

PGC Engineering PLLC

10 Chase Street, West Newbury, MA 01985
978-994-4550 philchristiansen.pe@gmail.com

NEWTON ROAD SUBDIVISION
DRAINAGE ANALYSIS
FOR
EXISTING AND PROPOSED CONDITIONS
PREPARED FOR
ALBERT COUILLARD

FEBRUARY 14, 2024

The drainage analysis was performed using a HydroCAD computer model utilizing Natural Resource Conservation Service Soils data modified by an onsite High Intensity Soil Survey in conjunction with NOAA Atlas 14 rainfall data for Plaistow NH

A comparison of rainfall runoff data for each of four storm events is shown below. In all cases except for design points 5 (DP5) and 6(DP6) the predicted flow rate after development is lower than under existing conditions. The proposed flow for DP5 is only 1% over the existing flow rate and well within the accuracy of the model. The flow increase to DP6 is directly to Snows Brook and flows through the Haverhill Country Club Golf Course a party to this application.

Streamstats shows the drainage area of Snows Brook upstream of design point 6 is .68 square miles or 435 acres. The project area that flows to DP 6 is only 3.74 acres. The small increase from the project will have a negligible effect on the Country Club. The Streamstats information is contained at the end of the report.

The various soil types on the property are shown on the Web Soil Survey supplied by the NRCS.

The soil types are listed by number and the Map Unit Legend provides the soil type name for each soil unit. The A,B,C and D after the soil numbers designates slopes. A is 0-5%, B is 5-8%, C is 8-15% and D is 15-25%.

Bruce Gilday, a certified soil scientist performed a High Intensity Soil Survey of the site, and the results of his work was used to edit the NRCS data. Since the computer model utilizes the hydrologic characterizations provided by the NRCS it was necessary to use that data as input, but the HISS data enabled a proper editing of the NRCS soil map.

The computer output consists of flow rates, hydrographs, and volumes of each Design point and each drainage area and sub area that contributes to the output for the 2,10,25 and 100 year 24 hour storm events.

EXISTING

DESIGN POINT	STORM FREQUENCY			
	2 YR	10 YR	25 YR	100 YR
	FLOW RATE CFS			
DP1	2.51	4.02	4.96	6.41
DP2	3.38	5.41	6.67	8.63
DP3	3.20	5.11	6.50	8.15
DP4	14.6	23.32	28.80	37.28
DP5	11.24	17.97	22.16	28.68
DP6	4.12	6.59	8.12	10.51
DP7	4.96	7.95	9.80	12.69
DP8	1.70	2.72	3.35	4.33

PROPOSED

DESIGN POINT	STORM FREQUENCY			
	2 YR	10 YR	25 YR	100 YR
	FLOW RATE CFS			
DP1	2.40	3.45	4.01	4.62
DP2	2.55	3.83	4.67	5.40
DP3	3.18	4.52	4.92	6.16
DP4	14.21	20.55	24.07	29.08
DP5	11.36	18.16	22.16	28.97
DP6	4.50	7.19	8.87	11.46
DP7	4.96	7.95	9.80	12.69
DP8	1.33	2.13	2.62	3.39

THERE IS A SLIGHT INCREASE OF FLOW UNDER PROPOSED CONDITIONS AT DESIGN POINT 5 COMPARED TO EXISTING CONDITIONS APPROXIMATELY 1%. IT IS AN INSIGNIFICANT INCREASE. THERE IS ALSO A SLIGHT OVERFLOW FROM THE BASIN DURING THE 100 YR STORM AMOUNTING TO 130 CUBIC FEET.

Soil Map—Rockingham County, New Hampshire



**Natural Resources
Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

2/9/2024
Page 1 of 3

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

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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: Rockingham County, New Hampshire
Survey Area Data: Version 26, Aug 22, 2023

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

Date(s) aerial images were photographed: Mar 1, 2023—Sep 1, 2023

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
12B	Hinckley loamy sand, 3 to 8 percent slopes	12.0	12.2%
26B	Windsor loamy sand, 3 to 8 percent slopes	1.0	1.0%
29B	Woodbridge fine sandy loam, 3 to 8 percent slopes	3.3	3.4%
42B	Canton fine sandy loam, 3 to 8 percent slopes	9.9	10.1%
66B	Paxton fine sandy loam, 3 to 8 percent slopes	34.9	35.4%
66C	Paxton fine sandy loam, 8 to 15 percent slopes	8.4	8.5%
66D	Paxton fine sandy loam, 15 to 25 percent slopes	4.3	4.3%
125	Scarboro muck, very stony	7.6	7.7%
140B	Chatfield-Hollis-Canton complex, 0 to 8 percent slopes, rocky	2.9	2.9%
314A	Pipestone sand, 0 to 5 percent slopes	12.7	12.9%
446B	Scituate-Newfields complex, 3 to 8 percent slopes	1.6	1.6%
Totals for Area of Interest		98.5	100.0%



LAND CONSULTANTS

January 12, 2024

Al Couillard
Abby Road Realty Trust
82 Seven Sisters Road
Haverhill, MA 01830

RE: Residential Development Project [Parcel A]
Newton Road (NH 108), Plaistow, NH [Tax Map 66; Lot 17]

Dear Al:

HISS Technical Letter Report

At your request, we visited the above-referenced property for the purpose of mapping the upland and wetland soils onsite. We understand that you are proposing to make land improvements that include new single-family residential housing units with a proposed new residential lot having its own separate frontage on Gulf Road.

Your survey team provided us with the necessary base map that includes a perimeter survey, sufficient ground control, one (1') foot contours, and a scale of 1" = 100'. Our office utilized the standards set forth in the SSSNNE Special Publication #1 "High Intensity Soil Maps for New Hampshire"; December 2017. Below is a listing of the mapped HISS types that describes the specific soils we identified within and adjacent to our study area.

H.I.S.S. LEGEND

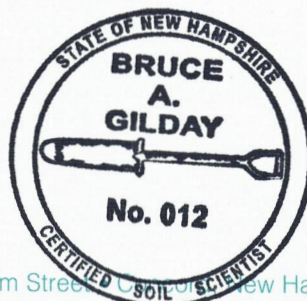
- 223*H - Well Drained, Glacial Till, Restrictive Features present, 0 to >25%
- 323*H - Moderately-well Drained, Glacial Till, Restrictive Feature present, 0 to 25%
- 523BH - Poorly Drained, Glacial Till, Restrictive Features present, 0 to 8%

Slope notes: B = 0 – 8%; C = 8 – 15%; D = 15 – 25%; E = > 25%

The attached sketch plan shows the HIS soil boundaries. We trust our environmental consulting service will assist in your land planning needs. Please feel free to contact us with any future questions concerning the soils and/or wetlands.

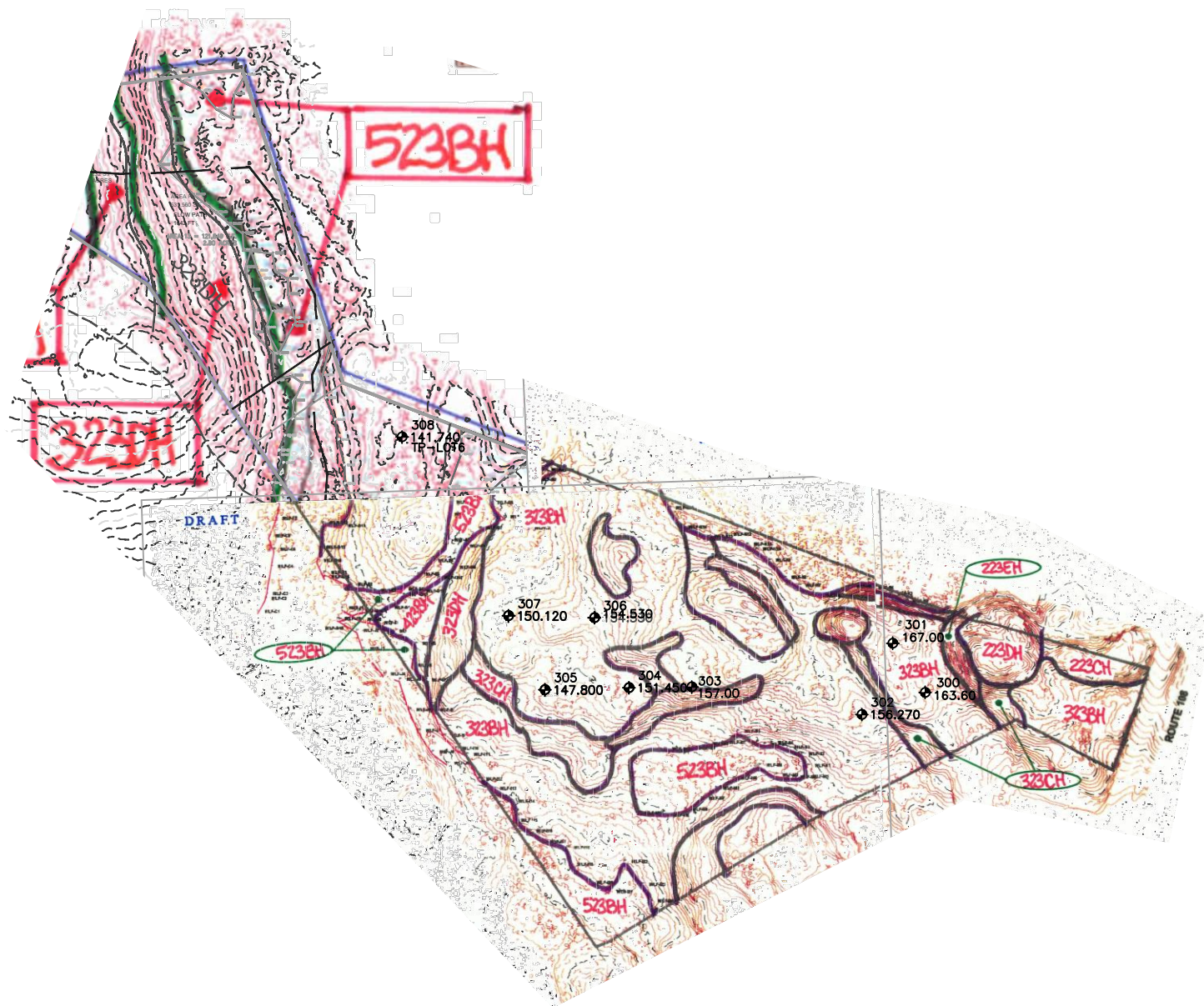
Sincerely,


Bruce A. Gilday
Certified Soil Scientist



BAG3474A:Attachment
Cc: Phil Christianson, PE

43 Rockingham Street, Portsmouth, New Hampshire 03301 • 603/228-5775



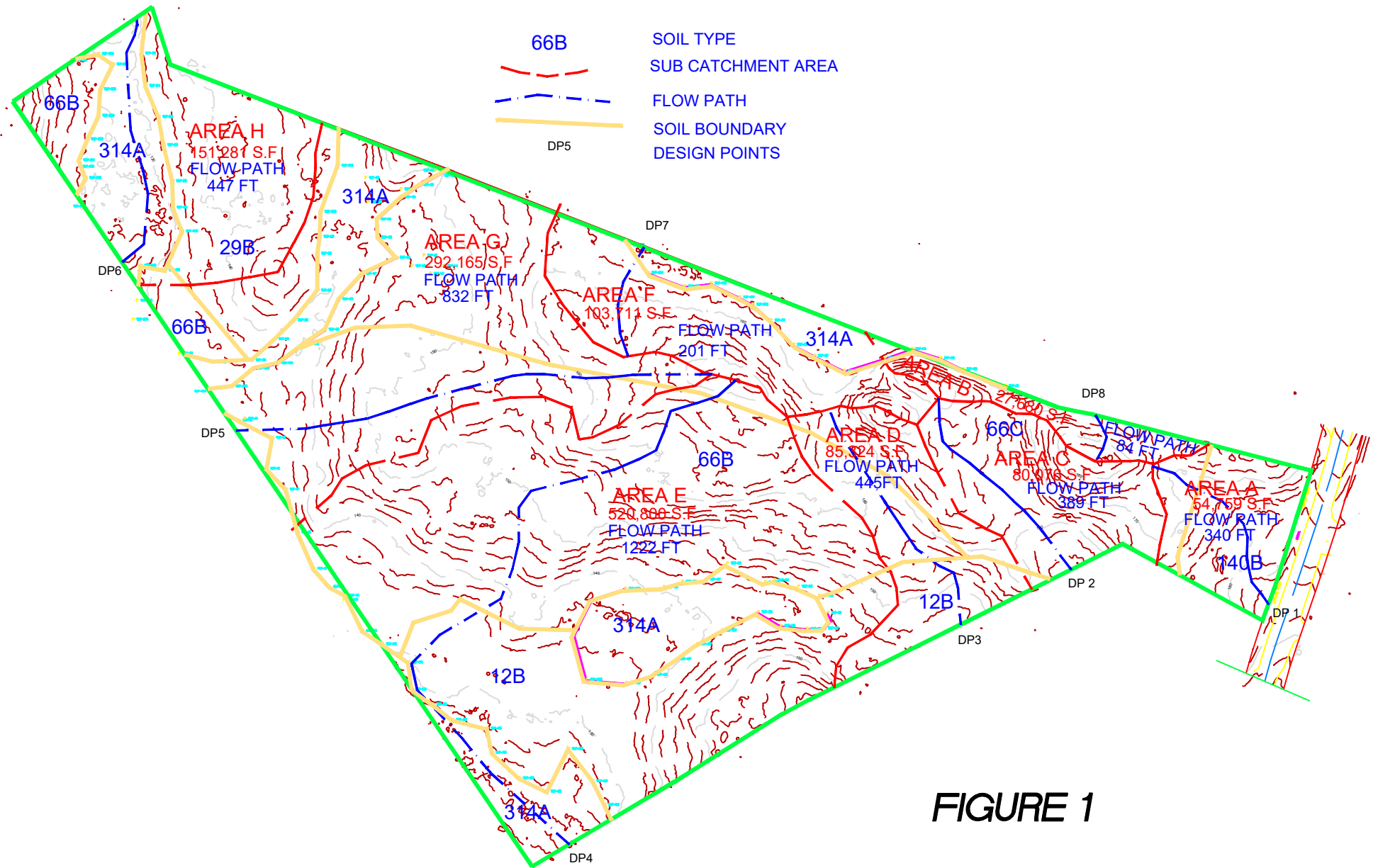
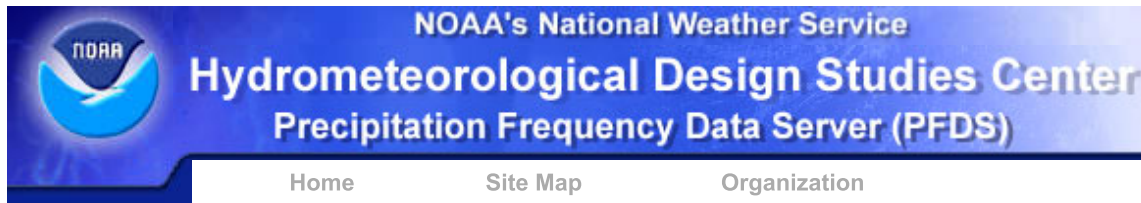
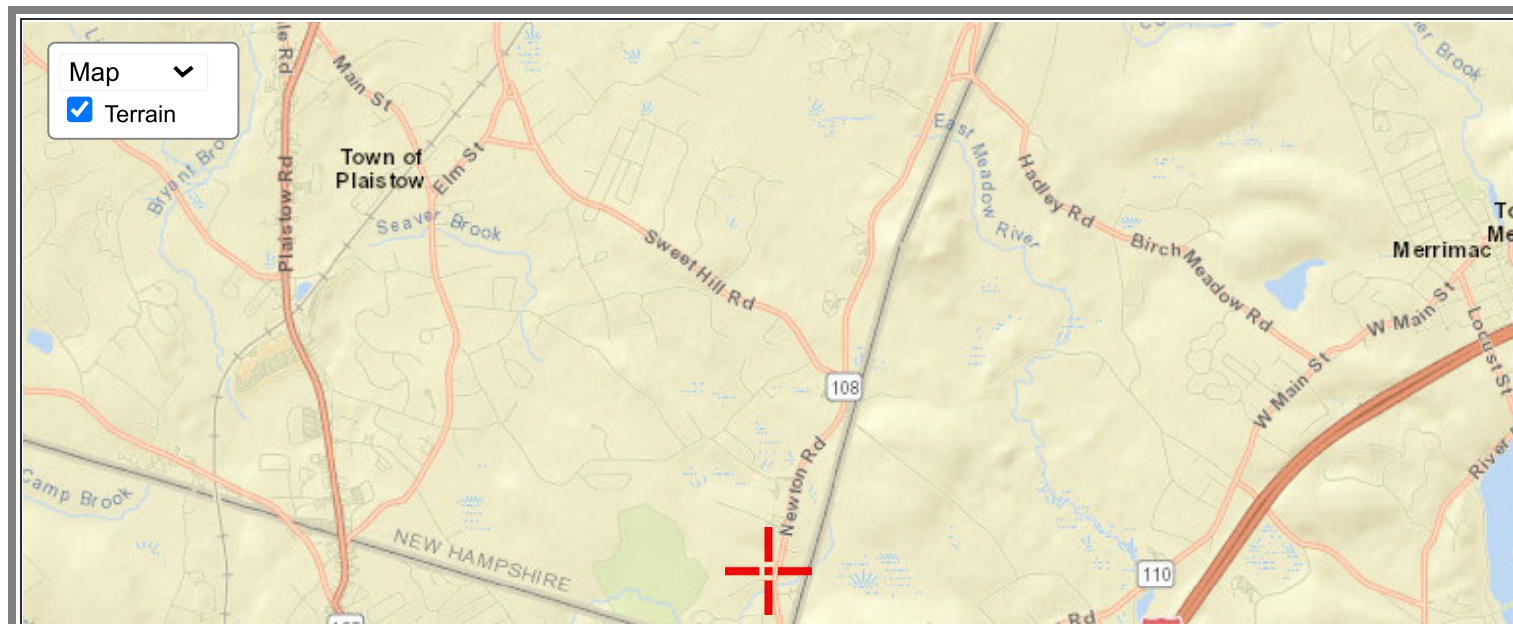


FIGURE 1

[Home](#)[Site Map](#)[Organization](#)[Search](#)☒ [NWS](#)☐ [All NOAA](#)**General Information**[Homepage](#)[Progress Reports](#)[FAQ](#)[Glossary](#)**Precipitation Frequency**[Data Server](#)[GIS Grids](#)[Maps](#)[Time Series](#)[Temporals](#)[Documents](#)**Probable Maximum Precipitation**[Documents](#)**Miscellaneous**[Publications](#)[Storm Analysis](#)[Record Precipitation](#)**Contact Us**[Inquiries](#)

NOAA ATLAS 14 POINT PRECIPITATION FREQUENCY ESTIMATES: NH

Data descriptionData type: Units: Time series type: **Select location****1) Manually:**a) By location (decimal degrees, use "-" for S and W): Latitude: Longitude: b) By station ([list of NH stations](#)): c) By address **2) Use map:**a) Select location
Move crosshairb) Click on station
☐ Show station**Location information**Name: Plaistow, NH
USA*

Latitude: 42.8

Longitude: -71.0

Elevation: 150



POINT PRECIPITATION FREQUENCY (PF) ESTIMATES

WITH 90% CONFIDENCE INTERVALS AND SUPPLEMENTARY INFORMATION

NOAA Atlas 14, Volume 10, Version 3

PF tabular

PF graphical

Supplementary information

Print

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

Duration	Average recurrence interval (years)								
	1	2	5	10	25	50	100	200	500
5-min	0.311 (0.244-0.393)	0.372 (0.291-0.469)	0.471 (0.367-0.596)	0.552 (0.427-0.702)	0.664 (0.497-0.881)	0.749 (0.549-1.02)	0.837 (0.595-1.18)	0.935 (0.631-1.34)	1.08 (0.697-1.6)
10-min	0.441 (0.345-0.556)	0.526 (0.412-0.664)	0.665 (0.518-0.842)	0.781 (0.605-0.995)	0.940 (0.705-1.25)	1.06 (0.778-1.44)	1.19 (0.844-1.66)	1.32 (0.894-1.90)	1.52 (0.987-2.2)
15-min	0.519 (0.406-0.655)	0.619 (0.484-0.782)	0.783 (0.610-0.992)	0.919 (0.712-1.17)	1.11 (0.829-1.47)	1.25 (0.914-1.69)	1.40 (0.992-1.96)	1.56 (1.05-2.24)	1.79 (1.16-2.66)
30-min	0.714 (0.559-0.900)	0.852 (0.666-1.08)	1.08 (0.839-1.36)	1.26 (0.979-1.61)	1.52 (1.14-2.02)	1.72 (1.26-2.32)	1.92 (1.36-2.69)	2.14 (1.45-3.08)	2.46 (1.60-3.66)
60-min	0.908 (0.711-1.14)	1.08 (0.847-1.37)	1.37 (1.07-1.74)	1.61 (1.25-2.05)	1.94 (1.45-2.57)	2.18 (1.60-2.96)	2.44 (1.74-3.43)	2.73 (1.84-3.92)	3.13 (2.03-4.66)
2-hr	1.18 (0.929-1.48)	1.41 (1.11-1.77)	1.80 (1.41-2.26)	2.11 (1.65-2.68)	2.55 (1.93-3.38)	2.88 (2.13-3.90)	3.23 (2.33-4.55)	3.64 (2.46-5.20)	4.26 (2.77-6.30)
3-hr	1.36 (1.08-1.70)	1.64 (1.30-2.05)	2.10 (1.65-2.63)	2.47 (1.94-3.12)	2.99 (2.27-3.96)	3.38 (2.52-4.57)	3.79 (2.75-5.35)	4.30 (2.92-6.12)	5.07 (3.30-7.47)
6-hr	1.75 (1.40-2.17)	2.12 (1.69-2.63)	2.72 (2.16-3.39)	3.22 (2.54-4.04)	3.91 (2.99-5.14)	4.42 (3.32-5.95)	4.97 (3.64-6.99)	5.66 (3.85-8.01)	6.71 (4.39-9.80)

12-hr	2.20 (1.77-2.71)	2.68 (2.15-3.31)	3.48 (2.78-4.30)	4.13 (3.29-5.15)	5.04 (3.88-6.59)	5.71 (4.31-7.64)	6.44 (4.73-8.99)	7.33 (5.02-10.3)	8.71 (5.71-12.7)
24-hr	2.60 (2.11-3.18)	3.23 (2.62-3.96)	4.26 (3.44-5.25)	5.12 (4.10-6.34)	6.30 (4.89-8.20)	7.17 (5.45-9.56)	8.12 (6.02-11.3)	9.31 (6.39-13.0)	11.2 (7.36-16.2)
2-day	2.92 (2.39-3.55)	3.71 (3.03-4.52)	5.00 (4.06-6.11)	6.07 (4.90-7.46)	7.54 (5.91-9.80)	8.62 (6.62-11.5)	9.82 (7.37-13.7)	11.4 (7.84-15.8)	13.9 (9.18-20.0)
3-day	3.20 (2.62-3.88)	4.05 (3.32-4.91)	5.43 (4.44-6.62)	6.59 (5.34-8.07)	8.17 (6.43-10.6)	9.32 (7.20-12.4)	10.6 (8.00-14.8)	12.3 (8.50-17.1)	15.1 (9.98-21.6)
4-day	3.47 (2.86-4.20)	4.34 (3.57-5.26)	5.78 (4.73-7.02)	6.96 (5.67-8.51)	8.60 (6.79-11.1)	9.79 (7.58-13.0)	11.1 (8.40-15.5)	12.9 (8.91-17.8)	15.8 (10.4-22.5)
7-day	4.22 (3.50-5.08)	5.13 (4.25-6.18)	6.62 (5.46-8.00)	7.85 (6.43-9.54)	9.54 (7.57-12.2)	10.8 (8.37-14.2)	12.2 (9.20-16.7)	14.0 (9.70-19.2)	16.9 (11.2-24.0)
10-day	4.91 (4.09-5.89)	5.84 (4.86-7.02)	7.37 (6.10-8.88)	8.63 (7.10-10.5)	10.4 (8.25-13.2)	11.7 (9.06-15.2)	13.1 (9.88-17.8)	14.9 (10.4-20.4)	17.8 (11.8-25.1)
20-day	6.87 (5.76-8.18)	7.90 (6.62-9.42)	9.58 (8.00-11.5)	11.0 (9.10-13.2)	12.9 (10.3-16.2)	14.3 (11.1-18.4)	15.9 (11.9-21.1)	17.6 (12.4-23.9)	20.2 (13.5-28.4)
30-day	8.49 (7.16-10.1)	9.60 (8.09-11.4)	11.4 (9.57-13.6)	12.9 (10.8-15.5)	15.0 (12.0-18.6)	16.6 (12.9-21.0)	18.2 (13.6-23.8)	19.9 (14.0-26.8)	22.3 (15.0-31.7)
45-day	10.6 (8.94-12.5)	11.7 (9.94-13.9)	13.7 (11.5-16.3)	15.3 (12.8-18.3)	17.6 (14.1-21.7)	19.3 (15.0-24.3)	21.0 (15.6-27.2)	22.7 (16.0-30.5)	24.9 (16.8-34.6)
60-day	12.3 (10.5-14.5)	13.6 (11.5-16.0)	15.6 (13.2-18.5)	17.3 (14.6-20.7)	19.7 (15.8-24.2)	21.5 (16.8-27.0)	23.3 (17.4-30.0)	25.0 (17.7-33.5)	27.1 (18.3-37.5)

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 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 estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Estimates from the table in CSV format: [Precipitation frequency estimates](#)

Main Link Categories:

[Home](#) | [OWP](#)

US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
Office of Water Prediction (OWP)
1325 East West Highway
Silver Spring, MD 20910
Page Author: [HDSC webmaster](#)
Page last modified: April 21, 2017

Map Disclaimer
Disclaimer
Credits
Glossary

TABLE 1

AREA DESIGNATION	TOTAL AREA	SOIL	HYDROLOGIC GROUP	AREA	GROUND COVER	COEFF
AREA A	54,759 S.F	140B	B	43,791 SF	WOODS FAIR	60
		CHATFIELD				
		HOLLIS				
		CANTON				
		66C	C	10,968 SF		73
		PAXTON				
AREA B	27,680 S.F	66C	C	27,680 S.F	WOODS FAIR	73
		PAXTON				
AREA C	80,076 S.F	66C	C	80,076 S.F	WOODS FAIR	73
		PAXTON				
AREA D	85,324 S.F	66B	C	25,239 SF	WOODS FAIR	73
		PAXTON				
		66C	C	29,274 SF		73
		PAXTON				
		12B	A	30,811 SF		36
		HINCKLEY				
AREA E	520,800 S.F	66C	C	5680 SF	WOODS FAIR	73
		PAXTON				
		66B	C	282576		73
		PAXTON				
		12B	A	155873		36
		HINCKLEY				
		314A	C/D	76,671		76
		PIPESTONE				
AREA F	103,711 S.F	66C	C	82,746 S.F	WOODS FAIR	73
		PAXTON				
		314A	C/D	20,965 SF		76
		PIPESTONE				
AREA G	292,165 S.F	668	C	120,282SF		73
		PAXTON				
		66C	C	99,136SF		73
		PAXTON				
		314A	C/D	44,714SF		76
		PIPESTONE				
		29B	C/D	28,033SF		76
		WOODBIDGE				
AREA H	151,281 S.F	66B	C	21,691 SF	WOODS FAIR	73
		PAXTON				
		314A	C/D	47,253 SF		76
		PIPESTONE				
		29B	C/D			76
		WOODBIDGE		82,337SF		



DP1



DP2



DP3



DP4



DP5



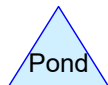
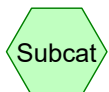
DP6



DP7



DP8



Routing Diagram for NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC, Printed 2/25/2024
HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Printed 2/25/2024

Page 2

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2YR	Type III 24-hr		Default	24.00	1	3.23	4
2	10YR	Type III 24-hr		Default	24.00	1	5.12	4
3	25YR	Type III 24-hr		Default	24.00	1	6.30	4
4	100YR	Type III 24-hr		Default	24.00	1	8.14	4

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Printed 2/25/2024

Page 3

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.473	73	(AREA H)
4.281	36	Woods, Fair, HSG A (AREA D, AREA E)
1.005	60	Woods, Fair, HSG B (AREA A)
21.447	73	Woods, Fair, HSG C (AREA A, AREA B, AREA C, AREA D, AREA E, AREA F, AREA G)
30.207	67	TOTAL AREA

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

Printed 2/25/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 4

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
4.281	HSG A	AREA D, AREA E
1.005	HSG B	AREA A
21.447	HSG C	AREA A, AREA B, AREA C, AREA D, AREA E, AREA F, AREA G
0.000	HSG D	
3.473	Other	AREA H
30.207		TOTAL AREA

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Printed 2/25/2024

Page 5

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	3.473	3.473		AREA H
4.281	1.005	21.447	0.000	0.000	26.734	Woods, Fair	AREA A, AREA B, AREA C, AREA D, AREA E, AREA F, AREA G
4.281	1.005	21.447	0.000	3.473	30.207	TOTAL AREA	

NEWTON ROAD EXIST*Type III 24-hr 2YR Rainfall=3.23", AMC=4*

Prepared by PGC Engineering PLLC

Printed 2/25/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 6

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment AREA A: DP1	Runoff Area=54,759 sf 0.00% Impervious Runoff Depth>2.80"
Flow Length=340' Slope=0.0590 '/ Tc=23.4 min AMC Adjusted CN=98	Runoff=2.51 cfs 0.293 af
Subcatchment AREA B: DP8	Runoff Area=27,880 sf 0.00% Impervious Runoff Depth>2.80"
Flow Length=81' Slope=0.1250 '/ Tc=10.9 min AMC Adjusted CN=98	Runoff=1.70 cfs 0.149 af
Subcatchment AREA C: DP2	Runoff Area=80,076 sf 0.00% Impervious Runoff Depth>2.80"
Flow Length=389' Slope=0.0300 '/ Tc=28.4 min AMC Adjusted CN=98	Runoff=3.38 cfs 0.428 af
Subcatchment AREA D: DP3	Runoff Area=85,124 sf 0.00% Impervious Runoff Depth>2.79"
Flow Length=445' Slope=0.0300 '/ Tc=36.7 min AMC Adjusted CN=98	Runoff=3.20 cfs 0.455 af
Subcatchment AREA E: DP4	Runoff Area=520,800 sf 0.00% Impervious Runoff Depth>2.78"
Flow Length=1,222' Slope=0.0400 '/ Tc=63.4 min AMC Adjusted CN=98	Runoff=14.60 cfs 2.773 af
Subcatchment AREA F: DP7	Runoff Area=103,711 sf 0.00% Impervious Runoff Depth>2.80"
Flow Length=201' Slope=0.0300 '/ Tc=21.1 min AMC Adjusted CN=98	Runoff=4.96 cfs 0.555 af
Subcatchment AREA G: DP5	Runoff Area=292,165 sf 0.00% Impervious Runoff Depth>2.79"
Flow Length=562' Slope=0.0470 '/ Tc=34.8 min AMC Adjusted CN=98	Runoff=11.24 cfs 1.562 af
Subcatchment AREA H: DP6	Runoff Area=151,281 sf 0.00% Impervious Runoff Depth>2.78"
Flow Length=447' Tc=66.6 min AMC Adjusted CN=98	Runoff=4.12 cfs 0.805 af

Total Runoff Area = 30.207 ac Runoff Volume = 7.021 af Average Runoff Depth = 2.79"
100.00% Pervious = 30.207 ac 0.00% Impervious = 0.000 ac

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 2YR Rainfall=3.23", AMC=4

Printed 2/25/2024

Page 7

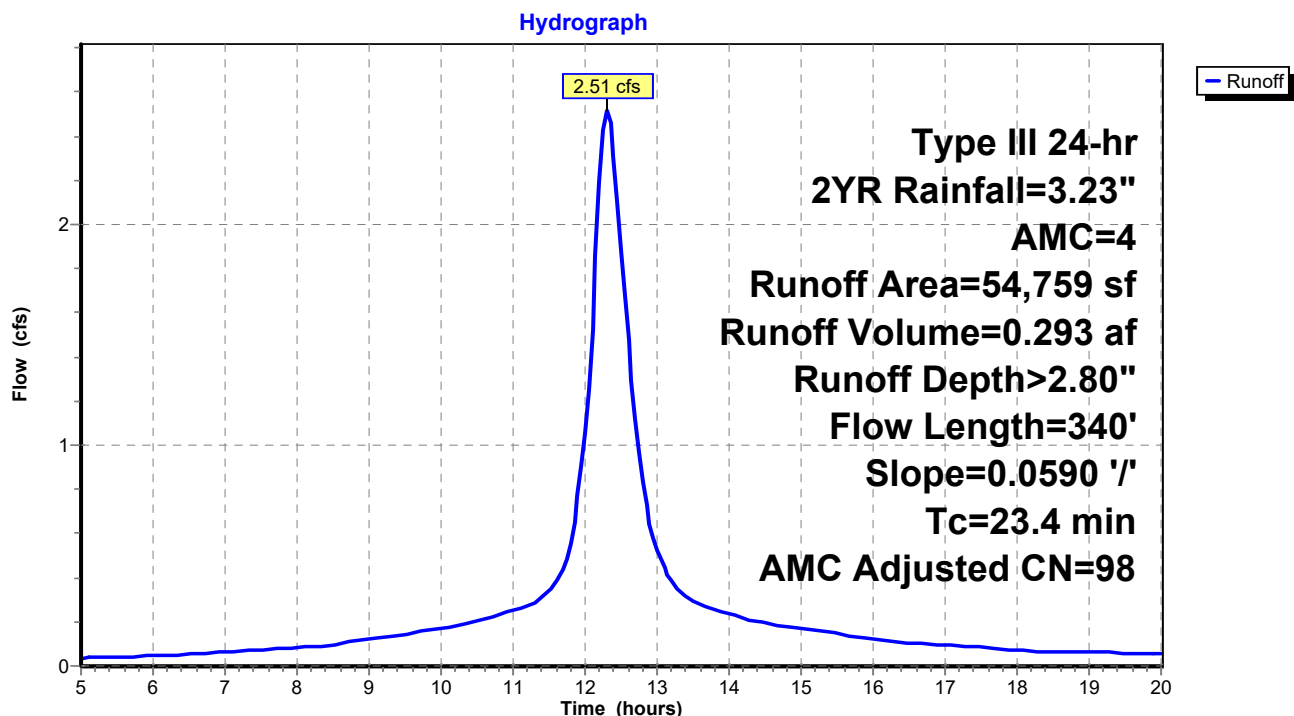
Summary for Subcatchment AREA A: DP1

Runoff = 2.51 cfs @ 12.31 hrs, Volume= 0.293 af, Depth> 2.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.23", AMC=4

Area (sf)	CN	Adj	Description
43,791	60		Woods, Fair, HSG B
10,968	73		Woods, Fair, HSG C
54,759	63	98	Weighted Average, AMC Adjusted
54,759			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	50	0.0590	0.06		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
4.1	150	0.0590	0.61		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
5.4	140	0.0590	0.43	2.17	Channel Flow, Area= 5.0 sf Perim= 15.0' r= 0.33' n= 0.400 Sheet flow: Woods+light brush
23.4	340	Total			

Subcatchment AREA A: DP1

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 2YR Rainfall=3.23", AMC=4

Printed 2/25/2024

Page 8

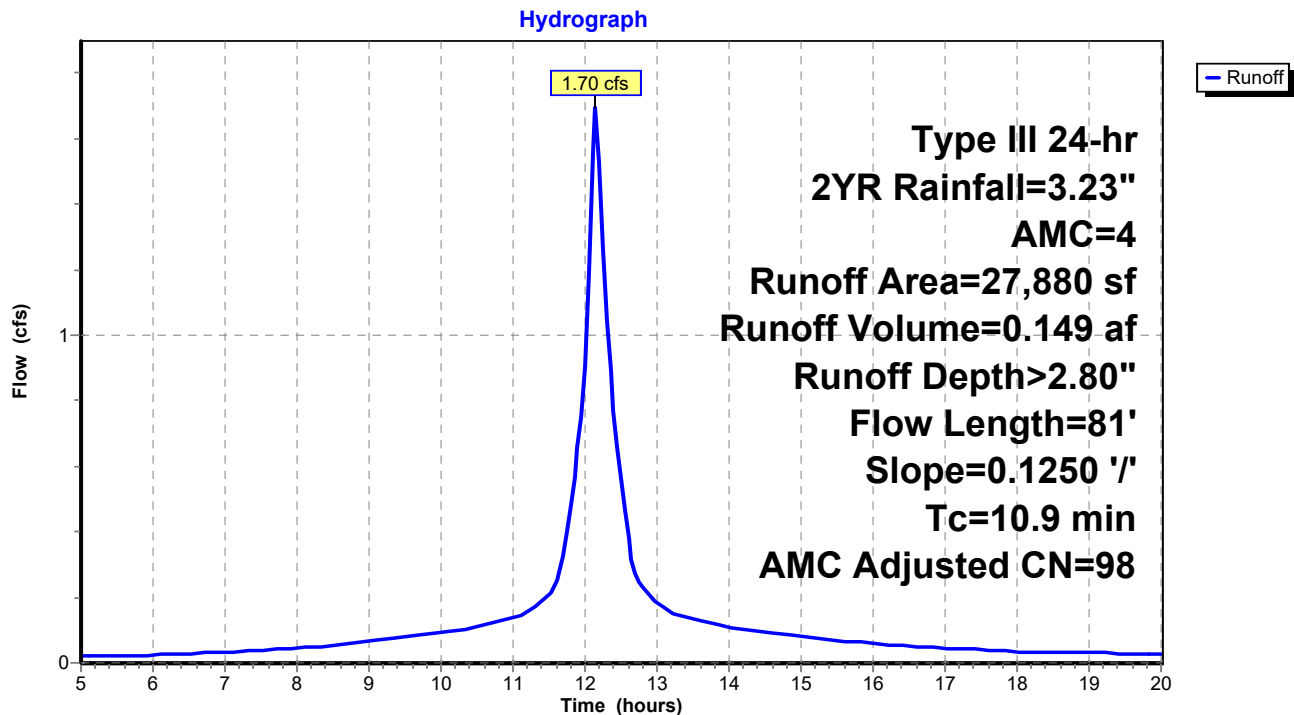
Summary for Subcatchment AREA B: DP8

Runoff = 1.70 cfs @ 12.15 hrs, Volume= 0.149 af, Depth> 2.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.23", AMC=4

Area (sf)	CN	Adj	Description
27,880	73		Woods, Fair, HSG C
27,880	73	98	Weighted Average, AMC Adjusted
27,880			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	50	0.1250	0.08		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
0.6	31	0.1250	0.88		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
10.9	81	Total			

Subcatchment AREA B: DP8

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 2YR Rainfall=3.23", AMC=4

Printed 2/25/2024

Page 9

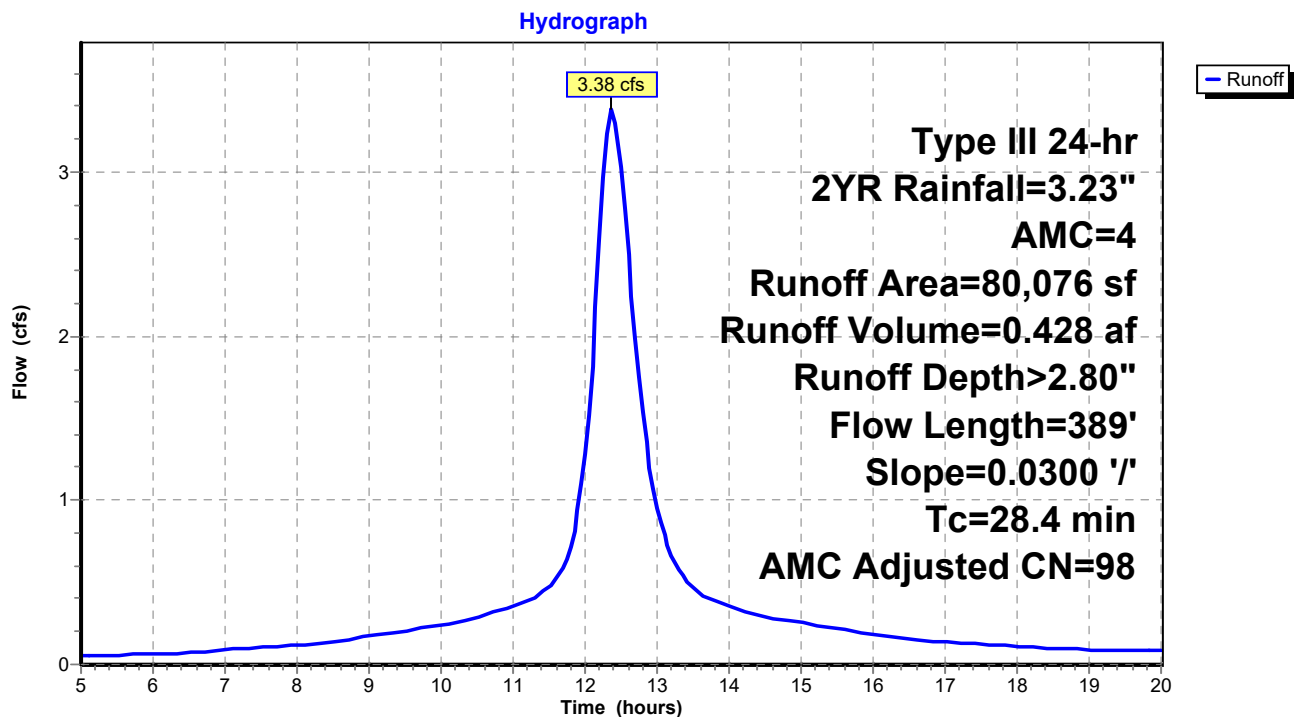
Summary for Subcatchment AREA C: DP2

Runoff = 3.38 cfs @ 12.37 hrs, Volume= 0.428 af, Depth> 2.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.23", AMC=4

Area (sf)	CN	Adj	Description
80,076	73		Woods, Fair, HSG C
80,076	73	98	Weighted Average, AMC Adjusted
80,076			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	50	0.0300	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
5.8	150	0.0300	0.43		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
4.4	189	0.0300	0.72	14.34	Channel Flow, Area= 20.0 sf Perim= 17.0' r= 1.18' n= 0.400 Sheet flow: Woods+light brush
28.4	389	Total			

Subcatchment AREA C: DP2

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 2YR Rainfall=3.23", AMC=4

Printed 2/25/2024

Page 10

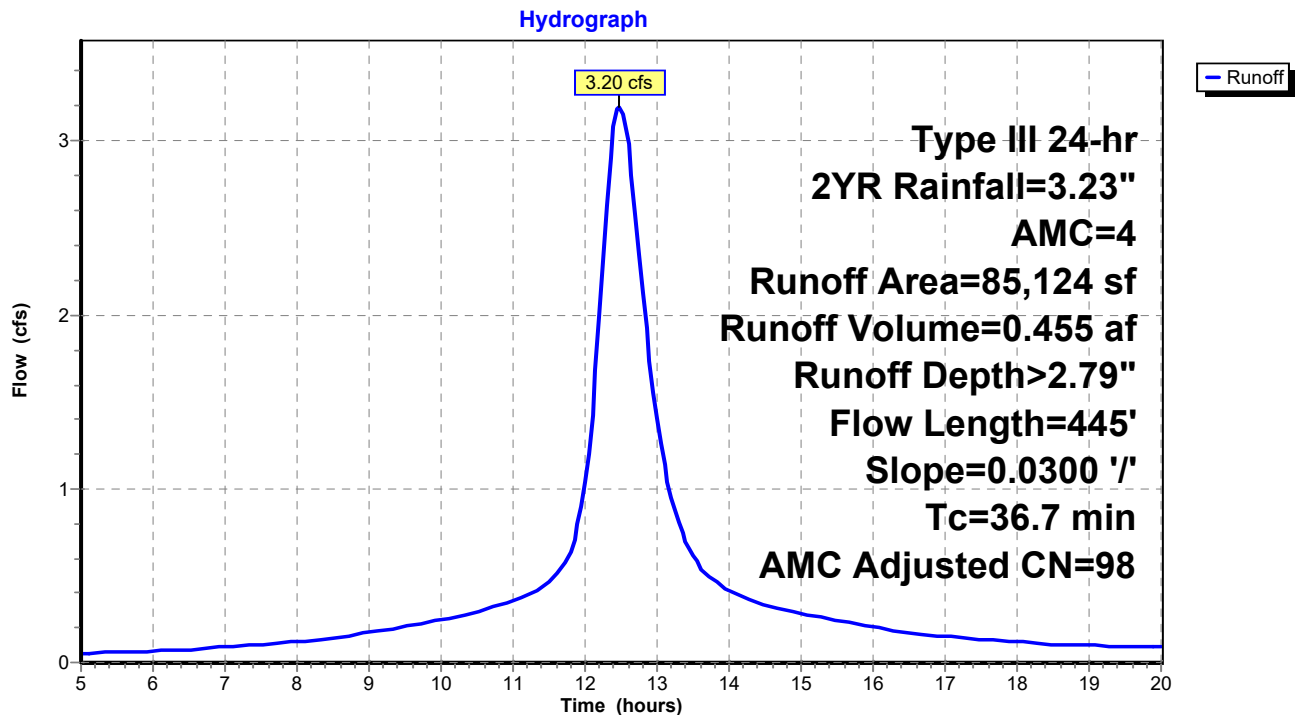
Summary for Subcatchment AREA D: DP3

Runoff = 3.20 cfs @ 12.48 hrs, Volume= 0.455 af, Depth> 2.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.23", AMC=4

Area (sf)	CN	Adj	Description
25,239	73		Woods, Fair, HSG C
29,274	73		Woods, Fair, HSG C
30,611	36		Woods, Fair, HSG A
85,124	60	98	Weighted Average, AMC Adjusted
85,124			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	50	0.0300	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
5.8	150	0.0300	0.43		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
12.7	245	0.0300	0.32	1.93	Channel Flow, Area= 6.0 sf Perim= 17.0' r= 0.35' n= 0.400 Sheet flow: Woods+light brush
36.7	445	Total			

Subcatchment AREA D: DP3

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 2YR Rainfall=3.23", AMC=4

Printed 2/25/2024

Page 11

Summary for Subcatchment AREA E: DP4

Runoff = 14.60 cfs @ 12.81 hrs, Volume= 2.773 af, Depth> 2.78"

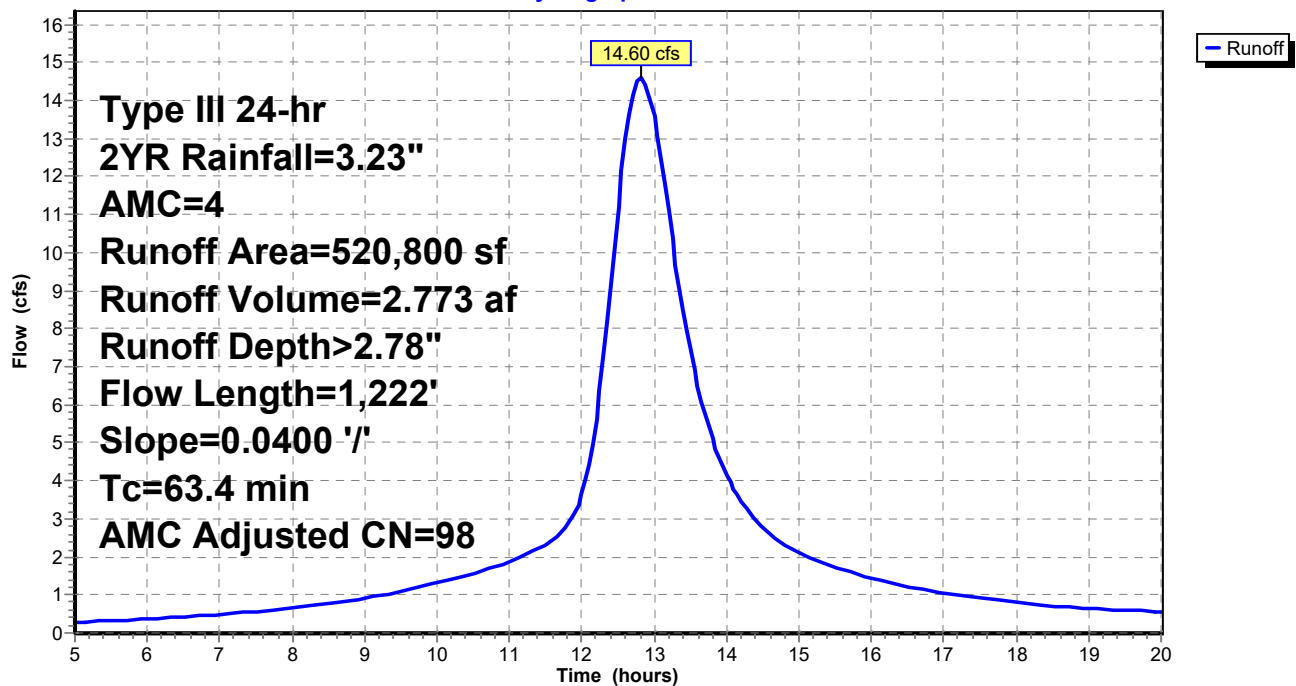
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.23", AMC=4

Area (sf)	CN	Adj	Description
364,927	73		Woods, Fair, HSG C
155,873	36		Woods, Fair, HSG A
520,800	62	98	Weighted Average, AMC Adjusted
520,800			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	50	0.0400	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
5.0	150	0.0400	0.50		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
42.2	1,022	0.0400	0.40	3.23	Channel Flow, Area= 8.0 sf Perim= 20.0' r= 0.40' n= 0.400 Sheet flow: Woods+light brush
63.4	1,222	Total			

Subcatchment AREA E: DP4

Hydrograph



NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 2YR Rainfall=3.23", AMC=4

Printed 2/25/2024

Page 12

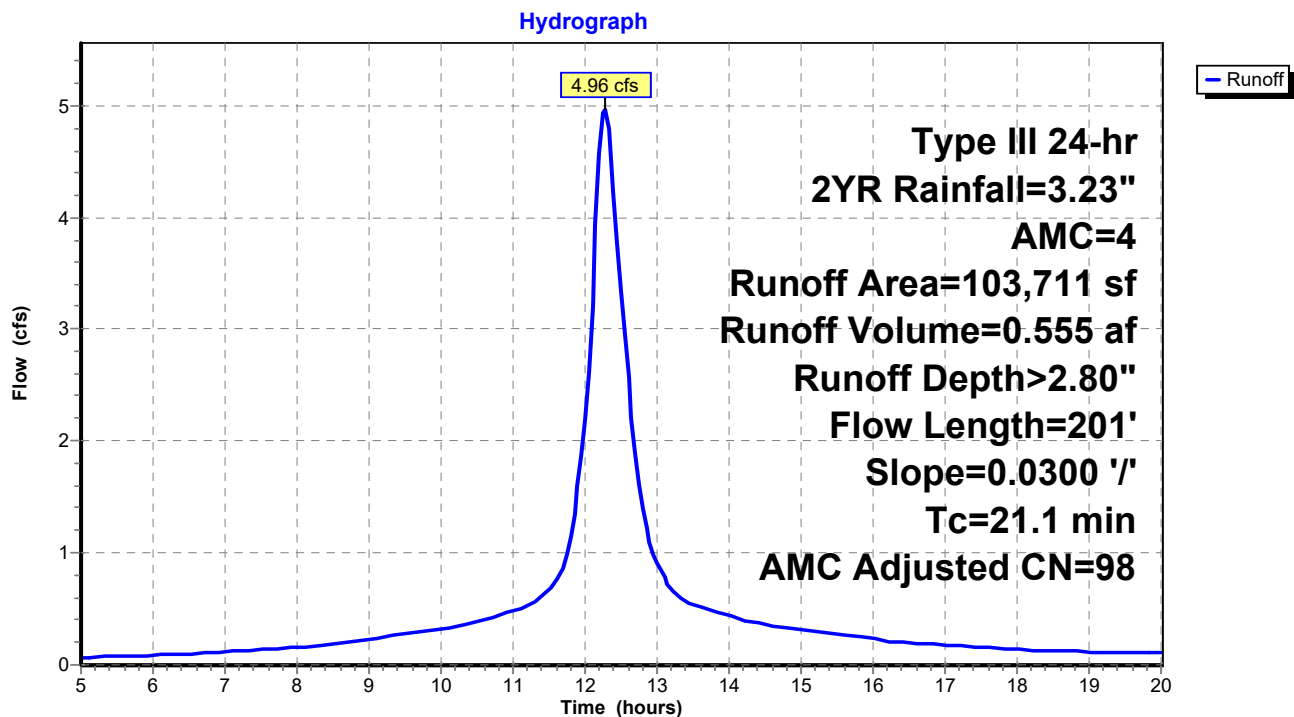
Summary for Subcatchment AREA F: DP7

Runoff = 4.96 cfs @ 12.28 hrs, Volume= 0.555 af, Depth> 2.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.23", AMC=4

Area (sf)	CN	Adj	Description
103,711	73		Woods, Fair, HSG C
103,711	73	98	Weighted Average, AMC Adjusted
103,711			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	50	0.0300	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
2.9	151	0.0300	0.87		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
21.1	201	Total			

Subcatchment AREA F: DP7

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 2YR Rainfall=3.23", AMC=4

Printed 2/25/2024

Page 13

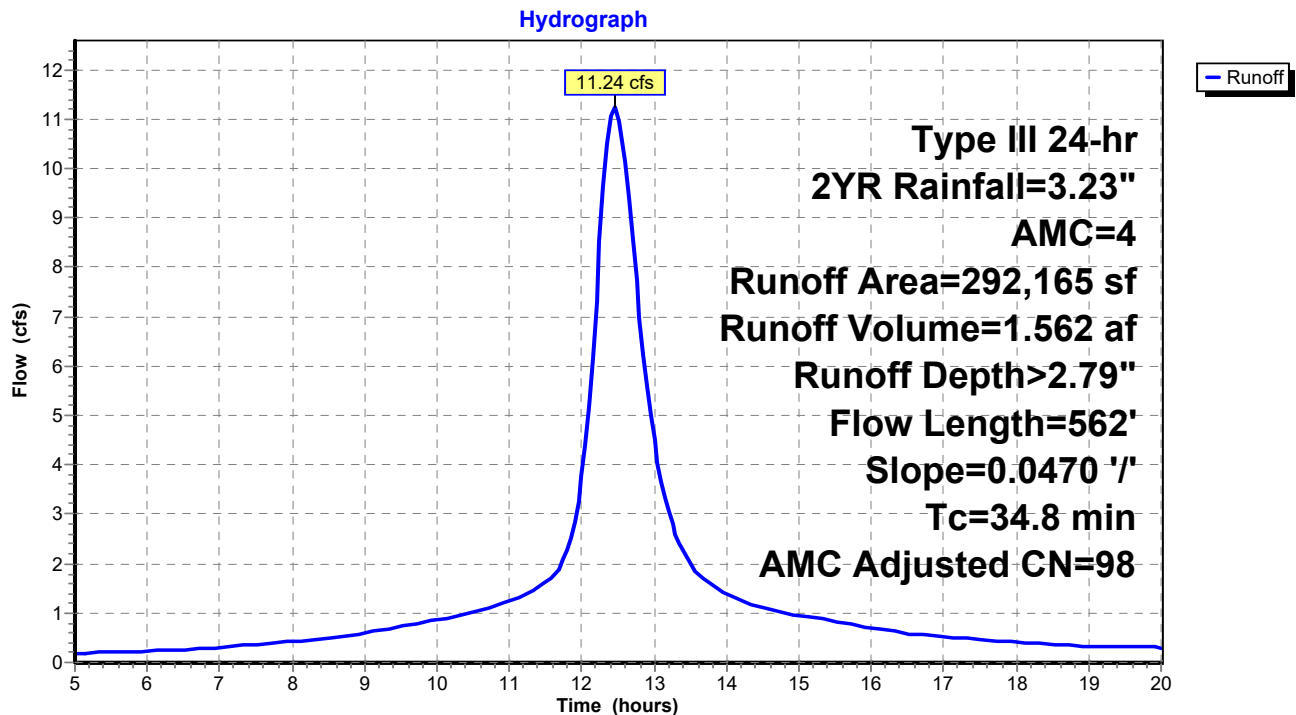
Summary for Subcatchment AREA G: DP5

Runoff = 11.24 cfs @ 12.46 hrs, Volume= 1.562 af, Depth> 2.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.23", AMC=4

Area (sf)	CN	Adj	Description
292,165	73		Woods, Fair, HSG C
292,165	73	98	Weighted Average, AMC Adjusted
292,165			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	50	0.0470	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
4.6	150	0.0470	0.54		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
15.0	362	0.0470	0.40	2.41	Channel Flow, Area= 6.0 sf Perim= 17.0' r= 0.35' n= 0.400 Sheet flow: Woods+light brush
34.8	562	Total			

Subcatchment AREA G: DP5

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 2YR Rainfall=3.23", AMC=4

Printed 2/25/2024

Page 14

Summary for Subcatchment AREA H: DP6

Runoff = 4.12 cfs @ 12.85 hrs, Volume= 0.805 af, Depth> 2.78"

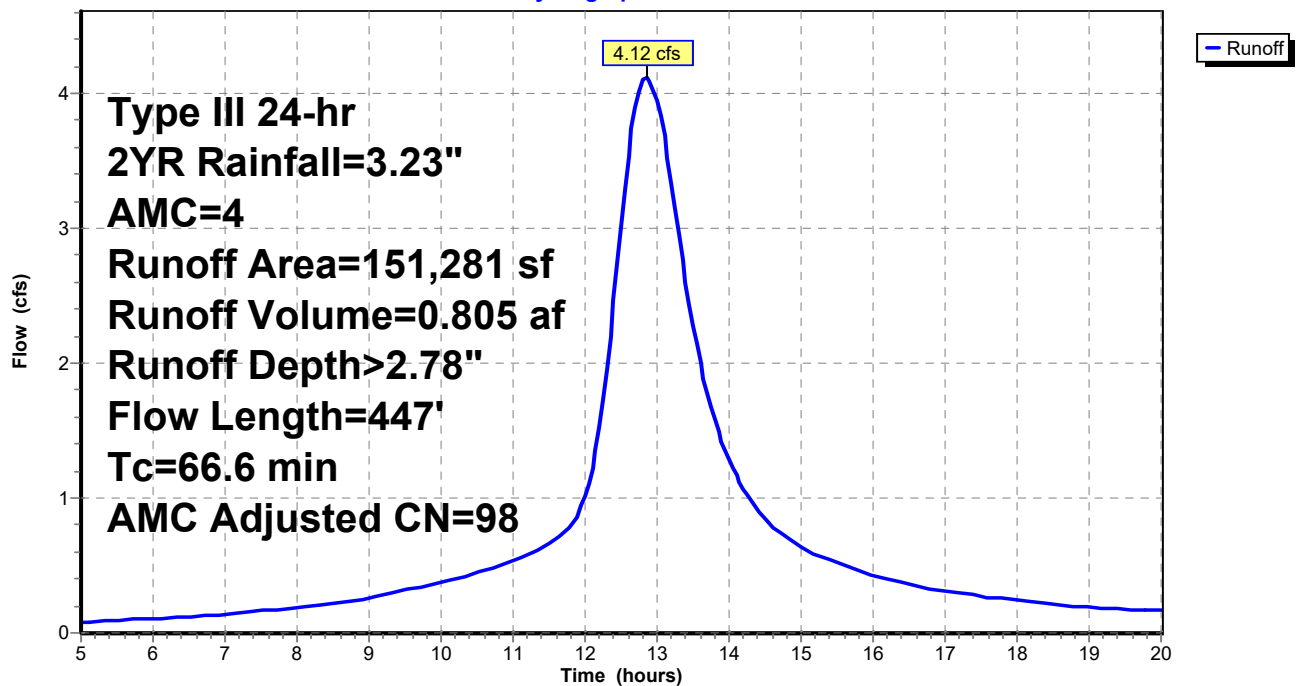
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.23", AMC=4

	Area (sf)	CN	Adj	Description
*	151,281	73		
	151,281	73	98	Weighted Average, AMC Adjusted
	151,281			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.4	50	0.0090	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
12.9	150	0.0060	0.19		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
24.3	247	0.0090	0.17	1.02	Channel Flow, Area= 6.0 sf Perim= 18.0' r= 0.33' n= 0.400
66.6	447	Total			

Subcatchment AREA H: DP6

Hydrograph



NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 10YR Rainfall=5.12", AMC=4

Printed 2/25/2024

Page 15

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment AREA A: DP1	Runoff Area=54,759 sf 0.00% Impervious Runoff Depth>4.52"
Flow Length=340' Slope=0.0590 '/ Tc=23.4 min AMC Adjusted CN=98	Runoff=4.02 cfs 0.474 af
Subcatchment AREA B: DP8	Runoff Area=27,880 sf 0.00% Impervious Runoff Depth>4.53"
Flow Length=81' Slope=0.1250 '/ Tc=10.9 min AMC Adjusted CN=98	Runoff=2.72 cfs 0.241 af
Subcatchment AREA C: DP2	Runoff Area=80,076 sf 0.00% Impervious Runoff Depth>4.52"
Flow Length=389' Slope=0.0300 '/ Tc=28.4 min AMC Adjusted CN=98	Runoff=5.41 cfs 0.693 af
Subcatchment AREA D: DP3	Runoff Area=85,124 sf 0.00% Impervious Runoff Depth>4.52"
Flow Length=445' Slope=0.0300 '/ Tc=36.7 min AMC Adjusted CN=98	Runoff=5.11 cfs 0.736 af
Subcatchment AREA E: DP4	Runoff Area=520,800 sf 0.00% Impervious Runoff Depth>4.51"
Flow Length=1,222' Slope=0.0400 '/ Tc=63.4 min AMC Adjusted CN=98	Runoff=23.35 cfs 4.494 af
Subcatchment AREA F: DP7	Runoff Area=103,711 sf 0.00% Impervious Runoff Depth>4.53"
Flow Length=201' Slope=0.0300 '/ Tc=21.1 min AMC Adjusted CN=98	Runoff=7.95 cfs 0.898 af
Subcatchment AREA G: DP5	Runoff Area=292,165 sf 0.00% Impervious Runoff Depth>4.52"
Flow Length=562' Slope=0.0470 '/ Tc=34.8 min AMC Adjusted CN=98	Runoff=17.97 cfs 2.527 af
Subcatchment AREA H: DP6	Runoff Area=151,281 sf 0.00% Impervious Runoff Depth>4.51"
Flow Length=447' Tc=66.6 min AMC Adjusted CN=98	Runoff=6.59 cfs 1.305 af

Total Runoff Area = 30.207 ac Runoff Volume = 11.368 af Average Runoff Depth = 4.52"
100.00% Pervious = 30.207 ac 0.00% Impervious = 0.000 ac

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 10YR Rainfall=5.12", AMC=4

Printed 2/25/2024

Page 16

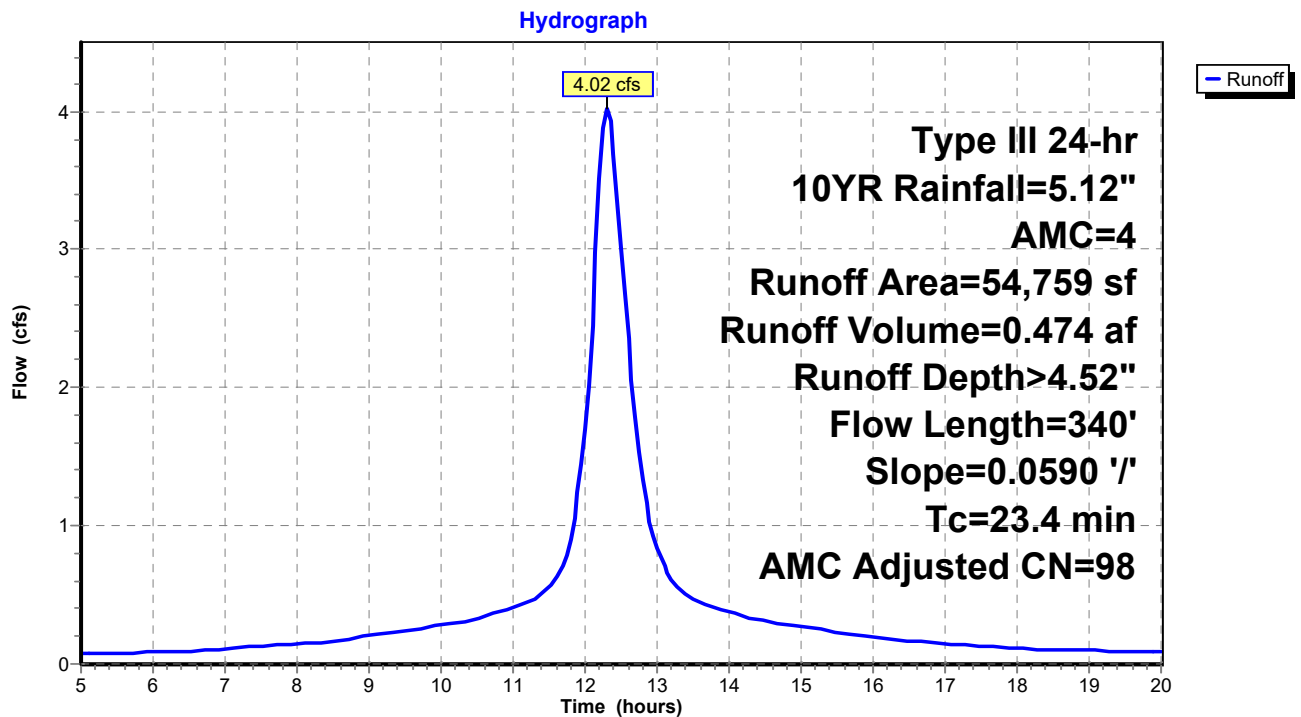
Summary for Subcatchment AREA A: DP1

Runoff = 4.02 cfs @ 12.31 hrs, Volume= 0.474 af, Depth> 4.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=5.12", AMC=4

Area (sf)	CN	Adj	Description
43,791	60		Woods, Fair, HSG B
10,968	73		Woods, Fair, HSG C
54,759	63	98	Weighted Average, AMC Adjusted
54,759			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	50	0.0590	0.06		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
4.1	150	0.0590	0.61		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
5.4	140	0.0590	0.43	2.17	Channel Flow, Area= 5.0 sf Perim= 15.0' r= 0.33' n= 0.400 Sheet flow: Woods+light brush
23.4	340	Total			

Subcatchment AREA A: DP1

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 10YR Rainfall=5.12", AMC=4

Printed 2/25/2024

Page 17

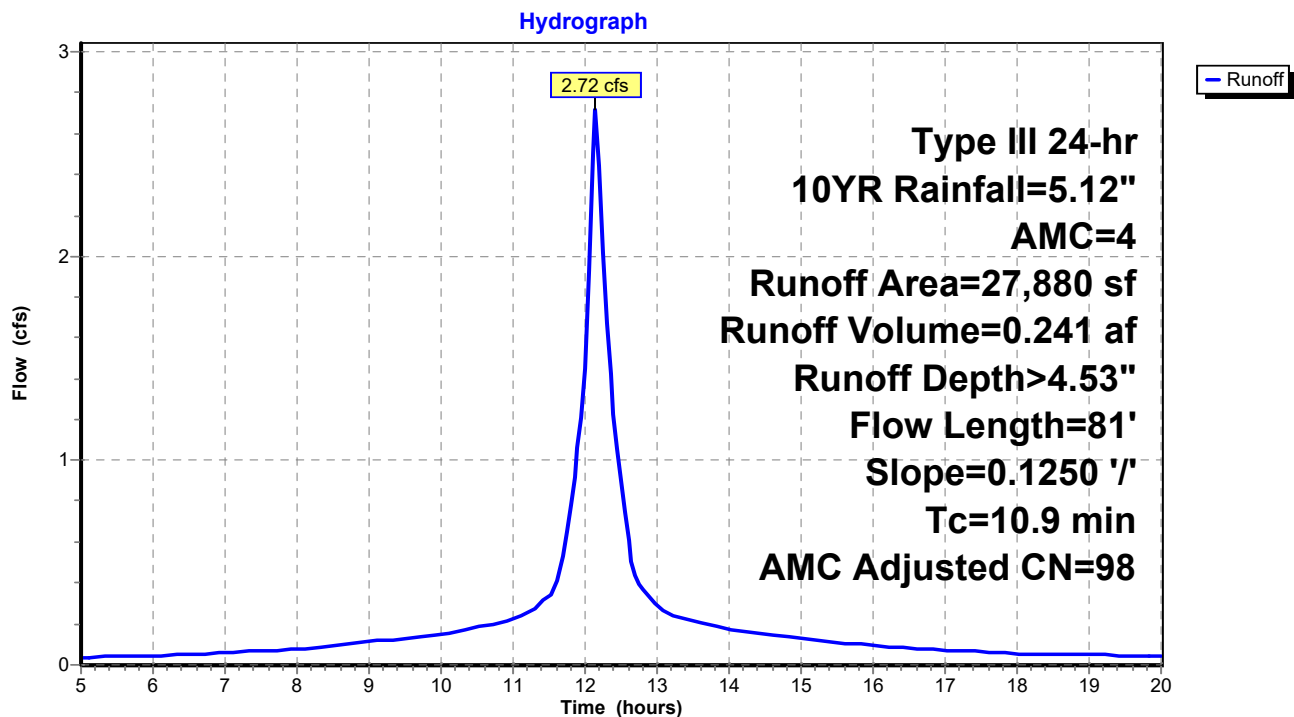
Summary for Subcatchment AREA B: DP8

Runoff = 2.72 cfs @ 12.15 hrs, Volume= 0.241 af, Depth> 4.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=5.12", AMC=4

Area (sf)	CN	Adj	Description
27,880	73		Woods, Fair, HSG C
27,880	73	98	Weighted Average, AMC Adjusted
27,880			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	50	0.1250	0.08		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
0.6	31	0.1250	0.88		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
10.9	81	Total			

Subcatchment AREA B: DP8

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 10YR Rainfall=5.12", AMC=4

Printed 2/25/2024

Page 18

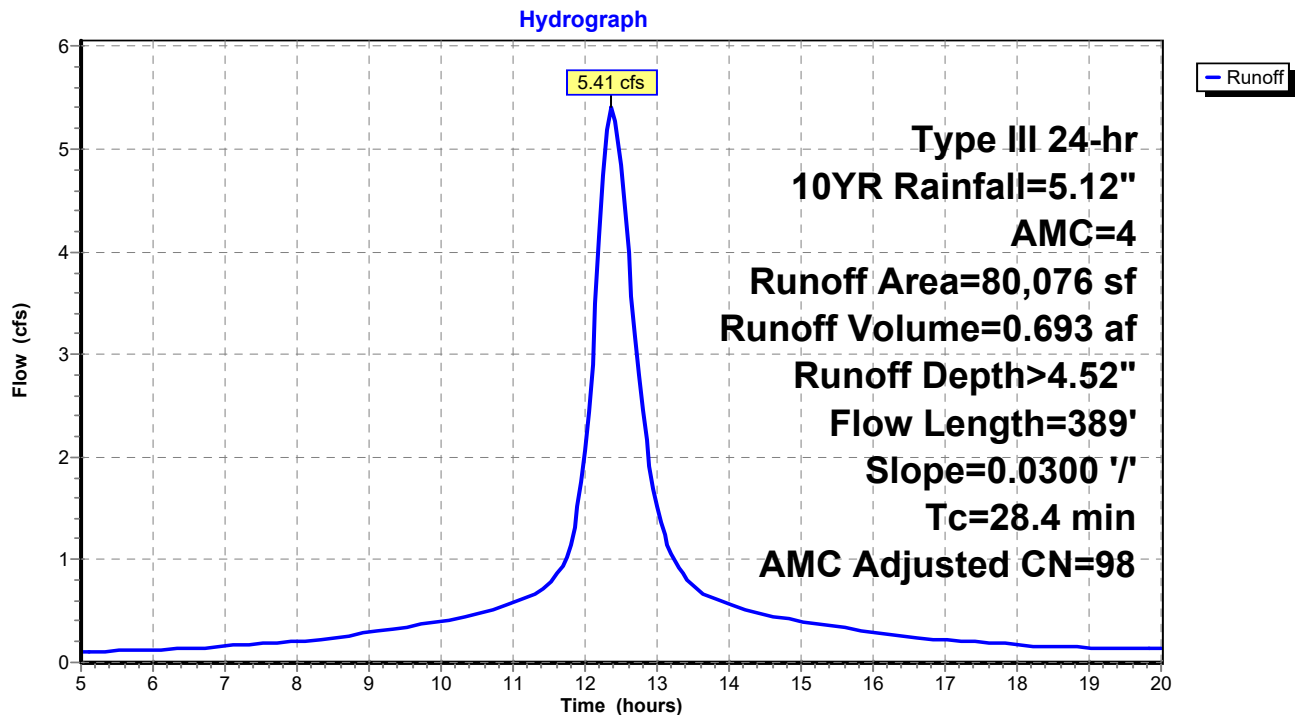
Summary for Subcatchment AREA C: DP2

Runoff = 5.41 cfs @ 12.37 hrs, Volume= 0.693 af, Depth> 4.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=5.12", AMC=4

Area (sf)	CN	Adj	Description
80,076	73		Woods, Fair, HSG C
80,076	73	98	Weighted Average, AMC Adjusted
80,076			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	50	0.0300	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
5.8	150	0.0300	0.43		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
4.4	189	0.0300	0.72	14.34	Channel Flow, Area= 20.0 sf Perim= 17.0' r= 1.18' n= 0.400 Sheet flow: Woods+light brush
28.4	389	Total			

Subcatchment AREA C: DP2

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 10YR Rainfall=5.12", AMC=4

Printed 2/25/2024

Page 19

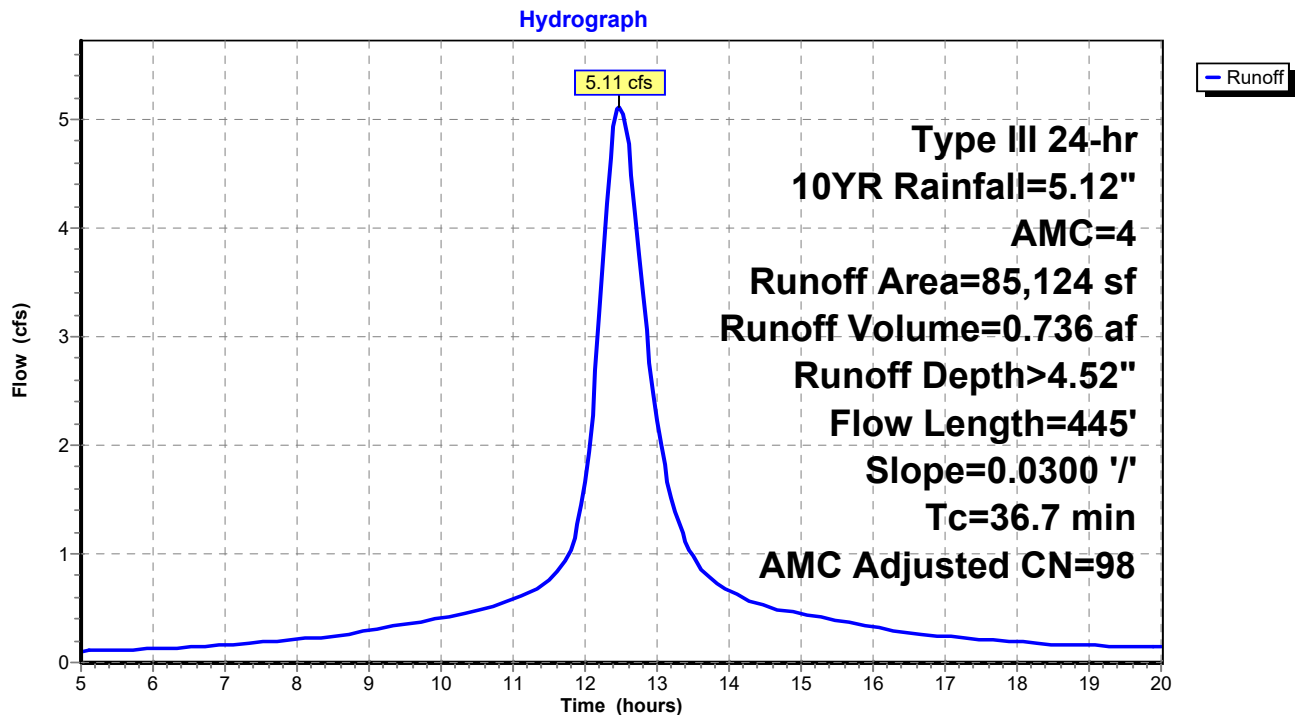
Summary for Subcatchment AREA D: DP3

Runoff = 5.11 cfs @ 12.48 hrs, Volume= 0.736 af, Depth> 4.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=5.12", AMC=4

Area (sf)	CN	Adj	Description
25,239	73		Woods, Fair, HSG C
29,274	73		Woods, Fair, HSG C
30,611	36		Woods, Fair, HSG A
85,124	60	98	Weighted Average, AMC Adjusted
85,124			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	50	0.0300	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
5.8	150	0.0300	0.43		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
12.7	245	0.0300	0.32	1.93	Channel Flow, Area= 6.0 sf Perim= 17.0' r= 0.35' n= 0.400 Sheet flow: Woods+light brush
36.7	445	Total			

Subcatchment AREA D: DP3

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 10YR Rainfall=5.12", AMC=4

Printed 2/25/2024

Page 20

Summary for Subcatchment AREA E: DP4

Runoff = 23.35 cfs @ 12.81 hrs, Volume= 4.494 af, Depth> 4.51"

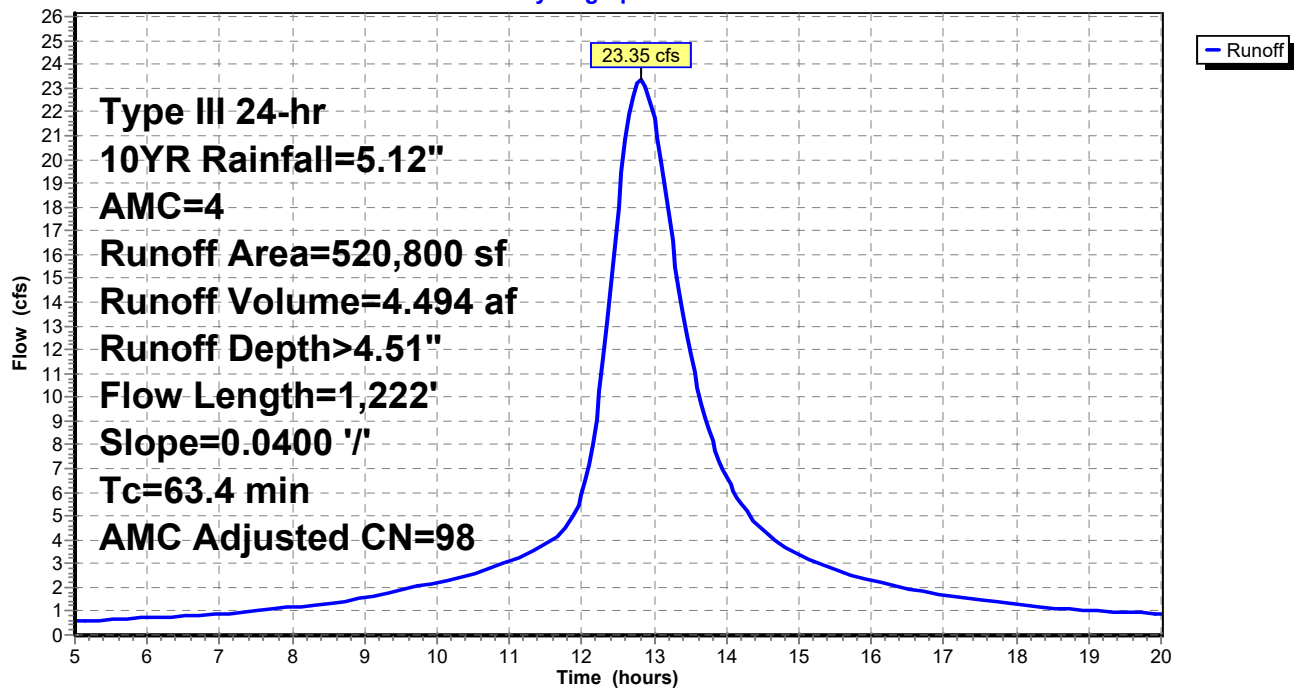
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=5.12", AMC=4

Area (sf)	CN	Adj	Description
364,927	73		Woods, Fair, HSG C
155,873	36		Woods, Fair, HSG A
520,800	62	98	Weighted Average, AMC Adjusted
520,800			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	50	0.0400	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
5.0	150	0.0400	0.50		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
42.2	1,022	0.0400	0.40	3.23	Channel Flow, Area= 8.0 sf Perim= 20.0' r= 0.40' n= 0.400 Sheet flow: Woods+light brush
63.4	1,222	Total			

Subcatchment AREA E: DP4

Hydrograph



NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 10YR Rainfall=5.12", AMC=4

Printed 2/25/2024

Page 21

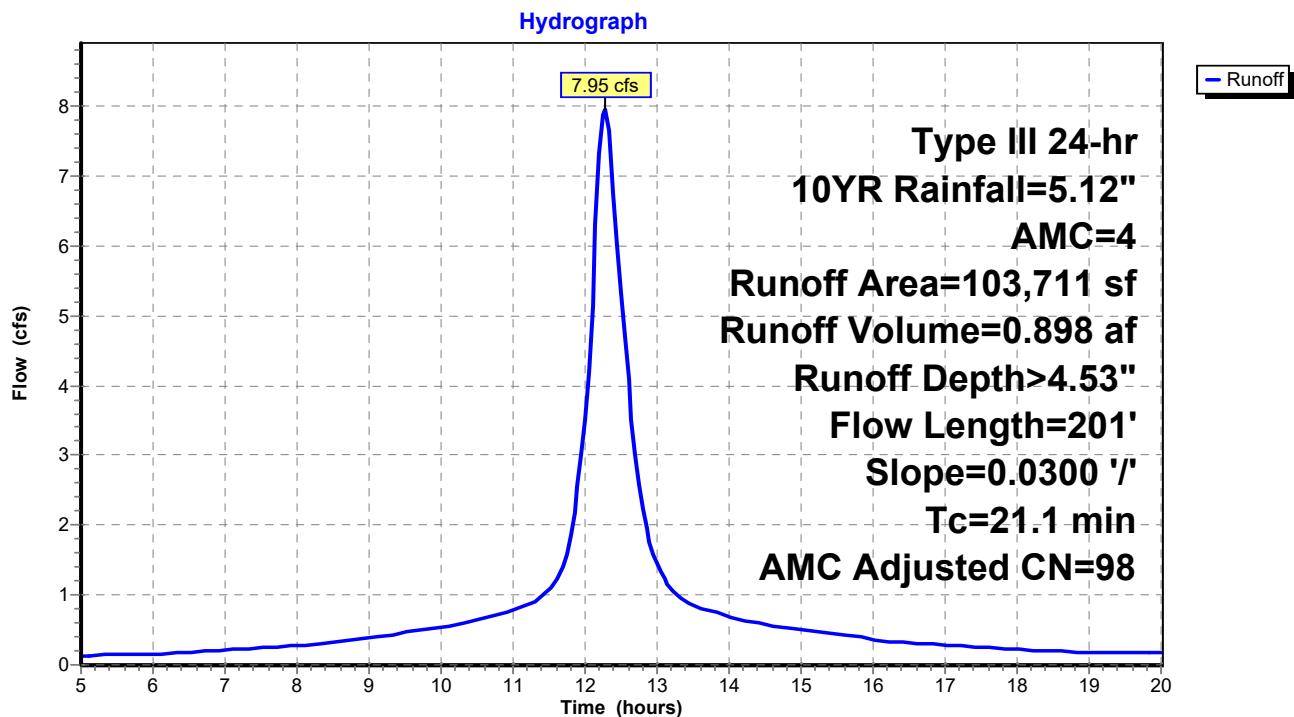
Summary for Subcatchment AREA F: DP7

Runoff = 7.95 cfs @ 12.27 hrs, Volume= 0.898 af, Depth> 4.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=5.12", AMC=4

Area (sf)	CN	Adj	Description
103,711	73		Woods, Fair, HSG C
103,711	73	98	Weighted Average, AMC Adjusted
103,711			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	50	0.0300	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
2.9	151	0.0300	0.87		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
21.1	201	Total			

Subcatchment AREA F: DP7

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 10YR Rainfall=5.12", AMC=4

Printed 2/25/2024

Page 22

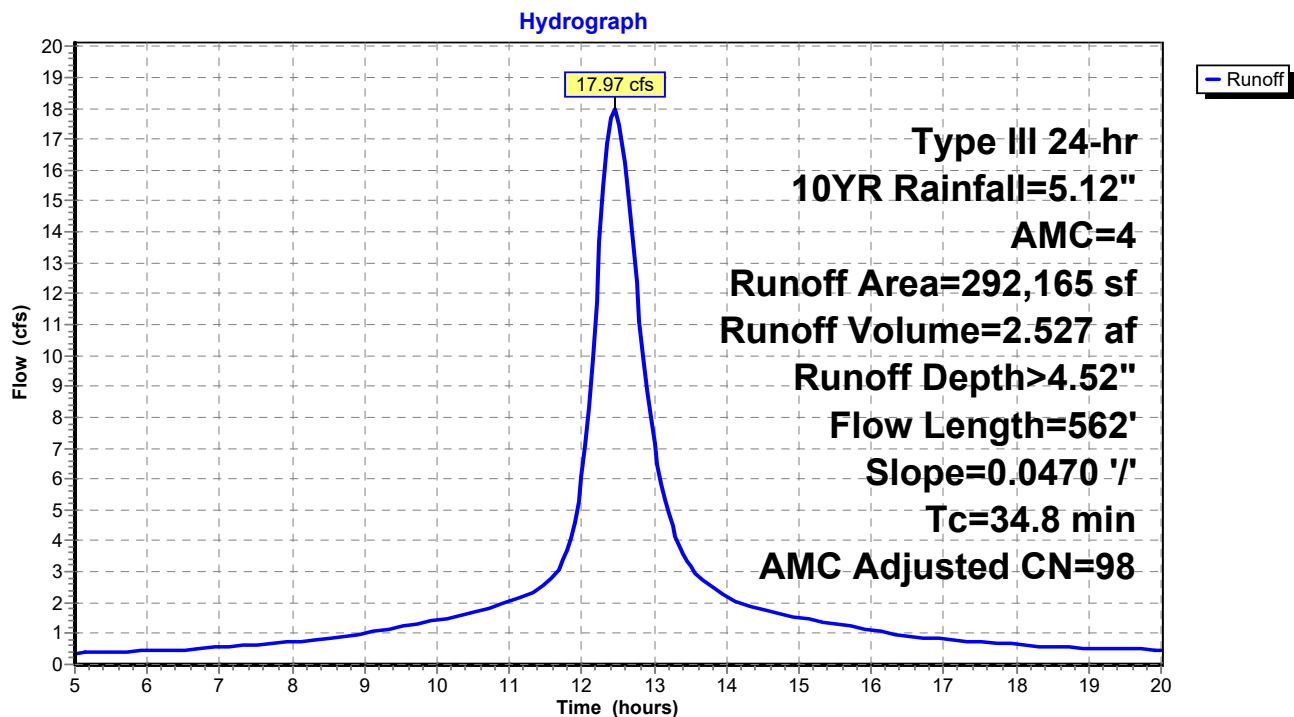
Summary for Subcatchment AREA G: DP5

Runoff = 17.97 cfs @ 12.46 hrs, Volume= 2.527 af, Depth> 4.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=5.12", AMC=4

Area (sf)	CN	Adj	Description
292,165	73		Woods, Fair, HSG C
292,165	73	98	Weighted Average, AMC Adjusted
292,165			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	50	0.0470	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
4.6	150	0.0470	0.54		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
15.0	362	0.0470	0.40	2.41	Channel Flow, Area= 6.0 sf Perim= 17.0' r= 0.35' n= 0.400 Sheet flow: Woods+light brush
34.8	562	Total			

Subcatchment AREA G: DP5

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 10YR Rainfall=5.12", AMC=4

Printed 2/25/2024

Page 23

Summary for Subcatchment AREA H: DP6

Runoff = 6.59 cfs @ 12.85 hrs, Volume= 1.305 af, Depth> 4.51"

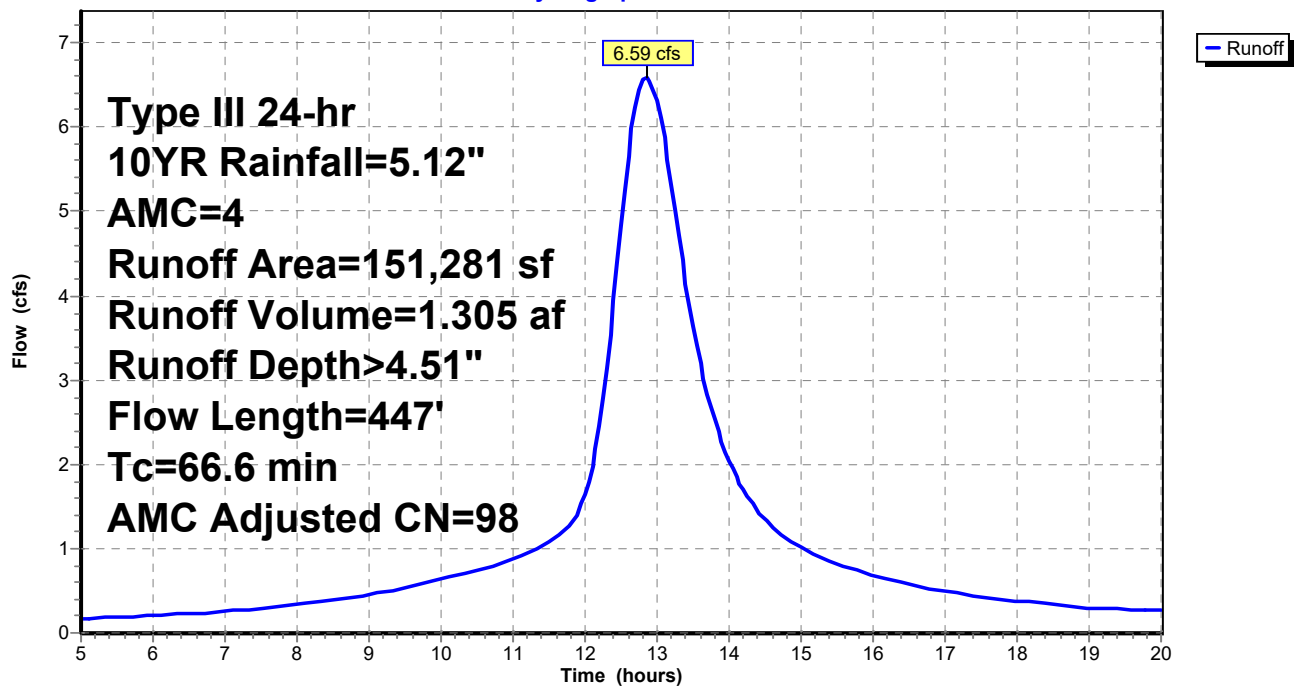
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=5.12", AMC=4

	Area (sf)	CN	Adj	Description
*	151,281	73		
	151,281	73	98	Weighted Average, AMC Adjusted
	151,281			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.4	50	0.0090	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
12.9	150	0.0060	0.19		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
24.3	247	0.0090	0.17	1.02	Channel Flow, Area= 6.0 sf Perim= 18.0' r= 0.33' n= 0.400
66.6	447	Total			

