

STORMWATER MANAGEMENT REPORT

For:

VETERAN HILL ROAD SOLAR PROJECT

Town of Veteran
Chemung County, NY 14845
Lot ID: 39.00-1-14.1

Prepared For:

Dynamic Energy LLC

2401 Walnut Street
Suite 503
Philadelphia, PA 19103

Prepared By:

AKRF, Inc.

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Suite 300
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Preparation Date:

April 20, 2026

Justin Seeney, PE

Registered Professional Engineer, State of New York No. 095227

AKRF Project Number: 231510

akrf

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1.0 EXECUTIVE SUMMARY

On behalf of the Applicant, Dynamic Energy LLC, this Stormwater Management Report and accompanying project plans were prepared by AKRF, Inc. (AKRF) for the proposed project entitled “Veteran Hill Road Solar Project” located in the Town of Veteran in Chemung County, New York. The project proposes to construct a 3.8-megawatt ground-mounted solar array with electrical infrastructure, a gravel access road, and stormwater management facilities.

The Stormwater Management Report was prepared to document the selection, design, installation, implementation, and maintenance of the control measures and practices proposed to minimize the discharge of pollutants and meet applicable water quality standards. The control measures and stormwater practices were selected and designed to comply with the following applicable rules, regulations, and guidance documents established by the New York State Department of Environmental Conservation (NYSDEC):

- NYSDEC State Pollutant Discharge Elimination System (SDPES) General Permit for Stormwater Discharges from Construction Activity, Permit No. GP-0-25-001 (“Construction General Permit”)
- NYSDEC Stormwater Management Design Manual, dated July 31, 2024 (“Stormwater Design Manual”)
- NYSDEC Standards and Specifications for Erosion and Sediment Control, dated July 2016 (“Blue Book”)

The project proposes to maintain existing drainage patterns as much as practicable and implements runoff reduction techniques and standard post-construction stormwater management practices (SMP) to satisfy water quantity requirements. The proposed SMP’s were designed to meet the performance criteria in the Stormwater Design Manual to mitigate potential impacts on the flow rate of stormwater runoff. A comparison of the overall peak flow rates under pre- and post-development conditions is summarized in the table below:

Table 1: Peak Flow Rate Summary Table

Storm Event	Pre-Development (cfs)	Post-Development (cfs)	Delta (cfs)
1-year	18.09	17.70	- 2.2%
10-year	91.64	92.40	+ 0.8%
100-year	262.94	265.97	+ 1.2%

2.0 EXISTING CONDITIONS

The 145-acre parcel consists predominantly of undeveloped woodlands, agricultural land, and single-family dwellings. The property is bound by Veteran Hills Road to the south, agricultural land to the east and west, and wooded area to the north. Access to the site is through an existing gravel path off Veteran Hill Road that runs along the southern property line.

The property is within the Chemung River watershed and generally drains to the west towards the Catherine Creek tributary to the west according to the existing topography.

3.0 PROPOSED CONDITIONS

The project consists of installing a 3.8-megawatt ground-mounted solar panel system with a footprint of approximately 24 acres in the center of the parcel. A new gravel access road off Veteran Hill Road provides access to panels, transformers, and other electrical equipment. Other improvements include a security fence around the solar racking system as well as stormwater management measures to meet Construction General Permit requirements. The total earth disturbance is estimated to be approximately 35.9 acres.

3.1 Water Quality

The project proposes to meet Appendix B, Table 1 conditions of the Construction General Permit by having the solar panels elevated off the ground, spaced a minimum of one table width apart, not altering hydrology from pre- to post-development conditions, and maintaining sheet flow. The solar panels will be elevated off the ground surface sufficiently enough to allow a well-established vegetative cover. This cover in combination with the vegetative cover between the panels serve as a grass filter strip and disconnection of impervious area, thus satisfying the water quality and runoff reduction volume requirements for the solar panels.

The project will also include traditional impervious area in the form of a gravel access road and gravel equipment pad. A grass filter strip and two bioretention basins will serve as standard SMPs with runoff reduction capacity and were designed in accordance with sizing criteria described in the Stormwater Design Manual. A summary of the stormwater practice, contributing areas, and water quality volumes are listed in the table below.

Table 2: Water Quality Summary

RR Technique	NYSDEC Design Variant	RRv Capacity	WQv Required (cf)	RRv Provided (cf)	WQv Treated (cf)	Total Treatment Provided (cf)
Sheetflow to Grass Filter Strip	RR-2	100%	724	724	0	724
Filtration Bioretention	F-5	40%	906	431	474	906
Filtration Bioretention	F-5	40%	3,944	2,015	1,929	3,944
Total			5,574	3,171	2,403	5,574

Minimum required Runoff Reduction Volume (RRv) = 1,394 CF
 Provided Runoff Reduction Volume = 3,171 CF

Refer to [Appendix B](#) for supporting calculations and additional information.

3.2 Water Quantity

A hydrologic analysis was completed using HydroCAD, a hydrologic modeling program that implements the USDA Soil Conservation Service Publication Technical Release (TR-55), to compare the peak flow rates under pre- and post-development conditions for the 1-, 10-, and 100-year, 24-hour storm events. Precipitation data for these storm events were obtained from Cornell's Extreme Precipitation Website which utilizes data collected from the Northeast Regional Climate Center (NRCC). A summary of the precipitation values can be found in the table below.

Table 3: Precipitation Values

Storm Event	Precipitation
1-year	1.93 inches
10-year	3.42 inches
100-year	5.90 inches

The overall watershed of the site was divided into 4 design points. Results of the hydrologic analysis comparing the peak flow rates are summarized in the table below. Refer to [Figures 5 and 6](#) as well as [Appendices C and D](#) for additional information.

Table 4: Pre- and Post-Development Peak Flow Rate Summary

Design Point	Storm Event	Pre-Developed Peak Flow Rate (cfs)	Post- Developed Peak Flow Rate (cfs)	Delta (%)
DP-1	1-year	9.02	9.01	- 0.1%
	10-year	46.26	46.01	- 0.5%
	100-year	133.8	132.82	- 0.7%
DP-2	1-year	3.81	3.92	+ 2.9%
	10-year	21.16	21.72	+2.6%
	100-year	63.06	64.64	+2.5%
DP-3	1-year	1.61	1.26	- 21.7%
	10-year	7.87	7.65	- 2.8%
	100-year	21.77	22.29	+ 2.4%
DP-4	1-year	3.65	3.51	- 3.8%
	10-year	16.35	17.02	+ 4.1%
	100-year	44.31	46.22	+ 4.3%

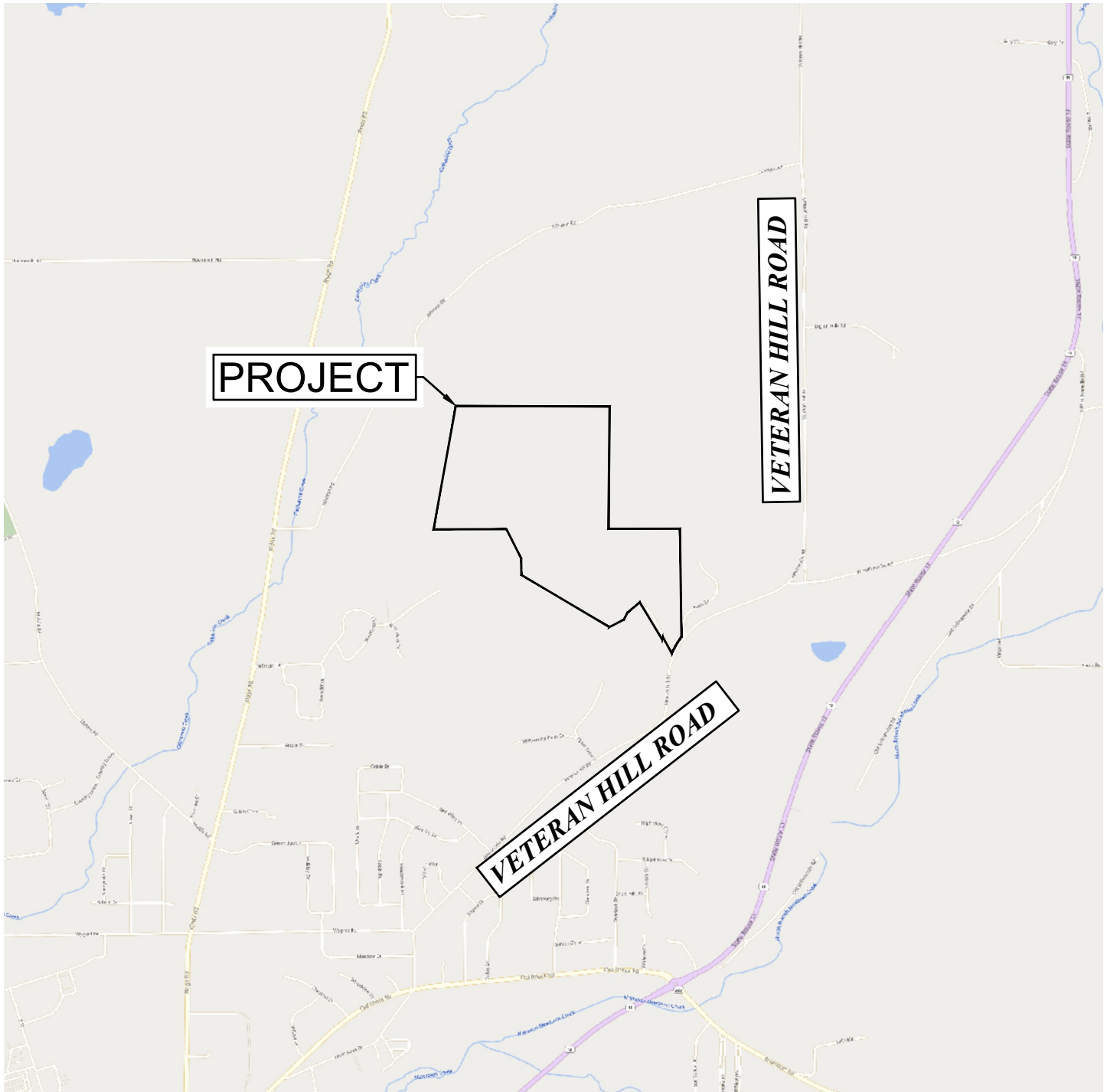
Based on the results of the hydrologic analysis, a comparison of the pre- and post-development conditions concludes that the post-development improvements will not alter the hydrology at each design point, which the Construction General Permit defines as an increase by more than 5% of the pre-developed conditions.

4.0 CONCLUSION

As described in this Stormwater Management Report, this project proposes to implement several post construction stormwater management practices to meet water quality, water quantity, and runoff reduction requirements based on the NYSDEC Construction General Permit. Such stormwater practices include grass filter strips, filtration bioretention basins, and a dry detention basin which were designed based on the performance criteria in the Stormwater Design Manual. Therefore, the supporting calculations and hydrologic analysis described in this Report have demonstrated that effective measures will be implemented as part of this project to improve water quantity within the surrounding and downstream areas.

FIGURES

**Site Location Map
Aerial Map
Flood Insurance Rate Map
Hydrologic Soils Map
Pre-Development Drainage Map
Post-Development Drainage Map**



CLIENT

DYNAMIC ENERGY LLC
1550 LIBERTY RIDGE DR., SUITE 310
WAYNE, PA 19087

SITE/CIVIL ENGINEER

akrf

AKRF INC.
34 SOUTH BROADWAY, SUITE 300
WHITE PLAINS, NY 10601
(914) 949-7336 (PHONE)

PROJECT

**VETERAN HILL
SOLAR PROJECT**

DRAWN BY

JM/AL

CHECKED BY

JS

SCALE

AS SHOWN

DATE

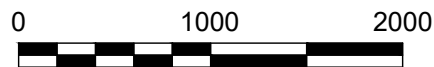
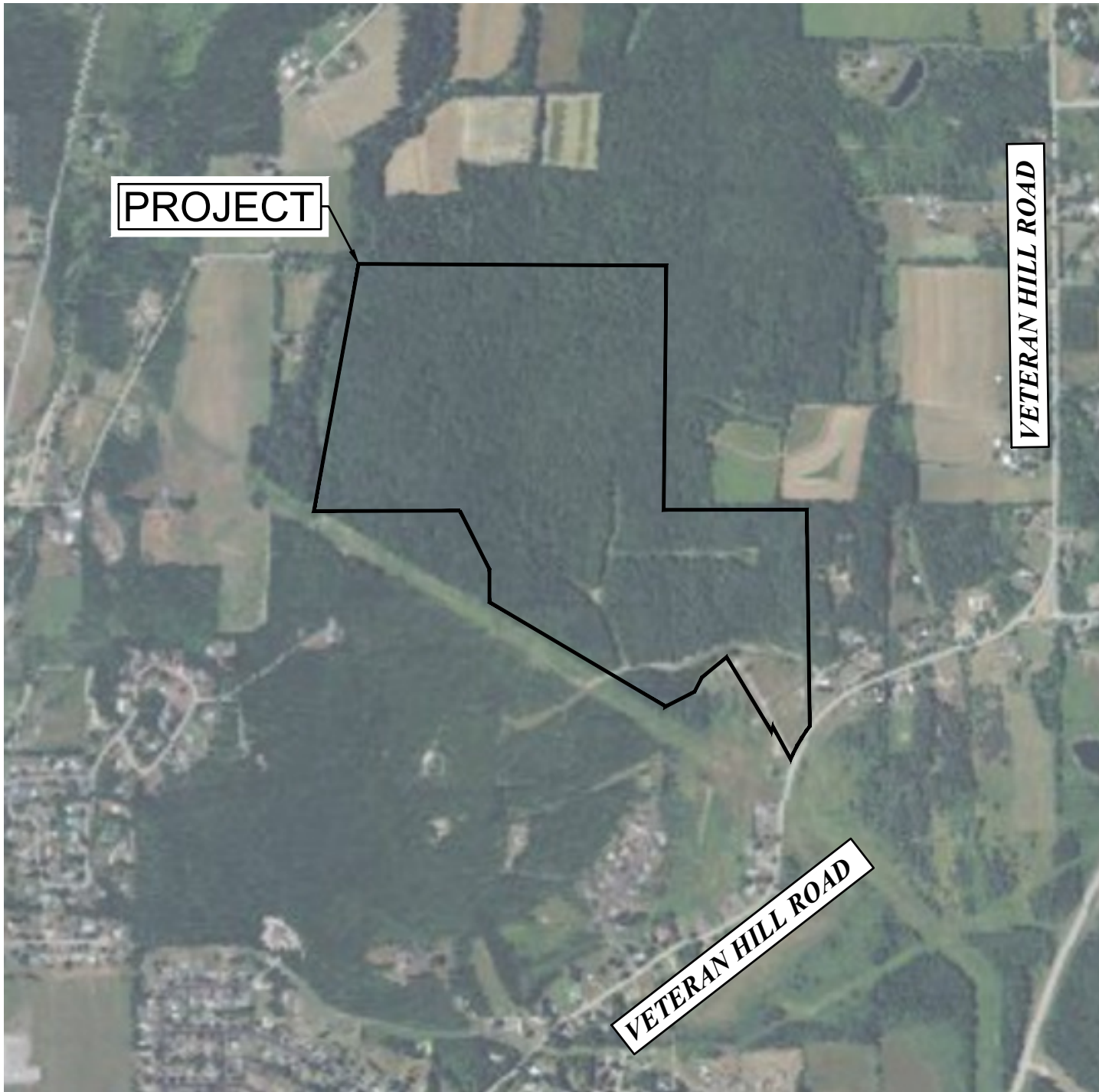
04/20/2026

SHEET TITLE

**SITE LOCATION
MAP**

SHEET NO.

FIGURE 1



SCALE: 1" = 1000'

CLIENT
DYNAMIC ENERGY LLC
1550 LIBERTY RIDGE DR., SUITE 310
WAYNE, PA 19087

SITE/CIVIL ENGINEER
akrf
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PROJECT
**VETERAN HILL
SOLAR PROJECT**

DRAWN BY
JM/AL

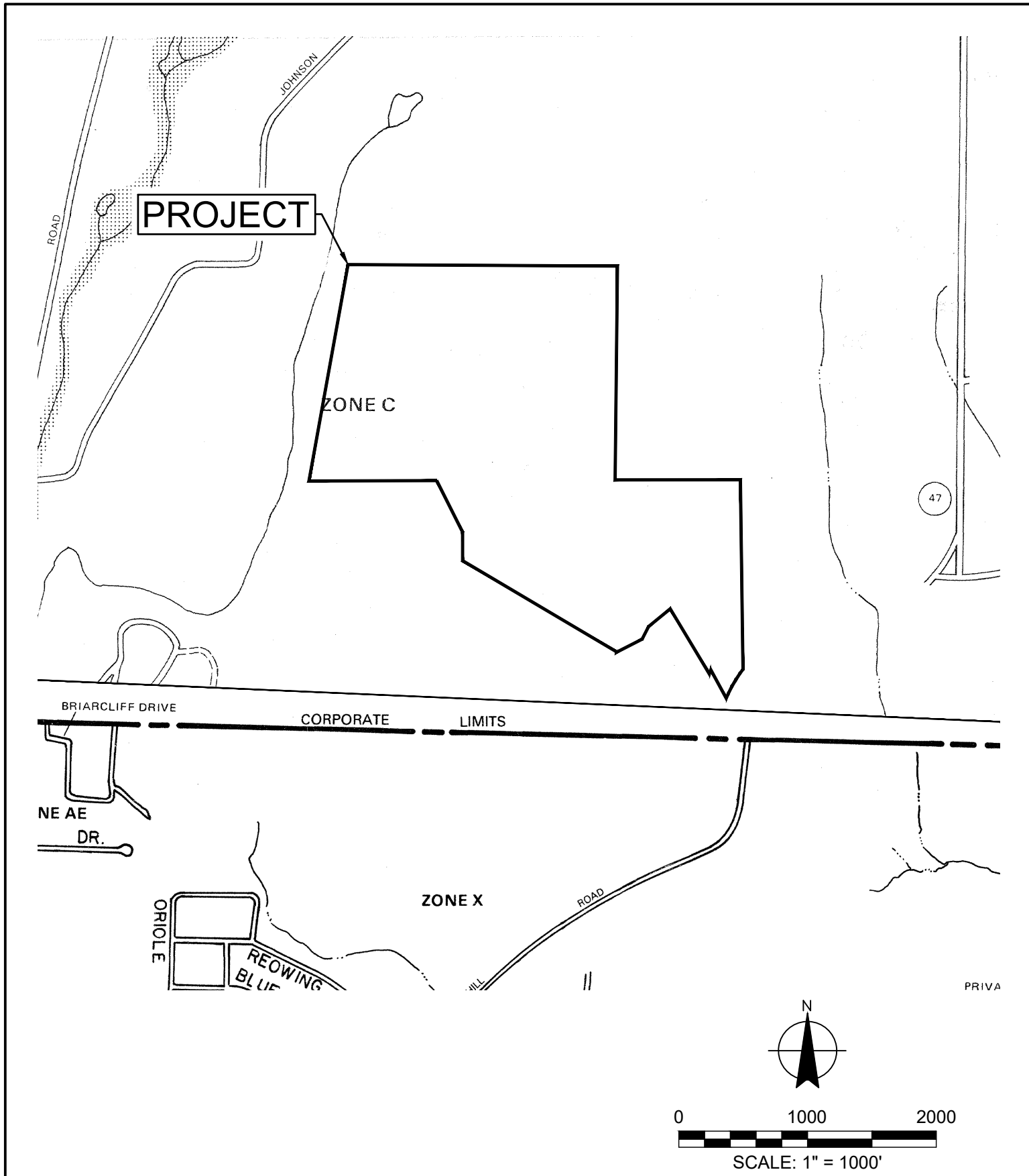
SCALE
AS SHOWN

CHECKED BY
JS

DATE
04/20/2026

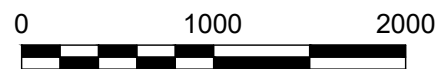
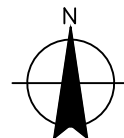
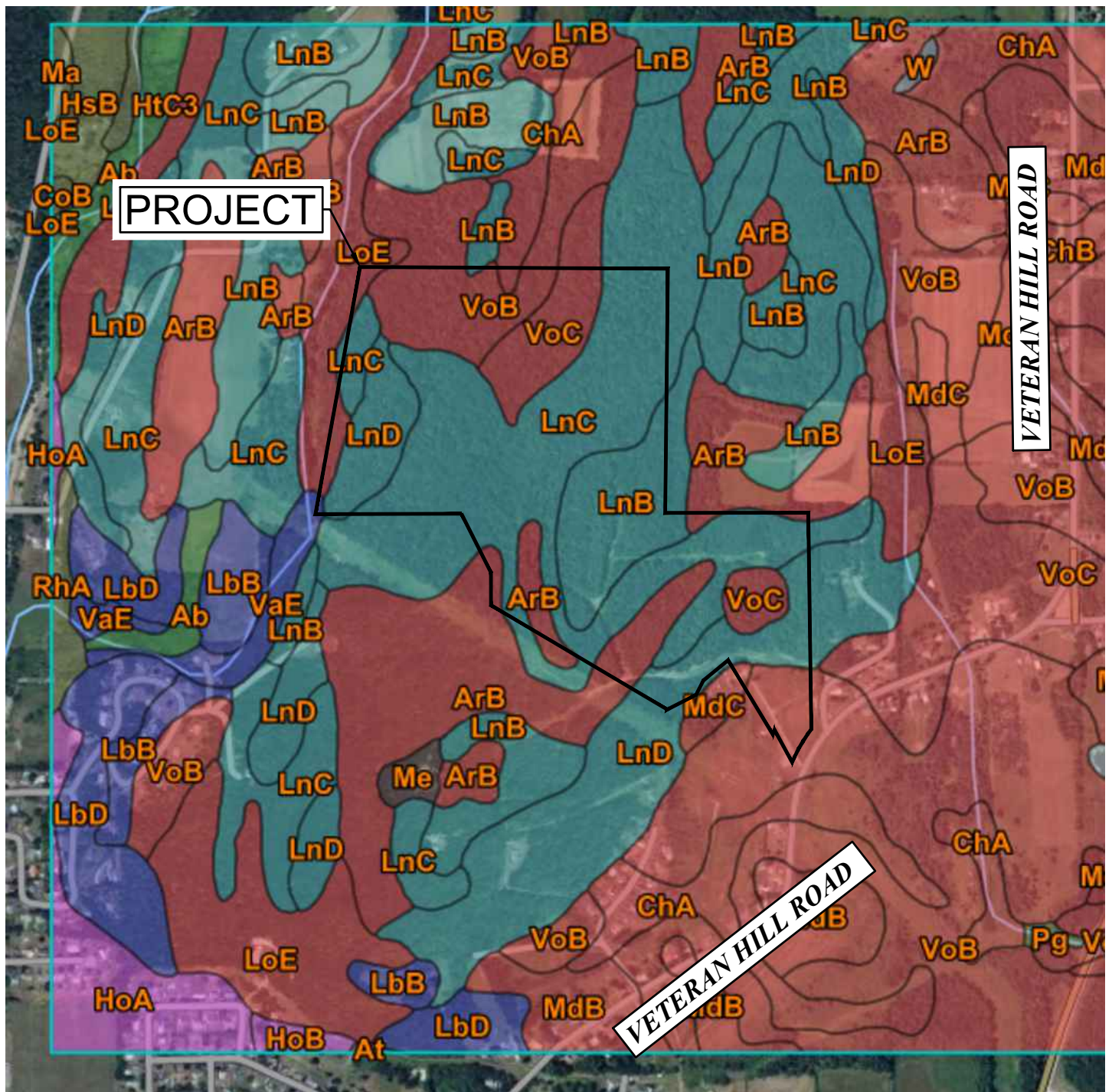
SHEET TITLE
AERIAL MAP

SHEET NO.
FIGURE 2



CLIENT DYNAMIC ENERGY LLC 1550 LIBERTY RIDGE DR., SUITE 310 WAYNE, PA 19087	SITE/CIVIL ENGINEER akrf AKRF INC. 34 SOUTH BROADWAY, SUITE 300 WHITE PLAINS, NY 10601 (914) 949-7336 (PHONE)	PROJECT VETERAN HILL SOLAR PROJECT		SHEET TITLE FLOOD INSURANCE MAP
		DRAWN BY JM/AL	CHECKED BY JS	SHEET NO. FIGURE 3
		SCALE AS SHOWN	DATE 04/20/2026	

Z:\Projects\231510 - DYNAMIC ENERGY VETERAN HILL SOLAR\Drawings\Figures\SWPPP Figures.dwg, FIGURE 3, alajqi



SCALE: 1" = 1000'

CLIENT DYNAMIC ENERGY LLC 1550 LIBERTY RIDGE DR., SUITE 310 WAYNE, PA 19087 SITE/CIVIL ENGINEER akrf AKRF INC. 34 SOUTH BROADWAY, SUITE 300 WHITE PLAINS, NY 10601 (914) 949-7336 (PHONE)	PROJECT VETERAN HILL SOLAR PROJECT		SHEET TITLE HYDROLOGIC SOILS MAP
	DRAWN BY JM/AL	CHECKED BY JS	SHEET NO. FIGURE 4
	SCALE AS SHOWN	DATE 04/20/2026	

OWNER

DYNAMIC ENERGY LLC

2401 WALNUT STREET, SUITE 503
PHILADELPHIA, PA 19103

PROJECT

**VETERAN HILL ROAD
SOLAR PROJECT**

TOWN OF VETERAN
CHEMUNG COUNTY, NY 14845

MILESTONE

SITE PLAN APPROVAL

REV.	DESCRIPTION	DATE

DESIGN PROFESSIONAL

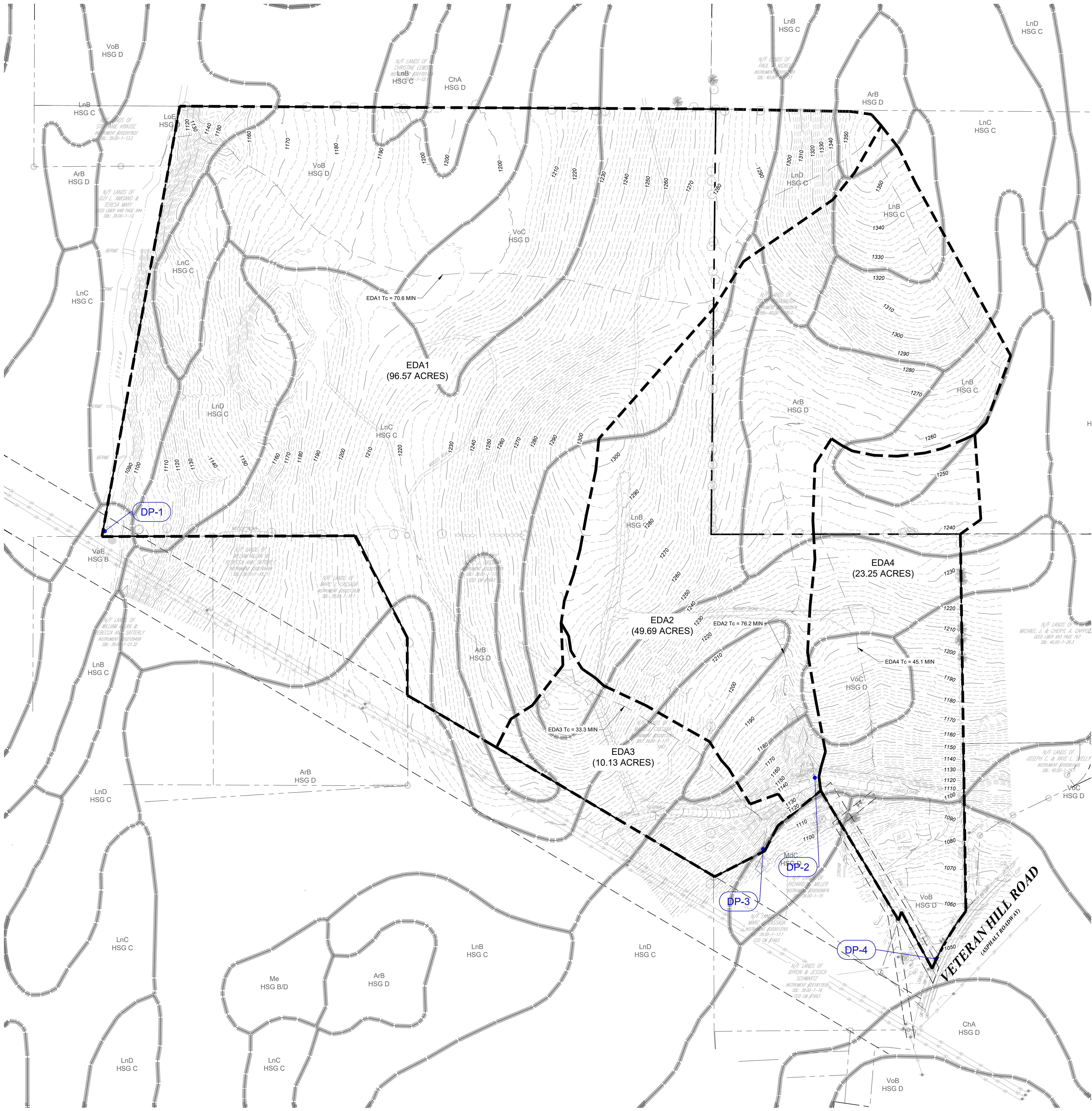
JUSTIN H. SEENEY P.E.
NY PROFESSIONAL ENGINEER NO. 095227

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DATE:	04/20/2026
SCALE:	AS NOTED
FORMAT:	30" x 42" (ARCH E1)
DRAWN BY:	DC
CHECKED BY:	JM / JS
SHEET TITLE:	

**EXISTING DRAINAGE
AREA PLAN**

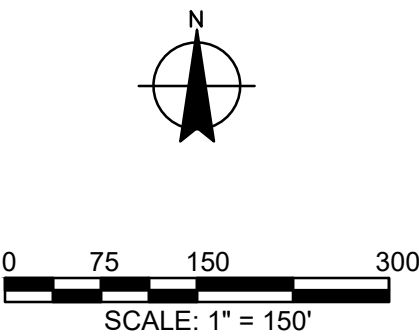
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EXISTING LEGEND

- EXISTING PROPERTY BOUNDARY
- EXISTING CONTOUR
- EXISTING STEEP SLOPE (10%-15%)
- EXISTING STEEP SLOPE (>15%)
- EXISTING FEMA ZONE AE FLOODPLAIN
- EXISTING PERENNIAL STREAM
- EXISTING WETLANDS
- EXISTING WOODED AREA
- EXISTING SOIL BOUNDARY
- EXISTING SOIL TYPE
- EXISTING OVERHEAD ELECTRIC
- EXISTING UTILITY POLE
- EXISTING BUILDING
- 532 EXISTING CONTOUR
- DRAINAGE BOUNDARY
- TIME OF CONCENTRATION



OWNER

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MILESTONE

SITE PLAN APPROVAL

REV.	DESCRIPTION	DATE

DESIGN PROFESSIONAL

JUSTIN H. SEENEY P.E.
NY PROFESSIONAL ENGINEER NO. 095227

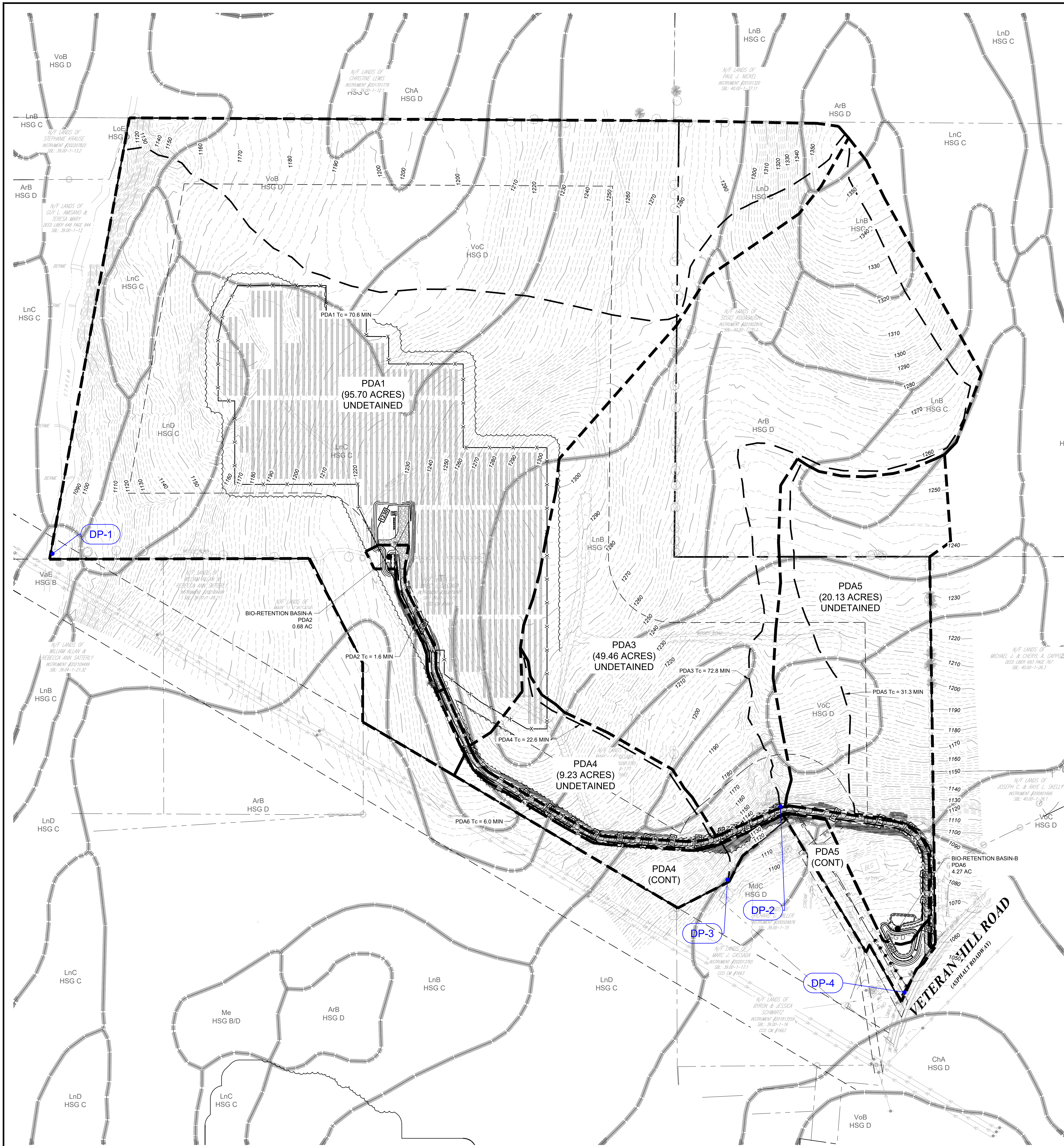
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CHECKED BY:	JM / JS

SHEET TITLE:

**PROPOSED
DRAINAGE AREA
PLAN**

SHEET NUMBER:

C602



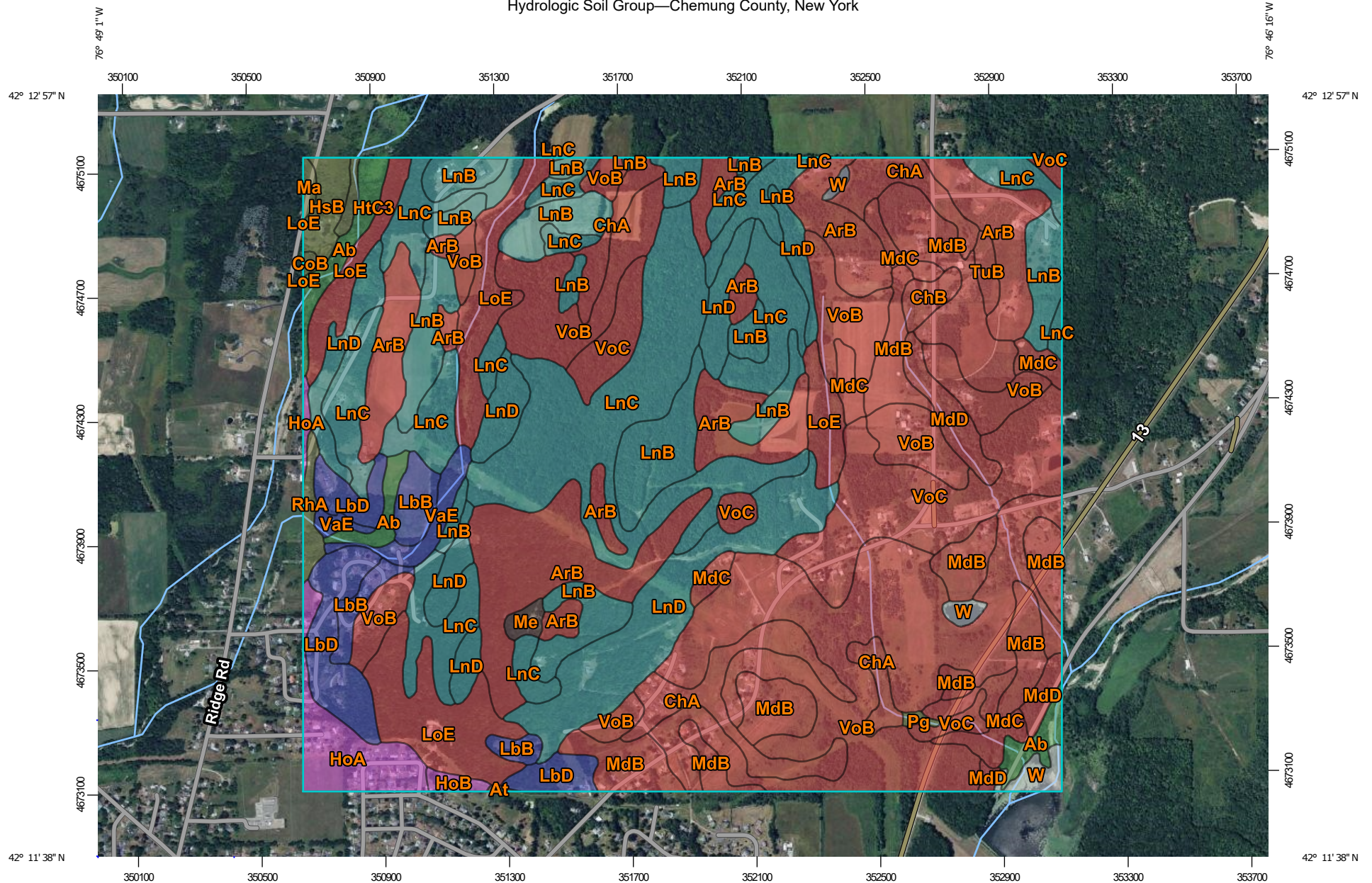
EXISTING LEGEND

- EXISTING PROPERTY BOUNDARY
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- EXISTING STEEP SLOPE (>15%)
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- EXISTING WOODED AREA
- EXISTING SOIL BOUNDARY
- EXISTING SOIL TYPE
- EXISTING OVERHEAD ELECTRIC
- EXISTING UTILITY POLE
- EXISTING BUILDING
- EXISTING CONTOUR
- PROPOSED CONTOUR
- DRAINAGE BOUNDARY
- TIME OF CONCENTRATION

APPENDIX A

USDA Web Soil Survey

Hydrologic Soil Group—Chemung County, New York



Map Scale: 1:17,300 if printed on A landscape (11" x 8.5") sheet.

