Appendix G

Pre-Development Stormwater Analysis

Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	------	21.28	-------	-------	-------	72.28	106.33	-------	178.51	Ex WS A
2	SCS Runoff	------	1.329	-------	-------	-------	8.484	14.01	-------	26.39	Ex WS B
3	SCS Runoff	------	0.994	-------	-------	-------	4.705	7.385	-------	13.26	Ex WS C
4	SCS Runoff	------	2.901	-------	-------	-------	6.100	7.963	-------	11.64	Ex WS D

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

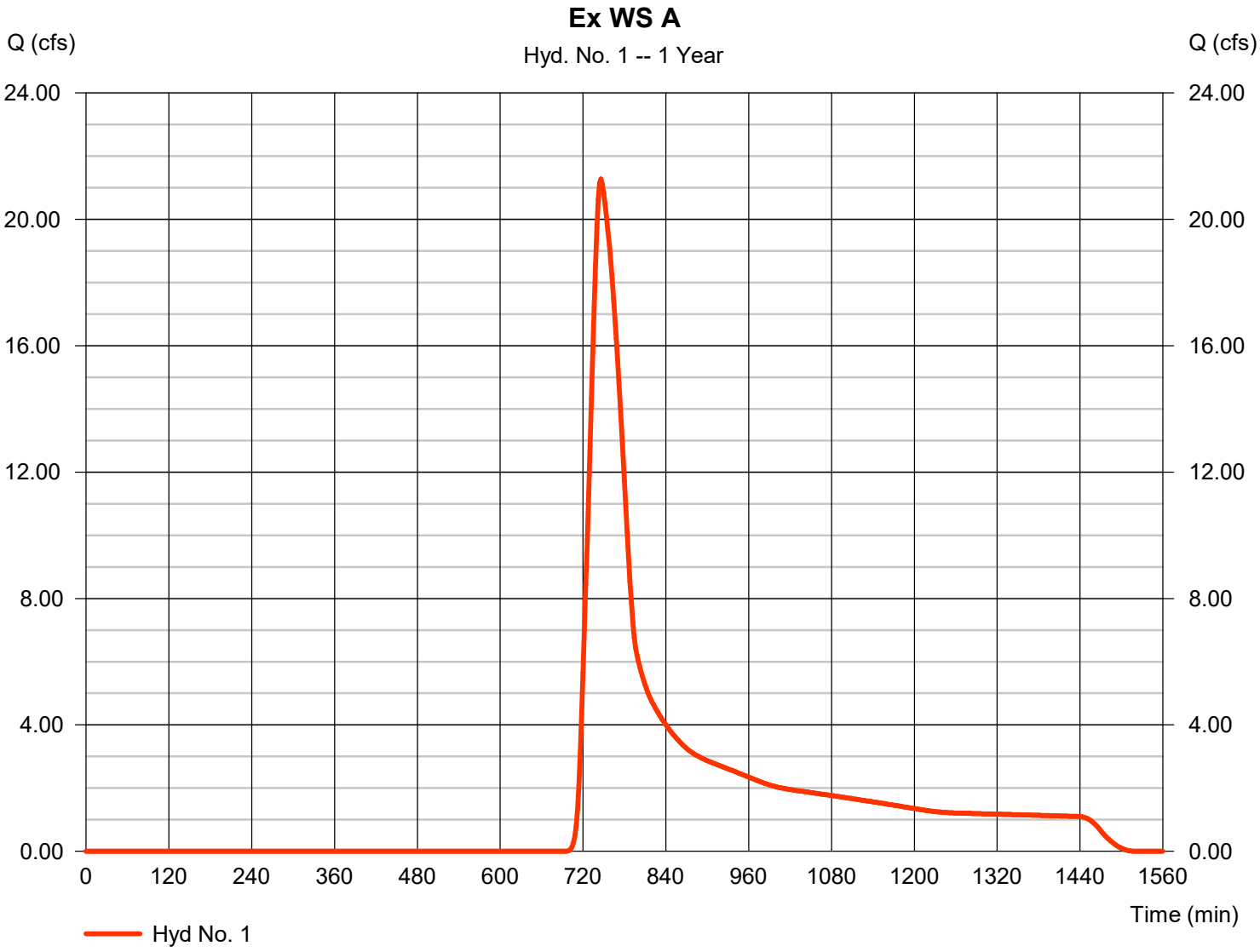
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	21.28	2	746	147,872	------	------	------	Ex WS A
2	SCS Runoff	1.329	2	736	9,986	------	------	------	Ex WS B
3	SCS Runoff	0.994	2	738	6,819	------	------	------	Ex WS C
4	SCS Runoff	2.901	2	722	8,133	------	------	------	Ex WS D

Hydrograph Report

Hyd. No. 1

Ex WS A

Hydrograph type	= SCS Runoff	Peak discharge	= 21.28 cfs
Storm frequency	= 1 yrs	Time to peak	= 746 min
Time interval	= 2 min	Hyd. volume	= 147,872 cuft
Drainage area	= 88.760 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 50.00 min
Total precip.	= 2.02 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

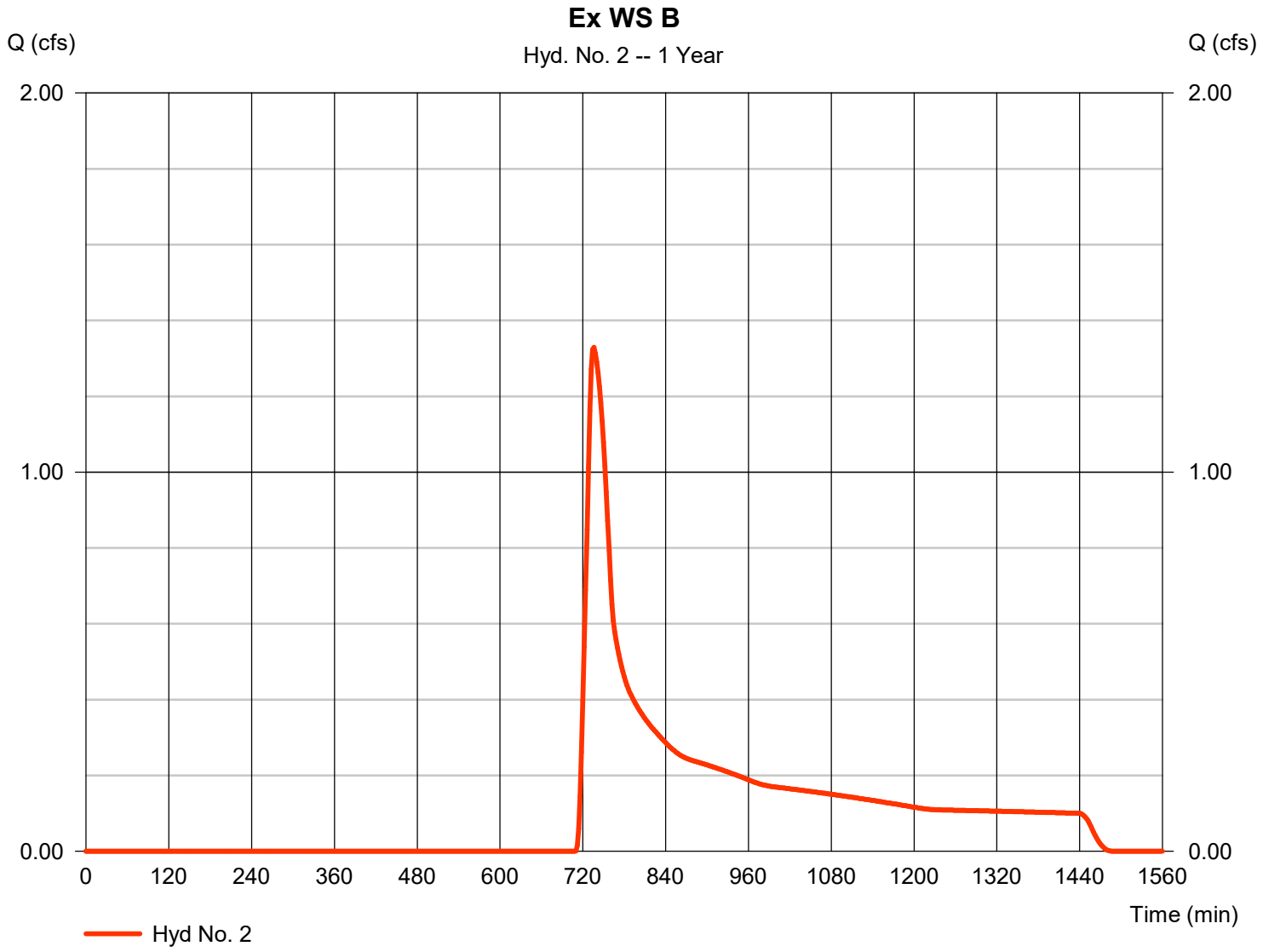


Hydrograph Report

Hyd. No. 2

Ex WS B

Hydrograph type	= SCS Runoff	Peak discharge	= 1.329 cfs
Storm frequency	= 1 yrs	Time to peak	= 736 min
Time interval	= 2 min	Hyd. volume	= 9,986 cuft
Drainage area	= 12.290 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 27.00 min
Total precip.	= 2.02 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

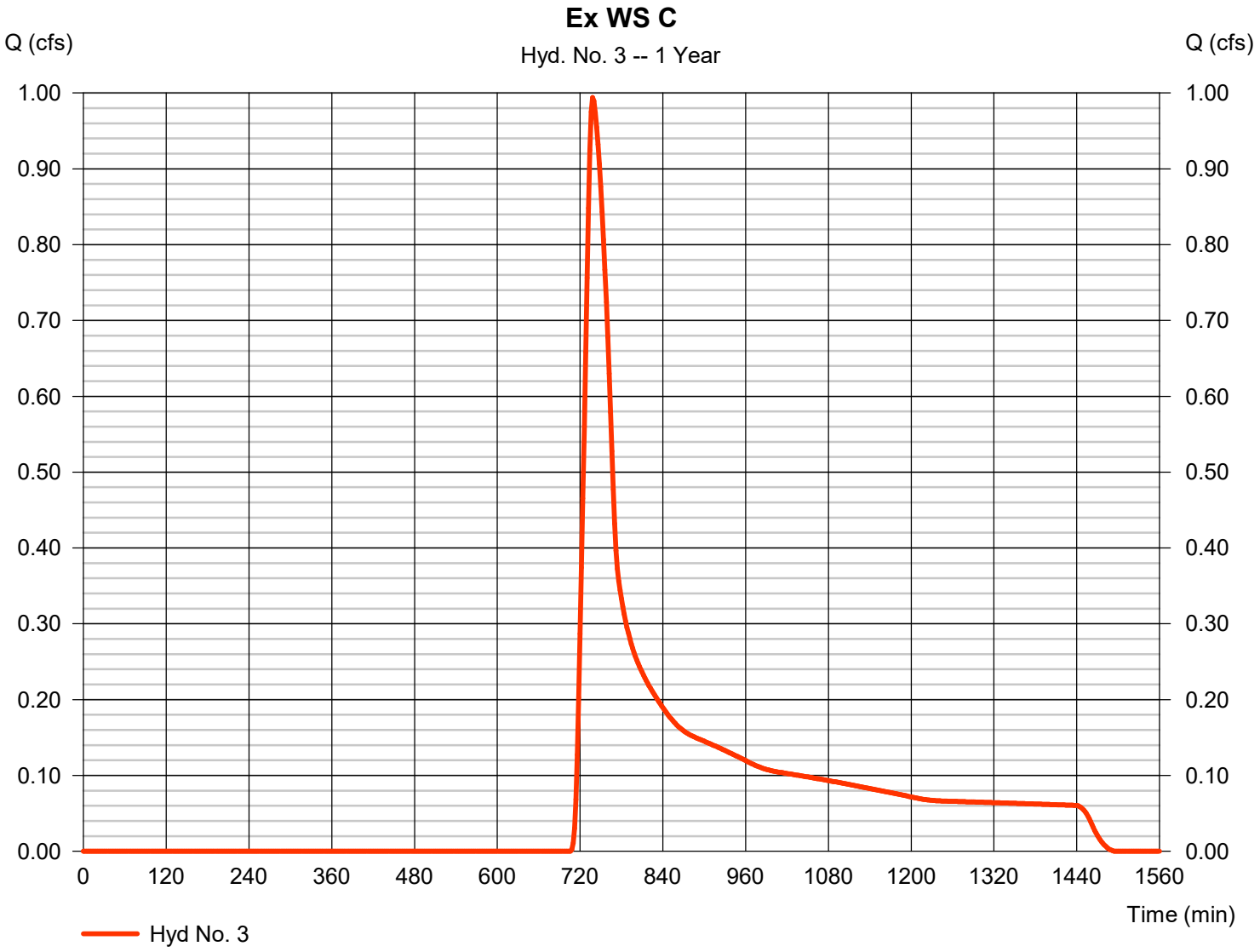


Hydrograph Report

Hyd. No. 3

Ex WS C

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.994 cfs
Storm frequency	=	1 yrs	Time to peak	=	738 min
Time interval	=	2 min	Hyd. volume	=	6,819 cuft
Drainage area	=	6.320 ac	Curve number	=	72
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	34.00 min
Total precip.	=	2.02 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

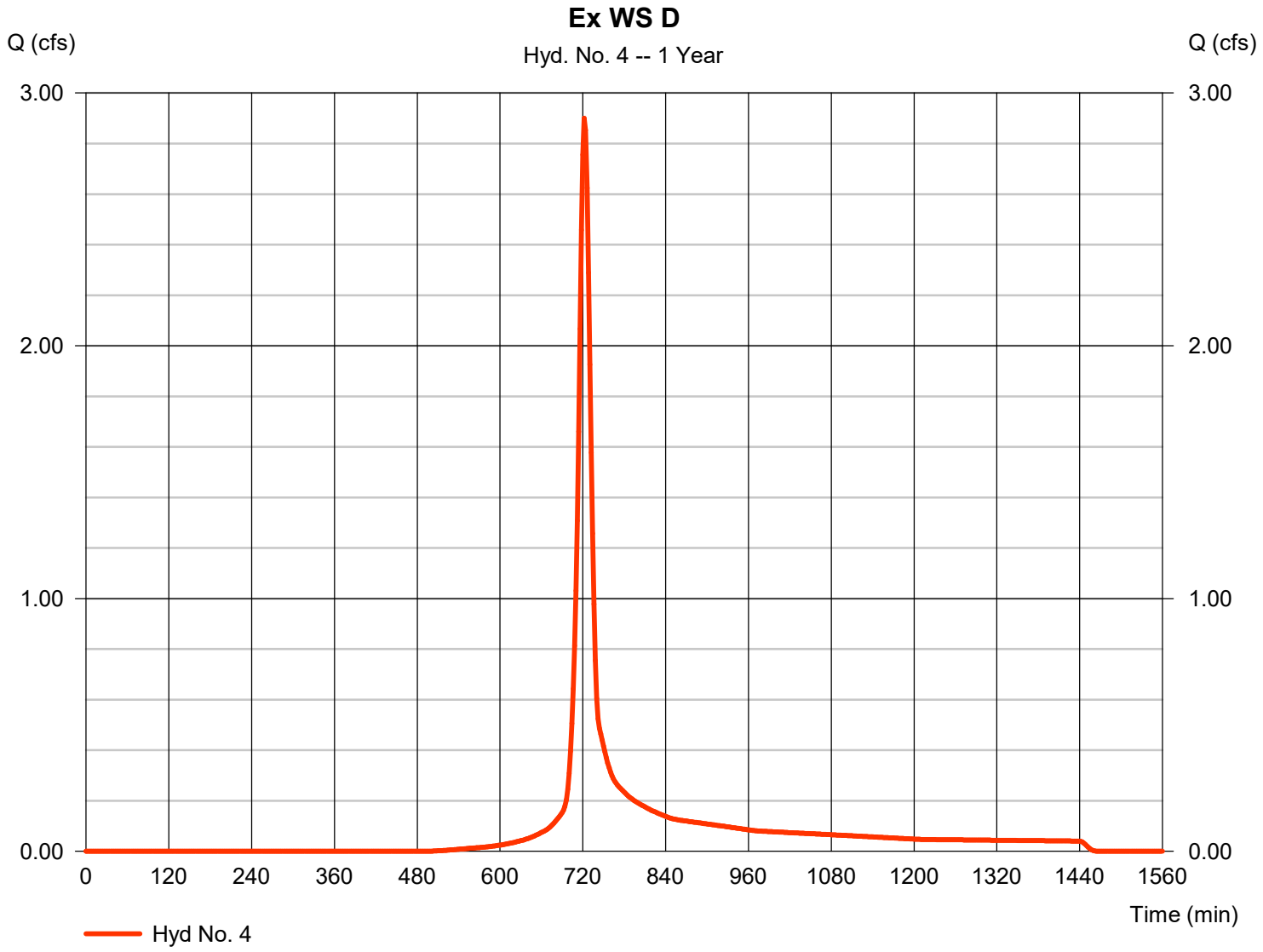


Hydrograph Report

Hyd. No. 4

Ex WS D

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.901 cfs
Storm frequency	=	1 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	8,133 cuft
Drainage area	=	2.200 ac	Curve number	=	89
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	15.00 min
Total precip.	=	2.02 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

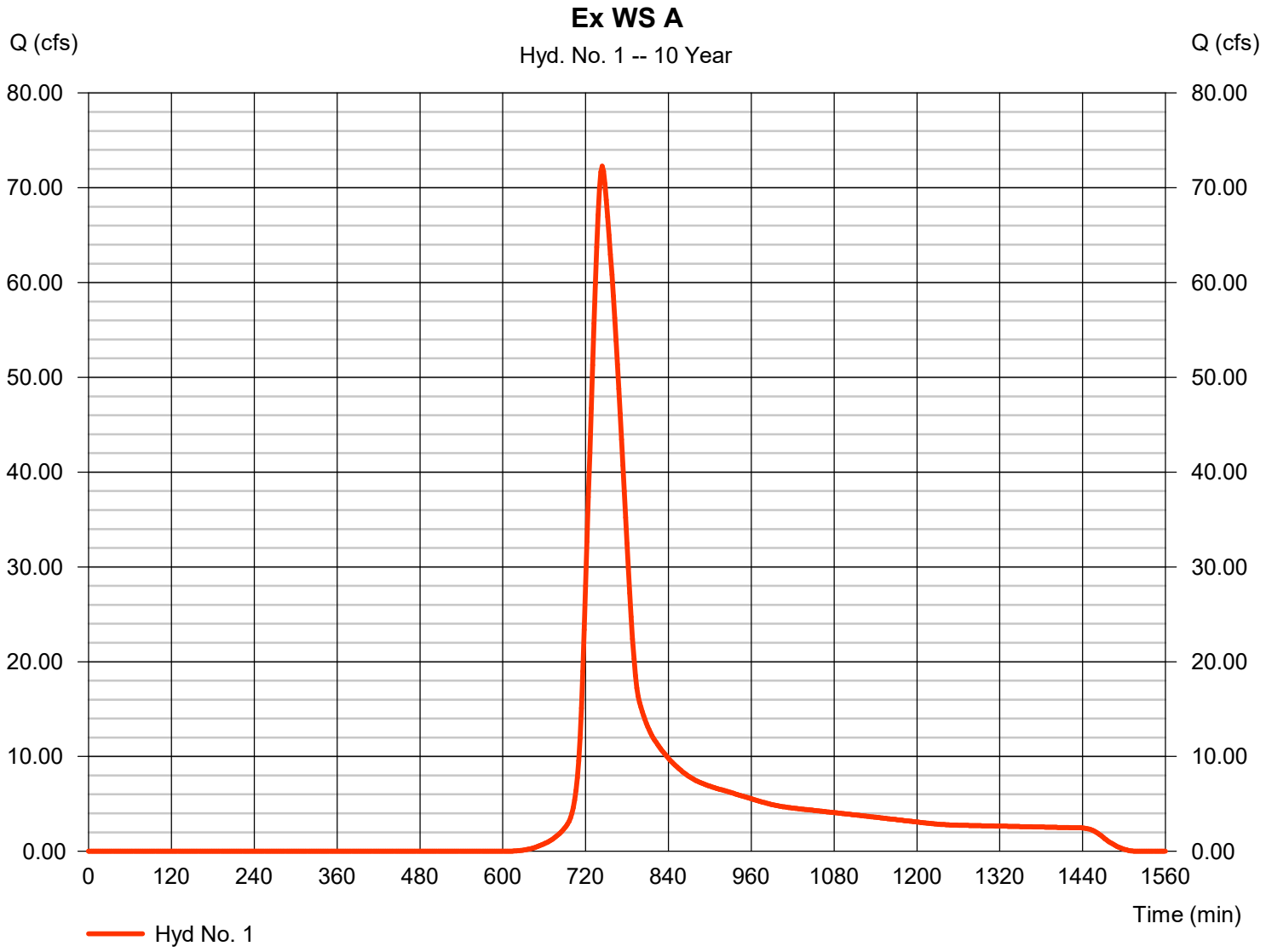
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	72.28	2	744	425,331	------	------	------	Ex WS A
2	SCS Runoff	8.484	2	732	38,608	------	------	------	Ex WS B
3	SCS Runoff	4.705	2	736	23,226	------	------	------	Ex WS C
4	SCS Runoff	6.100	2	722	17,277	------	------	------	Ex WS D

Hydrograph Report

Hyd. No. 1

Ex WS A

Hydrograph type	=	SCS Runoff	Peak discharge	=	72.28 cfs
Storm frequency	=	10 yrs	Time to peak	=	744 min
Time interval	=	2 min	Hyd. volume	=	425,331 cuft
Drainage area	=	88.760 ac	Curve number	=	77
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	50.00 min
Total precip.	=	3.35 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

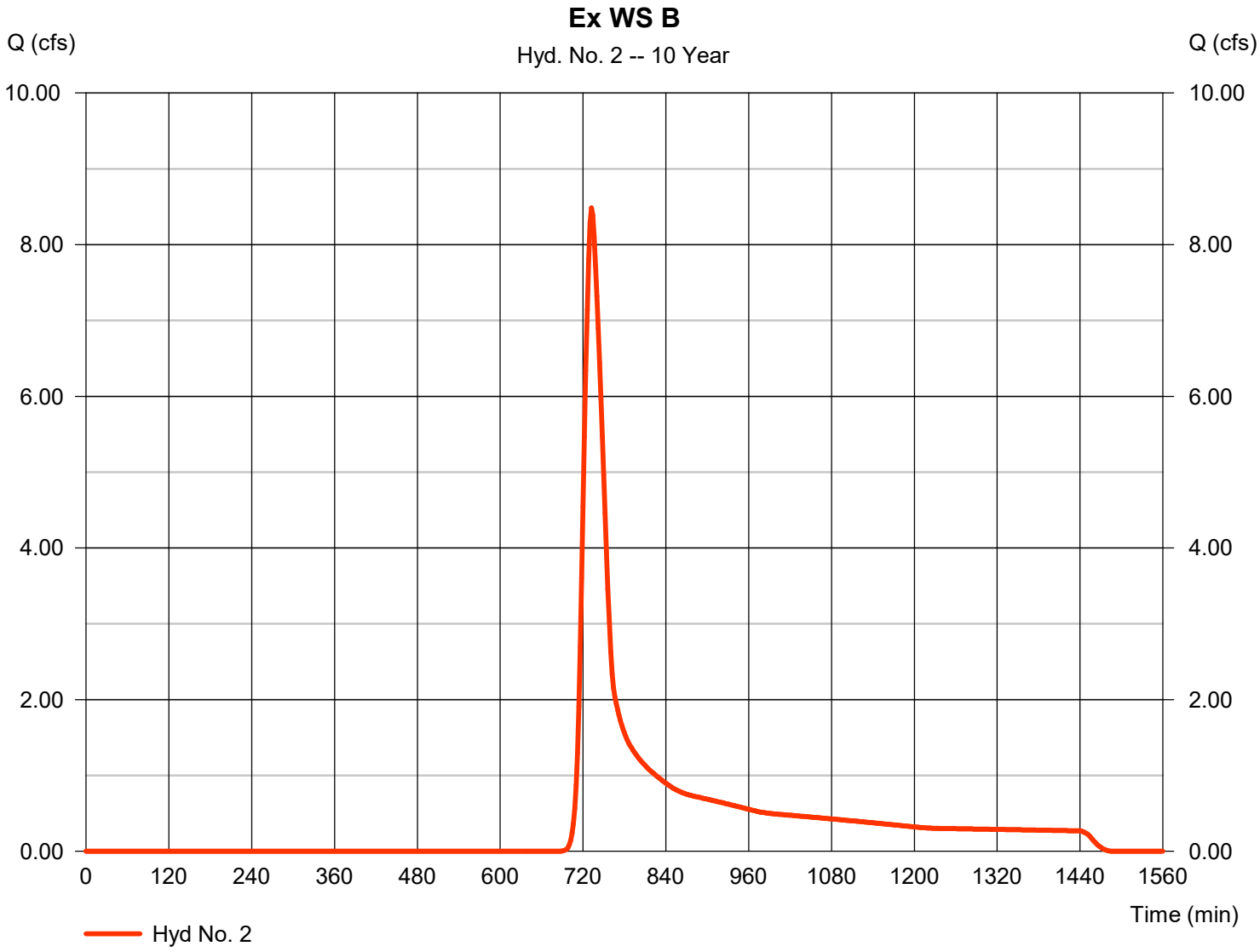


Hydrograph Report

Hyd. No. 2

Ex WS B

Hydrograph type	=	SCS Runoff	Peak discharge	=	8.484 cfs
Storm frequency	=	10 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	38,608 cuft
Drainage area	=	12.290 ac	Curve number	=	69
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	27.00 min
Total precip.	=	3.35 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

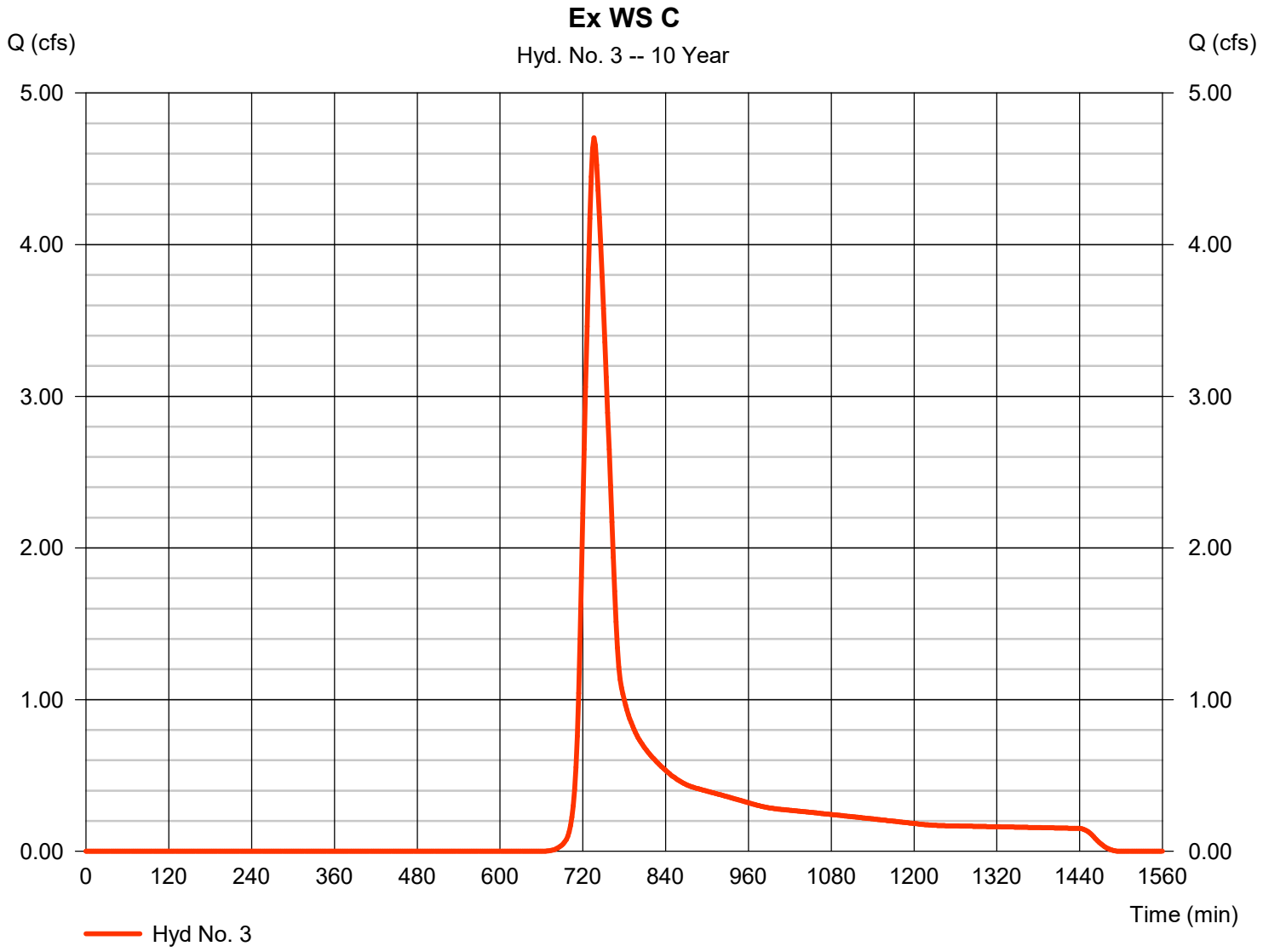


Hydrograph Report

Hyd. No. 3

Ex WS C

Hydrograph type	=	SCS Runoff	Peak discharge	=	4.705 cfs
Storm frequency	=	10 yrs	Time to peak	=	736 min
Time interval	=	2 min	Hyd. volume	=	23,226 cuft
Drainage area	=	6.320 ac	Curve number	=	72
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	34.00 min
Total precip.	=	3.35 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

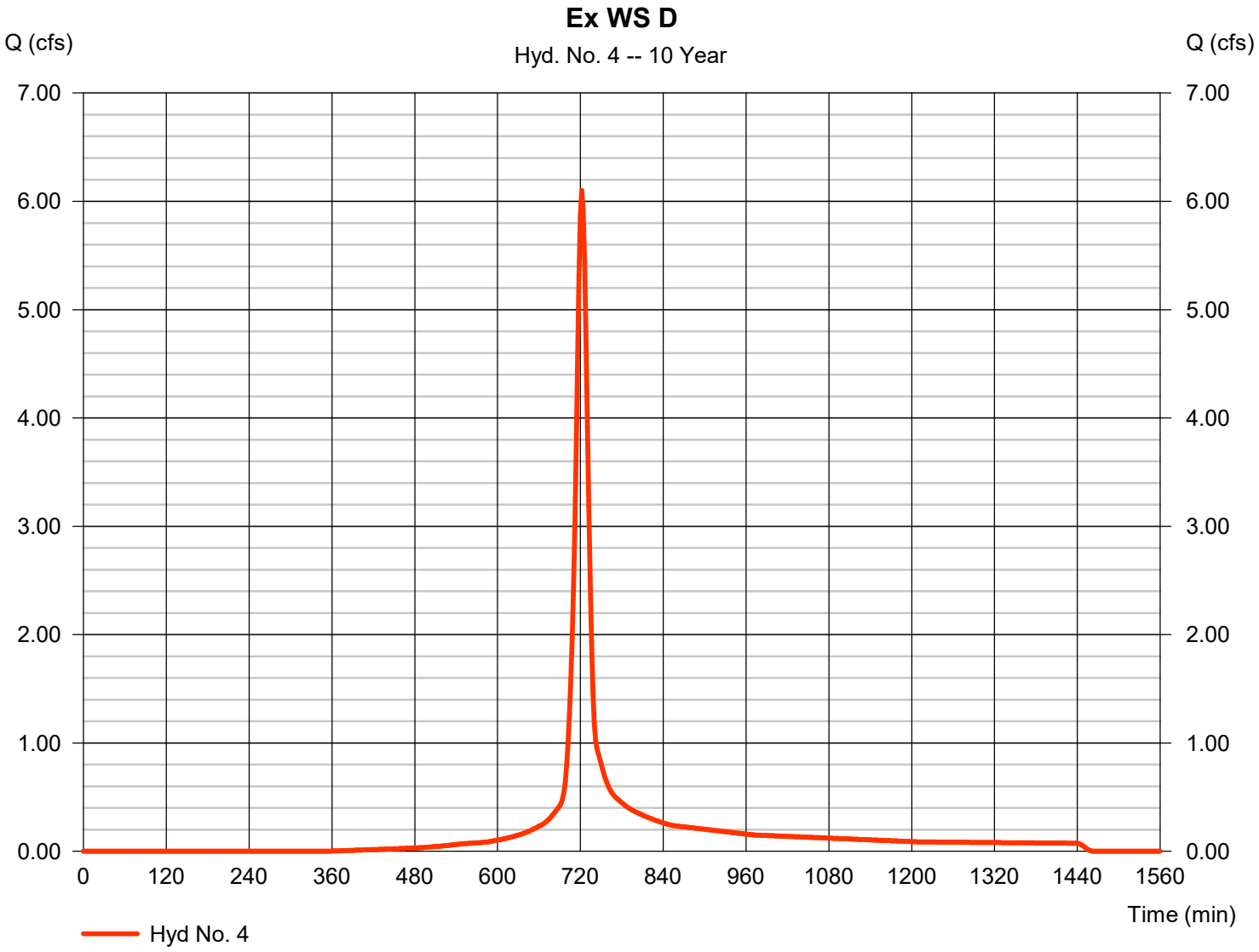


Hydrograph Report

Hyd. No. 4

Ex WS D

Hydrograph type	=	SCS Runoff	Peak discharge	=	6.100 cfs
Storm frequency	=	10 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	17,277 cuft
Drainage area	=	2.200 ac	Curve number	=	89
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	15.00 min
Total precip.	=	3.35 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

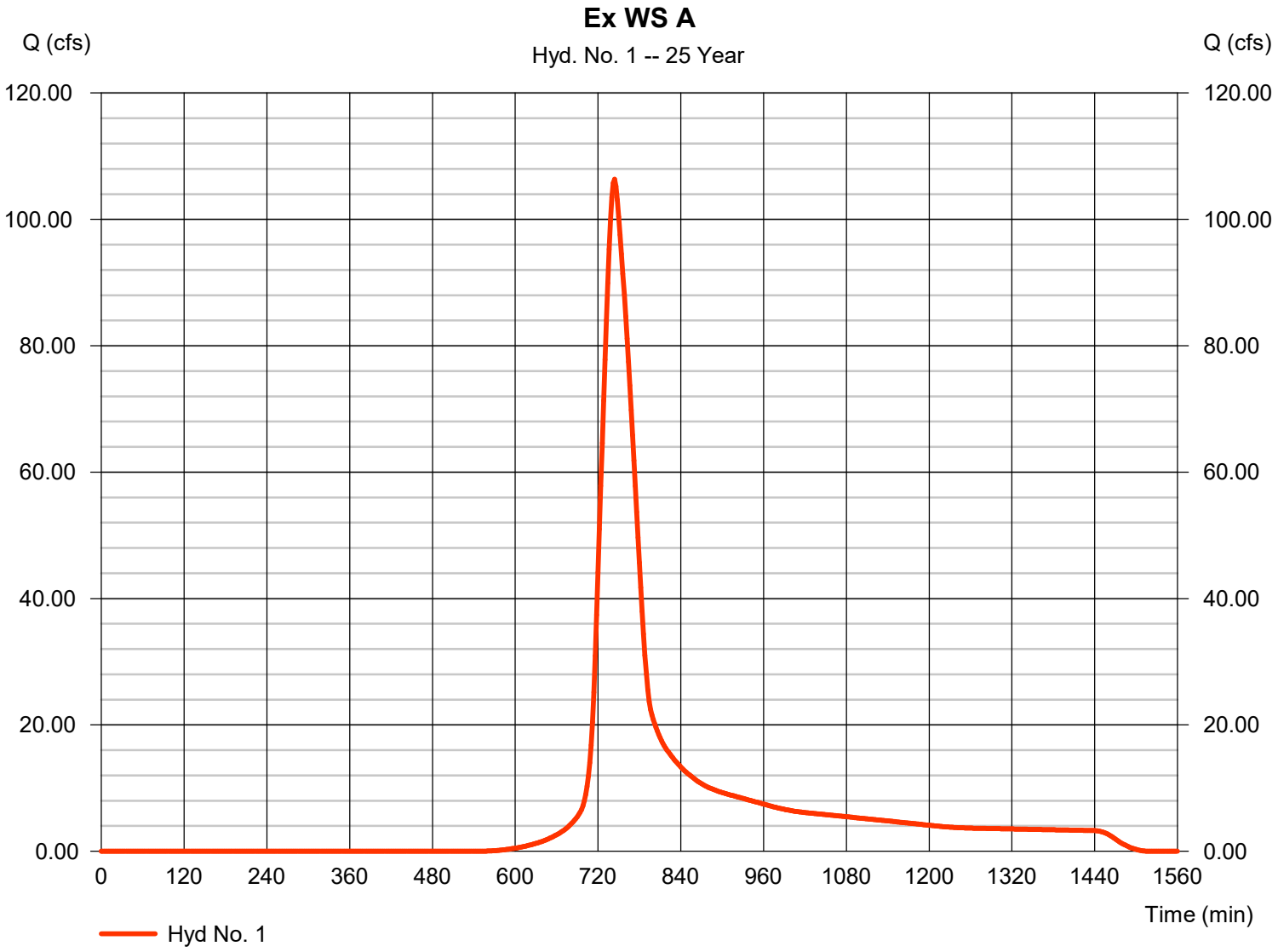
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	106.33	2	744	611,636	------	------	------	Ex WS A
2	SCS Runoff	14.01	2	732	59,722	------	------	------	Ex WS B
3	SCS Runoff	7.385	2	736	34,876	------	------	------	Ex WS C
4	SCS Runoff	7.963	2	722	22,786	------	------	------	Ex WS D

Hydrograph Report

Hyd. No. 1

Ex WS A

Hydrograph type	=	SCS Runoff	Peak discharge	=	106.33 cfs
Storm frequency	=	25 yrs	Time to peak	=	744 min
Time interval	=	2 min	Hyd. volume	=	611,636 cuft
Drainage area	=	88.760 ac	Curve number	=	77
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	50.00 min
Total precip.	=	4.11 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

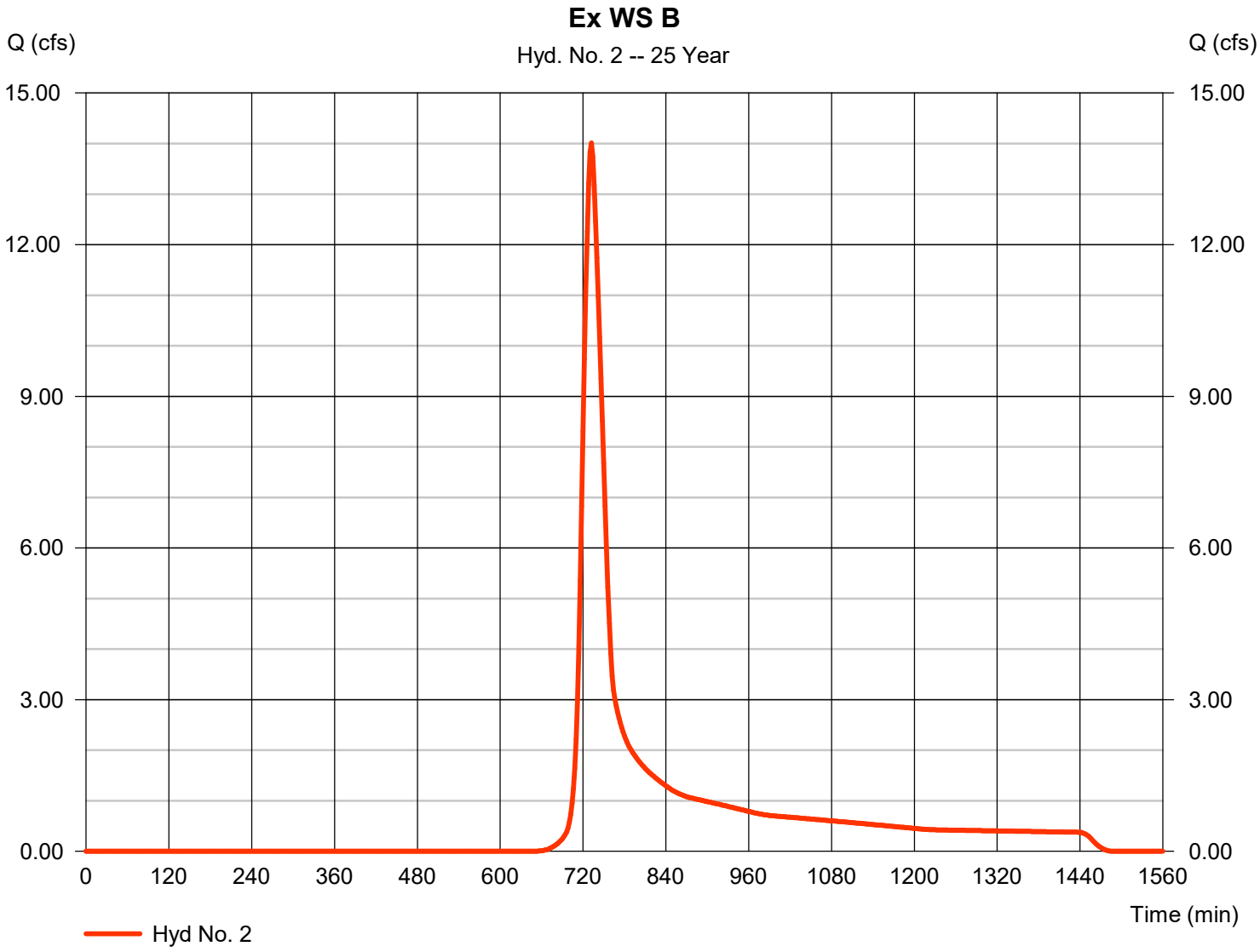


Hydrograph Report

Hyd. No. 2

Ex WS B

Hydrograph type	=	SCS Runoff	Peak discharge	=	14.01 cfs
Storm frequency	=	25 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	59,722 cuft
Drainage area	=	12.290 ac	Curve number	=	69
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	27.00 min
Total precip.	=	4.11 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

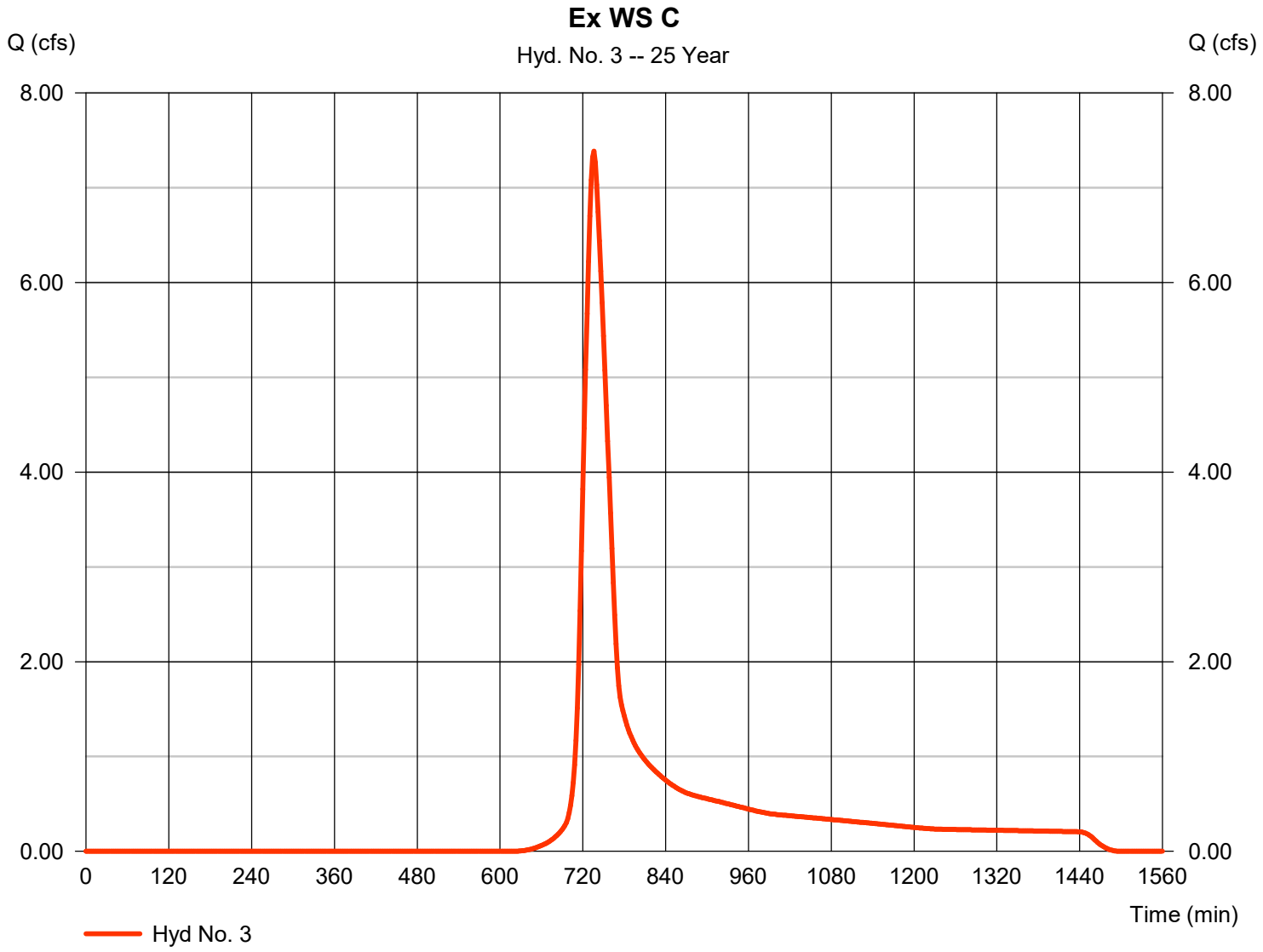


Hydrograph Report

Hyd. No. 3

Ex WS C

Hydrograph type	= SCS Runoff	Peak discharge	= 7.385 cfs
Storm frequency	= 25 yrs	Time to peak	= 736 min
Time interval	= 2 min	Hyd. volume	= 34,876 cuft
Drainage area	= 6.320 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 34.00 min
Total precip.	= 4.11 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

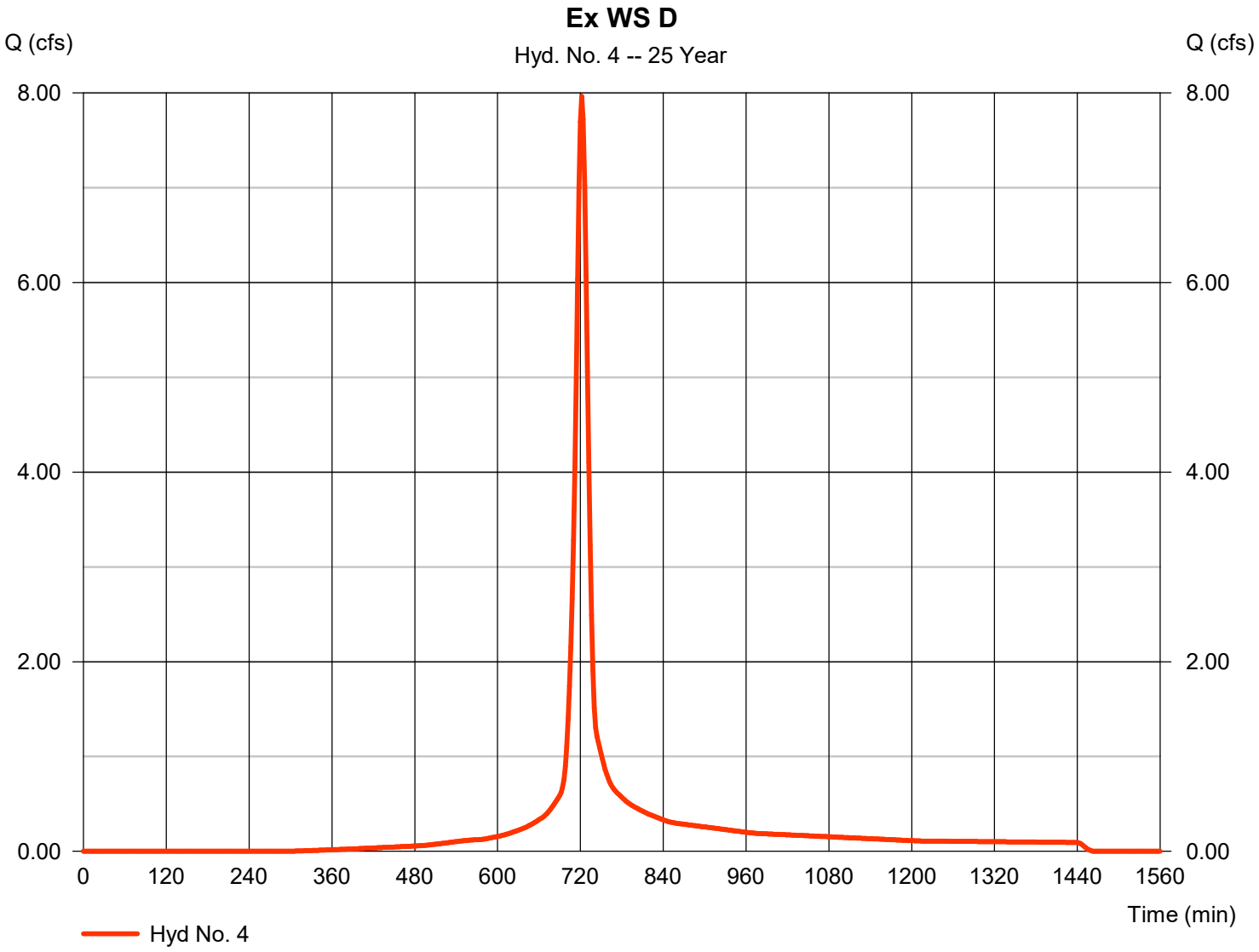


Hydrograph Report

Hyd. No. 4

Ex WS D

Hydrograph type	= SCS Runoff	Peak discharge	= 7.963 cfs
Storm frequency	= 25 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 22,786 cuft
Drainage area	= 2.200 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 4.11 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

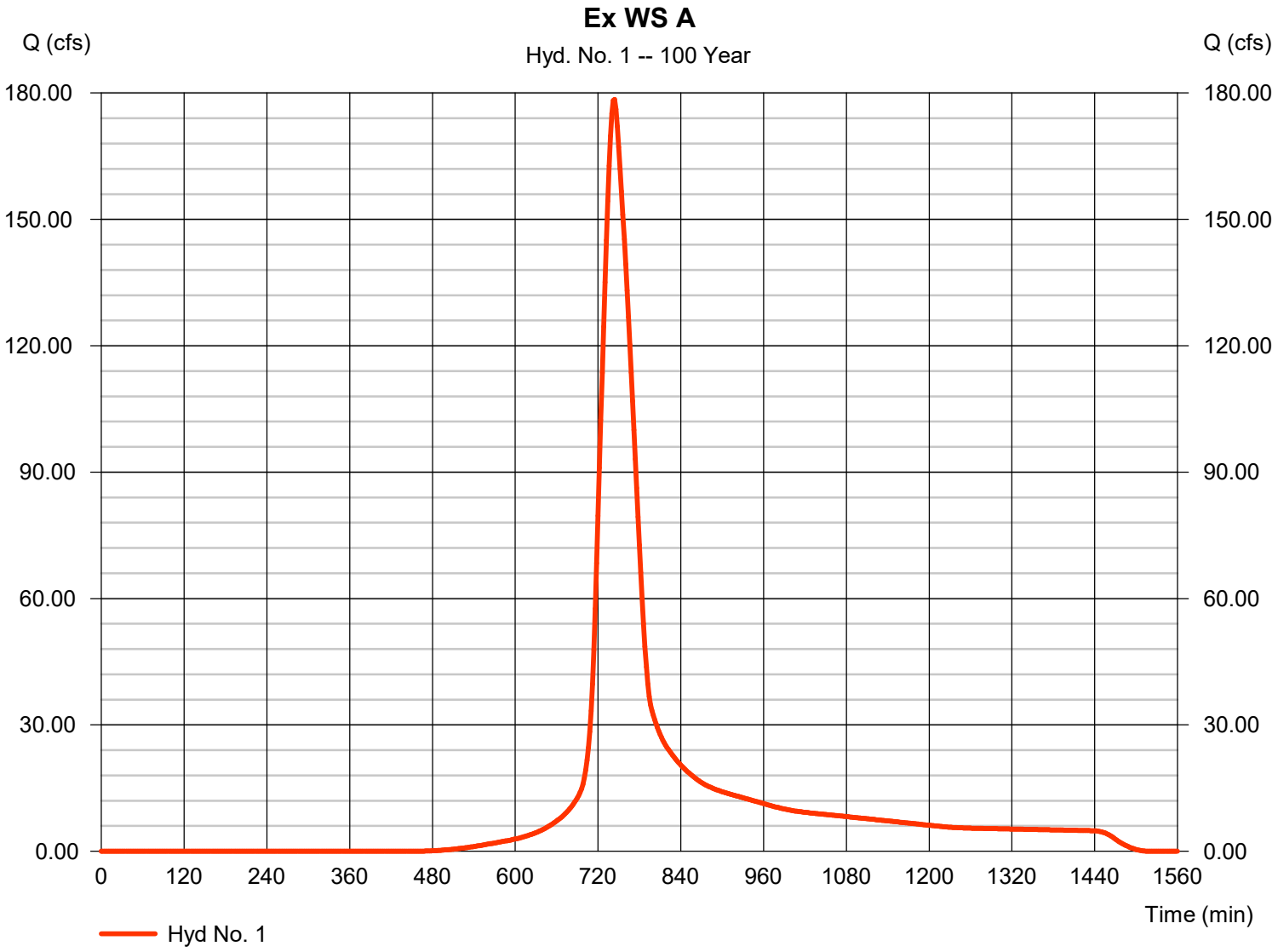
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	178.51	2	744	1,012,001	------	------	------	Ex WS A
2	SCS Runoff	26.39	2	732	107,592	------	------	------	Ex WS B
3	SCS Runoff	13.26	2	736	60,727	------	------	------	Ex WS C
4	SCS Runoff	11.64	2	722	33,936	------	------	------	Ex WS D

Hydrograph Report

Hyd. No. 1

Ex WS A

Hydrograph type	=	SCS Runoff	Peak discharge	=	178.51 cfs
Storm frequency	=	100 yrs	Time to peak	=	744 min
Time interval	=	2 min	Hyd. volume	=	1,012,001 cuft
Drainage area	=	88.760 ac	Curve number	=	77
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	50.00 min
Total precip.	=	5.61 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

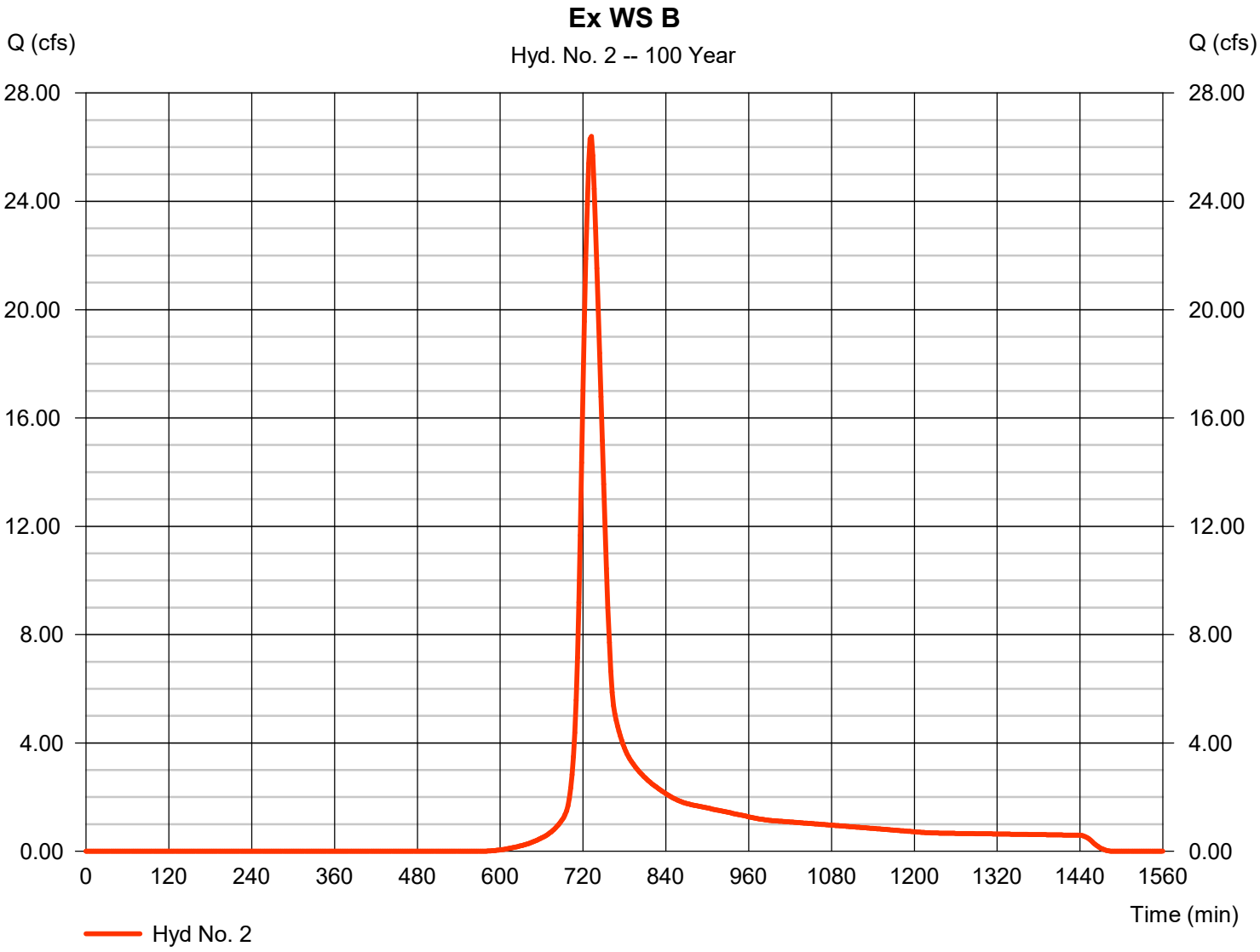


Hydrograph Report

Hyd. No. 2

Ex WS B

Hydrograph type	=	SCS Runoff	Peak discharge	=	26.39 cfs
Storm frequency	=	100 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	107,592 cuft
Drainage area	=	12.290 ac	Curve number	=	69
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	27.00 min
Total precip.	=	5.61 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

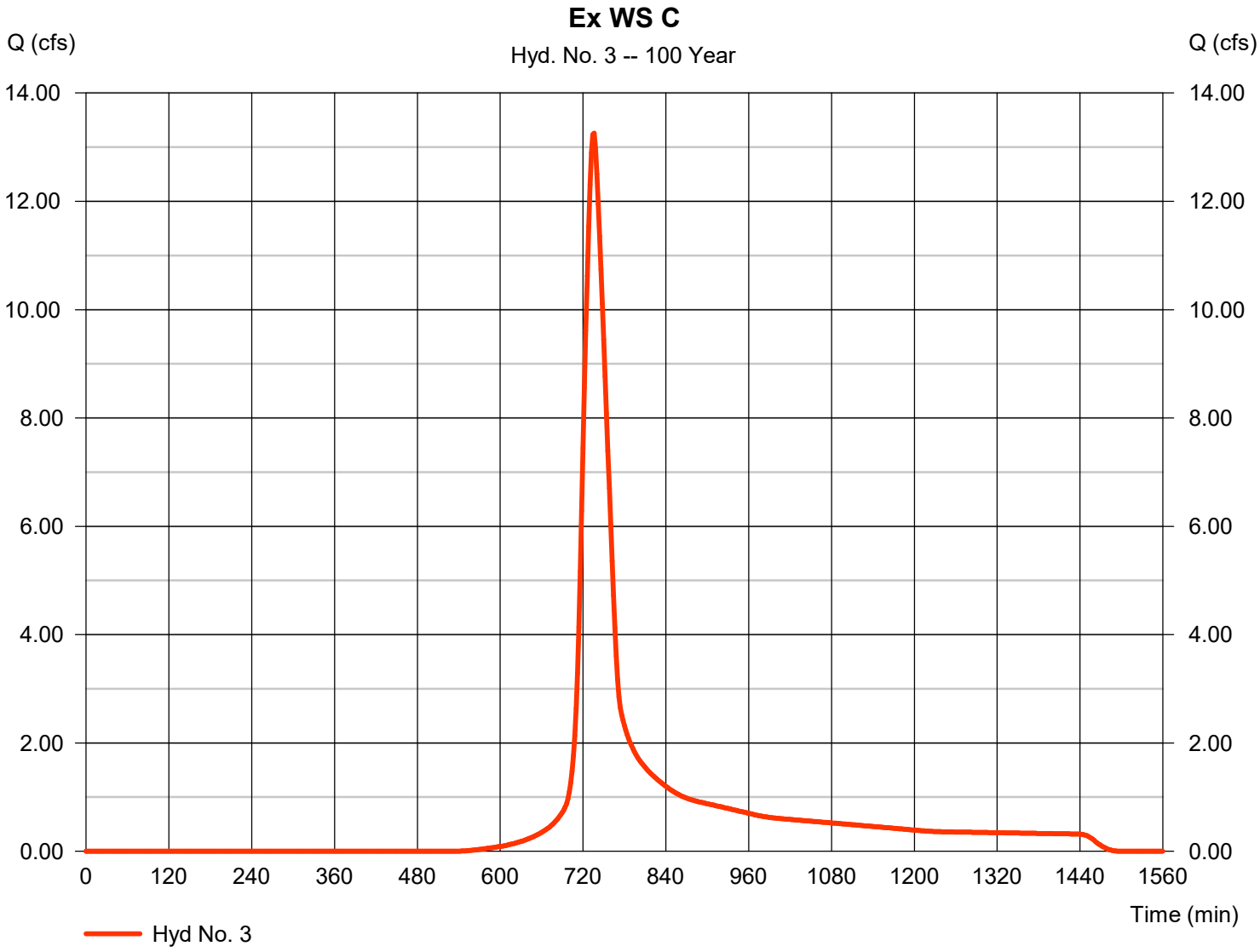


Hydrograph Report

Hyd. No. 3

Ex WS C

Hydrograph type	= SCS Runoff	Peak discharge	= 13.26 cfs
Storm frequency	= 100 yrs	Time to peak	= 736 min
Time interval	= 2 min	Hyd. volume	= 60,727 cuft
Drainage area	= 6.320 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 34.00 min
Total precip.	= 5.61 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

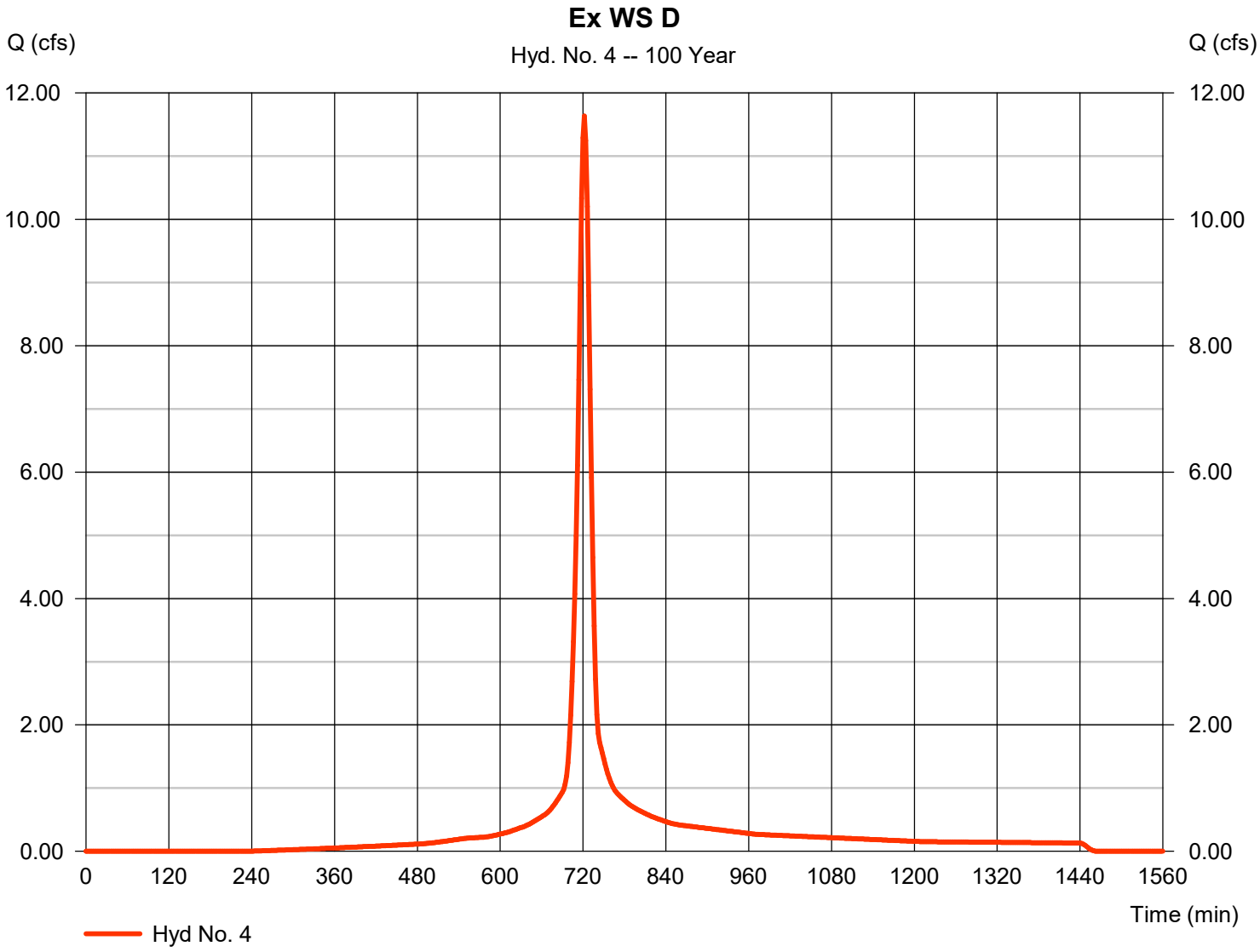


Hydrograph Report

Hyd. No. 4

Ex WS D

Hydrograph type	=	SCS Runoff	Peak discharge	=	11.64 cfs
Storm frequency	=	100 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	33,936 cuft
Drainage area	=	2.200 ac	Curve number	=	89
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	15.00 min
Total precip.	=	5.61 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Appendix H

Post-Development Stormwater Analysis

Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	------	26.28	-------	-------	-------	53.15	68.61	-------	98.93	Pr WS A1
2	Diversion1	1	17.25	-------	-------	-------	17.25	17.25	-------	17.25	A1 to Bio #1
3	Diversion2	1	9.034	-------	-------	-------	35.90	51.36	-------	81.68	A1 to Detention
5	SCS Runoff	------	55.61	-------	-------	-------	102.44	128.93	-------	180.71	Pr WS A2
6	Diversion1	5	38.56	-------	-------	-------	38.56	38.56	-------	38.56	A2 to Bio #2
7	Diversion2	5	17.05	-------	-------	-------	63.88	90.37	-------	142.15	A2 to Detention
9	SCS Runoff	------	18.24	-------	-------	-------	37.08	47.94	-------	69.26	Pr WS A3
10	Diversion1	9	18.24	-------	-------	-------	21.66	21.66	-------	21.66	A3 to Bio #3
11	Diversion2	9	0.000	-------	-------	-------	15.42	26.28	-------	47.60	A3 to Detention
13	SCS Runoff	------	9.026	-------	-------	-------	23.15	32.00	-------	50.01	Pr WS A4
14	Diversion1	13	9.026	-------	-------	-------	17.25	17.25	-------	17.25	A4 to Bio #4
15	Diversion2	13	0.000	-------	-------	-------	5.904	14.75	-------	32.76	A4 to Detention
17	SCS Runoff	------	2.122	-------	-------	-------	7.094	10.38	-------	17.39	Pr WS A5
18	Reach	17	2.129	-------	-------	-------	7.104	10.44	-------	17.48	PR Reach A5
19	SCS Runoff	------	2.217	-------	-------	-------	6.950	10.07	-------	16.64	Pr WS A6
20	Combine	18, 19	4.259	-------	-------	-------	13.84	20.22	-------	33.67	Combine
21	Reach	20	4.240	-------	-------	-------	13.85	20.25	-------	33.73	PR Reach A6
22	SCS Runoff	------	0.971	-------	-------	-------	6.203	10.20	-------	19.13	Pr WS A7
24	Reservoir	2	3.078	-------	-------	-------	11.87	14.45	-------	15.94	Bio A1
25	Reservoir	6	13.33	-------	-------	-------	25.88	27.14	-------	27.90	Bio A2
26	Reservoir	10	0.936	-------	-------	-------	8.284	12.43	-------	17.25	Bio A3
27	Reservoir	14	1.279	-------	-------	-------	13.01	15.62	-------	16.86	Bio A4
29	Combine	3, 7, 11,	19.00	-------	-------	-------	102.56	152.20	-------	249.39	A1+A2+A3 Bypass
30	Combine	24, 25, 26,	16.68	-------	-------	-------	43.65	52.02	-------	60.05	A1+A2+A3 thru Bioretention
31	Combine	29, 30	22.91	-------	-------	-------	129.84	192.35	-------	303.21	A1 + A2 + A3
32	Reservoir	31	4.034	-------	-------	-------	35.25	74.67	-------	115.23	Wet Pond #1
34	Combine	15, 27,	1.279	-------	-------	-------	13.01	24.24	-------	47.03	A4
35	Reservoir	34	0.101	-------	-------	-------	2.367	7.742	-------	24.15	North Detention
37	Combine	21, 22, 32, 35,	5.208	-------	-------	-------	49.64	104.84	-------	167.43	Total WS A

Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
39	SCS Runoff	------	0.695	-------	-------	-------	5.777	9.983	-------	19.57	Pr WS B
40	SCS Runoff	------	0.994	-------	-------	-------	4.705	7.385	-------	13.26	Pr WS C
41	SCS Runoff	------	0.310	-------	-------	-------	0.913	1.307	-------	2.127	Pr WS D

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

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	26.28	2	716	53,276	------	------	------	Pr WS A1
2	Diversion1	17.25	2	712	50,023	1	------	------	A1 to Bio #1
3	Diversion2	9.034	2	716	3,253	1	------	------	A1 to Detention
5	SCS Runoff	55.61	2	722	158,709	------	------	------	Pr WS A2
6	Diversion1	38.56	2	716	149,610	5	------	------	A2 to Bio #2
7	Diversion2	17.05	2	722	9,099	5	------	------	A2 to Detention
9	SCS Runoff	18.24	2	718	41,784	------	------	------	Pr WS A3
10	Diversion1	18.24	2	718	41,784	9	------	------	A3 to Bio #3
11	Diversion2	0.000	2	n/a	0	9	------	------	A3 to Detention
13	SCS Runoff	9.026	2	736	43,143	------	------	------	Pr WS A4
14	Diversion1	9.026	2	736	43,143	13	------	------	A4 to Bio #4
15	Diversion2	0.000	2	n/a	0	13	------	------	A4 to Detention
17	SCS Runoff	2.122	2	732	10,162	------	------	------	Pr WS A5
18	Reach	2.129	2	734	10,160	17	------	------	PR Reach A5
19	SCS Runoff	2.217	2	730	9,352	------	------	------	Pr WS A6
20	Combine	4.259	2	732	19,511	18, 19	------	------	Combine
21	Reach	4.240	2	734	19,511	20	------	------	PR Reach A6
22	SCS Runoff	0.971	2	732	6,646	------	------	------	Pr WS A7
24	Reservoir	3.078	2	738	47,727	2	405.89	23,516	Bio A1
25	Reservoir	13.33	2	738	140,421	6	401.89	73,290	Bio A2
26	Reservoir	0.936	2	798	40,720	10	409.04	25,021	Bio A3
27	Reservoir	1.279	2	804	43,088	14	403.32	21,817	Bio A4
29	Combine	19.00	2	718	12,352	3, 7, 11,	------	------	A1+A2+A3 Bypass
30	Combine	16.68	2	738	228,867	24, 25, 26,	------	------	A1+A2+A3 thru Bioretention
31	Combine	22.91	2	724	241,220	29, 30	------	------	A1 + A2 + A3
32	Reservoir	4.034	2	892	162,497	31	402.28	163,825	Wet Pond #1
34	Combine	1.279	2	804	43,088	15, 27,	------	------	A4
35	Reservoir	0.101	2	2638	7,320	34	402.83	37,545	North Detention
37	Combine	5.208	2	734	195,975	21, 22, 32, 35,	------	------	Total WS A

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

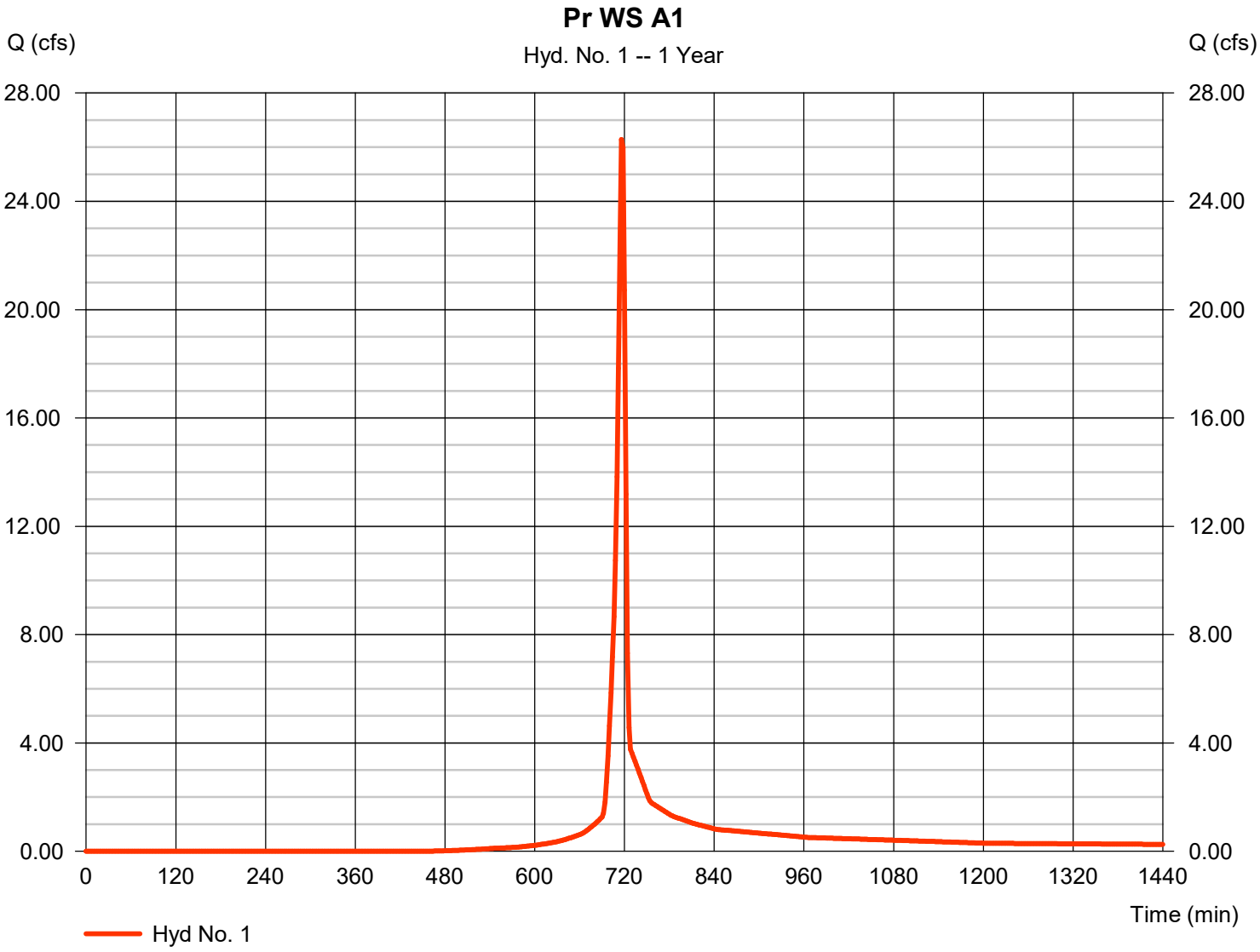
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
39	SCS Runoff	0.695	2	738	6,448	------	------	------	Pr WS B
40	SCS Runoff	0.994	2	738	6,819	------	------	------	Pr WS C
41	SCS Runoff	0.310	2	726	1,067	------	------	------	Pr WS D

Hydrograph Report

Hyd. No. 1

Pr WS A1

Hydrograph type	=	SCS Runoff	Peak discharge	=	26.28 cfs
Storm frequency	=	1 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	53,276 cuft
Drainage area	=	14.090 ac	Curve number	=	90
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.00 min
Total precip.	=	2.02 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

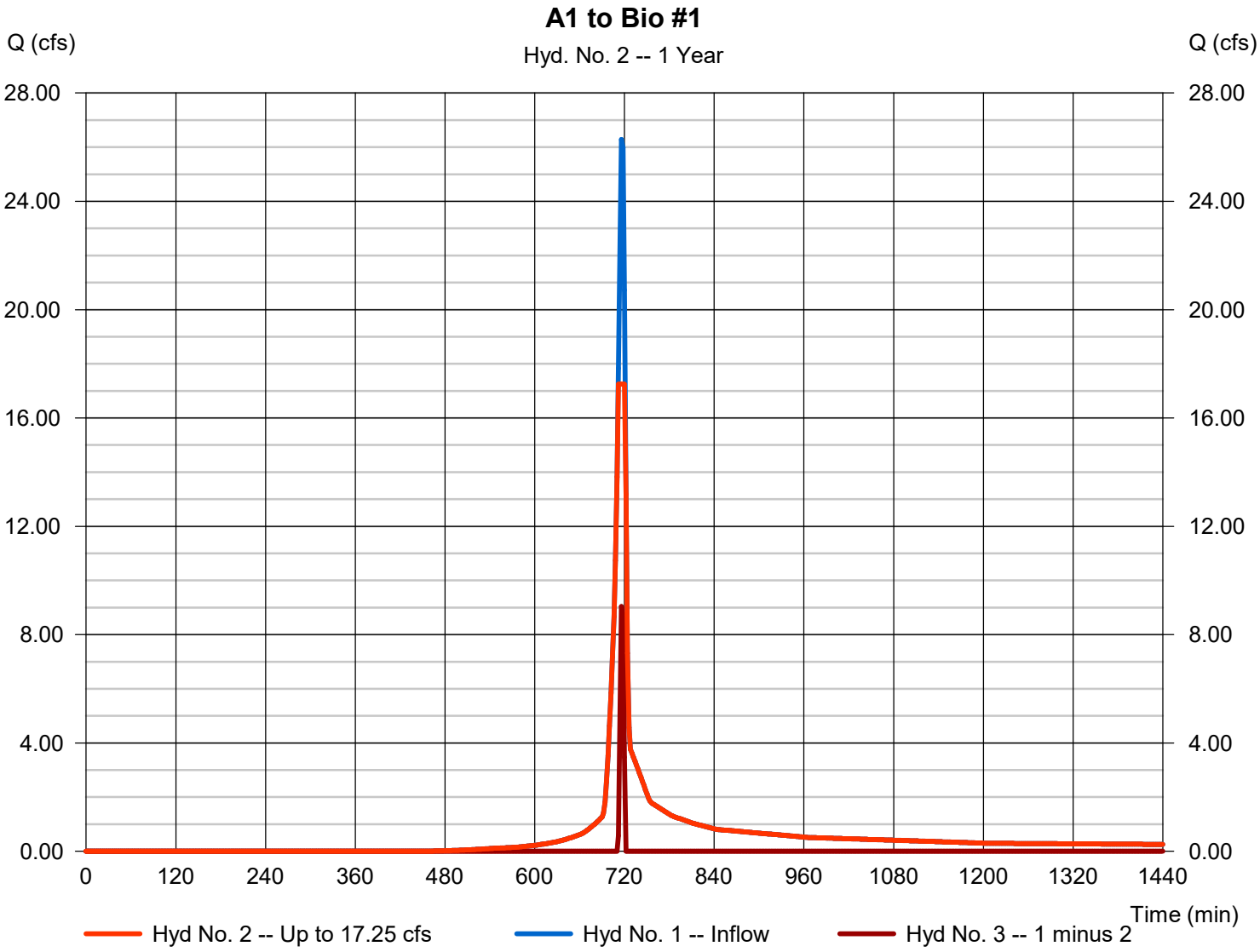


Hydrograph Report

Hyd. No. 2

A1 to Bio #1

Hydrograph type	= Diversion1	Peak discharge	= 17.25 cfs
Storm frequency	= 1 yrs	Time to peak	= 712 min
Time interval	= 2 min	Hyd. volume	= 50,023 cuft
Inflow hydrograph	= 1 - Pr WS A1	2nd diverted hyd.	= 3
Diversion method	= Constant Q	Constant Q	= 17.25 cfs

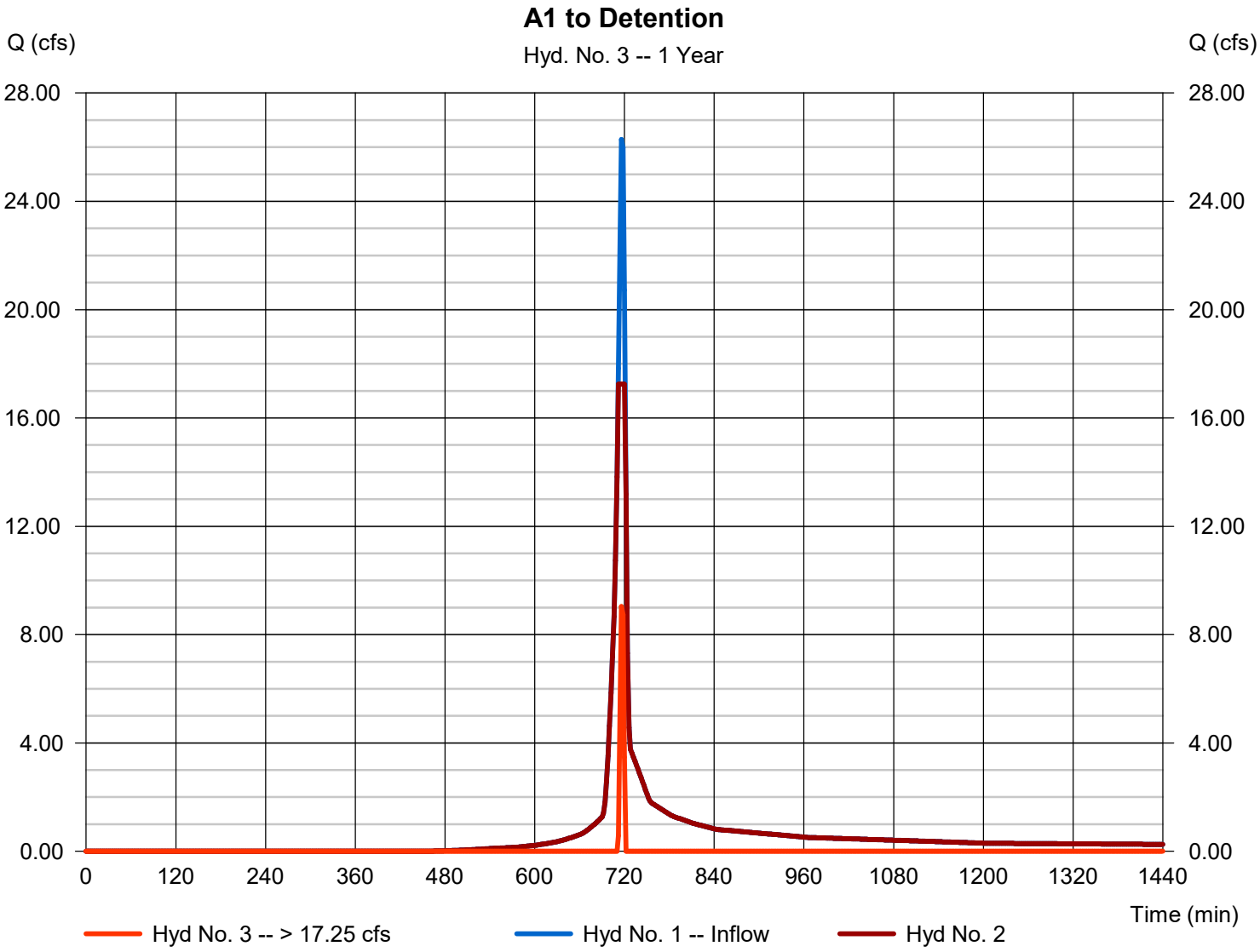


Hydrograph Report

Hyd. No. 3

A1 to Detention

Hydrograph type	= Diversion2	Peak discharge	= 9.034 cfs
Storm frequency	= 1 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 3,253 cuft
Inflow hydrograph	= 1 - Pr WS A1	2nd diverted hyd.	= 2
Diversion method	= Constant Q	Constant Q	= 17.25 cfs