Subcatchment AREA H: DP6

Hydrograph



NEWTON ROAD EXIST*Type III 24-hr 25YR Rainfall=6.30", AMC=4*

Prepared by PGC Engineering PLLC

Printed 2/25/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 24

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment AREA A: DP1	Runoff Area=54,759 sf 0.00% Impervious Runoff Depth>5.60"
Flow Length=340' Slope=0.0590 '/ Tc=23.4 min AMC Adjusted CN=98	Runoff=4.96 cfs 0.587 af
Subcatchment AREA B: DP8	Runoff Area=27,880 sf 0.00% Impervious Runoff Depth>5.60"
Flow Length=81' Slope=0.1250 '/ Tc=10.9 min AMC Adjusted CN=98	Runoff=3.35 cfs 0.299 af
Subcatchment AREA C: DP2	Runoff Area=80,076 sf 0.00% Impervious Runoff Depth>5.60"
Flow Length=389' Slope=0.0300 '/ Tc=28.4 min AMC Adjusted CN=98	Runoff=6.67 cfs 0.858 af
Subcatchment AREA D: DP3	Runoff Area=85,124 sf 0.00% Impervious Runoff Depth>5.60"
Flow Length=445' Slope=0.0300 '/ Tc=36.7 min AMC Adjusted CN=98	Runoff=6.30 cfs 0.911 af
Subcatchment AREA E: DP4	Runoff Area=520,800 sf 0.00% Impervious Runoff Depth>5.58"
Flow Length=1,222' Slope=0.0400 '/ Tc=63.4 min AMC Adjusted CN=98	Runoff=28.80 cfs 5.564 af
Subcatchment AREA F: DP7	Runoff Area=103,711 sf 0.00% Impervious Runoff Depth>5.60"
Flow Length=201' Slope=0.0300 '/ Tc=21.1 min AMC Adjusted CN=98	Runoff=9.80 cfs 1.111 af
Subcatchment AREA G: DP5	Runoff Area=292,165 sf 0.00% Impervious Runoff Depth>5.60"
Flow Length=562' Slope=0.0470 '/ Tc=34.8 min AMC Adjusted CN=98	Runoff=22.16 cfs 3.128 af
Subcatchment AREA H: DP6	Runoff Area=151,281 sf 0.00% Impervious Runoff Depth>5.58"
Flow Length=447' Tc=66.6 min AMC Adjusted CN=98	Runoff=8.12 cfs 1.616 af

Total Runoff Area = 30.207 ac Runoff Volume = 14.072 af Average Runoff Depth = 5.59"
100.00% Pervious = 30.207 ac 0.00% Impervious = 0.000 ac

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 25YR Rainfall=6.30", AMC=4

Printed 2/25/2024

Page 25

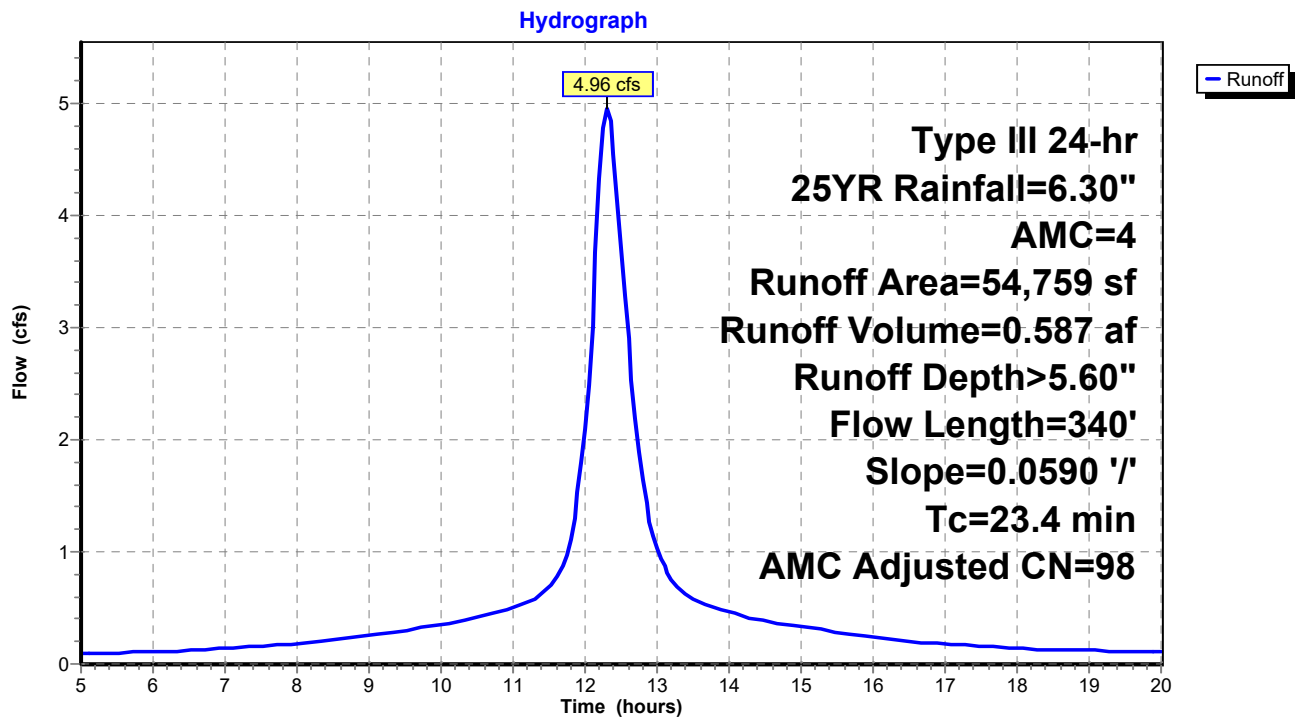
Summary for Subcatchment AREA A: DP1

Runoff = 4.96 cfs @ 12.31 hrs, Volume= 0.587 af, Depth> 5.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR Rainfall=6.30", AMC=4

Area (sf)	CN	Adj	Description
43,791	60		Woods, Fair, HSG B
10,968	73		Woods, Fair, HSG C
54,759	63	98	Weighted Average, AMC Adjusted
54,759			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	50	0.0590	0.06		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
4.1	150	0.0590	0.61		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
5.4	140	0.0590	0.43	2.17	Channel Flow, Area= 5.0 sf Perim= 15.0' r= 0.33' n= 0.400 Sheet flow: Woods+light brush
23.4	340	Total			

Subcatchment AREA A: DP1

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 25YR Rainfall=6.30", AMC=4

Printed 2/25/2024

Page 26

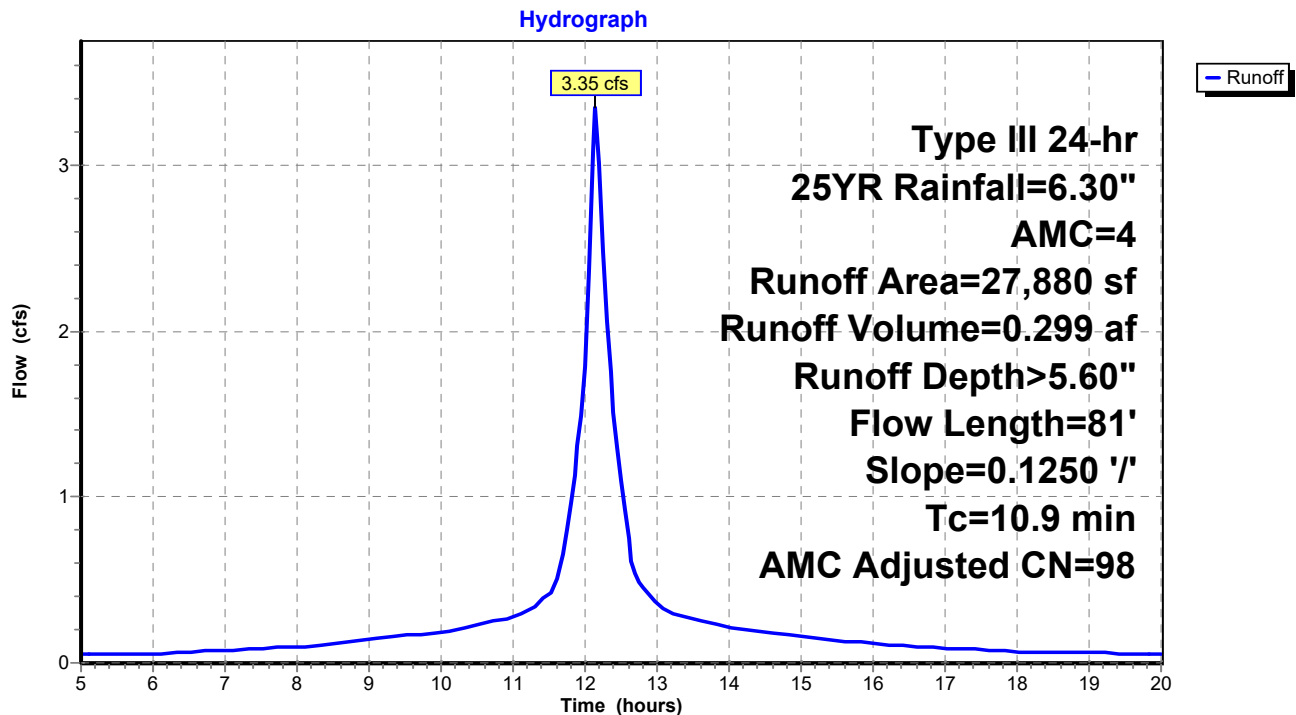
Summary for Subcatchment AREA B: DP8

Runoff = 3.35 cfs @ 12.15 hrs, Volume= 0.299 af, Depth> 5.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR Rainfall=6.30", AMC=4

Area (sf)	CN	Adj	Description
27,880	73		Woods, Fair, HSG C
27,880	73	98	Weighted Average, AMC Adjusted
27,880			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	50	0.1250	0.08		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
0.6	31	0.1250	0.88		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
10.9	81	Total			

Subcatchment AREA B: DP8

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 25YR Rainfall=6.30", AMC=4

Printed 2/25/2024

Page 27

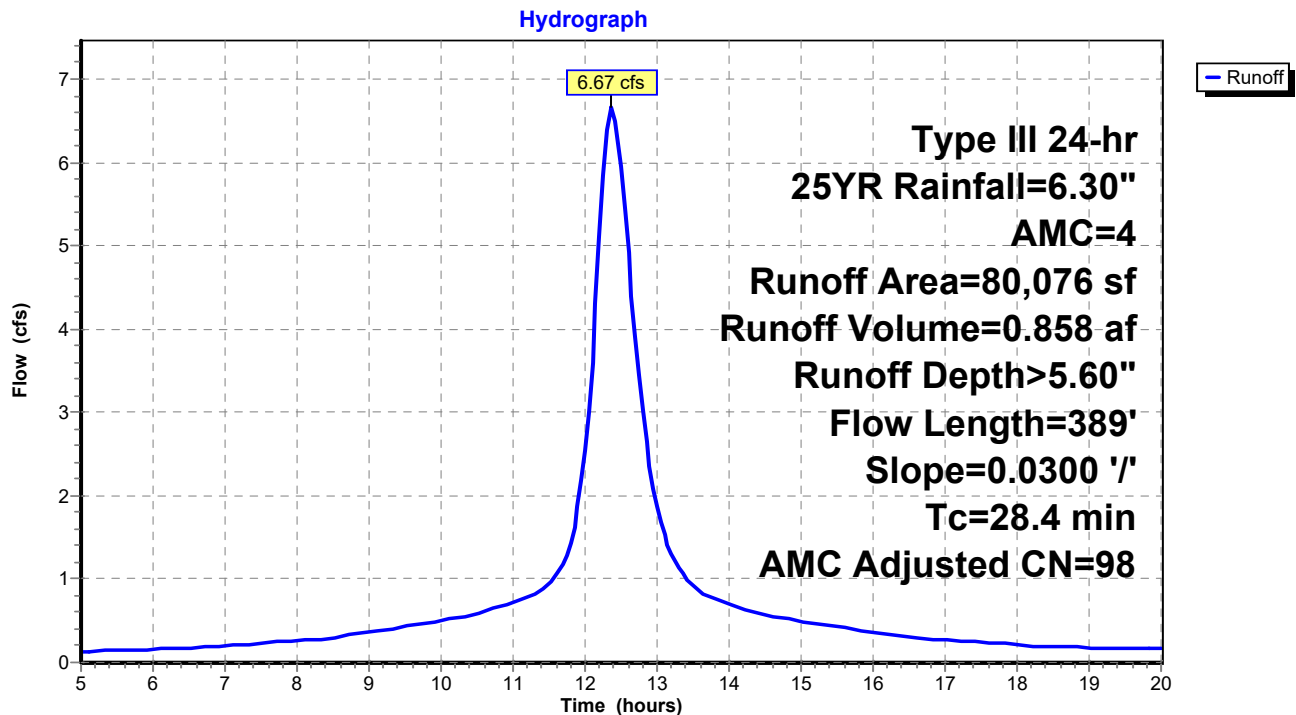
Summary for Subcatchment AREA C: DP2

Runoff = 6.67 cfs @ 12.37 hrs, Volume= 0.858 af, Depth> 5.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR Rainfall=6.30", AMC=4

Area (sf)	CN	Adj	Description
80,076	73		Woods, Fair, HSG C
80,076	73	98	Weighted Average, AMC Adjusted
80,076			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	50	0.0300	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
5.8	150	0.0300	0.43		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
4.4	189	0.0300	0.72	14.34	Channel Flow, Area= 20.0 sf Perim= 17.0' r= 1.18' n= 0.400 Sheet flow: Woods+light brush
28.4	389	Total			

Subcatchment AREA C: DP2

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 25YR Rainfall=6.30", AMC=4

Printed 2/25/2024

Page 28

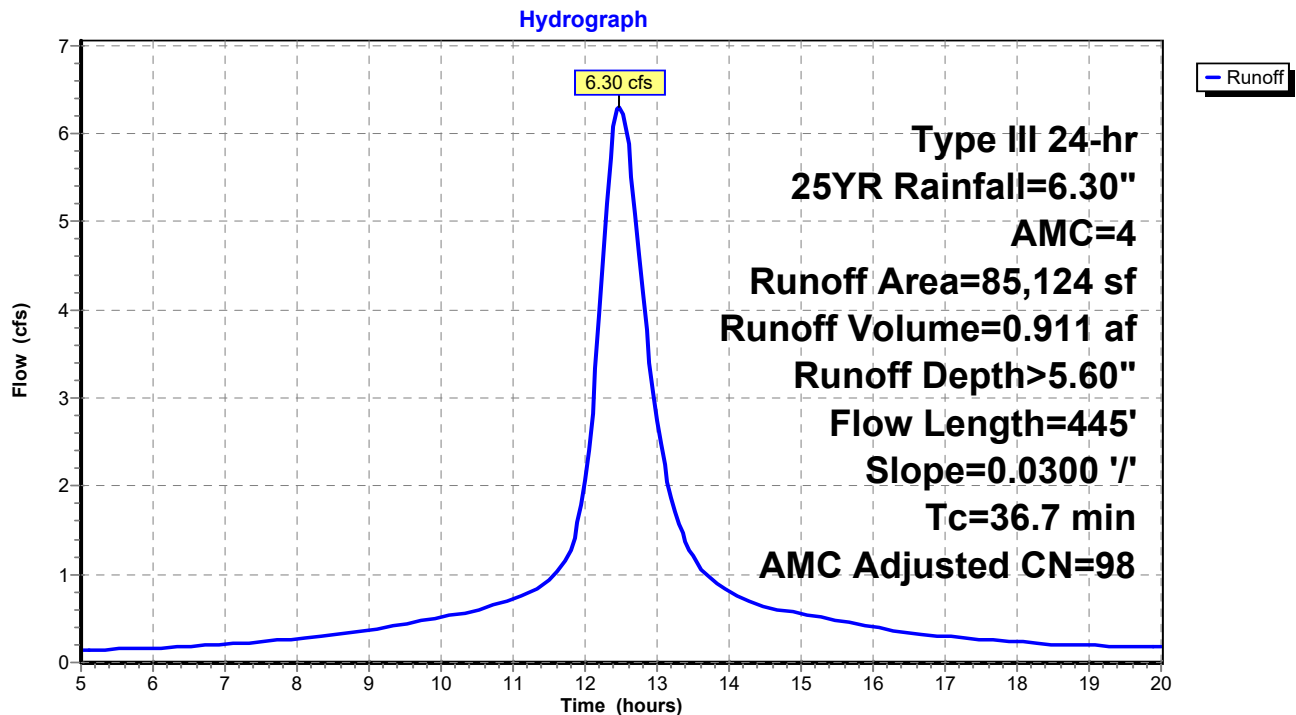
Summary for Subcatchment AREA D: DP3

Runoff = 6.30 cfs @ 12.48 hrs, Volume= 0.911 af, Depth> 5.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR Rainfall=6.30", AMC=4

Area (sf)	CN	Adj	Description
25,239	73		Woods, Fair, HSG C
29,274	73		Woods, Fair, HSG C
30,611	36		Woods, Fair, HSG A
85,124	60	98	Weighted Average, AMC Adjusted
85,124			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	50	0.0300	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
5.8	150	0.0300	0.43		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
12.7	245	0.0300	0.32	1.93	Channel Flow, Area= 6.0 sf Perim= 17.0' r= 0.35' n= 0.400 Sheet flow: Woods+light brush
36.7	445	Total			

Subcatchment AREA D: DP3

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 25YR Rainfall=6.30", AMC=4

Printed 2/25/2024

Page 29

Summary for Subcatchment AREA E: DP4

Runoff = 28.80 cfs @ 12.81 hrs, Volume= 5.564 af, Depth> 5.58"

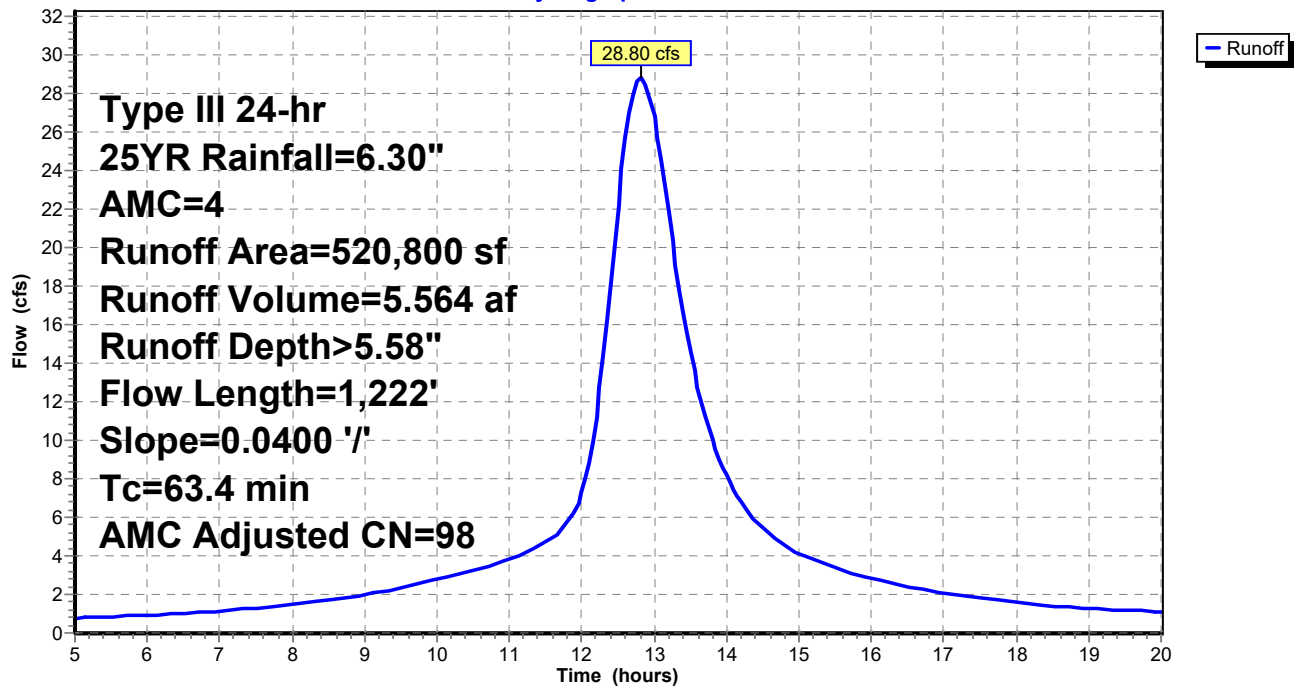
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR Rainfall=6.30", AMC=4

Area (sf)	CN	Adj	Description
364,927	73		Woods, Fair, HSG C
155,873	36		Woods, Fair, HSG A
520,800	62	98	Weighted Average, AMC Adjusted
520,800			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	50	0.0400	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
5.0	150	0.0400	0.50		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
42.2	1,022	0.0400	0.40	3.23	Channel Flow, Area= 8.0 sf Perim= 20.0' r= 0.40' n= 0.400 Sheet flow: Woods+light brush
63.4	1,222	Total			

Subcatchment AREA E: DP4

Hydrograph



NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 25YR Rainfall=6.30", AMC=4

Printed 2/25/2024

Page 30

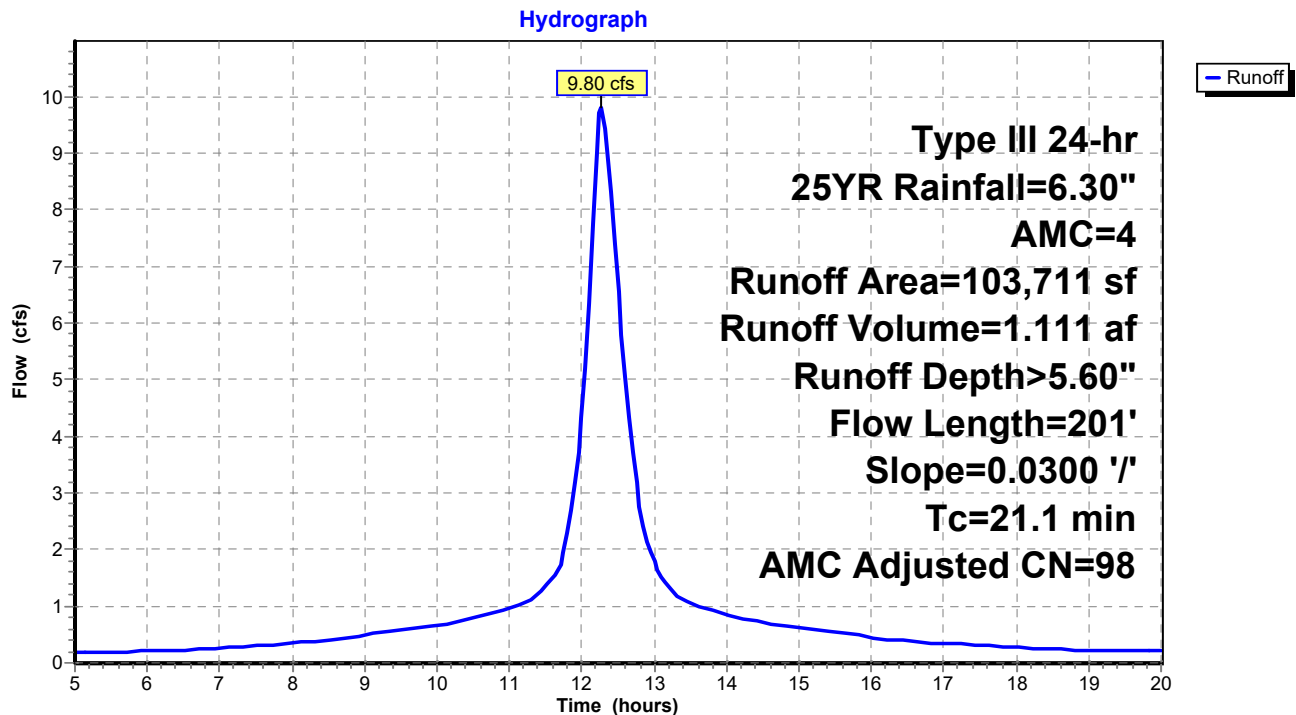
Summary for Subcatchment AREA F: DP7

Runoff = 9.80 cfs @ 12.27 hrs, Volume= 1.111 af, Depth> 5.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR Rainfall=6.30", AMC=4

Area (sf)	CN	Adj	Description
103,711	73		Woods, Fair, HSG C
103,711	73	98	Weighted Average, AMC Adjusted
103,711			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	50	0.0300	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
2.9	151	0.0300	0.87		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
21.1	201	Total			

Subcatchment AREA F: DP7

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 25YR Rainfall=6.30", AMC=4

Printed 2/25/2024

Page 31

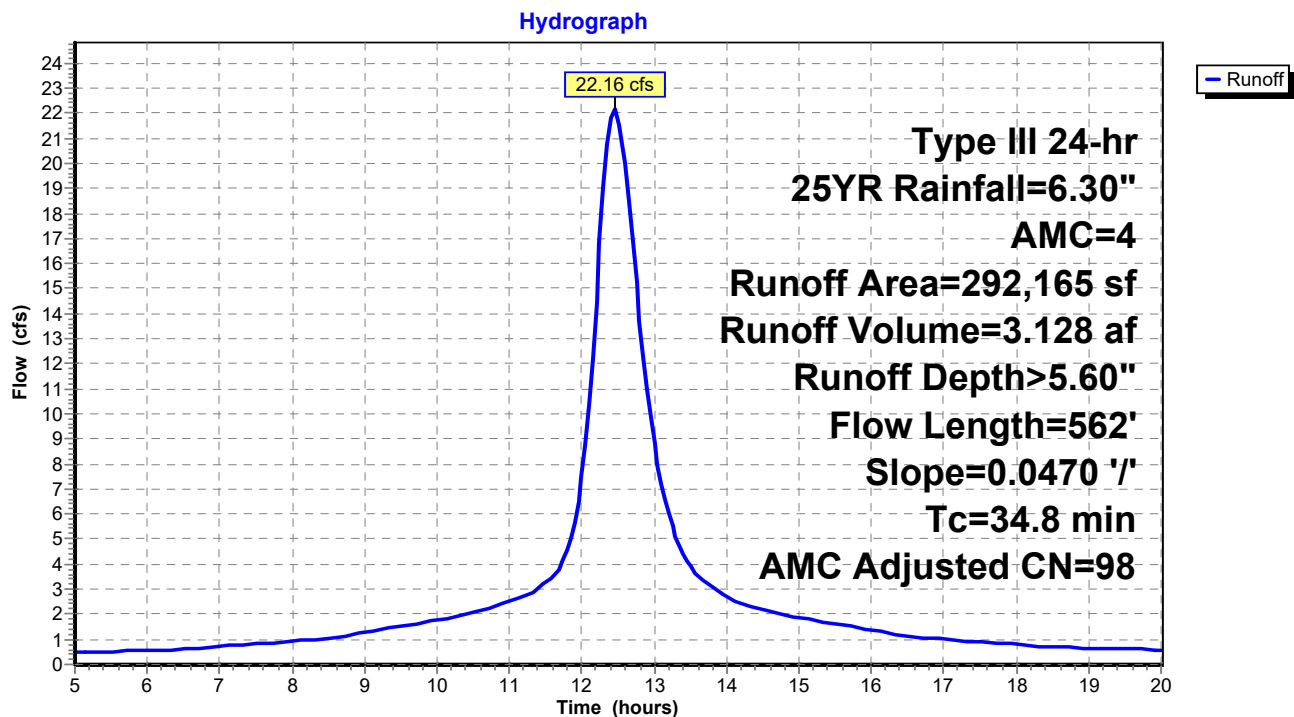
Summary for Subcatchment AREA G: DP5

Runoff = 22.16 cfs @ 12.46 hrs, Volume= 3.128 af, Depth> 5.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR Rainfall=6.30", AMC=4

Area (sf)	CN	Adj	Description
292,165	73		Woods, Fair, HSG C
292,165	73	98	Weighted Average, AMC Adjusted
292,165			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	50	0.0470	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
4.6	150	0.0470	0.54		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
15.0	362	0.0470	0.40	2.41	Channel Flow, Area= 6.0 sf Perim= 17.0' r= 0.35' n= 0.400 Sheet flow: Woods+light brush
34.8	562	Total			

Subcatchment AREA G: DP5

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 25YR Rainfall=6.30", AMC=4

Printed 2/25/2024

Page 32

Summary for Subcatchment AREA H: DP6

Runoff = 8.12 cfs @ 12.85 hrs, Volume= 1.616 af, Depth> 5.58"

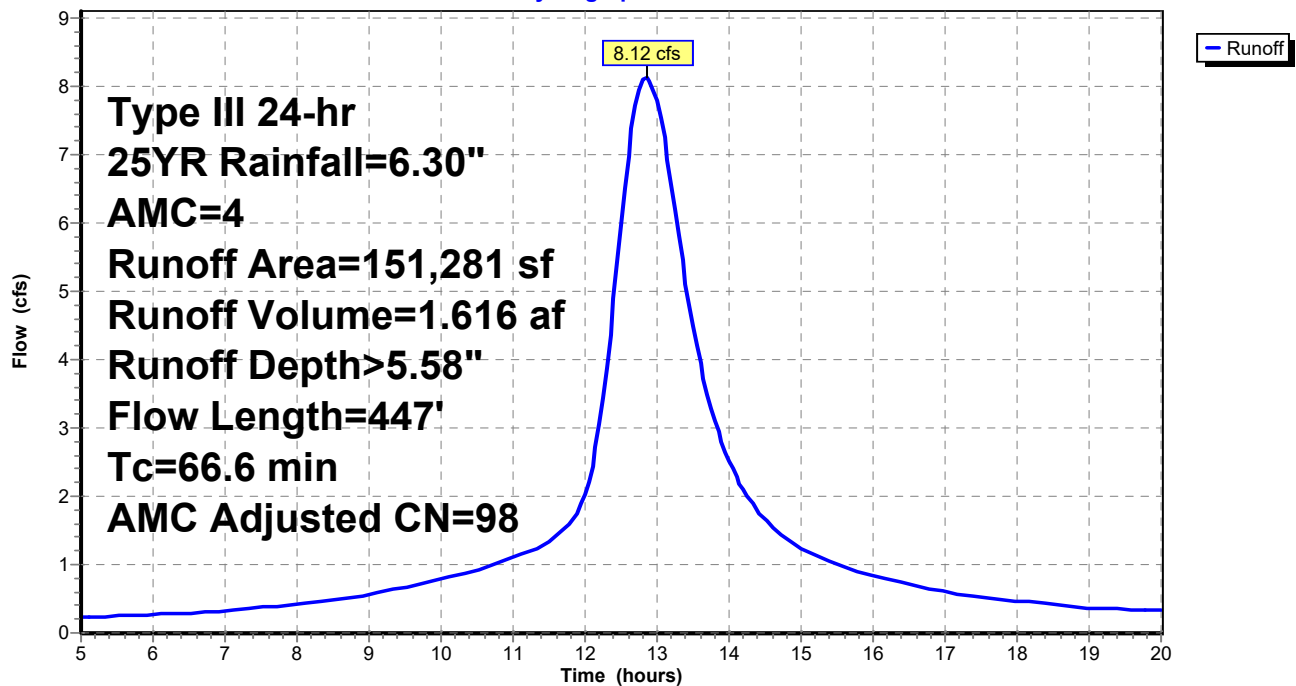
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR Rainfall=6.30", AMC=4

	Area (sf)	CN	Adj	Description
*	151,281	73		
	151,281	73	98	Weighted Average, AMC Adjusted
	151,281			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.4	50	0.0090	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
12.9	150	0.0060	0.19		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
24.3	247	0.0090	0.17	1.02	Channel Flow, Area= 6.0 sf Perim= 18.0' r= 0.33' n= 0.400
66.6	447	Total			

Subcatchment AREA H: DP6

Hydrograph



NEWTON ROAD EXIST

Type III 24-hr 100YR Rainfall=8.14", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/25/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 33

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment AREA A: DP1 Runoff Area=54,759 sf 0.00% Impervious Runoff Depth>7.27"
Flow Length=340' Slope=0.0590 '/ Tc=23.4 min AMC Adjusted CN=98 Runoff=6.41 cfs 0.762 af

Subcatchment AREA B: DP8 Runoff Area=27,880 sf 0.00% Impervious Runoff Depth>7.27"
Flow Length=81' Slope=0.1250 '/ Tc=10.9 min AMC Adjusted CN=98 Runoff=4.33 cfs 0.388 af

Subcatchment AREA C: DP2 Runoff Area=80,076 sf 0.00% Impervious Runoff Depth>7.27"
Flow Length=389' Slope=0.0300 '/ Tc=28.4 min AMC Adjusted CN=98 Runoff=8.63 cfs 1.113 af

Subcatchment AREA D: DP3 Runoff Area=85,124 sf 0.00% Impervious Runoff Depth>7.27"
Flow Length=445' Slope=0.0300 '/ Tc=36.7 min AMC Adjusted CN=98 Runoff=8.15 cfs 1.183 af

Subcatchment AREA E: DP4 Runoff Area=520,800 sf 0.00% Impervious Runoff Depth>7.25"
Flow Length=1,222' Slope=0.0400 '/ Tc=63.4 min AMC Adjusted CN=98 Runoff=37.28 cfs 7.228 af

Subcatchment AREA F: DP7 Runoff Area=103,711 sf 0.00% Impervious Runoff Depth>7.27"
Flow Length=201' Slope=0.0300 '/ Tc=21.1 min AMC Adjusted CN=98 Runoff=12.69 cfs 1.442 af

Subcatchment AREA G: DP5 Runoff Area=292,165 sf 0.00% Impervious Runoff Depth>7.27"
Flow Length=562' Slope=0.0470 '/ Tc=34.8 min AMC Adjusted CN=98 Runoff=28.68 cfs 4.062 af

Subcatchment AREA H: DP6 Runoff Area=151,281 sf 0.00% Impervious Runoff Depth>7.25"
Flow Length=447' Tc=66.6 min AMC Adjusted CN=98 Runoff=10.51 cfs 2.099 af

Total Runoff Area = 30.207 ac Runoff Volume = 18.277 af Average Runoff Depth = 7.26"
100.00% Pervious = 30.207 ac 0.00% Impervious = 0.000 ac

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 100YR Rainfall=8.14", AMC=4

Printed 2/25/2024

Page 34

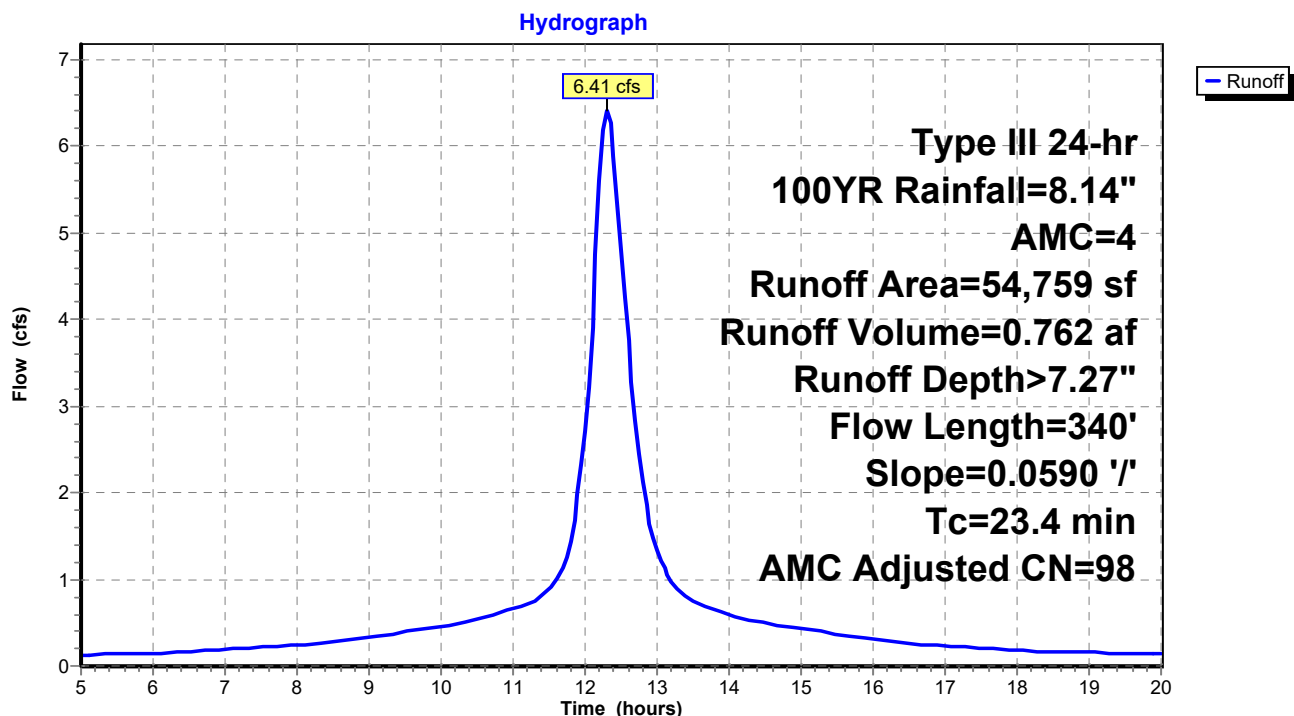
Summary for Subcatchment AREA A: DP1

Runoff = 6.41 cfs @ 12.31 hrs, Volume= 0.762 af, Depth> 7.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=8.14", AMC=4

Area (sf)	CN	Adj	Description
43,791	60		Woods, Fair, HSG B
10,968	73		Woods, Fair, HSG C
54,759	63	98	Weighted Average, AMC Adjusted
54,759			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	50	0.0590	0.06		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
4.1	150	0.0590	0.61		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
5.4	140	0.0590	0.43	2.17	Channel Flow, Area= 5.0 sf Perim= 15.0' r= 0.33' n= 0.400 Sheet flow: Woods+light brush
23.4	340	Total			

Subcatchment AREA A: DP1

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 100YR Rainfall=8.14", AMC=4

Printed 2/25/2024

Page 35

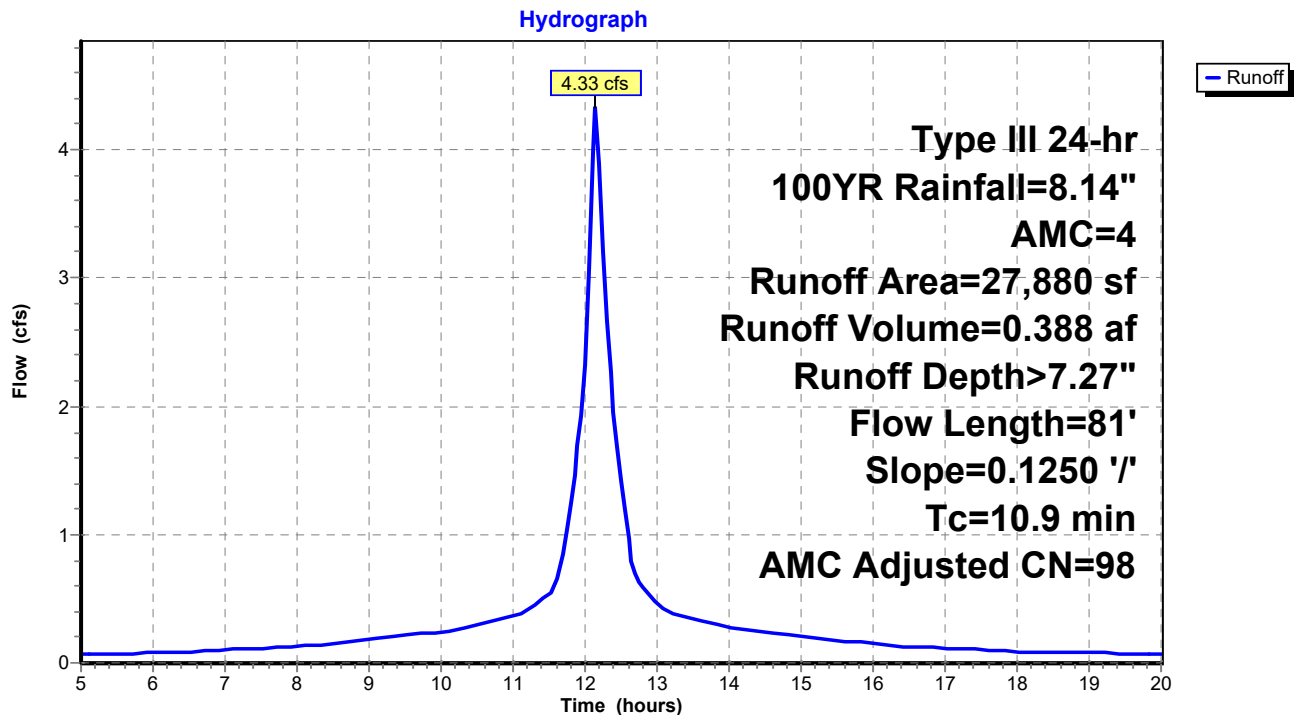
Summary for Subcatchment AREA B: DP8

Runoff = 4.33 cfs @ 12.15 hrs, Volume= 0.388 af, Depth> 7.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=8.14", AMC=4

Area (sf)	CN	Adj	Description
27,880	73		Woods, Fair, HSG C
27,880	73	98	Weighted Average, AMC Adjusted
27,880			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	50	0.1250	0.08		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
0.6	31	0.1250	0.88		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
10.9	81	Total			

Subcatchment AREA B: DP8

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 100YR Rainfall=8.14", AMC=4

Printed 2/25/2024

Page 36

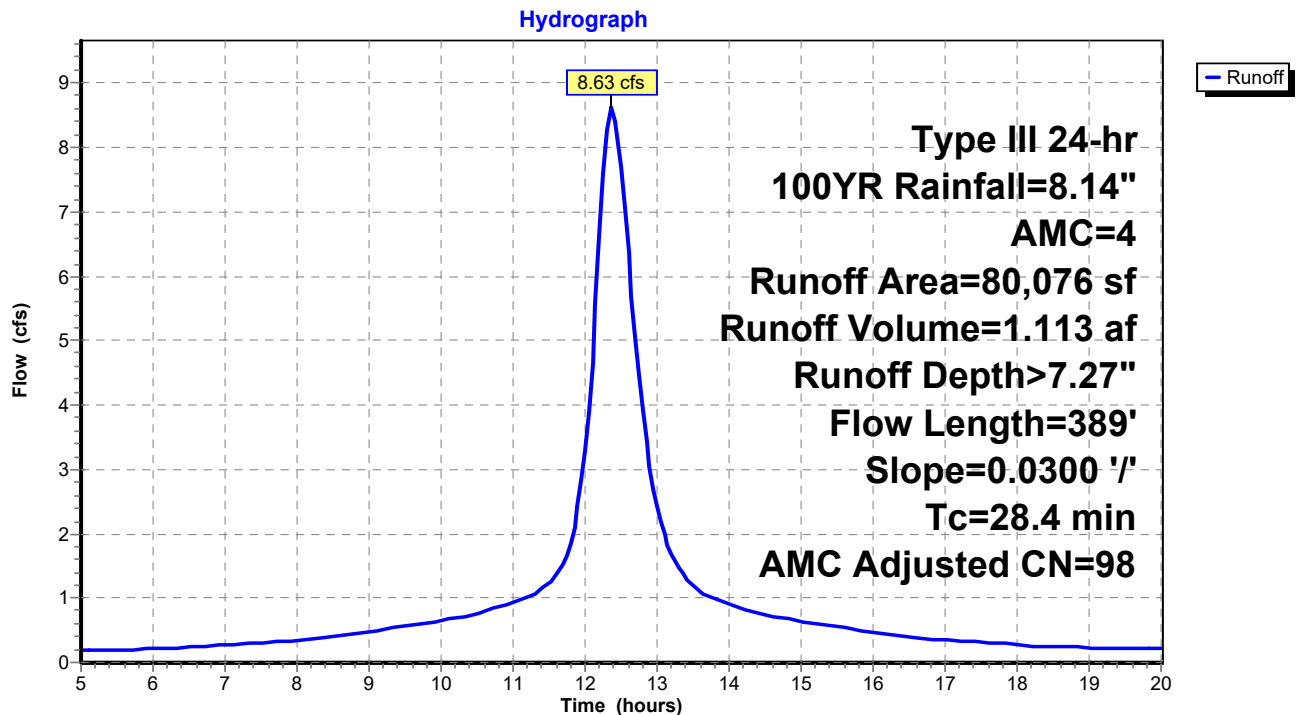
Summary for Subcatchment AREA C: DP2

Runoff = 8.63 cfs @ 12.37 hrs, Volume= 1.113 af, Depth> 7.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=8.14", AMC=4

Area (sf)	CN	Adj	Description
80,076	73		Woods, Fair, HSG C
80,076	73	98	Weighted Average, AMC Adjusted
80,076			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	50	0.0300	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
5.8	150	0.0300	0.43		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
4.4	189	0.0300	0.72	14.34	Channel Flow, Area= 20.0 sf Perim= 17.0' r= 1.18' n= 0.400 Sheet flow: Woods+light brush
28.4	389	Total			

Subcatchment AREA C: DP2

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 100YR Rainfall=8.14", AMC=4

Printed 2/25/2024

Page 37

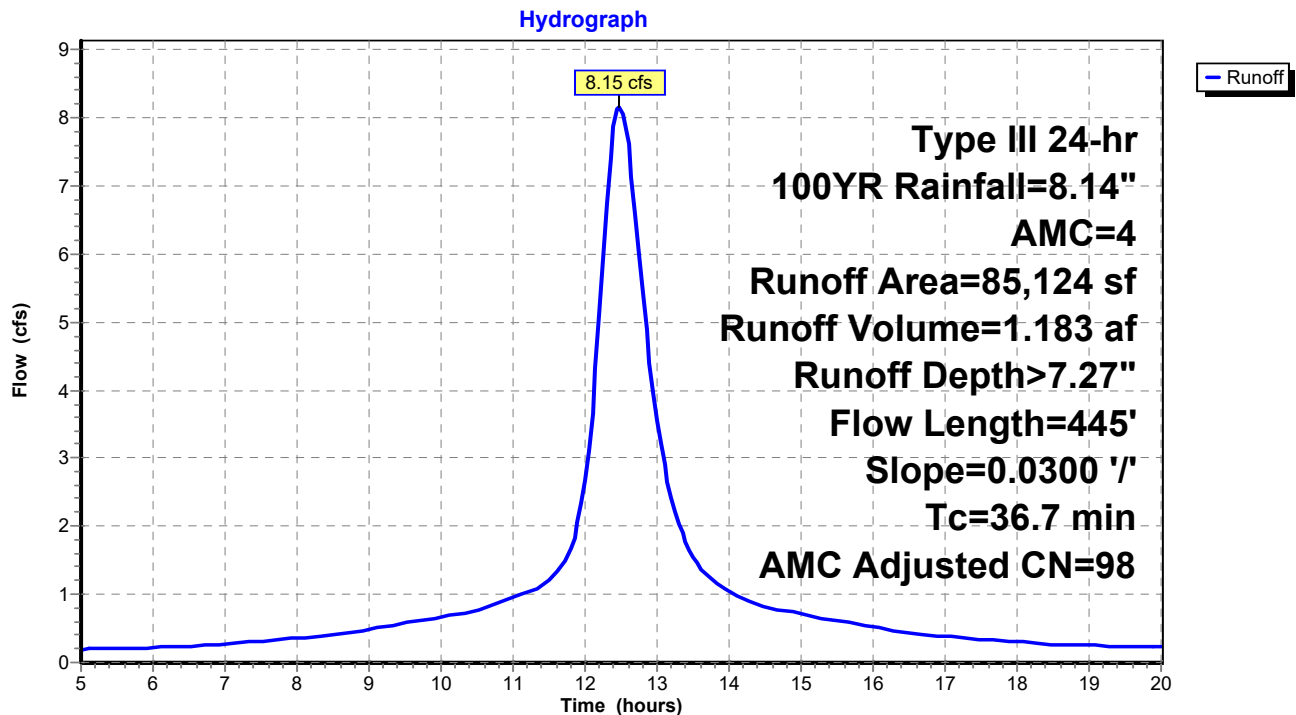
Summary for Subcatchment AREA D: DP3

Runoff = 8.15 cfs @ 12.48 hrs, Volume= 1.183 af, Depth> 7.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=8.14", AMC=4

Area (sf)	CN	Adj	Description
25,239	73		Woods, Fair, HSG C
29,274	73		Woods, Fair, HSG C
30,611	36		Woods, Fair, HSG A
85,124	60	98	Weighted Average, AMC Adjusted
85,124			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	50	0.0300	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
5.8	150	0.0300	0.43		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
12.7	245	0.0300	0.32	1.93	Channel Flow, Area= 6.0 sf Perim= 17.0' r= 0.35' n= 0.400 Sheet flow: Woods+light brush
36.7	445	Total			

Subcatchment AREA D: DP3

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 100YR Rainfall=8.14", AMC=4

Printed 2/25/2024

Page 38

Summary for Subcatchment AREA E: DP4

Runoff = 37.28 cfs @ 12.81 hrs, Volume= 7.228 af, Depth> 7.25"

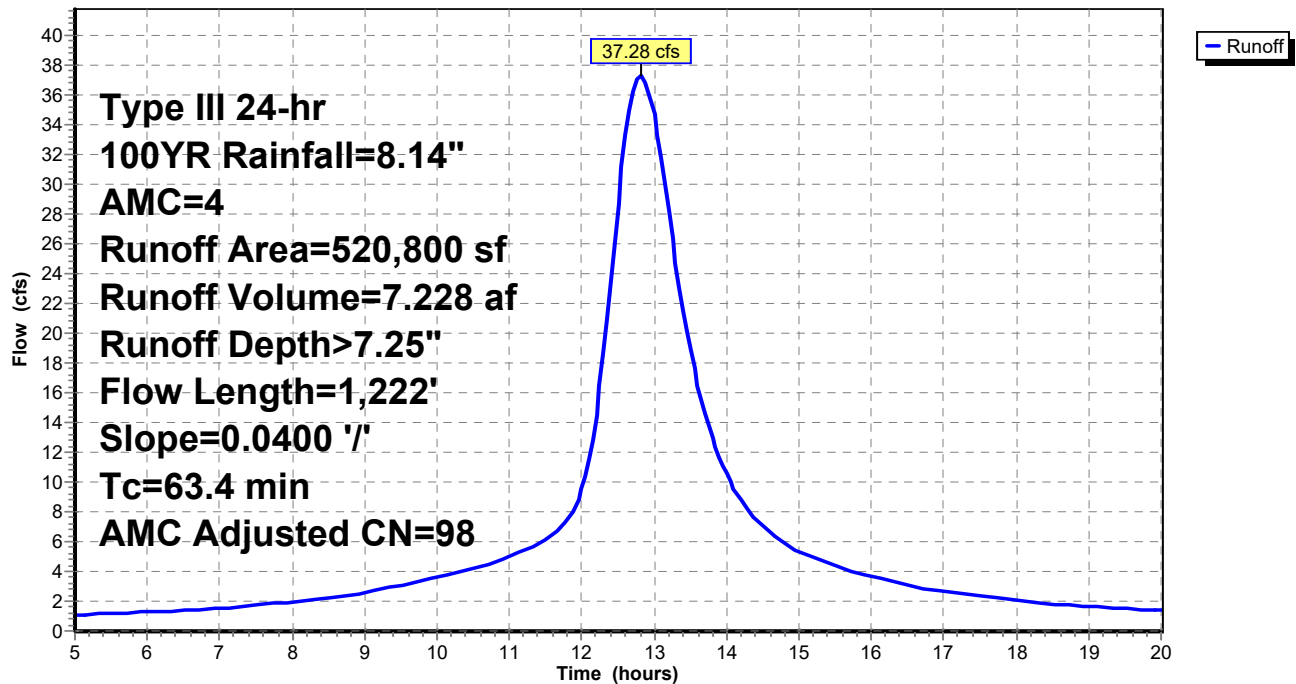
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=8.14", AMC=4

Area (sf)	CN	Adj	Description
364,927	73		Woods, Fair, HSG C
155,873	36		Woods, Fair, HSG A
520,800	62	98	Weighted Average, AMC Adjusted
520,800			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	50	0.0400	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
5.0	150	0.0400	0.50		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
42.2	1,022	0.0400	0.40	3.23	Channel Flow, Area= 8.0 sf Perim= 20.0' r= 0.40' n= 0.400 Sheet flow: Woods+light brush
63.4	1,222	Total			

Subcatchment AREA E: DP4

Hydrograph



NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 100YR Rainfall=8.14", AMC=4

Printed 2/25/2024

Page 39

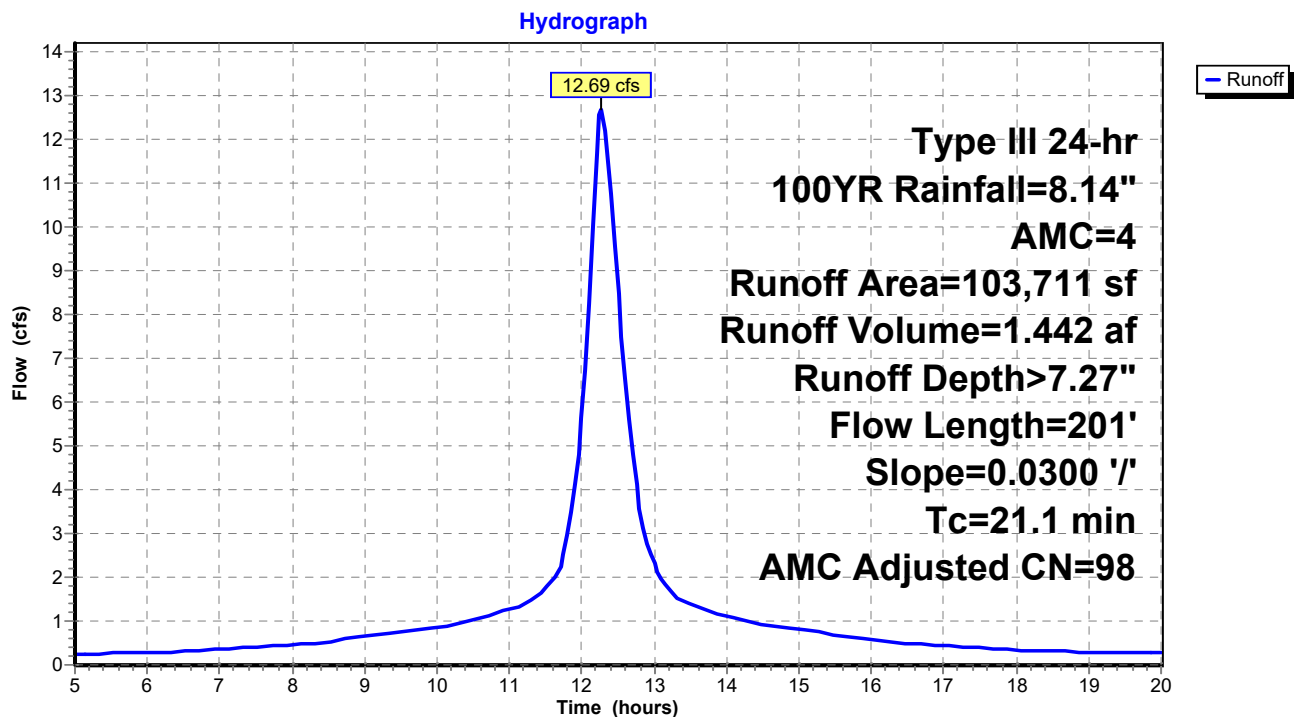
Summary for Subcatchment AREA F: DP7

Runoff = 12.69 cfs @ 12.27 hrs, Volume= 1.442 af, Depth> 7.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=8.14", AMC=4

Area (sf)	CN	Adj	Description
103,711	73		Woods, Fair, HSG C
103,711	73	98	Weighted Average, AMC Adjusted
103,711			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	50	0.0300	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
2.9	151	0.0300	0.87		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
21.1	201	Total			

Subcatchment AREA F: DP7

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 100YR Rainfall=8.14", AMC=4

Printed 2/25/2024

Page 40

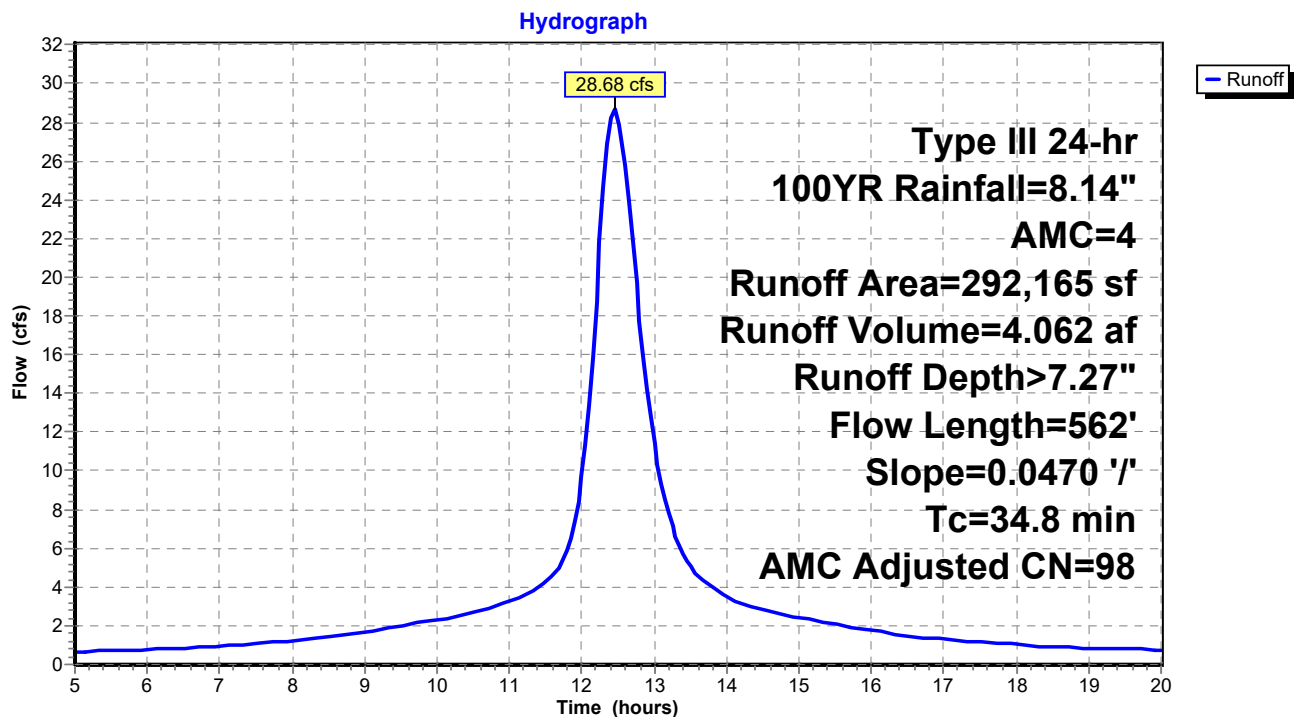
Summary for Subcatchment AREA G: DP5

Runoff = 28.68 cfs @ 12.46 hrs, Volume= 4.062 af, Depth> 7.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=8.14", AMC=4

Area (sf)	CN	Adj	Description
292,165	73		Woods, Fair, HSG C
292,165	73	98	Weighted Average, AMC Adjusted
292,165			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	50	0.0470	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
4.6	150	0.0470	0.54		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
15.0	362	0.0470	0.40	2.41	Channel Flow, Area= 6.0 sf Perim= 17.0' r= 0.35' n= 0.400 Sheet flow: Woods+light brush
34.8	562	Total			

Subcatchment AREA G: DP5

NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 100YR Rainfall=8.14", AMC=4

Printed 2/25/2024

Page 41

Summary for Subcatchment AREA H: DP6

Runoff = 10.51 cfs @ 12.85 hrs, Volume= 2.099 af, Depth> 7.25"

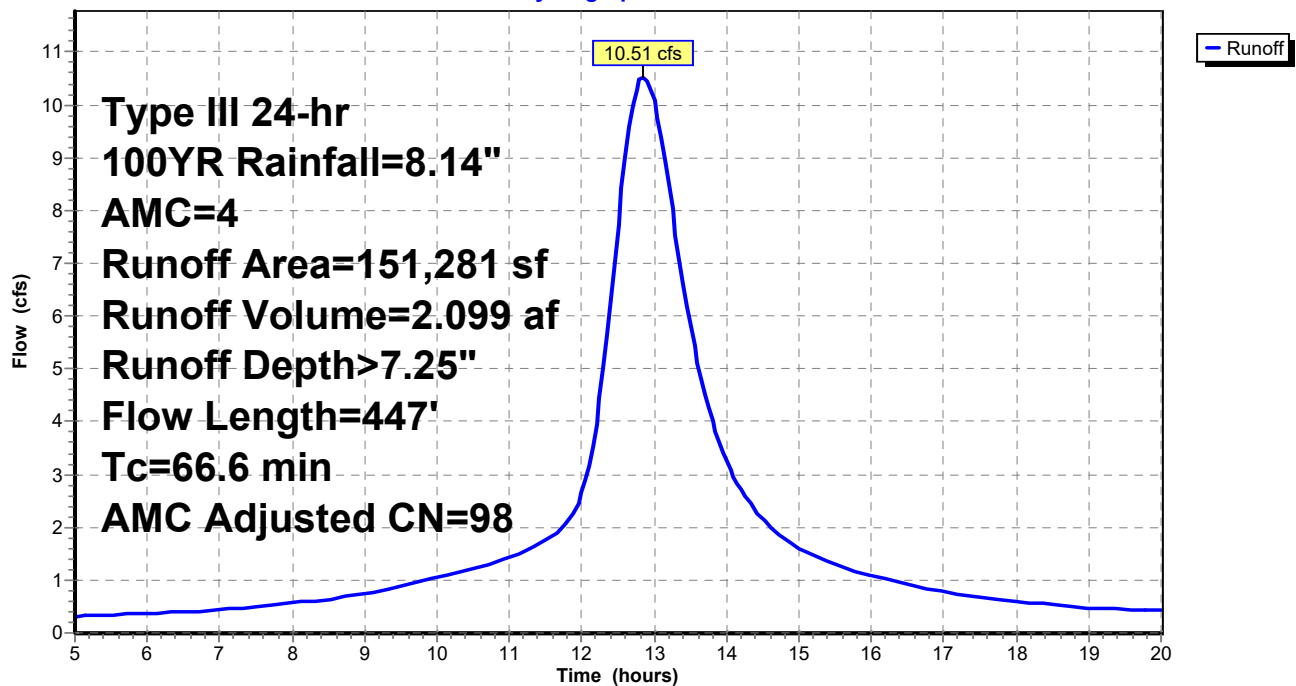
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=8.14", AMC=4

	Area (sf)	CN	Adj	Description
*	151,281	73		
	151,281	73	98	Weighted Average, AMC Adjusted
	151,281			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.4	50	0.0090	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
12.9	150	0.0060	0.19		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
24.3	247	0.0090	0.17	1.02	Channel Flow, Area= 6.0 sf Perim= 18.0' r= 0.33' n= 0.400
66.6	447	Total			

Subcatchment AREA H: DP6

Hydrograph



NEWTON ROAD EXIST

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Table of Contents

Printed 2/25/2024

TABLE OF CONTENTS

Project Reports

- 1 Routing Diagram
- 2 Rainfall Events Listing
- 3 Area Listing (all nodes)
- 4 Soil Listing (all nodes)
- 5 Ground Covers (all nodes)

2YR Event

- 6 Node Listing
- 7 Subcat AREA A: DP1
- 8 Subcat AREA B: DP8
- 9 Subcat AREA C: DP2
- 10 Subcat AREA D: DP3
- 11 Subcat AREA E: DP4
- 12 Subcat AREA F: DP7
- 13 Subcat AREA G: DP5
- 14 Subcat AREA H: DP6

10YR Event

- 15 Node Listing
- 16 Subcat AREA A: DP1
- 17 Subcat AREA B: DP8
- 18 Subcat AREA C: DP2
- 19 Subcat AREA D: DP3
- 20 Subcat AREA E: DP4
- 21 Subcat AREA F: DP7
- 22 Subcat AREA G: DP5
- 23 Subcat AREA H: DP6

25YR Event

- 24 Node Listing
- 25 Subcat AREA A: DP1
- 26 Subcat AREA B: DP8
- 27 Subcat AREA C: DP2
- 28 Subcat AREA D: DP3
- 29 Subcat AREA E: DP4
- 30 Subcat AREA F: DP7
- 31 Subcat AREA G: DP5
- 32 Subcat AREA H: DP6

100YR Event

- 33 Node Listing
- 34 Subcat AREA A: DP1
- 35 Subcat AREA B: DP8
- 36 Subcat AREA C: DP2
- 37 Subcat AREA D: DP3

NEWTON ROAD EXIST

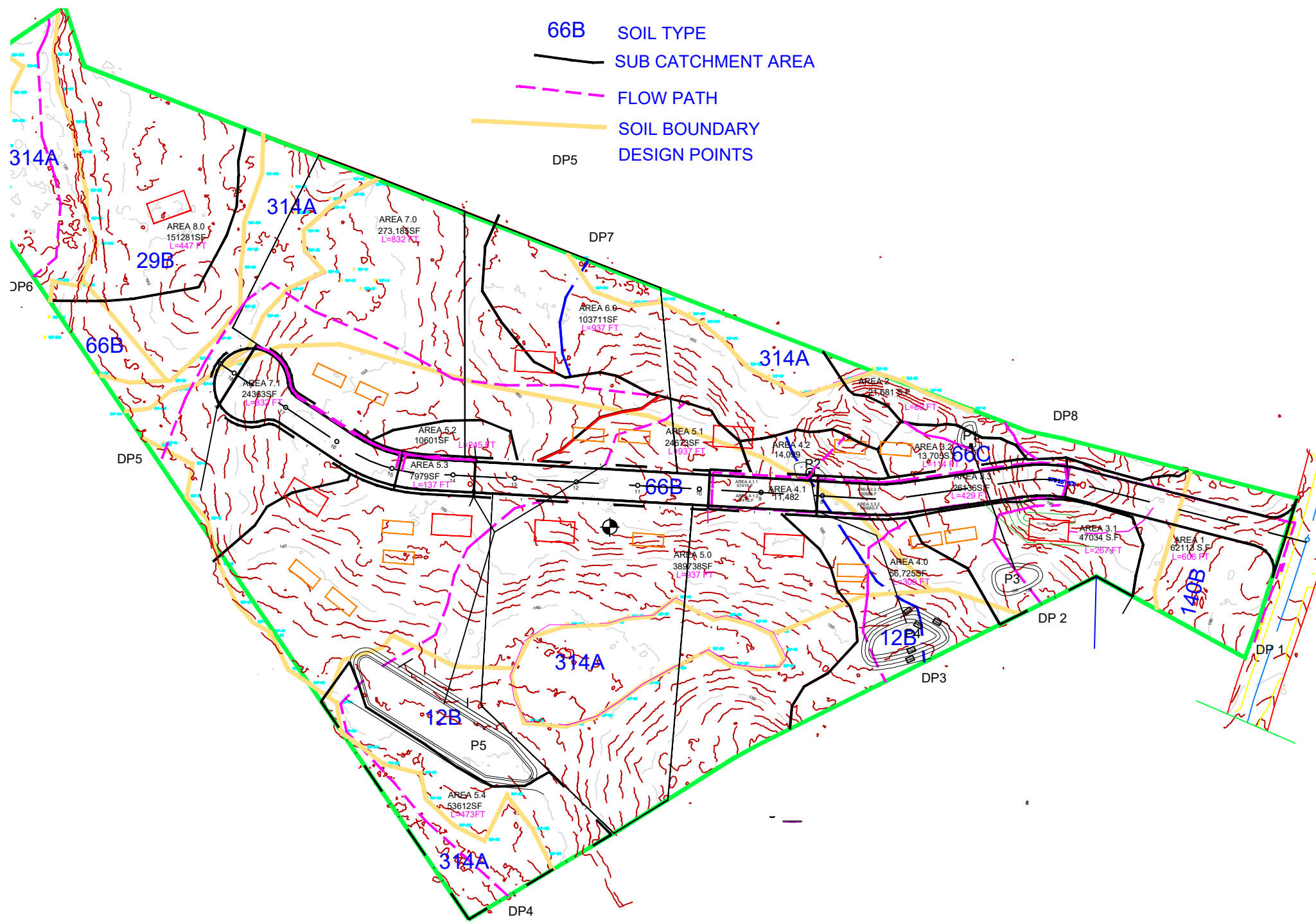
Prepared by PGC Engineering PLLC

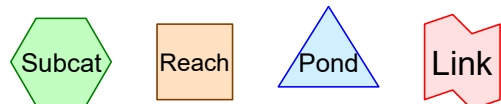
HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Table of Contents

Printed 2/25/2024

38	Subcat AREA E: DP4
39	Subcat AREA F: DP7
40	Subcat AREA G: DP5
41	Subcat AREA H: DP6





Routing Diagram for NEWTON ROAD PROPOSED 1-3 AND 8
Prepared by PGC Engineering PLLC, Printed 2/26/2024
HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

NEWTON ROAD PROPOSED 1-3 AND 8

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Printed 2/26/2024

Page 2

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2 YR	Type III 24-hr		Default	24.00	1	3.23	4
2	10 YR	Type III 24-hr		Default	24.00	1	5.12	4
3	25 YR	Type III 24-hr		Default	24.00	1	6.30	4
4	100 YR	Type III 24-hr		Default	24.00	1	8.14	4

NEWTON ROAD PROPOSED 1-3 AND 8

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 3

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.913	74	>75% Grass cover, Good, HSG C (AREA 3.1, AREA 3.2, AREA 3.3.1, AREA3.3.2, AREA4.1.1, AREA4.1.2, AREA4.2)
0.094	98	PAVE (AREA4.1.1, AREA4.1.2)
0.231	98	PAVED (AREA 1)
0.200	98	PAVED STREET (AREA 3.3.1, AREA3.3.2)
0.106	98	ROOF AND DRIVE (AREA 3.1)
0.677	36	Woods, Fair, HSG A (AREA4)
0.893	60	Woods, Fair, HSG B (AREA 1)
1.693	73	Woods, Fair, HSG C (AREA 1, AREA 2, AREA 3.2, AREA4)
5.808	70	TOTAL AREA

NEWTON ROAD PROPOSED 1-3 AND 8

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 4

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.677	HSG A	AREA4
0.893	HSG B	AREA 1
3.606	HSG C	AREA 1, AREA 2, AREA 3.1, AREA 3.2, AREA 3.3.1, AREA3.3.2, AREA4, AREA4.1.1, AREA4.1.2, AREA4.2
0.000	HSG D	
0.631	Other	AREA 1, AREA 3.1, AREA 3.3.1, AREA3.3.2, AREA4.1.1, AREA4.1.2
5.808		TOTAL AREA

NEWTON ROAD PROPOSED 1-3 AND 8

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 5

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	1.913	0.000	0.000	1.913	>75% Grass cover, Good	AREA 3.1, AREA 3.2, AREA 3.3.1, AREA3. 3.2, AREA4. 1.1, AREA4. 1.2, AREA4. 2
0.000	0.000	0.000	0.000	0.094	0.094	PAVE	AREA4. 1.1, AREA4. 1.2
0.000	0.000	0.000	0.000	0.231	0.231	PAVED	AREA 1
0.000	0.000	0.000	0.000	0.200	0.200	PAVED STREET	AREA 3.3.1, AREA3. 3.2
0.000	0.000	0.000	0.000	0.106	0.106	ROOF AND DRIVE	AREA 3.1
0.677	0.893	1.693	0.000	0.000	3.264	Woods, Fair	AREA 1, AREA 2, AREA 3.2, AREA4
0.677	0.893	3.606	0.000	0.631	5.808	TOTAL AREA	

NEWTON ROAD PROPOSED 1-3 AND 8

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 6

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	6R	154.40	148.00	243.0	0.0263	0.013	0.0	12.0	0.0	
2	1P	154.00	152.00	72.0	0.0278	0.013	0.0	12.0	0.0	
3	P1	158.50	158.00	212.0	0.0024	0.020	0.0	6.0	0.0	
4	P2	155.00	154.40	60.0	0.0100	0.020	0.0	15.0	0.0	
5	P3	156.00	155.70	23.0	0.0130	0.020	0.0	15.0	0.0	
6	P4	148.00	147.50	15.0	0.0333	0.020	0.0	12.0	0.0	

NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 2 YR Rainfall=3.23", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 7

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment AREA 1: DP 1 Runoff Area=62,113 sf 16.18% Impervious Runoff Depth>2.80"
Flow Length=606' Tc=5.3 min AMC Adjusted CN=98 Runoff=4.43 cfs 0.333 af

Subcatchment AREA 2: DP8 Runoff Area=21,681 sf 0.00% Impervious Runoff Depth>2.80"
Flow Length=80' Slope=0.1250 '/' Tc=10.6 min AMC Adjusted CN=98 Runoff=1.33 cfs 0.116 af

Subcatchment AREA 3.1: DP2 Runoff Area=47,034 sf 9.78% Impervious Runoff Depth>2.80"
Flow Length=267' Tc=6.0 min AMC Adjusted CN=98 Runoff=3.31 cfs 0.252 af

Subcatchment AREA 3.2: DP2 Runoff Area=13,705 sf 0.00% Impervious Runoff Depth>2.80"
Flow Length=114' Slope=0.0900 '/' Tc=13.0 min AMC Adjusted CN=98 Runoff=0.79 cfs 0.073 af

Subcatchment AREA 3.3.1: DP3 Runoff Area=13,068 sf 33.33% Impervious Runoff Depth>2.80"
Flow Length=400' Slope=0.0590 '/' Tc=5.8 min AMC Adjusted CN=98 Runoff=0.92 cfs 0.070 af

Subcatchment AREA 3.3.2: DP2 Runoff Area=13,068 sf 33.33% Impervious Runoff Depth>2.80"
Flow Length=400' Slope=0.0590 '/' Tc=5.8 min AMC Adjusted CN=98 Runoff=0.92 cfs 0.070 af

Subcatchment AREA 4: DP3 Runoff Area=56,725 sf 0.00% Impervious Runoff Depth>2.80"
Flow Length=300' Tc=25.8 min AMC Adjusted CN=98 Runoff=2.50 cfs 0.303 af

Subcatchment AREA 4.1.1: DP3 Runoff Area=5,741 sf 35.83% Impervious Runoff Depth>2.80"
Flow Length=195' Tc=1.5 min AMC Adjusted CN=98 Runoff=0.45 cfs 0.031 af

Subcatchment AREA 4.1.2: DP3 Runoff Area=5,741 sf 35.83% Impervious Runoff Depth>2.80"
Flow Length=195' Tc=1.5 min AMC Adjusted CN=98 Runoff=0.45 cfs 0.031 af

Subcatchment AREA 4.2: DP3 Runoff Area=14,099 sf 0.00% Impervious Runoff Depth>2.80"
Flow Length=76' Slope=0.3000 '/' Tc=0.3 min AMC Adjusted CN=98 Runoff=1.16 cfs 0.076 af

Reach 6R: PIPE Avg. Flow Depth=0.56' Max Vel=7.72 fps Inflow=3.51 cfs 0.277 af
12.0" Round Pipe n=0.013 L=243.0' S=0.0263 '/' Capacity=5.78 cfs Outflow=3.45 cfs 0.277 af

Pond 1P: (new Pond) Peak Elev=155.02' Storage=3,288 cf Inflow=4.43 cfs 0.333 af
12.0" Round Culvert n=0.013 L=72.0' S=0.0278 '/' Outflow=2.40 cfs 0.323 af

Pond P1: OUT Peak Elev=161.89' Storage=258 cf Inflow=0.79 cfs 0.073 af
6.0" Round Culvert n=0.020 L=212.0' S=0.0024 '/' Outflow=0.45 cfs 0.073 af

Pond P2: OUT Peak Elev=157.00' Storage=0 cf Inflow=2.26 cfs 0.176 af
15.0" Round Culvert n=0.020 L=60.0' S=0.0100 '/' Outflow=2.26 cfs 0.176 af

Pond P3: DP2 Peak Elev=156.94' Storage=2,290 cf Inflow=3.72 cfs 0.325 af
15.0" Round Culvert n=0.020 L=23.0' S=0.0130 '/' Outflow=2.55 cfs 0.319 af

Pond P4: DP3 Peak Elev=149.21' Storage=4,535 cf Inflow=4.69 cfs 0.580 af
12.0" Round Culvert n=0.020 L=15.0' S=0.0333 '/' Outflow=3.18 cfs 0.568 af

NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 2 YR Rainfall=3.23", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 8

Total Runoff Area = 5.808 ac Runoff Volume = 1.355 af Average Runoff Depth = 2.80"
89.14% Pervious = 5.177 ac 10.86% Impervious = 0.631 ac

NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 2 YR Rainfall=3.23", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 9

Summary for Subcatchment AREA 1: DP 1

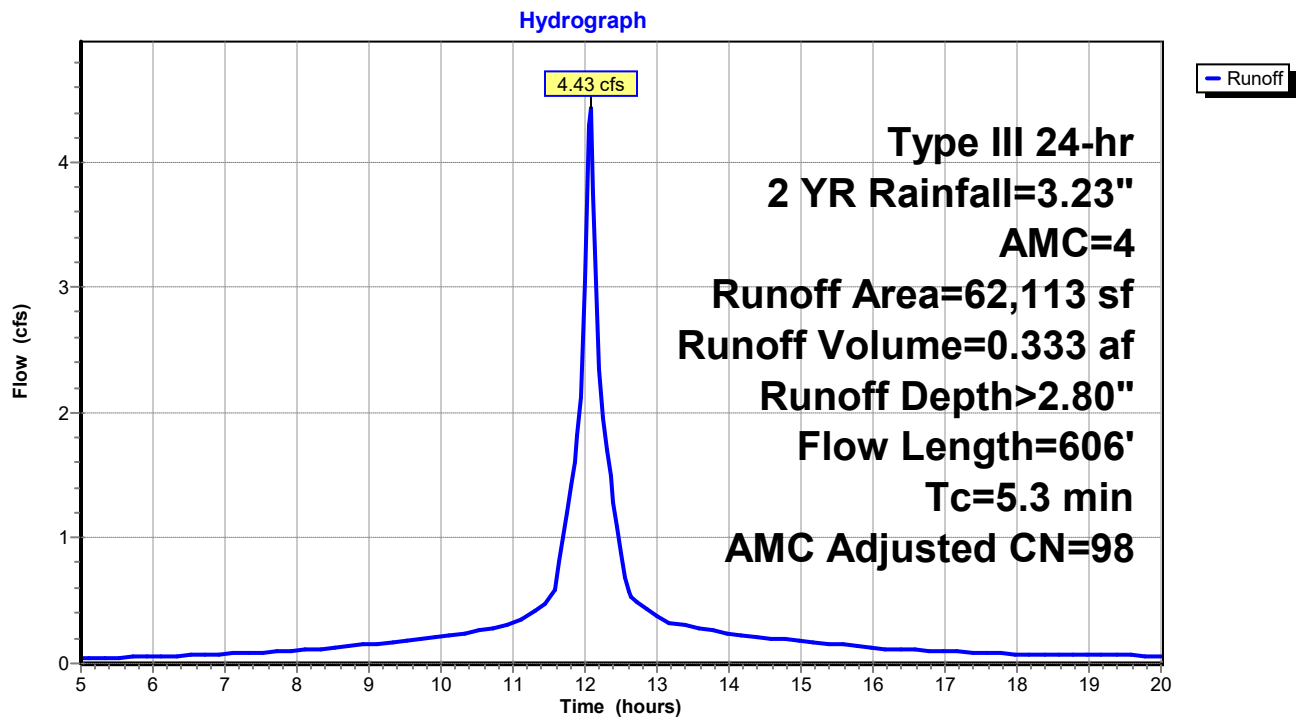
Runoff = 4.43 cfs @ 12.08 hrs, Volume= 0.333 af, Depth> 2.80"
 Routed to Pond 1P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2 YR Rainfall=3.23", AMC=4

Area (sf)	CN	Adj	Description
38,919	60		Woods, Fair, HSG B
13,142	73		Woods, Fair, HSG C
* 4,872	98		PAVED
* 5,180	98		PAVED
62,113	69	98	Weighted Average, AMC Adjusted
52,061			83.82% Pervious Area
10,052			16.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0200	0.89		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.23"
1.2	12	0.0500	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
1.6	250	0.0590	2.55	4.58	Channel Flow, Area= 1.8 sf Perim= 5.3' r= 0.34' n= 0.069 Riprap, 6-inch
1.6	143	0.0200	1.48	2.67	Channel Flow, Area= 1.8 sf Perim= 5.3' r= 0.34' n= 0.069 Riprap, 6-inch
0.7	190	0.0450	4.38	7.89	Channel Flow, Area= 1.8 sf Perim= 5.3' r= 0.34' n= 0.035 Earth, dense weeds
5.3	606	Total			

Subcatchment AREA 1: DP 1



NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 2 YR Rainfall=3.23", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 11

Summary for Subcatchment AREA 2: DP8

Runoff = 1.33 cfs @ 12.14 hrs, Volume= 0.116 af, Depth> 2.80"

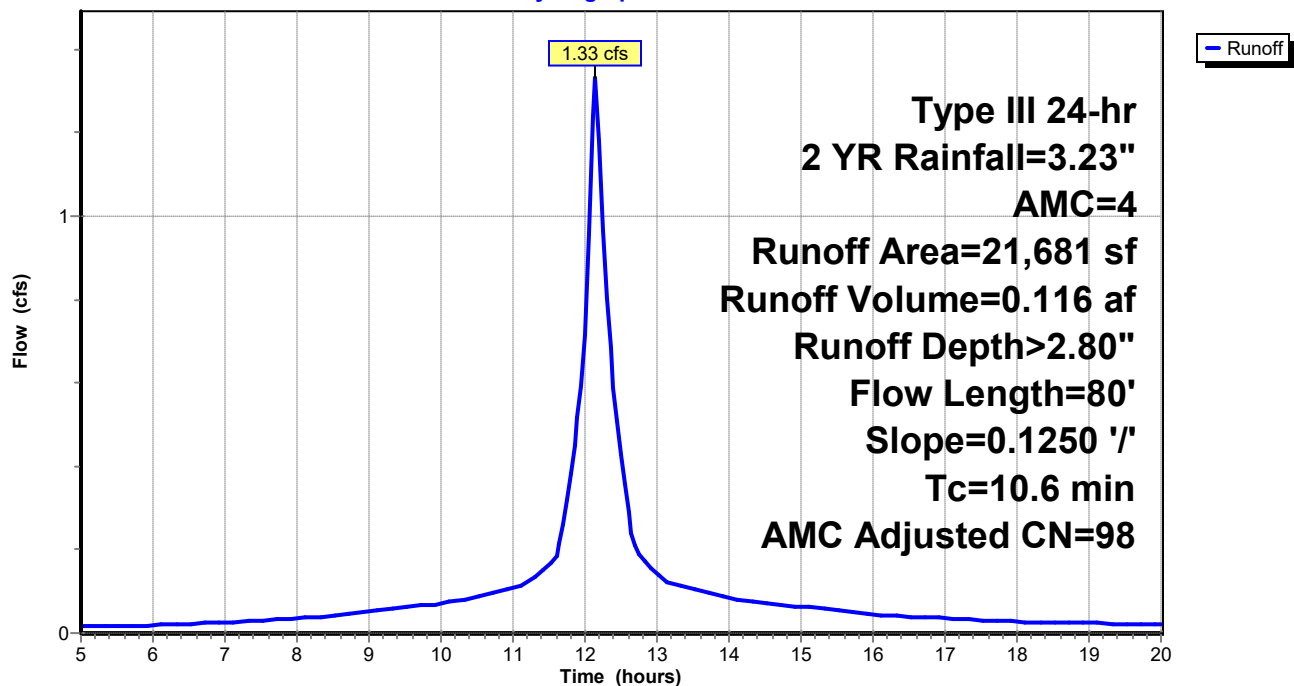
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.23", AMC=4

Area (sf)	CN	Adj	Description
21,681	73		Woods, Fair, HSG C
21,681	73	98	Weighted Average, AMC Adjusted
21,681			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	50	0.1250	0.08		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
0.3	30	0.1250	1.77		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.6	80	Total			

Subcatchment AREA 2: DP8

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 2 YR Rainfall=3.23", AMC=4

Printed 2/26/2024

Page 12

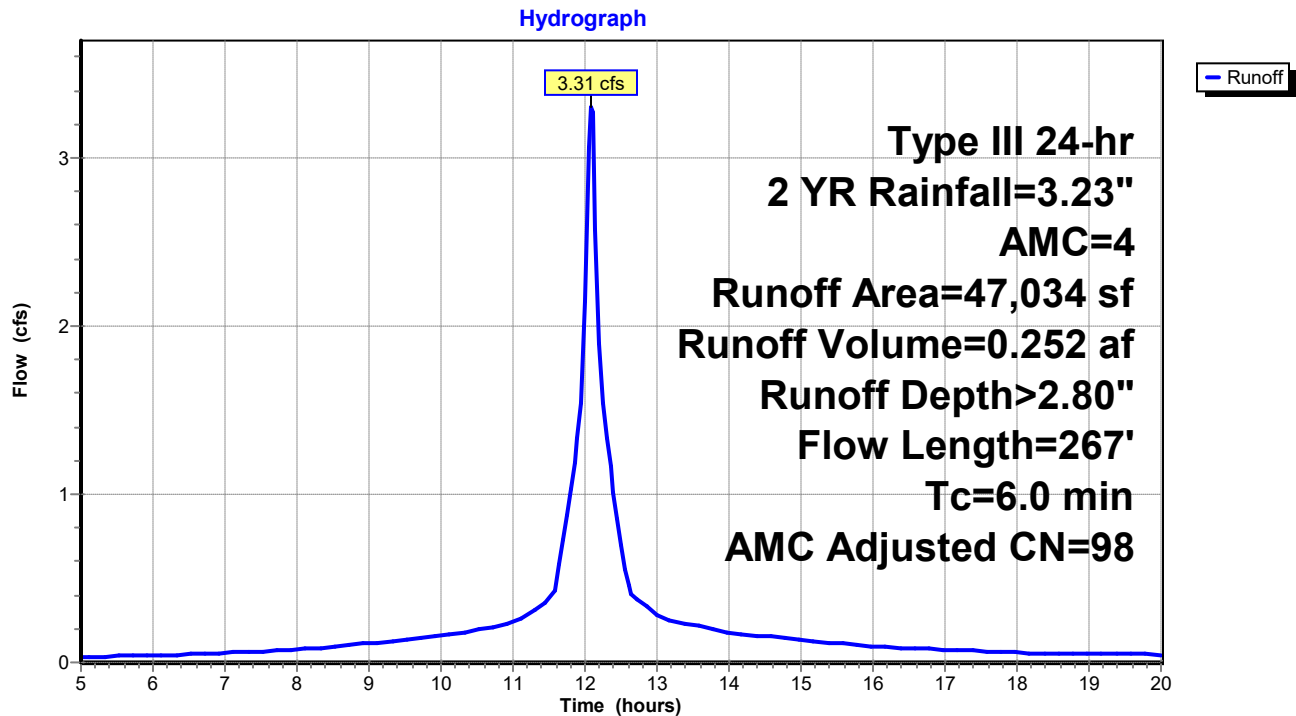
Summary for Subcatchment AREA 3.1: DP2

Runoff = 3.31 cfs @ 12.09 hrs, Volume= 0.252 af, Depth> 2.80"
Routed to Pond P3 : DP2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.23", AMC=4

Area (sf)	CN	Adj	Description
* 4,600	98		ROOF AND DRIVE
42,434	74		>75% Grass cover, Good, HSG C
47,034	76	98	Weighted Average, AMC Adjusted
42,434			90.22% Pervious Area
4,600			9.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	100	0.1600	0.39		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
1.8	167	0.0480	1.53		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
6.0	267	Total			

Subcatchment AREA 3.1: DP2

NEWTON ROAD PROPOSED 1-3 AND 8

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 2 YR Rainfall=3.23", AMC=4

Printed 2/26/2024

Page 13

Summary for Subcatchment AREA 3.2: DP2

Runoff = 0.79 cfs @ 12.17 hrs, Volume= 0.073 af, Depth> 2.80"
Routed to Pond P1 : OUT

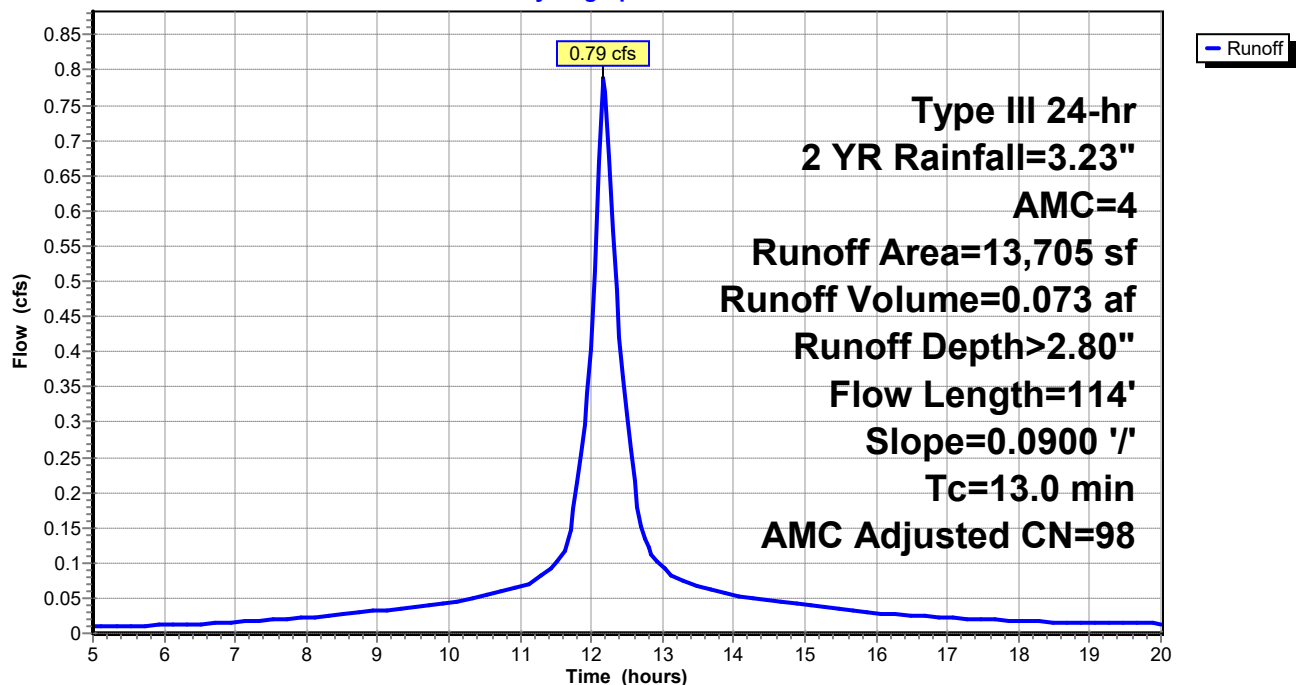
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.23", AMC=4

Area (sf)	CN	Adj	Description
2,000	74		>75% Grass cover, Good, HSG C
11,705	73		Woods, Fair, HSG C
13,705	73	98	Weighted Average, AMC Adjusted
13,705			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	114	0.0900	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.23"

Subcatchment AREA 3.2: DP2

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 2 YR Rainfall=3.23", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 14

