



ENGINEER'S REPORT

for

Uptown Apartments

2190 Wehrle Drive
Amherst, Erie County, NY

Prepared for

Young Development Inc.

Bryan Young
1120 Bullis Road
Elma NY, 14059

Prepared by

Carmina Wood Design

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Buffalo, NY 14203

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June 2026
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Table of Contents

Written Engineer's Report

Section 1 - Location & Description

Section 2 - Water Service

Section 3 - Sanitary Sewer Service

Section 4 - Storm Sewer Service

Section 5 - Earthwork & Impervious Area Calculations

Appendices

Appendix A Sanitary Sewer and Water Demand Calculations

- Site Water Pressure ECWA Correspondences

Appendix B Storm Sewer System Drainage Calculations

- Existing Runoff
- Proposed Runoff
 - Green Infrastructure & Water Quality Calculation

Appendix C Earthwork Calculations

Section 1 - Location & Description

This project consists of the development of a 24.91-acre site located at 2190 Wehrle Drive in the Town of Amherst. The proposed apartment community will be constructed in two phases and, upon full build out, will consist of 270 apartment units housed within twenty-six 10-unit buildings and two 5-unit buildings.

Phase 1 will include 150 apartment units, consisting of 37 one-bedroom units, 83 two-bedroom units, and 30 three-bedroom units. This phase will also include construction of the clubhouse and associated recreational amenities, including a swimming pool, dog park, pickleball courts, and cornhole courts. Phase 2 will include the remaining 120 apartment units, consisting of 30 one-bedroom units, 66 two-bedroom units, and 24 three-bedroom units.

At full build out, the development will contain 67 one-bedroom units, 149 two-bedroom units, and 54 three-bedroom units. In addition to the residential buildings, the project will include associated utility infrastructure, internal roadways, parking areas, site lighting, landscaping, and stormwater management facilities necessary to support the development. The project site is currently undeveloped. Construction of the proposed improvements will result in approximately 22.50 acres of land disturbance.

Section 2 - Water Service

Water service for the proposed apartment complex will be provided by private 8 inch and 6 inch water mains connected to the existing 12 inch ECWA water main located within the eastbound travel lane of Wehrle Drive. Both proposed mains will consist of AWWA C900 pipe. The 8 inch main will serve domestic water demand and fire protection requirements, while the 6 inch main will provide an emergency fire water supply. Each apartment building will be served by an individual 4 inch polyethylene combined domestic and fire protection service connected to the proposed 8 inch main.

Each proposed water main will be routed through a separate dedicated insulated enclosure housing its respective water meter and reduced pressure zone (RPZ) backflow prevention equipment. Both enclosures will be heated to prevent freezing during winter conditions.

Discharge from RPZ testing, maintenance, or relief valve operation will be conveyed by gravity to the nearest drainage inlet. The property owner will be responsible for maintaining the drainage conveyance system and keeping all drainage ports free of snow, ice, and debris to ensure proper operation. Four private hydrants will be installed on site as part of the development to ensure fire hose coverage not exceeding 400'.

Domestic Summary:

Peak Operating Demand:	132.92 gpm
Water Main:	12" on Wherle Drive
Static Pressure:	43 psi (Per ECWA)
Friction Loss:	0.0 psi
Loss through meter/RPZ:	13 psi
Elevation Loss:	8.66 psi
Pressure after RPZ:	30.0 psi

Repairs to all devices will be made during off hours, dual backflow preventers are not required. The site is not located in a 100-year flood plain. Disinfection of the water service following installation will be continuous feed, according to AWWA C-651, latest revision.

Section 3 - Sanitary Sewer Service

Sanitary service for the proposed apartment complex development will be provided by a private sanitary sewer collection system consisting of an 8-inch sanitary sewer main with manholes installed at all changes in alignment and at appropriate intervals in accordance with Town of Amherst and Erie County standards. Each apartment building will connect to the private sanitary sewer system through an individual 6-inch SDR 35 PVC sanitary lateral installed at a minimum slope of 1.0 percent.

The proposed private sanitary sewer system will convey wastewater to a proposed on site pump station. The pump station will be designed in accordance with Town of Amherst and Erie County standards by others and submitted under separate cover. From the pump station, sanitary flows will be discharged to the existing Town of Amherst sanitary sewer system located within Bellingham Drive, east of the project site.

Design Parameters

1-bedroom Units:	110 gal/day/house x 67 units = 7,370 gpd
2-bedroom Units:	220 gal/day/house x 149 units = 32,780 gpd
3-bedroom Units:	330 gal/day/house x 54 units = 17,820 gpd
Employee Demand:	15 gal/day/employee x 2 employees = 30 gpd

Phase 1 Sanitary Sewer Demand = 32,260 gpd

Phase 2 Sanitary Sewer Demand = 25,740 gpd

Total Sanitary Sewer Demand = 58,000 gpd

58,000 gpd * 3.94 = 228,532 gpd (Peak Sanitary Sewer Demand, Total)

*use peaking factor of 3.94

The hydraulic loading rate is per “Design Standards for Intermediate Sized Wastewater Treatment Systems” 2014, NYSDEC.

Section 4 - Storm Sewer Service

Existing site drainage generally flows to three discharge areas: a ditch northeast of the site, a ditch west of the site, and Wehrle Drive. Runoff from each drainage area ultimately enters the Town of Amherst storm sewer system before discharging to Ellicott Creek.

Stormwater runoff generated by the proposed development will be collected and conveyed through a stormwater management system consisting of micro pool detention ponds, catch basins, yard drains, splash blocks with filter strips, manholes, and smooth interior HDPE storm sewer pipe.

The proposed rooftop disconnection system, consisting of splash blocks and dedicated filter strips, has been designed to provide 100 percent of the required Runoff Reduction Volume (RRv) for the development. Each disconnected rooftop drains to a dedicated splash block and filter strip system designed in accordance with NYSDEC requirements. These rooftop disconnection practices function as green infrastructure measures that reduce runoff volume and promote infiltration across the site.

The remaining Water Quality Volume (WQv) treatment requirements, along with peak flow attenuation, are provided by two proposed micro pool detention ponds. Discharge from each stormwater management practice is controlled through outlet structures designed to meet the stormwater management criteria of both the Town of Amherst and NYSDEC. The overall stormwater management system, including RRv treatment, WQv treatment, and peak flow control, has been designed in accordance with Chapter 4 of the NYSDEC Stormwater Management Design Manual.

The proposed development will create approximately 11.08 acres of impervious area, with 6.60 acres constructed during Phase 1 and the remaining 4.48 acres constructed during Phase 2. Although the project will be developed in two phases, both micro pool detention ponds will be constructed during Phase 1 to accommodate the ultimate build out of the site. Micro Pool Detention Pond #1 has been designed to provide all required water quality treatment and runoff attenuation for the Phase 1 development area and will discharge to an existing catch basin within Wehrle Drive. Micro Pool Detention Pond #2 has been designed to provide all required water quality treatment and runoff attenuation for the Phase 2 development area and will discharge to an existing stormwater manhole within Bellingham Drive. Upon completion of both phases, the combined stormwater management system will provide the required water quality treatment, runoff reduction, and peak flow attenuation for the entire 11.08 acres of proposed impervious cover.

Town of Amherst Requirement:

The Town of Amherst requires the proposed 25-year storm event to be attenuated through detention, with the total outlet flow restricted to less than the existing 10-year peak runoff rate.

The required detention volume is provided by the proposed extended micropool detention ponds. The micro pool detention pond #1 provides 72,817 cubic feet of storage at elevation 694.41, and the extended micro pool detention pond #2 provides 61,562 cubic feet of storage at elevation 695.43. At these elevations, discharge from the micro pool detention pond #1 is restricted to 11.79 cfs, and discharge from the extended micro pool detention pond #2 is restricted to 3.19 cfs. The combined proposed discharge rate is 14.98 cfs, which is less than the existing 10-year peak runoff rate of 35.28 cfs for the overall site.

Micro-Pool Detention Pond #1 Summary:

Top of basin elevation = 696.00

Permanent pool elevation = 691.90

Bottom of basin elevation = 687.90

100-year storm storage volume = 98,263 cf @ 695.03

Micro-Pool Detention Pond #2 Summary:

Top of basin elevation = 697.00

Permanent pool elevation = 692.75

Bottom of basin elevation = 688.75

100-year storm storage volume = 86,306 cf @ 696.18

Water Quality Summary:

WQv req'd = 36,494 cf (0.838 ac-ft)

RRv min. req'd = 6,882 cf (0.158 ac-ft)

RRv provided - Rooftop Disconnection = 6,984 cf (0.160 ac-ft)

WQv provided - MicroPool Extended Detention Ponds = 29,510 cf (0.677 ac-ft)

Total RRv + WQv provided = 6,984 cf + 29,510 cf = 36,494 cf (0.838 ac-ft)

DA 1 Runoff Summary:

Event	Ex. Runoff (cfs)	Pro. Runoff (cfs)	Result (cfs)
1-year	8.36	2.89	-5.47
10-year	28.47	8.64	-19.83
25-year	38.98	11.79	-27.19
100-year	55.88	15.58	-40.30

Note: This portion of the site discharges from the wet pond through an outlet control structure and ultimately outfalls to an existing catch basin located along Wehrle Drive.

DA 2 Runoff Summary:

Event	Ex. Runoff (cfs)	Pro. Runoff (cfs)	Result (cfs)
1-year	2.02	1.45	-0.57
10-year	6.81	2.75	-4.06
25-year	9.30	3.19	-6.11
100-year	13.32	3.75	-9.57

Note: This portion of the site discharges from the extended micropool detention pond through an outlet control structure and ultimately outfalls to an existing storm sewer manhole located off Bellingham Drive.

DA 3 Runoff Summary:

Event	Ex. Runoff (cfs)	Pro. Runoff (cfs)	Result (cfs)
1-year	3.88	0.05	-3.83
10-year	13.10	0.15	-12.95
25-year	17.91	0.20	-17.71
100-year	25.66	0.29	-25.37

Note: This portion of the site continues to drain off site along the western property line under both existing and proposed conditions.

Section 5 - Earthwork & Impervious Area Calculations

Refer to Attachment C of this report for an estimated summary of the proposed earthwork calculations and impervious area for the proposed project.

Appendix A

Sanitary Sewer and Water Demand Calculations

CARMINA WOOD DESIGN
 80 SILO CITY ROW, SUITE 100
 BUFFALO, NEW YORK, 14203
 (716) 842-3165
 FAX (716) 842-0263

Project No.: 25-4008 Date: 9/30/2026
 Project Name: Uptown Apartments
 Project Address: 2190 Wehrle Drive Amherst, NY
 Subject: Sanitary Sewer & Water Demand Calcs
 Sheet: 1 of 2

Sanitary Sewage Demand Calculations:

Phase 1:

110 gal/d/unit	x	37 unit	=	4,070 gpd	*use 110 gallons per unit per day (1 bdrm)
220 gal/d/unit	x	83 unit	=	18,260 gpd	*use 220 gallons per unit per day (2 bdrm)
330 gal/d/unit	x	30 unit	=	9,900 gpd	*use 330 gallons per unit per day (3 bdrm)
15 gal/d/employee	x	2 employees	=	30 gpd	*use 15 gallons per employee per day

Phase 1 Site Sanitary Demand: = **32,260 gpd**

Phase 2:

110 gal/d/unit	x	30 unit	=	3300 gpd	*use 110 gallons per unit per day (1 bdrm)
220 gal/d/unit	x	66 unit	=	14520 gpd	*use 220 gallons per unit per day (2 bdrm)
330 gal/d/unit	x	24 unit	=	7920 gpd	*use 330 gallons per unit per day (3 bdrm)

Phase 2 Site Sanitary Demand: = **25740 gpd**

Total Site Sanitary Demand: = **58,000 gpd**

Find Peak Sanitary Demand:

Peaking Factor based on Population:

Total demand: 58,000 gpd / 100 gpcd = 580 per capita

Population (P) = 580 people

Peaking Factor : $(18 + \sqrt{P}) / (4 + \sqrt{P})$ where P is in thousands

Peaking Factor = 3.94

Peak Sanitary Demand, Phase 1: = 32,260 x 3.94 = 127,111 gpd = 0.127 MGD = 0.197 cfs

Peak Sanitary Demand, Phase 2: 25,740 x 3.94 = 101,421 gpd = 0.101 MGD = 0.157 cfs

Total Peak Sanitary Demand: 58,000 x 3.94 = 228,532 gpd = 0.229 MGD = 0.354 cfs

Required Infiltration and Inflow Mitigation:

Phase 1 Peak Sanitary Flow = 127,111 gpd = 88.27 gpm

4:1 offset flow per NYSDEC requirements = 88.27 x 4 = 353.09 gpm req'd

Mitigation Credit = \$250 / gpm

Mitigation Agreement Amount, Phase 1 = **\$88,271.47**

Phase 2 Peak Sanitary Flow = 101,421 = 70.43 gpm

4:1 offset flow per NYSDEC requirements = 70.43 x 4 = 281.724 gpm req'd

Mitigation Credit = \$250 / gpm

Mitigation Agreement Amount, Phase 2 = **\$70,431.11**

Water Demand Calculations (domestic):

Proposed Apartments

$$58,000 \text{ gpd} \times 1.1 = 63,800 \text{ gpd} \quad \text{*use 110\% of sewage demand}$$

$$63,800 \text{ gpd} \times 1\text{day}/24\text{hr} \times 1\text{hr}/60\text{min} = 44.31 \text{ gpm}$$

$$44.31 \text{ gpm} \times 3.0 = 132.92 \text{ gpm} \quad Q_{\text{peak}} \quad \text{*use peaker factor 3 per ECDOH}$$

Headlosses:

$$Q_{\text{peak}} = 132.92 \text{ gpm}$$

$$\text{Pipe} = 8 \text{ inch Polyethylene} \quad C = 140$$

$$\text{Length} = 60 \text{ LF (approx. distance from tap to RPZ)}$$

$$H_L = \frac{10.44 L Q^{1.85}}{C^{1.85} D^{4.866}} = \frac{10.44(60)(132.92)^{1.85}}{(140)^{1.85} (8)^{4.866}} = 0.02 \text{ ft} = 0.01 \text{ psi}$$

$$\Delta \text{elev} = 0 \text{ ft} = 0.00 \text{ psi}$$

$$\text{Loss through meter} = 1 \text{ psi}$$

$$\text{Loss through RPZ} = 12 \text{ psi}$$

$$\text{Total Losses} = 13.0 \text{ psi}$$

$$\text{Static Pressure} = 43 \text{ psi (per ECWA)}$$

$$\text{Residual Pressure Following RPZ} = 43 - 13.0 = 30.0 \text{ psi (available after rpz \& meter)}$$

Residual Pressure 30" above 2nd Floor

$$\Delta \text{elev} = 20 \text{ ft} = 8.66 \text{ psi}$$

$$\text{Residual Pressure 30" above 2nd Floor} = 21.3 \text{ psi} \quad *$$

*booster pump to be installed, designed by others

Water Demand Calculations (fire):

Proposed Apartments

$$Q = 1,044 \text{ gpm}$$

Headlosses:

$$Q_{\text{peak}} = 1044 \text{ gpm}$$

$$\text{Pipe} = 8 \text{ inch C-900 PVC} \quad C = 140$$

$$\text{Length} = 1,600 \text{ LF (approx. distance from RPZ to farthest hydrant)}$$

$$H_L = \frac{10.44 L Q^{1.85}}{C^{1.85} D^{4.866}} = \frac{10.44(1050)(1044)^{1.85}}{(140)^{1.85} (8)^{4.866}} = 27.73 \text{ ft} = 12.01 \text{ psi}$$

$$\Delta \text{elev} = 2 \text{ ft} = 0.87 \text{ psi}$$

$$\text{Static Pressure after RPZ} = 43 \text{ psi (per ECWA)}$$

$$\text{Residual Pressure at hydrant} = 43 - 9.00 = 30.1 \text{ psi}$$

Site Water Pressure ECWA Correspondences

Re: [EXTERNAL] 2190-2200 Wehrle Drive - Amherst

From William W. Wheeler <wwheeler@ecwa.org>
Date Mon 6/23/2025 3:02 PM
To Patrick Sheedy <PSheedy@carminawooddesign.com>
Cc Adam R. Massaro <amassaro@ecwa.org>

Pat,

Supply is not a concern.

-Bill

William W. Wheeler, PE

Senior Distribution Engineer

Erie County Water Authority

3030 Union Road
Cheektowaga, New York 14227-1097

Direct: (716) 685.8251
Cell: (716) 440.7447
wwheeler@ecwa.org

From: Patrick Sheedy <PSheedy@carminawooddesign.com>
Sent: Monday, June 23, 2025 1:31:37 PM
To: William W. Wheeler <wwheeler@ecwa.org>
Cc: Adam R. Massaro <amassaro@ecwa.org>
Subject: Re: [EXTERNAL] 2190-2200 Wehrle Drive - Amherst

Ok understood, that is helpful. And to confirm the proposed demand for this project would not draw down water from the supply in the watermain here? That's the one comment that keeps reoccurring from the residents.

Thank you,

CARMINAWOOD DESIGN

Patrick Sheedy Jr., P.E. | Senior Associate, Civil Engineering
m. 716.868.3209 o. 716.501.5795
80 Silo City Row Ste 100, Buffalo, NY 14203

From: William W. Wheeler <wwheeler@ecwa.org>
Sent: Monday, June 23, 2025 7:16 AM
To: Patrick Sheedy <PSheedy@carminawooddesign.com>
Cc: Adam R. Massaro <amassaro@ecwa.org>
Subject: RE: [EXTERNAL] 2190-2200 Wehrle Drive - Amherst

Patrick,

The elevation of your site is one of the highest in the pressure zone. Pressures in the other end of the pressure zone exceeds 120 psi. Even though the primary pumping station has enough head to increase pressure, the areas lower in elevation within the zone cannot support the additional pressure.

Regards,

-Bill

William W. Wheeler, PE

Senior Distribution Engineer



Erie County Water Authority

3030 Union Road | Cheektowaga, New York 14227-1097

Direct: (716) 685.8251 | Cell: (716) 440.7447 | wwheeler@ecwa.org

From: Patrick Sheedy <PSheedy@carminawooddesign.com>
Sent: Friday, June 20, 2025 9:05 AM
To: William W. Wheeler <wwheeler@ecwa.org>
Subject: Fw: [EXTERNAL] 2190-2200 Wehrle Drive - Amherst

Bill,

Is there a reason for the low pressure in this area for the surrounding neighborhoods? Is it a supply issue or old infrastructure in the area?

Thank you,

CARMINAWOOD DESIGN

Patrick Sheedy Jr., P.E. | Senior Associate, Civil Engineering

m. 716.868.3209 o. 716.501.5795

80 Silo City Row Ste 100, Buffalo, NY 14203

From: Adam R. Massaro <amassaro@ecwa.org>
Sent: Tuesday, June 17, 2025 1:37 PM
To: Patrick Sheedy <PSheedy@carminawooddesign.com>
Subject: FW: [EXTERNAL] 2190-2200 Wehrle Drive - Amherst

Pat see below:

From: William W. Wheeler <wwheeler@ecwa.org>
Sent: Tuesday, June 17, 2025 1:25 PM
To: Adam R. Massaro <amassaro@ecwa.org>
Subject: RE: [EXTERNAL] 2190-2200 Wehrle Drive - Amherst

Adam,

We can meet the required demands, but they should be aware that this is a low pressure area and under peak demands pressure could drop slightly below 40 psi.

Regards,

-Bill

William W. Wheeler, PE

Senior Distribution Engineer



Erie County Water Authority

3030 Union Road | Cheektowaga, New York 14227-1097

Direct: (716) 685.8251 | Cell: (716) 440.7447 | wwheeler@ecwa.org

From: Adam R. Massaro <amassaro@ecwa.org>
Sent: Tuesday, June 17, 2025 9:46 AM
To: William W. Wheeler <wwheeler@ecwa.org>
Subject: FW: [EXTERNAL] 2190-2200 Wehrle Drive - Amherst

Bill can you take a look at this and let me know if you have any concerns with the demands of this project?

From: Patrick Sheedy <PSheedy@carminawooddesign.com>
Sent: Tuesday, June 17, 2025 9:43 AM
To: Adam R. Massaro <amassaro@ecwa.org>
Subject: Re: [EXTERNAL] 2190-2200 Wehrle Drive - Amherst

62,700 gpd
43.5 gpm

We will have private hydrants on site so that would 1,000 gpm.

Thank you,

CARMINAWOOD DESIGN

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80 Silo City Row Ste 100, Buffalo, NY 14203
Buffalo | Utica | Greensboro
[\[carminawooddesign.com\]](http://carminawooddesign.com)carminawooddesign.com

From: Adam R. Massaro <amassaro@ecwa.org>
Sent: Tuesday, June 17, 2025 9:38 AM
To: Patrick Sheedy <PSheedy@carminawooddesign.com>
Subject: RE: [EXTERNAL] 2190-2200 Wehrle Drive - Amherst

Pat, do you know what the demand will be for the project? For both fire and domestic.

From: Patrick Sheedy <PSheedy@carminawooddesign.com>
Sent: Monday, June 9, 2025 3:35 PM
To: Adam R. Massaro <amassaro@ecwa.org>
Subject: [EXTERNAL] 2190-2200 Wehrle Drive - Amherst

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Adam,

We are working conceptually on a proposed multi-family development at the vacant parcel at 2190/2200 Wehrle Drive. We have learned there are water pressure issues in this area from neighboring residents and local fire personnel. Does ECWA have any information on the pressure/supply issues in this area or is there anything that can be done to increase pressures in this area? I have attached our concept plan for reference and recent hydrant flow test data.

We will be proposing a booster pump system similar to the one recently installed at 6386 Transit Road in Cheektowaga but want to ensure there is adequate supply to the project site and no other negative

impacts to the existing supply system or the surrounding neighborhood.

If needed, we can set up a call with the project team if you feel that's necessary.

Thank you,

CARMINAWOOD DESIGN

Patrick Sheedy Jr., P.E. | Senior Associate, Civil Engineering

m. 716.868.3209 o. 716.501.5795

80 Silo City Row Ste 100, Buffalo, NY 14203

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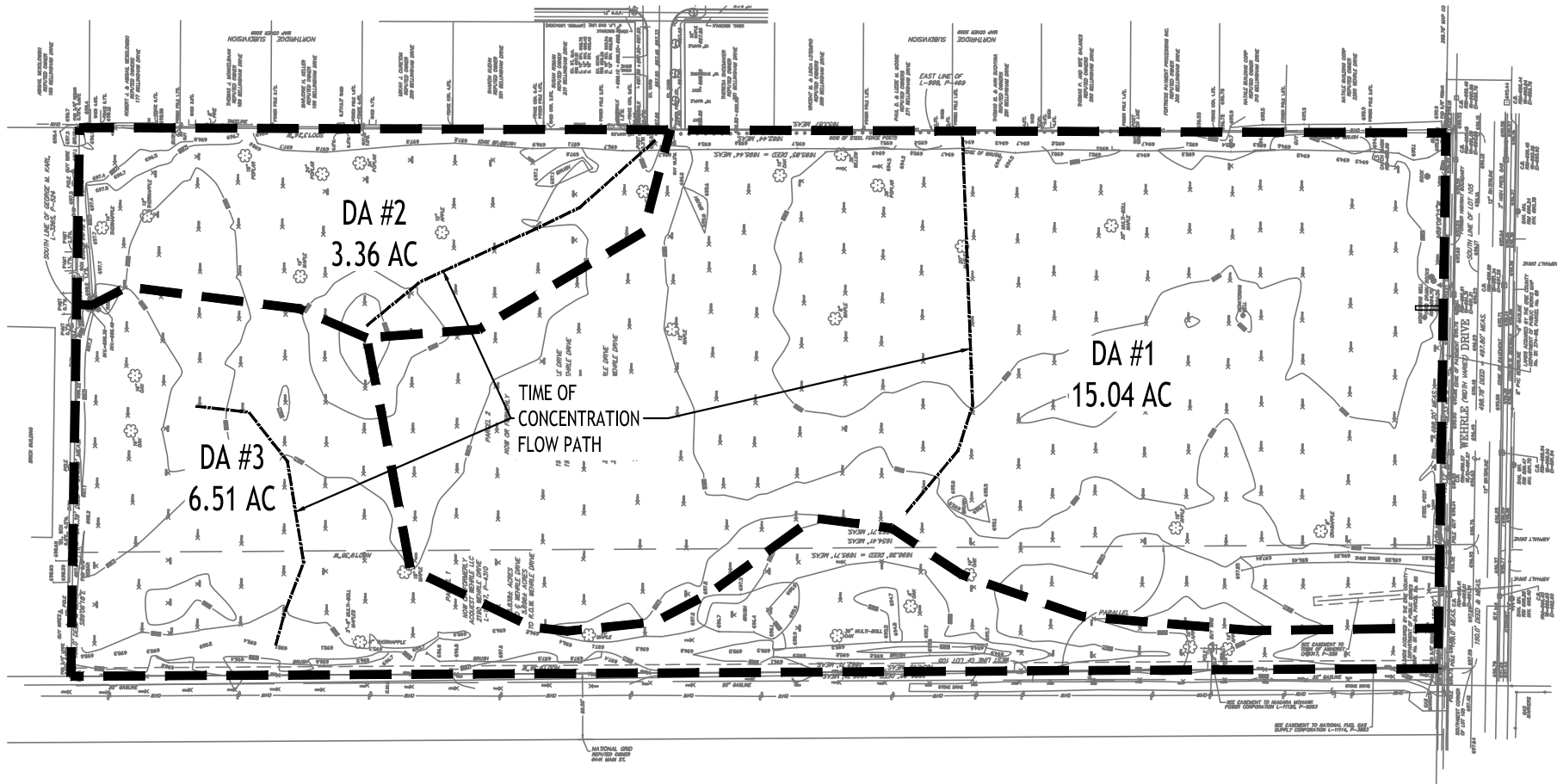
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Appendix B

Storm Sewer System Drainage Calculations

Existing Runoff



PRE-DEV DRAINAGE MAP

SCALE: 1"=200'

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS,
CARMINA WOOD DESIGN ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

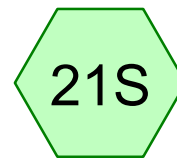




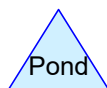
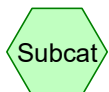
DA 1 - Pre Dev



DA 2 - Pre Dev



DA-3 Pre-Dev



Routing Diagram for 25-4008 HYDROCAD

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25-4008 HYDROCAD

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Page 2

Project Notes

Rainfall events imported from "NRCS2-Rain.txt" for 1421 NY Erie

Rainfall events imported from "NRCS2-Rain.txt" for 1421 NY Erie

25-4008 HYDROCAD

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Page 3

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	NOAA10 24-hr	A	Default	24.00	1	1.91	2
2	10-Year	NOAA10 24-hr	A	Default	24.00	1	3.44	2
3	25-Year	NOAA10 24-hr	A	Default	24.00	1	4.15	2
4	100-Year	NOAA10 24-hr	A	Default	24.00	1	5.25	2

25-4008 HYDROCAD

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Page 4

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
24.910	80	>75% Grass cover, Good, HSG D (16S, 17S, 21S)
24.910	80	TOTAL AREA

25-4008 HYDROCAD

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Page 5

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
24.910	HSG D	16S, 17S, 21S
0.000	Other	
24.910		TOTAL AREA

25-4008 HYDROCAD

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Page 6

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	24.910	0.000	24.910	>75% Grass cover, Good	16S, 17S, 21S
0.000	0.000	0.000	24.910	0.000	24.910	TOTAL AREA	

25-4008 HYDROCAD

NOAA10 24-hr A 1-Year Rainfall=1.91"

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Page 7

Time span=0.00-100.00 hrs, dt=0.05 hrs, 2001 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment16S: DA 2 - Pre DevRunoff Area=3.360 ac 0.00% Impervious Runoff Depth=0.51"
Flow Length=400' Tc=14.9 min CN=80 Runoff=2.02 cfs 0.142 af**Subcatchment17S: DA 1 - Pre Dev**Runoff Area=15.040 ac 0.00% Impervious Runoff Depth=0.51"
Flow Length=478' Tc=17.2 min CN=80 Runoff=8.36 cfs 0.637 af**Subcatchment21S: DA-3 Pre-Dev**Runoff Area=6.510 ac 0.00% Impervious Runoff Depth=0.51"
Flow Length=350' Slope=0.0150 '/' Tc=15.3 min CN=80 Runoff=3.88 cfs 0.276 af**Total Runoff Area = 24.910 ac Runoff Volume = 1.055 af Average Runoff Depth = 0.51"**
100.00% Pervious = 24.910 ac 0.00% Impervious = 0.000 ac

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NOAA10 24-hr A 1-Year Rainfall=1.91"

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Page 8

Summary for Subcatchment 16S: DA 2 - Pre Dev

Runoff = 2.02 cfs @ 12.25 hrs, Volume= 0.142 af, Depth= 0.51"
Routed to nonexistent node 25L

