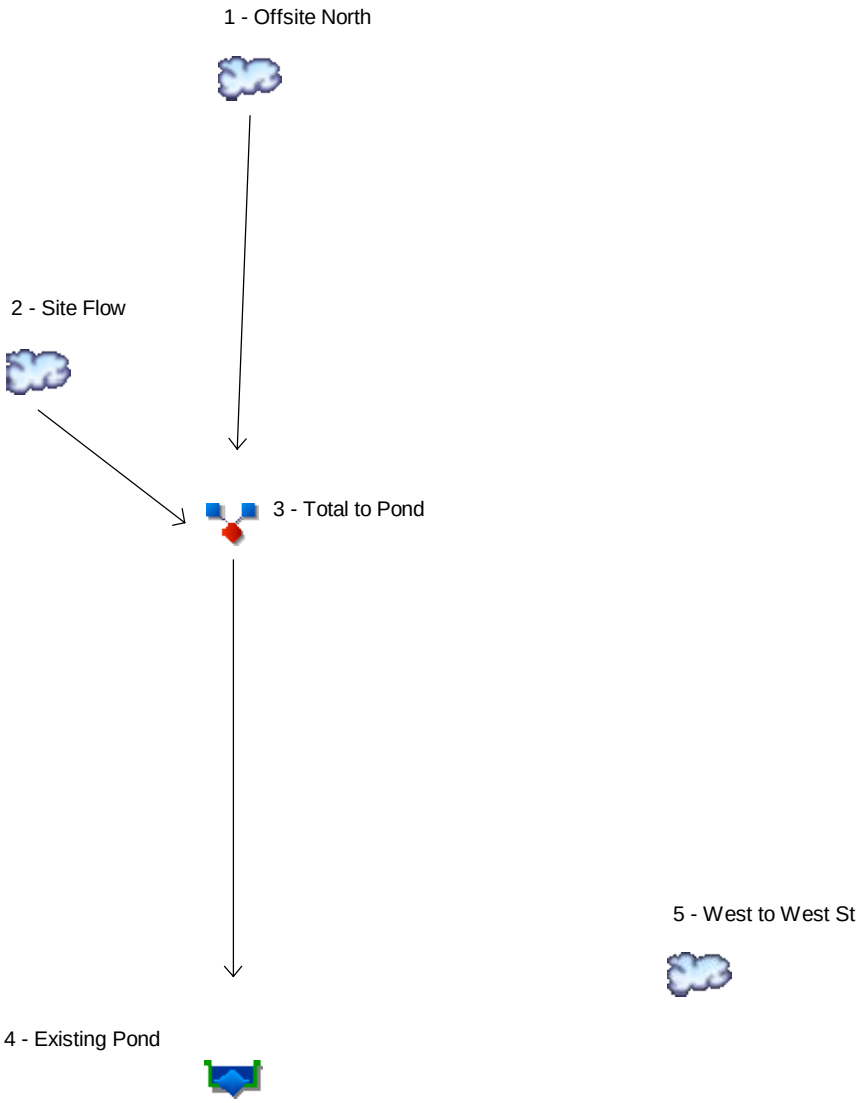
Watershed Model Schematic



Legend

Hyd.	Origin	Description
1	SCS Runoff	Offsite North
2	SCS Runoff	Site Flow
3	Combine	Total to Pond
4	Reservoir	Existing Pond
5	SCS Runoff	West to West St

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	------	16.09	23.98	1.911	35.94	44.57	55.85	65.97	77.41	Offsite North
2	SCS Runoff	------	42.05	60.73	6.023	88.49	108.38	134.15	157.13	182.98	Site Flow
3	Combine	1, 2	49.04	71.77	6.657	105.82	130.25	162.01	190.42	222.47	Total to Pond
4	Reservoir	3	16.39	26.51	1.528	43.24	56.20	71.93	85.05	100.63	Existing Pond
5	SCS Runoff	------	10.49	15.13	1.523	22.04	26.96	33.34	39.02	45.41	West to West St

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc. v10

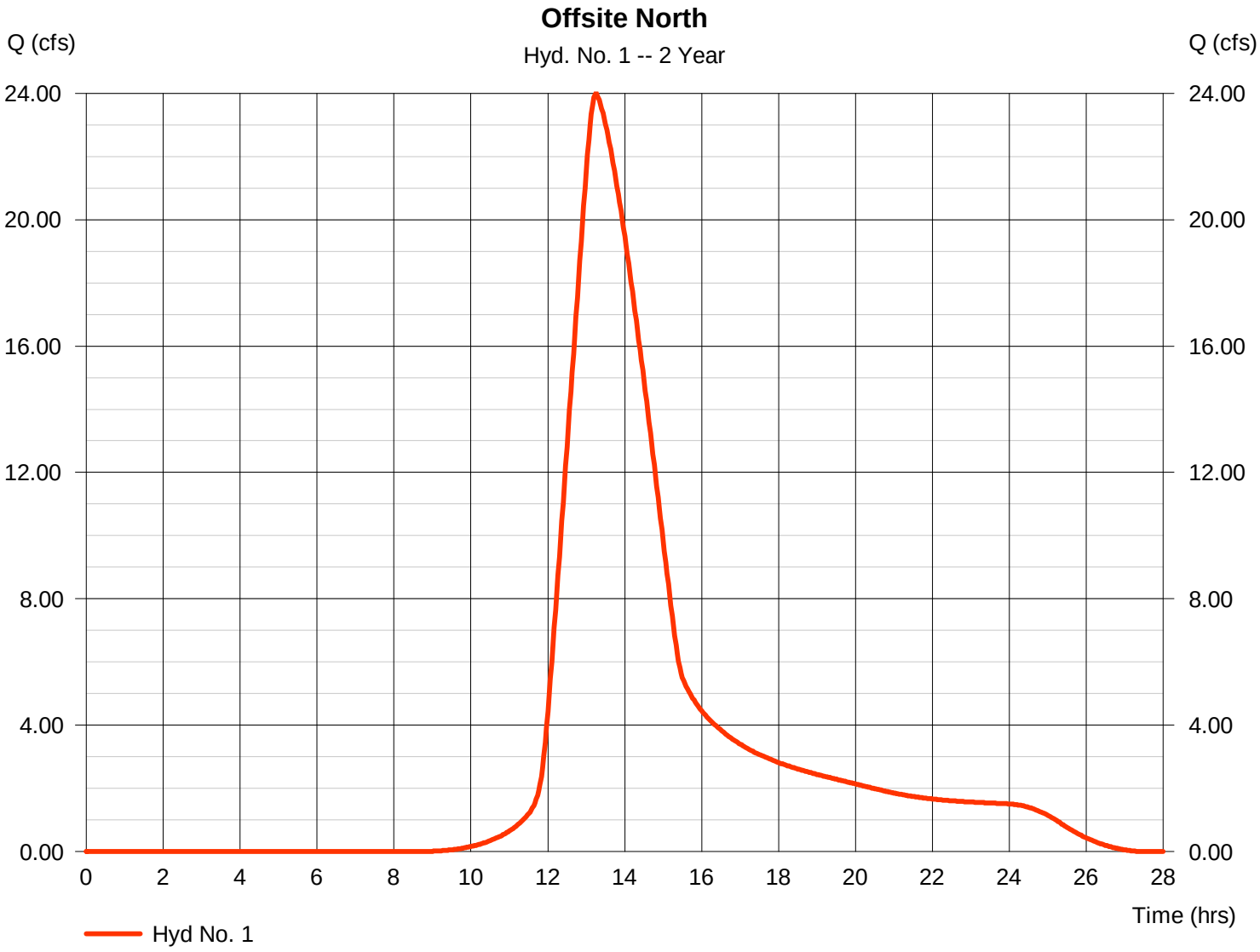
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph Description
1	SCS Runoff	23.98	2	794	6.557	------	------	------	Offsite North
2	SCS Runoff	60.73	2	744	7.907	------	------	------	Site Flow
3	Combine	71.77	2	744	14.464	1, 2	------	------	Total to Pond
4	Reservoir	26.51	2	840	14.463	3	1281.55	5.44	Existing Pond
5	SCS Runoff	15.13	2	732	1.503	------	------	------	West to West St

Hydrograph Report

Hyd. No. 1

Offsite North

Hydrograph type	=	SCS Runoff	Peak discharge	=	23.98 cfs
Storm frequency	=	2 yrs	Time to peak	=	13.23 hrs
Time interval	=	2 min	Hyd. volume	=	6.557 acft
Drainage area	=	44.000 ac	Curve number	=	82
Basin Slope	=	0.2 %	Hydraulic length	=	2000 ft
Tc method	=	LAG	Time of conc. (Tc)	=	134.20 min
Total precip.	=	3.50 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

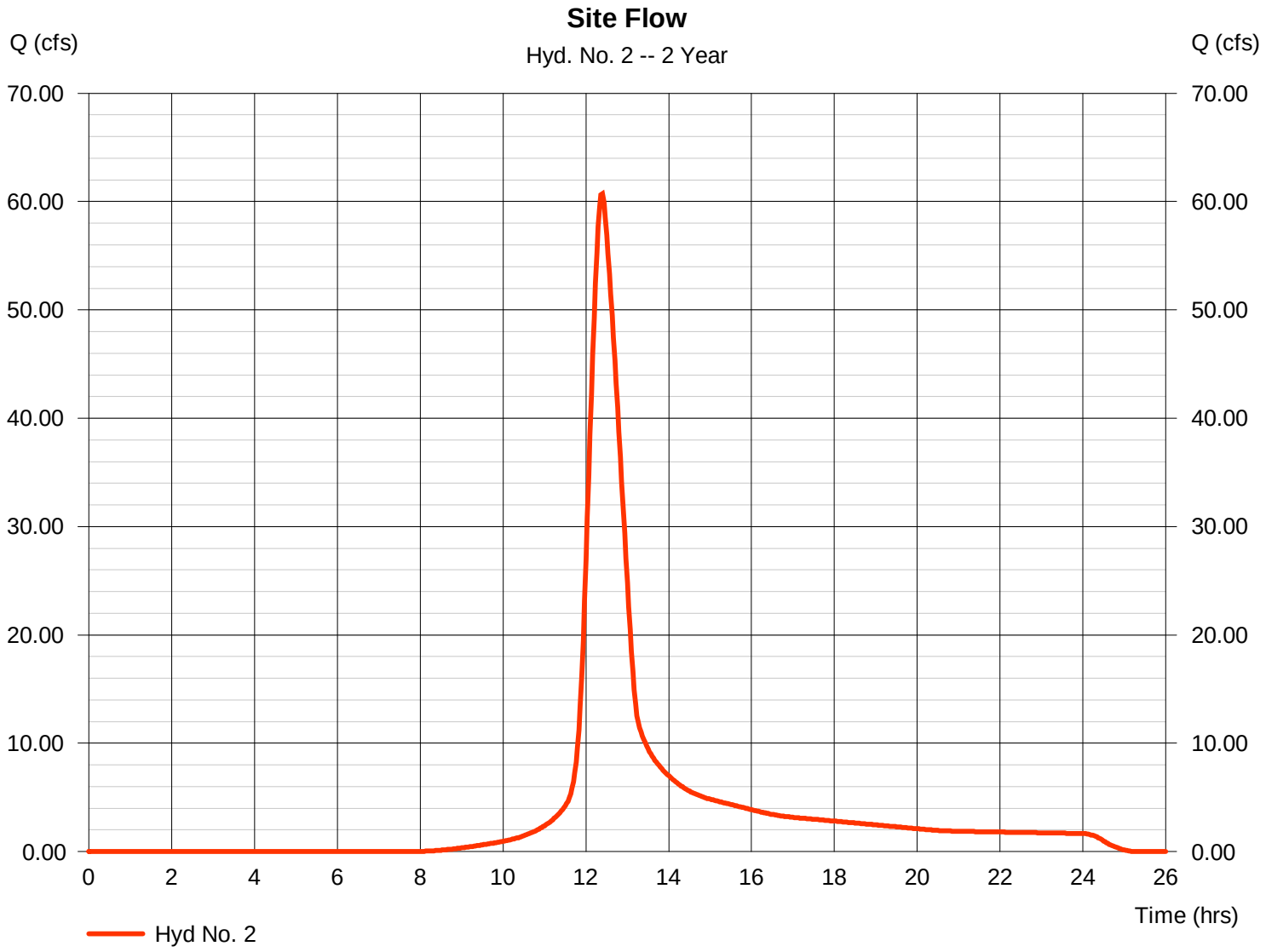


Hydrograph Report

Hyd. No. 2

Site Flow

Hydrograph type	= SCS Runoff	Peak discharge	= 60.73 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.40 hrs
Time interval	= 2 min	Hyd. volume	= 7.907 acft
Drainage area	= 49.000 ac	Curve number	= 84
Basin Slope	= 0.2 %	Hydraulic length	= 750 ft
Tc method	= LAG	Time of conc. (Tc)	= 49.60 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

