

Drainage areas for pre- and post-development scenarios were developed and are shown on Plan Sheet DA-1 entitled “Pre and Post Drainage Area Plan” contained in the plan set.

The times-of-concentration (Tc) were determined for both the pre- and post-development conditions using the SCS Lag Method given parameters of the watershed affecting overland flow, gutter flow, channel flow and pipe flow, where applicable; a minimum time-of-concentration (Tc) of 5 minutes is utilized. Hydrographs were developed using SCS TR-55 methodology to ascertain flow rates and volumes, utilizing NOAA 14 published rainfall values. The associated 24-hour rainfall totals utilized are 3.34”, 5.13”, 6.25” and 7.97” for the 2-, 10-, 25- and 100-year storms, respectively.

The following table summarizes each drainage area:

Watershed	Area (Acres)	Tc (min)	Weighted CN	Description
ex-POI-A	10.3	19	69	Existing runoff east to culvert
ex-POI-B	3.1	13	70	Existing runoff west to roadside
ex-POI-C	6.9	13	67	Existing runoff west overland
PR-DA-1	1.2	6	73	Post Dev runoff east to culvert
PR-DA-2	0.9	7	77	Post Dev runoff east to culvert
PR-DA-6	1.0	14	72	Post Dev runoff east to culvert
PR-DA-7	4.4	21	67	Post Dev runoff east to culvert
PR-DA-8a	3.6	13	71	Post Dev runoff east to culvert
PR-DA-8b	0.1	5	74	Post Dev runoff east to culvert
PR-DA-3	1.4	10	72	Post Dev runoff west to road side
PR-DA-4	1.8	10	72	Post Dev runoff west to road side
PR-DA-9a	0.1	9	73	Post Dev runoff west to road side
PR-DA-5	3.1	14	68	Post Dev runoff west overland
PR-DA-10a	0.2	5	70	Post Dev runoff west overland
PR-DA-10b	2.5	15	64	Post Dev runoff west overland

Not surprisingly, the developed site is anticipated to increase the peak runoff rates and volumes from the site. To mitigate this impact, sub-surface storm water infiltration systems are proposed to accommodate rooftop water from EACH of the proposed dwellings. Each system is designed to fully accommodate the anticipated volume for a 100-year, 24-hour storm. Each system will consist of approximately 60 feet of (18”x30”) infiltration chambers on a crushed stone bed.

While this first mitigation significantly reduces the post-development impact, we still expect an increase in peak runoff rates and volumes associated with the paved driveways and creation of lawns and other areas. To mitigate this impact, the site will be developed with a series of raingardens/ bioretention areas constructed as mild depressions in the topography. These storm water management areas are designed to hold enough volume of post development runoff to meet or reduce the pre-development volume. The following table summarizes the volume holding capacity of the raingardens:

Raingarden	Serves	Volume	Drains To
SWM 1	Lot 7	2,069	Runoff east to culvert
SWM 2	Lot 5	758	Runoff east to culvert
SWM 3	Lot 4	3,743	Runoff west to road side
SWM 4	Lot 1	5,374	Runoff west to road side
SWM 5	Lot 2	2,488	Runoff west overland
SWM 6	Lot 6	7,548	Runoff east to culvert
SWM 7	Lot 6	4,526	Runoff east to culvert

The following table summarizes the existing and post-development runoff rates and volumes. The table also depicts the volume that will be captured by the raingardens

Watershed	Existing		Proposed		Difference (cu. ft.)	Storage Available (cu. ft.)
	Rate (cfs)	Volume (cu. ft.)	Rate (cfs)	Volume (cu. ft.)		
East to culvert	36.6	163,697	40.29	178,345	+ 14,648	14,901
West to roadside	13.1	49,166	14.9	54,346	+ 5,180	9,117
West overland	26.8	101,000	20.2	82,327	- 18,673	2,488

As summarized above, the mitigation measures including the rooftop infiltrators and the proposed raingarden/ bioretention areas, will fully mitigate the storm water impacts of development. As such, the perpetual maintenance of these amenities should be required by future property owners as a deed covenant.

Long Hill SWM Summary

SWM-1 Rain Garden/Bio

1.5' deep. – Top berm 292.75, Bottom 291.00 (ALLOWS FOR 3" FREE BOARD)

Volume= Elev 292.50=1,508 s.f, Elev 291.50=1,015 s.f., Elev 290.50 = 600 s.f. equals 2,069 CF of volume

SWM-2 Rain Garden/Bio

1.00' deep. – Top berm 296.25, Bottom 295.00

Volume= Elev 296.00 = 936 s.f., Elev 295 = 581 s.f. equals 758 CF of volume

SWM-3 Rain Garden/Bio

2.00' deep. – Top berm 293.25, Bottom 291.00

Volume= Elev 293.0 = 2,733 s.f., Elev 292 = 1,807, Elev 291.0 = 1,140 s.f. equals 3,743 CF of volume

SWM-4 Rain Garden/Bio

2.00' deep. – Top berm 283.25, Bottom 281.00

Volume= Elev 283=3,443 s.f., Elev 282 = 2,668 s.f., Elev 281 = 1,970 s.f. equals 5,374 CF of volume

SWM-5 Rain Garden/Bio

2.00' deep. – Top berm 316.25, Bottom 314.00

Volume= Elev 316=2,381 s.f., Elev 315 = 1,612 s.f., Elev 314 = 984 s.f. equals 2,488 CF of volume

SWM-6 Rain Garden/Bio

2.00' deep. – Top berm 346.25, Bottom 344.00

Volume= Elev 344.00=4,698 s.f., Elev 343.00 = 3,760 s.f., Elev 342.00 = 2,878 equals 7,548 CF of volume

SWM-7 Rain Garden/Bio

2.00' deep. – Top berm 342.25, Bottom 340.00

Volume= Elev 342.00=3,148 s.f., Elev 341.00 = 2,296 s.f., Elev 340 = 1,510 equals 4,526 CF of volume

SUMMARY

Watershed 1 to the wetlands

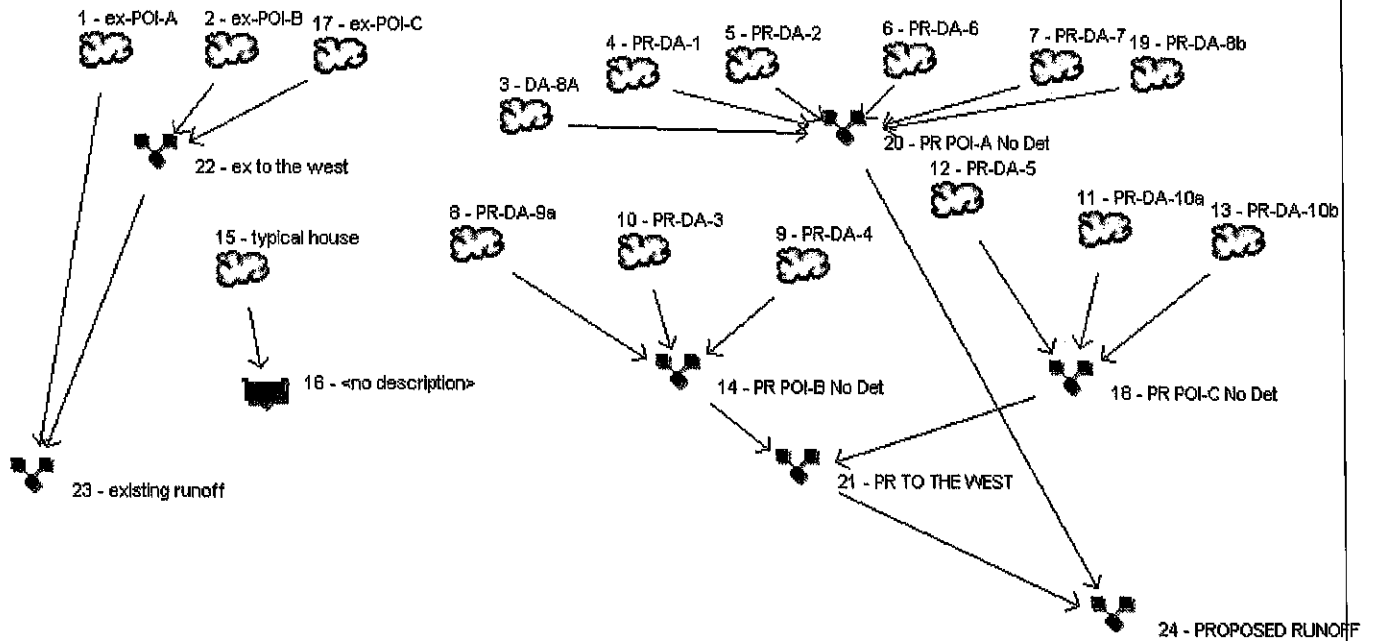
SWM-1, SWM-2, SWM-6, SWM-7 = 2,069 + 758 + 7,548 + 4,526 = 14,901 s.f. Total

Watershed 2 to the West

SWM-3, SWM-4, SWM-5 = 3,743 + 5,374 + 2,488 = 11,605 s.f. Total

Watershed Model Schematic

Hydraflow Hydrographs by Intellisolve v9.02



Legend

Hyd.	Origin	Description
1	SCS Runoff	ex-POI-A
2	SCS Runoff	ex-POI-B
3	SCS Runoff	DA-8A
4	SCS Runoff	PR-DA-1
5	SCS Runoff	PR-DA-2
6	SCS Runoff	PR-DA-6
7	SCS Runoff	PR-DA-7
8	SCS Runoff	PR-DA-9a
9	SCS Runoff	PR-DA-4
10	SCS Runoff	PR-DA-3
11	SCS Runoff	PR-DA-10a
12	SCS Runoff	PR-DA-5
13	SCS Runoff	PR-DA-10b
14	Combine	PR POI-B No Det
15	SCS Runoff	typical house
16	Reservoir	<no description>
17	SCS Runoff	ex-POI-C
18	Combine	PR POI-C No Det
19	SCS Runoff	PR-DA-8b
20	Combine	PR POI-A No Det
21	Combine	PR TO THE WEST
22	Combine	ex to the west
23	Combine	existing runoff
24	Combine	PROPOSED RUNOFF

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.02

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	7.026	1	733	32,542	---	-----	-----	ex-POI-A	
2	SCS Runoff	2.438	1	730	10,089	---	-----	-----	ex-POI-B	
3	SCS Runoff	2.892	1	731	12,415	---	-----	-----	DA-8A	
4	SCS Runoff	1.450	1	725	4,701	---	-----	-----	PR-DA-1	
5	SCS Runoff	1.205	1	726	3,949	---	-----	-----	PR-DA-2	
6	SCS Runoff	0.785	1	731	3,325	---	-----	-----	PR-DA-6	
7	SCS Runoff	2.302	1	739	12,256	---	-----	-----	PR-DA-7	
8	SCS Runoff	0.140	1	727	507	---	-----	-----	PR-DA-9a	
9	SCS Runoff	1.664	1	729	6,467	---	-----	-----	PR-DA-4	
10	SCS Runoff	1.257	1	729	4,888	---	-----	-----	PR-DA-3	
11	SCS Runoff	0.212	1	725	716	---	-----	-----	PR-DA-10a	
12	SCS Runoff	1.949	1	732	8,791	---	-----	-----	PR-DA-5	
13	SCS Runoff	1.053	1	735	5,520	---	-----	-----	PR-DA-10b	
14	Combine	3.058	1	729	11,862	8, 9, 10,	-----	-----	PR POI-B No Det	
15	SCS Runoff	0.111	1	724	384	---	-----	-----	typical house	
16	Reservoir	0.000	1	679	0	15	100.17	66.6	<no description>	
17	SCS Runoff	4.281	1	731	18,781	---	-----	-----	ex-POI-C	
18	Combine	3.102	1	733	15,027	11, 12, 13,	-----	-----	PR POI-C No Det	
19	SCS Runoff	0.136	1	724	410	---	-----	-----	PR-DA-8b	
20	Combine	7.500	1	730	37,057	3, 4, 5, 6, 7, 19	-----	-----	PR POI-A No Det	
21	Combine	6.018	1	730	26,889	14, 18,	-----	-----	PR TO THE WEST	
22	Combine	6.710	1	731	28,870	2, 17,	-----	-----	ex to the west	
23	Combine	12.79	1	733	61,010	1, 22	-----	-----	existing runoff	
24	Combine	13.52	1	730	63,945	20, 21,	-----	-----	PROPOSED RUNOFF	
drainage model.gpw					Return Period: 2 Year			Sunday, Apr 25, 2021		

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.02

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	26.46	1	732	110,129	---	----	-----	ex-POI-A
2	SCS Runoff	8.815	1	729	33,286	---	----	-----	ex-POI-B
3	SCS Runoff	10.08	1	730	39,967	---	----	-----	DA-8A
4	SCS Runoff	4.688	1	725	14,441	---	----	-----	PR-DA-1
5	SCS Runoff	3.454	1	726	11,126	---	----	-----	PR-DA-2
6	SCS Runoff	2.640	1	730	10,451	---	----	-----	PR-DA-6
7	SCS Runoff	9.435	1	736	43,765	---	----	-----	PR-DA-7
8	SCS Runoff	0.454	1	727	1,556	---	----	-----	PR-DA-9a
9	SCS Runoff	5.592	1	728	20,329	---	----	-----	PR-DA-4
10	SCS Runoff	4.227	1	728	15,365	---	----	-----	PR-DA-3
11	SCS Runoff	0.765	1	725	2,362	---	----	-----	PR-DA-10a
12	SCS Runoff	7.652	1	731	30,545	---	----	-----	PR-DA-5
13	SCS Runoff	5.087	1	732	21,552	---	----	-----	PR-DA-10b
14	Combine	10.27	1	728	37,250	8, 9, 10,	----	-----	PR POI-B No Det
15	SCS Runoff	0.209	1	724	743	---	----	-----	typical house
16	Reservoir	0.000	1	601	0	15	100.85	186	<no description>
17	SCS Runoff	17.62	1	729	67,068	---	----	-----	ex-POI-C
18	Combine	13.17	1	731	54,459	11, 12, 13,	----	-----	PR POI-C No Det
19	SCS Runoff	0.426	1	723	1,233	---	----	-----	PR-DA-8b
20	Combine	27.16	1	729	120,982	3, 4, 5, 6, 7, 19	----	-----	PR POI-A No Det
21	Combine	23.12	1	729	91,709	14, 18,	----	-----	PR TO THE WEST
22	Combine	26.43	1	729	100,353	2, 17,	----	-----	ex to the west
23	Combine	49.40	1	731	209,123	1, 22	----	-----	existing runoff
24	Combine	50.27	1	729	212,692	20, 21,	----	-----	PROPOSED RUNOFF
drainage model.gpw					Return Period: 10 Year			Sunday, Apr 25, 2021	