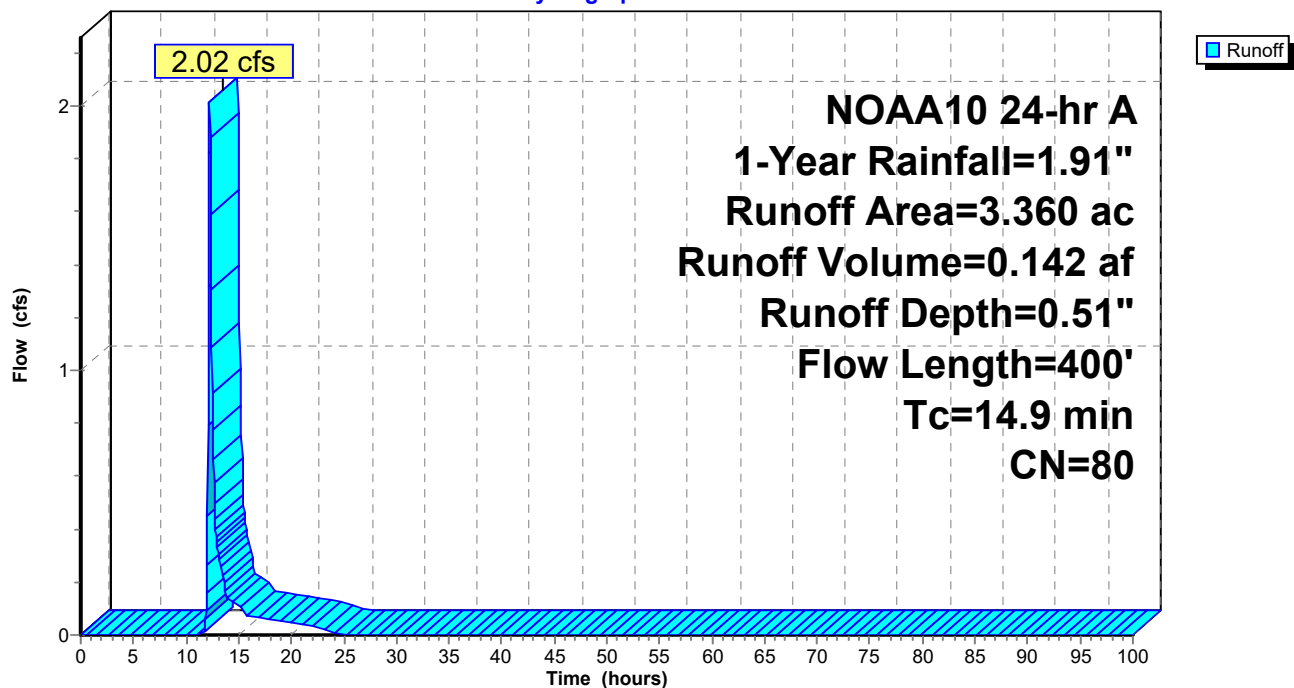
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 1-Year Rainfall=1.91"

Area (ac)	CN	Description
3.360	80	>75% Grass cover, Good, HSG D
3.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0200	0.14		Sheet Flow, SHEET FLOW - GRASS Grass: Short n= 0.150 P2= 2.29"
3.3	300	0.0100	1.50		Shallow Concentrated Flow, SHALLOW CONCENTRATED FLOW Grassed Waterway Kv= 15.0 fps
14.9	400	Total			

Subcatchment 16S: DA 2 - Pre Dev

Hydrograph



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NOAA10 24-hr A 1-Year Rainfall=1.91"

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Page 9

Summary for Subcatchment 17S: DA 1 - Pre Dev

Runoff = 8.36 cfs @ 12.29 hrs, Volume= 0.637 af, Depth= 0.51"
Routed to nonexistent node 25L

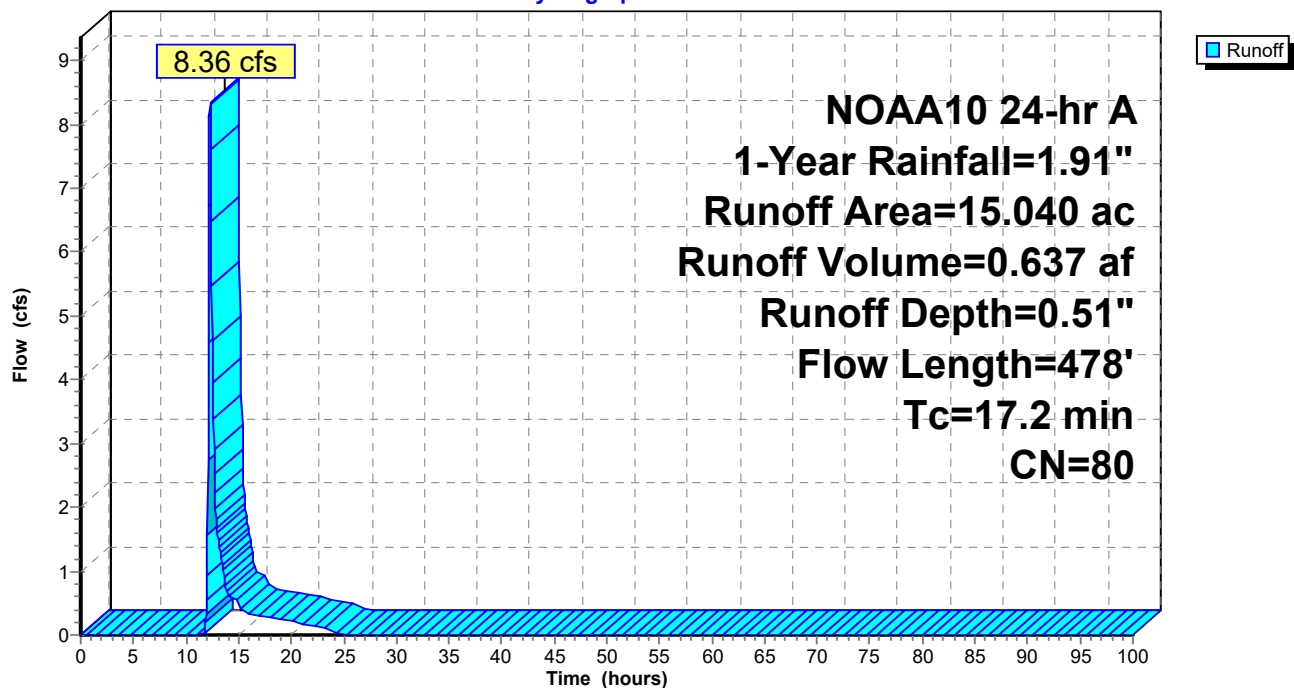
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 1-Year Rainfall=1.91"

Area (ac)	CN	Description
15.040	80	>75% Grass cover, Good, HSG D
15.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	100	0.0150	0.13		Sheet Flow, SHEET FLOW - GRASS Grass: Short n= 0.150 P2= 2.29"
4.2	378	0.0100	1.50		Shallow Concentrated Flow, SHALLOW CONCETRATED FLOW - Grassed Waterway Kv= 15.0 fps
17.2	478	Total			

Subcatchment 17S: DA 1 - Pre Dev

Hydrograph



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NOAA10 24-hr A 1-Year Rainfall=1.91"

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Page 10

Summary for Subcatchment 21S: DA-3 Pre-Dev

Runoff = 3.88 cfs @ 12.26 hrs, Volume= 0.276 af, Depth= 0.51"
Routed to nonexistent node 25L

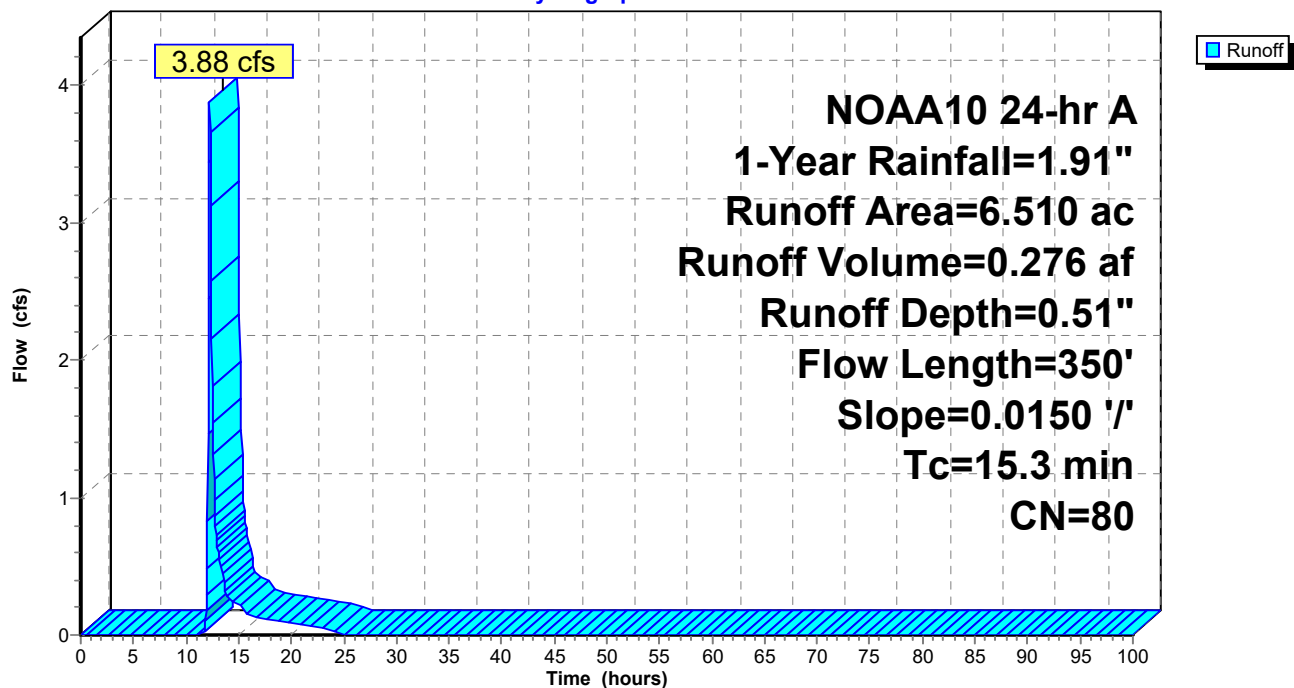
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NOAA10 24-hr A 1-Year Rainfall=1.91"

Area (ac)	CN	Description
6.510	80	>75% Grass cover, Good, HSG D
6.510		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	100	0.0150	0.13		Sheet Flow, Grass: Short n= 0.150 P2= 2.29"
2.3	250	0.0150	1.84		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
15.3	350	Total			

Subcatchment 21S: DA-3 Pre-Dev

Hydrograph



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NOAA10 24-hr A 10-Year Rainfall=3.44"

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Page 11

Time span=0.00-100.00 hrs, dt=0.05 hrs, 2001 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment16S: DA 2 - Pre DevRunoff Area=3.360 ac 0.00% Impervious Runoff Depth=1.59"
Flow Length=400' Tc=14.9 min CN=80 Runoff=6.81 cfs 0.445 af**Subcatchment17S: DA 1 - Pre Dev**Runoff Area=15.040 ac 0.00% Impervious Runoff Depth=1.59"
Flow Length=478' Tc=17.2 min CN=80 Runoff=28.47 cfs 1.991 af**Subcatchment21S: DA-3 Pre-Dev**Runoff Area=6.510 ac 0.00% Impervious Runoff Depth=1.59"
Flow Length=350' Slope=0.0150 '/' Tc=15.3 min CN=80 Runoff=13.10 cfs 0.862 af**Total Runoff Area = 24.910 ac Runoff Volume = 3.298 af Average Runoff Depth = 1.59"**
100.00% Pervious = 24.910 ac 0.00% Impervious = 0.000 ac

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NOAA10 24-hr A 10-Year Rainfall=3.44"

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Page 12

Summary for Subcatchment 16S: DA 2 - Pre Dev

Runoff = 6.81 cfs @ 12.24 hrs, Volume= 0.445 af, Depth= 1.59"
Routed to nonexistent node 25L

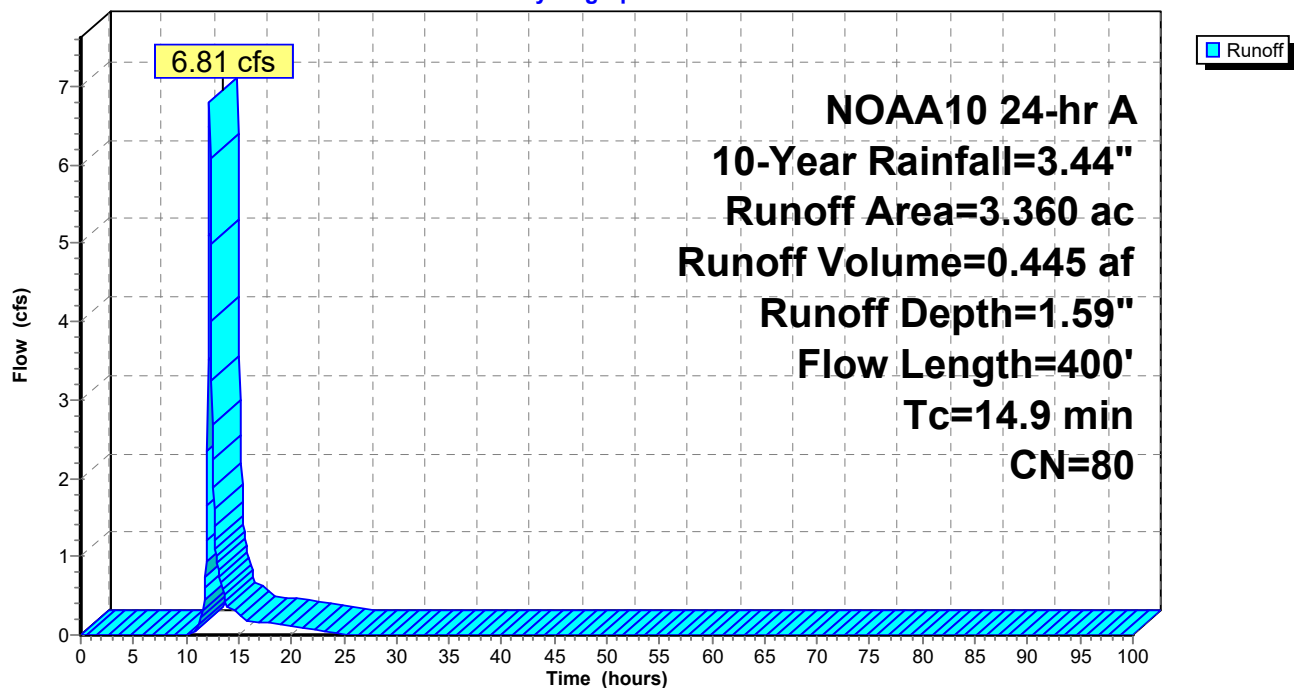
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 10-Year Rainfall=3.44"

Area (ac)	CN	Description
3.360	80	>75% Grass cover, Good, HSG D
3.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0200	0.14		Sheet Flow, SHEET FLOW - GRASS Grass: Short n= 0.150 P2= 2.29"
3.3	300	0.0100	1.50		Shallow Concentrated Flow, SHALLOW CONCENTRATED FLOW Grassed Waterway Kv= 15.0 fps
14.9	400	Total			

Subcatchment 16S: DA 2 - Pre Dev

Hydrograph



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NOAA10 24-hr A 10-Year Rainfall=3.44"

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Page 13

Summary for Subcatchment 17S: DA 1 - Pre Dev

Runoff = 28.47 cfs @ 12.27 hrs, Volume= 1.991 af, Depth= 1.59"
Routed to nonexistent node 25L

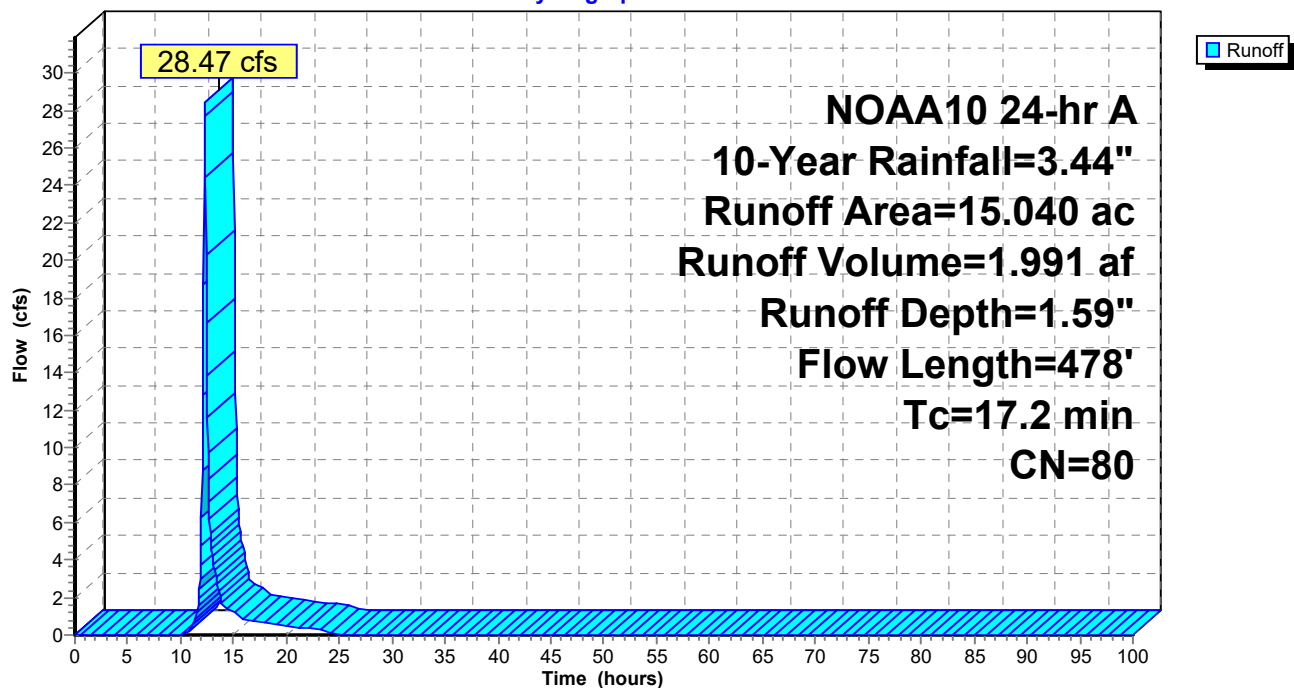
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NOAA10 24-hr A 10-Year Rainfall=3.44"

Area (ac)	CN	Description
15.040	80	>75% Grass cover, Good, HSG D
15.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	100	0.0150	0.13		Sheet Flow, SHEET FLOW - GRASS Grass: Short n= 0.150 P2= 2.29"
4.2	378	0.0100	1.50		Shallow Concentrated Flow, SHALLOW CONCETRATED FLOW - Grassed Waterway Kv= 15.0 fps
17.2	478	Total			

Subcatchment 17S: DA 1 - Pre Dev

Hydrograph



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NOAA10 24-hr A 10-Year Rainfall=3.44"

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Page 14

Summary for Subcatchment 21S: DA-3 Pre-Dev

Runoff = 13.10 cfs @ 12.24 hrs, Volume= 0.862 af, Depth= 1.59"
Routed to nonexistent node 25L

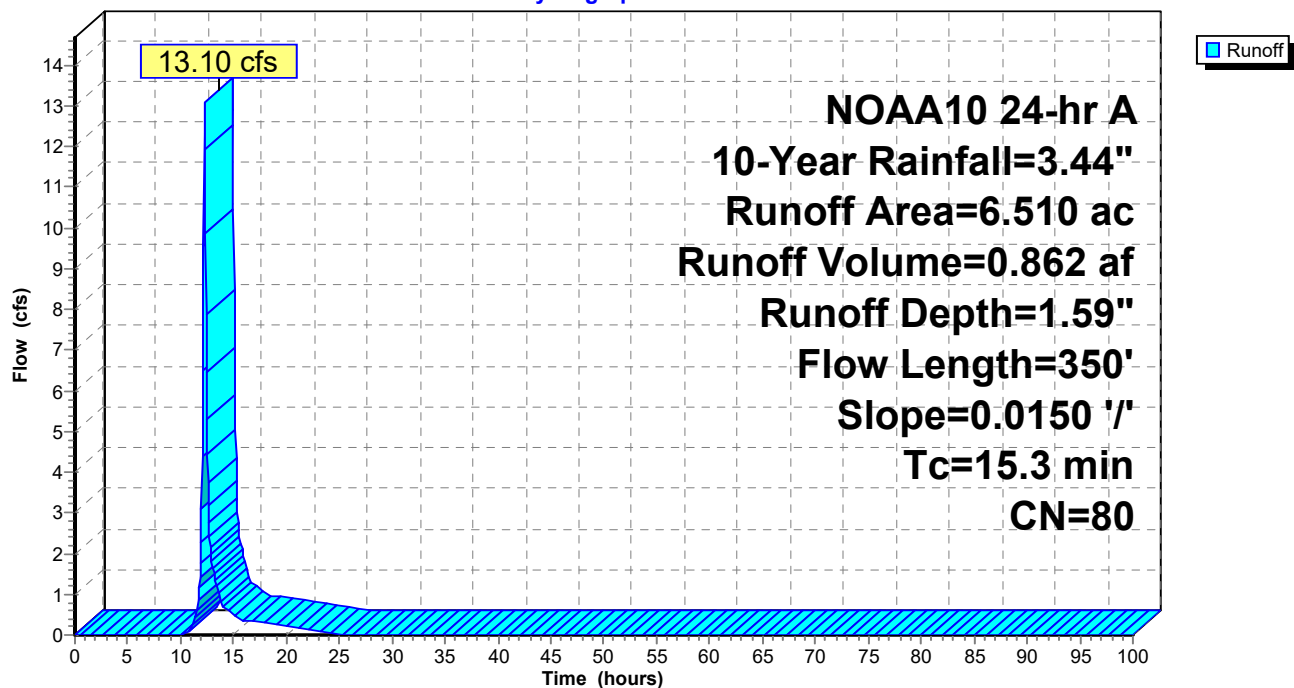
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 10-Year Rainfall=3.44"

Area (ac)	CN	Description
6.510	80	>75% Grass cover, Good, HSG D
6.510		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	100	0.0150	0.13		Sheet Flow, Grass: Short n= 0.150 P2= 2.29"
2.3	250	0.0150	1.84		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
15.3	350	Total			

Subcatchment 21S: DA-3 Pre-Dev

Hydrograph



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NOAA10 24-hr A 25-Year Rainfall=4.15"

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Page 15

Time span=0.00-100.00 hrs, dt=0.05 hrs, 2001 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment16S: DA 2 - Pre DevRunoff Area=3.360 ac 0.00% Impervious Runoff Depth=2.17"
Flow Length=400' Tc=14.9 min CN=80 Runoff=9.30 cfs 0.607 af**Subcatchment17S: DA 1 - Pre Dev**Runoff Area=15.040 ac 0.00% Impervious Runoff Depth=2.17"
Flow Length=478' Tc=17.2 min CN=80 Runoff=38.98 cfs 2.715 af**Subcatchment21S: DA-3 Pre-Dev**Runoff Area=6.510 ac 0.00% Impervious Runoff Depth=2.17"
Flow Length=350' Slope=0.0150 '/' Tc=15.3 min CN=80 Runoff=17.91 cfs 1.175 af**Total Runoff Area = 24.910 ac Runoff Volume = 4.497 af Average Runoff Depth = 2.17"**
100.00% Pervious = 24.910 ac 0.00% Impervious = 0.000 ac

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NOAA10 24-hr A 25-Year Rainfall=4.15"

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Page 16

Summary for Subcatchment 16S: DA 2 - Pre Dev

Runoff = 9.30 cfs @ 12.24 hrs, Volume= 0.607 af, Depth= 2.17"
Routed to nonexistent node 25L

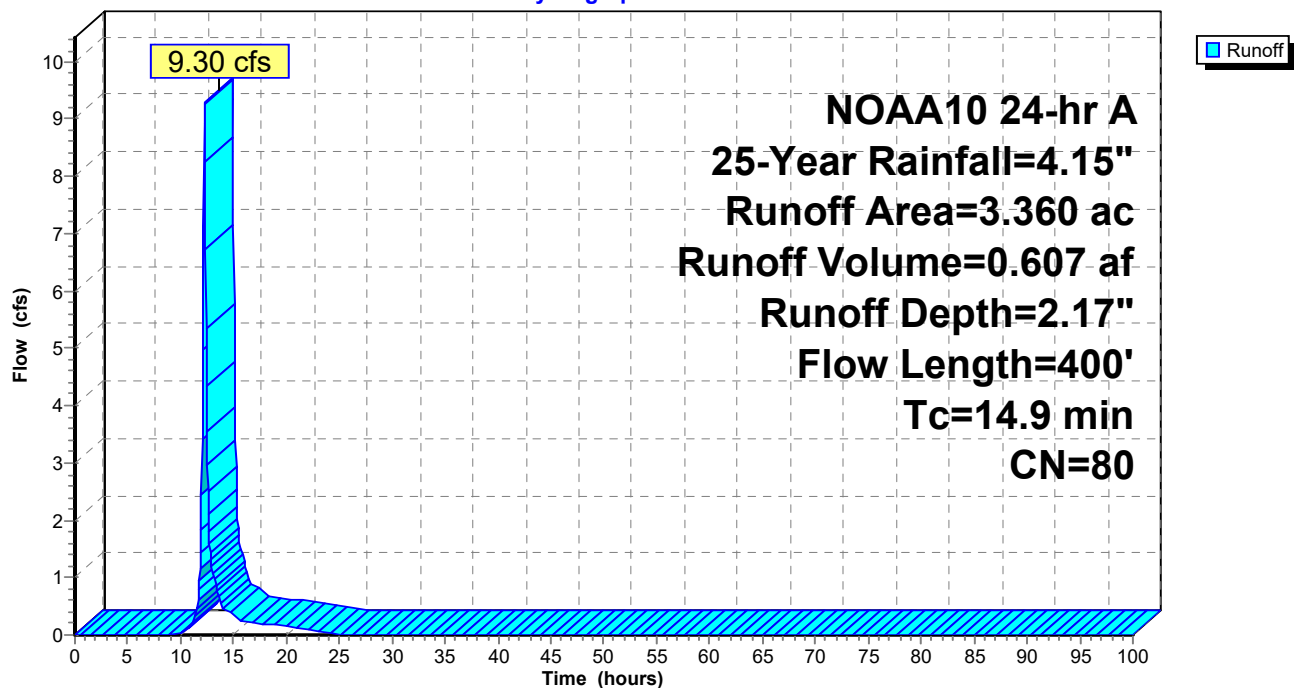
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 25-Year Rainfall=4.15"

Area (ac)	CN	Description
3.360	80	>75% Grass cover, Good, HSG D
3.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0200	0.14		Sheet Flow, SHEET FLOW - GRASS Grass: Short n= 0.150 P2= 2.29"
3.3	300	0.0100	1.50		Shallow Concentrated Flow, SHALLOW CONCENTRATED FLOW Grassed Waterway Kv= 15.0 fps
14.9	400	Total			

Subcatchment 16S: DA 2 - Pre Dev

Hydrograph



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NOAA10 24-hr A 25-Year Rainfall=4.15"

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Page 17

Summary for Subcatchment 17S: DA 1 - Pre Dev

Runoff = 38.98 cfs @ 12.27 hrs, Volume= 2.715 af, Depth= 2.17"
Routed to nonexistent node 25L

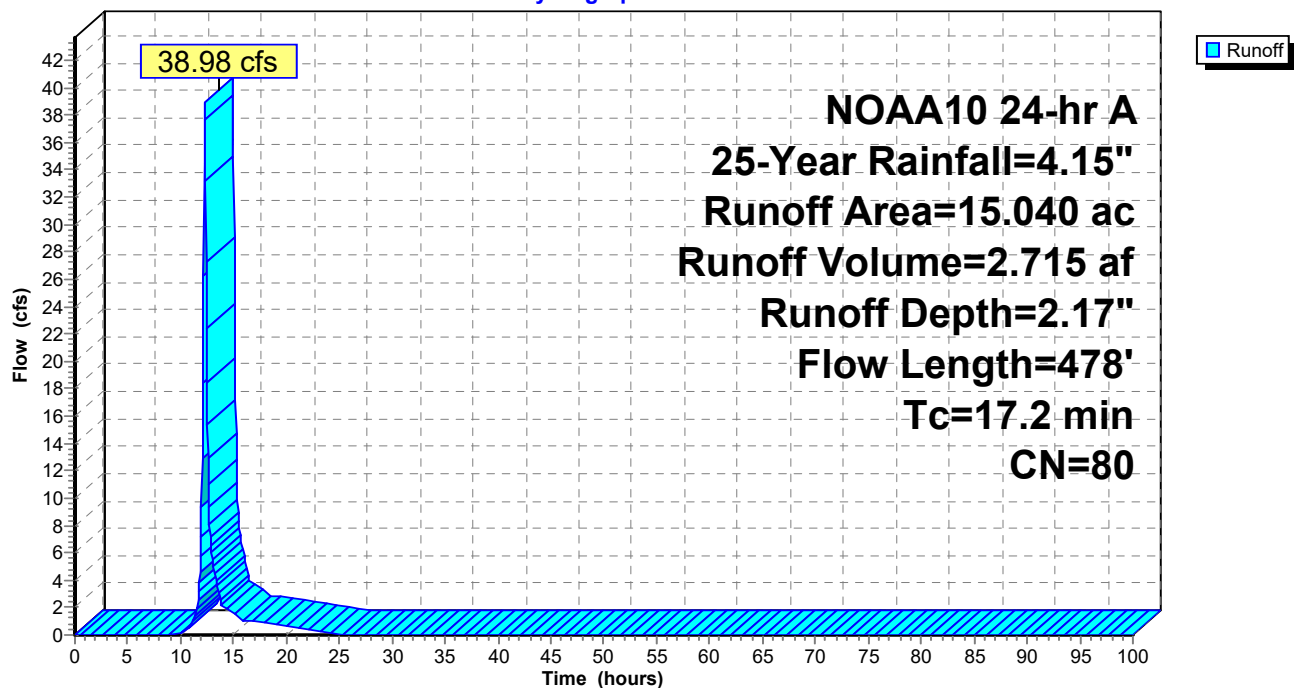
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 25-Year Rainfall=4.15"

