PPI ENGINEERING
VINEYARD DESIGN
EROSION CONTROL
WATER DEVELOPMENT
DRAINAGE
PERMITTING
GPS/GIS

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MEMORANDUM

Date: January 20, 2022

To: Patrick Ryan, Napa County Planning, Building, and Environmental Services

From: Matthew S. Bueno, P.E.
Rachel L. Rosasco, E.I.T.

Cc: John McDowell, Napa County Planning, Building, and Environmental Services

Re: Austin Peterson Track I ECP
APN 039-380-037
Hydrologic Analysis

This memo transmits the findings of a hydrologic analysis for the above-referenced Track I Erosion Control Plan (ECP). HydroCAD software was used to estimate pre- and post-project runoff from watersheds containing the proposed development areas. The software uses the Natural Resource Conservation Service (NRCS) TR-20 method to calculate runoff. The analysis uses the Type IA 24-hr storm distribution and includes site-specific National Oceanic and Atmospheric Administration (NOAA) point precipitation data for the ranch.

Three (3) watersheds were delineated for the hydrologic modeling using 2-foot contours from American Aerial, Inc. and 5-foot contours from Napa County LIDAR data. Watershed 1 encompasses approximately 16.9 acres and drains into an unnamed swale which eventually flows into Rector Creek. Watershed 2 is located to the south of Watershed 1 and contains approximately 27.2 acres which drains into a blue-line stream and eventually flows into Rector Creek. Watershed 3 is southeast of Watershed 1 and east of Watershed 2. It is approximately 14.6 acres is size and flows into the same blue-line stream as Watershed 2 before going to the shared outlet point. Please see the attached figures for the location of each watershed.

Soils within the watersheds were obtained from the NRCS Web Soil Survey and are classified as the following:

Boomer Loam, volcanic bedrock, 2-35% Slopes (Map Unit Symbol 107)
Guenoc-Rock Outcrop, 5-30% Slopes (Map Unit Symbol 143)
Rock outcrop-Hambright complex, 50-75% Slopes (Map Unit Symbol 176)

Boomer Loam, volcanic bedrock (107) and Guenoc-Rock Outcrop (143) are both classified as Hydrologic Soil Group (HSG) C. The Rock outcrop-Hambright complex (176) was modeled using HSG D. Please see the attached figures for soil type delineations within the vicinity of each watershed.

Land use areas were initially delineated based on Napa County orthophotos. A site visit was then conducted on August 6, 2021 by Matt Bueno and Rachel Rosasco of PPI Engineering to ground truth the orthophotos and determine the existing land use conditions. The land use hydrologic conditions were classified based on the respective covers as poor (less than 50% cover), fair (50%-75% cover), or good (greater than or equal to 75% cover). The HydroCAD software analyzes the land use data along with the corresponding soil HSGs to determine a weighted Curve Number (CN) for runoff calculations. The grassed areas have been historically managed with grazing. The pre-project condition of the grassed areas that are proposed to be converted to vineyard were classified as Annual Grass in Good condition. The land use classification of Annual Grass is based upon the NRCS Engineering Field Manual Chapter 2, Supplement 1 definition. The post-project condition within the proposed vineyard will be classified as good (based on the proposed cover in the ECP). Please see the attached figures for existing and proposed land use delineations.

The Time of Concentration (Tc) flow path within each watershed was determined using American Aerial, Inc. and Napa County contours. The flow path in each watershed was drafted from the hydrologically most distant point (longest travel time) in the watershed to the watershed outlet per NRCS standards. For modeling purposes Watershed 3 flows were routed using an internal reach through Watershed 2 to the shared outlet point (Outlet 2). In Watersheds 1 and 3 the Tc did not change from pre- to post-project conditions. A proposed rock level spreader at the southern edge of the vineyard block in Watershed 2 resulted in an increase in Tc. Please see the attached figures for both the pre- and post-project Tc flow paths by watershed.

Pre- and post-project runoff calculations from the HydroCAD models for each individual watershed are summarized in Table 1 below. In Table 2 the runoff calculations for the two modeled outlets are summarized. Runoff was calculated for the 2-, 10-, 50- and 100-year storms respectively for each watershed and for the modeled outlets.

Table 1. Individual Watershed Summary

	Runoff (cfs)								
	Watershed 1			Watershed 2			Watershed 3		
	Pre-Project	Post-Project	Increase/Decrease	Pre-Project	Post-Project	Increase/Decrease	Pre-Project	Post-Project	Increase/Decrease
2-Year Storm	6.77	6.77	0.00	12.36	11.76	0.60	5.38	5.38	0.00
10-Year Storm	14.56	14.56	0.00	25.48	24.31	1.17	11.87	11.87	0.00
50-Year Storm	23.20	23.20	0.00	39.78	38.07	1.71	19.13	19.13	0.00
100-Year Storm	27.00	27.00	0.00	46.02	44.08	1.94	22.34	22.34	0.00

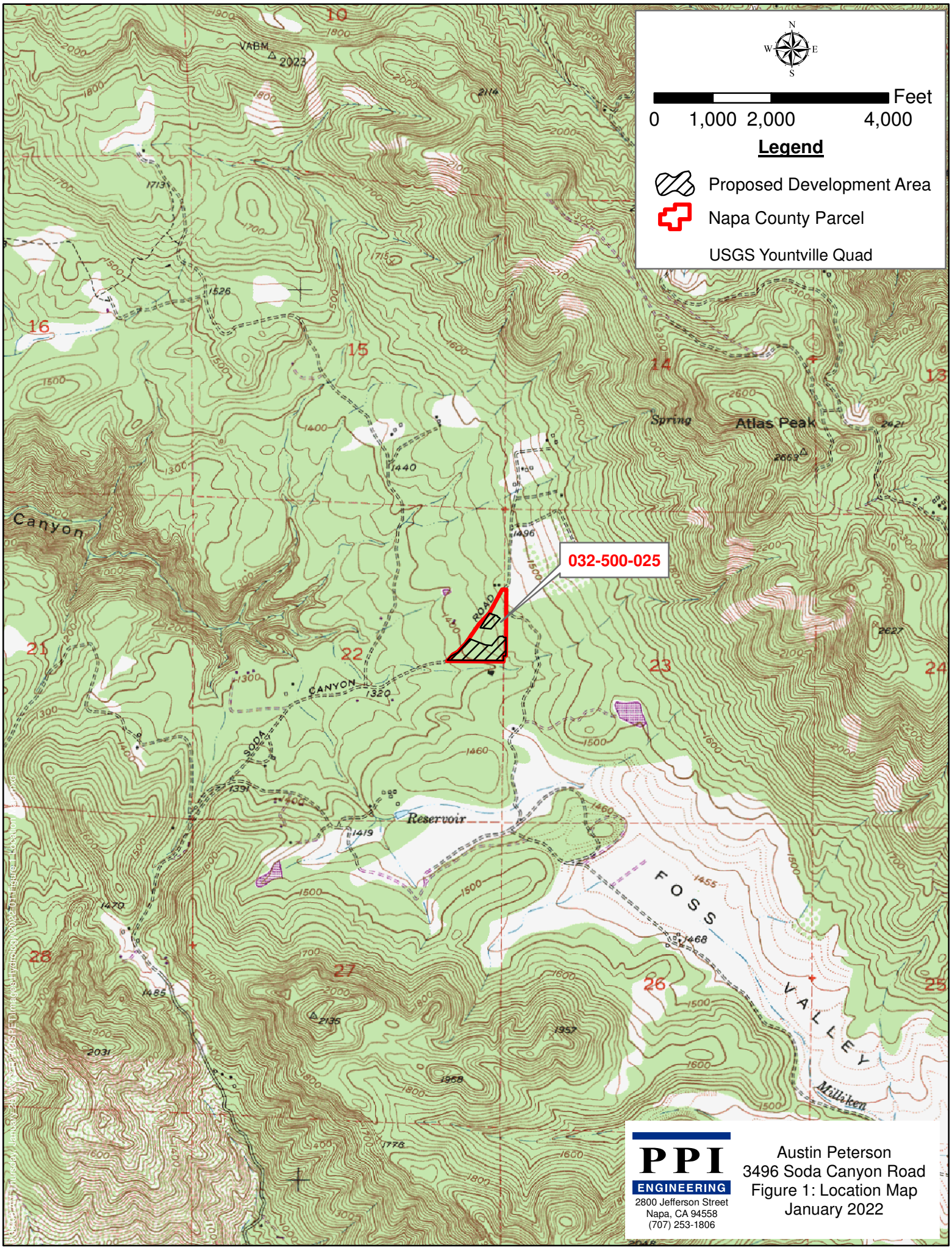
Table 2. Outlet Summary

	Runoff (cfs)					
	Outlet 1			Outlet 2		
	Pre-Project	Post-Project	Increase/Decrease	Pre-Project	Post-Project	Increase/Decrease
2-Year Storm	6.77	6.77	0.00	16.22	16.17	0.05
10-Year Storm	14.56	14.56	0.00	35.16	34.95	0.21
50-Year Storm	23.20	23.20	0.00	56.18	55.76	0.42
100-Year Storm	27.00	27.00	0.00	65.43	64.89	0.54

Estimated runoff from Watershed 1 and Watershed 3 did not change from pre- to post-project. Watershed 2 saw a decrease post-project as a result of the increase in Tc from pre- to post-project. The existing breached reservoir will be deconstructed and the area regraded to maintain existing drainage patterns.

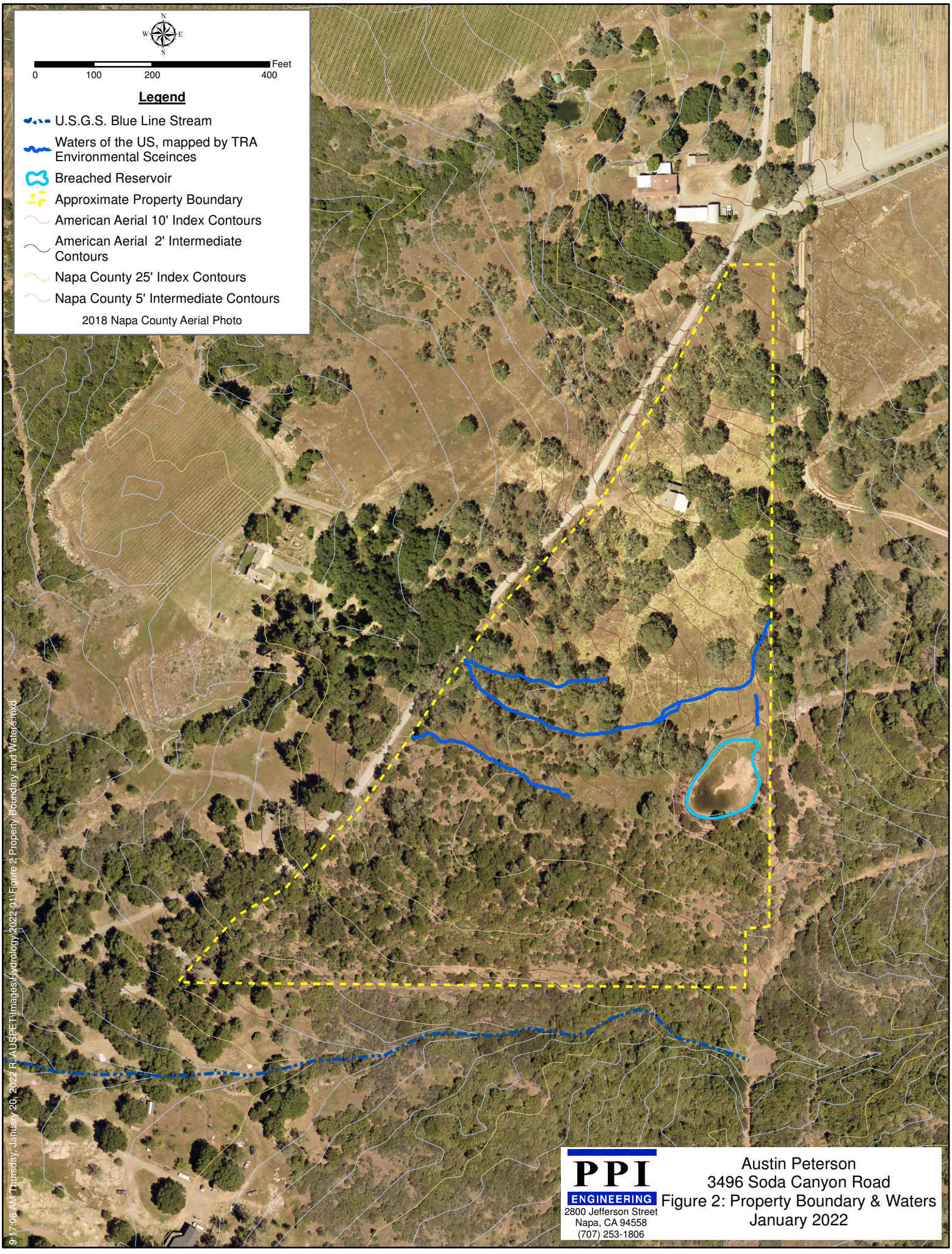
Please see the attached HydroCAD analyses for inputs, details, and summaries of the hydrologic modeling. Based on our analysis, there are no predicted net runoff increases, and no negative hydrologic impacts are expected as a result of this project. The project as proposed is in compliance with Napa County's General Plan policy requiring no-net-increase in runoff.





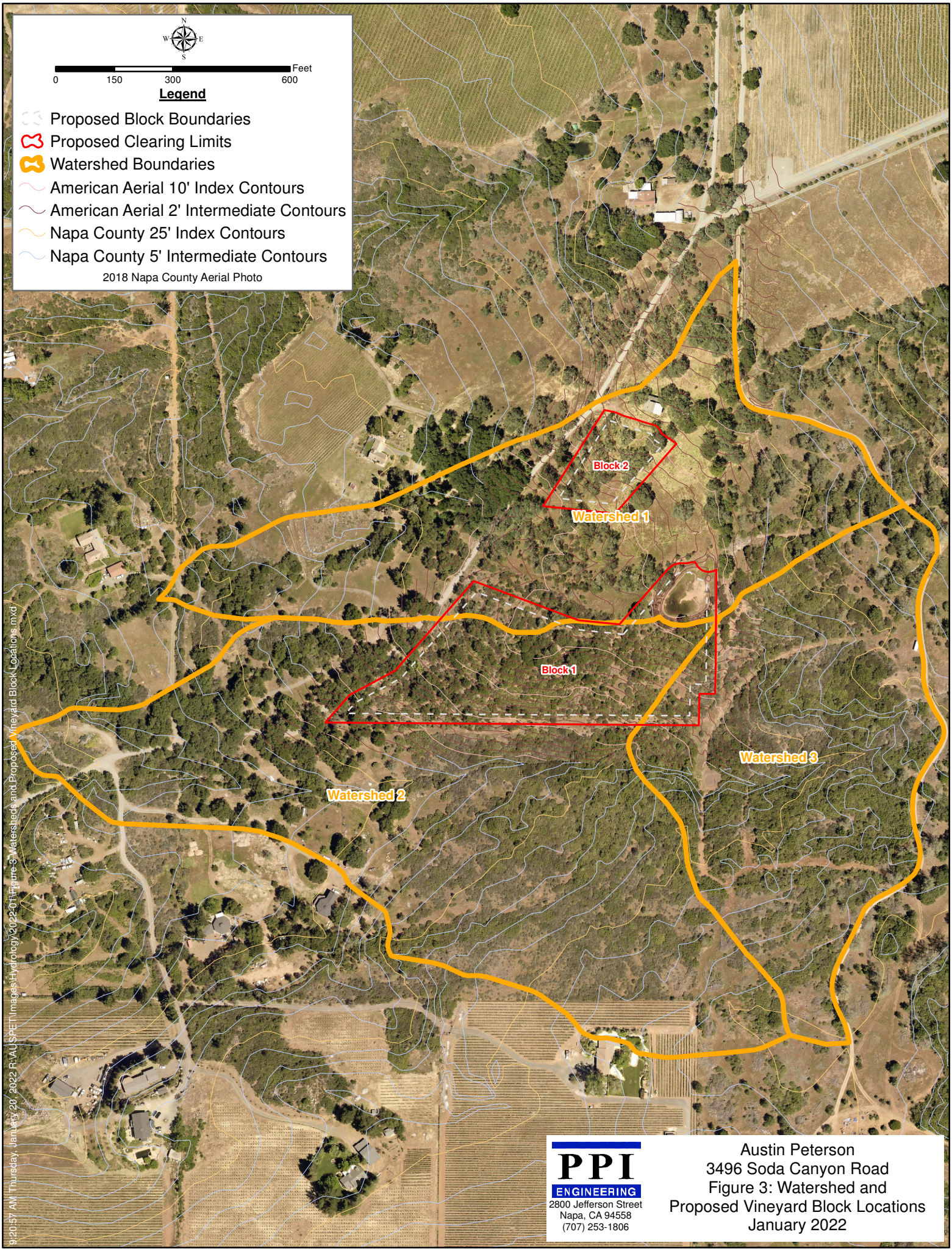
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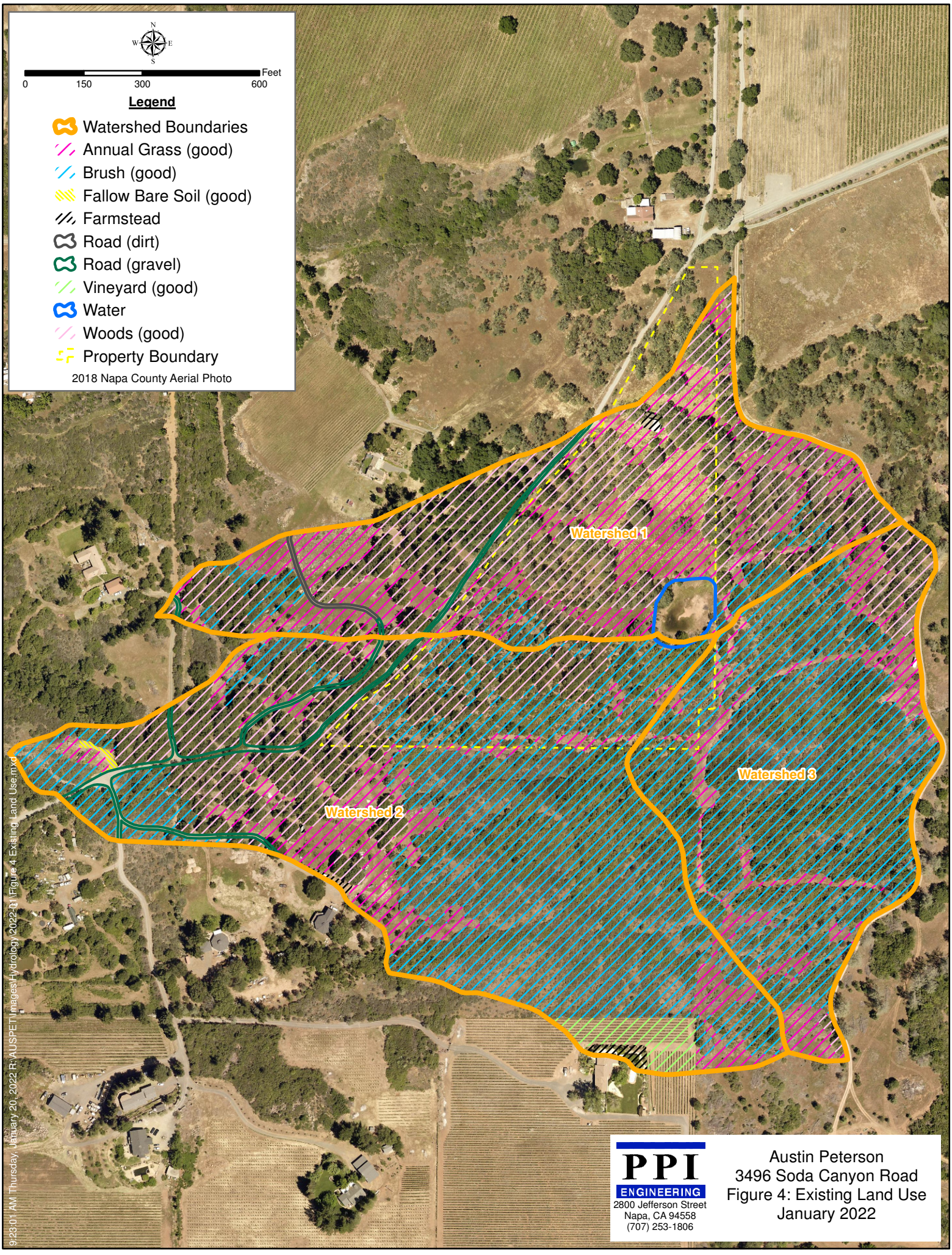
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Figure 1: Location Map
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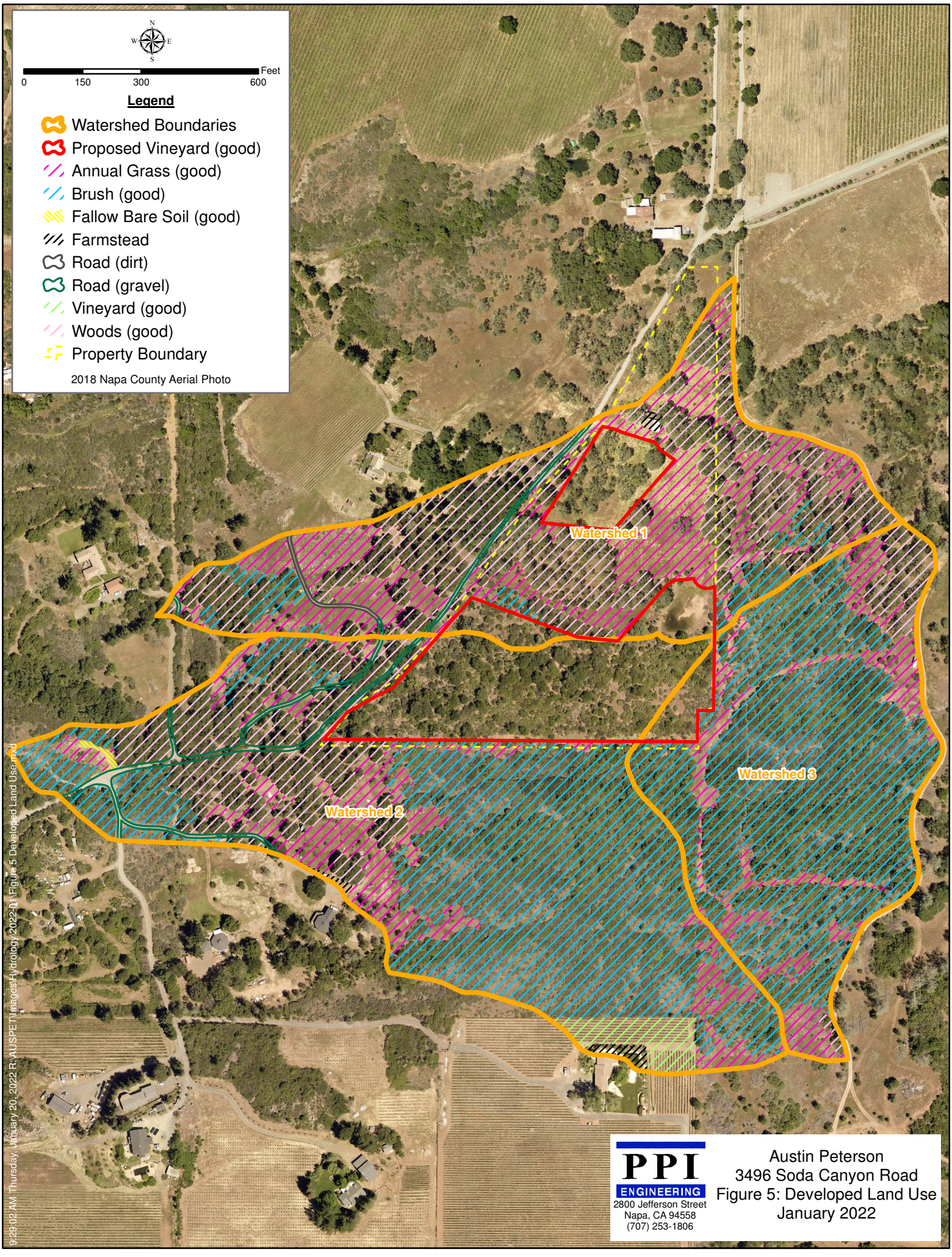
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Figure 2: Property Boundary & Waters
January 2022

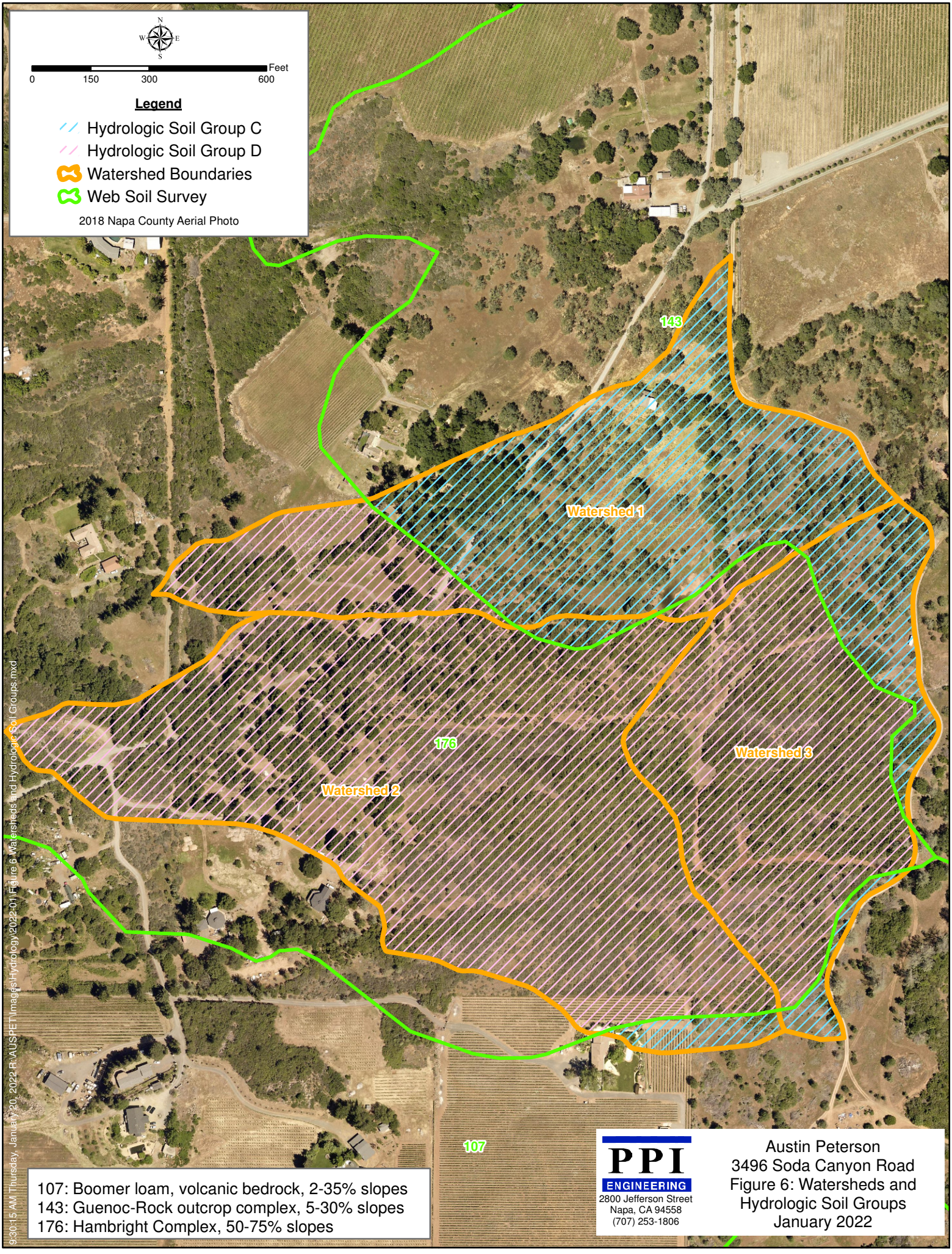

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Proposed Block Boundaries
Proposed Clearing Limits
Watershed Boundaries
American Aerial 10' Index Contours
American Aerial 2' Intermediate Contours
Napa County 25' Index Contours
Napa County 5' Intermediate Contours
2018 Napa County Aerial Photo
Block 2
Watershed 1
Block 1
Watershed 3
Watershed 2
9:20:57 AM Thursday, January 20, 2022 R:\AUSPET\Images\Hydrology\2022-01\Figure 3 Watersheds and Proposed Vineyard Block Locations.mxd
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Figure 3: Watershed and
Proposed Vineyard Block Locations
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Figure 4: Existing Land Use
January 2022

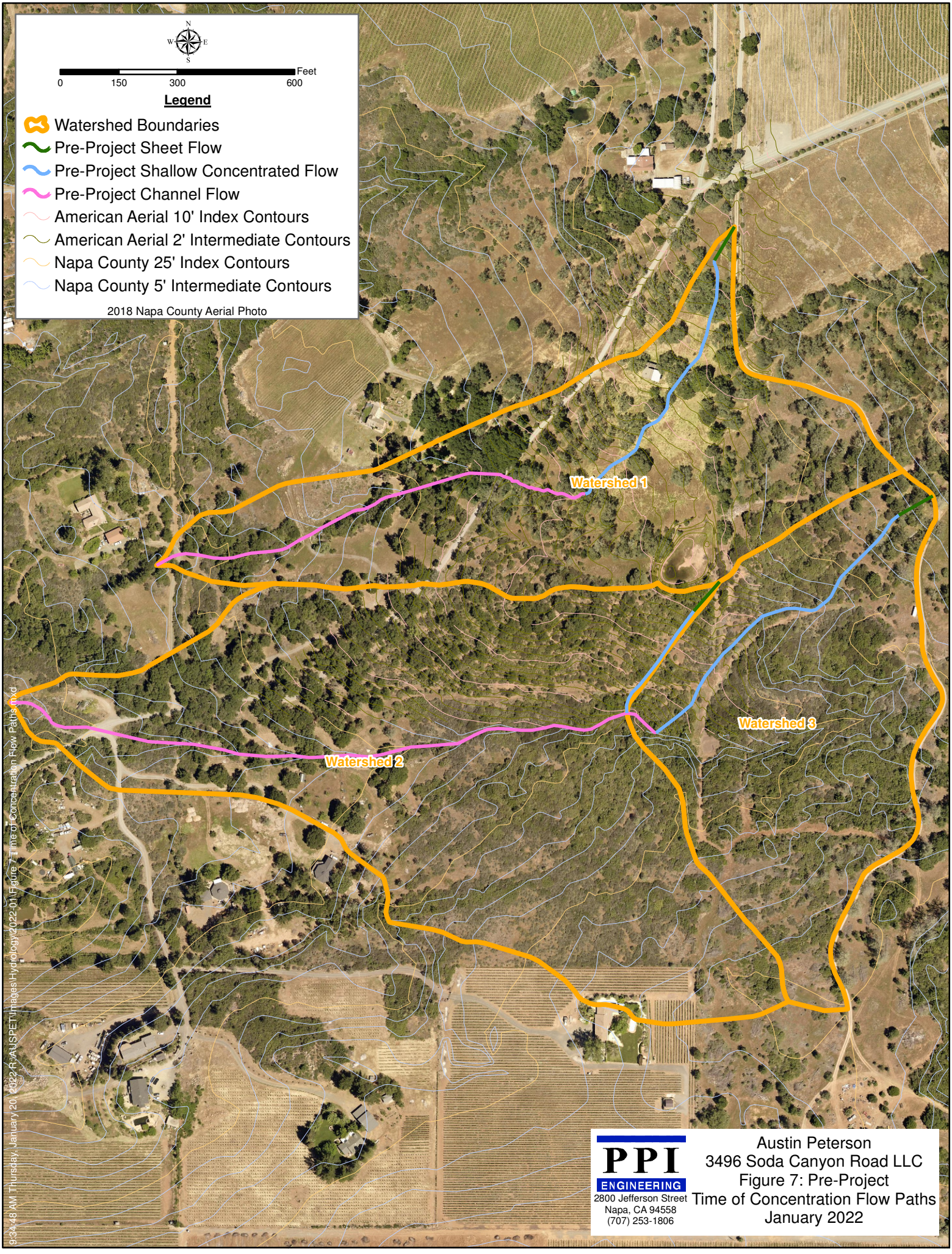

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Watershed Boundaries
Proposed Vineyard (good)
Annual Grass (good)
Brush (good)
Fallow Bare Soil (good)
Farmstead
Road (dirt)
Road (gravel)
Vineyard (good)
Woods (good)
Property Boundary
2018 Napa County Aerial Photo
Watershed 1
Watershed 2
Watershed 3
9:29:02 AM Thursday, January 20, 2022 R:\AUSPET\Images\Hydrology\2022-01\Figure 5 Developed Land Use.mxd
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Figure 5: Developed Land Use
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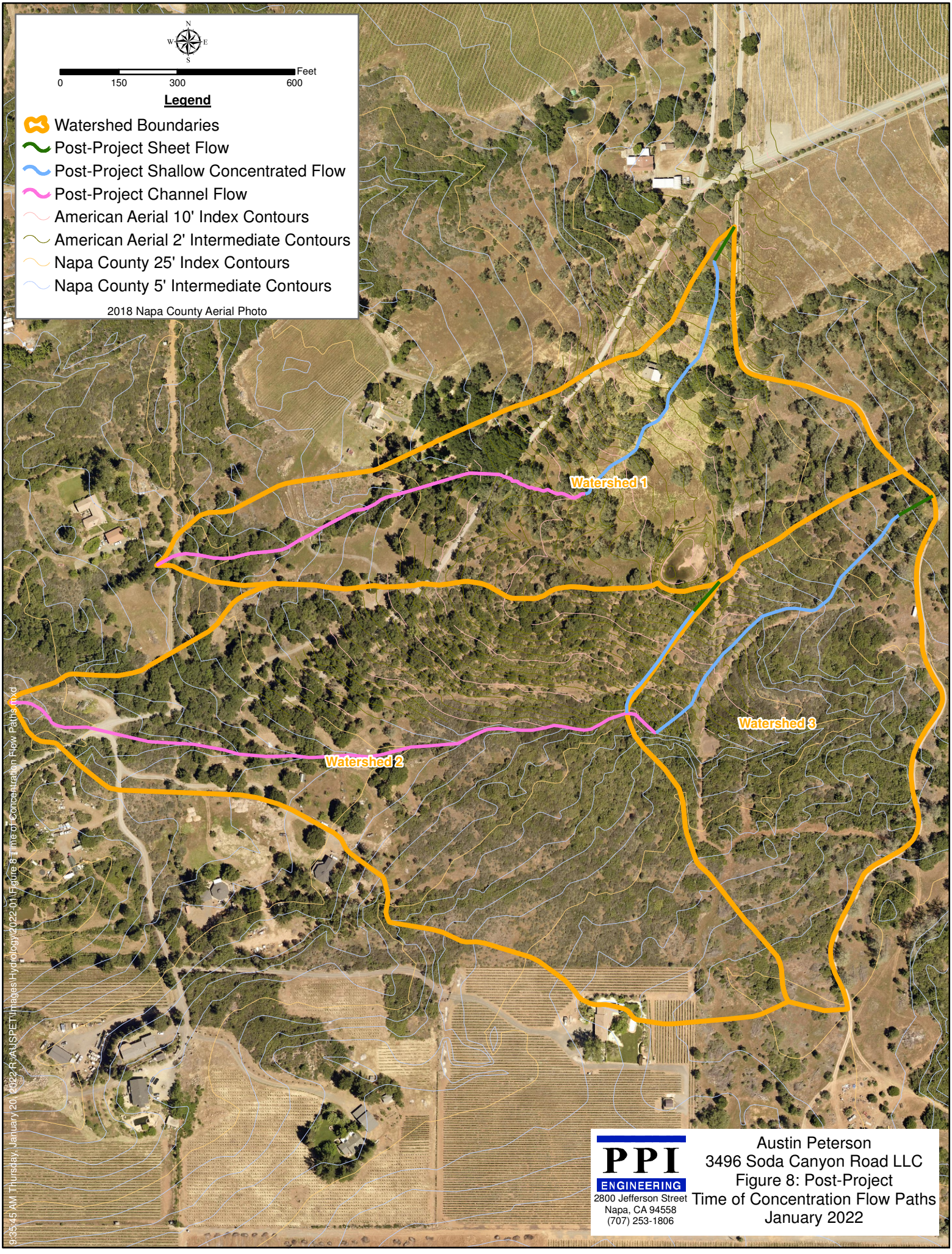


