STORMWATER REPORT

for

PROPOSED BUILDING EXPANSION

located at

1933 HECK AVENUE
BLOCK 1003, LOT 8

in

TOWNSHIP OF NEPTUNE
MONMOUTH COUNTY, NJ

has been prepared for

FOUR STAR DEVELOPERS, LLC

1301 CORLIES AVENUE, SUITE 3E
TOWNHSIP OF NEPTUNE, NJ 07753

on

February 28, 2025
InSite Project No. 23-2426-01

Andrew Grover, PE
NJPE LIC. No. 47123

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APPENDIX

1.0 SUMMARY

On behalf of the Applicant, Four Star Developers LLC, this Stormwater Report was prepared in support of the construction of a building expansion within the 2.93 acre property located at 1933 Heck Avenue Neptune Township in Monmouth County, New Jersey (Block 1003 Lot 8). The purpose of this report is to demonstrate the project is in compliance with the Town Municipal Stormwater Management Plan, last revised May 2009.

The proposed project will include a building expansion, a redone parking lot, loading docks and an underground infiltration system. The proposed project will utilize an existing open space and parking lot area in Block 1003 Lot 8 and will maintain existing drainage patterns as much as practical. The project incorporates stormwater controls designed to provide water quantity, water quality, and groundwater recharge in accordance with the township ordinance and the New Jersey Stormwater BMP Manual. The proposed project disturbs 1.1 acres and increases impervious area by 0.27 acres within the limit of disturbance.

The stormwater management system and erosion and sediment control measures to be implemented during construction as outlined in the project drawings will reduce the transport of sedimentation off site and maintain the existing water quality and quantity per stormwater requirements.

2.0 SITE DESCRIPTION

2.1 Site Information

The subject property is located within Block 1003, Lot 8 in the Township of Neptune, Monmouth County, New Jersey in the LI, Light Industrial zoning district. The property is bound by Bradley Avenue towards the north, N Taylor Avenue towards the west, Heck Avenue towards the south, and the existing building towards the east.

2.2 Existing Conditions

The property currently contains a warehouse and parking lot. The overall site generally drains from west to east towards the existing parking lot and Bradley Avenue. The site currently contains two driveways one provides access to the parking lot and the other provides access to the existing warehouse. The area of work is approximately 1.1 acres located at the western portion of the property primarily within Lot 8.

2.2.1 Soils

The soil descriptions of the area of work according to the United States Department of Agriculture (USDA) Soil Conservation Service Soil Survey for Monmouth County, NJ is referenced in Appendix A and summarized in the table below.

Table 1: Hydrologic Soil Group Summary

Map Symbol	Description	Hydrologic Soil Group
EvuB	Evesboro sand, 0 to 5 percent slopes	A
UduaB	Udorthents – Urban land complex, 0 to 8 percent slopes	D

2.2.2 Floodplain

According to FEMA's effective Flood Insurance Rate Map (FIRM) for Monmouth County, NJ, Community Panel #34025C0333G, dated 6/15/2022, the area of work not in a flood zone. Refer to Appendix A for additional information.

3.0 STORMWATER MANAGEMENT

3.1 Proposed Conditions

According to the Town of Neptune Municipal Stormwater Management Plan (MSWMP), last revised May 2009, the proposed project is defined as a "major development" considering the new impervious area is more than 1/4 of an acre and the limit of disturbance is more than 1.0 acres. Water quantity requirements per the MSWMP and the NJDEP Stormwater Management Rules (NJAC 7:8) are met.

Stormwater management for the proposed project will include an underground infiltration system. The underground infiltration system will collect run off from the proposed warehouse roof. The stormwater infiltration basin will use a 15" drain basin as an emitter to release overflow into the municipal ROW via sheet flow towards the northwestern portion of the property (Bradley Avenue). The infiltration system was designed to have a drain down time of less than 72 hours. Refer to Appendix E for additional information.

3.2 Hydrologic Analysis

A hydrologic computer modelling program called HydroCAD was used to calculate the pre- and post-development stormwater peak flow rates. HydroCAD implements the USDA Soil Conservation Service Publication Technical Release (TR-55) "Urban Hydrology for Small Watersheds" to calculate peak flow rates and volumes for each watershed. NOAA Region D rainfall distribution for a 24-hour rain event was used. Pervious and impervious surfaces were analyzed separately for the overall watershed. Watershed area, curve number (CN), and time of concentration (Tc) were calculated for each contributing watershed and are summarized in Appendix B.

Rainfall data was obtained from the National Oceanic and Atmospheric Administration (NOAA) Precipitation Frequency Data Server (PFDS). The rainfall data is summarized in the table below.

Table 2: 24-Hour Rainfall Data

Storm Event	NOAA Precipitation
2-year	3.31 inches
10-year	5.07 inches
100-year	8.56 inches

3.3 Water Quantity

Proposed stormwater measures were incorporated so the peak runoff rates for the 2-, 10-, and 100-year 24-hour storm events match the pre-development peak runoff rates. The post-development stormwater runoff must match the pre-development stormwater runoff reduction values that are attributable to the portion of the site on which the project is to be constructed. The pre- and post-development peak flow rates are summarized in the table below.

Table 3: Peak Flow Rates Summary (Design Point 1)

Storm Event	Overall Existing Flow Rate (cfs)	Reduced Existing Flow Rate (cfs)	Proposed Flow Rate (cfs)
2-year	1.40	(50%) 0.70	0.70
10-year	2.32	(75%) 1.74	1.18
100-year	4.77	(80%) 3.82	2.41

The Coverage Area Maps are provided in Appendix B and runoff analysis for both conditions are provided in Appendix C & D. Since there is no increase in stormwater runoff from pre-development conditions to post-development conditions, the site complies with the NJ Soil Erosions and Sedimental Control Standards, specifically the Standards for Offsite Stability.

3.4 Water Quality

According to the Town of Neptune Municipal Stormwater Management Plan (MSWMP), last revised May 2009, the proposed project is defined as a “major development”. The project is proposing a reduction in vehicular area therefore, water quality requirements per the MSWMP and the NJDEP Stormwater Management Rules (NJAC 7:8) are not applicable. See Table 4 for vehicular parking area differences.

Table 4: Vehicular Area Coverage

	Pre-Development Conditions (Ac)	Post-Development Conditions (Ac)
Vehicular Area	0.56	0.44

3.5 Groundwater Recharge

According to the Town of Neptune Municipal Stormwater Management Plan (MSWMP), last revised May 2009, the proposed project is defined as a "major development". The property is located in the PA-1 Metropolitan Zone and was previously disturbed therefore, groundwater recharge requirements per the MSWMP and the NJDEP Stormwater Management Rules (NJAC 7:8) are not applicable

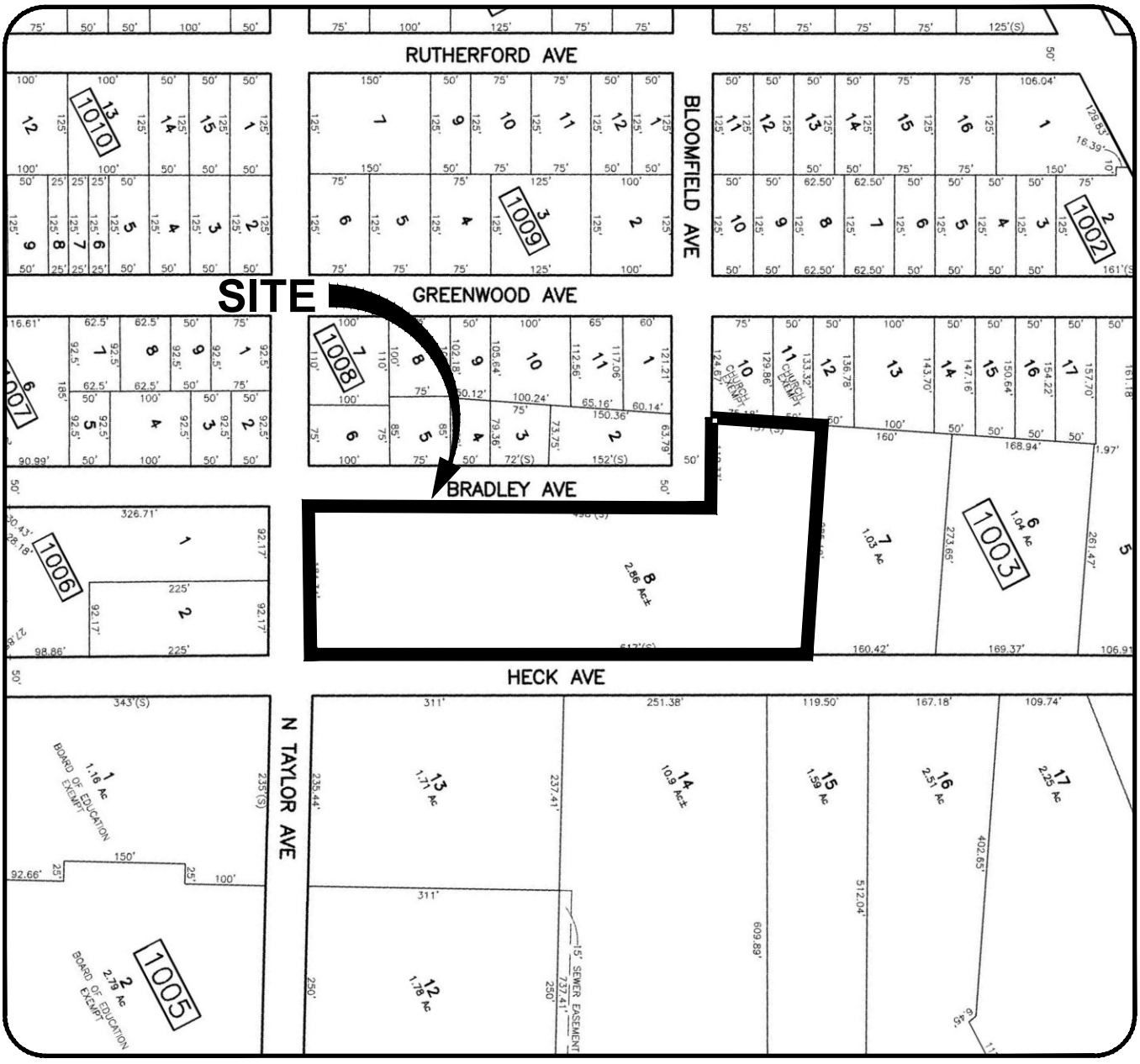
4.0 CONCLUSION

Since the project is considered a "major development" considering the new impervious area and limit of disturbance, water quantity requirements per the MSWMP and NJDEP are applicable. Since the project proposes a reduction in vehicular area and since the project is located in the PA-1 Metropolitan Zone and was previously disturbed water quality and ground water recharge requirements are not applicable. In addition, with no increase in runoff flow the project meets the offsite stability standards as noted in the NJ Standards for Soil Erosion and Sediment Control.

A P P E N D I X A

KEY MAP EXHIBITS:

1. **TAX MAP**
2. **SOILS MAP**
3. **USGS MAP**
4. **FEMA MAP**
5. **LOCATION MAP**



TAX MAP

200 0 200 400

SCALE: 1" = 200'

TAX MAP EXHIBIT

INSITE ENGINEERING, LLC
CERTIFICATE OF AUTHORIZATION:
24GA28083200
1955 ROUTE 34, SUITE 1A
WALL, NJ 07719
732-531-7100 (Ph)
732-531-7344 (Fax)
INSITE@INSITEENG.NET
WWW.INSITEENG.NET

SITE LOCATION:
1033 HECK AVENUE
TOWNSHIP OF NEPTUNE, MONMOUTH COUNTY, NJ
BLOCK: 1003 LOT: 8

REFERENCE:
TAX MAP SHEET 10

INSITE PROJECT NO.
24-2426-01
DRAWING NO.
24-2426-01r0
DATE
DECEMBER 4, 2024

REVISIONS

SOILS MAP

200 0 200 400

SCALE: 1" = 200'

SOILS MAP EXHIBIT

INSITE ENGINEERING, LLC
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732-531-7344 (Fax)
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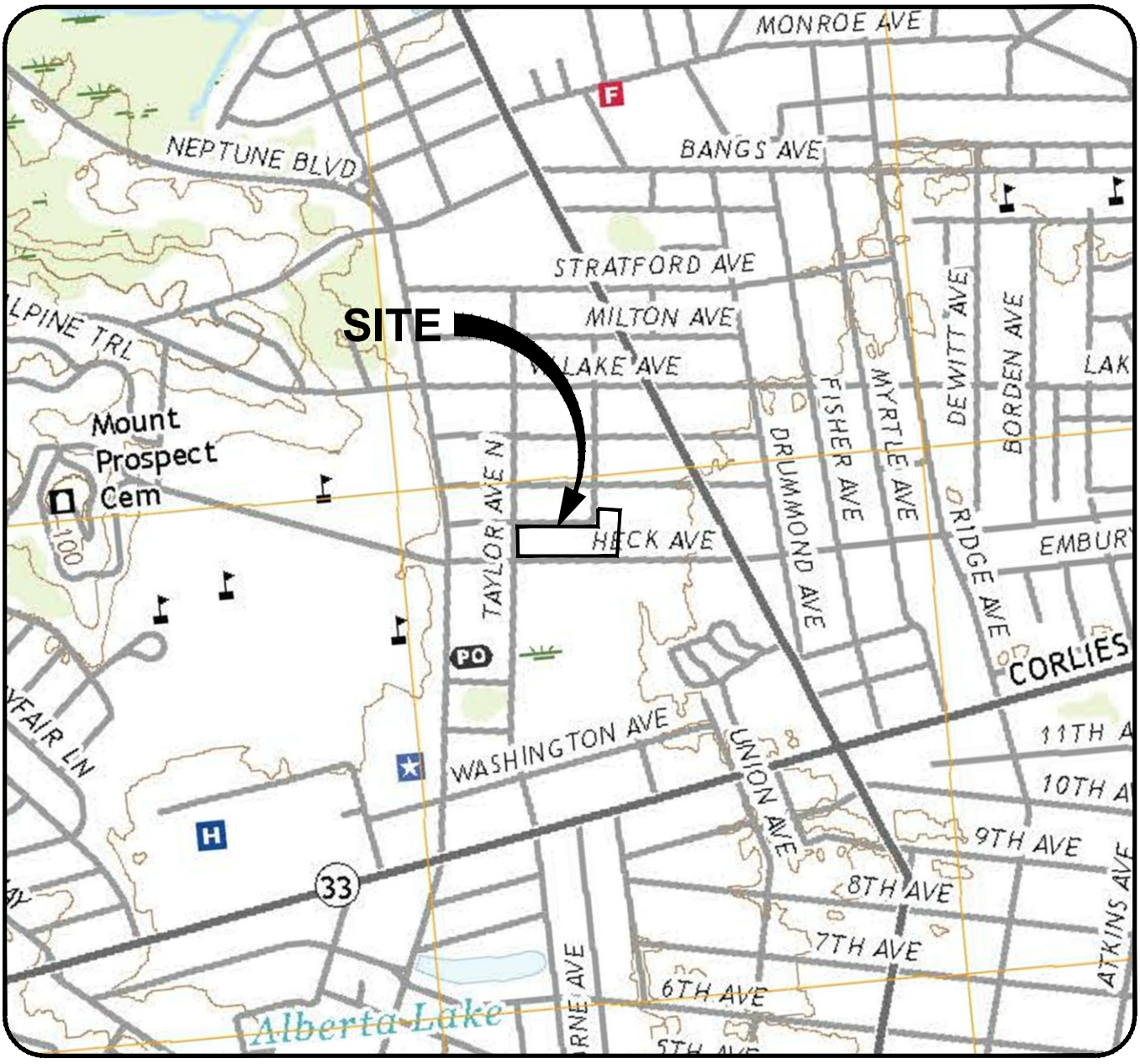
WWW.INSITEENG.NET

SITE LOCATION:
1033 HECK AVENUE
TOWNSHIP OF NEPTUNE, MONMOUTH COUNTY, NJ
BLOCK: 1003 LOT: 8

REFERENCE:
U.S. DEPARTMENT OF THE INTERIOR
FARMINGDALE QUADRANGLE 2019

INSITE PROJECT NO.
24-2426-01
DRAWING NO.
24-2426-01r0
DATE
DECEMBER 4, 2024

REVISIONS



USGS MAP

1000 0 1000 2000

SCALE: 1" = 1000'

USGS MAP EXHIBIT

INSITE Engineering • Surveying • Planning

INSITE ENGINEERING, LLC
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24-2426-01
DRAWING NO.
24-2426-01r0
DATE
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REVISIONS

FEMA MAP

1000 0 1000 2000

SCALE: 1" = 1000'