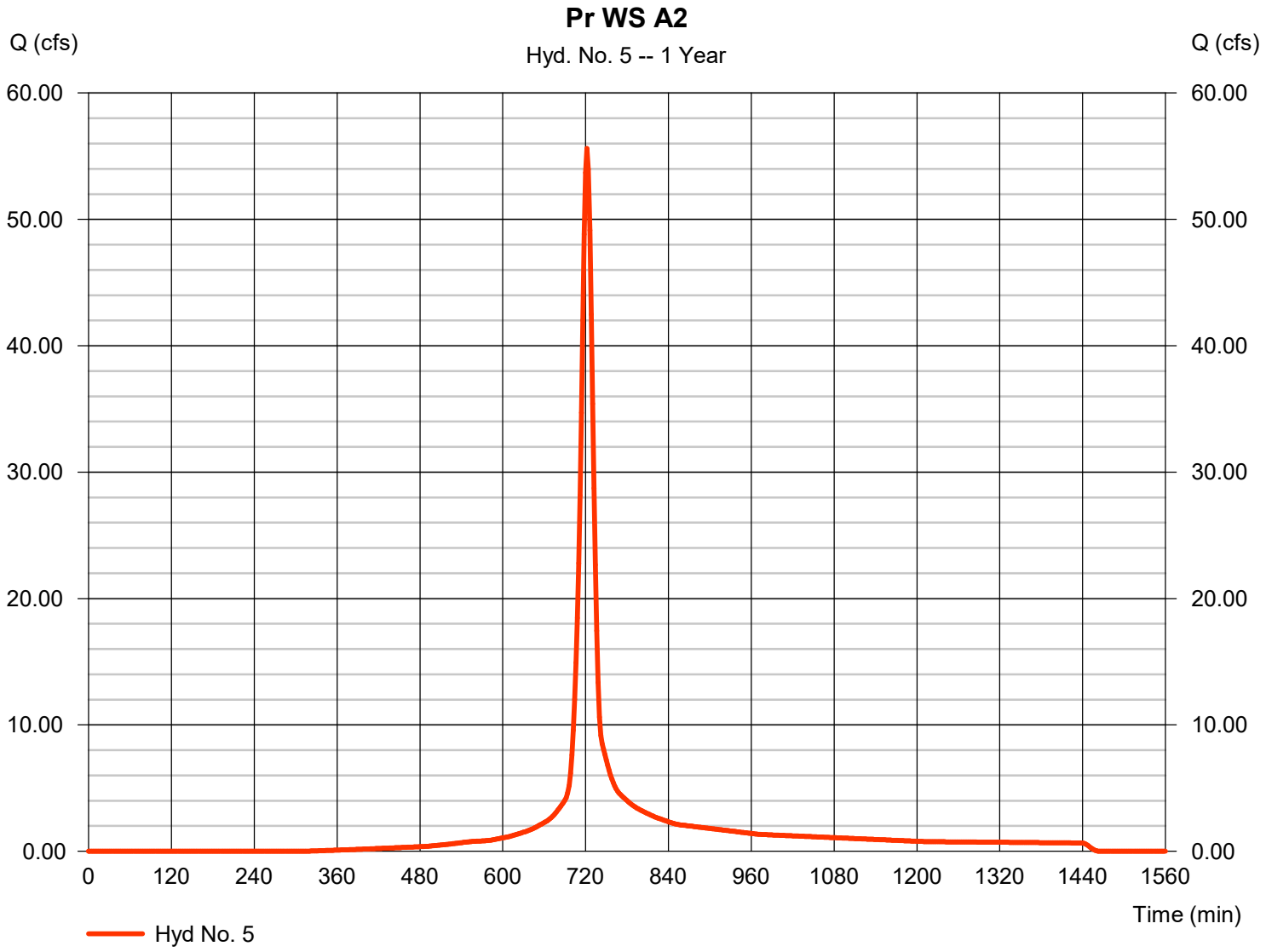


Hydrograph Report

Hyd. No. 5

Pr WS A2

Hydrograph type	=	SCS Runoff	Peak discharge	=	55.61 cfs
Storm frequency	=	1 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	158,709 cuft
Drainage area	=	31.690 ac	Curve number	=	94
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	15.00 min
Total precip.	=	2.02 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

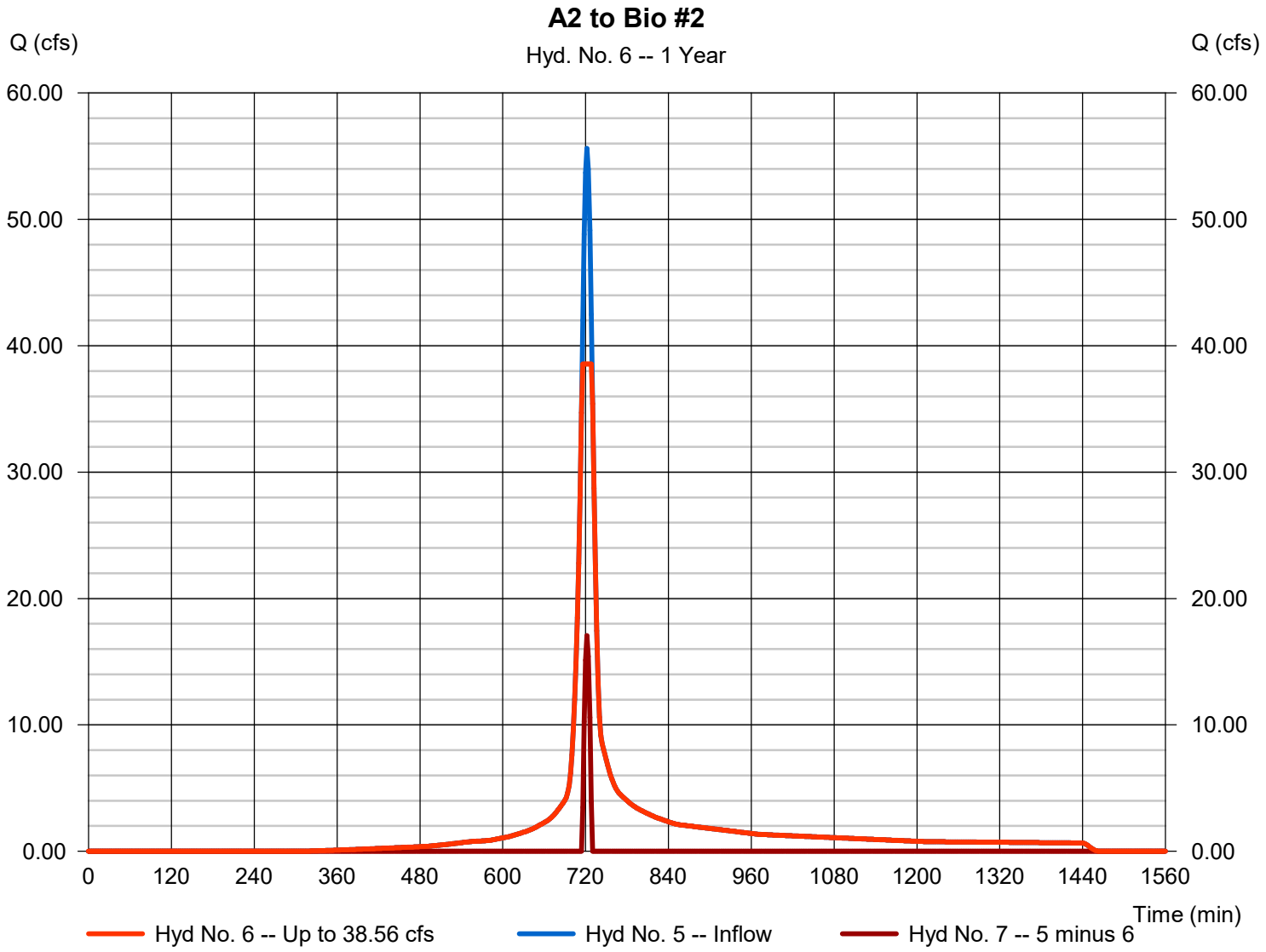


Hydrograph Report

Hyd. No. 6

A2 to Bio #2

Hydrograph type	= Diversion1	Peak discharge	= 38.56 cfs
Storm frequency	= 1 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 149,610 cuft
Inflow hydrograph	= 5 - Pr WS A2	2nd diverted hyd.	= 7
Diversion method	= Constant Q	Constant Q	= 38.56 cfs

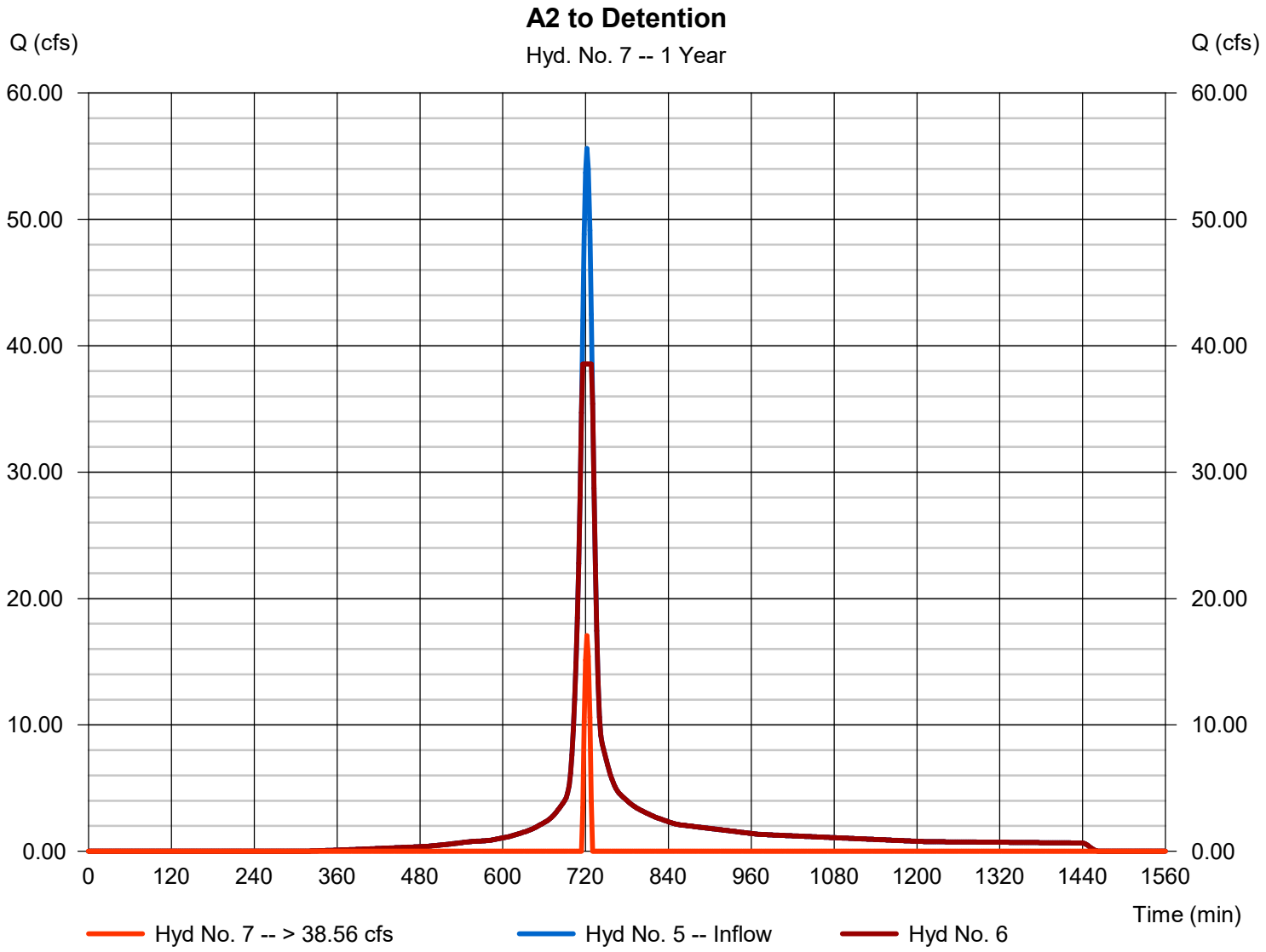


Hydrograph Report

Hyd. No. 7

A2 to Detention

Hydrograph type	= Diversion2	Peak discharge	= 17.05 cfs
Storm frequency	= 1 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 9,099 cuft
Inflow hydrograph	= 5 - Pr WS A2	2nd diverted hyd.	= 6
Diversion method	= Constant Q	Constant Q	= 38.56 cfs

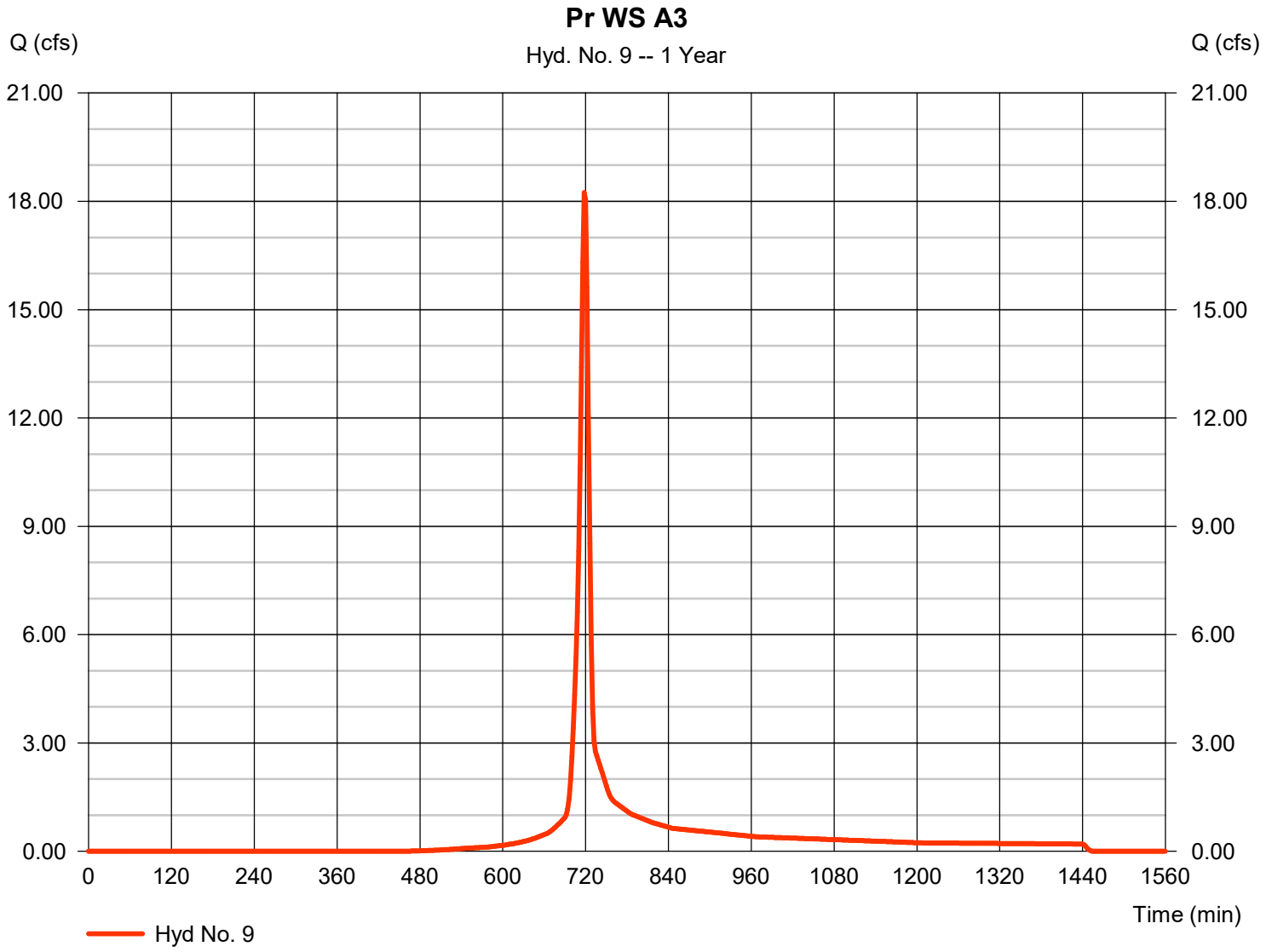


Hydrograph Report

Hyd. No. 9

Pr WS A3

Hydrograph type	= SCS Runoff	Peak discharge	= 18.24 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 41,784 cuft
Drainage area	= 10.360 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 7.00 min
Total precip.	= 2.02 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

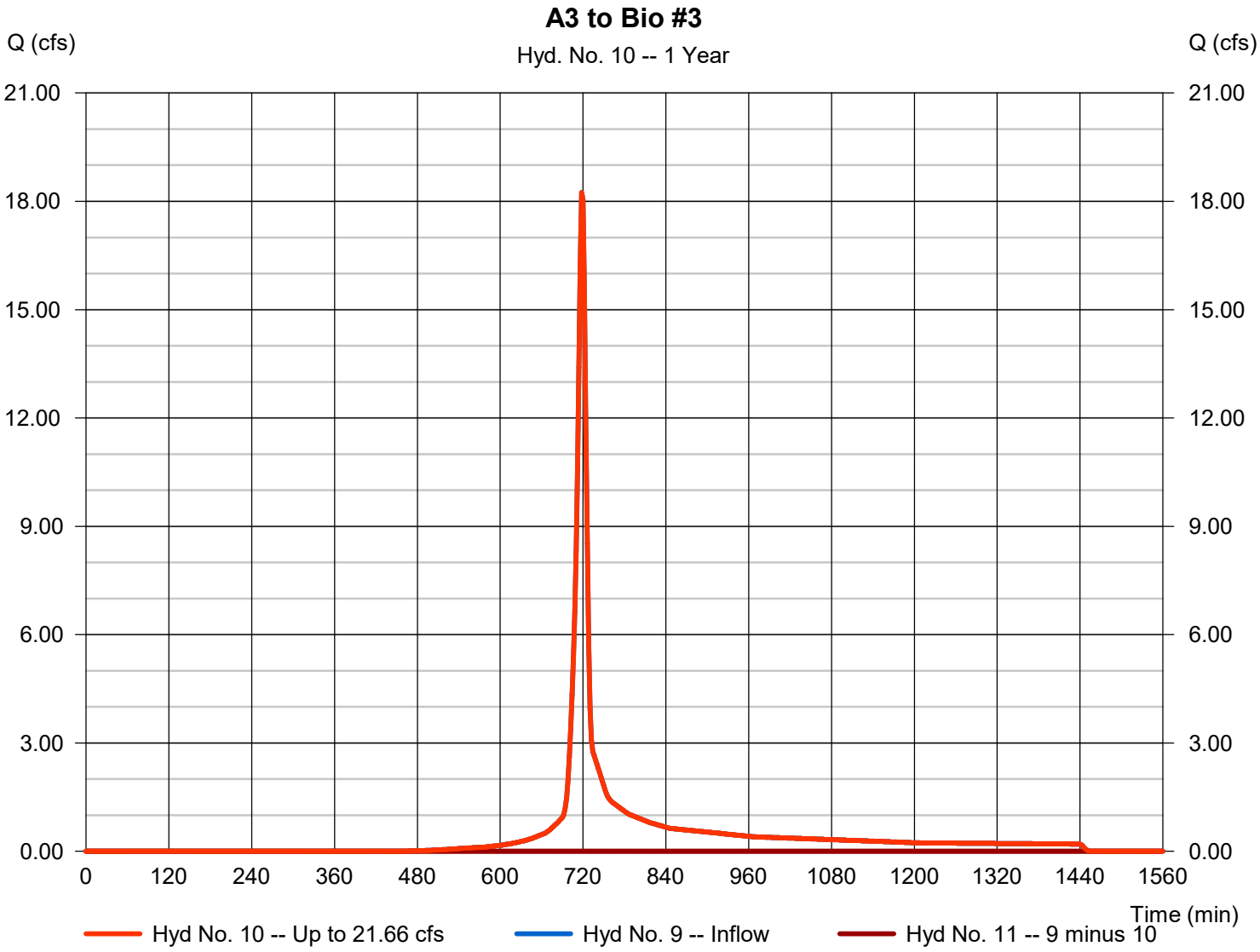


Hydrograph Report

Hyd. No. 10

A3 to Bio #3

Hydrograph type	= Diversion1	Peak discharge	= 18.24 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 41,784 cuft
Inflow hydrograph	= 9 - Pr WS A3	2nd diverted hyd.	= 11
Diversion method	= Constant Q	Constant Q	= 21.66 cfs

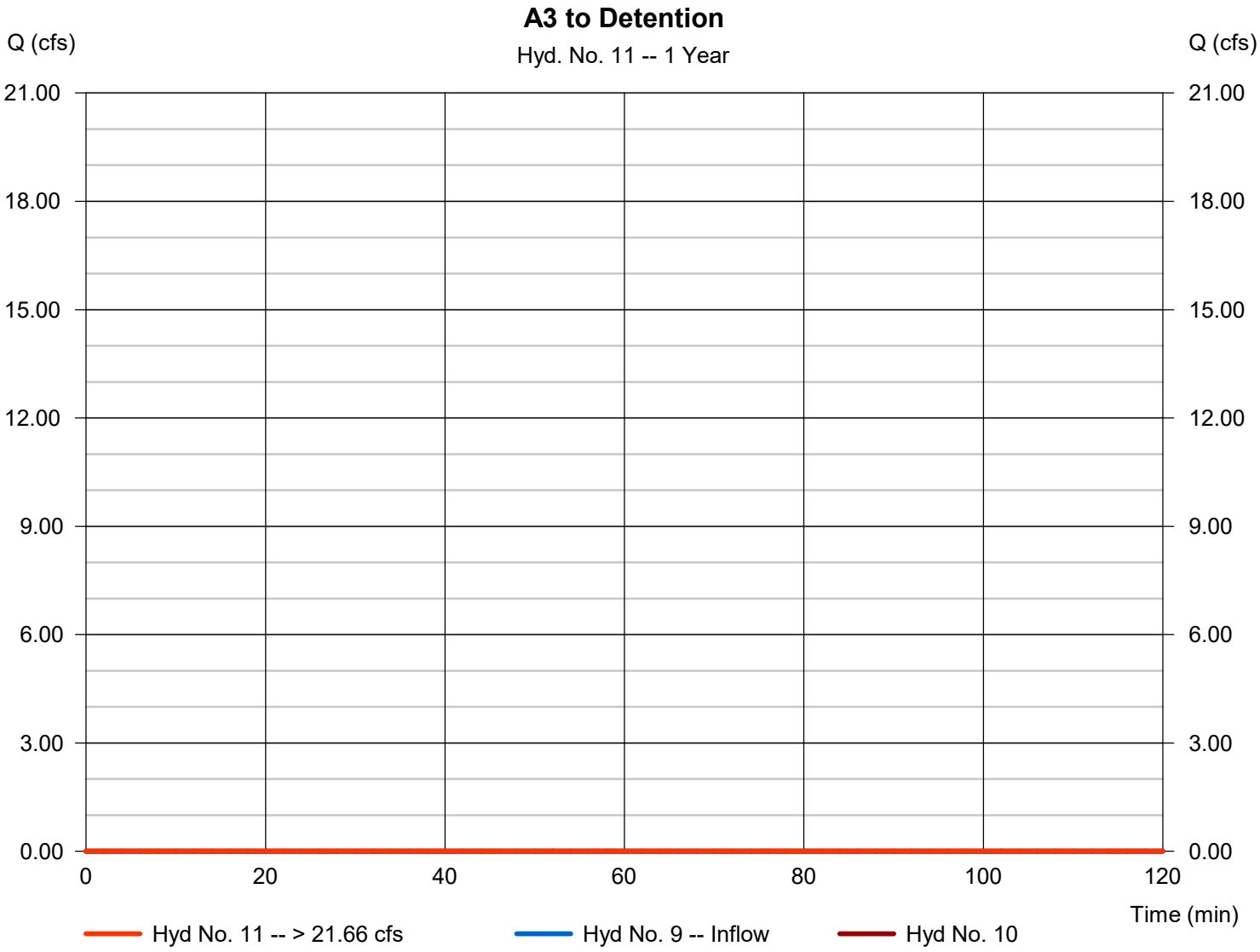


Hydrograph Report

Hyd. No. 11

A3 to Detention

Hydrograph type	= Diversion2	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hydrograph	= 9 - Pr WS A3	2nd diverted hyd.	= 10
Diversion method	= Constant Q	Constant Q	= 21.66 cfs

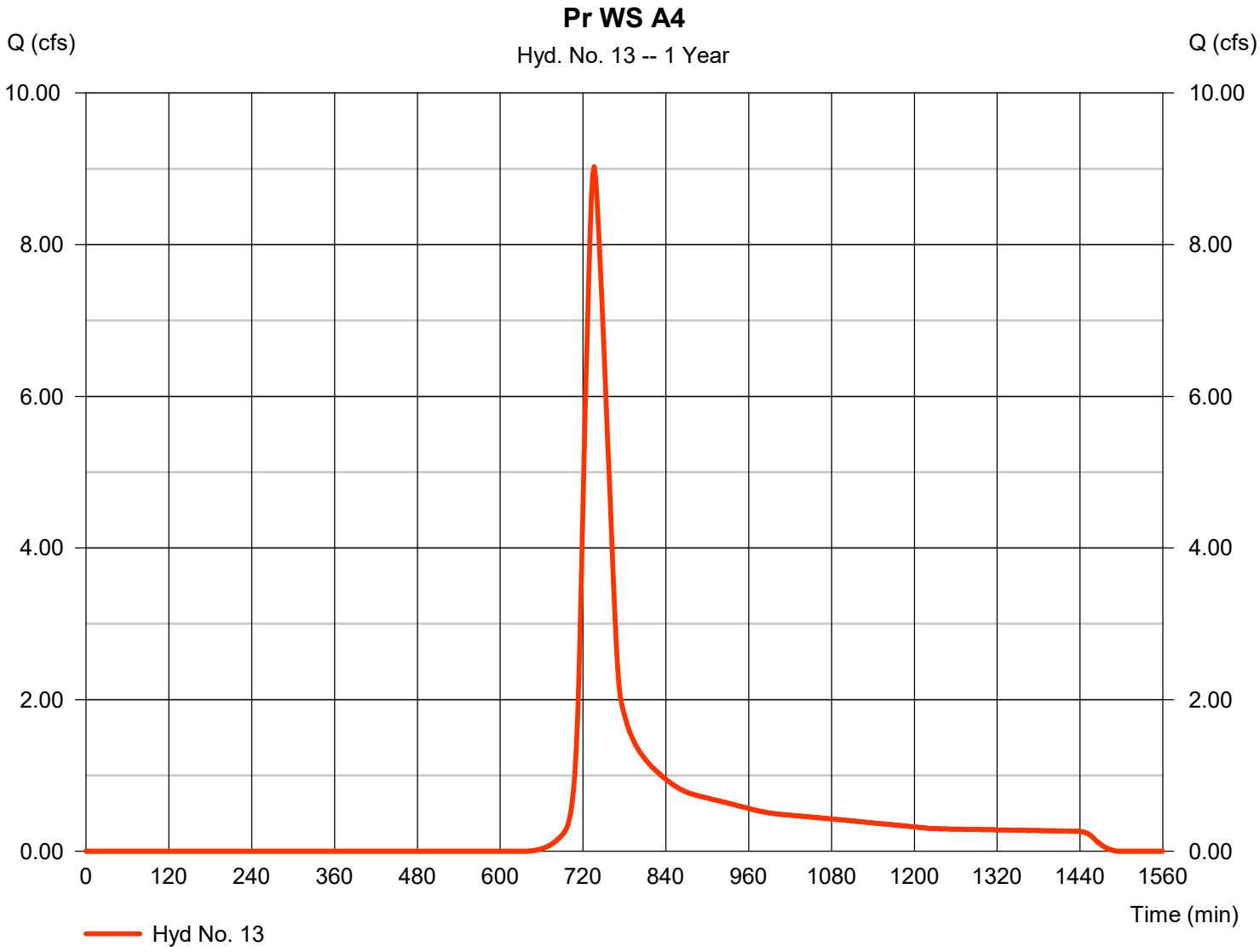


Hydrograph Report

Hyd. No. 13

Pr WS A4

Hydrograph type	=	SCS Runoff	Peak discharge	=	9.026 cfs
Storm frequency	=	1 yrs	Time to peak	=	736 min
Time interval	=	2 min	Hyd. volume	=	43,143 cuft
Drainage area	=	16.960 ac	Curve number	=	83
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	36.00 min
Total precip.	=	2.02 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

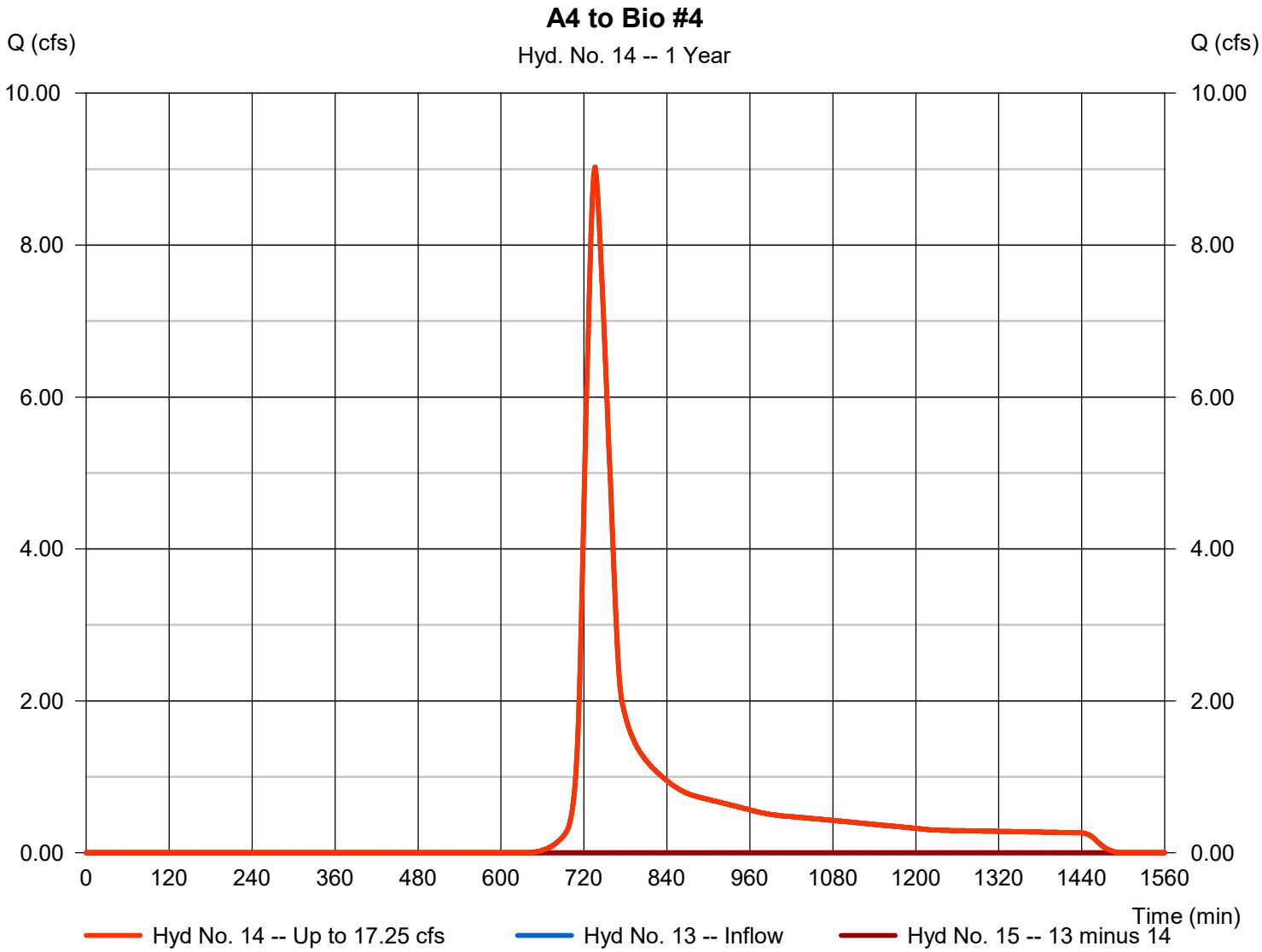


Hydrograph Report

Hyd. No. 14

A4 to Bio #4

Hydrograph type	= Diversion1	Peak discharge	= 9.026 cfs
Storm frequency	= 1 yrs	Time to peak	= 736 min
Time interval	= 2 min	Hyd. volume	= 43,143 cuft
Inflow hydrograph	= 13 - Pr WS A4	2nd diverted hyd.	= 15
Diversion method	= Constant Q	Constant Q	= 17.25 cfs

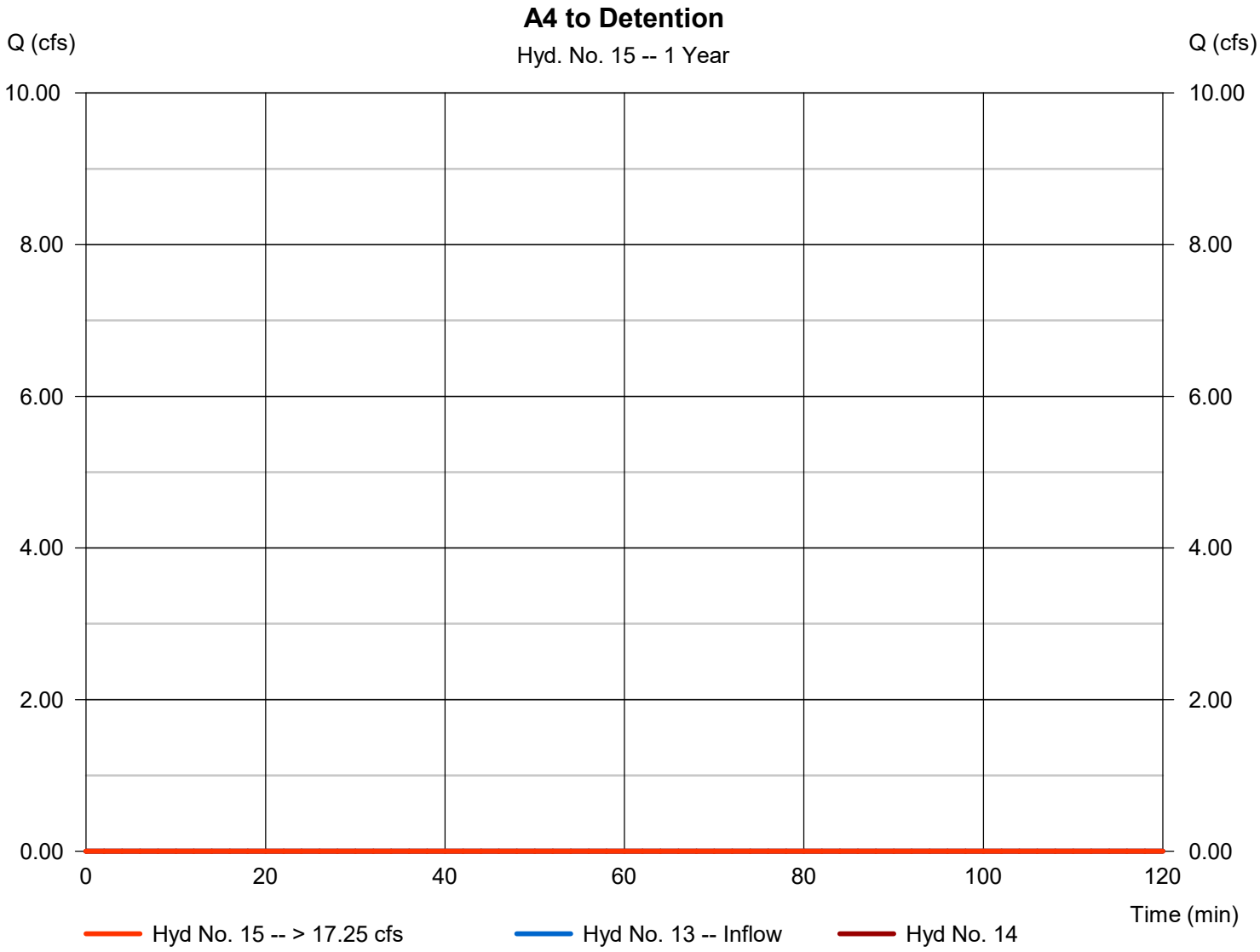


Hydrograph Report

Hyd. No. 15

A4 to Detention

Hydrograph type	= Diversion2	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hydrograph	= 13 - Pr WS A4	2nd diverted hyd.	= 14
Diversion method	= Constant Q	Constant Q	= 17.25 cfs

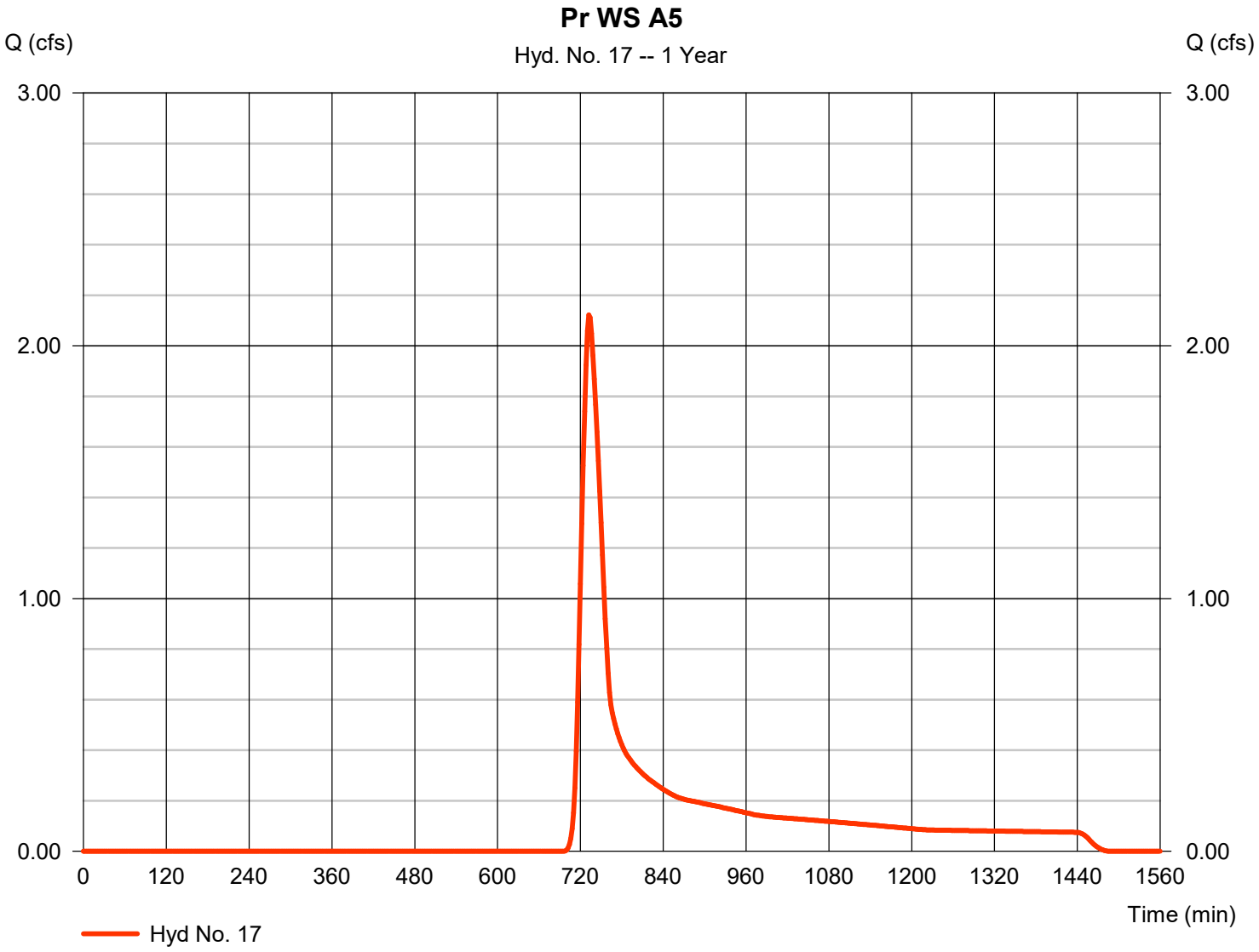


Hydrograph Report

Hyd. No. 17

Pr WS A5

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.122 cfs
Storm frequency	=	1 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	10,162 cuft
Drainage area	=	6.100 ac	Curve number	=	77
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	30.00 min
Total precip.	=	2.02 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



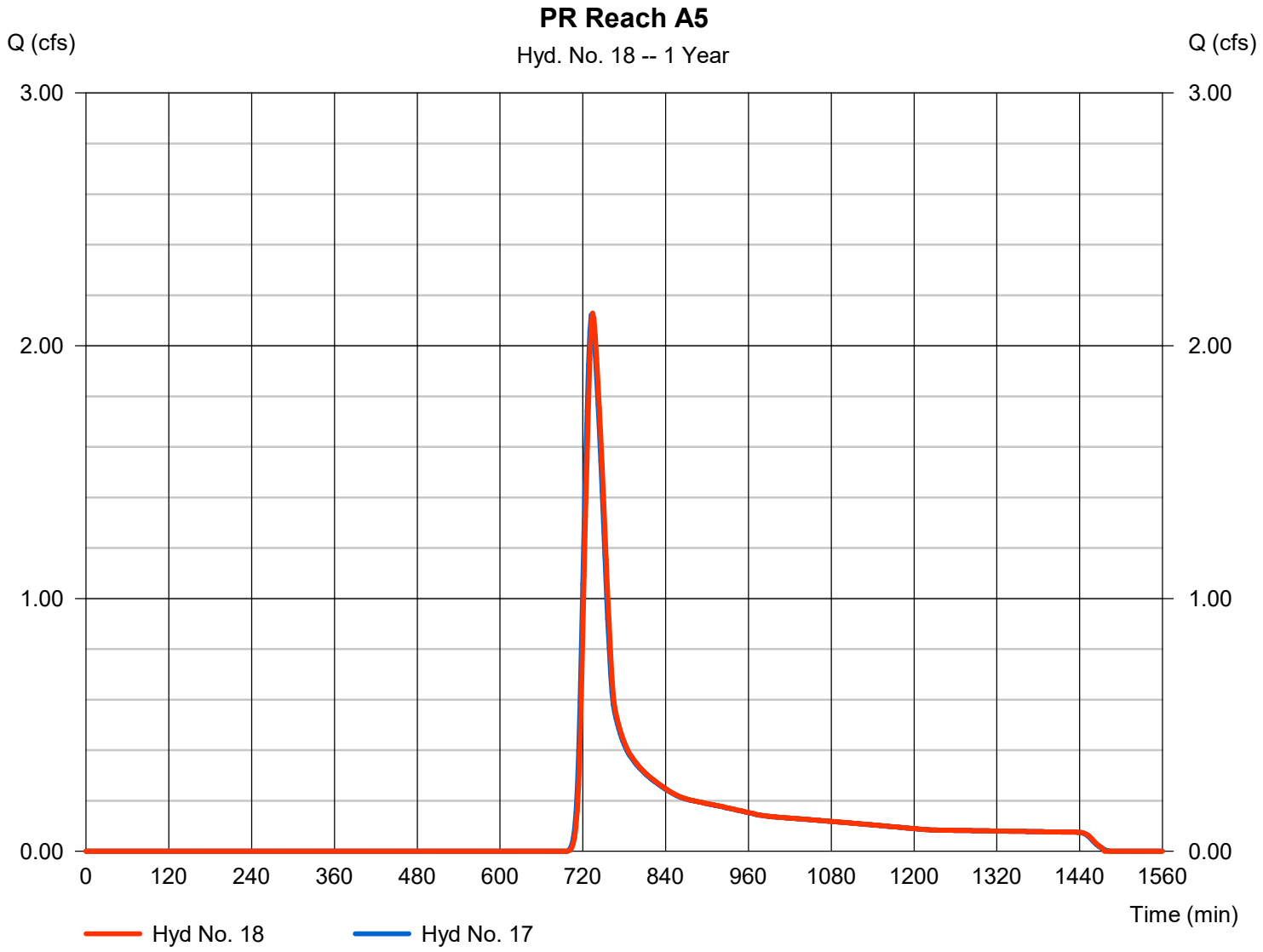
Hydrograph Report

Hyd. No. 18

PR Reach A5

Hydrograph type	=	Reach	Peak discharge	=	2.129 cfs
Storm frequency	=	1 yrs	Time to peak	=	734 min
Time interval	=	2 min	Hyd. volume	=	10,160 cuft
Inflow hyd. No.	=	17 - Pr WS A5	Section type	=	Trapezoidal
Reach length	=	101.0 ft	Channel slope	=	1.6 %
Manning's n	=	0.025	Bottom width	=	12.0 ft
Side slope	=	2.0:1	Max. depth	=	1.0 ft
Rating curve x	=	1.437	Rating curve m	=	1.425
Ave. velocity	=	1.61 ft/s	Routing coeff.	=	1.1547

Modified Att-Kin routing method used.

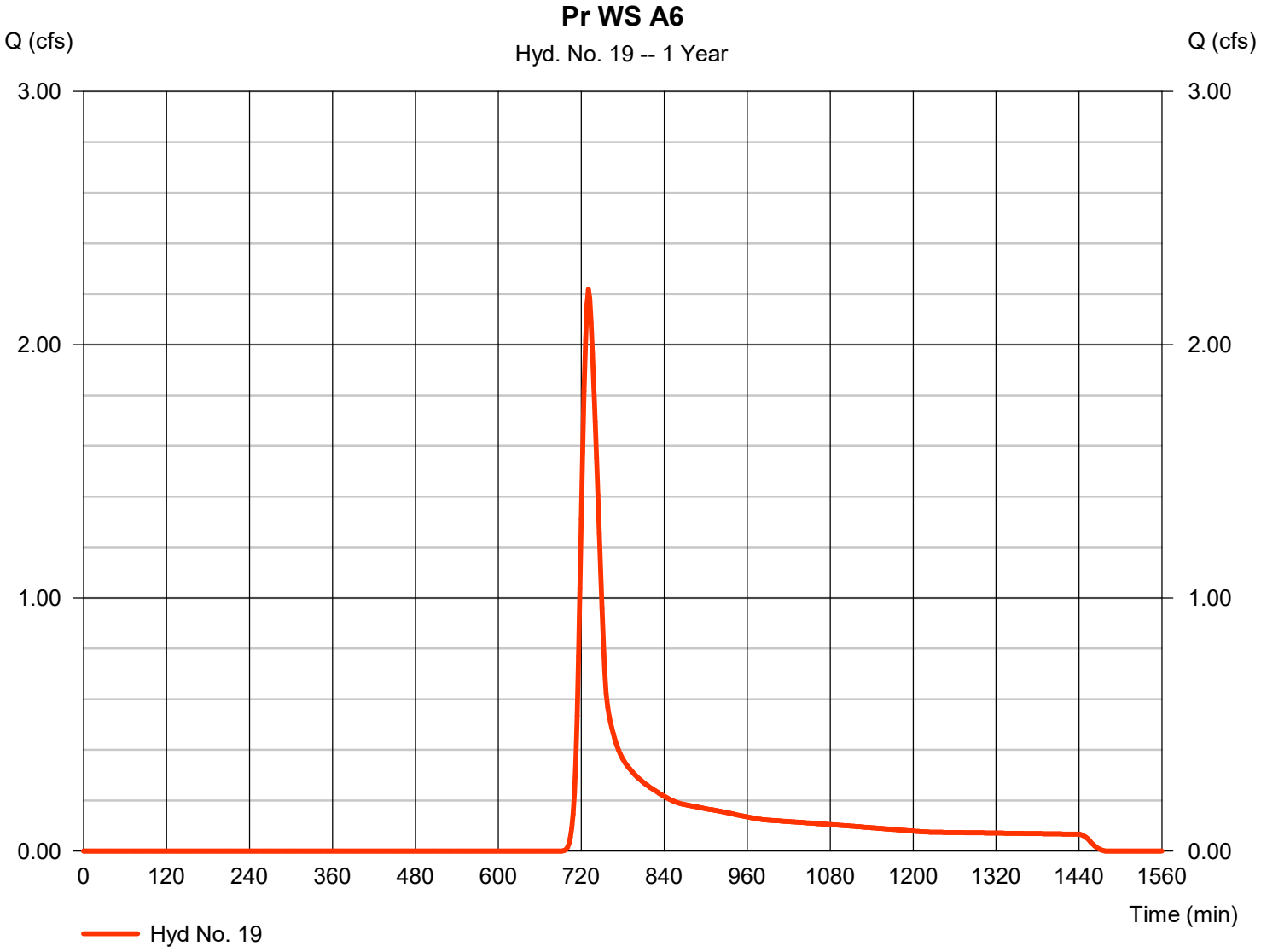


Hydrograph Report

Hyd. No. 19

Pr WS A6

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.217 cfs
Storm frequency	=	1 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	9,352 cuft
Drainage area	=	5.280 ac	Curve number	=	78
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	24.00 min
Total precip.	=	2.02 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

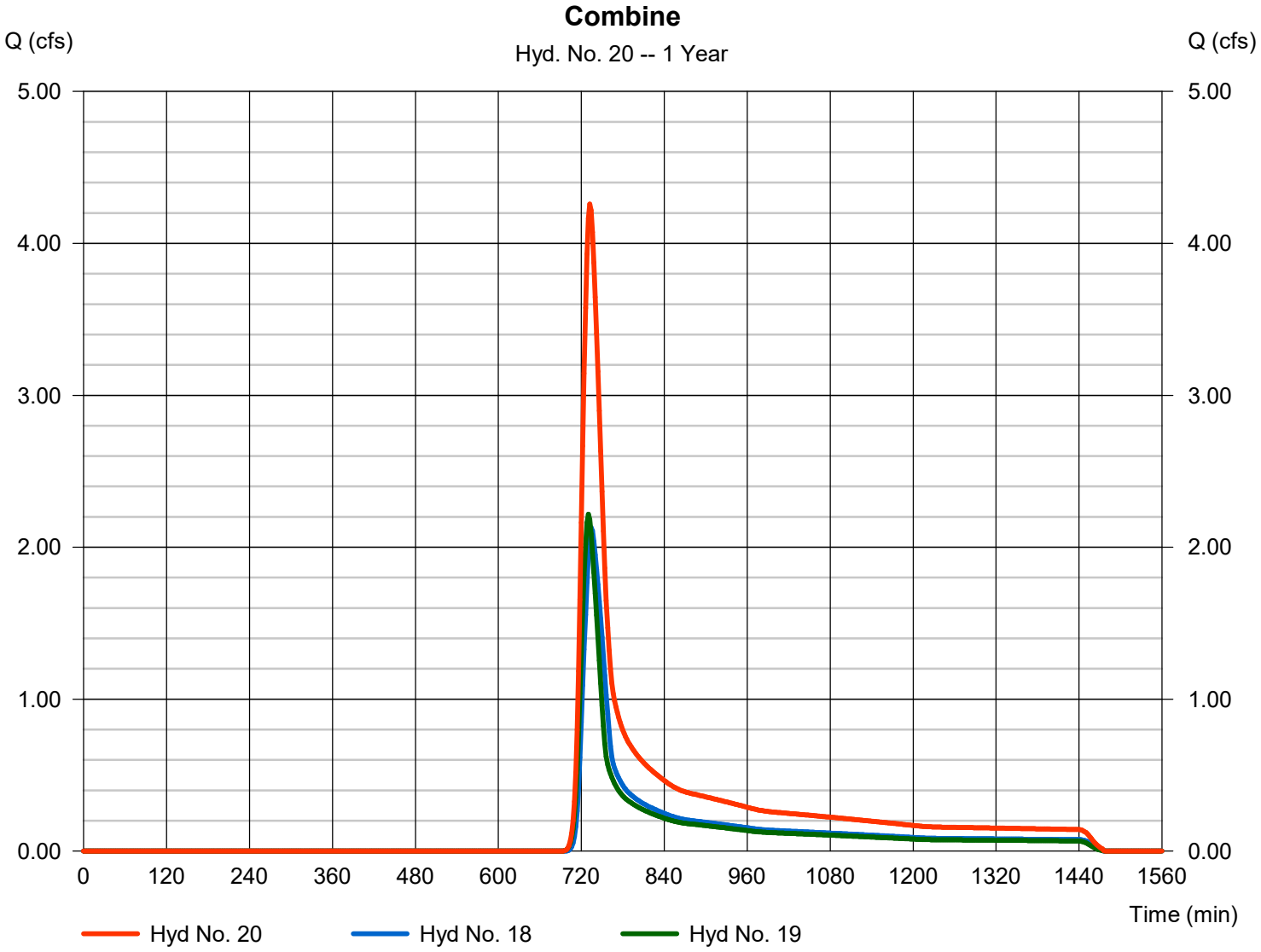


Hydrograph Report

Hyd. No. 20

Combine

Hydrograph type	= Combine	Peak discharge	= 4.259 cfs
Storm frequency	= 1 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 19,511 cuft
Inflow hyds.	= 18, 19	Contrib. drain. area	= 5.280 ac



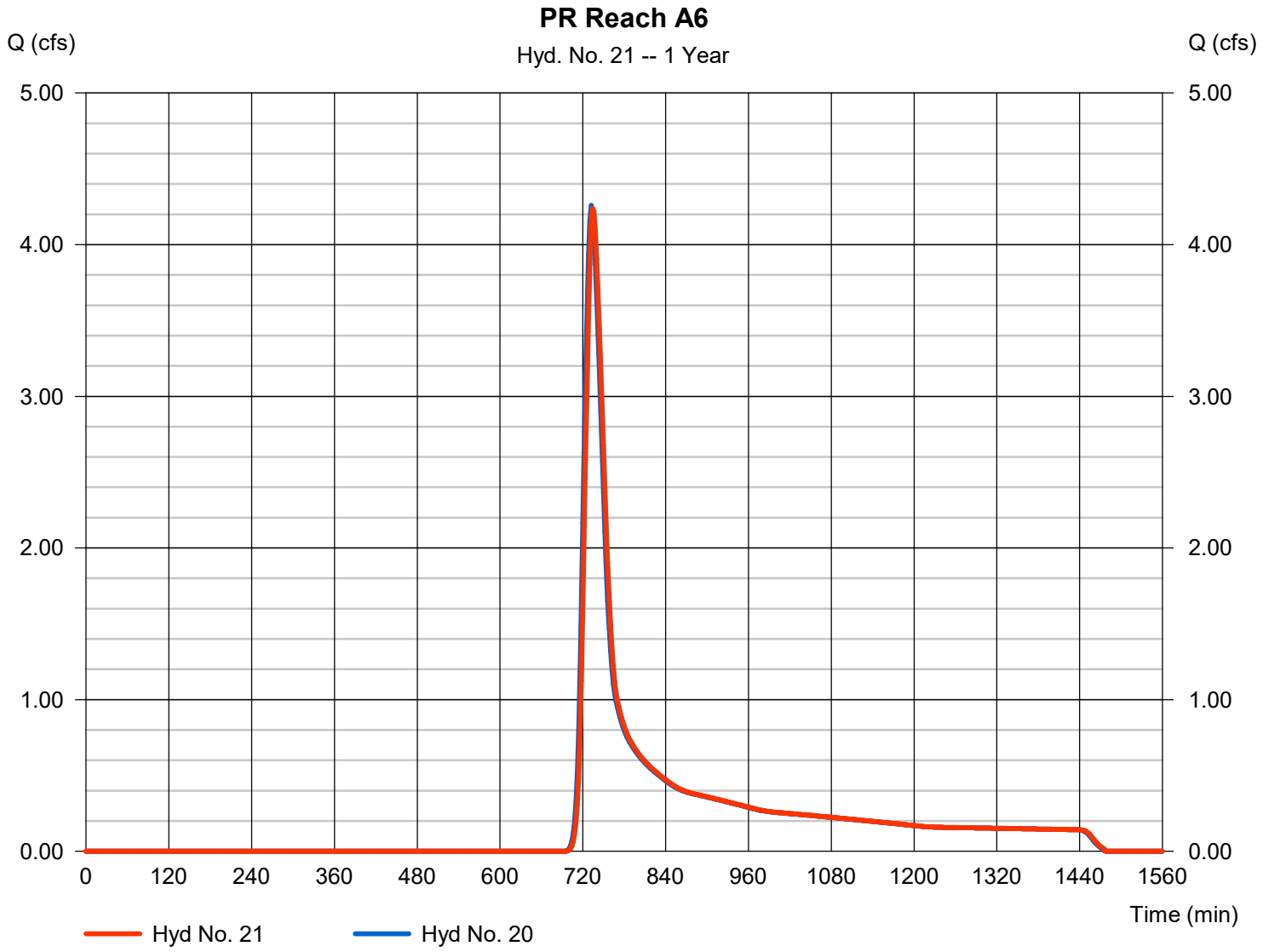
Hydrograph Report

Hyd. No. 21

PR Reach A6

Hydrograph type	=	Reach	Peak discharge	=	4.240 cfs
Storm frequency	=	1 yrs	Time to peak	=	734 min
Time interval	=	2 min	Hyd. volume	=	19,511 cuft
Inflow hyd. No.	=	20 - Combine	Section type	=	Trapezoidal
Reach length	=	413.0 ft	Channel slope	=	3.8 %
Manning's n	=	0.025	Bottom width	=	6.0 ft
Side slope	=	2.0:1	Max. depth	=	5.0 ft
Rating curve x	=	3.540	Rating curve m	=	1.395
Ave. velocity	=	3.73 ft/s	Routing coeff.	=	0.8611

Modified Att-Kin routing method used.

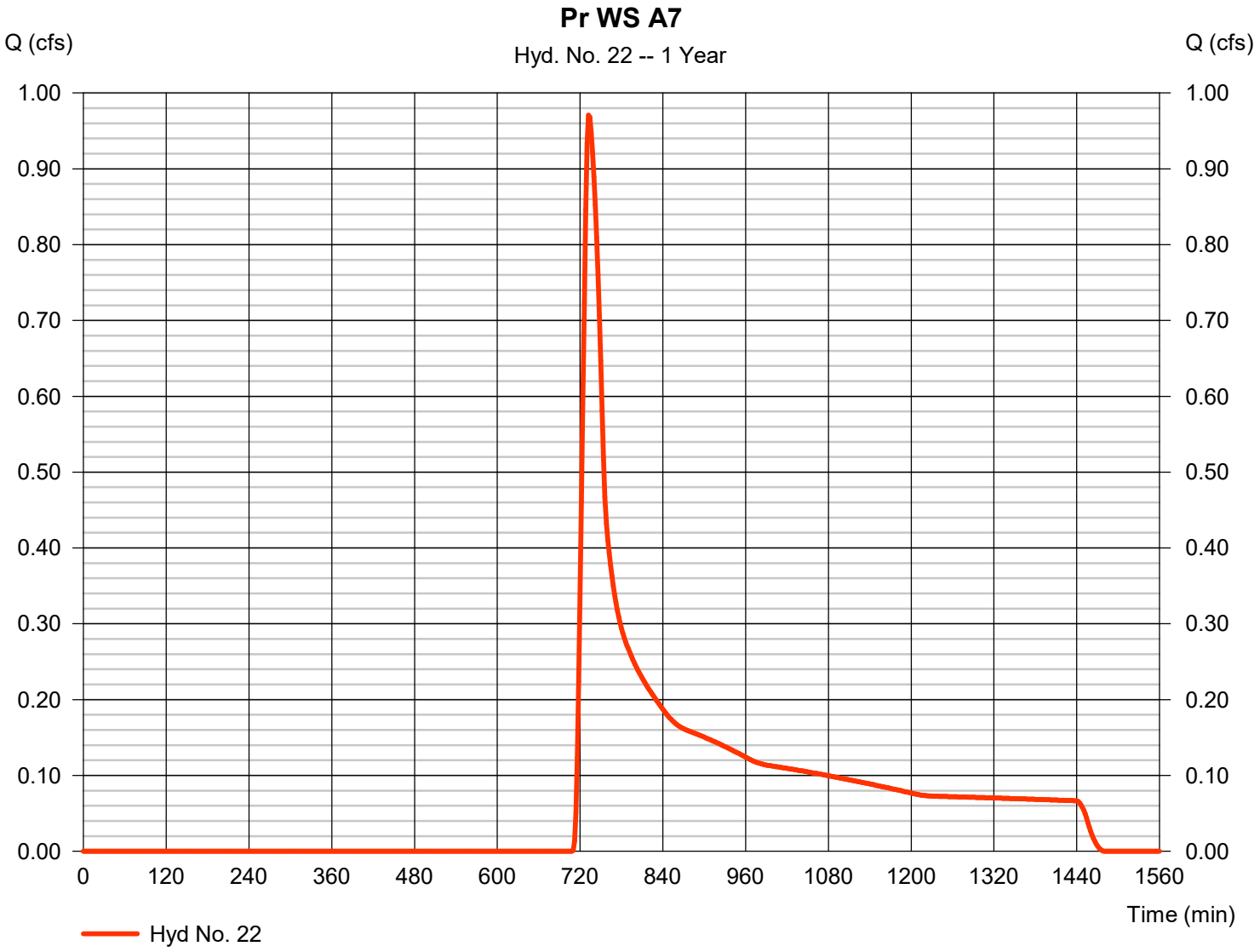


Hydrograph Report

Hyd. No. 22

Pr WS A7

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.971 cfs
Storm frequency	=	1 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	6,646 cuft
Drainage area	=	8.310 ac	Curve number	=	69
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	26.00 min
Total precip.	=	2.02 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



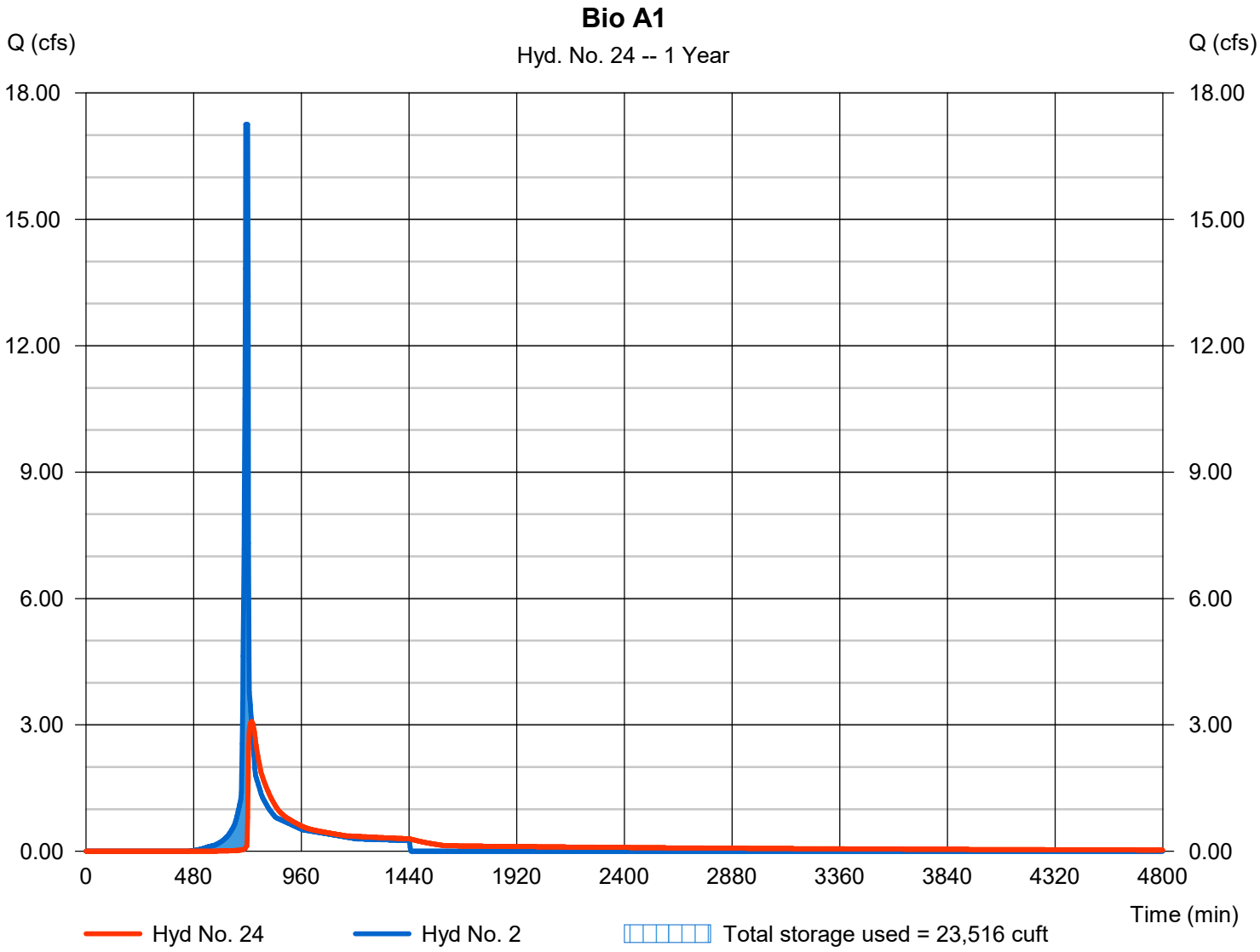
Hydrograph Report

Hyd. No. 24

Bio A1

Hydrograph type	=	Reservoir	Peak discharge	=	3.078 cfs
Storm frequency	=	1 yrs	Time to peak	=	738 min
Time interval	=	2 min	Hyd. volume	=	47,727 cuft
Inflow hyd. No.	=	2 - A1 to Bio #1	Max. Elevation	=	405.89 ft
Reservoir name	=	Bio A1 (south)	Max. Storage	=	23,516 cuft

Storage Indication method used. Outflow includes exfiltration.



Pond Report

Pond No. 1 - Bio A1 (south)

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 405.25 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	405.25	35,798	0	0
0.75	406.00	37,619	27,526	27,526
1.75	407.00	40,097	38,848	66,373
2.25	407.50	41,358	20,361	86,734

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 24.00	0.00	0.00	0.00
Span (in)	= 24.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 402.30	0.00	0.00	0.00
Length (ft)	= 60.00	0.00	0.00	0.00
Slope (%)	= 0.40	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

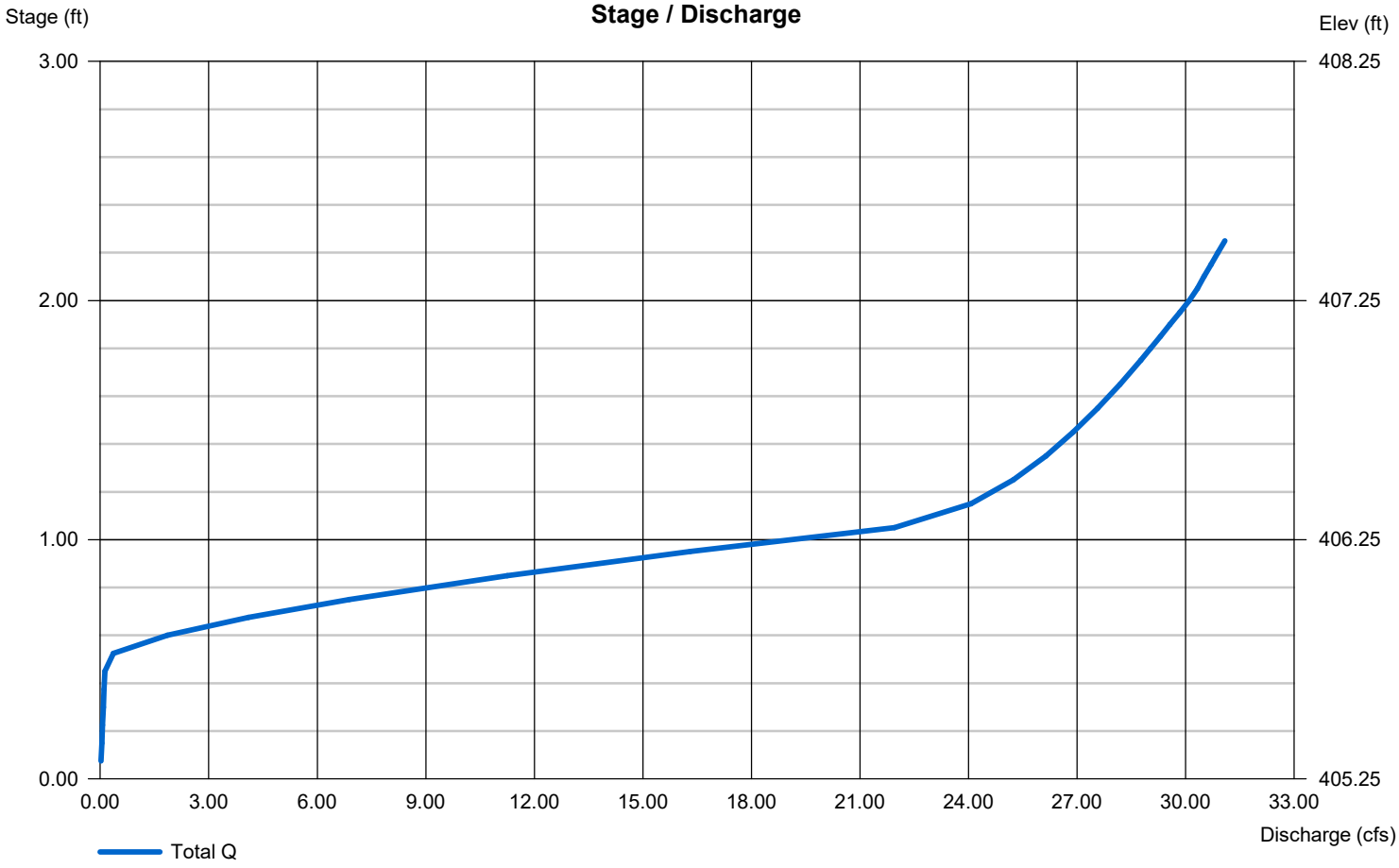
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 16.00	0.00	0.00	0.00
Crest El. (ft)	= 405.75	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 0.250 (by Contour)

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).



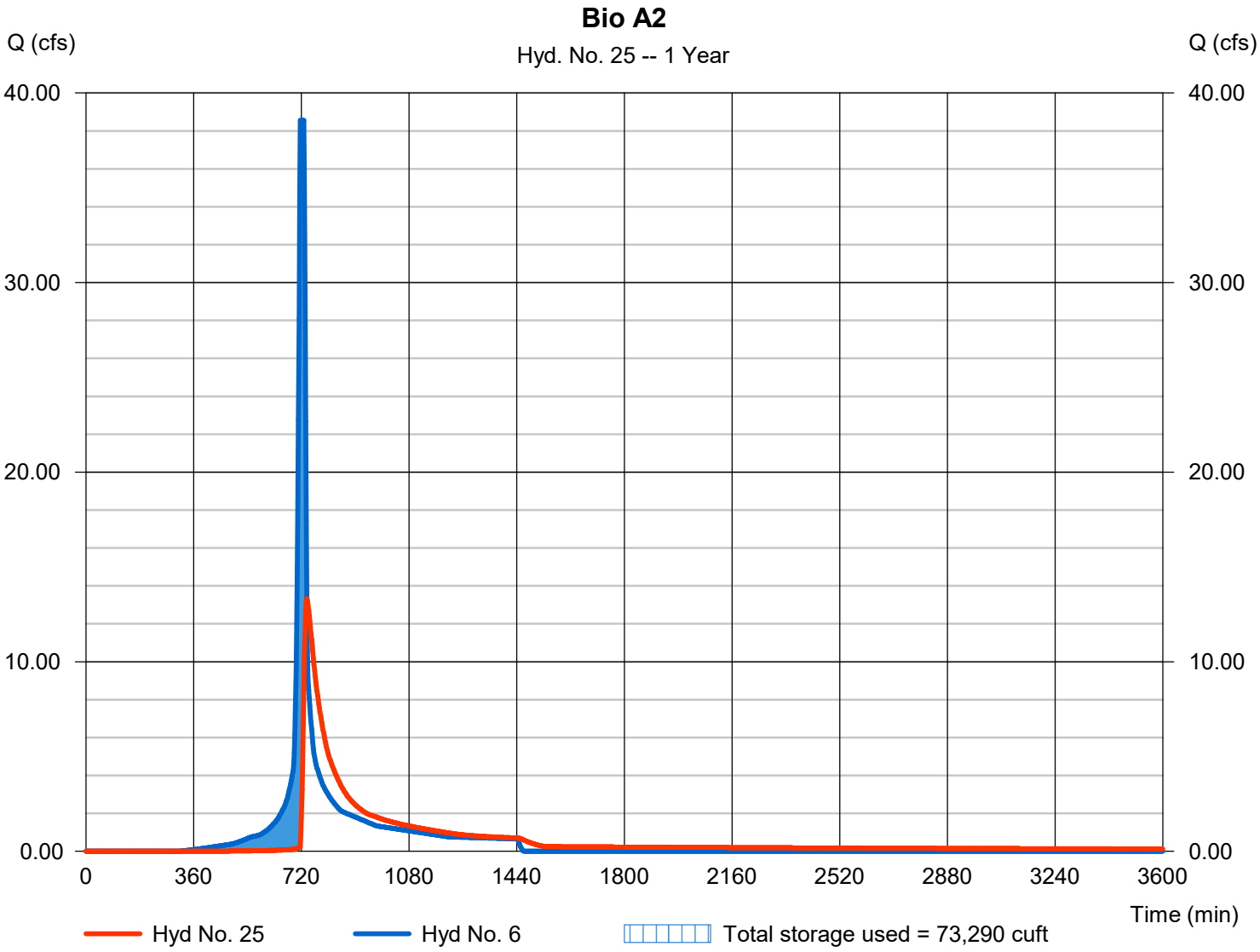
Hydrograph Report

Hyd. No. 25

Bio A2

Hydrograph type	=	Reservoir	Peak discharge	=	13.33 cfs
Storm frequency	=	1 yrs	Time to peak	=	738 min
Time interval	=	2 min	Hyd. volume	=	140,421 cuft
Inflow hyd. No.	=	6 - A2 to Bio #2	Max. Elevation	=	401.89 ft
Reservoir name	=	Bio A2 (west)	Max. Storage	=	73,290 cuft

Storage Indication method used. Outflow includes exfiltration.



Pond Report

Pond No. 2 - Bio A2 (west)

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 401.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	401.00	80,646	0	0
1.00	402.00	84,524	82,569	82,569
2.00	403.00	88,459	86,475	169,045
3.00	404.00	92,451	90,439	259,483
4.00	405.00	96,499	94,458	353,942
5.00	406.00	100,603	98,534	452,476

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 24.00	0.00	0.00	0.00
Span (in)	= 24.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 397.75	0.00	0.00	0.00
Length (ft)	= 54.00	0.00	0.00	0.00
Slope (%)	= 2.00	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

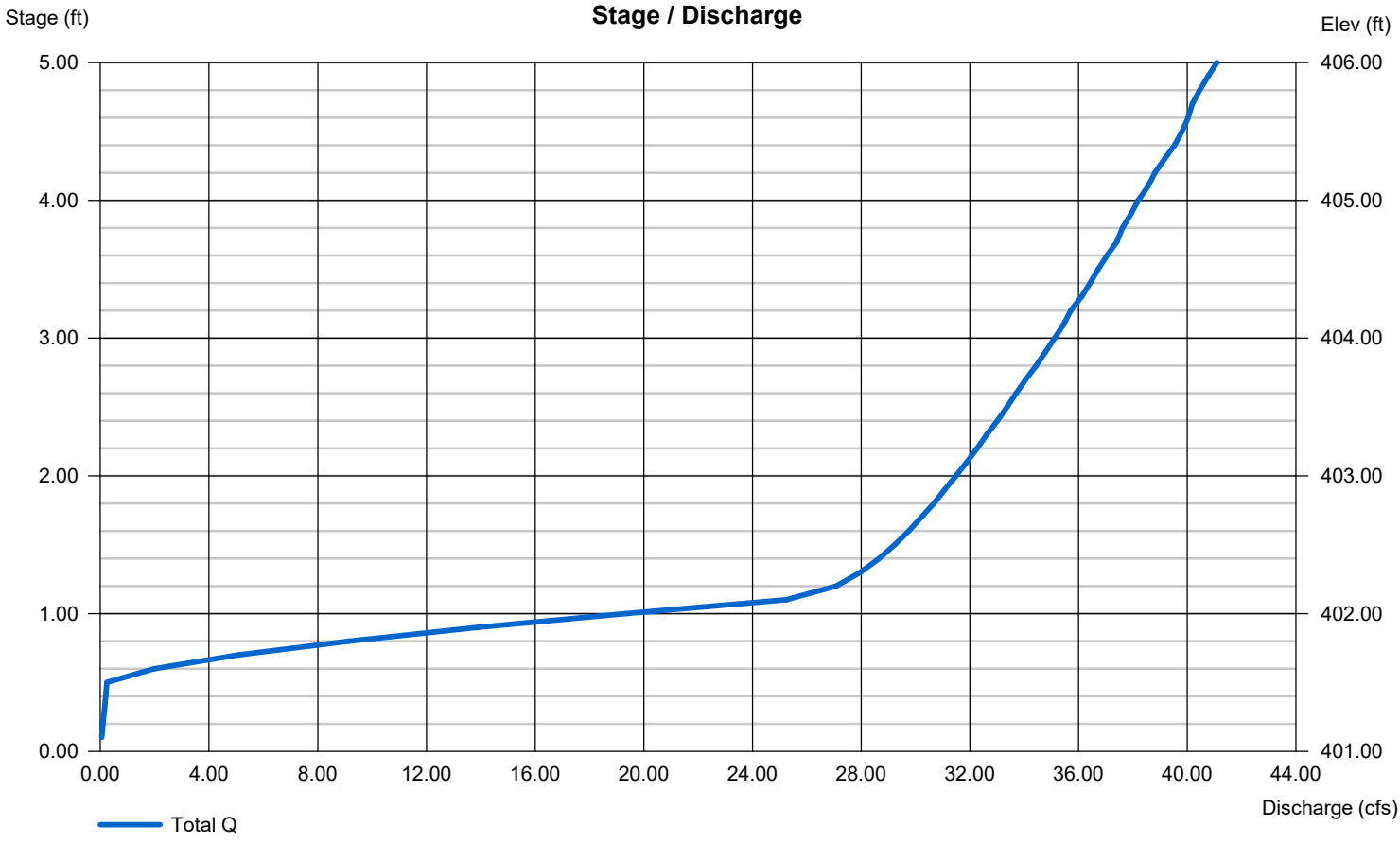
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 16.00	0.00	0.00	0.00
Crest El. (ft)	= 401.50	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 0.250 (by Contour)

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).



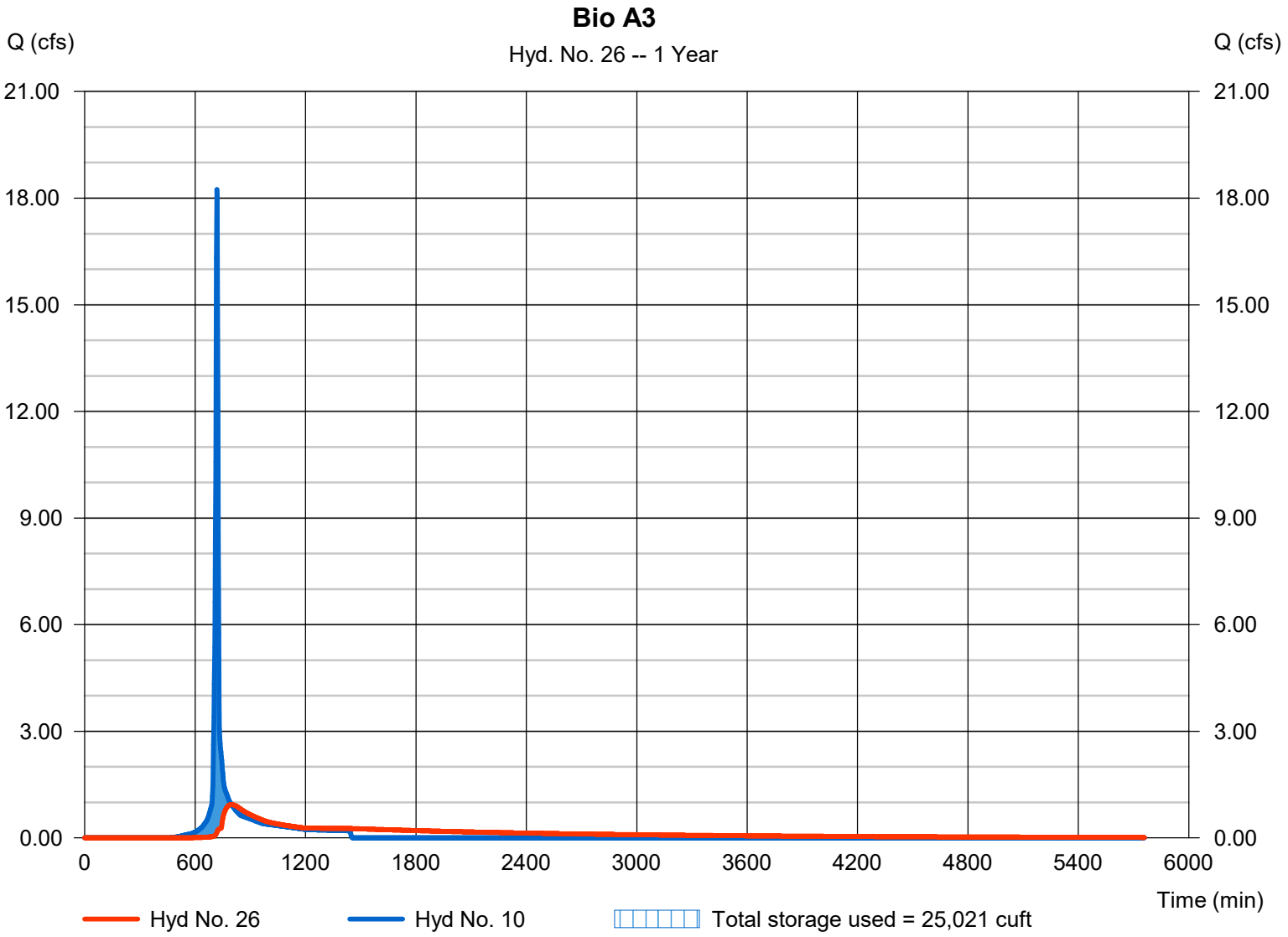
Hydrograph Report

Hyd. No. 26

Bio A3

Hydrograph type	=	Reservoir	Peak discharge	=	0.936 cfs
Storm frequency	=	1 yrs	Time to peak	=	798 min
Time interval	=	2 min	Hyd. volume	=	40,720 cuft
Inflow hyd. No.	=	10 - A3 to Bio #3	Max. Elevation	=	409.04 ft
Reservoir name	=	Bio A3 (east)	Max. Storage	=	25,021 cuft

Storage Indication method used. Outflow includes exfiltration.