Area (ac)	CN	Description
15.040	80	>75% Grass cover, Good, HSG D
15.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	100	0.0150	0.13		Sheet Flow, SHEET FLOW - GRASS Grass: Short n= 0.150 P2= 2.29"
4.2	378	0.0100	1.50		Shallow Concentrated Flow, SHALLOW CONCETRATED FLOW - Grassed Waterway Kv= 15.0 fps
17.2	478	Total			

Subcatchment 17S: DA 1 - Pre Dev

Hydrograph



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NOAA10 24-hr A 25-Year Rainfall=4.15"

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Page 18

Summary for Subcatchment 21S: DA-3 Pre-Dev

Runoff = 17.91 cfs @ 12.24 hrs, Volume= 1.175 af, Depth= 2.17"
Routed to nonexistent node 25L

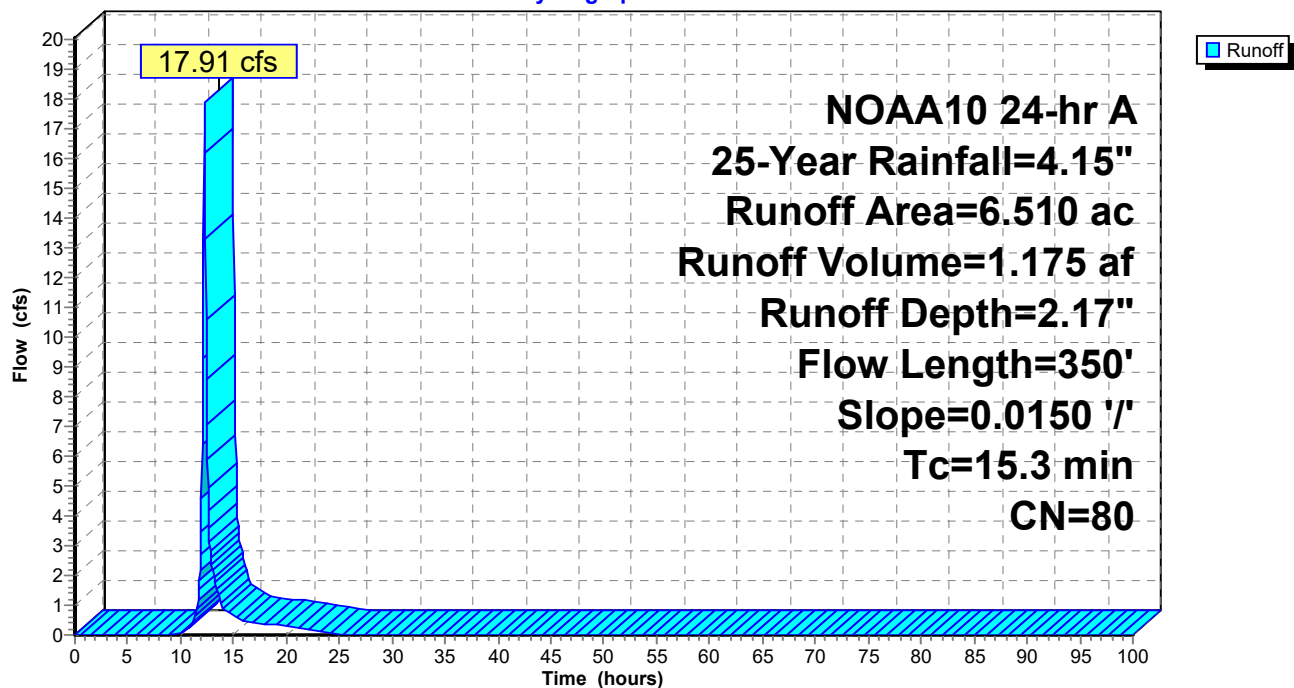
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 25-Year Rainfall=4.15"

Area (ac)	CN	Description
6.510	80	>75% Grass cover, Good, HSG D
6.510		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	100	0.0150	0.13		Sheet Flow, Grass: Short n= 0.150 P2= 2.29"
2.3	250	0.0150	1.84		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
15.3	350	Total			

Subcatchment 21S: DA-3 Pre-Dev

Hydrograph



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NOAA10 24-hr A 100-Year Rainfall=5.25"

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Page 19

Time span=0.00-100.00 hrs, dt=0.05 hrs, 2001 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment16S: DA 2 - Pre DevRunoff Area=3.360 ac 0.00% Impervious Runoff Depth=3.11"
Flow Length=400' Tc=14.9 min CN=80 Runoff=13.32 cfs 0.871 af**Subcatchment17S: DA 1 - Pre Dev**Runoff Area=15.040 ac 0.00% Impervious Runoff Depth=3.11"
Flow Length=478' Tc=17.2 min CN=80 Runoff=55.88 cfs 3.900 af**Subcatchment21S: DA-3 Pre-Dev**Runoff Area=6.510 ac 0.00% Impervious Runoff Depth=3.11"
Flow Length=350' Slope=0.0150 '/' Tc=15.3 min CN=80 Runoff=25.66 cfs 1.688 af**Total Runoff Area = 24.910 ac Runoff Volume = 6.460 af Average Runoff Depth = 3.11"**
100.00% Pervious = 24.910 ac 0.00% Impervious = 0.000 ac

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NOAA10 24-hr A 100-Year Rainfall=5.25"

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Page 20

Summary for Subcatchment 16S: DA 2 - Pre Dev

Runoff = 13.32 cfs @ 12.23 hrs, Volume= 0.871 af, Depth= 3.11"
Routed to nonexistent node 25L

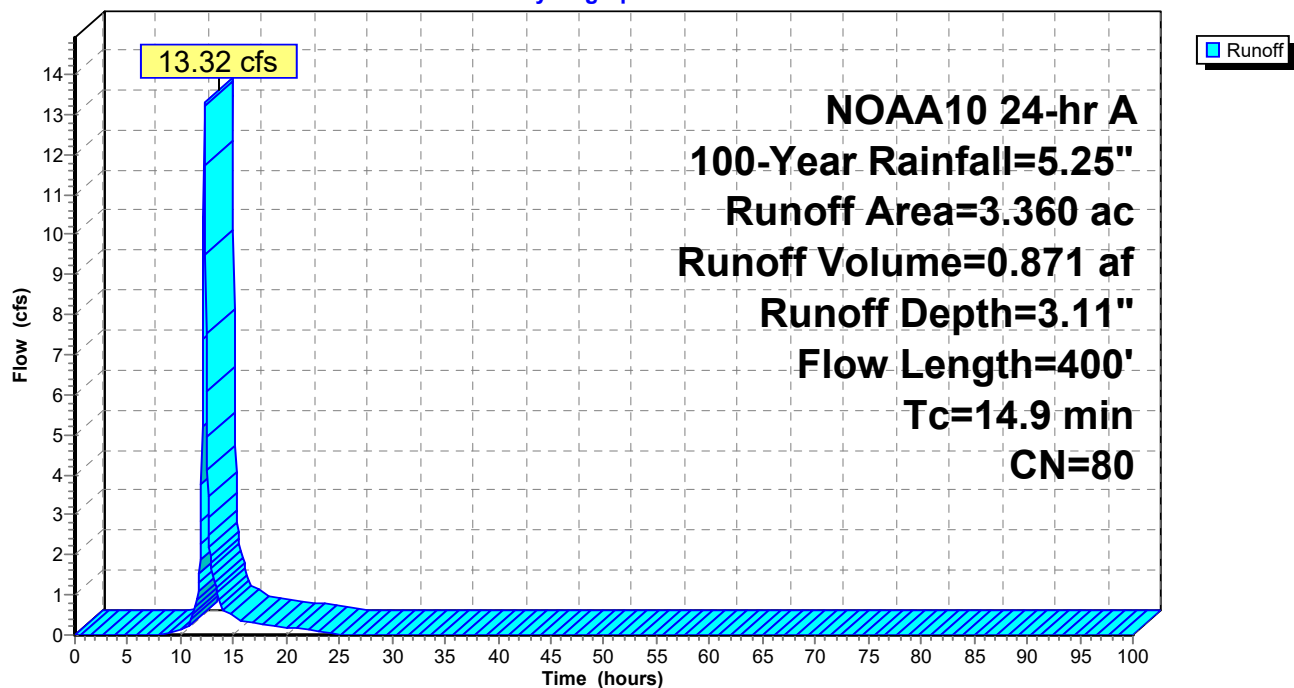
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NOAA10 24-hr A 100-Year Rainfall=5.25"

Area (ac)	CN	Description
3.360	80	>75% Grass cover, Good, HSG D
3.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0200	0.14		Sheet Flow, SHEET FLOW - GRASS Grass: Short n= 0.150 P2= 2.29"
3.3	300	0.0100	1.50		Shallow Concentrated Flow, SHALLOW CONCENTRATED FLOW Grassed Waterway Kv= 15.0 fps
14.9	400	Total			

Subcatchment 16S: DA 2 - Pre Dev

Hydrograph



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NOAA10 24-hr A 100-Year Rainfall=5.25"

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Page 21

Summary for Subcatchment 17S: DA 1 - Pre Dev

Runoff = 55.88 cfs @ 12.26 hrs, Volume= 3.900 af, Depth= 3.11"
Routed to nonexistent node 25L

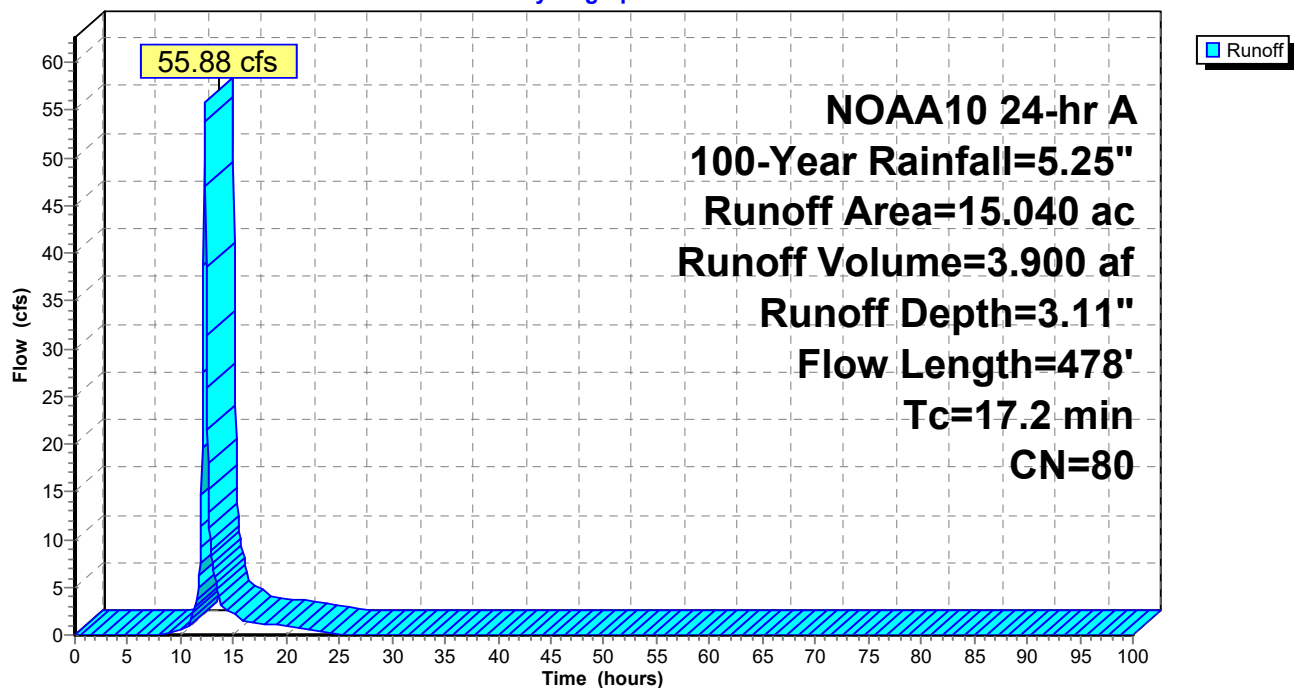
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 100-Year Rainfall=5.25"

Area (ac)	CN	Description
15.040	80	>75% Grass cover, Good, HSG D
15.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	100	0.0150	0.13		Sheet Flow, SHEET FLOW - GRASS Grass: Short n= 0.150 P2= 2.29"
4.2	378	0.0100	1.50		Shallow Concentrated Flow, SHALLOW CONCETRATED FLOW - Grassed Waterway Kv= 15.0 fps
17.2	478	Total			

Subcatchment 17S: DA 1 - Pre Dev

Hydrograph



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NOAA10 24-hr A 100-Year Rainfall=5.25"

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Page 22

Summary for Subcatchment 21S: DA-3 Pre-Dev

Runoff = 25.66 cfs @ 12.24 hrs, Volume= 1.688 af, Depth= 3.11"
Routed to nonexistent node 25L

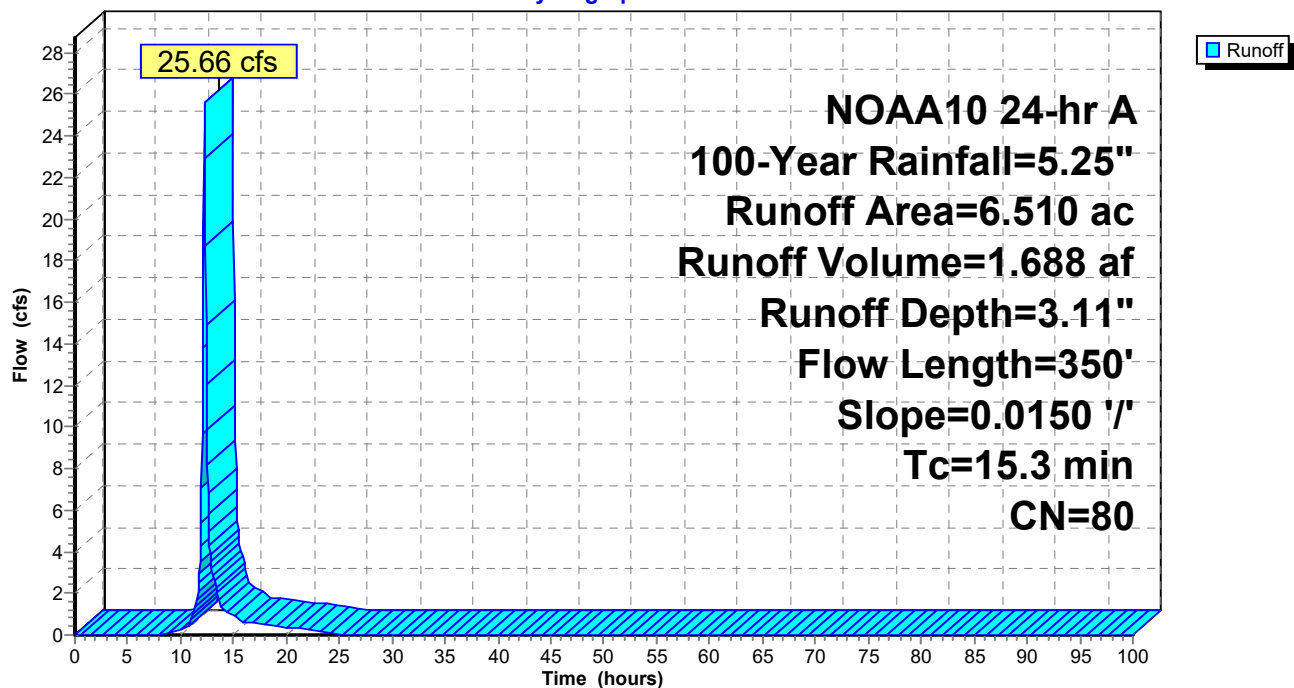
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 100-Year Rainfall=5.25"

Area (ac)	CN	Description
6.510	80	>75% Grass cover, Good, HSG D
6.510		100.00% Pervious Area

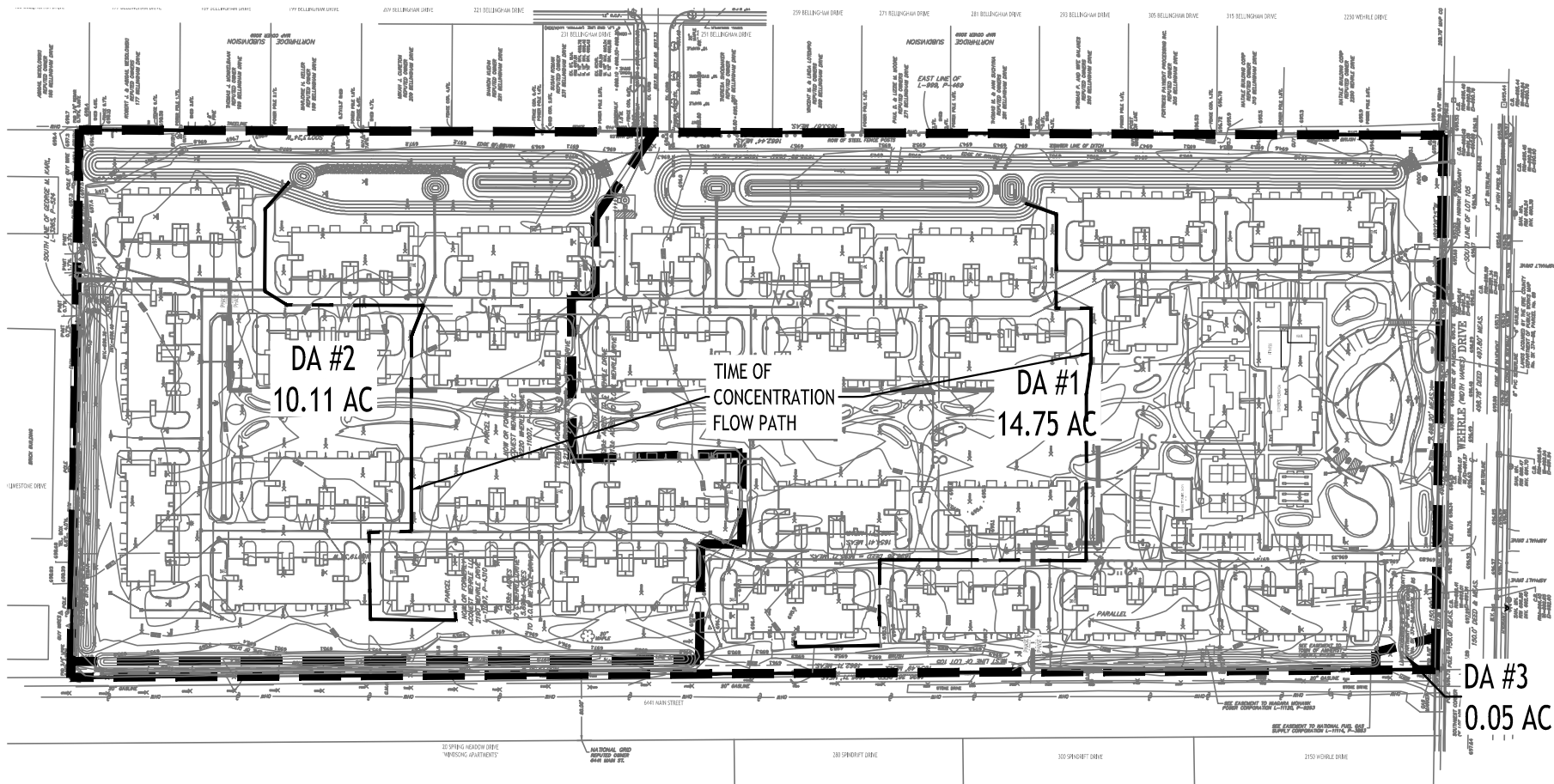
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	100	0.0150	0.13		Sheet Flow, Grass: Short n= 0.150 P2= 2.29"
2.3	250	0.0150	1.84		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
15.3	350	Total			

Subcatchment 21S: DA-3 Pre-Dev

Hydrograph



Proposed Runoff



POST-DEV DRAINAGE MAP

SCALE: 1"=200'

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS,
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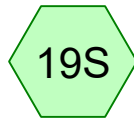




DA 1 - Post Dev



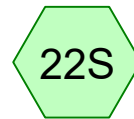
DETENTION POND #1



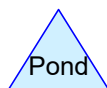
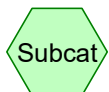
DA 2 - Post Dev



DETENTION POND #2



DA-3 Post Dev



Routing Diagram for 25-4008 HYDROCAD

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Page 2

Project Notes

Rainfall events imported from "NRCS2-Rain.txt" for 1421 NY Erie

Rainfall events imported from "NRCS2-Rain.txt" for 1421 NY Erie

25-4008 HYDROCAD

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Page 3

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	NOAA10 24-hr	A	Default	24.00	1	1.91	2
2	10-Year	NOAA10 24-hr	A	Default	24.00	1	3.44	2
3	25-Year	NOAA10 24-hr	A	Default	24.00	1	4.15	2
4	100-Year	NOAA10 24-hr	A	Default	24.00	1	5.25	2

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Page 4

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
13.840	80	>75% Grass cover, Good, HSG D (18S, 19S, 22S)
6.750	98	Paved parking, HSG D (18S, 19S)
4.320	98	Roofs, HSG D (18S, 19S)
24.910	88	TOTAL AREA

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Page 5

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
24.910	HSG D	18S, 19S, 22S
0.000	Other	
24.910		TOTAL AREA

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Page 6

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	13.840	0.000	13.840	>75% Grass cover, Good	18S, 19S, 22S
0.000	0.000	0.000	6.750	0.000	6.750	Paved parking	18S, 19S
0.000	0.000	0.000	4.320	0.000	4.320	Roofs	18S, 19S
0.000	0.000	0.000	24.910	0.000	24.910	TOTAL AREA	

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Page 7

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	18S	0.00	0.00	860.0	0.0020	0.013	0.0	12.0	0.0	
2	19S	0.00	0.00	780.0	0.0020	0.013	0.0	12.0	0.0	
3	20P	691.80	691.50	200.0	0.0015	0.013	0.0	24.0	0.0	
4	20P	692.00	691.90	5.0	0.0200	0.013	0.0	18.0	0.0	
5	23P	692.85	692.43	200.0	0.0021	0.013	0.0	12.0	0.0	
6	23P	693.00	692.95	5.0	0.0100	0.013	0.0	12.0	0.0	

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NOAA10 24-hr A 1-Year Rainfall=1.91"

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Page 8

Time span=0.00-100.00 hrs, dt=0.05 hrs, 2001 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment18S: DA 1 - Post DevRunoff Area=14.750 ac 44.75% Impervious Runoff Depth=0.89"
Flow Length=940' Tc=16.8 min CN=88 Runoff=15.92 cfs 1.098 af**Subcatchment19S: DA 2 - Post Dev**Runoff Area=10.110 ac 44.21% Impervious Runoff Depth=0.89"
Flow Length=860' Tc=16.1 min CN=88 Runoff=11.13 cfs 0.753 af**Subcatchment22S: DA-3 Post Dev**Runoff Area=0.050 ac 0.00% Impervious Runoff Depth=0.51"
Tc=5.0 min CN=80 Runoff=0.05 cfs 0.002 af**Pond 20P: DETENTION POND #1**Peak Elev=692.92' Storage=22,787 cf Inflow=15.92 cfs 1.098 af
Outflow=2.89 cfs 1.095 af**Pond 23P: DETENTION POND #2**Peak Elev=693.77' Storage=16,973 cf Inflow=11.13 cfs 0.753 af
Outflow=1.45 cfs 0.745 af**Total Runoff Area = 24.910 ac Runoff Volume = 1.853 af Average Runoff Depth = 0.89"**
55.56% Pervious = 13.840 ac 44.44% Impervious = 11.070 ac

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NOAA10 24-hr A 1-Year Rainfall=1.91"

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Page 9

Summary for Subcatchment 18S: DA 1 - Post Dev

[47] Hint: Peak is 999% of capacity of segment #2

Runoff = 15.92 cfs @ 12.26 hrs, Volume= 1.098 af, Depth= 0.89"
 Routed to Pond 20P : DETENTION POND #1

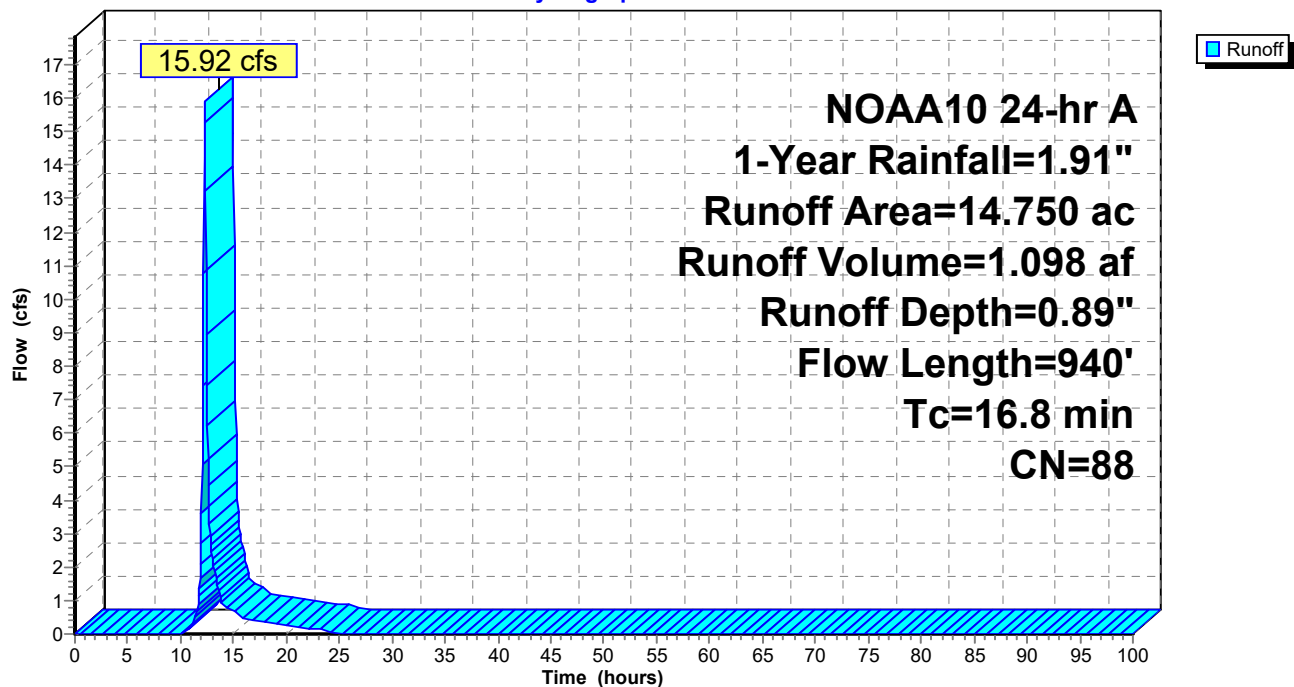
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
 NOAA10 24-hr A 1-Year Rainfall=1.91"

Area (ac)	CN	Description
2.470	98	Roofs, HSG D
4.130	98	Paved parking, HSG D
8.150	80	>75% Grass cover, Good, HSG D
14.750	88	Weighted Average
8.150		55.25% Pervious Area
6.600		44.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	80	0.0200	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 2.29"
7.1	860	0.0020	2.03	1.59	Pipe Channel, PIPE FLOW 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
16.8	940	Total			

Subcatchment 18S: DA 1 - Post Dev

Hydrograph



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NOAA10 24-hr A 1-Year Rainfall=1.91"

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Page 10

Summary for Subcatchment 19S: DA 2 - Post Dev

[47] Hint: Peak is 698% of capacity of segment #2

Runoff = 11.13 cfs @ 12.25 hrs, Volume= 0.753 af, Depth= 0.89"
 Routed to Pond 23P : DETENTION POND #2