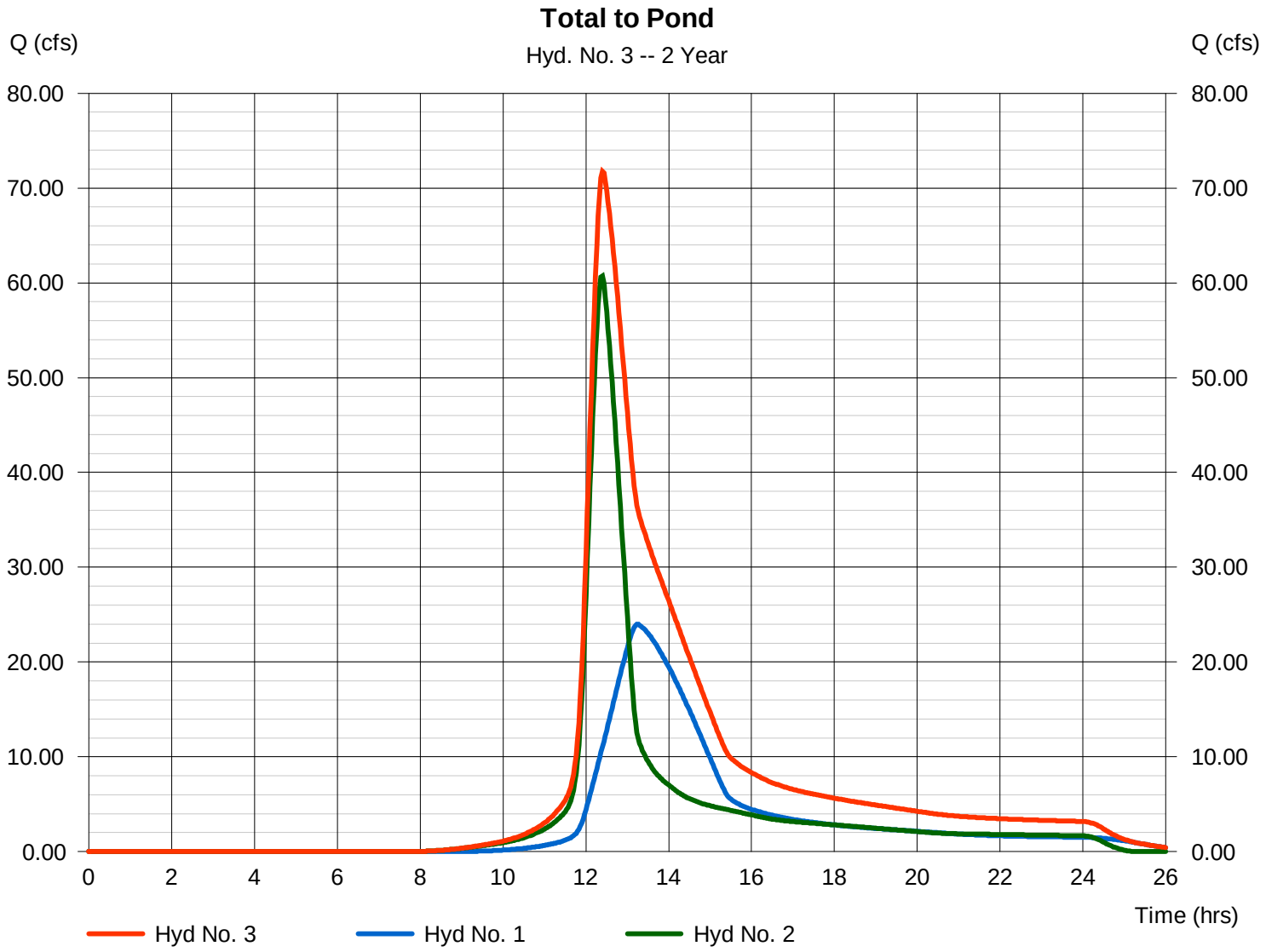


Hydrograph Report

Hyd. No. 3

Total to Pond

Hydrograph type	= Combine	Peak discharge	= 71.77 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.40 hrs
Time interval	= 2 min	Hyd. volume	= 14.464 acft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 93.000 ac



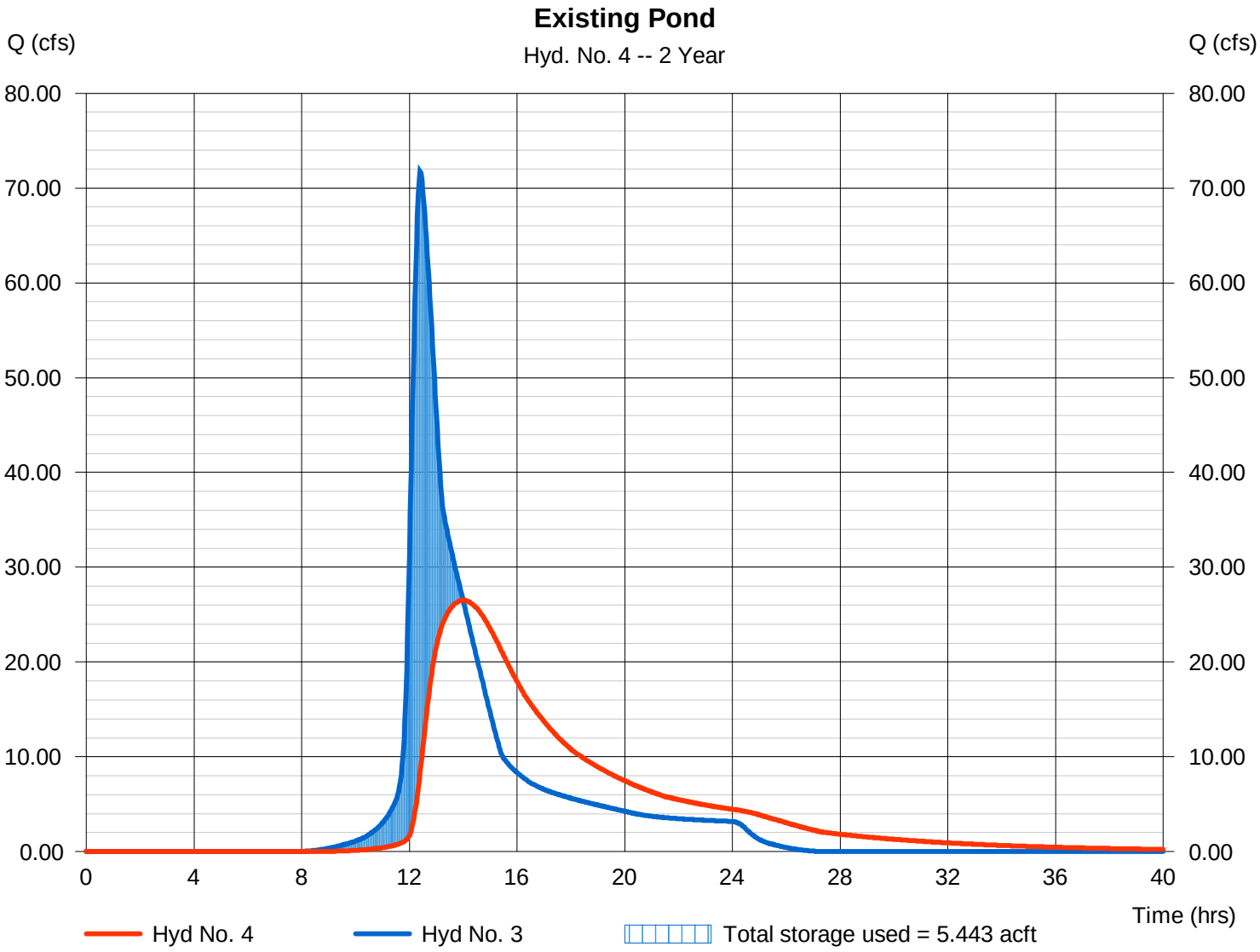
Hydrograph Report

Hyd. No. 4

Existing Pond

Hydrograph type	= Reservoir	Peak discharge	= 26.51 cfs
Storm frequency	= 2 yrs	Time to peak	= 14.00 hrs
Time interval	= 2 min	Hyd. volume	= 14.463 acft
Inflow hyd. No.	= 3 - Total to Pond	Max. Elevation	= 1281.55 ft
Reservoir name	= Existing Pond	Max. Storage	= 5.443 acft

Storage Indication method used.



Pond Report

Pond No. 1 - Existing Pond

Pond Data

Contours - User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 1281.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (acft)	Total storage (acft)
0.00	1281.00	283,350	0.000	0.000
1.00	1282.00	600,000	9.914	9.914
2.00	1283.00	650,000	14.343	24.257

Culvert / Orifice Structures

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

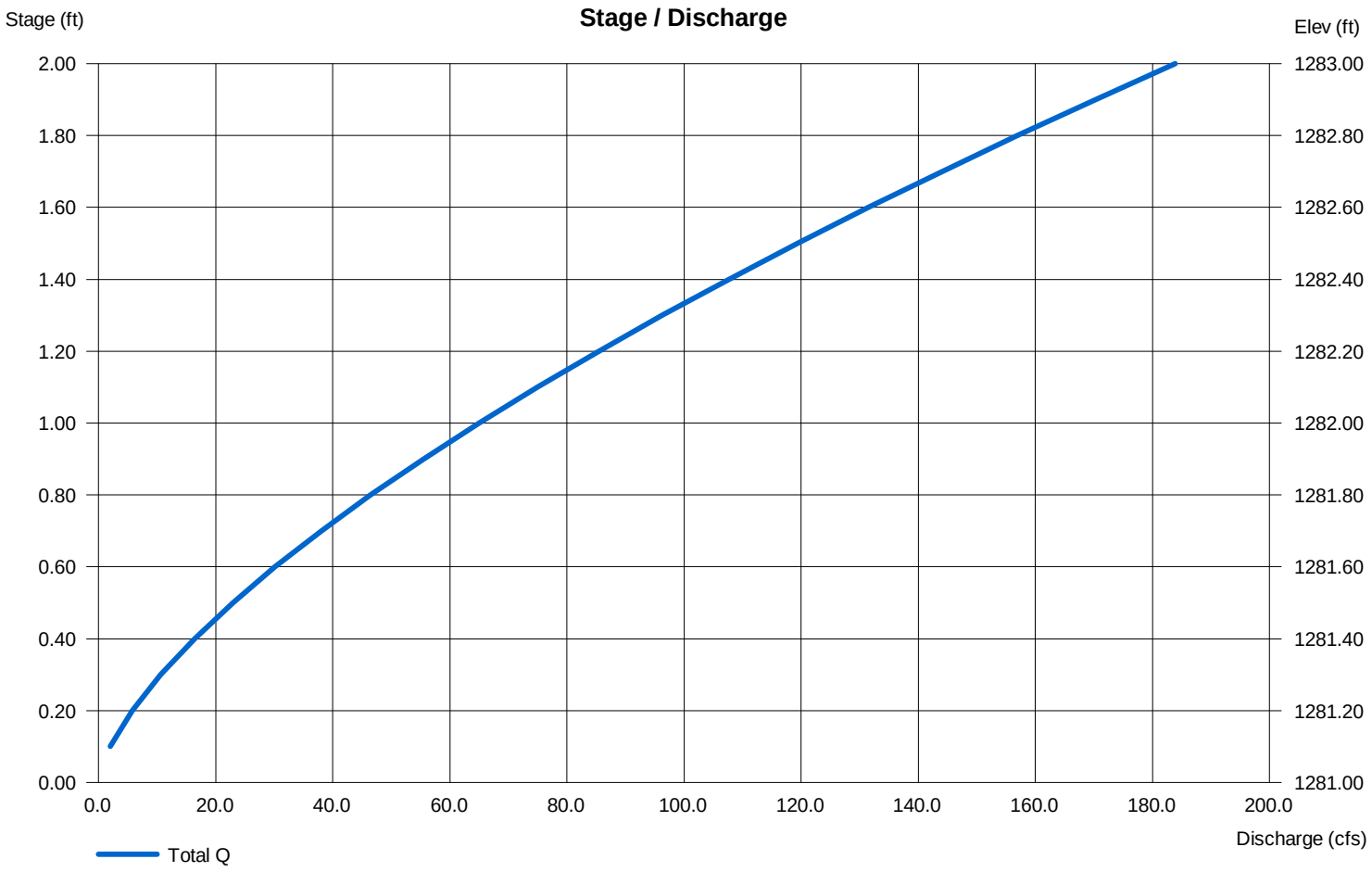
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 25.00	0.00	0.00	0.00
Crest El. (ft)	= 1281.00	0.00	0.00	0.00
Weir Coeff.	= 2.60	3.33	3.33	3.33
Weir Type	= Broad	---	---	---
Multi-Stage	= No	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).