107: Boomer loam, volcanic bedrock, 2-35% slopes
143: Guenoc-Rock outcrop complex, 5-30% slopes
176: Hambright Complex, 50-75% slopes

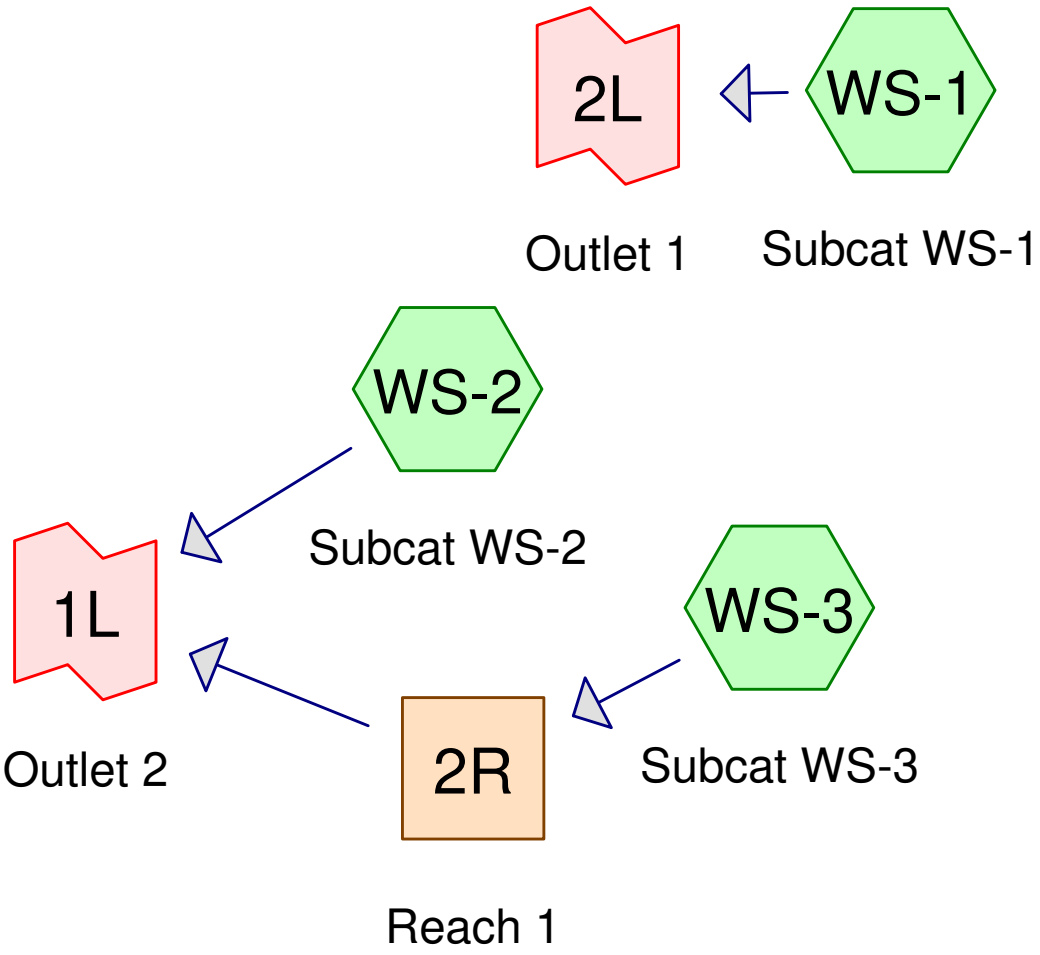
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Figure 6: Watersheds and Hydrologic Soil Groups
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Watershed Boundaries
Pre-Project Sheet Flow
Pre-Project Shallow Concentrated Flow
Pre-Project Channel Flow
American Aerial 10' Index Contours
American Aerial 2' Intermediate Contours
Napa County 25' Index Contours
Napa County 5' Intermediate Contours
2018 Napa County Aerial Photo
Watershed 1
Watershed 2
Watershed 3
9:34:48 AM Thursday, January 20, 2022 P:\AUSPET\Images\Hydrology\2022-01 Figure 7 Time of Concentration Flow Paths.mxd
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Figure 7: Pre-Project
Time of Concentration Flow Paths
January 2022


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Watershed Boundaries
Post-Project Sheet Flow
Post-Project Shallow Concentrated Flow
Post-Project Channel Flow
American Aerial 10' Index Contours
American Aerial 2' Intermediate Contours
Napa County 25' Index Contours
Napa County 5' Intermediate Contours
2018 Napa County Aerial Photo
Watershed 1
Watershed 2
Watershed 3
9:35:45 AM Thursday, January 20, 2022 P:\AUSPET\Images\Hydrology\2022-01 Figure 8 Time of Concentration Flow Paths.mxd
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Figure 8: Post-Project
Time of Concentration Flow Paths
January 2022


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Reach
Watershed Boundaries
American Aerial 10' Index Contours
American Aerial 2' Intermediate Contours
Napa County 25' Index Contours
Napa County 5' Intermediate Contours
2018 Napa County Aerial Photo
Watershed 1
Watershed 2
Watershed 3
11:04:32 AM Thursday, January 20, 2022 P:\AUSPET\Images\Hydrology\2022 01\Figure 9 Reach Flow Path.mxd
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Figure 9: Reach Flow Path
January 2022



Subcat Reach Pond Link

Routing Diagram for Pre-Project
Prepared by PPI Engineering, Printed 1/20/2022
HydroCAD® 10.10-7a s/n 09429 © 2021 HydroCAD Software Solutions LLC

Summary for Subcatchment WS-1: Subcat WS-1

Runoff = 6.77 cfs @ 8.09 hrs, Volume= 2.689 af, Depth= 1.91"
Routed to Link 2L : Outlet 1

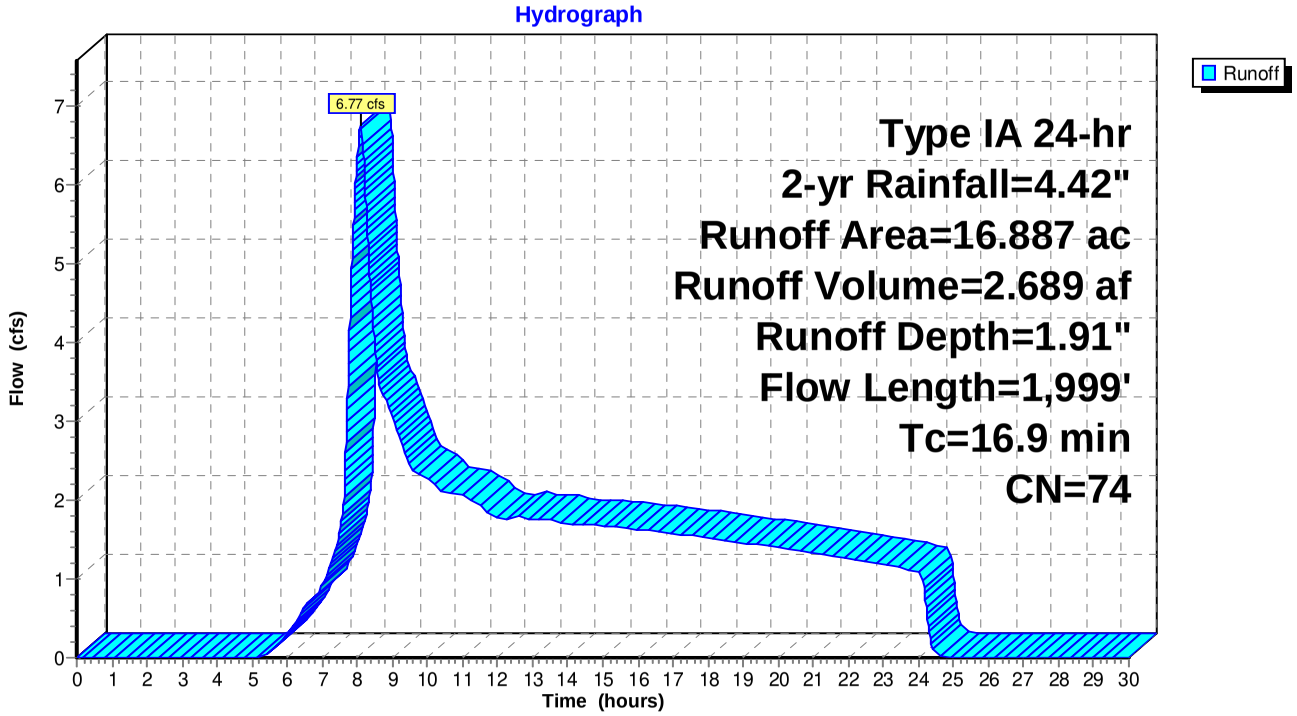
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type IA 24-hr 2-yr Rainfall=4.42"

Area (ac)	CN	Description
0.049	77	Woods, Good, HSG D
0.126	98	Water Surface, HSG D
0.067	89	Dirt roads, HSG D
0.008	73	Brush, Good, HSG D
0.055	73	Brush, Good, HSG D
0.364	73	Brush, Good, HSG D
0.058	73	Brush, Good, HSG D
0.050	73	Brush, Good, HSG D
0.223	73	Brush, Good, HSG D
0.031	77	Woods, Good, HSG D
0.032	77	Woods, Good, HSG D
0.483	77	Woods, Good, HSG D
0.019	77	Woods, Good, HSG D
0.041	77	Woods, Good, HSG D
0.211	77	Woods, Good, HSG D
0.445	77	Woods, Good, HSG D
0.000	77	Woods, Good, HSG D
0.021	91	Gravel Roads, HSG D
0.009	91	Gravel Roads, HSG D
0.012	91	Gravel Roads, HSG D
0.024	81	Annual Grass, Good, HSG D
0.081	81	Annual Grass, Good, HSG D
0.216	81	Annual Grass, Good, HSG D
0.002	81	Annual Grass, Good, HSG D
0.419	81	Annual Grass, Good, HSG D
0.484	81	Annual Grass, Good, HSG D
0.538	81	Annual Grass, Good, HSG D
0.113	81	Annual Grass, Good, HSG D
0.011	81	Annual Grass, Good, HSG D
0.005	81	Annual Grass, Good, HSG D
0.029	81	Annual Grass, Good, HSG D
0.005	77	Woods, Good, HSG D
0.022	77	Woods, Good, HSG D
0.015	73	Brush, Good, HSG D
0.011	73	Brush, Good, HSG D
0.240	70	Woods, Good, HSG C
0.362	98	Water Surface, HSG C
0.320	65	Brush, Good, HSG C
0.201	65	Brush, Good, HSG C
0.000	65	Brush, Good, HSG C
0.047	65	Brush, Good, HSG C
0.137	70	Woods, Good, HSG C
0.030	70	Woods, Good, HSG C
0.150	70	Woods, Good, HSG C
0.061	70	Woods, Good, HSG C
0.061	70	Woods, Good, HSG C
1.478	70	Woods, Good, HSG C
1.622	70	Woods, Good, HSG C
1.920	70	Woods, Good, HSG C
1.216	70	Woods, Good, HSG C

0.045	70	Woods, Good, HSG C
0.278	70	Woods, Good, HSG C
0.045	82	Farmsteads, HSG C
0.091	89	Gravel Roads, HSG C
0.316	75	Annual Grass, Good, HSG C
0.069	75	Annual Grass, Good, HSG C
0.434	75	Annual Grass, Good, HSG C
0.058	75	Annual Grass, Good, HSG C
0.005	75	Annual Grass, Good, HSG C
0.560	75	Annual Grass, Good, HSG C
1.730	75	Annual Grass, Good, HSG C
0.034	75	Annual Grass, Good, HSG C
0.100	75	Annual Grass, Good, HSG C
0.884	75	Annual Grass, Good, HSG C
0.115	75	Annual Grass, Good, HSG C
16.887	74	Weighted Average
16.399		97.11% Pervious Area
0.488		2.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	93	0.0500	0.20		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 4.42"
7.1	734	0.0600	1.71		**Shallow Concentrated Flow, Shallow - Short Grass** Short Grass Pasture Kv= 7.0 fps
1.9	1,172	0.0500	10.09	121.14	**Trap/Vee/Rect Channel Flow, Stream** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.035
16.9	1,999	Total			

Subcatchment WS-1: Subcat WS-1



Summary for Subcatchment WS-2: Subcat WS-2

Runoff = 12.36 cfs @ 8.08 hrs, Volume= 4.689 af, Depth= 2.07"
Routed to Link 1L : Outlet 2

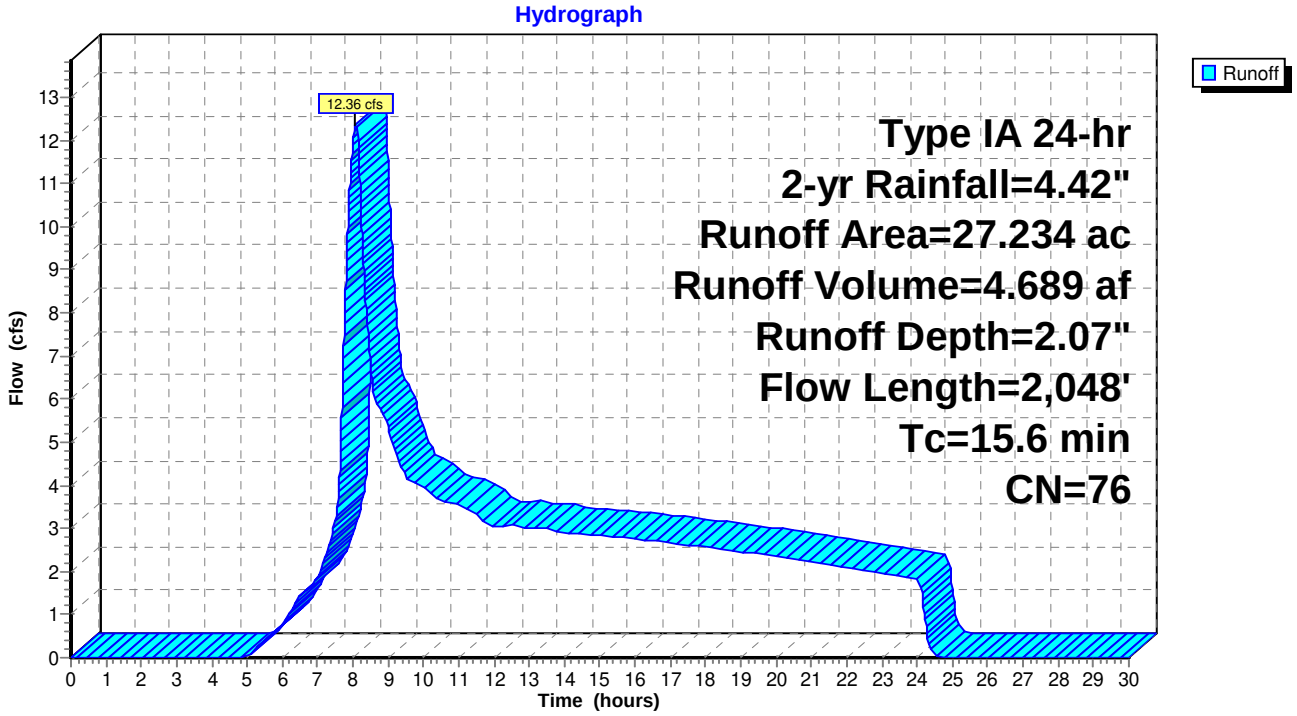
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type IA 24-hr 2-yr Rainfall=4.42"

Area (ac)	CN	Description
0.029	98	Water Surface, HSG D
0.050	94	Fallow, bare soil, HSG D
0.324	73	Brush, Good, HSG D
0.067	81	Annual Grass, Good, HSG D
0.072	81	Annual Grass, Good, HSG D
1.886	73	Brush, Good, HSG D
0.003	73	Brush, Good, HSG D
0.009	73	Brush, Good, HSG D
0.091	73	Brush, Good, HSG D
10.398	73	Brush, Good, HSG D
0.026	73	Brush, Good, HSG D
0.354	73	Brush, Good, HSG D
0.138	73	Brush, Good, HSG D
0.259	73	Brush, Good, HSG D
0.162	73	Brush, Good, HSG D
0.281	73	Brush, Good, HSG D
0.081	73	Brush, Good, HSG D
0.581	73	Brush, Good, HSG D
0.010	73	Brush, Good, HSG D
0.116	73	Brush, Good, HSG D
0.554	73	Brush, Good, HSG D
0.001	73	Brush, Good, HSG D
0.001	73	Brush, Good, HSG D
1.513	77	Woods, Good, HSG D
0.124	77	Woods, Good, HSG D
0.220	77	Woods, Good, HSG D
0.397	77	Woods, Good, HSG D
0.053	77	Woods, Good, HSG D
1.817	77	Woods, Good, HSG D
1.143	77	Woods, Good, HSG D
0.664	77	Woods, Good, HSG D
0.006	86	Farmsteads, HSG D
0.055	86	Farmsteads, HSG D
0.053	86	Farmsteads, HSG D
0.510	81	Vineyard, Good, HSG D
0.493	91	Gravel Roads, HSG D
0.000	81	Annual Grass, Good, HSG D
0.045	81	Annual Grass, Good, HSG D
0.107	81	Annual Grass, Good, HSG D
0.043	81	Annual Grass, Good, HSG D
2.120	81	Annual Grass, Good, HSG D
0.380	81	Annual Grass, Good, HSG D
0.004	81	Annual Grass, Good, HSG D
0.178	81	Annual Grass, Good, HSG D
0.045	81	Annual Grass, Good, HSG D
0.096	81	Annual Grass, Good, HSG D
0.007	81	Annual Grass, Good, HSG D
0.019	81	Annual Grass, Good, HSG D
0.037	81	Annual Grass, Good, HSG D
0.047	81	Annual Grass, Good, HSG D

0.007	81	Annual Grass, Good, HSG D
0.129	81	Annual Grass, Good, HSG D
0.068	81	Annual Grass, Good, HSG D
0.141	81	Annual Grass, Good, HSG D
0.022	81	Annual Grass, Good, HSG D
0.032	81	Annual Grass, Good, HSG D
0.011	81	Annual Grass, Good, HSG D
0.024	81	Annual Grass, Good, HSG D
0.011	81	Annual Grass, Good, HSG D
0.039	65	Brush, Good, HSG C
0.127	65	Brush, Good, HSG C
0.089	82	Farmsteads, HSG C
0.246	75	Vineyard, Good, HSG C
0.224	75	Annual Grass, Good, HSG C
0.017	75	Annual Grass, Good, HSG C
0.003	98	Water Surface, HSG C
0.087	65	Brush, Good, HSG C
0.085	65	Brush, Good, HSG C
0.203	70	Woods, Good, HSG C
27.234	76	Weighted Average
27.202		99.88% Pervious Area
0.031		0.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	66	0.0700	0.14		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 4.42"
4.8	408	0.0800	1.41		**Shallow Concentrated Flow, Shallow 1 - Woodland** Woodland Kv= 5.0 fps
2.9	1,574	0.0400	9.03	108.35	**Trap/Vee/Rect Channel Flow, Stream** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.035
15.6	2,048	Total			

Subcatchment WS-2: Subcat WS-2



Summary for Subcatchment WS-3: Subcat WS-3

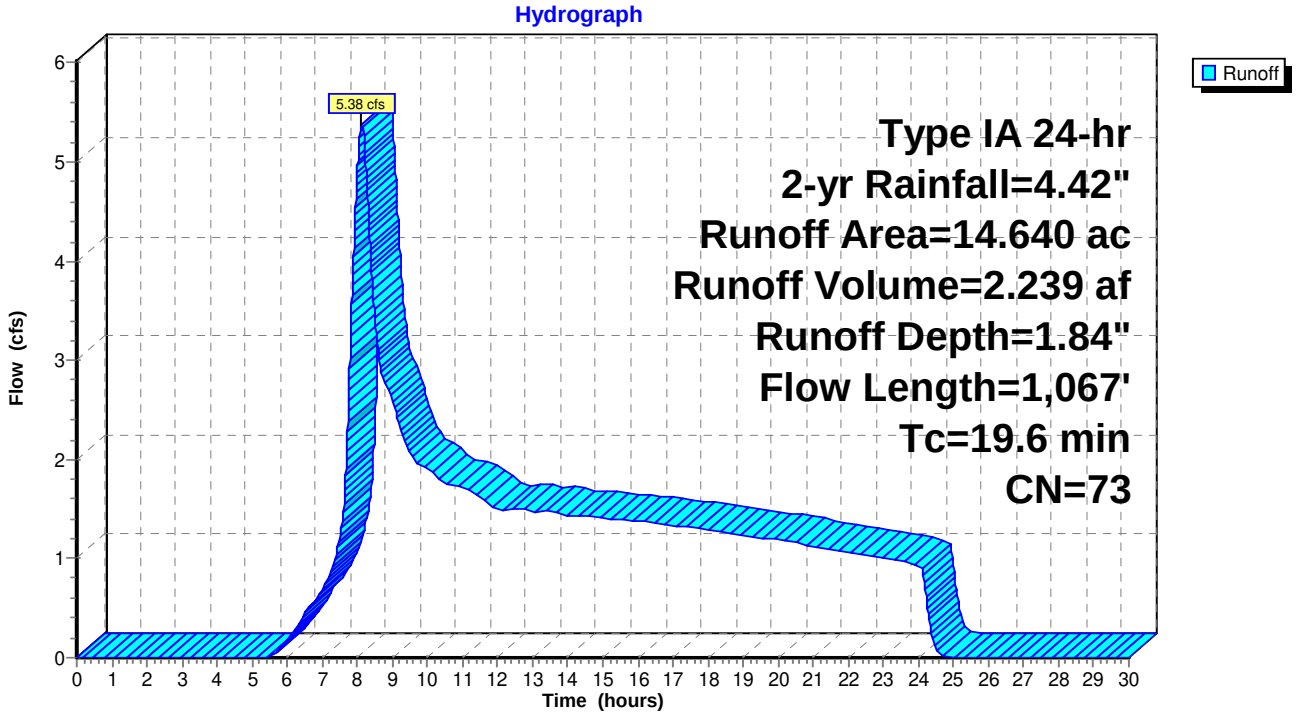
Runoff = 5.38 cfs @ 8.13 hrs, Volume= 2.239 af, Depth= 1.84"
Routed to Reach 2R : Reach 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type IA 24-hr 2-yr Rainfall=4.42"

Area (ac)	CN	Description
0.049	81	Annual Grass, Good, HSG D
0.461	73	Brush, Good, HSG D
0.018	73	Brush, Good, HSG D
0.957	73	Brush, Good, HSG D
8.698	73	Brush, Good, HSG D
0.046	81	Annual Grass, Good, HSG D
0.093	81	Annual Grass, Good, HSG D
0.109	81	Annual Grass, Good, HSG D
0.703	81	Annual Grass, Good, HSG D
0.036	81	Annual Grass, Good, HSG D
0.048	81	Annual Grass, Good, HSG D
0.012	81	Annual Grass, Good, HSG D
0.000	81	Annual Grass, Good, HSG D
0.046	81	Annual Grass, Good, HSG D
0.202	65	Brush, Good, HSG C
0.066	70	Woods, Good, HSG C
0.261	75	Annual Grass, Good, HSG C
0.043	75	Annual Grass, Good, HSG C
1.199	65	Brush, Good, HSG C
0.721	70	Woods, Good, HSG C
0.006	70	Woods, Good, HSG C
0.000	70	Woods, Good, HSG C
0.472	75	Annual Grass, Good, HSG C
0.394	75	Annual Grass, Good, HSG C
14.640	73	Weighted Average
14.640		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	61	0.0600	0.13		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 4.42"
11.5	912	0.0700	1.32		**Shallow Concentrated Flow, Shallow 1- Woodland** Woodland Kv= 5.0 fps
0.2	94	0.0300	7.82	93.83	**Trap/Vee/Rect Channel Flow, Stream** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.035
19.6	1,067	Total			

Subcatchment WS-3: Subcat WS-3



Summary for Reach 2R: Reach 1

Inflow Area = 14.640 ac, 0.00% Impervious, Inflow Depth = 1.84" for 2-yr event
Inflow = 5.38 cfs @ 8.13 hrs, Volume= 2.239 af
Outflow = 5.15 cfs @ 8.34 hrs, Volume= 2.239 af, Atten= 4%, Lag= 12.6 min
Routed to Link 1L : Outlet 2

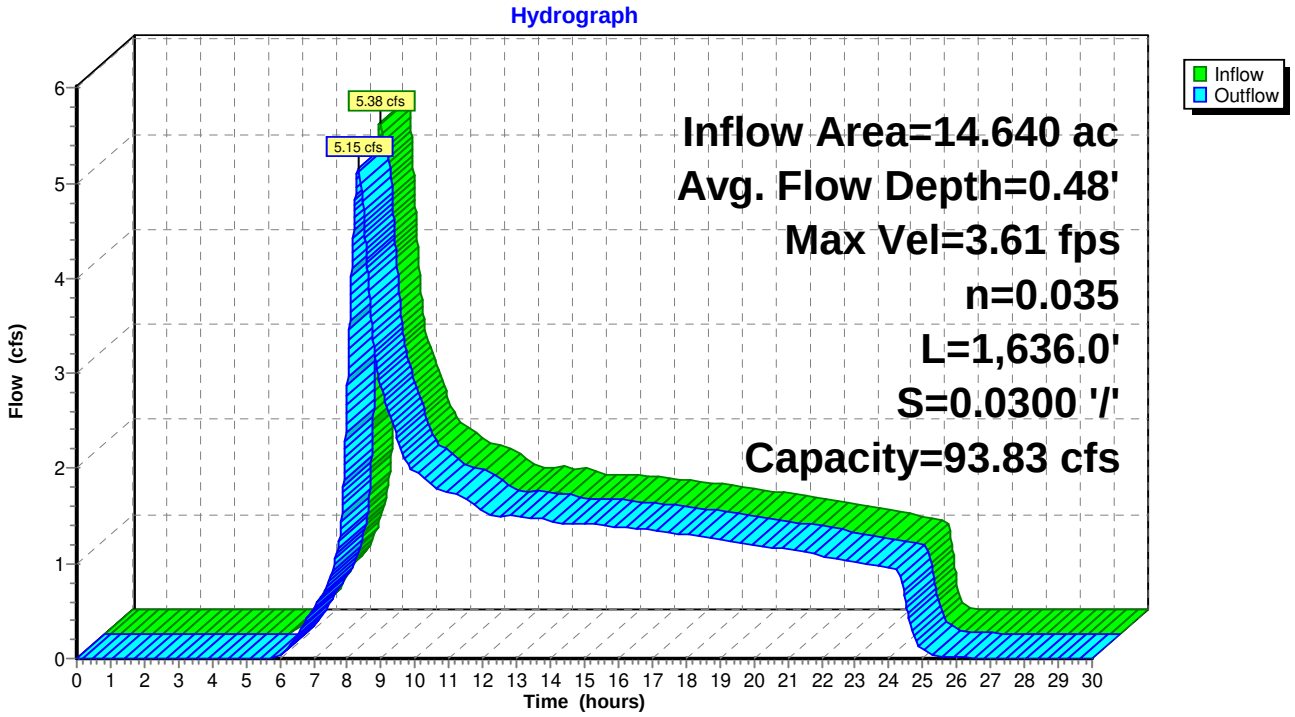
Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.61 fps, Min. Travel Time= 7.6 min
Avg. Velocity = 1.94 fps, Avg. Travel Time= 14.0 min

Peak Storage= 2,336 cf @ 8.21 hrs
Average Depth at Peak Storage= 0.48' , Surface Width= 3.93'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 93.83 cfs

2.00' x 2.00' deep channel, n= 0.035
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 1,636.0' Slope= 0.0300 '/'
Inlet Invert= 0.00', Outlet Invert= -49.08'



Reach 2R: Reach 1

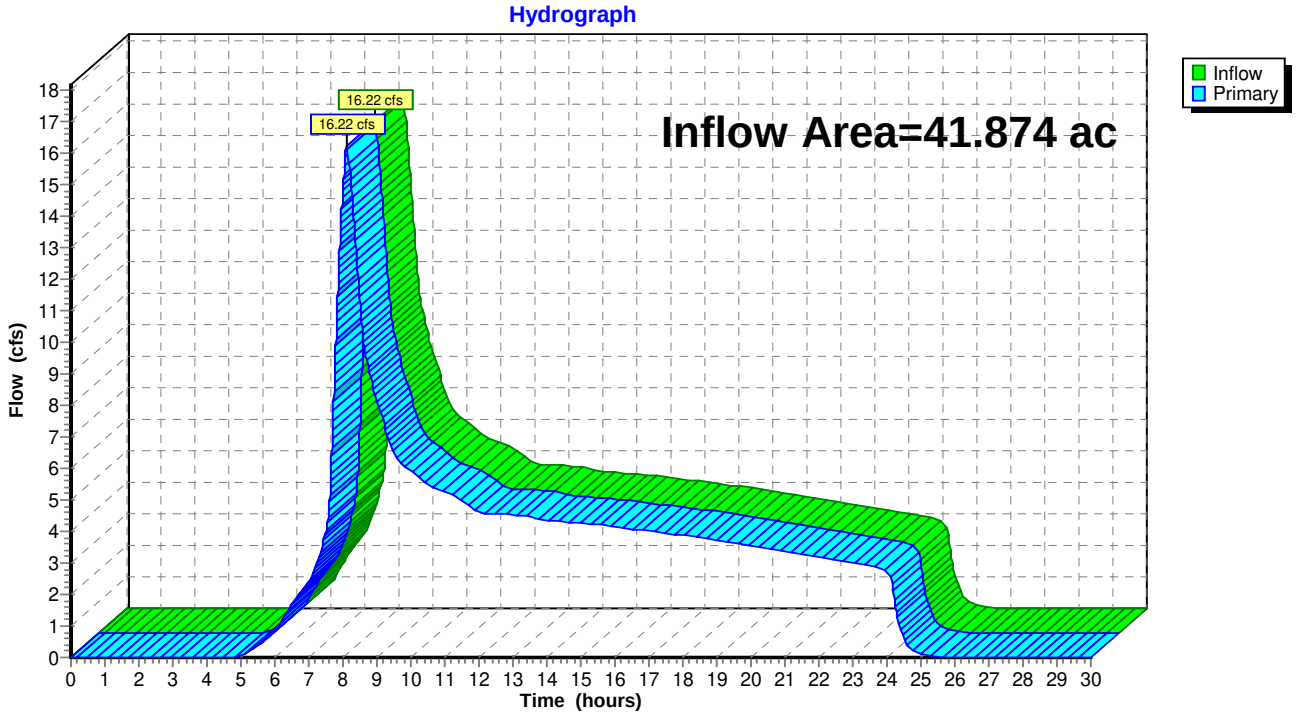


Summary for Link 1L: Outlet 2

Inflow Area = 41.874 ac, 0.08% Impervious, Inflow Depth = 1.99" for 2-yr event
Inflow = 16.22 cfs @ 8.13 hrs, Volume= 6.928 af
Primary = 16.22 cfs @ 8.13 hrs, Volume= 6.928 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link 1L: Outlet 2