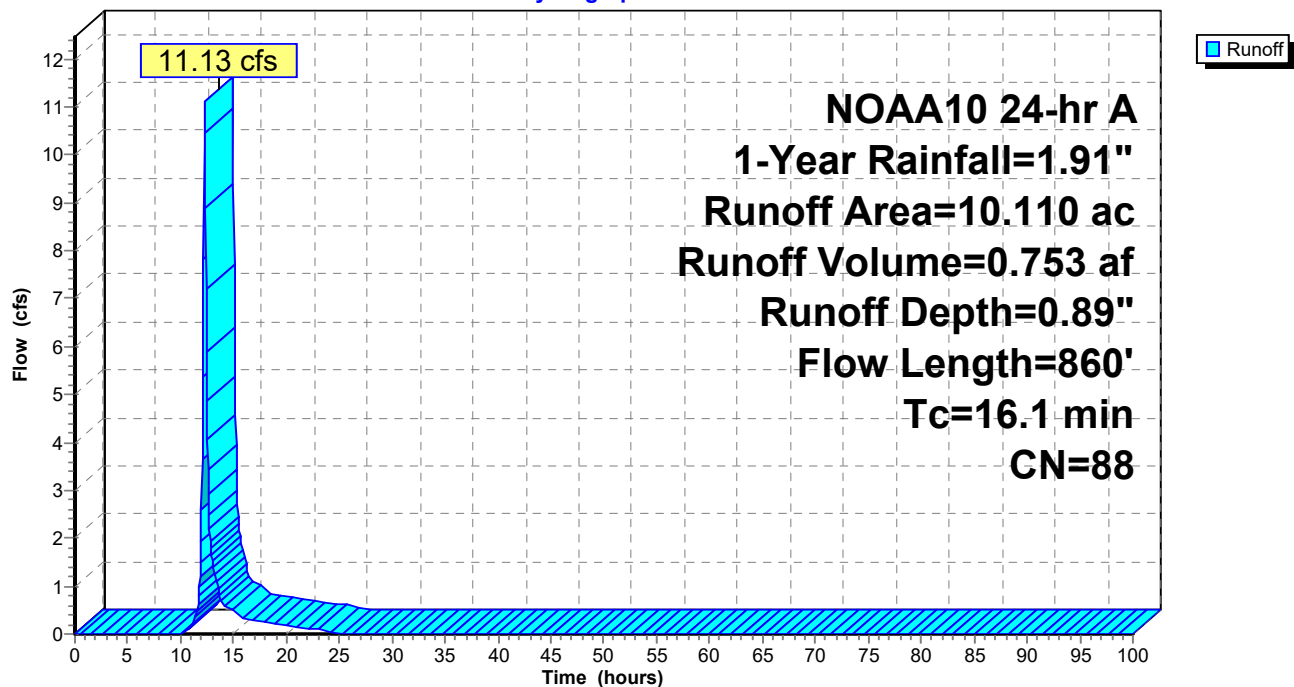
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
 NOAA10 24-hr A 1-Year Rainfall=1.91"

Area (ac)	CN	Description
1.850	98	Roofs, HSG D
2.620	98	Paved parking, HSG D
5.640	80	>75% Grass cover, Good, HSG D
10.110	88	Weighted Average
5.640		55.79% Pervious Area
4.470		44.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	80	0.0200	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 2.29"
6.4	780	0.0020	2.03	1.59	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
16.1	860	Total			

Subcatchment 19S: DA 2 - Post Dev

Hydrograph



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NOAA10 24-hr A 1-Year Rainfall=1.91"

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Page 11

Summary for Subcatchment 22S: DA-3 Post Dev[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 0.05 cfs @ 12.13 hrs, Volume= 0.002 af, Depth= 0.51"
Routed to nonexistent node 24L

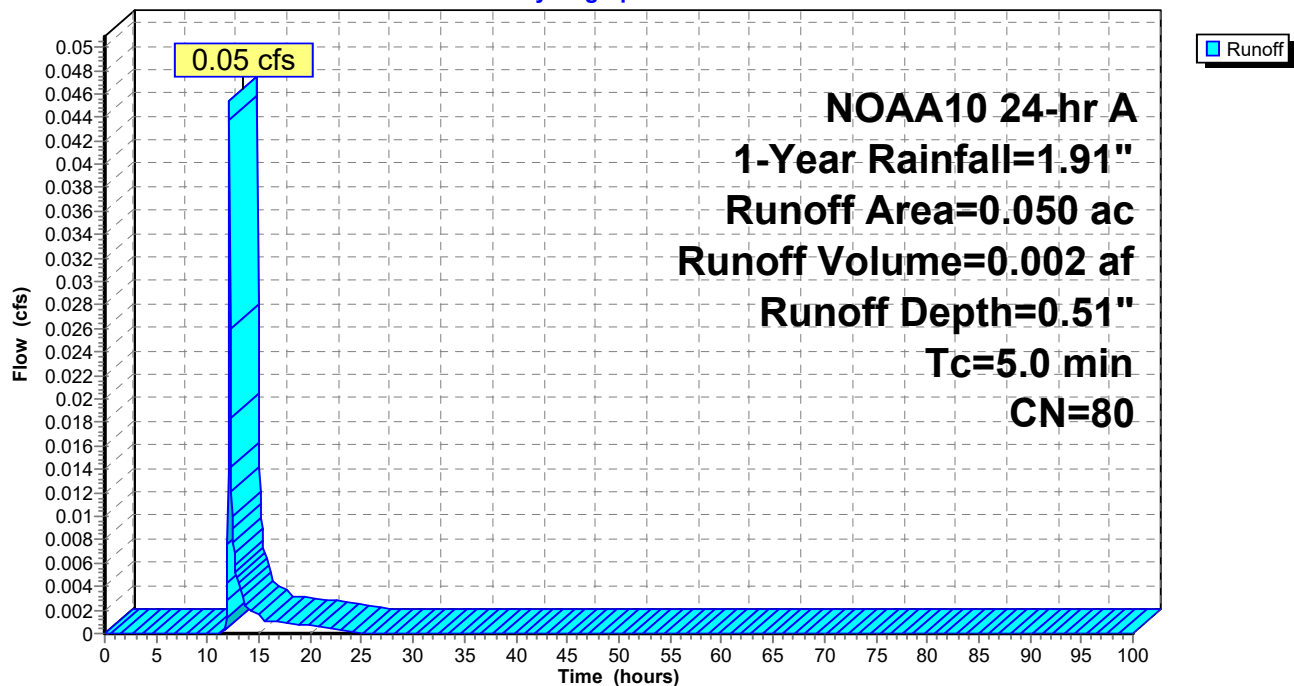
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, $dt=0.05$ hrs
NOAA10 24-hr A 1-Year Rainfall=1.91"

Area (ac)	CN	Description
0.050	80	>75% Grass cover, Good, HSG D
0.050		100.00% Pervious Area

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

Subcatchment 22S: DA-3 Post Dev

Hydrograph



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NOAA10 24-hr A 1-Year Rainfall=1.91"

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Page 12

Summary for Pond 20P: DETENTION POND #1

Inflow Area = 14.750 ac, 44.75% Impervious, Inflow Depth = 0.89" for 1-Year event
 Inflow = 15.92 cfs @ 12.26 hrs, Volume= 1.098 af
 Outflow = 2.89 cfs @ 12.81 hrs, Volume= 1.095 af, Atten= 82%, Lag= 32.9 min
 Primary = 2.89 cfs @ 12.81 hrs, Volume= 1.095 af
 Routed to nonexistent node 24L

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
 Peak Elev= 692.92' @ 12.81 hrs Surf.Area= 28,049 sf Storage= 22,787 cf

Plug-Flow detention time= 230.6 min calculated for 1.095 af (100% of inflow)
 Center-of-Mass det. time= 231.2 min (1,061.5 - 830.4)

Volume	Invert	Avail.Storage	Storage Description
#1	692.00'	144,521 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
692.00	21,500	0	0
693.00	28,620	25,060	25,060
694.00	36,000	32,310	57,370
695.00	43,560	39,780	97,150
696.00	51,182	47,371	144,521

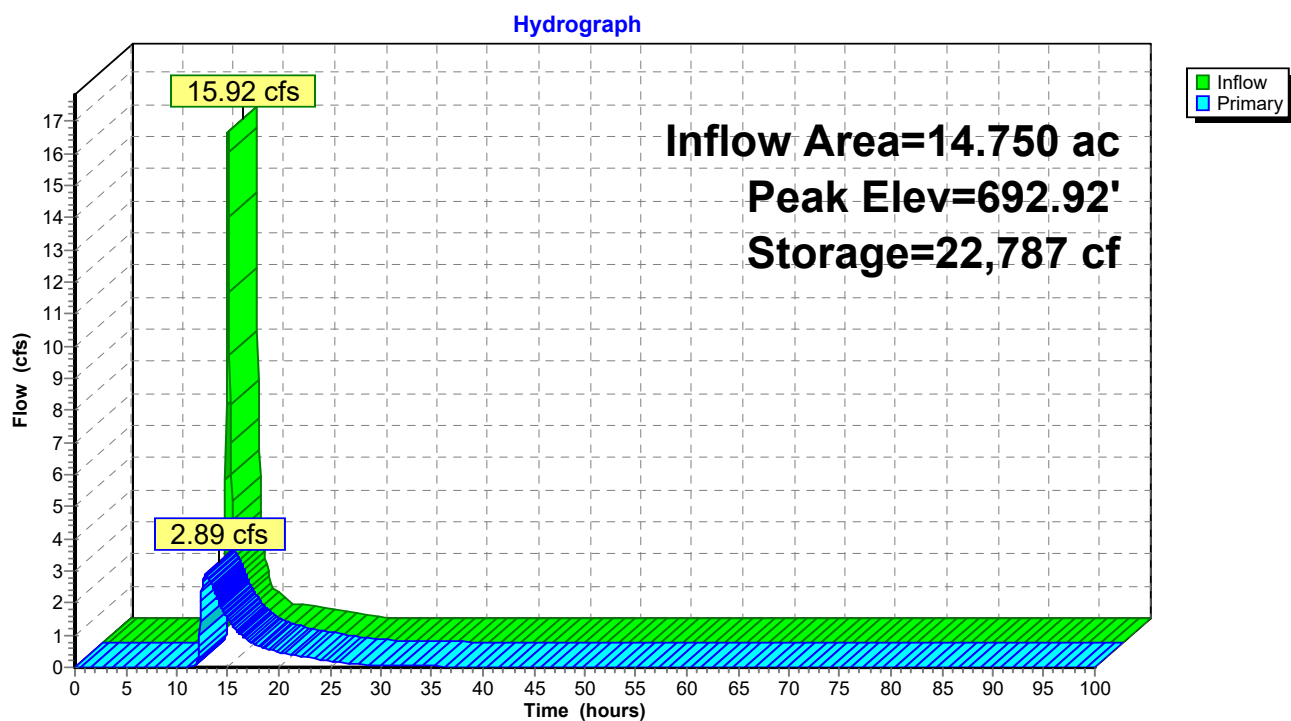
Device	Routing	Invert	Outlet Devices
#1	Primary	691.80'	24.0" Round Culvert L= 200.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 691.80' / 691.50' S= 0.0015 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	694.35'	48.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	692.00'	18.0" Round Culvert L= 5.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 692.00' / 691.90' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.89 cfs @ 12.81 hrs HW=692.92' (Free Discharge)

1=Culvert (Passes 2.89 cfs of 3.64 cfs potential flow)

2=Grate (Controls 0.00 cfs)

3=Culvert (Barrel Controls 2.89 cfs @ 3.65 fps)

Pond 20P: DETENTION POND #1

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NOAA10 24-hr A 1-Year Rainfall=1.91"

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Page 14

Summary for Pond 23P: DETENTION POND #2

Inflow Area = 10.110 ac, 44.21% Impervious, Inflow Depth = 0.89" for 1-Year event
 Inflow = 11.13 cfs @ 12.25 hrs, Volume= 0.753 af
 Outflow = 1.45 cfs @ 13.03 hrs, Volume= 0.745 af, Atten= 87%, Lag= 46.3 min
 Primary = 1.45 cfs @ 13.03 hrs, Volume= 0.745 af
 Routed to nonexistent node 24L

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
 Peak Elev= 693.77' @ 13.03 hrs Surf.Area= 23,249 sf Storage= 16,973 cf

Plug-Flow detention time= 334.7 min calculated for 0.745 af (99% of inflow)
 Center-of-Mass det. time= 331.2 min (1,160.9 - 829.7)

Volume	Invert	Avail.Storage	Storage Description
#1	693.00'	116,935 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
693.00	20,700	0	0
694.00	24,000	22,350	22,350
695.00	28,900	26,450	48,800
696.00	34,000	31,450	80,250
697.00	39,369	36,685	116,935

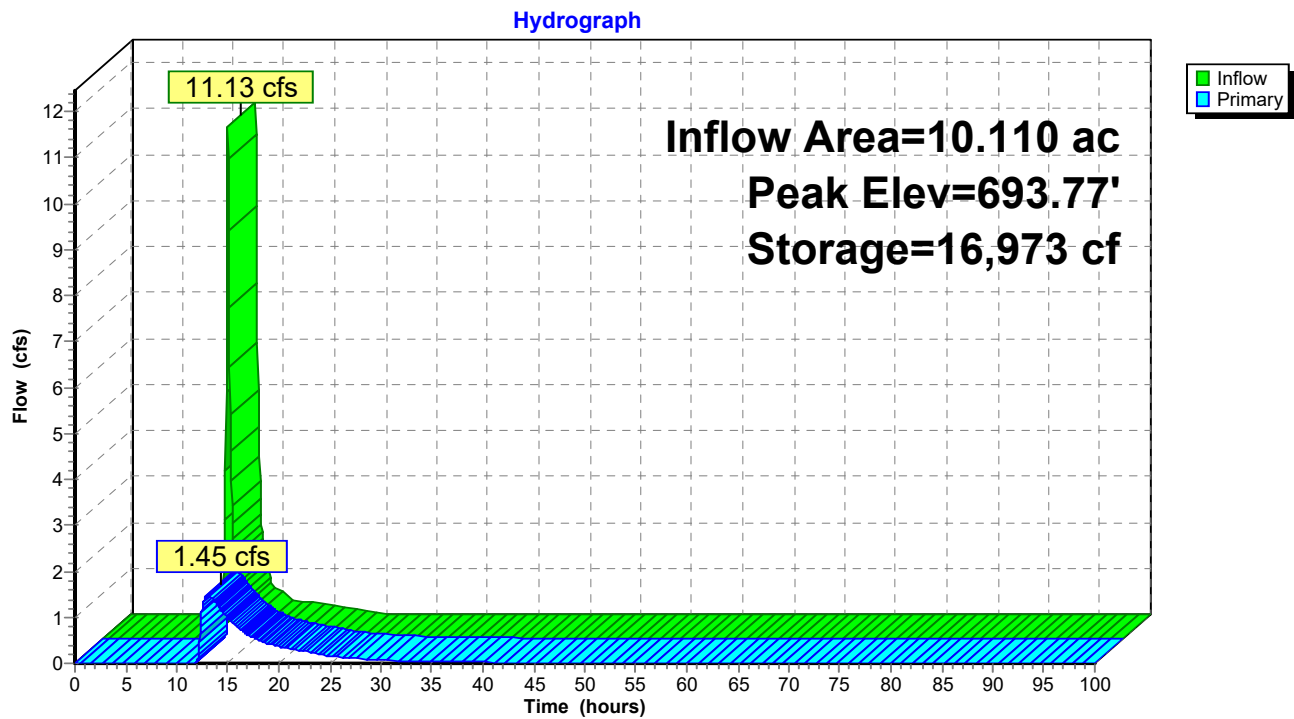
Device	Routing	Invert	Outlet Devices
#1	Primary	692.85'	12.0" Round Culvert L= 200.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 692.85' / 692.43' S= 0.0021 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	694.90'	36.0" x 36.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	693.00'	12.0" Round Culvert L= 5.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 693.00' / 692.95' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.46 cfs @ 13.03 hrs HW=693.77' (Free Discharge)

1=Culvert (Passes 1.46 cfs of 1.47 cfs potential flow)

2=Grate (Controls 0.00 cfs)

3=Culvert (Barrel Controls 1.46 cfs @ 3.09 fps)

Pond 23P: DETENTION POND #2

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NOAA10 24-hr A 10-Year Rainfall=3.44"

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Page 16

Time span=0.00-100.00 hrs, dt=0.05 hrs, 2001 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment18S: DA 1 - Post DevRunoff Area=14.750 ac 44.75% Impervious Runoff Depth=2.21"
Flow Length=940' Tc=16.8 min CN=88 Runoff=39.29 cfs 2.721 af**Subcatchment19S: DA 2 - Post Dev**Runoff Area=10.110 ac 44.21% Impervious Runoff Depth=2.21"
Flow Length=860' Tc=16.1 min CN=88 Runoff=27.42 cfs 1.865 af**Subcatchment22S: DA-3 Post Dev**Runoff Area=0.050 ac 0.00% Impervious Runoff Depth=1.59"
Tc=5.0 min CN=80 Runoff=0.15 cfs 0.007 af**Pond 20P: DETENTION POND #1**Peak Elev=693.97' Storage=56,232 cf Inflow=39.29 cfs 2.721 af
Outflow=8.64 cfs 2.718 af**Pond 23P: DETENTION POND #2**Peak Elev=694.91' Storage=46,258 cf Inflow=27.42 cfs 1.865 af
Outflow=2.75 cfs 1.858 af**Total Runoff Area = 24.910 ac Runoff Volume = 4.593 af Average Runoff Depth = 2.21"**
55.56% Pervious = 13.840 ac 44.44% Impervious = 11.070 ac

25-4008 HYDROCAD

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NOAA10 24-hr A 10-Year Rainfall=3.44"

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Page 17

Summary for Subcatchment 18S: DA 1 - Post Dev

[47] Hint: Peak is 2466% of capacity of segment #2

Runoff = 39.29 cfs @ 12.25 hrs, Volume= 2.721 af, Depth= 2.21"
 Routed to Pond 20P : DETENTION POND #1

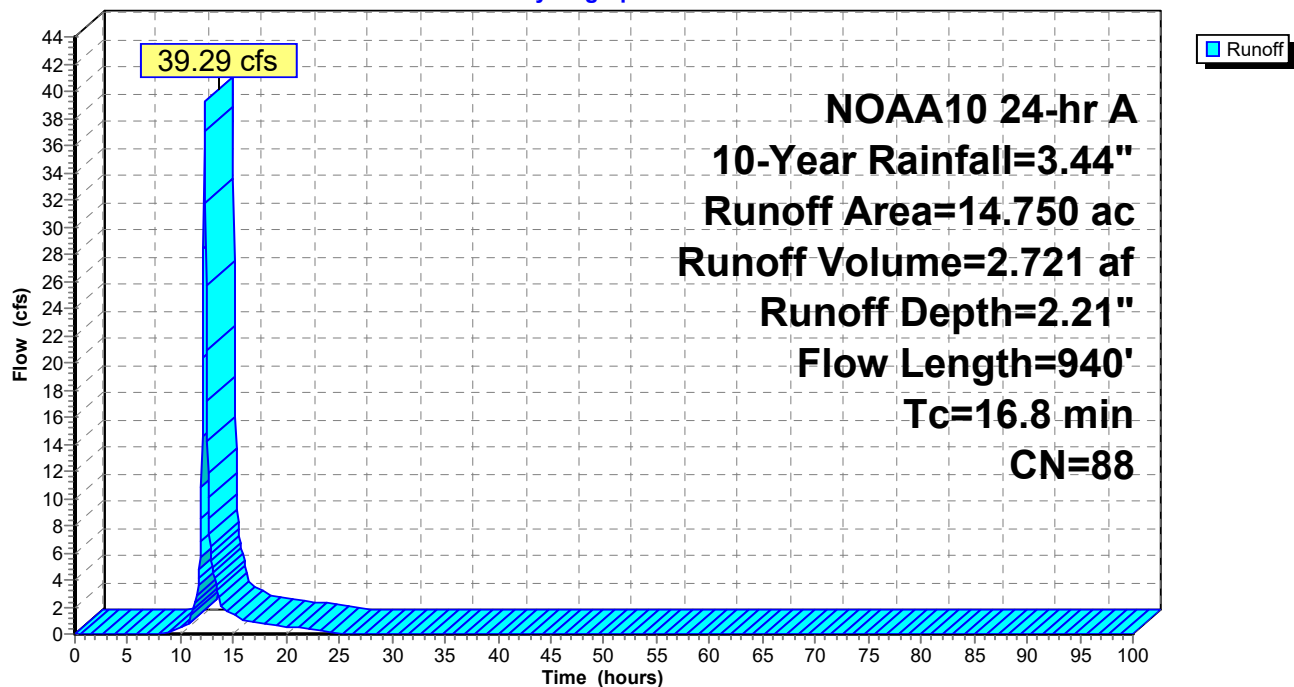
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
 NOAA10 24-hr A 10-Year Rainfall=3.44"

Area (ac)	CN	Description
2.470	98	Roofs, HSG D
4.130	98	Paved parking, HSG D
8.150	80	>75% Grass cover, Good, HSG D
14.750	88	Weighted Average
8.150		55.25% Pervious Area
6.600		44.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	80	0.0200	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 2.29"
7.1	860	0.0020	2.03	1.59	Pipe Channel, PIPE FLOW 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
16.8	940	Total			

Subcatchment 18S: DA 1 - Post Dev

Hydrograph



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NOAA10 24-hr A 10-Year Rainfall=3.44"

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Page 18

Summary for Subcatchment 19S: DA 2 - Post Dev

[47] Hint: Peak is 1721% of capacity of segment #2

Runoff = 27.42 cfs @ 12.25 hrs, Volume= 1.865 af, Depth= 2.21"
 Routed to Pond 23P : DETENTION POND #2

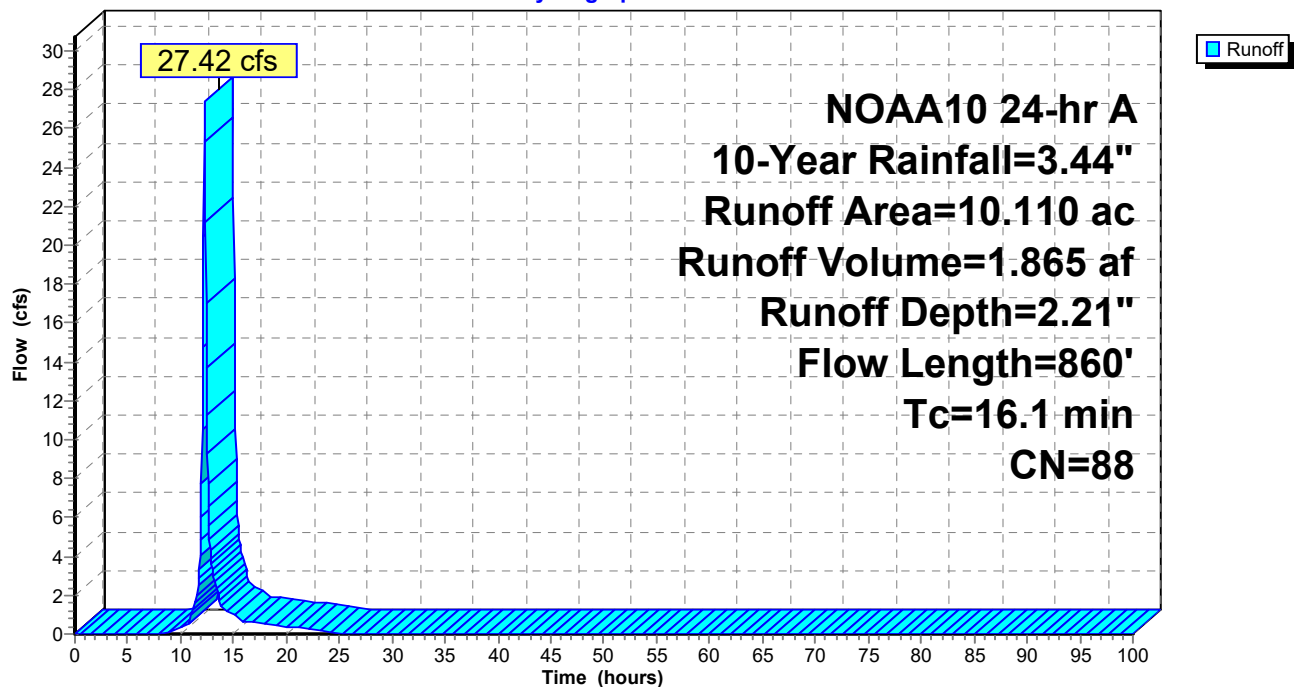
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
 NOAA10 24-hr A 10-Year Rainfall=3.44"

Area (ac)	CN	Description
1.850	98	Roofs, HSG D
2.620	98	Paved parking, HSG D
5.640	80	>75% Grass cover, Good, HSG D
10.110	88	Weighted Average
5.640		55.79% Pervious Area
4.470		44.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	80	0.0200	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 2.29"
6.4	780	0.0020	2.03	1.59	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
16.1	860	Total			

Subcatchment 19S: DA 2 - Post Dev

Hydrograph



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NOAA10 24-hr A 10-Year Rainfall=3.44"

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Page 19

Summary for Subcatchment 22S: DA-3 Post Dev[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 0.15 cfs @ 12.12 hrs, Volume= 0.007 af, Depth= 1.59"
Routed to nonexistent node 24L

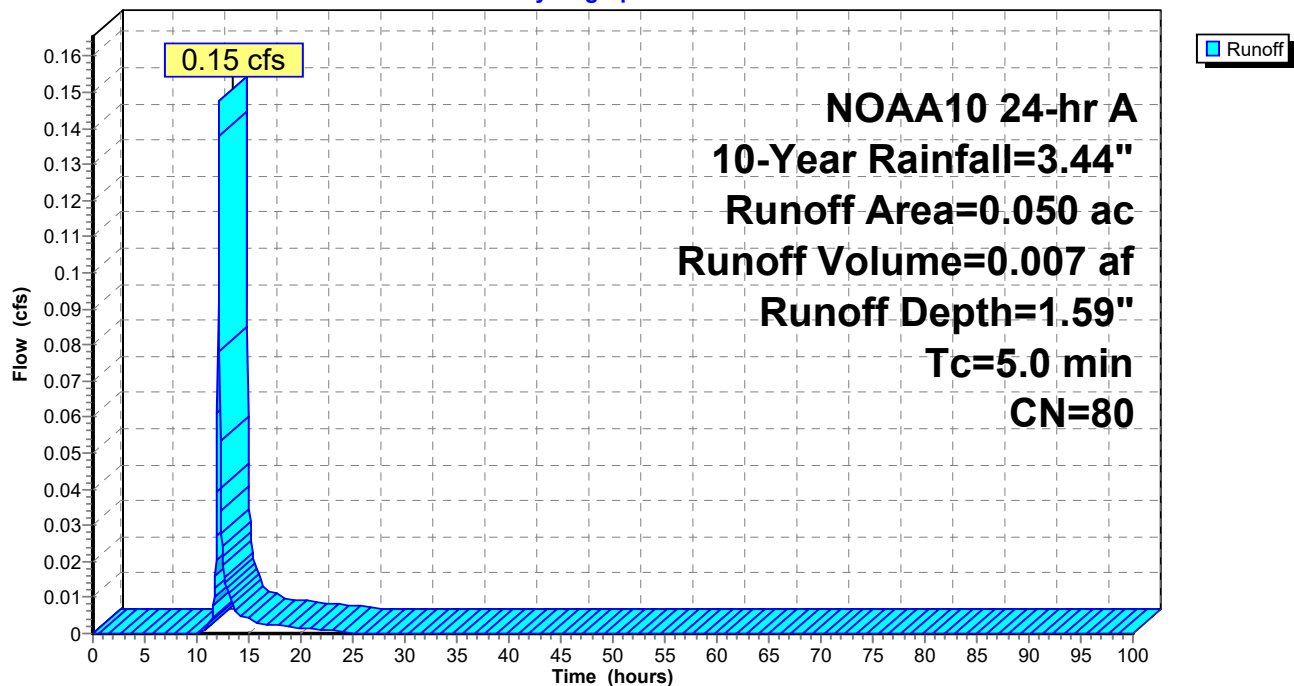
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, $dt=0.05$ hrs
NOAA10 24-hr A 10-Year Rainfall=3.44"

Area (ac)	CN	Description
0.050	80	>75% Grass cover, Good, HSG D
0.050		100.00% Pervious Area

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

Subcatchment 22S: DA-3 Post Dev

Hydrograph



25-4008 HYDROCAD

NOAA10 24-hr A 10-Year Rainfall=3.44"

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Page 20

Summary for Pond 20P: DETENTION POND #1

Inflow Area = 14.750 ac, 44.75% Impervious, Inflow Depth = 2.21" for 10-Year event
 Inflow = 39.29 cfs @ 12.25 hrs, Volume= 2.721 af
 Outflow = 8.64 cfs @ 12.70 hrs, Volume= 2.718 af, Atten= 78%, Lag= 26.6 min
 Primary = 8.64 cfs @ 12.70 hrs, Volume= 2.718 af
 Routed to nonexistent node 24L