FEMA MAP EXHIBIT

INSITE ENGINEERING, LLC
CERTIFICATE OF AUTHORIZATION:
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INSITE@INSITEENG.NET
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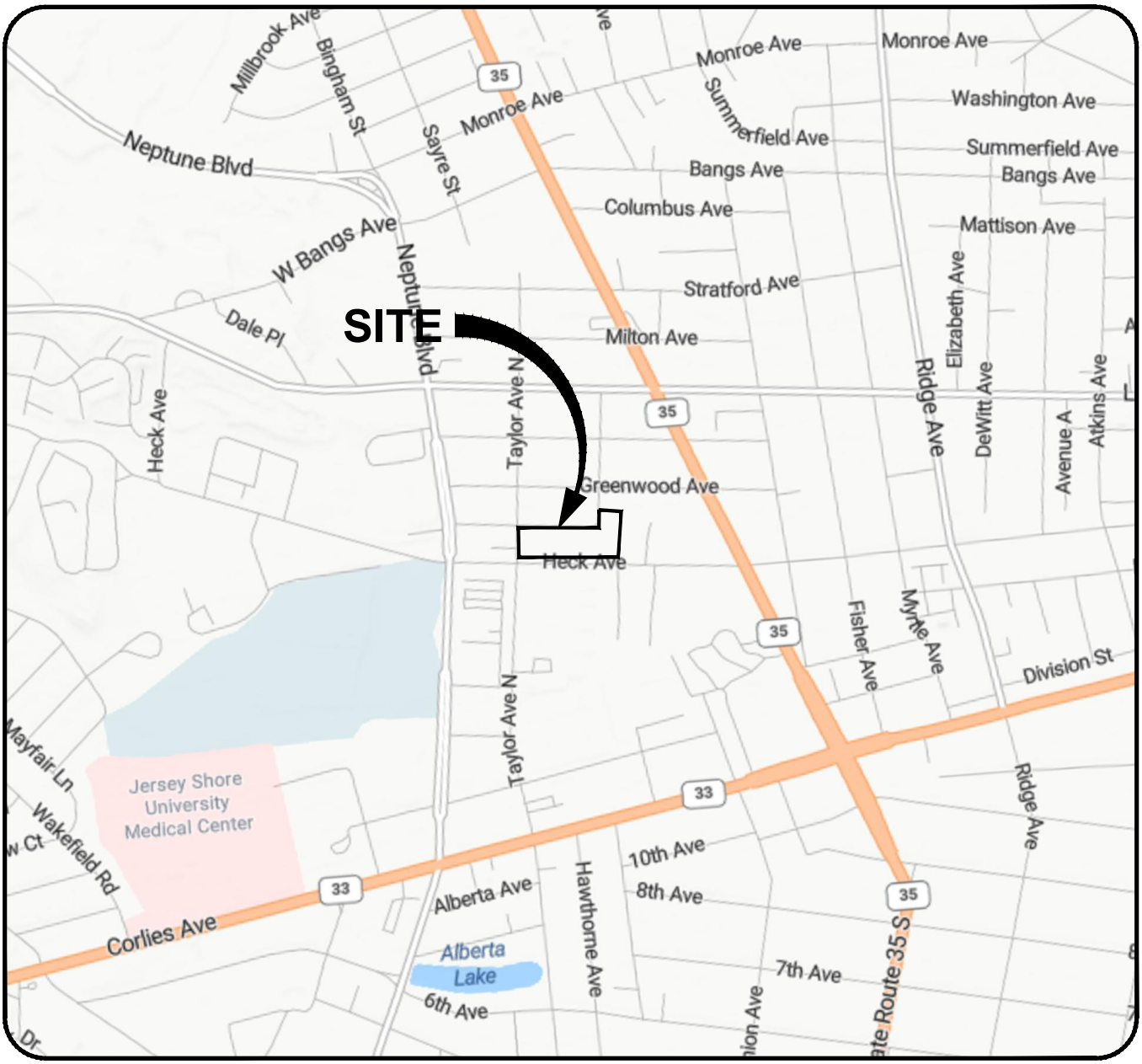
SITE LOCATION:
1033 HECK AVENUE
TOWNSHIP OF NEPTUNE, MONMOUTH COUNTY, NJ
BLOCK: 1003 LOT: 8

REFERENCE:
FEMA FIRM MAP
MAP NUMBER: 34025C0333G
DATED: 6/15/2022

INSITE PROJECT NO.
24-2426-01
DRAWING NO.
24-2426-01r0
DATE
DECEMBER 4, 2024

REVISIONS



LOCATION MAP

1000 0 1000 2000

SCALE: 1" = 1000'

LOCATION MAP EXHIBIT

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SITE LOCATION:
1033 HECK AVENUE
TOWNSHIP OF NEPTUNE, MONMOUTH COUNTY, NJ
BLOCK: 1003 LOT: 8

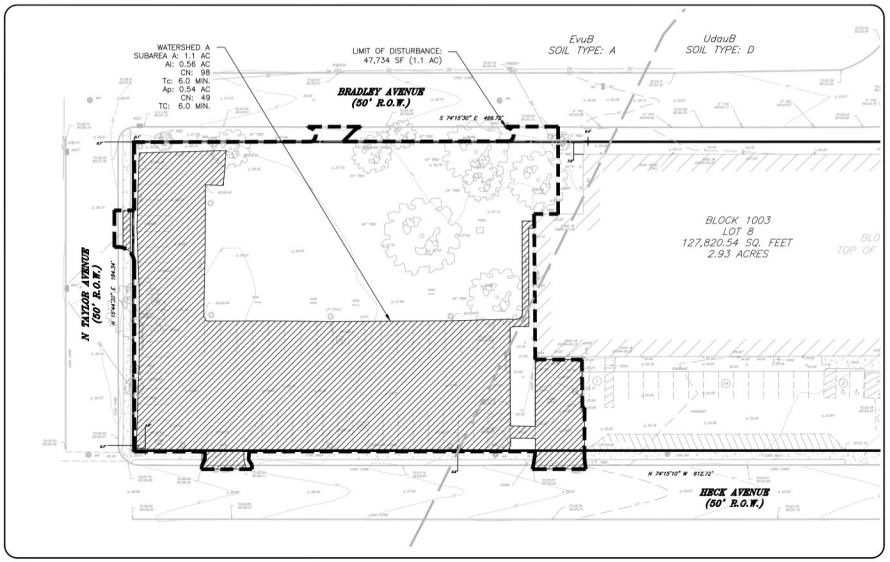
REFERENCE:
BING MAPS 2024

INSITE PROJECT NO.
24-2426-01
DRAWING NO.
24-2426-01r0
DATE
DECEMBER 4, 2024

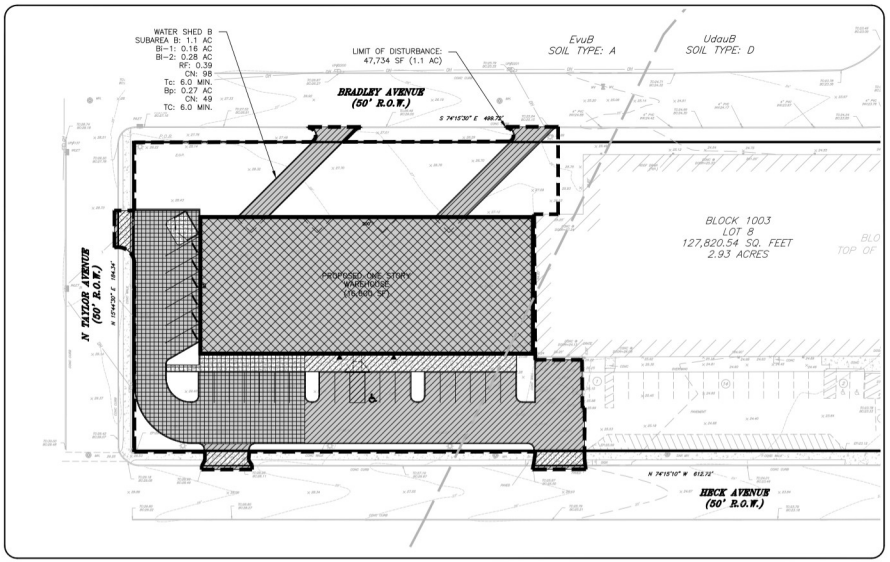
REVISIONS

A P P E N D I X B

COVERAGE AREA MAPS



PREDEVELOPMENT COVERAGE PLAN



POSTDEVELOPMENT COVERAGE PLAN

LEGEND

EXISTING		PROPOSED
	BOUNDARY LINE	
	CONTOUR LINE	
x 46.80	SPOT ELEVATION	+46.80
	BUILDING	
	WALL	
GAS	GAS	
WATER	WATER	
	INLET	
STORM	STORM	
SAN	SANITARY MAIN	
SAN	SANITARY LATERAL	SAN
OH	OVERHEAD WIRE	OH
E	ELECTRIC	E
TEL	TELEPHONE	TEL
	UTILITY POLE	
	HYDRANT	
	SIGN POST	
	FENCE	
	LIGHT FIXTURE	
	TEST PIT LOCATION	
	GRADE FLOW ARROW	
	SWALE CENTER LINE	

PROJECT INFORMATION

PROJECT NAME:

PROPOSED BUILDING EXPANSION

PROJECT LOCATION:
BLOCK 1003, LOT 8
1933 HECK AVENUE
TOWNSHIP OF NEPTUNE
MONMOUTH COUNTY, NJ

OWNER:
D.M.H.C. MEDLINE INDUSTRIES
PO BOX 939
MUNDELEIN, IL 60060

APPLICANT:
FOUR STAR DEVELOPERS
1301 CORLIES AVENUE, SUITE 1E
TOWNSHIP OF NEPTUNE, NJ 07753

APPLICANT'S PROFESSIONALS

SURVEYOR:
VALLE SURVEYING, INC.
PO BOX 419
HAINESPORT, NJ 08036

INSITE ENGINEERING, LLC SINCE 2003

INSITE
Engineering • Surveying • Planning

InSite Engineering, LLC
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ANDREW J. GROVER, P.E.
PROFESSIONAL ENGINEER
N.J.P.E. LIC. NO. 47123

REVISIONS

No.	Date	Description
1	03/26/25	REV. PER CLIENT COMMENTS
0	02/28/25	INITIAL RELEASE

SCALE: AS SHOWN | DESIGNED BY: ES
DATE: 01/09/25 | DRAWN BY: ES
JOB #: 24-2426-01 | CHECKED BY: AJG
NOT FOR CONSTRUCTION | APPROVED BY:
FOR CONSTRUCTION

PLAN INFORMATION

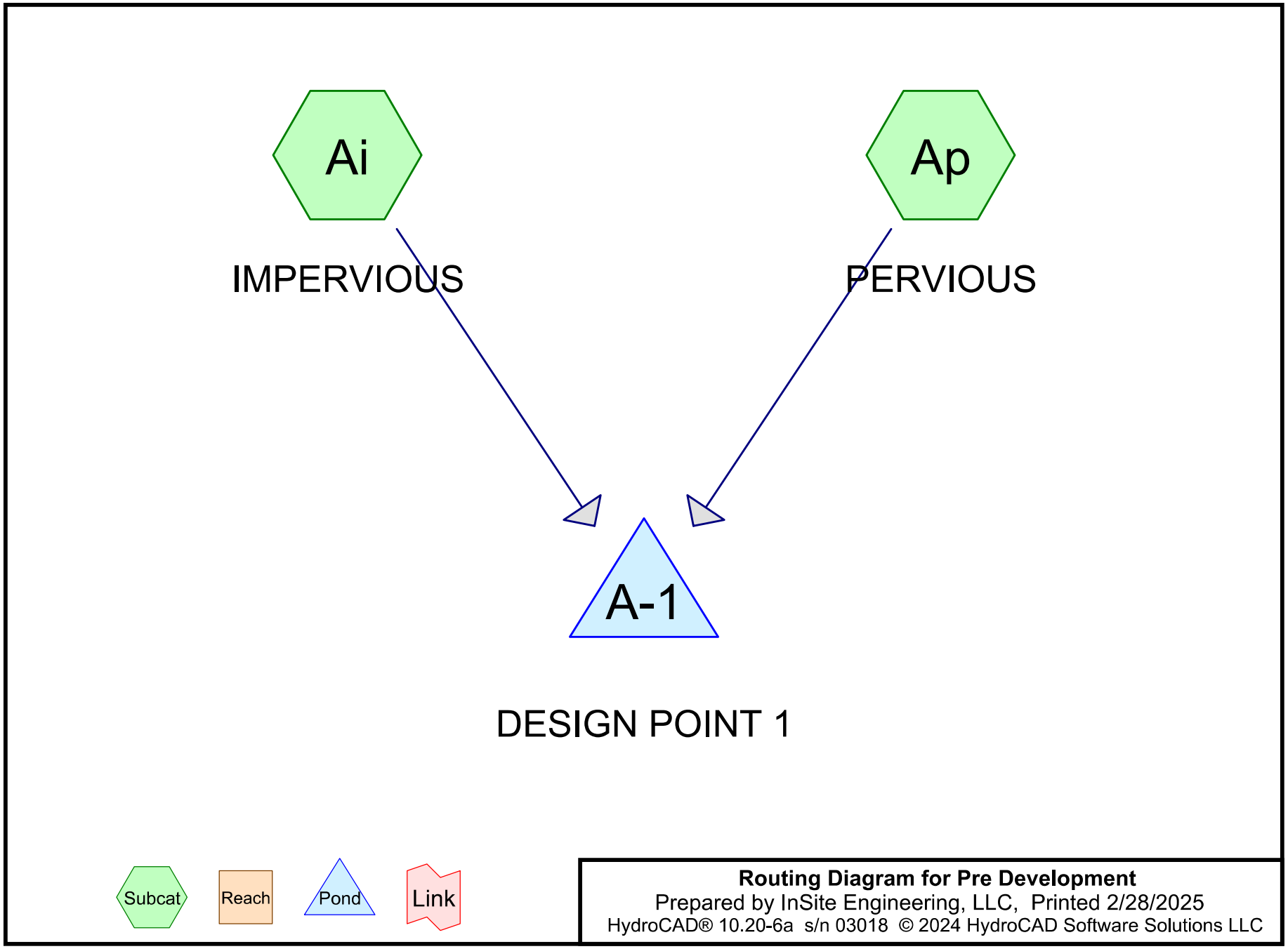
DRAWING TITLE:
PRELIMINARY & FINAL MAJOR SITE PLAN

SHEET TITLE:
COVERAGE PLAN

SHEET NO:
1 OF 1

A P P E N D I X C

PRE-DEVELOPMENT FLOW CALCULATIONS



Routing Diagram for Pre Development
Prepared by InSite Engineering, LLC, Printed 2/28/2025

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-yr	NOAA 24-hr	D	Default	24.00	1	3.31	2
2	10-yr	NOAA 24-hr	D	Default	24.00	1	5.07	2
3	100-yr	NOAA 24-hr	D	Default	24.00	1	8.56	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.540	49	50-75% Grass cover, Fair, HSG A (Ap)
0.560	98	Paved parking, HSG D (Ai)
1.100	**74**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.540	HSG A	Ap
0.000	HSG B	
0.000	HSG C	
0.560	HSG D	Ai
0.000	Other	
1.100		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.540	0.000	0.000	0.000	0.000	0.540	50-75% Grass cover, Fair	Ap
0.000	0.000	0.000	0.560	0.000	0.560	Paved parking	Ai
0.540	**0.000**	**0.000**	**0.560**	**0.000**	**1.100**	**TOTAL AREA**	

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

SubcatchmentAi: IMPERVIOUS Runoff Area=0.560 ac 100.00% Impervious Runoff Depth>2.82"
Tc=6.0 min CN=98 Runoff=1.40 cfs 0.131 af

SubcatchmentAp: PERVIOUS Runoff Area=0.540 ac 0.00% Impervious Runoff Depth>0.10"
Tc=6.0 min CN=49 Runoff=0.01 cfs 0.004 af

Pond A-1: DESIGN POINT 1 Inflow=1.40 cfs 0.136 af
Primary=1.40 cfs 0.136 af

Total Runoff Area = 1.100 ac Runoff Volume = 0.136 af Average Runoff Depth = 1.48"
49.09% Pervious = 0.540 ac 50.91% Impervious = 0.560 ac

Summary for Subcatchment Ai: IMPERVIOUS

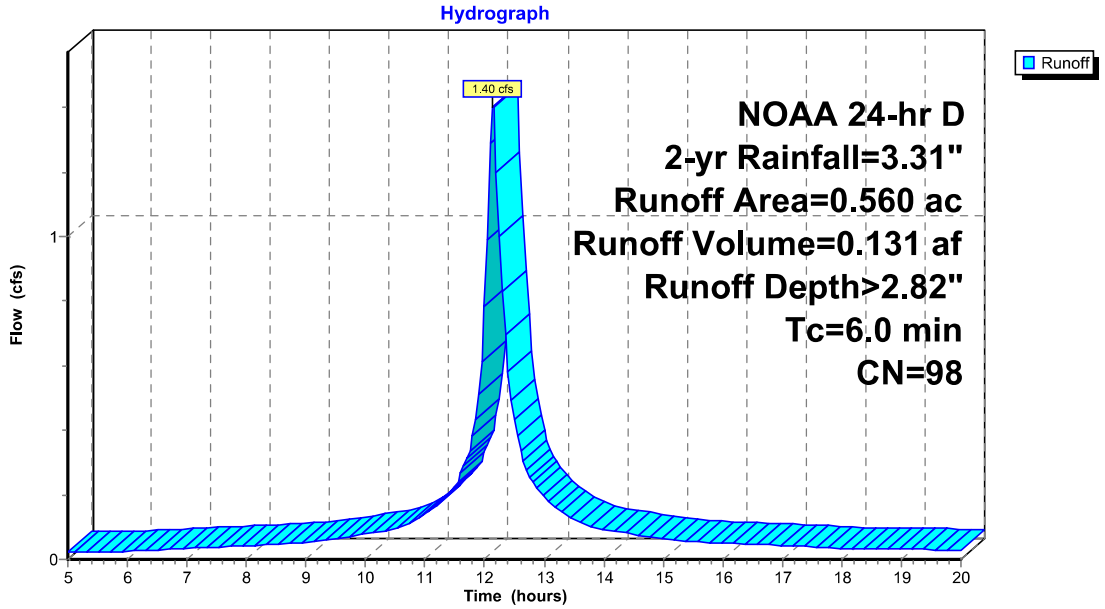
Runoff = 1.40 cfs @ 12.14 hrs, Volume= 0.131 af, Depth> 2.82"
Routed to Pond A-1 : DESIGN POINT 1

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2-yr Rainfall=3.31"

Area (ac)	CN	Description
0.560	98	Paved parking, HSG D
0.560		100.00% Impervious Area

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

Subcatchment Ai: IMPERVIOUS



Summary for Subcatchment Ap: PERVIOUS

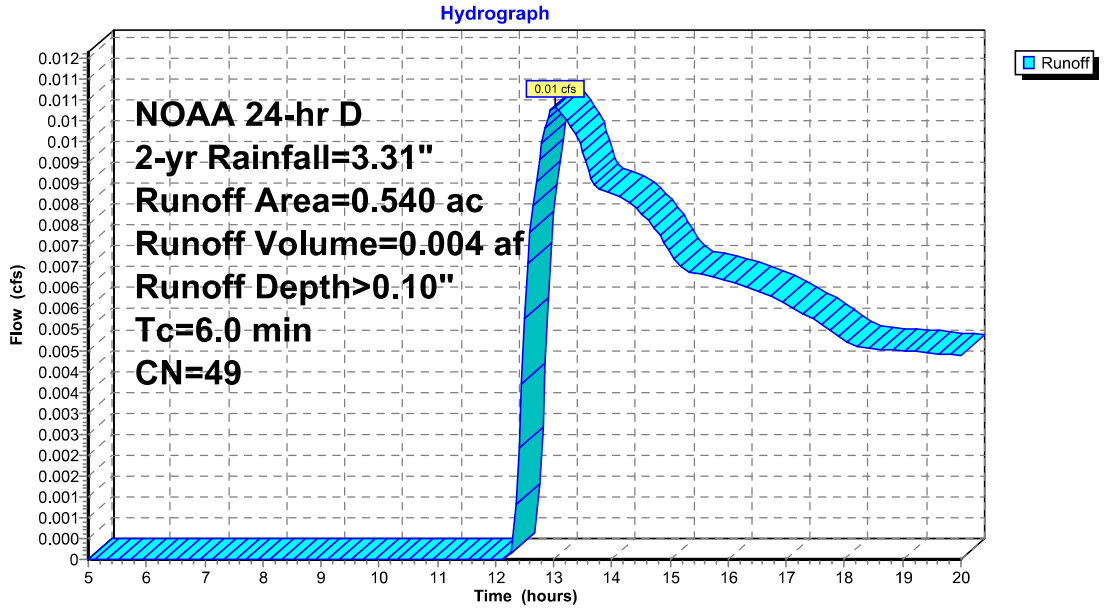
Runoff = 0.01 cfs @ 13.03 hrs, Volume= 0.004 af, Depth> 0.10"
Routed to Pond A-1 : DESIGN POINT 1

