

BERTIN ENGINEERING



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**STORMWATER DRAINAGE ANALYSIS**

**MOUNTAIN VIEW AUTO BODY  
BLOCK 3905, LOTS 12, 13 & 14  
246-264 SOUTH BROAD STREET  
VILLGE OF RIDGEWOOD, BERGEN COUNTY, NEW JERSEY  
BE# 22-146**

**DATE PREPARED:**

**JUNE 13, 2022**

**SHAN-PEI FANCHIANG, P.E.  
N.J.P.E. LICENSE NO. 37073**

5/23/22 BE# 22-146 RidgeWood Auto Body Design Co. Report, 12/19/22



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WATER QUALITY STORM HYDROGRAPH REPORTS

#### MAPS:

SOIL BOUNDARY MAP  
EXISTING DRAINAGE AREA MAP DM1  
PROPOSED DRAINAGE AREA MAP DM2



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## STORMWATER DRAINAGE ANALYSIS

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### I. PROJECT SUMMARY

The proposed project consists of redeveloping the fully developed lots into an automobile service center. The entire site is 1.695 acres. The existing site contains large portions of asphalt and gravel driveways and parking surfaces. Several 1-story buildings area also located throughout the site. The total amount of existing impervious and gravel surfaces at the site is 1.536 acres. The proposed development will decrease these surfaces and contain a larger portion of roof area.

For the stormwater drainage analysis, the portion of the site being disturbed will be considered the area of study. This analysis area has been divided into two drainage areas. The first drainage area is that which is directed to towards the existing County ROW and drainage system located in South Broad Street. The existing runoff sheet flows overland towards South Broad Street and will continue to do so for the proposed condition. The proposed development will increase the size of the drainage area but reduce the amount of impervious surfaces resulting in proposed peak flow rates that do not exceed existing for the four design storms. No additional measures to reduce the runoff.

Below is a summary of the stormwater analysis results for the County R.O.W. drainage area:

Frequency (year)	Existing (cfs)	Proposed (cfs)	Change (cfs)	% Exist.	Max. Allowable %
2	1.09	0.94	0.14	86.9%	100
10	1.72	1.63	0.10	94.4%	100
25	2.16	2.10	0.06	97.2%	100
100	2.96	2.96	0.00	100.0%	100

As per the above table, runoff directed towards the County ROW will have peak flow rates that do not exceed the existing for all design storms.

The second studied drainage area is that which is directed to the west towards the Conrail Erie Lackawanna Railroad. The existing runoff sheet flows overland towards the railroad and will continue to do so for the proposed condition. The proposed development will increase the size of the drainage area and the amount of impervious area. Due to the increases, infiltration will be required to reduce the proposed runoff to meet the required rate reductions. The outlet of the infiltration system will discharge on-site and sheet flow towards the railroad. The infiltration system will capture and hold all collected runoff up to the 25 year storm event before any stormwater is discharged.

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The development will reduce the amount of motor vehicle surfaces currently existing. Therefore, no water quality measures are required. However, since the infiltration basin will collect runoff from surfaces other than roof area, water quality treatment is required on non-roof runoff collected by the basin.

Below is a summary of the stormwater analysis results for the Railroad drainage area:

Frequency (year)	Existing (cfs)	Proposed (cfs)	Change (cfs)	% Exist.	Max. Allowable %
2	2.99	1.30	1.69	43.5%	50
10	4.86	2.09	2.17	42.9%	75
25	6.17	2.65	2.17	42.9%	n/a
100	8.52	3.67	4.85	43.1%	80

As per the above table, runoff directed towards the railroad will be reduced to levels below the existing with the required reductions for all design storms.



**3. EXISTING VS. PROPOSED RUNOFF**

Frequency (year)	Existing (cfs)	Proposed (cfs)	Change (cfs)	% Exist.
2	1.09	0.94	0.14	86.9%
10	1.72	1.63	0.10	94.4%
25	2.16	2.10	0.06	97.2%
100	2.96	2.96	0.00	100.0%

The calculations indicate that the proposed site redevelopment decreases the surface runoff towards the County stormwater system for the four storms. Runoff due to a 2, 10, 25 & 100 year storm are decreased by 0.14, 0.10, 0.06 & 0.00 cfs respectively. No additional water quantity control is required.

**IV. DRAINAGE AREA DIRECTED TOWARDS RAILROAD**

**1. EXISTING RUNOFF**

I) Area of Concern:

Drainage Area	Total (acres)	Pervious (acres)	Gravel (acres)	Impervious (acres)
Existing	1.266	0.096	0.667	0.503

The existing drainage area is located in Butler sand soil type (HSG rating of C).

CN Values (Hydrologic Group C),  
 Pervious = 74  
 Gravel = 89  
 Impervious = 98

II) Peak Discharge (as determined by TR-55):

Existing Drainage Area - Pervious				
Frequency (year)	Rainfall, P (in)	Curve Number	T <sub>c</sub> (min)	Peak Discharge (cfs)
2	3.34	74	6.0	0.11
10	5.07			0.23
25	6.28			0.33
100	8.47			0.51

Existing Drainage Area - Gravel & Impervious				
Frequency (year)	Rainfall, P (in)	Curve Number	T <sub>c</sub> (min)	Peak Discharge (cfs)
2	3.34	93	6.0	2.88
10	5.07			4.63
25	6.28			5.84
100	8.47			8.01

Existing Drainage Area - Railroad						
Storm (year)	Pervious		Gravel & Imperv.		Combined	
	Peak (cfs)	Time (hr)	Peak (cfs)	Time (hr)	Peak (cfs)	Time (hr)
2	0.11	12.15	2.88	12.10	2.99	12.10
10	0.23	12.15	4.63	12.10	4.86	12.10
25	0.33	12.15	5.84	12.10	6.17	12.10
100	0.51	12.10	8.01	12.10	8.52	12.10

**2. PROPOSED RUNOFF**

A large portion of the proposed drainage area will be directed into an underground infiltration basin (Prop - Infiltrate) located beneath the northeast parking area. The infiltrated drainage area includes the proposed parking and a small portion of the proposed roof runoff. The remaining portion of the proposed drainage area (Prop - Bypass) will bypass the infiltration system and continue to flow overland in the current drainage pattern.

Drainage Area	Total (acres)	Pervious (acres)	Impervious (acres)
Prop - Infiltrate	0.686	0.043	0.643
Prop - Bypass	0.558	0.137	0.421

**3. PROPOSED RUNOFF - INFILTRATION**

I) Peak Discharge: Proposed Drainage Area - Infiltrated (as determined by TR-55):

Proposed Drainage Area - Infiltrate (Pervious)				
Frequency (year)	Rainfall, P (in)	Curve Number	T <sub>c</sub> (min)	Peak Discharge (cfs)
2	3.34	74	6.0	0.05
10	5.07			0.10
25	6.28			0.15
100	8.47			0.23

Proposed Drainage Area - Infiltrate (Impervious)				
Frequency (year)	Rainfall, P (in)	Curve Number	T <sub>c</sub> (min)	Peak Discharge (cfs)
2	3.34	98	6.0	1.76
10	5.07			2.69
25	6.28			3.33
100	8.47			4.50

Proposed Drainage Area - Infiltrate						
Storm (year)	Pervious		Impervious		Combined	
	Peak (cfs)	Time (hr)	Peak (cfs)	Time (hr)	Peak (cfs)	Time (hr)
2	0.05	12.15	1.76	12.10	1.80	12.10
10	0.10	12.15	2.69	12.10	2.79	12.10
25	0.15	12.15	3.33	12.10	3.48	12.10
100	0.23	12.10	4.50	12.10	4.73	12.10

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22-146: Mountain View Auto Body - Ridgewood, NJ		
4	OF	7
MBL	DATE	6/13/2022
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**II) Detention Structure Summary - Below Ground Basin:**

Basin: 240 Cultec 360HD (5,415 sf bed)  
 Outlet Control: 52 LF of 15" HDPE @ 1.0%, Inv. 148.75  
 4' Rect. Weir at Elevation 149.90

Depth vs. Storage		
Elevation (ft)	Discharge (cfs)	Storage (cf)
146.00	0.00	0
146.50	0.00	1,083
147.00	0.00	3,372
147.50	0.00	5,597
148.00	0.00	7,731
148.50	0.00	9,735
149.00	0.00	11,539
149.50	0.00	12,926
150.00	0.41	14,009

<-Bottom of Stone  
 <-Bottom of Chamber  
  
 <-Top of Chamber  
 <-Top of Stone

See attached Cultec Recharger 360HD Volume Worksheet

Storm (year)	Inflow		Outflow		
	Peak Flow (cfs)	Time (hr)	Peak Flow (cfs)	Time (hr)	Peak Elev. (ft)
2	1.76	12.10	0.00	n/a	147.82
10	2.69	12.10	0.00	n/a	148.83
25	3.33	12.10	0.00	n/a	149.87
100	4.50	12.10	0.35	13.50	149.99

**III) Overflow Design:**

The outlet control structure is designed with an overflow weir. Design the overflow weir for unrouted 100 Year Storm with the weir as the only outlet.

Use  $Q = 3.2 \times L \times H^{1.5}$  to solve for H (head)

Outlet Control Structure:

100-yr Inflow:  $Q_{100} = 4.73$  cfs  
 $L = 4$  ft  
 Solve for H,  $H = 0.52$  ft above weir

The calculated value for H, 0.52 ft, should be provided as freeboard above the weir. With the weir set at elevation 149.90, the bottom of the outlet control structure lid should be at minimum elevation 150.42 to provide the calculated value of H.

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**4. PROPOSED RUNOFF - BYPASS**

As determined by TR-55:

Proposed Drainage Area - Bypass (Pervious)				
Frequency (year)	Rainfall, P (in)	Curve Number	T <sub>c</sub> (min)	Peak Discharge (cfs)
2	3.34	74	10.0	0.15
10	5.07			0.33
25	6.28			0.47
100	8.47			0.72

Proposed Drainage Area - Bypass (Impervious)				
Frequency (year)	Rainfall, P (in)	Curve Number	T <sub>c</sub> (min)	Peak Discharge (cfs)
2	3.34	98	10.0	1.15
10	5.07			1.76
25	6.28			2.18
100	8.47			2.95

Proposed Drainage Area - Bypass						
Storm (year)	Pervious		Impervious		Combined	
	Peak (cfs)	Time (hr)	Peak (cfs)	Time (hr)	Peak (cfs)	Time (hr)
2	0.15	12.15	1.15	12.10	1.30	12.10
10	0.33	12.15	1.76	12.10	2.09	12.10
25	0.47	12.15	2.18	12.10	2.65	12.10
100	0.72	12.10	2.95	12.10	3.67	12.10

**5. PROPOSED RUNOFF - COMBINED (TOTAL)**

Proposed Drainage Area						
Storm (year)	Infiltration Route		Bypass		Combined	
	Peak (cfs)	Time (hr)	Peak (cfs)	Time (hr)	Peak (cfs)	Time (hr)
2	0.00	n/a	1.30	12.10	1.30	12.10
10	0.00	n/a	2.09	12.10	2.09	12.10
25	0.00	n/a	2.65	12.10	2.65	12.10
100	0.35	13.50	3.67	12.10	3.67	12.10

**6. EXISTING VS. PROPOSED RUNOFF**

Frequency (year)	Existing (cfs)	Proposed (cfs)	Change (cfs)	% Exist.
2	2.99	1.30	1.69	43.5%
10	4.86	2.09	2.17	42.9%
25	6.17	2.65	2.17	42.9%
100	8.52	3.67	4.85	43.1%

The calculations indicate that the proposed site redevelopment decreases the surface runoff towards the railroad property to the west for the four storms. Runoff due to a 2, 10, 25 & 100 year storm are decreased by 1.69, 2.17, 2.17 & 4.85 cfs respectively.

**7. WATER QUALITY DESIGN**

Required TSS Removal Rate:

Existing On-Site Motor Vehicle Surface: 1.195 ac  
 Proposed On-Site Motor Vehicle Surface: 0.728 ac  
 Net Increase in Untreated Impervious Surfaces: -0.467 ac

Since the proposed amount of motor vehicle surfaces is below the existing, no water quality measures are required. However, due to use of subsurface infiltration systems, runoff from non-roof runoff must be treated to 80% TSS for the WQDS as per NJBMP Chapter 9.8.

The treatment unit will treat the pavement area directed into the drainage system for the Stormwater Quality Design Storm. As per N.J.A.C. 7:8-5.6, the BMP flow rate is determined using NRCS methodology based on the following criteria:

$T_d$  (Storm Duration) = 2 hours

$I$  = 0.625 inches/hr for Stormwater Quality Design Storm (See Table 5-1)

1) Area of Analysis:

Treated drainage area is equal to the infiltration basin area minus the proposed roof areas.

Drainage Area	Total (acres)	Pervious (acres)	Impervious (acres)
Prop - Treated	0.548	0.043	0.505

Proposed Drainage Area - Treated (Pervious)				
Frequency (year)	Rainfall, P (in)	Curve Number	$T_c$ (min)	Peak Discharge (cfs)
WQ	1.25	74	6.0	0.01

Proposed Drainage Area - Treated (Pervious)				
Frequency (year)	Rainfall, P (in)	Curve Number	$T_c$ (min)	Peak Discharge (cfs)
WQ	1.25	98	6.0	1.56

Proposed Drainage Area - Treated						
Storm (year)	Pervious		Impervious		Combined	
	Peak (cfs)	Time (hr)	Peak (cfs)	Time (hr)	Peak (cfs)	Time (hr)
WQ	0.01	1.18	1.56	1.08	1.57	1.08

The treatment unit (Aqua-Ponic by AquaShield) is designed to handle the water quality flow of 1.57 cfs. According to the New Jersey MTD Laboratory Certification, the AP-12 has a maximum treatment flow rate 1.77 cfs.

**8. STORMWATER RECHARGE REQUIREMENT**

Since the site is situated within the Metropolitan Planning Area (PA1), per the Policy Map of the New Jersey State Development and Redevelopment Plan, the site is exempt from the groundwater recharge requirements set forth in Chapter 6, Groundwater Recharge, of the NJBMP Manual.

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MBL DATE 6/13/2022  

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**9. PREFORMED SCOUR HOLE DESIGN**

Preformed Scour Hole:

$Q_{25} = 0.00$  cfs (See Section 3.II - 25YR)

$D_o = 15$  in

$T_w = 0.2D_o = 0.30$  ft

Length of Hole Bottom (L) =

$3 \times D_o = 3.75$  ft

Width of Hole Bottom (W) =

$2 \times W_o = 2.50$  ft

Median Stone Dia. ( $d_{50}$ ) =

$(0.0125 / 0.2D_o) \times (Q / W_o)^{1/3} = 0.00$  ft (Use 4" = 0.33 ft)



**Table 5-2: NJDEP 1.25-Inch/2-Hour Stormwater Runoff  
Water Quality Design Storm Rainfall Distribution**

<b>Time (Minutes)</b>	<b>Cumulative Rainfall (Inches)</b>	<b>Time (Minutes)</b>	<b>Cumulative Rainfall (Inches)</b>	<b>Time (Minutes)</b>	<b>Cumulative Rainfall (Inches)</b>
1	0.00166	41	0.1728	81	1.0906
2	0.00332	42	0.1796	82	1.0972
3	0.00498	43	0.1864	83	1.1038
4	0.00664	44	0.1932	84	1.1104
5	0.00830	45	0.2000	85	1.1170
6	0.00996	46	0.2117	86	1.1236
7	0.01162	47	0.2233	87	1.1302
8	0.01328	48	0.2350	88	1.1368
9	0.01494	49	0.2466	89	1.1434
10	0.01660	50	0.2583	90	1.1500
11	0.01828	51	0.2783	91	1.1550
12	0.01996	52	0.2983	92	1.1600
13	0.02164	53	0.3183	93	1.1650
14	0.02332	54	0.3383	94	1.1700
15	0.02500	55	0.3583	95	1.1750
16	0.03000	56	0.4116	96	1.1800
17	0.03500	57	0.4650	97	1.1850
18	0.04000	58	0.5183	98	1.1900
19	0.04500	59	0.5717	99	1.1950
20	0.05000	60	0.6250	100	1.2000
21	0.05500	61	0.6783	101	1.2050
22	0.06000	62	0.7317	102	1.2100
23	0.06500	63	0.7850	103	1.2150
24	0.07000	64	0.8384	104	1.2200
25	0.07500	65	0.8917	105	1.2250
26	0.08000	66	0.9117	106	1.2267
27	0.08500	67	0.9317	107	1.2284
28	0.09000	68	0.9517	108	1.2300
29	0.09500	69	0.9717	109	1.2317
30	0.10000	70	0.9917	110	1.2334
31	0.10660	71	1.0034	111	1.2351
32	0.11320	72	1.0150	112	1.2367
33	0.11980	73	1.0267	113	1.2384
34	0.12640	74	1.0383	114	1.2400
35	0.13300	75	1.0500	115	1.2417
36	0.13960	76	1.0568	116	1.2434
37	0.14620	77	1.0636	117	1.2450
38	0.15280	78	1.0704	118	1.2467
39	0.15940	79	1.0772	119	1.2483
40	0.16600	80	1.0840	120	1.2500





# CULTEC Stage-Storage Calculations

Date: June 23, 2022

Project Information:

Project Numbers:  
0

Chamber Model - Recharger 360HD  
 Number of Rows - 8 units  
 Total Number of Chambers - 240 units  
 HVLV FC-24 Feed Connectors - 14 units  
 Stone Void - 40 %  
 Stone Base - 6 inches  
 Stone Above Units - 6 inches  
 Area - 5414.85 ft<sup>2</sup>  
 Base of Stone Elevation - 0.00

## Recharger 360HD Incremental Storage Volumes

Height of System		Chamber Volume		HVLV Feed Connector Volume		Stone Volume		Cumulative Storage Volume		Total Cumulative Storage Volume		Elevation	
ft	mm	ft <sup>3</sup>	m <sup>3</sup>	ft <sup>3</sup>	m <sup>3</sup>	ft <sup>3</sup>	m <sup>3</sup>	ft <sup>3</sup>	m <sup>3</sup>	ft <sup>3</sup>	m <sup>3</sup>	ft	m
48.0	1219	0.0	0.0	0.0	0.0	180.5	5.1	180.495	5.1	14009.27	396.70	4.000	1.22
47.0	1194	0.0	0.0	0.0	0.0	180.5	5.1	180.495	5.1	13828.77	391.59	3.920	1.19
46.0	1168	0.0	0.0	0.0	0.0	180.5	5.1	180.495	5.1	13648.28	386.48	3.830	1.17
45.0	1143	0.0	0.0	0.0	0.0	180.5	5.1	180.495	5.1	13467.79	381.36	3.750	1.14
44.0	1118	0.0	0.0	0.0	0.0	180.5	5.1	180.495	5.1	13287.29	376.25	3.670	1.12
43.0	1092	0.0	0.0	0.0	0.0	180.5	5.1	180.495	5.1	13106.79	371.14	3.580	1.09
42.0	1067	19.4	0.6	0.0	0.0	172.7	4.9	192.150	5.4	12926.30	366.03	3.500	1.07
41.0	1041	41.2	1.2	0.0	0.0	164.0	4.6	205.204	5.8	12734.15	360.59	3.420	1.04
40.0	1016	61.2	1.7	0.0	0.0	156.0	4.4	217.234	6.2	12528.95	354.78	3.330	1.02
39.0	991	103.5	2.9	0.0	0.0	139.1	3.9	242.625	6.9	12311.71	348.63	3.250	0.99
38.0	965	130.8	3.7	0.0	0.0	128.2	3.6	258.950	7.3	12069.09	341.76	3.170	0.97
37.0	940	151.2	4.3	0.0	0.0	120.0	3.4	271.210	7.7	11810.14	334.43	3.080	0.94
36.0	914	168.2	4.8	0.0	0.0	113.2	3.2	281.410	8.0	11536.93	326.75	3.000	0.91
35.0	889	182.9	5.2	0.0	0.0	107.3	3.0	290.240	8.2	11257.52	318.78	2.920	0.89
34.0	864	195.9	5.5	0.0	0.0	102.1	2.9	298.062	8.4	10967.28	310.56	2.830	0.86
33.0	838	207.7	5.9	0.0	0.0	97.4	2.8	305.090	8.6	10669.21	302.12	2.750	0.84
32.0	813	218.3	6.2	0.0	0.0	93.2	2.6	311.485	8.8	10364.12	293.48	2.670	0.81
31.0	787	228.0	6.5	0.0	0.0	89.3	2.5	317.317	9.0	10052.64	284.66	2.580	0.79
30.0	762	237.1	6.7	0.0	0.0	85.6	2.4	322.785	9.1	9735.32	275.67	2.500	0.76
29.0	737	245.4	6.9	0.0	0.0	82.3	2.3	327.752	9.3	9412.54	266.53	2.420	0.74
28.0	711	253.1	7.2	0.0	0.0	79.3	2.2	332.345	9.4	9084.78	257.25	2.330	0.71
27.0	686	260.2	7.4	0.0	0.0	76.4	2.2	336.635	9.5	8752.44	247.84	2.250	0.69
26.0	660	266.9	7.6	0.0	0.0	73.7	2.1	340.652	9.6	8415.80	238.31	2.170	0.66
25.0	635	273.2	7.7	0.0	0.0	71.2	2.0	344.423	9.8	8075.15	228.66	2.080	0.64
24.0	610	279.1	7.9	0.0	0.0	68.8	1.9	347.964	9.9	7730.73	218.91	2.000	0.61
23.0	584	284.5	8.1	0.0	0.0	66.7	1.9	351.221	9.9	7382.77	209.06	1.920	0.58
22.0	559	289.8	8.2	0.0	0.0	64.6	1.8	354.373	10.0	7031.54	199.11	1.830	0.56
21.0	533	294.8	8.3	0.0	0.0	62.6	1.8	357.366	10.1	6677.17	189.08	1.750	0.53
20.0	508	299.5	8.5	0.0	0.0	60.7	1.7	360.186	10.2	6319.81	178.96	1.670	0.51
19.0	483	303.9	8.6	0.0	0.0	58.9	1.7	362.847	10.3	5959.62	168.76	1.580	0.48
18.0	457	308.0	8.7	0.0	0.0	57.3	1.6	365.269	10.3	5596.77	158.48	1.500	0.46
17.0	432	311.9	8.8	0.0	0.0	55.7	1.6	367.656	10.4	5231.50	148.14	1.420	0.43
16.0	406	315.7	8.9	0.0	0.0	54.2	1.5	369.914	10.5	4863.85	137.73	1.330	0.41
15.0	381	319.1	9.0	0.0	0.0	52.9	1.5	371.961	10.5	4493.93	127.25	1.250	0.38
14.0	356	322.5	9.1	0.0	0.0	51.5	1.5	373.974	10.6	4121.97	116.72	1.170	0.36
13.0	330	325.7	9.2	0.0	0.0	50.2	1.4	375.866	10.6	3748.00	106.13	1.080	0.33
12.0	305	328.6	9.3	0.0	0.0	49.0	1.4	377.683	10.7	3372.11	95.49	1.000	0.30
11.0	279	331.3	9.4	0.0	0.0	48.0	1.4	379.297	10.7	2994.43	84.79	0.920	0.28
10.0	254	334.0	9.5	0.0	0.0	46.9	1.3	380.892	10.8	2615.13	74.05	0.830	0.25
9.0	229	336.3	9.5	0.0	0.0	46.0	1.3	382.304	10.6	2234.24	63.27	0.750	0.23
8.0	203	338.7	9.6	0.0	0.0	45.0	1.3	383.741	10.9	1851.94	52.44	0.670	0.20
7.0	178	341.2	9.7	0.0	0.0	44.0	1.2	385.225	10.9	1468.20	41.57	0.580	0.18
6.0	152	0.0	0.0	0.0	0.0	180.5	5.1	180.495	5.1	1082.97	30.67	0.500	0.15
5.0	127	0.0	0.0	0.0	0.0	180.5	5.1	180.495	5.1	902.48	25.56	0.420	0.13
4.0	102	0.0	0.0	0.0	0.0	180.5	5.1	180.495	5.1	721.98	20.44	0.330	0.10
3.0	76	0.0	0.0	0.0	0.0	180.5	5.1	180.495	5.1	541.49	15.33	0.250	0.08
2.0	51	0.0	0.0	0.0	0.0	180.5	5.1	180.495	5.1	360.99	10.22	0.170	0.05
1.0	25	0.0	0.0	0.0	0.0	180.5	5.1	180.495	5.1	180.50	5.11	0.080	0.03
0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.000	0.0	0.00	0.00	0.000	0.00

Top of Stone Elevation

Top of Chamber Elevation

Bottom of Chamber Elevation

Bottom of Stone Elevation



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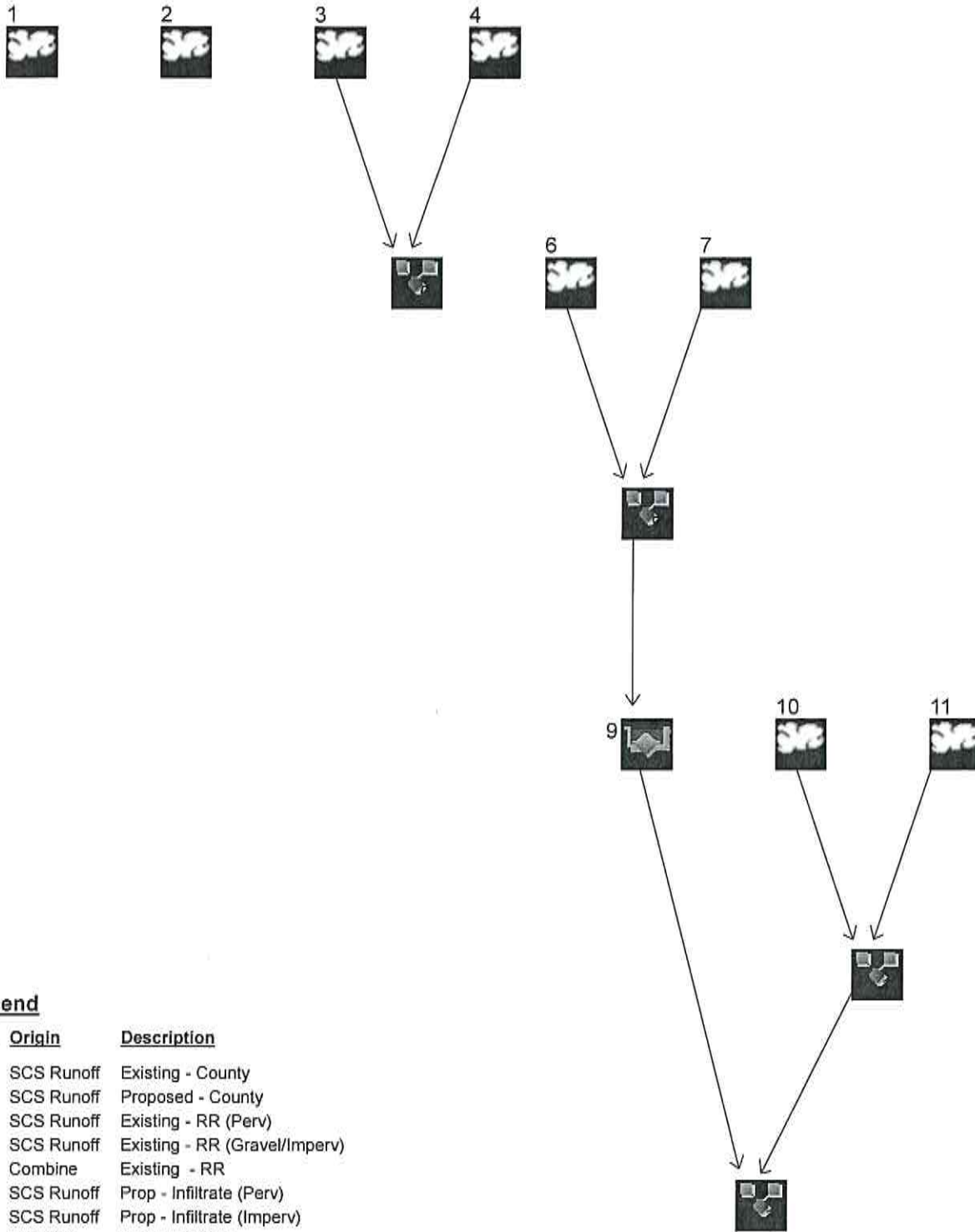
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# Watershed Model Schematic

Hydraflow Hydrographs by Intelisolve v9.25



**Legend**

Hyd. Origin	Description
1	SCS Runoff Existing - County
2	SCS Runoff Proposed - County
3	SCS Runoff Existing - RR (Perv)
4	SCS Runoff Existing - RR (Gravel/Imperv)
5	Combine Existing - RR
6	SCS Runoff Prop - Infiltrate (Perv)
7	SCS Runoff Prop - Infiltrate (Imperv)
8	Combine Prop - Infiltrate
9	Reservoir Basin Route
10	SCS Runoff Prop - Bypass (Perv)
11	SCS Runoff Prop - Bypass (Imperv)
12	Combine Prop - Bypass
13	Combine Proposed - RR

# Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.25

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	1.086	3	726	3,912	----	----	----	Existing - County
2	SCS Runoff	0.944	3	726	3,259	----	----	----	Proposed - County
3	SCS Runoff	0.107	3	729	369	----	----	----	Existing - RR (Perv)
4	SCS Runoff	2.883	3	726	10,275	----	----	----	Existing - RR (Gravel/Imperv)
5	Combine	2.985	3	726	10,644	3, 4	-----	-----	Existing - RR
6	SCS Runoff	0.048	3	729	165	-----	-----	-----	Prop - Infiltrate (Perv)
7	SCS Runoff	1.758	3	726	6,799	-----	-----	-----	Prop - Infiltrate (Imperv)
8	Combine	1.804	3	726	6,964	6, 7	-----	-----	Prop - Infiltrate
9	Reservoir	0.000	3	n/a	0	8	147.82	6,964	Basin Route
10	SCS Runoff	0.152	3	729	527	-----	-----	-----	Prop - Bypass (Perv)
11	SCS Runoff	1.151	3	726	4,451	-----	-----	-----	Prop - Bypass (Imperv)
12	Combine	1.297	3	726	4,979	10, 11	-----	-----	Prop - Bypass
13	Combine	1.297	3	726	4,979	9, 12	-----	-----	Proposed - RR
22-146.gpw					Return Period: 2 Year			Thursday, Jun 23, 2022	

# Hydrograph Report

Hydraflow Hydrographs by Intellsolve v9.25

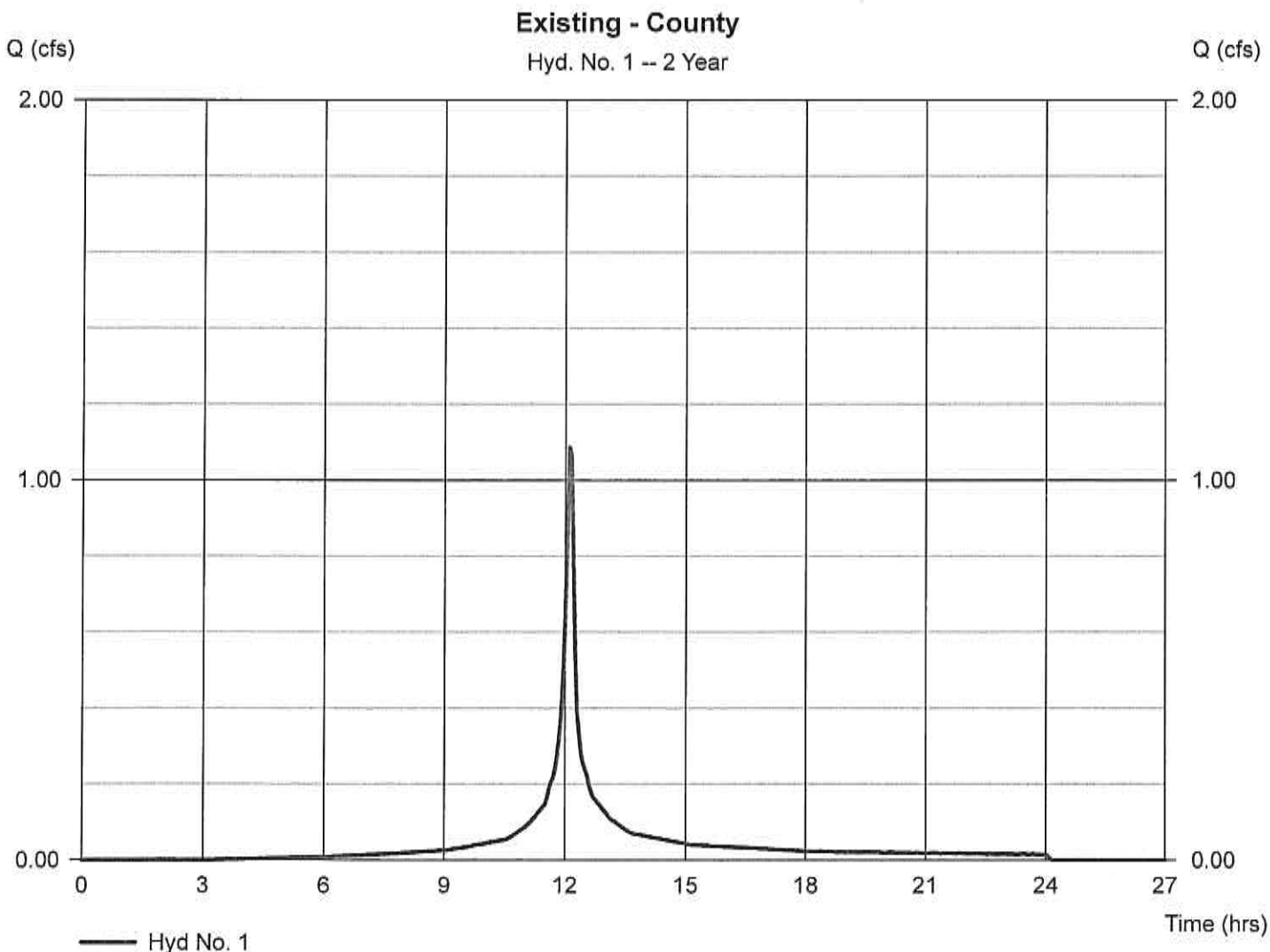
Thursday, Jun 23, 2022

## Hyd. No. 1

Existing - County

Hydrograph type	= SCS Runoff	Peak discharge	= 1.086 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 3,912 cuft
Drainage area	= 0.429 ac	Curve number	= 94*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.34 in	Distribution	= Custom
Storm duration	= NOAA_D.cds	Shape factor	= 484