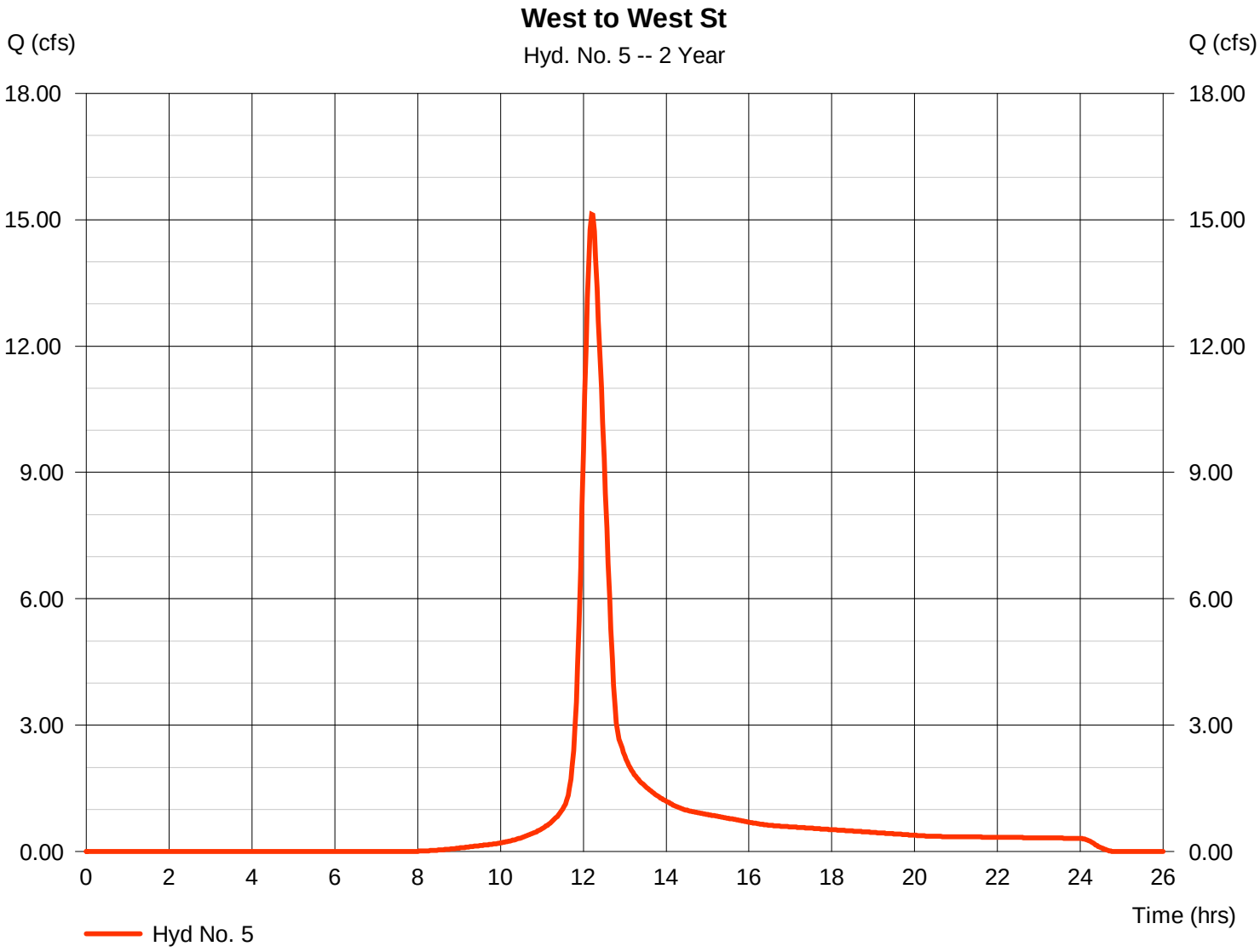


Hydrograph Report

Hyd. No. 5

West to West St

Hydrograph type	=	SCS Runoff	Peak discharge	=	15.13 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.20 hrs
Time interval	=	2 min	Hyd. volume	=	1.503 acft
Drainage area	=	9.200 ac	Curve number	=	84
Basin Slope	=	0.6 %	Hydraulic length	=	850 ft
Tc method	=	LAG	Time of conc. (Tc)	=	31.60 min
Total precip.	=	3.50 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc. v10

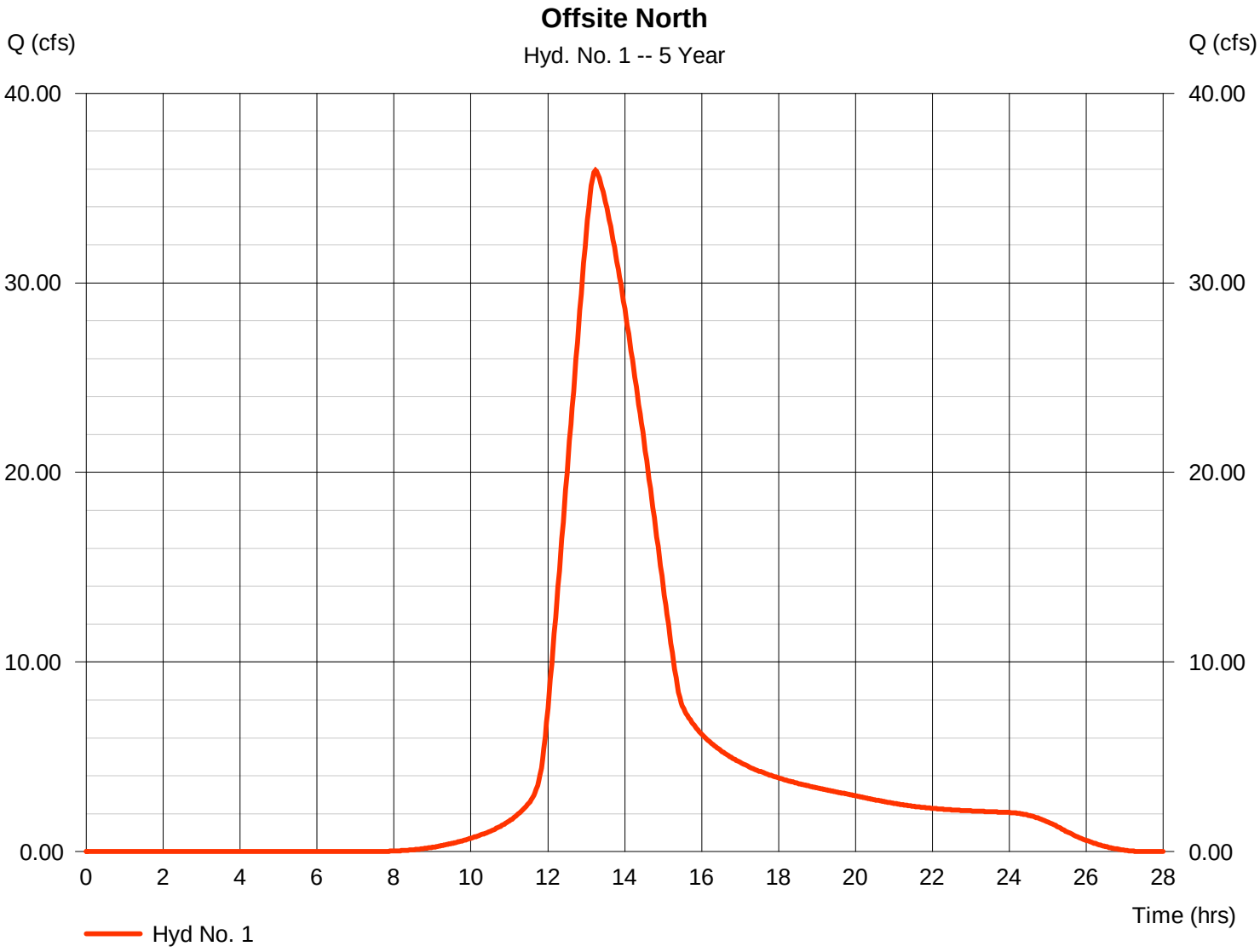
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph Description
1	SCS Runoff	35.94	2	794	9.696	------	------	------	Offsite North
2	SCS Runoff	88.49	2	742	11.501	------	------	------	Site Flow
3	Combine	105.82	2	744	21.197	1, 2	------	------	Total to Pond
4	Reservoir	43.24	2	824	21.196	3	1281.76	7.55	Existing Pond
5	SCS Runoff	22.04	2	732	2.186	------	------	------	West to West St

Hydrograph Report

Hyd. No. 1

Offsite North

Hydrograph type	=	SCS Runoff	Peak discharge	=	35.94 cfs
Storm frequency	=	5 yrs	Time to peak	=	13.23 hrs
Time interval	=	2 min	Hyd. volume	=	9.696 acft
Drainage area	=	44.000 ac	Curve number	=	82
Basin Slope	=	0.2 %	Hydraulic length	=	2000 ft
Tc method	=	LAG	Time of conc. (Tc)	=	134.20 min
Total precip.	=	4.50 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