Pond Report

Pond No. 3 - Bio A3 (east)

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 408.50 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	408.50	45,503	0	0
0.50	409.00	46,963	23,113	23,113
1.50	410.00	49,927	48,433	71,546
2.50	411.00	52,947	51,424	122,970

Culvert / Orifice Structures

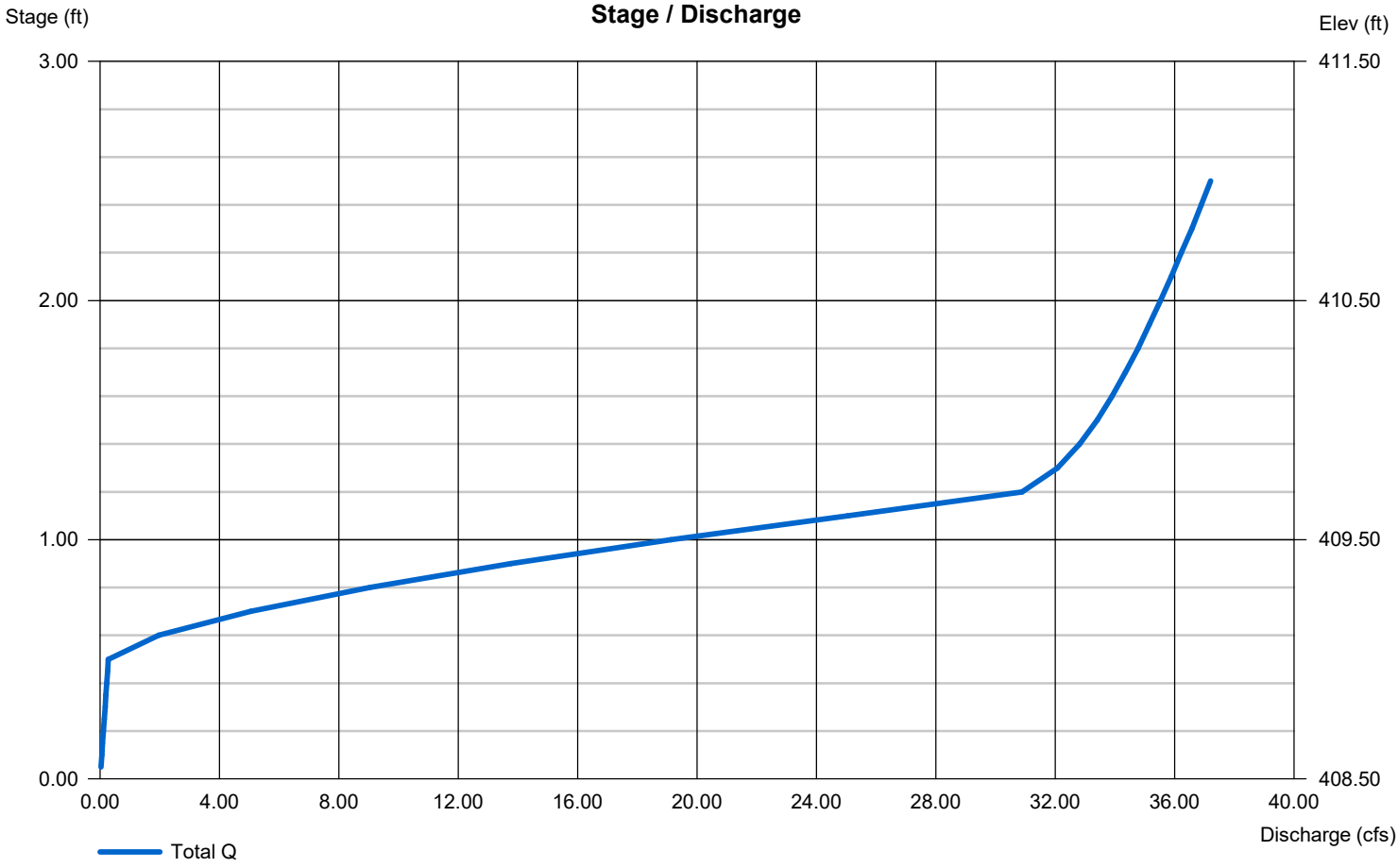
	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 24.00	0.00	0.00	0.00
Span (in)	= 24.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 404.00	0.00	0.00	0.00
Length (ft)	= 83.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 16.00	0.00	0.00	0.00
Crest El. (ft)	= 409.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 0.250 (by Contour)
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).



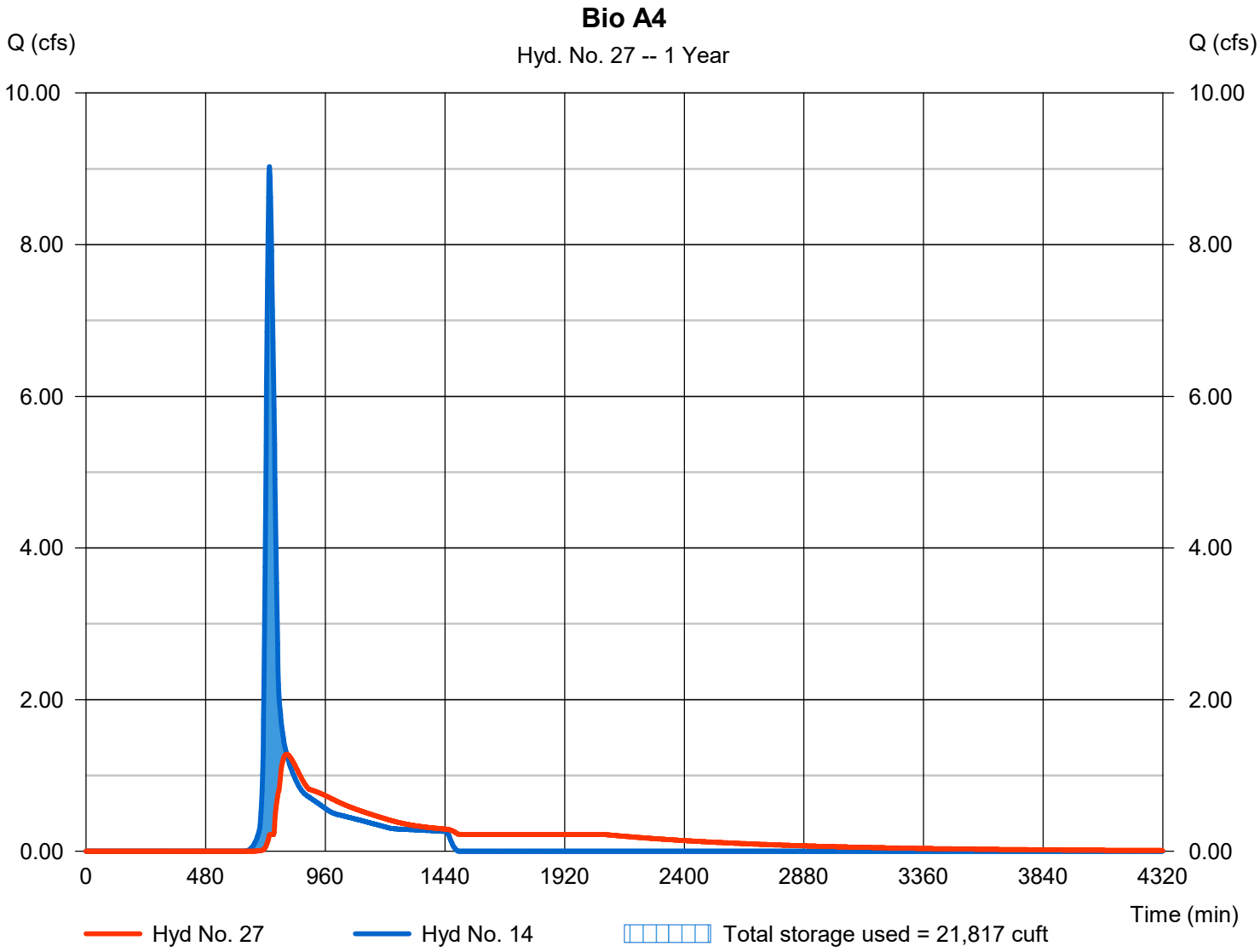
Hydrograph Report

Hyd. No. 27

Bio A4

Hydrograph type	=	Reservoir	Peak discharge	=	1.279 cfs
Storm frequency	=	1 yrs	Time to peak	=	804 min
Time interval	=	2 min	Hyd. volume	=	43,088 cuft
Inflow hyd. No.	=	14 - A4 to Bio #4	Max. Elevation	=	403.32 ft
Reservoir name	=	Bio A4 (north)	Max. Storage	=	21,817 cuft

Storage Indication method used. Outflow includes exfiltration.



Pond Report

Pond No. 4 - Bio A4 (north)

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 402.75 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	402.75	37,012	0	0
0.25	403.00	37,734	9,342	9,342
1.25	404.00	40,654	39,181	48,523
2.25	405.00	43,631	42,130	90,653
3.25	406.00	46,664	45,135	135,787

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 24.00	0.00	0.00	0.00
Span (in)	= 24.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 400.24	0.00	0.00	0.00
Length (ft)	= 44.00	0.00	0.00	0.00
Slope (%)	= 0.55	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

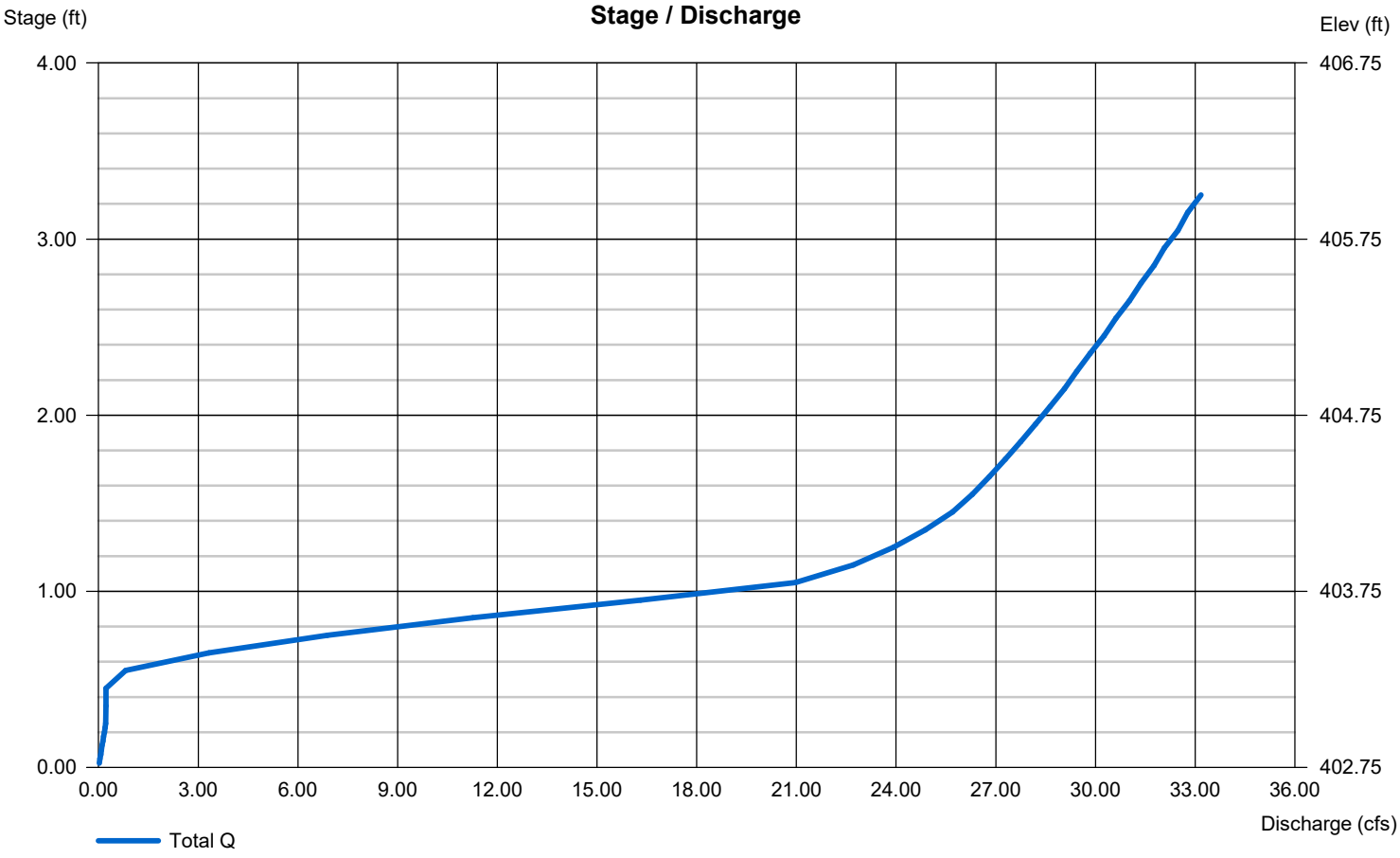
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 16.00	0.00	0.00	0.00
Crest El. (ft)	= 403.25	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 0.250 (by Contour)

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).

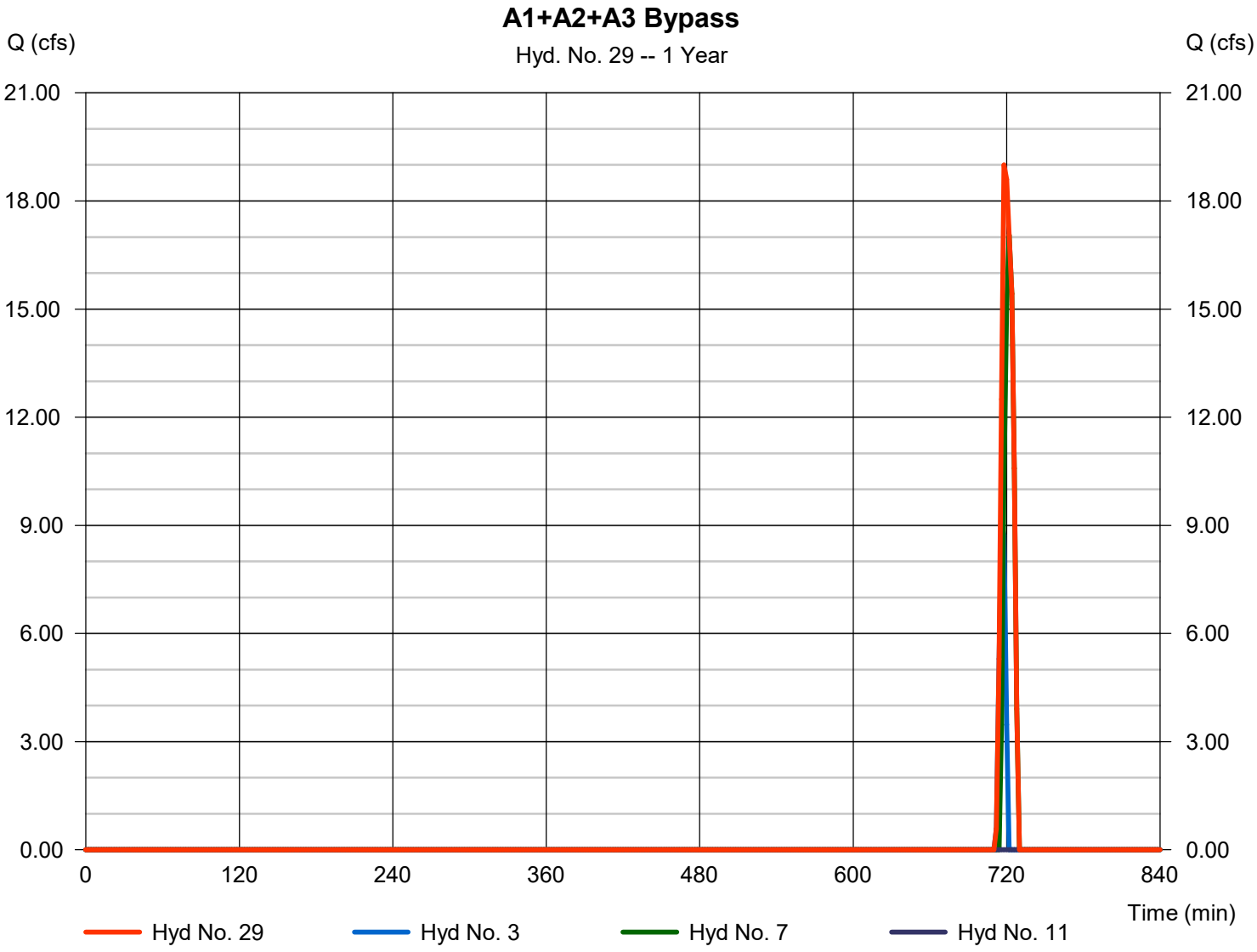


Hydrograph Report

Hyd. No. 29

A1+A2+A3 Bypass

Hydrograph type	= Combine	Peak discharge	= 19.00 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 12,352 cuft
Inflow hyds.	= 3, 7, 11	Contrib. drain. area	= 0.000 ac

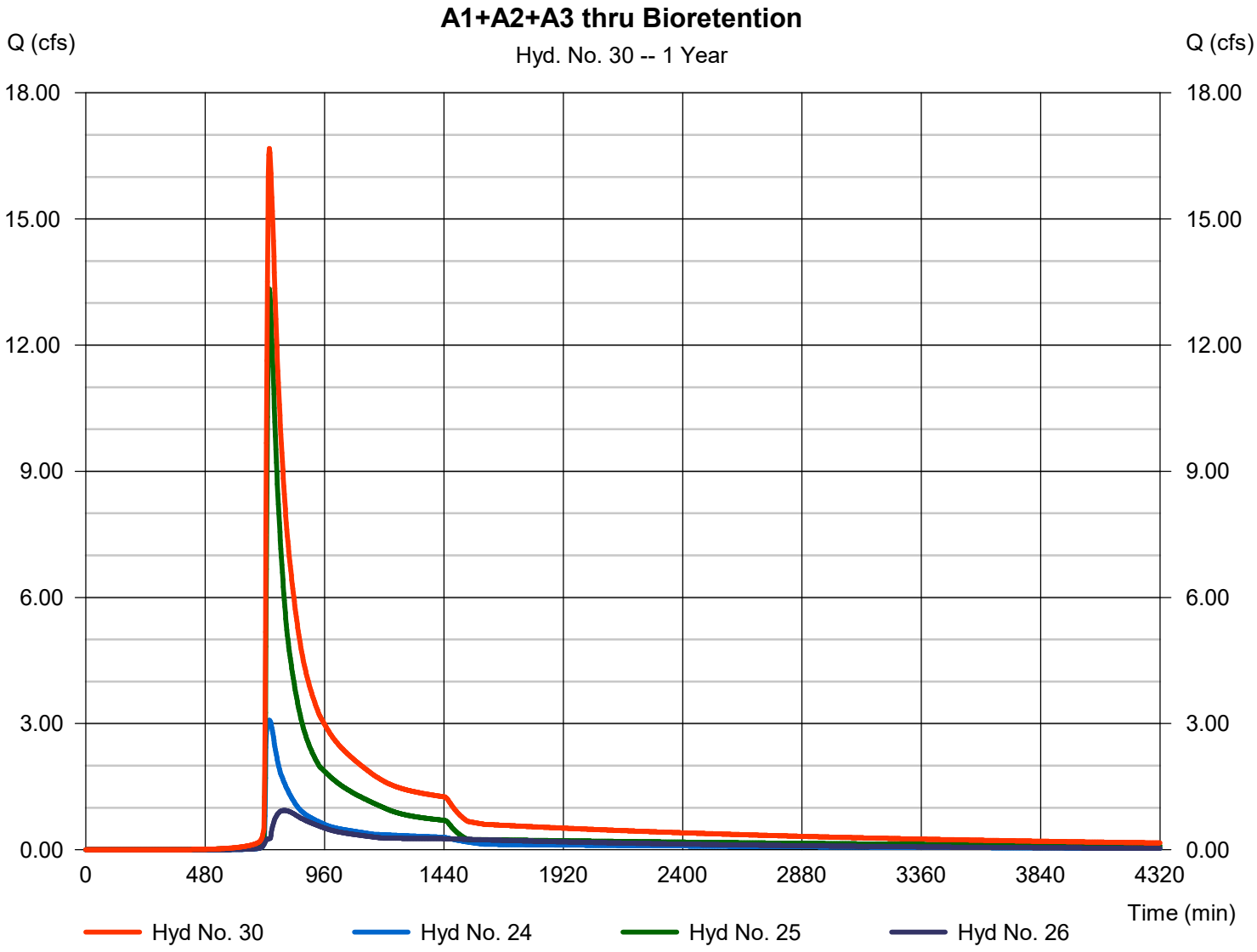


Hydrograph Report

Hyd. No. 30

A1+A2+A3 thru Bioretention

Hydrograph type	= Combine	Peak discharge	= 16.68 cfs
Storm frequency	= 1 yrs	Time to peak	= 738 min
Time interval	= 2 min	Hyd. volume	= 228,867 cuft
Inflow hyds.	= 24, 25, 26	Contrib. drain. area	= 0.000 ac

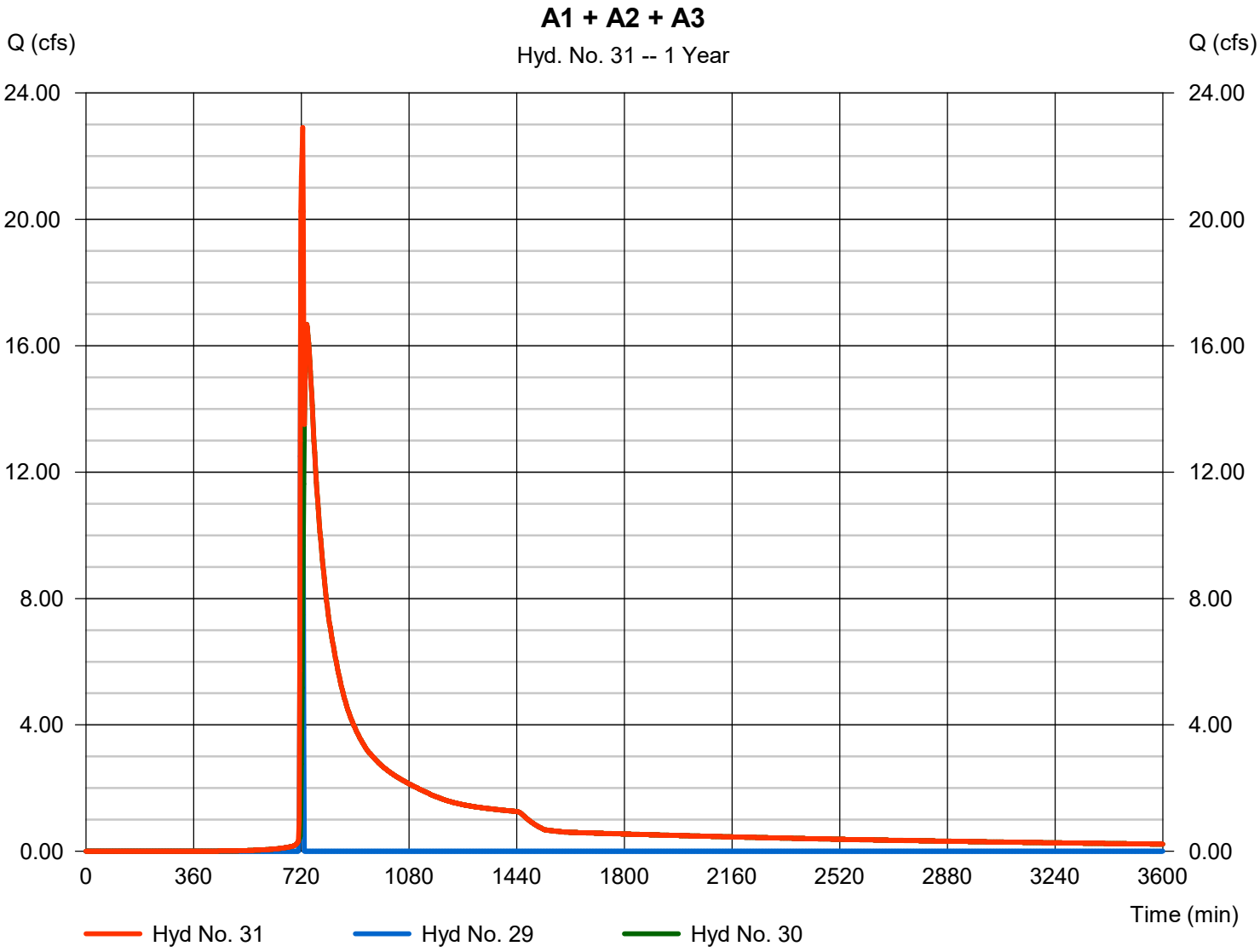


Hydrograph Report

Hyd. No. 31

A1 + A2 + A3

Hydrograph type	=	Combine	Peak discharge	=	22.91 cfs
Storm frequency	=	1 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	241,220 cuft
Inflow hyds.	=	29, 30	Contrib. drain. area	=	0.000 ac



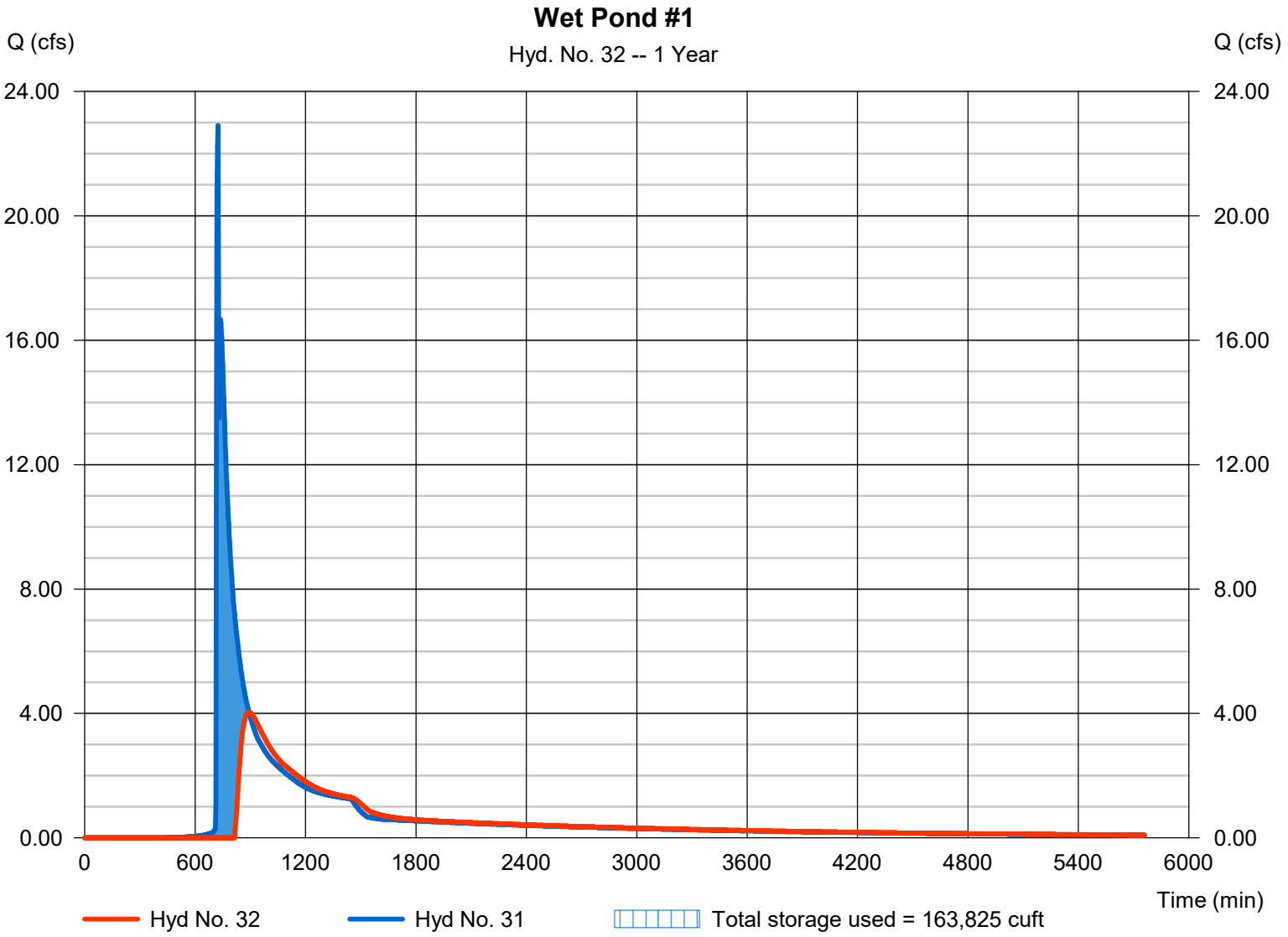
Hydrograph Report

Hyd. No. 32

Wet Pond #1

Hydrograph type	= Reservoir	Peak discharge	= 4.034 cfs
Storm frequency	= 1 yrs	Time to peak	= 892 min
Time interval	= 2 min	Hyd. volume	= 162,497 cuft
Inflow hyd. No.	= 31 - A1 + A2 + A3	Max. Elevation	= 402.28 ft
Reservoir name	= Wet Pond #1	Max. Storage	= 163,825 cuft

Storage Indication method used. Wet pond routing start elevation = 400.00 ft.



Pond Report

Pond No. 9 - Wet Pond #1

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 397.50 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	397.50	23,939	0	0
2.50	400.00	34,930	73,148	73,148
3.00	400.50	37,790	18,174	91,321
3.50	401.00	39,299	19,269	110,590
4.00	401.50	40,822	20,027	130,617
4.50	402.00	42,360	20,792	151,410
5.50	403.00	45,477	43,905	195,314
6.50	404.00	48,650	47,050	242,364
7.50	405.00	51,880	50,251	292,616
8.50	406.00	55,206	53,529	346,145
9.50	407.00	57,712	56,449	402,593

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 42.00	5.00	30.00	0.00
Span (in)	= 42.00	5.00	30.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 397.50	400.00	401.00	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	Yes	Yes	No

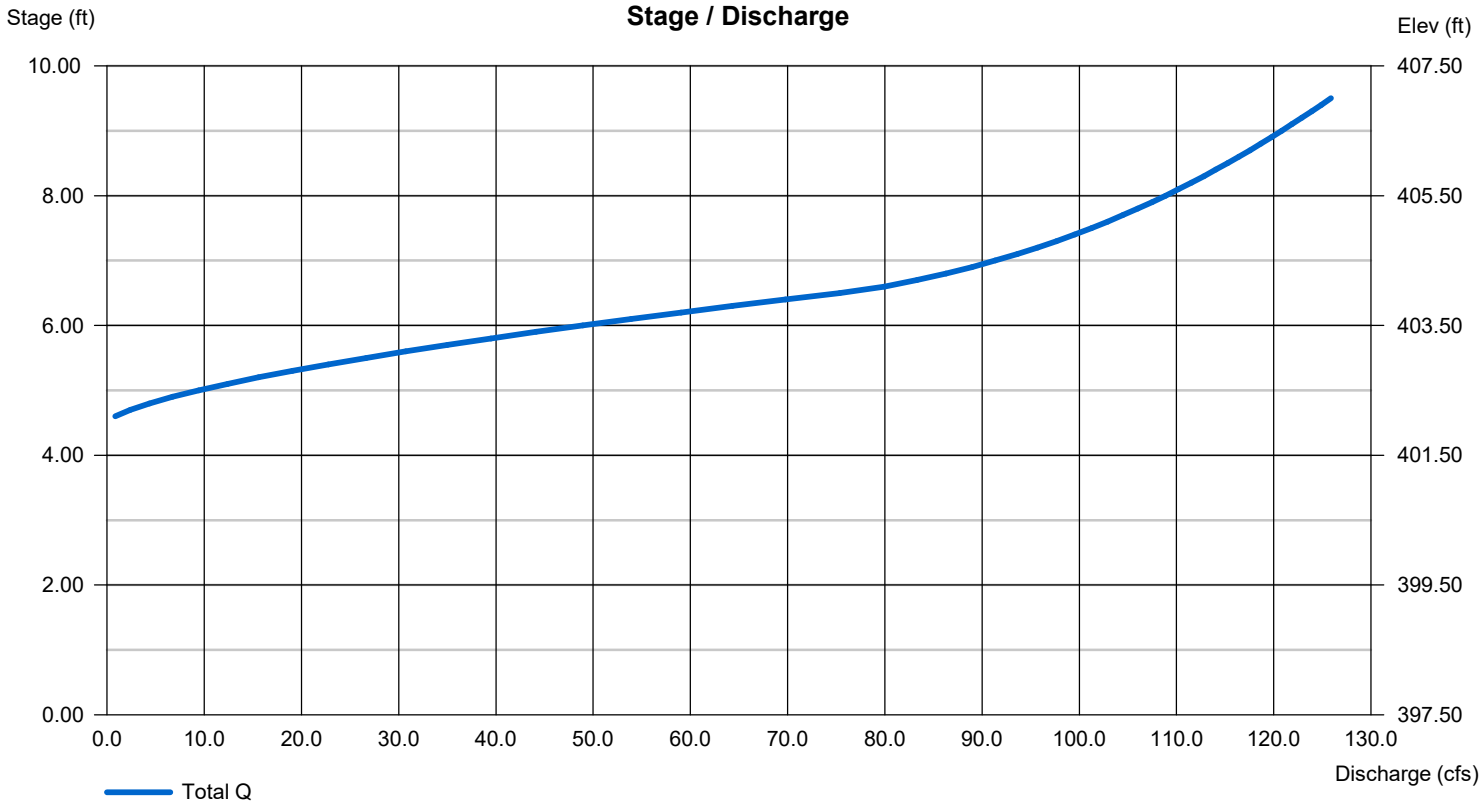
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 8.00	0.00	0.00	0.00
Crest El. (ft)	= 402.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 0.000 (by Contour)

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).

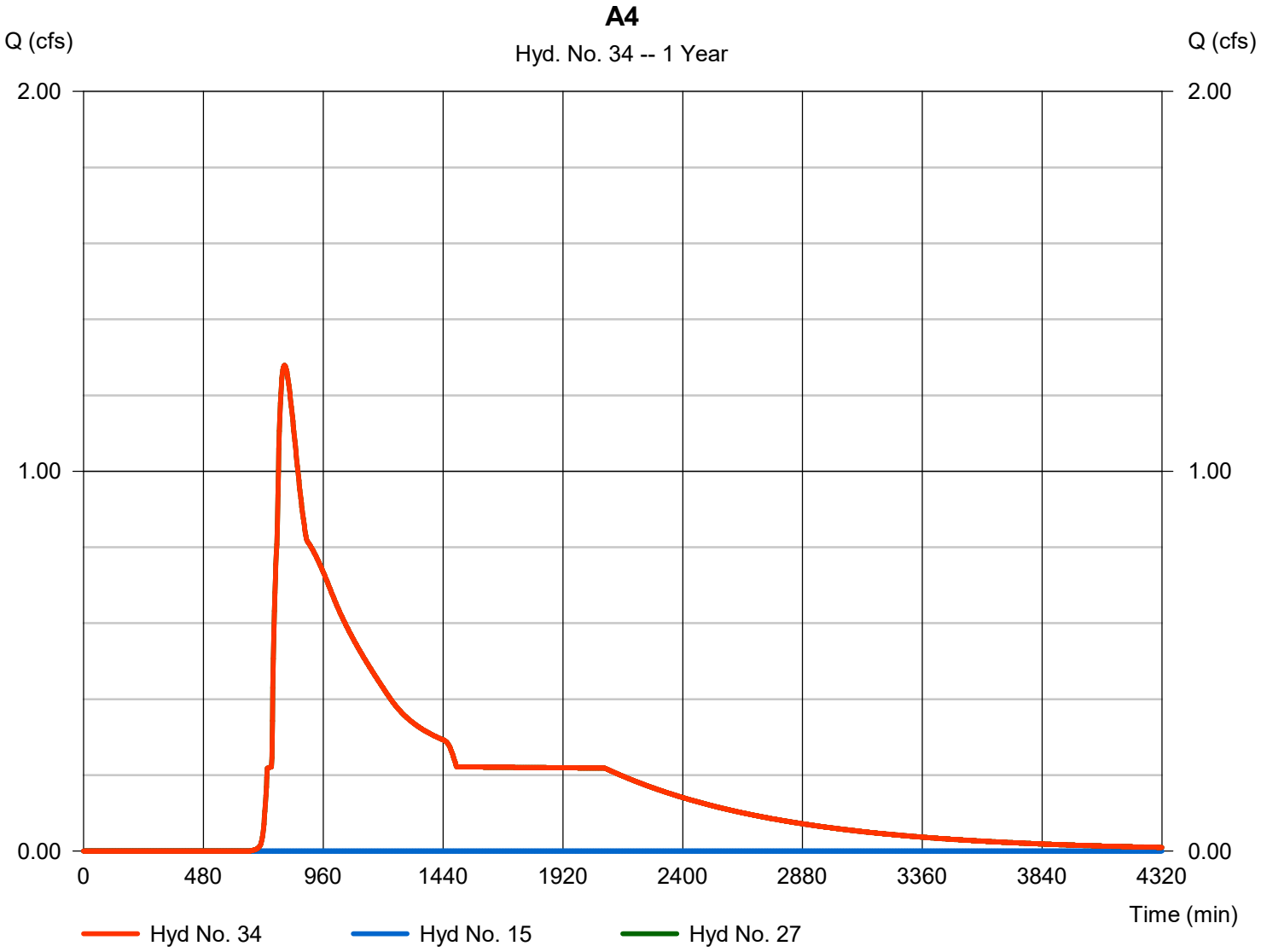


Hydrograph Report

Hyd. No. 34

A4

Hydrograph type	= Combine	Peak discharge	= 1.279 cfs
Storm frequency	= 1 yrs	Time to peak	= 804 min
Time interval	= 2 min	Hyd. volume	= 43,088 cuft
Inflow hyds.	= 15, 27	Contrib. drain. area	= 0.000 ac



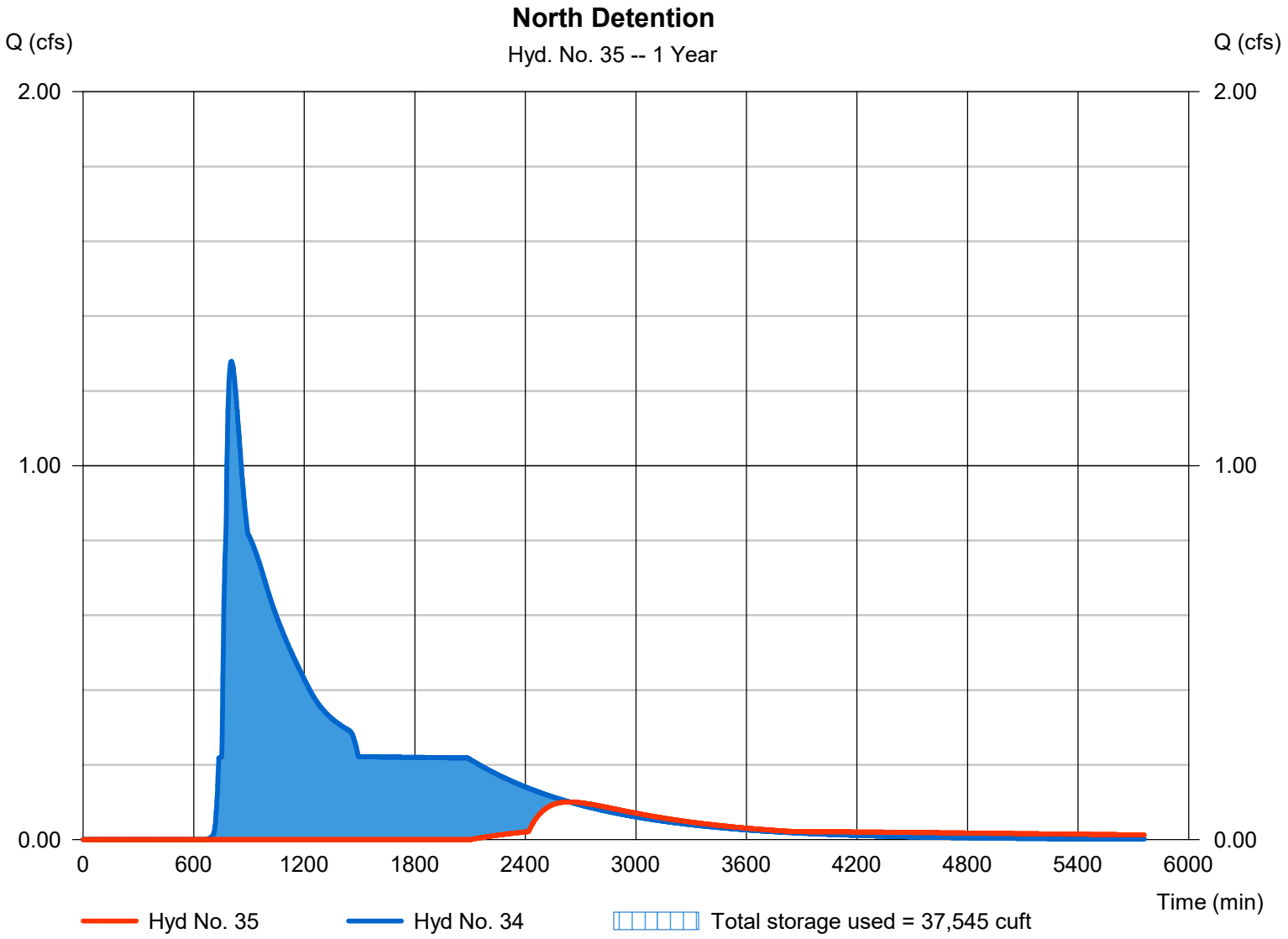
Hydrograph Report

Hyd. No. 35

North Detention

Hydrograph type	=	Reservoir	Peak discharge	=	0.101 cfs
Storm frequency	=	1 yrs	Time to peak	=	2638 min
Time interval	=	2 min	Hyd. volume	=	7,320 cuft
Inflow hyd. No.	=	34 - A4	Max. Elevation	=	402.83 ft
Reservoir name	=	Dry Detention #1	Max. Storage	=	37,545 cuft

Storage Indication method used.



Pond Report

Pond No. 7 - Dry Detention #1

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 400.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	400.00	10,783	0	0
2.00	402.00	13,895	24,610	24,610
4.00	404.00	17,231	31,063	55,673
6.00	406.00	20,793	37,964	93,637

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 30.00	4.50	36.00	0.00
Span (in)	= 30.00	4.50	36.00	0.00
No. Barrels	= 1	0	1	0
Invert El. (ft)	= 400.00	400.00	402.75	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	Yes	Yes	No

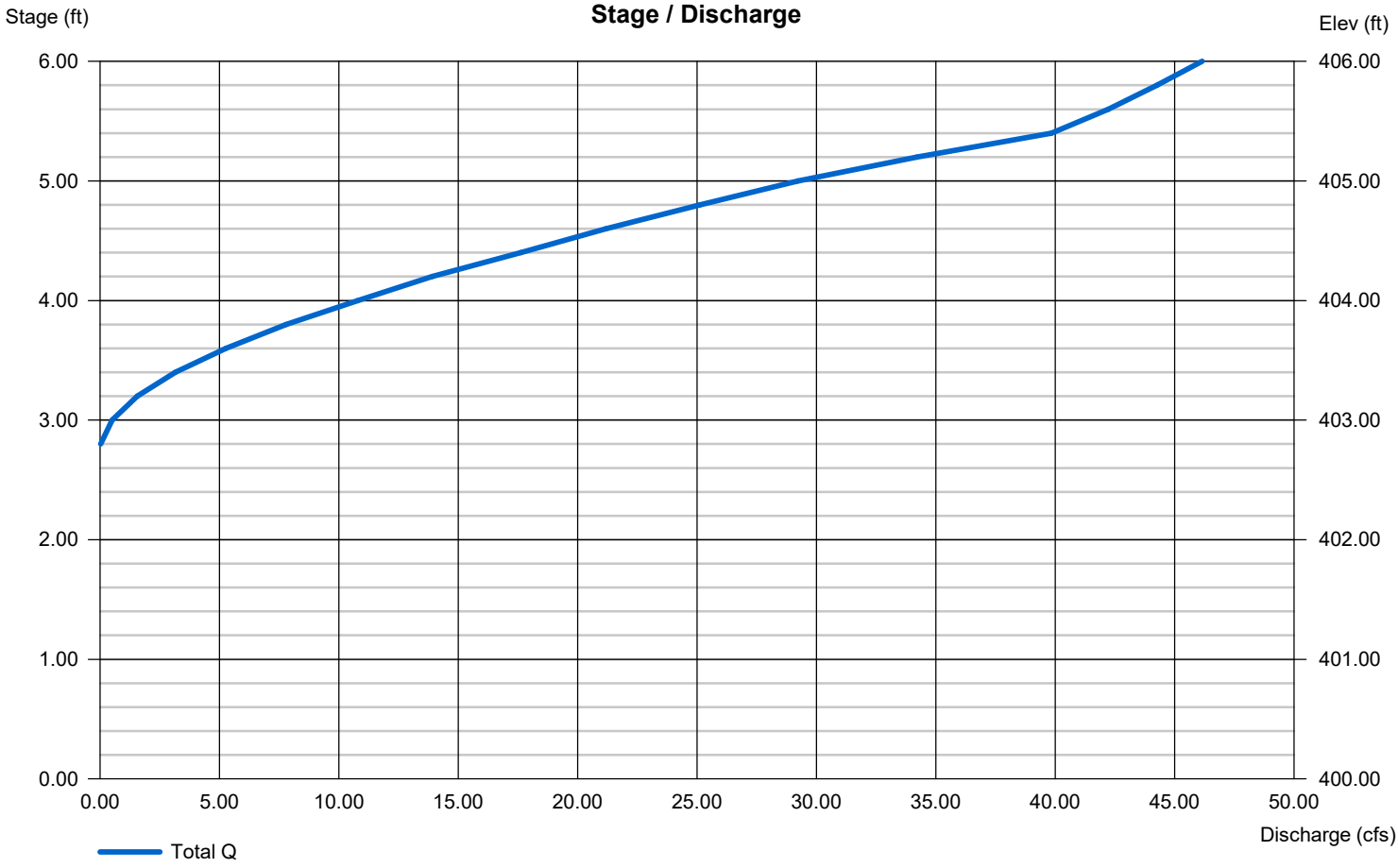
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 4.00	0.00	0.00	0.00
Crest El. (ft)	= 405.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	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).

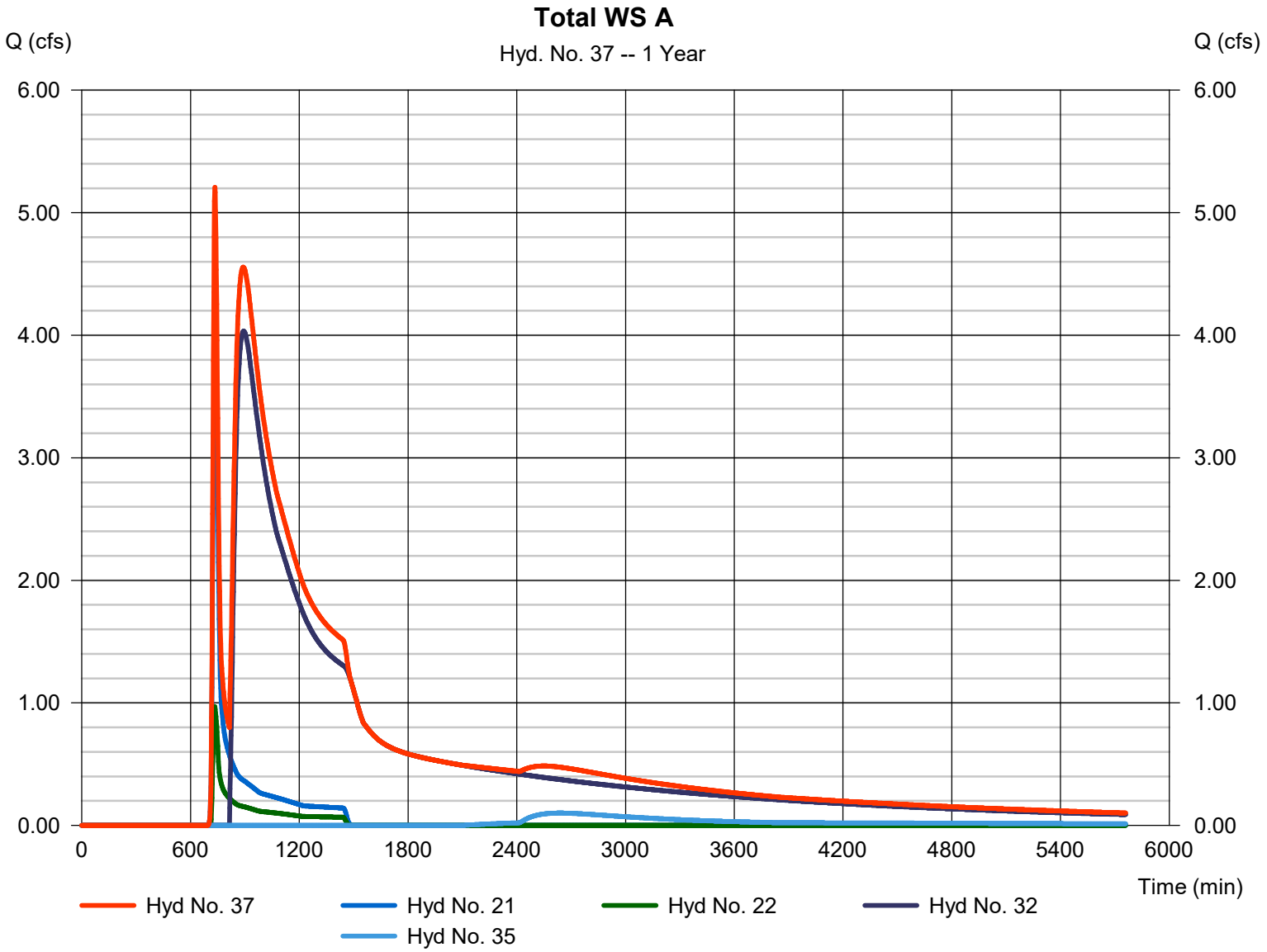


Hydrograph Report

Hyd. No. 37

Total WS A

Hydrograph type	= Combine	Peak discharge	= 5.208 cfs
Storm frequency	= 1 yrs	Time to peak	= 734 min
Time interval	= 2 min	Hyd. volume	= 195,975 cuft
Inflow hyds.	= 21, 22, 32, 35	Contrib. drain. area	= 8.310 ac

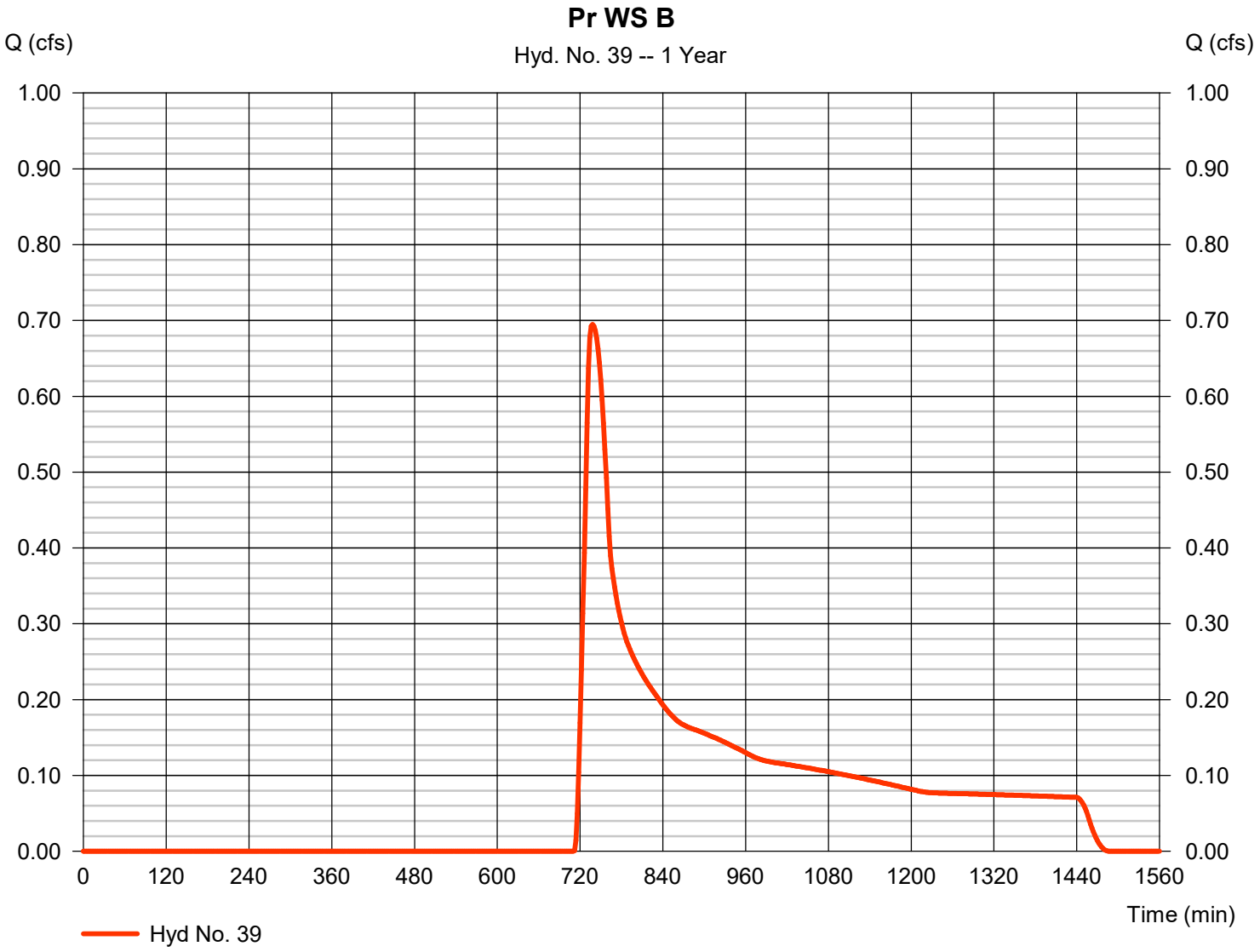


Hydrograph Report

Hyd. No. 39

Pr WS B

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.695 cfs
Storm frequency	=	1 yrs	Time to peak	=	738 min
Time interval	=	2 min	Hyd. volume	=	6,448 cuft
Drainage area	=	9.900 ac	Curve number	=	67
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	27.00 min
Total precip.	=	2.02 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

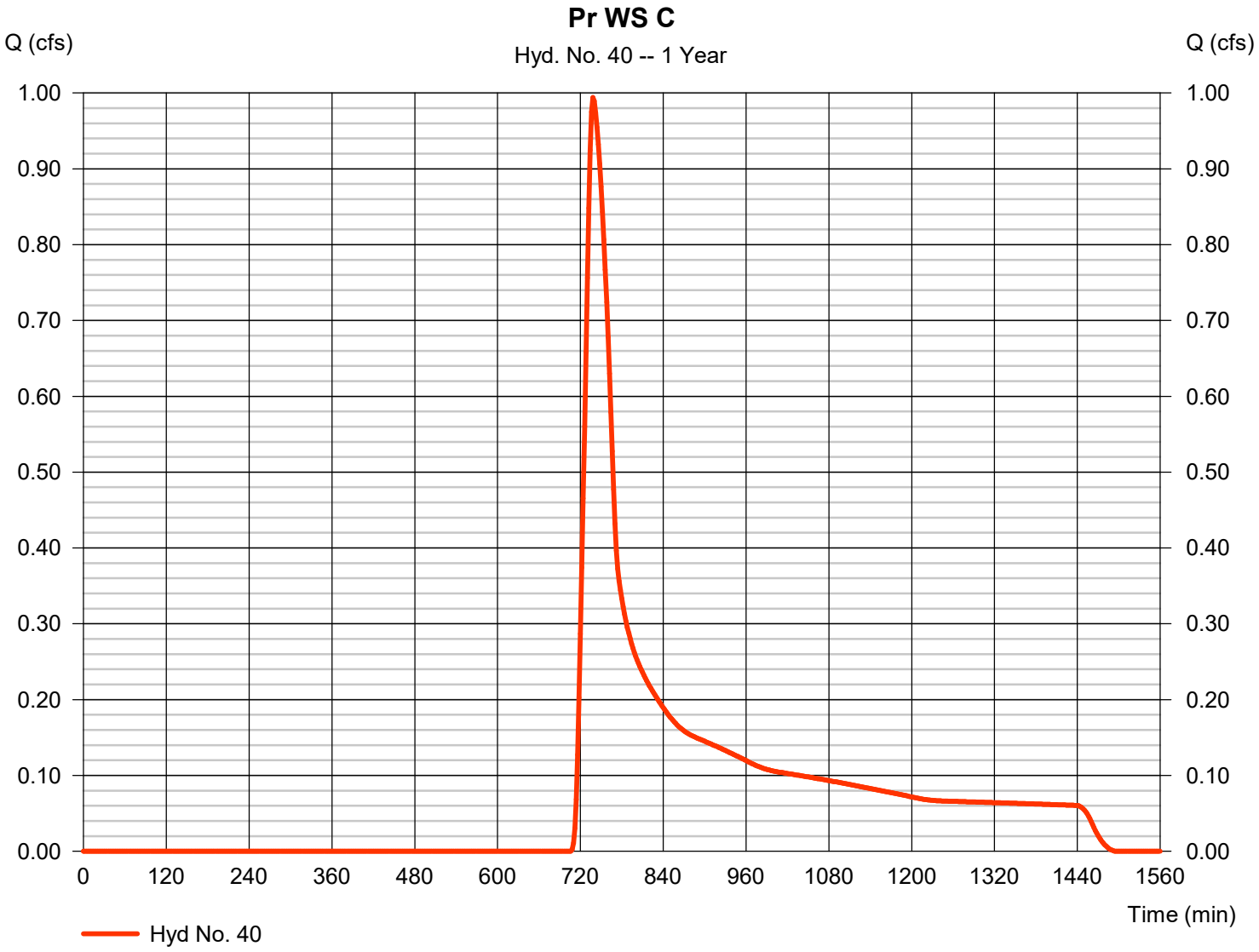


Hydrograph Report

Hyd. No. 40

Pr WS C

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.994 cfs
Storm frequency	=	1 yrs	Time to peak	=	738 min
Time interval	=	2 min	Hyd. volume	=	6,819 cuft
Drainage area	=	6.320 ac	Curve number	=	72
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	34.00 min
Total precip.	=	2.02 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

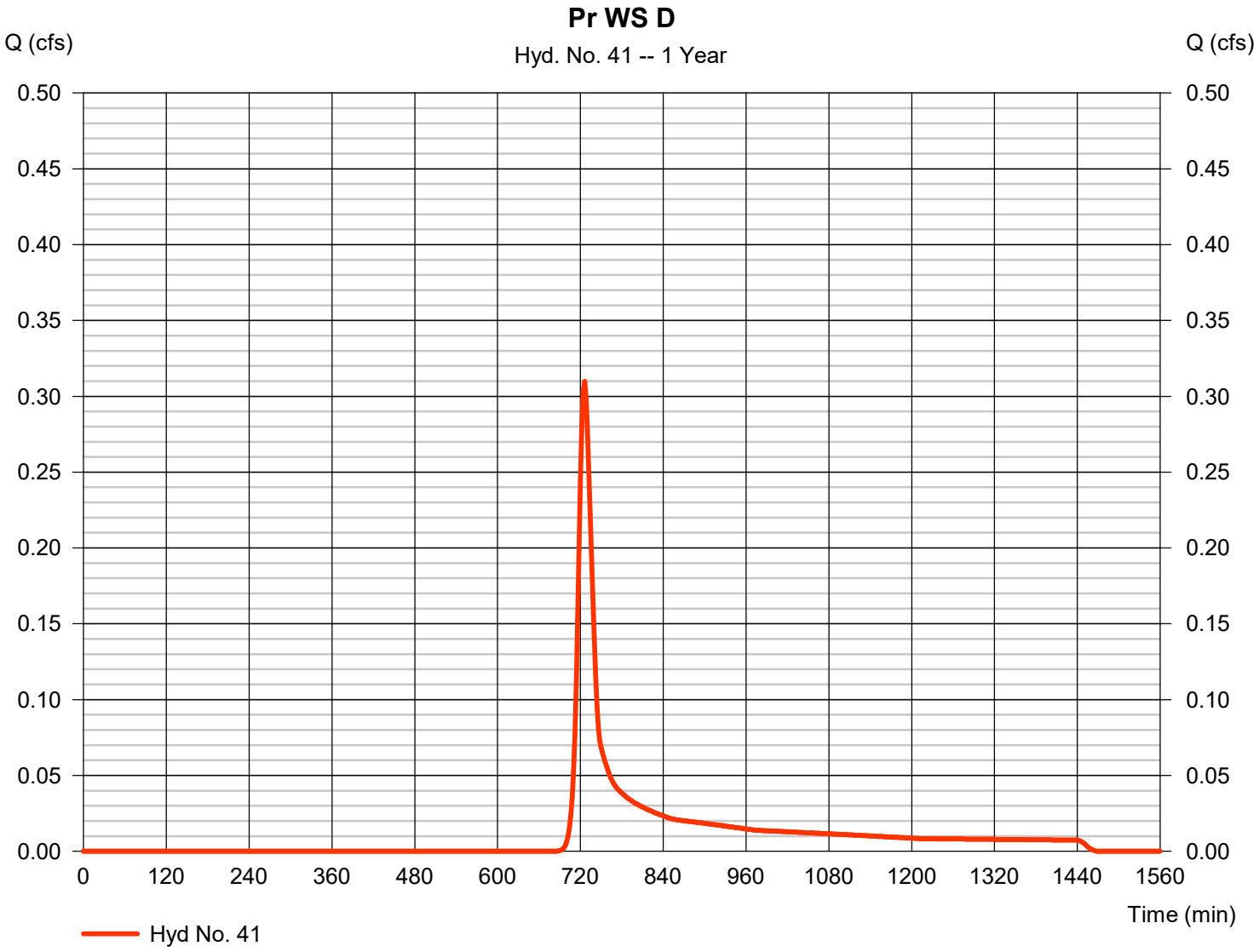


Hydrograph Report

Hyd. No. 41

Pr WS D

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.310 cfs
Storm frequency	=	1 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	1,067 cuft
Drainage area	=	0.550 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	20.00 min
Total precip.	=	2.02 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

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	53.15	2	716	110,665	------	------	------	Pr WS A1
2	Diversion1	17.25	2	706	89,869	1	------	------	A1 to Bio #1
3	Diversion2	35.90	2	716	20,795	1	------	------	A1 to Detention
5	SCS Runoff	102.44	2	722	301,660	------	------	------	Pr WS A2
6	Diversion1	38.56	2	710	246,623	5	------	------	A2 to Bio #2
7	Diversion2	63.88	2	722	55,037	5	------	------	A2 to Detention
9	SCS Runoff	37.08	2	718	86,793	------	------	------	Pr WS A3
10	Diversion1	21.66	2	712	79,445	9	------	------	A3 to Bio #3
11	Diversion2	15.42	2	718	7,348	9	------	------	A3 to Detention
13	SCS Runoff	23.15	2	736	105,486	------	------	------	Pr WS A4
14	Diversion1	17.25	2	726	100,248	13	------	------	A4 to Bio #4
15	Diversion2	5.904	2	736	5,239	13	------	------	A4 to Detention
17	SCS Runoff	7.094	2	732	29,231	------	------	------	Pr WS A5
18	Reach	7.104	2	732	29,229	17	------	------	PR Reach A5
19	SCS Runoff	6.950	2	730	26,118	------	------	------	Pr WS A6
20	Combine	13.84	2	730	55,347	18, 19	------	------	Combine
21	Reach	13.85	2	732	55,347	20	------	------	PR Reach A6
22	SCS Runoff	6.203	2	730	25,698	------	------	------	Pr WS A7
24	Reservoir	11.87	2	724	87,518	2	406.12	31,882	Bio A1
25	Reservoir	25.88	2	738	237,292	6	402.14	94,192	Bio A2
26	Reservoir	8.284	2	730	78,332	10	409.28	36,736	Bio A3
27	Reservoir	13.01	2	756	100,187	14	403.64	34,206	Bio A4
29	Combine	102.56	2	718	83,181	3, 7, 11,	------	------	A1+A2+A3 Bypass
30	Combine	43.65	2	732	403,142	24, 25, 26,	------	------	A1+A2+A3 thru Bioretention
31	Combine	129.84	2	720	486,323	29, 30	------	------	A1 + A2 + A3
32	Reservoir	35.25	2	750	407,589	31	403.21	204,971	Wet Pond #1
34	Combine	13.01	2	756	105,426	15, 27,	------	------	A4
35	Reservoir	2.367	2	854	69,606	34	403.30	44,842	North Detention
37	Combine	49.64	2	738	558,240	21, 22, 32, 35,	------	------	Total WS A

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

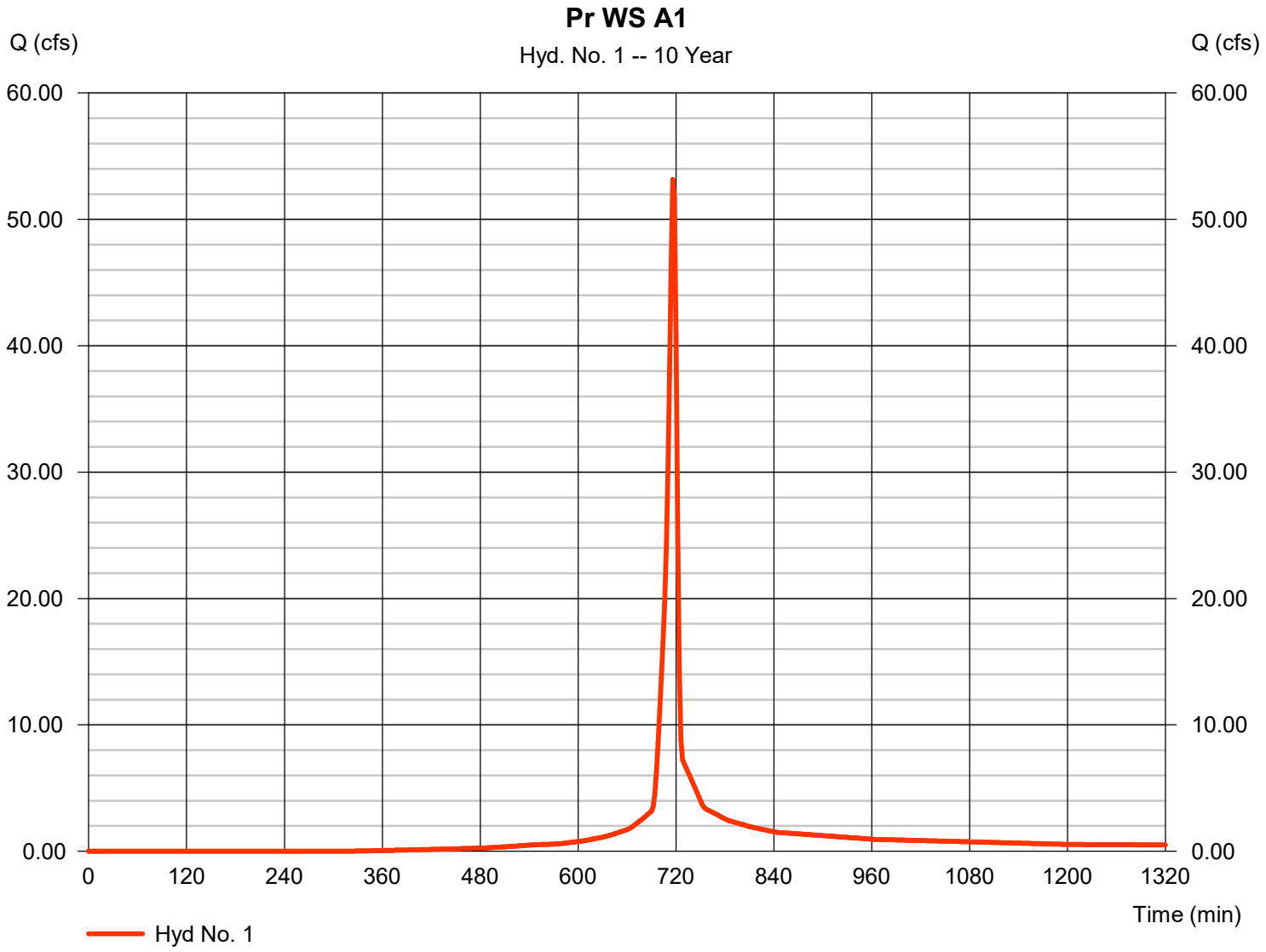
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
39	SCS Runoff	5.777	2	732	27,569	------	------	------	Pr WS B
40	SCS Runoff	4.705	2	736	23,226	------	------	------	Pr WS C
41	SCS Runoff	0.913	2	724	2,896	------	------	------	Pr WS D

Hydrograph Report

Hyd. No. 1

Pr WS A1

Hydrograph type	=	SCS Runoff	Peak discharge	=	53.15 cfs
Storm frequency	=	10 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	110,665 cuft
Drainage area	=	14.090 ac	Curve number	=	90
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.00 min
Total precip.	=	3.35 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

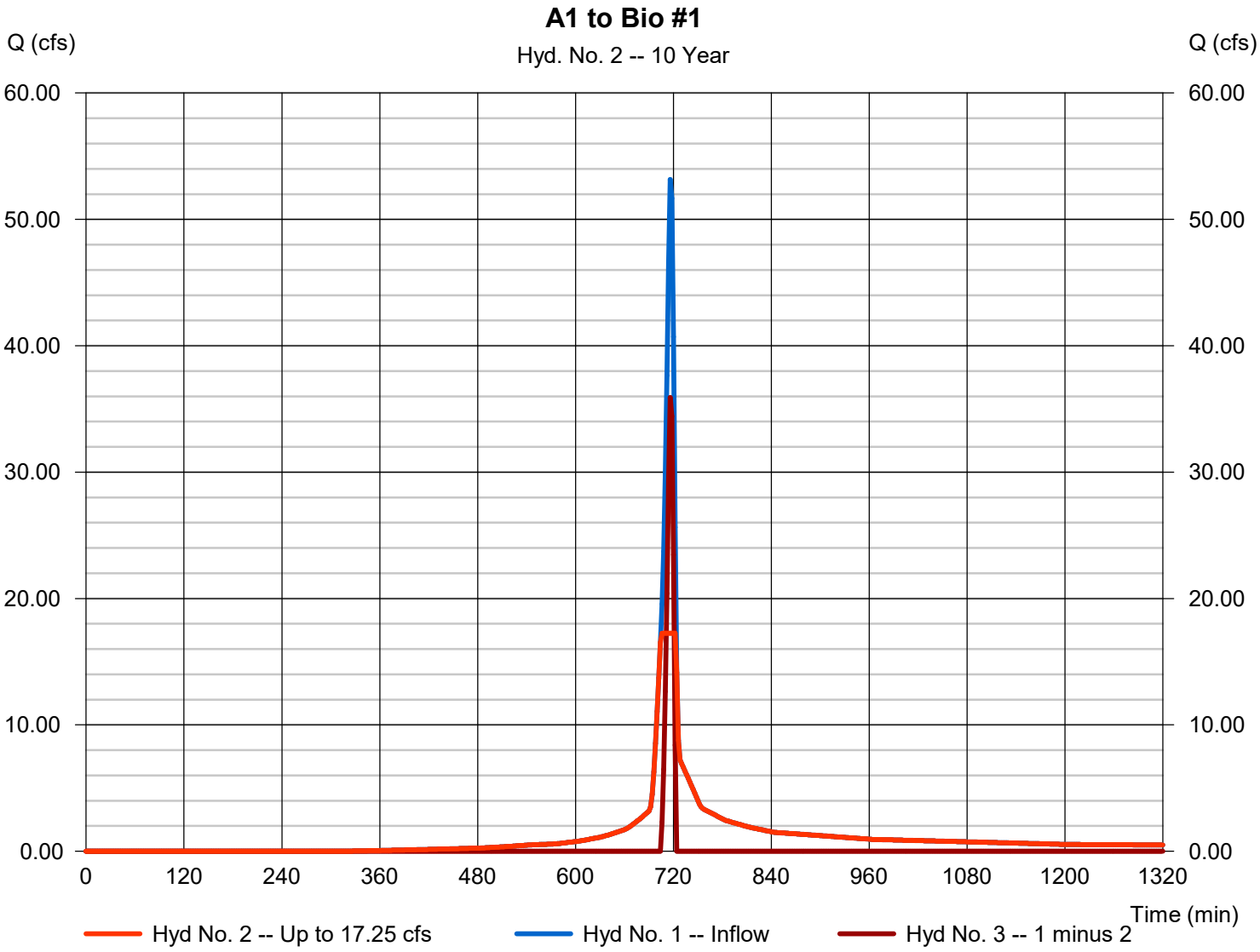


Hydrograph Report

Hyd. No. 2

A1 to Bio #1

Hydrograph type	= Diversion1	Peak discharge	= 17.25 cfs
Storm frequency	= 10 yrs	Time to peak	= 706 min
Time interval	= 2 min	Hyd. volume	= 89,869 cuft
Inflow hydrograph	= 1 - Pr WS A1	2nd diverted hyd.	= 3
Diversion method	= Constant Q	Constant Q	= 17.25 cfs

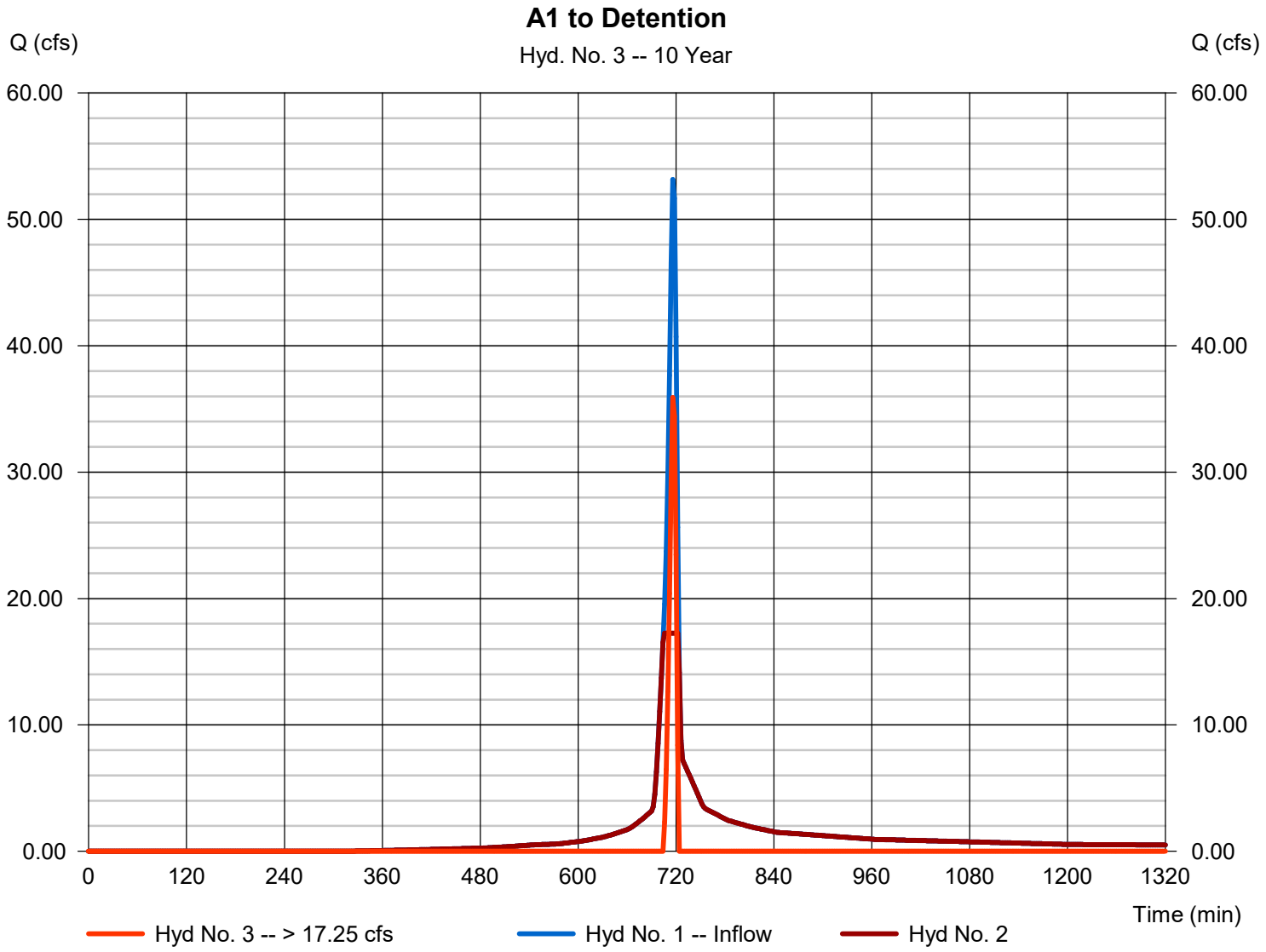


Hydrograph Report

Hyd. No. 3

A1 to Detention

Hydrograph type	= Diversion2	Peak discharge	= 35.90 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 20,795 cuft
Inflow hydrograph	= 1 - Pr WS A1	2nd diverted hyd.	= 2
Diversion method	= Constant Q	Constant Q	= 17.25 cfs

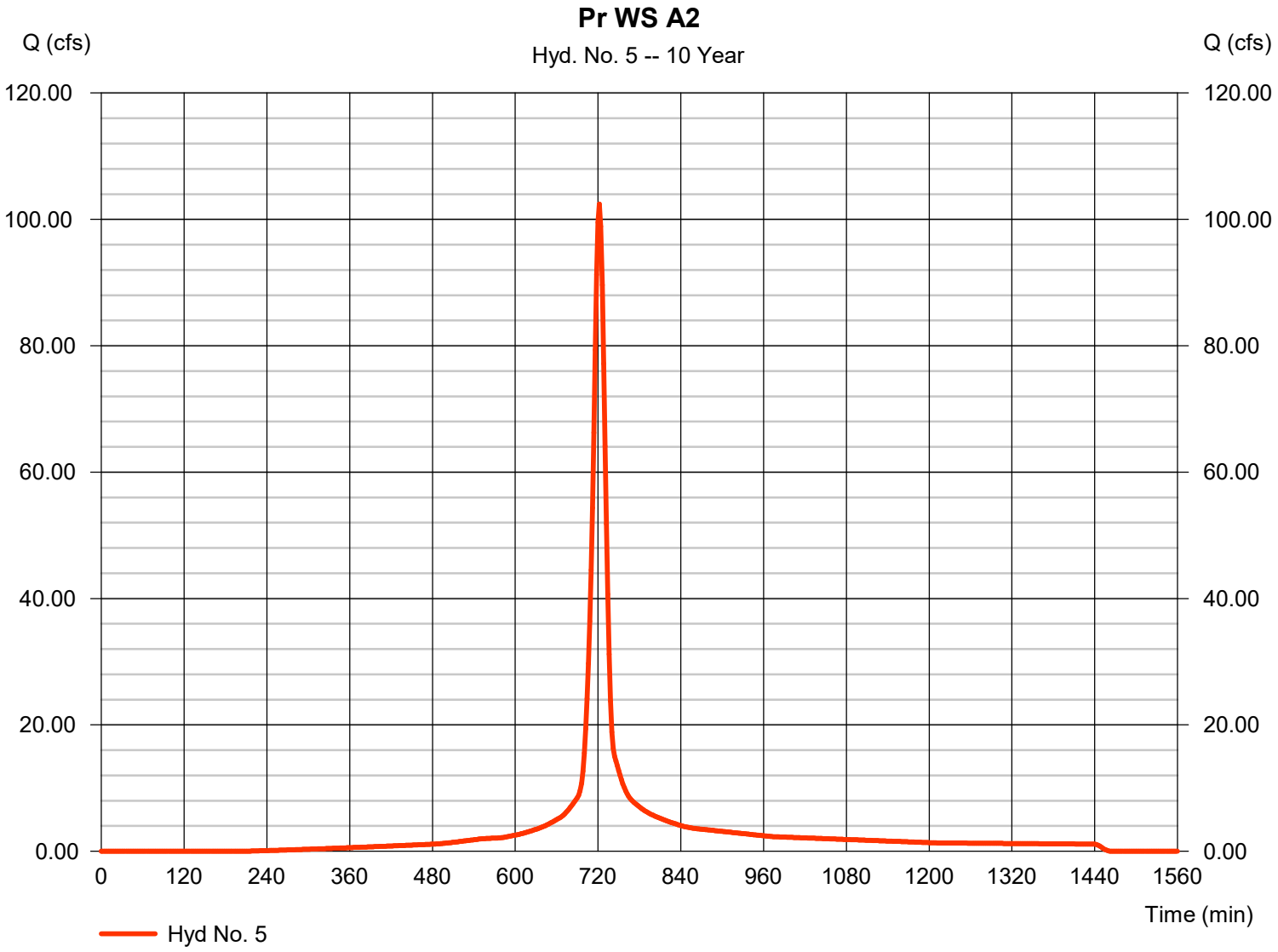


Hydrograph Report

Hyd. No. 5

Pr WS A2

Hydrograph type	=	SCS Runoff	Peak discharge	=	102.44 cfs
Storm frequency	=	10 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	301,660 cuft
Drainage area	=	31.690 ac	Curve number	=	94
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	15.00 min
Total precip.	=	3.35 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

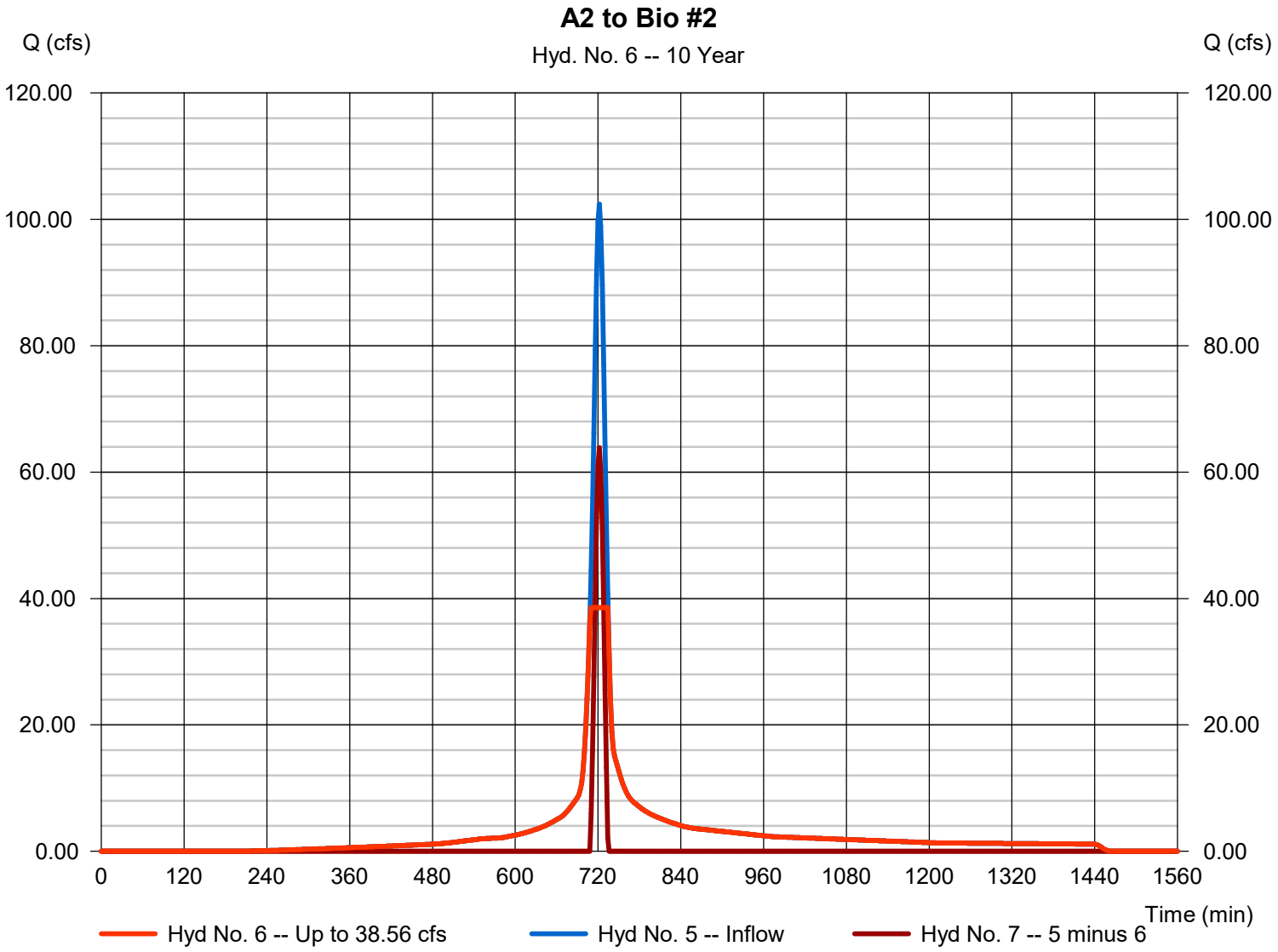


Hydrograph Report

Hyd. No. 6

A2 to Bio #2

Hydrograph type	= Diversion1	Peak discharge	= 38.56 cfs
Storm frequency	= 10 yrs	Time to peak	= 710 min
Time interval	= 2 min	Hyd. volume	= 246,623 cuft
Inflow hydrograph	= 5 - Pr WS A2	2nd diverted hyd.	= 7
Diversion method	= Constant Q	Constant Q	= 38.56 cfs