0 250 500 1000 1500 Meters

0 500 1000 2000 3000 Feet

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



**Natural Resources
Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

1/16/2026
Page 1 of 6

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points

 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Chemung County, New York

Survey Area Data: Version 23, Aug 27, 2025

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

Date(s) aerial images were photographed: Apr 1, 2020—Oct 1, 2020

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Ab	Alluvial land	A/D	21.0	1.7%
ArB	Arnot channery silt loam, 2 to 8 percent slopes	D	139.7	11.2%
At	Atherton mucky silt loam	B/D	0.3	0.0%
ChA	Chippewa silt loam, 0 to 3 percent slopes	D	51.1	4.1%
ChB	Chippewa silt loam, 3 to 8 percent slopes	D	5.4	0.4%
CoB	Collamer silt loam, 3 to 8 percent slopes	C/D	0.8	0.1%
HoA	Howard gravelly silt loam, 0 to 3 percent slopes	A	23.0	1.9%
HoB	Howard gravelly silt loam, 3 to 8 percent slopes	A	2.6	0.2%
HsB	Hudson silt loam, gravelly substratum, 2 to 8 percent slopes	C/D	8.7	0.7%
HtC3	Hudson silty clay loam, gravelly substratum, 8 to 20 percent slopes, eroded	C/D	2.1	0.2%
LbB	Lansing gravelly silt loam, 3 to 8 percent slopes	B	16.6	1.3%
LbD	Lansing gravelly silt loam, 15 to 25 percent slopes	B	35.2	2.8%
LnB	Lordstown channery silt loam, 2 to 8 percent slopes	C	106.9	8.6%
LnC	Lordstown channery silt loam, 8 to 15 percent slopes	C	183.4	14.8%
LnD	Lordstown channery silt loam, 15 to 25 percent slopes	C	96.3	7.7%
LoE	Lordstown and Arnot soils, 25 to 35 percent slopes, very rocky	D	76.4	6.1%
Ma	Madalin silt loam, gravelly substratum	C/D	1.7	0.1%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
MdB	Mardin channery silt loam, 2 to 8 percent slopes	D	92.4	7.4%
MdC	Mardin channery silt loam, 8 to 15 percent slopes	D	25.0	2.0%
MdD	Mardin channery silt loam, 15 to 25 percent slopes	D	15.7	1.3%
Me	Middlebury silt loam	B/D	2.8	0.2%
Pg	Papakating silt loam	C/D	1.0	0.1%
RhA	Rhinebeck silt loam, gravelly substratum, 0 to 3 percent slopes	C/D	4.8	0.4%
TuB	Tuller channery silt loam, 0 to 8 percent slopes	D	3.7	0.3%
VaE	Valois gravelly loam, 25 to 40 percent slopes	B	10.2	0.8%
VoB	Volusia channery silt loam, 2 to 8 percent slopes	D	229.6	18.5%
VoC	Volusia channery silt loam, 8 to 15 percent slopes	D	78.7	6.3%
W	Water		7.7	0.6%
Totals for Area of Interest			1,242.9	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

APPENDIX B

Water Quality Calculations

Provided Water Quality Volume Calculation

Is this project subject to Section 4.3 of the NYS Design Manual for Enhanced Phosphorus Removal?							No
What is the nature of this construction project? Redevelopment with no increase in impervious area							
Design Point = 1, 2, 3, & 4			Enter 90% Rainfall Event as P				
P = 1.00 inches							
Calculate WQv							
Drainage Area Number	Contributing Area (acres)	Impervious Area (acres)	Percent Impervious (%)	Runoff Coefficient, Rv	WQv (cf)	SMP Description	
1	0.39	0.20	51%	0.51	724	Sheetflow to Grass Filter Strip	
PDA2	0.67	0.24	36%	0.37	906	Filtration Bioretention	
PDA3	4.27	0.97	23%	0.25	3,944	Filtration Bioretention	
4							
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	5.33	1.41	26%	0.29	5,574		

Required WQv = 0.128 af

Apply RRv Techniques and Standard SMP's

Runoff Reduction Volume and Treated Volumes						
Runoff Reduction Techniques / Standard SMPs			Total Contributing Area (acres)	Total Contributing Impervious Area (acres)	WQv Reduced, RRv (cf)	WQv Treated (cf)
RR Techniques	Conservation of Natural Areas	RR-1				
	Sheetflow to Riparian Buffer/Filter Strip	RR-2	0.39	0.20	724	
	Tree Planting/Tree Pit/Tree Trench	RR-3				
	Disconnection of Rooftop Runoff	RR-4				
	Vegetated Swale	RR-5				
	Rain Garden	RR-6				
	Stormwater Planter	RR-7				
	Rainwater Harvesting Systems	RR-8				
	Porous Pavement	RR-9				
	Green Roof (Extensive & Intensive)	RR-10				
	Stream Daylighting	RR-11				
Standard SMPs w/ RRv Capacity	Infiltration Trench	I-1				
	Infiltration Basin	I-2				
	Dry Well	I-3				
	Underground Infiltration System	I-4				
	Infiltration Bioretention	F-4				
	Filtration Bioretention	F-5	4.94	1.21	2,446	2,403
	Bioslope	F-6				
	Dry Swale	O-1				
Standard SMPs	Micropool Extended Detention	P-1				
	Wet Pond	P-2				
	Wet Extended Detention	P-3				
	Multiple Pond System	P-4				
	Shallow Wetland	W-1				
	Ext. Detention Shallow Wetland	W-2				
	Pont / Wetland System	W-3				
	Pocket Wetland	W-4				
	Gravel Wetland	W-5				
	Surface Sand Filter	F-1				
	Underground Sand Filter	F-2				
	Perimeter Sand Filter	F-3				
	Wet Swale	O-2				
Alt SMP	Flow Based Alternative Practice	-				
	Volume Based Alternative Practice	-				
Totals by RR Technique →			0.39	0.20	724	
Totals by Standard SMP w/ RRv →			4.94	1.21	2,446	2,403
Totals by Standard SMP →			0.00	0.00		0
Totals by Alternative SMP →			0.00	0.00		0
Totals (RR Technique + All SMPs) →			5.33	1.41	3,171	2,403

Calculate Minimum RRv Required

Enter the Soils Data for the Site		
Hydrologic Soil Group	Acres	S
A		55%
B		40%
C	0.84	30%
D	0.76	20%

Total Area 1.6

Calculate the Minimum RRv		
S =	0.2525	
Impervious =	1.6	acres
Precipitation =	1.00	inches
Rv =	0.95	
Minimum RRv	0.032	af
	1,394	cf

Sheet Flow to Grass Filter Strip (RR-2)

Design Point	1, 2, 3, & 4					
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)	SMP Description
1	0.39	0.2	51%	0.51	724	Grass Filter Strip
Design Criteria						
Is the contributing area a designated hotspot?				No		
Is a pretreatment pea gravel diaphragm proposed along the upgradient edge of the buffer?				Yes		
Is runoff entering the buffer as overland sheet flow or a flow spreader proposed upgradient of the buffer?				Yes		
Enter the total length of contributing flow path (ft)				70		
Enter the length of contributing flow path from impervious surfaces (ft)				70		
Enter the slope of contributing flow path (%)				2		
Minimum buffer length based on contributing flow path slope (ft)				35		
Enter the slope of the first 10 ft of the buffer (%)				2		
Sizing Criteria						
				Value	Units	Notes
Enter Travel Time through Buffer <i>T</i>				6	min	
Enter 2-yr 24-hr Rainfall Depth <i>P</i>				2.34	inch	
Enter Overall Buffer Slope <i>S</i>				0.0200	ft/ft	
Enter Manning's Coefficient for Buffer <i>n</i>				0.24		
Calculated Minimum Length of Buffer <i>L</i>				28	ft	
Minimum Length of Buffer <i>L</i>				35	ft	
Select HSG				C		
Required Length of Buffer <i>L</i>				40	ft	
Enter Provided Length of Buffer <i>L</i>				40	ft	
Determine for Water Quality Volume Treated						
Water Quality Volume Treated				724	cf	
Runoff Reduction Credit				100%		
RRv Provided				724	cf	

Filtration Bioretention (F-5)

Design Point 1, 2, 3, & 4

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)	SMP Description
PDA2	0.67	0.24	36%	0.37	906	Filtration Bioretention
Design Criteria						
Enter underlying soil infiltration rate (based on geotechnical testing, refer to Appendix D)			0.0	in/hr	Underdrains required	
Is the contributing area to the practice a stormwater hotspot?			No			
Is the practice the first in series for treatment of a Level 1 (Infiltration Restricted) hotspot?			No			
Is contributing area greater than max. contributing area?			No			
Enter depth to seasonal high water table			>2	ft		
Enter depth to bedrock			>2	ft		
Is pretreatment provided, in conformance with Section 6.4.3.1?			Yes			
Enter average height of ponding			0.25	ft		
Enter depth of surface layer			3	in		
Enter depth of filter media			2.5	ft		
Enter depth of drainage layer			10	in		
Enter slope of maintenance access			15	%		
Enter width of maintenance access			12	ft		

Sizing Criteria				
		Value	Units	Notes
Permeability Flow Rate	k	1	ft/day	
Filter Time	tf	2	days	
Required Filter Area	Af	412	sf	
Enter Provided Filter Area	Af	490	sf	
Recalculated Water Quality Volume (Based on provided filter area)				
	WQv calc	1,078	cf	

Determine for Water Quality Volume Treated		
WQv calc	1,078	cf
Runoff Reduction Credit	40%	
RRv Provided	431	cf
WQv Treated	474	cf

Filtration Bioretention (F-5)

Design Point 1, 2, 3, & 4

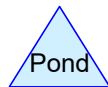
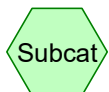
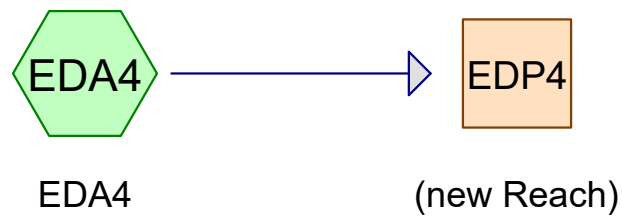
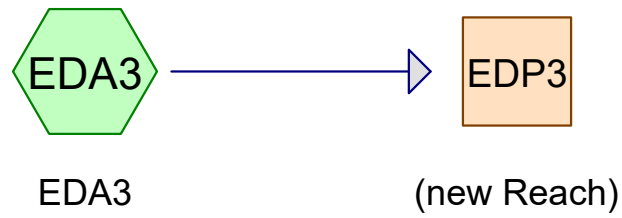
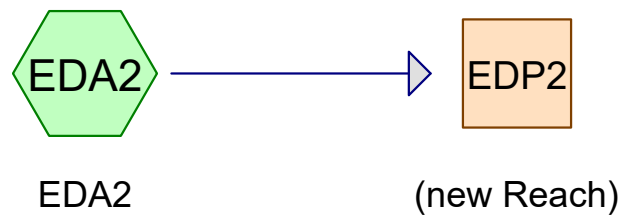
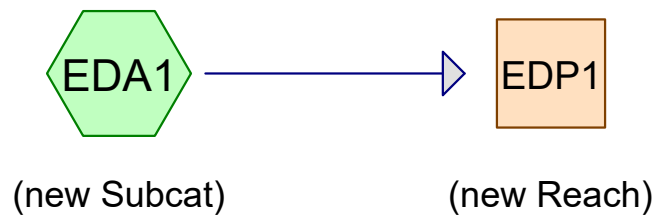
Enter Site Data for Drainage Area to be Treated by Practice						
Drainage Area Number	Contributing Area (acres)	Impervious Area (acres)	Percent Impervious (%)	Rv	WQv (cf)	SMP Description
PDA3	4.27	0.97	23%	0.25	3,944	Filtration Bioretention
Design Criteria						
Enter underlying soil infiltration rate (based on geotechnical testing, refer to Appendix D)			0.0	in/hr	Underdrains required	
Is the contributing area to the practice a stormwater hotspot?			No			
Is the practice the first in series for treatment of a Level 1 (Infiltration Restricted) hotspot?			No			
Is contributing area greater than max. contributing area?			No			
Enter depth to seasonal high water table			>2	ft		
Enter depth to bedrock			>2	ft		
Is pretreatment provided, in conformance with Section 6.4.3.1?			Yes			
Enter average height of ponding			0.25	ft		
Enter depth of surface layer			3	in		
Enter depth of filter media			2.5	ft		
Enter depth of drainage layer			10	in		
Enter slope of maintenance access			15	%		
Enter width of maintenance access			12	ft		

Sizing Criteria				
		Value	Units	Notes
Permeability Flow Rate	k	1	ft/day	
Filter Time	tf	2	days	
Required Filter Area	Af	1,793	sf	
Enter Provided Filter Area	Af	2,290	sf	
Recalculated Water Quality Volume (Based on provided filter area)				
	WQv calc	5,038	cf	

Determine for Water Quality Volume Treated		
WQv calc	5,038	cf
Runoff Reduction Credit	40%	
RRv Provided	2,015	cf
WQv Treated	1,929	cf

APPENDIX C

Pre-Development HydroCAD Report



Veteran Hill Solar - Existing Conditions

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr	NY - Veteran Solar 24-hr S1	1-yr	Default	24.00	1	1.93	2
2	10-yr	NY - Veteran Solar 24-hr S1	10-yr	Default	24.00	1	3.42	2
3	100-yr	NY - Veteran Solar 24-hr S1	100-yr	Default	24.00	1	5.90	2

Veteran Hill Solar - Existing Conditions

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.130	65	Brush, Good, HSG C (EDA1)
0.070	73	Brush, Good, HSG D (EDA1)
3.000	96	Gravel surface, HSG C (EDA1, EDA2, EDA3, EDA4)
1.010	96	Gravel surface, HSG D (EDA1, EDA2, EDA3, EDA4)
6.750	71	Meadow, non-grazed, HSG C (EDA2, EDA3, EDA4)
15.740	78	Meadow, non-grazed, HSG D (EDA1, EDA2, EDA3, EDA4)
0.290	55	Woods, Good, HSG B (EDA1)
110.260	70	Woods, Good, HSG C (EDA1, EDA2, EDA3, EDA4)
42.370	77	Woods, Good, HSG D (EDA1, EDA2, EDA3, EDA4)

Veteran Hill Solar - Existing Conditions

NY - Veteran Solar 24-hr S1 1-yr Rainfall=1.93"

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

SubcatchmentEDA1: (new Subcat)

Runoff Area=96.560 ac 0.00% Impervious Runoff Depth>0.24"
Flow Length=3,298' Tc=70.6 min CN=73 Runoff=9.02 cfs 1.909 af

SubcatchmentEDA2: EDA2

Runoff Area=49.680 ac 0.00% Impervious Runoff Depth>0.21"
Flow Length=3,595' Tc=76.2 min CN=72 Runoff=3.81 cfs 0.880 af

SubcatchmentEDA3: EDA3

Runoff Area=10.140 ac 0.00% Impervious Runoff Depth>0.27"
Flow Length=1,215' Tc=33.3 min CN=74 Runoff=1.61 cfs 0.228 af

SubcatchmentEDA4: EDA4

Runoff Area=23.240 ac 0.00% Impervious Runoff Depth>0.29"
Flow Length=2,299' Tc=45.1 min CN=75 Runoff=3.65 cfs 0.570 af

Reach EDP1: (new Reach)

Inflow=9.02 cfs 1.909 af
Outflow=9.02 cfs 1.909 af

Reach EDP2: (new Reach)

Inflow=3.81 cfs 0.880 af
Outflow=3.81 cfs 0.880 af

Reach EDP3: (new Reach)

Inflow=1.61 cfs 0.228 af
Outflow=1.61 cfs 0.228 af

Reach EDP4: (new Reach)

Inflow=3.65 cfs 0.570 af
Outflow=3.65 cfs 0.570 af

Veteran Hill Solar - Existing Conditions

NY - Veteran Solar 24-hr S1 1-yr Rainfall=1.93"

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Summary for Subcatchment EDA1: (new Subcat)

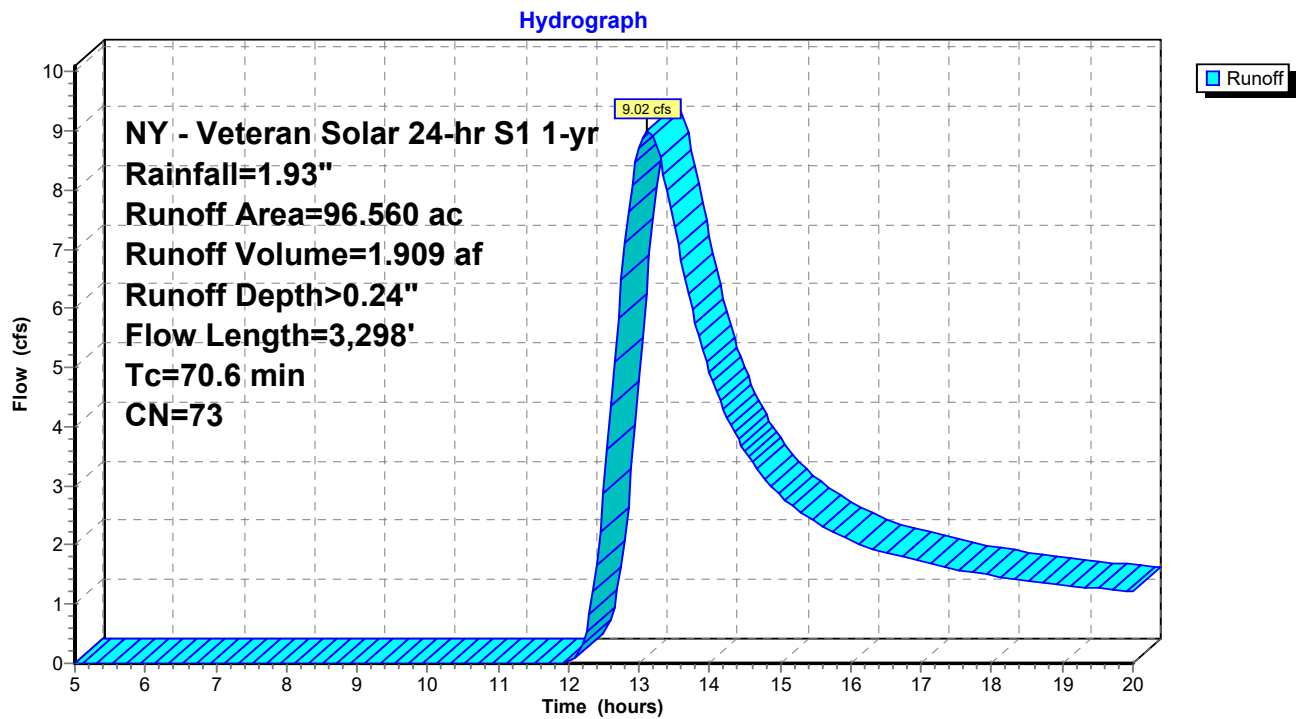
Runoff = 9.02 cfs @ 13.12 hrs, Volume= 1.909 af, Depth> 0.24"
 Routed to Reach EDP1 : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 NY - Veteran Solar 24-hr S1 1-yr Rainfall=1.93"

Area (ac)	CN	Description
1.180	96	Gravel surface, HSG C
0.190	96	Gravel surface, HSG D
0.130	65	Brush, Good, HSG C
0.070	73	Brush, Good, HSG D
5.960	78	Meadow, non-grazed, HSG D
0.290	55	Woods, Good, HSG B
62.870	70	Woods, Good, HSG C
25.870	77	Woods, Good, HSG D
96.560	73	Weighted Average
96.560		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
32.8	150	0.0231	0.08		Sheet Flow, SEG 1
					Woods: Light underbrush n= 0.400 P2= 2.34"
37.8	3,148	0.0770	1.39		Shallow Concentrated Flow, SEG 2
					Woodland Kv= 5.0 fps
70.6	3,298	Total			

Subcatchment EDA1: (new Subcat)



Veteran Hill Solar - Existing Conditions

NY - Veteran Solar 24-hr S1 1-yr Rainfall=1.93"

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Summary for Subcatchment EDA2: EDA2

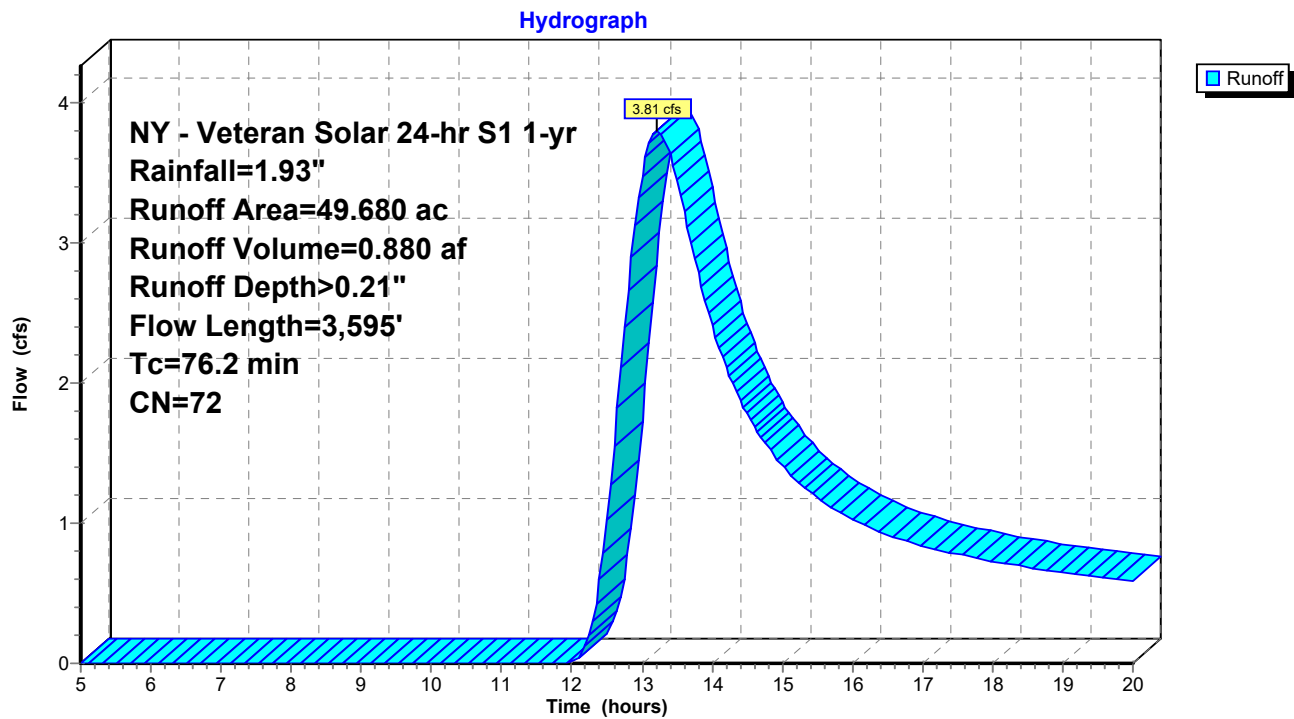
Runoff = 3.81 cfs @ 13.22 hrs, Volume= 0.880 af, Depth> 0.21"
 Routed to Reach EDP2 : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 NY - Veteran Solar 24-hr S1 1-yr Rainfall=1.93"

Area (ac)	CN	Description
0.820	96	Gravel surface, HSG C
0.020	96	Gravel surface, HSG D
3.610	71	Meadow, non-grazed, HSG C
33.200	70	Woods, Good, HSG C
9.530	77	Woods, Good, HSG D
2.500	78	Meadow, non-grazed, HSG D
49.680	72	Weighted Average
49.680		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.3	150	0.0305	0.09		Sheet Flow, SEG1
					Woods: Light underbrush n= 0.400 P2= 2.34"
40.1	2,740	0.0519	1.14		Shallow Concentrated Flow, SEG2
					Woodland Kv= 5.0 fps
0.6	53	0.0418	1.43		Shallow Concentrated Flow, SEG3
					Short Grass Pasture Kv= 7.0 fps
5.8	613	0.1248	1.77		Shallow Concentrated Flow, SEG4
					Woodland Kv= 5.0 fps
0.4	39	0.0669	1.81		Shallow Concentrated Flow, SEG5
					Short Grass Pasture Kv= 7.0 fps
76.2	3,595	Total			

Subcatchment EDA2: EDA2



Veteran Hill Solar - Existing Conditions

NY - Veteran Solar 24-hr S1 1-yr Rainfall=1.93"

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Summary for Subcatchment EDA3: EDA3

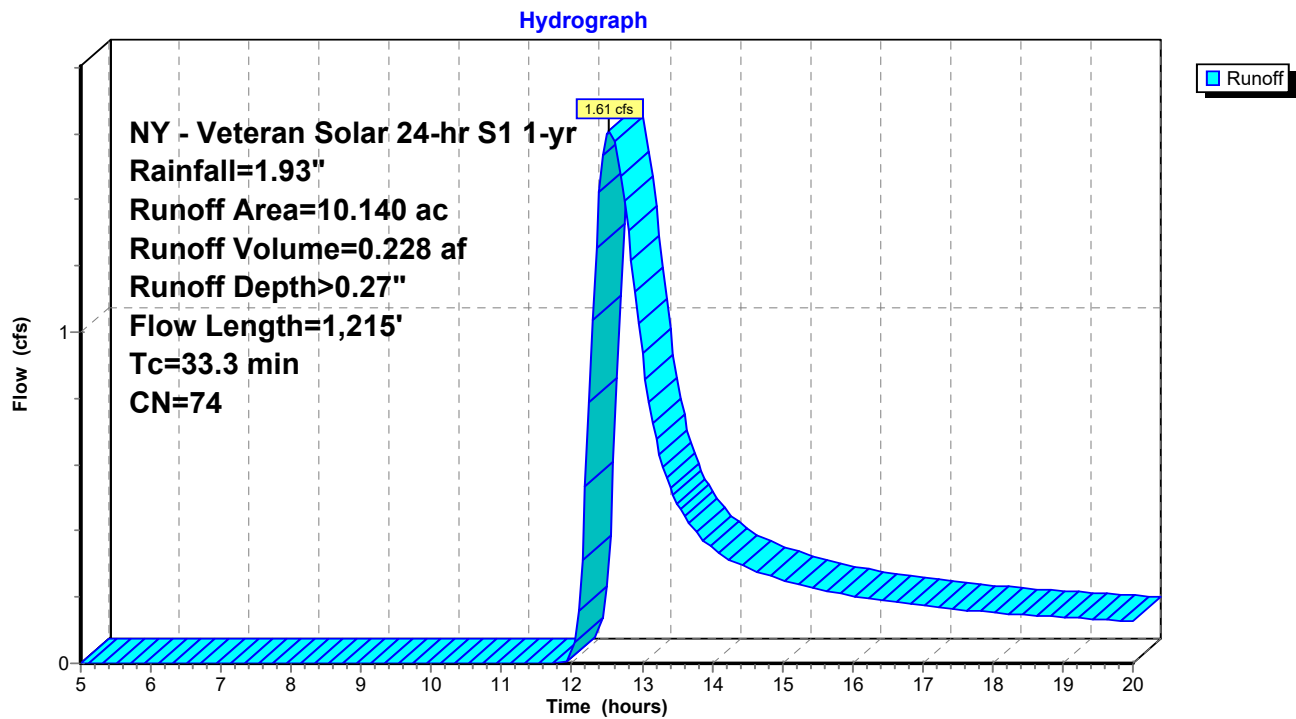
Runoff = 1.61 cfs @ 12.54 hrs, Volume= 0.228 af, Depth> 0.27"
 Routed to Reach EDP3 : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 NY - Veteran Solar 24-hr S1 1-yr Rainfall=1.93"

Area (ac)	CN	Description
0.560	96	Gravel surface, HSG C
0.330	96	Gravel surface, HSG D
0.480	71	Meadow, non-grazed, HSG C
0.230	78	Meadow, non-grazed, HSG D
5.810	70	Woods, Good, HSG C
2.730	77	Woods, Good, HSG D
10.140	74	Weighted Average
10.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.7	150	0.0470	0.10		Sheet Flow, SEG1
					Woods: Light underbrush n= 0.400 P2= 2.34"
0.2	19	0.0784	1.96		Shallow Concentrated Flow, SEG2
					Short Grass Pasture Kv= 7.0 fps
1.0	124	0.0803	1.98		Shallow Concentrated Flow, SEG3
					Short Grass Pasture Kv= 7.0 fps
6.2	679	0.1334	1.83		Shallow Concentrated Flow, SEG4
					Woodland Kv= 5.0 fps
0.1	78	0.1200	15.71	12.34	Pipe Channel, SEG5
					12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'
					n= 0.013 Concrete pipe, straight & clean
1.1	165	0.2369	2.43		Shallow Concentrated Flow, SEG6
					Woodland Kv= 5.0 fps
33.3	1,215	Total			

Subcatchment EDA3: EDA3



Veteran Hill Solar - Existing Conditions

NY - Veteran Solar 24-hr S1 1-yr Rainfall=1.93"

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Summary for Subcatchment EDA4: EDA4

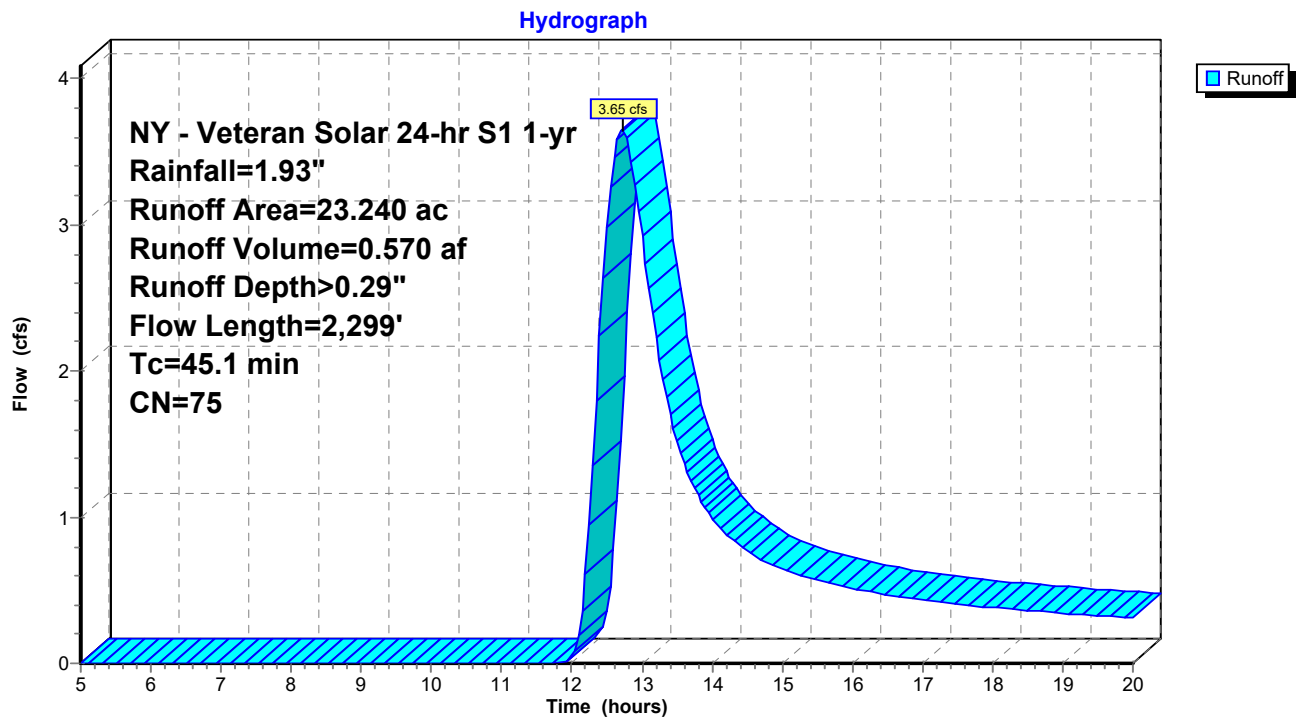
Runoff = 3.65 cfs @ 12.72 hrs, Volume= 0.570 af, Depth> 0.29"
 Routed to Reach EDP4 : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 NY - Veteran Solar 24-hr S1 1-yr Rainfall=1.93"

Area (ac)	CN	Description
0.440	96	Gravel surface, HSG C
0.470	96	Gravel surface, HSG D
2.660	71	Meadow, non-grazed, HSG C
7.050	78	Meadow, non-grazed, HSG D
8.380	70	Woods, Good, HSG C
4.240	77	Woods, Good, HSG D
23.240	75	Weighted Average
23.240		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	150	0.0481	0.10		Sheet Flow, SEG1
					Woods: Light underbrush n= 0.400 P2= 2.34"
6.6	508	0.0657	1.28		Shallow Concentrated Flow, SEG2
					Woodland Kv= 5.0 fps
1.1	121	0.0664	1.80		Shallow Concentrated Flow, SEG3
					Short Grass Pasture Kv= 7.0 fps
4.9	547	0.1386	1.86		Shallow Concentrated Flow, SEG4
					Woodland Kv= 5.0 fps
8.0	973	0.0847	2.04		Shallow Concentrated Flow, SEG5
					Short Grass Pasture Kv= 7.0 fps
45.1	2,299	Total			

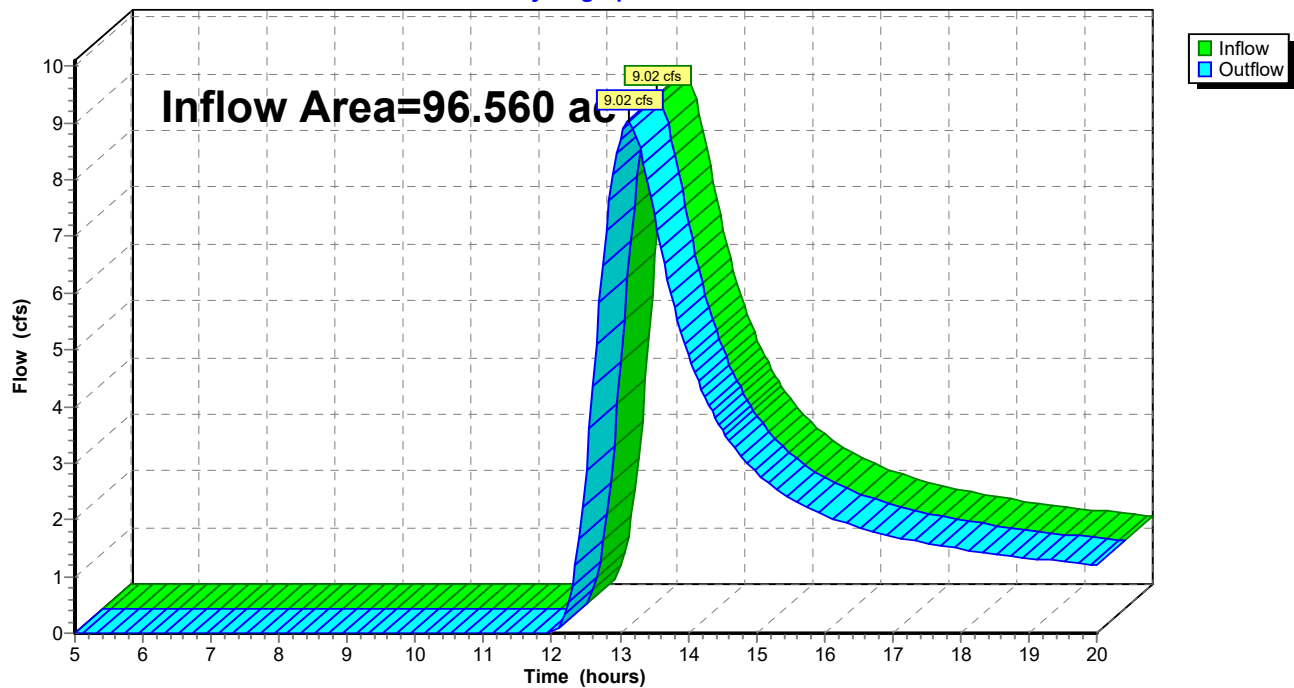
Subcatchment EDA4: EDA4



Summary for Reach EDP1: (new Reach)

Inflow Area = 96.560 ac, 0.00% Impervious, Inflow Depth > 0.24" for 1-yr event
Inflow = 9.02 cfs @ 13.12 hrs, Volume= 1.909 af
Outflow = 9.02 cfs @ 13.12 hrs, Volume= 1.909 af, Atten= 0%, Lag= 0.0 min

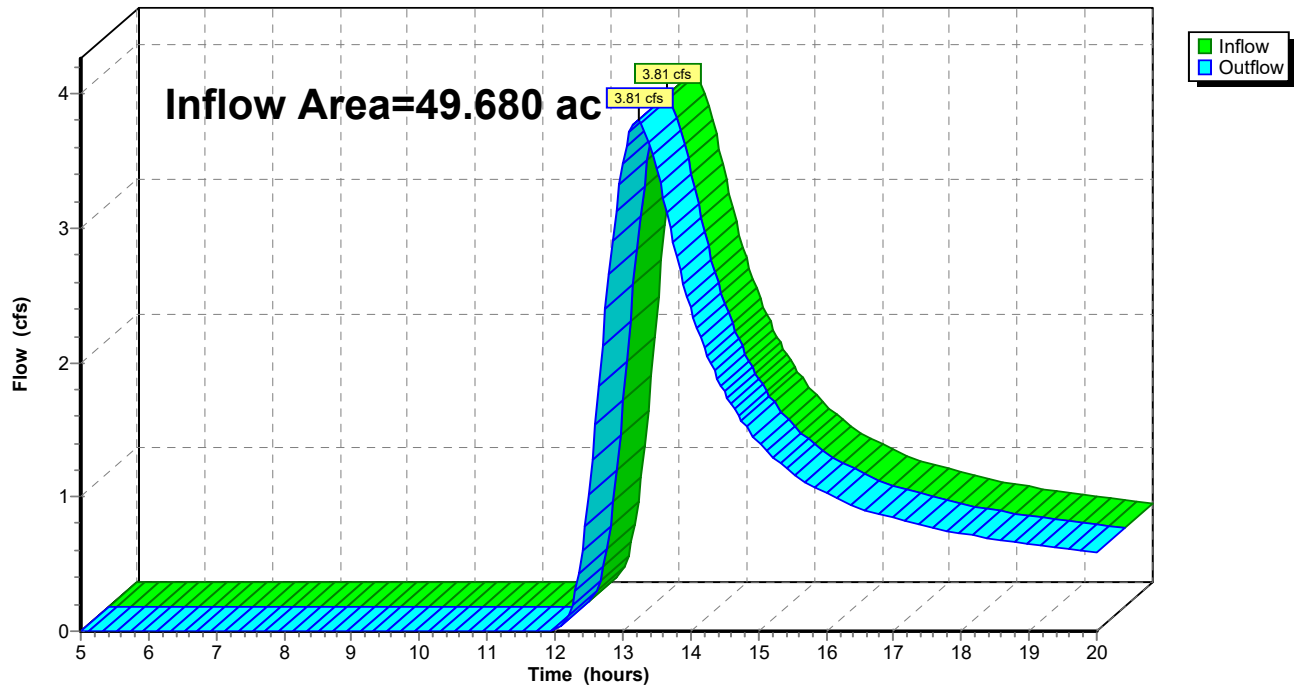
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach EDP1: (new Reach)**Hydrograph**