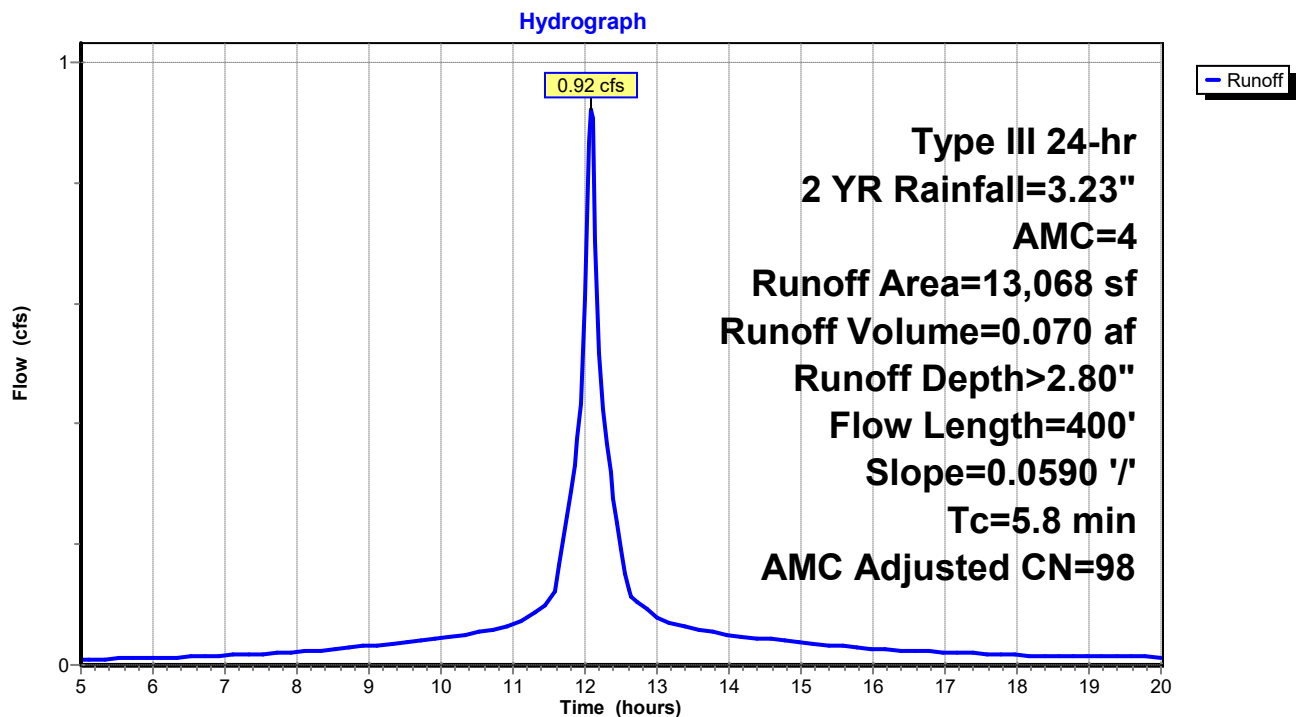
Summary for Subcatchment AREA 3.3.1: DP3

Runoff = 0.92 cfs @ 12.08 hrs, Volume= 0.070 af, Depth> 2.80"
Routed to Pond P2 : OUT

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.23", AMC=4

Area (sf)	CN	Adj	Description
* 4,356	98		PAVED STREET
8,712	74		>75% Grass cover, Good, HSG C
13,068	82	98	Weighted Average, AMC Adjusted
8,712			66.67% Pervious Area
4,356			33.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0590	0.23		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
2.2	350	0.0590	2.69	4.58	Channel Flow, Area= 1.7 sf Perim= 4.6' r= 0.37' n= 0.069 Riprap, 6-inch
5.8	400	Total			

Subcatchment AREA 3.3.1: DP3

NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 2 YR Rainfall=3.23", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 15

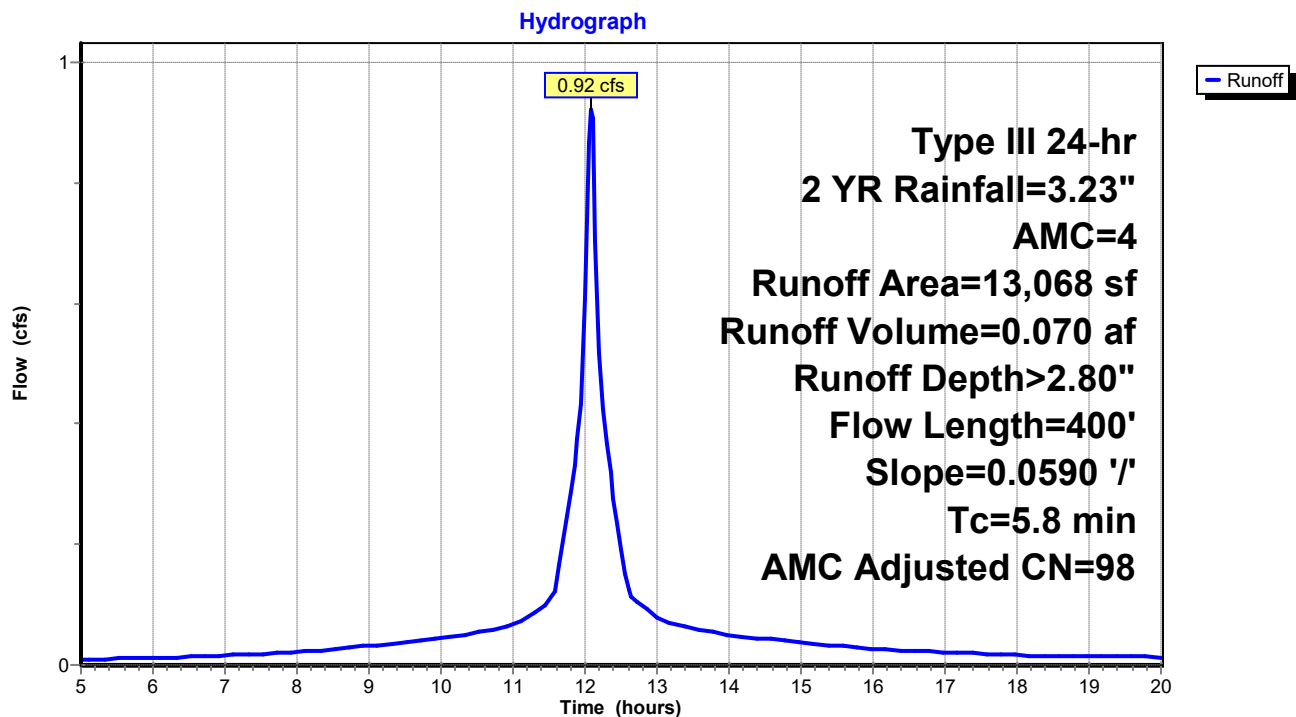
Summary for Subcatchment AREA3.3.2: DP2

Runoff = 0.92 cfs @ 12.08 hrs, Volume= 0.070 af, Depth> 2.80"
Routed to Reach 6R : PIPE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.23", AMC=4

Area (sf)	CN	Adj	Description
* 4,356	98		PAVED STREET
8,712	74		>75% Grass cover, Good, HSG C
13,068	82	98	Weighted Average, AMC Adjusted
8,712			66.67% Pervious Area
4,356			33.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0590	0.23		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
2.2	350	0.0590	2.69	4.58	Channel Flow, Area= 1.7 sf Perim= 4.6' r= 0.37' n= 0.069 Riprap, 6-inch
5.8	400	Total			

Subcatchment AREA3.3.2: DP2

NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 2 YR Rainfall=3.23", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 16

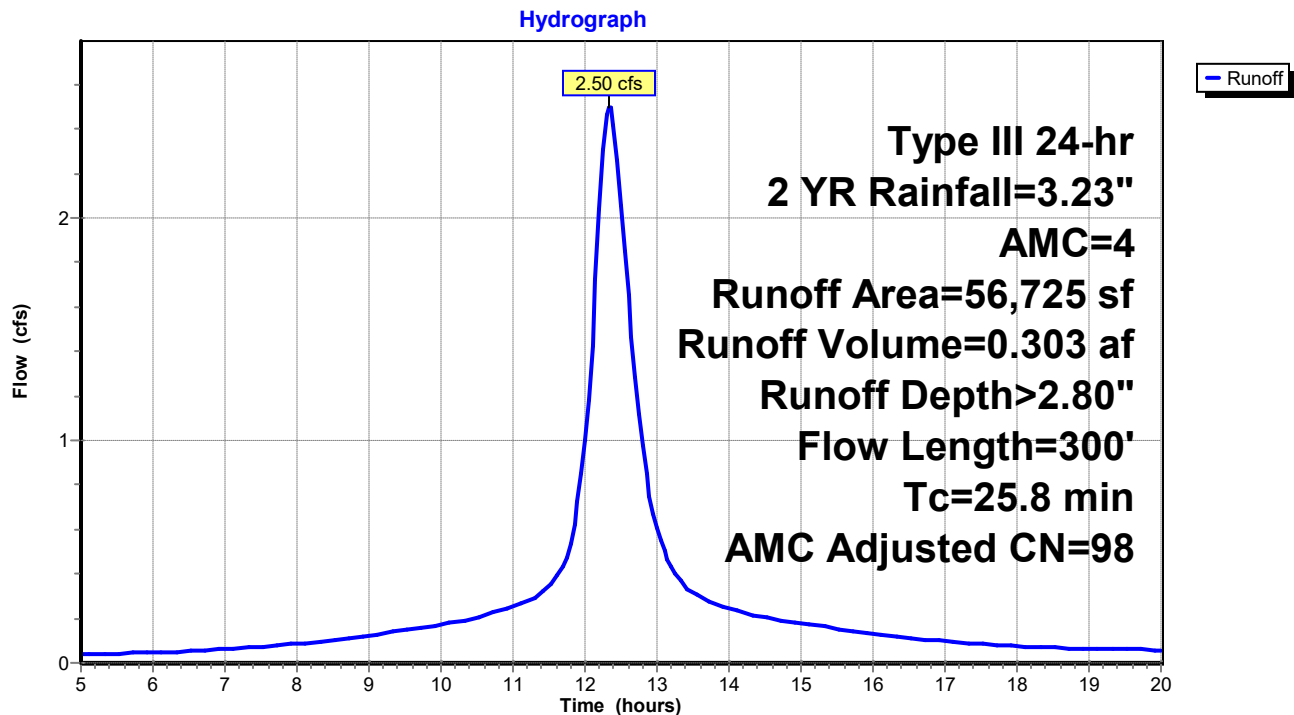
Summary for Subcatchment AREA4: DP3

Runoff = 2.50 cfs @ 12.34 hrs, Volume= 0.303 af, Depth> 2.80"
Routed to Pond P4 : DP3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.23", AMC=4

Area (sf)	CN	Adj	Description
29,511	36		Woods, Fair, HSG A
27,214	73		Woods, Fair, HSG C
56,725	54	98	Weighted Average, AMC Adjusted
56,725			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.5	100	0.1000	0.09		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
6.3	200	0.0450	0.53		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
25.8	300	Total			

Subcatchment AREA4: DP3

NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 2 YR Rainfall=3.23", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 17

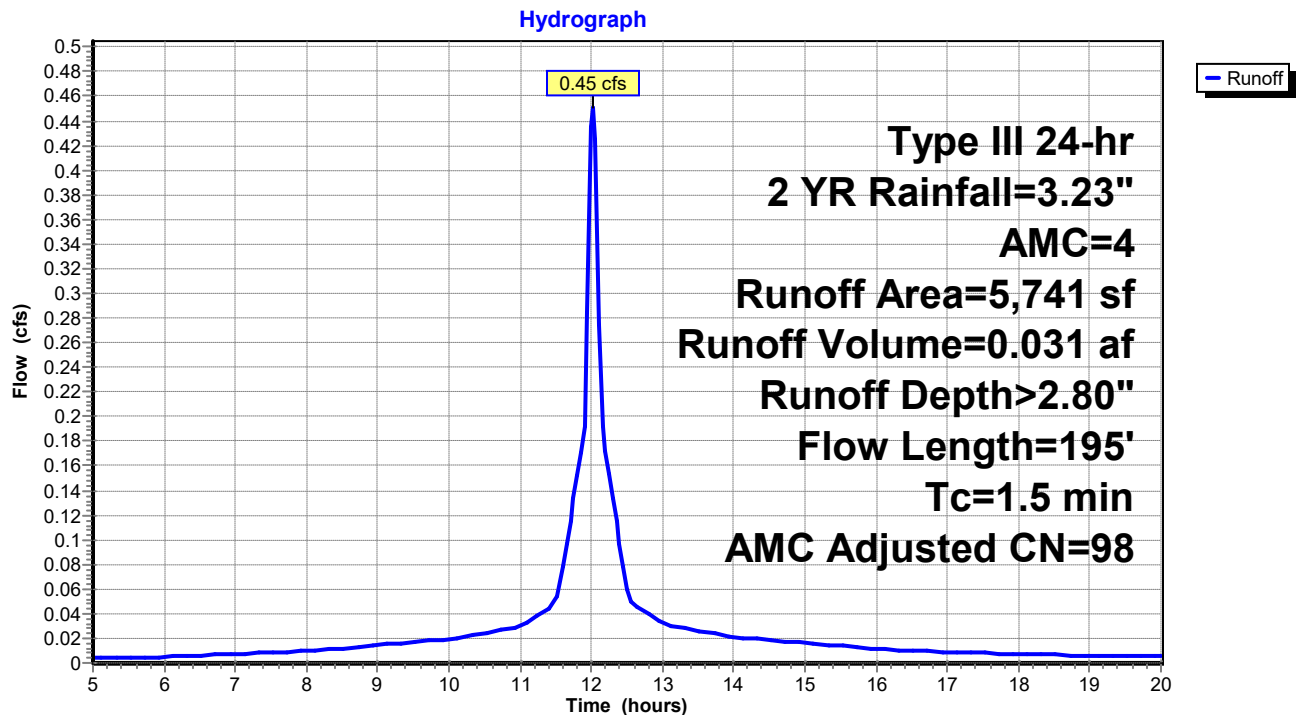
Summary for Subcatchment AREA4.1.1: DP3

Runoff = 0.45 cfs @ 12.02 hrs, Volume= 0.031 af, Depth> 2.80"
Routed to Pond P2 : OUT

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.23", AMC=4

	Area (sf)	CN	Adj	Description
*	2,057	98		PAVE
	3,684	74		>75% Grass cover, Good, HSG C
	5,741	83	98	Weighted Average, AMC Adjusted
	3,684			64.17% Pervious Area
	2,057			35.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0200	0.89		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.23"
1.3	184	0.0464	2.39	4.06	Channel Flow, Area= 1.7 sf Perim= 4.6' r= 0.37' n= 0.069 Riprap, 6-inch
1.5	195	Total			

Subcatchment AREA4.1.1: DP3

NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 2 YR Rainfall=3.23", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 18

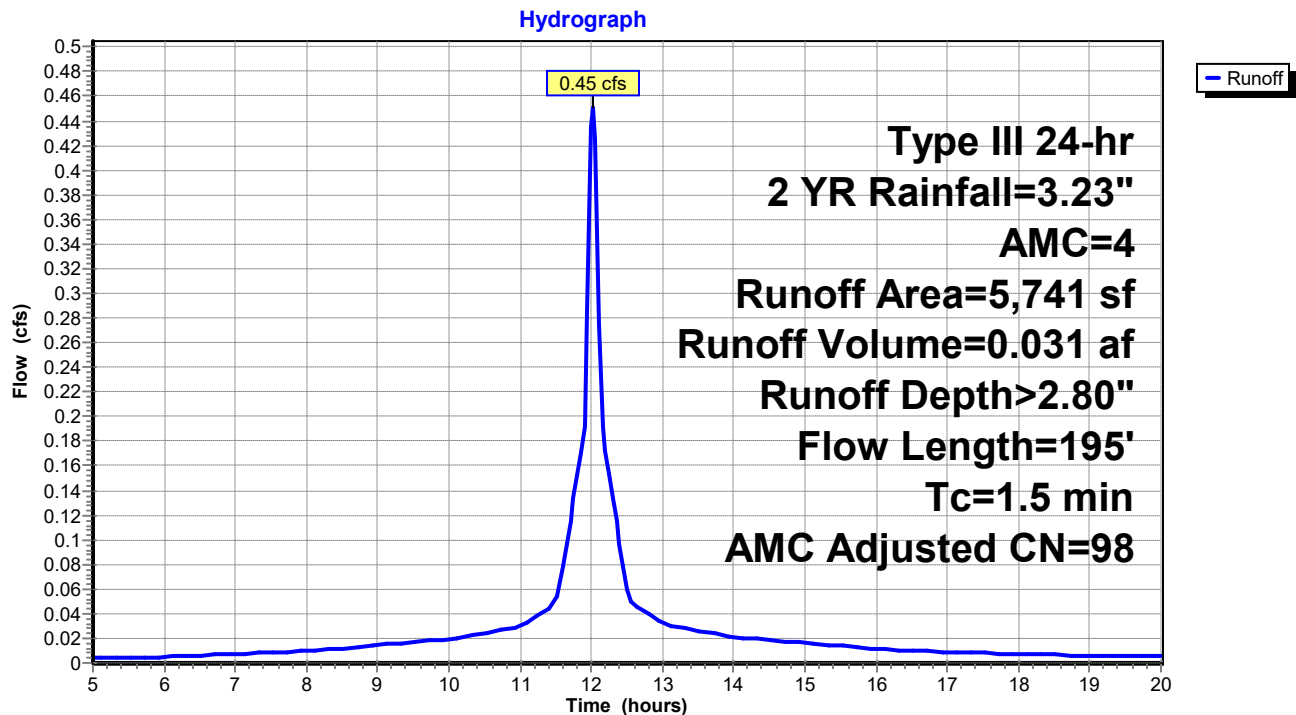
Summary for Subcatchment AREA4.1.2: DP3

Runoff = 0.45 cfs @ 12.02 hrs, Volume= 0.031 af, Depth> 2.80"
Routed to Reach 6R : PIPE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.23", AMC=4

	Area (sf)	CN	Adj	Description
*	2,057	98		PAVE
	3,684	74		>75% Grass cover, Good, HSG C
	5,741	83	98	Weighted Average, AMC Adjusted
	3,684			64.17% Pervious Area
	2,057			35.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0200	0.89		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.23"
1.3	184	0.0464	2.39	4.06	Channel Flow, Area= 1.7 sf Perim= 4.6' r= 0.37' n= 0.069 Riprap, 6-inch
1.5	195	Total			

Subcatchment AREA4.1.2: DP3

NEWTON ROAD PROPOSED 1-3 AND 8

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 2 YR Rainfall=3.23", AMC=4

Printed 2/26/2024

Page 19

Summary for Subcatchment AREA4.2: DP3

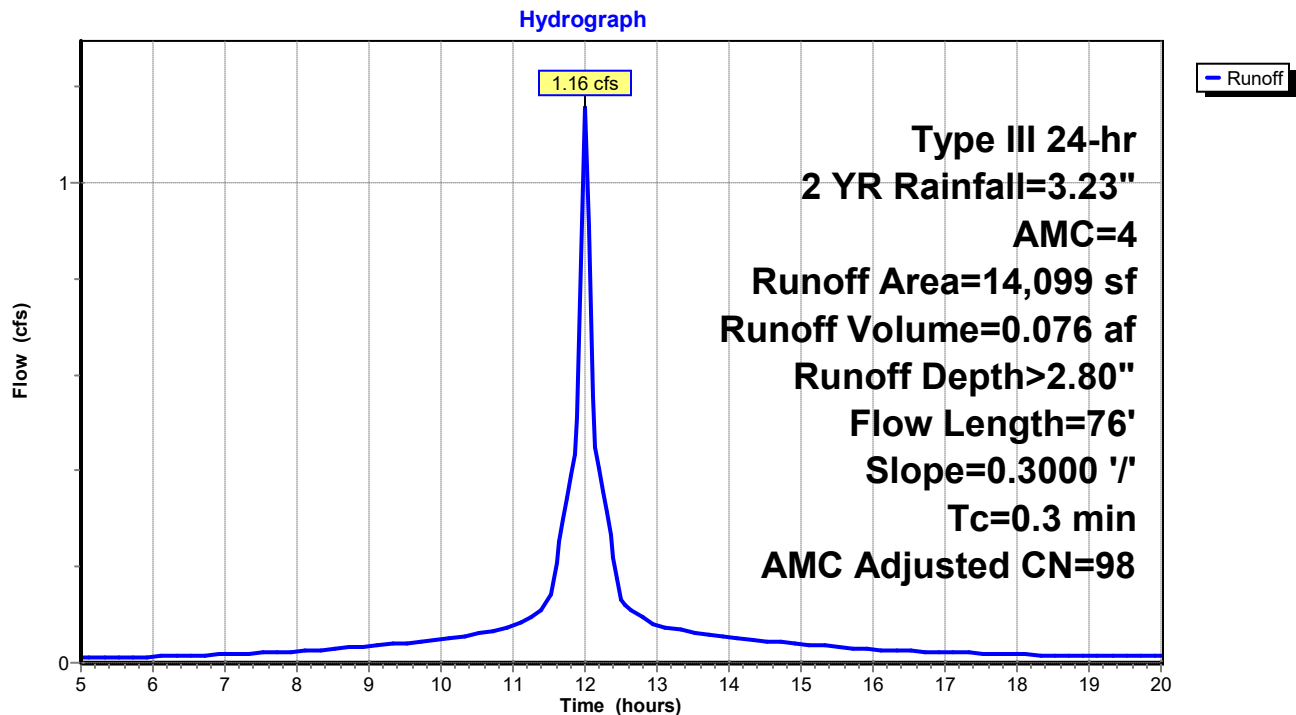
Runoff = 1.16 cfs @ 12.00 hrs, Volume= 0.076 af, Depth> 2.80"
Routed to Pond P2 : OUT

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.23", AMC=4

Area (sf)	CN	Adj	Description
14,099	74		>75% Grass cover, Good, HSG C
14,099	74	98	Weighted Average, AMC Adjusted
14,099			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	76	0.3000	3.83		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps

Subcatchment AREA4.2: DP3



NEWTON ROAD PROPOSED 1-3 AND 8

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 2 YR Rainfall=3.23", AMC=4

Printed 2/26/2024

Page 20

Summary for Reach 6R: PIPE

Inflow Area = 1.187 ac, 24.80% Impervious, Inflow Depth > 2.80" for 2 YR event
Inflow = 3.51 cfs @ 12.04 hrs, Volume= 0.277 af
Outflow = 3.45 cfs @ 12.06 hrs, Volume= 0.277 af, Atten= 2%, Lag= 0.9 min
Routed to Pond P4 : DP3

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 7.72 fps, Min. Travel Time= 0.5 min

Avg. Velocity= 3.10 fps, Avg. Travel Time= 1.3 min

Peak Storage= 111 cf @ 12.05 hrs

Average Depth at Peak Storage= 0.56', Surface Width= 0.99'

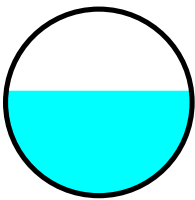
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.78 cfs

12.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

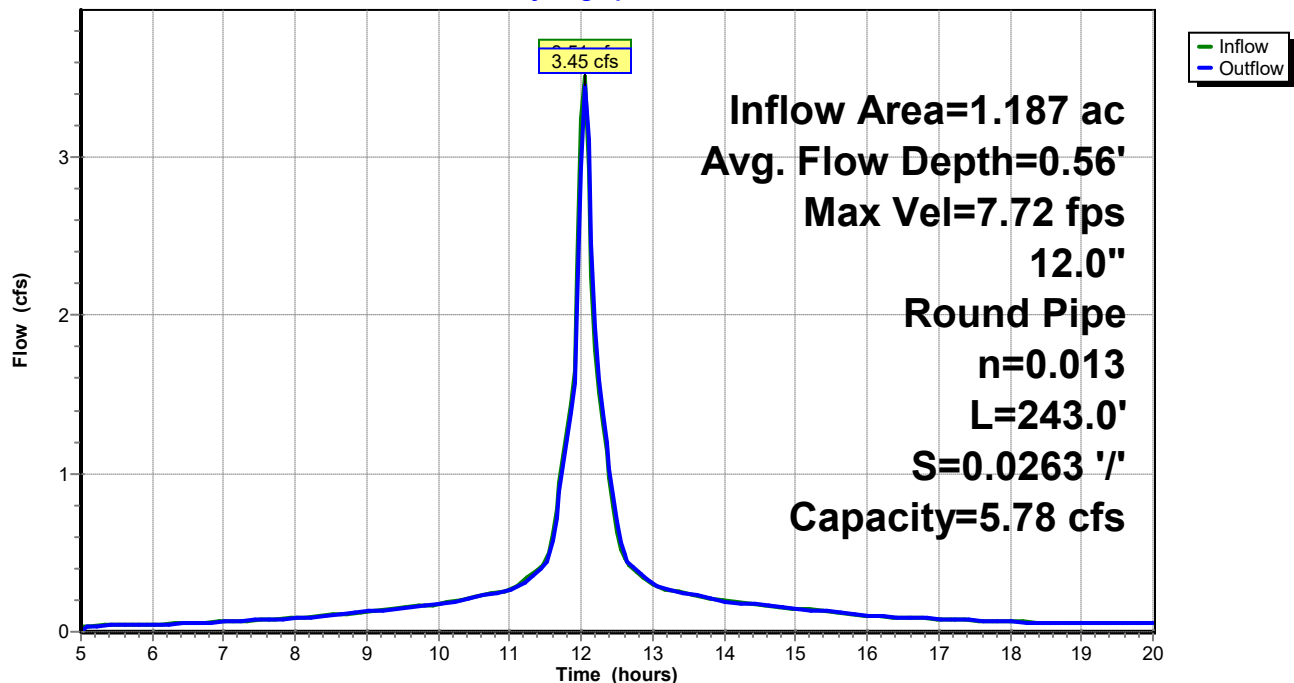
Length= 243.0' Slope= 0.0263 '/'

Inlet Invert= 154.40', Outlet Invert= 148.00'



Reach 6R: PIPE

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 2 YR Rainfall=3.23", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 21

Summary for Pond 1P: (new Pond)

Inflow Area = 1.426 ac, 16.18% Impervious, Inflow Depth > 2.80" for 2 YR event
 Inflow = 4.43 cfs @ 12.08 hrs, Volume= 0.333 af
 Outflow = 2.40 cfs @ 12.21 hrs, Volume= 0.323 af, Atten= 46%, Lag= 7.8 min
 Primary = 2.40 cfs @ 12.21 hrs, Volume= 0.323 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 155.02' @ 12.21 hrs Surf.Area= 3,243 sf Storage= 3,288 cf

Plug-Flow detention time= 45.2 min calculated for 0.323 af (97% of inflow)
 Center-of-Mass det. time= 32.6 min (770.6 - 737.9)

Volume	Invert	Avail.Storage	Storage Description
#1	154.00'	15,785 cf	Custom Stage Data (Prismatic) Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
154.00	2,572	0	0
156.00	3,890	6,462	6,462
158.00	5,433	9,323	15,785

Device	Routing	Invert	Outlet Devices
#1	Primary	154.00'	12.0" Round Culvert L= 72.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 154.00' / 152.00' S= 0.0278 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.40 cfs @ 12.21 hrs HW=155.02' (Free Discharge)

↑ **1=Culvert** (Inlet Controls 2.40 cfs @ 3.05 fps)

NEWTON ROAD PROPOSED 1-3 AND 8

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

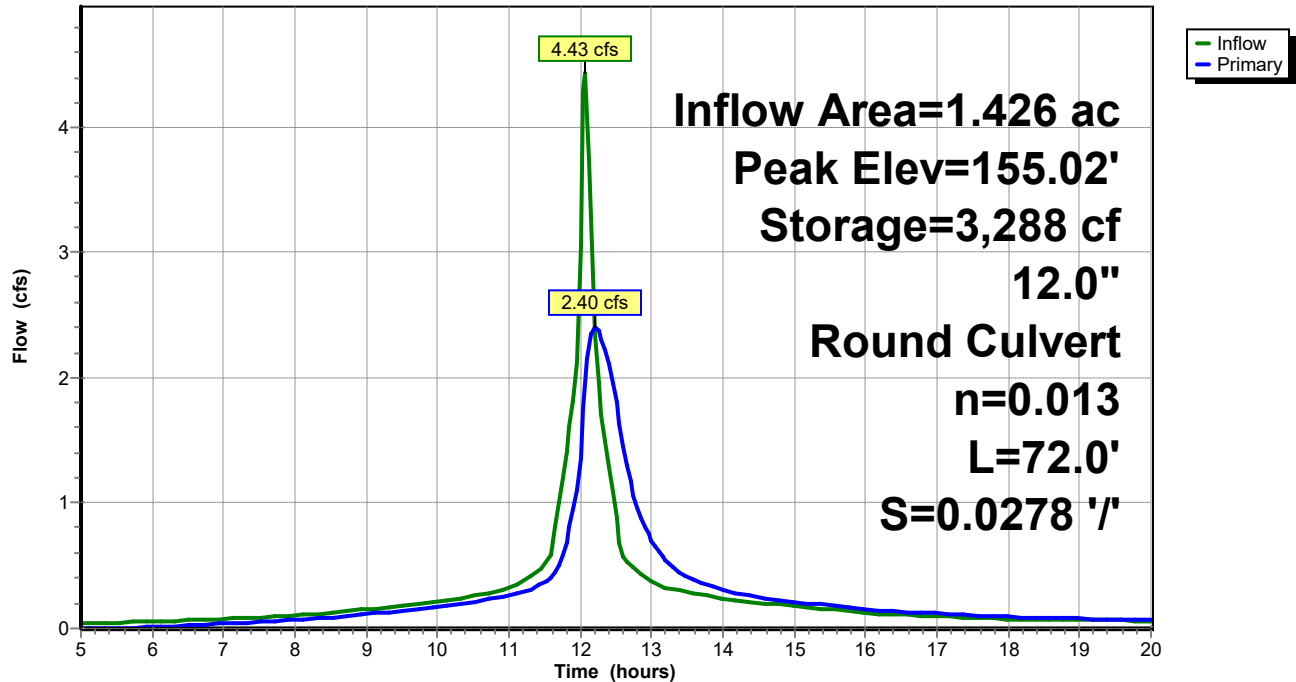
Type III 24-hr 2 YR Rainfall=3.23", AMC=4

Printed 2/26/2024

Page 22

Pond 1P: (new Pond)

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 2 YR Rainfall=3.23", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 23

Summary for Pond P1: OUT

Inflow Area = 0.315 ac, 0.00% Impervious, Inflow Depth > 2.80" for 2 YR event
 Inflow = 0.79 cfs @ 12.17 hrs, Volume= 0.073 af
 Outflow = 0.45 cfs @ 12.38 hrs, Volume= 0.073 af, Atten= 43%, Lag= 12.3 min
 Primary = 0.45 cfs @ 12.38 hrs, Volume= 0.073 af
 Routed to Pond P3 : DP2

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 161.89' @ 12.38 hrs Surf.Area= 582 sf Storage= 258 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 2.2 min (745.9 - 743.7)

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	2,358 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

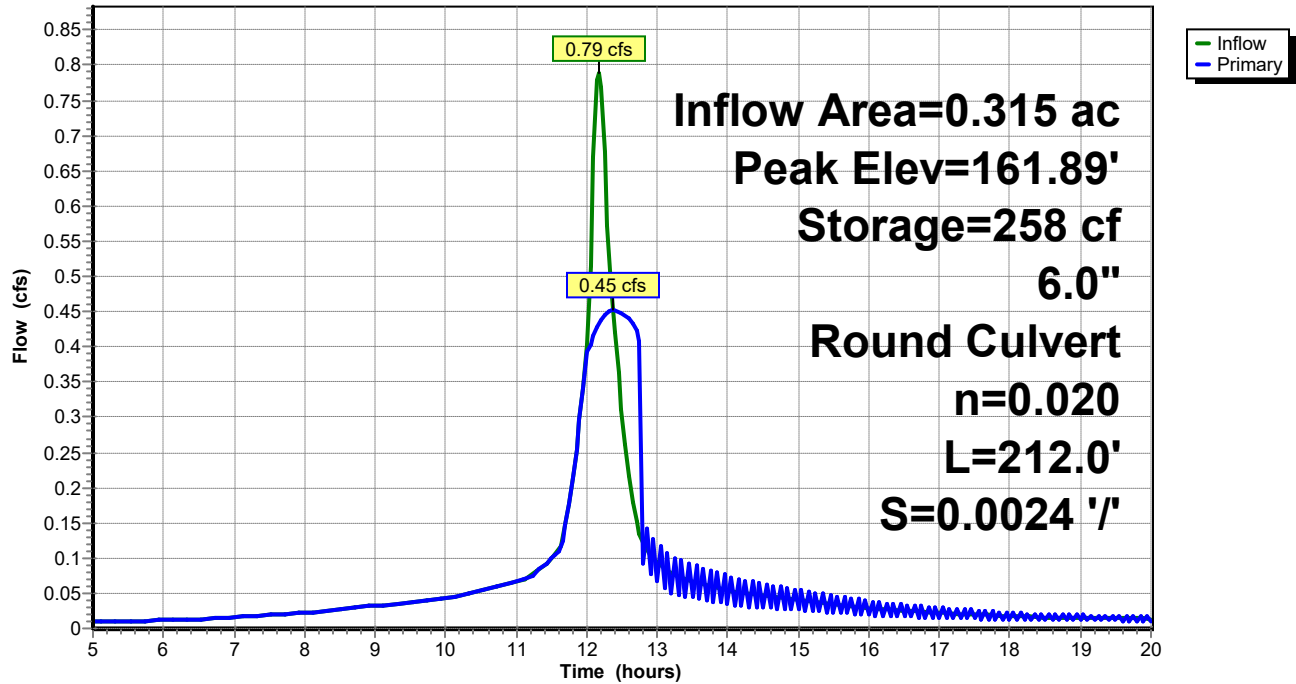
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	0	0	0
162.00	656	328	328
164.00	1,374	2,030	2,358

Device	Routing	Invert	Outlet Devices
#1	Primary	158.50'	6.0" Round Culvert L= 212.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 158.50' / 158.00' S= 0.0024 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.45 cfs @ 12.38 hrs HW=161.88' (Free Discharge)
 ↑ **1=Culvert** (Barrel Controls 0.45 cfs @ 2.30 fps)

Pond P1: OUT

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 2 YR Rainfall=3.23", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 25

Summary for Pond P2: OUT

Inflow Area = 0.755 ac, 19.49% Impervious, Inflow Depth > 2.80" for 2 YR event
 Inflow = 2.26 cfs @ 12.03 hrs, Volume= 0.176 af
 Outflow = 2.26 cfs @ 12.03 hrs, Volume= 0.176 af, Atten= 0%, Lag= 0.0 min
 Primary = 2.26 cfs @ 12.03 hrs, Volume= 0.176 af
 Routed to Reach 6R : PIPE

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 157.00' @ 12.03 hrs Surf.Area= 5 sf Storage= 0 cf

Plug-Flow detention time= 0.0 min calculated for 0.176 af (100% of inflow)

Center-of-Mass det. time= 0.0 min (736.0 - 736.0)

Volume	Invert	Avail.Storage	Storage Description
#1	157.00'	348 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

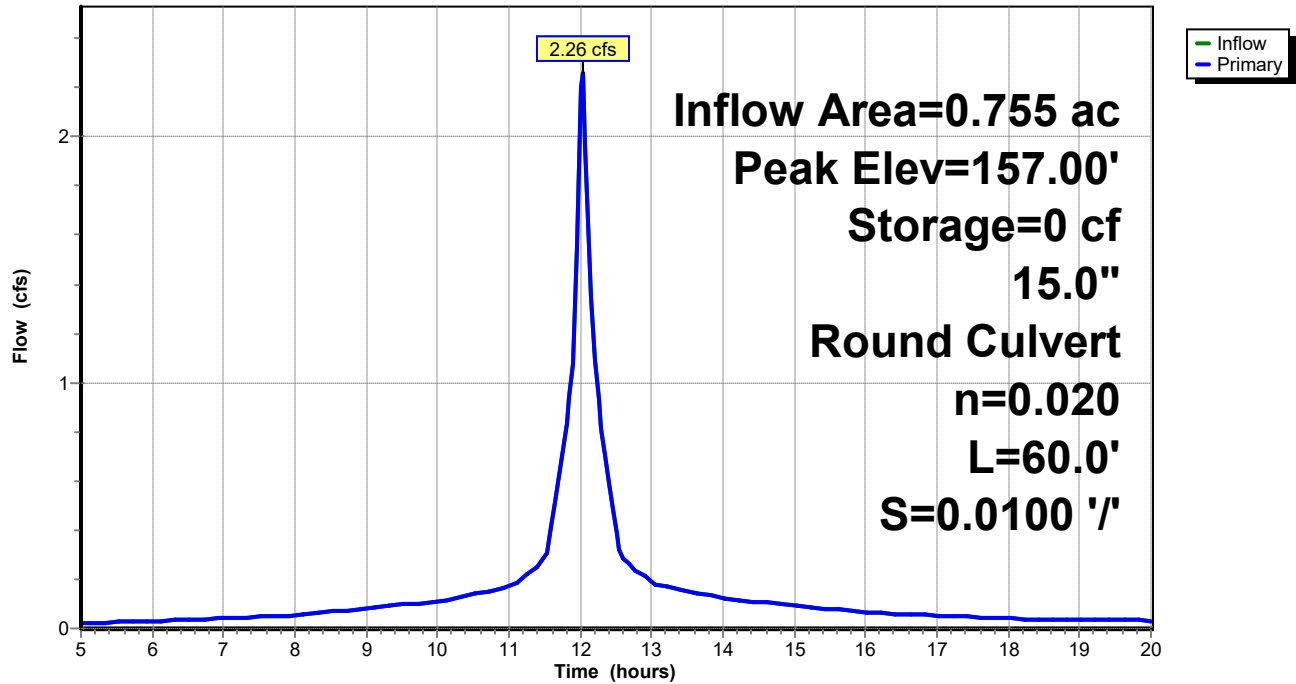
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
157.00	4	0	0
157.50	174	45	45
158.00	1,040	304	348

Device	Routing	Invert	Outlet Devices
#1	Primary	155.00'	15.0" Round Culvert L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 155.00' / 154.40' S= 0.0100 ' S= 0.0100 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.23 sf

Primary OutFlow Max=5.22 cfs @ 12.03 hrs HW=157.00' (Free Discharge)↑ **1=Culvert** (Barrel Controls 5.22 cfs @ 4.26 fps)

Pond P2: OUT

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 2 YR Rainfall=3.23", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 27

Summary for Pond P3: DP2

Inflow Area = 1.394 ac, 7.57% Impervious, Inflow Depth > 2.80" for 2 YR event
 Inflow = 3.72 cfs @ 12.09 hrs, Volume= 0.325 af
 Outflow = 2.55 cfs @ 12.19 hrs, Volume= 0.319 af, Atten= 31%, Lag= 6.2 min
 Primary = 2.55 cfs @ 12.19 hrs, Volume= 0.319 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 156.94' @ 12.19 hrs Surf.Area= 2,752 sf Storage= 2,290 cf

Plug-Flow detention time= 32.4 min calculated for 0.317 af (98% of inflow)
 Center-of-Mass det. time= 23.4 min (763.5 - 740.1)

Volume	Invert	Avail.Storage	Storage Description
#1	156.00'	5,589 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
156.00	2,145	0	0
158.00	3,444	5,589	5,589

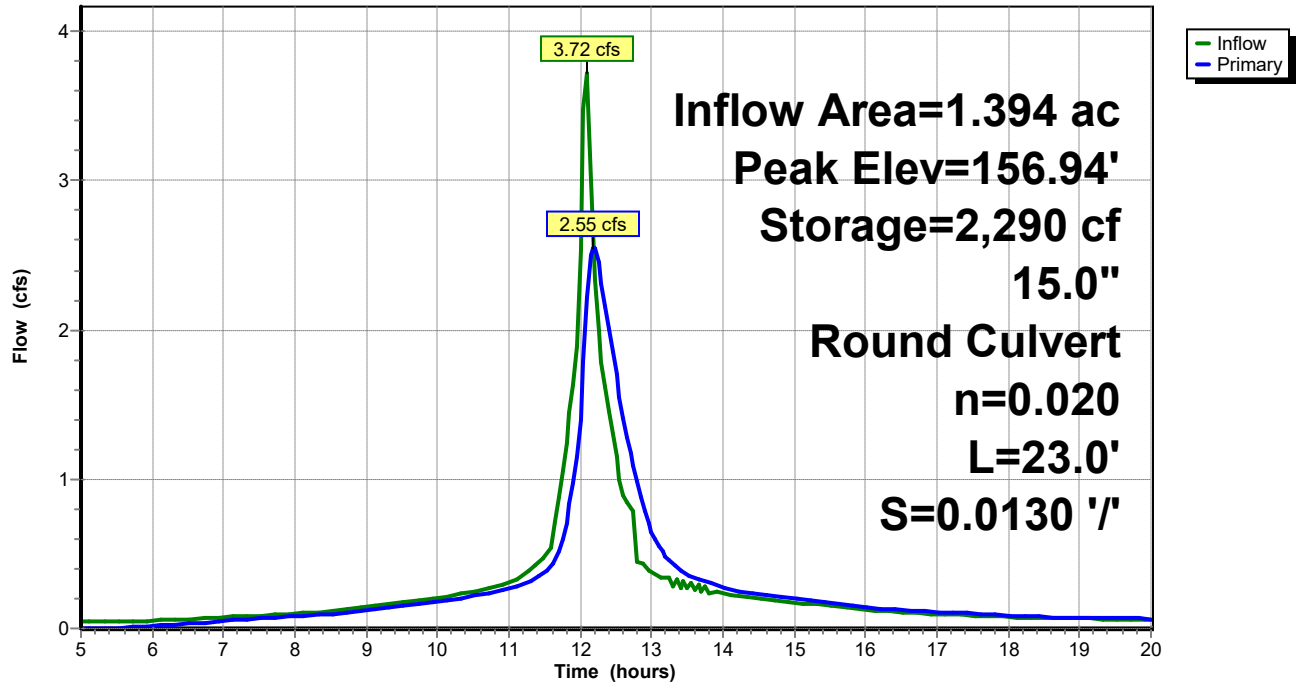
Device	Routing	Invert	Outlet Devices
#1	Primary	156.00'	15.0" Round Culvert L= 23.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 156.00' / 155.70' S= 0.0130 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.54 cfs @ 12.19 hrs HW=156.93' (Free Discharge)

↑ **1=Culvert** (Barrel Controls 2.54 cfs @ 3.59 fps)

Pond P3: DP2

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 2 YR Rainfall=3.23", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 29

Summary for Pond P4: DP3

Inflow Area = 2.489 ac, 11.83% Impervious, Inflow Depth > 2.80" for 2 YR event
 Inflow = 4.69 cfs @ 12.07 hrs, Volume= 0.580 af
 Outflow = 3.18 cfs @ 12.44 hrs, Volume= 0.568 af, Atten= 32%, Lag= 22.3 min
 Primary = 3.18 cfs @ 12.44 hrs, Volume= 0.568 af
 Routed to nonexistent node SUM

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 149.21' @ 12.44 hrs Surf.Area= 4,222 sf Storage= 4,535 cf

Plug-Flow detention time= 36.2 min calculated for 0.566 af (97% of inflow)
 Center-of-Mass det. time= 27.1 min (773.0 - 745.9)

Volume	Invert	Avail.Storage	Storage Description
#1	148.00'	19,740 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
148.00	3,278	0	0
149.00	4,059	3,669	3,669
150.00	4,840	4,450	8,118
152.00	6,782	11,622	19,740

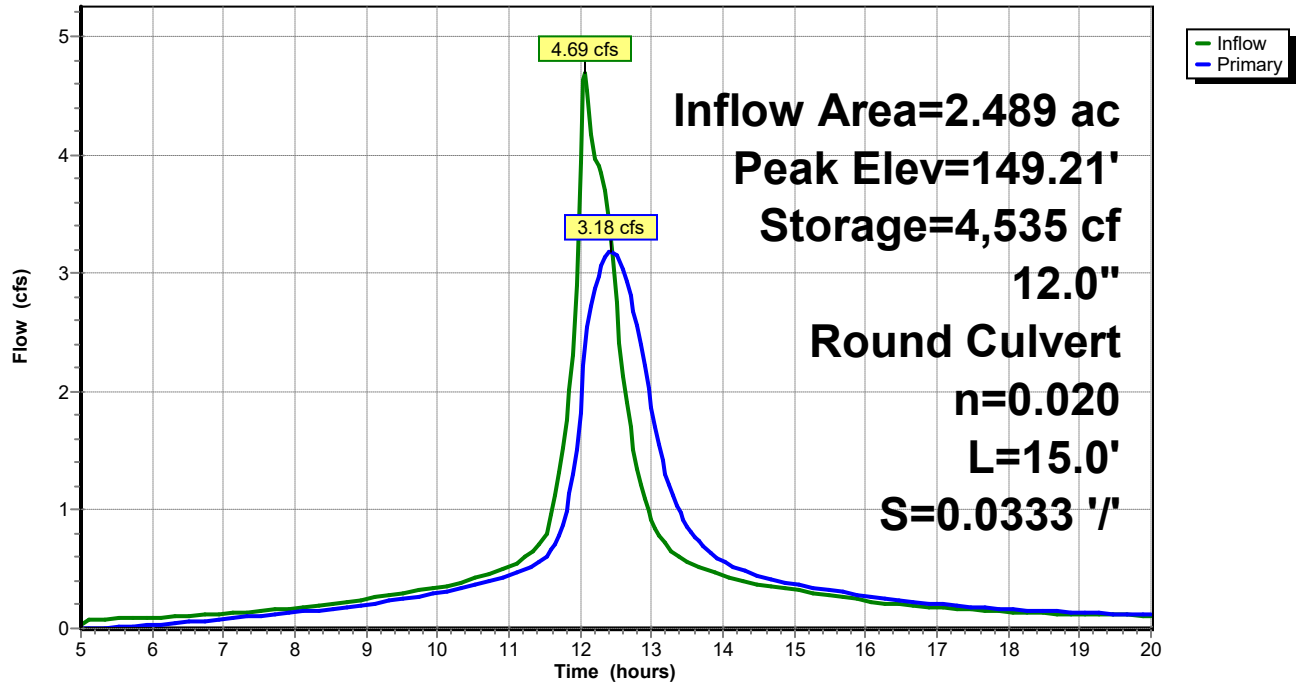
Device	Routing	Invert	Outlet Devices
#1	Primary	148.00'	12.0" Round Culvert L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 148.00' / 147.50' S= 0.0333 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.18 cfs @ 12.44 hrs HW=149.21' (Free Discharge)

↑ **1=Culvert** (Inlet Controls 3.18 cfs @ 4.05 fps)

Pond P4: DP3

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 10 YR Rainfall=5.12", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 31

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment AREA 1: DP 1 Runoff Area=62,113 sf 16.18% Impervious Runoff Depth>4.53"
Flow Length=606' Tc=5.3 min AMC Adjusted CN=98 Runoff=7.08 cfs 0.538 af

Subcatchment AREA 2: DP8 Runoff Area=21,681 sf 0.00% Impervious Runoff Depth>4.53"
Flow Length=80' Slope=0.1250 '/' Tc=10.6 min AMC Adjusted CN=98 Runoff=2.13 cfs 0.188 af

Subcatchment AREA 3.1: DP2 Runoff Area=47,034 sf 9.78% Impervious Runoff Depth>4.53"
Flow Length=267' Tc=6.0 min AMC Adjusted CN=98 Runoff=5.28 cfs 0.407 af

Subcatchment AREA 3.2: DP2 Runoff Area=13,705 sf 0.00% Impervious Runoff Depth>4.53"
Flow Length=114' Slope=0.0900 '/' Tc=13.0 min AMC Adjusted CN=98 Runoff=1.26 cfs 0.119 af

Subcatchment AREA 3.3.1: DP3 Runoff Area=13,068 sf 33.33% Impervious Runoff Depth>4.53"
Flow Length=400' Slope=0.0590 '/' Tc=5.8 min AMC Adjusted CN=98 Runoff=1.47 cfs 0.113 af

Subcatchment AREA 3.3.2: DP2 Runoff Area=13,068 sf 33.33% Impervious Runoff Depth>4.53"
Flow Length=400' Slope=0.0590 '/' Tc=5.8 min AMC Adjusted CN=98 Runoff=1.47 cfs 0.113 af

Subcatchment AREA 4: DP3 Runoff Area=56,725 sf 0.00% Impervious Runoff Depth>4.52"
Flow Length=300' Tc=25.8 min AMC Adjusted CN=98 Runoff=3.99 cfs 0.491 af

Subcatchment AREA 4.1.1: DP3 Runoff Area=5,741 sf 35.83% Impervious Runoff Depth>4.53"
Flow Length=195' Tc=1.5 min AMC Adjusted CN=98 Runoff=0.72 cfs 0.050 af

Subcatchment AREA 4.1.2: DP3 Runoff Area=5,741 sf 35.83% Impervious Runoff Depth>4.53"
Flow Length=195' Tc=1.5 min AMC Adjusted CN=98 Runoff=0.72 cfs 0.050 af

Subcatchment AREA 4.2: DP3 Runoff Area=14,099 sf 0.00% Impervious Runoff Depth>4.53"
Flow Length=76' Slope=0.3000 '/' Tc=0.3 min AMC Adjusted CN=98 Runoff=1.85 cfs 0.122 af

Reach 6R: PIPE Avg. Flow Depth=0.79' Max Vel=8.39 fps Inflow=5.60 cfs 0.448 af
12.0" Round Pipe n=0.013 L=243.0' S=0.0263 '/' Capacity=5.78 cfs Outflow=5.51 cfs 0.448 af

Pond 1P: (new Pond) Peak Elev=155.57' Storage=5,076 cf Inflow=7.08 cfs 0.538 af
12.0" Round Culvert n=0.013 L=72.0' S=0.0278 '/' Outflow=3.45 cfs 0.526 af

Pond P1: OUT Peak Elev=162.64' Storage=822 cf Inflow=1.26 cfs 0.119 af
6.0" Round Culvert n=0.020 L=212.0' S=0.0024 '/' Outflow=0.50 cfs 0.119 af

Pond P2: OUT Peak Elev=157.01' Storage=0 cf Inflow=3.65 cfs 0.285 af
15.0" Round Culvert n=0.020 L=60.0' S=0.0100 '/' Outflow=3.65 cfs 0.285 af

Pond P3: DP2 Peak Elev=157.25' Storage=3,190 cf Inflow=5.72 cfs 0.526 af
15.0" Round Culvert n=0.020 L=23.0' S=0.0130 '/' Outflow=3.93 cfs 0.518 af

Pond P4: DP3 Peak Elev=149.93' Storage=7,763 cf Inflow=7.50 cfs 0.939 af
12.0" Round Culvert n=0.020 L=15.0' S=0.0333 '/' Outflow=4.52 cfs 0.923 af

NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 10 YR Rainfall=5.12", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 32

Total Runoff Area = 5.808 ac Runoff Volume = 2.191 af Average Runoff Depth = 4.53"
89.14% Pervious = 5.177 ac 10.86% Impervious = 0.631 ac

NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 10 YR Rainfall=5.12", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 33

Summary for Subcatchment AREA 1: DP 1

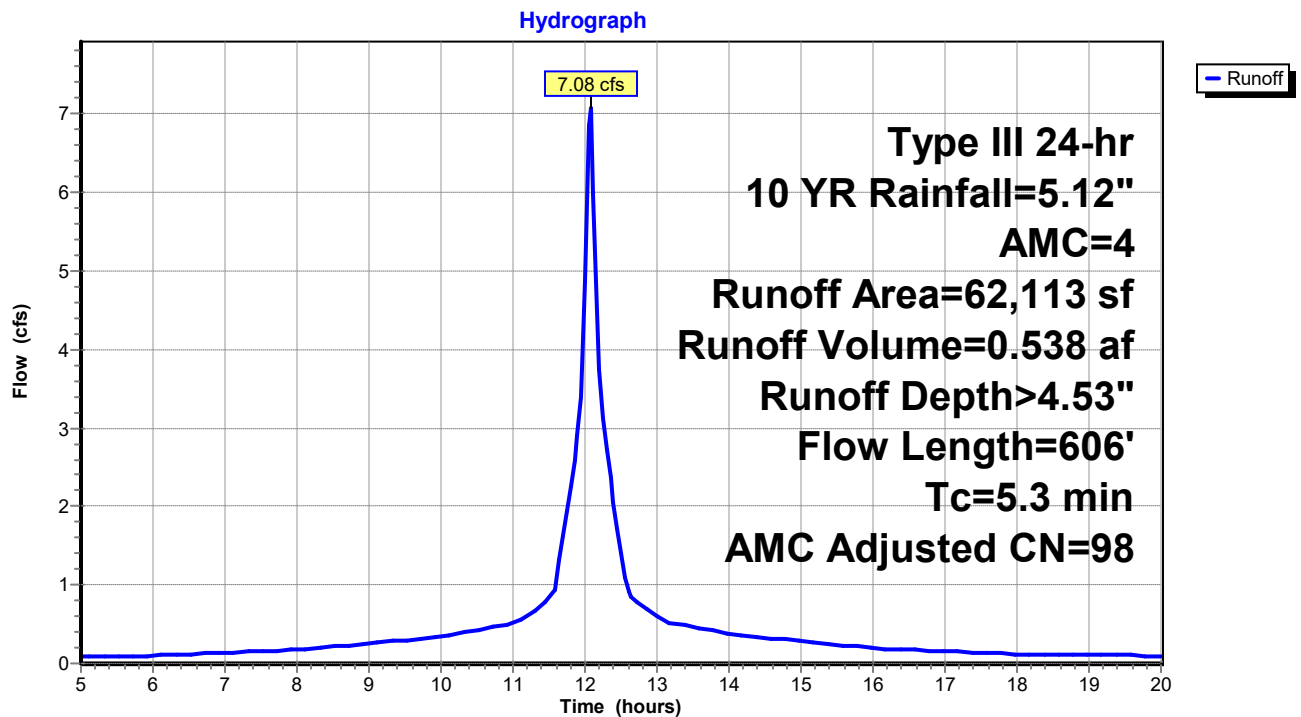
Runoff = 7.08 cfs @ 12.08 hrs, Volume= 0.538 af, Depth> 4.53"
 Routed to Pond 1P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10 YR Rainfall=5.12", AMC=4

Area (sf)	CN	Adj	Description
38,919	60		Woods, Fair, HSG B
13,142	73		Woods, Fair, HSG C
* 4,872	98		PAVED
* 5,180	98		PAVED
62,113	69	98	Weighted Average, AMC Adjusted
52,061			83.82% Pervious Area
10,052			16.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0200	0.89		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.23"
1.2	12	0.0500	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
1.6	250	0.0590	2.55	4.58	Channel Flow, Area= 1.8 sf Perim= 5.3' r= 0.34' n= 0.069 Riprap, 6-inch
1.6	143	0.0200	1.48	2.67	Channel Flow, Area= 1.8 sf Perim= 5.3' r= 0.34' n= 0.069 Riprap, 6-inch
0.7	190	0.0450	4.38	7.89	Channel Flow, Area= 1.8 sf Perim= 5.3' r= 0.34' n= 0.035 Earth, dense weeds
5.3	606	Total			

Subcatchment AREA 1: DP 1



NEWTON ROAD PROPOSED 1-3 AND 8

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 10 YR Rainfall=5.12", AMC=4

Printed 2/26/2024

Page 35

Summary for Subcatchment AREA 2: DP8

Runoff = 2.13 cfs @ 12.14 hrs, Volume= 0.188 af, Depth> 4.53"

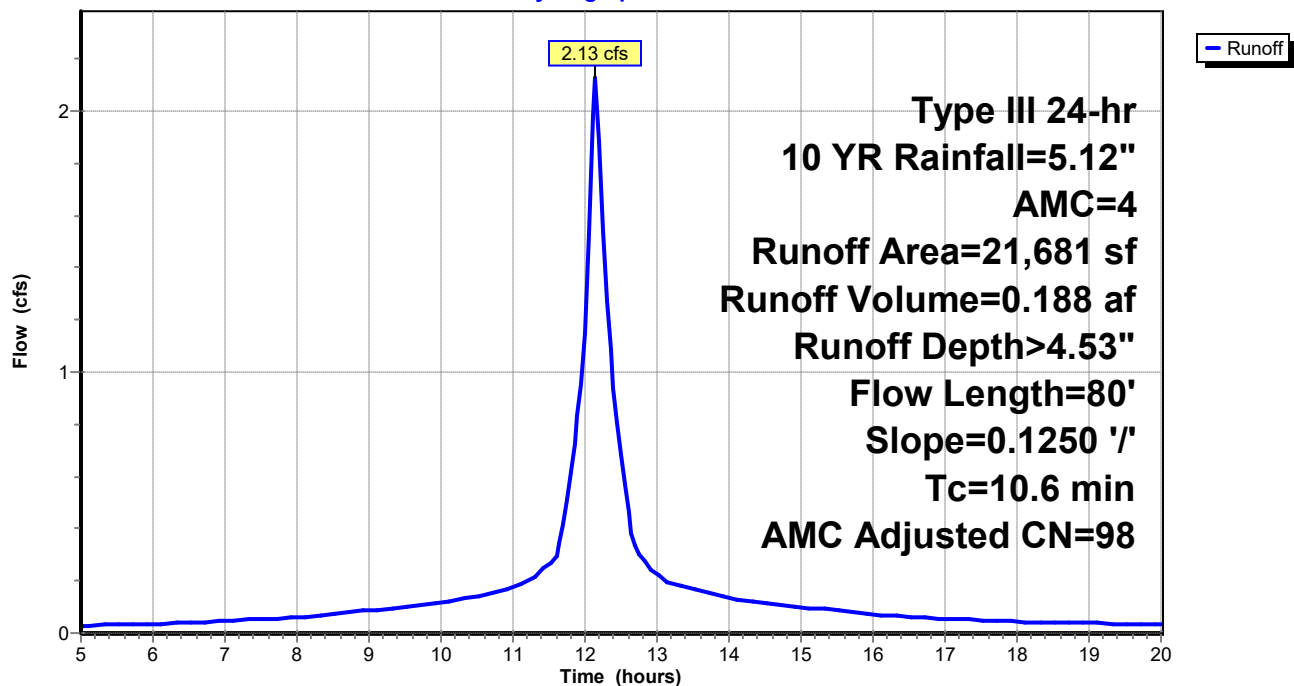
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=5.12", AMC=4

Area (sf)	CN	Adj	Description
21,681	73		Woods, Fair, HSG C
21,681	73	98	Weighted Average, AMC Adjusted
21,681			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	50	0.1250	0.08		Sheet Flow,
					Woods: Dense underbrush n= 0.800 P2= 3.23"
0.3	30	0.1250	1.77		Shallow Concentrated Flow,
					Woodland Kv= 5.0 fps
10.6	80	Total			

Subcatchment AREA 2: DP8

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 10 YR Rainfall=5.12", AMC=4

Printed 2/26/2024

Page 36

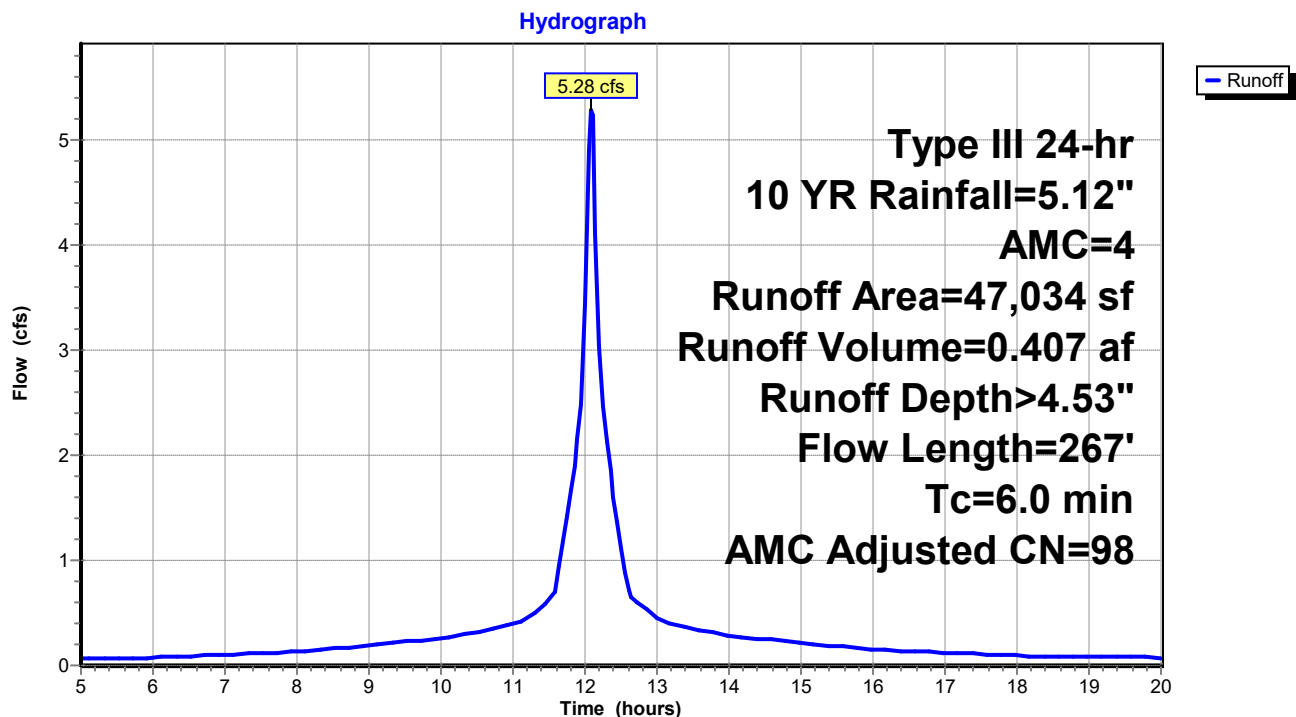
Summary for Subcatchment AREA 3.1: DP2

Runoff = 5.28 cfs @ 12.09 hrs, Volume= 0.407 af, Depth> 4.53"
Routed to Pond P3 : DP2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=5.12", AMC=4

Area (sf)	CN	Adj	Description
* 4,600	98		ROOF AND DRIVE
42,434	74		>75% Grass cover, Good, HSG C
47,034	76	98	Weighted Average, AMC Adjusted
42,434			90.22% Pervious Area
4,600			9.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	100	0.1600	0.39		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
1.8	167	0.0480	1.53		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
6.0	267	Total			

Subcatchment AREA 3.1: DP2

NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 10 YR Rainfall=5.12", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 37

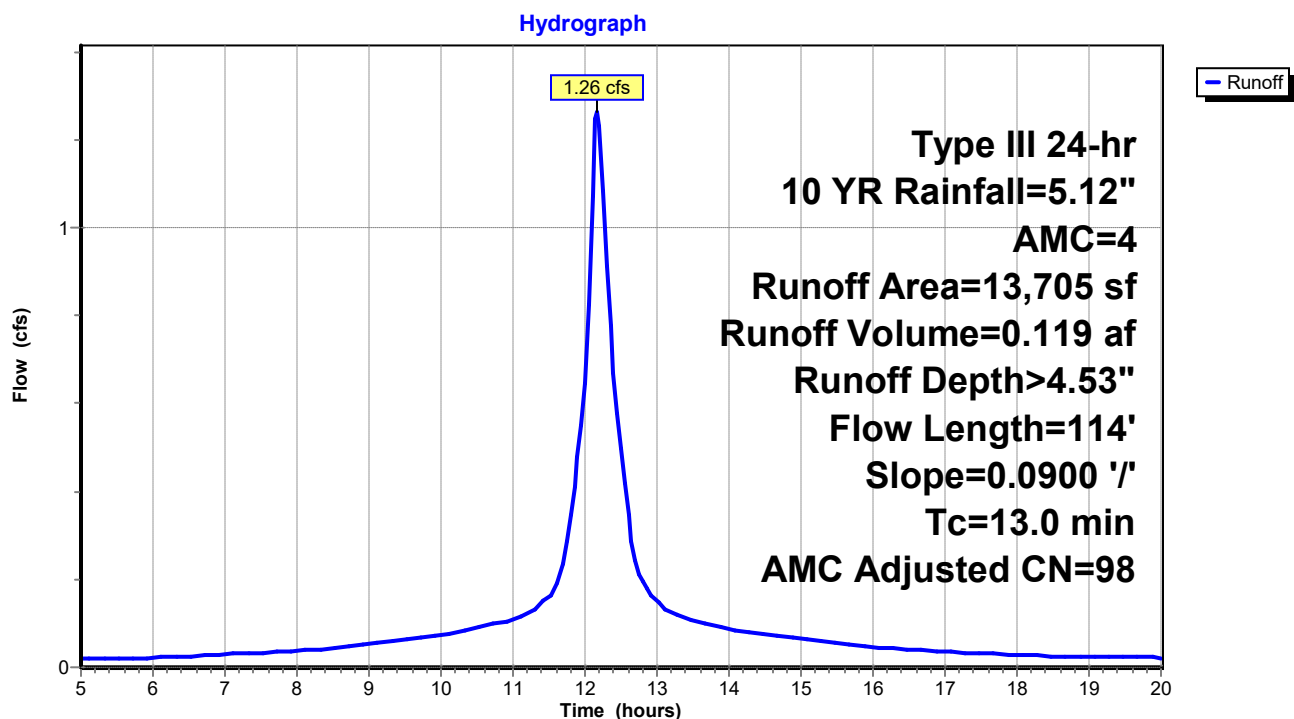
Summary for Subcatchment AREA 3.2: DP2

Runoff = 1.26 cfs @ 12.17 hrs, Volume= 0.119 af, Depth> 4.53"
Routed to Pond P1 : OUT

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=5.12", AMC=4

Area (sf)	CN	Adj	Description
2,000	74		>75% Grass cover, Good, HSG C
11,705	73		Woods, Fair, HSG C
13,705	73	98	Weighted Average, AMC Adjusted
13,705			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	114	0.0900	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.23"

Subcatchment AREA 3.2: DP2

NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 10 YR Rainfall=5.12", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 38

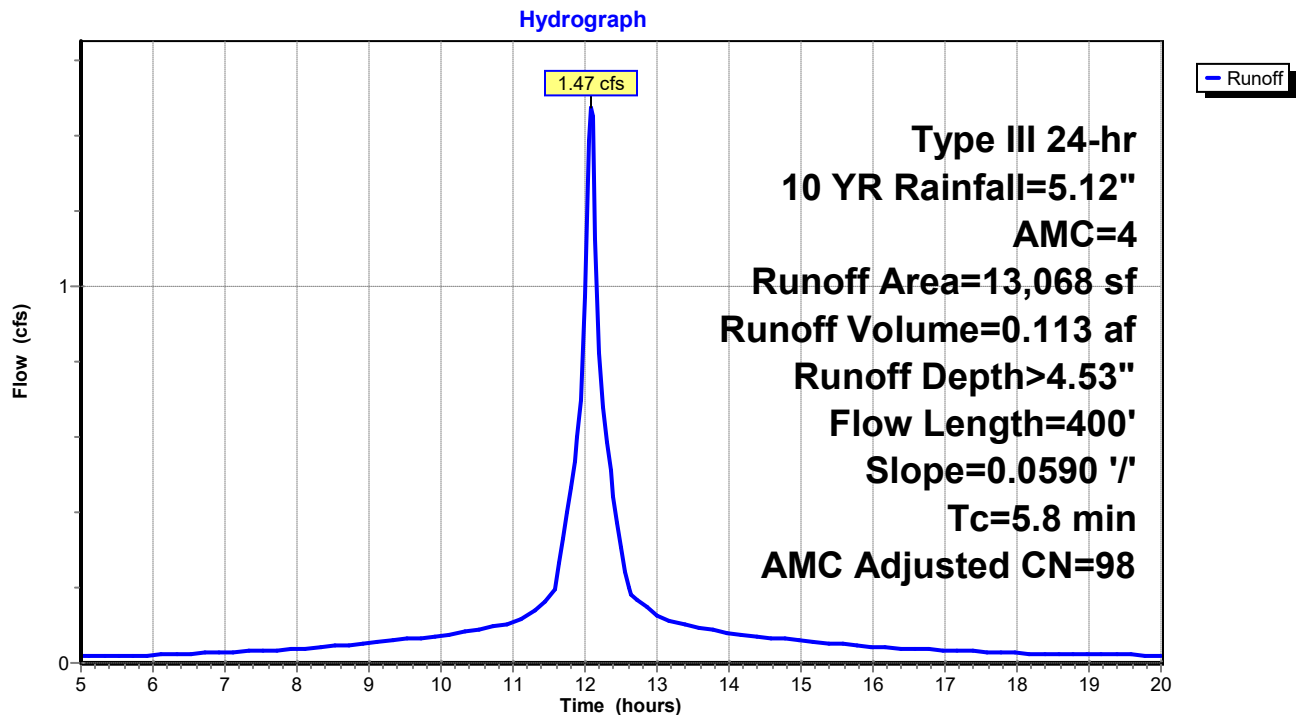
Summary for Subcatchment AREA 3.3.1: DP3

Runoff = 1.47 cfs @ 12.08 hrs, Volume= 0.113 af, Depth> 4.53"
Routed to Pond P2 : OUT

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=5.12", AMC=4

Area (sf)	CN	Adj	Description
* 4,356	98		PAVED STREET
8,712	74		>75% Grass cover, Good, HSG C
13,068	82	98	Weighted Average, AMC Adjusted
8,712			66.67% Pervious Area
4,356			33.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0590	0.23		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
2.2	350	0.0590	2.69	4.58	Channel Flow, Area= 1.7 sf Perim= 4.6' r= 0.37' n= 0.069 Riprap, 6-inch
5.8	400	Total			

Subcatchment AREA 3.3.1: DP3

NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 10 YR Rainfall=5.12", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 39

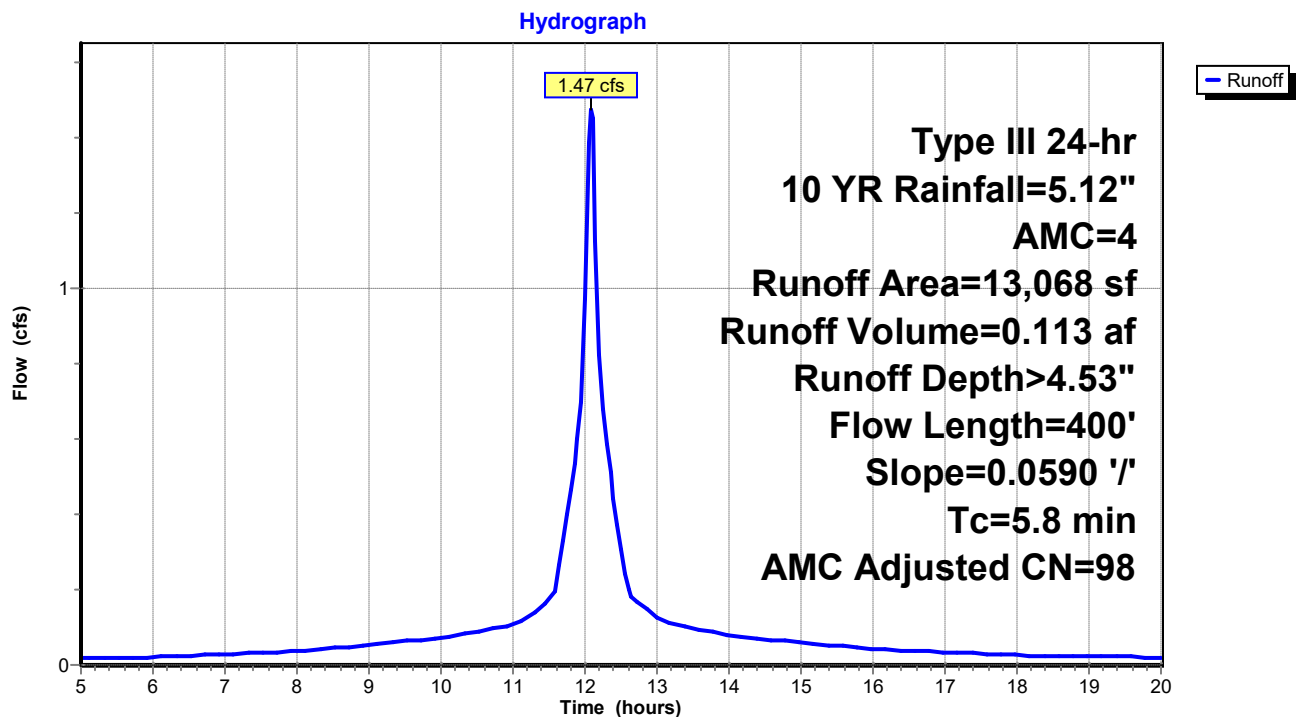
Summary for Subcatchment AREA3.3.2: DP2

Runoff = 1.47 cfs @ 12.08 hrs, Volume= 0.113 af, Depth> 4.53"
Routed to Reach 6R : PIPE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=5.12", AMC=4

Area (sf)	CN	Adj	Description
* 4,356	98		PAVED STREET
8,712	74		>75% Grass cover, Good, HSG C
13,068	82	98	Weighted Average, AMC Adjusted
8,712			66.67% Pervious Area
4,356			33.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0590	0.23		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
2.2	350	0.0590	2.69	4.58	Channel Flow, Area= 1.7 sf Perim= 4.6' r= 0.37' n= 0.069 Riprap, 6-inch
5.8	400	Total			

Subcatchment AREA3.3.2: DP2

NEWTON ROAD PROPOSED 1-3 AND 8

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 10 YR Rainfall=5.12", AMC=4

Printed 2/26/2024

Page 40

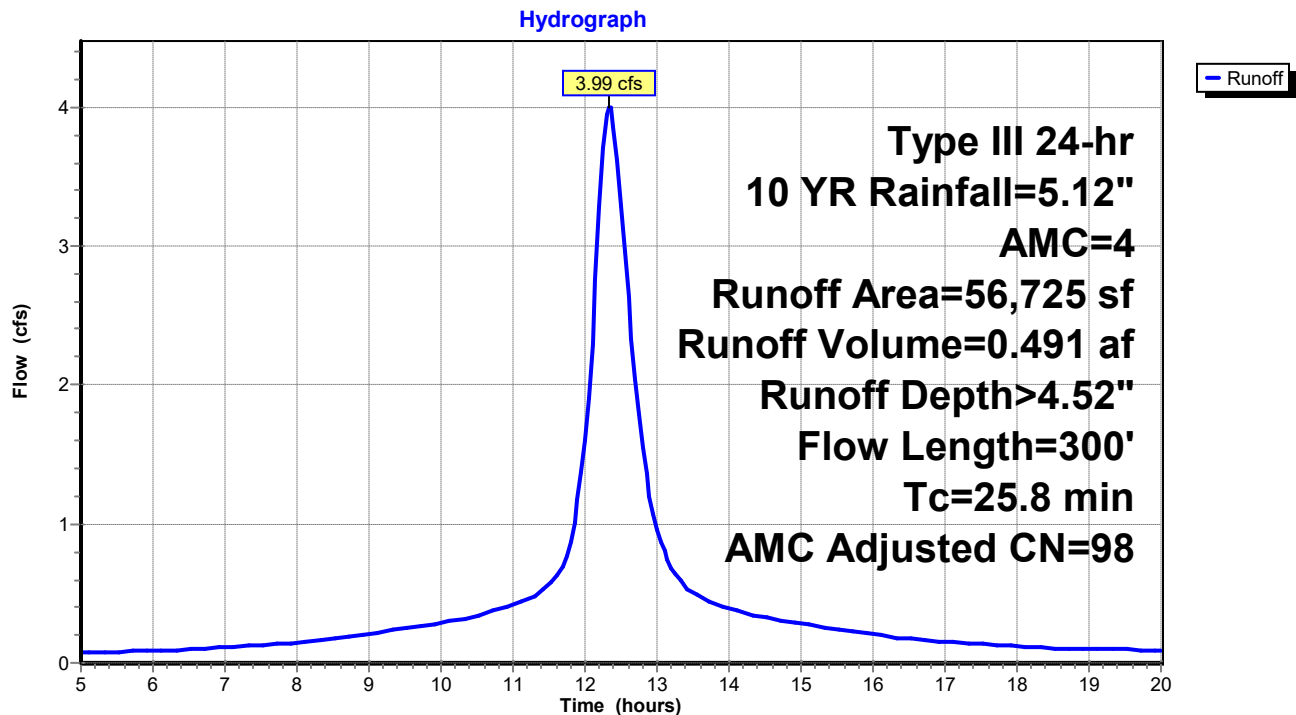
Summary for Subcatchment AREA4: DP3

Runoff = 3.99 cfs @ 12.34 hrs, Volume= 0.491 af, Depth> 4.52"
Routed to Pond P4 : DP3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=5.12", AMC=4

Area (sf)	CN	Adj	Description
29,511	36		Woods, Fair, HSG A
27,214	73		Woods, Fair, HSG C
56,725	54	98	Weighted Average, AMC Adjusted
56,725			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.5	100	0.1000	0.09		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
6.3	200	0.0450	0.53		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
25.8	300	Total			

Subcatchment AREA4: DP3

NEWTON ROAD PROPOSED 1-3 AND 8

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 10 YR Rainfall=5.12", AMC=4

Printed 2/26/2024

Page 41

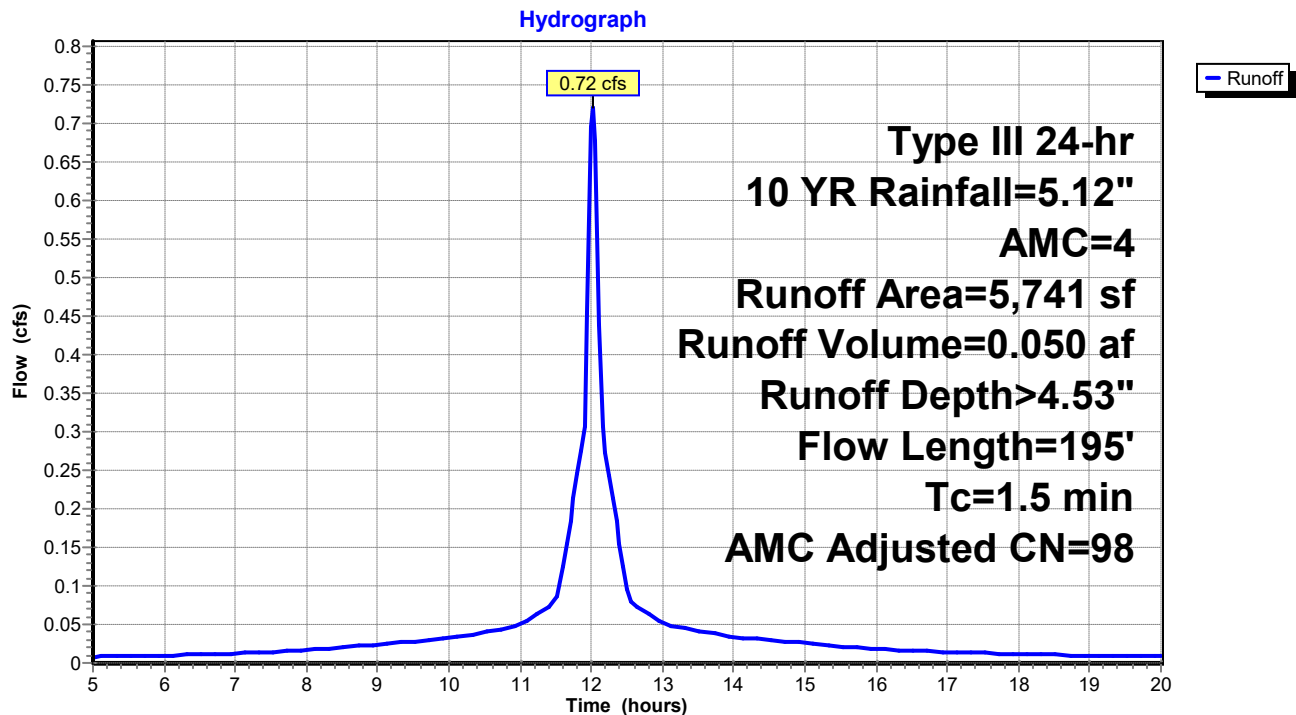
Summary for Subcatchment AREA4.1.1: DP3

Runoff = 0.72 cfs @ 12.02 hrs, Volume= 0.050 af, Depth> 4.53"
Routed to Pond P2 : OUT

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=5.12", AMC=4

	Area (sf)	CN	Adj	Description
*	2,057	98		PAVE
	3,684	74		>75% Grass cover, Good, HSG C
	5,741	83	98	Weighted Average, AMC Adjusted
	3,684			64.17% Pervious Area
	2,057			35.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0200	0.89		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.23"
1.3	184	0.0464	2.39	4.06	Channel Flow, Area= 1.7 sf Perim= 4.6' r= 0.37' n= 0.069 Riprap, 6-inch
1.5	195	Total			

Subcatchment AREA4.1.1: DP3

NEWTON ROAD PROPOSED 1-3 AND 8

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 10 YR Rainfall=5.12", AMC=4

Printed 2/26/2024

Page 42

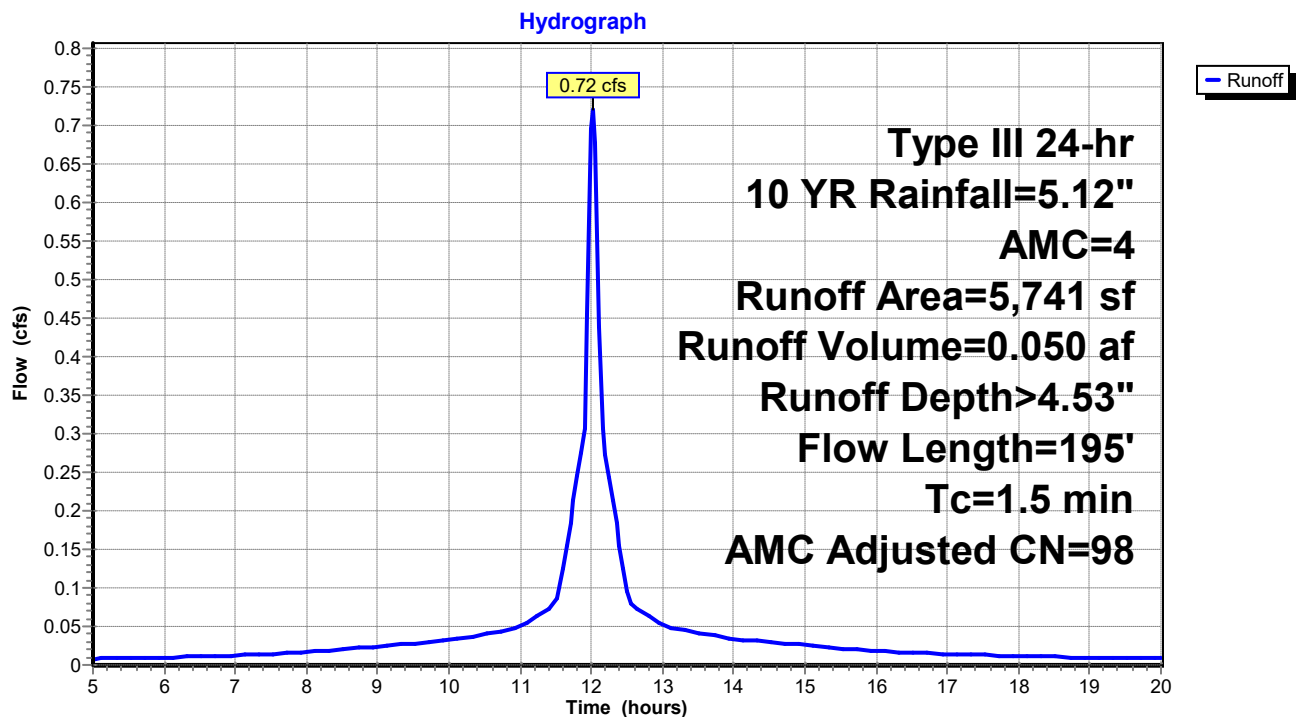
Summary for Subcatchment AREA4.1.2: DP3

Runoff = 0.72 cfs @ 12.02 hrs, Volume= 0.050 af, Depth> 4.53"
Routed to Reach 6R : PIPE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=5.12", AMC=4

	Area (sf)	CN	Adj	Description
*	2,057	98		PAVE
	3,684	74		>75% Grass cover, Good, HSG C
	5,741	83	98	Weighted Average, AMC Adjusted
	3,684			64.17% Pervious Area
	2,057			35.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0200	0.89		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.23"
1.3	184	0.0464	2.39	4.06	Channel Flow, Area= 1.7 sf Perim= 4.6' r= 0.37' n= 0.069 Riprap, 6-inch
1.5	195	Total			

Subcatchment AREA4.1.2: DP3

NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 10 YR Rainfall=5.12", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 43

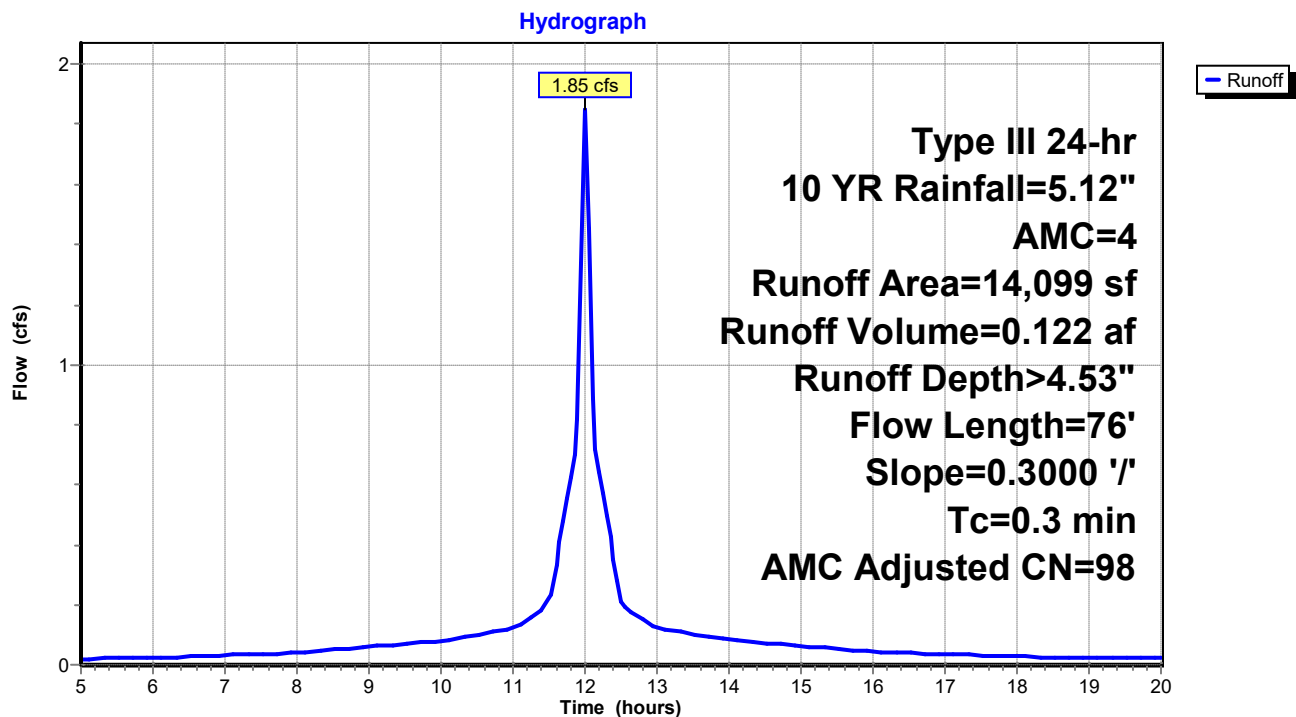
Summary for Subcatchment AREA4.2: DP3

Runoff = 1.85 cfs @ 12.00 hrs, Volume= 0.122 af, Depth> 4.53"
Routed to Pond P2 : OUT

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=5.12", AMC=4

Area (sf)	CN	Adj	Description
14,099	74		>75% Grass cover, Good, HSG C
14,099	74	98	Weighted Average, AMC Adjusted
14,099			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	76	0.3000	3.83		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps

Subcatchment AREA4.2: DP3

NEWTON ROAD PROPOSED 1-3 AND 8

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 10 YR Rainfall=5.12", AMC=4

Printed 2/26/2024

Page 44

Summary for Reach 6R: PIPE

Inflow Area = 1.187 ac, 24.80% Impervious, Inflow Depth > 4.53" for 10 YR event
Inflow = 5.60 cfs @ 12.04 hrs, Volume= 0.448 af
Outflow = 5.51 cfs @ 12.05 hrs, Volume= 0.448 af, Atten= 2%, Lag= 0.9 min
Routed to Pond P4 : DP3

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 8.39 fps, Min. Travel Time= 0.5 min

Avg. Velocity= 3.58 fps, Avg. Travel Time= 1.1 min

Peak Storage= 163 cf @ 12.05 hrs

Average Depth at Peak Storage= 0.79' , Surface Width= 0.81'

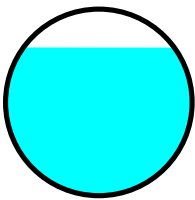
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.78 cfs

12.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

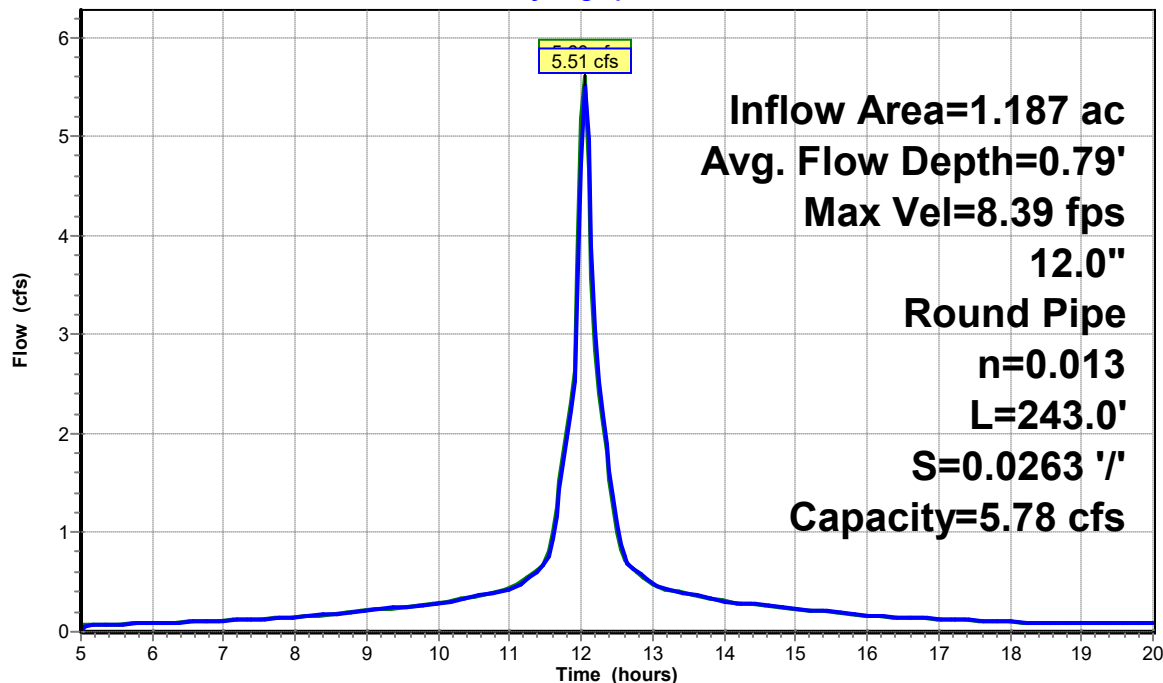
Length= 243.0' Slope= 0.0263 '/'

Inlet Invert= 154.40', Outlet Invert= 148.00'



Reach 6R: PIPE

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 10 YR Rainfall=5.12", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 45