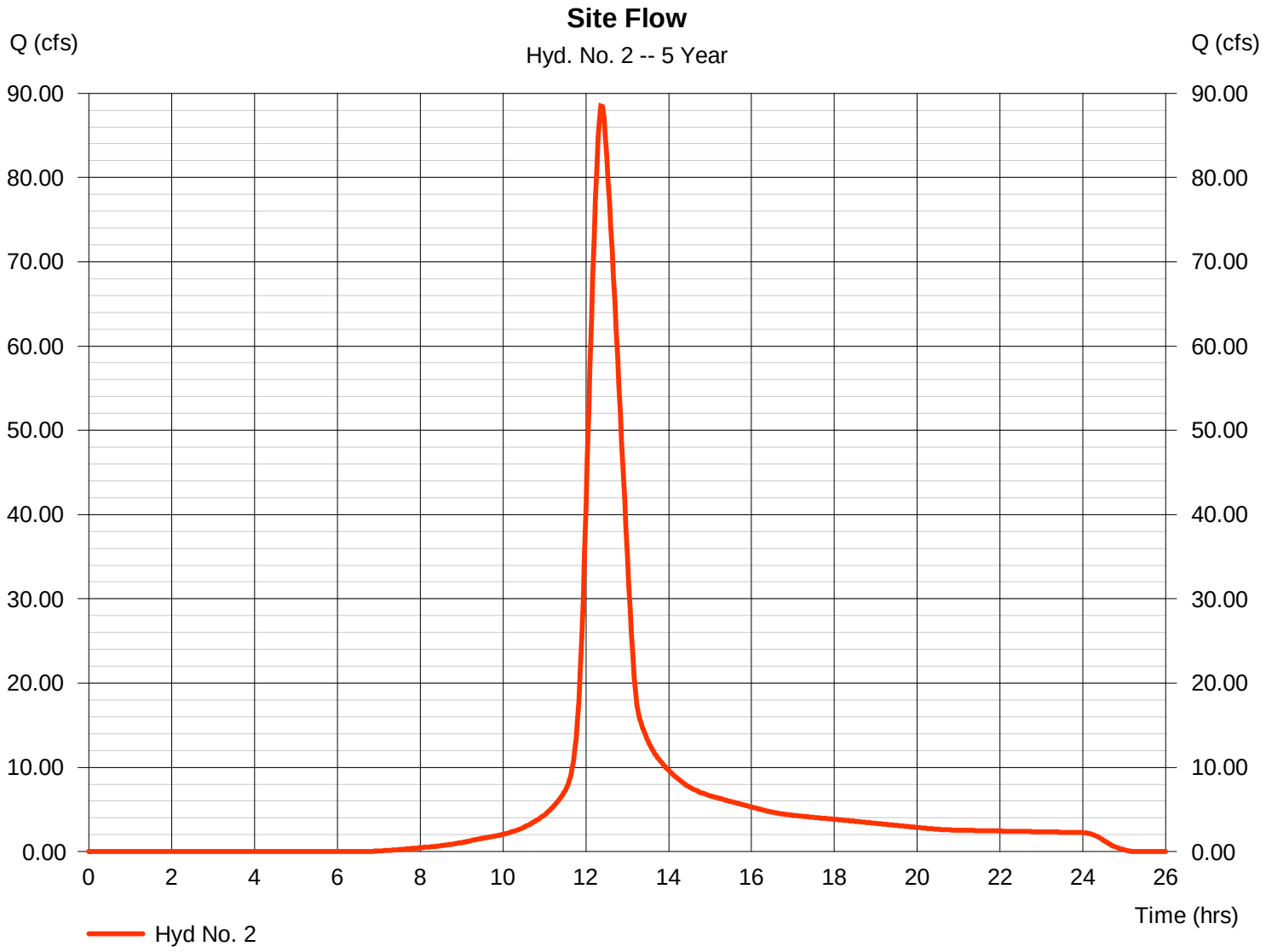


Hydrograph Report

Hyd. No. 2

Site Flow

Hydrograph type	= SCS Runoff	Peak discharge	= 88.49 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.37 hrs
Time interval	= 2 min	Hyd. volume	= 11.501 acft
Drainage area	= 49.000 ac	Curve number	= 84
Basin Slope	= 0.2 %	Hydraulic length	= 750 ft
Tc method	= LAG	Time of conc. (Tc)	= 49.60 min
Total precip.	= 4.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

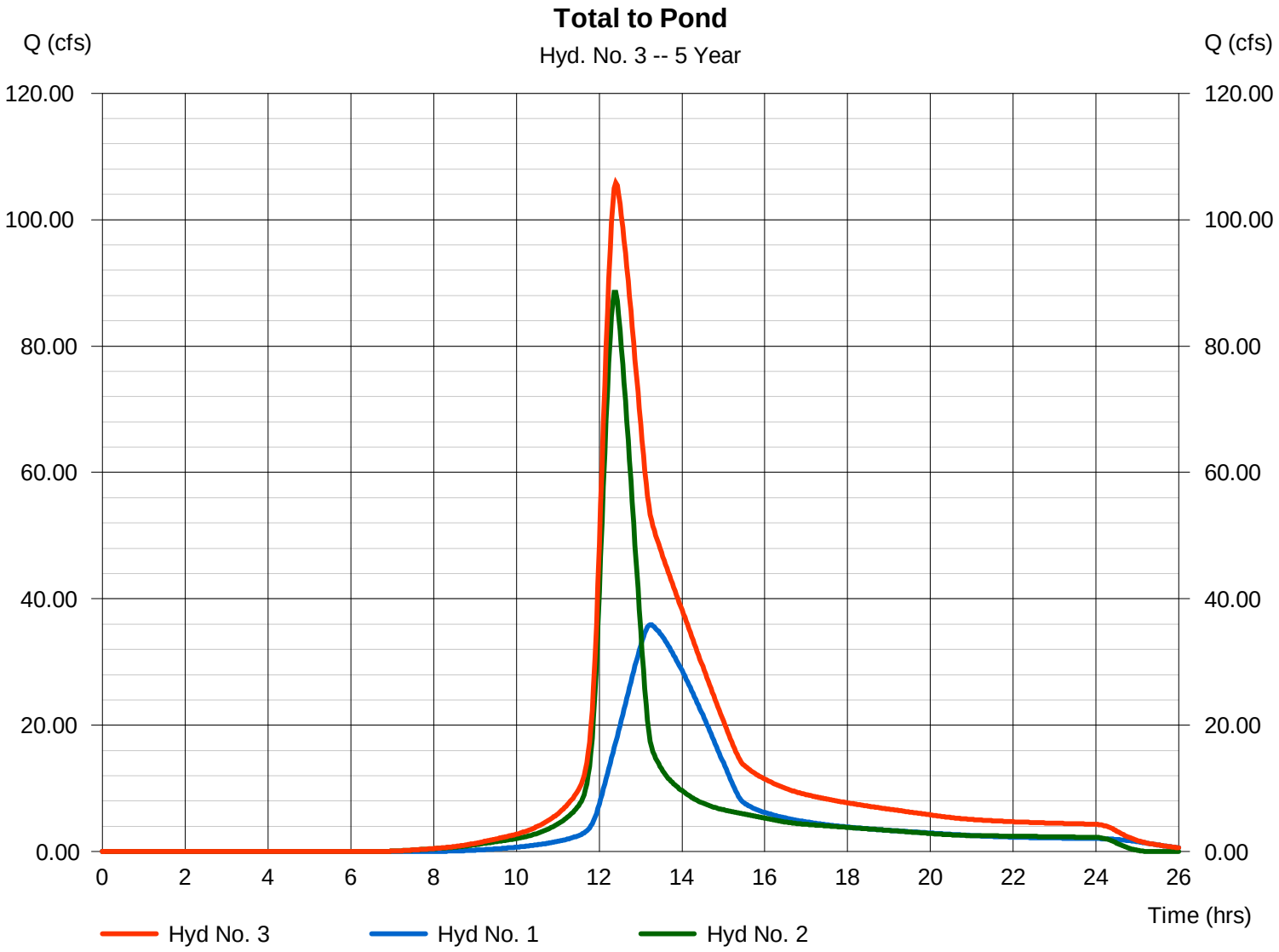


Hydrograph Report

Hyd. No. 3

Total to Pond

Hydrograph type	= Combine	Peak discharge	= 105.82 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.40 hrs
Time interval	= 2 min	Hyd. volume	= 21.197 acft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 93.000 ac



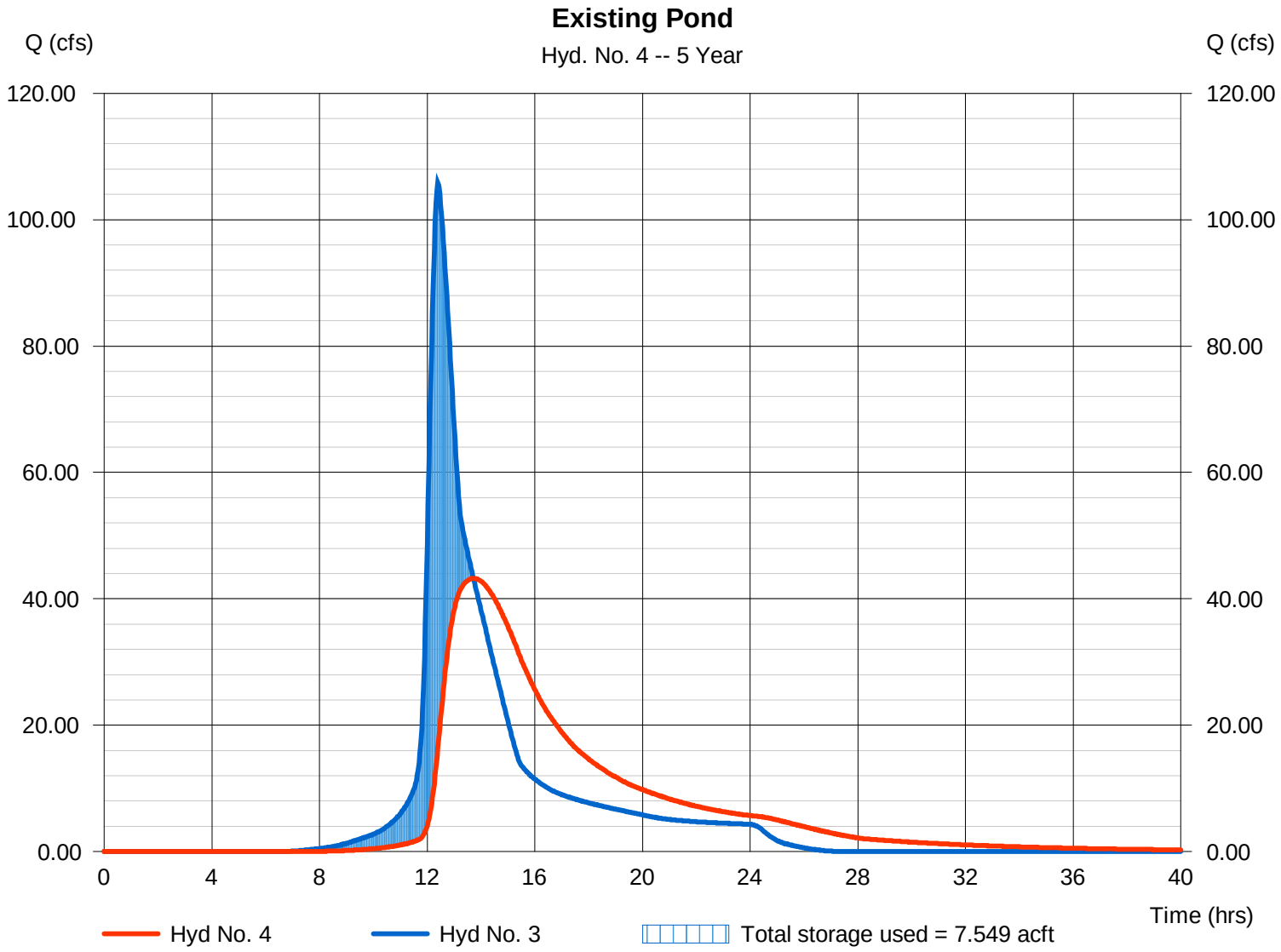
Hydrograph Report

Hyd. No. 4

Existing Pond

Hydrograph type	=	Reservoir	Peak discharge	=	43.24 cfs
Storm frequency	=	5 yrs	Time to peak	=	13.73 hrs
Time interval	=	2 min	Hyd. volume	=	21.196 acft
Inflow hyd. No.	=	3 - Total to Pond	Max. Elevation	=	1281.76 ft
Reservoir name	=	Existing Pond	Max. Storage	=	7.549 acft

Storage Indication method used.