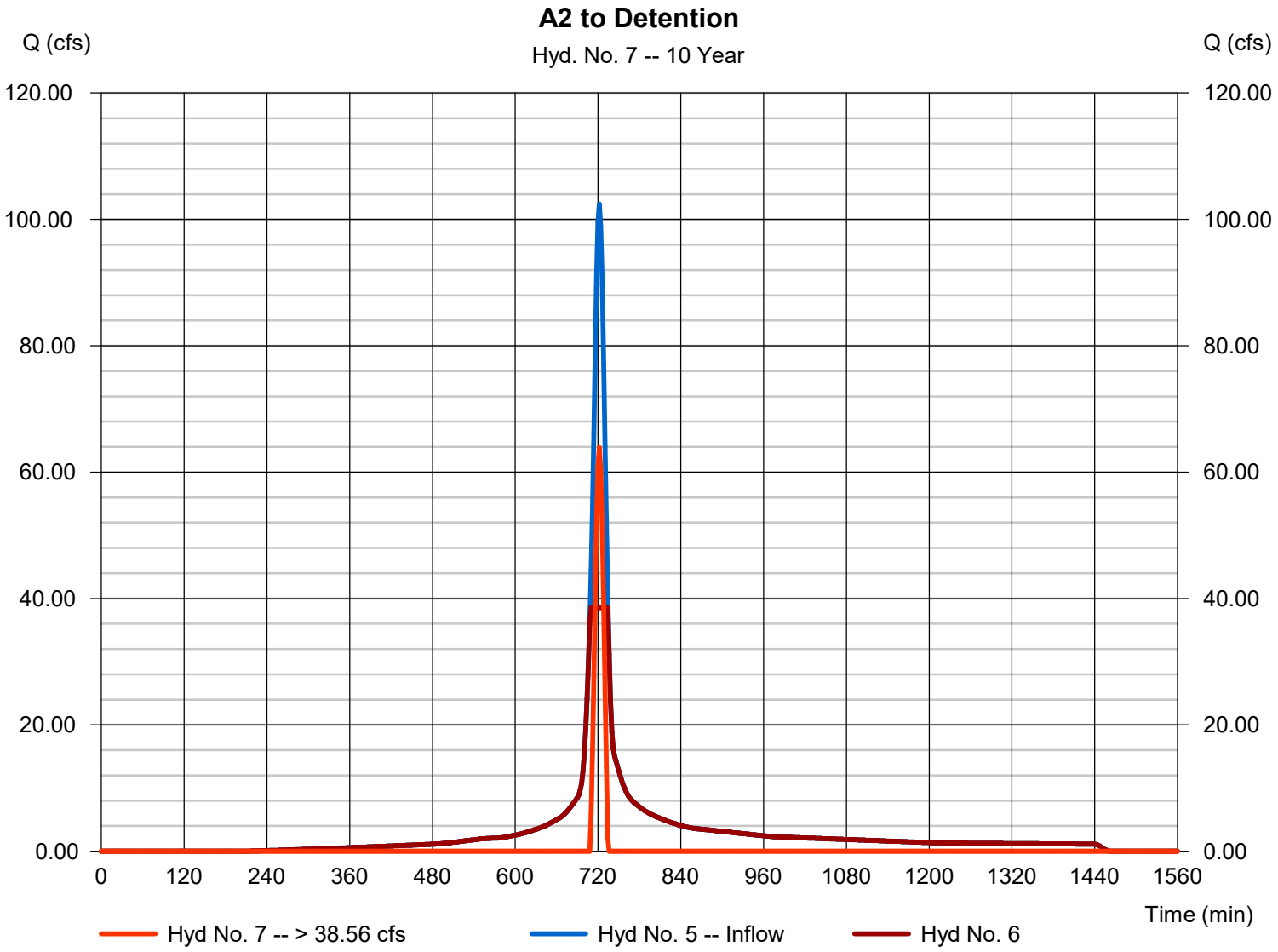


Hydrograph Report

Hyd. No. 7

A2 to Detention

Hydrograph type	= Diversion2	Peak discharge	= 63.88 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 55,037 cuft
Inflow hydrograph	= 5 - Pr WS A2	2nd diverted hyd.	= 6
Diversion method	= Constant Q	Constant Q	= 38.56 cfs

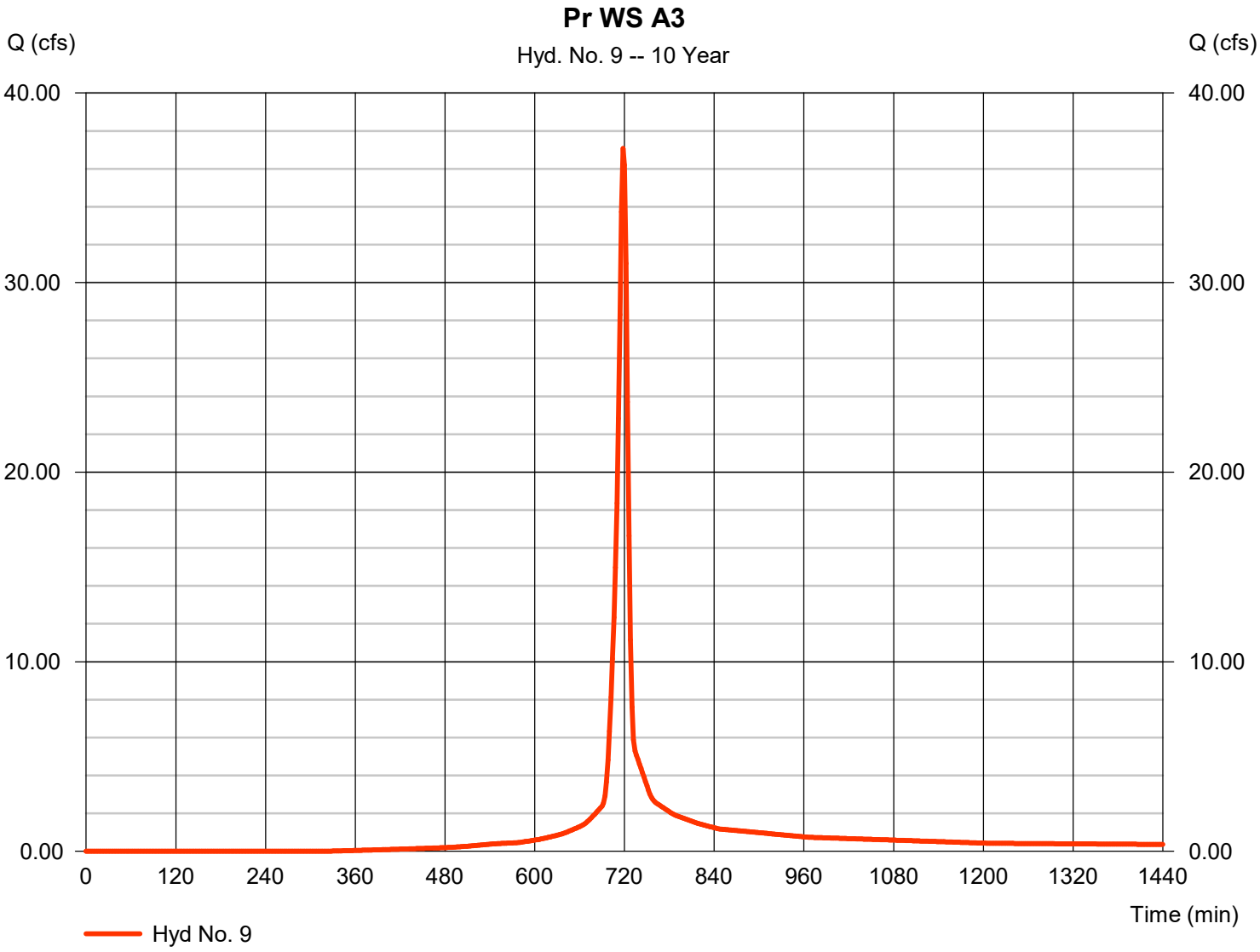


Hydrograph Report

Hyd. No. 9

Pr WS A3

Hydrograph type	=	SCS Runoff	Peak discharge	=	37.08 cfs
Storm frequency	=	10 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	86,793 cuft
Drainage area	=	10.360 ac	Curve number	=	90
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	7.00 min
Total precip.	=	3.35 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

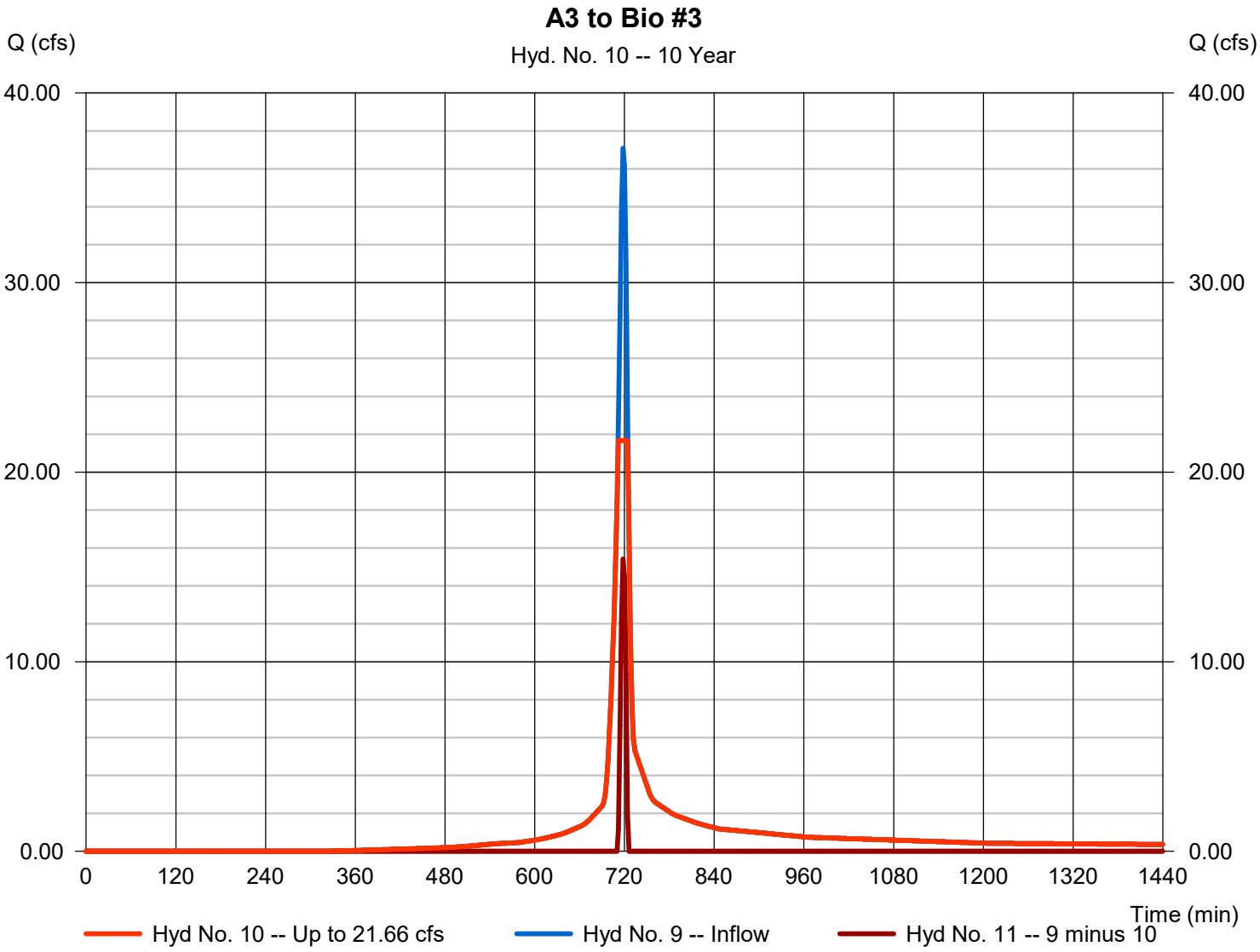


Hydrograph Report

Hyd. No. 10

A3 to Bio #3

Hydrograph type	= Diversion1	Peak discharge	= 21.66 cfs
Storm frequency	= 10 yrs	Time to peak	= 712 min
Time interval	= 2 min	Hyd. volume	= 79,445 cuft
Inflow hydrograph	= 9 - Pr WS A3	2nd diverted hyd.	= 11
Diversion method	= Constant Q	Constant Q	= 21.66 cfs

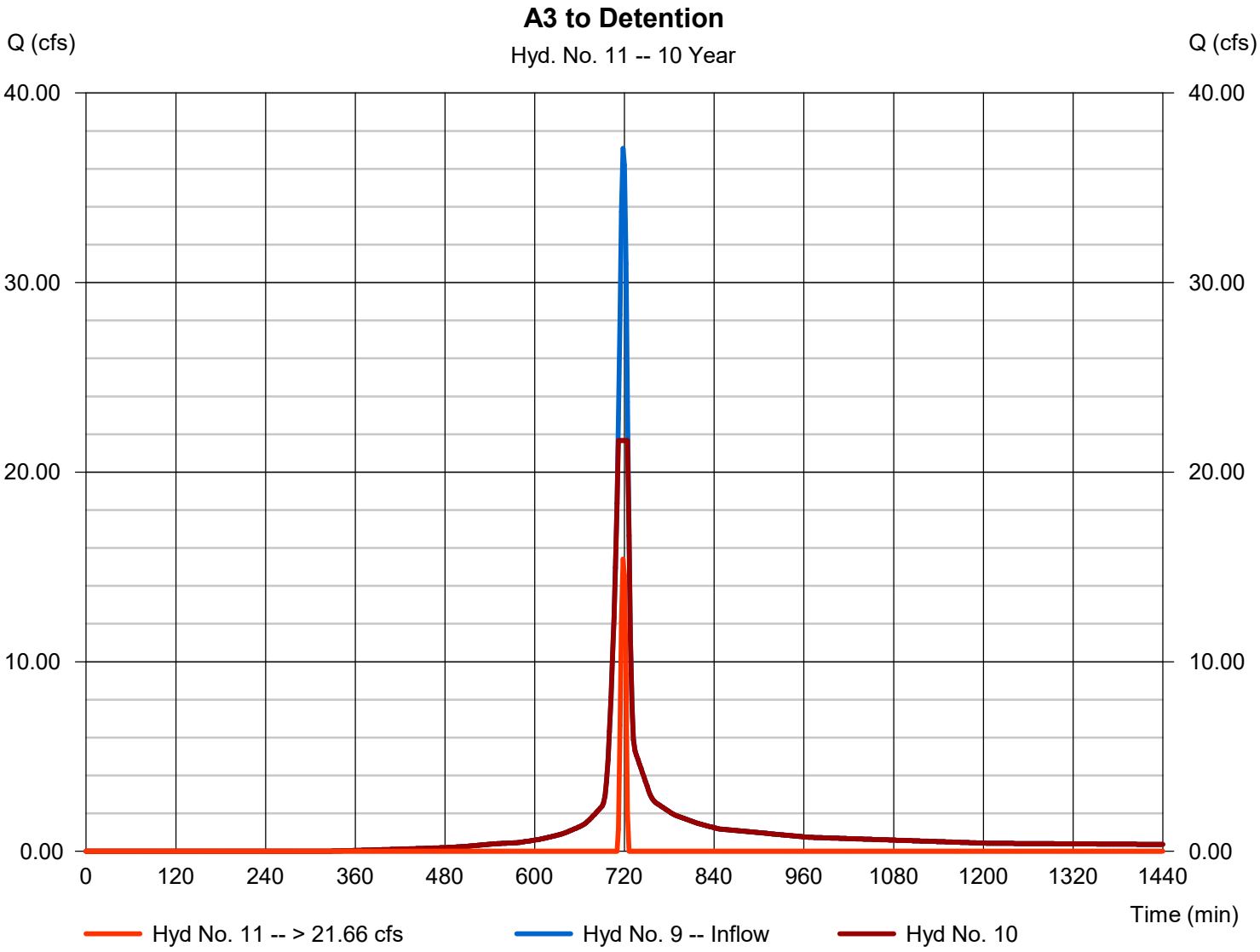


Hydrograph Report

Hyd. No. 11

A3 to Detention

Hydrograph type	= Diversion2	Peak discharge	= 15.42 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 7,348 cuft
Inflow hydrograph	= 9 - Pr WS A3	2nd diverted hyd.	= 10
Diversion method	= Constant Q	Constant Q	= 21.66 cfs

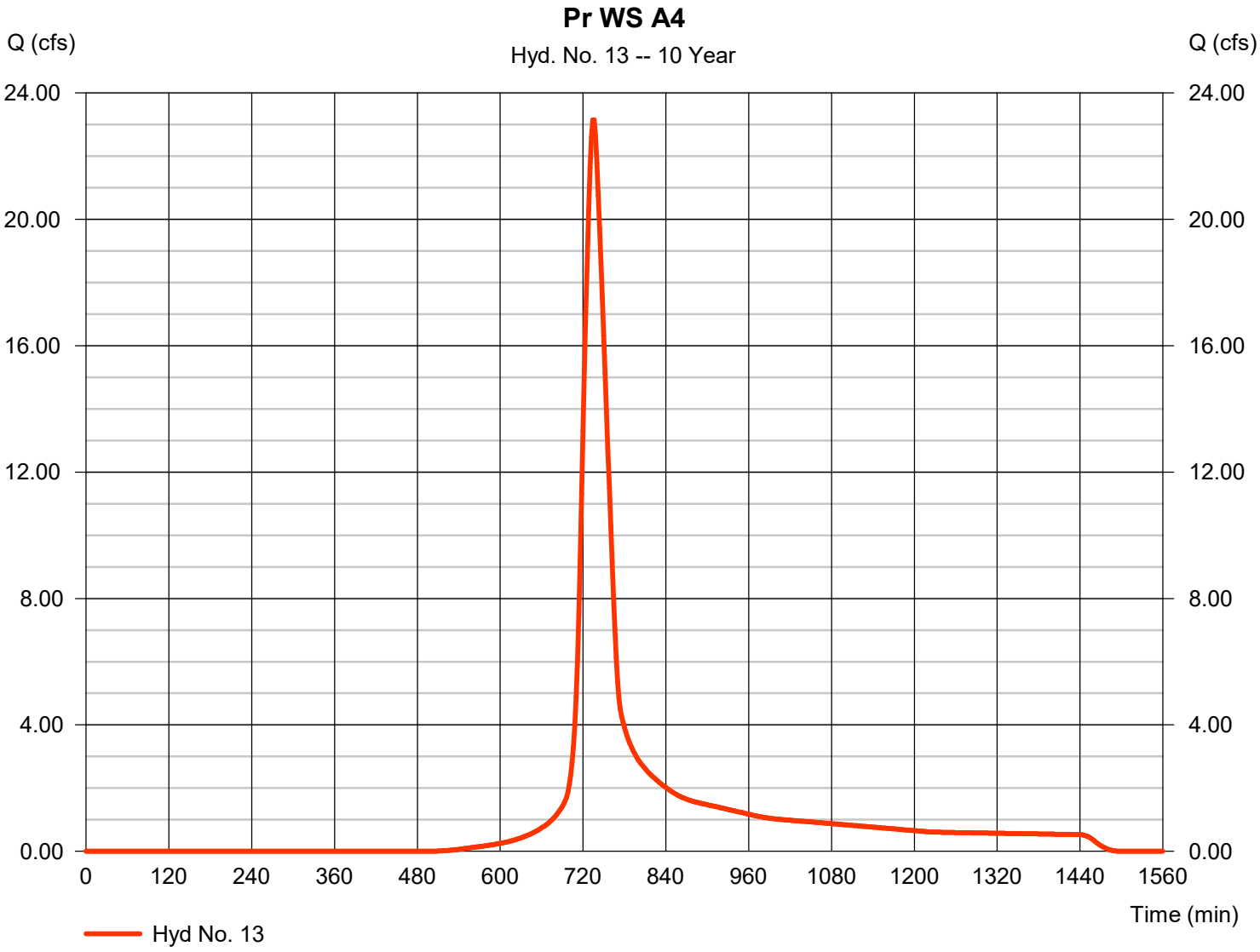


Hydrograph Report

Hyd. No. 13

Pr WS A4

Hydrograph type	=	SCS Runoff	Peak discharge	=	23.15 cfs
Storm frequency	=	10 yrs	Time to peak	=	736 min
Time interval	=	2 min	Hyd. volume	=	105,486 cuft
Drainage area	=	16.960 ac	Curve number	=	83
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	36.00 min
Total precip.	=	3.35 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

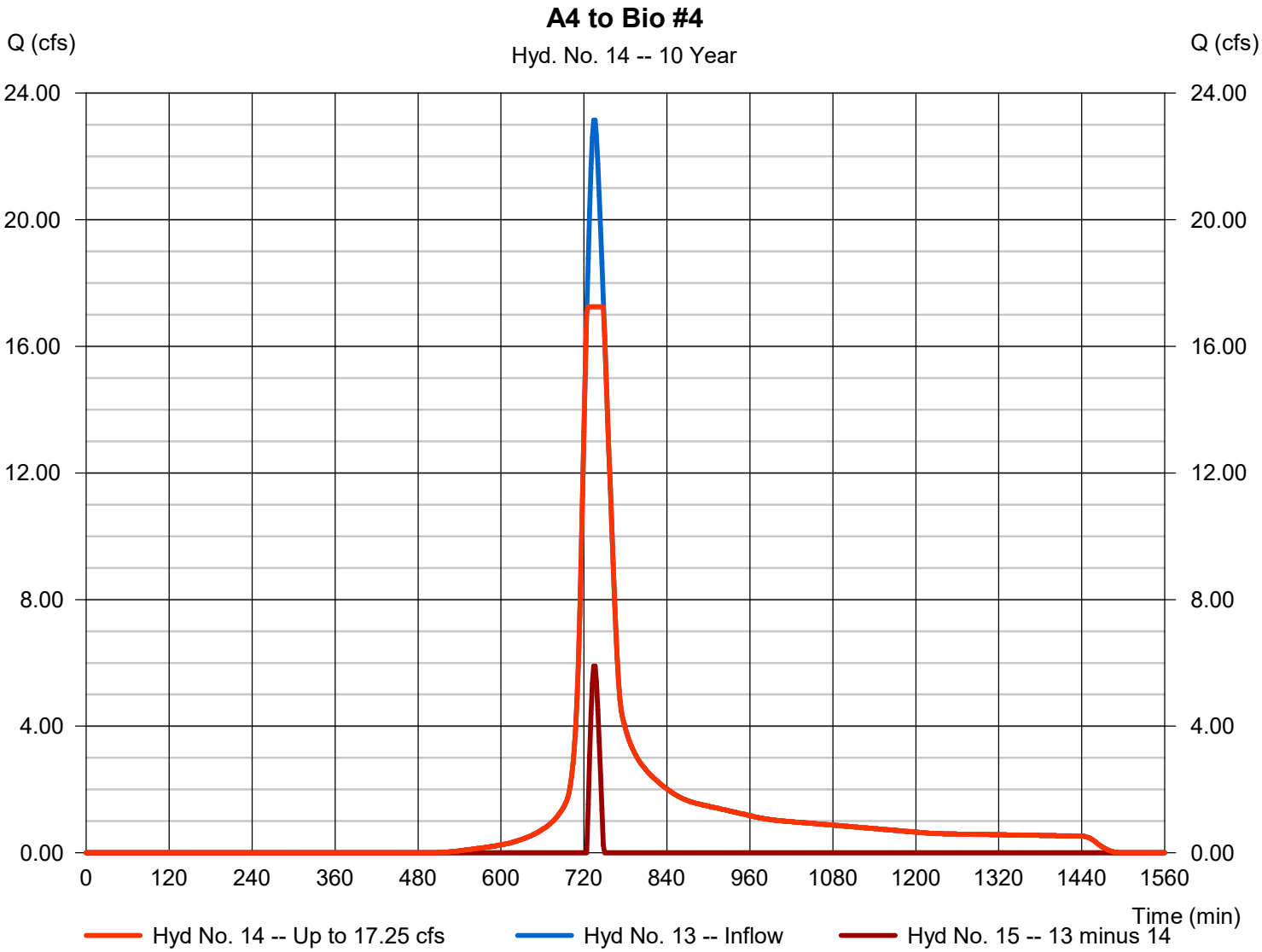


Hydrograph Report

Hyd. No. 14

A4 to Bio #4

Hydrograph type	= Diversion1	Peak discharge	= 17.25 cfs
Storm frequency	= 10 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 100,248 cuft
Inflow hydrograph	= 13 - Pr WS A4	2nd diverted hyd.	= 15
Diversion method	= Constant Q	Constant Q	= 17.25 cfs

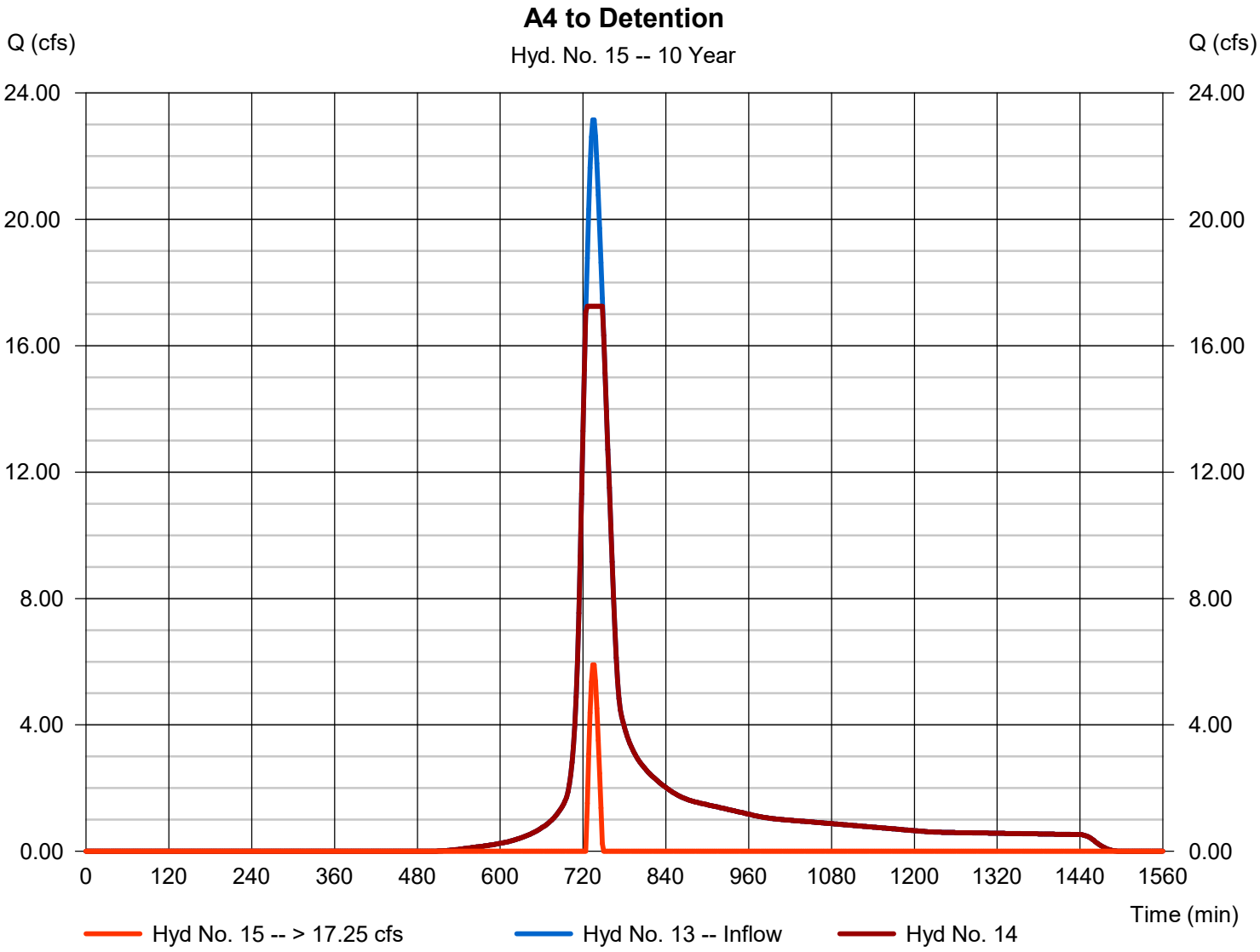


Hydrograph Report

Hyd. No. 15

A4 to Detention

Hydrograph type	= Diversion2	Peak discharge	= 5.904 cfs
Storm frequency	= 10 yrs	Time to peak	= 736 min
Time interval	= 2 min	Hyd. volume	= 5,239 cuft
Inflow hydrograph	= 13 - Pr WS A4	2nd diverted hyd.	= 14
Diversion method	= Constant Q	Constant Q	= 17.25 cfs

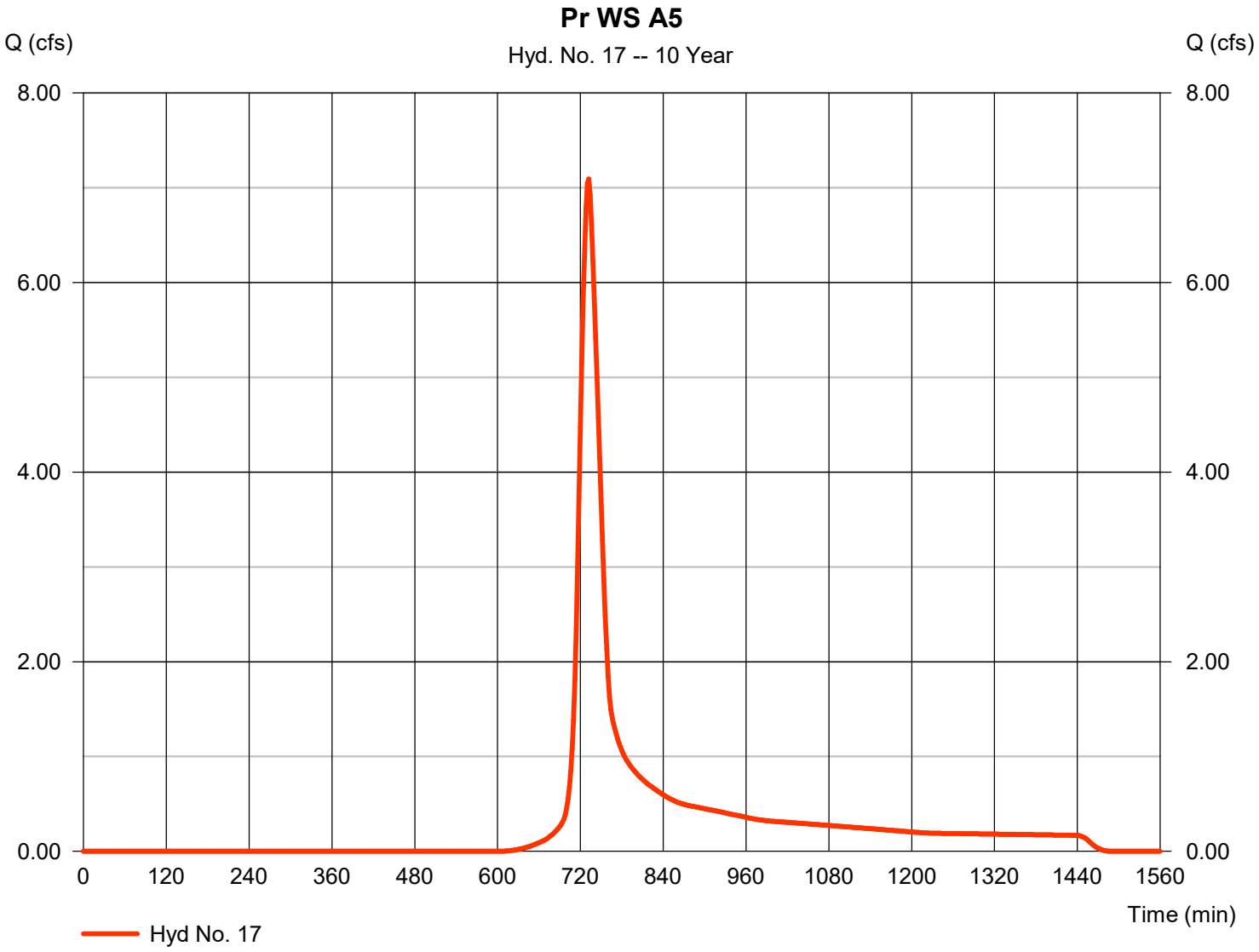


Hydrograph Report

Hyd. No. 17

Pr WS A5

Hydrograph type	=	SCS Runoff	Peak discharge	=	7.094 cfs
Storm frequency	=	10 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	29,231 cuft
Drainage area	=	6.100 ac	Curve number	=	77
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	30.00 min
Total precip.	=	3.35 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



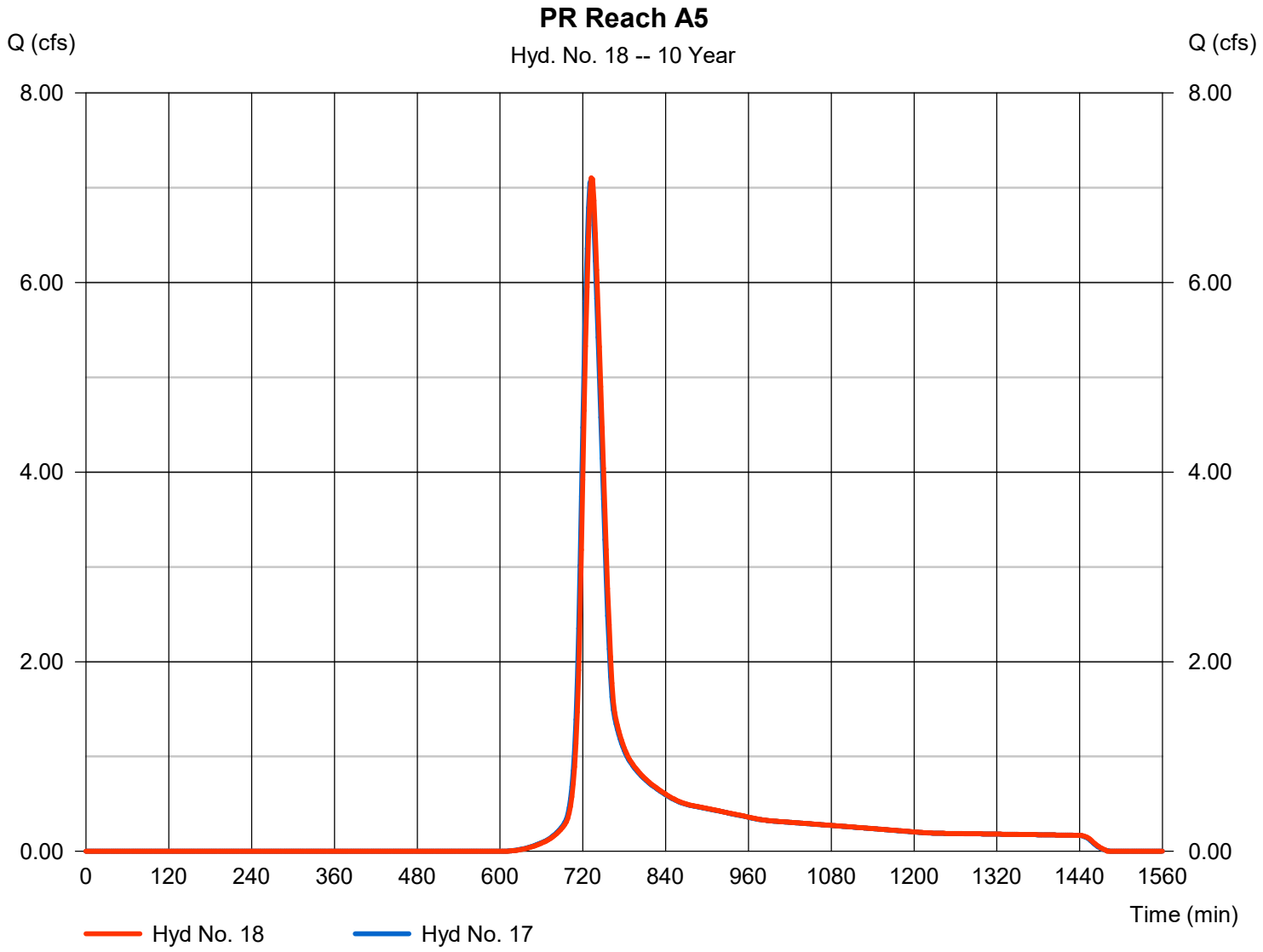
Hydrograph Report

Hyd. No. 18

PR Reach A5

Hydrograph type	=	Reach	Peak discharge	=	7.104 cfs
Storm frequency	=	10 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	29,229 cuft
Inflow hyd. No.	=	17 - Pr WS A5	Section type	=	Trapezoidal
Reach length	=	101.0 ft	Channel slope	=	1.6 %
Manning's n	=	0.025	Bottom width	=	12.0 ft
Side slope	=	2.0:1	Max. depth	=	1.0 ft
Rating curve x	=	1.437	Rating curve m	=	1.425
Ave. velocity	=	2.31 ft/s	Routing coeff.	=	1.3238

Modified Att-Kin routing method used.

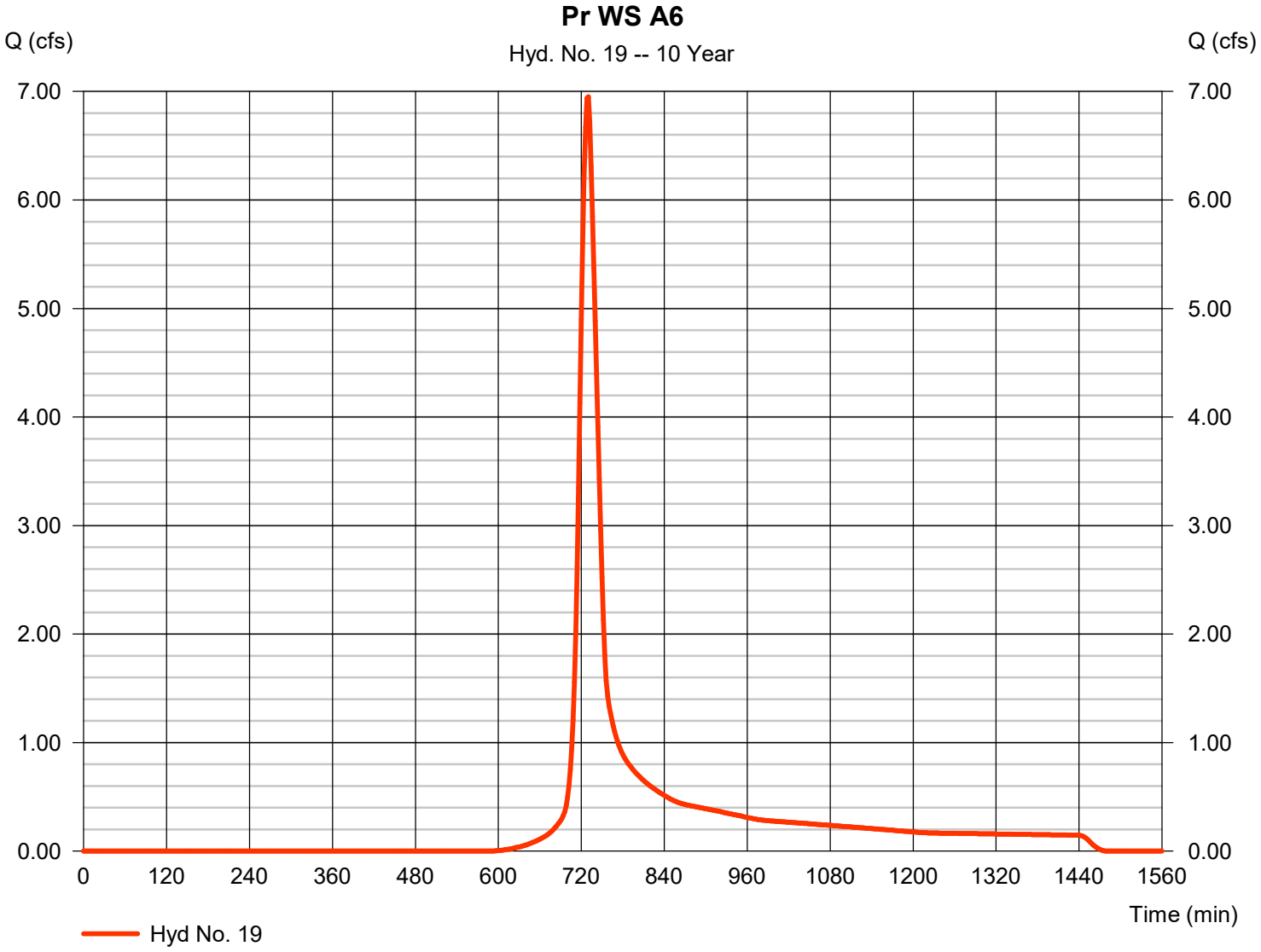


Hydrograph Report

Hyd. No. 19

Pr WS A6

Hydrograph type	=	SCS Runoff	Peak discharge	=	6.950 cfs
Storm frequency	=	10 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	26,118 cuft
Drainage area	=	5.280 ac	Curve number	=	78
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	24.00 min
Total precip.	=	3.35 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

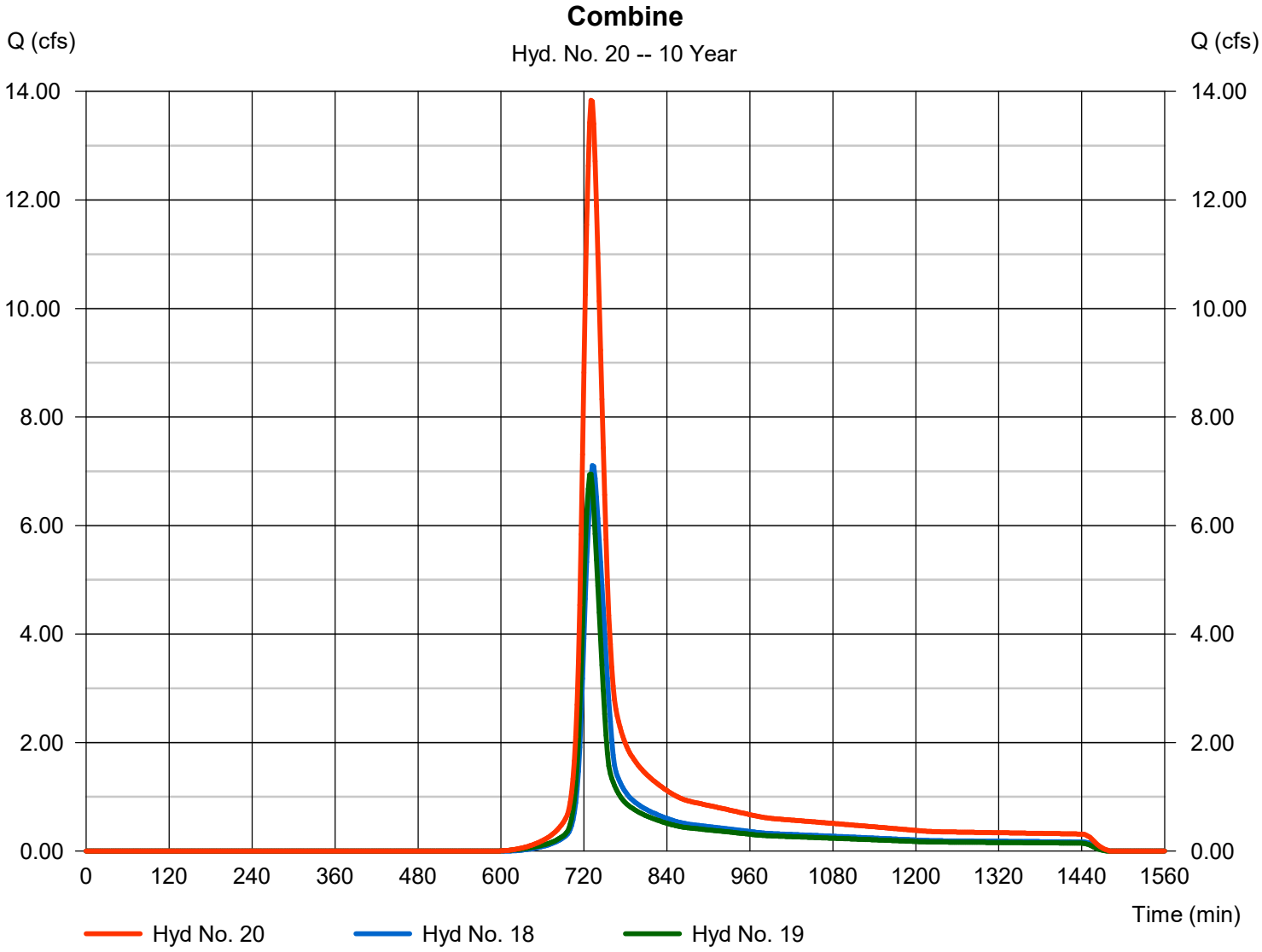


Hydrograph Report

Hyd. No. 20

Combine

Hydrograph type	=	Combine	Peak discharge	=	13.84 cfs
Storm frequency	=	10 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	55,347 cuft
Inflow hyds.	=	18, 19	Contrib. drain. area	=	5.280 ac



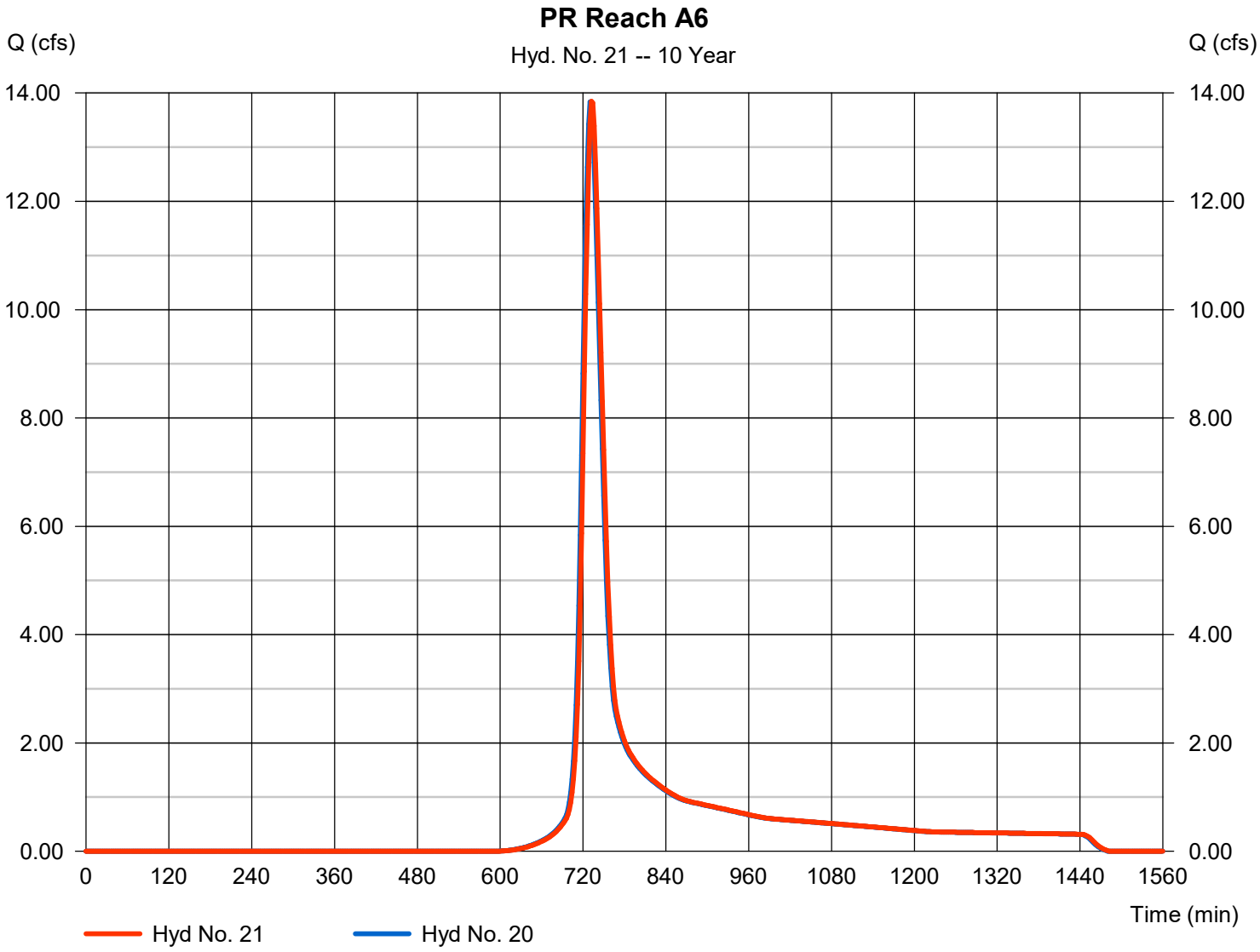
Hydrograph Report

Hyd. No. 21

PR Reach A6

Hydrograph type	=	Reach	Peak discharge	=	13.85 cfs
Storm frequency	=	10 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	55,347 cuft
Inflow hyd. No.	=	20 - Combine	Section type	=	Trapezoidal
Reach length	=	413.0 ft	Channel slope	=	3.8 %
Manning's n	=	0.025	Bottom width	=	6.0 ft
Side slope	=	2.0:1	Max. depth	=	5.0 ft
Rating curve x	=	3.540	Rating curve m	=	1.395
Ave. velocity	=	5.21 ft/s	Routing coeff.	=	1.0270

Modified Att-Kin routing method used.

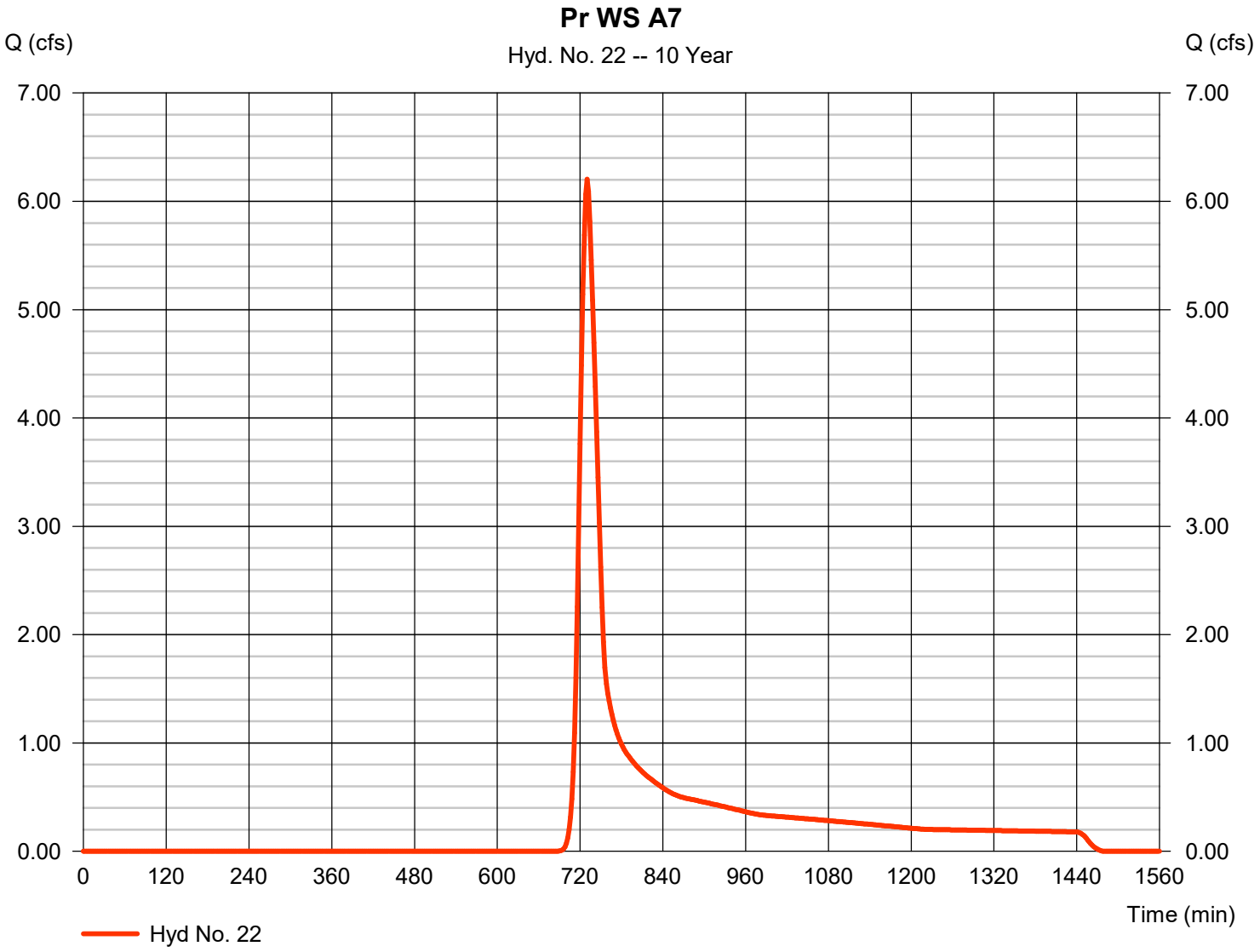


Hydrograph Report

Hyd. No. 22

Pr WS A7

Hydrograph type	=	SCS Runoff	Peak discharge	=	6.203 cfs
Storm frequency	=	10 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	25,698 cuft
Drainage area	=	8.310 ac	Curve number	=	69
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	26.00 min
Total precip.	=	3.35 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



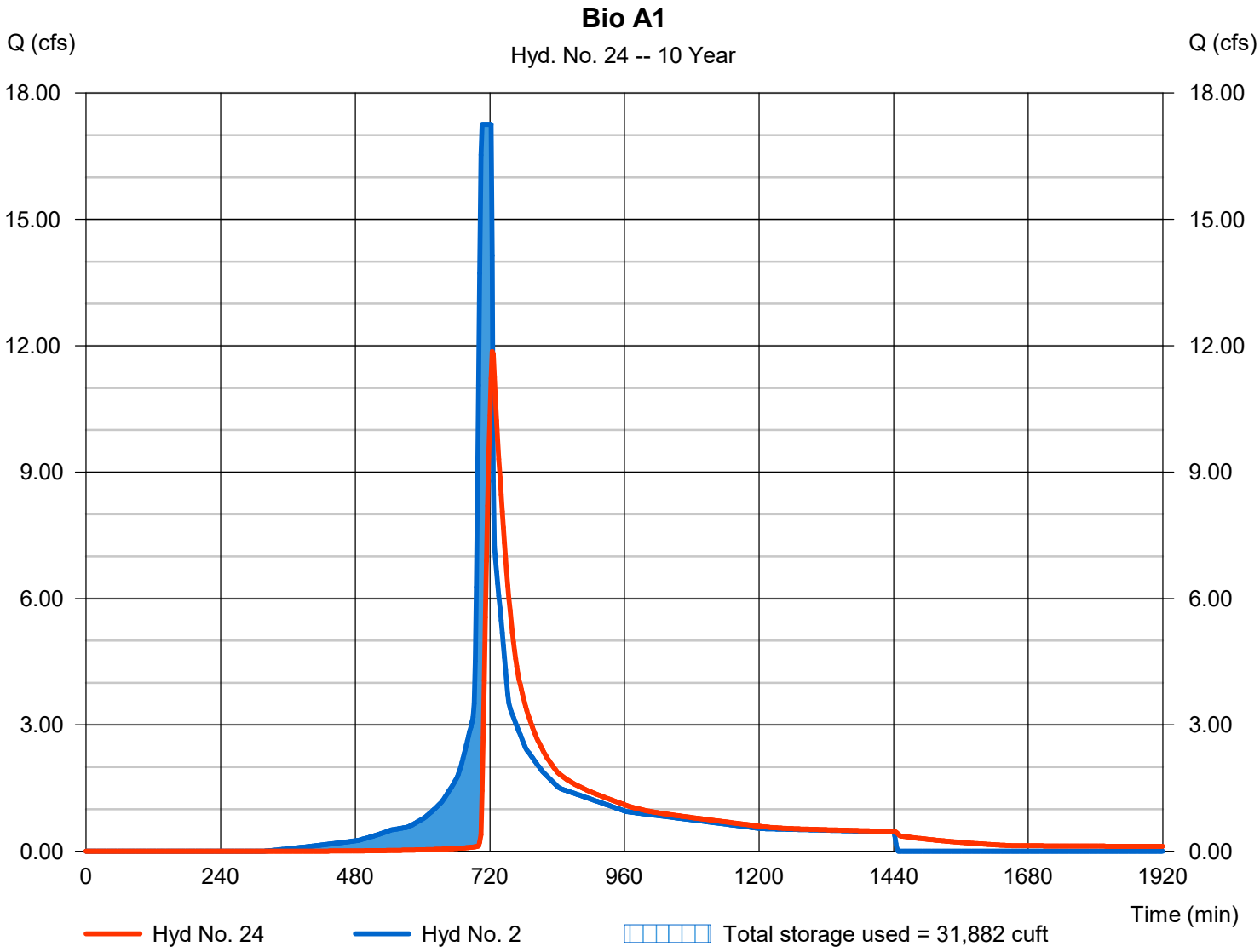
Hydrograph Report

Hyd. No. 24

Bio A1

Hydrograph type	=	Reservoir	Peak discharge	=	11.87 cfs
Storm frequency	=	10 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	87,518 cuft
Inflow hyd. No.	=	2 - A1 to Bio #1	Max. Elevation	=	406.12 ft
Reservoir name	=	Bio A1 (south)	Max. Storage	=	31,882 cuft

Storage Indication method used. Outflow includes exfiltration.



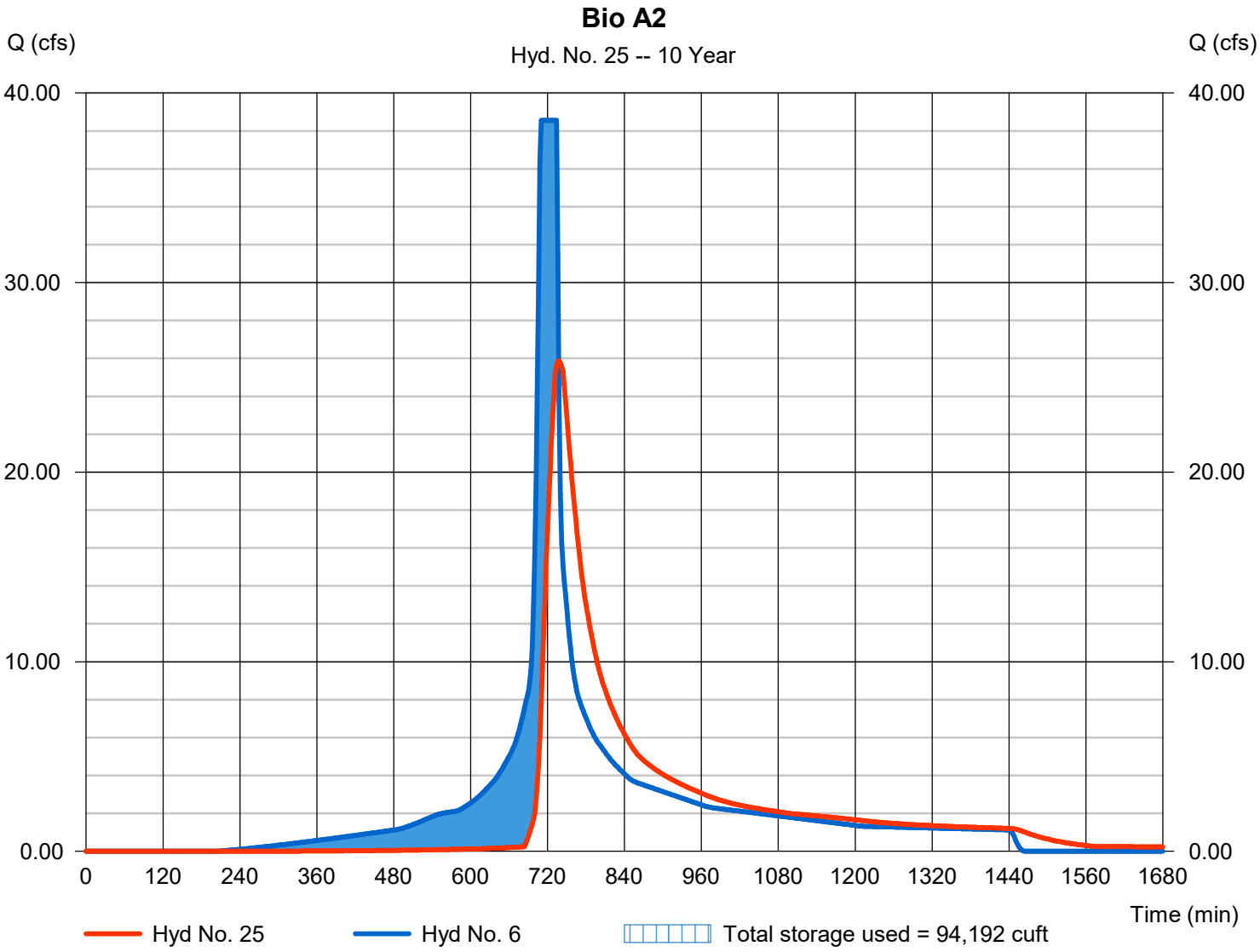
Hydrograph Report

Hyd. No. 25

Bio A2

Hydrograph type	=	Reservoir	Peak discharge	=	25.88 cfs
Storm frequency	=	10 yrs	Time to peak	=	738 min
Time interval	=	2 min	Hyd. volume	=	237,292 cuft
Inflow hyd. No.	=	6 - A2 to Bio #2	Max. Elevation	=	402.14 ft
Reservoir name	=	Bio A2 (west)	Max. Storage	=	94,192 cuft

Storage Indication method used. Outflow includes exfiltration.



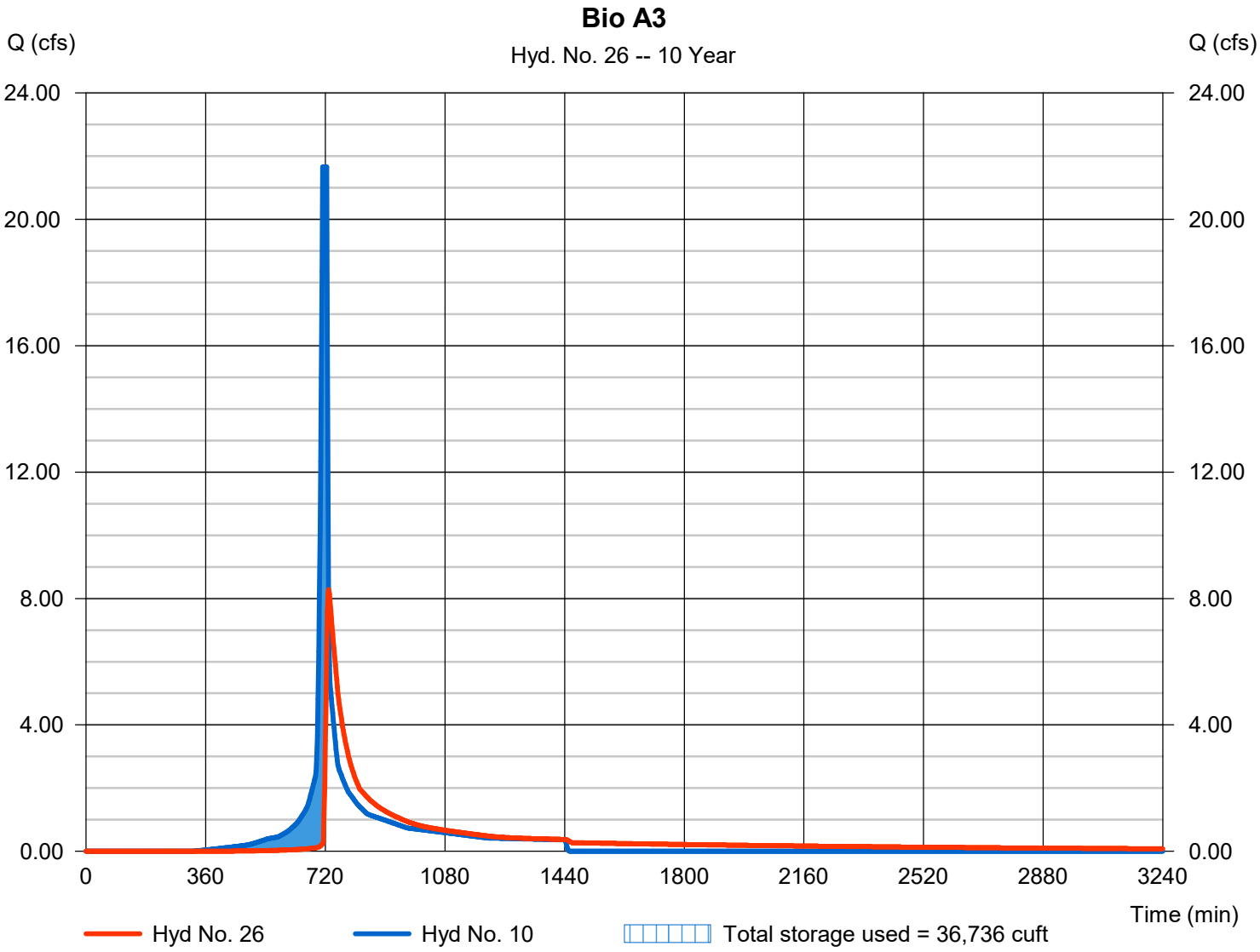
Hydrograph Report

Hyd. No. 26

Bio A3

Hydrograph type	=	Reservoir	Peak discharge	=	8.284 cfs
Storm frequency	=	10 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	78,332 cuft
Inflow hyd. No.	=	10 - A3 to Bio #3	Max. Elevation	=	409.28 ft
Reservoir name	=	Bio A3 (east)	Max. Storage	=	36,736 cuft

Storage Indication method used. Outflow includes exfiltration.



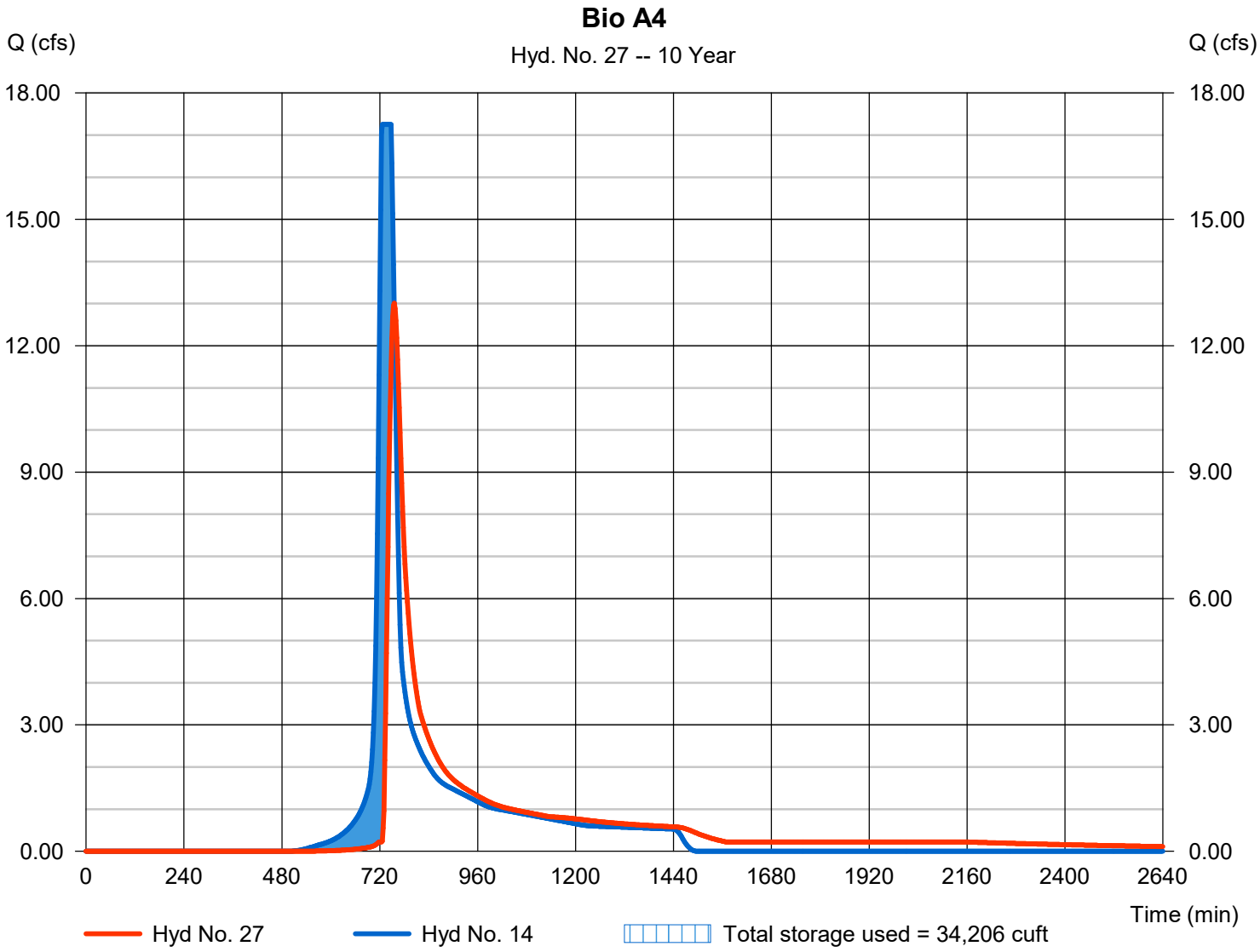
Hydrograph Report

Hyd. No. 27

Bio A4

Hydrograph type	=	Reservoir	Peak discharge	=	13.01 cfs
Storm frequency	=	10 yrs	Time to peak	=	756 min
Time interval	=	2 min	Hyd. volume	=	100,187 cuft
Inflow hyd. No.	=	14 - A4 to Bio #4	Max. Elevation	=	403.64 ft
Reservoir name	=	Bio A4 (north)	Max. Storage	=	34,206 cuft

Storage Indication method used. Outflow includes exfiltration.

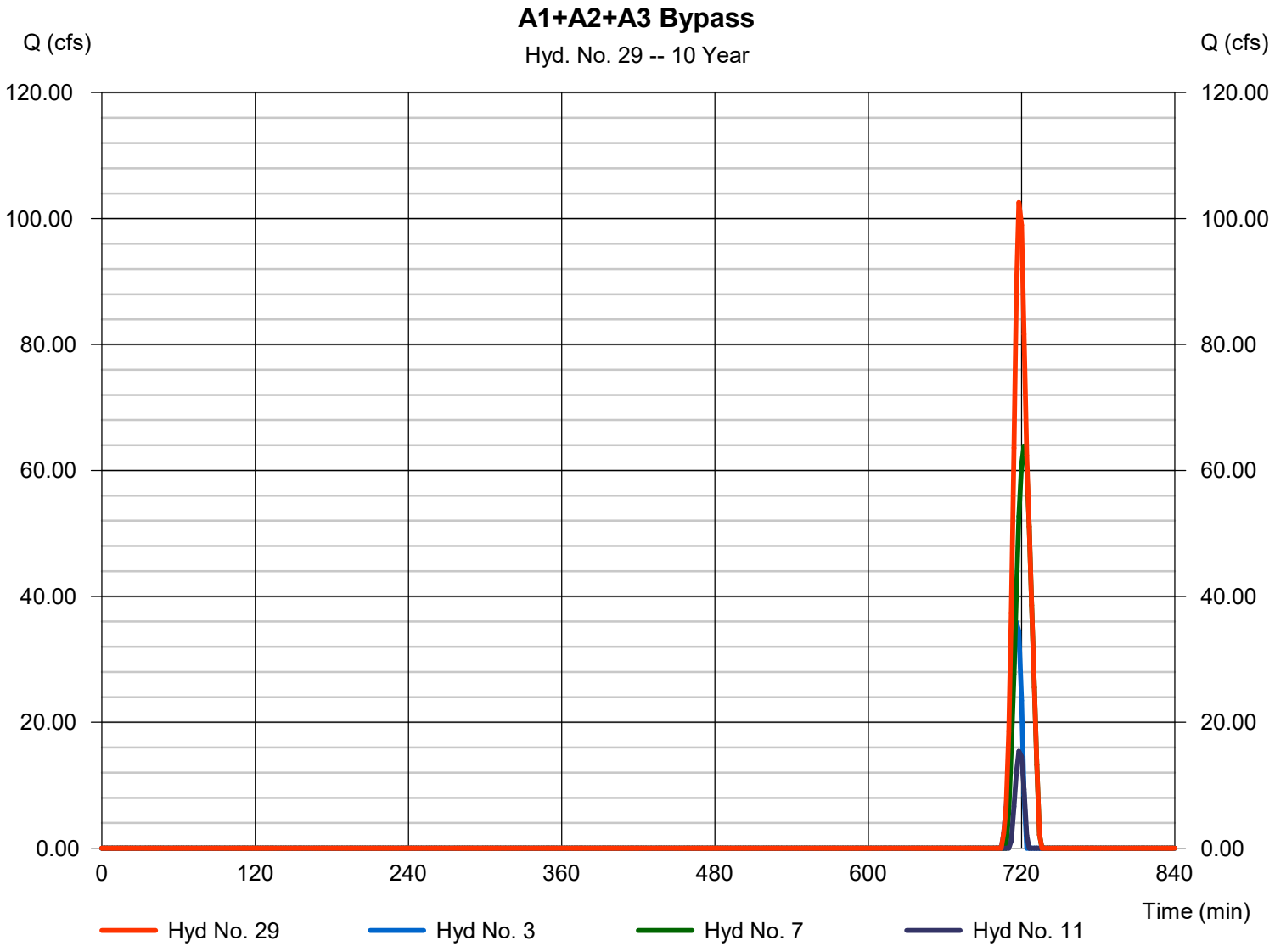


Hydrograph Report

Hyd. No. 29

A1+A2+A3 Bypass

Hydrograph type	= Combine	Peak discharge	= 102.56 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 83,181 cuft
Inflow hyds.	= 3, 7, 11	Contrib. drain. area	= 0.000 ac

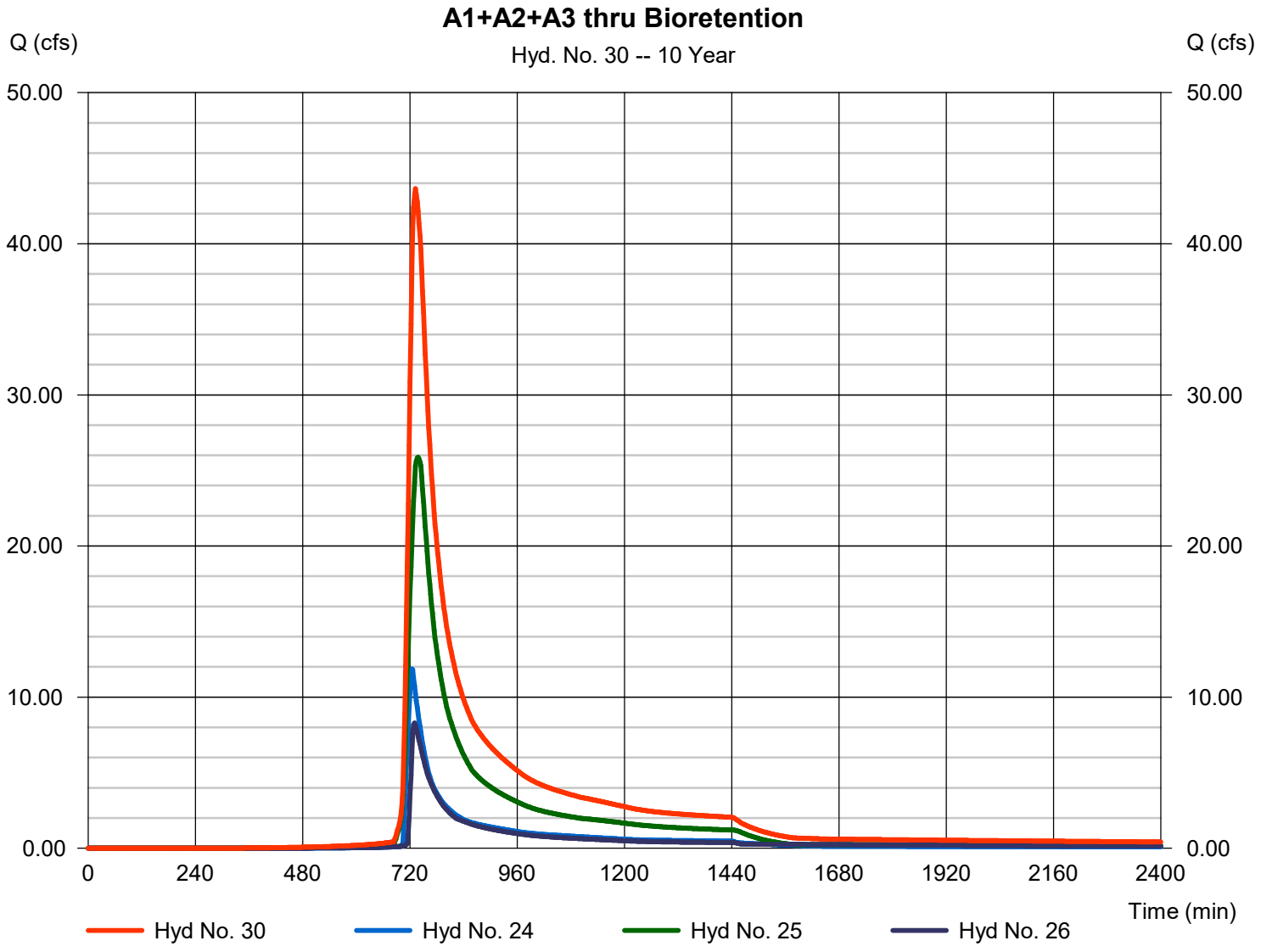


Hydrograph Report

Hyd. No. 30

A1+A2+A3 thru Bioretention

Hydrograph type	= Combine	Peak discharge	= 43.65 cfs
Storm frequency	= 10 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 403,142 cuft
Inflow hyds.	= 24, 25, 26	Contrib. drain. area	= 0.000 ac

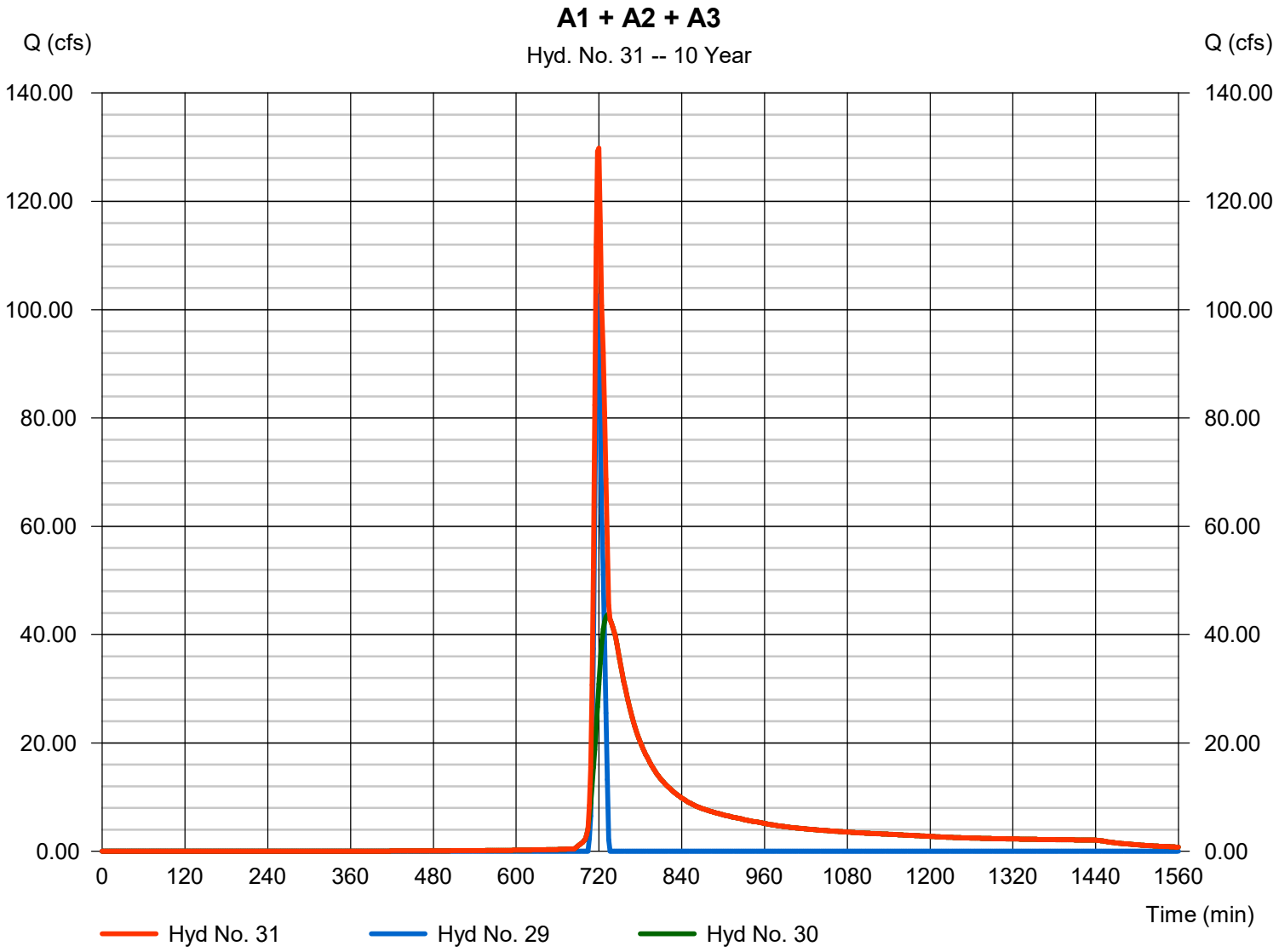


Hydrograph Report

Hyd. No. 31

A1 + A2 + A3

Hydrograph type	= Combine	Peak discharge	= 129.84 cfs
Storm frequency	= 10 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 486,323 cuft
Inflow hyds.	= 29, 30	Contrib. drain. area	= 0.000 ac



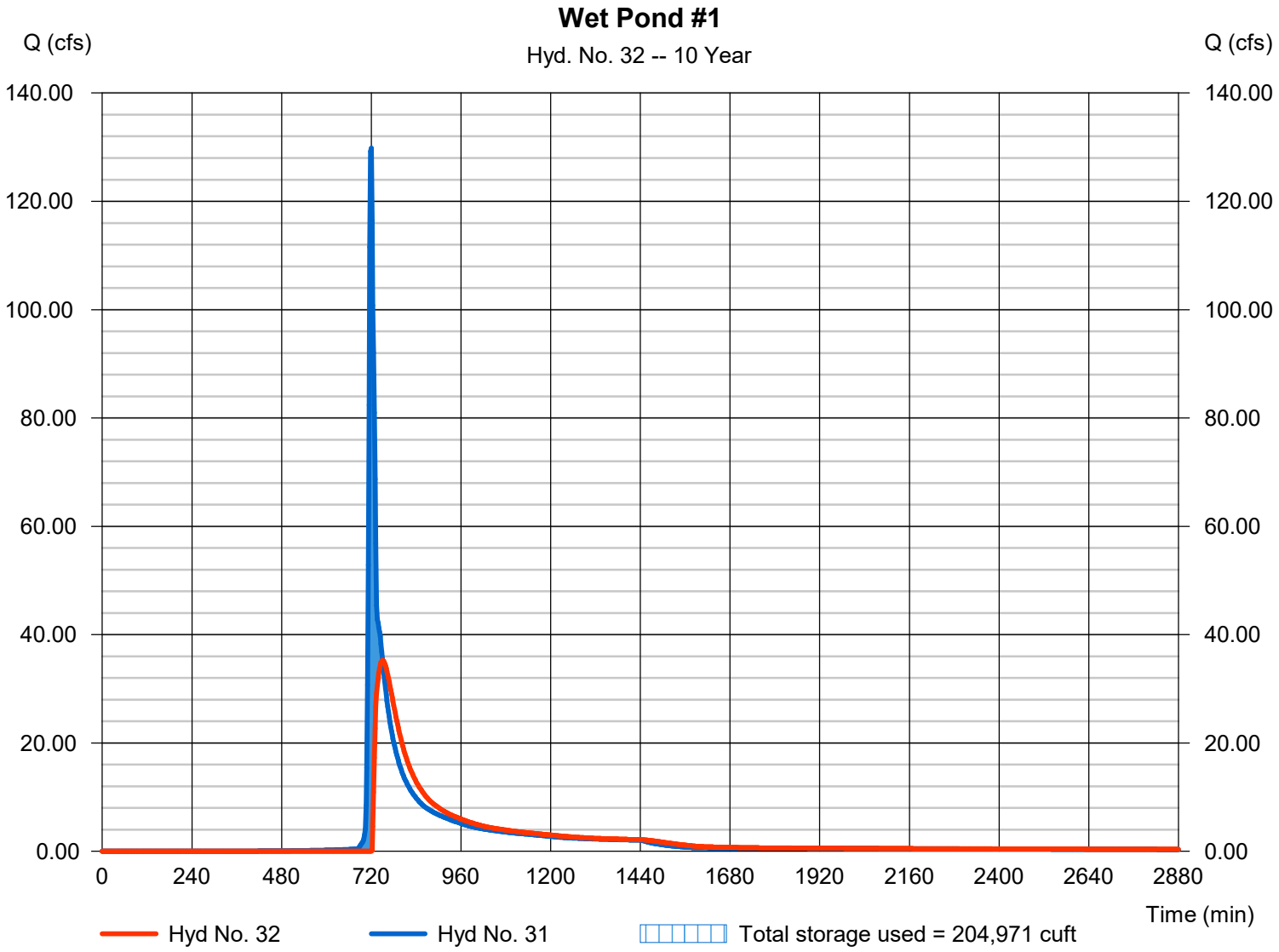
Hydrograph Report

Hyd. No. 32

Wet Pond #1

Hydrograph type	= Reservoir	Peak discharge	= 35.25 cfs
Storm frequency	= 10 yrs	Time to peak	= 750 min
Time interval	= 2 min	Hyd. volume	= 407,589 cuft
Inflow hyd. No.	= 31 - A1 + A2 + A3	Max. Elevation	= 403.21 ft
Reservoir name	= Wet Pond #1	Max. Storage	= 204,971 cuft

Storage Indication method used. Wet pond routing start elevation = 400.00 ft.