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
 Peak Elev= 693.97' @ 12.70 hrs Surf.Area= 35,766 sf Storage= 56,232 cf

Plug-Flow detention time= 157.6 min calculated for 2.717 af (100% of inflow)
 Center-of-Mass det. time= 158.9 min (968.6 - 809.7)

Volume	Invert	Avail.Storage	Storage Description
#1	692.00'	144,521 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
692.00	21,500	0	0
693.00	28,620	25,060	25,060
694.00	36,000	32,310	57,370
695.00	43,560	39,780	97,150
696.00	51,182	47,371	144,521

Device	Routing	Invert	Outlet Devices
#1	Primary	691.80'	24.0" Round Culvert L= 200.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 691.80' / 691.50' S= 0.0015 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	694.35'	48.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	692.00'	18.0" Round Culvert L= 5.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 692.00' / 691.90' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

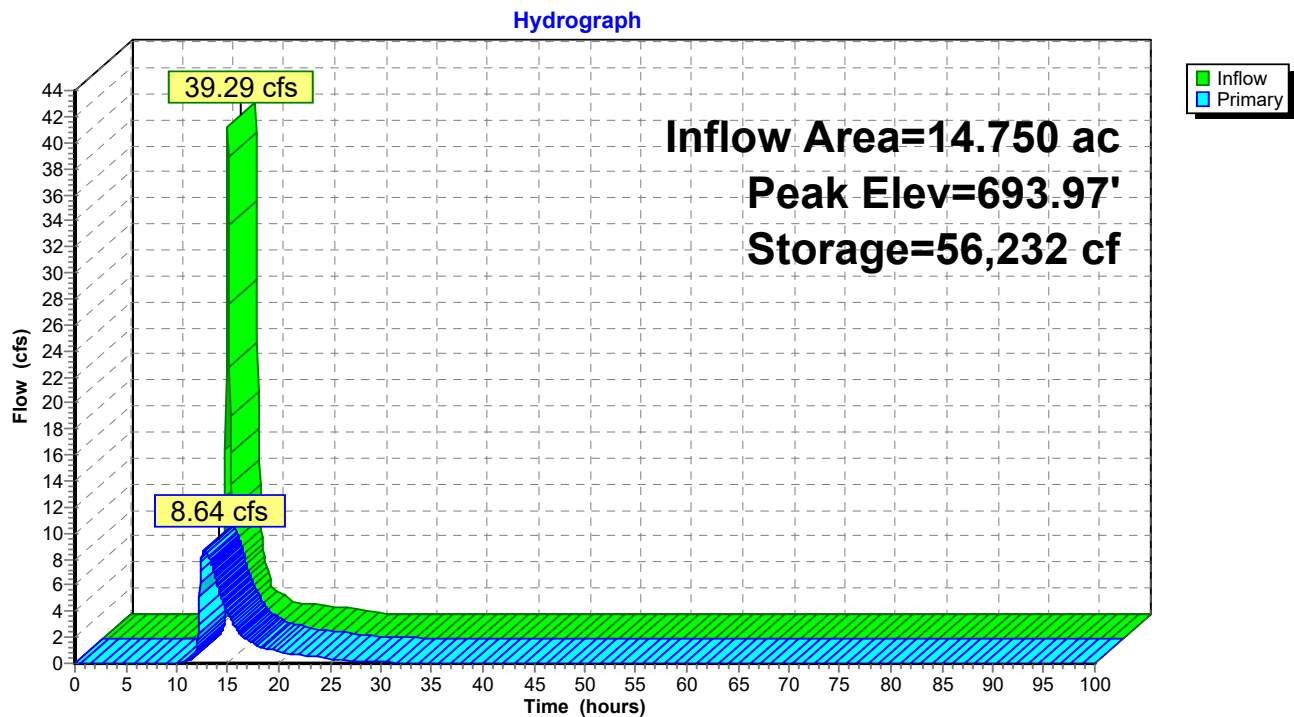
Primary OutFlow Max=8.65 cfs @ 12.70 hrs HW=693.97' (Free Discharge)

1=Culvert (Passes 8.65 cfs of 10.90 cfs potential flow)

2=Grate (Controls 0.00 cfs)

3=Culvert (Barrel Controls 8.65 cfs @ 4.91 fps)

Pond 20P: DETENTION POND #1



25-4008 HYDROCAD

NOAA10 24-hr A 10-Year Rainfall=3.44"

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Page 22

Summary for Pond 23P: DETENTION POND #2

Inflow Area = 10.110 ac, 44.21% Impervious, Inflow Depth = 2.21" for 10-Year event
 Inflow = 27.42 cfs @ 12.25 hrs, Volume= 1.865 af
 Outflow = 2.75 cfs @ 13.21 hrs, Volume= 1.858 af, Atten= 90%, Lag= 57.8 min
 Primary = 2.75 cfs @ 13.21 hrs, Volume= 1.858 af
 Routed to nonexistent node 24L

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
 Peak Elev= 694.91' @ 13.21 hrs Surf.Area= 28,466 sf Storage= 46,258 cf

Plug-Flow detention time= 281.3 min calculated for 1.858 af (100% of inflow)
 Center-of-Mass det. time= 278.8 min (1,087.8 - 809.0)

Volume	Invert	Avail.Storage	Storage Description
#1	693.00'	116,935 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

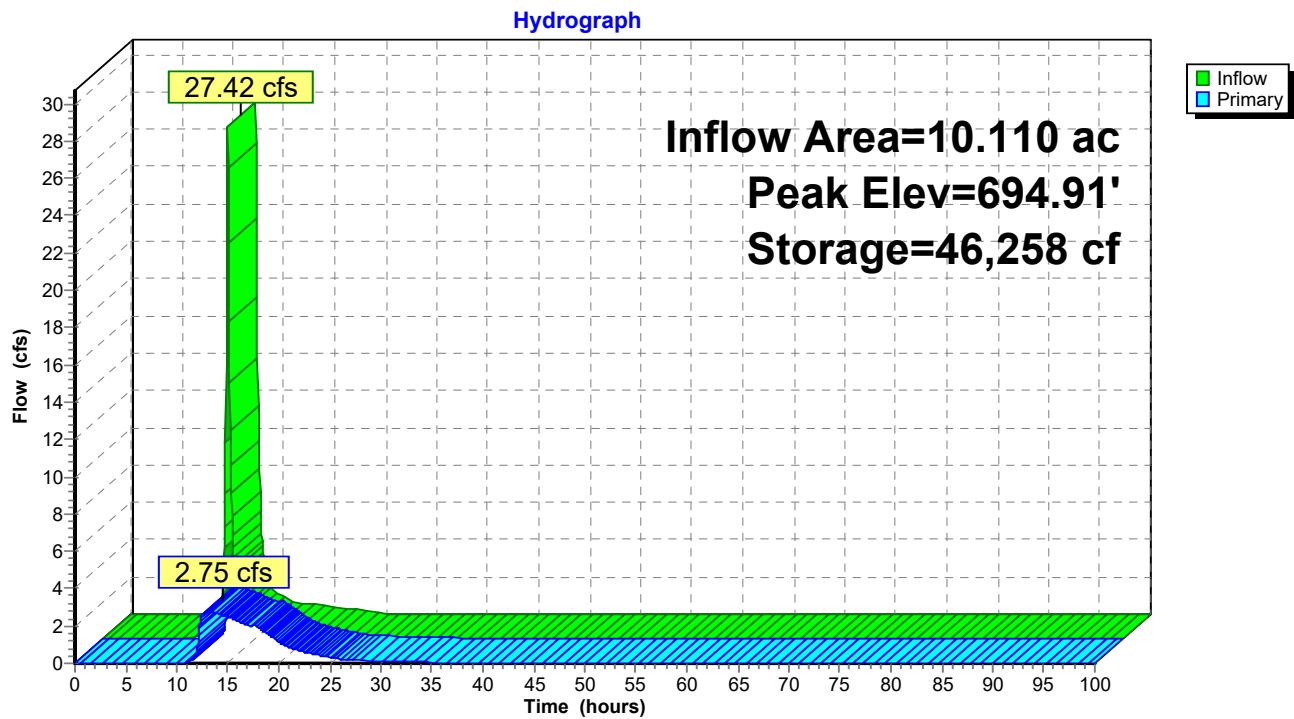
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
693.00	20,700	0	0
694.00	24,000	22,350	22,350
695.00	28,900	26,450	48,800
696.00	34,000	31,450	80,250
697.00	39,369	36,685	116,935

Device	Routing	Invert	Outlet Devices
#1	Primary	692.85'	12.0" Round Culvert L= 200.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 692.85' / 692.43' S= 0.0021 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	694.90'	36.0" x 36.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	693.00'	12.0" Round Culvert L= 5.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 693.00' / 692.95' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.75 cfs @ 13.21 hrs HW=694.91' (Free Discharge)

↑ **1=Culvert** (Barrel Controls 2.75 cfs @ 3.50 fps)
 ↑ **2=Grate** (Passes < 0.05 cfs potential flow)
 ↑ **3=Culvert** (Passes < 4.49 cfs potential flow)

Pond 23P: DETENTION POND #2



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NOAA10 24-hr A 25-Year Rainfall=4.15"

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Page 24

Time span=0.00-100.00 hrs, dt=0.05 hrs, 2001 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment18S: DA 1 - Post DevRunoff Area=14.750 ac 44.75% Impervious Runoff Depth=2.87"
Flow Length=940' Tc=16.8 min CN=88 Runoff=50.49 cfs 3.526 af**Subcatchment19S: DA 2 - Post Dev**Runoff Area=10.110 ac 44.21% Impervious Runoff Depth=2.87"
Flow Length=860' Tc=16.1 min CN=88 Runoff=35.23 cfs 2.417 af**Subcatchment22S: DA-3 Post Dev**Runoff Area=0.050 ac 0.00% Impervious Runoff Depth=2.17"
Tc=5.0 min CN=80 Runoff=0.20 cfs 0.009 af**Pond 20P: DETENTION POND #1**Peak Elev=694.41' Storage=72,817 cf Inflow=50.49 cfs 3.526 af
Outflow=11.79 cfs 3.523 af**Pond 23P: DETENTION POND #2**Peak Elev=695.43' Storage=61,562 cf Inflow=35.23 cfs 2.417 af
Outflow=3.19 cfs 2.409 af**Total Runoff Area = 24.910 ac Runoff Volume = 5.951 af Average Runoff Depth = 2.87"**
55.56% Pervious = 13.840 ac 44.44% Impervious = 11.070 ac

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NOAA10 24-hr A 25-Year Rainfall=4.15"

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Page 25

Summary for Subcatchment 18S: DA 1 - Post Dev

[47] Hint: Peak is 3169% of capacity of segment #2

Runoff = 50.49 cfs @ 12.25 hrs, Volume= 3.526 af, Depth= 2.87"
 Routed to Pond 20P : DETENTION POND #1

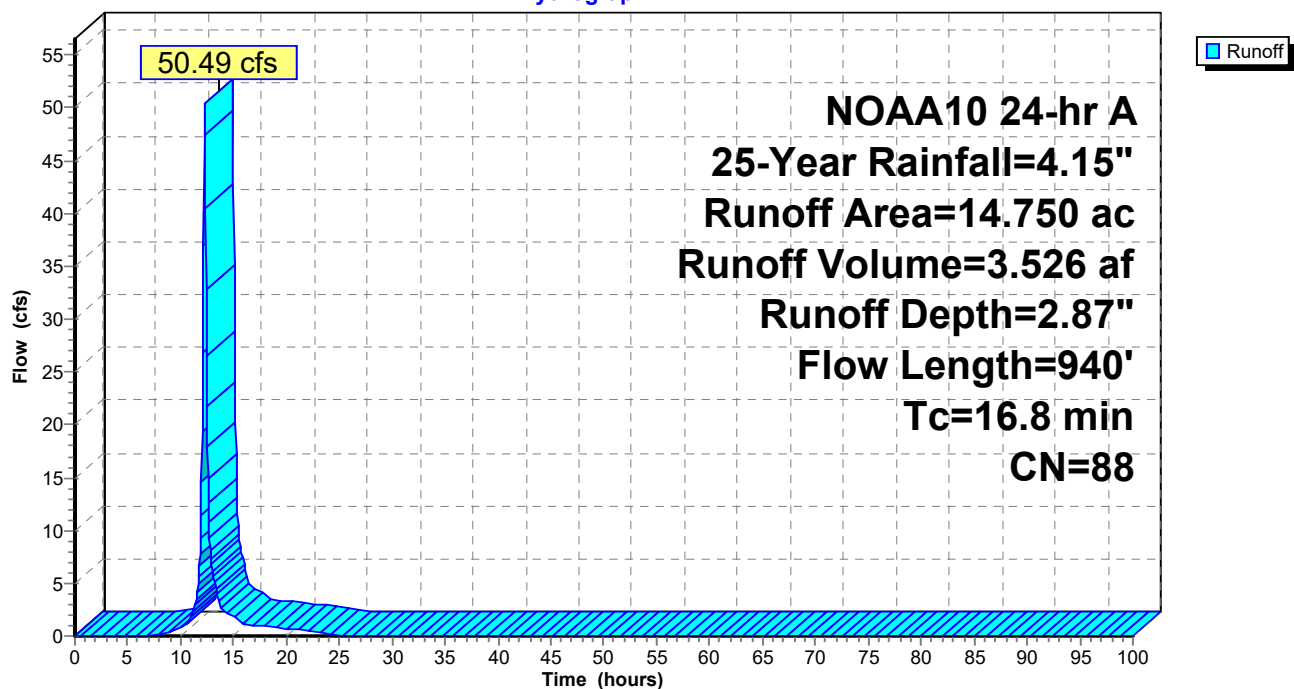
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
 NOAA10 24-hr A 25-Year Rainfall=4.15"

Area (ac)	CN	Description
2.470	98	Roofs, HSG D
4.130	98	Paved parking, HSG D
8.150	80	>75% Grass cover, Good, HSG D
14.750	88	Weighted Average
8.150		55.25% Pervious Area
6.600		44.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	80	0.0200	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 2.29"
7.1	860	0.0020	2.03	1.59	Pipe Channel, PIPE FLOW 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
16.8	940	Total			

Subcatchment 18S: DA 1 - Post Dev

Hydrograph



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NOAA10 24-hr A 25-Year Rainfall=4.15"

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Page 26

Summary for Subcatchment 19S: DA 2 - Post Dev

[47] Hint: Peak is 2211% of capacity of segment #2

Runoff = 35.23 cfs @ 12.25 hrs, Volume= 2.417 af, Depth= 2.87"
 Routed to Pond 23P : DETENTION POND #2

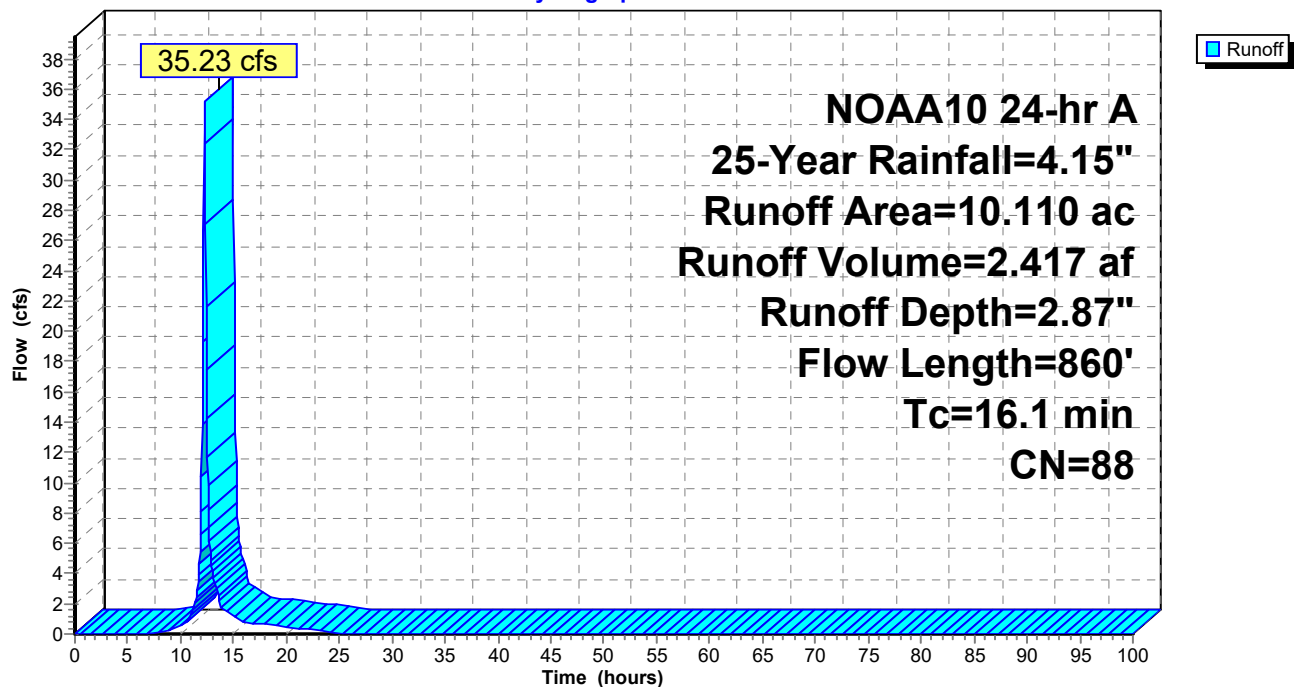
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
 NOAA10 24-hr A 25-Year Rainfall=4.15"

Area (ac)	CN	Description
1.850	98	Roofs, HSG D
2.620	98	Paved parking, HSG D
5.640	80	>75% Grass cover, Good, HSG D
10.110	88	Weighted Average
5.640		55.79% Pervious Area
4.470		44.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	80	0.0200	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 2.29"
6.4	780	0.0020	2.03	1.59	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
16.1	860	Total			

Subcatchment 19S: DA 2 - Post Dev

Hydrograph



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NOAA10 24-hr A 25-Year Rainfall=4.15"

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Page 27

Summary for Subcatchment 22S: DA-3 Post Dev[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 0.20 cfs @ 12.12 hrs, Volume= 0.009 af, Depth= 2.17"
Routed to nonexistent node 24L

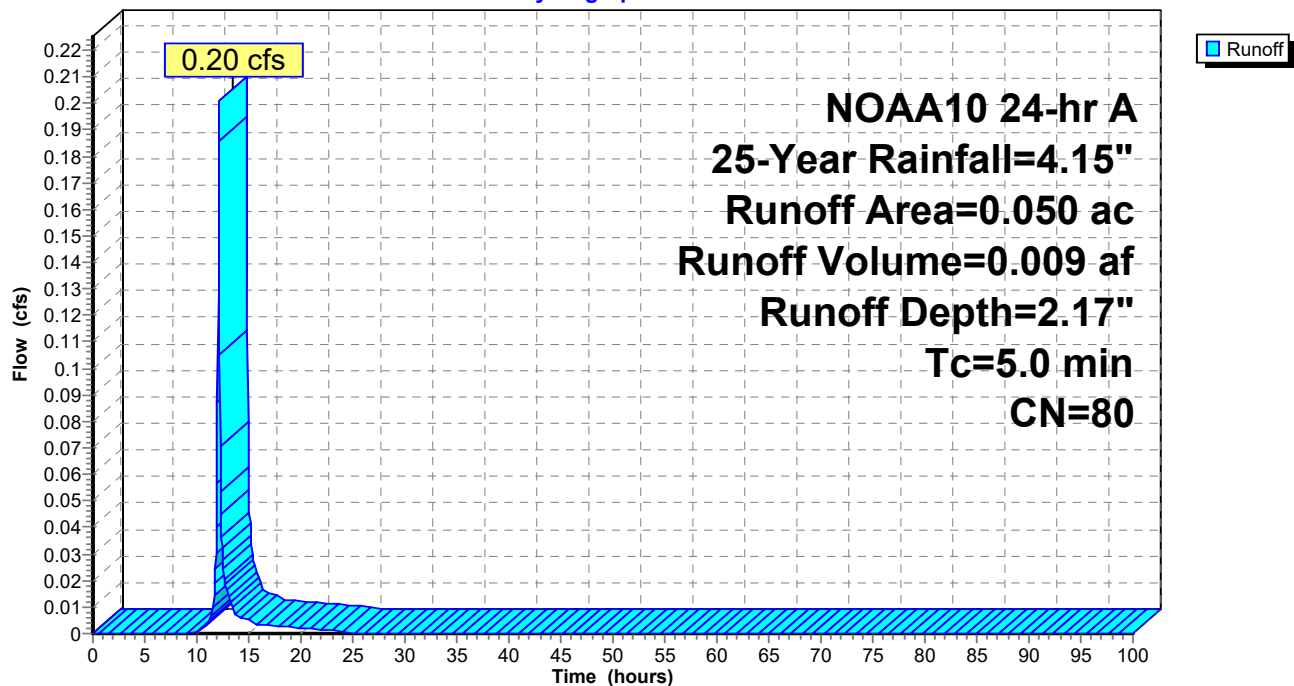
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, $dt=0.05$ hrs
NOAA10 24-hr A 25-Year Rainfall=4.15"

Area (ac)	CN	Description
0.050	80	>75% Grass cover, Good, HSG D
0.050		100.00% Pervious Area

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

Subcatchment 22S: DA-3 Post Dev

Hydrograph



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NOAA10 24-hr A 25-Year Rainfall=4.15"

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Page 28

Summary for Pond 20P: DETENTION POND #1

Inflow Area = 14.750 ac, 44.75% Impervious, Inflow Depth = 2.87" for 25-Year event
 Inflow = 50.49 cfs @ 12.25 hrs, Volume= 3.526 af
 Outflow = 11.79 cfs @ 12.67 hrs, Volume= 3.523 af, Atten= 77%, Lag= 25.2 min
 Primary = 11.79 cfs @ 12.67 hrs, Volume= 3.523 af
 Routed to nonexistent node 24L

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
 Peak Elev= 694.41' @ 12.67 hrs Surf.Area= 39,110 sf Storage= 72,817 cf

Plug-Flow detention time= 148.5 min calculated for 3.523 af (100% of inflow)
 Center-of-Mass det. time= 148.0 min (951.8 - 803.8)

Volume	Invert	Avail.Storage	Storage Description
#1	692.00'	144,521 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
692.00	21,500	0	0
693.00	28,620	25,060	25,060
694.00	36,000	32,310	57,370
695.00	43,560	39,780	97,150
696.00	51,182	47,371	144,521

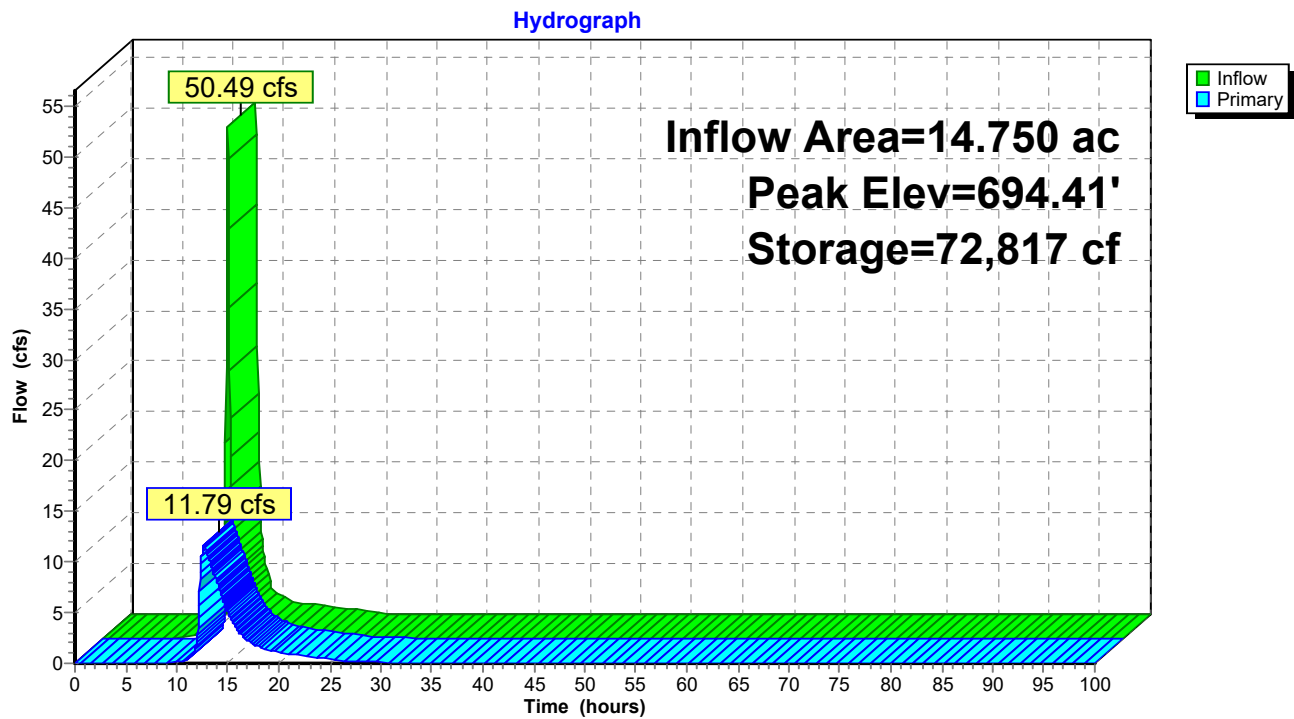
Device	Routing	Invert	Outlet Devices
#1	Primary	691.80'	24.0" Round Culvert L= 200.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 691.80' / 691.50' S= 0.0015 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	694.35'	48.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	692.00'	18.0" Round Culvert L= 5.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 692.00' / 691.90' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=11.73 cfs @ 12.67 hrs HW=694.41' (Free Discharge)

↑ **1=Culvert** (Passes 11.73 cfs of 12.72 cfs potential flow)

↑ **2=Grate** (Weir Controls 0.77 cfs @ 0.80 fps)

↑ **3=Culvert** (Inlet Controls 10.96 cfs @ 6.20 fps)

Pond 20P: DETENTION POND #1

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NOAA10 24-hr A 25-Year Rainfall=4.15"

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Page 30

Summary for Pond 23P: DETENTION POND #2

Inflow Area = 10.110 ac, 44.21% Impervious, Inflow Depth = 2.87" for 25-Year event
 Inflow = 35.23 cfs @ 12.25 hrs, Volume= 2.417 af
 Outflow = 3.19 cfs @ 13.31 hrs, Volume= 2.409 af, Atten= 91%, Lag= 63.6 min
 Primary = 3.19 cfs @ 13.31 hrs, Volume= 2.409 af
 Routed to nonexistent node 24L

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
 Peak Elev= 695.43' @ 13.31 hrs Surf.Area= 31,071 sf Storage= 61,562 cf

Plug-Flow detention time= 290.4 min calculated for 2.408 af (100% of inflow)
 Center-of-Mass det. time= 290.5 min (1,093.6 - 803.2)

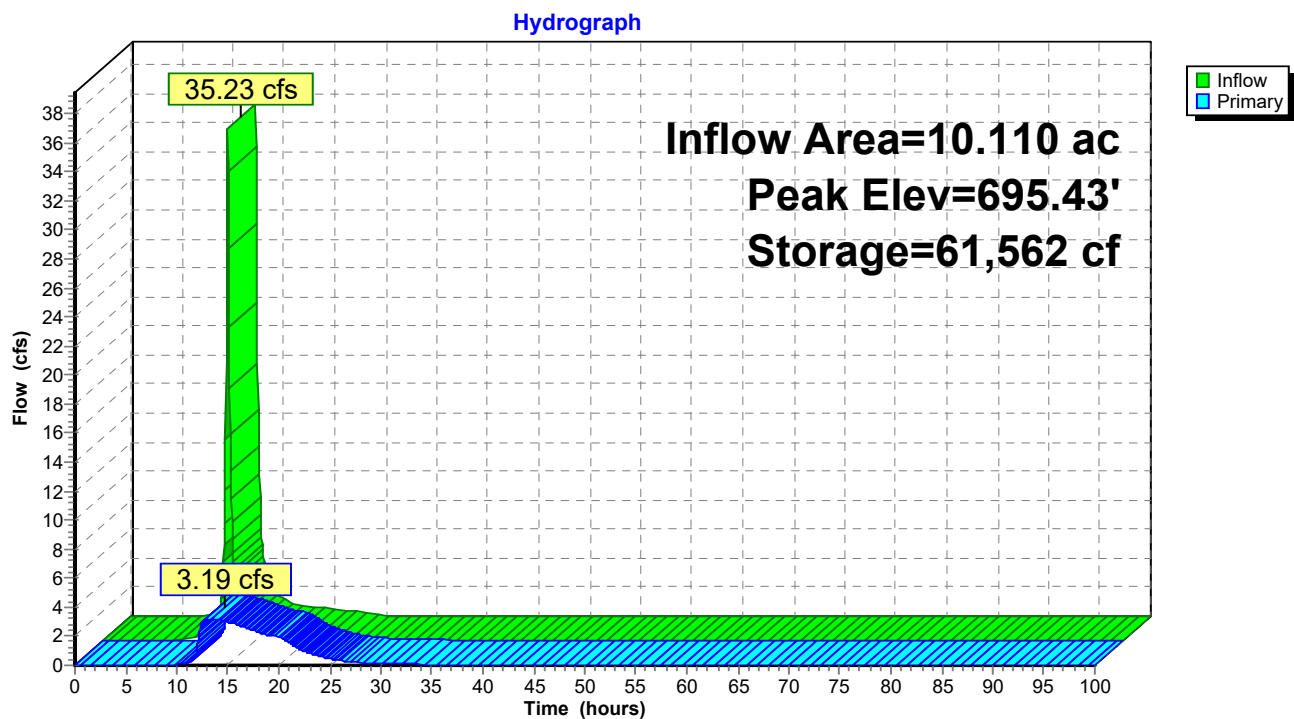
Volume	Invert	Avail.Storage	Storage Description
#1	693.00'	116,935 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
693.00	20,700	0	0
694.00	24,000	22,350	22,350
695.00	28,900	26,450	48,800
696.00	34,000	31,450	80,250
697.00	39,369	36,685	116,935