Summary for Reach EDP2: (new Reach)

Inflow Area = 49.680 ac, 0.00% Impervious, Inflow Depth > 0.21" for 1-yr event
Inflow = 3.81 cfs @ 13.22 hrs, Volume= 0.880 af
Outflow = 3.81 cfs @ 13.22 hrs, Volume= 0.880 af, Atten= 0%, Lag= 0.0 min

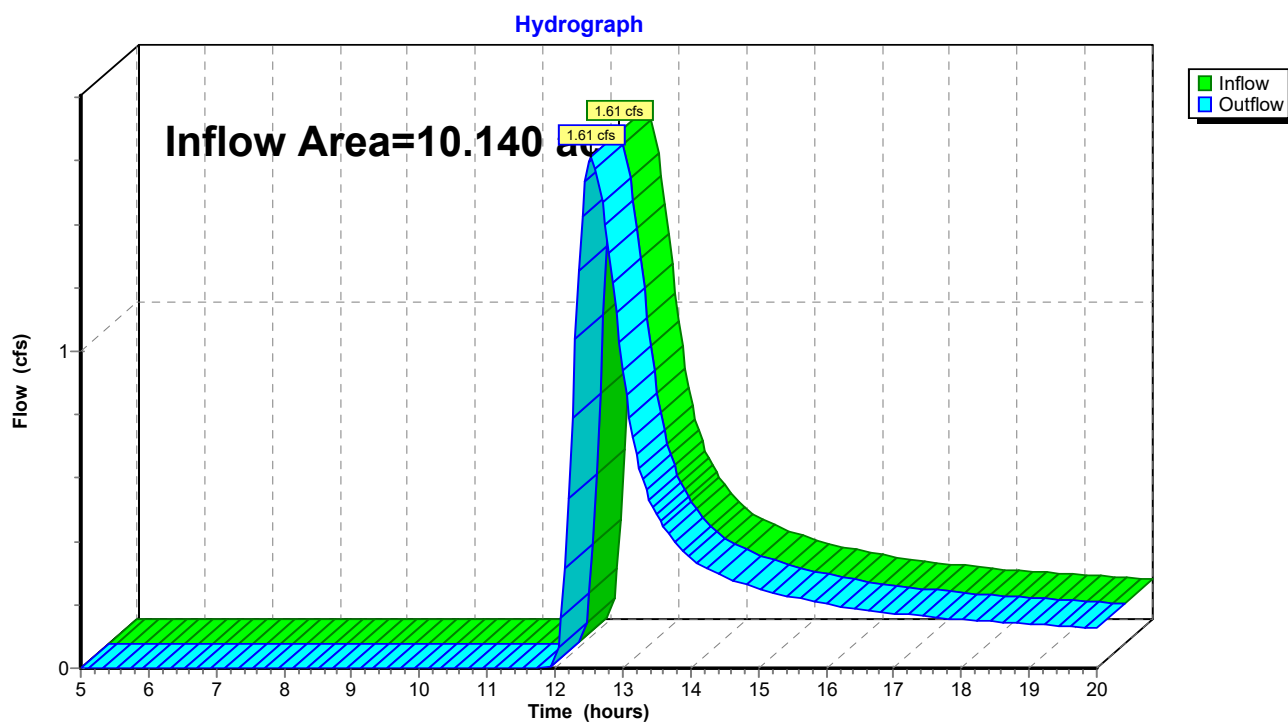
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach EDP2: (new Reach)**Hydrograph**

Summary for Reach EDP3: (new Reach)

Inflow Area = 10.140 ac, 0.00% Impervious, Inflow Depth > 0.27" for 1-yr event
Inflow = 1.61 cfs @ 12.54 hrs, Volume= 0.228 af
Outflow = 1.61 cfs @ 12.54 hrs, Volume= 0.228 af, Atten= 0%, Lag= 0.0 min

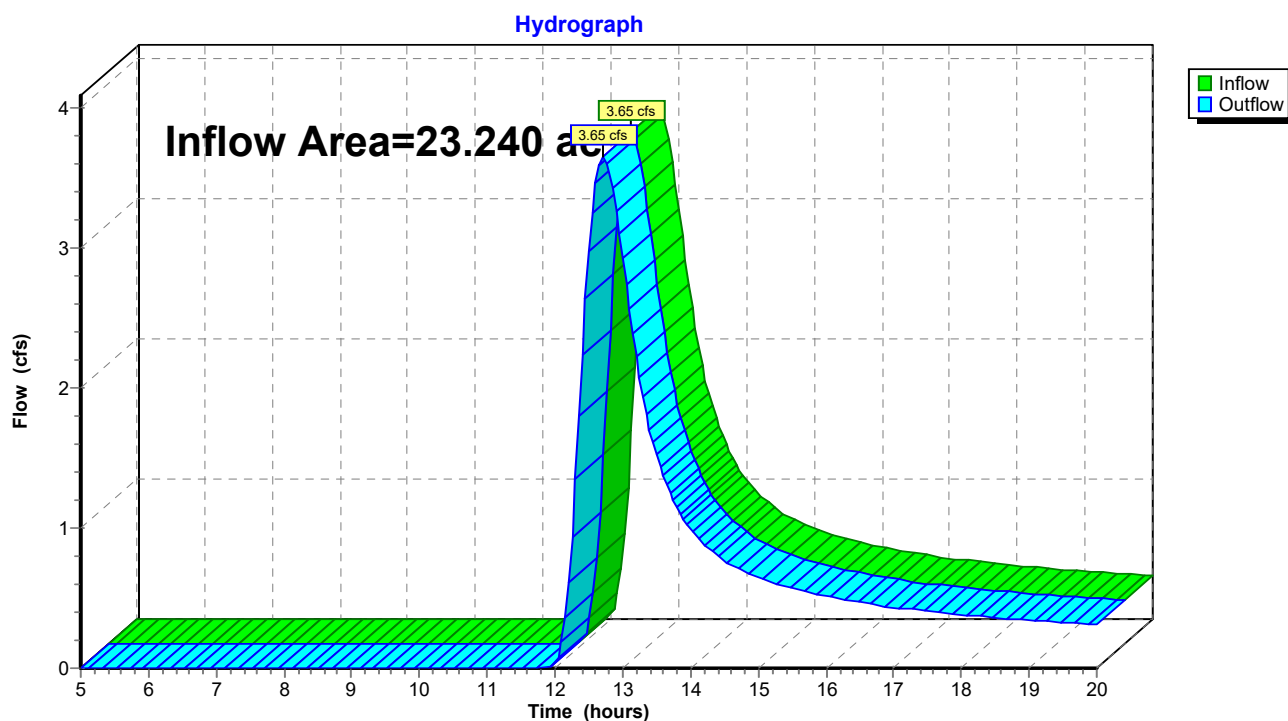
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach EDP3: (new Reach)

Summary for Reach EDP4: (new Reach)

Inflow Area = 23.240 ac, 0.00% Impervious, Inflow Depth > 0.29" for 1-yr event
Inflow = 3.65 cfs @ 12.72 hrs, Volume= 0.570 af
Outflow = 3.65 cfs @ 12.72 hrs, Volume= 0.570 af, Atten= 0%, Lag= 0.0 min

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

Reach EDP4: (new Reach)

Veteran Hill Solar - Existing Conditions

NY - Veteran Solar 24-hr S1 10-yr Rainfall=3.42"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

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

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

SubcatchmentEDA1: (new Subcat)Runoff Area=96.560 ac 0.00% Impervious Runoff Depth>0.98"
Flow Length=3,298' Tc=70.6 min CN=73 Runoff=46.26 cfs 7.907 af**SubcatchmentEDA2: EDA2**Runoff Area=49.680 ac 0.00% Impervious Runoff Depth>0.93"
Flow Length=3,595' Tc=76.2 min CN=72 Runoff=21.16 cfs 3.836 af**SubcatchmentEDA3: EDA3**Runoff Area=10.140 ac 0.00% Impervious Runoff Depth>1.06"
Flow Length=1,215' Tc=33.3 min CN=74 Runoff=7.87 cfs 0.894 af**SubcatchmentEDA4: EDA4**Runoff Area=23.240 ac 0.00% Impervious Runoff Depth>1.11"
Flow Length=2,299' Tc=45.1 min CN=75 Runoff=16.35 cfs 2.146 af**Reach EDP1: (new Reach)**Inflow=46.26 cfs 7.907 af
Outflow=46.26 cfs 7.907 af**Reach EDP2: (new Reach)**Inflow=21.16 cfs 3.836 af
Outflow=21.16 cfs 3.836 af**Reach EDP3: (new Reach)**Inflow=7.87 cfs 0.894 af
Outflow=7.87 cfs 0.894 af**Reach EDP4: (new Reach)**Inflow=16.35 cfs 2.146 af
Outflow=16.35 cfs 2.146 af

Veteran Hill Solar - Existing Conditions

NY - Veteran Solar 24-hr S1 10-yr Rainfall=3.42"

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Summary for Subcatchment EDA1: (new Subcat)

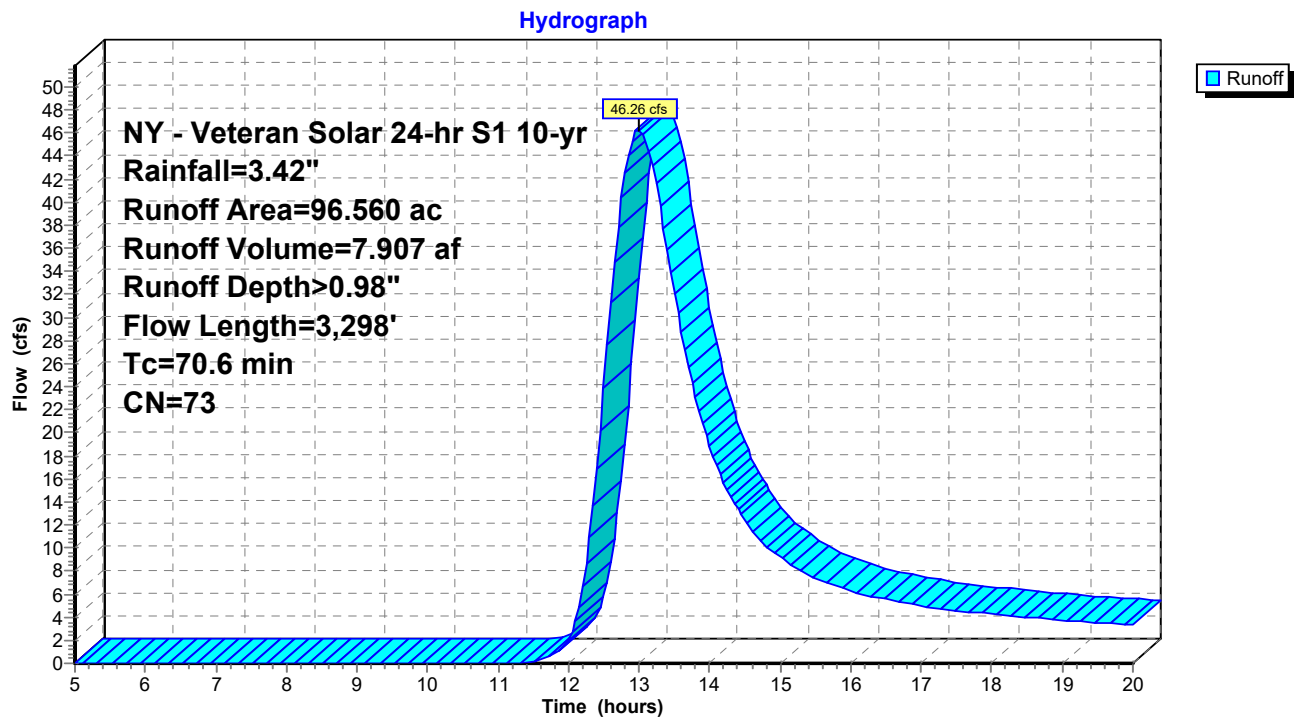
Runoff = 46.26 cfs @ 12.99 hrs, Volume= 7.907 af, Depth> 0.98"
Routed to Reach EDP1 : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NY - Veteran Solar 24-hr S1 10-yr Rainfall=3.42"

Area (ac)	CN	Description
1.180	96	Gravel surface, HSG C
0.190	96	Gravel surface, HSG D
0.130	65	Brush, Good, HSG C
0.070	73	Brush, Good, HSG D
5.960	78	Meadow, non-grazed, HSG D
0.290	55	Woods, Good, HSG B
62.870	70	Woods, Good, HSG C
25.870	77	Woods, Good, HSG D
96.560	73	Weighted Average
96.560		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
32.8	150	0.0231	0.08		Sheet Flow, SEG 1
					Woods: Light underbrush n= 0.400 P2= 2.34"
37.8	3,148	0.0770	1.39		Shallow Concentrated Flow, SEG 2
					Woodland Kv= 5.0 fps
70.6	3,298	Total			

Subcatchment EDA1: (new Subcat)



Veteran Hill Solar - Existing Conditions

NY - Veteran Solar 24-hr S1 10-yr Rainfall=3.42"

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Summary for Subcatchment EDA2: EDA2

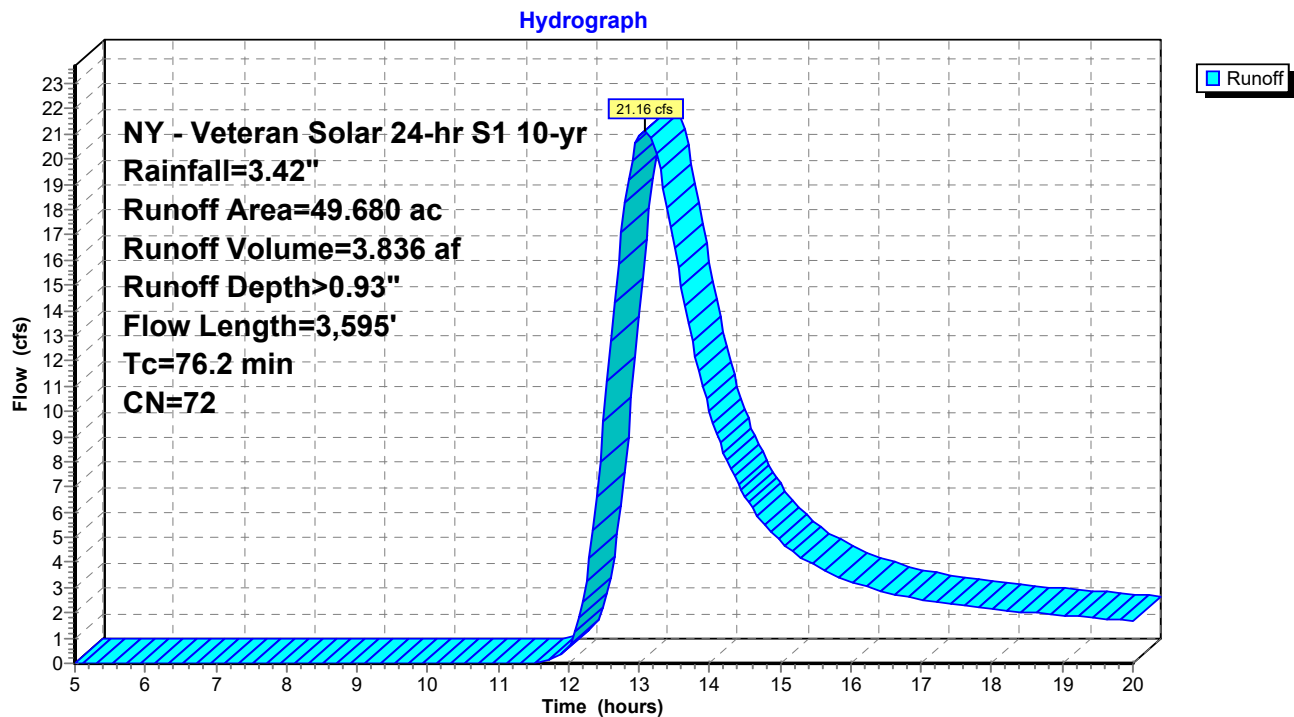
Runoff = 21.16 cfs @ 13.08 hrs, Volume= 3.836 af, Depth> 0.93"
 Routed to Reach EDP2 : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 NY - Veteran Solar 24-hr S1 10-yr Rainfall=3.42"

Area (ac)	CN	Description
0.820	96	Gravel surface, HSG C
0.020	96	Gravel surface, HSG D
3.610	71	Meadow, non-grazed, HSG C
33.200	70	Woods, Good, HSG C
9.530	77	Woods, Good, HSG D
2.500	78	Meadow, non-grazed, HSG D
49.680	72	Weighted Average
49.680		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.3	150	0.0305	0.09		Sheet Flow, SEG1
					Woods: Light underbrush n= 0.400 P2= 2.34"
40.1	2,740	0.0519	1.14		Shallow Concentrated Flow, SEG2
					Woodland Kv= 5.0 fps
0.6	53	0.0418	1.43		Shallow Concentrated Flow, SEG3
					Short Grass Pasture Kv= 7.0 fps
5.8	613	0.1248	1.77		Shallow Concentrated Flow, SEG4
					Woodland Kv= 5.0 fps
0.4	39	0.0669	1.81		Shallow Concentrated Flow, SEG5
					Short Grass Pasture Kv= 7.0 fps
76.2	3,595	Total			

Subcatchment EDA2: EDA2



Veteran Hill Solar - Existing Conditions

NY - Veteran Solar 24-hr S1 10-yr Rainfall=3.42"

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Summary for Subcatchment EDA3: EDA3

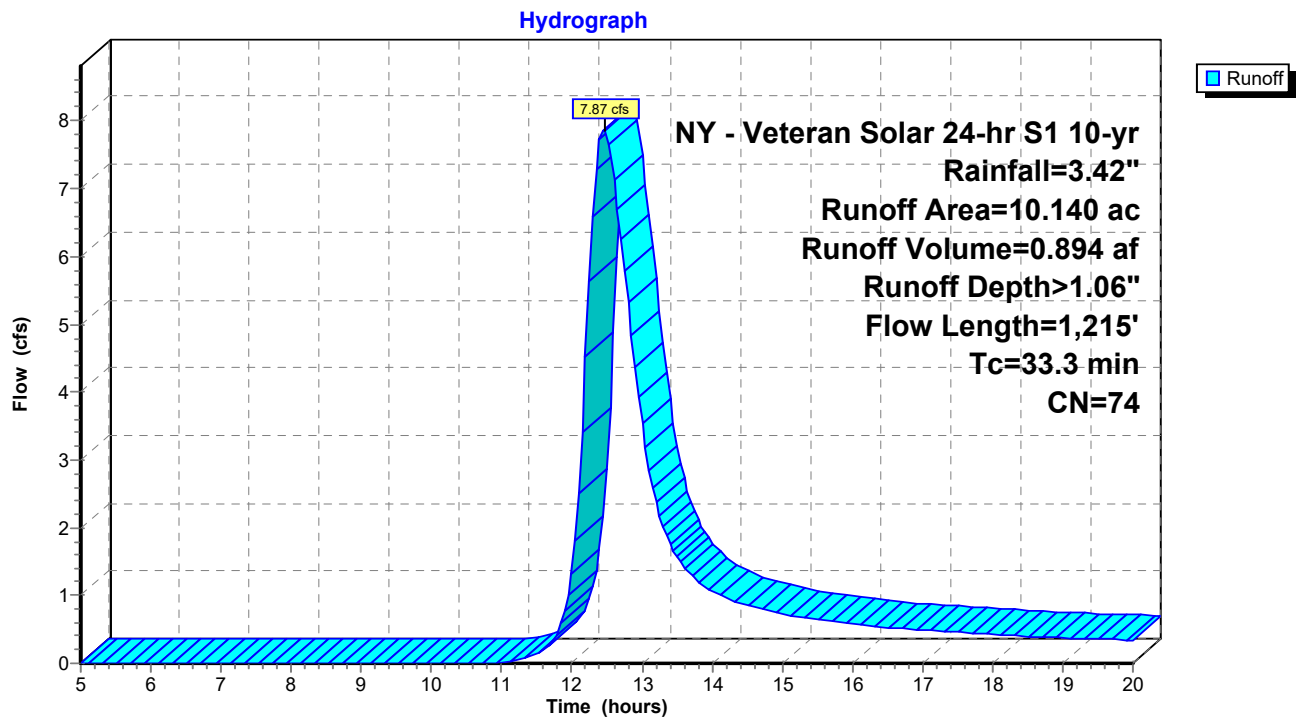
Runoff = 7.87 cfs @ 12.46 hrs, Volume= 0.894 af, Depth> 1.06"
 Routed to Reach EDP3 : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 NY - Veteran Solar 24-hr S1 10-yr Rainfall=3.42"

Area (ac)	CN	Description
0.560	96	Gravel surface, HSG C
0.330	96	Gravel surface, HSG D
0.480	71	Meadow, non-grazed, HSG C
0.230	78	Meadow, non-grazed, HSG D
5.810	70	Woods, Good, HSG C
2.730	77	Woods, Good, HSG D
10.140	74	Weighted Average
10.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.7	150	0.0470	0.10		Sheet Flow, SEG1 Woods: Light underbrush n= 0.400 P2= 2.34"
0.2	19	0.0784	1.96		Shallow Concentrated Flow, SEG2 Short Grass Pasture Kv= 7.0 fps
1.0	124	0.0803	1.98		Shallow Concentrated Flow, SEG3 Short Grass Pasture Kv= 7.0 fps
6.2	679	0.1334	1.83		Shallow Concentrated Flow, SEG4 Woodland Kv= 5.0 fps
0.1	78	0.1200	15.71	12.34	Pipe Channel, SEG5 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, straight & clean
1.1	165	0.2369	2.43		Shallow Concentrated Flow, SEG6 Woodland Kv= 5.0 fps
33.3	1,215	Total			

Subcatchment EDA3: EDA3



Veteran Hill Solar - Existing Conditions

NY - Veteran Solar 24-hr S1 10-yr Rainfall=3.42"

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Summary for Subcatchment EDA4: EDA4

Runoff = 16.35 cfs @ 12.63 hrs, Volume= 2.146 af, Depth> 1.11"
 Routed to Reach EDP4 : (new Reach)

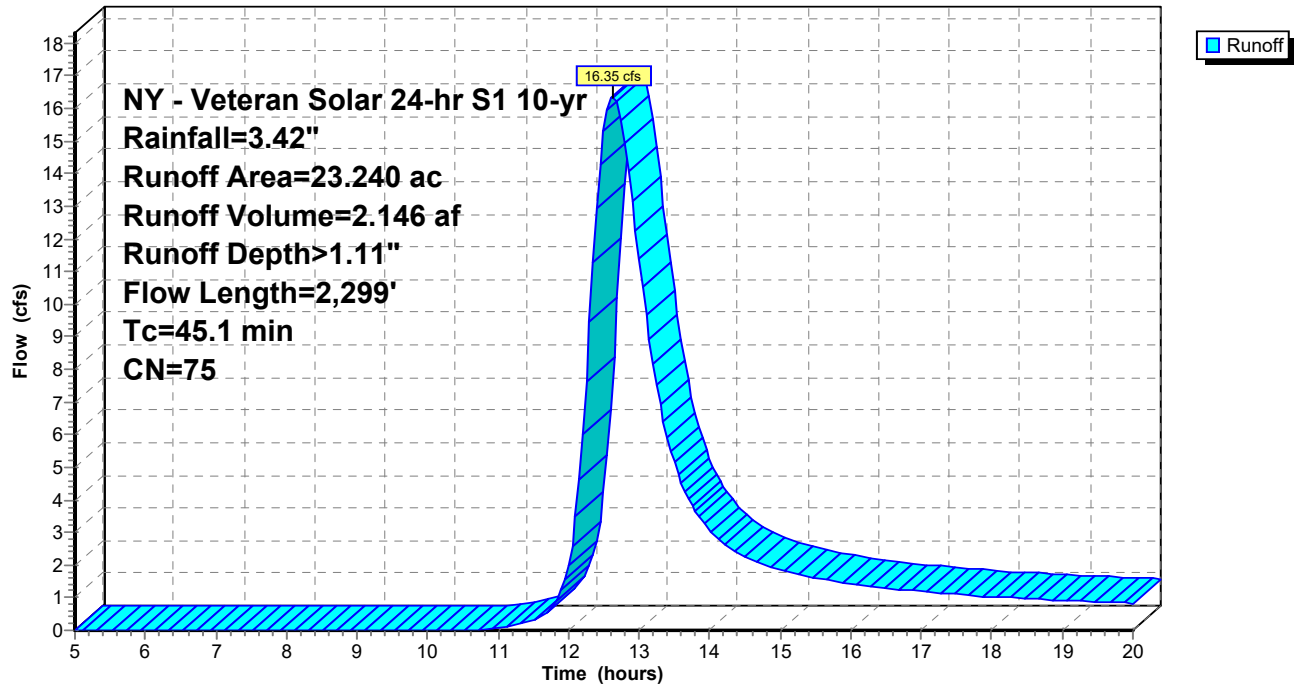
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 NY - Veteran Solar 24-hr S1 10-yr Rainfall=3.42"

Area (ac)	CN	Description
0.440	96	Gravel surface, HSG C
0.470	96	Gravel surface, HSG D
2.660	71	Meadow, non-grazed, HSG C
7.050	78	Meadow, non-grazed, HSG D
8.380	70	Woods, Good, HSG C
4.240	77	Woods, Good, HSG D
23.240	75	Weighted Average
23.240		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	150	0.0481	0.10		Sheet Flow, SEG1 Woods: Light underbrush n= 0.400 P2= 2.34"
6.6	508	0.0657	1.28		Shallow Concentrated Flow, SEG2 Woodland Kv= 5.0 fps
1.1	121	0.0664	1.80		Shallow Concentrated Flow, SEG3 Short Grass Pasture Kv= 7.0 fps
4.9	547	0.1386	1.86		Shallow Concentrated Flow, SEG4 Woodland Kv= 5.0 fps
8.0	973	0.0847	2.04		Shallow Concentrated Flow, SEG5 Short Grass Pasture Kv= 7.0 fps
45.1	2,299	Total			

Subcatchment EDA4: EDA4

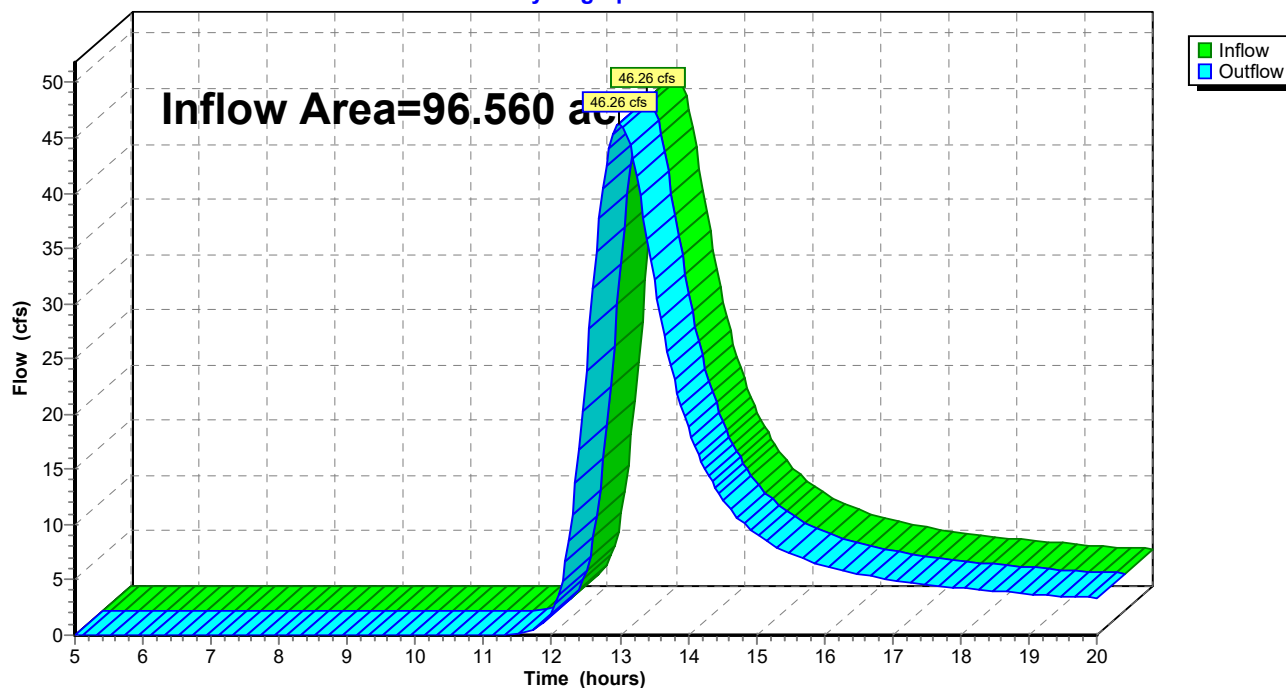
Hydrograph



Summary for Reach EDP1: (new Reach)

Inflow Area = 96.560 ac, 0.00% Impervious, Inflow Depth > 0.98" for 10-yr event
Inflow = 46.26 cfs @ 12.99 hrs, Volume= 7.907 af
Outflow = 46.26 cfs @ 12.99 hrs, Volume= 7.907 af, Atten= 0%, Lag= 0.0 min

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

Reach EDP1: (new Reach)**Hydrograph**

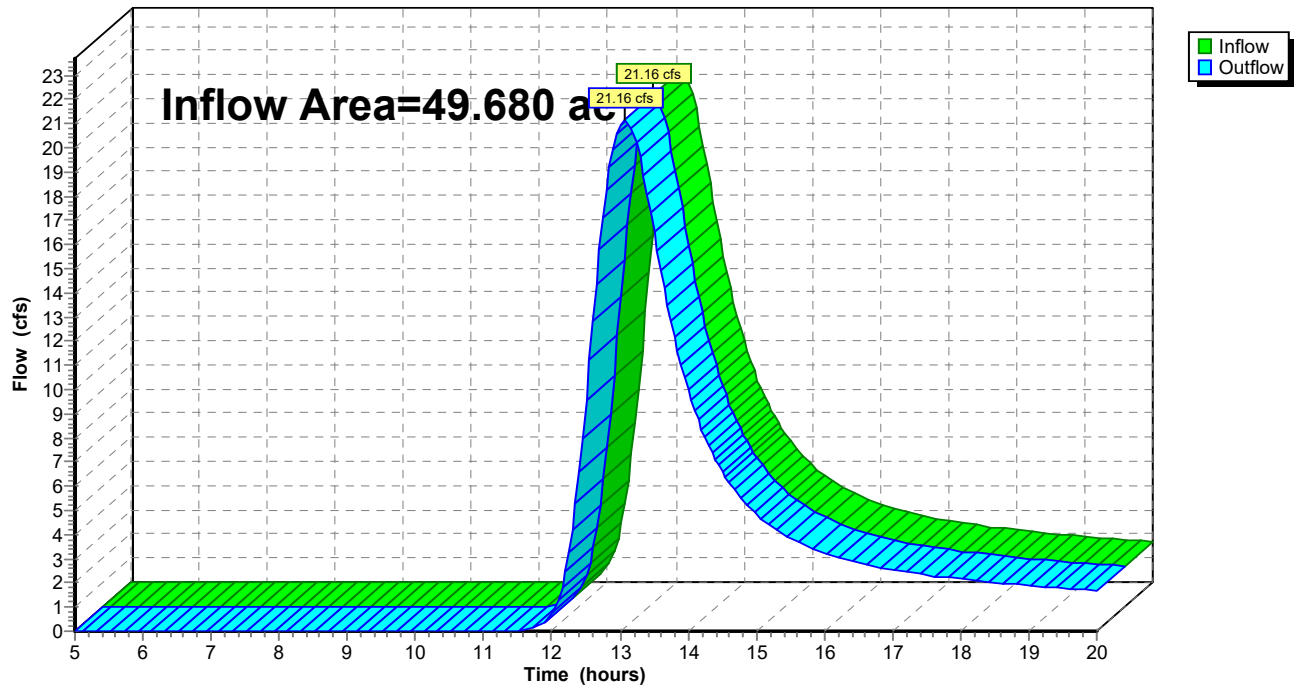
Summary for Reach EDP2: (new Reach)

Inflow Area = 49.680 ac, 0.00% Impervious, Inflow Depth > 0.93" for 10-yr event
Inflow = 21.16 cfs @ 13.08 hrs, Volume= 3.836 af
Outflow = 21.16 cfs @ 13.08 hrs, Volume= 3.836 af, Atten= 0%, Lag= 0.0 min

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

Reach EDP2: (new Reach)

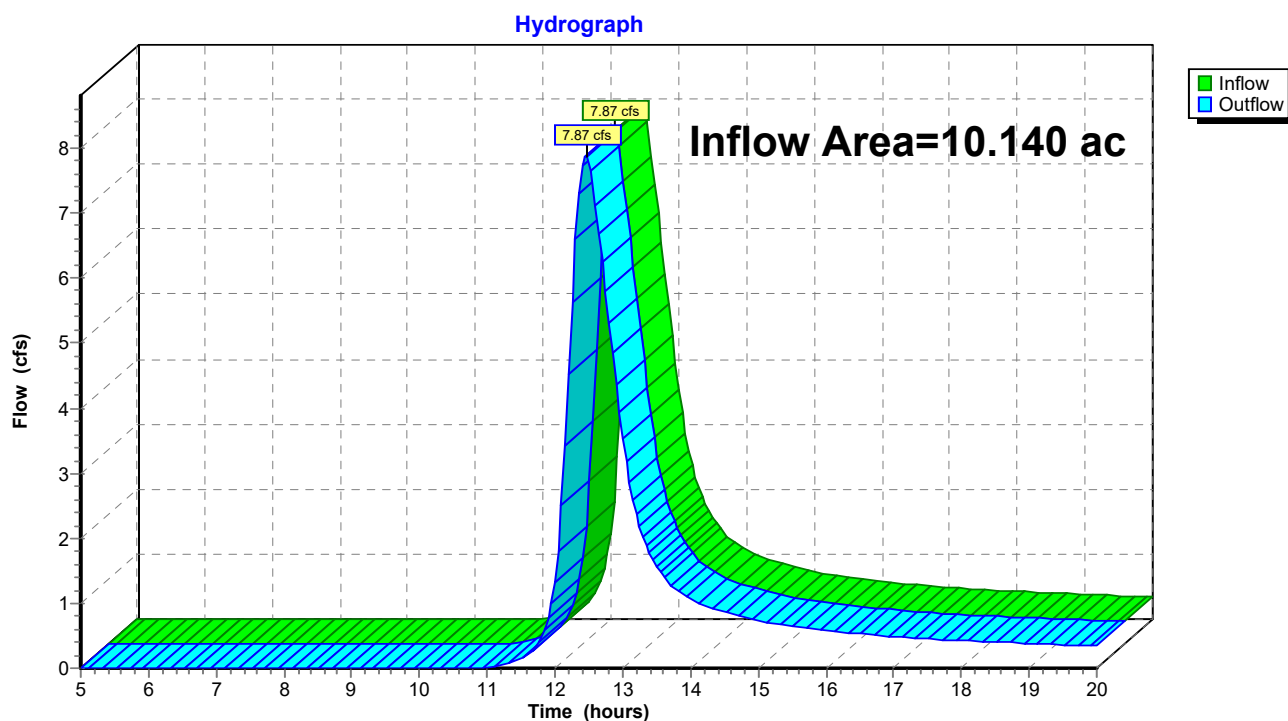
Hydrograph



Summary for Reach EDP3: (new Reach)

Inflow Area = 10.140 ac, 0.00% Impervious, Inflow Depth > 1.06" for 10-yr event
Inflow = 7.87 cfs @ 12.46 hrs, Volume= 0.894 af
Outflow = 7.87 cfs @ 12.46 hrs, Volume= 0.894 af, Atten= 0%, Lag= 0.0 min

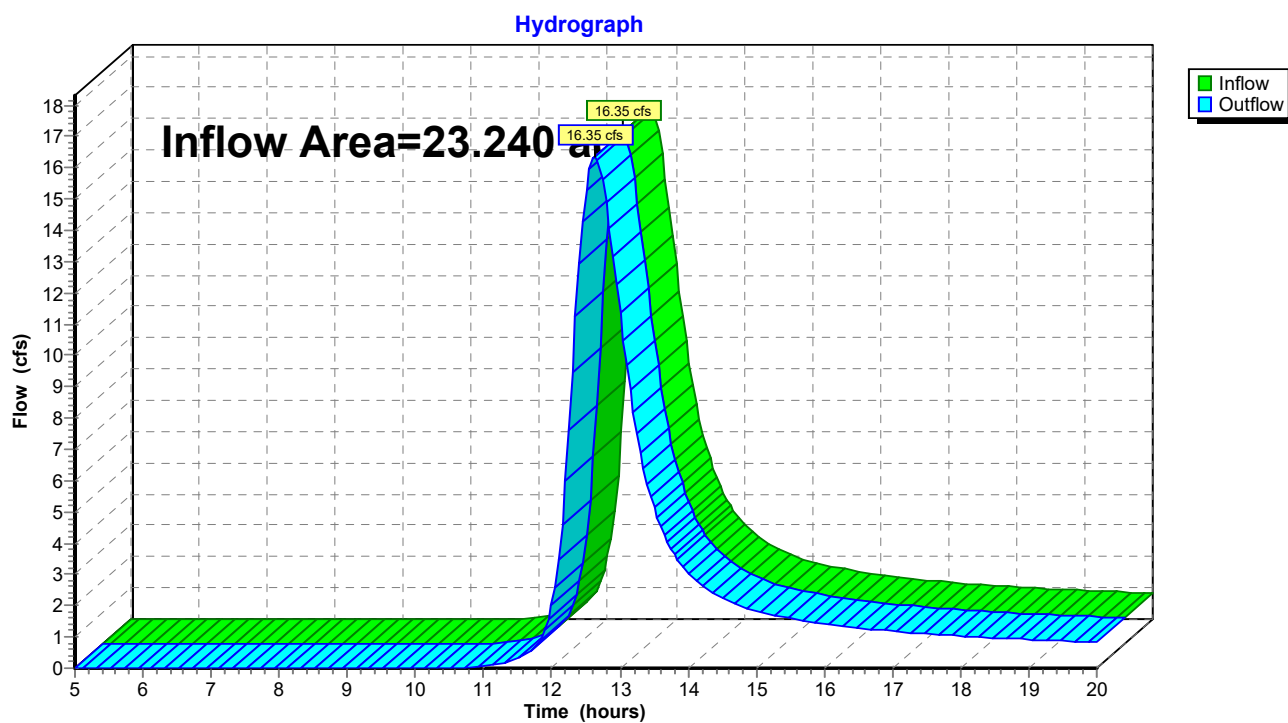
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach EDP3: (new Reach)