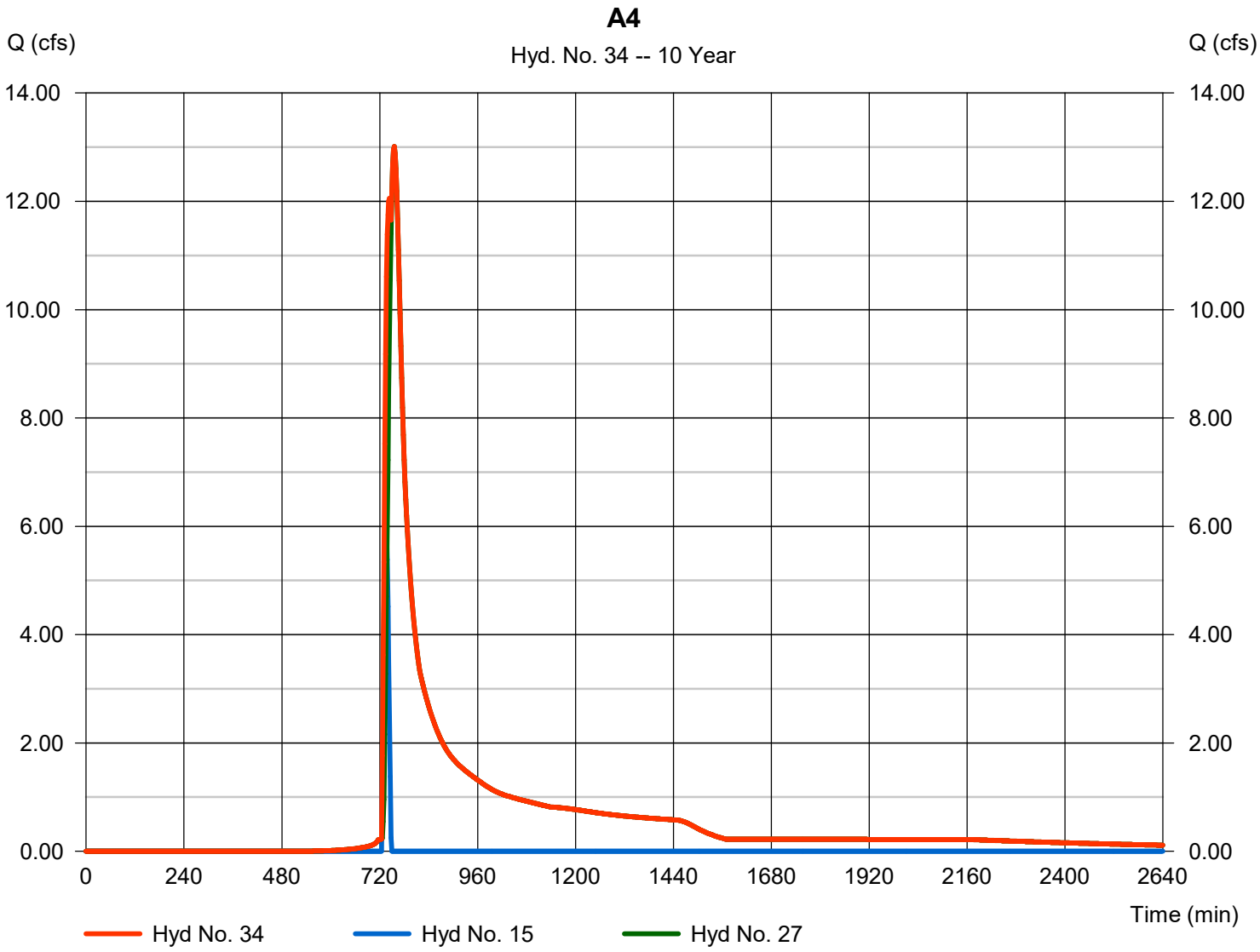


Hydrograph Report

Hyd. No. 34

A4

Hydrograph type	= Combine	Peak discharge	= 13.01 cfs
Storm frequency	= 10 yrs	Time to peak	= 756 min
Time interval	= 2 min	Hyd. volume	= 105,426 cuft
Inflow hyds.	= 15, 27	Contrib. drain. area	= 0.000 ac



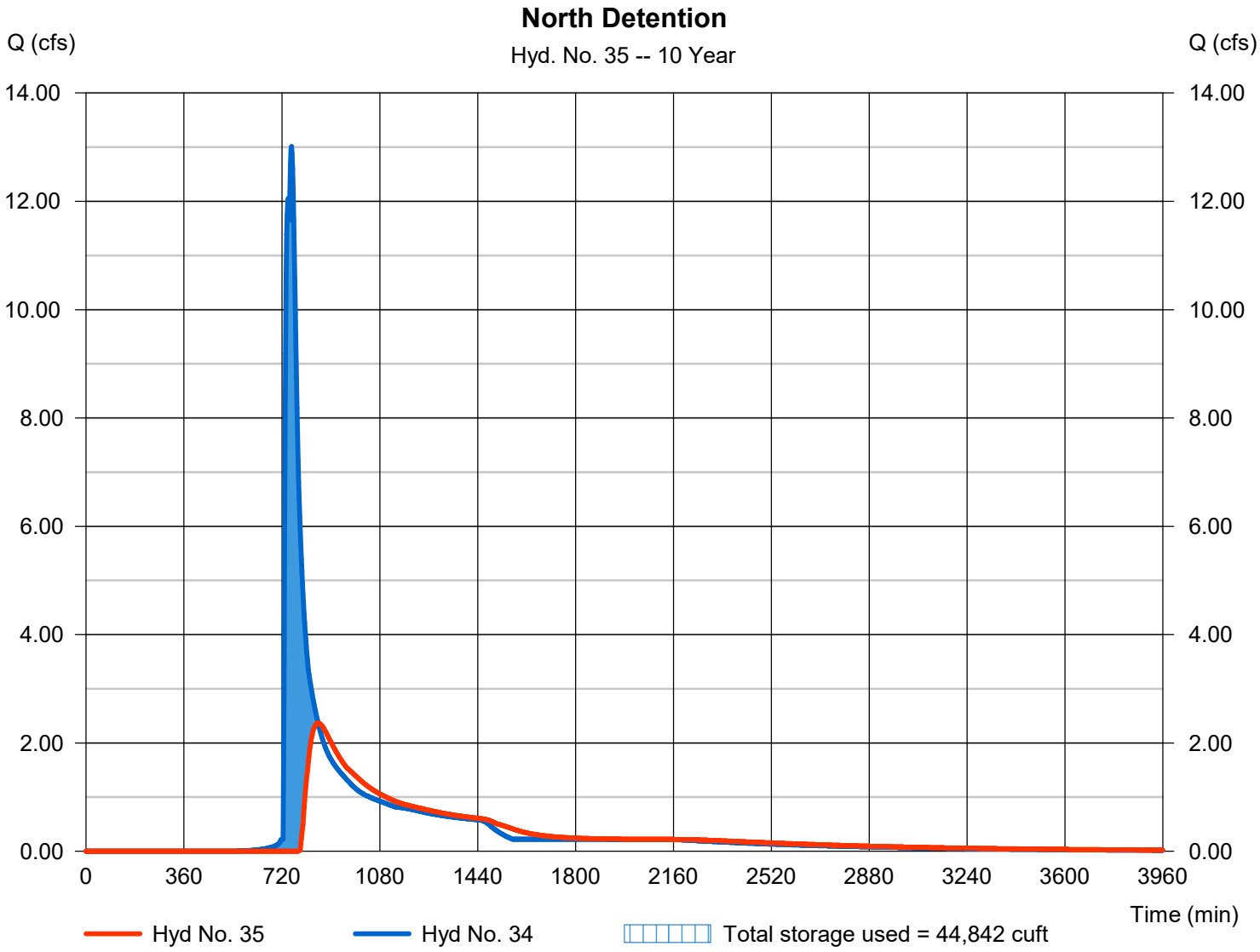
Hydrograph Report

Hyd. No. 35

North Detention

Hydrograph type	=	Reservoir	Peak discharge	=	2.367 cfs
Storm frequency	=	10 yrs	Time to peak	=	854 min
Time interval	=	2 min	Hyd. volume	=	69,606 cuft
Inflow hyd. No.	=	34 - A4	Max. Elevation	=	403.30 ft
Reservoir name	=	Dry Detention #1	Max. Storage	=	44,842 cuft

Storage Indication method used.

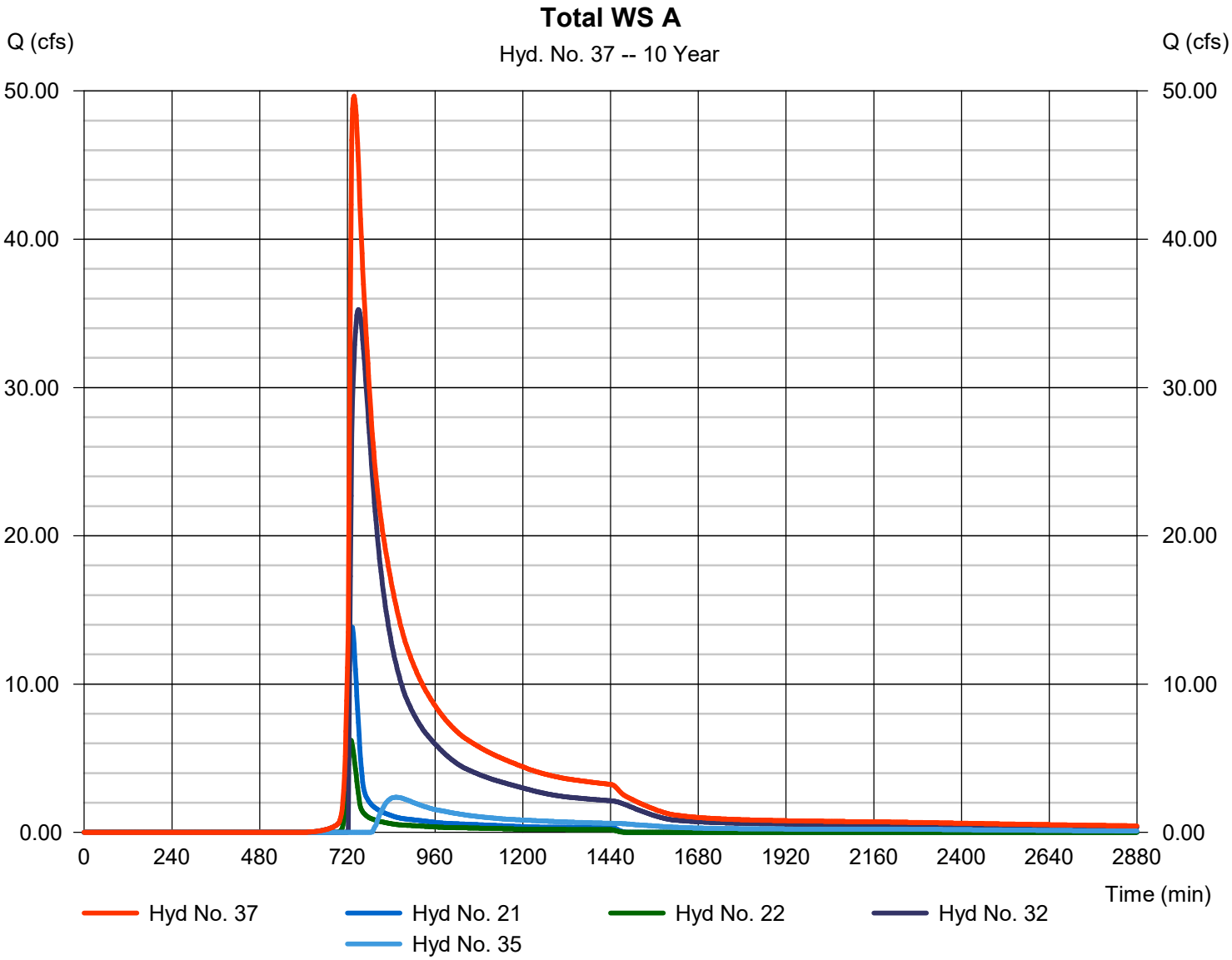


Hydrograph Report

Hyd. No. 37

Total WS A

Hydrograph type	= Combine	Peak discharge	= 49.64 cfs
Storm frequency	= 10 yrs	Time to peak	= 738 min
Time interval	= 2 min	Hyd. volume	= 558,240 cuft
Inflow hyds.	= 21, 22, 32, 35	Contrib. drain. area	= 8.310 ac

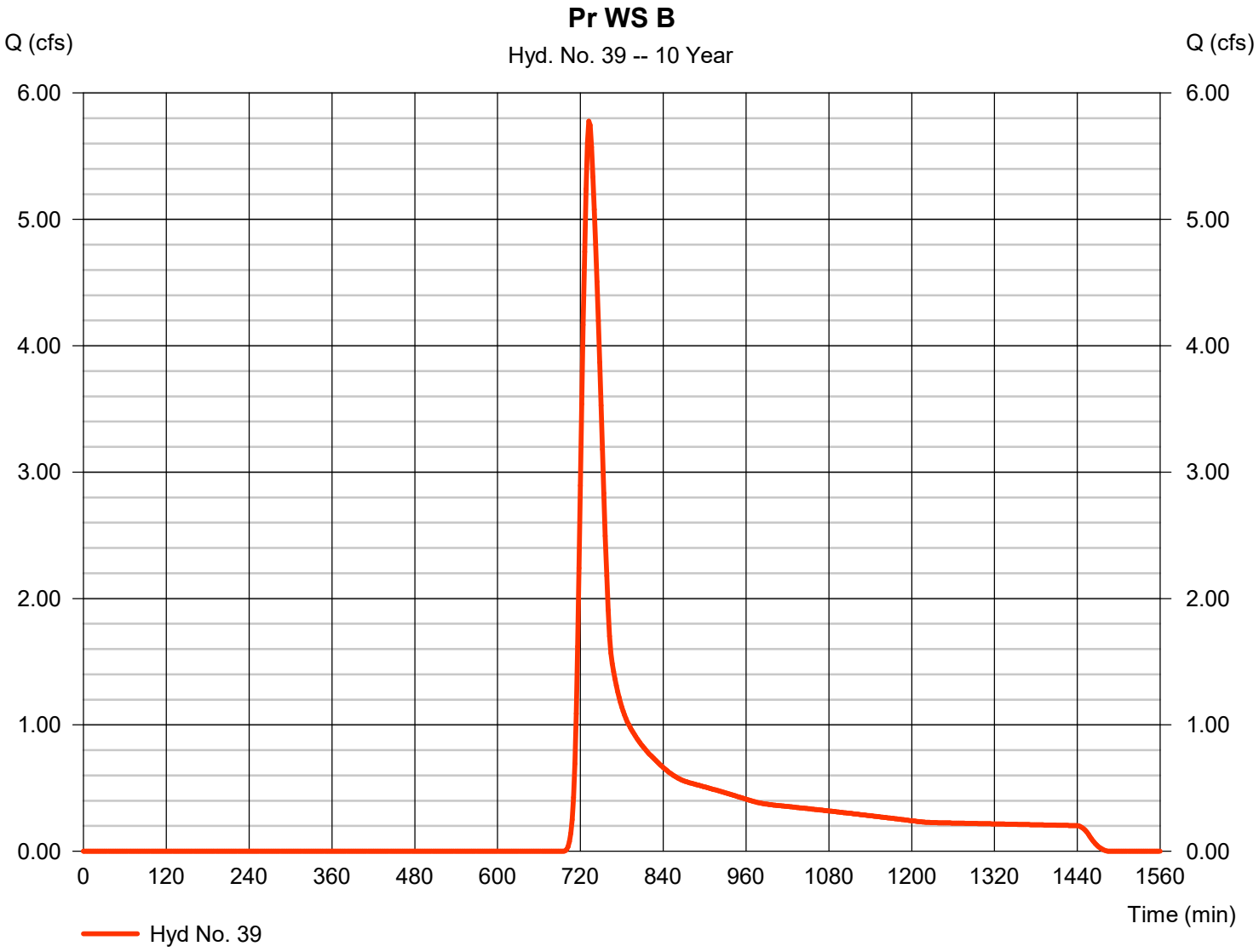


Hydrograph Report

Hyd. No. 39

Pr WS B

Hydrograph type	=	SCS Runoff	Peak discharge	=	5.777 cfs
Storm frequency	=	10 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	27,569 cuft
Drainage area	=	9.900 ac	Curve number	=	67
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	27.00 min
Total precip.	=	3.35 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

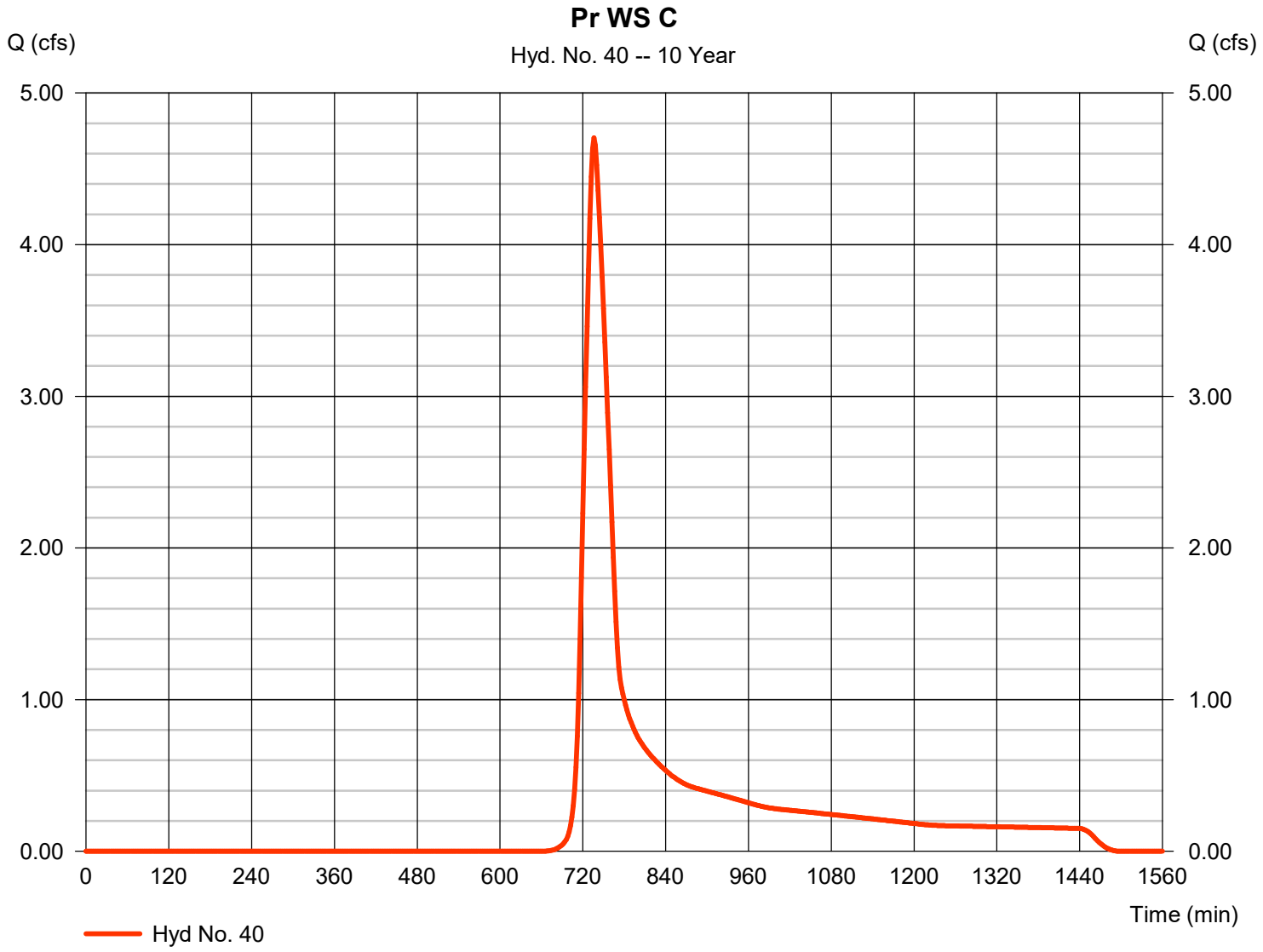


Hydrograph Report

Hyd. No. 40

Pr WS C

Hydrograph type	=	SCS Runoff	Peak discharge	=	4.705 cfs
Storm frequency	=	10 yrs	Time to peak	=	736 min
Time interval	=	2 min	Hyd. volume	=	23,226 cuft
Drainage area	=	6.320 ac	Curve number	=	72
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	34.00 min
Total precip.	=	3.35 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

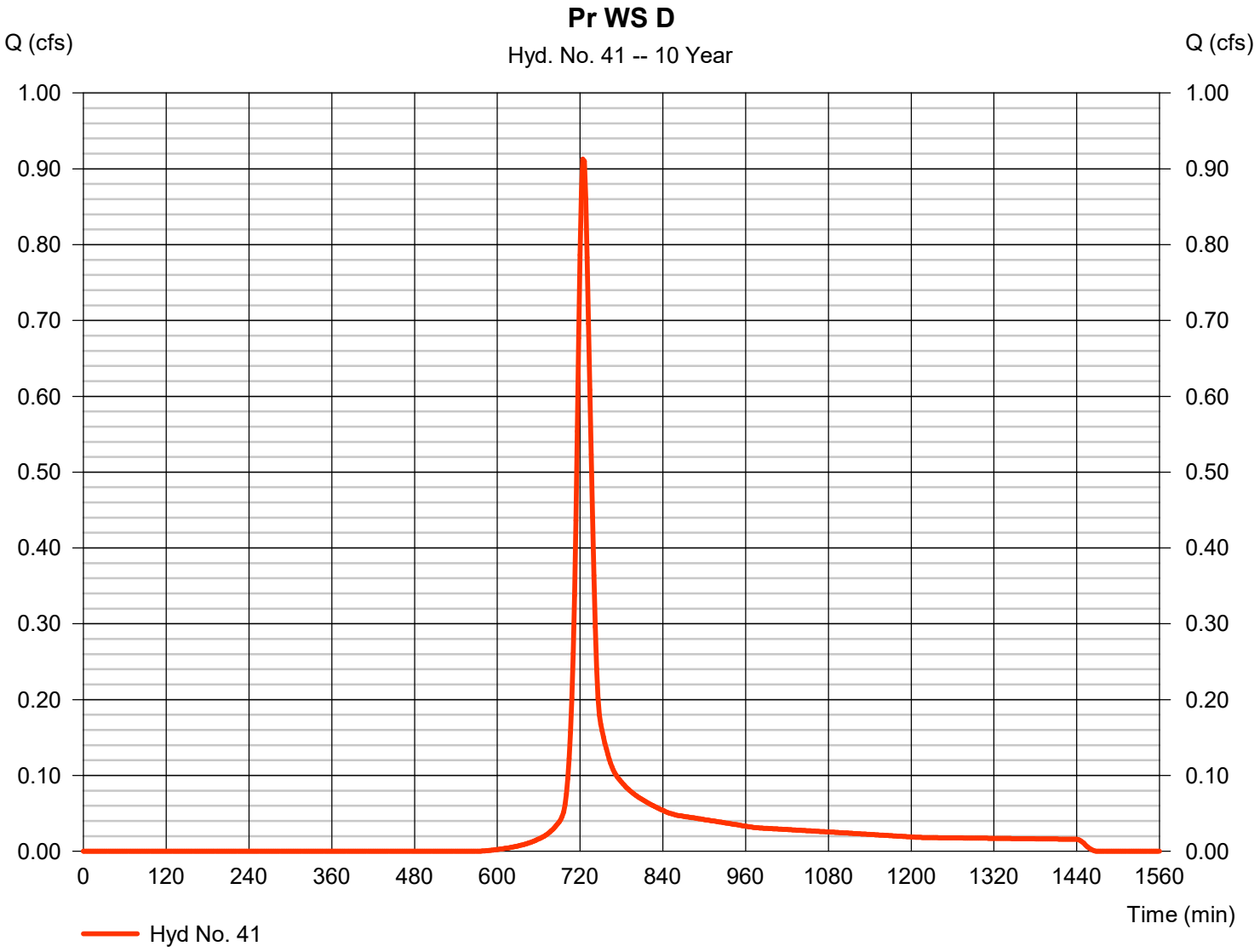


Hydrograph Report

Hyd. No. 41

Pr WS D

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.913 cfs
Storm frequency	=	10 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	2,896 cuft
Drainage area	=	0.550 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	20.00 min
Total precip.	=	3.35 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

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	68.61	2	716	144,983	------	------	------	Pr WS A1
2	Diversion1	17.25	2	702	111,643	1	------	------	A1 to Bio #1
3	Diversion2	51.36	2	716	33,341	1	------	------	A1 to Detention
5	SCS Runoff	128.93	2	722	384,954	------	------	------	Pr WS A2
6	Diversion1	38.56	2	718	298,873	5	------	------	A2 to Bio #2
7	Diversion2	90.37	2	722	86,081	5	------	------	A2 to Detention
9	SCS Runoff	47.94	2	718	113,709	------	------	------	Pr WS A3
10	Diversion1	21.66	2	710	98,518	9	------	------	A3 to Bio #3
11	Diversion2	26.28	2	718	15,191	9	------	------	A3 to Detention
13	SCS Runoff	32.00	2	734	144,977	------	------	------	Pr WS A4
14	Diversion1	17.25	2	720	125,626	13	------	------	A4 to Bio #4
15	Diversion2	14.75	2	734	19,351	13	------	------	A4 to Detention
17	SCS Runoff	10.38	2	732	42,034	------	------	------	Pr WS A5
18	Reach	10.44	2	732	42,033	17	------	------	PR Reach A5
19	SCS Runoff	10.07	2	728	37,261	------	------	------	Pr WS A6
20	Combine	20.22	2	730	79,295	18, 19	------	------	Combine
21	Reach	20.25	2	732	79,295	20	------	------	PR Reach A6
22	SCS Runoff	10.20	2	730	39,750	------	------	------	Pr WS A7
24	Reservoir	14.45	2	724	109,284	2	406.17	33,870	Bio A1
25	Reservoir	27.14	2	738	289,487	6	402.21	100,396	Bio A2
26	Reservoir	12.43	2	728	97,397	10	409.37	41,129	Bio A3
27	Reservoir	15.62	2	758	125,564	14	403.69	36,229	Bio A4
29	Combine	152.20	2	718	134,613	3, 7, 11,	------	------	A1+A2+A3 Bypass
30	Combine	52.02	2	728	496,168	24, 25, 26,	------	------	A1+A2+A3 thru Bioretention
31	Combine	192.35	2	718	630,779	29, 30	------	------	A1 + A2 + A3
32	Reservoir	74.67	2	732	552,044	31	403.99	241,790	Wet Pond #1
34	Combine	24.24	2	738	144,915	15, 27,	------	------	A4
35	Reservoir	7.742	2	786	109,076	34	403.80	52,517	North Detention
37	Combine	104.84	2	732	780,165	21, 22, 32, 35,	------	------	Total WS A

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

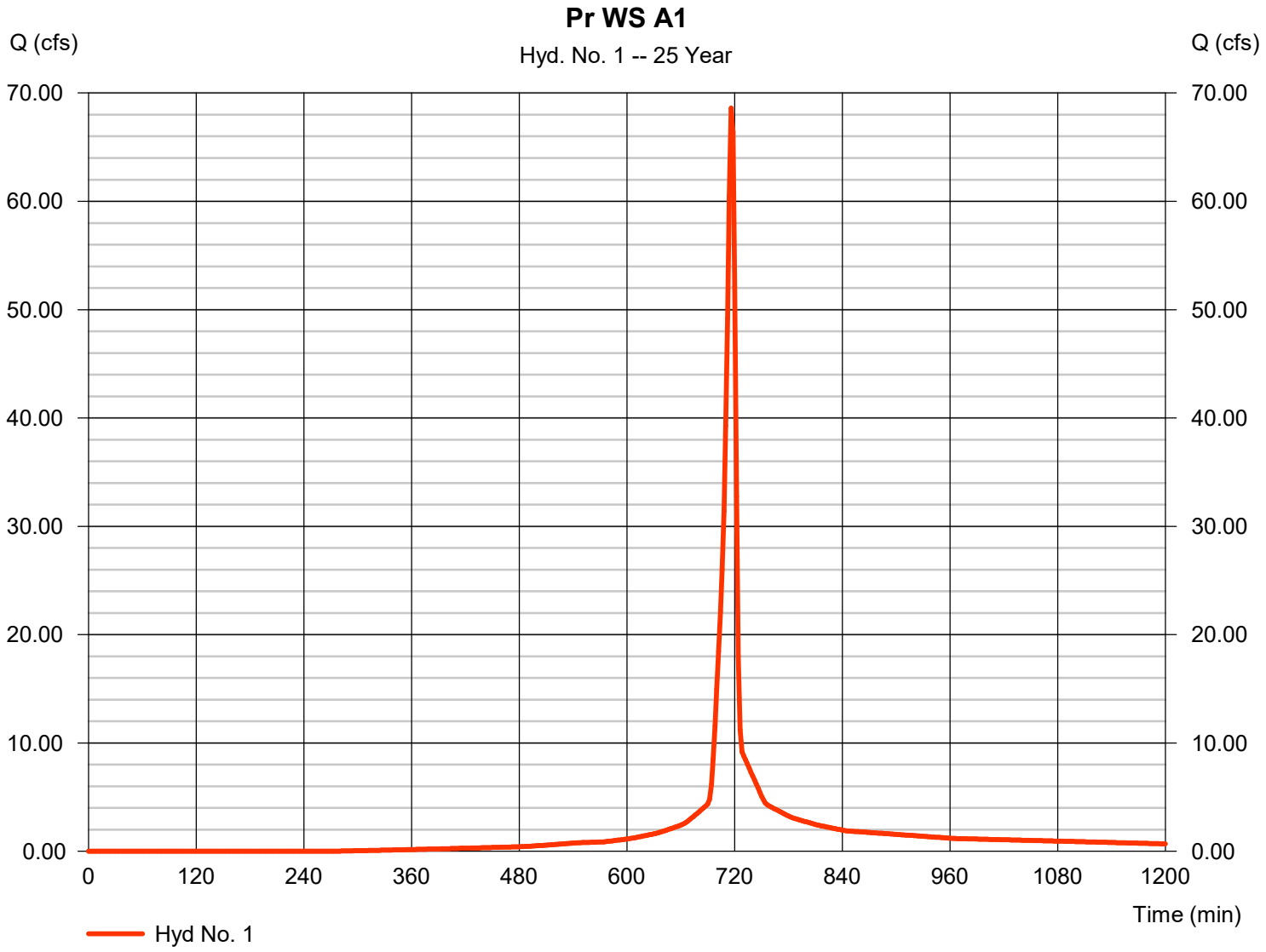
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
39	SCS Runoff	9.983	2	732	43,592	------	------	------	Pr WS B
40	SCS Runoff	7.385	2	736	34,876	------	------	------	Pr WS C
41	SCS Runoff	1.307	2	724	4,099	------	------	------	Pr WS D

Hydrograph Report

Hyd. No. 1

Pr WS A1

Hydrograph type	=	SCS Runoff	Peak discharge	=	68.61 cfs
Storm frequency	=	25 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	144,983 cuft
Drainage area	=	14.090 ac	Curve number	=	90
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.00 min
Total precip.	=	4.11 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

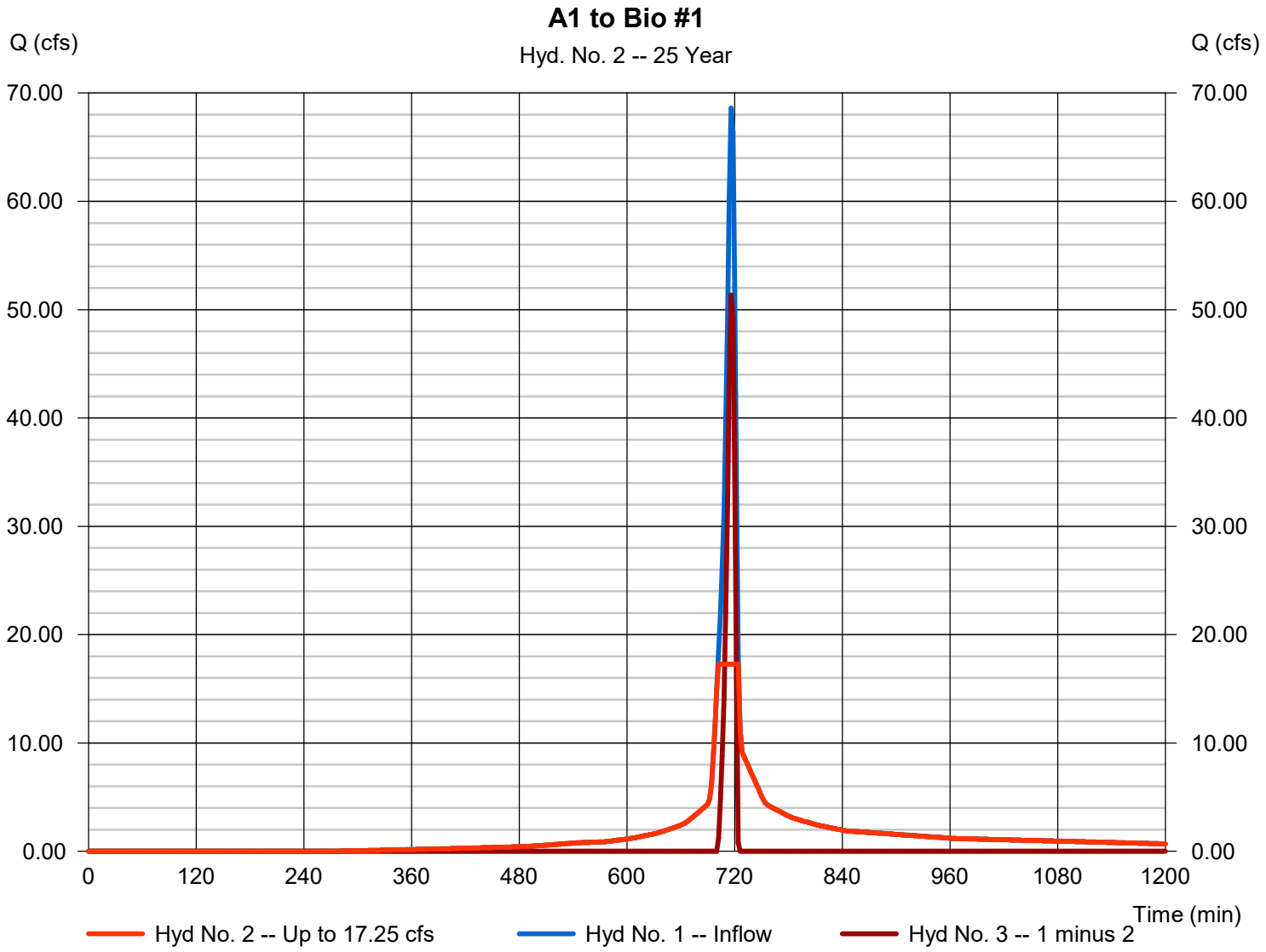


Hydrograph Report

Hyd. No. 2

A1 to Bio #1

Hydrograph type	= Diversion1	Peak discharge	= 17.25 cfs
Storm frequency	= 25 yrs	Time to peak	= 702 min
Time interval	= 2 min	Hyd. volume	= 111,643 cuft
Inflow hydrograph	= 1 - Pr WS A1	2nd diverted hyd.	= 3
Diversion method	= Constant Q	Constant Q	= 17.25 cfs

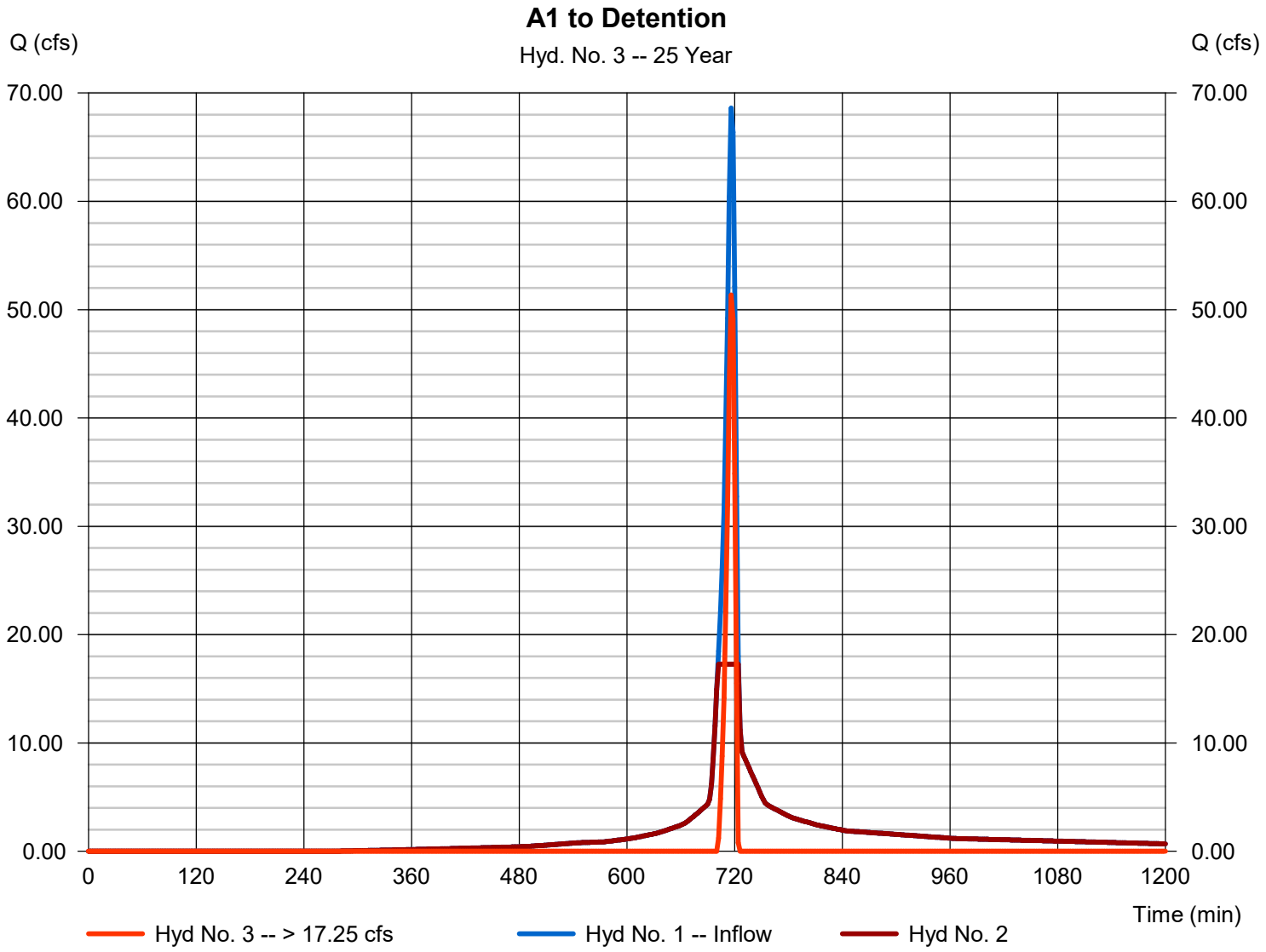


Hydrograph Report

Hyd. No. 3

A1 to Detention

Hydrograph type	= Diversion2	Peak discharge	= 51.36 cfs
Storm frequency	= 25 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 33,341 cuft
Inflow hydrograph	= 1 - Pr WS A1	2nd diverted hyd.	= 2
Diversion method	= Constant Q	Constant Q	= 17.25 cfs

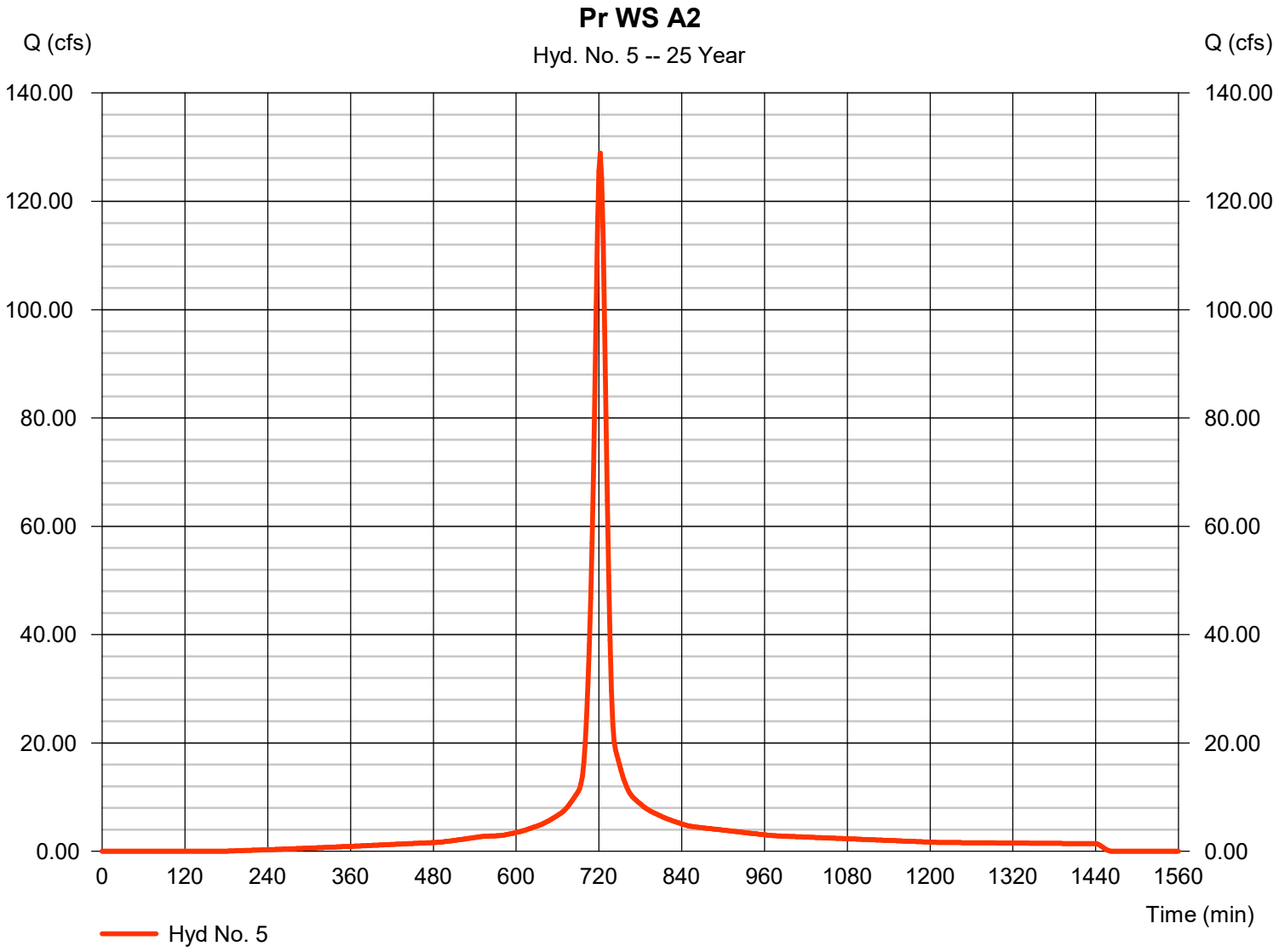


Hydrograph Report

Hyd. No. 5

Pr WS A2

Hydrograph type	=	SCS Runoff	Peak discharge	=	128.93 cfs
Storm frequency	=	25 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	384,954 cuft
Drainage area	=	31.690 ac	Curve number	=	94
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	15.00 min
Total precip.	=	4.11 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

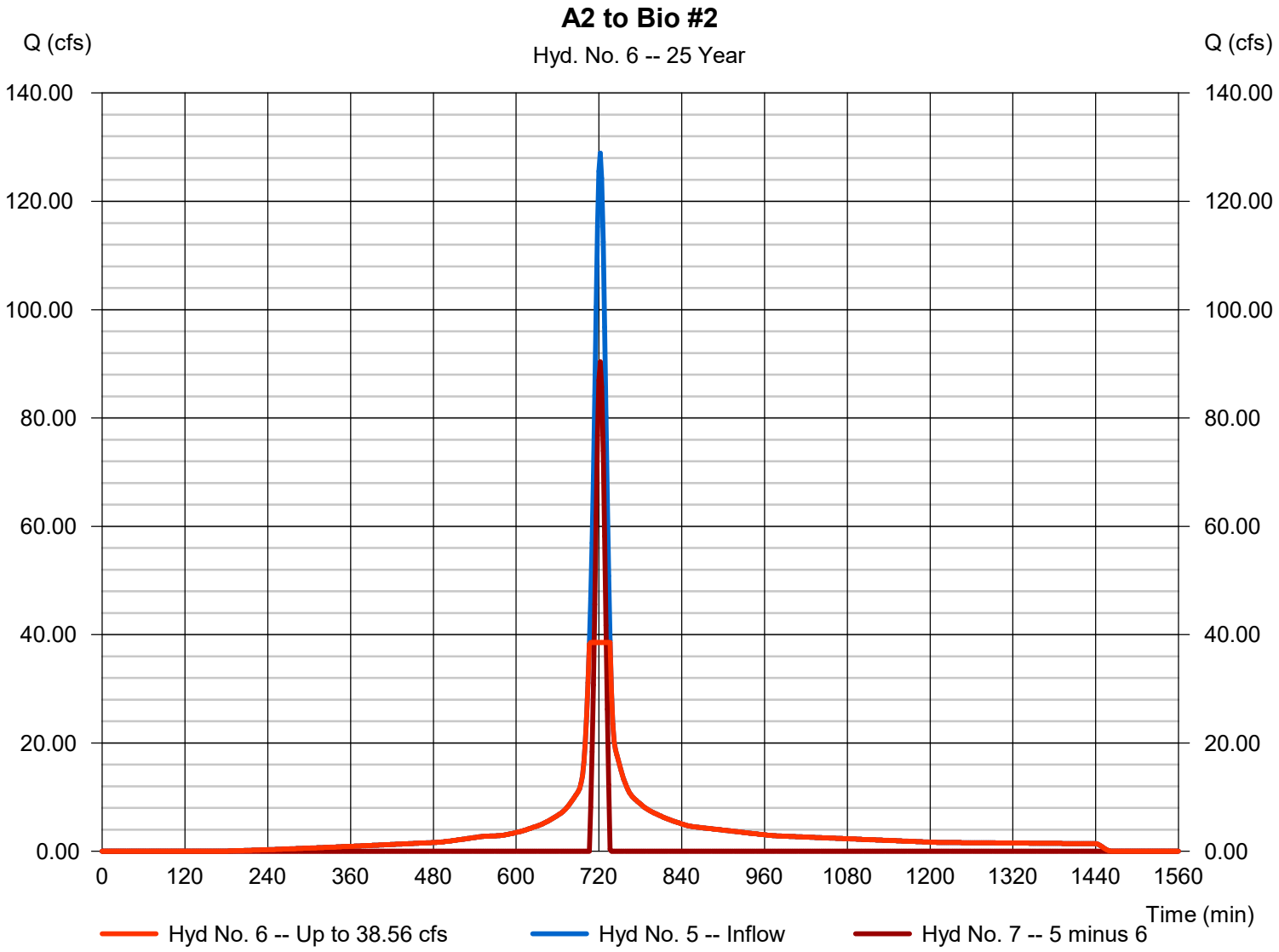


Hydrograph Report

Hyd. No. 6

A2 to Bio #2

Hydrograph type	= Diversion1	Peak discharge	= 38.56 cfs
Storm frequency	= 25 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 298,873 cuft
Inflow hydrograph	= 5 - Pr WS A2	2nd diverted hyd.	= 7
Diversion method	= Constant Q	Constant Q	= 38.56 cfs

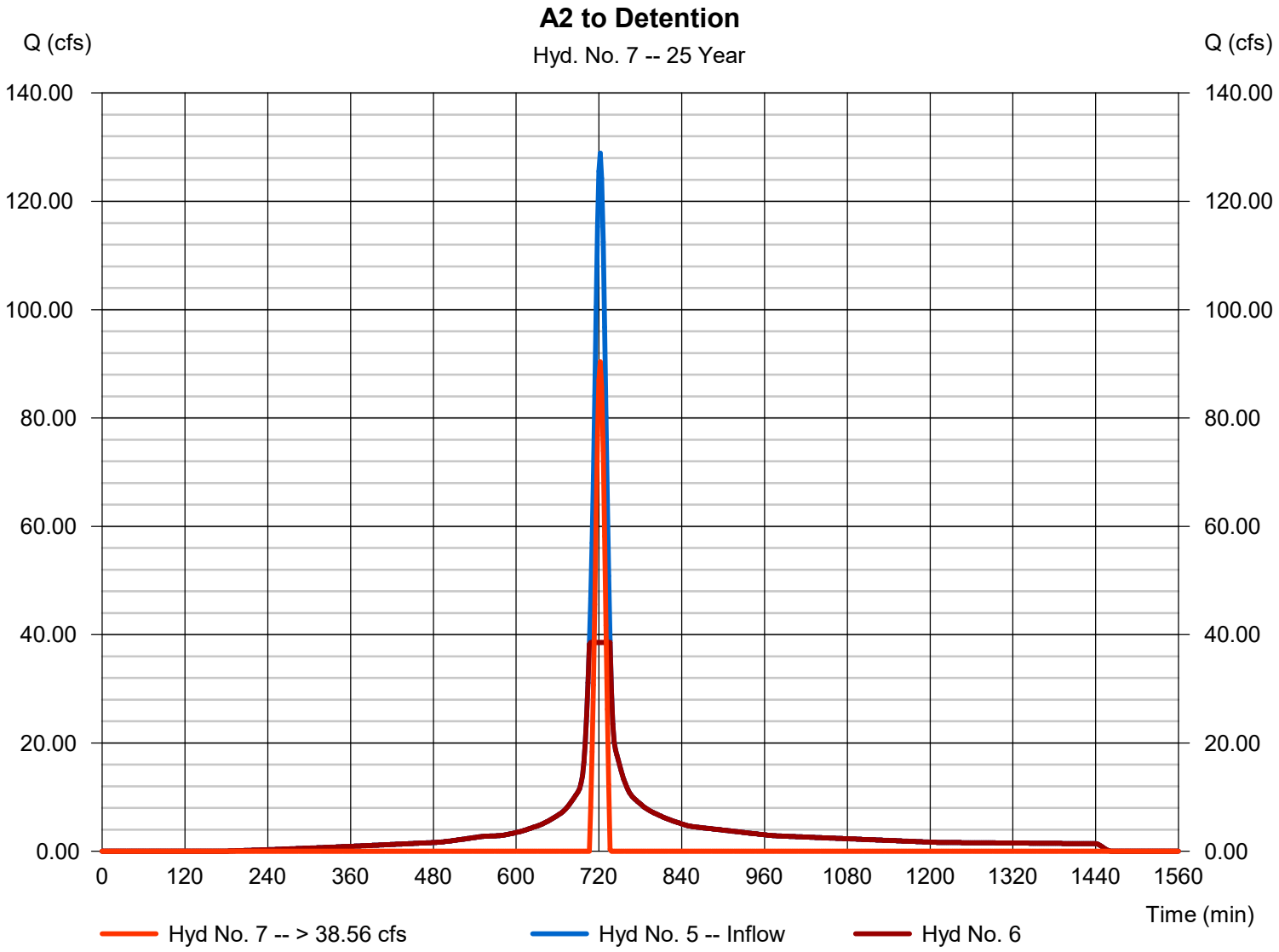


Hydrograph Report

Hyd. No. 7

A2 to Detention

Hydrograph type	= Diversion2	Peak discharge	= 90.37 cfs
Storm frequency	= 25 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 86,081 cuft
Inflow hydrograph	= 5 - Pr WS A2	2nd diverted hyd.	= 6
Diversion method	= Constant Q	Constant Q	= 38.56 cfs

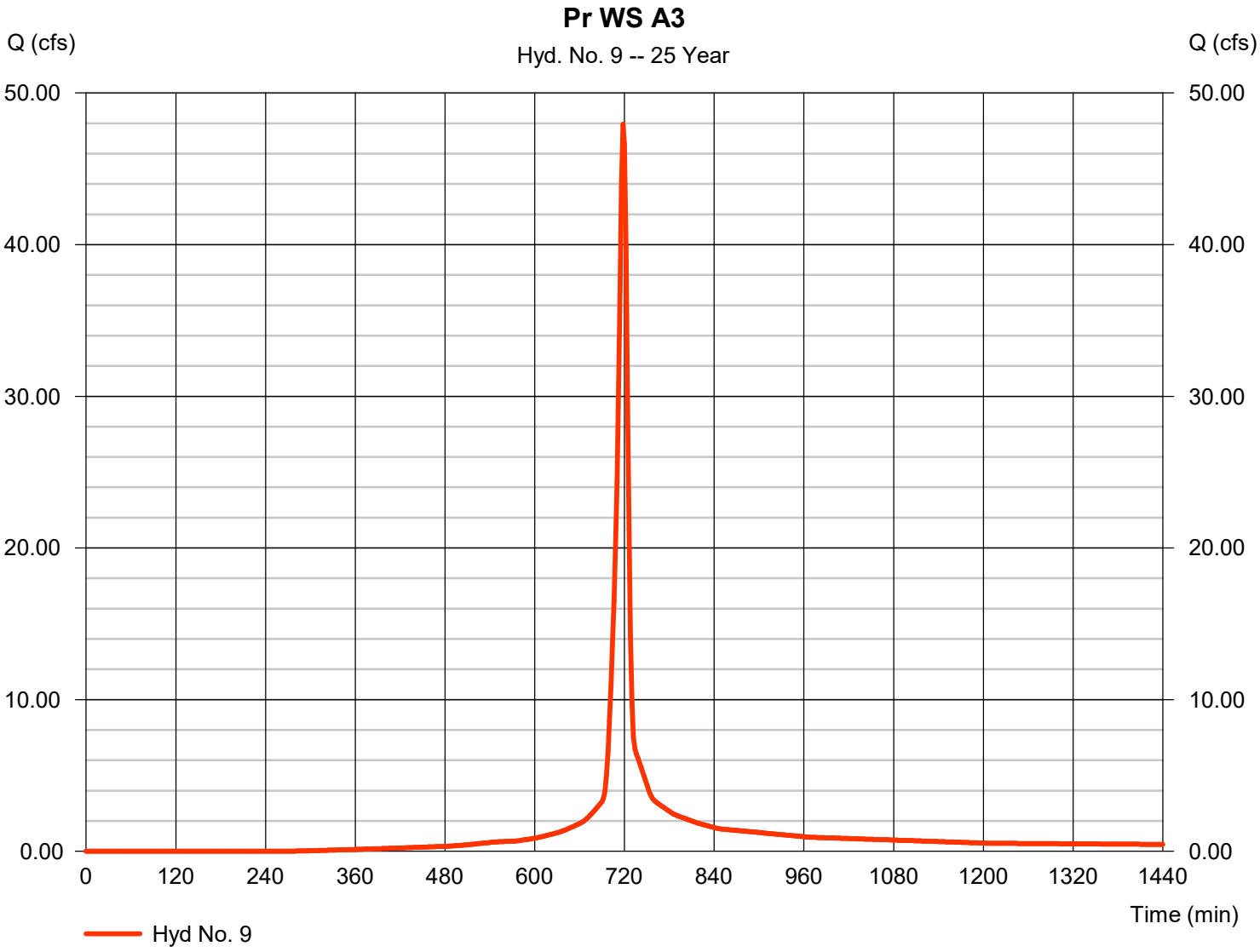


Hydrograph Report

Hyd. No. 9

Pr WS A3

Hydrograph type	=	SCS Runoff	Peak discharge	=	47.94 cfs
Storm frequency	=	25 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	113,709 cuft
Drainage area	=	10.360 ac	Curve number	=	90
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	7.00 min
Total precip.	=	4.11 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

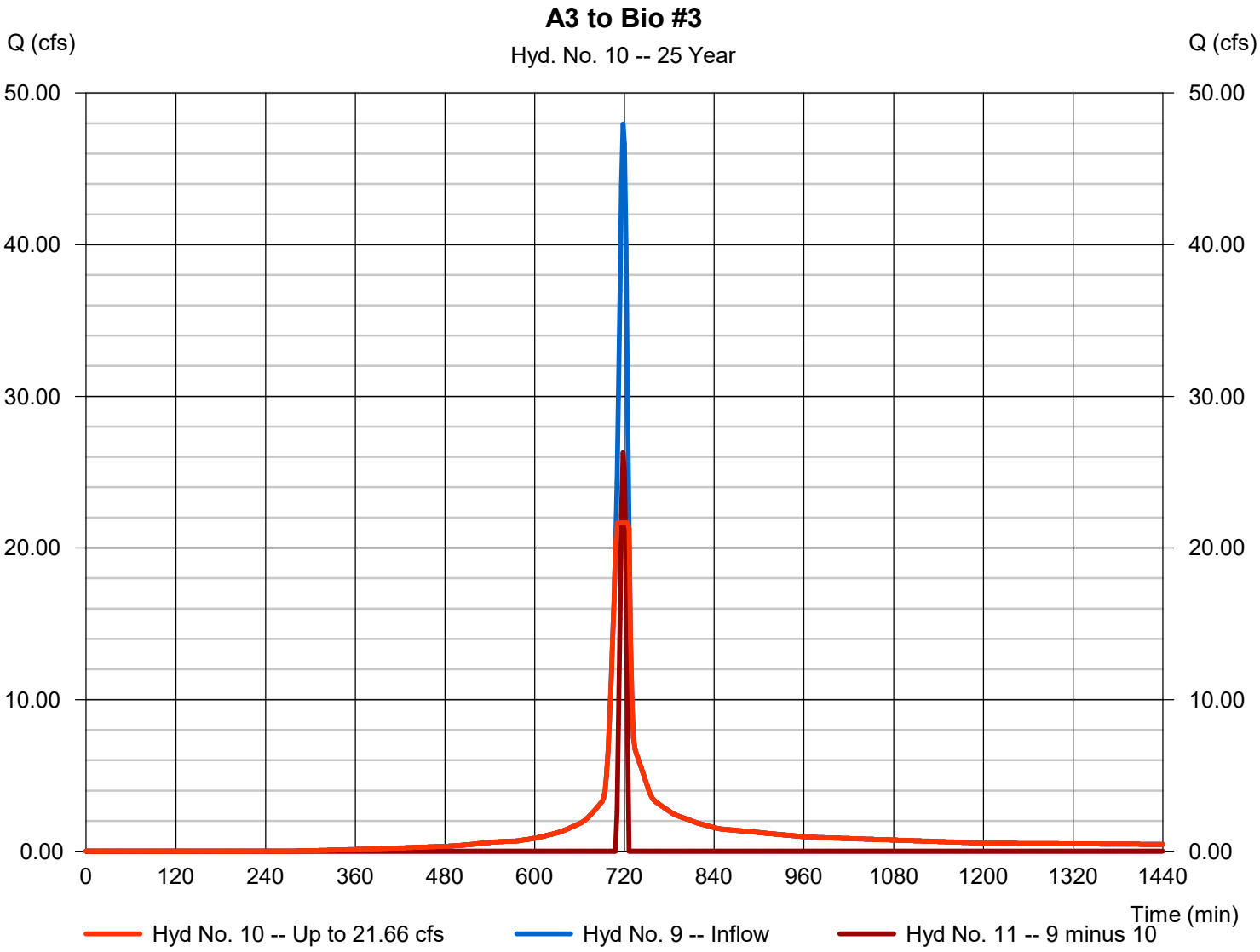


Hydrograph Report

Hyd. No. 10

A3 to Bio #3

Hydrograph type	= Diversion1	Peak discharge	= 21.66 cfs
Storm frequency	= 25 yrs	Time to peak	= 710 min
Time interval	= 2 min	Hyd. volume	= 98,518 cuft
Inflow hydrograph	= 9 - Pr WS A3	2nd diverted hyd.	= 11
Diversion method	= Constant Q	Constant Q	= 21.66 cfs

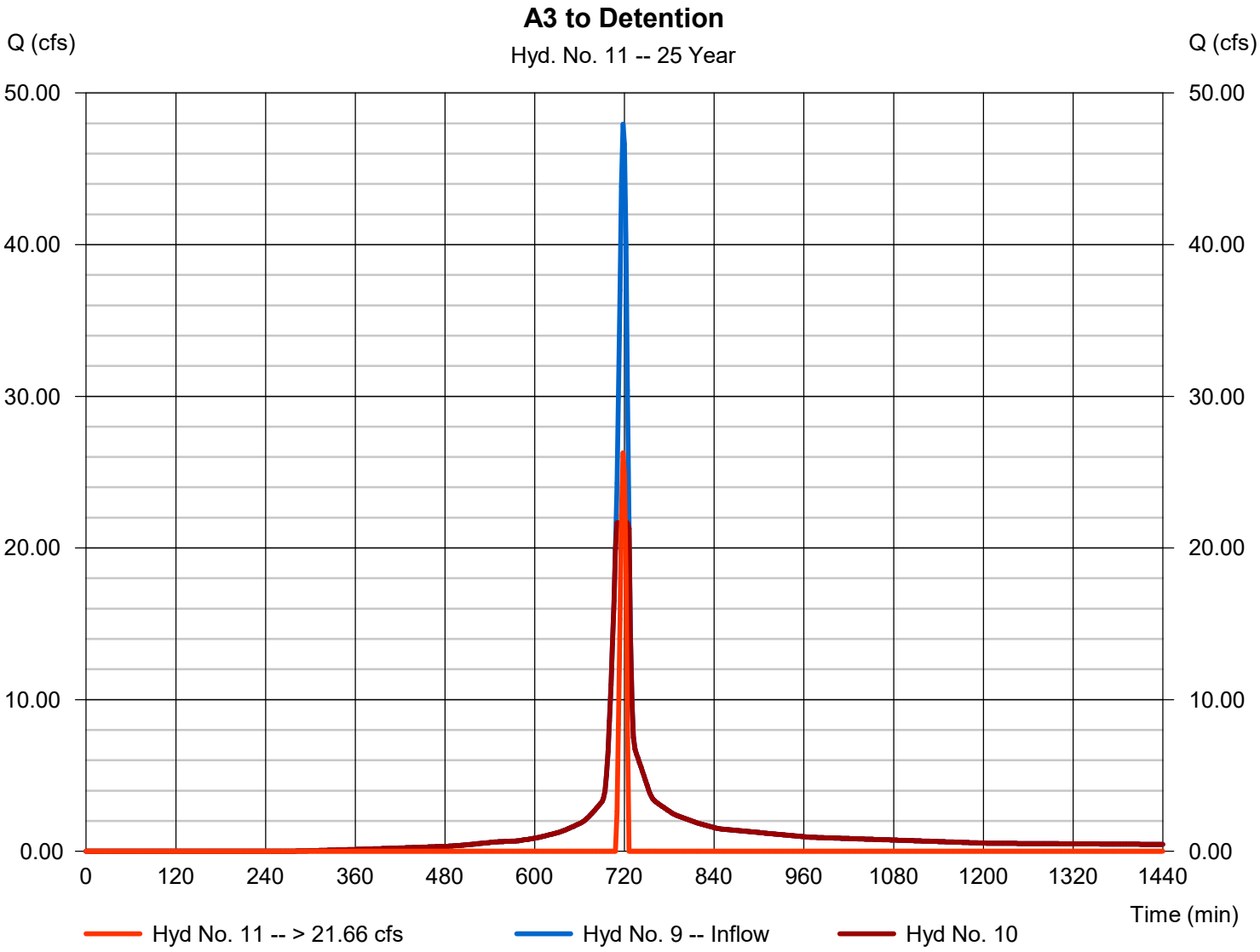


Hydrograph Report

Hyd. No. 11

A3 to Detention

Hydrograph type	= Diversion2	Peak discharge	= 26.28 cfs
Storm frequency	= 25 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 15,191 cuft
Inflow hydrograph	= 9 - Pr WS A3	2nd diverted hyd.	= 10
Diversion method	= Constant Q	Constant Q	= 21.66 cfs

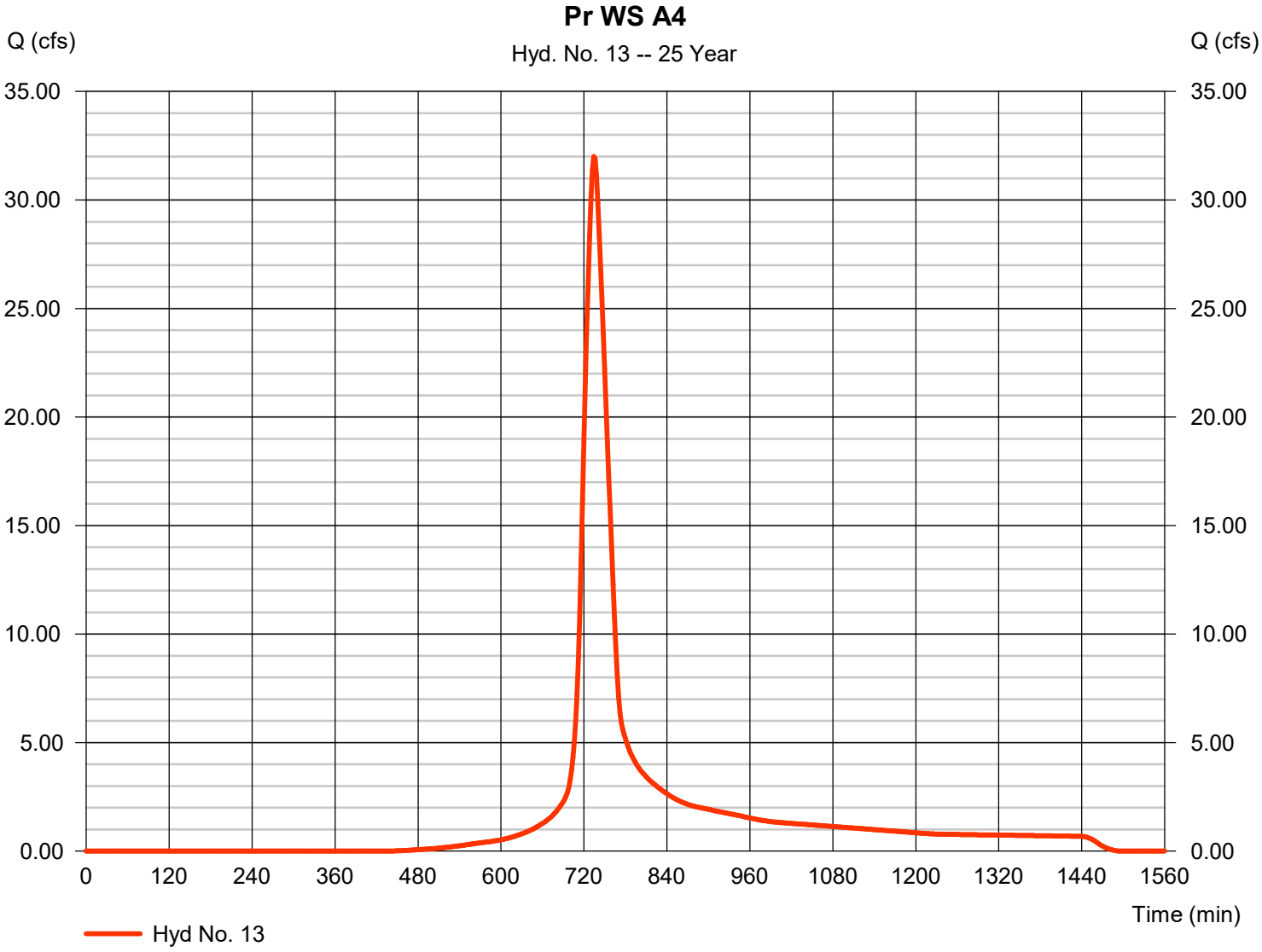


Hydrograph Report

Hyd. No. 13

Pr WS A4

Hydrograph type	=	SCS Runoff	Peak discharge	=	32.00 cfs
Storm frequency	=	25 yrs	Time to peak	=	734 min
Time interval	=	2 min	Hyd. volume	=	144,977 cuft
Drainage area	=	16.960 ac	Curve number	=	83
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	36.00 min
Total precip.	=	4.11 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

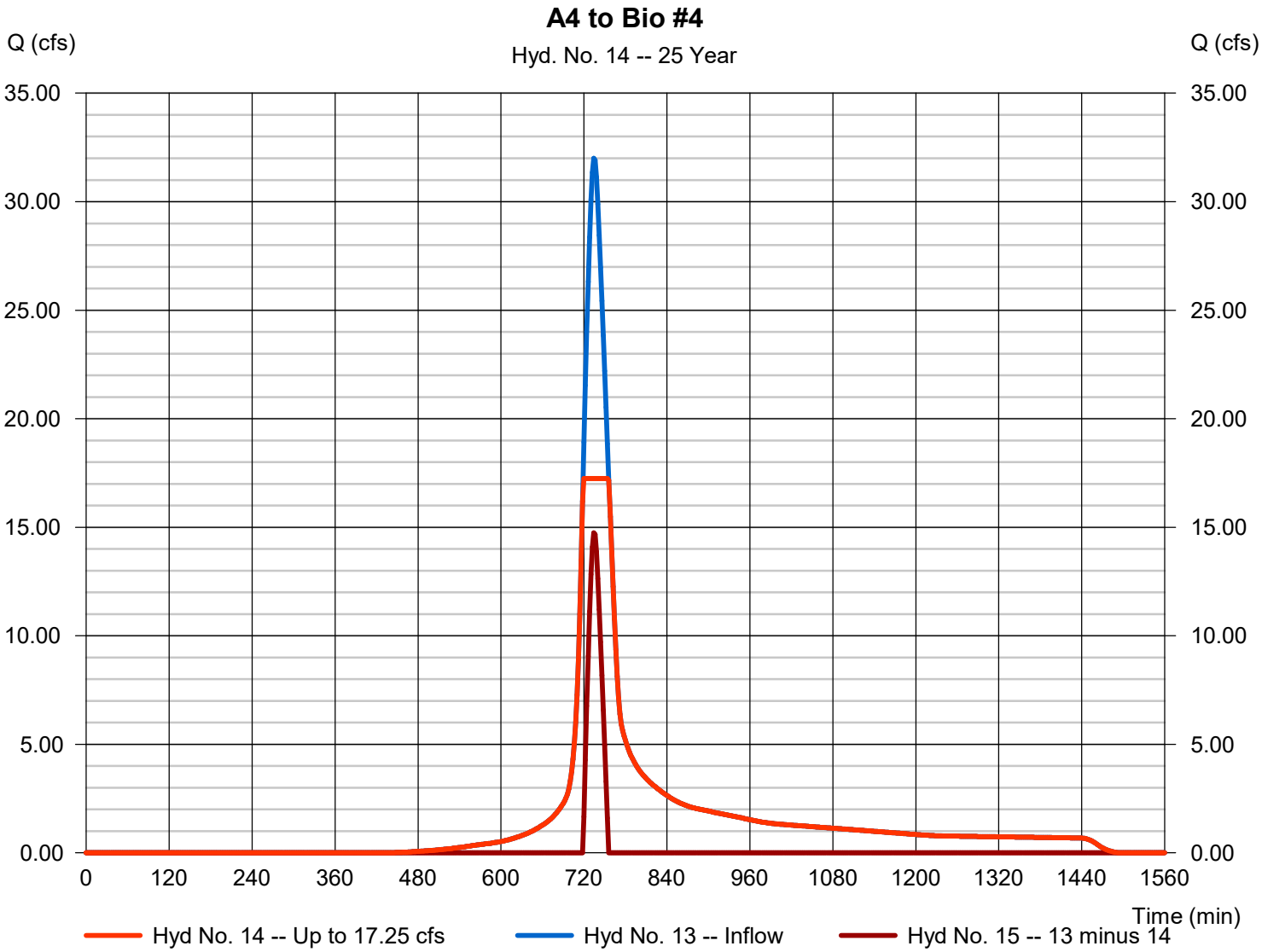


Hydrograph Report

Hyd. No. 14

A4 to Bio #4

Hydrograph type	= Diversion1	Peak discharge	= 17.25 cfs
Storm frequency	= 25 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 125,626 cuft
Inflow hydrograph	= 13 - Pr WS A4	2nd diverted hyd.	= 15
Diversion method	= Constant Q	Constant Q	= 17.25 cfs

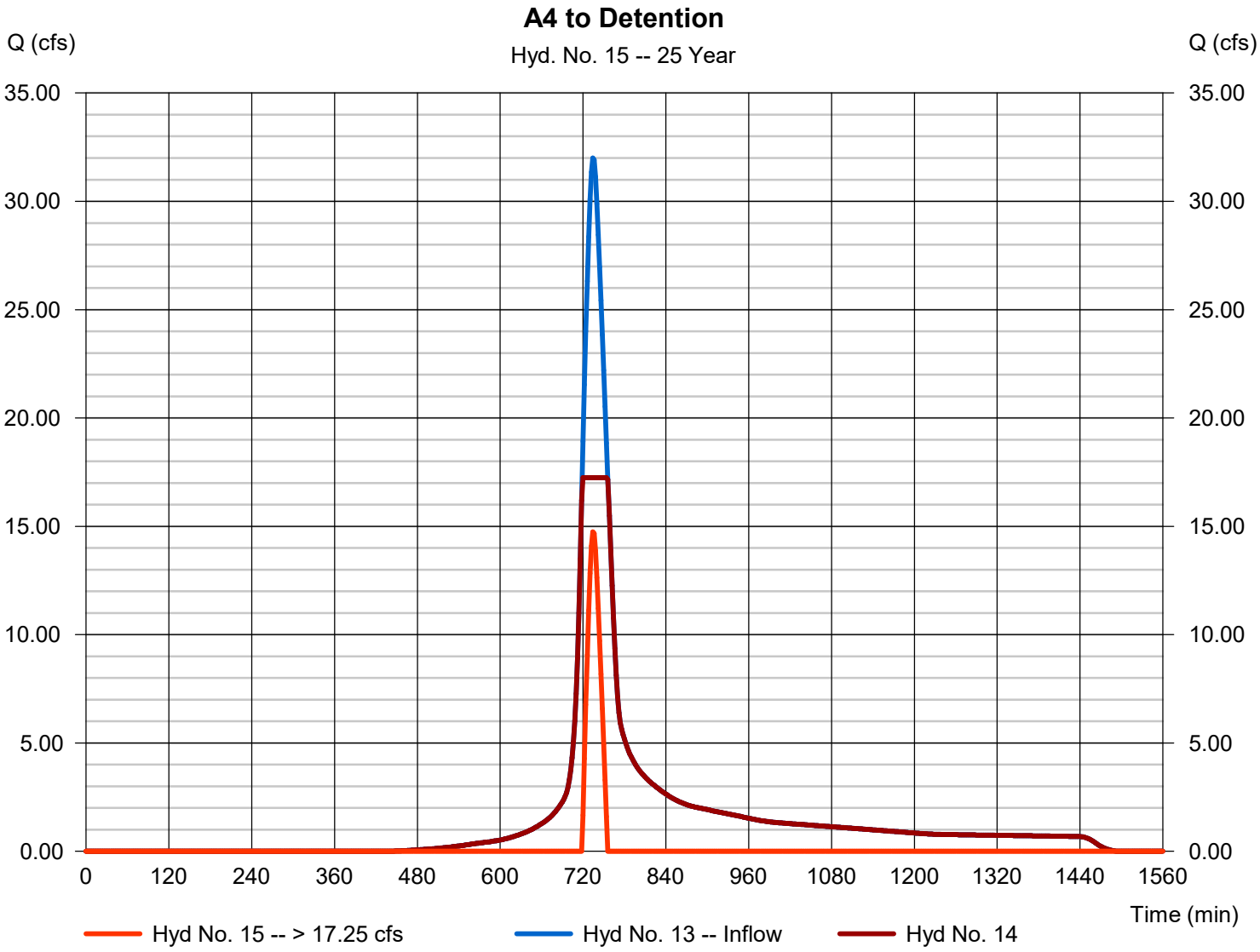


Hydrograph Report

Hyd. No. 15

A4 to Detention

Hydrograph type	= Diversion2	Peak discharge	= 14.75 cfs
Storm frequency	= 25 yrs	Time to peak	= 734 min
Time interval	= 2 min	Hyd. volume	= 19,351 cuft
Inflow hydrograph	= 13 - Pr WS A4	2nd diverted hyd.	= 14
Diversion method	= Constant Q	Constant Q	= 17.25 cfs

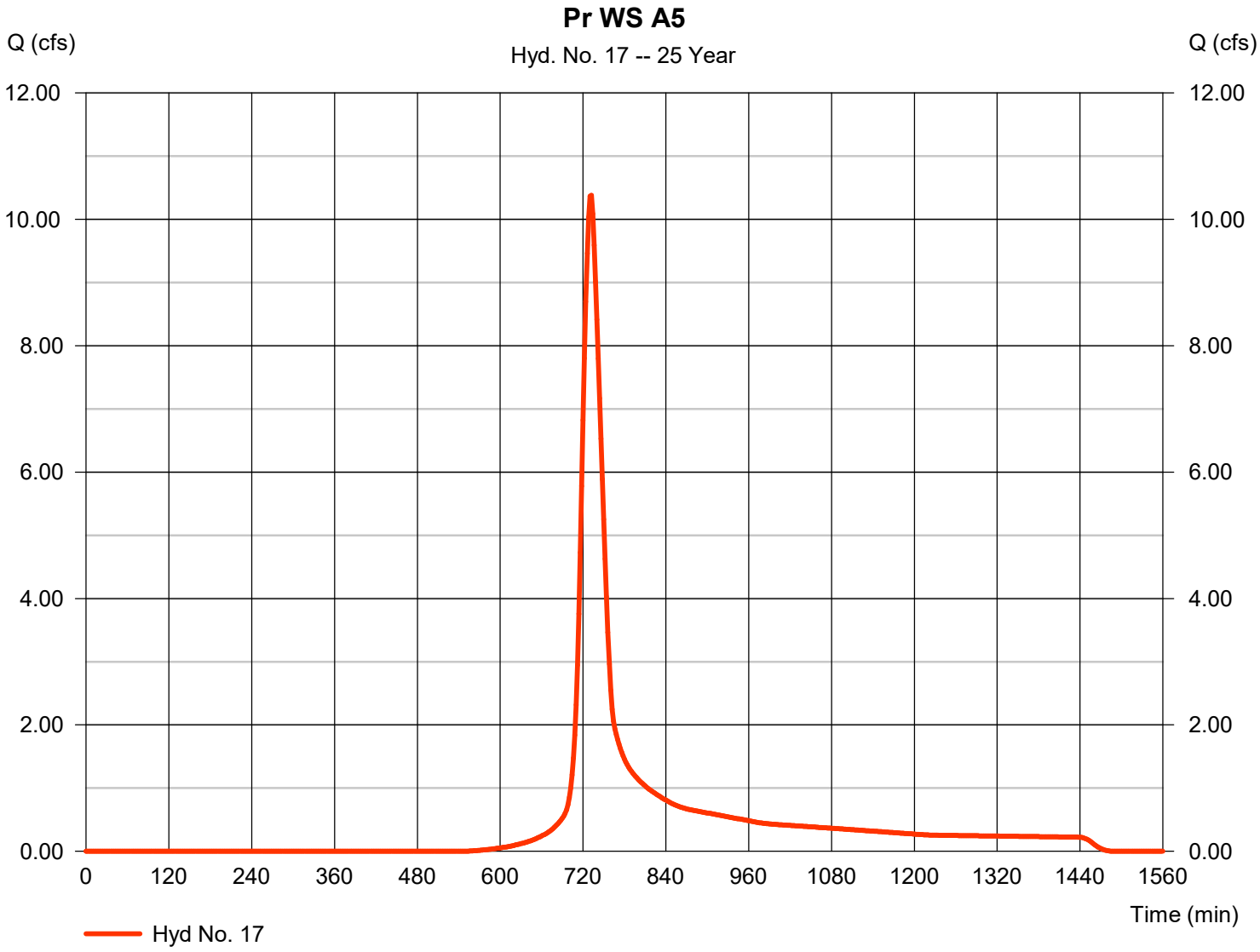


Hydrograph Report

Hyd. No. 17

Pr WS A5

Hydrograph type	=	SCS Runoff	Peak discharge	=	10.38 cfs
Storm frequency	=	25 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	42,034 cuft
Drainage area	=	6.100 ac	Curve number	=	77
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	30.00 min
Total precip.	=	4.11 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



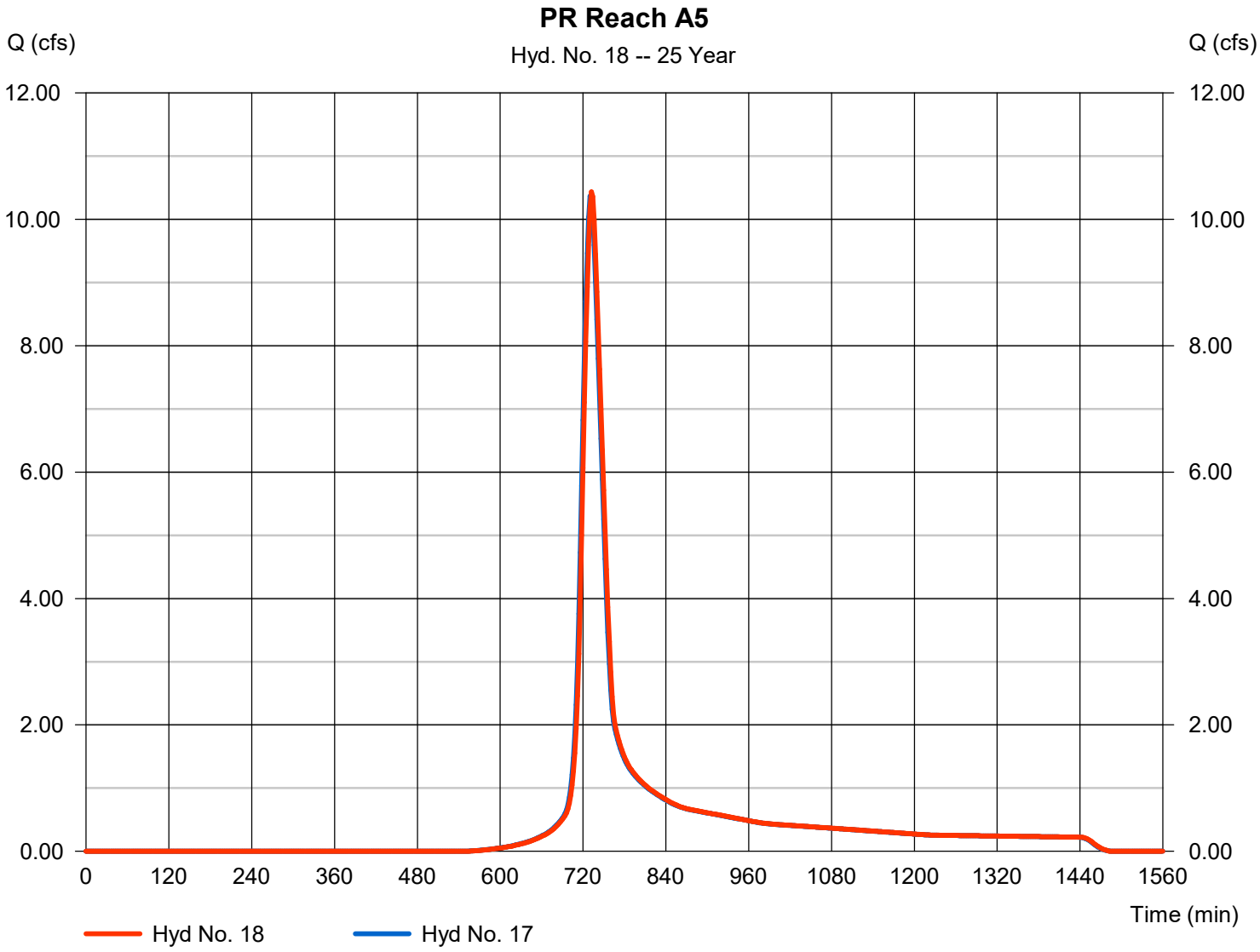
Hydrograph Report

Hyd. No. 18

PR Reach A5

Hydrograph type	=	Reach	Peak discharge	=	10.44 cfs
Storm frequency	=	25 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	42,033 cuft
Inflow hyd. No.	=	17 - Pr WS A5	Section type	=	Trapezoidal
Reach length	=	101.0 ft	Channel slope	=	1.6 %
Manning's n	=	0.025	Bottom width	=	12.0 ft
Side slope	=	2.0:1	Max. depth	=	1.0 ft
Rating curve x	=	1.437	Rating curve m	=	1.425
Ave. velocity	=	2.59 ft/s	Routing coeff.	=	1.3736

Modified Att-Kin routing method used.