\* Composite (Area/CN) = [(0.063 x 74) + (0.028 x 89) + (0.338 x 98)] / 0.429



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.25

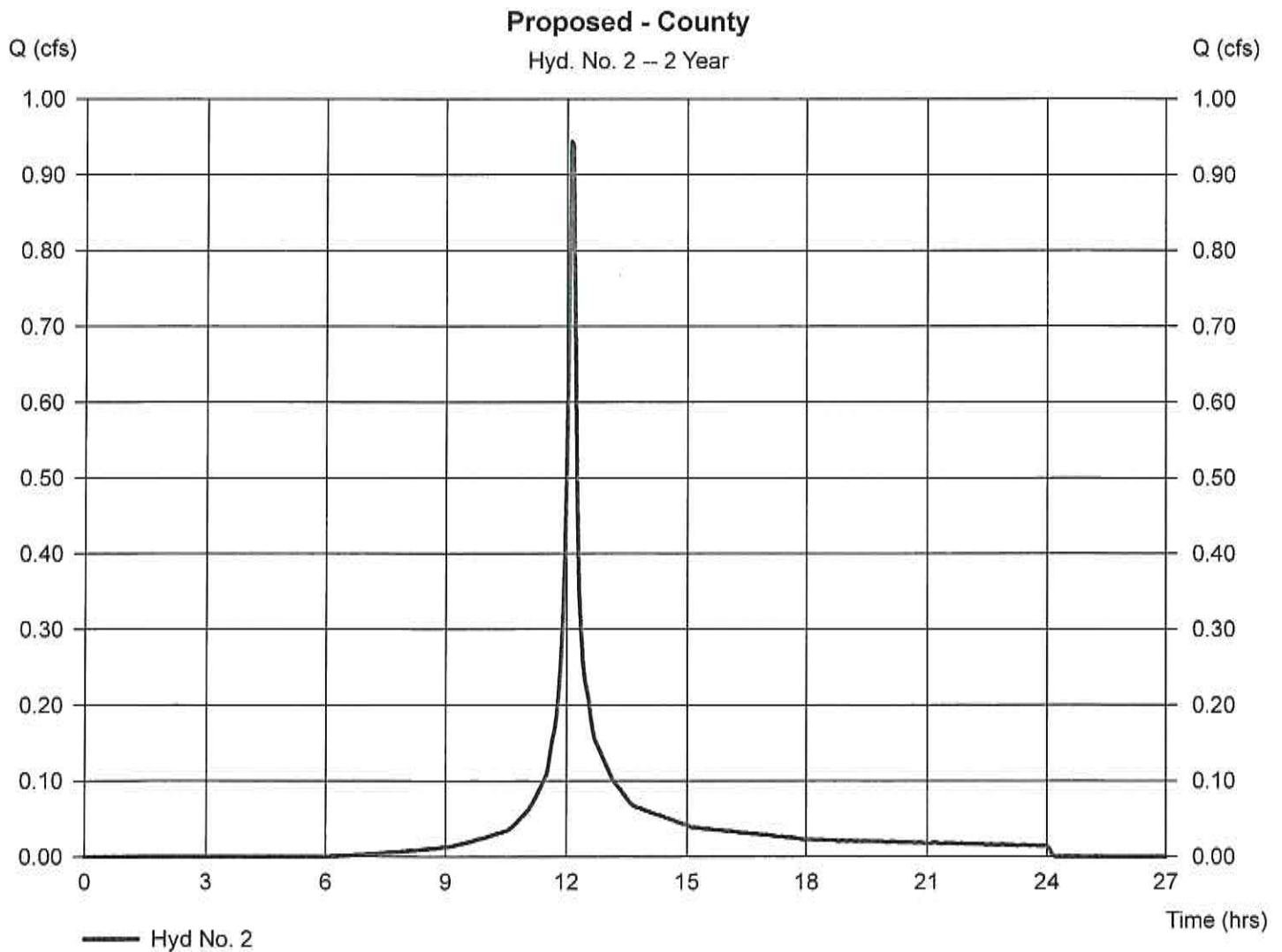
Thursday, Jun 23, 2022

## Hyd. No. 2

Proposed - County

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.944 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.10 hrs
Time interval	=	3 min	Hyd. volume	=	3,259 cuft
Drainage area	=	0.451 ac	Curve number	=	88*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	3.34 in	Distribution	=	Custom
Storm duration	=	NOAA_D.cds	Shape factor	=	484

\* Composite (Area/CN) =  $[(0.183 \times 74) + (0.268 \times 98)] / 0.451$



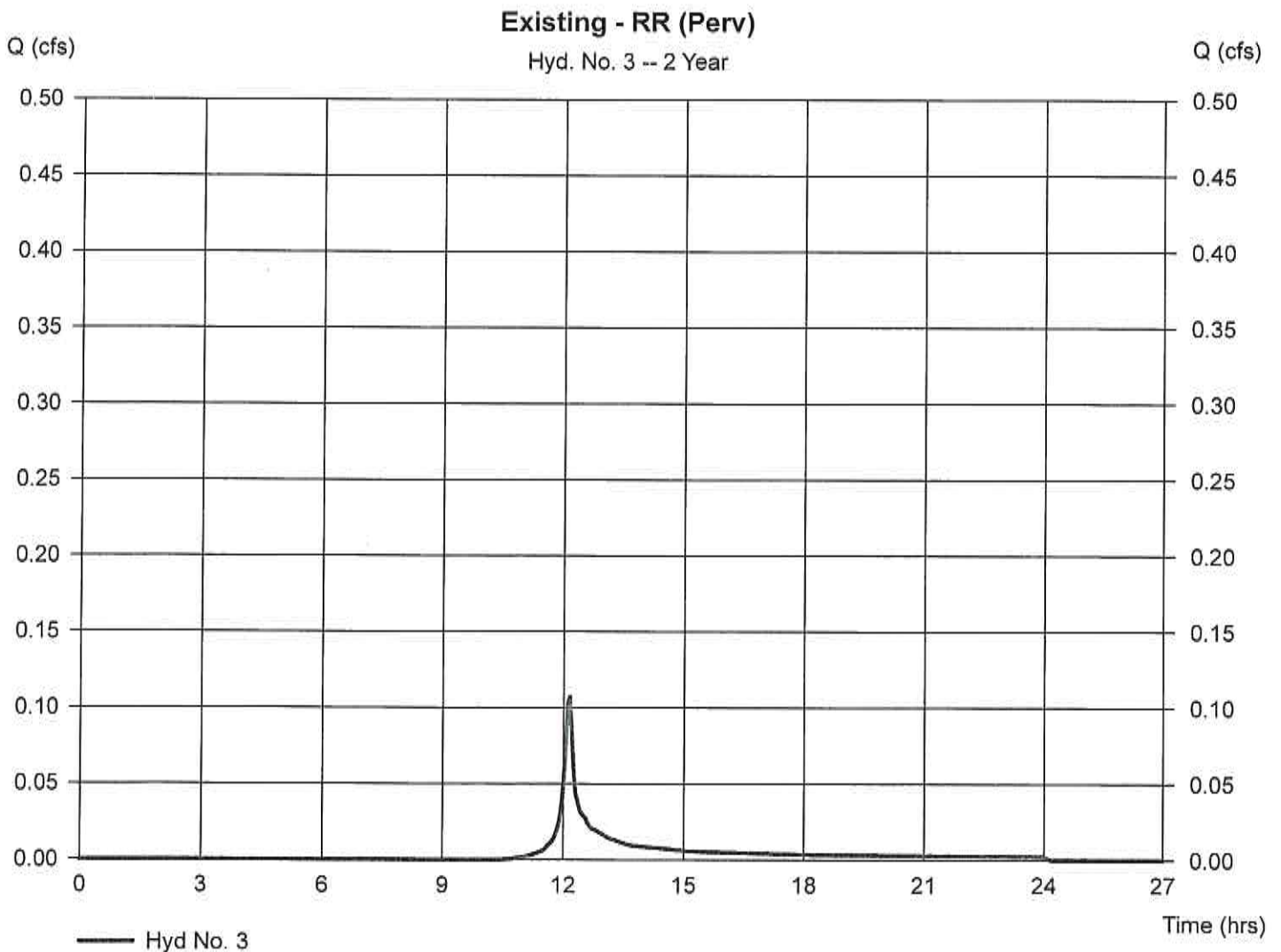
# Hydrograph Report

## Hyd. No. 3

Existing - RR (Perv)

Hydrograph type = SCS Runoff  
Storm frequency = 2 yrs  
Time interval = 3 min  
Drainage area = 0.096 ac  
Basin Slope = 0.0 %  
Tc method = USER  
Total precip. = 3.34 in  
Storm duration = NOAA\_D.cds

Peak discharge = 0.107 cfs  
Time to peak = 12.15 hrs  
Hyd. volume = 369 cuft  
Curve number = 74  
Hydraulic length = 0 ft  
Time of conc. (Tc) = 6.00 min  
Distribution = Custom  
Shape factor = 484



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.25

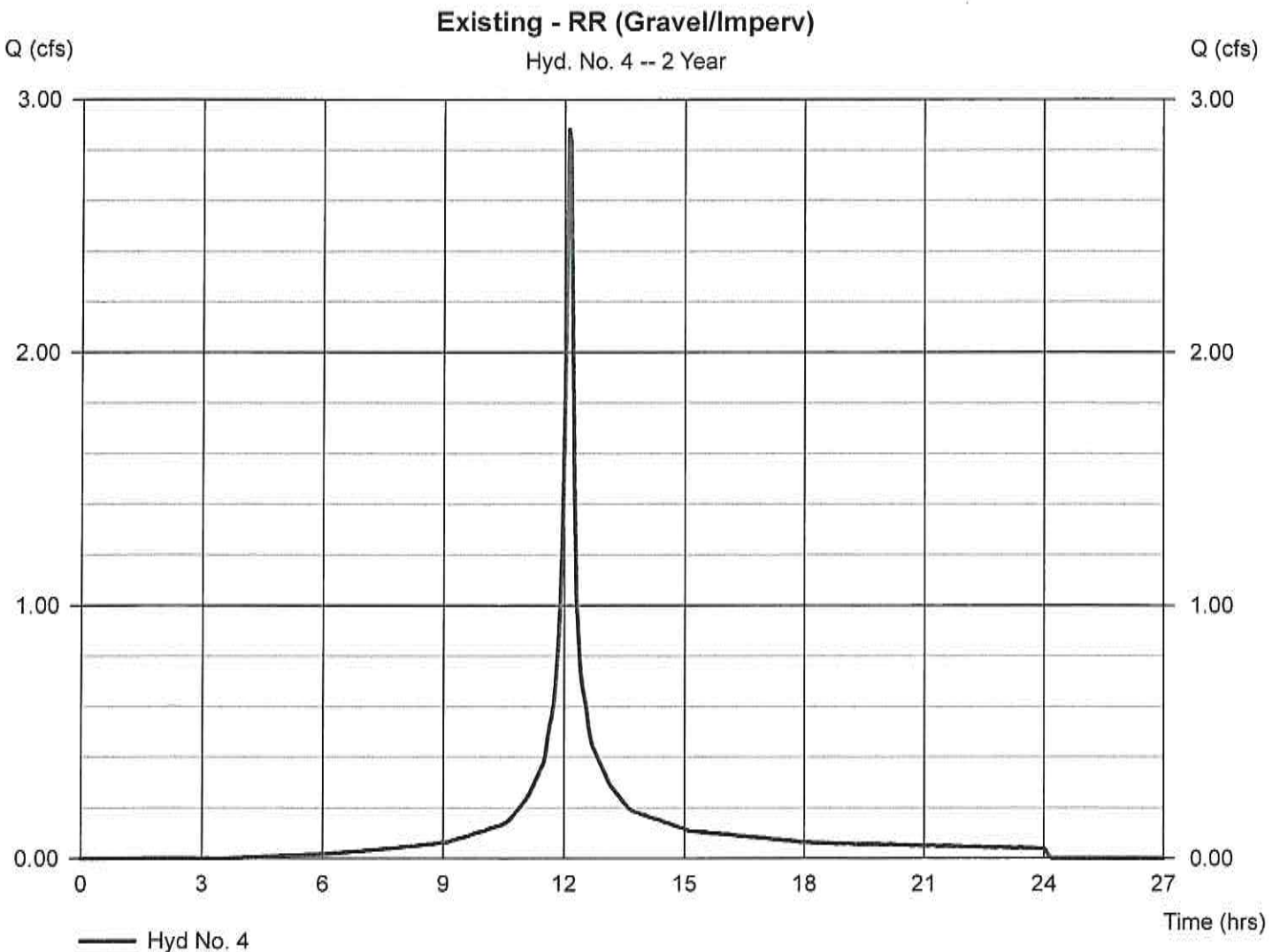
Thursday, Jun 23, 2022

## Hyd. No. 4

Existing - RR (Gravel/Imperv)

Hydrograph type	= SCS Runoff	Peak discharge	= 2.883 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 10,275 cuft
Drainage area	= 1.170 ac	Curve number	= 93*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.34 in	Distribution	= Custom
Storm duration	= NOAA_D.cds	Shape factor	= 484

\* Composite (Area/CN) = [(0.667 x 89) + (0.503 x 98)] / 1.170



# Hydrograph Report

Hydraflow Hydrographs by Intellsolve v9.25

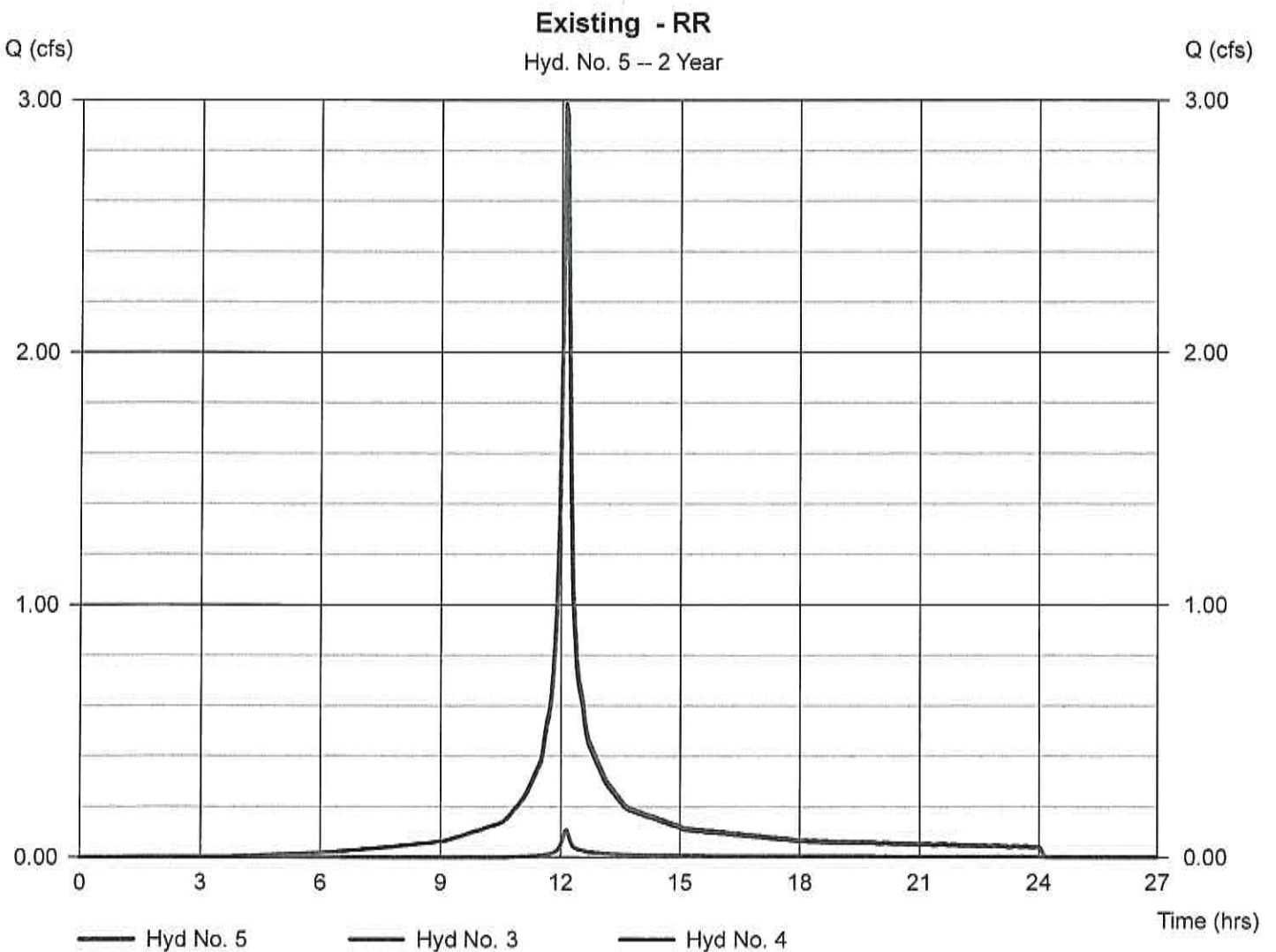
Thursday, Jun 23, 2022

## Hyd. No. 5

Existing - RR

Hydrograph type = Combine  
Storm frequency = 2 yrs  
Time interval = 3 min  
Inflow hyds. = 3, 4

Peak discharge = 2.985 cfs  
Time to peak = 12.10 hrs  
Hyd. volume = 10,644 cuft  
Contrib. drain. area = 1.266 ac



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.25

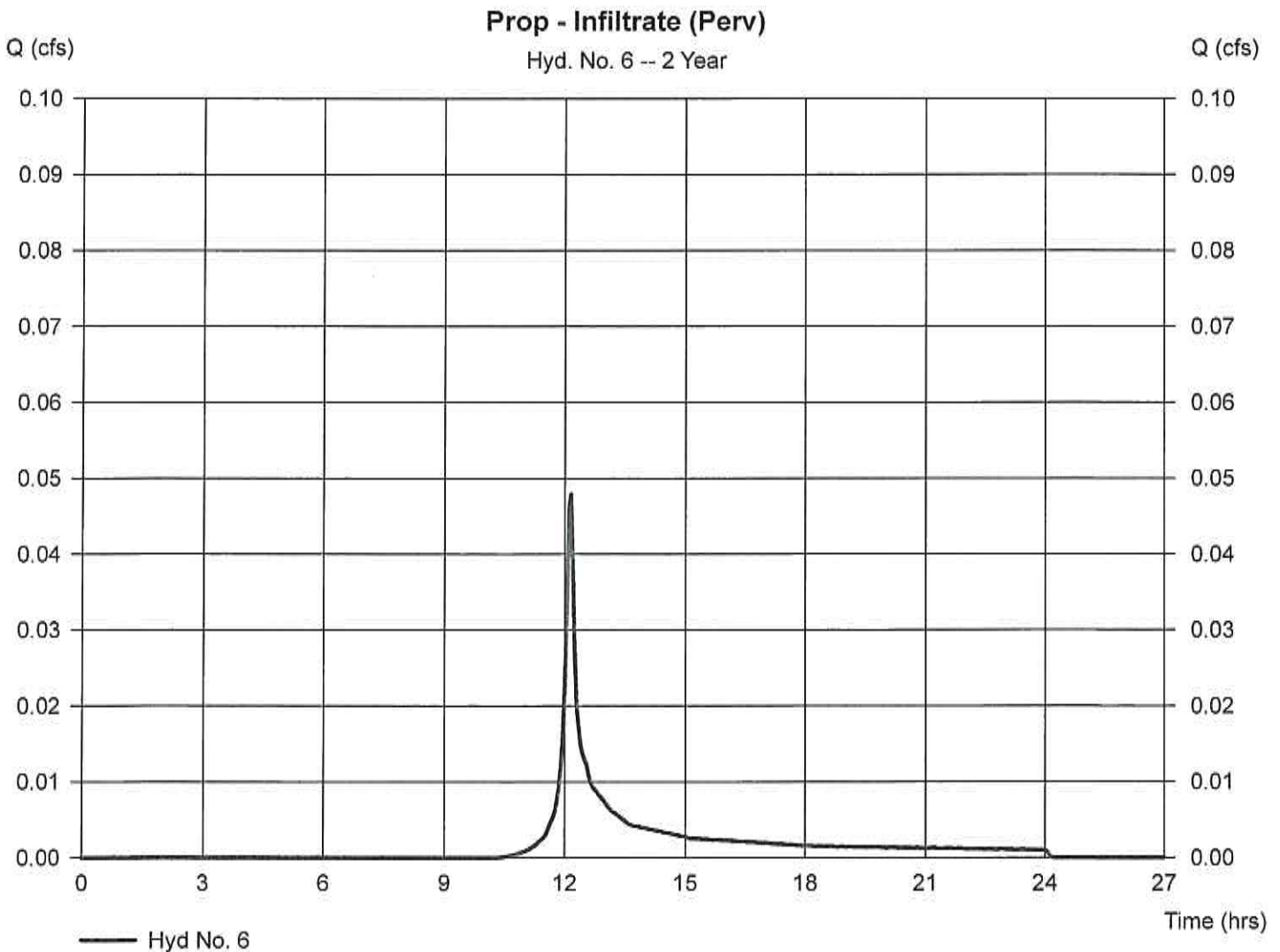
Thursday, Jun 23, 2022

## Hyd. No. 6

Prop - Infiltrate (Perv)

Hydrograph type = SCS Runoff  
Storm frequency = 2 yrs  
Time interval = 3 min  
Drainage area = 0.043 ac  
Basin Slope = 0.0 %  
Tc method = USER  
Total precip. = 3.34 in  
Storm duration = NOAA\_D.cds

Peak discharge = 0.048 cfs  
Time to peak = 12.15 hrs  
Hyd. volume = 165 cuft  
Curve number = 74  
Hydraulic length = 0 ft  
Time of conc. (Tc) = 6.00 min  
Distribution = Custom  
Shape factor = 484



# Hydrograph Report

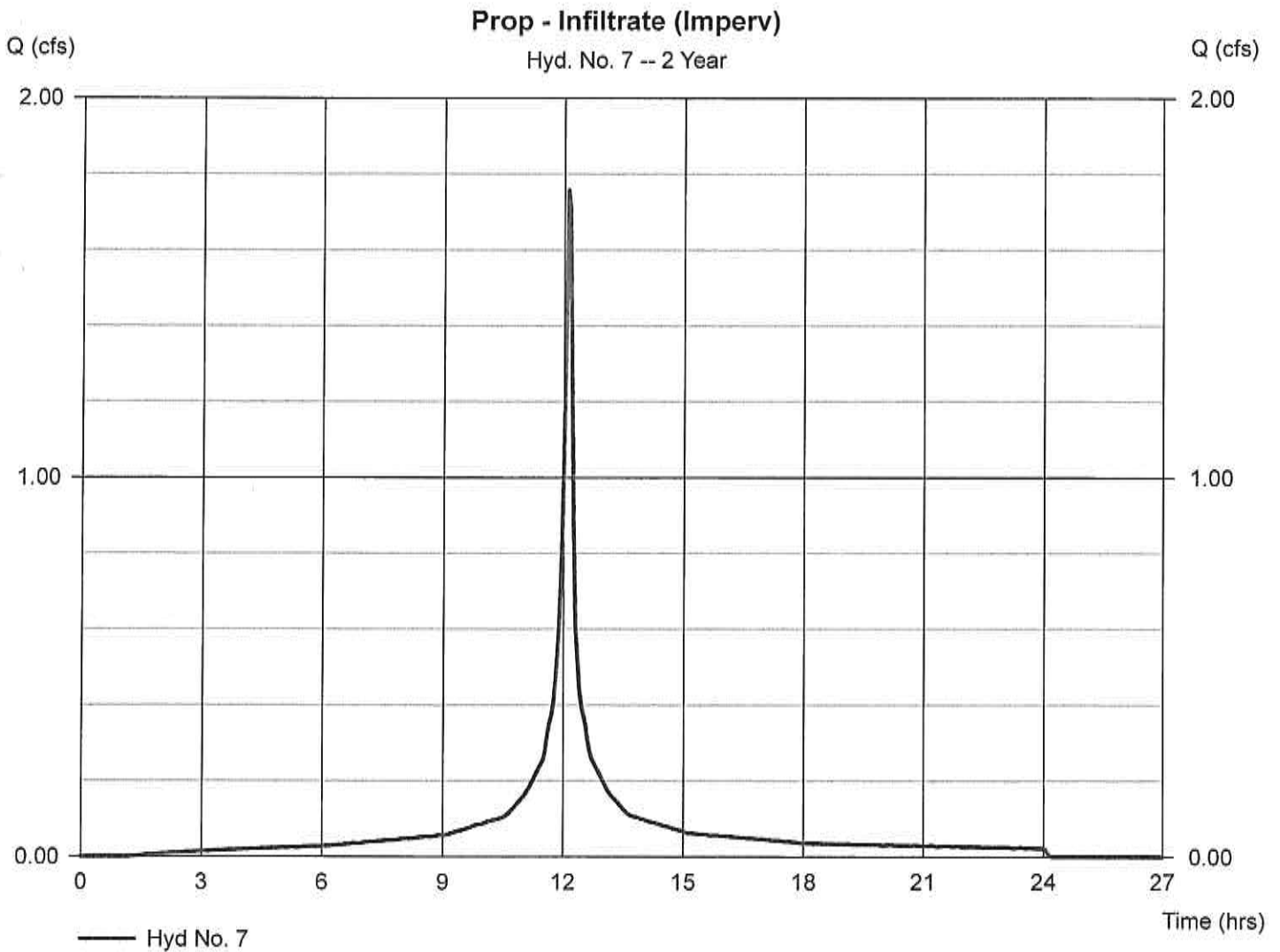
Hydraflow Hydrographs by Intelisolve v9.25

Thursday, Jun 23, 2022

## Hyd. No. 7

Prop - Infiltrate (Imperv)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.758 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 6,799 cuft
Drainage area	= 0.643 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.34 in	Distribution	= Custom
Storm duration	= NOAA_D.cds	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs by Intellisolve v9.25

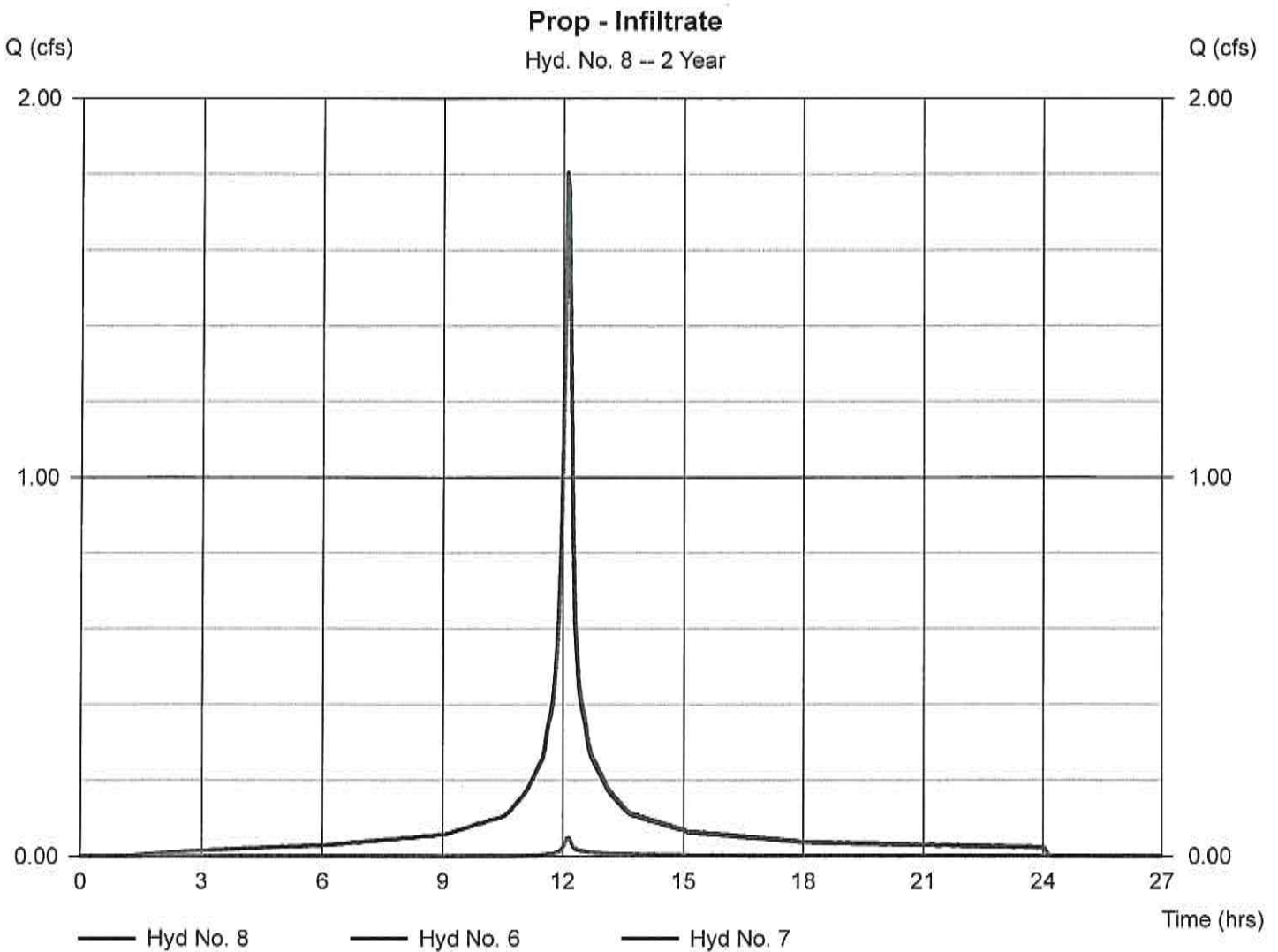
Thursday, Jun 23, 2022

## Hyd. No. 8

Prop - Infiltrate

Hydrograph type = Combine  
Storm frequency = 2 yrs  
Time interval = 3 min  
Inflow hyds. = 6, 7

Peak discharge = 1.804 cfs  
Time to peak = 12.10 hrs  
Hyd. volume = 6,964 cuft  
Contrib. drain. area = 0.686 ac



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.25

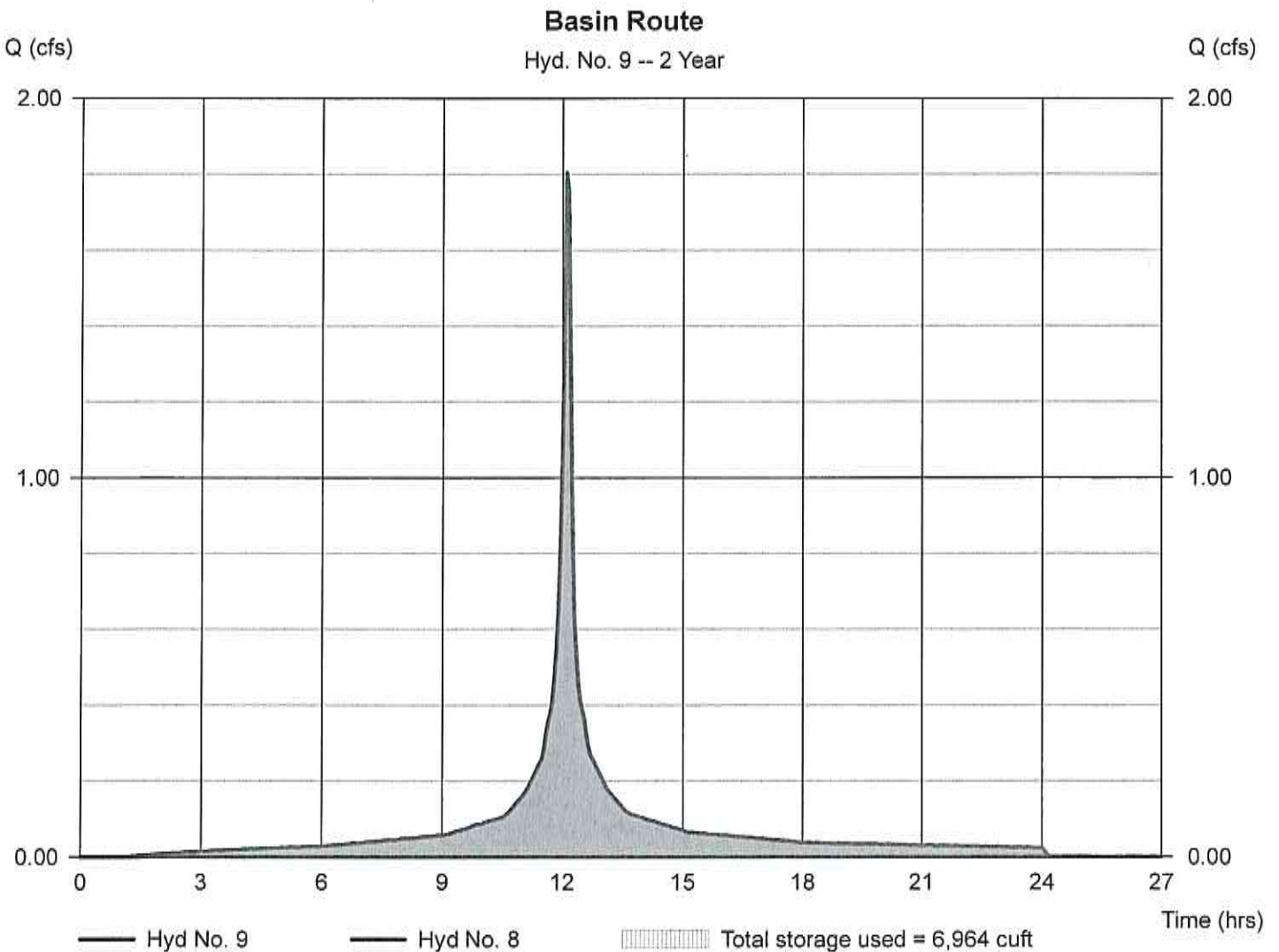
Thursday, Jun 23, 2022

## Hyd. No. 9

### Basin Route

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 3 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 8 - Prop - Infiltrate	Max. Elevation	= 147.82 ft
Reservoir name	= Basin	Max. Storage	= 6,964 cuft

Storage Indication method used.



# Pond Report

## Pond No. 1 - Basin

### Pond Data

Pond storage is based on user-defined values.

### Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	146.00	n/a	0	0
0.25	146.25	n/a	541	541
0.50	146.50	n/a	542	1,083
0.75	146.75	n/a	1,151	2,234
1.00	147.00	n/a	1,138	3,372
1.25	147.25	n/a	1,122	4,494
1.50	147.50	n/a	1,103	5,597
1.75	147.75	n/a	1,080	6,677
2.00	148.00	n/a	1,054	7,731
2.25	148.25	n/a	1,021	8,752
2.50	148.50	n/a	983	9,735
2.75	148.75	n/a	934	10,669
3.00	149.00	n/a	870	11,539
3.25	149.25	n/a	773	12,312
3.50	149.50	n/a	614	12,926
3.75	149.75	n/a	542	13,468
4.00	150.00	n/a	541	14,009

### Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 15.00	0.00	0.00	0.00
Span (in)	= 15.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 148.75	0.00	0.00	0.00
Length (ft)	= 52.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .012	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

### Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 4.00	0.00	0.00	0.00
Crest El. (ft)	= 149.90	0.00	0.00	0.00
Weir Coeff.	= 3.20	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 0.000 (by Wet area)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

### Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	146.00	0.00	---	---	---	0.00	---	---	---	---	---	0.000
0.25	541	146.25	0.00	---	---	---	0.00	---	---	---	---	---	0.000
0.50	1,083	146.50	0.00	---	---	---	0.00	---	---	---	---	---	0.000
0.75	2,234	146.75	0.00	---	---	---	0.00	---	---	---	---	---	0.000
1.00	3,372	147.00	0.00	---	---	---	0.00	---	---	---	---	---	0.000
1.25	4,494	147.25	0.00	---	---	---	0.00	---	---	---	---	---	0.000
1.50	5,597	147.50	0.00	---	---	---	0.00	---	---	---	---	---	0.000
1.75	6,677	147.75	0.00	---	---	---	0.00	---	---	---	---	---	0.000
2.00	7,731	148.00	0.00	---	---	---	0.00	---	---	---	---	---	0.000
2.25	8,752	148.25	0.00	---	---	---	0.00	---	---	---	---	---	0.000
2.50	9,735	148.50	0.00	---	---	---	0.00	---	---	---	---	---	0.000
2.75	10,669	148.75	0.00	---	---	---	0.00	---	---	---	---	---	0.000
3.00	11,539	149.00	0.00	---	---	---	0.00	---	---	---	---	---	0.000
3.25	12,312	149.25	0.00	---	---	---	0.00	---	---	---	---	---	0.000
3.50	12,926	149.50	0.00	---	---	---	0.00	---	---	---	---	---	0.000
3.75	13,468	149.75	0.00	---	---	---	0.00	---	---	---	---	---	0.000
4.00	14,009	150.00	0.41 ic	---	---	---	0.40	---	---	---	---	---	0.405

# Hydrograph Report

Hydraflow Hydrographs by Intellisolve v9.25

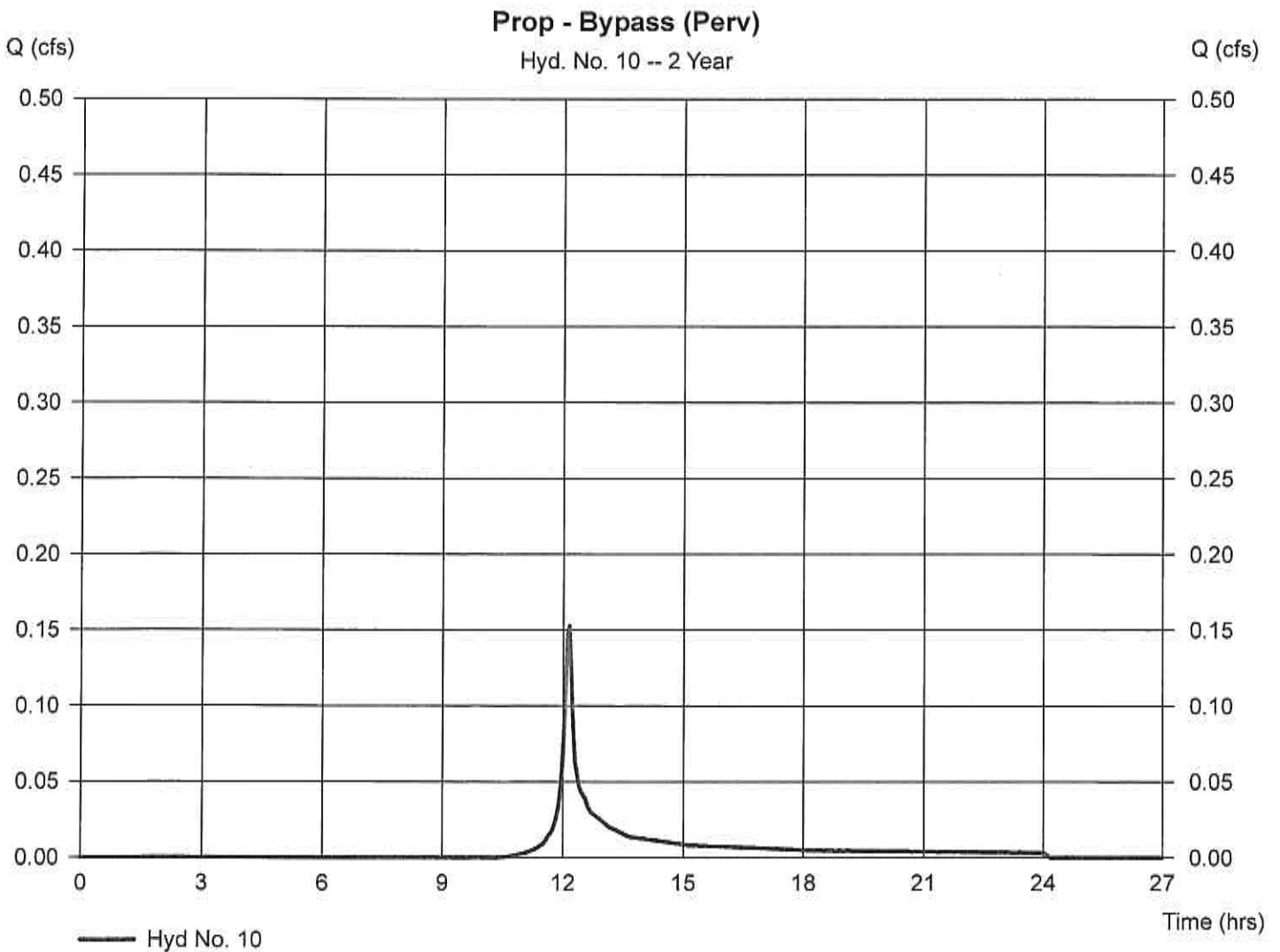
Thursday, Jun 23, 2022

## Hyd. No. 10

Prop - Bypass (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.152 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.15 hrs
Time interval	= 3 min	Hyd. volume	= 527 cuft
Drainage area	= 0.137 ac	Curve number	= 74*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.34 in	Distribution	= Custom
Storm duration	= NOAA_D.cds	Shape factor	= 484

\* Composite (Area/CN) = [(0.161 x 98) + (0.426 x 98)] / 0.137



# Hydrograph Report

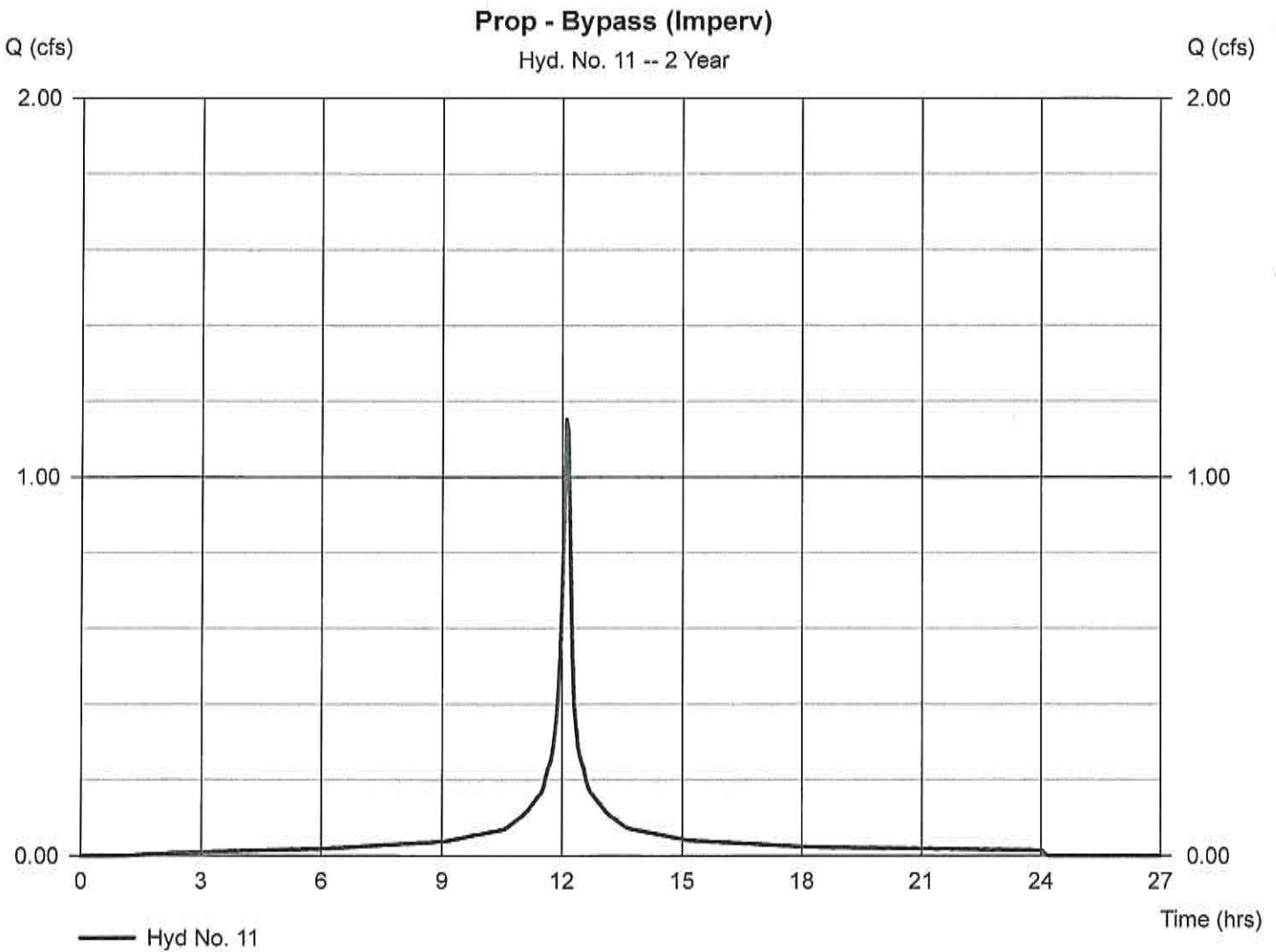
Hydraflow Hydrographs by Intellsolve v9.25

Thursday, Jun 23, 2022

## Hyd. No. 11

Prop - Bypass (Imperv)

Hydrograph type	= SCS Runoff	Peak discharge	= 1,151 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 4,451 cuft
Drainage area	= 0.421 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.34 in	Distribution	= Custom
Storm duration	= NOAA_D.cds	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.25

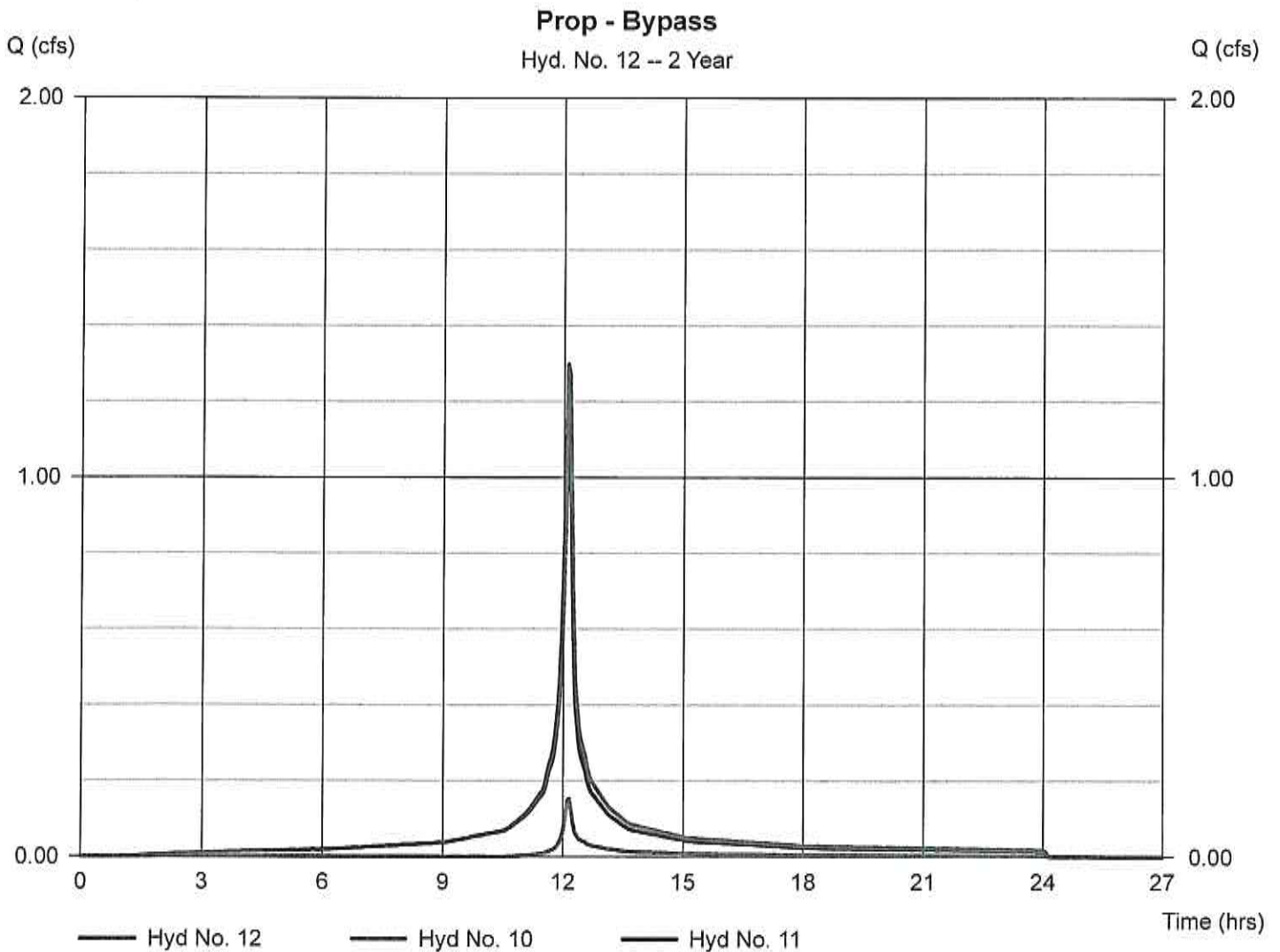
Thursday, Jun 23, 2022

## Hyd. No. 12

Prop - Bypass

Hydrograph type = Combine  
Storm frequency = 2 yrs  
Time interval = 3 min  
Inflow hyds. = 10, 11

Peak discharge = 1.297 cfs  
Time to peak = 12.10 hrs  
Hyd. volume = 4,979 cuft  
Contrib. drain. area = 0.558 ac



# Hydrograph Report

Hydraflow Hydrographs by Intellisolve v9.25

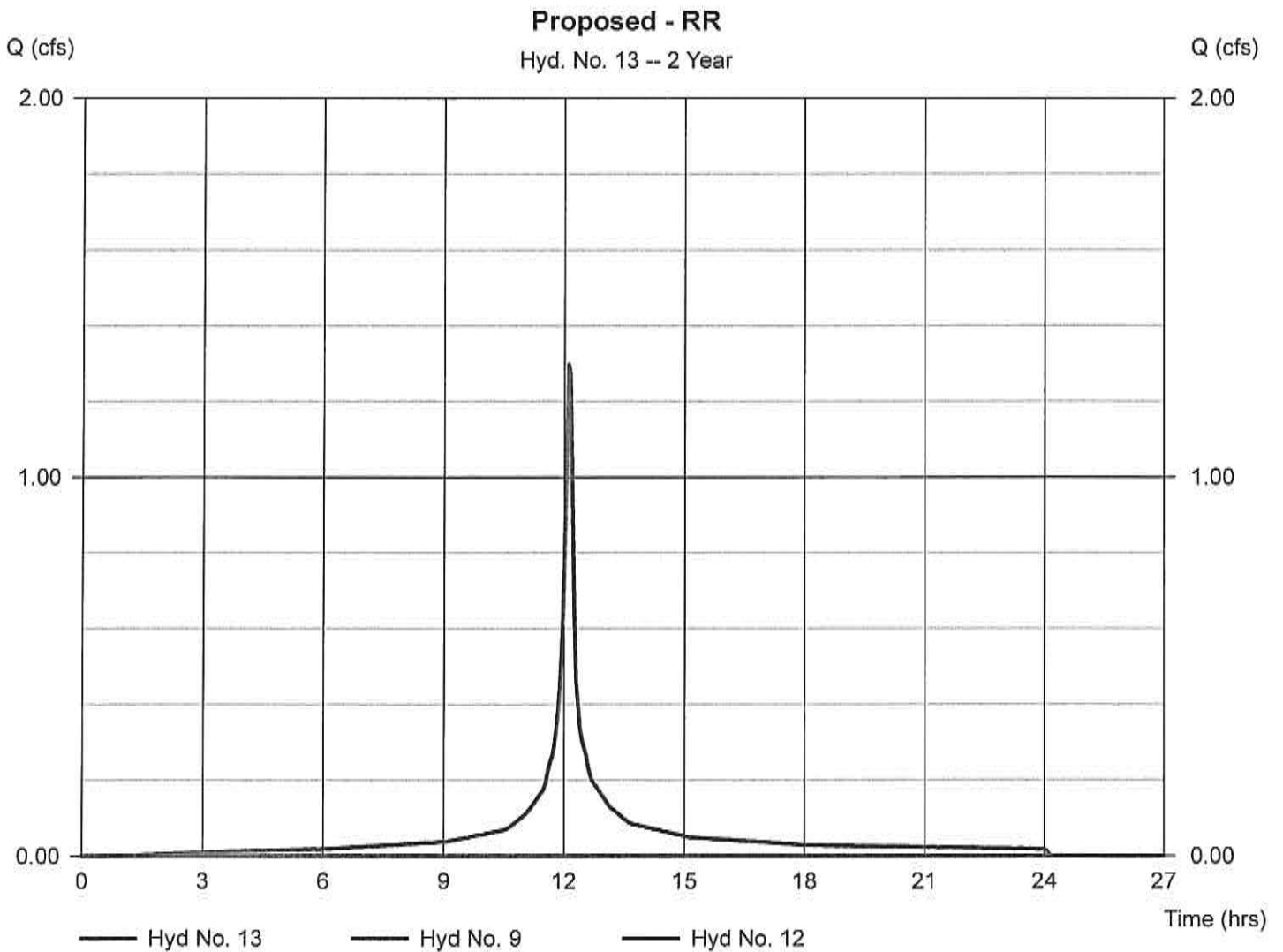
Thursday, Jun 23, 2022

## Hyd. No. 13

Proposed - RR

Hydrograph type = Combine  
Storm frequency = 2 yrs  
Time interval = 3 min  
Inflow hyds. = 9, 12

Peak discharge = 1.297 cfs  
Time to peak = 12.10 hrs  
Hyd. volume = 4,979 cuft  
Contrib. drain. area = 0.000 ac



# Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.25

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	1.723	3	726	6,390	-----	-----	-----	Existing - County
2	SCS Runoff	1.627	3	726	5,733	-----	-----	-----	Proposed - County
3	SCS Runoff	0.232	3	729	791	-----	-----	-----	Existing - RR (Perv)
4	SCS Runoff	4.632	3	726	16,988	-----	-----	-----	Existing - RR (Gravel/Imperv)
5	Combine	4.862	3	726	17,779	3, 4	-----	-----	Existing - RR
6	SCS Runoff	0.104	3	729	354	-----	-----	-----	Prop - Infiltrate (Perv)
7	SCS Runoff	2.686	3	726	10,576	-----	-----	-----	Prop - Infiltrate (Imperv)
8	Combine	2.789	3	726	10,930	6, 7	-----	-----	Prop - Infiltrate
9	Reservoir	0.000	3	n/a	0	8	148.83	10,930	Basin Route
10	SCS Runoff	0.332	3	729	1,128	-----	-----	-----	Prop - Bypass (Perv)
11	SCS Runoff	1.759	3	726	6,924	-----	-----	-----	Prop - Bypass (Imperv)
12	Combine	2.086	3	726	8,053	10, 11	-----	-----	Prop - Bypass
13	Combine	2.086	3	726	8,053	9, 12	-----	-----	Proposed - RR
22-146.gpw					Return Period: 10 Year			Thursday, Jun 23, 2022	

# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.25

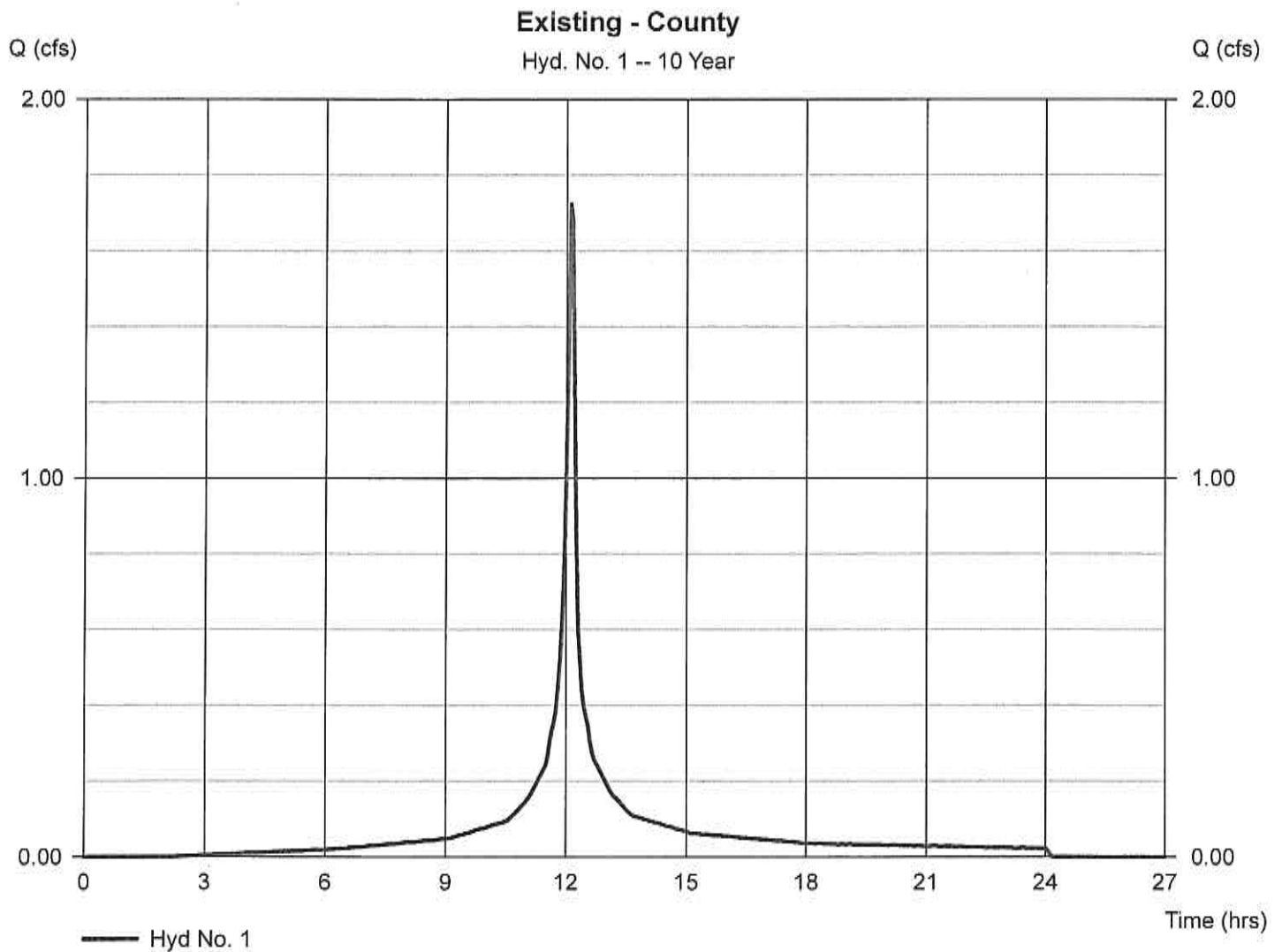
Thursday, Jun 23, 2022

## Hyd. No. 1

Existing - County

Hydrograph type	= SCS Runoff	Peak discharge	= 1.723 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 6,390 cuft
Drainage area	= 0.429 ac	Curve number	= 94*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 5.07 in	Distribution	= Custom
Storm duration	= NOAA_D.cds	Shape factor	= 484

\* Composite (Area/CN) =  $[(0.063 \times 74) + (0.028 \times 89) + (0.338 \times 98)] / 0.429$



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.25

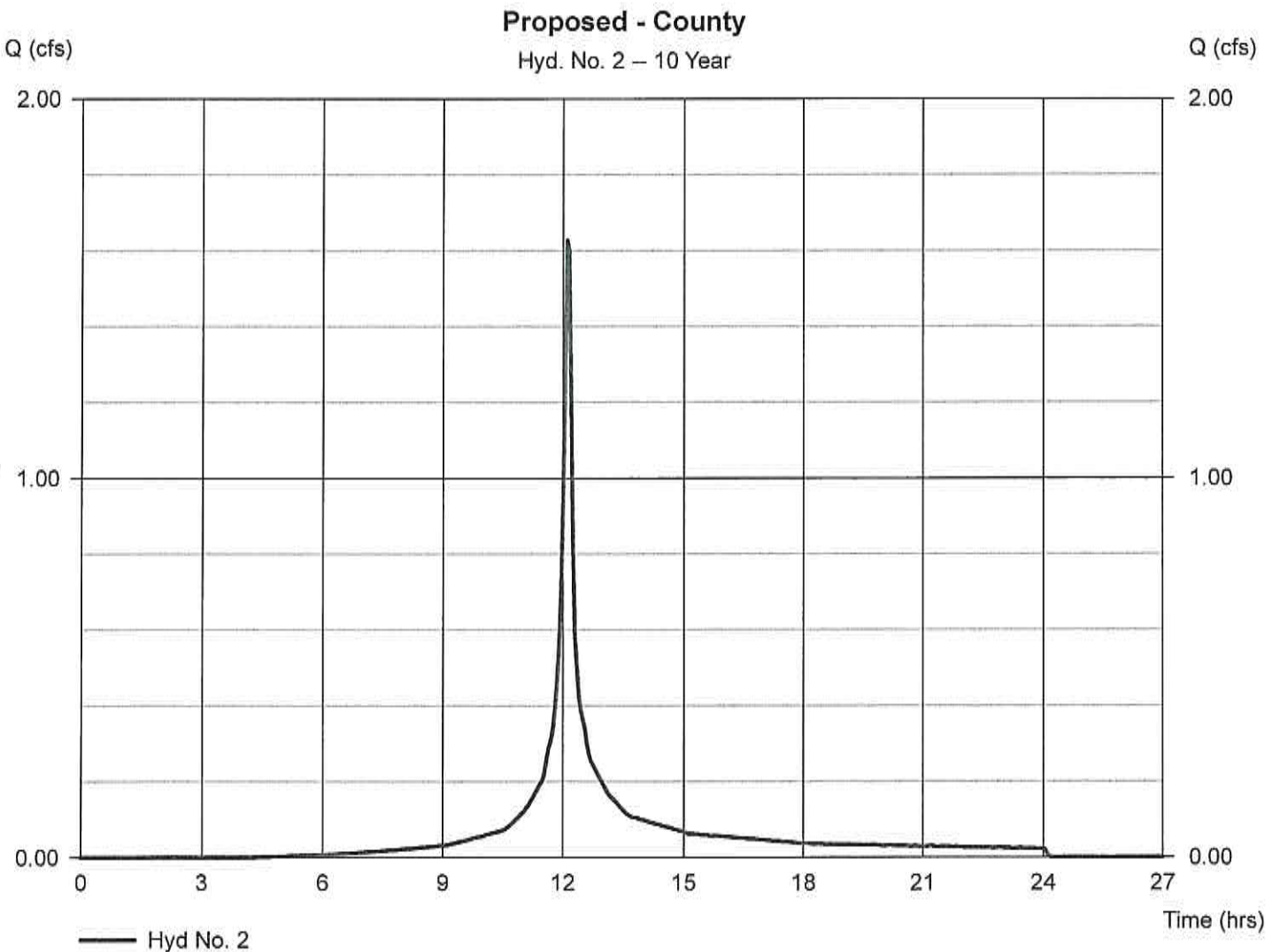
Thursday, Jun 23, 2022

## Hyd. No. 2

Proposed - County

Hydrograph type	= SCS Runoff	Peak discharge	= 1.627 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 5,733 cuft
Drainage area	= 0.451 ac	Curve number	= 88*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 5.07 in	Distribution	= Custom
Storm duration	= NOAA_D.cds	Shape factor	= 484

\* Composite (Area/CN) = [(0.183 x 74) + (0.268 x 98)] / 0.451



# Hydrograph Report

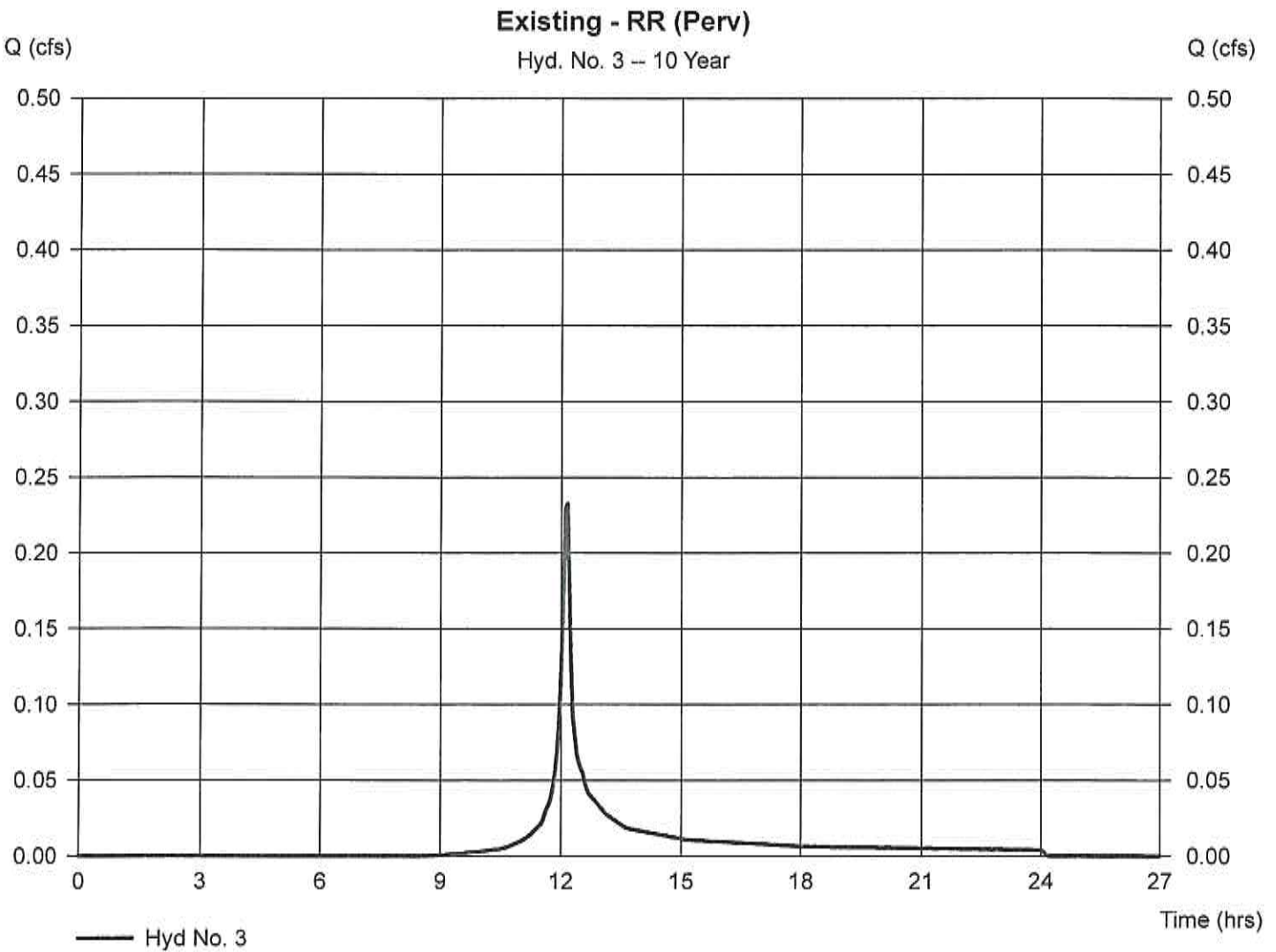
Hydraflow Hydrographs by Intellsolve v9.25

Thursday, Jun 23, 2022

## Hyd. No. 3

Existing - RR (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.232 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.15 hrs
Time interval	= 3 min	Hyd. volume	= 791 cuft
Drainage area	= 0.096 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 5.07 in	Distribution	= Custom
Storm duration	= NOAA_D.cds	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs by Intellisolve v9.25

Thursday, Jun 23, 2022

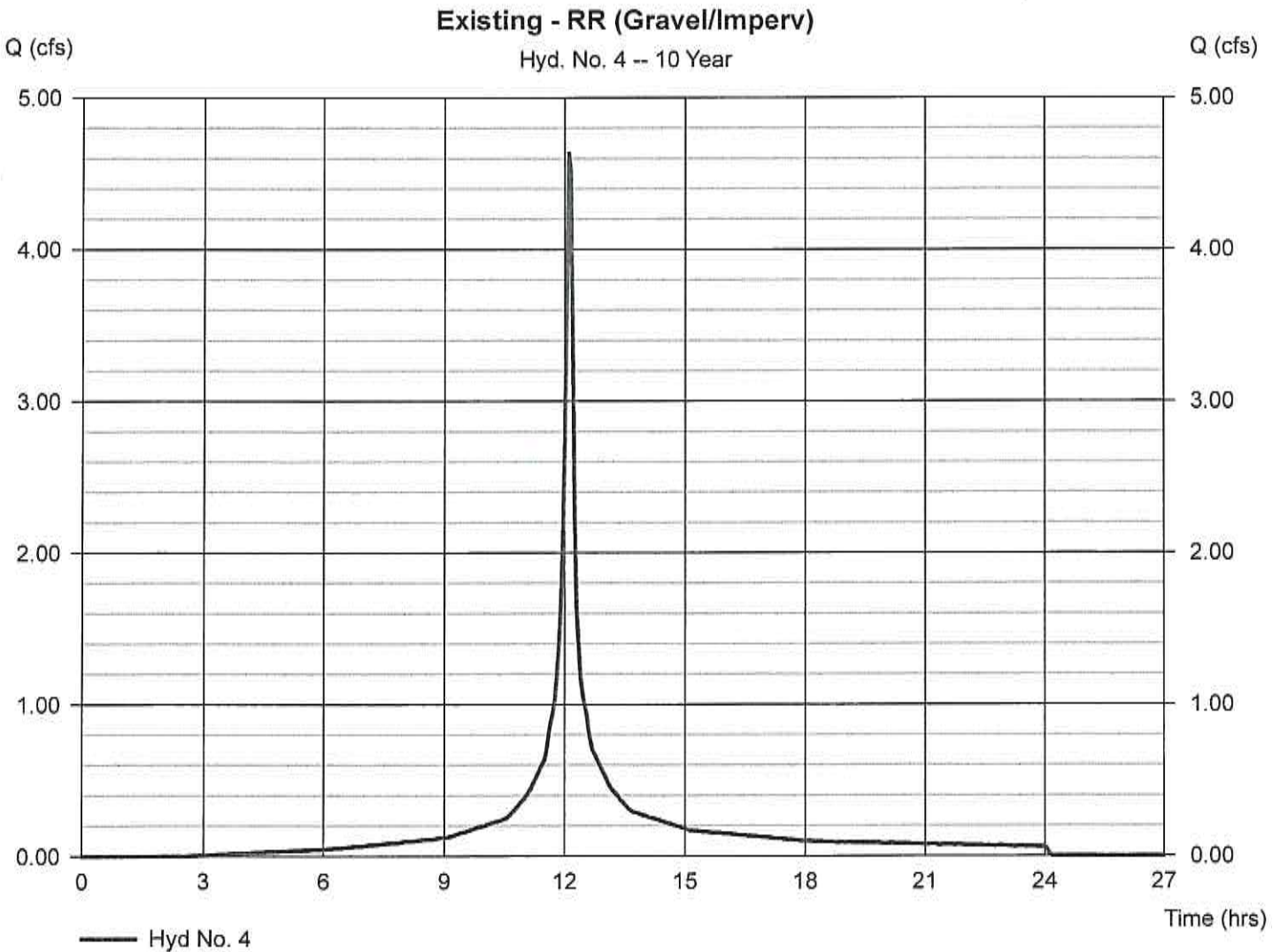
## Hyd. No. 4

Existing - RR (Gravel/Imperv)

Hydrograph type = SCS Runoff  
Storm frequency = 10 yrs  
Time interval = 3 min  
Drainage area = 1.170 ac  
Basin Slope = 0.0 %  
Tc method = USER  
Total precip. = 5.07 in  
Storm duration = NOAA\_D.cds

Peak discharge = 4.632 cfs  
Time to peak = 12.10 hrs  
Hyd. volume = 16,988 cuft  
Curve number = 93\*  
Hydraulic length = 0 ft  
Time of conc. (Tc) = 6.00 min  
Distribution = Custom  
Shape factor = 484

\* Composite (Area/CN) = [(0.667 x 89) + (0.503 x 98)] / 1.170



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.25

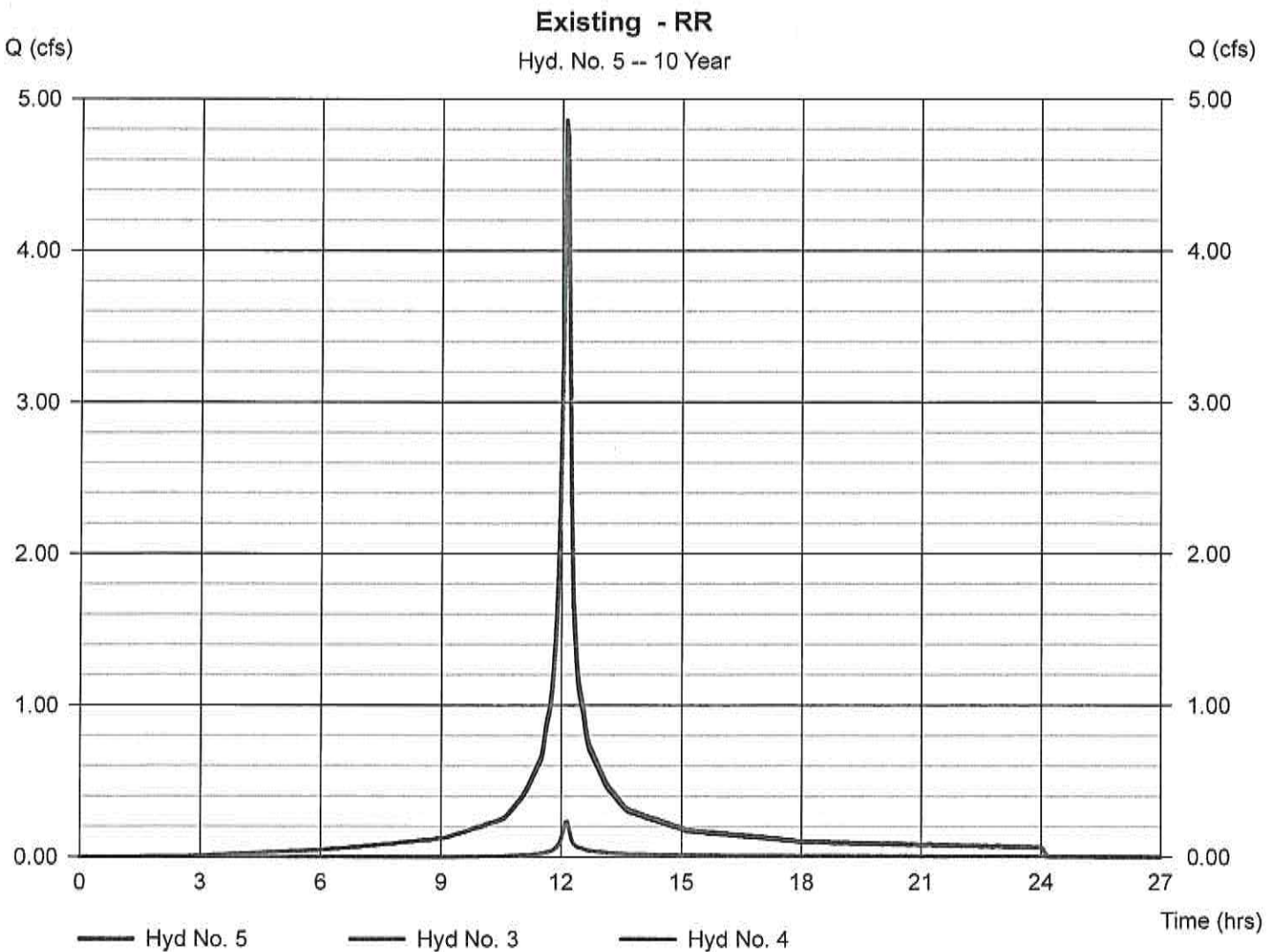
Thursday, Jun 23, 2022

## Hyd. No. 5

Existing - RR

Hydrograph type = Combine  
Storm frequency = 10 yrs  
Time interval = 3 min  
Inflow hyds. = 3, 4

Peak discharge = 4.862 cfs  
Time to peak = 12.10 hrs  
Hyd. volume = 17,779 cuft  
Contrib. drain. area = 1.266 ac



# Hydrograph Report

Hydraflow Hydrographs by Intellisolve v9.25

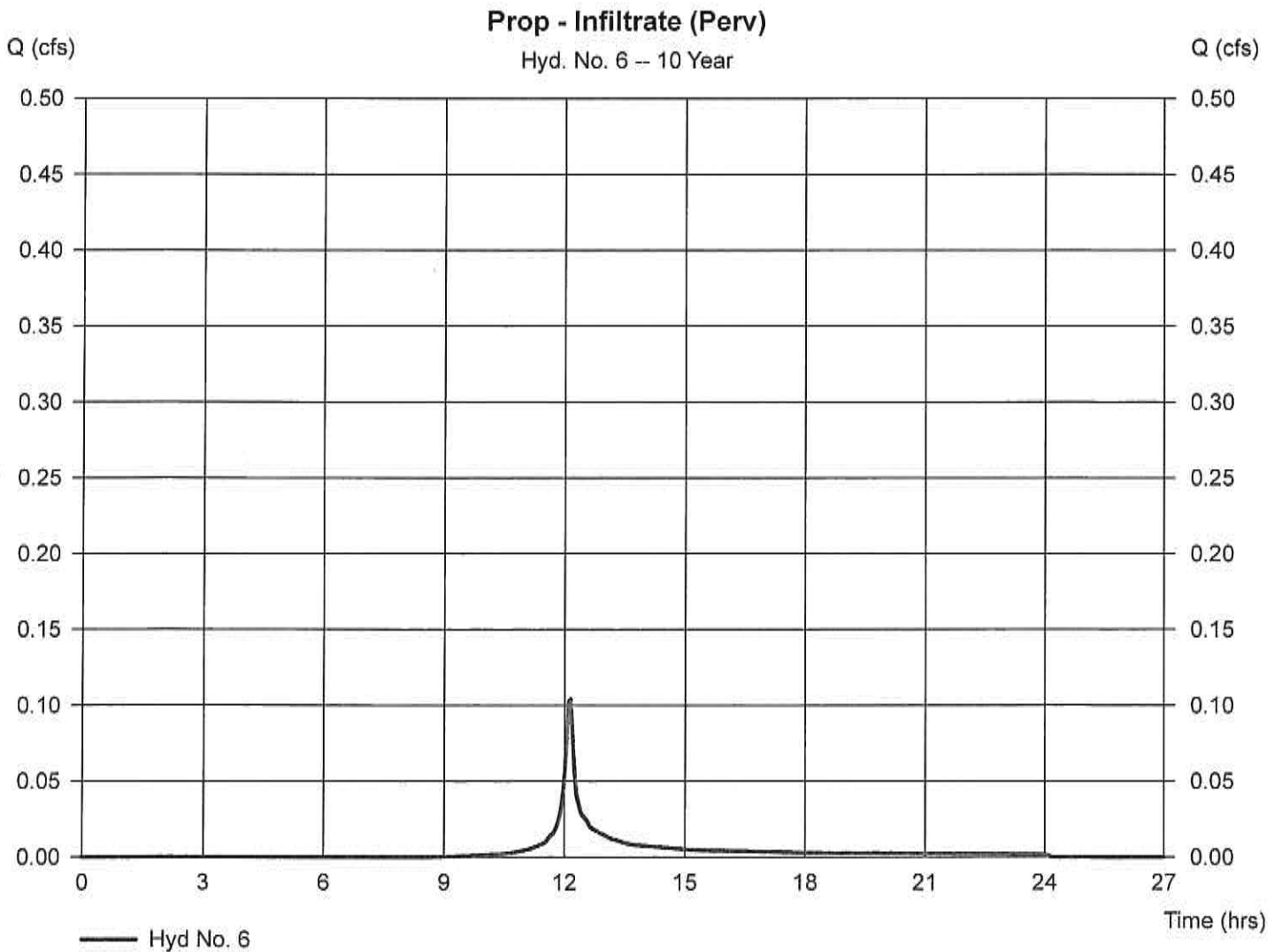
Thursday, Jun 23, 2022

## Hyd. No. 6

Prop - Infiltrate (Perv)

Hydrograph type = SCS Runoff  
 Storm frequency = 10 yrs  
 Time interval = 3 min  
 Drainage area = 0.043 ac  
 Basin Slope = 0.0 %  
 Tc method = USER  
 Total precip. = 5.07 in  
 Storm duration = NOAA\_D.cds

Peak discharge = 0.104 cfs  
 Time to peak = 12.15 hrs  
 Hyd. volume = 354 cuft  
 Curve number = 74  
 Hydraulic length = 0 ft  
 Time of conc. (Tc) = 6.00 min  
 Distribution = Custom  
 Shape factor = 484



# Hydrograph Report

Hydraflow Hydrographs by Intellsolve v9.25

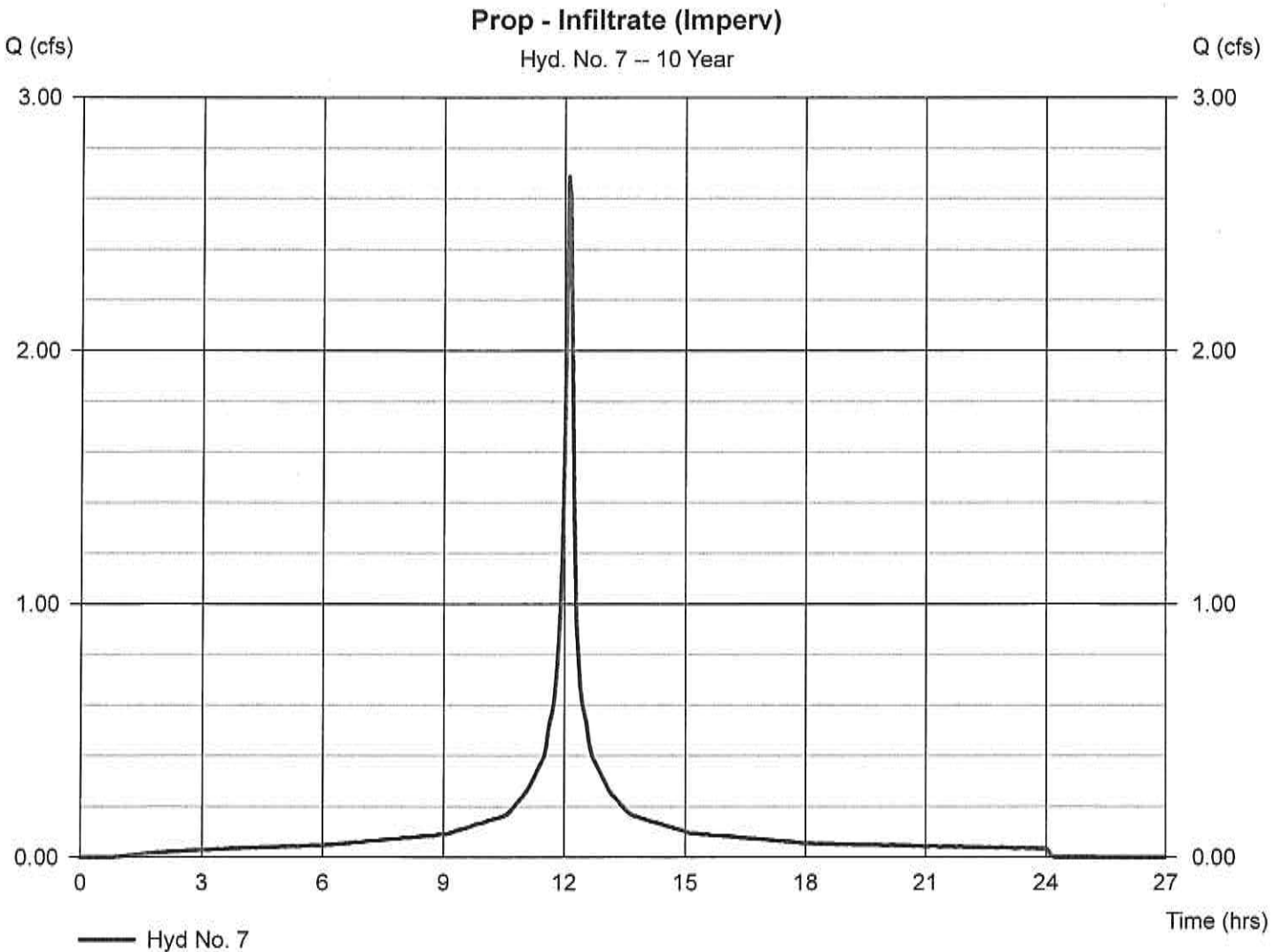
Thursday, Jun 23, 2022

## Hyd. No. 7

Prop - Infiltrate (Imperv)

Hydrograph type = SCS Runoff  
 Storm frequency = 10 yrs  
 Time interval = 3 min  
 Drainage area = 0.643 ac  
 Basin Slope = 0.0 %  
 Tc method = USER  
 Total precip. = 5.07 in  
 Storm duration = NOAA\_D.cds

Peak discharge = 2.686 cfs  
 Time to peak = 12.10 hrs  
 Hyd. volume = 10,576 cuft  
 Curve number = 98  
 Hydraulic length = 0 ft  
 Time of conc. (Tc) = 6.00 min  
 Distribution = Custom  
 Shape factor = 484



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.25

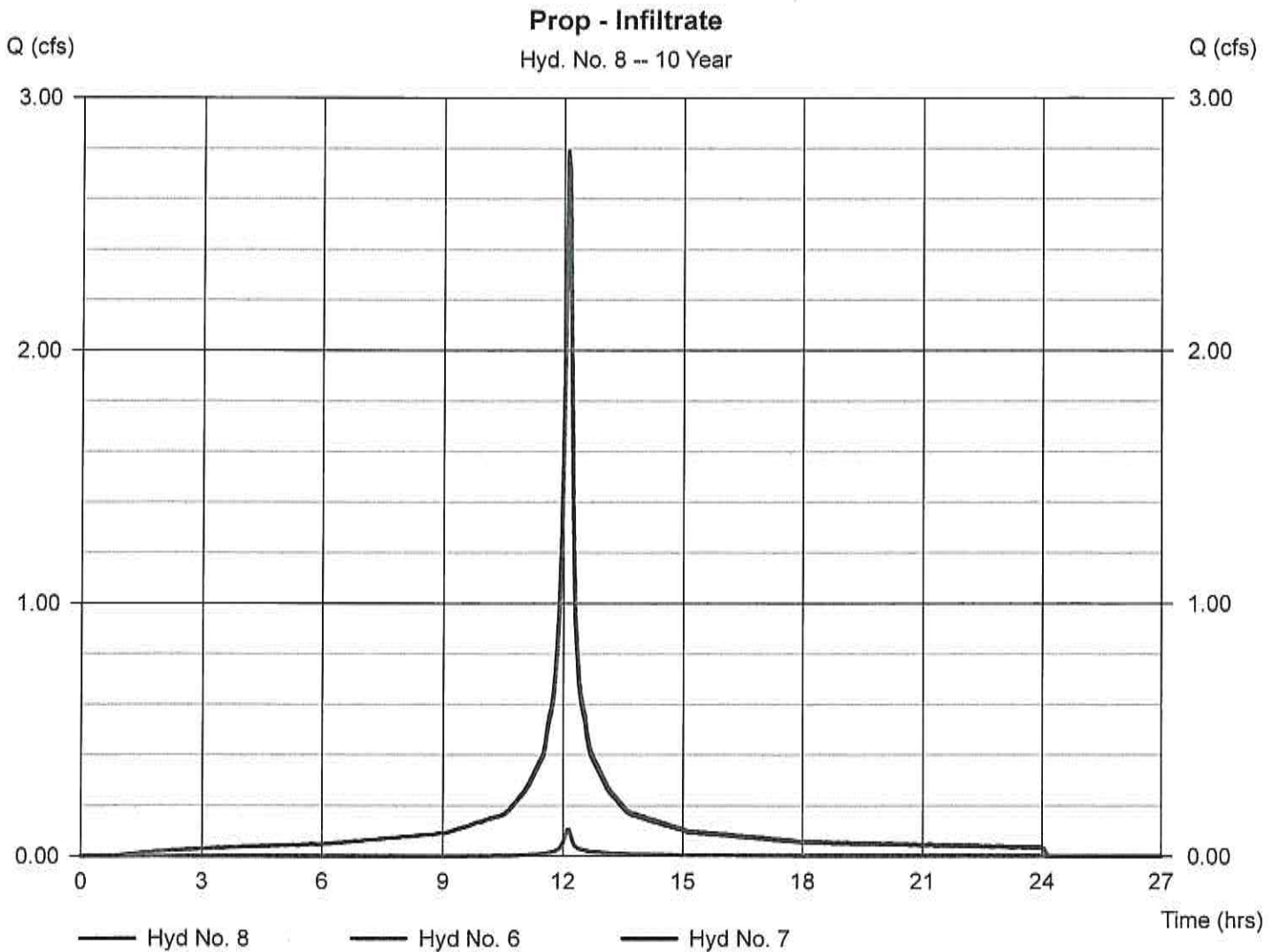
Thursday, Jun 23, 2022

## Hyd. No. 8

Prop - Infiltrate

Hydrograph type = Combine  
Storm frequency = 10 yrs  
Time interval = 3 min  
Inflow hyds. = 6, 7

Peak discharge = 2.789 cfs  
Time to peak = 12.10 hrs  
Hyd. volume = 10,930 cuft  
Contrib. drain. area = 0.686 ac



# Hydrograph Report

Hydraflow Hydrographs by Intellisolve v9.25

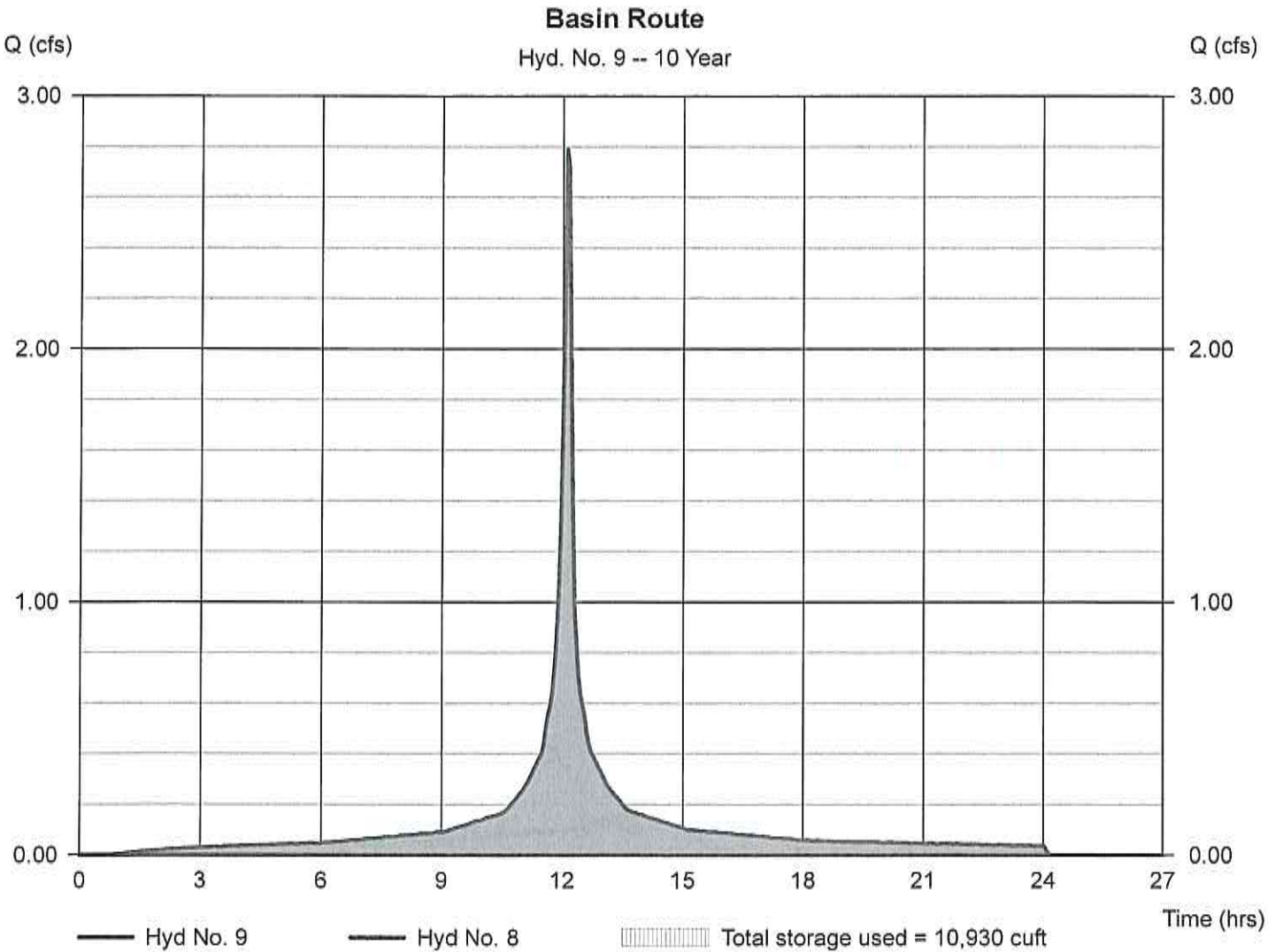
Thursday, Jun 23, 2022

## Hyd. No. 9

### Basin Route

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= n/a
Time interval	= 3 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 8 - Prop - Infiltrate	Max. Elevation	= 148.83 ft
Reservoir name	= Basin	Max. Storage	= 10,930 cuft

Storage Indication method used.



# Hydrograph Report

Hydraflow Hydrographs by Intellisolve v9.25

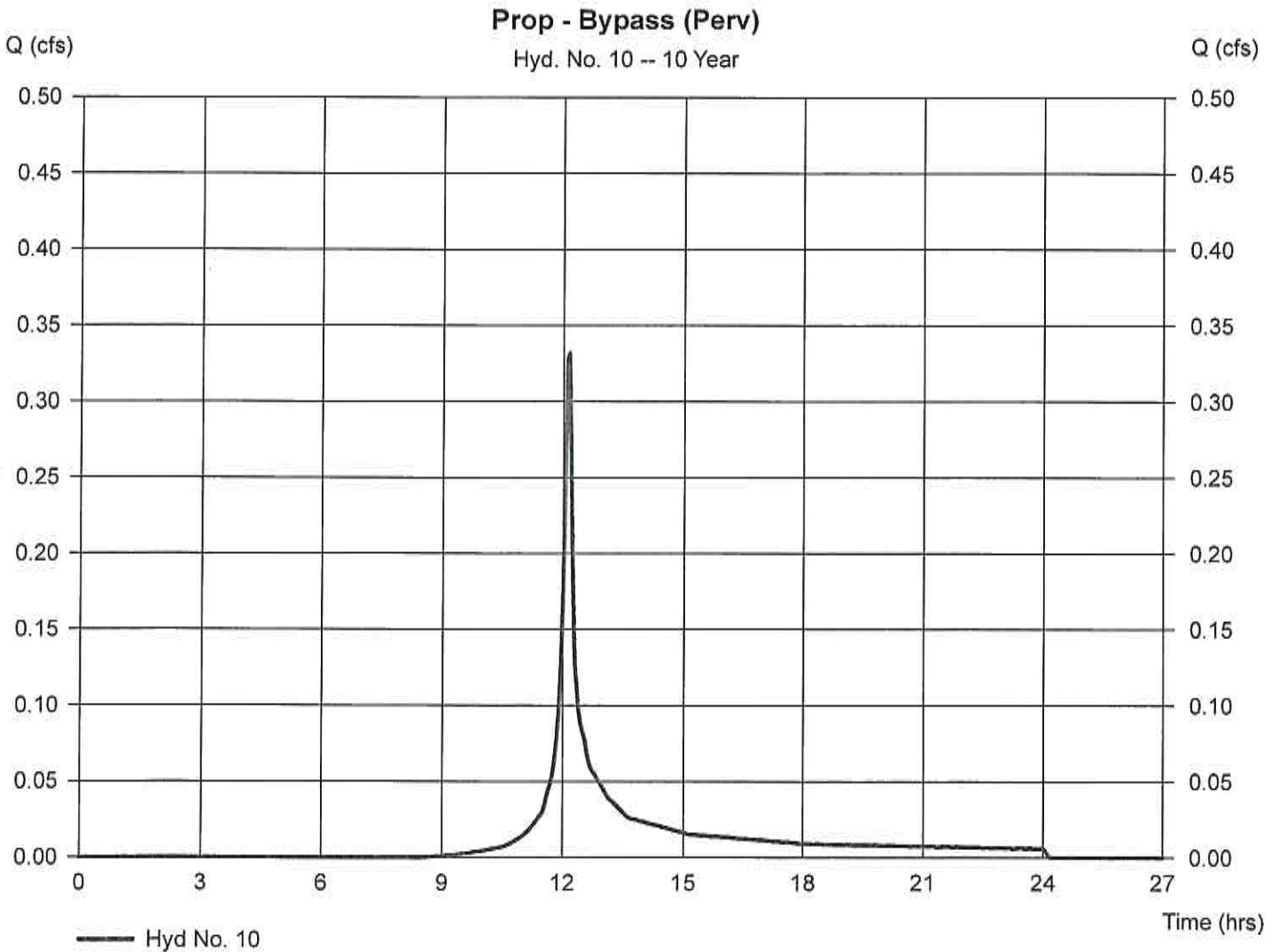
Thursday, Jun 23, 2022

## Hyd. No. 10

### Prop - Bypass (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.332 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.15 hrs
Time interval	= 3 min	Hyd. volume	= 1,128 cuft
Drainage area	= 0.137 ac	Curve number	= 74*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 5.07 in	Distribution	= Custom
Storm duration	= NOAA_D.cds	Shape factor	= 484

\* Composite (Area/CN) = [(0.161 x 98) + (0.426 x 98)] / 0.137



# Hydrograph Report

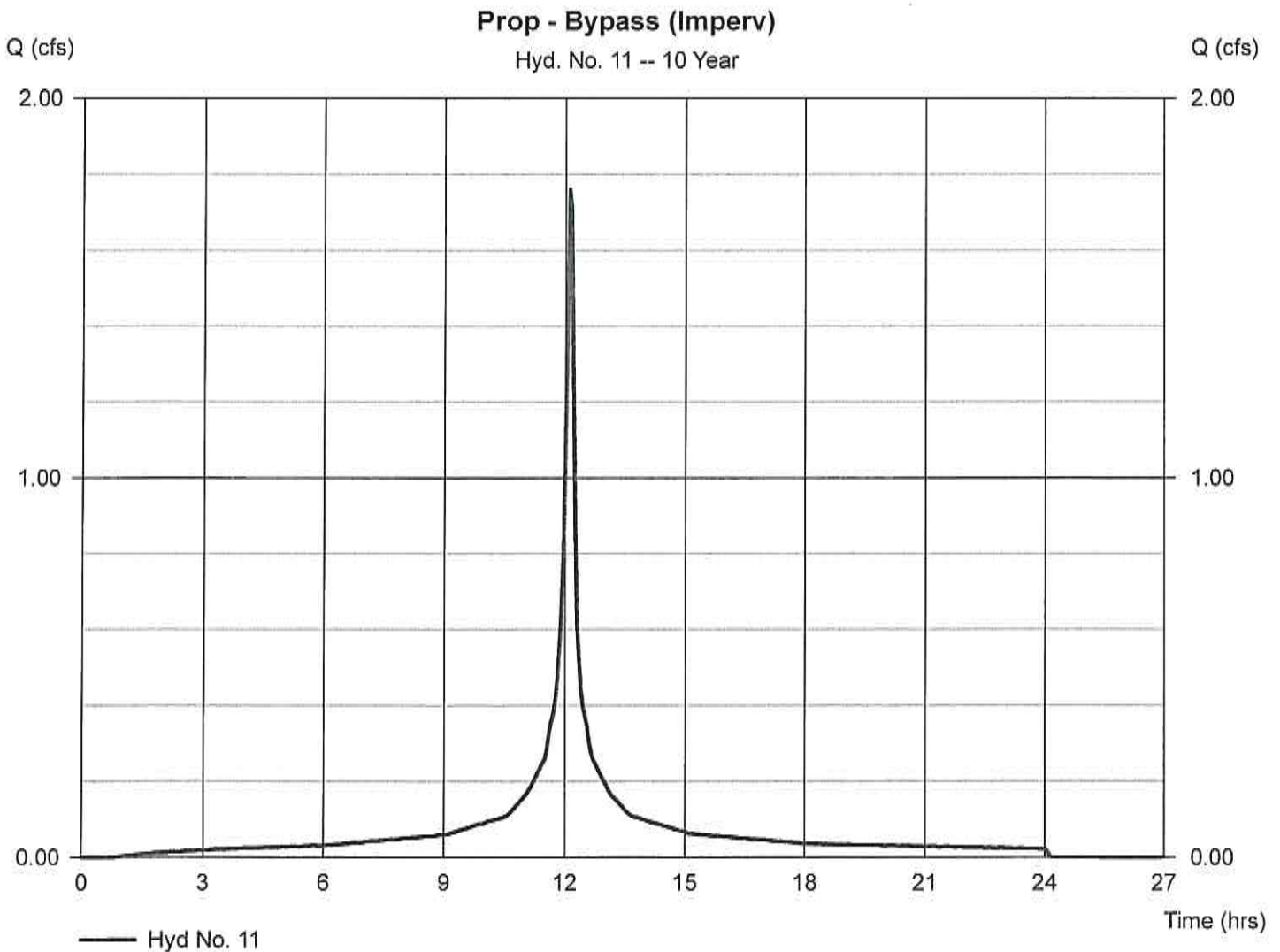
Hydraflow Hydrographs by Intellisolve v9.25

Thursday, Jun 23, 2022

## Hyd. No. 11

Prop - Bypass (Imperv)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.759 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 6,924 cuft
Drainage area	= 0.421 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 5.07 in	Distribution	= Custom
Storm duration	= NOAA_D.cds	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.25

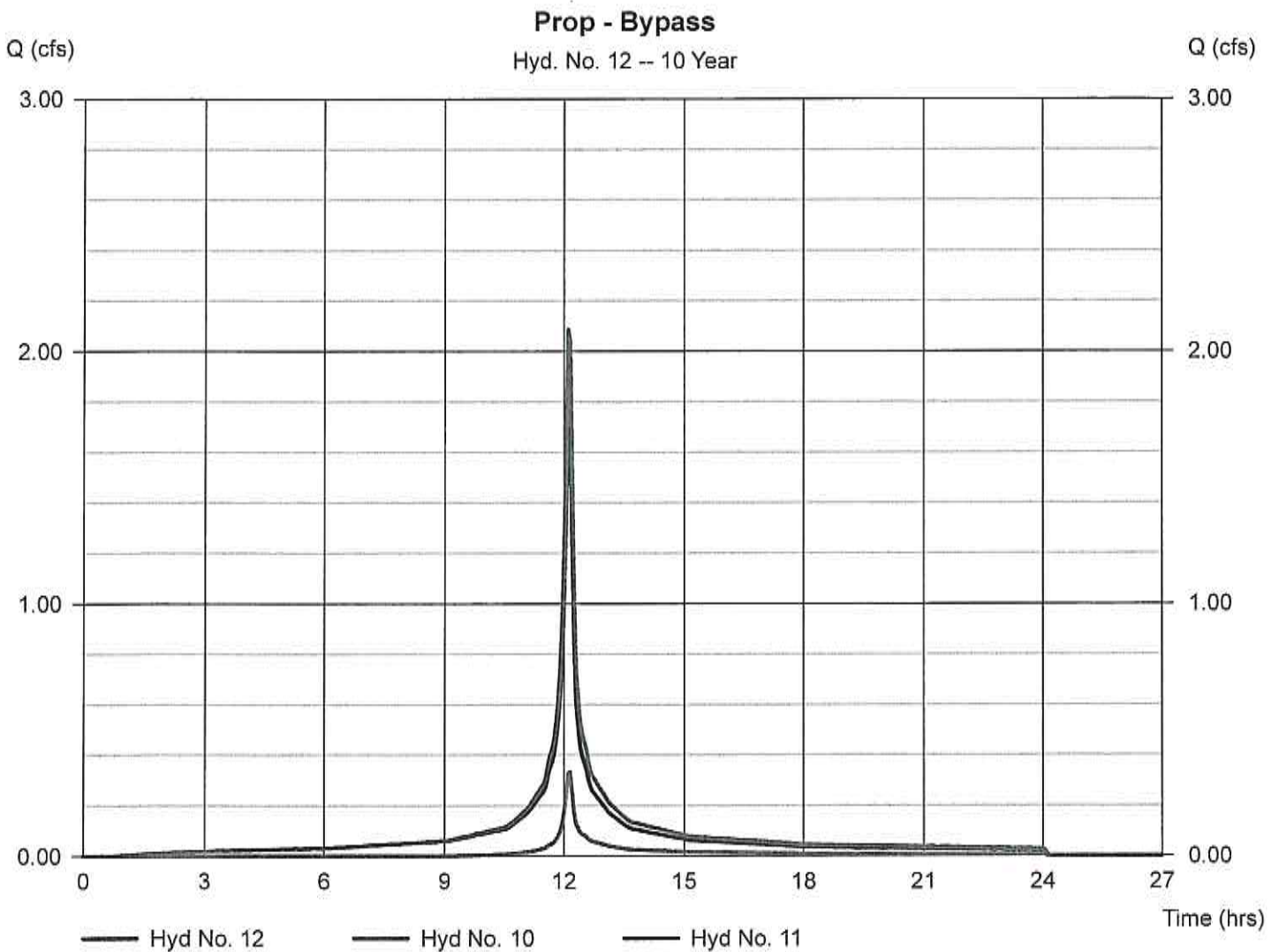
Thursday, Jun 23, 2022

## Hyd. No. 12

Prop - Bypass

Hydrograph type = Combine  
Storm frequency = 10 yrs  
Time interval = 3 min  
Inflow hyds. = 10, 11

Peak discharge = 2.086 cfs  
Time to peak = 12.10 hrs  
Hyd. volume = 8,053 cuft  
Contrib. drain. area = 0.558 ac



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.25

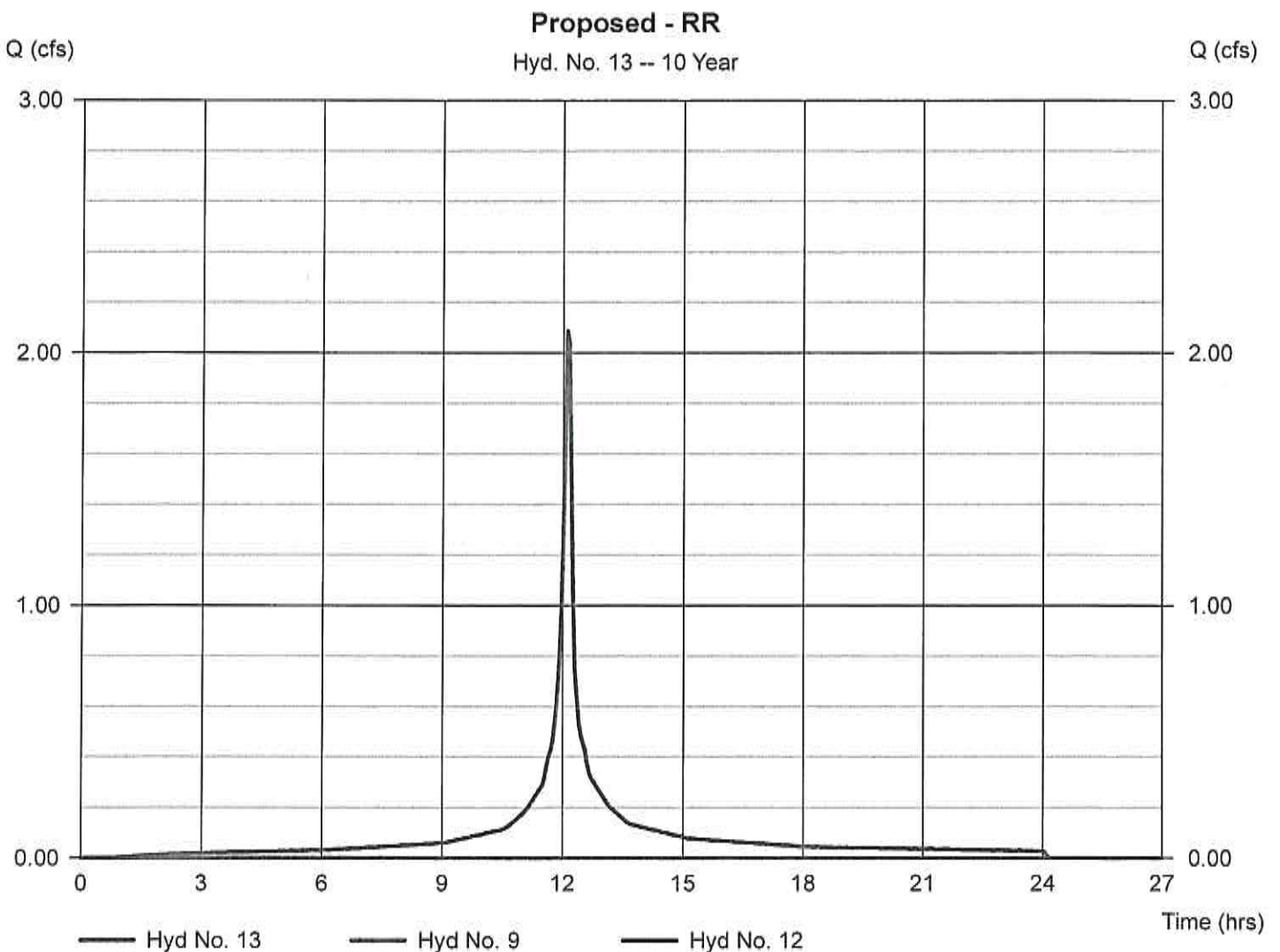
Thursday, Jun 23, 2022

## Hyd. No. 13

Proposed - RR

Hydrograph type = Combine  
Storm frequency = 10 yrs  
Time interval = 3 min  
Inflow hyds. = 9, 12

Peak discharge = 2.086 cfs  
Time to peak = 12.10 hrs  
Hyd. volume = 8,053 cuft  
Contrib. drain. area = 0.000 ac



# Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.25

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	2.164	3	726	8,138	-----	-----	-----	Existing - County
2	SCS Runoff	2.103	3	726	7,514	-----	-----	-----	Proposed - County
3	SCS Runoff	0.327	3	729	1,118	-----	-----	-----	Existing - RR (Perv)
4	SCS Runoff	5.842	3	726	21,736	-----	-----	-----	Existing - RR (Gravel/Imperv)
5	Combine	6.168	3	726	22,854	3, 4	-----	-----	Existing - RR
6	SCS Runoff	0.146	3	729	501	-----	-----	-----	Prop - Infiltrate (Perv)
7	SCS Runoff	3.334	3	726	13,220	-----	-----	-----	Prop - Infiltrate (Imperv)
8	Combine	3.480	3	726	13,721	6, 7	-----	-----	Prop - Infiltrate
9	Reservoir	0.000	3	n/a	0	8	149.87	13,721	Basin Route
10	SCS Runoff	0.467	3	729	1,595	-----	-----	-----	Prop - Bypass (Perv)
11	SCS Runoff	2.183	3	726	8,656	-----	-----	-----	Prop - Bypass (Imperv)
12	Combine	2.648	3	726	10,251	10, 11	-----	-----	Prop - Bypass
13	Combine	2.648	3	726	10,251	9, 12	-----	-----	Proposed - RR
22-146.gpw					Return Period: 25 Year			Thursday, Jun 23, 2022	

# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.25

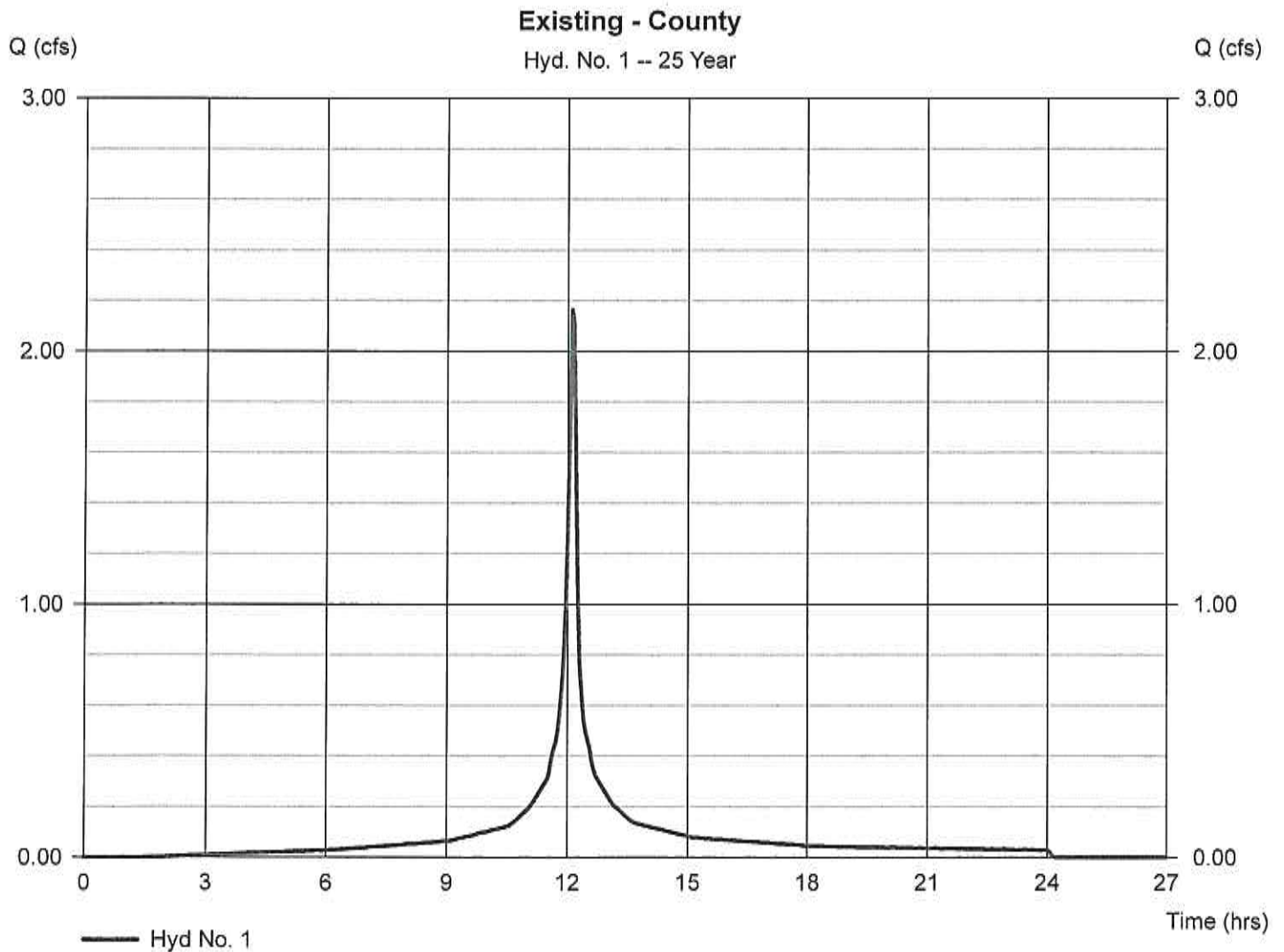
Thursday, Jun 23, 2022

## Hyd. No. 1

Existing - County

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.164 cfs
Storm frequency	=	25 yrs	Time to peak	=	12.10 hrs
Time interval	=	3 min	Hyd. volume	=	8,138 cuft
Drainage area	=	0.429 ac	Curve number	=	94*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	6.28 in	Distribution	=	Custom
Storm duration	=	NOAA_D.cds	Shape factor	=	484

\* Composite (Area/CN) = [(0.063 x 74) + (0.028 x 89) + (0.338 x 98)] / 0.429



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.25

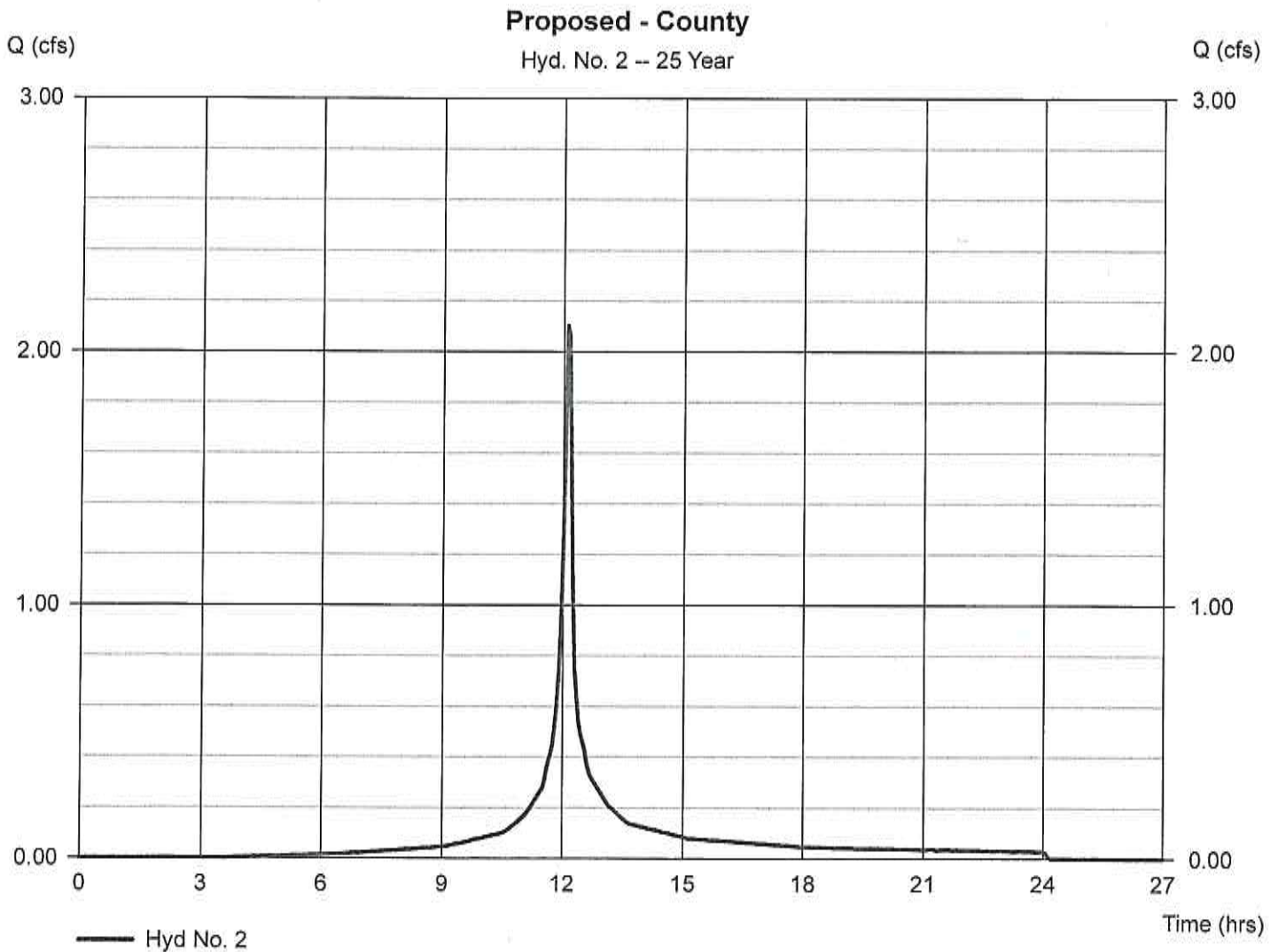
Thursday, Jun 23, 2022

## Hyd. No. 2

Proposed - County

Hydrograph type	= SCS Runoff	Peak discharge	= 2.103 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 7,514 cuft
Drainage area	= 0.451 ac	Curve number	= 88*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 6.28 in	Distribution	= Custom
Storm duration	= NOAA_D.cds	Shape factor	= 484

\* Composite (Area/CN) = [(0.183 x 74) + (0.268 x 98)] / 0.451



# Hydrograph Report

Hydraflow Hydrographs by Intellisolve v9.25

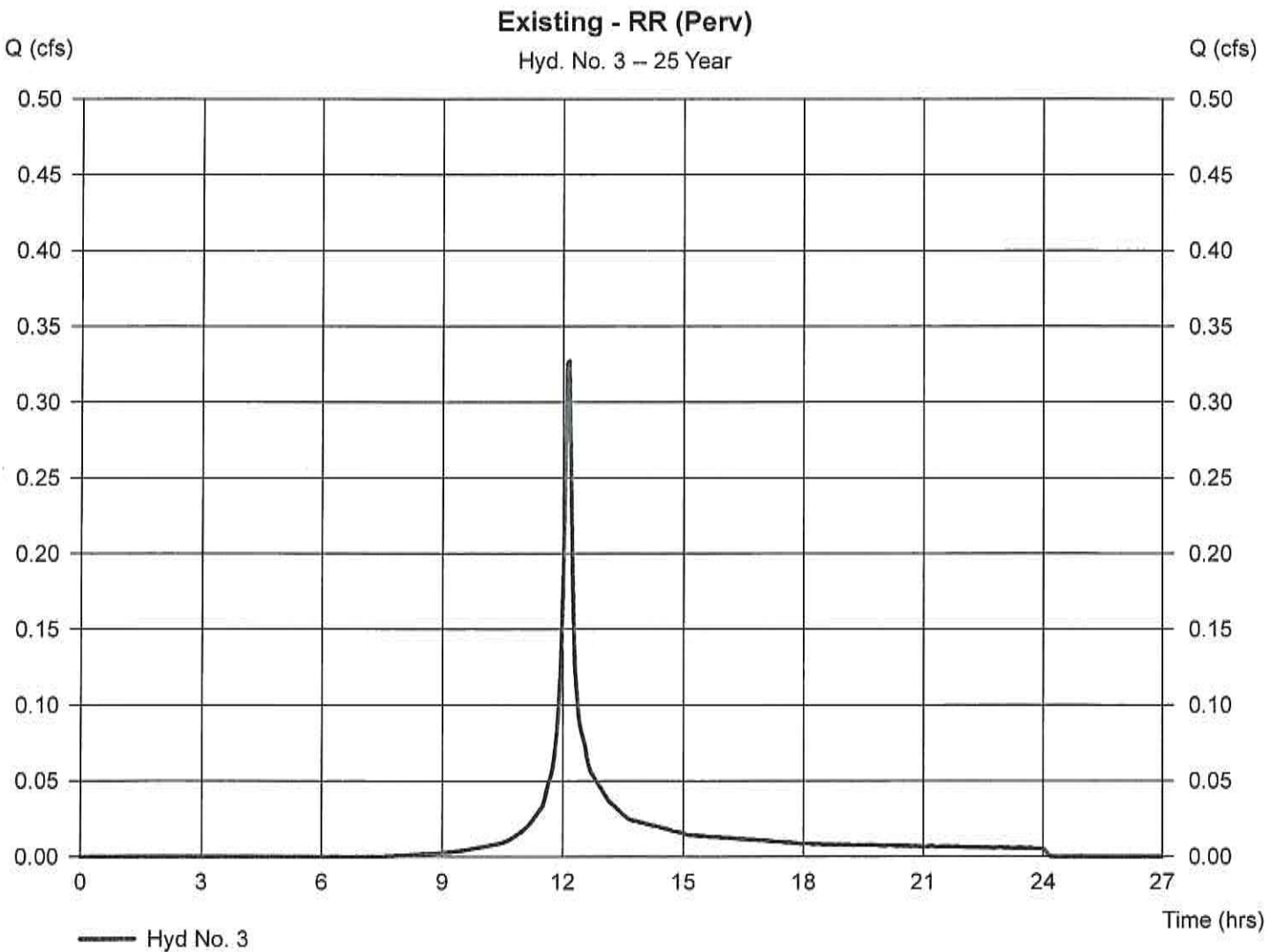
Thursday, Jun 23, 2022

## Hyd. No. 3

Existing - RR (Perv)

Hydrograph type = SCS Runoff  
Storm frequency = 25 yrs  
Time interval = 3 min  
Drainage area = 0.096 ac  
Basin Slope = 0.0 %  
Tc method = USER  
Total precip. = 6.28 in  
Storm duration = NOAA\_D.cds

Peak discharge = 0.327 cfs  
Time to peak = 12.15 hrs  
Hyd. volume = 1,118 cuft  
Curve number = 74  
Hydraulic length = 0 ft  
Time of conc. (Tc) = 6.00 min  
Distribution = Custom  
Shape factor = 484



# Hydrograph Report

Hydraflow Hydrographs by Intellisolve v9.25

Thursday, Jun 23, 2022

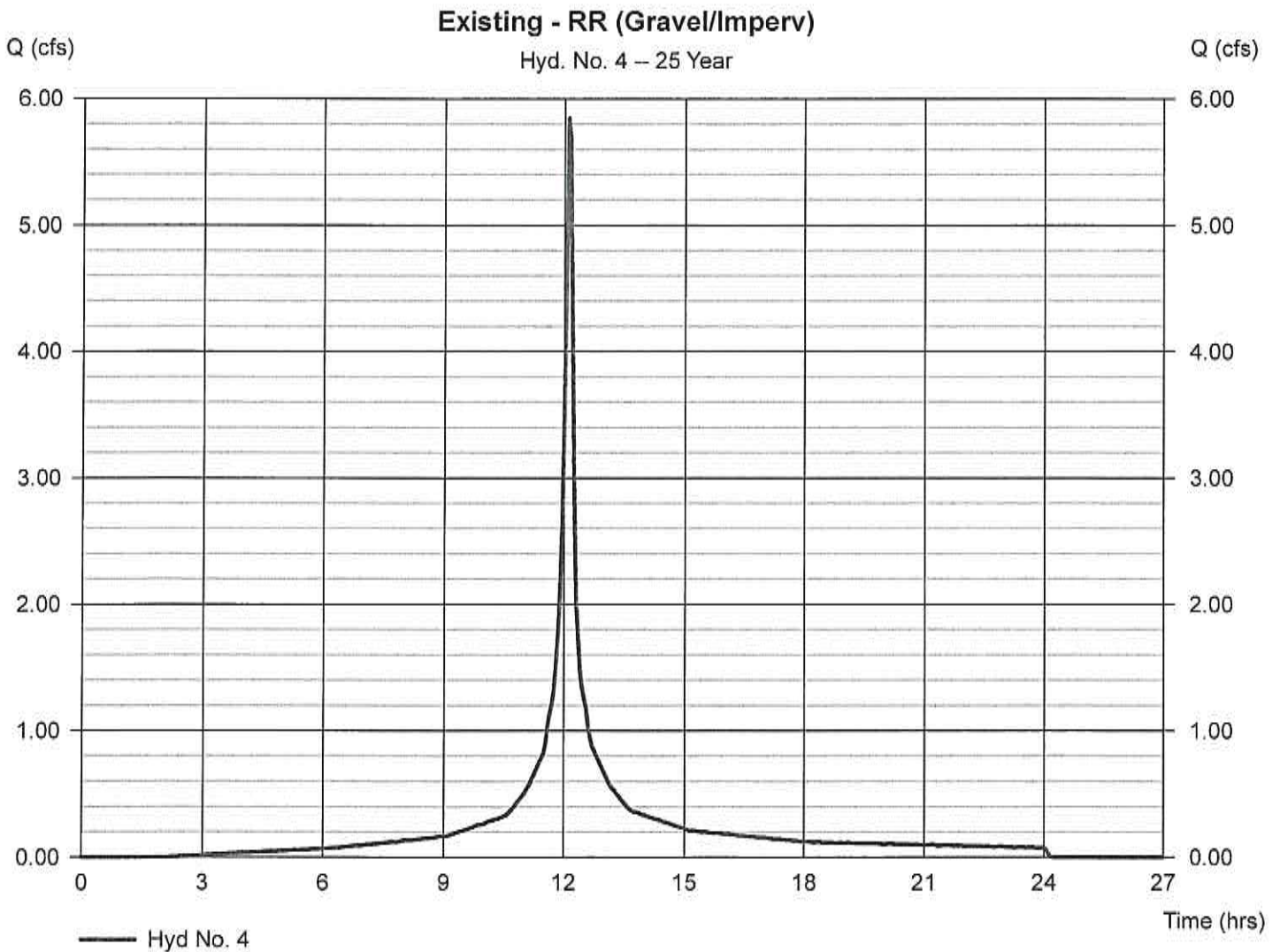
## Hyd. No. 4

Existing - RR (Gravel/Imperv)

Hydrograph type = SCS Runoff  
 Storm frequency = 25 yrs  
 Time interval = 3 min  
 Drainage area = 1.170 ac  
 Basin Slope = 0.0 %  
 Tc method = USER  
 Total precip. = 6.28 in  
 Storm duration = NOAA\_D.cds

Peak discharge = 5.842 cfs  
 Time to peak = 12.10 hrs  
 Hyd. volume = 21,736 cuft  
 Curve number = 93\*  
 Hydraulic length = 0 ft  
 Time of conc. (Tc) = 6.00 min  
 Distribution = Custom  
 Shape factor = 484

\* Composite (Area/CN) = [(0.667 x 89) + (0.503 x 98)] / 1.170



# Hydrograph Report

Hydraflow Hydrographs by Intellsolve v9.25

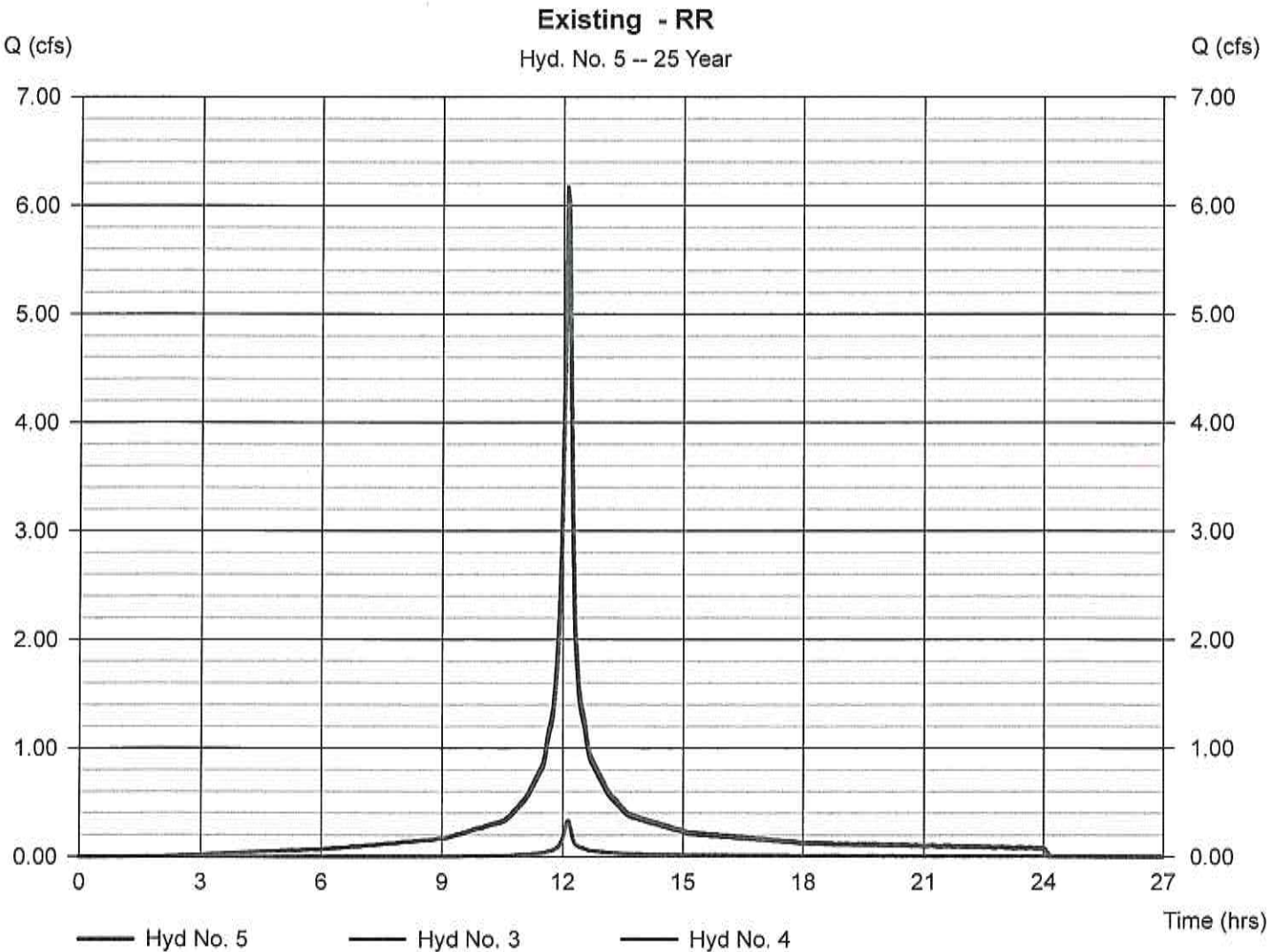
Thursday, Jun 23, 2022

## Hyd. No. 5

Existing - RR

Hydrograph type = Combine  
 Storm frequency = 25 yrs  
 Time interval = 3 min  
 Inflow hyds. = 3, 4

Peak discharge = 6.168 cfs  
 Time to peak = 12.10 hrs  
 Hyd. volume = 22,854 cuft  
 Contrib. drain. area = 1.266 ac



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.25

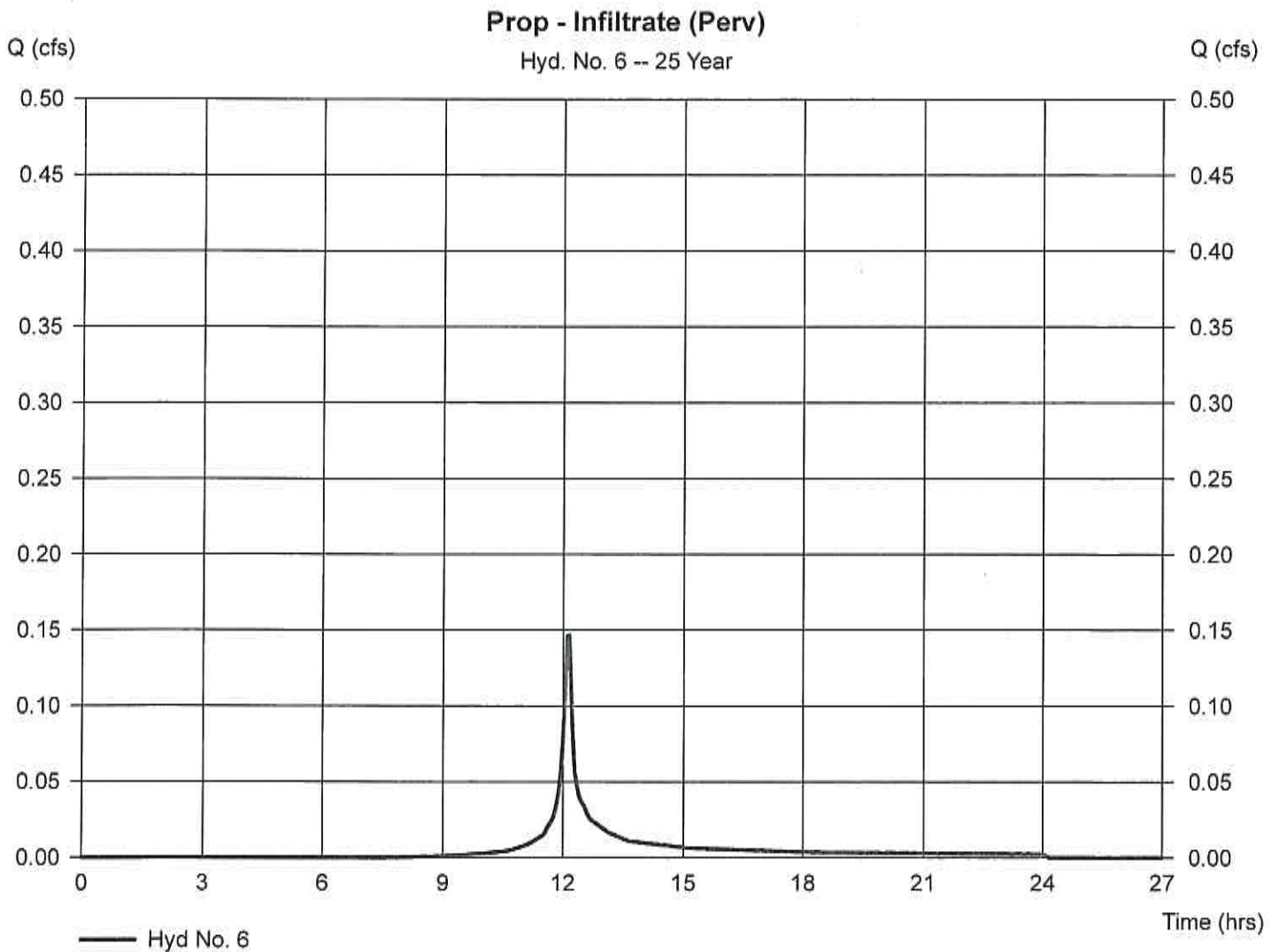
Thursday, Jun 23, 2022

## Hyd. No. 6

Prop - Infiltrate (Perv)

Hydrograph type = SCS Runoff  
Storm frequency = 25 yrs  
Time interval = 3 min  
Drainage area = 0.043 ac  
Basin Slope = 0.0 %  
Tc method = USER  
Total precip. = 6.28 in  
Storm duration = NOAA\_D.cds

Peak discharge = 0.146 cfs  
Time to peak = 12.15 hrs  
Hyd. volume = 501 cuft  
Curve number = 74  
Hydraulic length = 0 ft  
Time of conc. (Tc) = 6.00 min  
Distribution = Custom  
Shape factor = 484



# Hydrograph Report

Hydraflow Hydrographs by Intellsolve v9.25

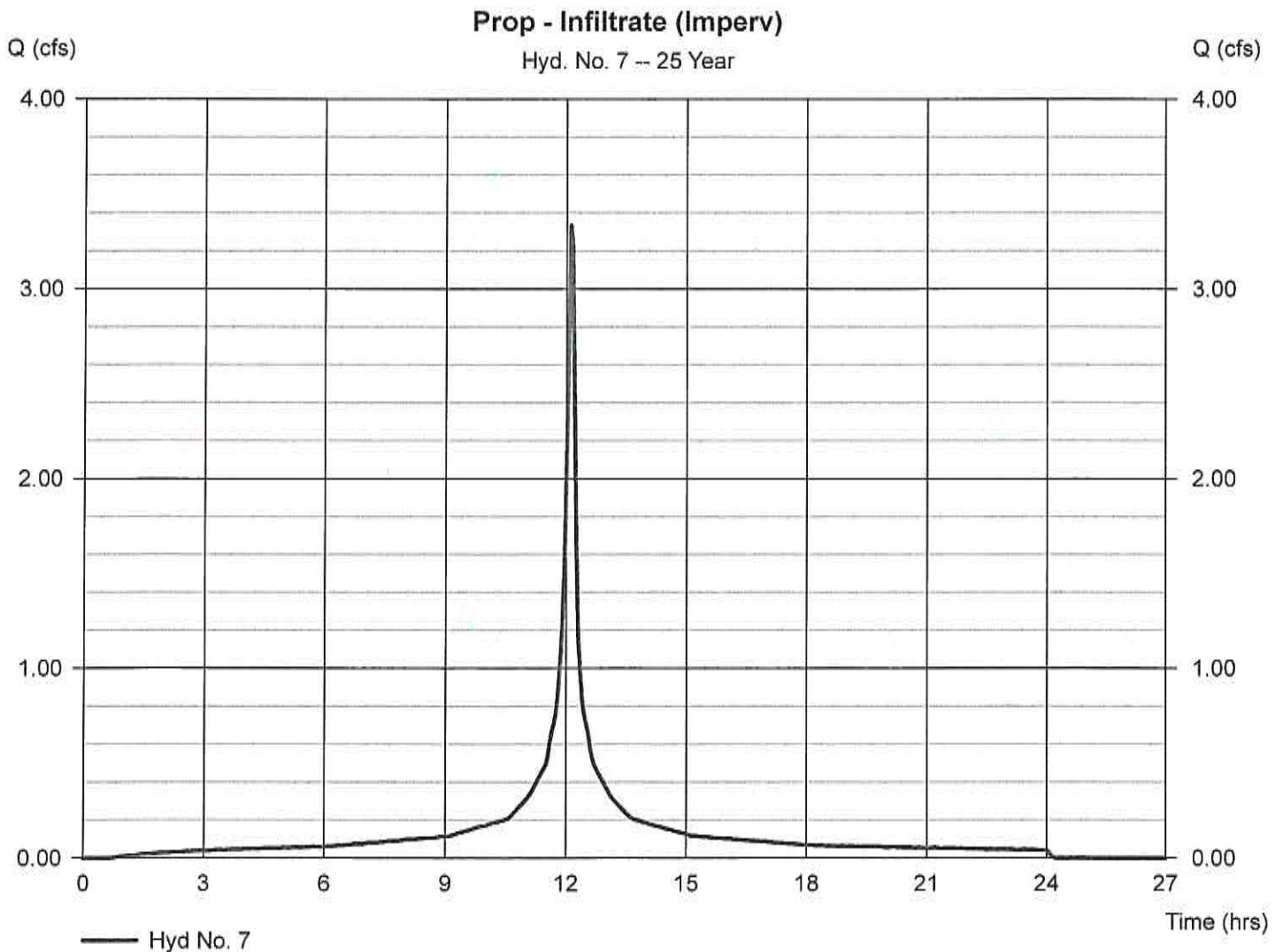
Thursday, Jun 23, 2022

## Hyd. No. 7

Prop - Infiltrate (Imperv)

Hydrograph type = SCS Runoff  
 Storm frequency = 25 yrs  
 Time interval = 3 min  
 Drainage area = 0.643 ac  
 Basin Slope = 0.0 %  
 Tc method = USER  
 Total precip. = 6.28 in  
 Storm duration = NOAA\_D.cds

Peak discharge = 3.334 cfs  
 Time to peak = 12.10 hrs  
 Hyd. volume = 13,220 cuft  
 Curve number = 98  
 Hydraulic length = 0 ft  
 Time of conc. (Tc) = 6.00 min  
 Distribution = Custom  
 Shape factor = 484



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.25

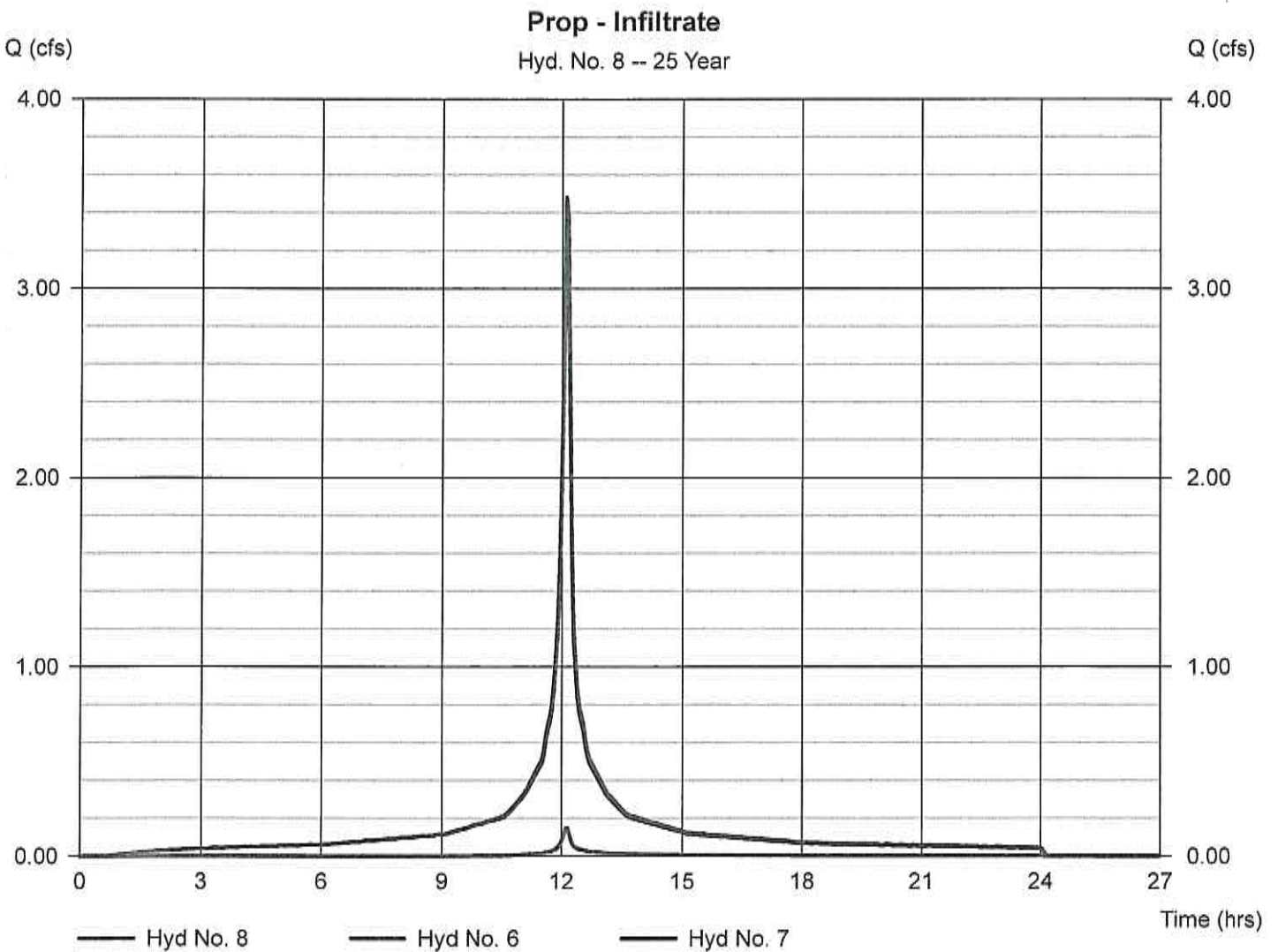
Thursday, Jun 23, 2022

## Hyd. No. 8

Prop - Infiltrate

Hydrograph type = Combine  
Storm frequency = 25 yrs  
Time interval = 3 min  
Inflow hyds. = 6, 7

Peak discharge = 3.480 cfs  
Time to peak = 12.10 hrs  
Hyd. volume = 13,721 cuft  
Contrib. drain. area = 0.686 ac



# Hydrograph Report

Hydraflow Hydrographs by Intellisolve v9.25

Thursday, Jun 23, 2022

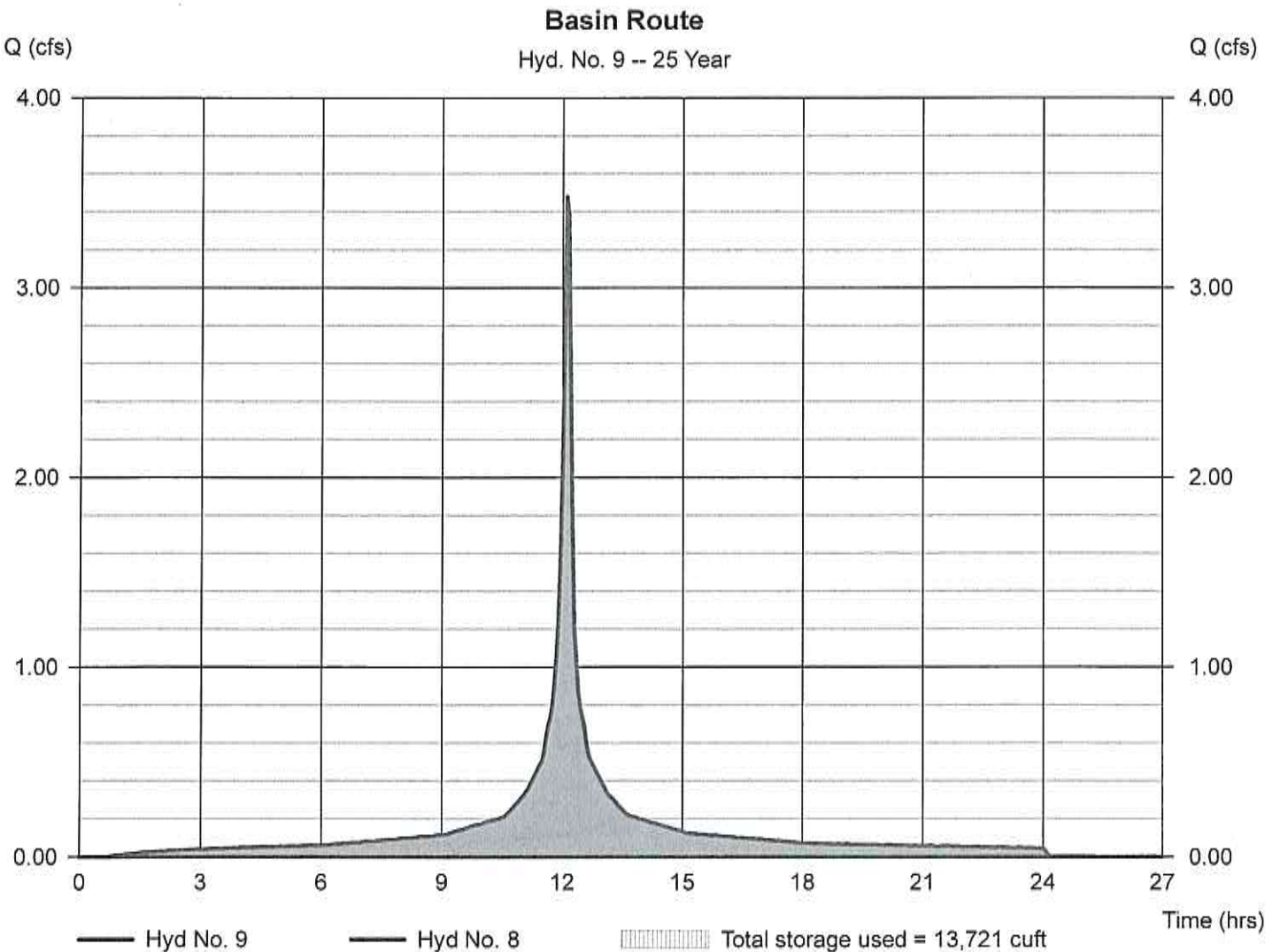
## Hyd. No. 9

### Basin Route

Hydrograph type = Reservoir  
 Storm frequency = 25 yrs  
 Time interval = 3 min  
 Inflow hyd. No. = 8 - Prop - Infiltrate  
 Reservoir name = Basin

Peak discharge = 0.000 cfs  
 Time to peak = n/a  
 Hyd. volume = 0 cuft  
 Max. Elevation = 149.87 ft  
 Max. Storage = 13,721 cuft

Storage Indication method used.



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.25

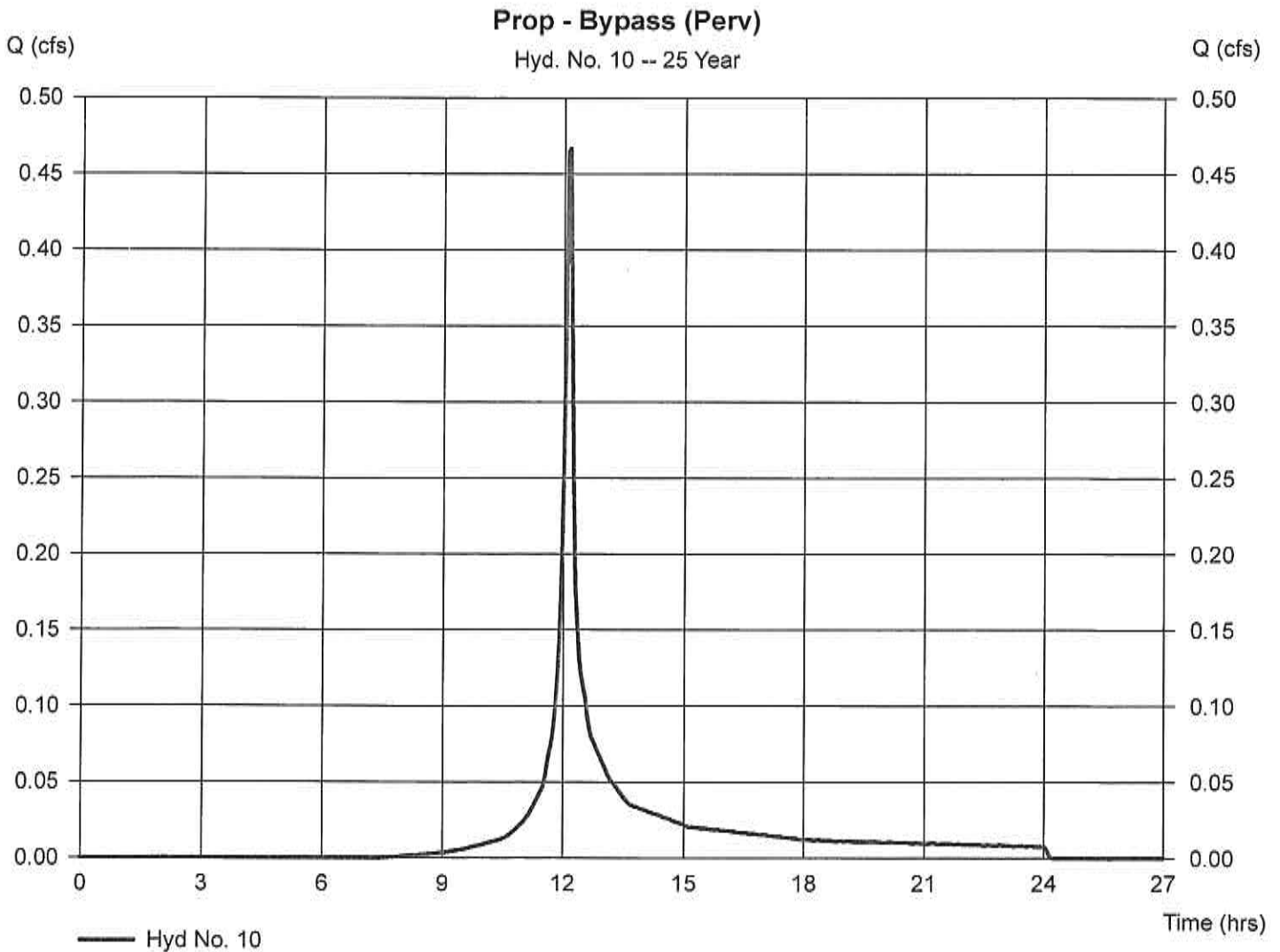
Thursday, Jun 23, 2022

## Hyd. No. 10

Prop - Bypass (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.467 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.15 hrs
Time interval	= 3 min	Hyd. volume	= 1,595 cuft
Drainage area	= 0.137 ac	Curve number	= 74*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 6.28 in	Distribution	= Custom
Storm duration	= NOAA_D.cds	Shape factor	= 484

\* Composite (Area/CN) =  $[(0.161 \times 98) + (0.426 \times 98)] / 0.137$



# Hydrograph Report

Hydraflow Hydrographs by Intellisolve v9.25

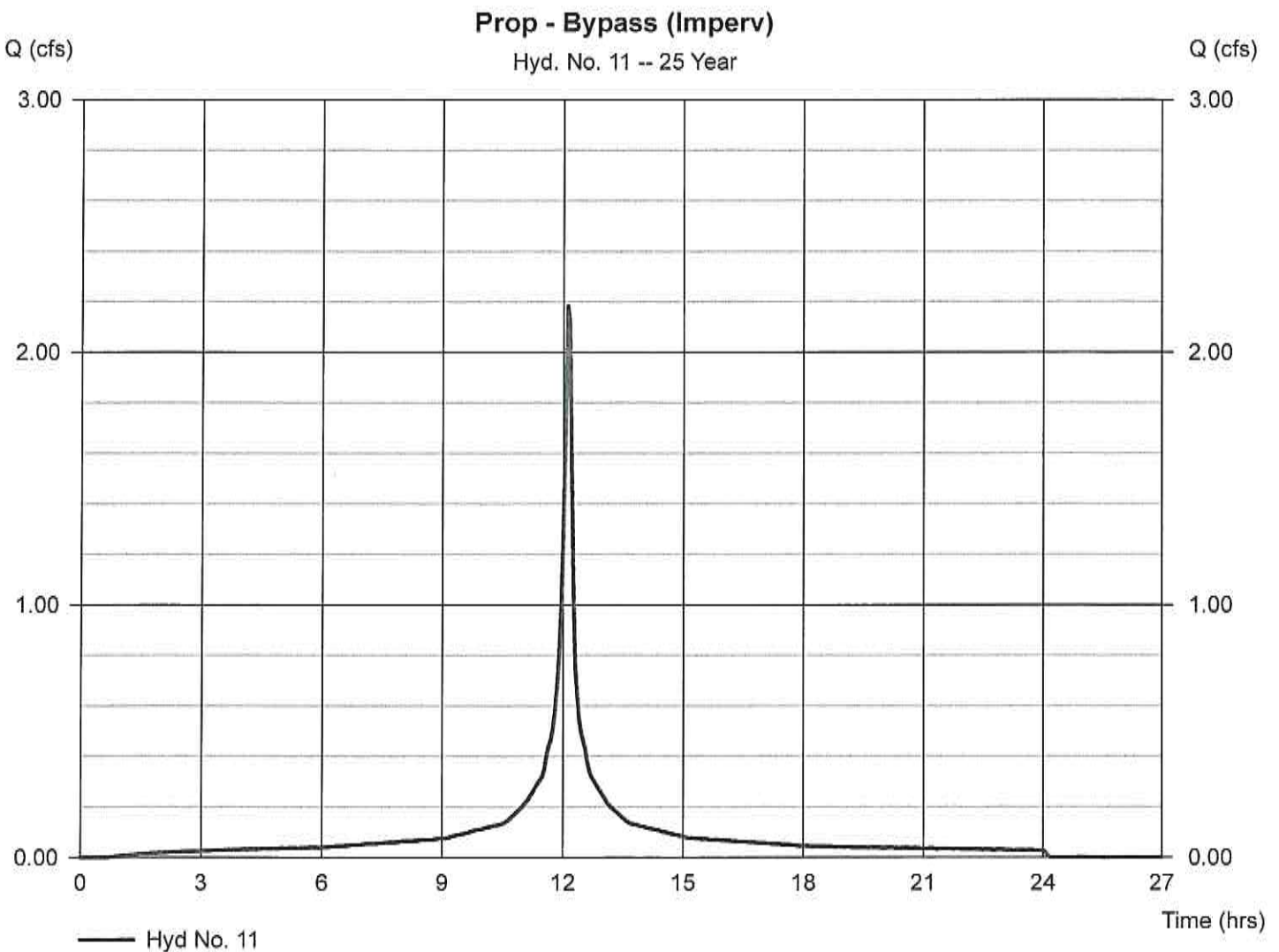
Thursday, Jun 23, 2022

## Hyd. No. 11

Prop - Bypass (Imperv)

Hydrograph type = SCS Runoff  
Storm frequency = 25 yrs  
Time interval = 3 min  
Drainage area = 0.421 ac  
Basin Slope = 0.0 %  
Tc method = USER  
Total precip. = 6.28 in  
Storm duration = NOAA\_D.cds

Peak discharge = 2.183 cfs  
Time to peak = 12.10 hrs  
Hyd. volume = 8,656 cuft  
Curve number = 98  
Hydraulic length = 0 ft  
Time of conc. (Tc) = 6.00 min  
Distribution = Custom  
Shape factor = 484



# Hydrograph Report

Hydraflow Hydrographs by Intellsolve v9.25

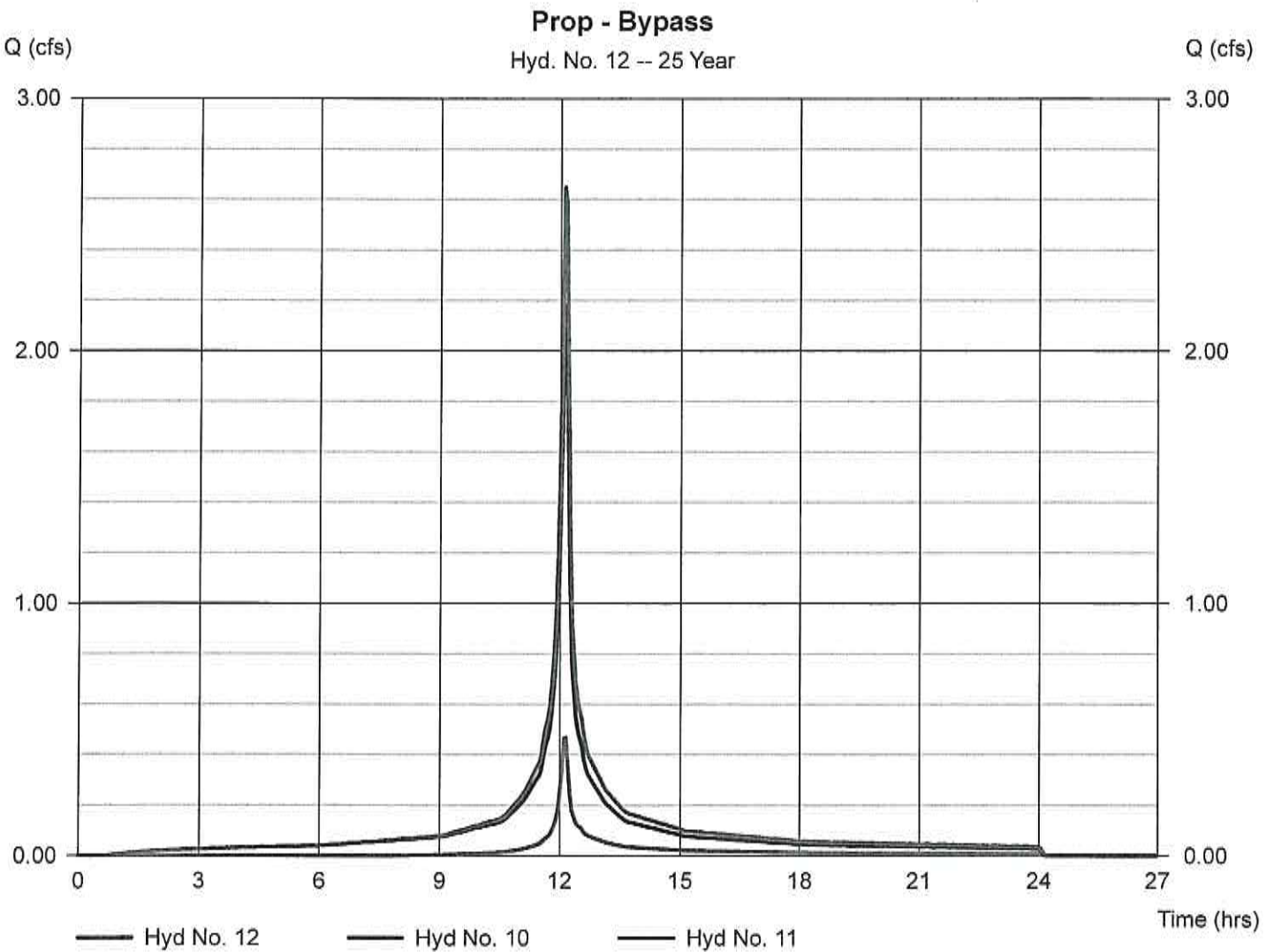
Thursday, Jun 23, 2022

## Hyd. No. 12

Prop - Bypass

Hydrograph type = Combine  
 Storm frequency = 25 yrs  
 Time interval = 3 min  
 Inflow hyds. = 10, 11

Peak discharge = 2.648 cfs  
 Time to peak = 12.10 hrs  
 Hyd. volume = 10,251 cuft  
 Contrib. drain. area = 0.558 ac



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.25

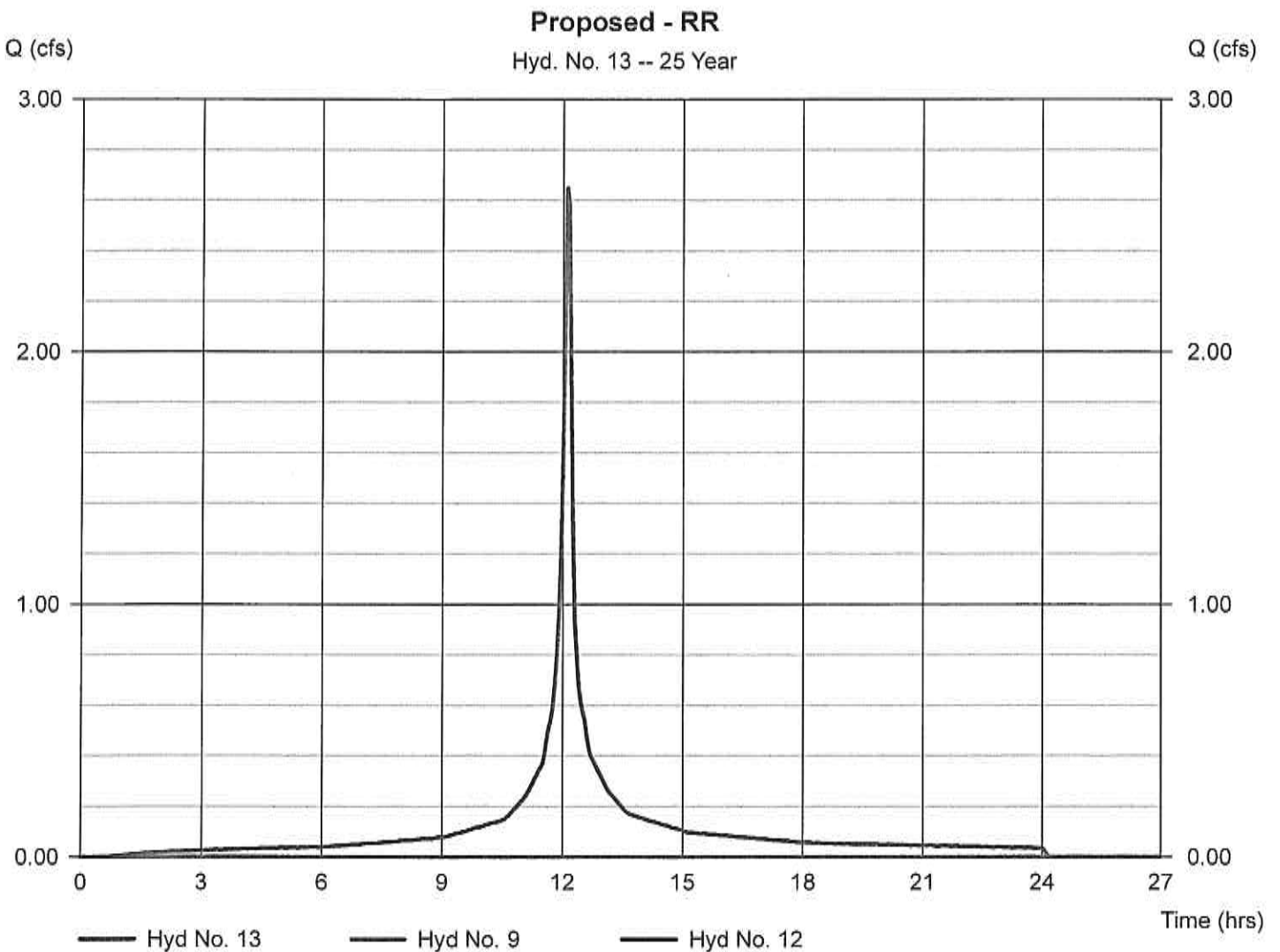
Thursday, Jun 23, 2022

## Hyd. No. 13

Proposed - RR

Hydrograph type = Combine  
Storm frequency = 25 yrs  
Time interval = 3 min  
Inflow hyds. = 9, 12

Peak discharge = 2.648 cfs  
Time to peak = 12.10 hrs  
Hyd. volume = 10,251 cuft  
Contrib. drain. area = 0.000 ac



# Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.25

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	2.957	3	726	11,314	----	----	----	Existing - County
2	SCS Runoff	2.958	3	726	10,787	----	----	----	Proposed - County
3	SCS Runoff	0.506	3	726	1,747	----	----	----	Existing - RR (Perv)
4	SCS Runoff	8.014	3	726	30,377	----	----	----	Existing - RR (Gravel/Imperv)
5	Combine	8.520	3	726	32,124	3, 4	----	----	Existing - RR
6	SCS Runoff	0.227	3	726	783	----	----	----	Prop - Infiltrate (Perv)
7	SCS Runoff	4.504	3	726	18,009	----	----	----	Prop - Infiltrate (Imperv)
8	Combine	4.731	3	726	18,791	6, 7	----	----	Prop - Infiltrate
9	Reservoir	0.347	3	810	4,998	8	149.99	13,987	Basin Route
10	SCS Runoff	0.722	3	726	2,493	----	----	----	Prop - Bypass (Perv)
11	SCS Runoff	2.949	3	726	11,791	----	----	----	Prop - Bypass (Imperv)
12	Combine	3.672	3	726	14,285	10, 11	----	----	Prop - Bypass
13	Combine	3.672	3	726	19,282	9, 12	----	----	Proposed - RR
22-146.gpw					Return Period: 100 Year			Thursday, Jun 23, 2022	

# Hydrograph Report

Hydraflow Hydrographs by Intellsolve v9.25

Thursday, Jun 23, 2022

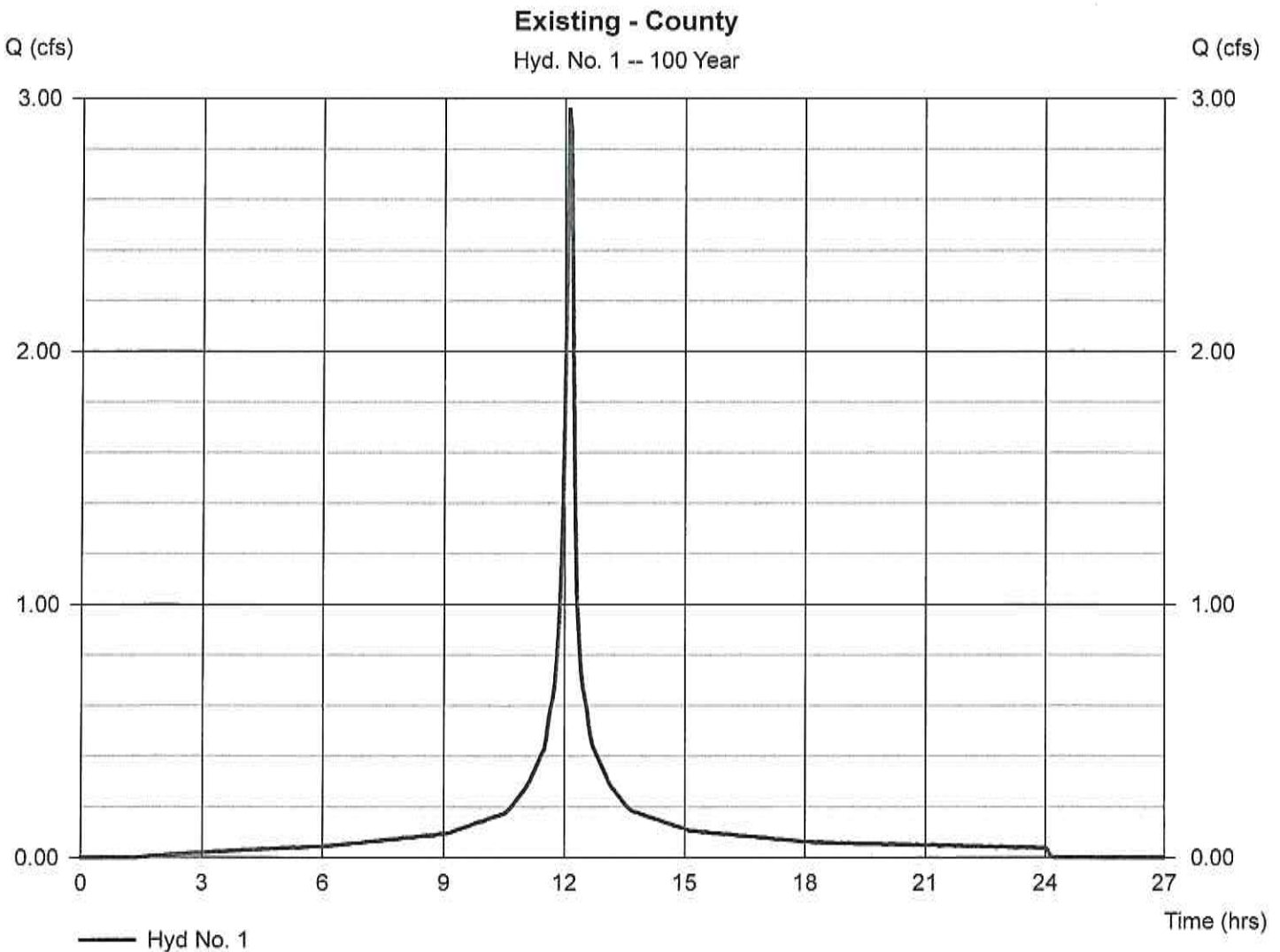
## Hyd. No. 1

Existing - County

Hydrograph type = SCS Runoff  
Storm frequency = 100 yrs  
Time interval = 3 min  
Drainage area = 0.429 ac  
Basin Slope = 0.0 %  
Tc method = USER  
Total precip. = 8.47 in  
Storm duration = NOAA\_D.cds

Peak discharge = 2.957 cfs  
Time to peak = 12.10 hrs  
Hyd. volume = 11,314 cuft  
Curve number = 94\*  
Hydraulic length = 0 ft  
Time of conc. (Tc) = 6.00 min  
Distribution = Custom  
Shape factor = 484

\* Composite (Area/CN) = [(0.063 x 74) + (0.028 x 89) + (0.338 x 98)] / 0.429



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.25

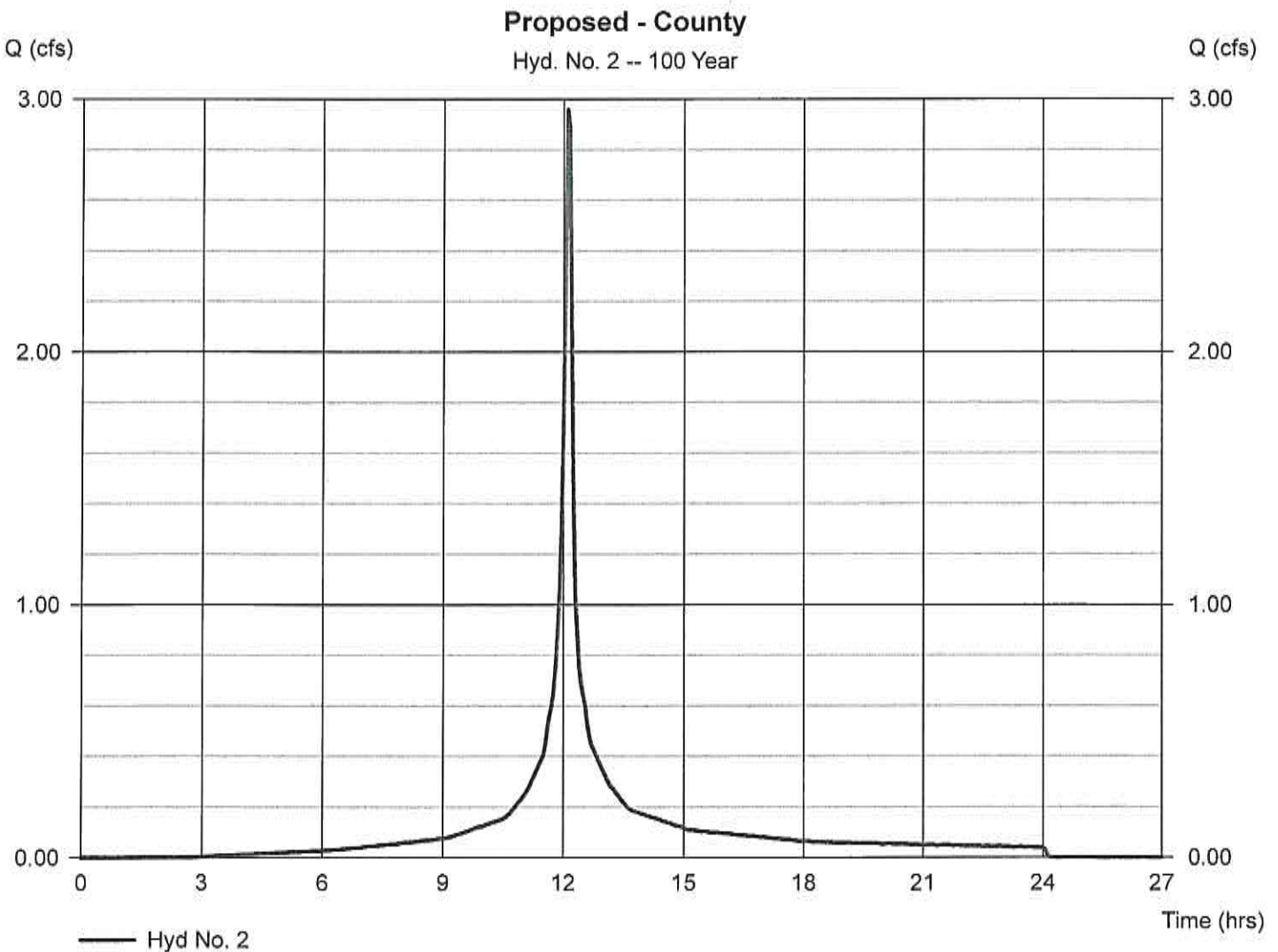
Thursday, Jun 23, 2022

## Hyd. No. 2

Proposed - County

Hydrograph type	= SCS Runoff	Peak discharge	= 2.958 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 10,787 cuft
Drainage area	= 0.451 ac	Curve number	= 88*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 8.47 in	Distribution	= Custom
Storm duration	= NOAA_D.cds	Shape factor	= 484

\* Composite (Area/CN) = [(0.183 x 74) + (0.268 x 98)] / 0.451



# Hydrograph Report

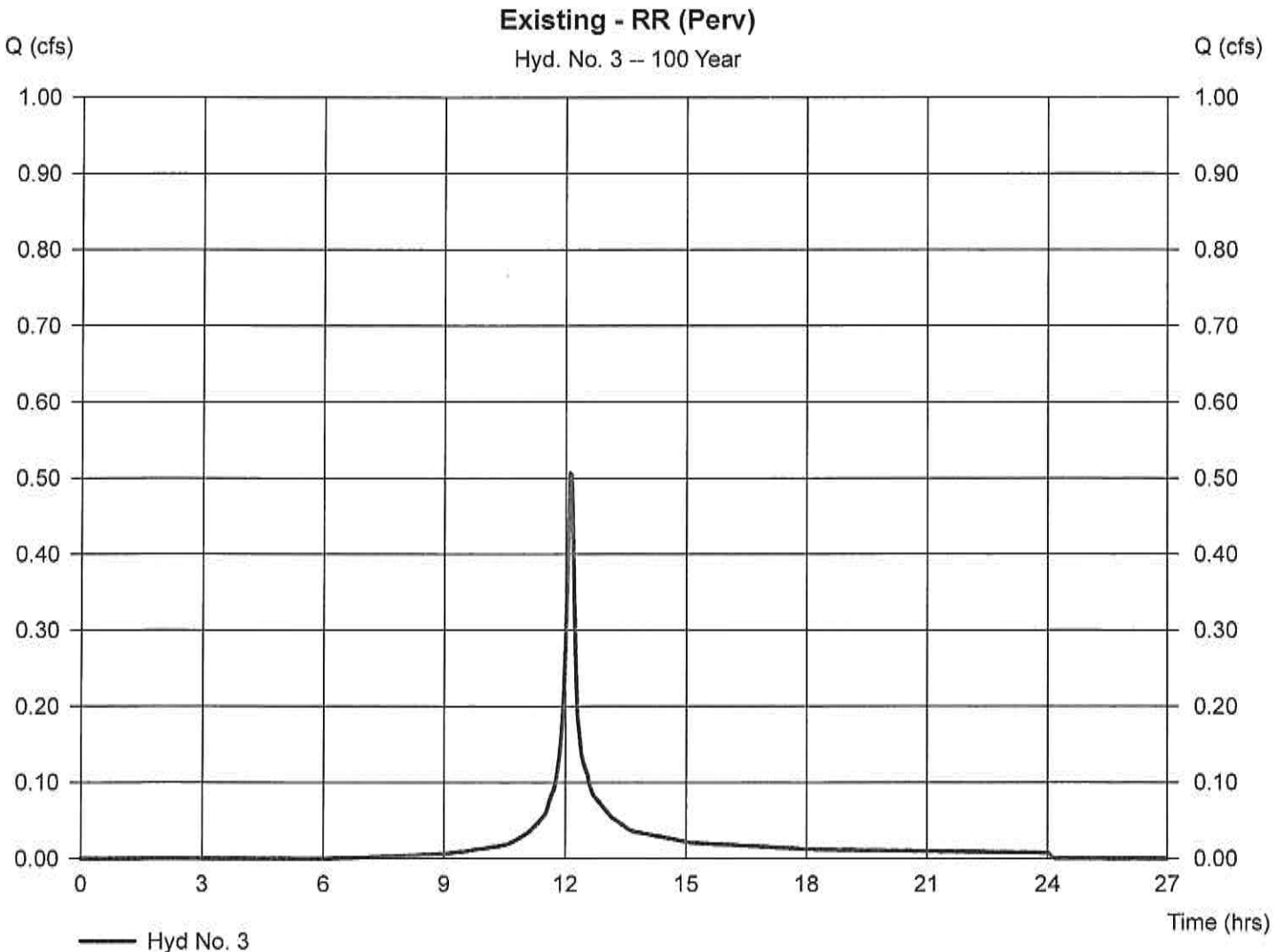
Hydraflow Hydrographs by Intellisolve v9.25

Thursday, Jun 23, 2022

## Hyd. No. 3

Existing - RR (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.506 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 1,747 cuft
Drainage area	= 0.096 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 8.47 in	Distribution	= Custom
Storm duration	= NOAA_D.cds	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.25

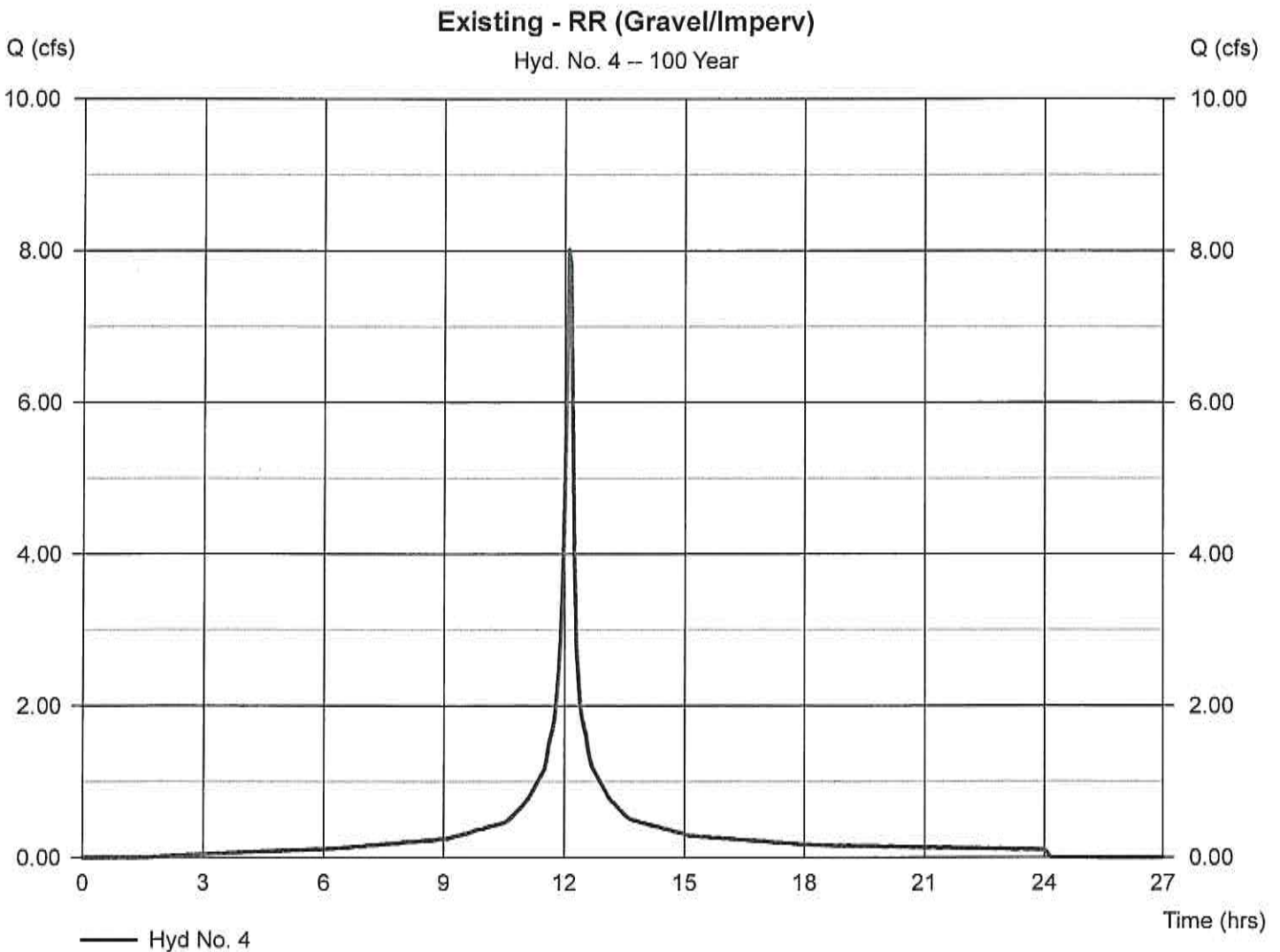
Thursday, Jun 23, 2022

## Hyd. No. 4

Existing - RR (Gravel/Imperv)

Hydrograph type	= SCS Runoff	Peak discharge	= 8.014 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 30,377 cuft
Drainage area	= 1.170 ac	Curve number	= 93*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 8.47 in	Distribution	= Custom
Storm duration	= NOAA_D.cds	Shape factor	= 484

\* Composite (Area/CN) = [(0.667 x 89) + (0.503 x 98)] / 1.170



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.25

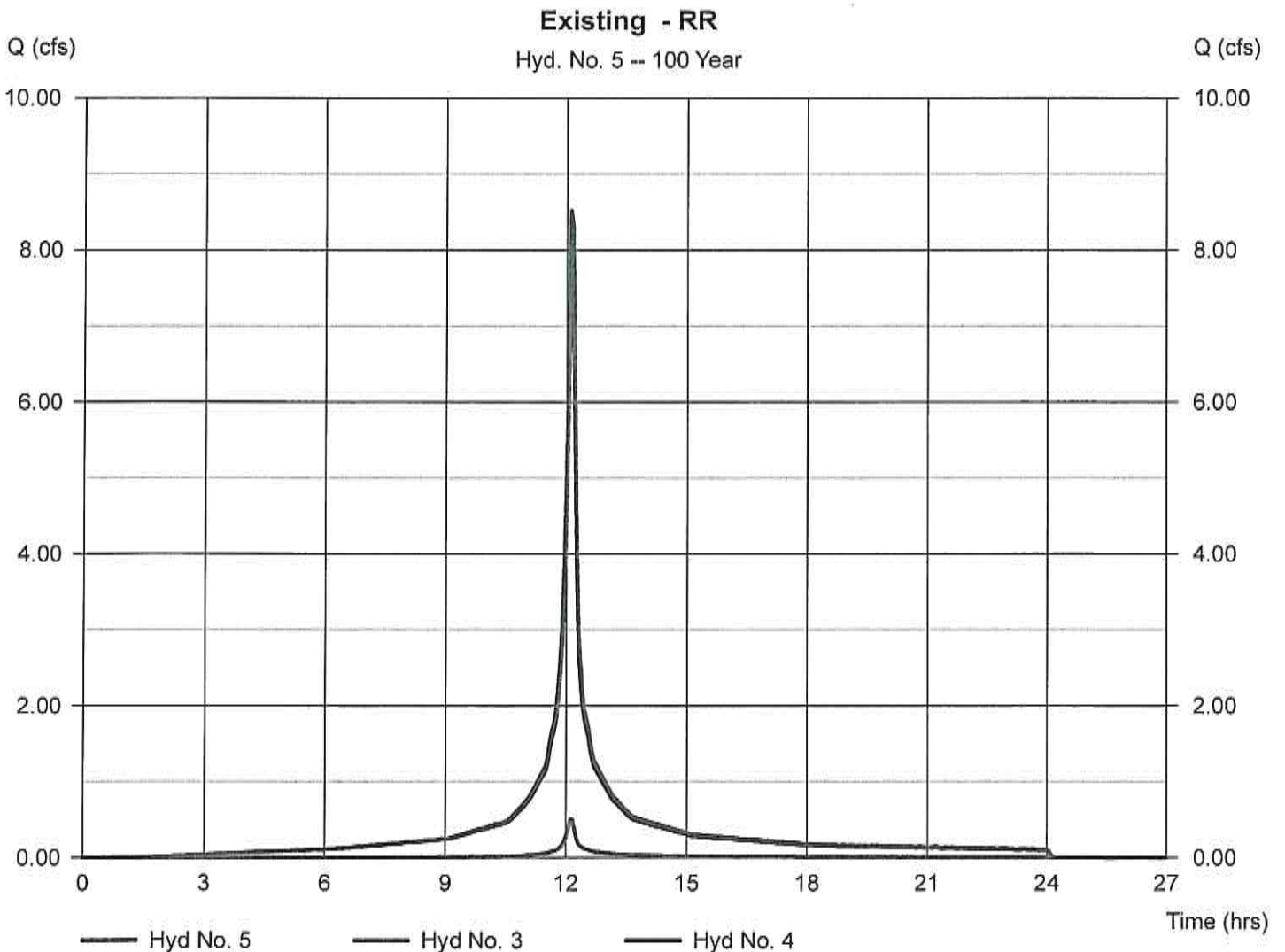
Thursday, Jun 23, 2022

## Hyd. No. 5

Existing - RR

Hydrograph type = Combine  
 Storm frequency = 100 yrs  
 Time interval = 3 min  
 Inflow hyds. = 3, 4

Peak discharge = 8.520 cfs  
 Time to peak = 12.10 hrs  
 Hyd. volume = 32,124 cuft  
 Contrib. drain. area = 1.266 ac



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.25

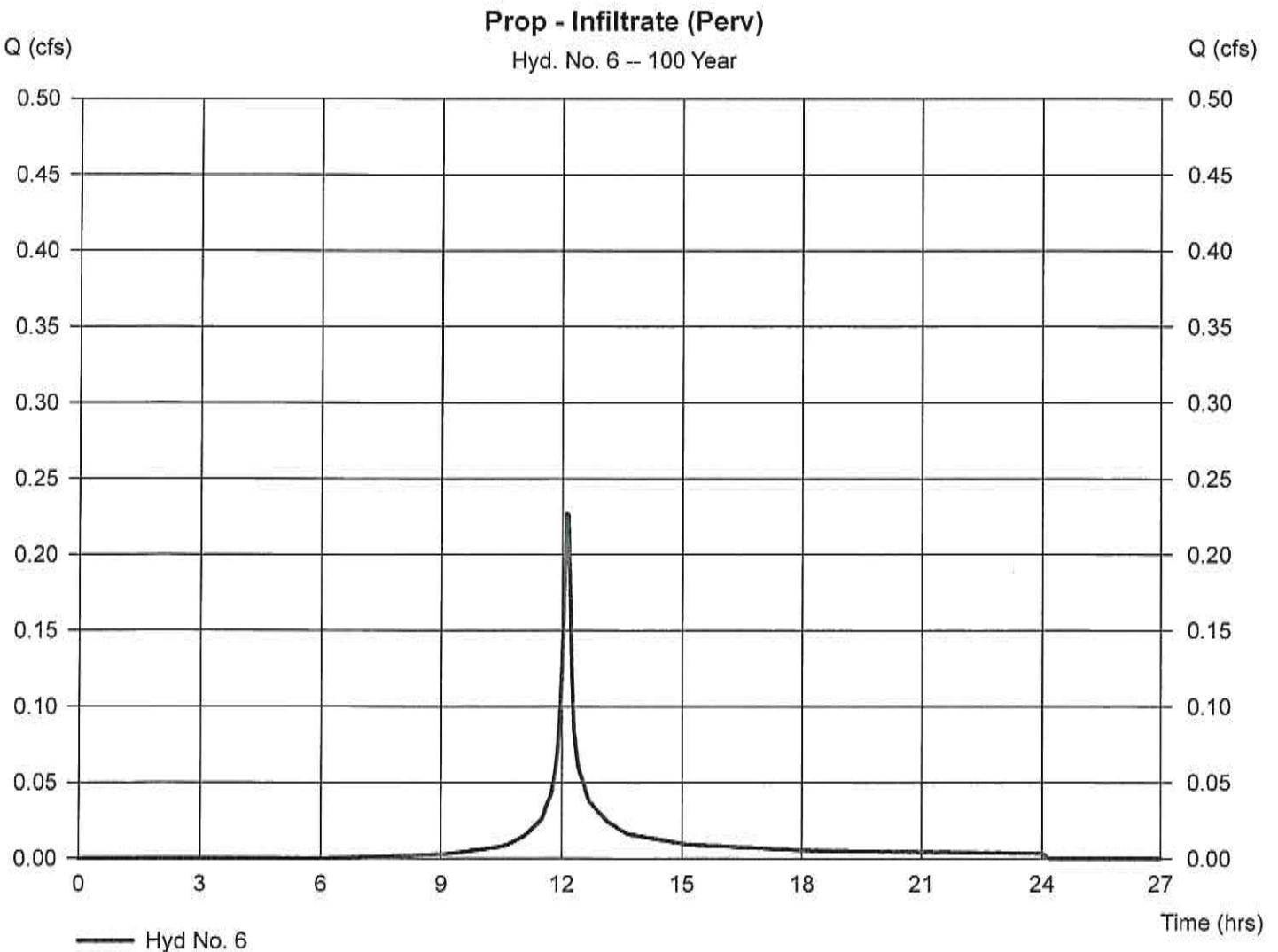
Thursday, Jun 23, 2022

## Hyd. No. 6

Prop - Infiltrate (Perv)

Hydrograph type = SCS Runoff  
Storm frequency = 100 yrs  
Time interval = 3 min  
Drainage area = 0.043 ac  
Basin Slope = 0.0 %  
Tc method = USER  
Total precip. = 8.47 in  
Storm duration = NOAA\_D.cds

Peak discharge = 0.227 cfs  
Time to peak = 12.10 hrs  
Hyd. volume = 783 cuft  
Curve number = 74  
Hydraulic length = 0 ft  
Time of conc. (Tc) = 6.00 min  
Distribution = Custom  
Shape factor = 484



# Hydrograph Report

Hydraflow Hydrographs by Intellisolve v9.25

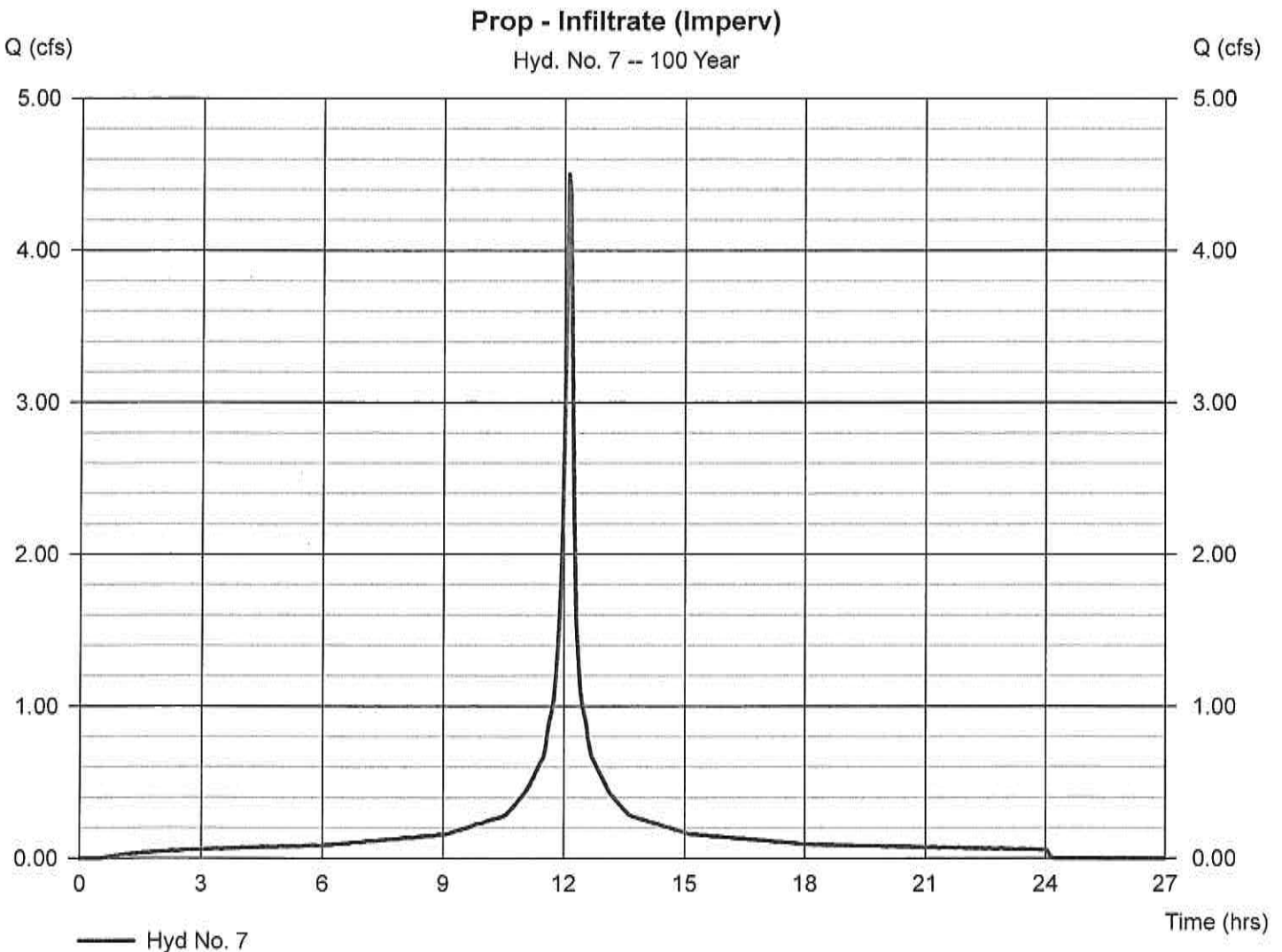
Thursday, Jun 23, 2022

## Hyd. No. 7

Prop - Infiltrate (Imperv)

Hydrograph type = SCS Runoff  
 Storm frequency = 100 yrs  
 Time interval = 3 min  
 Drainage area = 0.643 ac  
 Basin Slope = 0.0 %  
 Tc method = USER  
 Total precip. = 8.47 in  
 Storm duration = NOAA\_D.cds

Peak discharge = 4.504 cfs  
 Time to peak = 12.10 hrs  
 Hyd. volume = 18,009 cuft  
 Curve number = 98  
 Hydraulic length = 0 ft  
 Time of conc. (Tc) = 6.00 min  
 Distribution = Custom  
 Shape factor = 484



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.25

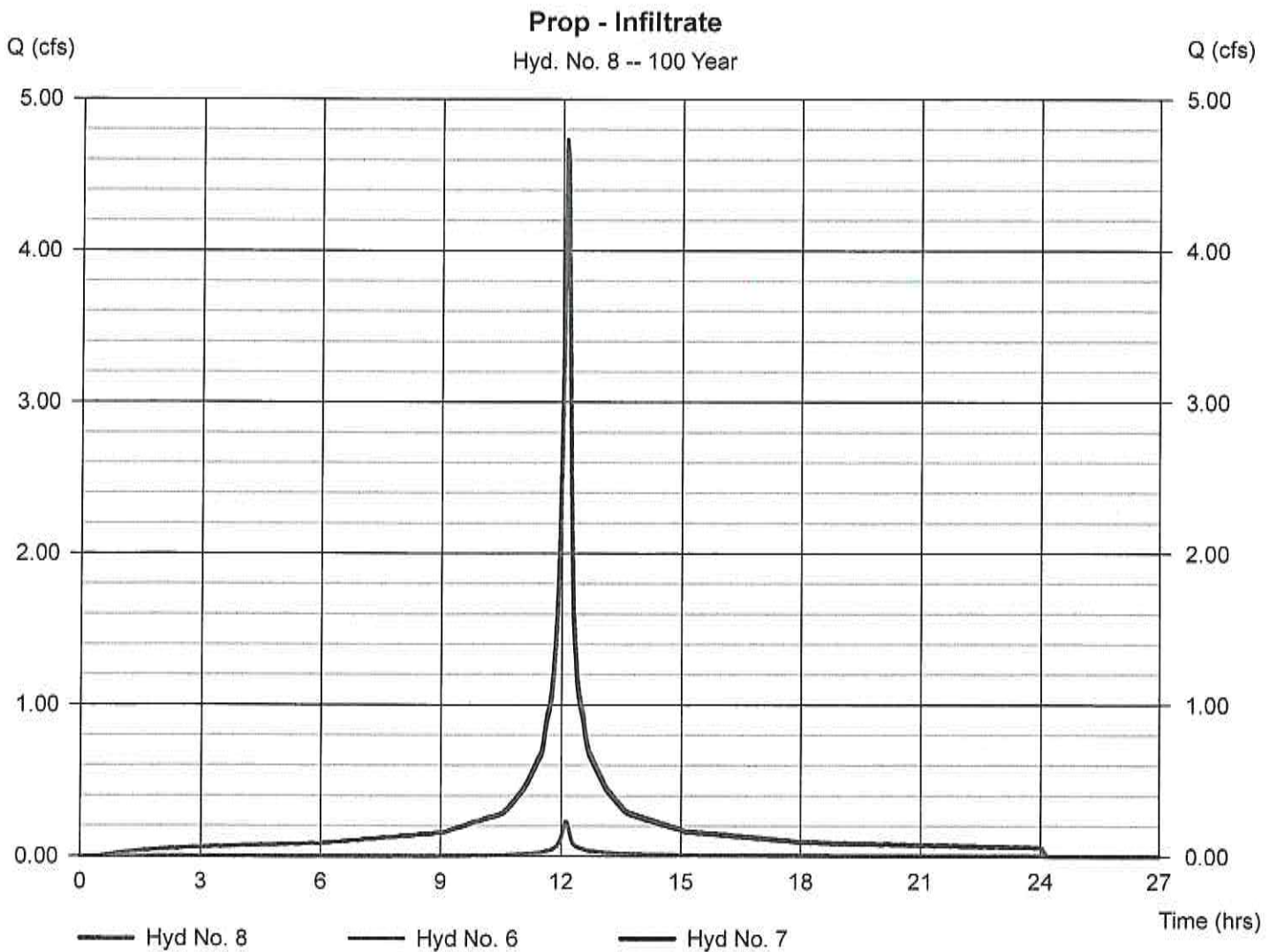
Thursday, Jun 23, 2022

## Hyd. No. 8

Prop - Infiltrate

Hydrograph type = Combine  
Storm frequency = 100 yrs  
Time interval = 3 min  
Inflow hyds. = 6, 7

Peak discharge = 4.731 cfs  
Time to peak = 12.10 hrs  
Hyd. volume = 18,791 cuft  
Contrib. drain. area = 0.686 ac



# Hydrograph Report

Hydraflow Hydrographs by Intellisolve v9.25

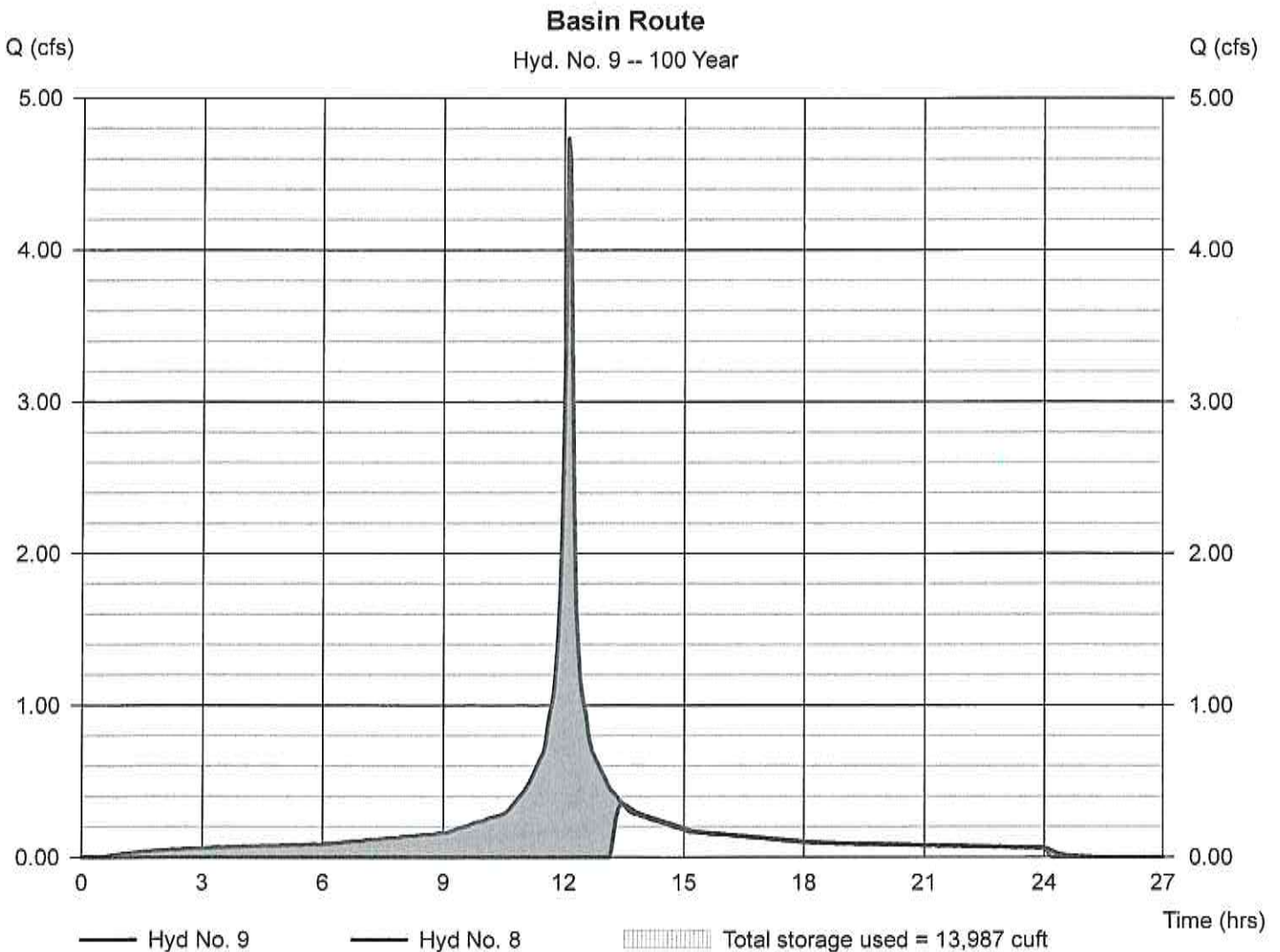
Thursday, Jun 23, 2022

## Hyd. No. 9

### Basin Route

Hydrograph type	= Reservoir	Peak discharge	= 0.347 cfs
Storm frequency	= 100 yrs	Time to peak	= 13.50 hrs
Time interval	= 3 min	Hyd. volume	= 4,998 cuft
Inflow hyd. No.	= 8 - Prop - Infiltrate	Max. Elevation	= 149.99 ft
Reservoir name	= Basin	Max. Storage	= 13,987 cuft

Storage Indication method used.



# Hydrograph Report

Hydraflow Hydrographs by Intellisolve v9.25

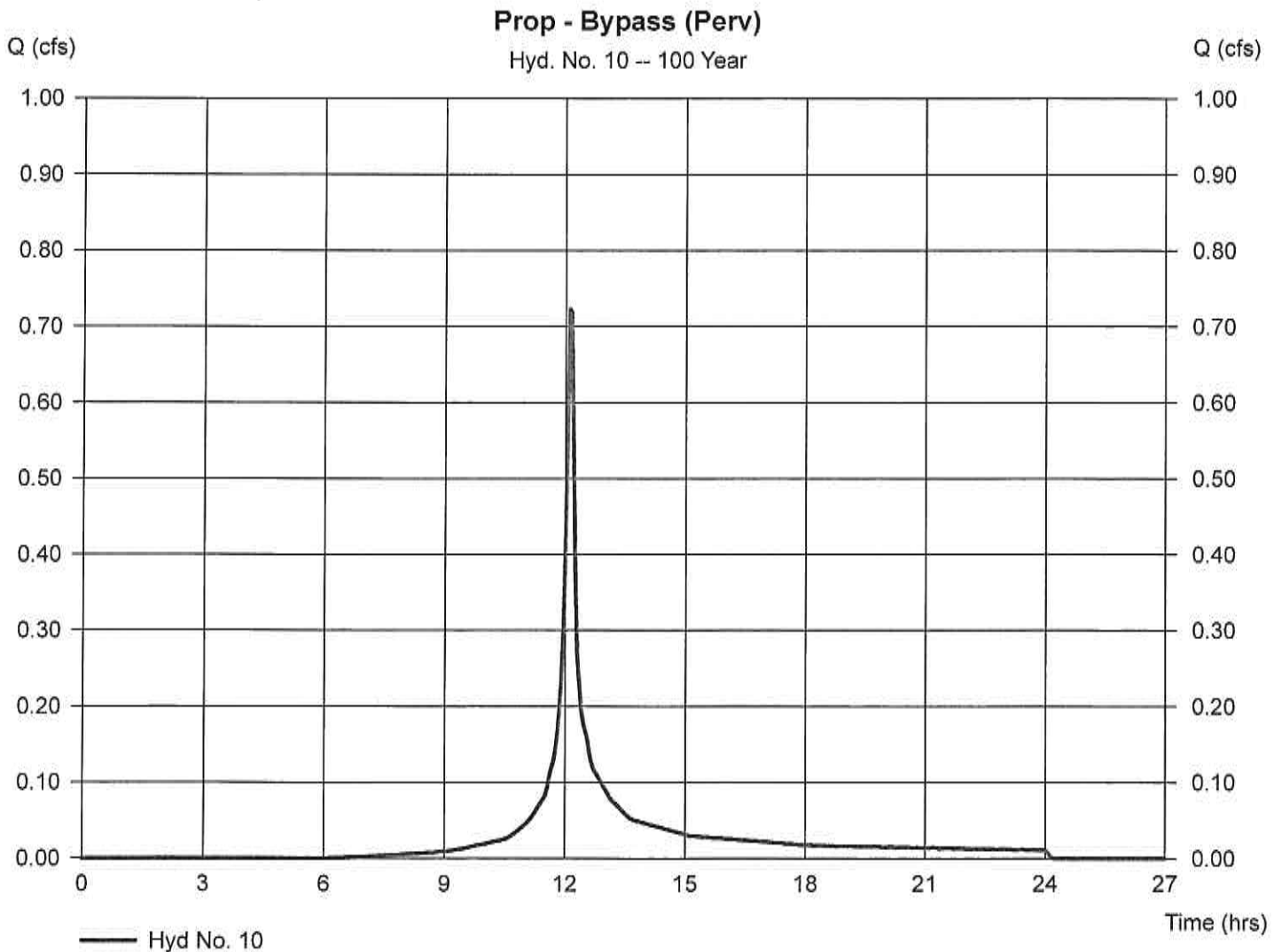
Thursday, Jun 23, 2022

## Hyd. No. 10

Prop - Bypass (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.722 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 2,493 cuft
Drainage area	= 0.137 ac	Curve number	= 74*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 8.47 in	Distribution	= Custom
Storm duration	= NOAA_D.cds	Shape factor	= 484

\* Composite (Area/CN) = [(0.161 x 98) + (0.426 x 98)] / 0.137



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.25

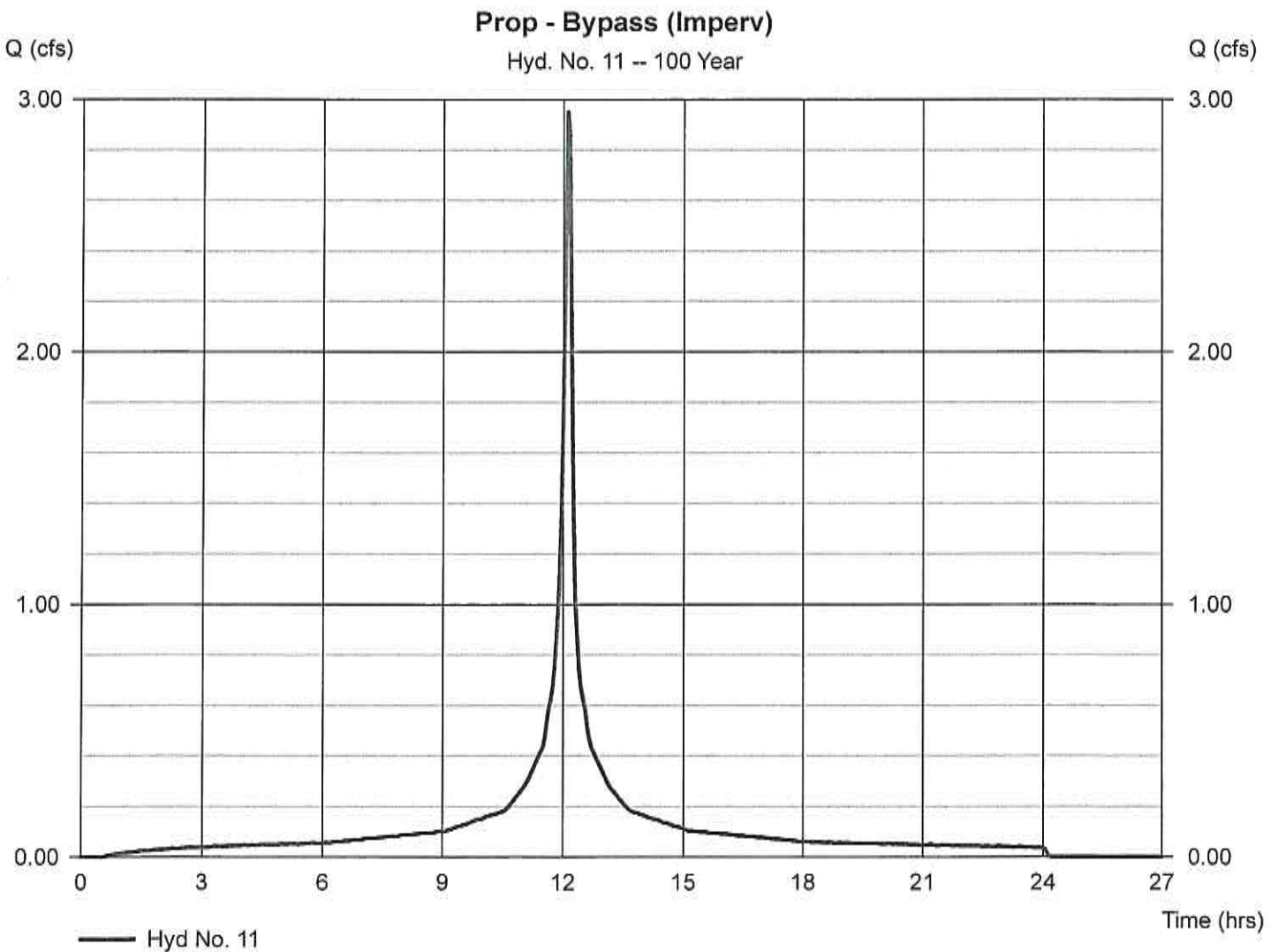
Thursday, Jun 23, 2022

## Hyd. No. 11

Prop - Bypass (Imperv)

Hydrograph type = SCS Runoff  
Storm frequency = 100 yrs  
Time interval = 3 min  
Drainage area = 0.421 ac  
Basin Slope = 0.0 %  
Tc method = USER  
Total precip. = 8.47 in  
Storm duration = NOAA\_D.cds

Peak discharge = 2.949 cfs  
Time to peak = 12.10 hrs  
Hyd. volume = 11,791 cuft  
Curve number = 98  
Hydraulic length = 0 ft  
Time of conc. (Tc) = 6.00 min  
Distribution = Custom  
Shape factor = 484



# Hydrograph Report

Hydraflow Hydrographs by Intellisolve v9.25

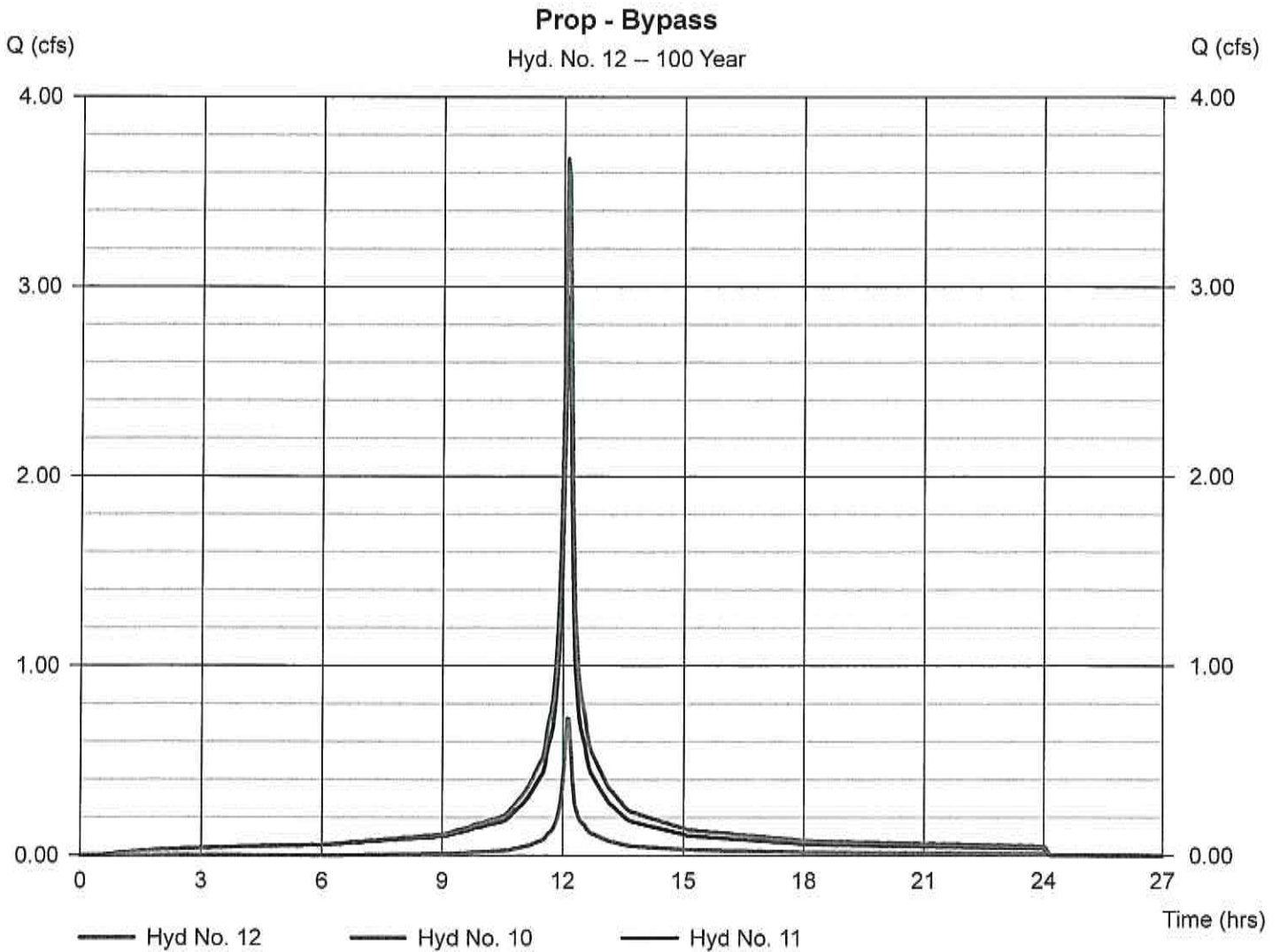
Thursday, Jun 23, 2022

## Hyd. No. 12

Prop - Bypass

Hydrograph type = Combine  
 Storm frequency = 100 yrs  
 Time interval = 3 min  
 Inflow hyds. = 10, 11

Peak discharge = 3.672 cfs  
 Time to peak = 12.10 hrs  
 Hyd. volume = 14,285 cuft  
 Contrib. drain. area = 0.558 ac



# Hydrograph Report

Hydraflow Hydrographs by Intellisolve v9.25

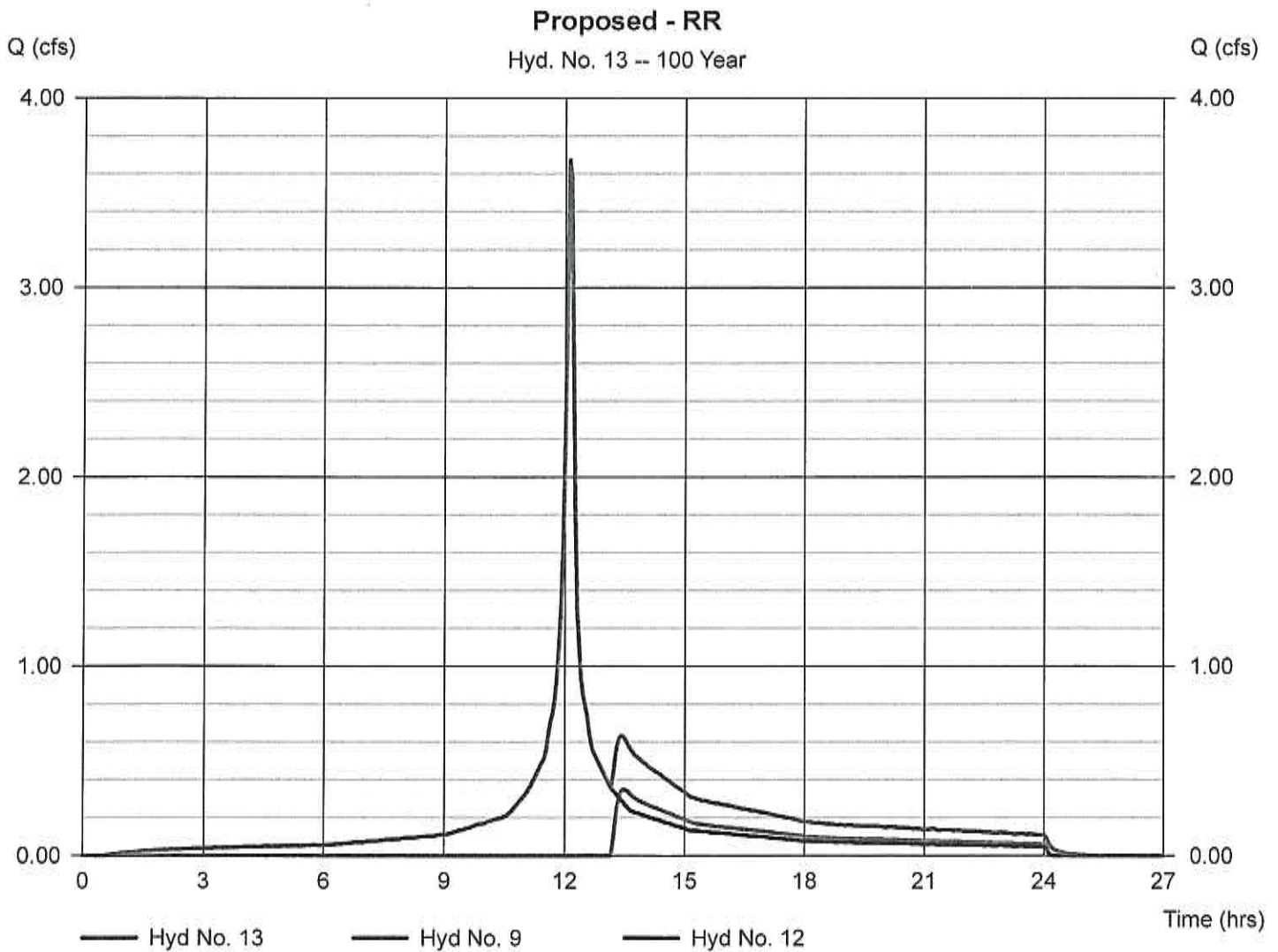
Thursday, Jun 23, 2022

## Hyd. No. 13

Proposed - RR

Hydrograph type = Combine  
Storm frequency = 100 yrs  
Time interval = 3 min  
Inflow hyds. = 9, 12

Peak discharge = 3.672 cfs  
Time to peak = 12.10 hrs  
Hyd. volume = 19,282 cuft  
Contrib. drain. area = 0.000 ac



# Hydraflow Table of Contents

22-146-wq.gpw

Hydraflow Hydrographs by Intelisolve v9.25

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# Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.25

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	0.007	1	71	12	-----	-----	-----	Treated (Perv)
2	SCS Runoff	1.564	1	65	1,952	-----	-----	-----	Treated (Imperv)
3	Combine	1.566	1	65	1,964	1, 2	-----	-----	Treated
22-146-wq.gpw					Return Period: 1 Year			Thursday, Jun 23, 2022	

# Hydrograph Report

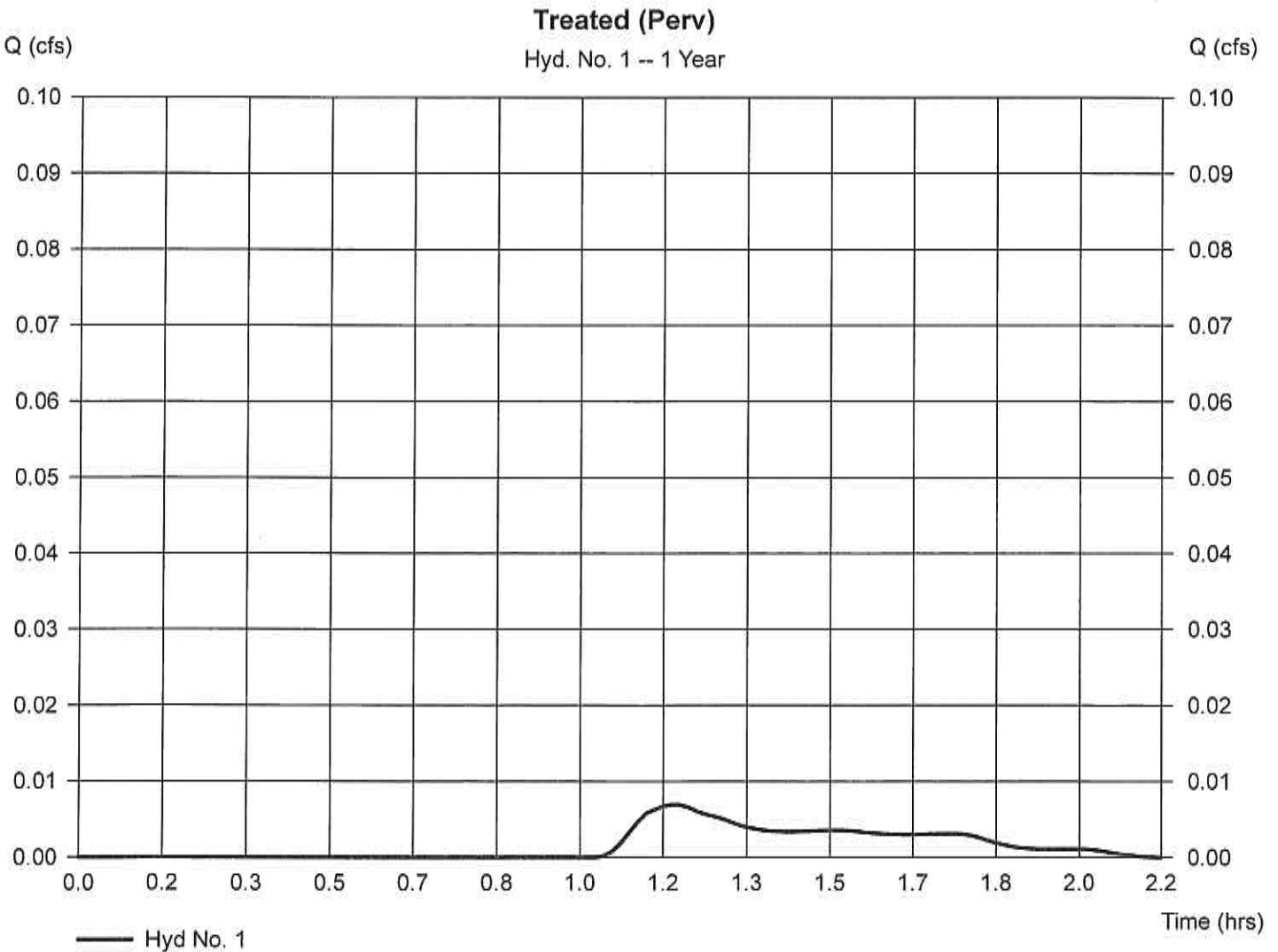
Hydraflow Hydrographs by Intelisolve v9.25

Thursday, Jun 23, 2022

## Hyd. No. 1

Treated (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.007 cfs
Storm frequency	= 1 yrs	Time to peak	= 1.18 hrs
Time interval	= 1 min	Hyd. volume	= 12 cuft
Drainage area	= 0.043 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 1.25 in	Distribution	= Custom
Storm duration	= NJWaterQuality.cds	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs by Intellsolve v9.25

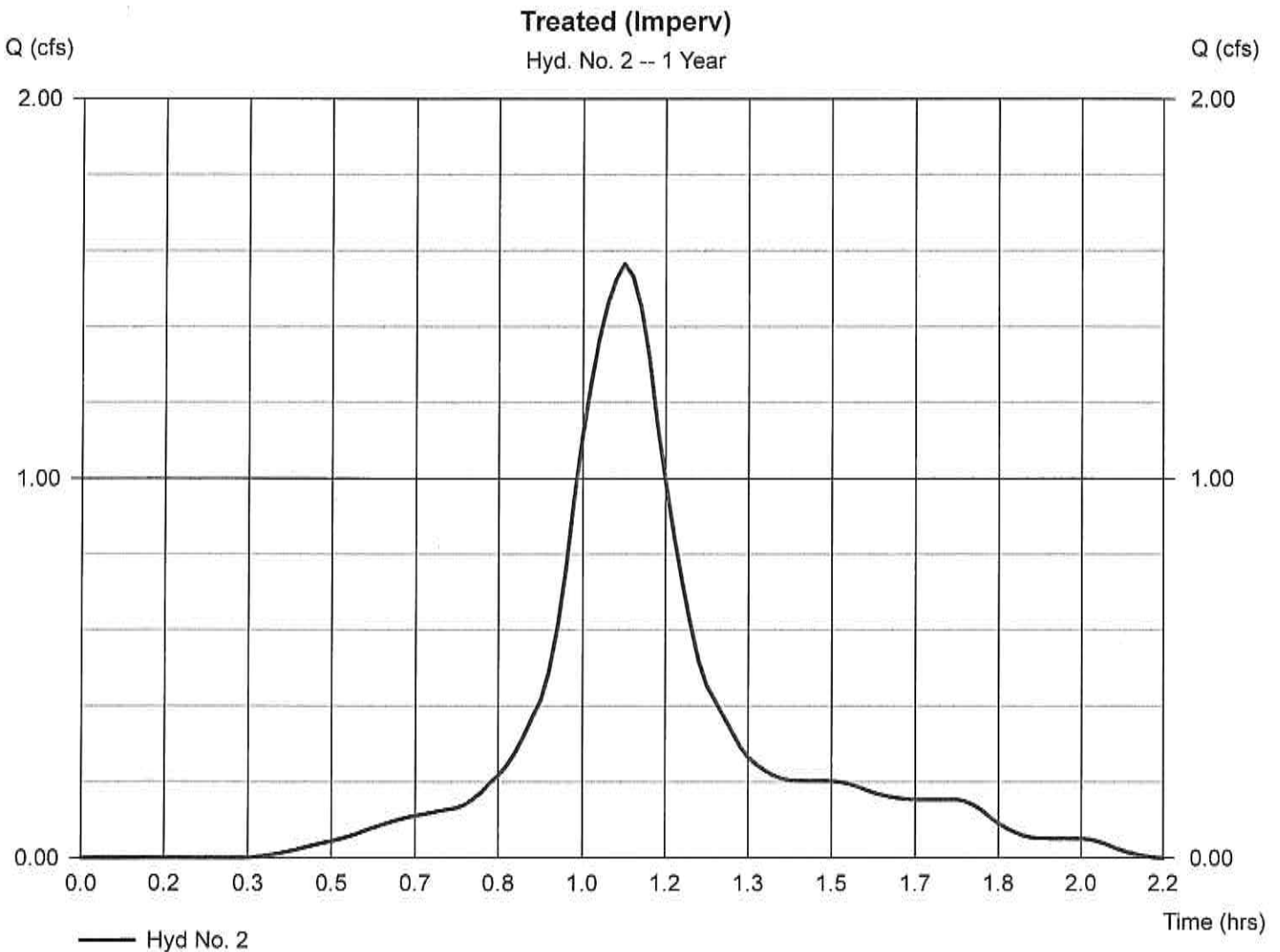
Thursday, Jun 23, 2022

## Hyd. No. 2

Treated (Imperv)

Hydrograph type = SCS Runoff  
 Storm frequency = 1 yrs  
 Time interval = 1 min  
 Drainage area = 0.504 ac  
 Basin Slope = 0.0 %  
 Tc method = USER  
 Total precip. = 1.25 in  
 Storm duration = NJWaterQuality.cds

Peak discharge = 1.564 cfs  
 Time to peak = 1.08 hrs  
 Hyd. volume = 1,952 cuft  
 Curve number = 98  
 Hydraulic length = 0 ft  
 Time of conc. (Tc) = 6.00 min  
 Distribution = Custom  
 Shape factor = 484



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.25

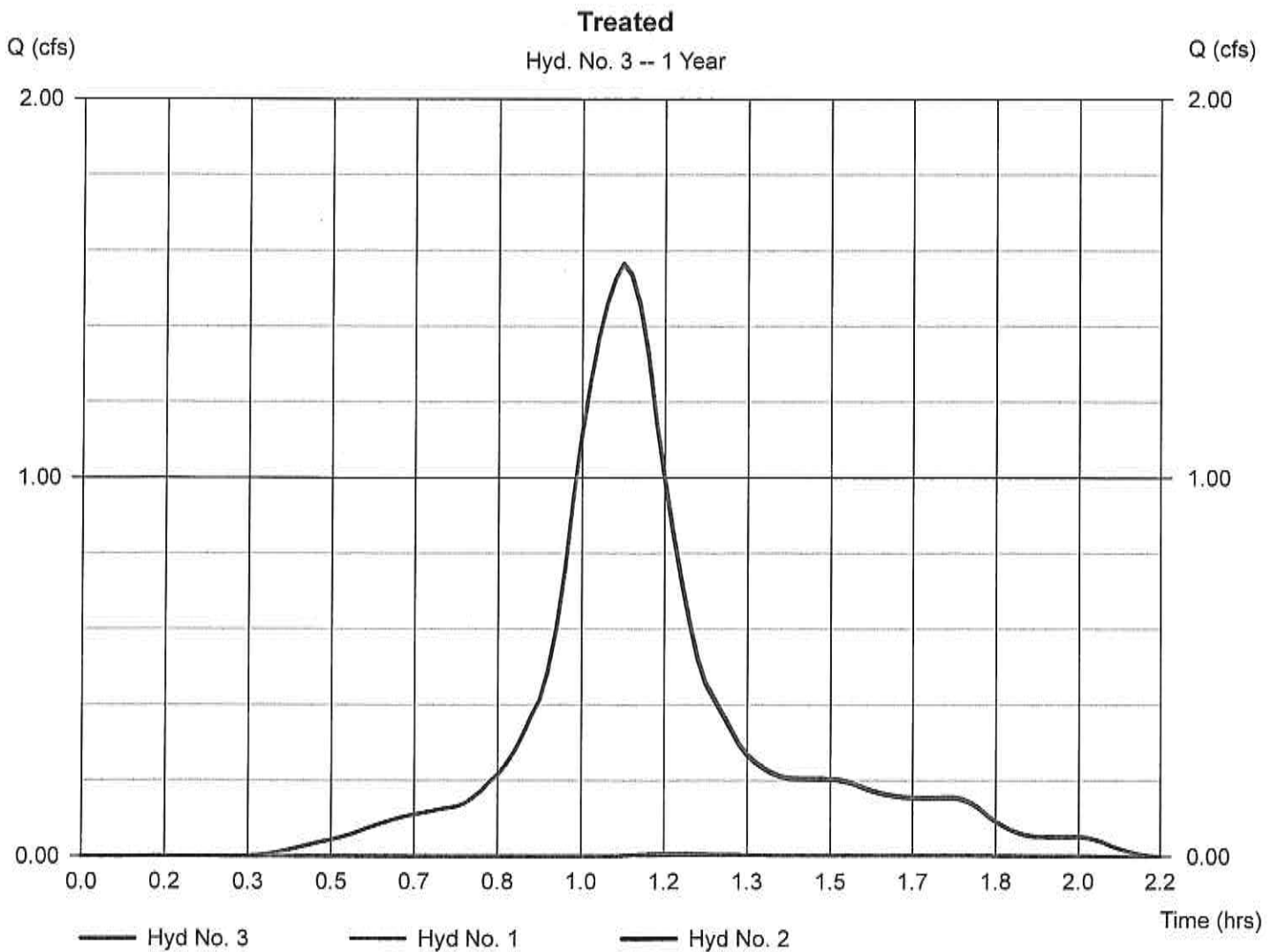
Thursday, Jun 23, 2022

## Hyd. No. 3

Treated

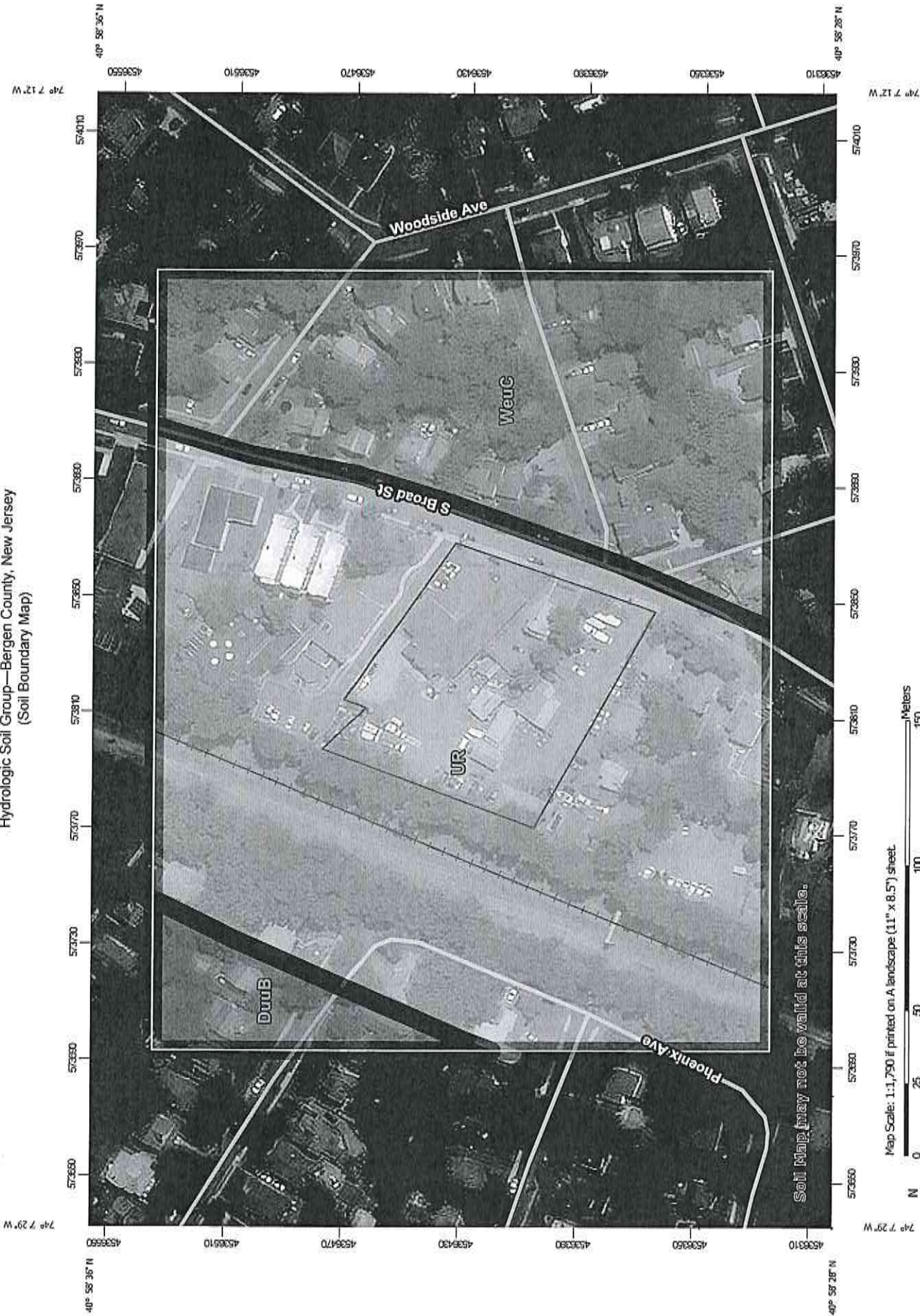
Hydrograph type = Combine  
Storm frequency = 1 yrs  
Time interval = 1 min  
Inflow hyds. = 1, 2

Peak discharge = 1.566 cfs  
Time to peak = 1.08 hrs  
Hyd. volume = 1,964 cuft  
Contrib. drain. area = 0.547 ac





Hydrologic Soil Group—Bergen County, New Jersey  
(Soil Boundary Map)



Soil Map may not be valid at this scale.

Map Scale: 1:1,790 if printed on A landscape (11" x 8.5") sheet.

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



Natural Resources  
Conservation Service

Web Soil Survey  
National Cooperative Soil Survey

## MAP LEGEND

Area of Interest (AOI)	<input type="checkbox"/>	C
Area of Interest (AOI)	<input type="checkbox"/>	C/D
Soils	<input type="checkbox"/>	D
Soil Rating Polygons	<input type="checkbox"/>	Not rated or not available
A	<input type="checkbox"/>	Water Features
A/D	<input type="checkbox"/>	Streams and Canals
B	<input type="checkbox"/>	Transportation
B/D	<input type="checkbox"/>	Rails
C	<input type="checkbox"/>	Interstate Highways
C/D	<input type="checkbox"/>	US Routes
D	<input type="checkbox"/>	Major Roads
Not rated or not available	<input type="checkbox"/>	Local Roads
Soil Rating Lines	<input type="checkbox"/>	Background
A	<input type="checkbox"/>	Aerial Photography
A/D	<input type="checkbox"/>	
B	<input type="checkbox"/>	
B/D	<input type="checkbox"/>	
C	<input type="checkbox"/>	
C/D	<input type="checkbox"/>	
D	<input type="checkbox"/>	
Not rated or not available	<input type="checkbox"/>	
Soil Rating Points	<input type="checkbox"/>	
A	<input type="checkbox"/>	
A/D	<input type="checkbox"/>	
B	<input type="checkbox"/>	
B/D	<input type="checkbox"/>	

## MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

Source of Map: Natural Resources Conservation Service  
Web Soil Survey URL:  
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Bergen County, New Jersey  
Survey Area Data: Version 18, Aug 30, 2021

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

Date(s) aerial images were photographed: Dec 31, 2009—Feb 26, 2017

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

## Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
DuuB	Dunellen-Urban land complex, 3 to 8 percent slopes	A	0.7	5.1%
UR	Urban land		8.9	63.4%
WeuC	Wethersfield-Urban land complex, 8 to 15 percent slopes	C	4.4	31.5%
<b>Totals for Area of Interest</b>			<b>14.1</b>	<b>100.0%</b>

### Description

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

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

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

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

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

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

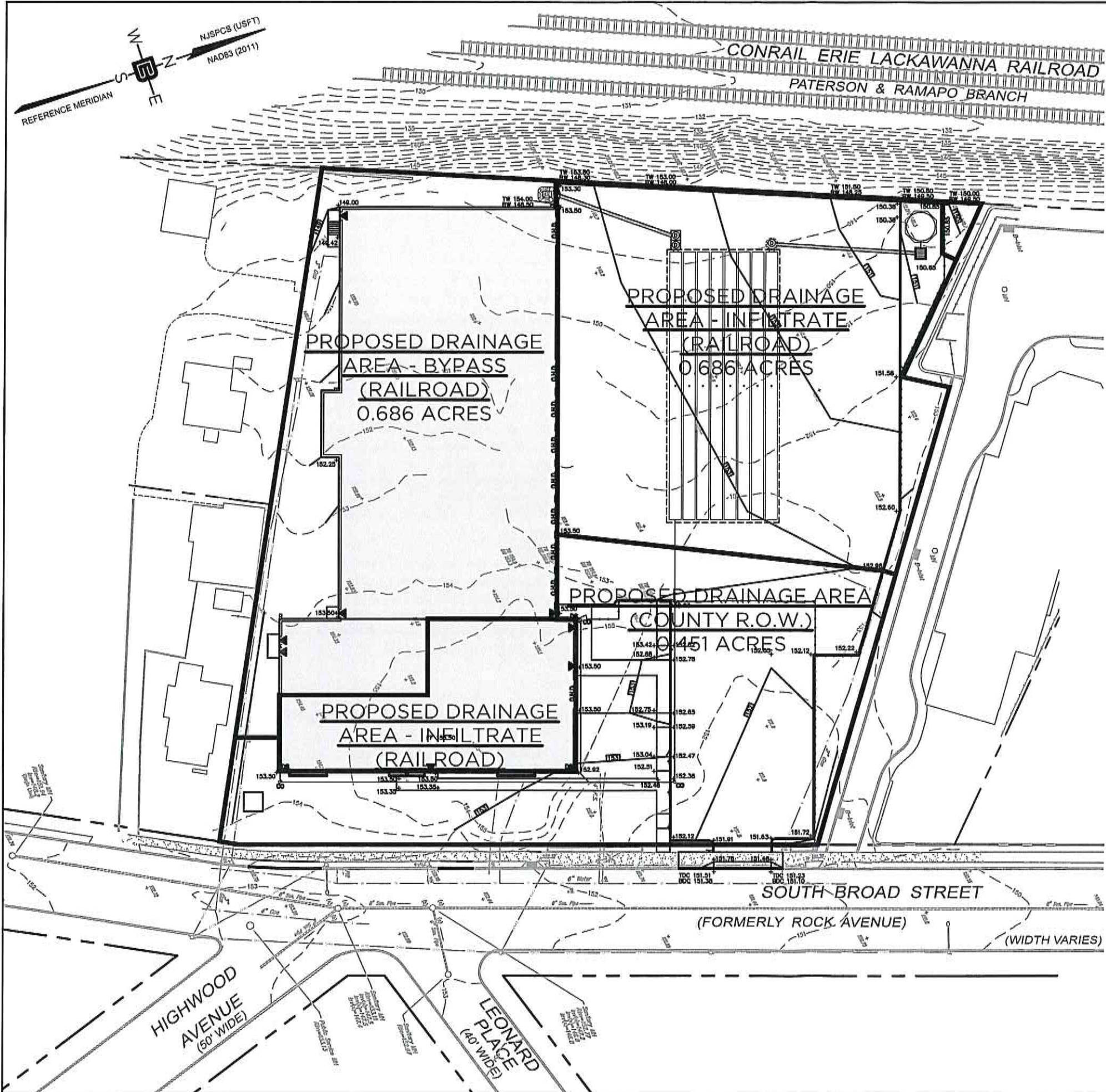
If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

## Rating Options

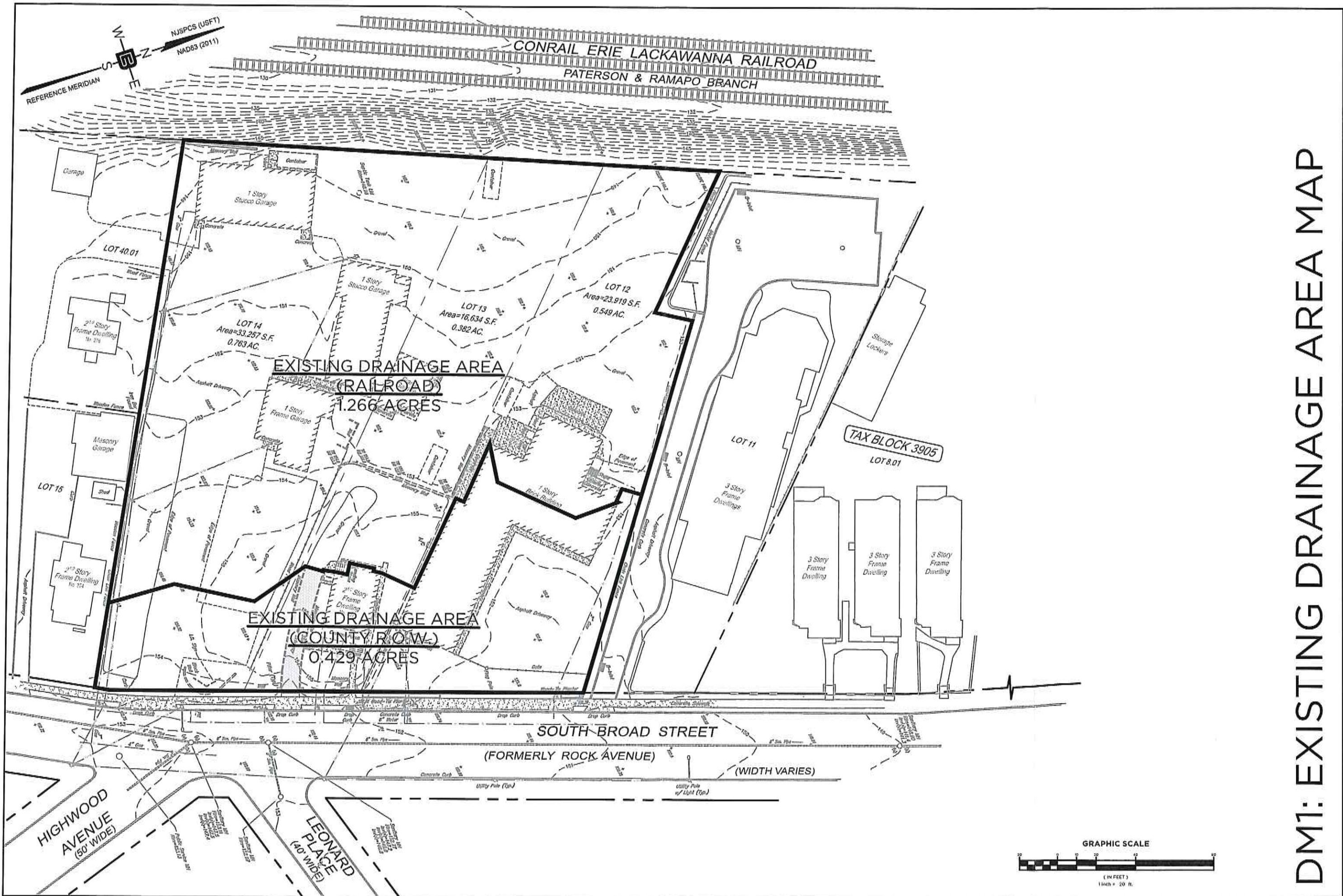
*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Higher



DM2: PROPOSED DRAINAGE AREA MAP



DM1: EXISTING DRAINAGE AREA MAP