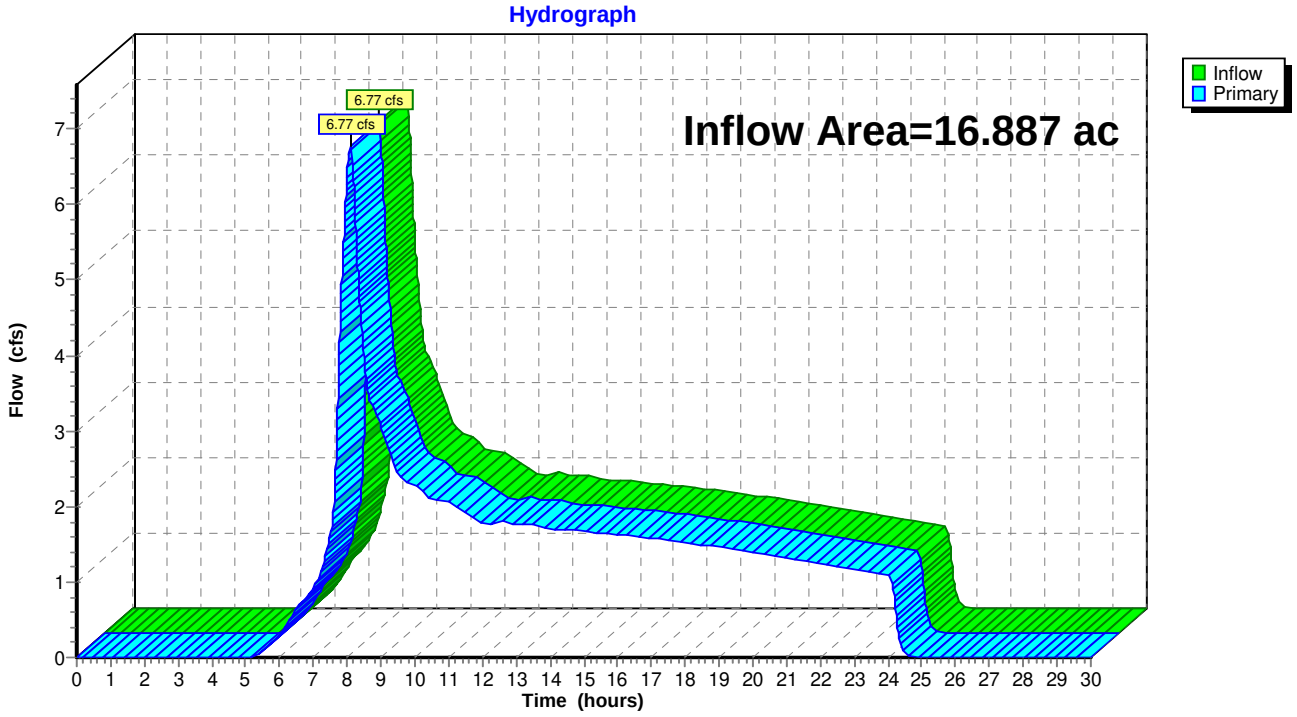


Summary for Link 2L: Outlet 1

Inflow Area = 16.887 ac, 2.89% Impervious, Inflow Depth = 1.91" for 2-yr event
Inflow = 6.77 cfs @ 8.09 hrs, Volume= 2.689 af
Primary = 6.77 cfs @ 8.09 hrs, Volume= 2.689 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link 2L: Outlet 1



Summary for Subcatchment WS-1: Subcat WS-1

Runoff = 14.56 cfs @ 8.09 hrs, Volume= 5.188 af, Depth= 3.69"
Routed to Link 2L : Outlet 1

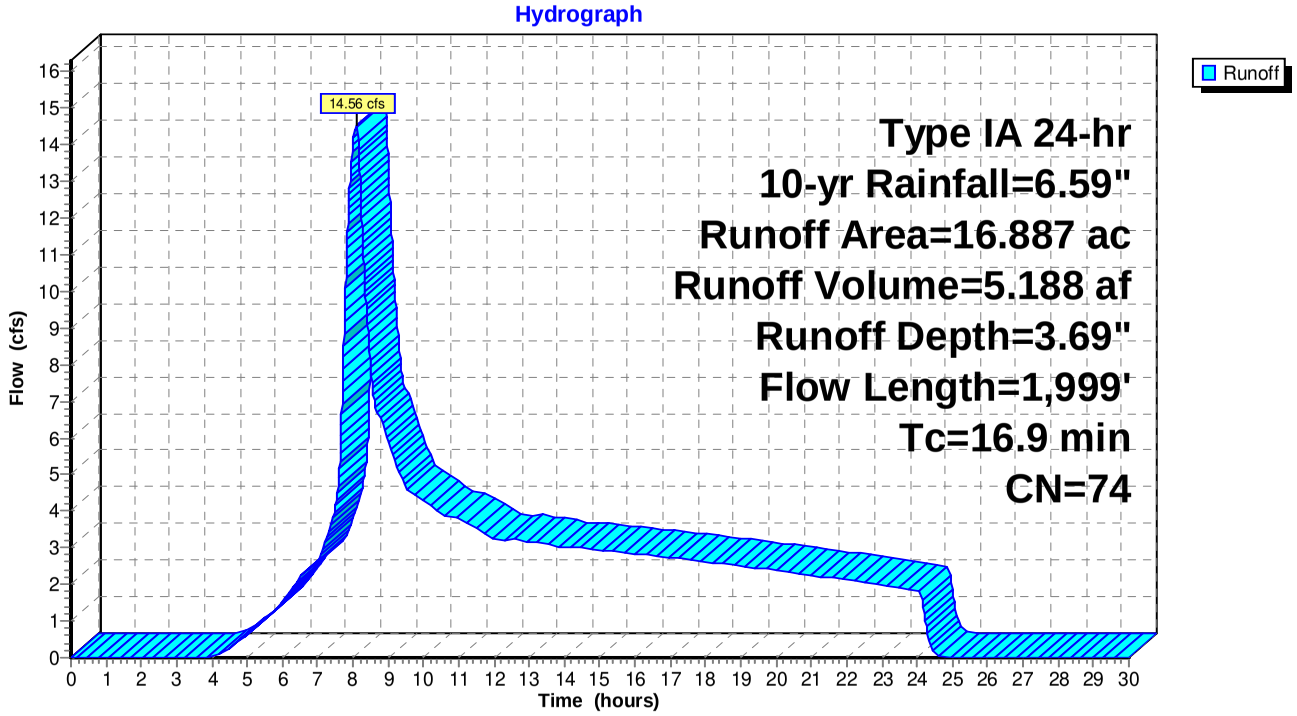
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-yr Rainfall=6.59"

Area (ac)	CN	Description
0.049	77	Woods, Good, HSG D
0.126	98	Water Surface, HSG D
0.067	89	Dirt roads, HSG D
0.008	73	Brush, Good, HSG D
0.055	73	Brush, Good, HSG D
0.364	73	Brush, Good, HSG D
0.058	73	Brush, Good, HSG D
0.050	73	Brush, Good, HSG D
0.223	73	Brush, Good, HSG D
0.031	77	Woods, Good, HSG D
0.032	77	Woods, Good, HSG D
0.483	77	Woods, Good, HSG D
0.019	77	Woods, Good, HSG D
0.041	77	Woods, Good, HSG D
0.211	77	Woods, Good, HSG D
0.445	77	Woods, Good, HSG D
0.000	77	Woods, Good, HSG D
0.021	91	Gravel Roads, HSG D
0.009	91	Gravel Roads, HSG D
0.012	91	Gravel Roads, HSG D
0.024	81	Annual Grass, Good, HSG D
0.081	81	Annual Grass, Good, HSG D
0.216	81	Annual Grass, Good, HSG D
0.002	81	Annual Grass, Good, HSG D
0.419	81	Annual Grass, Good, HSG D
0.484	81	Annual Grass, Good, HSG D
0.538	81	Annual Grass, Good, HSG D
0.113	81	Annual Grass, Good, HSG D
0.011	81	Annual Grass, Good, HSG D
0.005	81	Annual Grass, Good, HSG D
0.029	81	Annual Grass, Good, HSG D
0.005	77	Woods, Good, HSG D
0.022	77	Woods, Good, HSG D
0.015	73	Brush, Good, HSG D
0.011	73	Brush, Good, HSG D
0.240	70	Woods, Good, HSG C
0.362	98	Water Surface, HSG C
0.320	65	Brush, Good, HSG C
0.201	65	Brush, Good, HSG C
0.000	65	Brush, Good, HSG C
0.047	65	Brush, Good, HSG C
0.137	70	Woods, Good, HSG C
0.030	70	Woods, Good, HSG C
0.150	70	Woods, Good, HSG C
0.061	70	Woods, Good, HSG C
0.061	70	Woods, Good, HSG C
1.478	70	Woods, Good, HSG C
1.622	70	Woods, Good, HSG C
1.920	70	Woods, Good, HSG C
1.216	70	Woods, Good, HSG C

0.045	70	Woods, Good, HSG C
0.278	70	Woods, Good, HSG C
0.045	82	Farmsteads, HSG C
0.091	89	Gravel Roads, HSG C
0.316	75	Annual Grass, Good, HSG C
0.069	75	Annual Grass, Good, HSG C
0.434	75	Annual Grass, Good, HSG C
0.058	75	Annual Grass, Good, HSG C
0.005	75	Annual Grass, Good, HSG C
0.560	75	Annual Grass, Good, HSG C
1.730	75	Annual Grass, Good, HSG C
0.034	75	Annual Grass, Good, HSG C
0.100	75	Annual Grass, Good, HSG C
0.884	75	Annual Grass, Good, HSG C
0.115	75	Annual Grass, Good, HSG C
16.887	74	Weighted Average
16.399		97.11% Pervious Area
0.488		2.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	93	0.0500	0.20		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 4.42"
7.1	734	0.0600	1.71		**Shallow Concentrated Flow, Shallow - Short Grass** Short Grass Pasture Kv= 7.0 fps
1.9	1,172	0.0500	10.09	121.14	**Trap/Vee/Rect Channel Flow, Stream** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.035
16.9	1,999	Total			

Subcatchment WS-1: Subcat WS-1



Summary for Subcatchment WS-2: Subcat WS-2

Runoff = 25.48 cfs @ 8.06 hrs, Volume= 8.838 af, Depth= 3.89"
Routed to Link 1L : Outlet 2

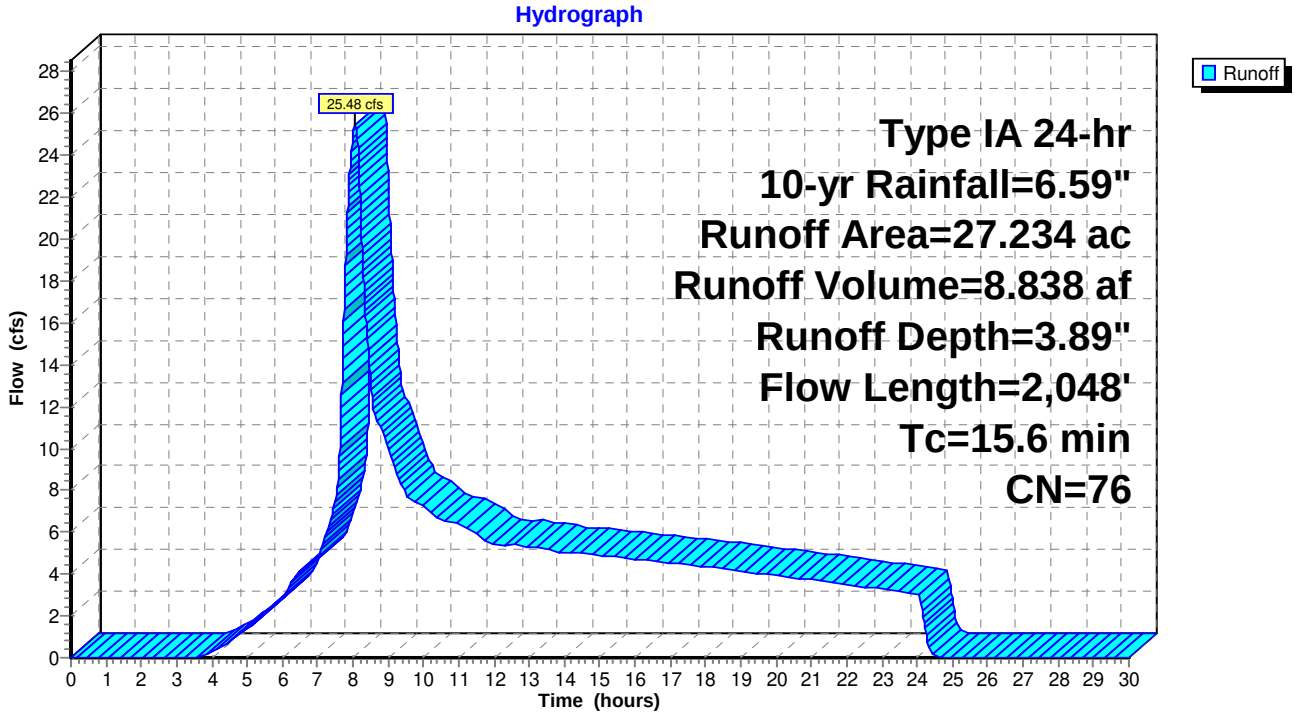
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-yr Rainfall=6.59"

Area (ac)	CN	Description
0.029	98	Water Surface, HSG D
0.050	94	Fallow, bare soil, HSG D
0.324	73	Brush, Good, HSG D
0.067	81	Annual Grass, Good, HSG D
0.072	81	Annual Grass, Good, HSG D
1.886	73	Brush, Good, HSG D
0.003	73	Brush, Good, HSG D
0.009	73	Brush, Good, HSG D
0.091	73	Brush, Good, HSG D
10.398	73	Brush, Good, HSG D
0.026	73	Brush, Good, HSG D
0.354	73	Brush, Good, HSG D
0.138	73	Brush, Good, HSG D
0.259	73	Brush, Good, HSG D
0.162	73	Brush, Good, HSG D
0.281	73	Brush, Good, HSG D
0.081	73	Brush, Good, HSG D
0.581	73	Brush, Good, HSG D
0.010	73	Brush, Good, HSG D
0.116	73	Brush, Good, HSG D
0.554	73	Brush, Good, HSG D
0.001	73	Brush, Good, HSG D
0.001	73	Brush, Good, HSG D
1.513	77	Woods, Good, HSG D
0.124	77	Woods, Good, HSG D
0.220	77	Woods, Good, HSG D
0.397	77	Woods, Good, HSG D
0.053	77	Woods, Good, HSG D
1.817	77	Woods, Good, HSG D
1.143	77	Woods, Good, HSG D
0.664	77	Woods, Good, HSG D
0.006	86	Farmsteads, HSG D
0.055	86	Farmsteads, HSG D
0.053	86	Farmsteads, HSG D
0.510	81	Vineyard, Good, HSG D
0.493	91	Gravel Roads, HSG D
0.000	81	Annual Grass, Good, HSG D
0.045	81	Annual Grass, Good, HSG D
0.107	81	Annual Grass, Good, HSG D
0.043	81	Annual Grass, Good, HSG D
2.120	81	Annual Grass, Good, HSG D
0.380	81	Annual Grass, Good, HSG D
0.004	81	Annual Grass, Good, HSG D
0.178	81	Annual Grass, Good, HSG D
0.045	81	Annual Grass, Good, HSG D
0.096	81	Annual Grass, Good, HSG D
0.007	81	Annual Grass, Good, HSG D
0.019	81	Annual Grass, Good, HSG D
0.037	81	Annual Grass, Good, HSG D
0.047	81	Annual Grass, Good, HSG D

0.007	81	Annual Grass, Good, HSG D
0.129	81	Annual Grass, Good, HSG D
0.068	81	Annual Grass, Good, HSG D
0.141	81	Annual Grass, Good, HSG D
0.022	81	Annual Grass, Good, HSG D
0.032	81	Annual Grass, Good, HSG D
0.011	81	Annual Grass, Good, HSG D
0.024	81	Annual Grass, Good, HSG D
0.011	81	Annual Grass, Good, HSG D
0.039	65	Brush, Good, HSG C
0.127	65	Brush, Good, HSG C
0.089	82	Farmsteads, HSG C
0.246	75	Vineyard, Good, HSG C
0.224	75	Annual Grass, Good, HSG C
0.017	75	Annual Grass, Good, HSG C
0.003	98	Water Surface, HSG C
0.087	65	Brush, Good, HSG C
0.085	65	Brush, Good, HSG C
0.203	70	Woods, Good, HSG C
27.234	76	Weighted Average
27.202		99.88% Pervious Area
0.031		0.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	66	0.0700	0.14		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 4.42"
4.8	408	0.0800	1.41		**Shallow Concentrated Flow, Shallow 1 - Woodland** Woodland Kv= 5.0 fps
2.9	1,574	0.0400	9.03	108.35	**Trap/Vee/Rect Channel Flow, Stream** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.035
15.6	2,048	Total			

Subcatchment WS-2: Subcat WS-2



Summary for Subcatchment WS-3: Subcat WS-3

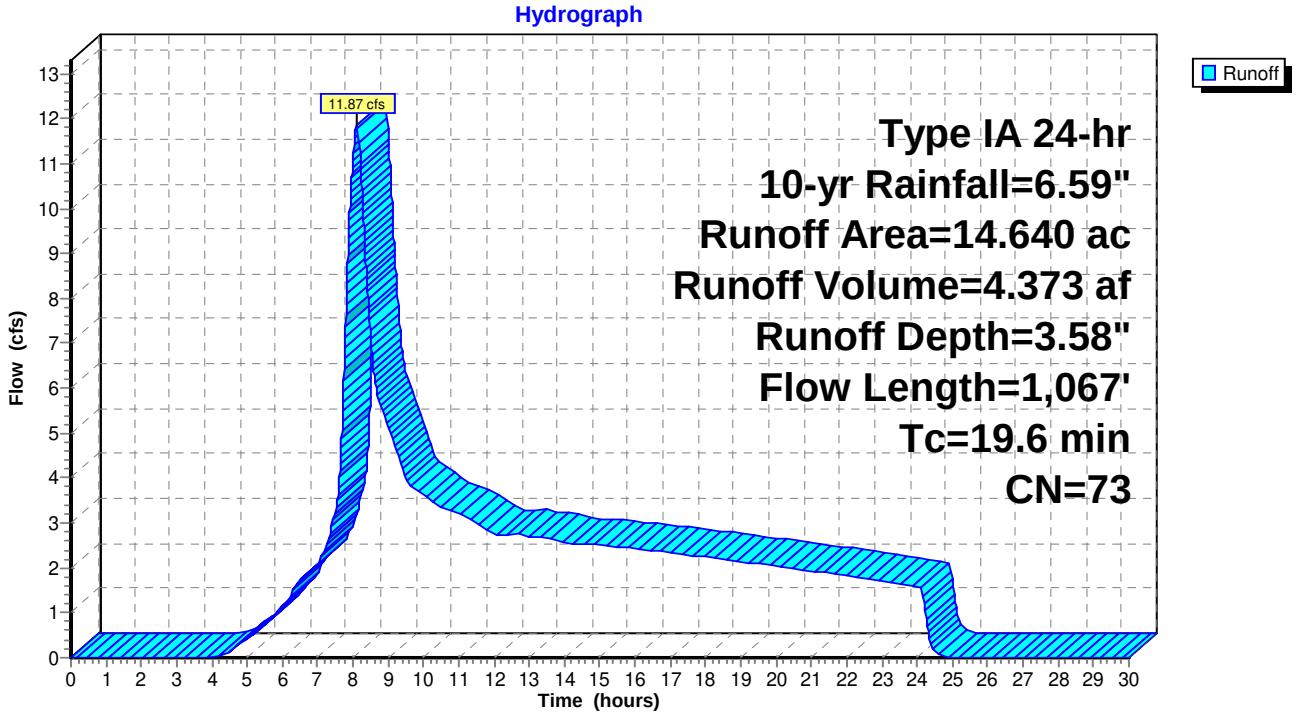
Runoff = 11.87 cfs @ 8.12 hrs, Volume= 4.373 af, Depth= 3.58"
Routed to Reach 2R : Reach 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-yr Rainfall=6.59"

Area (ac)	CN	Description
0.049	81	Annual Grass, Good, HSG D
0.461	73	Brush, Good, HSG D
0.018	73	Brush, Good, HSG D
0.957	73	Brush, Good, HSG D
8.698	73	Brush, Good, HSG D
0.046	81	Annual Grass, Good, HSG D
0.093	81	Annual Grass, Good, HSG D
0.109	81	Annual Grass, Good, HSG D
0.703	81	Annual Grass, Good, HSG D
0.036	81	Annual Grass, Good, HSG D
0.048	81	Annual Grass, Good, HSG D
0.012	81	Annual Grass, Good, HSG D
0.000	81	Annual Grass, Good, HSG D
0.046	81	Annual Grass, Good, HSG D
0.202	65	Brush, Good, HSG C
0.066	70	Woods, Good, HSG C
0.261	75	Annual Grass, Good, HSG C
0.043	75	Annual Grass, Good, HSG C
1.199	65	Brush, Good, HSG C
0.721	70	Woods, Good, HSG C
0.006	70	Woods, Good, HSG C
0.000	70	Woods, Good, HSG C
0.472	75	Annual Grass, Good, HSG C
0.394	75	Annual Grass, Good, HSG C
14.640	73	Weighted Average
14.640		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	61	0.0600	0.13		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 4.42"
11.5	912	0.0700	1.32		**Shallow Concentrated Flow, Shallow 1- Woodland** Woodland Kv= 5.0 fps
0.2	94	0.0300	7.82	93.83	**Trap/Vee/Rect Channel Flow, Stream** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.035
19.6	1,067	Total			

Subcatchment WS-3: Subcat WS-3



Summary for Reach 2R: Reach 1

Inflow Area = 14.640 ac, 0.00% Impervious, Inflow Depth = 3.58" for 10-yr event
Inflow = 11.87 cfs @ 8.12 hrs, Volume= 4.373 af
Outflow = 11.56 cfs @ 8.28 hrs, Volume= 4.373 af, Atten= 3%, Lag= 9.5 min
Routed to Link 1L : Outlet 2

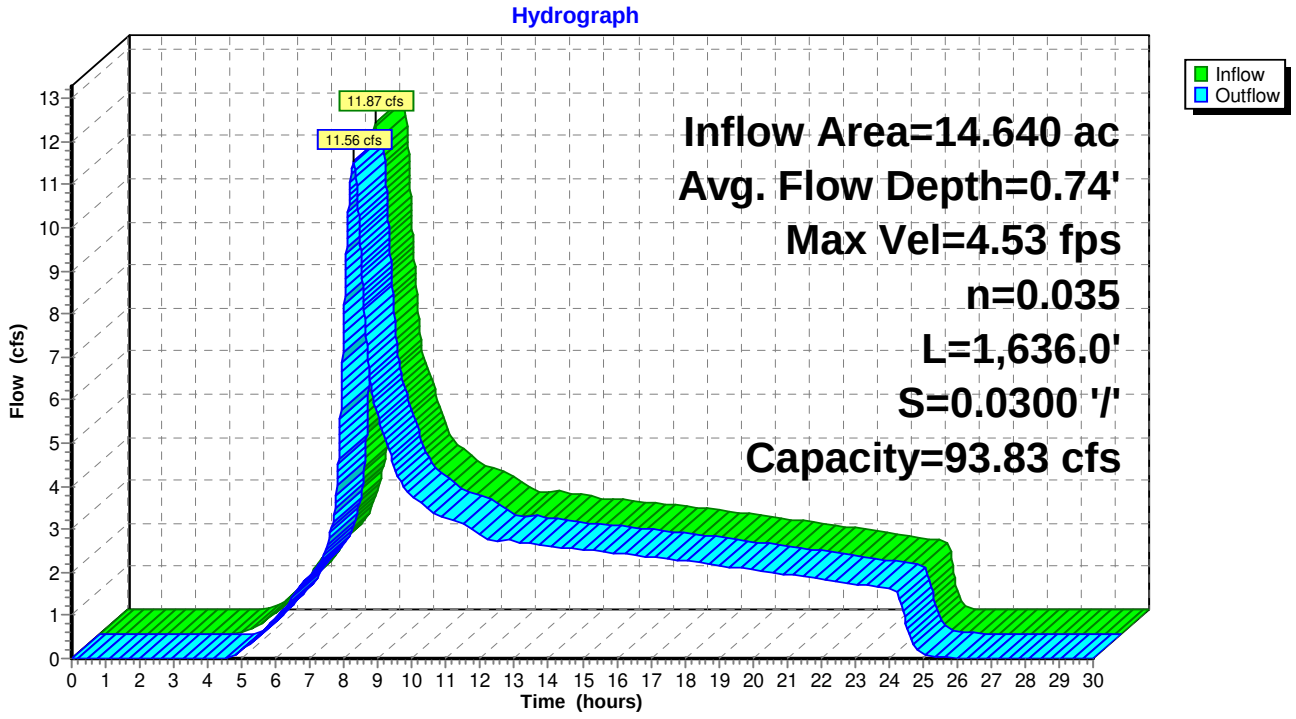
Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.53 fps, Min. Travel Time= 6.0 min
Avg. Velocity = 2.32 fps, Avg. Travel Time= 11.7 min

Peak Storage= 4,178 cf @ 8.18 hrs
Average Depth at Peak Storage= 0.74' , Surface Width= 4.94'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 93.83 cfs

2.00' x 2.00' deep channel, n= 0.035
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 1,636.0' Slope= 0.0300 '/'
Inlet Invert= 0.00', Outlet Invert= -49.08'



Reach 2R: Reach 1

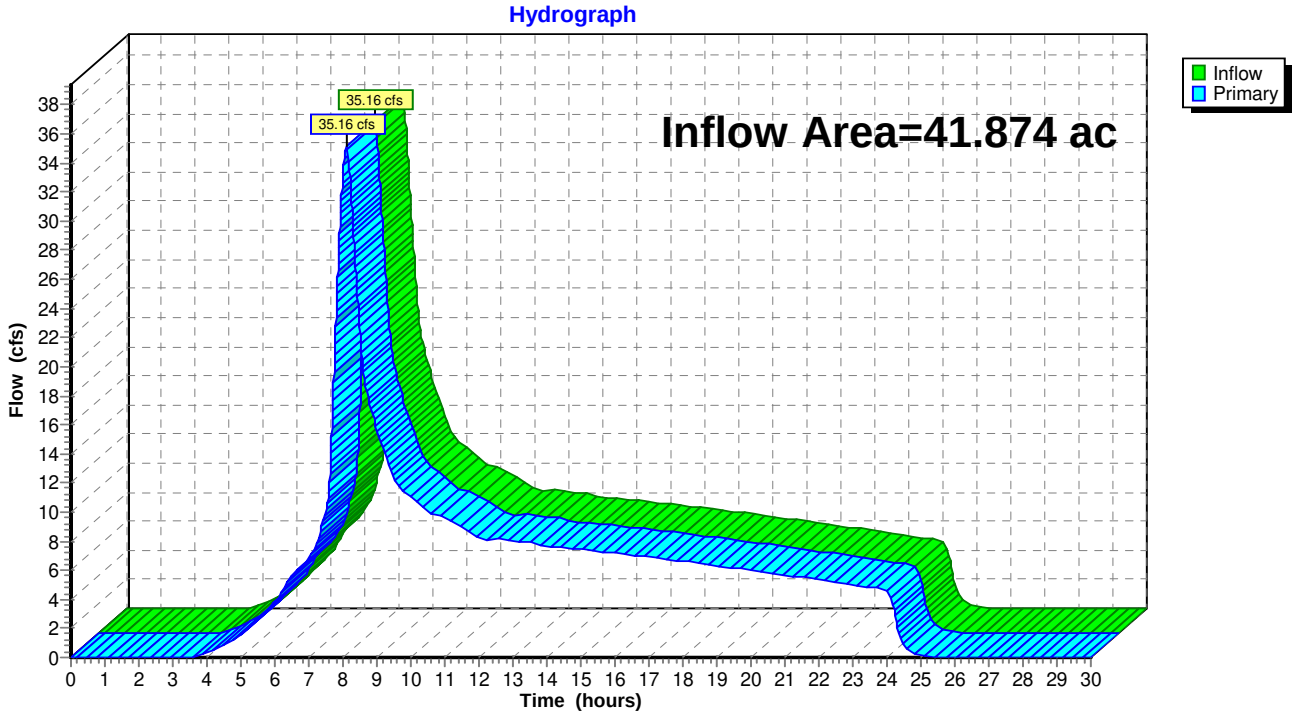


Summary for Link 1L: Outlet 2

Inflow Area = 41.874 ac, 0.08% Impervious, Inflow Depth = 3.79" for 10-yr event
Inflow = 35.16 cfs @ 8.10 hrs, Volume= 13.211 af
Primary = 35.16 cfs @ 8.10 hrs, Volume= 13.211 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link 1L: Outlet 2

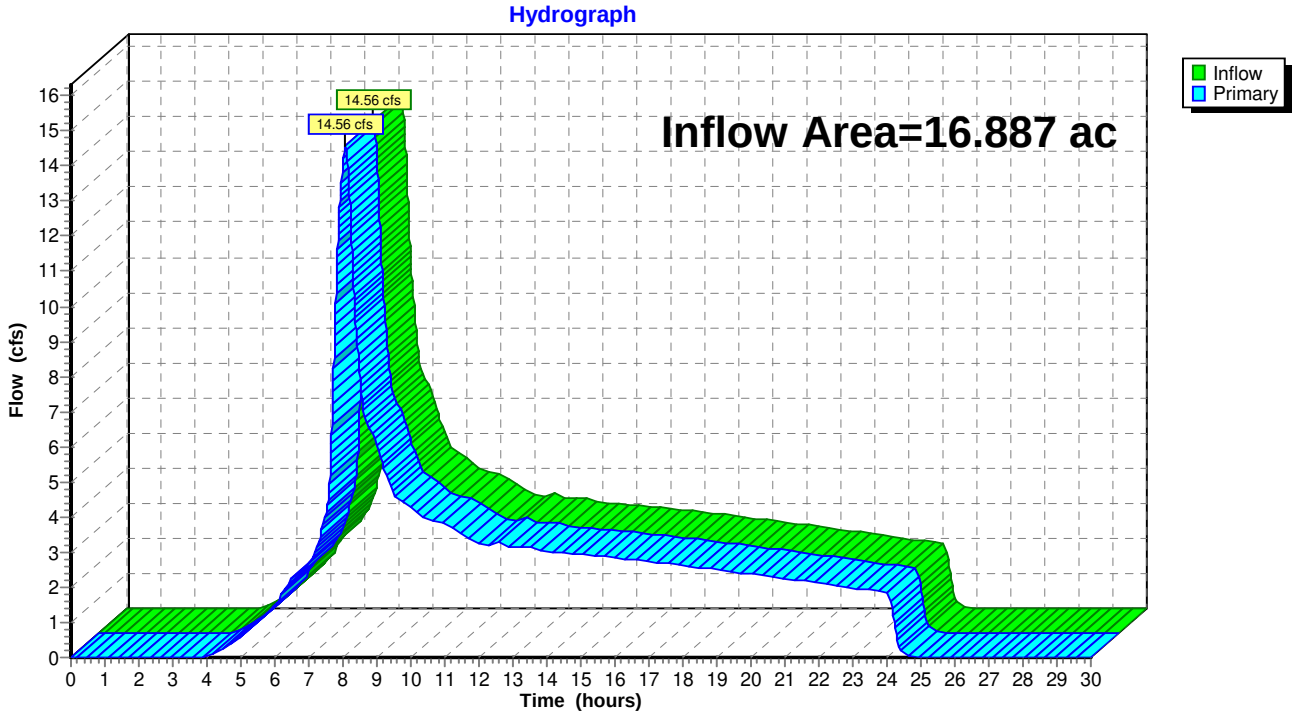


Summary for Link 2L: Outlet 1

Inflow Area = 16.887 ac, 2.89% Impervious, Inflow Depth = 3.69" for 10-yr event
Inflow = 14.56 cfs @ 8.09 hrs, Volume= 5.188 af
Primary = 14.56 cfs @ 8.09 hrs, Volume= 5.188 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link 2L: Outlet 1



Summary for Subcatchment WS-1: Subcat WS-1

Runoff = 23.20 cfs @ 8.06 hrs, Volume= 7.934 af, Depth= 5.64"
Routed to Link 2L : Outlet 1

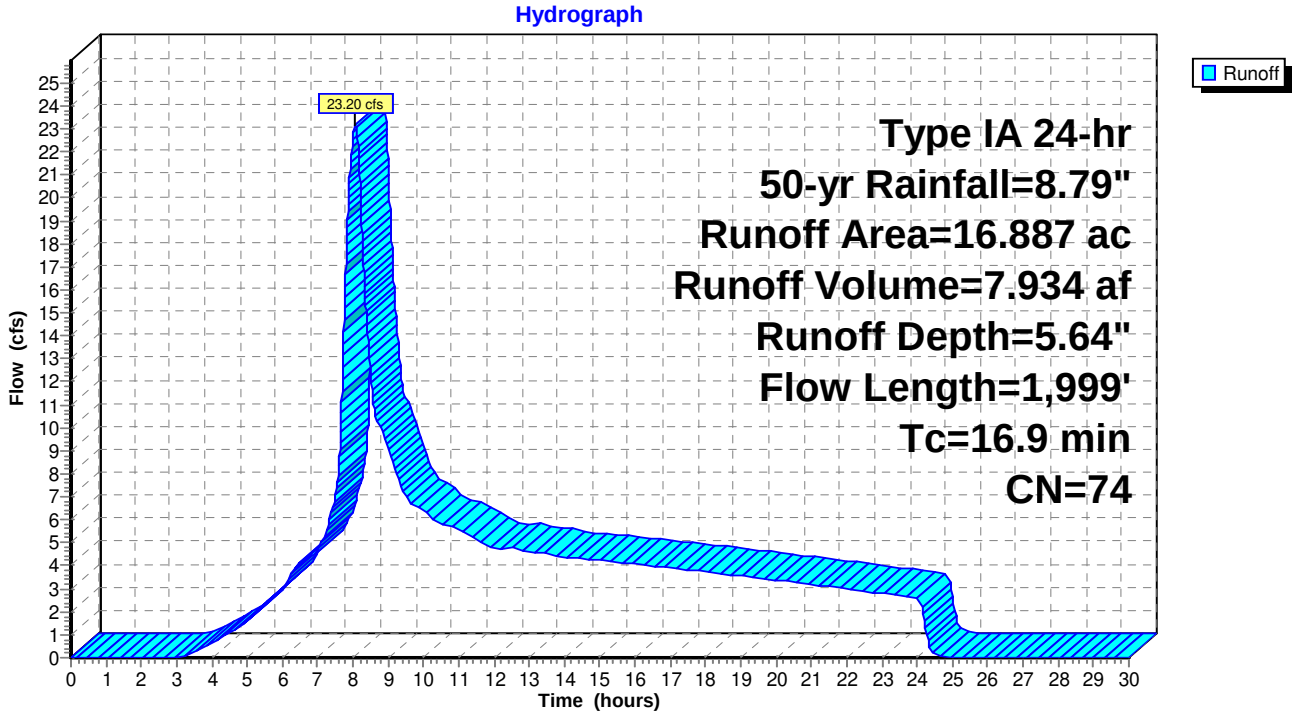
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type IA 24-hr 50-yr Rainfall=8.79"