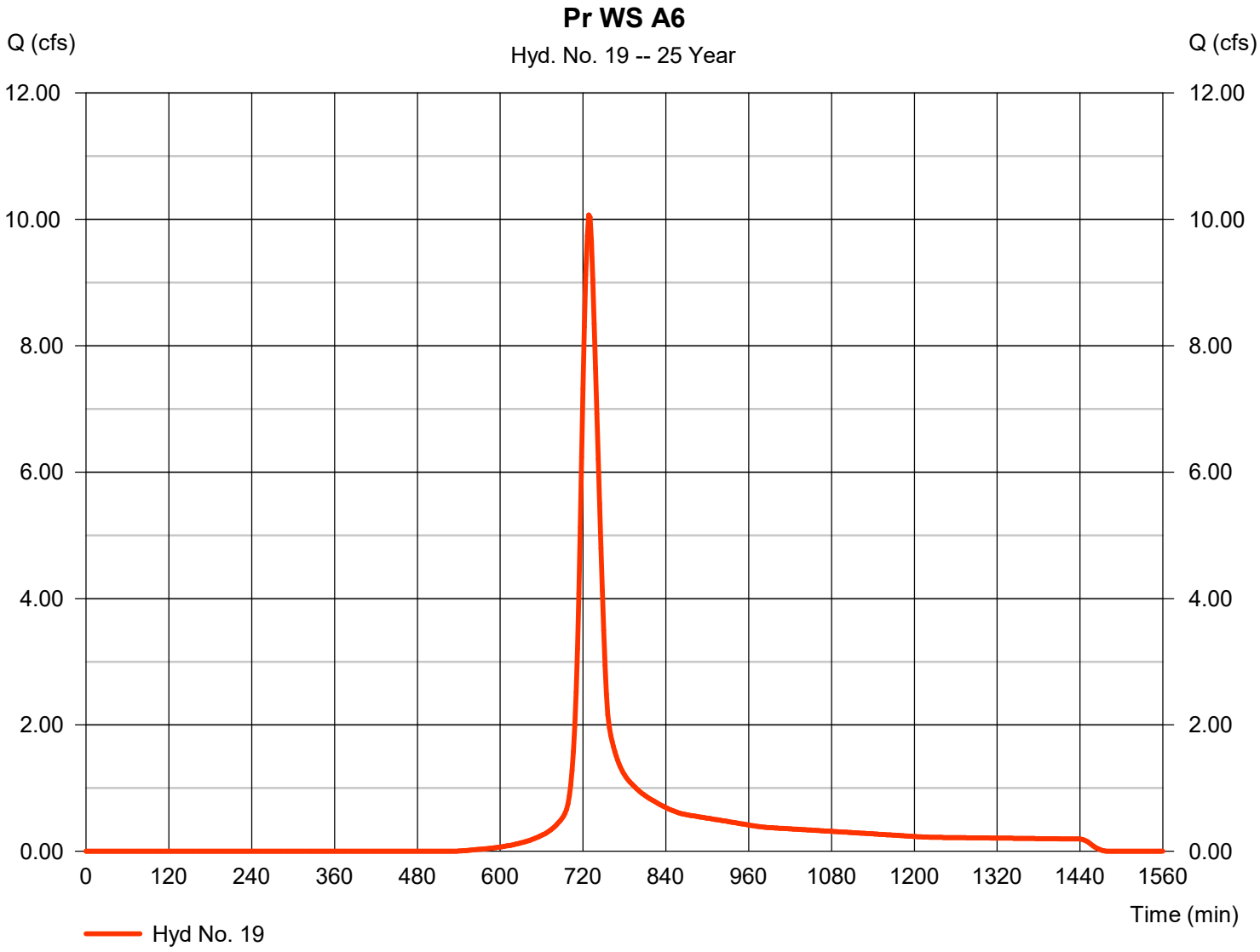


Hydrograph Report

Hyd. No. 19

Pr WS A6

Hydrograph type	=	SCS Runoff	Peak discharge	=	10.07 cfs
Storm frequency	=	25 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	37,261 cuft
Drainage area	=	5.280 ac	Curve number	=	78
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	24.00 min
Total precip.	=	4.11 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

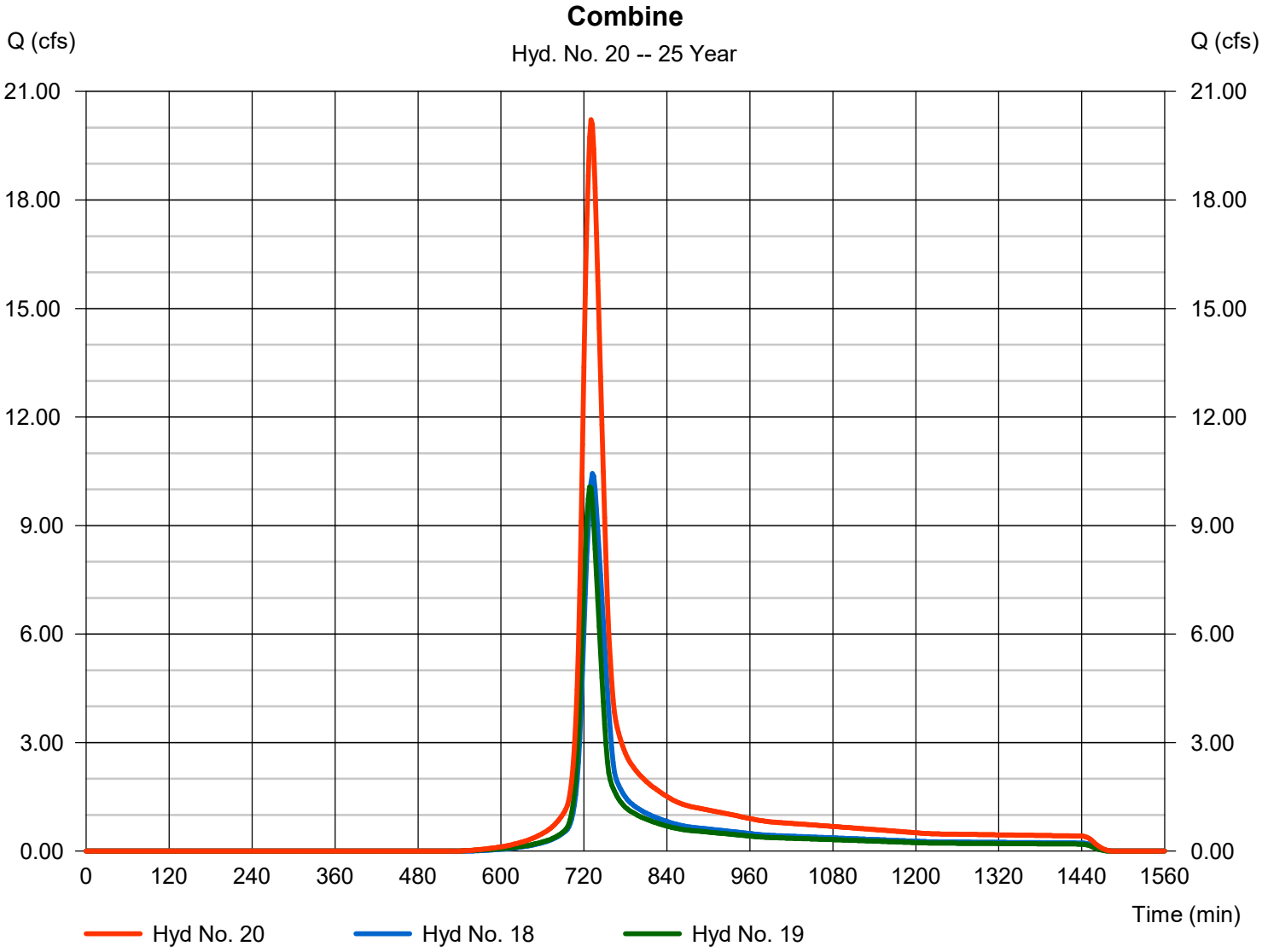


Hydrograph Report

Hyd. No. 20

Combine

Hydrograph type	=	Combine	Peak discharge	=	20.22 cfs
Storm frequency	=	25 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	79,295 cuft
Inflow hyds.	=	18, 19	Contrib. drain. area	=	5.280 ac



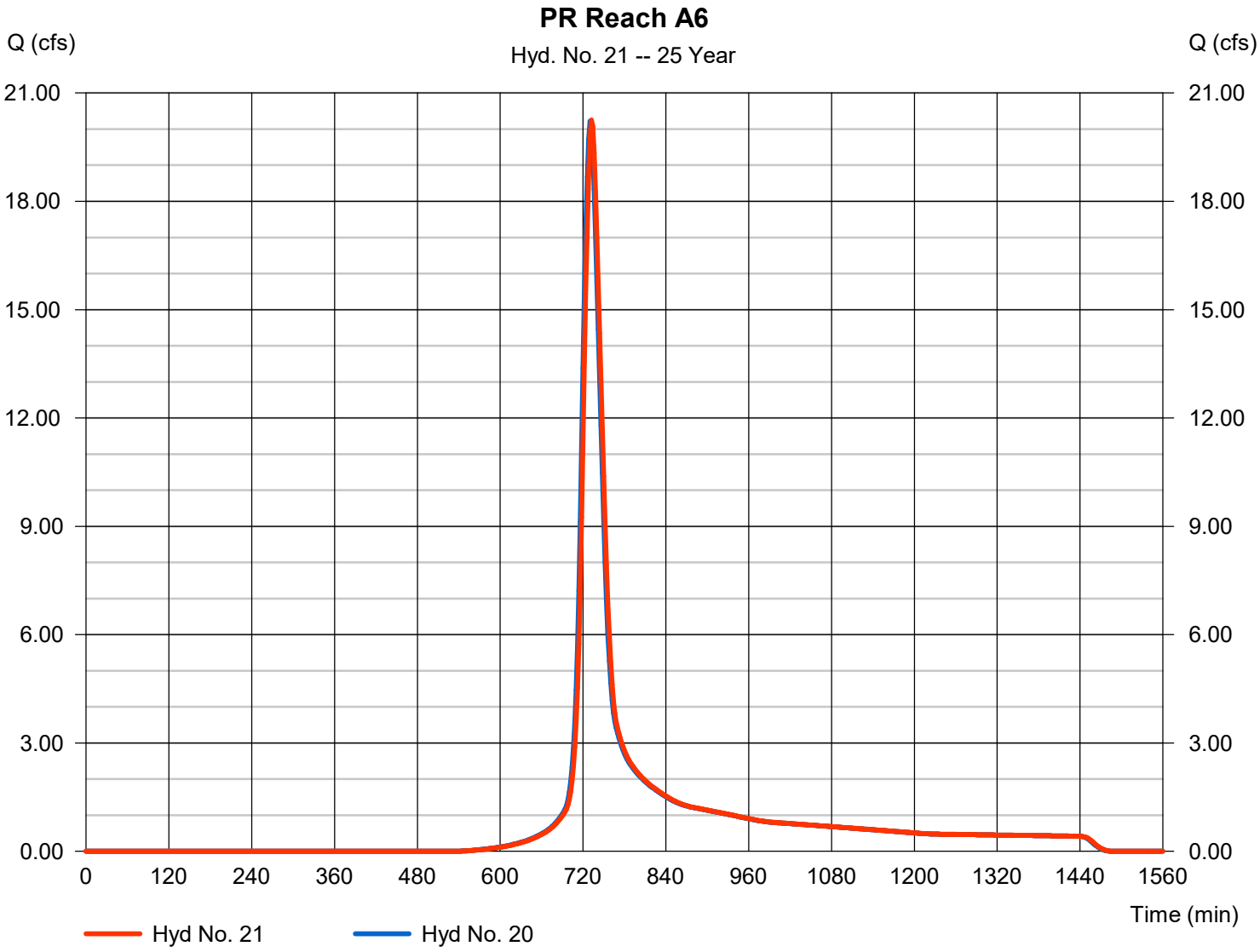
Hydrograph Report

Hyd. No. 21

PR Reach A6

Hydrograph type	=	Reach	Peak discharge	=	20.25 cfs
Storm frequency	=	25 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	79,295 cuft
Inflow hyd. No.	=	20 - Combine	Section type	=	Trapezoidal
Reach length	=	413.0 ft	Channel slope	=	3.8 %
Manning's n	=	0.025	Bottom width	=	6.0 ft
Side slope	=	2.0:1	Max. depth	=	5.0 ft
Rating curve x	=	3.540	Rating curve m	=	1.395
Ave. velocity	=	5.80 ft/s	Routing coeff.	=	1.0806

Modified Att-Kin routing method used.

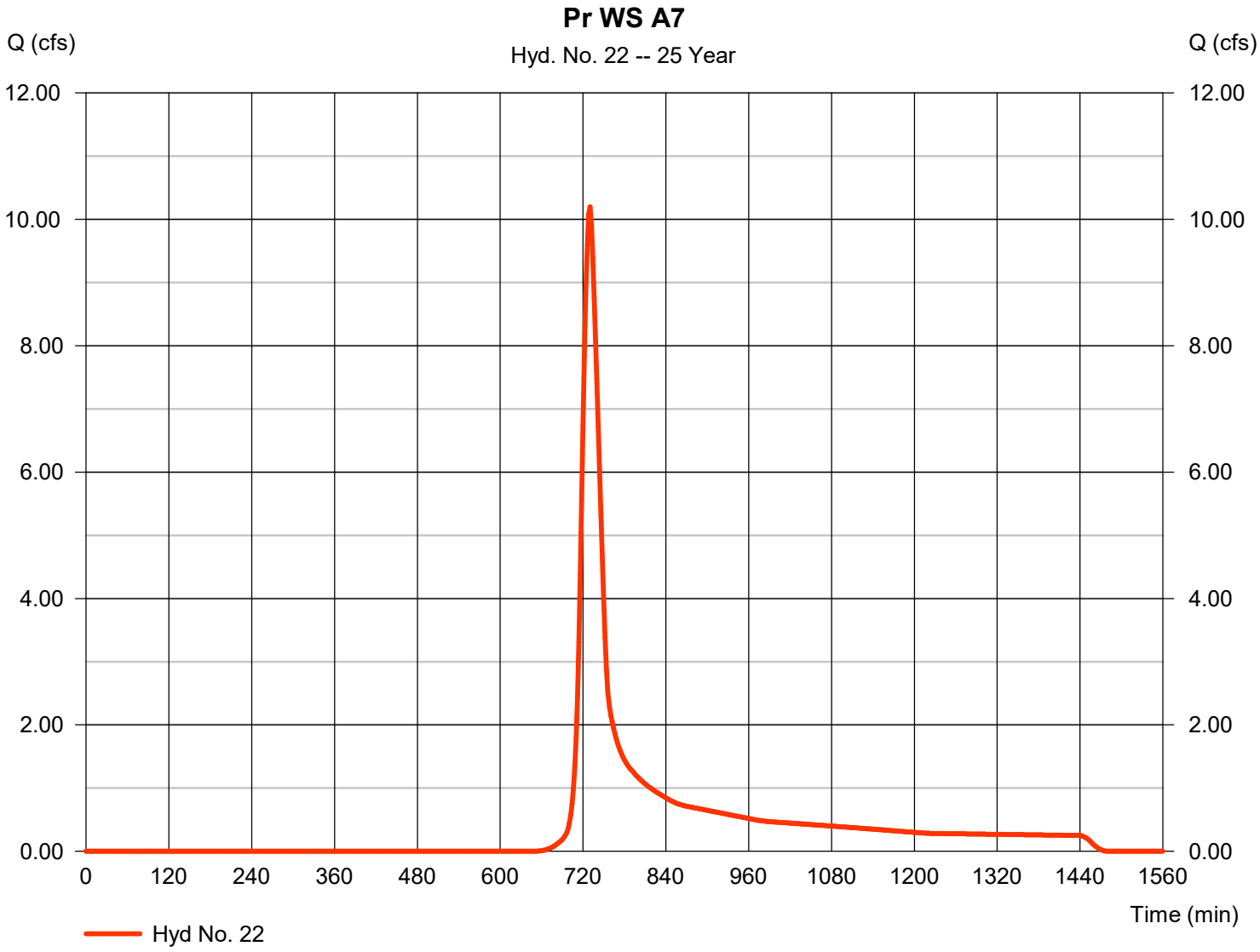


Hydrograph Report

Hyd. No. 22

Pr WS A7

Hydrograph type	=	SCS Runoff	Peak discharge	=	10.20 cfs
Storm frequency	=	25 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	39,750 cuft
Drainage area	=	8.310 ac	Curve number	=	69
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	26.00 min
Total precip.	=	4.11 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



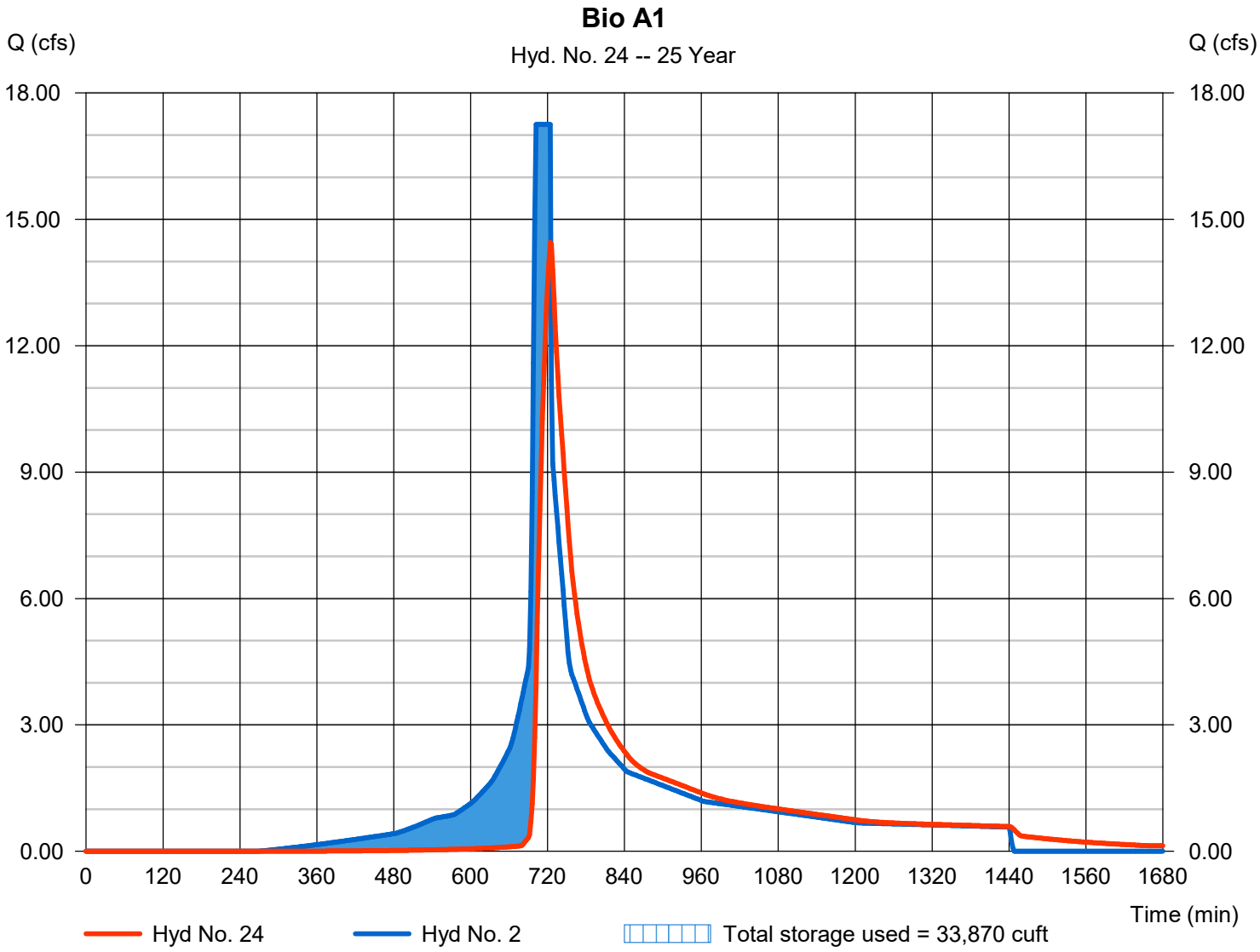
Hydrograph Report

Hyd. No. 24

Bio A1

Hydrograph type	=	Reservoir	Peak discharge	=	14.45 cfs
Storm frequency	=	25 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	109,284 cuft
Inflow hyd. No.	=	2 - A1 to Bio #1	Max. Elevation	=	406.17 ft
Reservoir name	=	Bio A1 (south)	Max. Storage	=	33,870 cuft

Storage Indication method used. Outflow includes exfiltration.



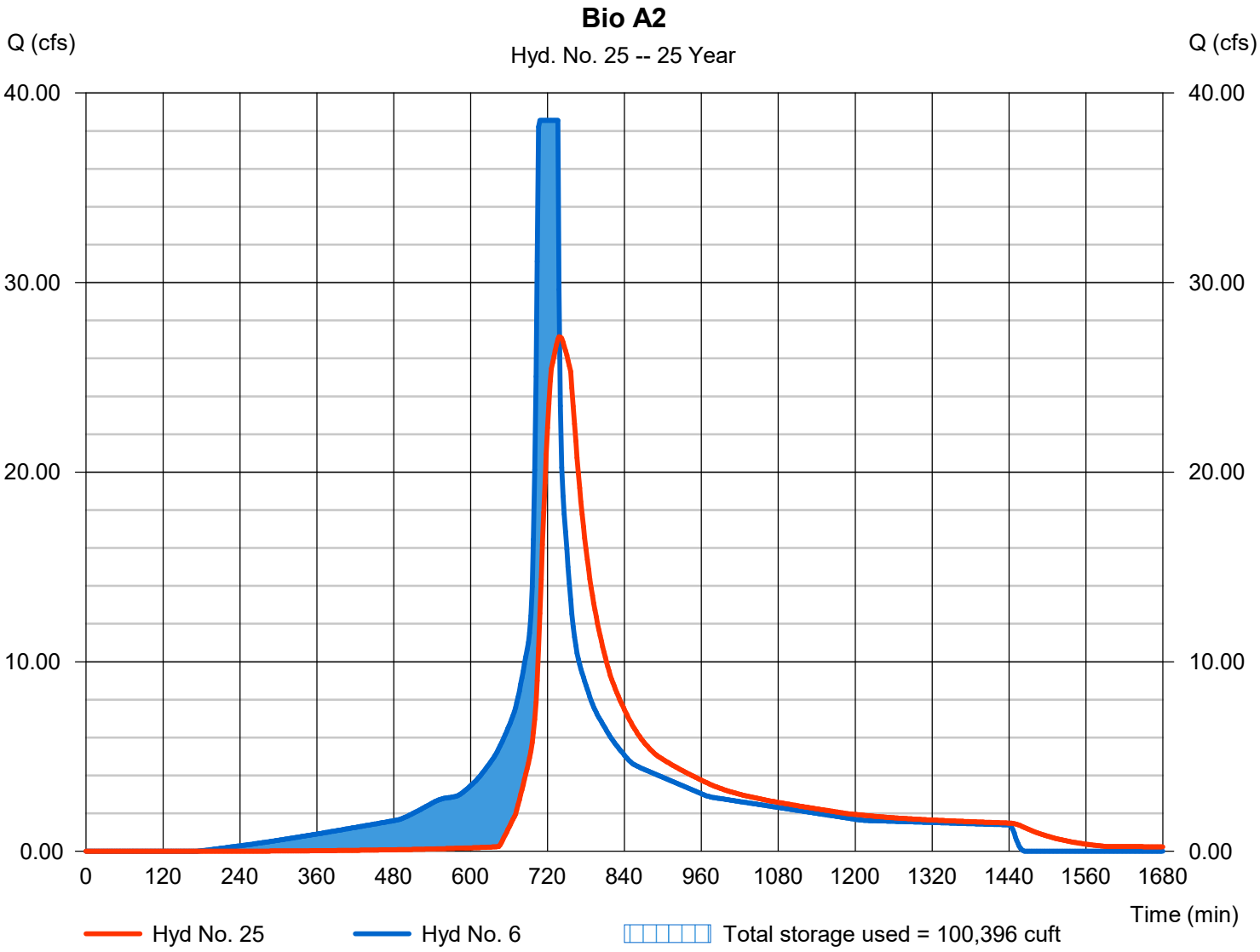
Hydrograph Report

Hyd. No. 25

Bio A2

Hydrograph type	=	Reservoir	Peak discharge	=	27.14 cfs
Storm frequency	=	25 yrs	Time to peak	=	738 min
Time interval	=	2 min	Hyd. volume	=	289,487 cuft
Inflow hyd. No.	=	6 - A2 to Bio #2	Max. Elevation	=	402.21 ft
Reservoir name	=	Bio A2 (west)	Max. Storage	=	100,396 cuft

Storage Indication method used. Outflow includes exfiltration.



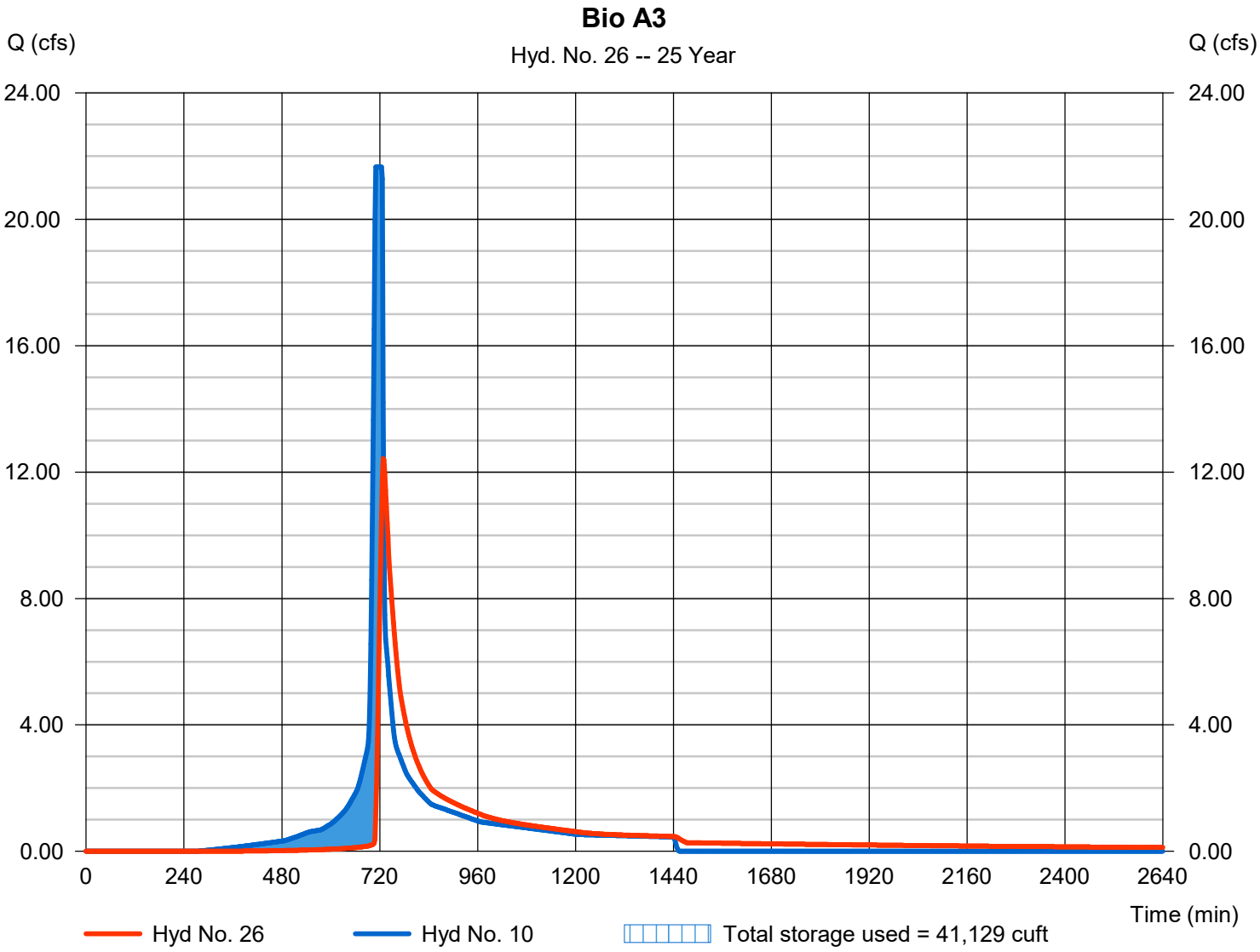
Hydrograph Report

Hyd. No. 26

Bio A3

Hydrograph type	=	Reservoir	Peak discharge	=	12.43 cfs
Storm frequency	=	25 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	97,397 cuft
Inflow hyd. No.	=	10 - A3 to Bio #3	Max. Elevation	=	409.37 ft
Reservoir name	=	Bio A3 (east)	Max. Storage	=	41,129 cuft

Storage Indication method used. Outflow includes exfiltration.



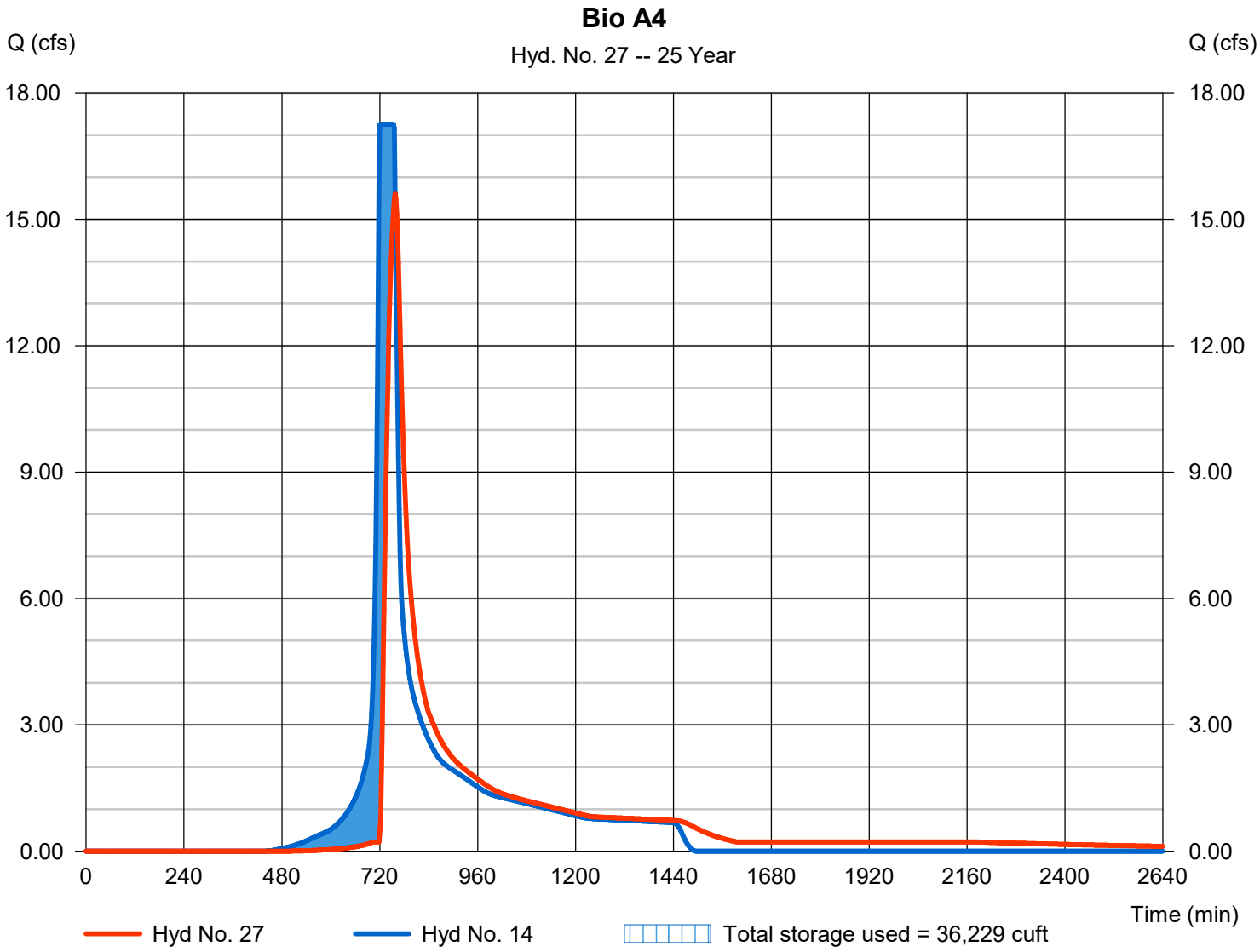
Hydrograph Report

Hyd. No. 27

Bio A4

Hydrograph type	=	Reservoir	Peak discharge	=	15.62 cfs
Storm frequency	=	25 yrs	Time to peak	=	758 min
Time interval	=	2 min	Hyd. volume	=	125,564 cuft
Inflow hyd. No.	=	14 - A4 to Bio #4	Max. Elevation	=	403.69 ft
Reservoir name	=	Bio A4 (north)	Max. Storage	=	36,229 cuft

Storage Indication method used. Outflow includes exfiltration.

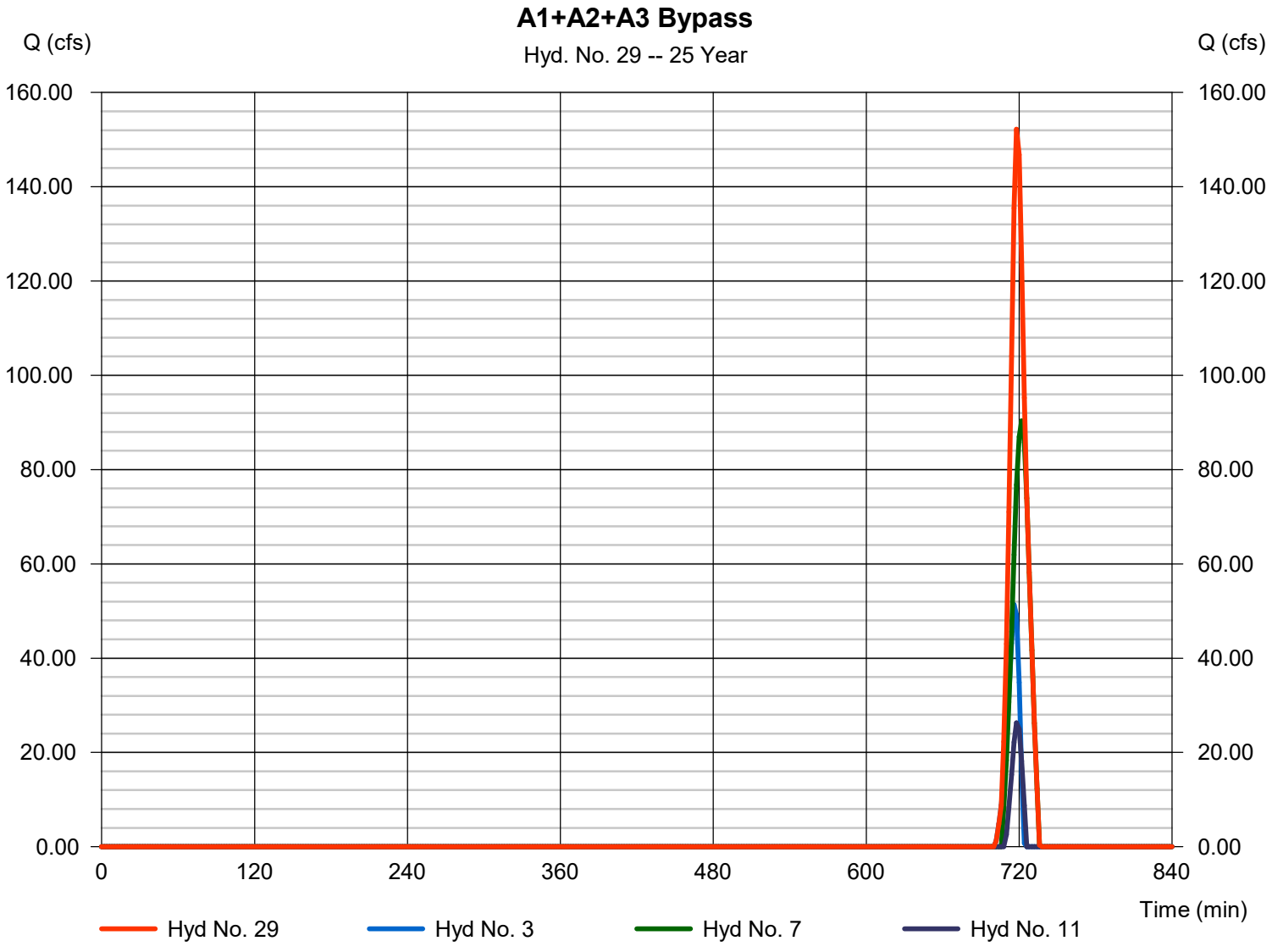


Hydrograph Report

Hyd. No. 29

A1+A2+A3 Bypass

Hydrograph type	=	Combine	Peak discharge	=	152.20 cfs
Storm frequency	=	25 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	134,613 cuft
Inflow hyds.	=	3, 7, 11	Contrib. drain. area	=	0.000 ac

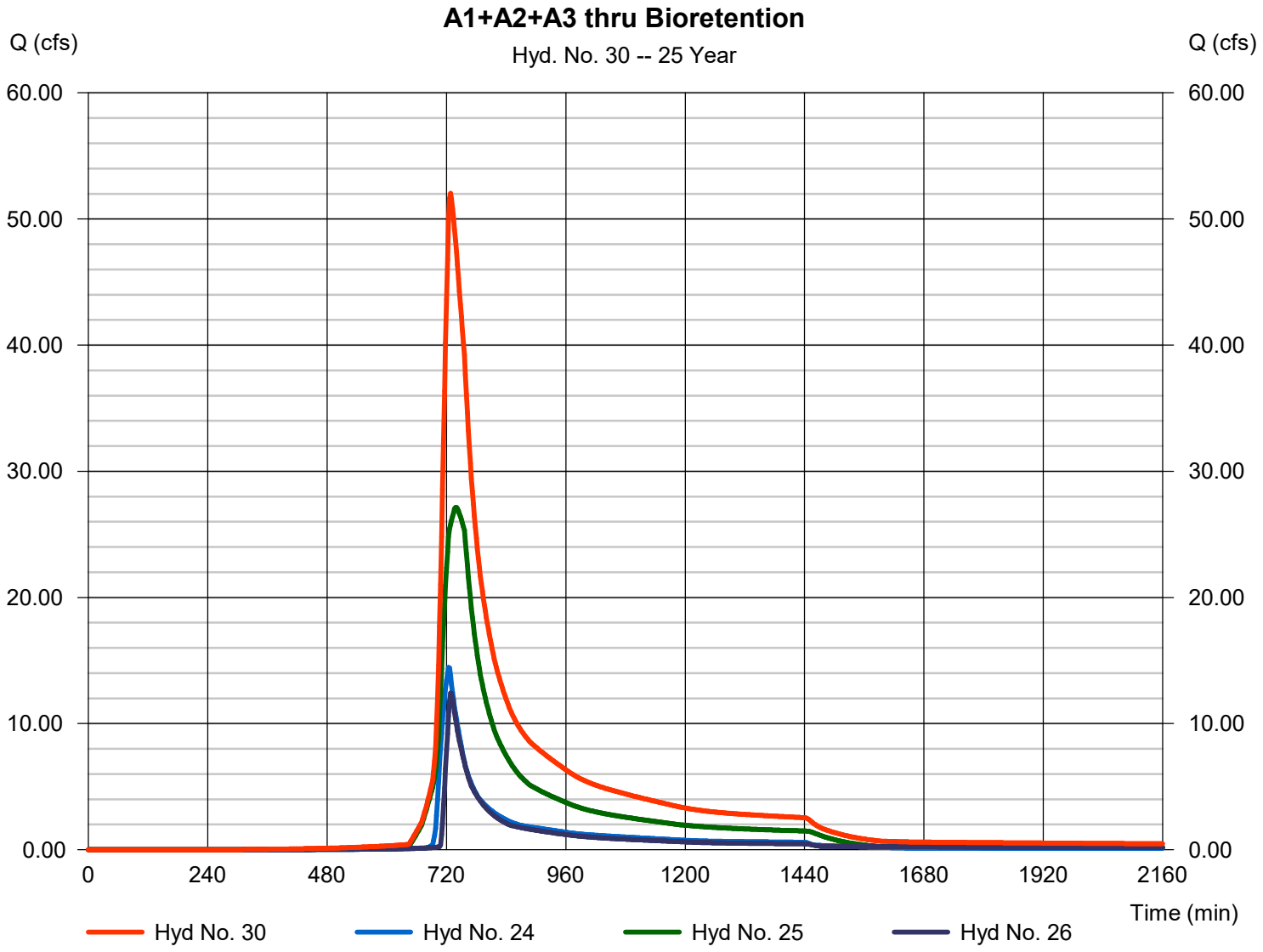


Hydrograph Report

Hyd. No. 30

A1+A2+A3 thru Bioretention

Hydrograph type	= Combine	Peak discharge	= 52.02 cfs
Storm frequency	= 25 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 496,168 cuft
Inflow hyds.	= 24, 25, 26	Contrib. drain. area	= 0.000 ac

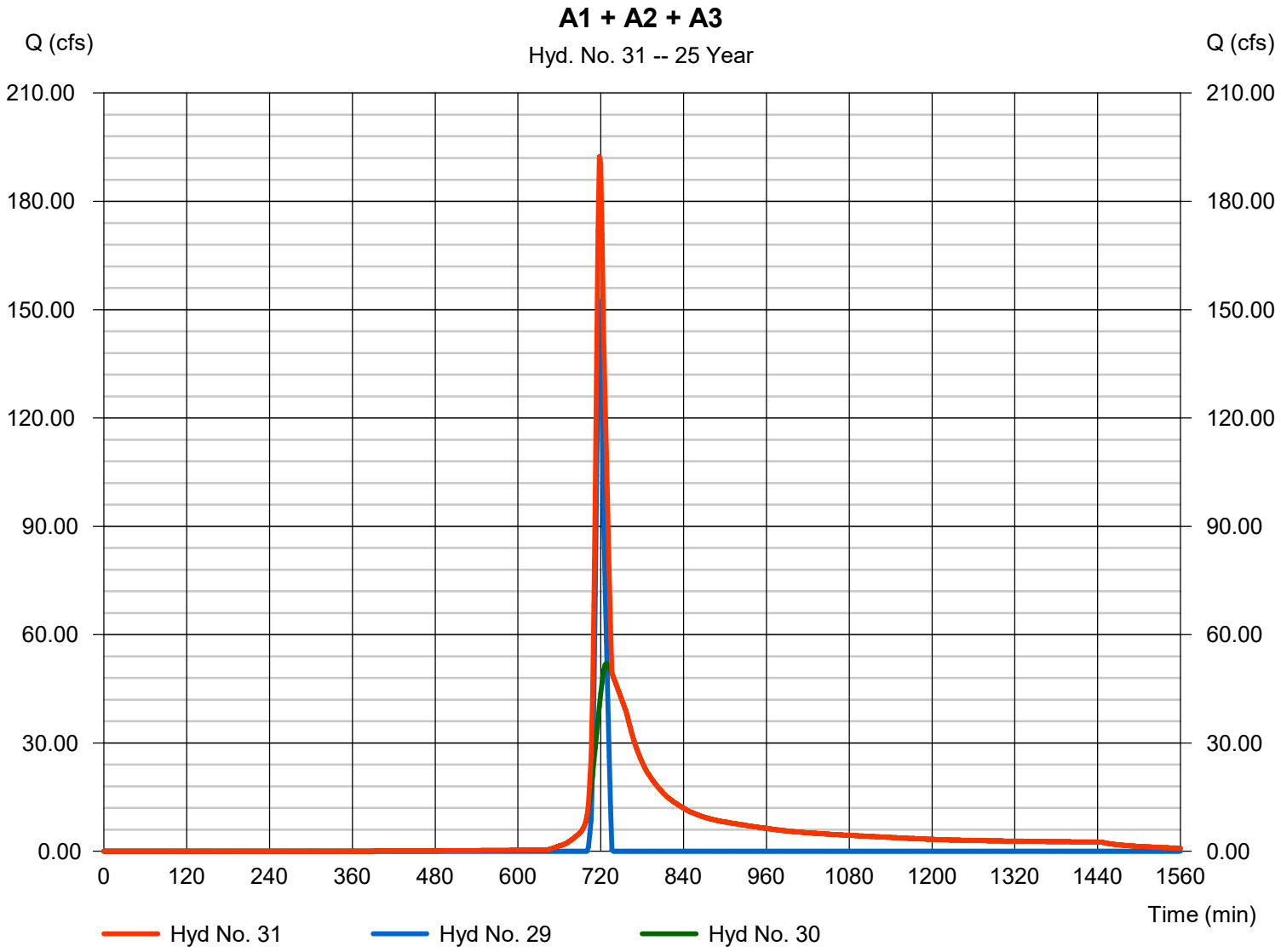


Hydrograph Report

Hyd. No. 31

A1 + A2 + A3

Hydrograph type	= Combine	Peak discharge	= 192.35 cfs
Storm frequency	= 25 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 630,779 cuft
Inflow hyds.	= 29, 30	Contrib. drain. area	= 0.000 ac



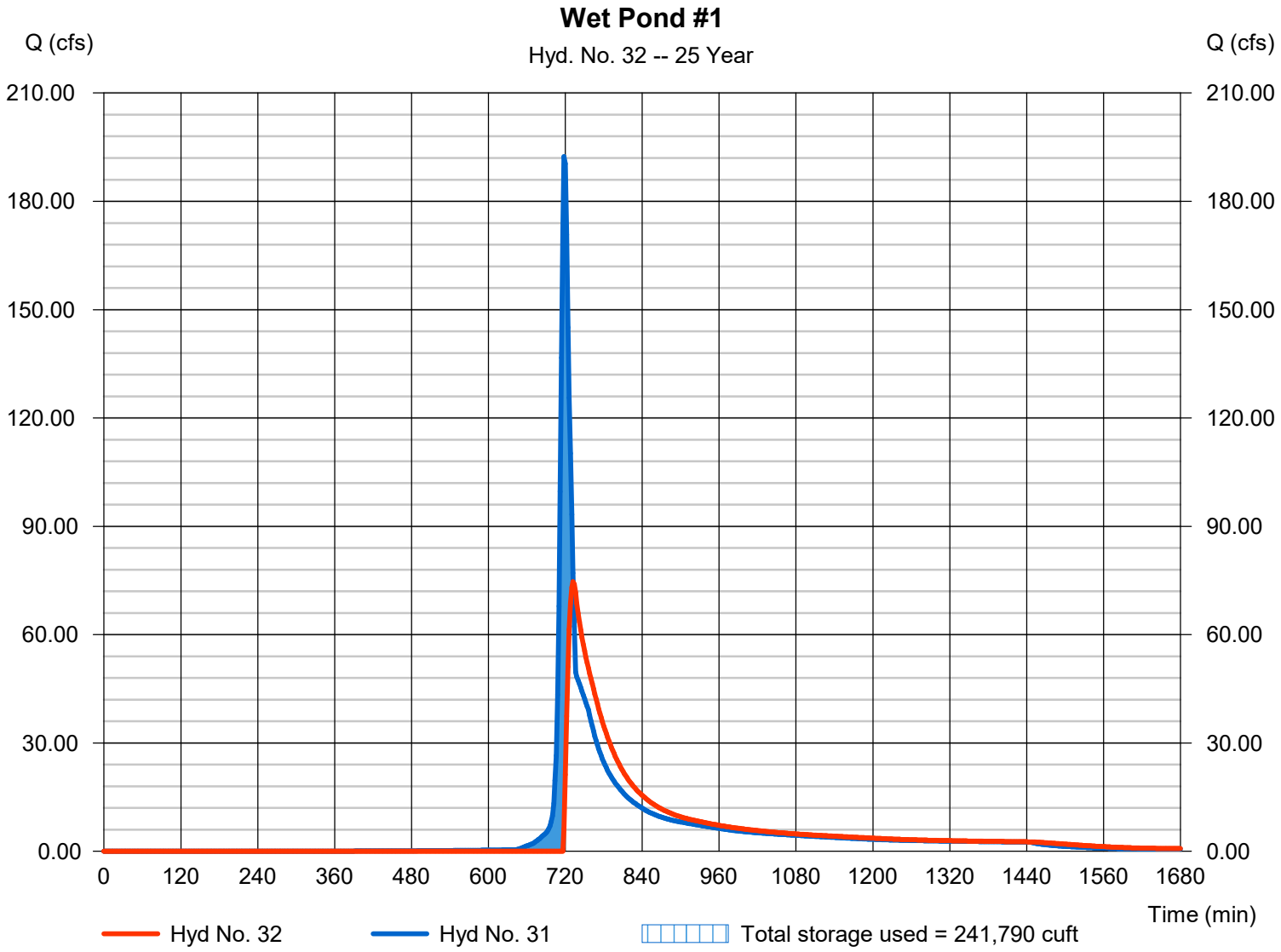
Hydrograph Report

Hyd. No. 32

Wet Pond #1

Hydrograph type	= Reservoir	Peak discharge	= 74.67 cfs
Storm frequency	= 25 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 552,044 cuft
Inflow hyd. No.	= 31 - A1 + A2 + A3	Max. Elevation	= 403.99 ft
Reservoir name	= Wet Pond #1	Max. Storage	= 241,790 cuft

Storage Indication method used. Wet pond routing start elevation = 400.00 ft.

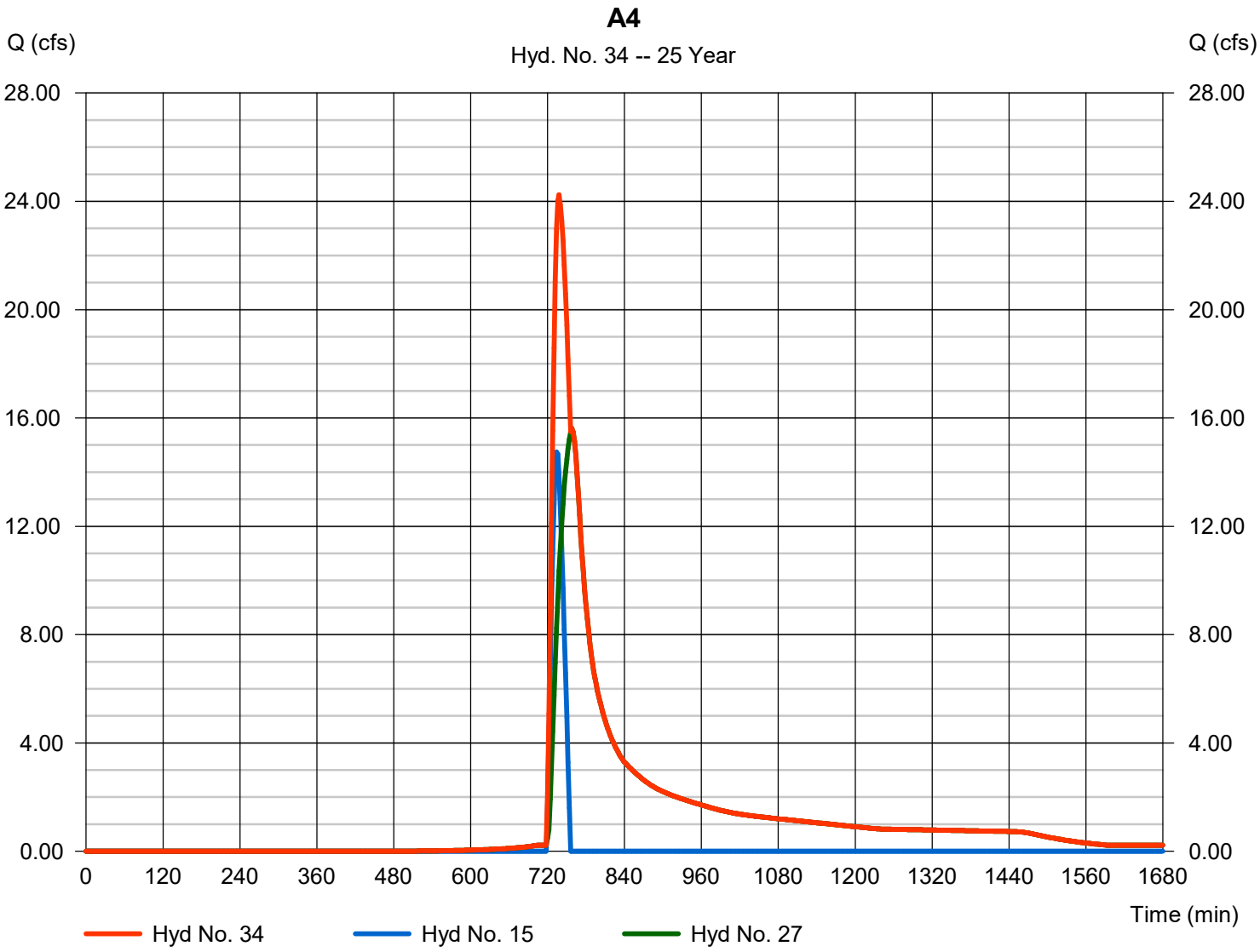


Hydrograph Report

Hyd. No. 34

A4

Hydrograph type	=	Combine	Peak discharge	=	24.24 cfs
Storm frequency	=	25 yrs	Time to peak	=	738 min
Time interval	=	2 min	Hyd. volume	=	144,915 cuft
Inflow hyds.	=	15, 27	Contrib. drain. area	=	0.000 ac



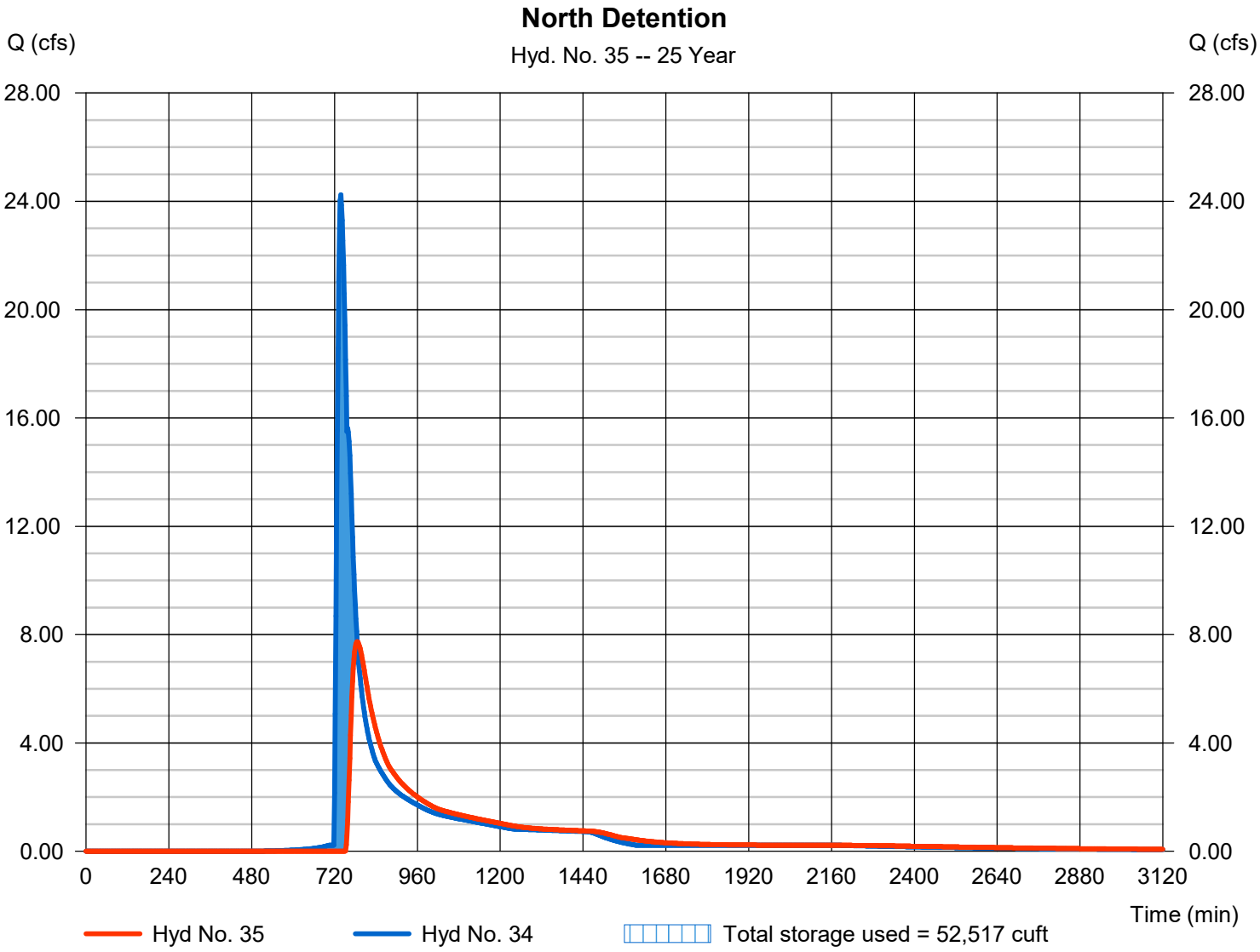
Hydrograph Report

Hyd. No. 35

North Detention

Hydrograph type	=	Reservoir	Peak discharge	=	7.742 cfs
Storm frequency	=	25 yrs	Time to peak	=	786 min
Time interval	=	2 min	Hyd. volume	=	109,076 cuft
Inflow hyd. No.	=	34 - A4	Max. Elevation	=	403.80 ft
Reservoir name	=	Dry Detention #1	Max. Storage	=	52,517 cuft

Storage Indication method used.

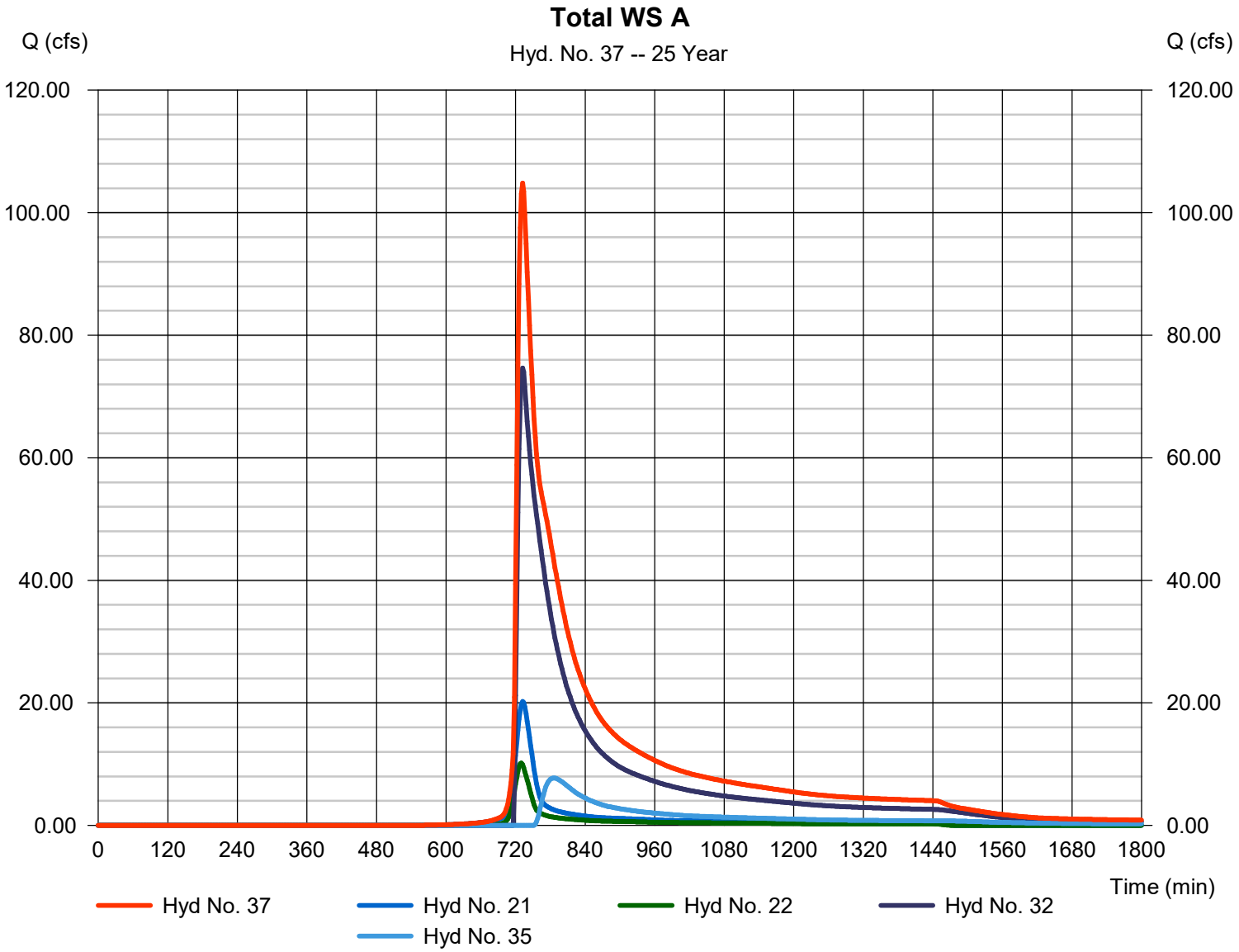


Hydrograph Report

Hyd. No. 37

Total WS A

Hydrograph type	=	Combine	Peak discharge	=	104.84 cfs
Storm frequency	=	25 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	780,165 cuft
Inflow hyds.	=	21, 22, 32, 35	Contrib. drain. area	=	8.310 ac

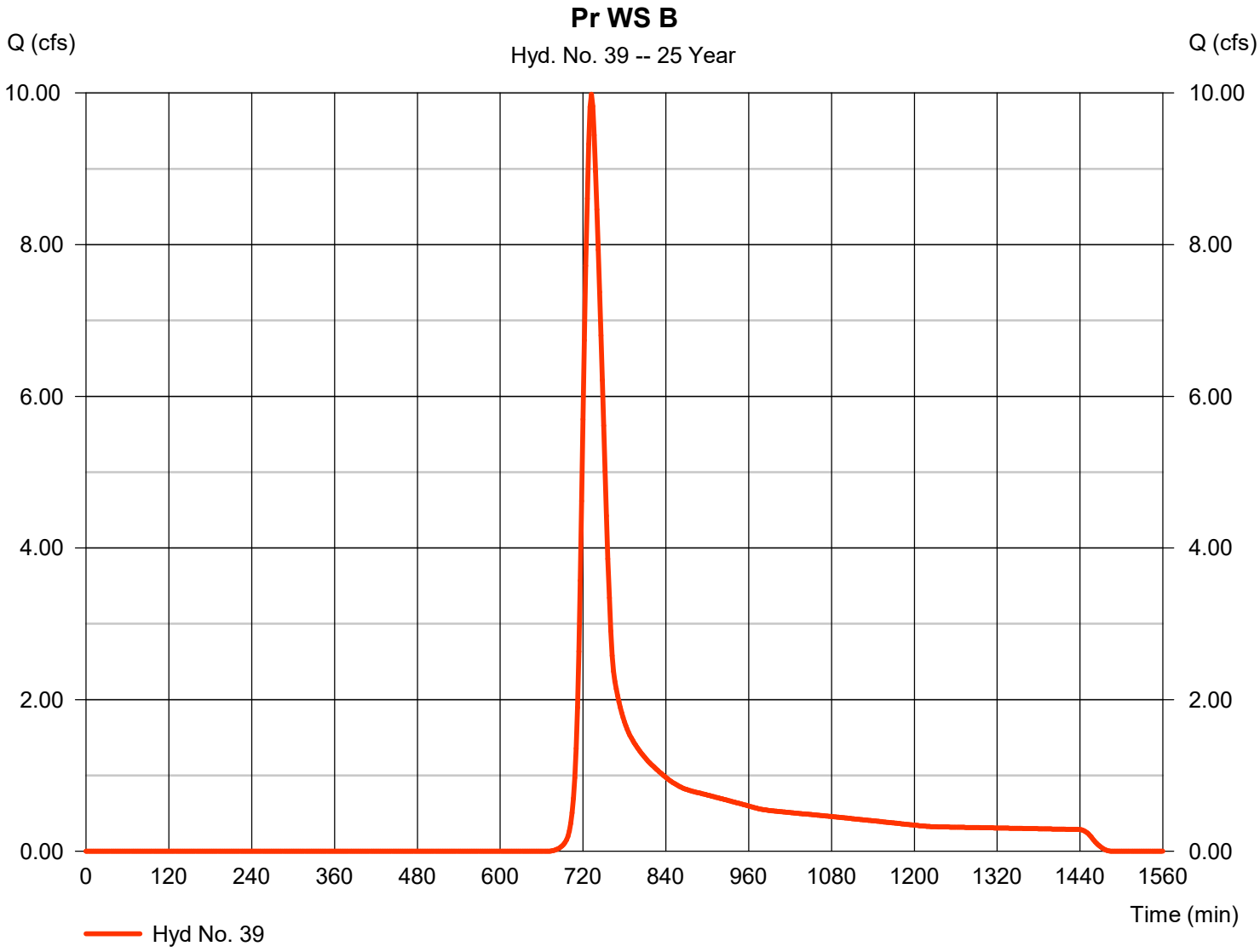


Hydrograph Report

Hyd. No. 39

Pr WS B

Hydrograph type	= SCS Runoff	Peak discharge	= 9.983 cfs
Storm frequency	= 25 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 43,592 cuft
Drainage area	= 9.900 ac	Curve number	= 67
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 27.00 min
Total precip.	= 4.11 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

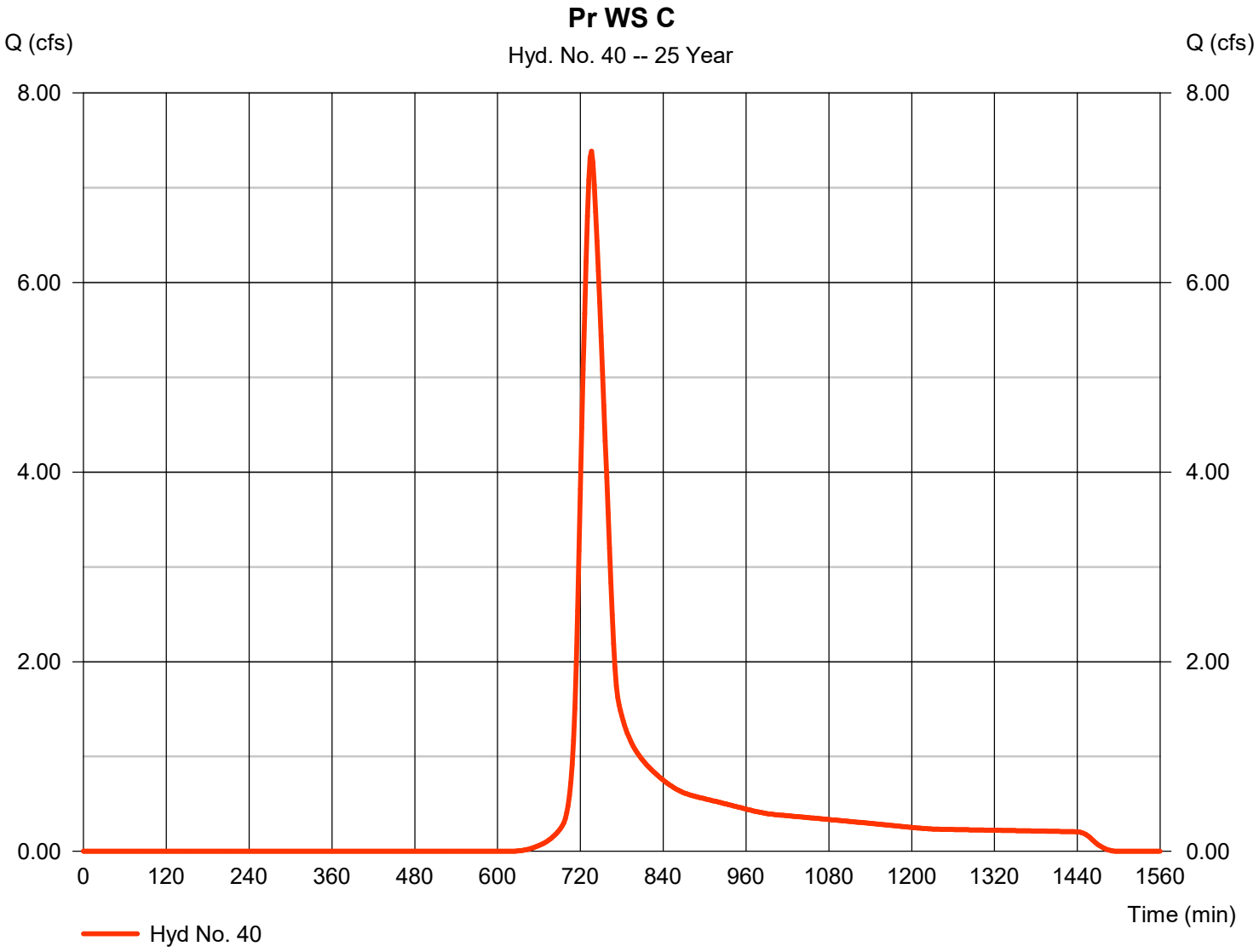


Hydrograph Report

Hyd. No. 40

Pr WS C

Hydrograph type	= SCS Runoff	Peak discharge	= 7.385 cfs
Storm frequency	= 25 yrs	Time to peak	= 736 min
Time interval	= 2 min	Hyd. volume	= 34,876 cuft
Drainage area	= 6.320 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 34.00 min
Total precip.	= 4.11 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

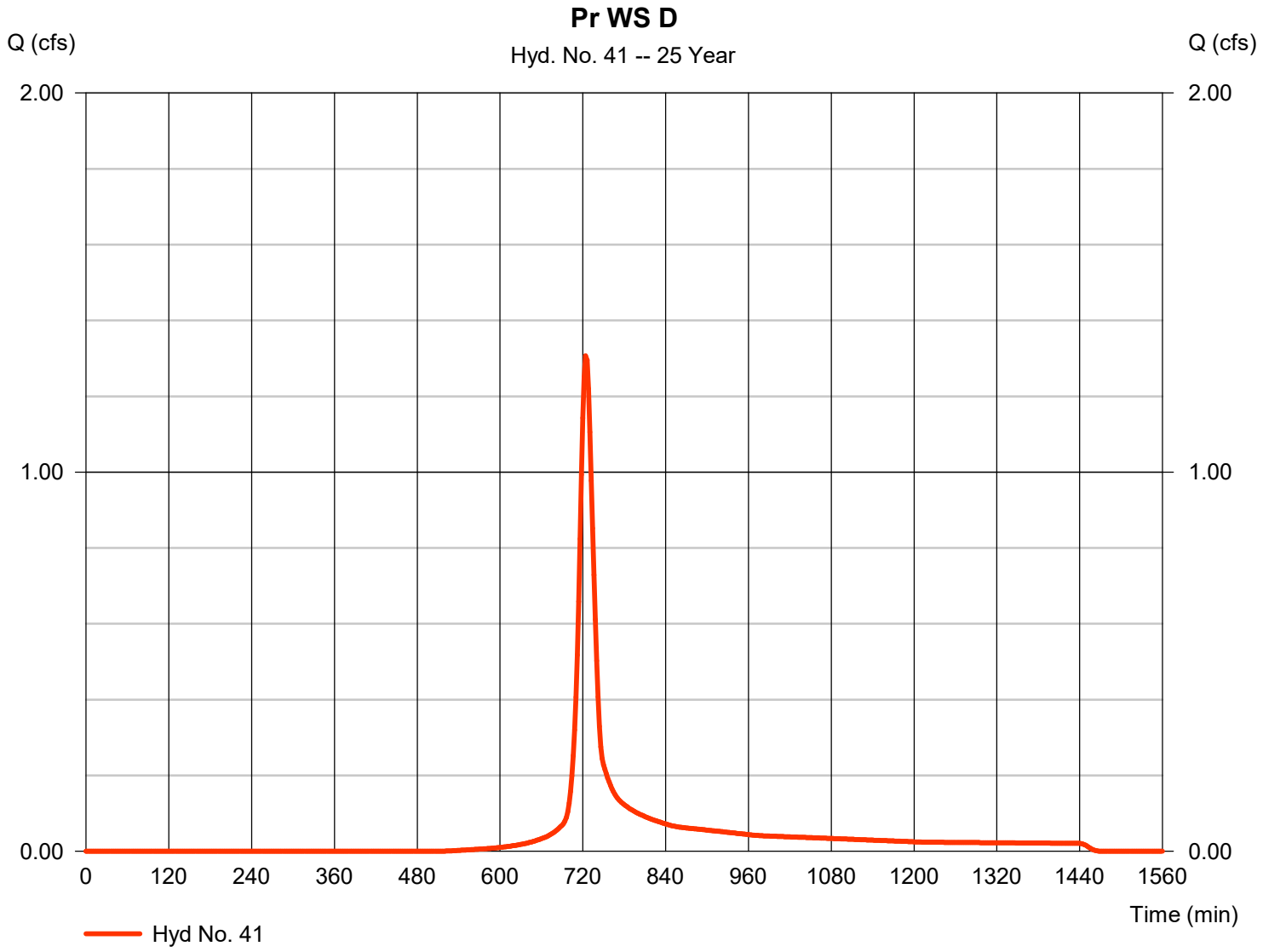


Hydrograph Report

Hyd. No. 41

Pr WS D

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.307 cfs
Storm frequency	=	25 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	4,099 cuft
Drainage area	=	0.550 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	20.00 min
Total precip.	=	4.11 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

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	98.93	2	716	214,175	------	------	------	Pr WS A1
2	Diversion1	17.25	2	698	153,681	1	------	------	A1 to Bio #1
3	Diversion2	81.68	2	716	60,495	1	------	------	A1 to Detention
5	SCS Runoff	180.71	2	722	550,769	------	------	------	Pr WS A2
6	Diversion1	38.56	2	704	398,739	5	------	------	A2 to Bio #2
7	Diversion2	142.15	2	722	152,029	5	------	------	A2 to Detention
9	SCS Runoff	69.26	2	718	167,976	------	------	------	Pr WS A3
10	Diversion1	21.66	2	706	134,190	9	------	------	A3 to Bio #3
11	Diversion2	47.60	2	718	33,786	9	------	------	A3 to Detention
13	SCS Runoff	50.01	2	734	227,083	------	------	------	Pr WS A4
14	Diversion1	17.25	2	714	171,726	13	------	------	A4 to Bio #4
15	Diversion2	32.76	2	734	55,357	13	------	------	A4 to Detention
17	SCS Runoff	17.39	2	730	69,549	------	------	------	Pr WS A5
18	Reach	17.48	2	732	69,548	17	------	------	PR Reach A5
19	SCS Runoff	16.64	2	728	61,066	------	------	------	Pr WS A6
20	Combine	33.67	2	730	130,614	18, 19	------	------	Combine
21	Reach	33.73	2	732	130,614	20	------	------	PR Reach A6
22	SCS Runoff	19.13	2	730	71,613	------	------	------	Pr WS A7
24	Reservoir	15.94	2	726	151,311	2	406.19	35,011	Bio A1
25	Reservoir	27.90	2	742	389,275	6	402.29	107,731	Bio A2
26	Reservoir	17.25	2	728	133,056	10	409.47	45,640	Bio A3
27	Reservoir	16.86	2	762	171,662	14	403.71	37,230	Bio A4
29	Combine	249.39	2	718	246,309	3, 7, 11,	------	------	A1+A2+A3 Bypass
30	Combine	60.05	2	728	673,641	24, 25, 26,	------	------	A1+A2+A3 thru Bioretention
31	Combine	303.21	2	718	919,952	29, 30	------	------	A1 + A2 + A3
32	Reservoir	115.23	2	732	841,211	31	406.00	346,087	Wet Pond #1
34	Combine	47.03	2	736	227,019	15, 27,	------	------	A4
35	Reservoir	24.15	2	758	191,167	34	404.75	69,921	North Detention
37	Combine	167.43	2	730	1,234,606	21, 22, 32, 35,	------	------	Total WS A

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

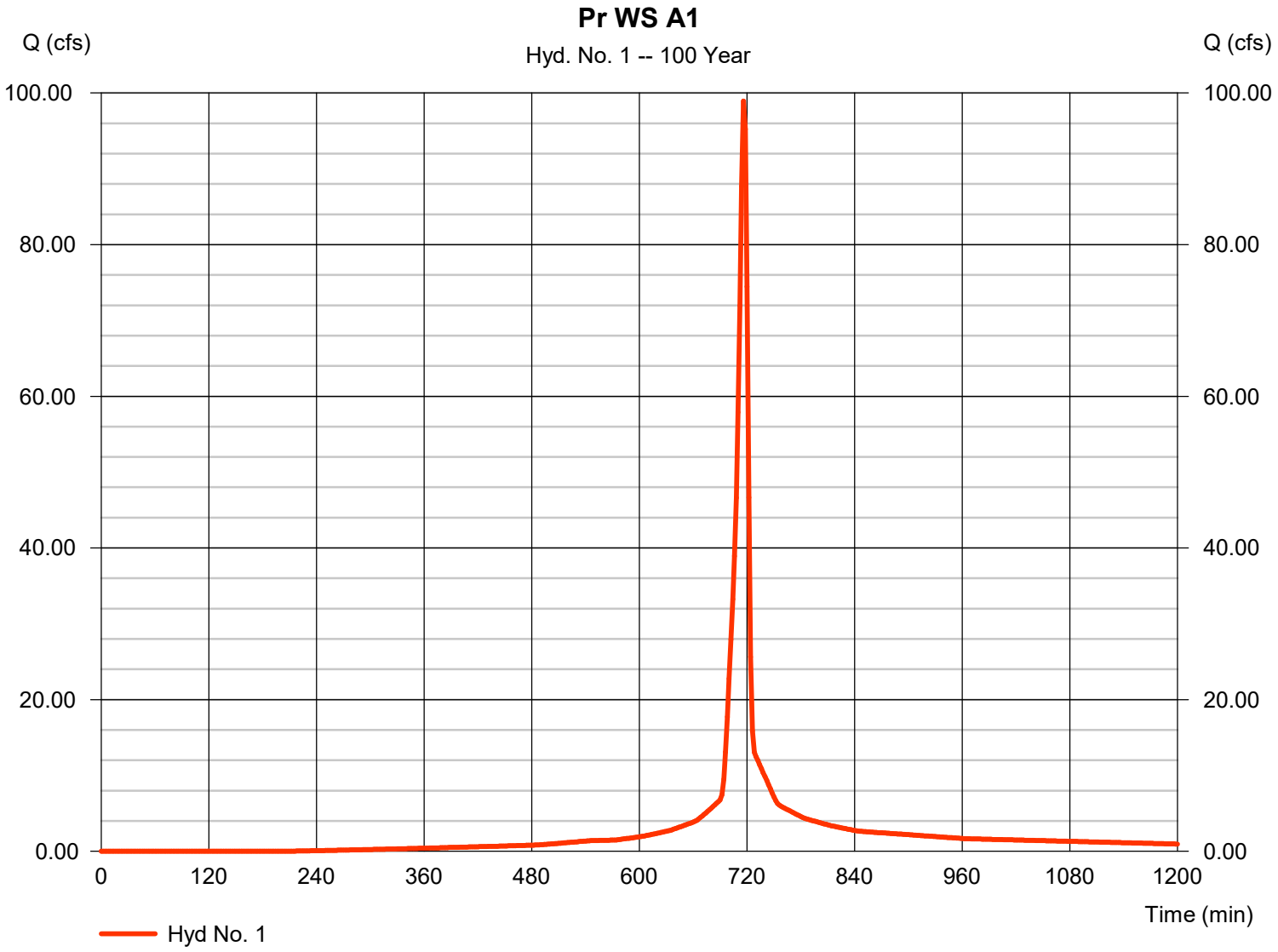
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
39	SCS Runoff	19.57	2	732	80,489	------	------	------	Pr WS B
40	SCS Runoff	13.26	2	736	60,727	------	------	------	Pr WS C
41	SCS Runoff	2.127	2	724	6,655	------	------	------	Pr WS D

Hydrograph Report

Hyd. No. 1

Pr WS A1

Hydrograph type	= SCS Runoff	Peak discharge	= 98.93 cfs
Storm frequency	= 100 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 214,175 cuft
Drainage area	= 14.090 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 5.61 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

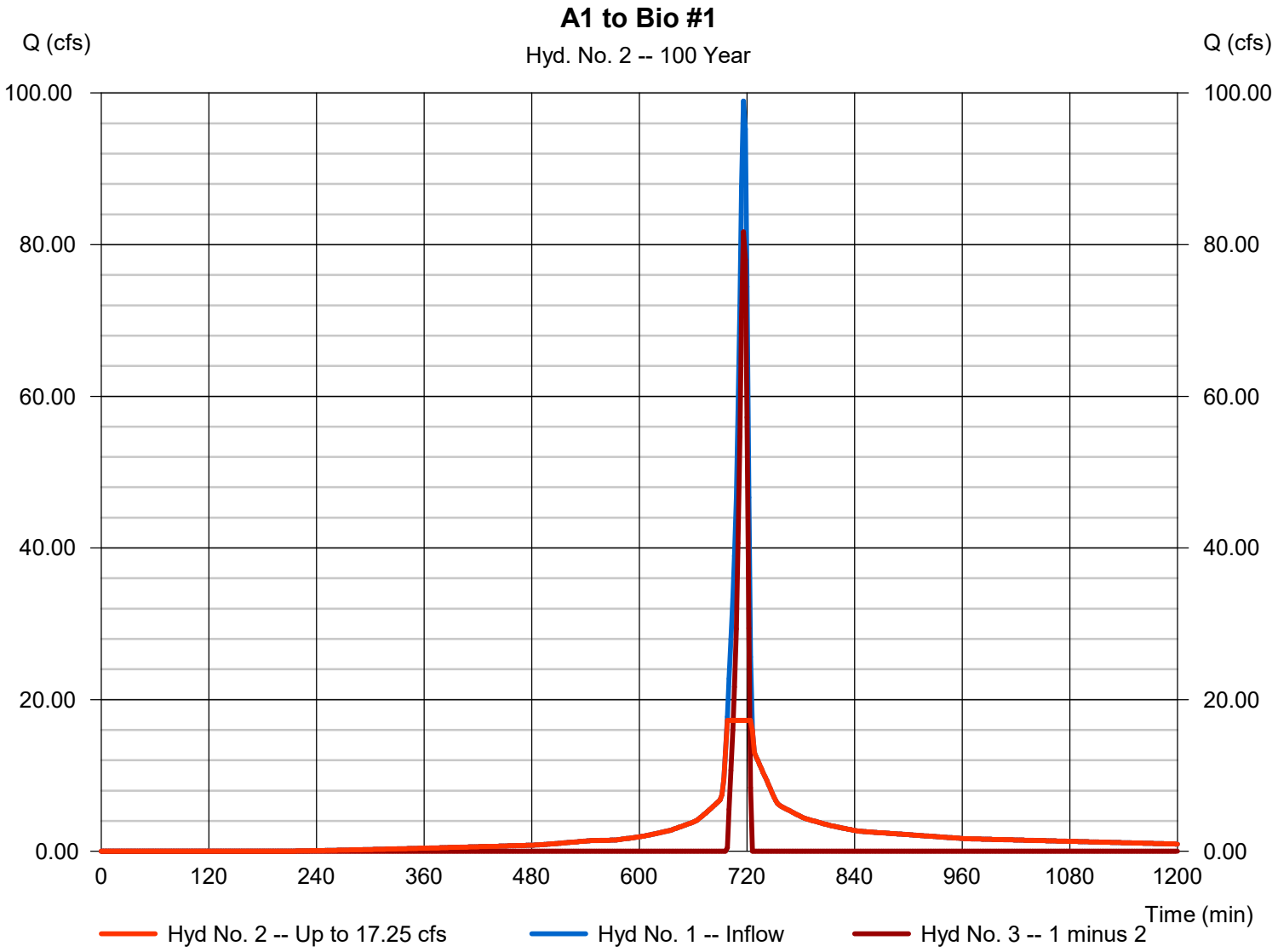


Hydrograph Report

Hyd. No. 2

A1 to Bio #1

Hydrograph type	= Diversion1	Peak discharge	= 17.25 cfs
Storm frequency	= 100 yrs	Time to peak	= 698 min
Time interval	= 2 min	Hyd. volume	= 153,681 cuft
Inflow hydrograph	= 1 - Pr WS A1	2nd diverted hyd.	= 3
Diversion method	= Constant Q	Constant Q	= 17.25 cfs