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2-yr Rainfall=3.31"

Area (ac)	CN	Description
0.540	49	50-75% Grass cover, Fair, HSG A
0.540		100.00% Pervious Area

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

Subcatchment Ap: PERVIOUS



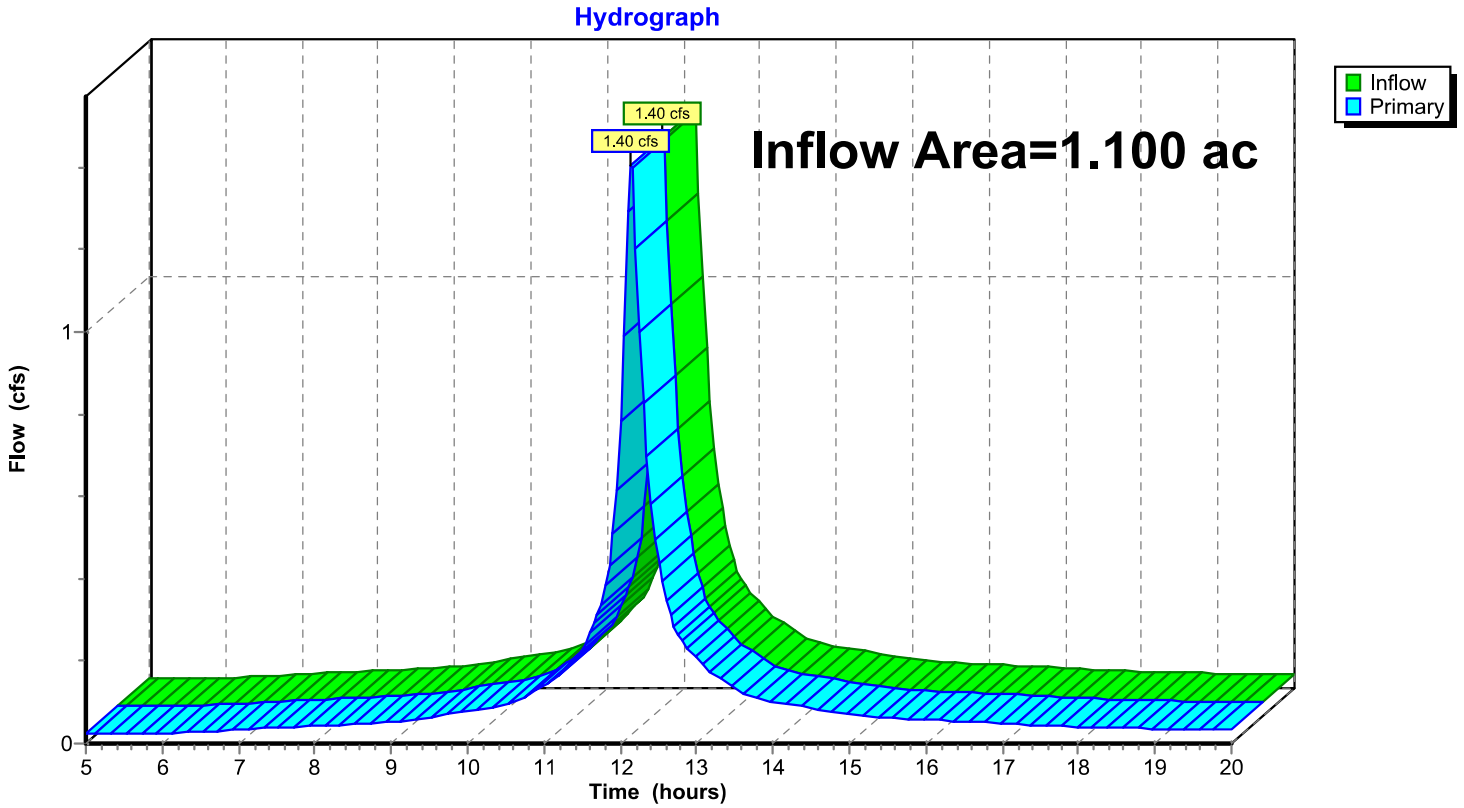
Summary for Pond A-1: DESIGN POINT 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.100 ac, 50.91% Impervious, Inflow Depth > 1.48" for 2-yr event
Inflow = 1.40 cfs @ 12.14 hrs, Volume= 0.136 af
Primary = 1.40 cfs @ 12.14 hrs, Volume= 0.136 af, Atten= 0%, Lag= 0.0 min

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

Pond A-1: DESIGN POINT 1



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

SubcatchmentAi: IMPERVIOUS Runoff Area=0.560 ac 100.00% Impervious Runoff Depth>4.39"
Tc=6.0 min CN=98 Runoff=2.16 cfs 0.205 af

SubcatchmentAp: PERVIOUS Runoff Area=0.540 ac 0.00% Impervious Runoff Depth>0.56"
Tc=6.0 min CN=49 Runoff=0.19 cfs 0.025 af

Pond A-1: DESIGN POINT 1 Inflow=2.35 cfs 0.230 af
Primary=2.35 cfs 0.230 af

Total Runoff Area = 1.100 ac Runoff Volume = 0.230 af Average Runoff Depth = 2.51"
49.09% Pervious = 0.540 ac 50.91% Impervious = 0.560 ac

Summary for Subcatchment Ai: IMPERVIOUS

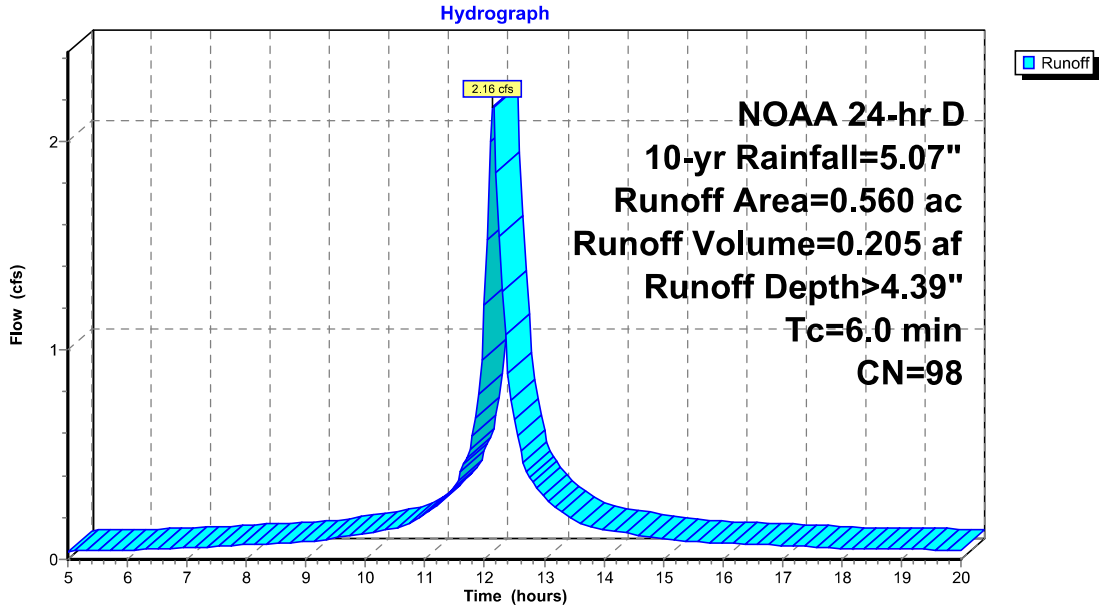
Runoff = 2.16 cfs @ 12.14 hrs, Volume= 0.205 af, Depth> 4.39"
Routed to Pond A-1 : DESIGN POINT 1

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10-yr Rainfall=5.07"

Area (ac)	CN	Description
0.560	98	Paved parking, HSG D
0.560		100.00% Impervious Area

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

Subcatchment Ai: IMPERVIOUS



Summary for Subcatchment Ap: PERVIOUS

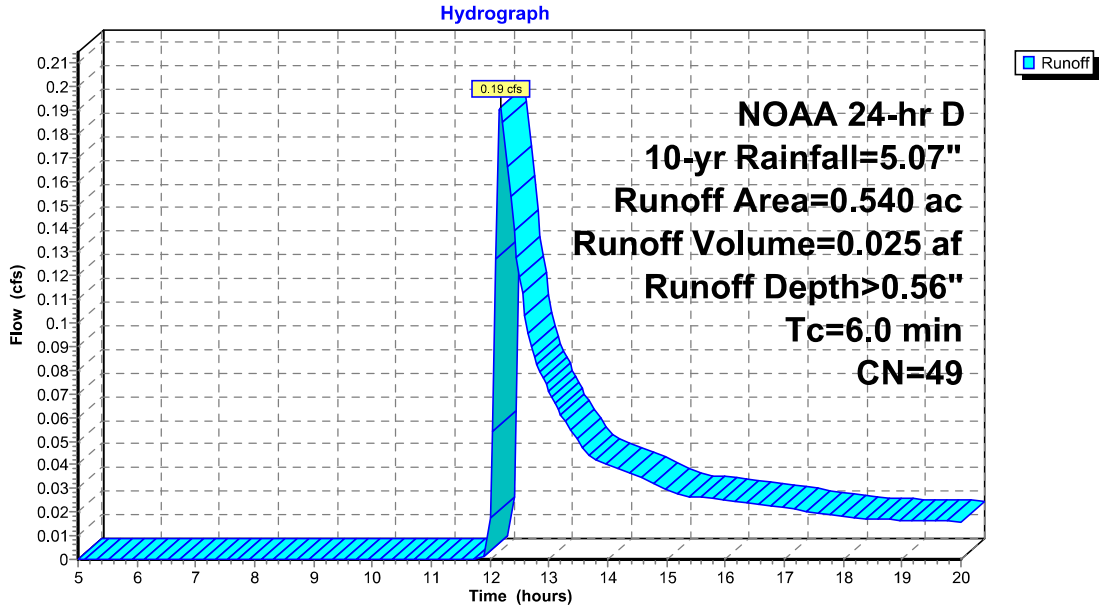
Runoff = 0.19 cfs @ 12.18 hrs, Volume= 0.025 af, Depth> 0.56"
Routed to Pond A-1 : DESIGN POINT 1

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10-yr Rainfall=5.07"

Area (ac)	CN	Description
0.540	49	50-75% Grass cover, Fair, HSG A
0.540		100.00% Pervious Area

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

Subcatchment Ap: PERVIOUS



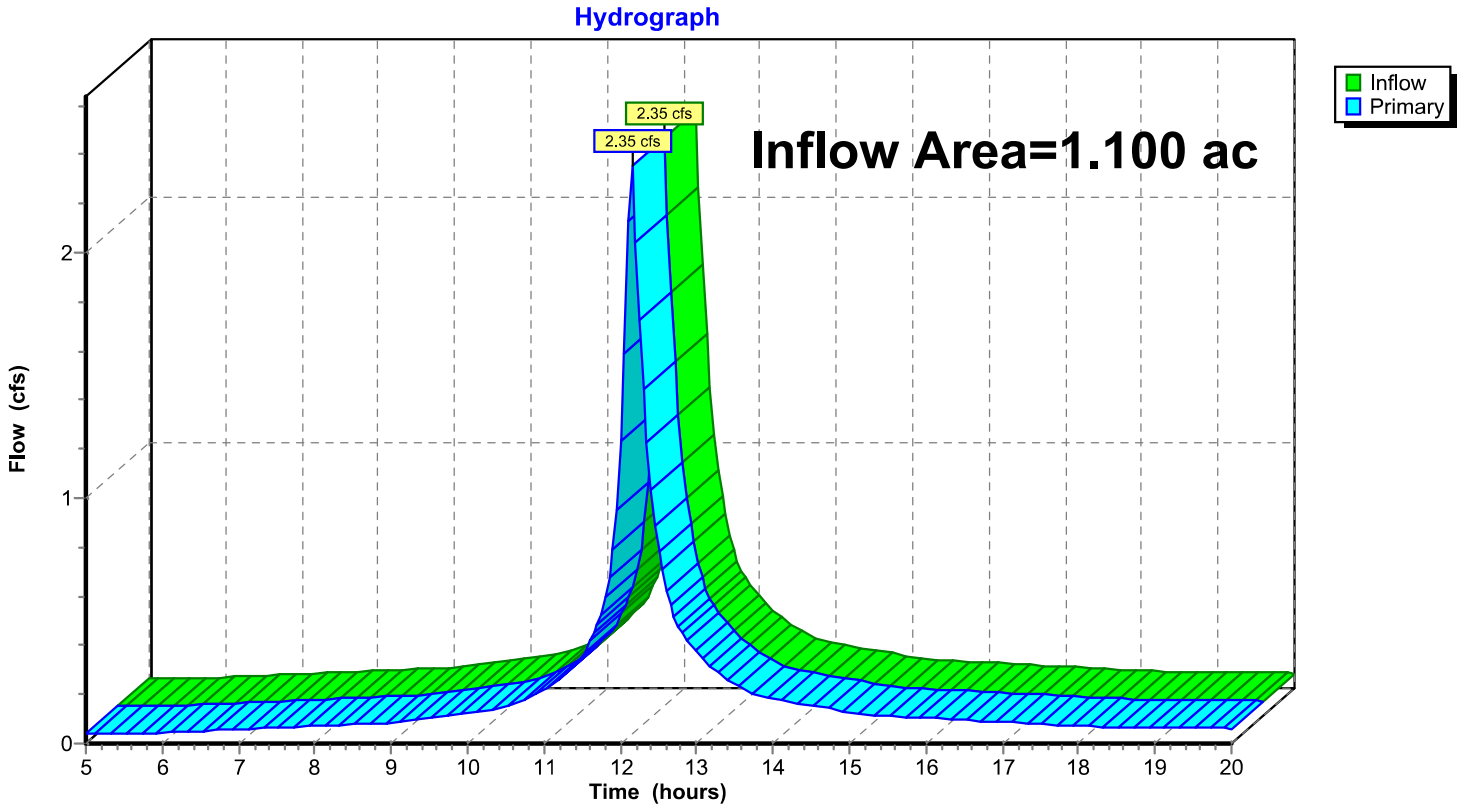
Summary for Pond A-1: DESIGN POINT 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.100 ac, 50.91% Impervious, Inflow Depth > 2.51" for 10-yr event
Inflow = 2.35 cfs @ 12.15 hrs, Volume= 0.230 af
Primary = 2.35 cfs @ 12.15 hrs, Volume= 0.230 af, Atten= 0%, Lag= 0.0 min

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

Pond A-1: DESIGN POINT 1



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

SubcatchmentAi: IMPERVIOUS Runoff Area=0.560 ac 100.00% Impervious Runoff Depth>7.48"
Tc=6.0 min CN=98 Runoff=3.67 cfs 0.349 af

SubcatchmentAp: PERVIOUS Runoff Area=0.540 ac 0.00% Impervious Runoff Depth>2.20"
Tc=6.0 min CN=49 Runoff=1.15 cfs 0.099 af

Pond A-1: DESIGN POINT 1 Inflow=4.81 cfs 0.448 af
Primary=4.81 cfs 0.448 af

Total Runoff Area = 1.100 ac Runoff Volume = 0.448 af Average Runoff Depth = 4.89"
49.09% Pervious = 0.540 ac 50.91% Impervious = 0.560 ac

Summary for Subcatchment Ai: IMPERVIOUS

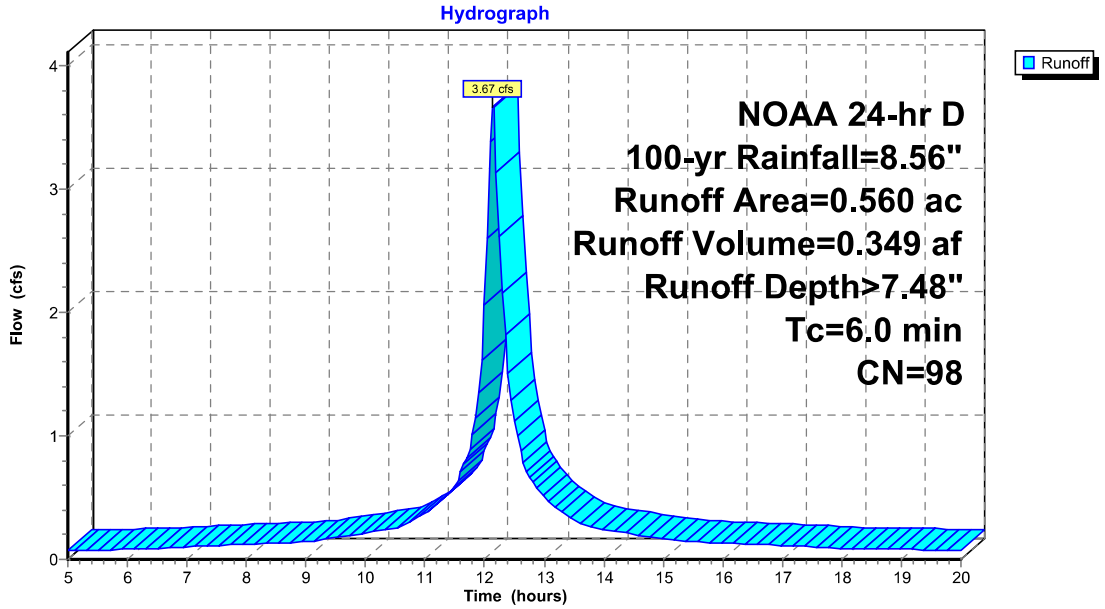
Runoff = 3.67 cfs @ 12.14 hrs, Volume= 0.349 af, Depth> 7.48"
Routed to Pond A-1 : DESIGN POINT 1

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100-yr Rainfall=8.56"

Area (ac)	CN	Description
0.560	98	Paved parking, HSG D
0.560		100.00% Impervious Area