Area (ac)	CN	Description
0.049	77	Woods, Good, HSG D
0.126	98	Water Surface, HSG D
0.067	89	Dirt roads, HSG D
0.008	73	Brush, Good, HSG D
0.055	73	Brush, Good, HSG D
0.364	73	Brush, Good, HSG D
0.058	73	Brush, Good, HSG D
0.050	73	Brush, Good, HSG D
0.223	73	Brush, Good, HSG D
0.031	77	Woods, Good, HSG D
0.032	77	Woods, Good, HSG D
0.483	77	Woods, Good, HSG D
0.019	77	Woods, Good, HSG D
0.041	77	Woods, Good, HSG D
0.211	77	Woods, Good, HSG D
0.445	77	Woods, Good, HSG D
0.000	77	Woods, Good, HSG D
0.021	91	Gravel Roads, HSG D
0.009	91	Gravel Roads, HSG D
0.012	91	Gravel Roads, HSG D
0.024	81	Annual Grass, Good, HSG D
0.081	81	Annual Grass, Good, HSG D
0.216	81	Annual Grass, Good, HSG D
0.002	81	Annual Grass, Good, HSG D
0.419	81	Annual Grass, Good, HSG D
0.484	81	Annual Grass, Good, HSG D
0.538	81	Annual Grass, Good, HSG D
0.113	81	Annual Grass, Good, HSG D
0.011	81	Annual Grass, Good, HSG D
0.005	81	Annual Grass, Good, HSG D
0.029	81	Annual Grass, Good, HSG D
0.005	77	Woods, Good, HSG D
0.022	77	Woods, Good, HSG D
0.015	73	Brush, Good, HSG D
0.011	73	Brush, Good, HSG D
0.240	70	Woods, Good, HSG C
0.362	98	Water Surface, HSG C
0.320	65	Brush, Good, HSG C
0.201	65	Brush, Good, HSG C
0.000	65	Brush, Good, HSG C
0.047	65	Brush, Good, HSG C
0.137	70	Woods, Good, HSG C
0.030	70	Woods, Good, HSG C
0.150	70	Woods, Good, HSG C
0.061	70	Woods, Good, HSG C
0.061	70	Woods, Good, HSG C
1.478	70	Woods, Good, HSG C
1.622	70	Woods, Good, HSG C
1.920	70	Woods, Good, HSG C
1.216	70	Woods, Good, HSG C

0.045	70	Woods, Good, HSG C
0.278	70	Woods, Good, HSG C
0.045	82	Farmsteads, HSG C
0.091	89	Gravel Roads, HSG C
0.316	75	Annual Grass, Good, HSG C
0.069	75	Annual Grass, Good, HSG C
0.434	75	Annual Grass, Good, HSG C
0.058	75	Annual Grass, Good, HSG C
0.005	75	Annual Grass, Good, HSG C
0.560	75	Annual Grass, Good, HSG C
1.730	75	Annual Grass, Good, HSG C
0.034	75	Annual Grass, Good, HSG C
0.100	75	Annual Grass, Good, HSG C
0.884	75	Annual Grass, Good, HSG C
0.115	75	Annual Grass, Good, HSG C
16.887	74	Weighted Average
16.399		97.11% Pervious Area
0.488		2.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	93	0.0500	0.20		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 4.42"
7.1	734	0.0600	1.71		**Shallow Concentrated Flow, Shallow - Short Grass** Short Grass Pasture Kv= 7.0 fps
1.9	1,172	0.0500	10.09	121.14	**Trap/Vee/Rect Channel Flow, Stream** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.035
16.9	1,999	Total			

Subcatchment WS-1: Subcat WS-1



Summary for Subcatchment WS-2: Subcat WS-2

Runoff = 39.78 cfs @ 8.06 hrs, Volume= 13.349 af, Depth= 5.88"
Routed to Link 1L : Outlet 2

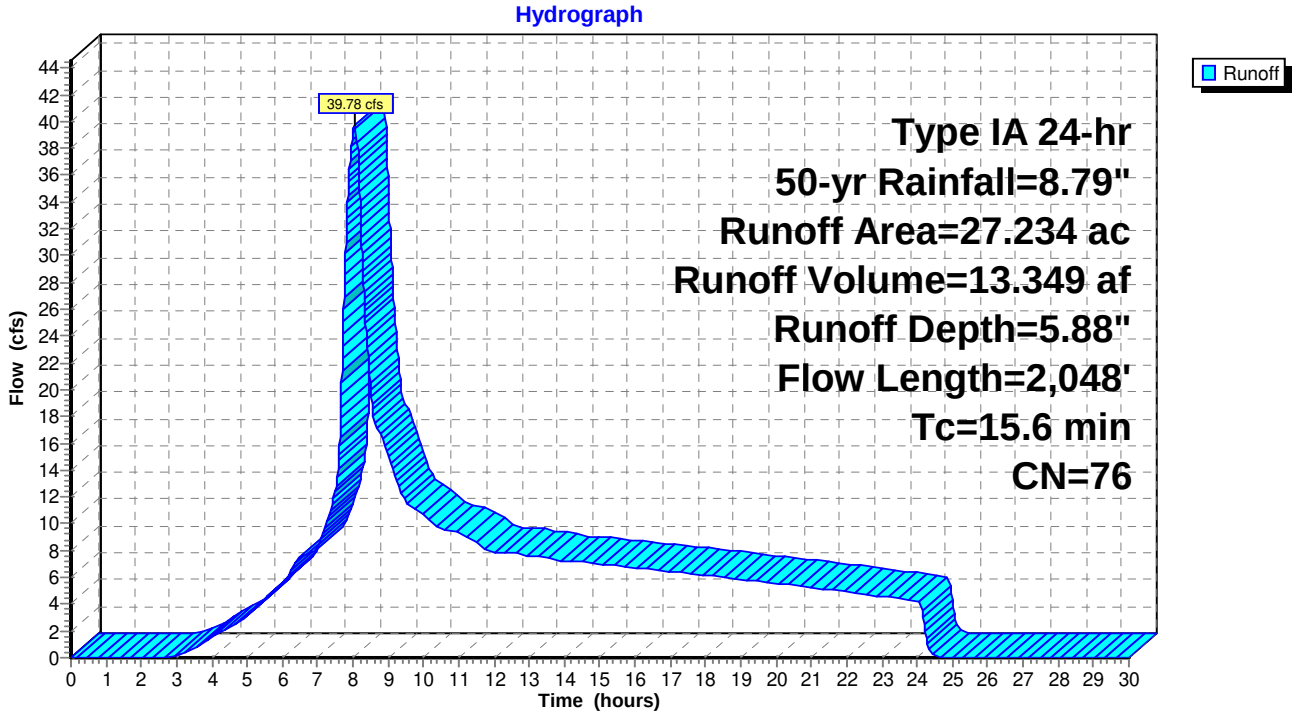
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type IA 24-hr 50-yr Rainfall=8.79"

Area (ac)	CN	Description
0.029	98	Water Surface, HSG D
0.050	94	Fallow, bare soil, HSG D
0.324	73	Brush, Good, HSG D
0.067	81	Annual Grass, Good, HSG D
0.072	81	Annual Grass, Good, HSG D
1.886	73	Brush, Good, HSG D
0.003	73	Brush, Good, HSG D
0.009	73	Brush, Good, HSG D
0.091	73	Brush, Good, HSG D
10.398	73	Brush, Good, HSG D
0.026	73	Brush, Good, HSG D
0.354	73	Brush, Good, HSG D
0.138	73	Brush, Good, HSG D
0.259	73	Brush, Good, HSG D
0.162	73	Brush, Good, HSG D
0.281	73	Brush, Good, HSG D
0.081	73	Brush, Good, HSG D
0.581	73	Brush, Good, HSG D
0.010	73	Brush, Good, HSG D
0.116	73	Brush, Good, HSG D
0.554	73	Brush, Good, HSG D
0.001	73	Brush, Good, HSG D
0.001	73	Brush, Good, HSG D
1.513	77	Woods, Good, HSG D
0.124	77	Woods, Good, HSG D
0.220	77	Woods, Good, HSG D
0.397	77	Woods, Good, HSG D
0.053	77	Woods, Good, HSG D
1.817	77	Woods, Good, HSG D
1.143	77	Woods, Good, HSG D
0.664	77	Woods, Good, HSG D
0.006	86	Farmsteads, HSG D
0.055	86	Farmsteads, HSG D
0.053	86	Farmsteads, HSG D
0.510	81	Vineyard, Good, HSG D
0.493	91	Gravel Roads, HSG D
0.000	81	Annual Grass, Good, HSG D
0.045	81	Annual Grass, Good, HSG D
0.107	81	Annual Grass, Good, HSG D
0.043	81	Annual Grass, Good, HSG D
2.120	81	Annual Grass, Good, HSG D
0.380	81	Annual Grass, Good, HSG D
0.004	81	Annual Grass, Good, HSG D
0.178	81	Annual Grass, Good, HSG D
0.045	81	Annual Grass, Good, HSG D
0.096	81	Annual Grass, Good, HSG D
0.007	81	Annual Grass, Good, HSG D
0.019	81	Annual Grass, Good, HSG D
0.037	81	Annual Grass, Good, HSG D
0.047	81	Annual Grass, Good, HSG D

0.007	81	Annual Grass, Good, HSG D
0.129	81	Annual Grass, Good, HSG D
0.068	81	Annual Grass, Good, HSG D
0.141	81	Annual Grass, Good, HSG D
0.022	81	Annual Grass, Good, HSG D
0.032	81	Annual Grass, Good, HSG D
0.011	81	Annual Grass, Good, HSG D
0.024	81	Annual Grass, Good, HSG D
0.011	81	Annual Grass, Good, HSG D
0.039	65	Brush, Good, HSG C
0.127	65	Brush, Good, HSG C
0.089	82	Farmsteads, HSG C
0.246	75	Vineyard, Good, HSG C
0.224	75	Annual Grass, Good, HSG C
0.017	75	Annual Grass, Good, HSG C
0.003	98	Water Surface, HSG C
0.087	65	Brush, Good, HSG C
0.085	65	Brush, Good, HSG C
0.203	70	Woods, Good, HSG C
27.234	76	Weighted Average
27.202		99.88% Pervious Area
0.031		0.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	66	0.0700	0.14		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 4.42"
4.8	408	0.0800	1.41		**Shallow Concentrated Flow, Shallow 1 - Woodland** Woodland Kv= 5.0 fps
2.9	1,574	0.0400	9.03	108.35	**Trap/Vee/Rect Channel Flow, Stream** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.035
15.6	2,048	Total			

Subcatchment WS-2: Subcat WS-2



Summary for Subcatchment WS-3: Subcat WS-3

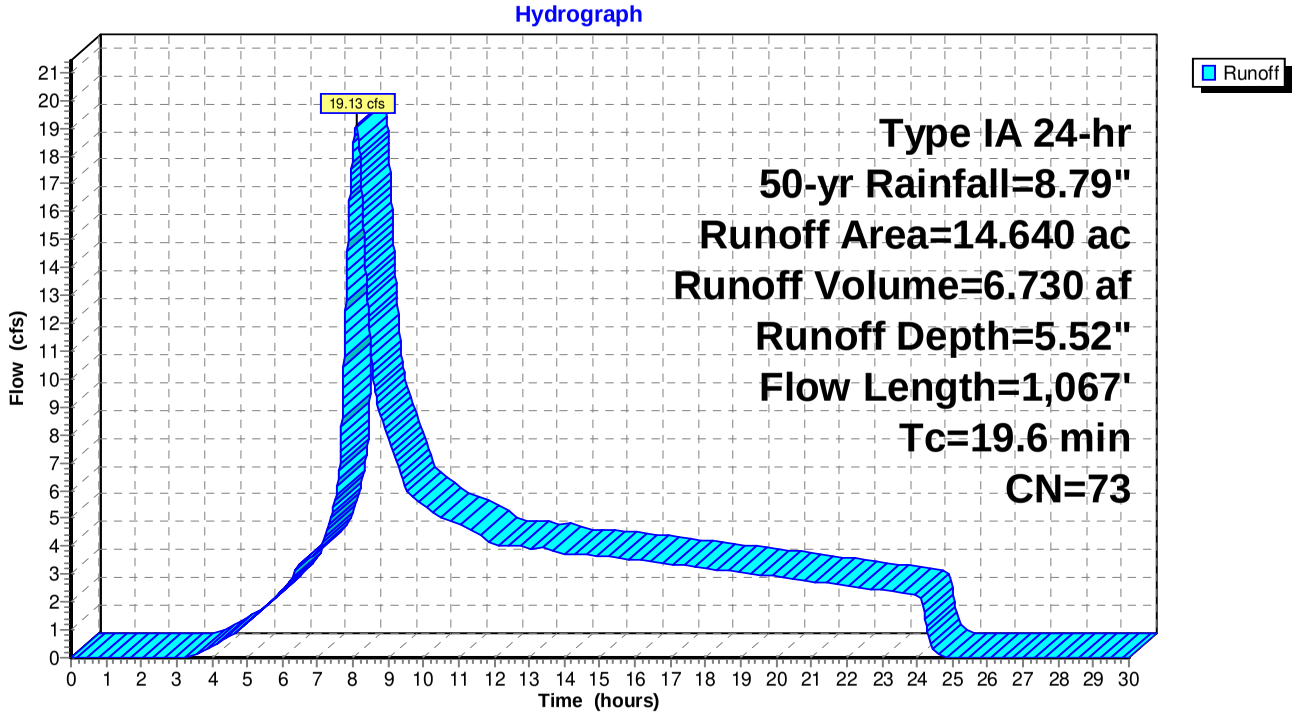
Runoff = 19.13 cfs @ 8.10 hrs, Volume= 6.730 af, Depth= 5.52"
Routed to Reach 2R : Reach 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type IA 24-hr 50-yr Rainfall=8.79"

Area (ac)	CN	Description
0.049	81	Annual Grass, Good, HSG D
0.461	73	Brush, Good, HSG D
0.018	73	Brush, Good, HSG D
0.957	73	Brush, Good, HSG D
8.698	73	Brush, Good, HSG D
0.046	81	Annual Grass, Good, HSG D
0.093	81	Annual Grass, Good, HSG D
0.109	81	Annual Grass, Good, HSG D
0.703	81	Annual Grass, Good, HSG D
0.036	81	Annual Grass, Good, HSG D
0.048	81	Annual Grass, Good, HSG D
0.012	81	Annual Grass, Good, HSG D
0.000	81	Annual Grass, Good, HSG D
0.046	81	Annual Grass, Good, HSG D
0.202	65	Brush, Good, HSG C
0.066	70	Woods, Good, HSG C
0.261	75	Annual Grass, Good, HSG C
0.043	75	Annual Grass, Good, HSG C
1.199	65	Brush, Good, HSG C
0.721	70	Woods, Good, HSG C
0.006	70	Woods, Good, HSG C
0.000	70	Woods, Good, HSG C
0.472	75	Annual Grass, Good, HSG C
0.394	75	Annual Grass, Good, HSG C
14.640	73	Weighted Average
14.640		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	61	0.0600	0.13		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 4.42"
11.5	912	0.0700	1.32		**Shallow Concentrated Flow, Shallow 1- Woodland** Woodland Kv= 5.0 fps
0.2	94	0.0300	7.82	93.83	**Trap/Vee/Rect Channel Flow, Stream** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.035
19.6	1,067	Total			

Subcatchment WS-3: Subcat WS-3



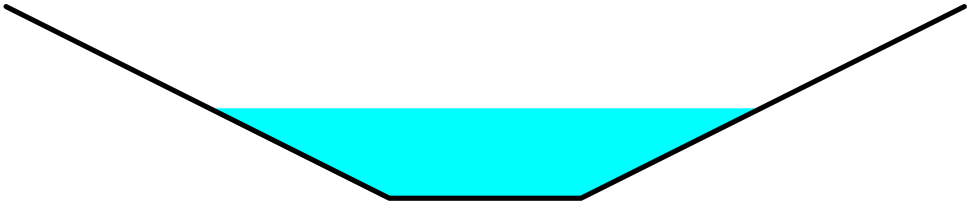
Summary for Reach 2R: Reach 1

Inflow Area = 14.640 ac, 0.00% Impervious, Inflow Depth = 5.52" for 50-yr event
Inflow = 19.13 cfs @ 8.10 hrs, Volume= 6.730 af
Outflow = 18.76 cfs @ 8.25 hrs, Volume= 6.730 af, Atten= 2%, Lag= 8.8 min
Routed to Link 1L : Outlet 2

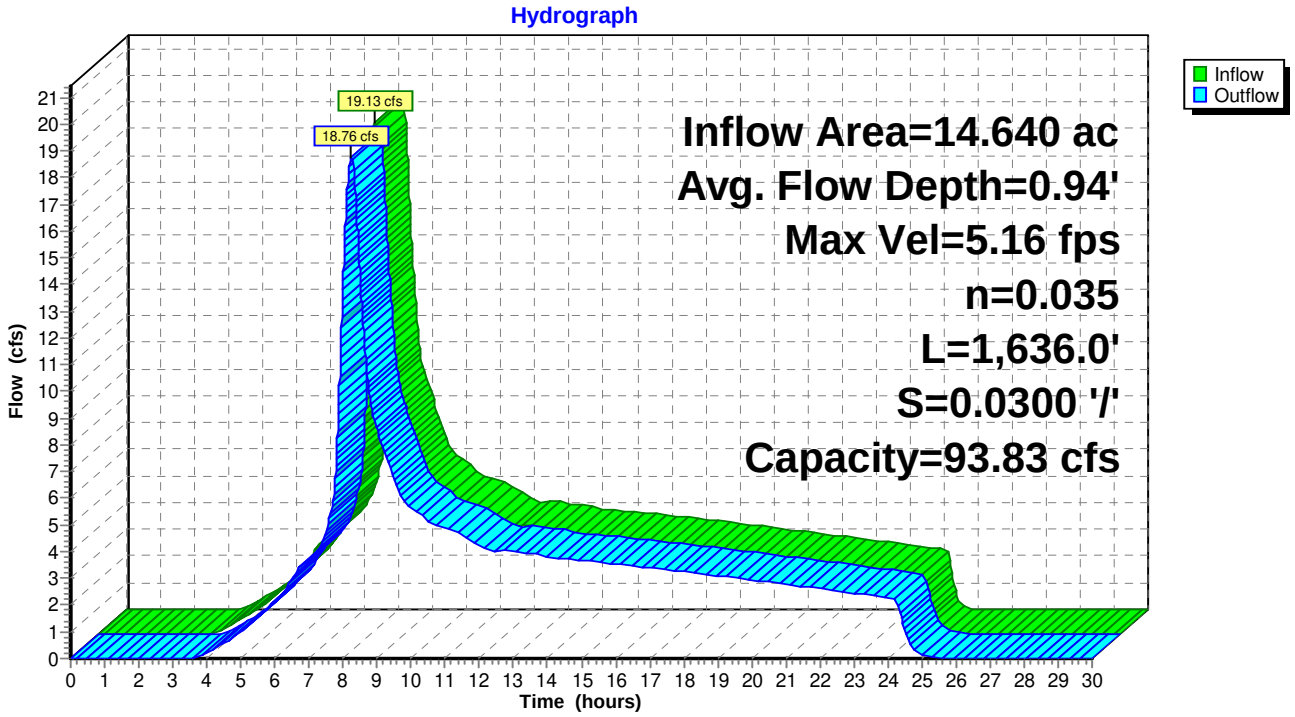
Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.16 fps, Min. Travel Time= 5.3 min
Avg. Velocity = 2.61 fps, Avg. Travel Time= 10.5 min

Peak Storage= 5,953 cf @ 8.16 hrs
Average Depth at Peak Storage= 0.94' , Surface Width= 5.75'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 93.83 cfs

2.00' x 2.00' deep channel, n= 0.035
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 1,636.0' Slope= 0.0300 '/'
Inlet Invert= 0.00', Outlet Invert= -49.08'



Reach 2R: Reach 1

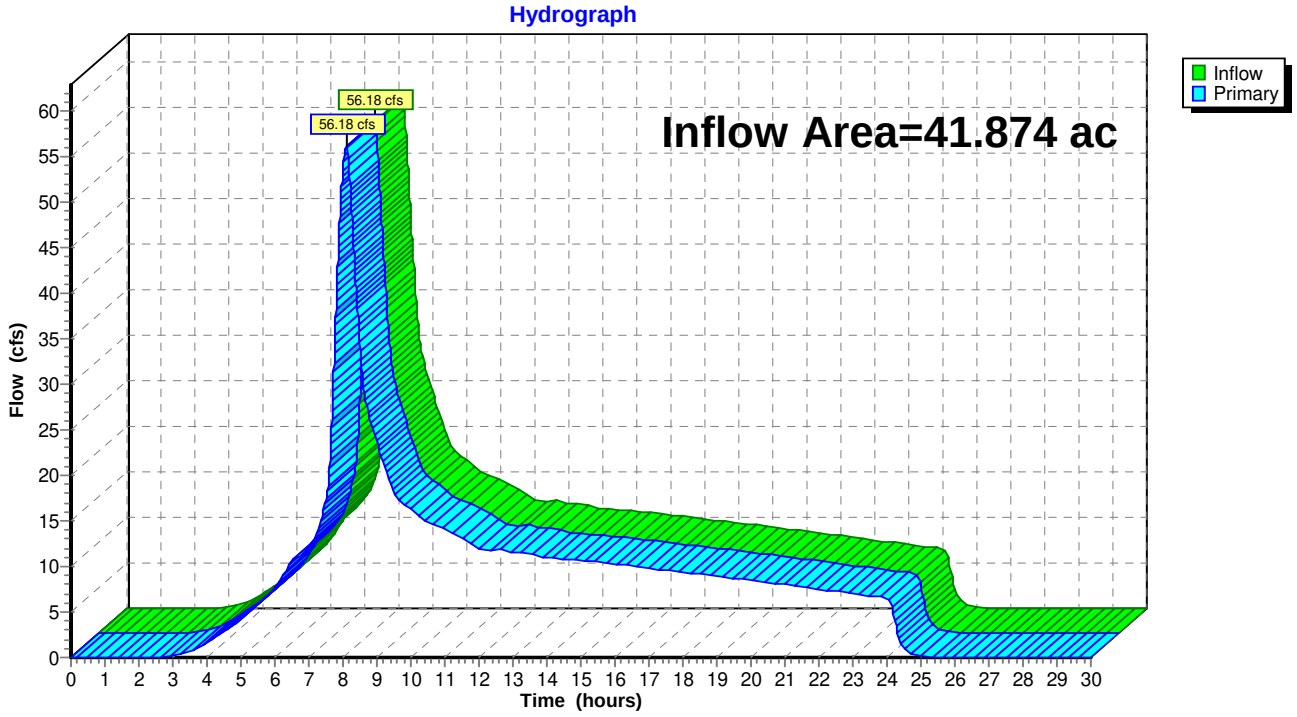


Summary for Link 1L: Outlet 2

Inflow Area = 41.874 ac, 0.08% Impervious, Inflow Depth = 5.75" for 50-yr event
Inflow = 56.18 cfs @ 8.10 hrs, Volume= 20.078 af
Primary = 56.18 cfs @ 8.10 hrs, Volume= 20.078 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link 1L: Outlet 2

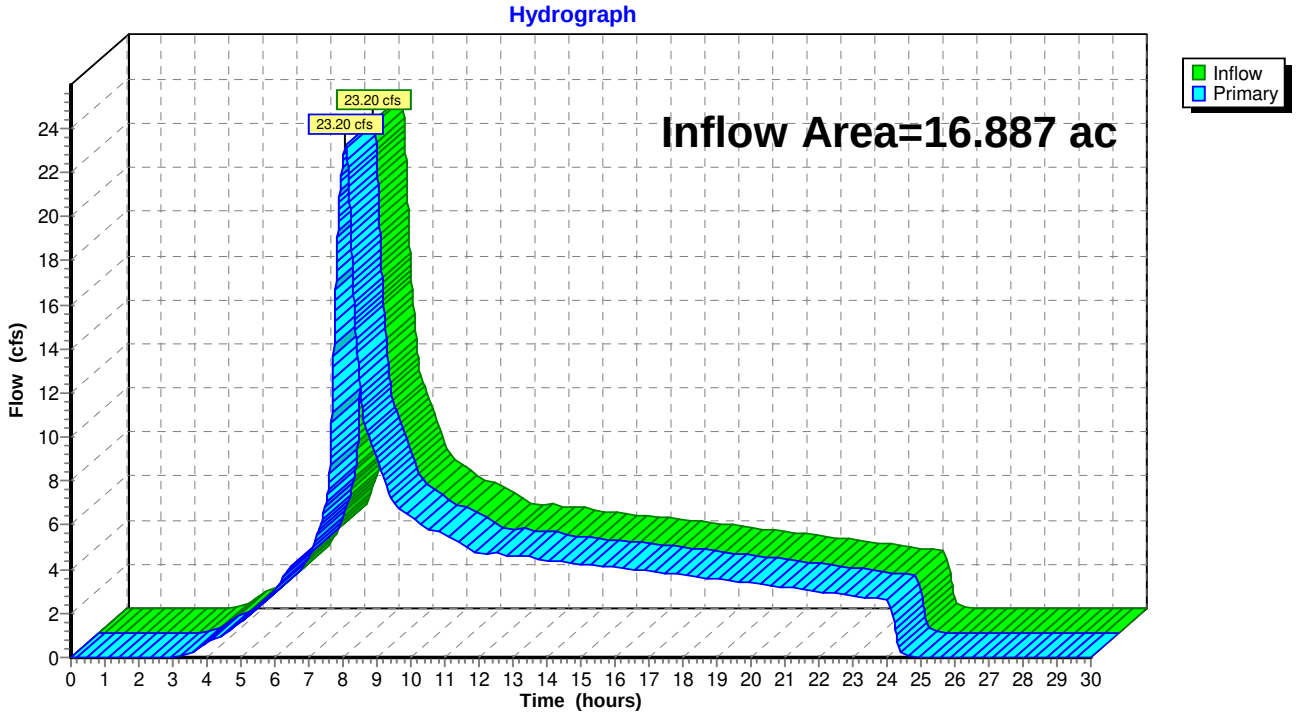


Summary for Link 2L: Outlet 1

Inflow Area = 16.887 ac, 2.89% Impervious, Inflow Depth = 5.64" for 50-yr event
Inflow = 23.20 cfs @ 8.06 hrs, Volume= 7.934 af
Primary = 23.20 cfs @ 8.06 hrs, Volume= 7.934 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link 2L: Outlet 1



Summary for Subcatchment WS-1: Subcat WS-1

Runoff = 27.00 cfs @ 8.06 hrs, Volume= 9.144 af, Depth= 6.50"
Routed to Link 2L : Outlet 1

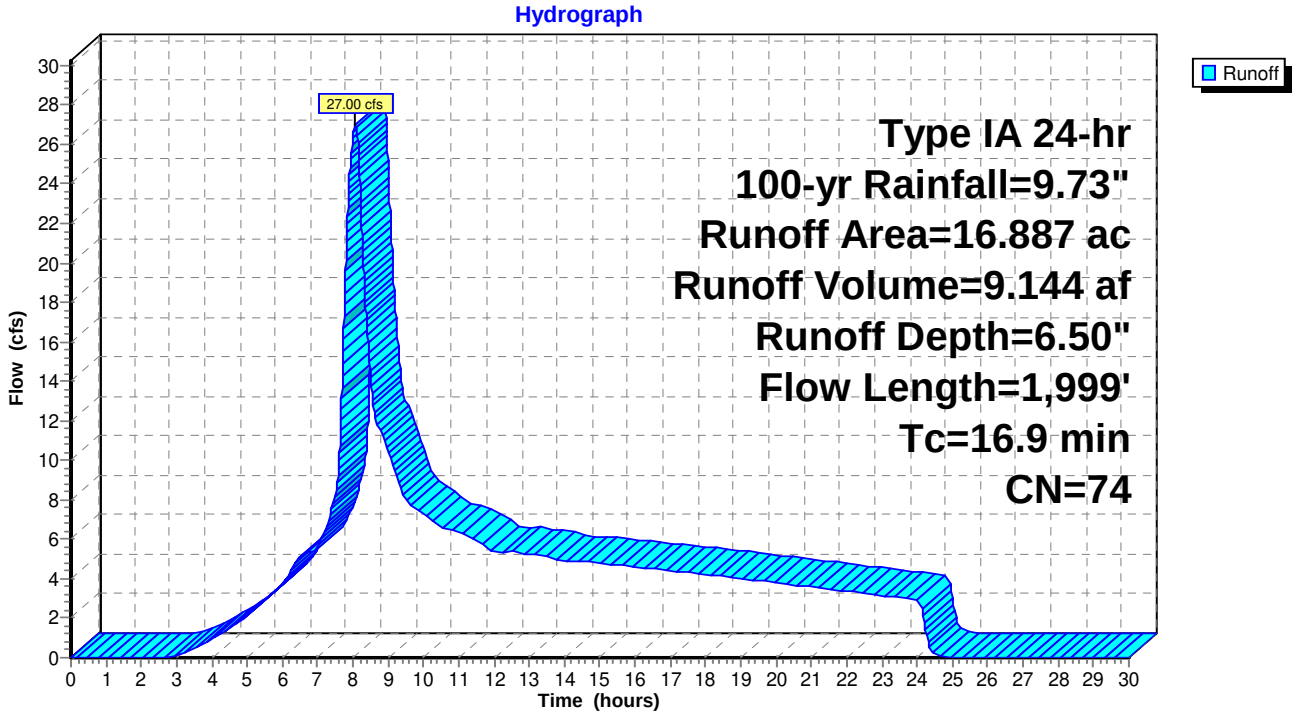
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type IA 24-hr 100-yr Rainfall=9.73"

Area (ac)	CN	Description
0.049	77	Woods, Good, HSG D
0.126	98	Water Surface, HSG D
0.067	89	Dirt roads, HSG D
0.008	73	Brush, Good, HSG D
0.055	73	Brush, Good, HSG D
0.364	73	Brush, Good, HSG D
0.058	73	Brush, Good, HSG D
0.050	73	Brush, Good, HSG D
0.223	73	Brush, Good, HSG D
0.031	77	Woods, Good, HSG D
0.032	77	Woods, Good, HSG D
0.483	77	Woods, Good, HSG D
0.019	77	Woods, Good, HSG D
0.041	77	Woods, Good, HSG D
0.211	77	Woods, Good, HSG D
0.445	77	Woods, Good, HSG D
0.000	77	Woods, Good, HSG D
0.021	91	Gravel Roads, HSG D
0.009	91	Gravel Roads, HSG D
0.012	91	Gravel Roads, HSG D
0.024	81	Annual Grass, Good, HSG D
0.081	81	Annual Grass, Good, HSG D
0.216	81	Annual Grass, Good, HSG D
0.002	81	Annual Grass, Good, HSG D
0.419	81	Annual Grass, Good, HSG D
0.484	81	Annual Grass, Good, HSG D
0.538	81	Annual Grass, Good, HSG D
0.113	81	Annual Grass, Good, HSG D
0.011	81	Annual Grass, Good, HSG D
0.005	81	Annual Grass, Good, HSG D
0.029	81	Annual Grass, Good, HSG D
0.005	77	Woods, Good, HSG D
0.022	77	Woods, Good, HSG D
0.015	73	Brush, Good, HSG D
0.011	73	Brush, Good, HSG D
0.240	70	Woods, Good, HSG C
0.362	98	Water Surface, HSG C
0.320	65	Brush, Good, HSG C
0.201	65	Brush, Good, HSG C
0.000	65	Brush, Good, HSG C
0.047	65	Brush, Good, HSG C
0.137	70	Woods, Good, HSG C
0.030	70	Woods, Good, HSG C
0.150	70	Woods, Good, HSG C
0.061	70	Woods, Good, HSG C
0.061	70	Woods, Good, HSG C
1.478	70	Woods, Good, HSG C
1.622	70	Woods, Good, HSG C
1.920	70	Woods, Good, HSG C
1.216	70	Woods, Good, HSG C

0.045	70	Woods, Good, HSG C
0.278	70	Woods, Good, HSG C
0.045	82	Farmsteads, HSG C
0.091	89	Gravel Roads, HSG C
0.316	75	Annual Grass, Good, HSG C
0.069	75	Annual Grass, Good, HSG C
0.434	75	Annual Grass, Good, HSG C
0.058	75	Annual Grass, Good, HSG C
0.005	75	Annual Grass, Good, HSG C
0.560	75	Annual Grass, Good, HSG C
1.730	75	Annual Grass, Good, HSG C
0.034	75	Annual Grass, Good, HSG C
0.100	75	Annual Grass, Good, HSG C
0.884	75	Annual Grass, Good, HSG C
0.115	75	Annual Grass, Good, HSG C
16.887	74	Weighted Average
16.399		97.11% Pervious Area
0.488		2.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	93	0.0500	0.20		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 4.42"
7.1	734	0.0600	1.71		**Shallow Concentrated Flow, Shallow - Short Grass** Short Grass Pasture Kv= 7.0 fps
1.9	1,172	0.0500	10.09	121.14	**Trap/Vee/Rect Channel Flow, Stream** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.035
16.9	1,999	Total			

Subcatchment WS-1: Subcat WS-1



Summary for Subcatchment WS-2: Subcat WS-2

Runoff = 46.02 cfs @ 8.06 hrs, Volume= 15.329 af, Depth= 6.75"
Routed to Link 1L : Outlet 2