Device	Routing	Invert	Outlet Devices
#1	Primary	692.85'	12.0" Round Culvert L= 200.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 692.85' / 692.43' S= 0.0021 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	694.90'	36.0" x 36.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	693.00'	12.0" Round Culvert L= 5.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 693.00' / 692.95' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.19 cfs @ 13.31 hrs HW=695.43' (Free Discharge)

↑ **1=Culvert** (Barrel Controls 3.19 cfs @ 4.06 fps)
 ↑ **2=Grate** (Passes < 14.95 cfs potential flow)
 ↑ **3=Culvert** (Passes < 5.25 cfs potential flow)

Pond 23P: DETENTION POND #2

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NOAA10 24-hr A 100-Year Rainfall=5.25"

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Page 32

Time span=0.00-100.00 hrs, dt=0.05 hrs, 2001 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment18S: DA 1 - Post DevRunoff Area=14.750 ac 44.75% Impervious Runoff Depth=3.91"
Flow Length=940' Tc=16.8 min CN=88 Runoff=67.88 cfs 4.802 af**Subcatchment19S: DA 2 - Post Dev**Runoff Area=10.110 ac 44.21% Impervious Runoff Depth=3.91"
Flow Length=860' Tc=16.1 min CN=88 Runoff=47.35 cfs 3.292 af**Subcatchment22S: DA-3 Post Dev**Runoff Area=0.050 ac 0.00% Impervious Runoff Depth=3.11"
Tc=5.0 min CN=80 Runoff=0.29 cfs 0.013 af**Pond 20P: DETENTION POND #1**Peak Elev=695.03' Storage=98,263 cf Inflow=67.88 cfs 4.802 af
Outflow=15.58 cfs 4.799 af**Pond 23P: DETENTION POND #2**Peak Elev=696.18' Storage=86,306 cf Inflow=47.35 cfs 3.292 af
Outflow=3.74 cfs 3.283 af**Total Runoff Area = 24.910 ac Runoff Volume = 8.107 af Average Runoff Depth = 3.91"**
55.56% Pervious = 13.840 ac 44.44% Impervious = 11.070 ac

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NOAA10 24-hr A 100-Year Rainfall=5.25"

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Page 33

Summary for Subcatchment 18S: DA 1 - Post Dev

[47] Hint: Peak is 4260% of capacity of segment #2

Runoff = 67.88 cfs @ 12.25 hrs, Volume= 4.802 af, Depth= 3.91"
 Routed to Pond 20P : DETENTION POND #1

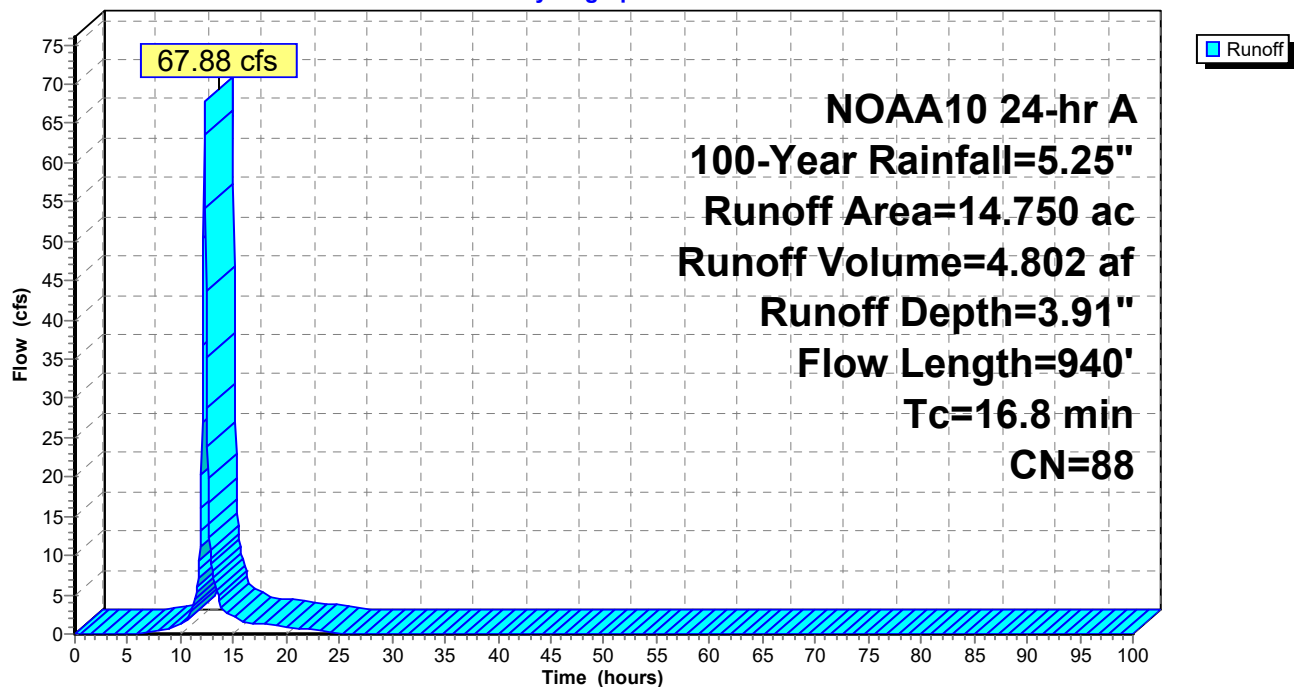
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
 NOAA10 24-hr A 100-Year Rainfall=5.25"

Area (ac)	CN	Description
2.470	98	Roofs, HSG D
4.130	98	Paved parking, HSG D
8.150	80	>75% Grass cover, Good, HSG D
14.750	88	Weighted Average
8.150		55.25% Pervious Area
6.600		44.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	80	0.0200	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 2.29"
7.1	860	0.0020	2.03	1.59	Pipe Channel, PIPE FLOW 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
16.8	940	Total			

Subcatchment 18S: DA 1 - Post Dev

Hydrograph



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NOAA10 24-hr A 100-Year Rainfall=5.25"

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Page 34

Summary for Subcatchment 19S: DA 2 - Post Dev

[47] Hint: Peak is 2972% of capacity of segment #2

Runoff = 47.35 cfs @ 12.24 hrs, Volume= 3.292 af, Depth= 3.91"
 Routed to Pond 23P : DETENTION POND #2

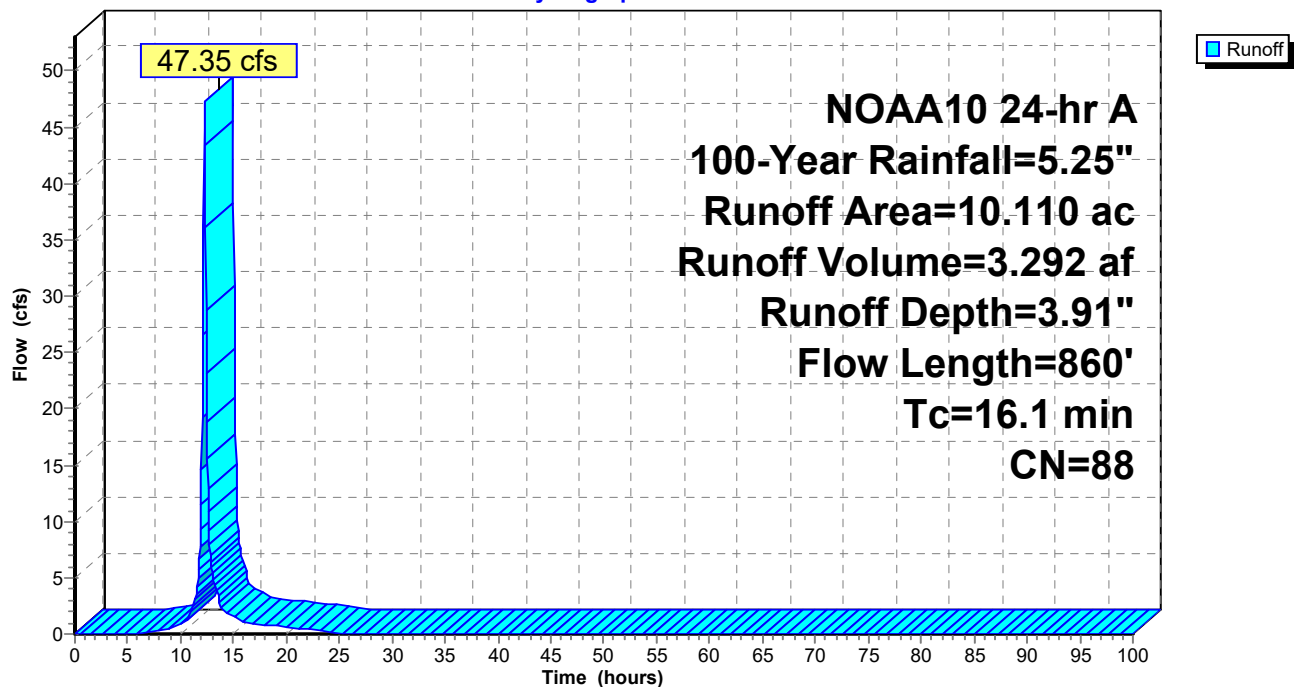
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
 NOAA10 24-hr A 100-Year Rainfall=5.25"

Area (ac)	CN	Description
1.850	98	Roofs, HSG D
2.620	98	Paved parking, HSG D
5.640	80	>75% Grass cover, Good, HSG D
10.110	88	Weighted Average
5.640		55.79% Pervious Area
4.470		44.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	80	0.0200	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 2.29"
6.4	780	0.0020	2.03	1.59	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
16.1	860	Total			

Subcatchment 19S: DA 2 - Post Dev

Hydrograph



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NOAA10 24-hr A 100-Year Rainfall=5.25"

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Page 35

Summary for Subcatchment 22S: DA-3 Post Dev[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 0.29 cfs @ 12.12 hrs, Volume= 0.013 af, Depth= 3.11"
Routed to nonexistent node 24L

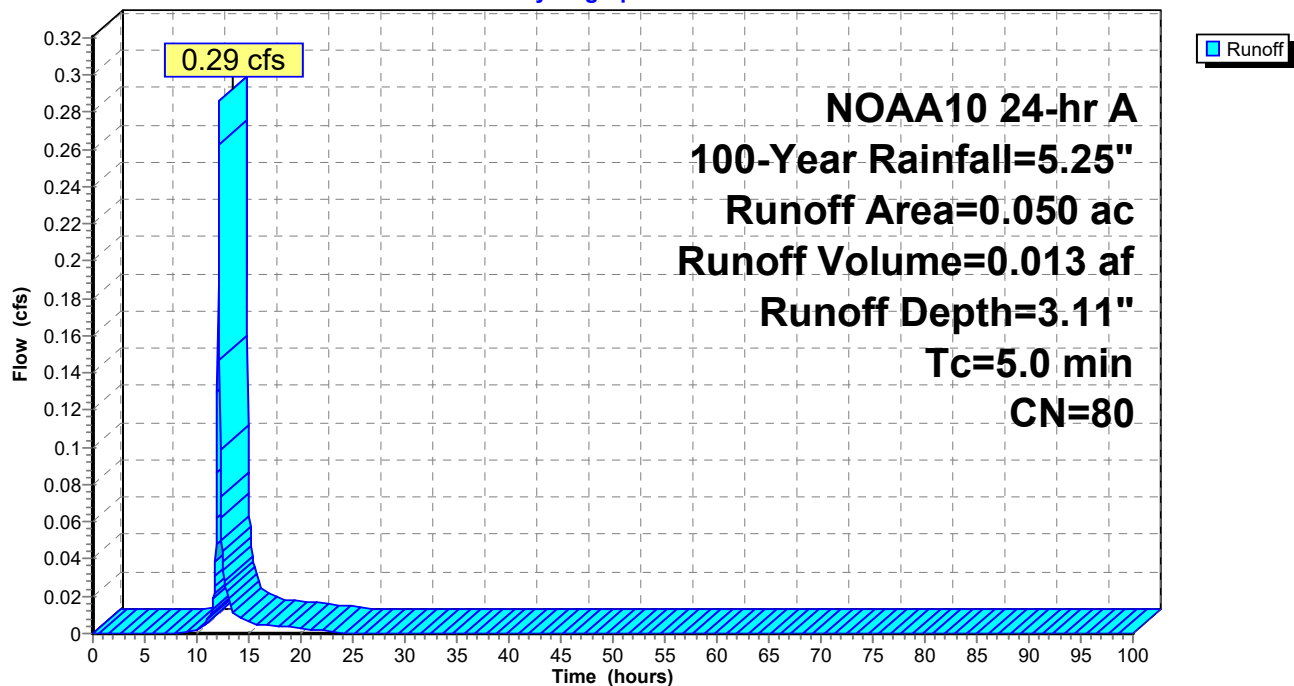
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, $dt=0.05$ hrs
NOAA10 24-hr A 100-Year Rainfall=5.25"

Area (ac)	CN	Description
0.050	80	>75% Grass cover, Good, HSG D
0.050		100.00% Pervious Area

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

Subcatchment 22S: DA-3 Post Dev

Hydrograph



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NOAA10 24-hr A 100-Year Rainfall=5.25"

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Page 36

Summary for Pond 20P: DETENTION POND #1

Inflow Area = 14.750 ac, 44.75% Impervious, Inflow Depth = 3.91" for 100-Year event
 Inflow = 67.88 cfs @ 12.25 hrs, Volume= 4.802 af
 Outflow = 15.58 cfs @ 12.67 hrs, Volume= 4.799 af, Atten= 77%, Lag= 25.2 min
 Primary = 15.58 cfs @ 12.67 hrs, Volume= 4.799 af
 Routed to nonexistent node 24L

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
 Peak Elev= 695.03' @ 12.67 hrs Surf.Area= 43,754 sf Storage= 98,263 cf

Plug-Flow detention time= 137.0 min calculated for 4.799 af (100% of inflow)
 Center-of-Mass det. time= 136.5 min (933.4 - 796.8)

Volume	Invert	Avail.Storage	Storage Description
#1	692.00'	144,521 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

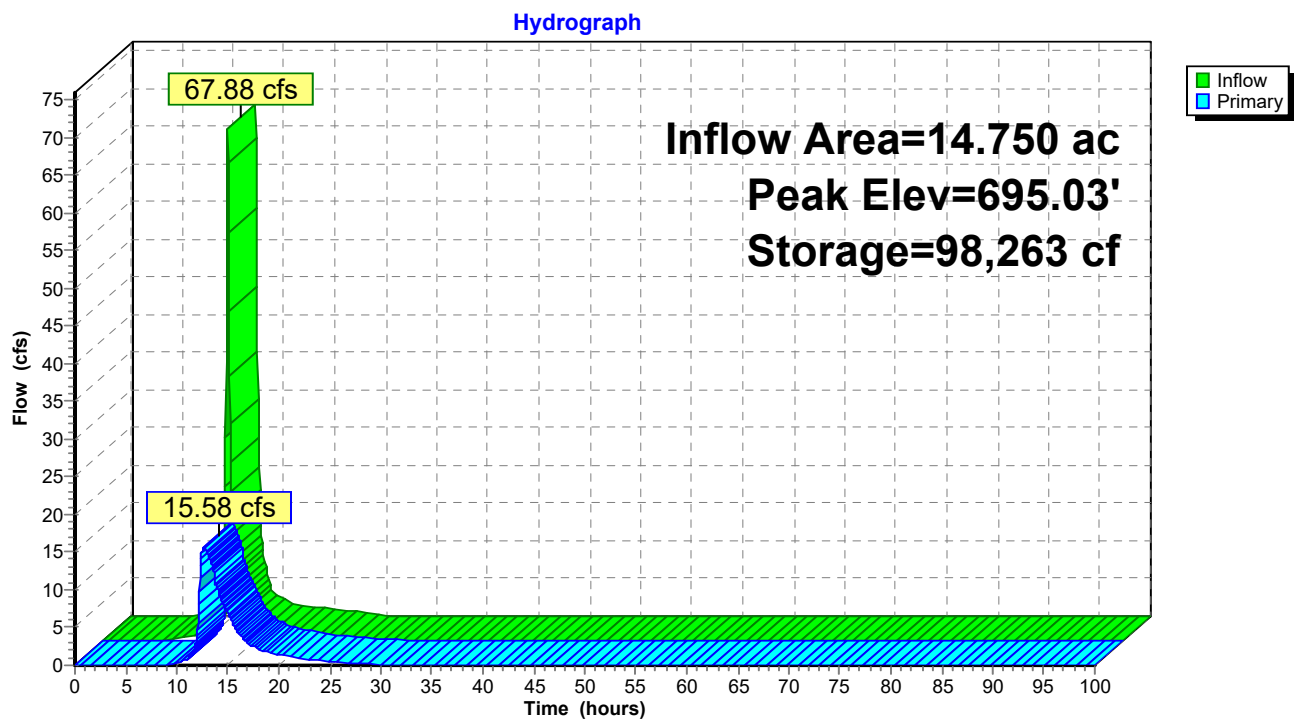
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
692.00	21,500	0	0
693.00	28,620	25,060	25,060
694.00	36,000	32,310	57,370
695.00	43,560	39,780	97,150
696.00	51,182	47,371	144,521

Device	Routing	Invert	Outlet Devices
#1	Primary	691.80'	24.0" Round Culvert L= 200.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 691.80' / 691.50' S= 0.0015 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	694.35'	48.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	692.00'	18.0" Round Culvert L= 5.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 692.00' / 691.90' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=15.58 cfs @ 12.67 hrs HW=695.02' (Free Discharge)

↑ **1=Culvert** (Barrel Controls 15.58 cfs @ 4.96 fps)
 ↑ **2=Grate** (Passes < 28.95 cfs potential flow)
 ↑ **3=Culvert** (Passes < 12.83 cfs potential flow)

Pond 20P: DETENTION POND #1



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NOAA10 24-hr A 100-Year Rainfall=5.25"

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Page 38

Summary for Pond 23P: DETENTION POND #2

Inflow Area = 10.110 ac, 44.21% Impervious, Inflow Depth = 3.91" for 100-Year event
 Inflow = 47.35 cfs @ 12.24 hrs, Volume= 3.292 af
 Outflow = 3.74 cfs @ 13.44 hrs, Volume= 3.283 af, Atten= 92%, Lag= 71.5 min
 Primary = 3.74 cfs @ 13.44 hrs, Volume= 3.283 af
 Routed to nonexistent node 24L

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
 Peak Elev= 696.18' @ 13.44 hrs Surf.Area= 34,943 sf Storage= 86,306 cf

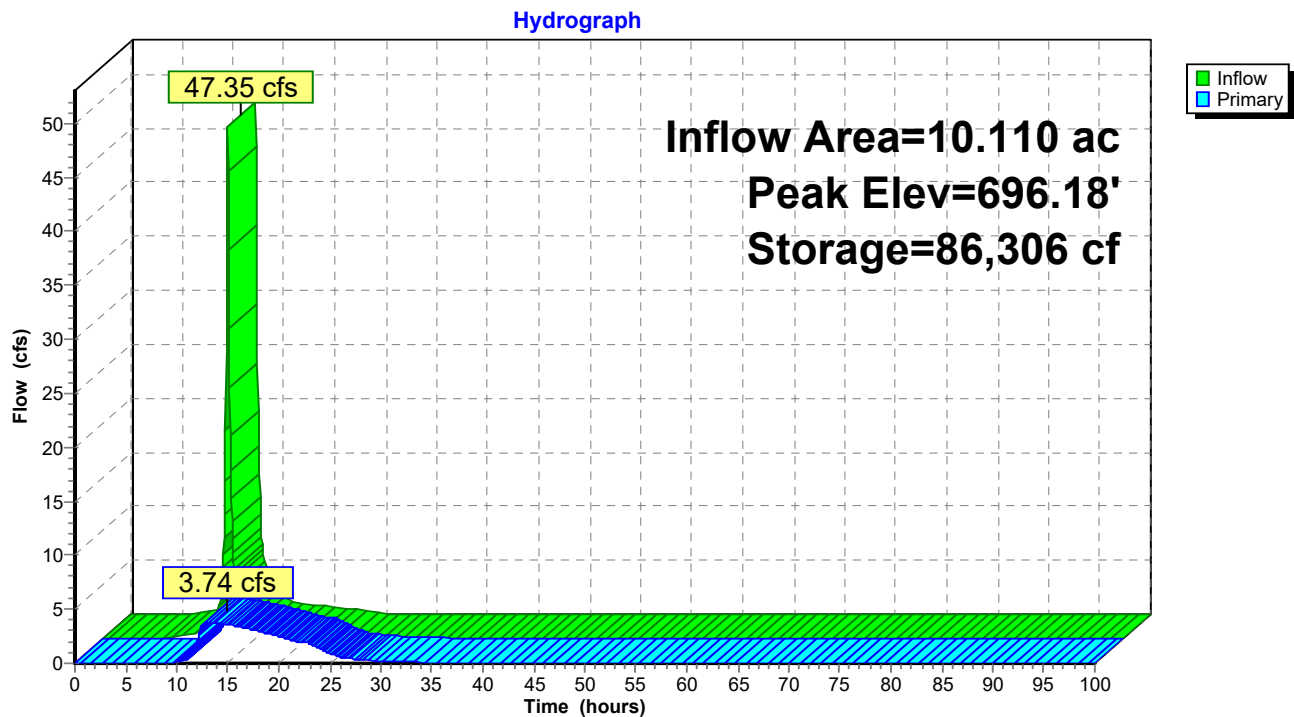
Plug-Flow detention time= 319.7 min calculated for 3.283 af (100% of inflow)
 Center-of-Mass det. time= 318.1 min (1,114.3 - 796.2)

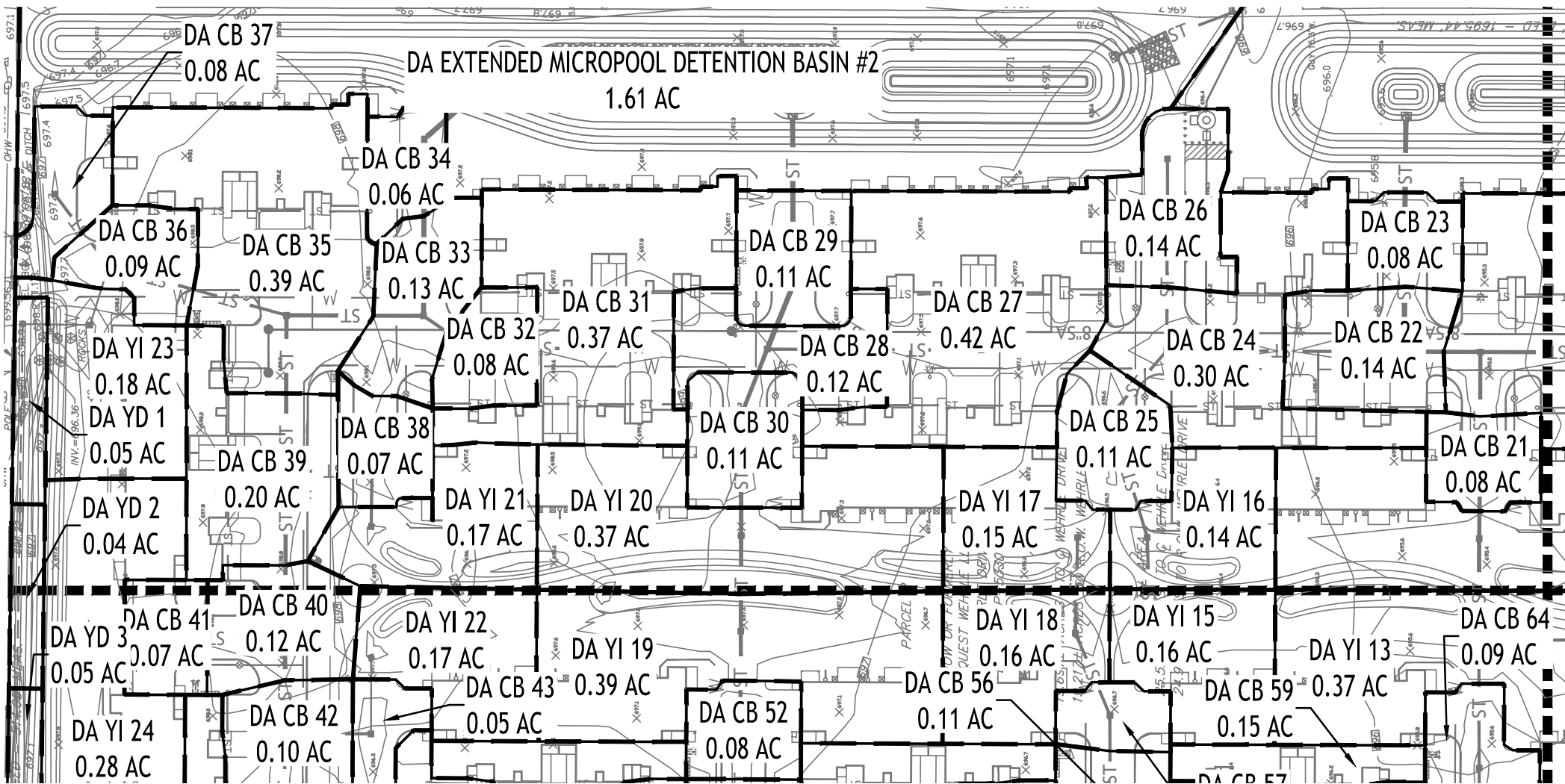
Volume	Invert	Avail.Storage	Storage Description
#1	693.00'	116,935 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
693.00	20,700	0	0
694.00	24,000	22,350	22,350
695.00	28,900	26,450	48,800
696.00	34,000	31,450	80,250
697.00	39,369	36,685	116,935

Device	Routing	Invert	Outlet Devices
#1	Primary	692.85'	12.0" Round Culvert L= 200.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 692.85' / 692.43' S= 0.0021 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	694.90'	36.0" x 36.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	693.00'	12.0" Round Culvert L= 5.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 693.00' / 692.95' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.74 cfs @ 13.44 hrs HW=696.18' (Free Discharge)

- ↑ **1=Culvert** (Barrel Controls 3.74 cfs @ 4.77 fps)
- ↑ **2=Grate** (Passes < 48.94 cfs potential flow)
- ↑ **3=Culvert** (Passes < 6.19 cfs potential flow)

Pond 23P: DETENTION POND #2

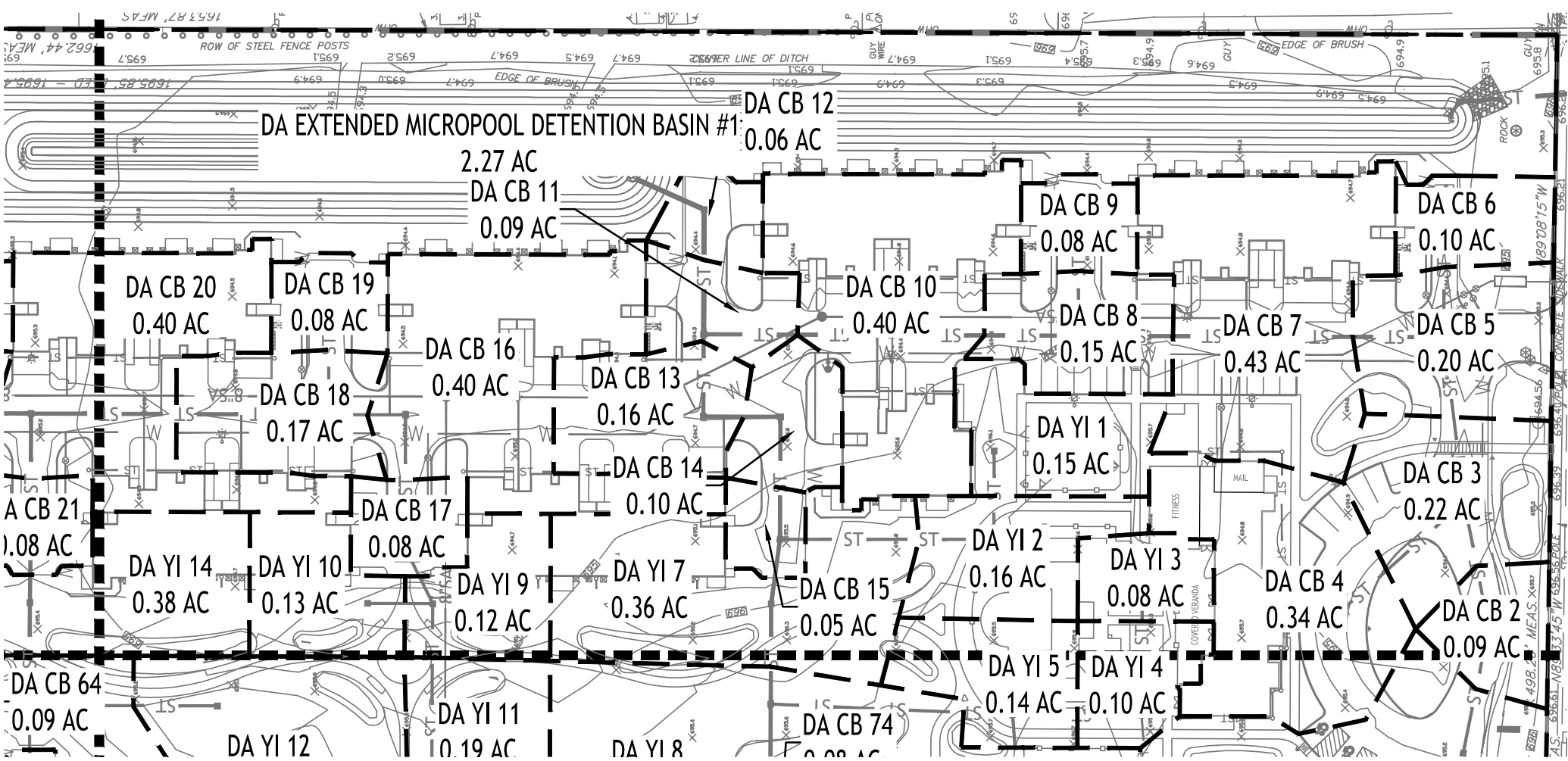


STORM MAP

SCALE: 1"=80'

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD DESIGN ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.



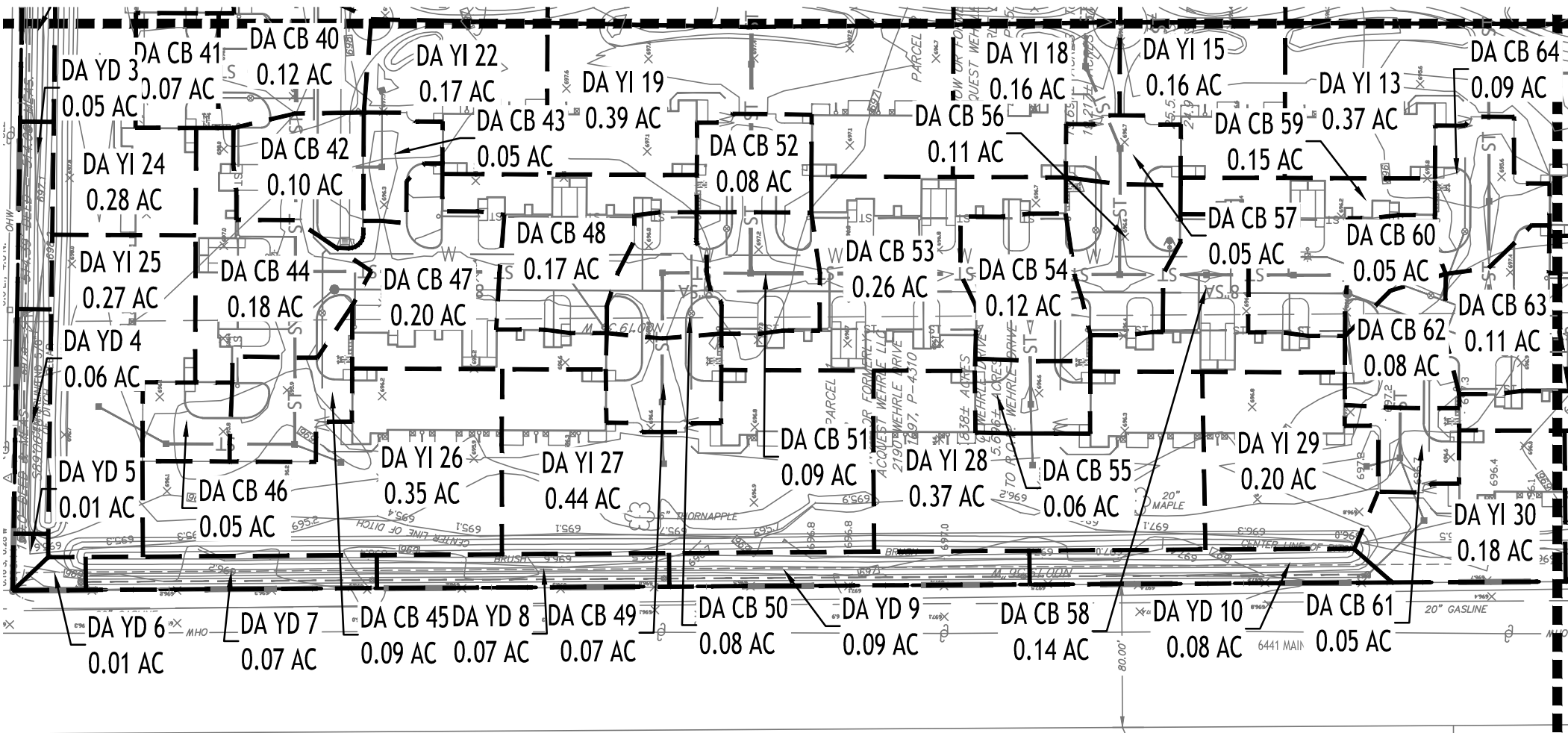


STORM MAP

SCALE: 1"=80'

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD DESIGN ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.



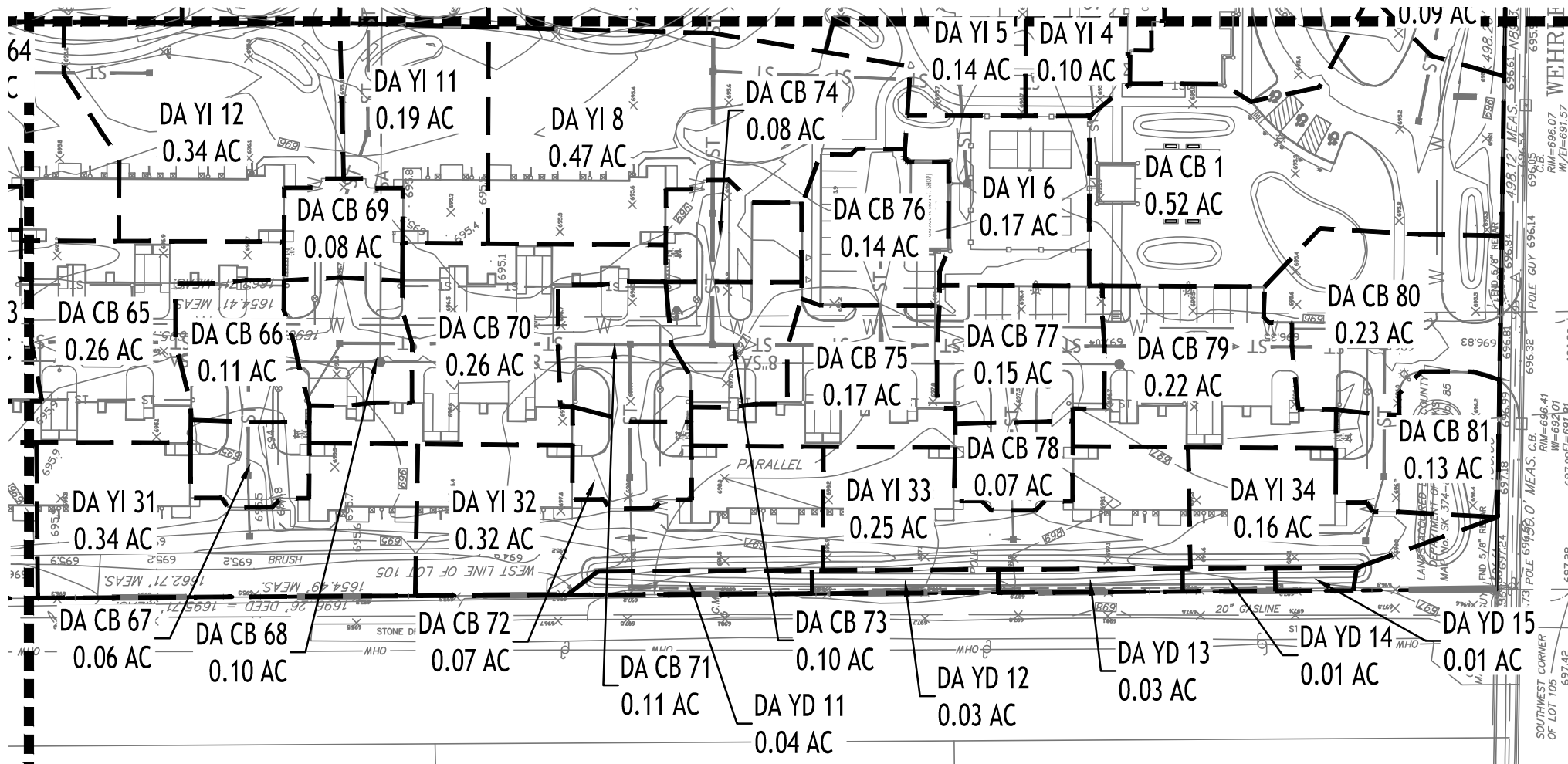


STORM MAP

SCALE: 1"=80'

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD DESIGN ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.





STORM MAP

SCALE: 1"=80'

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD DESIGN ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.



Storm Sewer Tabulation

Station		Len (ft)	Drng Area		Rnoff coeff (C)	Area x C		Tc		Rain (l) (in/hr)	Total flow (cfs)	Cap full (cfs)	Vel (ft/s)	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	40.406	0.06	7.28	0.65	0.04	3.93	11.0	81.1	1.2	4.88	10.07	2.90	24	0.20	692.00	692.08	693.07	693.13	694.25	695.08	CB 12 - ES 1
2	1	68.641	0.09	7.22	0.65	0.06	3.90	11.0	80.8	1.2	4.84	9.84	2.48	24	0.19	692.08	692.21	693.31	693.37	695.08	695.21	CB 11 - CB 12
3	2	45.207	0.16	4.60	0.65	0.10	2.42	11.0	80.6	1.2	3.02	5.63	1.91	18	0.29	692.21	692.34	693.52	693.55	695.21	694.84	CB 13 - CB 11
4	3	42.434	0.10	4.44	0.65	0.07	2.32	11.0	80.4	1.2	2.89	5.35	1.83	18	0.26	692.34	692.45	693.64	693.67	694.84	694.95	CB 14 - CB 13
5	4	67.351	0.05	4.34	0.65	0.03	2.25	11.0	80.1	1.3	2.82	5.28	1.82	18	0.25	692.45	692.62	693.75	693.79	694.95	695.15	CB 15 - CB 14
6	5	35.855	0.36	3.98	0.45	0.16	2.10	17.0	79.9	1.3	2.62	4.96	1.71	18	0.22	692.62	692.70	693.87	693.89	695.15	695.20	YI 7 - CB 15
7	6	55.176	0.47	3.62	0.45	0.21	1.93	17.0	79.6	1.3	2.43	4.69	1.64	18	0.20	692.70	692.81	693.91	693.94	695.20	695.31	YI 8 - YI 7
8	7	76.588	0.08	2.66	0.65	0.05	1.49	11.0	79.1	1.3	1.88	4.65	1.32	18	0.20	692.81	692.96	694.01	694.03	695.31	695.46	CB 74 - YI 8
9	8	71.032	0.10	2.58	0.65	0.07	1.44	11.0	78.7	1.3	1.82	4.66	1.42	18	0.20	692.96	693.10	694.05	694.07	695.46	695.60	CB 73 - CB 74
10	9	44.182	0.11	0.96	0.65	0.07	0.49	11.0	78.3	1.3	0.62	1.61	0.80	12	0.20	693.10	693.19	694.15	694.16	695.60	695.19	CB 71 - CB 73
11	10	71.749	0.07	0.51	0.65	0.05	0.20	11.0	76.8	1.3	0.25	1.57	0.34	12	0.20	693.19	693.33	694.18	694.18	695.19	695.33	CB 72 - CB 71
12	11	32.764	0.32	0.44	0.40	0.13	0.15	18.0	76.6	1.3	0.20	0.38	1.00	6	0.40	693.33	693.46	694.18	694.22	695.33	694.91	YI 32 - CB 72
13	12	27.066	0.04	0.12	0.20	0.01	0.02	15.0	75.5	1.3	0.03	0.61	0.16	6	1.00	693.46	693.73	694.23	694.23	694.91	696.87	YD 11 - YI 32
14	13	100.002	0.03	0.08	0.20	0.01	0.02	15.0	69.6	1.4	0.02	0.47	0.59	6	0.60	693.73	694.33	694.23	694.41	696.87	697.91	YD 12 - YD 11
15	14	100.000	0.03	0.05	0.20	0.01	0.01	15.0	60.3	1.5	0.02	0.46	0.89	6	0.57	694.33	694.90	694.42	694.96	697.91	698.00	YD 13 - YD 12
16	15	100.000	0.01	0.02	0.20	0.00	0.00	15.0	37.5	2.1	0.01	0.43	0.79	6	0.50	694.90	695.40	694.96	695.44	698.00	697.31	YD 14 - YD 13
17	16	50.000	0.01	0.01	0.20	0.00	0.00	15.0	15.0	3.6	0.01	0.43	0.80	6	0.50	695.40	695.65	695.45	695.69	697.31	697.13	YD 15 - YD 14
18	End	92.008	0.11	3.90	0.65	0.07	2.12	11.0	27.5	2.5	5.35	10.00	3.73	24	0.20	693.00	693.18	693.83	694.25	695.25	696.18	CB 29 - ES 3
19	18	38.495	0.12	3.79	0.65	0.08	2.05	11.0	27.1	2.5	5.21	10.31	2.78	24	0.21	693.18	693.26	694.35	694.39	696.18	696.26	CB 28 - CB 29
20	19	39.324	0.11	3.25	0.65	0.07	1.70	11.0	26.9	2.6	4.34	4.74	2.65	18	0.20	693.26	693.34	694.58	694.64	696.26	696.04	CB 30 - CB 28
21	20	67.489	0.37	3.14	0.45	0.17	1.62	17.0	26.5	2.6	4.20	4.78	2.52	18	0.21	693.34	693.48	694.71	694.80	696.04	695.98	YI 20 - CB 30
22	21	53.224	0.39	2.77	0.45	0.18	1.46	17.0	26.2	2.6	3.80	4.78	2.28	18	0.21	693.48	693.59	694.85	694.91	695.98	696.09	YI 19 - YI 20

Project File: New.stm

Number of lines: 130

Run Date: 7/30/2026

NOTES: Intensity = $29.35 / (\text{Inlet time} + 3.80)^{0.71}$; Return period = Yrs. 10 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID	
Line	To Line		Incr	Total		Incr	Total	Inlet	Syst					Size	Slope	Dn	Up	Dn	Up	Dn	Up		
		(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)		
23	22	47.040	0.08	2.38	0.65	0.05	1.28	11.0	25.8	2.6	3.37	4.59	2.03	18	0.19	693.59	693.68	694.95	694.99	696.09	696.19	CB 52 - YI 19	
24	23	69.574	0.09	2.30	0.65	0.06	1.23	11.0	25.3	2.7	3.27	4.71	2.02	18	0.20	693.68	693.82	695.02	695.07	696.19	696.33	CB 51 - CB 52	
25	24	77.908	0.26	1.62	0.65	0.17	0.90	11.0	24.5	2.7	2.44	4.61	1.46	18	0.19	693.82	693.97	695.23	695.26	696.33	696.49	CB 53 - CB 51	
26	25	77.908	0.12	1.36	0.65	0.08	0.73	11.0	23.5	2.8	2.03	4.76	1.31	18	0.21	693.97	694.13	695.28	695.30	696.49	696.68	CB 54 - CB 53	
27	26	50.231	0.11	0.81	0.65	0.07	0.46	11.0	23.1	2.8	1.31	1.59	1.66	12	0.20	694.13	694.23	695.35	695.41	696.68	696.65	CB 56 - CB 54	
28	27	70.345	0.05	0.36	0.65	0.03	0.17	11.0	21.5	2.9	0.51	1.59	0.64	12	0.20	694.23	694.37	695.49	695.50	696.65	696.97	CB 57 - CB 56	
29	28	49.763	0.16	0.31	0.45	0.07	0.14	17.0	20.1	3.1	0.43	1.60	0.54	12	0.20	694.37	694.47	695.51	695.52	696.97	696.48	YI 18 - CB 57	
30	29	53.465	0.15	0.15	0.45	0.07	0.07	17.0	17.0	3.4	0.23	1.62	0.29	12	0.21	694.47	694.58	695.52	695.52	696.48	696.58	YI 17 - YI 18	
31	27	48.502	0.14	0.34	0.65	0.09	0.22	11.0	17.8	3.3	0.73	1.62	0.92	12	0.21	694.23	694.33	695.49	695.51	696.65	696.85	CB 58 - CB 56	
32	31	48.502	0.15	0.20	0.65	0.10	0.13	11.0	16.7	3.4	0.44	1.62	0.57	12	0.21	694.33	694.43	695.52	695.52	696.85	696.95	CB 59 - CB 58	
33	32	60.628	0.05	0.05	0.65	0.03	0.03	11.0	11.0	4.3	0.14	1.58	0.18	12	0.20	694.43	694.55	695.53	695.53	696.95	697.07	CB 60 - CB 59	
34	End	43.238	0.06	4.24	0.65	0.04	2.32	11.0	89.8	1.2	2.69	12.40	2.21	24	0.30	693.00	693.13	693.88	693.90	695.25	696.13	CB 34 - ES 4	
35	34	98.712	0.13	4.18	0.65	0.08	2.28	11.0	89.1	1.2	2.66	11.61	2.34	24	0.26	693.13	693.39	694.01	694.10	696.13	696.39	CB 33 - CB 34	
36	35	76.470	0.39	3.49	0.65	0.25	1.84	11.0	88.7	1.2	2.14	4.95	2.04	18	0.22	693.39	693.56	694.31	694.37	696.39	696.06	CB 35 - CB 33	
37	36	86.892	0.20	2.54	0.65	0.13	1.36	11.0	22.7	2.8	3.86	4.64	2.94	18	0.20	693.56	693.73	694.60	694.78	696.06	696.23	CB 39 - CB 35	
38	37	93.371	0.12	2.10	0.65	0.08	1.11	11.0	21.9	2.9	3.21	4.74	2.14	18	0.20	693.73	693.92	694.98	695.06	696.23	696.42	CB 40 - CB 39	
39	38	53.127	0.10	1.63	0.65	0.07	0.87	11.0	21.3	3.0	2.57	4.78	1.68	18	0.21	693.92	694.03	695.17	695.20	696.42	696.53	CB 42 - CB 40	
40	39	58.352	0.18	1.31	0.65	0.12	0.70	11.0	21.0	3.0	2.08	1.86	2.64	12	0.27	694.03	694.19	695.27	695.47	696.53	696.40	CB 44 - CB 42	
41	40	96.547	0.09	0.76	0.65	0.06	0.34	11.0	19.9	3.1	1.04	1.58	1.33	12	0.20	694.19	694.38	695.63	695.72	696.40	696.40	CB 45 - CB 44	
42	41	71.833	0.05	0.32	0.65	0.03	0.14	11.0	17.9	3.3	0.46	1.57	0.59	12	0.19	694.38	694.52	695.78	695.79	696.40	696.52	CB 46 - CB 45	
43	40	75.849	0.20	0.37	0.65	0.13	0.24	11.0	13.1	3.9	0.94	1.58	1.20	12	0.20	694.19	694.34	695.63	695.69	696.40	696.38	CB 47 - CB 44	
44	43	75.850	0.17	0.17	0.65	0.11	0.11	11.0	11.0	4.3	0.48	1.58	0.61	12	0.20	694.34	694.49	695.70	695.71	696.38	696.49	CB 48 - CB 47	
Project File: New.stm																Number of lines: 130				Run Date: 7/30/2026			
NOTES:Intensity = 29.35 / (Inlet time + 3.80) ^ 0.71; Return period =Yrs. 10 ; c = cir e = ellip b = box																							

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (l)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID	
Line	To Line		Incr	Total		Incr	Total	Inlet	Syst					Size	Slope	Dn	Up	Dn	Up	Dn	Up		
		(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)		
45	End	54.763	0.08	5.39	0.65	0.05	2.80	11.0	113.9	1.0	2.75	10.14	1.88	24	0.20	692.00	692.11	692.99	693.02	694.25	695.49	CB 23 - ES 2	
46	45	73.286	0.08	5.31	0.65	0.05	2.74	11.0	113.4	1.0	2.70	10.23	2.02	24	0.20	692.11	692.26	693.05	693.09	695.49	695.26	CB 22 - CB 23	
47	46	42.434	0.14	4.38	0.65	0.09	2.20	11.0	113.2	1.0	2.17	5.81	1.99	18	0.31	692.26	692.39	693.20	693.23	695.26	695.04	CB 20 - CB 22	
48	47	71.792	0.08	2.97	0.65	0.05	1.37	11.0	112.7	1.0	1.36	4.64	1.21	18	0.20	692.39	692.53	693.37	693.38	695.04	695.05	CB 21 - CB 20	
49	48	32.286	0.38	2.89	0.45	0.17	1.32	17.0	112.5	1.0	1.31	4.53	1.28	18	0.19	692.53	692.59	693.40	693.41	695.05	695.09	YI 14 - CB 21	
50	49	56.448	0.37	2.51	0.45	0.17	1.15	17.0	112.0	1.0	1.14	4.64	1.23	18	0.19	692.59	692.70	693.42	693.44	695.09	695.40	YI 13 - YI 14	
51	50	71.634	0.09	1.80	0.65	0.06	0.85	11.0	111.6	1.0	0.84	1.57	1.38	12	0.20	692.70	692.84	693.48	693.52	695.40	695.65	CB 64 - YI 13	
52	51	73.792	0.11	1.71	0.65	0.07	0.79	11.0	111.2	1.0	0.79	1.61	1.46	12	0.20	692.84	692.99	693.54	693.59	695.65	695.65	CB 63 - CB 64	
53	52	49.182	0.08	0.83	0.65	0.05	0.30	11.0	110.5	1.0	0.30	1.61	0.57	12	0.20	692.99	693.09	693.68	693.69	695.65	695.75	CB 62 - CB 63	
54	53	69.535	0.05	0.75	0.65	0.03	0.25	11.0	109.3	1.0	0.25	1.60	0.59	12	0.20	693.09	693.23	693.70	693.71	695.75	695.89	CB 61 - CB 62	
55	54	37.490	0.18	0.50	0.40	0.07	0.14	17.0	109.0	1.0	0.14	0.28	0.74	6	0.21	693.23	693.31	693.72	693.73	695.89	695.59	YI 30 - CB 61	
56	55	43.529	0.08	0.32	0.20	0.02	0.06	15.0	108.3	1.0	0.07	0.37	0.45	6	0.37	693.30	693.46	693.75	693.75	695.59	696.56	YD 10 - YI 30	
57	56	192.180	0.09	0.24	0.20	0.02	0.05	15.0	104.3	1.0	0.05	0.27	0.77	6	0.20	693.46	693.84	693.76	693.98	696.56	697.40	YD 9 - YD 10	
58	57	200.727	0.07	0.15	0.20	0.01	0.03	15.0	97.9	1.1	0.03	0.27	0.86	6	0.20	693.84	694.24	693.99	694.35	697.40	696.34	YD 8 - YD 9	
59	58	162.851	0.07	0.08	0.20	0.01	0.02	15.0	88.4	1.2	0.02	0.27	0.73	6	0.20	694.24	694.57	694.36	694.65	696.34	696.00	YD 7 - YD 8	
60	59	162.851	0.01	0.01	0.20	0.00	0.00	15.0	15.0	3.6	0.01	0.27	0.52	6	0.20	694.57	694.90	694.66	694.95	696.00	696.35	YD 6 - YD 7	
61	42	42.934	0.27	0.27	0.40	0.11	0.11	17.0	17.0	3.4	0.36	0.99	0.83	9	0.30	694.52	694.65	695.79	695.81	696.52	696.15	YI 25 - CB 46	
62	36	102.914	0.09	0.56	0.65	0.06	0.22	11.0	86.9	1.2	0.27	1.61	0.39	12	0.20	693.56	693.77	694.49	694.49	696.06	695.77	CB 36 - CB 35	
63	62	34.588	0.18	0.39	0.40	0.07	0.11	17.0	86.6	1.2	0.14	0.27	0.69	6	0.20	693.77	693.84	694.50	694.52	695.77	695.58	YI 23 - CB 36	
64	63	37.501	0.05	0.21	0.20	0.01	0.04	15.0	85.7	1.2	0.05	0.28	0.26	6	0.21	693.84	693.92	694.53	694.53	695.58	698.72	YD 1 - YI 23	
65	64	103.577	0.04	0.16	0.20	0.01	0.03	15.0	82.6	1.2	0.04	0.26	0.21	6	0.18	693.92	694.11	694.53	694.54	698.72	697.07	YD 2 - YD 1	
66	65	103.577	0.05	0.12	0.20	0.01	0.02	15.0	78.5	1.3	0.03	0.26	0.25	6	0.18	694.11	694.30	694.54	694.54	697.07	697.01	YD 3 - YD 2	
Project File: New.stm																Number of lines: 130				Run Date: 7/30/2026			
NOTES:Intensity = 29.35 / (Inlet time + 3.80) ^ 0.71; Return period =Yrs. 10 ; c = cir e = ellip b = box																							

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr	Total		Incr	Total	Inlet	Syst					Size	Slope	Dn	Up	Dn	Up	Dn	Up	
		(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
67	66	103.577	0.06	0.07	0.20	0.01	0.01	15.0	71.6	1.3	0.02	0.27	0.43	6	0.19	694.30	694.50	694.54	694.60	697.01	697.02	YD 4 - YD 3
68	67	125.655	0.01	0.01	0.20	0.00	0.00	15.0	15.0	3.6	0.01	0.27	0.46	6	0.19	694.50	694.74	694.60	694.79	697.02	696.24	YD 5 - YD 4
69	26	72.591	0.06	0.43	0.65	0.04	0.19	11.0	17.5	3.3	0.62	1.67	0.79	12	0.22	694.13	694.29	695.35	695.37	696.68	696.88	CB 55 - CB 54
70	41	27.737	0.35	0.35	0.40	0.14	0.14	17.0	17.0	3.4	0.47	0.83	1.07	9	0.22	694.38	694.44	695.78	695.79	696.40	696.04	YI 26 - CB 45
71	69	33.935	0.37	0.37	0.40	0.15	0.15	17.0	17.0	3.4	0.50	0.81	1.13	9	0.21	694.29	694.36	695.37	695.40	696.88	696.29	YI 28 - CB 55
72	39	48.060	0.05	0.22	0.65	0.03	0.11	11.0	15.5	3.6	0.39	1.62	0.49	12	0.21	694.03	694.13	695.27	695.28	696.53	696.51	CB 43 - CB 42
73	37	48.066	0.07	0.24	0.65	0.05	0.12	11.0	18.6	3.2	0.39	2.57	0.50	12	0.52	693.73	693.98	694.98	694.98	696.23	696.70	CB 38 - CB 39
74	73	30.793	0.17	0.17	0.45	0.08	0.08	17.0	17.0	3.4	0.26	1.93	0.34	12	0.29	693.98	694.07	694.99	694.99	696.70	695.88	YI 21 - CB 38
75	38	73.274	0.07	0.35	0.65	0.05	0.16	11.0	17.3	3.3	0.53	1.61	0.67	12	0.20	693.92	694.07	695.17	695.19	696.42	696.34	CB 41 - CB 40
76	24	49.217	0.08	0.59	0.65	0.05	0.27	11.0	18.7	3.2	0.87	1.61	1.11	12	0.20	693.82	693.92	695.23	695.25	696.33	696.43	CB 50 - CB 51
77	76	72.119	0.07	0.51	0.65	0.05	0.22	11.0	17.4	3.3	0.74	1.57	0.94	12	0.19	693.92	694.06	695.28	695.31	696.43	696.57	CB 49 - CB 50
78	9	90.643	0.17	1.52	0.65	0.11	0.89	11.0	22.1	2.9	2.56	4.68	2.06	18	0.20	693.10	693.28	694.15	694.22	695.60	695.78	CB 75 - CB 73
79	78	71.258	0.15	1.21	0.65	0.10	0.68	11.0	21.6	2.9	2.00	1.93	2.55	12	0.29	693.28	693.49	694.34	694.56	695.78	695.49	CB 77 - CB 75
80	79	100.542	0.22	0.74	0.65	0.14	0.44	11.0	20.7	3.0	1.33	1.59	1.69	12	0.20	693.49	693.69	694.71	694.85	695.49	695.69	CB 79 - CB 77
81	80	100.542	0.23	0.52	0.65	0.15	0.30	11.0	19.4	3.1	0.93	1.59	1.19	12	0.20	693.69	693.89	694.87	694.94	695.69	695.89	CB 80 - CB 79
82	81	69.781	0.13	0.29	0.65	0.08	0.15	11.0	17.5	3.3	0.49	1.60	0.63	12	0.20	693.89	694.03	694.98	694.99	695.89	696.03	CB 81 - CB 80
83	72	42.709	0.17	0.17	0.45	0.08	0.08	15.0	15.0	3.6	0.28	0.43	1.41	6	0.50	694.14	694.35	695.28	695.37	696.51	695.85	YI 22 - CB 43
84	75	36.432	0.28	0.28	0.40	0.11	0.11	17.0	17.0	3.4	0.38	0.60	1.93	6	0.99	694.07	694.43	695.19	695.34	696.34	695.93	YI 24 - CB 41
85	77	34.396	0.44	0.44	0.40	0.18	0.18	17.0	17.0	3.4	0.59	0.81	1.35	9	0.20	694.06	694.13	695.32	695.36	696.57	696.07	YI 27 - CB 49
86	82	36.082	0.16	0.16	0.40	0.06	0.06	17.0	17.0	3.4	0.22	0.27	1.10	6	0.19	694.03	694.10	694.99	695.04	696.03	695.43	YI 34 - CB 81
87	62	50.178	0.08	0.08	0.65	0.05	0.05	11.0	11.0	4.3	0.22	1.59	0.39	12	0.20	693.77	693.87	694.50	694.50	695.77	695.87	CB 37 - CB 36
88	47	163.649	0.40	1.27	0.65	0.26	0.74	11.0	21.2	3.0	2.18	4.72	2.05	18	0.20	692.39	692.72	693.37	693.51	695.04	695.26	CB 18 - CB 20
Project File: New.stm																Number of lines: 130				Run Date: 7/30/2026		
NOTES:Intensity = 29.35 / (Inlet time + 3.80) ^ 0.71; Return period =Yrs. 10 ; c = cir e = ellip b = box																						

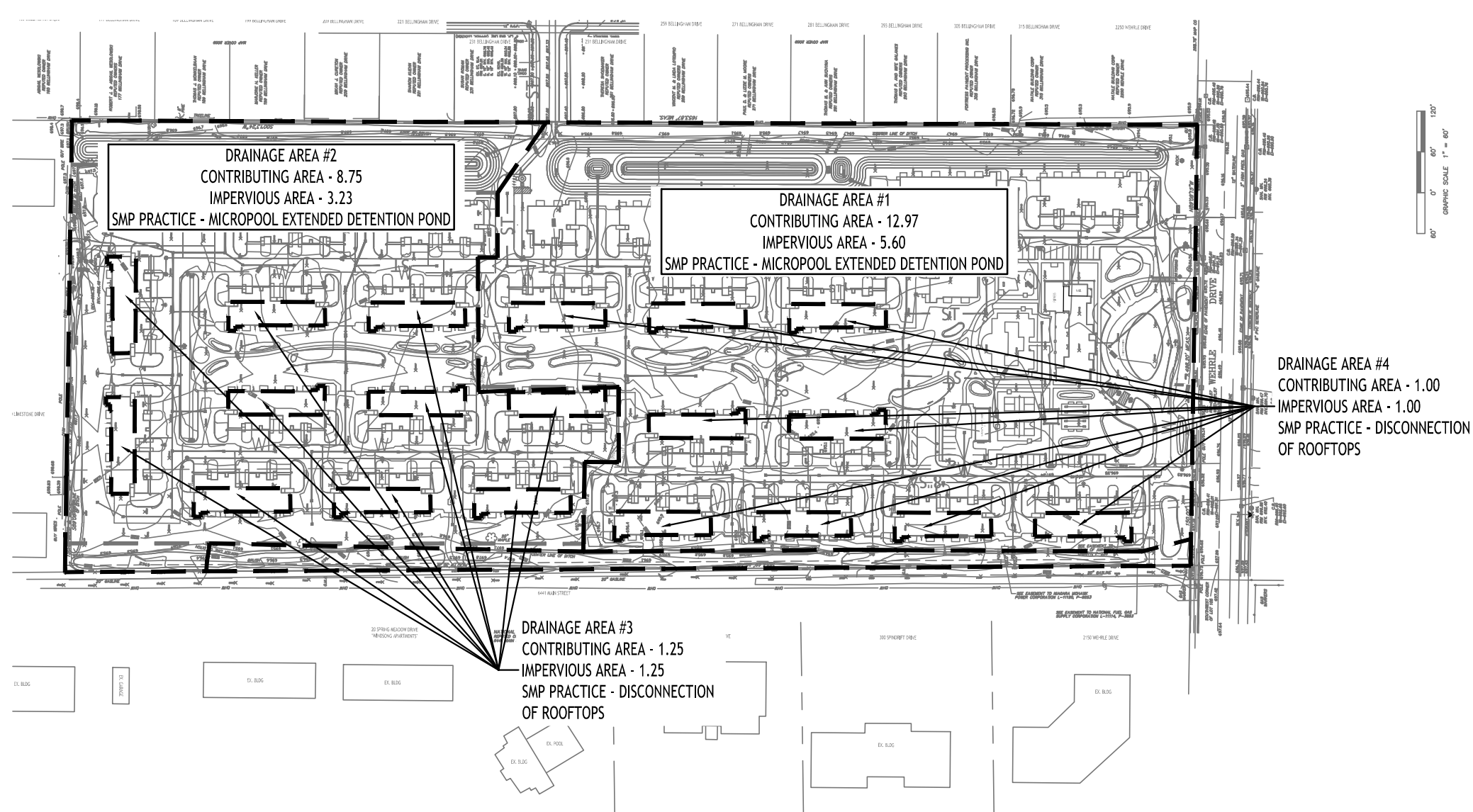
Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr	Total		Incr	Total	Inlet	Syst					Size	Slope	Dn	Up	Dn	Up	Dn	Up	
		(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
89	88	42.369	0.17	0.79	0.65	0.11	0.43	11.0	20.8	3.0	1.28	2.51	1.86	12	0.50	692.72	692.93	693.64	693.67	695.26	694.93	CB 16 - CB 18
90	89	73.146	0.08	0.62	0.65	0.05	0.32	11.0	19.9	3.1	0.97	2.24	1.67	12	0.40	692.93	693.22	693.77	693.82	694.93	695.36	CB 17 - CB 16
91	90	34.238	0.12	0.54	0.45	0.05	0.26	17.0	19.4	3.1	0.82	1.92	1.64	12	0.29	693.22	693.32	693.87	693.90	695.36	695.33	YI 9 - CB 17
92	91	88.857	0.19	0.29	0.45	0.09	0.15	17.0	17.0	3.4	0.51	1.65	1.13	12	0.21	693.32	693.51	693.97	694.01	695.33	695.51	YI 11 - YI 9
93	92	44.733	0.10	0.10	0.65	0.07	0.07	11.0	11.0	4.3	0.28	1.60	0.78	12	0.20	693.51	693.60	694.02	694.03	695.51	695.60	CB 69 - YI 11
94	79	71.300	0.07	0.32	0.65	0.05	0.15	11.0	17.3	3.3	0.49	1.58	0.62	12	0.20	693.49	693.63	694.71	694.73	695.49	695.63	CB 78 - CB 77
95	35	31.529	0.08	0.56	0.65	0.05	0.36	11.0	11.7	4.2	1.51	1.68	2.02	12	0.22	693.39	693.46	694.31	694.36	696.39	696.55	CB 32 - CB 33
96	95	75.707	0.48	0.48	0.65	0.31	0.31	11.0	11.0	4.3	1.34	2.32	1.97	12	0.42	693.46	693.78	694.42	694.51	696.55	696.36	CB 31 - CB 32
97	2	103.042	0.40	2.53	0.65	0.26	1.42	11.0	20.6	3.0	4.27	4.74	2.66	18	0.20	692.21	692.42	693.52	693.67	695.21	694.95	CB 10 - CB 11
98	97	103.042	0.15	2.13	0.65	0.10	1.16	11.0	19.8	3.1	3.57	4.74	2.26	18	0.20	692.42	692.63	693.73	693.83	694.95	695.13	CB 8 - CB 10
99	98	100.543	0.43	1.90	0.60	0.26	1.01	11.0	19.0	3.2	3.19	4.68	2.01	18	0.20	692.63	692.83	693.96	694.04	695.13	695.33	CB 7 - CB 8
100	99	100.543	0.20	1.47	0.50	0.10	0.75	11.0	17.8	3.3	2.46	4.68	1.67	18	0.20	692.83	693.03	694.07	694.13	695.33	695.53	CB 5 - CB 7
101	100	91.255	0.22	1.17	0.50	0.11	0.58	11.0	17.2	3.3	1.96	1.97	2.49	12	0.31	693.03	693.31	694.20	694.48	695.53	695.31	CB 3 - CB 5
102	101	70.530	0.09	0.61	0.50	0.05	0.25	11.0	16.2	3.5	0.88	1.59	1.12	12	0.20	693.31	693.45	694.60	694.64	695.31	695.45	CB 2 - CB 3
103	102	70.530	0.52	0.52	0.40	0.21	0.21	15.0	15.0	3.6	0.76	1.59	0.96	12	0.20	693.45	693.59	694.65	694.69	695.45	695.59	CB 1 - CB 2
104	94	33.212	0.25	0.25	0.40	0.10	0.10	17.0	17.0	3.4	0.34	0.38	1.72	6	0.39	693.63	693.76	694.73	694.83	695.63	694.94	YI 33 - CB 78
105	10	78.451	0.26	0.34	0.65	0.17	0.22	11.0	15.6	3.6	0.78	1.61	1.05	12	0.20	693.19	693.35	694.18	694.21	695.19	695.35	CB 70 - CB 71
106	105	78.451	0.08	0.08	0.65	0.05	0.05	11.0	11.0	4.3	0.22	1.61	0.34	12	0.20	693.35	693.51	694.22	694.22	695.35	695.51	CB 68 - CB 70
107	91	35.815	0.13	0.13	0.45	0.06	0.06	17.0	17.0	3.4	0.20	1.57	0.39	12	0.20	693.32	693.39	693.97	693.97	695.33	695.39	YI 10 - YI 9
108	52	78.450	0.26	0.77	0.65	0.17	0.42	11.0	20.4	3.0	1.26	1.61	2.20	12	0.20	692.99	693.15	693.68	693.83	695.65	695.31	CB 65 - CB 63
109	108	78.450	0.11	0.51	0.65	0.07	0.25	11.0	19.1	3.2	0.78	1.61	1.42	12	0.20	693.15	693.31	693.87	693.92	695.31	695.31	CB 66 - CB 65
110	109	71.684	0.06	0.40	0.65	0.04	0.18	11.0	17.5	3.3	0.58	1.57	1.17	12	0.20	693.31	693.45	693.97	694.01	695.31	695.45	CB 67 - CB 66
Project File: New.stm																Number of lines: 130				Run Date: 7/30/2026		
NOTES:Intensity = 29.35 / (Inlet time + 3.80) ^ 0.71; Return period =Yrs. 10 ; c = cir e = ellip b = box																						

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (l)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr	Total		Incr	Total	Inlet	Syst					Size	Slope	Dn	Up	Dn	Up	Dn	Up	
		(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
111	101	103.697	0.34	0.34	0.65	0.22	0.22	11.0	11.0	4.3	0.95	1.60	1.21	12	0.20	693.31	693.52	694.60	694.67	695.31	695.52	CB 4 - CB 3
112	78	63.821	0.14	0.14	0.65	0.09	0.09	11.0	11.0	4.3	0.39	1.61	0.51	12	0.20	693.28	693.41	694.34	694.34	695.78	695.41	CB 76 - CB 75
113	19	119.429	0.42	0.42	0.65	0.27	0.27	11.0	11.0	4.3	1.18	1.60	1.50	12	0.20	693.26	693.50	694.58	694.71	696.26	696.02	CB 27 - CB 28
114	7	133.192	0.14	0.49	0.45	0.06	0.23	17.0	29.4	2.4	0.55	1.60	0.71	12	0.20	692.81	693.08	694.01	694.04	695.31	696.04	YI 5 - YI 8
115	114	71.024	0.10	0.18	0.45	0.05	0.08	17.0	25.9	2.6	0.21	1.58	0.29	12	0.20	693.08	693.22	694.05	694.05	696.04	696.04	YI 4 - YI 5
116	115	83.104	0.08	0.08	0.45	0.04	0.04	17.0	17.0	3.4	0.12	1.61	0.20	12	0.20	693.22	693.39	694.05	694.06	696.04	696.05	YI 3 - YI 4
117	110	32.829	0.34	0.34	0.40	0.14	0.14	17.0	17.0	3.4	0.46	1.25	1.52	9	0.49	693.45	693.61	694.02	694.04	695.45	695.13	YI 31 - CB 67
118	114	54.971	0.17	0.17	0.50	0.09	0.09	15.0	15.0	3.6	0.31	1.59	0.41	12	0.20	693.08	693.19	694.05	694.05	696.04	695.80	YI 6 - YI 5
119	100	71.371	0.10	0.10	0.65	0.07	0.07	11.0	11.0	4.3	0.28	1.58	0.36	12	0.20	693.03	693.17	694.20	694.20	695.53	695.27	CB 6 - CB 5
120	54	19.290	0.20	0.20	0.40	0.08	0.08	17.0	17.0	3.4	0.27	0.28	1.39	6	0.21	693.23	693.27	693.72	693.75	695.89	695.36	YI 29 - CB 61
121	5	117.589	0.16	0.31	0.40	0.06	0.12	17.0	20.1	3.1	0.38	1.61	0.48	12	0.20	692.62	692.86	693.87	693.88	695.15	695.49	YI 2 - CB 15
122	121	48.568	0.15	0.15	0.40	0.06	0.06	17.0	17.0	3.4	0.20	1.62	0.26	12	0.21	692.86	692.96	693.89	693.89	695.49	695.50	YI 1 - YI 2
123	46	132.481	0.30	0.85	0.65	0.20	0.49	11.0	22.9	2.8	1.39	1.61	1.89	12	0.20	692.26	692.53	693.20	693.38	695.26	695.38	CB 24 - CB 22
124	123	47.663	0.11	0.41	0.65	0.07	0.21	11.0	22.0	2.9	0.60	1.63	0.81	12	0.21	692.53	692.63	693.47	693.48	695.38	695.48	CB 25 - CB 24
125	124	71.236	0.14	0.30	0.45	0.06	0.14	17.0	19.9	3.1	0.42	1.58	0.62	12	0.20	692.63	692.77	693.49	693.50	695.48	695.62	YI 16 - CB 25
126	125	54.337	0.16	0.16	0.45	0.07	0.07	17.0	17.0	3.4	0.24	1.60	0.43	12	0.20	692.77	692.88	693.51	693.51	695.62	695.99	YI 15 - YI 16
127	88	71.529	0.08	0.08	0.65	0.05	0.05	11.0	11.0	4.3	0.22	1.58	0.32	12	0.20	692.72	692.86	693.64	693.64	695.26	695.25	CB 19 - CB 18
128	50	103.363	0.34	0.34	0.40	0.14	0.14	17.0	17.0	3.4	0.46	1.61	0.82	12	0.20	692.70	692.91	693.48	693.50	695.40	695.10	YI 12 - YI 13
129	98	71.296	0.08	0.08	0.65	0.05	0.05	11.0	11.0	4.3	0.22	1.58	0.29	12	0.20	692.63	692.77	693.96	693.97	695.13	694.95	CB 9 - CB 8
130	123	107.005	0.14	0.14	0.65	0.09	0.09	11.0	11.0	4.3	0.39	1.58	0.57	12	0.20	692.53	692.74	693.47	693.48	695.38	696.08	CB 26 - CB 24
Project File: New.stm																Number of lines: 130				Run Date: 7/30/2026		
NOTES:Intensity = 29.35 / (Inlet time + 3.80) ^ 0.71; Return period =Yrs. 10 ; c = cir e = ellip b = box																						

Green Infrastructure & Water Quality Calculations



SMP DRAINAGE MAP

SCALE: 1"=200'

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD DESIGN ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.



Step 2 - Calculate Water Quality Volume

Is this project subject to Section 4.3 of the NYS Design Manual for Enhanced Phosphorus Removal?						
What is the nature of this construction project? New Construction						
Design Point:	1					
P=	0.90	inches				
Calculate Required WQv						
Drainage Area Number	Contributing Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (cf)	SMP Description
1	12.97	5.60	43	0.44	18,584	Micropool Extended Detention Pond
2	8.75	3.23	37	0.38	10,926	Micropool Extended Detention Pond
3	1.25	1.25	100	0.95	3,880	Disconnection of Rooftop Runoff
4	1.00	1.00	100	0.95	3,104	Disconnection of Rooftop Runoff
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
Total	23.97	11.08	46	0.47	36494	Required WQv

Step 4 - Calculate Minimum RRv Required

Enter the Soils Data for the entire site

Hydrologic Soil Group	Acres	S
A		55%
B		40%
C		30%
D	11.08	20%
Total Area	11.08	

Calculate the Minimum RRv

S =	0.20	
Impervious =	11.08	<i>acres</i>
Precipitation	0.90	<i>inches</i>
Rv	0.95	
Minimum RRv	0.158	<i>af</i>
	6882	cf

Stormwater Ponds

Design Point:	1						
Enter Site Data For Drainage Area to be Treated by Practice							
Drainage Area Number	Contributing Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (cf)	Precipitation (in)	Description
1	12.97	5.60	43	0.44	18,584	0.90	Micropool Extended Detention Pond
Select pond type			Micropool Extended Detention				
Design Criteria							
Is the pond located within jurisdictional waters?			No				
Enter the natural slope of the pond area (%)			2				
Enter underlying soil infiltration rate (based on geotechnical testing, refer to Appendix D).			0				
Has an impermeable liner been provided?			No				
Is the pond located within a sole source aquifer?			No				
Is the pond located within a designated hotspot?			No				
Enter depth to seasonal high water table (ft)			5				
Enter depth to sound bedrock (ft)			5				
List any drainage areas treated by other practices that will be directed to this practice.			4			Additional Areas	1
Is the contributing area less than the minimum contributing area?			No				
Will the pond discharge to trout waters?			No				
Has a controlled outlet been provided?			Yes				
Has an emergency spillway been provided?			Yes				
Has pretreatment been provided per Section 6.1.3?			Yes				
Enter freeboard depth (ft)			1				
Enter side slopes above permanent pool (X:1)			4				
Enter aquatic bench slope (%)			15				
Enter aquatic bench slope to pond floor (X:1)			6.66				
Enter min. aquatic bench width provided (ft)			10				
Enter aquatic bench average width provided (ft)			15				
Enter aquatic bench depth (inches)			1.5				
Enter maintenance access slope (%)			5				
Enter maintenance access width (ft)			20				
Enter permanent pool depth (ft)			4				
Minimum permanent pool depth per Water Balance Calculation (ft)			4.00				
Sizing Criteria							
			Value	Units	Notes		
Required Water Quality Volume			18584	cf			
Pretreatment WQv Provided			2860	cf			
Permanent Pool WQv Provided			19000	cf			
Extended Detention WQv Provided			0	cf			
Determine the Water Quality Volume Treated							
Water Quality Volume Treated			18,584	cf			

Stormwater Ponds

Design Point:	1						
Enter Site Data For Drainage Area to be Treated by Practice							
Drainage Area Number	Contributing Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (cf)	Precipitation (in)	Description
2	8.75	3.23	37	0.38	10,926	0.90	Micropool Extended Detention Pond
Select pond type			Micropool Extended Detention				
Design Criteria							
Is the pond located within jurisdictional waters?			No				
Enter the natural slope of the pond area (%)			2				
Enter underlying soil infiltration rate (based on geotechnical testing, refer to Appendix D).			0				
Has an impermeable liner been provided?			No				
Is the pond located within a sole source aquifer?			No				
Is the pond located within a designated hotspot?			No				
Enter depth to seasonal high water table (ft)			5				
Enter depth to sound bedrock (ft)			5				
List any drainage areas treated by other practices that will be directed to this practice.			3			Additional Areas	1.25
Is the contributing area less than the minimum contributing area?			No				
Will the pond discharge to trout waters?			No				
Has a controlled outlet been provided?			Yes				
Has an emergency spillway been provided?			Yes				
Has pretreatment been provided per Section 6.1.3?			Yes				
Enter freeboard depth (ft)			1				
Enter side slopes above permanent pool (X:1)			4				
Enter aquatic bench slope (%)			15				
Enter aquatic bench slope to pond floor (X:1)			6.66				
Enter min. aquatic bench width provided (ft)			15				
Enter aquatic bench average width provided (ft)			15				
Enter aquatic bench depth (inches)			1.5				
Enter maintenance access slope (%)			5				
Enter maintenance access width (ft)			20				
Enter permanent pool depth (ft)			4				
Minimum permanent pool depth per Water Balance			4.00				
Sizing Criteria							
			Value	Units	Notes		
Required Water Quality Volume			10926	cf			
Pretreatment WQv Provided			1600	cf			
Permanent Pool WQv Provided			12000	cf			
Extended Detention WQv Provided			0	cf			
Determine the Water Quality Volume Treated							
Water Quality Volume Treated			10,926	cf			

Stormwater Ponds

Micropool Extended Detention

Total Area	21.72	acres
	12.97	acres
	8.75	acres
	0	acres
	0	acres
	0	acres
Total Impervious	8.83	acres
	5.6	acres
	3.23	acres
	0	acres
	0	acres
	0	acres
Total WQv Provided	29,510	cf
	18584	cf
	10926	cf
	0	cf
	0	cf
	0	cf

Wet Pond

Total Area	0.00	acres
	0	acres
	0	acres
	0	acres
	0	acres
Total Impervious	0.00	acres
	0	acres
	0	acres
	0	acres
	0	acres
Total WQv Provided	0	cf
	0	cf
	0	cf
	0	cf
	0	cf
	0	cf

Wet Extended Detention

Total Area	0.00	acres
	0	acres
	0	acres
	0	acres
	0	acres
	0	acres
Total Impervious	0.00	acres
	0	acres
	0	acres
	0	acres
	0	acres
	0	acres
Total WQv Provided	0	cf
	0	cf
	0	cf
	0	cf
	0	cf
	0	cf

Multiple Pond System

Total Area	0.00	acres
	0	acres
	0	acres
	0	acres
	0	acres
	0	acres
Total Impervious	0.00	acres
	0	acres
	0	acres
	0	acres
	0	acres
	0	acres
Total WQv Provided	0	cf
	0	cf
	0	cf
	0	cf
	0	cf
	0	cf

Disconnection of Rooftop Runoff (RR-4)

Design Point:	1						
Enter Site Data For Drainage Area to be Reduced							
Drainage Area Number	Contributing Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (cf)	Precipitation (in)	Description
3	1.25	1.25	100	0.95	3,880	0.90	Disconnection of Rooftop Runoff
Design Criteria							
Will disconnected runoff flow over HSG C or D soils?						Yes	Amended soil required
Is the contributing area to each filter path greater than 1,000 sf?						No	
Enter the flow length of the contributing area (ft)						50	
Enter the width of the filter path (ft)						10	
Enter the length of the filter path (ft)						70	
Enter the filter path slope						0.01	
Area Reduction Adjustments							
RRv Provided		3,880	cf				

Disconnection of Rooftop Runoff (RR-4)

Design Point:	1						
Enter Site Data For Drainage Area to be Reduced							
Drainage Area Number	Contributing Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (cf)	Precipitation (in)	Description
4	1.00	1.00	100	0.95	3,104	0.90	Disconnection of Rooftop Runoff
Design Criteria							
Will disconnected runoff flow over HSG C or D soils?						Yes	Amended soil required
Is the contributing area to each filter path greater than 1,000 sf?						No	
Enter the flow length of the contributing area (ft)						50	
Enter the width of the filter path (ft)						10	
Enter the length of the filter path (ft)						70	
Enter the filter path slope						0.01	
Area Reduction Adjustments							
RRv Provided		3,104	cf				

Disconnection of Rooftop Runoff (RR-4)

Total Impervious	2.25	acres
Total RRv Provided	6,984	cf

Steps 3 and 5 - Apply RR Techniques and Standard SMPs

Runoff Reduction Volume and Treated Volumes						
	Runoff Reduction Techniques/Standard SMPs		Total Contributing Area	Total Contributing Impervious Area	WQv Reduced (RRv)	WQv Treated
			(acres)	(acres)	(cf)	(cf)
RR Techniques	Conservation of Natural Areas	RR-1	12.97		0	
	Sheet Flow to Riparian Buffer/Filter Strip	RR-2	0.00	0.00	0	
	Tree Planting/Tree Pit/Tree Trench	RR-3	0.00	0.00	0	
	Disconnection of Rooftop Runoff	RR-4		2.25	6,984	
	Vegetated Swale	RR-5	0.00	0.00	0	
	Rain Garden	RR-6	0.00	0.00	0	
	Stormwater Planter	RR-7	0.00	0.00	0	
	Rainwater Harvesting Systems	RR-8	0.00	0.00	0	
	Porous Pavement	RR-9	0.00	0.00	0	
	Green Roof (Extensive & Intensive)	RR-10	0.00	0.00	0	
	Stream Daylighting	RR-11				
Standard SMPs w/ RRv Capacity	Infiltration Trench	I-1	0.00	0.00	0	0
	Infiltration Basin	I-2	0.00	0.00	0	0
	Dry Well	I-3	0.00	0.00	0	0
	Underground Infiltration System	I-4	0.00	0.00	0	0
	Infiltration Bioretention	F-4	0.00	0.00	0	0
	Filtration Bioretention	F-5	0.00	0.00	0	0
	Bioslope	F-6	0.00	0.00	0	0
	Dry swale	O-1	0.00	0.00	0	0
Standard SMPs	Micropool Extended Detention	P-1	21.72	8.83		29,510
	Wet Pond	P-2	0.00	0.00		0
	Wet Extended Detention	P-3	0.00	0.00		0
	Multiple Pond System	P-4	0.00	0.00		0
	Shallow Wetland	W-1	0.00	0.00		0
	Extended Detention Shallow Wetland	W-2	0.00	0.00		0
	Pond/Wetland System	W-3	0.00	0.00		0
	Pocket Wetland	W-4	0.00	0.00		0
	Gravel Wetland	W-5	0.00	0.00		0
	Surface Sand Filter	F-1	0.00	0.00		0
	Underground Sand Filter	F-2	0.00	0.00		0
	Perimeter Sand Filter	F-3	0.00	0.00		0
	Wet Swale	O-2	0.00	0.00		0
Alt. SMPs	Flow Based Alternative Practice	-	0.00	0.00		0
	Volume Based Alternative Practice	-				
Totals by RR Technique →			12.97	2.25	6,984	
Totals by Standard SMP w/RRV →			0.00	0.00	0	0
Totals by Standard SMP →			21.72	8.83		29,510
Totals by Alternative SMP →			0.00	0.00		0
Totals (RR Techniques + all SMPs) →			34.69	11.08	6,984	29,510

NOI QUESTIONS

#	eNOI Question 49	Reported Value	
		cf	af
49	Total Water Quality Volume (WQv) Required	36494	0.838
49	Total RRV Provided	6984	0.160
49	Is RRV Provided ≥WQv Required?	No	
49	Minimum RRV	6882	0.158
49	Is RRV Provided ≥ Minimum RRV Required?	Yes	
49	Total WQv Treated	29510	0.677
49	Sum of Volume Reduced & Treated	36494	0.838
49	Is Sum RRV Provided and WQv Provided ≥WQv Required?	Yes	

Appendix C

Earthwork Calculations

CARMINA WOOD DESIGN
80 SILO CITY ROW, STE 100
BUFFALO, NEW YORK, 14203
(716) 842-3165
FAX (716) 842-0263

Project No.: 25-4080 Date: 6/12/2026
Project Name: Uptown Apartments
Project Address: 2190 Wehrle Drive
Subject: Earthwork Calculations
Sheet: 1 of 1

SITE EARTHWORK CALCULATIONS

INITIAL CUT/FILL NUMBERS COMPARING EX SURFACE AND PROPOSED SURFACE

CUT	18,900	CY
FILL	16,900	CY
NET	2,000	CY

TOPSOIL STRIP	23,760	CY	(ASSUME 8" OF TOPSOIL)
TOPSOIL RESPREAD	5,861	CY	(ASSUME 4" OF TOPSOIL)
TOPSOIL EXPORT	17,898	CY	

PROPOSED IMPERVIOUS VOLUME CALCULATIONS

	DEPTH (INCHES)	AREA (SF)	VOLUME (CF)	
BUILDING PADS	8	188,231	125,487	
CONCRETE	8	25,578	17,052	
ROAD	11	268,905	246,496	
TOTAL			389,036	CF
			14,409	CY

TOTAL EARTHWORK

ADJUSTED NET	(1,490) CY	<u>DIRT TO BE IMPORTED</u>
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