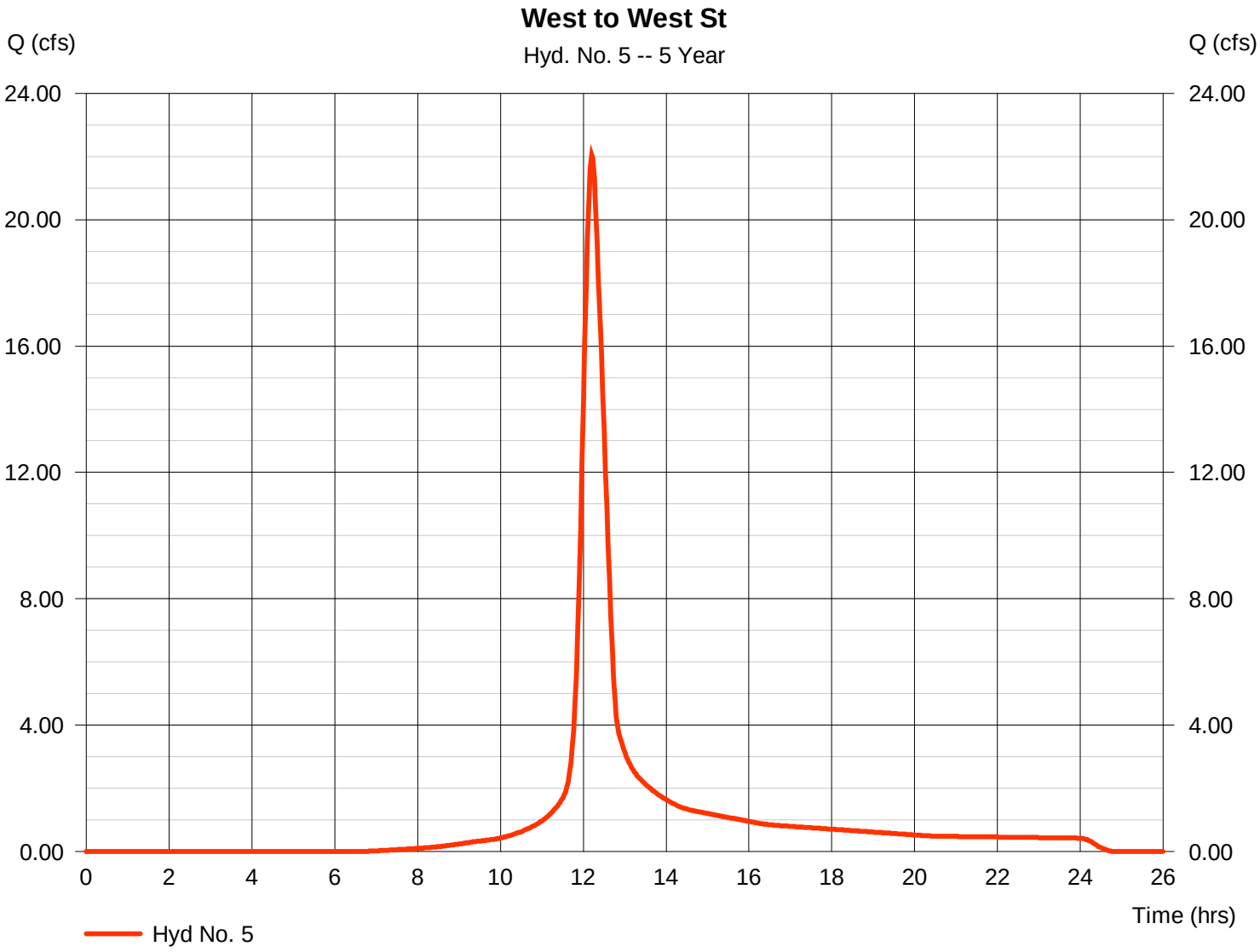


Hydrograph Report

Hyd. No. 5

West to West St

Hydrograph type	=	SCS Runoff	Peak discharge	=	22.04 cfs
Storm frequency	=	5 yrs	Time to peak	=	12.20 hrs
Time interval	=	2 min	Hyd. volume	=	2.186 acft
Drainage area	=	9.200 ac	Curve number	=	84
Basin Slope	=	0.6 %	Hydraulic length	=	850 ft
Tc method	=	LAG	Time of conc. (Tc)	=	31.60 min
Total precip.	=	4.50 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc. v10

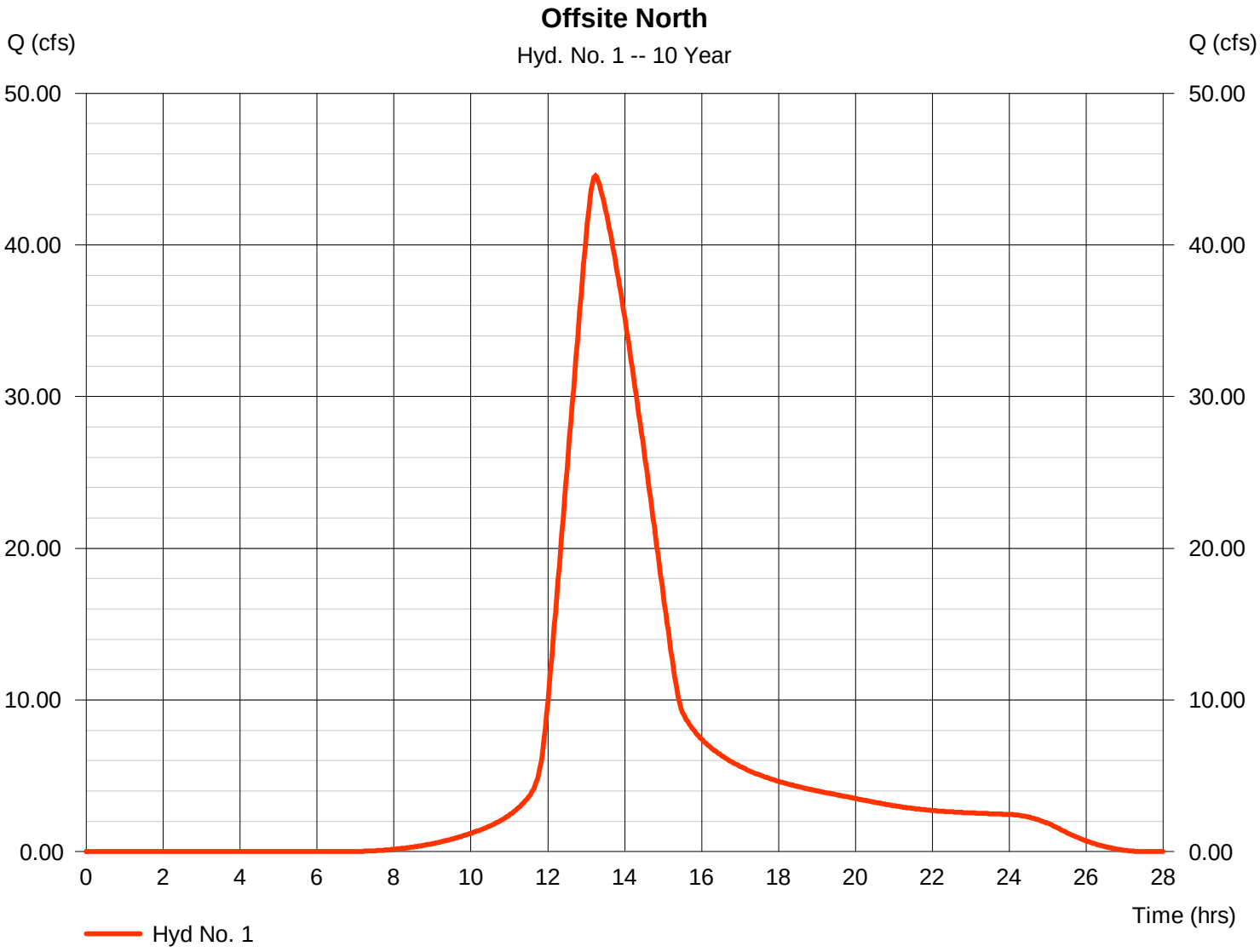
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph Description
1	SCS Runoff	44.57	2	794	11.985	------	------	------	Offsite North
2	SCS Runoff	108.38	2	742	14.103	------	------	------	Site Flow
3	Combine	130.25	2	744	26.089	1, 2	------	------	Total to Pond
4	Reservoir	56.20	2	814	26.088	3	1281.91	9.00	Existing Pond
5	SCS Runoff	26.96	2	732	2.681	------	------	------	West to West St

Hydrograph Report

Hyd. No. 1

Offsite North

Hydrograph type	=	SCS Runoff	Peak discharge	=	44.57 cfs
Storm frequency	=	10 yrs	Time to peak	=	13.23 hrs
Time interval	=	2 min	Hyd. volume	=	11.985 acft
Drainage area	=	44.000 ac	Curve number	=	82
Basin Slope	=	0.2 %	Hydraulic length	=	2000 ft
Tc method	=	LAG	Time of conc. (Tc)	=	134.20 min
Total precip.	=	5.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

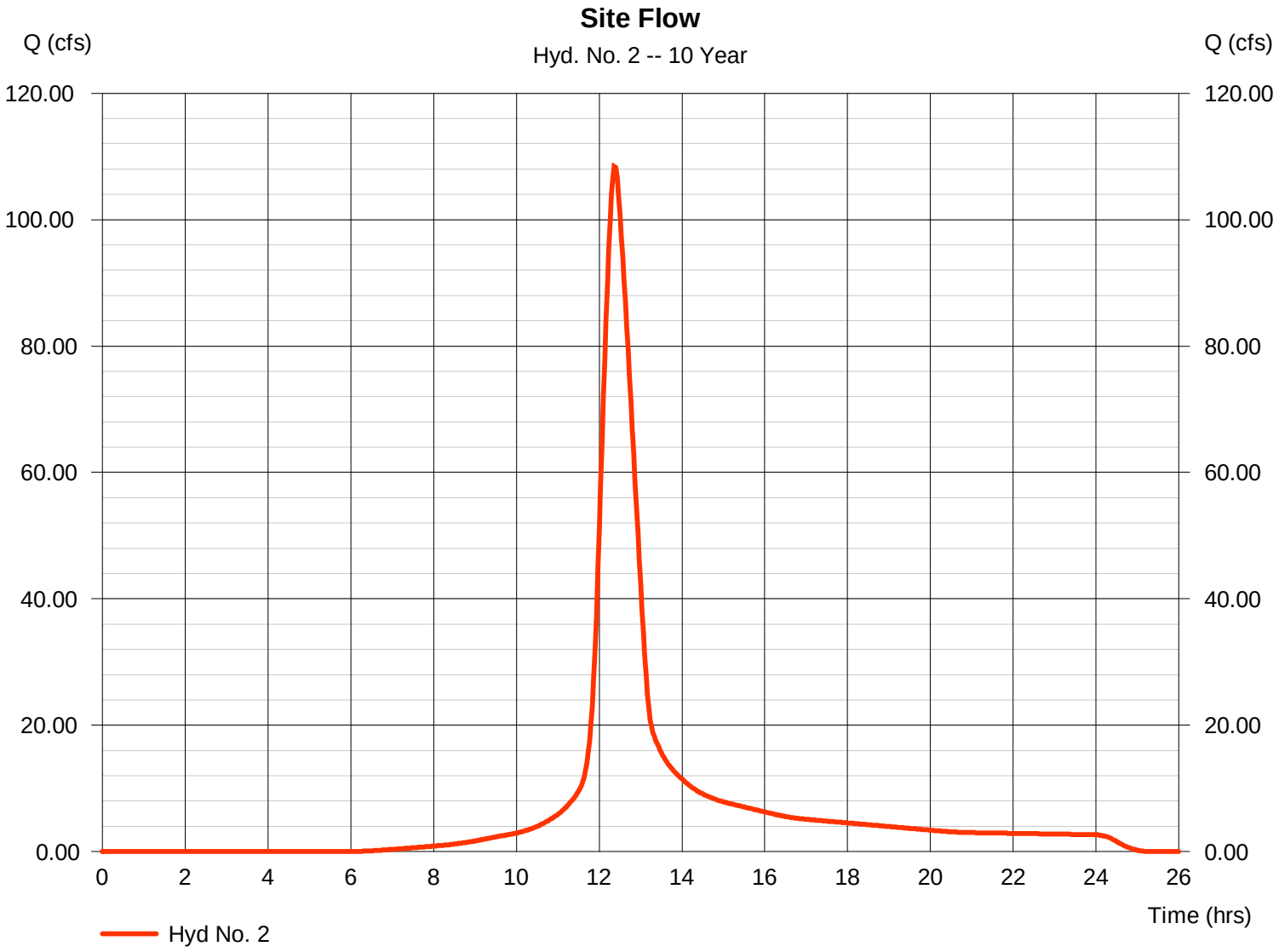


Hydrograph Report

Hyd. No. 2

Site Flow

Hydrograph type	=	SCS Runoff	Peak discharge	=	108.38 cfs
Storm frequency	=	10 yrs	Time to peak	=	12.37 hrs
Time interval	=	2 min	Hyd. volume	=	14.103 acft
Drainage area	=	49.000 ac	Curve number	=	84
Basin Slope	=	0.2 %	Hydraulic length	=	750 ft
Tc method	=	LAG	Time of conc. (Tc)	=	49.60 min
Total precip.	=	5.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