Summary for Pond 1P: (new Pond)

Inflow Area = 1.426 ac, 16.18% Impervious, Inflow Depth > 4.53" for 10 YR event
 Inflow = 7.08 cfs @ 12.08 hrs, Volume= 0.538 af
 Outflow = 3.45 cfs @ 12.22 hrs, Volume= 0.526 af, Atten= 51%, Lag= 9.0 min
 Primary = 3.45 cfs @ 12.22 hrs, Volume= 0.526 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 155.57' @ 12.22 hrs Surf.Area= 3,607 sf Storage= 5,076 cf

Plug-Flow detention time= 38.2 min calculated for 0.524 af (97% of inflow)
 Center-of-Mass det. time= 28.3 min (762.7 - 734.5)

Volume	Invert	Avail.Storage	Storage Description
#1	154.00'	15,785 cf	Custom Stage Data (Prismatic) Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
154.00	2,572	0	0
156.00	3,890	6,462	6,462
158.00	5,433	9,323	15,785

Device	Routing	Invert	Outlet Devices
#1	Primary	154.00'	12.0" Round Culvert L= 72.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 154.00' / 152.00' S= 0.0278 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.44 cfs @ 12.22 hrs HW=155.56' (Free Discharge)

↑ **1=Culvert** (Inlet Controls 3.44 cfs @ 4.38 fps)

NEWTON ROAD PROPOSED 1-3 AND 8

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

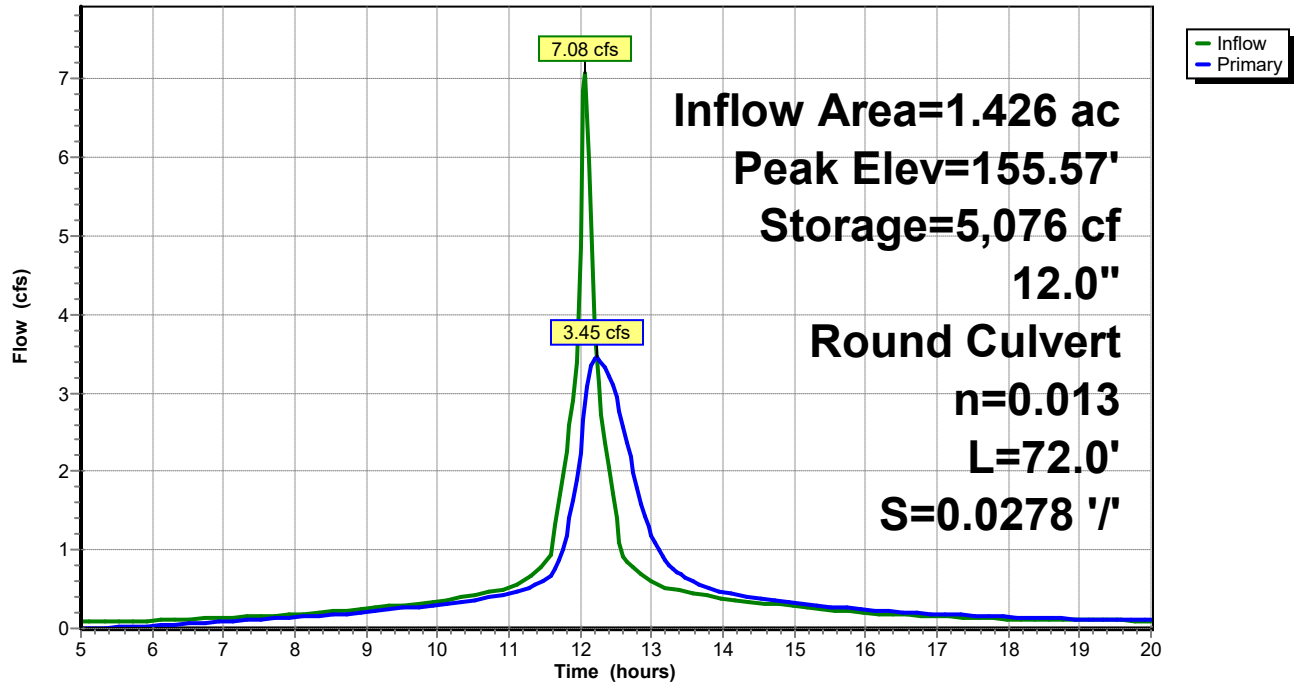
Type III 24-hr 10 YR Rainfall=5.12", AMC=4

Printed 2/26/2024

Page 46

Pond 1P: (new Pond)

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 10 YR Rainfall=5.12", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 47

Summary for Pond P1: OUT

Inflow Area = 0.315 ac, 0.00% Impervious, Inflow Depth > 4.53" for 10 YR event
 Inflow = 1.26 cfs @ 12.17 hrs, Volume= 0.119 af
 Outflow = 0.50 cfs @ 12.50 hrs, Volume= 0.119 af, Atten= 60%, Lag= 19.6 min
 Primary = 0.50 cfs @ 12.50 hrs, Volume= 0.119 af
 Routed to Pond P3 : DP2

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 162.64' @ 12.50 hrs Surf.Area= 886 sf Storage= 822 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 7.7 min (747.8 - 740.1)

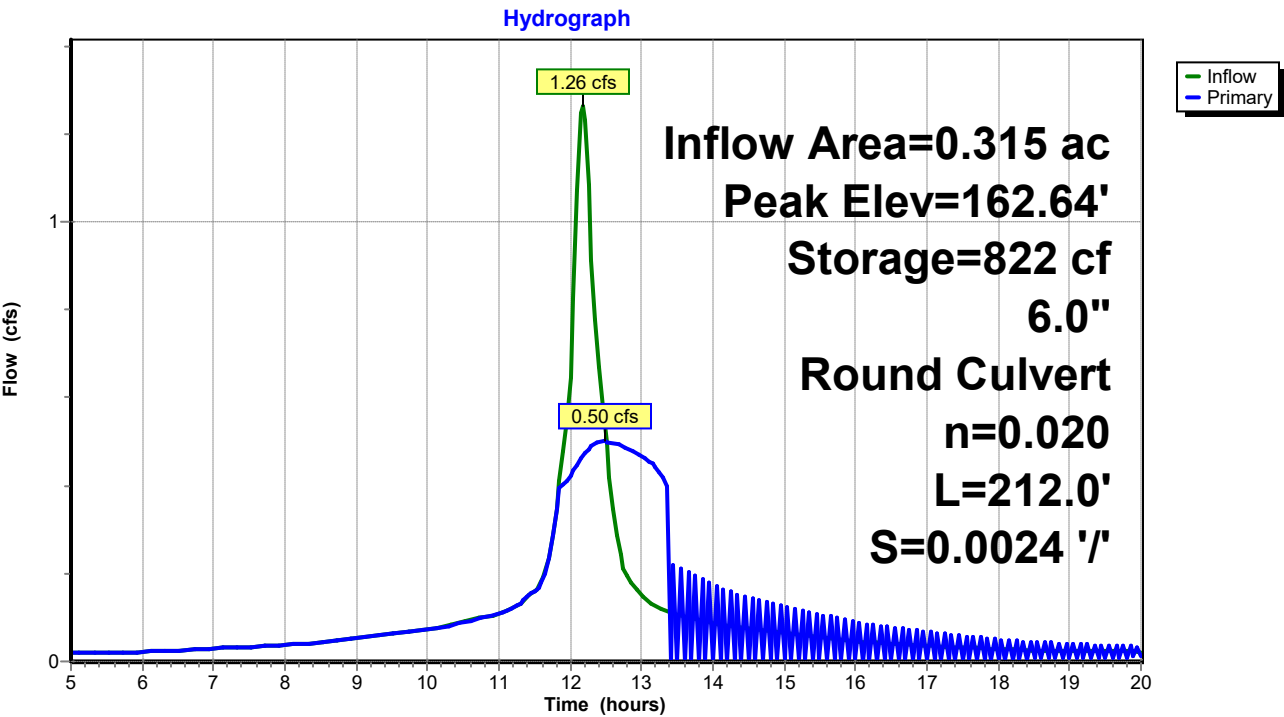
Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	2,358 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	0	0	0
162.00	656	328	328
164.00	1,374	2,030	2,358

Device	Routing	Invert	Outlet Devices
#1	Primary	158.50'	6.0" Round Culvert L= 212.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 158.50' / 158.00' S= 0.0024 ' S= 0.0024 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.50 cfs @ 12.50 hrs HW=162.64' (Free Discharge)
 ↑ **1=Culvert** (Barrel Controls 0.50 cfs @ 2.54 fps)

Pond P1: OUT



NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 10 YR Rainfall=5.12", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 49

Summary for Pond P2: OUT

Inflow Area = 0.755 ac, 19.49% Impervious, Inflow Depth > 4.53" for 10 YR event
 Inflow = 3.65 cfs @ 12.02 hrs, Volume= 0.285 af
 Outflow = 3.65 cfs @ 12.02 hrs, Volume= 0.285 af, Atten= 0%, Lag= 0.0 min
 Primary = 3.65 cfs @ 12.02 hrs, Volume= 0.285 af
 Routed to Reach 6R : PIPE

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 157.01' @ 12.02 hrs Surf.Area= 6 sf Storage= 0 cf

Plug-Flow detention time= 0.0 min calculated for 0.284 af (100% of inflow)

Center-of-Mass det. time= 0.0 min (732.5 - 732.5)

Volume	Invert	Avail.Storage	Storage Description
#1	157.00'	348 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

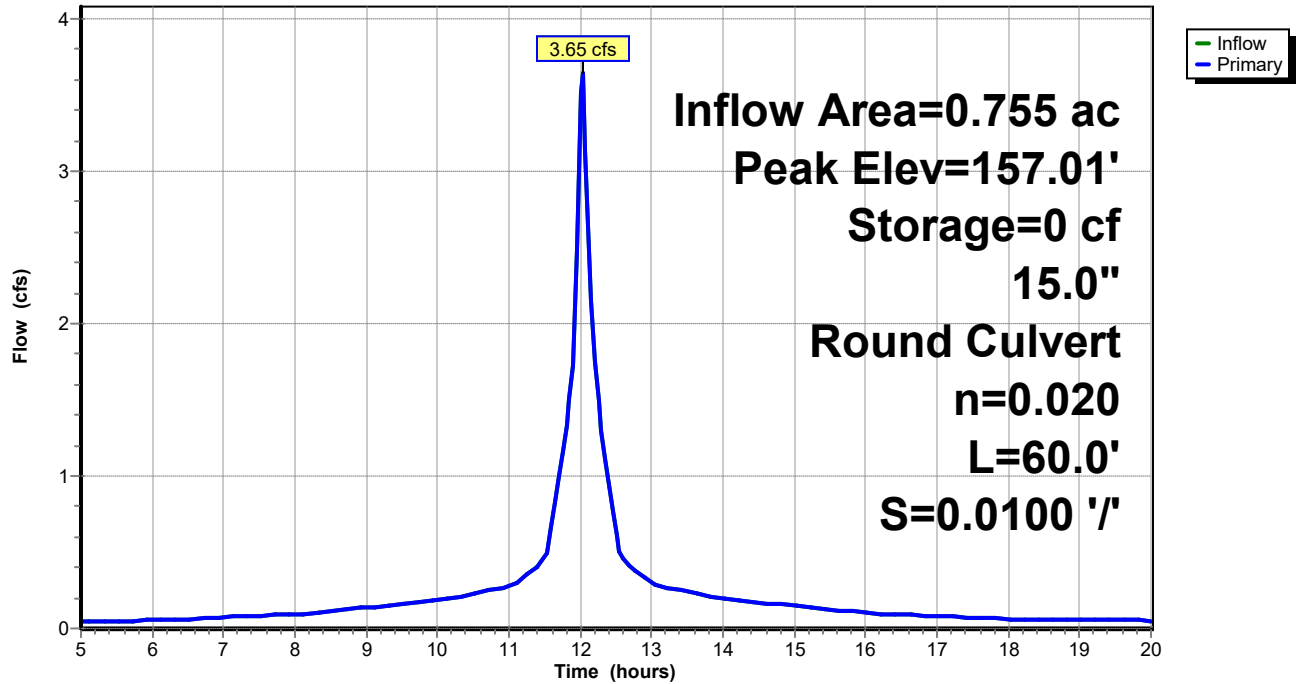
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
157.00	4	0	0
157.50	174	45	45
158.00	1,040	304	348

Device	Routing	Invert	Outlet Devices
#1	Primary	155.00'	15.0" Round Culvert L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 155.00' / 154.40' S= 0.0100 ' S= 0.0100 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.23 sf

Primary OutFlow Max=5.23 cfs @ 12.02 hrs HW=157.01' (Free Discharge)↑ **1=Culvert** (Barrel Controls 5.23 cfs @ 4.26 fps)

Pond P2: OUT

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 10 YR Rainfall=5.12", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 51

Summary for Pond P3: DP2

Inflow Area = 1.394 ac, 7.57% Impervious, Inflow Depth > 4.53" for 10 YR event
 Inflow = 5.72 cfs @ 12.09 hrs, Volume= 0.526 af
 Outflow = 3.93 cfs @ 12.18 hrs, Volume= 0.518 af, Atten= 31%, Lag= 5.8 min
 Primary = 3.93 cfs @ 12.18 hrs, Volume= 0.518 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 157.25' @ 12.18 hrs Surf.Area= 2,957 sf Storage= 3,190 cf

Plug-Flow detention time= 26.9 min calculated for 0.518 af (98% of inflow)
 Center-of-Mass det. time= 19.6 min (757.4 - 737.9)

Volume	Invert	Avail.Storage	Storage Description
#1	156.00'	5,589 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
156.00	2,145	0	0
158.00	3,444	5,589	5,589

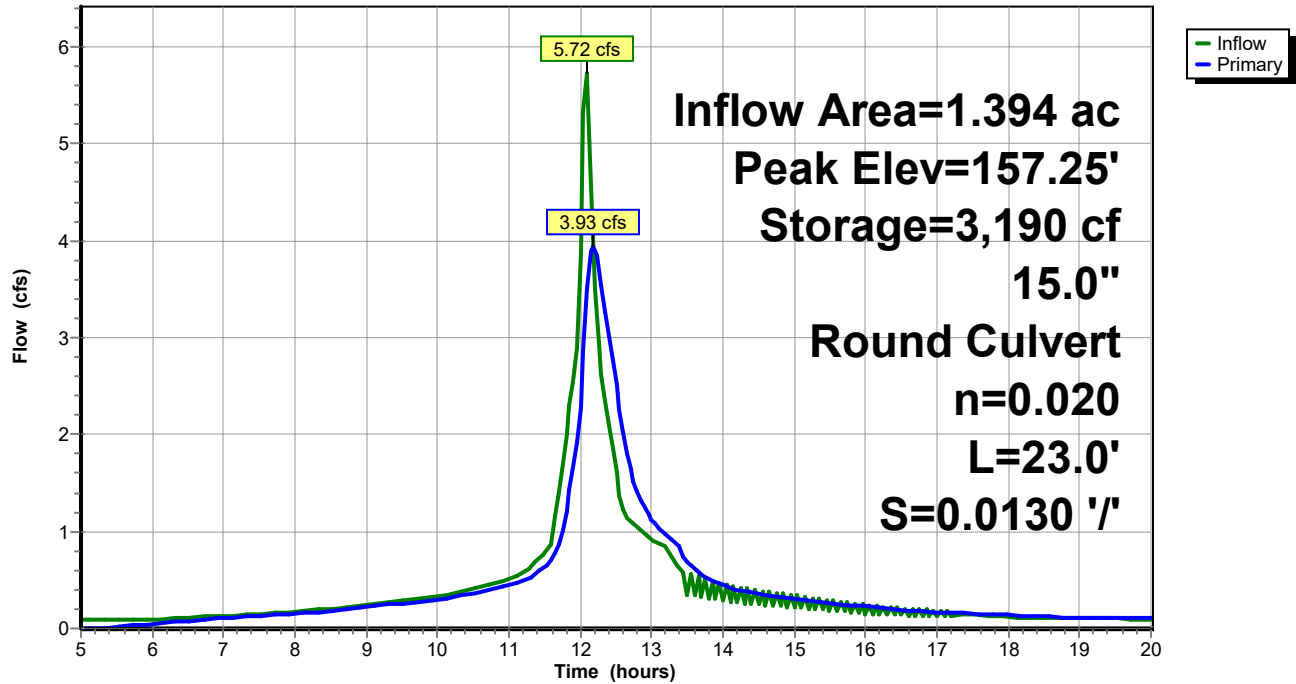
Device	Routing	Invert	Outlet Devices
#1	Primary	156.00'	15.0" Round Culvert L= 23.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 156.00' / 155.70' S= 0.0130 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.91 cfs @ 12.18 hrs HW=157.25' (Free Discharge)

↑ **1=Culvert** (Barrel Controls 3.91 cfs @ 3.98 fps)

Pond P3: DP2

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 10 YR Rainfall=5.12", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 53

Summary for Pond P4: DP3

Inflow Area = 2.489 ac, 11.83% Impervious, Inflow Depth > 4.52" for 10 YR event
 Inflow = 7.50 cfs @ 12.07 hrs, Volume= 0.939 af
 Outflow = 4.52 cfs @ 12.49 hrs, Volume= 0.923 af, Atten= 40%, Lag= 25.3 min
 Primary = 4.52 cfs @ 12.49 hrs, Volume= 0.923 af
 Routed to nonexistent node SUM

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 149.93' @ 12.49 hrs Surf.Area= 4,782 sf Storage= 7,763 cf

Plug-Flow detention time= 33.0 min calculated for 0.923 af (98% of inflow)
 Center-of-Mass det. time= 25.5 min (767.7 - 742.3)

Volume	Invert	Avail.Storage	Storage Description
#1	148.00'	19,740 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
148.00	3,278	0	0
149.00	4,059	3,669	3,669
150.00	4,840	4,450	8,118
152.00	6,782	11,622	19,740

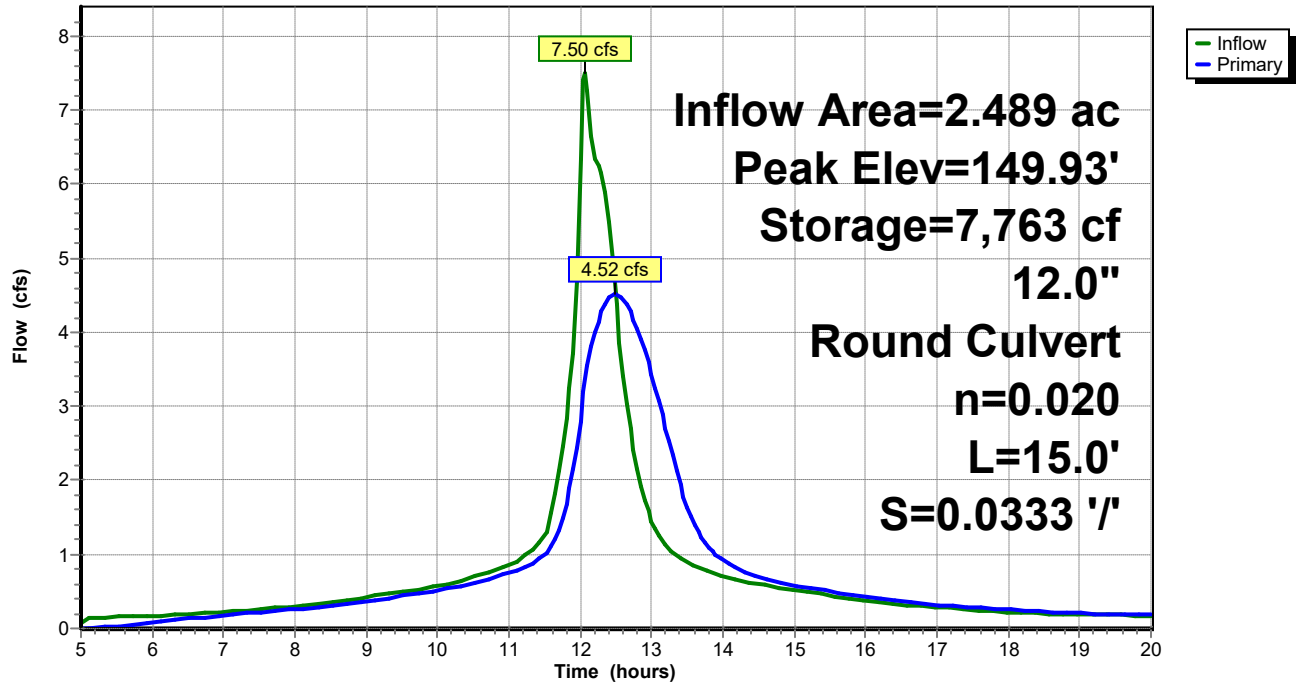
Device	Routing	Invert	Outlet Devices
#1	Primary	148.00'	12.0" Round Culvert L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 148.00' / 147.50' S= 0.0333 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf

Primary OutFlow Max=4.51 cfs @ 12.49 hrs HW=149.92' (Free Discharge)

↑ **1=Culvert** (Inlet Controls 4.51 cfs @ 5.75 fps)

Pond P4: DP3

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 25 YR Rainfall=6.30", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 55

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment AREA 1: DP 1 Runoff Area=62,113 sf 16.18% Impervious Runoff Depth>5.60"
Flow Length=606' Tc=5.3 min AMC Adjusted CN=98 Runoff=8.72 cfs 0.666 af

Subcatchment AREA 2: DP8 Runoff Area=21,681 sf 0.00% Impervious Runoff Depth>5.60"
Flow Length=80' Slope=0.1250 '/' Tc=10.6 min AMC Adjusted CN=98 Runoff=2.62 cfs 0.232 af

Subcatchment AREA 3.1: DP2 Runoff Area=47,034 sf 9.78% Impervious Runoff Depth>5.60"
Flow Length=267' Tc=6.0 min AMC Adjusted CN=98 Runoff=6.51 cfs 0.504 af

Subcatchment AREA 3.2: DP2 Runoff Area=13,705 sf 0.00% Impervious Runoff Depth>5.60"
Flow Length=114' Slope=0.0900 '/' Tc=13.0 min AMC Adjusted CN=98 Runoff=1.55 cfs 0.147 af

Subcatchment AREA 3.3.1: DP3 Runoff Area=13,068 sf 33.33% Impervious Runoff Depth>5.60"
Flow Length=400' Slope=0.0590 '/' Tc=5.8 min AMC Adjusted CN=98 Runoff=1.82 cfs 0.140 af

Subcatchment AREA 3.3.2: DP2 Runoff Area=13,068 sf 33.33% Impervious Runoff Depth>5.60"
Flow Length=400' Slope=0.0590 '/' Tc=5.8 min AMC Adjusted CN=98 Runoff=1.82 cfs 0.140 af

Subcatchment AREA 4: DP3 Runoff Area=56,725 sf 0.00% Impervious Runoff Depth>5.60"
Flow Length=300' Tc=25.8 min AMC Adjusted CN=98 Runoff=4.92 cfs 0.608 af

Subcatchment AREA 4.1.1: DP3 Runoff Area=5,741 sf 35.83% Impervious Runoff Depth>5.60"
Flow Length=195' Tc=1.5 min AMC Adjusted CN=98 Runoff=0.89 cfs 0.062 af

Subcatchment AREA 4.1.2: DP3 Runoff Area=5,741 sf 35.83% Impervious Runoff Depth>5.60"
Flow Length=195' Tc=1.5 min AMC Adjusted CN=98 Runoff=0.89 cfs 0.062 af

Subcatchment AREA 4.2: DP3 Runoff Area=14,099 sf 0.00% Impervious Runoff Depth>5.60"
Flow Length=76' Slope=0.3000 '/' Tc=0.3 min AMC Adjusted CN=98 Runoff=2.28 cfs 0.151 af

Reach 6R: PIPE Avg. Flow Depth=1.00' Max Vel=8.39 fps Inflow=6.91 cfs 0.554 af
12.0" Round Pipe n=0.013 L=243.0' S=0.0263 '/' Capacity=5.78 cfs Outflow=5.86 cfs 0.554 af

Pond 1P: (new Pond) Peak Elev=155.94' Storage=6,279 cf Inflow=8.72 cfs 0.666 af
12.0" Round Culvert n=0.013 L=72.0' S=0.0278 '/' Outflow=4.01 cfs 0.652 af

Pond P1: OUT Peak Elev=163.07' Storage=1,240 cf Inflow=1.55 cfs 0.147 af
6.0" Round Culvert n=0.020 L=212.0' S=0.0024 '/' Outflow=0.53 cfs 0.147 af

Pond P2: OUT Peak Elev=157.01' Storage=0 cf Inflow=4.50 cfs 0.353 af
15.0" Round Culvert n=0.020 L=60.0' S=0.0100 '/' Outflow=4.50 cfs 0.353 af

Pond P3: DP2 Peak Elev=157.44' Storage=3,771 cf Inflow=6.97 cfs 0.651 af
15.0" Round Culvert n=0.020 L=23.0' S=0.0130 '/' Outflow=4.67 cfs 0.642 af

Pond P4: DP3 Peak Elev=150.40' Storage=10,117 cf Inflow=9.28 cfs 1.161 af
12.0" Round Culvert n=0.020 L=15.0' S=0.0333 '/' Outflow=5.21 cfs 1.144 af

NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 25 YR Rainfall=6.30", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 56

Total Runoff Area = 5.808 ac Runoff Volume = 2.711 af Average Runoff Depth = 5.60"
89.14% Pervious = 5.177 ac 10.86% Impervious = 0.631 ac

NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 25 YR Rainfall=6.30", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 57

Summary for Subcatchment AREA 1: DP 1

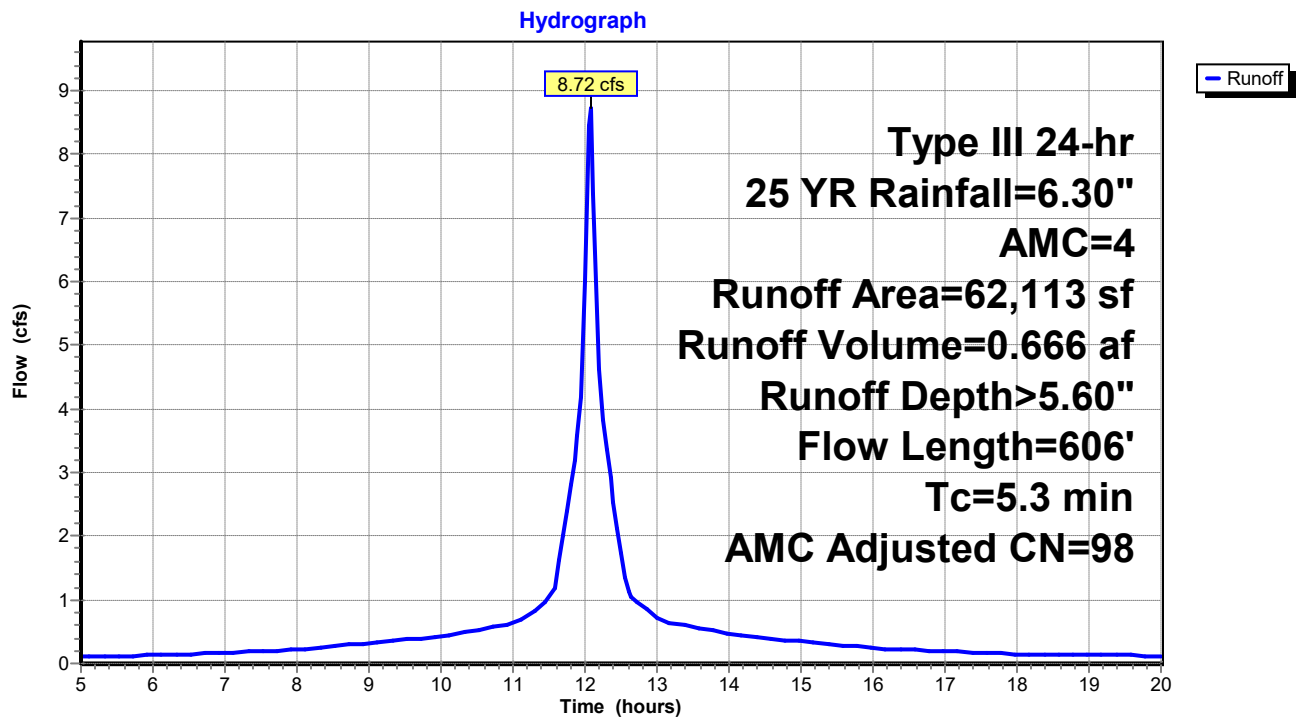
Runoff = 8.72 cfs @ 12.08 hrs, Volume= 0.666 af, Depth> 5.60"
 Routed to Pond 1P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25 YR Rainfall=6.30", AMC=4

Area (sf)	CN	Adj	Description
38,919	60		Woods, Fair, HSG B
13,142	73		Woods, Fair, HSG C
* 4,872	98		PAVED
* 5,180	98		PAVED
62,113	69	98	Weighted Average, AMC Adjusted
52,061			83.82% Pervious Area
10,052			16.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0200	0.89		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.23"
1.2	12	0.0500	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
1.6	250	0.0590	2.55	4.58	Channel Flow, Area= 1.8 sf Perim= 5.3' r= 0.34' n= 0.069 Riprap, 6-inch
1.6	143	0.0200	1.48	2.67	Channel Flow, Area= 1.8 sf Perim= 5.3' r= 0.34' n= 0.069 Riprap, 6-inch
0.7	190	0.0450	4.38	7.89	Channel Flow, Area= 1.8 sf Perim= 5.3' r= 0.34' n= 0.035 Earth, dense weeds
5.3	606	Total			

Subcatchment AREA 1: DP 1



NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 25 YR Rainfall=6.30", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 59

Summary for Subcatchment AREA 2: DP8

Runoff = 2.62 cfs @ 12.14 hrs, Volume= 0.232 af, Depth> 5.60"

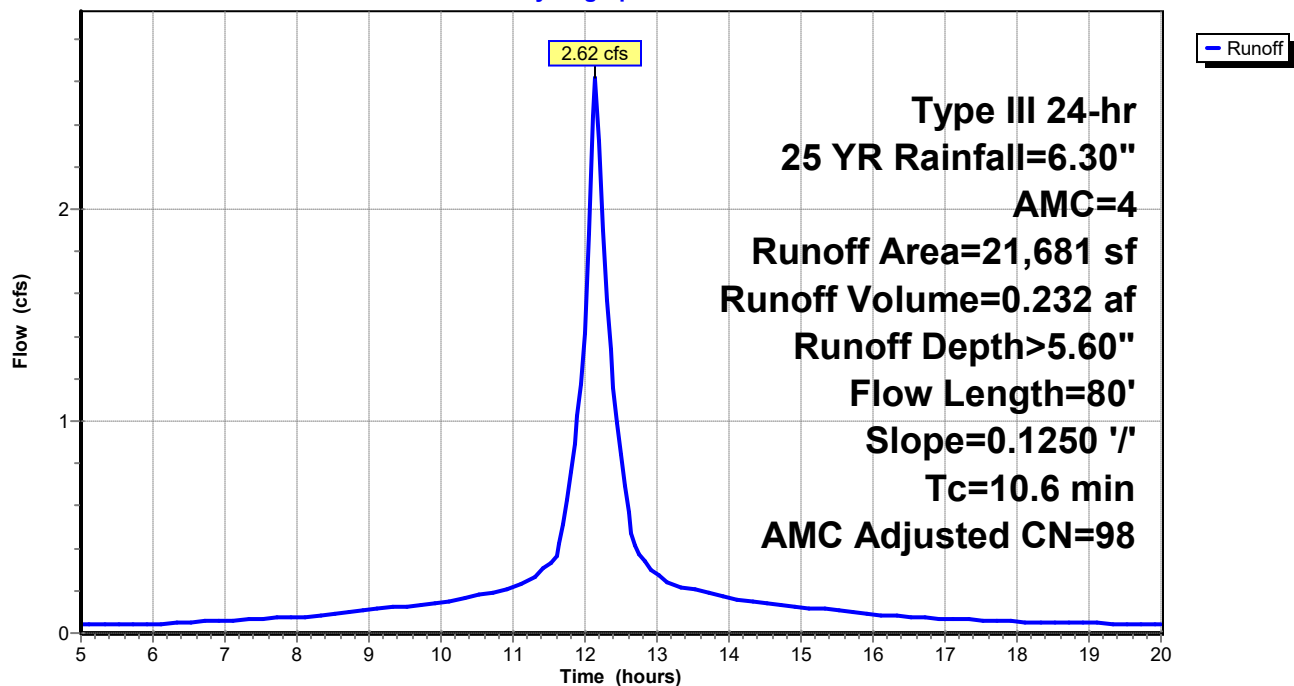
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.30", AMC=4

Area (sf)	CN	Adj	Description
21,681	73		Woods, Fair, HSG C
21,681	73	98	Weighted Average, AMC Adjusted
21,681			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	50	0.1250	0.08		Sheet Flow,
					Woods: Dense underbrush n= 0.800 P2= 3.23"
0.3	30	0.1250	1.77		Shallow Concentrated Flow,
					Woodland Kv= 5.0 fps
10.6	80	Total			

Subcatchment AREA 2: DP8

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 25 YR Rainfall=6.30", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 60

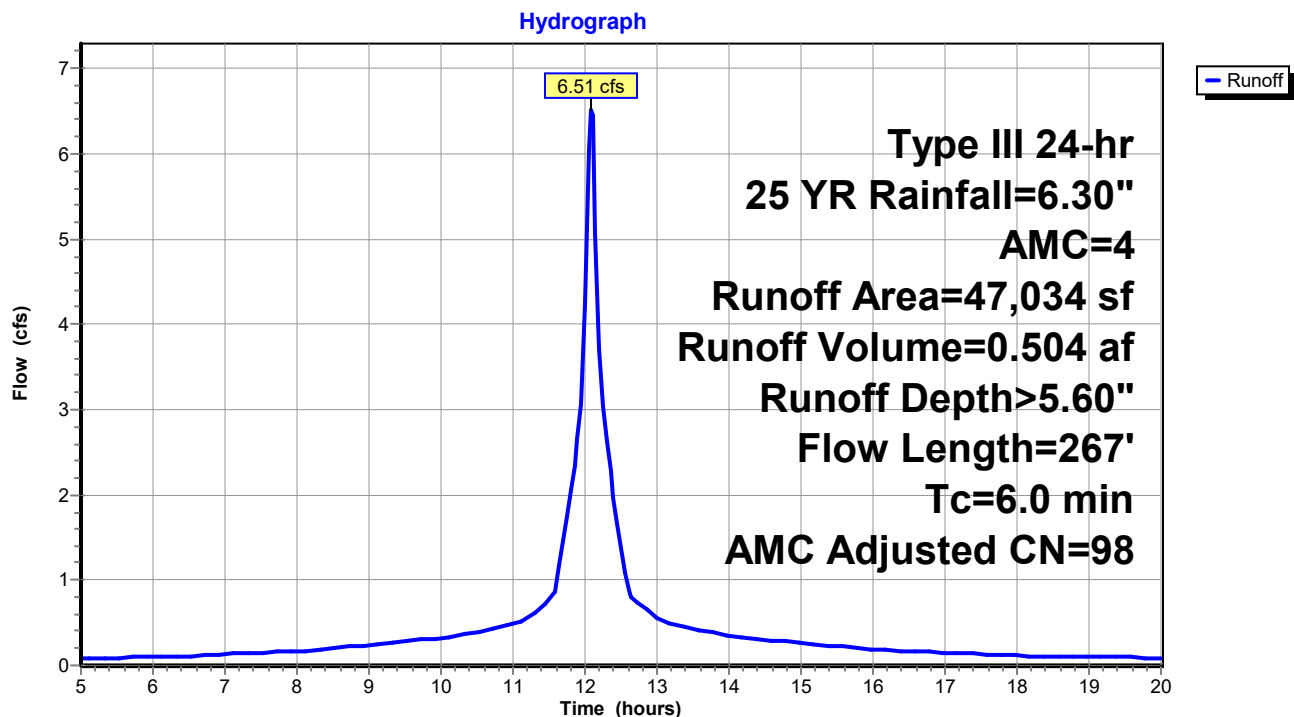
Summary for Subcatchment AREA 3.1: DP2

Runoff = 6.51 cfs @ 12.09 hrs, Volume= 0.504 af, Depth> 5.60"
Routed to Pond P3 : DP2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.30", AMC=4

	Area (sf)	CN	Adj	Description
*	4,600	98		ROOF AND DRIVE
	42,434	74		>75% Grass cover, Good, HSG C
	47,034	76	98	Weighted Average, AMC Adjusted
	42,434			90.22% Pervious Area
	4,600			9.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	100	0.1600	0.39		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
1.8	167	0.0480	1.53		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
6.0	267	Total			

Subcatchment AREA 3.1: DP2

NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 25 YR Rainfall=6.30", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 61

Summary for Subcatchment AREA 3.2: DP2

Runoff = 1.55 cfs @ 12.17 hrs, Volume= 0.147 af, Depth> 5.60"
Routed to Pond P1 : OUT

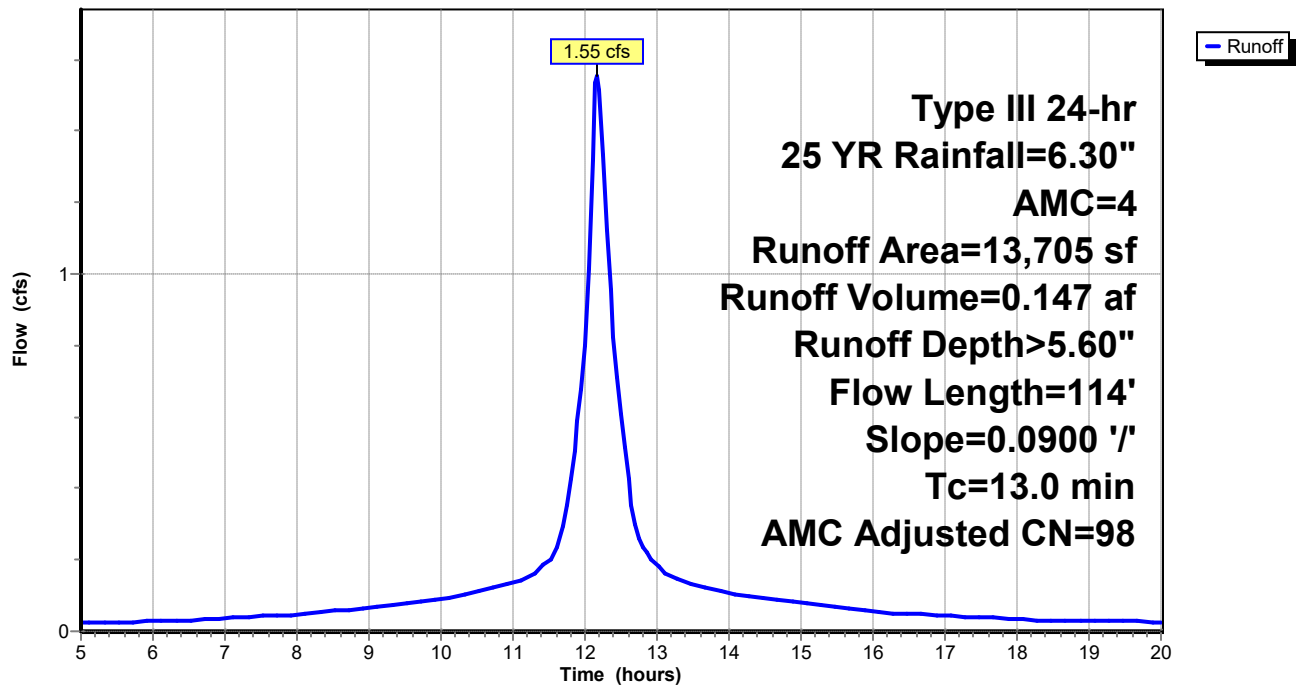
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.30", AMC=4

Area (sf)	CN	Adj	Description
2,000	74		>75% Grass cover, Good, HSG C
11,705	73		Woods, Fair, HSG C
13,705	73	98	Weighted Average, AMC Adjusted
13,705			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	114	0.0900	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.23"

Subcatchment AREA 3.2: DP2

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 25 YR Rainfall=6.30", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 62

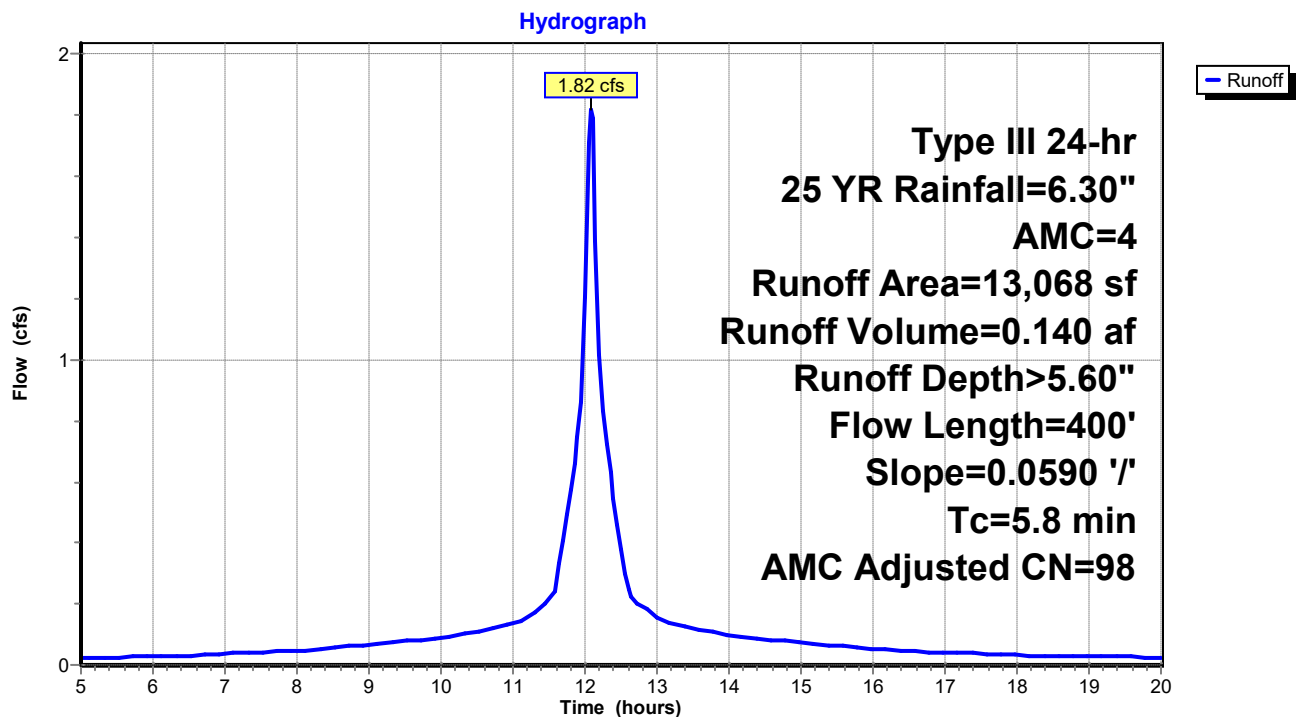
Summary for Subcatchment AREA 3.3.1: DP3

Runoff = 1.82 cfs @ 12.08 hrs, Volume= 0.140 af, Depth> 5.60"
Routed to Pond P2 : OUT

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.30", AMC=4

Area (sf)	CN	Adj	Description
* 4,356	98		PAVED STREET
8,712	74		>75% Grass cover, Good, HSG C
13,068	82	98	Weighted Average, AMC Adjusted
8,712			66.67% Pervious Area
4,356			33.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0590	0.23		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
2.2	350	0.0590	2.69	4.58	Channel Flow, Area= 1.7 sf Perim= 4.6' r= 0.37' n= 0.069 Riprap, 6-inch
5.8	400	Total			

Subcatchment AREA 3.3.1: DP3

NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 25 YR Rainfall=6.30", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 63

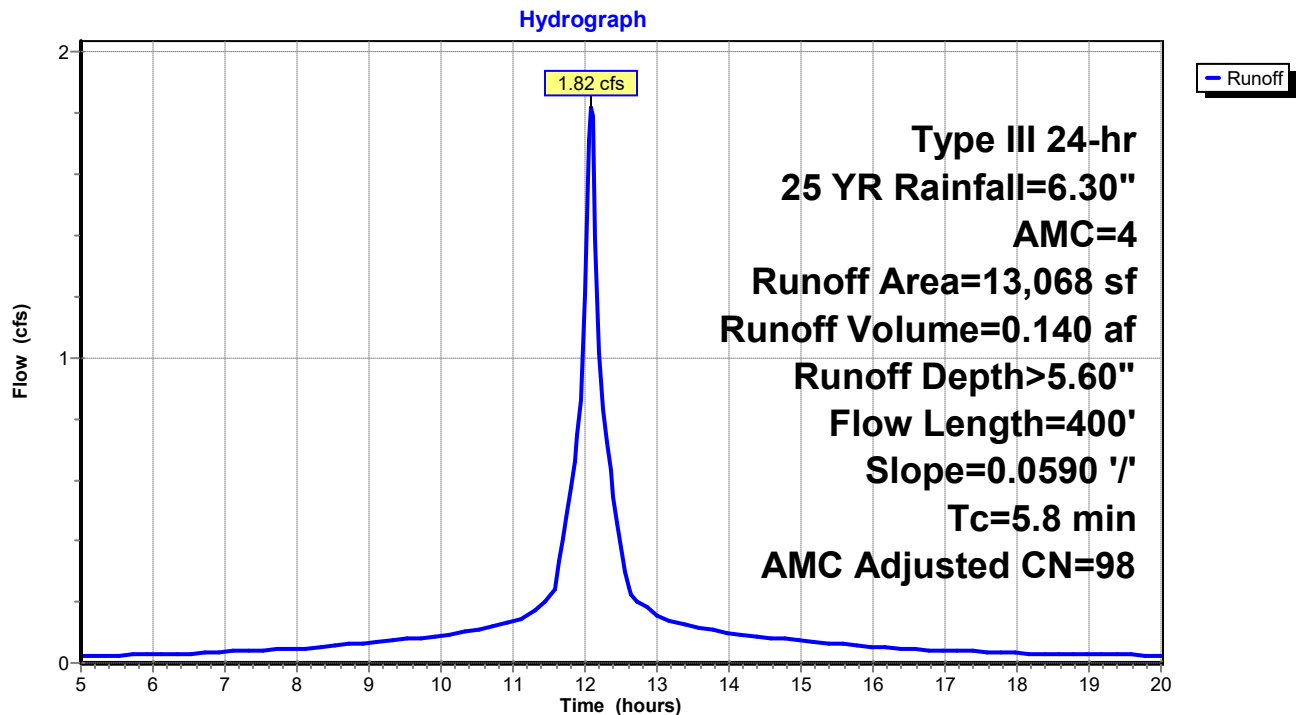
Summary for Subcatchment AREA3.3.2: DP2

Runoff = 1.82 cfs @ 12.08 hrs, Volume= 0.140 af, Depth> 5.60"
Routed to Reach 6R : PIPE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.30", AMC=4

Area (sf)	CN	Adj	Description
* 4,356	98		PAVED STREET
8,712	74		>75% Grass cover, Good, HSG C
13,068	82	98	Weighted Average, AMC Adjusted
8,712			66.67% Pervious Area
4,356			33.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0590	0.23		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
2.2	350	0.0590	2.69	4.58	Channel Flow, Area= 1.7 sf Perim= 4.6' r= 0.37' n= 0.069 Riprap, 6-inch
5.8	400	Total			

Subcatchment AREA3.3.2: DP2

NEWTON ROAD PROPOSED 1-3 AND 8

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 25 YR Rainfall=6.30", AMC=4

Printed 2/26/2024

Page 64

Summary for Subcatchment AREA4: DP3

Runoff = 4.92 cfs @ 12.34 hrs, Volume= 0.608 af, Depth> 5.60"
Routed to Pond P4 : DP3

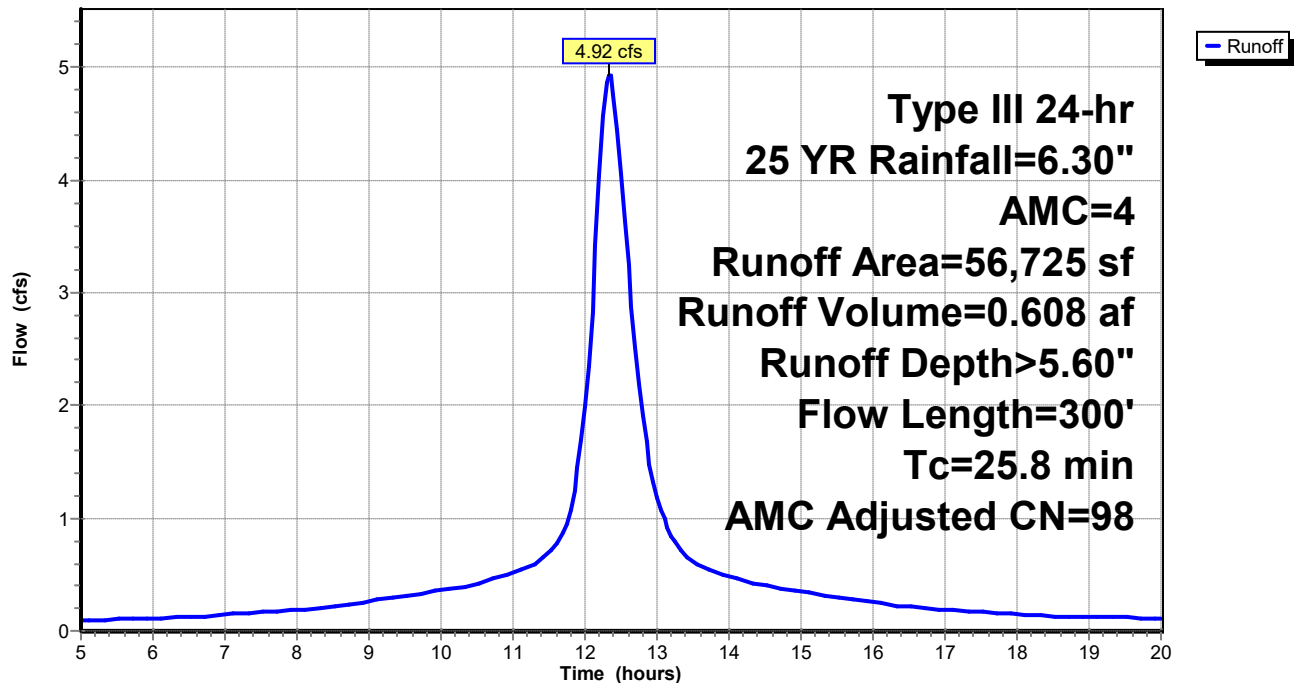
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.30", AMC=4

Area (sf)	CN	Adj	Description
29,511	36		Woods, Fair, HSG A
27,214	73		Woods, Fair, HSG C
56,725	54	98	Weighted Average, AMC Adjusted
56,725			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.5	100	0.1000	0.09		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
6.3	200	0.0450	0.53		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
25.8	300	Total			

Subcatchment AREA4: DP3

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 25 YR Rainfall=6.30", AMC=4

Printed 2/26/2024

Page 65

Summary for Subcatchment AREA4.1.1: DP3

Runoff = 0.89 cfs @ 12.02 hrs, Volume= 0.062 af, Depth> 5.60"
Routed to Pond P2 : OUT

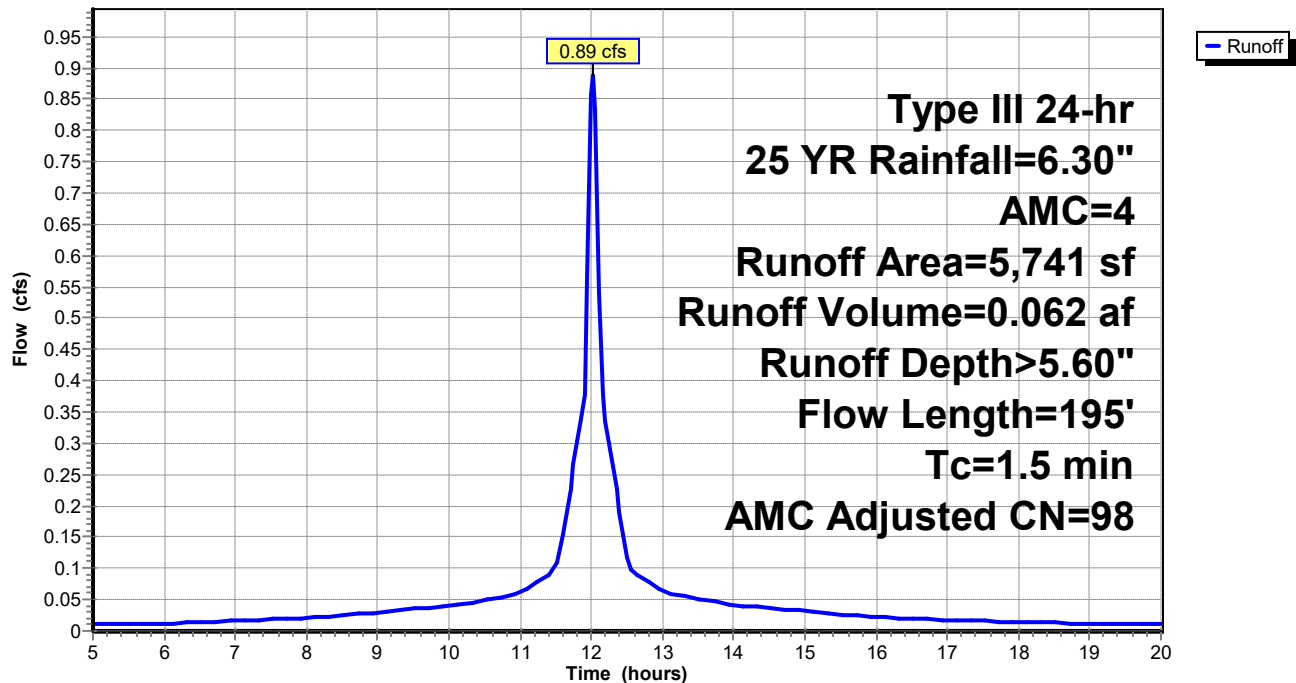
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.30", AMC=4

	Area (sf)	CN	Adj	Description
*	2,057	98		PAVE
	3,684	74		>75% Grass cover, Good, HSG C
	5,741	83	98	Weighted Average, AMC Adjusted
	3,684			64.17% Pervious Area
	2,057			35.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0200	0.89		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.23"
1.3	184	0.0464	2.39	4.06	Channel Flow, Area= 1.7 sf Perim= 4.6' r= 0.37' n= 0.069 Riprap, 6-inch
1.5	195	Total			

Subcatchment AREA4.1.1: DP3

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 25 YR Rainfall=6.30", AMC=4

Printed 2/26/2024

Page 66

Summary for Subcatchment AREA4.1.2: DP3

Runoff = 0.89 cfs @ 12.02 hrs, Volume= 0.062 af, Depth> 5.60"
Routed to Reach 6R : PIPE

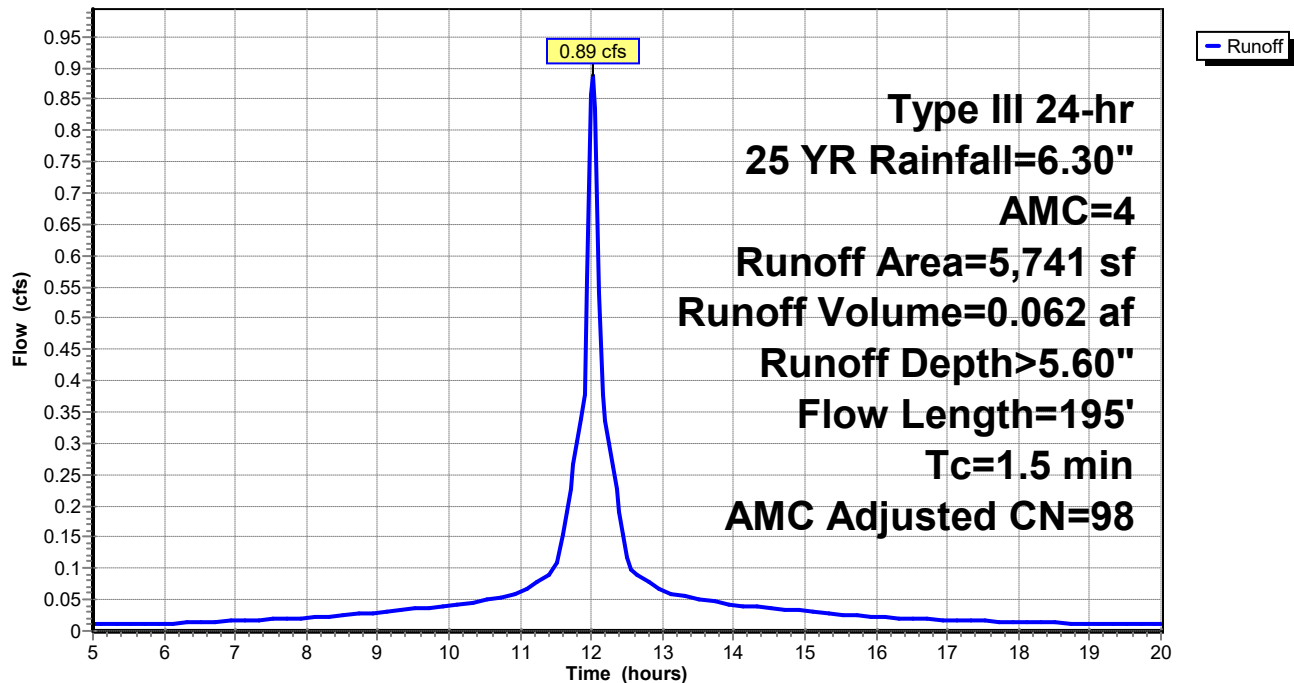
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.30", AMC=4

	Area (sf)	CN	Adj	Description
*	2,057	98		PAVE
	3,684	74		>75% Grass cover, Good, HSG C
	5,741	83	98	Weighted Average, AMC Adjusted
	3,684			64.17% Pervious Area
	2,057			35.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0200	0.89		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.23"
1.3	184	0.0464	2.39	4.06	Channel Flow, Area= 1.7 sf Perim= 4.6' r= 0.37' n= 0.069 Riprap, 6-inch
1.5	195	Total			

Subcatchment AREA4.1.2: DP3

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 25 YR Rainfall=6.30", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 67

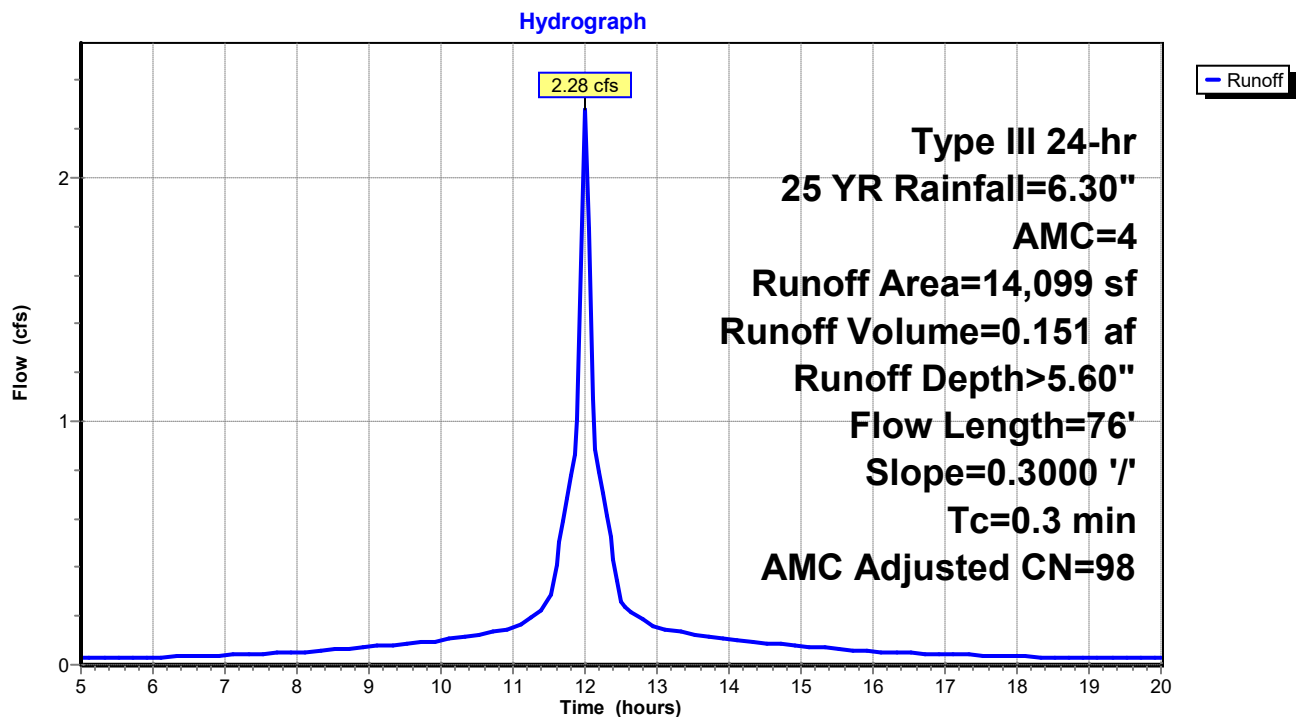
Summary for Subcatchment AREA4.2: DP3

Runoff = 2.28 cfs @ 12.00 hrs, Volume= 0.151 af, Depth> 5.60"
Routed to Pond P2 : OUT

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.30", AMC=4

Area (sf)	CN	Adj	Description
14,099	74		>75% Grass cover, Good, HSG C
14,099	74	98	Weighted Average, AMC Adjusted
14,099			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	76	0.3000	3.83		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps

Subcatchment AREA4.2: DP3

NEWTON ROAD PROPOSED 1-3 AND 8

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 25 YR Rainfall=6.30", AMC=4

Printed 2/26/2024

Page 68

Summary for Reach 6R: PIPE

Inflow Area = 1.187 ac, 24.80% Impervious, Inflow Depth > 5.60" for 25 YR event
Inflow = 6.91 cfs @ 12.04 hrs, Volume= 0.554 af
Outflow = 5.86 cfs @ 12.15 hrs, Volume= 0.554 af, Atten= 15%, Lag= 6.6 min
Routed to Pond P4 : DP3

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 8.39 fps, Min. Travel Time= 0.5 min

Avg. Velocity= 3.81 fps, Avg. Travel Time= 1.1 min

Peak Storage= 193 cf @ 12.08 hrs

Average Depth at Peak Storage= 1.00'

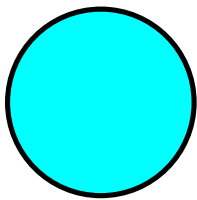
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.78 cfs

12.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

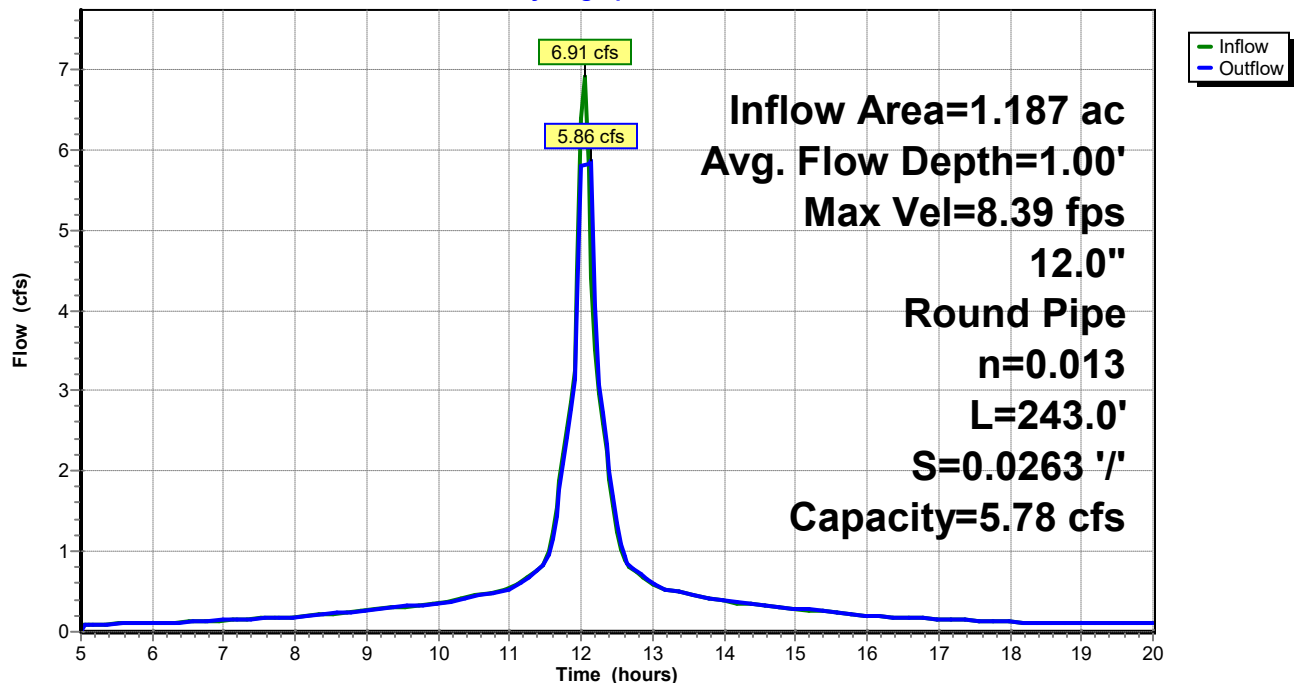
Length= 243.0' Slope= 0.0263 '/'

Inlet Invert= 154.40', Outlet Invert= 148.00'



Reach 6R: PIPE

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 25 YR Rainfall=6.30", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 69

Summary for Pond 1P: (new Pond)

Inflow Area = 1.426 ac, 16.18% Impervious, Inflow Depth > 5.60" for 25 YR event
 Inflow = 8.72 cfs @ 12.08 hrs, Volume= 0.666 af
 Outflow = 4.01 cfs @ 12.24 hrs, Volume= 0.652 af, Atten= 54%, Lag= 10.1 min
 Primary = 4.01 cfs @ 12.24 hrs, Volume= 0.652 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 155.94' @ 12.24 hrs Surf.Area= 3,853 sf Storage= 6,279 cf

Plug-Flow detention time= 36.2 min calculated for 0.652 af (98% of inflow)
 Center-of-Mass det. time= 27.0 min (760.4 - 733.4)

Volume	Invert	Avail.Storage	Storage Description
#1	154.00'	15,785 cf	Custom Stage Data (Prismatic) Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
154.00	2,572	0	0
156.00	3,890	6,462	6,462
158.00	5,433	9,323	15,785

Device	Routing	Invert	Outlet Devices
#1	Primary	154.00'	12.0" Round Culvert L= 72.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 154.00' / 152.00' S= 0.0278 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=4.01 cfs @ 12.24 hrs HW=155.94' (Free Discharge)

↑ **1=Culvert** (Inlet Controls 4.01 cfs @ 5.10 fps)

NEWTON ROAD PROPOSED 1-3 AND 8

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

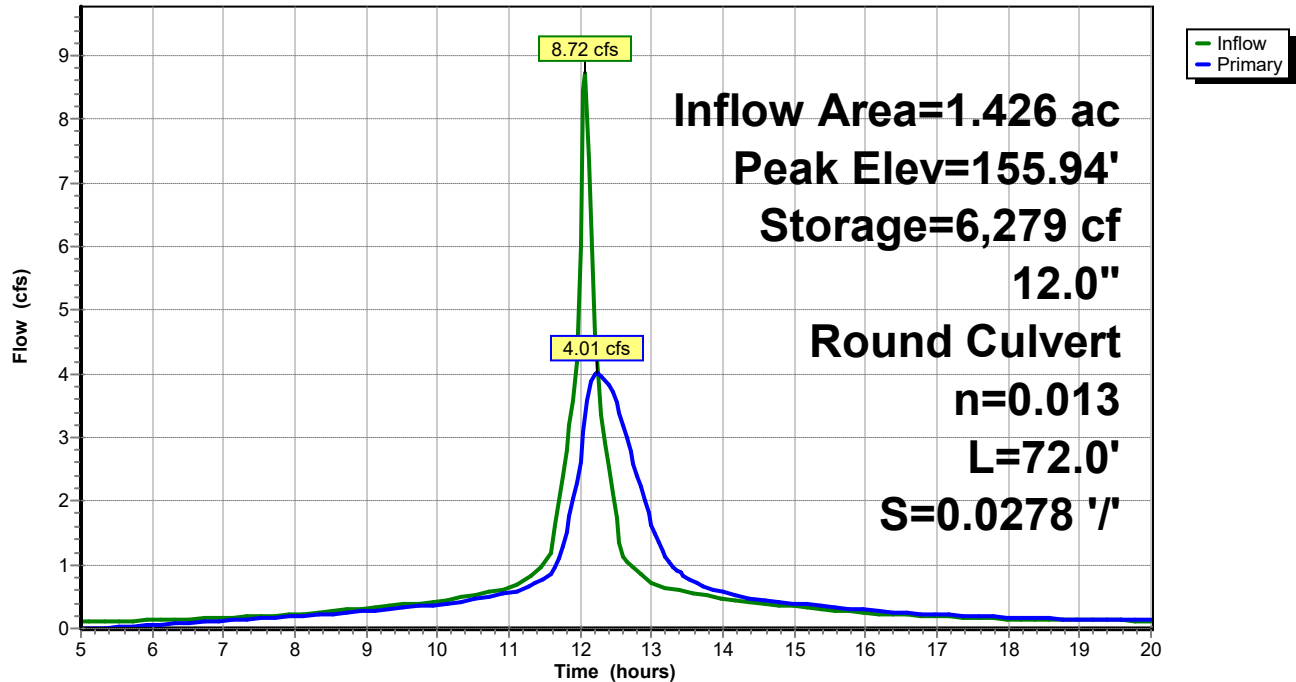
Type III 24-hr 25 YR Rainfall=6.30", AMC=4

Printed 2/26/2024

Page 70

Pond 1P: (new Pond)

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 25 YR Rainfall=6.30", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 71

Summary for Pond P1: OUT

Inflow Area = 0.315 ac, 0.00% Impervious, Inflow Depth > 5.60" for 25 YR event
 Inflow = 1.55 cfs @ 12.17 hrs, Volume= 0.147 af
 Outflow = 0.53 cfs @ 12.55 hrs, Volume= 0.147 af, Atten= 66%, Lag= 22.4 min
 Primary = 0.53 cfs @ 12.55 hrs, Volume= 0.147 af
 Routed to Pond P3 : DP2

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 163.07' @ 12.55 hrs Surf.Area= 1,042 sf Storage= 1,240 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 11.9 min (751.0 - 739.1)

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	2,358 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

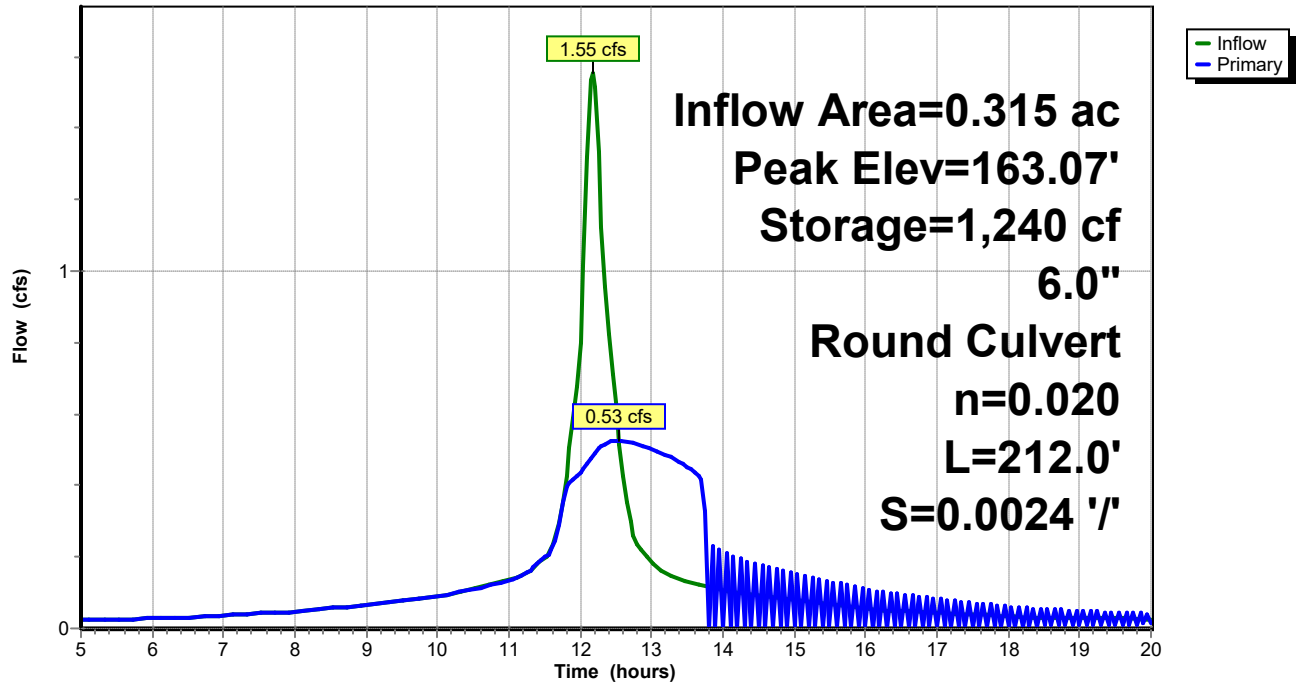
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	0	0	0
162.00	656	328	328
164.00	1,374	2,030	2,358

Device	Routing	Invert	Outlet Devices
#1	Primary	158.50'	6.0" Round Culvert L= 212.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 158.50' / 158.00' S= 0.0024 ' S= 0.0024 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.53 cfs @ 12.55 hrs HW=163.07' (Free Discharge)
 ↑ **1=Culvert** (Barrel Controls 0.53 cfs @ 2.67 fps)

Pond P1: OUT

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 25 YR Rainfall=6.30", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 73

Summary for Pond P2: OUT

Inflow Area = 0.755 ac, 19.49% Impervious, Inflow Depth > 5.60" for 25 YR event
 Inflow = 4.50 cfs @ 12.02 hrs, Volume= 0.353 af
 Outflow = 4.50 cfs @ 12.02 hrs, Volume= 0.353 af, Atten= 0%, Lag= 0.0 min
 Primary = 4.50 cfs @ 12.02 hrs, Volume= 0.353 af
 Routed to Reach 6R : PIPE

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 157.01' @ 12.02 hrs Surf.Area= 7 sf Storage= 0 cf

Plug-Flow detention time= 0.0 min calculated for 0.352 af (100% of inflow)
 Center-of-Mass det. time= 0.0 min (731.5 - 731.5)

Volume	Invert	Avail.Storage	Storage Description
#1	157.00'	348 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

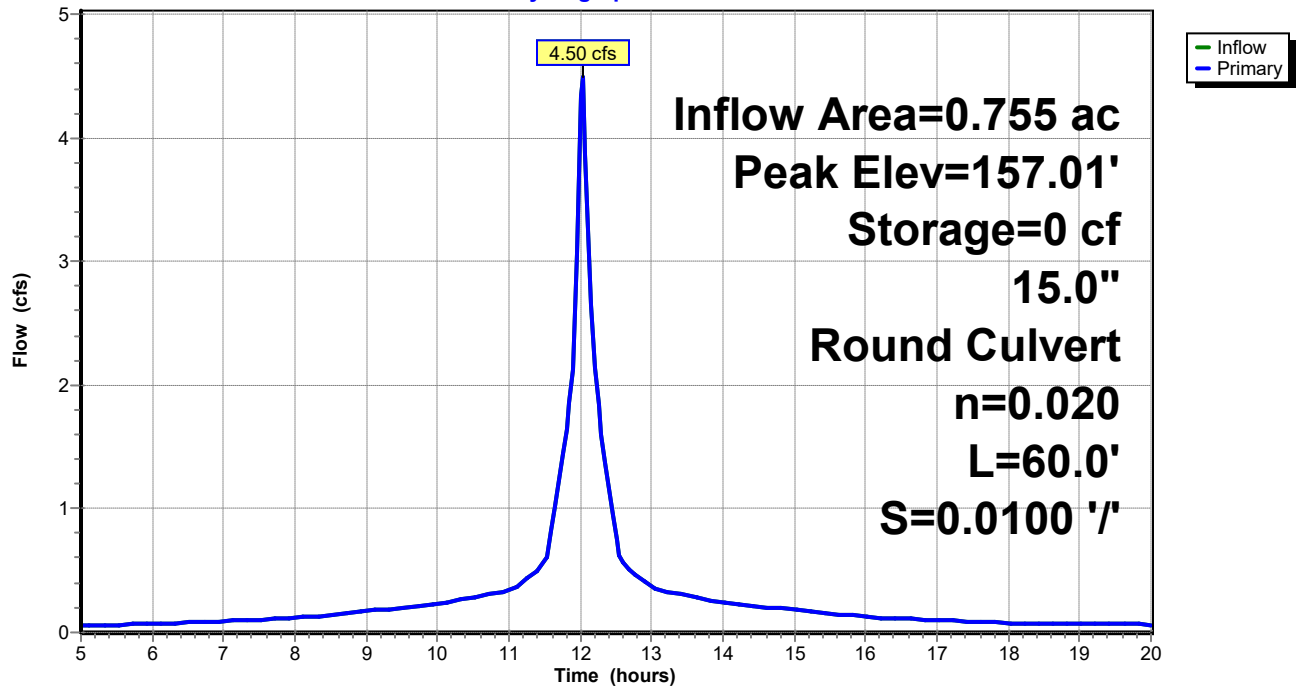
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
157.00	4	0	0
157.50	174	45	45
158.00	1,040	304	348

Device	Routing	Invert	Outlet Devices
#1	Primary	155.00'	15.0" Round Culvert L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 155.00' / 154.40' S= 0.0100 ' S= 0.0100 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.23 sf

Primary OutFlow Max=5.23 cfs @ 12.02 hrs HW=157.01' (Free Discharge)
 ↑ **1=Culvert** (Barrel Controls 5.23 cfs @ 4.26 fps)

Pond P2: OUT

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 25 YR Rainfall=6.30", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 75

Summary for Pond P3: DP2

Inflow Area = 1.394 ac, 7.57% Impervious, Inflow Depth > 5.60" for 25 YR event
 Inflow = 6.97 cfs @ 12.09 hrs, Volume= 0.651 af
 Outflow = 4.67 cfs @ 12.19 hrs, Volume= 0.642 af, Atten= 33%, Lag= 6.0 min
 Primary = 4.67 cfs @ 12.19 hrs, Volume= 0.642 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 157.44' @ 12.19 hrs Surf.Area= 3,082 sf Storage= 3,771 cf

Plug-Flow detention time= 24.7 min calculated for 0.639 af (98% of inflow)
 Center-of-Mass det. time= 18.2 min (756.0 - 737.8)

Volume	Invert	Avail.Storage	Storage Description
#1	156.00'	5,589 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
156.00	2,145	0	0
158.00	3,444	5,589	5,589

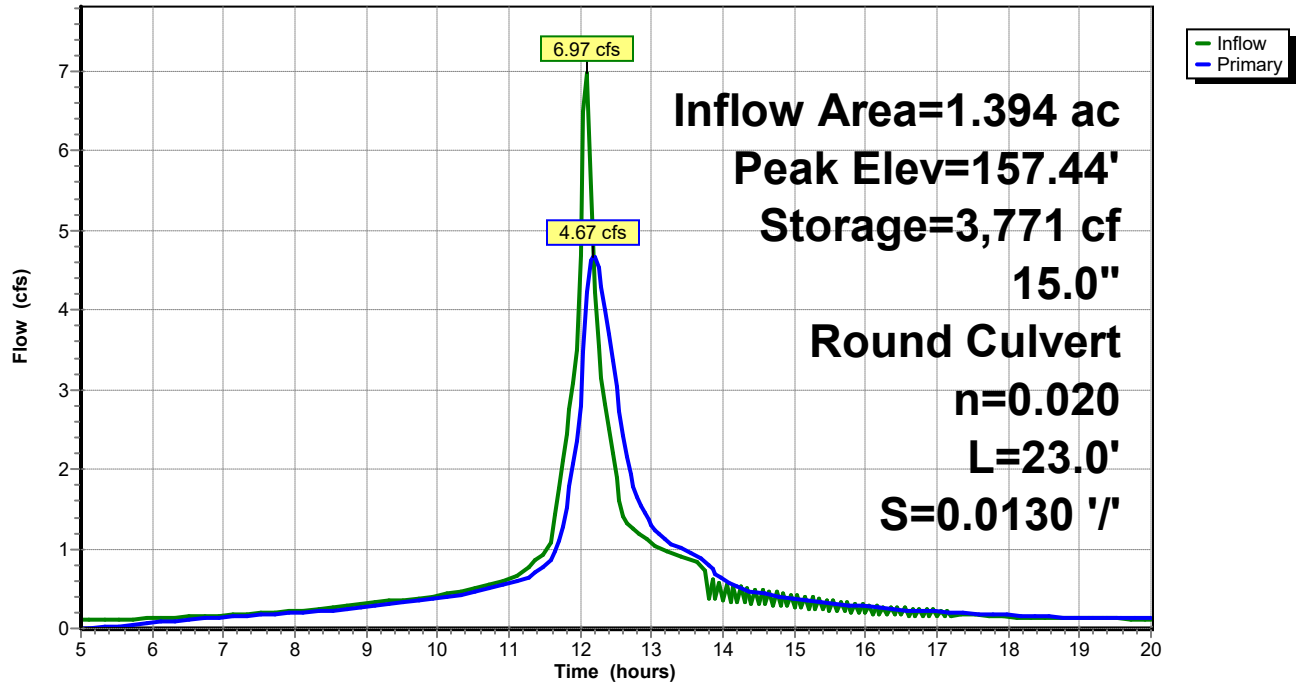
Device	Routing	Invert	Outlet Devices
#1	Primary	156.00'	15.0" Round Culvert L= 23.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 156.00' / 155.70' S= 0.0130 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.65 cfs @ 12.19 hrs HW=157.44' (Free Discharge)

↑ **1=Culvert** (Barrel Controls 4.65 cfs @ 4.13 fps)

Pond P3: DP2

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 25 YR Rainfall=6.30", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 77

Summary for Pond P4: DP3

Inflow Area = 2.489 ac, 11.83% Impervious, Inflow Depth > 5.60" for 25 YR event
 Inflow = 9.28 cfs @ 12.14 hrs, Volume= 1.161 af
 Outflow = 5.21 cfs @ 12.52 hrs, Volume= 1.144 af, Atten= 44%, Lag= 22.3 min
 Primary = 5.21 cfs @ 12.52 hrs, Volume= 1.144 af
 Routed to nonexistent node SUM

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 150.40' @ 12.52 hrs Surf.Area= 5,226 sf Storage= 10,117 cf

Plug-Flow detention time= 32.4 min calculated for 1.140 af (98% of inflow)
 Center-of-Mass det. time= 25.6 min (766.8 - 741.2)

Volume	Invert	Avail.Storage	Storage Description
#1	148.00'	19,740 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
148.00	3,278	0	0
149.00	4,059	3,669	3,669
150.00	4,840	4,450	8,118
152.00	6,782	11,622	19,740

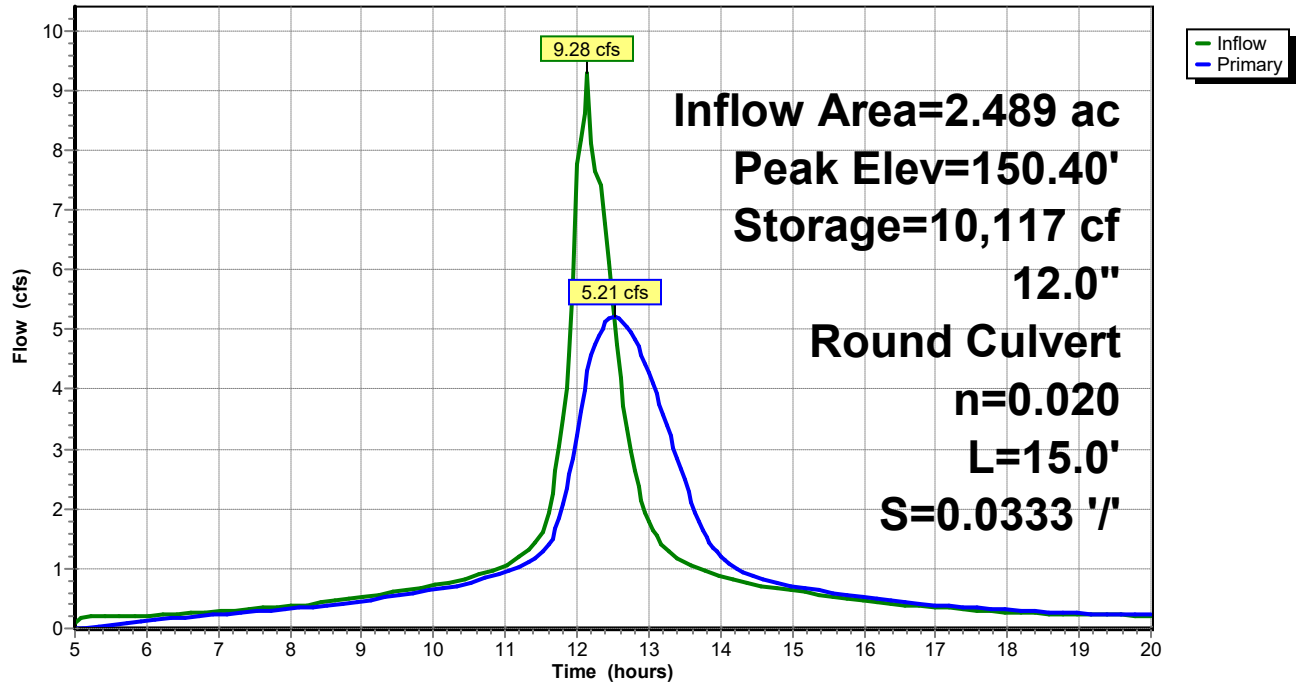
Device	Routing	Invert	Outlet Devices
#1	Primary	148.00'	12.0" Round Culvert L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 148.00' / 147.50' S= 0.0333 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf

Primary OutFlow Max=5.21 cfs @ 12.52 hrs HW=150.39' (Free Discharge)

↑ **1=Culvert** (Inlet Controls 5.21 cfs @ 6.63 fps)

Pond P4: DP3

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 100 YR Rainfall=8.14", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 79

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment AREA 1: DP 1 Runoff Area=62,113 sf 16.18% Impervious Runoff Depth>7.27"
Flow Length=606' Tc=5.3 min AMC Adjusted CN=98 Runoff=11.29 cfs 0.864 af

Subcatchment AREA 2: DP8 Runoff Area=21,681 sf 0.00% Impervious Runoff Depth>7.27"
Flow Length=80' Slope=0.1250 '/' Tc=10.6 min AMC Adjusted CN=98 Runoff=3.39 cfs 0.302 af

Subcatchment AREA 3.1: DP2 Runoff Area=47,034 sf 9.78% Impervious Runoff Depth>7.27"
Flow Length=267' Tc=6.0 min AMC Adjusted CN=98 Runoff=8.43 cfs 0.654 af

Subcatchment AREA 3.2: DP2 Runoff Area=13,705 sf 0.00% Impervious Runoff Depth>7.27"
Flow Length=114' Slope=0.0900 '/' Tc=13.0 min AMC Adjusted CN=98 Runoff=2.01 cfs 0.191 af

Subcatchment AREA 3.3.1: DP3 Runoff Area=13,068 sf 33.33% Impervious Runoff Depth>7.27"
Flow Length=400' Slope=0.0590 '/' Tc=5.8 min AMC Adjusted CN=98 Runoff=2.35 cfs 0.182 af

Subcatchment AREA 3.3.2: DP2 Runoff Area=13,068 sf 33.33% Impervious Runoff Depth>7.27"
Flow Length=400' Slope=0.0590 '/' Tc=5.8 min AMC Adjusted CN=98 Runoff=2.35 cfs 0.182 af

Subcatchment AREA 4: DP3 Runoff Area=56,725 sf 0.00% Impervious Runoff Depth>7.27"
Flow Length=300' Tc=25.8 min AMC Adjusted CN=98 Runoff=6.37 cfs 0.789 af

Subcatchment AREA 4.1.1: DP3 Runoff Area=5,741 sf 35.83% Impervious Runoff Depth>7.27"
Flow Length=195' Tc=1.5 min AMC Adjusted CN=98 Runoff=1.15 cfs 0.080 af

Subcatchment AREA 4.1.2: DP3 Runoff Area=5,741 sf 35.83% Impervious Runoff Depth>7.27"
Flow Length=195' Tc=1.5 min AMC Adjusted CN=98 Runoff=1.15 cfs 0.080 af

Subcatchment AREA 4.2: DP3 Runoff Area=14,099 sf 0.00% Impervious Runoff Depth>7.27"
Flow Length=76' Slope=0.3000 '/' Tc=0.3 min AMC Adjusted CN=98 Runoff=2.95 cfs 0.196 af

Reach 6R: PIPE Avg. Flow Depth=1.00' Max Vel=8.38 fps Inflow=8.95 cfs 0.720 af
12.0" Round Pipe n=0.013 L=243.0' S=0.0263 '/' Capacity=5.78 cfs Outflow=5.78 cfs 0.719 af

Pond 1P: (new Pond) Peak Elev=156.42' Storage=8,408 cf Inflow=11.29 cfs 0.864 af
12.0" Round Culvert n=0.013 L=72.0' S=0.0278 '/' Outflow=4.62 cfs 0.849 af

Pond P1: OUT Peak Elev=163.69' Storage=1,946 cf Inflow=2.01 cfs 0.191 af
6.0" Round Culvert n=0.020 L=212.0' S=0.0024 '/' Outflow=0.56 cfs 0.191 af

Pond P2: OUT Peak Elev=157.24' Storage=11 cf Inflow=5.82 cfs 0.458 af
15.0" Round Culvert n=0.020 L=60.0' S=0.0100 '/' Outflow=5.75 cfs 0.458 af

Pond P3: DP2 Peak Elev=157.78' Storage=4,859 cf Inflow=8.90 cfs 0.845 af
15.0" Round Culvert n=0.020 L=23.0' S=0.0130 '/' Outflow=5.40 cfs 0.834 af

Pond P4: DP3 Peak Elev=151.16' Storage=14,360 cf Inflow=12.09 cfs 1.508 af
12.0" Round Culvert n=0.020 L=15.0' S=0.0333 '/' Outflow=6.16 cfs 1.487 af

NEWTON ROAD PROPOSED 1-3 AND 8*Type III 24-hr 100 YR Rainfall=8.14", AMC=4*

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 80

Total Runoff Area = 5.808 ac Runoff Volume = 3.519 af Average Runoff Depth = 7.27"
89.14% Pervious = 5.177 ac 10.86% Impervious = 0.631 ac

NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 100 YR Rainfall=8.14", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 81

Summary for Subcatchment AREA 1: DP 1

Runoff = 11.29 cfs @ 12.08 hrs, Volume= 0.864 af, Depth> 7.27"
 Routed to Pond 1P : (new Pond)

