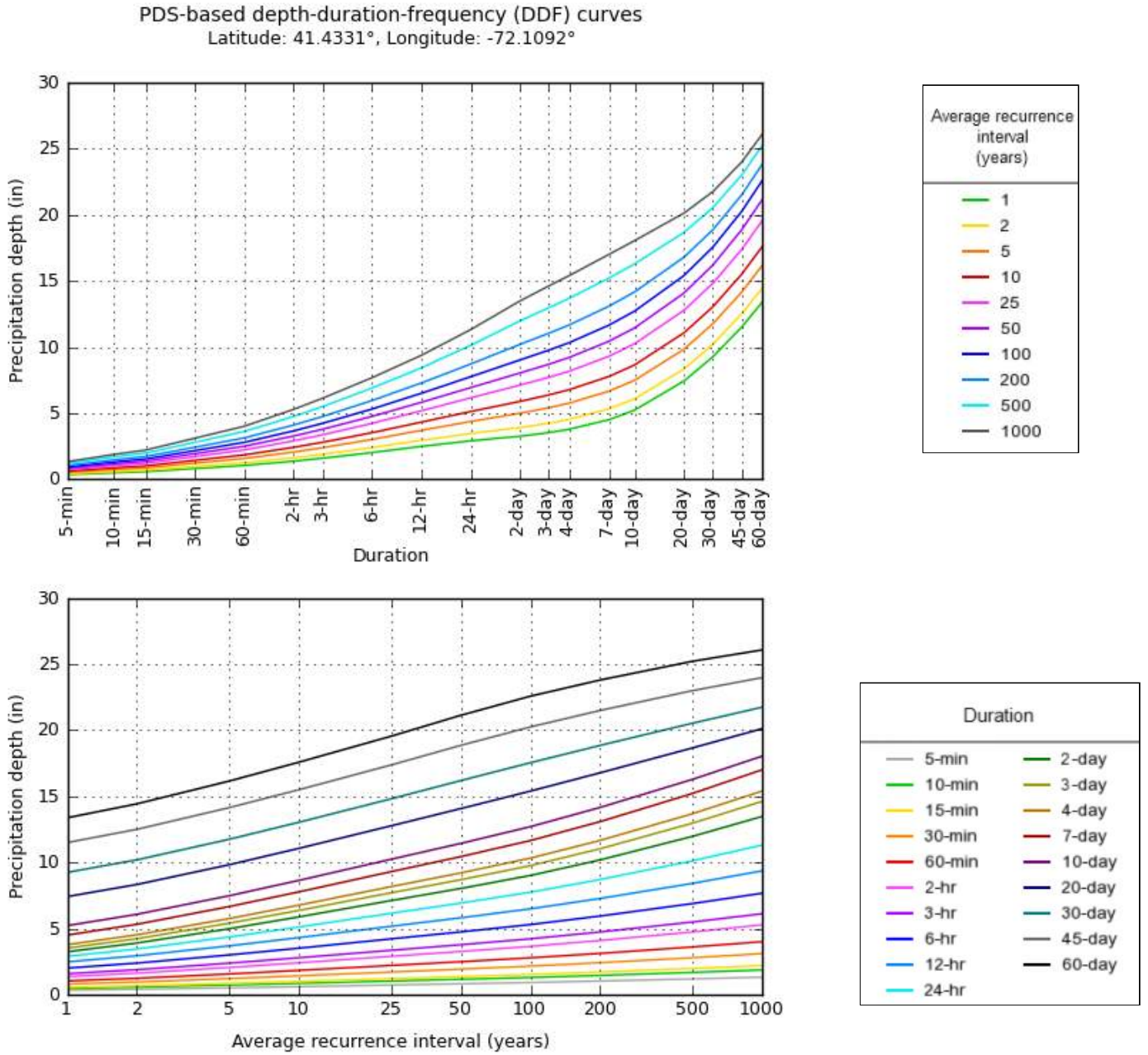
PF graphical



NOAA Atlas 14, Volume 10, Version 3

Created (GMT): Thu Jan 20 18:50:23 2022

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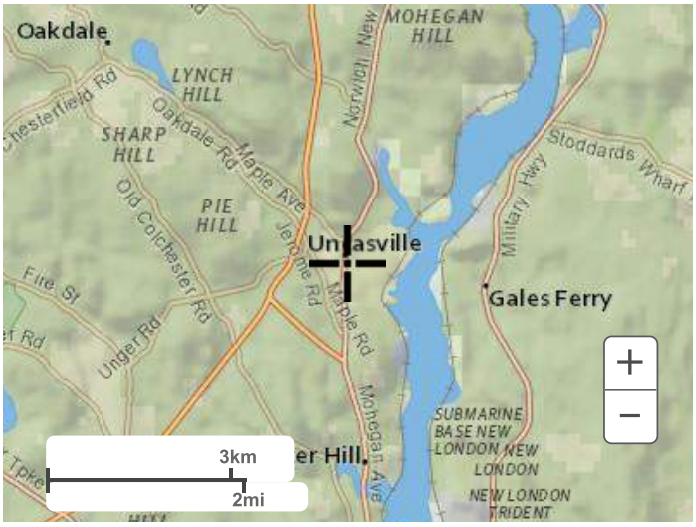
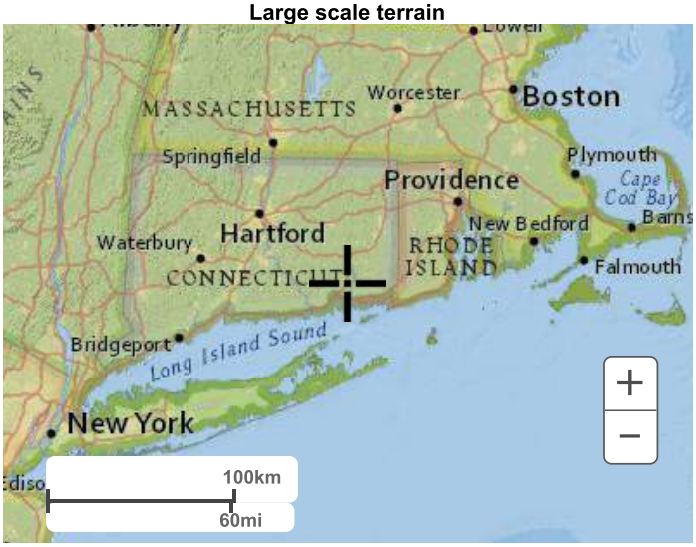
Maps & aerials

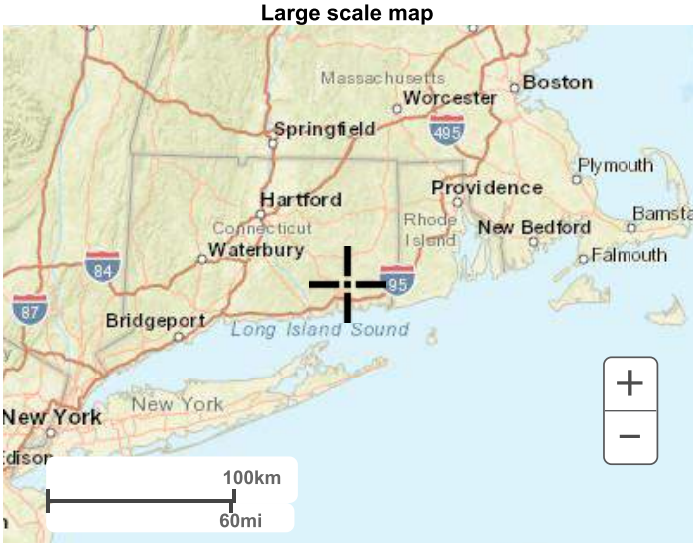
Small scale terrain



Large scale terrain



Large scale map



Large scale aerial

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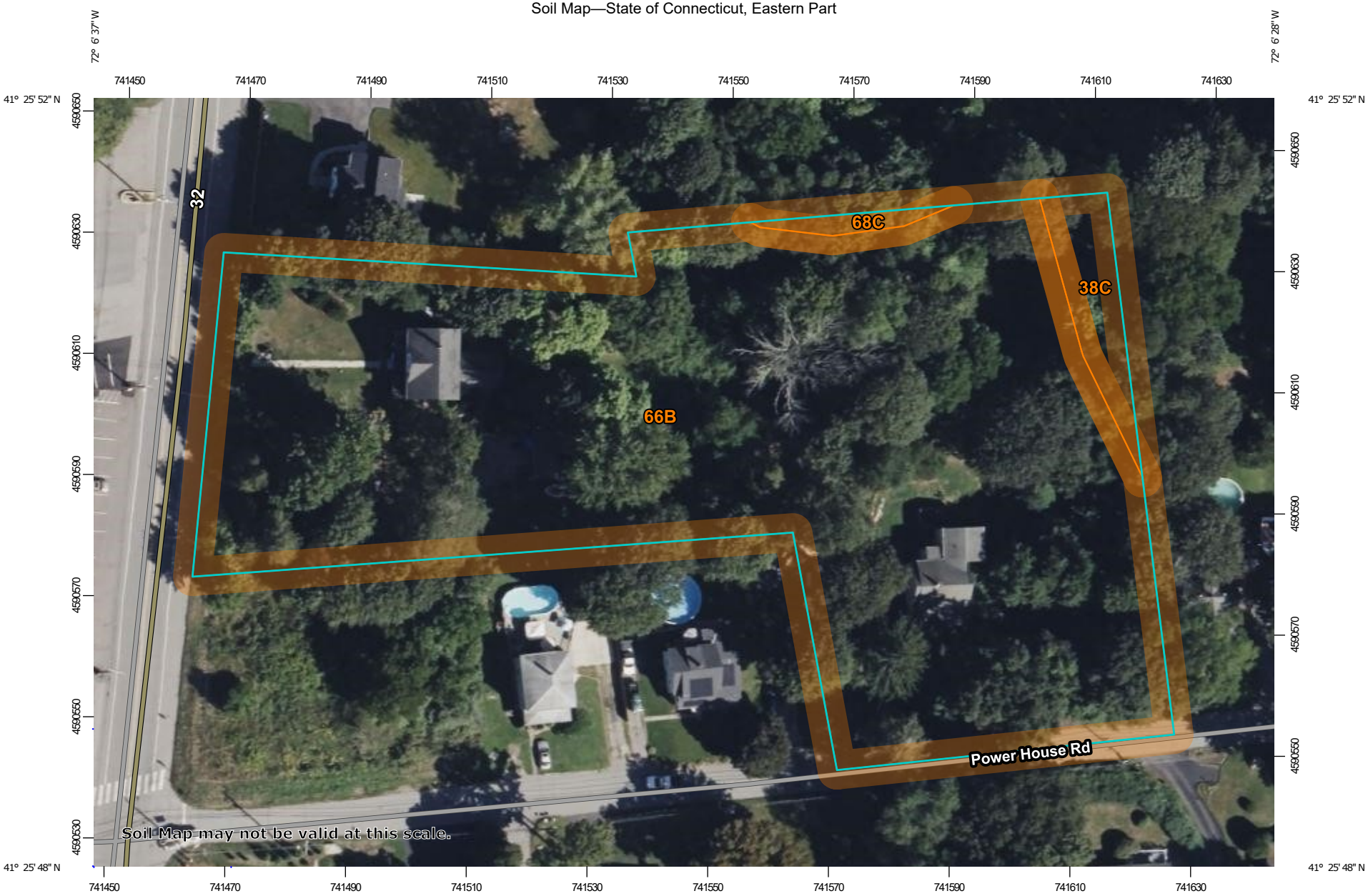
US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

APPENDIX “B”

NRCS SOIL MAP AND HYDROLOGIC SOIL GROUP RATINGS



Map Scale: 1:894 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 10 20 40 60

Feet
0 40 80 160 240

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

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

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

Special Point Features

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

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut, Eastern Part
Survey Area Data: Version 2, Aug 30, 2024

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

Date(s) aerial images were photographed: Jun 14, 2022—Oct 6, 2022

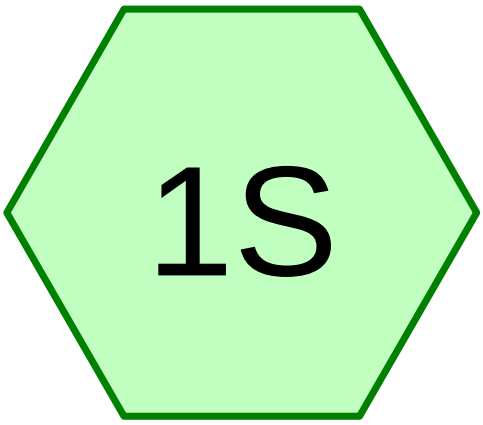
The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
38C	Hinckley loamy sand, 3 to 15 percent slopes	0.1	3.2%
66B	Narragansett silt loam, 2 to 8 percent slopes	2.4	96.0%
68C	Narragansett silt loam, 3 to 15 percent slopes, extremely stony	0.0	0.7%
Totals for Area of Interest		**2.5**	**100.0%**

APPENDIX "C"

HydroCAD Analysis
Basin A
Powerhouse Road



Existing Conditions Basin A Powerhouse Road

Subcat Reach Pond Link

Routing Diagram for 2578Existing
Prepared by Fairfield County Engineering LLC, Printed 3/31/2025
HydroCAD® 10.00-26 s/n 06020 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 1S: Existing Conditions Basin A Powerhouse Road

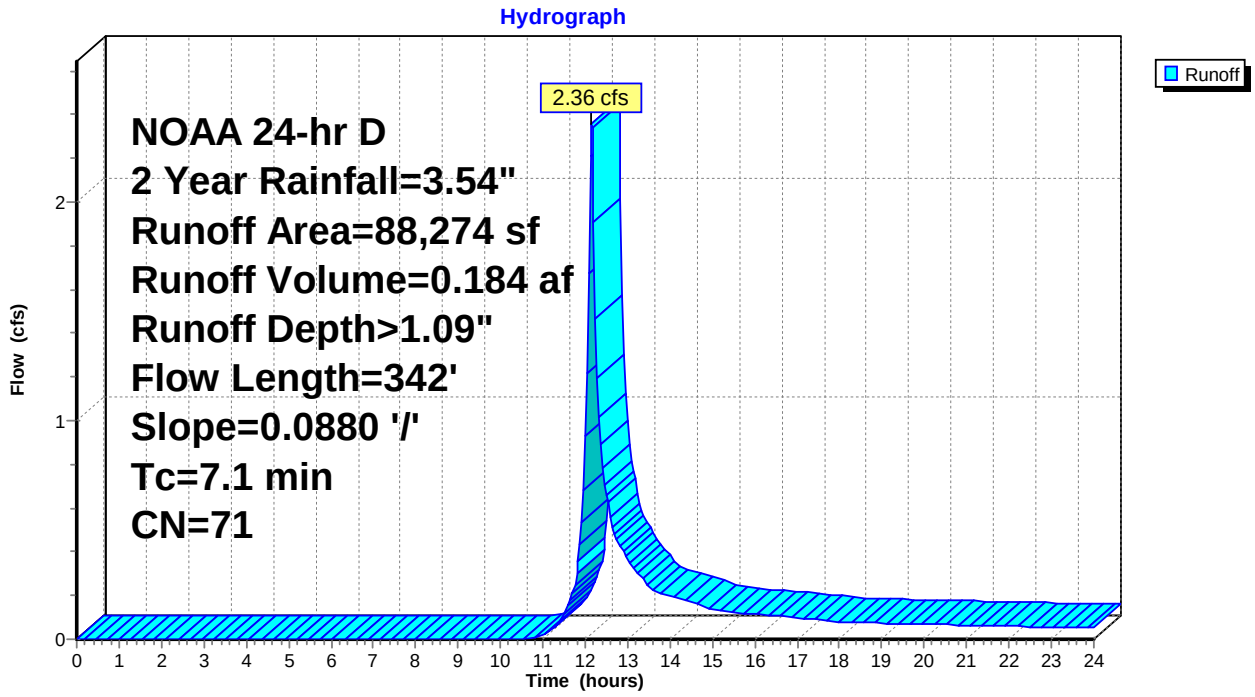
Runoff = 2.36 cfs @ 12.15 hrs, Volume= 0.184 af, Depth> 1.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 2 Year Rainfall=3.54"

	Area (sf)	CN	Description
*	1,382	98	House
*	1,696	98	Driveway
*	764	98	Garage
*	246	98	Concrete Slab
*	373	98	Shed
*	221	98	Walks
*	200	98	House Basin B
*	1,169	98	Driveway Basin B
	82,223	69	50-75% Grass cover, Fair, HSG B
	88,274	71	Weighted Average
	82,223		93.15% Pervious Area
	6,051		6.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0880	0.32		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.54"
1.9	242	0.0880	2.08		**Shallow Concentrated Flow, Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
7.1	342	Total			

Subcatchment 1S: Existing Conditions Basin A Powerhouse Road



Summary for Subcatchment 1S: Existing Conditions Basin A Powerhouse Road

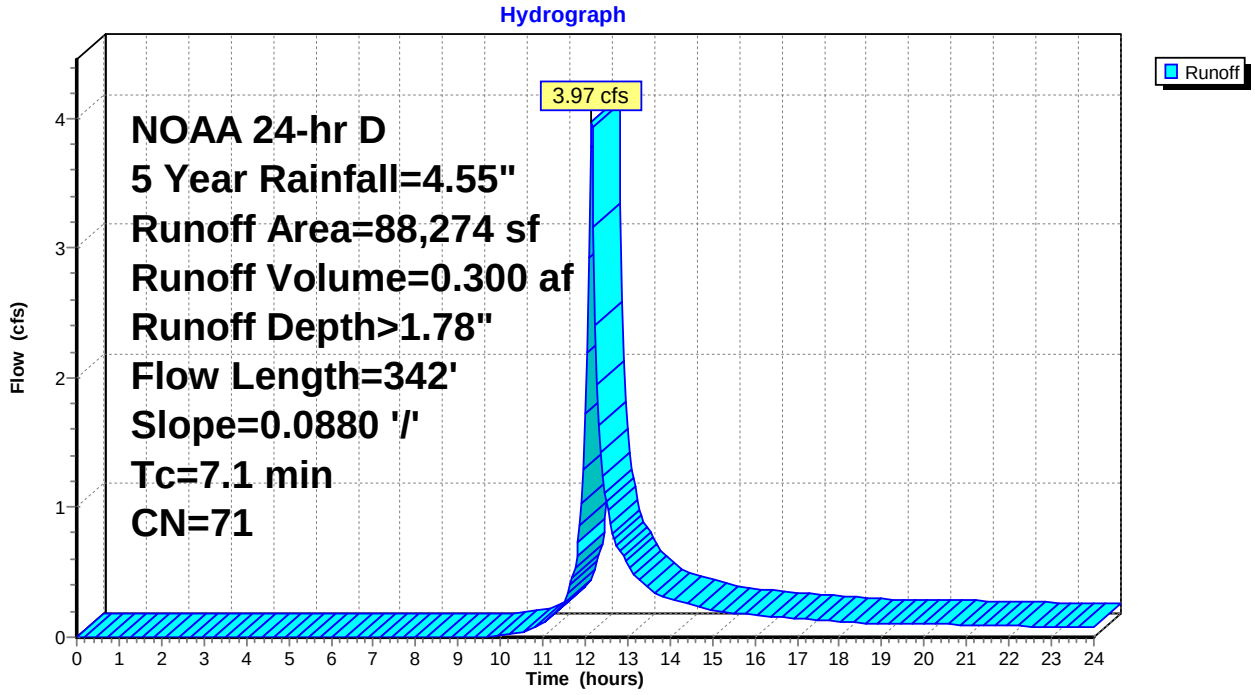
Runoff = 3.97 cfs @ 12.15 hrs, Volume= 0.300 af, Depth> 1.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 5 Year Rainfall=4.55"

	Area (sf)	CN	Description
*	1,382	98	House
*	1,696	98	Driveway
*	764	98	Garage
*	246	98	Concrete Slab
*	373	98	Shed
*	221	98	Walks
*	200	98	House Basin B
*	1,169	98	Driveway Basin B
	82,223	69	50-75% Grass cover, Fair, HSG B
	88,274	71	Weighted Average
	82,223		93.15% Pervious Area
	6,051		6.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0880	0.32		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.54"
1.9	242	0.0880	2.08		**Shallow Concentrated Flow, Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
7.1	342	Total			

Subcatchment 1S: Existing Conditions Basin A Powerhouse Road



Summary for Subcatchment 1S: Existing Conditions Basin A Powerhouse Road

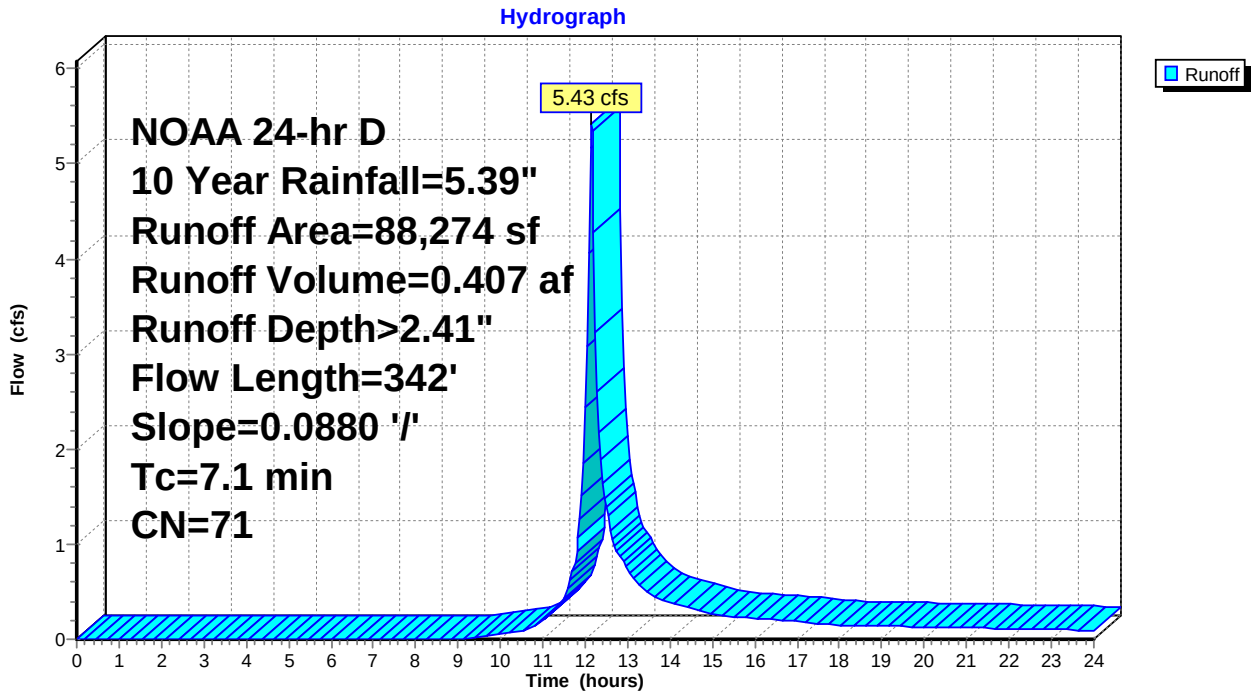
Runoff = 5.43 cfs @ 12.15 hrs, Volume= 0.407 af, Depth> 2.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 10 Year Rainfall=5.39"

	Area (sf)	CN	Description
*	1,382	98	House
*	1,696	98	Driveway
*	764	98	Garage
*	246	98	Concrete Slab
*	373	98	Shed
*	221	98	Walks
*	200	98	House Basin B
*	1,169	98	Driveway Basin B
	82,223	69	50-75% Grass cover, Fair, HSG B
	88,274	71	Weighted Average
	82,223		93.15% Pervious Area
	6,051		6.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0880	0.32		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.54"
1.9	242	0.0880	2.08		**Shallow Concentrated Flow, Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
7.1	342	Total			

Subcatchment 1S: Existing Conditions Basin A Powerhouse Road



Summary for Subcatchment 1S: Existing Conditions Basin A Powerhouse Road

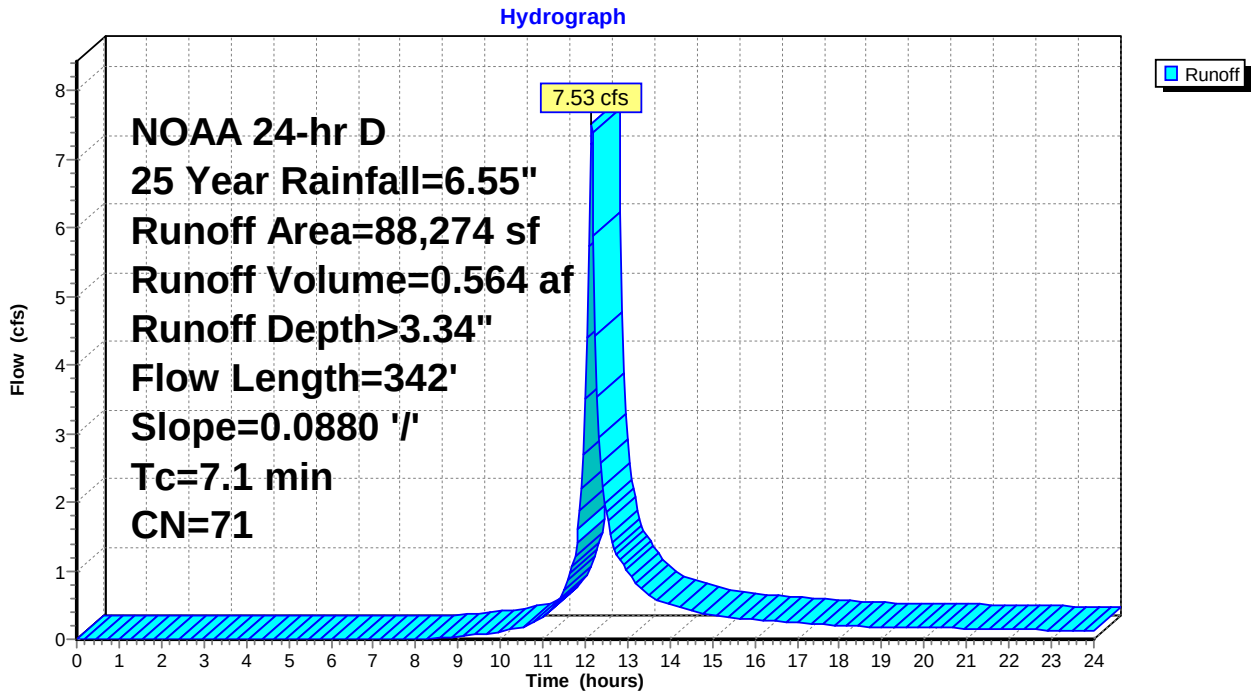
Runoff = 7.53 cfs @ 12.14 hrs, Volume= 0.564 af, Depth> 3.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 25 Year Rainfall=6.55"

	Area (sf)	CN	Description
*	1,382	98	House
*	1,696	98	Driveway
*	764	98	Garage
*	246	98	Concrete Slab
*	373	98	Shed
*	221	98	Walks
*	200	98	House Basin B
*	1,169	98	Driveway Basin B
	82,223	69	50-75% Grass cover, Fair, HSG B
	88,274	71	Weighted Average
	82,223		93.15% Pervious Area
	6,051		6.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0880	0.32		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.54"
1.9	242	0.0880	2.08		**Shallow Concentrated Flow, Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
7.1	342	Total			

Subcatchment 1S: Existing Conditions Basin A Powerhouse Road



Summary for Subcatchment 1S: Existing Conditions Basin A Powerhouse Road

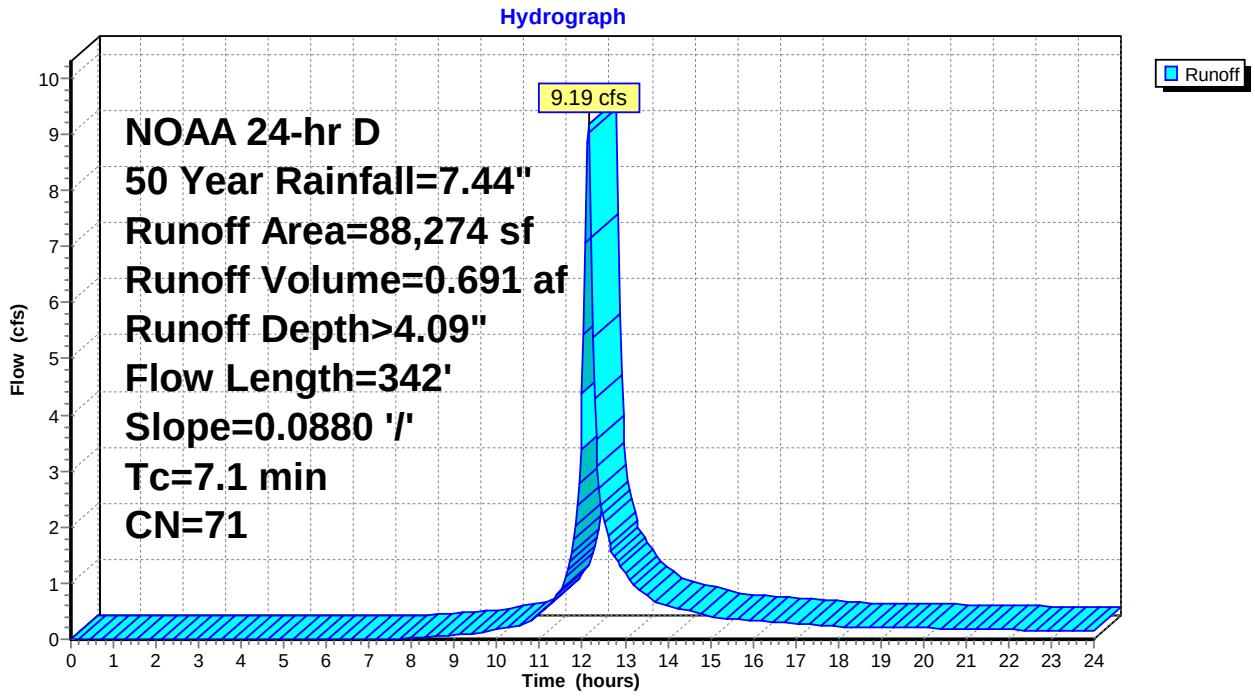
Runoff = 9.19 cfs @ 12.14 hrs, Volume= 0.691 af, Depth> 4.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 50 Year Rainfall=7.44"