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

Subcatchment Ai: IMPERVIOUS



Summary for Subcatchment Ap: PERVIOUS

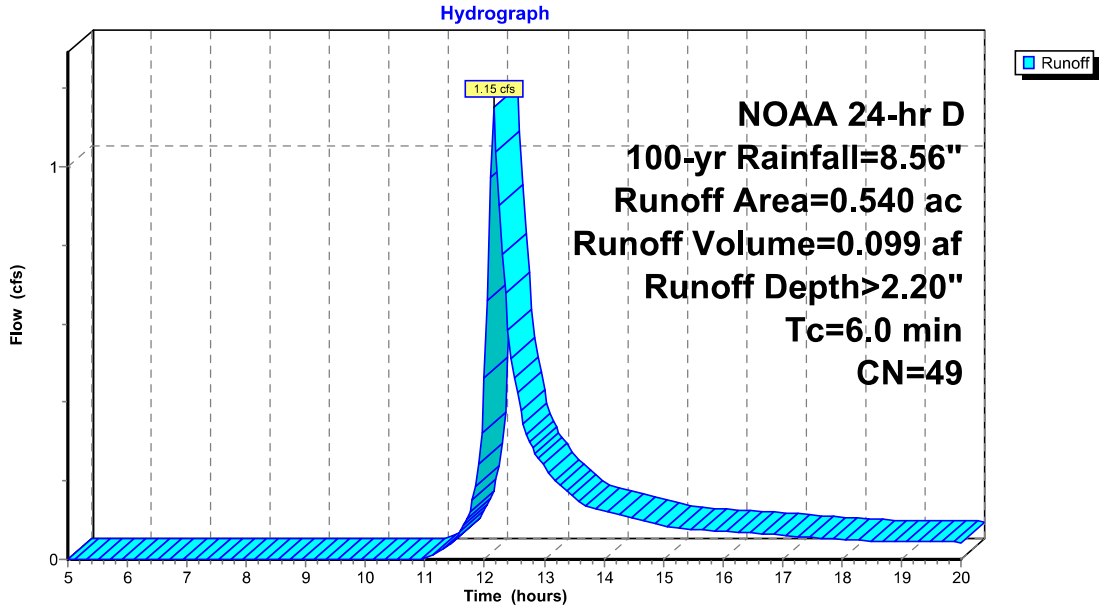
Runoff = 1.15 cfs @ 12.16 hrs, Volume= 0.099 af, Depth> 2.20"
Routed to Pond A-1 : DESIGN POINT 1

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100-yr Rainfall=8.56"

Area (ac)	CN	Description
0.540	49	50-75% Grass cover, Fair, HSG A
0.540		100.00% Pervious Area

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

Subcatchment Ap: PERVIOUS



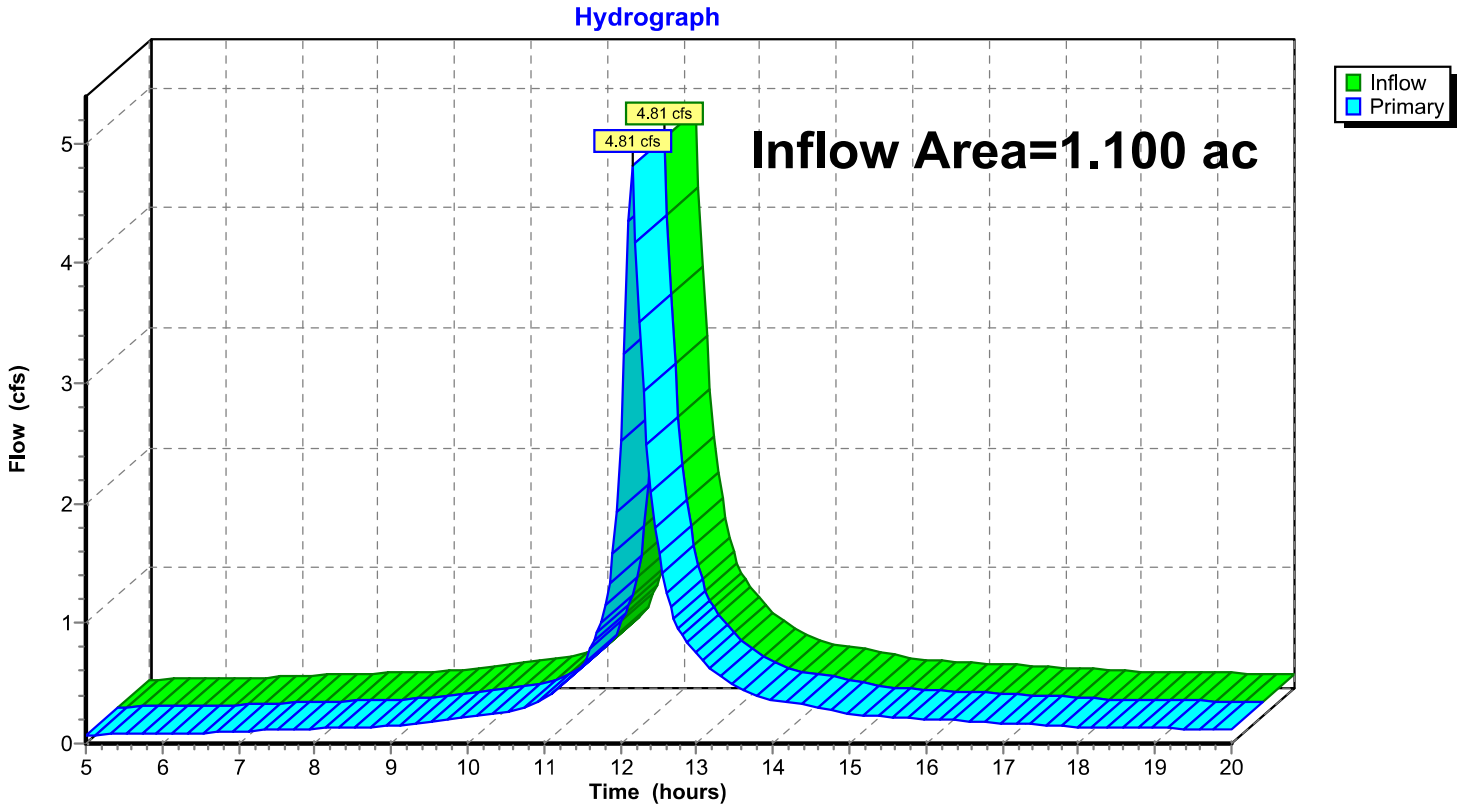
Summary for Pond A-1: DESIGN POINT 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.100 ac, 50.91% Impervious, Inflow Depth > 4.89" for 100-yr event
Inflow = 4.81 cfs @ 12.15 hrs, Volume= 0.448 af
Primary = 4.81 cfs @ 12.15 hrs, Volume= 0.448 af, Atten= 0%, Lag= 0.0 min

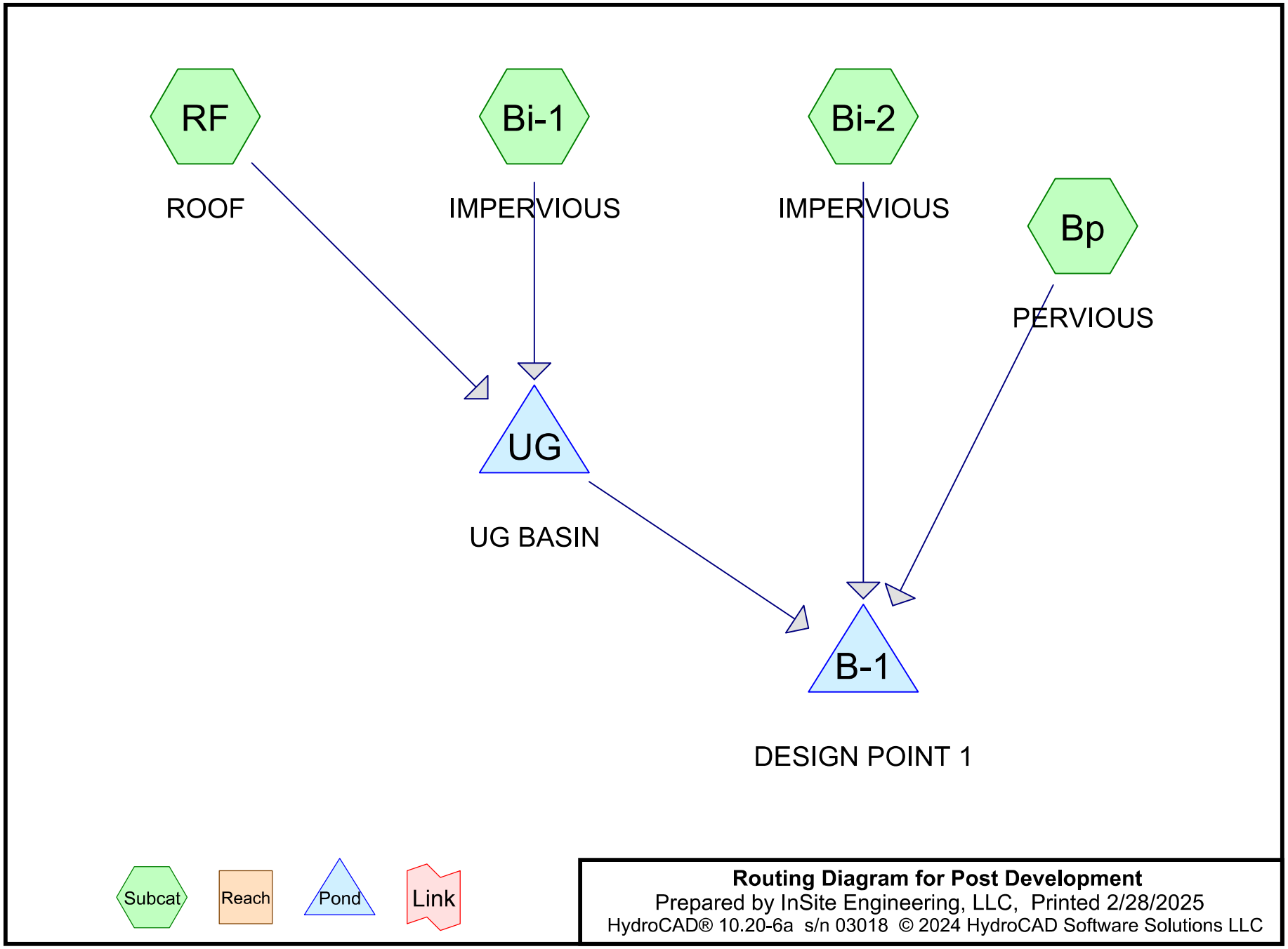
Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond A-1: DESIGN POINT 1



A P P E N D I X D

POST-DEVELOPMENT FLOW CALCULATIONS



Routing Diagram for Post Development
Prepared by InSite Engineering, LLC, Printed 2/28/2025

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-yr	NOAA 24-hr	D	Default	24.00	1	3.31	2
2	10-yr	NOAA 24-hr	D	Default	24.00	1	5.07	2
3	100-yr	NOAA 24-hr	D	Default	24.00	1	8.56	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.270	49	50-75% Grass cover, Fair, HSG A (Bp)
0.440	98	Unconnected pavement, HSG D (Bi-1, Bi-2)
0.390	98	Unconnected roofs, HSG A (RF)
1.100	**86**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.660	HSG A	Bp, RF
0.000	HSG B	
0.000	HSG C	
0.440	HSG D	Bi-1, Bi-2
0.000	Other	
1.100		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.270	0.000	0.000	0.000	0.000	0.270	50-75% Grass cover, Fair	Bp
0.000	0.000	0.000	0.440	0.000	0.440	Unconnected pavement	Bi-1, Bi-2
0.390	0.000	0.000	0.000	0.000	0.390	Unconnected roofs	RF
0.660	**0.000**	**0.000**	**0.440**	**0.000**	**1.100**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	UG	24.75	25.95	7.0	-0.1714	0.012	0.0	12.0	0.0	UG BASIN

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

SubcatchmentBi-1: IMPERVIOUS Runoff Area=0.160 ac 100.00% Impervious Runoff Depth>2.82"
Tc=6.0 min CN=98 Runoff=0.40 cfs 0.038 af

SubcatchmentBi-2: IMPERVIOUS Runoff Area=0.280 ac 100.00% Impervious Runoff Depth>2.82"
Tc=6.0 min CN=98 Runoff=0.70 cfs 0.066 af

SubcatchmentBp: PERVIOUS Runoff Area=0.270 ac 0.00% Impervious Runoff Depth>0.10"
Tc=6.0 min CN=49 Runoff=0.01 cfs 0.002 af

SubcatchmentRF: ROOF Runoff Area=0.390 ac 100.00% Impervious Runoff Depth>2.82"
Tc=6.0 min CN=98 Runoff=0.98 cfs 0.092 af

Pond B-1: DESIGN POINT 1 Inflow=0.70 cfs 0.068 af
Primary=0.70 cfs 0.068 af

Pond UG: UG BASIN Peak Elev=22.74' Storage=0.129 af Inflow=1.38 cfs 0.129 af
12.0" Round Culvert n=0.012 L=7.0' S=-0.1714 '/' Outflow=0.00 cfs 0.000 af

Total Runoff Area = 1.100 ac Runoff Volume = 0.197 af Average Runoff Depth = 2.15"
24.55% Pervious = 0.270 ac 75.45% Impervious = 0.830 ac

Summary for Subcatchment Bi-1: IMPERVIOUS

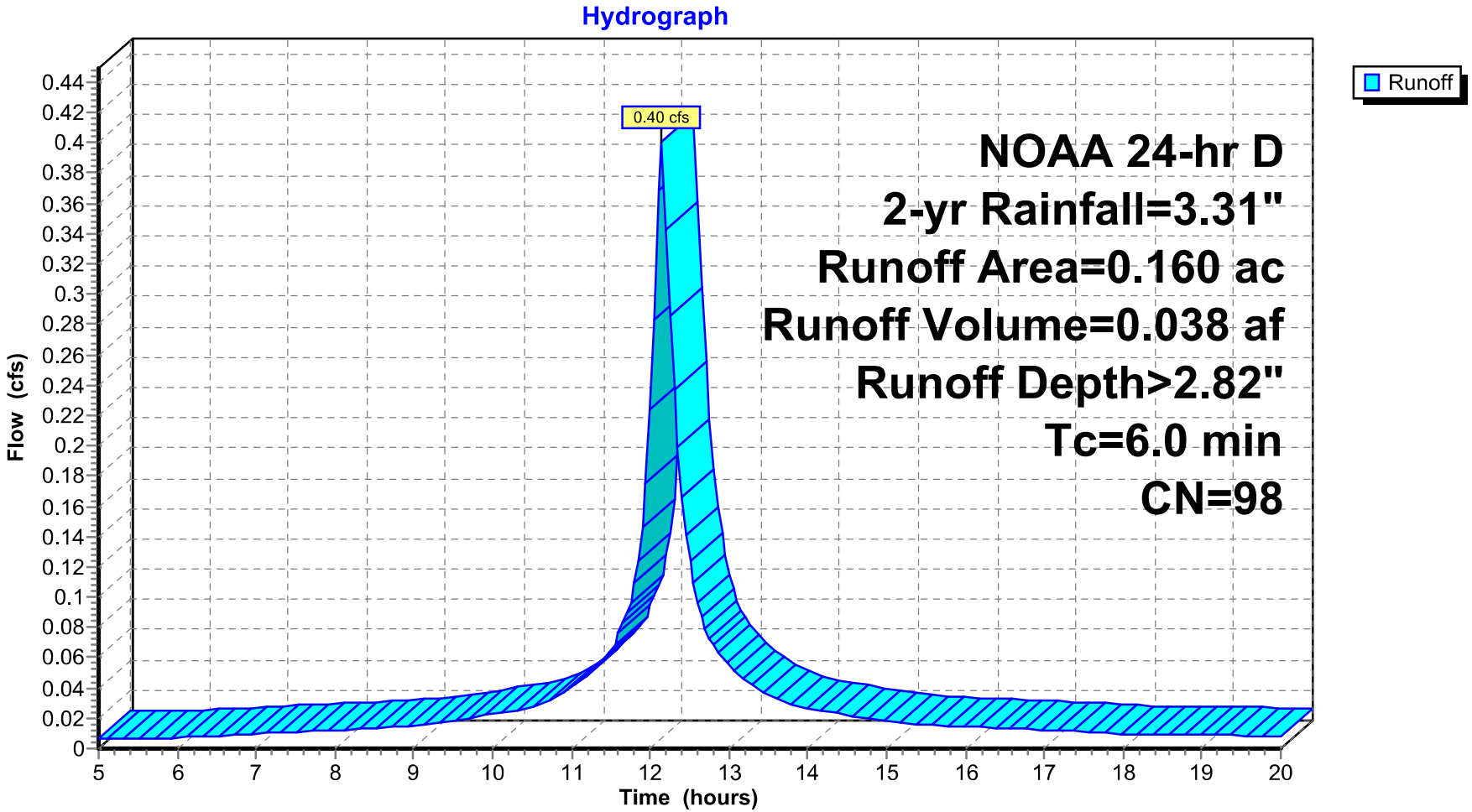
Runoff = 0.40 cfs @ 12.14 hrs, Volume= 0.038 af, Depth> 2.82"
Routed to Pond UG : UG BASIN

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2-yr Rainfall=3.31"

Area (ac)	CN	Description
0.160	98	Unconnected pavement, HSG D
0.160		100.00% Impervious Area
0.160		100.00% Unconnected