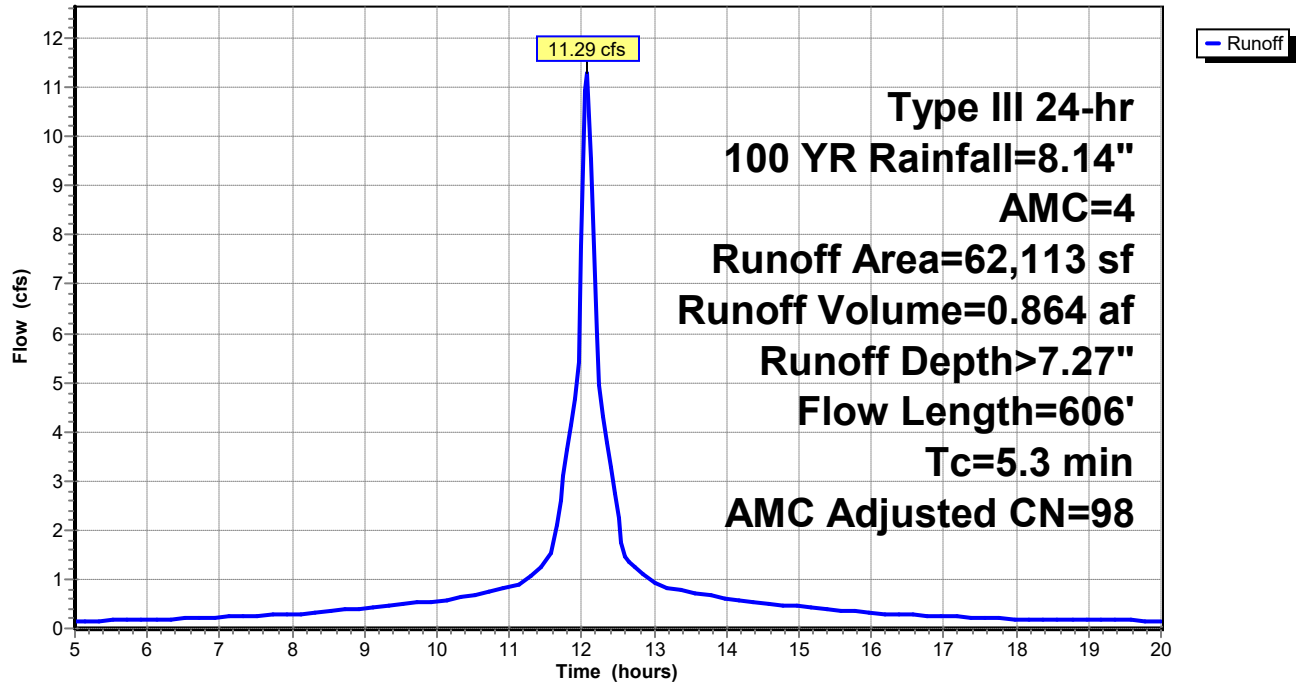
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 100 YR Rainfall=8.14", AMC=4

Area (sf)	CN	Adj	Description
38,919	60		Woods, Fair, HSG B
13,142	73		Woods, Fair, HSG C
* 4,872	98		PAVED
* 5,180	98		PAVED
62,113	69	98	Weighted Average, AMC Adjusted
52,061			83.82% Pervious Area
10,052			16.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0200	0.89		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.23"
1.2	12	0.0500	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
1.6	250	0.0590	2.55	4.58	Channel Flow, Area= 1.8 sf Perim= 5.3' r= 0.34' n= 0.069 Riprap, 6-inch
1.6	143	0.0200	1.48	2.67	Channel Flow, Area= 1.8 sf Perim= 5.3' r= 0.34' n= 0.069 Riprap, 6-inch
0.7	190	0.0450	4.38	7.89	Channel Flow, Area= 1.8 sf Perim= 5.3' r= 0.34' n= 0.035 Earth, dense weeds
5.3	606	Total			

Subcatchment AREA 1: DP 1

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 100 YR Rainfall=8.14", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 83

Summary for Subcatchment AREA 2: DP8

Runoff = 3.39 cfs @ 12.14 hrs, Volume= 0.302 af, Depth> 7.27"

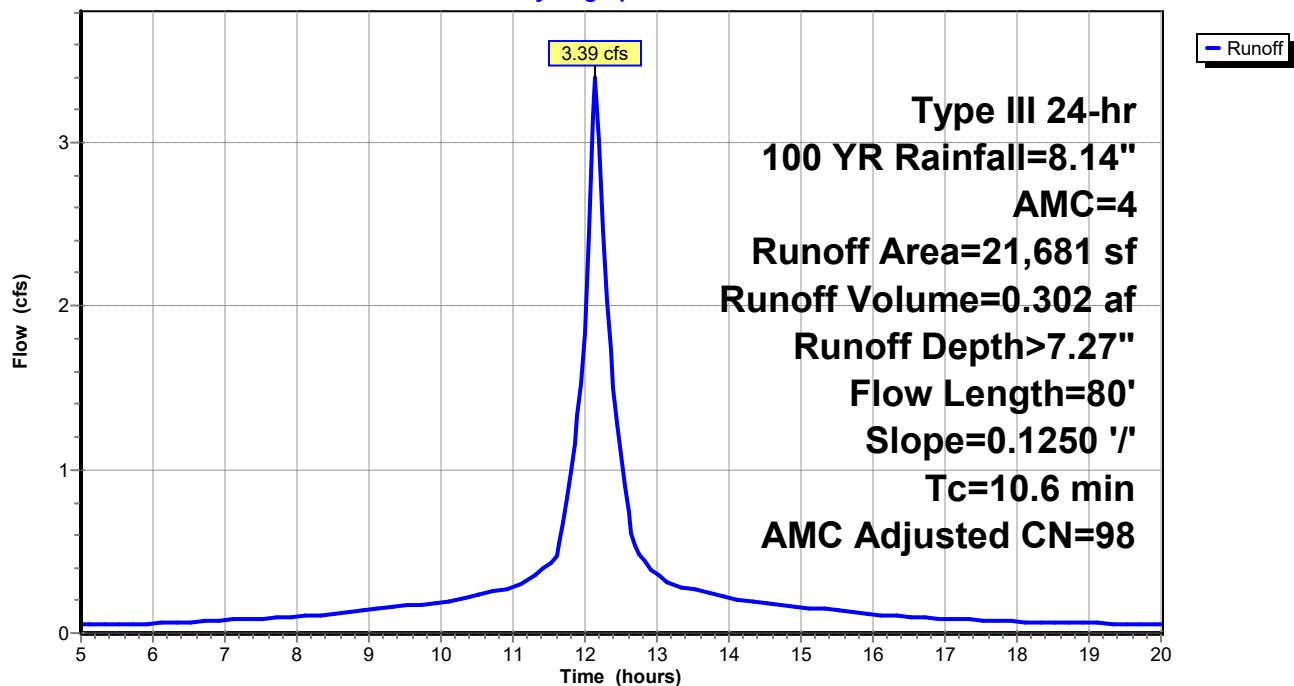
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.14", AMC=4

Area (sf)	CN	Adj	Description
21,681	73		Woods, Fair, HSG C
21,681	73	98	Weighted Average, AMC Adjusted
21,681			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	50	0.1250	0.08		Sheet Flow,
					Woods: Dense underbrush n= 0.800 P2= 3.23"
0.3	30	0.1250	1.77		Shallow Concentrated Flow,
					Woodland Kv= 5.0 fps
10.6	80	Total			

Subcatchment AREA 2: DP8

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 100 YR Rainfall=8.14", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 84

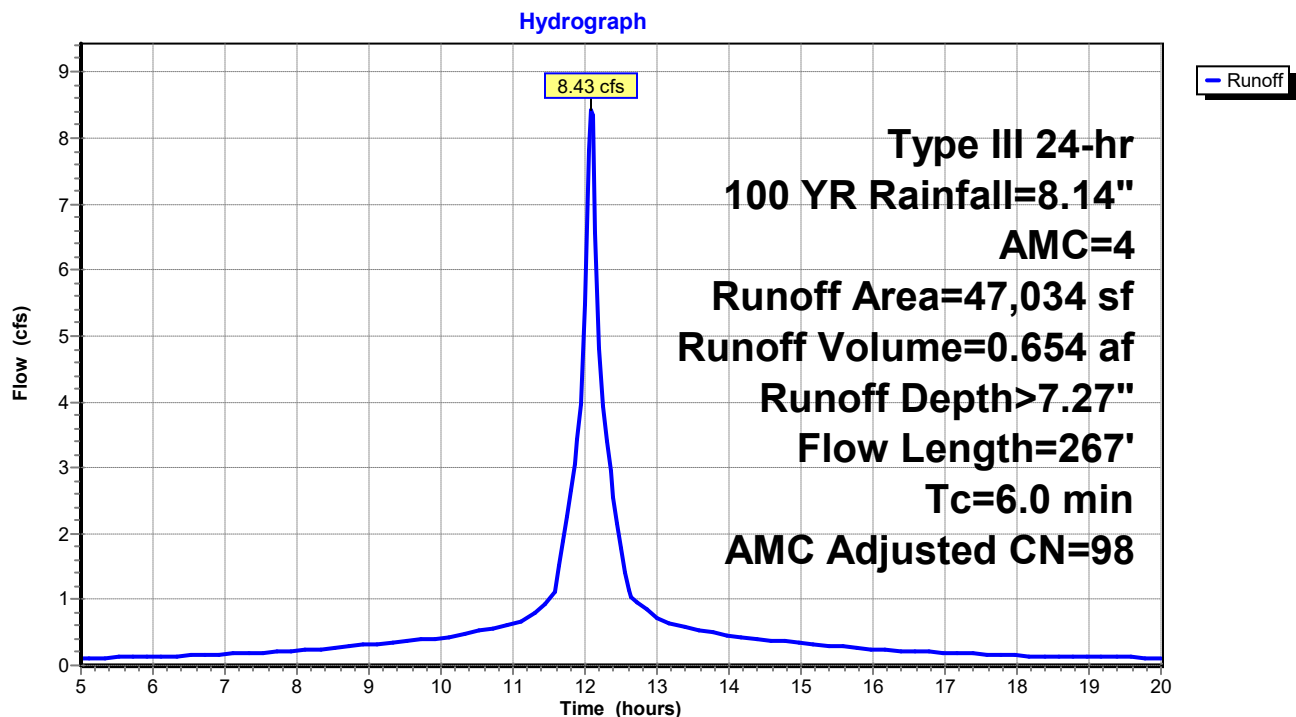
Summary for Subcatchment AREA 3.1: DP2

Runoff = 8.43 cfs @ 12.09 hrs, Volume= 0.654 af, Depth> 7.27"
Routed to Pond P3 : DP2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.14", AMC=4

Area (sf)	CN	Adj	Description
* 4,600	98		ROOF AND DRIVE
42,434	74		>75% Grass cover, Good, HSG C
47,034	76	98	Weighted Average, AMC Adjusted
42,434			90.22% Pervious Area
4,600			9.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	100	0.1600	0.39		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
1.8	167	0.0480	1.53		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
6.0	267	Total			

Subcatchment AREA 3.1: DP2

NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 100 YR Rainfall=8.14", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 85

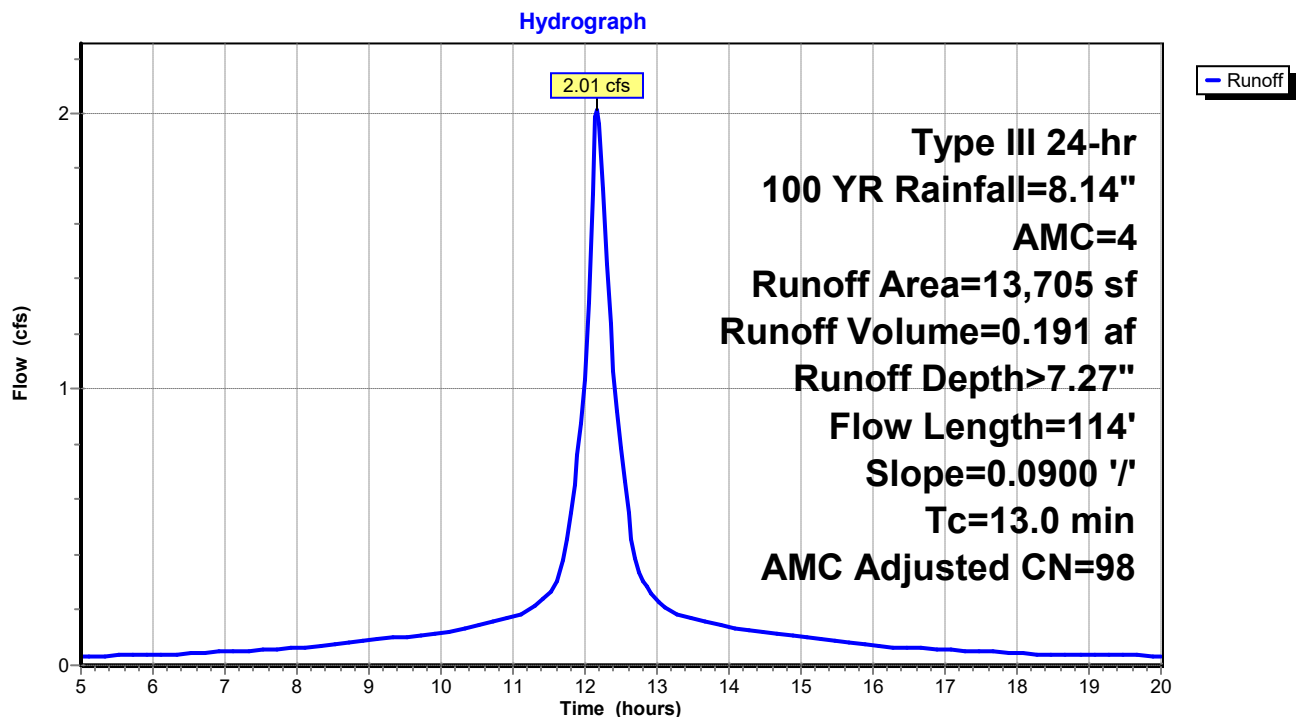
Summary for Subcatchment AREA 3.2: DP2

Runoff = 2.01 cfs @ 12.17 hrs, Volume= 0.191 af, Depth> 7.27"
Routed to Pond P1 : OUT

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.14", AMC=4

Area (sf)	CN	Adj	Description
2,000	74		>75% Grass cover, Good, HSG C
11,705	73		Woods, Fair, HSG C
13,705	73	98	Weighted Average, AMC Adjusted
13,705			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	114	0.0900	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.23"

Subcatchment AREA 3.2: DP2

NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 100 YR Rainfall=8.14", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 86

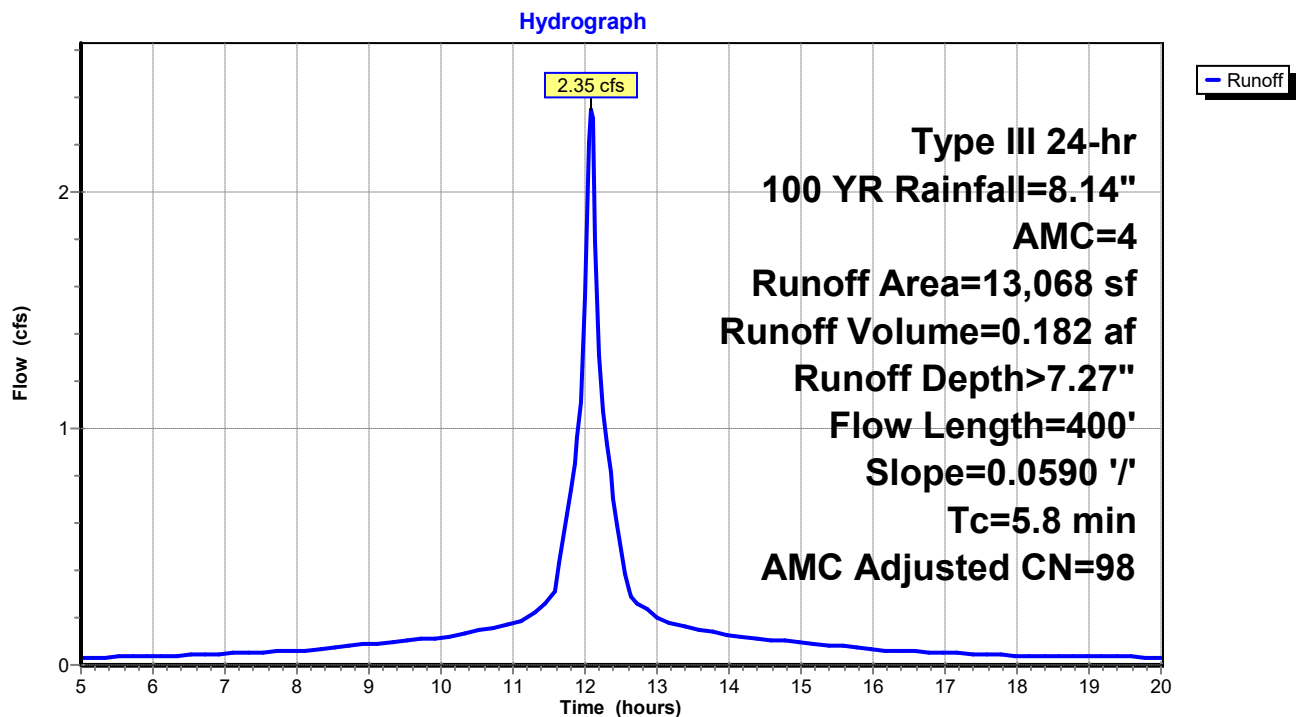
Summary for Subcatchment AREA 3.3.1: DP3

Runoff = 2.35 cfs @ 12.08 hrs, Volume= 0.182 af, Depth> 7.27"
Routed to Pond P2 : OUT

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.14", AMC=4

Area (sf)	CN	Adj	Description
* 4,356	98		PAVED STREET
8,712	74		>75% Grass cover, Good, HSG C
13,068	82	98	Weighted Average, AMC Adjusted
8,712			66.67% Pervious Area
4,356			33.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0590	0.23		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
2.2	350	0.0590	2.69	4.58	Channel Flow, Area= 1.7 sf Perim= 4.6' r= 0.37' n= 0.069 Riprap, 6-inch
5.8	400	Total			

Subcatchment AREA 3.3.1: DP3

NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 100 YR Rainfall=8.14", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 87

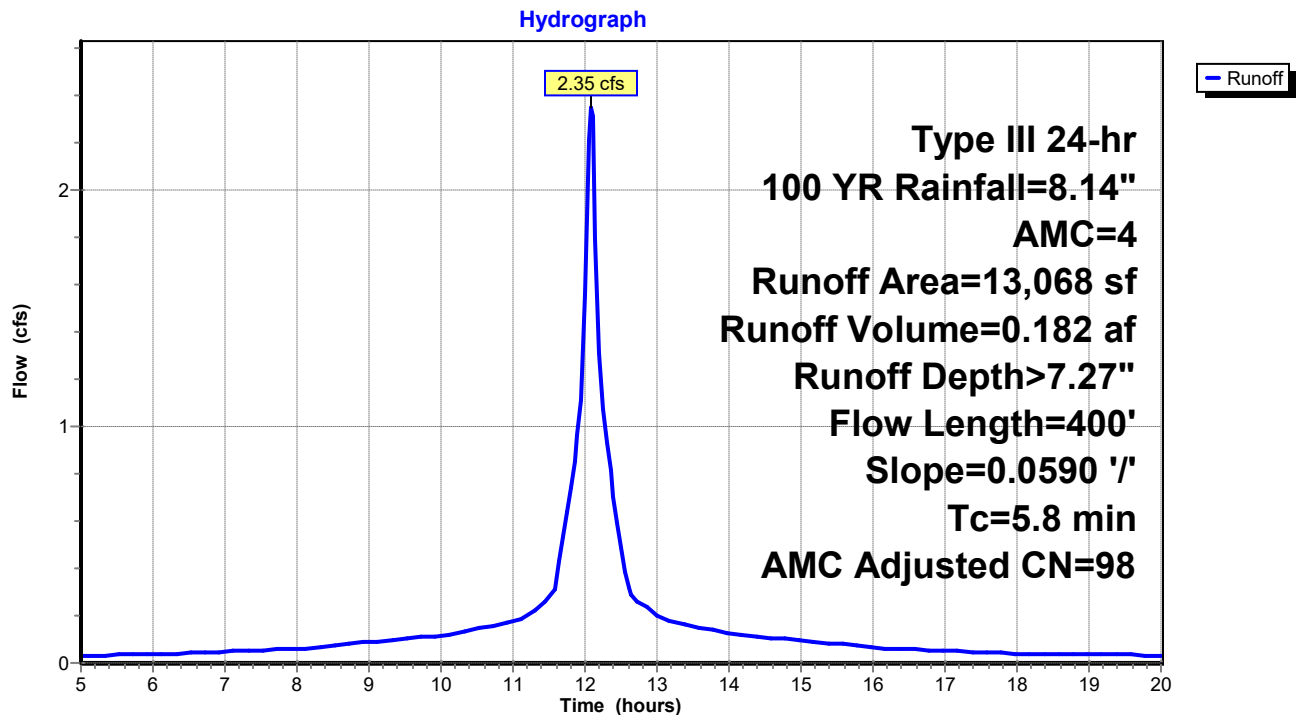
Summary for Subcatchment AREA3.3.2: DP2

Runoff = 2.35 cfs @ 12.08 hrs, Volume= 0.182 af, Depth> 7.27"
Routed to Reach 6R : PIPE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.14", AMC=4

	Area (sf)	CN	Adj	Description
*	4,356	98		PAVED STREET
	8,712	74		>75% Grass cover, Good, HSG C
	13,068	82	98	Weighted Average, AMC Adjusted
	8,712			66.67% Pervious Area
	4,356			33.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0590	0.23		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
2.2	350	0.0590	2.69	4.58	Channel Flow, Area= 1.7 sf Perim= 4.6' r= 0.37" n= 0.069 Riprap, 6-inch
5.8	400	Total			

Subcatchment AREA3.3.2: DP2

NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 100 YR Rainfall=8.14", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 88

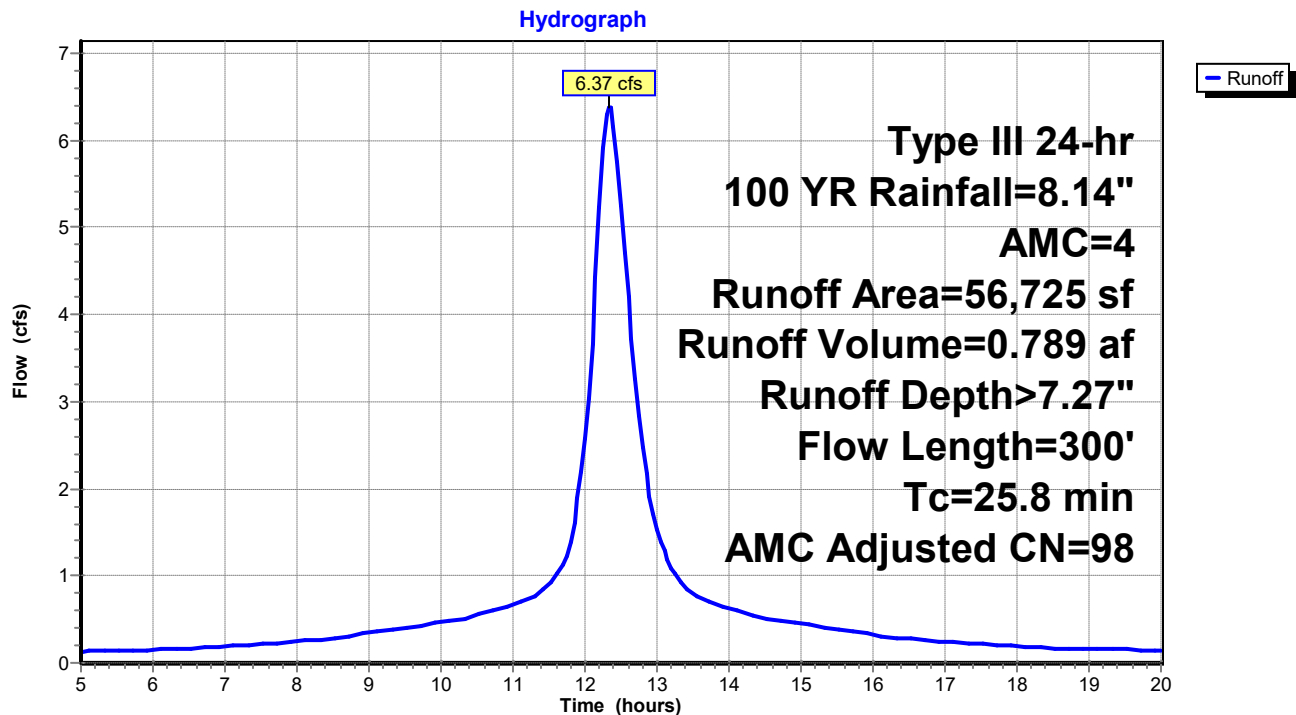
Summary for Subcatchment AREA4: DP3

Runoff = 6.37 cfs @ 12.34 hrs, Volume= 0.789 af, Depth> 7.27"
Routed to Pond P4 : DP3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.14", AMC=4

Area (sf)	CN	Adj	Description
29,511	36		Woods, Fair, HSG A
27,214	73		Woods, Fair, HSG C
56,725	54	98	Weighted Average, AMC Adjusted
56,725			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.5	100	0.1000	0.09		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
6.3	200	0.0450	0.53		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
25.8	300	Total			

Subcatchment AREA4: DP3

NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 100 YR Rainfall=8.14", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 89

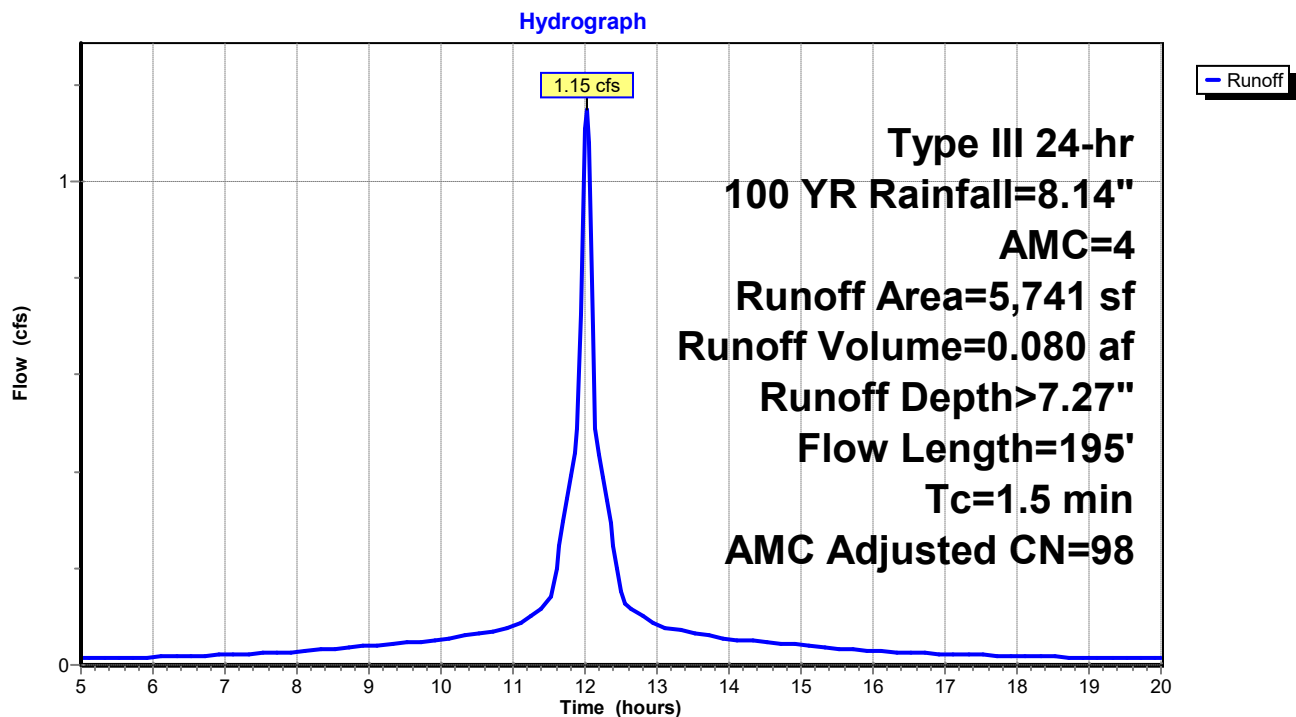
Summary for Subcatchment AREA4.1.1: DP3

Runoff = 1.15 cfs @ 12.02 hrs, Volume= 0.080 af, Depth> 7.27"
Routed to Pond P2 : OUT

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.14", AMC=4

	Area (sf)	CN	Adj	Description
*	2,057	98		PAVE
	3,684	74		>75% Grass cover, Good, HSG C
	5,741	83	98	Weighted Average, AMC Adjusted
	3,684			64.17% Pervious Area
	2,057			35.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0200	0.89		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.23"
1.3	184	0.0464	2.39	4.06	Channel Flow, Area= 1.7 sf Perim= 4.6' r= 0.37' n= 0.069 Riprap, 6-inch
1.5	195	Total			

Subcatchment AREA4.1.1: DP3

NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 100 YR Rainfall=8.14", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 90

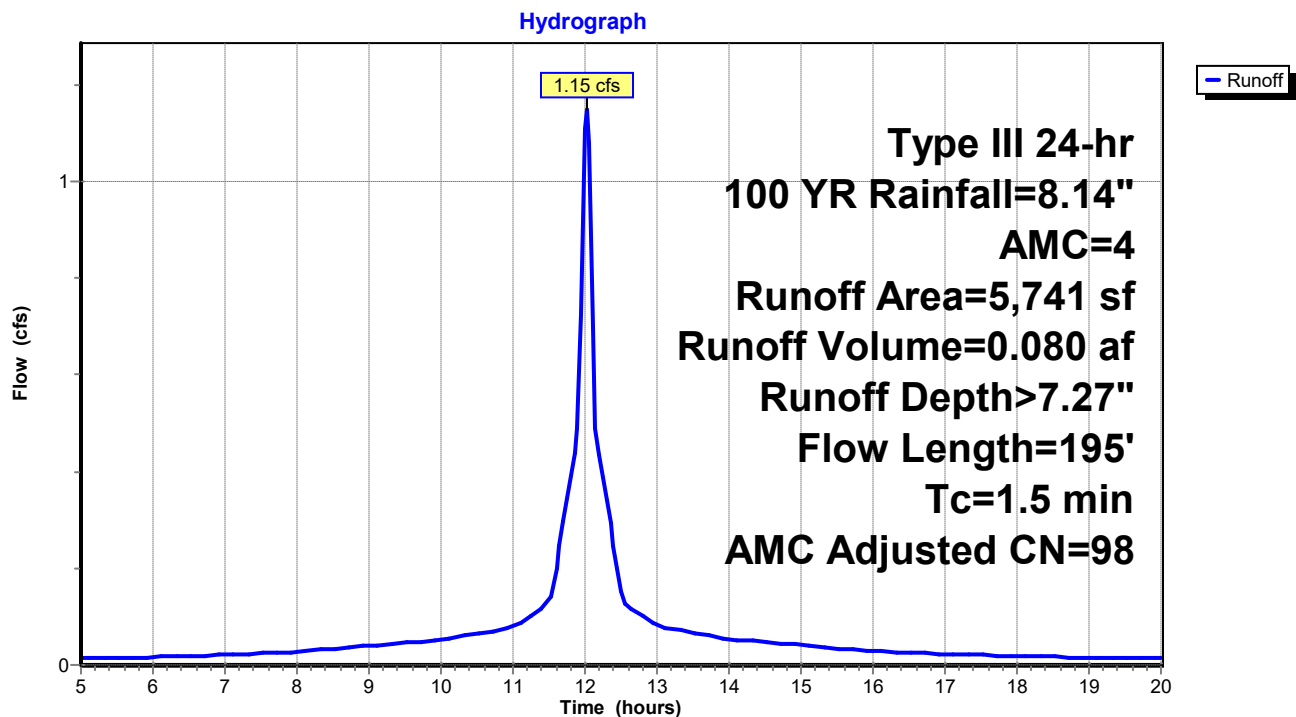
Summary for Subcatchment AREA4.1.2: DP3

Runoff = 1.15 cfs @ 12.02 hrs, Volume= 0.080 af, Depth> 7.27"
Routed to Reach 6R : PIPE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.14", AMC=4

	Area (sf)	CN	Adj	Description
*	2,057	98		PAVE
	3,684	74		>75% Grass cover, Good, HSG C
	5,741	83	98	Weighted Average, AMC Adjusted
	3,684			64.17% Pervious Area
	2,057			35.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0200	0.89		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.23"
1.3	184	0.0464	2.39	4.06	Channel Flow, Area= 1.7 sf Perim= 4.6' r= 0.37" n= 0.069 Riprap, 6-inch
1.5	195	Total			

Subcatchment AREA4.1.2: DP3

NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 100 YR Rainfall=8.14", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 91

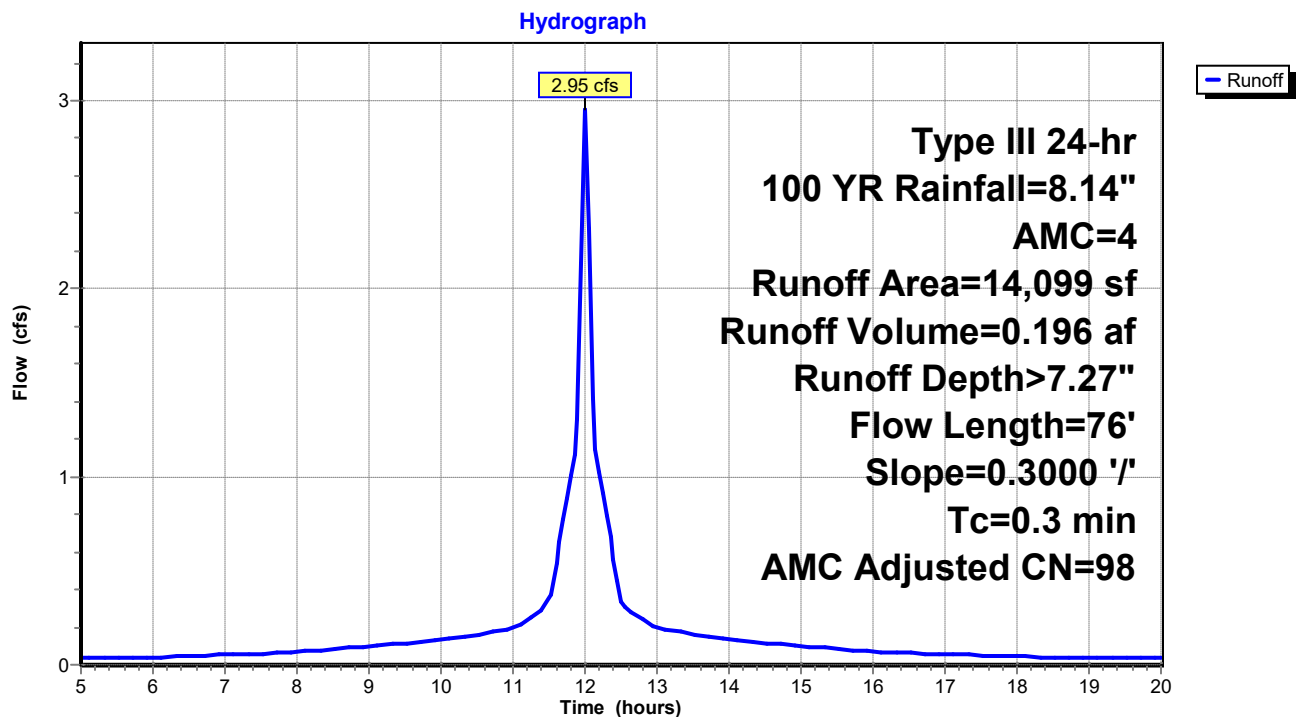
Summary for Subcatchment AREA4.2: DP3

Runoff = 2.95 cfs @ 12.00 hrs, Volume= 0.196 af, Depth> 7.27"
Routed to Pond P2 : OUT

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.14", AMC=4

Area (sf)	CN	Adj	Description
14,099	74		>75% Grass cover, Good, HSG C
14,099	74	98	Weighted Average, AMC Adjusted
14,099			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	76	0.3000	3.83		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps

Subcatchment AREA4.2: DP3

NEWTON ROAD PROPOSED 1-3 AND 8

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 100 YR Rainfall=8.14", AMC=4

Printed 2/26/2024

Page 92

Summary for Reach 6R: PIPE

Inflow Area = 1.187 ac, 24.80% Impervious, Inflow Depth > 7.27" for 100 YR event
Inflow = 8.95 cfs @ 12.04 hrs, Volume= 0.720 af
Outflow = 5.78 cfs @ 12.05 hrs, Volume= 0.719 af, Atten= 35%, Lag= 0.5 min
Routed to Pond P4 : DP3

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 8.38 fps, Min. Travel Time= 0.5 min

Avg. Velocity= 4.10 fps, Avg. Travel Time= 1.0 min

Peak Storage= 191 cf @ 12.00 hrs

Average Depth at Peak Storage= 1.00'

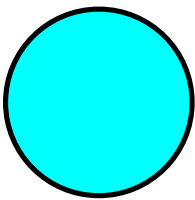
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.78 cfs

12.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

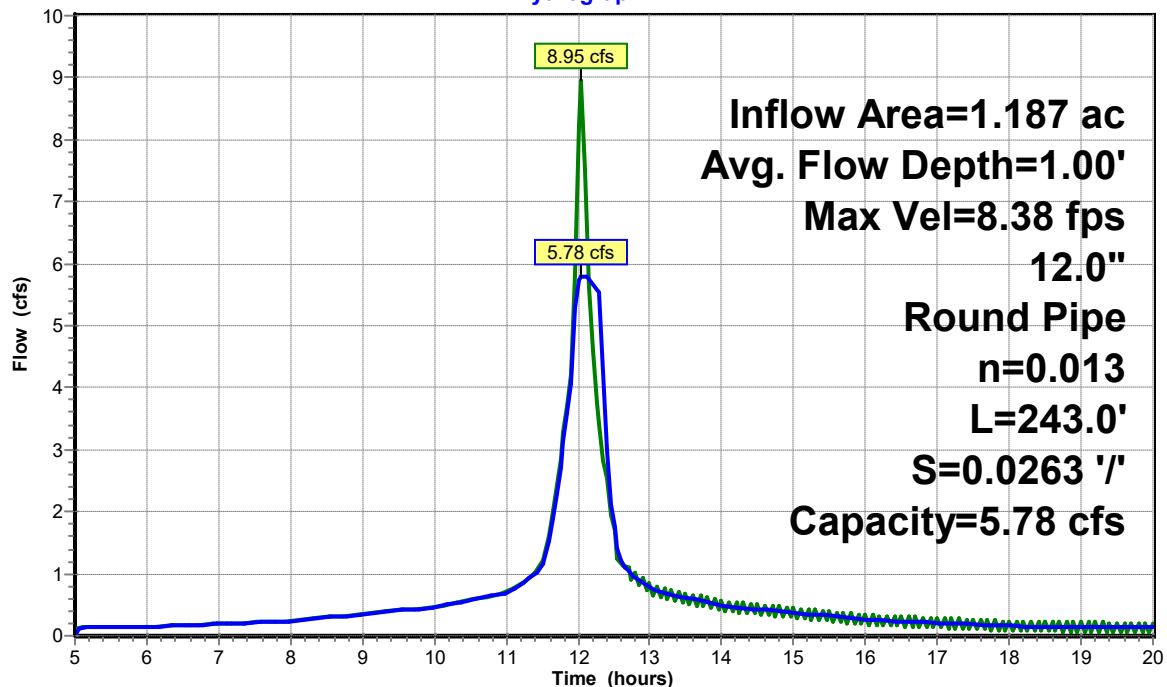
Length= 243.0' Slope= 0.0263 '/'

Inlet Invert= 154.40', Outlet Invert= 148.00'



Reach 6R: PIPE

Hydrograph



Summary for Pond 1P: (new Pond)

Inflow Area = 1.426 ac, 16.18% Impervious, Inflow Depth > 7.27" for 100 YR event
 Inflow = 11.29 cfs @ 12.08 hrs, Volume= 0.864 af
 Outflow = 4.62 cfs @ 12.28 hrs, Volume= 0.849 af, Atten= 59%, Lag= 12.1 min
 Primary = 4.62 cfs @ 12.28 hrs, Volume= 0.849 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 156.42' @ 12.28 hrs Surf.Area= 4,212 sf Storage= 8,408 cf

Plug-Flow detention time= 34.4 min calculated for 0.845 af (98% of inflow)
 Center-of-Mass det. time= 26.3 min (758.8 - 732.5)

Volume	Invert	Avail.Storage	Storage Description
#1	154.00'	15,785 cf	Custom Stage Data (Prismatic) Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
154.00	2,572	0	0
156.00	3,890	6,462	6,462
158.00	5,433	9,323	15,785

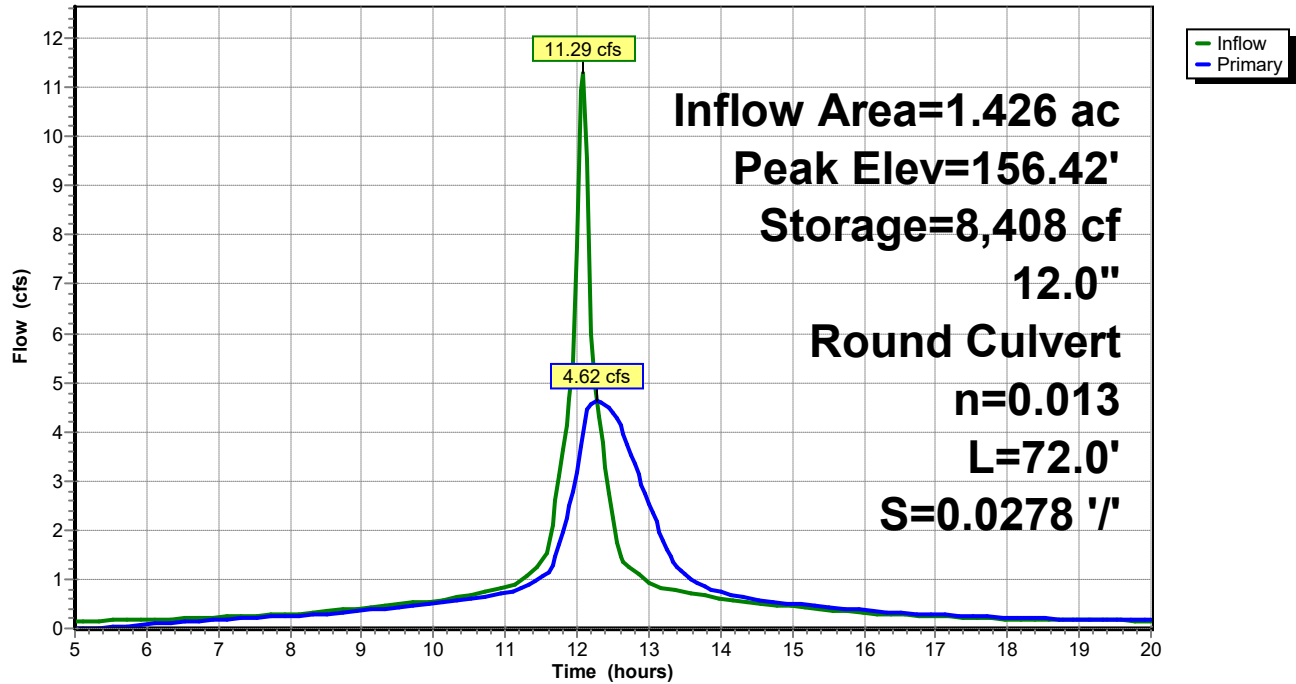
Device	Routing	Invert	Outlet Devices
#1	Primary	154.00'	12.0" Round Culvert L= 72.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 154.00' / 152.00' S= 0.0278 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=4.62 cfs @ 12.28 hrs HW=156.41' (Free Discharge)

↑ **1=Culvert** (Inlet Controls 4.62 cfs @ 5.88 fps)

Pond 1P: (new Pond)

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 100 YR Rainfall=8.14", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 95

Summary for Pond P1: OUT

Inflow Area = 0.315 ac, 0.00% Impervious, Inflow Depth > 7.27" for 100 YR event
 Inflow = 2.01 cfs @ 12.17 hrs, Volume= 0.191 af
 Outflow = 0.56 cfs @ 12.60 hrs, Volume= 0.191 af, Atten= 72%, Lag= 25.6 min
 Primary = 0.56 cfs @ 12.60 hrs, Volume= 0.191 af
 Routed to Pond P3 : DP2

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 163.69' @ 12.60 hrs Surf.Area= 1,262 sf Storage= 1,946 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 19.2 min (757.3 - 738.1)

Volume	Invert	Avail.Storage	Storage Description
#1	161.00'	2,358 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

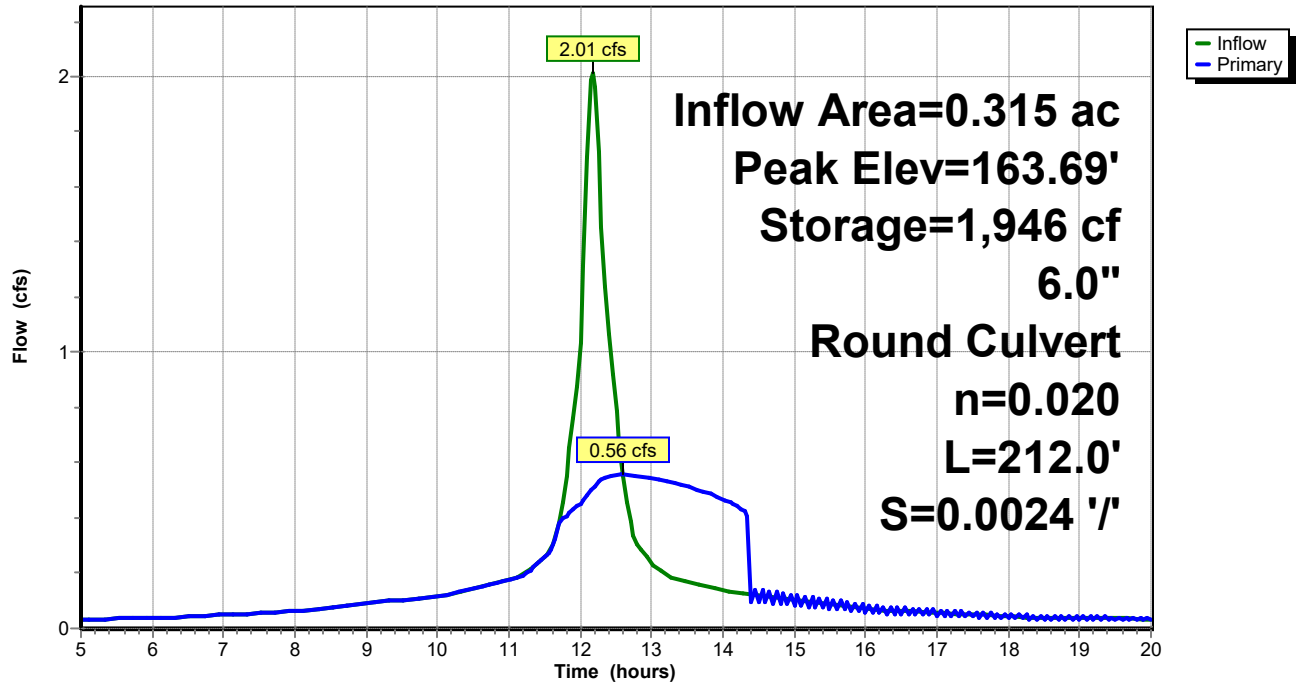
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
161.00	0	0	0
162.00	656	328	328
164.00	1,374	2,030	2,358

Device	Routing	Invert	Outlet Devices
#1	Primary	158.50'	6.0" Round Culvert L= 212.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 158.50' / 158.00' S= 0.0024 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.56 cfs @ 12.60 hrs HW=163.69' (Free Discharge)
 ↑ **1=Culvert** (Barrel Controls 0.56 cfs @ 2.85 fps)

Pond P1: OUT

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 100 YR Rainfall=8.14", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 97

Summary for Pond P2: OUT

Inflow Area = 0.755 ac, 19.49% Impervious, Inflow Depth > 7.27" for 100 YR event
 Inflow = 5.82 cfs @ 12.02 hrs, Volume= 0.458 af
 Outflow = 5.75 cfs @ 12.03 hrs, Volume= 0.458 af, Atten= 1%, Lag= 0.2 min
 Primary = 5.75 cfs @ 12.03 hrs, Volume= 0.458 af
 Routed to Reach 6R : PIPE

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 157.24' @ 12.03 hrs Surf.Area= 85 sf Storage= 11 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.2 min (730.8 - 730.6)

Volume	Invert	Avail.Storage	Storage Description
#1	157.00'	348 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

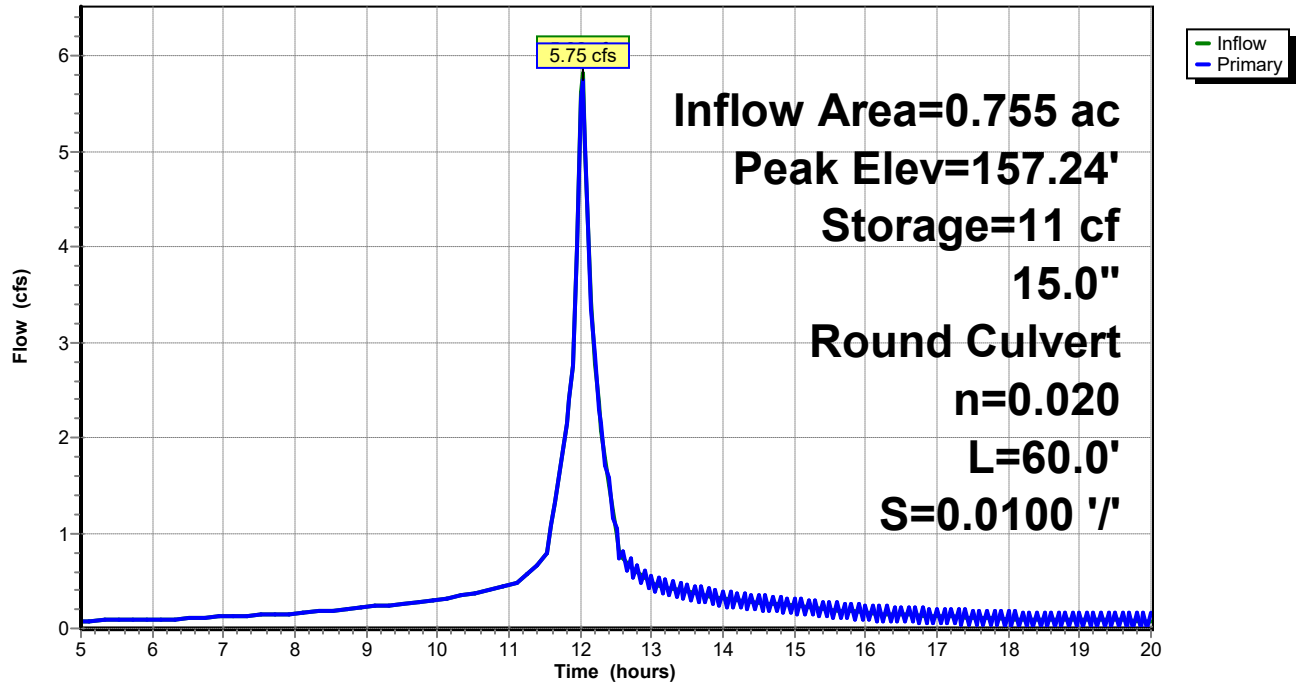
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
157.00	4	0	0
157.50	174	45	45
158.00	1,040	304	348

Device	Routing	Invert	Outlet Devices
#1	Primary	155.00'	15.0" Round Culvert L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 155.00' / 154.40' S= 0.0100 ' S= 0.0100 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.23 sf

Primary OutFlow Max=5.60 cfs @ 12.03 hrs HW=157.20' (Free Discharge)
 ↑ **1=Culvert** (Barrel Controls 5.60 cfs @ 4.56 fps)

Pond P2: OUT

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 100 YR Rainfall=8.14", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 99

Summary for Pond P3: DP2

Inflow Area = 1.394 ac, 7.57% Impervious, Inflow Depth > 7.27" for 100 YR event
 Inflow = 8.90 cfs @ 12.09 hrs, Volume= 0.845 af
 Outflow = 5.40 cfs @ 12.21 hrs, Volume= 0.834 af, Atten= 39%, Lag= 7.3 min
 Primary = 5.40 cfs @ 12.21 hrs, Volume= 0.834 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 157.78' @ 12.21 hrs Surf.Area= 3,303 sf Storage= 4,859 cf

Plug-Flow detention time= 22.7 min calculated for 0.831 af (98% of inflow)
 Center-of-Mass det. time= 16.9 min (755.4 - 738.5)

Volume	Invert	Avail.Storage	Storage Description
#1	156.00'	5,589 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
156.00	2,145	0	0
158.00	3,444	5,589	5,589

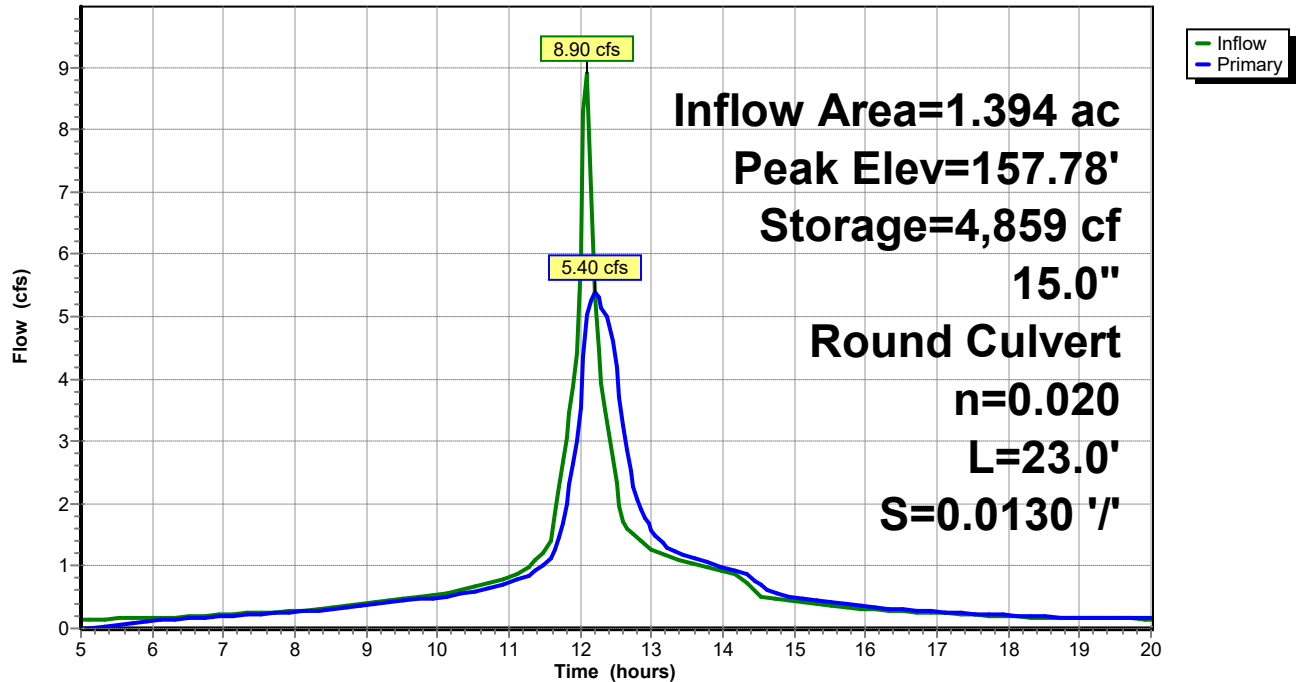
Device	Routing	Invert	Outlet Devices
#1	Primary	156.00'	15.0" Round Culvert L= 23.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 156.00' / 155.70' S= 0.0130 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.23 sf

Primary OutFlow Max=5.39 cfs @ 12.21 hrs HW=157.78' (Free Discharge)

↑ **1=Culvert** (Barrel Controls 5.39 cfs @ 4.39 fps)

Pond P3: DP2

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Type III 24-hr 100 YR Rainfall=8.14", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/26/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 101

Summary for Pond P4: DP3

Inflow Area = 2.489 ac, 11.83% Impervious, Inflow Depth > 7.27" for 100 YR event
 Inflow = 12.09 cfs @ 12.29 hrs, Volume= 1.508 af
 Outflow = 6.16 cfs @ 12.55 hrs, Volume= 1.487 af, Atten= 49%, Lag= 15.4 min
 Primary = 6.16 cfs @ 12.55 hrs, Volume= 1.487 af
 Routed to nonexistent node SUM

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 151.16' @ 12.55 hrs Surf.Area= 5,962 sf Storage= 14,360 cf

Plug-Flow detention time= 32.8 min calculated for 1.487 af (99% of inflow)
 Center-of-Mass det. time= 26.7 min (767.2 - 740.5)

Volume	Invert	Avail.Storage	Storage Description
#1	148.00'	19,740 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
148.00	3,278	0	0
149.00	4,059	3,669	3,669
150.00	4,840	4,450	8,118
152.00	6,782	11,622	19,740

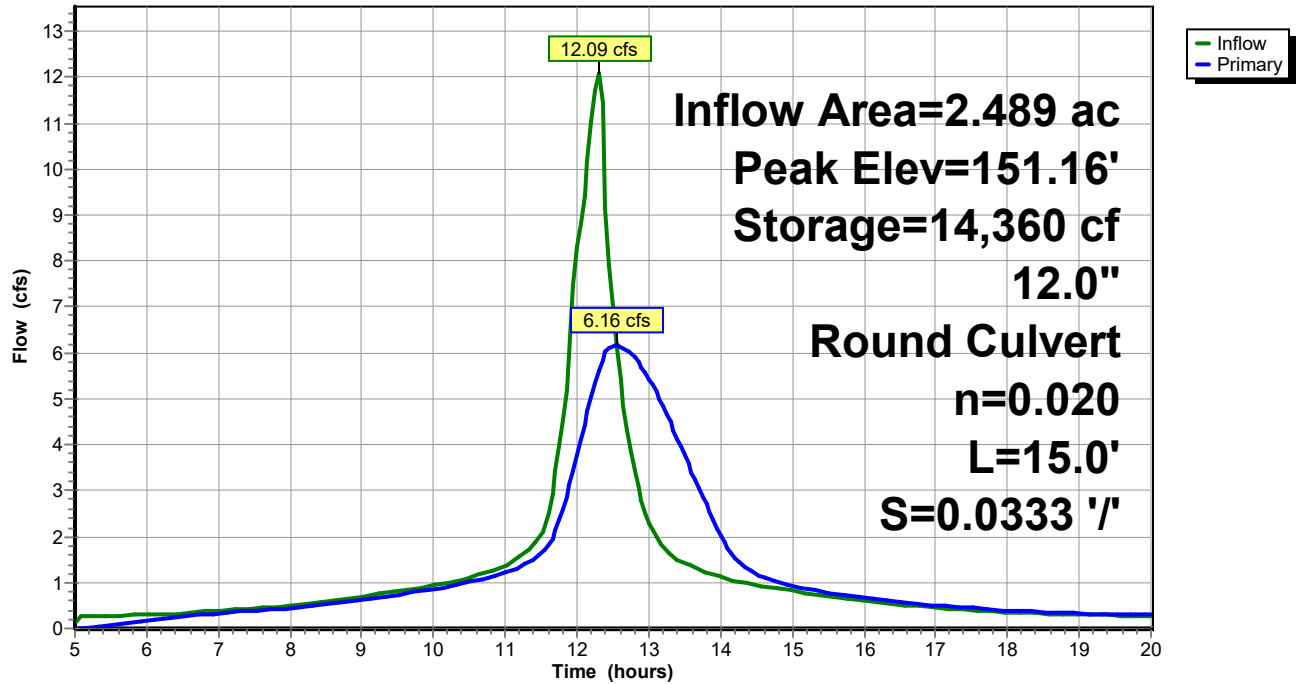
Device	Routing	Invert	Outlet Devices
#1	Primary	148.00'	12.0" Round Culvert L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 148.00' / 147.50' S= 0.0333 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf

Primary OutFlow Max=6.16 cfs @ 12.55 hrs HW=151.16' (Free Discharge)

↑ **1=Culvert** (Inlet Controls 6.16 cfs @ 7.85 fps)

Pond P4: DP3

Hydrograph



NEWTON ROAD PROPOSED 1-3 AND 8

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Table of Contents

Printed 2/26/2024

TABLE OF CONTENTS

Project Reports

- 1 Routing Diagram
- 2 Rainfall Events Listing
- 3 Area Listing (all nodes)
- 4 Soil Listing (all nodes)
- 5 Ground Covers (all nodes)
- 6 Pipe Listing (all nodes)

2 YR Event

- 7 Node Listing
- 9 Subcat AREA 1: DP 1
- 11 Subcat AREA 2: DP8
- 12 Subcat AREA 3.1: DP2
- 13 Subcat AREA 3.2: DP2
- 14 Subcat AREA 3.3.1: DP3
- 15 Subcat AREA3.3.2: DP2
- 16 Subcat AREA4: DP3
- 17 Subcat AREA4.1.1: DP3
- 18 Subcat AREA4.1.2: DP3
- 19 Subcat AREA4.2: DP3
- 20 Reach 6R: PIPE
- 21 Pond 1P: (new Pond)
- 23 Pond P1: OUT
- 25 Pond P2: OUT
- 27 Pond P3: DP2
- 29 Pond P4: DP3

10 YR Event

- 31 Node Listing
- 33 Subcat AREA 1: DP 1
- 35 Subcat AREA 2: DP8
- 36 Subcat AREA 3.1: DP2
- 37 Subcat AREA 3.2: DP2
- 38 Subcat AREA 3.3.1: DP3
- 39 Subcat AREA3.3.2: DP2
- 40 Subcat AREA4: DP3
- 41 Subcat AREA4.1.1: DP3
- 42 Subcat AREA4.1.2: DP3
- 43 Subcat AREA4.2: DP3
- 44 Reach 6R: PIPE
- 45 Pond 1P: (new Pond)
- 47 Pond P1: OUT
- 49 Pond P2: OUT
- 51 Pond P3: DP2
- 53 Pond P4: DP3

NEWTON ROAD PROPOSED 1-3 AND 8

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Table of Contents

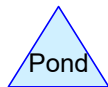
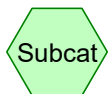
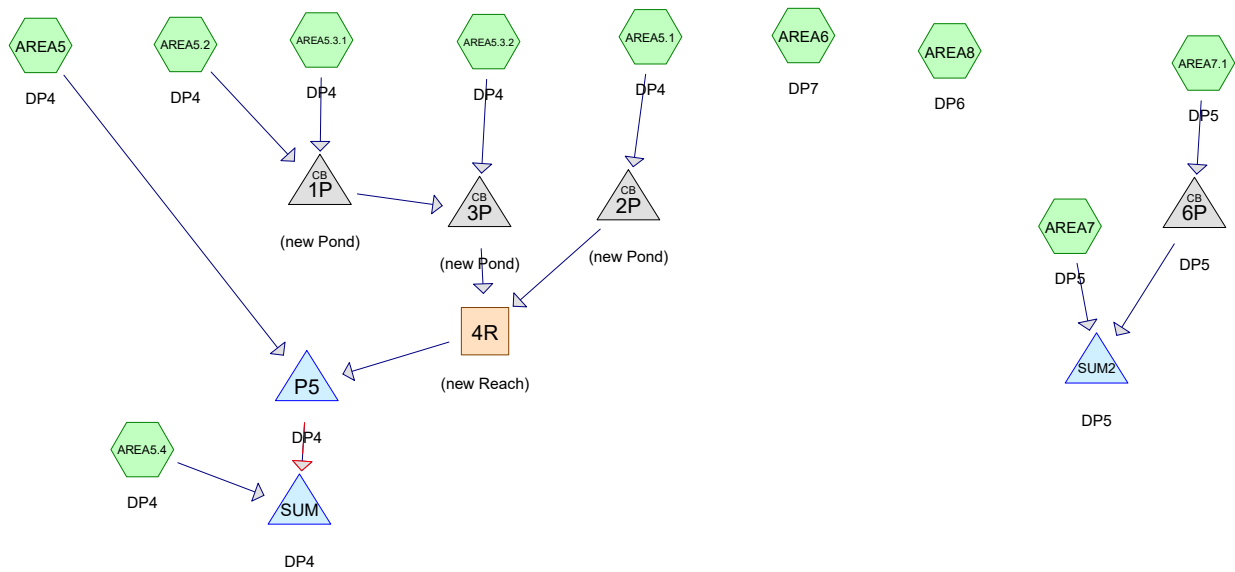
Printed 2/26/2024

25 YR Event

- 55 Node Listing
- 57 Subcat AREA 1: DP 1
- 59 Subcat AREA 2: DP8
- 60 Subcat AREA 3.1: DP2
- 61 Subcat AREA 3.2: DP2
- 62 Subcat AREA 3.3.1: DP3
- 63 Subcat AREA3.3.2: DP2
- 64 Subcat AREA4: DP3
- 65 Subcat AREA4.1.1: DP3
- 66 Subcat AREA4.1.2: DP3
- 67 Subcat AREA4.2: DP3
- 68 Reach 6R: PIPE
- 69 Pond 1P: (new Pond)
- 71 Pond P1: OUT
- 73 Pond P2: OUT
- 75 Pond P3: DP2
- 77 Pond P4: DP3

100 YR Event

- 79 Node Listing
- 81 Subcat AREA 1: DP 1
- 83 Subcat AREA 2: DP8
- 84 Subcat AREA 3.1: DP2
- 85 Subcat AREA 3.2: DP2
- 86 Subcat AREA 3.3.1: DP3
- 87 Subcat AREA3.3.2: DP2
- 88 Subcat AREA4: DP3
- 89 Subcat AREA4.1.1: DP3
- 90 Subcat AREA4.1.2: DP3
- 91 Subcat AREA4.2: DP3
- 92 Reach 6R: PIPE
- 93 Pond 1P: (new Pond)
- 95 Pond P1: OUT
- 97 Pond P2: OUT
- 99 Pond P3: DP2
- 101 Pond P4: DP3



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Printed 2/25/2024

Page 2

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2YR	Type III 24-hr		Default	24.00	1	3.23	4
2	10YR	Type III 24-hr		Default	24.00	1	5.12	4
3	25YR	Type III 24-hr		Default	24.00	1	6.30	4
4	100YR	Type III 24-hr		Default	24.00	1	8.14	4

NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Printed 2/25/2024

Page 3

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.731	74	>75% Grass cover, Good, HSG C (AREA5, AREA5.1, AREA5.3.1, AREA5.3.2, AREA7, AREA7.1, AREA8)
0.333	98	Paved parking, HSG C (AREA5.3.1, AREA5.3.2, AREA7.1)
0.150	98	ROOF (AREA5)
0.239	98	Roofs, HSG C (AREA6, AREA7, AREA8)
2.963	36	WOODS A SOIL (AREA5)
4.457	73	WOODS C SOIL (AREA5)
0.615	36	Woods, Fair, HSG A (AREA5.4)
11.367	73	Woods, Fair, HSG C (AREA5.2, AREA5.4, AREA6, AREA7, AREA8)
23.855	68	TOTAL AREA

NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Printed 2/25/2024

Page 4

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.615	HSG A	AREA5.4
0.000	HSG B	
15.670	HSG C	AREA5, AREA5.1, AREA5.2, AREA5.3.1, AREA5.3.2, AREA5.4, AREA6, AREA7, AREA7.1, AREA8
0.000	HSG D	
7.570	Other	AREA5
23.855		TOTAL AREA

NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

Printed 2/25/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 5

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	3.731	0.000	0.000	3.731	>75% Grass cover, Good	AREA5, AREA5. 1, AREA5. 3.1, AREA5. 3.2, AREA7, AREA7. 1, AREA8
0.000	0.000	0.333	0.000	0.000	0.333	Paved parking	AREA5. 3.1, AREA5. 3.2, AREA7. 1
0.000	0.000	0.000	0.000	0.150	0.150	ROOF	AREA5
0.000	0.000	0.239	0.000	0.000	0.239	Roofs	AREA6, AREA7, AREA8
0.000	0.000	0.000	0.000	2.963	2.963	WOODS A SOIL	AREA5
0.000	0.000	0.000	0.000	4.457	4.457	WOODS C SOIL	AREA5
0.615	0.000	11.367	0.000	0.000	11.983	Woods, Fair	AREA5. 2, AREA5. 4, AREA6, AREA7, AREA8
0.615	0.000	15.670	0.000	7.570	23.855	TOTAL AREA	

NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

Printed 2/25/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 6

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	4R	148.00	127.00	321.0	0.0654	0.013	0.0	12.0	0.0	
2	1P	150.00	149.00	50.0	0.0200	0.013	0.0	6.0	0.0	
3	2P	150.10	148.00	210.0	0.0100	0.013	0.0	6.0	0.0	
4	3P	149.00	148.00	65.0	0.0154	0.013	0.0	6.0	0.0	
5	6P	135.10	134.22	220.0	0.0040	0.013	0.0	12.0	0.0	

NEWTON ROAD PROPOSED 4-7

Type III 24-hr 2YR Rainfall=3.23", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/25/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 7

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment AREA5: DP4 Runoff Area=389,738 sf 1.67% Impervious Runoff Depth>2.80"
Flow Length=398' Tc=8.0 min AMC Adjusted CN=98 Runoff=25.93 cfs 2.088 af

Subcatchment AREA5.1: DP4 Runoff Area=24,673 sf 0.00% Impervious Runoff Depth>2.80"
Flow Length=177' Slope=0.0660 '/' Tc=5.8 min AMC Adjusted CN=98 Runoff=1.74 cfs 0.132 af

Subcatchment AREA5.2: DP4 Runoff Area=10,601 sf 0.00% Impervious Runoff Depth>2.80"
Flow Length=120' Tc=17.5 min AMC Adjusted CN=98 Runoff=0.55 cfs 0.057 af

Subcatchment AREA5.3.1: DP4 Runoff Area=3,989 sf 34.47% Impervious Runoff Depth>2.80"
Flow Length=131' Slope=0.0200 '/' Tc=1.7 min AMC Adjusted CN=98 Runoff=0.31 cfs 0.021 af

Subcatchment AREA5.3.2: DP4 Runoff Area=3,989 sf 34.47% Impervious Runoff Depth>2.80"
Flow Length=131' Slope=0.0200 '/' Tc=1.7 min AMC Adjusted CN=98 Runoff=0.31 cfs 0.021 af

Subcatchment AREA5.4: DP4 Runoff Area=53,612 sf 0.00% Impervious Runoff Depth>2.79"
Flow Length=473' Slope=0.0200 '/' Tc=52.5 min AMC Adjusted CN=98 Runoff=1.68 cfs 0.286 af

Subcatchment AREA6: DP7 Runoff Area=103,711 sf 1.67% Impervious Runoff Depth>2.80"
Flow Length=201' Slope=0.0300 '/' Tc=21.1 min AMC Adjusted CN=98 Runoff=4.96 cfs 0.555 af

Subcatchment AREA7: DP5 Runoff Area=273,185 sf 2.39% Impervious Runoff Depth>2.79"
Flow Length=991' Tc=31.9 min AMC Adjusted CN=98 Runoff=10.95 cfs 1.461 af

Subcatchment AREA7.1: DP5 Runoff Area=24,366 sf 48.22% Impervious Runoff Depth>2.80"
Flow Length=331' Tc=2.3 min AMC Adjusted CN=98 Runoff=1.91 cfs 0.131 af

Subcatchment AREA8: DP6 Runoff Area=151,281 sf 1.44% Impervious Runoff Depth>2.79"
Flow Length=447' Slope=0.0090 '/' Tc=57.3 min AMC Adjusted CN=98 Runoff=4.50 cfs 0.806 af

Reach 4R: (new Reach) Avg. Flow Depth=0.36' Max Vel=9.95 fps Inflow=2.60 cfs 0.232 af
12.0" Round Pipe n=0.013 L=321.0' S=0.0654 '/' Capacity=9.11 cfs Outflow=2.54 cfs 0.232 af

Pond 1P: (new Pond) Peak Elev=150.74' Inflow=0.66 cfs 0.078 af
6.0" Round Culvert n=0.013 L=50.0' S=0.0200 '/' Outflow=0.66 cfs 0.078 af

Pond 2P: (new Pond) Peak Elev=170.76' Inflow=1.74 cfs 0.132 af
6.0" Round Culvert n=0.013 L=210.0' S=0.0100 '/' Outflow=1.74 cfs 0.132 af

Pond 3P: (new Pond) Peak Elev=150.74' Inflow=0.91 cfs 0.100 af
6.0" Round Culvert n=0.013 L=65.0' S=0.0154 '/' Outflow=0.91 cfs 0.100 af

Pond 6P: DP5 Peak Elev=136.05' Inflow=1.91 cfs 0.131 af
Primary=1.91 cfs 0.131 af Secondary=0.00 cfs 0.000 af Outflow=1.91 cfs 0.131 af

Pond P5: DP4 Peak Elev=127.78' Storage=14,878 cf Inflow=28.44 cfs 2.320 af
Discarded=3.83 cfs 1.582 af Primary=13.33 cfs 0.736 af Secondary=0.00 cfs 0.000 af Outflow=17.16 cfs 2.318 af

NEWTON ROAD PROPOSED 4-7*Type III 24-hr 2YR Rainfall=3.23", AMC=4*

Prepared by PGC Engineering PLLC

Printed 2/25/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 8

Pond SUM: DP4

Inflow=14.21 cfs 1.022 af

Primary=14.21 cfs 1.022 af

Pond SUM2: DP5

Inflow=11.36 cfs 1.591 af

Primary=11.36 cfs 1.591 af

Total Runoff Area = 23.855 ac Runoff Volume = 5.559 af Average Runoff Depth = 2.80"
96.97% Pervious = 23.133 ac 3.03% Impervious = 0.722 ac

NEWTON ROAD PROPOSED 4-7

Type III 24-hr 2YR Rainfall=3.23", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/25/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 9

Summary for Subcatchment AREA5: DP4

Runoff = 25.93 cfs @ 12.11 hrs, Volume= 2.088 af, Depth> 2.80"
 Routed to Pond P5 : DP4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2YR Rainfall=3.23", AMC=4

	Area (sf)	CN	Adj	Description
*	6,528	98		ROOF
*	129,067	36		WOODS A SOIL
*	194,143	73		WOODS C SOIL
	60,000	74		>75% Grass cover, Good, HSG C
	389,738	61	98	Weighted Average, AMC Adjusted
	383,210			98.33% Pervious Area
	6,528			1.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	100	0.0700	0.28		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
0.9	100	0.0700	1.85		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.2	198	0.0350	2.65	53.04	Channel Flow, Area= 20.0 sf Perim= 30.0' r= 0.67' n= 0.080 Earth, long dense weeds
8.0	398	Total			

NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

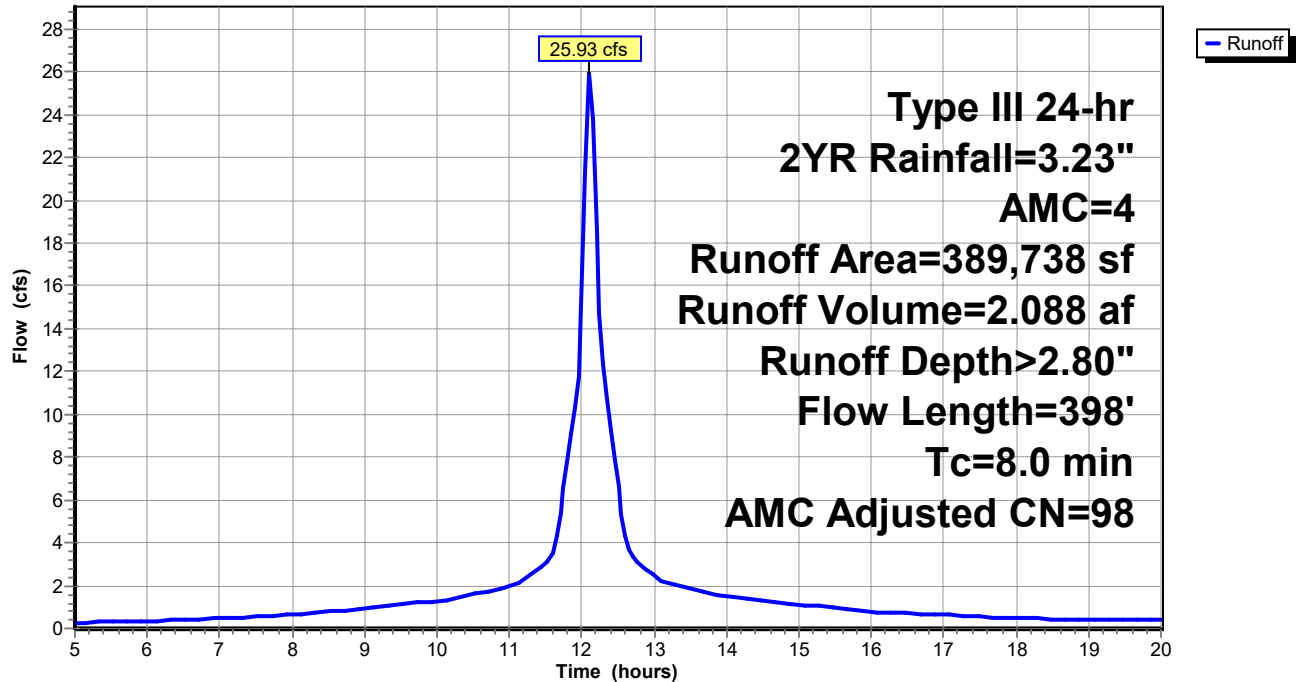
Type III 24-hr 2YR Rainfall=3.23", AMC=4

Printed 2/25/2024

Page 10

Subcatchment AREA5: DP4

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 2YR Rainfall=3.23", AMC=4

Printed 2/25/2024

Page 11

Summary for Subcatchment AREA5.1: DP4

Runoff = 1.74 cfs @ 12.08 hrs, Volume= 0.132 af, Depth> 2.80"
Routed to Pond 2P : (new Pond)

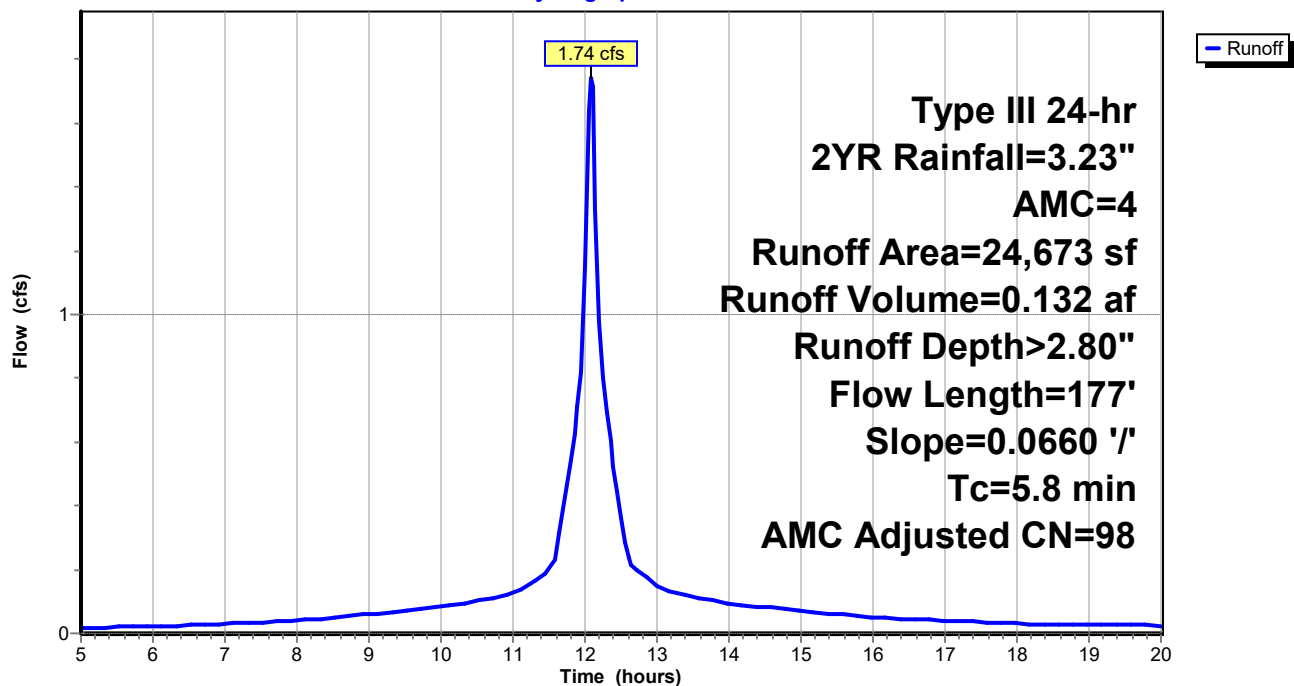
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.23", AMC=4

Area (sf)	CN	Adj	Description
24,673	74		>75% Grass cover, Good, HSG C
24,673	74	98	Weighted Average, AMC Adjusted
24,673			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	77	0.0660	0.26		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
0.9	100	0.0660	1.80		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
5.8	177	Total			

Subcatchment AREA5.1: DP4

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 2YR Rainfall=3.23", AMC=4

Printed 2/25/2024

Page 12

Summary for Subcatchment AREA5.2: DP4

Runoff = 0.55 cfs @ 12.23 hrs, Volume= 0.057 af, Depth> 2.80"
Routed to Pond 1P : (new Pond)

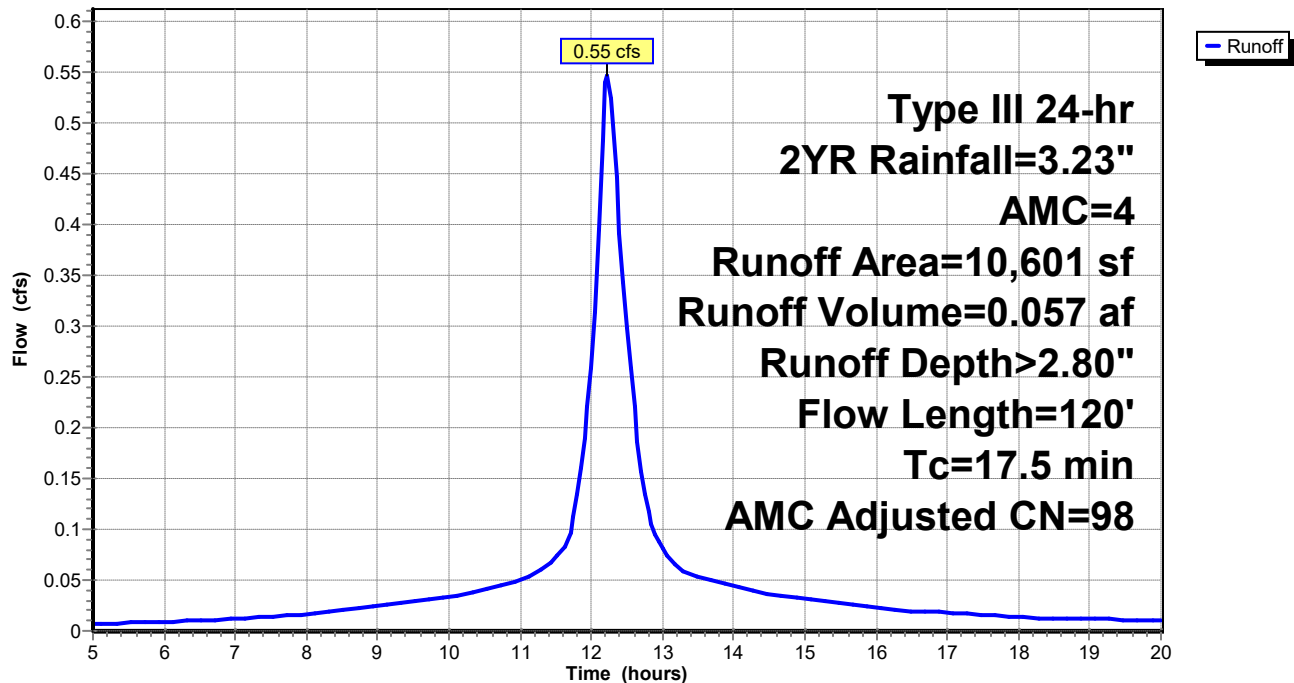
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.23", AMC=4

Area (sf)	CN	Adj	Description
10,601	73		Woods, Fair, HSG C
10,601	73	98	Weighted Average, AMC Adjusted
10,601			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.1	60	0.0500	0.06		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
0.4	60	0.0590	2.26	3.84	Channel Flow, Area= 1.7 sf Perim= 6.0' r= 0.28' n= 0.069 Riprap, 6-inch
17.5	120	Total			

Subcatchment AREA5.2: DP4

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 2YR Rainfall=3.23", AMC=4

Printed 2/25/2024

Page 13

Summary for Subcatchment AREA5.3.1: DP4

Runoff = 0.31 cfs @ 12.03 hrs, Volume= 0.021 af, Depth> 2.80"
 Routed to Pond 1P : (new Pond)

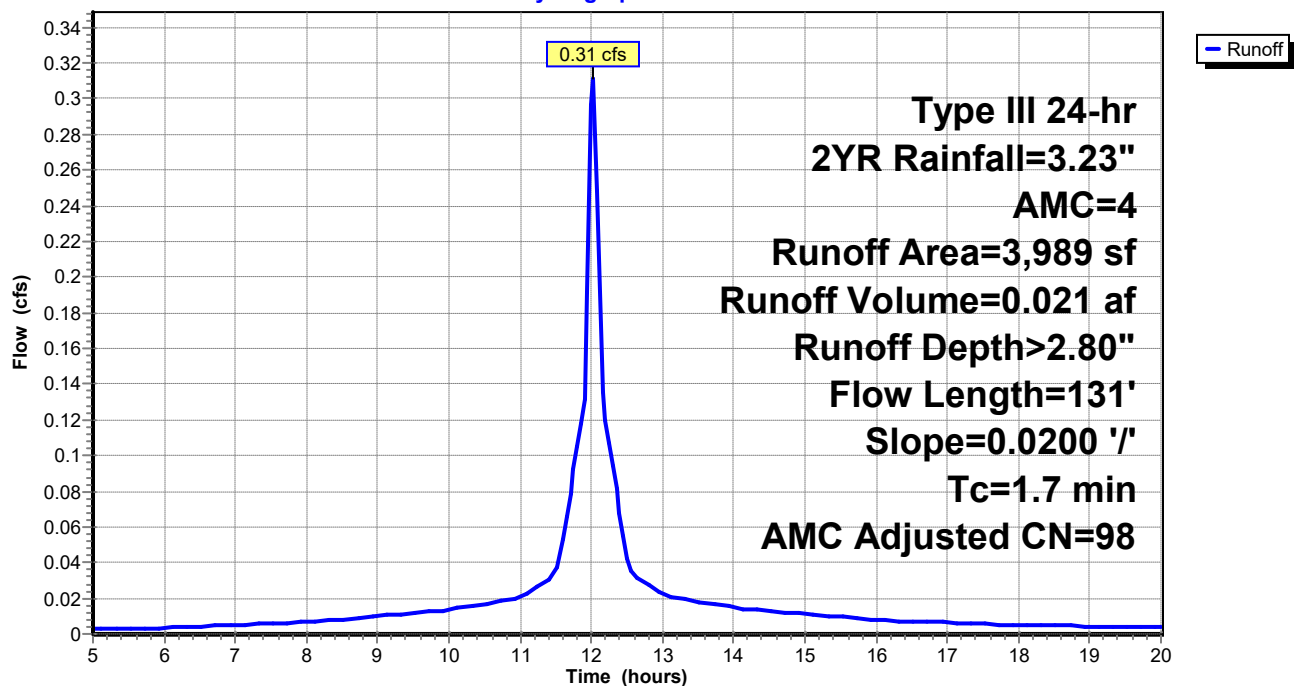
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2YR Rainfall=3.23", AMC=4

Area (sf)	CN	Adj	Description
1,375	98		Paved parking, HSG C
2,614	74		>75% Grass cover, Good, HSG C
3,989	82	98	Weighted Average, AMC Adjusted
2,614			65.53% Pervious Area
1,375			34.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0200	0.89		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.23"
1.5	120	0.0200	1.31	2.23	Channel Flow, Area= 1.7 sf Perim= 6.0' r= 0.28' n= 0.069 Riprap, 6-inch
1.7	131	Total			

Subcatchment AREA5.3.1: DP4

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 2YR Rainfall=3.23", AMC=4

Printed 2/25/2024

Page 14

Summary for Subcatchment AREA5.3.2: DP4

Runoff = 0.31 cfs @ 12.03 hrs, Volume= 0.021 af, Depth> 2.80"
 Routed to Pond 3P : (new Pond)

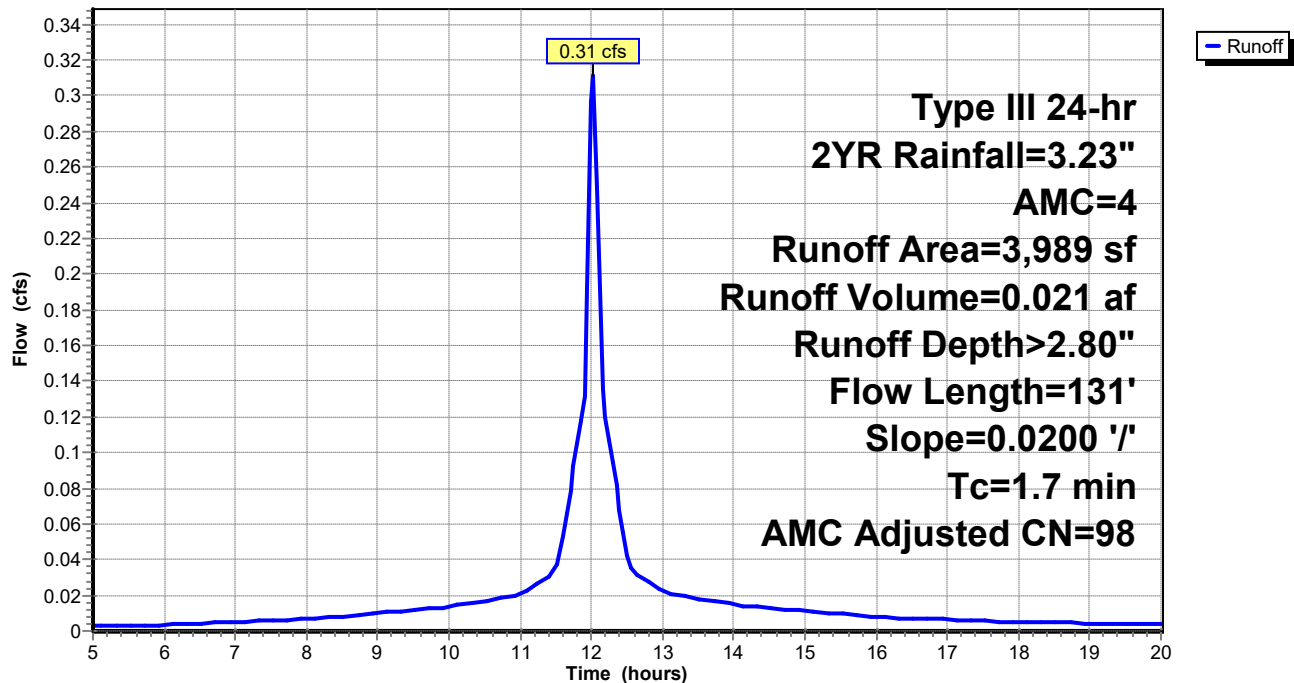
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2YR Rainfall=3.23", AMC=4