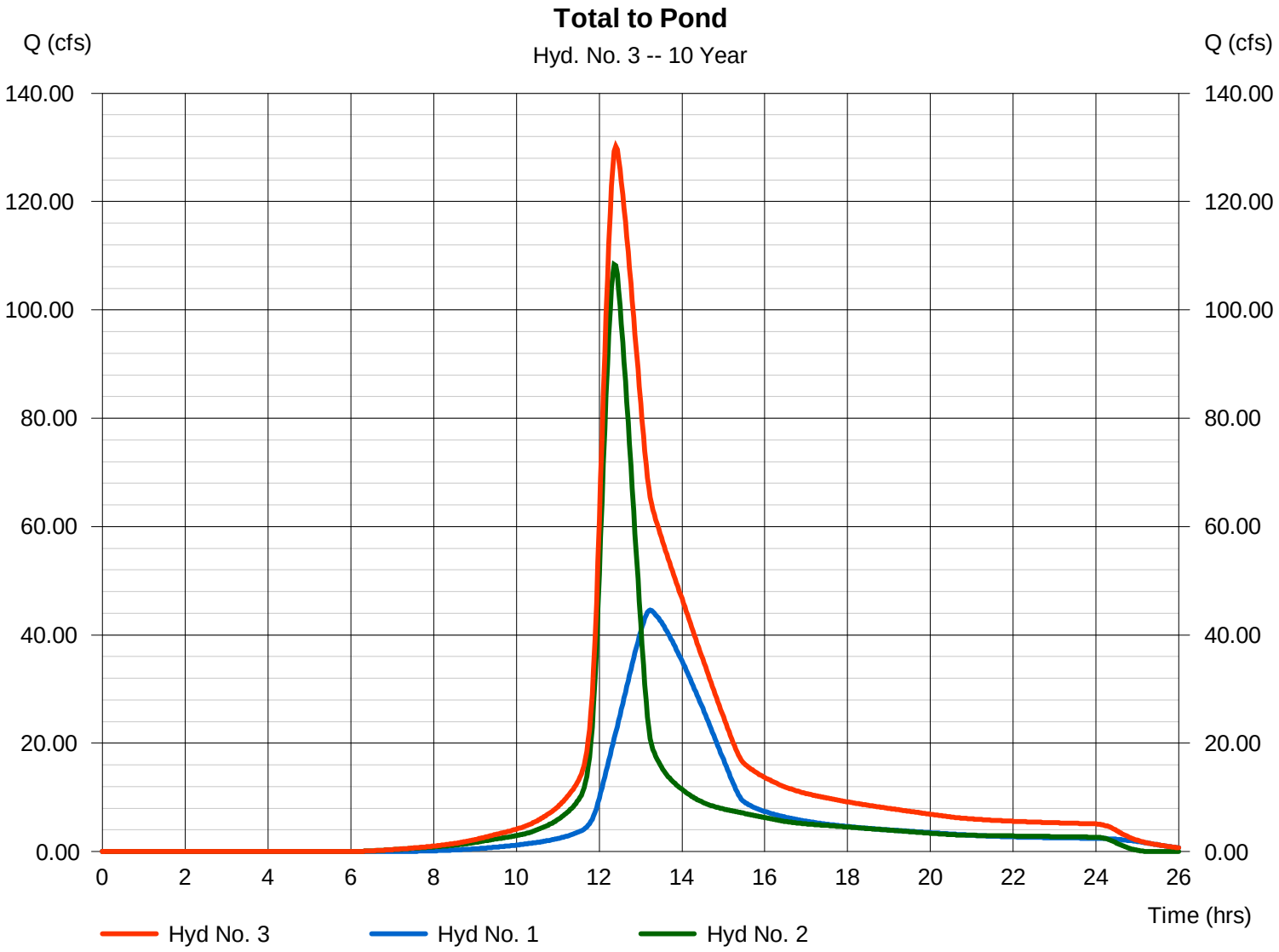


Hydrograph Report

Hyd. No. 3

Total to Pond

Hydrograph type	= Combine	Peak discharge	= 130.25 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.40 hrs
Time interval	= 2 min	Hyd. volume	= 26.089 acft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 93.000 ac



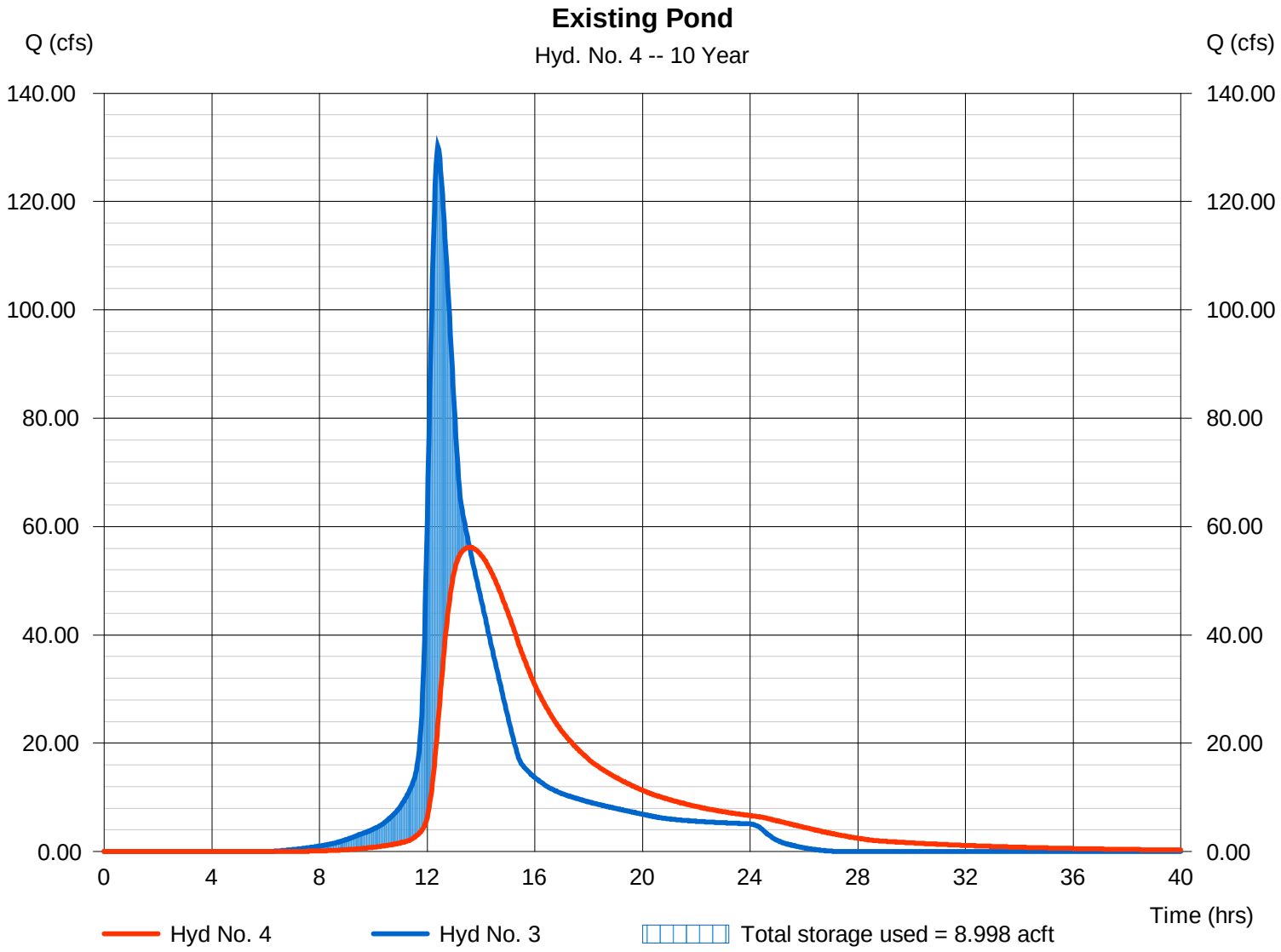
Hydrograph Report

Hyd. No. 4

Existing Pond

Hydrograph type	=	Reservoir	Peak discharge	=	56.20 cfs
Storm frequency	=	10 yrs	Time to peak	=	13.57 hrs
Time interval	=	2 min	Hyd. volume	=	26.088 acft
Inflow hyd. No.	=	3 - Total to Pond	Max. Elevation	=	1281.91 ft
Reservoir name	=	Existing Pond	Max. Storage	=	8.998 acft

Storage Indication method used.

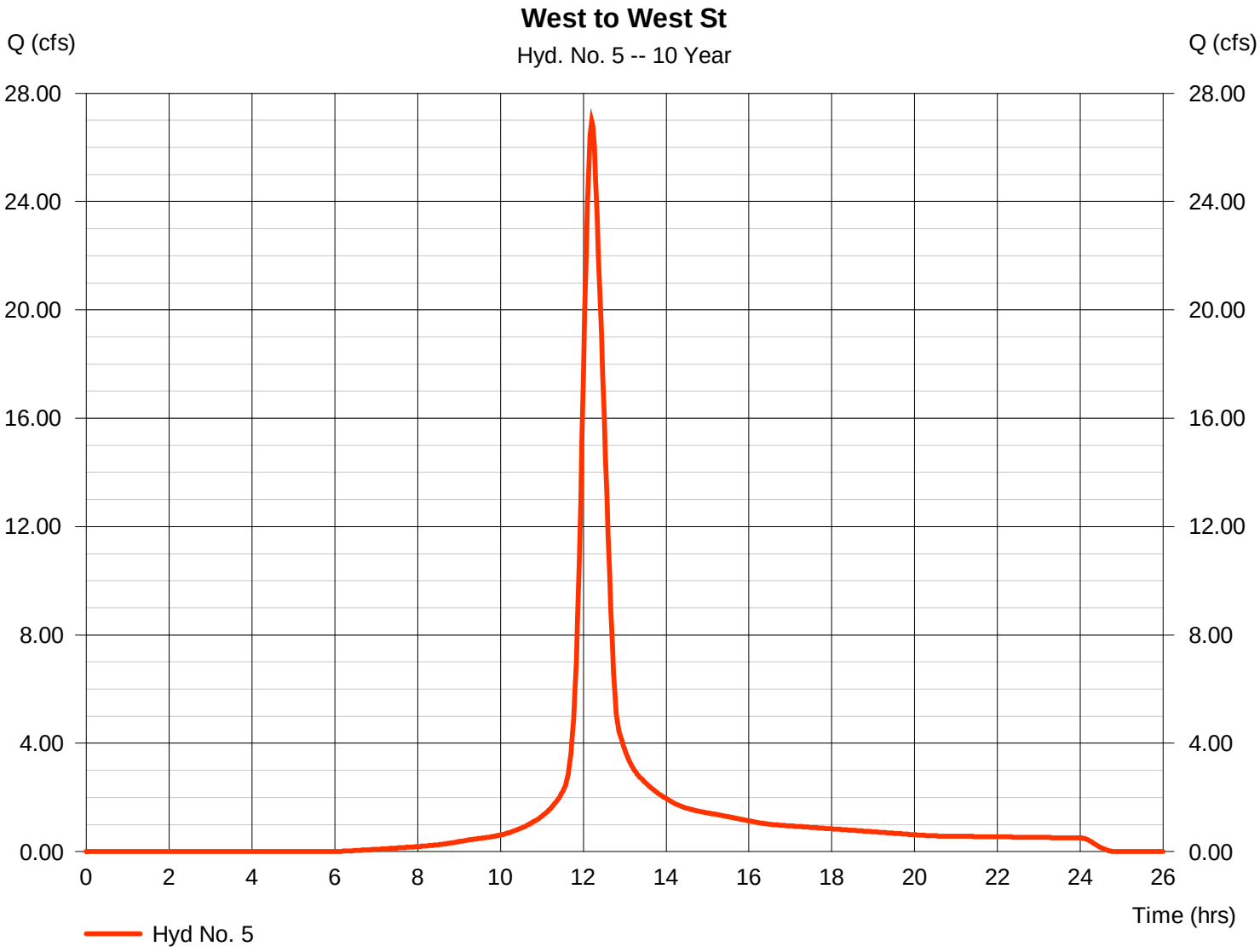


Hydrograph Report

Hyd. No. 5

West to West St

Hydrograph type	= SCS Runoff	Peak discharge	= 26.96 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 2.681 acft
Drainage area	= 9.200 ac	Curve number	= 84
Basin Slope	= 0.6 %	Hydraulic length	= 850 ft
Tc method	= LAG	Time of conc. (Tc)	= 31.60 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc. v10