Summary for Reach EDP4: (new Reach)

Inflow Area = 23.240 ac, 0.00% Impervious, Inflow Depth > 1.11" for 10-yr event
Inflow = 16.35 cfs @ 12.63 hrs, Volume= 2.146 af
Outflow = 16.35 cfs @ 12.63 hrs, Volume= 2.146 af, Atten= 0%, Lag= 0.0 min

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

Reach EDP4: (new Reach)

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

SubcatchmentEDA1: (new Subcat)	Runoff Area=96.560 ac 0.00% Impervious Runoff Depth>2.71" Flow Length=3,298' Tc=70.6 min CN=73 Runoff=133.80 cfs 21.775 af
SubcatchmentEDA2: EDA2	Runoff Area=49.680 ac 0.00% Impervious Runoff Depth>2.61" Flow Length=3,595' Tc=76.2 min CN=72 Runoff=63.06 cfs 10.805 af
SubcatchmentEDA3: EDA3	Runoff Area=10.140 ac 0.00% Impervious Runoff Depth>2.84" Flow Length=1,215' Tc=33.3 min CN=74 Runoff=21.77 cfs 2.399 af
SubcatchmentEDA4: EDA4	Runoff Area=23.240 ac 0.00% Impervious Runoff Depth>2.92" Flow Length=2,299' Tc=45.1 min CN=75 Runoff=44.31 cfs 5.652 af
Reach EDP1: (new Reach)	Inflow=133.80 cfs 21.775 af Outflow=133.80 cfs 21.775 af
Reach EDP2: (new Reach)	Inflow=63.06 cfs 10.805 af Outflow=63.06 cfs 10.805 af
Reach EDP3: (new Reach)	Inflow=21.77 cfs 2.399 af Outflow=21.77 cfs 2.399 af
Reach EDP4: (new Reach)	Inflow=44.31 cfs 5.652 af Outflow=44.31 cfs 5.652 af

Summary for Subcatchment EDA1: (new Subcat)

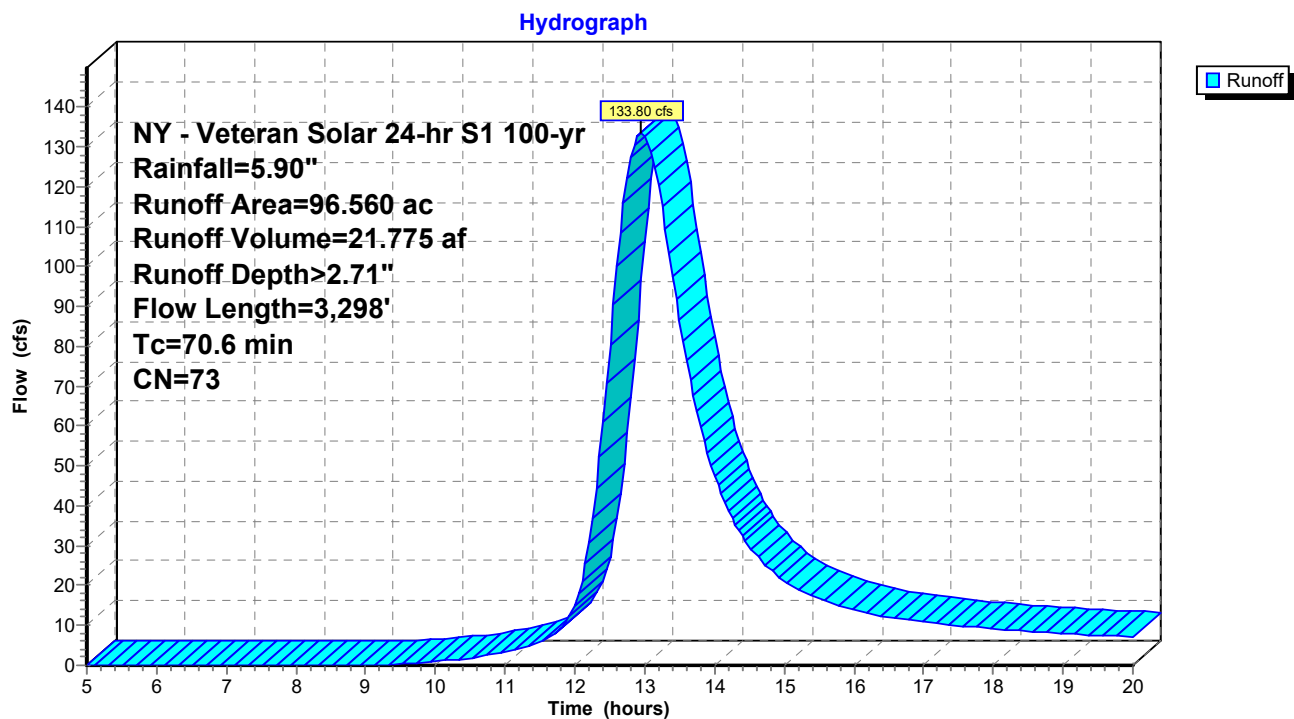
Runoff = 133.80 cfs @ 12.95 hrs, Volume= 21.775 af, Depth> 2.71"
 Routed to Reach EDP1 : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 NY - Veteran Solar 24-hr S1 100-yr Rainfall=5.90"

Area (ac)	CN	Description
1.180	96	Gravel surface, HSG C
0.190	96	Gravel surface, HSG D
0.130	65	Brush, Good, HSG C
0.070	73	Brush, Good, HSG D
5.960	78	Meadow, non-grazed, HSG D
0.290	55	Woods, Good, HSG B
62.870	70	Woods, Good, HSG C
25.870	77	Woods, Good, HSG D
96.560	73	Weighted Average
96.560		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
32.8	150	0.0231	0.08		Sheet Flow, SEG 1
					Woods: Light underbrush n= 0.400 P2= 2.34"
37.8	3,148	0.0770	1.39		Shallow Concentrated Flow, SEG 2
					Woodland Kv= 5.0 fps
70.6	3,298	Total			

Subcatchment EDA1: (new Subcat)



Summary for Subcatchment EDA2: EDA2

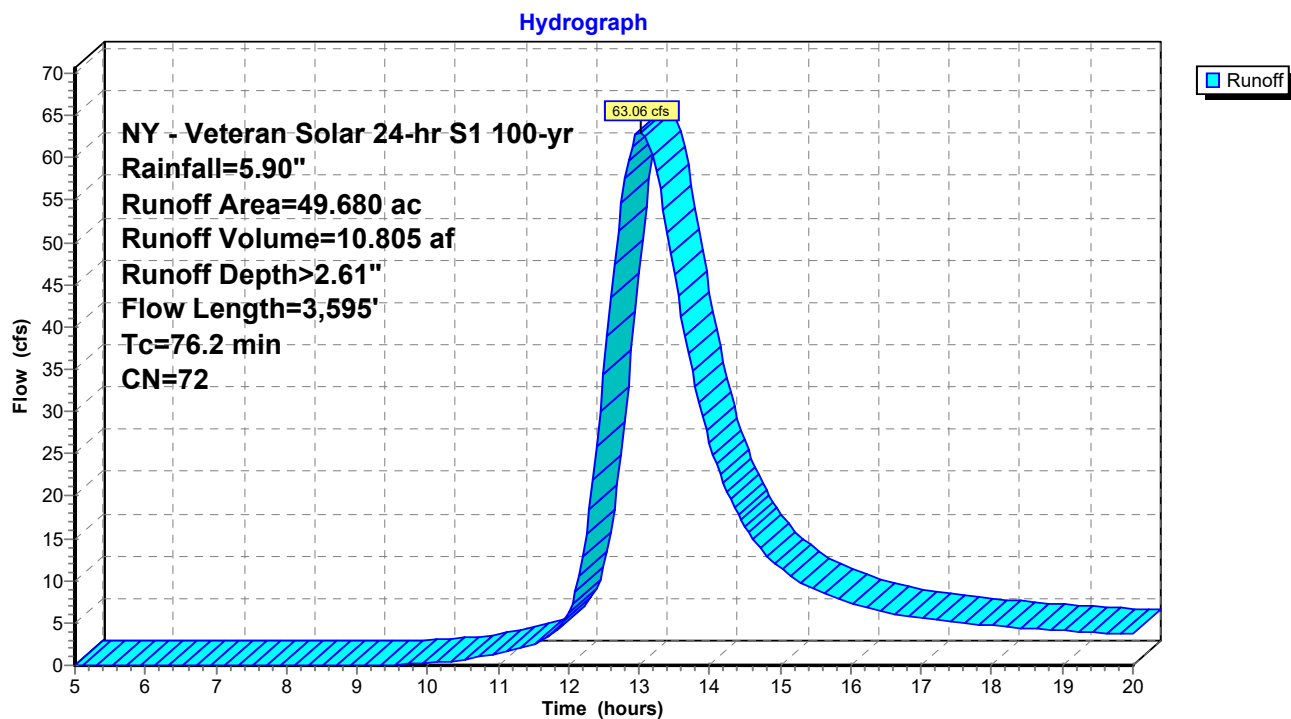
Runoff = 63.06 cfs @ 13.02 hrs, Volume= 10.805 af, Depth> 2.61"
 Routed to Reach EDP2 : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 NY - Veteran Solar 24-hr S1 100-yr Rainfall=5.90"

Area (ac)	CN	Description
0.820	96	Gravel surface, HSG C
0.020	96	Gravel surface, HSG D
3.610	71	Meadow, non-grazed, HSG C
33.200	70	Woods, Good, HSG C
9.530	77	Woods, Good, HSG D
2.500	78	Meadow, non-grazed, HSG D
49.680	72	Weighted Average
49.680		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.3	150	0.0305	0.09		Sheet Flow, SEG1 Woods: Light underbrush n= 0.400 P2= 2.34"
40.1	2,740	0.0519	1.14		Shallow Concentrated Flow, SEG2 Woodland Kv= 5.0 fps
0.6	53	0.0418	1.43		Shallow Concentrated Flow, SEG3 Short Grass Pasture Kv= 7.0 fps
5.8	613	0.1248	1.77		Shallow Concentrated Flow, SEG4 Woodland Kv= 5.0 fps
0.4	39	0.0669	1.81		Shallow Concentrated Flow, SEG5 Short Grass Pasture Kv= 7.0 fps
76.2	3,595	Total			

Subcatchment EDA2: EDA2



Summary for Subcatchment EDA3: EDA3

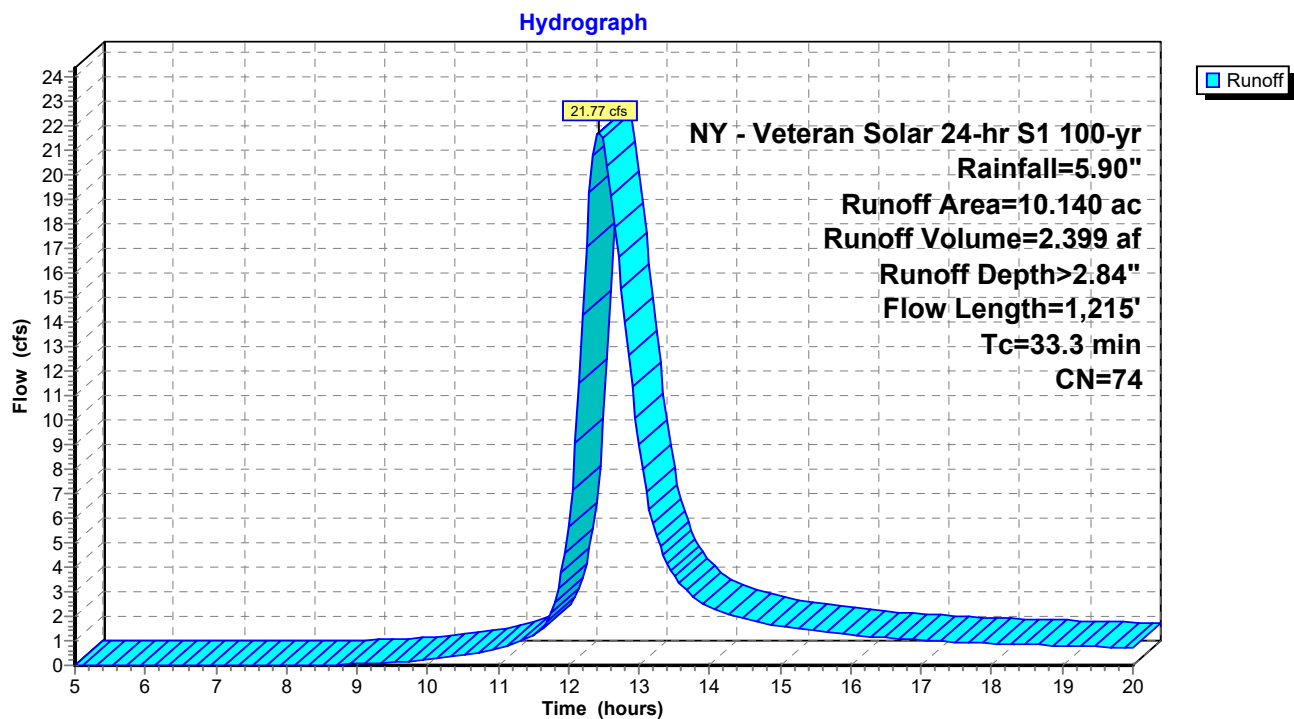
Runoff = 21.77 cfs @ 12.43 hrs, Volume= 2.399 af, Depth> 2.84"
 Routed to Reach EDP3 : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 NY - Veteran Solar 24-hr S1 100-yr Rainfall=5.90"

Area (ac)	CN	Description
0.560	96	Gravel surface, HSG C
0.330	96	Gravel surface, HSG D
0.480	71	Meadow, non-grazed, HSG C
0.230	78	Meadow, non-grazed, HSG D
5.810	70	Woods, Good, HSG C
2.730	77	Woods, Good, HSG D
10.140	74	Weighted Average
10.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.7	150	0.0470	0.10		Sheet Flow, SEG1 Woods: Light underbrush n= 0.400 P2= 2.34"
0.2	19	0.0784	1.96		Shallow Concentrated Flow, SEG2 Short Grass Pasture Kv= 7.0 fps
1.0	124	0.0803	1.98		Shallow Concentrated Flow, SEG3 Short Grass Pasture Kv= 7.0 fps
6.2	679	0.1334	1.83		Shallow Concentrated Flow, SEG4 Woodland Kv= 5.0 fps
0.1	78	0.1200	15.71	12.34	Pipe Channel, SEG5 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, straight & clean
1.1	165	0.2369	2.43		Shallow Concentrated Flow, SEG6 Woodland Kv= 5.0 fps
33.3	1,215	Total			

Subcatchment EDA3: EDA3



Summary for Subcatchment EDA4: EDA4

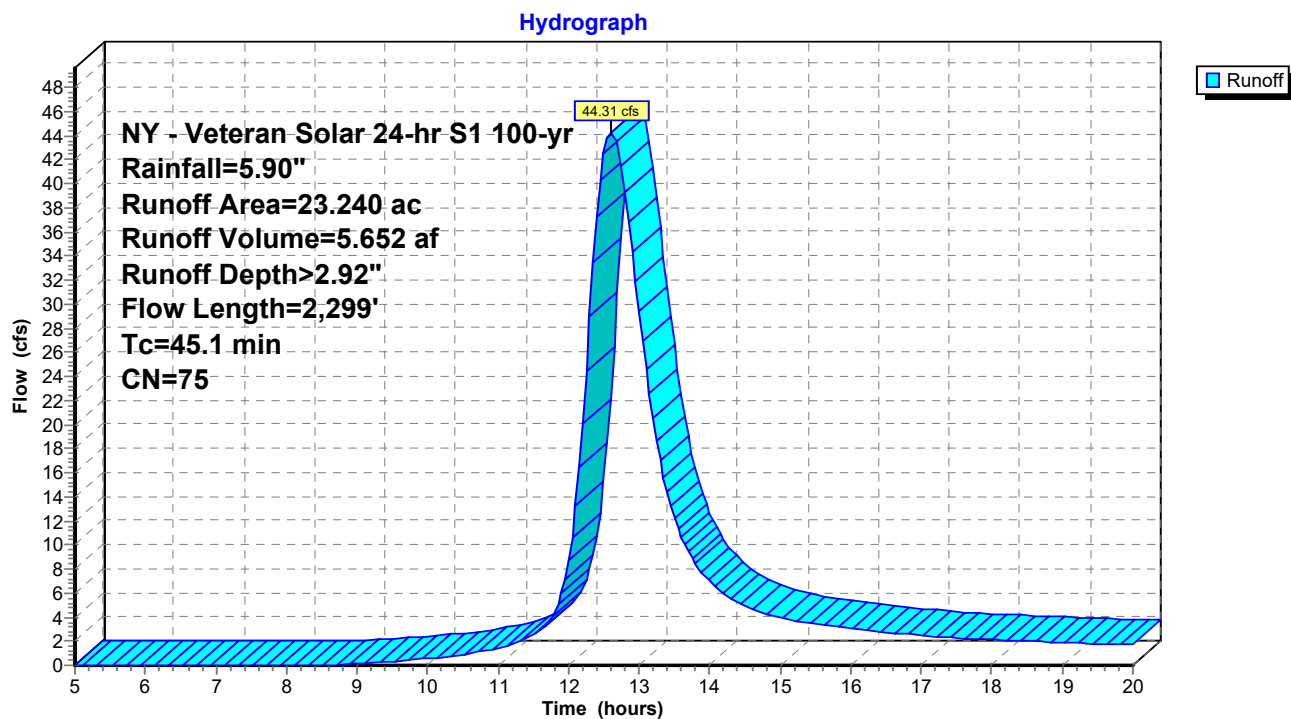
Runoff = 44.31 cfs @ 12.60 hrs, Volume= 5.652 af, Depth> 2.92"
 Routed to Reach EDP4 : (new Reach)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 NY - Veteran Solar 24-hr S1 100-yr Rainfall=5.90"

Area (ac)	CN	Description
0.440	96	Gravel surface, HSG C
0.470	96	Gravel surface, HSG D
2.660	71	Meadow, non-grazed, HSG C
7.050	78	Meadow, non-grazed, HSG D
8.380	70	Woods, Good, HSG C
4.240	77	Woods, Good, HSG D
23.240	75	Weighted Average
23.240		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	150	0.0481	0.10		Sheet Flow, SEG1 Woods: Light underbrush n= 0.400 P2= 2.34"
6.6	508	0.0657	1.28		Shallow Concentrated Flow, SEG2 Woodland Kv= 5.0 fps
1.1	121	0.0664	1.80		Shallow Concentrated Flow, SEG3 Short Grass Pasture Kv= 7.0 fps
4.9	547	0.1386	1.86		Shallow Concentrated Flow, SEG4 Woodland Kv= 5.0 fps
8.0	973	0.0847	2.04		Shallow Concentrated Flow, SEG5 Short Grass Pasture Kv= 7.0 fps
45.1	2,299	Total			

Subcatchment EDA4: EDA4

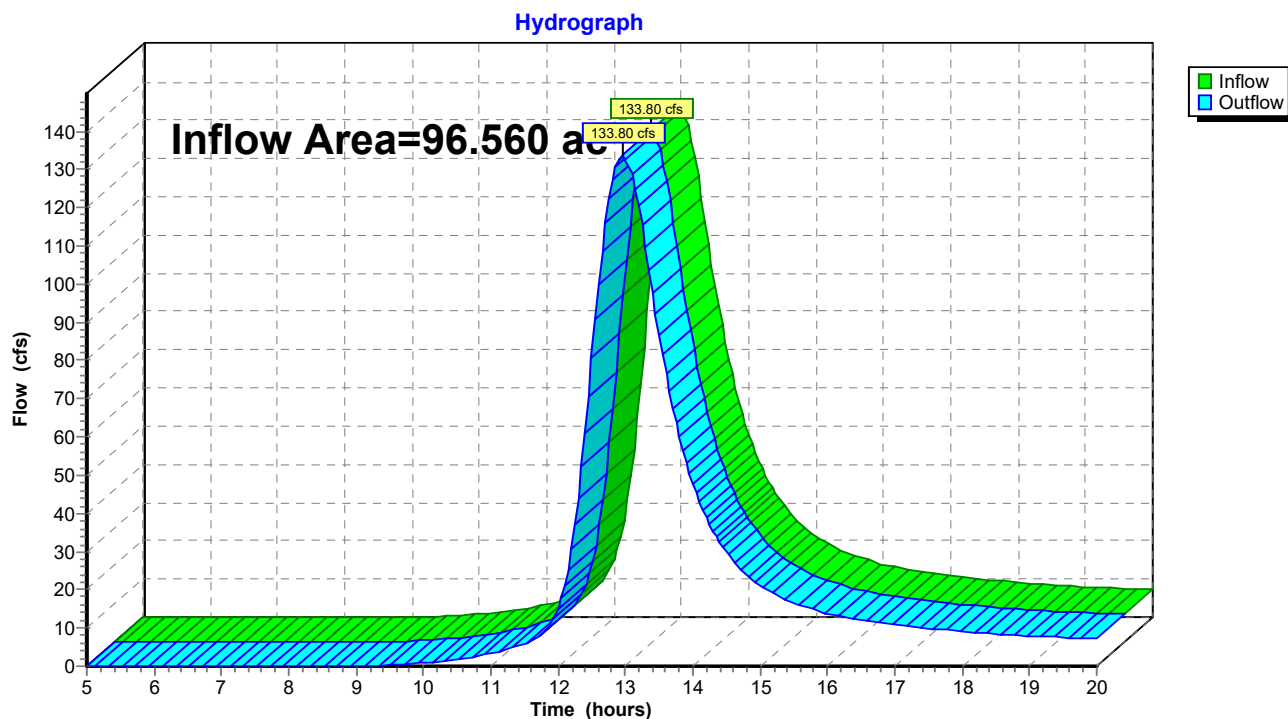


Summary for Reach EDP1: (new Reach)

Inflow Area = 96.560 ac, 0.00% Impervious, Inflow Depth > 2.71" for 100-yr event
Inflow = 133.80 cfs @ 12.95 hrs, Volume= 21.775 af
Outflow = 133.80 cfs @ 12.95 hrs, Volume= 21.775 af, Atten= 0%, Lag= 0.0 min

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

Reach EDP1: (new Reach)

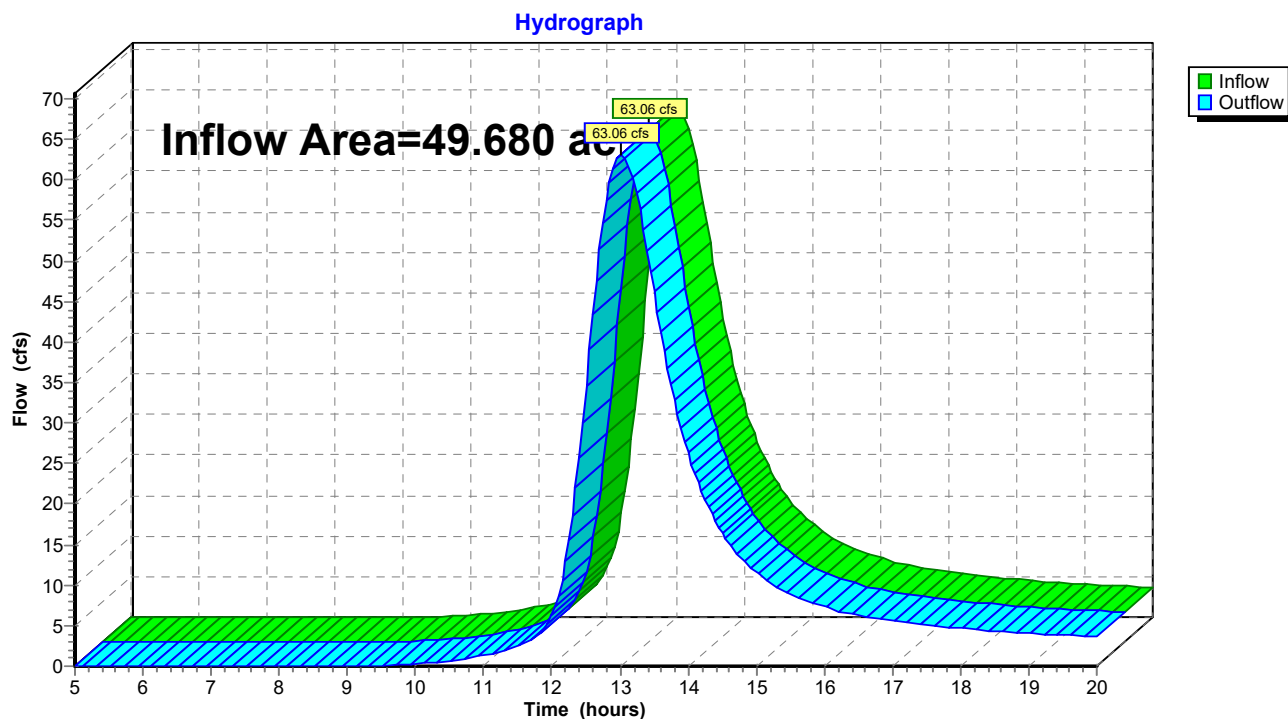


Summary for Reach EDP2: (new Reach)

Inflow Area = 49.680 ac, 0.00% Impervious, Inflow Depth > 2.61" for 100-yr event
Inflow = 63.06 cfs @ 13.02 hrs, Volume= 10.805 af
Outflow = 63.06 cfs @ 13.02 hrs, Volume= 10.805 af, Atten= 0%, Lag= 0.0 min

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

Reach EDP2: (new Reach)

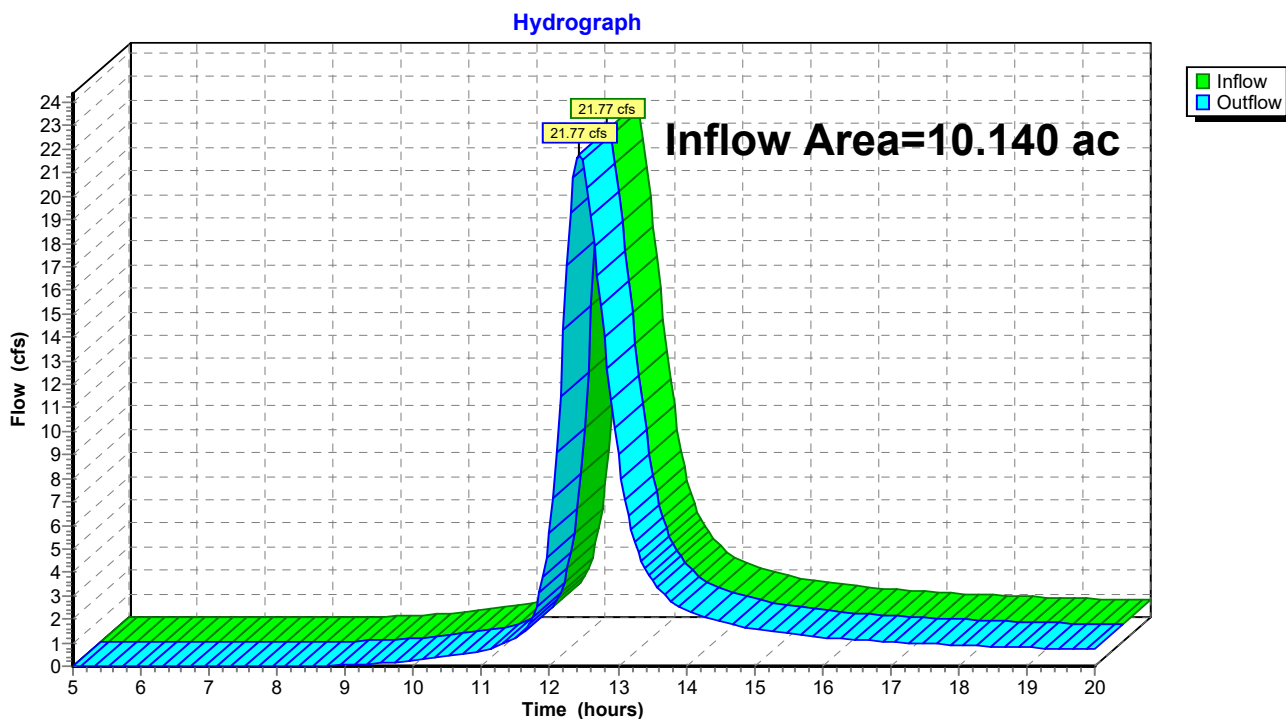


Summary for Reach EDP3: (new Reach)

Inflow Area = 10.140 ac, 0.00% Impervious, Inflow Depth > 2.84" for 100-yr event
Inflow = 21.77 cfs @ 12.43 hrs, Volume= 2.399 af
Outflow = 21.77 cfs @ 12.43 hrs, Volume= 2.399 af, Atten= 0%, Lag= 0.0 min

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

Reach EDP3: (new Reach)

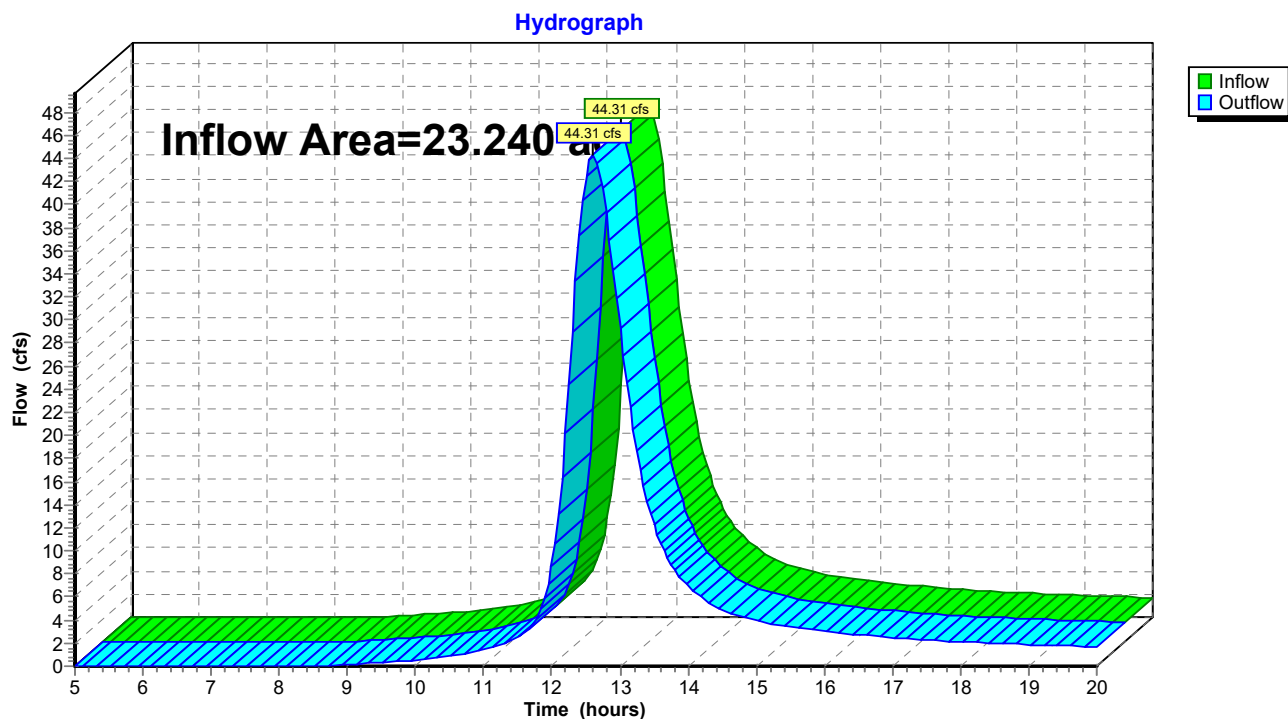


Summary for Reach EDP4: (new Reach)

Inflow Area = 23.240 ac, 0.00% Impervious, Inflow Depth > 2.92" for 100-yr event
Inflow = 44.31 cfs @ 12.60 hrs, Volume= 5.652 af
Outflow = 44.31 cfs @ 12.60 hrs, Volume= 5.652 af, Atten= 0%, Lag= 0.0 min

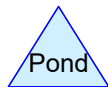
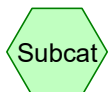
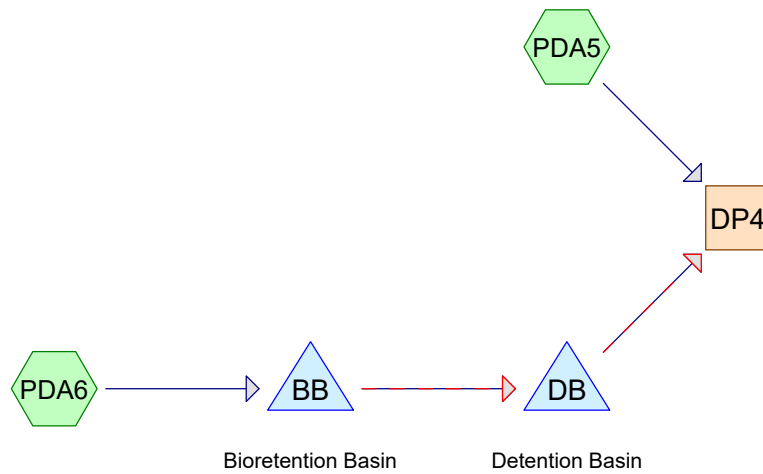
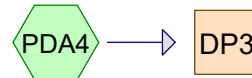
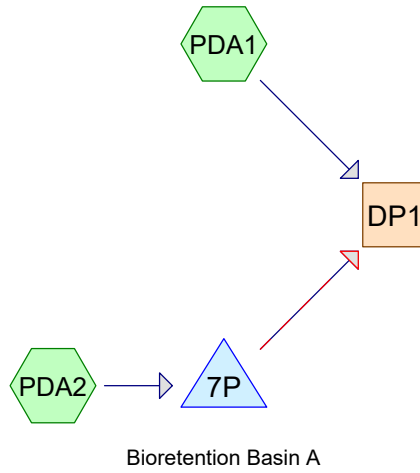
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach EDP4: (new Reach)



APPENDIX D

Post-Development HydroCAD Report



Veteran Hill Solar - Proposed Conditions

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr	NY - Veteran Solar 24-hr S1	1-yr	Default	24.00	1	1.93	2
2	10-yr	NY - Veteran Solar 24-hr S1	10-yr	Default	24.00	1	3.42	2
3	100-yr	NY - Veteran Solar 24-hr S1	100-yr	Default	24.00	1	5.90	2

Veteran Hill Solar - Proposed Conditions

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.840	96	Gravel surface, HSG C (PDA1, PDA2, PDA6)
0.760	96	Gravel surface, HSG D (PDA2, PDA5, PDA6)
35.950	71	Meadow, non-grazed, HSG C (PDA1, PDA2, PDA3, PDA4, PDA5, PDA6)
13.310	78	Meadow, non-grazed, HSG D (PDA1, PDA2, PDA3, PDA4, PDA5, PDA6)
0.290	55	Woods, Good, HSG B (PDA1)
82.230	70	Woods, Good, HSG C (PDA1, PDA3, PDA4, PDA5)
46.070	77	Woods, Good, HSG D (PDA1, PDA3, PDA4, PDA5)

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentPDA1:	Runoff Area=95.680 ac 0.00% Impervious Runoff Depth=0.29" Flow Length=3,298' Tc=70.6 min CN=73 Runoff=8.94 cfs 2.311 af
SubcatchmentPDA2:	Runoff Area=0.670 ac 0.00% Impervious Runoff Depth=0.56" Flow Length=521' Tc=1.6 min CN=81 Runoff=0.63 cfs 0.031 af
SubcatchmentPDA3:	Runoff Area=49.470 ac 0.00% Impervious Runoff Depth=0.26" Flow Length=3,557' Tc=72.8 min CN=72 Runoff=3.92 cfs 1.086 af
SubcatchmentPDA4:	Runoff Area=9.220 ac 0.00% Impervious Runoff Depth=0.26" Flow Length=1,243' Tc=22.6 min CN=72 Runoff=1.26 cfs 0.202 af
SubcatchmentPDA5:	Runoff Area=20.140 ac 0.00% Impervious Runoff Depth=0.32" Flow Length=2,095' Tc=31.3 min CN=74 Runoff=3.30 cfs 0.533 af
SubcatchmentPDA6:	Runoff Area=4.270 ac 0.00% Impervious Runoff Depth=0.56" Tc=6.0 min CN=81 Runoff=3.25 cfs 0.199 af
Reach DP1:	Inflow=9.01 cfs 2.342 af Outflow=9.01 cfs 2.342 af
Reach DP2:	Inflow=3.92 cfs 1.086 af Outflow=3.92 cfs 1.086 af
Reach DP3:	Inflow=1.26 cfs 0.202 af Outflow=1.26 cfs 0.202 af
Reach DP4:	Inflow=3.51 cfs 0.732 af Outflow=3.51 cfs 0.732 af
Pond 7P: Bioretention Basin A	Peak Elev=1,229.71' Storage=453 cf Inflow=0.63 cfs 0.031 af Primary=0.12 cfs 0.031 af Secondary=0.00 cfs 0.000 af Outflow=0.12 cfs 0.031 af
Pond BB: Bioretention Basin	Peak Elev=1,061.63' Storage=1,568 cf Inflow=3.25 cfs 0.199 af Primary=1.15 cfs 0.122 af Secondary=1.40 cfs 0.077 af Outflow=2.56 cfs 0.199 af
Pond DB: Detention Basin	Peak Elev=1,055.52' Storage=2,662 cf Inflow=2.56 cfs 0.199 af Primary=0.25 cfs 0.198 af Secondary=0.00 cfs 0.000 af Outflow=0.25 cfs 0.198 af

Veteran Hill Solar - Proposed Conditions

NY - Veteran Solar 24-hr S1 1-yr Rainfall=1.93"

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Summary for Subcatchment PDA1:

Runoff = 8.94 cfs @ 13.12 hrs, Volume= 2.311 af, Depth= 0.29"
Routed to Reach DP1 :