Area (sf)	CN	Adj	Description
1,375	98		Paved parking, HSG C
2,614	74		>75% Grass cover, Good, HSG C
3,989	82	98	Weighted Average, AMC Adjusted
2,614			65.53% Pervious Area
1,375			34.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0200	0.89		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.23"
1.5	120	0.0200	1.31	2.23	Channel Flow, Area= 1.7 sf Perim= 6.0' r= 0.28' n= 0.069 Riprap, 6-inch
1.7	131	Total			

Subcatchment AREA5.3.2: DP4

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 2YR Rainfall=3.23", AMC=4

Printed 2/25/2024

Page 15

Summary for Subcatchment AREA5.4: DP4

Runoff = 1.68 cfs @ 12.67 hrs, Volume= 0.286 af, Depth> 2.79"
Routed to Pond SUM : DP4

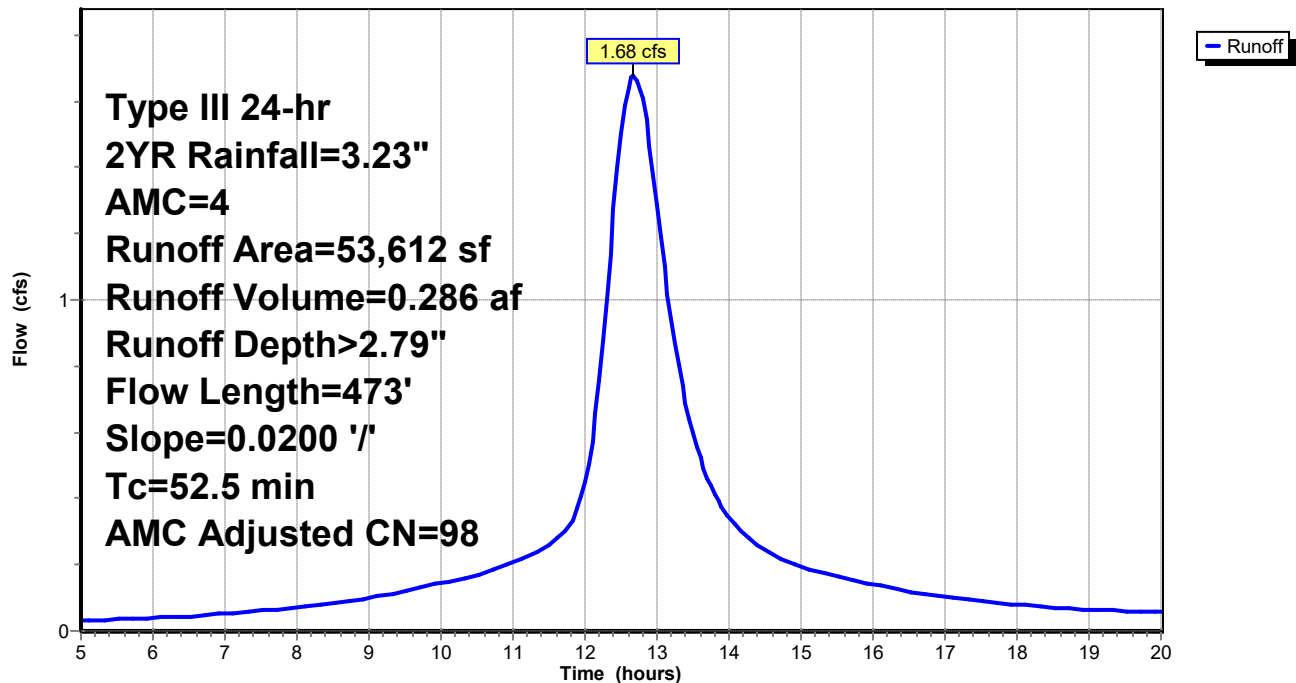
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.23", AMC=4

Area (sf)	CN	Adj	Description
26,806	36		Woods, Fair, HSG A
26,806	73		Woods, Fair, HSG C
53,612	55	98	Weighted Average, AMC Adjusted
53,612			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.2	100	0.0200	0.04		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
2.4	100	0.0200	0.71		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
12.9	273	0.0200	0.35		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
52.5	473	Total			

Subcatchment AREA5.4: DP4

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 2YR Rainfall=3.23", AMC=4

Printed 2/25/2024

Page 16

Summary for Subcatchment AREA6: DP7

Runoff = 4.96 cfs @ 12.28 hrs, Volume= 0.555 af, Depth> 2.80"

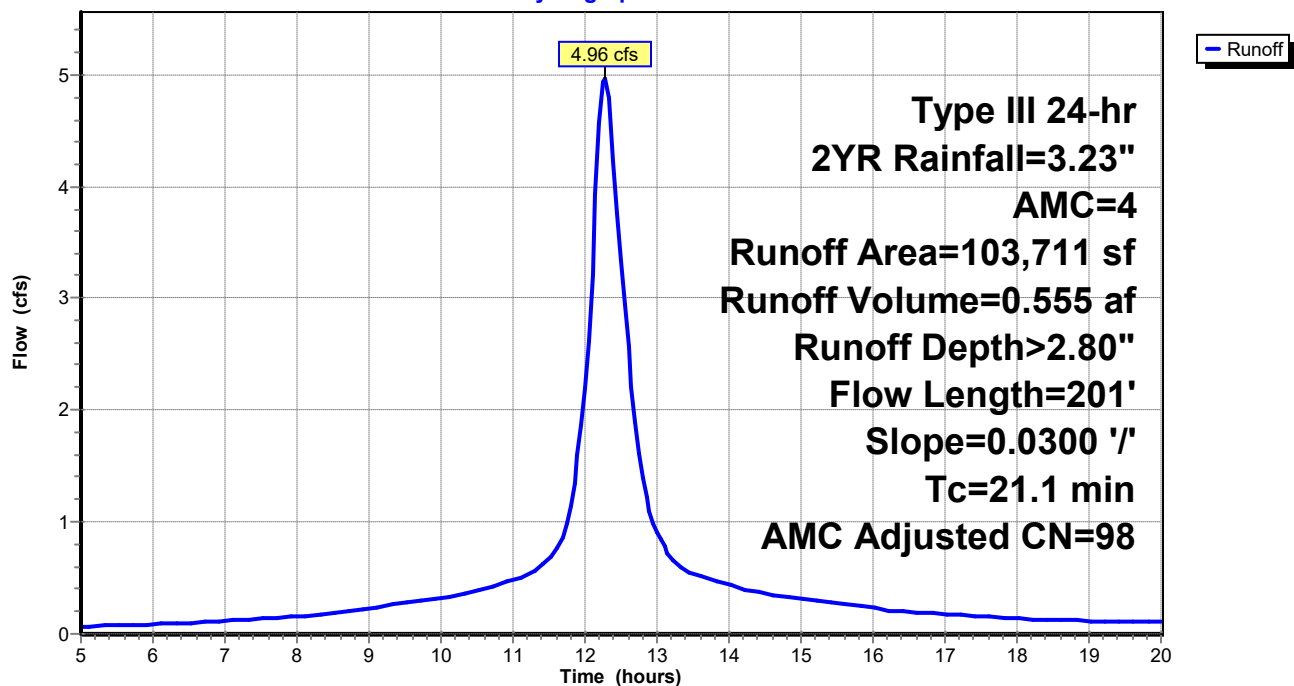
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.23", AMC=4

Area (sf)	CN	Adj	Description
101,983	73		Woods, Fair, HSG C
1,728	98		Roofs, HSG C
103,711	73	98	Weighted Average, AMC Adjusted
101,983			98.33% Pervious Area
1,728			1.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	50	0.0300	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
2.9	151	0.0300	0.87		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
21.1	201	Total			

Subcatchment AREA6: DP7

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 2YR Rainfall=3.23", AMC=4

Printed 2/25/2024

Page 17

Summary for Subcatchment AREA7: DP5

Runoff = 10.95 cfs @ 12.42 hrs, Volume= 1.461 af, Depth> 2.79"
 Routed to Pond SUM2 : DP5

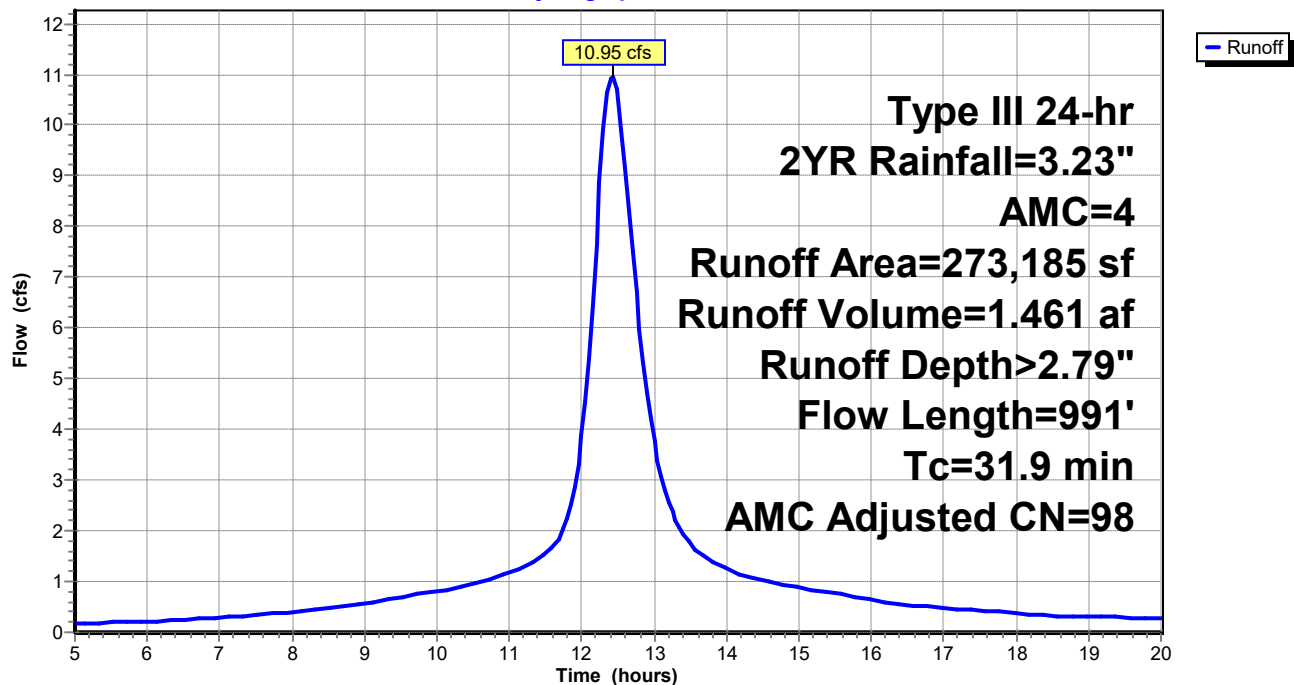
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2YR Rainfall=3.23", AMC=4

Area (sf)	CN	Adj	Description
40,000	74		>75% Grass cover, Good, HSG C
6,528	98		Roofs, HSG C
226,657	73		Woods, Fair, HSG C
273,185	74	98	Weighted Average, AMC Adjusted
266,657			97.61% Pervious Area
6,528			2.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0800	0.30		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
1.4	100	0.0300	1.21		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
24.9	791	0.0350	0.53	10.61	Channel Flow, Area= 20.0 sf Perim= 30.0' r= 0.67' n= 0.400 Sheet flow: Woods+light brush
31.9	991	Total			

Subcatchment AREA7: DP5

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 2YR Rainfall=3.23", AMC=4

Printed 2/25/2024

Page 18

Summary for Subcatchment AREA7.1: DP5

Runoff = 1.91 cfs @ 12.04 hrs, Volume= 0.131 af, Depth> 2.80"
 Routed to Pond 6P : DP5

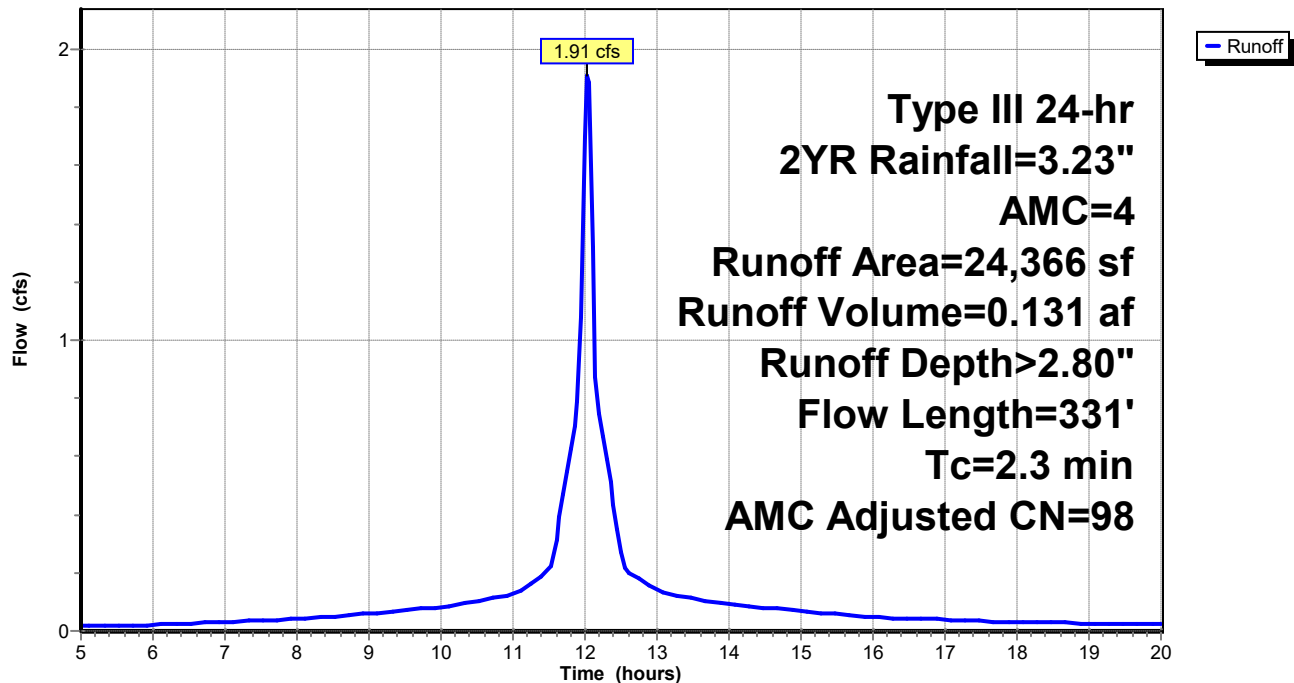
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2YR Rainfall=3.23", AMC=4

Area (sf)	CN	Adj	Description
11,749	98		Paved parking, HSG C
12,617	74		>75% Grass cover, Good, HSG C
24,366	86	98	Weighted Average, AMC Adjusted
12,617			51.78% Pervious Area
11,749			48.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0200	0.89		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.23"
2.1	320	0.0590	2.51	4.28	Channel Flow, Area= 1.7 sf Perim= 5.1' r= 0.33' n= 0.069 Riprap, 6-inch
2.3	331	Total			

Subcatchment AREA7.1: DP5

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 2YR Rainfall=3.23", AMC=4

Printed 2/25/2024

Page 19

Summary for Subcatchment AREA8: DP6

Runoff = 4.50 cfs @ 12.74 hrs, Volume= 0.806 af, Depth> 2.79"

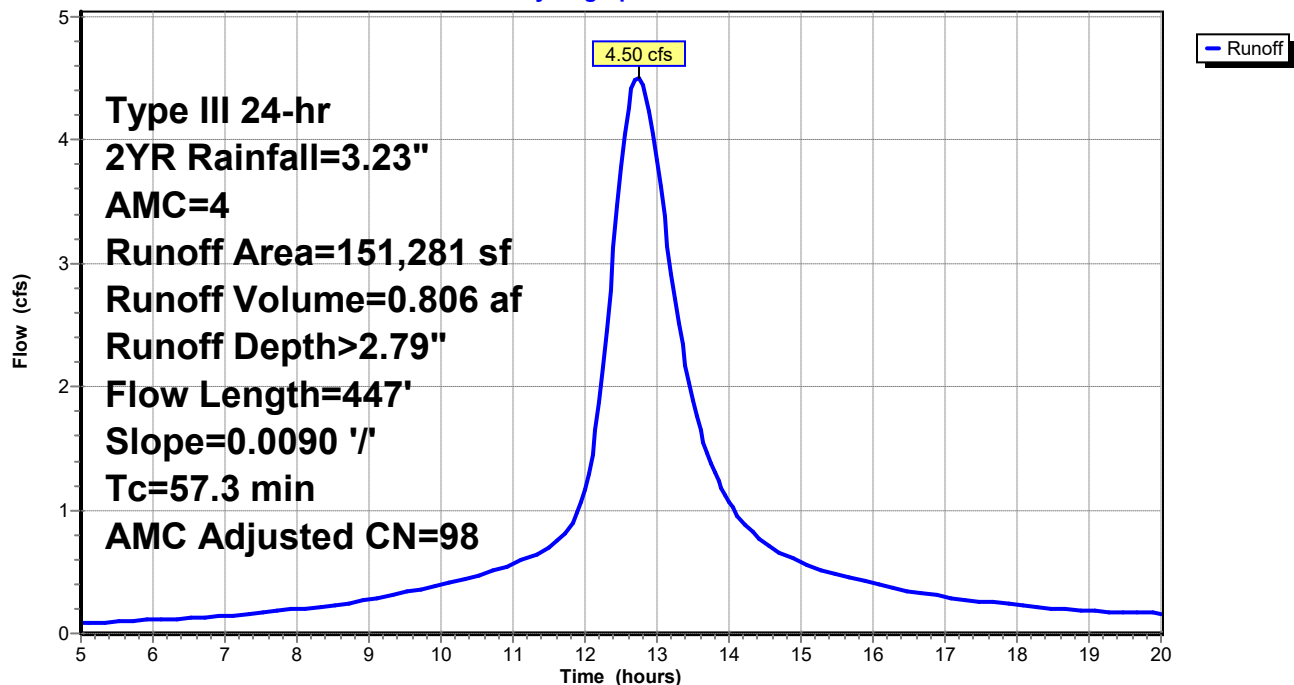
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.23", AMC=4

Area (sf)	CN	Adj	Description
20,000	74		>75% Grass cover, Good, HSG C
2,176	98		Roofs, HSG C
129,105	73		Woods, Fair, HSG C
151,281	73	98	Weighted Average, AMC Adjusted
149,105			98.56% Pervious Area
2,176			1.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.4	50	0.0090	0.03		Sheet Flow,
					Woods: Dense underbrush n= 0.800 P2= 3.23"
27.9	397	0.0090	0.24		Shallow Concentrated Flow,
					Forest w/Heavy Litter Kv= 2.5 fps
57.3	447	Total			

Subcatchment AREA8: DP6

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 2YR Rainfall=3.23", AMC=4

Printed 2/25/2024

Page 20

Summary for Reach 4R: (new Reach)

Inflow Area = 0.993 ac, 6.36% Impervious, Inflow Depth > 2.80" for 2YR event
Inflow = 2.60 cfs @ 12.07 hrs, Volume= 0.232 af
Outflow = 2.54 cfs @ 12.09 hrs, Volume= 0.232 af, Atten= 2%, Lag= 1.2 min
Routed to Pond P5 : DP4

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 9.95 fps, Min. Travel Time= 0.5 min

Avg. Velocity= 4.04 fps, Avg. Travel Time= 1.3 min

Peak Storage= 83 cf @ 12.08 hrs

Average Depth at Peak Storage= 0.36', Surface Width= 0.96'

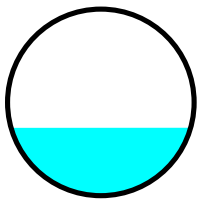
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 9.11 cfs

12.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

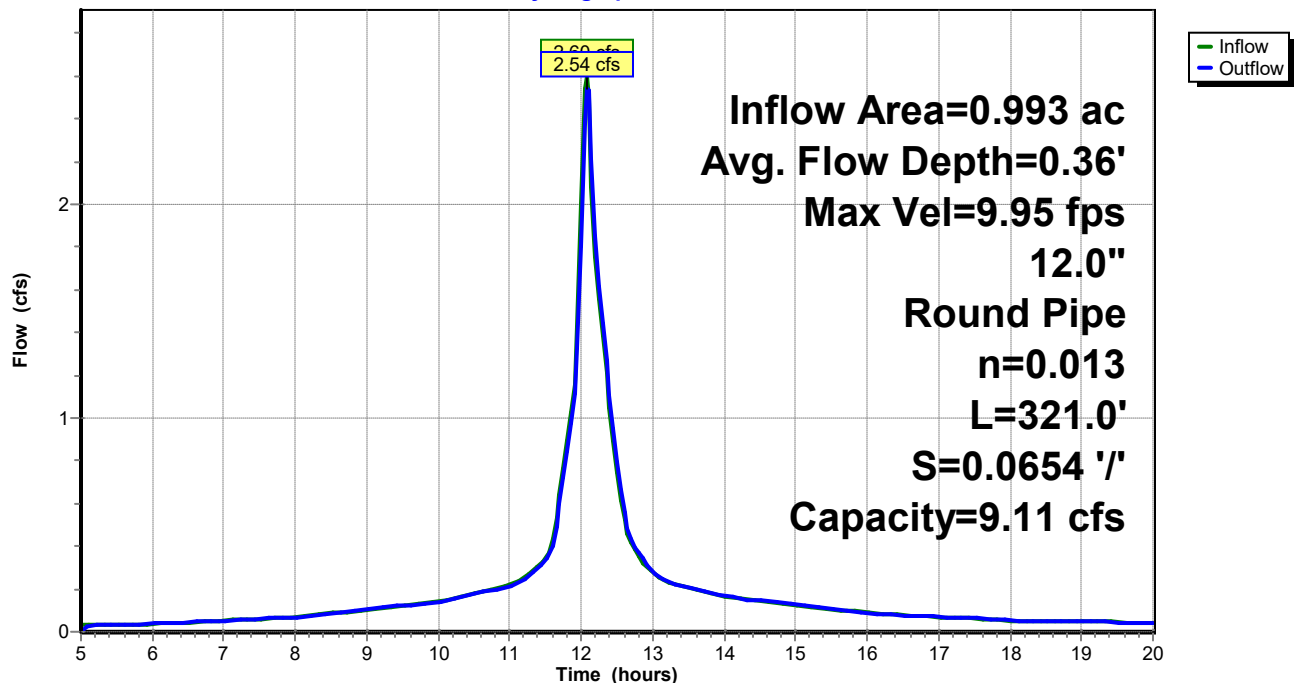
Length= 321.0' Slope= 0.0654 '/'

Inlet Invert= 148.00', Outlet Invert= 127.00'



Reach 4R: (new Reach)

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 2YR Rainfall=3.23", AMC=4

Printed 2/25/2024

Page 21

Summary for Pond 1P: (new Pond)

Inflow Area = 0.335 ac, 9.42% Impervious, Inflow Depth > 2.80" for 2YR event
Inflow = 0.66 cfs @ 12.22 hrs, Volume= 0.078 af
Outflow = 0.66 cfs @ 12.22 hrs, Volume= 0.078 af, Atten= 0%, Lag= 0.0 min
Primary = 0.66 cfs @ 12.22 hrs, Volume= 0.078 af
Routed to Pond 3P : (new Pond)

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

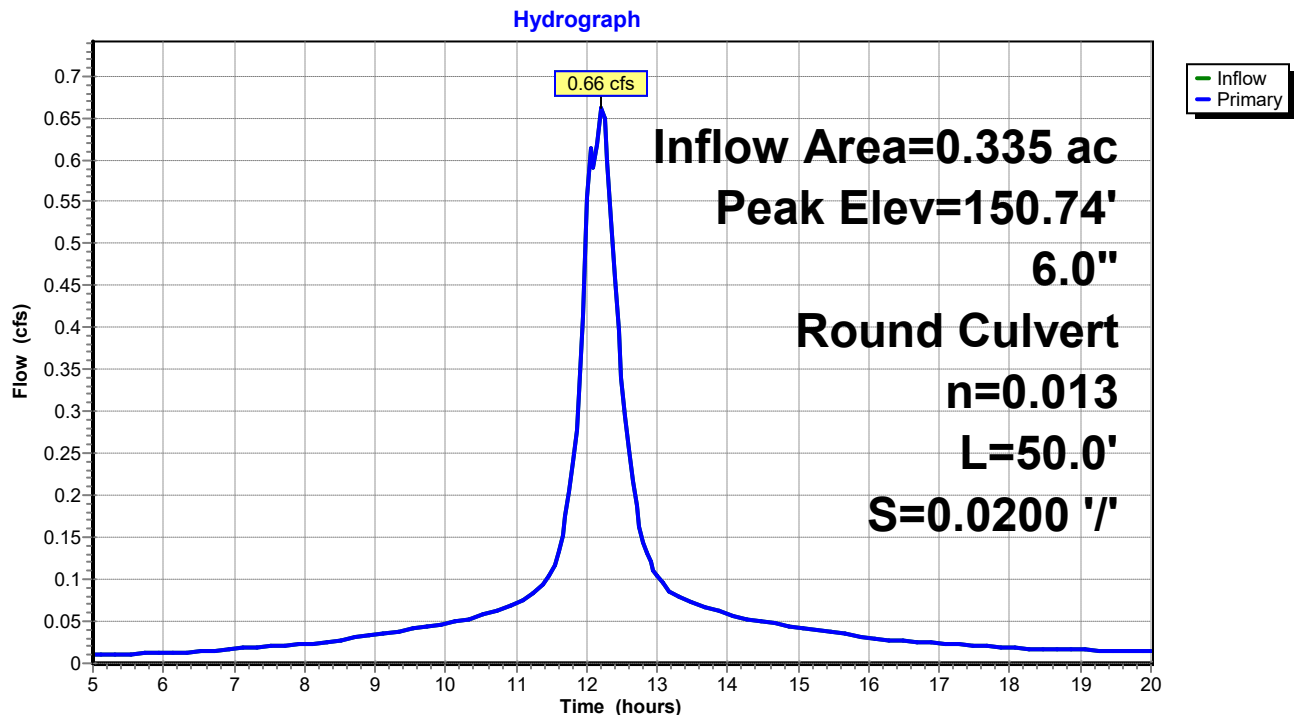
Peak Elev= 150.74' @ 12.22 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	150.00'	6.0" Round Culvert L= 50.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 150.00' / 149.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.66 cfs @ 12.22 hrs HW=150.73' (Free Discharge)

↑1=Culvert (Inlet Controls 0.66 cfs @ 3.34 fps)

Pond 1P: (new Pond)



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 2YR Rainfall=3.23", AMC=4

Printed 2/25/2024

Page 22

Summary for Pond 2P: (new Pond)

Inflow Area = 0.566 ac, 0.00% Impervious, Inflow Depth > 2.80" for 2YR event
Inflow = 1.74 cfs @ 12.08 hrs, Volume= 0.132 af
Outflow = 1.74 cfs @ 12.08 hrs, Volume= 0.132 af, Atten= 0%, Lag= 0.0 min
Primary = 1.74 cfs @ 12.08 hrs, Volume= 0.132 af
Routed to Reach 4R : (new Reach)

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

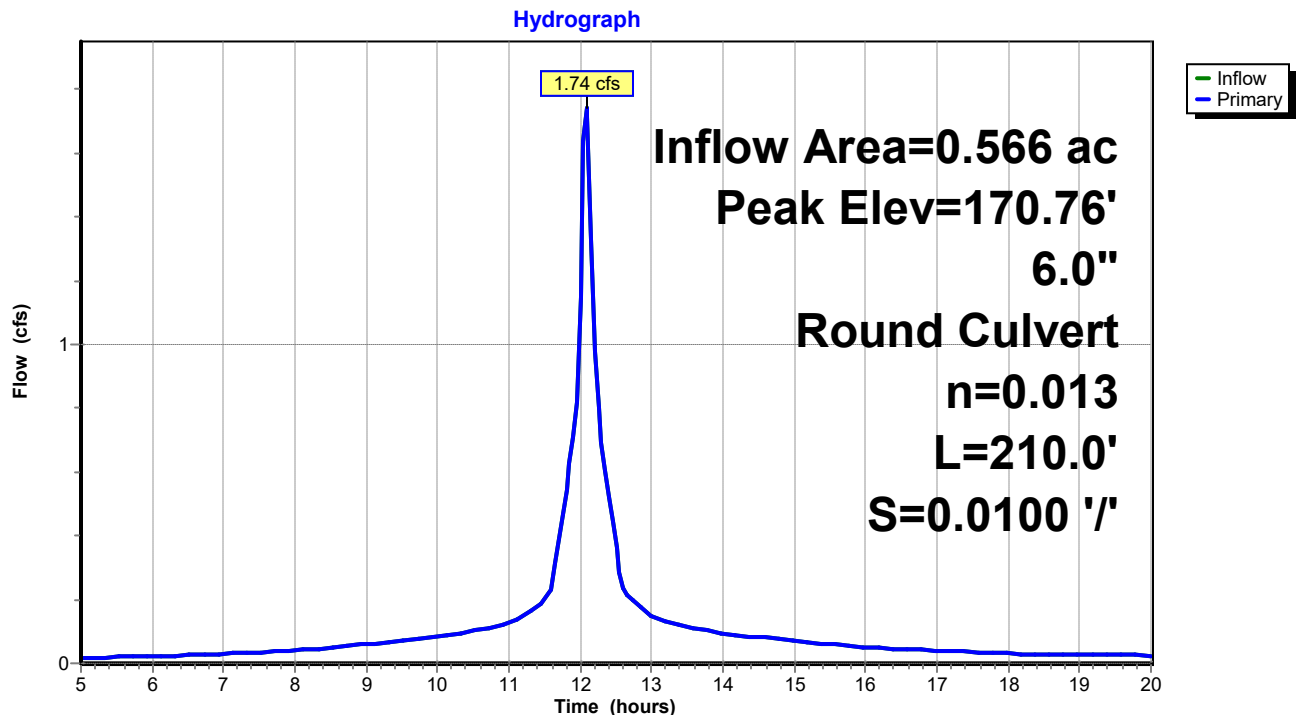
Peak Elev= 170.76' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	150.10'	6.0" Round Culvert L= 210.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 150.10' / 148.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=1.69 cfs @ 12.08 hrs HW=169.59' (Free Discharge)

↑1=Culvert (Barrel Controls 1.69 cfs @ 8.61 fps)

Pond 2P: (new Pond)



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 2YR Rainfall=3.23", AMC=4

Printed 2/25/2024

Page 23

Summary for Pond 3P: (new Pond)

Inflow Area = 0.427 ac, 14.80% Impervious, Inflow Depth > 2.80" for 2YR event
Inflow = 0.91 cfs @ 12.04 hrs, Volume= 0.100 af
Outflow = 0.91 cfs @ 12.04 hrs, Volume= 0.100 af, Atten= 0%, Lag= 0.0 min
Primary = 0.91 cfs @ 12.04 hrs, Volume= 0.100 af
Routed to Reach 4R : (new Reach)

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

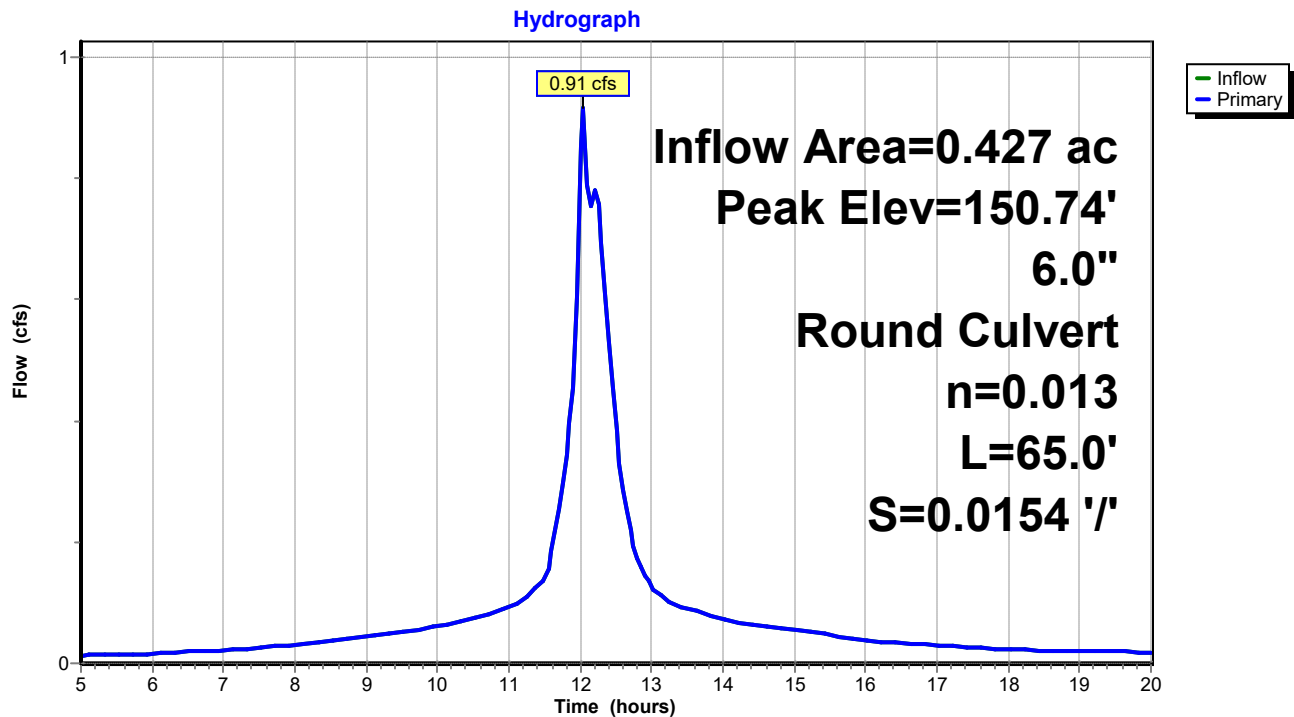
Peak Elev= 150.74' @ 12.04 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	149.00'	6.0" Round Culvert L= 65.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 149.00' / 148.00' S= 0.0154 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.90 cfs @ 12.04 hrs HW=150.68' (Free Discharge)

↑1=Culvert (Barrel Controls 0.90 cfs @ 4.60 fps)

Pond 3P: (new Pond)



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 2YR Rainfall=3.23", AMC=4

Printed 2/25/2024

Page 24

Summary for Pond 6P: DP5

Inflow Area = 0.559 ac, 48.22% Impervious, Inflow Depth > 2.80" for 2YR event
Inflow = 1.91 cfs @ 12.04 hrs, Volume= 0.131 af
Outflow = 1.91 cfs @ 12.04 hrs, Volume= 0.131 af, Atten= 0%, Lag= 0.0 min
Primary = 1.91 cfs @ 12.04 hrs, Volume= 0.131 af
Routed to Pond SUM2 : DP5
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 136.05' @ 12.04 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	135.10'	12.0" Round Culvert L= 220.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 135.10' / 134.22' S= 0.0040 ' S= 0.0040 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	138.90'	2.0" x 2.0" Horiz. Orifice/Grate X 6.00 columns X 6 rows C= 0.600 in 24.0" x 24.0" Grate (25% open area) Limited to weir flow at low heads

Primary OutFlow Max=1.84 cfs @ 12.04 hrs HW=136.03' (Free Discharge)

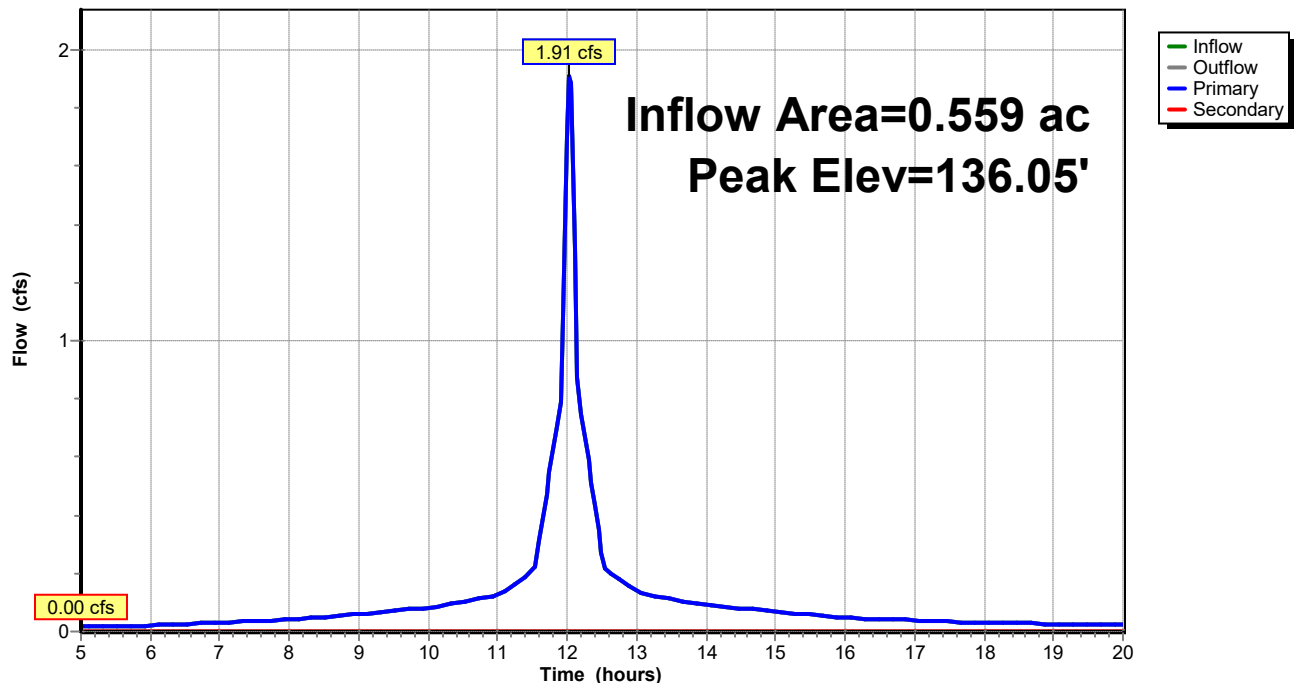
1=Culvert (Barrel Controls 1.84 cfs @ 3.15 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=135.18' (Free Discharge)

2=Orifice/Grate (Controls 0.00 cfs)

Pond 6P: DP5

Hydrograph



NEWTON ROAD PROPOSED 4-7

Type III 24-hr 2YR Rainfall=3.23", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/25/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 25

Summary for Pond P5: DP4

Inflow Area = 9.940 ac, 2.14% Impervious, Inflow Depth > 2.80" for 2YR event
 Inflow = 28.44 cfs @ 12.11 hrs, Volume= 2.320 af
 Outflow = 17.16 cfs @ 12.24 hrs, Volume= 2.318 af, Atten= 40%, Lag= 8.2 min
 Discarded = 3.83 cfs @ 12.24 hrs, Volume= 1.582 af
 Primary = 13.33 cfs @ 12.24 hrs, Volume= 0.736 af
 Routed to Pond SUM : DP4
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Routed to Pond SUM : DP4

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 127.78' @ 12.24 hrs Surf.Area= 20,018 sf Storage= 14,878 cf

Plug-Flow detention time= 8.1 min calculated for 2.310 af (100% of inflow)
 Center-of-Mass det. time= 7.7 min (747.8 - 740.1)

Volume	Invert	Avail.Storage	Storage Description
#1	127.00'	64,966 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
127.00	18,323	0	0
128.00	20,507	19,415	19,415
130.00	25,044	45,551	64,966

Device	Routing	Invert	Outlet Devices
#1	Secondary	128.00'	8.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	127.00'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Discarded	127.00'	8.270 in/hr Exfiltration over Surface area

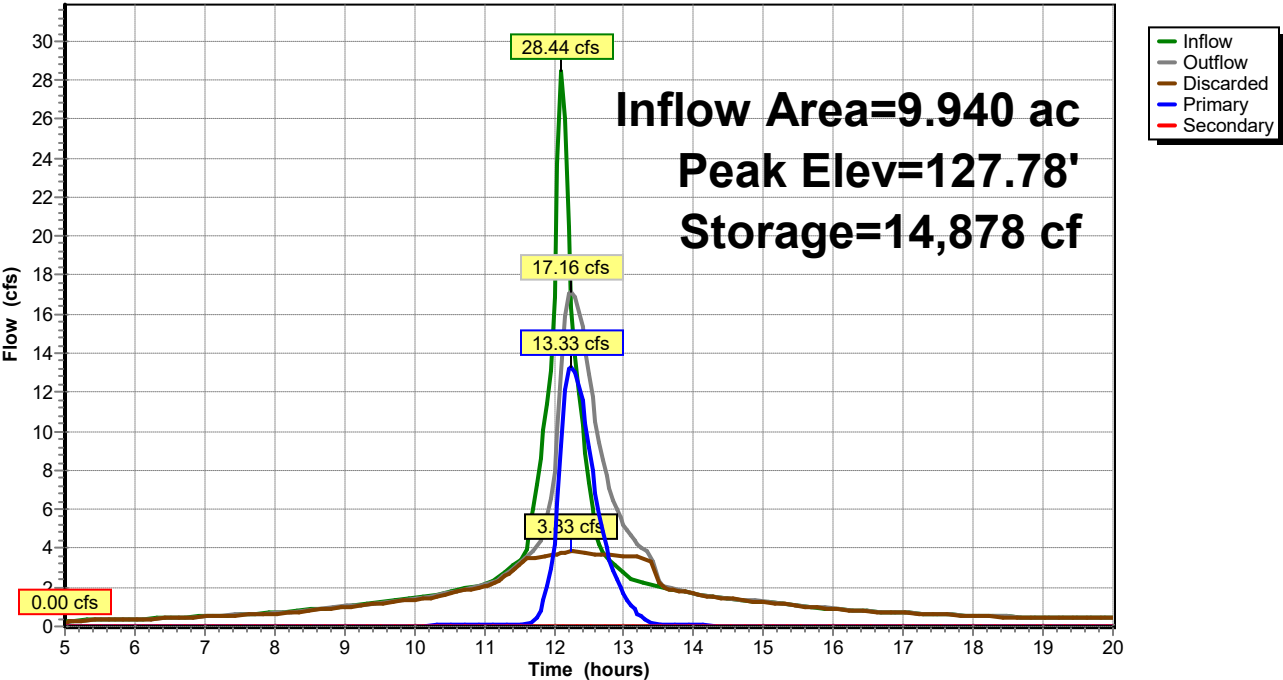
Discarded OutFlow Max=3.83 cfs @ 12.24 hrs HW=127.77' (Free Discharge)
 ↑ **3=Exfiltration** (Exfiltration Controls 3.83 cfs)

Primary OutFlow Max=13.31 cfs @ 12.24 hrs HW=127.77' (Free Discharge)
 ↑ **2=Orifice/Grate** (Orifice Controls 13.31 cfs @ 4.24 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=127.00' (Free Discharge)
 ↑ **1=Orifice/Grate** (Controls 0.00 cfs)

Pond P5: DP4

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 2YR Rainfall=3.23", AMC=4

Printed 2/25/2024

Page 27

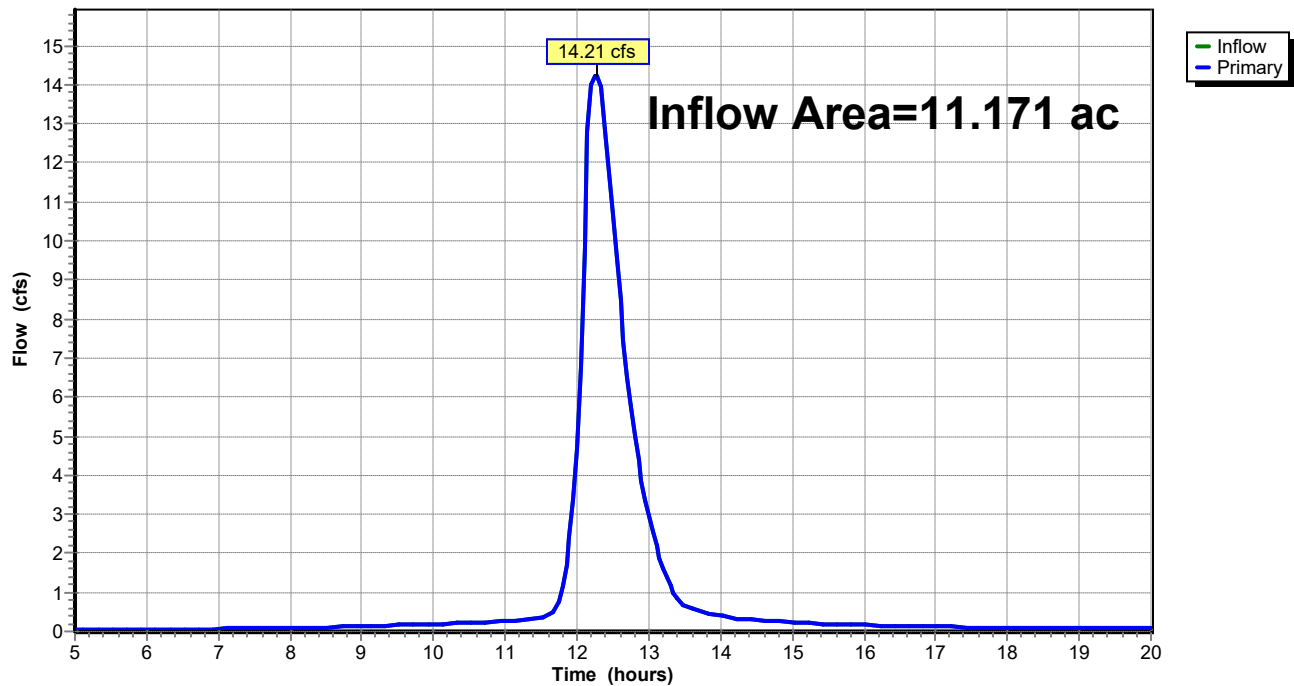
Summary for Pond SUM: DP4

Inflow Area = 11.171 ac, 1.91% Impervious, Inflow Depth > 1.10" for 2YR event
Inflow = 14.21 cfs @ 12.27 hrs, Volume= 1.022 af
Primary = 14.21 cfs @ 12.27 hrs, Volume= 1.022 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond SUM: DP4

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 2YR Rainfall=3.23", AMC=4

Printed 2/25/2024

Page 28

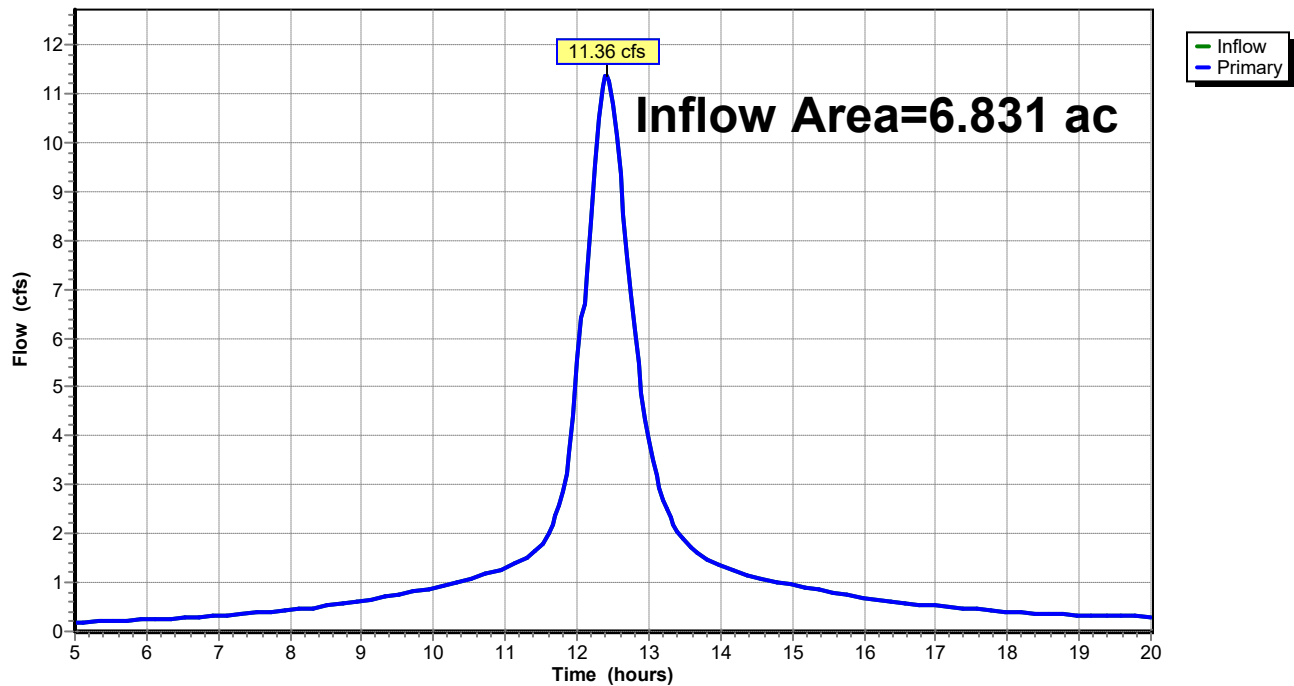
Summary for Pond SUM2: DP5

Inflow Area = 6.831 ac, 6.14% Impervious, Inflow Depth > 2.80" for 2YR event
Inflow = 11.36 cfs @ 12.41 hrs, Volume= 1.591 af
Primary = 11.36 cfs @ 12.41 hrs, Volume= 1.591 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond SUM2: DP5

Hydrograph



NEWTON ROAD PROPOSED 4-7

Type III 24-hr 10YR Rainfall=5.12", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/25/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 29

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment AREA5: DP4 Runoff Area=389,738 sf 1.67% Impervious Runoff Depth>4.53"
Flow Length=398' Tc=8.0 min AMC Adjusted CN=98 Runoff=41.43 cfs 3.376 af

Subcatchment AREA5.1: DP4 Runoff Area=24,673 sf 0.00% Impervious Runoff Depth>4.53"
Flow Length=177' Slope=0.0660 '/' Tc=5.8 min AMC Adjusted CN=98 Runoff=2.78 cfs 0.214 af

Subcatchment AREA5.2: DP4 Runoff Area=10,601 sf 0.00% Impervious Runoff Depth>4.53"
Flow Length=120' Tc=17.5 min AMC Adjusted CN=98 Runoff=0.87 cfs 0.092 af

Subcatchment AREA5.3.1: DP4 Runoff Area=3,989 sf 34.47% Impervious Runoff Depth>4.53"
Flow Length=131' Slope=0.0200 '/' Tc=1.7 min AMC Adjusted CN=98 Runoff=0.50 cfs 0.035 af

Subcatchment AREA5.3.2: DP4 Runoff Area=3,989 sf 34.47% Impervious Runoff Depth>4.53"
Flow Length=131' Slope=0.0200 '/' Tc=1.7 min AMC Adjusted CN=98 Runoff=0.50 cfs 0.035 af

Subcatchment AREA5.4: DP4 Runoff Area=53,612 sf 0.00% Impervious Runoff Depth>4.52"
Flow Length=473' Slope=0.0200 '/' Tc=52.5 min AMC Adjusted CN=98 Runoff=2.68 cfs 0.463 af

Subcatchment AREA6: DP7 Runoff Area=103,711 sf 1.67% Impervious Runoff Depth>4.53"
Flow Length=201' Slope=0.0300 '/' Tc=21.1 min AMC Adjusted CN=98 Runoff=7.95 cfs 0.898 af

Subcatchment AREA7: DP5 Runoff Area=273,185 sf 2.39% Impervious Runoff Depth>4.52"
Flow Length=991' Tc=31.9 min AMC Adjusted CN=98 Runoff=17.50 cfs 2.364 af

Subcatchment AREA7.1: DP5 Runoff Area=24,366 sf 48.22% Impervious Runoff Depth>4.53"
Flow Length=331' Tc=2.3 min AMC Adjusted CN=98 Runoff=3.05 cfs 0.211 af

Subcatchment AREA8: DP6 Runoff Area=151,281 sf 1.44% Impervious Runoff Depth>4.51"
Flow Length=447' Slope=0.0090 '/' Tc=57.3 min AMC Adjusted CN=98 Runoff=7.19 cfs 1.306 af

Reach 4R: (new Reach) Avg. Flow Depth=0.47' Max Vel=11.27 fps Inflow=4.16 cfs 0.375 af
12.0" Round Pipe n=0.013 L=321.0' S=0.0654 '/' Capacity=9.11 cfs Outflow=4.07 cfs 0.374 af

Pond 1P: (new Pond) Peak Elev=151.95' Inflow=1.06 cfs 0.126 af
6.0" Round Culvert n=0.013 L=50.0' S=0.0200 '/' Outflow=1.06 cfs 0.126 af

Pond 2P: (new Pond) Peak Elev=205.31' Inflow=2.78 cfs 0.214 af
6.0" Round Culvert n=0.013 L=210.0' S=0.0100 '/' Outflow=2.78 cfs 0.214 af

Pond 3P: (new Pond) Peak Elev=154.22' Inflow=1.46 cfs 0.161 af
6.0" Round Culvert n=0.013 L=65.0' S=0.0154 '/' Outflow=1.46 cfs 0.161 af

Pond 6P: DP5 Peak Elev=137.22' Inflow=3.05 cfs 0.211 af
Primary=3.05 cfs 0.211 af Secondary=0.00 cfs 0.000 af Outflow=3.05 cfs 0.211 af

Pond P5: DP4 Peak Elev=128.39' Storage=27,571 cf Inflow=45.44 cfs 3.750 af
Discarded=4.09 cfs 2.251 af Primary=17.83 cfs 1.466 af Secondary=1.05 cfs 0.030 af Outflow=22.97 cfs 3.748 af

NEWTON ROAD PROPOSED 4-7*Type III 24-hr 10YR Rainfall=5.12", AMC=4*

Prepared by PGC Engineering PLLC

Printed 2/25/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 30

Pond SUM: DP4

Inflow=20.55 cfs 1.960 af

Primary=20.55 cfs 1.960 af

Pond SUM2: DP5

Inflow=18.16 cfs 2.575 af

Primary=18.16 cfs 2.575 af

Total Runoff Area = 23.855 ac Runoff Volume = 8.992 af Average Runoff Depth = 4.52"
96.97% Pervious = 23.133 ac 3.03% Impervious = 0.722 ac

NEWTON ROAD PROPOSED 4-7

Type III 24-hr 10YR Rainfall=5.12", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/25/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 31

Summary for Subcatchment AREA5: DP4

Runoff = 41.43 cfs @ 12.11 hrs, Volume= 3.376 af, Depth> 4.53"
 Routed to Pond P5 : DP4

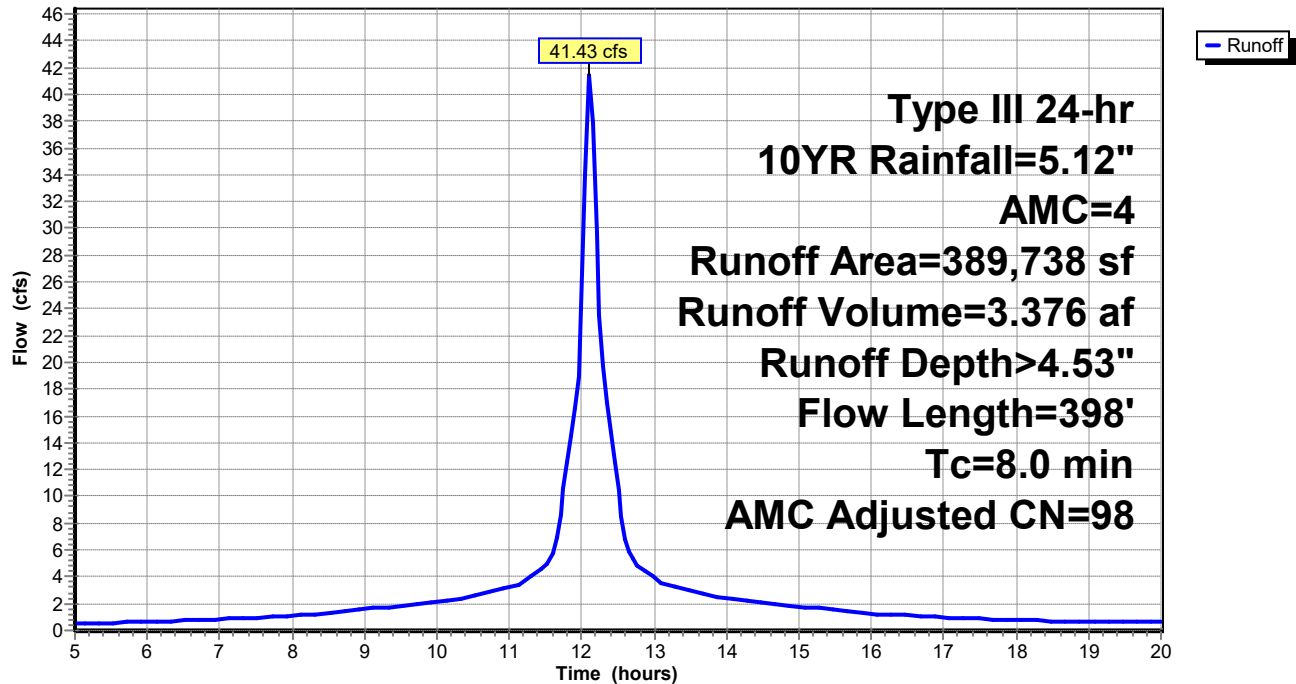
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10YR Rainfall=5.12", AMC=4

	Area (sf)	CN	Adj	Description
*	6,528	98		ROOF
*	129,067	36		WOODS A SOIL
*	194,143	73		WOODS C SOIL
	60,000	74		>75% Grass cover, Good, HSG C
	389,738	61	98	Weighted Average, AMC Adjusted
	383,210			98.33% Pervious Area
	6,528			1.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	100	0.0700	0.28		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
0.9	100	0.0700	1.85		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.2	198	0.0350	2.65	53.04	Channel Flow, Area= 20.0 sf Perim= 30.0' r= 0.67' n= 0.080 Earth, long dense weeds
8.0	398	Total			

Subcatchment AREA5: DP4

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 10YR Rainfall=5.12", AMC=4

Printed 2/25/2024

Page 33

Summary for Subcatchment AREA5.1: DP4

Runoff = 2.78 cfs @ 12.08 hrs, Volume= 0.214 af, Depth> 4.53"
 Routed to Pond 2P : (new Pond)

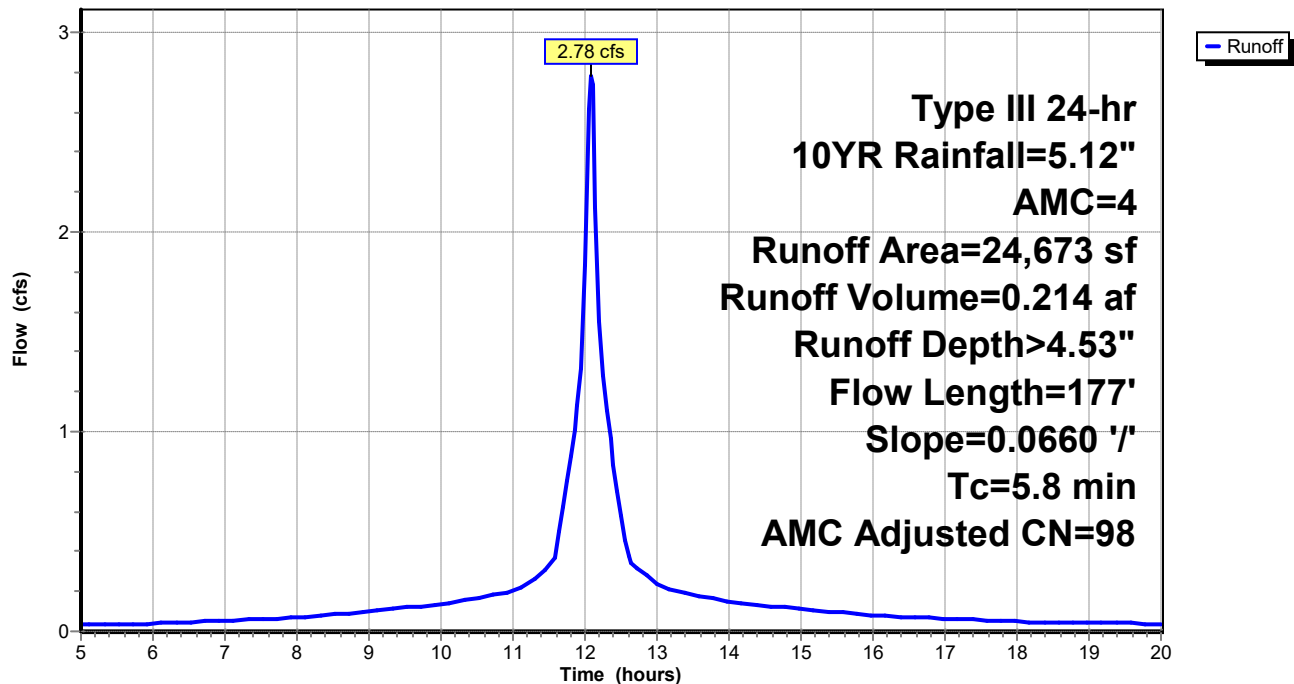
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10YR Rainfall=5.12", AMC=4

Area (sf)	CN	Adj	Description
24,673	74		>75% Grass cover, Good, HSG C
24,673	74	98	Weighted Average, AMC Adjusted
24,673			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	77	0.0660	0.26		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
0.9	100	0.0660	1.80		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
5.8	177	Total			

Subcatchment AREA5.1: DP4

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 10YR Rainfall=5.12", AMC=4

Printed 2/25/2024

Page 34

Summary for Subcatchment AREA5.2: DP4

Runoff = 0.87 cfs @ 12.23 hrs, Volume= 0.092 af, Depth> 4.53"
Routed to Pond 1P : (new Pond)

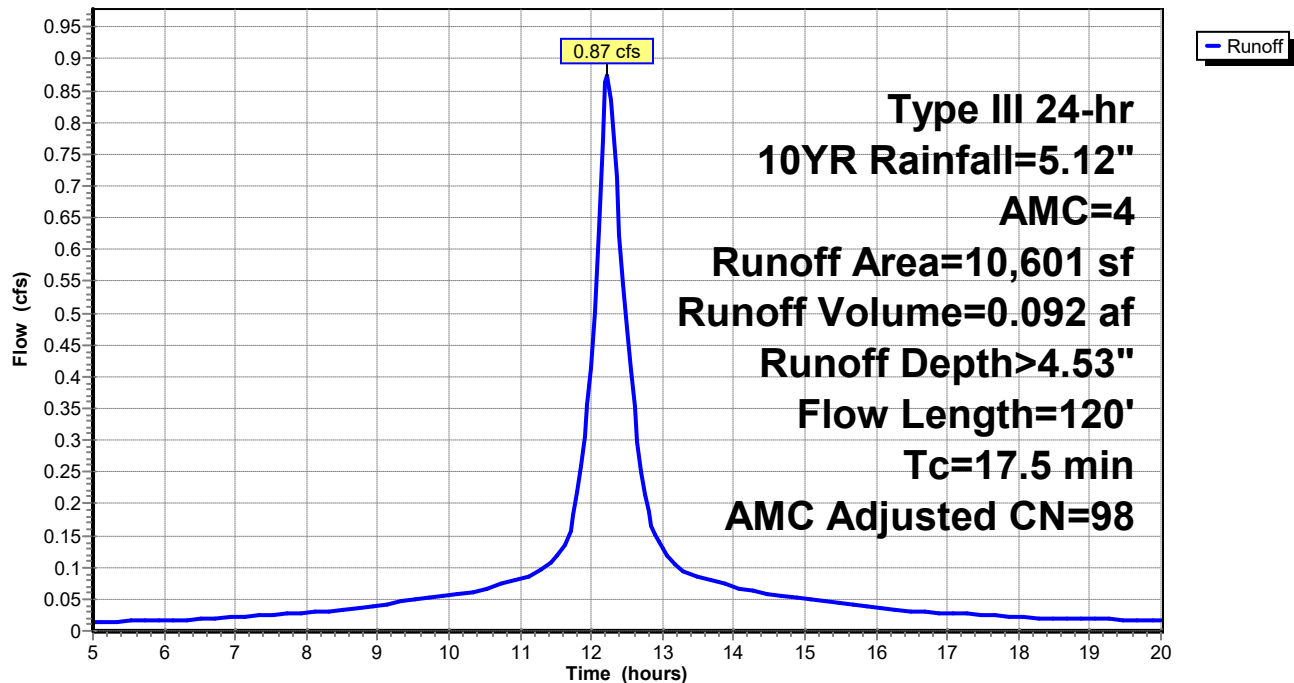
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=5.12", AMC=4

Area (sf)	CN	Adj	Description
10,601	73		Woods, Fair, HSG C
10,601	73	98	Weighted Average, AMC Adjusted
10,601			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.1	60	0.0500	0.06		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
0.4	60	0.0590	2.26	3.84	Channel Flow, Area= 1.7 sf Perim= 6.0' r= 0.28' n= 0.069 Riprap, 6-inch
17.5	120	Total			

Subcatchment AREA5.2: DP4

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 10YR Rainfall=5.12", AMC=4

Printed 2/25/2024

Page 35

Summary for Subcatchment AREA5.3.1: DP4

Runoff = 0.50 cfs @ 12.03 hrs, Volume= 0.035 af, Depth> 4.53"
 Routed to Pond 1P : (new Pond)

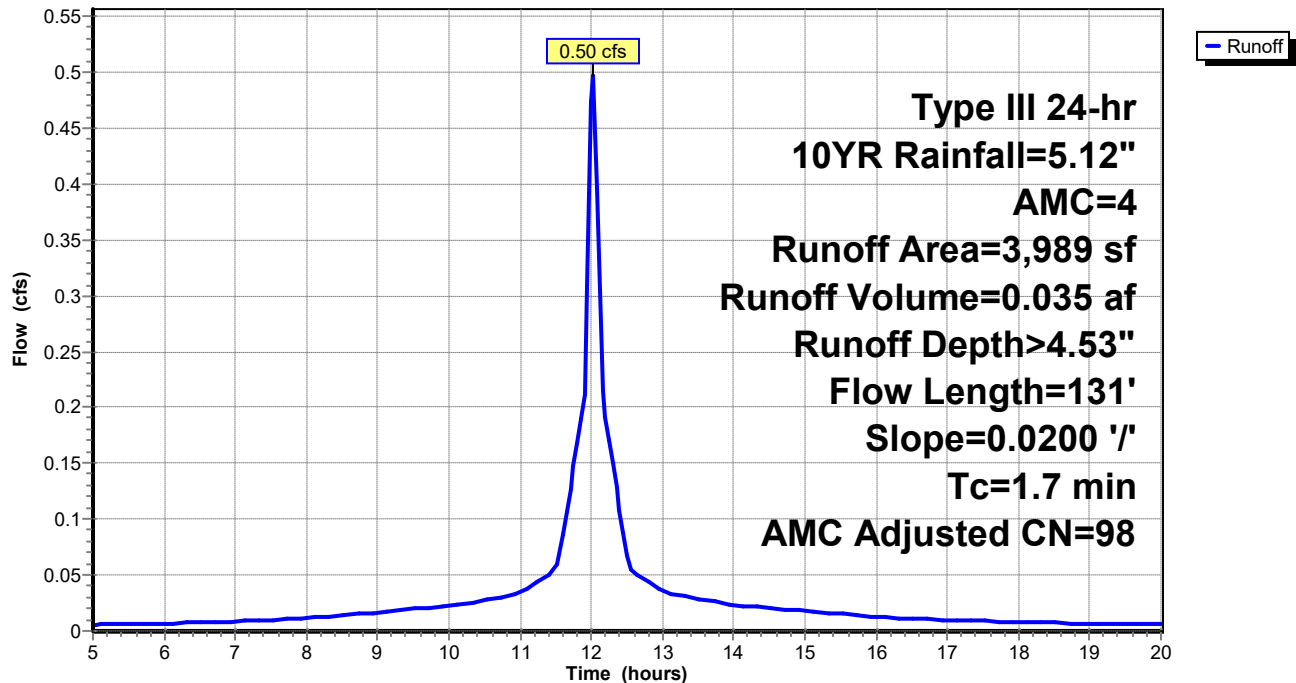
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10YR Rainfall=5.12", AMC=4

Area (sf)	CN	Adj	Description
1,375	98		Paved parking, HSG C
2,614	74		>75% Grass cover, Good, HSG C
3,989	82	98	Weighted Average, AMC Adjusted
2,614			65.53% Pervious Area
1,375			34.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0200	0.89		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.23"
1.5	120	0.0200	1.31	2.23	Channel Flow, Area= 1.7 sf Perim= 6.0' r= 0.28' n= 0.069 Riprap, 6-inch
1.7	131	Total			

Subcatchment AREA5.3.1: DP4

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 10YR Rainfall=5.12", AMC=4

Printed 2/25/2024

Page 36

Summary for Subcatchment AREA5.3.2: DP4

Runoff = 0.50 cfs @ 12.03 hrs, Volume= 0.035 af, Depth> 4.53"
 Routed to Pond 3P : (new Pond)

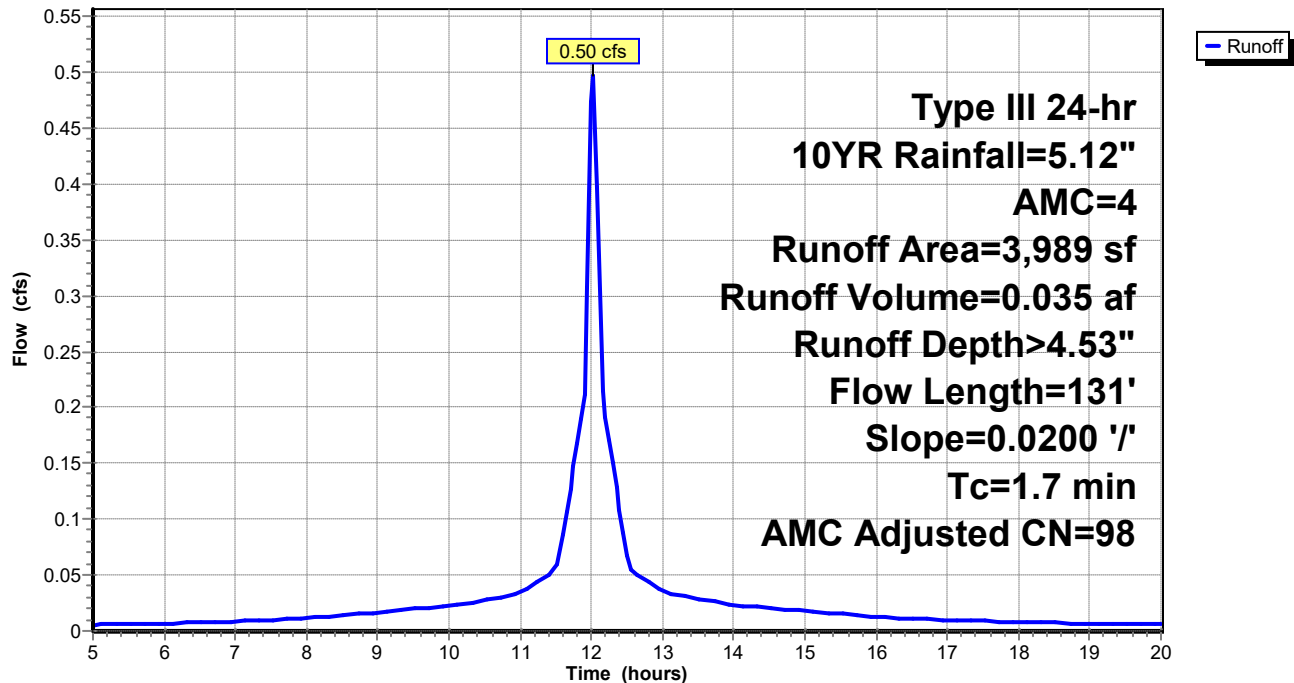
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10YR Rainfall=5.12", AMC=4

Area (sf)	CN	Adj	Description
1,375	98		Paved parking, HSG C
2,614	74		>75% Grass cover, Good, HSG C
3,989	82	98	Weighted Average, AMC Adjusted
2,614			65.53% Pervious Area
1,375			34.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0200	0.89		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.23"
1.5	120	0.0200	1.31	2.23	Channel Flow, Area= 1.7 sf Perim= 6.0' r= 0.28' n= 0.069 Riprap, 6-inch
1.7	131	Total			

Subcatchment AREA5.3.2: DP4

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 10YR Rainfall=5.12", AMC=4

Printed 2/25/2024

Page 37

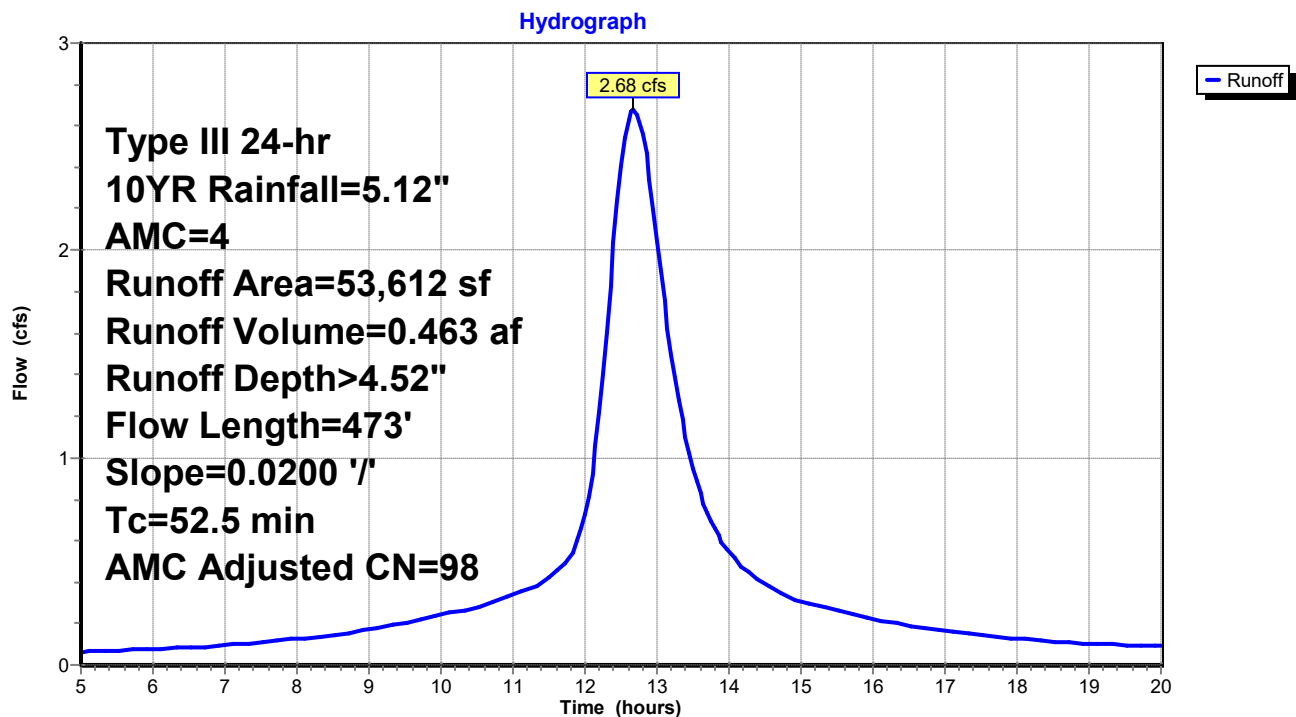
Summary for Subcatchment AREA5.4: DP4

Runoff = 2.68 cfs @ 12.67 hrs, Volume= 0.463 af, Depth> 4.52"
Routed to Pond SUM : DP4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=5.12", AMC=4

Area (sf)	CN	Adj	Description
26,806	36		Woods, Fair, HSG A
26,806	73		Woods, Fair, HSG C
53,612	55	98	Weighted Average, AMC Adjusted
53,612			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.2	100	0.0200	0.04		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
2.4	100	0.0200	0.71		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
12.9	273	0.0200	0.35		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
52.5	473	Total			

Subcatchment AREA5.4: DP4

NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 10YR Rainfall=5.12", AMC=4

Printed 2/25/2024

Page 38

Summary for Subcatchment AREA6: DP7

Runoff = 7.95 cfs @ 12.27 hrs, Volume= 0.898 af, Depth> 4.53"

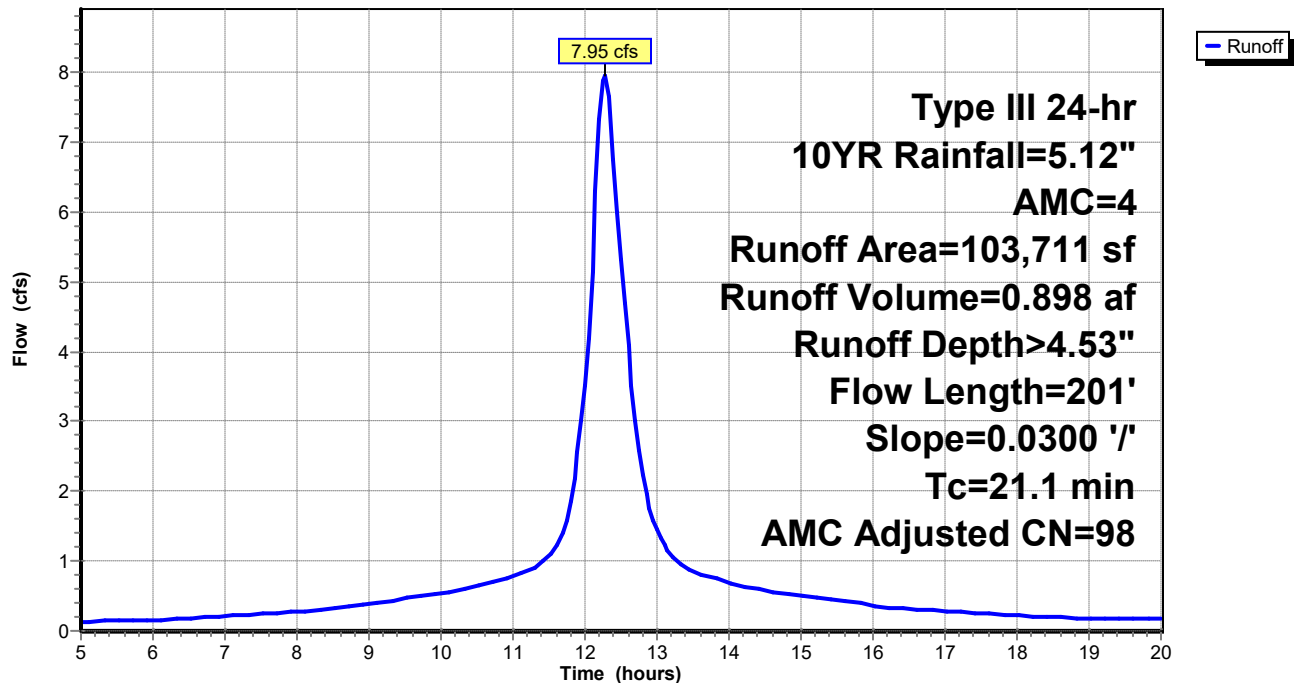
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=5.12", AMC=4

Area (sf)	CN	Adj	Description
101,983	73		Woods, Fair, HSG C
1,728	98		Roofs, HSG C
103,711	73	98	Weighted Average, AMC Adjusted
101,983			98.33% Pervious Area
1,728			1.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	50	0.0300	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
2.9	151	0.0300	0.87		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
21.1	201	Total			

Subcatchment AREA6: DP7

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 10YR Rainfall=5.12", AMC=4

Printed 2/25/2024

Page 39

Summary for Subcatchment AREA7: DP5

Runoff = 17.50 cfs @ 12.42 hrs, Volume= 2.364 af, Depth> 4.52"
 Routed to Pond SUM2 : DP5

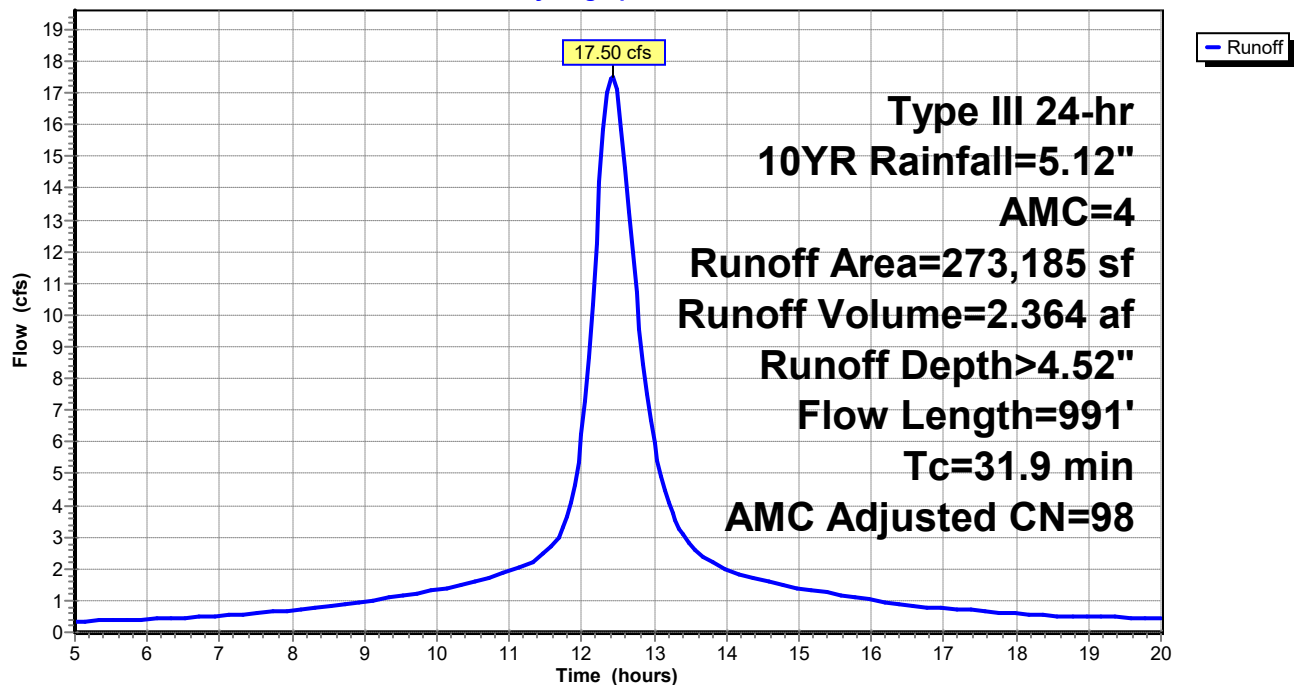
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10YR Rainfall=5.12", AMC=4

Area (sf)	CN	Adj	Description
40,000	74		>75% Grass cover, Good, HSG C
6,528	98		Roofs, HSG C
226,657	73		Woods, Fair, HSG C
273,185	74	98	Weighted Average, AMC Adjusted
266,657			97.61% Pervious Area
6,528			2.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0800	0.30		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
1.4	100	0.0300	1.21		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
24.9	791	0.0350	0.53	10.61	Channel Flow, Area= 20.0 sf Perim= 30.0' r= 0.67' n= 0.400 Sheet flow: Woods+light brush
31.9	991	Total			

Subcatchment AREA7: DP5

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 10YR Rainfall=5.12", AMC=4

Printed 2/25/2024

Page 40

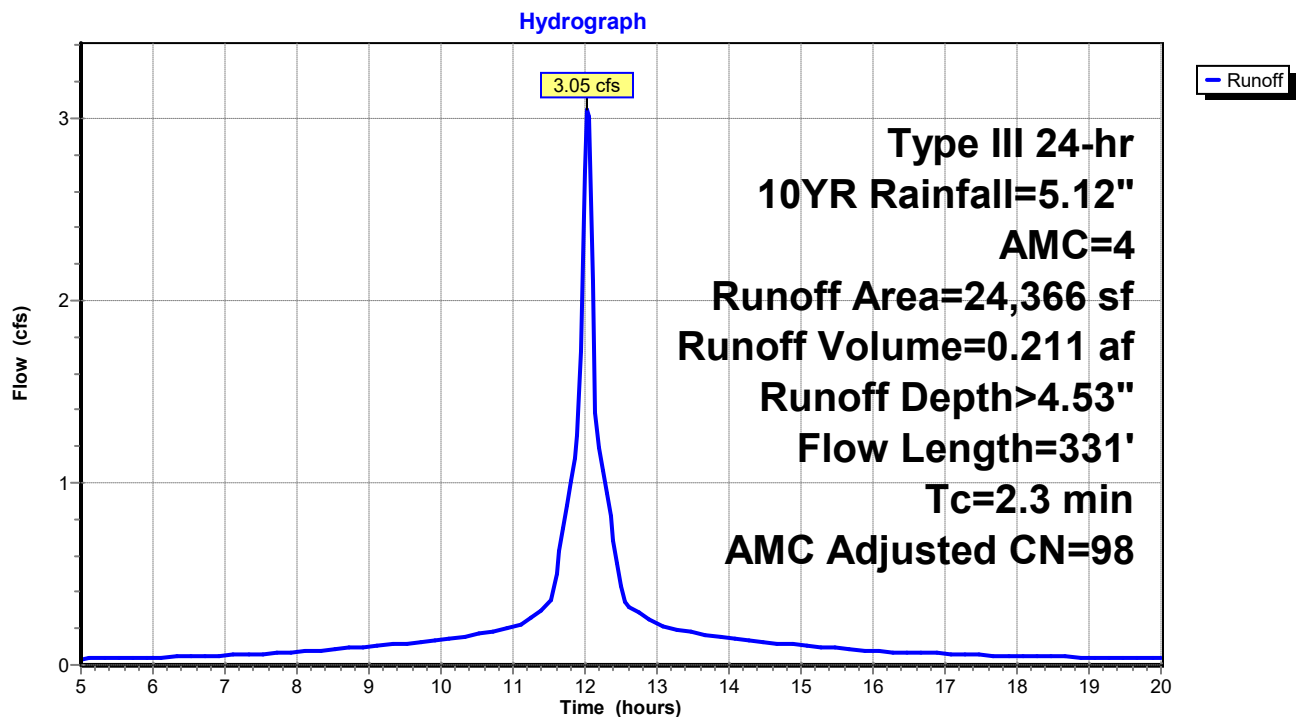
Summary for Subcatchment AREA7.1: DP5

Runoff = 3.05 cfs @ 12.04 hrs, Volume= 0.211 af, Depth> 4.53"
Routed to Pond 6P : DP5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=5.12", AMC=4

Area (sf)	CN	Adj	Description
11,749	98		Paved parking, HSG C
12,617	74		>75% Grass cover, Good, HSG C
24,366	86	98	Weighted Average, AMC Adjusted
12,617			51.78% Pervious Area
11,749			48.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0200	0.89		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.23"
2.1	320	0.0590	2.51	4.28	Channel Flow, Area= 1.7 sf Perim= 5.1' r= 0.33' n= 0.069 Riprap, 6-inch
2.3	331	Total			

Subcatchment AREA7.1: DP5

NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 10YR Rainfall=5.12", AMC=4

Printed 2/25/2024

Page 41

Summary for Subcatchment AREA8: DP6

Runoff = 7.19 cfs @ 12.74 hrs, Volume= 1.306 af, Depth> 4.51"

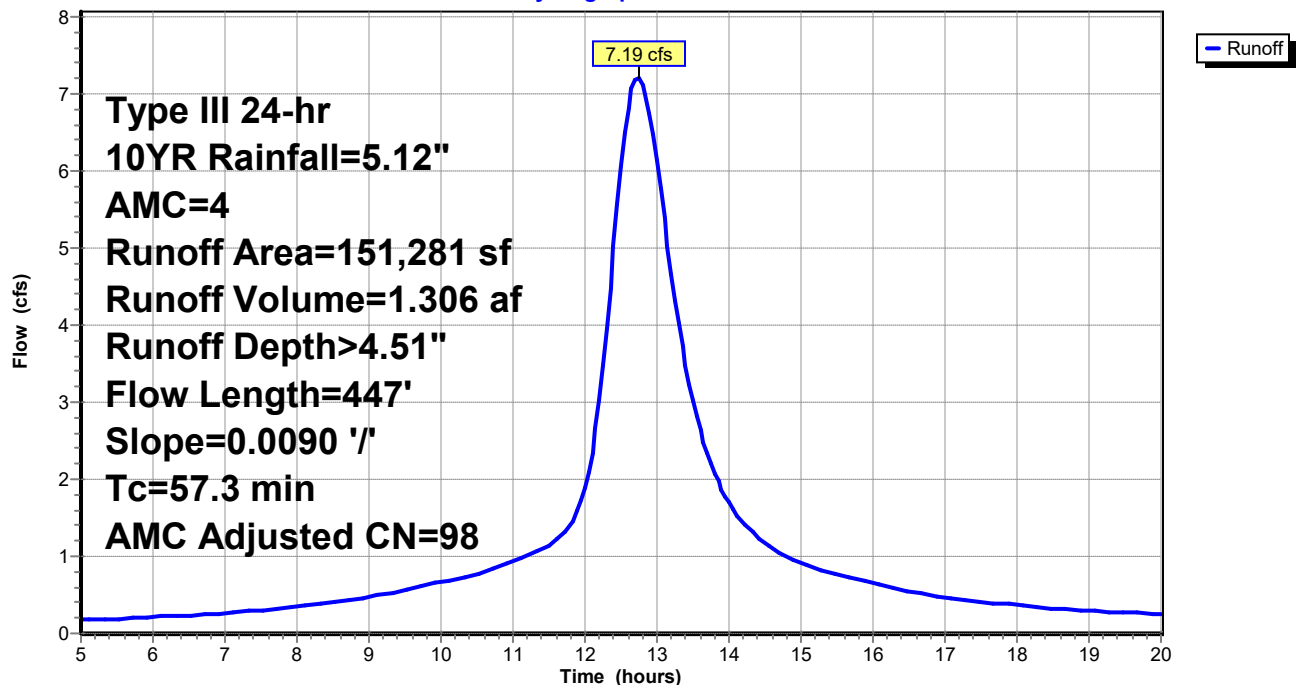
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=5.12", AMC=4

Area (sf)	CN	Adj	Description
20,000	74		>75% Grass cover, Good, HSG C
2,176	98		Roofs, HSG C
129,105	73		Woods, Fair, HSG C
151,281	73	98	Weighted Average, AMC Adjusted
149,105			98.56% Pervious Area
2,176			1.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.4	50	0.0090	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
27.9	397	0.0090	0.24		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
57.3	447	Total			

Subcatchment AREA8: DP6

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 10YR Rainfall=5.12", AMC=4

Printed 2/25/2024

Page 42

Summary for Reach 4R: (new Reach)

Inflow Area = 0.993 ac, 6.36% Impervious, Inflow Depth > 4.53" for 10YR event
Inflow = 4.16 cfs @ 12.07 hrs, Volume= 0.375 af
Outflow = 4.07 cfs @ 12.09 hrs, Volume= 0.374 af, Atten= 2%, Lag= 1.1 min
Routed to Pond P5 : DP4

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 11.27 fps, Min. Travel Time= 0.5 min

Avg. Velocity= 4.69 fps, Avg. Travel Time= 1.1 min

Peak Storage= 117 cf @ 12.08 hrs

Average Depth at Peak Storage= 0.47', Surface Width= 1.00'

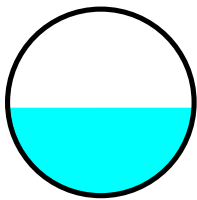
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 9.11 cfs