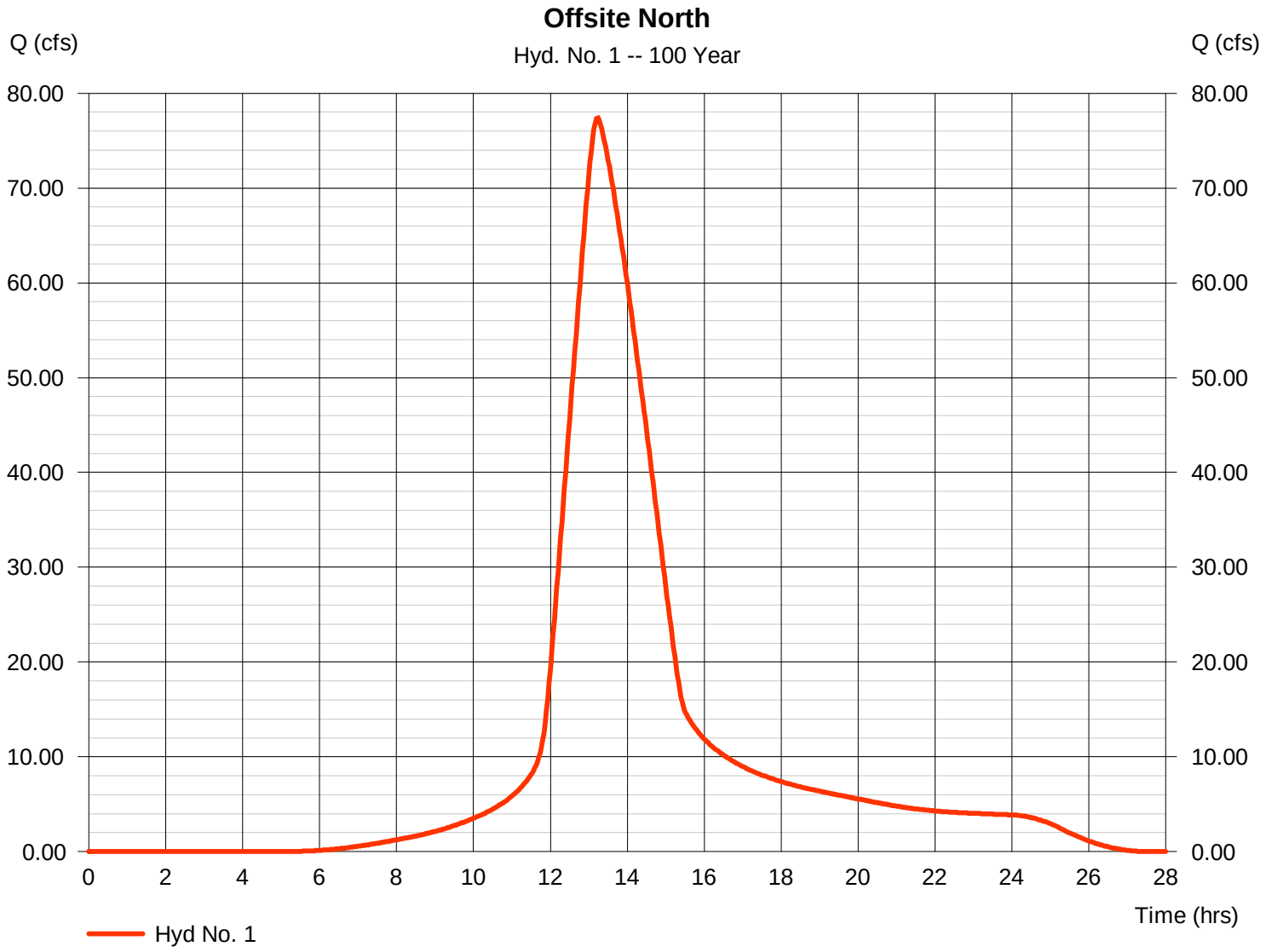
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph Description
1	SCS Runoff	77.41	2	794	20.855	------	------	------	Offsite North
2	SCS Runoff	182.98	2	742	24.106	------	------	------	Site Flow
3	Combine	222.47	2	744	44.961	1, 2	------	------	Total to Pond
4	Reservoir	100.63	2	806	44.960	3	1282.34	14.8	Existing Pond
5	SCS Runoff	45.41	2	732	4.583	------	------	------	West to West St

Hydrograph Report

Hyd. No. 1

Offsite North

Hydrograph type	=	SCS Runoff	Peak discharge	=	77.41 cfs
Storm frequency	=	100 yrs	Time to peak	=	13.23 hrs
Time interval	=	2 min	Hyd. volume	=	20.855 acft
Drainage area	=	44.000 ac	Curve number	=	82
Basin Slope	=	0.2 %	Hydraulic length	=	2000 ft
Tc method	=	LAG	Time of conc. (Tc)	=	134.20 min
Total precip.	=	7.80 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

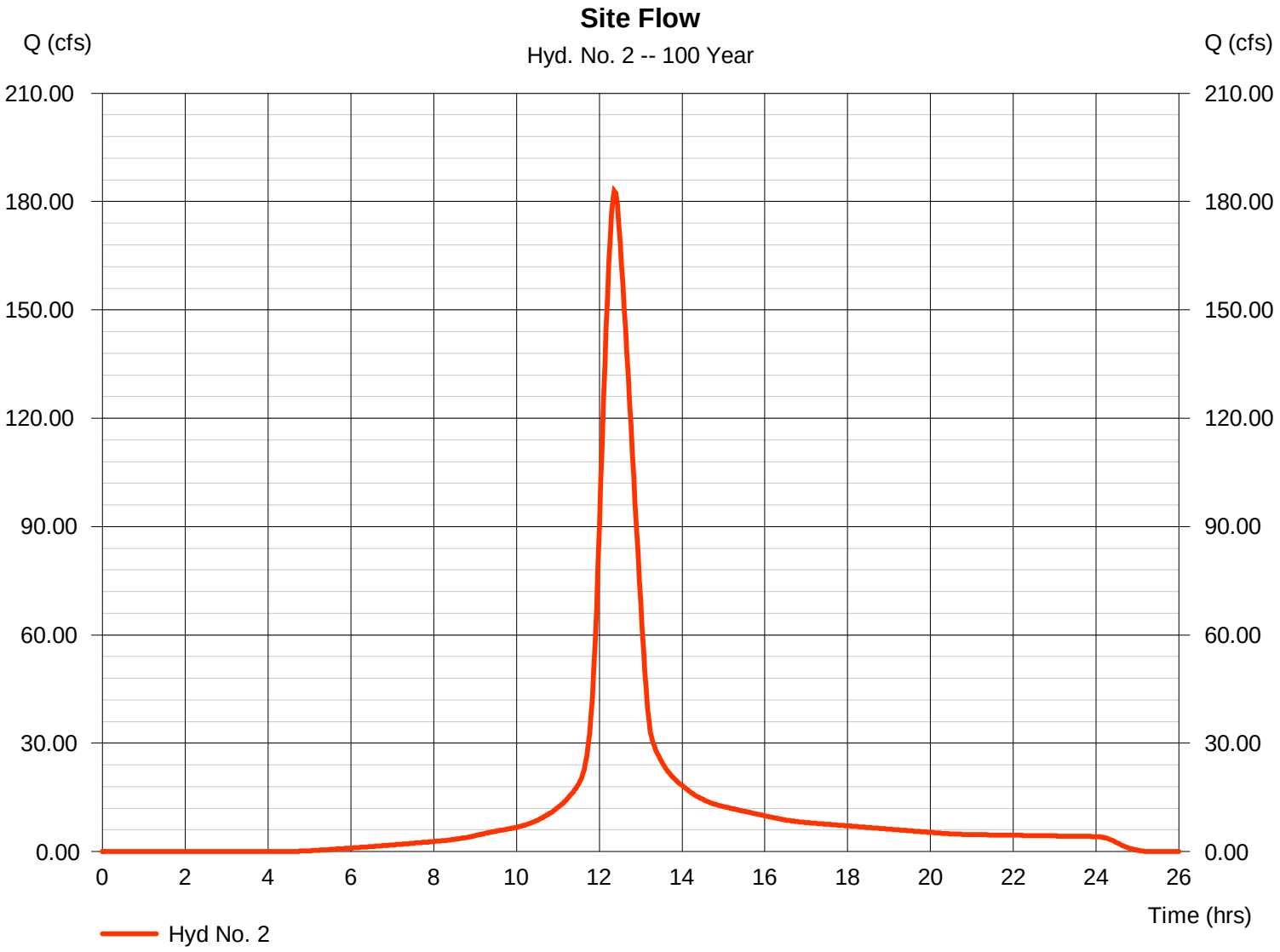


Hydrograph Report

Hyd. No. 2

Site Flow

Hydrograph type	=	SCS Runoff	Peak discharge	=	182.98 cfs
Storm frequency	=	100 yrs	Time to peak	=	12.37 hrs
Time interval	=	2 min	Hyd. volume	=	24.106 acft
Drainage area	=	49.000 ac	Curve number	=	84
Basin Slope	=	0.2 %	Hydraulic length	=	750 ft
Tc method	=	LAG	Time of conc. (Tc)	=	49.60 min
Total precip.	=	7.80 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

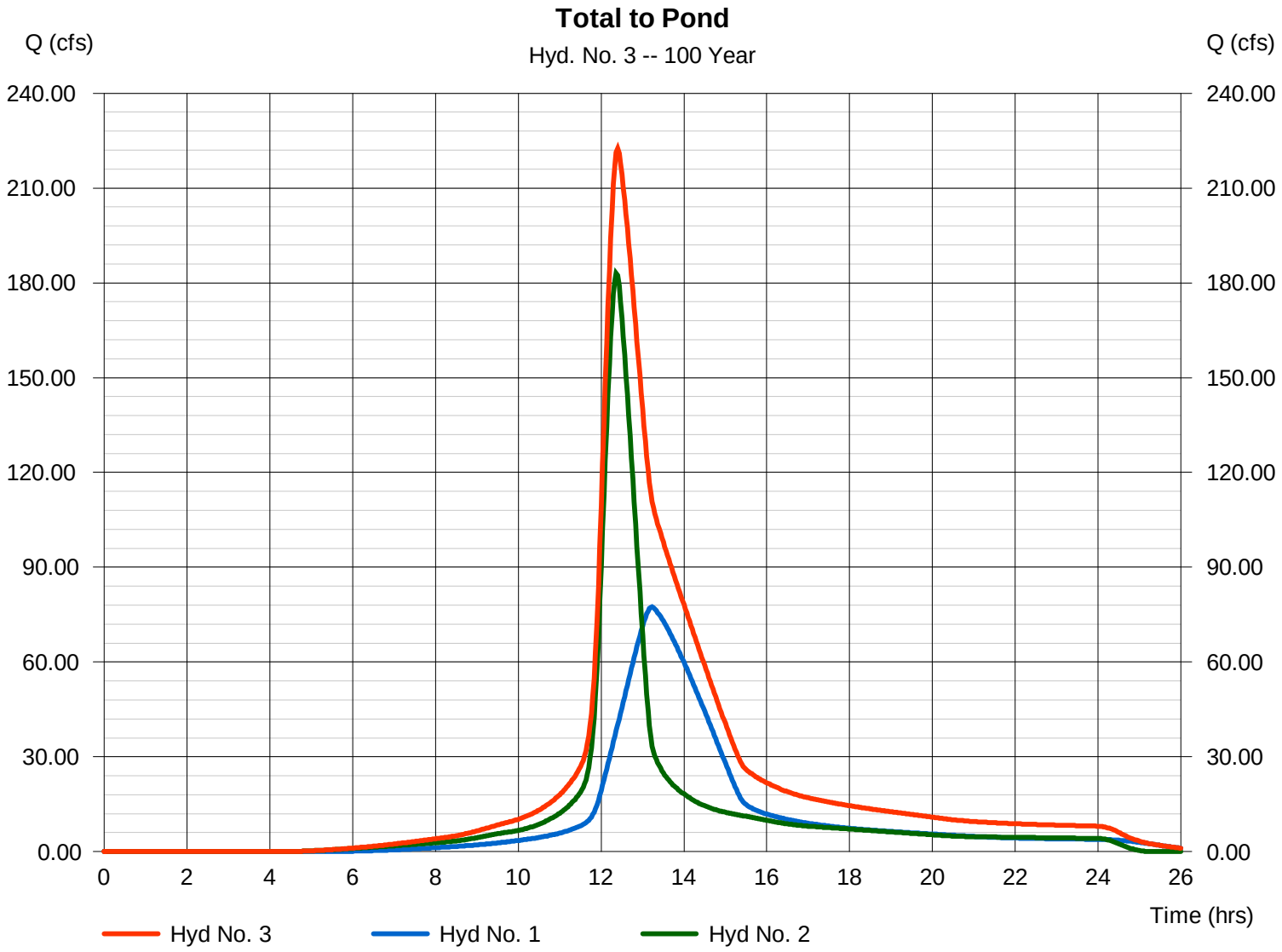


Hydrograph Report

Hyd. No. 3

Total to Pond

Hydrograph type	= Combine	Peak discharge	= 222.47 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.40 hrs
Time interval	= 2 min	Hyd. volume	= 44.961 acft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 93.000 ac