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

Subcatchment Bi-1: IMPERVIOUS



Summary for Subcatchment Bi-2: IMPERVIOUS

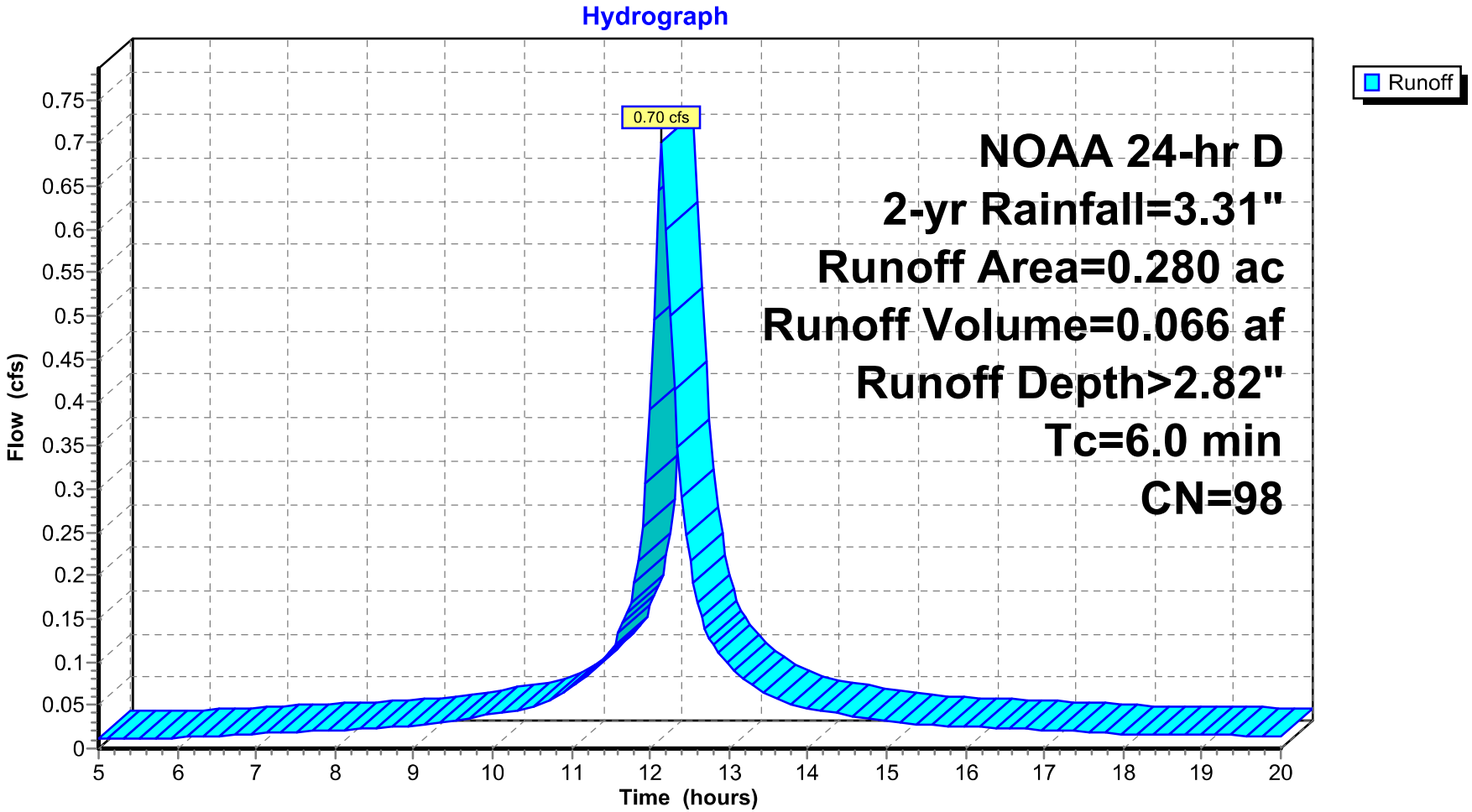
Runoff = 0.70 cfs @ 12.14 hrs, Volume= 0.066 af, Depth> 2.82"
Routed to Pond B-1 : DESIGN POINT 1

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2-yr Rainfall=3.31"

Area (ac)	CN	Description
0.280	98	Unconnected pavement, HSG D
0.280		100.00% Impervious Area
0.280		100.00% Unconnected

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

Subcatchment Bi-2: IMPERVIOUS



Summary for Subcatchment Bp: PERVIOUS

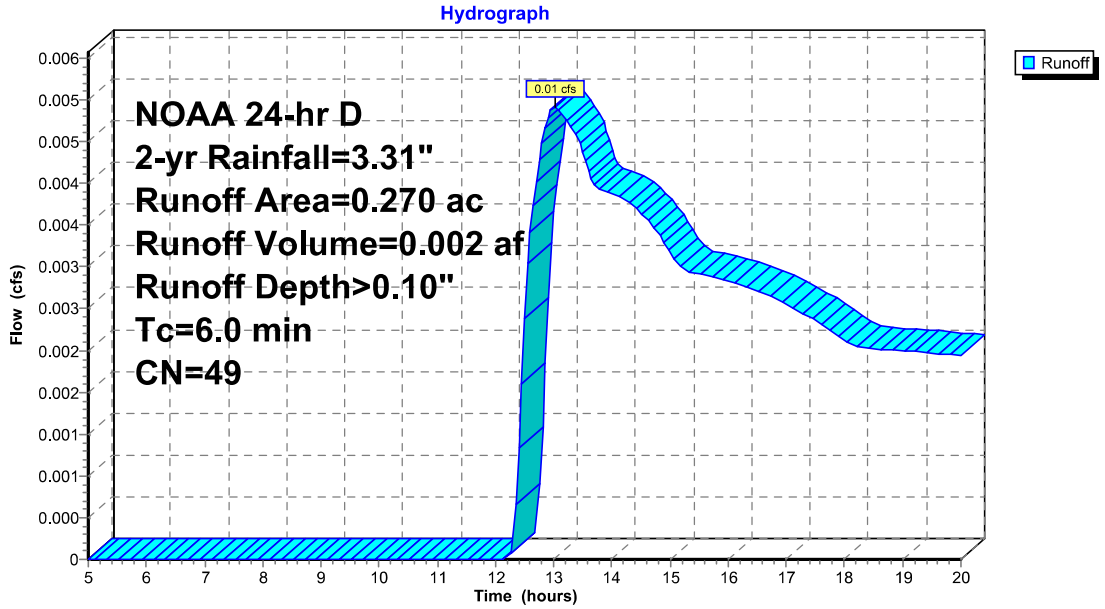
Runoff = 0.01 cfs @ 13.03 hrs, Volume= 0.002 af, Depth> 0.10"
Routed to Pond B-1 : DESIGN POINT 1

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2-yr Rainfall=3.31"

Area (ac)	CN	Description
0.270	49	50-75% Grass cover, Fair, HSG A
0.270		100.00% Pervious Area

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

Subcatchment Bp: PERVIOUS



Summary for Subcatchment RF: ROOF

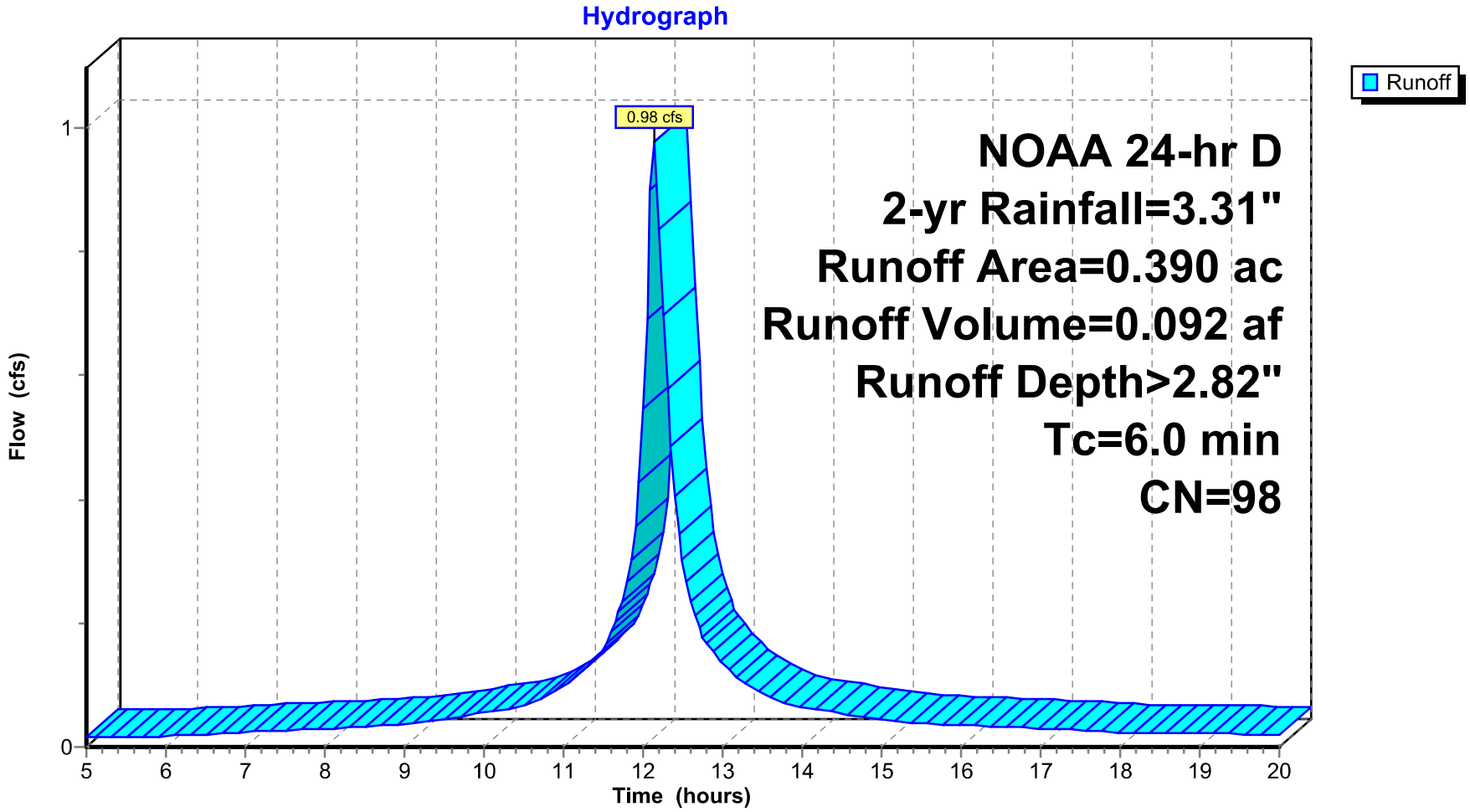
Runoff = 0.98 cfs @ 12.14 hrs, Volume= 0.092 af, Depth> 2.82"
Routed to Pond UG : UG BASIN

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2-yr Rainfall=3.31"

Area (ac)	CN	Description
0.390	98	Unconnected roofs, HSG A
0.390		100.00% Impervious Area
0.390		100.00% Unconnected

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

Subcatchment RF: ROOF



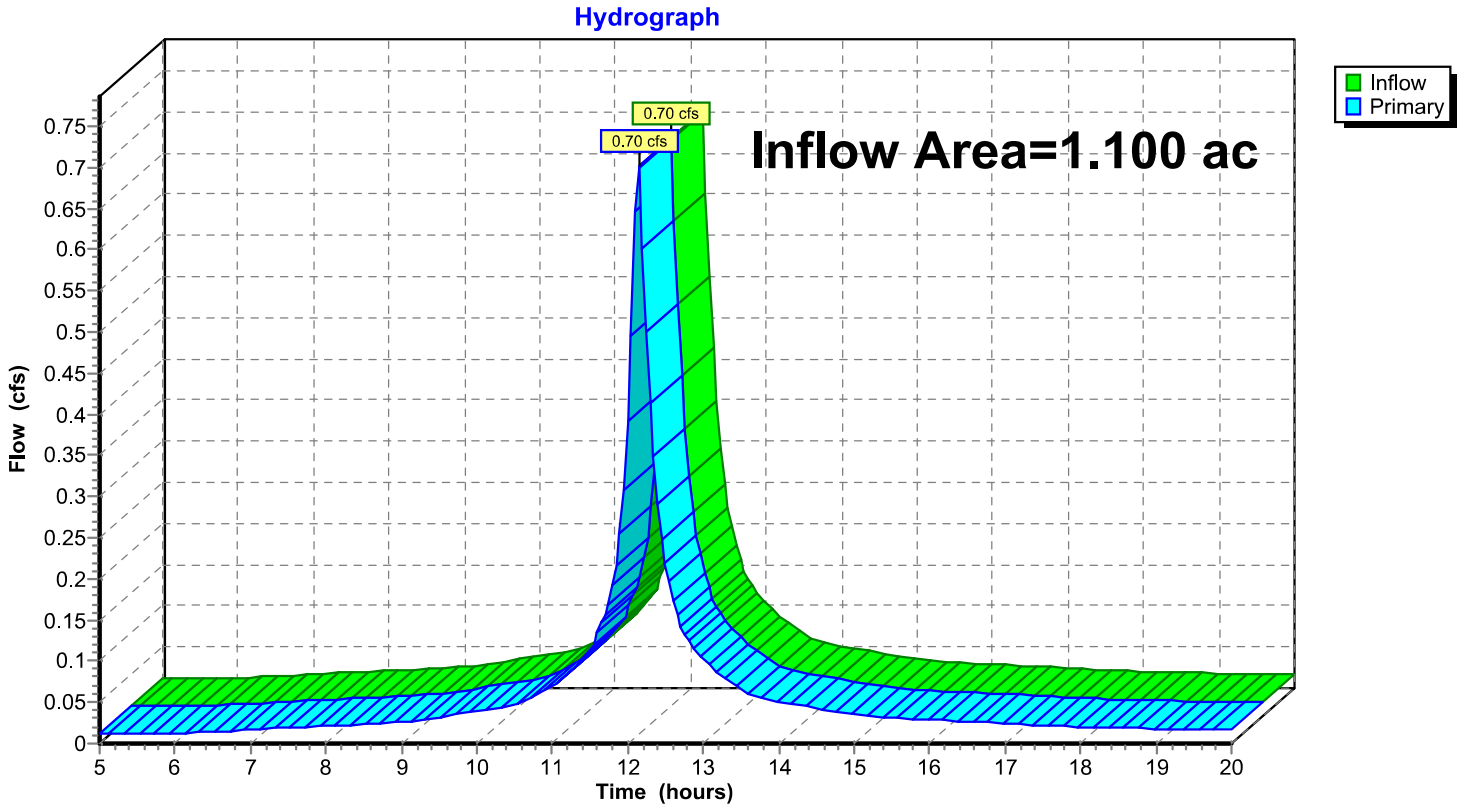
Summary for Pond B-1: DESIGN POINT 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.100 ac, 75.45% Impervious, Inflow Depth > 0.74" for 2-yr event
Inflow = 0.70 cfs @ 12.14 hrs, Volume= 0.068 af
Primary = 0.70 cfs @ 12.14 hrs, Volume= 0.068 af, Atten= 0%, Lag= 0.0 min

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

Pond B-1: DESIGN POINT 1



Summary for Pond UG: UG BASIN

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.550 ac,100.00% Impervious, Inflow Depth > 2.82" for 2-yr event
Inflow = 1.38 cfs @ 12.14 hrs, Volume= 0.129 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond B-1 : DESIGN POINT 1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 22.74' @ 20.00 hrs Surf.Area= 0.095 ac Storage= 0.129 af

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

Volume	Invert	Avail.Storage	Storage Description
#1A	20.75'	0.154 af	**28.50'W x 145.89'L x 6.75'H Field A** 0.644 af Overall - 0.260 af Embedded = 0.384 af x 40.0% Voids
#2A	21.50'	0.260 af	**ADS_StormTech MC-7200 +Cap**x 63 Inside #1 Effective Size= 91.2"W x 60.0"H => 26.68 sf x 6.59'L = 175.9 cf Overall Size= 100.0"W x 60.0"H x 6.95'L with 0.36' Overlap 63 Chambers in 3 Rows Cap Storage= 39.5 cf x 2 x 3 rows = 237.0 cf
		0.414 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	25.95'	**12.0" Round Culvert** L= 7.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 24.75' / 25.95' S= -0.1714 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=20.75' TW=28.00' (Fixed TW Elev= 28.00')
↑—**1=Culvert** (Controls 0.00 cfs)

Pond UG: UG BASIN - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-7200 +Cap (ADS StormTech®MC-7200 with cap volume)
Effective Size= 91.2"W x 60.0"H => 26.68 sf x 6.59'L = 175.9 cf
Overall Size= 100.0"W x 60.0"H x 6.95'L with 0.36' Overlap
Cap Storage= 39.5 cf x 2 x 3 rows = 237.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

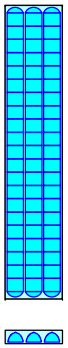
21 Chambers/Row x 6.59' Long +2.73' Cap Length x 2 = 143.89' Row Length +12.0" End Stone x 2 = 145.89' Base Length
3 Rows x 100.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 28.50' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

63 Chambers x 175.9 cf + 39.5 cf Cap Volume x 2 x 3 Rows = 11,317.2 cf Chamber Storage

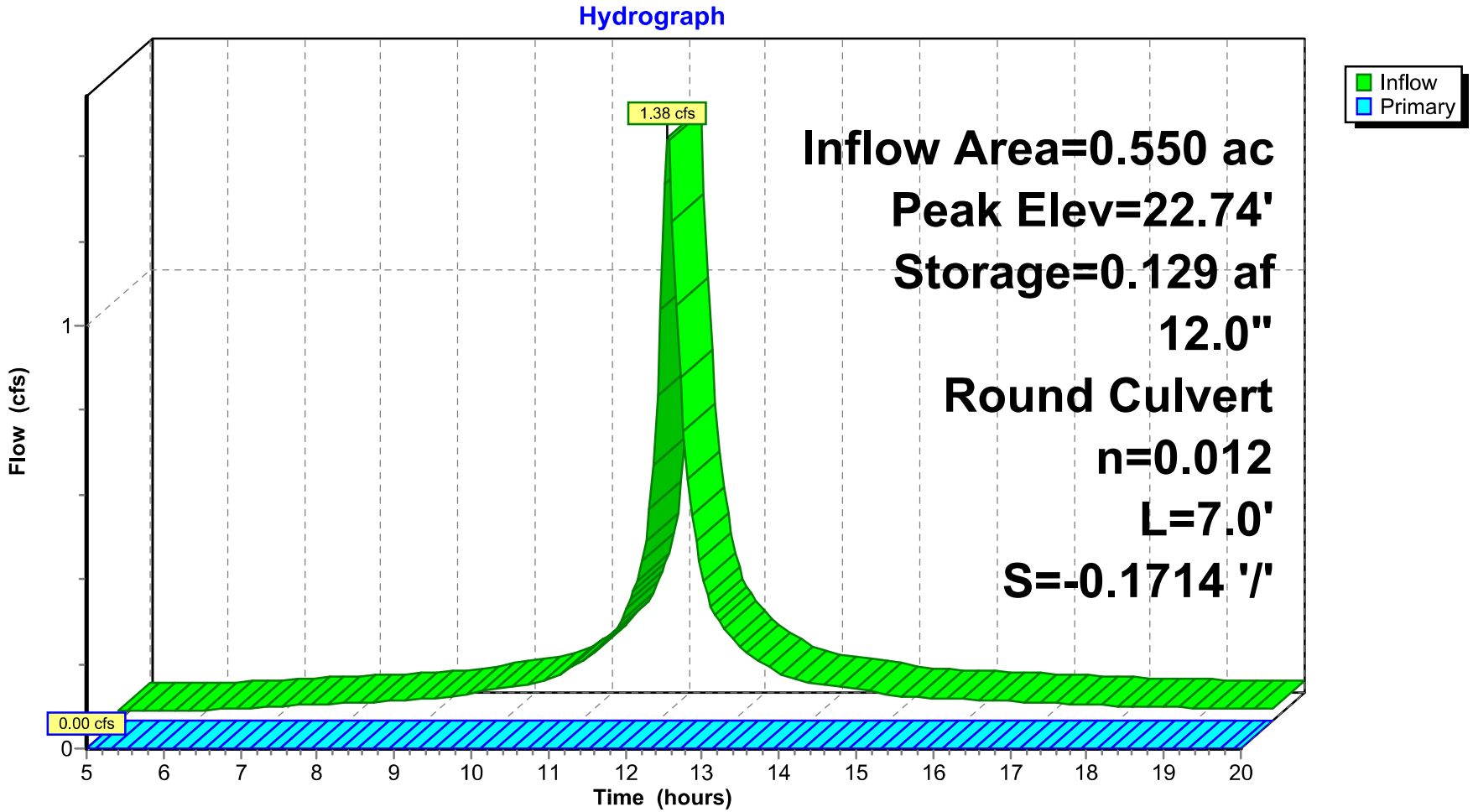
28,065.9 cf Field - 11,317.2 cf Chambers = 16,748.7 cf Stone x 40.0% Voids = 6,699.5 cf Stone Storage