Hydrograph Summary Report

Hydraflow Hydrographs by Intellisolve v9.02

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	32.93	1	732	136,449	---	----	-----	ex-POI-A
2	SCS Runoff	10.93	1	729	41,096	---	----	-----	ex-POI-B
3	SCS Runoff	12.44	1	730	49,178	---	----	-----	DA-8A
4	SCS Runoff	5.726	1	725	17,652	---	----	-----	PR-DA-1
5	SCS Runoff	4.154	1	726	13,432	---	----	-----	PR-DA-2
6	SCS Runoff	3.245	1	730	12,816	---	----	-----	PR-DA-6
7	SCS Runoff	11.87	1	735	54,620	---	----	-----	PR-DA-7
8	SCS Runoff	0.556	1	727	1,902	---	----	-----	PR-DA-9a
9	SCS Runoff	6.868	1	728	24,931	---	----	-----	PR-DA-4
10	SCS Runoff	5.191	1	728	18,843	---	----	-----	PR-DA-3
11	SCS Runoff	0.947	1	725	2,917	---	----	-----	PR-DA-10a
12	SCS Runoff	9.576	1	730	37,981	---	----	-----	PR-DA-5
13	SCS Runoff	6.502	1	732	27,215	---	----	-----	PR-DA-10b
14	Combine	12.61	1	728	45,676	8, 9, 10,	----	-----	PR POI-B No Det
15	SCS Runoff	0.238	1	724	849	---	----	-----	typical house
16	Reservoir	0.000	1	673	0	15	101.09	224	<no description>
17	SCS Runoff	22.16	1	729	83,703	---	----	-----	ex-POI-C
18	Combine	16.61	1	731	68,112	11, 12, 13,	----	-----	PR POI-C No Det
19	SCS Runoff	0.519	1	723	1,502	---	----	-----	PR-DA-8b
20	Combine	33.65	1	729	149,200	3, 4, 5, 6, 7, 19	----	-----	PR POI-A No Det
21	Combine	28.85	1	729	113,788	14, 18,	----	-----	PR TO THE WEST
22	Combine	33.08	1	729	124,800	2, 17,	----	-----	ex to the west
23	Combine	61.70	1	731	259,565	1, 22	----	-----	existing runoff
24	Combine	62.50	1	729	262,988	20, 21,	----	-----	PROPOSED RUNOFF
drainage model.gpw					Return Period: 25 Year			Sunday, Apr 25, 2021	

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.02

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	39.58	1	731	163,697	---	----	-----	ex-POI-A
2	SCS Runoff	13.08	1	729	49,166	---	----	-----	ex-POI-B
3	SCS Runoff	14.86	1	730	58,675	---	----	-----	DA-8A
4	SCS Runoff	6.780	1	725	20,950	---	----	-----	PR-DA-1
5	SCS Runoff	4.861	1	725	15,784	---	----	-----	PR-DA-2
6	SCS Runoff	3.860	1	730	15,251	---	----	-----	PR-DA-6
7	SCS Runoff	14.39	1	735	65,906	---	----	-----	PR-DA-7
8	SCS Runoff	0.658	1	727	2,257	---	----	-----	PR-DA-9a
9	SCS Runoff	8.168	1	728	29,666	---	----	-----	PR-DA-4
10	SCS Runoff	6.173	1	728	22,422	---	----	-----	PR-DA-3
11	SCS Runoff	1.132	1	725	3,489	---	----	-----	PR-DA-10a
12	SCS Runoff	11.56	1	730	45,695	---	----	-----	PR-DA-5
13	SCS Runoff	7.971	1	732	33,143	---	----	-----	PR-DA-10b
14	Combine	14.99	1	728	54,346	8, 9, 10,	----	-----	PR POI-B No Det
15	SCS Runoff	0.267	1	724	955	---	----	-----	typical house
16	Reservoir	0.000	1	669	0	15	101.37	262	<no description>
17	SCS Runoff	26.84	1	729	100,999	---	----	-----	ex-POI-C
18	Combine	20.16	1	731	82,327	11, 12, 13,	----	-----	PR POI-C No Det
19	SCS Runoff	0.613	1	723	1,778	---	----	-----	PR-DA-8b
20	Combine	40.29	1	729	178,345	3, 4, 5, 6, 7, 19	----	-----	PR POI-A No Det
21	Combine	34.74	1	729	136,674	14, 18,	----	-----	PR TO THE WEST
22	Combine	39.92	1	729	150,165	2, 17,	----	-----	ex to the west
23	Combine	74.34	1	731	311,841	1, 22	----	-----	existing runoff
24	Combine	75.03	1	729	315,018	20, 21,	----	-----	PROPOSED RUNOFF
drainage model.gpw					Return Period: 100 Year			Sunday, Apr 25, 2021	

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.02

Sunday, Apr 25, 2021

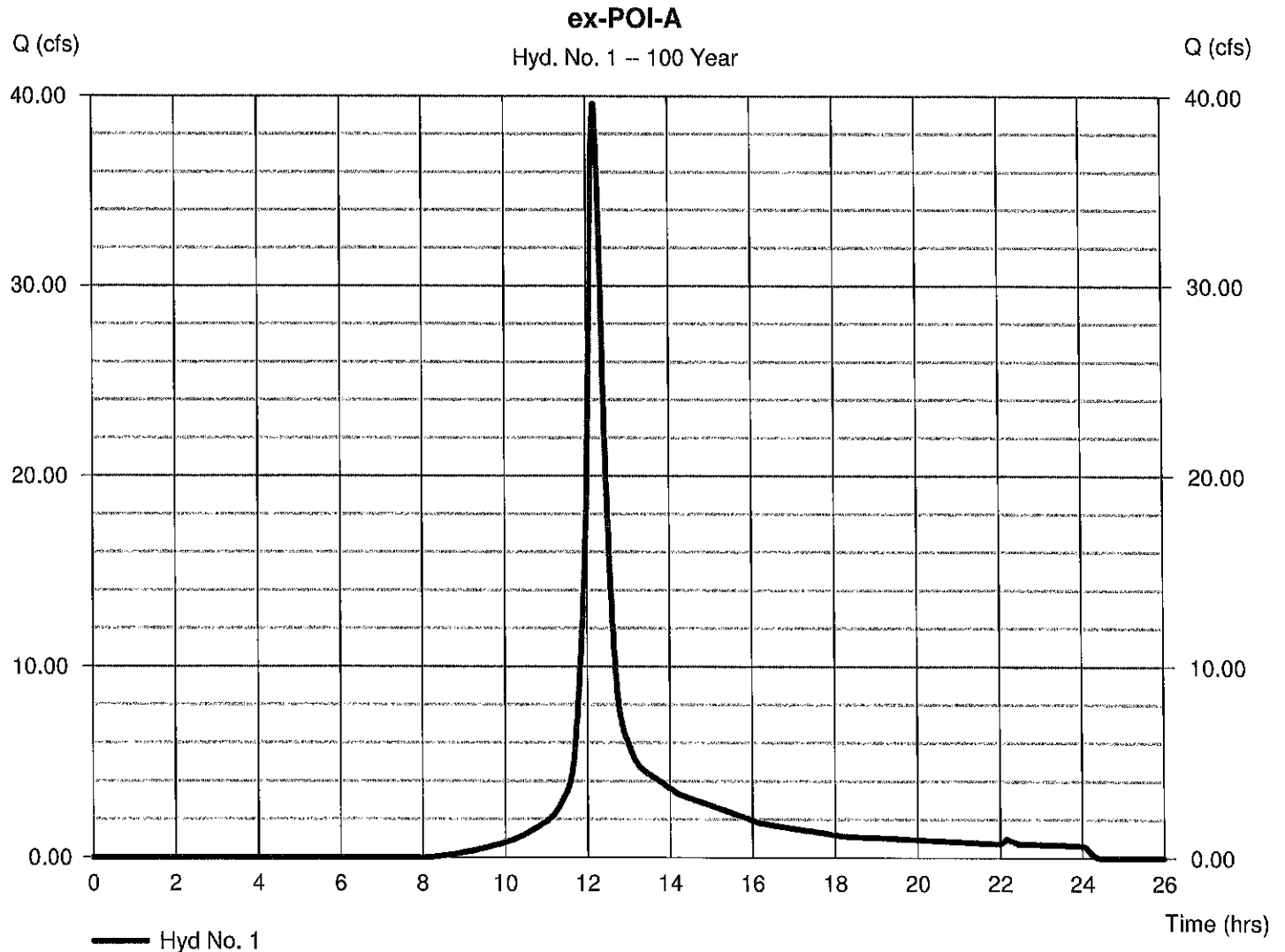
Hyd. No. 1

ex-POI-A

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Time interval = 1 min
Drainage area = 10.300 ac
Basin Slope = 10.0 %
Tc method = LAG
Total precip. = 7.97 in
Storm duration = 24 hrs

Peak discharge = 39.58 cfs
Time to peak = 12.18 hrs
Hyd. volume = 163,697 cuft
Curve number = 69*
Hydraulic length = 1276 ft
Time of conc. (Tc) = 16.77 min
Distribution = Type III
Shape factor = 484

* Composite (Area/CN) = $[(1.000 \times 55) + (9.300 \times 70)] / 10.300$



Hydrograph Report

Hydraflow Hydrographs by Intellisolve v9.02

Sunday, Apr 25, 2021

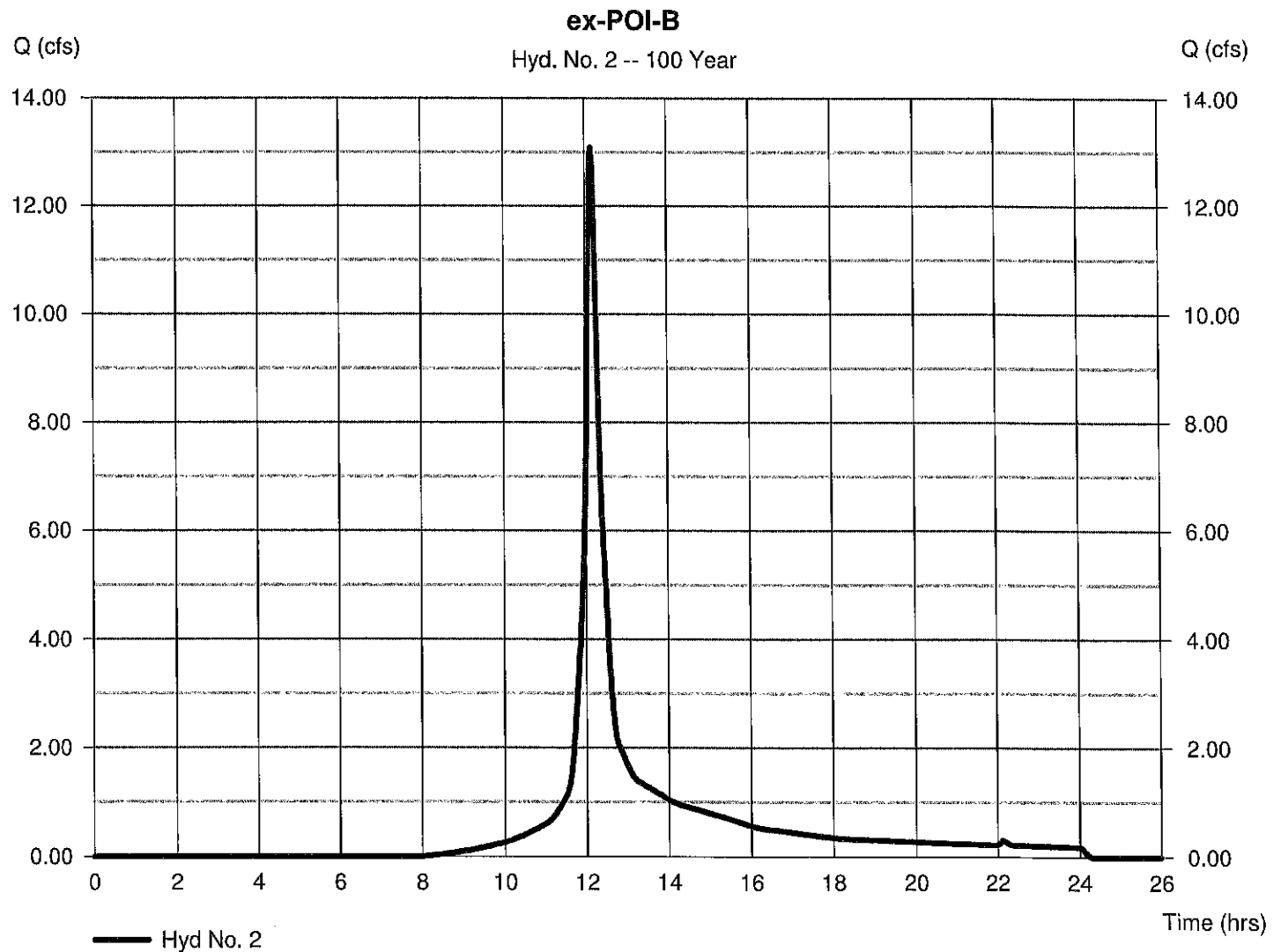
Hyd. No. 2

ex-POI-B

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Time interval = 1 min
Drainage area = 3.100 ac
Basin Slope = 9.9 %
Tc method = LAG
Total precip. = 7.97 in
Storm duration = 24 hrs

Peak discharge = 13.08 cfs
Time to peak = 12.15 hrs
Hyd. volume = 49,166 cuft
Curve number = 70*
Hydraulic length = 990 ft
Time of conc. (Tc) = 13.40 min
Distribution = Type III
Shape factor = 484