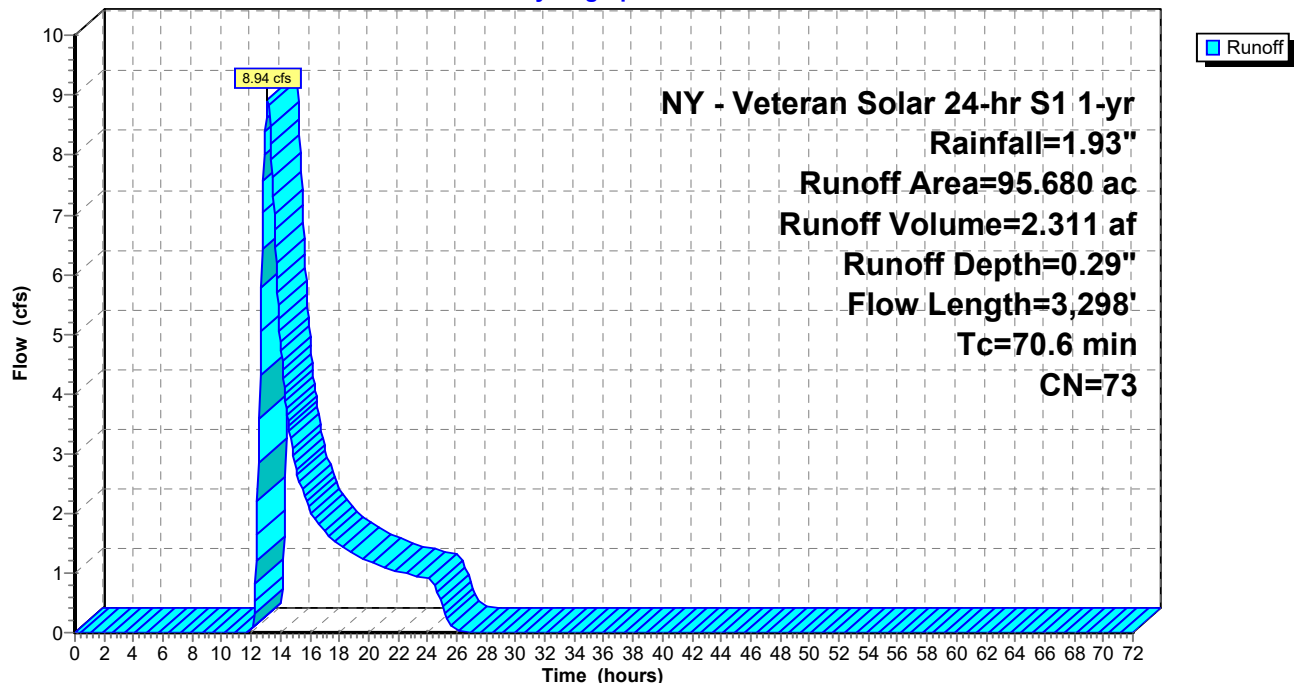
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NY - Veteran Solar 24-hr S1 1-yr Rainfall=1.93"

Area (ac)	CN	Description
24.460	71	Meadow, non-grazed, HSG C
2.890	78	Meadow, non-grazed, HSG D
0.290	55	Woods, Good, HSG B
38.080	70	Woods, Good, HSG C
29.780	77	Woods, Good, HSG D
0.180	96	Gravel surface, HSG C
95.680	73	Weighted Average
95.680		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
32.8	150	0.0231	0.08		Sheet Flow, SEG 1
					Woods: Light underbrush n= 0.400 P2= 2.34"
37.8	3,148	0.0770	1.39		Shallow Concentrated Flow, SEG 2
					Woodland Kv= 5.0 fps
70.6	3,298	Total			

Subcatchment PDA1:

Hydrograph



Veteran Hill Solar - Proposed Conditions

NY - Veteran Solar 24-hr S1 1-yr Rainfall=1.93"

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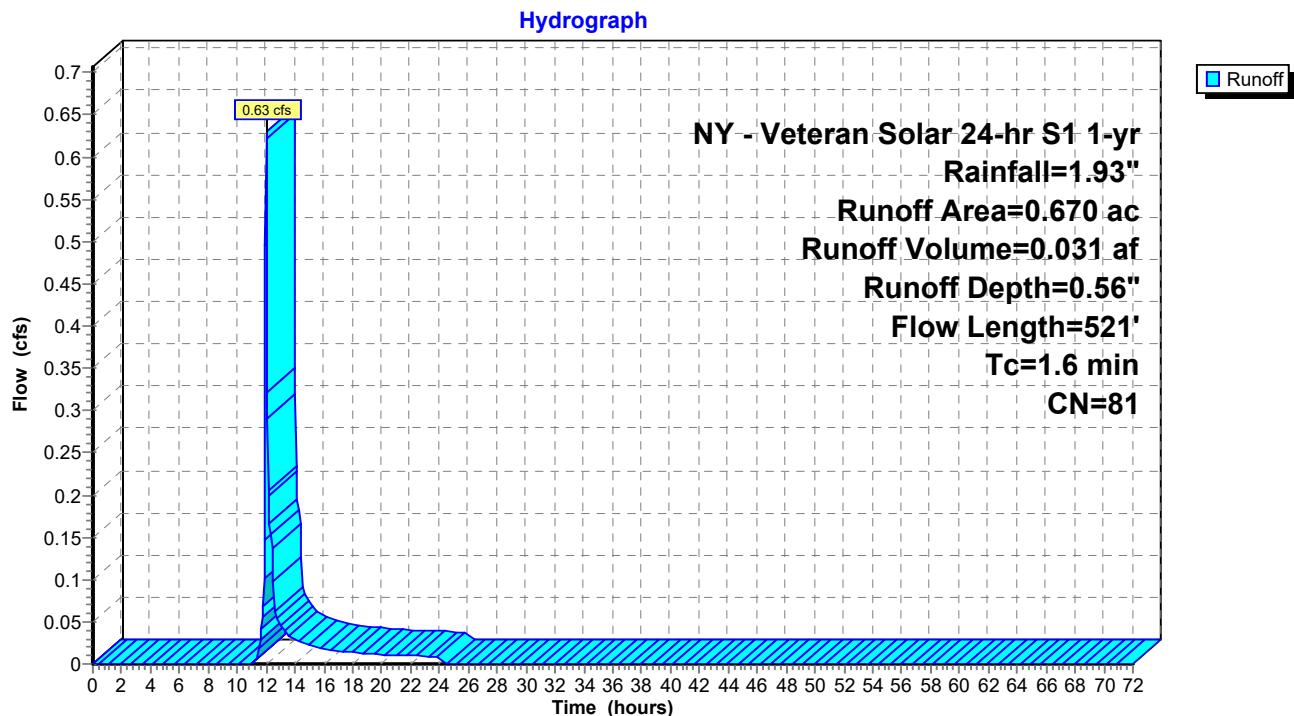
Summary for Subcatchment PDA2:

Runoff = 0.63 cfs @ 11.99 hrs, Volume= 0.031 af, Depth= 0.56"
Routed to Pond 7P : Bioretention Basin A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NY - Veteran Solar 24-hr S1 1-yr Rainfall=1.93"

Area (ac)	CN	Description
0.130	96	Gravel surface, HSG C
0.110	96	Gravel surface, HSG D
0.310	71	Meadow, non-grazed, HSG C
0.120	78	Meadow, non-grazed, HSG D
0.670	81	Weighted Average
0.670		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0051	2.81	25.32	Channel Flow, SEG1 Area= 9.0 sf Perim= 11.0' r= 0.82' n= 0.033
1.0	421	0.0289	6.70	60.27	Channel Flow, SEG2 Area= 9.0 sf Perim= 11.0' r= 0.82' n= 0.033 Earth, grassed & winding
1.6	521	Total			

Subcatchment PDA2:

Summary for Subcatchment PDA3:

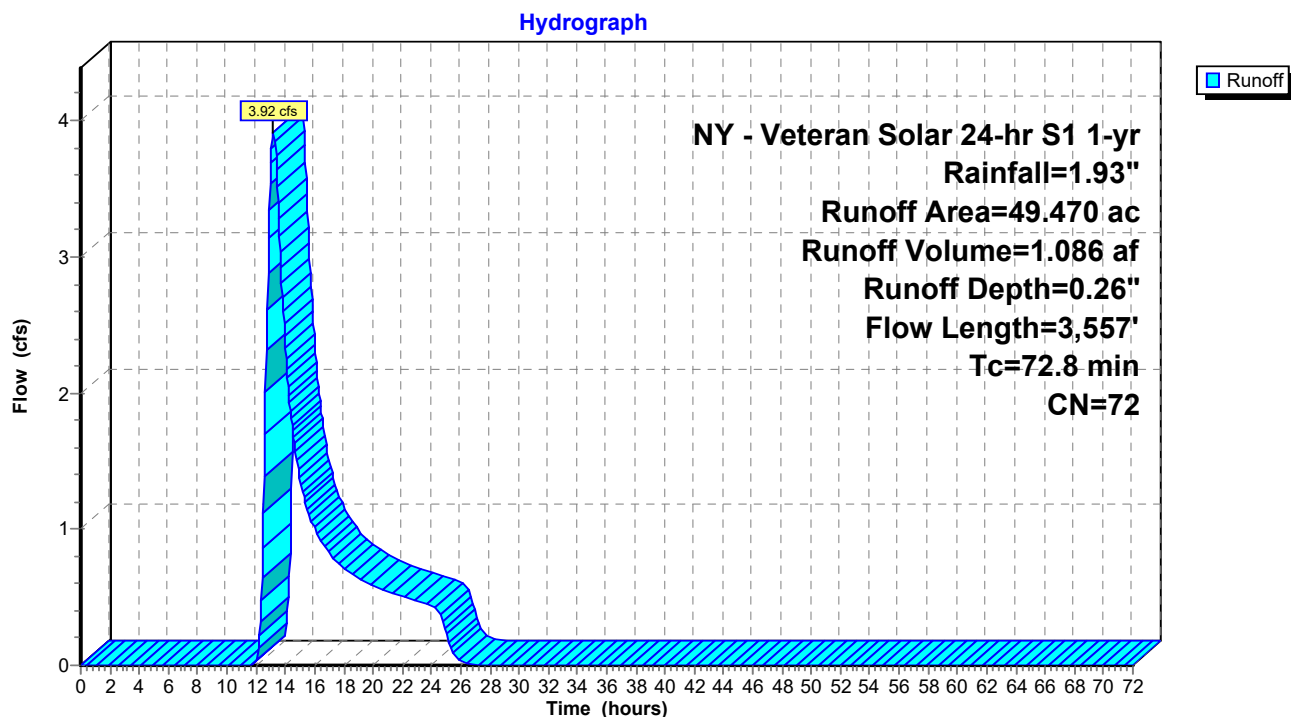
Runoff = 3.92 cfs @ 13.19 hrs, Volume= 1.086 af, Depth= 0.26"
 Routed to Reach DP2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NY - Veteran Solar 24-hr S1 1-yr Rainfall=1.93"

Area (ac)	CN	Description
6.140	71	Meadow, non-grazed, HSG C
31.290	70	Woods, Good, HSG C
9.550	77	Woods, Good, HSG D
2.490	78	Meadow, non-grazed, HSG D
49.470	72	Weighted Average
49.470		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6	150	0.0391	0.09		Sheet Flow, SEG1 Woods: Light underbrush n= 0.400 P2= 2.34"
39.6	2,706	0.0518	1.14		Shallow Concentrated Flow, SEG2 Woodland Kv= 5.0 fps
0.6	53	0.0418	1.43		Shallow Concentrated Flow, SEG3 Short Grass Pasture Kv= 7.0 fps
5.8	613	0.1248	1.77		Shallow Concentrated Flow, SEG4 Woodland Kv= 5.0 fps
0.2	35	0.1129	2.35		Shallow Concentrated Flow, SEG5 Short Grass Pasture Kv= 7.0 fps
72.8	3,557	Total			

Subcatchment PDA3:



Summary for Subcatchment PDA4:

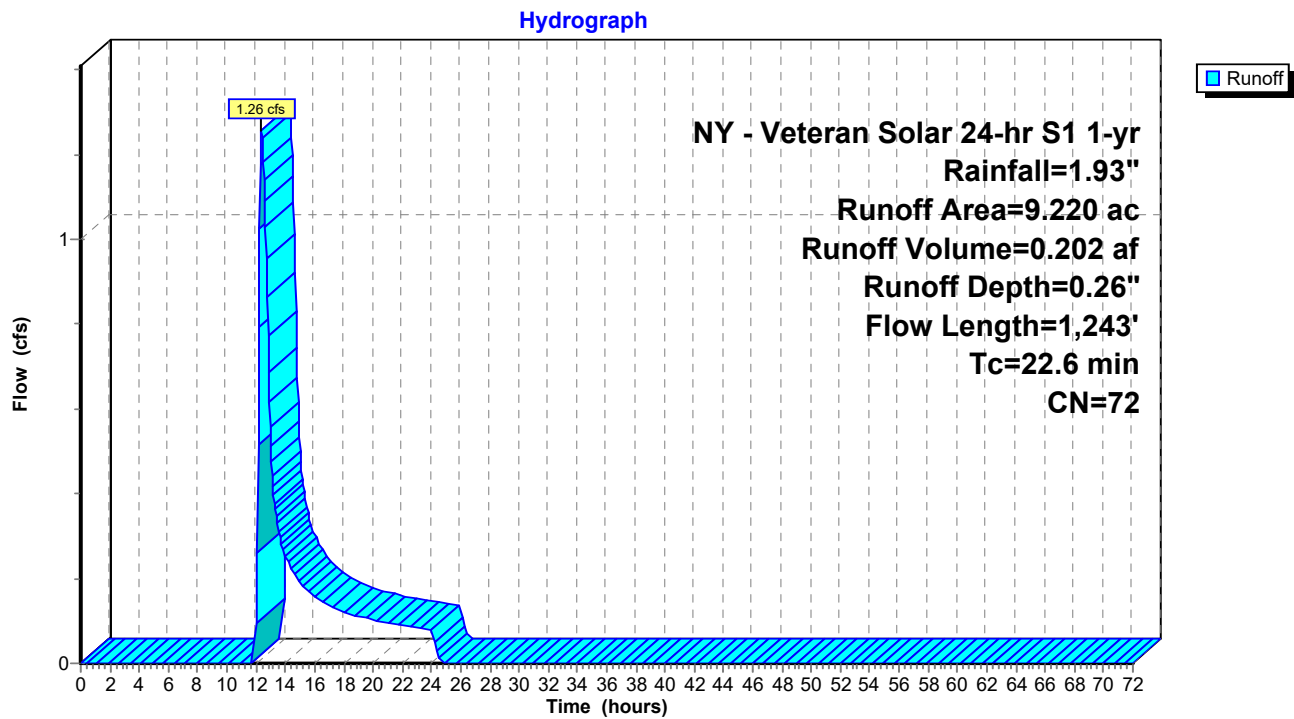
Runoff = 1.26 cfs @ 12.38 hrs, Volume= 0.202 af, Depth= 0.26"
 Routed to Reach DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NY - Veteran Solar 24-hr S1 1-yr Rainfall=1.93"

Area (ac)	CN	Description
1.780	71	Meadow, non-grazed, HSG C
0.460	78	Meadow, non-grazed, HSG D
4.490	70	Woods, Good, HSG C
2.490	77	Woods, Good, HSG D
9.220	72	Weighted Average
9.220		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	100	0.0405	0.13		Sheet Flow, SEG1 Grass: Dense n= 0.240 P2= 2.34"
2.5	234	0.0947	1.54		Shallow Concentrated Flow, SEG2 Woodland Kv= 5.0 fps
6.2	663	0.1282	1.79		Shallow Concentrated Flow, SEG3 Woodland Kv= 5.0 fps
0.2	35	0.3074	3.88		Shallow Concentrated Flow, SEG4 Short Grass Pasture Kv= 7.0 fps
0.1	65	0.1400	16.97	13.33	Pipe Channel, SEG5 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, straight & clean
0.1	33	0.4987	4.94		Shallow Concentrated Flow, SEG6 Short Grass Pasture Kv= 7.0 fps
0.9	113	0.1894	2.18		Shallow Concentrated Flow, SEG7 Woodland Kv= 5.0 fps
22.6	1,243	Total			

Subcatchment PDA4:



Summary for Subcatchment PDA5:

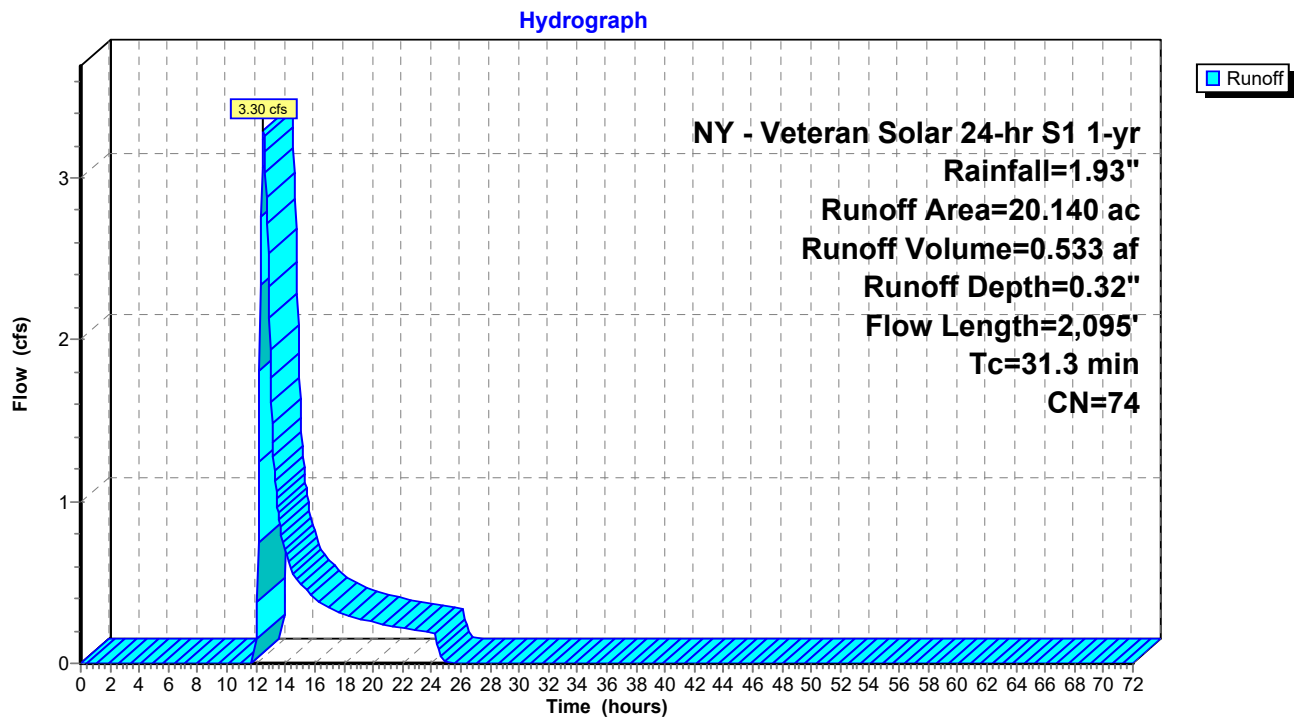
Runoff = 3.30 cfs @ 12.51 hrs, Volume= 0.533 af, Depth= 0.32"
 Routed to Reach DP4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NY - Veteran Solar 24-hr S1 1-yr Rainfall=1.93"

Area (ac)	CN	Description
2.710	71	Meadow, non-grazed, HSG C
4.600	78	Meadow, non-grazed, HSG D
8.370	70	Woods, Good, HSG C
4.250	77	Woods, Good, HSG D
0.210	96	Gravel surface, HSG D
20.140	74	Weighted Average
20.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.4	100	0.0583	0.10		Sheet Flow, SEG1 Woods: Light underbrush n= 0.400 P2= 2.34"
7.3	555	0.0640	1.26		Shallow Concentrated Flow, SEG2 Woodland Kv= 5.0 fps
1.2	123	0.0639	1.77		Shallow Concentrated Flow, SEG3 Short Grass Pasture Kv= 7.0 fps
5.1	570	0.1396	1.87		Shallow Concentrated Flow, SEG4 Woodland Kv= 5.0 fps
0.2	39	0.2016	3.14		Shallow Concentrated Flow, SEG5 Short Grass Pasture Kv= 7.0 fps
1.1	708	0.0800	11.14	100.27	Channel Flow, SEG6 Area= 9.0 sf Perim= 11.0' r= 0.82' n= 0.033
31.3	2,095	Total			

Subcatchment PDA5:



Veteran Hill Solar - Proposed Conditions

NY - Veteran Solar 24-hr S1 1-yr Rainfall=1.93"

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Summary for Subcatchment PDA6:

Runoff = 3.25 cfs @ 12.05 hrs, Volume= 0.199 af, Depth= 0.56"
Routed to Pond BB : Bioretention Basin

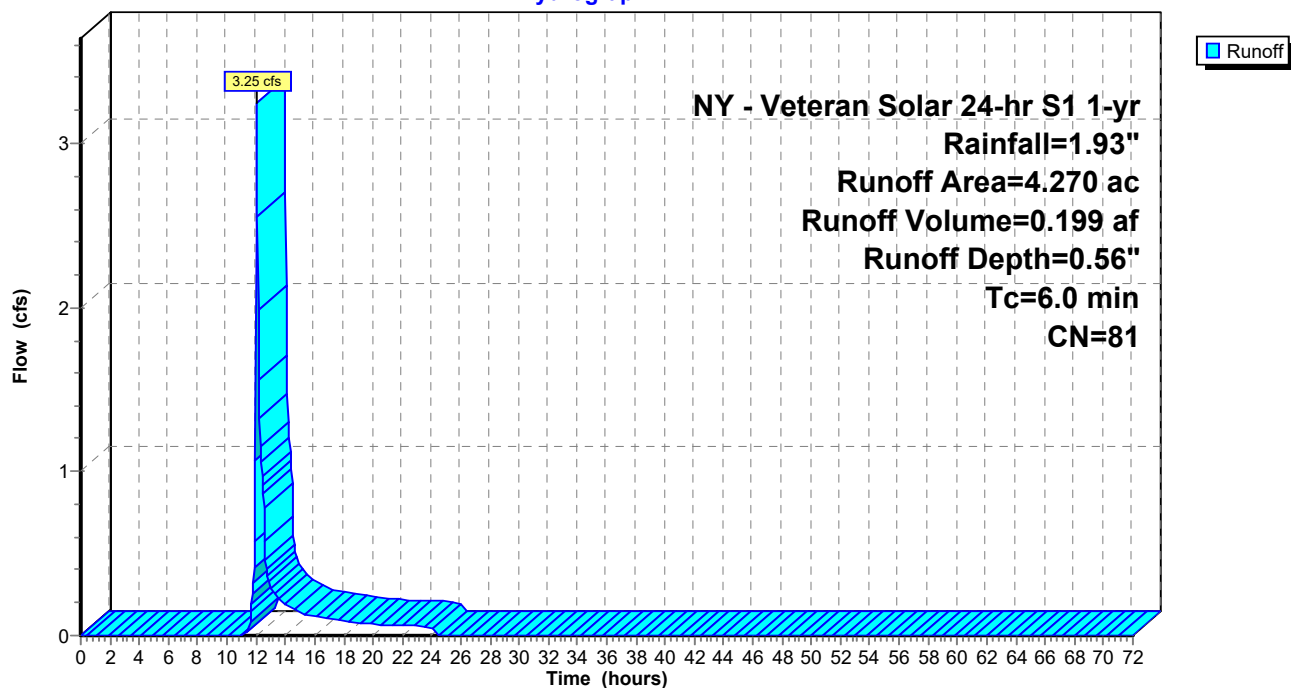
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NY - Veteran Solar 24-hr S1 1-yr Rainfall=1.93"

Area (ac)	CN	Description
0.530	96	Gravel surface, HSG C
0.440	96	Gravel surface, HSG D
0.550	71	Meadow, non-grazed, HSG C
2.750	78	Meadow, non-grazed, HSG D
4.270	81	Weighted Average
4.270		100.00% Pervious Area

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

Subcatchment PDA6:

Hydrograph

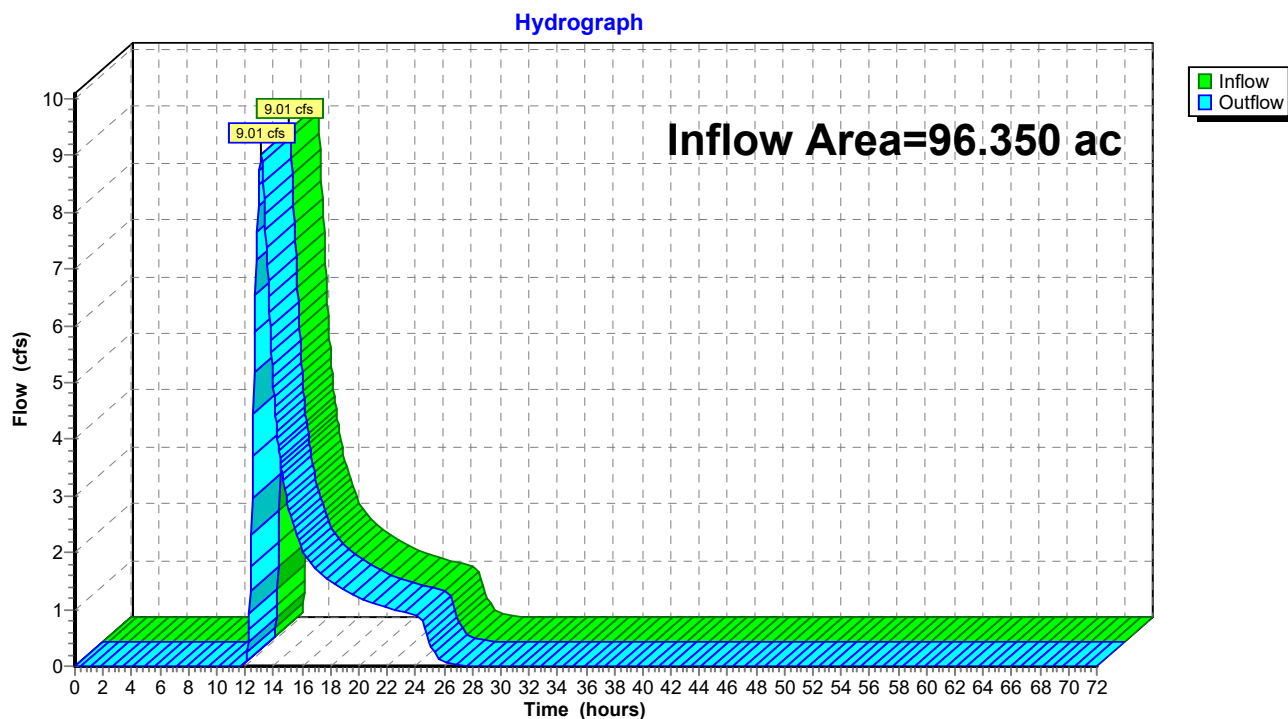


Summary for Reach DP1:

Inflow Area = 96.350 ac, 0.00% Impervious, Inflow Depth = 0.29" for 1-yr event
Inflow = 9.01 cfs @ 13.12 hrs, Volume= 2.342 af
Outflow = 9.01 cfs @ 13.12 hrs, Volume= 2.342 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach DP1:



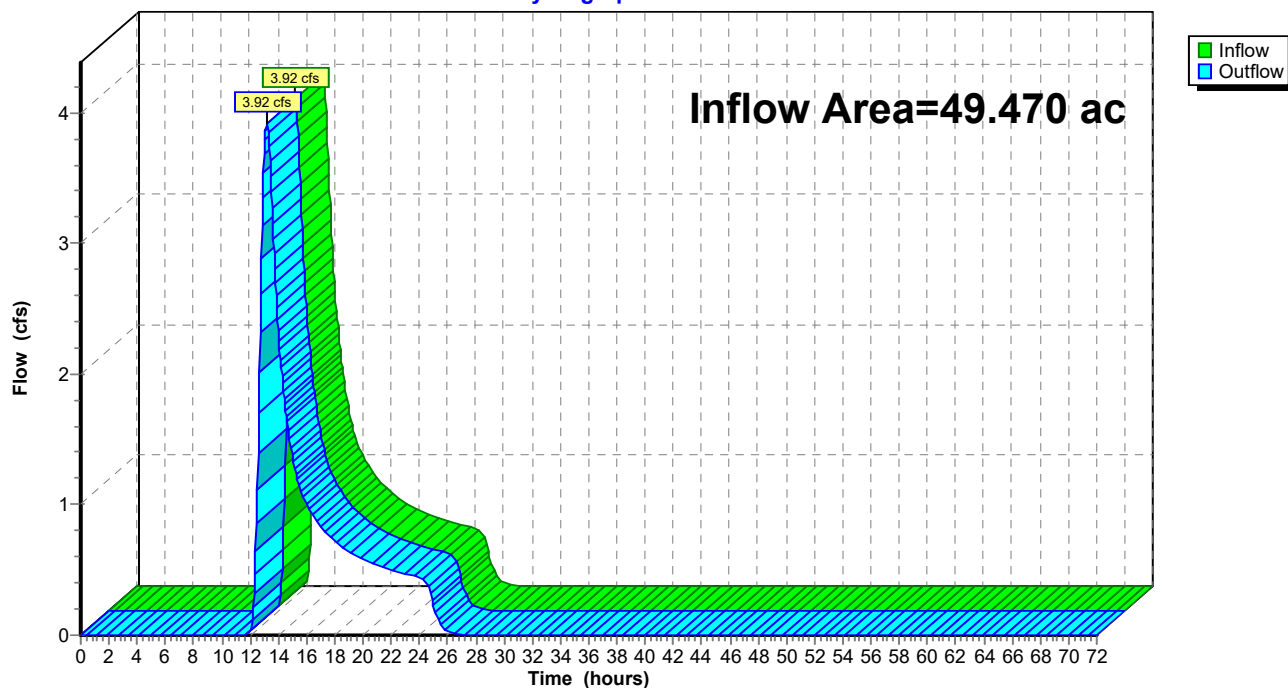
Summary for Reach DP2:

Inflow Area = 49.470 ac, 0.00% Impervious, Inflow Depth = 0.26" for 1-yr event
Inflow = 3.92 cfs @ 13.19 hrs, Volume= 1.086 af
Outflow = 3.92 cfs @ 13.19 hrs, Volume= 1.086 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach DP2:

Hydrograph



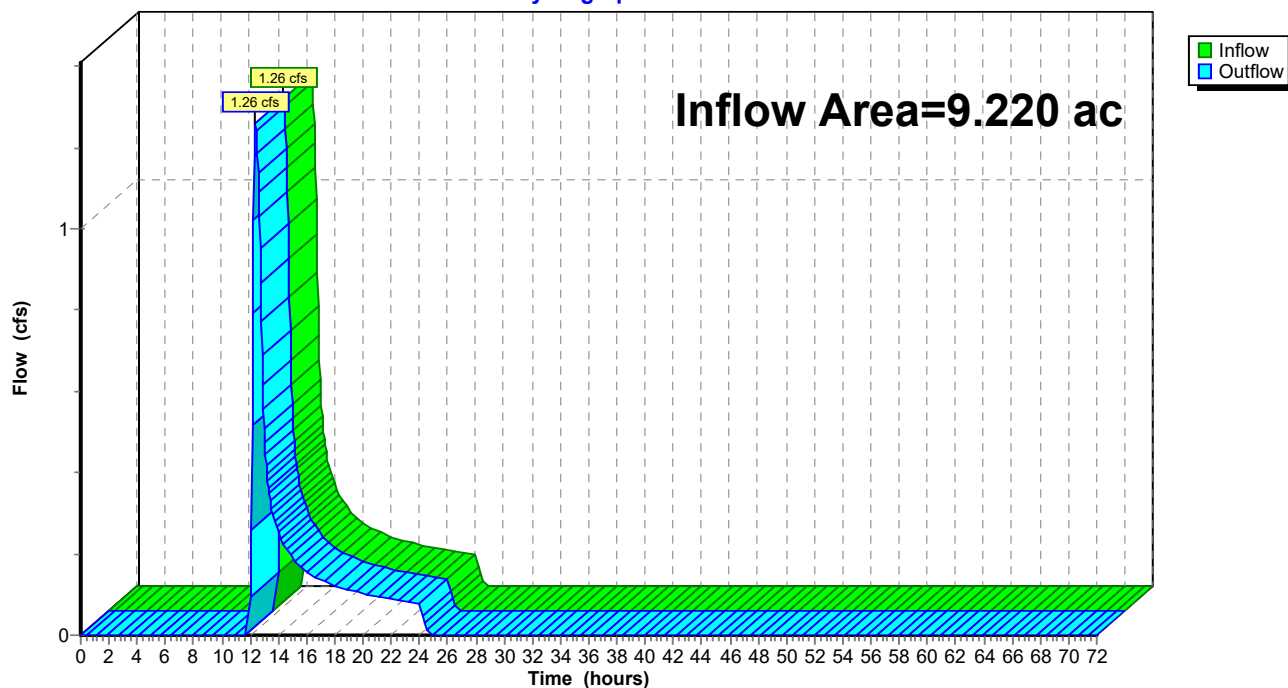
Summary for Reach DP3:

Inflow Area = 9.220 ac, 0.00% Impervious, Inflow Depth = 0.26" for 1-yr event
Inflow = 1.26 cfs @ 12.38 hrs, Volume= 0.202 af
Outflow = 1.26 cfs @ 12.38 hrs, Volume= 0.202 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach DP3:

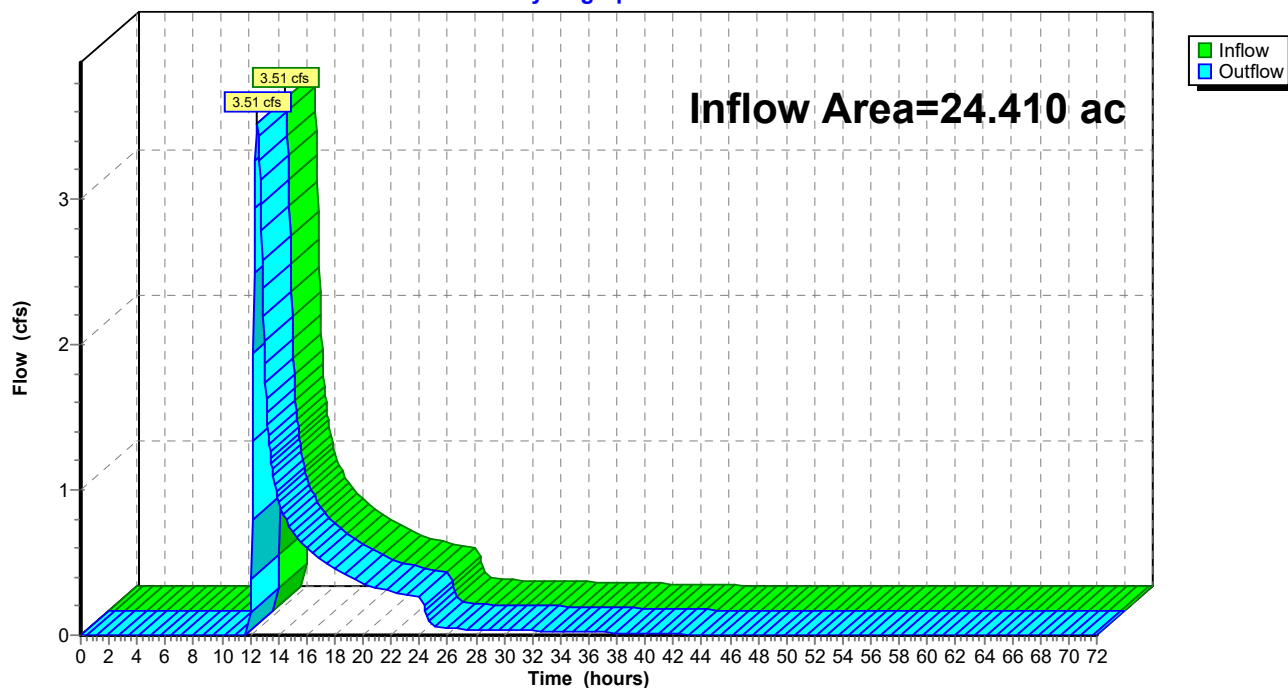
Hydrograph



Summary for Reach DP4:

Inflow Area = 24.410 ac, 0.00% Impervious, Inflow Depth = 0.36" for 1-yr event
Inflow = 3.51 cfs @ 12.51 hrs, Volume= 0.732 af
Outflow = 3.51 cfs @ 12.51 hrs, Volume= 0.732 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach DP4:**Hydrograph**

Summary for Pond 7P: Bioretention Basin A

Inflow Area = 0.670 ac, 0.00% Impervious, Inflow Depth = 0.56" for 1-yr event
 Inflow = 0.63 cfs @ 11.99 hrs, Volume= 0.031 af
 Outflow = 0.12 cfs @ 12.50 hrs, Volume= 0.031 af, Atten= 82%, Lag= 30.3 min
 Primary = 0.12 cfs @ 12.50 hrs, Volume= 0.031 af
 Routed to Reach DP1 :
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Reach DP1 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 1,229.71' @ 12.50 hrs Surf.Area= 793 sf Storage= 453 cf

Plug-Flow detention time= 246.1 min calculated for 0.031 af (100% of inflow)
 Center-of-Mass det. time= 246.5 min (1,115.2 - 868.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,229.00'	3,405 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,229.00	490	0	0
1,232.00	1,780	3,405	3,405

Device	Routing	Invert	Outlet Devices
#1	Primary	1,225.00'	15.0" Round Culvert L= 33.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,225.00' / 1,224.00' S= 0.0303 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	1,229.50'	3.0" Horiz. 3" Orifice C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,230.00'	48.0" x 30.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	1,225.25'	6.0" Vert. 6" Underdrain C= 0.600 Limited to weir flow at low heads
#5	Device 4	1,229.00'	0.500 in/hr Filtering Media over Surface area
#6	Secondary	1,230.50'	20.0' long Emergency Spillway 2 End Contraction(s)

Primary OutFlow Max=0.12 cfs @ 12.50 hrs HW=1,229.71' (Free Discharge)