Chamber Storage + Stone Storage = 18,016.7 cf = 0.414 af
Overall Storage Efficiency = 64.2%
Overall System Size = 145.89' x 28.50' x 6.75'

63 Chambers
1,039.5 cy Field
620.3 cy Stone



Pond UG: UG BASIN



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

SubcatchmentBi-1: IMPERVIOUS Runoff Area=0.160 ac 100.00% Impervious Runoff Depth>4.39"
Tc=6.0 min CN=98 Runoff=0.62 cfs 0.058 af

SubcatchmentBi-2: IMPERVIOUS Runoff Area=0.280 ac 100.00% Impervious Runoff Depth>4.39"
Tc=6.0 min CN=98 Runoff=1.08 cfs 0.102 af

SubcatchmentBp: PERVIOUS Runoff Area=0.270 ac 0.00% Impervious Runoff Depth>0.56"
Tc=6.0 min CN=49 Runoff=0.10 cfs 0.013 af

SubcatchmentRF: ROOF Runoff Area=0.390 ac 100.00% Impervious Runoff Depth>4.39"
Tc=6.0 min CN=98 Runoff=1.51 cfs 0.143 af

Pond B-1: DESIGN POINT 1 Inflow=1.18 cfs 0.115 af
Primary=1.18 cfs 0.115 af

Pond UG: UG BASIN Peak Elev=23.66' Storage=0.201 af Inflow=2.13 cfs 0.201 af
12.0" Round Culvert n=0.012 L=7.0' S=-0.1714 '/' Outflow=0.00 cfs 0.000 af

Total Runoff Area = 1.100 ac Runoff Volume = 0.316 af Average Runoff Depth = 3.45"
24.55% Pervious = 0.270 ac 75.45% Impervious = 0.830 ac

Summary for Subcatchment Bi-1: IMPERVIOUS

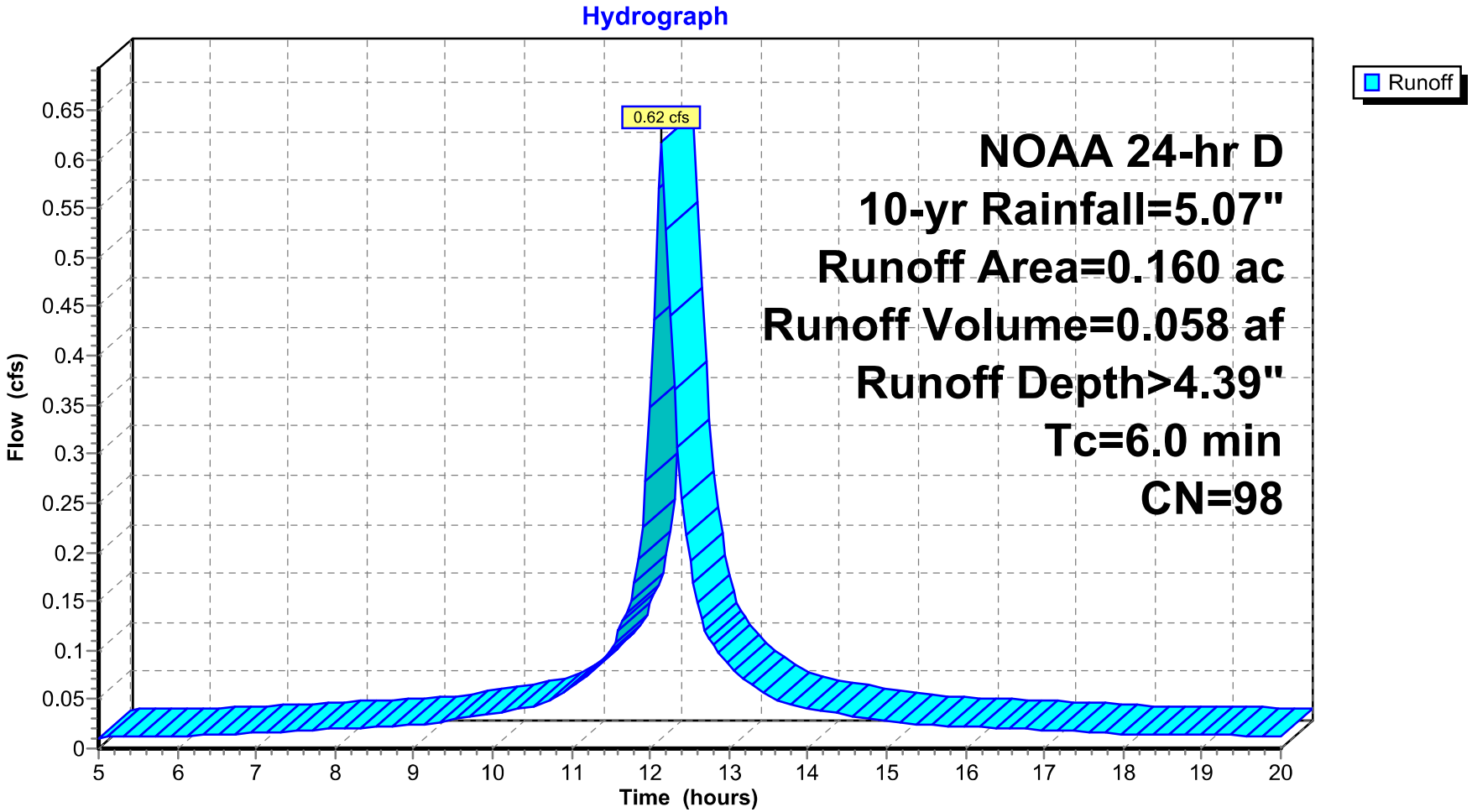
Runoff = 0.62 cfs @ 12.14 hrs, Volume= 0.058 af, Depth> 4.39"
Routed to Pond UG : UG BASIN

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10-yr Rainfall=5.07"

Area (ac)	CN	Description
0.160	98	Unconnected pavement, HSG D
0.160		100.00% Impervious Area
0.160		100.00% Unconnected

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

Subcatchment Bi-1: IMPERVIOUS



Summary for Subcatchment Bi-2: IMPERVIOUS

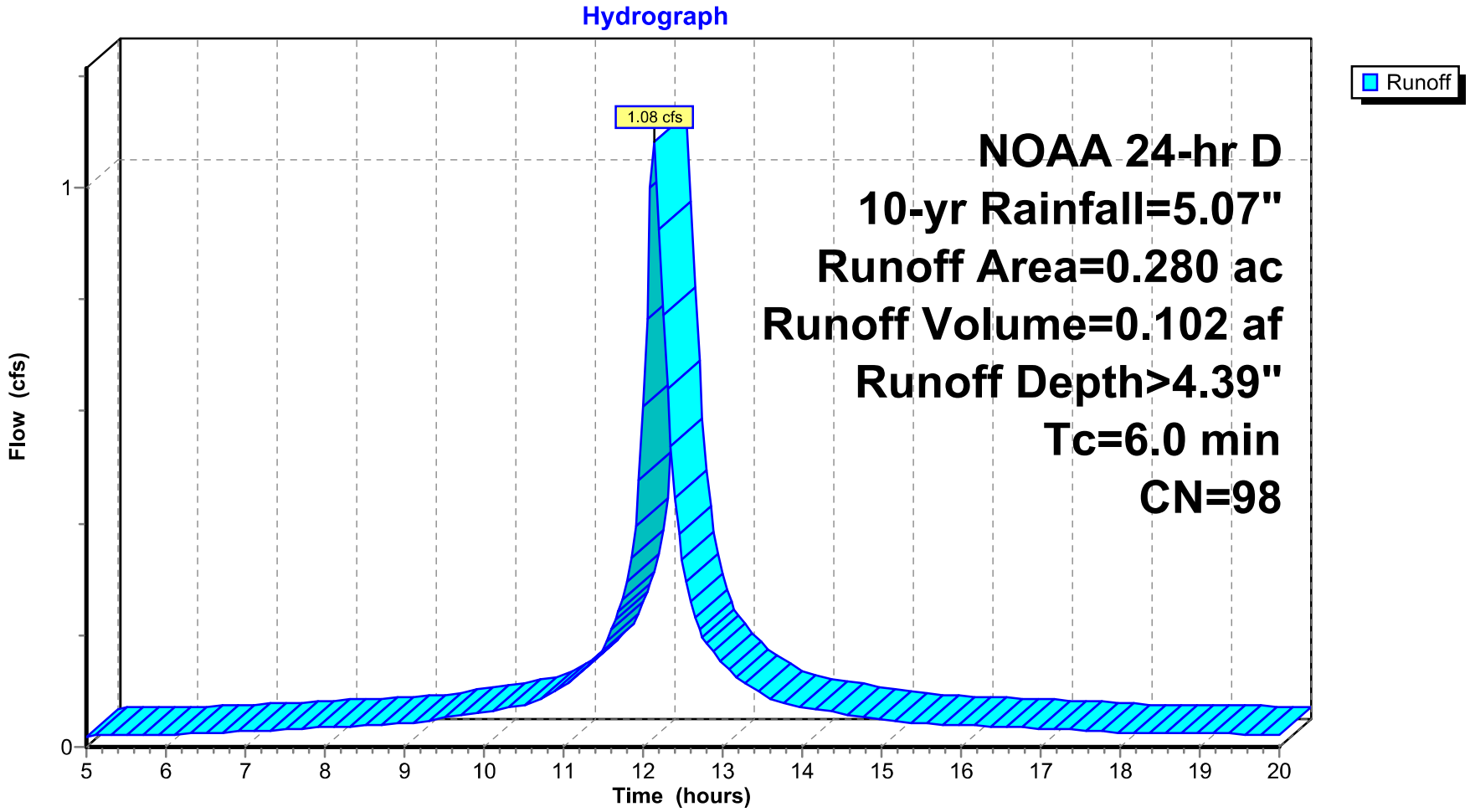
Runoff = 1.08 cfs @ 12.14 hrs, Volume= 0.102 af, Depth> 4.39"
Routed to Pond B-1 : DESIGN POINT 1

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10-yr Rainfall=5.07"

Area (ac)	CN	Description
0.280	98	Unconnected pavement, HSG D
0.280		100.00% Impervious Area
0.280		100.00% Unconnected

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

Subcatchment Bi-2: IMPERVIOUS



Summary for Subcatchment Bp: PERVIOUS

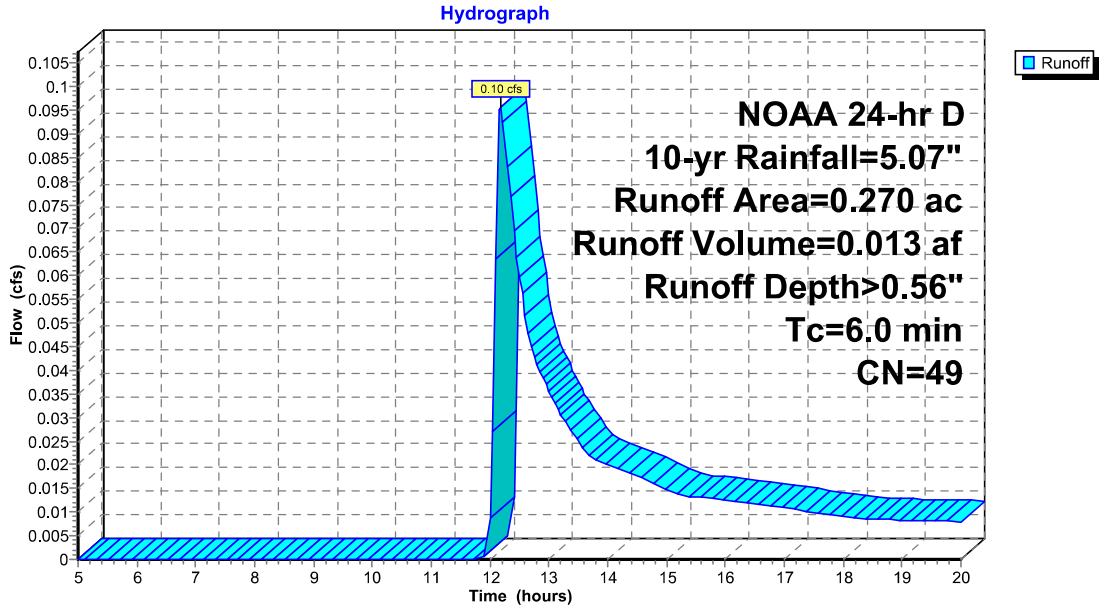
Runoff = 0.10 cfs @ 12.18 hrs, Volume= 0.013 af, Depth> 0.56"
Routed to Pond B-1 : DESIGN POINT 1

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10-yr Rainfall=5.07"

Area (ac)	CN	Description
0.270	49	50-75% Grass cover, Fair, HSG A
0.270		100.00% Pervious Area

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

Subcatchment Bp: PERVIOUS



Summary for Subcatchment RF: ROOF

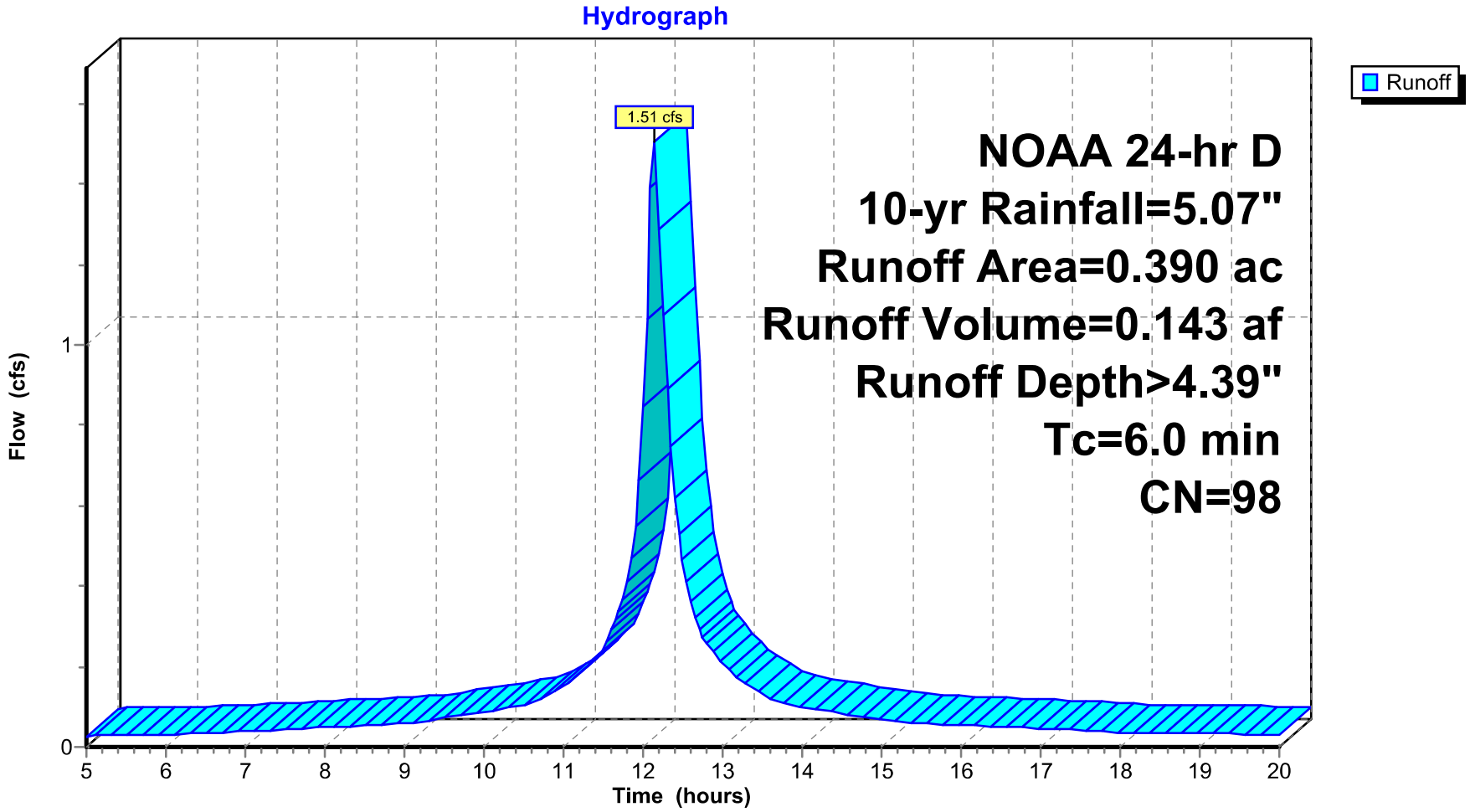
Runoff = 1.51 cfs @ 12.14 hrs, Volume= 0.143 af, Depth> 4.39"
Routed to Pond UG : UG BASIN

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10-yr Rainfall=5.07"

Area (ac)	CN	Description
0.390	98	Unconnected roofs, HSG A
0.390		100.00% Impervious Area
0.390		100.00% Unconnected