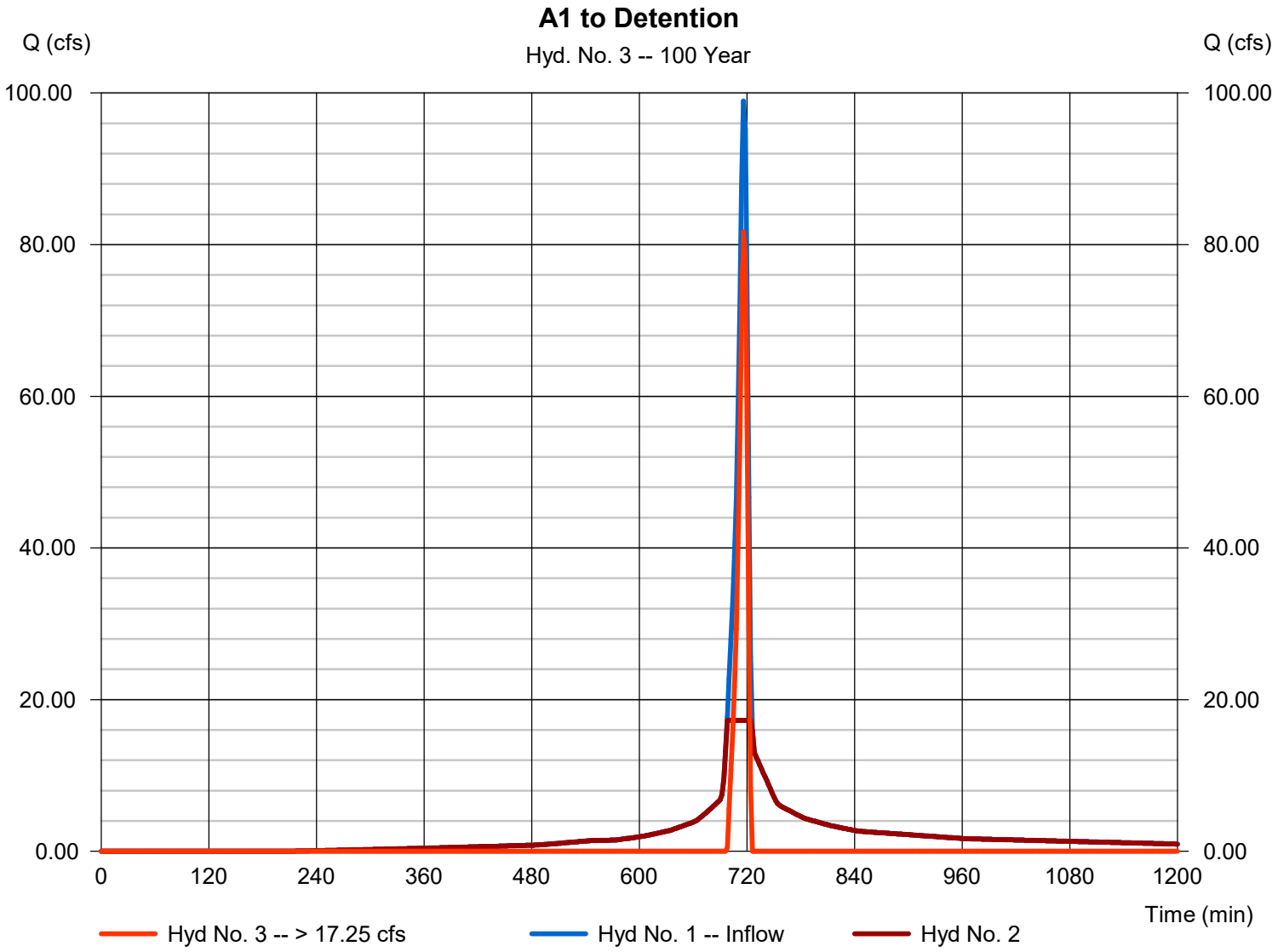


Hydrograph Report

Hyd. No. 3

A1 to Detention

Hydrograph type	= Diversion2	Peak discharge	= 81.68 cfs
Storm frequency	= 100 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 60,495 cuft
Inflow hydrograph	= 1 - Pr WS A1	2nd diverted hyd.	= 2
Diversion method	= Constant Q	Constant Q	= 17.25 cfs

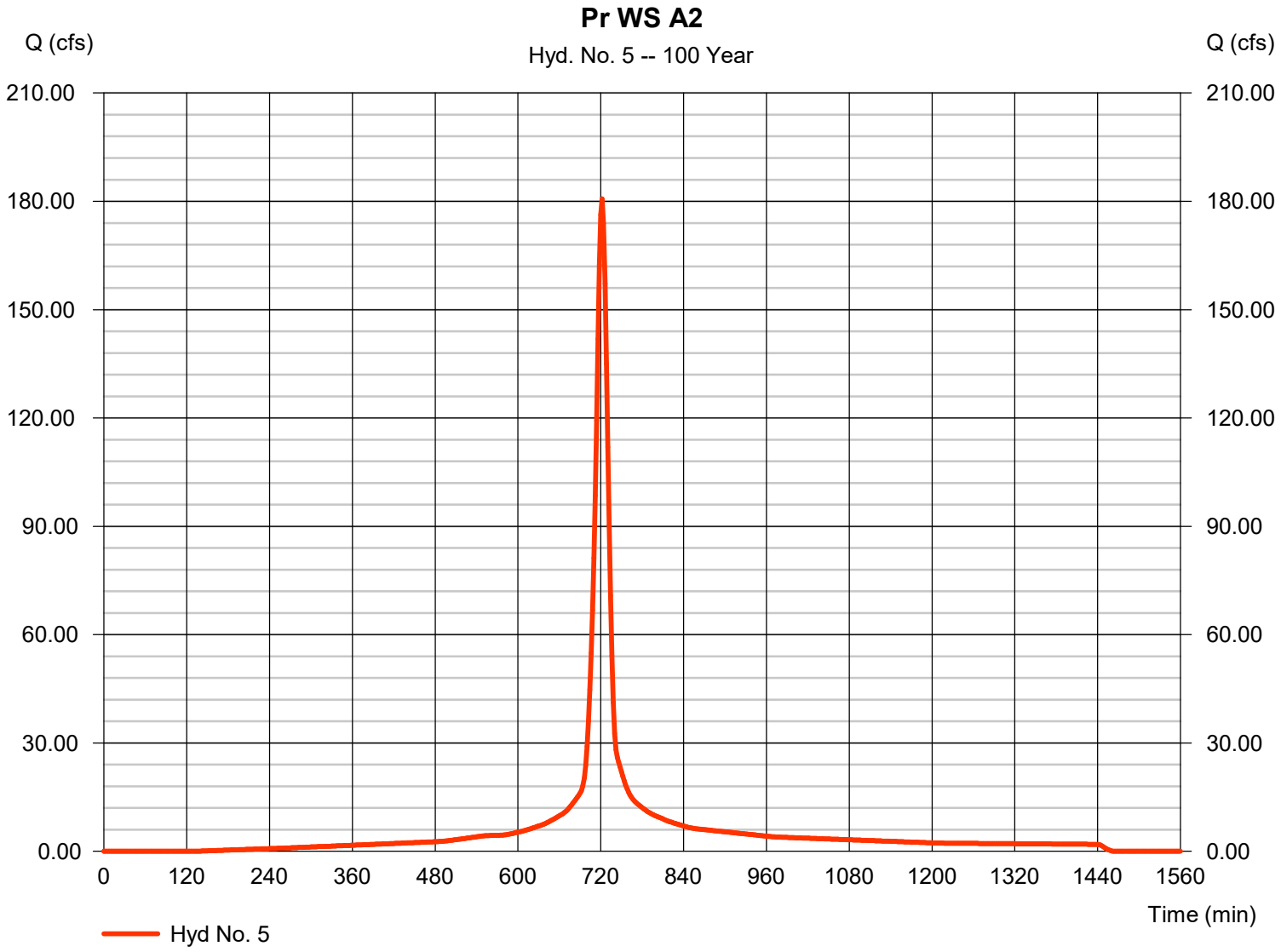


Hydrograph Report

Hyd. No. 5

Pr WS A2

Hydrograph type	=	SCS Runoff	Peak discharge	=	180.71 cfs
Storm frequency	=	100 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	550,769 cuft
Drainage area	=	31.690 ac	Curve number	=	94
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	15.00 min
Total precip.	=	5.61 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

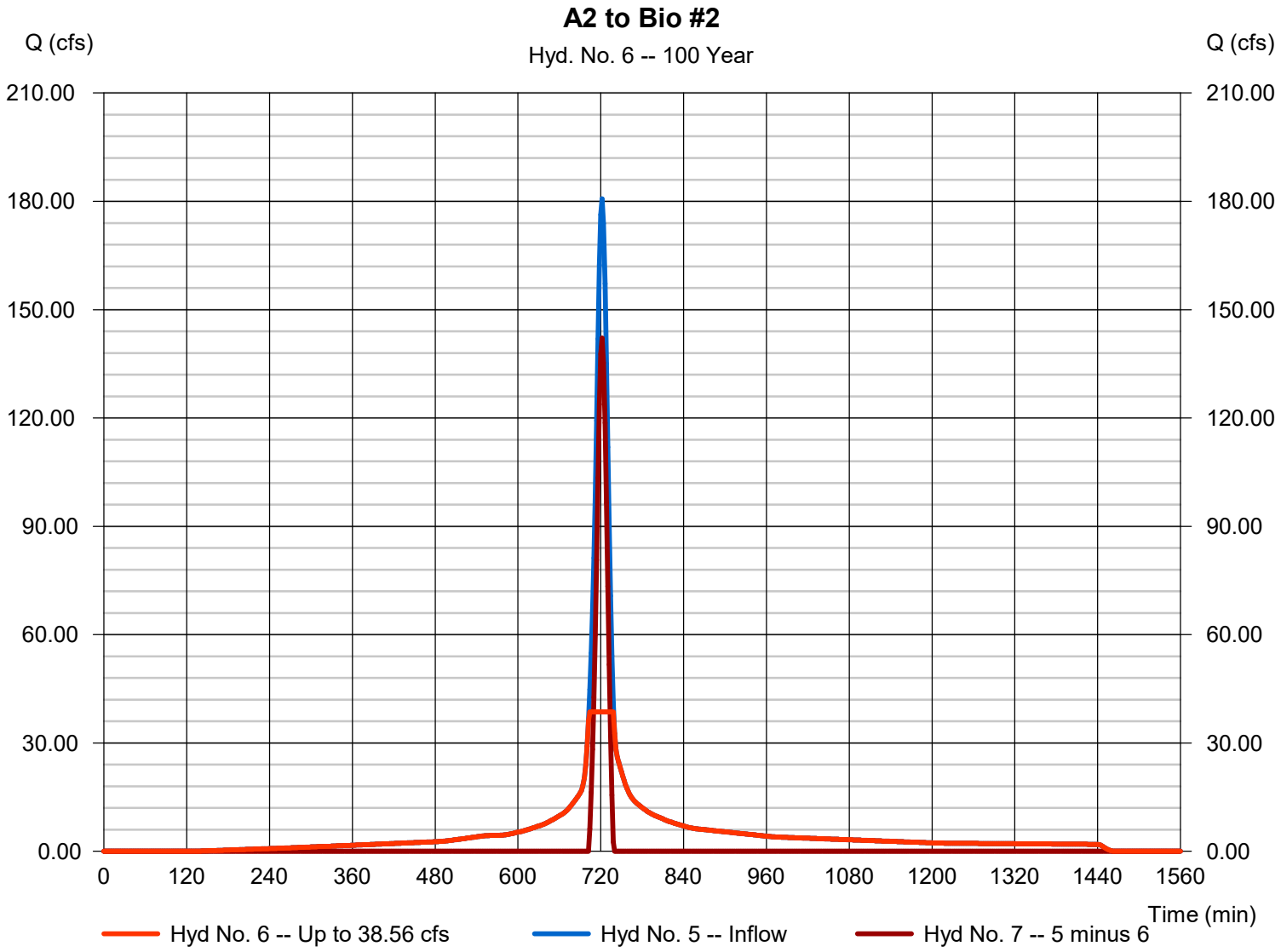


Hydrograph Report

Hyd. No. 6

A2 to Bio #2

Hydrograph type	= Diversion1	Peak discharge	= 38.56 cfs
Storm frequency	= 100 yrs	Time to peak	= 704 min
Time interval	= 2 min	Hyd. volume	= 398,739 cuft
Inflow hydrograph	= 5 - Pr WS A2	2nd diverted hyd.	= 7
Diversion method	= Constant Q	Constant Q	= 38.56 cfs

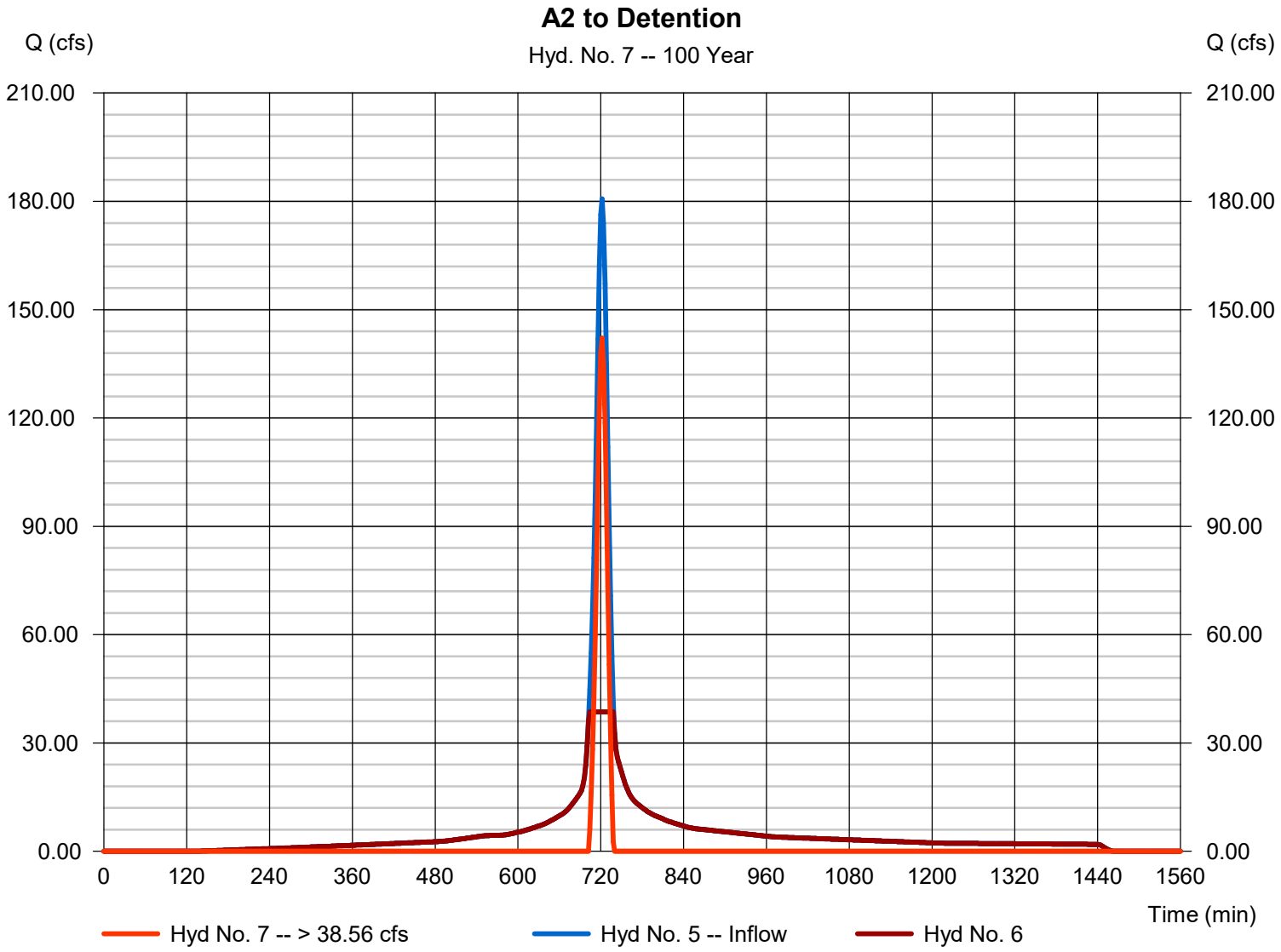


Hydrograph Report

Hyd. No. 7

A2 to Detention

Hydrograph type	= Diversion2	Peak discharge	= 142.15 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 152,029 cuft
Inflow hydrograph	= 5 - Pr WS A2	2nd diverted hyd.	= 6
Diversion method	= Constant Q	Constant Q	= 38.56 cfs

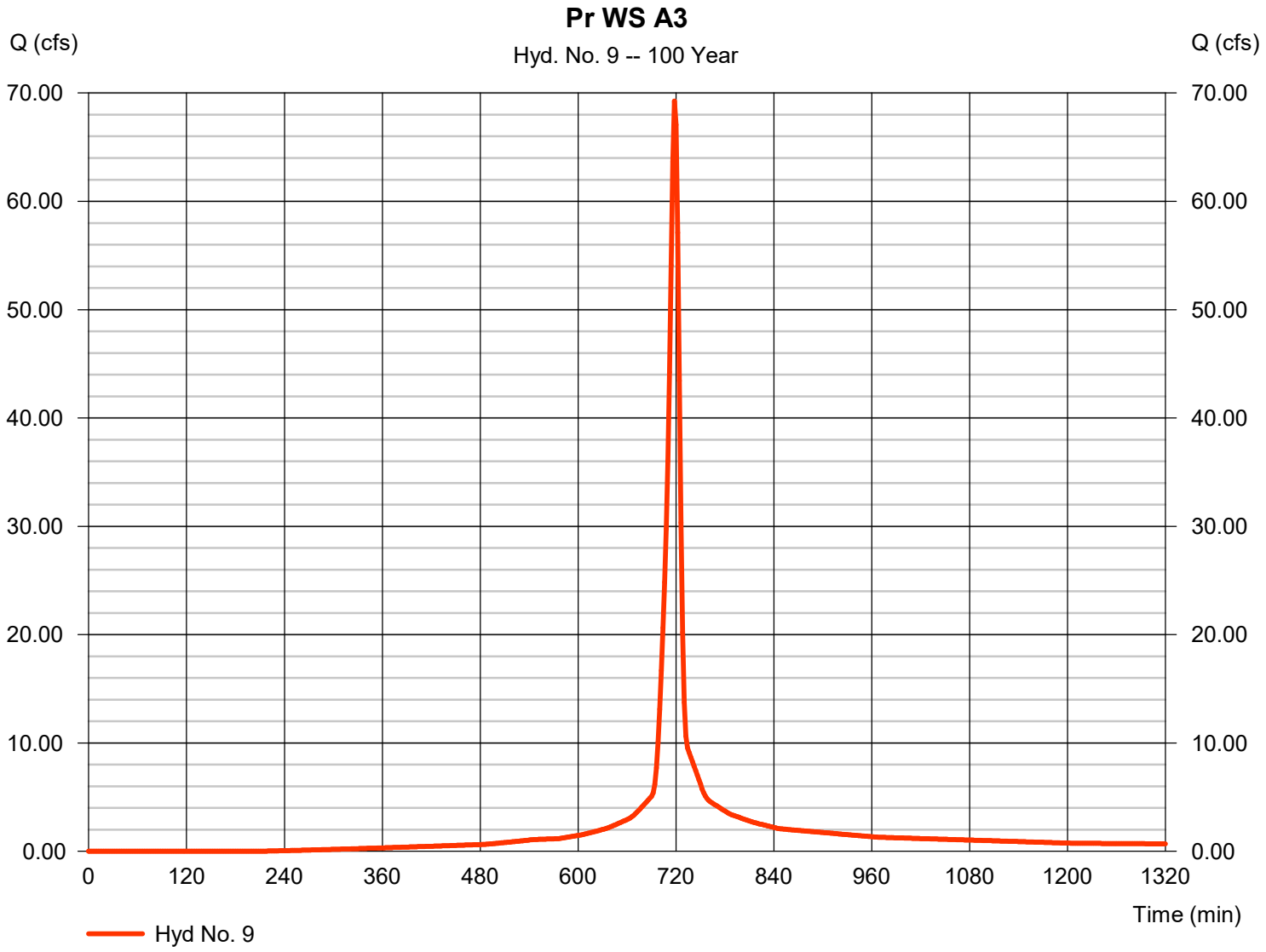


Hydrograph Report

Hyd. No. 9

Pr WS A3

Hydrograph type	=	SCS Runoff	Peak discharge	=	69.26 cfs
Storm frequency	=	100 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	167,976 cuft
Drainage area	=	10.360 ac	Curve number	=	90
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	7.00 min
Total precip.	=	5.61 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

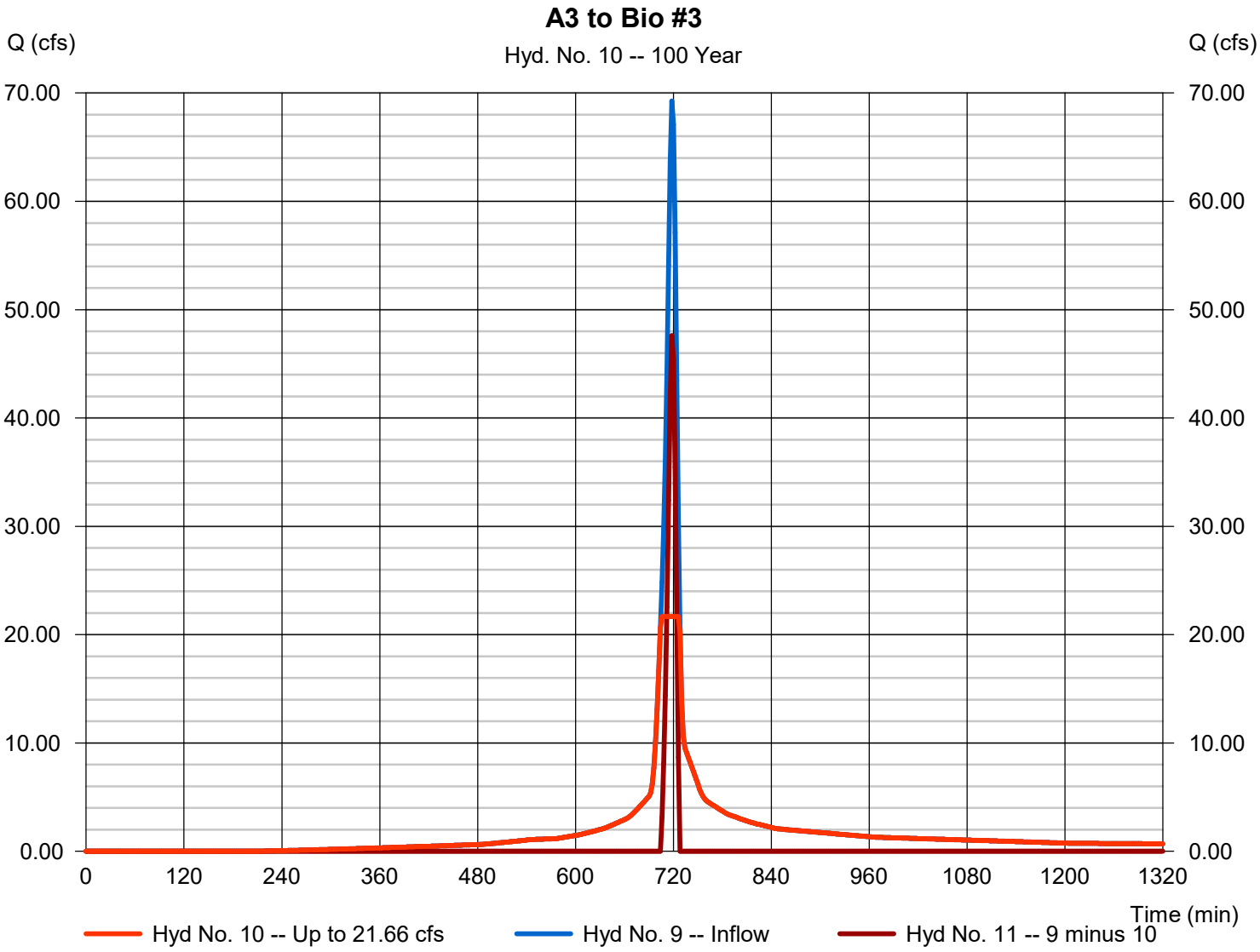


Hydrograph Report

Hyd. No. 10

A3 to Bio #3

Hydrograph type	= Diversion1	Peak discharge	= 21.66 cfs
Storm frequency	= 100 yrs	Time to peak	= 706 min
Time interval	= 2 min	Hyd. volume	= 134,190 cuft
Inflow hydrograph	= 9 - Pr WS A3	2nd diverted hyd.	= 11
Diversion method	= Constant Q	Constant Q	= 21.66 cfs

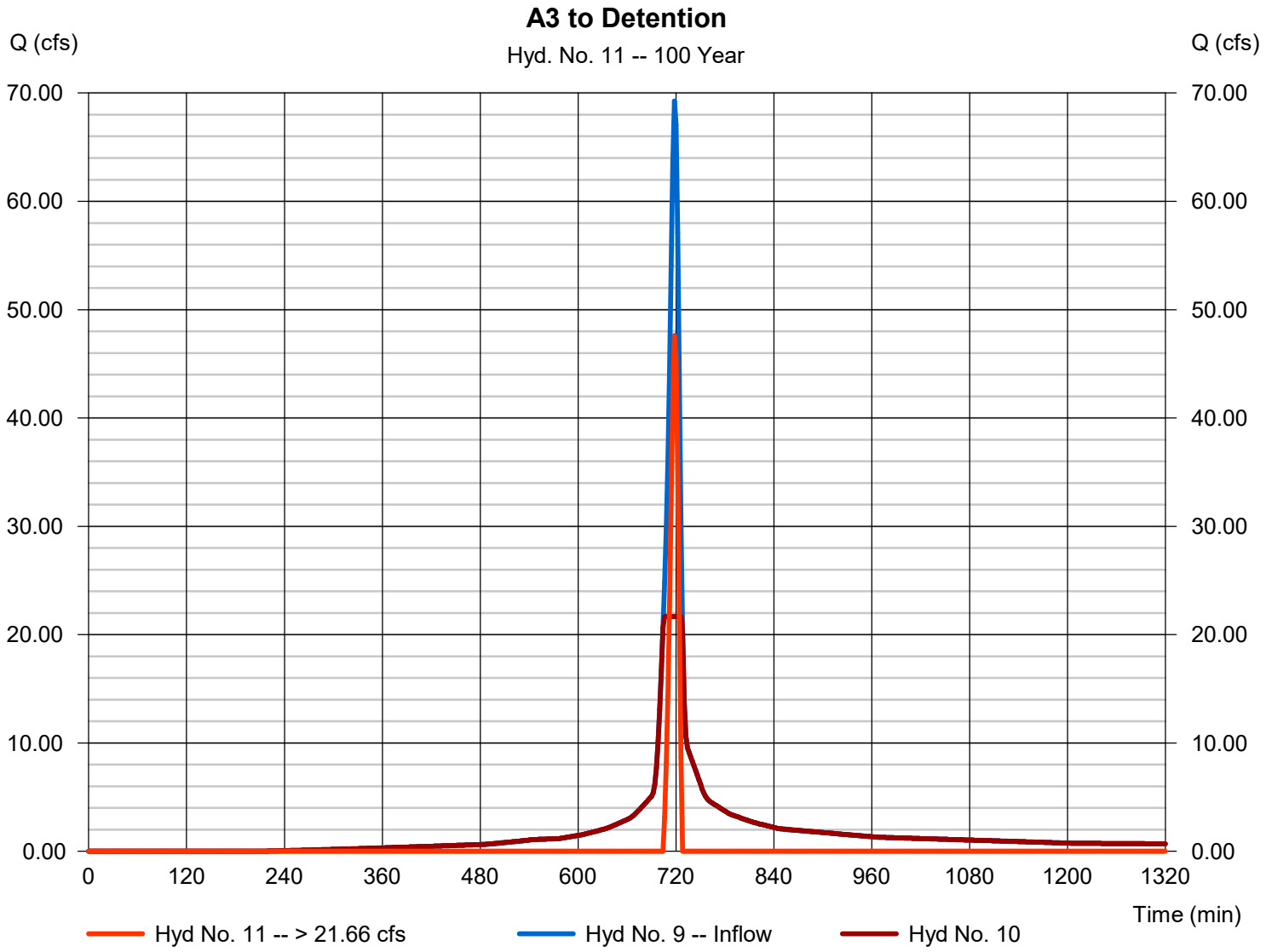


Hydrograph Report

Hyd. No. 11

A3 to Detention

Hydrograph type	= Diversion2	Peak discharge	= 47.60 cfs
Storm frequency	= 100 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 33,786 cuft
Inflow hydrograph	= 9 - Pr WS A3	2nd diverted hyd.	= 10
Diversion method	= Constant Q	Constant Q	= 21.66 cfs

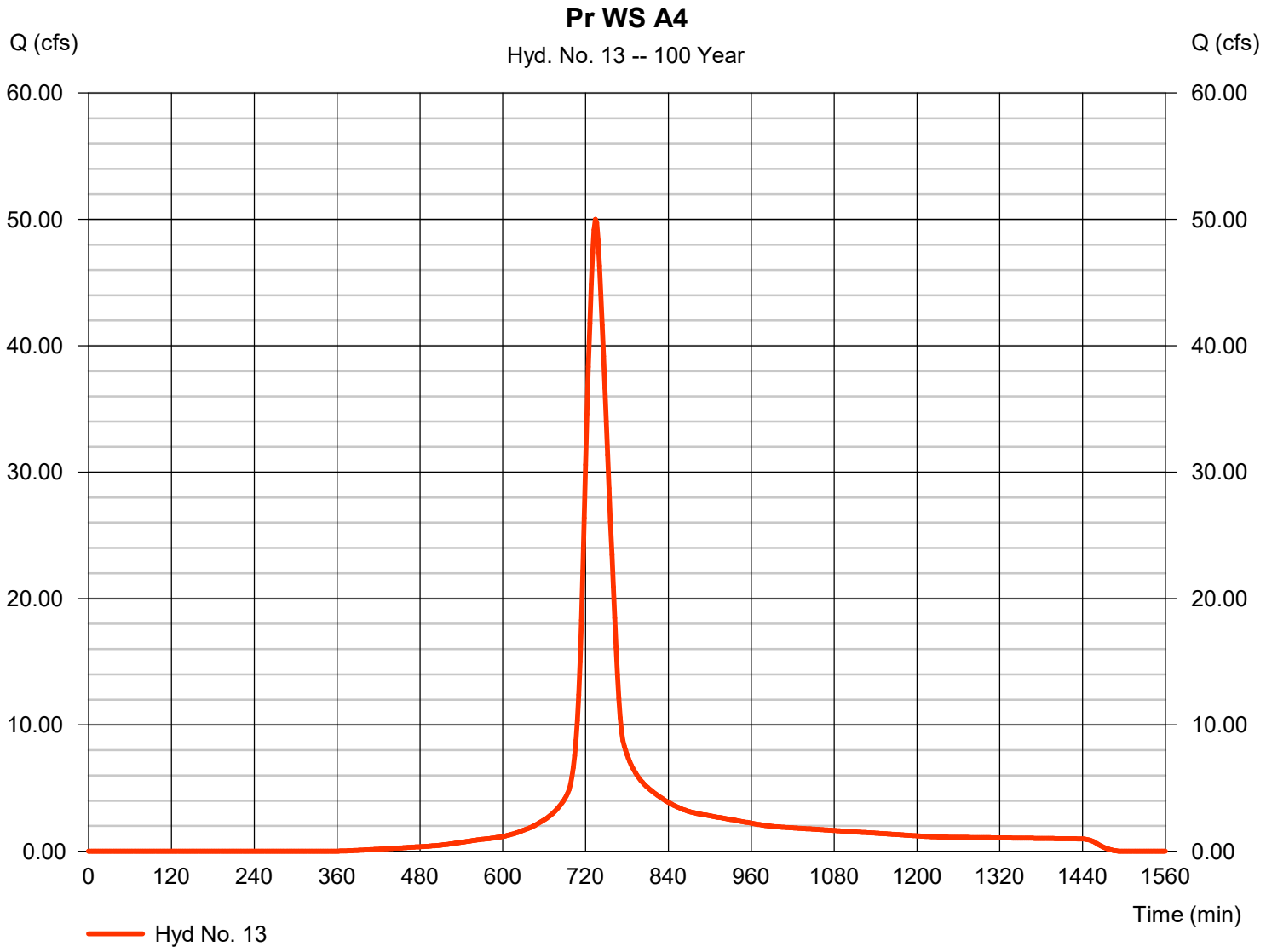


Hydrograph Report

Hyd. No. 13

Pr WS A4

Hydrograph type	=	SCS Runoff	Peak discharge	=	50.01 cfs
Storm frequency	=	100 yrs	Time to peak	=	734 min
Time interval	=	2 min	Hyd. volume	=	227,083 cuft
Drainage area	=	16.960 ac	Curve number	=	83
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	36.00 min
Total precip.	=	5.61 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

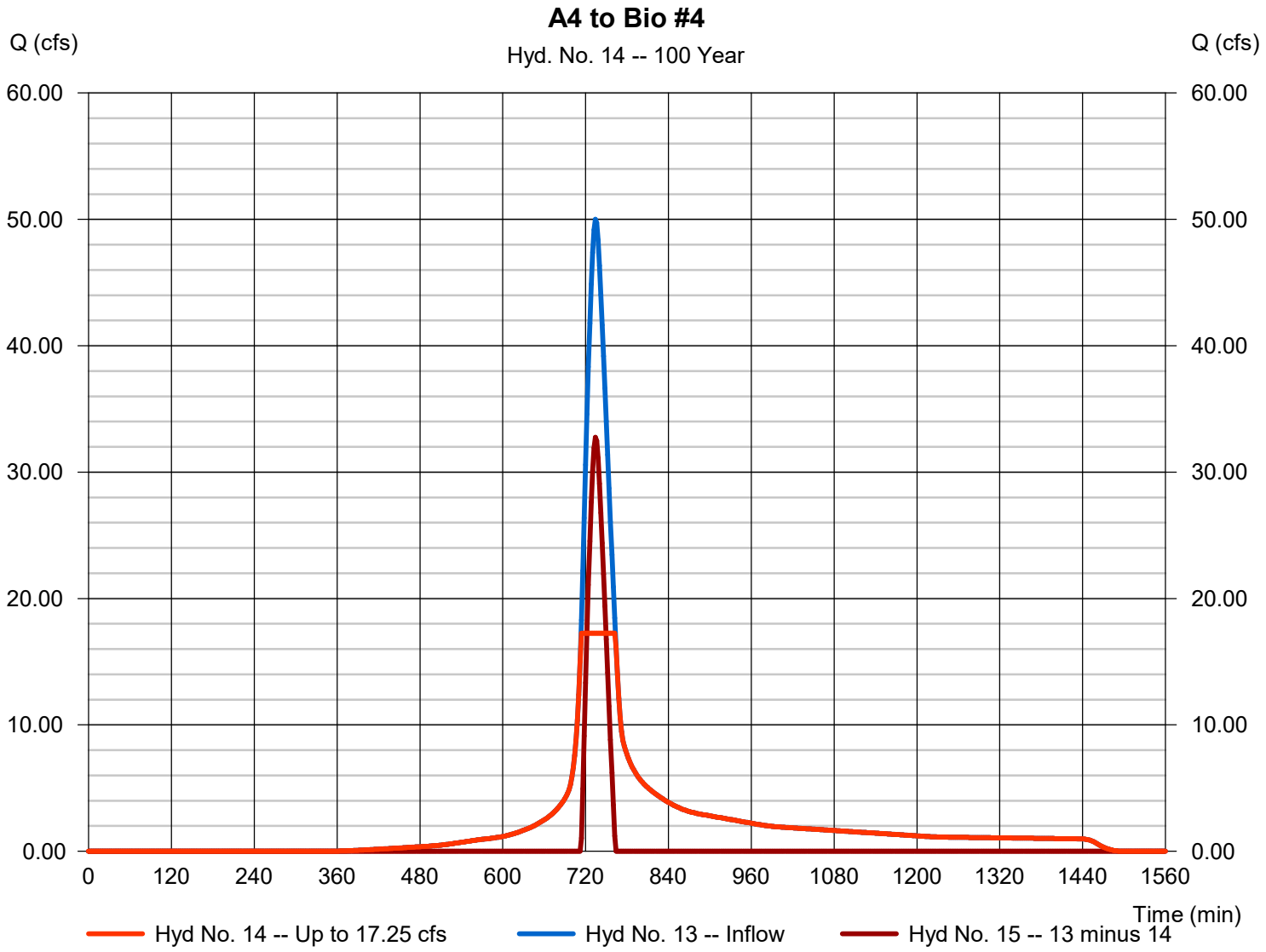


Hydrograph Report

Hyd. No. 14

A4 to Bio #4

Hydrograph type	= Diversion1	Peak discharge	= 17.25 cfs
Storm frequency	= 100 yrs	Time to peak	= 714 min
Time interval	= 2 min	Hyd. volume	= 171,726 cuft
Inflow hydrograph	= 13 - Pr WS A4	2nd diverted hyd.	= 15
Diversion method	= Constant Q	Constant Q	= 17.25 cfs

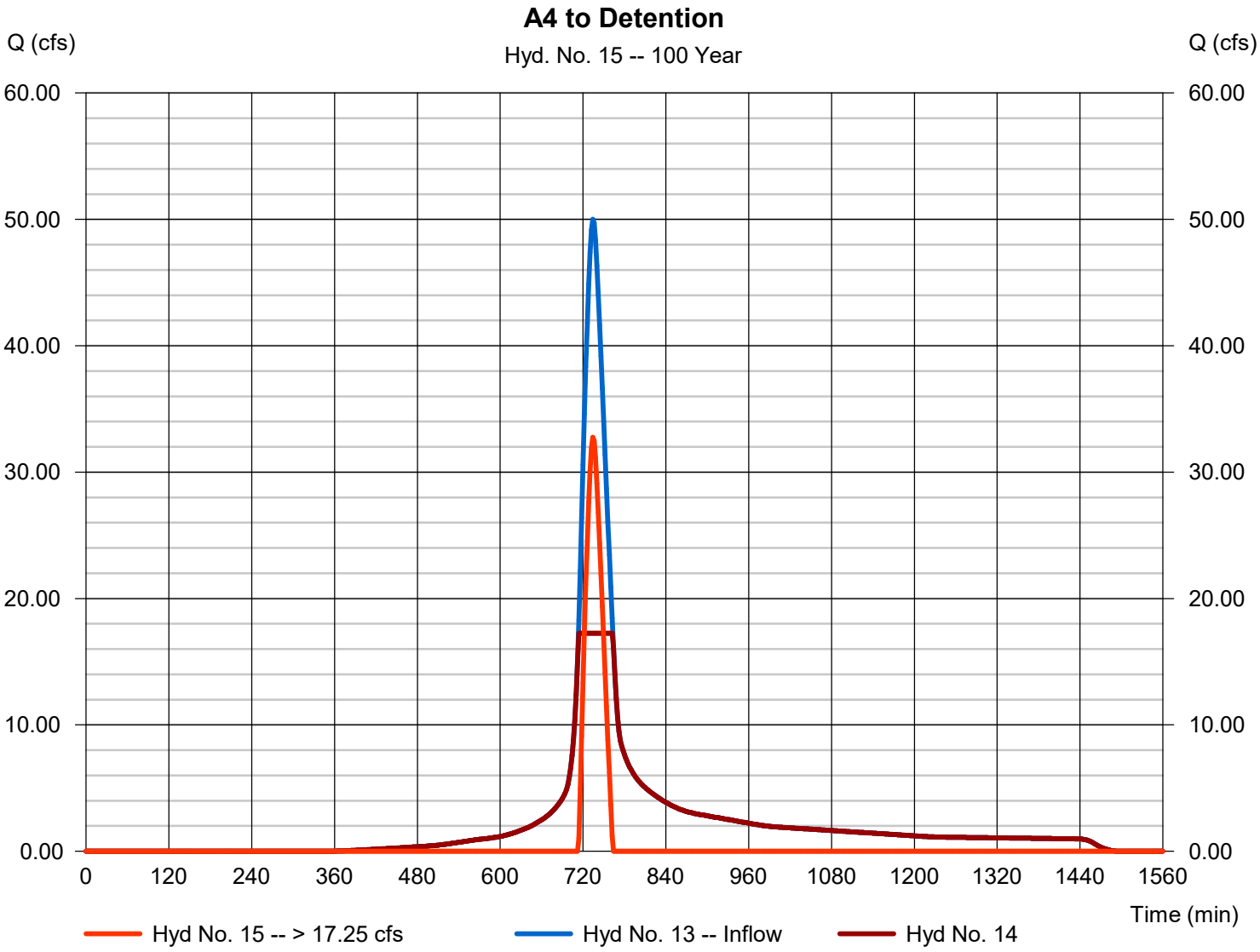


Hydrograph Report

Hyd. No. 15

A4 to Detention

Hydrograph type	= Diversion2	Peak discharge	= 32.76 cfs
Storm frequency	= 100 yrs	Time to peak	= 734 min
Time interval	= 2 min	Hyd. volume	= 55,357 cuft
Inflow hydrograph	= 13 - Pr WS A4	2nd diverted hyd.	= 14
Diversion method	= Constant Q	Constant Q	= 17.25 cfs

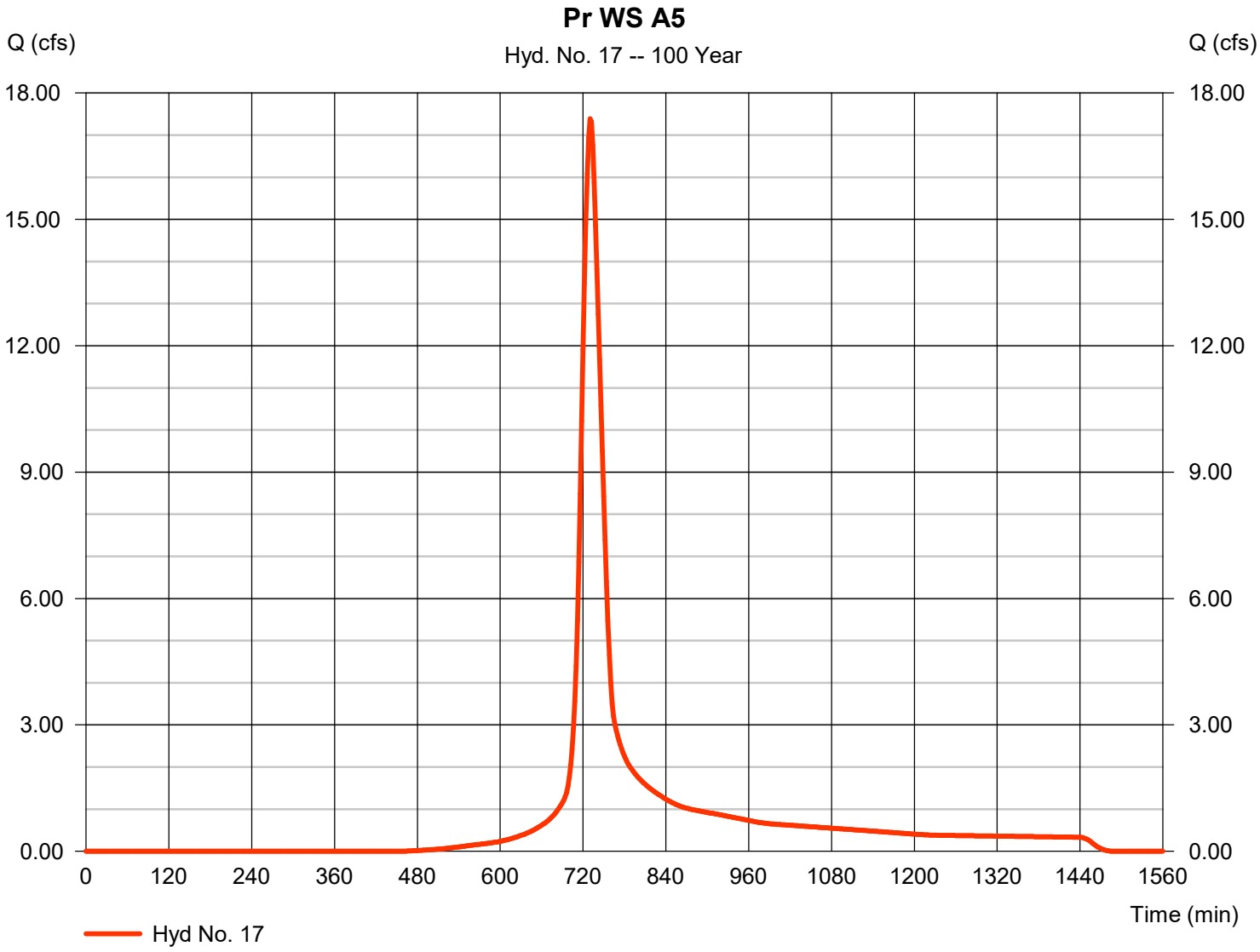


Hydrograph Report

Hyd. No. 17

Pr WS A5

Hydrograph type	=	SCS Runoff	Peak discharge	=	17.39 cfs
Storm frequency	=	100 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	69,549 cuft
Drainage area	=	6.100 ac	Curve number	=	77
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	30.00 min
Total precip.	=	5.61 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



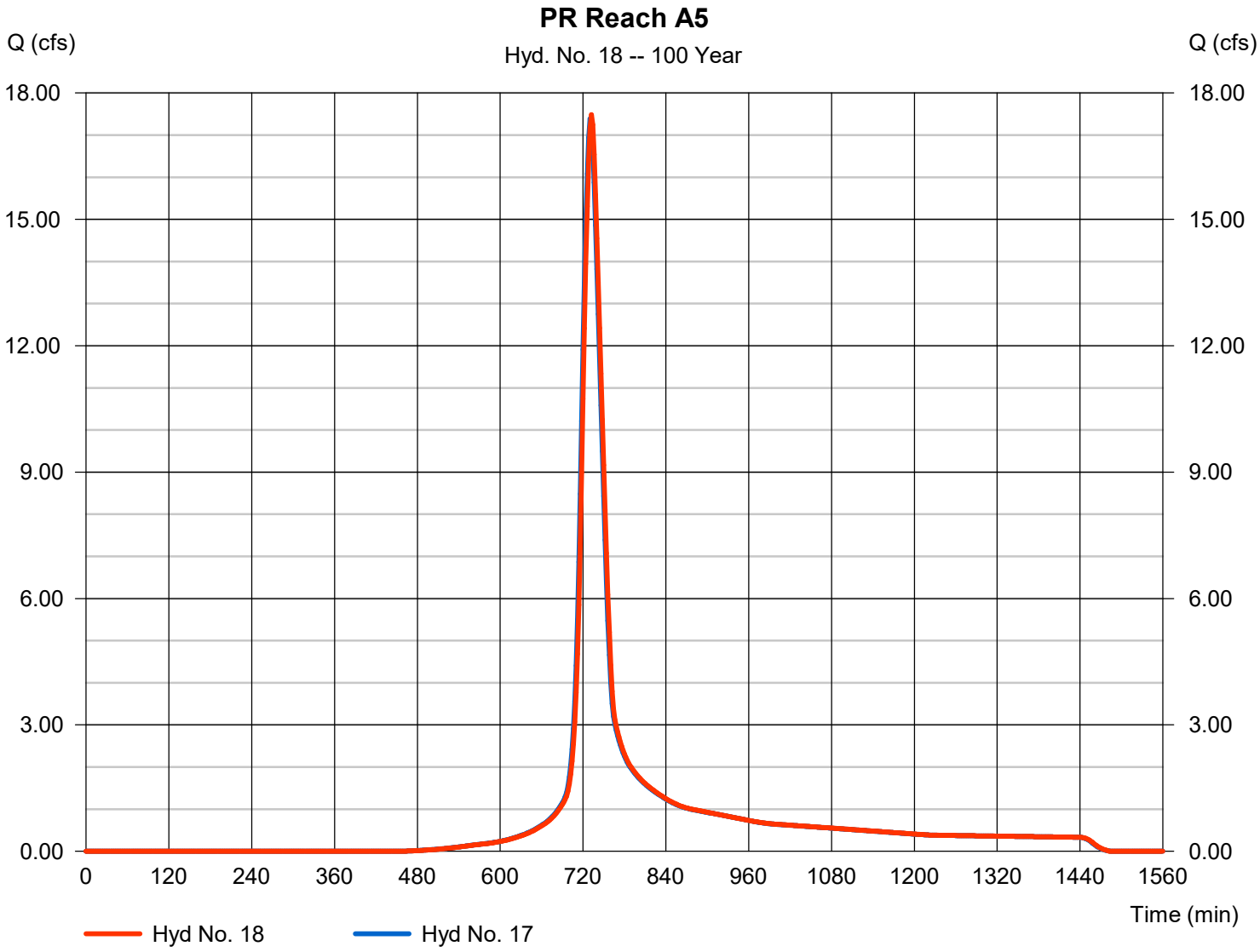
Hydrograph Report

Hyd. No. 18

PR Reach A5

Hydrograph type	=	Reach	Peak discharge	=	17.48 cfs
Storm frequency	=	100 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	69,548 cuft
Inflow hyd. No.	=	17 - Pr WS A5	Section type	=	Trapezoidal
Reach length	=	101.0 ft	Channel slope	=	1.6 %
Manning's n	=	0.025	Bottom width	=	12.0 ft
Side slope	=	2.0:1	Max. depth	=	1.0 ft
Rating curve x	=	1.437	Rating curve m	=	1.425
Ave. velocity	=	3.02 ft/s	Routing coeff.	=	1.4378

Modified Att-Kin routing method used.

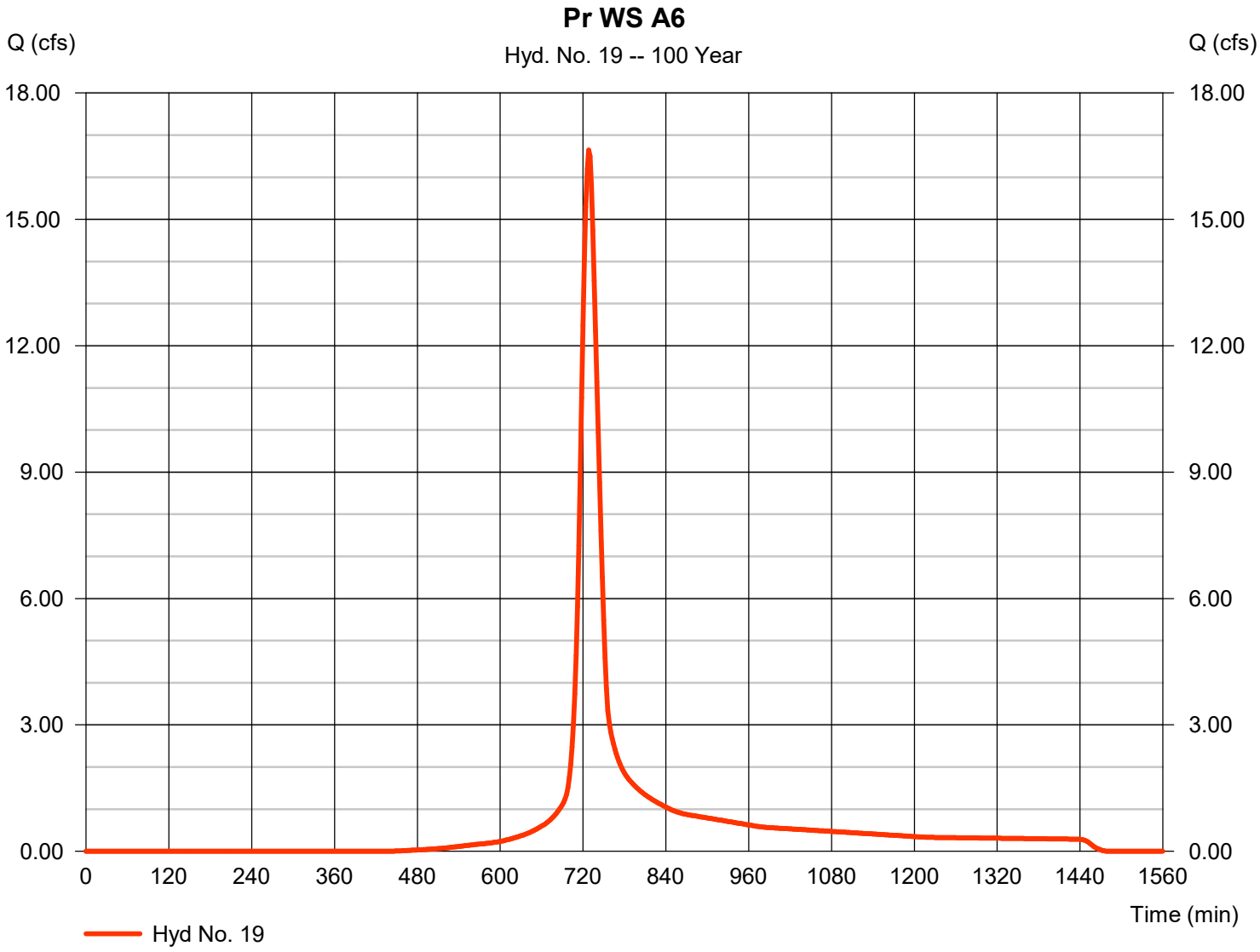


Hydrograph Report

Hyd. No. 19

Pr WS A6

Hydrograph type	=	SCS Runoff	Peak discharge	=	16.64 cfs
Storm frequency	=	100 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	61,066 cuft
Drainage area	=	5.280 ac	Curve number	=	78
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	24.00 min
Total precip.	=	5.61 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

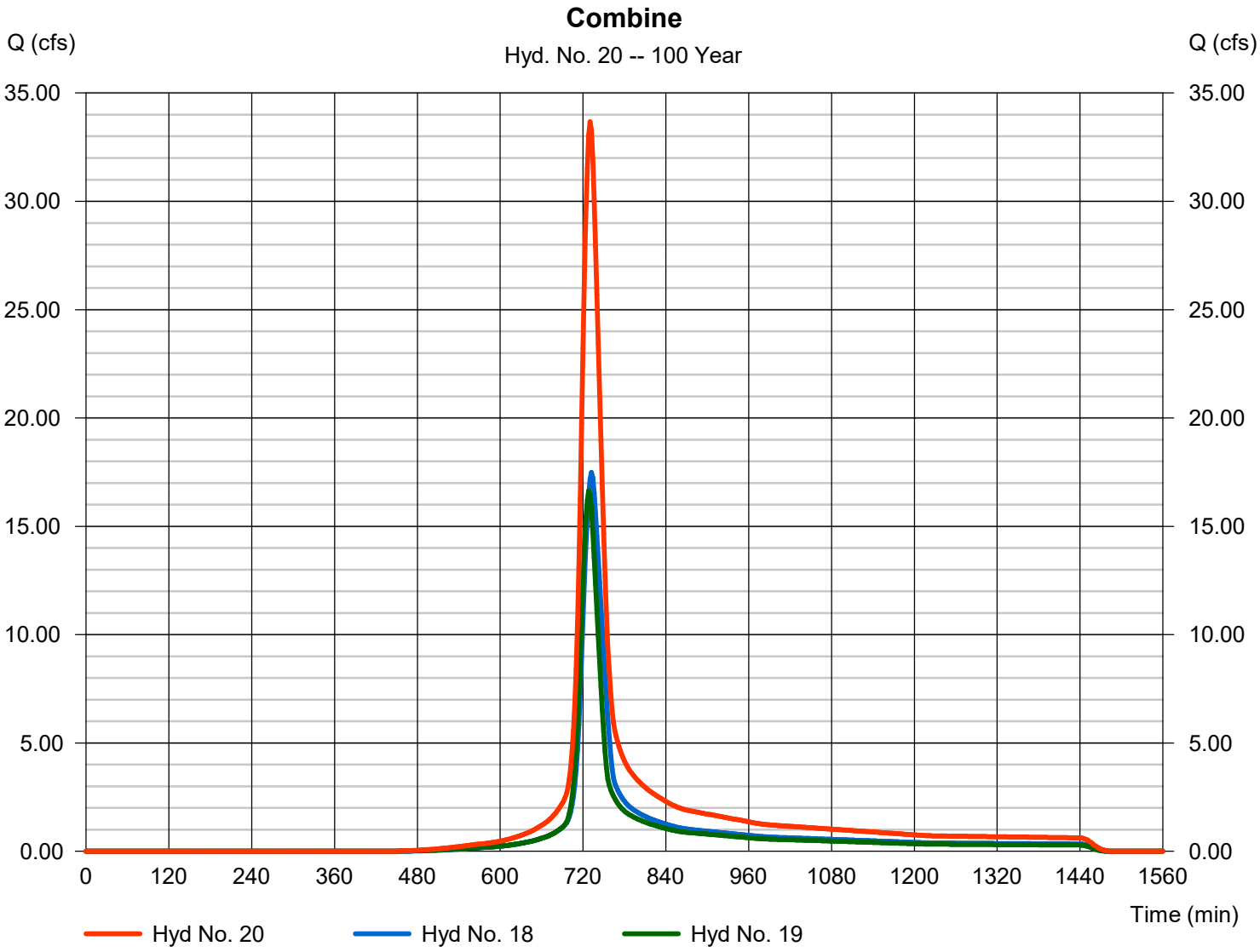


Hydrograph Report

Hyd. No. 20

Combine

Hydrograph type	=	Combine	Peak discharge	=	33.67 cfs
Storm frequency	=	100 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	130,614 cuft
Inflow hyds.	=	18, 19	Contrib. drain. area	=	5.280 ac



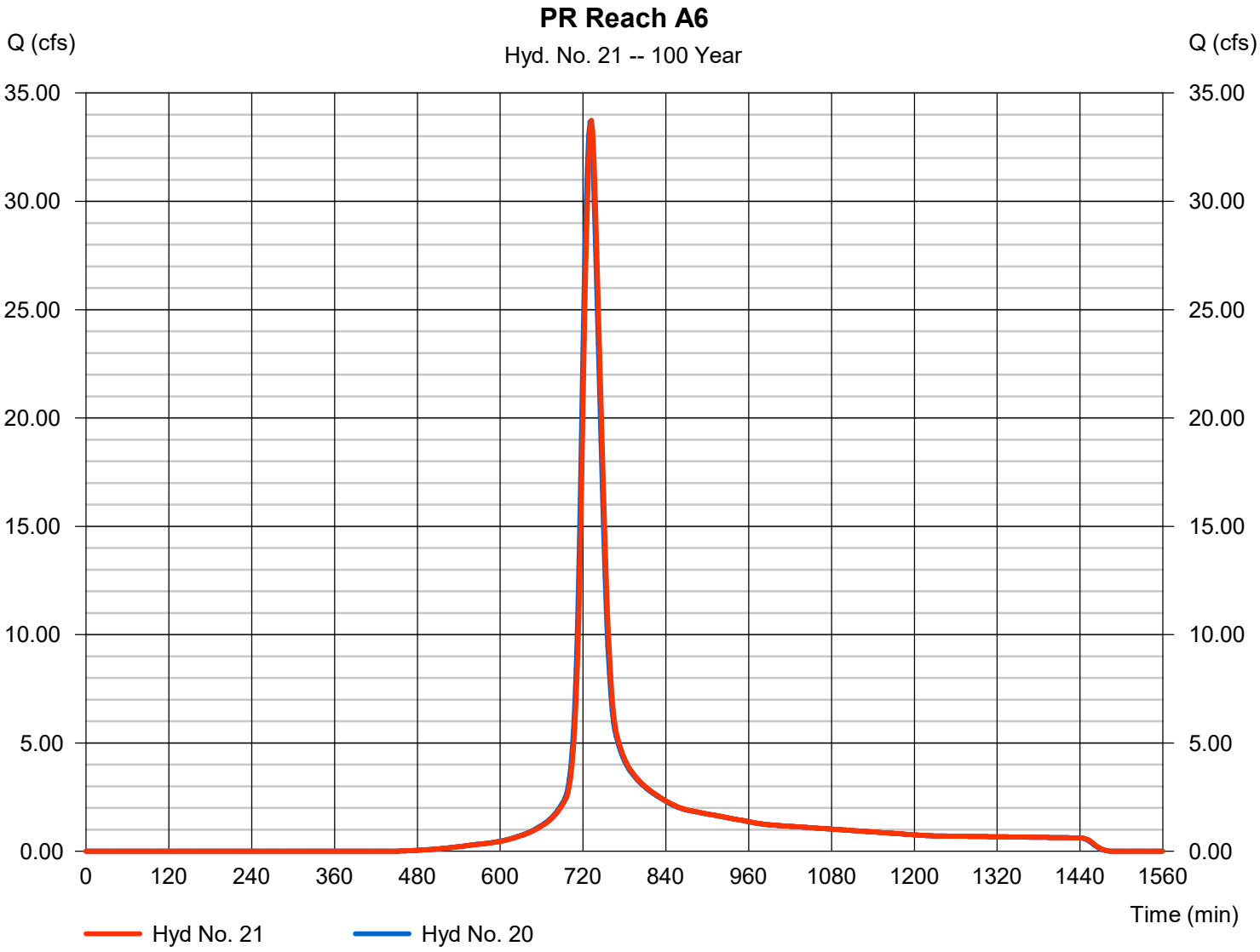
Hydrograph Report

Hyd. No. 21

PR Reach A6

Hydrograph type	=	Reach	Peak discharge	=	33.73 cfs
Storm frequency	=	100 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	130,614 cuft
Inflow hyd. No.	=	20 - Combine	Section type	=	Trapezoidal
Reach length	=	413.0 ft	Channel slope	=	3.8 %
Manning's n	=	0.025	Bottom width	=	6.0 ft
Side slope	=	2.0:1	Max. depth	=	5.0 ft
Rating curve x	=	3.540	Rating curve m	=	1.395
Ave. velocity	=	6.70 ft/s	Routing coeff.	=	1.1518

Modified Att-Kin routing method used.

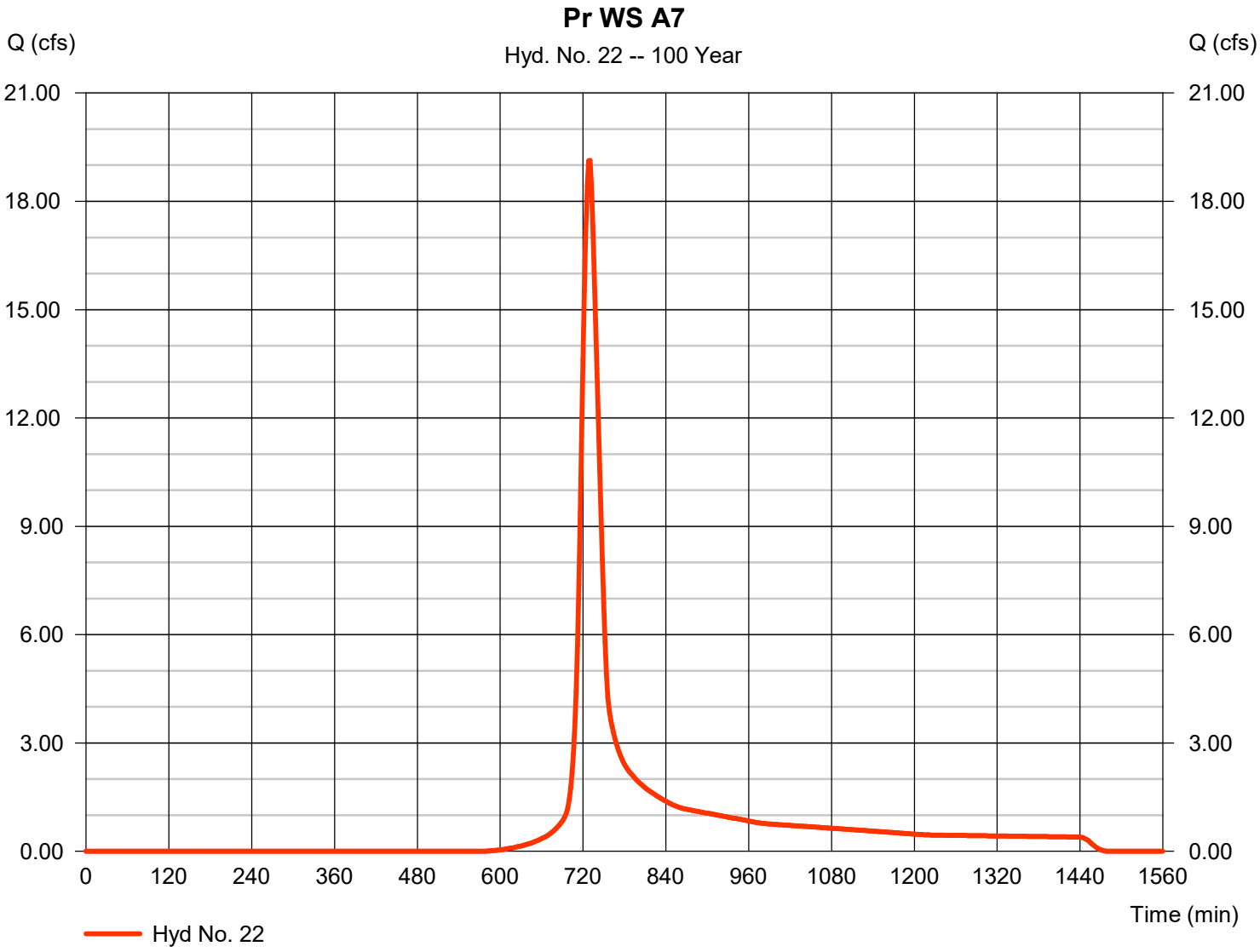


Hydrograph Report

Hyd. No. 22

Pr WS A7

Hydrograph type	=	SCS Runoff	Peak discharge	=	19.13 cfs
Storm frequency	=	100 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	71,613 cuft
Drainage area	=	8.310 ac	Curve number	=	69
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	26.00 min
Total precip.	=	5.61 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



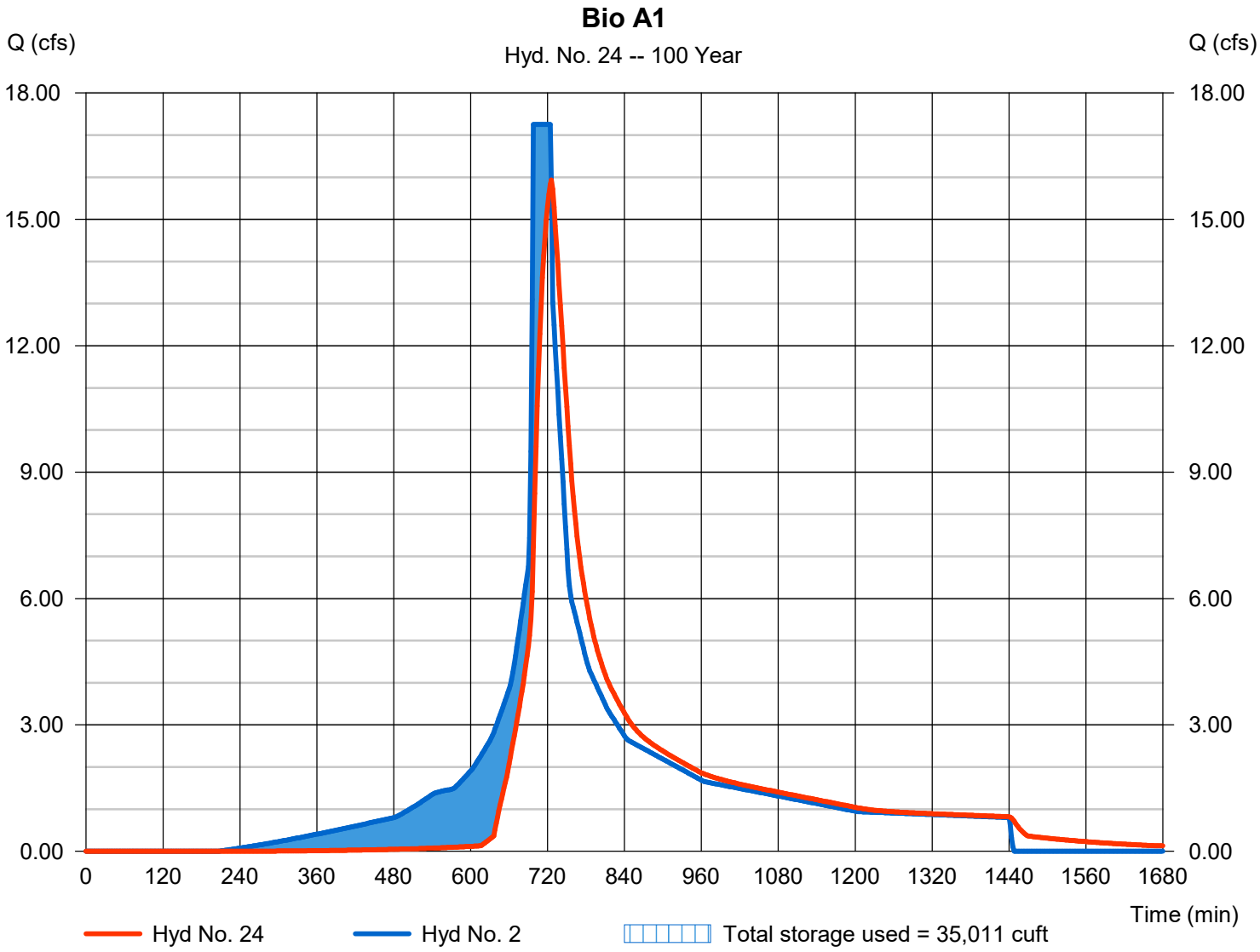
Hydrograph Report

Hyd. No. 24

Bio A1

Hydrograph type	=	Reservoir	Peak discharge	=	15.94 cfs
Storm frequency	=	100 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	151,311 cuft
Inflow hyd. No.	=	2 - A1 to Bio #1	Max. Elevation	=	406.19 ft
Reservoir name	=	Bio A1 (south)	Max. Storage	=	35,011 cuft

Storage Indication method used. Outflow includes exfiltration.



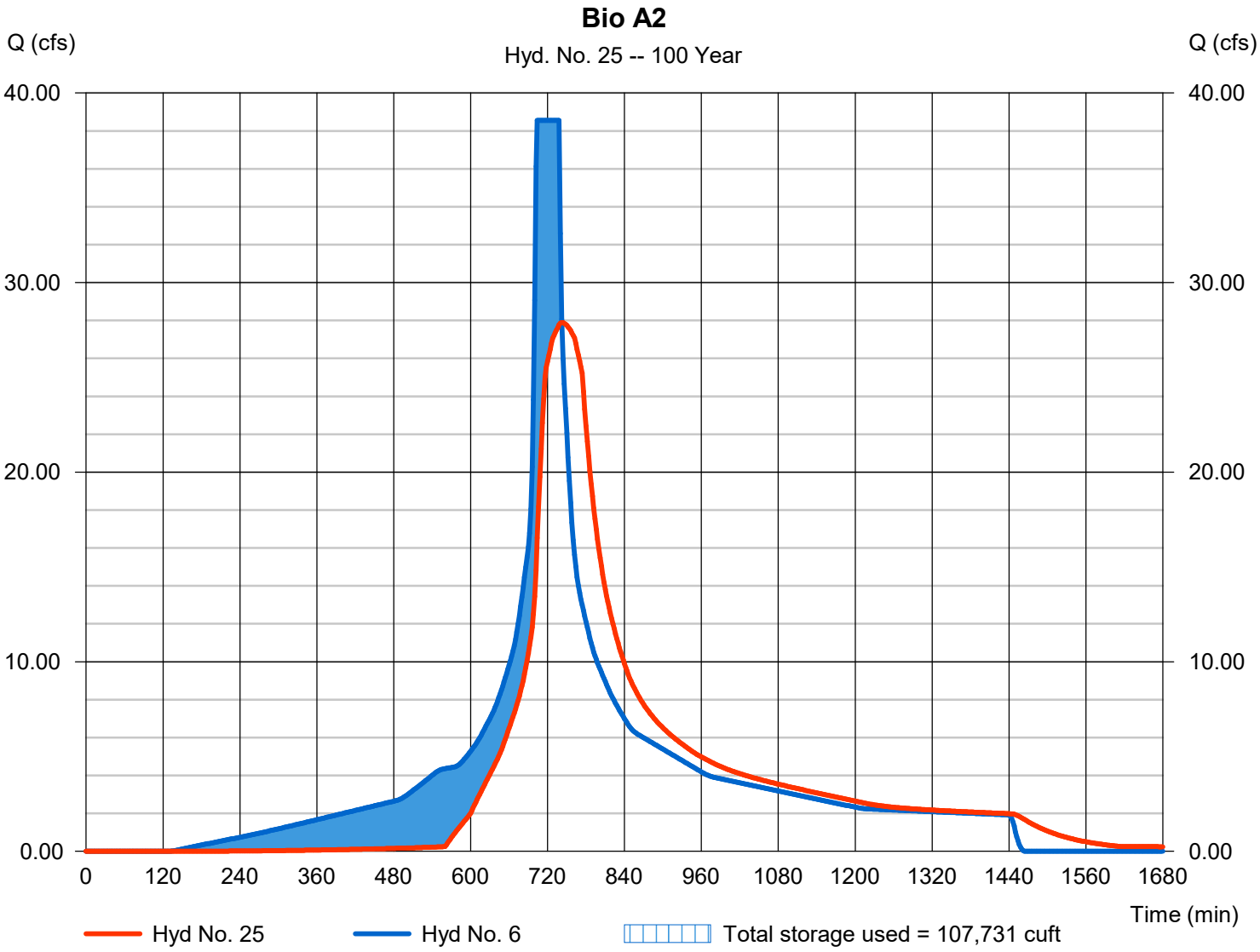
Hydrograph Report

Hyd. No. 25

Bio A2

Hydrograph type	=	Reservoir	Peak discharge	=	27.90 cfs
Storm frequency	=	100 yrs	Time to peak	=	742 min
Time interval	=	2 min	Hyd. volume	=	389,275 cuft
Inflow hyd. No.	=	6 - A2 to Bio #2	Max. Elevation	=	402.29 ft
Reservoir name	=	Bio A2 (west)	Max. Storage	=	107,731 cuft

Storage Indication method used. Outflow includes exfiltration.



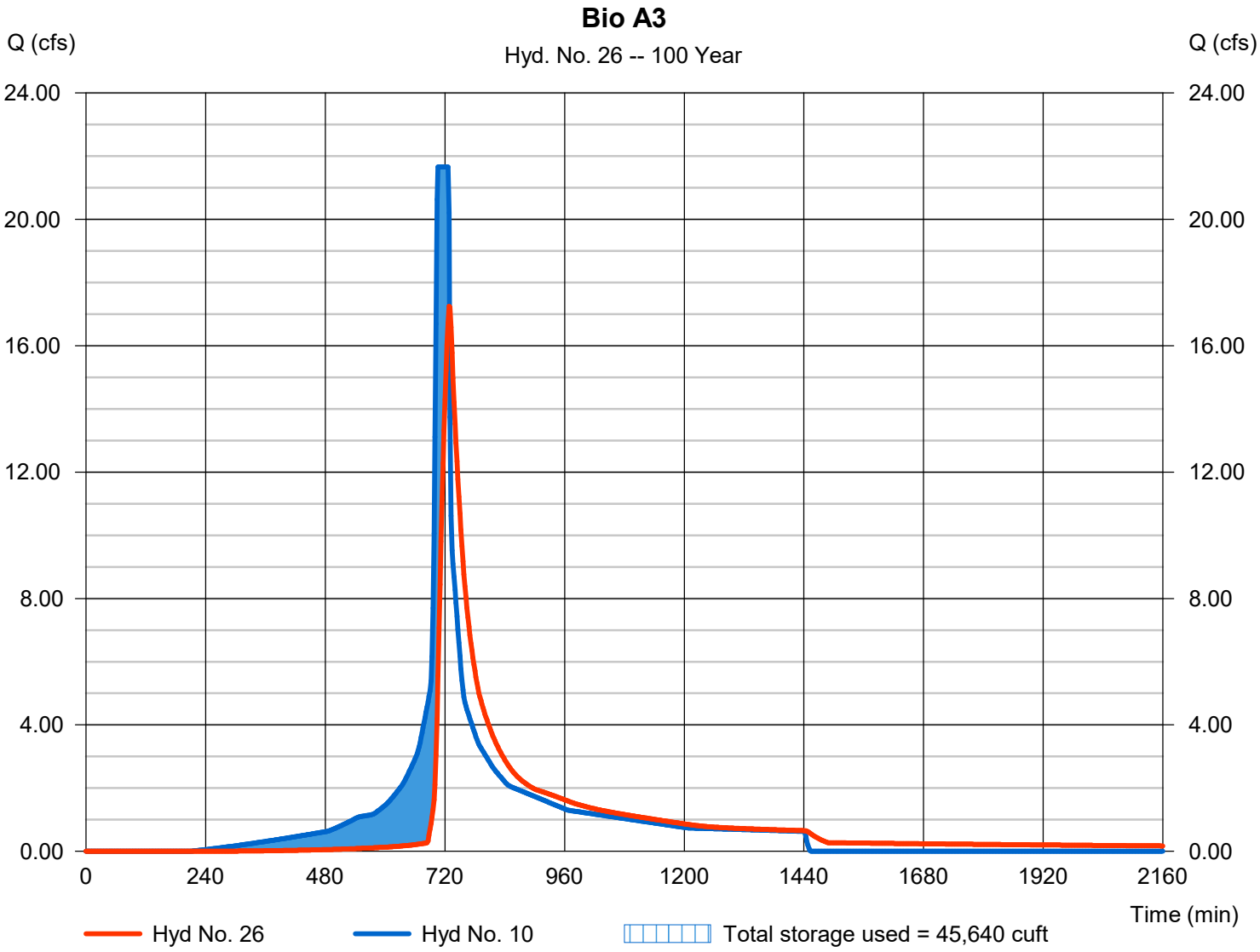
Hydrograph Report

Hyd. No. 26

Bio A3

Hydrograph type	=	Reservoir	Peak discharge	=	17.25 cfs
Storm frequency	=	100 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	133,056 cuft
Inflow hyd. No.	=	10 - A3 to Bio #3	Max. Elevation	=	409.47 ft
Reservoir name	=	Bio A3 (east)	Max. Storage	=	45,640 cuft

Storage Indication method used. Outflow includes exfiltration.



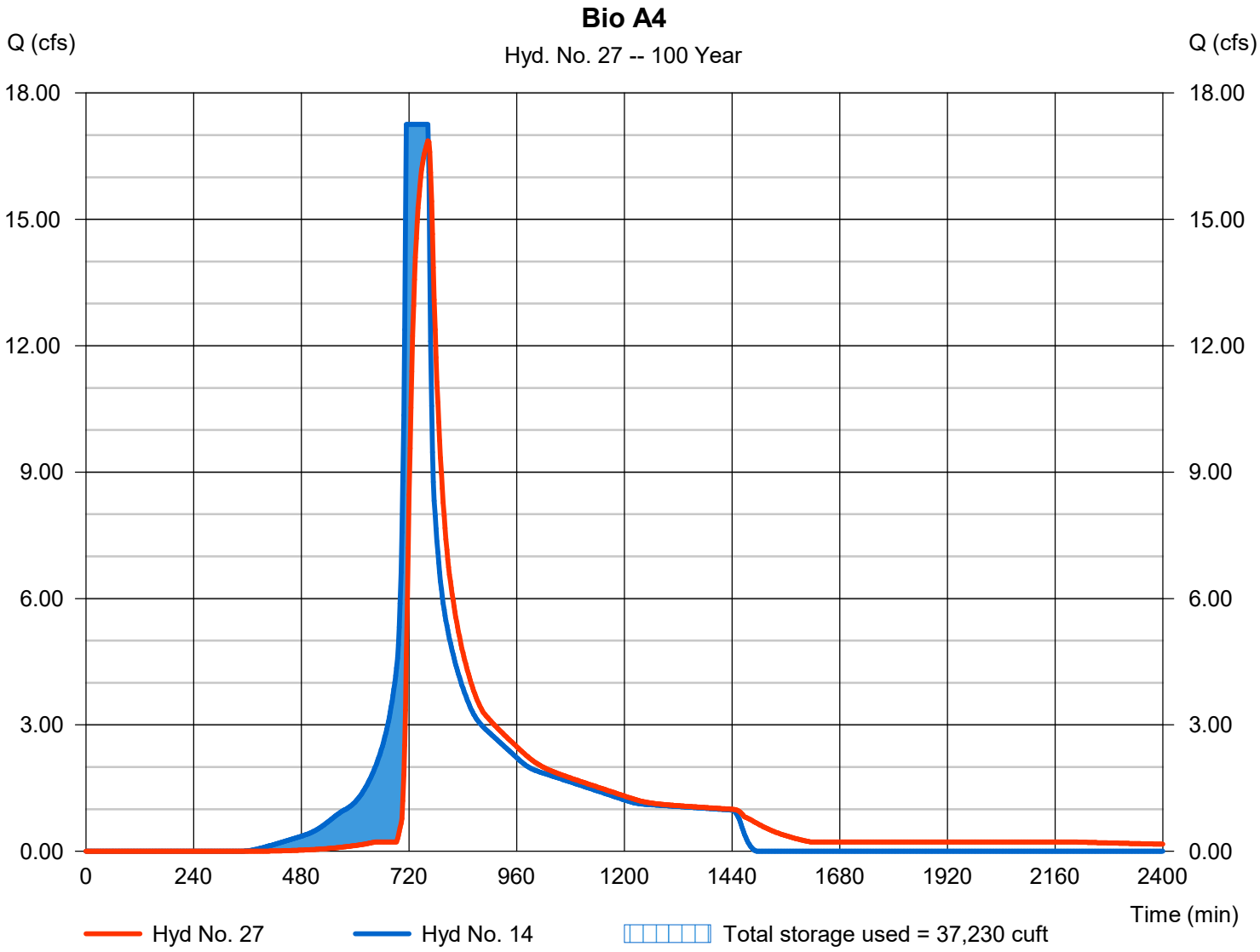
Hydrograph Report

Hyd. No. 27

Bio A4

Hydrograph type	=	Reservoir	Peak discharge	=	16.86 cfs
Storm frequency	=	100 yrs	Time to peak	=	762 min
Time interval	=	2 min	Hyd. volume	=	171,662 cuft
Inflow hyd. No.	=	14 - A4 to Bio #4	Max. Elevation	=	403.71 ft
Reservoir name	=	Bio A4 (north)	Max. Storage	=	37,230 cuft

Storage Indication method used. Outflow includes exfiltration.