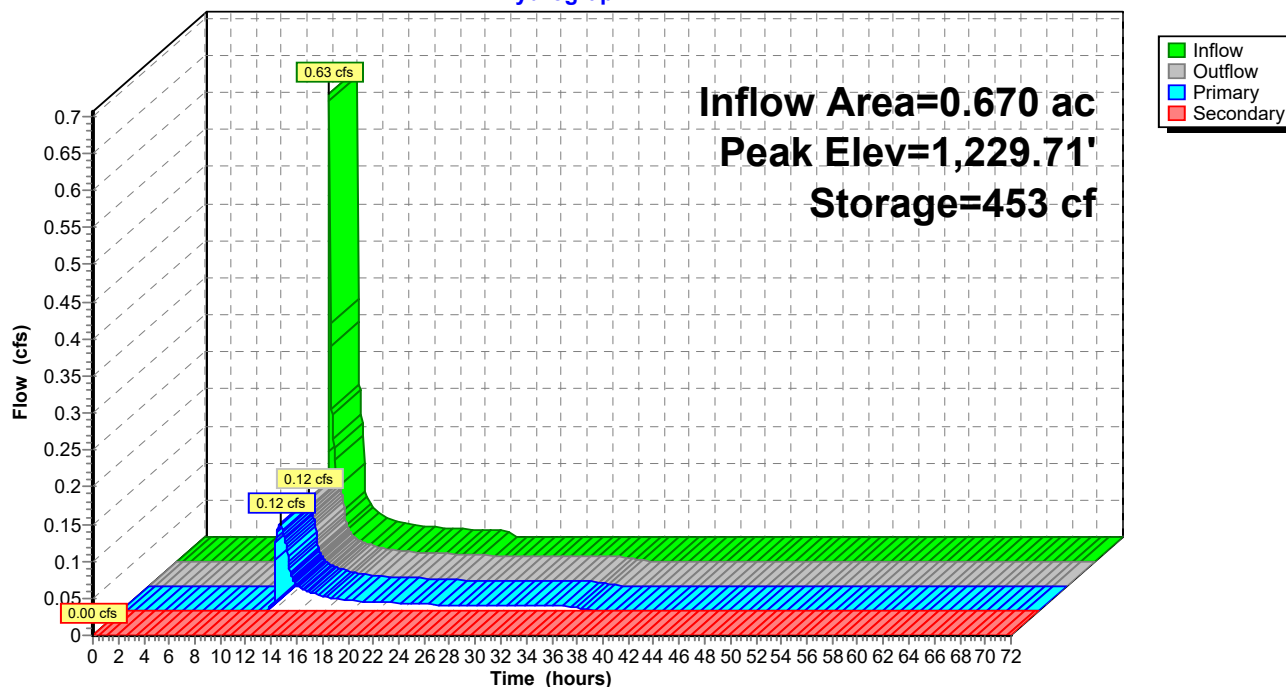
↑ **1=Culvert** (Passes 0.12 cfs of 11.94 cfs potential flow)
 ↑ **2=3" Orifice** (Orifice Controls 0.11 cfs @ 2.18 fps)
 ↑ **3=Grate** (Controls 0.00 cfs)
 ↑ **4=6" Underdrain** (Passes 0.01 cfs of 1.94 cfs potential flow)
 ↑ **5=Filtering Media** (Exfiltration Controls 0.01 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,229.00' (Free Discharge)

↑ **6=Emergency Spillway** (Controls 0.00 cfs)

Pond 7P: Bioretention Basin A

Hydrograph



Summary for Pond BB: Bioretention Basin

Inflow Area = 4.270 ac, 0.00% Impervious, Inflow Depth = 0.56" for 1-yr event
 Inflow = 3.25 cfs @ 12.05 hrs, Volume= 0.199 af
 Outflow = 2.56 cfs @ 12.12 hrs, Volume= 0.199 af, Atten= 21%, Lag= 4.3 min
 Primary = 1.15 cfs @ 12.12 hrs, Volume= 0.122 af
 Routed to Pond DB : Detention Basin
 Secondary = 1.40 cfs @ 12.12 hrs, Volume= 0.077 af
 Routed to Pond DB : Detention Basin

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 1,061.63' @ 12.12 hrs Surf.Area= 2,719 sf Storage= 1,568 cf

Plug-Flow detention time= 160.0 min calculated for 0.199 af (100% of inflow)
 Center-of-Mass det. time= 157.7 min (1,030.4 - 872.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,061.00'	5,950 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,061.00	2,290	0	0
1,063.00	3,660	5,950	5,950

Device	Routing	Invert	Outlet Devices
#1	Primary	1,057.00'	15.0" Round Culvert L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,057.00' / 1,056.50' S= 0.0100 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	1,061.50'	24.0" x 24.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,057.20'	6.0" Vert. 6" Underdrain C= 0.600 Limited to weir flow at low heads
#4	Device 3	1,061.00'	0.500 in/hr Filtering Media over Surface area
#5	Secondary	1,061.50'	10.0' long Overflow Spillway 2 End Contraction(s)

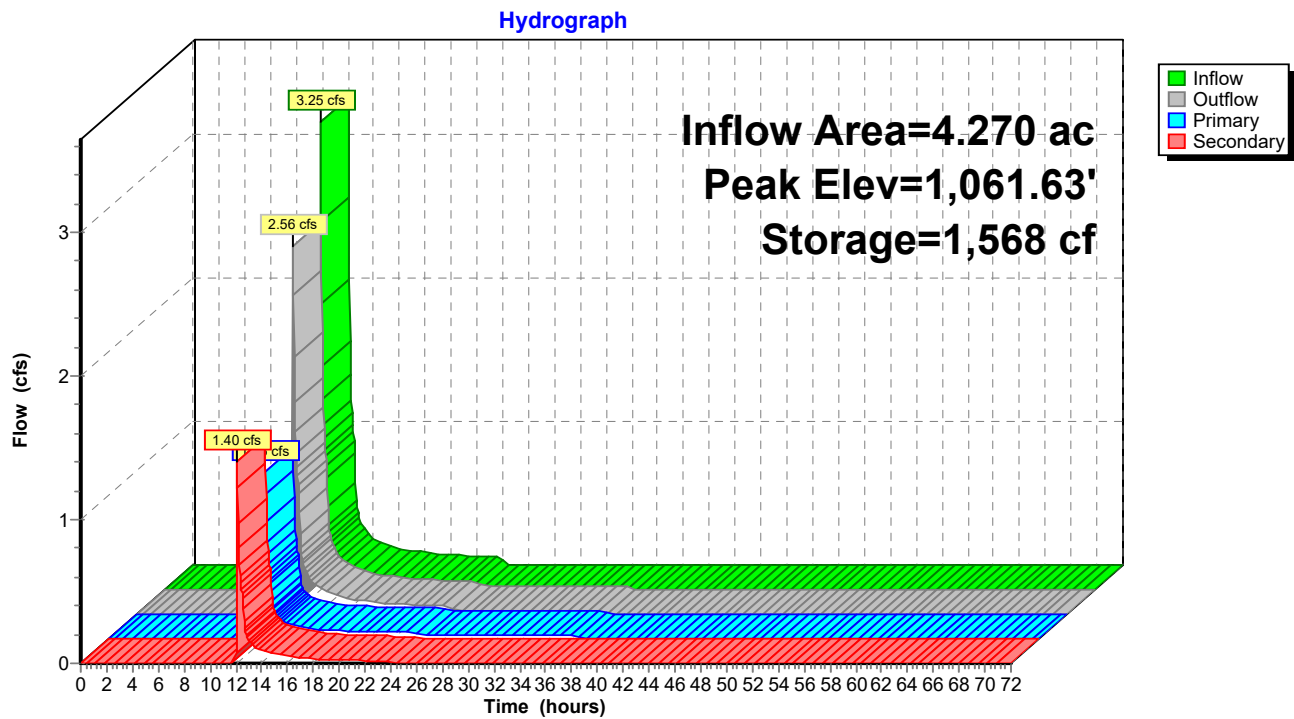
Primary OutFlow Max=1.03 cfs @ 12.12 hrs HW=1,061.61' (Free Discharge)

↑ **1=Culvert** (Passes 1.03 cfs of 11.80 cfs potential flow)
 ↑ **2=Grate** (Weir Controls 1.00 cfs @ 1.10 fps)
 ↑ **3=6" Underdrain** (Passes 0.03 cfs of 1.93 cfs potential flow)
 ↑ **4=Filtering Media** (Exfiltration Controls 0.03 cfs)

Secondary OutFlow Max=1.24 cfs @ 12.12 hrs HW=1,061.61' (Free Discharge)

↑ **5=Overflow Spillway** (Weir Controls 1.24 cfs @ 1.10 fps)

Pond BB: Bioretention Basin



Summary for Pond DB: Detention Basin

Inflow Area = 4.270 ac, 0.00% Impervious, Inflow Depth = 0.56" for 1-yr event
 Inflow = 2.56 cfs @ 12.12 hrs, Volume= 0.199 af
 Outflow = 0.25 cfs @ 13.36 hrs, Volume= 0.198 af, Atten= 90%, Lag= 74.2 min
 Primary = 0.25 cfs @ 13.36 hrs, Volume= 0.198 af
 Routed to Reach DP4 :
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Reach DP4 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 1,055.52' @ 13.36 hrs Surf.Area= 5,432 sf Storage= 2,662 cf

Plug-Flow detention time= 210.6 min calculated for 0.198 af (100% of inflow)
 Center-of-Mass det. time= 209.1 min (1,239.5 - 1,030.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,055.00'	44,550 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,055.00	4,810	0	0
1,060.50	11,390	44,550	44,550

Device	Routing	Invert	Outlet Devices
#1	Primary	1,055.00'	15.0" Round Culvert L= 100.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,055.00' / 1,054.00' S= 0.0100 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	1,055.00'	4.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,056.00'	4.0" Vert. Orifice C= 0.600 Limited to weir flow at low heads
#4	Device 1	1,059.00'	48.0" x 30.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Secondary	1,059.50'	20.0' long Emergency Spillway 2 End Contraction(s)

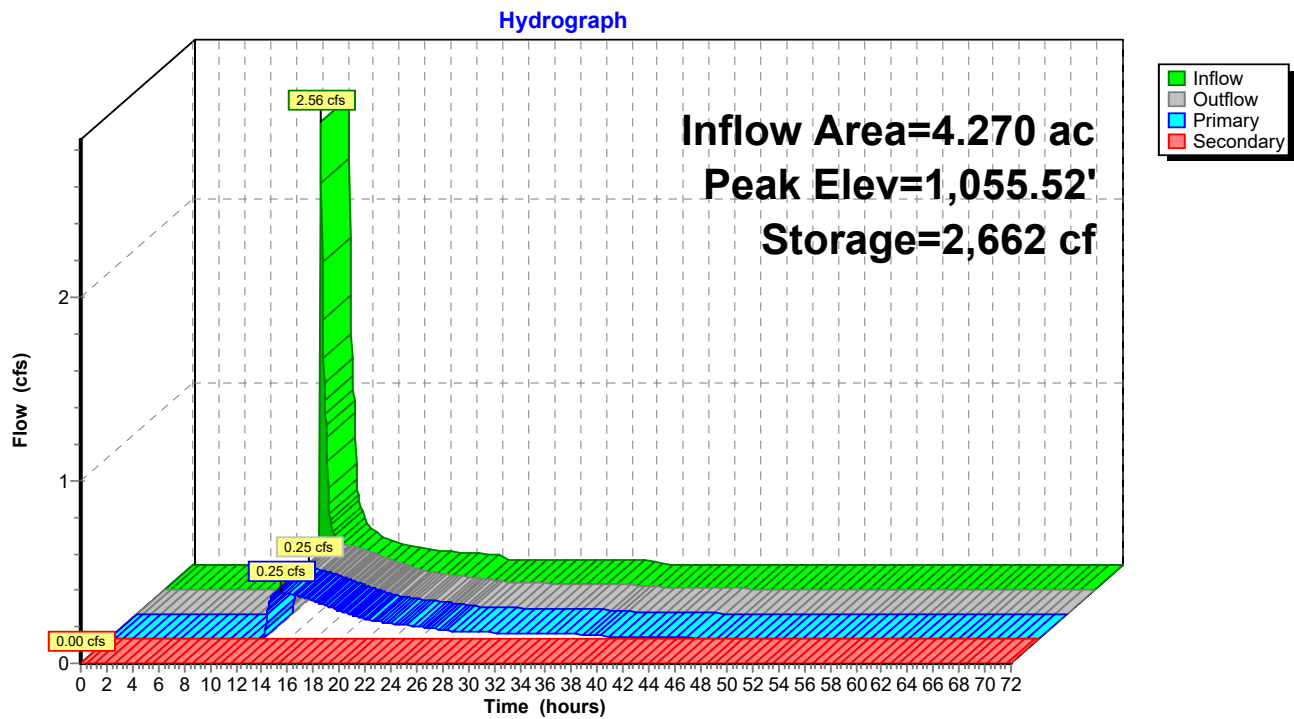
Primary OutFlow Max=0.25 cfs @ 13.36 hrs HW=1,055.52' (Free Discharge)

↑ **1=Culvert** (Passes 0.25 cfs of 1.18 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 0.25 cfs @ 2.86 fps)
 ↑ **3=Orifice** (Controls 0.00 cfs)
 ↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,055.00' (Free Discharge)

↑ **5=Emergency Spillway** (Controls 0.00 cfs)

Pond DB: Detention Basin



Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentPDA1:	Runoff Area=95.680 ac 0.00% Impervious Runoff Depth=1.13" Flow Length=3,298' Tc=70.6 min CN=73 Runoff=45.84 cfs 8.980 af
SubcatchmentPDA2:	Runoff Area=0.670 ac 0.00% Impervious Runoff Depth=1.64" Flow Length=521' Tc=1.6 min CN=81 Runoff=1.89 cfs 0.092 af
SubcatchmentPDA3:	Runoff Area=49.470 ac 0.00% Impervious Runoff Depth=1.07" Flow Length=3,557' Tc=72.8 min CN=72 Runoff=21.72 cfs 4.407 af
SubcatchmentPDA4:	Runoff Area=9.220 ac 0.00% Impervious Runoff Depth=1.07" Flow Length=1,243' Tc=22.6 min CN=72 Runoff=7.65 cfs 0.821 af
SubcatchmentPDA5:	Runoff Area=20.140 ac 0.00% Impervious Runoff Depth=1.19" Flow Length=2,095' Tc=31.3 min CN=74 Runoff=16.17 cfs 1.989 af
SubcatchmentPDA6:	Runoff Area=4.270 ac 0.00% Impervious Runoff Depth=1.64" Tc=6.0 min CN=81 Runoff=9.98 cfs 0.585 af
Reach DP1:	Inflow=46.01 cfs 9.071 af Outflow=46.01 cfs 9.071 af
Reach DP2:	Inflow=21.72 cfs 4.407 af Outflow=21.72 cfs 4.407 af
Reach DP3:	Inflow=7.65 cfs 0.821 af Outflow=7.65 cfs 0.821 af
Reach DP4:	Inflow=17.02 cfs 2.574 af Outflow=17.02 cfs 2.574 af
Pond 7P: Bioretention Basin A	Peak Elev=1,230.12' Storage=818 cf Inflow=1.89 cfs 0.092 af Primary=1.81 cfs 0.091 af Secondary=0.00 cfs 0.000 af Outflow=1.81 cfs 0.091 af
Pond BB: Bioretention Basin	Peak Elev=1,061.80' Storage=2,039 cf Inflow=9.98 cfs 0.585 af Primary=4.24 cfs 0.297 af Secondary=5.22 cfs 0.288 af Outflow=9.46 cfs 0.585 af
Pond DB: Detention Basin	Peak Elev=1,056.93' Storage=11,510 cf Inflow=9.46 cfs 0.585 af Primary=0.92 cfs 0.585 af Secondary=0.00 cfs 0.000 af Outflow=0.92 cfs 0.585 af

Summary for Subcatchment PDA1:

Runoff = 45.84 cfs @ 12.99 hrs, Volume= 8.980 af, Depth= 1.13"
 Routed to Reach DP1 :

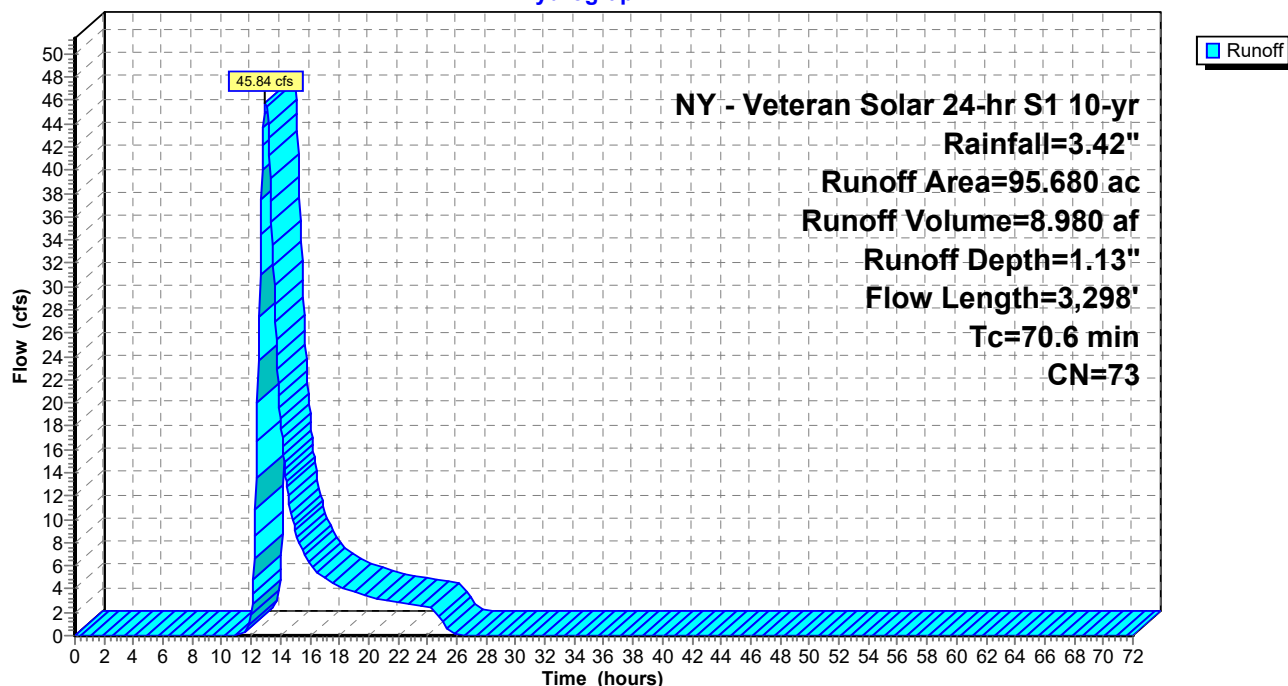
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NY - Veteran Solar 24-hr S1 10-yr Rainfall=3.42"

Area (ac)	CN	Description
24.460	71	Meadow, non-grazed, HSG C
2.890	78	Meadow, non-grazed, HSG D
0.290	55	Woods, Good, HSG B
38.080	70	Woods, Good, HSG C
29.780	77	Woods, Good, HSG D
0.180	96	Gravel surface, HSG C
95.680	73	Weighted Average
95.680		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
32.8	150	0.0231	0.08		Sheet Flow, SEG 1
					Woods: Light underbrush n= 0.400 P2= 2.34"
37.8	3,148	0.0770	1.39		Shallow Concentrated Flow, SEG 2
					Woodland Kv= 5.0 fps
70.6	3,298	Total			

Subcatchment PDA1:

Hydrograph



Summary for Subcatchment PDA2:

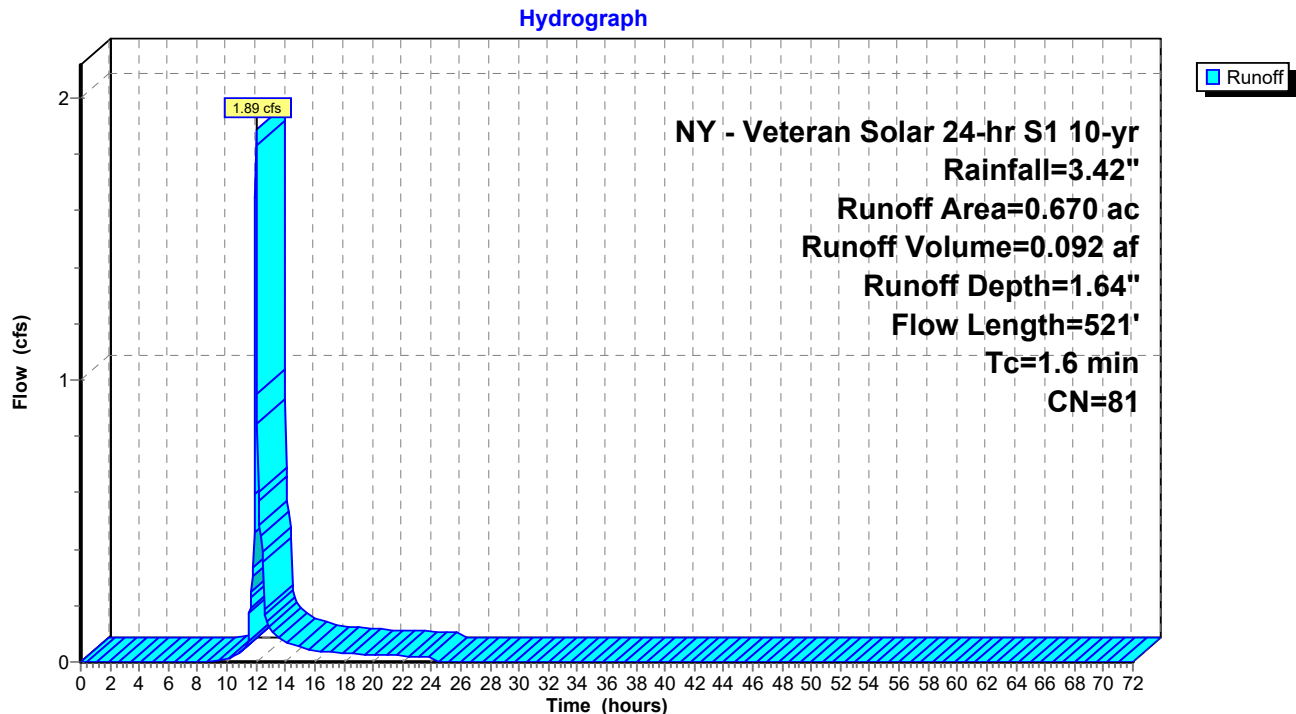
Runoff = 1.89 cfs @ 11.98 hrs, Volume= 0.092 af, Depth= 1.64"
 Routed to Pond 7P : Bioretention Basin A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NY - Veteran Solar 24-hr S1 10-yr Rainfall=3.42"

Area (ac)	CN	Description
0.130	96	Gravel surface, HSG C
0.110	96	Gravel surface, HSG D
0.310	71	Meadow, non-grazed, HSG C
0.120	78	Meadow, non-grazed, HSG D
0.670	81	Weighted Average
0.670		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0051	2.81	25.32	Channel Flow, SEG1 Area= 9.0 sf Perim= 11.0' r= 0.82' n= 0.033
1.0	421	0.0289	6.70	60.27	Channel Flow, SEG2 Area= 9.0 sf Perim= 11.0' r= 0.82' n= 0.033 Earth, grassed & winding
1.6	521	Total			

Subcatchment PDA2:



Summary for Subcatchment PDA3:

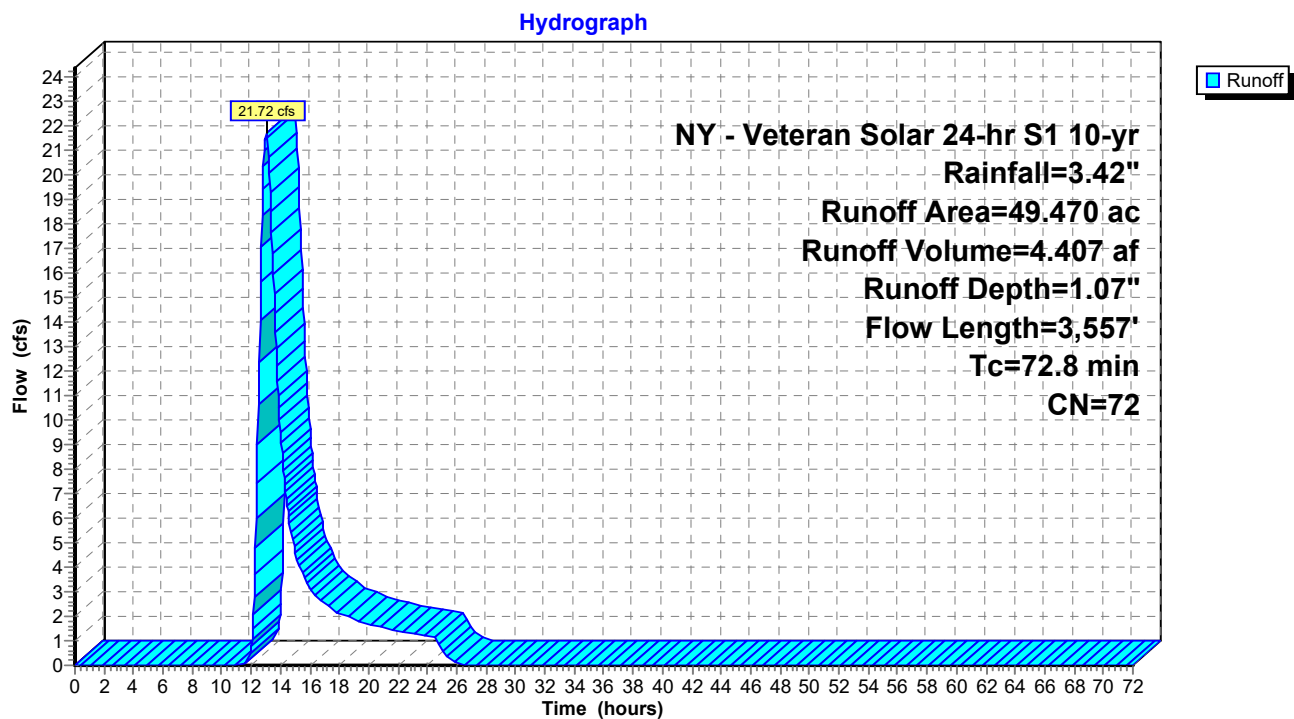
Runoff = 21.72 cfs @ 13.03 hrs, Volume= 4.407 af, Depth= 1.07"
 Routed to Reach DP2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NY - Veteran Solar 24-hr S1 10-yr Rainfall=3.42"

Area (ac)	CN	Description
6.140	71	Meadow, non-grazed, HSG C
31.290	70	Woods, Good, HSG C
9.550	77	Woods, Good, HSG D
2.490	78	Meadow, non-grazed, HSG D
49.470	72	Weighted Average
49.470		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6	150	0.0391	0.09		Sheet Flow, SEG1 Woods: Light underbrush n= 0.400 P2= 2.34"
39.6	2,706	0.0518	1.14		Shallow Concentrated Flow, SEG2 Woodland Kv= 5.0 fps
0.6	53	0.0418	1.43		Shallow Concentrated Flow, SEG3 Short Grass Pasture Kv= 7.0 fps
5.8	613	0.1248	1.77		Shallow Concentrated Flow, SEG4 Woodland Kv= 5.0 fps
0.2	35	0.1129	2.35		Shallow Concentrated Flow, SEG5 Short Grass Pasture Kv= 7.0 fps
72.8	3,557	Total			

Subcatchment PDA3:



Summary for Subcatchment PDA4:

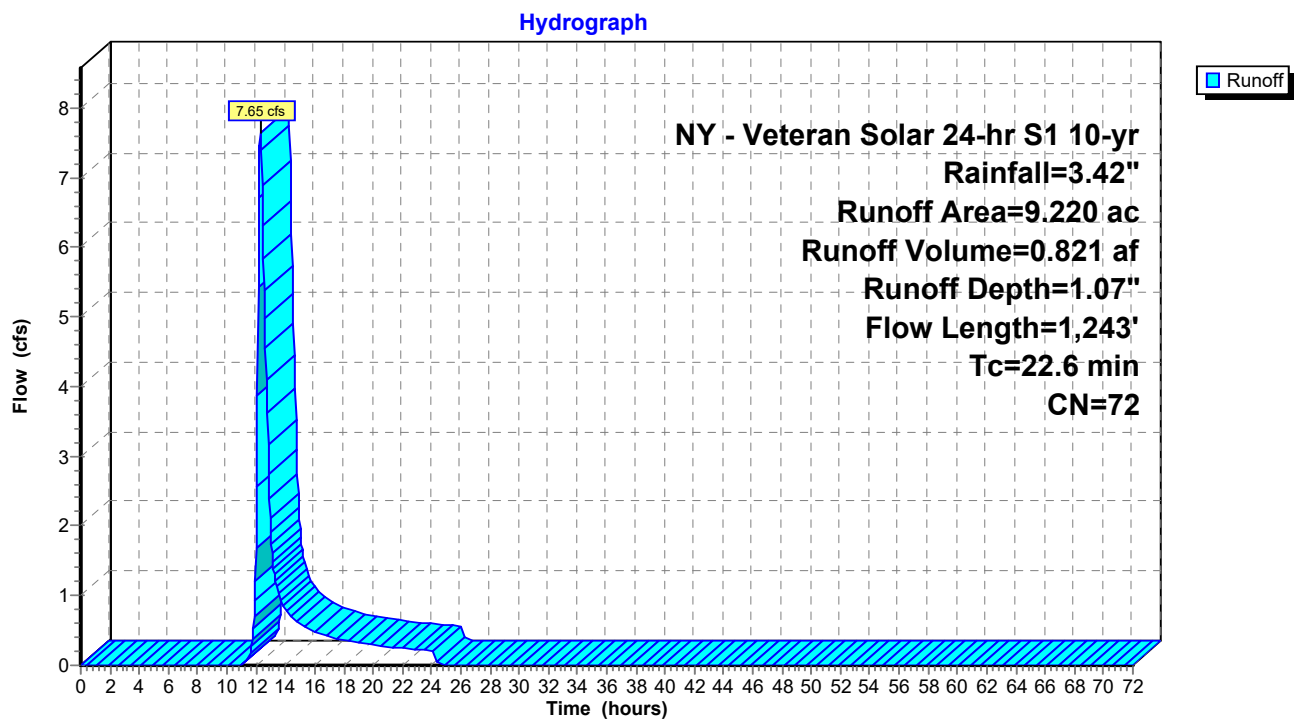
Runoff = 7.65 cfs @ 12.30 hrs, Volume= 0.821 af, Depth= 1.07"
 Routed to Reach DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NY - Veteran Solar 24-hr S1 10-yr Rainfall=3.42"

Area (ac)	CN	Description
1.780	71	Meadow, non-grazed, HSG C
0.460	78	Meadow, non-grazed, HSG D
4.490	70	Woods, Good, HSG C
2.490	77	Woods, Good, HSG D
9.220	72	Weighted Average
9.220		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	100	0.0405	0.13		Sheet Flow, SEG1 Grass: Dense n= 0.240 P2= 2.34"
2.5	234	0.0947	1.54		Shallow Concentrated Flow, SEG2 Woodland Kv= 5.0 fps
6.2	663	0.1282	1.79		Shallow Concentrated Flow, SEG3 Woodland Kv= 5.0 fps
0.2	35	0.3074	3.88		Shallow Concentrated Flow, SEG4 Short Grass Pasture Kv= 7.0 fps
0.1	65	0.1400	16.97	13.33	Pipe Channel, SEG5 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, straight & clean
0.1	33	0.4987	4.94		Shallow Concentrated Flow, SEG6 Short Grass Pasture Kv= 7.0 fps
0.9	113	0.1894	2.18		Shallow Concentrated Flow, SEG7 Woodland Kv= 5.0 fps
22.6	1,243	Total			

Subcatchment PDA4:



Summary for Subcatchment PDA5:

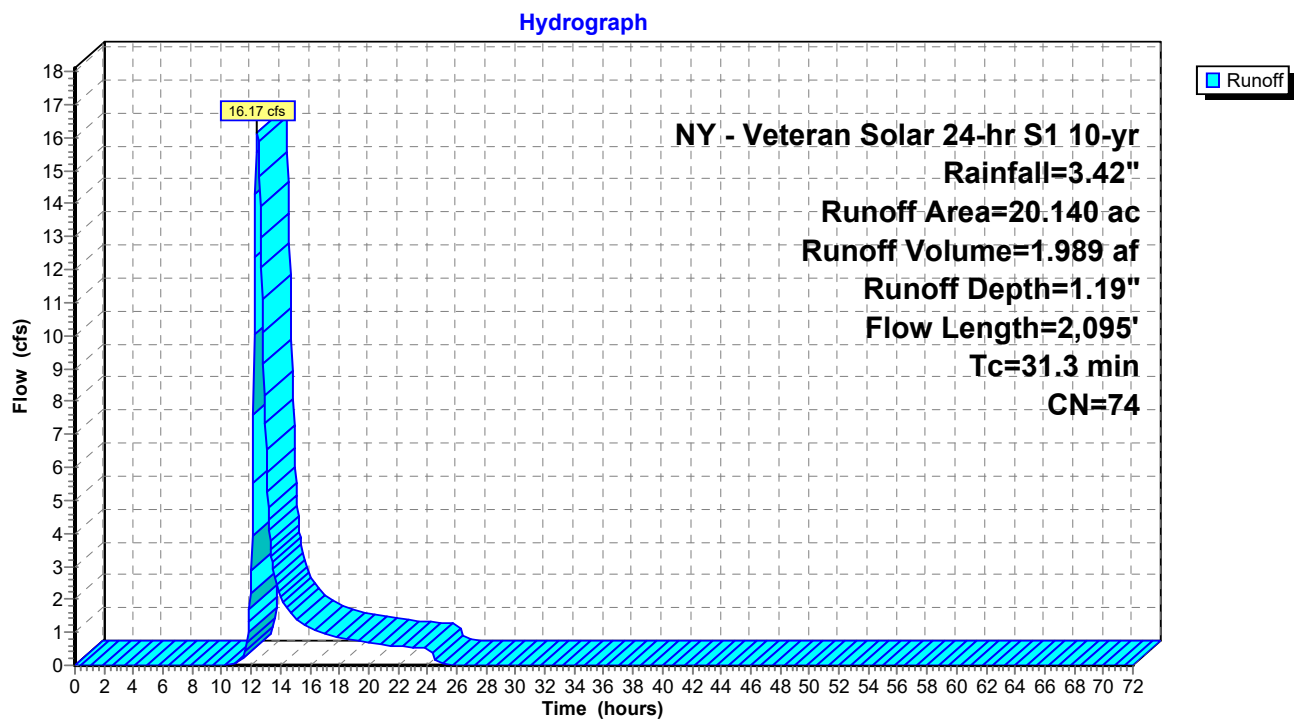
Runoff = 16.17 cfs @ 12.43 hrs, Volume= 1.989 af, Depth= 1.19"
 Routed to Reach DP4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NY - Veteran Solar 24-hr S1 10-yr Rainfall=3.42"

Area (ac)	CN	Description
2.710	71	Meadow, non-grazed, HSG C
4.600	78	Meadow, non-grazed, HSG D
8.370	70	Woods, Good, HSG C
4.250	77	Woods, Good, HSG D
0.210	96	Gravel surface, HSG D
20.140	74	Weighted Average
20.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.4	100	0.0583	0.10		Sheet Flow, SEG1 Woods: Light underbrush n= 0.400 P2= 2.34"
7.3	555	0.0640	1.26		Shallow Concentrated Flow, SEG2 Woodland Kv= 5.0 fps
1.2	123	0.0639	1.77		Shallow Concentrated Flow, SEG3 Short Grass Pasture Kv= 7.0 fps
5.1	570	0.1396	1.87		Shallow Concentrated Flow, SEG4 Woodland Kv= 5.0 fps
0.2	39	0.2016	3.14		Shallow Concentrated Flow, SEG5 Short Grass Pasture Kv= 7.0 fps
1.1	708	0.0800	11.14	100.27	Channel Flow, SEG6 Area= 9.0 sf Perim= 11.0' r= 0.82' n= 0.033
31.3	2,095	Total			

Subcatchment PDA5:



Summary for Subcatchment PDA6:

Runoff = 9.98 cfs @ 12.05 hrs, Volume= 0.585 af, Depth= 1.64"
 Routed to Pond BB : Bioretention Basin

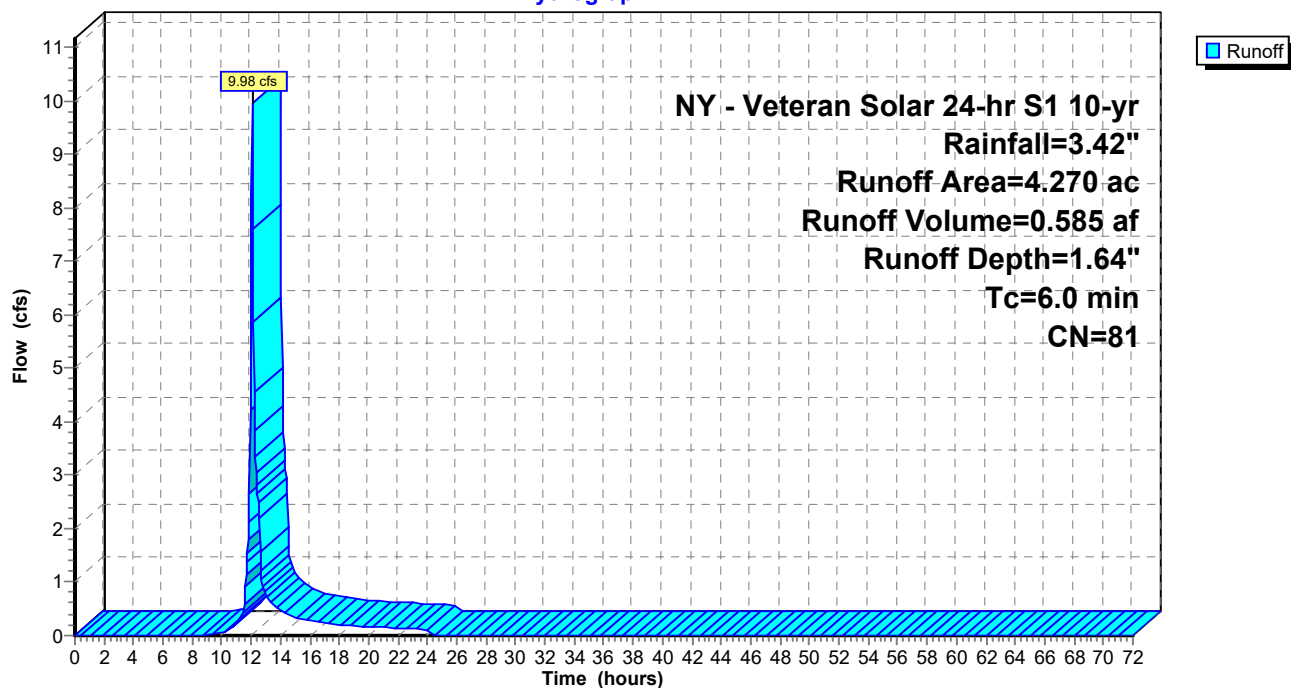
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NY - Veteran Solar 24-hr S1 10-yr Rainfall=3.42"

Area (ac)	CN	Description
0.530	96	Gravel surface, HSG C
0.440	96	Gravel surface, HSG D
0.550	71	Meadow, non-grazed, HSG C
2.750	78	Meadow, non-grazed, HSG D
4.270	81	Weighted Average
4.270		100.00% Pervious Area

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

Subcatchment PDA6:

Hydrograph

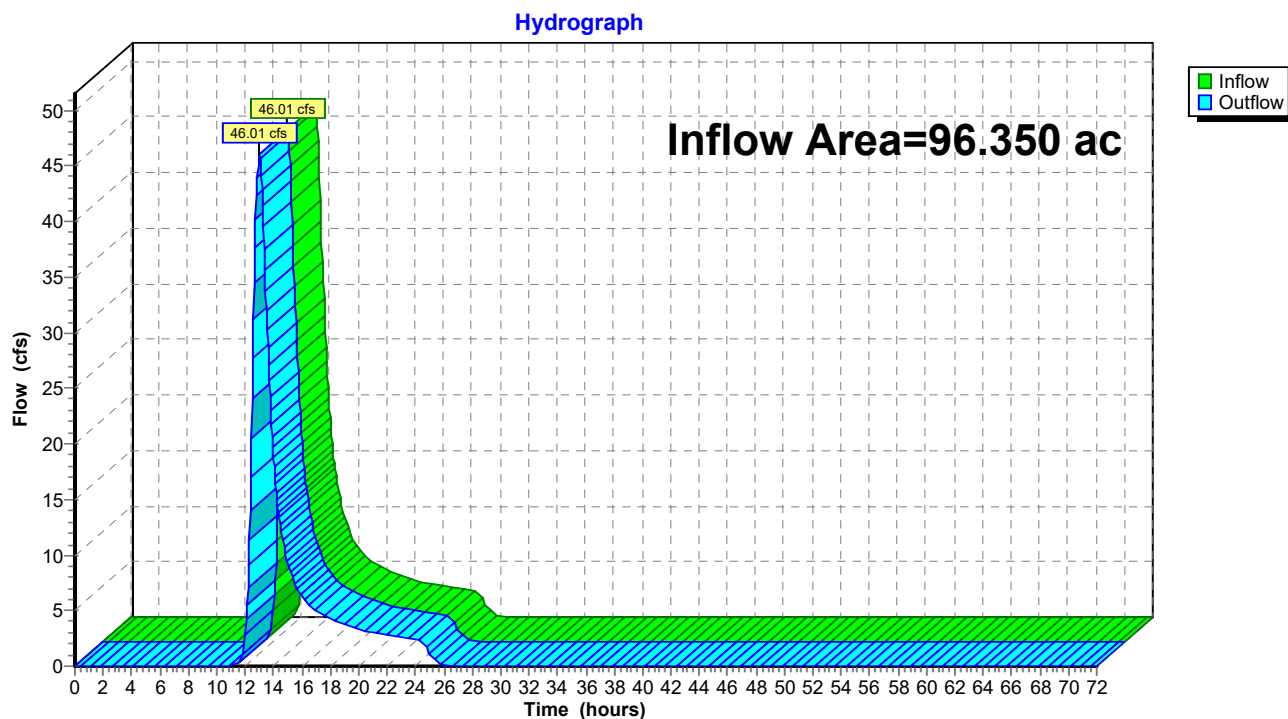


Summary for Reach DP1:

Inflow Area = 96.350 ac, 0.00% Impervious, Inflow Depth = 1.13" for 10-yr event
Inflow = 46.01 cfs @ 12.99 hrs, Volume= 9.071 af
Outflow = 46.01 cfs @ 12.99 hrs, Volume= 9.071 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach DP1:



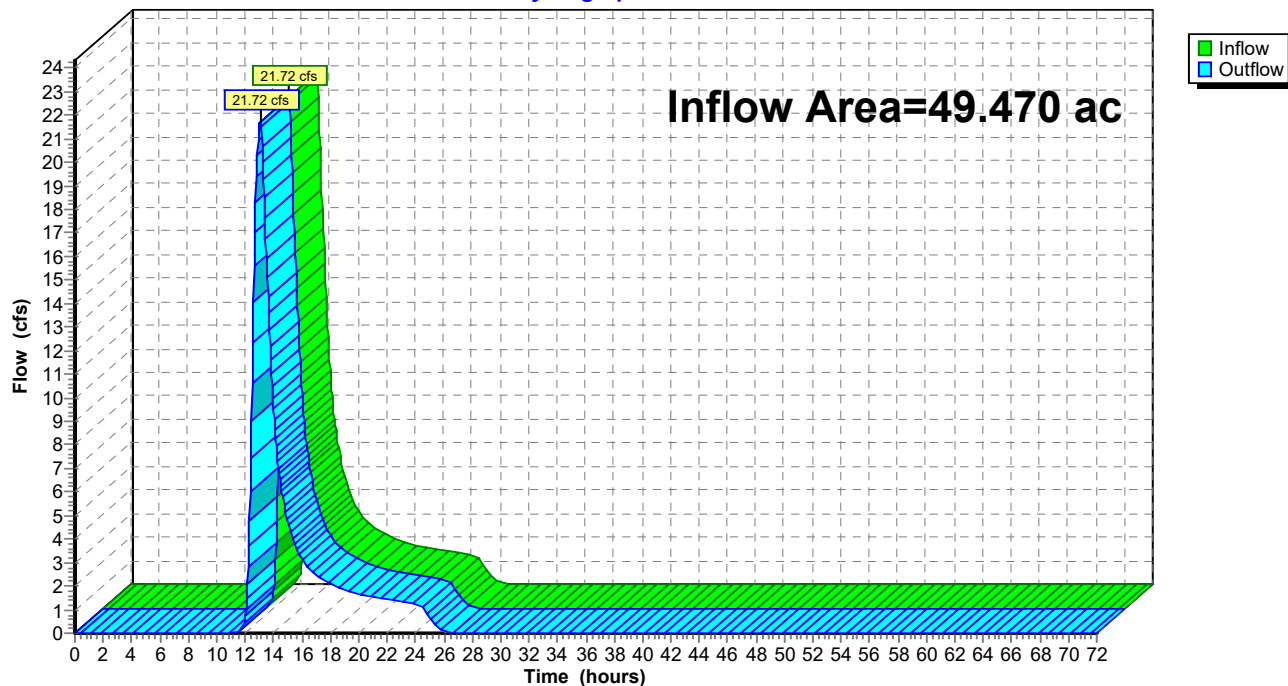
Summary for Reach DP2:

Inflow Area = 49.470 ac, 0.00% Impervious, Inflow Depth = 1.07" for 10-yr event
Inflow = 21.72 cfs @ 13.03 hrs, Volume= 4.407 af
Outflow = 21.72 cfs @ 13.03 hrs, Volume= 4.407 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach DP2:

Hydrograph

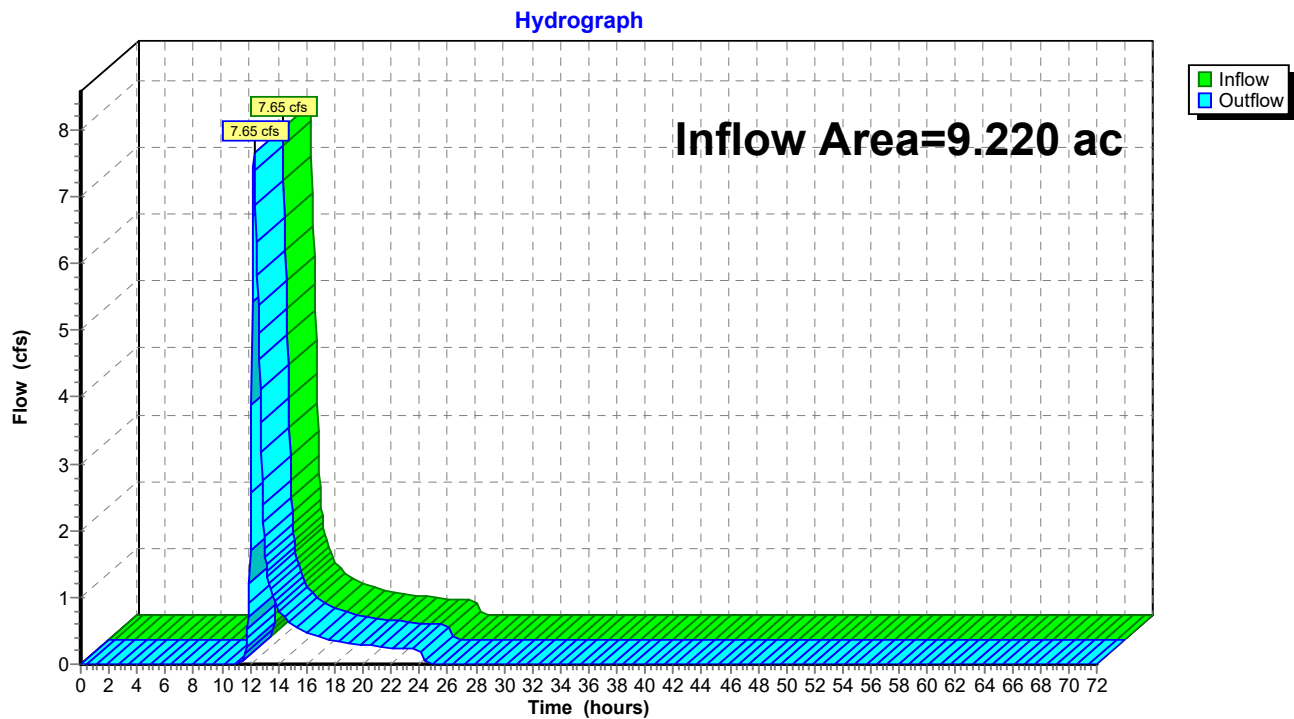


Summary for Reach DP3:

Inflow Area = 9.220 ac, 0.00% Impervious, Inflow Depth = 1.07" for 10-yr event
Inflow = 7.65 cfs @ 12.30 hrs, Volume= 0.821 af
Outflow = 7.65 cfs @ 12.30 hrs, Volume= 0.821 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach DP3:



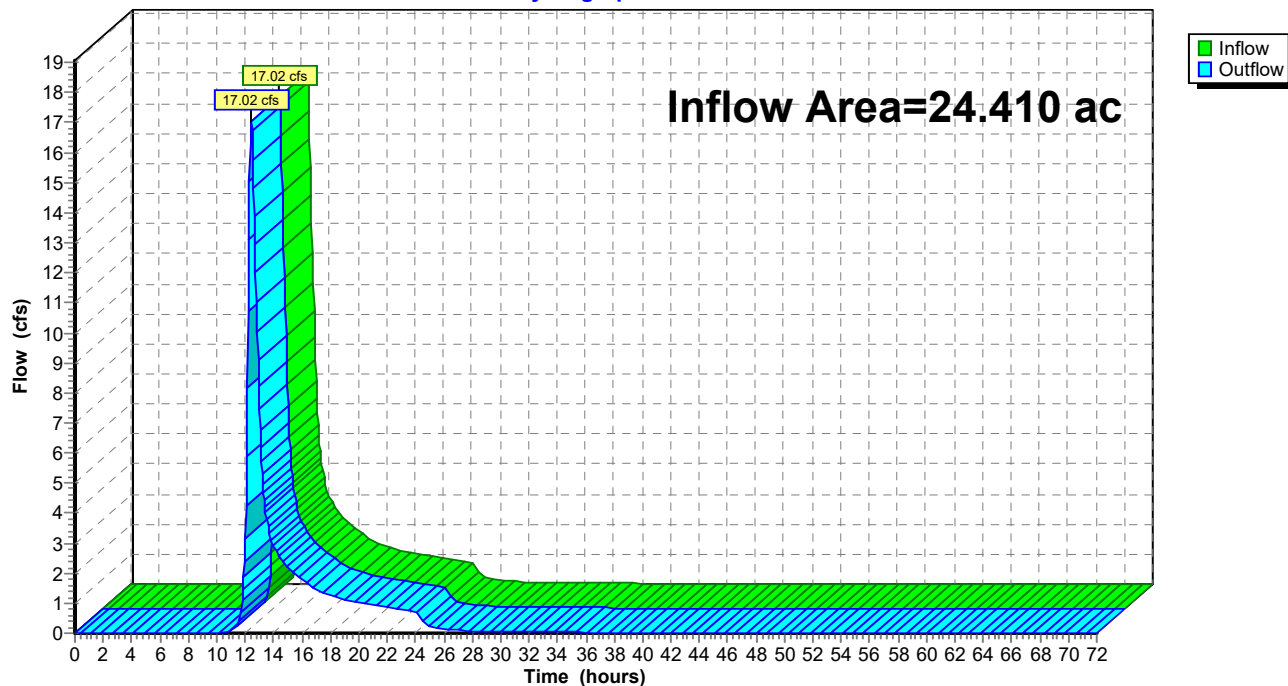
Summary for Reach DP4:

Inflow Area = 24.410 ac, 0.00% Impervious, Inflow Depth = 1.27" for 10-yr event
Inflow = 17.02 cfs @ 12.43 hrs, Volume= 2.574 af
Outflow = 17.02 cfs @ 12.43 hrs, Volume= 2.574 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach DP4:

Hydrograph



Summary for Pond 7P: Bioretention Basin A

Inflow Area = 0.670 ac, 0.00% Impervious, Inflow Depth = 1.64" for 10-yr event
 Inflow = 1.89 cfs @ 11.98 hrs, Volume= 0.092 af
 Outflow = 1.81 cfs @ 12.01 hrs, Volume= 0.091 af, Atten= 4%, Lag= 1.7 min
 Primary = 1.81 cfs @ 12.01 hrs, Volume= 0.091 af
 Routed to Reach DP1 :
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Reach DP1 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 1,230.12' @ 12.02 hrs Surf.Area= 971 sf Storage= 818 cf

Plug-Flow detention time= 102.8 min calculated for 0.091 af (100% of inflow)
 Center-of-Mass det. time= 101.3 min (934.8 - 833.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,229.00'	3,405 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,229.00	490	0	0
1,232.00	1,780	3,405	3,405

Device	Routing	Invert	Outlet Devices
#1	Primary	1,225.00'	15.0" Round Culvert L= 33.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,225.00' / 1,224.00' S= 0.0303 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	1,229.50'	3.0" Horiz. 3" Orifice C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,230.00'	48.0" x 30.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	1,225.25'	6.0" Vert. 6" Underdrain C= 0.600 Limited to weir flow at low heads
#5	Device 4	1,229.00'	0.500 in/hr Filtering Media over Surface area
#6	Secondary	1,230.50'	20.0' long Emergency Spillway 2 End Contraction(s)

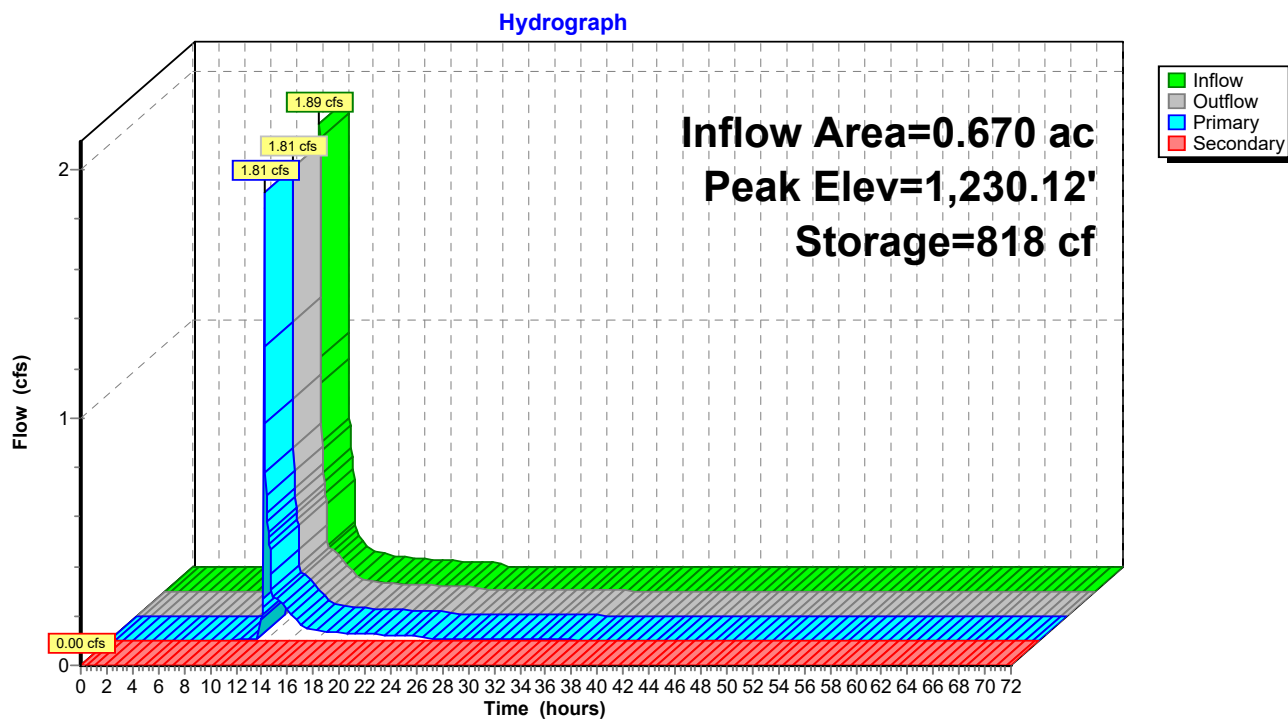
Primary OutFlow Max=1.61 cfs @ 12.01 hrs HW=1,230.10' (Free Discharge)

↑ **1=Culvert** (Passes 1.61 cfs of 12.50 cfs potential flow)
 ↑ **2=3" Orifice** (Orifice Controls 0.18 cfs @ 3.74 fps)
 ↑ **3=Grate** (Weir Controls 1.41 cfs @ 1.05 fps)
 ↑ **4=6" Underdrain** (Passes 0.01 cfs of 2.03 cfs potential flow)
 ↑ **5=Filtering Media** (Exfiltration Controls 0.01 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,229.00' (Free Discharge)

↑ **6=Emergency Spillway** (Controls 0.00 cfs)

Pond 7P: Bioretention Basin A



Summary for Pond BB: Bioretention Basin

Inflow Area = 4.270 ac, 0.00% Impervious, Inflow Depth = 1.64" for 10-yr event
 Inflow = 9.98 cfs @ 12.05 hrs, Volume= 0.585 af
 Outflow = 9.46 cfs @ 12.06 hrs, Volume= 0.585 af, Atten= 5%, Lag= 0.9 min
 Primary = 4.24 cfs @ 12.06 hrs, Volume= 0.297 af
 Routed to Pond DB : Detention Basin
 Secondary = 5.22 cfs @ 12.06 hrs, Volume= 0.288 af
 Routed to Pond DB : Detention Basin

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 1,061.80' @ 12.06 hrs Surf.Area= 2,835 sf Storage= 2,039 cf

Plug-Flow detention time= 57.3 min calculated for 0.585 af (100% of inflow)
 Center-of-Mass det. time= 57.7 min (895.3 - 837.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,061.00'	5,950 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,061.00	2,290	0	0
1,063.00	3,660	5,950	5,950

Device	Routing	Invert	Outlet Devices
#1	Primary	1,057.00'	15.0" Round Culvert L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,057.00' / 1,056.50' S= 0.0100 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	1,061.50'	24.0" x 24.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,057.20'	6.0" Vert. 6" Underdrain C= 0.600 Limited to weir flow at low heads
#4	Device 3	1,061.00'	0.500 in/hr Filtering Media over Surface area
#5	Secondary	1,061.50'	10.0' long Overflow Spillway 2 End Contraction(s)

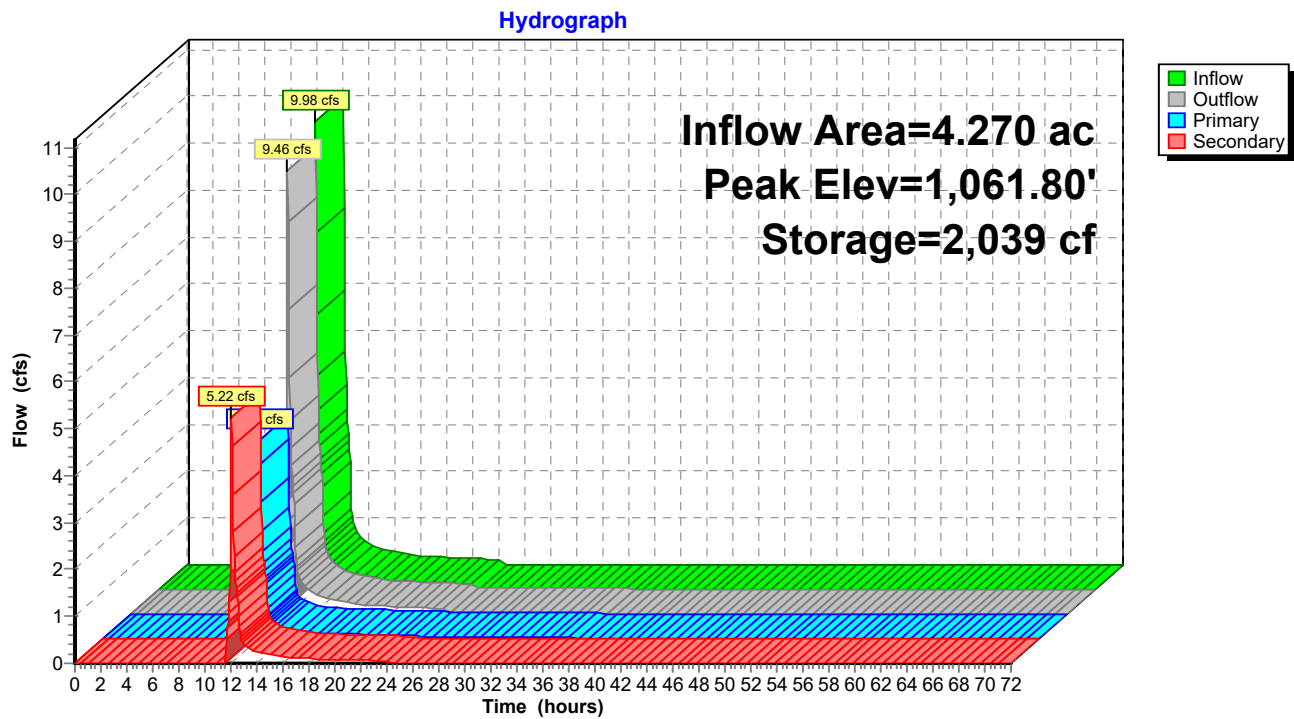
Primary OutFlow Max=4.09 cfs @ 12.06 hrs HW=1,061.79' (Free Discharge)

↑ **1=Culvert** (Passes 4.09 cfs of 12.06 cfs potential flow)
 ↑ **2=Grate** (Weir Controls 4.06 cfs @ 1.76 fps)
 ↑ **3=6" Underdrain** (Passes 0.03 cfs of 1.97 cfs potential flow)
 ↑ **4=Filtering Media** (Exfiltration Controls 0.03 cfs)

Secondary OutFlow Max=5.05 cfs @ 12.06 hrs HW=1,061.79' (Free Discharge)

↑ **5=Overflow Spillway** (Weir Controls 5.05 cfs @ 1.76 fps)

Pond BB: Bioretention Basin



Summary for Pond DB: Detention Basin

Inflow Area = 4.270 ac, 0.00% Impervious, Inflow Depth = 1.64" for 10-yr event
 Inflow = 9.46 cfs @ 12.06 hrs, Volume= 0.585 af
 Outflow = 0.92 cfs @ 12.82 hrs, Volume= 0.585 af, Atten= 90%, Lag= 45.6 min
 Primary = 0.92 cfs @ 12.82 hrs, Volume= 0.585 af
 Routed to Reach DP4 :
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Reach DP4 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 1,056.93' @ 12.82 hrs Surf.Area= 7,119 sf Storage= 11,510 cf

Plug-Flow detention time= 211.2 min calculated for 0.585 af (100% of inflow)
 Center-of-Mass det. time= 210.6 min (1,105.9 - 895.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,055.00'	44,550 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,055.00	4,810	0	0
1,060.50	11,390	44,550	44,550

Device	Routing	Invert	Outlet Devices
#1	Primary	1,055.00'	15.0" Round Culvert L= 100.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,055.00' / 1,054.00' S= 0.0100 ' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	1,055.00'	4.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,056.00'	4.0" Vert. Orifice C= 0.600 Limited to weir flow at low heads
#4	Device 1	1,059.00'	48.0" x 30.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Secondary	1,059.50'	20.0' long Emergency Spillway 2 End Contraction(s)

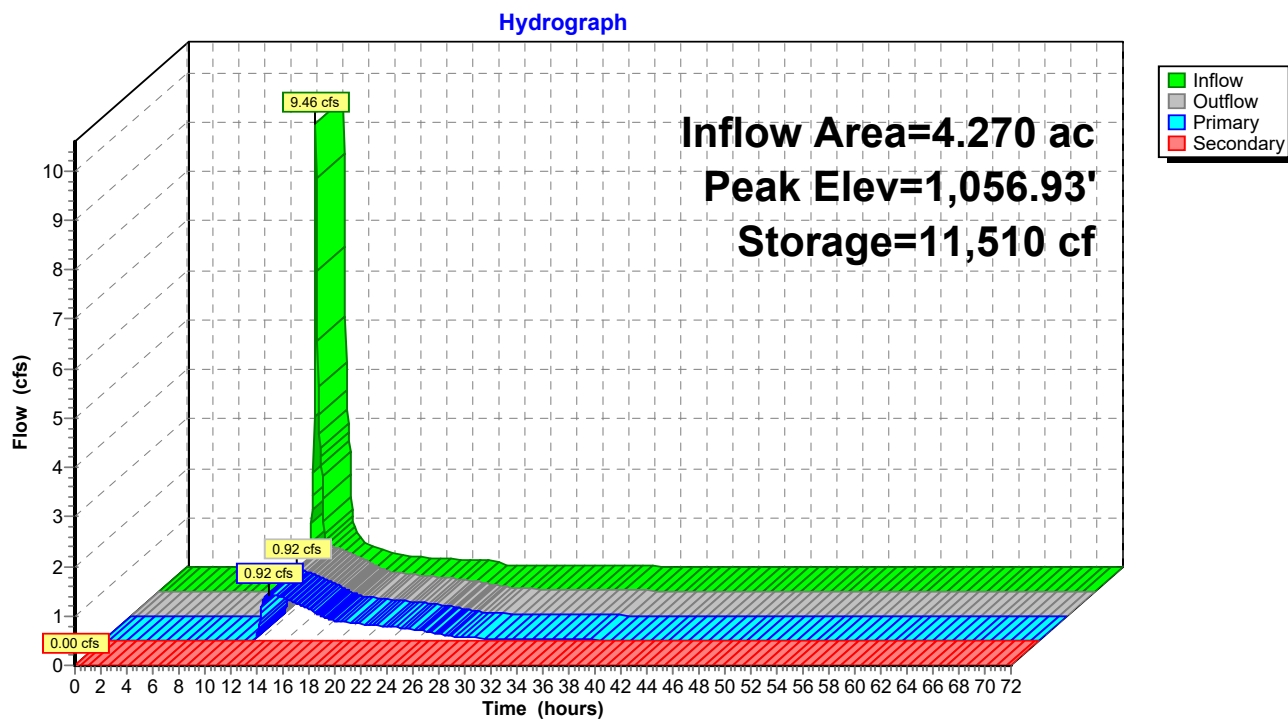
Primary OutFlow Max=0.92 cfs @ 12.82 hrs HW=1,056.93' (Free Discharge)

↑ **1=Culvert** (Passes 0.92 cfs of 6.52 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 0.56 cfs @ 6.39 fps)
 ↑ **3=Orifice** (Orifice Controls 0.37 cfs @ 4.21 fps)
 ↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,055.00' (Free Discharge)

↑ **5=Emergency Spillway** (Controls 0.00 cfs)

Pond DB: Detention Basin



Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentPDA1: Runoff Area=95.680 ac 0.00% Impervious Runoff Depth=3.01"
Flow Length=3,298' Tc=70.6 min CN=73 Runoff=132.58 cfs 23.967 af

SubcatchmentPDA2: Runoff Area=0.670 ac 0.00% Impervious Runoff Depth=3.79"
Flow Length=521' Tc=1.6 min CN=81 Runoff=4.13 cfs 0.212 af

SubcatchmentPDA3: Runoff Area=49.470 ac 0.00% Impervious Runoff Depth=2.91"
Flow Length=3,557' Tc=72.8 min CN=72 Runoff=64.64 cfs 12.003 af

SubcatchmentPDA4: Runoff Area=9.220 ac 0.00% Impervious Runoff Depth=2.91"
Flow Length=1,243' Tc=22.6 min CN=72 Runoff=22.29 cfs 2.237 af

SubcatchmentPDA5: Runoff Area=20.140 ac 0.00% Impervious Runoff Depth=3.10"
Flow Length=2,095' Tc=31.3 min CN=74 Runoff=44.71 cfs 5.204 af

SubcatchmentPDA6: Runoff Area=4.270 ac 0.00% Impervious Runoff Depth=3.79"
Tc=6.0 min CN=81 Runoff=22.14 cfs 1.350 af

Reach DP1: Inflow=132.82 cfs 24.178 af
Outflow=132.82 cfs 24.178 af

Reach DP2: Inflow=64.64 cfs 12.003 af
Outflow=64.64 cfs 12.003 af

Reach DP3: Inflow=22.29 cfs 2.237 af
Outflow=22.29 cfs 2.237 af

Reach DP4: Inflow=46.22 cfs 6.554 af
Outflow=46.22 cfs 6.554 af

Pond 7P: Bioretention Basin A Peak Elev=1,230.20' Storage=896 cf Inflow=4.13 cfs 0.212 af
Primary=3.95 cfs 0.212 af Secondary=0.00 cfs 0.000 af Outflow=3.95 cfs 0.212 af

Pond BB: Bioretention Basin Peak Elev=1,062.01' Storage=2,661 cf Inflow=22.14 cfs 1.350 af
Primary=9.55 cfs 0.641 af Secondary=11.77 cfs 0.709 af Outflow=21.31 cfs 1.350 af

Pond DB: Detention Basin Peak Elev=1,059.14' Storage=30,194 cf Inflow=21.31 cfs 1.350 af
Primary=3.88 cfs 1.349 af Secondary=0.00 cfs 0.000 af Outflow=3.88 cfs 1.349 af

Summary for Subcatchment PDA1:

Runoff = 132.58 cfs @ 12.95 hrs, Volume= 23.967 af, Depth= 3.01"
 Routed to Reach DP1 :

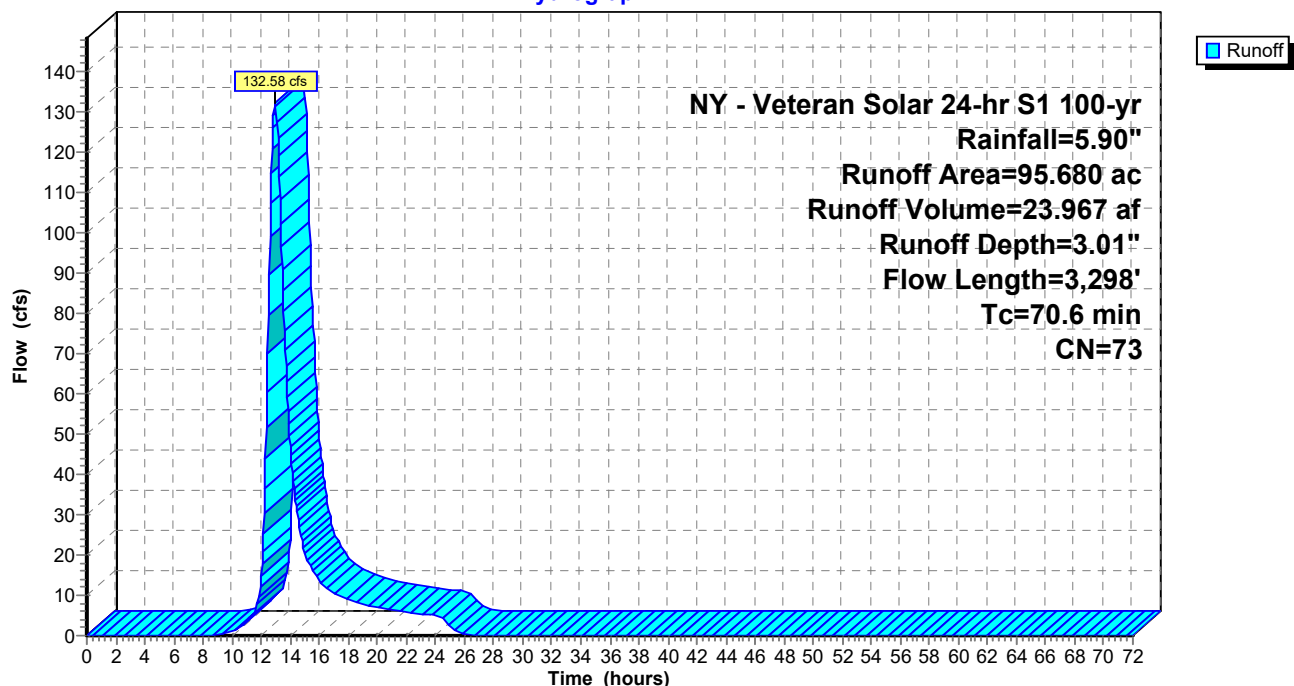
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NY - Veteran Solar 24-hr S1 100-yr Rainfall=5.90"

Area (ac)	CN	Description
24.460	71	Meadow, non-grazed, HSG C
2.890	78	Meadow, non-grazed, HSG D
0.290	55	Woods, Good, HSG B
38.080	70	Woods, Good, HSG C
29.780	77	Woods, Good, HSG D
0.180	96	Gravel surface, HSG C
95.680	73	Weighted Average
95.680		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
32.8	150	0.0231	0.08		Sheet Flow, SEG 1
					Woods: Light underbrush n= 0.400 P2= 2.34"
37.8	3,148	0.0770	1.39		Shallow Concentrated Flow, SEG 2
					Woodland Kv= 5.0 fps
70.6	3,298	Total			

Subcatchment PDA1:

Hydrograph



Summary for Subcatchment PDA2:

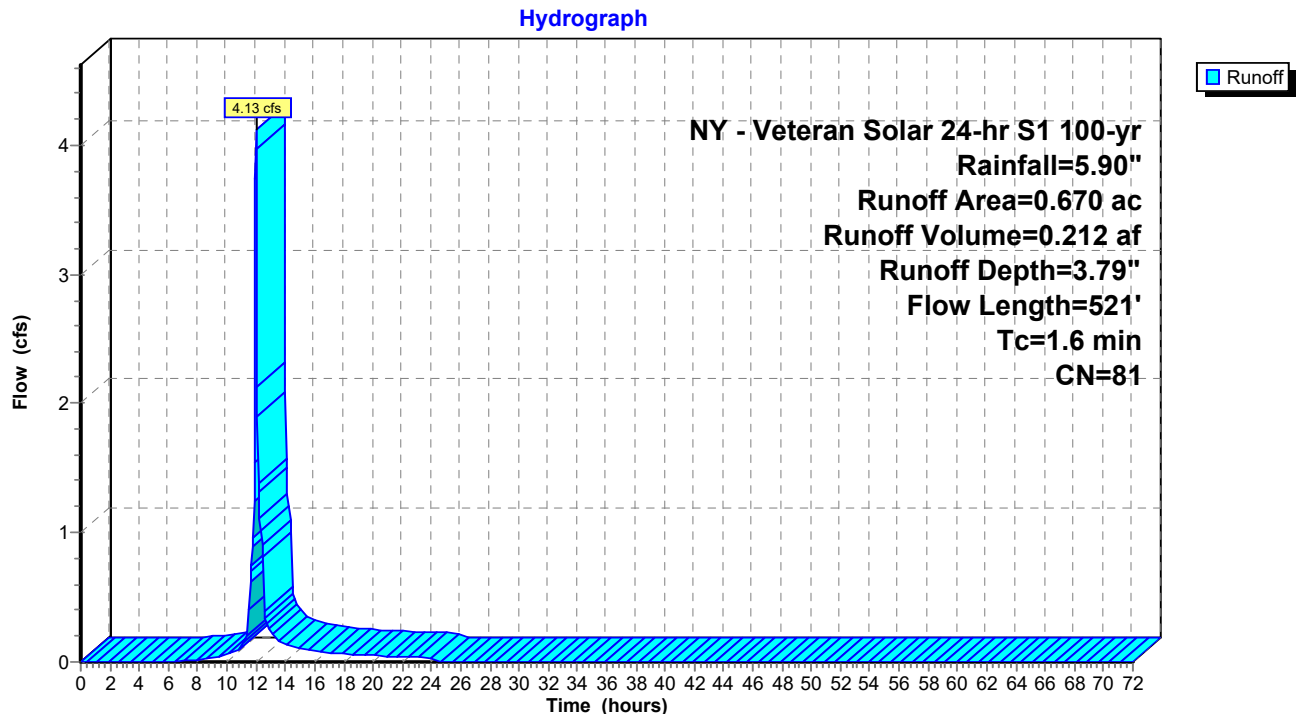
Runoff = 4.13 cfs @ 11.98 hrs, Volume= 0.212 af, Depth= 3.79"
 Routed to Pond 7P : Bioretention Basin A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NY - Veteran Solar 24-hr S1 100-yr Rainfall=5.90"

Area (ac)	CN	Description
0.130	96	Gravel surface, HSG C
0.110	96	Gravel surface, HSG D
0.310	71	Meadow, non-grazed, HSG C
0.120	78	Meadow, non-grazed, HSG D
0.670	81	Weighted Average
0.670		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	100	0.0051	2.81	25.32	Channel Flow, SEG1 Area= 9.0 sf Perim= 11.0' r= 0.82' n= 0.033
1.0	421	0.0289	6.70	60.27	Channel Flow, SEG2 Area= 9.0 sf Perim= 11.0' r= 0.82' n= 0.033 Earth, grassed & winding
1.6	521	Total			

Subcatchment PDA2:



Summary for Subcatchment PDA3:

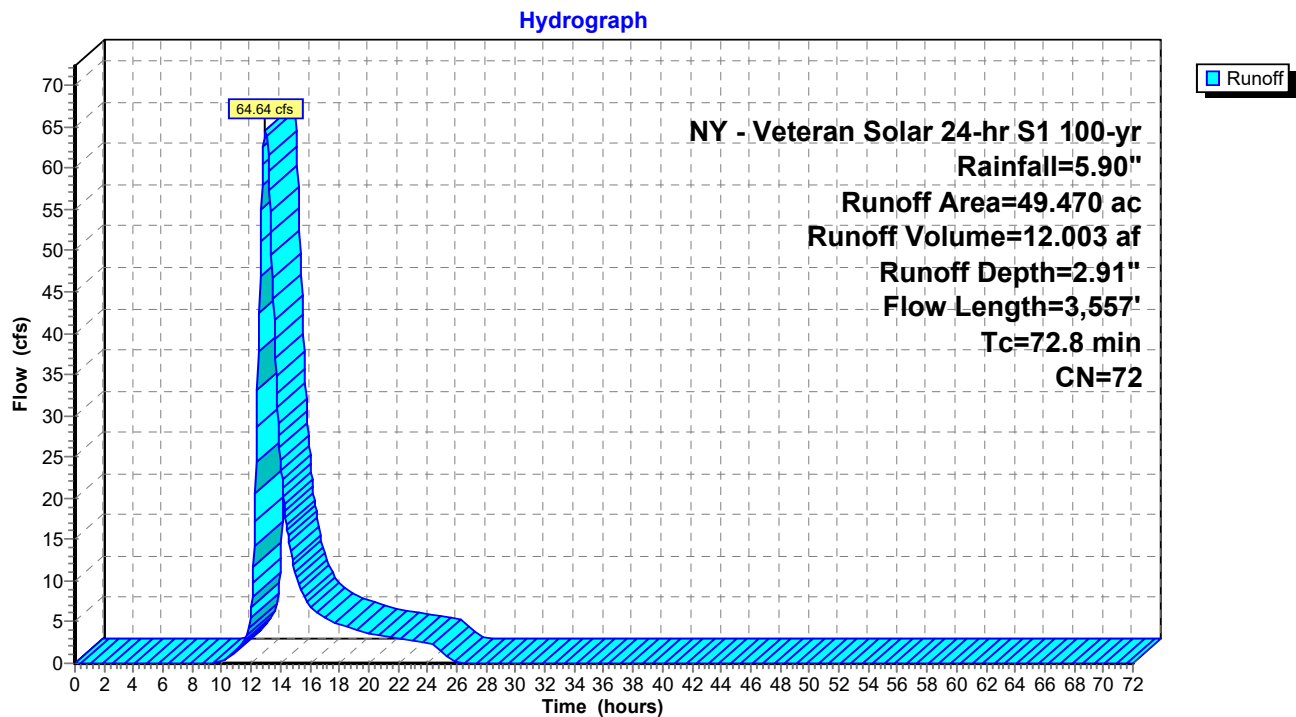
Runoff = 64.64 cfs @ 12.99 hrs, Volume= 12.003 af, Depth= 2.91"
 Routed to Reach DP2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NY - Veteran Solar 24-hr S1 100-yr Rainfall=5.90"