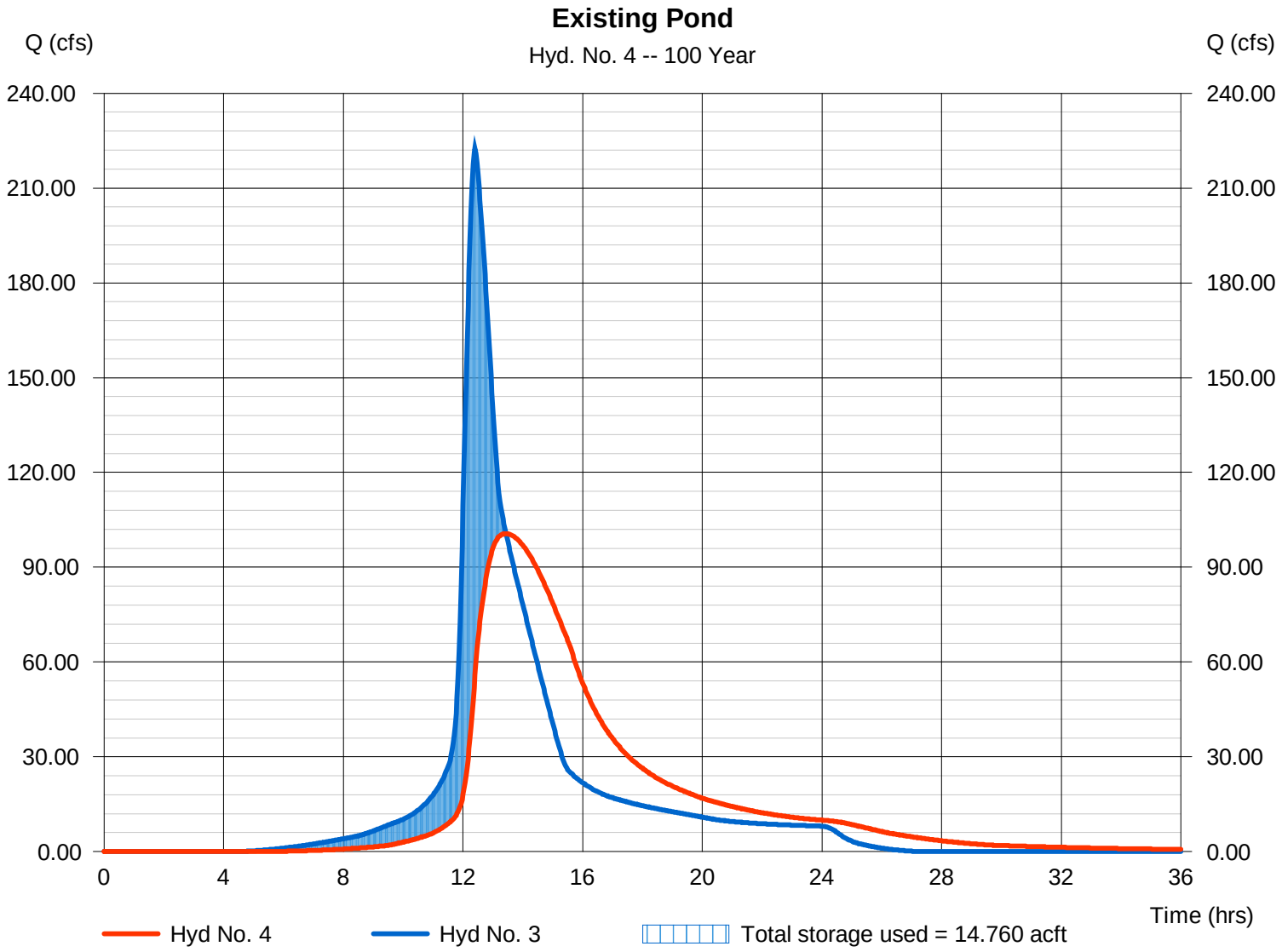
Hydrograph Report

Hyd. No. 4

Existing Pond

Hydrograph type	= Reservoir	Peak discharge	= 100.63 cfs
Storm frequency	= 100 yrs	Time to peak	= 13.43 hrs
Time interval	= 2 min	Hyd. volume	= 44.960 acft
Inflow hyd. No.	= 3 - Total to Pond	Max. Elevation	= 1282.34 ft
Reservoir name	= Existing Pond	Max. Storage	= 14.760 acft

Storage Indication method used.

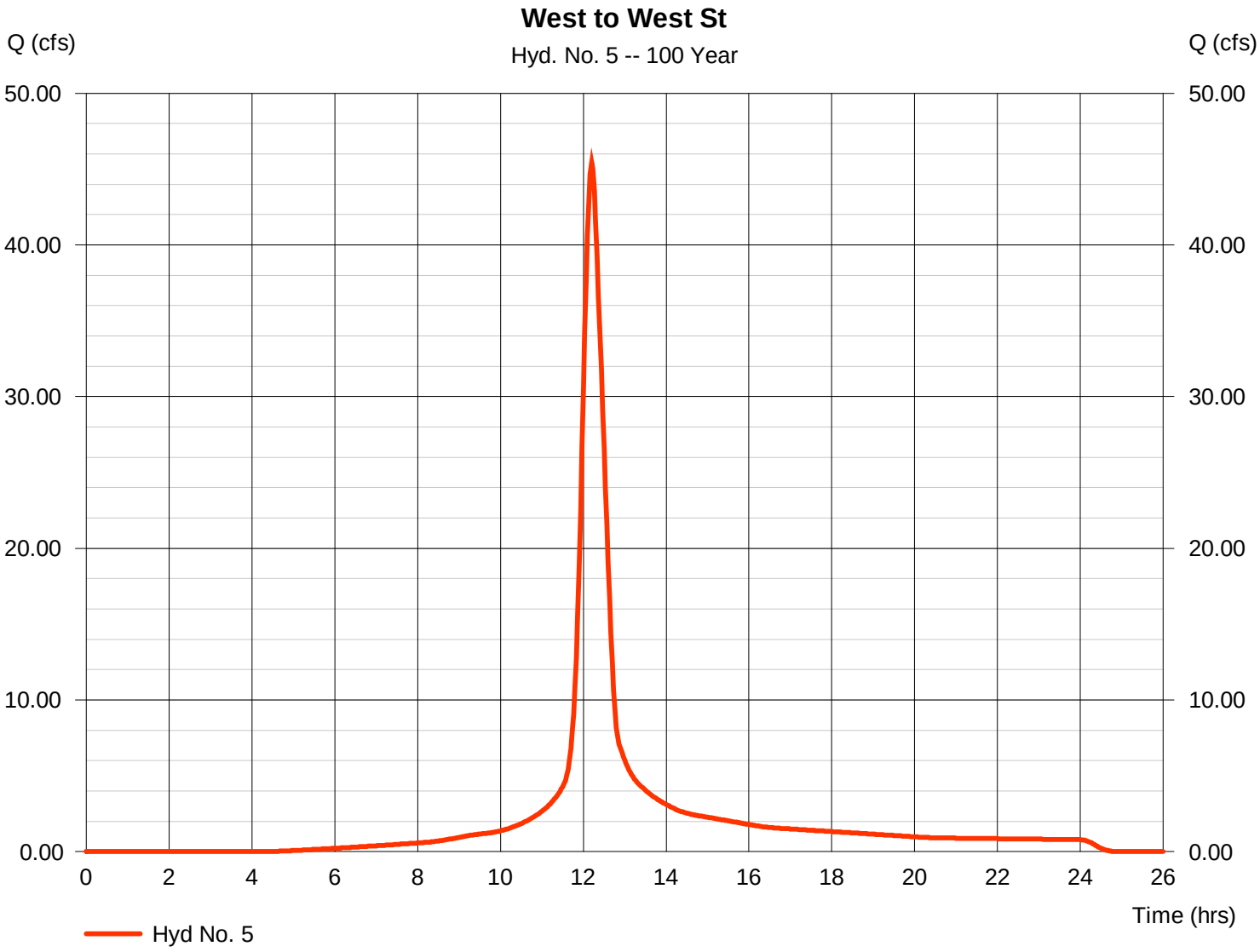


Hydrograph Report

Hyd. No. 5

West to West St

Hydrograph type	=	SCS Runoff	Peak discharge	=	45.41 cfs
Storm frequency	=	100 yrs	Time to peak	=	12.20 hrs
Time interval	=	2 min	Hyd. volume	=	4.583 acft
Drainage area	=	9.200 ac	Curve number	=	84
Basin Slope	=	0.6 %	Hydraulic length	=	850 ft
Tc method	=	LAG	Time of conc. (Tc)	=	31.60 min
Total precip.	=	7.80 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	27.8967	9.8000	0.7047	--------
2	76.3137	14.3000	0.8844	--------
3	1.2000	0.1000	0.0000	--------
5	52.6224	11.2000	0.7497	--------
10	55.1841	11.1000	0.7229	--------
25	60.7012	11.1000	0.7068	--------
50	66.9222	11.3000	0.7004	--------
100	62.2794	10.1000	0.6624	--------

File name: wich_IDF.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	4.18	3.40	2.90	2.55	2.29	2.08	1.91	1.78	1.66	1.56	1.48	1.40
2	5.57	4.54	3.85	3.35	2.97	2.67	2.43	2.23	2.06	1.92	1.80	1.69
3	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
5	6.52	5.33	4.55	3.99	3.57	3.24	2.97	2.75	2.57	2.41	2.27	2.15
10	7.40	6.09	5.22	4.60	4.13	3.76	3.46	3.21	3.00	2.82	2.67	2.53
25	8.51	7.03	6.05	5.35	4.81	4.39	4.05	3.76	3.52	3.32	3.14	2.98
50	9.47	7.86	6.78	6.00	5.41	4.94	4.56	4.24	3.98	3.75	3.55	3.37
100	10.31	8.53	7.37	6.53	5.90	5.40	5.00	4.66	4.37	4.13	3.92	3.73

Tc = time in minutes. Values may exceed 60.

Precip. file name: wich_24hr.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	2.80	3.50	1.20	4.50	5.20	6.10	6.90	7.80
SCS 6-Hr	0.00	1.80	0.00	0.00	2.60	0.00	0.00	4.00
Huff-1st	0.00	1.55	0.00	2.75	4.00	5.38	6.50	8.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	1.75	0.00	2.80	3.90	5.25	6.00	7.10

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Lange.gpw