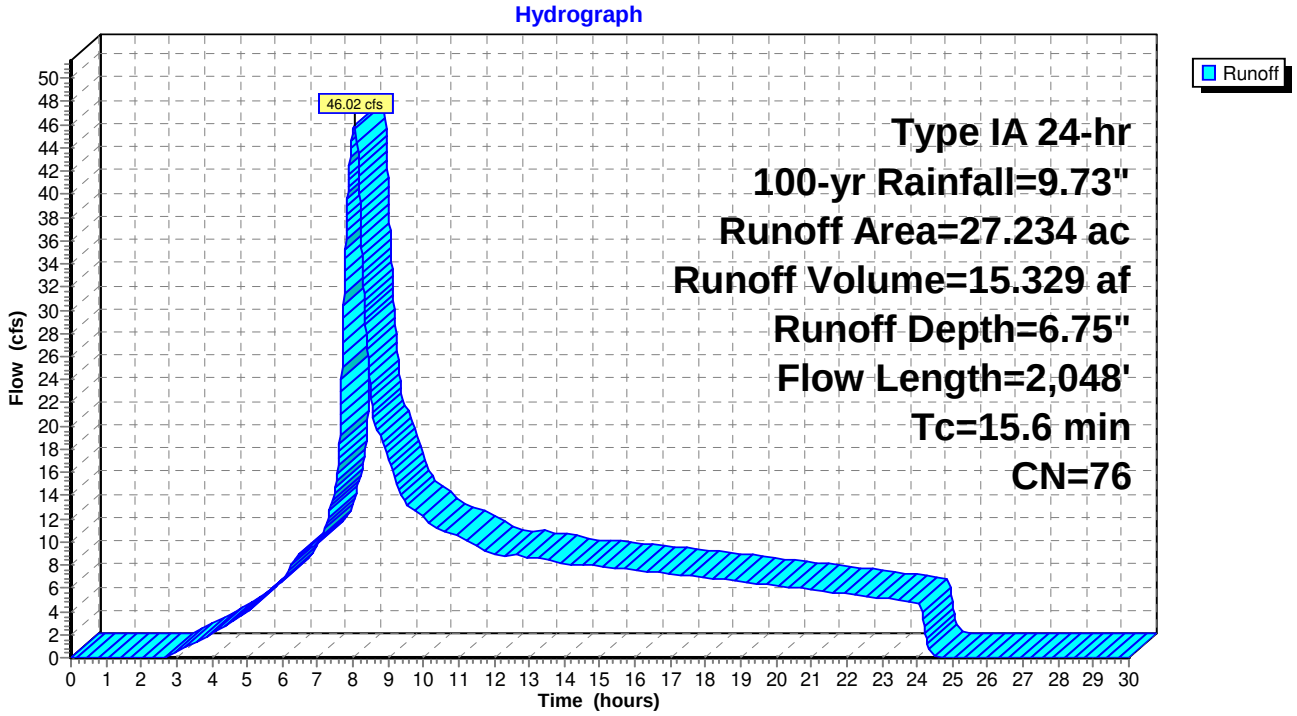
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type IA 24-hr 100-yr Rainfall=9.73"

Area (ac)	CN	Description
0.029	98	Water Surface, HSG D
0.050	94	Fallow, bare soil, HSG D
0.324	73	Brush, Good, HSG D
0.067	81	Annual Grass, Good, HSG D
0.072	81	Annual Grass, Good, HSG D
1.886	73	Brush, Good, HSG D
0.003	73	Brush, Good, HSG D
0.009	73	Brush, Good, HSG D
0.091	73	Brush, Good, HSG D
10.398	73	Brush, Good, HSG D
0.026	73	Brush, Good, HSG D
0.354	73	Brush, Good, HSG D
0.138	73	Brush, Good, HSG D
0.259	73	Brush, Good, HSG D
0.162	73	Brush, Good, HSG D
0.281	73	Brush, Good, HSG D
0.081	73	Brush, Good, HSG D
0.581	73	Brush, Good, HSG D
0.010	73	Brush, Good, HSG D
0.116	73	Brush, Good, HSG D
0.554	73	Brush, Good, HSG D
0.001	73	Brush, Good, HSG D
0.001	73	Brush, Good, HSG D
1.513	77	Woods, Good, HSG D
0.124	77	Woods, Good, HSG D
0.220	77	Woods, Good, HSG D
0.397	77	Woods, Good, HSG D
0.053	77	Woods, Good, HSG D
1.817	77	Woods, Good, HSG D
1.143	77	Woods, Good, HSG D
0.664	77	Woods, Good, HSG D
0.006	86	Farmsteads, HSG D
0.055	86	Farmsteads, HSG D
0.053	86	Farmsteads, HSG D
0.510	81	Vineyard, Good, HSG D
0.493	91	Gravel Roads, HSG D
0.000	81	Annual Grass, Good, HSG D
0.045	81	Annual Grass, Good, HSG D
0.107	81	Annual Grass, Good, HSG D
0.043	81	Annual Grass, Good, HSG D
2.120	81	Annual Grass, Good, HSG D
0.380	81	Annual Grass, Good, HSG D
0.004	81	Annual Grass, Good, HSG D
0.178	81	Annual Grass, Good, HSG D
0.045	81	Annual Grass, Good, HSG D
0.096	81	Annual Grass, Good, HSG D
0.007	81	Annual Grass, Good, HSG D
0.019	81	Annual Grass, Good, HSG D
0.037	81	Annual Grass, Good, HSG D
0.047	81	Annual Grass, Good, HSG D

0.007	81	Annual Grass, Good, HSG D
0.129	81	Annual Grass, Good, HSG D
0.068	81	Annual Grass, Good, HSG D
0.141	81	Annual Grass, Good, HSG D
0.022	81	Annual Grass, Good, HSG D
0.032	81	Annual Grass, Good, HSG D
0.011	81	Annual Grass, Good, HSG D
0.024	81	Annual Grass, Good, HSG D
0.011	81	Annual Grass, Good, HSG D
0.039	65	Brush, Good, HSG C
0.127	65	Brush, Good, HSG C
0.089	82	Farmsteads, HSG C
0.246	75	Vineyard, Good, HSG C
0.224	75	Annual Grass, Good, HSG C
0.017	75	Annual Grass, Good, HSG C
0.003	98	Water Surface, HSG C
0.087	65	Brush, Good, HSG C
0.085	65	Brush, Good, HSG C
0.203	70	Woods, Good, HSG C
27.234	76	Weighted Average
27.202		99.88% Pervious Area
0.031		0.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	66	0.0700	0.14		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 4.42"
4.8	408	0.0800	1.41		**Shallow Concentrated Flow, Shallow 1 - Woodland** Woodland Kv= 5.0 fps
2.9	1,574	0.0400	9.03	108.35	**Trap/Vee/Rect Channel Flow, Stream** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.035
15.6	2,048	Total			

Subcatchment WS-2: Subcat WS-2



Summary for Subcatchment WS-3: Subcat WS-3

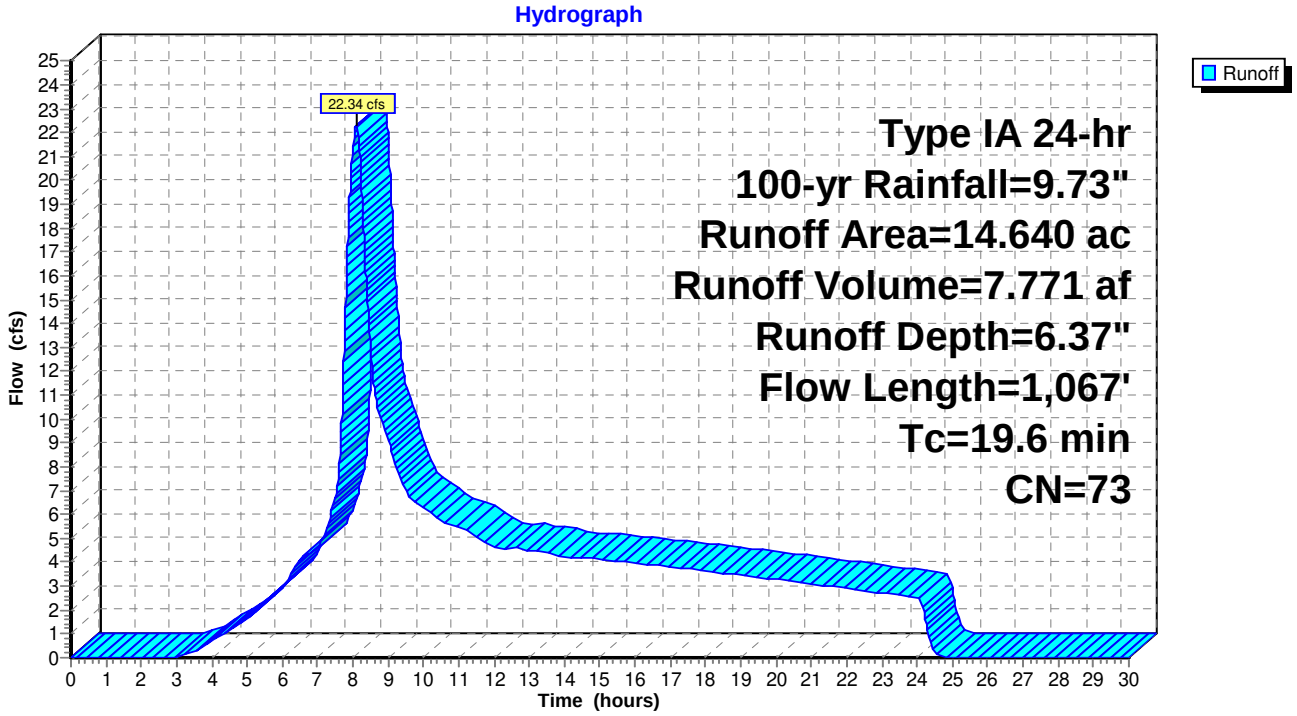
Runoff = 22.34 cfs @ 8.10 hrs, Volume= 7.771 af, Depth= 6.37"
Routed to Reach 2R : Reach 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type IA 24-hr 100-yr Rainfall=9.73"

Area (ac)	CN	Description
0.049	81	Annual Grass, Good, HSG D
0.461	73	Brush, Good, HSG D
0.018	73	Brush, Good, HSG D
0.957	73	Brush, Good, HSG D
8.698	73	Brush, Good, HSG D
0.046	81	Annual Grass, Good, HSG D
0.093	81	Annual Grass, Good, HSG D
0.109	81	Annual Grass, Good, HSG D
0.703	81	Annual Grass, Good, HSG D
0.036	81	Annual Grass, Good, HSG D
0.048	81	Annual Grass, Good, HSG D
0.012	81	Annual Grass, Good, HSG D
0.000	81	Annual Grass, Good, HSG D
0.046	81	Annual Grass, Good, HSG D
0.202	65	Brush, Good, HSG C
0.066	70	Woods, Good, HSG C
0.261	75	Annual Grass, Good, HSG C
0.043	75	Annual Grass, Good, HSG C
1.199	65	Brush, Good, HSG C
0.721	70	Woods, Good, HSG C
0.006	70	Woods, Good, HSG C
0.000	70	Woods, Good, HSG C
0.472	75	Annual Grass, Good, HSG C
0.394	75	Annual Grass, Good, HSG C
14.640	73	Weighted Average
14.640		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	61	0.0600	0.13		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 4.42"
11.5	912	0.0700	1.32		**Shallow Concentrated Flow, Shallow 1- Woodland** Woodland Kv= 5.0 fps
0.2	94	0.0300	7.82	93.83	**Trap/Vee/Rect Channel Flow, Stream** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.035
19.6	1,067	Total			

Subcatchment WS-3: Subcat WS-3



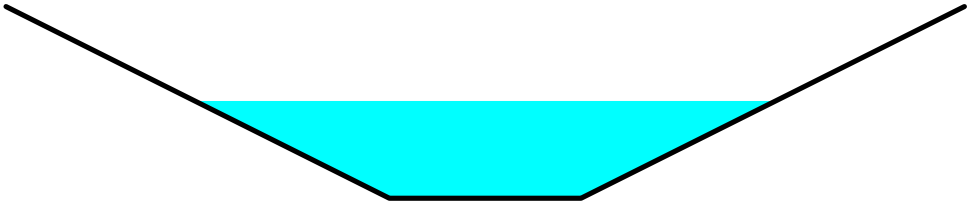
Summary for Reach 2R: Reach 1

Inflow Area = 14.640 ac, 0.00% Impervious, Inflow Depth = 6.37" for 100-yr event
Inflow = 22.34 cfs @ 8.10 hrs, Volume= 7.771 af
Outflow = 21.95 cfs @ 8.24 hrs, Volume= 7.771 af, Atten= 2%, Lag= 8.5 min
Routed to Link 1L : Outlet 2

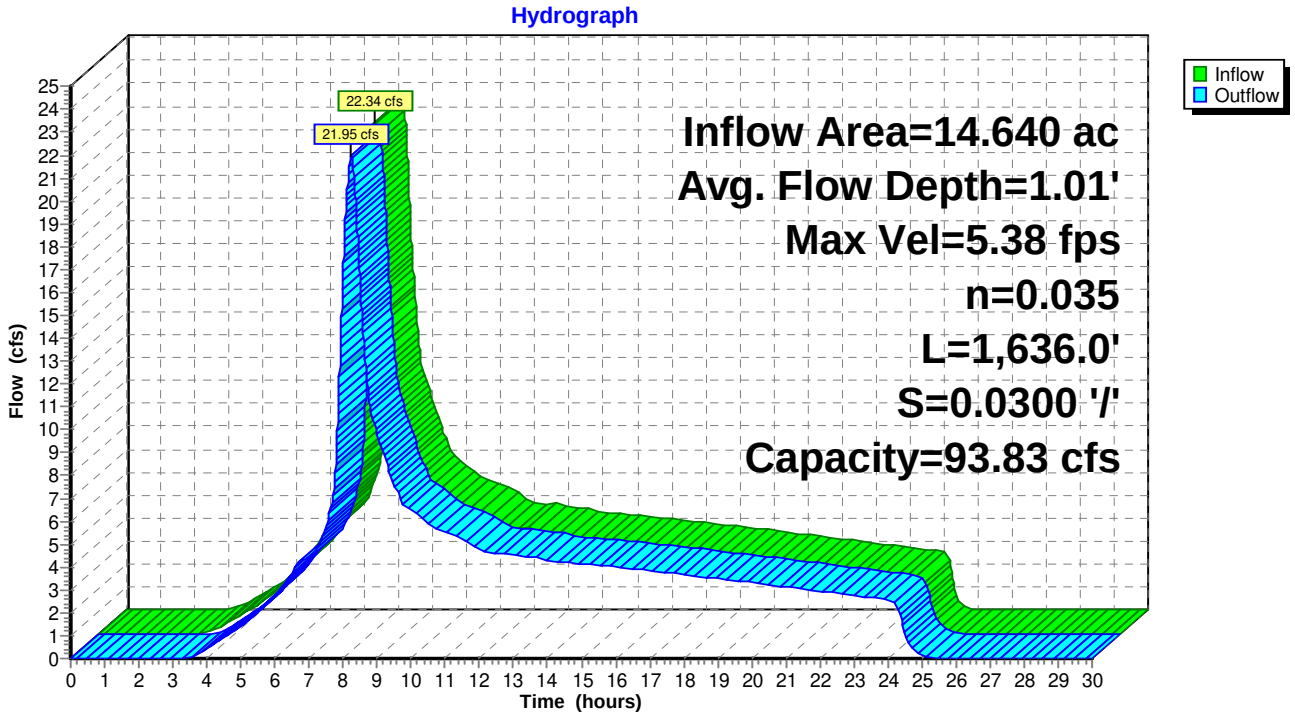
Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.38 fps, Min. Travel Time= 5.1 min
Avg. Velocity = 2.71 fps, Avg. Travel Time= 10.1 min

Peak Storage= 6,680 cf @ 8.15 hrs
Average Depth at Peak Storage= 1.01' , Surface Width= 6.06'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 93.83 cfs

2.00' x 2.00' deep channel, n= 0.035
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 1,636.0' Slope= 0.0300 '/'
Inlet Invert= 0.00', Outlet Invert= -49.08'



Reach 2R: Reach 1

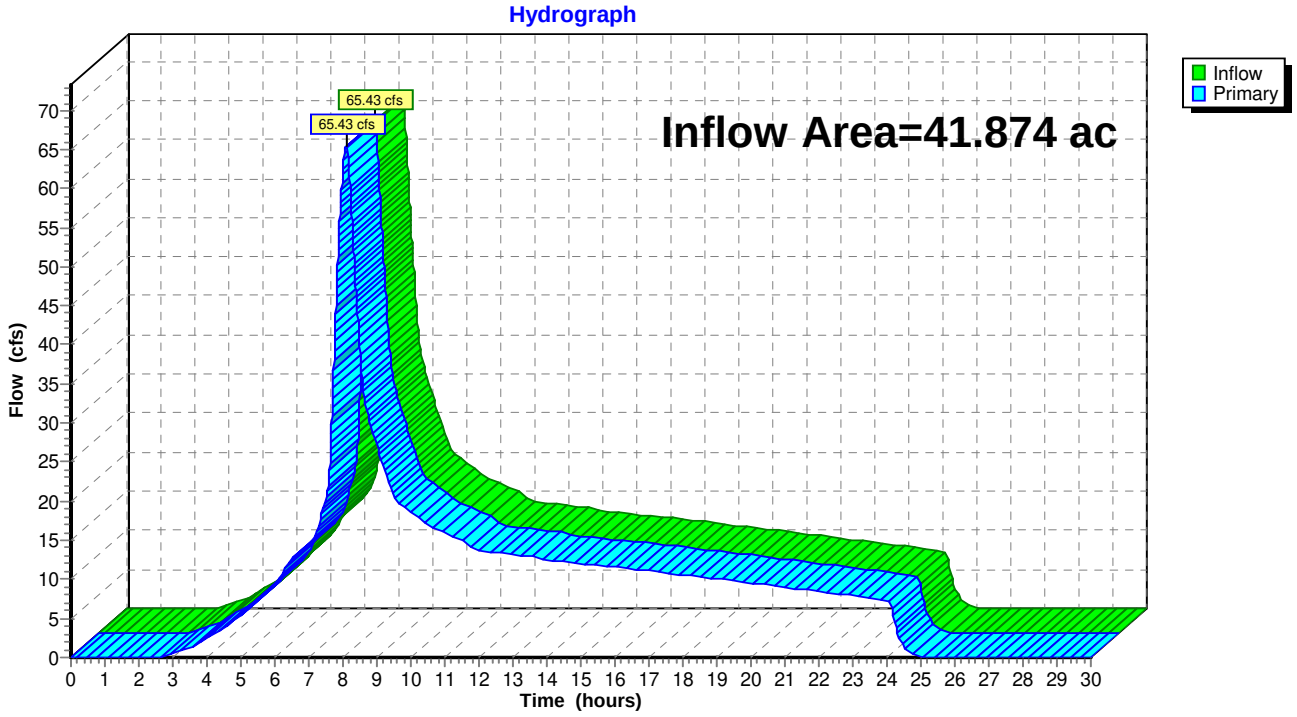


Summary for Link 1L: Outlet 2

Inflow Area = 41.874 ac, 0.08% Impervious, Inflow Depth = 6.62" for 100-yr event
Inflow = 65.43 cfs @ 8.09 hrs, Volume= 23.100 af
Primary = 65.43 cfs @ 8.09 hrs, Volume= 23.100 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link 1L: Outlet 2

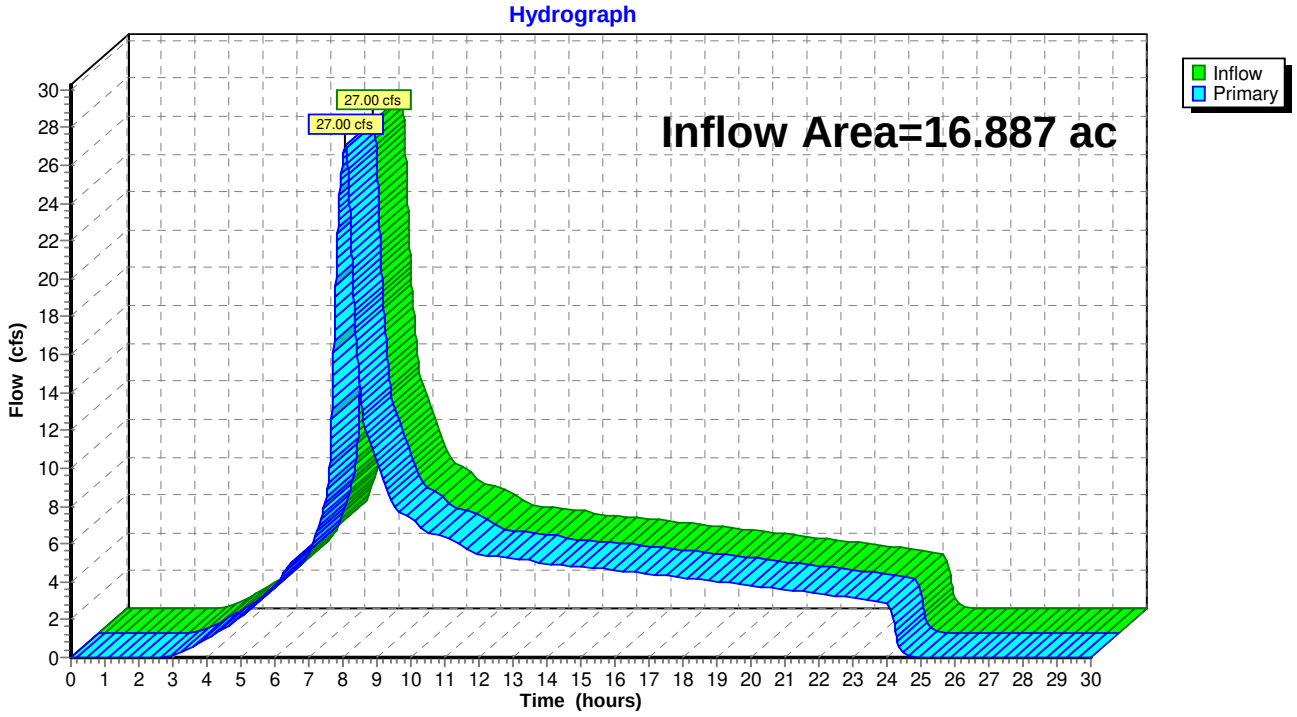


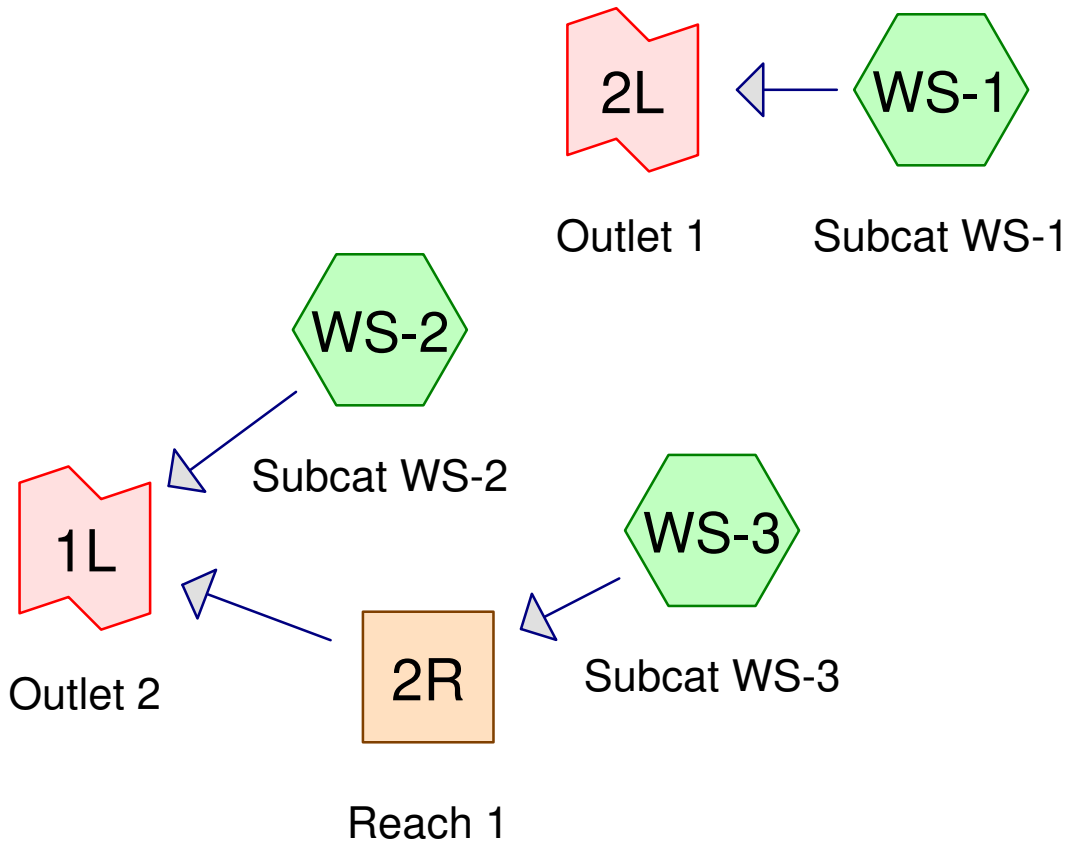
Summary for Link 2L: Outlet 1

Inflow Area = 16.887 ac, 2.89% Impervious, Inflow Depth = 6.50" for 100-yr event
Inflow = 27.00 cfs @ 8.06 hrs, Volume= 9.144 af
Primary = 27.00 cfs @ 8.06 hrs, Volume= 9.144 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link 2L: Outlet 1





Subcat Reach Pond Link

Routing Diagram for Post-Project
Prepared by PPI Engineering, Printed 1/20/2022
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Summary for Subcatchment WS-1: Subcat WS-1

Runoff = 6.77 cfs @ 8.09 hrs, Volume= 2.689 af, Depth= 1.91"
Routed to Link 2L : Outlet 1

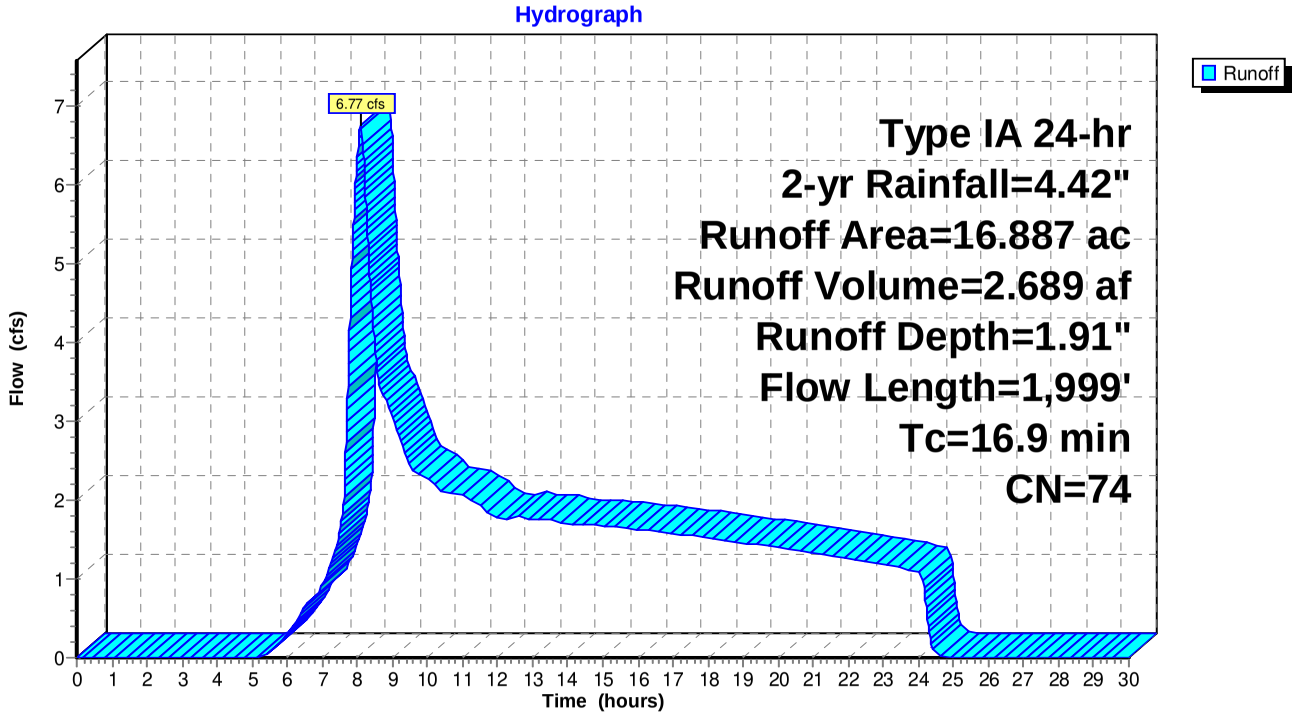
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type IA 24-hr 2-yr Rainfall=4.42"

Area (ac)	CN	Description
0.166	81	Vineyard, Good, HSG D
0.144	81	Vineyard, Good, HSG D
0.067	89	Dirt roads, HSG D
0.223	73	Brush, Good, HSG D
0.050	73	Brush, Good, HSG D
0.058	73	Brush, Good, HSG D
0.364	73	Brush, Good, HSG D
0.055	73	Brush, Good, HSG D
0.445	77	Woods, Good, HSG D
0.211	77	Woods, Good, HSG D
0.041	77	Woods, Good, HSG D
0.019	77	Woods, Good, HSG D
0.483	77	Woods, Good, HSG D
0.032	77	Woods, Good, HSG D
0.000	77	Woods, Good, HSG D
0.024	77	Woods, Good, HSG D
0.012	91	Gravel Roads, HSG D
0.009	91	Gravel Roads, HSG D
0.021	91	Gravel Roads, HSG D
0.538	81	Annual Grass, Good, HSG D
0.484	81	Annual Grass, Good, HSG D
0.419	81	Annual Grass, Good, HSG D
0.002	81	Annual Grass, Good, HSG D
0.216	81	Annual Grass, Good, HSG D
0.081	81	Annual Grass, Good, HSG D
0.052	81	Annual Grass, Good, HSG D
0.001	81	Annual Grass, Good, HSG D
0.005	81	Annual Grass, Good, HSG D
0.029	81	Annual Grass, Good, HSG D
0.005	77	Woods, Good, HSG D
0.022	77	Woods, Good, HSG D
0.317	75	Vineyard, Good, HSG C
0.443	75	Vineyard, Good, HSG C
0.047	65	Brush, Good, HSG C
0.000	65	Brush, Good, HSG C
0.201	65	Brush, Good, HSG C
0.122	65	Brush, Good, HSG C
1.216	70	Woods, Good, HSG C
1.622	70	Woods, Good, HSG C
0.278	70	Woods, Good, HSG C
0.045	70	Woods, Good, HSG C
0.061	70	Woods, Good, HSG C
0.061	70	Woods, Good, HSG C
0.150	70	Woods, Good, HSG C
1.006	70	Woods, Good, HSG C
0.053	70	Woods, Good, HSG C
0.152	70	Woods, Good, HSG C
0.127	70	Woods, Good, HSG C
0.207	70	Woods, Good, HSG C
1.462	70	Woods, Good, HSG C

0.020	70	Woods, Good, HSG C
0.045	82	Farmsteads, HSG C
1.137	75	Vineyard, Good, HSG C
0.091	89	Gravel Roads, HSG C
0.884	75	Annual Grass, Good, HSG C
0.100	75	Annual Grass, Good, HSG C
0.034	75	Annual Grass, Good, HSG C
0.005	75	Annual Grass, Good, HSG C
0.058	75	Annual Grass, Good, HSG C
0.434	75	Annual Grass, Good, HSG C
0.115	75	Annual Grass, Good, HSG C
0.205	75	Annual Grass, Good, HSG C
1.339	75	Annual Grass, Good, HSG C
0.045	75	Annual Grass, Good, HSG C
0.069	75	Annual Grass, Good, HSG C
0.006	75	Annual Grass, Good, HSG C
0.453	75	Annual Grass, Good, HSG C
16.887	74	Weighted Average
16.887		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	93	0.0500	0.20		**Sheet Flow, Sheet** Grass: Dense n= 0.240 P2= 4.42"
7.1	734	0.0600	1.71		**Shallow Concentrated Flow, Shallow - Short Grass** Short Grass Pasture Kv= 7.0 fps
1.9	1,172	0.0500	10.09	121.14	**Trap/Vee/Rect Channel Flow, Stream** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.035
16.9	1,999	Total			

Subcatchment WS-1: Subcat WS-1



Summary for Subcatchment WS-2: Subcat WS-2

Runoff = 11.76 cfs @ 8.15 hrs, Volume= 4.689 af, Depth= 2.07"
Routed to Link 1L : Outlet 2

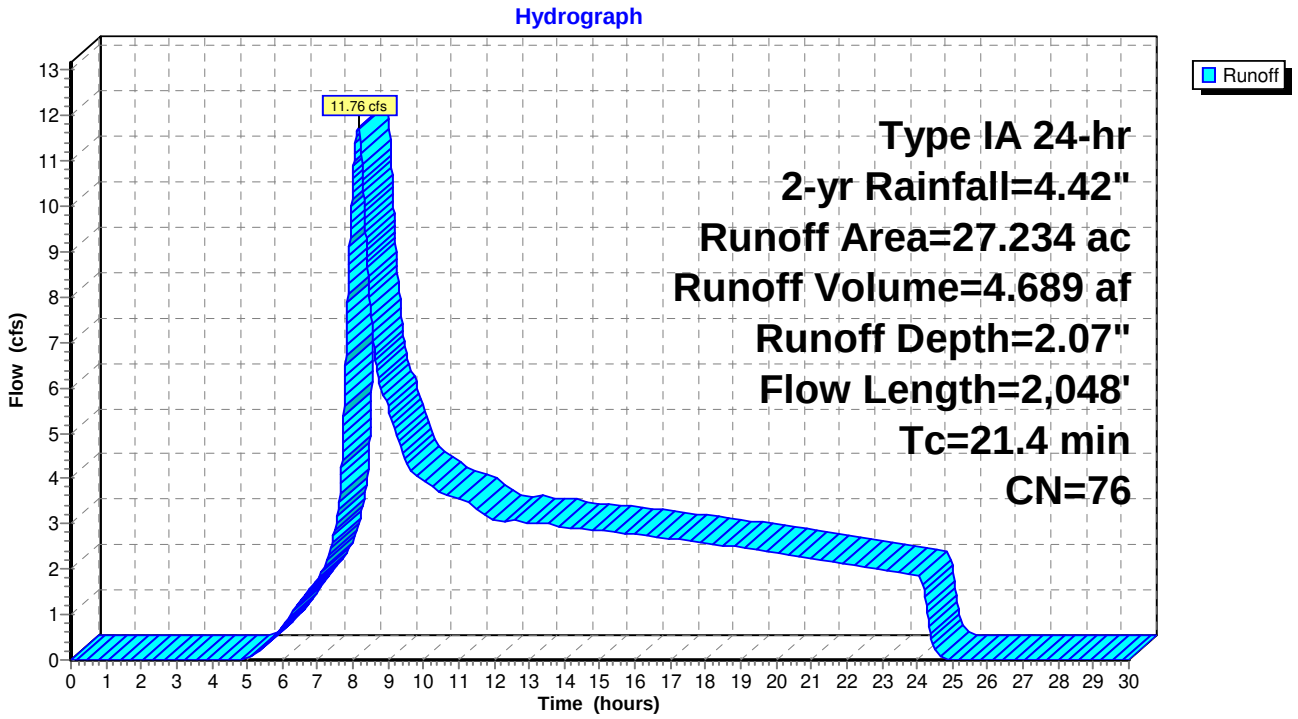
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type IA 24-hr 2-yr Rainfall=4.42"

Area (ac)	CN	Description
0.050	94	Fallow, bare soil, HSG D
0.554	73	Brush, Good, HSG D
0.010	73	Brush, Good, HSG D
0.581	73	Brush, Good, HSG D
0.081	73	Brush, Good, HSG D
0.281	73	Brush, Good, HSG D
0.162	73	Brush, Good, HSG D
0.259	73	Brush, Good, HSG D
0.138	73	Brush, Good, HSG D
0.354	73	Brush, Good, HSG D
0.026	73	Brush, Good, HSG D
10.398	73	Brush, Good, HSG D
0.091	73	Brush, Good, HSG D
0.001	73	Brush, Good, HSG D
0.664	77	Woods, Good, HSG D
1.143	77	Woods, Good, HSG D
1.817	77	Woods, Good, HSG D
0.053	77	Woods, Good, HSG D
0.397	77	Woods, Good, HSG D
0.220	77	Woods, Good, HSG D
0.124	77	Woods, Good, HSG D
0.189	77	Woods, Good, HSG D
0.006	86	Farmsteads, HSG D
0.055	86	Farmsteads, HSG D
0.053	86	Farmsteads, HSG D
0.510	81	Vineyard, Good, HSG D
4.108	81	Vineyard, Good, HSG D
0.493	91	Gravel Roads, HSG D
0.141	81	Annual Grass, Good, HSG D
0.068	81	Annual Grass, Good, HSG D
0.129	81	Annual Grass, Good, HSG D
0.007	81	Annual Grass, Good, HSG D
0.037	81	Annual Grass, Good, HSG D
0.019	81	Annual Grass, Good, HSG D
0.096	81	Annual Grass, Good, HSG D
0.045	81	Annual Grass, Good, HSG D
0.178	81	Annual Grass, Good, HSG D
0.004	81	Annual Grass, Good, HSG D
0.380	81	Annual Grass, Good, HSG D
2.120	81	Annual Grass, Good, HSG D
0.043	81	Annual Grass, Good, HSG D
0.027	81	Annual Grass, Good, HSG D
0.004	81	Annual Grass, Good, HSG D
0.001	81	Annual Grass, Good, HSG D
0.127	65	Brush, Good, HSG C
0.039	65	Brush, Good, HSG C
0.089	82	Farmsteads, HSG C
0.246	75	Vineyard, Good, HSG C
0.017	75	Annual Grass, Good, HSG C
0.224	75	Annual Grass, Good, HSG C

0.002	65	Brush, Good, HSG C
0.001	70	Woods, Good, HSG C
0.375	75	Vineyard, Good, HSG C
27.234	76	Weighted Average
27.234		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	66	0.0700	0.14		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 4.42"
2.5	315	0.0900	2.10		**Shallow Concentrated Flow, Shallow 1 - Short Grass** Short Grass Pasture Kv= 7.0 fps
8.0	83	0.1100	0.17		**Sheet Flow, Sheet Flow - Post Level Spreader** Woods: Light underbrush n= 0.400 P2= 4.42"
0.1	10	0.1100	1.66		**Shallow Concentrated Flow, Shallow 2 - Woodland** Woodland Kv= 5.0 fps
2.9	1,574	0.0400	9.03	108.35	**Trap/Vee/Rect Channel Flow, Stream** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.035
21.4	2,048	Total			

Subcatchment WS-2: Subcat WS-2



Summary for Subcatchment WS-3: Subcat WS-3

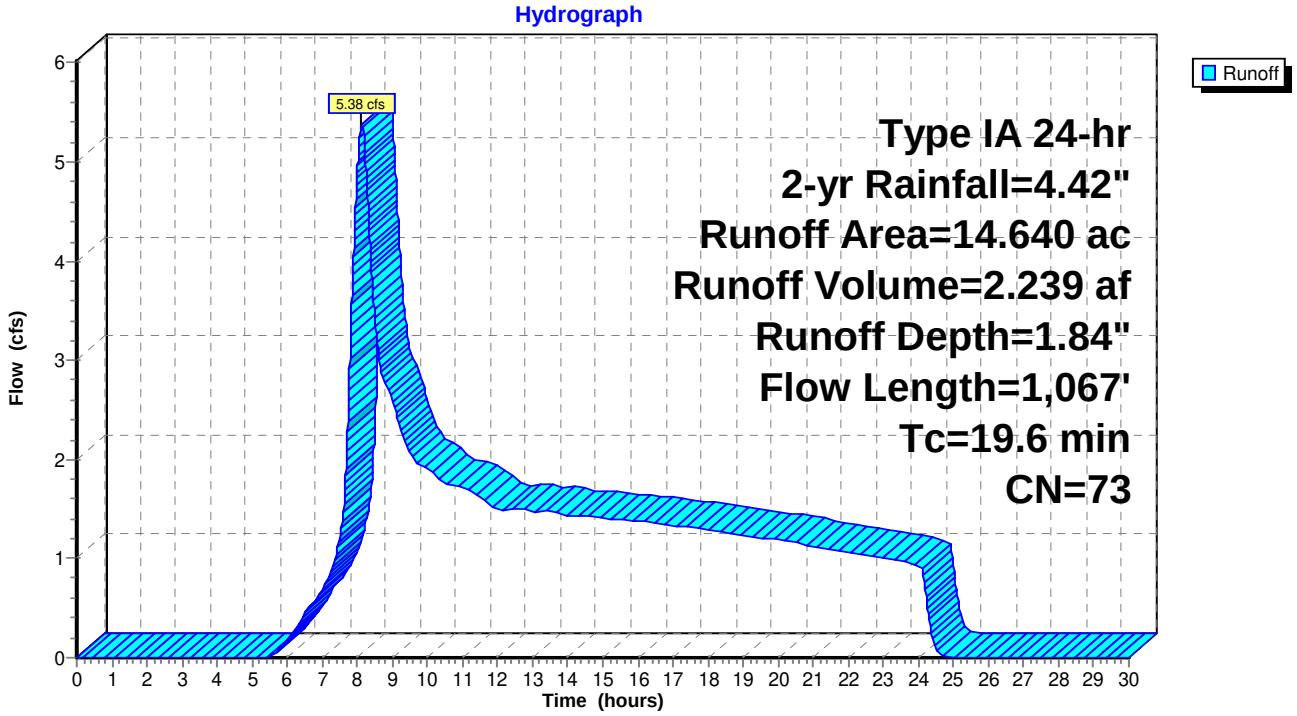
Runoff = 5.38 cfs @ 8.13 hrs, Volume= 2.239 af, Depth= 1.84"
Routed to Reach 2R : Reach 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type IA 24-hr 2-yr Rainfall=4.42"

Area (ac)	CN	Description
8.698	73	Brush, Good, HSG D
0.957	73	Brush, Good, HSG D
0.072	73	Brush, Good, HSG D
0.003	73	Brush, Good, HSG D
0.503	81	Vineyard, Good, HSG D
0.048	81	Annual Grass, Good, HSG D
0.036	81	Annual Grass, Good, HSG D
0.109	81	Annual Grass, Good, HSG D
0.093	81	Annual Grass, Good, HSG D
0.001	81	Annual Grass, Good, HSG D
0.012	81	Annual Grass, Good, HSG D
0.698	81	Annual Grass, Good, HSG D
0.000	81	Annual Grass, Good, HSG D
0.046	81	Annual Grass, Good, HSG D
0.202	65	Brush, Good, HSG C
0.066	70	Woods, Good, HSG C
0.043	75	Annual Grass, Good, HSG C
0.261	75	Annual Grass, Good, HSG C
1.199	65	Brush, Good, HSG C
0.000	70	Woods, Good, HSG C
0.006	70	Woods, Good, HSG C
0.721	70	Woods, Good, HSG C
0.394	75	Annual Grass, Good, HSG C
0.472	75	Annual Grass, Good, HSG C
14.640	73	Weighted Average
14.640		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	61	0.0600	0.13		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 4.42"
11.5	912	0.0700	1.32		**Shallow Concentrated Flow, Shallow 1 - Woodland** Woodland Kv= 5.0 fps
0.2	94	0.0300	7.82	93.83	**Trap/Vee/Rect Channel Flow, Stream** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.035
19.6	1,067	Total			

Subcatchment WS-3: Subcat WS-3



Summary for Reach 2R: Reach 1

Inflow Area = 14.640 ac, 0.00% Impervious, Inflow Depth = 1.84" for 2-yr event
Inflow = 5.38 cfs @ 8.13 hrs, Volume= 2.239 af
Outflow = 5.15 cfs @ 8.34 hrs, Volume= 2.239 af, Atten= 4%, Lag= 12.6 min
Routed to Link 1L : Outlet 2

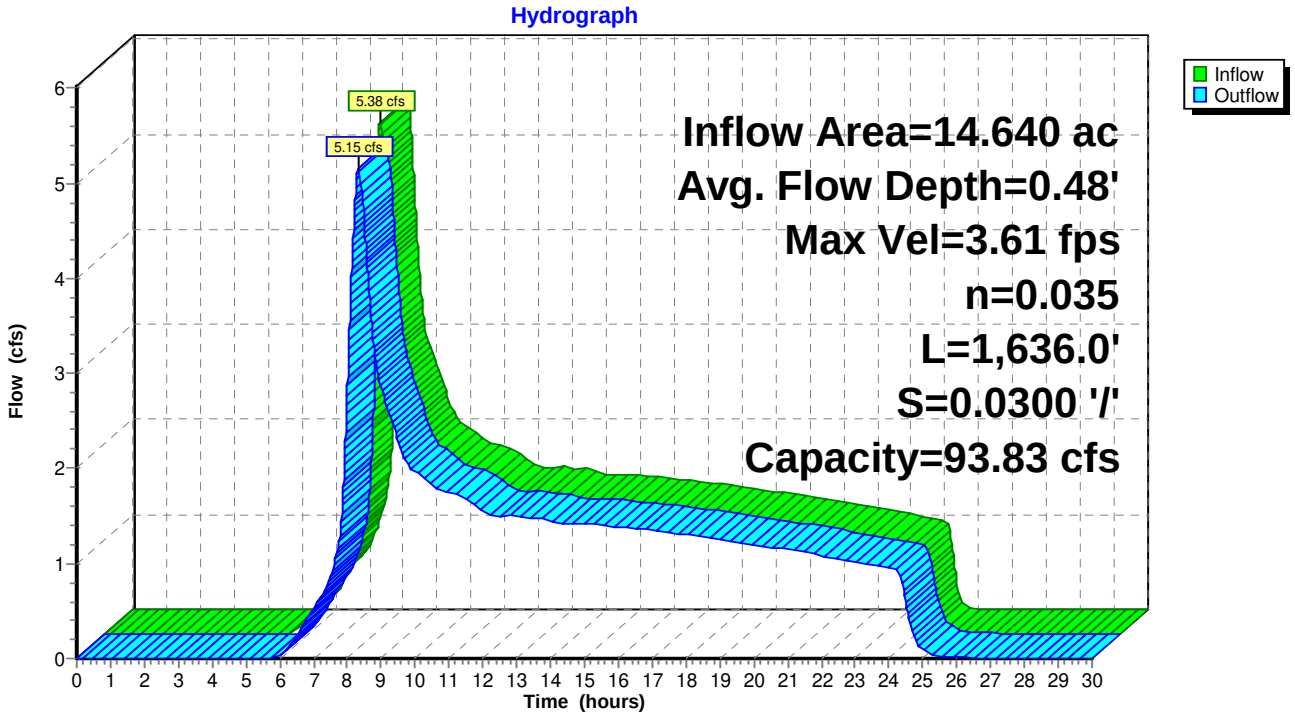
Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.61 fps, Min. Travel Time= 7.6 min
Avg. Velocity = 1.94 fps, Avg. Travel Time= 14.0 min

Peak Storage= 2,336 cf @ 8.21 hrs
Average Depth at Peak Storage= 0.48' , Surface Width= 3.93'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 93.83 cfs

2.00' x 2.00' deep channel, n= 0.035
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 1,636.0' Slope= 0.0300 '/'
Inlet Invert= 0.00', Outlet Invert= -49.08'



Reach 2R: Reach 1

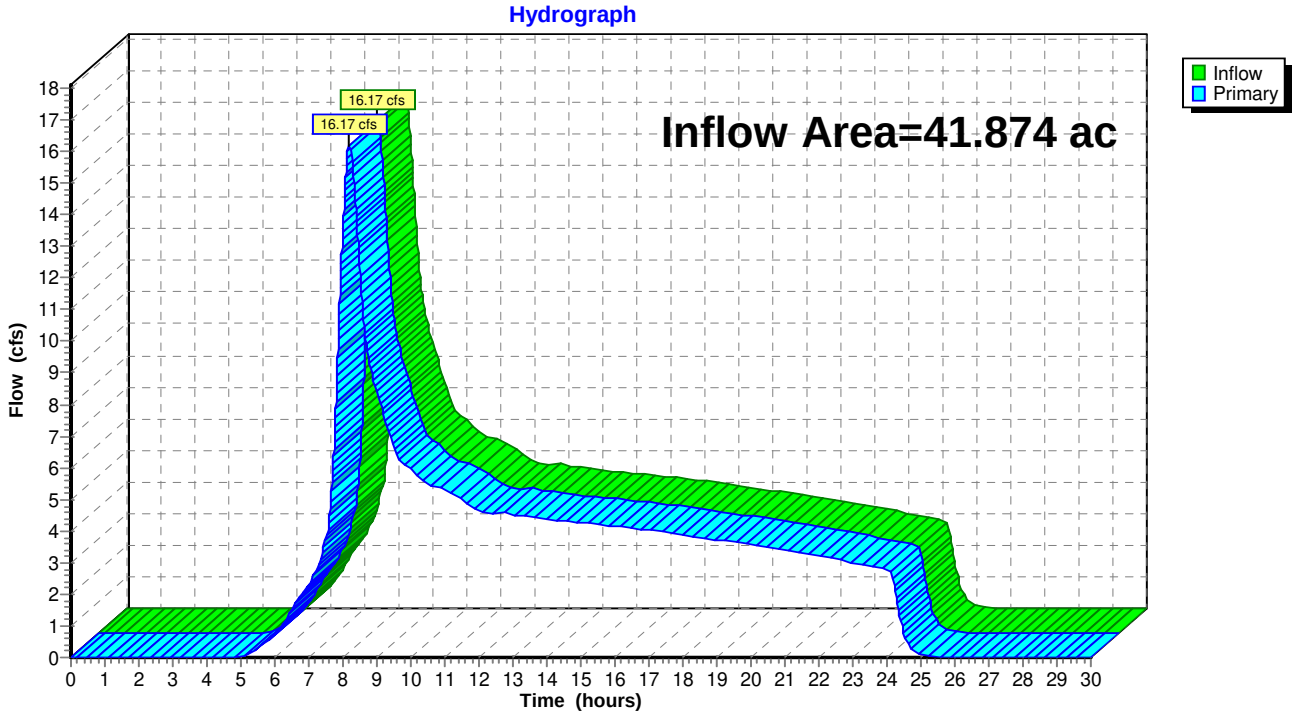


Summary for Link 1L: Outlet 2

Inflow Area = 41.874 ac, 0.00% Impervious, Inflow Depth = 1.99" for 2-yr event
Inflow = 16.17 cfs @ 8.20 hrs, Volume= 6.928 af
Primary = 16.17 cfs @ 8.20 hrs, Volume= 6.928 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link 1L: Outlet 2

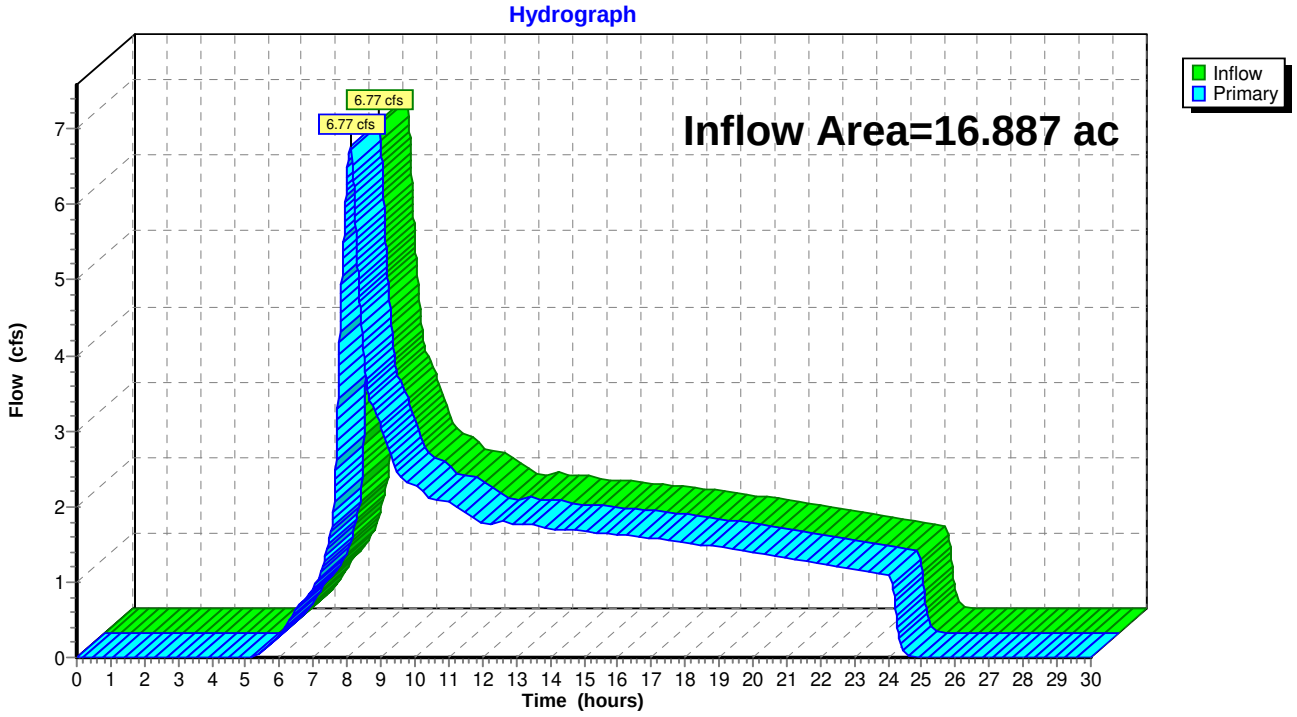


Summary for Link 2L: Outlet 1

Inflow Area = 16.887 ac, 0.00% Impervious, Inflow Depth = 1.91" for 2-yr event
Inflow = 6.77 cfs @ 8.09 hrs, Volume= 2.689 af
Primary = 6.77 cfs @ 8.09 hrs, Volume= 2.689 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link 2L: Outlet 1



Summary for Subcatchment WS-1: Subcat WS-1

Runoff = 14.56 cfs @ 8.09 hrs, Volume= 5.188 af, Depth= 3.69"
Routed to Link 2L : Outlet 1

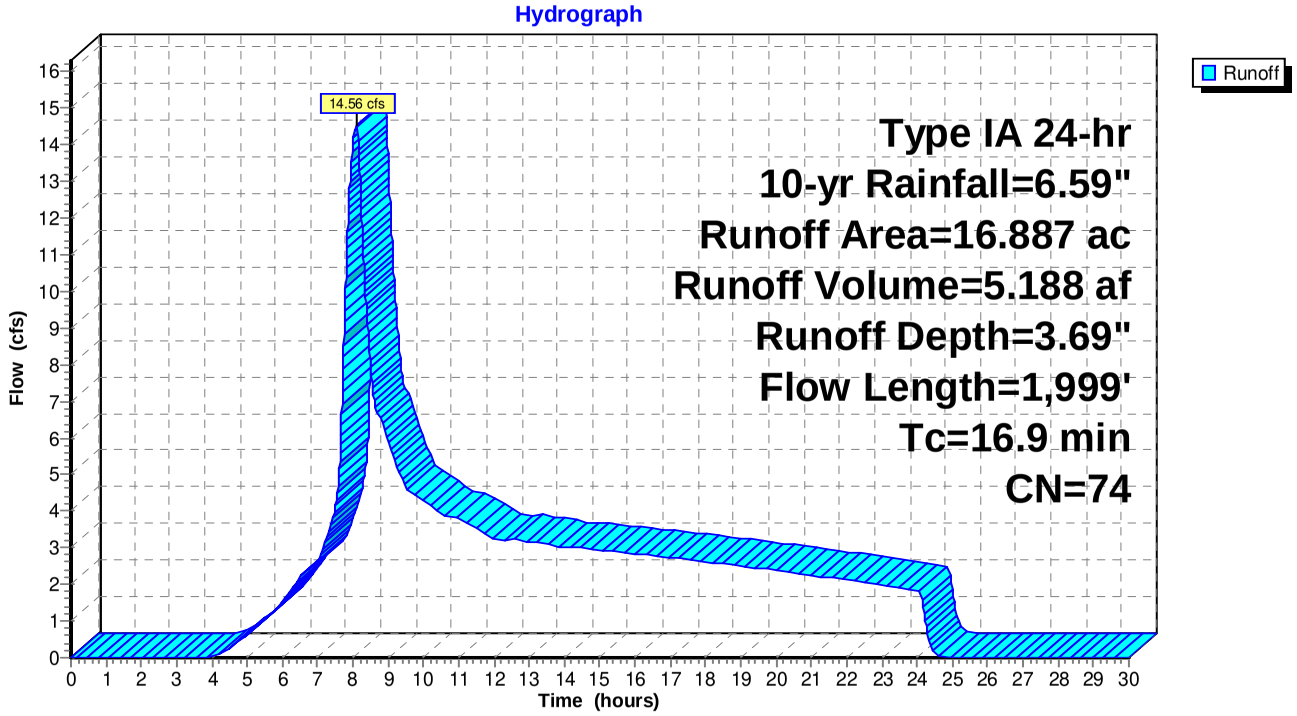
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-yr Rainfall=6.59"

Area (ac)	CN	Description
0.166	81	Vineyard, Good, HSG D
0.144	81	Vineyard, Good, HSG D
0.067	89	Dirt roads, HSG D
0.223	73	Brush, Good, HSG D
0.050	73	Brush, Good, HSG D
0.058	73	Brush, Good, HSG D
0.364	73	Brush, Good, HSG D
0.055	73	Brush, Good, HSG D
0.445	77	Woods, Good, HSG D
0.211	77	Woods, Good, HSG D
0.041	77	Woods, Good, HSG D
0.019	77	Woods, Good, HSG D
0.483	77	Woods, Good, HSG D
0.032	77	Woods, Good, HSG D
0.000	77	Woods, Good, HSG D
0.024	77	Woods, Good, HSG D
0.012	91	Gravel Roads, HSG D
0.009	91	Gravel Roads, HSG D
0.021	91	Gravel Roads, HSG D
0.538	81	Annual Grass, Good, HSG D
0.484	81	Annual Grass, Good, HSG D
0.419	81	Annual Grass, Good, HSG D
0.002	81	Annual Grass, Good, HSG D
0.216	81	Annual Grass, Good, HSG D
0.081	81	Annual Grass, Good, HSG D
0.052	81	Annual Grass, Good, HSG D
0.001	81	Annual Grass, Good, HSG D
0.005	81	Annual Grass, Good, HSG D
0.029	81	Annual Grass, Good, HSG D
0.005	77	Woods, Good, HSG D
0.022	77	Woods, Good, HSG D
0.317	75	Vineyard, Good, HSG C
0.443	75	Vineyard, Good, HSG C
0.047	65	Brush, Good, HSG C
0.000	65	Brush, Good, HSG C
0.201	65	Brush, Good, HSG C
0.122	65	Brush, Good, HSG C
1.216	70	Woods, Good, HSG C
1.622	70	Woods, Good, HSG C
0.278	70	Woods, Good, HSG C
0.045	70	Woods, Good, HSG C
0.061	70	Woods, Good, HSG C
0.061	70	Woods, Good, HSG C
0.150	70	Woods, Good, HSG C
1.006	70	Woods, Good, HSG C
0.053	70	Woods, Good, HSG C
0.152	70	Woods, Good, HSG C
0.127	70	Woods, Good, HSG C
0.207	70	Woods, Good, HSG C
1.462	70	Woods, Good, HSG C

0.020	70	Woods, Good, HSG C
0.045	82	Farmsteads, HSG C
1.137	75	Vineyard, Good, HSG C
0.091	89	Gravel Roads, HSG C
0.884	75	Annual Grass, Good, HSG C
0.100	75	Annual Grass, Good, HSG C
0.034	75	Annual Grass, Good, HSG C
0.005	75	Annual Grass, Good, HSG C
0.058	75	Annual Grass, Good, HSG C
0.434	75	Annual Grass, Good, HSG C
0.115	75	Annual Grass, Good, HSG C
0.205	75	Annual Grass, Good, HSG C
1.339	75	Annual Grass, Good, HSG C
0.045	75	Annual Grass, Good, HSG C
0.069	75	Annual Grass, Good, HSG C
0.006	75	Annual Grass, Good, HSG C
0.453	75	Annual Grass, Good, HSG C
16.887	74	Weighted Average
16.887		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	93	0.0500	0.20		**Sheet Flow, Sheet** Grass: Dense n= 0.240 P2= 4.42"
7.1	734	0.0600	1.71		**Shallow Concentrated Flow, Shallow - Short Grass** Short Grass Pasture Kv= 7.0 fps
1.9	1,172	0.0500	10.09	121.14	**Trap/Vee/Rect Channel Flow, Stream** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.035
16.9	1,999	Total			

Subcatchment WS-1: Subcat WS-1



Summary for Subcatchment WS-2: Subcat WS-2

Runoff = 24.31 cfs @ 8.12 hrs, Volume= 8.838 af, Depth= 3.89"
Routed to Link 1L : Outlet 2

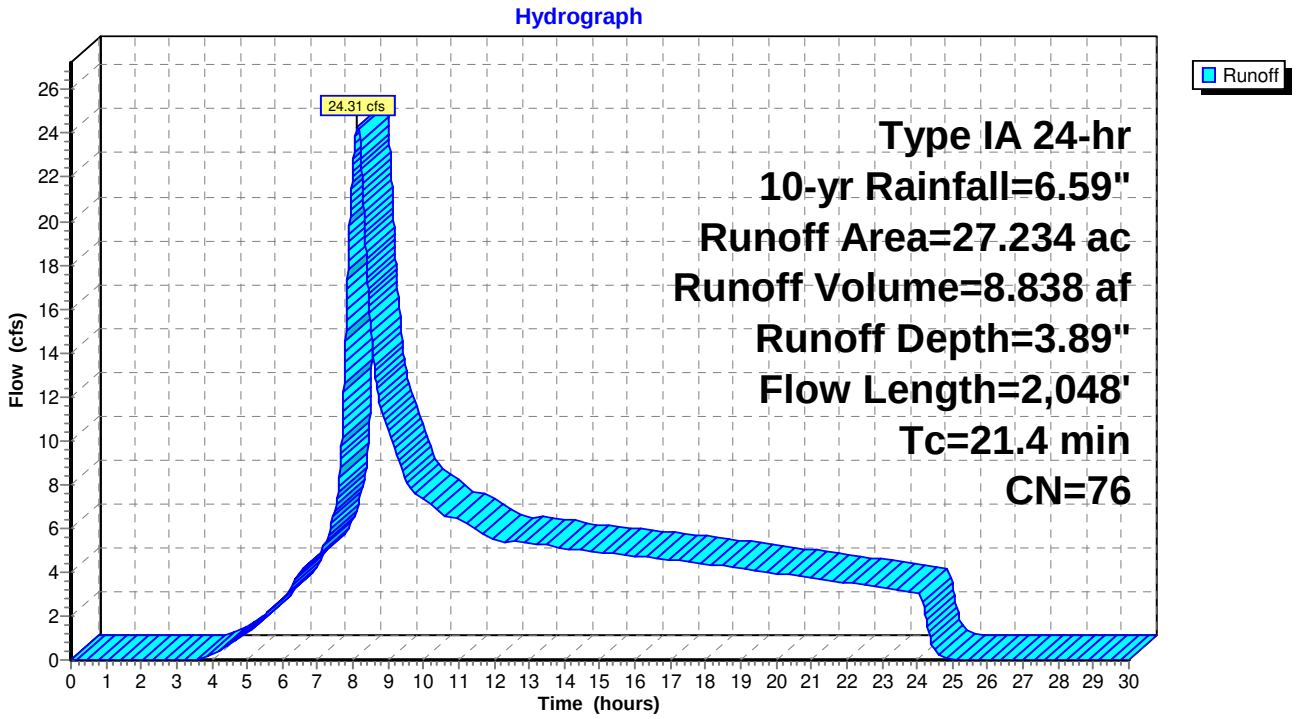
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-yr Rainfall=6.59"

Area (ac)	CN	Description
0.050	94	Fallow, bare soil, HSG D
0.554	73	Brush, Good, HSG D
0.010	73	Brush, Good, HSG D
0.581	73	Brush, Good, HSG D
0.081	73	Brush, Good, HSG D
0.281	73	Brush, Good, HSG D
0.162	73	Brush, Good, HSG D
0.259	73	Brush, Good, HSG D
0.138	73	Brush, Good, HSG D
0.354	73	Brush, Good, HSG D
0.026	73	Brush, Good, HSG D
10.398	73	Brush, Good, HSG D
0.091	73	Brush, Good, HSG D
0.001	73	Brush, Good, HSG D
0.664	77	Woods, Good, HSG D
1.143	77	Woods, Good, HSG D
1.817	77	Woods, Good, HSG D
0.053	77	Woods, Good, HSG D
0.397	77	Woods, Good, HSG D
0.220	77	Woods, Good, HSG D
0.124	77	Woods, Good, HSG D
0.189	77	Woods, Good, HSG D
0.006	86	Farmsteads, HSG D
0.055	86	Farmsteads, HSG D
0.053	86	Farmsteads, HSG D
0.510	81	Vineyard, Good, HSG D
4.108	81	Vineyard, Good, HSG D
0.493	91	Gravel Roads, HSG D
0.141	81	Annual Grass, Good, HSG D
0.068	81	Annual Grass, Good, HSG D
0.129	81	Annual Grass, Good, HSG D
0.007	81	Annual Grass, Good, HSG D
0.037	81	Annual Grass, Good, HSG D
0.019	81	Annual Grass, Good, HSG D
0.096	81	Annual Grass, Good, HSG D
0.045	81	Annual Grass, Good, HSG D
0.178	81	Annual Grass, Good, HSG D
0.004	81	Annual Grass, Good, HSG D
0.380	81	Annual Grass, Good, HSG D
2.120	81	Annual Grass, Good, HSG D
0.043	81	Annual Grass, Good, HSG D
0.027	81	Annual Grass, Good, HSG D
0.004	81	Annual Grass, Good, HSG D
0.001	81	Annual Grass, Good, HSG D
0.127	65	Brush, Good, HSG C
0.039	65	Brush, Good, HSG C
0.089	82	Farmsteads, HSG C
0.246	75	Vineyard, Good, HSG C
0.017	75	Annual Grass, Good, HSG C
0.224	75	Annual Grass, Good, HSG C

0.002	65	Brush, Good, HSG C
0.001	70	Woods, Good, HSG C
0.375	75	Vineyard, Good, HSG C
27.234	76	Weighted Average
27.234		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	66	0.0700	0.14		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 4.42"
2.5	315	0.0900	2.10		**Shallow Concentrated Flow, Shallow 1 - Short Grass** Short Grass Pasture Kv= 7.0 fps
8.0	83	0.1100	0.17		**Sheet Flow, Sheet Flow - Post Level Spreader** Woods: Light underbrush n= 0.400 P2= 4.42"
0.1	10	0.1100	1.66		**Shallow Concentrated Flow, Shallow 2 - Woodland** Woodland Kv= 5.0 fps
2.9	1,574	0.0400	9.03	108.35	**Trap/Vee/Rect Channel Flow, Stream** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.035
21.4	2,048	Total			

Subcatchment WS-2: Subcat WS-2



Summary for Subcatchment WS-3: Subcat WS-3

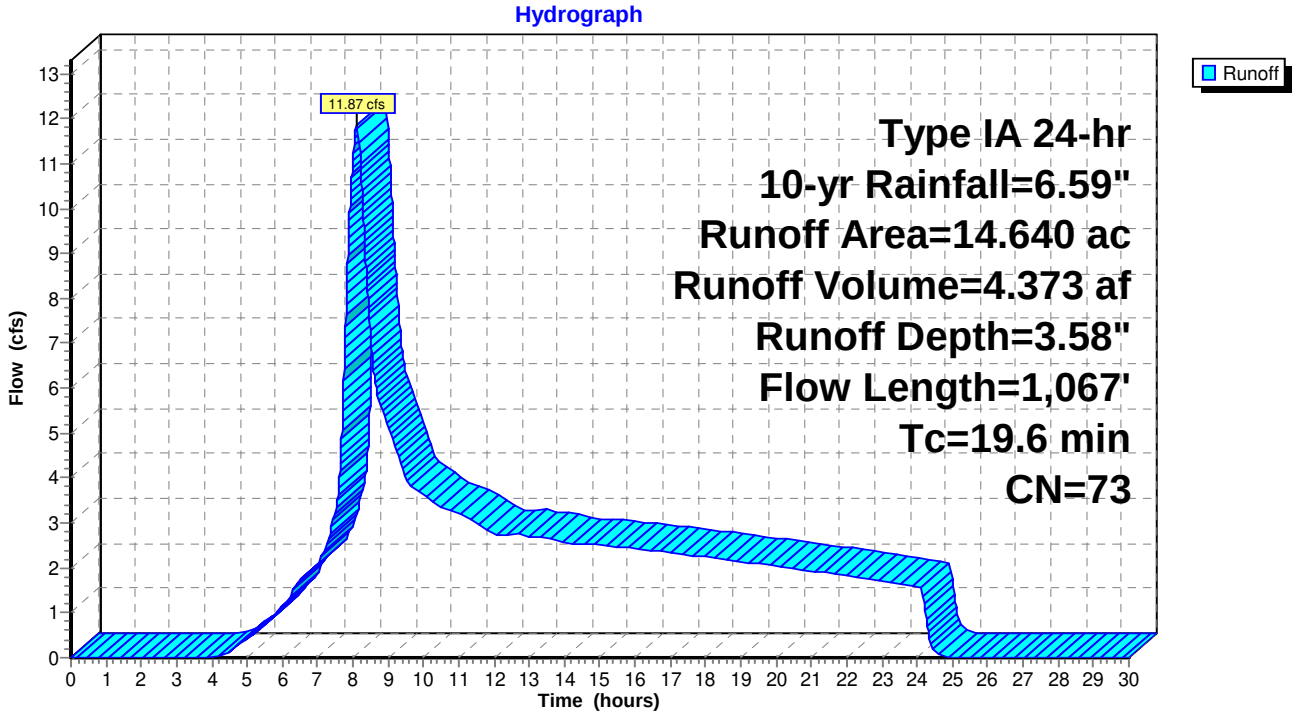
Runoff = 11.87 cfs @ 8.12 hrs, Volume= 4.373 af, Depth= 3.58"
Routed to Reach 2R : Reach 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-yr Rainfall=6.59"

Area (ac)	CN	Description
8.698	73	Brush, Good, HSG D
0.957	73	Brush, Good, HSG D
0.072	73	Brush, Good, HSG D
0.003	73	Brush, Good, HSG D
0.503	81	Vineyard, Good, HSG D
0.048	81	Annual Grass, Good, HSG D
0.036	81	Annual Grass, Good, HSG D
0.109	81	Annual Grass, Good, HSG D
0.093	81	Annual Grass, Good, HSG D
0.001	81	Annual Grass, Good, HSG D
0.012	81	Annual Grass, Good, HSG D
0.698	81	Annual Grass, Good, HSG D
0.000	81	Annual Grass, Good, HSG D
0.046	81	Annual Grass, Good, HSG D
0.202	65	Brush, Good, HSG C
0.066	70	Woods, Good, HSG C
0.043	75	Annual Grass, Good, HSG C
0.261	75	Annual Grass, Good, HSG C
1.199	65	Brush, Good, HSG C
0.000	70	Woods, Good, HSG C
0.006	70	Woods, Good, HSG C
0.721	70	Woods, Good, HSG C
0.394	75	Annual Grass, Good, HSG C
0.472	75	Annual Grass, Good, HSG C
14.640	73	Weighted Average
14.640		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	61	0.0600	0.13		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 4.42"
11.5	912	0.0700	1.32		**Shallow Concentrated Flow, Shallow 1 - Woodland** Woodland Kv= 5.0 fps
0.2	94	0.0300	7.82	93.83	**Trap/Vee/Rect Channel Flow, Stream** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.035
19.6	1,067	Total			

Subcatchment WS-3: Subcat WS-3



Summary for Reach 2R: Reach 1

Inflow Area = 14.640 ac, 0.00% Impervious, Inflow Depth = 3.58" for 10-yr event
Inflow = 11.87 cfs @ 8.12 hrs, Volume= 4.373 af
Outflow = 11.56 cfs @ 8.28 hrs, Volume= 4.373 af, Atten= 3%, Lag= 9.5 min
Routed to Link 1L : Outlet 2

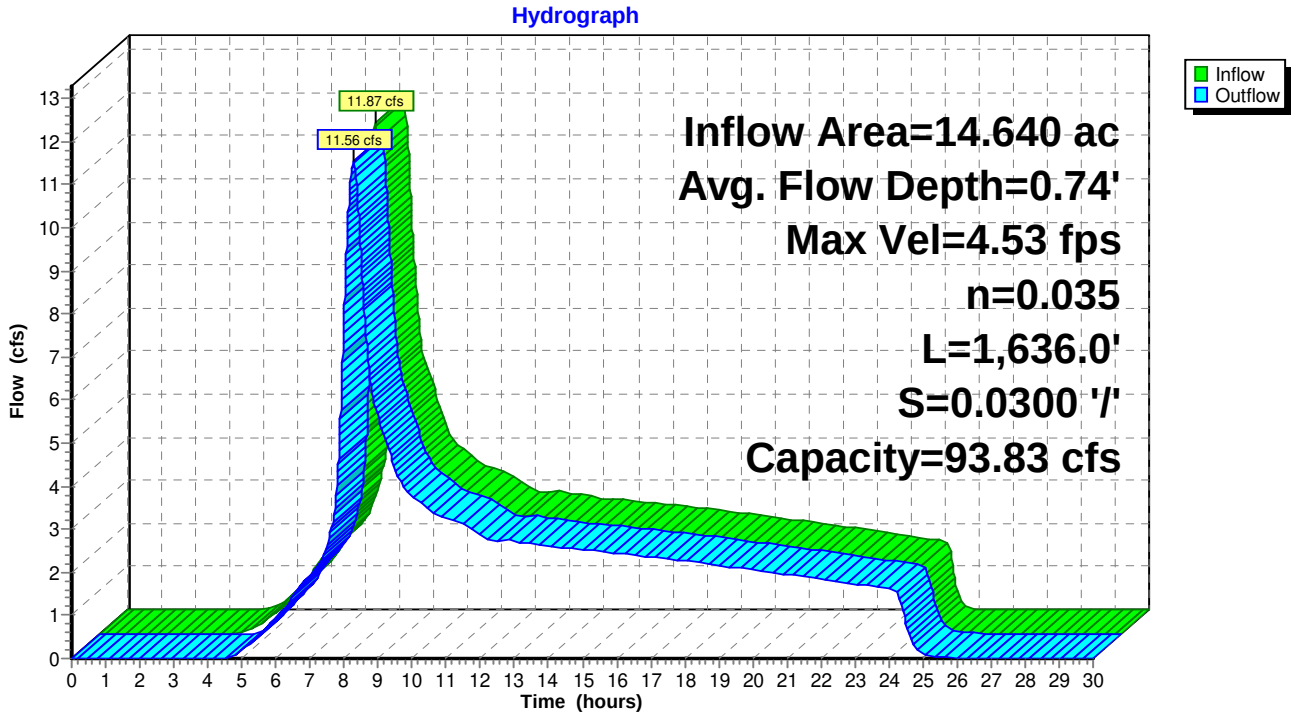
Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.53 fps, Min. Travel Time= 6.0 min
Avg. Velocity = 2.32 fps, Avg. Travel Time= 11.7 min

Peak Storage= 4,178 cf @ 8.18 hrs
Average Depth at Peak Storage= 0.74' , Surface Width= 4.94'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 93.83 cfs

2.00' x 2.00' deep channel, n= 0.035
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 1,636.0' Slope= 0.0300 '/'
Inlet Invert= 0.00', Outlet Invert= -49.08'



Reach 2R: Reach 1

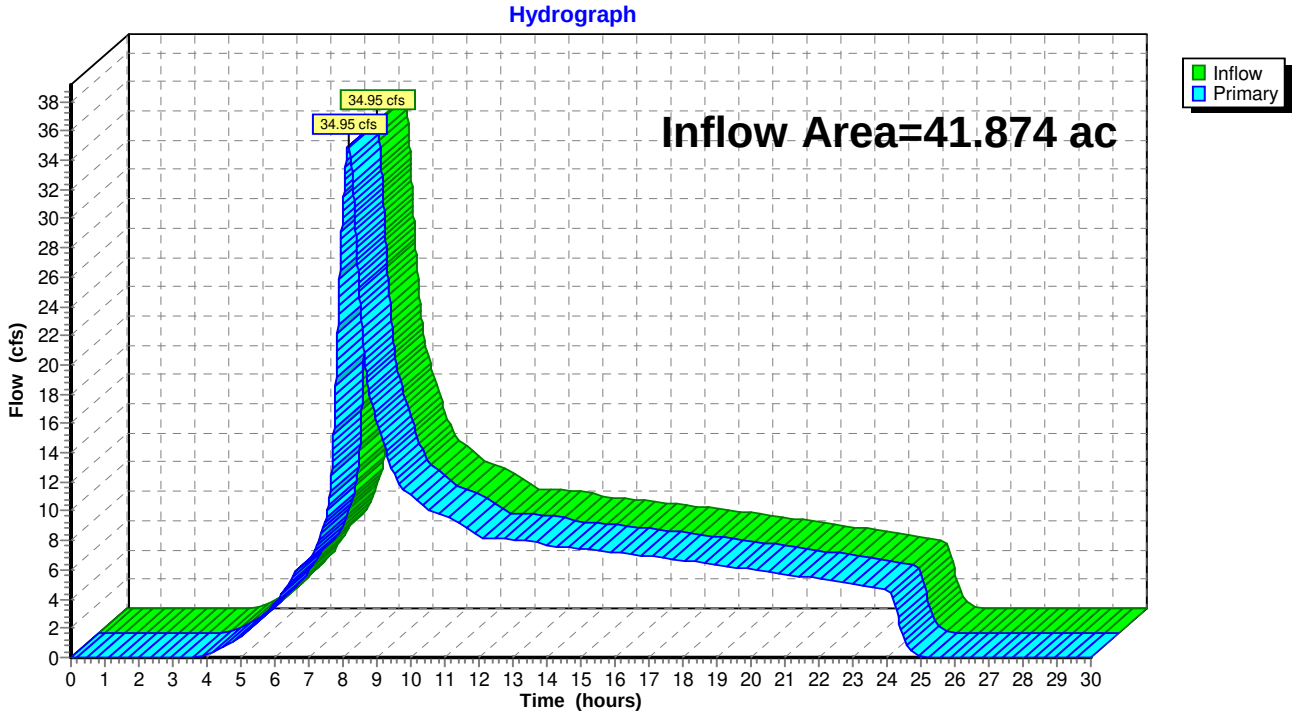


Summary for Link 1L: Outlet 2

Inflow Area = 41.874 ac, 0.00% Impervious, Inflow Depth = 3.79" for 10-yr event
Inflow = 34.95 cfs @ 8.16 hrs, Volume= 13.211 af
Primary = 34.95 cfs @ 8.16 hrs, Volume= 13.211 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link 1L: Outlet 2

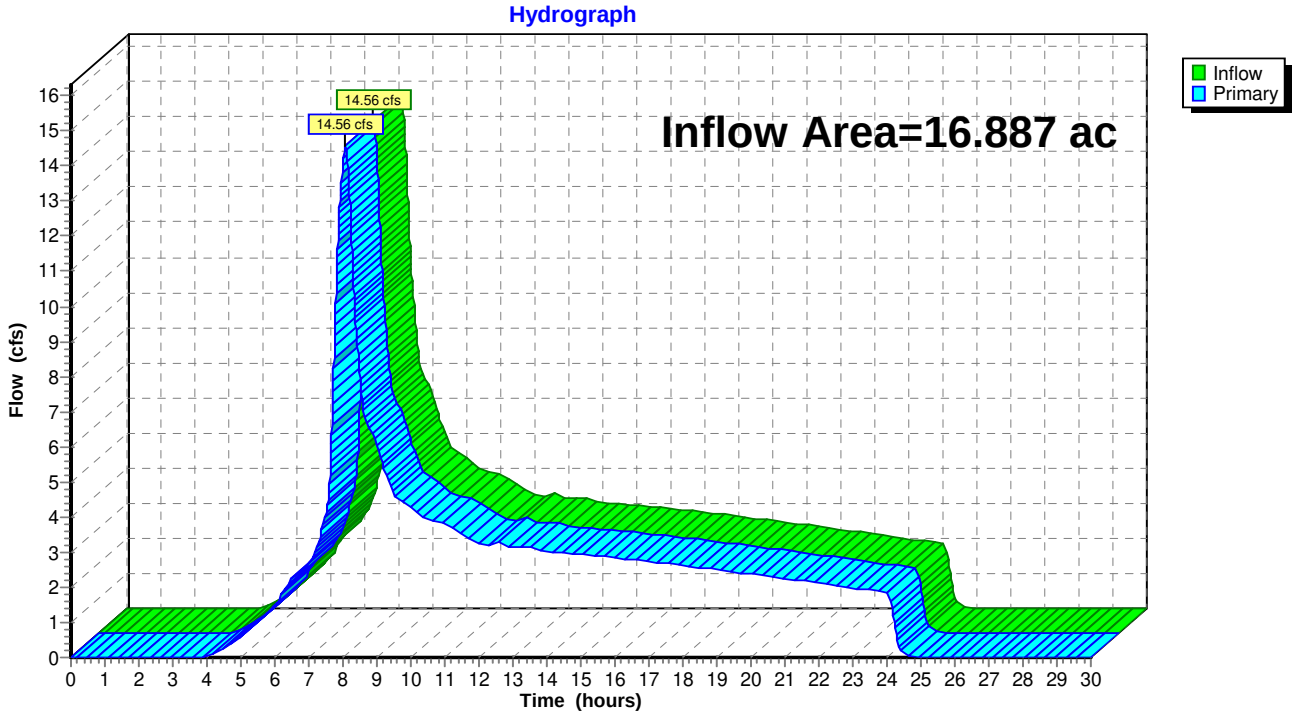


Summary for Link 2L: Outlet 1

Inflow Area = 16.887 ac, 0.00% Impervious, Inflow Depth = 3.69" for 10-yr event
Inflow = 14.56 cfs @ 8.09 hrs, Volume= 5.188 af
Primary = 14.56 cfs @ 8.09 hrs, Volume= 5.188 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link 2L: Outlet 1



Summary for Subcatchment WS-1: Subcat WS-1

Runoff = 23.20 cfs @ 8.06 hrs, Volume= 7.934 af, Depth= 5.64"
Routed to Link 2L : Outlet 1

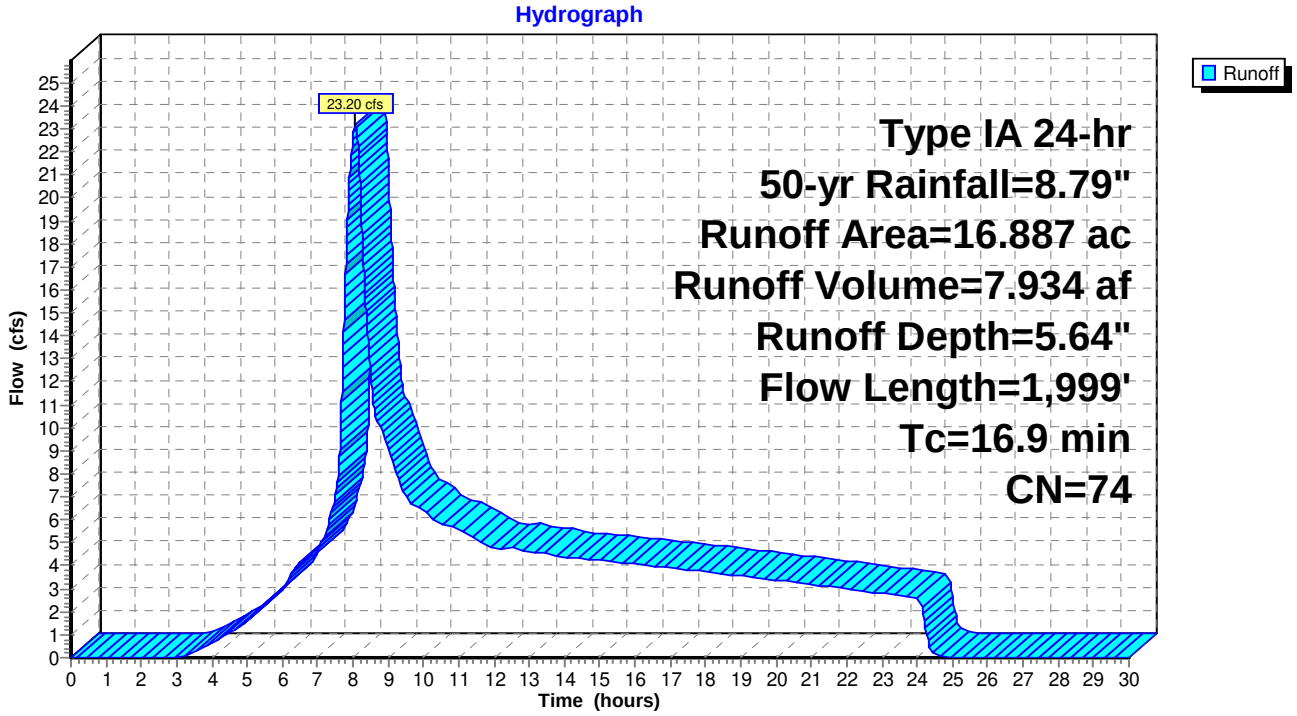
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type IA 24-hr 50-yr Rainfall=8.79"

Area (ac)	CN	Description
0.166	81	Vineyard, Good, HSG D
0.144	81	Vineyard, Good, HSG D
0.067	89	Dirt roads, HSG D
0.223	73	Brush, Good, HSG D
0.050	73	Brush, Good, HSG D
0.058	73	Brush, Good, HSG D
0.364	73	Brush, Good, HSG D
0.055	73	Brush, Good, HSG D
0.445	77	Woods, Good, HSG D
0.211	77	Woods, Good, HSG D
0.041	77	Woods, Good, HSG D
0.019	77	Woods, Good, HSG D
0.483	77	Woods, Good, HSG D
0.032	77	Woods, Good, HSG D
0.000	77	Woods, Good, HSG D
0.024	77	Woods, Good, HSG D
0.012	91	Gravel Roads, HSG D
0.009	91	Gravel Roads, HSG D
0.021	91	Gravel Roads, HSG D
0.538	81	Annual Grass, Good, HSG D
0.484	81	Annual Grass, Good, HSG D
0.419	81	Annual Grass, Good, HSG D
0.002	81	Annual Grass, Good, HSG D
0.216	81	Annual Grass, Good, HSG D
0.081	81	Annual Grass, Good, HSG D
0.052	81	Annual Grass, Good, HSG D
0.001	81	Annual Grass, Good, HSG D
0.005	81	Annual Grass, Good, HSG D
0.029	81	Annual Grass, Good, HSG D
0.005	77	Woods, Good, HSG D
0.022	77	Woods, Good, HSG D
0.317	75	Vineyard, Good, HSG C
0.443	75	Vineyard, Good, HSG C
0.047	65	Brush, Good, HSG C
0.000	65	Brush, Good, HSG C
0.201	65	Brush, Good, HSG C
0.122	65	Brush, Good, HSG C
1.216	70	Woods, Good, HSG C
1.622	70	Woods, Good, HSG C
0.278	70	Woods, Good, HSG C
0.045	70	Woods, Good, HSG C
0.061	70	Woods, Good, HSG C
0.061	70	Woods, Good, HSG C
0.150	70	Woods, Good, HSG C
1.006	70	Woods, Good, HSG C
0.053	70	Woods, Good, HSG C
0.152	70	Woods, Good, HSG C
0.127	70	Woods, Good, HSG C
0.207	70	Woods, Good, HSG C
1.462	70	Woods, Good, HSG C

0.020	70	Woods, Good, HSG C
0.045	82	Farmsteads, HSG C
1.137	75	Vineyard, Good, HSG C
0.091	89	Gravel Roads, HSG C
0.884	75	Annual Grass, Good, HSG C
0.100	75	Annual Grass, Good, HSG C
0.034	75	Annual Grass, Good, HSG C
0.005	75	Annual Grass, Good, HSG C
0.058	75	Annual Grass, Good, HSG C
0.434	75	Annual Grass, Good, HSG C
0.115	75	Annual Grass, Good, HSG C
0.205	75	Annual Grass, Good, HSG C
1.339	75	Annual Grass, Good, HSG C
0.045	75	Annual Grass, Good, HSG C
0.069	75	Annual Grass, Good, HSG C
0.006	75	Annual Grass, Good, HSG C
0.453	75	Annual Grass, Good, HSG C
16.887	74	Weighted Average
16.887		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	93	0.0500	0.20		**Sheet Flow, Sheet** Grass: Dense n= 0.240 P2= 4.42"
7.1	734	0.0600	1.71		**Shallow Concentrated Flow, Shallow - Short Grass** Short Grass Pasture Kv= 7.0 fps
1.9	1,172	0.0500	10.09	121.14	**Trap/Vee/Rect Channel Flow, Stream** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.035
16.9	1,999	Total			

Subcatchment WS-1: Subcat WS-1



Summary for Subcatchment WS-2: Subcat WS-2

Runoff = 38.07 cfs @ 8.11 hrs, Volume= 13.349 af, Depth= 5.88"
Routed to Link 1L : Outlet 2

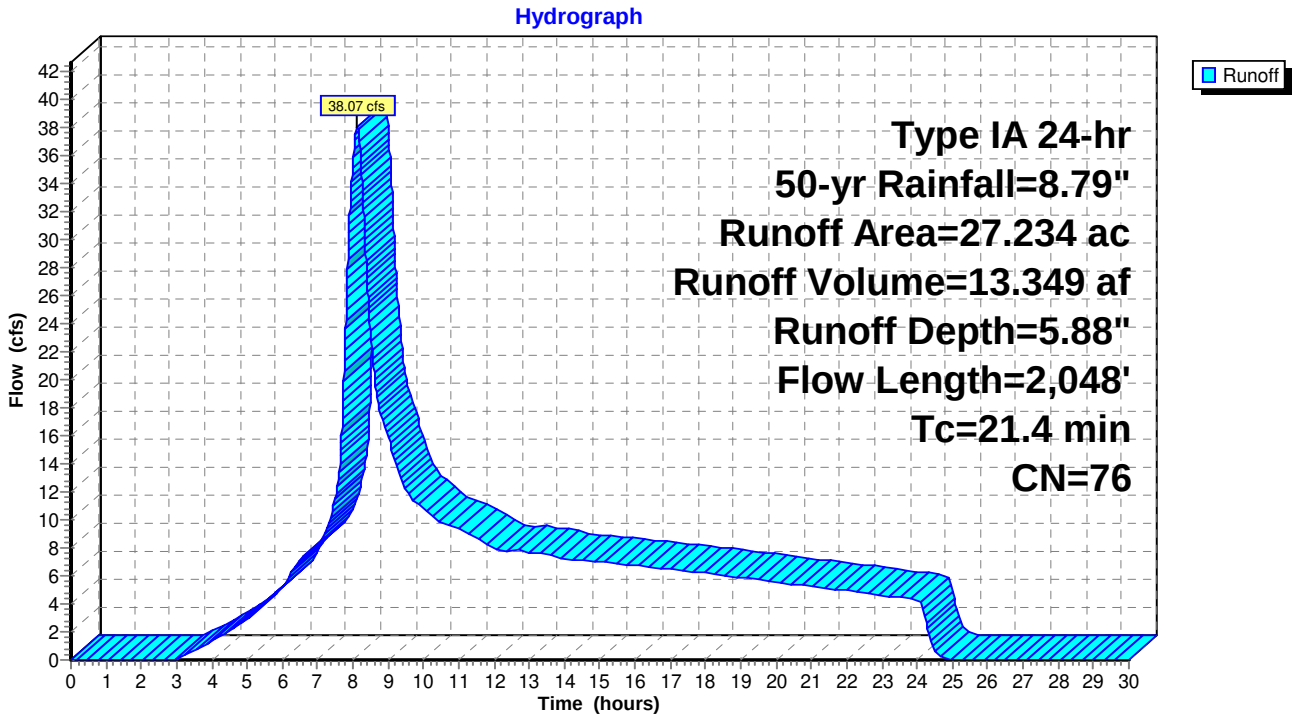
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type IA 24-hr 50-yr Rainfall=8.79"

Area (ac)	CN	Description
0.050	94	Fallow, bare soil, HSG D
0.554	73	Brush, Good, HSG D
0.010	73	Brush, Good, HSG D
0.581	73	Brush, Good, HSG D
0.081	73	Brush, Good, HSG D
0.281	73	Brush, Good, HSG D
0.162	73	Brush, Good, HSG D
0.259	73	Brush, Good, HSG D
0.138	73	Brush, Good, HSG D
0.354	73	Brush, Good, HSG D
0.026	73	Brush, Good, HSG D
10.398	73	Brush, Good, HSG D
0.091	73	Brush, Good, HSG D
0.001	73	Brush, Good, HSG D
0.664	77	Woods, Good, HSG D
1.143	77	Woods, Good, HSG D
1.817	77	Woods, Good, HSG D
0.053	77	Woods, Good, HSG D
0.397	77	Woods, Good, HSG D
0.220	77	Woods, Good, HSG D
0.124	77	Woods, Good, HSG D
0.189	77	Woods, Good, HSG D
0.006	86	Farmsteads, HSG D
0.055	86	Farmsteads, HSG D
0.053	86	Farmsteads, HSG D
0.510	81	Vineyard, Good, HSG D
4.108	81	Vineyard, Good, HSG D
0.493	91	Gravel Roads, HSG D
0.141	81	Annual Grass, Good, HSG D
0.068	81	Annual Grass, Good, HSG D
0.129	81	Annual Grass, Good, HSG D
0.007	81	Annual Grass, Good, HSG D
0.037	81	Annual Grass, Good, HSG D
0.019	81	Annual Grass, Good, HSG D
0.096	81	Annual Grass, Good, HSG D
0.045	81	Annual Grass, Good, HSG D
0.178	81	Annual Grass, Good, HSG D
0.004	81	Annual Grass, Good, HSG D
0.380	81	Annual Grass, Good, HSG D
2.120	81	Annual Grass, Good, HSG D
0.043	81	Annual Grass, Good, HSG D
0.027	81	Annual Grass, Good, HSG D
0.004	81	Annual Grass, Good, HSG D
0.001	81	Annual Grass, Good, HSG D
0.127	65	Brush, Good, HSG C
0.039	65	Brush, Good, HSG C
0.089	82	Farmsteads, HSG C
0.246	75	Vineyard, Good, HSG C
0.017	75	Annual Grass, Good, HSG C
0.224	75	Annual Grass, Good, HSG C

0.002	65	Brush, Good, HSG C
0.001	70	Woods, Good, HSG C
0.375	75	Vineyard, Good, HSG C
27.234	76	Weighted Average
27.234		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	66	0.0700	0.14		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 4.42"
2.5	315	0.0900	2.10		**Shallow Concentrated Flow, Shallow 1 - Short Grass** Short Grass Pasture Kv= 7.0 fps
8.0	83	0.1100	0.17		**Sheet Flow, Sheet Flow - Post Level Spreader** Woods: Light underbrush n= 0.400 P2= 4.42"
0.1	10	0.1100	1.66		**Shallow Concentrated Flow, Shallow 2 - Woodland** Woodland Kv= 5.0 fps
2.9	1,574	0.0400	9.03	108.35	**Trap/Vee/Rect Channel Flow, Stream** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.035
21.4	2,048	Total			

Subcatchment WS-2: Subcat WS-2



Summary for Subcatchment WS-3: Subcat WS-3

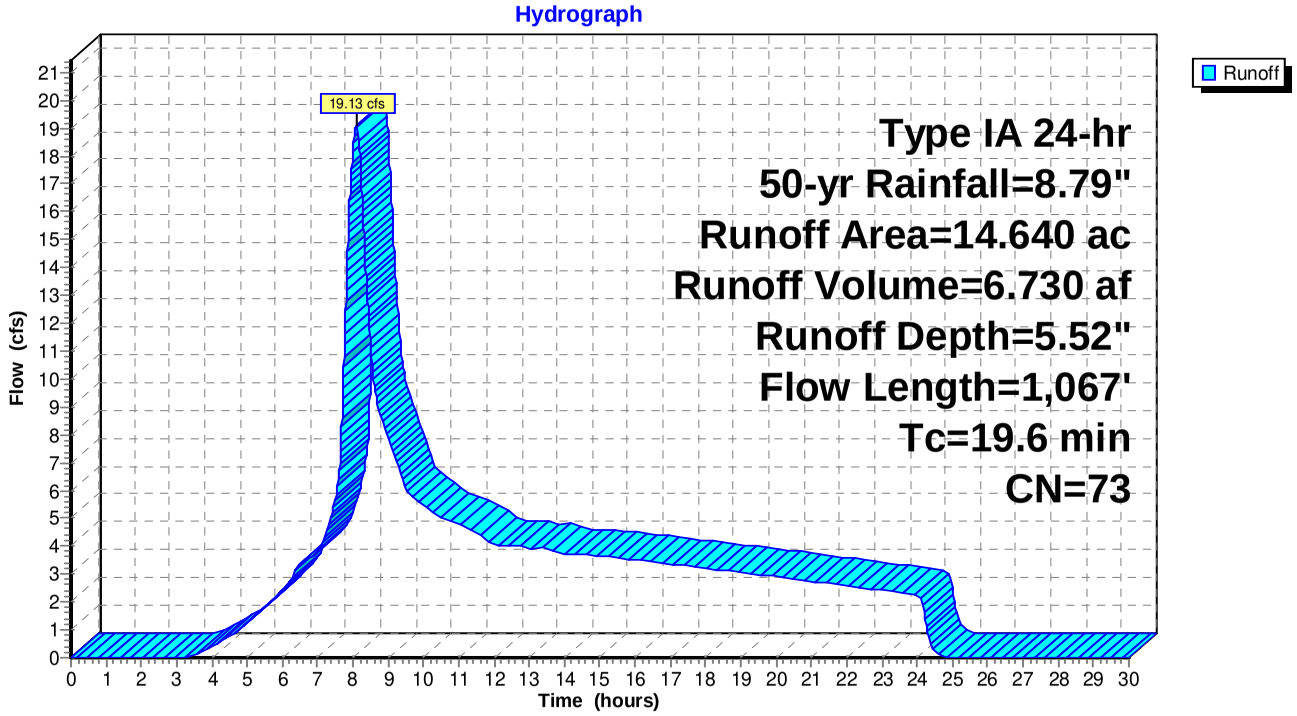
Runoff = 19.13 cfs @ 8.10 hrs, Volume= 6.730 af, Depth= 5.52"
Routed to Reach 2R : Reach 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type IA 24-hr 50-yr Rainfall=8.79"

Area (ac)	CN	Description
8.698	73	Brush, Good, HSG D
0.957	73	Brush, Good, HSG D
0.072	73	Brush, Good, HSG D
0.003	73	Brush, Good, HSG D
0.503	81	Vineyard, Good, HSG D
0.048	81	Annual Grass, Good, HSG D
0.036	81	Annual Grass, Good, HSG D
0.109	81	Annual Grass, Good, HSG D
0.093	81	Annual Grass, Good, HSG D
0.001	81	Annual Grass, Good, HSG D
0.012	81	Annual Grass, Good, HSG D
0.698	81	Annual Grass, Good, HSG D
0.000	81	Annual Grass, Good, HSG D
0.046	81	Annual Grass, Good, HSG D
0.202	65	Brush, Good, HSG C
0.066	70	Woods, Good, HSG C
0.043	75	Annual Grass, Good, HSG C
0.261	75	Annual Grass, Good, HSG C
1.199	65	Brush, Good, HSG C
0.000	70	Woods, Good, HSG C
0.006	70	Woods, Good, HSG C
0.721	70	Woods, Good, HSG C
0.394	75	Annual Grass, Good, HSG C
0.472	75	Annual Grass, Good, HSG C
14.640	73	Weighted Average
14.640		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	61	0.0600	0.13		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 4.42"
11.5	912	0.0700	1.32		**Shallow Concentrated Flow, Shallow 1 - Woodland** Woodland Kv= 5.0 fps
0.2	94	0.0300	7.82	93.83	**Trap/Vee/Rect Channel Flow, Stream** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.035
19.6	1,067	Total			

Subcatchment WS-3: Subcat WS-3



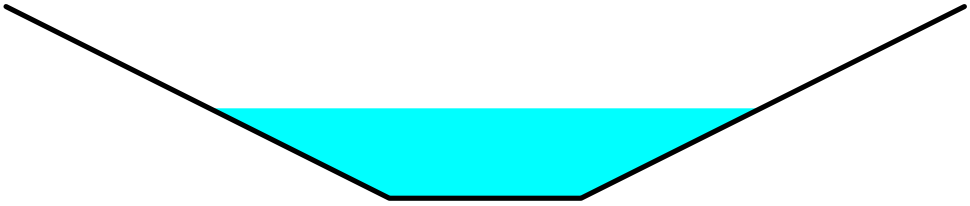
Summary for Reach 2R: Reach 1

Inflow Area = 14.640 ac, 0.00% Impervious, Inflow Depth = 5.52" for 50-yr event
Inflow = 19.13 cfs @ 8.10 hrs, Volume= 6.730 af
Outflow = 18.76 cfs @ 8.25 hrs, Volume= 6.730 af, Atten= 2%, Lag= 8.8 min
Routed to Link 1L : Outlet 2

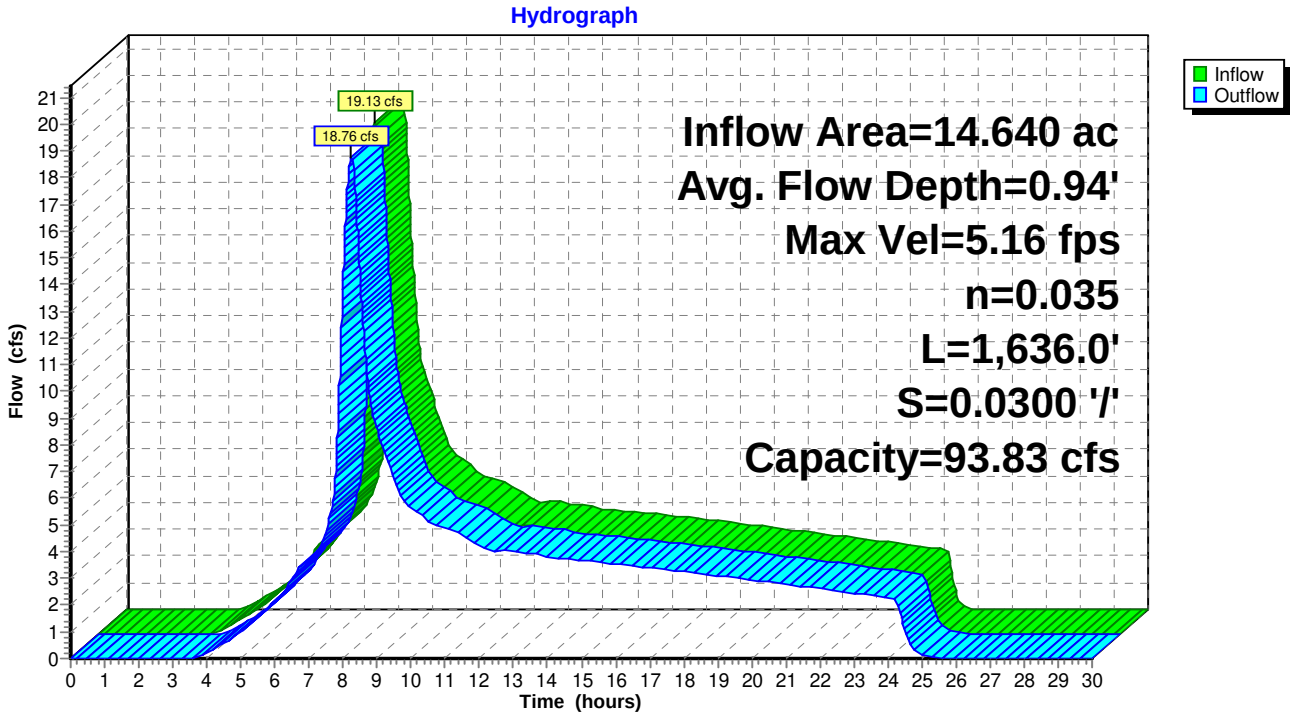
Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.16 fps, Min. Travel Time= 5.3 min
Avg. Velocity = 2.61 fps, Avg. Travel Time= 10.5 min

Peak Storage= 5,953 cf @ 8.16 hrs
Average Depth at Peak Storage= 0.94' , Surface Width= 5.75'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 93.83 cfs

2.00' x 2.00' deep channel, n= 0.035
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 1,636.0' Slope= 0.0300 '/'
Inlet Invert= 0.00', Outlet Invert= -49.08'



Reach 2R: Reach 1

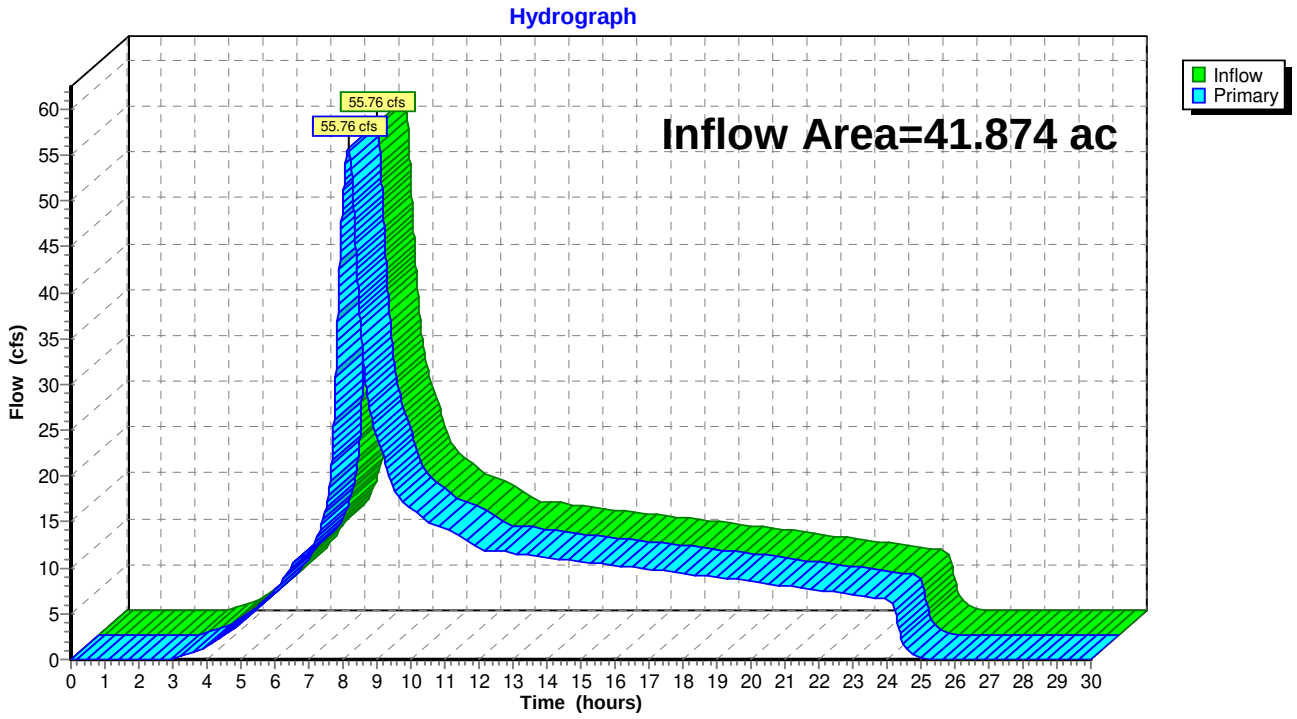


Summary for Link 1L: Outlet 2

Inflow Area = 41.874 ac, 0.00% Impervious, Inflow Depth = 5.75" for 50-yr event
Inflow = 55.76 cfs @ 8.16 hrs, Volume= 20.078 af
Primary = 55.76 cfs @ 8.16 hrs, Volume= 20.078 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link 1L: Outlet 2

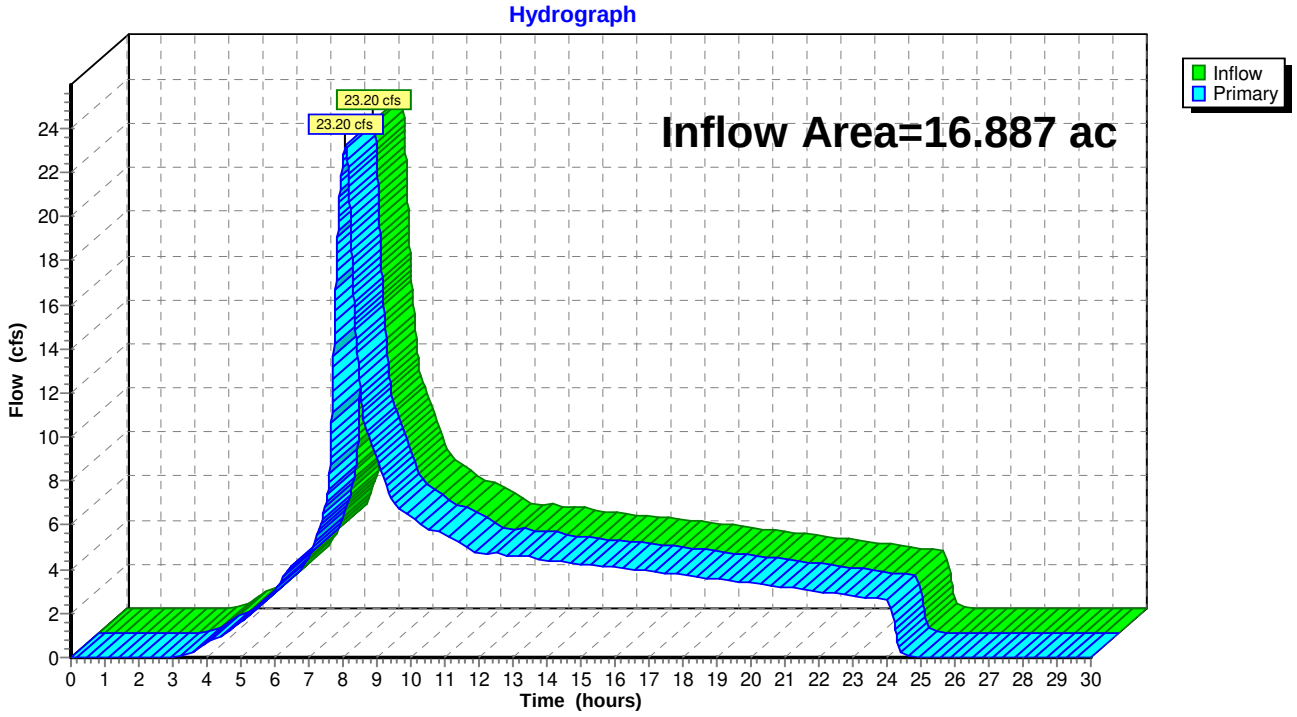


Summary for Link 2L: Outlet 1

Inflow Area = 16.887 ac, 0.00% Impervious, Inflow Depth = 5.64" for 50-yr event
Inflow = 23.20 cfs @ 8.06 hrs, Volume= 7.934 af
Primary = 23.20 cfs @ 8.06 hrs, Volume= 7.934 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link 2L: Outlet 1



Summary for Subcatchment WS-1: Subcat WS-1

Runoff = 27.00 cfs @ 8.06 hrs, Volume= 9.144 af, Depth= 6.50"
Routed to Link 2L : Outlet 1

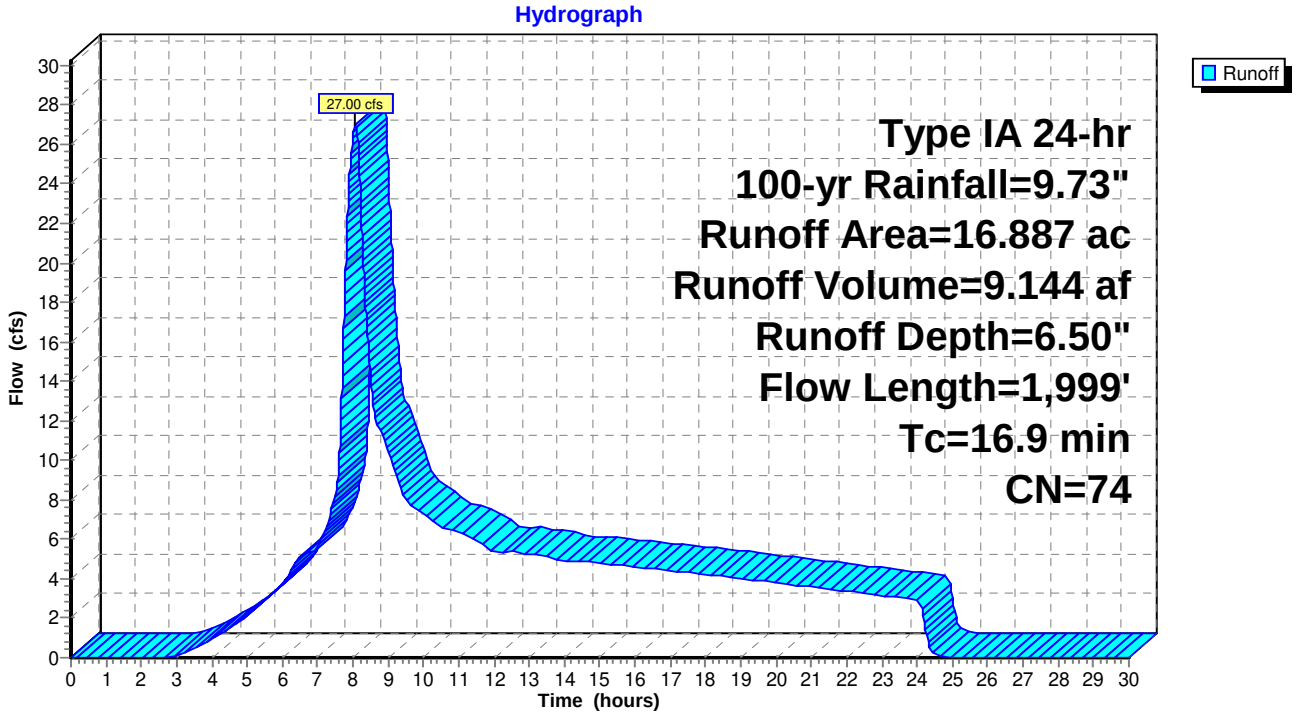
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type IA 24-hr 100-yr Rainfall=9.73"

Area (ac)	CN	Description
0.166	81	Vineyard, Good, HSG D
0.144	81	Vineyard, Good, HSG D
0.067	89	Dirt roads, HSG D
0.223	73	Brush, Good, HSG D
0.050	73	Brush, Good, HSG D
0.058	73	Brush, Good, HSG D
0.364	73	Brush, Good, HSG D
0.055	73	Brush, Good, HSG D
0.445	77	Woods, Good, HSG D
0.211	77	Woods, Good, HSG D
0.041	77	Woods, Good, HSG D
0.019	77	Woods, Good, HSG D
0.483	77	Woods, Good, HSG D
0.032	77	Woods, Good, HSG D
0.000	77	Woods, Good, HSG D
0.024	77	Woods, Good, HSG D
0.012	91	Gravel Roads, HSG D
0.009	91	Gravel Roads, HSG D
0.021	91	Gravel Roads, HSG D
0.538	81	Annual Grass, Good, HSG D
0.484	81	Annual Grass, Good, HSG D
0.419	81	Annual Grass, Good, HSG D
0.002	81	Annual Grass, Good, HSG D
0.216	81	Annual Grass, Good, HSG D
0.081	81	Annual Grass, Good, HSG D
0.052	81	Annual Grass, Good, HSG D
0.001	81	Annual Grass, Good, HSG D
0.005	81	Annual Grass, Good, HSG D
0.029	81	Annual Grass, Good, HSG D
0.005	77	Woods, Good, HSG D
0.022	77	Woods, Good, HSG D
0.317	75	Vineyard, Good, HSG C
0.443	75	Vineyard, Good, HSG C
0.047	65	Brush, Good, HSG C
0.000	65	Brush, Good, HSG C
0.201	65	Brush, Good, HSG C
0.122	65	Brush, Good, HSG C
1.216	70	Woods, Good, HSG C
1.622	70	Woods, Good, HSG C
0.278	70	Woods, Good, HSG C
0.045	70	Woods, Good, HSG C
0.061	70	Woods, Good, HSG C
0.061	70	Woods, Good, HSG C
0.150	70	Woods, Good, HSG C
1.006	70	Woods, Good, HSG C
0.053	70	Woods, Good, HSG C
0.152	70	Woods, Good, HSG C
0.127	70	Woods, Good, HSG C
0.207	70	Woods, Good, HSG C
1.462	70	Woods, Good, HSG C

0.020	70	Woods, Good, HSG C
0.045	82	Farmsteads, HSG C
1.137	75	Vineyard, Good, HSG C
0.091	89	Gravel Roads, HSG C
0.884	75	Annual Grass, Good, HSG C
0.100	75	Annual Grass, Good, HSG C
0.034	75	Annual Grass, Good, HSG C
0.005	75	Annual Grass, Good, HSG C
0.058	75	Annual Grass, Good, HSG C
0.434	75	Annual Grass, Good, HSG C
0.115	75	Annual Grass, Good, HSG C
0.205	75	Annual Grass, Good, HSG C
1.339	75	Annual Grass, Good, HSG C
0.045	75	Annual Grass, Good, HSG C
0.069	75	Annual Grass, Good, HSG C
0.006	75	Annual Grass, Good, HSG C
0.453	75	Annual Grass, Good, HSG C
16.887	74	Weighted Average
16.887		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	93	0.0500	0.20		**Sheet Flow, Sheet** Grass: Dense n= 0.240 P2= 4.42"
7.1	734	0.0600	1.71		**Shallow Concentrated Flow, Shallow - Short Grass** Short Grass Pasture Kv= 7.0 fps
1.9	1,172	0.0500	10.09	121.14	**Trap/Vee/Rect Channel Flow, Stream** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.035
16.9	1,999	Total			

Subcatchment WS-1: Subcat WS-1



Summary for Subcatchment WS-2: Subcat WS-2

Runoff = 44.08 cfs @ 8.11 hrs, Volume= 15.329 af, Depth= 6.75"
Routed to Link 1L : Outlet 2

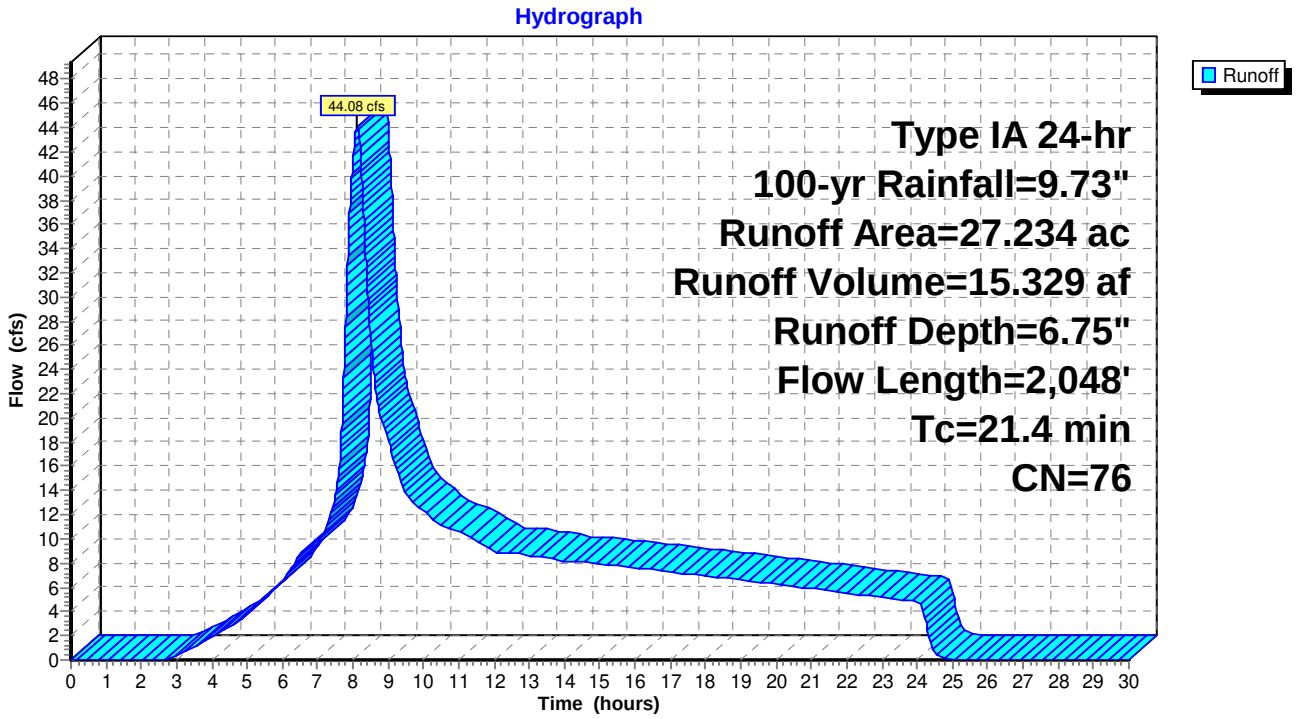
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type IA 24-hr 100-yr Rainfall=9.73"

Area (ac)	CN	Description
0.050	94	Fallow, bare soil, HSG D
0.554	73	Brush, Good, HSG D
0.010	73	Brush, Good, HSG D
0.581	73	Brush, Good, HSG D
0.081	73	Brush, Good, HSG D
0.281	73	Brush, Good, HSG D
0.162	73	Brush, Good, HSG D
0.259	73	Brush, Good, HSG D
0.138	73	Brush, Good, HSG D
0.354	73	Brush, Good, HSG D
0.026	73	Brush, Good, HSG D
10.398	73	Brush, Good, HSG D
0.091	73	Brush, Good, HSG D
0.001	73	Brush, Good, HSG D
0.664	77	Woods, Good, HSG D
1.143	77	Woods, Good, HSG D
1.817	77	Woods, Good, HSG D
0.053	77	Woods, Good, HSG D
0.397	77	Woods, Good, HSG D
0.220	77	Woods, Good, HSG D
0.124	77	Woods, Good, HSG D
0.189	77	Woods, Good, HSG D
0.006	86	Farmsteads, HSG D
0.055	86	Farmsteads, HSG D
0.053	86	Farmsteads, HSG D
0.510	81	Vineyard, Good, HSG D
4.108	81	Vineyard, Good, HSG D
0.493	91	Gravel Roads, HSG D
0.141	81	Annual Grass, Good, HSG D
0.068	81	Annual Grass, Good, HSG D
0.129	81	Annual Grass, Good, HSG D
0.007	81	Annual Grass, Good, HSG D
0.037	81	Annual Grass, Good, HSG D
0.019	81	Annual Grass, Good, HSG D
0.096	81	Annual Grass, Good, HSG D
0.045	81	Annual Grass, Good, HSG D
0.178	81	Annual Grass, Good, HSG D
0.004	81	Annual Grass, Good, HSG D
0.380	81	Annual Grass, Good, HSG D
2.120	81	Annual Grass, Good, HSG D
0.043	81	Annual Grass, Good, HSG D
0.027	81	Annual Grass, Good, HSG D
0.004	81	Annual Grass, Good, HSG D
0.001	81	Annual Grass, Good, HSG D
0.127	65	Brush, Good, HSG C
0.039	65	Brush, Good, HSG C
0.089	82	Farmsteads, HSG C
0.246	75	Vineyard, Good, HSG C
0.017	75	Annual Grass, Good, HSG C
0.224	75	Annual Grass, Good, HSG C

0.002	65	Brush, Good, HSG C
0.001	70	Woods, Good, HSG C
0.375	75	Vineyard, Good, HSG C
27.234	76	Weighted Average
27.234		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	66	0.0700	0.14		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 4.42"
2.5	315	0.0900	2.10		**Shallow Concentrated Flow, Shallow 1 - Short Grass** Short Grass Pasture Kv= 7.0 fps
8.0	83	0.1100	0.17		**Sheet Flow, Sheet Flow - Post Level Spreader** Woods: Light underbrush n= 0.400 P2= 4.42"
0.1	10	0.1100	1.66		**Shallow Concentrated Flow, Shallow 2 - Woodland** Woodland Kv= 5.0 fps
2.9	1,574	0.0400	9.03	108.35	**Trap/Vee/Rect Channel Flow, Stream** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.035
21.4	2,048	Total			

Subcatchment WS-2: Subcat WS-2



Summary for Subcatchment WS-3: Subcat WS-3

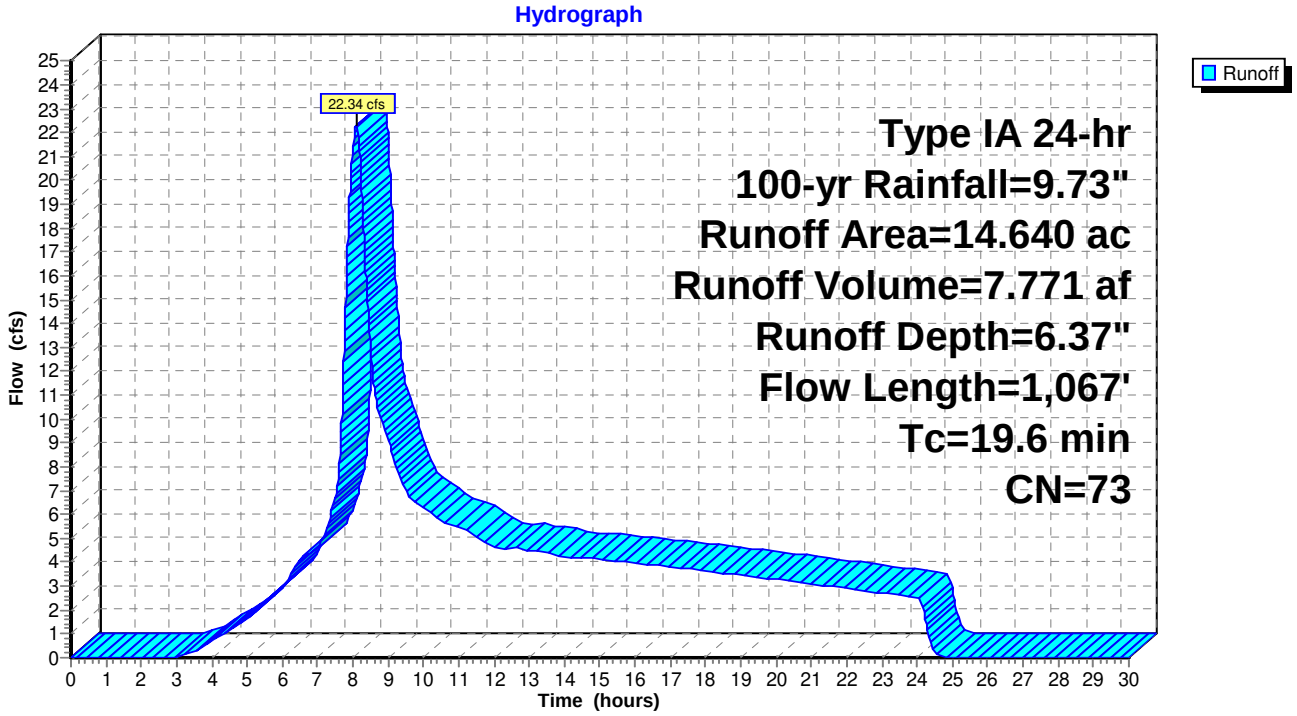
Runoff = 22.34 cfs @ 8.10 hrs, Volume= 7.771 af, Depth= 6.37"
Routed to Reach 2R : Reach 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type IA 24-hr 100-yr Rainfall=9.73"

Area (ac)	CN	Description
8.698	73	Brush, Good, HSG D
0.957	73	Brush, Good, HSG D
0.072	73	Brush, Good, HSG D
0.003	73	Brush, Good, HSG D
0.503	81	Vineyard, Good, HSG D
0.048	81	Annual Grass, Good, HSG D
0.036	81	Annual Grass, Good, HSG D
0.109	81	Annual Grass, Good, HSG D
0.093	81	Annual Grass, Good, HSG D
0.001	81	Annual Grass, Good, HSG D
0.012	81	Annual Grass, Good, HSG D
0.698	81	Annual Grass, Good, HSG D
0.000	81	Annual Grass, Good, HSG D
0.046	81	Annual Grass, Good, HSG D
0.202	65	Brush, Good, HSG C
0.066	70	Woods, Good, HSG C
0.043	75	Annual Grass, Good, HSG C
0.261	75	Annual Grass, Good, HSG C
1.199	65	Brush, Good, HSG C
0.000	70	Woods, Good, HSG C
0.006	70	Woods, Good, HSG C
0.721	70	Woods, Good, HSG C
0.394	75	Annual Grass, Good, HSG C
0.472	75	Annual Grass, Good, HSG C
14.640	73	Weighted Average
14.640		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	61	0.0600	0.13		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 4.42"
11.5	912	0.0700	1.32		**Shallow Concentrated Flow, Shallow 1 - Woodland** Woodland Kv= 5.0 fps
0.2	94	0.0300	7.82	93.83	**Trap/Vee/Rect Channel Flow, Stream** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.035
19.6	1,067	Total			

Subcatchment WS-3: Subcat WS-3



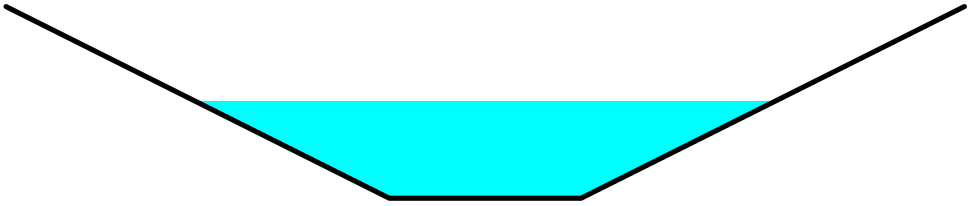
Summary for Reach 2R: Reach 1

Inflow Area = 14.640 ac, 0.00% Impervious, Inflow Depth = 6.37" for 100-yr event
Inflow = 22.34 cfs @ 8.10 hrs, Volume= 7.771 af
Outflow = 21.95 cfs @ 8.24 hrs, Volume= 7.771 af, Atten= 2%, Lag= 8.5 min
Routed to Link 1L : Outlet 2

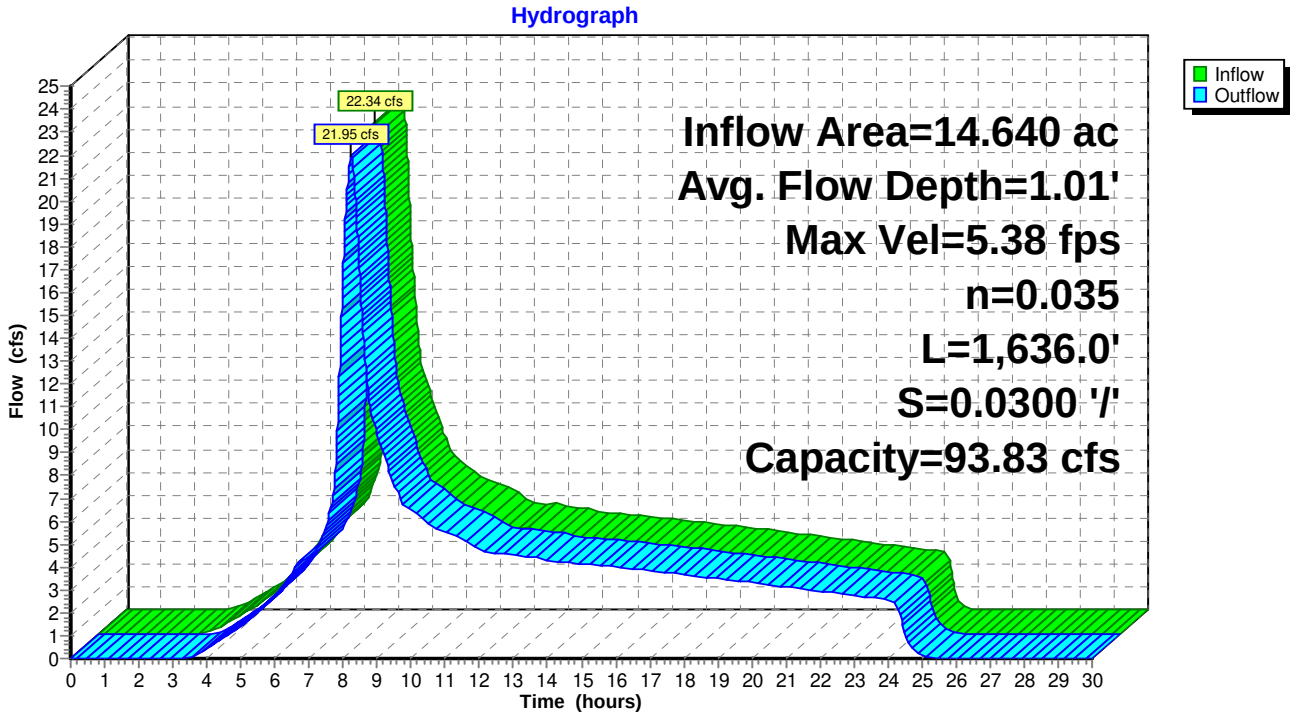
Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.38 fps, Min. Travel Time= 5.1 min
Avg. Velocity = 2.71 fps, Avg. Travel Time= 10.1 min

Peak Storage= 6,680 cf @ 8.15 hrs
Average Depth at Peak Storage= 1.01' , Surface Width= 6.06'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 93.83 cfs

2.00' x 2.00' deep channel, n= 0.035
Side Slope Z-value= 2.0 '/' Top Width= 10.00'
Length= 1,636.0' Slope= 0.0300 '/'
Inlet Invert= 0.00', Outlet Invert= -49.08'



Reach 2R: Reach 1

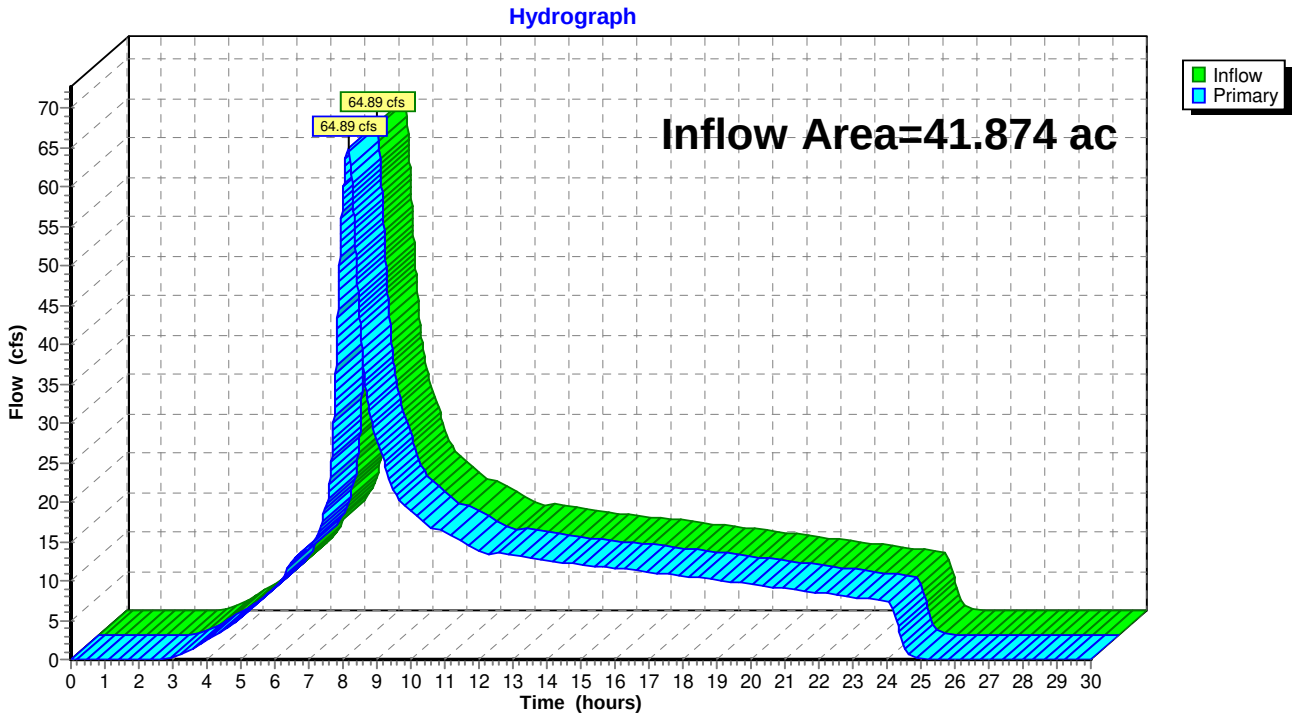


Summary for Link 1L: Outlet 2

Inflow Area = 41.874 ac, 0.00% Impervious, Inflow Depth = 6.62" for 100-yr event
Inflow = 64.89 cfs @ 8.15 hrs, Volume= 23.100 af
Primary = 64.89 cfs @ 8.15 hrs, Volume= 23.100 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link 1L: Outlet 2



Summary for Link 2L: Outlet 1

Inflow Area = 16.887 ac, 0.00% Impervious, Inflow Depth = 6.50" for 100-yr event
Inflow = 27.00 cfs @ 8.06 hrs, Volume= 9.144 af
Primary = 27.00 cfs @ 8.06 hrs, Volume= 9.144 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link 2L: Outlet 1