	Area (sf)	CN	Description
*	1,382	98	House
*	1,696	98	Driveway
*	764	98	Garage
*	246	98	Concrete Slab
*	373	98	Shed
*	221	98	Walks
*	200	98	House Basin B
*	1,169	98	Driveway Basin B
	82,223	69	50-75% Grass cover, Fair, HSG B
	88,274	71	Weighted Average
	82,223		93.15% Pervious Area
	6,051		6.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0880	0.32		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.54"
1.9	242	0.0880	2.08		**Shallow Concentrated Flow, Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
7.1	342	Total			

Subcatchment 1S: Existing Conditions Basin A Powerhouse Road



Summary for Subcatchment 1S: Existing Conditions Basin A Powerhouse Road

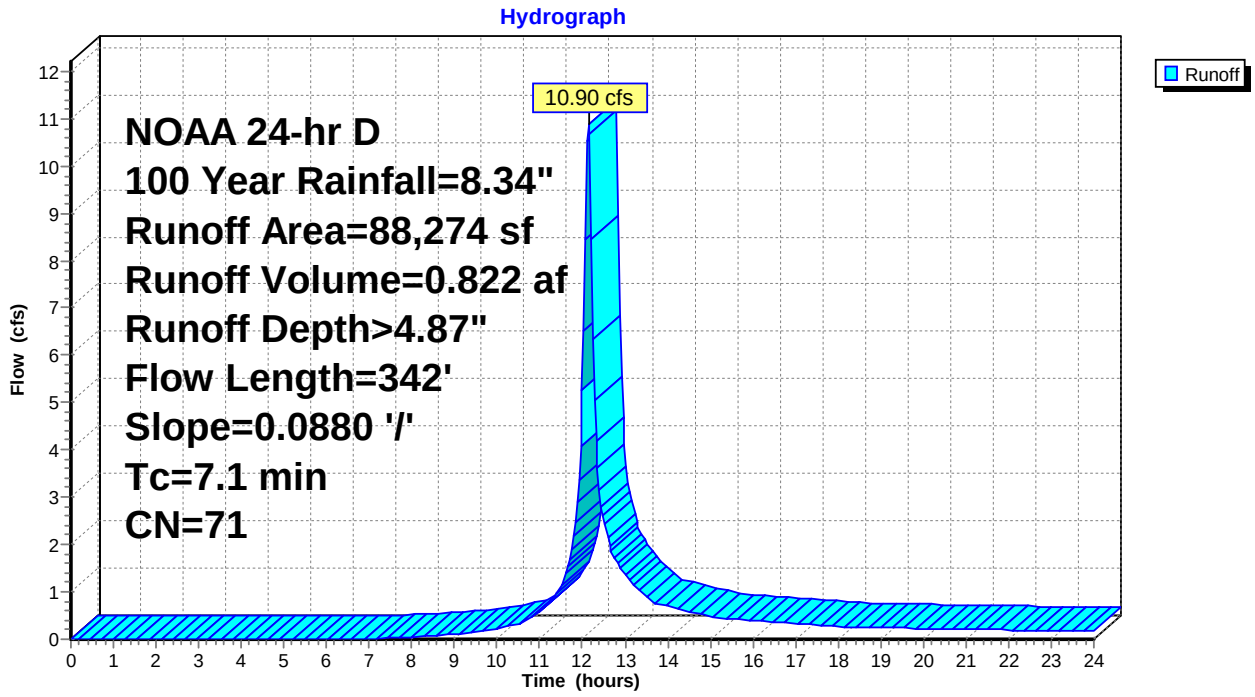
Runoff = 10.90 cfs @ 12.14 hrs, Volume= 0.822 af, Depth> 4.87"

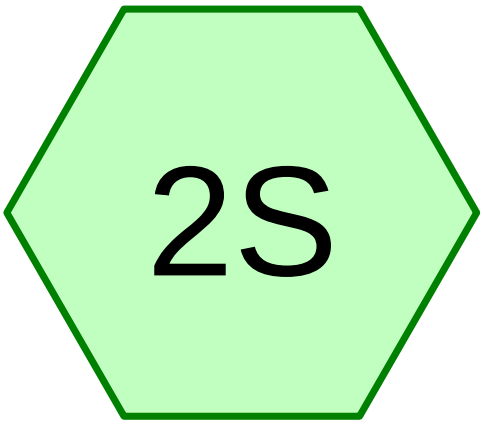
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 100 Year Rainfall=8.34"

	Area (sf)	CN	Description
*	1,382	98	House
*	1,696	98	Driveway
*	764	98	Garage
*	246	98	Concrete Slab
*	373	98	Shed
*	221	98	Walks
*	200	98	House Basin B
*	1,169	98	Driveway Basin B
	82,223	69	50-75% Grass cover, Fair, HSG B
	88,274	71	Weighted Average
	82,223		93.15% Pervious Area
	6,051		6.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0880	0.32		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.54"
1.9	242	0.0880	2.08		**Shallow Concentrated Flow, Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
7.1	342	Total			

Subcatchment 1S: Existing Conditions Basin A Powerhouse Road





Proposed Conditions Basin A Powehouse Road

Subcat Reach Pond Link

Routing Diagram for 2578Proposed
Prepared by Fairfield County Engineering LLC, Printed 3/31/2025
HydroCAD® 10.00-26 s/n 06020 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 2S: Proposed Conditions Basin A Powehouse Road

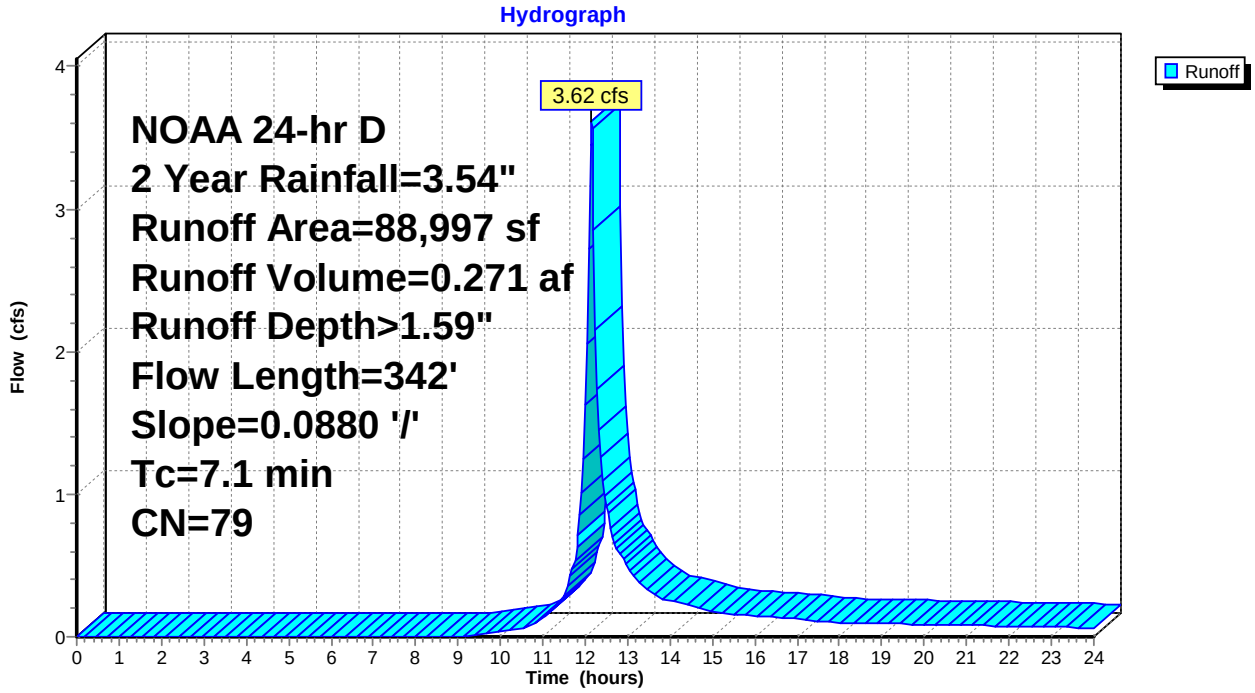
Runoff = 3.62 cfs @ 12.15 hrs, Volume= 0.271 af, Depth> 1.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 2 Year Rainfall=3.54"

	Area (sf)	CN	Description
*	14,182	98	Buildings
*	16,150	98	Driveway
	58,665	69	50-75% Grass cover, Fair, HSG B
	88,997	79	Weighted Average
	58,665		65.92% Pervious Area
	30,332		34.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0880	0.32		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.54"
1.9	242	0.0880	2.08		**Shallow Concentrated Flow, Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
7.1	342	Total			

Subcatchment 2S: Proposed Conditions Basin A Powehouse Road



Summary for Subcatchment 2S: Proposed Conditions Basin A Powehouse Road

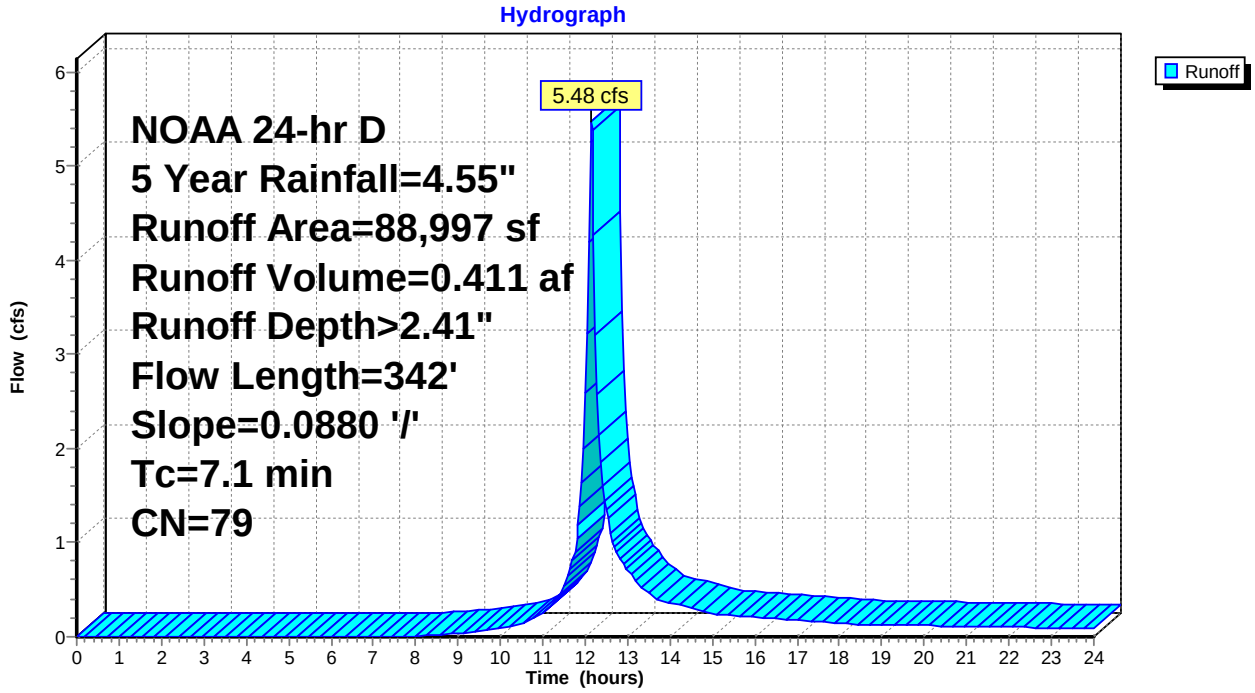
Runoff = 5.48 cfs @ 12.14 hrs, Volume= 0.411 af, Depth> 2.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 5 Year Rainfall=4.55"

	Area (sf)	CN	Description
*	14,182	98	Buildings
*	16,150	98	Driveway
	58,665	69	50-75% Grass cover, Fair, HSG B
	88,997	79	Weighted Average
	58,665		65.92% Pervious Area
	30,332		34.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0880	0.32		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.54"
1.9	242	0.0880	2.08		**Shallow Concentrated Flow, Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
7.1	342	Total			

Subcatchment 2S: Proposed Conditions Basin A Powehouse Road



Summary for Subcatchment 2S: Proposed Conditions Basin A Powehouse Road

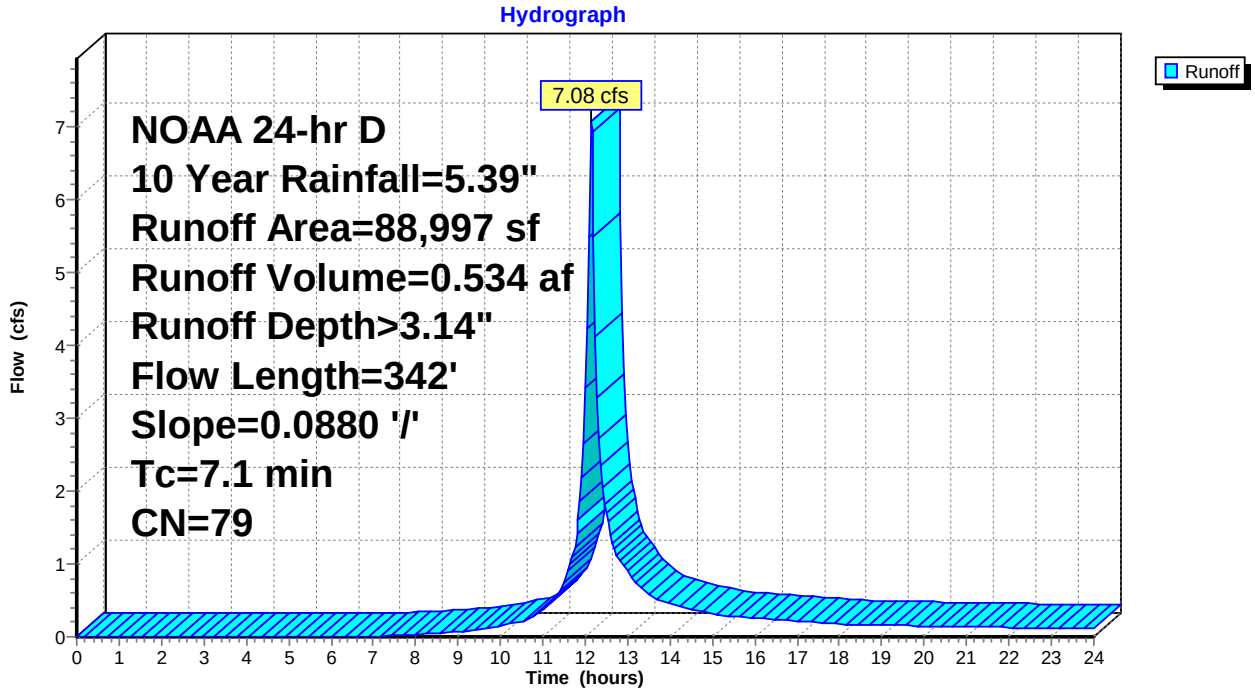
Runoff = 7.08 cfs @ 12.14 hrs, Volume= 0.534 af, Depth> 3.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 10 Year Rainfall=5.39"

	Area (sf)	CN	Description
*	14,182	98	Buildings
*	16,150	98	Driveway
	58,665	69	50-75% Grass cover, Fair, HSG B
	88,997	79	Weighted Average
	58,665		65.92% Pervious Area
	30,332		34.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0880	0.32		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.54"
1.9	242	0.0880	2.08		**Shallow Concentrated Flow, Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
7.1	342	Total			

Subcatchment 2S: Proposed Conditions Basin A Powehouse Road



Summary for Subcatchment 2S: Proposed Conditions Basin A Powehouse Road

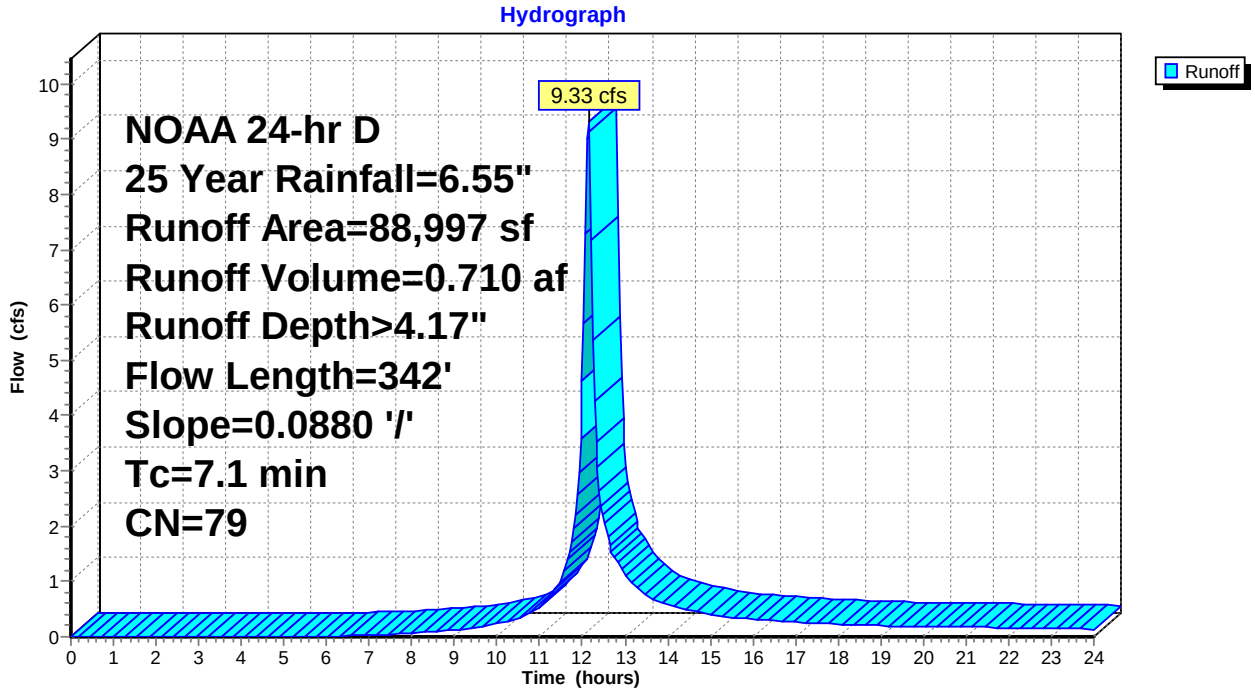
Runoff = 9.33 cfs @ 12.14 hrs, Volume= 0.710 af, Depth> 4.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 25 Year Rainfall=6.55"

	Area (sf)	CN	Description
*	14,182	98	Buildings
*	16,150	98	Driveway
	58,665	69	50-75% Grass cover, Fair, HSG B
	88,997	79	Weighted Average
	58,665		65.92% Pervious Area
	30,332		34.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0880	0.32		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.54"
1.9	242	0.0880	2.08		**Shallow Concentrated Flow, Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
7.1	342	Total			

Subcatchment 2S: Proposed Conditions Basin A Powehouse Road



Summary for Subcatchment 2S: Proposed Conditions Basin A Powehouse Road

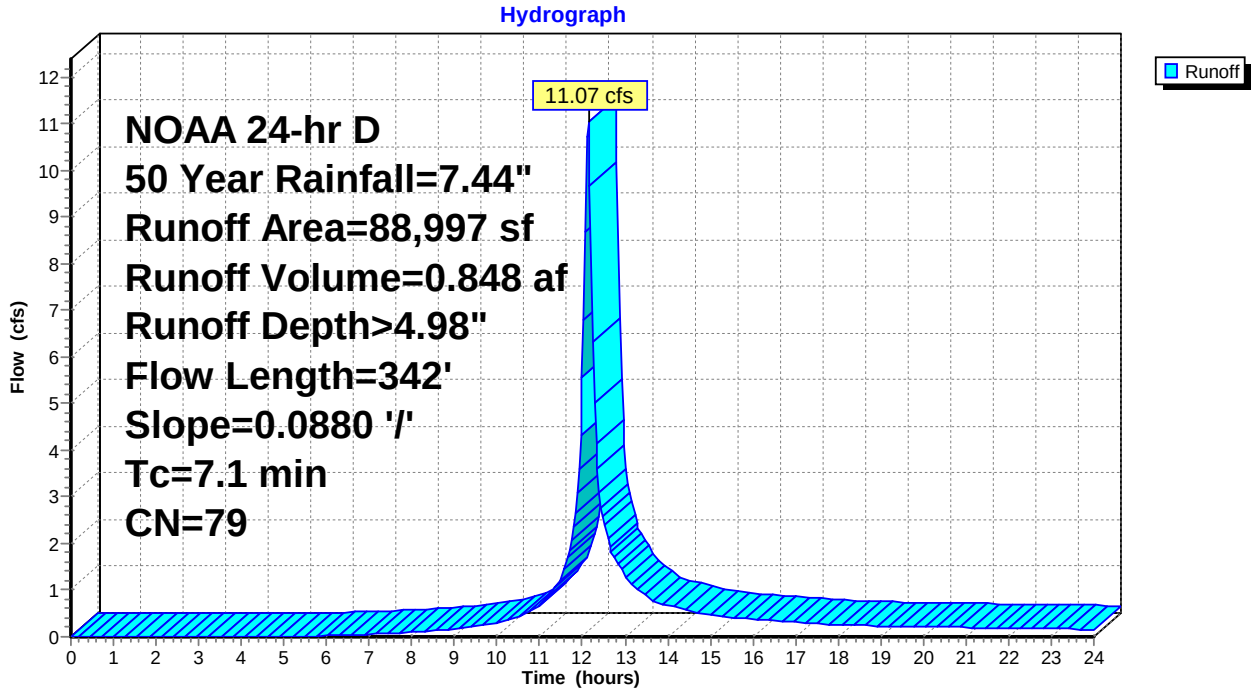
Runoff = 11.07 cfs @ 12.14 hrs, Volume= 0.848 af, Depth> 4.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 50 Year Rainfall=7.44"

	Area (sf)	CN	Description
*	14,182	98	Buildings
*	16,150	98	Driveway
	58,665	69	50-75% Grass cover, Fair, HSG B
	88,997	79	Weighted Average
	58,665		65.92% Pervious Area
	30,332		34.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0880	0.32		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.54"
1.9	242	0.0880	2.08		**Shallow Concentrated Flow, Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
7.1	342	Total			

Subcatchment 2S: Proposed Conditions Basin A Powehouse Road



Summary for Subcatchment 2S: Proposed Conditions Basin A Powehouse Road

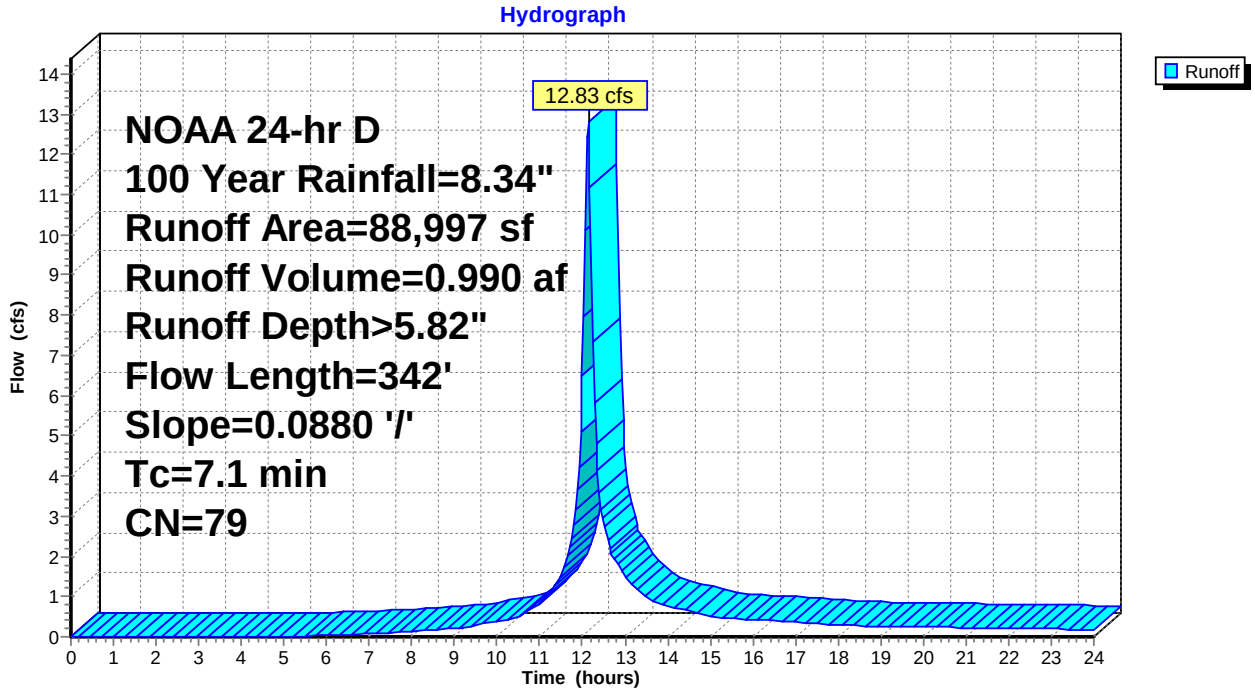
Runoff = 12.83 cfs @ 12.14 hrs, Volume= 0.990 af, Depth> 5.82"

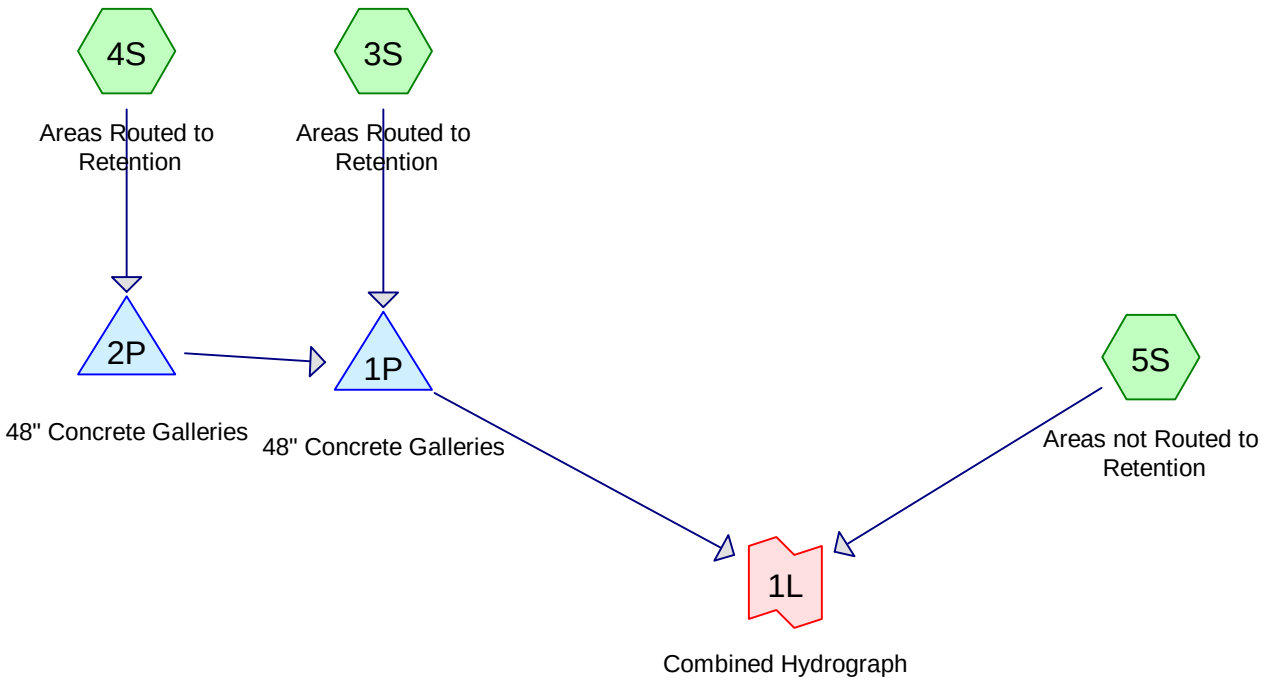
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 100 Year Rainfall=8.34"

	Area (sf)	CN	Description
*	14,182	98	Buildings
*	16,150	98	Driveway
	58,665	69	50-75% Grass cover, Fair, HSG B
	88,997	79	Weighted Average
	58,665		65.92% Pervious Area
	30,332		34.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0880	0.32		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.54"
1.9	242	0.0880	2.08		**Shallow Concentrated Flow, Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
7.1	342	Total			

Subcatchment 2S: Proposed Conditions Basin A Powehouse Road





Subcat Reach Pond Link

Routing Diagram for 2578Combined
Prepared by Fairfield County Engineering LLC, Printed 3/31/2025
HydroCAD® 10.00-26 s/n 06020 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 3S: Areas Routed to Retention

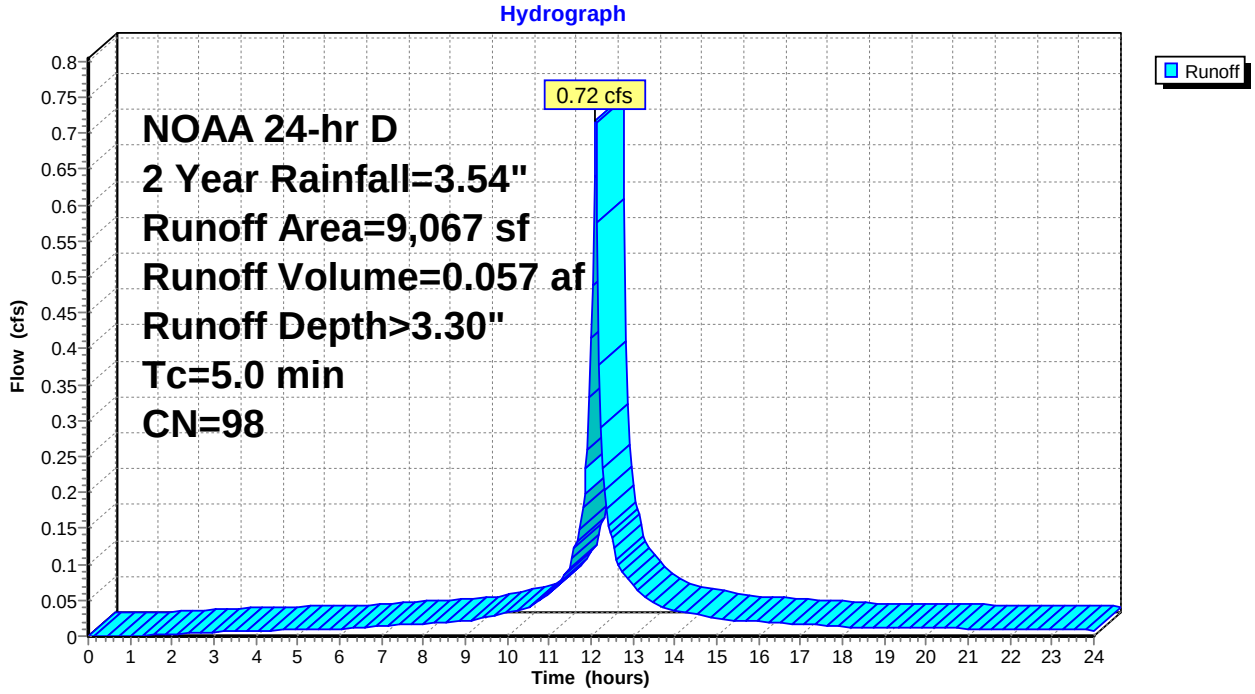
Runoff = 0.72 cfs @ 12.11 hrs, Volume= 0.057 af, Depth> 3.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 2 Year Rainfall=3.54"

	Area (sf)	CN	Description
*	9,067	98	Driveway/Parking
	9,067		100.00% Impervious Area

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

Subcatchment 3S: Areas Routed to Retention



Summary for Subcatchment 4S: Areas Routed to Retention

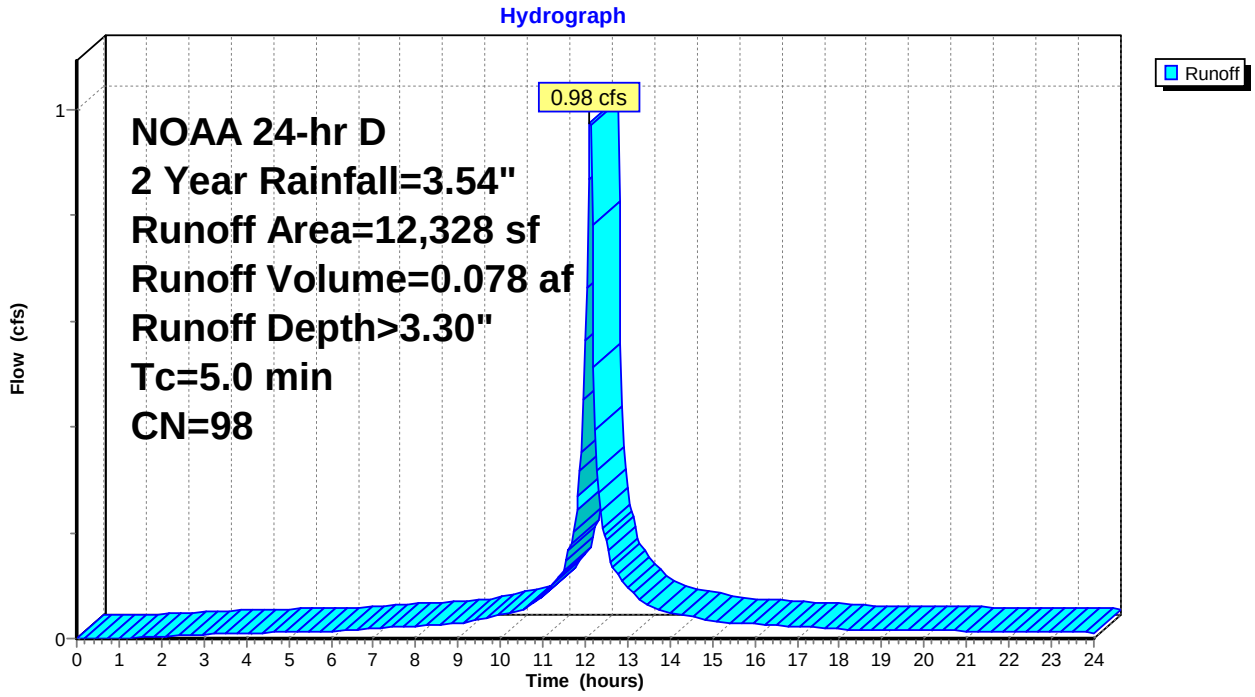
Runoff = 0.98 cfs @ 12.11 hrs, Volume= 0.078 af, Depth> 3.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 2 Year Rainfall=3.54"

	Area (sf)	CN	Description
*	7,083	98	Parking/Driveway
*	5,245	98	Building Units 2-4
	12,328	98	Weighted Average
	12,328		100.00% Impervious Area

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

Subcatchment 4S: Areas Routed to Retention



Summary for Subcatchment 5S: Areas not Routed to Retention

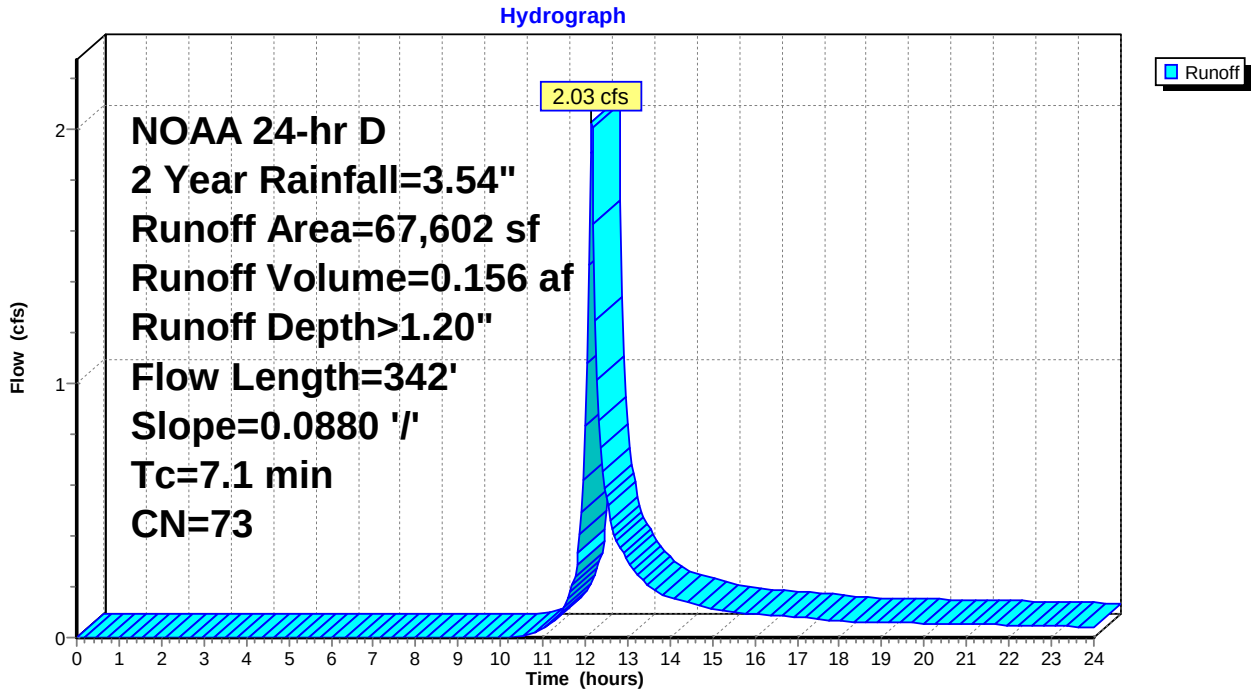
Runoff = 2.03 cfs @ 12.15 hrs, Volume= 0.156 af, Depth> 1.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 2 Year Rainfall=3.54"

	Area (sf)	CN	Description
*	8,937	98	Buildings
	58,665	69	50-75% Grass cover, Fair, HSG B
	67,602	73	Weighted Average
	58,665		86.78% Pervious Area
	8,937		13.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0880	0.32		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.54"
1.9	242	0.0880	2.08		**Shallow Concentrated Flow, Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
7.1	342	Total			

Subcatchment 5S: Areas not Routed to Retention



Summary for Pond 1P: 48" Concrete Galleries

Inflow Area = 0.491 ac,100.00% Impervious, Inflow Depth > 1.40" for 2 Year event
Inflow = 0.72 cfs @ 12.11 hrs, Volume= 0.057 af
Outflow = 0.07 cfs @ 11.32 hrs, Volume= 0.057 af, Atten= 90%, Lag= 0.0 min
Discarded = 0.07 cfs @ 11.32 hrs, Volume= 0.057 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 95.50' @ 12.97 hrs Surf.Area= 532 sf Storage= 756 cf

Plug-Flow detention time= 65.9 min calculated for 0.057 af (100% of inflow)
Center-of-Mass det. time= 65.3 min (820.0 - 754.7)

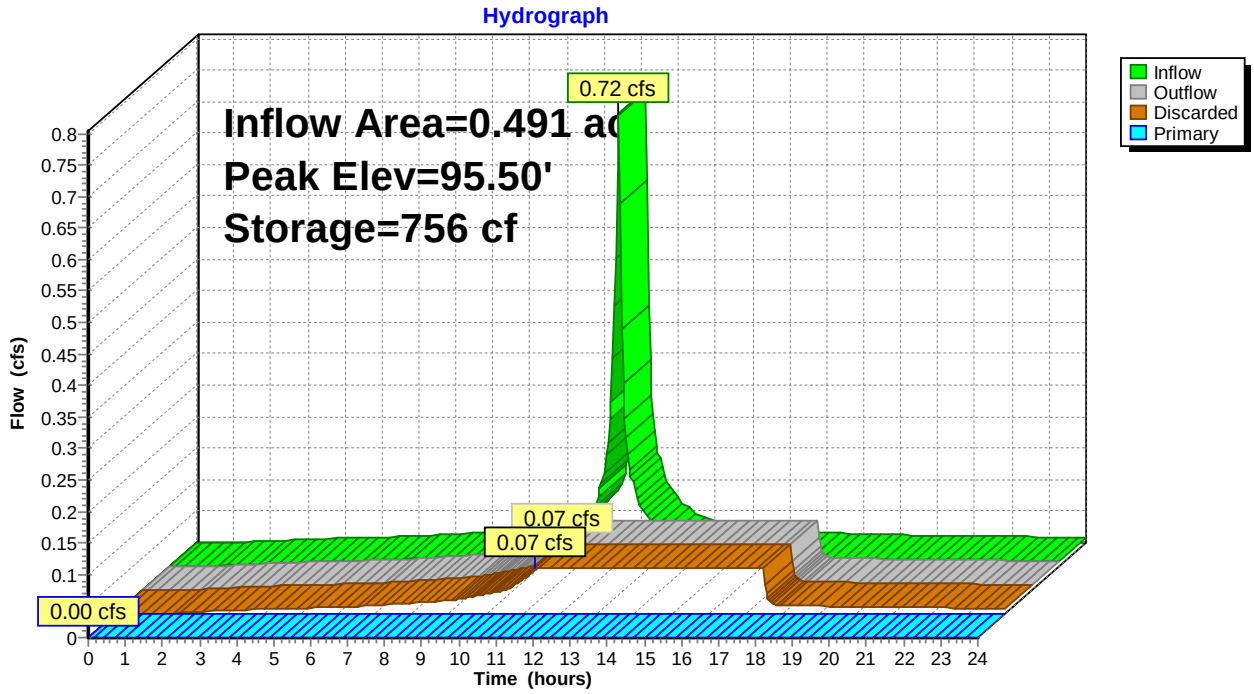
Volume	Invert	Avail.Storage	Storage Description
#1	93.90'	217 cf	**14.00'W x 38.00'L x 4.00'H Stone** 2,128 cf Overall - 1,585 cf Embedded = 543 cf x 40.0% Voids
#2	93.90'	1,585 cf	**12.00'W x 36.00'L x 3.67'H 48" Concrete Galleries** Inside #1
		1,802 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	97.90'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	93.90'	**6.000 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.07 cfs @ 11.32 hrs HW=93.94' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=93.90' (Free Discharge)
└**1=Orifice/Grate** (Controls 0.00 cfs)

Pond 1P: 48" Concrete Galleries



Summary for Pond 2P: 48" Concrete Galleries

Inflow Area = 0.283 ac,100.00% Impervious, Inflow Depth > 3.30" for 2 Year event
Inflow = 0.98 cfs @ 12.11 hrs, Volume= 0.078 af
Outflow = 0.11 cfs @ 11.36 hrs, Volume= 0.078 af, Atten= 89%, Lag= 0.0 min
Discarded = 0.11 cfs @ 11.36 hrs, Volume= 0.078 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 100.06' @ 12.92 hrs Surf.Area= 756 sf Storage= 1,002 cf

Plug-Flow detention time= 60.7 min calculated for 0.078 af (100% of inflow)
Center-of-Mass det. time= 60.0 min (814.8 - 754.7)

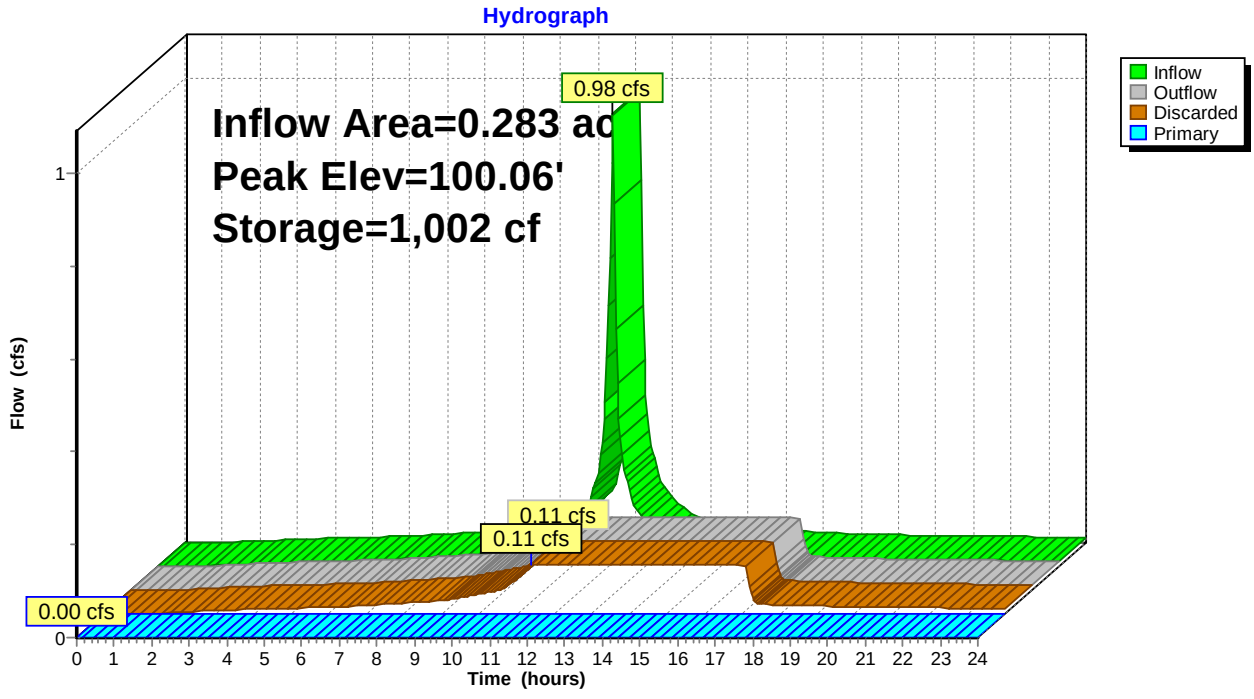
Volume	Invert	Avail.Storage	Storage Description
#1	98.60'	270 cf	**18.00'W x 42.00'L x 4.00'H Stone** 3,024 cf Overall - 2,349 cf Embedded = 675 cf x 40.0% Voids
#2	98.60'	2,349 cf	**16.00'W x 40.00'L x 3.67'H 48" Concrete Galleries** Inside #1
		2,619 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	102.60'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	98.60'	**6.000 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.11 cfs @ 11.36 hrs HW=98.64' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=98.60' (Free Discharge)
└**1=Orifice/Grate** (Controls 0.00 cfs)

Pond 2P: 48" Concrete Galleries

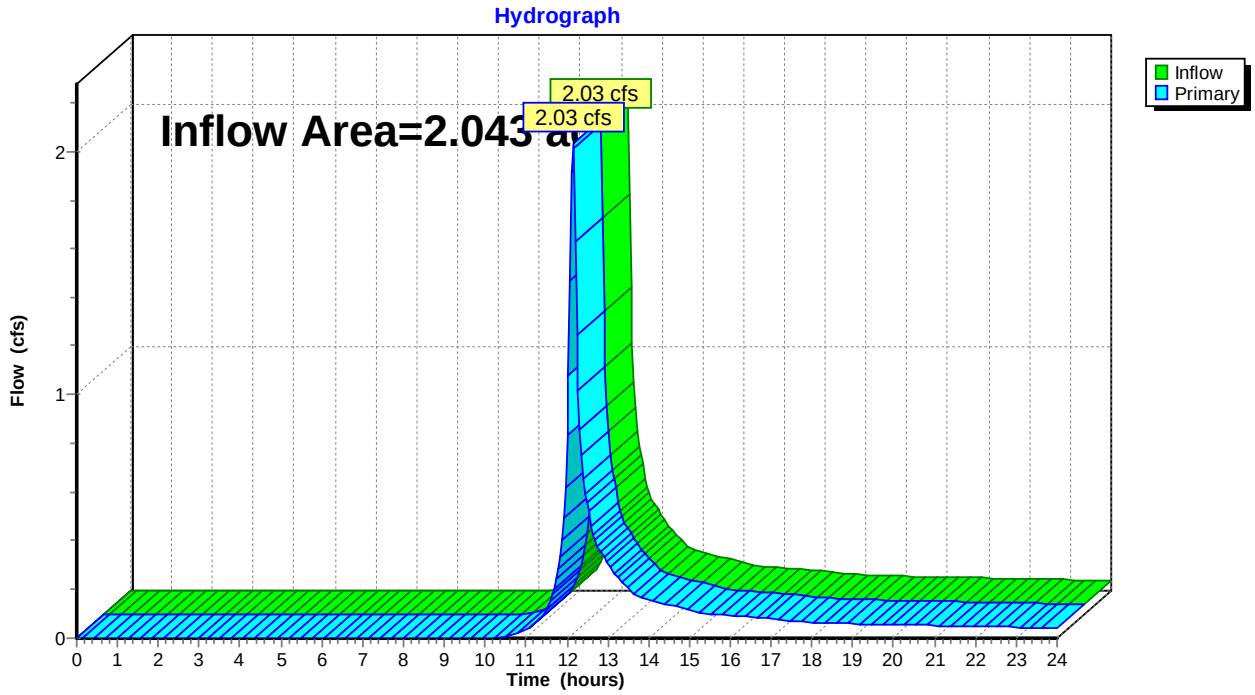


Summary for Link 1L: Combined Hydrograph

Inflow Area = 2.043 ac, 34.08% Impervious, Inflow Depth > 0.91" for 2 Year event
Inflow = 2.03 cfs @ 12.15 hrs, Volume= 0.156 af
Primary = 2.03 cfs @ 12.15 hrs, Volume= 0.156 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs

Link 1L: Combined Hydrograph



Summary for Subcatchment 3S: Areas Routed to Retention

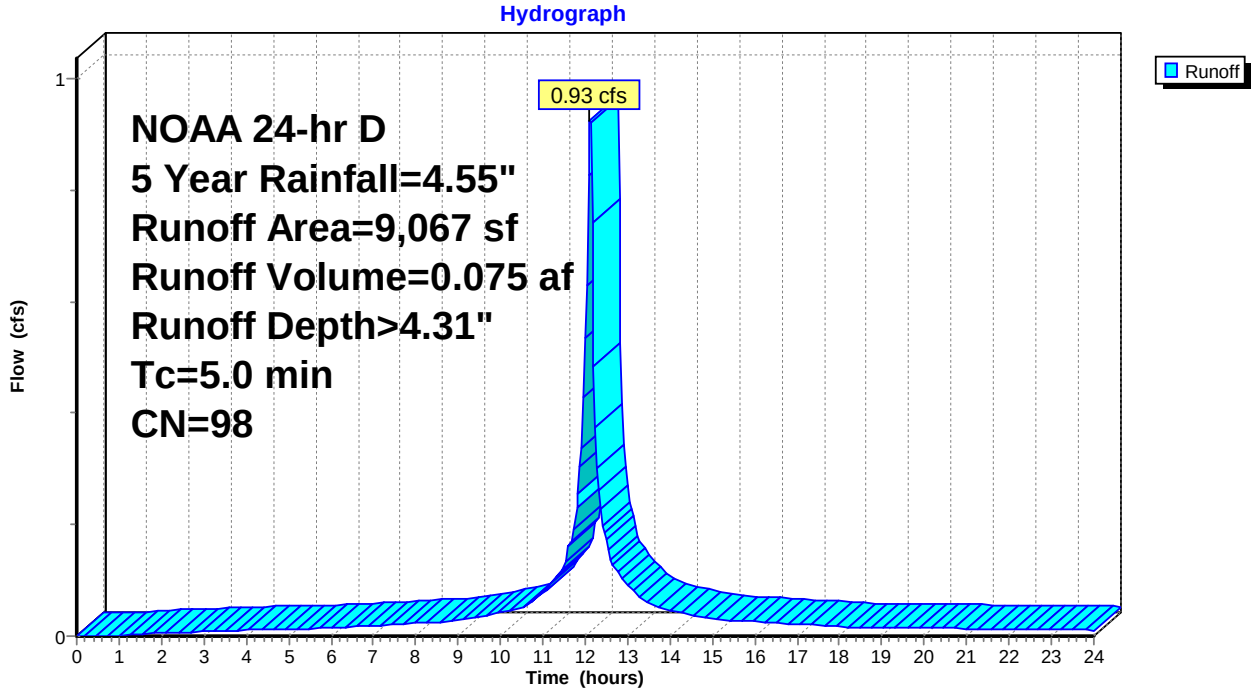
Runoff = 0.93 cfs @ 12.11 hrs, Volume= 0.075 af, Depth> 4.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 5 Year Rainfall=4.55"

	Area (sf)	CN	Description
*	9,067	98	Driveway/Parking
	9,067		100.00% Impervious Area

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

Subcatchment 3S: Areas Routed to Retention



Summary for Subcatchment 4S: Areas Routed to Retention

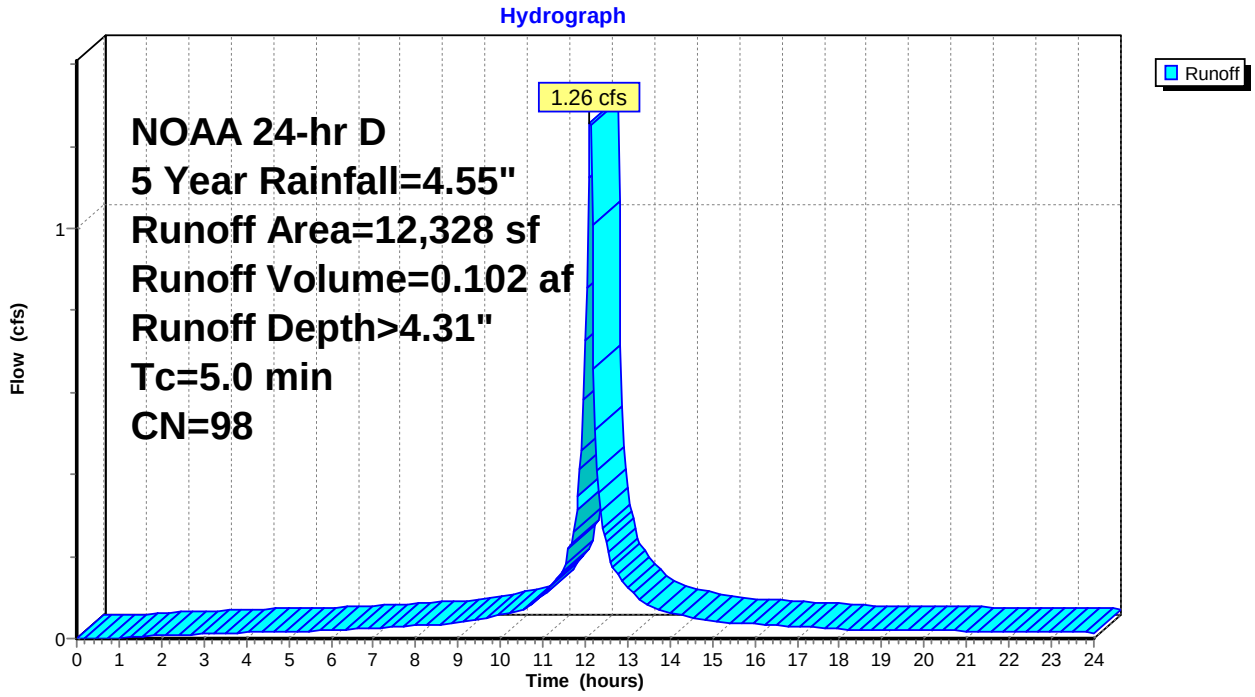
Runoff = 1.26 cfs @ 12.11 hrs, Volume= 0.102 af, Depth> 4.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 5 Year Rainfall=4.55"

	Area (sf)	CN	Description
*	7,083	98	Parking/Driveway
*	5,245	98	Building Units 2-4
	12,328	98	Weighted Average
	12,328		100.00% Impervious Area

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

Subcatchment 4S: Areas Routed to Retention



Summary for Subcatchment 5S: Areas not Routed to Retention

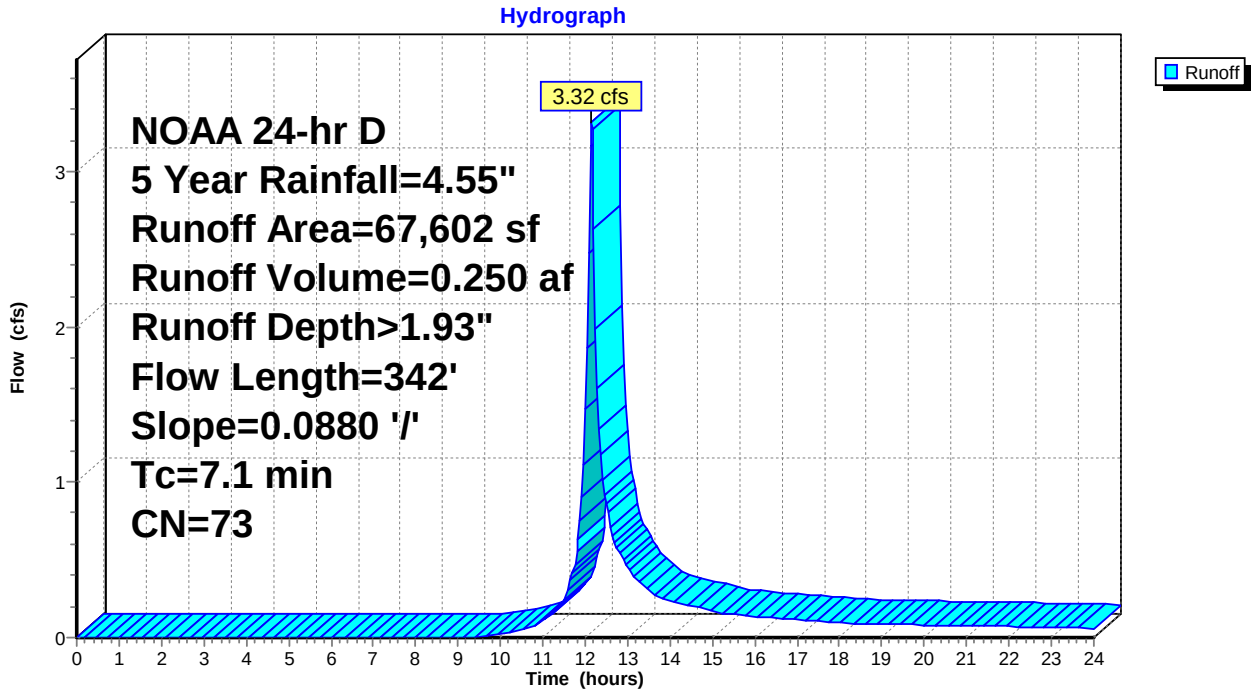
Runoff = 3.32 cfs @ 12.15 hrs, Volume= 0.250 af, Depth> 1.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 5 Year Rainfall=4.55"

	Area (sf)	CN	Description
*	8,937	98	Buildings
	58,665	69	50-75% Grass cover, Fair, HSG B
	67,602	73	Weighted Average
	58,665		86.78% Pervious Area
	8,937		13.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0880	0.32		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.54"
1.9	242	0.0880	2.08		**Shallow Concentrated Flow, Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
7.1	342	Total			

Subcatchment 5S: Areas not Routed to Retention



Summary for Pond 1P: 48" Concrete Galleries

Inflow Area = 0.491 ac,100.00% Impervious, Inflow Depth > 1.83" for 5 Year event
Inflow = 0.93 cfs @ 12.11 hrs, Volume= 0.075 af
Outflow = 0.07 cfs @ 11.04 hrs, Volume= 0.075 af, Atten= 92%, Lag= 0.0 min
Discarded = 0.07 cfs @ 11.04 hrs, Volume= 0.075 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 96.28' @ 13.23 hrs Surf.Area= 532 sf Storage= 1,126 cf

Plug-Flow detention time= 105.3 min calculated for 0.075 af (100% of inflow)
Center-of-Mass det. time= 104.8 min (854.4 - 749.6)

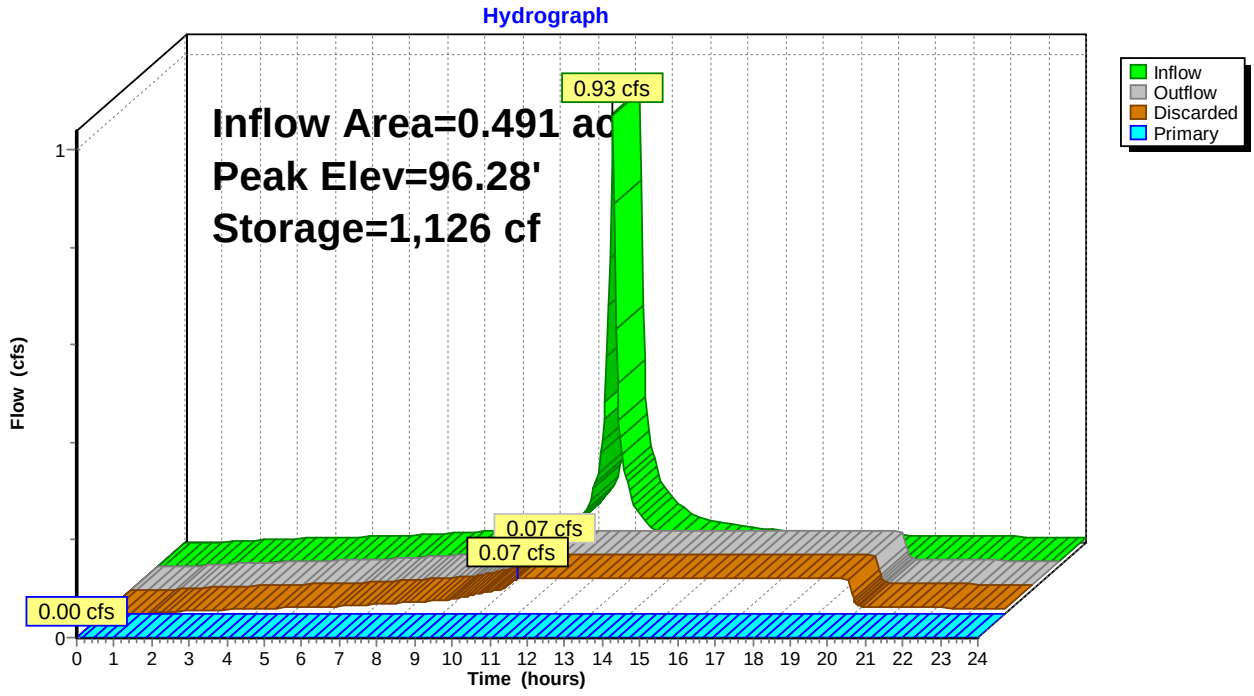
Volume	Invert	Avail.Storage	Storage Description
#1	93.90'	217 cf	**14.00'W x 38.00'L x 4.00'H Stone** 2,128 cf Overall - 1,585 cf Embedded = 543 cf x 40.0% Voids
#2	93.90'	1,585 cf	**12.00'W x 36.00'L x 3.67'H 48" Concrete Galleries** Inside #1
		1,802 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	97.90'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	93.90'	**6.000 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.07 cfs @ 11.04 hrs HW=93.94' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=93.90' (Free Discharge)
└**1=Orifice/Grate** (Controls 0.00 cfs)

Pond 1P: 48" Concrete Galleries



Summary for Pond 2P: 48" Concrete Galleries

Inflow Area = 0.283 ac,100.00% Impervious, Inflow Depth > 4.31" for 5 Year event
Inflow = 1.26 cfs @ 12.11 hrs, Volume= 0.102 af
Outflow = 0.11 cfs @ 11.08 hrs, Volume= 0.102 af, Atten= 92%, Lag= 0.0 min
Discarded = 0.11 cfs @ 11.08 hrs, Volume= 0.102 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 100.78' @ 13.17 hrs Surf.Area= 756 sf Storage= 1,496 cf

Plug-Flow detention time= 97.3 min calculated for 0.101 af (100% of inflow)
Center-of-Mass det. time= 96.6 min (846.2 - 749.6)

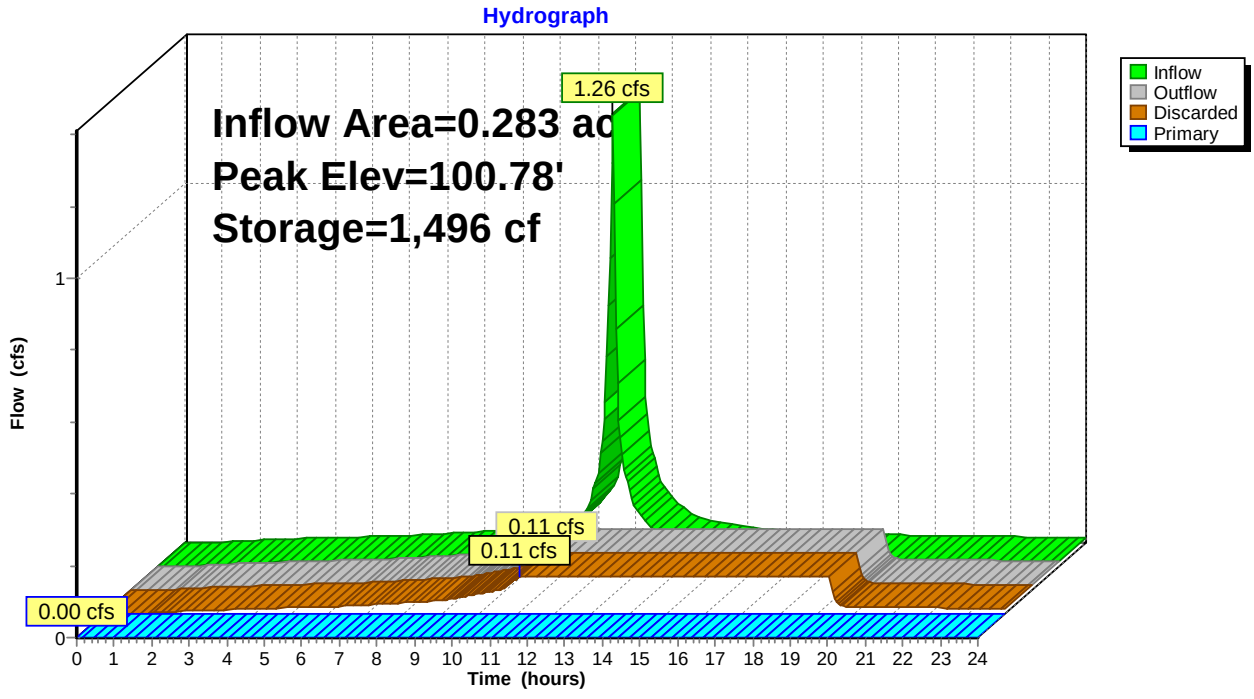
Volume	Invert	Avail.Storage	Storage Description
#1	98.60'	270 cf	**18.00'W x 42.00'L x 4.00'H Stone** 3,024 cf Overall - 2,349 cf Embedded = 675 cf x 40.0% Voids
#2	98.60'	2,349 cf	**16.00'W x 40.00'L x 3.67'H 48" Concrete Galleries** Inside #1
		2,619 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	102.60'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	98.60'	**6.000 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.11 cfs @ 11.08 hrs HW=98.64' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=98.60' (Free Discharge)
└**1=Orifice/Grate** (Controls 0.00 cfs)

Pond 2P: 48" Concrete Galleries

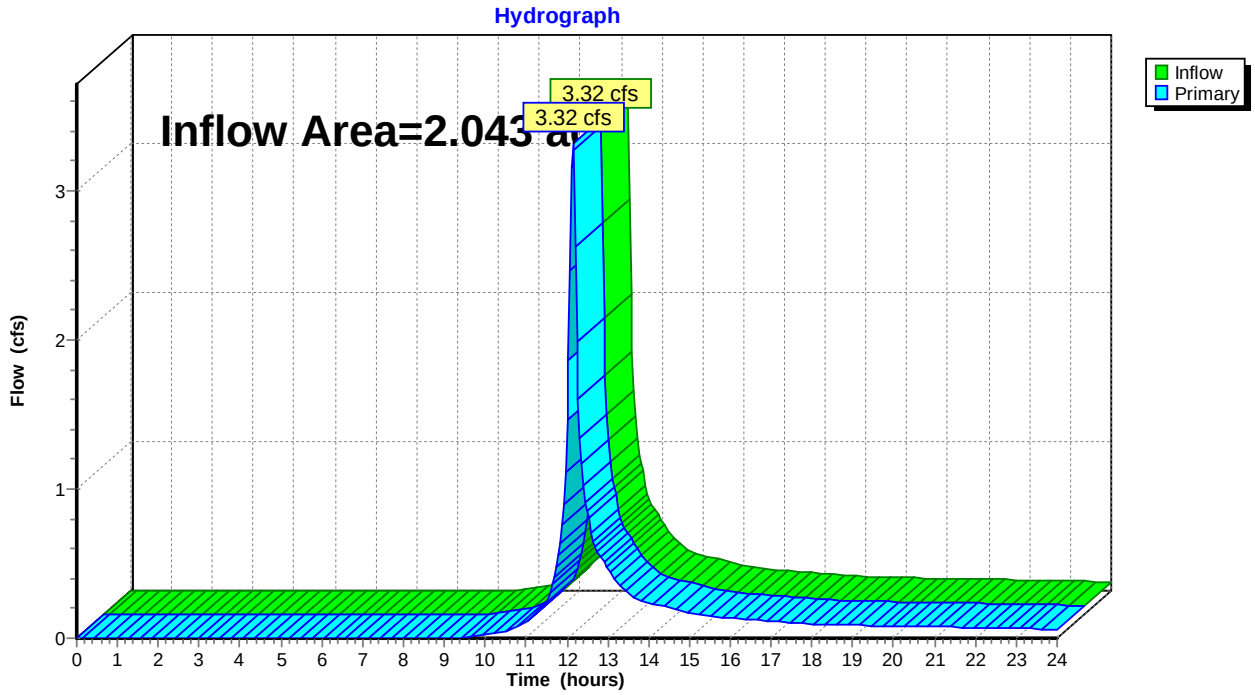


Summary for Link 1L: Combined Hydrograph

Inflow Area = 2.043 ac, 34.08% Impervious, Inflow Depth > 1.47" for 5 Year event
Inflow = 3.32 cfs @ 12.15 hrs, Volume= 0.250 af
Primary = 3.32 cfs @ 12.15 hrs, Volume= 0.250 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs

Link 1L: Combined Hydrograph



Summary for Subcatchment 3S: Areas Routed to Retention

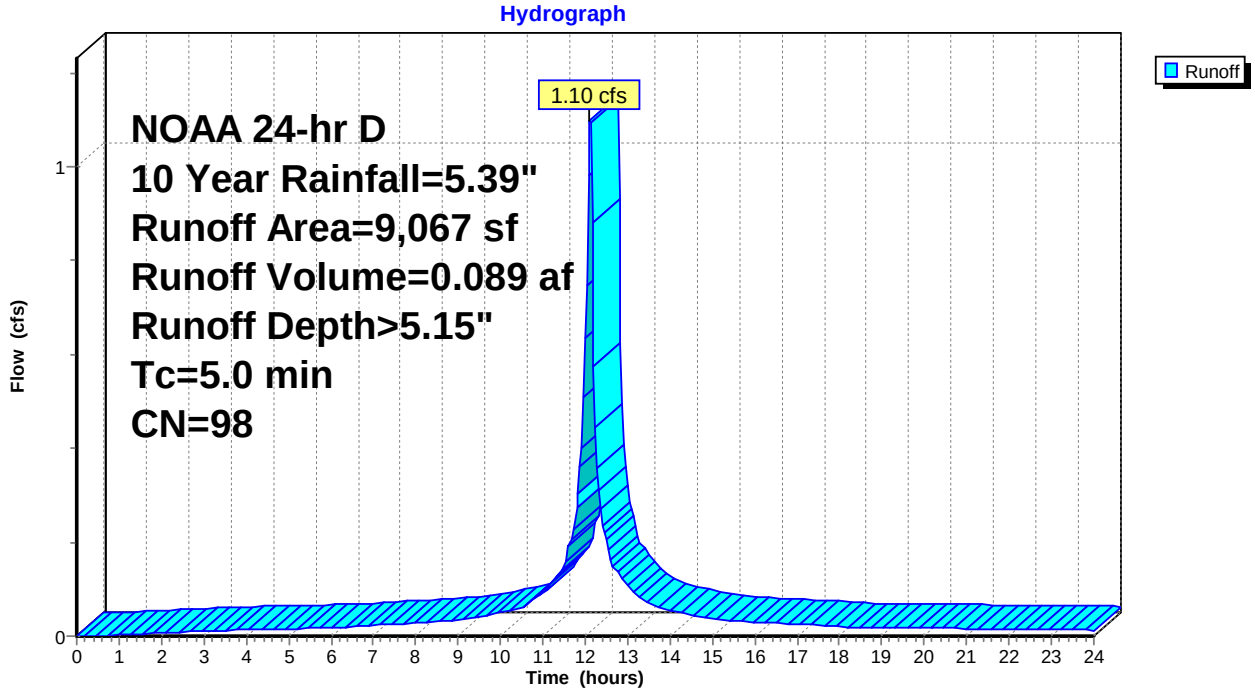
Runoff = 1.10 cfs @ 12.11 hrs, Volume= 0.089 af, Depth> 5.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 10 Year Rainfall=5.39"

	Area (sf)	CN	Description
*	9,067	98	Driveway/Parking
	9,067		100.00% Impervious Area

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

Subcatchment 3S: Areas Routed to Retention



Summary for Subcatchment 4S: Areas Routed to Retention

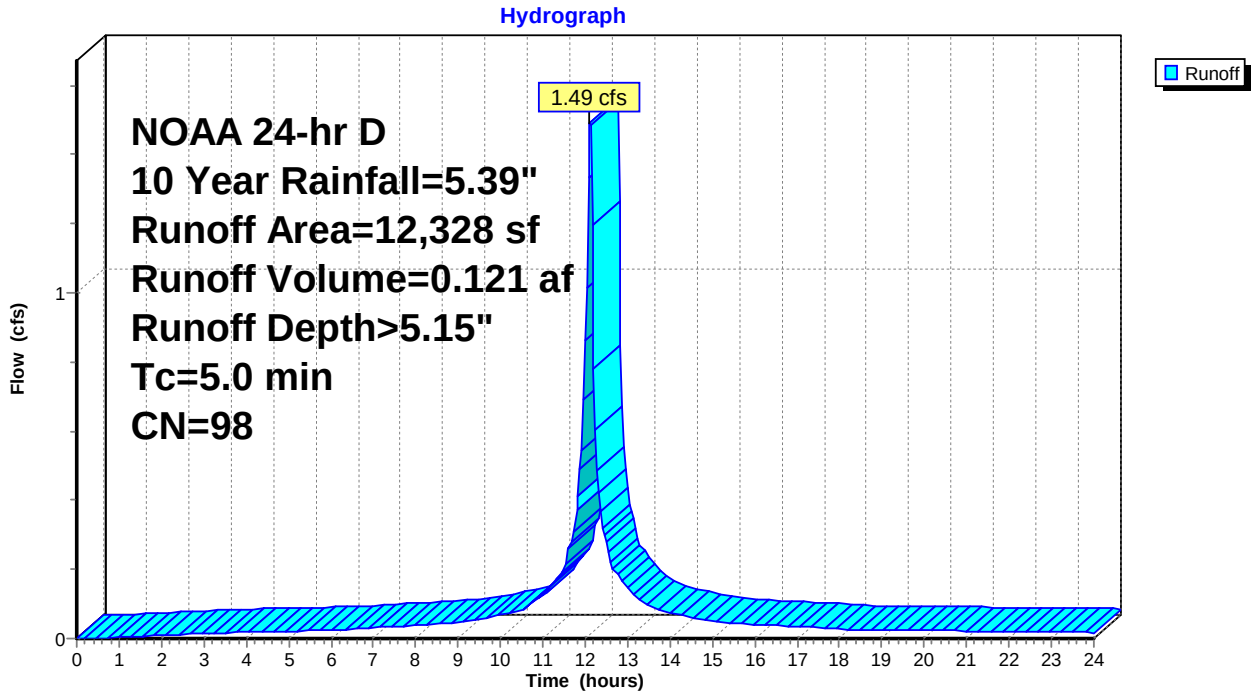
Runoff = 1.49 cfs @ 12.11 hrs, Volume= 0.121 af, Depth> 5.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 10 Year Rainfall=5.39"

	Area (sf)	CN	Description
*	7,083	98	Parking/Driveway
*	5,245	98	Building Units 2-4
	12,328	98	Weighted Average
	12,328		100.00% Impervious Area

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

Subcatchment 4S: Areas Routed to Retention



Summary for Subcatchment 5S: Areas not Routed to Retention

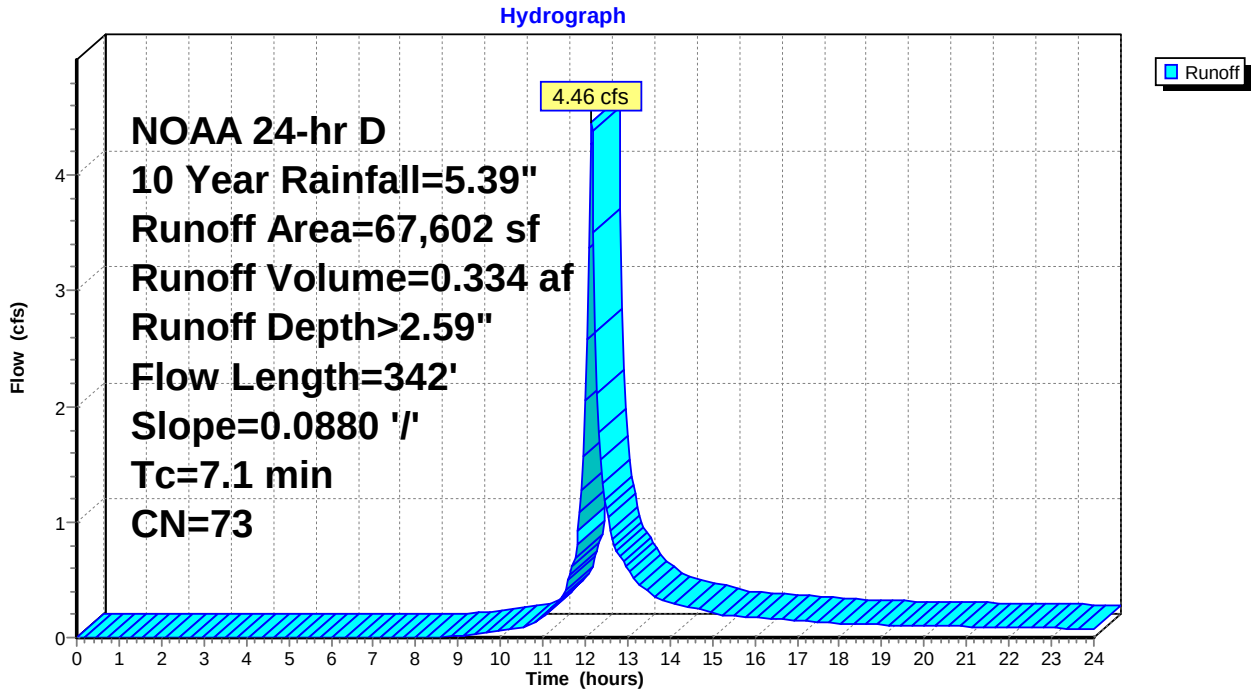
Runoff = 4.46 cfs @ 12.14 hrs, Volume= 0.334 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 10 Year Rainfall=5.39"

	Area (sf)	CN	Description
*	8,937	98	Buildings
	58,665	69	50-75% Grass cover, Fair, HSG B
	67,602	73	Weighted Average
	58,665		86.78% Pervious Area
	8,937		13.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0880	0.32		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.54"
1.9	242	0.0880	2.08		**Shallow Concentrated Flow, Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
7.1	342	Total			

Subcatchment 5S: Areas not Routed to Retention



Summary for Pond 1P: 48" Concrete Galleries

Inflow Area = 0.491 ac,100.00% Impervious, Inflow Depth > 2.18" for 10 Year event
Inflow = 1.10 cfs @ 12.11 hrs, Volume= 0.089 af
Outflow = 0.07 cfs @ 10.84 hrs, Volume= 0.089 af, Atten= 93%, Lag= 0.0 min
Discarded = 0.07 cfs @ 10.84 hrs, Volume= 0.089 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 96.99' @ 13.44 hrs Surf.Area= 532 sf Storage= 1,457 cf

Plug-Flow detention time= 143.5 min calculated for 0.089 af (100% of inflow)
Center-of-Mass det. time= 143.0 min (889.6 - 746.6)

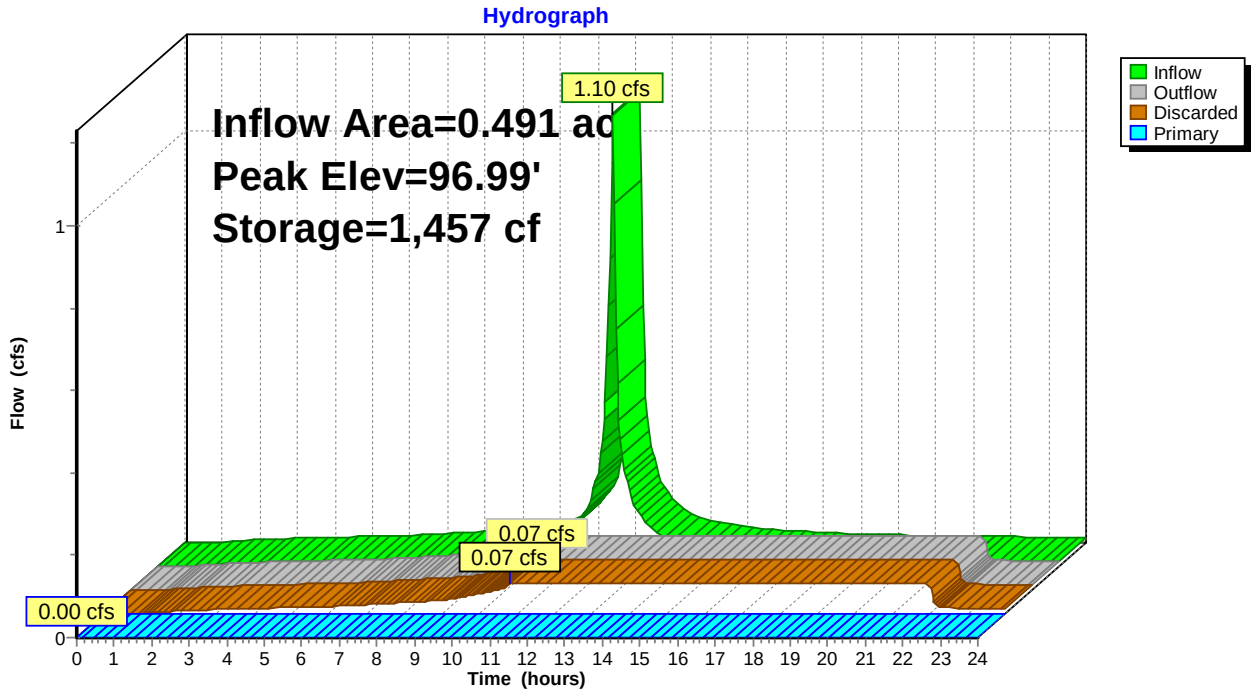
Volume	Invert	Avail.Storage	Storage Description
#1	93.90'	217 cf	**14.00'W x 38.00'L x 4.00'H Stone** 2,128 cf Overall - 1,585 cf Embedded = 543 cf x 40.0% Voids
#2	93.90'	1,585 cf	**12.00'W x 36.00'L x 3.67'H 48" Concrete Galleries** Inside #1
		1,802 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	97.90'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	93.90'	**6.000 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.07 cfs @ 10.84 hrs HW=93.94' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=93.90' (Free Discharge)
1=Orifice/Grate (Controls 0.00 cfs)

Pond 1P: 48" Concrete Galleries



Summary for Pond 2P: 48" Concrete Galleries

Inflow Area = 0.283 ac,100.00% Impervious, Inflow Depth > 5.15" for 10 Year event
Inflow = 1.49 cfs @ 12.11 hrs, Volume= 0.121 af
Outflow = 0.11 cfs @ 10.88 hrs, Volume= 0.121 af, Atten= 93%, Lag= 0.0 min
Discarded = 0.11 cfs @ 10.88 hrs, Volume= 0.121 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 101.43' @ 13.39 hrs Surf.Area= 756 sf Storage= 1,940 cf

Plug-Flow detention time= 132.7 min calculated for 0.121 af (100% of inflow)
Center-of-Mass det. time= 131.9 min (878.5 - 746.6)

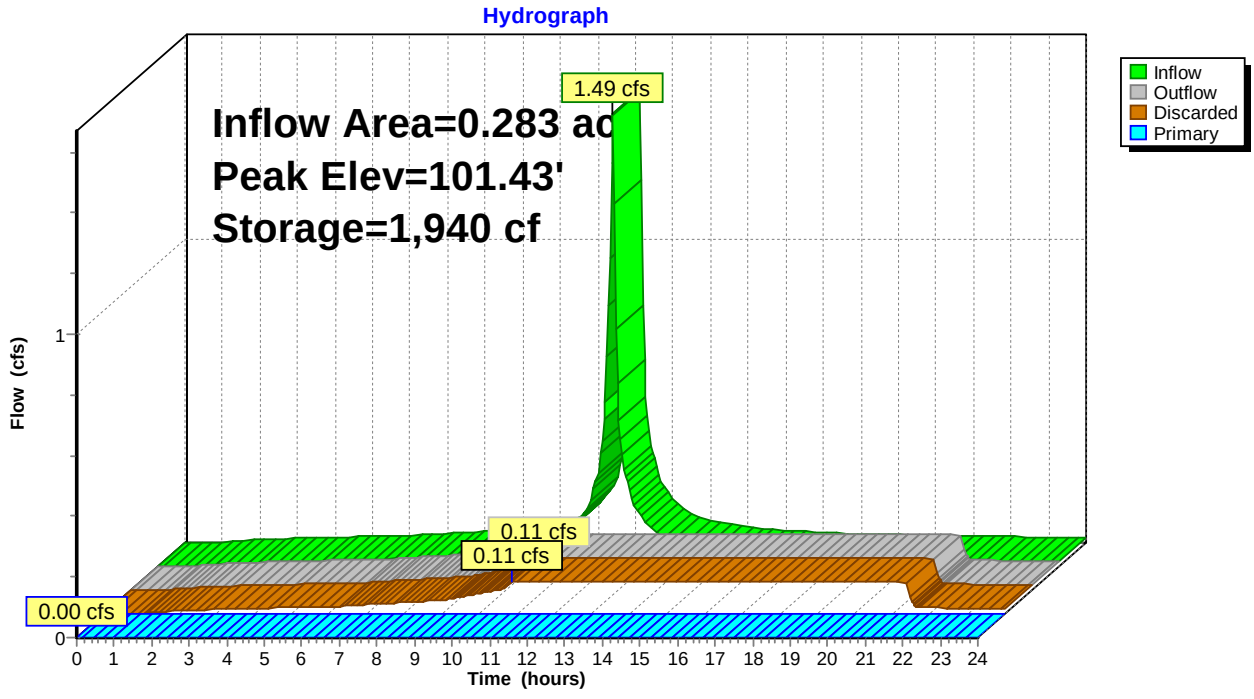
Volume	Invert	Avail.Storage	Storage Description
#1	98.60'	270 cf	**18.00'W x 42.00'L x 4.00'H Stone** 3,024 cf Overall - 2,349 cf Embedded = 675 cf x 40.0% Voids
#2	98.60'	2,349 cf	**16.00'W x 40.00'L x 3.67'H 48" Concrete Galleries** Inside #1
		2,619 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	102.60'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	98.60'	**6.000 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.11 cfs @ 10.88 hrs HW=98.64' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=98.60' (Free Discharge)
└**1=Orifice/Grate** (Controls 0.00 cfs)

Pond 2P: 48" Concrete Galleries

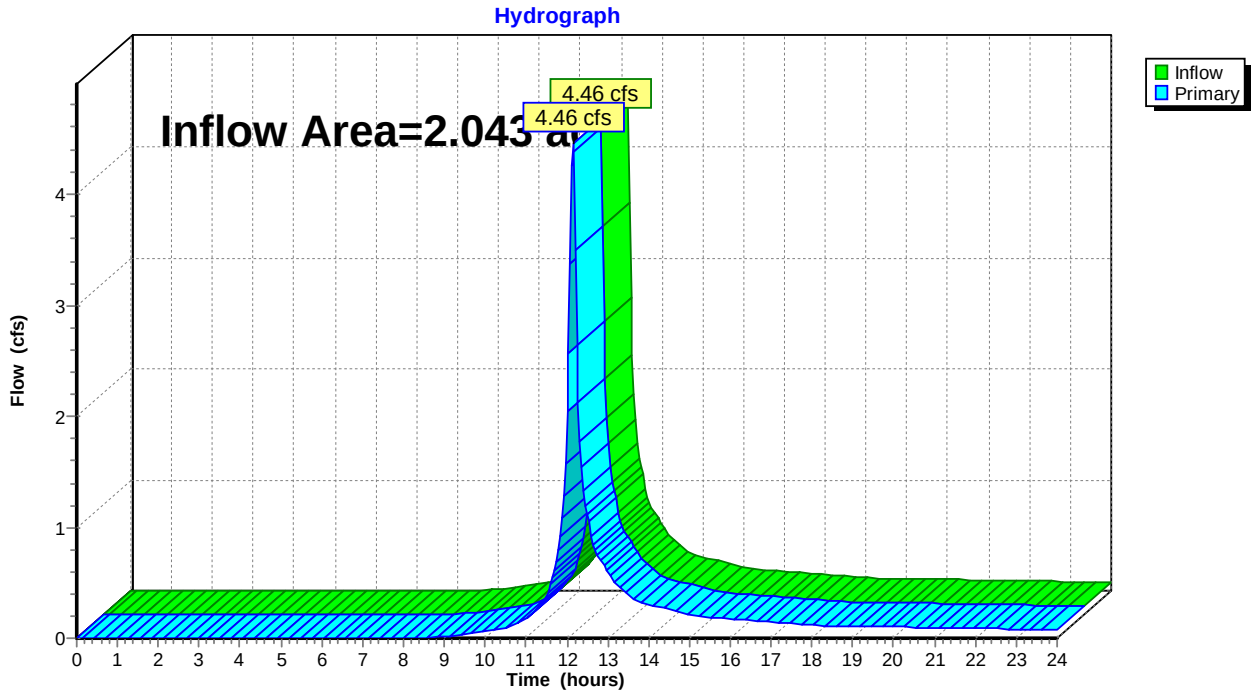


Summary for Link 1L: Combined Hydrograph

Inflow Area = 2.043 ac, 34.08% Impervious, Inflow Depth > 1.96" for 10 Year event
Inflow = 4.46 cfs @ 12.14 hrs, Volume= 0.334 af
Primary = 4.46 cfs @ 12.14 hrs, Volume= 0.334 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs

Link 1L: Combined Hydrograph



Summary for Subcatchment 3S: Areas Routed to Retention

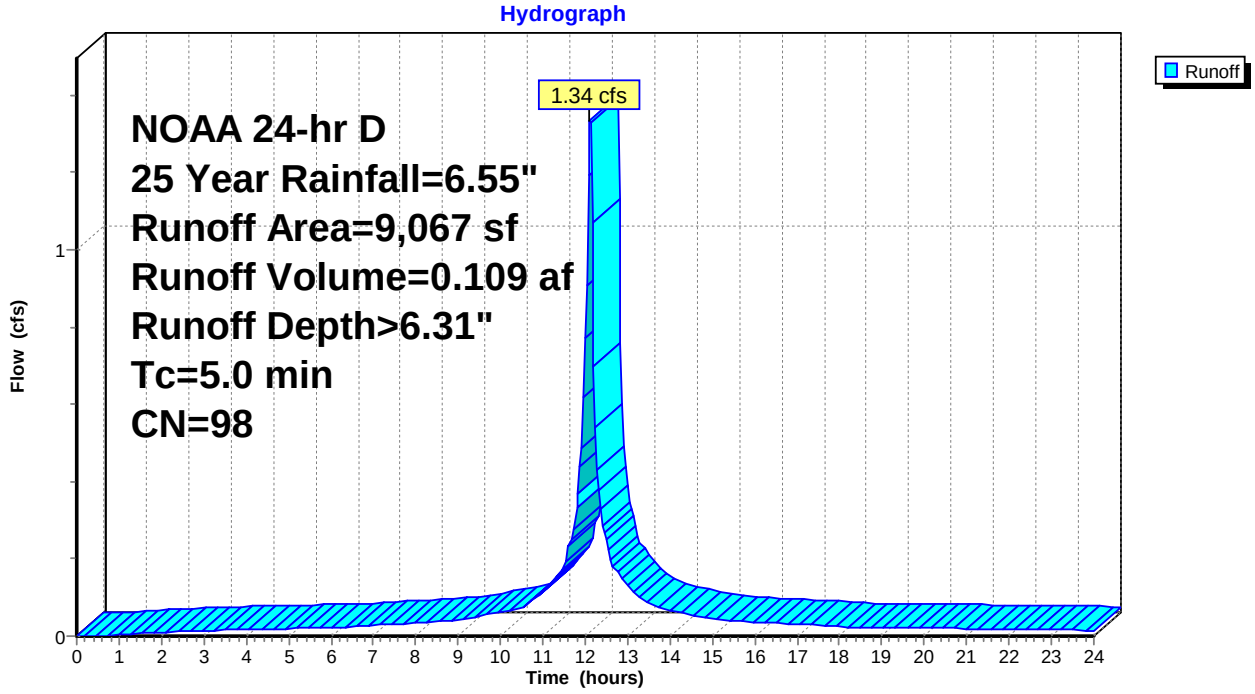
Runoff = 1.34 cfs @ 12.11 hrs, Volume= 0.109 af, Depth> 6.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 25 Year Rainfall=6.55"

	Area (sf)	CN	Description
*	9,067	98	Driveway/Parking
	9,067		100.00% Impervious Area

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

Subcatchment 3S: Areas Routed to Retention



Summary for Subcatchment 4S: Areas Routed to Retention

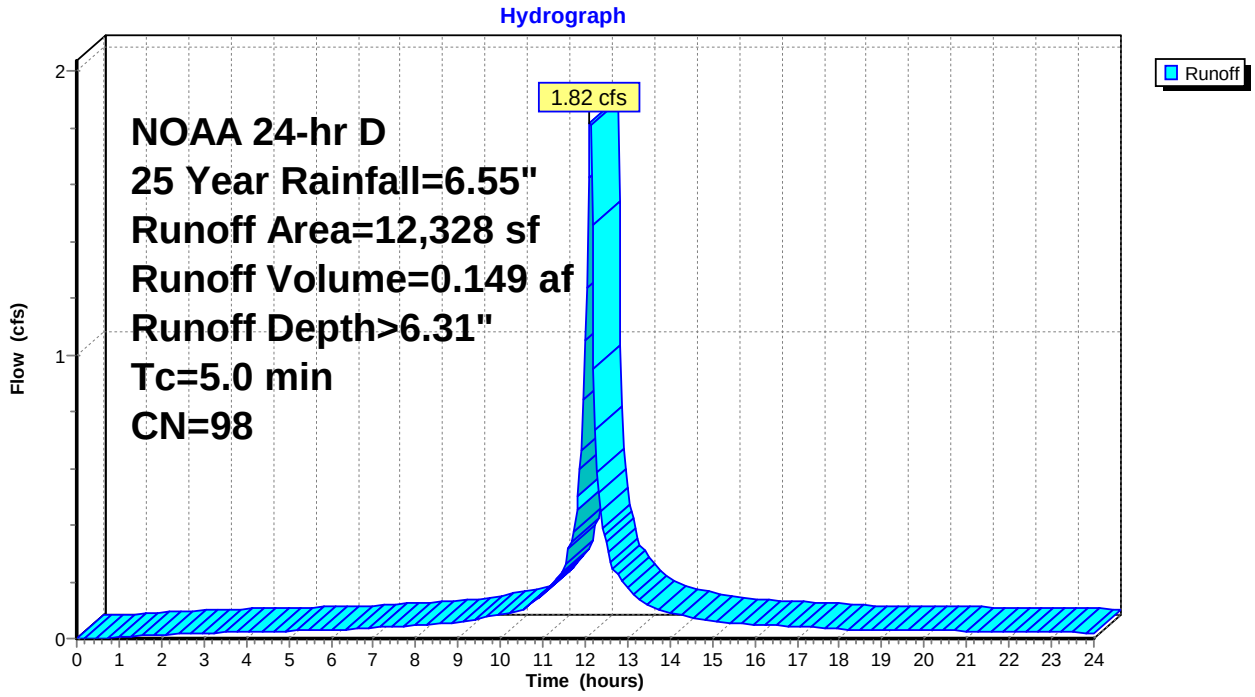
Runoff = 1.82 cfs @ 12.11 hrs, Volume= 0.149 af, Depth> 6.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 25 Year Rainfall=6.55"

	Area (sf)	CN	Description
*	7,083	98	Parking/Driveway
*	5,245	98	Building Units 2-4
	12,328	98	Weighted Average
	12,328		100.00% Impervious Area

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

Subcatchment 4S: Areas Routed to Retention



Summary for Subcatchment 5S: Areas not Routed to Retention

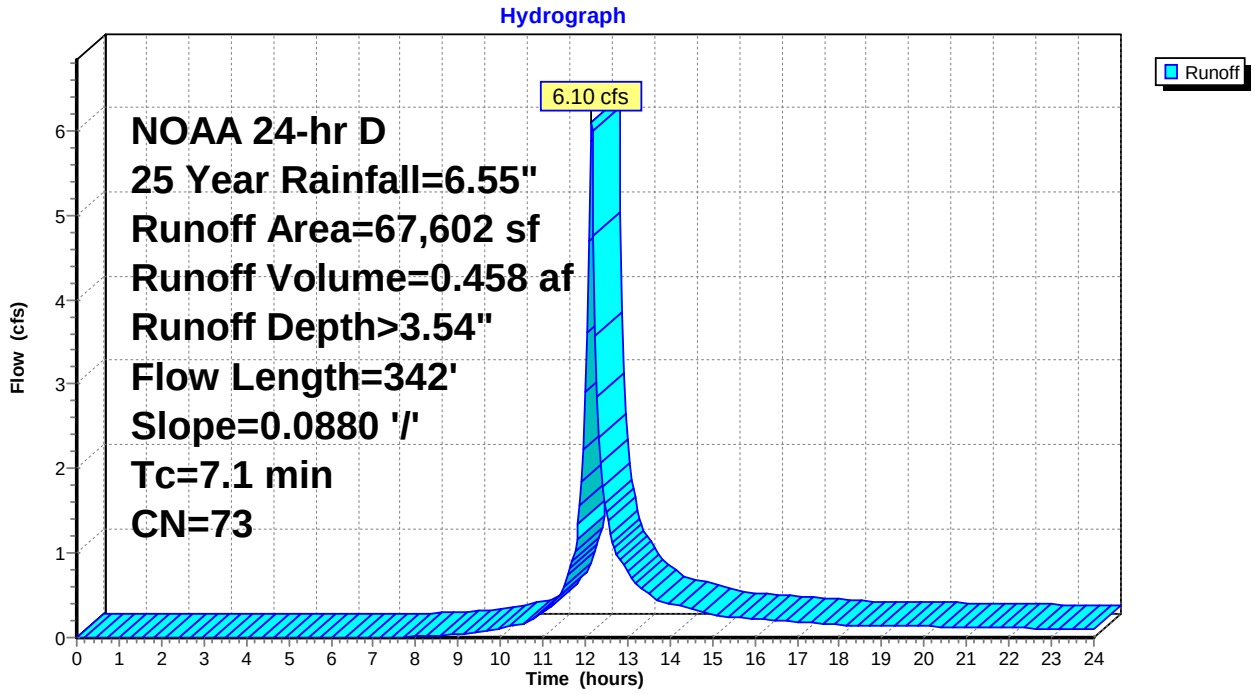
Runoff = 6.10 cfs @ 12.14 hrs, Volume= 0.458 af, Depth> 3.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 25 Year Rainfall=6.55"

	Area (sf)	CN	Description
*	8,937	98	Buildings
	58,665	69	50-75% Grass cover, Fair, HSG B
	67,602	73	Weighted Average
	58,665		86.78% Pervious Area
	8,937		13.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0880	0.32		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.54"
1.9	242	0.0880	2.08		**Shallow Concentrated Flow, Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
7.1	342	Total			

Subcatchment 5S: Areas not Routed to Retention



Summary for Pond 1P: 48" Concrete Galleries

Inflow Area = 0.491 ac,100.00% Impervious, Inflow Depth > 2.67" for 25 Year event
Inflow = 1.34 cfs @ 12.11 hrs, Volume= 0.109 af
Outflow = 0.23 cfs @ 12.76 hrs, Volume= 0.106 af, Atten= 83%, Lag= 38.8 min
Discarded = 0.07 cfs @ 10.60 hrs, Volume= 0.103 af
Primary = 0.16 cfs @ 12.76 hrs, Volume= 0.003 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 98.00' @ 12.76 hrs Surf.Area= 532 sf Storage= 1,802 cf

Plug-Flow detention time= 185.3 min calculated for 0.106 af (97% of inflow)
Center-of-Mass det. time= 167.8 min (911.3 - 743.5)

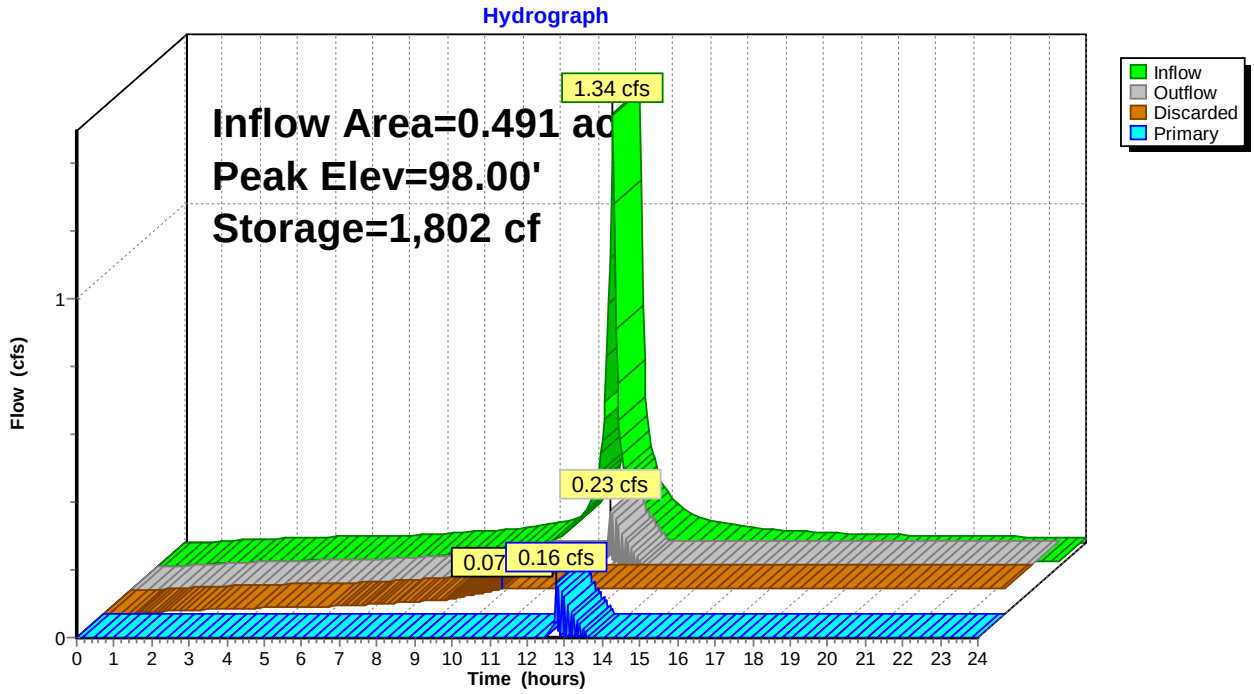
Volume	Invert	Avail.Storage	Storage Description
#1	93.90'	217 cf	**14.00'W x 38.00'L x 4.00'H Stone** 2,128 cf Overall - 1,585 cf Embedded = 543 cf x 40.0% Voids
#2	93.90'	1,585 cf	**12.00'W x 36.00'L x 3.67'H 48" Concrete Galleries** Inside #1
		1,802 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	97.90'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	93.90'	**6.000 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.07 cfs @ 10.60 hrs HW=93.94' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=0.15 cfs @ 12.76 hrs HW=98.00' (Free Discharge)
└**1=Orifice/Grate** (Weir Controls 0.15 cfs @ 1.01 fps)

Pond 1P: 48" Concrete Galleries



Summary for Pond 2P: 48" Concrete Galleries

Inflow Area = 0.283 ac,100.00% Impervious, Inflow Depth > 6.31" for 25 Year event
Inflow = 1.82 cfs @ 12.11 hrs, Volume= 0.149 af
Outflow = 0.11 cfs @ 10.64 hrs, Volume= 0.145 af, Atten= 94%, Lag= 0.0 min
Discarded = 0.11 cfs @ 10.64 hrs, Volume= 0.145 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 102.50' @ 13.60 hrs Surf.Area= 756 sf Storage= 2,588 cf

Plug-Flow detention time= 190.6 min calculated for 0.145 af (98% of inflow)
Center-of-Mass det. time= 176.1 min (919.6 - 743.5)

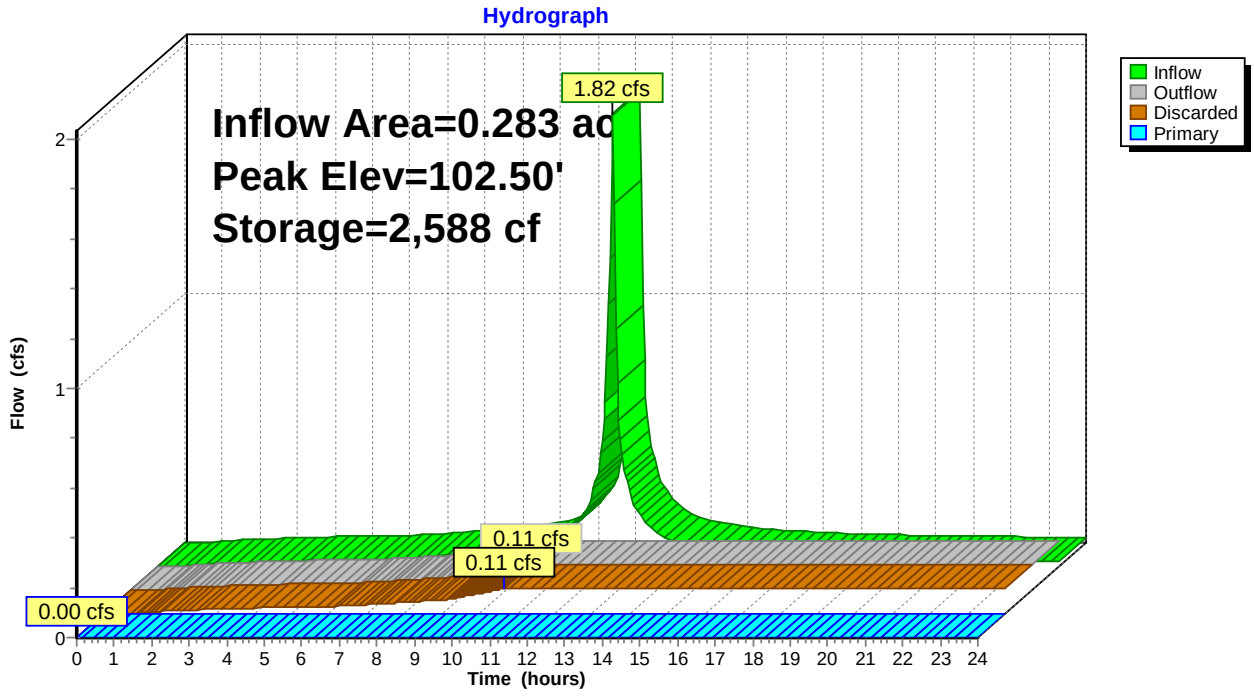
Volume	Invert	Avail.Storage	Storage Description
#1	98.60'	270 cf	**18.00'W x 42.00'L x 4.00'H Stone** 3,024 cf Overall - 2,349 cf Embedded = 675 cf x 40.0% Voids
#2	98.60'	2,349 cf	**16.00'W x 40.00'L x 3.67'H 48" Concrete Galleries** Inside #1
		2,619 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	102.60'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	98.60'	**6.000 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.11 cfs @ 10.64 hrs HW=98.64' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=98.60' (Free Discharge)
└**1=Orifice/Grate** (Controls 0.00 cfs)

Pond 2P: 48" Concrete Galleries

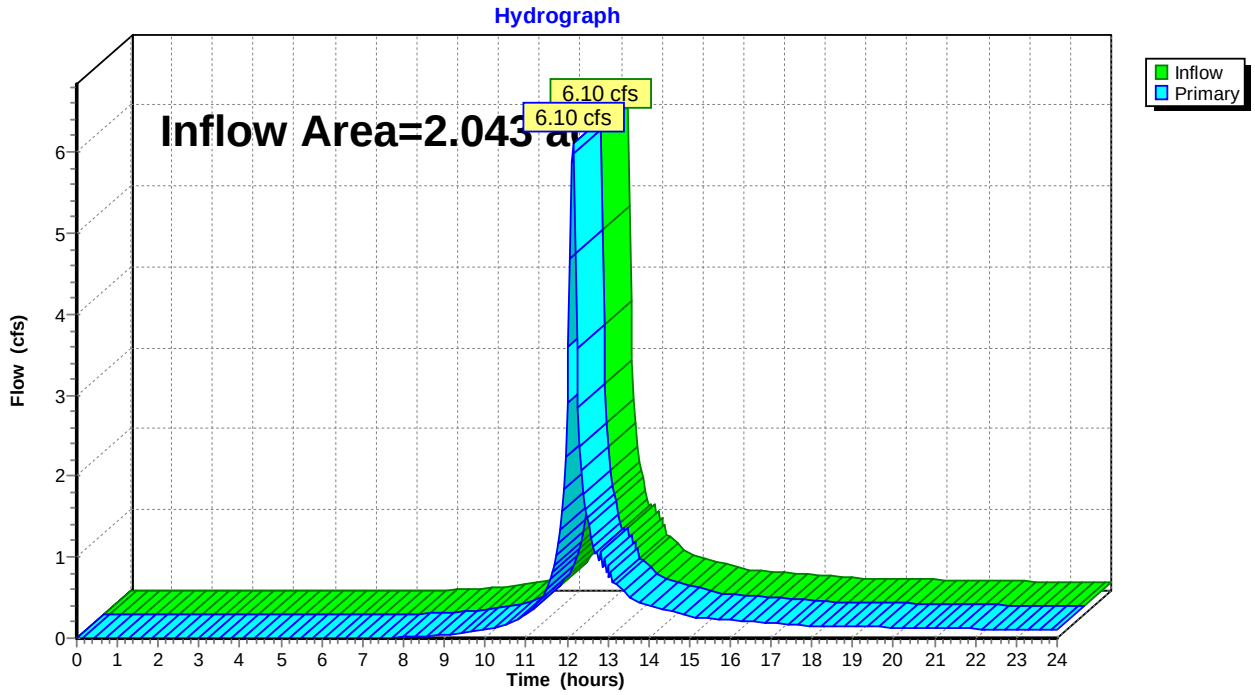


Summary for Link 1L: Combined Hydrograph

Inflow Area = 2.043 ac, 34.08% Impervious, Inflow Depth > 2.71" for 25 Year event
Inflow = 6.10 cfs @ 12.14 hrs, Volume= 0.462 af
Primary = 6.10 cfs @ 12.14 hrs, Volume= 0.462 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs

Link 1L: Combined Hydrograph



Summary for Subcatchment 3S: Areas Routed to Retention

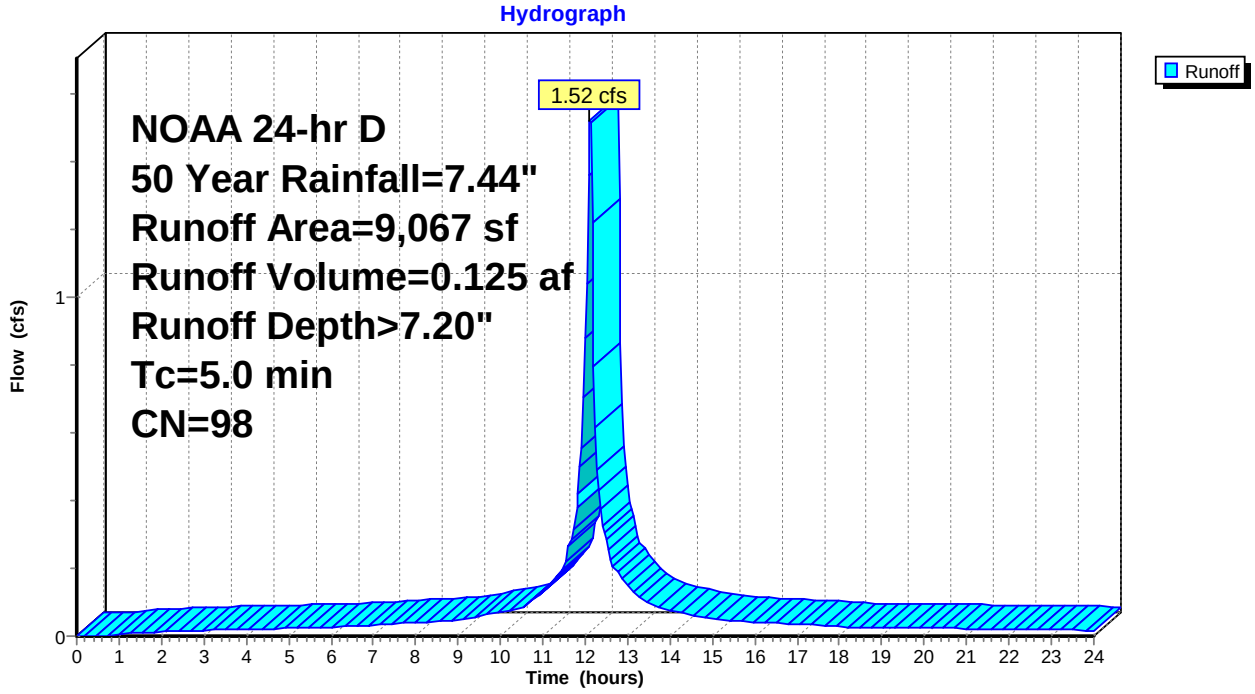
Runoff = 1.52 cfs @ 12.11 hrs, Volume= 0.125 af, Depth> 7.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 50 Year Rainfall=7.44"

	Area (sf)	CN	Description
*	9,067	98	Driveway/Parking
	9,067		100.00% Impervious Area

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

Subcatchment 3S: Areas Routed to Retention



Summary for Subcatchment 4S: Areas Routed to Retention

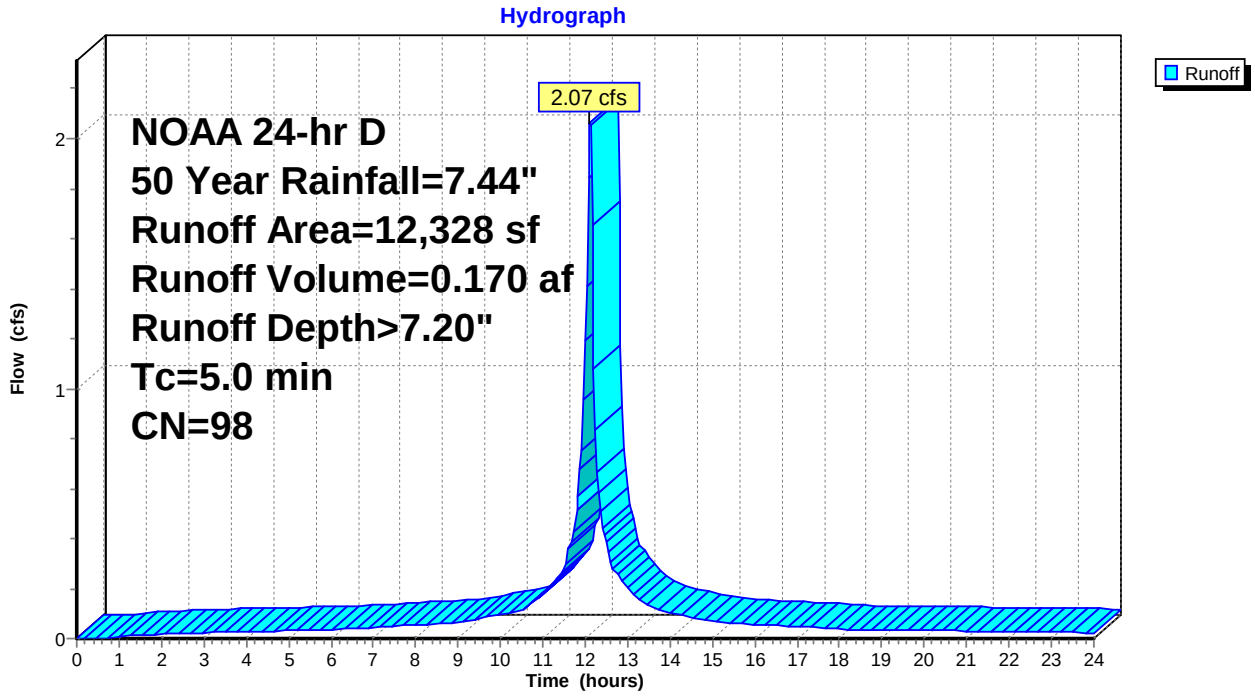
Runoff = 2.07 cfs @ 12.11 hrs, Volume= 0.170 af, Depth> 7.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 50 Year Rainfall=7.44"

	Area (sf)	CN	Description
*	7,083	98	Parking/Driveway
*	5,245	98	Building Units 2-4
	12,328	98	Weighted Average
	12,328		100.00% Impervious Area

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

Subcatchment 4S: Areas Routed to Retention



Summary for Subcatchment 5S: Areas not Routed to Retention

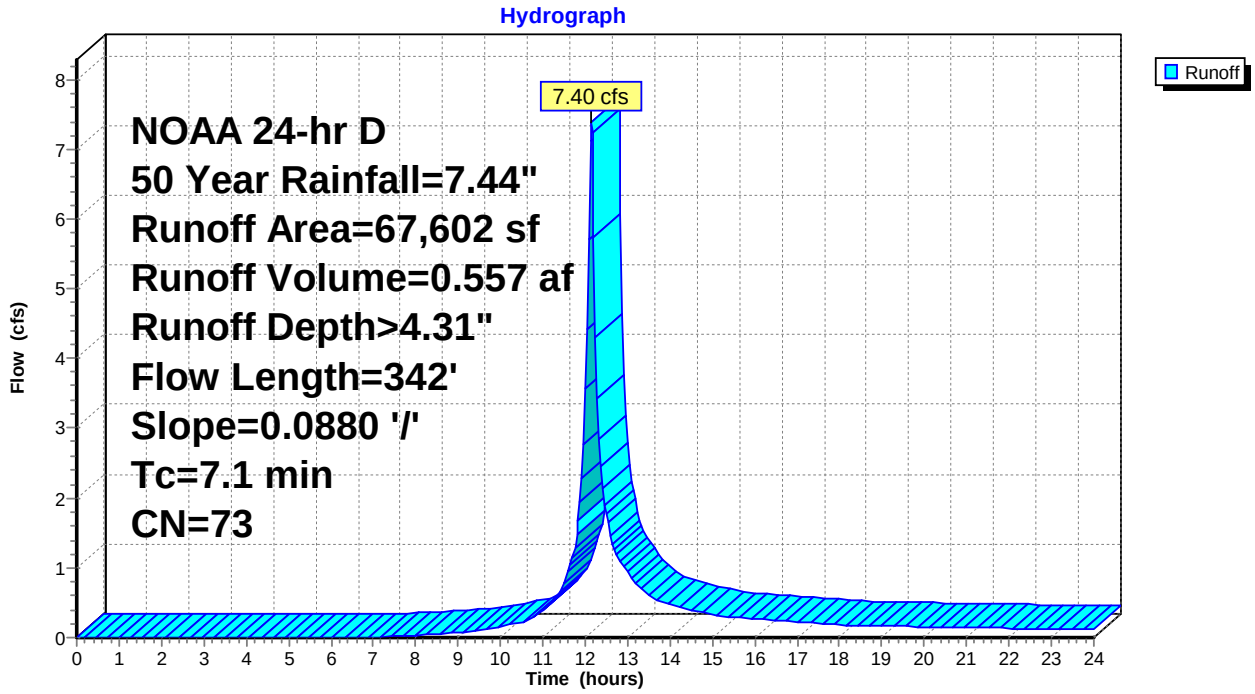
Runoff = 7.40 cfs @ 12.14 hrs, Volume= 0.557 af, Depth> 4.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 50 Year Rainfall=7.44"

	Area (sf)	CN	Description
*	8,937	98	Buildings
	58,665	69	50-75% Grass cover, Fair, HSG B
	67,602	73	Weighted Average
	58,665		86.78% Pervious Area
	8,937		13.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0880	0.32		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.54"
1.9	242	0.0880	2.08		**Shallow Concentrated Flow, Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
7.1	342	Total			

Subcatchment 5S: Areas not Routed to Retention



Summary for Pond 1P: 48" Concrete Galleries

Inflow Area = 0.491 ac,100.00% Impervious, Inflow Depth > 3.33" for 50 Year event
Inflow = 1.52 cfs @ 12.11 hrs, Volume= 0.136 af
Outflow = 0.89 cfs @ 12.48 hrs, Volume= 0.130 af, Atten= 42%, Lag= 21.9 min
Discarded = 0.07 cfs @ 10.20 hrs, Volume= 0.106 af
Primary = 0.81 cfs @ 12.48 hrs, Volume= 0.023 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 98.64' @ 12.48 hrs Surf.Area= 532 sf Storage= 1,802 cf

Plug-Flow detention time= 159.2 min calculated for 0.130 af (95% of inflow)
Center-of-Mass det. time= 131.7 min (875.5 - 743.8)

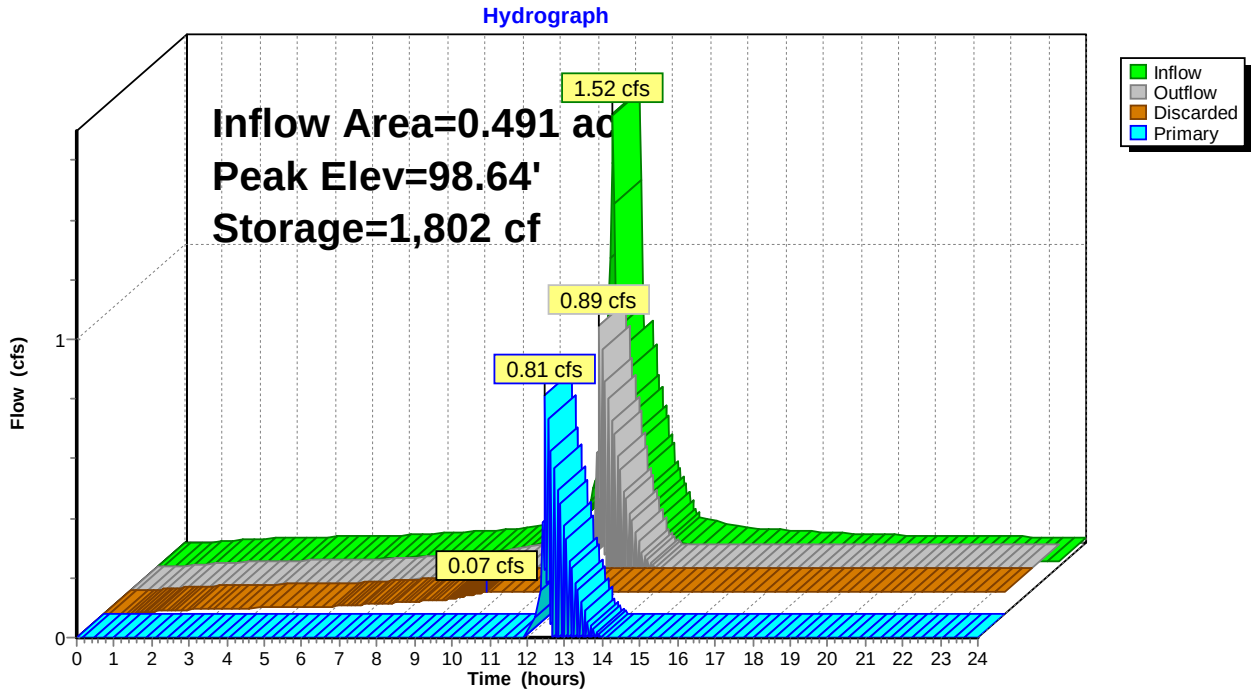
Volume	Invert	Avail.Storage	Storage Description
#1	93.90'	217 cf	**14.00'W x 38.00'L x 4.00'H Stone** 2,128 cf Overall - 1,585 cf Embedded = 543 cf x 40.0% Voids
#2	93.90'	1,585 cf	**12.00'W x 36.00'L x 3.67'H 48" Concrete Galleries** Inside #1
		1,802 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	97.90'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	93.90'	**6.000 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.07 cfs @ 10.20 hrs HW=93.94' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=0.81 cfs @ 12.48 hrs HW=98.63' (Free Discharge)
1=Orifice/Grate (Orifice Controls 0.81 cfs @ 4.10 fps)

Pond 1P: 48" Concrete Galleries



Summary for Pond 2P: 48" Concrete Galleries

Inflow Area = 0.283 ac,100.00% Impervious, Inflow Depth > 7.20" for 50 Year event
Inflow = 2.07 cfs @ 12.11 hrs, Volume= 0.170 af
Outflow = 0.56 cfs @ 12.48 hrs, Volume= 0.161 af, Atten= 73%, Lag= 21.9 min
Discarded = 0.11 cfs @ 10.32 hrs, Volume= 0.150 af
Primary = 0.46 cfs @ 12.48 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 102.83' @ 12.48 hrs Surf.Area= 756 sf Storage= 2,619 cf

Plug-Flow detention time= 183.8 min calculated for 0.161 af (95% of inflow)
Center-of-Mass det. time= 153.3 min (894.9 - 741.6)

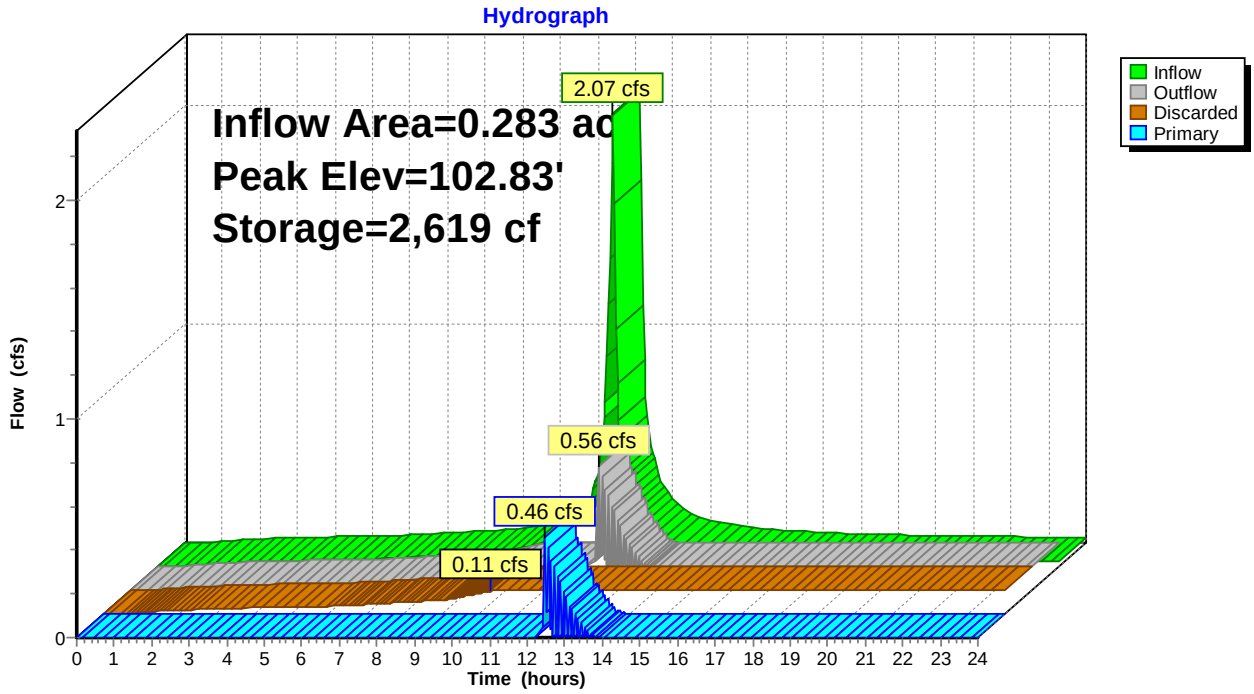
Volume	Invert	Avail.Storage	Storage Description
#1	98.60'	270 cf	**18.00'W x 42.00'L x 4.00'H Stone** 3,024 cf Overall - 2,349 cf Embedded = 675 cf x 40.0% Voids
#2	98.60'	2,349 cf	**16.00'W x 40.00'L x 3.67'H 48" Concrete Galleries** Inside #1
		2,619 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	102.60'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	98.60'	**6.000 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.11 cfs @ 10.32 hrs HW=98.64' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.45 cfs @ 12.48 hrs HW=102.83' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.45 cfs @ 2.31 fps)

Pond 2P: 48" Concrete Galleries

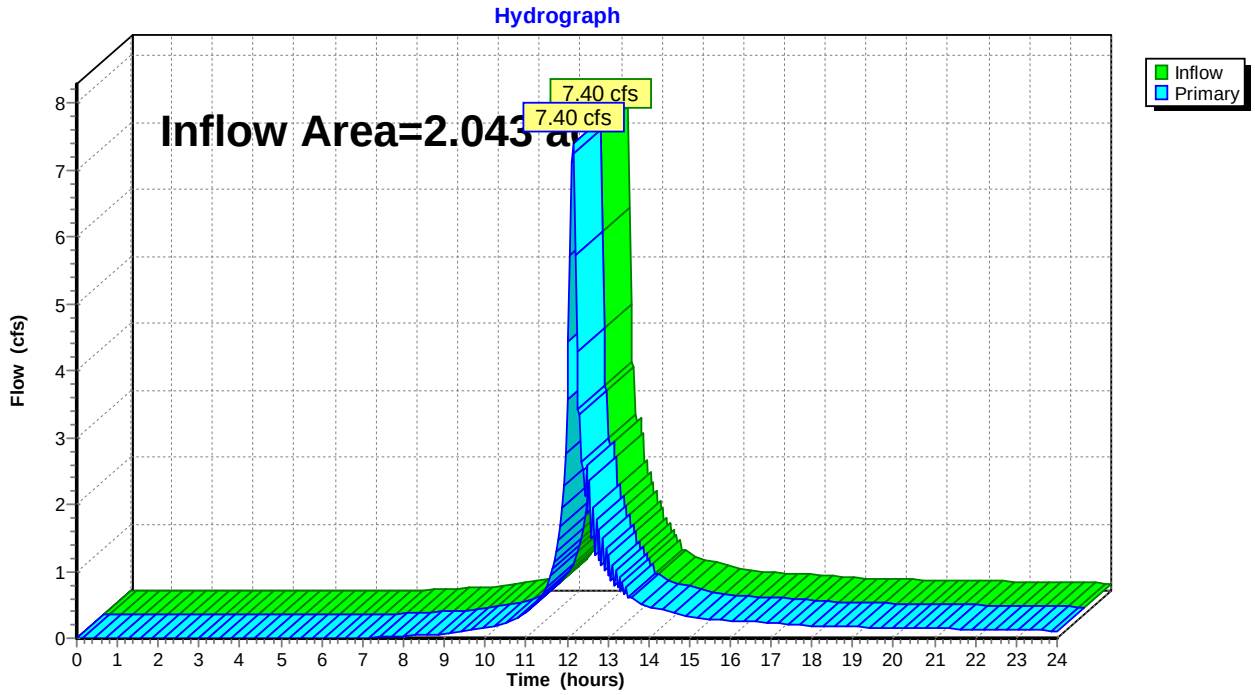


Summary for Link 1L: Combined Hydrograph

Inflow Area = 2.043 ac, 34.08% Impervious, Inflow Depth > 3.41" for 50 Year event
Inflow = 7.40 cfs @ 12.14 hrs, Volume= 0.581 af
Primary = 7.40 cfs @ 12.14 hrs, Volume= 0.581 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs

Link 1L: Combined Hydrograph



Summary for Subcatchment 3S: Areas Routed to Retention

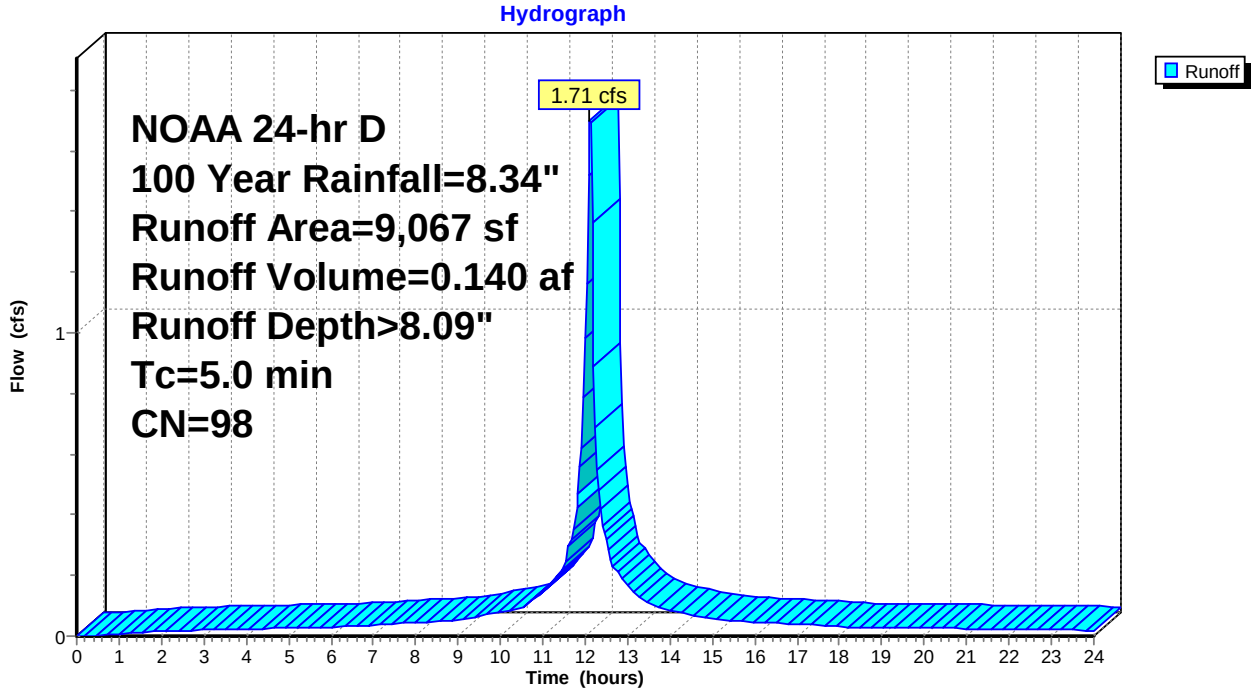
Runoff = 1.71 cfs @ 12.11 hrs, Volume= 0.140 af, Depth> 8.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 100 Year Rainfall=8.34"

	Area (sf)	CN	Description
*	9,067	98	Driveway/Parking
	9,067		100.00% Impervious Area

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

Subcatchment 3S: Areas Routed to Retention



Summary for Subcatchment 4S: Areas Routed to Retention

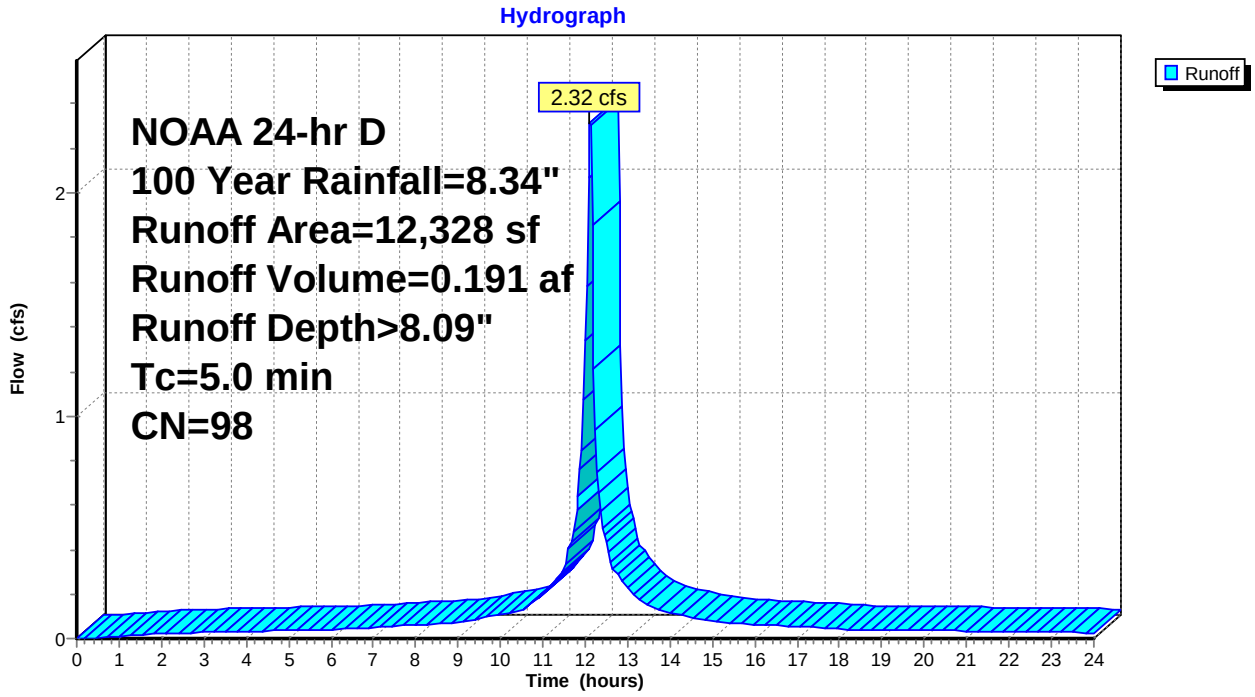
Runoff = 2.32 cfs @ 12.11 hrs, Volume= 0.191 af, Depth> 8.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 100 Year Rainfall=8.34"

	Area (sf)	CN	Description
*	7,083	98	Parking/Driveway
*	5,245	98	Building Units 2-4
	12,328	98	Weighted Average
	12,328		100.00% Impervious Area

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

Subcatchment 4S: Areas Routed to Retention



Summary for Subcatchment 5S: Areas not Routed to Retention

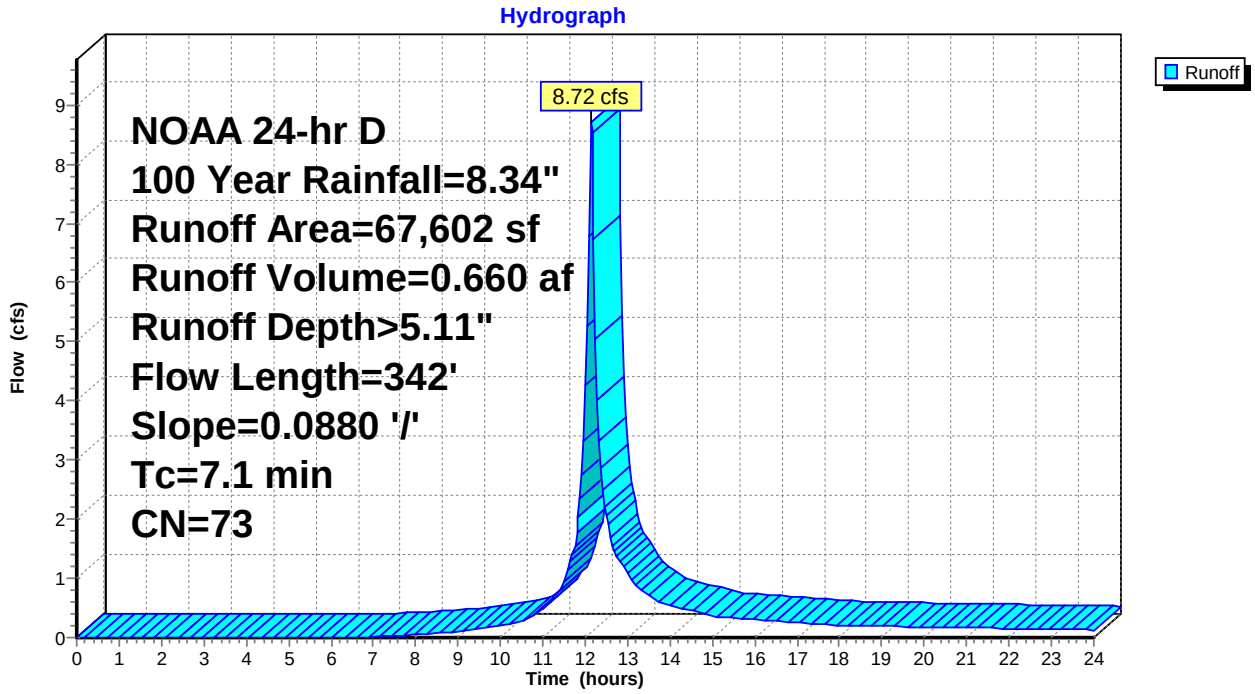
Runoff = 8.72 cfs @ 12.14 hrs, Volume= 0.660 af, Depth> 5.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 100 Year Rainfall=8.34"

	Area (sf)	CN	Description
*	8,937	98	Buildings
	58,665	69	50-75% Grass cover, Fair, HSG B
	67,602	73	Weighted Average
	58,665		86.78% Pervious Area
	8,937		13.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0880	0.32		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.54"
1.9	242	0.0880	2.08		**Shallow Concentrated Flow, Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
7.1	342	Total			

Subcatchment 5S: Areas not Routed to Retention



Summary for Pond 1P: 48" Concrete Galleries

Inflow Area = 0.491 ac,100.00% Impervious, Inflow Depth > 4.02" for 100 Year event
Inflow = 1.71 cfs @ 12.11 hrs, Volume= 0.165 af
Outflow = 1.69 cfs @ 12.27 hrs, Volume= 0.156 af, Atten= 1%, Lag= 9.6 min
Discarded = 0.07 cfs @ 9.88 hrs, Volume= 0.109 af
Primary = 1.61 cfs @ 12.27 hrs, Volume= 0.046 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 100.76' @ 12.28 hrs Surf.Area= 532 sf Storage= 1,802 cf

Plug-Flow detention time= 136.9 min calculated for 0.155 af (94% of inflow)
Center-of-Mass det. time= 105.0 min (847.8 - 742.8)

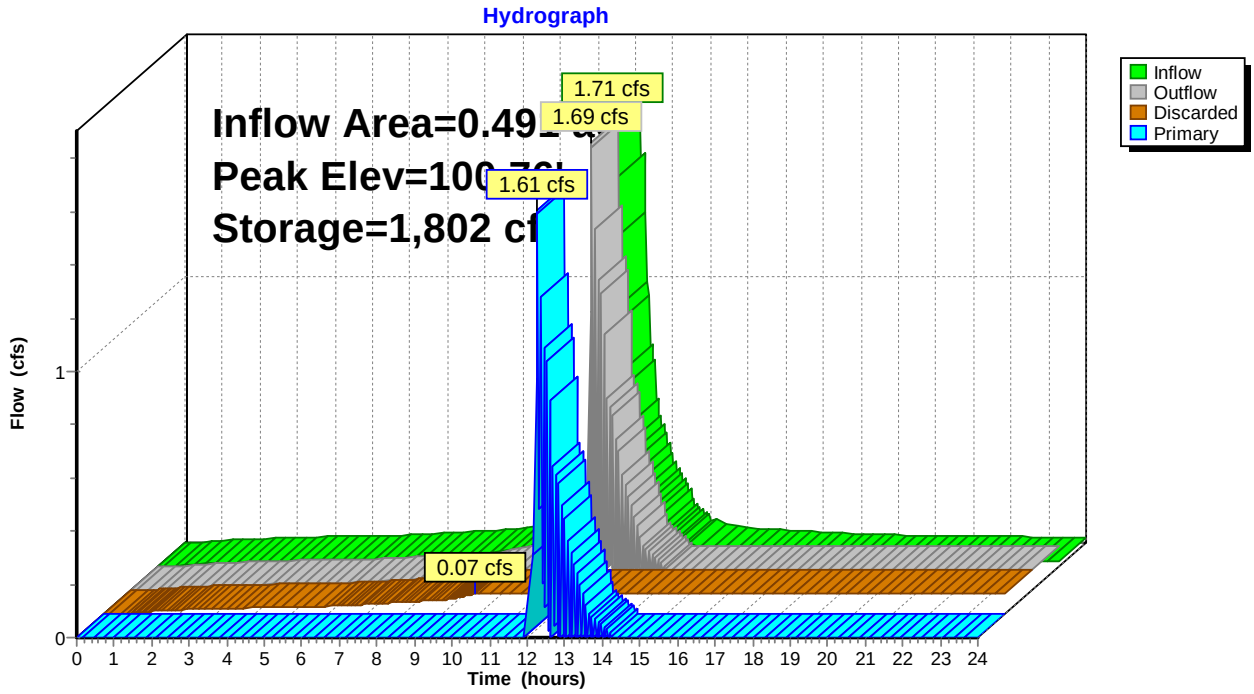
Volume	Invert	Avail.Storage	Storage Description
#1	93.90'	217 cf	**14.00'W x 38.00'L x 4.00'H Stone** 2,128 cf Overall - 1,585 cf Embedded = 543 cf x 40.0% Voids
#2	93.90'	1,585 cf	**12.00'W x 36.00'L x 3.67'H 48" Concrete Galleries** Inside #1
		1,802 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	97.90'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	93.90'	**6.000 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.07 cfs @ 9.88 hrs HW=93.94' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=1.52 cfs @ 12.27 hrs HW=100.49' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 1.52 cfs @ 7.76 fps)

Pond 1P: 48" Concrete Galleries



Summary for Pond 2P: 48" Concrete Galleries

Inflow Area = 0.283 ac,100.00% Impervious, Inflow Depth > 8.09" for 100 Year event
Inflow = 2.32 cfs @ 12.11 hrs, Volume= 0.191 af
Outflow = 0.96 cfs @ 12.26 hrs, Volume= 0.178 af, Atten= 59%, Lag= 8.5 min
Discarded = 0.11 cfs @ 10.00 hrs, Volume= 0.154 af
Primary = 0.85 cfs @ 12.26 hrs, Volume= 0.024 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 103.36' @ 12.25 hrs Surf.Area= 756 sf Storage= 2,619 cf

Plug-Flow detention time= 171.5 min calculated for 0.178 af (93% of inflow)
Center-of-Mass det. time= 132.5 min (872.6 - 740.1)

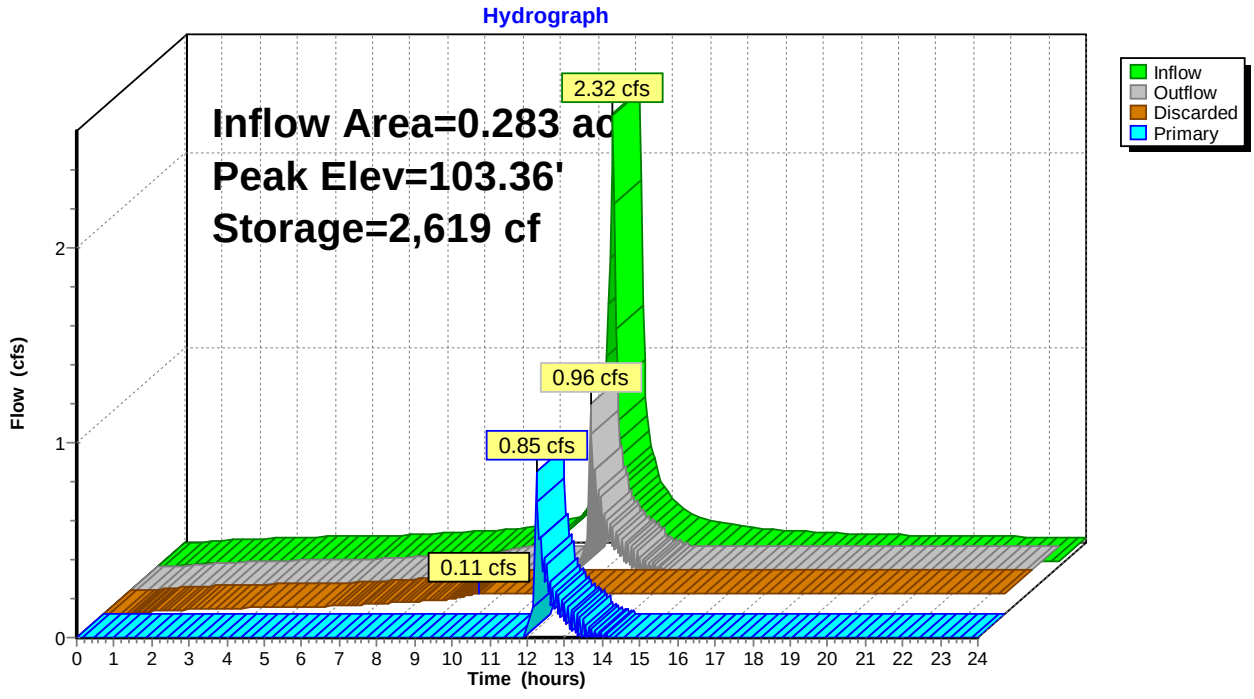
Volume	Invert	Avail.Storage	Storage Description
#1	98.60'	270 cf	**18.00'W x 42.00'L x 4.00'H Stone** 3,024 cf Overall - 2,349 cf Embedded = 675 cf x 40.0% Voids
#2	98.60'	2,349 cf	**16.00'W x 40.00'L x 3.67'H 48" Concrete Galleries** Inside #1
		2,619 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	102.60'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Discarded	98.60'	**6.000 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.11 cfs @ 10.00 hrs HW=98.64' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.75 cfs @ 12.26 hrs HW=103.23' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.75 cfs @ 3.81 fps)

Pond 2P: 48" Concrete Galleries

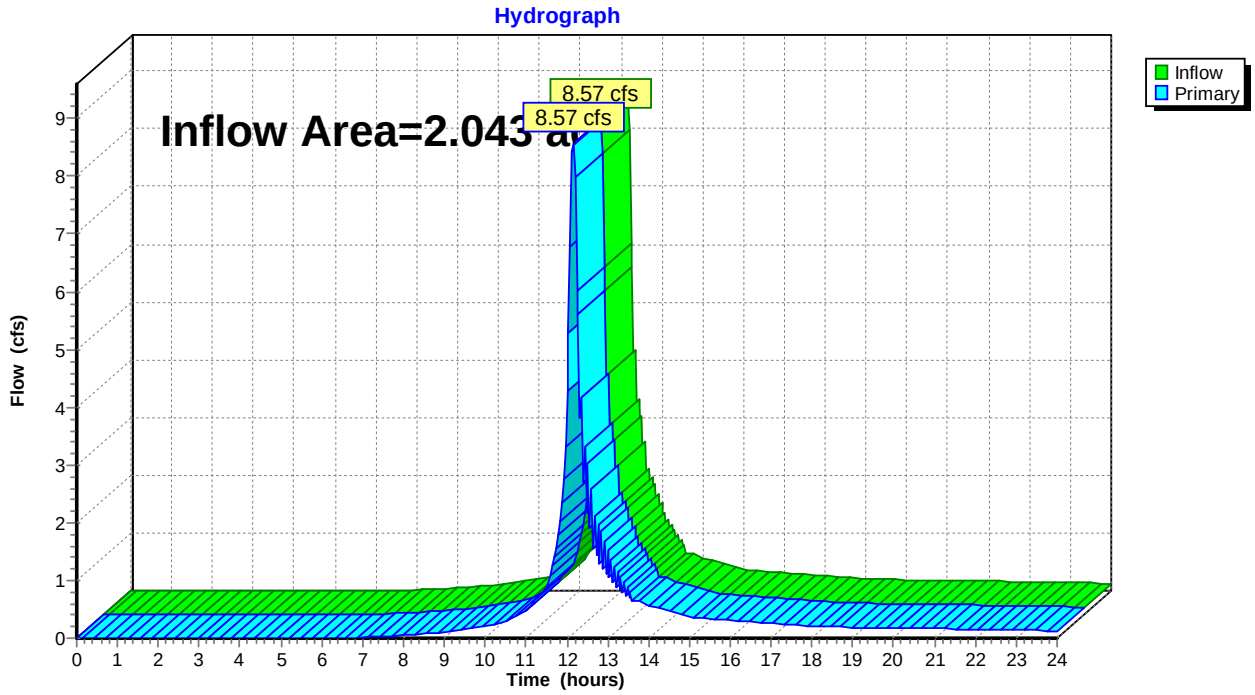


Summary for Link 1L: Combined Hydrograph

Inflow Area = 2.043 ac, 34.08% Impervious, Inflow Depth > 4.15" for 100 Year event
Inflow = 8.57 cfs @ 12.15 hrs, Volume= 0.706 af
Primary = 8.57 cfs @ 12.15 hrs, Volume= 0.706 af, Atten= 0%, Lag= 0.0 min

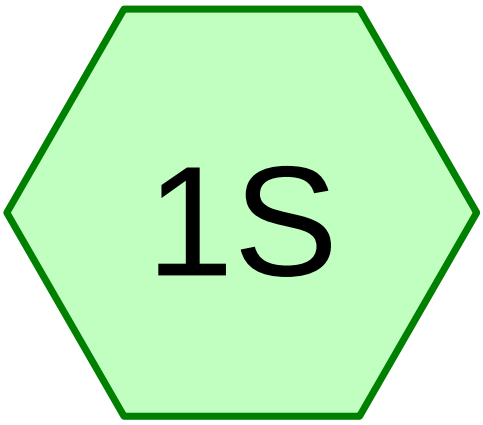
Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs

Link 1L: Combined Hydrograph



APPENDIX “D”

HYDROCAD ANALYSIS
BASIN B
CT ROUTE 32



Existing Conditions
Basin B Route 32

Subcat Reach Pond Link

Routing Diagram for 2578Existing
Prepared by Fairfield County Engineering LLC, Printed 3/31/2025
HydroCAD® 10.00-26 s/n 06020 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 1S: Existing Conditions Basin B Route 32

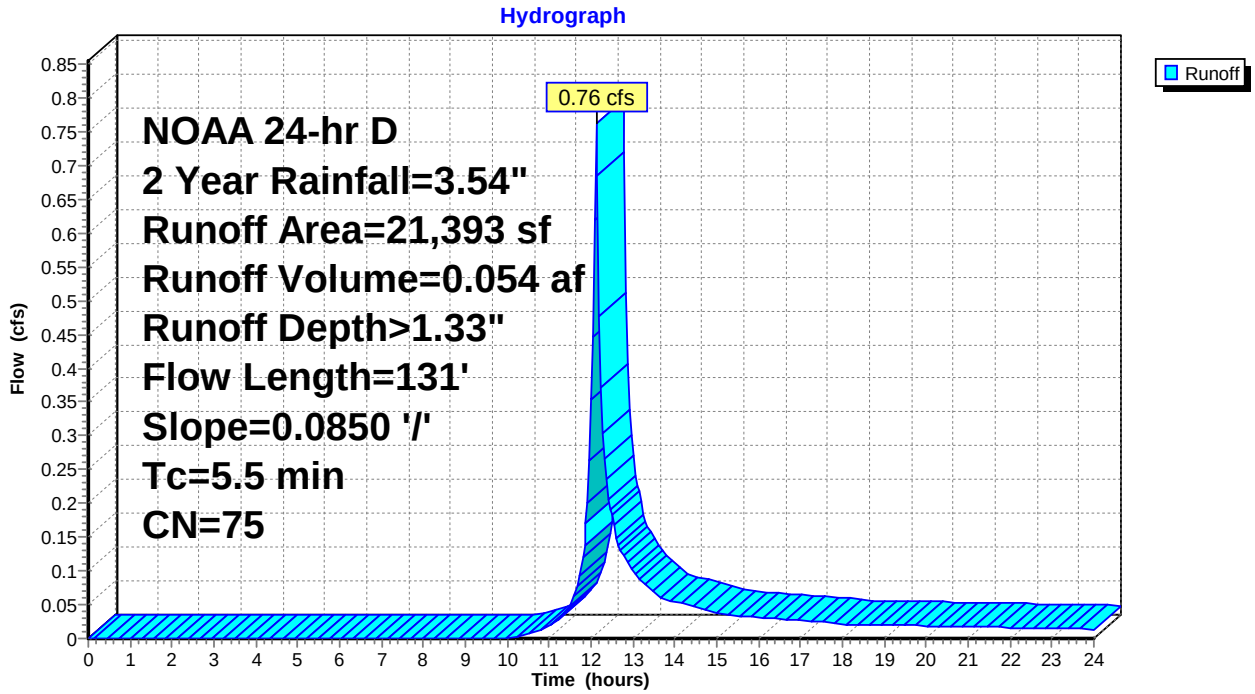
Runoff = 0.76 cfs @ 12.13 hrs, Volume= 0.054 af, Depth> 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 2 Year Rainfall=3.54"

	Area (sf)	CN	Description
*	1,659	98	House
*	1,934	98	Driveway
*	836	85	Gravel
*	196	98	Walks
	16,768	69	50-75% Grass cover, Fair, HSG B
	21,393	75	Weighted Average
	17,604		82.29% Pervious Area
	3,789		17.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0850	0.32		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.54"
0.3	31	0.0850	2.04		**Shallow Concentrated Flow, Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
5.5	131	Total			

Subcatchment 1S: Existing Conditions Basin B Route 32



Summary for Subcatchment 1S: Existing Conditions Basin B Route 32

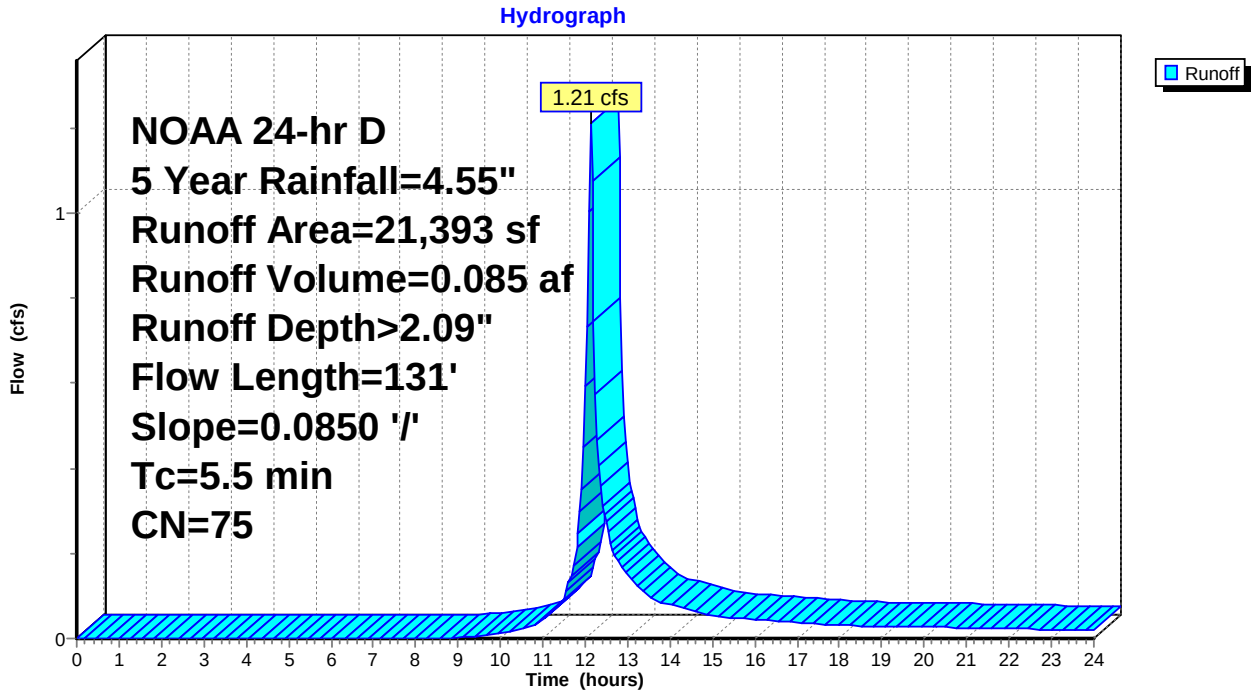
Runoff = 1.21 cfs @ 12.12 hrs, Volume= 0.085 af, Depth> 2.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 5 Year Rainfall=4.55"

	Area (sf)	CN	Description
*	1,659	98	House
*	1,934	98	Driveway
*	836	85	Gravel
*	196	98	Walks
	16,768	69	50-75% Grass cover, Fair, HSG B
	21,393	75	Weighted Average
	17,604		82.29% Pervious Area
	3,789		17.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0850	0.32		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.54"
0.3	31	0.0850	2.04		**Shallow Concentrated Flow, Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
5.5	131	Total			

Subcatchment 1S: Existing Conditions Basin B Route 32



Summary for Subcatchment 1S: Existing Conditions Basin B Route 32

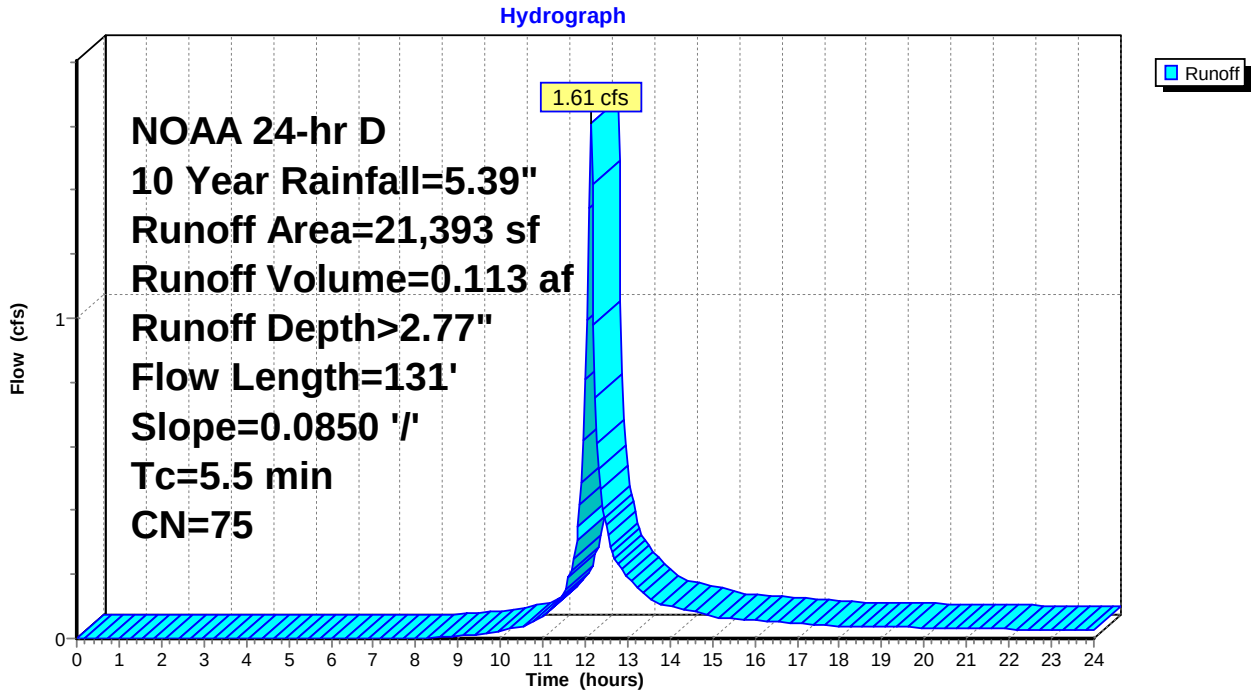
Runoff = 1.61 cfs @ 12.12 hrs, Volume= 0.113 af, Depth> 2.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 10 Year Rainfall=5.39"

	Area (sf)	CN	Description
*	1,659	98	House
*	1,934	98	Driveway
*	836	85	Gravel
*	196	98	Walks
	16,768	69	50-75% Grass cover, Fair, HSG B
	21,393	75	Weighted Average
	17,604		82.29% Pervious Area
	3,789		17.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0850	0.32		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.54"
0.3	31	0.0850	2.04		**Shallow Concentrated Flow, Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
5.5	131	Total			

Subcatchment 1S: Existing Conditions Basin B Route 32



Summary for Subcatchment 1S: Existing Conditions Basin B Route 32

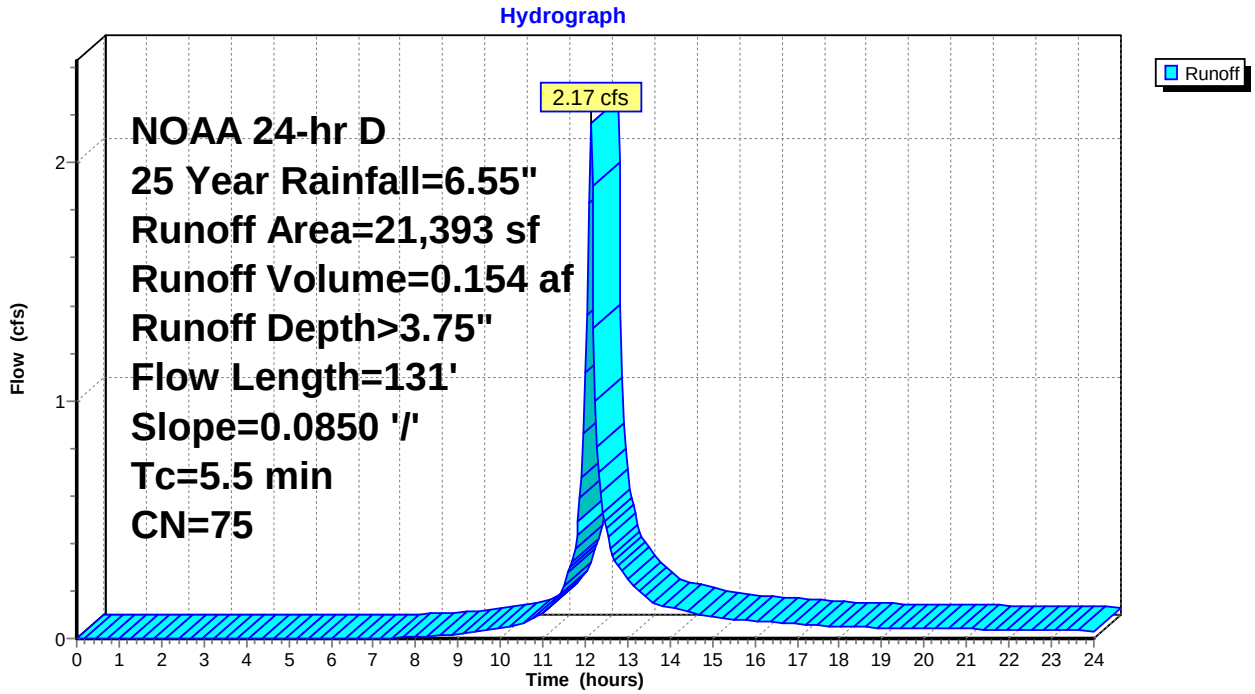
Runoff = 2.17 cfs @ 12.12 hrs, Volume= 0.154 af, Depth> 3.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 25 Year Rainfall=6.55"

	Area (sf)	CN	Description
*	1,659	98	House
*	1,934	98	Driveway
*	836	85	Gravel
*	196	98	Walks
	16,768	69	50-75% Grass cover, Fair, HSG B
	21,393	75	Weighted Average
	17,604		82.29% Pervious Area
	3,789		17.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0850	0.32		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.54"
0.3	31	0.0850	2.04		**Shallow Concentrated Flow, Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
5.5	131	Total			

Subcatchment 1S: Existing Conditions Basin B Route 32



Summary for Subcatchment 1S: Existing Conditions Basin B Route 32

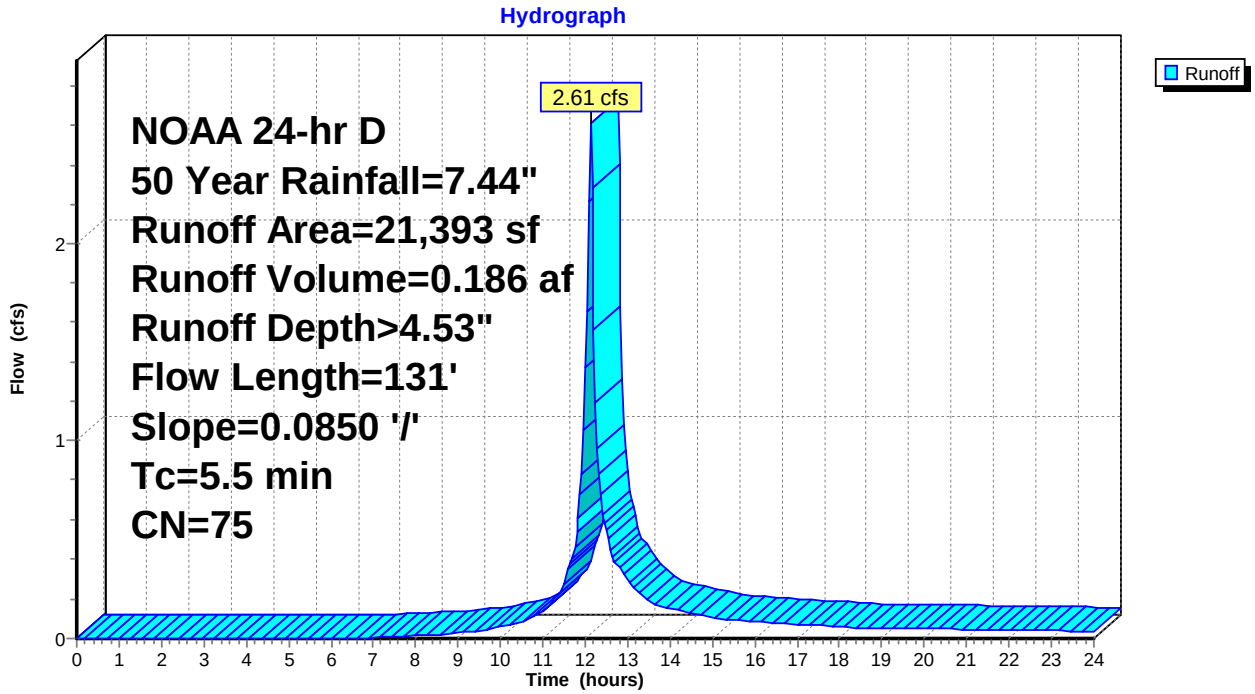
Runoff = 2.61 cfs @ 12.12 hrs, Volume= 0.186 af, Depth> 4.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 50 Year Rainfall=7.44"

	Area (sf)	CN	Description
*	1,659	98	House
*	1,934	98	Driveway
*	836	85	Gravel
*	196	98	Walks
	16,768	69	50-75% Grass cover, Fair, HSG B
	21,393	75	Weighted Average
	17,604		82.29% Pervious Area
	3,789		17.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0850	0.32		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.54"
0.3	31	0.0850	2.04		**Shallow Concentrated Flow, Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
5.5	131	Total			

Subcatchment 1S: Existing Conditions Basin B Route 32



Summary for Subcatchment 1S: Existing Conditions Basin B Route 32

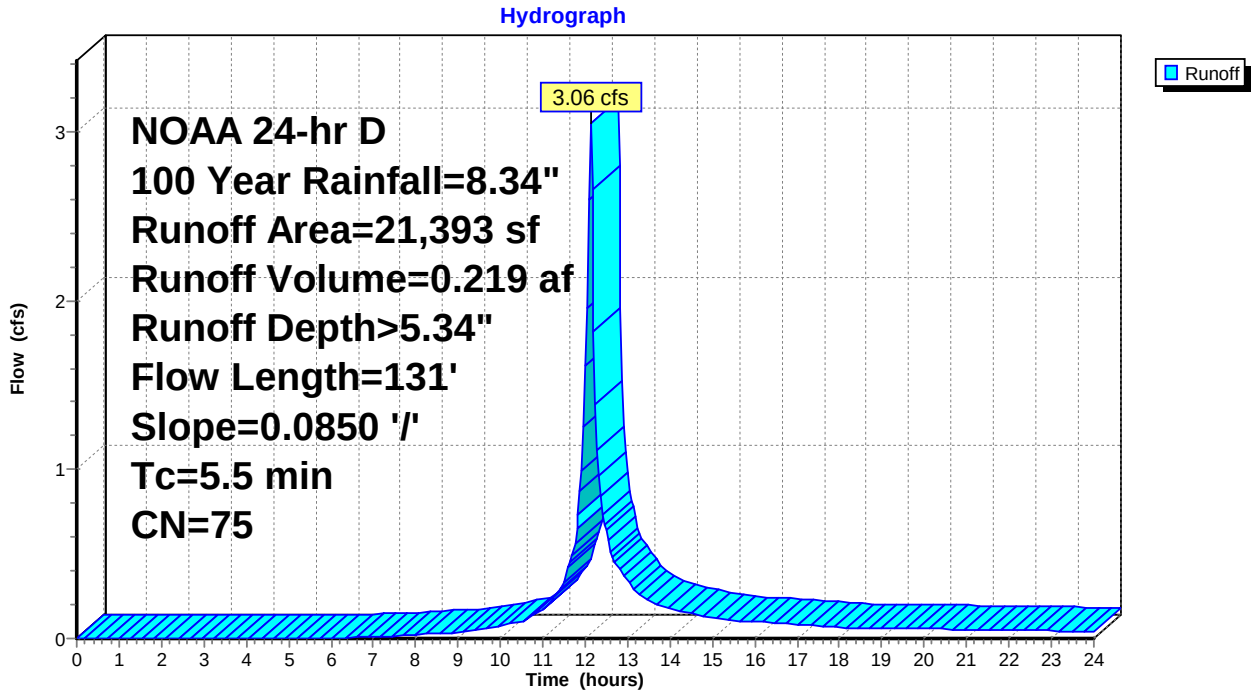
Runoff = 3.06 cfs @ 12.12 hrs, Volume= 0.219 af, Depth> 5.34"

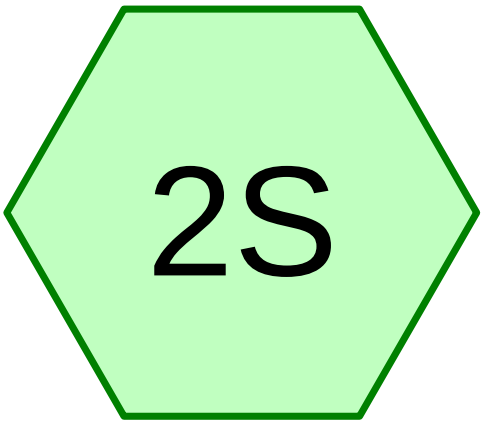
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 100 Year Rainfall=8.34"

	Area (sf)	CN	Description
*	1,659	98	House
*	1,934	98	Driveway
*	836	85	Gravel
*	196	98	Walks
	16,768	69	50-75% Grass cover, Fair, HSG B
	21,393	75	Weighted Average
	17,604		82.29% Pervious Area
	3,789		17.71% Impervious Area

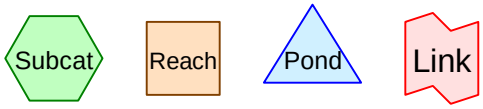
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0850	0.32		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.54"
0.3	31	0.0850	2.04		**Shallow Concentrated Flow, Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
5.5	131	Total			

Subcatchment 1S: Existing Conditions Basin B Route 32





Proposed Conditions
Basin B Route 32



Routing Diagram for 2578Proposed
Prepared by Fairfield County Engineering LLC, Printed 3/31/2025
HydroCAD® 10.00-26 s/n 06020 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 2S: Proposed Conditions Basin B Route 32

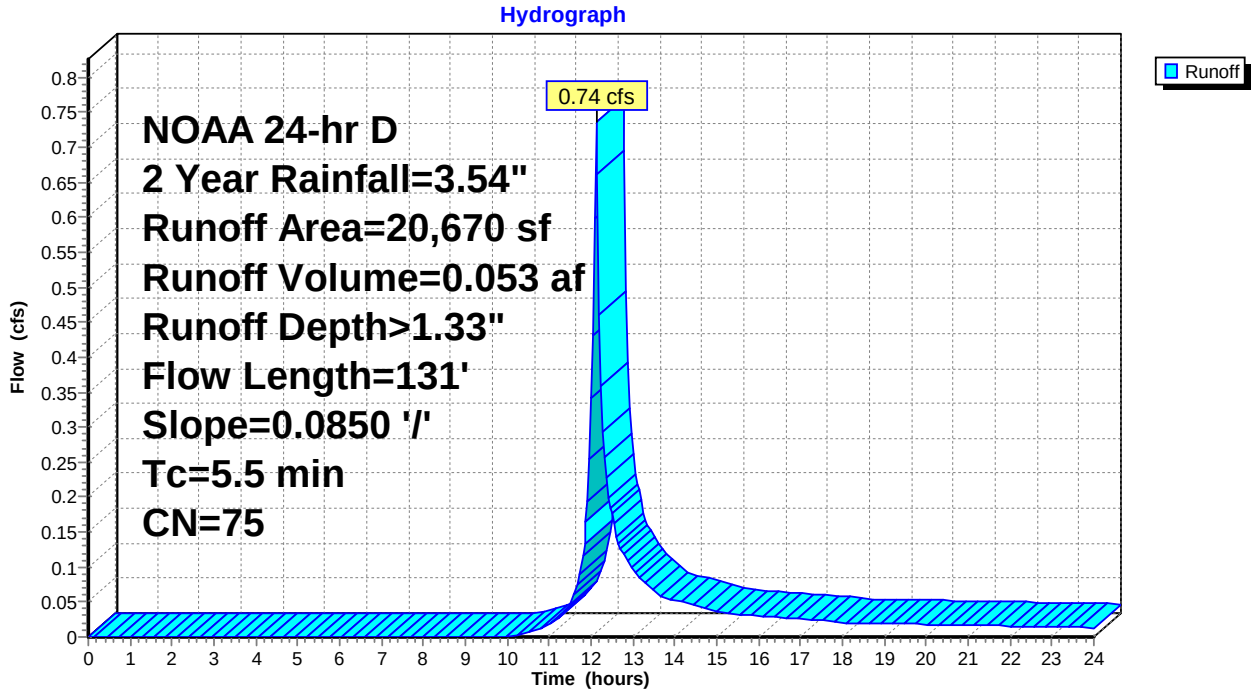
Runoff = 0.74 cfs @ 12.13 hrs, Volume= 0.053 af, Depth> 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 2 Year Rainfall=3.54"

	Area (sf)	CN	Description
*	1,659	98	House
*	1,046	98	Building
*	1,271	98	Driveway
	16,694	69	50-75% Grass cover, Fair, HSG B
	20,670	75	Weighted Average
	16,694		80.76% Pervious Area
	3,976		19.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0850	0.32		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.54"
0.3	31	0.0850	2.04		**Shallow Concentrated Flow, Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
5.5	131	Total			

Subcatchment 2S: Proposed Conditions Basin B Route 32



Summary for Subcatchment 2S: Proposed Conditions Basin B Route 32

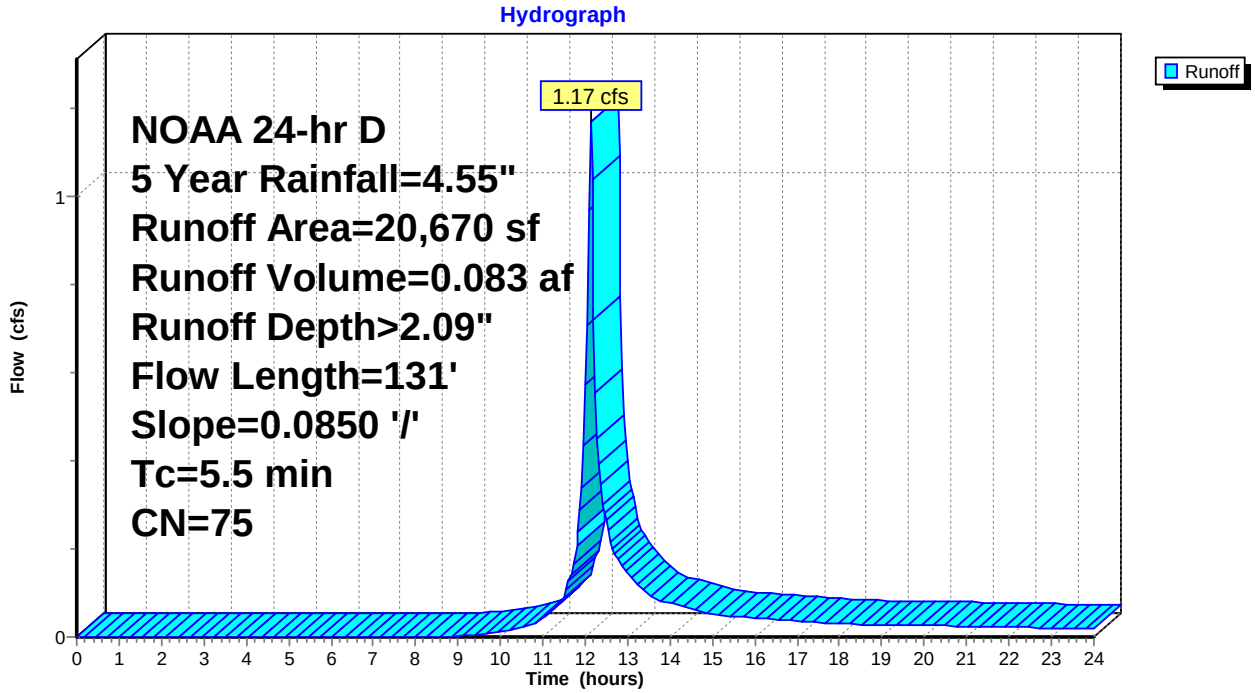
Runoff = 1.17 cfs @ 12.12 hrs, Volume= 0.083 af, Depth> 2.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 5 Year Rainfall=4.55"