* Composite (Area/CN) = $[(0.060 \times 55) + (3.040 \times 70)] / 3.100$



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.02

Sunday, Apr 25, 2021

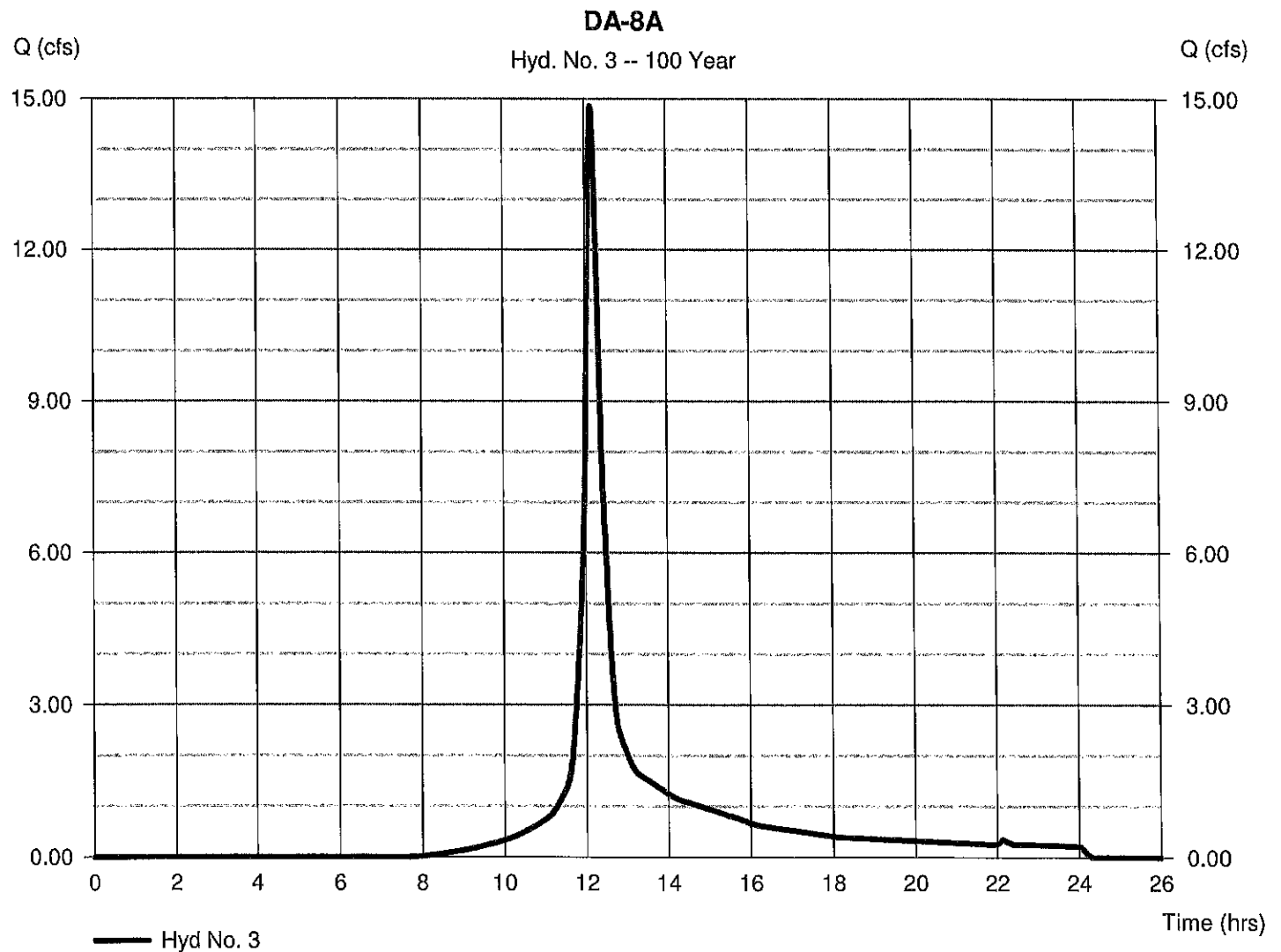
Hyd. No. 3

DA-8A

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Time interval = 1 min
Drainage area = 3.550 ac
Basin Slope = 8.9 %
Tc method = LAG
Total precip. = 7.97 in
Storm duration = 24 hrs

Peak discharge = 14.86 cfs
Time to peak = 12.17 hrs
Hyd. volume = 58,675 cuft
Curve number = 71*
Hydraulic length = 970 ft
Time of conc. (Tc) = 13.53 min
Distribution = Type III
Shape factor = 484

* Composite (Area/CN) = [(0.450 x 74) + (3.040 x 70) + (0.060 x 98)] / 3.550



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.02

Sunday, Apr 25, 2021

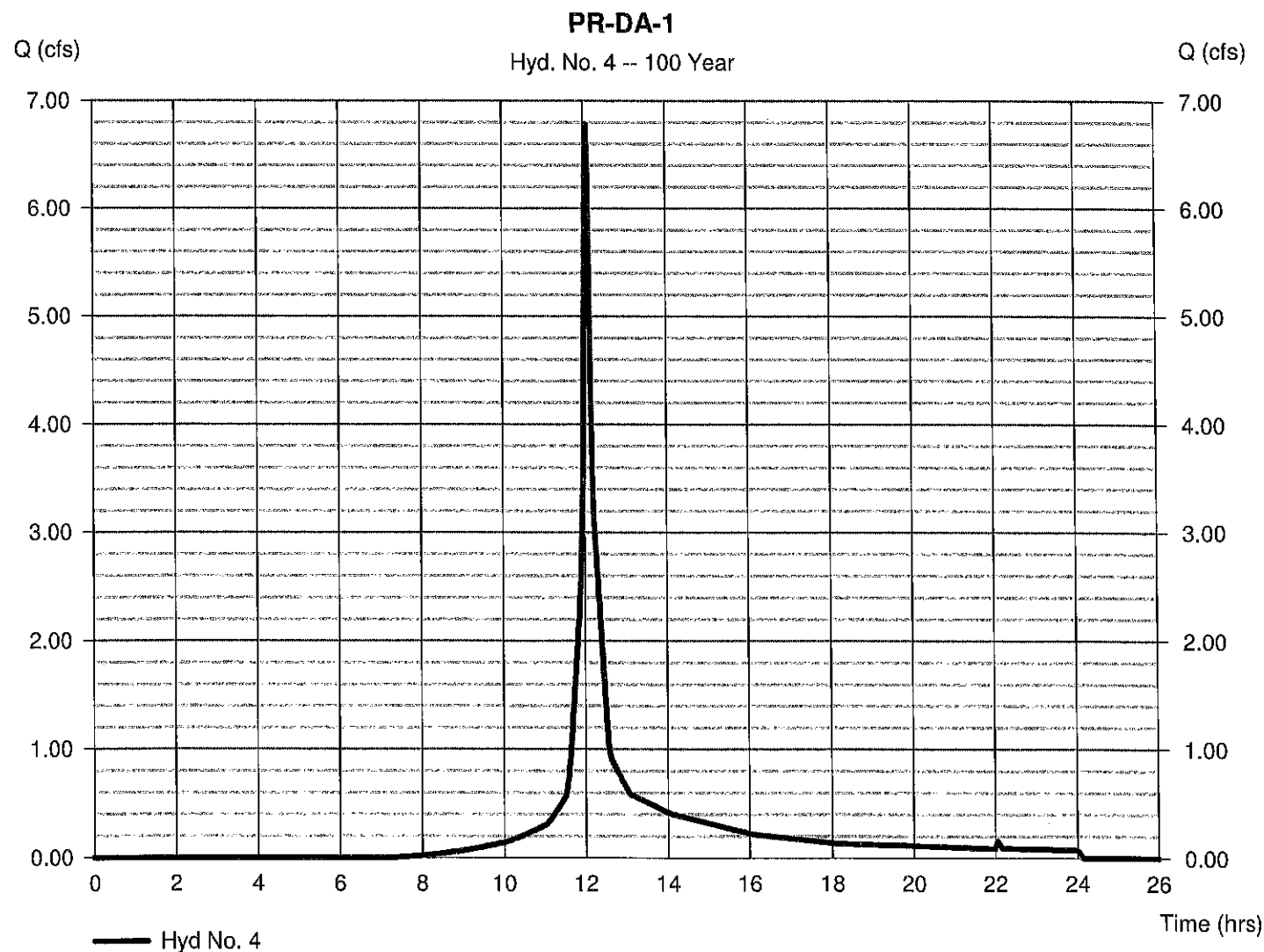
Hyd. No. 4

PR-DA-1

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 1 min
 Drainage area = 1.170 ac
 Basin Slope = 11.9 %
 Tc method = LAG
 Total precip. = 7.97 in
 Storm duration = 24 hrs

Peak discharge = 6.780 cfs
 Time to peak = 12.08 hrs
 Hyd. volume = 20,950 cuft
 Curve number = 73*
 Hydraulic length = 470 ft
 Time of conc. (Tc) = 6.20 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = [(0.430 x 74) + (0.660 x 70) + (0.080 x 98)] / 1.170



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.02

Sunday, Apr 25, 2021

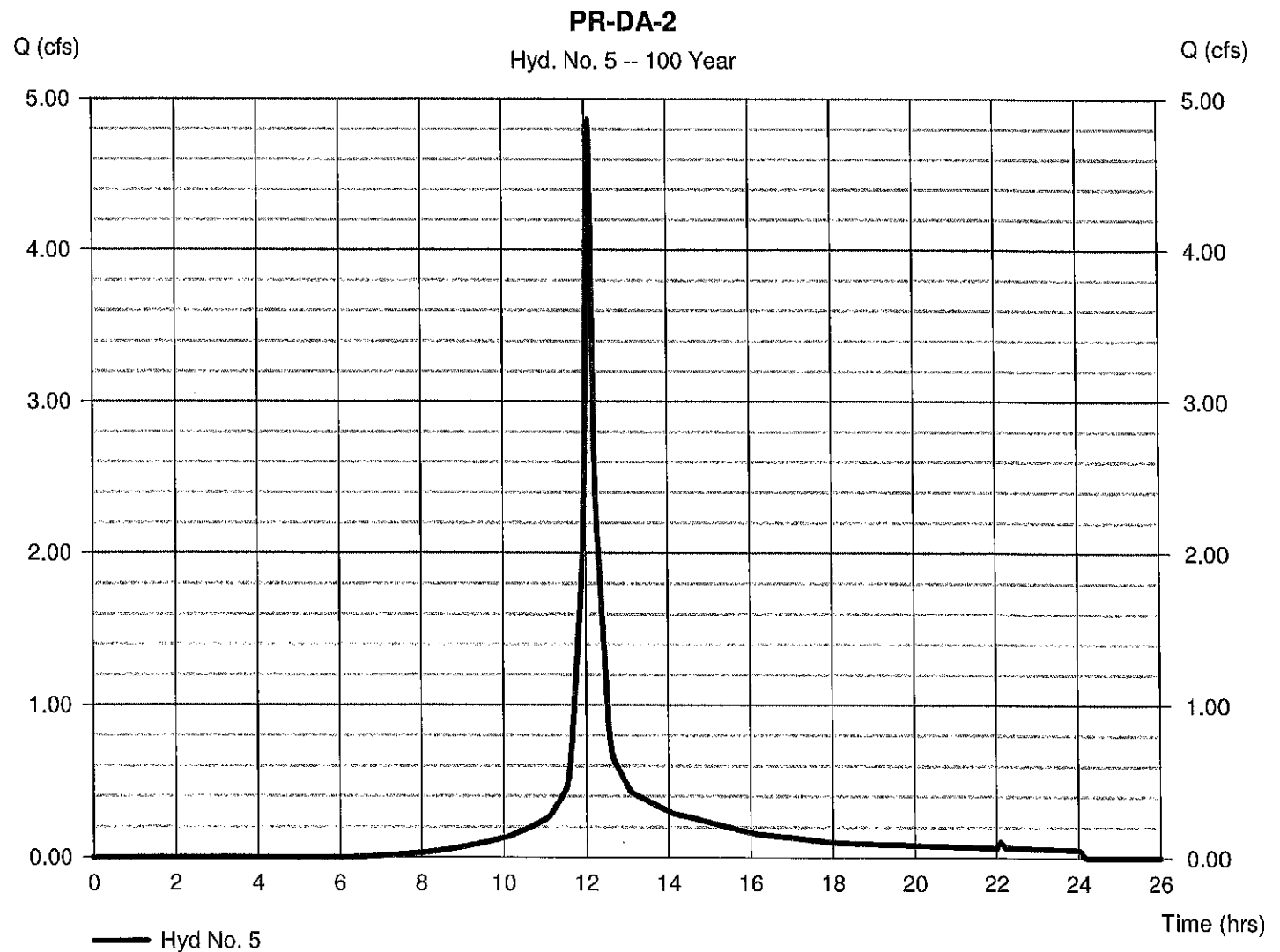
Hyd. No. 5

PR-DA-2

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Time interval = 1 min
Drainage area = 0.850 ac
Basin Slope = 10.0 %
Tc method = LAG
Total precip. = 7.97 in
Storm duration = 24 hrs

Peak discharge = 4.861 cfs
Time to peak = 12.08 hrs
Hyd. volume = 15,784 cuft
Curve number = 77*
Hydraulic length = 595 ft
Time of conc. (Tc) = 7.28 min
Distribution = Type III
Shape factor = 484

* Composite (Area/CN) = $[(0.390 \times 74) + (0.150 \times 98) + (0.310 \times 70)] / 0.850$



Hydrograph Report

Hydraflow Hydrographs by Intellisolve v9.02

Sunday, Apr 25, 2021

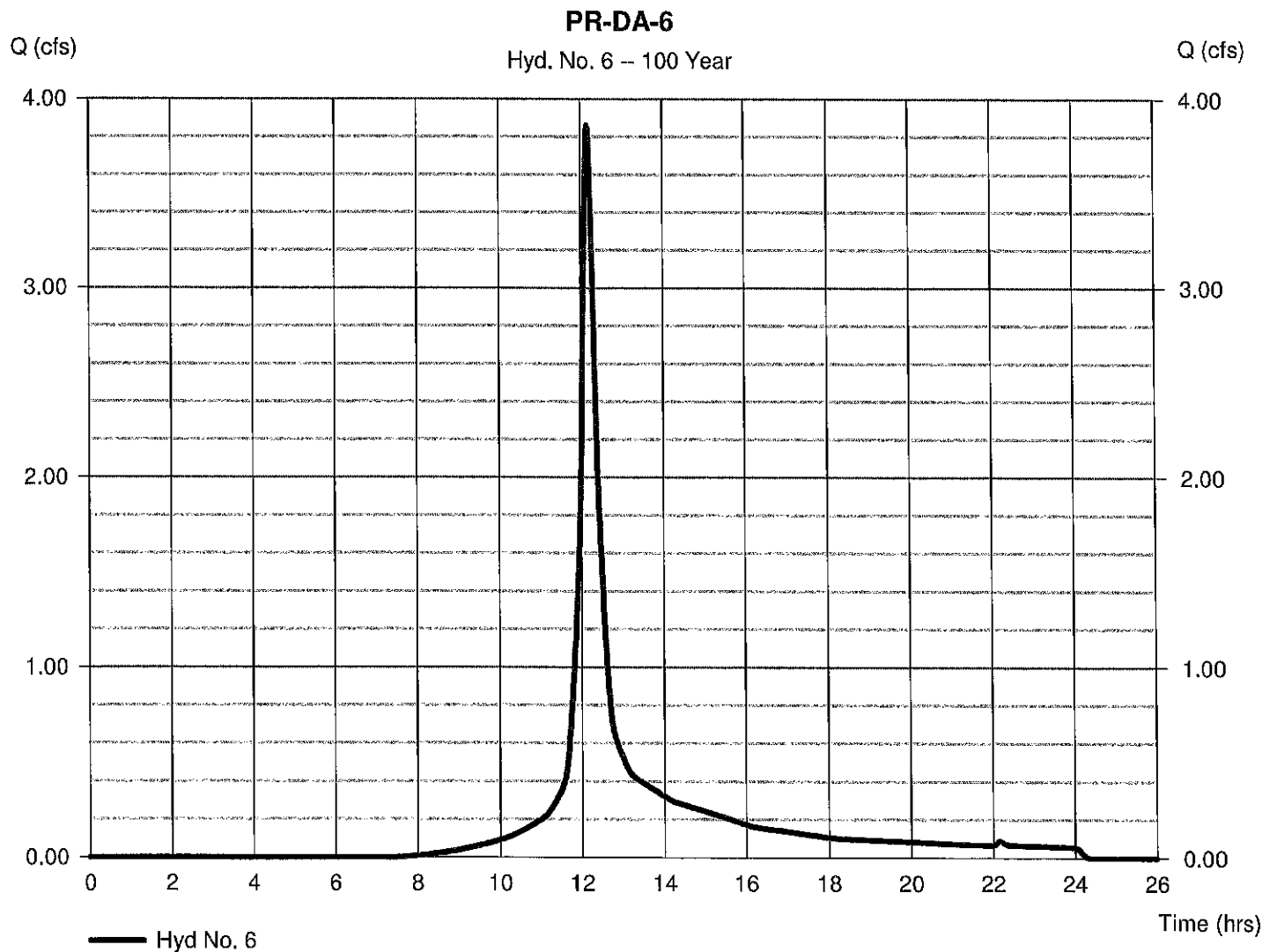
Hyd. No. 6

PR-DA-6

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Time interval = 1 min
Drainage area = 0.900 ac
Basin Slope = 9.9 %
Tc method = LAG
Total precip. = 7.97 in
Storm duration = 24 hrs