12.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

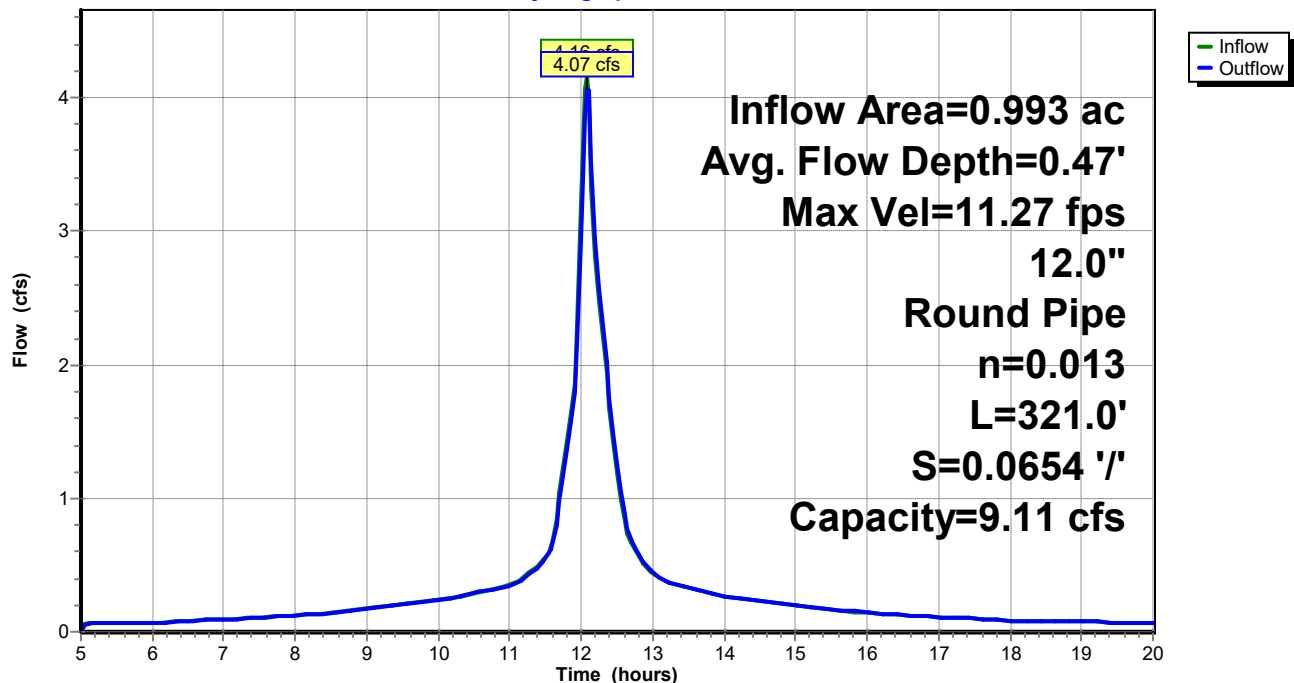
Length= 321.0' Slope= 0.0654 '/'

Inlet Invert= 148.00', Outlet Invert= 127.00'



Reach 4R: (new Reach)

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 10YR Rainfall=5.12", AMC=4

Printed 2/25/2024

Page 43

Summary for Pond 1P: (new Pond)

Inflow Area = 0.335 ac, 9.42% Impervious, Inflow Depth > 4.53" for 10YR event
Inflow = 1.06 cfs @ 12.22 hrs, Volume= 0.126 af
Outflow = 1.06 cfs @ 12.22 hrs, Volume= 0.126 af, Atten= 0%, Lag= 0.0 min
Primary = 1.06 cfs @ 12.22 hrs, Volume= 0.126 af
Routed to Pond 3P : (new Pond)

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

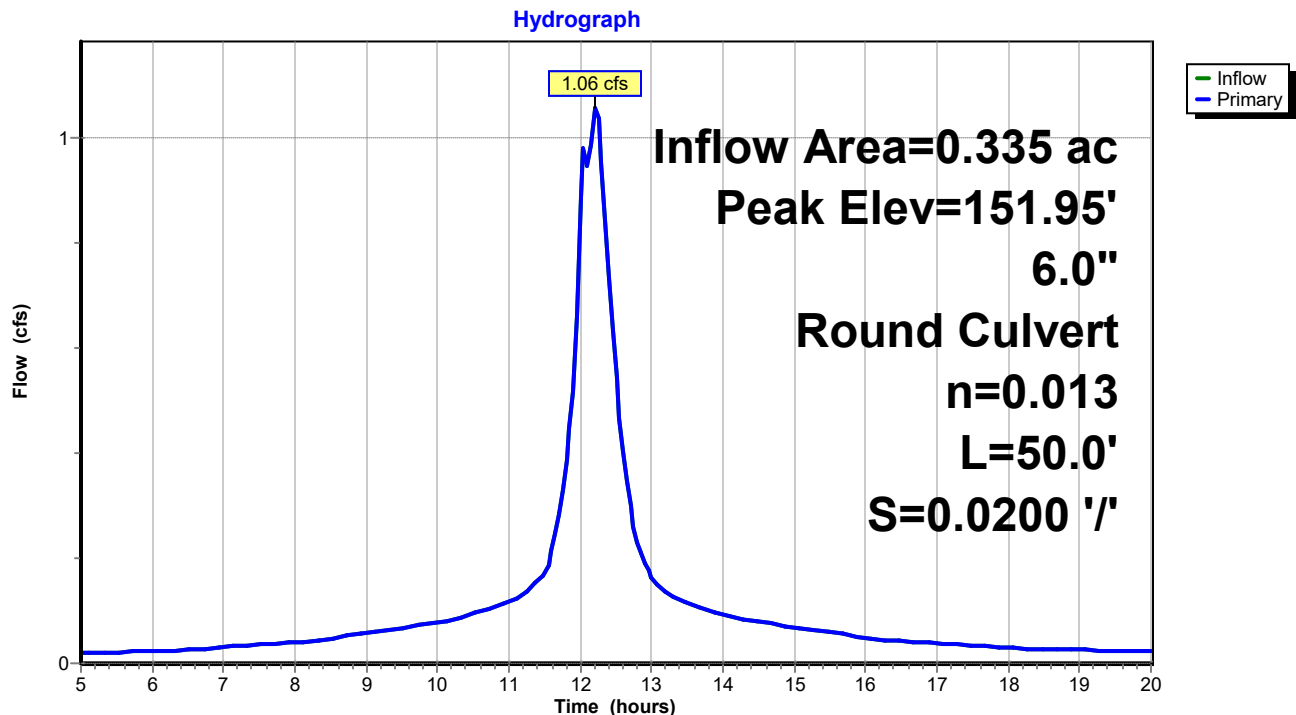
Peak Elev= 151.95' @ 12.22 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	150.00'	6.0" Round Culvert L= 50.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 150.00' / 149.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=1.05 cfs @ 12.22 hrs HW=151.91' (Free Discharge)

↑1=Culvert (Barrel Controls 1.05 cfs @ 5.34 fps)

Pond 1P: (new Pond)



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 10YR Rainfall=5.12", AMC=4

Printed 2/25/2024

Page 44

Summary for Pond 2P: (new Pond)

Inflow Area = 0.566 ac, 0.00% Impervious, Inflow Depth > 4.53" for 10YR event
Inflow = 2.78 cfs @ 12.08 hrs, Volume= 0.214 af
Outflow = 2.78 cfs @ 12.08 hrs, Volume= 0.214 af, Atten= 0%, Lag= 0.0 min
Primary = 2.78 cfs @ 12.08 hrs, Volume= 0.214 af
Routed to Reach 4R : (new Reach)

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

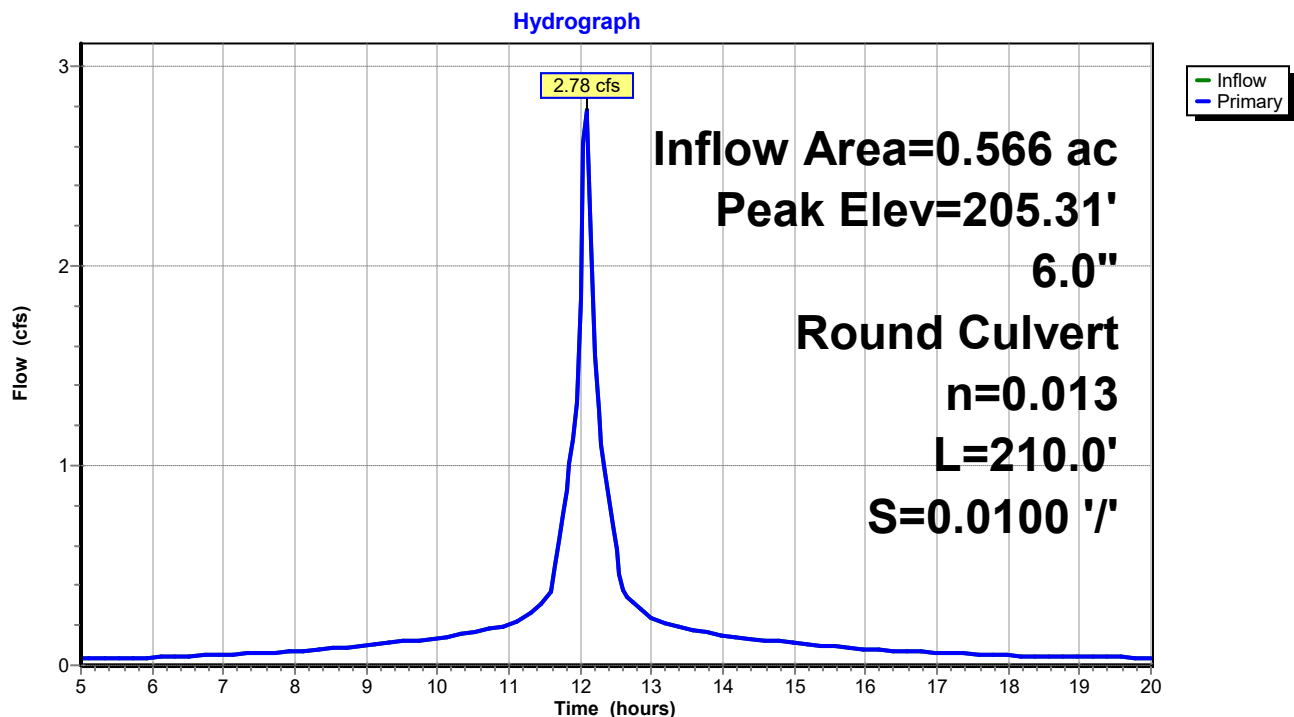
Peak Elev= 205.31' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	150.10'	6.0" Round Culvert L= 210.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 150.10' / 148.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=2.70 cfs @ 12.08 hrs HW=202.30' (Free Discharge)

↑1=Culvert (Barrel Controls 2.70 cfs @ 13.76 fps)

Pond 2P: (new Pond)



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 10YR Rainfall=5.12", AMC=4

Printed 2/25/2024

Page 45

Summary for Pond 3P: (new Pond)

Inflow Area = 0.427 ac, 14.80% Impervious, Inflow Depth > 4.53" for 10YR event
Inflow = 1.46 cfs @ 12.04 hrs, Volume= 0.161 af
Outflow = 1.46 cfs @ 12.04 hrs, Volume= 0.161 af, Atten= 0%, Lag= 0.0 min
Primary = 1.46 cfs @ 12.04 hrs, Volume= 0.161 af
Routed to Reach 4R : (new Reach)

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

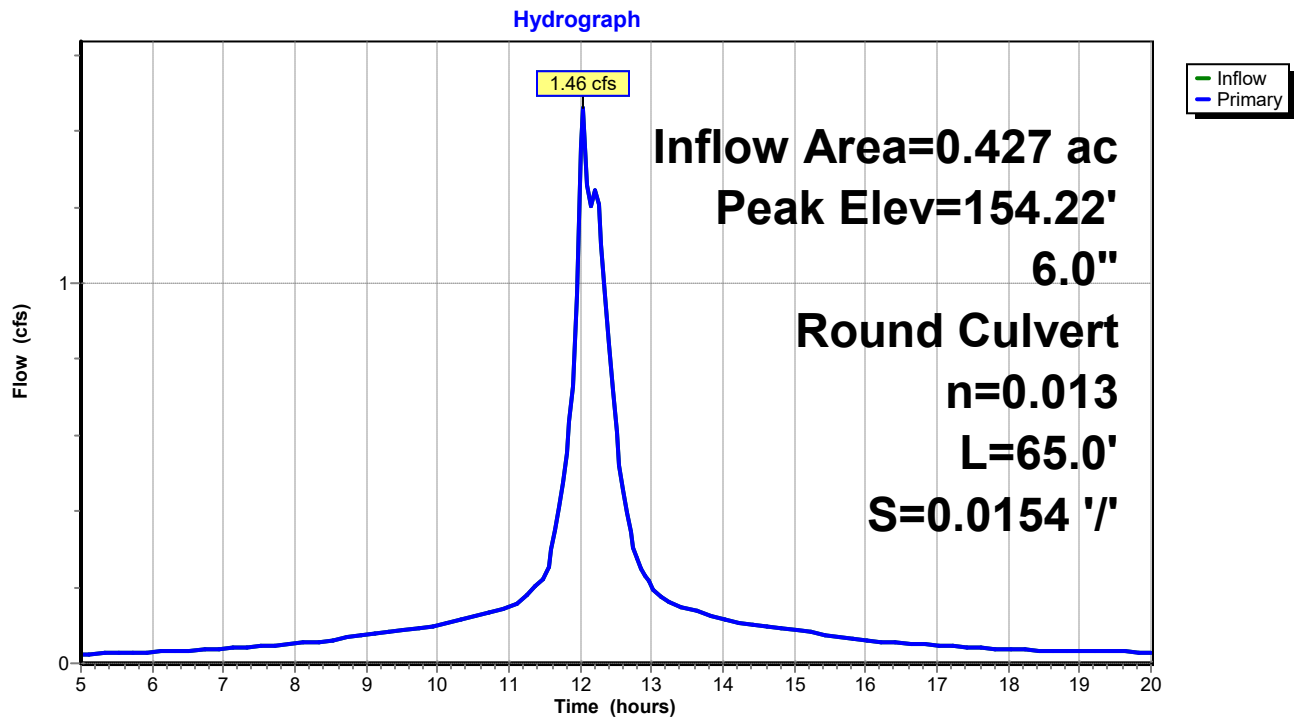
Peak Elev= 154.22' @ 12.04 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	149.00'	6.0" Round Culvert L= 65.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 149.00' / 148.00' S= 0.0154 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=1.44 cfs @ 12.04 hrs HW=154.07' (Free Discharge)

↑1=Culvert (Barrel Controls 1.44 cfs @ 7.35 fps)

Pond 3P: (new Pond)



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 10YR Rainfall=5.12", AMC=4

Printed 2/25/2024

Page 46

Summary for Pond 6P: DP5

Inflow Area = 0.559 ac, 48.22% Impervious, Inflow Depth > 4.53" for 10YR event
 Inflow = 3.05 cfs @ 12.04 hrs, Volume= 0.211 af
 Outflow = 3.05 cfs @ 12.04 hrs, Volume= 0.211 af, Atten= 0%, Lag= 0.0 min
 Primary = 3.05 cfs @ 12.04 hrs, Volume= 0.211 af
 Routed to Pond SUM2 : DP5
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 137.22' @ 12.04 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	135.10'	12.0" Round Culvert L= 220.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 135.10' / 134.22' S= 0.0040 ' S= 0.0040 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	138.90'	2.0" x 2.0" Horiz. Orifice/Grate X 6.00 columns X 6 rows C= 0.600 in 24.0" x 24.0" Grate (25% open area) Limited to weir flow at low heads

Primary OutFlow Max=2.94 cfs @ 12.04 hrs HW=137.09' (Free Discharge)

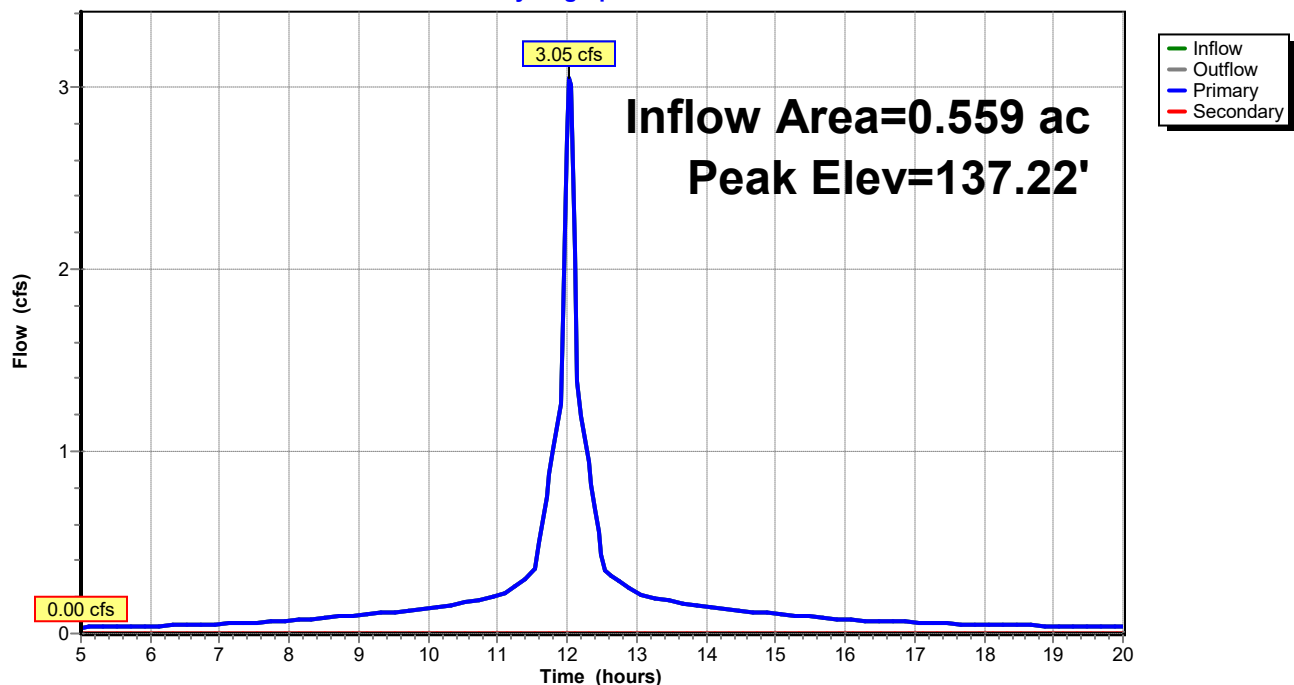
1=Culvert (Barrel Controls 2.94 cfs @ 3.74 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=135.21' (Free Discharge)

2=Orifice/Grate (Controls 0.00 cfs)

Pond 6P: DP5

Hydrograph



NEWTON ROAD PROPOSED 4-7

Type III 24-hr 10YR Rainfall=5.12", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/25/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 47

Summary for Pond P5: DP4

Inflow Area = 9.940 ac, 2.14% Impervious, Inflow Depth > 4.53" for 10YR event
 Inflow = 45.44 cfs @ 12.11 hrs, Volume= 3.750 af
 Outflow = 22.97 cfs @ 12.29 hrs, Volume= 3.748 af, Atten= 49%, Lag= 11.0 min
 Discarded = 4.09 cfs @ 12.29 hrs, Volume= 2.251 af
 Primary = 17.83 cfs @ 12.29 hrs, Volume= 1.466 af
 Routed to Pond SUM : DP4
 Secondary = 1.05 cfs @ 12.29 hrs, Volume= 0.030 af
 Routed to Pond SUM : DP4

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 128.39' @ 12.29 hrs Surf.Area= 21,390 sf Storage= 27,571 cf

Plug-Flow detention time= 10.3 min calculated for 3.735 af (100% of inflow)
 Center-of-Mass det. time= 9.8 min (746.4 - 736.6)

Volume	Invert	Avail.Storage	Storage Description
#1	127.00'	64,966 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
127.00	18,323	0	0
128.00	20,507	19,415	19,415
130.00	25,044	45,551	64,966

Device	Routing	Invert	Outlet Devices
#1	Secondary	128.00'	8.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	127.00'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Discarded	127.00'	8.270 in/hr Exfiltration over Surface area

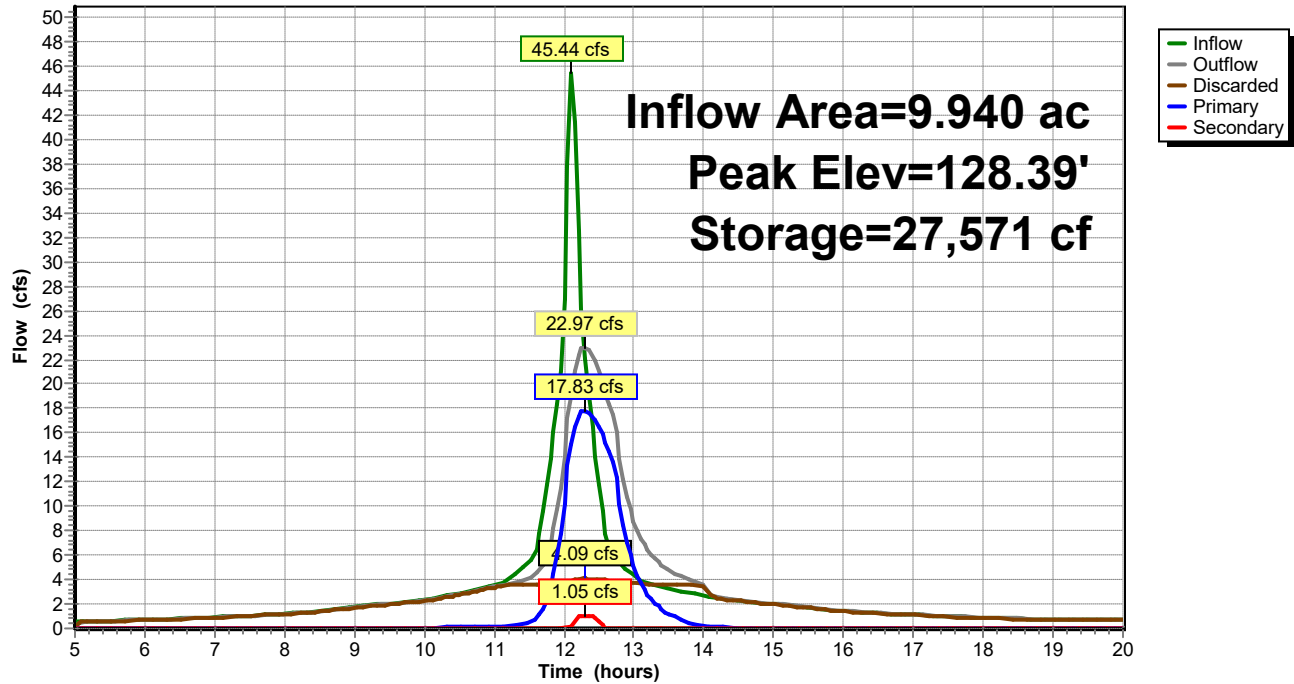
Discarded OutFlow Max=4.09 cfs @ 12.29 hrs HW=128.39' (Free Discharge)
 ↑ **3=Exfiltration** (Exfiltration Controls 4.09 cfs)

Primary OutFlow Max=17.82 cfs @ 12.29 hrs HW=128.39' (Free Discharge)
 ↑ **2=Orifice/Grate** (Orifice Controls 17.82 cfs @ 5.67 fps)

Secondary OutFlow Max=1.05 cfs @ 12.29 hrs HW=128.39' (Free Discharge)
 ↑ **1=Orifice/Grate** (Orifice Controls 1.05 cfs @ 3.00 fps)

Pond P5: DP4

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 10YR Rainfall=5.12", AMC=4

Printed 2/25/2024

Page 49

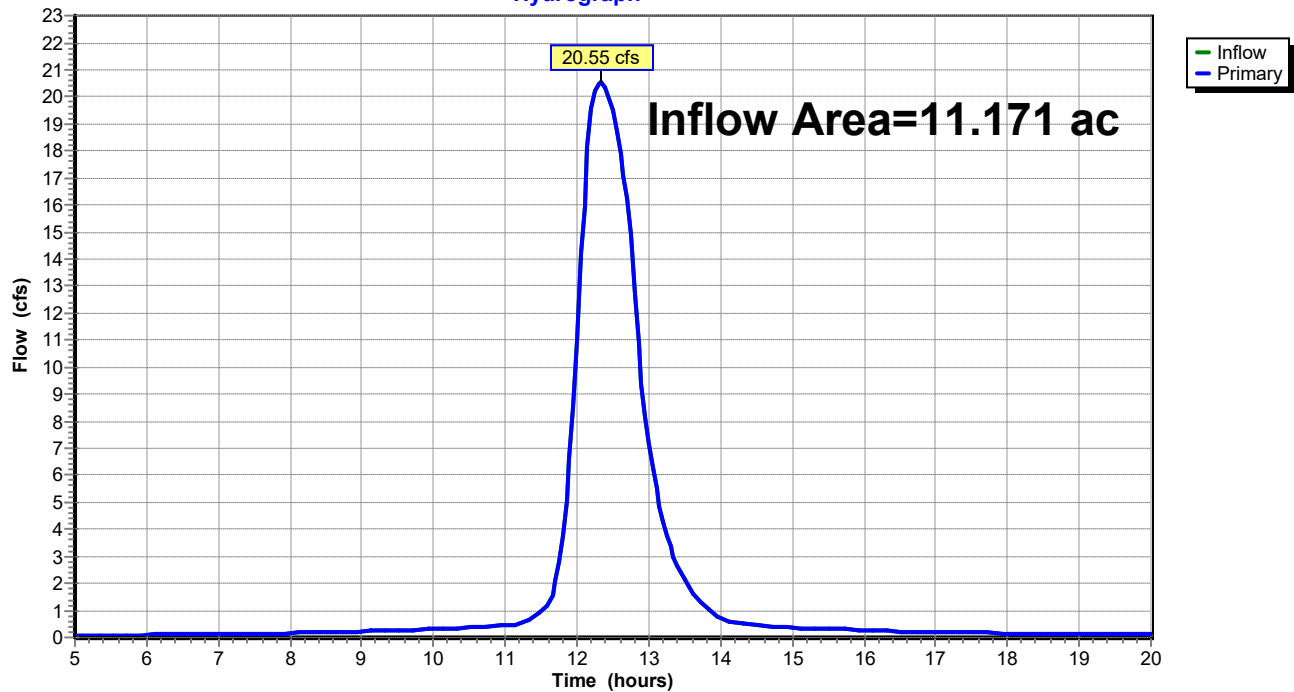
Summary for Pond SUM: DP4

Inflow Area = 11.171 ac, 1.91% Impervious, Inflow Depth > 2.11" for 10YR event
Inflow = 20.55 cfs @ 12.34 hrs, Volume= 1.960 af
Primary = 20.55 cfs @ 12.34 hrs, Volume= 1.960 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond SUM: DP4

Hydrograph



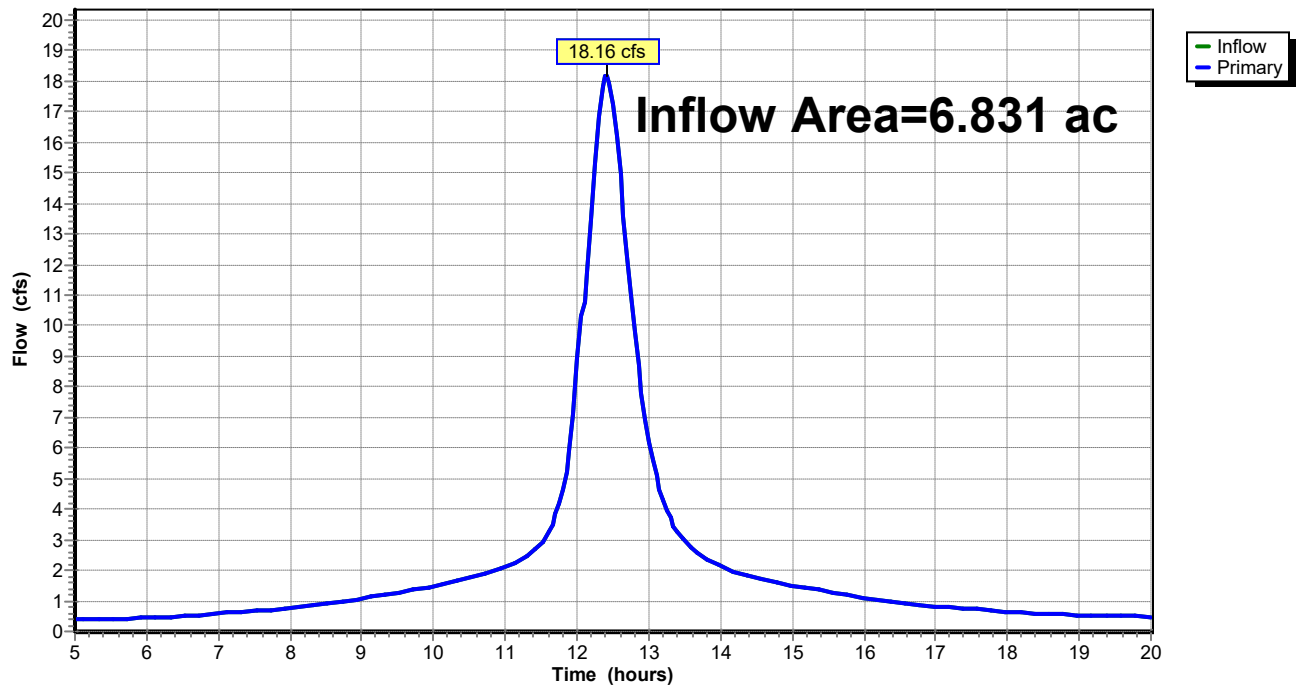
Summary for Pond SUM2: DP5

Inflow Area = 6.831 ac, 6.14% Impervious, Inflow Depth > 4.52" for 10YR event
 Inflow = 18.16 cfs @ 12.41 hrs, Volume= 2.575 af
 Primary = 18.16 cfs @ 12.41 hrs, Volume= 2.575 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond SUM2: DP5

Hydrograph



NEWTON ROAD PROPOSED 4-7

Type III 24-hr 25YR Rainfall=6.30", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/25/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 51

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment AREA5: DP4 Runoff Area=389,738 sf 1.67% Impervious Runoff Depth>5.60"
Flow Length=398' Tc=8.0 min AMC Adjusted CN=98 Runoff=51.07 cfs 4.176 af

Subcatchment AREA5.1: DP4 Runoff Area=24,673 sf 0.00% Impervious Runoff Depth>5.60"
Flow Length=177' Slope=0.0660 '/' Tc=5.8 min AMC Adjusted CN=98 Runoff=3.43 cfs 0.264 af

Subcatchment AREA5.2: DP4 Runoff Area=10,601 sf 0.00% Impervious Runoff Depth>5.60"
Flow Length=120' Tc=17.5 min AMC Adjusted CN=98 Runoff=1.08 cfs 0.114 af

Subcatchment AREA5.3.1: DP4 Runoff Area=3,989 sf 34.47% Impervious Runoff Depth>5.60"
Flow Length=131' Slope=0.0200 '/' Tc=1.7 min AMC Adjusted CN=98 Runoff=0.61 cfs 0.043 af

Subcatchment AREA5.3.2: DP4 Runoff Area=3,989 sf 34.47% Impervious Runoff Depth>5.60"
Flow Length=131' Slope=0.0200 '/' Tc=1.7 min AMC Adjusted CN=98 Runoff=0.61 cfs 0.043 af

Subcatchment AREA5.4: DP4 Runoff Area=53,612 sf 0.00% Impervious Runoff Depth>5.59"
Flow Length=473' Slope=0.0200 '/' Tc=52.5 min AMC Adjusted CN=98 Runoff=3.30 cfs 0.573 af

Subcatchment AREA6: DP7 Runoff Area=103,711 sf 1.67% Impervious Runoff Depth>5.60"
Flow Length=201' Slope=0.0300 '/' Tc=21.1 min AMC Adjusted CN=98 Runoff=9.80 cfs 1.111 af

Subcatchment AREA7: DP5 Runoff Area=273,185 sf 2.39% Impervious Runoff Depth>5.60"
Flow Length=991' Tc=31.9 min AMC Adjusted CN=98 Runoff=21.58 cfs 2.925 af

Subcatchment AREA7.1: DP5 Runoff Area=24,366 sf 48.22% Impervious Runoff Depth>5.60"
Flow Length=331' Tc=2.3 min AMC Adjusted CN=98 Runoff=3.76 cfs 0.261 af

Subcatchment AREA8: DP6 Runoff Area=151,281 sf 1.44% Impervious Runoff Depth>5.59"
Flow Length=447' Slope=0.0090 '/' Tc=57.3 min AMC Adjusted CN=98 Runoff=8.87 cfs 1.617 af

Reach 4R: (new Reach) Avg. Flow Depth=0.53' Max Vel=11.88 fps Inflow=5.13 cfs 0.463 af
12.0" Round Pipe n=0.013 L=321.0' S=0.0654 '/' Capacity=9.11 cfs Outflow=5.02 cfs 0.463 af

Pond 1P: (new Pond) Peak Elev=153.23' Inflow=1.30 cfs 0.156 af
6.0" Round Culvert n=0.013 L=50.0' S=0.0200 '/' Outflow=1.30 cfs 0.156 af

Pond 2P: (new Pond) Peak Elev=234.83' Inflow=3.43 cfs 0.264 af
6.0" Round Culvert n=0.013 L=210.0' S=0.0100 '/' Outflow=3.43 cfs 0.264 af

Pond 3P: (new Pond) Peak Elev=157.20' Inflow=1.80 cfs 0.199 af
6.0" Round Culvert n=0.013 L=65.0' S=0.0154 '/' Outflow=1.80 cfs 0.199 af

Pond 6P: DP5 Peak Elev=138.25' Inflow=3.76 cfs 0.261 af
Primary=3.76 cfs 0.261 af Secondary=0.00 cfs 0.000 af Outflow=3.76 cfs 0.261 af

Pond P5: DP4 Peak Elev=128.80' Storage=36,612 cf Inflow=56.02 cfs 4.640 af
Discarded=4.27 cfs 2.601 af Primary=20.31 cfs 1.969 af Secondary=1.51 cfs 0.067 af Outflow=26.09 cfs 4.637 af

NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 25YR Rainfall=6.30", AMC=4

Printed 2/25/2024

Page 52

Pond SUM: DP4

Inflow=24.07 cfs 2.609 af

Primary=24.07 cfs 2.609 af

Pond SUM2: DP5

Inflow=22.39 cfs 3.186 af

Primary=22.39 cfs 3.186 af

Total Runoff Area = 23.855 ac Runoff Volume = 11.127 af Average Runoff Depth = 5.60"
96.97% Pervious = 23.133 ac 3.03% Impervious = 0.722 ac

NEWTON ROAD PROPOSED 4-7

Type III 24-hr 25YR Rainfall=6.30", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/25/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 53

Summary for Subcatchment AREA5: DP4

Runoff = 51.07 cfs @ 12.11 hrs, Volume= 4.176 af, Depth> 5.60"
 Routed to Pond P5 : DP4

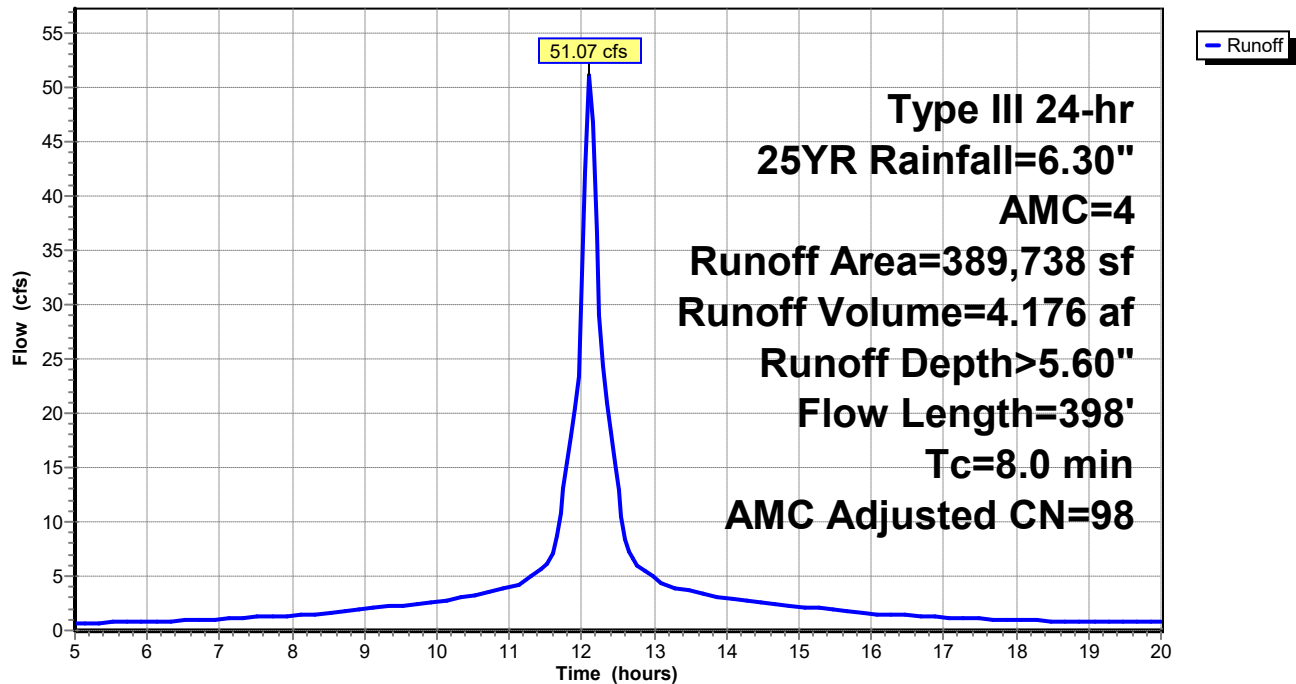
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25YR Rainfall=6.30", AMC=4

	Area (sf)	CN	Adj	Description
*	6,528	98		ROOF
*	129,067	36		WOODS A SOIL
*	194,143	73		WOODS C SOIL
	60,000	74		>75% Grass cover, Good, HSG C
	389,738	61	98	Weighted Average, AMC Adjusted
	383,210			98.33% Pervious Area
	6,528			1.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	100	0.0700	0.28		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
0.9	100	0.0700	1.85		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.2	198	0.0350	2.65	53.04	Channel Flow, Area= 20.0 sf Perim= 30.0' r= 0.67' n= 0.080 Earth, long dense weeds
8.0	398	Total			

Subcatchment AREA5: DP4

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 25YR Rainfall=6.30", AMC=4

Printed 2/25/2024

Page 55

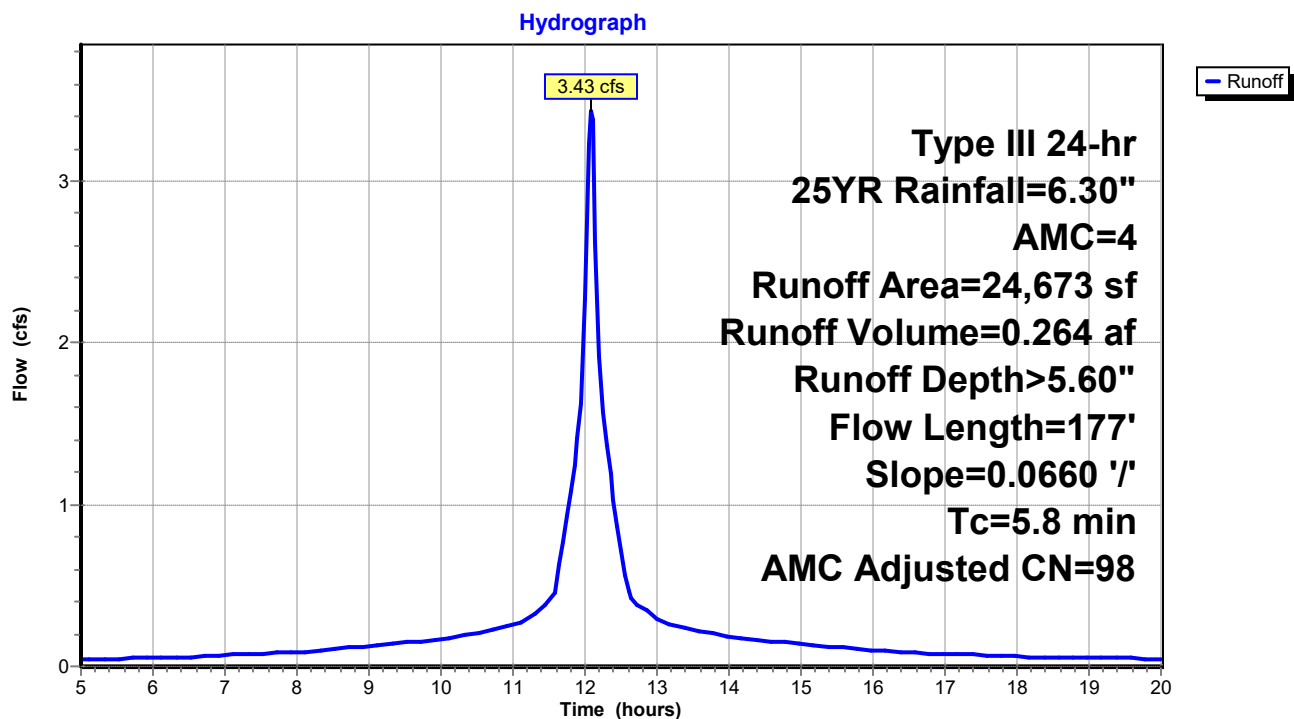
Summary for Subcatchment AREA5.1: DP4

Runoff = 3.43 cfs @ 12.08 hrs, Volume= 0.264 af, Depth> 5.60"
Routed to Pond 2P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR Rainfall=6.30", AMC=4

Area (sf)	CN	Adj	Description
24,673	74		>75% Grass cover, Good, HSG C
24,673	74	98	Weighted Average, AMC Adjusted
24,673			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	77	0.0660	0.26		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
0.9	100	0.0660	1.80		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
5.8	177	Total			

Subcatchment AREA5.1: DP4

NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 25YR Rainfall=6.30", AMC=4

Printed 2/25/2024

Page 56

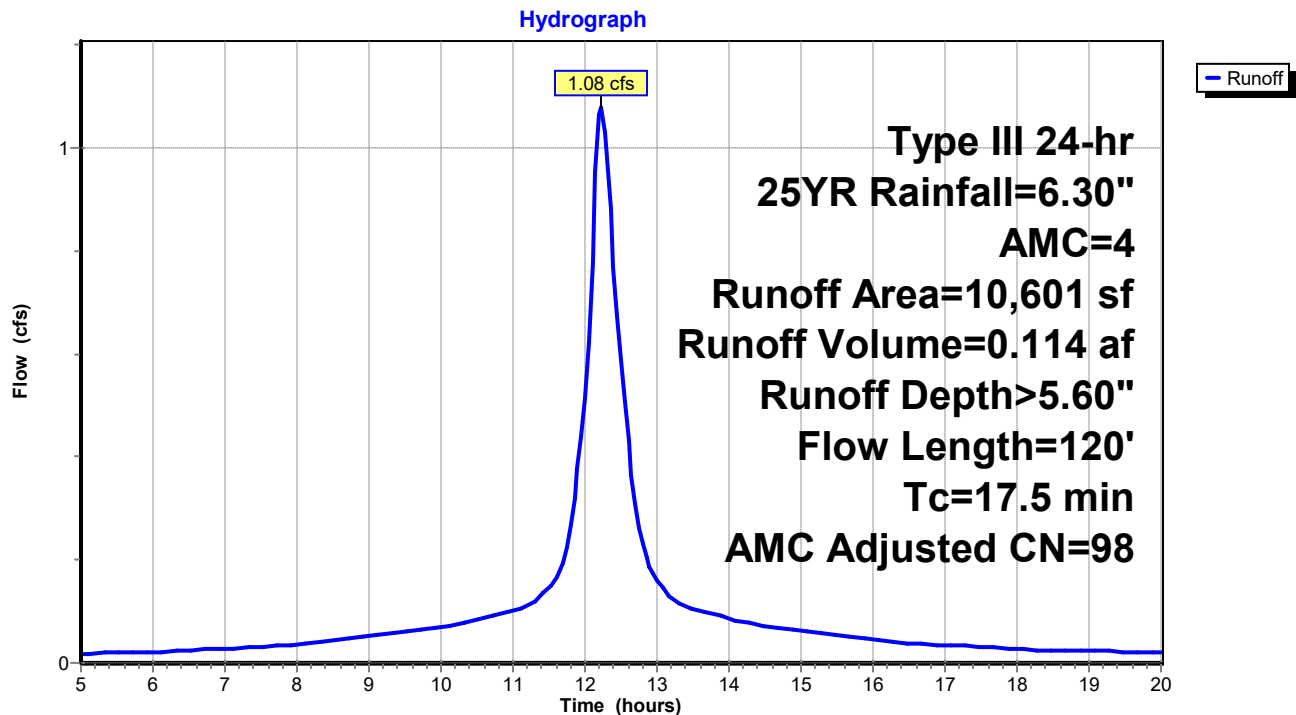
Summary for Subcatchment AREA5.2: DP4

Runoff = 1.08 cfs @ 12.23 hrs, Volume= 0.114 af, Depth> 5.60"
Routed to Pond 1P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR Rainfall=6.30", AMC=4

Area (sf)	CN	Adj	Description
10,601	73		Woods, Fair, HSG C
10,601	73	98	Weighted Average, AMC Adjusted
10,601			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.1	60	0.0500	0.06		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
0.4	60	0.0590	2.26	3.84	Channel Flow, Area= 1.7 sf Perim= 6.0' r= 0.28' n= 0.069 Riprap, 6-inch
17.5	120	Total			

Subcatchment AREA5.2: DP4

NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 25YR Rainfall=6.30", AMC=4

Printed 2/25/2024

Page 57

Summary for Subcatchment AREA5.3.1: DP4

Runoff = 0.61 cfs @ 12.03 hrs, Volume= 0.043 af, Depth> 5.60"
 Routed to Pond 1P : (new Pond)

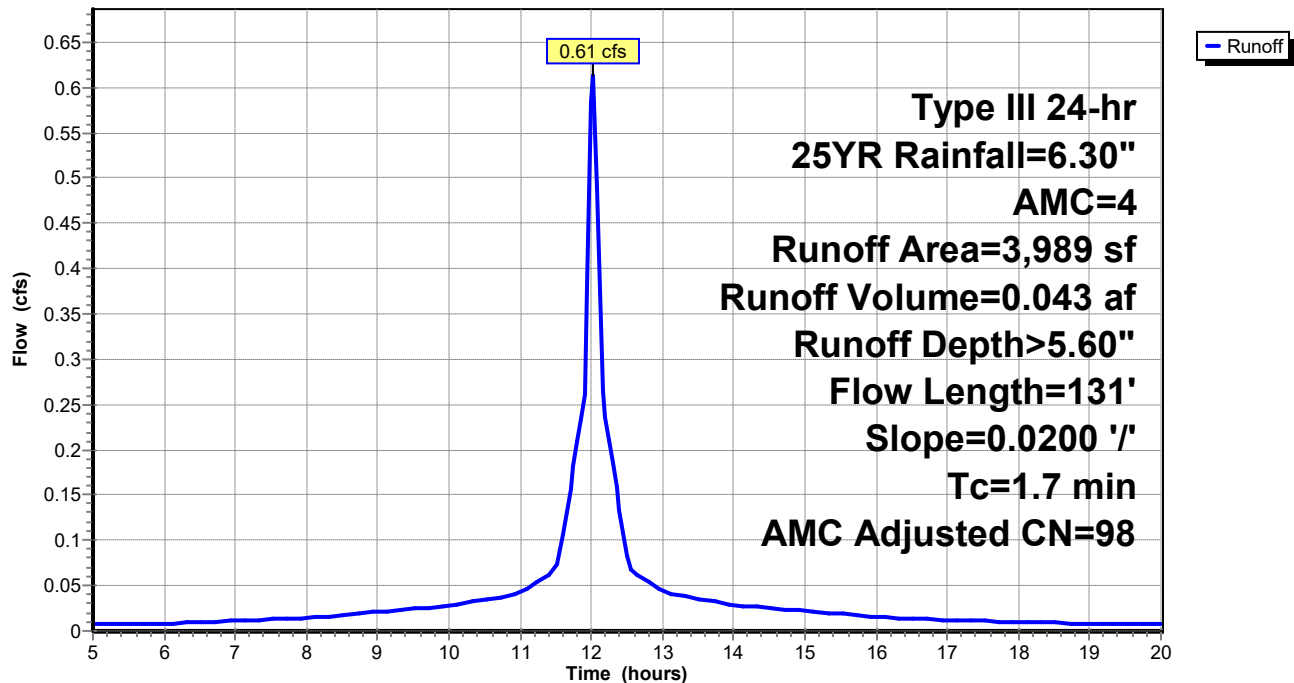
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25YR Rainfall=6.30", AMC=4

Area (sf)	CN	Adj	Description
1,375	98		Paved parking, HSG C
2,614	74		>75% Grass cover, Good, HSG C
3,989	82	98	Weighted Average, AMC Adjusted
2,614			65.53% Pervious Area
1,375			34.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0200	0.89		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.23"
1.5	120	0.0200	1.31	2.23	Channel Flow, Area= 1.7 sf Perim= 6.0' r= 0.28' n= 0.069 Riprap, 6-inch
1.7	131	Total			

Subcatchment AREA5.3.1: DP4

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 25YR Rainfall=6.30", AMC=4

Printed 2/25/2024

Page 58

Summary for Subcatchment AREA5.3.2: DP4

Runoff = 0.61 cfs @ 12.03 hrs, Volume= 0.043 af, Depth> 5.60"
Routed to Pond 3P : (new Pond)

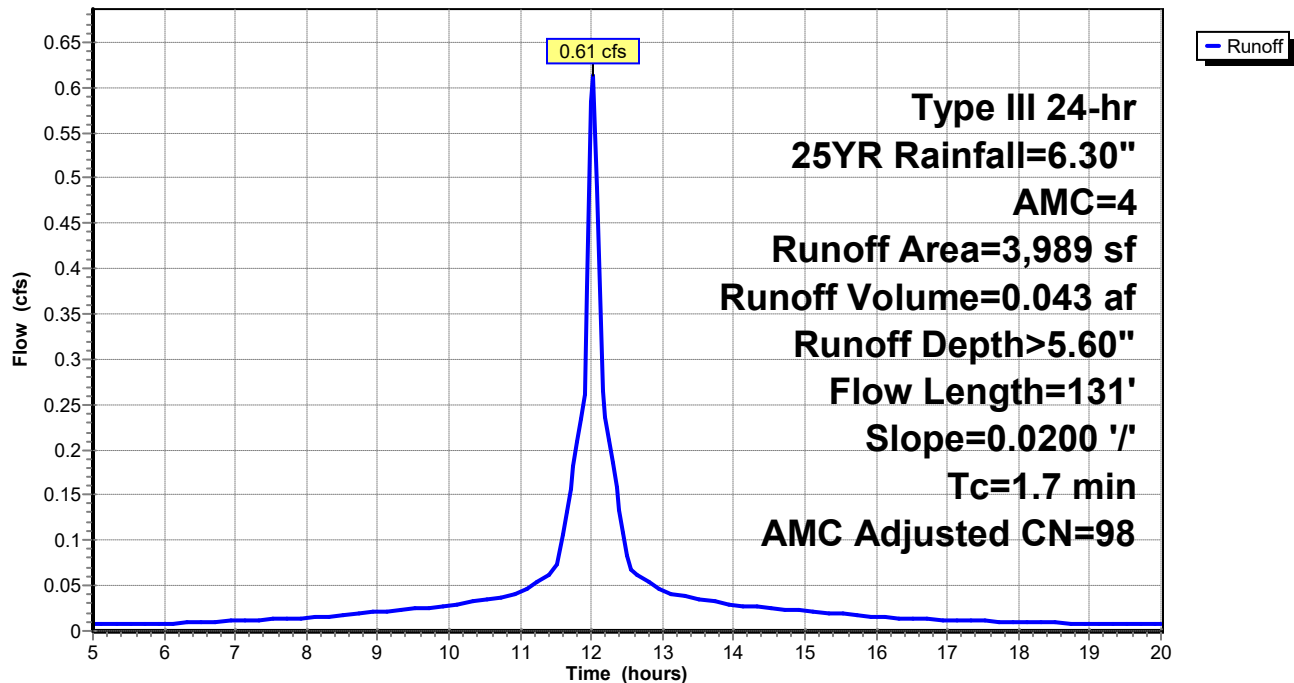
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR Rainfall=6.30", AMC=4

Area (sf)	CN	Adj	Description
1,375	98		Paved parking, HSG C
2,614	74		>75% Grass cover, Good, HSG C
3,989	82	98	Weighted Average, AMC Adjusted
2,614			65.53% Pervious Area
1,375			34.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0200	0.89		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.23"
1.5	120	0.0200	1.31	2.23	Channel Flow, Area= 1.7 sf Perim= 6.0' r= 0.28' n= 0.069 Riprap, 6-inch
1.7	131	Total			

Subcatchment AREA5.3.2: DP4

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 25YR Rainfall=6.30", AMC=4

Printed 2/25/2024

Page 59

Summary for Subcatchment AREA5.4: DP4

Runoff = 3.30 cfs @ 12.67 hrs, Volume= 0.573 af, Depth> 5.59"
Routed to Pond SUM : DP4

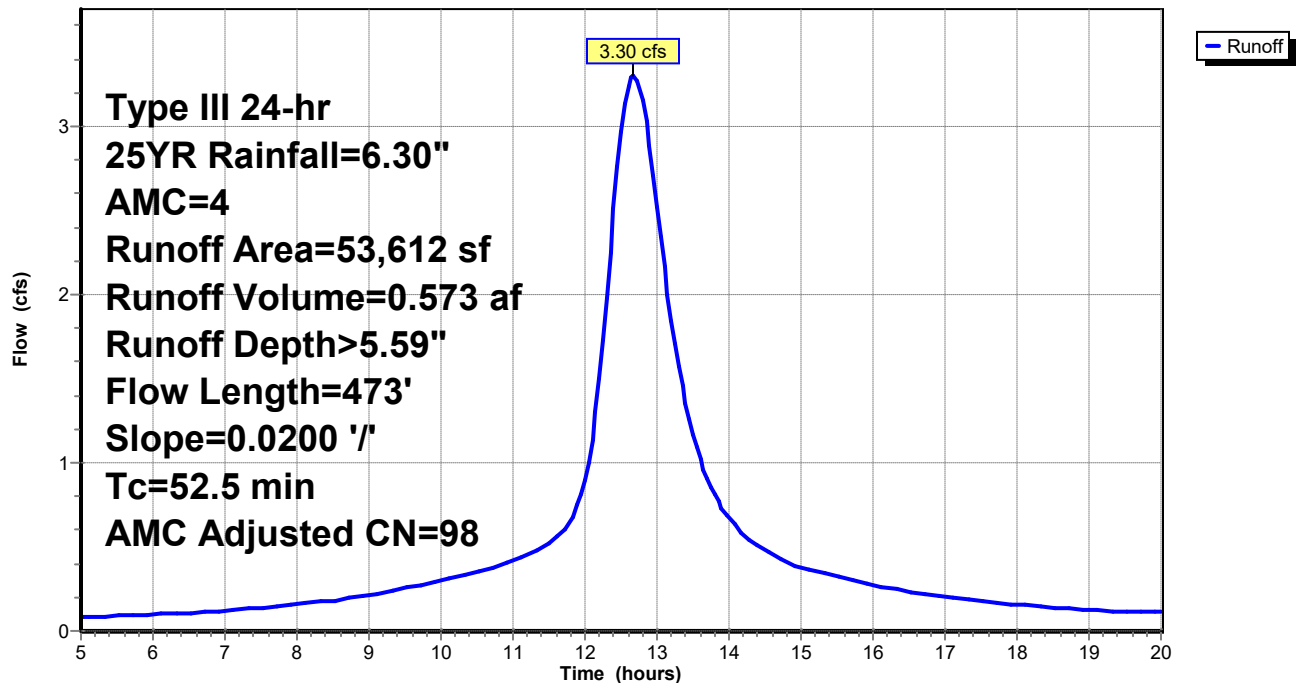
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR Rainfall=6.30", AMC=4

Area (sf)	CN	Adj	Description
26,806	36		Woods, Fair, HSG A
26,806	73		Woods, Fair, HSG C
53,612	55	98	Weighted Average, AMC Adjusted
53,612			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.2	100	0.0200	0.04		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
2.4	100	0.0200	0.71		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
12.9	273	0.0200	0.35		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
52.5	473	Total			

Subcatchment AREA5.4: DP4

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 25YR Rainfall=6.30", AMC=4

Printed 2/25/2024

Page 60

Summary for Subcatchment AREA6: DP7

Runoff = 9.80 cfs @ 12.27 hrs, Volume= 1.111 af, Depth> 5.60"

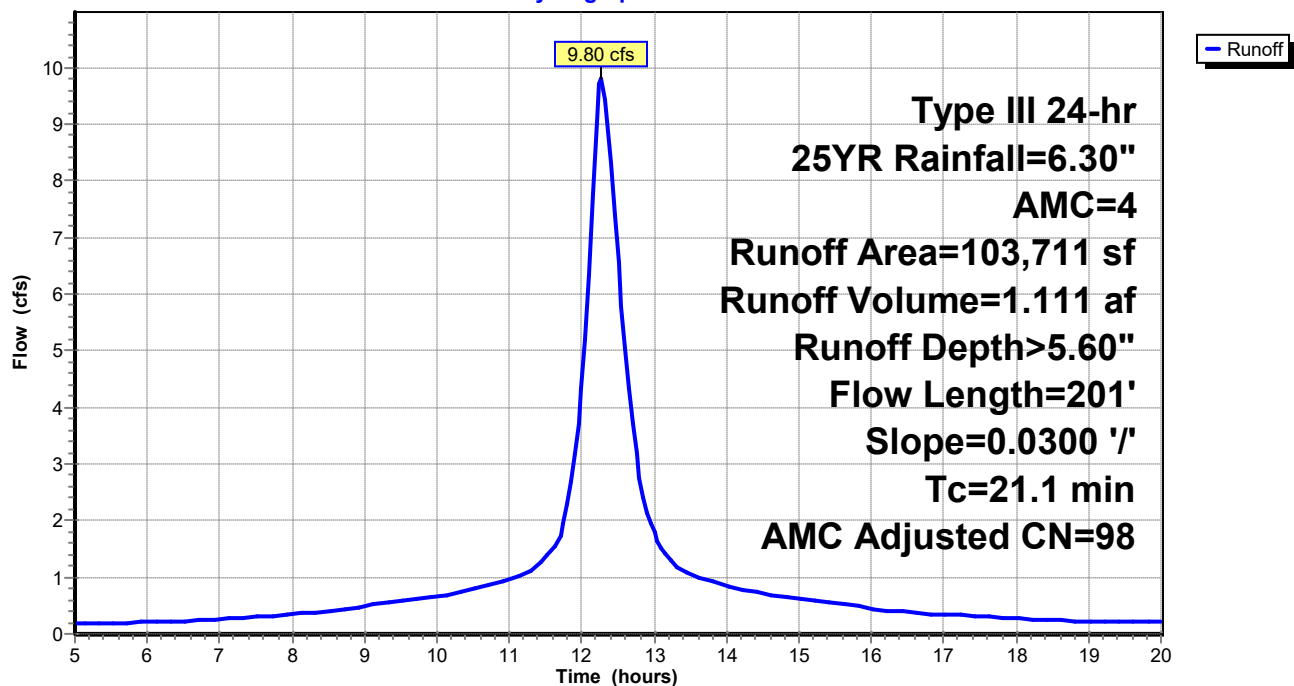
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR Rainfall=6.30", AMC=4

Area (sf)	CN	Adj	Description
101,983	73		Woods, Fair, HSG C
1,728	98		Roofs, HSG C
103,711	73	98	Weighted Average, AMC Adjusted
101,983			98.33% Pervious Area
1,728			1.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	50	0.0300	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
2.9	151	0.0300	0.87		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
21.1	201	Total			

Subcatchment AREA6: DP7

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 25YR Rainfall=6.30", AMC=4

Printed 2/25/2024

Page 61

Summary for Subcatchment AREA7: DP5

Runoff = 21.58 cfs @ 12.42 hrs, Volume= 2.925 af, Depth> 5.60"
 Routed to Pond SUM2 : DP5

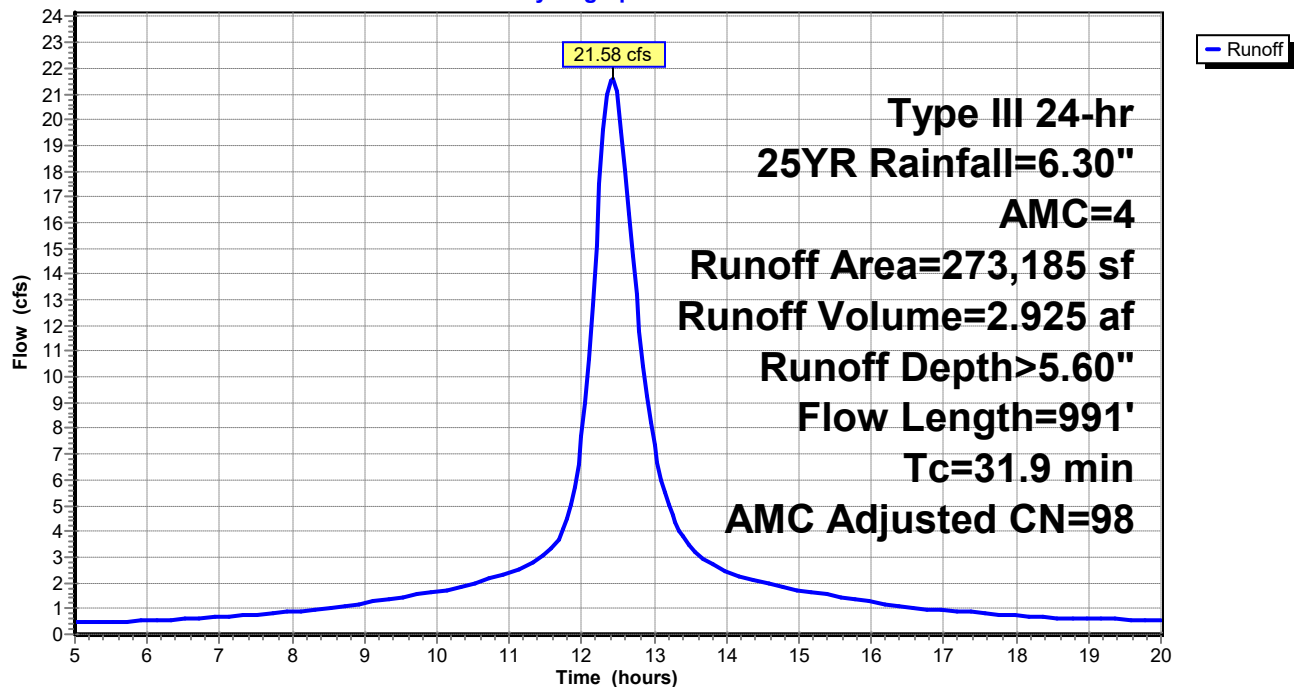
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25YR Rainfall=6.30", AMC=4

Area (sf)	CN	Adj	Description
40,000	74		>75% Grass cover, Good, HSG C
6,528	98		Roofs, HSG C
226,657	73		Woods, Fair, HSG C
273,185	74	98	Weighted Average, AMC Adjusted
266,657			97.61% Pervious Area
6,528			2.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0800	0.30		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
1.4	100	0.0300	1.21		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
24.9	791	0.0350	0.53	10.61	Channel Flow, Area= 20.0 sf Perim= 30.0' r= 0.67' n= 0.400 Sheet flow: Woods+light brush
31.9	991	Total			

Subcatchment AREA7: DP5

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 25YR Rainfall=6.30", AMC=4

Printed 2/25/2024

Page 62

Summary for Subcatchment AREA7.1: DP5

Runoff = 3.76 cfs @ 12.04 hrs, Volume= 0.261 af, Depth> 5.60"
 Routed to Pond 6P : DP5

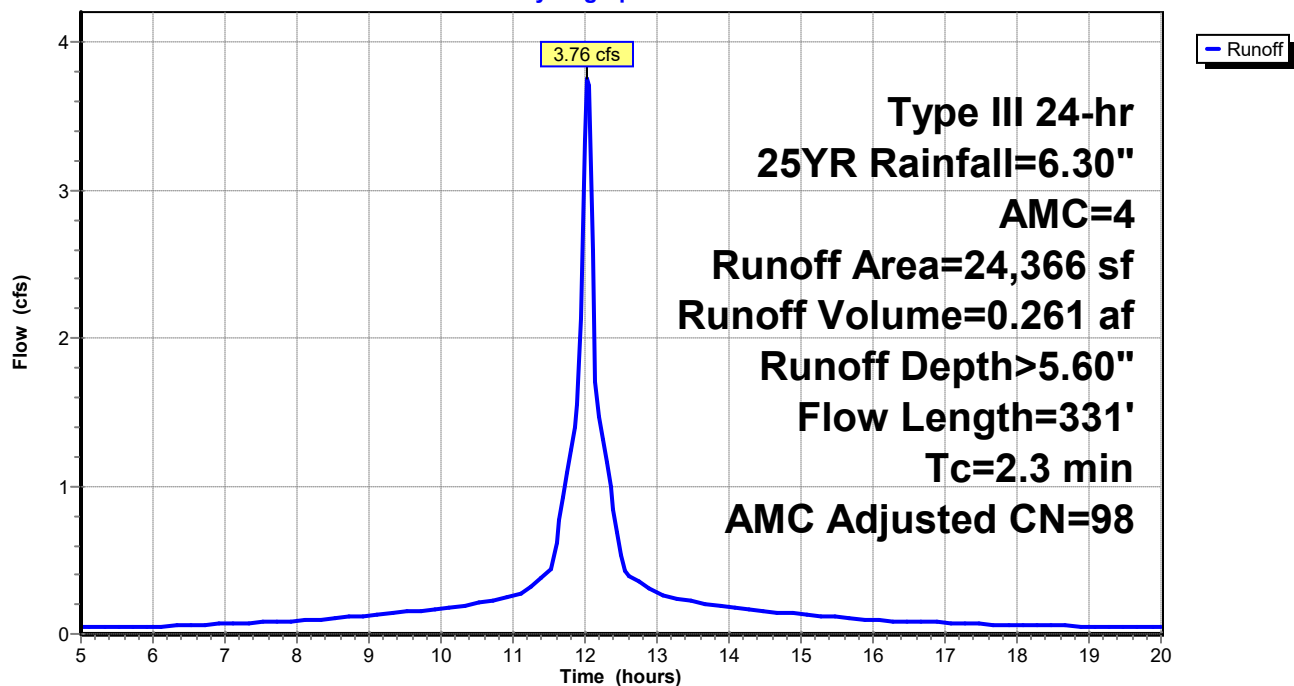
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25YR Rainfall=6.30", AMC=4

Area (sf)	CN	Adj	Description
11,749	98		Paved parking, HSG C
12,617	74		>75% Grass cover, Good, HSG C
24,366	86	98	Weighted Average, AMC Adjusted
12,617			51.78% Pervious Area
11,749			48.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0200	0.89		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.23"
2.1	320	0.0590	2.51	4.28	Channel Flow, Area= 1.7 sf Perim= 5.1' r= 0.33' n= 0.069 Riprap, 6-inch
2.3	331	Total			

Subcatchment AREA7.1: DP5

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 25YR Rainfall=6.30", AMC=4

Printed 2/25/2024

Page 63

Summary for Subcatchment AREA8: DP6

Runoff = 8.87 cfs @ 12.74 hrs, Volume= 1.617 af, Depth> 5.59"

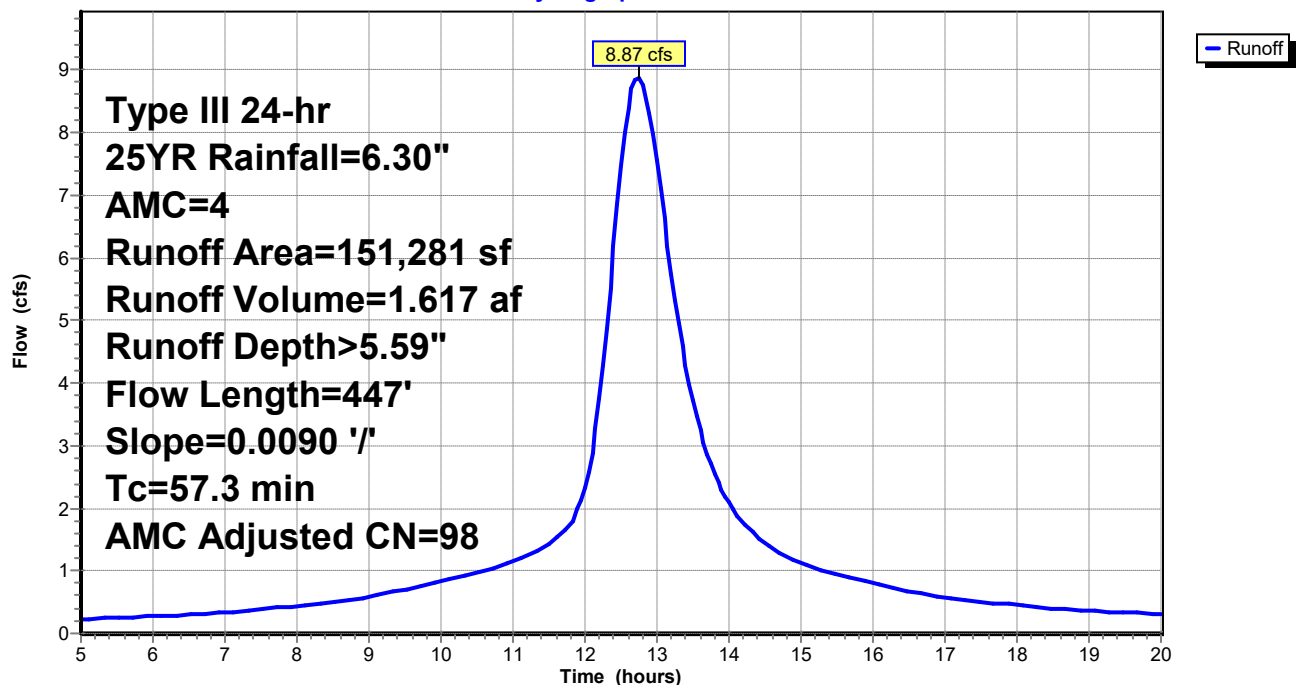
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR Rainfall=6.30", AMC=4

Area (sf)	CN	Adj	Description
20,000	74		>75% Grass cover, Good, HSG C
2,176	98		Roofs, HSG C
129,105	73		Woods, Fair, HSG C
151,281	73	98	Weighted Average, AMC Adjusted
149,105			98.56% Pervious Area
2,176			1.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.4	50	0.0090	0.03		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
27.9	397	0.0090	0.24		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
57.3	447	Total			

Subcatchment AREA8: DP6

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 25YR Rainfall=6.30", AMC=4

Printed 2/25/2024

Page 64

Summary for Reach 4R: (new Reach)

Inflow Area = 0.993 ac, 6.36% Impervious, Inflow Depth > 5.60" for 25YR event
Inflow = 5.13 cfs @ 12.07 hrs, Volume= 0.463 af
Outflow = 5.02 cfs @ 12.09 hrs, Volume= 0.463 af, Atten= 2%, Lag= 1.0 min
Routed to Pond P5 : DP4

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 11.88 fps, Min. Travel Time= 0.5 min

Avg. Velocity= 5.00 fps, Avg. Travel Time= 1.1 min

Peak Storage= 137 cf @ 12.08 hrs

Average Depth at Peak Storage= 0.53', Surface Width= 1.00'

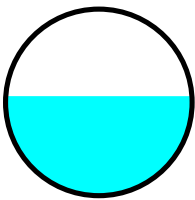
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 9.11 cfs

12.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

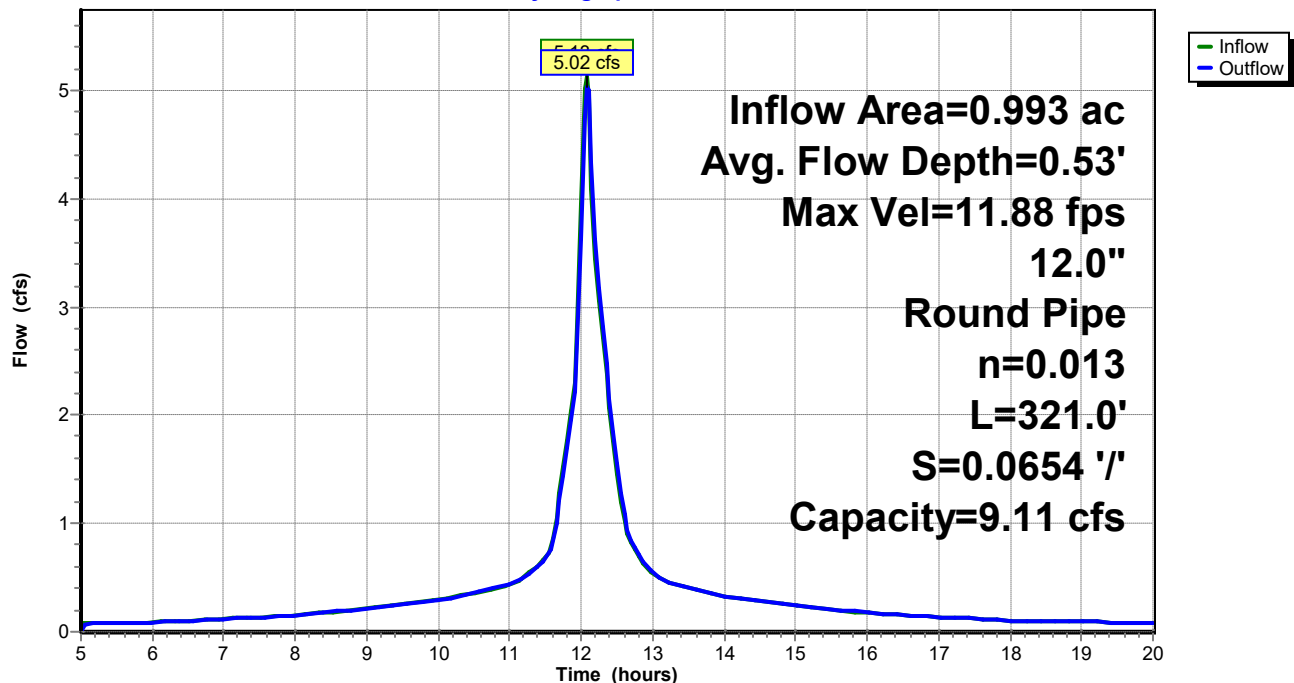
Length= 321.0' Slope= 0.0654 '/'

Inlet Invert= 148.00', Outlet Invert= 127.00'



Reach 4R: (new Reach)

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 25YR Rainfall=6.30", AMC=4

Printed 2/25/2024

Page 65

Summary for Pond 1P: (new Pond)

Inflow Area = 0.335 ac, 9.42% Impervious, Inflow Depth > 5.60" for 25YR event
Inflow = 1.30 cfs @ 12.22 hrs, Volume= 0.156 af
Outflow = 1.30 cfs @ 12.22 hrs, Volume= 0.156 af, Atten= 0%, Lag= 0.0 min
Primary = 1.30 cfs @ 12.22 hrs, Volume= 0.156 af
Routed to Pond 3P : (new Pond)

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

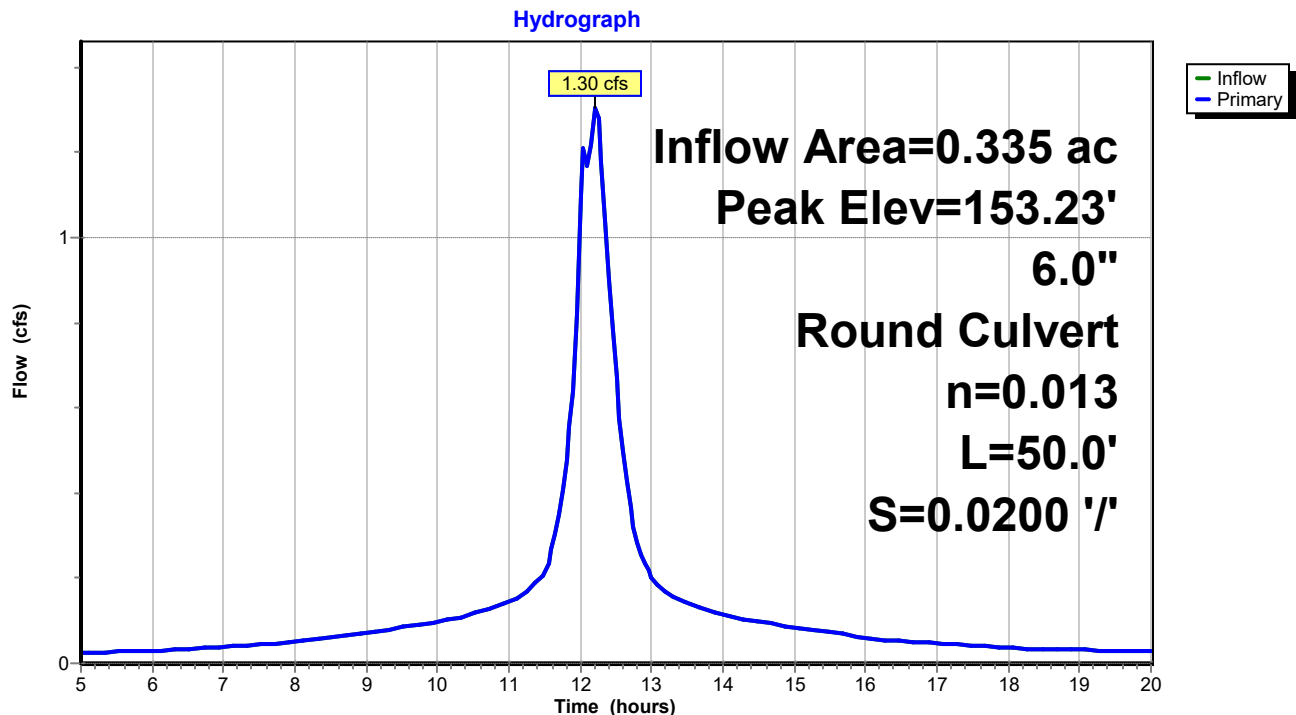
Peak Elev= 153.23' @ 12.22 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	150.00'	6.0" Round Culvert L= 50.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 150.00' / 149.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=1.29 cfs @ 12.22 hrs HW=153.17' (Free Discharge)

↑1=Culvert (Barrel Controls 1.29 cfs @ 6.58 fps)

Pond 1P: (new Pond)



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 25YR Rainfall=6.30", AMC=4

Printed 2/25/2024

Page 66

Summary for Pond 2P: (new Pond)

Inflow Area = 0.566 ac, 0.00% Impervious, Inflow Depth > 5.60" for 25YR event
Inflow = 3.43 cfs @ 12.08 hrs, Volume= 0.264 af
Outflow = 3.43 cfs @ 12.08 hrs, Volume= 0.264 af, Atten= 0%, Lag= 0.0 min
Primary = 3.43 cfs @ 12.08 hrs, Volume= 0.264 af
Routed to Reach 4R : (new Reach)

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 234.83' @ 12.08 hrs

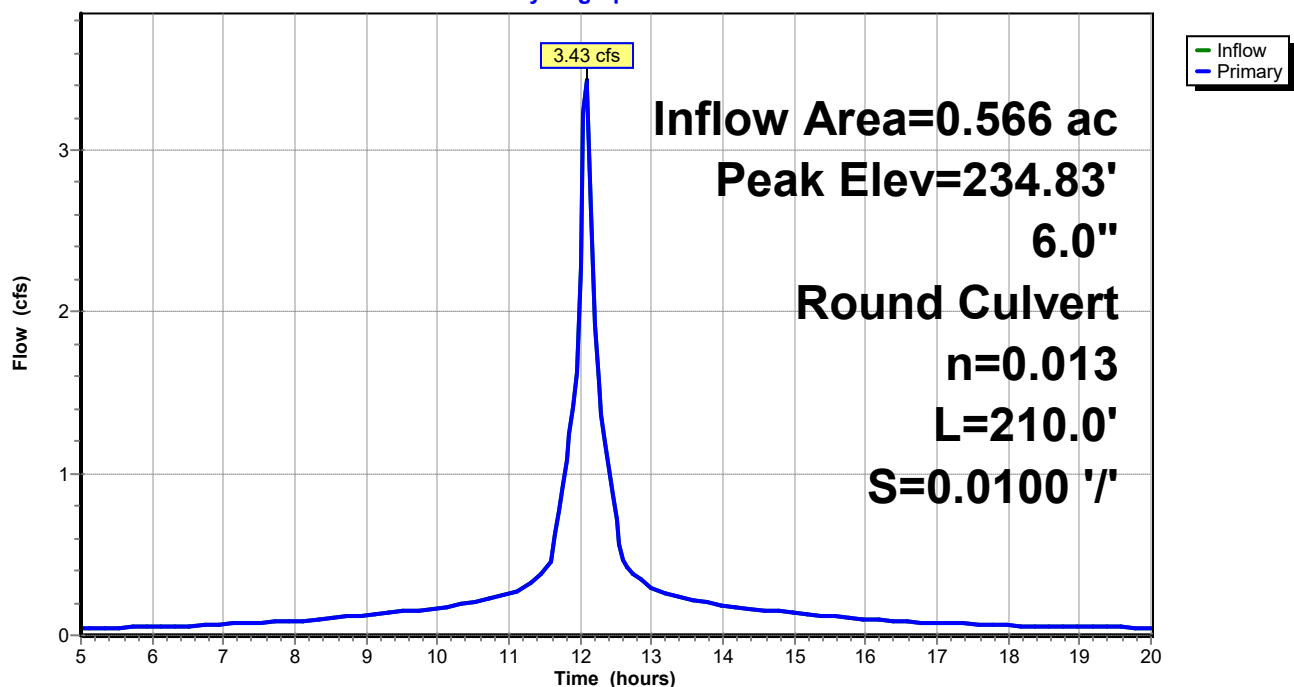
Device	Routing	Invert	Outlet Devices
#1	Primary	150.10'	6.0" Round Culvert L= 210.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 150.10' / 148.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=3.33 cfs @ 12.08 hrs HW=230.25' (Free Discharge)

↑1=Culvert (Barrel Controls 3.33 cfs @ 16.96 fps)

Pond 2P: (new Pond)

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 25YR Rainfall=6.30", AMC=4

Printed 2/25/2024

Page 67

Summary for Pond 3P: (new Pond)

Inflow Area = 0.427 ac, 14.80% Impervious, Inflow Depth > 5.60" for 25YR event
Inflow = 1.80 cfs @ 12.04 hrs, Volume= 0.199 af
Outflow = 1.80 cfs @ 12.04 hrs, Volume= 0.199 af, Atten= 0%, Lag= 0.0 min
Primary = 1.80 cfs @ 12.04 hrs, Volume= 0.199 af
Routed to Reach 4R : (new Reach)

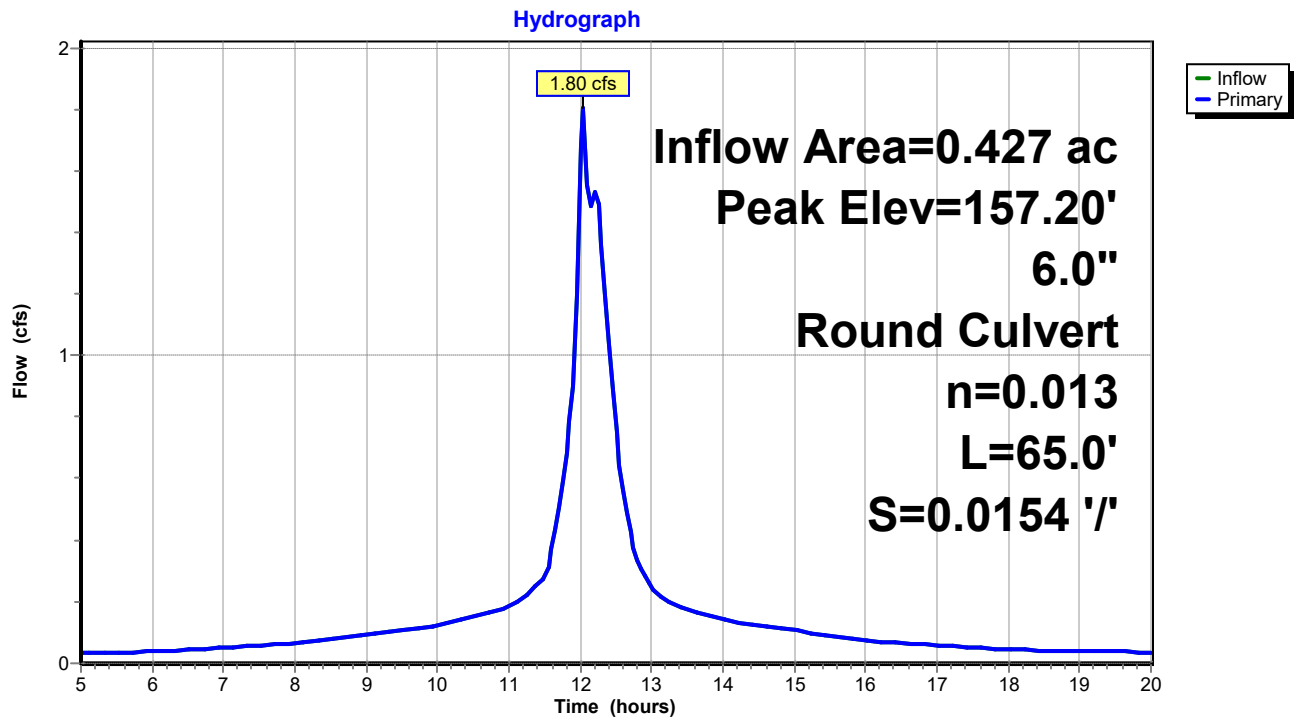
Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 157.20' @ 12.04 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	149.00'	6.0" Round Culvert L= 65.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 149.00' / 148.00' S= 0.0154 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=1.78 cfs @ 12.04 hrs HW=156.97' (Free Discharge)

↑1=Culvert (Barrel Controls 1.78 cfs @ 9.06 fps)

Pond 3P: (new Pond)

NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 25YR Rainfall=6.30", AMC=4

Printed 2/25/2024

Page 68

Summary for Pond 6P: DP5

Inflow Area = 0.559 ac, 48.22% Impervious, Inflow Depth > 5.60" for 25YR event
Inflow = 3.76 cfs @ 12.04 hrs, Volume= 0.261 af
Outflow = 3.76 cfs @ 12.04 hrs, Volume= 0.261 af, Atten= 0%, Lag= 0.0 min
Primary = 3.76 cfs @ 12.04 hrs, Volume= 0.261 af
Routed to Pond SUM2 : DP5
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 138.25' @ 12.04 hrs

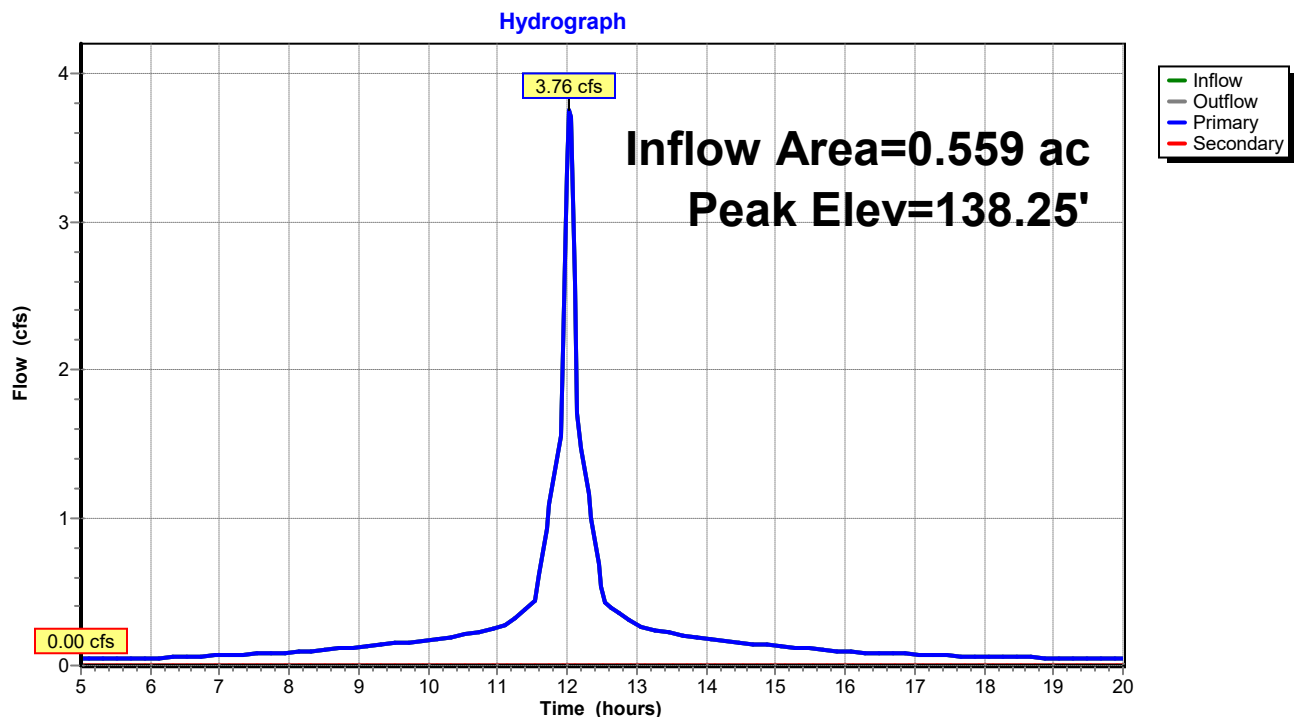
Device	Routing	Invert	Outlet Devices
#1	Primary	135.10'	12.0" Round Culvert L= 220.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 135.10' / 134.22' S= 0.0040 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	138.90'	2.0" x 2.0" Horiz. Orifice/Grate X 6.00 columns X 6 rows C= 0.600 in 24.0" x 24.0" Grate (25% open area) Limited to weir flow at low heads

Primary OutFlow Max=3.62 cfs @ 12.04 hrs HW=138.06' (Free Discharge)

1=Culvert (Barrel Controls 3.62 cfs @ 4.61 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=135.23' (Free Discharge)

2=Orifice/Grate (Controls 0.00 cfs)

Pond 6P: DP5

NEWTON ROAD PROPOSED 4-7

Type III 24-hr 25YR Rainfall=6.30", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/25/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 69

Summary for Pond P5: DP4

Inflow Area = 9.940 ac, 2.14% Impervious, Inflow Depth > 5.60" for 25YR event
 Inflow = 56.02 cfs @ 12.11 hrs, Volume= 4.640 af
 Outflow = 26.09 cfs @ 12.32 hrs, Volume= 4.637 af, Atten= 53%, Lag= 12.5 min
 Discarded = 4.27 cfs @ 12.32 hrs, Volume= 2.601 af
 Primary = 20.31 cfs @ 12.32 hrs, Volume= 1.969 af
 Routed to Pond SUM : DP4
 Secondary = 1.51 cfs @ 12.32 hrs, Volume= 0.067 af
 Routed to Pond SUM : DP4

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 128.80' @ 12.32 hrs Surf.Area= 22,328 sf Storage= 36,612 cf

Plug-Flow detention time= 11.9 min calculated for 4.620 af (100% of inflow)
 Center-of-Mass det. time= 11.4 min (746.9 - 735.5)

Volume	Invert	Avail.Storage	Storage Description
#1	127.00'	64,966 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
127.00	18,323	0	0
128.00	20,507	19,415	19,415
130.00	25,044	45,551	64,966

Device	Routing	Invert	Outlet Devices
#1	Secondary	128.00'	8.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	127.00'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Discarded	127.00'	8.270 in/hr Exfiltration over Surface area

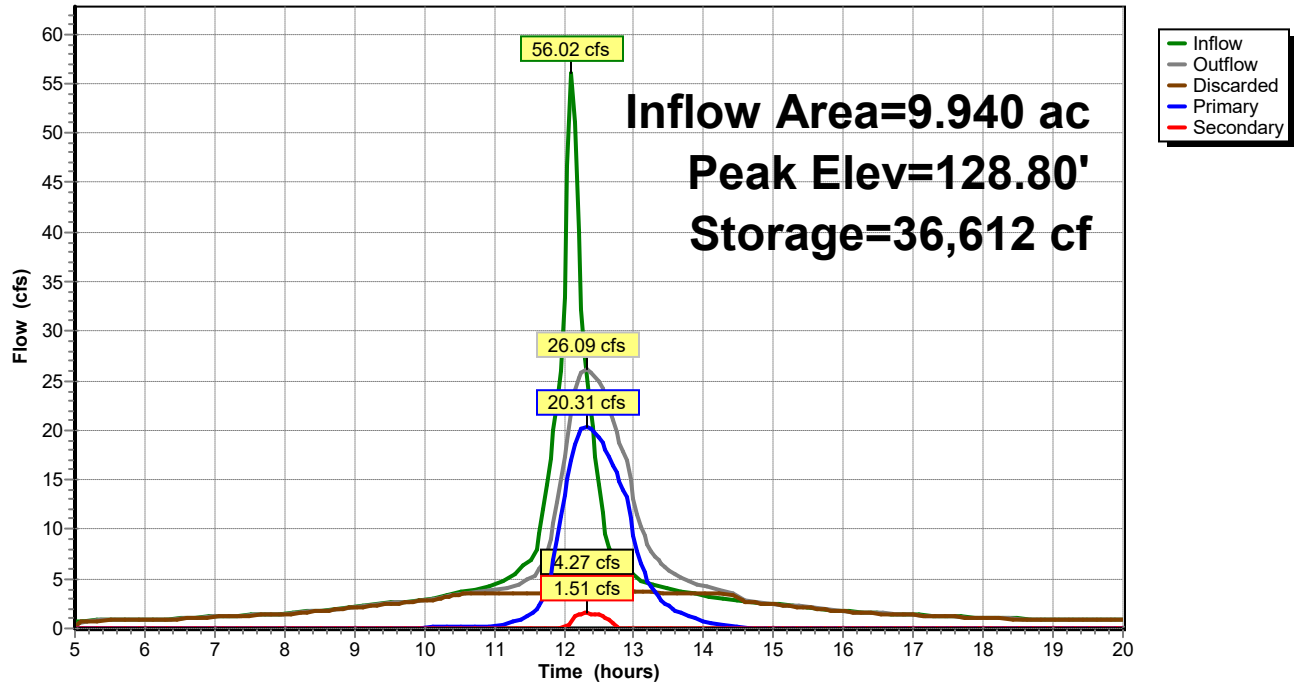
Discarded OutFlow Max=4.27 cfs @ 12.32 hrs HW=128.80' (Free Discharge)
 ↑ **3=Exfiltration** (Exfiltration Controls 4.27 cfs)

Primary OutFlow Max=20.29 cfs @ 12.32 hrs HW=128.80' (Free Discharge)
 ↑ **2=Orifice/Grate** (Orifice Controls 20.29 cfs @ 6.46 fps)

Secondary OutFlow Max=1.50 cfs @ 12.32 hrs HW=128.80' (Free Discharge)
 ↑ **1=Orifice/Grate** (Orifice Controls 1.50 cfs @ 4.30 fps)

Pond P5: DP4

Hydrograph



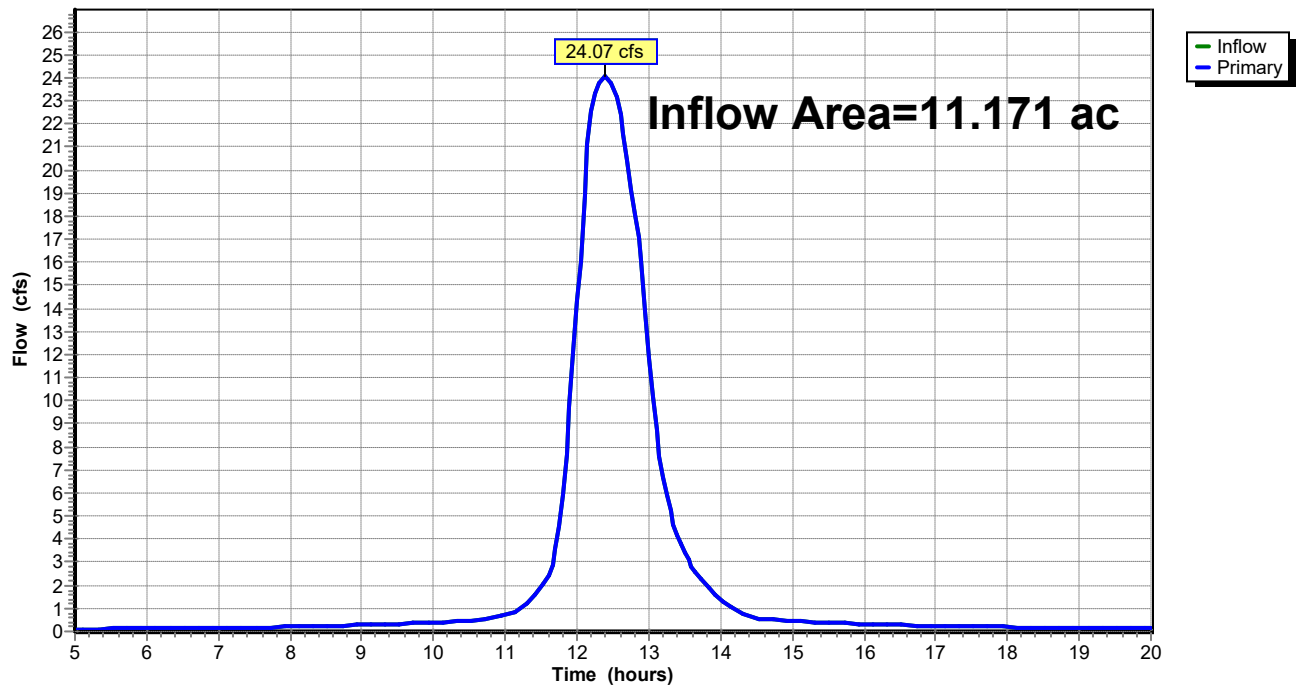
Summary for Pond SUM: DP4

Inflow Area = 11.171 ac, 1.91% Impervious, Inflow Depth > 2.80" for 25YR event
 Inflow = 24.07 cfs @ 12.39 hrs, Volume= 2.609 af
 Primary = 24.07 cfs @ 12.39 hrs, Volume= 2.609 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond SUM: DP4

Hydrograph



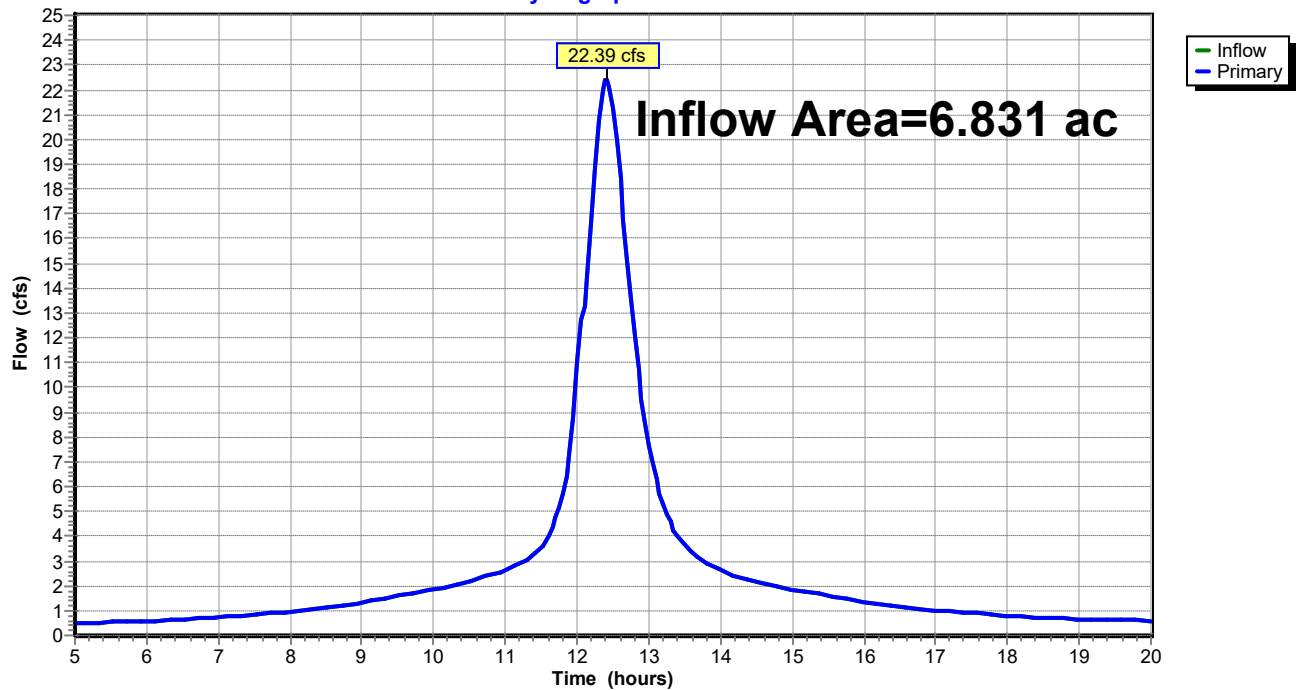
Summary for Pond SUM2: DP5

Inflow Area = 6.831 ac, 6.14% Impervious, Inflow Depth > 5.60" for 25YR event
 Inflow = 22.39 cfs @ 12.41 hrs, Volume= 3.186 af
 Primary = 22.39 cfs @ 12.41 hrs, Volume= 3.186 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond SUM2: DP5

Hydrograph



NEWTON ROAD PROPOSED 4-7

Type III 24-hr 100YR Rainfall=8.14", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/25/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 73

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment AREA5: DP4 Runoff Area=389,738 sf 1.67% Impervious Runoff Depth>7.27"
Flow Length=398' Tc=8.0 min AMC Adjusted CN=98 Runoff=66.09 cfs 5.422 af

Subcatchment AREA5.1: DP4 Runoff Area=24,673 sf 0.00% Impervious Runoff Depth>7.27"
Flow Length=177' Slope=0.0660 '/' Tc=5.8 min AMC Adjusted CN=98 Runoff=4.44 cfs 0.343 af

Subcatchment AREA5.2: DP4 Runoff Area=10,601 sf 0.00% Impervious Runoff Depth>7.27"
Flow Length=120' Tc=17.5 min AMC Adjusted CN=98 Runoff=1.39 cfs 0.147 af

Subcatchment AREA5.3.1: DP4 Runoff Area=3,989 sf 34.47% Impervious Runoff Depth>7.27"
Flow Length=131' Slope=0.0200 '/' Tc=1.7 min AMC Adjusted CN=98 Runoff=0.79 cfs 0.055 af

Subcatchment AREA5.3.2: DP4 Runoff Area=3,989 sf 34.47% Impervious Runoff Depth>7.27"
Flow Length=131' Slope=0.0200 '/' Tc=1.7 min AMC Adjusted CN=98 Runoff=0.79 cfs 0.055 af

Subcatchment AREA5.4: DP4 Runoff Area=53,612 sf 0.00% Impervious Runoff Depth>7.26"
Flow Length=473' Slope=0.0200 '/' Tc=52.5 min AMC Adjusted CN=98 Runoff=4.28 cfs 0.745 af

Subcatchment AREA6: DP7 Runoff Area=103,711 sf 1.67% Impervious Runoff Depth>7.27"
Flow Length=201' Slope=0.0300 '/' Tc=21.1 min AMC Adjusted CN=98 Runoff=12.69 cfs 1.442 af

Subcatchment AREA7: DP5 Runoff Area=273,185 sf 2.39% Impervious Runoff Depth>7.27"
Flow Length=991' Tc=31.9 min AMC Adjusted CN=98 Runoff=27.93 cfs 3.798 af

Subcatchment AREA7.1: DP5 Runoff Area=24,366 sf 48.22% Impervious Runoff Depth>7.27"
Flow Length=331' Tc=2.3 min AMC Adjusted CN=98 Runoff=4.86 cfs 0.339 af

Subcatchment AREA8: DP6 Runoff Area=151,281 sf 1.44% Impervious Runoff Depth>7.26"
Flow Length=447' Slope=0.0090 '/' Tc=57.3 min AMC Adjusted CN=98 Runoff=11.48 cfs 2.100 af

Reach 4R: (new Reach) Avg. Flow Depth=0.63' Max Vel=12.60 fps Inflow=6.63 cfs 0.602 af
12.0" Round Pipe n=0.013 L=321.0' S=0.0654 '/' Capacity=9.11 cfs Outflow=6.50 cfs 0.601 af

Pond 1P: (new Pond) Peak Elev=155.74' Inflow=1.69 cfs 0.203 af
6.0" Round Culvert n=0.013 L=50.0' S=0.0200 '/' Outflow=1.69 cfs 0.203 af

Pond 2P: (new Pond) Peak Elev=293.05' Inflow=4.44 cfs 0.343 af
6.0" Round Culvert n=0.013 L=210.0' S=0.0100 '/' Outflow=4.44 cfs 0.343 af

Pond 3P: (new Pond) Peak Elev=163.08' Inflow=2.34 cfs 0.258 af
6.0" Round Culvert n=0.013 L=65.0' S=0.0154 '/' Outflow=2.34 cfs 0.258 af

Pond 6P: DP5 Peak Elev=139.13' Inflow=4.86 cfs 0.339 af
Primary=4.26 cfs 0.336 af Secondary=0.63 cfs 0.003 af Outflow=4.86 cfs 0.339 af

Pond P5: DP4 Peak Elev=129.47' Storage=52,115 cf Inflow=72.49 cfs 6.023 af
Discarded=4.57 cfs 3.056 af Primary=23.79 cfs 2.836 af Secondary=2.04 cfs 0.127 af Outflow=30.40 cfs 6.019 af

NEWTON ROAD PROPOSED 4-7*Type III 24-hr 100YR Rainfall=8.14", AMC=4*

Prepared by PGC Engineering PLLC

Printed 2/25/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 74

Pond SUM: DP4

Inflow=29.08 cfs 3.708 af

Primary=29.08 cfs 3.708 af

Pond SUM2: DP5

Inflow=28.97 cfs 4.134 af

Primary=28.97 cfs 4.134 af

Total Runoff Area = 23.855 ac Runoff Volume = 14.448 af Average Runoff Depth = 7.27"
96.97% Pervious = 23.133 ac 3.03% Impervious = 0.722 ac

NEWTON ROAD PROPOSED 4-7

Type III 24-hr 100YR Rainfall=8.14", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/25/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 75

Summary for Subcatchment AREA5: DP4

Runoff = 66.09 cfs @ 12.11 hrs, Volume= 5.422 af, Depth> 7.27"
 Routed to Pond P5 : DP4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 100YR Rainfall=8.14", AMC=4

	Area (sf)	CN	Adj	Description
*	6,528	98		ROOF
*	129,067	36		WOODS A SOIL
*	194,143	73		WOODS C SOIL
	60,000	74		>75% Grass cover, Good, HSG C
	389,738	61	98	Weighted Average, AMC Adjusted
	383,210			98.33% Pervious Area
	6,528			1.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	100	0.0700	0.28		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
0.9	100	0.0700	1.85		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.2	198	0.0350	2.65	53.04	Channel Flow, Area= 20.0 sf Perim= 30.0' r= 0.67' n= 0.080 Earth, long dense weeds
8.0	398	Total			

NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

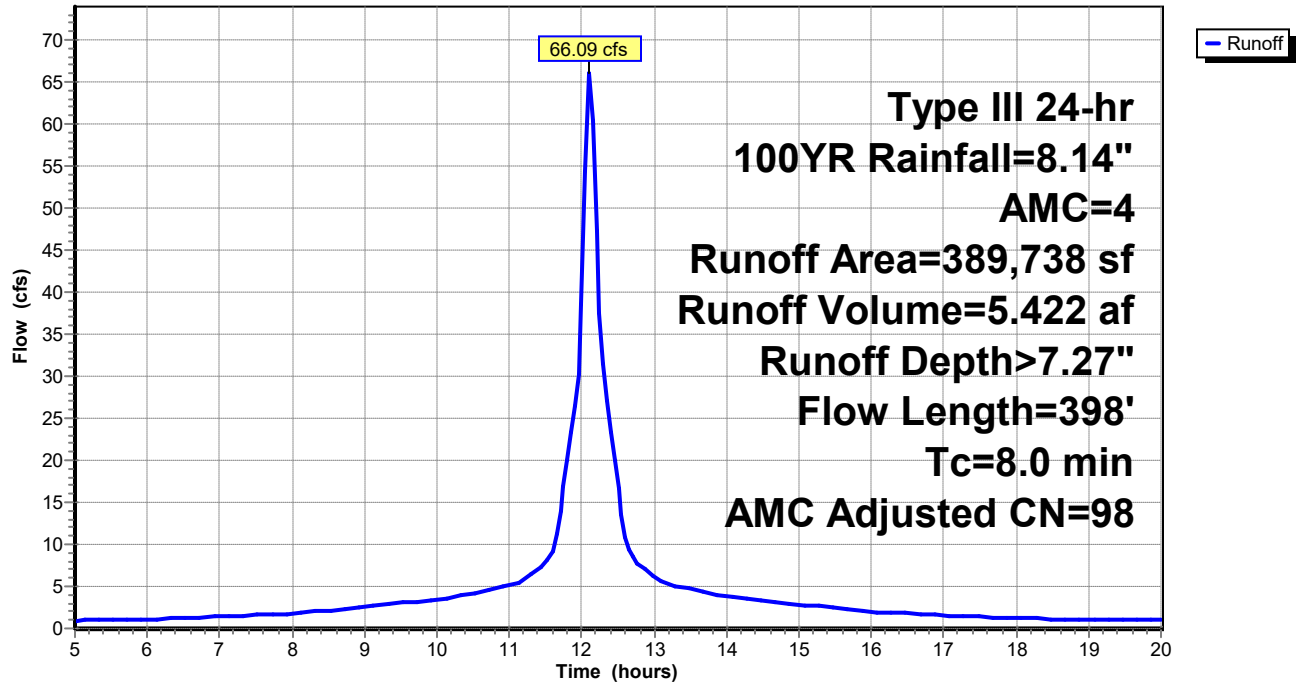
Type III 24-hr 100YR Rainfall=8.14", AMC=4

Printed 2/25/2024

Page 76

Subcatchment AREA5: DP4

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 100YR Rainfall=8.14", AMC=4

Printed 2/25/2024

Page 77

Summary for Subcatchment AREA5.1: DP4

Runoff = 4.44 cfs @ 12.08 hrs, Volume= 0.343 af, Depth> 7.27"
Routed to Pond 2P : (new Pond)

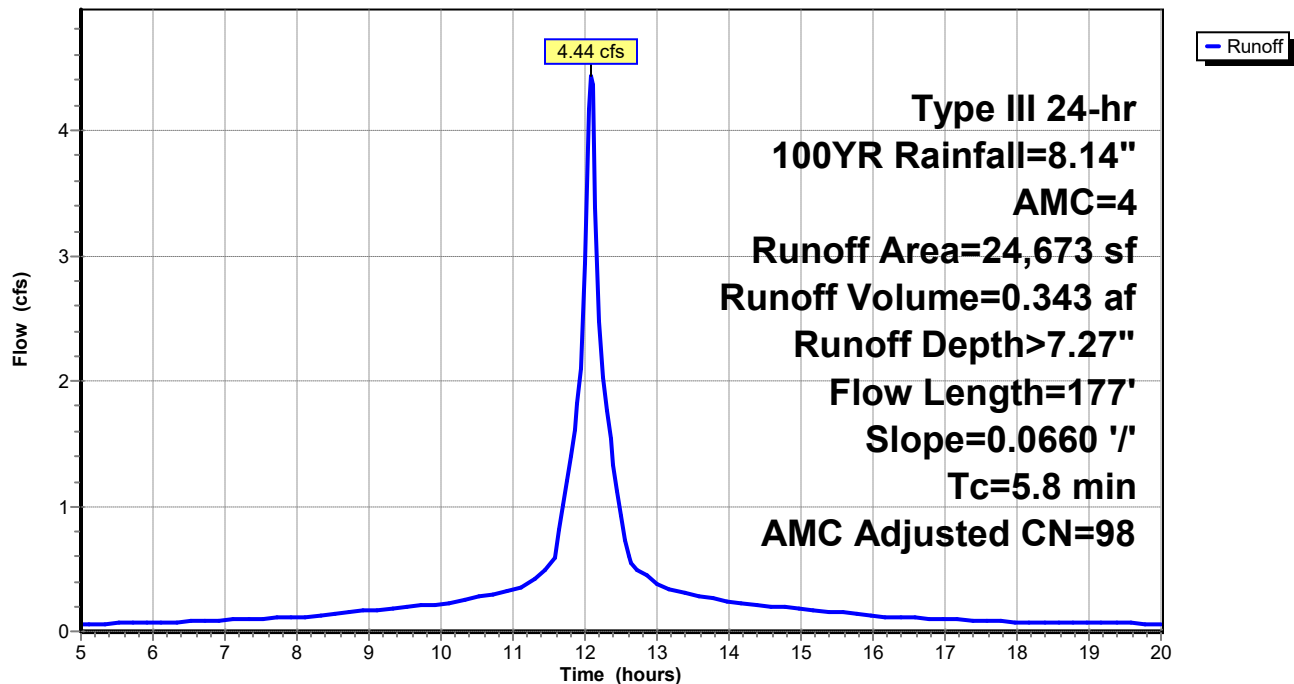
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=8.14", AMC=4

Area (sf)	CN	Adj	Description
24,673	74		>75% Grass cover, Good, HSG C
24,673	74	98	Weighted Average, AMC Adjusted
24,673			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	77	0.0660	0.26		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
0.9	100	0.0660	1.80		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
5.8	177	Total			

Subcatchment AREA5.1: DP4

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 100YR Rainfall=8.14", AMC=4

Printed 2/25/2024

Page 78

Summary for Subcatchment AREA5.2: DP4

Runoff = 1.39 cfs @ 12.23 hrs, Volume= 0.147 af, Depth> 7.27"
 Routed to Pond 1P : (new Pond)

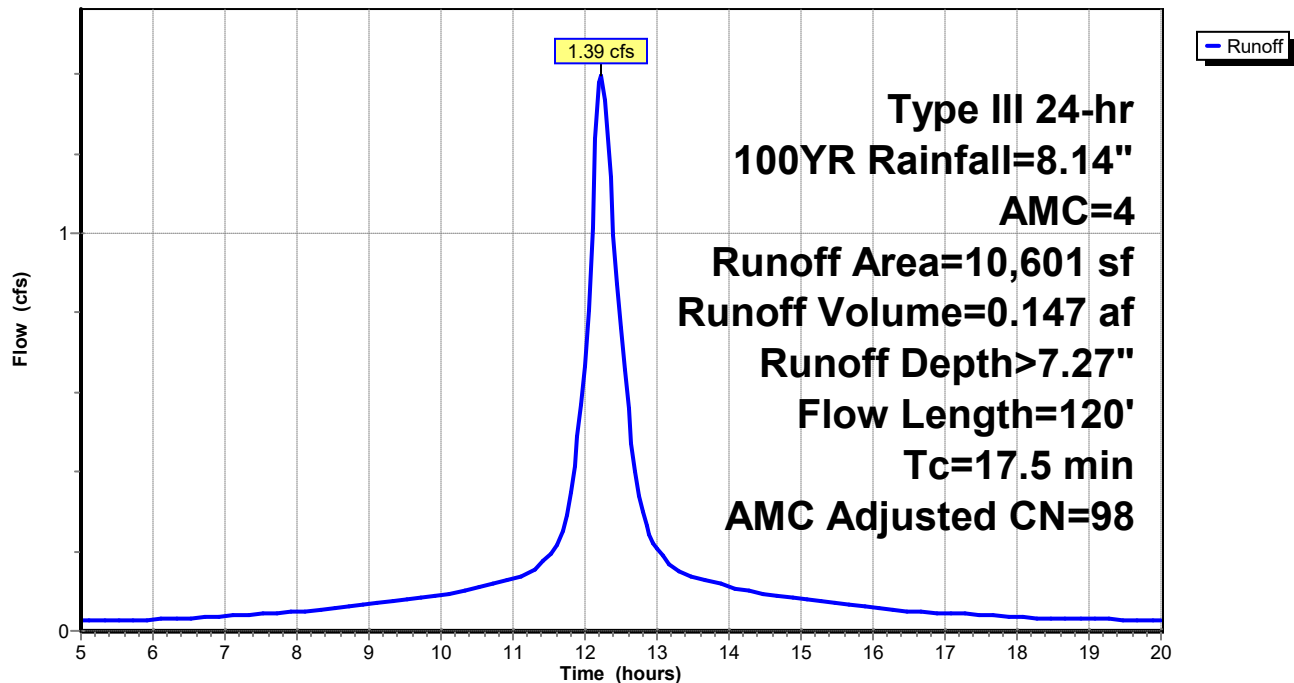
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 100YR Rainfall=8.14", AMC=4

Area (sf)	CN	Adj	Description
10,601	73		Woods, Fair, HSG C
10,601	73	98	Weighted Average, AMC Adjusted
10,601			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.1	60	0.0500	0.06		Sheet Flow,
					Woods: Dense underbrush n= 0.800 P2= 3.23"
0.4	60	0.0590	2.26	3.84	Channel Flow,
					Area= 1.7 sf Perim= 6.0' r= 0.28'
					n= 0.069 Riprap, 6-inch
17.5	120	Total			

Subcatchment AREA5.2: DP4

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 100YR Rainfall=8.14", AMC=4

Printed 2/25/2024

Page 79

Summary for Subcatchment AREA5.3.1: DP4

Runoff = 0.79 cfs @ 12.03 hrs, Volume= 0.055 af, Depth> 7.27"
Routed to Pond 1P : (new Pond)

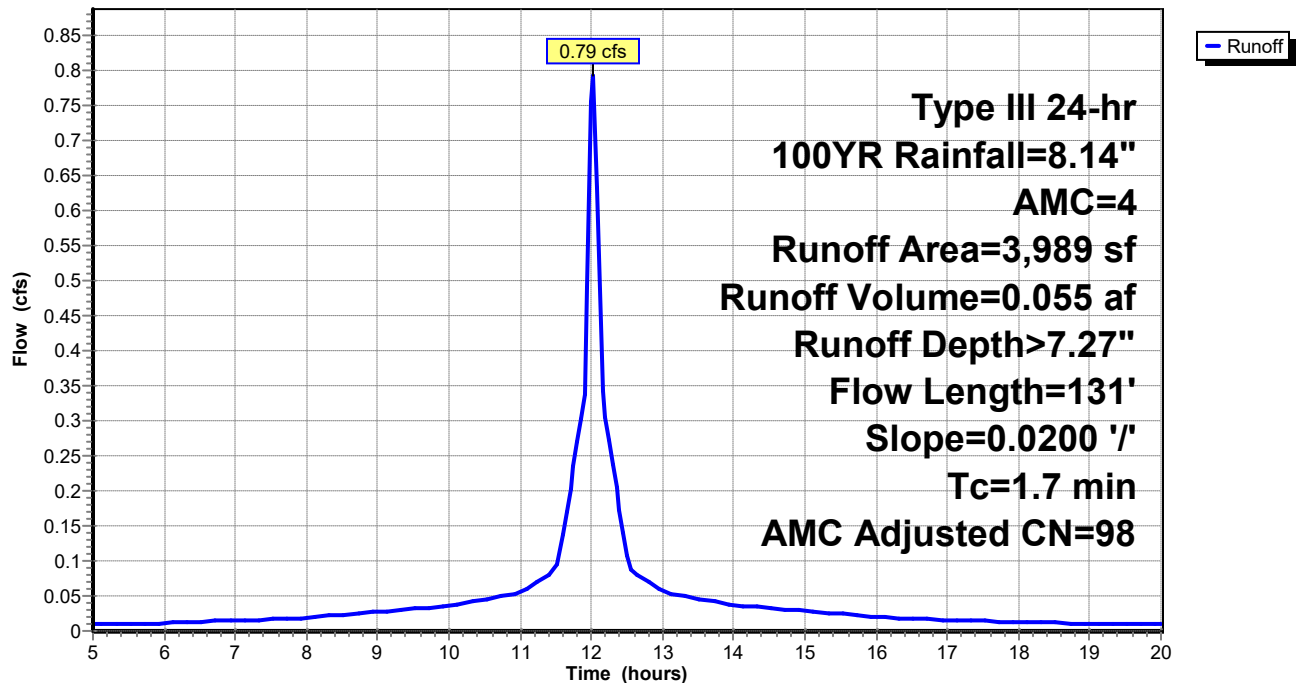
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=8.14", AMC=4

Area (sf)	CN	Adj	Description
1,375	98		Paved parking, HSG C
2,614	74		>75% Grass cover, Good, HSG C
3,989	82	98	Weighted Average, AMC Adjusted
2,614			65.53% Pervious Area
1,375			34.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0200	0.89		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.23"
1.5	120	0.0200	1.31	2.23	Channel Flow, Area= 1.7 sf Perim= 6.0' r= 0.28' n= 0.069 Riprap, 6-inch
1.7	131	Total			

Subcatchment AREA5.3.1: DP4

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 100YR Rainfall=8.14", AMC=4

Printed 2/25/2024

Page 80

Summary for Subcatchment AREA5.3.2: DP4

Runoff = 0.79 cfs @ 12.03 hrs, Volume= 0.055 af, Depth> 7.27"
Routed to Pond 3P : (new Pond)

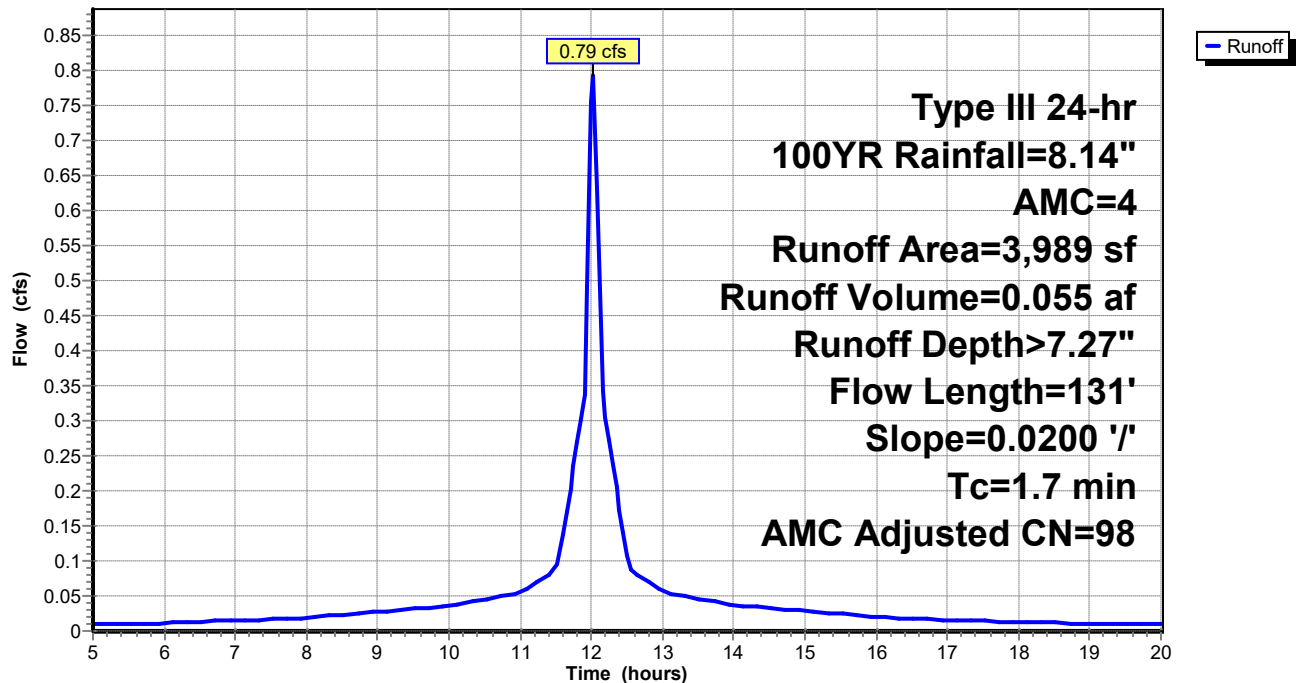
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=8.14", AMC=4

Area (sf)	CN	Adj	Description
1,375	98		Paved parking, HSG C
2,614	74		>75% Grass cover, Good, HSG C
3,989	82	98	Weighted Average, AMC Adjusted
2,614			65.53% Pervious Area
1,375			34.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0200	0.89		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.23"
1.5	120	0.0200	1.31	2.23	Channel Flow, Area= 1.7 sf Perim= 6.0' r= 0.28' n= 0.069 Riprap, 6-inch
1.7	131	Total			

Subcatchment AREA5.3.2: DP4

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 100YR Rainfall=8.14", AMC=4

Printed 2/25/2024

Page 81

Summary for Subcatchment AREA5.4: DP4

Runoff = 4.28 cfs @ 12.67 hrs, Volume= 0.745 af, Depth> 7.26"
Routed to Pond SUM : DP4

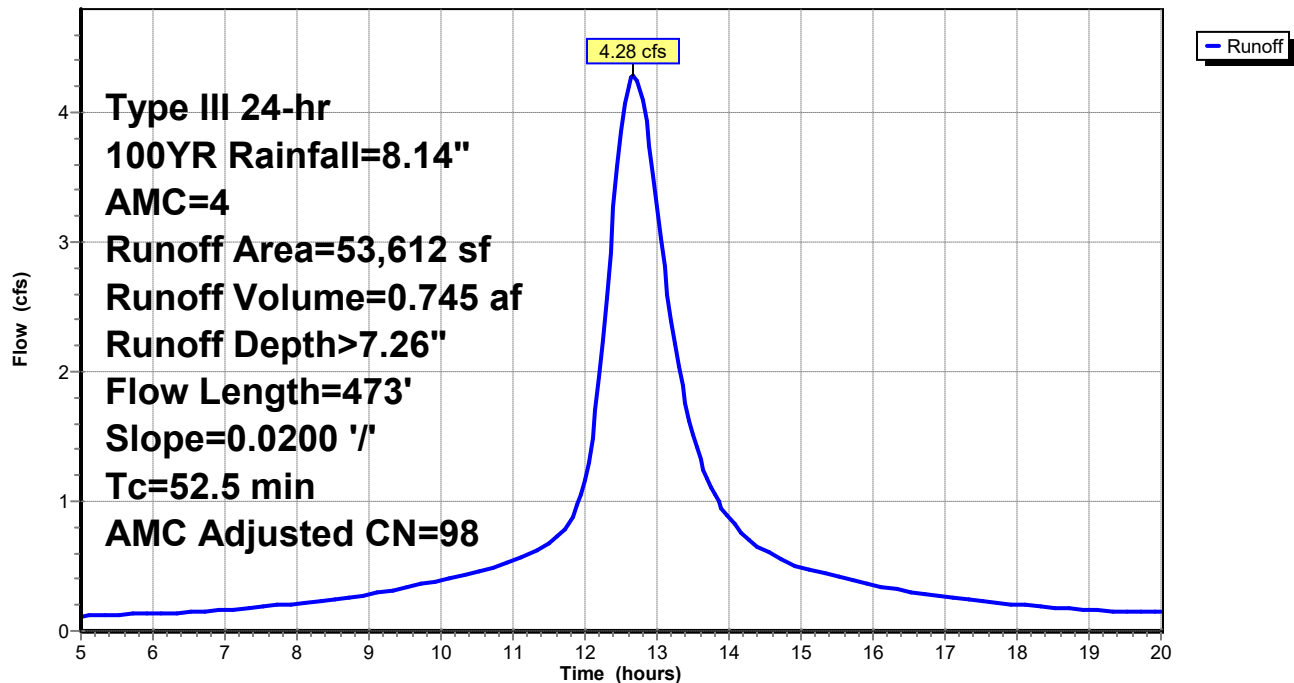
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=8.14", AMC=4

Area (sf)	CN	Adj	Description
26,806	36		Woods, Fair, HSG A
26,806	73		Woods, Fair, HSG C
53,612	55	98	Weighted Average, AMC Adjusted
53,612			100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.2	100	0.0200	0.04		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
2.4	100	0.0200	0.71		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
12.9	273	0.0200	0.35		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
52.5	473	Total			

Subcatchment AREA5.4: DP4

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 100YR Rainfall=8.14", AMC=4

Printed 2/25/2024

Page 82

Summary for Subcatchment AREA6: DP7

Runoff = 12.69 cfs @ 12.27 hrs, Volume= 1.442 af, Depth> 7.27"

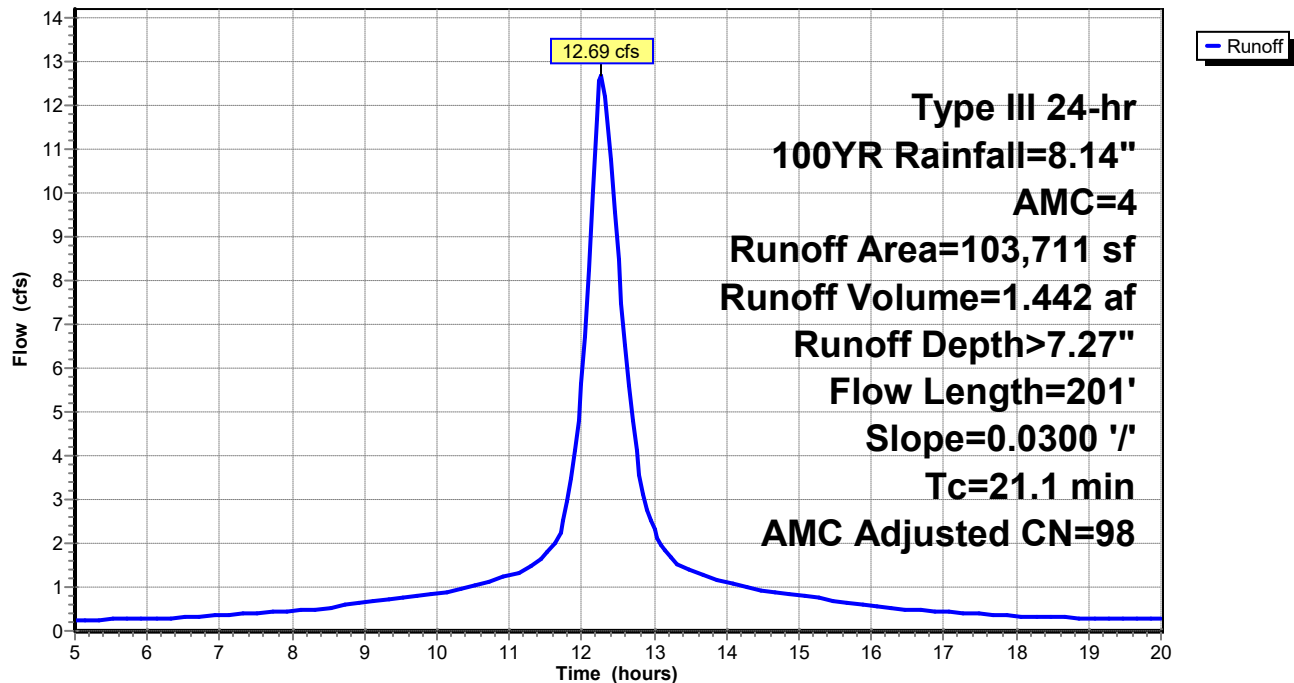
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=8.14", AMC=4

Area (sf)	CN	Adj	Description
101,983	73		Woods, Fair, HSG C
1,728	98		Roofs, HSG C
103,711	73	98	Weighted Average, AMC Adjusted
101,983			98.33% Pervious Area
1,728			1.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	50	0.0300	0.05		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.23"
2.9	151	0.0300	0.87		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
21.1	201	Total			

Subcatchment AREA6: DP7

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 100YR Rainfall=8.14", AMC=4

Printed 2/25/2024

Page 83

Summary for Subcatchment AREA7: DP5

Runoff = 27.93 cfs @ 12.42 hrs, Volume= 3.798 af, Depth> 7.27"
 Routed to Pond SUM2 : DP5

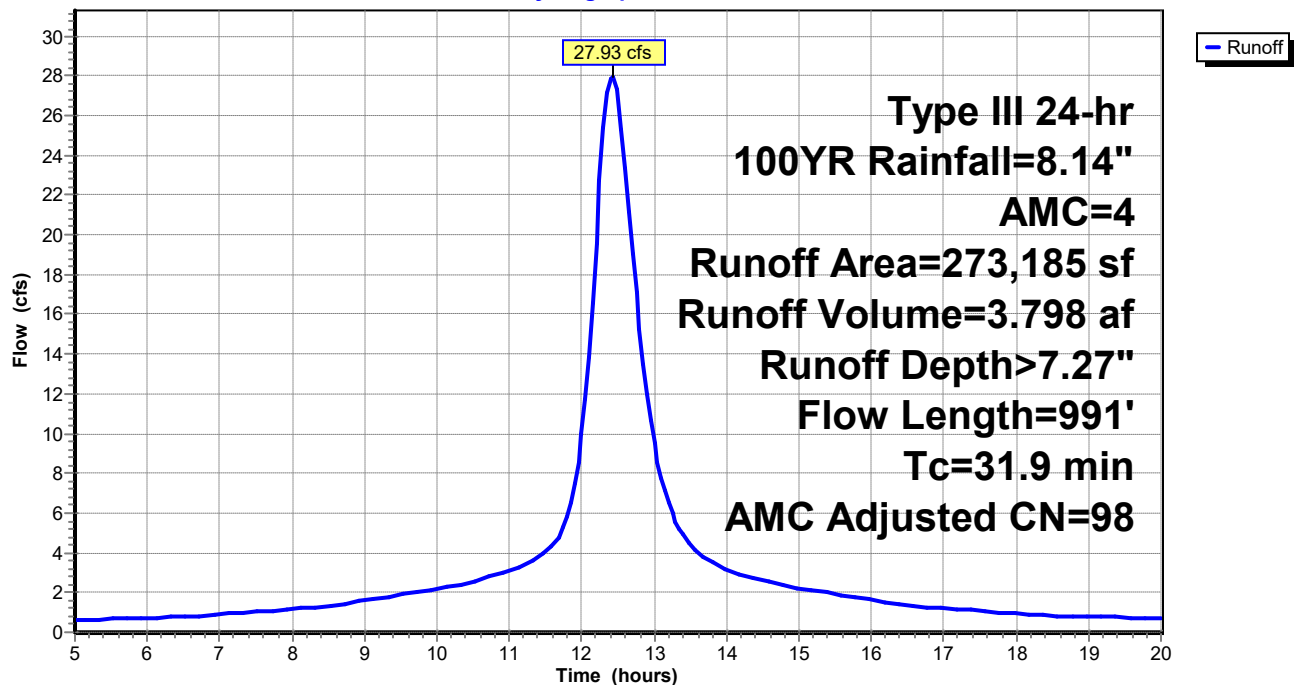
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 100YR Rainfall=8.14", AMC=4

Area (sf)	CN	Adj	Description
40,000	74		>75% Grass cover, Good, HSG C
6,528	98		Roofs, HSG C
226,657	73		Woods, Fair, HSG C
273,185	74	98	Weighted Average, AMC Adjusted
266,657			97.61% Pervious Area
6,528			2.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0800	0.30		Sheet Flow, Grass: Short n= 0.150 P2= 3.23"
1.4	100	0.0300	1.21		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
24.9	791	0.0350	0.53	10.61	Channel Flow, Area= 20.0 sf Perim= 30.0' r= 0.67' n= 0.400 Sheet flow: Woods+light brush
31.9	991	Total			

Subcatchment AREA7: DP5

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 100YR Rainfall=8.14", AMC=4

Printed 2/25/2024

Page 84

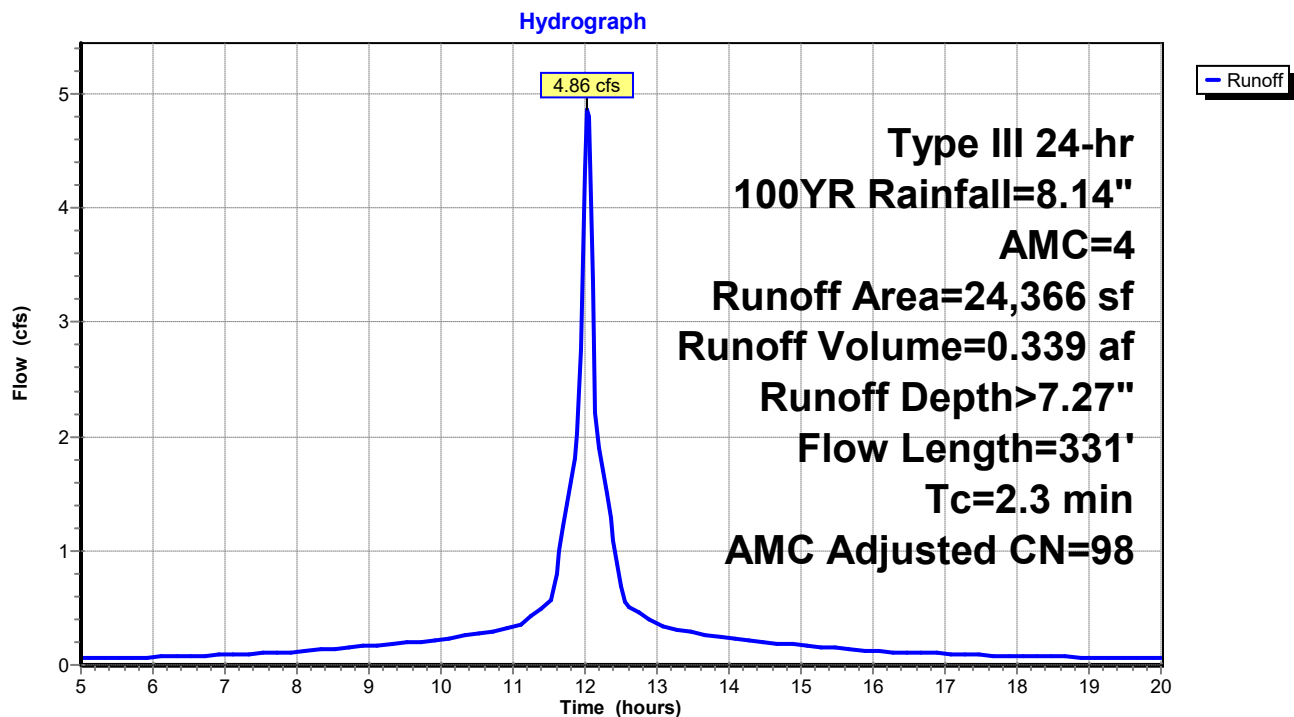
Summary for Subcatchment AREA7.1: DP5

Runoff = 4.86 cfs @ 12.04 hrs, Volume= 0.339 af, Depth> 7.27"
Routed to Pond 6P : DP5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=8.14", AMC=4

Area (sf)	CN	Adj	Description
11,749	98		Paved parking, HSG C
12,617	74		>75% Grass cover, Good, HSG C
24,366	86	98	Weighted Average, AMC Adjusted
12,617			51.78% Pervious Area
11,749			48.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	11	0.0200	0.89		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.23"
2.1	320	0.0590	2.51	4.28	Channel Flow, Area= 1.7 sf Perim= 5.1' r= 0.33' n= 0.069 Riprap, 6-inch
2.3	331	Total			

Subcatchment AREA7.1: DP5

NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 100YR Rainfall=8.14", AMC=4

Printed 2/25/2024

Page 85

Summary for Subcatchment AREA8: DP6

Runoff = 11.48 cfs @ 12.74 hrs, Volume= 2.100 af, Depth> 7.26"

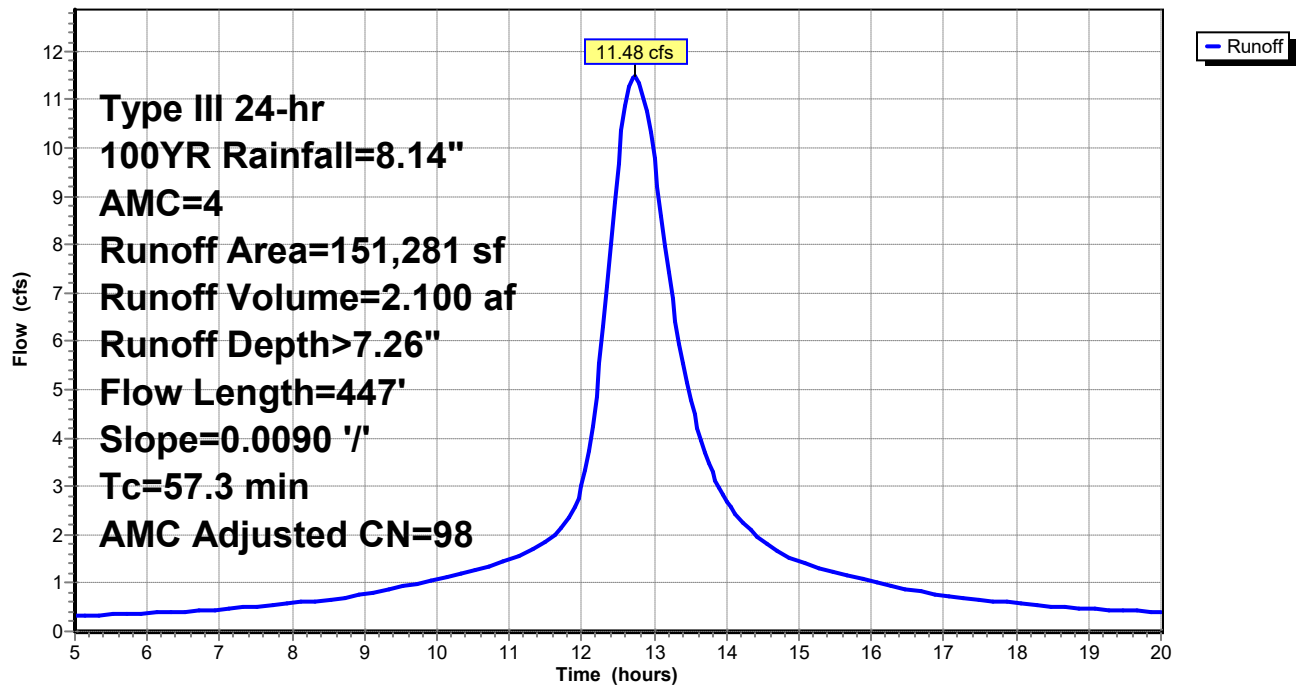
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100YR Rainfall=8.14", AMC=4

Area (sf)	CN	Adj	Description
20,000	74		>75% Grass cover, Good, HSG C
2,176	98		Roofs, HSG C
129,105	73		Woods, Fair, HSG C
151,281	73	98	Weighted Average, AMC Adjusted
149,105			98.56% Pervious Area
2,176			1.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.4	50	0.0090	0.03		Sheet Flow,
					Woods: Dense underbrush n= 0.800 P2= 3.23"
27.9	397	0.0090	0.24		Shallow Concentrated Flow,
					Forest w/Heavy Litter Kv= 2.5 fps
57.3	447	Total			

Subcatchment AREA8: DP6

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 100YR Rainfall=8.14", AMC=4

Printed 2/25/2024

Page 86

Summary for Reach 4R: (new Reach)

Inflow Area = 0.993 ac, 6.36% Impervious, Inflow Depth > 7.27" for 100YR event
Inflow = 6.63 cfs @ 12.07 hrs, Volume= 0.602 af
Outflow = 6.50 cfs @ 12.09 hrs, Volume= 0.601 af, Atten= 2%, Lag= 1.0 min
Routed to Pond P5 : DP4

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 12.60 fps, Min. Travel Time= 0.4 min

Avg. Velocity= 5.41 fps, Avg. Travel Time= 1.0 min

Peak Storage= 167 cf @ 12.08 hrs

Average Depth at Peak Storage= 0.63', Surface Width= 0.97'

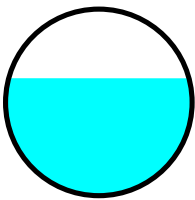
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 9.11 cfs

12.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

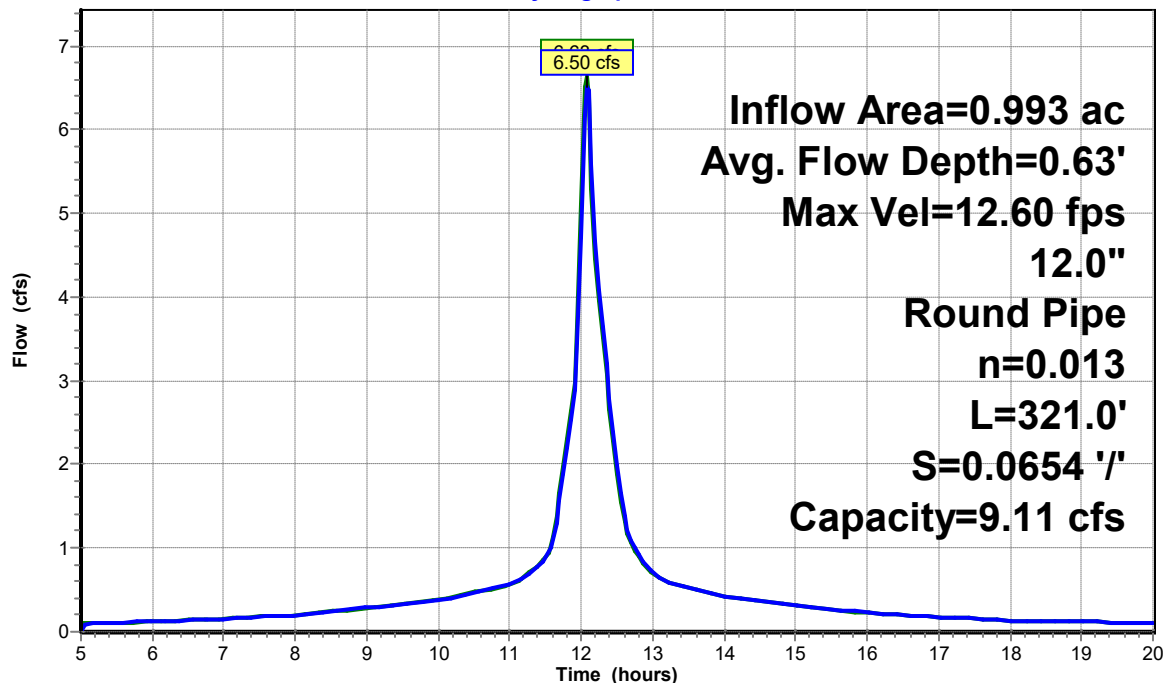
Length= 321.0' Slope= 0.0654 '/'

Inlet Invert= 148.00', Outlet Invert= 127.00'



Reach 4R: (new Reach)

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 100YR Rainfall=8.14", AMC=4

Printed 2/25/2024

Page 87

Summary for Pond 1P: (new Pond)

Inflow Area = 0.335 ac, 9.42% Impervious, Inflow Depth > 7.27" for 100YR event
Inflow = 1.69 cfs @ 12.22 hrs, Volume= 0.203 af
Outflow = 1.69 cfs @ 12.22 hrs, Volume= 0.203 af, Atten= 0%, Lag= 0.0 min
Primary = 1.69 cfs @ 12.22 hrs, Volume= 0.203 af
Routed to Pond 3P : (new Pond)

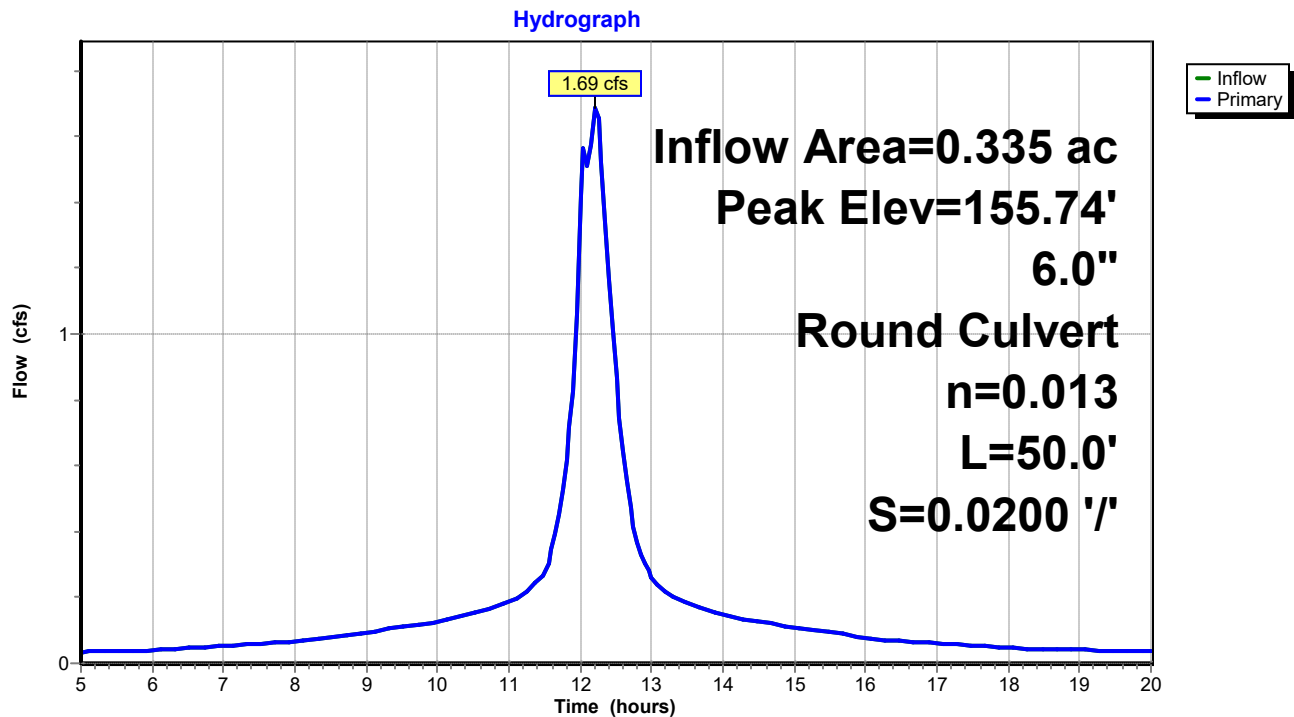
Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 155.74' @ 12.22 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	150.00'	6.0" Round Culvert L= 50.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 150.00' / 149.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=1.67 cfs @ 12.22 hrs HW=155.65' (Free Discharge)

1=Culvert (Barrel Controls 1.67 cfs @ 8.52 fps)

Pond 1P: (new Pond)

NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 100YR Rainfall=8.14", AMC=4

Printed 2/25/2024

Page 88

Summary for Pond 2P: (new Pond)

Inflow Area = 0.566 ac, 0.00% Impervious, Inflow Depth > 7.27" for 100YR event
Inflow = 4.44 cfs @ 12.08 hrs, Volume= 0.343 af
Outflow = 4.44 cfs @ 12.08 hrs, Volume= 0.343 af, Atten= 0%, Lag= 0.0 min
Primary = 4.44 cfs @ 12.08 hrs, Volume= 0.343 af
Routed to Reach 4R : (new Reach)

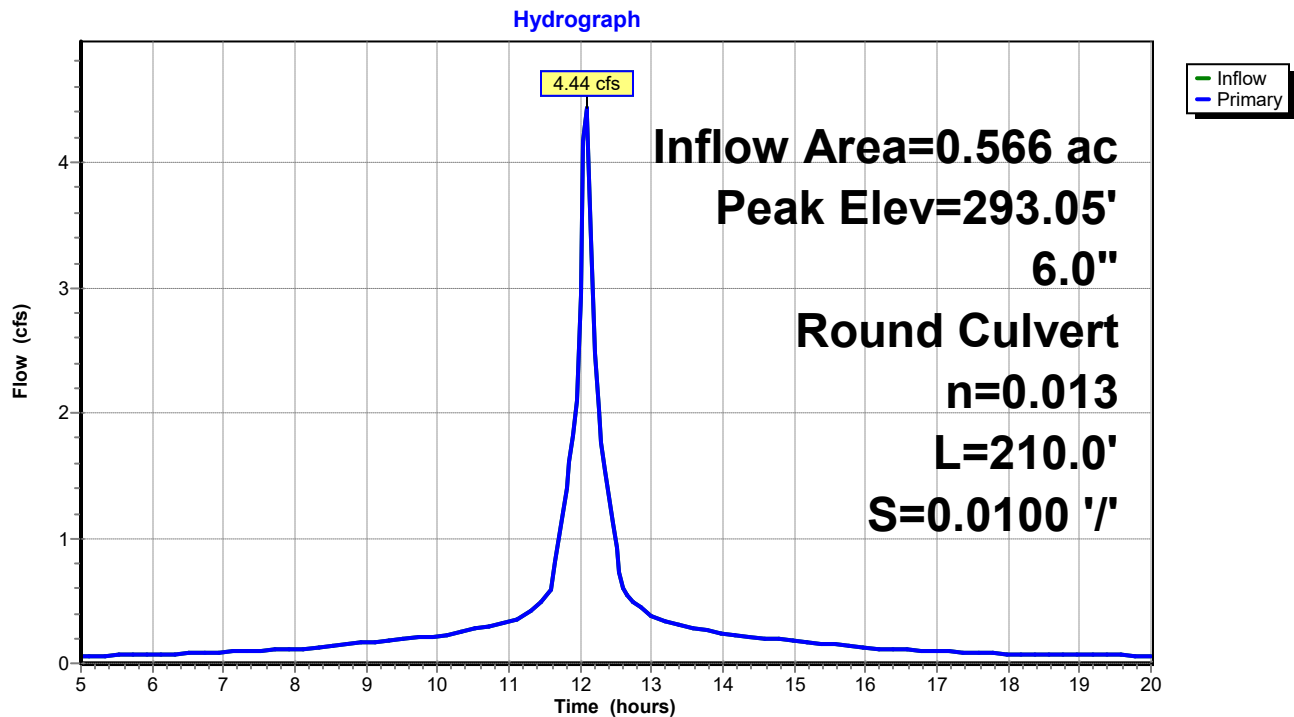
Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 293.05' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	150.10'	6.0" Round Culvert L= 210.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 150.10' / 148.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=4.31 cfs @ 12.08 hrs HW=285.37' (Free Discharge)

↑1=Culvert (Barrel Controls 4.31 cfs @ 21.94 fps)

Pond 2P: (new Pond)

NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 100YR Rainfall=8.14", AMC=4

Printed 2/25/2024

Page 89

Summary for Pond 3P: (new Pond)

Inflow Area = 0.427 ac, 14.80% Impervious, Inflow Depth > 7.27" for 100YR event
Inflow = 2.34 cfs @ 12.04 hrs, Volume= 0.258 af
Outflow = 2.34 cfs @ 12.04 hrs, Volume= 0.258 af, Atten= 0%, Lag= 0.0 min
Primary = 2.34 cfs @ 12.04 hrs, Volume= 0.258 af
Routed to Reach 4R : (new Reach)

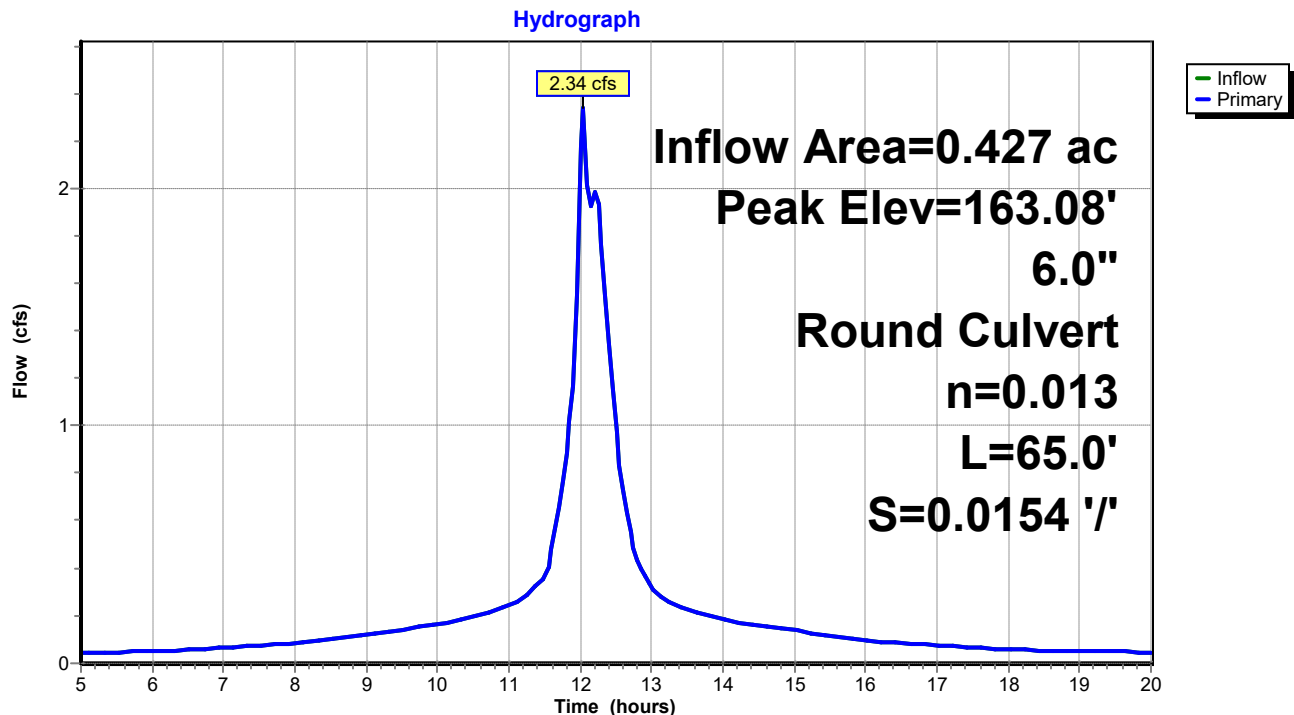
Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 163.08' @ 12.04 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	149.00'	6.0" Round Culvert L= 65.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 149.00' / 148.00' S= 0.0154 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=2.30 cfs @ 12.04 hrs HW=162.68' (Free Discharge)

↑1=Culvert (Barrel Controls 2.30 cfs @ 11.73 fps)

Pond 3P: (new Pond)

NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Type III 24-hr 100YR Rainfall=8.14", AMC=4

Printed 2/25/2024

Page 90

Summary for Pond 6P: DP5

Inflow Area = 0.559 ac, 48.22% Impervious, Inflow Depth > 7.27" for 100YR event
Inflow = 4.86 cfs @ 12.04 hrs, Volume= 0.339 af
Outflow = 4.86 cfs @ 12.04 hrs, Volume= 0.339 af, Atten= 0%, Lag= 0.0 min
Primary = 4.26 cfs @ 12.03 hrs, Volume= 0.336 af
Routed to Pond SUM2 : DP5
Secondary = 0.63 cfs @ 12.05 hrs, Volume= 0.003 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 139.13' @ 12.03 hrs

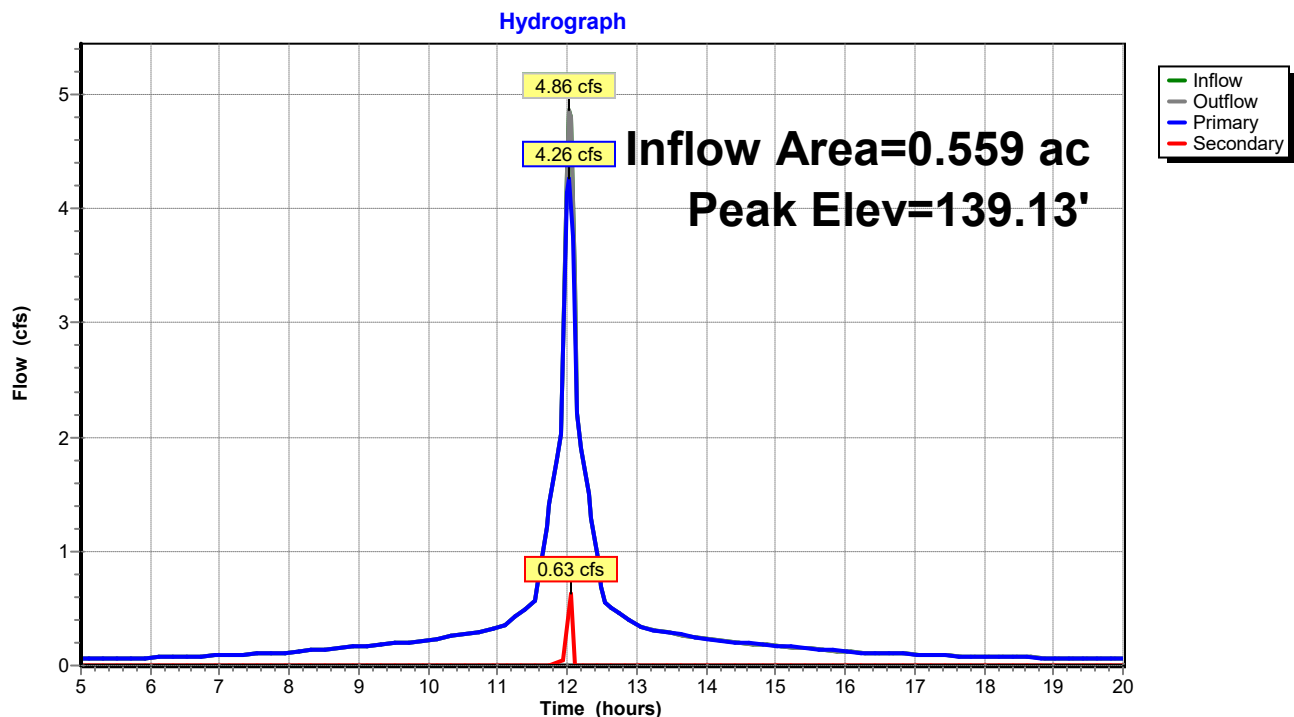
Device	Routing	Invert	Outlet Devices
#1	Primary	135.10'	12.0" Round Culvert L= 220.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 135.10' / 134.22' S= 0.0040 ' S= 0.0040 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	138.90'	2.0" x 2.0" Horiz. Orifice/Grate X 6.00 columns X 6 rows C= 0.600 in 24.0" x 24.0" Grate (25% open area) Limited to weir flow at low heads

Primary OutFlow Max=4.16 cfs @ 12.03 hrs HW=138.96' (Free Discharge)

1=Culvert (Barrel Controls 4.16 cfs @ 5.29 fps)

Secondary OutFlow Max=0.58 cfs @ 12.05 hrs HW=138.98' (Free Discharge)

2=Orifice/Grate (Weir Controls 0.58 cfs @ 0.92 fps)

Pond 6P: DP5

NEWTON ROAD PROPOSED 4-7

Type III 24-hr 100YR Rainfall=8.14", AMC=4

Prepared by PGC Engineering PLLC

Printed 2/25/2024

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Page 91

Summary for Pond P5: DP4

Inflow Area = 9.940 ac, 2.14% Impervious, Inflow Depth > 7.27" for 100YR event
 Inflow = 72.49 cfs @ 12.11 hrs, Volume= 6.023 af
 Outflow = 30.40 cfs @ 12.35 hrs, Volume= 6.019 af, Atten= 58%, Lag= 14.6 min
 Discarded = 4.57 cfs @ 12.35 hrs, Volume= 3.056 af
 Primary = 23.79 cfs @ 12.35 hrs, Volume= 2.836 af
 Routed to Pond SUM : DP4
 Secondary = 2.04 cfs @ 12.35 hrs, Volume= 0.127 af
 Routed to Pond SUM : DP4

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 129.47' @ 12.35 hrs Surf.Area= 23,852 sf Storage= 52,115 cf

Plug-Flow detention time= 14.4 min calculated for 5.998 af (100% of inflow)
 Center-of-Mass det. time= 13.9 min (748.5 - 734.6)

Volume	Invert	Avail.Storage	Storage Description
#1	127.00'	64,966 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
127.00	18,323	0	0
128.00	20,507	19,415	19,415
130.00	25,044	45,551	64,966

Device	Routing	Invert	Outlet Devices
#1	Secondary	128.00'	8.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	127.00'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Discarded	127.00'	8.270 in/hr Exfiltration over Surface area

Discarded OutFlow Max=4.57 cfs @ 12.35 hrs HW=129.47' (Free Discharge)
 ↑ **3=Exfiltration** (Exfiltration Controls 4.57 cfs)

Primary OutFlow Max=23.79 cfs @ 12.35 hrs HW=129.47' (Free Discharge)
 ↑ **2=Orifice/Grate** (Orifice Controls 23.79 cfs @ 7.57 fps)

Secondary OutFlow Max=2.04 cfs @ 12.35 hrs HW=129.47' (Free Discharge)
 ↑ **1=Orifice/Grate** (Orifice Controls 2.04 cfs @ 5.85 fps)

NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

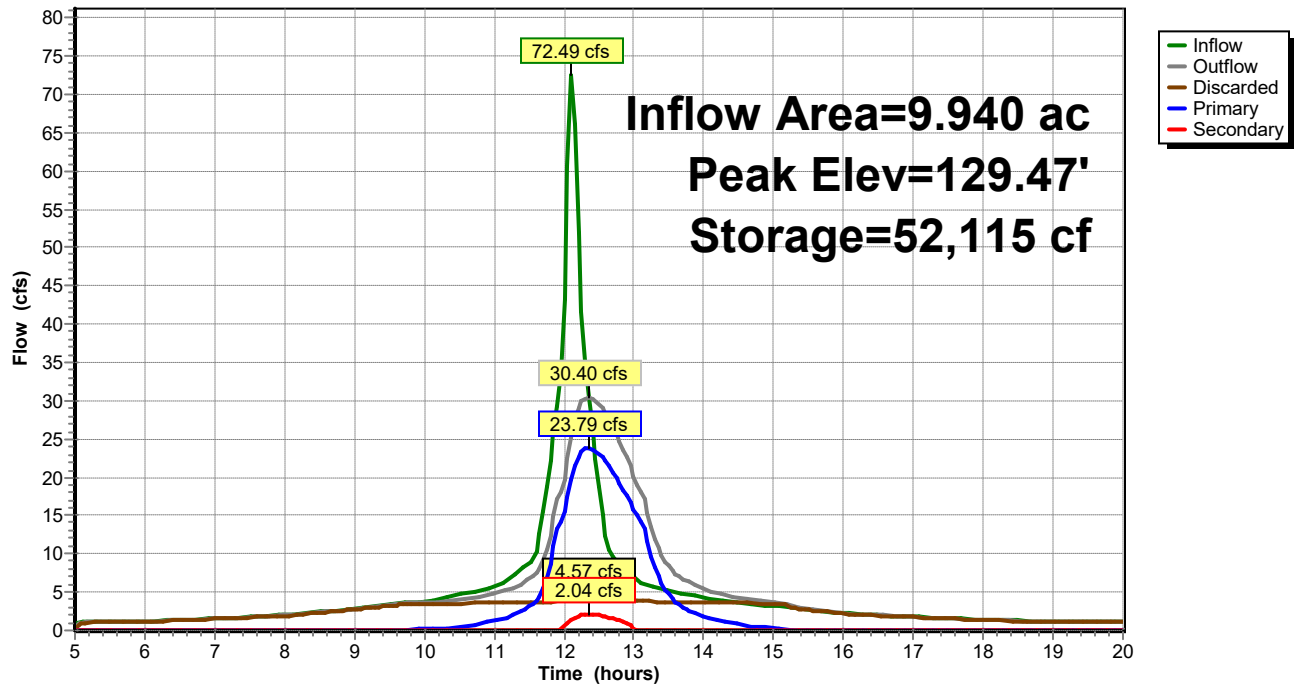
Type III 24-hr 100YR Rainfall=8.14", AMC=4

Printed 2/25/2024

Page 92

Pond P5: DP4

Hydrograph



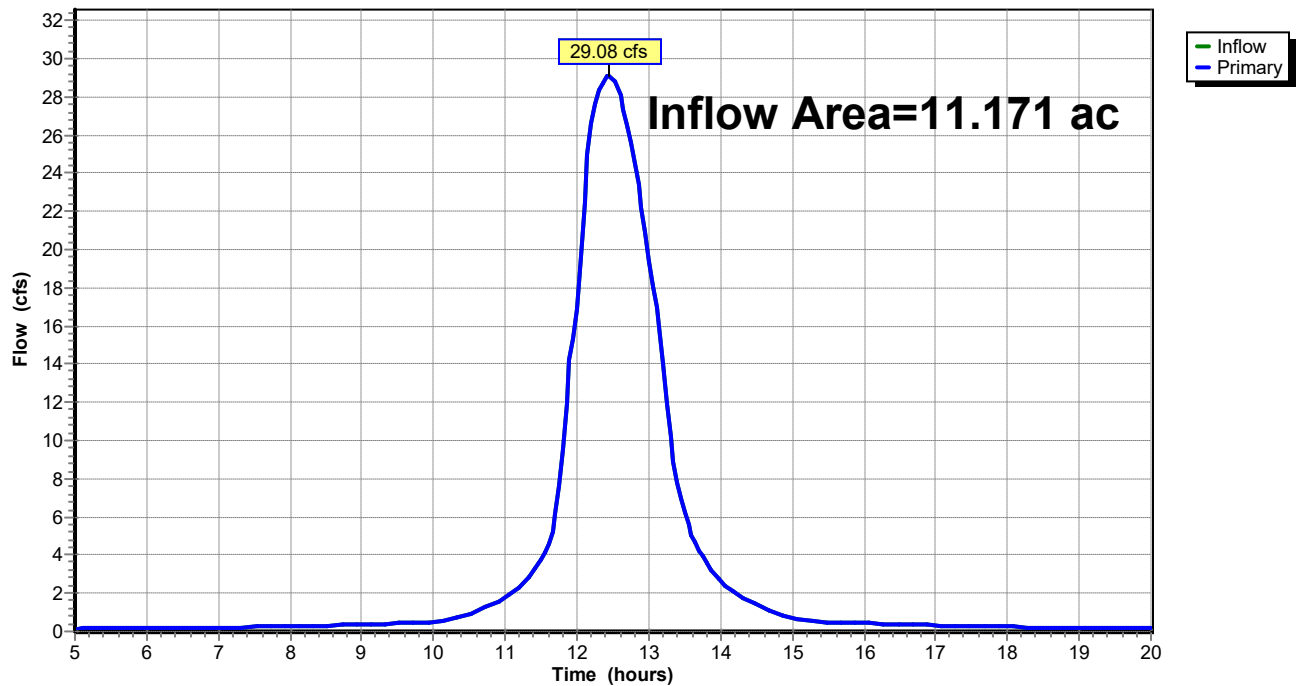
Summary for Pond SUM: DP4

Inflow Area = 11.171 ac, 1.91% Impervious, Inflow Depth > 3.98" for 100YR event
 Inflow = 29.08 cfs @ 12.44 hrs, Volume= 3.708 af
 Primary = 29.08 cfs @ 12.44 hrs, Volume= 3.708 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond SUM: DP4

Hydrograph



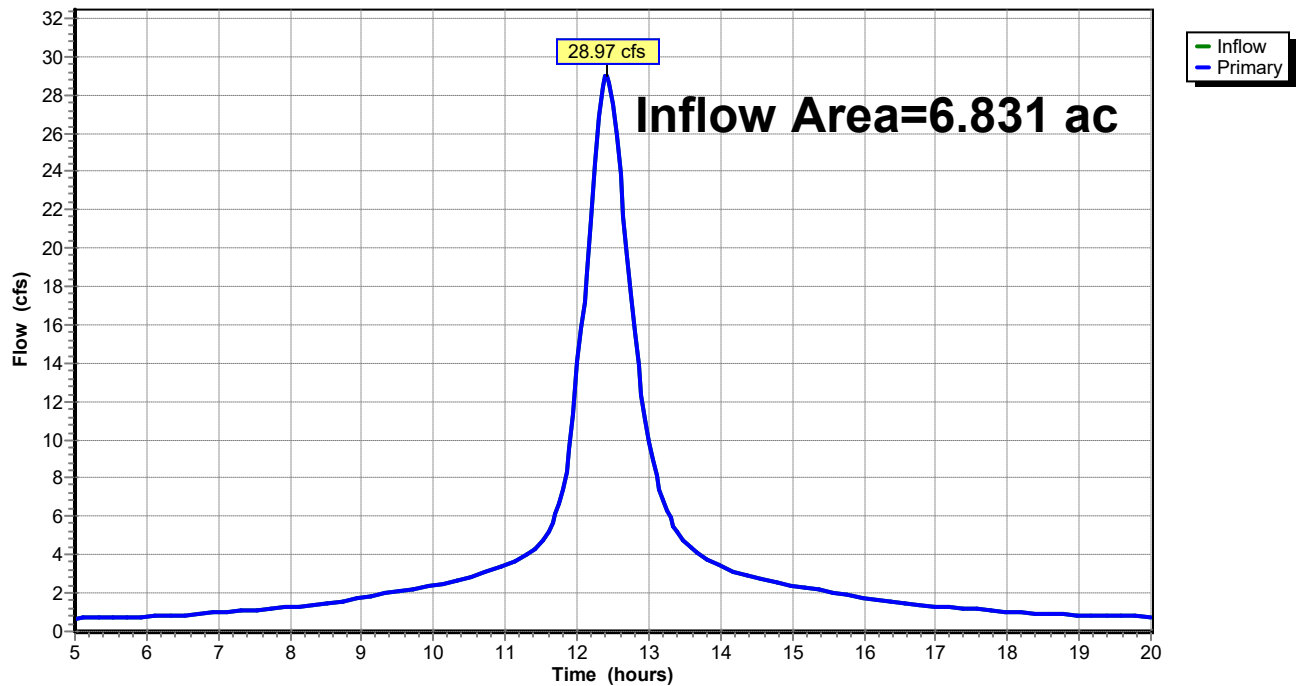
Summary for Pond SUM2: DP5

Inflow Area = 6.831 ac, 6.14% Impervious, Inflow Depth > 7.26" for 100YR event
 Inflow = 28.97 cfs @ 12.41 hrs, Volume= 4.134 af
 Primary = 28.97 cfs @ 12.41 hrs, Volume= 4.134 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond SUM2: DP5

Hydrograph



NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Table of Contents

Printed 2/25/2024

TABLE OF CONTENTS

Project Reports

- 1 Routing Diagram
- 2 Rainfall Events Listing
- 3 Area Listing (all nodes)
- 4 Soil Listing (all nodes)
- 5 Ground Covers (all nodes)
- 6 Pipe Listing (all nodes)

2YR Event

- 7 Node Listing
- 9 Subcat AREA5: DP4
- 11 Subcat AREA5.1: DP4
- 12 Subcat AREA5.2: DP4
- 13 Subcat AREA5.3.1: DP4
- 14 Subcat AREA5.3.2: DP4
- 15 Subcat AREA5.4: DP4
- 16 Subcat AREA6: DP7
- 17 Subcat AREA7: DP5
- 18 Subcat AREA7.1: DP5
- 19 Subcat AREA8: DP6
- 20 Reach 4R: (new Reach)
- 21 Pond 1P: (new Pond)
- 22 Pond 2P: (new Pond)
- 23 Pond 3P: (new Pond)
- 24 Pond 6P: DP5
- 25 Pond P5: DP4
- 27 Pond SUM: DP4
- 28 Pond SUM2: DP5

10YR Event

- 29 Node Listing
- 31 Subcat AREA5: DP4
- 33 Subcat AREA5.1: DP4
- 34 Subcat AREA5.2: DP4
- 35 Subcat AREA5.3.1: DP4
- 36 Subcat AREA5.3.2: DP4
- 37 Subcat AREA5.4: DP4
- 38 Subcat AREA6: DP7
- 39 Subcat AREA7: DP5
- 40 Subcat AREA7.1: DP5
- 41 Subcat AREA8: DP6
- 42 Reach 4R: (new Reach)
- 43 Pond 1P: (new Pond)
- 44 Pond 2P: (new Pond)
- 45 Pond 3P: (new Pond)
- 46 Pond 6P: DP5

NEWTON ROAD PROPOSED 4-7

Prepared by PGC Engineering PLLC

HydroCAD® 10.20-4a s/n 12771 © 2023 HydroCAD Software Solutions LLC

Table of Contents

Printed 2/25/2024

- 47 Pond P5: DP4
- 49 Pond SUM: DP4
- 50 Pond SUM2: DP5

25YR Event

- 51 Node Listing
- 53 Subcat AREA5: DP4
- 55 Subcat AREA5.1: DP4
- 56 Subcat AREA5.2: DP4
- 57 Subcat AREA5.3.1: DP4
- 58 Subcat AREA5.3.2: DP4
- 59 Subcat AREA5.4: DP4
- 60 Subcat AREA6: DP7
- 61 Subcat AREA7: DP5
- 62 Subcat AREA7.1: DP5
- 63 Subcat AREA8: DP6
- 64 Reach 4R: (new Reach)
- 65 Pond 1P: (new Pond)
- 66 Pond 2P: (new Pond)
- 67 Pond 3P: (new Pond)
- 68 Pond 6P: DP5
- 69 Pond P5: DP4
- 71 Pond SUM: DP4
- 72 Pond SUM2: DP5

100YR Event

- 73 Node Listing
- 75 Subcat AREA5: DP4
- 77 Subcat AREA5.1: DP4
- 78 Subcat AREA5.2: DP4
- 79 Subcat AREA5.3.1: DP4
- 80 Subcat AREA5.3.2: DP4
- 81 Subcat AREA5.4: DP4
- 82 Subcat AREA6: DP7
- 83 Subcat AREA7: DP5
- 84 Subcat AREA7.1: DP5
- 85 Subcat AREA8: DP6
- 86 Reach 4R: (new Reach)
- 87 Pond 1P: (new Pond)
- 88 Pond 2P: (new Pond)
- 89 Pond 3P: (new Pond)
- 90 Pond 6P: DP5
- 91 Pond P5: DP4
- 93 Pond SUM: DP4
- 94 Pond SUM2: DP5

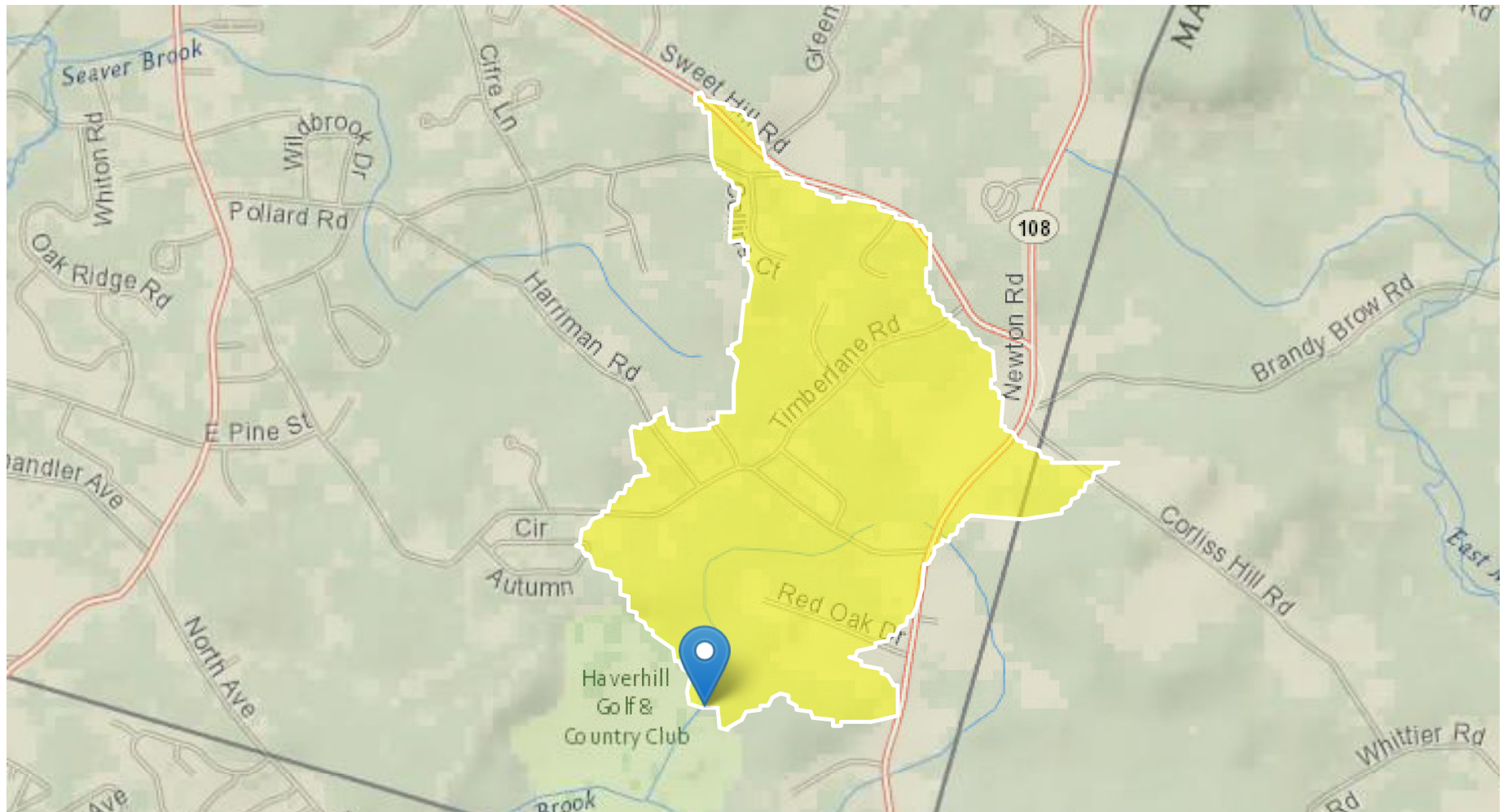
StreamStats Report Snows Brook

Region ID: NH

Workspace ID: NH20240226122211123000

Clicked Point (Latitude, Longitude): 42.81365, -71.07262

Time: 2024-02-26 07:22:31 -0500



[+ Collapse All](#)

➤ Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
APRAVPRE	Mean April Precipitation	4.283	inches
CSL10_85	Change in elevation divided by length between points 10 and 85 percent of distance along main channel to basin divide - main channel method not known	55.6	feet per mi
DRNAREA	Area that drains to a point on a stream	0.68	square miles
WETLAND	Percentage of Wetlands	13.0882	percent

➤ Peak-Flow Statistics

Peak-Flow Statistics Parameters [Peak Flow Statewide SIR2008 5206]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.68	square miles	0.7	1290
APRAVPRE	Mean April Precipitation	4.283	inches	2.79	6.23
WETLAND	Percent Wetlands	13.0882	percent	0	21.8
CSL10_85	Stream Slope 10 and 85 Method	55.6	feet per mi	5.43	543

Peak-Flow Statistics Disclaimers [Peak Flow Statewide SIR2008 5206]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Peak-Flow Statistics Flow Report [Peak Flow Statewide SIR2008 5206]

Statistic	Value	Unit
50-percent AEP flood	17.3	ft ³ /s