Area (ac)	CN	Description
6.140	71	Meadow, non-grazed, HSG C
31.290	70	Woods, Good, HSG C
9.550	77	Woods, Good, HSG D
2.490	78	Meadow, non-grazed, HSG D
49.470	72	Weighted Average
49.470		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6	150	0.0391	0.09		Sheet Flow, SEG1 Woods: Light underbrush n= 0.400 P2= 2.34"
39.6	2,706	0.0518	1.14		Shallow Concentrated Flow, SEG2 Woodland Kv= 5.0 fps
0.6	53	0.0418	1.43		Shallow Concentrated Flow, SEG3 Short Grass Pasture Kv= 7.0 fps
5.8	613	0.1248	1.77		Shallow Concentrated Flow, SEG4 Woodland Kv= 5.0 fps
0.2	35	0.1129	2.35		Shallow Concentrated Flow, SEG5 Short Grass Pasture Kv= 7.0 fps
72.8	3,557	Total			

Subcatchment PDA3:



Summary for Subcatchment PDA4:

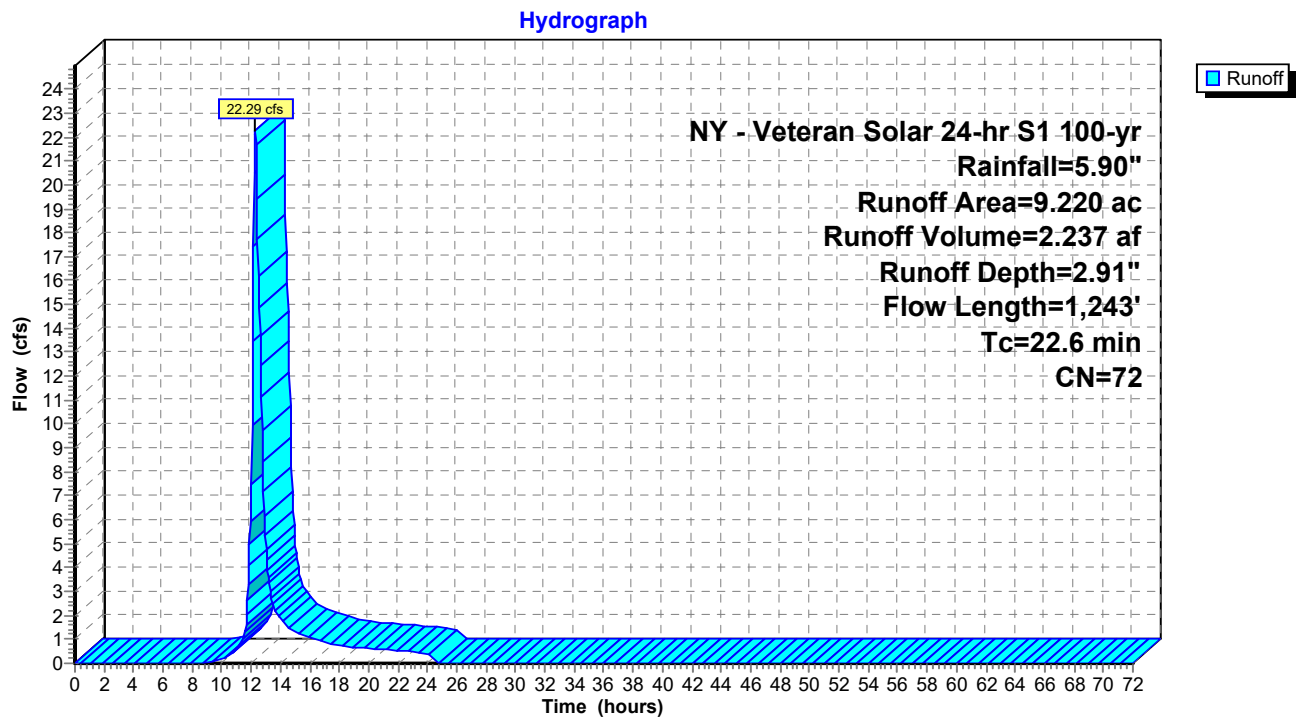
Runoff = 22.29 cfs @ 12.28 hrs, Volume= 2.237 af, Depth= 2.91"
 Routed to Reach DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NY - Veteran Solar 24-hr S1 100-yr Rainfall=5.90"

Area (ac)	CN	Description
1.780	71	Meadow, non-grazed, HSG C
0.460	78	Meadow, non-grazed, HSG D
4.490	70	Woods, Good, HSG C
2.490	77	Woods, Good, HSG D
9.220	72	Weighted Average
9.220		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	100	0.0405	0.13		Sheet Flow, SEG1 Grass: Dense n= 0.240 P2= 2.34"
2.5	234	0.0947	1.54		Shallow Concentrated Flow, SEG2 Woodland Kv= 5.0 fps
6.2	663	0.1282	1.79		Shallow Concentrated Flow, SEG3 Woodland Kv= 5.0 fps
0.2	35	0.3074	3.88		Shallow Concentrated Flow, SEG4 Short Grass Pasture Kv= 7.0 fps
0.1	65	0.1400	16.97	13.33	Pipe Channel, SEG5 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Concrete pipe, straight & clean
0.1	33	0.4987	4.94		Shallow Concentrated Flow, SEG6 Short Grass Pasture Kv= 7.0 fps
0.9	113	0.1894	2.18		Shallow Concentrated Flow, SEG7 Woodland Kv= 5.0 fps
22.6	1,243	Total			

Subcatchment PDA4:



Summary for Subcatchment PDA5:

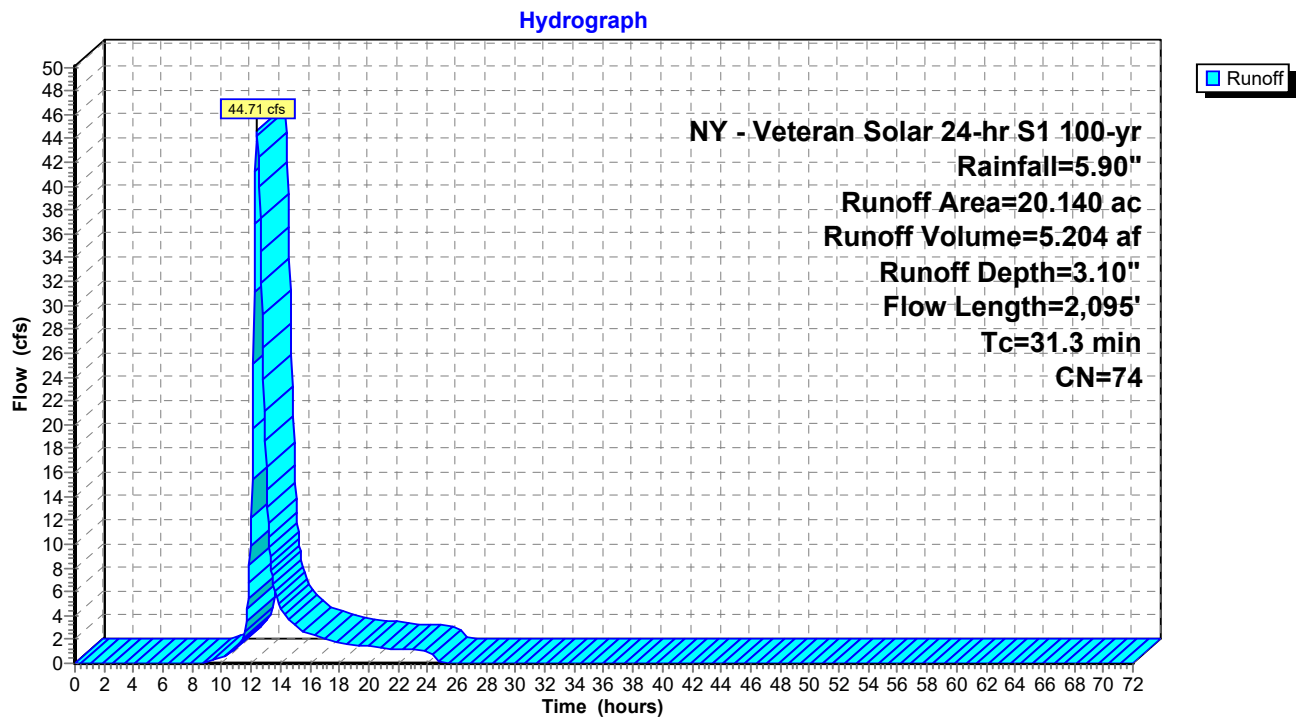
Runoff = 44.71 cfs @ 12.41 hrs, Volume= 5.204 af, Depth= 3.10"
 Routed to Reach DP4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NY - Veteran Solar 24-hr S1 100-yr Rainfall=5.90"

Area (ac)	CN	Description
2.710	71	Meadow, non-grazed, HSG C
4.600	78	Meadow, non-grazed, HSG D
8.370	70	Woods, Good, HSG C
4.250	77	Woods, Good, HSG D
0.210	96	Gravel surface, HSG D
20.140	74	Weighted Average
20.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.4	100	0.0583	0.10		Sheet Flow, SEG1 Woods: Light underbrush n= 0.400 P2= 2.34"
7.3	555	0.0640	1.26		Shallow Concentrated Flow, SEG2 Woodland Kv= 5.0 fps
1.2	123	0.0639	1.77		Shallow Concentrated Flow, SEG3 Short Grass Pasture Kv= 7.0 fps
5.1	570	0.1396	1.87		Shallow Concentrated Flow, SEG4 Woodland Kv= 5.0 fps
0.2	39	0.2016	3.14		Shallow Concentrated Flow, SEG5 Short Grass Pasture Kv= 7.0 fps
1.1	708	0.0800	11.14	100.27	Channel Flow, SEG6 Area= 9.0 sf Perim= 11.0' r= 0.82' n= 0.033
31.3	2,095	Total			

Subcatchment PDA5:



Summary for Subcatchment PDA6:

Runoff = 22.14 cfs @ 12.04 hrs, Volume= 1.350 af, Depth= 3.79"
 Routed to Pond BB : Bioretention Basin

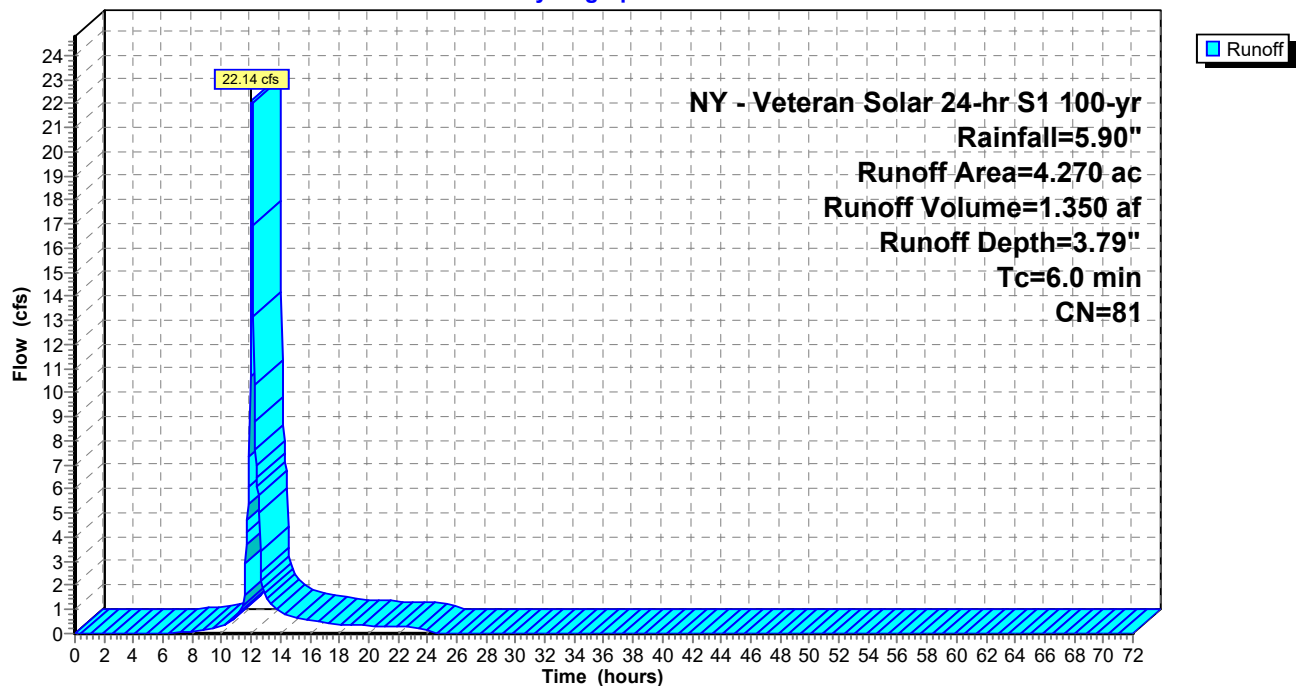
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NY - Veteran Solar 24-hr S1 100-yr Rainfall=5.90"

Area (ac)	CN	Description
0.530	96	Gravel surface, HSG C
0.440	96	Gravel surface, HSG D
0.550	71	Meadow, non-grazed, HSG C
2.750	78	Meadow, non-grazed, HSG D
4.270	81	Weighted Average
4.270		100.00% Pervious Area

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

Subcatchment PDA6:

Hydrograph

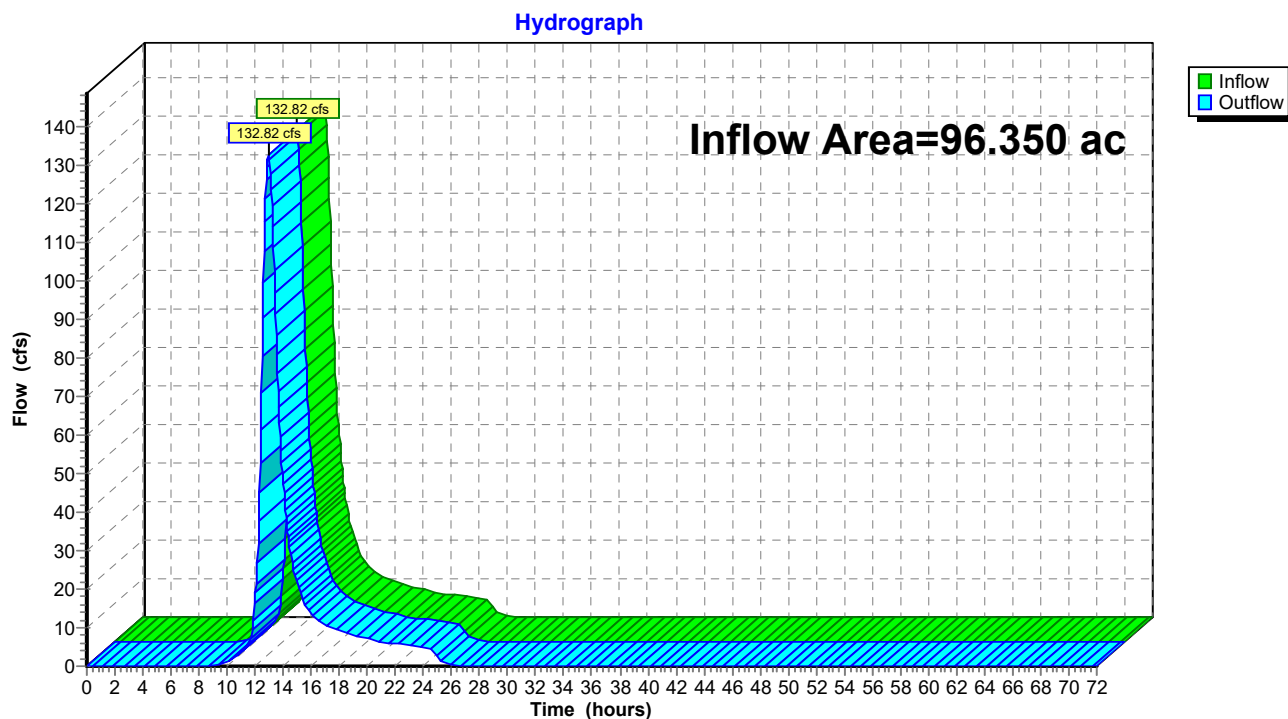


Summary for Reach DP1:

Inflow Area = 96.350 ac, 0.00% Impervious, Inflow Depth = 3.01" for 100-yr event
Inflow = 132.82 cfs @ 12.95 hrs, Volume= 24.178 af
Outflow = 132.82 cfs @ 12.95 hrs, Volume= 24.178 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach DP1:



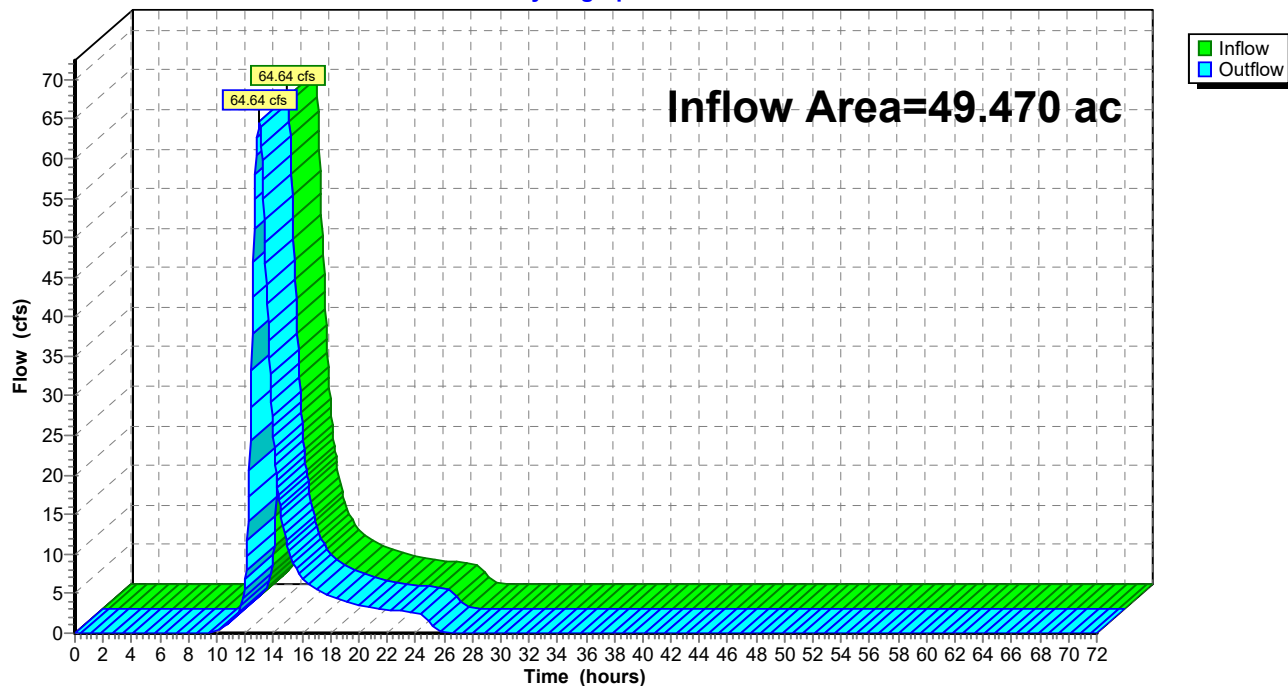
Summary for Reach DP2:

Inflow Area = 49.470 ac, 0.00% Impervious, Inflow Depth = 2.91" for 100-yr event
Inflow = 64.64 cfs @ 12.99 hrs, Volume= 12.003 af
Outflow = 64.64 cfs @ 12.99 hrs, Volume= 12.003 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach DP2:

Hydrograph



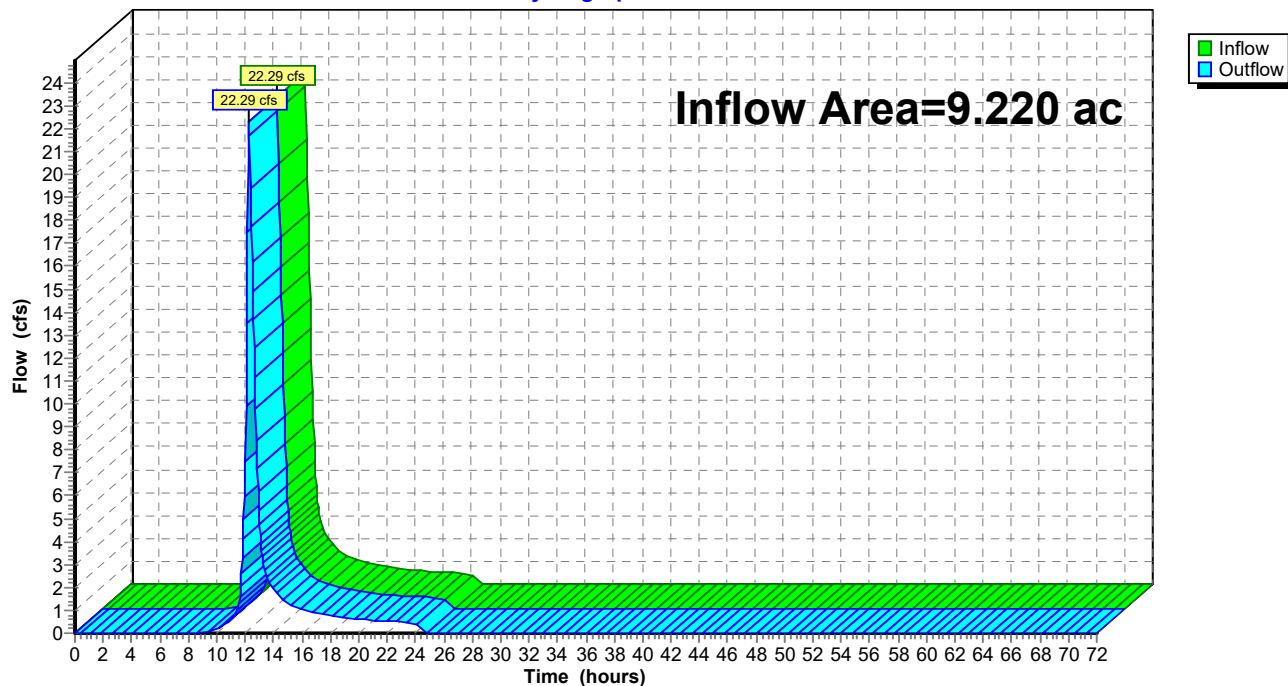
Summary for Reach DP3:

Inflow Area = 9.220 ac, 0.00% Impervious, Inflow Depth = 2.91" for 100-yr event
Inflow = 22.29 cfs @ 12.28 hrs, Volume= 2.237 af
Outflow = 22.29 cfs @ 12.28 hrs, Volume= 2.237 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach DP3:

Hydrograph

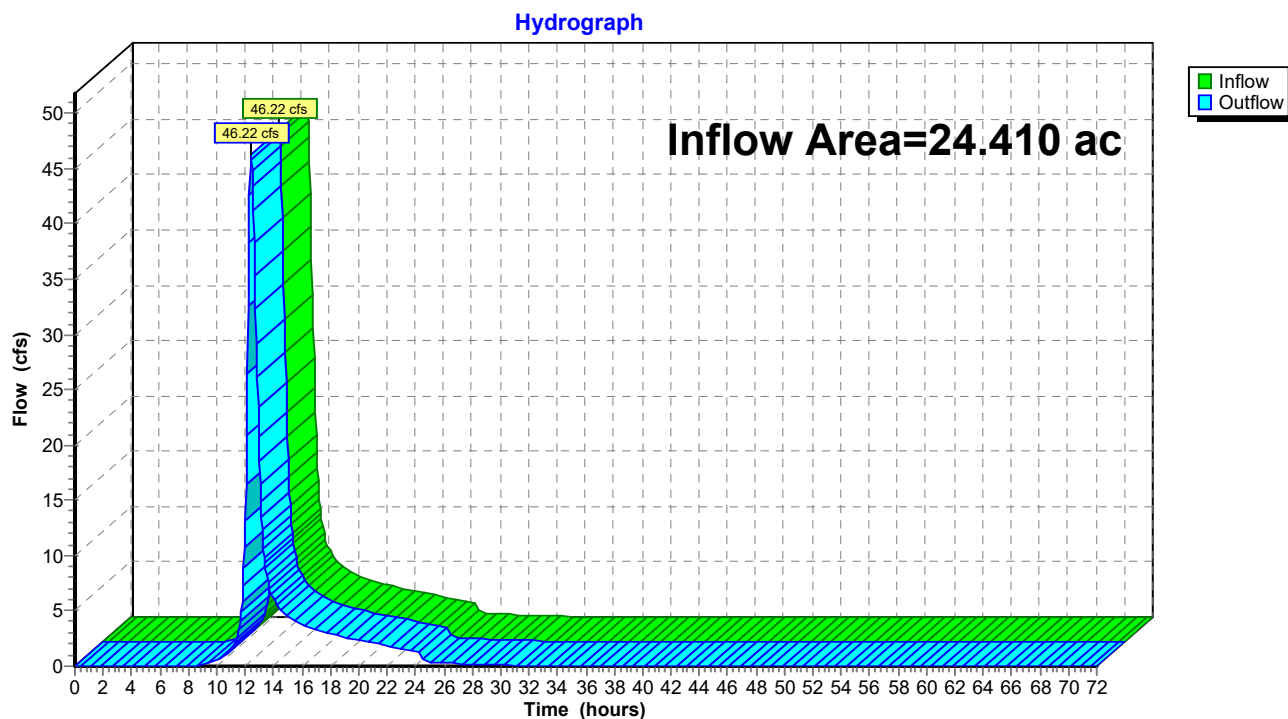


Summary for Reach DP4:

Inflow Area = 24.410 ac, 0.00% Impervious, Inflow Depth = 3.22" for 100-yr event
Inflow = 46.22 cfs @ 12.41 hrs, Volume= 6.554 af
Outflow = 46.22 cfs @ 12.41 hrs, Volume= 6.554 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach DP4:



Summary for Pond 7P: Bioretention Basin A

Inflow Area = 0.670 ac, 0.00% Impervious, Inflow Depth = 3.79" for 100-yr event
 Inflow = 4.13 cfs @ 11.98 hrs, Volume= 0.212 af
 Outflow = 3.95 cfs @ 11.99 hrs, Volume= 0.212 af, Atten= 4%, Lag= 0.6 min
 Primary = 3.95 cfs @ 11.99 hrs, Volume= 0.212 af
 Routed to Reach DP1 :
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Reach DP1 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 1,230.20' @ 11.99 hrs Surf.Area= 1,005 sf Storage= 896 cf

Plug-Flow detention time= 54.8 min calculated for 0.212 af (100% of inflow)
 Center-of-Mass det. time= 54.0 min (861.4 - 807.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,229.00'	3,405 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,229.00	490	0	0
1,232.00	1,780	3,405	3,405

Device	Routing	Invert	Outlet Devices
#1	Primary	1,225.00'	15.0" Round Culvert L= 33.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,225.00' / 1,224.00' S= 0.0303 ' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	1,229.50'	3.0" Horiz. 3" Orifice C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,230.00'	48.0" x 30.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	1,225.25'	6.0" Vert. 6" Underdrain C= 0.600 Limited to weir flow at low heads
#5	Device 4	1,229.00'	0.500 in/hr Filtering Media over Surface area
#6	Secondary	1,230.50'	20.0' long Emergency Spillway 2 End Contraction(s)

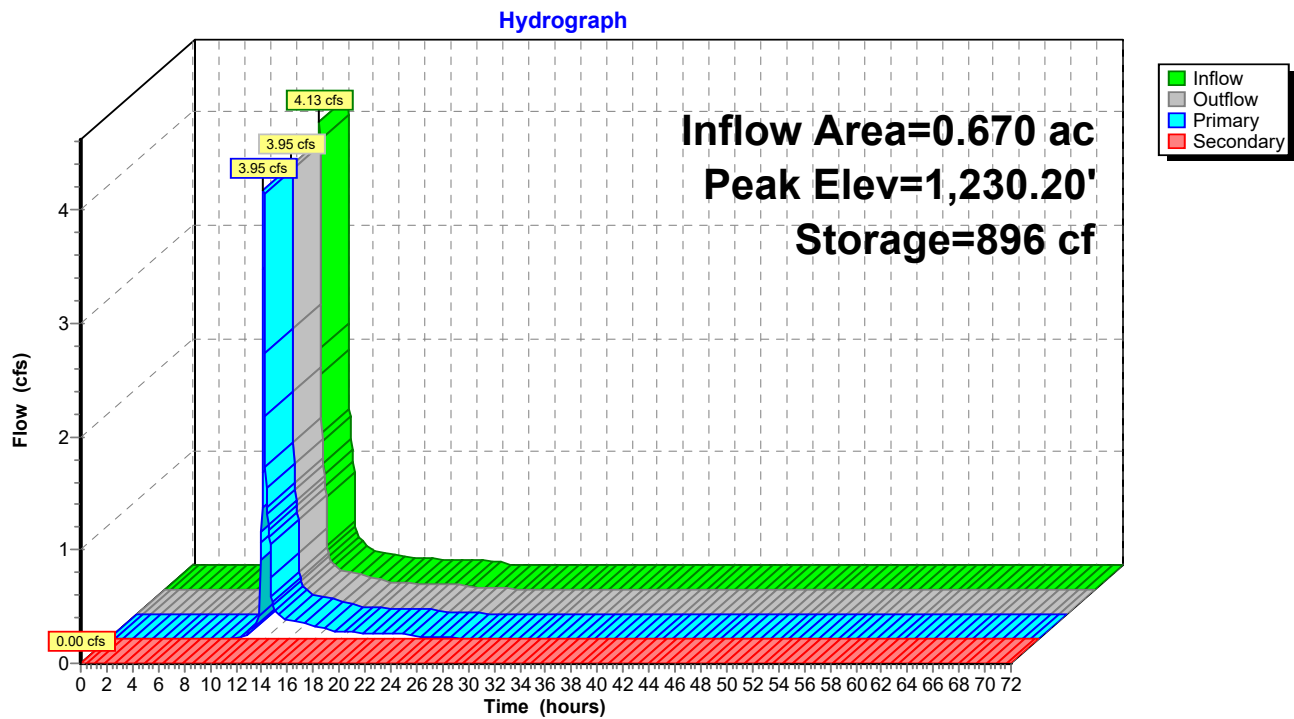
Primary OutFlow Max=3.79 cfs @ 11.99 hrs HW=1,230.19' (Free Discharge)

↑ **1=Culvert** (Passes 3.79 cfs of 12.63 cfs potential flow)
 ↑ **2=3" Orifice** (Orifice Controls 0.20 cfs @ 4.01 fps)
 ↑ **3=Grate** (Weir Controls 3.59 cfs @ 1.43 fps)
 ↑ **4=6" Underdrain** (Passes 0.01 cfs of 2.05 cfs potential flow)
 ↑ **5=Filtering Media** (Exfiltration Controls 0.01 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,229.00' (Free Discharge)

↑ **6=Emergency Spillway** (Controls 0.00 cfs)

Pond 7P: Bioretention Basin A



Summary for Pond BB: Bioretention Basin

Inflow Area = 4.270 ac, 0.00% Impervious, Inflow Depth = 3.79" for 100-yr event
 Inflow = 22.14 cfs @ 12.04 hrs, Volume= 1.350 af
 Outflow = 21.31 cfs @ 12.06 hrs, Volume= 1.350 af, Atten= 4%, Lag= 0.7 min
 Primary = 9.55 cfs @ 12.06 hrs, Volume= 0.641 af
 Routed to Pond DB : Detention Basin
 Secondary = 11.77 cfs @ 12.06 hrs, Volume= 0.709 af
 Routed to Pond DB : Detention Basin

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 1,062.01' @ 12.06 hrs Surf.Area= 2,981 sf Storage= 2,661 cf

Plug-Flow detention time= 28.3 min calculated for 1.349 af (100% of inflow)
 Center-of-Mass det. time= 28.8 min (840.3 - 811.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,061.00'	5,950 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,061.00	2,290	0	0
1,063.00	3,660	5,950	5,950

Device	Routing	Invert	Outlet Devices
#1	Primary	1,057.00'	15.0" Round Culvert L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,057.00' / 1,056.50' S= 0.0100 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	1,061.50'	24.0" x 24.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,057.20'	6.0" Vert. 6" Underdrain C= 0.600 Limited to weir flow at low heads
#4	Device 3	1,061.00'	0.500 in/hr Filtering Media over Surface area
#5	Secondary	1,061.50'	10.0' long Overflow Spillway 2 End Contraction(s)

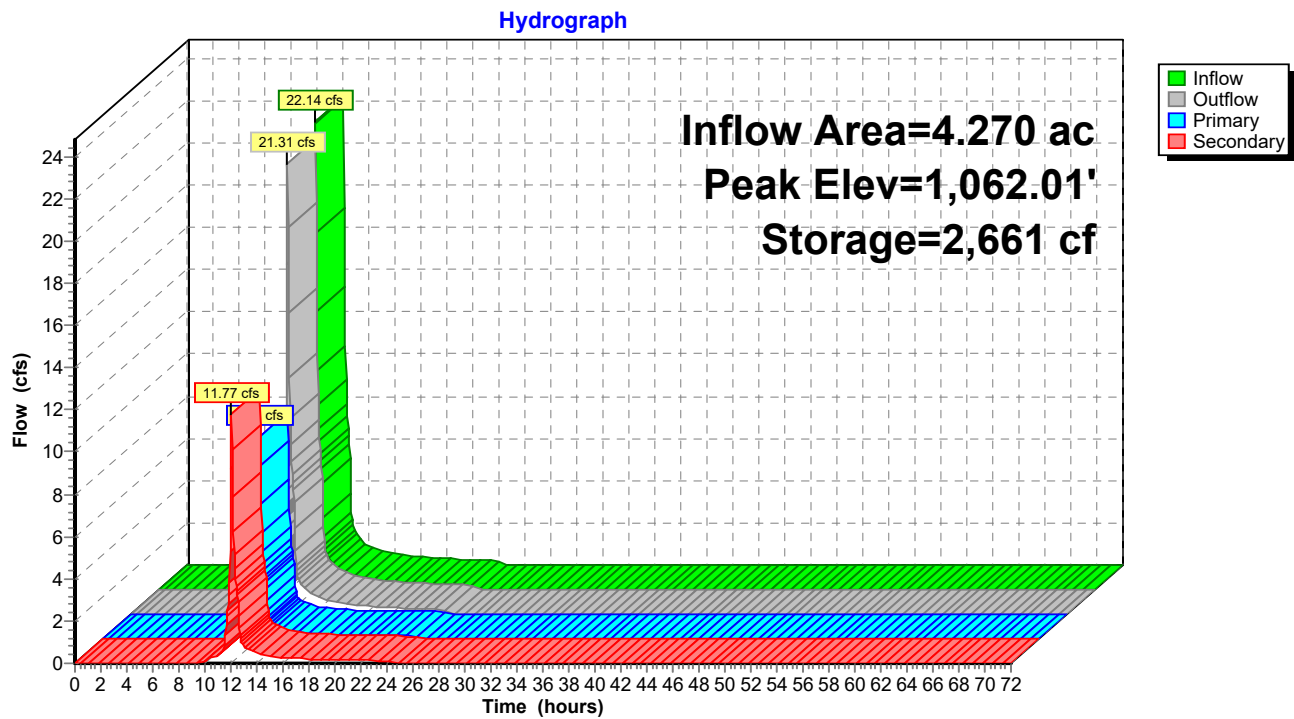
Primary OutFlow Max=9.37 cfs @ 12.06 hrs HW=1,062.00' (Free Discharge)

↑ **1=Culvert** (Passes 9.37 cfs of 12.36 cfs potential flow)
 ↑ **2=Grate** (Weir Controls 9.34 cfs @ 2.32 fps)
 ↑ **3=6" Underdrain** (Passes 0.03 cfs of 2.02 cfs potential flow)
 ↑ **4=Filtering Media** (Exfiltration Controls 0.03 cfs)

Secondary OutFlow Max=11.55 cfs @ 12.06 hrs HW=1,062.00' (Free Discharge)

↑ **5=Overflow Spillway** (Weir Controls 11.55 cfs @ 2.32 fps)

Pond BB: Bioretention Basin



Summary for Pond DB: Detention Basin

Inflow Area = 4.270 ac, 0.00% Impervious, Inflow Depth = 3.79" for 100-yr event
 Inflow = 21.31 cfs @ 12.06 hrs, Volume= 1.350 af
 Outflow = 3.88 cfs @ 12.61 hrs, Volume= 1.349 af, Atten= 82%, Lag= 33.5 min
 Primary = 3.88 cfs @ 12.61 hrs, Volume= 1.349 af
 Routed to Reach DP4 :
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Reach DP4 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 1,059.14' @ 12.61 hrs Surf.Area= 9,766 sf Storage= 30,194 cf

Plug-Flow detention time= 240.9 min calculated for 1.348 af (100% of inflow)
 Center-of-Mass det. time= 241.5 min (1,081.8 - 840.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,055.00'	44,550 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,055.00	4,810	0	0
1,060.50	11,390	44,550	44,550

Device	Routing	Invert	Outlet Devices
#1	Primary	1,055.00'	15.0" Round Culvert L= 100.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,055.00' / 1,054.00' S= 0.0100 ' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	1,055.00'	4.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,056.00'	4.0" Vert. Orifice C= 0.600 Limited to weir flow at low heads
#4	Device 1	1,059.00'	48.0" x 30.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Secondary	1,059.50'	20.0' long Emergency Spillway 2 End Contraction(s)

Primary OutFlow Max=3.80 cfs @ 12.61 hrs HW=1,059.14' (Free Discharge)

↑ **1=Culvert** (Passes 3.80 cfs of 9.92 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 0.84 cfs @ 9.60 fps)
 ↑ **3=Orifice** (Orifice Controls 0.72 cfs @ 8.30 fps)
 ↑ **4=Orifice/Grate** (Weir Controls 2.23 cfs @ 1.22 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,055.00' (Free Discharge)

↑ **5=Emergency Spillway** (Controls 0.00 cfs)

Pond DB: Detention Basin