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

Subcatchment RF: ROOF



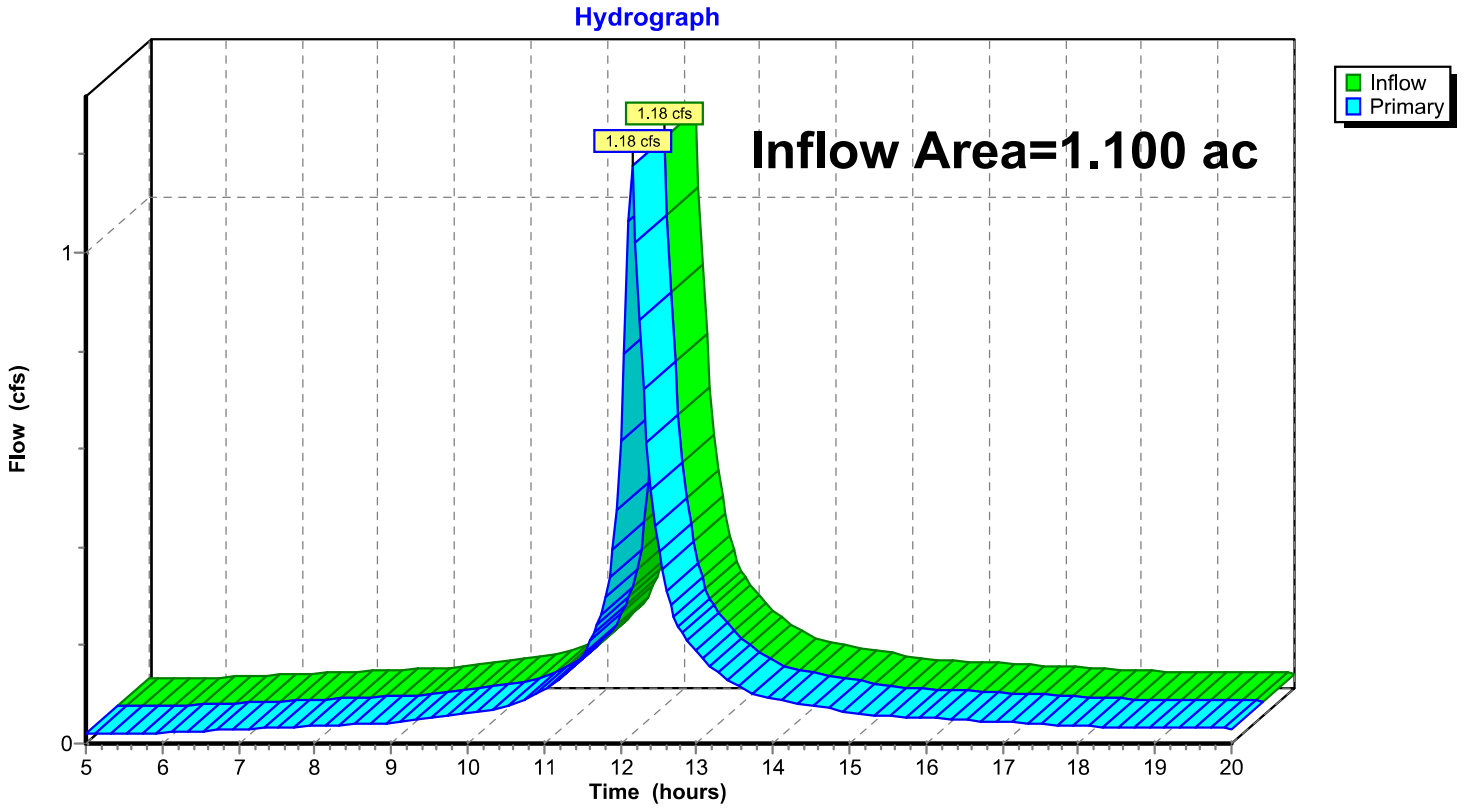
Summary for Pond B-1: DESIGN POINT 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.100 ac, 75.45% Impervious, Inflow Depth > 1.25" for 10-yr event
Inflow = 1.18 cfs @ 12.15 hrs, Volume= 0.115 af
Primary = 1.18 cfs @ 12.15 hrs, Volume= 0.115 af, Atten= 0%, Lag= 0.0 min

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

Pond B-1: DESIGN POINT 1



Summary for Pond UG: UG BASIN

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.550 ac,100.00% Impervious, Inflow Depth > 4.39" for 10-yr event
Inflow = 2.13 cfs @ 12.14 hrs, Volume= 0.201 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond B-1 : DESIGN POINT 1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 23.66' @ 20.00 hrs Surf.Area= 0.095 ac Storage= 0.201 af

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

Volume	Invert	Avail.Storage	Storage Description
#1A	20.75'	0.154 af	**28.50'W x 145.89'L x 6.75'H Field A** 0.644 af Overall - 0.260 af Embedded = 0.384 af x 40.0% Voids
#2A	21.50'	0.260 af	**ADS_StormTech MC-7200 +Cap**x 63 Inside #1 Effective Size= 91.2"W x 60.0"H => 26.68 sf x 6.59'L = 175.9 cf Overall Size= 100.0"W x 60.0"H x 6.95'L with 0.36' Overlap 63 Chambers in 3 Rows Cap Storage= 39.5 cf x 2 x 3 rows = 237.0 cf
		0.414 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	25.95'	**12.0" Round Culvert** L= 7.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 24.75' / 25.95' S= -0.1714 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=20.75' TW=28.00' (Fixed TW Elev= 28.00')
↑—**1=Culvert** (Controls 0.00 cfs)

Pond UG: UG BASIN - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-7200 +Cap (ADS StormTech®MC-7200 with cap volume)
Effective Size= 91.2"W x 60.0"H => 26.68 sf x 6.59'L = 175.9 cf
Overall Size= 100.0"W x 60.0"H x 6.95'L with 0.36' Overlap
Cap Storage= 39.5 cf x 2 x 3 rows = 237.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

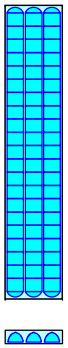
21 Chambers/Row x 6.59' Long +2.73' Cap Length x 2 = 143.89' Row Length +12.0" End Stone x 2 = 145.89' Base Length
3 Rows x 100.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 28.50' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

63 Chambers x 175.9 cf + 39.5 cf Cap Volume x 2 x 3 Rows = 11,317.2 cf Chamber Storage

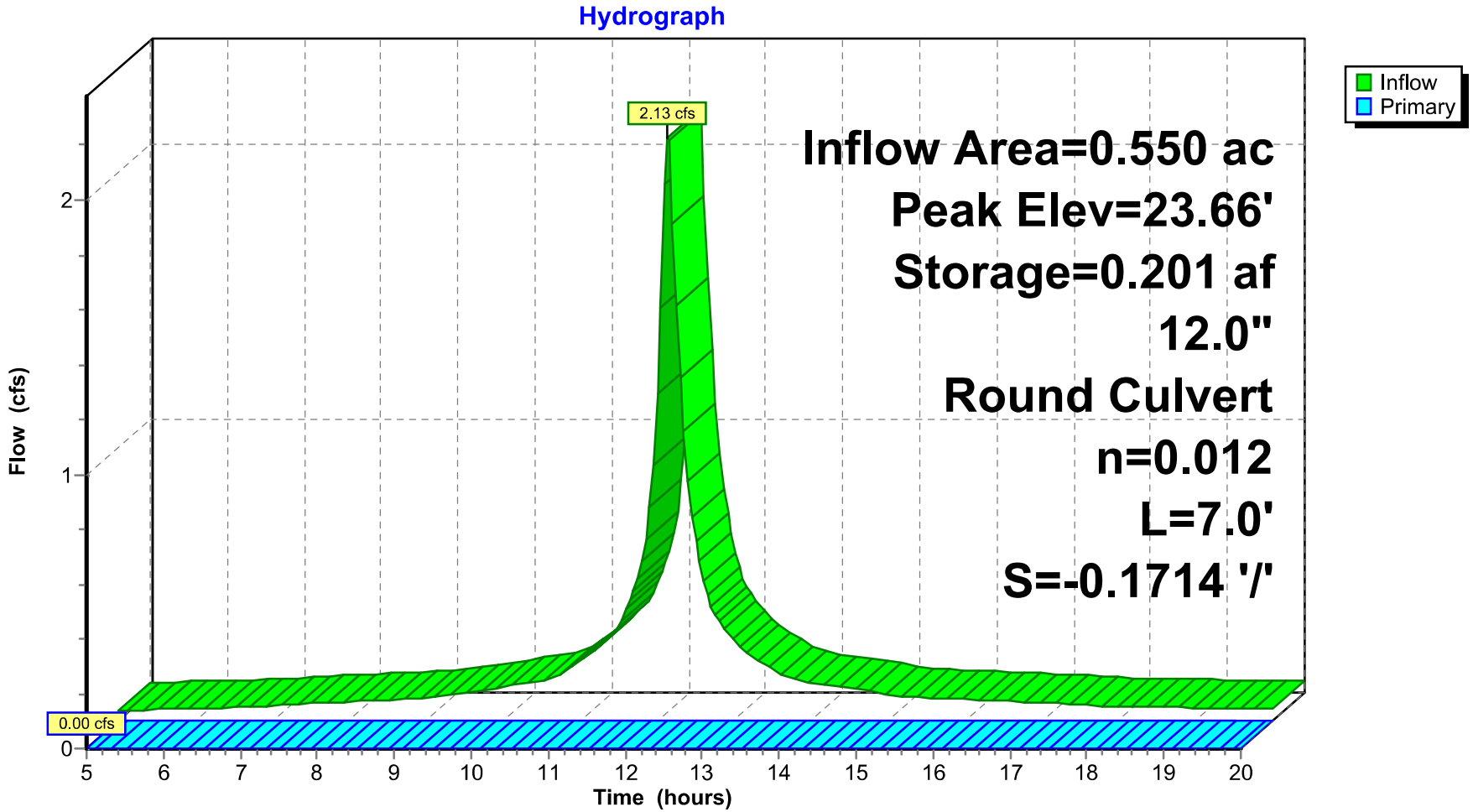
28,065.9 cf Field - 11,317.2 cf Chambers = 16,748.7 cf Stone x 40.0% Voids = 6,699.5 cf Stone Storage

Chamber Storage + Stone Storage = 18,016.7 cf = 0.414 af
Overall Storage Efficiency = 64.2%
Overall System Size = 145.89' x 28.50' x 6.75'

63 Chambers
1,039.5 cy Field
620.3 cy Stone



Pond UG: UG BASIN



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

SubcatchmentBi-1: IMPERVIOUS Runoff Area=0.160 ac 100.00% Impervious Runoff Depth>7.48"
Tc=6.0 min CN=98 Runoff=1.05 cfs 0.100 af

SubcatchmentBi-2: IMPERVIOUS Runoff Area=0.280 ac 100.00% Impervious Runoff Depth>7.48"
Tc=6.0 min CN=98 Runoff=1.83 cfs 0.175 af

SubcatchmentBp: PERVIOUS Runoff Area=0.270 ac 0.00% Impervious Runoff Depth>2.20"
Tc=6.0 min CN=49 Runoff=0.58 cfs 0.050 af

SubcatchmentRF: ROOF Runoff Area=0.390 ac 100.00% Impervious Runoff Depth>7.48"
Tc=6.0 min CN=98 Runoff=2.55 cfs 0.243 af

Pond B-1: DESIGN POINT 1 Inflow=2.41 cfs 0.224 af
Primary=2.41 cfs 0.224 af

Pond UG: UG BASIN Peak Elev=25.77' Storage=0.343 af Inflow=3.60 cfs 0.343 af
12.0" Round Culvert n=0.012 L=7.0' S=-0.1714 '/' Outflow=0.00 cfs 0.000 af

Total Runoff Area = 1.100 ac Runoff Volume = 0.567 af Average Runoff Depth = 6.19"
24.55% Pervious = 0.270 ac 75.45% Impervious = 0.830 ac

Summary for Subcatchment Bi-1: IMPERVIOUS

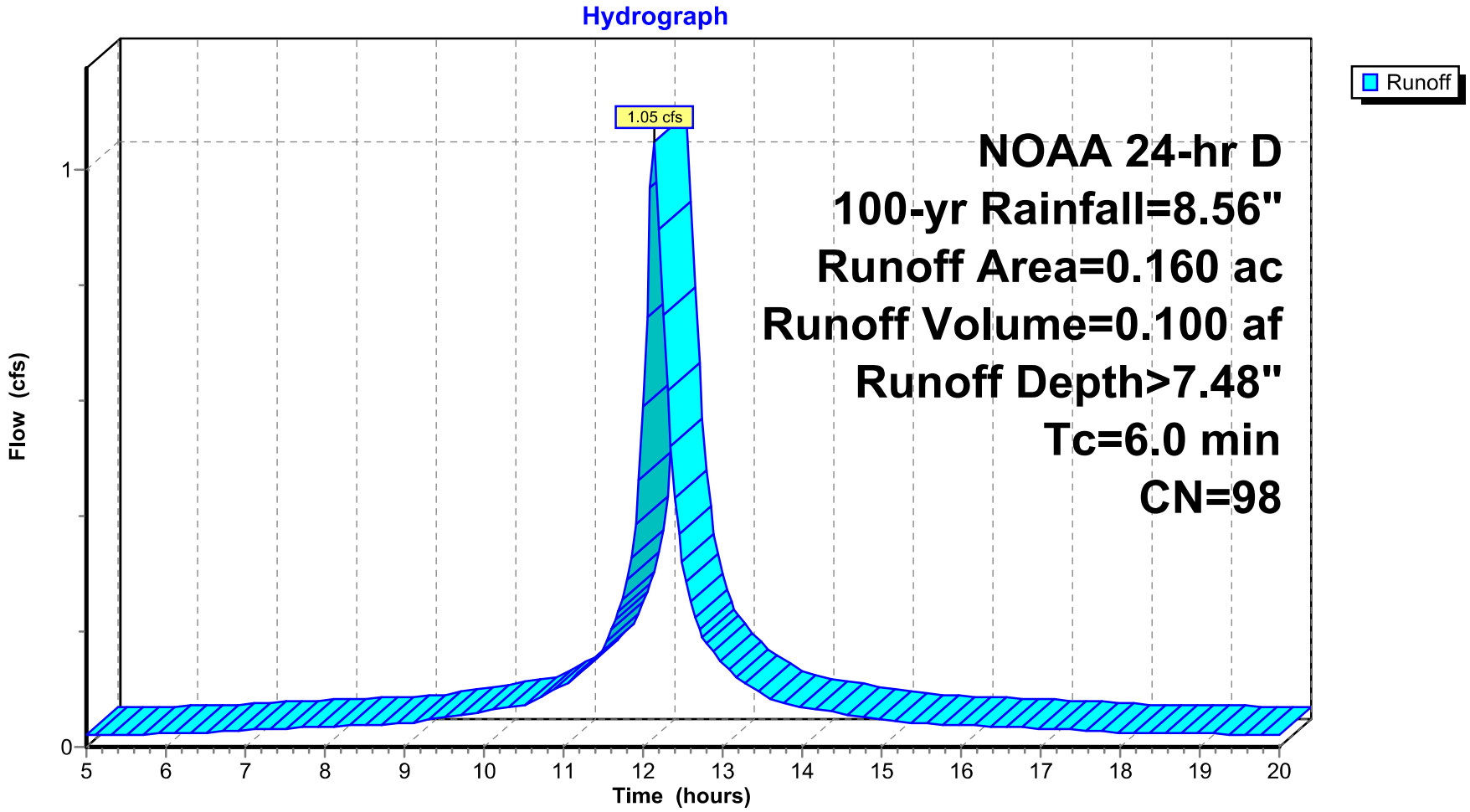
Runoff = 1.05 cfs @ 12.14 hrs, Volume= 0.100 af, Depth> 7.48"
Routed to Pond UG : UG BASIN

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100-yr Rainfall=8.56"

Area (ac)	CN	Description
0.160	98	Unconnected pavement, HSG D
0.160		100.00% Impervious Area
0.160		100.00% Unconnected

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

Subcatchment Bi-1: IMPERVIOUS



Summary for Subcatchment Bi-2: IMPERVIOUS

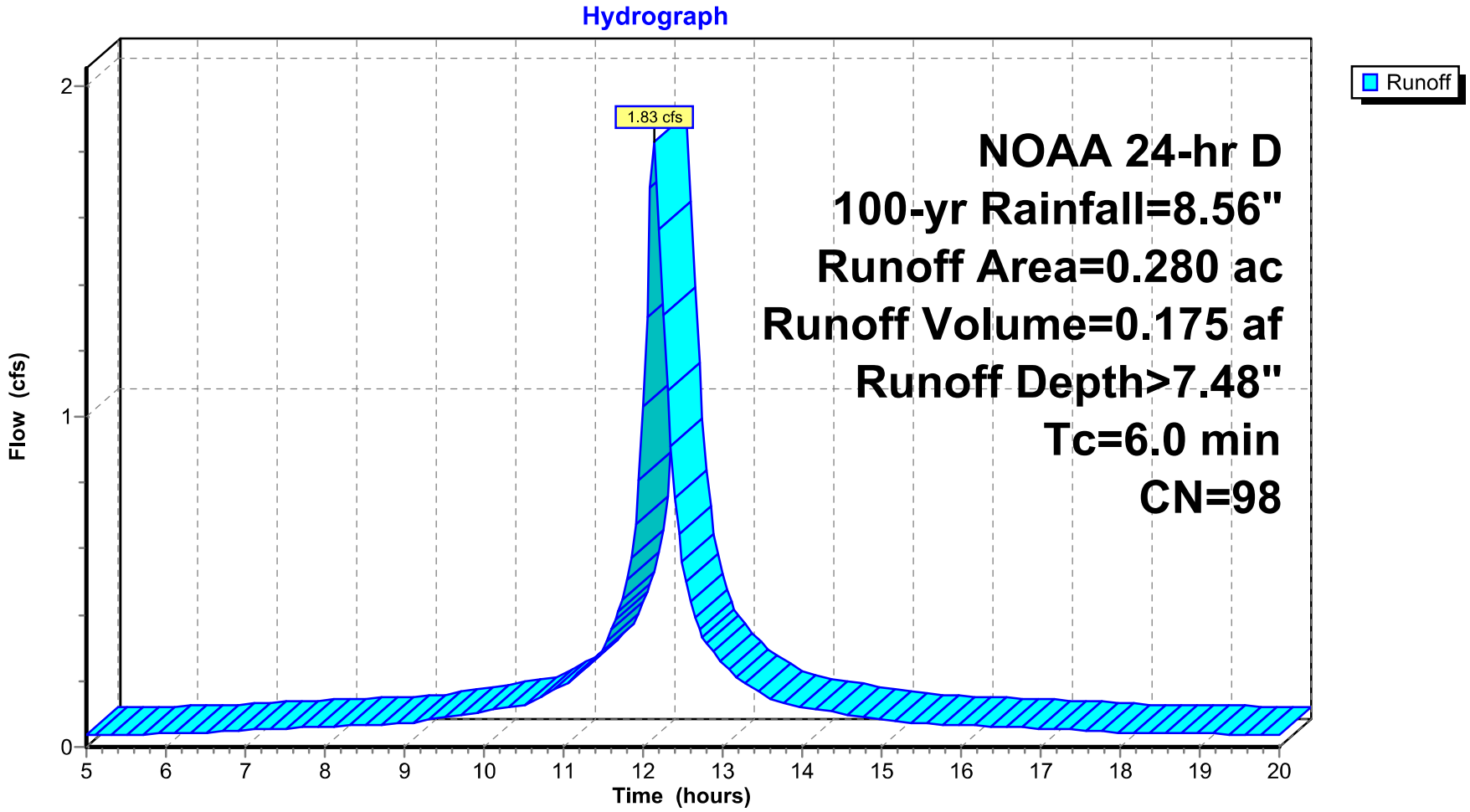
Runoff = 1.83 cfs @ 12.14 hrs, Volume= 0.175 af, Depth> 7.48"
Routed to Pond B-1 : DESIGN POINT 1

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100-yr Rainfall=8.56"

Area (ac)	CN	Description
0.280	98	Unconnected pavement, HSG D
0.280		100.00% Impervious Area
0.280		100.00% Unconnected

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

Subcatchment Bi-2: IMPERVIOUS



Summary for Subcatchment Bp: PERVIOUS

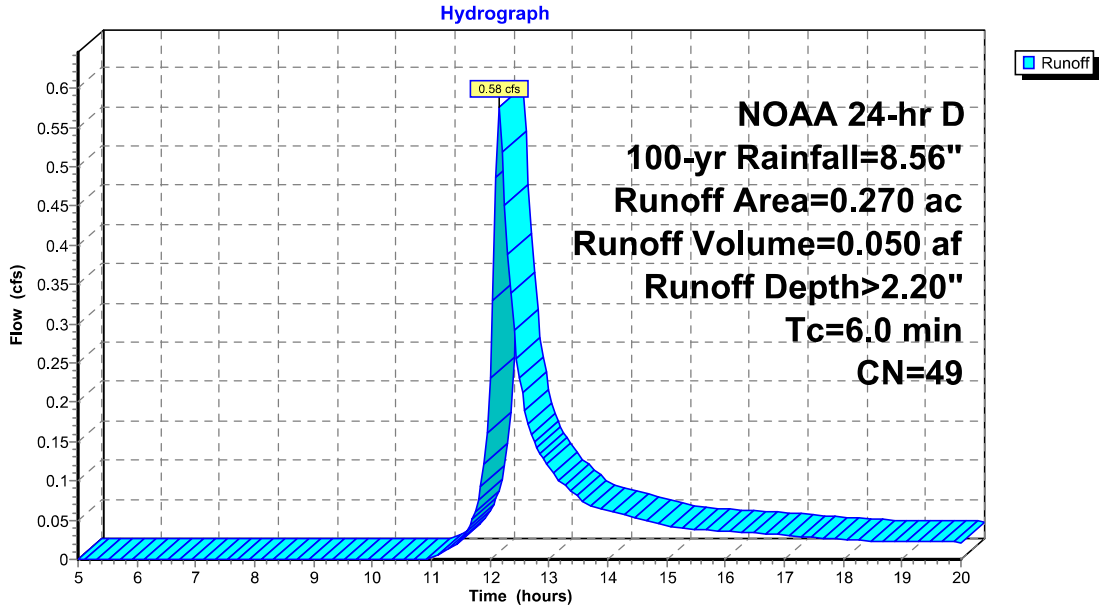
Runoff = 0.58 cfs @ 12.16 hrs, Volume= 0.050 af, Depth> 2.20"
Routed to Pond B-1 : DESIGN POINT 1

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100-yr Rainfall=8.56"

Area (ac)	CN	Description
0.270	49	50-75% Grass cover, Fair, HSG A
0.270		100.00% Pervious Area

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

Subcatchment Bp: PERVIOUS



Summary for Subcatchment RF: ROOF

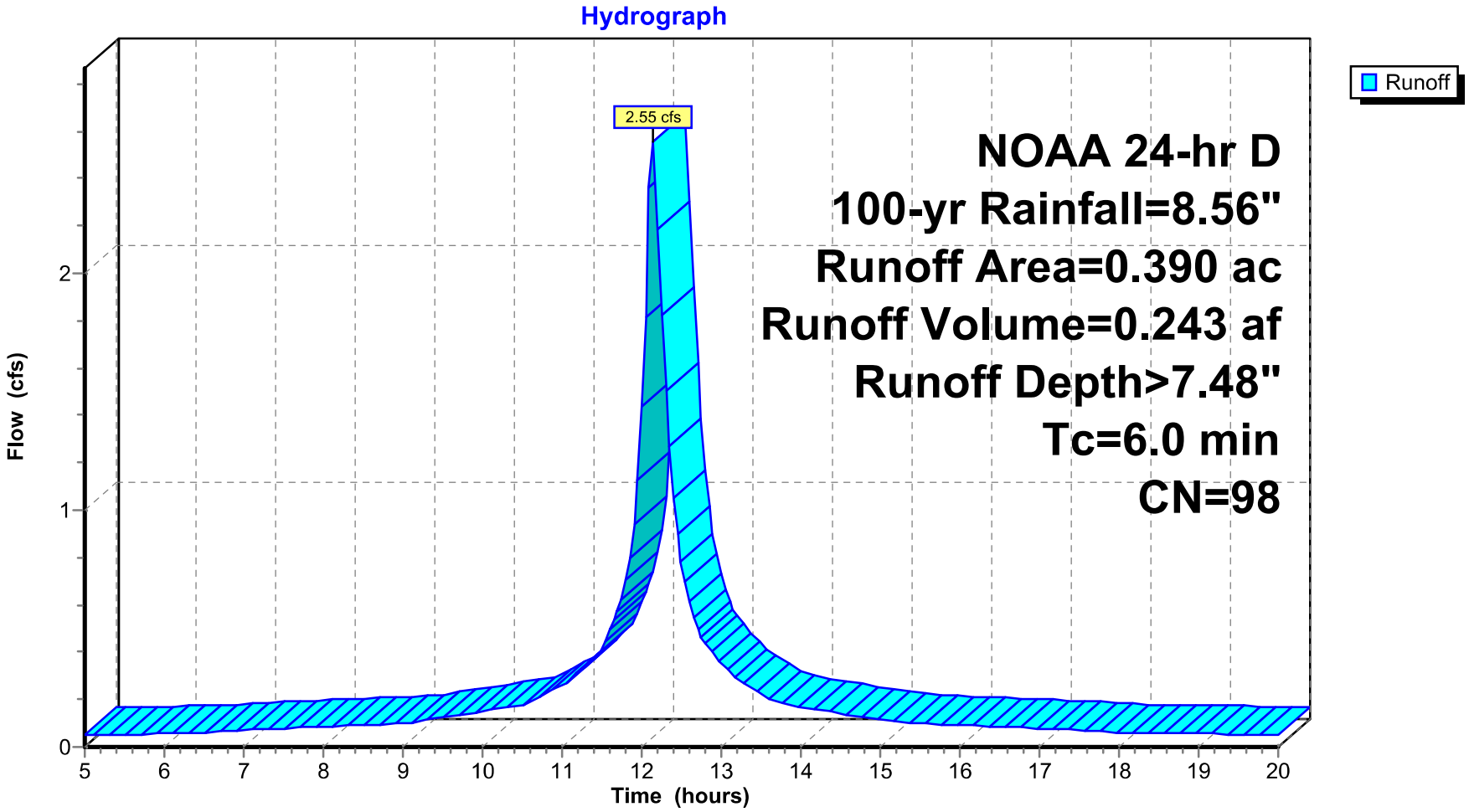
Runoff = 2.55 cfs @ 12.14 hrs, Volume= 0.243 af, Depth> 7.48"
Routed to Pond UG : UG BASIN

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100-yr Rainfall=8.56"

Area (ac)	CN	Description
0.390	98	Unconnected roofs, HSG A
0.390		100.00% Impervious Area
0.390		100.00% Unconnected

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

Subcatchment RF: ROOF



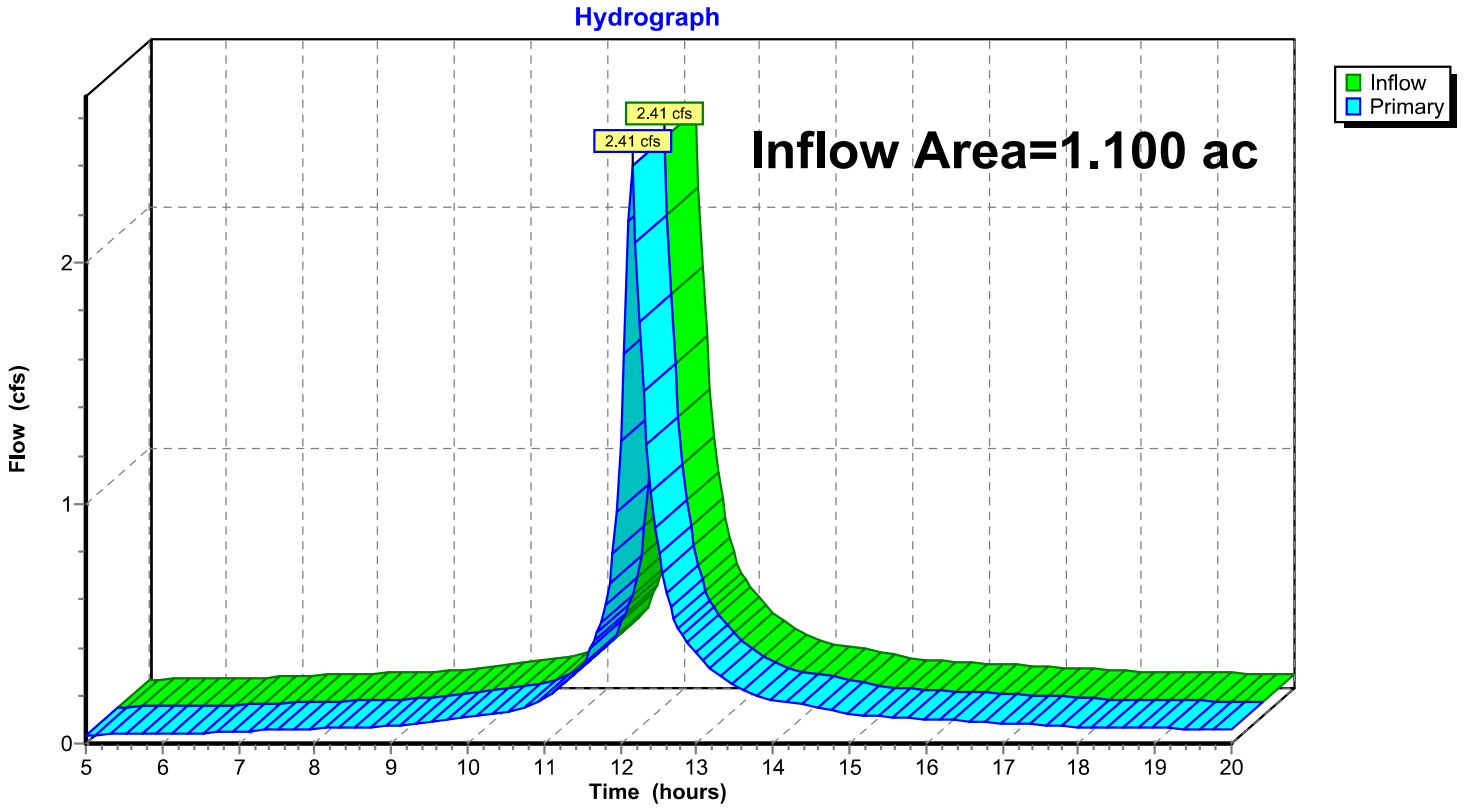
Summary for Pond B-1: DESIGN POINT 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.100 ac, 75.45% Impervious, Inflow Depth > 2.44" for 100-yr event
Inflow = 2.41 cfs @ 12.15 hrs, Volume= 0.224 af
Primary = 2.41 cfs @ 12.15 hrs, Volume= 0.224 af, Atten= 0%, Lag= 0.0 min

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

Pond B-1: DESIGN POINT 1



Summary for Pond UG: UG BASIN

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.550 ac,100.00% Impervious, Inflow Depth > 7.48" for 100-yr event
Inflow = 3.60 cfs @ 12.14 hrs, Volume= 0.343 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond B-1 : DESIGN POINT 1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 25.77' @ 20.00 hrs Surf.Area= 0.095 ac Storage= 0.343 af

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

Volume	Invert	Avail.Storage	Storage Description
#1A	20.75'	0.154 af	**28.50'W x 145.89'L x 6.75'H Field A** 0.644 af Overall - 0.260 af Embedded = 0.384 af x 40.0% Voids
#2A	21.50'	0.260 af	**ADS_StormTech MC-7200 +Cap**x 63 Inside #1 Effective Size= 91.2"W x 60.0"H => 26.68 sf x 6.59'L = 175.9 cf Overall Size= 100.0"W x 60.0"H x 6.95'L with 0.36' Overlap 63 Chambers in 3 Rows Cap Storage= 39.5 cf x 2 x 3 rows = 237.0 cf
		0.414 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	25.95'	**12.0" Round Culvert** L= 7.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 24.75' / 25.95' S= -0.1714 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=20.75' TW=28.00' (Fixed TW Elev= 28.00')
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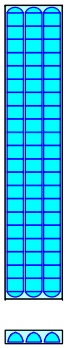
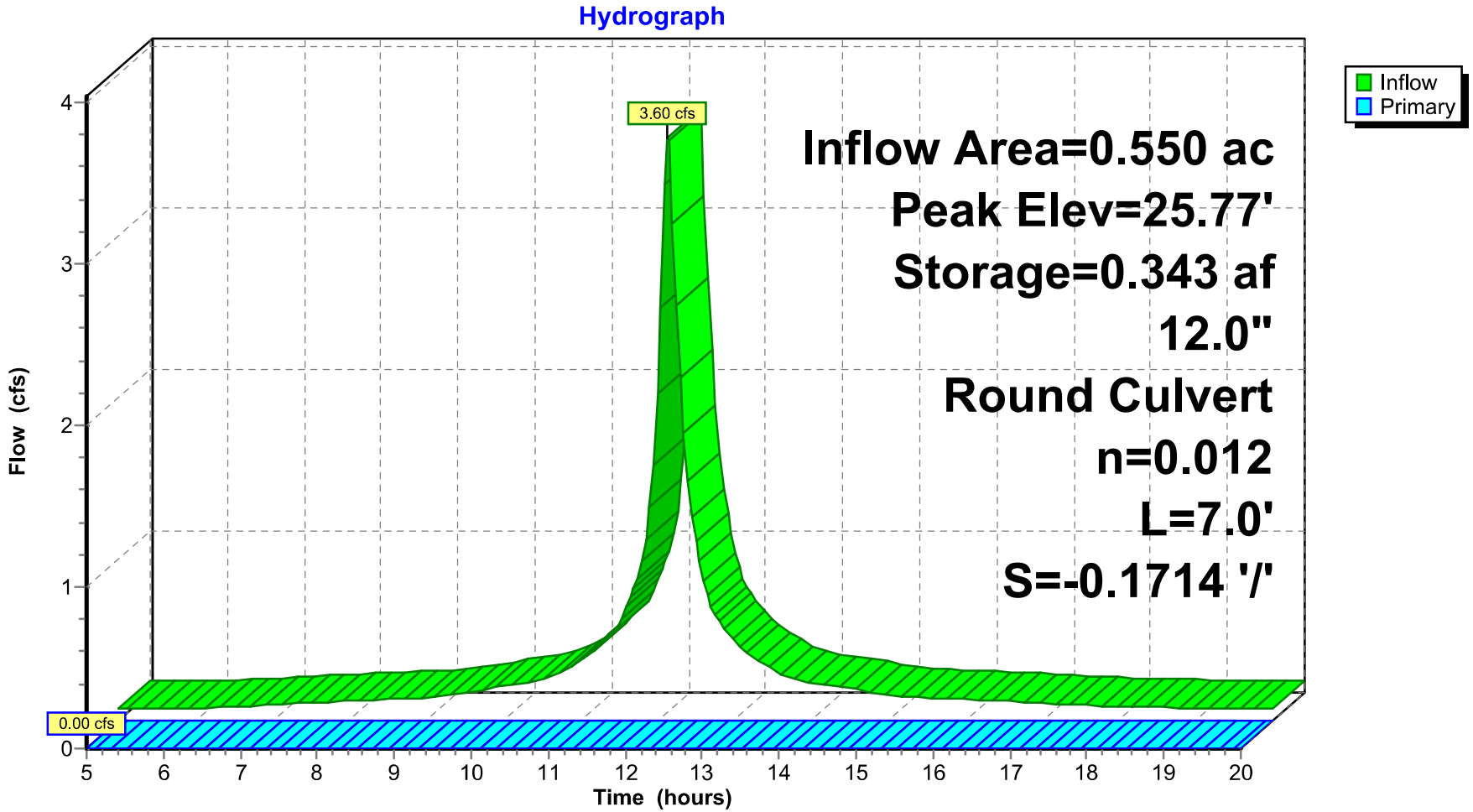


Pond UG: UG BASIN



A P P E N D I X E

DRAIN DOWN TIME CALCULATIONS

Project Name	Proposed Building Expansion
Location	Township of Neptune
Project ID	24-2426-01
Date	2/28/2025
Prepared By	ES

DRAIN DOWN TIME CALCULATIONS

Basin ID: Infiltration Basin

$$Drain\ Time = \frac{Volume}{Infiltration\ Rate\ x\ Design\ Permeability\ Rate}$$

Volume Below Emergency Spillway[1]	18,017	cf
Infiltration Area	4,161	sf
Design Permeability Rate	1	in/hr

Drain Time = 4.3 hr

Less than 72 hours YES

[1] Volume below emergency spillway assumes outlet control structure fails and entire volume is infiltrated