	Area (sf)	CN	Description
*	1,659	98	House
*	1,046	98	Building
*	1,271	98	Driveway
	16,694	69	50-75% Grass cover, Fair, HSG B
	20,670	75	Weighted Average
	16,694		80.76% Pervious Area
	3,976		19.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0850	0.32		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.54"
0.3	31	0.0850	2.04		**Shallow Concentrated Flow, Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
5.5	131	Total			

Subcatchment 2S: Proposed Conditions Basin B Route 32



Summary for Subcatchment 2S: Proposed Conditions Basin B Route 32

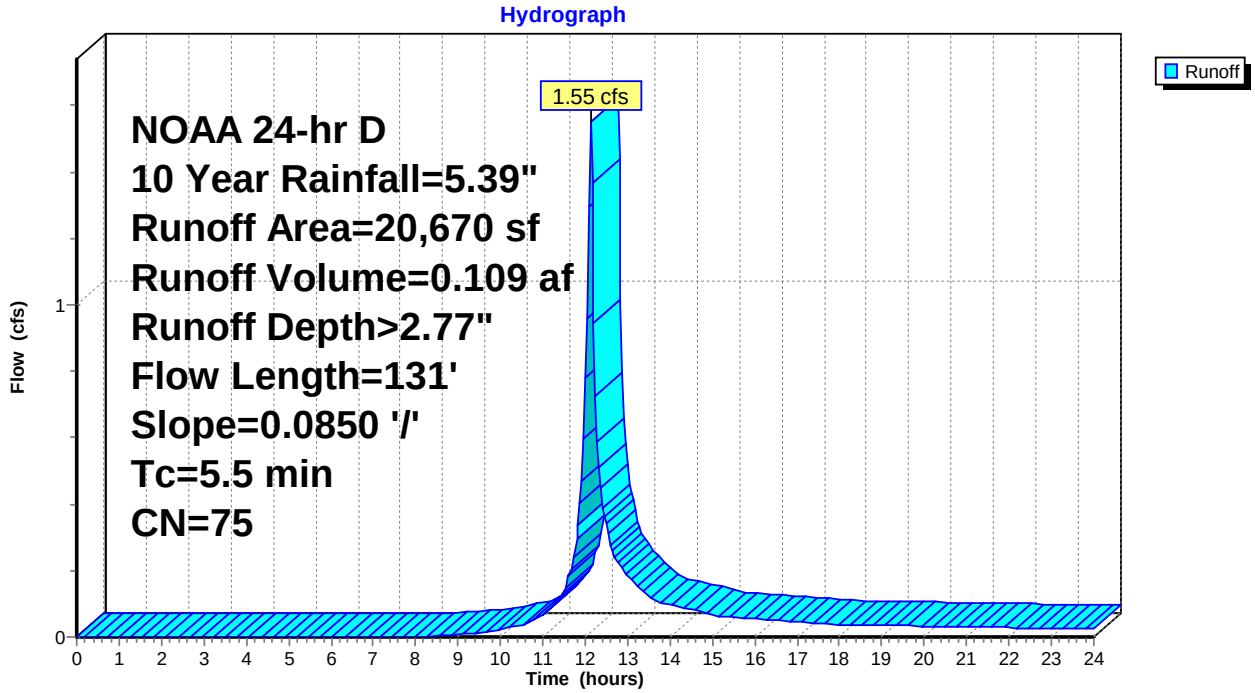
Runoff = 1.55 cfs @ 12.12 hrs, Volume= 0.109 af, Depth> 2.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 10 Year Rainfall=5.39"

	Area (sf)	CN	Description
*	1,659	98	House
*	1,046	98	Building
*	1,271	98	Driveway
	16,694	69	50-75% Grass cover, Fair, HSG B
	20,670	75	Weighted Average
	16,694		80.76% Pervious Area
	3,976		19.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0850	0.32		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.54"
0.3	31	0.0850	2.04		**Shallow Concentrated Flow, Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
5.5	131	Total			

Subcatchment 2S: Proposed Conditions Basin B Route 32



Summary for Subcatchment 2S: Proposed Conditions Basin B Route 32

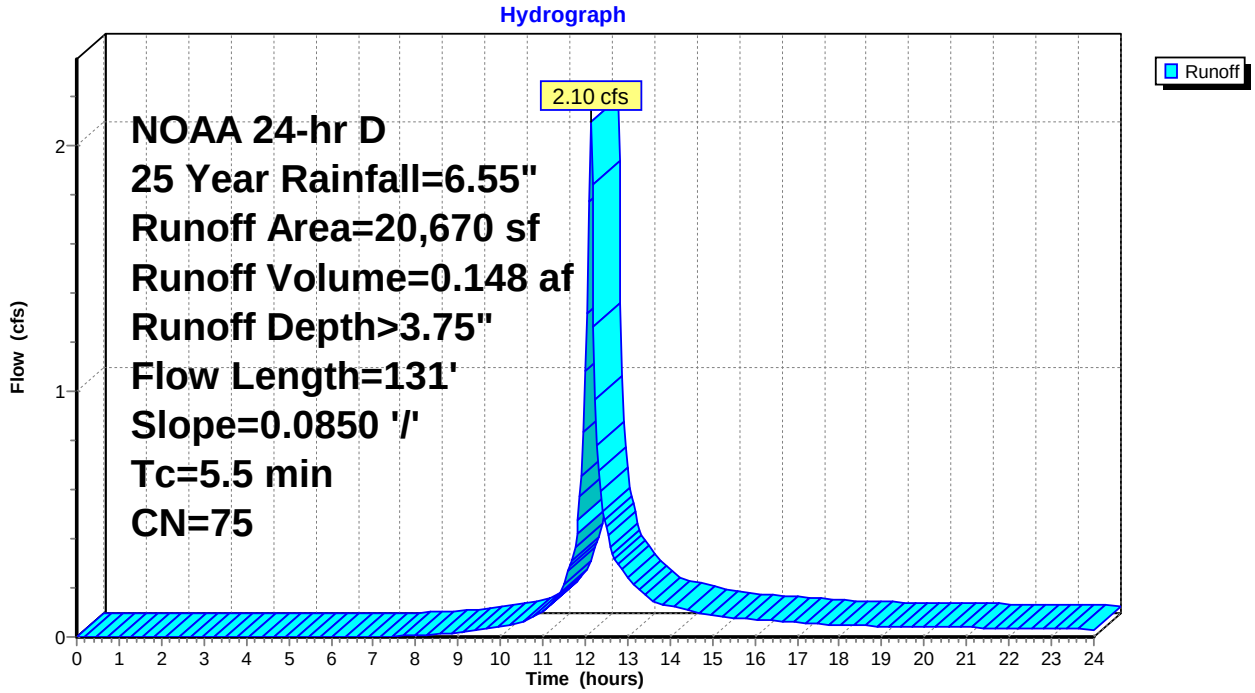
Runoff = 2.10 cfs @ 12.12 hrs, Volume= 0.148 af, Depth> 3.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 25 Year Rainfall=6.55"

	Area (sf)	CN	Description
*	1,659	98	House
*	1,046	98	Building
*	1,271	98	Driveway
	16,694	69	50-75% Grass cover, Fair, HSG B
	20,670	75	Weighted Average
	16,694		80.76% Pervious Area
	3,976		19.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0850	0.32		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.54"
0.3	31	0.0850	2.04		**Shallow Concentrated Flow, Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
5.5	131	Total			

Subcatchment 2S: Proposed Conditions Basin B Route 32



Summary for Subcatchment 2S: Proposed Conditions Basin B Route 32

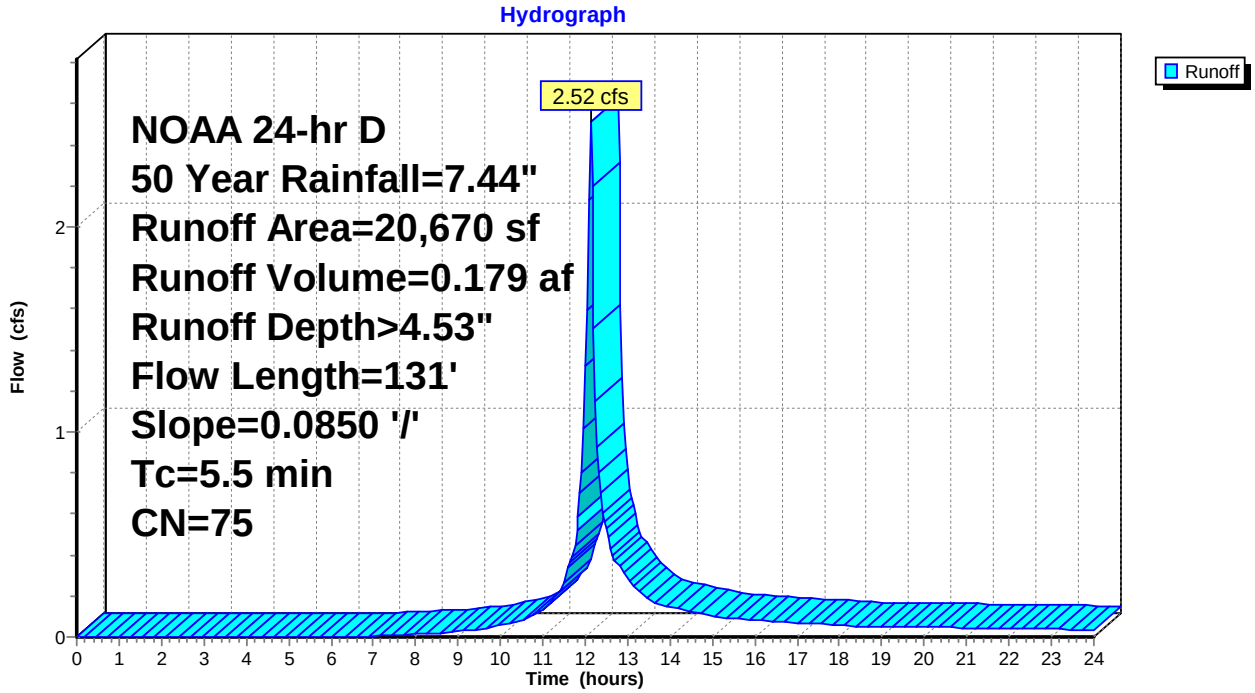
Runoff = 2.52 cfs @ 12.12 hrs, Volume= 0.179 af, Depth> 4.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 50 Year Rainfall=7.44"

	Area (sf)	CN	Description
*	1,659	98	House
*	1,046	98	Building
*	1,271	98	Driveway
	16,694	69	50-75% Grass cover, Fair, HSG B
	20,670	75	Weighted Average
	16,694		80.76% Pervious Area
	3,976		19.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0850	0.32		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.54"
0.3	31	0.0850	2.04		**Shallow Concentrated Flow, Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
5.5	131	Total			

Subcatchment 2S: Proposed Conditions Basin B Route 32



Summary for Subcatchment 2S: Proposed Conditions Basin B Route 32

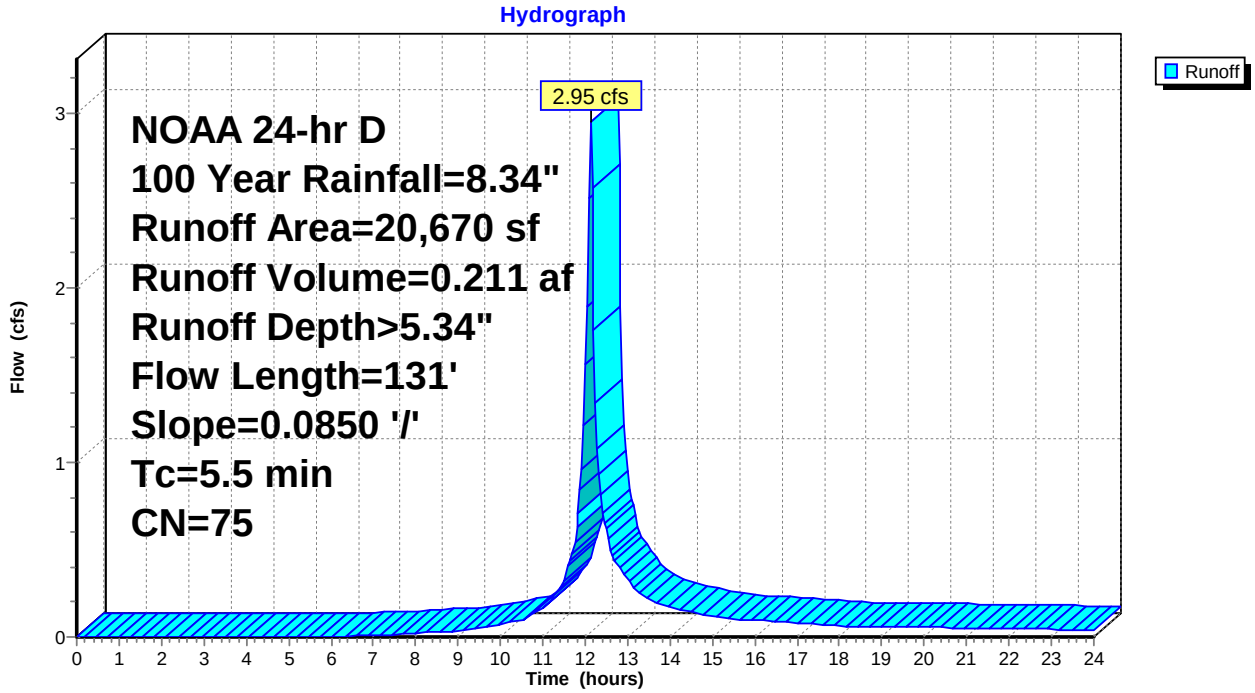
Runoff = 2.95 cfs @ 12.12 hrs, Volume= 0.211 af, Depth> 5.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
NOAA 24-hr D 100 Year Rainfall=8.34"

	Area (sf)	CN	Description
*	1,659	98	House
*	1,046	98	Building
*	1,271	98	Driveway
	16,694	69	50-75% Grass cover, Fair, HSG B
	20,670	75	Weighted Average
	16,694		80.76% Pervious Area
	3,976		19.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	100	0.0850	0.32		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.54"
0.3	31	0.0850	2.04		**Shallow Concentrated Flow, Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
5.5	131	Total			

Subcatchment 2S: Proposed Conditions Basin B Route 32



APPENDIX E

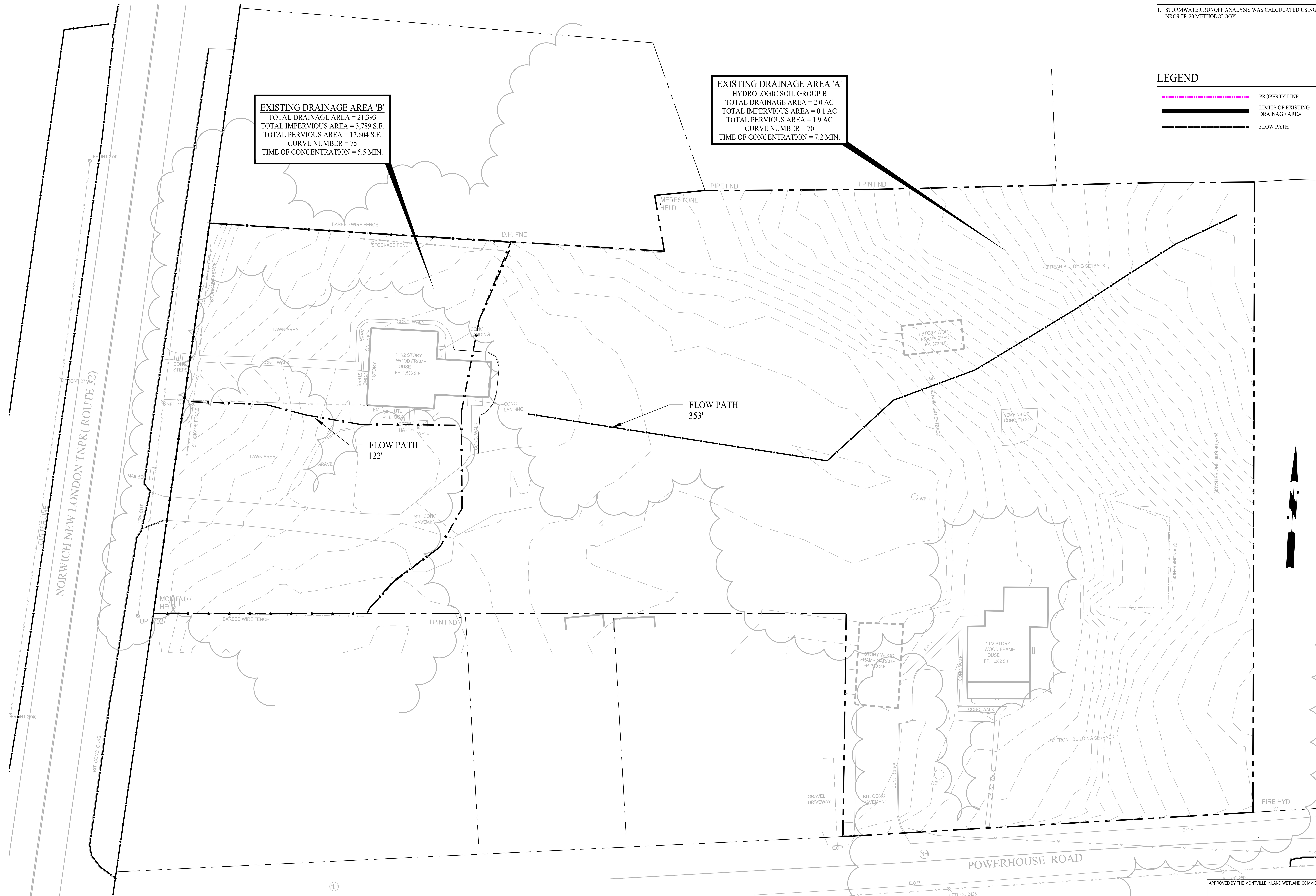
WATERSHED MAPS
FOR
EXISTING & PROPOSED CONDITIONS

GENERAL NOTES

1. STORMWATER RUNOFF ANALYSIS WAS CALCULATED USING THE NRCS TR-20 METHODOLOGY.

LEGEND

- PROPERTY LINE
- LIMITS OF EXISTING DRAINAGE AREA
- FLOW PATH



APPROVED BY THE MONTVILLE INLAND WETLAND COMMISSION

CHAIRMAN ____________ DATE ____________

APPROVED BY THE MONTVILLE PLANNING AND ZONING COMMISSION

CHAIRMAN ____________ DATE ____________

EXPIRATION DATE ____________

SEC PLAN APPROVAL DATE ____________

20 0 20 40 60

GRAPHIC SCALE – FEET

STATE OF CONNECTICUT — JAMES E. QUILL — NO. 14358 — LICENSED PROFESSIONAL ENGINEER

Fuller Engineering & Land Surveying
525 JOHN STREET BRIDGEPORT, CT. 06604
Office (203) 333-9465
fax (203) 336-1769
e-mail Info@FullerSurveyors

MADISON PLACE

LUXURY TOWNHOUSE DEVELOPMENT

18 POWERHOUSE ROAD
MONTVILLE, CONNECTICUT

PREPARED FOR
JNE HOLDINGS, LLC

Job Number: FE24-1889

Job Start Date: 3/20/24

Staff Comments	03/31/25
Staff Comments	03/18/25
Staff Comments	03/07/25
Staff Comments	02/21/25
Submission	02/11/25
Staff Review	01/15/25

Drawn By: D.R.R. Checked By: J.E.Q.

Sheet Title: EXISTING DRAINAGE AREA

Scale: 1" = 20'

Sheet Number: DA-EX

GENERAL NOTES

1. THE STORMWATER MANAGEMENT PLAN AND DESIGN IS INTENDED TO BE IN COMPLIANCE WITH THE 2000 CONNECTICUT DEPARTMENT OF TRANSPORTATION (CTDOT) DRAINAGE MANUAL AND THE 2004 CONNECTICUT STORMWATER QUALITY MANUAL.
2. STORMWATER RUNOFF ANALYSIS WAS CALCULATED USING THE SCS TR-55 METHODOLOGY.

LEGEND

- PROPERTY LINE
- LIMITS OF EXISTING DRAINAGE AREA
- FLOW PATH
- AREA NOT ROUTED TO DETENTION

PROPOSED SUBCATCHMENT 4S
TOTAL DRAINAGE AREA = 12,328 S.F.
TOTAL IMPERVIOUS AREA = 12,328 S.F.
TOTAL PERVIOUS AREA = 0 S.F.
CURVE NUMBER = 98
TIME OF CONCENTRATION = 5.0 MIN.

PHASE 2
PROPOSED POND 2P

PROPOSED SUBCATCHMENT 5S
NOT ROUTED TO RETENTION
TOTAL DRAINAGE AREA = 58,665 S.F.
TOTAL IMPERVIOUS AREA = 8,937 S.F.
PERVIOUS AREA = 58,665 S.F.
CURVE NUMBER = 73
TIME OF CONCENTRATION = 7.1 MIN.

PHASE 1
PROPOSED POND 1P

PROPOSED SUBCATCHMENT 3S
TOTAL DRAINAGE AREA = 9,067 S.F.
TOTAL IMPERVIOUS AREA =9,067 S.F.
TOTAL PERVIOUS AREA = 0 S.F.
CURVE NUMBER = 98
TIME OF CONCENTRATION = 5.0 MIN.

FLOW PATH
342'

FLOW PATH
(TYP.) 353'

DRAINAGE BASIN 'B'

DRAINAGE BASIN 'A'

AREA 2S

AREA 4S

AREA 5S

AREA 3S

PROPOSED SUBCATCHMENT 2S
TOTAL DRAINAGE AREA = 20,670 S.F.
TOTAL IMPERVIOUS AREA = 3,973 S.F.
TOTAL PERVIOUS AREA = 16,694 S.F.
CURVE NUMBER = 75
TIME OF CONCENTRATION = 5.5 MIN.

POWERHOUSE ROAD

APPROVED BY THE MONTVILLE INLAND WETLAND COMMISSION

CHAIRMAN _____ DATE _____

APPROVED BY THE MONTVILLE PLANNING AND ZONING COMMISSION

CHAIRMAN _____ DATE _____

EXPIRATION DATE _____

SEC PLAN APPROVAL DATE _____

STATE OF CONNECTICUT
JAMES E. QUELLA
NO. 14358
LICENSED PROFESSIONAL ENGINEER

FULLER ENGINEERING & LAND SURVEYING
525 JOHN STREET BRIDGEPORT, CT. 06604
Office (203) 333-9465
fax (203) 336-1769
e-mail Info@FullerSurveyors

MADISON PLACE
LUXURY TOWNHOUSE DEVELOPMENT
18 POWERHOUSE ROAD
MONTVILLE, CONNECTICUT
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Job Number: FE24-1889

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Staff Comments	03/31/25
Staff Comments	03/18/25
Staff Comments	03/07/25
Staff Comments	02/21/25
Submission	02/11/25
Staff Review	01/15/25

Drawn By: D.R.R. Checked By: J.E.Q.

Sheet Title: PROPOSED DRAINAGE AREA

Scale: 1" = 20'

Sheet Number: DA-PR

APPENDIX F

PIPE FLOW CALCULATIONS

FULLER ENGINEERING & LAND SURVEYING, LLC
525 John Street – Second Floor – Bridgeport, CT 06604

Phone: (203) 333-9465 Fax: (203) 336-1769

PIPE FLOW CALCULATIONS

Phase 1

8" pipe @ 1% = **1.43 cfs**
10" pipe @ 0.5 % = **1.83 cfs**

Therefore, good for Phase 1; max flow 0.85 cfs

Phase 2

8" pipe @ 3 % = **2.47 cfs**
8" pipe @ 1.5 % = **1.74 cfs**

Therefore, good for Phase 2and 3 ; max flow 1.63 cfs

APPENDIX “G”

OPERATIONS AND MAINTENANCE PLAN

Appendix O
Operations and Maintenance Plan

145 Norwich New London Tpke. Route 32 &
18 Powerhouse Road
Montville, CT

February 11, 2025

Scope:

The purpose of the Operations and Maintenance Plan is to ensure that the existing and proposed stormwater components installed at *145 Route 32, Norwich New London Turnpike and 18 Powerhouse Road, Montville, CT* are maintained in operational condition throughout the life of the project. The service procedures associated with this plan shall be performed as required by the parties legally responsible for their maintenance.

Recommended Frequency of Service:

As further defined below, all stormwater components should be checked on a periodic basis and kept in full working order. Ultimately, the required frequency of inspection and service will depend on runoff quantities, pollutant loading, and clogging due to debris. At a minimum, we recommend that all stormwater components be inspected and serviced twice per year, once before winter begins and once during spring cleanup.

Qualified Inspector:

The inspections must be completed by an individual experienced in the construction and maintenance of stormwater drainage systems. Once every five years the inspections must be completed by a professional engineer.

Service Procedures:

1. Catch Basins & Drainage Inlets:
    a. Catch basins and drainage inlets shall be completely cleaned of accumulated debris and sediments at the completion of construction.
    b. For the first year, catch basins and drainage inlets shall be inspected on a quarterly basis.
    c. Any accumulated debris within the catch basins/inlets shall be removed and any repairs as required.
    d. From the second year onward, visual inspections shall occur twice per year, once in the spring and once in the fall, after fall cleanup of leaves has occurred.
    e. Accumulated debris within the catch basins/inlets shall be removed and repairs made as required.
    f. Accumulated sediments shall be removed at which time they are within 12 inches of the invert of the outlet pipe.
    g. Any additional maintenance required per the manufacturer's specifications shall also be completed.

2. Storm Drainage Piping and Manholes/Junction Boxes:
    a. All storm drainage piping shall be completely flushed of debris and accumulated sediment at the completion of construction.
    b. Manholes/Junction Boxes shall be inspected and repaired on an annual basis.

c. Unless system performance indicates degradation of piping, comprehensive video inspection of storm drainage piping shall occur once every ten years.

d. Any additional maintenance required per the manufacturer's specifications shall also be completed.

3. Stormwater Inlet/Control Structures:
   a. All control structures (orifice, weir, etc.) shall be completely cleaned of accumulated debris and sediments at the completion of construction. Any repairs shall be performed.
   b. For the first year, control structures (orifice, weir, etc.) shall be inspected on a quarterly basis.
   c. Any accumulated debris shall be removed and any repairs made to the control structures (orifice, weir, etc.) as required.
   d. From the second year onward, visual inspections shall occur twice per year, once in the spring and once in the fall, after fall cleanup of leaves has occurred.
   e. Accumulated debris shall be removed and repairs made as required.
   f. Any additional maintenance required per the manufacturer's specifications shall also be completed.
4. Drywells and Infiltration Systems:
   a. All drywells/infiltrators shall be completely cleaned of accumulated debris and sediments upon the completion of construction.
   b. For the first year, the drywells/infiltrators shall be inspected on a quarterly basis.
   c. Any accumulated debris within the drywells/infiltrators shall be removed and any repairs made to the units as required.
   d. From the second year onward, visual inspection shall occur twice per year, once in the spring and once in the fall, after fall cleanup of leaves has occurred.
   e. Accumulated debris within the units shall be removed and repairs made as required.
   f. Any additional maintenance required per the manufacturer's specifications shall also be completed.
5. Roof Gutters:
   a. Remove accumulated debris and inspect for damage. Any damage should be repaired as required.

Disposal of Debris and Sediment:

All debris and sediment removed from the stormwater structures and bioretention/biofiltration basins shall be disposed of legally. There shall be no dumping of silt or debris into or in proximity to any inland or tidal wetlands.

Maintenance Records:

The Owners(s) must maintain all records (logs, invoices, reports, data, etc.) and have them readily available for inspection at all times.

Operations and Maintenance Log (Page 1 of 3)

#245 Route 32 Norwich New London Tpke. Montville, CT
March 8, 2022 30,

Type of Inspection: ☐ Spring ☐ Fall ☐ Other

Inspector's Name:_____ Date of Inspection:_____

Affiliation:_____ Phone #:_____

Catch Basins & Drainage Inlets:

- Has accumulated debris been removed from grates? ☐ Yes ☐ No ☐ N/A
- Do any basins require additional repair? (identify below): ☐ Yes ☐ No ☐ N/A
- Have sumps been cleaned of sediment? ☐ Yes ☐ No ☐ N/A

Notes:

Storm Drainage Piping and Manholes/Junction Boxes:

- Has accumulated debris been removed? ☐ Yes ☐ No ☐ N/A
- Do any manholes require additional repair? (identify below): ☐ Yes ☐ No ☐ N/A
- Is there any evidence of stormwater piping failure? ☐ Yes ☐ No ☐ N/A
- Has a comprehensive video inspection been completed? ☐ Yes ☐ No ☐ N/A

Notes:

Stormwater Control Structures:

- Has accumulated debris been removed? ☐ Yes ☐ No ☐ N/A
- Are any repairs required? (identify below): ☐ Yes ☐ No ☐ N/A
- Have orifices and weirs been cleaned of debris? ☐ Yes ☐ No ☐ N/A

Notes:

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Drainage Outfalls/Splash Pads/Scour Holes/Level Spreaders:

- Have all drainage outlets been cleared of debris? ☐ Yes ☐ No ☐ N/A
- Have all outlet protections been inspected/repaired? ☐ Yes ☐ No ☐ N/A
- Have all erosion issues been repaired? ☐ Yes ☐ No ☐ N/A

Notes:

Drywells and Infiltration Systems:

- Have units been cleared of debris/sediments? ☐ Yes ☐ No ☐ N/A
- Do units require additional repair? (identify below): ☐ Yes ☐ No ☐ N/A
- Has draining times of system been verified? ☐ Yes ☐ No ☐ N/A

Notes:

Roof Gutters:

- Has accumulated debris been removed from gutters? ☐ Yes ☐ No ☐ N/A
- Do any gutters require additional repair? (identify below): ☐ Yes ☐ No ☐ N/A

Notes:

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Please make additional notes/observations and particular concerns below. Also record any additional maintenance that has been performed:

_____ _____

Signature of Inspector: **Date:**