Peak discharge = 3.860 cfs
Time to peak = 12.17 hrs
Hyd. volume = 15,251 cuft
Curve number = 72*
Hydraulic length = 1164 ft
Time of conc. (Tc) = 14.44 min
Distribution = Type III
Shape factor = 484

* Composite (Area/CN) = $[(0.230 \times 70) + (0.400 \times 74) + (0.100 \times 98) + (0.170 \times 55)] / 0.900$



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.02

Sunday, Apr 25, 2021

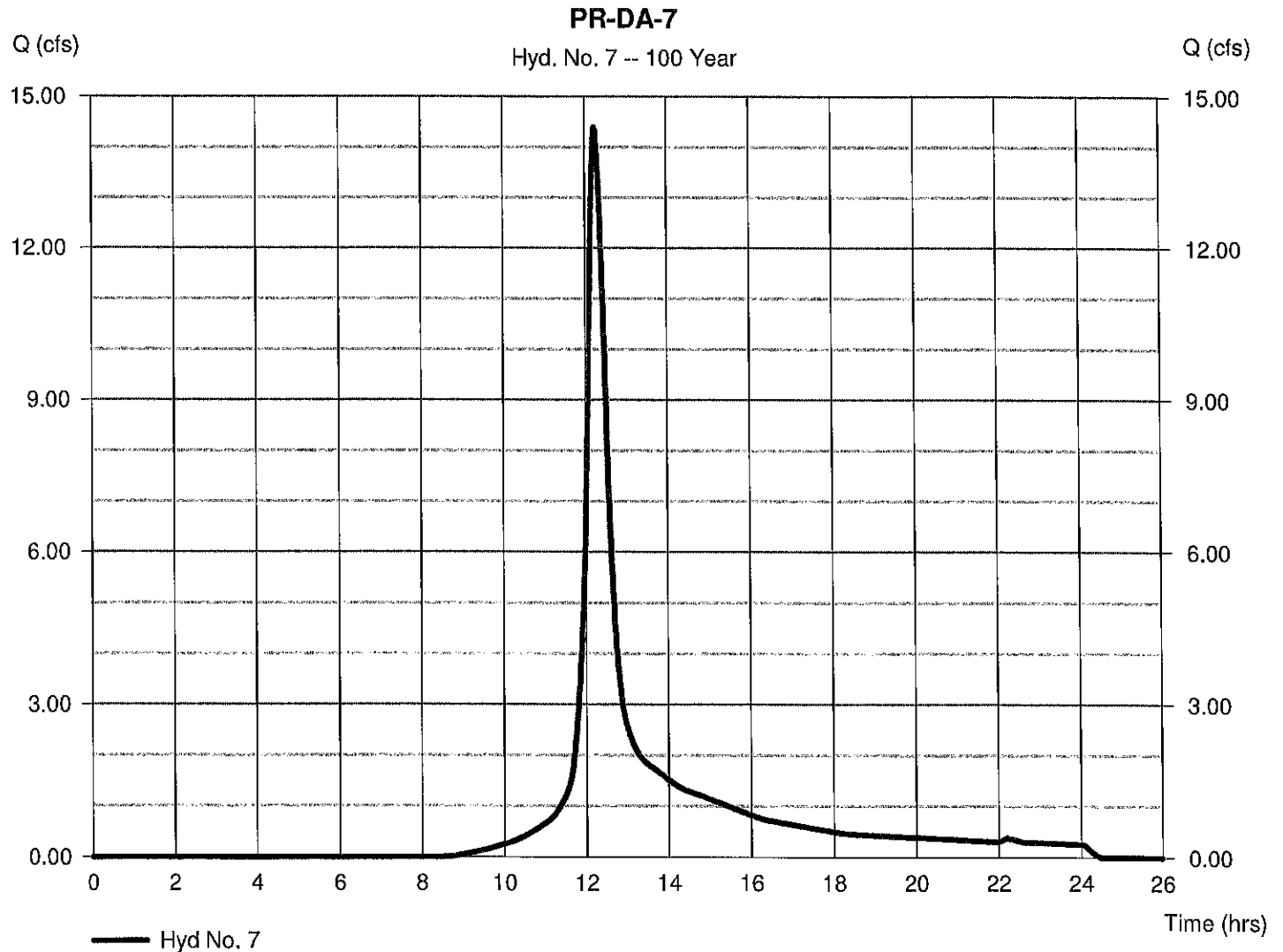
Hyd. No. 7

PR-DA-7

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Time interval = 1 min
Drainage area = 4.390 ac
Basin Slope = 7.5 %
Tc method = LAG
Total precip. = 7.97 in
Storm duration = 24 hrs

Peak discharge = 14.39 cfs
Time to peak = 12.25 hrs
Hyd. volume = 65,906 cuft
Curve number = 67*
Hydraulic length = 1367 ft
Time of conc. (Tc) = 21.58 min
Distribution = Type III
Shape factor = 484

* Composite (Area/CN) = $[(0.270 \times 74) + (0.030 \times 98) + (3.090 \times 70) + (1.000 \times 55)] / 4.390$



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.02

Sunday, Apr 25, 2021

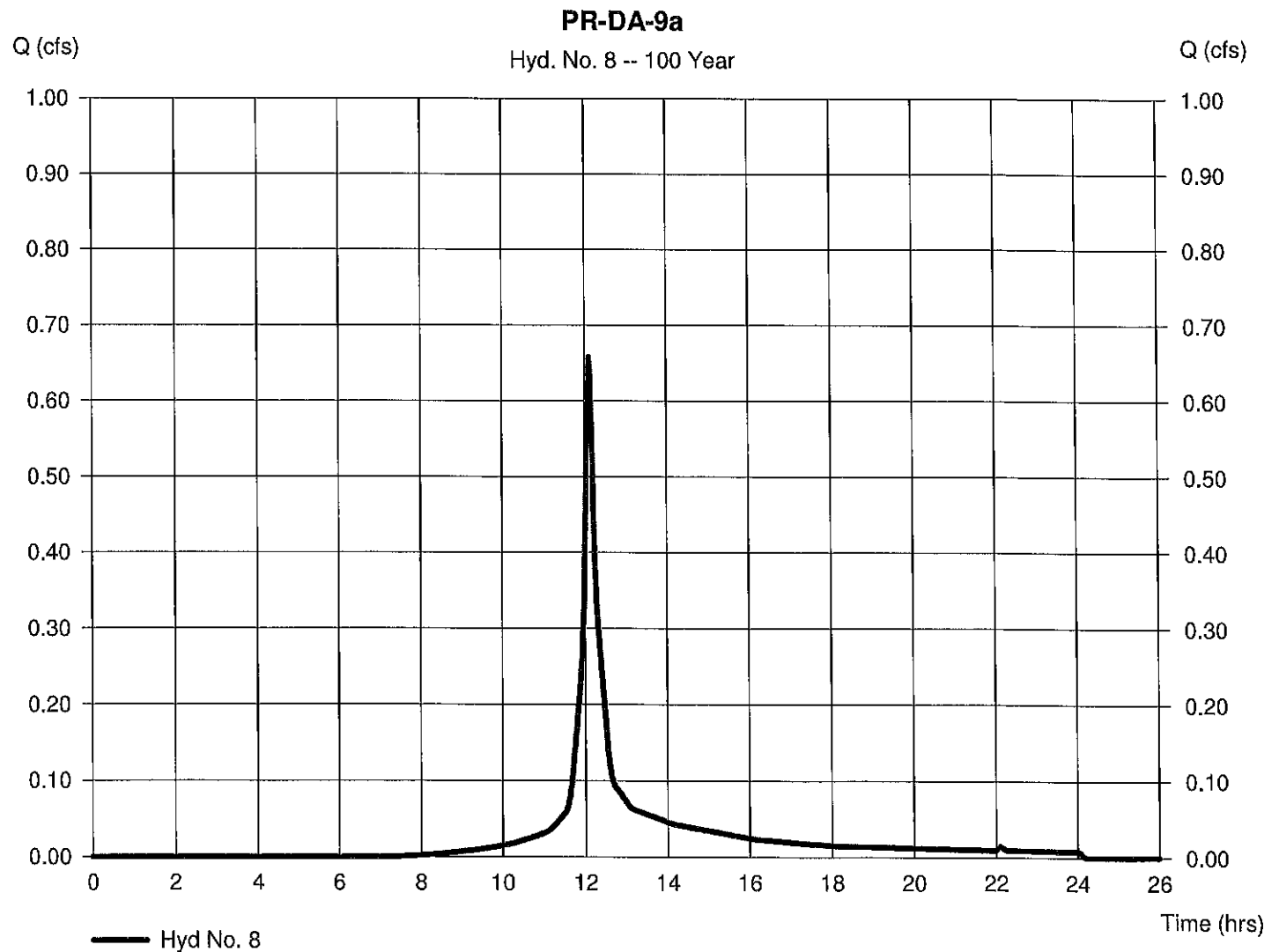
Hyd. No. 8

PR-DA-9a

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Time interval = 1 min
Drainage area = 0.130 ac
Basin Slope = 9.3 %
Tc method = LAG
Total precip. = 7.97 in
Storm duration = 24 hrs

Peak discharge = 0.658 cfs
Time to peak = 12.12 hrs
Hyd. volume = 2,257 cuft
Curve number = 73*
Hydraulic length = 624 ft
Time of conc. (Tc) = 8.80 min
Distribution = Type III
Shape factor = 484

* Composite (Area/CN) = [(0.090 x 70) + (0.010 x 98) + (0.030 x 74)] / 0.130



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.02

Sunday, Apr 25, 2021

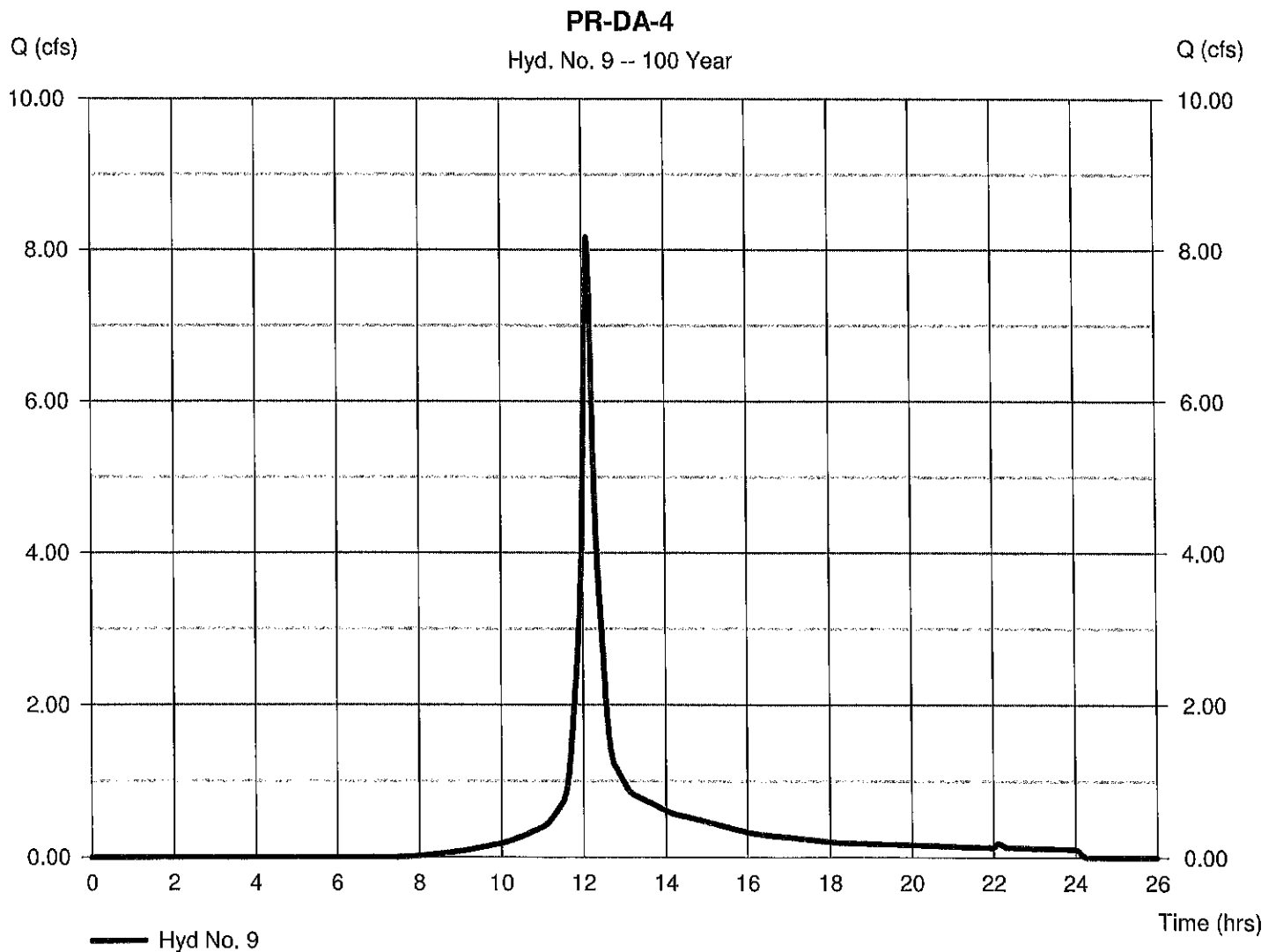
Hyd. No. 9

PR-DA-4

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Time interval = 1 min
Drainage area = 1.720 ac
Basin Slope = 10.0 %
Tc method = LAG
Total precip. = 7.97 in
Storm duration = 24 hrs

Peak discharge = 8.168 cfs
Time to peak = 12.13 hrs
Hyd. volume = 29,666 cuft
Curve number = 72*
Hydraulic length = 760 ft
Time of conc. (Tc) = 10.21 min
Distribution = Type III
Shape factor = 484

* Composite (Area/CN) = $[(1.150 \times 70) + (0.070 \times 98) + (0.500 \times 74)] / 1.720$



Hydrograph Report

Hydraflow Hydrographs by Intellisolve v9.02

Sunday, Apr 25, 2021

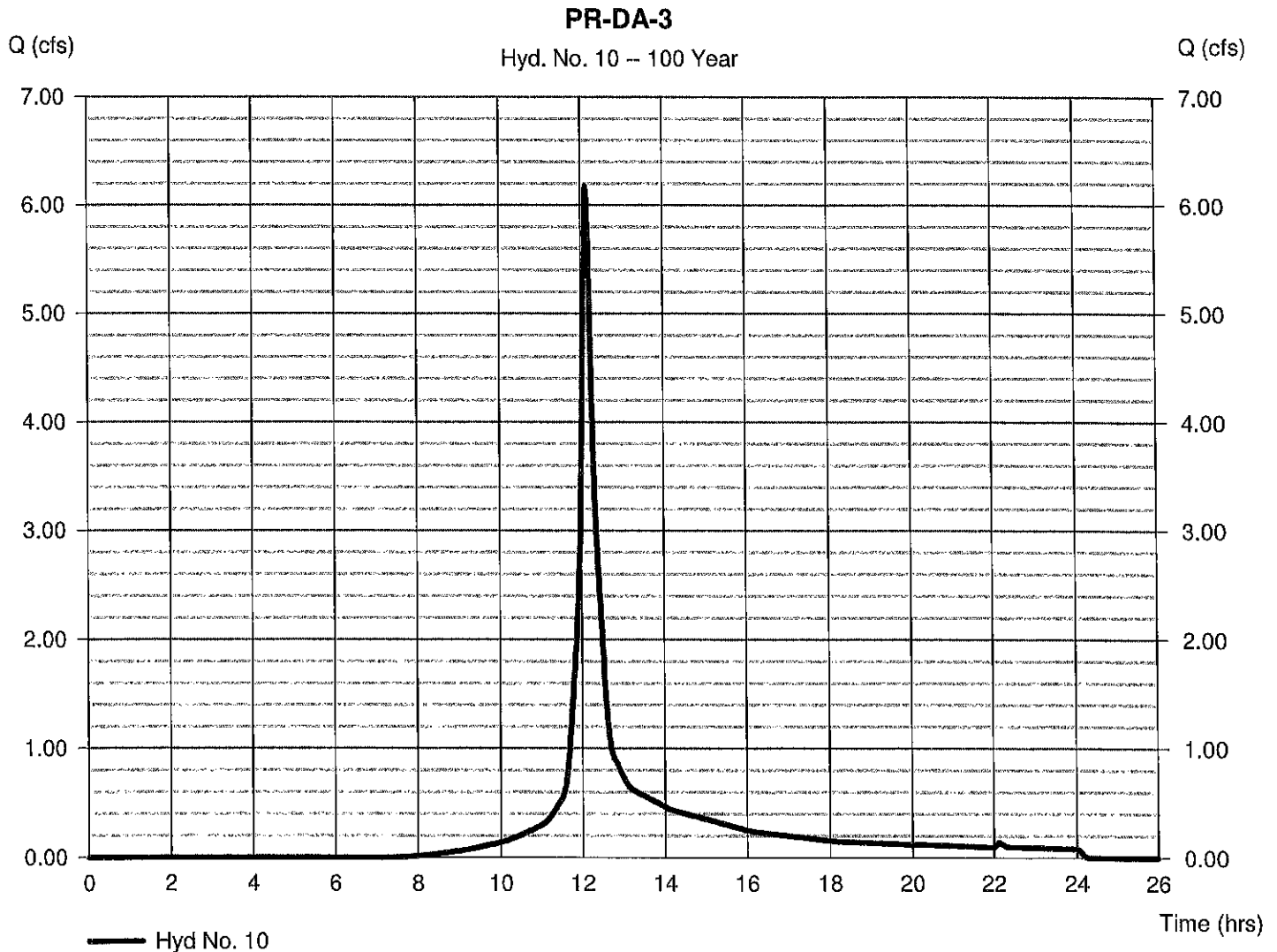
Hyd. No. 10

PR-DA-3

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 1 min
 Drainage area = 1.300 ac
 Basin Slope = 9.7 %
 Tc method = LAG
 Total precip. = 7.97 in
 Storm duration = 24 hrs

Peak discharge = 6.173 cfs
 Time to peak = 12.13 hrs
 Hyd. volume = 22,422 cuft
 Curve number = 72*
 Hydraulic length = 760 ft
 Time of conc. (Tc) = 10.37 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = [(0.850 x 70) + (0.050 x 98) + (0.400 x 74)] / 1.300



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.02

Sunday, Apr 25, 2021

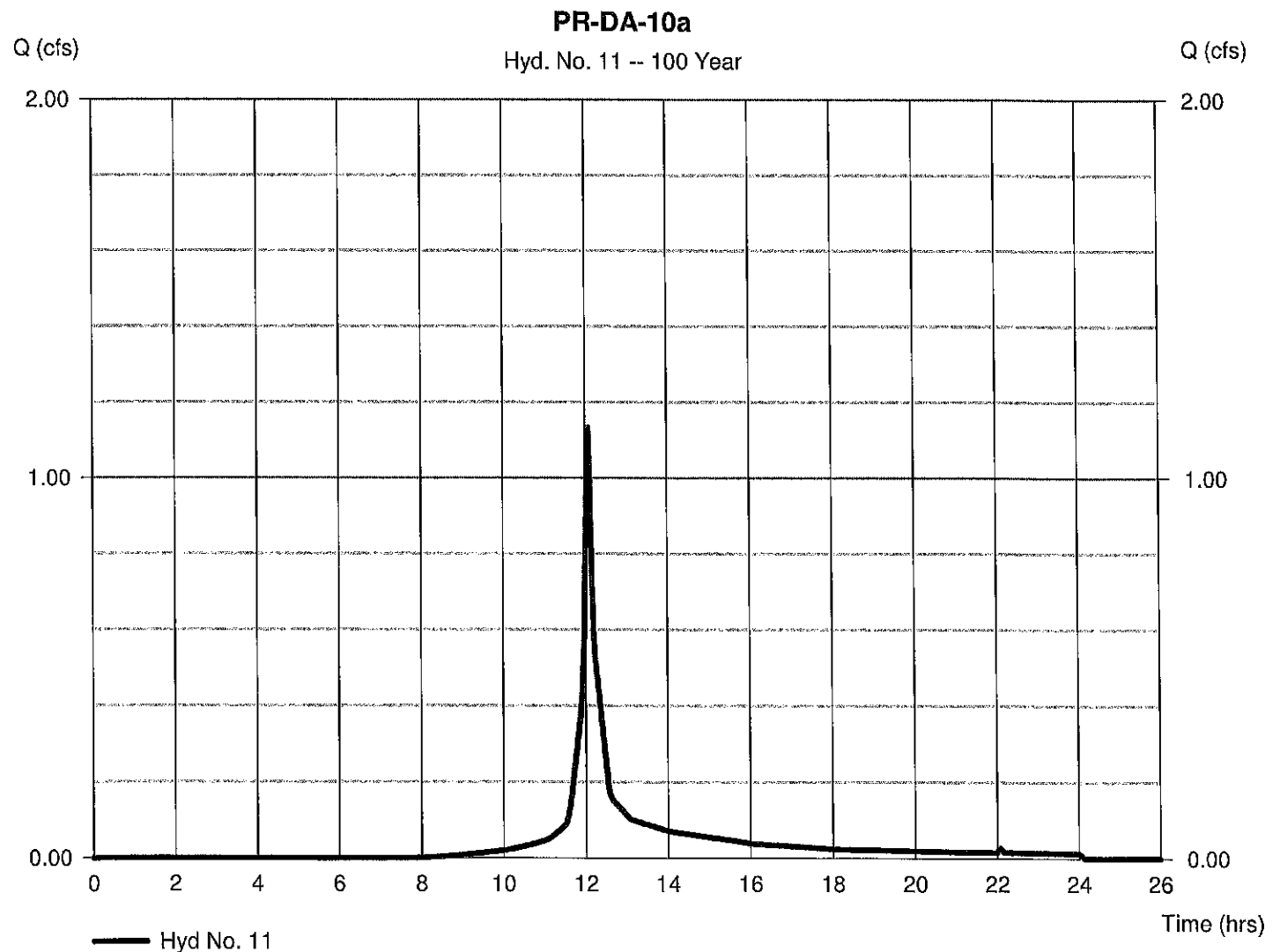
Hyd. No. 11

PR-DA-10a

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Time interval = 1 min
Drainage area = 0.210 ac
Basin Slope = 11.1 %
Tc method = USER
Total precip. = 7.97 in
Storm duration = 24 hrs

Peak discharge = 1.132 cfs
Time to peak = 12.08 hrs
Hyd. volume = 3,489 cuft
Curve number = 70*
Hydraulic length = 325 ft
Time of conc. (Tc) = 5.00 min
Distribution = Type III
Shape factor = 484

* Composite (Area/CN) = + (0.210 x 70) / 0.210



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.02

Sunday, Apr 25, 2021

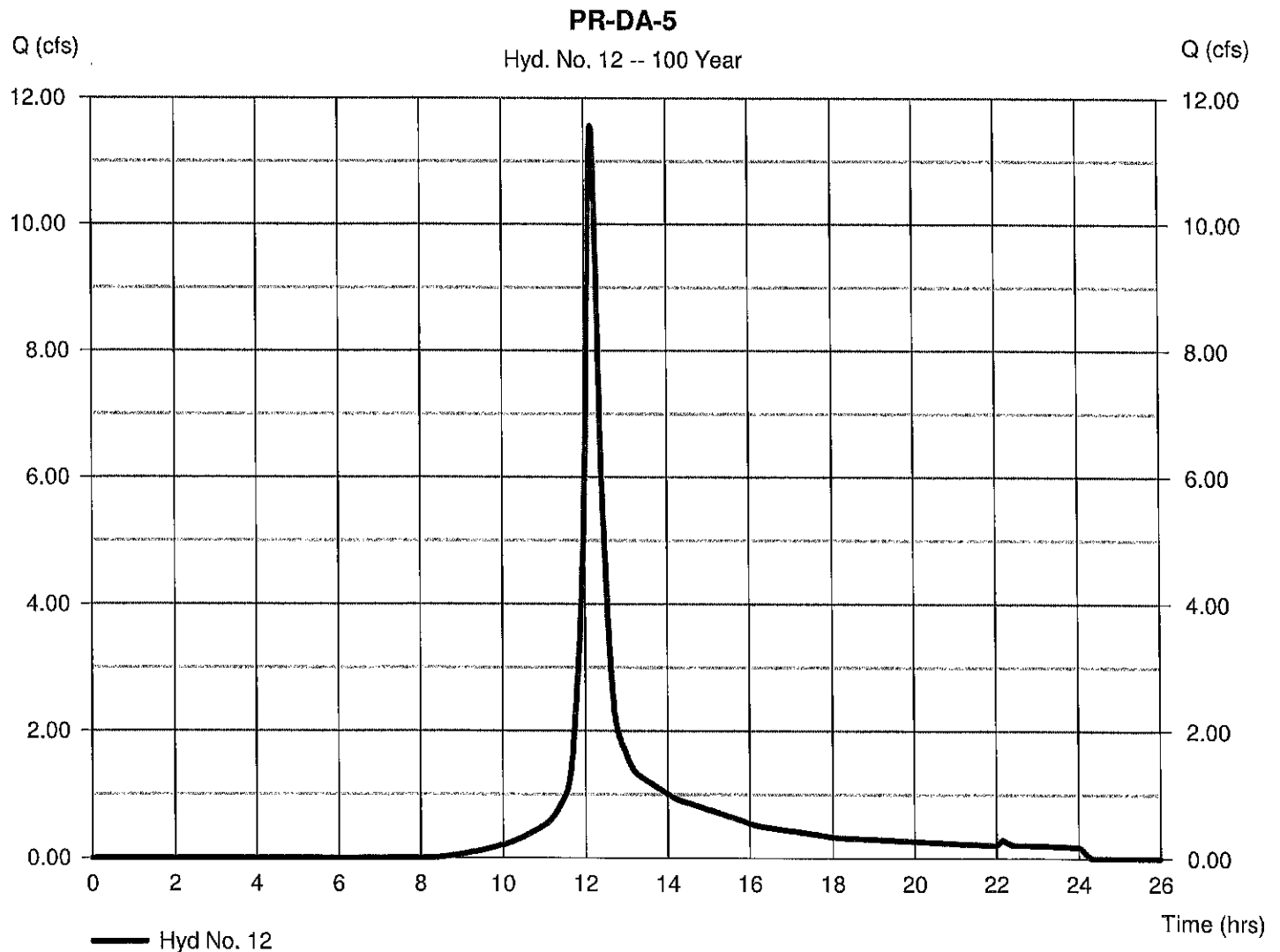
Hyd. No. 12

PR-DA-5

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Time interval = 1 min
Drainage area = 2.990 ac
Basin Slope = 8.7 %
Tc method = LAG
Total precip. = 7.97 in
Storm duration = 24 hrs

Peak discharge = 11.56 cfs
Time to peak = 12.17 hrs
Hyd. volume = 45,695 cuft
Curve number = 68*
Hydraulic length = 900 ft
Time of conc. (Tc) = 13.97 min
Distribution = Type III
Shape factor = 484

* Composite (Area/CN) = $[(0.510 \times 74) + (0.120 \times 98) + (1.660 \times 70) + (0.700 \times 55)] / 2.990$



Hydrograph Report

Hydraflow Hydrographs by Intellisolve v9.02

Sunday, Apr 25, 2021

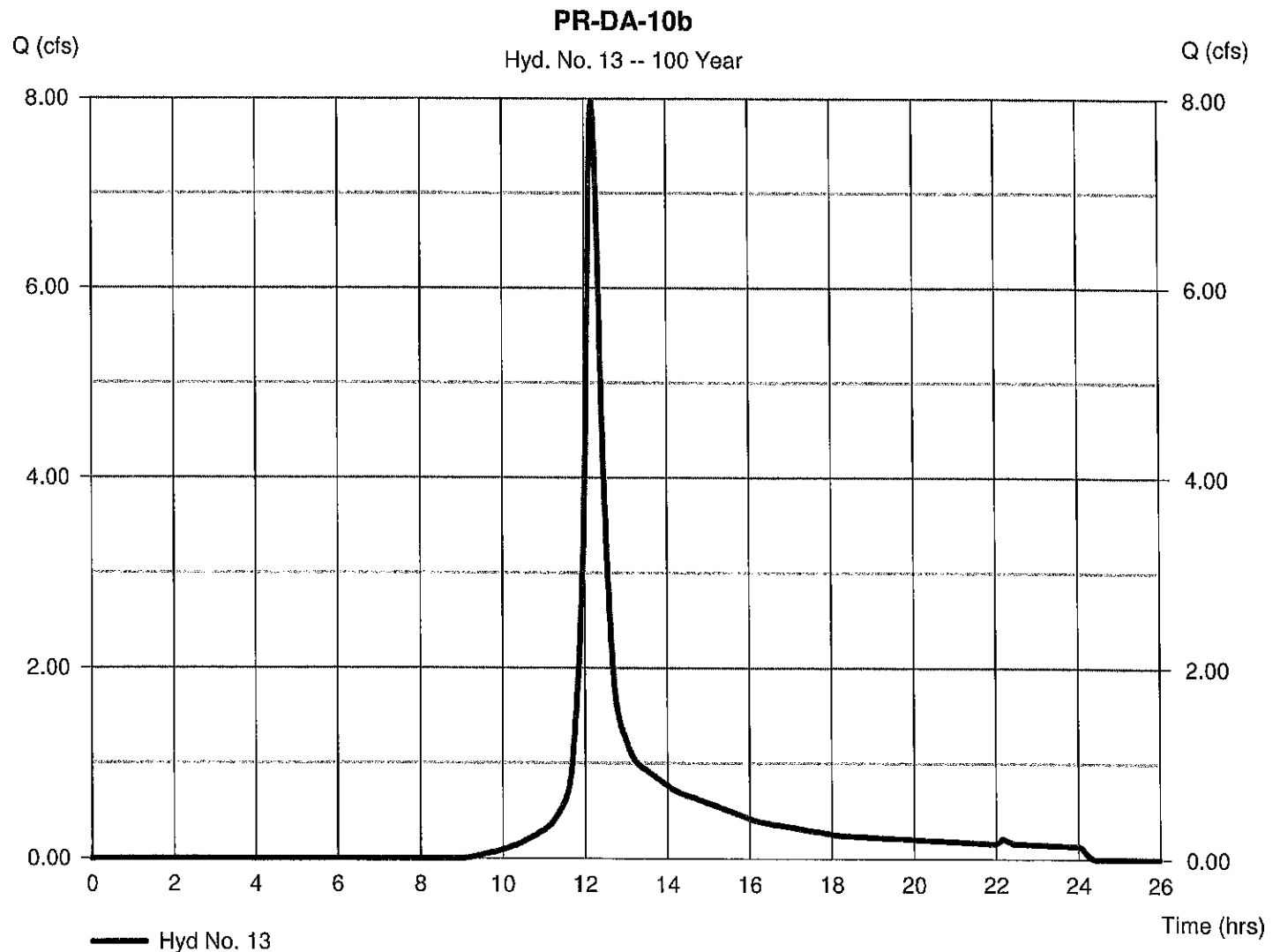
Hyd. No. 13

PR-DA-10b

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Time interval = 1 min
Drainage area = 2.400 ac
Basin Slope = 10.3 %
Tc method = LAG
Total precip. = 7.97 in
Storm duration = 24 hrs

Peak discharge = 7.971 cfs
Time to peak = 12.20 hrs
Hyd. volume = 33,143 cuft
Curve number = 64*
Hydraulic length = 988 ft
Time of conc. (Tc) = 15.36 min
Distribution = Type III
Shape factor = 484

* Composite (Area/CN) = $[(0.980 \times 55) + (1.420 \times 70)] / 2.400$



Hydrograph Report

Hydraflow Hydrographs by Intellisolve v9.02

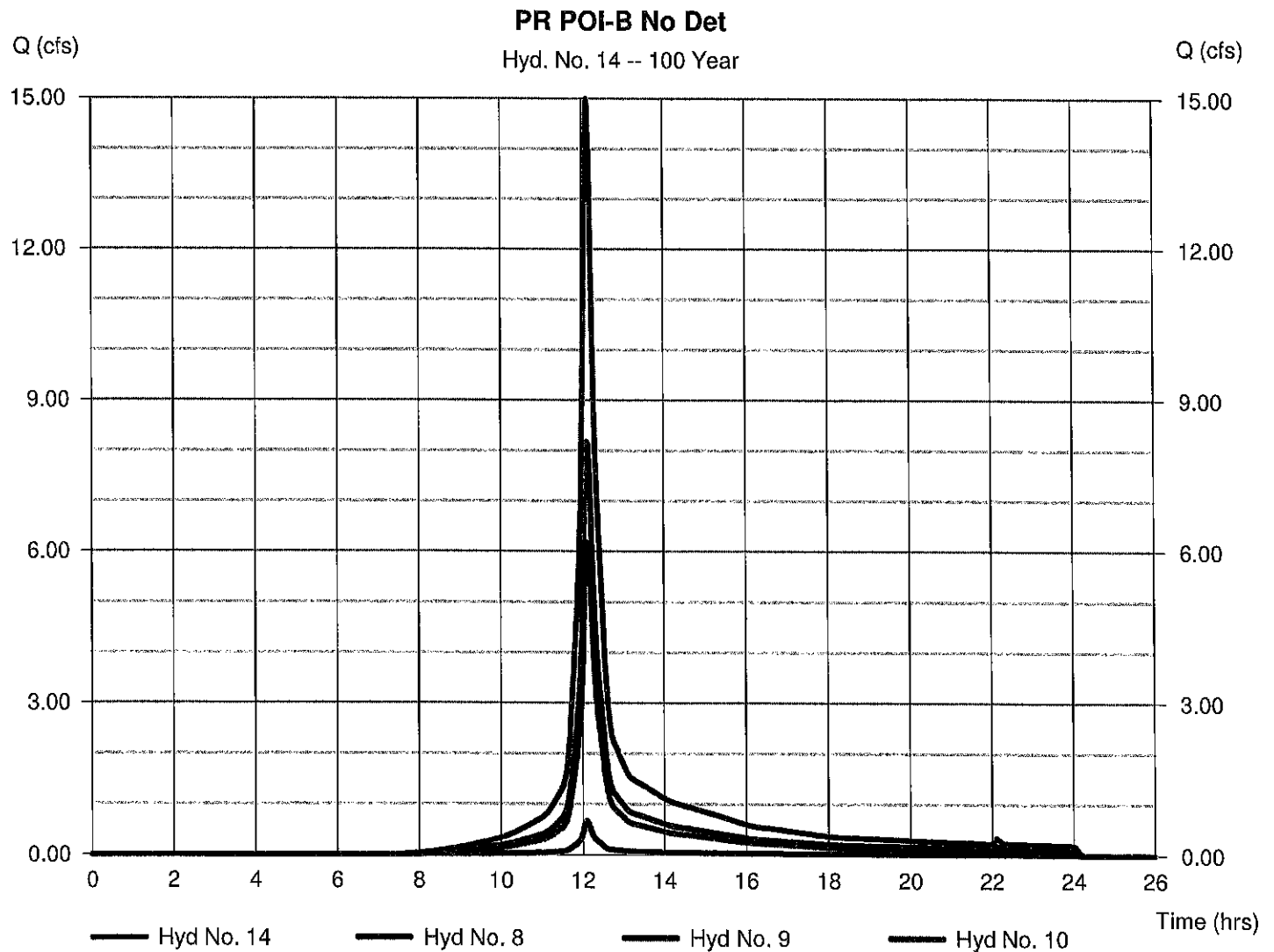
Sunday, Apr 25, 2021

Hyd. No. 14

PR POI-B No Det

Hydrograph type = Combine
Storm frequency = 100 yrs
Time interval = 1 min
Inflow hyds. = 8, 9, 10

Peak discharge = 14.99 cfs
Time to peak = 12.13 hrs
Hyd. volume = 54,346 cuft
Contrib. drain. area = 3.150 ac



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.02

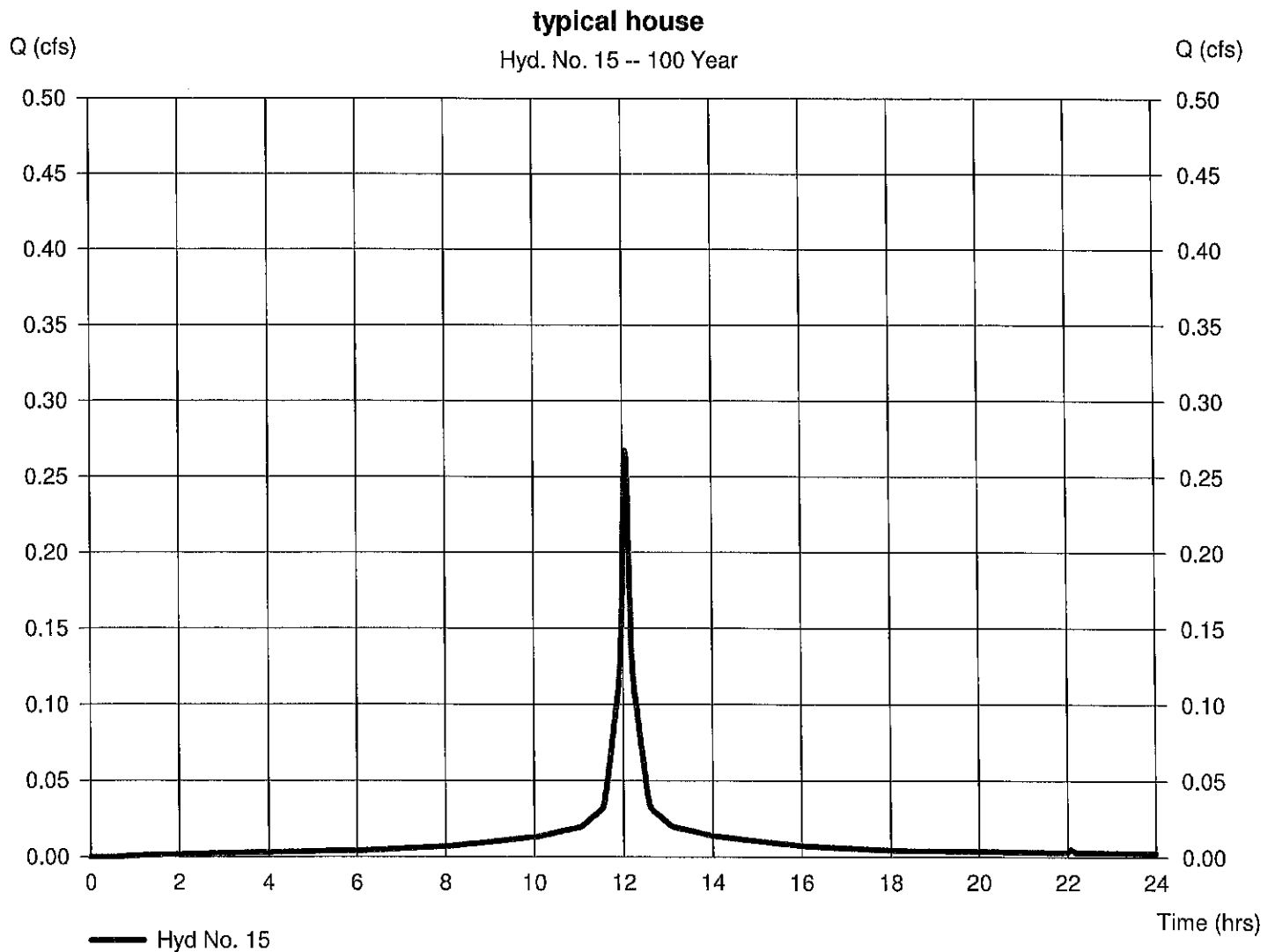
Sunday, Apr 25, 2021

Hyd. No. 15

typical house

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Time interval = 1 min
Drainage area = 0.033 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 7.97 in
Storm duration = 24 hrs

Peak discharge = 0.267 cfs
Time to peak = 12.07 hrs
Hyd. volume = 955 cuft
Curve number = 98
Hydraulic length = 0 ft
Time of conc. (Tc) = 5.00 min
Distribution = Type III
Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs by Intellisolve v9.02

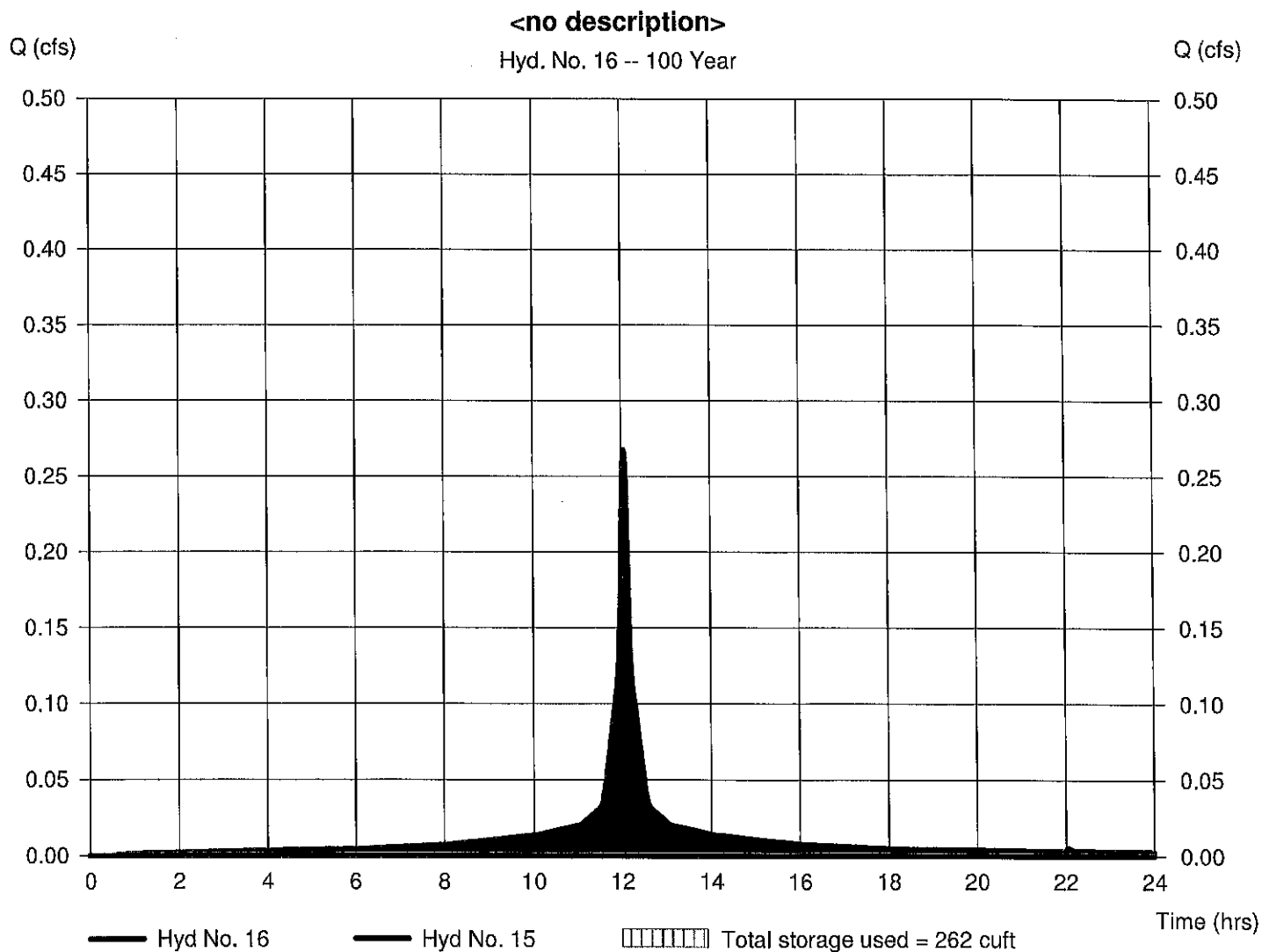
Sunday, Apr 25, 2021

Hyd. No. 16

<no description>

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.15 hrs
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 15 - typical house	Max. Elevation	= 101.37 ft
Reservoir name	= dwelling roof system	Max. Storage	= 262 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Hydraflow Hydrographs by Intellisolve v9.02

Sunday, Apr 25, 2021

Pond No. 2 - dwelling roof system

Pond Data

UG Chambers - Invert elev. = 100.00 ft, Rise x Span = 1.50 x 3.00 ft, Barrel Len = 55.00 ft, No. Barrels = 1, Slope = 0.00%, Headers = No
 Encasement - Invert elev. = 99.50 ft, Width = 4.00 ft, Height = 2.00 ft, Voids = 33.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	99.50	n/a	0	0
0.20	99.70	n/a	15	15
0.40	99.90	n/a	15	29
0.60	100.10	n/a	26	55
0.80	100.30	n/a	36	91
1.00	100.50	n/a	36	127
1.20	100.70	n/a	35	162
1.40	100.90	n/a	33	195
1.60	101.10	n/a	31	226
1.80	101.30	n/a	28	254
2.00	101.50	n/a	22	275

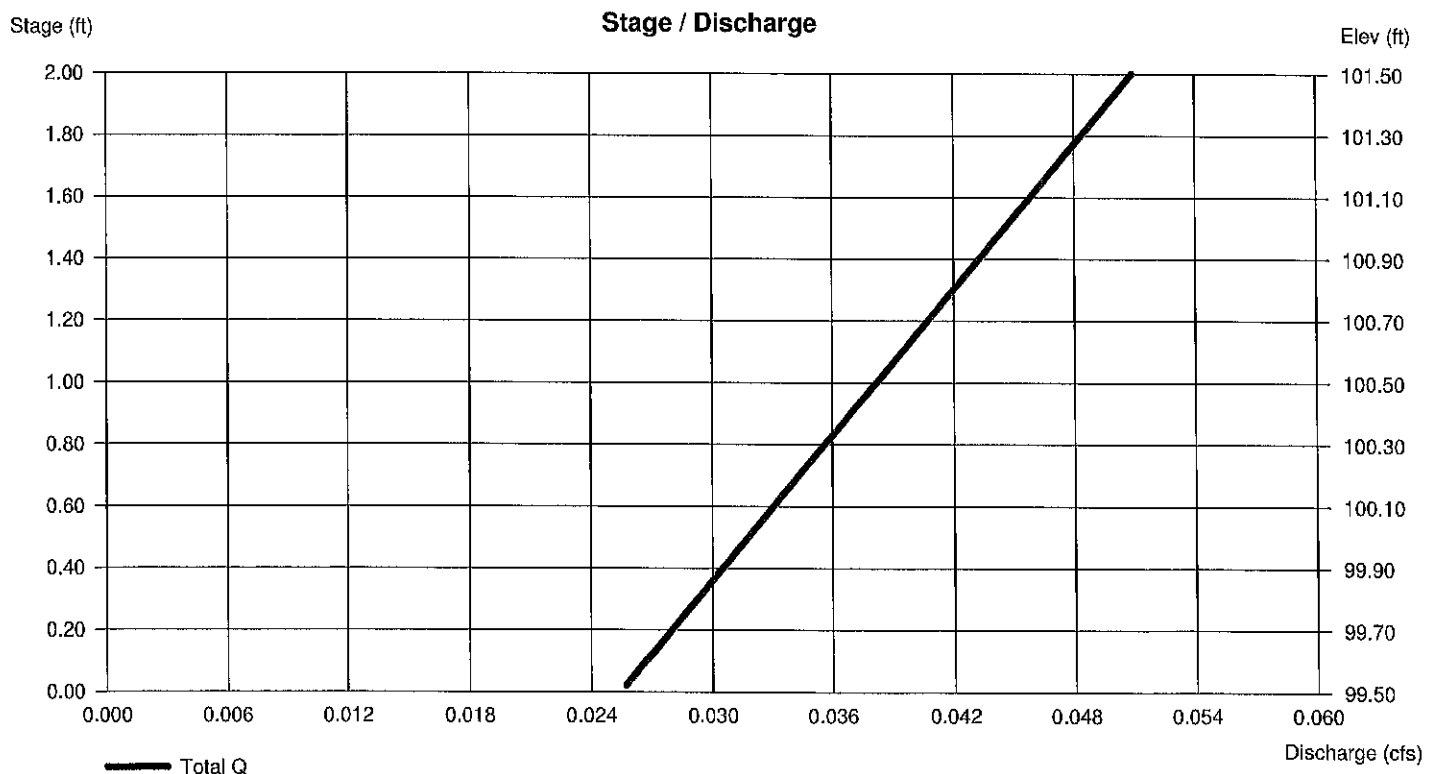
Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.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)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 5.000 (by Wet area)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet and outlet control. Weir risers are checked for orifice conditions.



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.02

Sunday, Apr 25, 2021

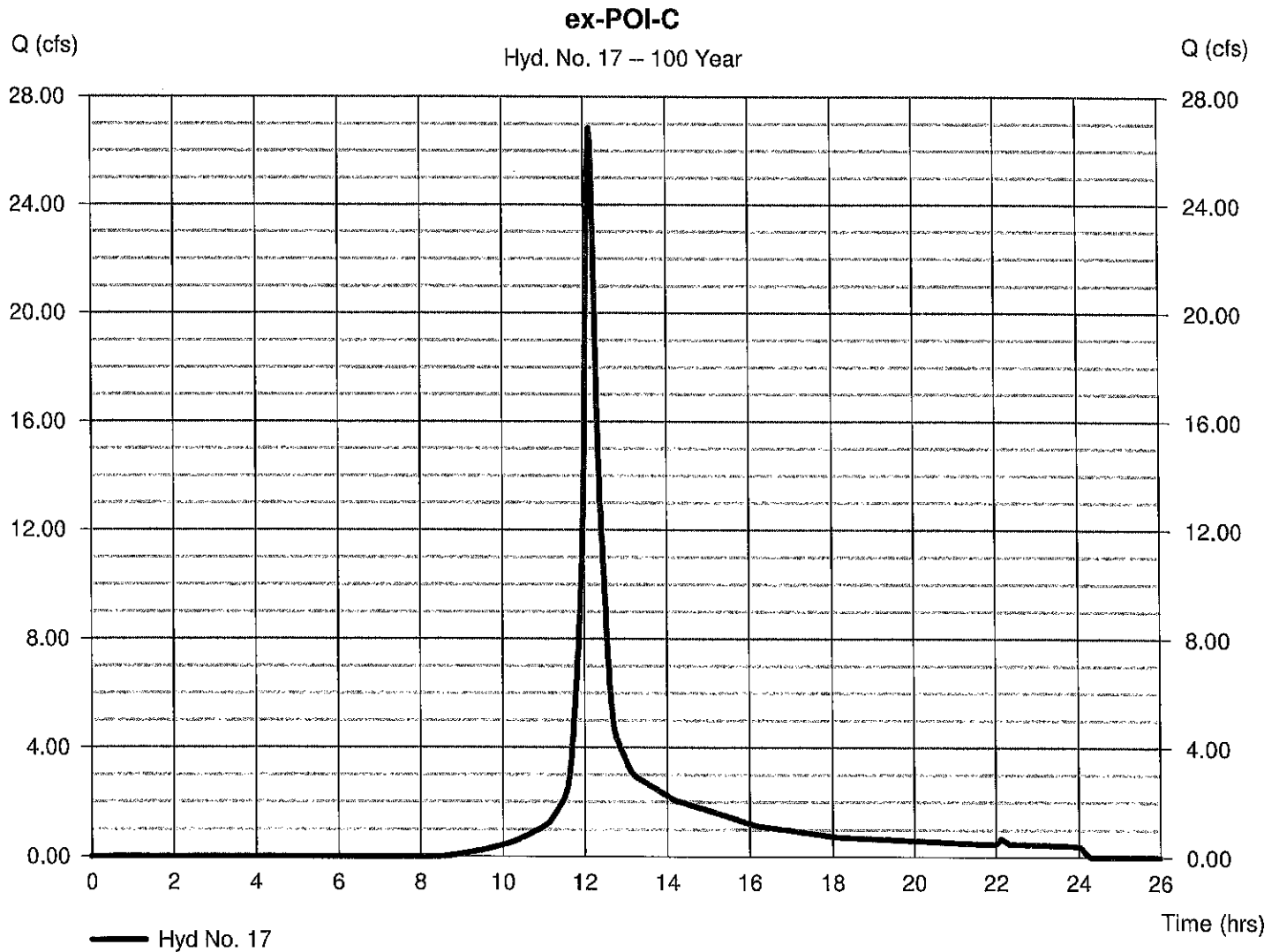
Hyd. No. 17

ex-POI-C

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 1 min
 Drainage area = 6.900 ac
 Basin Slope = 9.2 %
 Tc method = LAG
 Total precip. = 7.97 in
 Storm duration = 24 hrs

Peak discharge = 26.84 cfs
 Time to peak = 12.15 hrs
 Hyd. volume = 100,999 cuft
 Curve number = 67*
 Hydraulic length = 795 ft
 Time of conc. (Tc) = 12.63 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(1.600 \times 55) + (5.300 \times 70)] / 6.900$



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.02

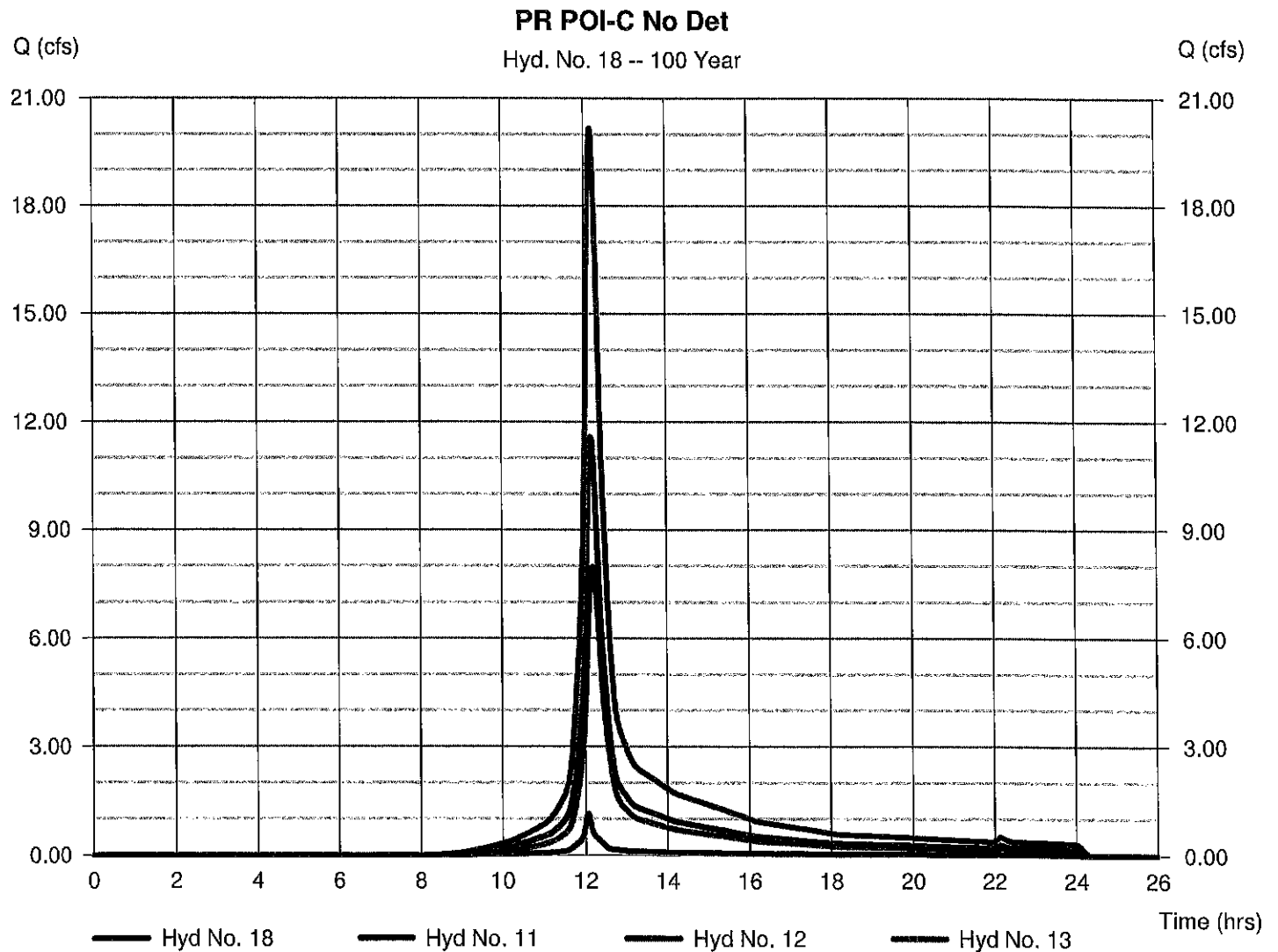
Sunday, Apr 25, 2021

Hyd. No. 18

PR POI-C No Det

Hydrograph type = Combine
Storm frequency = 100 yrs
Time interval = 1 min
Inflow hyds. = 11, 12, 13

Peak discharge = 20.16 cfs
Time to peak = 12.18 hrs
Hyd. volume = 82,327 cuft
Contrib. drain. area = 5.600 ac



Hydrograph Report

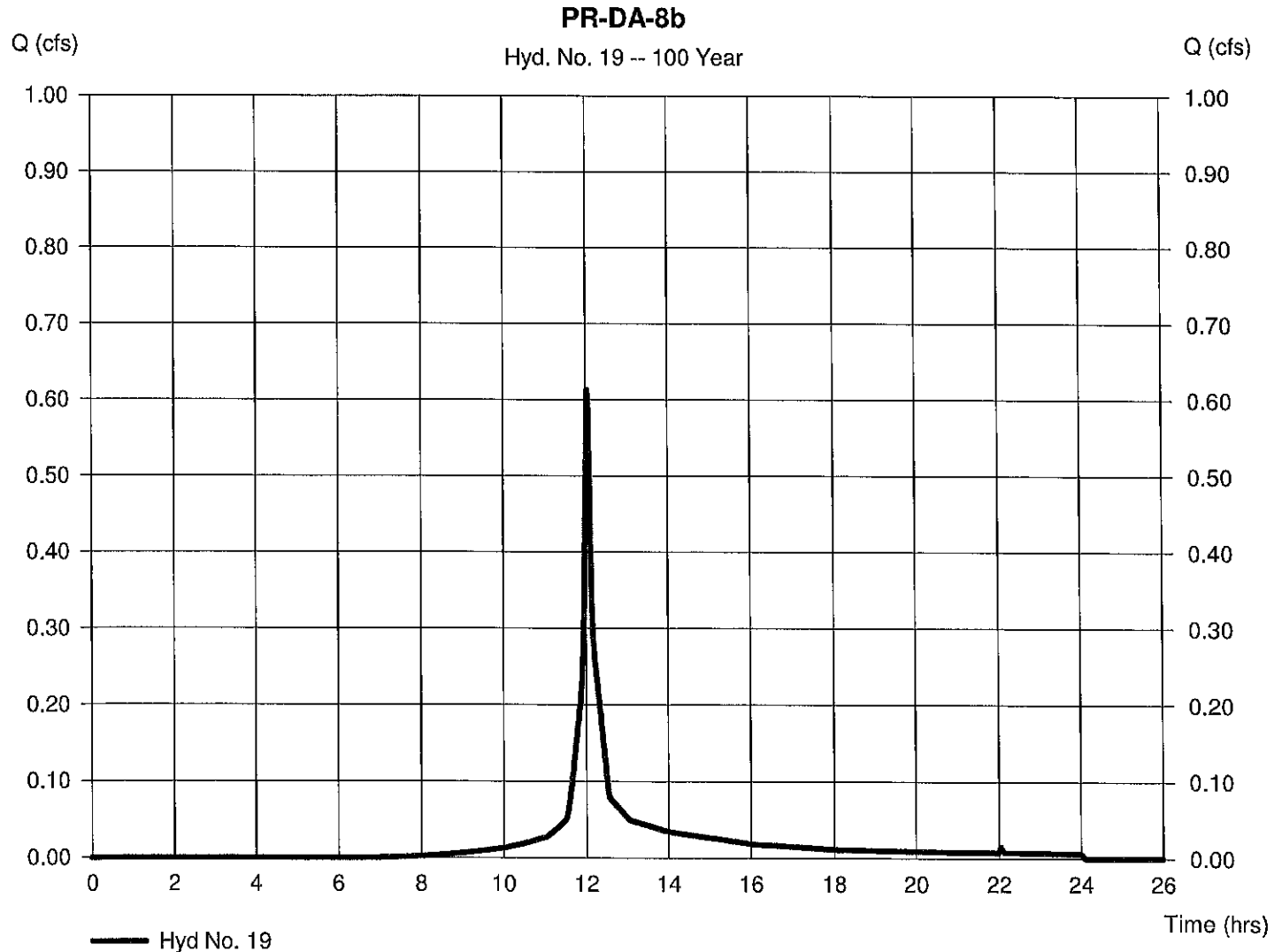
Hyd. No. 19

PR-DA-8b

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Time interval = 1 min
Drainage area = 0.100 ac
Basin Slope = 13.0 %
Tc method = LAG
Total precip. = 7.97 in
Storm duration = 24 hrs

Peak discharge = 0.613 cfs
Time to peak = 12.05 hrs
Hyd. volume = 1,778 cuft
Curve number = 74*
Hydraulic length = 230 ft
Time of conc. (Tc) = 3.26 min
Distribution = Type III
Shape factor = 484

* Composite (Area/CN) = [(0.010 x 98) + (0.020 x 74) + (0.070 x 70)] / 0.100



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.02

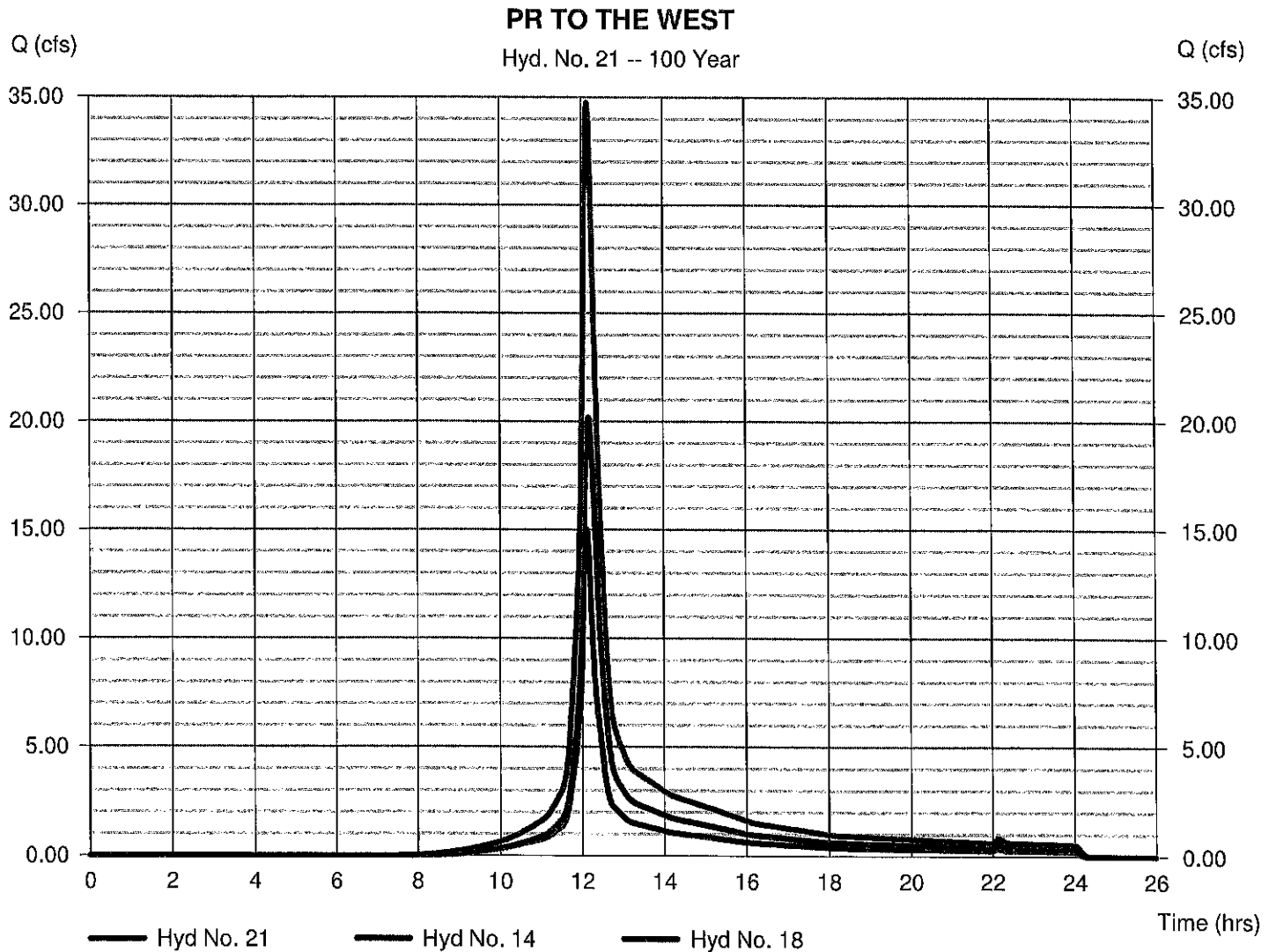
Sunday, Apr 25, 2021

Hyd. No. 21

PR TO THE WEST

Hydrograph type = Combine
Storm frequency = 100 yrs
Time interval = 1 min
Inflow hyds. = 14, 18

Peak discharge = 34.74 cfs
Time to peak = 12.15 hrs
Hyd. volume = 136,674 cuft
Contrib. drain. area = 0.000 ac



Hydrograph Report

Hydraflow Hydrographs by Intellsolve v9.02

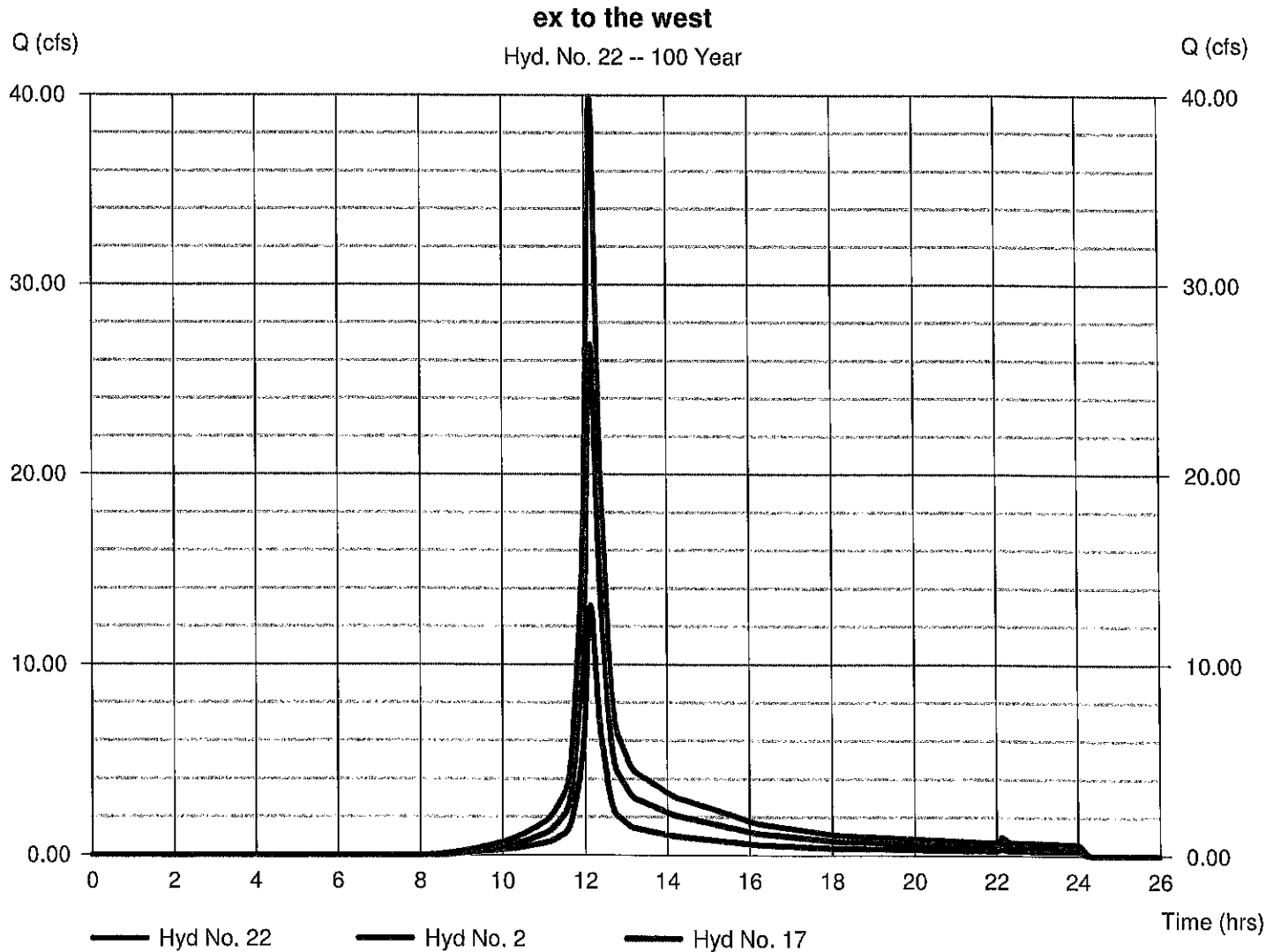
Sunday, Apr 25, 2021

Hyd. No. 22

ex to the west

Hydrograph type = Combine
Storm frequency = 100 yrs
Time interval = 1 min
Inflow hyds. = 2, 17

Peak discharge = 39.92 cfs
Time to peak = 12.15 hrs
Hyd. volume = 150,165 cuft
Contrib. drain. area = 10.000 ac



Hydrograph Report

Hydraflow Hydrographs by Intellisolve v9.02

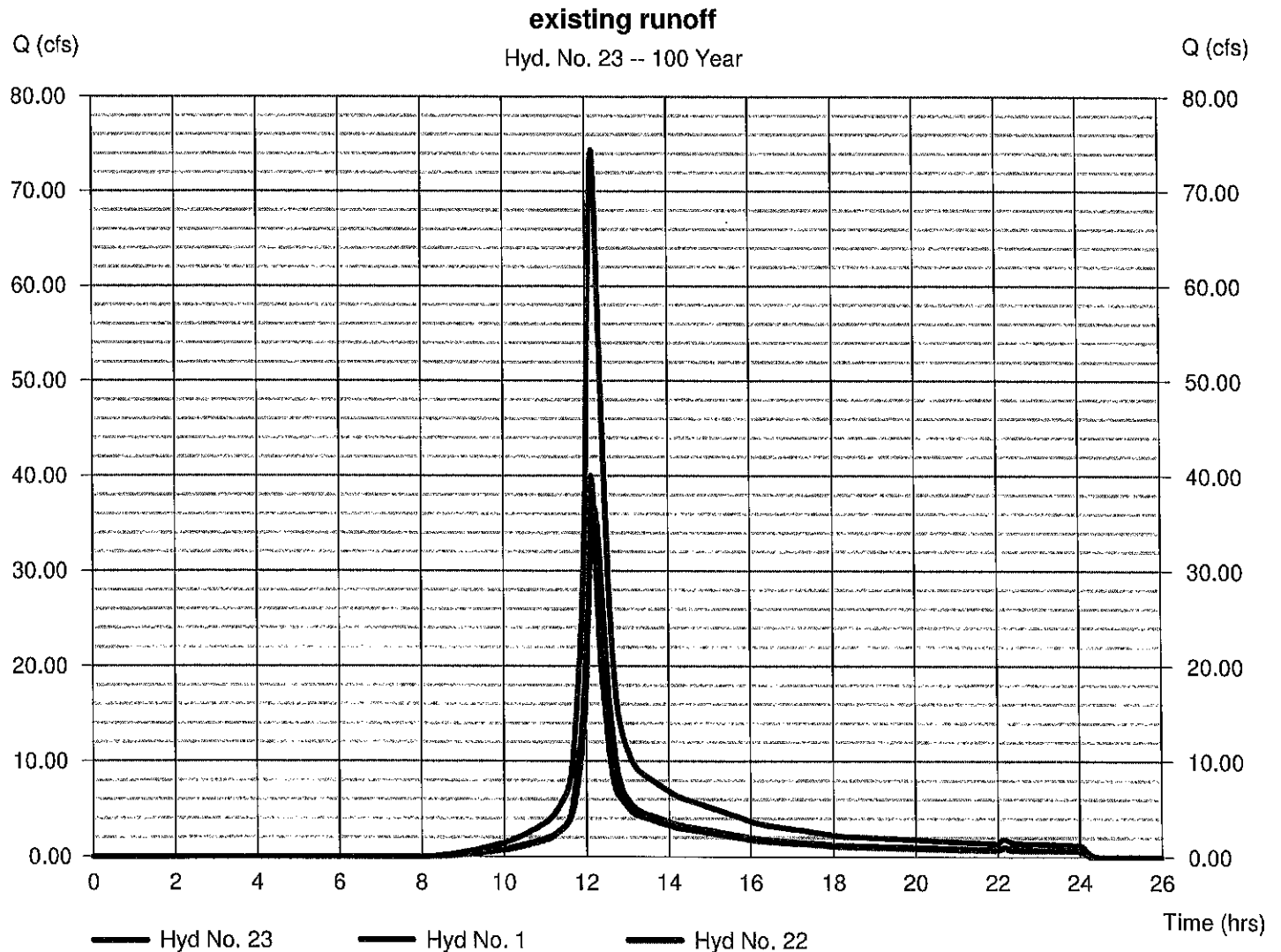
Sunday, Apr 25, 2021

Hyd. No. 23

existing runoff

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyds. = 1, 22

Peak discharge = 74.34 cfs
 Time to peak = 12.18 hrs
 Hyd. volume = 311,841 cuft
 Contrib. drain. area = 10.300 ac



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.02

Sunday, Apr 25, 2021

Hyd. No. 24

PROPOSED RUNOFF

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyds. = 20, 21

Peak discharge = 75.03 cfs
 Time to peak = 12.15 hrs
 Hyd. volume = 315,018 cuft
 Contrib. drain. area = 0.000 ac