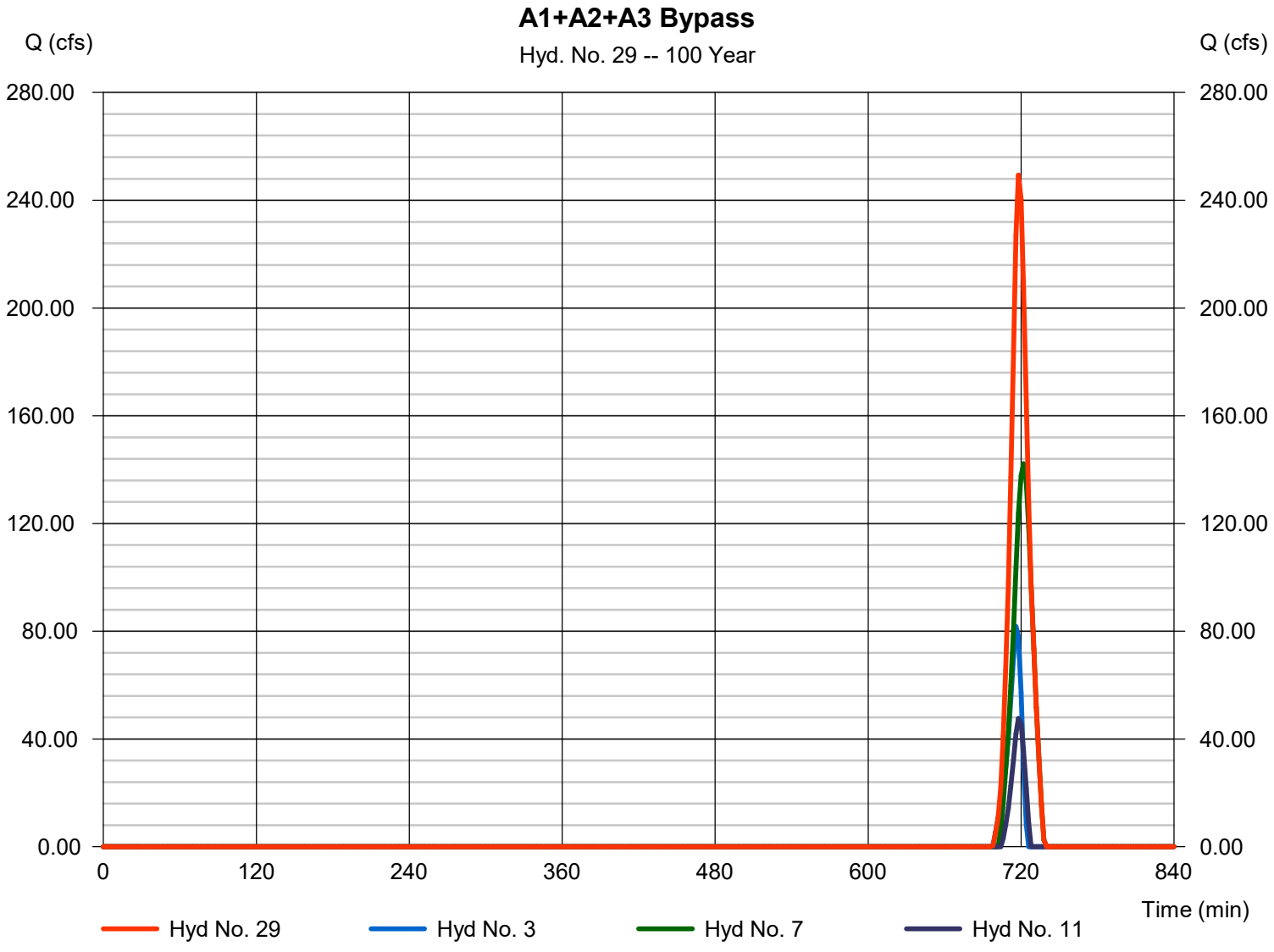


Hydrograph Report

Hyd. No. 29

A1+A2+A3 Bypass

Hydrograph type	=	Combine	Peak discharge	=	249.39 cfs
Storm frequency	=	100 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	246,309 cuft
Inflow hyds.	=	3, 7, 11	Contrib. drain. area	=	0.000 ac

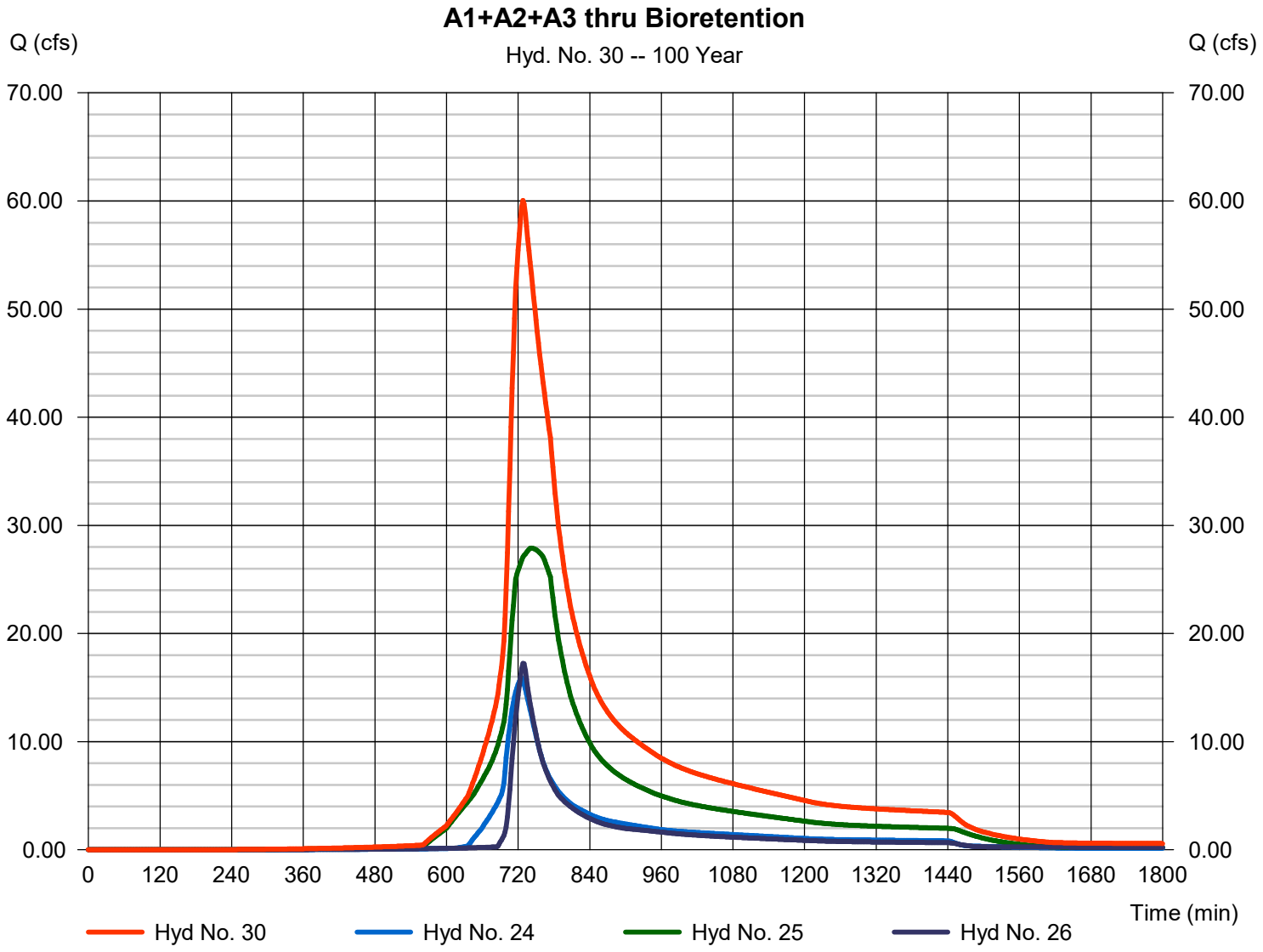


Hydrograph Report

Hyd. No. 30

A1+A2+A3 thru Bioretention

Hydrograph type	= Combine	Peak discharge	= 60.05 cfs
Storm frequency	= 100 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 673,641 cuft
Inflow hyds.	= 24, 25, 26	Contrib. drain. area	= 0.000 ac

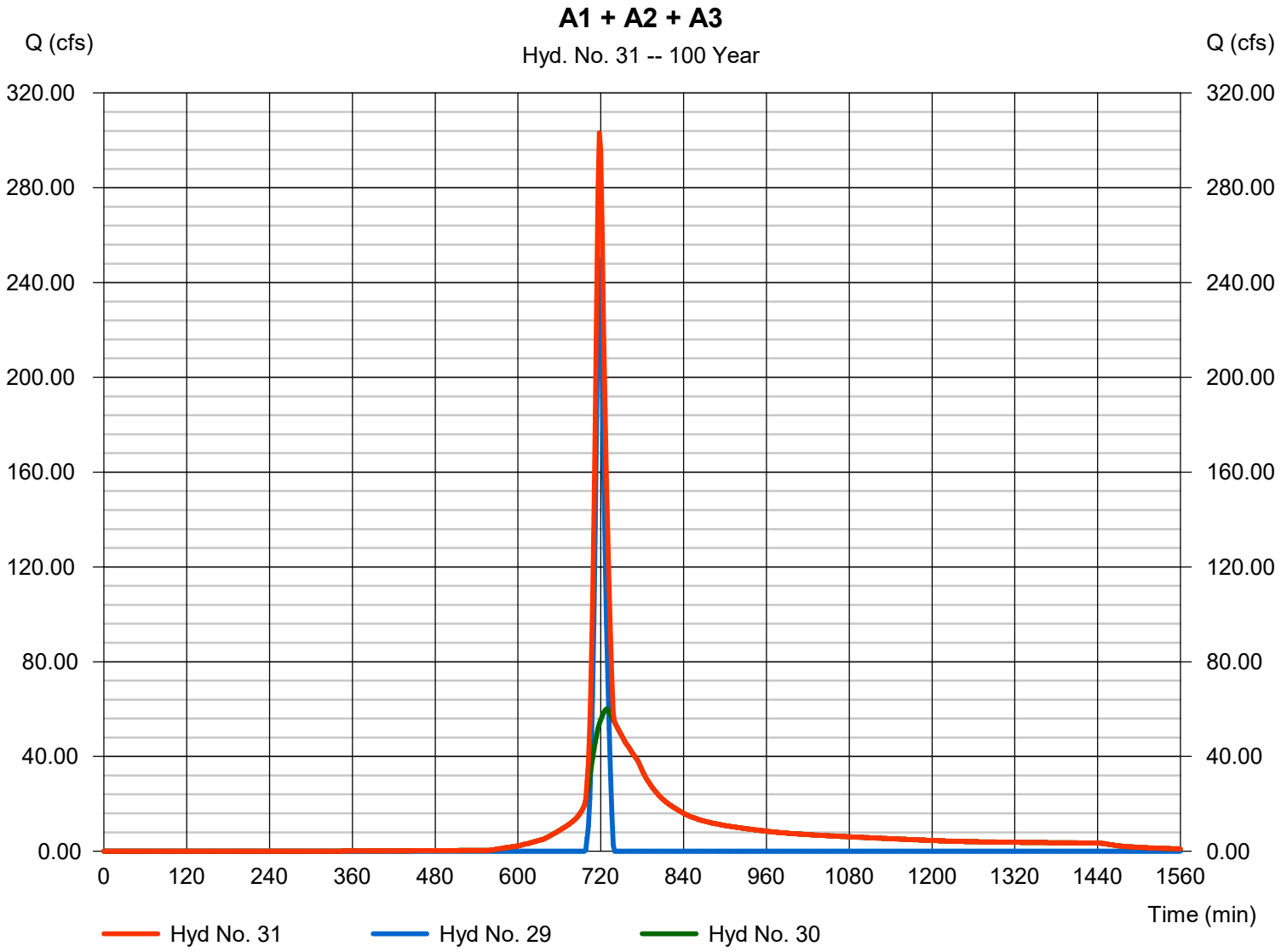


Hydrograph Report

Hyd. No. 31

A1 + A2 + A3

Hydrograph type	= Combine	Peak discharge	= 303.21 cfs
Storm frequency	= 100 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 919,952 cuft
Inflow hyds.	= 29, 30	Contrib. drain. area	= 0.000 ac



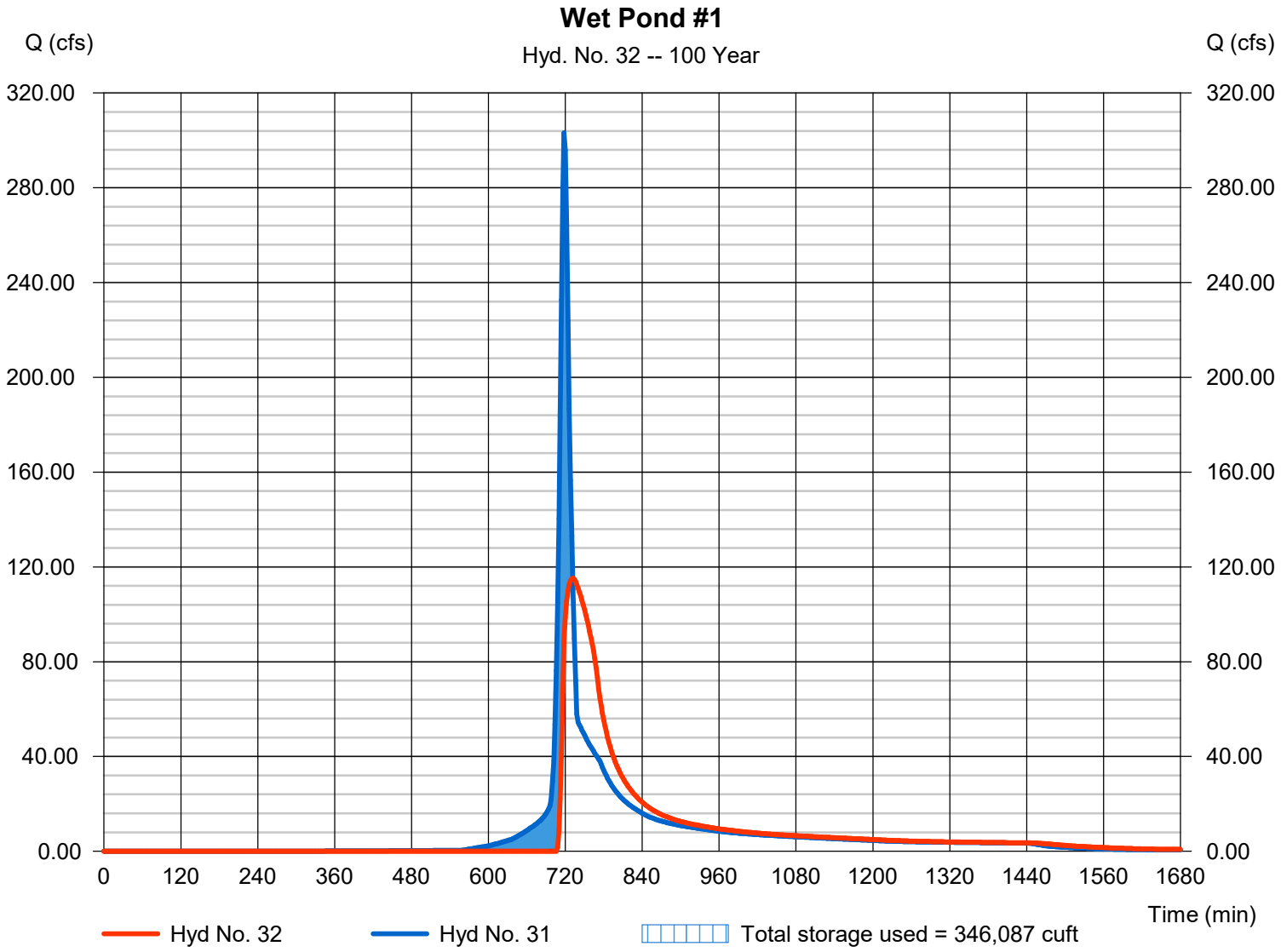
Hydrograph Report

Hyd. No. 32

Wet Pond #1

Hydrograph type	= Reservoir	Peak discharge	= 115.23 cfs
Storm frequency	= 100 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 841,211 cuft
Inflow hyd. No.	= 31 - A1 + A2 + A3	Max. Elevation	= 406.00 ft
Reservoir name	= Wet Pond #1	Max. Storage	= 346,087 cuft

Storage Indication method used. Wet pond routing start elevation = 400.00 ft.

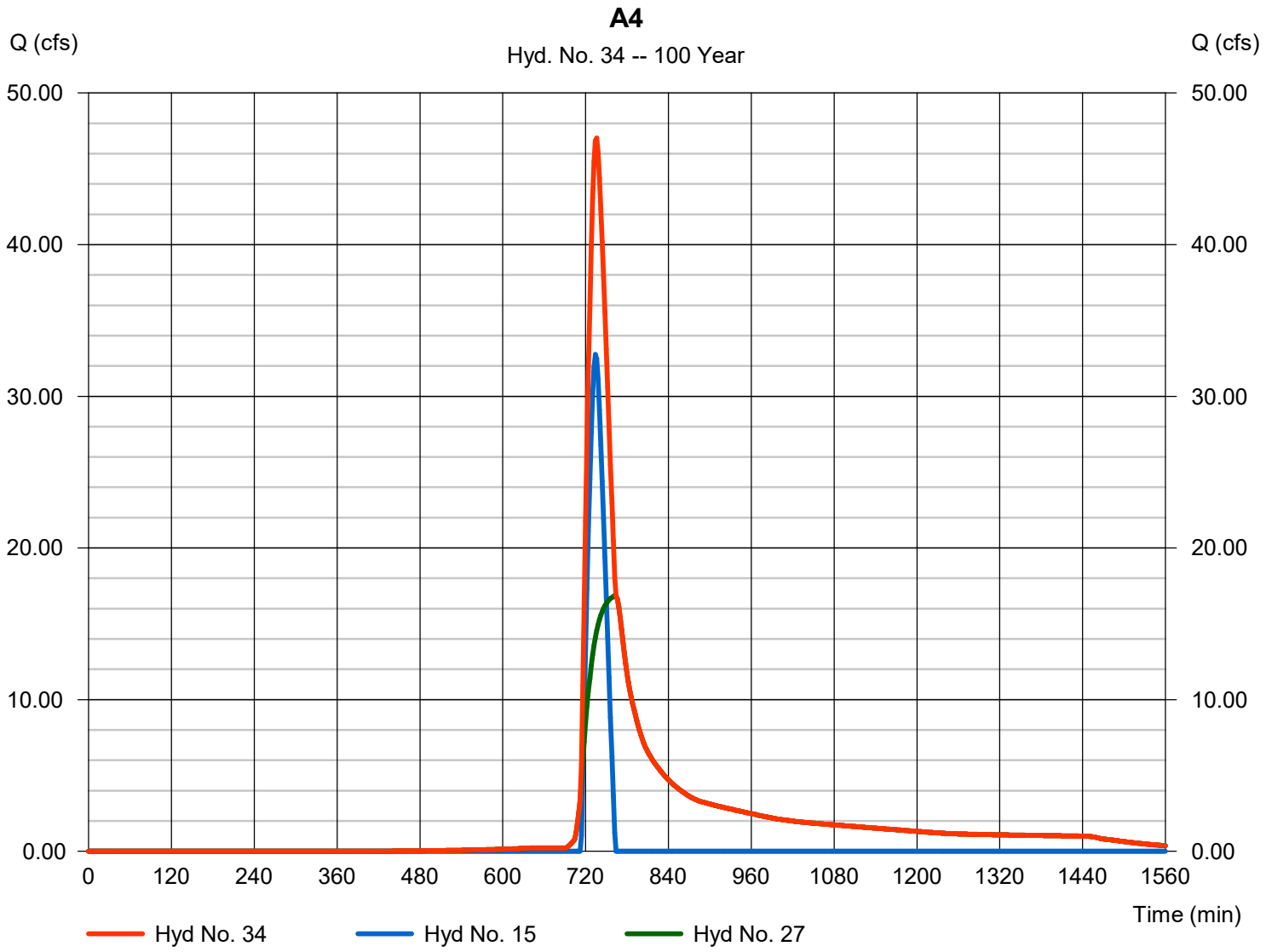


Hydrograph Report

Hyd. No. 34

A4

Hydrograph type	= Combine	Peak discharge	= 47.03 cfs
Storm frequency	= 100 yrs	Time to peak	= 736 min
Time interval	= 2 min	Hyd. volume	= 227,019 cuft
Inflow hyds.	= 15, 27	Contrib. drain. area	= 0.000 ac



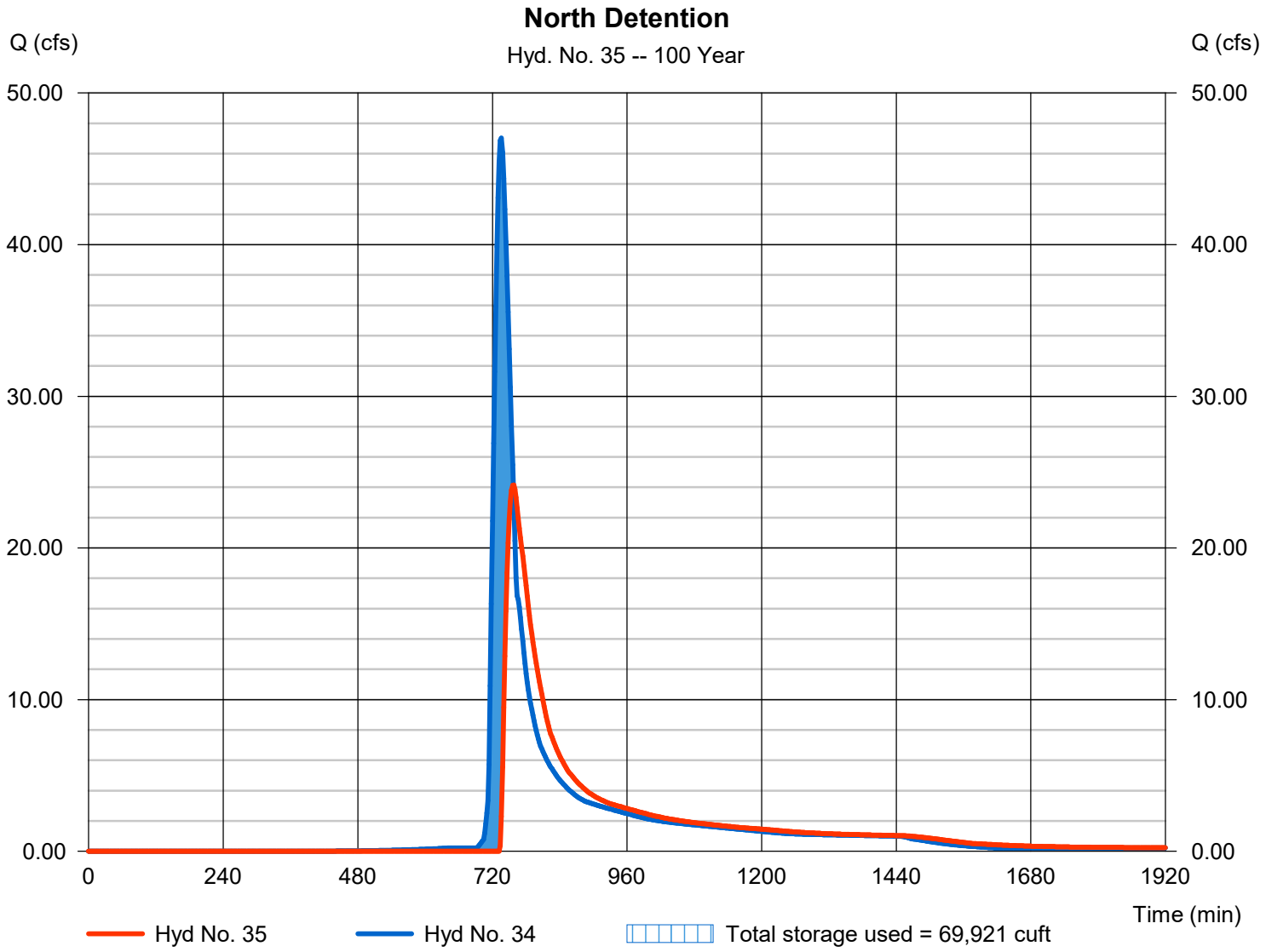
Hydrograph Report

Hyd. No. 35

North Detention

Hydrograph type	=	Reservoir	Peak discharge	=	24.15 cfs
Storm frequency	=	100 yrs	Time to peak	=	758 min
Time interval	=	2 min	Hyd. volume	=	191,167 cuft
Inflow hyd. No.	=	34 - A4	Max. Elevation	=	404.75 ft
Reservoir name	=	Dry Detention #1	Max. Storage	=	69,921 cuft

Storage Indication method used.

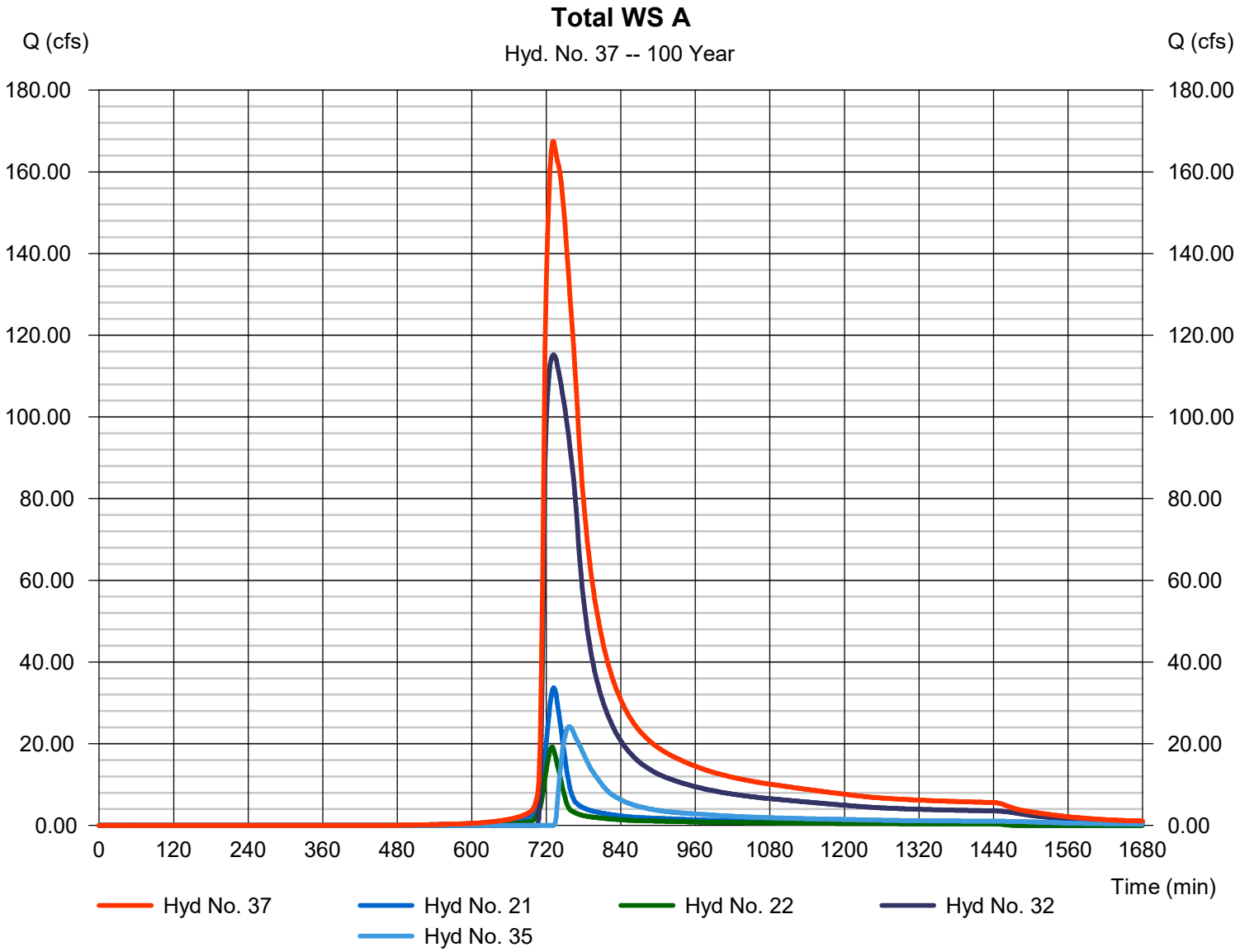


Hydrograph Report

Hyd. No. 37

Total WS A

Hydrograph type	=	Combine	Peak discharge	=	167.43 cfs
Storm frequency	=	100 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	1,234,606 cuft
Inflow hyds.	=	21, 22, 32, 35	Contrib. drain. area	=	8.310 ac

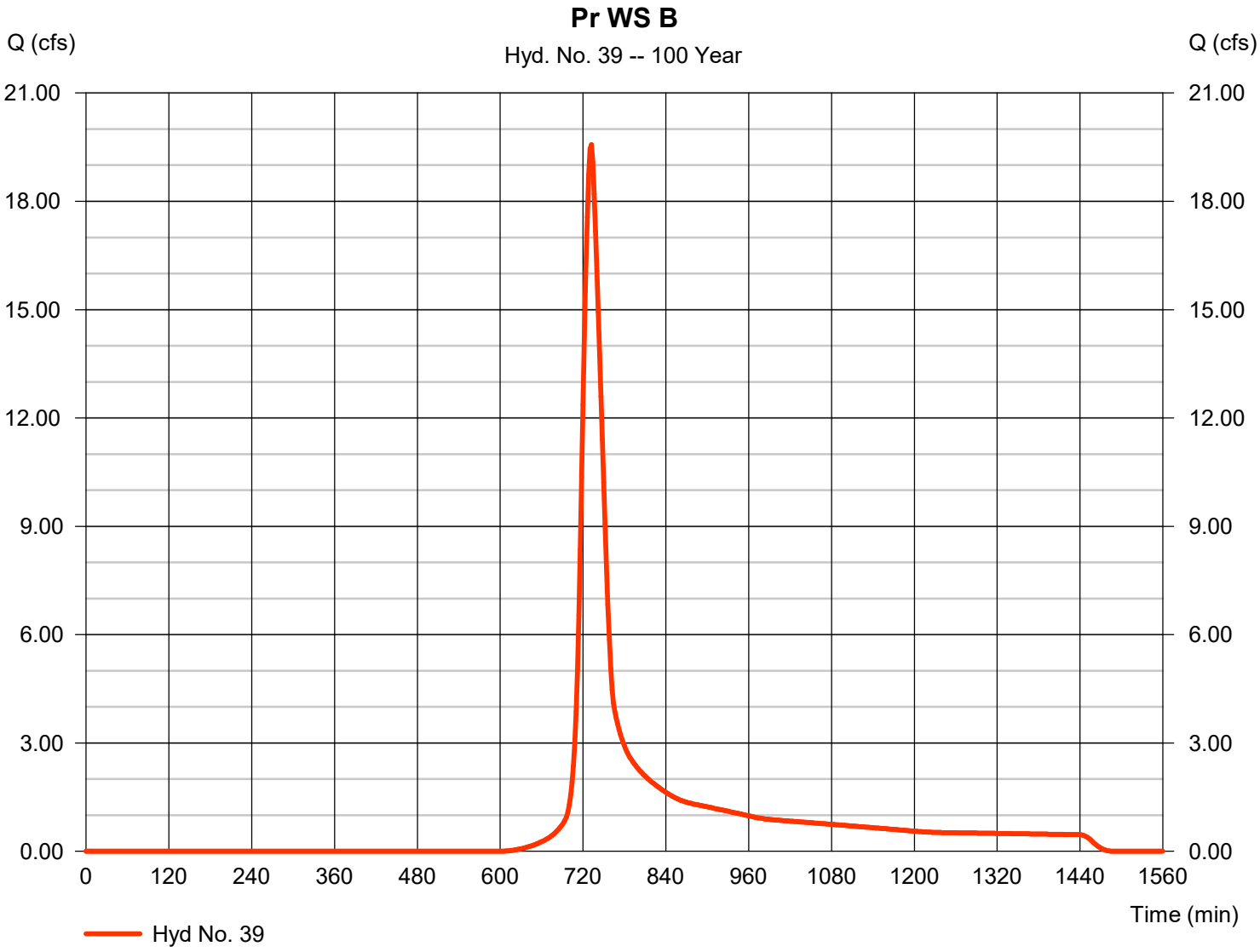


Hydrograph Report

Hyd. No. 39

Pr WS B

Hydrograph type	=	SCS Runoff	Peak discharge	=	19.57 cfs
Storm frequency	=	100 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	80,489 cuft
Drainage area	=	9.900 ac	Curve number	=	67
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	27.00 min
Total precip.	=	5.61 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

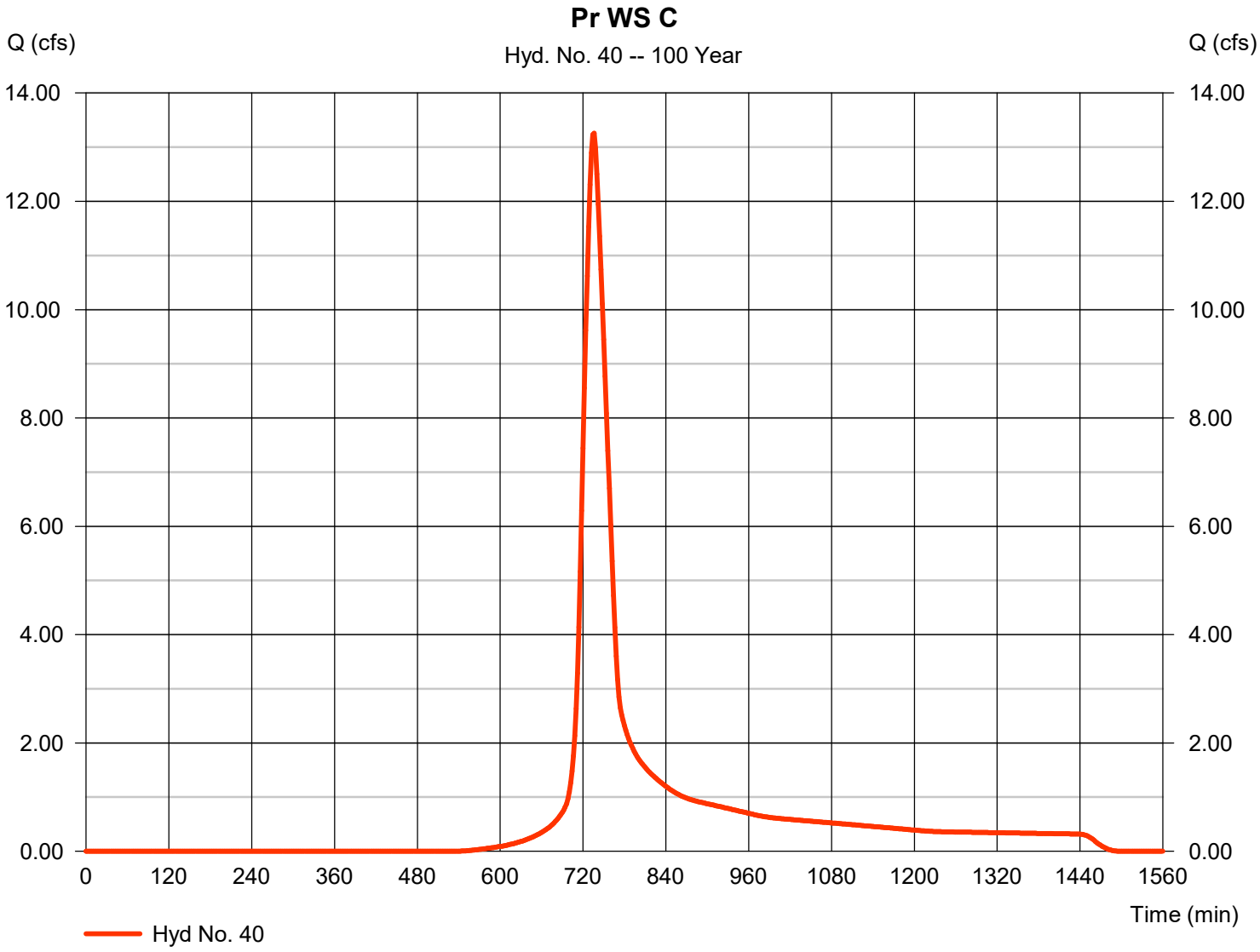


Hydrograph Report

Hyd. No. 40

Pr WS C

Hydrograph type	=	SCS Runoff	Peak discharge	=	13.26 cfs
Storm frequency	=	100 yrs	Time to peak	=	736 min
Time interval	=	2 min	Hyd. volume	=	60,727 cuft
Drainage area	=	6.320 ac	Curve number	=	72
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	34.00 min
Total precip.	=	5.61 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

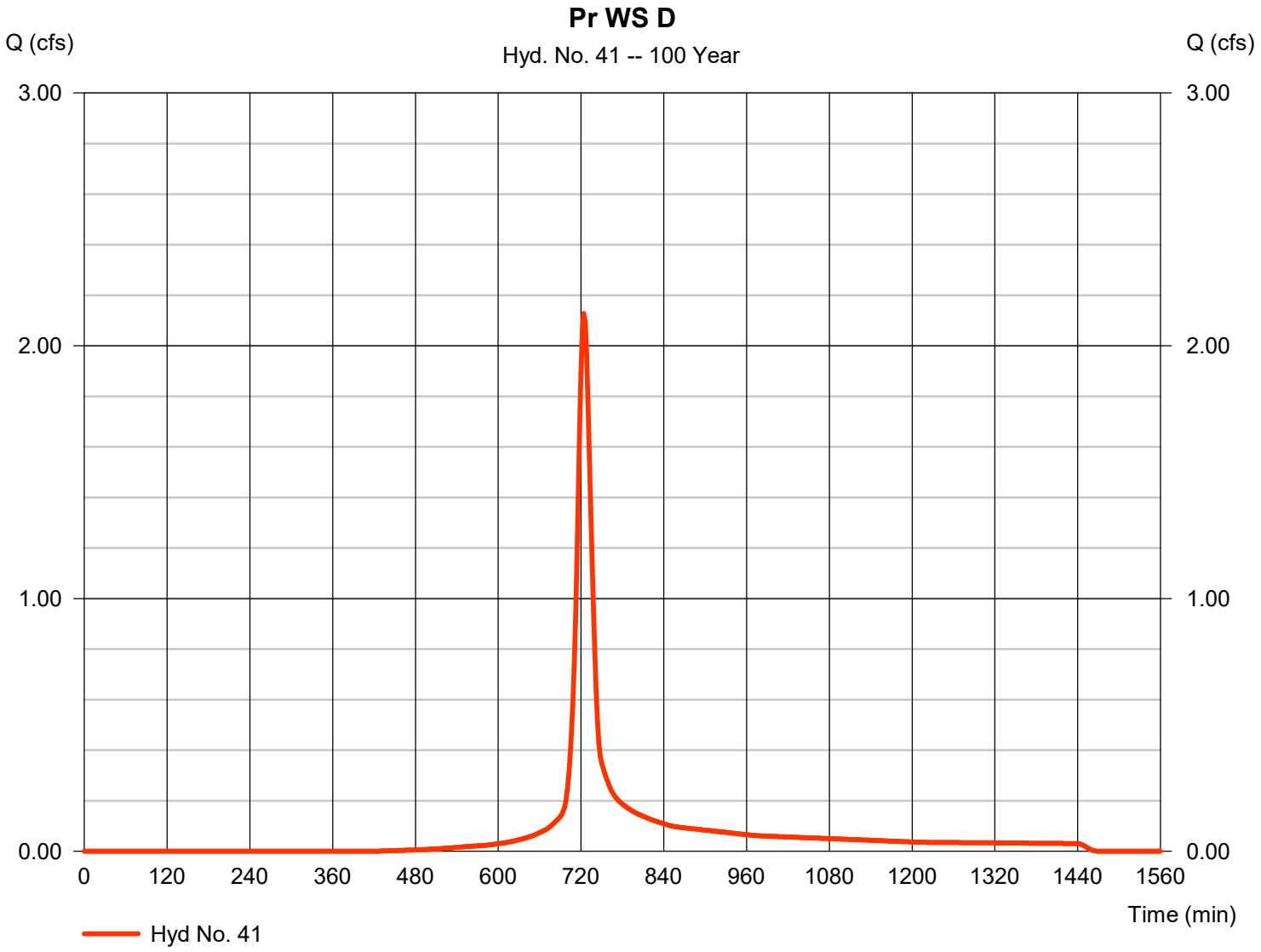


Hydrograph Report

Hyd. No. 41

Pr WS D

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.127 cfs
Storm frequency	=	100 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	6,655 cuft
Drainage area	=	0.550 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	20.00 min
Total precip.	=	5.61 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Appendix I

Post-Construction Inspection and Maintenance

Post Construction Inspection and Maintenance Site Checklist

	Yes	No	NA
1. Steep Slopes (any slope 3:1 or steeper) (Frequency: Annual)			
a. Vegetation and ground cover adequate.	☐	☐	☐
i. Minimum 80% ground cover. *Maintenance: Topsoil, rake and seed bare areas. Remove any dead or dying plants and decaying plant material. Replace dead and dying plants.*	☐	☐	☐
ii. Excessively tall grass (greater than 6" in height) *Maintenance: Mow slopes 3:1 or flatter to have a grass height of 4" to 6". Increase mowing frequency as necessary. Steep slopes planted with meadow mix as shown on the approved plans do not have to be mowed.*	☐	☐	☐
iii. Unauthorized plants. *Maintenance: Remove any unauthorized plants, including roots. Do not use herbicides. Topsoil, rake and seed the area disturbed by their removal.*	☐	☐	☐
b. Slope erosion.	☐	☐	☐
i. Small bare areas (min. 50 square feet). *Maintenance: Topsoil, rake and seed bare areas.*	☐	☐	☐
ii. Ruts less than 12" wide. *Maintenance: Prior to making any repairs, identify the source of erosion and correct. Protect the slopes prior to any work occurring. Backfill ruts and compact soil. Topsoil, rake and seed bare areas. Alternatively, hydroseeding can be used to seed the slope.*	☐	☐	☐
iii. Ruts greater than 12" wide. *Maintenance: Prior to making any repairs, identify the source of erosion and correct. Protect the slopes prior to any work occurring. Re-grade, backfill ruts and compact soil. Install erosion control mats on slopes 3:1 or steeper to protect the re-graded slope. Topsoil, rake and seed bare areas. Inspect on a weekly basis until 80% ground cover is achieved. Alternatively, hydroseeding can be used to seed the slope.*	☐	☐	☐
c. Uneven settling *Maintenance: Visually inspect for uneven settling. Classify the settling based upon the categories below.*	☐	☐	☐
i. Greater than 0" but less than 2" of settling. *Maintenance: No immediate action required. Re-inspect in 6 months.*	☐	☐	☐
ii. Greater than 2" but less than 4" of settling. *Maintenance: Immediately repair. Re-grade and compact the soil. Topsoil, rake and seed the area. Re-inspect in 6 months.*	☐	☐	☐

	Yes	No	NA
iii. Greater than 4" of settling. *Maintenance: Immediately stabilize the area and consult a NYS Licensed Professional Engineer within 2 weeks before making any additional repairs.*	☐	☐	☐

2. Swales (Frequency: Annual)	**Yes**	**No**	**NA**
a. Inflow Points	☐	☐	☐
i. Vegetation and ground cover adequate. *Maintenance: Reseed bare areas. Remove any unauthorized plants or any nuisance weeds and vegetation, including their roots. Do not use any herbicides. Topsoil, rake and seed the disturbed area by their removal.*	☐	☐	☐
ii. Free from erosion/undercutting. *Maintenance: Immediately stabilize and repair any areas where erosion around has occurred. Rake and seed the area. Seed mixture shall meet the seed mixture requirements specified on the approved plans.*	☐	☐	☐
iii. Rip rap in good condition. *Maintenance: Replace stone, as necessary.*	☐	☐	☐
iv. No evidence of sediment buildup. *Maintenance: Remove and properly dispose of any accumulated sediment when the depth is 20% of swale design depth.*	☐	☐	☐
b. Check Dams	☐	☐	☐
i. No evidence of sediment buildup. *Maintenance: Remove accumulated sediment behind dams when sediment depth is one-third the dam height.*	☐	☐	☐
ii. Stone in good condition. *Maintenance: Replace stone, as necessary.*	☐	☐	☐
iii. No evidence of erosion *Maintenance: Immediately stabilize and repair any areas where erosion has occurred. Replace stone, as necessary. Topsoil, rake and reseed area.*	☐	☐	☐
c. Energy Dissipaters	☐	☐	☐
i. No evidence of sediment buildup. *Maintenance: Remove and properly dispose of any accumulated sediment when half of the void space is filled.*	☐	☐	☐
ii. Rip rap in good condition. *Maintenance: Replace stone, as necessary.*	☐	☐	☐
iii. No evidence of erosion. *Maintenance: Immediately stabilize and repair any areas where erosion has occurred. Replace stone, as necessary. Topsoil, rake and reseed.*	☐	☐	☐

Notes:

1. The site must be returned to the approved conditions when any repairs are made.
2. Unauthorized plants are any plants that are growing or have been installed that are not any of the plants shown on the approved plans.
3. All seed mixtures shall meet the seed mixture requirements specified on the approved plans.
4. Replace any dead or dying plants with plants specified in the planting schedule shown on the approved plans.

Comments:

_____
_____
_____
_____
_____
_____

Actions to be taken:

_____
_____
_____
_____
_____
_____

Post Construction Inspection and Maintenance Checklist
Bioretention Basin

1. Embankment

(Frequency: Annual)	**Yes**	**No**	**NA**
a. Vegetation and ground cover adequate.	☐	☐	☐
i. Minimum 80% ground cover.	☐	☐	☐
Maintenance: Topsoil, rake and seed bare areas. Replace dead and dying plants.			
ii. Excessively tall grass (greater than 6" in height)	☐	☐	☐
Maintenance: Mow grass to have a height of 4" to 6". Increase mowing frequency as necessary.			
iii. Unauthorized plants.	☐	☐	☐
Maintenance: Remove any unauthorized plants, including roots. Do not use herbicides. Topsoil, rake and seed the area disturbed by their removal.			
b. Slope erosion.	☐	☐	☐
i. Small bare areas (min. 50 square feet).	☐	☐	☐
Maintenance: Topsoil, rake and seed bare areas.			
ii. Ruts less than 12" wide.	☐	☐	☐
Maintenance: Prior to making any repairs, identify the source of erosion and correct. Protect the slopes prior to any work occurring. Backfill ruts and compact soil. Topsoil, rake and seed bare areas. Alternatively, hydroseeding can be used to seed the slope.			
iii. Ruts greater than 12" wide.	☐	☐	☐
Maintenance: Prior to making any repairs, identify the source of erosion and correct. Protect the slopes prior to any work occurring. Re-grade, backfill ruts and compact soil. Install erosion control mats on slopes 3:1 or steeper to protect the re-graded slope. Topsoil, rake and seed bare areas. Inspect on a weekly basis until 80% ground cover is achieved. Alternatively, hydroseeding can be used to seed the slope.			
c. Uneven settling	☐	☐	☐
Maintenance: Install permanent benchmarks or other permanent reference point in each practice to be used with as-built elevations to measure uneven settling.			
i. Greater than 0" but less than 2" of settling.	☐	☐	☐
Maintenance: No immediate action required. Re-inspect in 6 months.			
ii. Greater than 2" but less than 4" of settling.	☐	☐	☐

Maintenance: Immediately repair. Re-grade and compact the soil. Topsoil, rake and seed the area. Re-inspect in 6 months.

	Yes	No	NA
iii. Greater than 4" of settling. *Maintenance: Immediately stabilize the area and consult a NYS Licensed Professional Engineer within 2 weeks before making any additional repairs.*	☐	☐	☐
d. Animal burrows. *Maintenance: Fill animal burrows with similar material to the existing material and compact. Rake and seed the area.*	☐	☐	☐
e. Cracking, bulging, or sliding of slope.	☐	☐	☐
i. Upstream face.	☐	☐	☐
ii. Downstream face.	☐	☐	☐
iii. At or beyond downstream toe.	☐	☐	☐
iv. At or beyond upstream toe.	☐	☐	☐
v. Emergency spillway. *Maintenance: Immediately stabilize the slope and consult an NYS Licensed Professional Engineer within 2 weeks before making any additional repairs.*	☐	☐	☐
f. Seeps/leaks at downstream face. *Maintenance: Look for changes in the color of the vegetation, plant species and their density to help locate the leak source.*	☐	☐	☐
g. Rip rap slope protection failure. *Maintenance: Stabilize slope, re-grade and compact the soil. Replace stone as necessary.*	☐	☐	☐
i. Emergency spillway clear of any obstructions or debris. *Maintenance: Remove and properly dispose of any trash and debris. Remove any unauthorized plants or any nuisance weeds and vegetation, including their roots. Do not use any herbicides. Topsoil, rake and seed the disturbed area by their removal.*	☐	☐	☐

2. Inflow Points

(Frequency: Annual)	**Yes**	**No**	**NA**
a. Vegetation and ground cover adequate. *Maintenance: Reseed bare areas. Remove any unauthorized plants or any nuisance weeds and vegetation, including their roots. Do not use any herbicides. Topsoil, rake and seed the disturbed area by their removal.*	☐	☐	☐
b. Free from erosion/undercutting.	☐	☐	☐

Maintenance: Immediately stabilize and repair any areas where erosion around has occurred. Rake and seed the area. Seed mixture shall meet the seed mixture requirements specified on the approved plans.

c. Rip rap in good condition. ☐ ☐ ☐
Maintenance: Replace stone, as necessary.

	Yes	No	NA
d. Pipes free from damage, corrosion, and sediment. *Maintenance: Immediately repair any damaged pipes. If pipes are severely damaged and cannot be repaired, replace the pipes. Remove and properly dispose of any sediment.*	☐	☐	☐

3. Outlet Structure/Overflow Spillway

(Frequency: Annual)	**Yes**	**No**	**NA**
a. Outlet structure in good condition.	☐	☐	☐
i. In good condition, no need for repairs.	☐	☐	☐
a. Cracks or displacement *Maintenance: Repair any minor cracks or displacement. Replace structure if major cracks or displacement is observed.*	☐	☐	☐
b. Minor spalling (<1"). *Maintenance: Repair any minor spalling observed.*	☐	☐	☐
c. Major spalling (rebars exposed). *Maintenance: Replace structure.*	☐	☐	☐
d. Joint failures. *Maintenance: Replace structure.*	☐	☐	☐
e. Water tightness. *Maintenance: Reseal structure for water tightness if minor leaks are observed. Replace structure if significant leaks are observed.*	☐	☐	☐
ii. Clear of sediment. *Maintenance: Remove and properly dispose of any accumulated sediment when at 50% of sump height.*	☐	☐	☐
iii. Clear of debris and trash. *Maintenance: Remove and properly dispose of any debris and trash.*	☐	☐	☐
iv. Pipes free from damage, corrosion, and sediment. *Maintenance: Immediately repair any damaged pipes. If pipes are severely damaged and cannot be repaired, replace the pipes. Remove and properly dispose of any sediment.*	☐	☐	☐
b. Overflow spillway	☐	☐	☐

i.	In good condition, no need for repairs. *<u>Maintenance</u>: Replace stone, as necessary.*	☐	☐	☐
ii.	Clear of sediment. *<u>Maintenance</u>: Remove and properly dispose of any accumulated sediment when half of the void space is filled.*	☐	☐	☐
iii.	Clear of debris and trash. *<u>Maintenance</u>: Remove and properly dispose of any debris and trash.*	☐	☐	☐

		Yes	**No**	**NA**
iv.	No evidence of erosion. *<u>Maintenance</u>: Immediately stabilize and repair any areas where erosion occurred around or below the overflow spillway. Replace stone, as necessary. Topsoil, rake and seed the area.*	☐	☐	☐
v.	No evidence of erosion at downstream toe of drop structure or weir spillway. *<u>Maintenance</u>: Immediately stabilize and repair any areas where erosion has occurred. Replace stone, as necessary. Topsoil, rake and reseed.*	☐	☐	☐

4. Check Dams/Energy Dissipaters/Swales

(Frequency: Annual)		**Yes**	**No**	**NA**
a.	Check Dams	☐	☐	☐
i.	No evidence of sediment buildup. *<u>Maintenance</u>: Remove accumulated sediment behind dams when sediment depth is one-third the dam height.*	☐	☐	☐
ii.	Stone in good condition. *<u>Maintenance</u>: Replace stone, as necessary.*	☐	☐	☐
iii.	No evidence of erosion *<u>Maintenance</u>: Immediately stabilize and repair any areas where erosion has occurred. Replace stone, as necessary. Topsoil, rake and reseed area.*	☐	☐	☐
b.	Energy Dissipaters	☐	☐	☐
i.	No evidence of sediment buildup. *<u>Maintenance</u>: Remove and properly dispose of any accumulated sediment when half of the void space is filled.*	☐	☐	☐
ii.	Rip rap in good condition. *<u>Maintenance</u>: Replace stone, as necessary.*	☐	☐	☐
iii.	No evidence of erosion.	☐	☐	☐

Maintenance: Immediately stabilize and repair any areas where erosion has occurred. Replace stone, as necessary. Topsoil, rake and reseed.

c. Swales ☐ ☐ ☐
   i. No evidence of sediment buildup. ☐ ☐ ☐
   Maintenance: Remove and properly dispose of any accumulated sediment when the depth is 20% of swale design depth.
   ii. No evidence of erosion. ☐ ☐ ☐
   Maintenance: Immediately stabilize. Backfill any ruts and compact the soil. Topsoil, rake and seed the area.

5. Sediment Forebay

(Frequency: Monthly)	**Yes**	**No**	**NA**
a. Free of sediment. *Maintenance: Remove and properly dispose of any accumulated sediment when at 50% of the design capacity.*	☐	☐	☐
b. No evidence of erosion. *Maintenance: Immediately stabilize and repair any areas where erosion has occurred. Topsoil, rake and seed the area.*	☐	☐	☐
c. Overflow Spillway.	☐	☐	☐
i. In good working condition, no need for repairs. *Maintenance: Replace stone, as necessary.*	☐	☐	☐
ii. Clear of sediment. *Maintenance: Remove and properly dispose of any accumulated sediment when half of the void space is filled.*	☐	☐	☐
iii. Clear of trash and debris. *Maintenance: Remove and properly dispose of any debris and trash.*	☐	☐	☐
iv. No evidence of erosion. *Maintenance: Immediately stabilize and repair any areas where erosion occurred around or below the overflow spillway. Replace stone, as necessary. Topsoil, rake and seed the area.*	☐	☐	☐
v. No evidence of erosion at downstream toe of drop structure or weir spillway. *Maintenance: Immediately stabilize and repair any areas where erosion has occurred. Replace stone, as necessary. Topsoil, rake and seed the area.*	☐	☐	☐

		Yes	No	NA
6.	**Debris Cleanout (Frequency: Monthly)**			
a.	Contributing areas clean of debris. *Maintenance: Remove and properly dispose of any trash and debris.*	☐	☐	☐
b.	No dumping of yard wastes into practice. *Maintenance: Remove any yard wastes. Remind any maintenance personnel, landscapers, etc. to properly dispose of any yard wastes.*	☐	☐	☐
c.	Clear of debris and litter. *Maintenance: Remove and properly dispose of any trash and debris.*	☐	☐	☐

		Yes	No	NA
7.	**Bioretention Basin Vegetation (Frequency: Monthly)**			
a.	Plant height not less than design water depth of 3". *Maintenance: Remove any plants that have heights less than 3". Replace with plants specified on the approved plans that have a minimum height of 3".*	☐	☐	☐
b.	Plant composition according to approved plans. *Maintenance: Remove any dead or dying plants and decaying plant material. Replace dead and dying plants.*	☐	☐	☐
c.	No placement of unapproved plants. *Maintenance: Remove any unauthorized plants or any nuisance weeds and vegetation, including their roots. Do not use herbicides.*	☐	☐	☐
d.	Grass height not greater than 6". *Maintenance: Mow grass. Increase frequency of mowing as necessary to keep grass heights less than 6".*	☐	☐	☐
e.	Sparse or bare vegetation in more than 10% of bioretention area. *Maintenance: Install replacement plants, as necessary. Topsoil, rake and seed the area.*	☐	☐	☐
f.	Nuisance weeds or vegetation taking over more than 25% of the basin. *Maintenance: Remove any nuisance weeds and vegetation, including their roots. Do not use any herbicides. Topsoil, rake and seed the disturbed area*	☐	☐	☐
g.	Mulch is in good condition and the appropriate thickness.	☐	☐	☐

Maintenance: Replace decomposed mulch to the thickness shown on the approved plans.

8. Bioretention Basin Dewatering
(Frequency: Monthly)

	Yes	No	NA
a. Dewaters between storms. *Maintenance: If filter bed is clogged or draining poorly, remove top few inches of discolored filter media. Rake the remaining material and replace the removed filter bed media.*	☐	☐	☐
b. No evidence of standing water 48 or more hours after a rainfall. *Maintenance: If standing water covers more than 15% of the planting bed 48 hours after a rainfall, remove top few inches of planting bed media. Rake the filter bed media to loosen the soil. Recheck after next rainfall event. If still not dewatering fully after 48 hours, remove and replace the entire filter bed media. If problem persists, contact a NYS licensed Professional Engineer.*	☐	☐	☐

	Yes	No	NA
c. Underdrain present and no evidence of standing water 48 or more hours after a rainfall. *Maintenance: Flush underdrain system to remove any trapped sediment. If no sediment is present, remove top few inches of planting bed media. Rake the filter bed media to loosen the soil. Recheck after next rainfall event. If still not dewatering fully after 48 hours, remove entire filter bed material and check the gravel drainage layer for clogging. Replace filter bed media and gravel drainage layer with new material. If problem persists, contact a NYS licensed Professional Engineer.*	☐	☐	☐

9. Bioretention Basin Filter Bed Integrity
(Frequency: Annual)

	Yes	No	NA
a. Filter bed has not been blocked or filled inappropriately. *Maintenance: Remove all blockages and inappropriate fill. Restore filter bed to elevation shown on the approved plans.*	☐	☐	☐
b. Filter bed flat and level. *Maintenance: Remove all blockages, inappropriate fill, or accumulated sediment if present. Check embankment for differential settlement. If differential settlement is noted, refer to Item 1.c for maintenance procedures. If no differential settlement*	☐	☐	☐

is noted, rake and level the planting bed media so that it is flat and level.

c. Uneven ponding. ☐ ☐ ☐
<u>Maintenance</u>: Remove all blockages, inappropriate fill, or accumulated sediment if present. Check embankment for differential settlement. If differential settlement is noted, refer to Item 1.c for maintenance procedures. If no differential settlement is noted, rake and level the planting bed media so that it is flat and level.

Notes:

1. The site must be returned to the approved conditions when any repairs are made.
2. Unauthorized plants are any plants that are growing or have been installed that are not any of the plants shown on the approved plans.
3. All seed mixtures shall meet the seed mixture requirements specified on the approved plans.
4. Replace any dead or dying plants with plants specified in the planting schedule shown on the approved plans.
5. Replaced stone shall meet the stone requirements specified on the approved plans.
6. Replaced filter bed media shall meet the filter bed media requirements specified on the approved plans.
7. Replaced gravel drainage layer shall meet the gravel drainage layer requirements specified on the approved plans.

Comments:

_____
_____
_____
_____
_____
_____
_____
_____

Actions to be taken:

_____
_____
_____
_____
_____
_____
_____

Post Construction Inspection and Maintenance Checklist
Stormwater Pond

1. Embankment

(Frequency: Annual)	**Yes**	**No**	**NA**
a. Vegetation and ground cover adequate.	☐	☐	☐
i. Minimum 80% ground cover.	☐	☐	☐
Maintenance: Topsoil, rake and seed bare areas. Replace dead and dying plants.			
ii. Excessively tall grass (greater than 6" in height)	☐	☐	☐
Maintenance: Mow grass to have a height of 4" to 6". Increase mowing frequency as necessary.			
iii. Unauthorized plants.	☐	☐	☐
Maintenance: Remove any unauthorized plants, including roots. Do not use herbicides. Topsoil, rake and seed the area disturbed by their removal.			
b. Slope erosion.	☐	☐	☐
i. Small bare areas (min. 50 square feet).	☐	☐	☐
Maintenance: Topsoil, rake and seed bare areas.			
ii. Ruts less than 12" wide.	☐	☐	☐
Maintenance: Prior to making any repairs, identify the source of erosion and correct. Protect the slopes prior to any work occurring. Backfill ruts and compact soil. Topsoil, rake and seed bare areas. Alternatively, hydroseeding can be used to seed the slope.			
iii. Ruts greater than 12" wide.	☐	☐	☐
Maintenance: Prior to making any repairs, identify the source of erosion and correct. Protect the slopes prior to any work occurring. Re-grade, backfill ruts and compact soil. Install erosion control mats on slopes 3:1 or steeper to protect the re-graded slope. Topsoil, rake and seed bare areas. Inspect on a weekly basis until 80% ground cover is achieved. Alternatively, hydroseeding can be used to seed the slope.			
c. Uneven settling	☐	☐	☐
Maintenance: Install permanent benchmarks or other permanent reference point in each practice to be used with as-built elevations to measure uneven settling.			
i. Greater than 0" but less than 2" of settling.	☐	☐	☐
Maintenance: No immediate action required. Re-inspect in 6 months.			
ii. Greater than 2" but less than 4" of settling.	☐	☐	☐
Maintenance: Immediately repair. Re-grade and compact the soil. Topsoil, rake and seed the area. Re-inspect in 6 months.			

	Yes	No	NA
iii. Greater than 4" of settling. *Maintenance: Immediately stabilize the area and consult a NYS Licensed Professional Engineer within 2 weeks before making any additional repairs.*	☐	☐	☐
d. Animal burrows. *Maintenance: Fill animal burrows with similar material to the existing material and compact. Topsoil, rake and seed the area.*	☐	☐	☐
e. Cracking, bulging, or sliding of slope.	☐	☐	☐
i. Upstream face.	☐	☐	☐
ii. Downstream face.	☐	☐	☐
iii. At or beyond downstream toe.	☐	☐	☐
iv. At or beyond upstream toe.	☐	☐	☐
v. Emergency spillway. *Maintenance: Immediately stabilize the slope and consult an NYS Licensed Professional Engineer within 2 weeks before making any additional repairs.*	☐	☐	☐
f. Seeps/leaks at downstream face. *Maintenance: Look for changes in the color of the vegetation, plant species and their density to help locate the leak source.*	☐	☐	☐
g. Rip rap slope protection failure. *Maintenance: Stabilize slope, re-grade and compact the soil. Replace stone, as necessary.*	☐	☐	☐
i. Emergency spillway clear of any obstructions or debris. *Maintenance: Remove and properly dispose of any trash and debris. Remove any unauthorized plants, or any nuisance weeds and vegetation, including their roots. Do not use any herbicides. Topsoil, rake and seed the area disturbed by their removal.*	☐	☐	☐

2. Inflow Points

(Frequency: Annual)	Yes	No	NA
a. Vegetation and ground cover adequate. *Maintenance: Reseed bare areas. Remove any unauthorized plants or any nuisance weeds and vegetation, including their roots. Do not use any herbicides. Topsoil, rake and seed the area disturbed by their removal.*	☐	☐	☐
b. Free from erosion/undercutting. *Maintenance: Immediately stabilize and repair any areas where erosion around has occurred. Topsoil, rake and seed the area.*	☐	☐	☐
c. Rip rap in good condition. *Maintenance: Replace stone, as necessary.*	☐	☐	☐
d. Pipes free from damage, corrosion, and sediment. *Maintenance: Immediately repair any damaged pipes. If pipes are severely damaged and cannot be repaired, replace the pipes. Remove and properly dispose of any sediment.*	☐	☐	☐

3. Outlet Structure/Overflow Spillway

(Frequency: Annual)	**Yes**	**No**	**NA**
a. Riser pipe	☐	☐	☐
i. In good condition, no need for repairs. *Maintenance: Repair any minor damages. Replace structure if significant damages are observed.*	☐	☐	☐
ii. Clear of sediment. *Maintenance: Remove and properly dispose of any accumulated sediment when at 50% of sump height.*	☐	☐	☐
iii. Clear of debris and trash. *Maintenance: Remove and properly dispose of any debris and trash.*	☐	☐	☐
b. Concrete outlet structure	☐	☐	☐
i. In good condition, no need for repairs.	☐	☐	☐
a. Cracks or displacement. *Maintenance: Repair any minor cracks. If minor displacement is observed, re-inspect in 6 months. Replace structure if major cracks or significant displacement is observed.*	☐	☐	☐
b. Minor spalling (<1"). *Maintenance: Repair any minor spalling.*	☐	☐	☐
c. Major spalling (rebars exposed). *Maintenance: Replace structure.*	☐	☐	☐
d. Joint failures. *Maintenance: Replace structure.*	☐	☐	☐
e. Water tightness. *Maintenance: Reseal structure for water tightness if minor leaks are observed. Replace structure if significant leaks are observed.*	☐	☐	☐
ii. Clear of sediment. *Maintenance: Remove and properly dispose of any accumulated sediment when at 50% of sump height.*	☐	☐	☐
iii. Clear of debris and trash. *Maintenance: Remove and properly dispose of any debris and trash.*	☐	☐	☐
iv. Pipes free from damage, corrosion, and sediment. *Maintenance: Immediately repair any damaged pipes. If pipes are severely damaged and cannot be repaired, replace the pipes. Remove and properly dispose of any sediment.*	☐	☐	☐
c. Low flow orifice is unobstructed. *Maintenance: Remove and properly dispose of any debris and trash.*	☐	☐	☐

	Yes	No	NA
d. Low flow trash rack.	☐	☐	☐
i. Clear of debris and trash. *Maintenance: Remove and properly dispose of any debris and trash.*	☐	☐	☐
ii. Clear of any corrosion. *Maintenance: If significant corrosion is observed, replace trash rack.*	☐	☐	☐
e. Weir trash rack.	☐	☐	☐
i. Clear of debris and trash. *Maintenance: Remove and properly dispose of any debris and trash.*	☐	☐	☐
ii. Clear of any corrosion. *Maintenance: If significant corrosion is observed, replace trash rack.*	☐	☐	☐
f. Control valve operational. *Maintenance: Replace if not functioning or operational.*	☐	☐	☐
g. Pond valve operational, chained and locked. *Maintenance: Replace valve if not functioning or operational.*	☐	☐	☐
h. Overflow spillway	☐	☐	☐
i. In good condition, no need for repairs. *Maintenance: Replace any dislodged stone with the same stone type.*	☐	☐	☐
ii. Clear of sediment. *Maintenance: Remove and properly dispose of any accumulated sediment when half of the void space is filled.*	☐	☐	☐
iii. Clear of debris and trash. *Maintenance: Remove and properly dispose of any debris and trash.*	☐	☐	☐
iv. No evidence of erosion. *Maintenance: Immediately stabilize and repair any areas where erosion occurred around or below the overflow spillway. Replace stone, as necessary. Topsoil, rake and seed the area.*	☐	☐	☐
v. No evidence of erosion at downstream toe of drop structure or weir spillway. *Maintenance: Immediately stabilize and repair any areas where erosion has occurred. Replace stone, as necessary. Topsoil, rake and seed the area.*	☐	☐	☐

4. Sediment Forebay

(Frequency: Monthly)	**Yes**	**No**	**NA**
a. Free of sediment. *Maintenance: Remove and properly dispose of any accumulated sediment when at 50% of the design capacity.*	☐	☐	☐

	Yes	No	NA
b. No evidence of erosion. *Maintenance: Immediately stabilize and repair any areas where erosion has occurred. Topsoil, rake and seed the area.*	☐	☐	☐
c. Overflow Spillway.	☐	☐	☐
i. In good working condition, no need for repairs. *Maintenance: Replace stone, as necessary.*	☐	☐	☐
ii. Clear of sediment. *Maintenance: Remove and properly dispose of any accumulated sediment when half of the void space is filled.*	☐	☐	☐
iii. Clear of trash and debris. *Maintenance: Remove and properly dispose of any debris and trash.*	☐	☐	☐
iv. No evidence of erosion. *Maintenance: Immediately stabilize and repair any areas where erosion occurred around or below the overflow spillway. Replace stone, as necessary. Topsoil, rake and seed the area.*	☐	☐	☐
v. No evidence of erosion at downstream toe of drop structure or weir spillway. *Maintenance: Immediately stabilize and repair any areas where erosion has occurred. Replace stone, as necessary. Topsoil, rake and seed the area.*	☐	☐	☐

5. Permanent Pool (Wet Ponds)
(Frequency: Monthly)

	Yes	No	NA
a. Undesirable vegetative growth. *Maintenance: Mow grass to have a height of 4" to 6". Remove any unauthorized plants or any nuisance weeds and vegetation, including their roots. Do not use herbicides. Topsoil, rake and seed the area disturbed by their removal.*	☐	☐	☐
b. Floating or floatable debris removal required. *Maintenance: Remove and properly dispose of any debris and trash.*	☐	☐	☐
c. Visible pollution. *Maintenance: Coordinate removal/cleanup of any oil, gas, or contaminants with the appropriate clean-up personnel.*	☐	☐	☐
d. Erosion occurring along shoreline. *Maintenance: Leave a 10' unmowed vegetated buffer around the perimeter of the permanent pool to help prevent shoreline erosion.*	☐	☐	☐

6. Dry Pond Areas
(Frequency: Monthly)

a. Vegetation adequate. *Maintenance: Topsoil, rake and seed the area.*	☐	☐	☐

	Yes	No	NA
b. Undesirable vegetative growth. *Maintenance: Mow grass to have a height of 4" to 6". Remove any unauthorized plants or any nuisance weeds and vegetation, including their roots. Do not use herbicides. Topsoil, rake and seed the area disturbed by their removal.*	☐	☐	☐
c. Undesirable woody vegetation. *Maintenance: Remove any undesirable woody vegetation, including their roots. Do not use herbicides. Topsoil, rake and seed the area disturbed by their removal.*	☐	☐	☐
d. Low flow channels clear of obstructions. *Maintenance: Remove and properly dispose of any debris and trash.*	☐	☐	☐
e. Standing water or wet spots. *Maintenance: Re-grade areas to ensure positive drainage. Topsoil, rake and seed the area.*	☐	☐	☐
f. Sediment and trash accumulation. *Maintenance: Remove and properly dispose of any accumulated sediment and trash.*	☐	☐	☐

7. Wetland Vegetation

(Frequency: Annual)	Yes	No	NA
a. Vegetation health and growing. *Maintenance: Remove any dead or dying plants and decaying plant material. Replace dead and dying plants.*	☐	☐	☐
	Yes	**No**	**NA**
i. Wetland maintaining 50% surface area coverage of wetland plants after second growing season. *Maintenance: If unsatisfactory, install reinforcement plants.*	☐	☐	☐
b. Dominant wetland plants:			
i. Survival of desired wetland plant species. *Maintenance: Remove any dead or dying plants and decaying plant material. Remove any unauthorized plants or any nuisance weeds and vegetation, including their roots. Do not use herbicides. Replace any dead and dying plants.*	☐	☐	☐
ii. Distribution according to landscaping plan. *Maintenance: Install additional wetland plants as necessary.*	☐	☐	☐
c. Evidence of invasive species. *Maintenance: Remove invasive species, including roots. Do not use herbicides. Install additional wetland plants as necessary.*	☐	☐	☐
d. Maintenance of adequate water depths for desired wetland plant species. *Maintenance: Remove and properly dispose of any accumulated sediment that may impact the water depth.*	☐	☐	☐

	Yes	No	NA
e. Harvesting of emergent plantings needed. *Maintenance: A qualified professional shall identify the plants to be removed.*	☐	☐	☐
f. Accumulated sediment reducing pool volume significantly or plants are "choked" with sediment. *Maintenance: Remove and properly dispose of any accumulated sediment when at 50% of the design capacity. A bathymetric study may be necessary to determine the amount of water and accumulated sediment in the pond.*	☐	☐	☐
g. Eutrophication level of wetland. *Maintenance: Reduce the amount of phosphorus being applied upstream starting in early April and through September. Chemical treatments can be applied; however, consult a NYS licensed Professional Engineer prior to starting any treatments as chemical treatments may require a permit.*	☐	☐	☐

8. Miscellaneous

(Frequency: Monthly)	Yes	No	NA
a. Encroachment on pond or easement area. *Maintenance: Remove any encroachments into the pond or easement area.*	☐	☐	☐
b. Maintenance access routes in good condition. *Maintenance: Repair any minor damage or erosion to the maintenance access routes. If significant damage or erosion is noted, stabilize, re-grade and re-establish the maintenance access routes in accordance with the plans.*	☐	☐	☐
c. Signs of hydrocarbon build-up. *Maintenance: Coordinate removal/cleanup of any oil, gas, or contaminants with the appropriate clean-up personnel.*	☐	☐	☐
d. Fence in good condition. *Maintenance: Replace any damaged sections of fence.*	☐	☐	☐
e. Safety signs are installed. *Maintenance: Replace any missing signs.*	☐	☐	☐

Notes:

1. The site must be returned to the approved conditions when any repairs are made.
2. Unauthorized plants are any plants that are growing or have been installed that are not any of the plants shown on the approved plans.
3. All seed mixtures shall meet the seed mixture requirements specified on the approved plans.
4. Replace any dead or dying plants with plants specified in the planting schedule shown on the approved plans.
5. Replaced stone shall meet the stone requirements specified on the approved plans.

Comments:

Actions to be taken:

Post Construction Inspection and Maintenance Checklist
Dry Detention Basin

1. Embankment (Frequency: Annual)	**Yes**	**No**	**NA**
a. Vegetation and ground cover adequate.	☐	☐	☐
i. Minimum 80% ground cover.	☐	☐	☐
Maintenance: Topsoil, rake and seed bare areas. Replace dead and dying plants.			
ii. Excessively tall grass (greater than 6" in height)	☐	☐	☐
Maintenance: Mow grass to have a height of 4" to 6". Increase mowing frequency as necessary.			
iii. Unauthorized plants.	☐	☐	☐
Maintenance: Remove any unauthorized plants, including roots. Do not use herbicides. Topsoil, rake and seed the area disturbed by their removal.			
b. Slope erosion.	☐	☐	☐
i. Small bare areas (min. 50 square feet).	☐	☐	☐
Maintenance: Topsoil, rake and seed bare areas.			
ii. Ruts less than 12" wide.	☐	☐	☐
Maintenance: Prior to making any repairs, identify the source of erosion and correct. Protect the slopes prior to any work occurring. Backfill ruts and compact soil. Topsoil, rake and seed bare areas. Alternatively, hydroseeding can be used to seed the slope.			
iii. Ruts greater than 12" wide.	☐	☐	☐
Maintenance: Prior to making any repairs, identify the source of erosion and correct. Protect the slopes prior to any work occurring. Re-grade, backfill ruts and compact soil. Install erosion control mats on slopes 3:1 or steeper to protect the re-graded slope. Topsoil, rake and seed bare areas. Inspect on a weekly basis until 80% ground cover is achieved. Alternatively, hydroseeding can be used to seed the slope.			
c. Uneven settling	☐	☐	☐
Maintenance: Install permanent benchmarks or other permanent reference point in each practice to be used with as-built elevations to measure uneven settling.			
i. Greater than 0" but less than 2" of settling.	☐	☐	☐
Maintenance: No immediate action required. Re-inspect in 6 months.			
ii. Greater than 2" but less than 4" of settling.	☐	☐	☐

Maintenance: Immediately repair. Re-grade and compact the soil. Topsoil, rake and seed the area. Re-inspect in 6 months.

	Yes	No	NA
iii. Greater than 4" of settling. *Maintenance: Immediately stabilize the area and consult a NYS Licensed Professional Engineer within 2 weeks before making any additional repairs.*	☐	☐	☐
d. Animal burrows. *Maintenance: Fill animal burrows with similar material to the existing material and compact. Topsoil, rake and seed the area.*	☐	☐	☐
e. Cracking, bulging, or sliding of slope.	☐	☐	☐
i. Upstream face.	☐	☐	☐
ii. Downstream face.	☐	☐	☐
iii. At or beyond downstream toe.	☐	☐	☐
iv. At or beyond upstream toe.	☐	☐	☐
v. Emergency spillway. *Maintenance: Immediately stabilize the slope and consult an NYS Licensed Professional Engineer within 2 weeks before making any additional repairs.*	☐	☐	☐
f. Seeps/leaks at downstream face. *Maintenance: Look for changes in the color of the vegetation, plant species and their density to help locate the leak source.*	☐	☐	☐
g. Rip rap slope protection failure. *Maintenance: Stabilize slope, re-grade and compact the soil. Replace stone, as necessary.*	☐	☐	☐
i. Emergency spillway clear of any obstructions or debris. *Maintenance: Remove and properly dispose of any trash and debris. Remove any unauthorized plants, or any nuisance weeds and vegetation, including their roots. Do not use any herbicides. Topsoil, rake and seed the area disturbed by their removal.*	☐	☐	☐

2. Inflow Points

(Frequency: Annual)	Yes	No	NA
a. Vegetation and ground cover adequate. *Maintenance: Reseed bare areas. Remove any unauthorized plants or any nuisance weeds and vegetation, including their roots. Do not use any herbicides. Topsoil, rake and seed the area disturbed by their removal.*	☐	☐	☐
b. Free from erosion/undercutting. *Maintenance: Immediately stabilize and repair any areas where erosion around has occurred. Topsoil, rake and seed the area.*	☐	☐	☐

c. Rip rap in good condition. ☐ ☐ ☐
Maintenance: Replace stone, as necessary.

d. Pipes free from damage, corrosion, and sediment. ☐ ☐ ☐
Maintenance: Immediately repair any damaged pipes. If pipes are severely damaged and cannot be repaired, replace the pipes. Remove and properly dispose of any sediment.

3. Outlet Structure/Overflow Spillway

(Frequency: Annual)	**Yes**	**No**	**NA**
a. Riser pipe	☐	☐	☐
i. In good condition, no need for repairs. *Maintenance: Repair any minor damages. Replace structure if significant damages are observed.*	☐	☐	☐
ii. Clear of sediment. *Maintenance: Remove and properly dispose of any accumulated sediment when at 50% of sump height.*	☐	☐	☐
iii. Clear of debris and trash. *Maintenance: Remove and properly dispose of any debris and trash.*	☐	☐	☐
b. Concrete outlet structure	☐	☐	☐
i. In good condition, no need for repairs.	☐	☐	☐
a. Cracks or displacement. *Maintenance: Repair any minor cracks. If minor displacement is observed, re-inspect in 6 months. Replace structure if major cracks or significant displacement is observed.*	☐	☐	☐
b. Minor spalling (<1"). *Maintenance: Repair any minor spalling.*	☐	☐	☐
c. Major spalling (rebars exposed). *Maintenance: Replace structure.*	☐	☐	☐
d. Joint failures. *Maintenance: Replace structure.*	☐	☐	☐
e. Water tightness. *Maintenance: Reseal structure for water tightness if minor leaks are observed. Replace structure if significant leaks are observed.*	☐	☐	☐
ii. Clear of sediment. *Maintenance: Remove and properly dispose of any accumulated sediment when at 50% of sump height.*	☐	☐	☐
iii. Clear of debris and trash. *Maintenance: Remove and properly dispose of any debris and trash.*	☐	☐	☐

		Yes	No	NA
iv.	Pipes free from damage, corrosion, and sediment. *Maintenance: Immediately repair any damaged pipes. If pipes are severely damaged and cannot be repaired, replace the pipes. Remove and properly dispose of any sediment.*	☐	☐	☐
c.	Low flow orifice is unobstructed. *Maintenance: Remove and properly dispose of any debris and trash.*	☐	☐	☐
d.	Low flow trash rack.	☐	☐	☐
i.	Clear of debris and trash. *Maintenance: Remove and properly dispose of any debris and trash.*	☐	☐	☐
ii.	Clear of any corrosion. *Maintenance: If significant corrosion is observed, replace trash rack.*	☐	☐	☐
e.	Weir trash rack.	☐	☐	☐
i.	Clear of debris and trash. *Maintenance: Remove and properly dispose of any debris and trash.*	☐	☐	☐
ii.	Clear of any corrosion. *Maintenance: If significant corrosion is observed, replace trash rack.*	☐	☐	☐
f.	Control valve operational. *Maintenance: Replace if not functioning or operational.*	☐	☐	☐
g.	Pond valve operational, chained and locked. *Maintenance: Replace valve if not functioning or operational.*	☐	☐	☐
h.	Overflow spillway	☐	☐	☐
i.	In good condition, no need for repairs. *Maintenance: Replace any dislodged stone with the same stone type.*	☐	☐	☐
ii.	Clear of sediment. *Maintenance: Remove and properly dispose of any accumulated sediment when half of the void space is filled.*	☐	☐	☐
iii.	Clear of debris and trash. *Maintenance: Remove and properly dispose of any debris and trash.*	☐	☐	☐
iv.	No evidence of erosion. *Maintenance: Immediately stabilize and repair any areas where erosion occurred around or below the overflow*	☐	☐	☐

spillway. Replace stone, as necessary. Topsoil, rake and seed the area.

v. No evidence of erosion at downstream toe of drop structure or weir spillway. ☐ ☐ ☐
Maintenance: Immediately stabilize and repair any areas where erosion has occurred. Replace stone, as necessary. Topsoil, rake and seed the area.

4. Sediment Forebay

(Frequency: Monthly)	**Yes**	**No**	**NA**
a. Free of sediment. *Maintenance: Remove and properly dispose of any accumulated sediment when at 50% of the design capacity.*	☐	☐	☐
	Yes	**No**	**NA**
b. No evidence of erosion. *Maintenance: Immediately stabilize and repair any areas where erosion has occurred. Topsoil, rake and seed the area.*	☐	☐	☐
c. Overflow Spillway.	☐	☐	☐
i. In good working condition, no need for repairs. *Maintenance: Replace stone, as necessary.*	☐	☐	☐
ii. Clear of sediment. *Maintenance: Remove and properly dispose of any accumulated sediment when half of the void space is filled.*	☐	☐	☐
iii. Clear of trash and debris. *Maintenance: Remove and properly dispose of any debris and trash.*	☐	☐	☐
iv. No evidence of erosion. *Maintenance: Immediately stabilize and repair any areas where erosion occurred around or below the overflow spillway. Replace stone, as necessary. Topsoil, rake and seed the area.*	☐	☐	☐
v. No evidence of erosion at downstream toe of drop structure or weir spillway. *Maintenance: Immediately stabilize and repair any areas where erosion has occurred. Replace stone, as necessary. Topsoil, rake and seed the area.*	☐	☐	☐

5. Dry Pond Areas

(Frequency: Monthly)	**Yes**	**No**	**NA**
a. Vegetation adequate. *Maintenance: Topsoil, rake and seed the area.*	☐	☐	☐
b. Undesirable vegetative growth.	☐	☐	☐

Maintenance: Mow grass to have a height of 4" to 6". Remove any unauthorized plants or any nuisance weeds and vegetation, including their roots. Do not use herbicides. Topsoil, rake and seed the area disturbed by their removal.

c. Undesirable woody vegetation. ☐ ☐ ☐
Maintenance: Remove any undesirable woody vegetation, including their roots. Do not use herbicides. Topsoil, rake and seed the area disturbed by their removal.

d. Low flow channels clear of obstructions. ☐ ☐ ☐
Maintenance: Remove and properly dispose of any debris and trash.

e. Standing water or wet spots. ☐ ☐ ☐
Maintenance: Re-grade areas to ensure positive drainage. Topsoil, rake and seed the area.

f. Sediment and trash accumulation. ☐ ☐ ☐
Maintenance: Remove and properly dispose of any accumulated sediment and trash.

6. Vegetation

(Frequency: Annual)	**Yes**	**No**	**NA**
a. Vegetation health and growing. *Maintenance: Remove any dead or dying plants and decaying plant material. Replace dead and dying plants.*	☐	☐	☐
b. Evidence of invasive species. *Maintenance: Remove invasive species, including roots. Do not use herbicides. Install additional wetland plants as necessary.*	☐	☐	☐
c. Accumulated sediment reducing volume significantly. *Maintenance: Remove and properly dispose of any accumulated sediment when at 50% of the design capacity.*	☐	☐	☐

7. Miscellaneous

(Frequency: Monthly)	**Yes**	**No**	**NA**
a. Encroachment on pond or easement area. *Maintenance: Remove any encroachments into the pond or easement area.*	☐	☐	☐
b. Maintenance access routes in good condition. *Maintenance: Repair any minor damage or erosion to the maintenance access routes. If significant damage or erosion is noted, stabilize, re-grade and re-establish the maintenance access routes in accordance with the plans.*	☐	☐	☐
c. Signs of hydrocarbon build-up.	☐	☐	☐

<u>Maintenance</u>: Coordinate removal/cleanup of any oil, gas, or contaminants with the appropriate clean-up personnel.

d. Fence in good condition. ☐ ☐ ☐
<u>Maintenance</u>: Replace any damaged sections of fence.

e. Safety signs are installed. ☐ ☐ ☐
<u>Maintenance</u>: Replace any missing signs.

Notes:

1. The site must be returned to the approved conditions when any repairs are made.
2. Unauthorized plants are any plants that are growing or have been installed that are not any of the plants shown on the approved plans.
3. All seed mixtures shall meet the seed mixture requirements specified on the approved plans.
4. Replace any dead or dying plants with plants specified in the planting schedule shown on the approved plans.
5. Replaced stone shall meet the stone requirements specified on the approved plans.

Comments:

Actions to be taken: