Indigo Land Design, LLC
40 Elm Street, 2nd Floor
Old Saybrook, CT 06475

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July 12, 2022

Re: Ivy Hill Village
(48 Great Neck Road – Map 145 Lot 2871)
Waterford, CT 06385

DRAINAGE REPORT

This project involves the construction of 40 detached condominium units (one family & two-family buildings) with paved driveways, a two-lane roadway, sidewalks, community amenities, and the installation of low impact development (LID) measures, etc. as shown on the site plan, and other associated improvements. The subject property currently has a house and barn at the southwest corner. There is an existing gravel driveway that provides access to the existing dwelling and an old farm road the provides access to the eastern portion of the property. The majority of the site is wooded.

The majority of the proposed buildings will be located east of the wetlands area that bisects the property and five proposed buildings will be located west of the wetlands in the vicinity of the existing house, which is to be removed. The proposed topography on the eastern portion of the property slopes from the highpoint near the eastern (rear) property line to the west toward proposed stormwater management basins “C” and “D” while the topography near the western portion of the property slopes to the east toward proposed stormwater management basin “E” and “F”.

The underlying upland soils on the property consist mainly of Canton & Charlton fine sandy loam and Canton-Chatfield Complex (all of which are NRCS hydrologic soil group 'B'). The wetlands area on the property was assumed to be hydrologic soil group ‘D’ for design purposes due to its saturated condition.

The proposed project includes several BMP and LID techniques and measures to mitigate impacts of stormwater runoff and reduce the pollutant content of stormwater discharge. The proposed methods include, but are not limited to: breaking up areas of impervious surfaces and avoiding concentrated point discharges, encouraging overland flow by using open swales and a partial-curbless roadway and parking areas, inhibiting erosion by using pre-formed scour holes and bioretention areas at pipe outfalls, deep catch basins sumps and outlet hoods, minimizing the removal of existing trees, introducing dense new landscaping and wetlands buffer plantings, and maintaining existing drainage patterns. Also refer to the project wetland report by Cowen Ecodesign for additional information.

The NRCS TR-55 methodology was utilized to evaluate existing and proposed stormwater runoff conditions with the AutoCAD embedded HydraFlow Hydrographs computer program. All times of concentration were computed using the TR-55 methodology as recommended by the ConnDOT Drainage Manual. The Town of Waterford recommends using the 24-hour NRCS Type III rainfall distribution for all storms. All rainfall amounts used in this analysis were taken from the Hydrometeorological Design Studies Center of the National Oceanic and Atmospheric Administration (NOAA) National Weather Service and published in NOAA Atlas 14 Volume 10: Precipitation-Frequency Atlas of the United States, Northeastern States, last revised on September 30, 2015. Refer to the plan entitled “Drainage Area Map” enclosed within this report for all watershed information.

Included with this report are HydraFlow supporting computations and hydrographs for the existing conditions and proposed conditions. Two design points were analyzed and include Design Point #1 near the northwestern corner of the property and Design Point #2 near the southeastern corner of the property – see enclosed Drainage Area Maps for further information. Detailed summaries of the computational results for the 10, 25, 50 and 100-year storms are also included. The results indicate that the proposed peak rate of runoff and volume of runoff will decrease to both design points for the 10-year through 100-year storms. See attached summary tables.

The stormwater management basins are proposed to capture, attenuate and enhance the runoff generated from the proposed site improvements. The outlet control structures will meter the volume and rate of runoff to less than the existing conditions. The stormwater basins provide a minimum of 1-foot of freeboard to the top of the berm for the 100-year storms. A permeability range was estimated from NRCS published data and reduced per the DEEP Stormwater Quality Manual. Refer to the attached summary tables for tabulated results for peak rates of runoff, volume of runoff and water surface elevations for the pre- and post-development conditions.

DESIGN POINT #1 (NORTHWEST CORNER OF PROPERTY)

PEAK RATE OF RUNOFF		
STORM	PEAK RATE OF RUNOFF (CFS)	
	EXISTING	PROPOSED
10-YEAR	82.92	81.98
25-YEAR	98.85	97.10
50-YEAR	115.96	112.42
100-YEAR	136.26	130.95

VOLUME OF RUNOFF		
STORM	VOLUME OF RUNOFF (CF)	
	EXISTING	PROPOSED
10-YEAR	713,738	713,679
25-YEAR	851,021	843,747
50-YEAR	999,907	984,428
100-YEAR	1,178,338	1,155,902

DESIGN POINT #2 (SOUTHEAST CORNER OF PROPERTY)

PEAK RATE OF RUNOFF		
STORM	PEAK RATE OF RUNOFF (CFS)	
	EXISTING	PROPOSED
10-YEAR	6.56	2.26
25-YEAR	8.10	2.77
50-YEAR	9.81	3.32
100-YEAR	11.86	3.99

VOLUME OF RUNOFF		
STORM	VOLUME OF RUNOFF (CF)	
	EXISTING	PROPOSED
10-YEAR	50,290	19,802
25-YEAR	61,700	24,132
50-YEAR	74,279	28,886
100-YEAR	89,572	34,646

DATE: MAR. 30, 2022	SCALE: N/A
DRAWN BY: JG	CHKD BY: JW
DWG. NO.: DS-1	SHEET NO.: 1 of 2

DRAINAGE SUMMARY

PREPARED FOR SKIP ADAMS

48 GREAT NECK ROAD -- MAP 145 LOT 2871

WATERFORD, CONNECTICUT

PLAN PREPARED BY:
INDIGO LAND DESIGN, LLC
JOSEPH WREN, P.E.
CT REG. NO. 21090
40 ELM STREET, 2ND FLOOR
OLD SAYBROOK, CT 06475
PHONE: (860) 388-9343
FAX: (860) 391-8854

PROPOSED BASIN "C"
WATER SURFACE ELEVATION

STORM	ELEVATION
10–YEAR	66.02
25–YEAR	66.51
50–YEAR	67.02
100–YEAR	67.23

BASIN BOTTOM ELEV. = 62.00
1"x1" OPENING ELEV. = 64.50
TOP OF GRATE ELEV. = 67.00
WEIR/SPILLWAY ELEV. = 67.50
BASIN TOP OF BERM ELEV. = 68.50

PROPOSED BASIN "D"
WATER SURFACE ELEVATION

STORM	ELEVATION
10–YEAR	66.05
25–YEAR	66.24
50–YEAR	66.44
100–YEAR	66.69

BASIN BOTTOM ELEV. = 63.00
1"x3" OPENING ELEV. = 64.50
TOP OF GRATE ELEV. = 67.00
WEIR/SPILLWAY ELEV. = 67.50
BASIN TOP OF BERM ELEV. = 68.50

PROPOSED BASIN "E"
WATER SURFACE ELEVATION

STORM	ELEVATION
10–YEAR	63.05
25–YEAR	63.19
50–YEAR	63.36
100–YEAR	63.38

BASIN BOTTOM ELEV. = 60.00
TOP OF GRATE ELEV. = 62.60
WEIR/SPILLWAY ELEV. = 64.00
BASIN TOP OF BERM ELEV. = 64.50

PROPOSED BASIN "F"
WATER SURFACE ELEVATION

STORM	ELEVATION
10–YEAR	62.59
25–YEAR	62.65
50–YEAR	62.79
100–YEAR	63.01

BASIN BOTTOM ELEV. = 61.00
TOP OF GRATE ELEV. = 62.50
WEIR/SPILLWAY ELEV. = 64.00
BASIN TOP OF BERM ELEV. = 64.50

DATE: MAR. 30, 2022	SCALE: N/A
DRAWN BY: JG	CHKD BY: JW
DWG. NO.: PBS-1	SHEET NO.: 2 of 2

PROPOSED BASIN SUMMARY

PREPARED FOR SKIP ADAMS

48 GREAT NECK ROAD -- MAP 145 LOT 2871

WATERFORD, CONNECTICUT

PLAN PREPARED BY:
INDIGO LAND DESIGN, LLC
JOSEPH WREN, P.E.
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OLD SAYBROOK, CT 06475
PHONE: (860) 388-9343
FAX: (860) 391-8854

REFERENCE: "SECTION 7.4.1: WATER QUALITY VOLUME (WQV)" OF THE 2004 CONNECTICUT STORMWATER QUALITY MANUAL BY THE CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION

$$WQV = (1")(R)(A) / 12$$

WHERE: $R = 0.05 + 0.009 \times I$

I = IMPERVIOUS COVER (%)

A = DRAINAGE AREA IN ACRES

WATER QUALITY VOLUME (WQV) DATA								
WATERSHED AREA	DRAINAGE AREA (ACRES)	IMPERVIOUS AREA* (ARCES)	IMPERVIOUS AREA* (%)	R (INCHES)	WQV (ACRE-FT)	WQV (CU. FT.)	10% WQV REQUIRED (CU. FT.)	MIN. WQV PROVIDED** (CU. FT.)
C	1.96	0.56	28.35	0.305	0.050	2,171	217	448
D	2.41	0.66	27.59	0.298	0.060	2,609	261	314
E	0.46	0.13	27.83	0.300	0.012	502	50	1,218
F	0.25	0.05	19.04	0.221	0.005	201	20	487

*THE IMPERVIOUS AREA FOR 1/8 RESIDENTIAL AREAS (I.E. TOWNHOUSE AREAS) WAS CALCULATED USING TABLE 7-3 OF THE 2004 CT STORMWATER QUALITY MANUAL.

**ALL FOREBAYS WERE SIZED TO CONTAIN 10% (MINIMUM) OF THE WQV VOLUME AS REQUIRED PER TABLES 7-5 AND 11-P1-1 OF THE 2004 CT STORMWATER MANUAL.

REFERENCE: "SECTION 7.5.1: GROUNDWATER RECHARGE VOLUME (GRV)" OF THE 2004 CONNECTICUT STORMWATER QUALITY MANUAL BY THE CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION

$$GRV = (D)(A)(I) / 12$$

WHERE: D = DEPTH TO RUNOFF (PER TABLE 7-4)

I = IMPERVIOUSNESS (DECIMAL, NOT %)

A = DRAINAGE AREA IN ACRES

GROUNDWATER RECHARGE VOLUME (GRV) DATA						
WATERSHED AREA	DRAINAGE AREA (ACRES)	IMPERVIOUS AREA* (ARCES)	IMPERVIOUS AREA* (%/100)	D (INCHES)	GRV (ACRE-FT)	GRV (CU. FT.)
C	1.96	0.56	0.28	0.25	0.012	504
D	2.41	0.66	0.28	0.25	0.014	603
E	0.46	0.13	0.28	0.25	0.003	116
F	0.25	0.05	0.19	0.25	0.001	43

*THE IMPERVIOUS AREA FOR 1/8 RESIDENTIAL AREAS (I.E. TOWNHOUSE AREAS) WAS CALCULATED USING TABLE 7-3 OF THE 2004 CT STORMWATER QUALITY MANUAL.

DATE: JULY 12, 2022	SCALE: N/A
DRAWN BY: RG	CHKD BY: JW
DWG. NO.: WQV-1	SHEET NO.: 3 of 3

WATER QUALITY VOLUME CALCULATIONS

PREPARED FOR MEMLE PROPERTIES, LLC

114 CROSS ROAD -- MAP 97 LOT 1712

WATERFORD, CONNECTICUT

PLAN PREPARED BY:
INDIGO LAND DESIGN, LLC
JOSEPH WREN, P.E.
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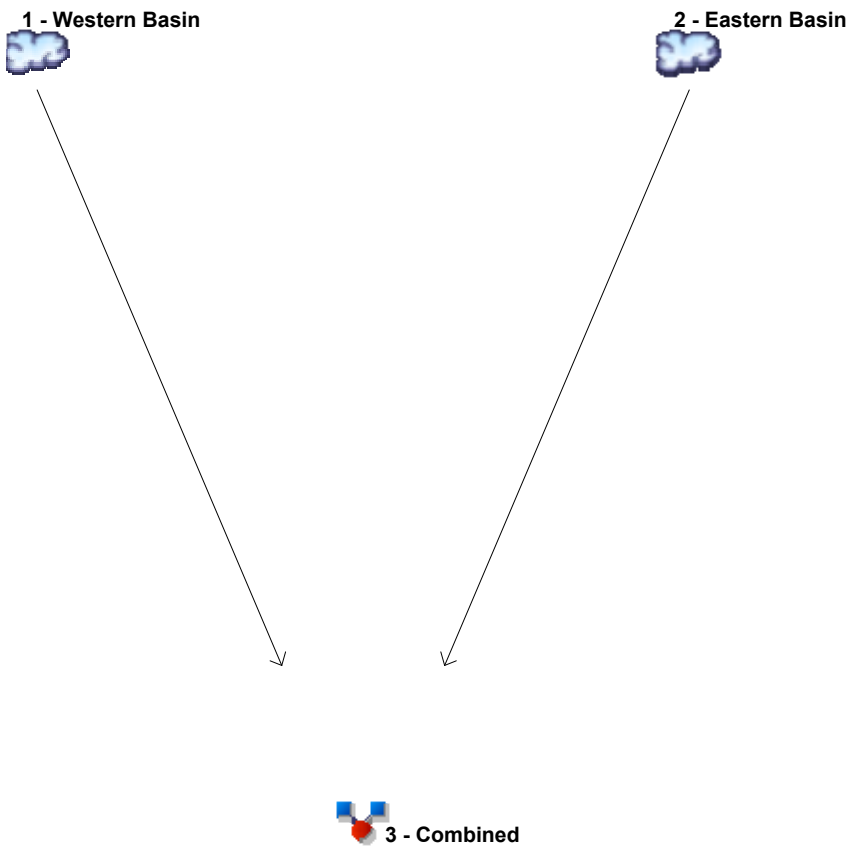
OLD SAYBROOK, CT 06475
PHONE: (860) 388-9343
FAX: (860) 391-8854

PREPARED FOR SKIP ADAMS
48 GREAT NECK ROAD
MAP 145 LOT 2871
WATERFORD, CONNECTICUT

EXISTING DRAINAGE COMPUTATIONS
3-30-2022

Watershed Model Schematic



Legend

Hyd.	Origin	Description
1	SCS Runoff	Western Basin
2	SCS Runoff	Eastern Basin
3	Combine	Combined

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	------	-------	-------	-------	-------	76.51	90.96	106.46	124.82	Western Basin
2	SCS Runoff	------	-------	-------	-------	-------	6.558	8.104	9.807	11.86	Eastern Basin
3	Combine	1, 2	-------	-------	-------	-------	82.92	98.85	115.96	136.26	Combined

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

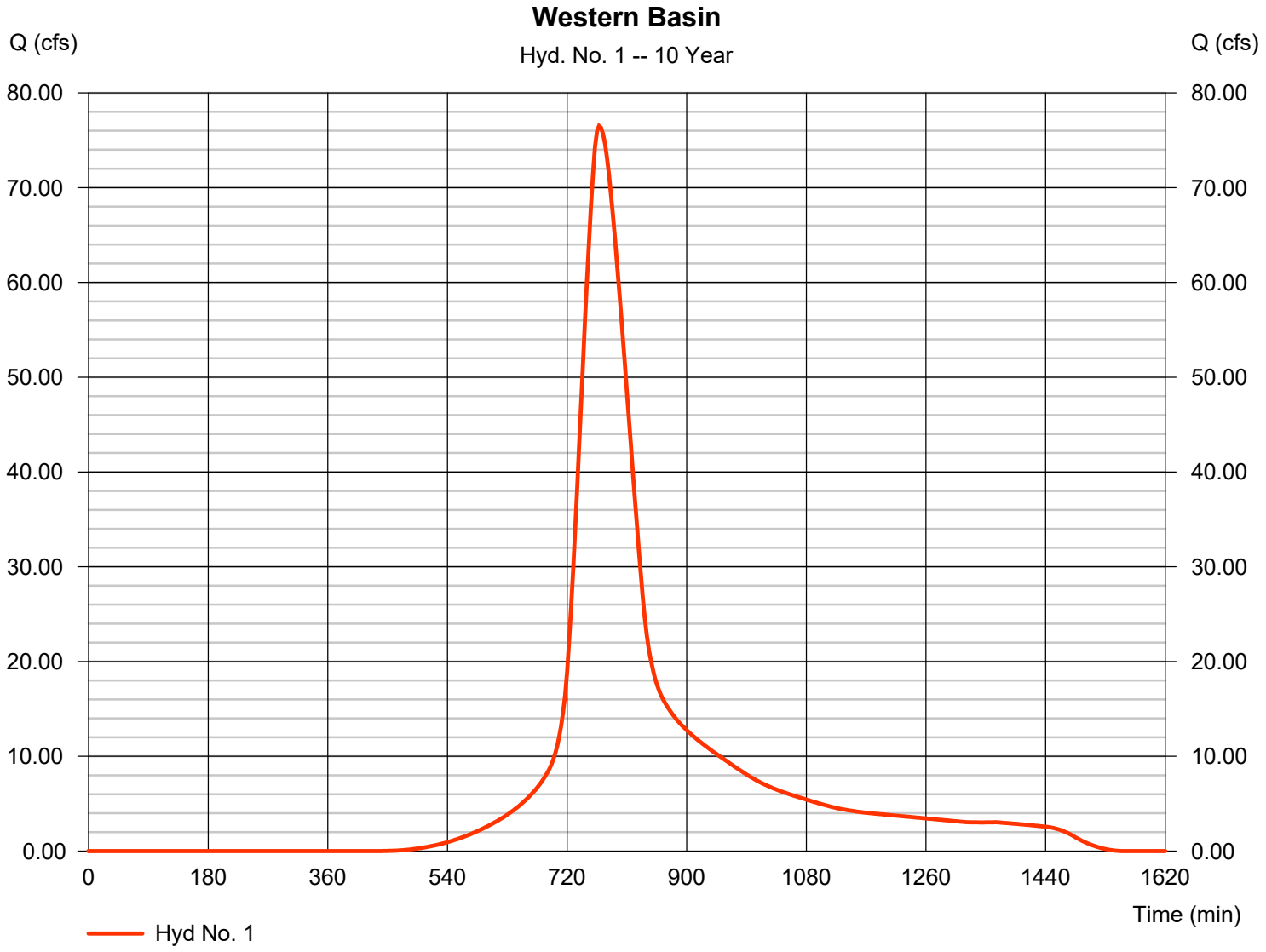
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	76.51	3	768	663,449	------	------	------	Western Basin
2	SCS Runoff	6.558	3	762	50,290	------	------	------	Eastern Basin
3	Combine	82.92	3	768	713,738	1, 2	------	------	Combined

Hydrograph Report

Hyd. No. 1

Western Basin

Hydrograph type	=	SCS Runoff	Peak discharge	=	76.51 cfs
Storm frequency	=	10 yrs	Time to peak	=	768 min
Time interval	=	3 min	Hyd. volume	=	663,449 cuft
Drainage area	=	48.890 ac	Curve number	=	78
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	72.90 min
Total precip.	=	6.18 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



TR55 Tc Worksheet

Hyd. No. 1

Western Basin

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.600		0.400		0.011		
Flow length (ft)	= 200.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.43		3.43		0.00		
Land slope (%)	= 1.80		1.40		0.00		
Travel Time (min)	**= 52.10**	**+**	**0.00**	**+**	**0.00**	**=**	**52.10**
Shallow Concentrated Flow							
Flow length (ft)	= 1850.00		960.00		65.00		
Watercourse slope (%)	= 1.70		1.80		3.07		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=2.10		2.73		3.56		
Travel Time (min)	**= 14.66**	**+**	**5.87**	**+**	**0.30**	**=**	**20.83**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

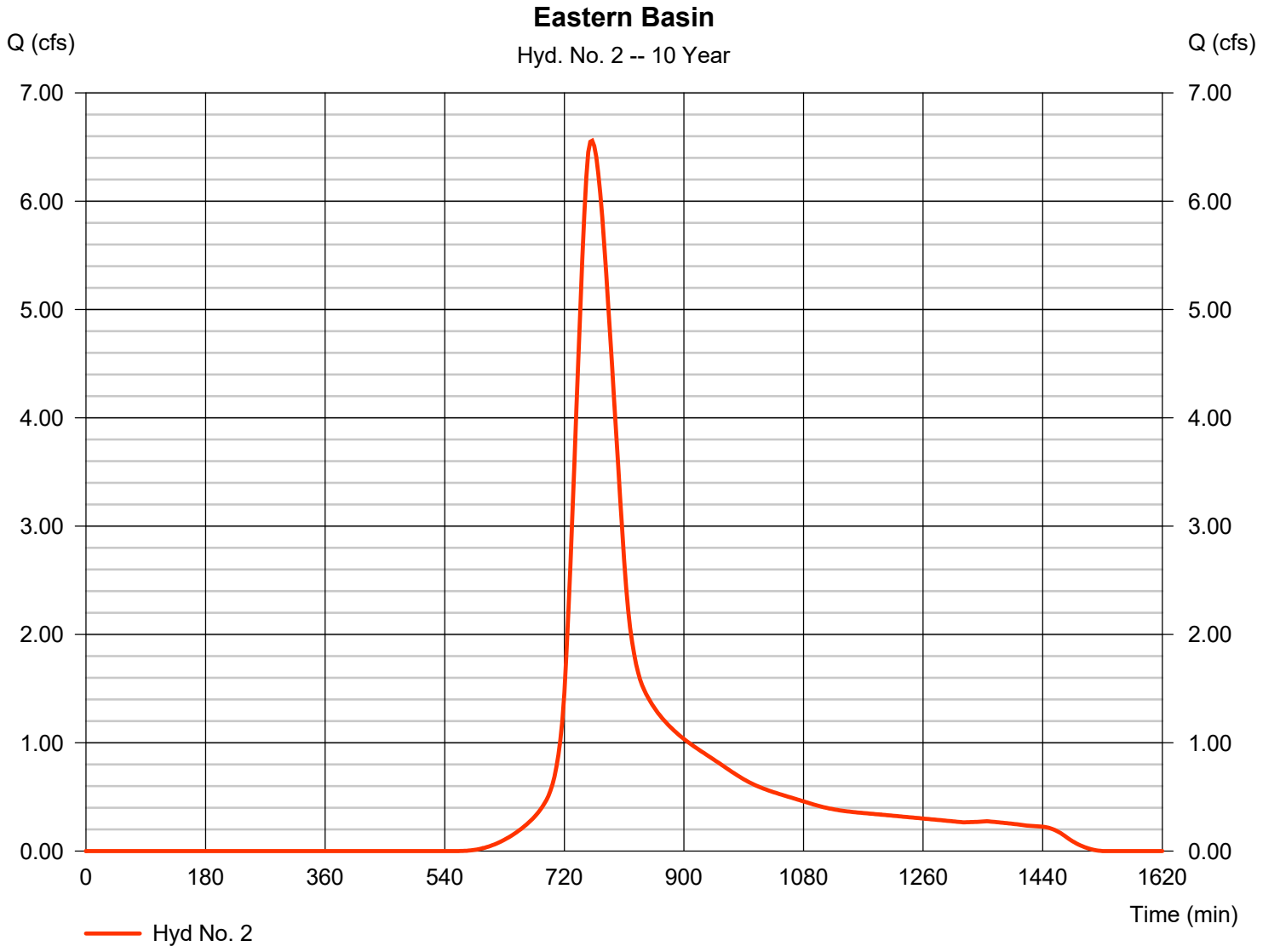
Total Travel Time, Tc ..... 72.90 min

Hydrograph Report

Hyd. No. 2

Eastern Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 6.558 cfs
Storm frequency	= 10 yrs	Time to peak	= 762 min
Time interval	= 3 min	Hyd. volume	= 50,290 cuft
Drainage area	= 5.020 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 59.30 min
Total precip.	= 6.18 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



TR55 Tc Worksheet

Hyd. No. 2

Eastern Basin

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.800		0.011		0.011		
Flow length (ft)	= 200.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.43		0.00		0.00		
Land slope (%)	= 2.70		0.00		0.00		
Travel Time (min)	**= 55.76**	**+**	**0.00**	**+**	**0.00**	**=**	**55.76**
Shallow Concentrated Flow							
Flow length (ft)	= 557.00		0.00		0.00		
Watercourse slope (%)	= 2.70		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=2.65		0.00		0.00		
Travel Time (min)	**= 3.50**	**+**	**0.00**	**+**	**0.00**	**=**	**3.50**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

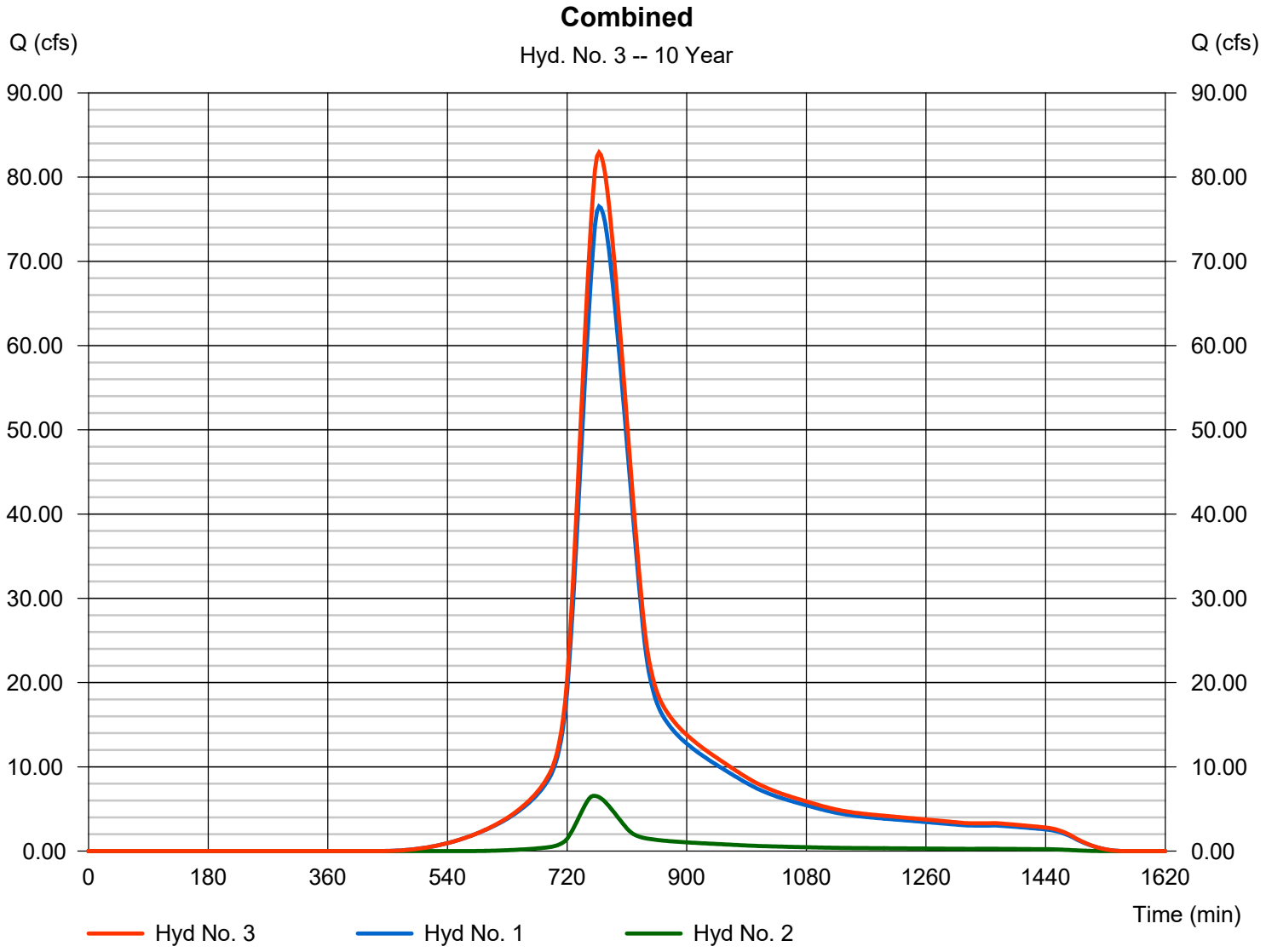
Total Travel Time, Tc ..... 59.30 min

Hydrograph Report

Hyd. No. 3

Combined

Hydrograph type	=	Combine	Peak discharge	=	82.92 cfs
Storm frequency	=	10 yrs	Time to peak	=	768 min
Time interval	=	3 min	Hyd. volume	=	713,738 cuft
Inflow hyds.	=	1, 2	Contrib. drain. area	=	53.910 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

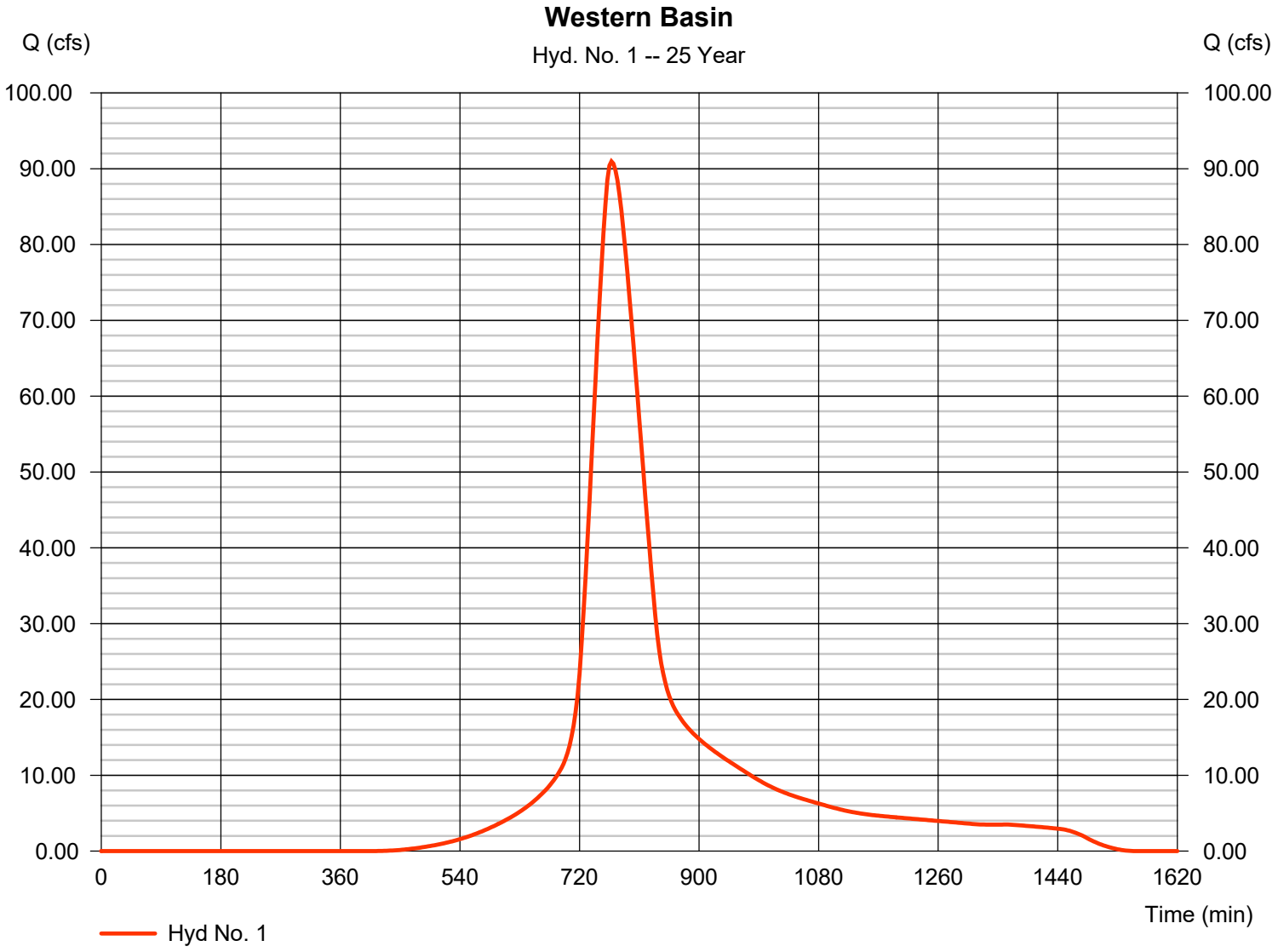
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	90.96	3	768	789,321	------	------	------	Western Basin
2	SCS Runoff	8.104	3	759	61,700	------	------	------	Eastern Basin
3	Combine	98.85	3	768	851,021	1, 2	------	------	Combined

Hydrograph Report

Hyd. No. 1

Western Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 90.96 cfs
Storm frequency	= 25 yrs	Time to peak	= 768 min
Time interval	= 3 min	Hyd. volume	= 789,321 cuft
Drainage area	= 48.890 ac	Curve number	= 78
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 72.90 min
Total precip.	= 6.97 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

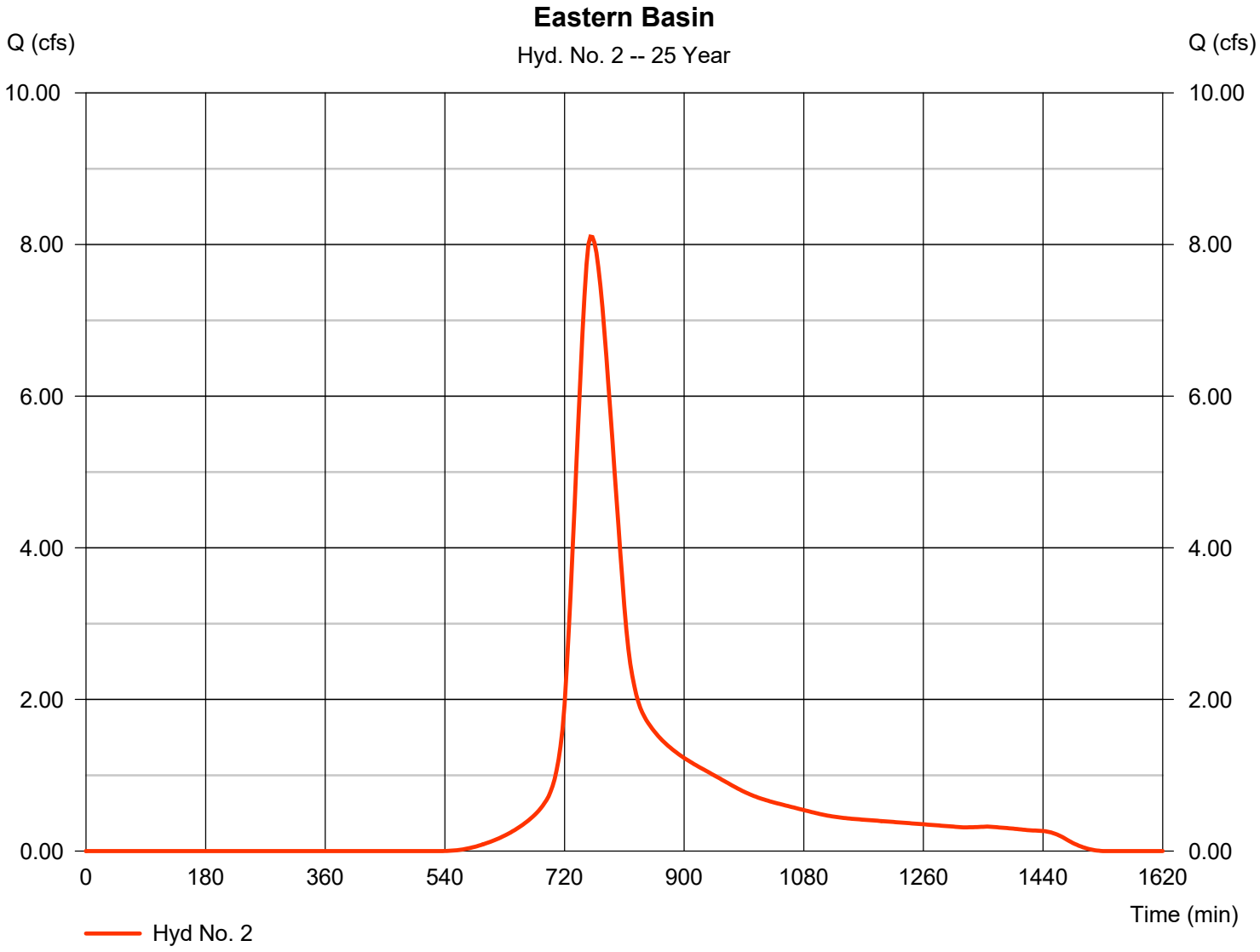


Hydrograph Report

Hyd. No. 2

Eastern Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 8.104 cfs
Storm frequency	= 25 yrs	Time to peak	= 759 min
Time interval	= 3 min	Hyd. volume	= 61,700 cuft
Drainage area	= 5.020 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 59.30 min
Total precip.	= 6.97 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

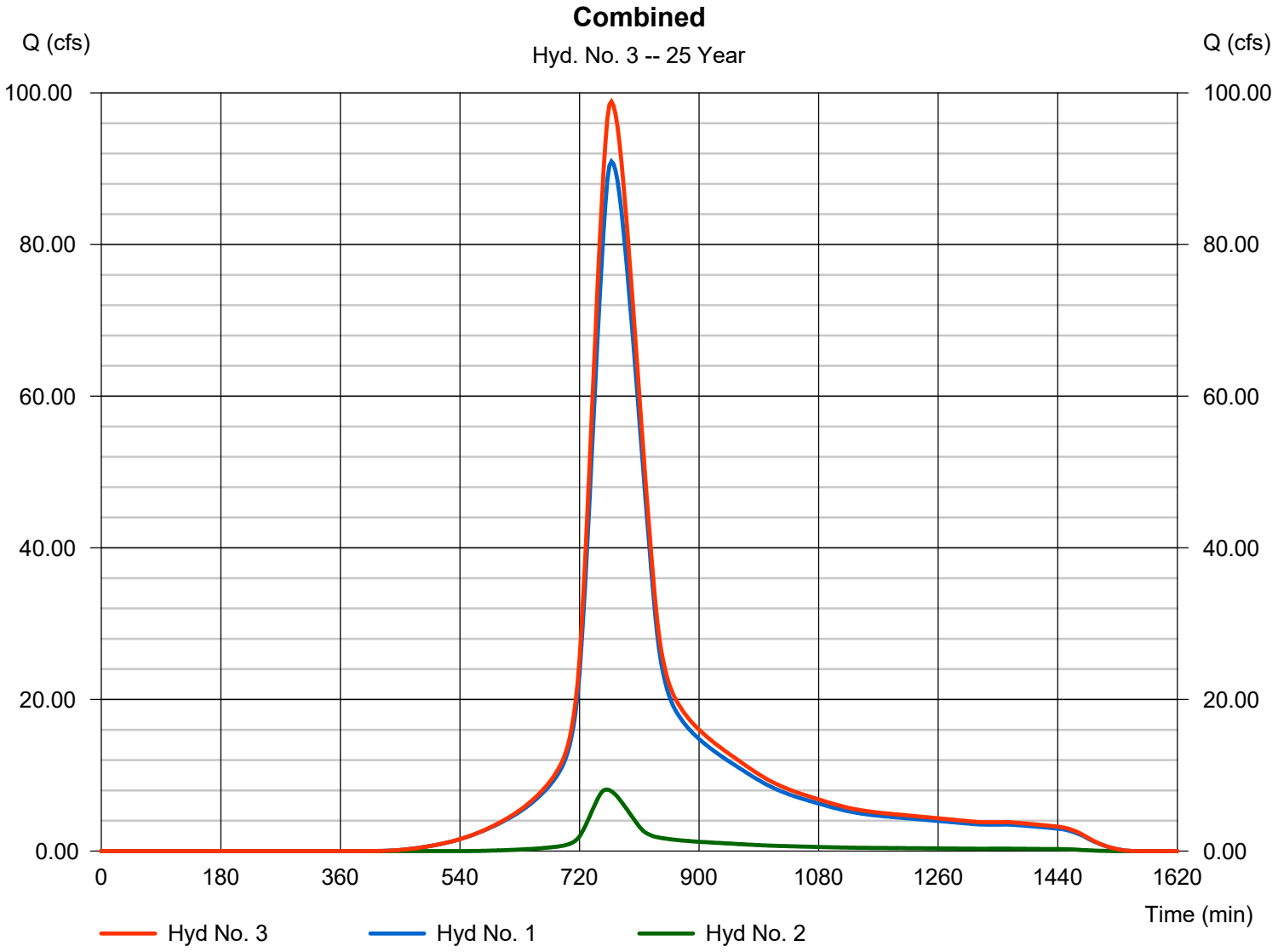


Hydrograph Report

Hyd. No. 3

Combined

Hydrograph type	=	Combine	Peak discharge	=	98.85 cfs
Storm frequency	=	25 yrs	Time to peak	=	768 min
Time interval	=	3 min	Hyd. volume	=	851,021 cuft
Inflow hyds.	=	1, 2	Contrib. drain. area	=	53.910 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

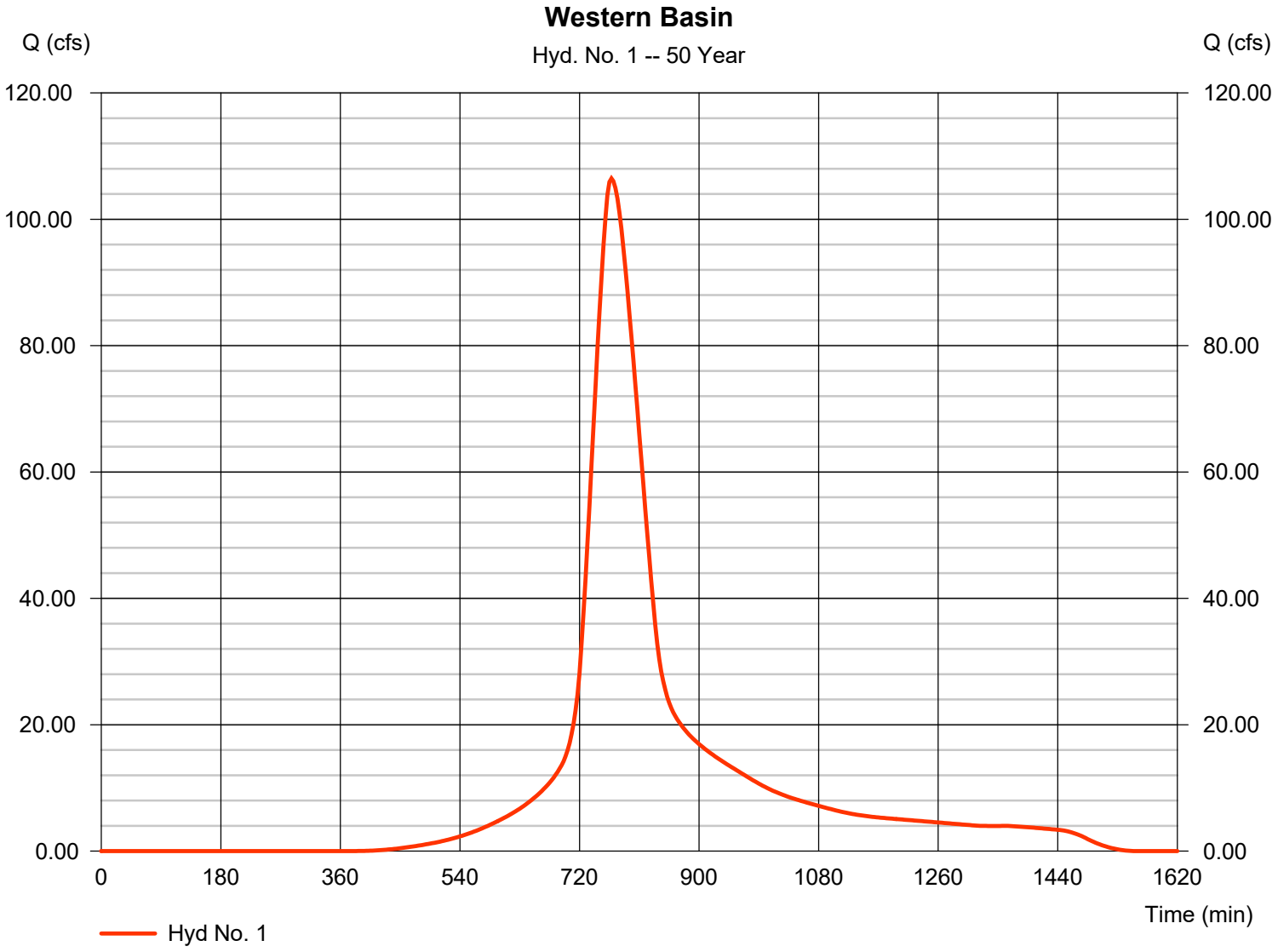
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	106.46	3	768	925,628	------	------	------	Western Basin
2	SCS Runoff	9.807	3	759	74,279	------	------	------	Eastern Basin
3	Combine	115.96	3	768	999,907	1, 2	------	------	Combined

Hydrograph Report

Hyd. No. 1

Western Basin

Hydrograph type	=	SCS Runoff	Peak discharge	=	106.46 cfs
Storm frequency	=	50 yrs	Time to peak	=	768 min
Time interval	=	3 min	Hyd. volume	=	925,628 cuft
Drainage area	=	48.890 ac	Curve number	=	78
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	72.90 min
Total precip.	=	7.81 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

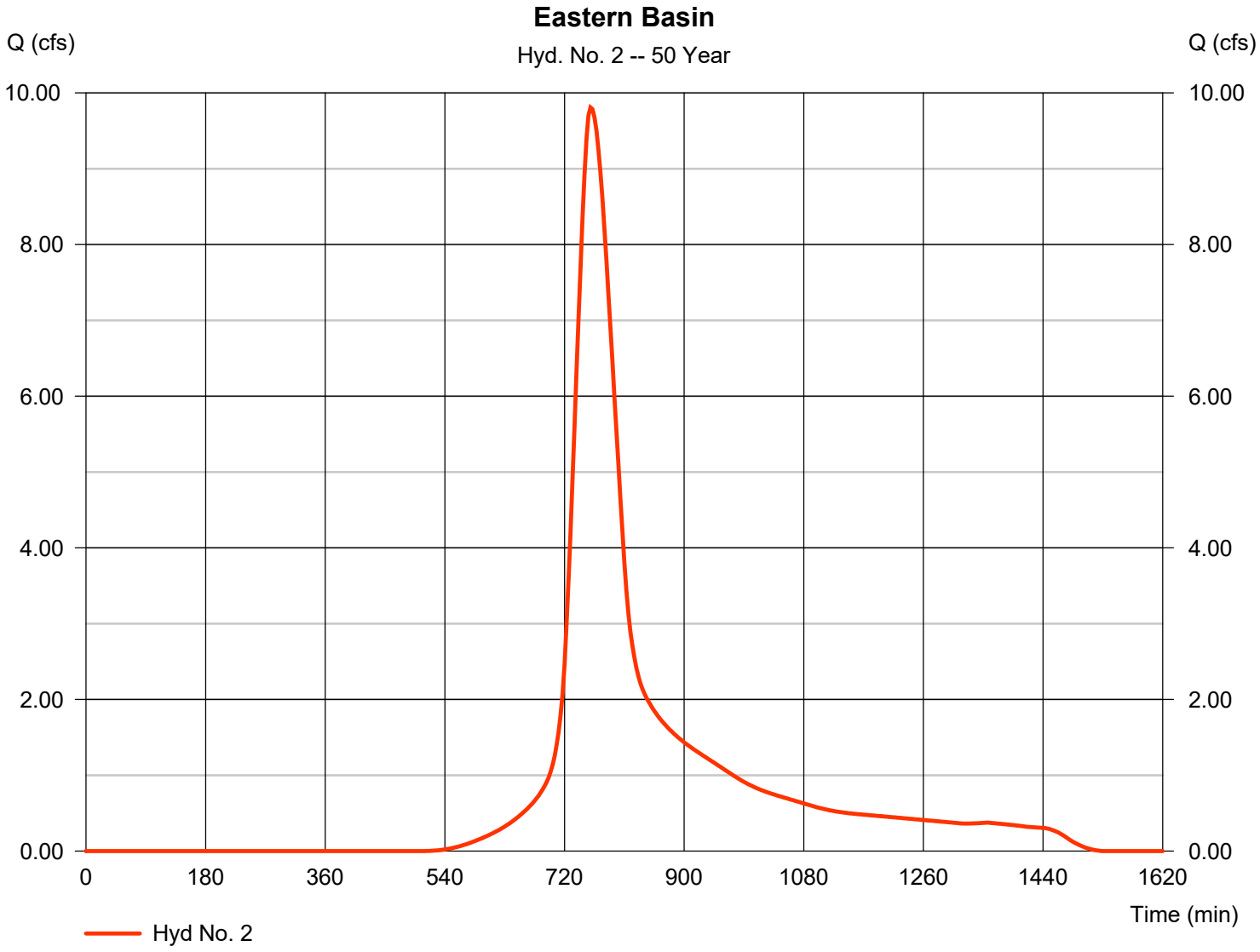


Hydrograph Report

Hyd. No. 2

Eastern Basin

Hydrograph type	=	SCS Runoff	Peak discharge	=	9.807 cfs
Storm frequency	=	50 yrs	Time to peak	=	759 min
Time interval	=	3 min	Hyd. volume	=	74,279 cuft
Drainage area	=	5.020 ac	Curve number	=	68
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	59.30 min
Total precip.	=	7.81 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

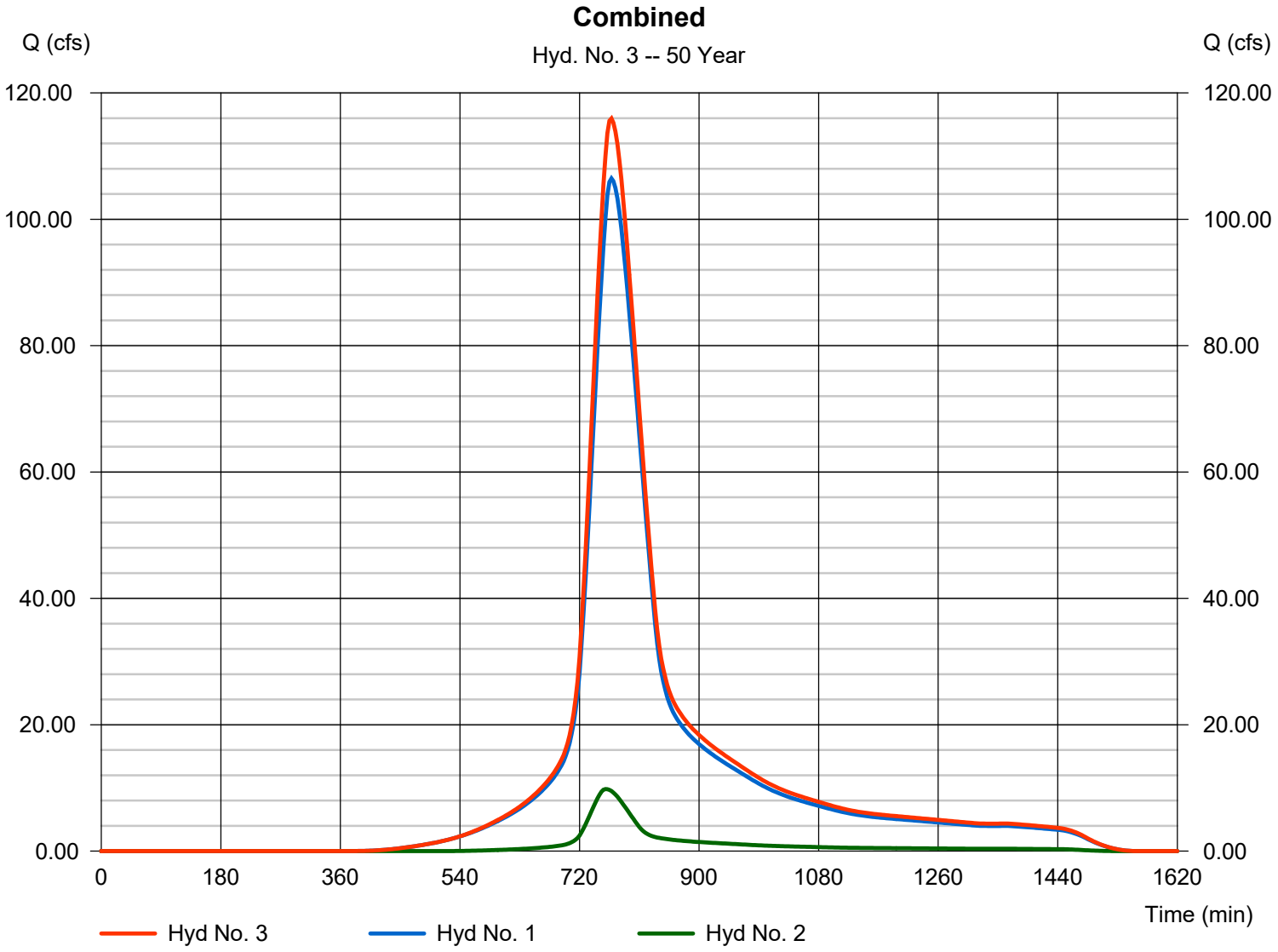


Hydrograph Report

Hyd. No. 3

Combined

Hydrograph type	=	Combine	Peak discharge	=	115.96 cfs
Storm frequency	=	50 yrs	Time to peak	=	768 min
Time interval	=	3 min	Hyd. volume	=	999,907 cuft
Inflow hyds.	=	1, 2	Contrib. drain. area	=	53.910 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

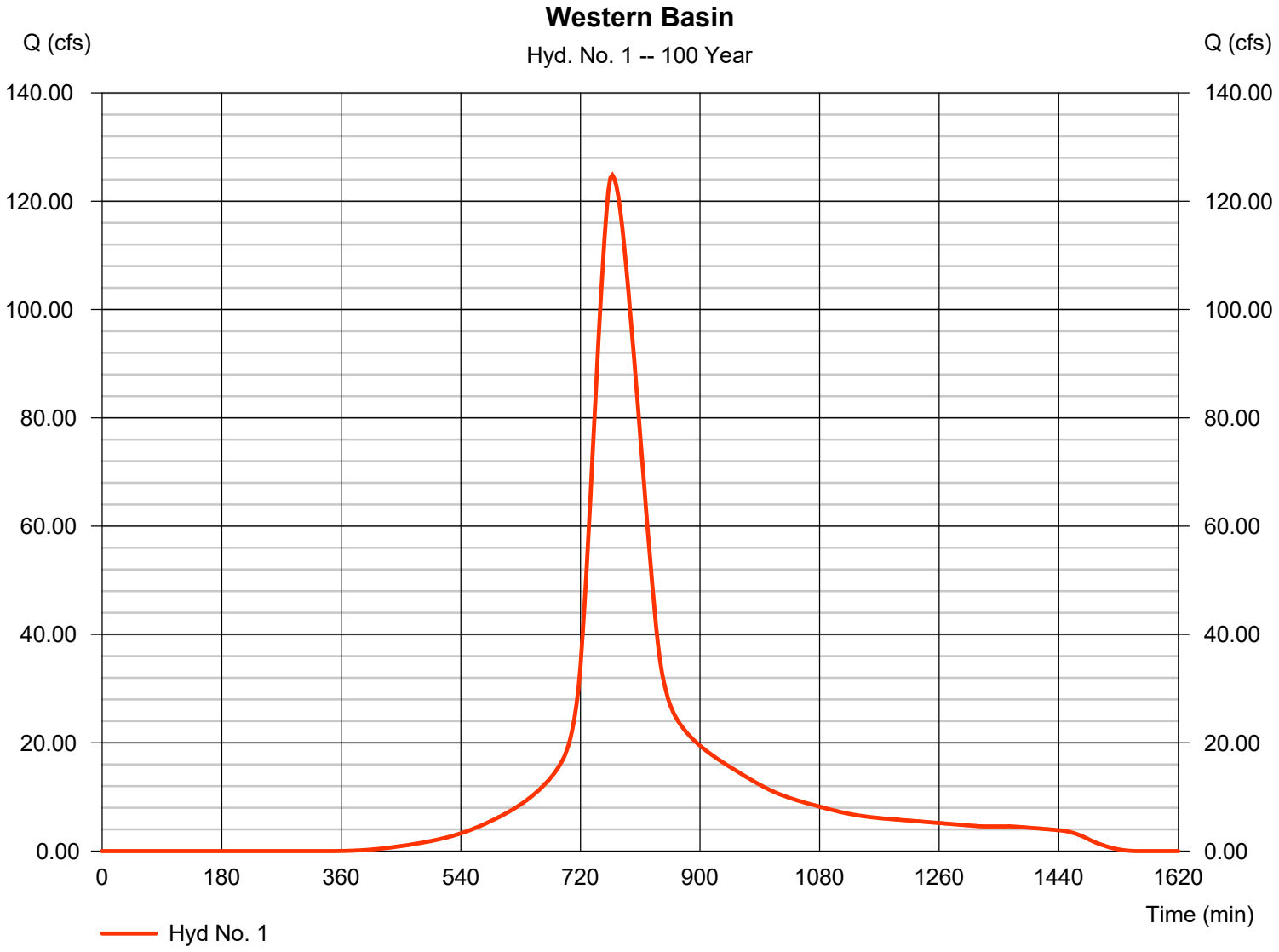
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	124.82	3	768	1,088,766	------	------	------	Western Basin
2	SCS Runoff	11.86	3	759	89,572	------	------	------	Eastern Basin
3	Combine	136.26	3	768	1,178,338	1, 2	------	------	Combined

Hydrograph Report

Hyd. No. 1

Western Basin

Hydrograph type	=	SCS Runoff	Peak discharge	=	124.82 cfs
Storm frequency	=	100 yrs	Time to peak	=	768 min
Time interval	=	3 min	Hyd. volume	=	1,088,766 cuft
Drainage area	=	48.890 ac	Curve number	=	78
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	72.90 min
Total precip.	=	8.80 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

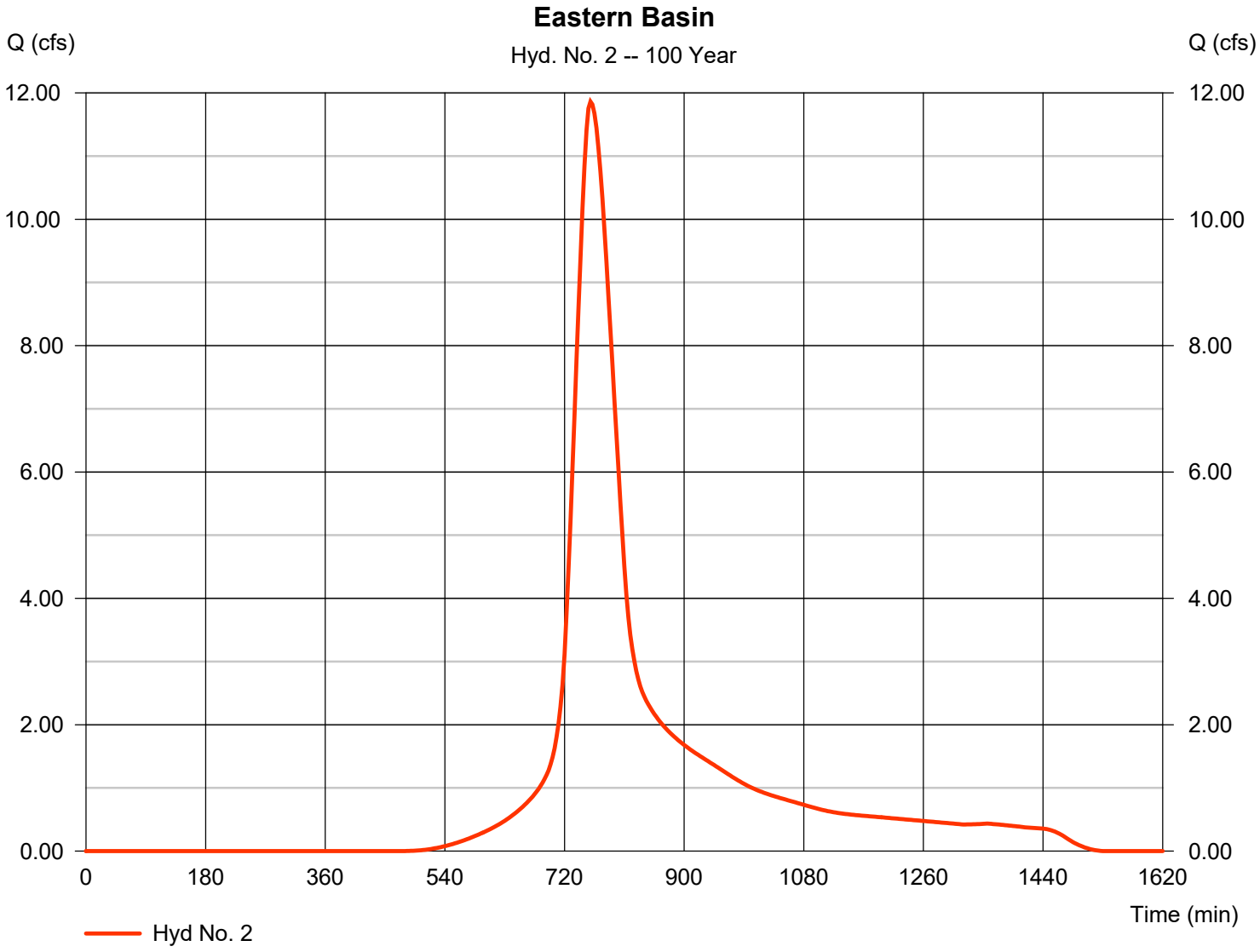


Hydrograph Report

Hyd. No. 2

Eastern Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 11.86 cfs
Storm frequency	= 100 yrs	Time to peak	= 759 min
Time interval	= 3 min	Hyd. volume	= 89,572 cuft
Drainage area	= 5.020 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 59.30 min
Total precip.	= 8.80 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

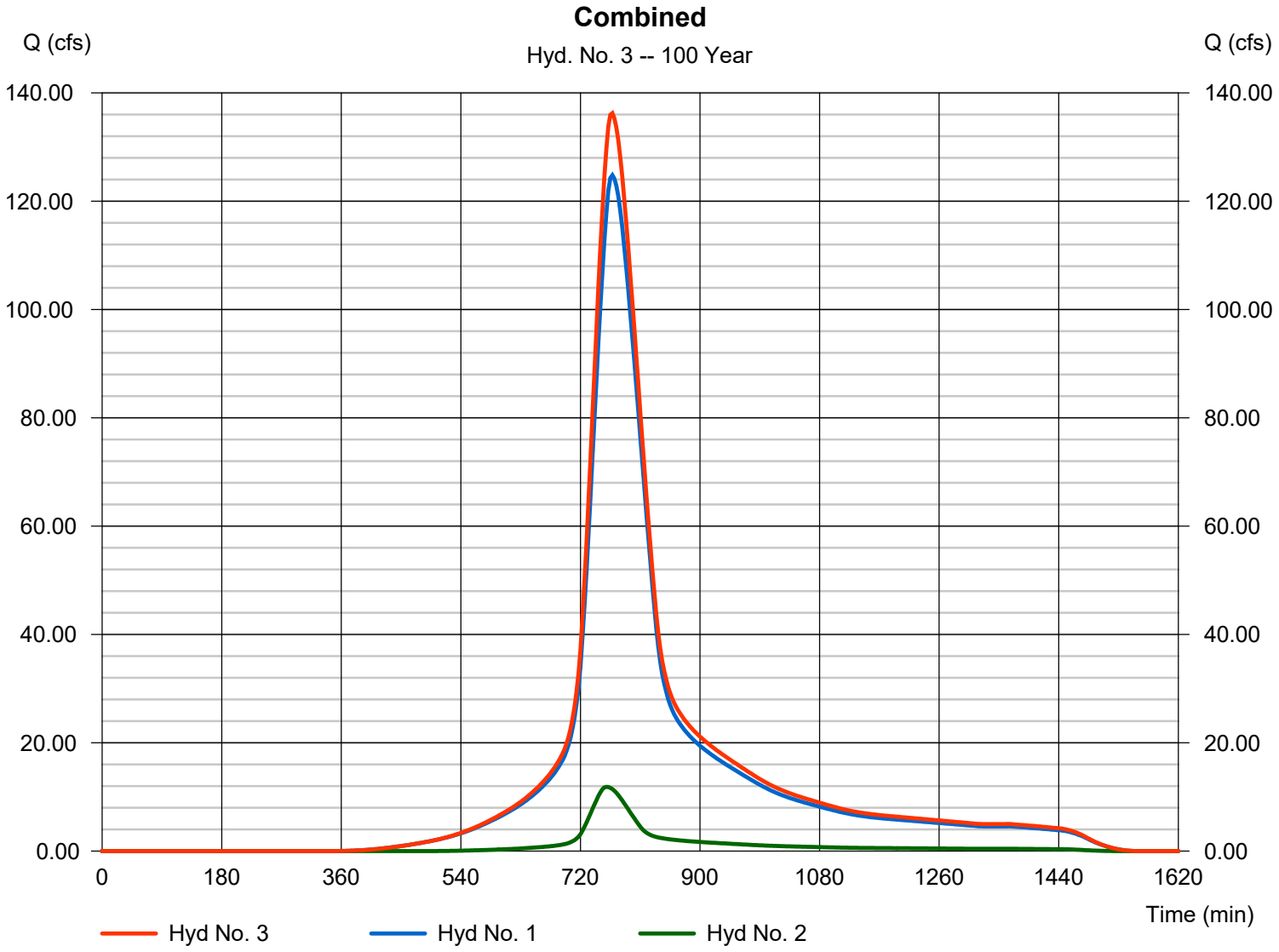


Hydrograph Report

Hyd. No. 3

Combined

Hydrograph type	= Combine	Peak discharge	= 136.26 cfs
Storm frequency	= 100 yrs	Time to peak	= 768 min
Time interval	= 3 min	Hyd. volume	= 1,178,338 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 53.910 ac



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	69.8703	13.1000	0.8658	--------
3	0.0000	0.0000	0.0000	--------
5	79.2597	14.6000	0.8369	--------
10	88.2351	15.5000	0.8279	--------
25	102.6072	16.5000	0.8217	--------
50	114.8193	17.2000	0.8199	--------
100	127.1596	17.8000	0.8186	--------

File name: SampleFHA.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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	5.69	4.61	3.89	3.38	2.99	2.69	2.44	2.24	2.07	1.93	1.81	1.70
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.57	5.43	4.65	4.08	3.65	3.30	3.02	2.79	2.59	2.42	2.27	2.15
10	7.24	6.04	5.21	4.59	4.12	3.74	3.43	3.17	2.95	2.77	2.60	2.46
25	8.25	6.95	6.03	5.34	4.80	4.38	4.02	3.73	3.48	3.26	3.07	2.91
50	9.04	7.65	6.66	5.92	5.34	4.87	4.49	4.16	3.88	3.65	3.44	3.25
100	9.83	8.36	7.30	6.50	5.87	5.36	4.94	4.59	4.29	4.03	3.80	3.60

Tc = time in minutes. Values may exceed 60.

Precip. file name: Sample.pcp

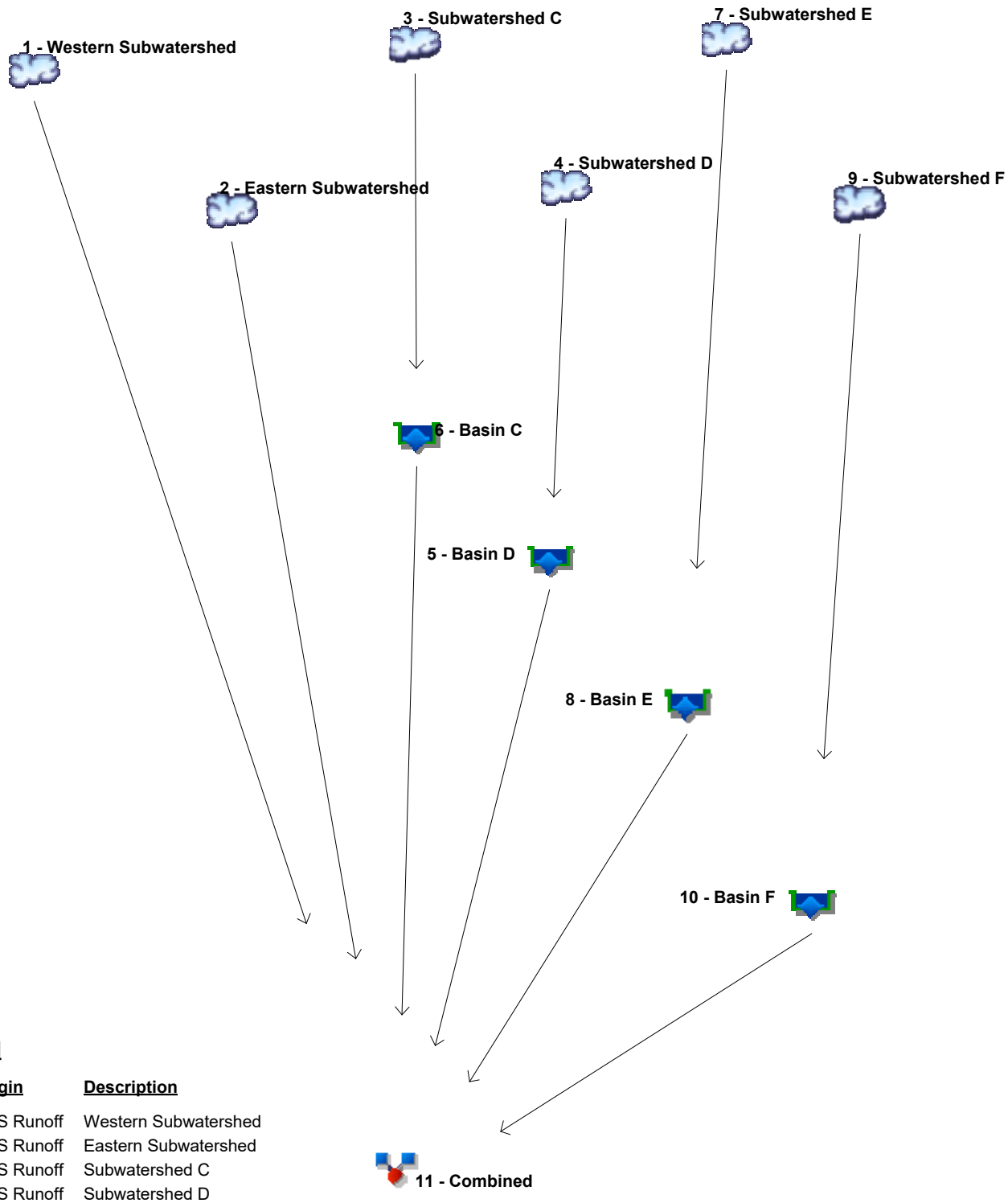
Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	2.86	3.43	4.36	5.12	6.18	6.97	7.81	8.80
SCS 6-Hr	0.00	1.80	0.00	0.00	2.60	0.00	0.00	4.00
Huff-1st	0.00	1.55	0.00	2.75	4.00	5.38	6.50	8.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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

Hydraflow Table of Contents

PREPARED FOR SKIP ADAMS
48 GREAT NECK ROAD
MAP 145 LOT 2871
WATERFORD, CONNECTICUT

PROPOSED DRAINAGE COMPUTATIONS
3-30-2022

Watershed Model Schematic



Legend

Hyd.	Origin	Description
1	SCS Runoff	Western Subwatershed
2	SCS Runoff	Eastern Subwatershed
3	SCS Runoff	Subwatershed C
4	SCS Runoff	Subwatershed D
5	Reservoir	Basin D
6	Reservoir	Basin C
7	SCS Runoff	Subwatershed E
8	Reservoir	Basin E
9	SCS Runoff	Subwatershed F
10	Reservoir	Basin F
11	Combine	Combined

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	------	-------	-------	-------	-------	79.44	93.49	108.48	126.17	Western Subwatershed
2	SCS Runoff	------	-------	-------	-------	-------	2.259	2.768	3.324	3.994	Eastern Subwatershed
3	SCS Runoff	------	-------	-------	-------	-------	4.152	4.898	5.695	6.635	Subwatershed C
4	SCS Runoff	------	-------	-------	-------	-------	3.754	4.419	5.129	5.967	Subwatershed D
5	Reservoir	4	-------	-------	-------	-------	0.032	0.034	0.036	0.039	Basin D
6	Reservoir	3	-------	-------	-------	-------	0.032	0.037	0.209	1.508	Basin C
7	SCS Runoff	------	-------	-------	-------	-------	1.708	2.006	2.324	2.698	Subwatershed E
8	Reservoir	7	-------	-------	-------	-------	0.757	0.782	0.790	0.822	Basin E
9	SCS Runoff	------	-------	-------	-------	-------	0.839	0.999	1.170	1.373	Subwatershed F
10	Reservoir	9	-------	-------	-------	-------	0.728	0.795	0.832	0.841	Basin F
11	Combine	1, 2, 5, 6, 8, 10	-------	-------	-------	-------	81.98	97.10	112.42	130.95	Combined

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

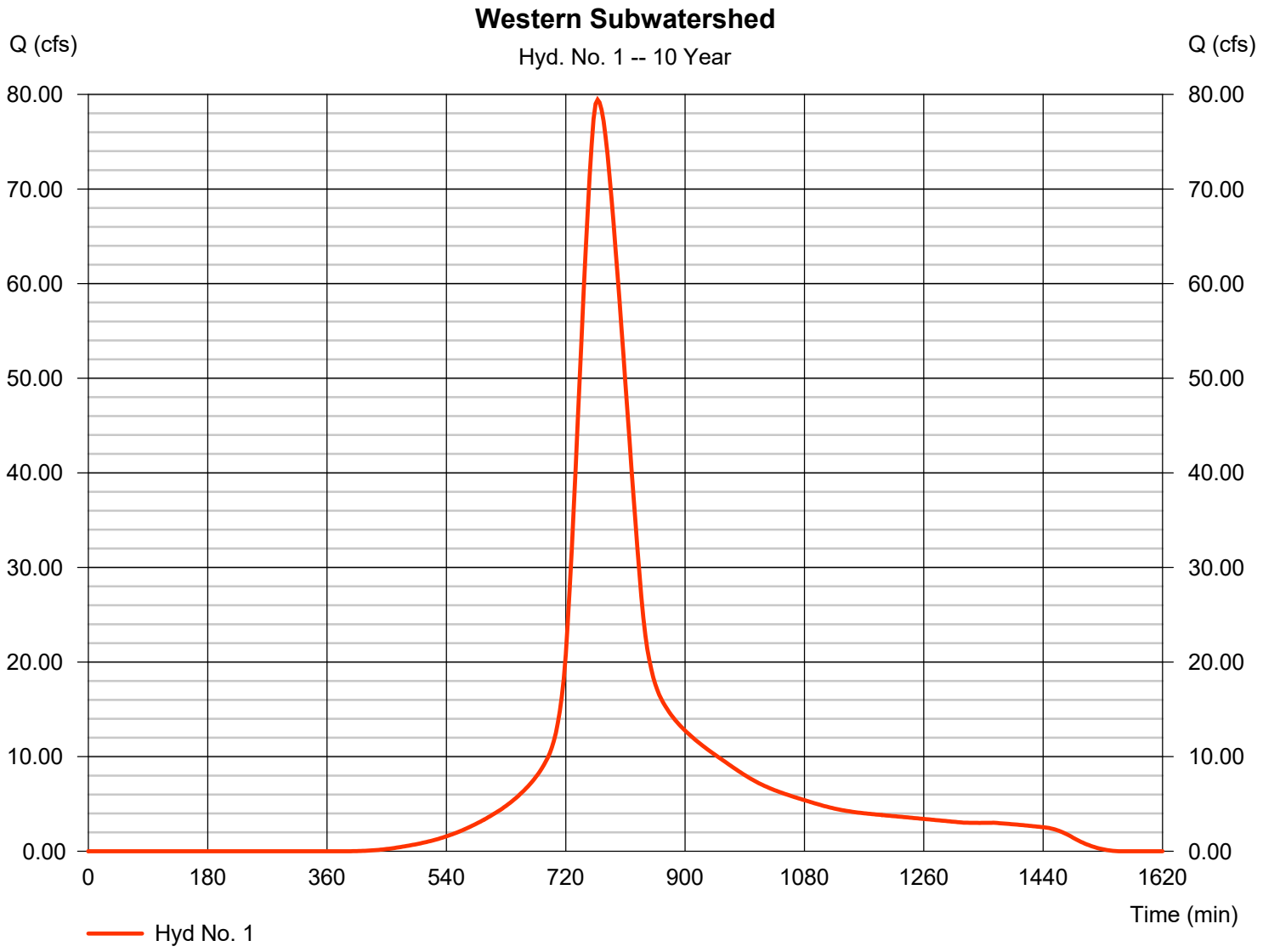
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	79.44	3	768	690,064	------	------	------	Western Subwatershed
2	SCS Runoff	2.259	3	771	19,802	------	------	------	Eastern Subwatershed
3	SCS Runoff	4.152	3	753	28,412	------	------	------	Subwatershed C
4	SCS Runoff	3.754	3	774	35,154	------	------	------	Subwatershed D
5	Reservoir	0.032	3	837	596	4	66.05	13,282	Basin D
6	Reservoir	0.032	3	825	584	3	66.02	13,297	Basin C
7	SCS Runoff	1.708	3	729	6,760	------	------	------	Subwatershed E
8	Reservoir	0.757	3	750	1,775	7	63.05	2,006	Basin E
9	SCS Runoff	0.839	3	729	3,300	------	------	------	Subwatershed F
10	Reservoir	0.728	3	732	858	9	62.59	713	Basin F
11	Combine	81.98	3	768	713,679	1, 2, 5, 6, 8, 10	------	------	Combined

Hydrograph Report

Hyd. No. 1

Western Subwatershed

Hydrograph type	=	SCS Runoff	Peak discharge	=	79.44 cfs
Storm frequency	=	10 yrs	Time to peak	=	768 min
Time interval	=	3 min	Hyd. volume	=	690,064 cuft
Drainage area	=	46.960 ac	Curve number	=	81
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	72.90 min
Total precip.	=	6.18 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



TR55 Tc Worksheet

Hyd. No. 1

Western Subwatershed

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.600		0.400		0.011		
Flow length (ft)	= 200.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.43		3.43		0.00		
Land slope (%)	= 1.80		1.40		0.00		
Travel Time (min)	**= 52.10**	**+**	**0.00**	**+**	**0.00**	**=**	**52.10**
Shallow Concentrated Flow							
Flow length (ft)	= 1850.00		960.00		65.00		
Watercourse slope (%)	= 1.70		1.80		3.07		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=2.10		2.73		3.56		
Travel Time (min)	**= 14.66**	**+**	**5.87**	**+**	**0.30**	**=**	**20.83**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

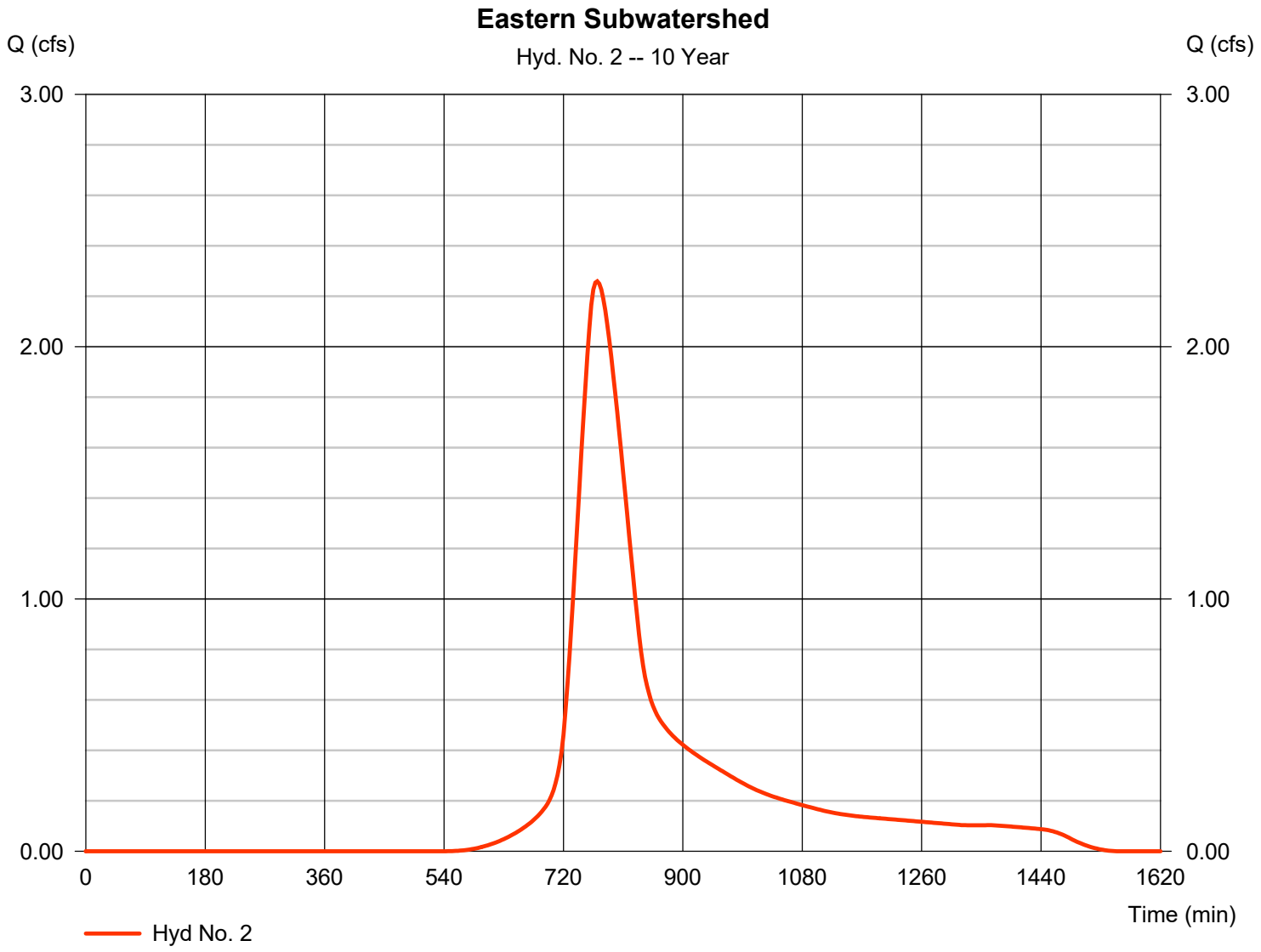
Total Travel Time, Tc ..... 72.90 min

Hydrograph Report

Hyd. No. 2

Eastern Subwatershed

Hydrograph type	= SCS Runoff	Peak discharge	= 2.259 cfs
Storm frequency	= 10 yrs	Time to peak	= 771 min
Time interval	= 3 min	Hyd. volume	= 19,802 cuft
Drainage area	= 1.850 ac	Curve number	= 70
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 73.00 min
Total precip.	= 6.18 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



TR55 Tc Worksheet

Hyd. No. 2

Eastern Subwatershed

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.800		0.011		0.011		
Flow length (ft)	= 300.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.43		0.00		0.00		
Land slope (%)	= 3.10		0.00		0.00		
Travel Time (min)	**= 72.98**	**+**	**0.00**	**+**	**0.00**	**=**	**72.98**
Shallow Concentrated Flow							
Flow length (ft)	= 9.00		0.00		0.00		
Watercourse slope (%)	= 3.10		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=2.84		0.00		0.00		
Travel Time (min)	**= 0.05**	**+**	**0.00**	**+**	**0.00**	**=**	**0.05**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

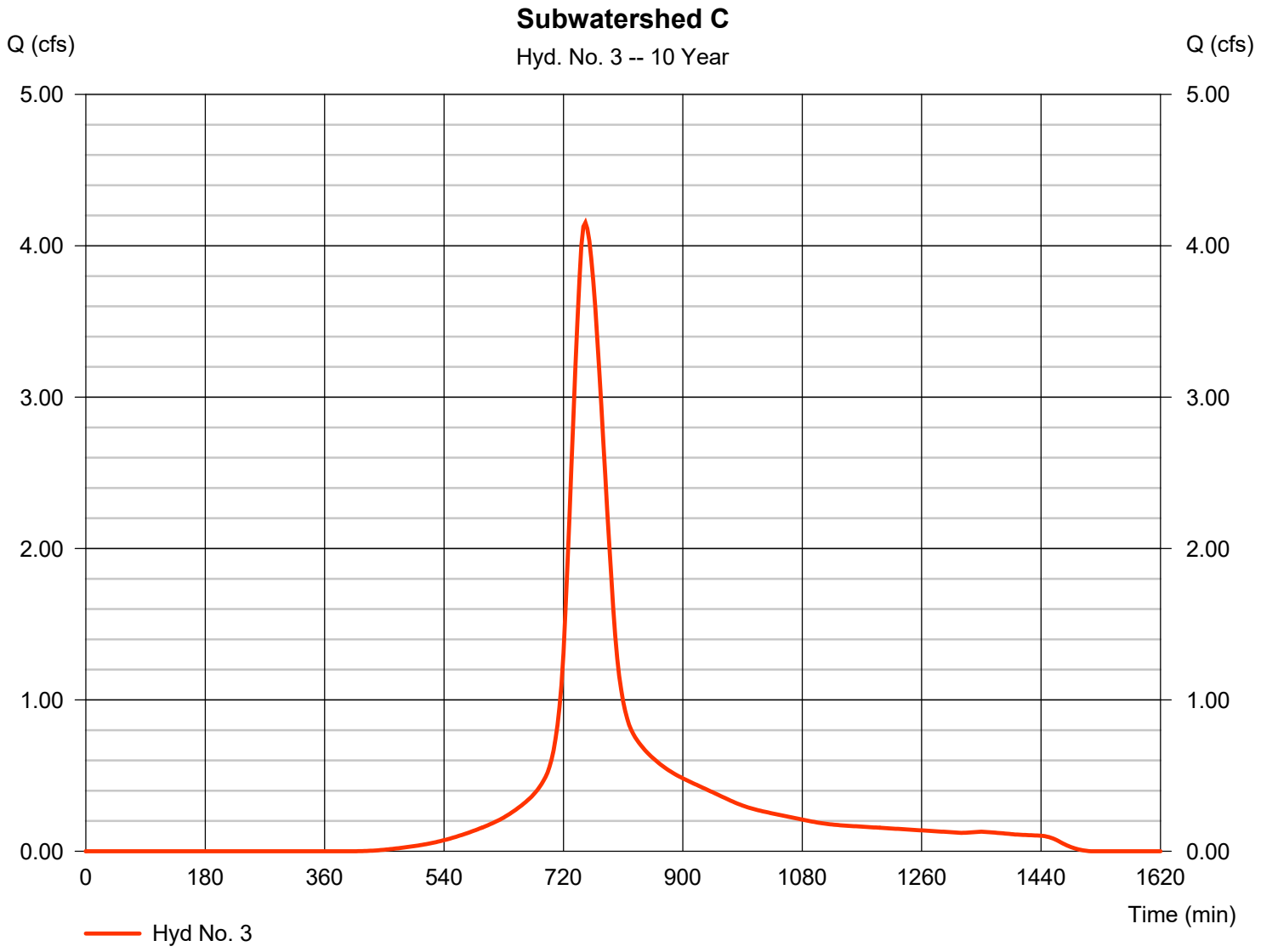
Total Travel Time, Tc ..... 73.00 min

Hydrograph Report

Hyd. No. 3

Subwatershed C

Hydrograph type	= SCS Runoff	Peak discharge	= 4.152 cfs
Storm frequency	= 10 yrs	Time to peak	= 753 min
Time interval	= 3 min	Hyd. volume	= 28,412 cuft
Drainage area	= 1.960 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 48.80 min
Total precip.	= 6.18 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



TR55 Tc Worksheet

Hyd. No. 3

Subwatershed C

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.800		0.240		0.011		
Flow length (ft)	= 201.0		99.0		0.0		
Two-year 24-hr precip. (in)	= 3.43		3.43		0.00		
Land slope (%)	= 7.50		3.70		0.00		
Travel Time (min)	**= 37.21**	**+**	**10.69**	**+**	**0.00**	**=**	**47.90**
Shallow Concentrated Flow							
Flow length (ft)	= 169.74		0.00		0.00		
Watercourse slope (%)	= 3.70		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=3.10		0.00		0.00		
Travel Time (min)	**= 0.91**	**+**	**0.00**	**+**	**0.00**	**=**	**0.91**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

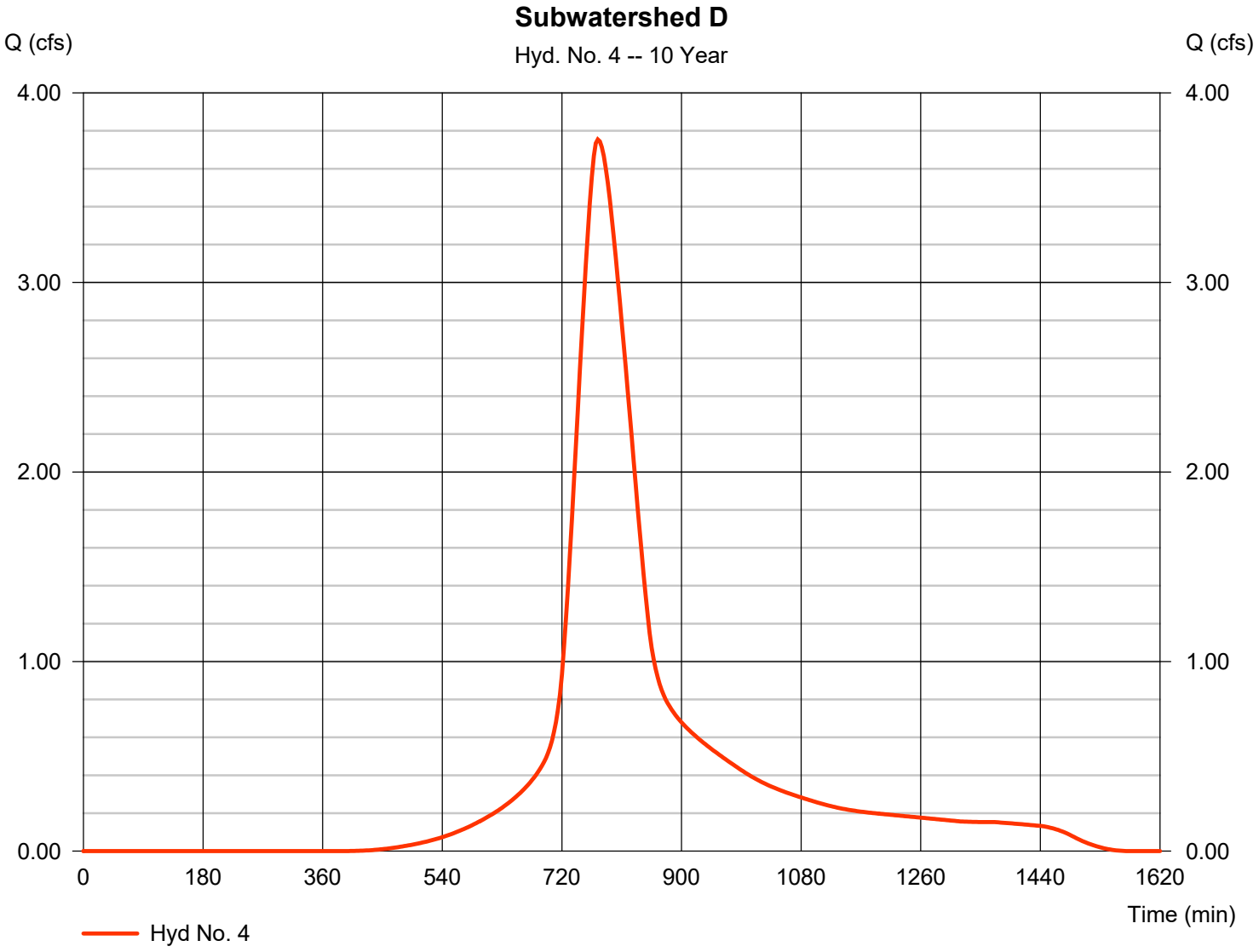
Total Travel Time, Tc ..... 48.80 min

Hydrograph Report

Hyd. No. 4

Subwatershed D

Hydrograph type	=	SCS Runoff	Peak discharge	=	3.754 cfs
Storm frequency	=	10 yrs	Time to peak	=	774 min
Time interval	=	3 min	Hyd. volume	=	35,154 cuft
Drainage area	=	2.410 ac	Curve number	=	81
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	81.20 min
Total precip.	=	6.18 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



TR55 Tc Worksheet

Hyd. No. 4

Subwatershed D

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 300.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.43		3.43		0.00		
Land slope (%)	= 0.22		0.00		0.00		
Travel Time (min)	**= 80.26**	**+**	**0.00**	**+**	**0.00**	**=**	**80.26**
Shallow Concentrated Flow							
Flow length (ft)	= 180.64		0.00		0.00		
Watercourse slope (%)	= 2.60		0.00		0.00		
Surface description	= Paved		Paved		Paved		
Average velocity (ft/s)	=3.28		0.00		0.00		
Travel Time (min)	**= 0.92**	**+**	**0.00**	**+**	**0.00**	**=**	**0.92**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 81.20 min

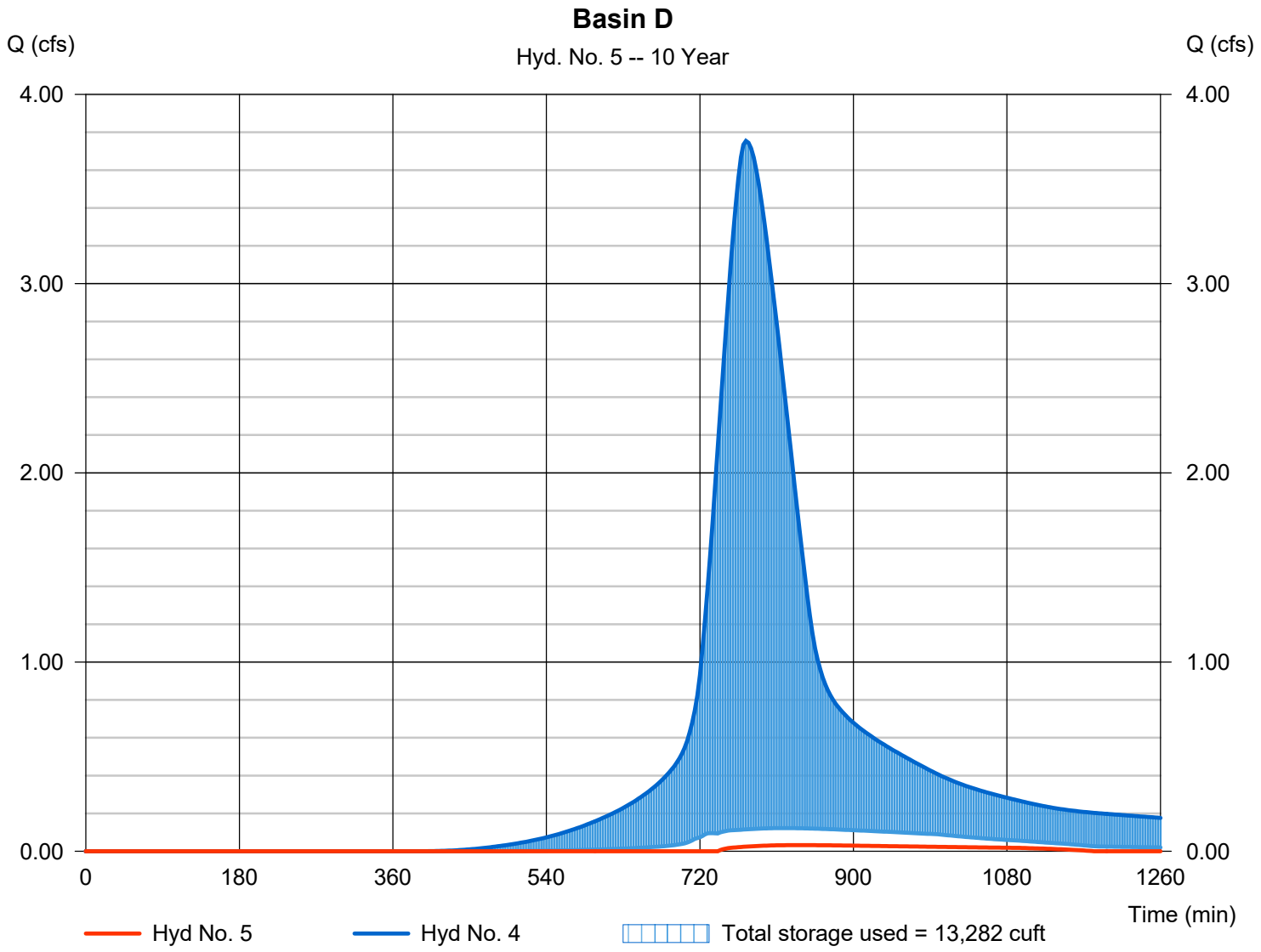
Hydrograph Report

Hyd. No. 5

Basin D

Hydrograph type	=	Reservoir	Peak discharge	=	0.032 cfs
Storm frequency	=	10 yrs	Time to peak	=	837 min
Time interval	=	3 min	Hyd. volume	=	596 cuft
Inflow hyd. No.	=	4 - Subwatershed D	Max. Elevation	=	66.05 ft
Reservoir name	=	Basin D Pond	Max. Storage	=	13,282 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Pond No. 2 - Basin D Pond

Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 63.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	63.00	496	0	0
1.00	64.00	2,237	1,367	1,367
2.00	65.00	4,405	3,321	4,688
3.00	66.00	11,175	7,790	12,478
4.00	67.00	18,515	14,845	27,323
5.00	68.00	20,565	19,540	46,863
5.50	68.50	23,404	10,992	57,855

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 6.00	1.00	Inactive	Inactive
Span (in)	= 6.00	1.00	3.00	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 63.50	64.50	64.00	0.00
Length (ft)	= 50.00	1.00	1.00	0.00
Slope (%)	= 1.50	1.00	1.00	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)	= 15.00	10.00	Inactive	Inactive
Crest El. (ft)	= 67.00	67.50	0.00	0.00
Weir Coeff.	= 2.60	2.60	3.33	3.33
Weir Type	= Broad	Broad	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 6.000 (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).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	63.00	0.00	0.00	0.00	---	0.00	0.00	---	---	0.000	---	0.000
0.10	137	63.10	0.00	0.00	0.00	---	0.00	0.00	---	---	0.031	---	0.031
0.20	273	63.20	0.00	0.00	0.00	---	0.00	0.00	---	---	0.062	---	0.062
0.30	410	63.30	0.00	0.00	0.00	---	0.00	0.00	---	---	0.093	---	0.093
0.40	547	63.40	0.00	0.00	0.00	---	0.00	0.00	---	---	0.124	---	0.124
0.50	683	63.50	0.00	0.00	0.00	---	0.00	0.00	---	---	0.155	---	0.155
0.60	820	63.60	0.00	0.00	0.00	---	0.00	0.00	---	---	0.186	---	0.186
0.70	957	63.70	0.00	0.00	0.00	---	0.00	0.00	---	---	0.217	---	0.217
0.80	1,093	63.80	0.00	0.00	0.00	---	0.00	0.00	---	---	0.249	---	0.249
0.90	1,230	63.90	0.00	0.00	0.00	---	0.00	0.00	---	---	0.280	---	0.280
1.00	1,367	64.00	0.00	0.00	0.00	---	0.00	0.00	---	---	0.311	---	0.311
1.10	1,699	64.10	0.00	0.00	0.00	---	0.00	0.00	---	---	0.341	---	0.341
1.20	2,031	64.20	0.00	0.00	0.00	---	0.00	0.00	---	---	0.371	---	0.371
1.30	2,363	64.30	0.00	0.00	0.00	---	0.00	0.00	---	---	0.401	---	0.401
1.40	2,695	64.40	0.00	0.00	0.00	---	0.00	0.00	---	---	0.431	---	0.431
1.50	3,027	64.50	0.00	0.00	0.00	---	0.00	0.00	---	---	0.461	---	0.461
1.60	3,359	64.60	0.01 ic	0.01 ic	0.00	---	0.00	0.00	---	---	0.491	---	0.498
1.70	3,691	64.70	0.01 ic	0.01 ic	0.00	---	0.00	0.00	---	---	0.521	---	0.532
1.80	4,023	64.80	0.01 ic	0.01 ic	0.00	---	0.00	0.00	---	---	0.552	---	0.565
1.90	4,355	64.90	0.02 ic	0.02 ic	0.00	---	0.00	0.00	---	---	0.582	---	0.597
2.00	4,688	65.00	0.02 ic	0.02 ic	0.00	---	0.00	0.00	---	---	0.612	---	0.630
2.10	5,467	65.10	0.02 ic	0.02 ic	0.00	---	0.00	0.00	---	---	0.706	---	0.725
2.20	6,246	65.20	0.02 ic	0.02 ic	0.00	---	0.00	0.00	---	---	0.800	---	0.821
2.30	7,025	65.30	0.02 ic	0.02 ic	0.00	---	0.00	0.00	---	---	0.894	---	0.917
2.40	7,804	65.40	0.02 ic	0.02 ic	0.00	---	0.00	0.00	---	---	0.988	---	1.012
2.50	8,583	65.50	0.03 ic	0.03 ic	0.00	---	0.00	0.00	---	---	1.082	---	1.108
2.60	9,362	65.60	0.03 ic	0.03 ic	0.00	---	0.00	0.00	---	---	1.176	---	1.203
2.70	10,141	65.70	0.03 ic	0.03 ic	0.00	---	0.00	0.00	---	---	1.270	---	1.298
2.80	10,920	65.80	0.03 ic	0.03 ic	0.00	---	0.00	0.00	---	---	1.364	---	1.393
2.90	11,699	65.90	0.03 ic	0.03 ic	0.00	---	0.00	0.00	---	---	1.458	---	1.489
3.00	12,478	66.00	0.03 ic	0.03 ic	0.00	---	0.00	0.00	---	---	1.552	---	1.584
3.10	13,962	66.10	0.03 ic	0.03 ic	0.00	---	0.00	0.00	---	---	1.654	---	1.687
3.20	15,447	66.20	0.03 ic	0.03 ic	0.00	---	0.00	0.00	---	---	1.756	---	1.790
3.30	16,931	66.30	0.04 ic	0.03 ic	0.00	---	0.00	0.00	---	---	1.858	---	1.893
3.40	18,416	66.40	0.04 ic	0.04 ic	0.00	---	0.00	0.00	---	---	1.960	---	1.996
3.50	19,900	66.50	0.04 ic	0.04 ic	0.00	---	0.00	0.00	---	---	2.062	---	2.099

Continues on next page...

Basin D Pond

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
3.60	21,385	66.60	0.04 ic	0.04 ic	0.00	---	0.00	0.00	---	---	2.164	---	2.201
3.70	22,869	66.70	0.04 ic	0.04 ic	0.00	---	0.00	0.00	---	---	2.266	---	2.304
3.80	24,354	66.80	0.04 ic	0.04 ic	0.00	---	0.00	0.00	---	---	2.368	---	2.407
3.90	25,838	66.90	0.04 ic	0.04 ic	0.00	---	0.00	0.00	---	---	2.470	---	2.510
4.00	27,323	67.00	0.04 ic	0.04 ic	0.00	---	0.00	0.00	---	---	2.572	---	2.613
4.10	29,277	67.10	1.25 oc	0.02 ic	0.00	---	1.23	0.00	---	---	2.600	---	3.851
4.20	31,231	67.20	1.35 oc	0.00 ic	0.00	---	1.34 s	0.00	---	---	2.628	---	3.973
4.30	33,185	67.30	1.36 oc	0.00 ic	0.00	---	1.35 s	0.00	---	---	2.657	---	4.010
4.40	35,139	67.40	1.38 oc	0.00 ic	0.00	---	1.38 s	0.00	---	---	2.685	---	4.064
4.50	37,093	67.50	1.40 oc	0.00 ic	0.00	---	1.36 s	0.00	---	---	2.714	---	4.076
4.60	39,047	67.60	1.41 oc	0.00 ic	0.00	---	1.40 s	0.82	---	---	2.742	---	4.963
4.70	41,001	67.70	1.43 oc	0.00 ic	0.00	---	1.37 s	2.33	---	---	2.771	---	6.470
4.80	42,955	67.80	1.45 oc	0.00 ic	0.00	---	1.38 s	4.27	---	---	2.799	---	8.447
4.90	44,909	67.90	1.46 oc	0.00 ic	0.00	---	1.23 s	6.58	---	---	2.828	---	10.64
5.00	46,863	68.00	1.48 oc	0.00 ic	0.00	---	1.45 s	9.19	---	---	2.856	---	13.50
5.05	47,962	68.05	1.49 oc	0.00 ic	0.00	---	0.87 s	10.61	---	---	2.896	---	14.37
5.10	49,061	68.10	1.49 oc	0.00 ic	0.00	---	1.00 s	12.08	---	---	2.935	---	16.02
5.15	50,160	68.15	1.50 oc	0.00 ic	0.00	---	0.97 s	13.63	---	---	2.975	---	17.57
5.20	51,259	68.20	1.51 oc	0.00 ic	0.00	---	1.01 s	15.23	---	---	3.014	---	19.25
5.25	52,359	68.25	1.52 oc	0.00 ic	0.00	---	1.16 s	16.89	---	---	3.053	---	21.10
5.30	53,458	68.30	1.52 oc	0.00 ic	0.00	---	1.11 s	18.60	---	---	3.093	---	22.80
5.35	54,557	68.35	1.53 oc	0.00 ic	0.00	---	1.15 s	20.38	---	---	3.132	---	24.66
5.40	55,656	68.40	1.54 oc	0.00 ic	0.00	---	1.07 s	22.20	---	---	3.172	---	26.44
5.45	56,756	68.45	1.55 oc	0.00 ic	0.00	---	1.25 s	24.08	---	---	3.211	---	28.54
5.50	57,855	68.50	1.55 oc	0.00 ic	0.00	---	0.00 s	26.00	---	---	3.251	---	30.80

...End

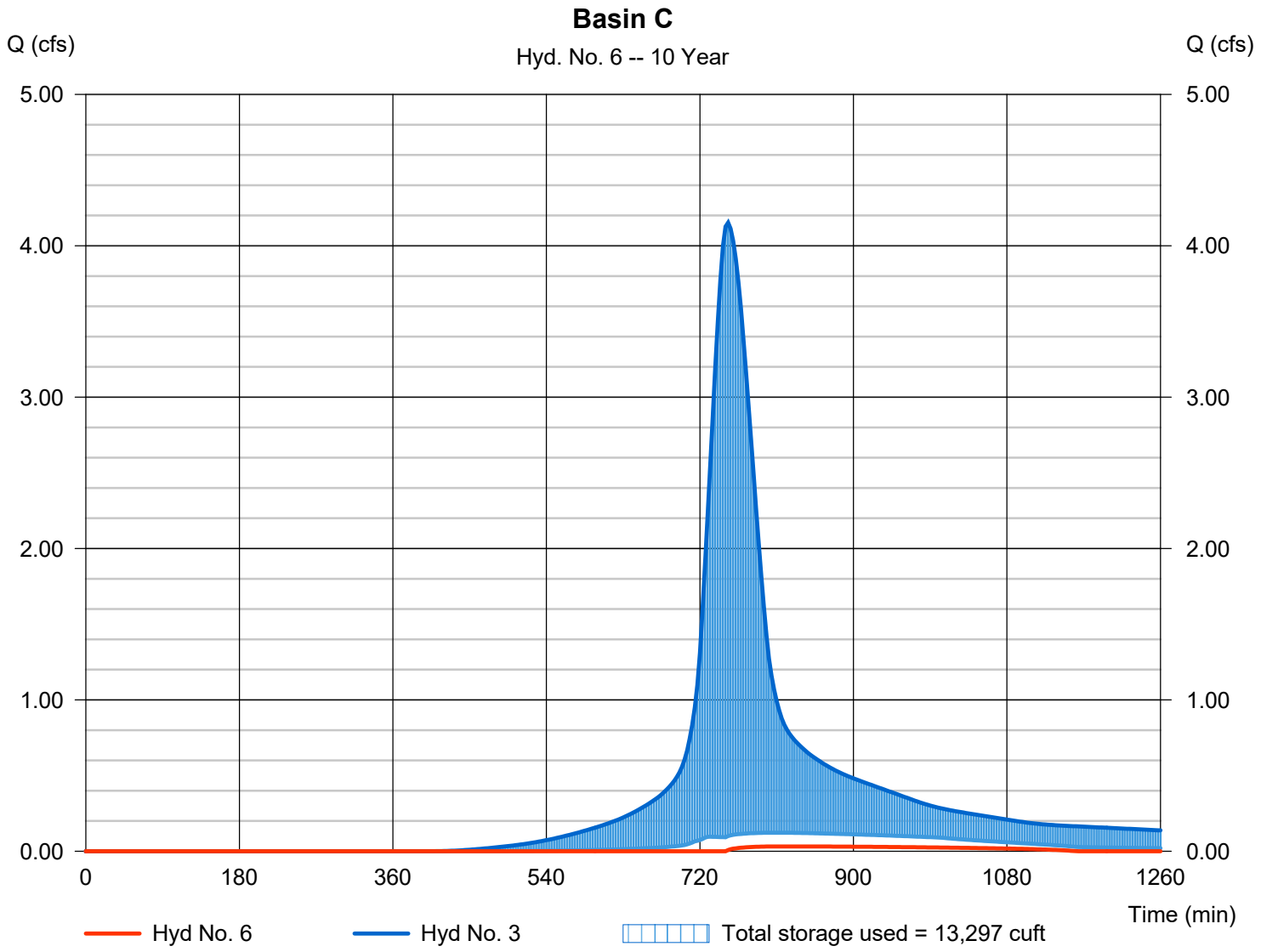
Hydrograph Report

Hyd. No. 6

Basin C

Hydrograph type	=	Reservoir	Peak discharge	=	0.032 cfs
Storm frequency	=	10 yrs	Time to peak	=	825 min
Time interval	=	3 min	Hyd. volume	=	584 cuft
Inflow hyd. No.	=	3 - Subwatershed C	Max. Elevation	=	66.02 ft
Reservoir name	=	Basin C Pond	Max. Storage	=	13,297 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Pond No. 1 - Basin C Pond

Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 62.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	62.00	552	0	0
1.00	63.00	2,187	1,370	1,370
2.00	64.00	3,569	2,878	4,248
3.00	65.00	4,461	4,015	8,263
4.00	66.00	5,411	4,936	13,199
5.00	67.00	6,421	5,916	19,115
6.00	68.00	7,923	7,172	26,287
6.50	68.50	9,350	4,318	30,605

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 6.00	1.00	Inactive	Inactive
Span (in)	= 6.00	1.00	6.00	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 62.50	64.50	65.00	0.00
Length (ft)	= 50.00	1.00	1.00	0.00
Slope (%)	= 1.50	1.00	1.00	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)	= 12.00	10.00	Inactive	Inactive
Crest El. (ft)	= 67.00	67.50	0.00	0.00
Weir Coeff.	= 2.60	2.60	3.33	3.33
Weir Type	= Broad	Broad	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 6.000 (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).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	62.00	0.00	0.00	0.00	---	0.00	0.00	---	---	0.000	---	0.000
0.10	137	62.10	0.00	0.00	0.00	---	0.00	0.00	---	---	0.030	---	0.030
0.20	274	62.20	0.00	0.00	0.00	---	0.00	0.00	---	---	0.061	---	0.061
0.30	411	62.30	0.00	0.00	0.00	---	0.00	0.00	---	---	0.091	---	0.091
0.40	548	62.40	0.00	0.00	0.00	---	0.00	0.00	---	---	0.121	---	0.121
0.50	685	62.50	0.00	0.00	0.00	---	0.00	0.00	---	---	0.152	---	0.152
0.60	822	62.60	0.00	0.00	0.00	---	0.00	0.00	---	---	0.182	---	0.182
0.70	959	62.70	0.00	0.00	0.00	---	0.00	0.00	---	---	0.213	---	0.213
0.80	1,096	62.80	0.00	0.00	0.00	---	0.00	0.00	---	---	0.243	---	0.243
0.90	1,233	62.90	0.00	0.00	0.00	---	0.00	0.00	---	---	0.273	---	0.273
1.00	1,370	63.00	0.00	0.00	0.00	---	0.00	0.00	---	---	0.304	---	0.304
1.10	1,657	63.10	0.00	0.00	0.00	---	0.00	0.00	---	---	0.323	---	0.323
1.20	1,945	63.20	0.00	0.00	0.00	---	0.00	0.00	---	---	0.342	---	0.342
1.30	2,233	63.30	0.00	0.00	0.00	---	0.00	0.00	---	---	0.361	---	0.361
1.40	2,521	63.40	0.00	0.00	0.00	---	0.00	0.00	---	---	0.381	---	0.381
1.50	2,809	63.50	0.00	0.00	0.00	---	0.00	0.00	---	---	0.400	---	0.400
1.60	3,096	63.60	0.00	0.00	0.00	---	0.00	0.00	---	---	0.419	---	0.419
1.70	3,384	63.70	0.00	0.00	0.00	---	0.00	0.00	---	---	0.438	---	0.438
1.80	3,672	63.80	0.00	0.00	0.00	---	0.00	0.00	---	---	0.457	---	0.457
1.90	3,960	63.90	0.00	0.00	0.00	---	0.00	0.00	---	---	0.476	---	0.476
2.00	4,248	64.00	0.00	0.00	0.00	---	0.00	0.00	---	---	0.496	---	0.496
2.10	4,649	64.10	0.00	0.00	0.00	---	0.00	0.00	---	---	0.508	---	0.508
2.20	5,051	64.20	0.00	0.00	0.00	---	0.00	0.00	---	---	0.520	---	0.520
2.30	5,452	64.30	0.00	0.00	0.00	---	0.00	0.00	---	---	0.533	---	0.533
2.40	5,854	64.40	0.00	0.00	0.00	---	0.00	0.00	---	---	0.545	---	0.545
2.50	6,255	64.50	0.00	0.00	0.00	---	0.00	0.00	---	---	0.558	---	0.558
2.60	6,657	64.60	0.01 ic	0.01 ic	0.00	---	0.00	0.00	---	---	0.570	---	0.576
2.70	7,058	64.70	0.01 ic	0.01 ic	0.00	---	0.00	0.00	---	---	0.582	---	0.593
2.80	7,460	64.80	0.01 ic	0.01 ic	0.00	---	0.00	0.00	---	---	0.595	---	0.608
2.90	7,861	64.90	0.02 ic	0.02 ic	0.00	---	0.00	0.00	---	---	0.607	---	0.623
3.00	8,263	65.00	0.02 ic	0.02 ic	0.00	---	0.00	0.00	---	---	0.620	---	0.637
3.10	8,756	65.10	0.02 ic	0.02 ic	0.00	---	0.00	0.00	---	---	0.633	---	0.652
3.20	9,250	65.20	0.02 ic	0.02 ic	0.00	---	0.00	0.00	---	---	0.646	---	0.667
3.30	9,743	65.30	0.02 ic	0.02 ic	0.00	---	0.00	0.00	---	---	0.659	---	0.682
3.40	10,237	65.40	0.02 ic	0.02 ic	0.00	---	0.00	0.00	---	---	0.672	---	0.697

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Basin C Pond

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
3.50	10,731	65.50	0.03 ic	0.03 ic	0.00	---	0.00	0.00	---	---	0.686	---	0.711
3.60	11,224	65.60	0.03 ic	0.03 ic	0.00	---	0.00	0.00	---	---	0.699	---	0.726
3.70	11,718	65.70	0.03 ic	0.03 ic	0.00	---	0.00	0.00	---	---	0.712	---	0.740
3.80	12,211	65.80	0.03 ic	0.03 ic	0.00	---	0.00	0.00	---	---	0.725	---	0.755
3.90	12,705	65.90	0.03 ic	0.03 ic	0.00	---	0.00	0.00	---	---	0.738	---	0.769
4.00	13,199	66.00	0.03 ic	0.03 ic	0.00	---	0.00	0.00	---	---	0.752	---	0.783
4.10	13,790	66.10	0.03 ic	0.03 ic	0.00	---	0.00	0.00	---	---	0.766	---	0.798
4.20	14,382	66.20	0.03 ic	0.03 ic	0.00	---	0.00	0.00	---	---	0.780	---	0.813
4.30	14,973	66.30	0.04 ic	0.03 ic	0.00	---	0.00	0.00	---	---	0.794	---	0.828
4.40	15,565	66.40	0.04 ic	0.04 ic	0.00	---	0.00	0.00	---	---	0.808	---	0.843
4.50	16,157	66.50	0.04 ic	0.04 ic	0.00	---	0.00	0.00	---	---	0.822	---	0.858
4.60	16,748	66.60	0.04 ic	0.04 ic	0.00	---	0.00	0.00	---	---	0.836	---	0.873
4.70	17,340	66.70	0.04 ic	0.04 ic	0.00	---	0.00	0.00	---	---	0.850	---	0.888
4.80	17,931	66.80	0.04 ic	0.04 ic	0.00	---	0.00	0.00	---	---	0.864	---	0.903
4.90	18,523	66.90	0.04 ic	0.04 ic	0.00	---	0.00	0.00	---	---	0.878	---	0.918
5.00	19,115	67.00	0.04 ic	0.04 ic	0.00	---	0.00	0.00	---	---	0.892	---	0.933
5.10	19,832	67.10	1.03 oc	0.04 ic	0.00	---	0.99	0.00	---	---	0.913	---	1.941
5.20	20,549	67.20	1.51 oc	0.00 ic	0.00	---	1.50 s	0.00	---	---	0.934	---	2.437
5.30	21,266	67.30	1.52 oc	0.00 ic	0.00	---	1.52 s	0.00	---	---	0.954	---	2.474
5.40	21,983	67.40	1.54 oc	0.00 ic	0.00	---	1.54 s	0.00	---	---	0.975	---	2.512
5.50	22,701	67.50	1.55 oc	0.00 ic	0.00	---	1.54 s	0.00	---	---	0.996	---	2.540
5.60	23,418	67.60	1.57 oc	0.00 ic	0.00	---	1.56 s	0.82	---	---	1.017	---	3.396
5.70	24,135	67.70	1.58 oc	0.00 ic	0.00	---	1.51 s	2.33	---	---	1.038	---	4.871
5.80	24,852	67.80	1.60 oc	0.00 ic	0.00	---	1.54 s	4.27	---	---	1.059	---	6.872
5.90	25,569	67.90	1.61 oc	0.00 ic	0.00	---	1.45 s	6.58	---	---	1.080	---	9.111
6.00	26,287	68.00	1.63 oc	0.00 ic	0.00	---	1.45 s	9.19	---	---	1.100	---	11.74
6.05	26,718	68.05	1.63 oc	0.00 ic	0.00	---	1.53 s	10.61	---	---	1.120	---	13.26
6.10	27,150	68.10	1.64 oc	0.00 ic	0.00	---	1.63 s	12.08	---	---	1.140	---	14.86
6.15	27,582	68.15	1.65 oc	0.00 ic	0.00	---	1.36 s	13.63	---	---	1.160	---	16.15
6.20	28,014	68.20	1.65 oc	0.00 ic	0.00	---	1.43 s	15.23	---	---	1.180	---	17.83
6.25	28,446	68.25	1.66 oc	0.00 ic	0.00	---	1.53 s	16.89	---	---	1.200	---	19.61
6.30	28,877	68.30	1.67 oc	0.00 ic	0.00	---	1.56 s	18.60	---	---	1.219	---	21.38
6.35	29,309	68.35	1.68 oc	0.00 ic	0.00	---	1.63 s	20.38	---	---	1.239	---	23.24
6.40	29,741	68.40	1.68 oc	0.00 ic	0.00	---	1.65 s	22.20	---	---	1.259	---	25.11
6.45	30,173	68.45	1.69 oc	0.00 ic	0.00	---	1.00 s	24.08	---	---	1.279	---	26.35
6.50	30,605	68.50	1.70 oc	0.00 ic	0.00	---	1.65 s	26.00	---	---	1.299	---	28.95

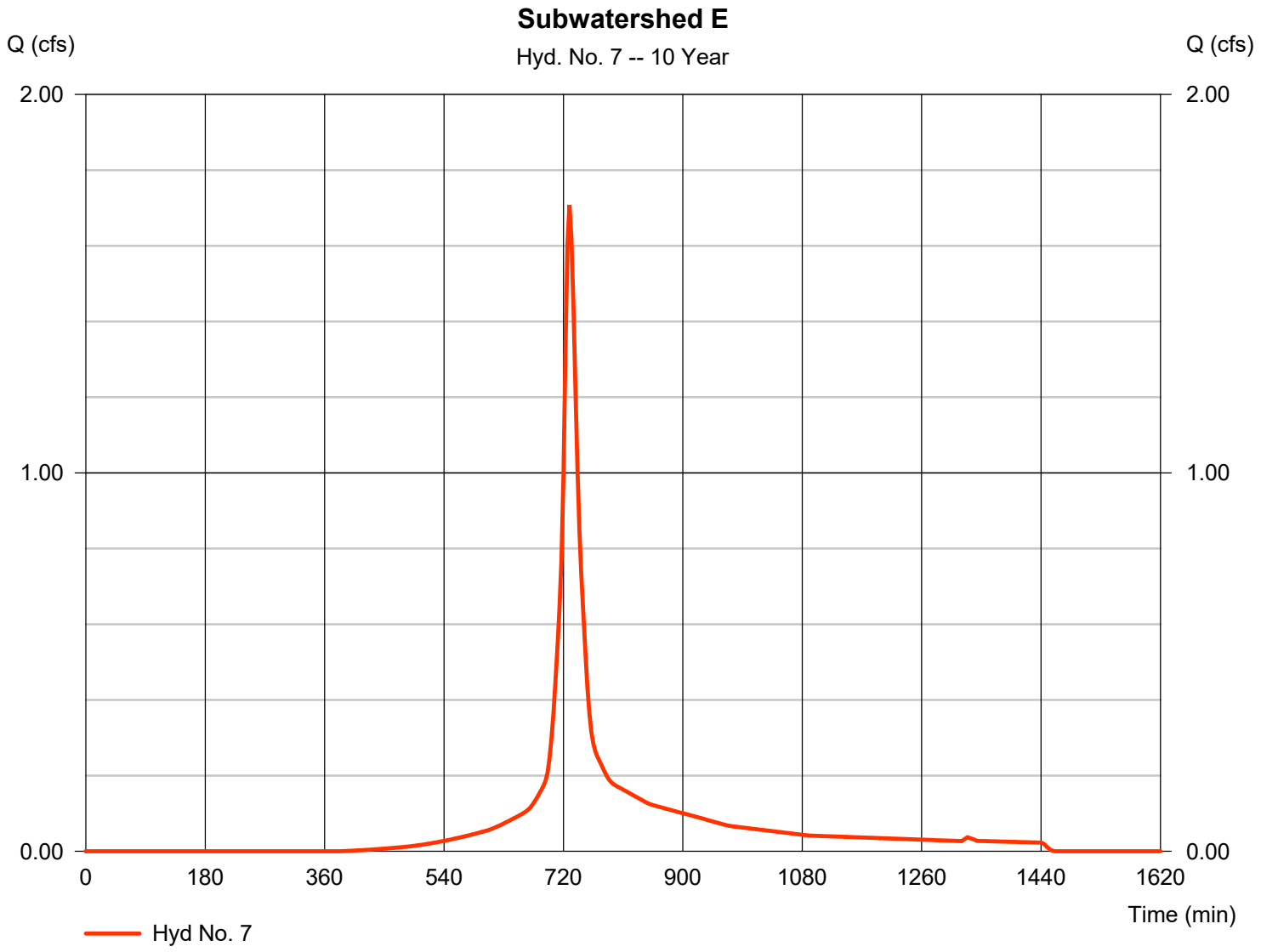
...End

Hydrograph Report

Hyd. No. 7

Subwatershed E

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.708 cfs
Storm frequency	=	10 yrs	Time to peak	=	729 min
Time interval	=	3 min	Hyd. volume	=	6,760 cuft
Drainage area	=	0.460 ac	Curve number	=	81
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	13.50 min
Total precip.	=	6.18 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



TR55 Tc Worksheet

Hyd. No. 7

Subwatershed E

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.240		0.011		
Flow length (ft)	= 138.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.43		3.43		3.43		
Land slope (%)	= 4.00		1.10		1.00		
Travel Time (min)	**= 13.52**	**+**	**0.00**	**+**	**0.00**	**=**	**13.52**
Shallow Concentrated Flow							
Flow length (ft)	= 0.00		0.00		0.00		
Watercourse slope (%)	= 3.00		0.00		0.00		
Surface description	= Paved		Paved		Paved		
Average velocity (ft/s)	=3.52		0.00		0.00		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 13.50 min

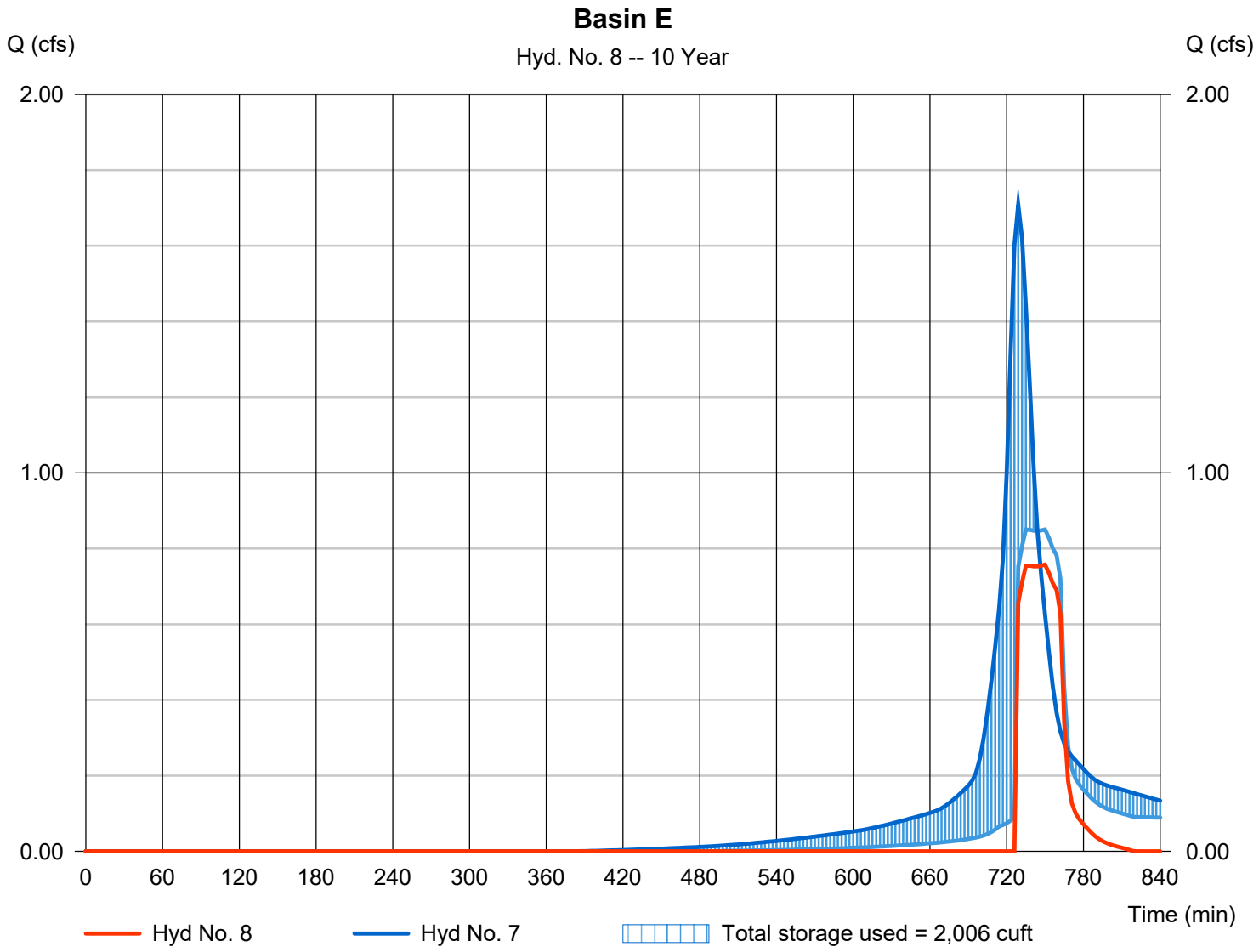
Hydrograph Report

Hyd. No. 8

Basin E

Hydrograph type	=	Reservoir	Peak discharge	=	0.757 cfs
Storm frequency	=	10 yrs	Time to peak	=	750 min
Time interval	=	3 min	Hyd. volume	=	1,775 cuft
Inflow hyd. No.	=	7 - Subwatershed E	Max. Elevation	=	63.05 ft
Reservoir name	=	Basin E Pond	Max. Storage	=	2,006 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond No. 4 - Basin E Pond

Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 60.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	60.00	153	0	0
1.00	61.00	406	280	280
2.00	62.00	742	574	854
3.00	63.00	1,378	1,060	1,914
4.00	64.00	2,249	1,814	3,727
4.50	64.50	3,499	1,437	5,164

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 6.00	Inactive	Inactive	Inactive
Span (in)	= 6.00	1.00	12.00	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 62.00	61.25	62.00	0.00
Length (ft)	= 50.00	1.00	1.00	0.00
Slope (%)	= 1.50	1.00	1.00	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)	= 12.00	10.00	Inactive	Inactive
Crest El. (ft)	= 62.60	64.00	0.00	0.00
Weir Coeff.	= 2.60	2.60	3.33	3.33
Weir Type	= Broad	Broad	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 6.000 (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).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	60.00	0.00	0.00	0.00	---	0.00	0.00	---	---	0.000	---	0.000
0.10	28	60.10	0.00	0.00	0.00	---	0.00	0.00	---	---	0.006	---	0.006
0.20	56	60.20	0.00	0.00	0.00	---	0.00	0.00	---	---	0.011	---	0.011
0.30	84	60.30	0.00	0.00	0.00	---	0.00	0.00	---	---	0.017	---	0.017
0.40	112	60.40	0.00	0.00	0.00	---	0.00	0.00	---	---	0.023	---	0.023
0.50	140	60.50	0.00	0.00	0.00	---	0.00	0.00	---	---	0.028	---	0.028
0.60	168	60.60	0.00	0.00	0.00	---	0.00	0.00	---	---	0.034	---	0.034
0.70	196	60.70	0.00	0.00	0.00	---	0.00	0.00	---	---	0.039	---	0.039
0.80	224	60.80	0.00	0.00	0.00	---	0.00	0.00	---	---	0.045	---	0.045
0.90	252	60.90	0.00	0.00	0.00	---	0.00	0.00	---	---	0.051	---	0.051
1.00	280	61.00	0.00	0.00	0.00	---	0.00	0.00	---	---	0.056	---	0.056
1.10	337	61.10	0.00	0.00	0.00	---	0.00	0.00	---	---	0.061	---	0.061
1.20	394	61.20	0.00	0.00	0.00	---	0.00	0.00	---	---	0.066	---	0.066
1.30	452	61.30	0.00	0.00	0.00	---	0.00	0.00	---	---	0.070	---	0.070
1.40	509	61.40	0.00	0.00	0.00	---	0.00	0.00	---	---	0.075	---	0.075
1.50	567	61.50	0.00	0.00	0.00	---	0.00	0.00	---	---	0.080	---	0.080
1.60	624	61.60	0.00	0.00	0.00	---	0.00	0.00	---	---	0.084	---	0.084
1.70	681	61.70	0.00	0.00	0.00	---	0.00	0.00	---	---	0.089	---	0.089
1.80	739	61.80	0.00	0.00	0.00	---	0.00	0.00	---	---	0.094	---	0.094
1.90	796	61.90	0.00	0.00	0.00	---	0.00	0.00	---	---	0.098	---	0.098
2.00	854	62.00	0.00	0.00	0.00	---	0.00	0.00	---	---	0.103	---	0.103
2.10	960	62.10	0.00	0.00	0.00	---	0.00	0.00	---	---	0.112	---	0.112
2.20	1,066	62.20	0.00	0.00	0.00	---	0.00	0.00	---	---	0.121	---	0.121
2.30	1,172	62.30	0.00	0.00	0.00	---	0.00	0.00	---	---	0.130	---	0.130
2.40	1,278	62.40	0.00	0.00	0.00	---	0.00	0.00	---	---	0.138	---	0.138
2.50	1,384	62.50	0.00	0.00	0.00	---	0.00	0.00	---	---	0.147	---	0.147
2.60	1,490	62.60	0.00	0.00	0.00	---	0.00	0.00	---	---	0.156	---	0.156
2.70	1,596	62.70	0.62 ic	0.00	0.00	---	0.62 s	0.00	---	---	0.165	---	0.784
2.80	1,702	62.80	0.69 oc	0.00	0.00	---	0.69 s	0.00	---	---	0.174	---	0.866
2.90	1,808	62.90	0.73 oc	0.00	0.00	---	0.71 s	0.00	---	---	0.183	---	0.895
3.00	1,914	63.00	0.76 oc	0.00	0.00	---	0.76 s	0.00	---	---	0.191	---	0.949
3.10	2,095	63.10	0.79 oc	0.00	0.00	---	0.75 s	0.00	---	---	0.203	---	0.951
3.20	2,276	63.20	0.82 oc	0.00	0.00	---	0.79 s	0.00	---	---	0.216	---	1.003
3.30	2,458	63.30	0.84 oc	0.00	0.00	---	0.73 s	0.00	---	---	0.228	---	0.953
3.40	2,639	63.40	0.87 oc	0.00	0.00	---	0.84 s	0.00	---	---	0.240	---	1.082
3.50	2,820	63.50	0.90 oc	0.00	0.00	---	0.34 s	0.00	---	---	0.252	---	0.589
3.60	3,002	63.60	0.92 oc	0.00	0.00	---	0.38 s	0.00	---	---	0.264	---	0.644

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Basin E Pond

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
3.70	3,183	63.70	0.95 oc	0.00	0.00	---	0.42 s	0.00	---	---	0.276	---	0.697
3.80	3,364	63.80	0.97 oc	0.00	0.00	---	0.46 s	0.00	---	---	0.288	---	0.751
3.90	3,546	63.90	0.99 oc	0.00	0.00	---	0.51 s	0.00	---	---	0.300	---	0.808
4.00	3,727	64.00	1.02 oc	0.00	0.00	---	0.86 s	0.00	---	---	0.312	---	1.171
4.05	3,871	64.05	1.03 oc	0.00	0.00	---	0.89 s	0.29	---	---	0.330	---	1.514
4.10	4,014	64.10	1.04 oc	0.00	0.00	---	0.93 s	0.82	---	---	0.347	---	2.096
4.15	4,158	64.15	1.05 oc	0.00	0.00	---	0.96 s	1.51	---	---	0.364	---	2.837
4.20	4,302	64.20	1.06 oc	0.00	0.00	---	1.00 s	2.33	---	---	0.382	---	3.705
4.25	4,446	64.25	1.07 oc	0.00	0.00	---	1.03 s	3.25	---	---	0.399	---	4.682
4.30	4,589	64.30	1.08 oc	0.00	0.00	---	1.07 s	4.27	---	---	0.417	---	5.756
4.35	4,733	64.35	1.09 oc	0.00	0.00	---	0.00 s	5.38	---	---	0.434	---	6.912
4.40	4,877	64.40	1.10 oc	0.00	0.00	---	0.00	6.58	---	---	0.451	---	8.134
4.45	5,020	64.45	1.11 oc	0.00	0.00	---	0.00	7.85	---	---	0.469	---	9.433
4.50	5,164	64.50	1.12 oc	0.00	0.00	---	0.00	9.19	---	---	0.486	---	10.80

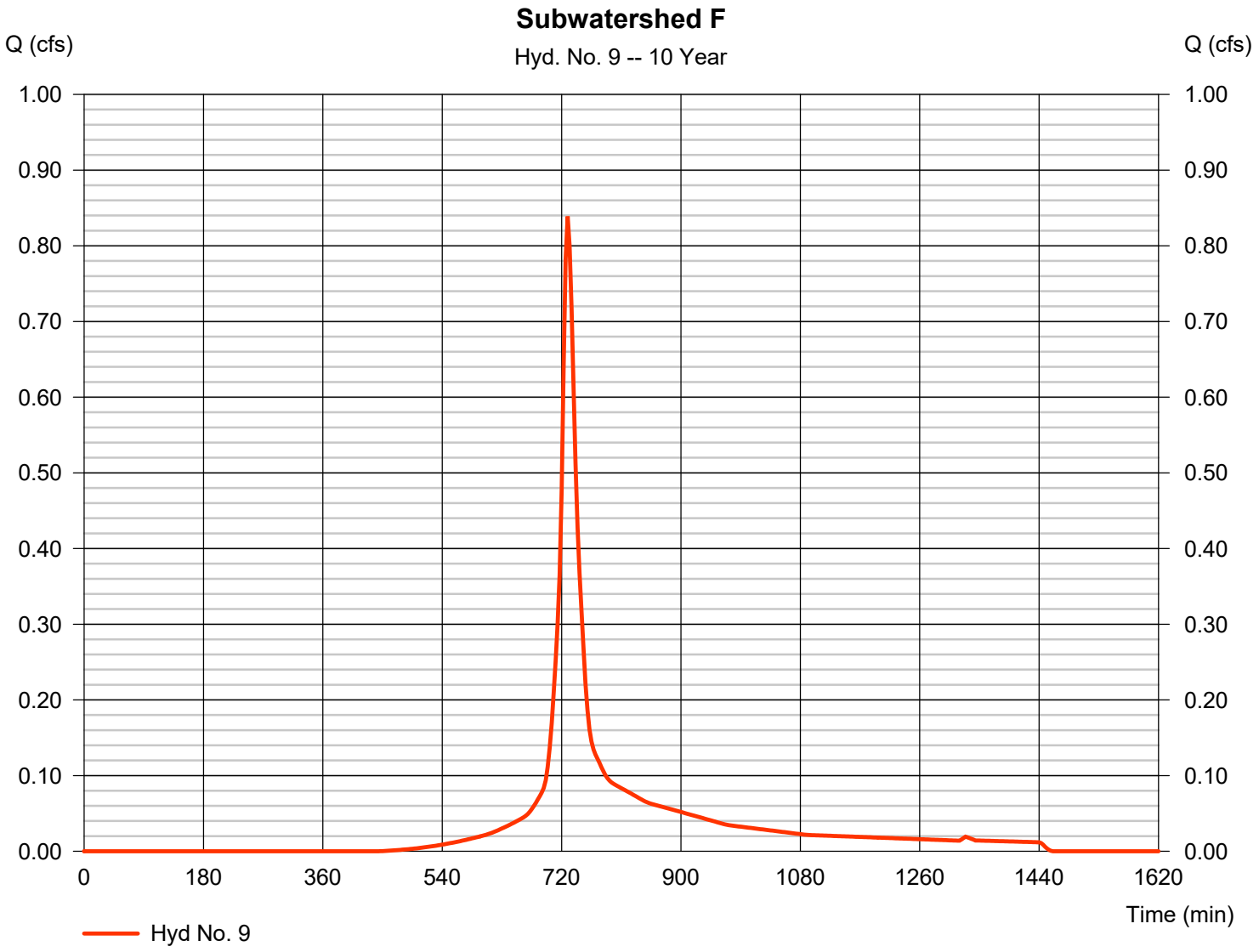
...End

Hydrograph Report

Hyd. No. 9

Subwatershed F

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.839 cfs
Storm frequency	=	10 yrs	Time to peak	=	729 min
Time interval	=	3 min	Hyd. volume	=	3,300 cuft
Drainage area	=	0.250 ac	Curve number	=	77
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	12.10 min
Total precip.	=	6.18 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



TR55 Tc Worksheet

Hyd. No. 9

Subwatershed F

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.400		0.011		
Flow length (ft)	= 90.6		16.6		0.0		
Two-year 24-hr precip. (in)	= 3.43		3.43		0.00		
Land slope (%)	= 6.60		3.03		0.00		
Travel Time (min)	**= 7.90**	**+**	**4.18**	**+**	**0.00**	**=**	**12.08**
Shallow Concentrated Flow							
Flow length (ft)	= 0.00		0.00		0.00		
Watercourse slope (%)	= 4.50		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=3.42		0.00		0.00		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 12.10 min

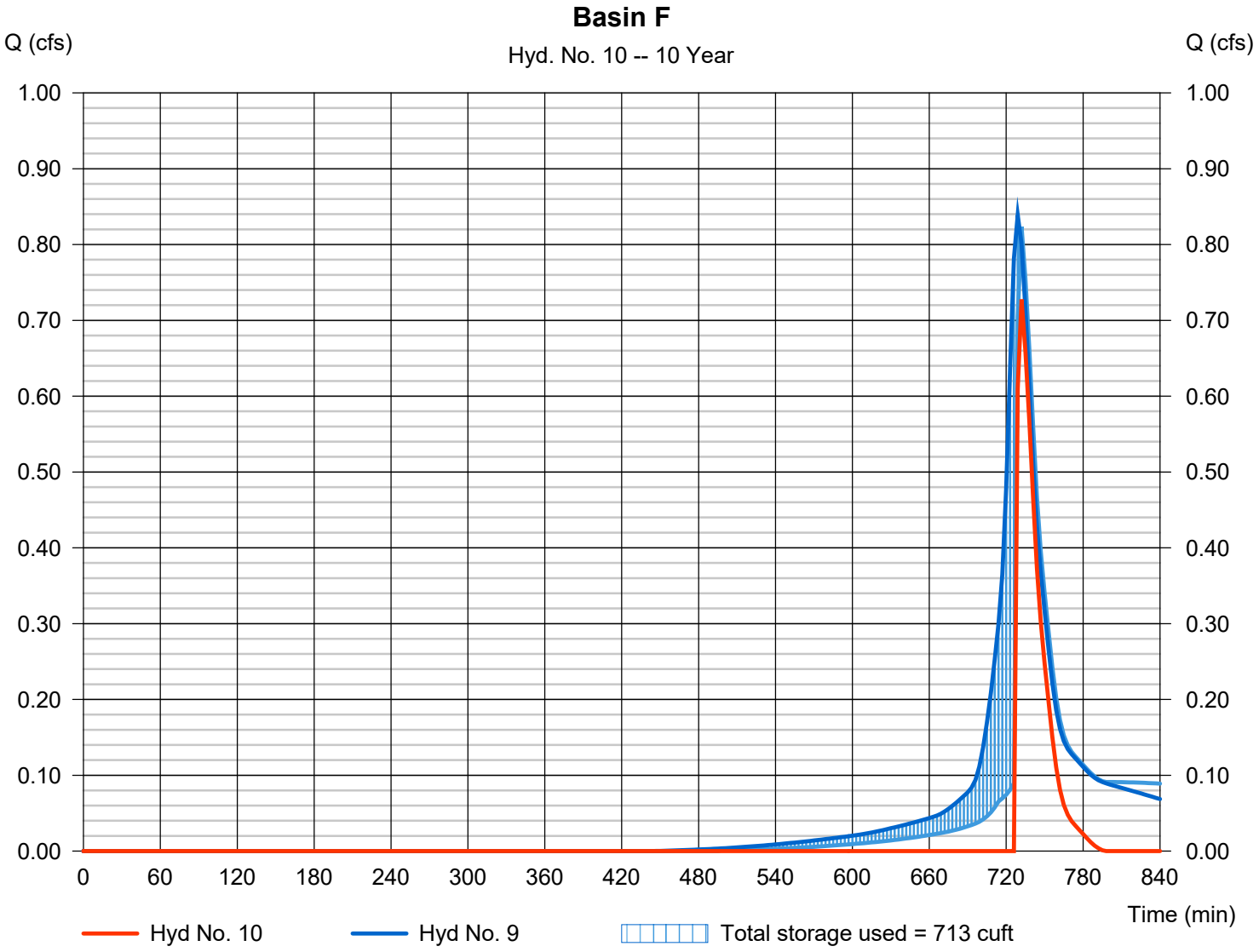
Hydrograph Report

Hyd. No. 10

Basin F

Hydrograph type	=	Reservoir	Peak discharge	=	0.728 cfs
Storm frequency	=	10 yrs	Time to peak	=	732 min
Time interval	=	3 min	Hyd. volume	=	858 cuft
Inflow hyd. No.	=	9 - Subwatershed F	Max. Elevation	=	62.59 ft
Reservoir name	=	Basin F Pond	Max. Storage	=	713 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond No. 3 - Basin F Pond

Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 61.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	61.00	171	0	0
1.00	62.00	476	324	324
2.00	63.00	837	657	980
3.00	64.00	1,255	1,046	2,026
3.50	64.50	1,900	789	2,815

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 6.00	Inactive	Inactive	Inactive
Span (in)	= 6.00	2.00	1.00	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 61.50	61.00	62.50	0.00
Length (ft)	= 50.00	1.00	1.00	0.00
Slope (%)	= 1.50	1.00	1.00	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)	= 12.00	10.00	Inactive	Inactive
Crest El. (ft)	= 62.50	64.00	0.00	0.00
Weir Coeff.	= 2.60	2.60	3.33	3.33
Weir Type	= Broad	Broad	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 6.000 (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).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	61.00	0.00	0.00	0.00	---	0.00	0.00	---	---	0.000	---	0.000
0.10	32	61.10	0.00	0.00	0.00	---	0.00	0.00	---	---	0.007	---	0.007
0.20	65	61.20	0.00	0.00	0.00	---	0.00	0.00	---	---	0.013	---	0.013
0.30	97	61.30	0.00	0.00	0.00	---	0.00	0.00	---	---	0.020	---	0.020
0.40	129	61.40	0.00	0.00	0.00	---	0.00	0.00	---	---	0.026	---	0.026
0.50	162	61.50	0.00	0.00	0.00	---	0.00	0.00	---	---	0.033	---	0.033
0.60	194	61.60	0.00	0.00	0.00	---	0.00	0.00	---	---	0.040	---	0.040
0.70	226	61.70	0.00	0.00	0.00	---	0.00	0.00	---	---	0.046	---	0.046
0.80	259	61.80	0.00	0.00	0.00	---	0.00	0.00	---	---	0.053	---	0.053
0.90	291	61.90	0.00	0.00	0.00	---	0.00	0.00	---	---	0.059	---	0.059
1.00	324	62.00	0.00	0.00	0.00	---	0.00	0.00	---	---	0.066	---	0.066
1.10	389	62.10	0.00	0.00	0.00	---	0.00	0.00	---	---	0.071	---	0.071
1.20	455	62.20	0.00	0.00	0.00	---	0.00	0.00	---	---	0.076	---	0.076
1.30	520	62.30	0.00	0.00	0.00	---	0.00	0.00	---	---	0.081	---	0.081
1.40	586	62.40	0.00	0.00	0.00	---	0.00	0.00	---	---	0.086	---	0.086
1.50	652	62.50	0.00	0.00	0.00	---	0.00	0.00	---	---	0.091	---	0.091
1.60	717	62.60	0.78 oc	0.00	0.00	---	0.78 s	0.00	---	---	0.096	---	0.872
1.70	783	62.70	0.82 oc	0.00	0.00	---	0.81 s	0.00	---	---	0.101	---	0.916
1.80	849	62.80	0.84 oc	0.00	0.00	---	0.83 s	0.00	---	---	0.106	---	0.940
1.90	914	62.90	0.87 oc	0.00	0.00	---	0.84 s	0.00	---	---	0.111	---	0.951
2.00	980	63.00	0.90 oc	0.00	0.00	---	0.83 s	0.00	---	---	0.116	---	0.947
2.10	1,085	63.10	0.92 oc	0.00	0.00	---	0.91 s	0.00	---	---	0.122	---	1.034
2.20	1,189	63.20	0.95 oc	0.00	0.00	---	0.94 s	0.00	---	---	0.128	---	1.063
2.30	1,294	63.30	0.97 oc	0.00	0.00	---	0.84 s	0.00	---	---	0.134	---	0.976
2.40	1,398	63.40	0.99 oc	0.00	0.00	---	0.93 s	0.00	---	---	0.139	---	1.073
2.50	1,503	63.50	1.02 oc	0.00	0.00	---	0.00 s	0.00	---	---	0.145	---	1.163
2.60	1,608	63.60	1.04 oc	0.00	0.00	---	0.00	0.00	---	---	0.151	---	1.191
2.70	1,712	63.70	1.06 oc	0.00	0.00	---	0.00	0.00	---	---	0.157	---	1.219
2.80	1,817	63.80	1.08 oc	0.00	0.00	---	0.00	0.00	---	---	0.163	---	1.246
2.90	1,921	63.90	1.10 oc	0.00	0.00	---	0.00	0.00	---	---	0.168	---	1.273
3.00	2,026	64.00	1.12 oc	0.00	0.00	---	0.00	0.00	---	---	0.174	---	1.299
3.05	2,105	64.05	1.14 oc	0.00	0.00	---	0.00	0.29	---	---	0.183	---	1.609
3.10	2,184	64.10	1.15 oc	0.00	0.00	---	0.00	0.82	---	---	0.192	---	2.160
3.15	2,263	64.15	1.16 oc	0.00	0.00	---	0.00	1.51	---	---	0.201	---	2.867
3.20	2,342	64.20	1.17 oc	0.00	0.00	---	0.00	2.33	---	---	0.210	---	3.701
3.25	2,420	64.25	1.17 oc	0.00	0.00	---	0.00	3.25	---	---	0.219	---	4.644
3.30	2,499	64.30	1.18 oc	0.00	0.00	---	0.00	4.27	---	---	0.228	---	5.685
3.35	2,578	64.35	1.19 oc	0.00	0.00	---	0.00	5.38	---	---	0.237	---	6.815

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Basin F Pond

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
3.40	2,657	64.40	1.20 oc	0.00	0.00	---	0.00	6.58	---	---	0.246	---	8.028
3.45	2,736	64.45	1.21 oc	0.00	0.00	---	0.00	7.85	---	---	0.255	---	9.318
3.50	2,815	64.50	1.22 oc	0.00	0.00	---	0.00	9.19	---	---	0.264	---	10.68

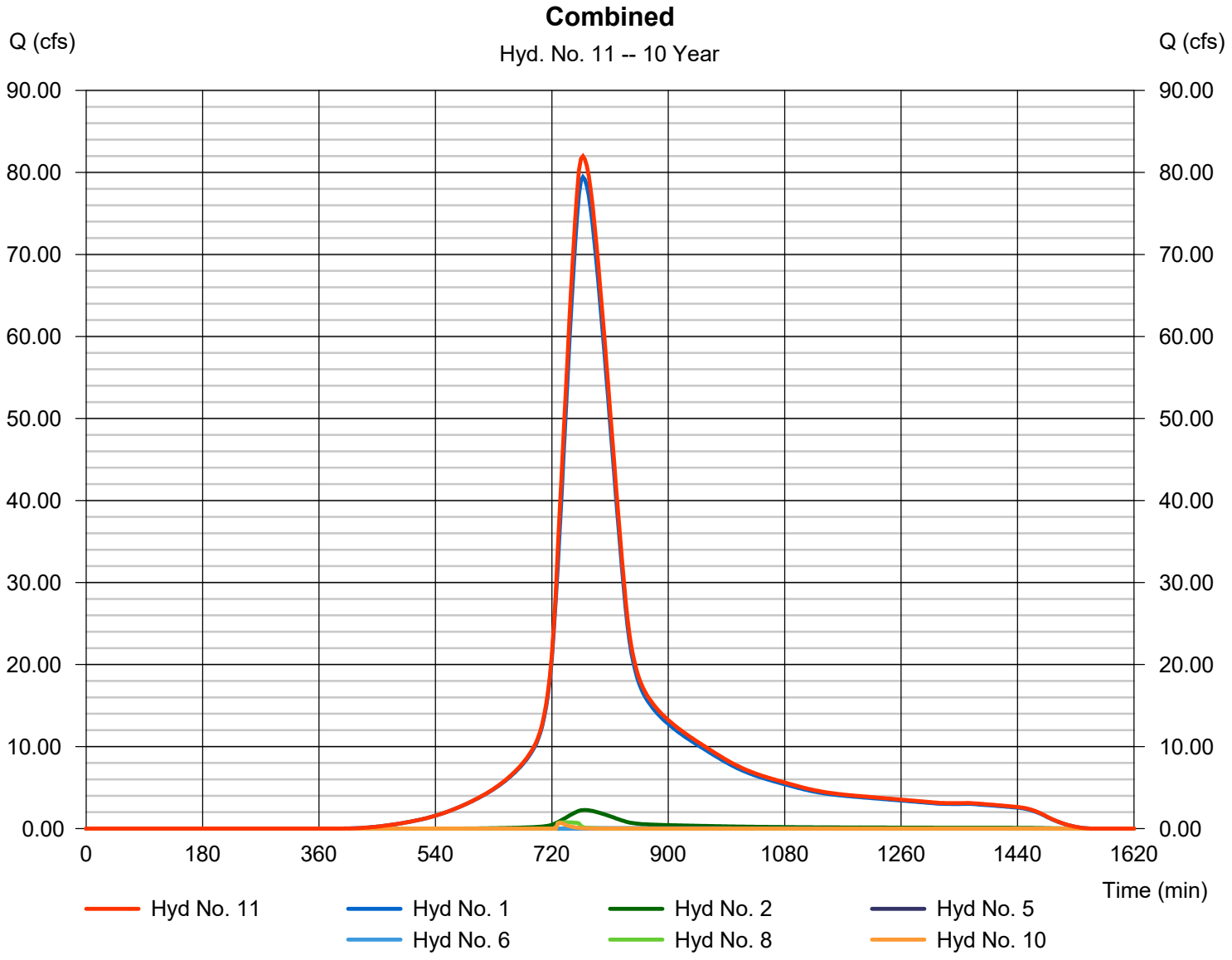
...End

Hydrograph Report

Hyd. No. 11

Combined

Hydrograph type	=	Combine	Peak discharge	=	81.98 cfs
Storm frequency	=	10 yrs	Time to peak	=	768 min
Time interval	=	3 min	Hyd. volume	=	713,679 cuft
Inflow hyds.	=	1, 2, 5, 6, 8, 10	Contrib. drain. area	=	48.810 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

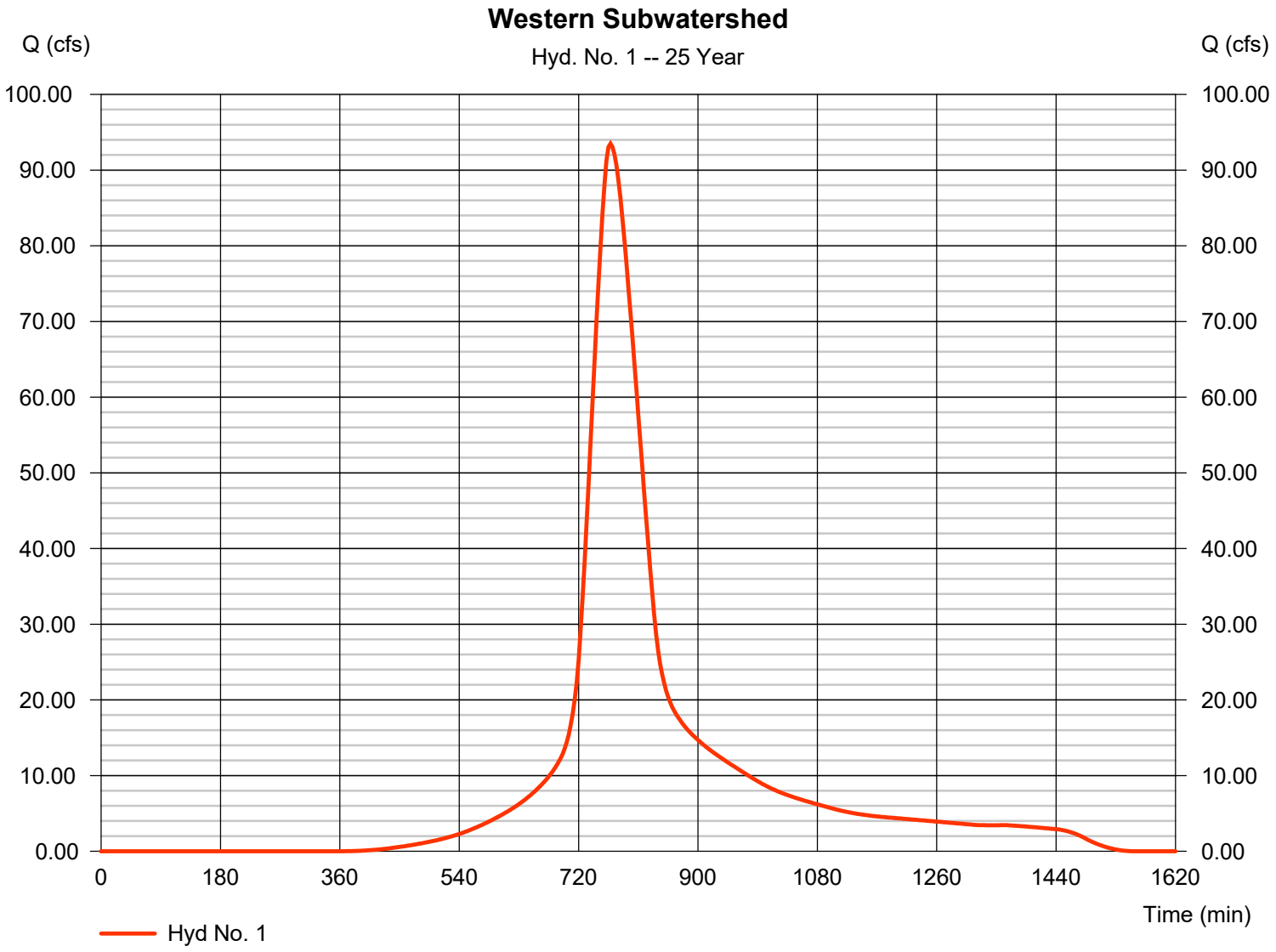
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	93.49	3	768	814,335	------	------	------	Western Subwatershed
2	SCS Runoff	2.768	3	771	24,132	------	------	------	Eastern Subwatershed
3	SCS Runoff	4.898	3	753	33,618	------	------	------	Subwatershed C
4	SCS Runoff	4.419	3	774	41,485	------	------	------	Subwatershed D
5	Reservoir	0.034	3	840	703	4	66.24	16,028	Basin D
6	Reservoir	0.037	3	831	832	3	66.51	16,196	Basin C
7	SCS Runoff	2.006	3	729	7,977	------	------	------	Subwatershed E
8	Reservoir	0.782	3	753	2,502	7	63.19	2,401	Basin E
9	SCS Runoff	0.999	3	729	3,938	------	------	------	Subwatershed F
10	Reservoir	0.795	3	735	1,243	9	62.65	750	Basin F
11	Combine	97.10	3	768	843,747	1, 2, 5, 6, 8, 10	------	------	Combined

Hydrograph Report

Hyd. No. 1

Western Subwatershed

Hydrograph type	= SCS Runoff	Peak discharge	= 93.49 cfs
Storm frequency	= 25 yrs	Time to peak	= 768 min
Time interval	= 3 min	Hyd. volume	= 814,335 cuft
Drainage area	= 46.960 ac	Curve number	= 81
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 72.90 min
Total precip.	= 6.97 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

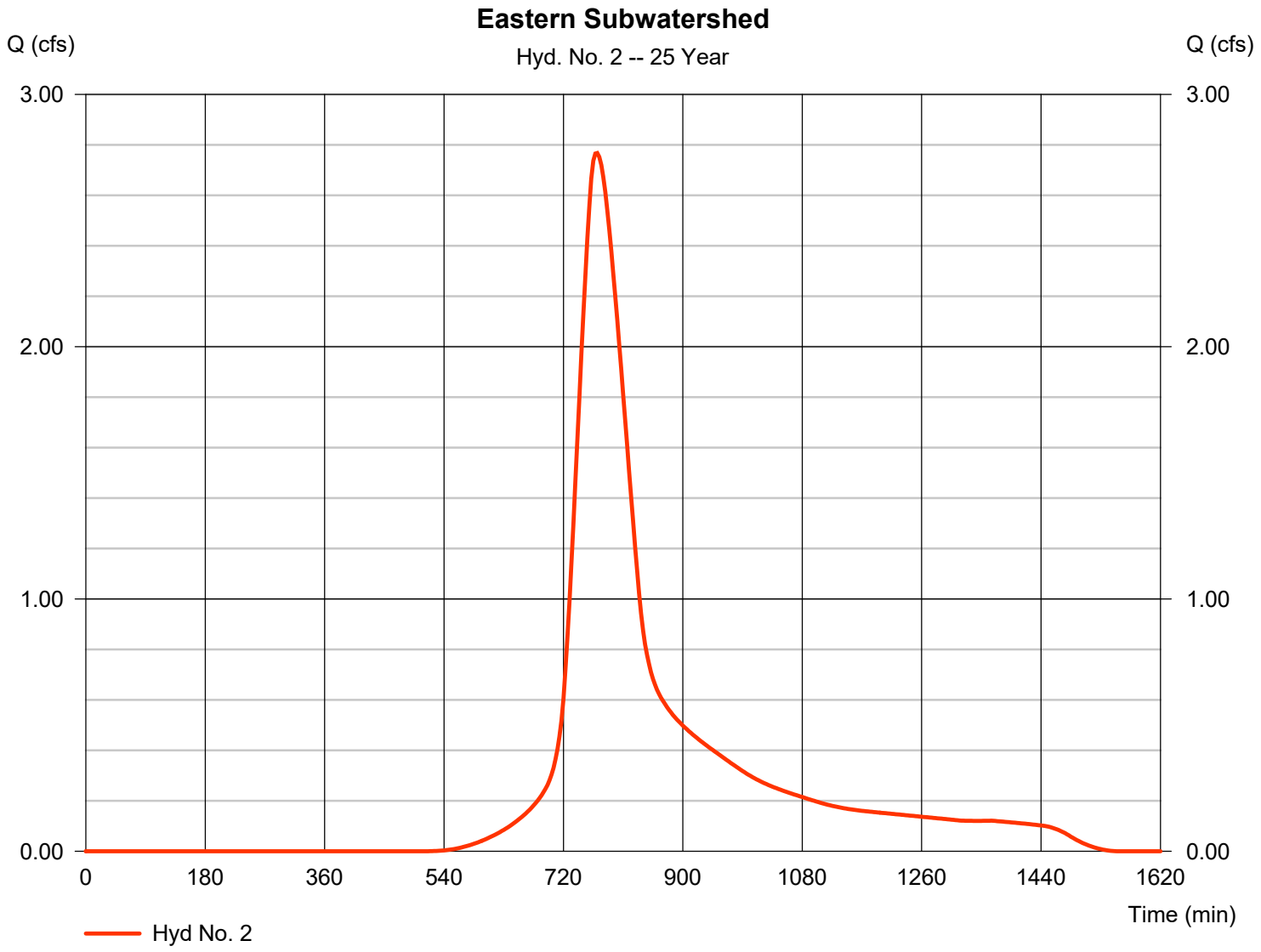


Hydrograph Report

Hyd. No. 2

Eastern Subwatershed

Hydrograph type	= SCS Runoff	Peak discharge	= 2.768 cfs
Storm frequency	= 25 yrs	Time to peak	= 771 min
Time interval	= 3 min	Hyd. volume	= 24,132 cuft
Drainage area	= 1.850 ac	Curve number	= 70
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 73.00 min
Total precip.	= 6.97 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

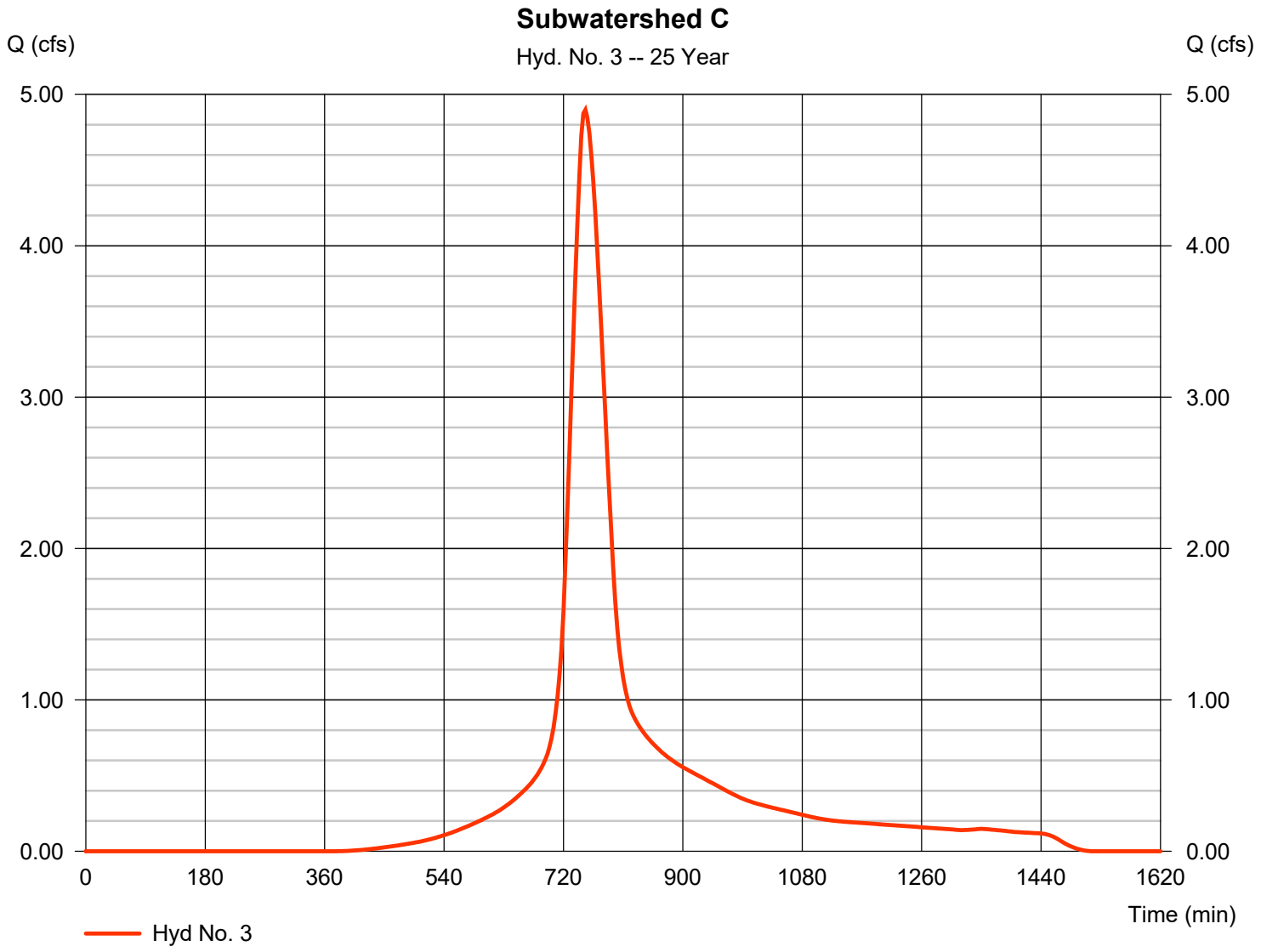


Hydrograph Report

Hyd. No. 3

Subwatershed C

Hydrograph type	= SCS Runoff	Peak discharge	= 4.898 cfs
Storm frequency	= 25 yrs	Time to peak	= 753 min
Time interval	= 3 min	Hyd. volume	= 33,618 cuft
Drainage area	= 1.960 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 48.80 min
Total precip.	= 6.97 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

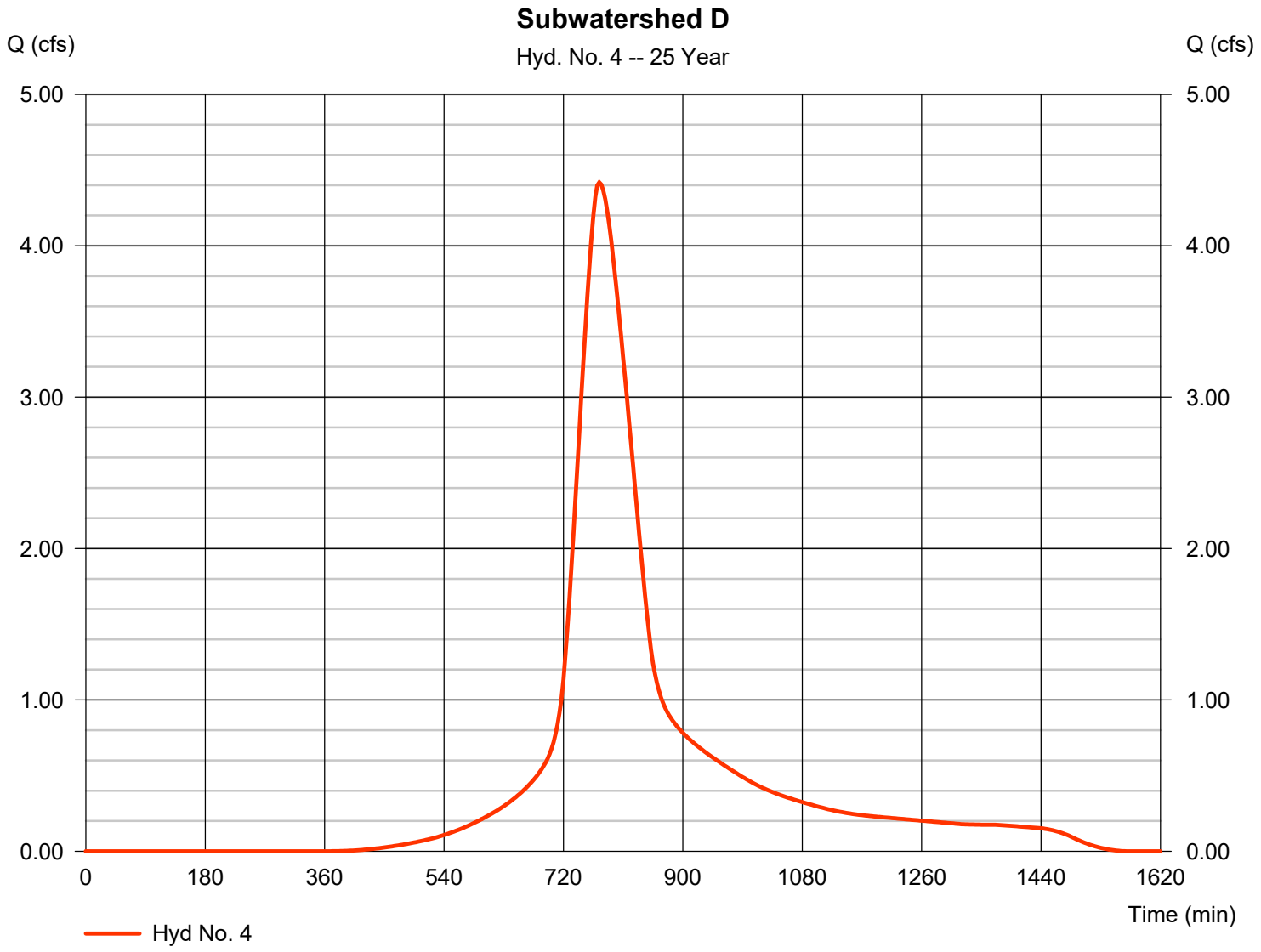


Hydrograph Report

Hyd. No. 4

Subwatershed D

Hydrograph type	=	SCS Runoff	Peak discharge	=	4.419 cfs
Storm frequency	=	25 yrs	Time to peak	=	774 min
Time interval	=	3 min	Hyd. volume	=	41,485 cuft
Drainage area	=	2.410 ac	Curve number	=	81
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	81.20 min
Total precip.	=	6.97 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



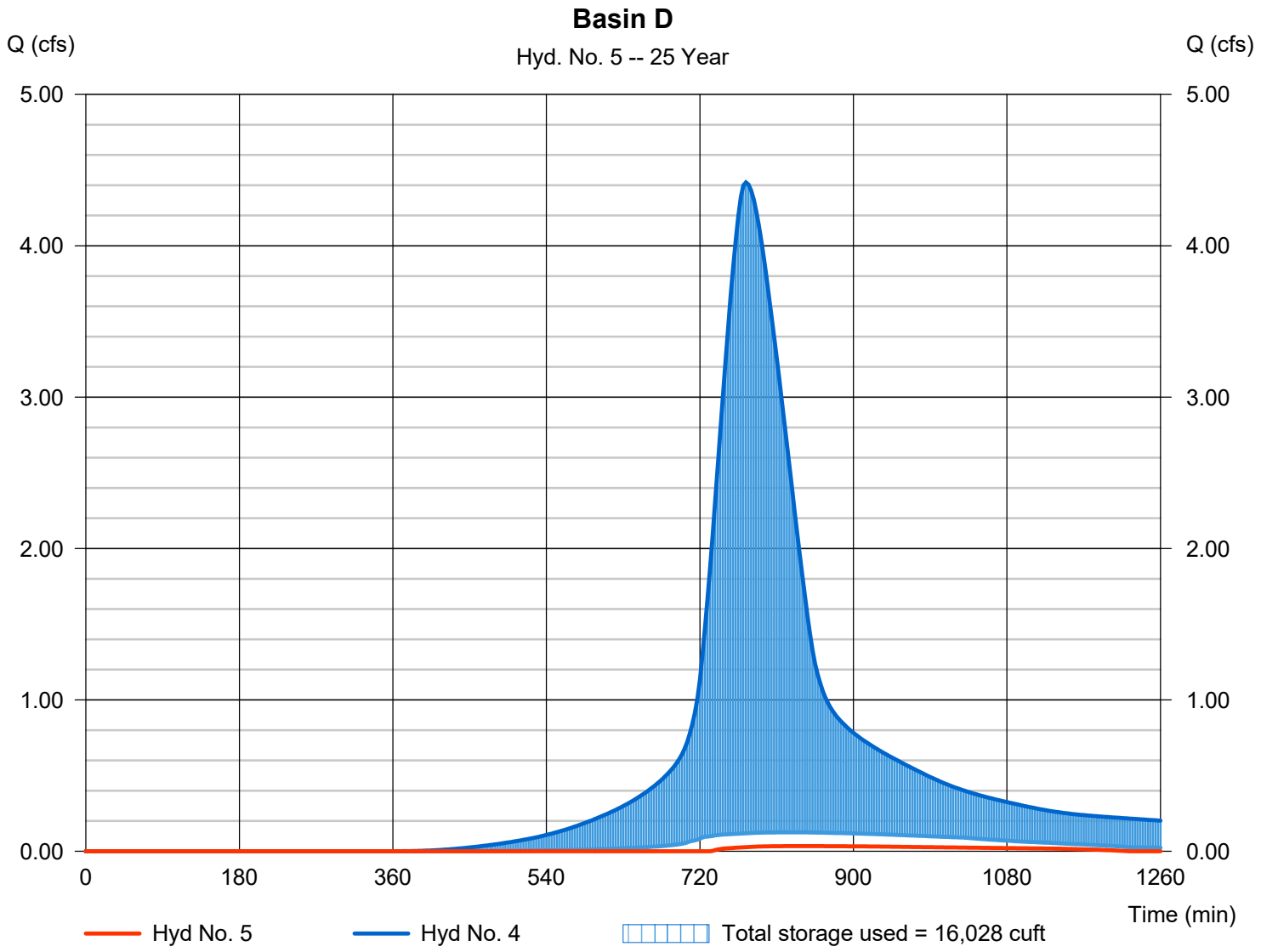
Hydrograph Report

Hyd. No. 5

Basin D

Hydrograph type	=	Reservoir	Peak discharge	=	0.034 cfs
Storm frequency	=	25 yrs	Time to peak	=	840 min
Time interval	=	3 min	Hyd. volume	=	703 cuft
Inflow hyd. No.	=	4 - Subwatershed D	Max. Elevation	=	66.24 ft
Reservoir name	=	Basin D Pond	Max. Storage	=	16,028 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



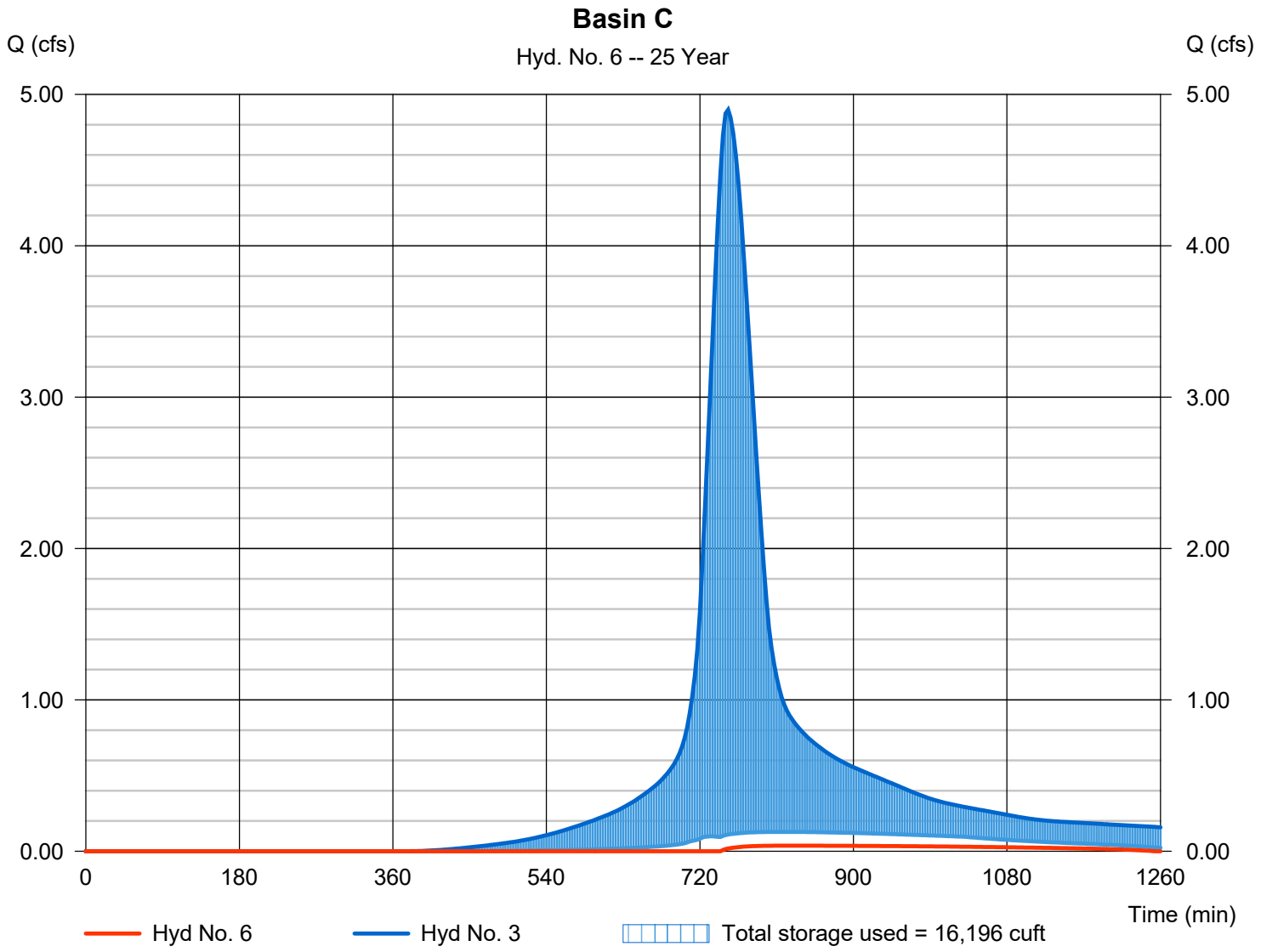
Hydrograph Report

Hyd. No. 6

Basin C

Hydrograph type	=	Reservoir	Peak discharge	=	0.037 cfs
Storm frequency	=	25 yrs	Time to peak	=	831 min
Time interval	=	3 min	Hyd. volume	=	832 cuft
Inflow hyd. No.	=	3 - Subwatershed C	Max. Elevation	=	66.51 ft
Reservoir name	=	Basin C Pond	Max. Storage	=	16,196 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

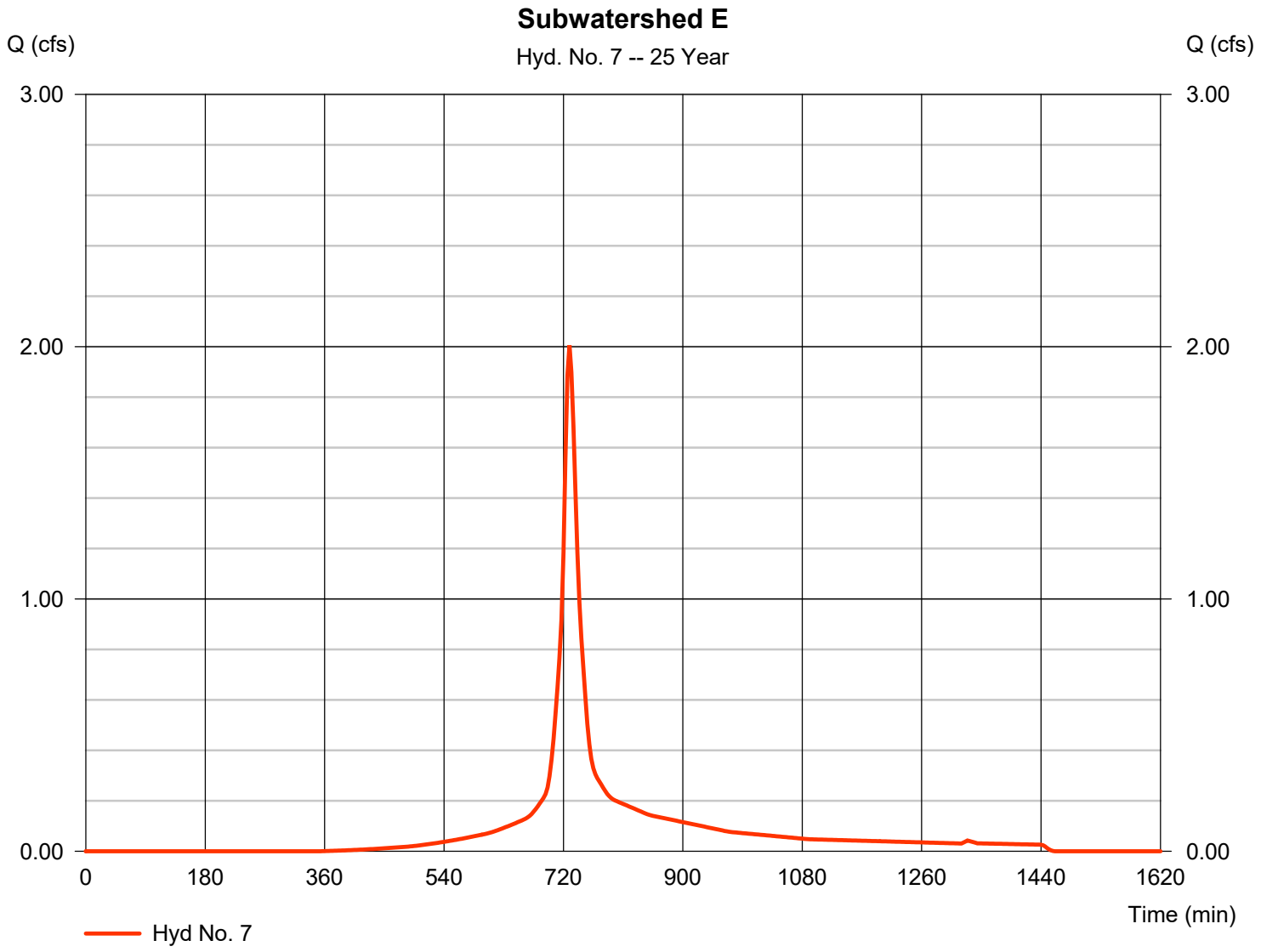


Hydrograph Report

Hyd. No. 7

Subwatershed E

Hydrograph type	= SCS Runoff	Peak discharge	= 2.006 cfs
Storm frequency	= 25 yrs	Time to peak	= 729 min
Time interval	= 3 min	Hyd. volume	= 7,977 cuft
Drainage area	= 0.460 ac	Curve number	= 81
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 13.50 min
Total precip.	= 6.97 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



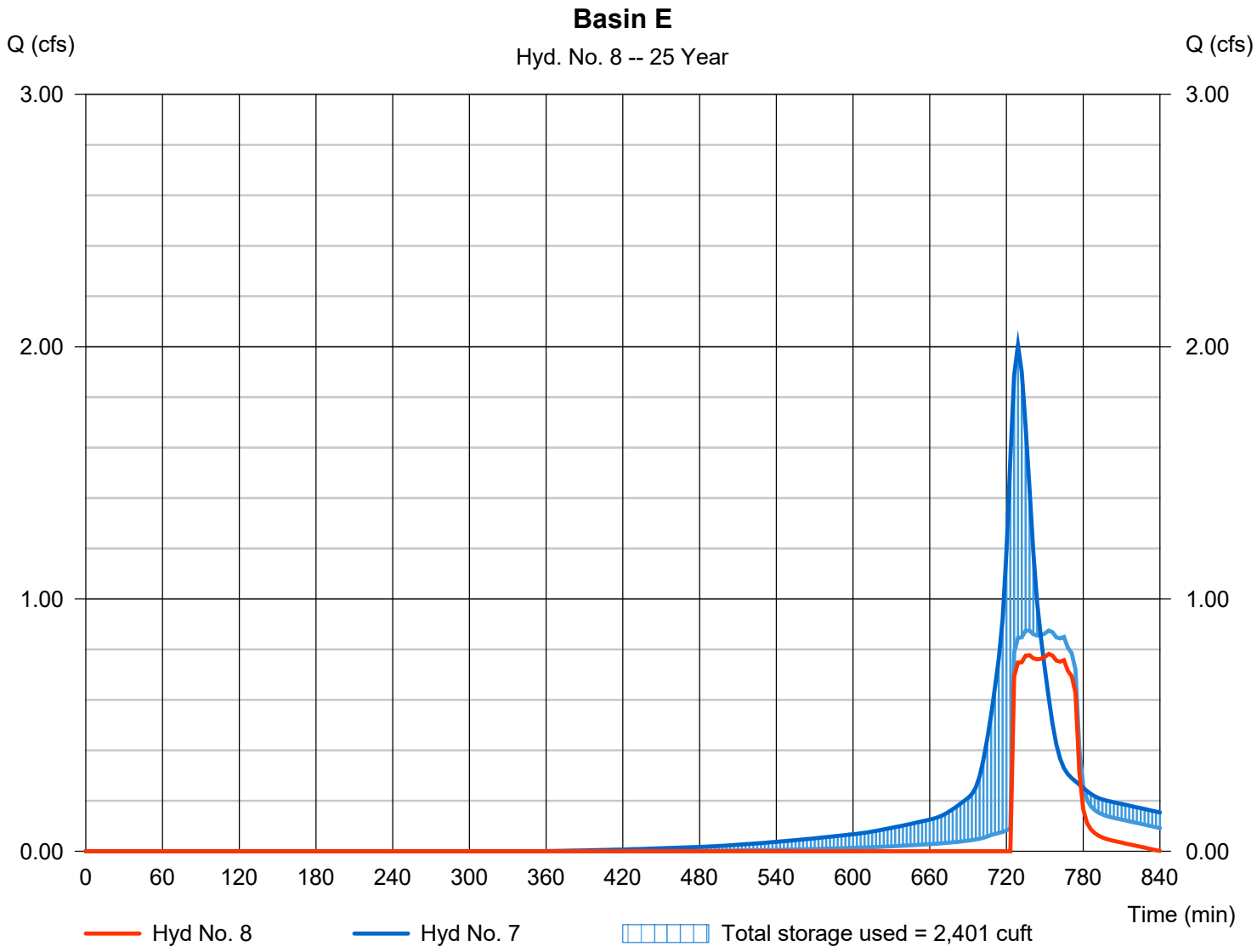
Hydrograph Report

Hyd. No. 8

Basin E

Hydrograph type	=	Reservoir	Peak discharge	=	0.782 cfs
Storm frequency	=	25 yrs	Time to peak	=	753 min
Time interval	=	3 min	Hyd. volume	=	2,502 cuft
Inflow hyd. No.	=	7 - Subwatershed E	Max. Elevation	=	63.19 ft
Reservoir name	=	Basin E Pond	Max. Storage	=	2,401 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

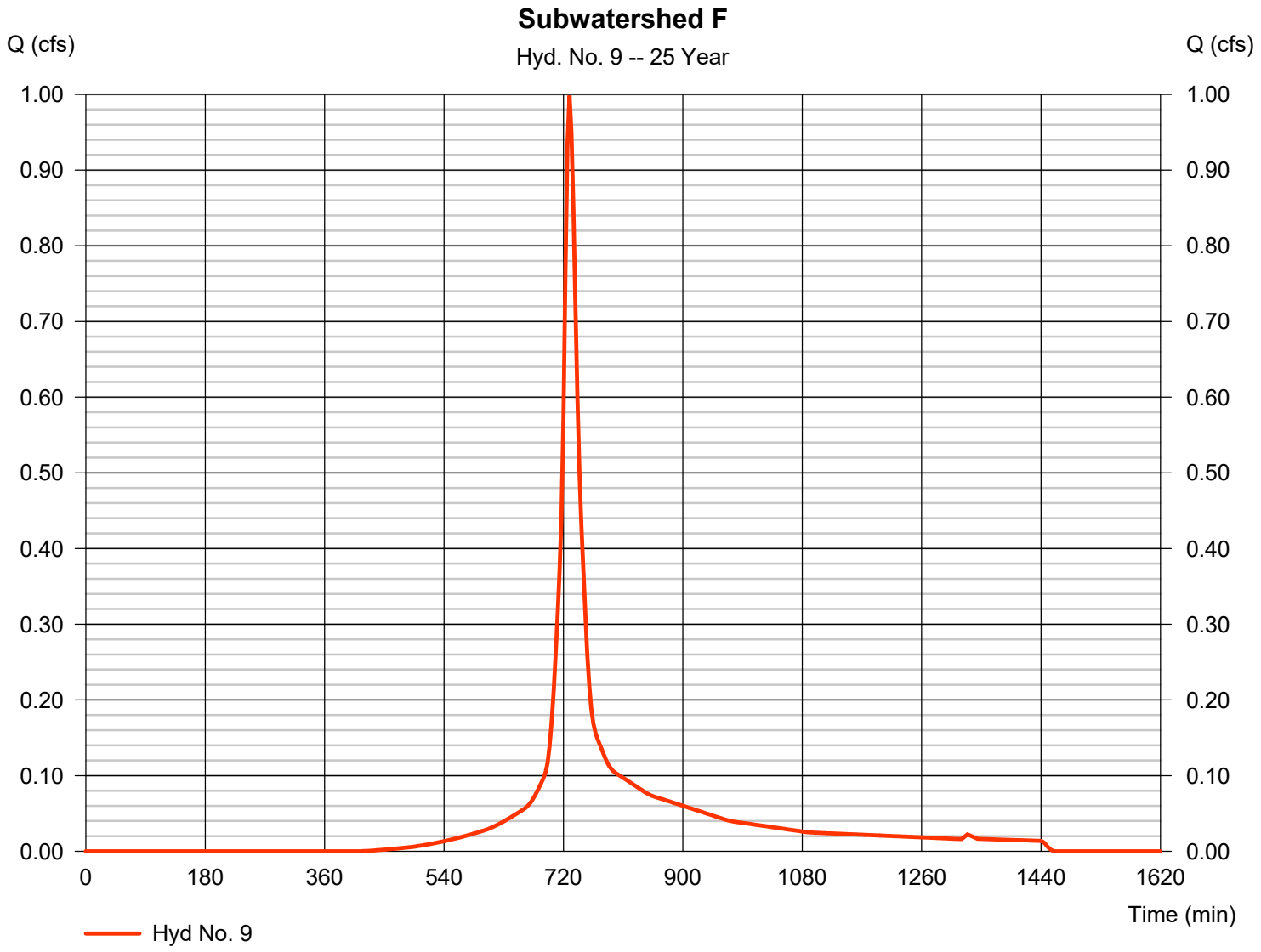


Hydrograph Report

Hyd. No. 9

Subwatershed F

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.999 cfs
Storm frequency	=	25 yrs	Time to peak	=	729 min
Time interval	=	3 min	Hyd. volume	=	3,938 cuft
Drainage area	=	0.250 ac	Curve number	=	77
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	12.10 min
Total precip.	=	6.97 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



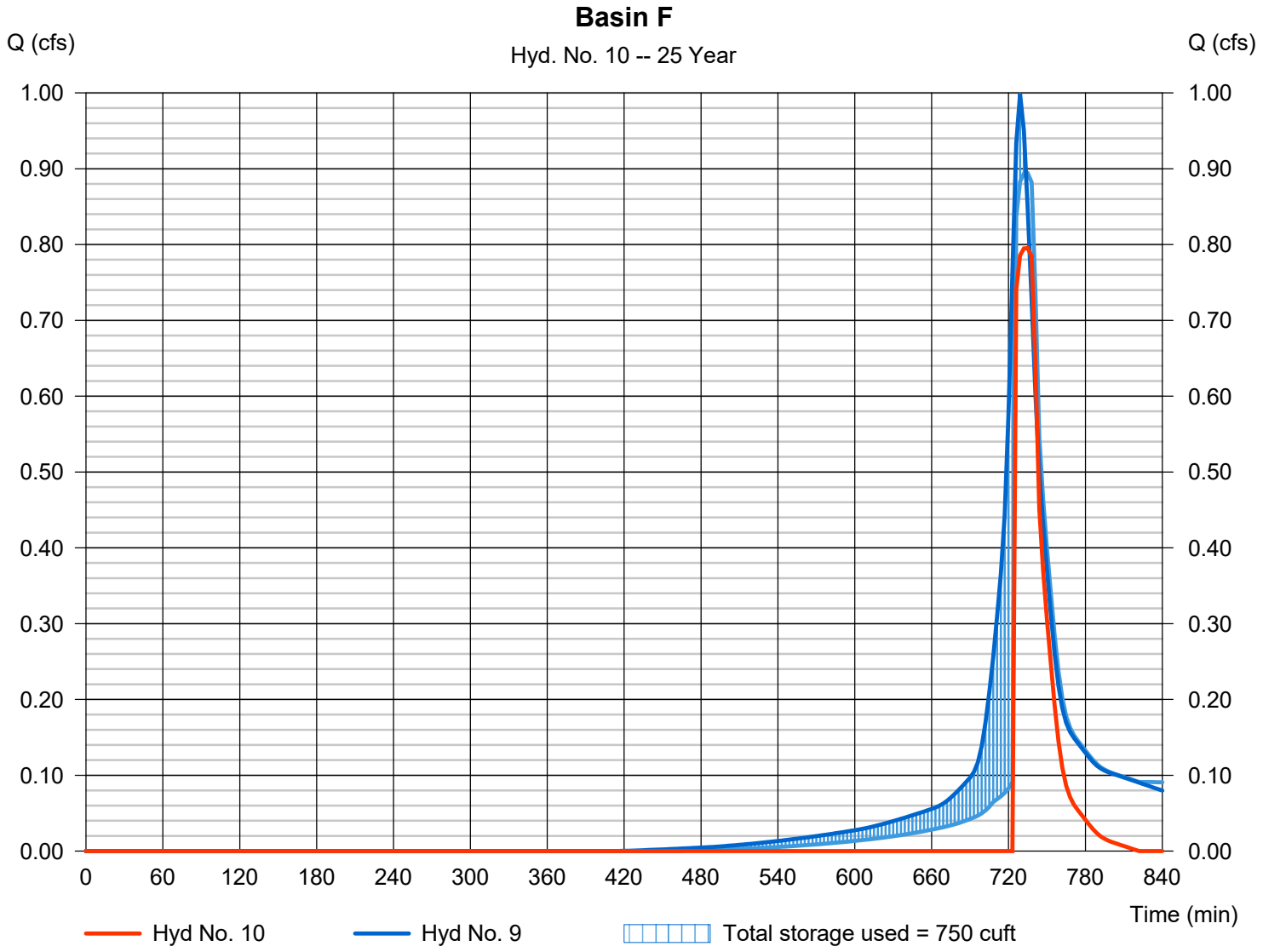
Hydrograph Report

Hyd. No. 10

Basin F

Hydrograph type	=	Reservoir	Peak discharge	=	0.795 cfs
Storm frequency	=	25 yrs	Time to peak	=	735 min
Time interval	=	3 min	Hyd. volume	=	1,243 cuft
Inflow hyd. No.	=	9 - Subwatershed F	Max. Elevation	=	62.65 ft
Reservoir name	=	Basin F Pond	Max. Storage	=	750 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

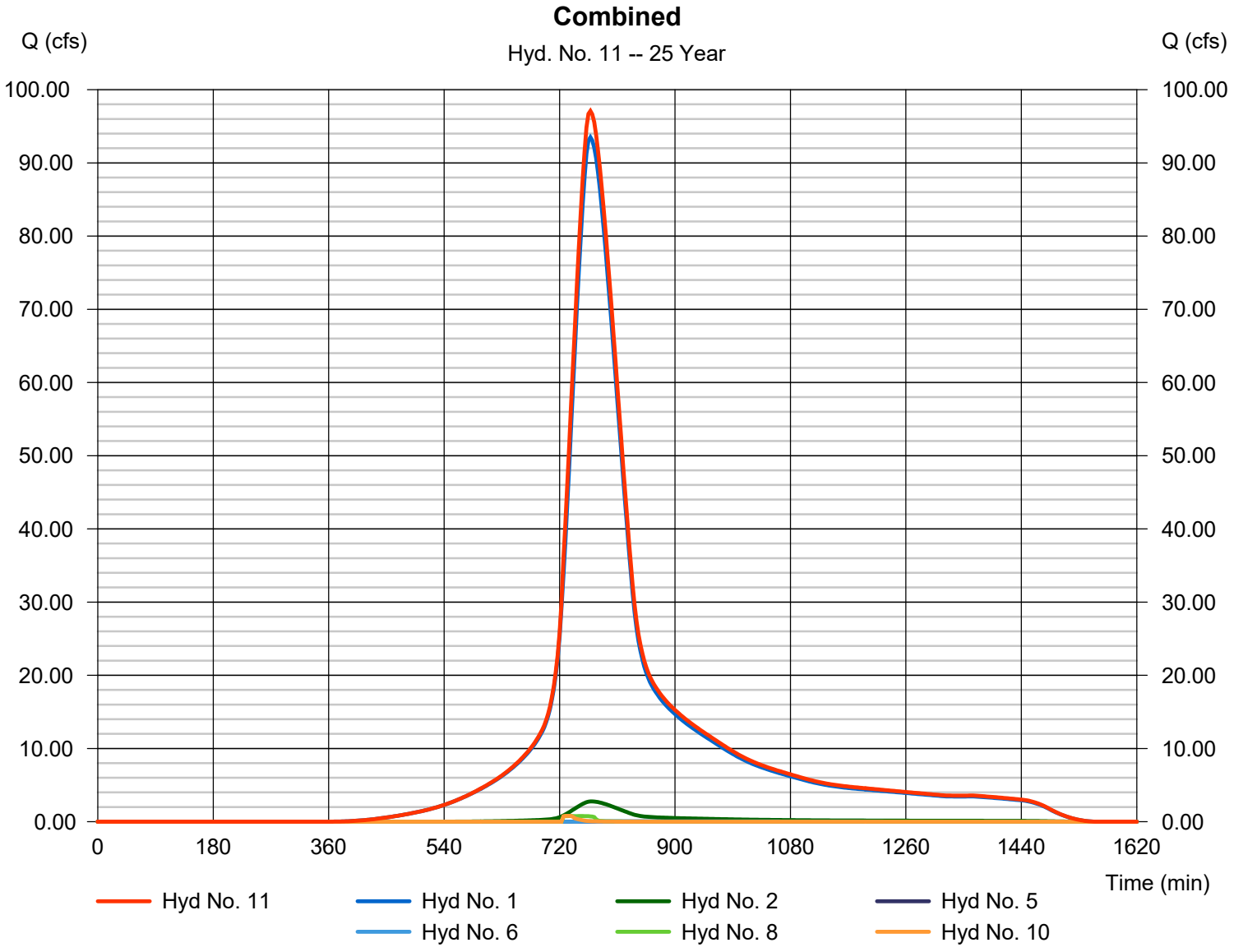


Hydrograph Report

Hyd. No. 11

Combined

Hydrograph type	=	Combine	Peak discharge	=	97.10 cfs
Storm frequency	=	25 yrs	Time to peak	=	768 min
Time interval	=	3 min	Hyd. volume	=	843,747 cuft
Inflow hyds.	=	1, 2, 5, 6, 8, 10	Contrib. drain. area	=	48.810 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

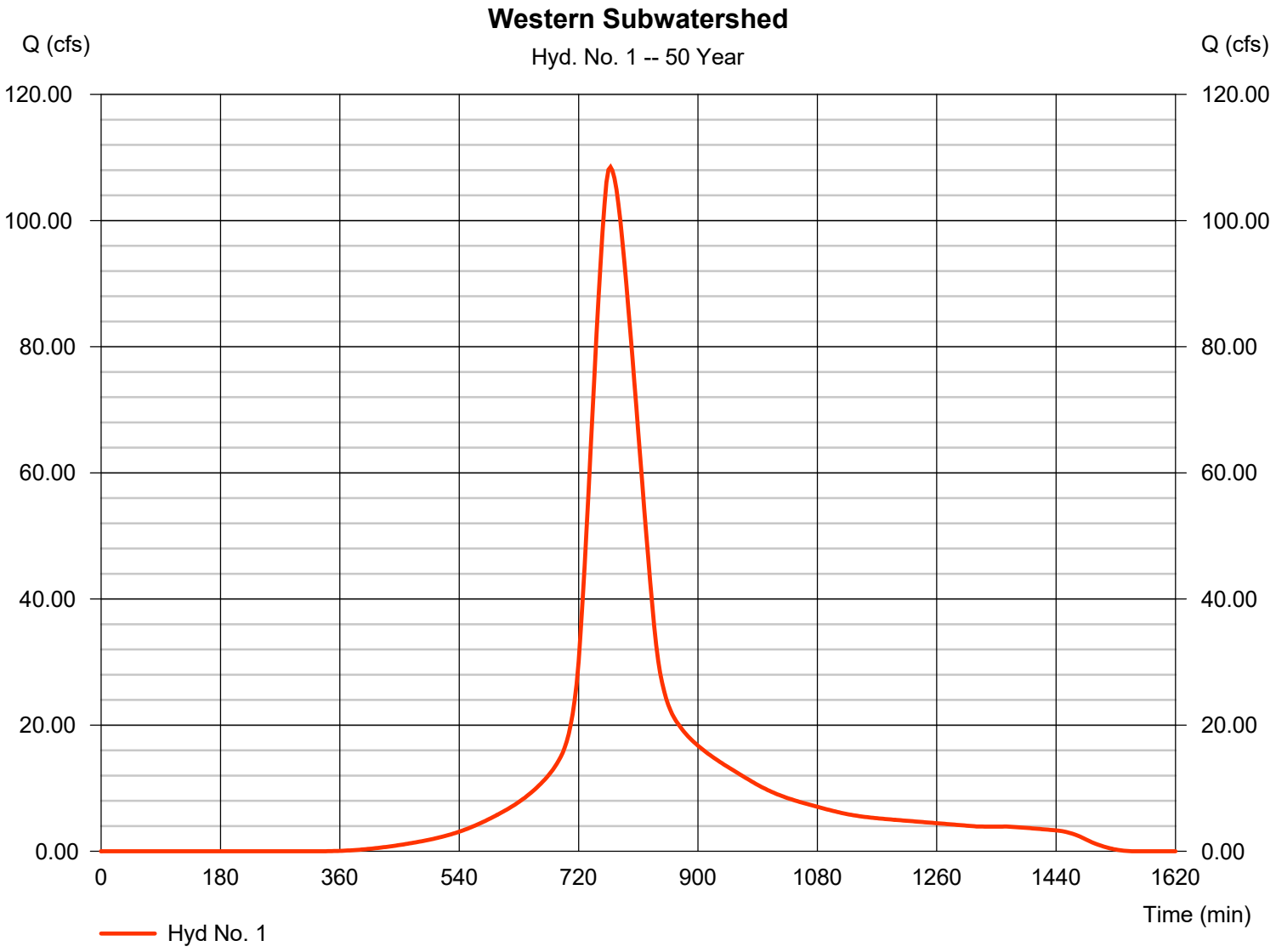
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	108.48	3	768	948,331	------	------	------	Western Subwatershed
2	SCS Runoff	3.324	3	768	28,886	------	------	------	Eastern Subwatershed
3	SCS Runoff	5.695	3	753	39,240	------	------	------	Subwatershed C
4	SCS Runoff	5.129	3	774	48,311	------	------	------	Subwatershed D
5	Reservoir	0.036	3	840	816	4	66.44	19,079	Basin D
6	Reservoir	0.209	3	819	1,334	3	67.02	19,236	Basin C
7	SCS Runoff	2.324	3	729	9,289	------	------	------	Subwatershed E
8	Reservoir	0.790	3	735	3,383	7	63.36	3,064	Basin E
9	SCS Runoff	1.170	3	729	4,629	------	------	------	Subwatershed F
10	Reservoir	0.832	3	735	1,677	9	62.79	841	Basin F
11	Combine	112.42	3	768	984,428	1, 2, 5, 6, 8, 10	------	------	Combined

Hydrograph Report

Hyd. No. 1

Western Subwatershed

Hydrograph type	=	SCS Runoff	Peak discharge	=	108.48 cfs
Storm frequency	=	50 yrs	Time to peak	=	768 min
Time interval	=	3 min	Hyd. volume	=	948,331 cuft
Drainage area	=	46.960 ac	Curve number	=	81
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	72.90 min
Total precip.	=	7.81 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

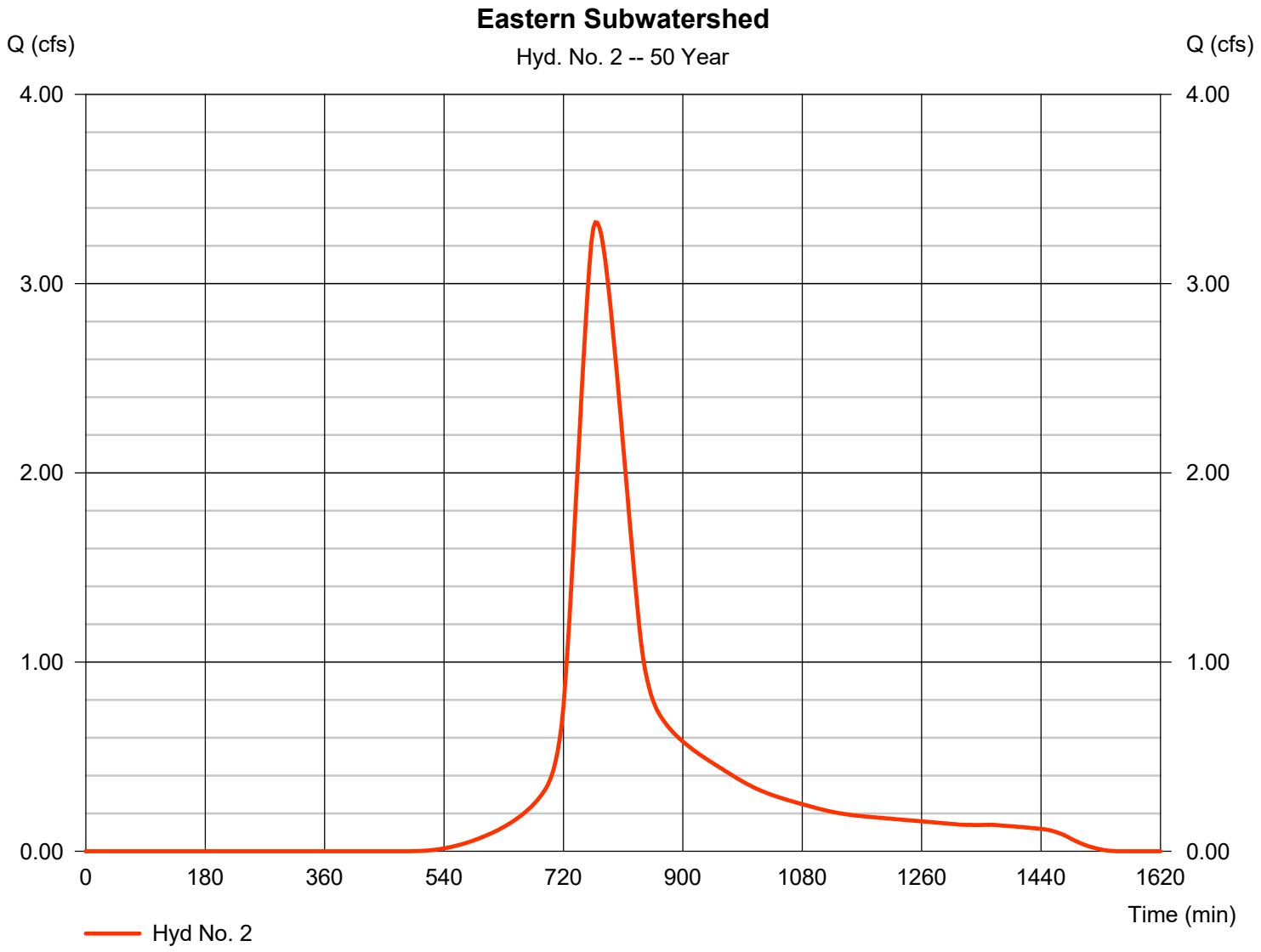


Hydrograph Report

Hyd. No. 2

Eastern Subwatershed

Hydrograph type	= SCS Runoff	Peak discharge	= 3.324 cfs
Storm frequency	= 50 yrs	Time to peak	= 768 min
Time interval	= 3 min	Hyd. volume	= 28,886 cuft
Drainage area	= 1.850 ac	Curve number	= 70
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 73.00 min
Total precip.	= 7.81 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

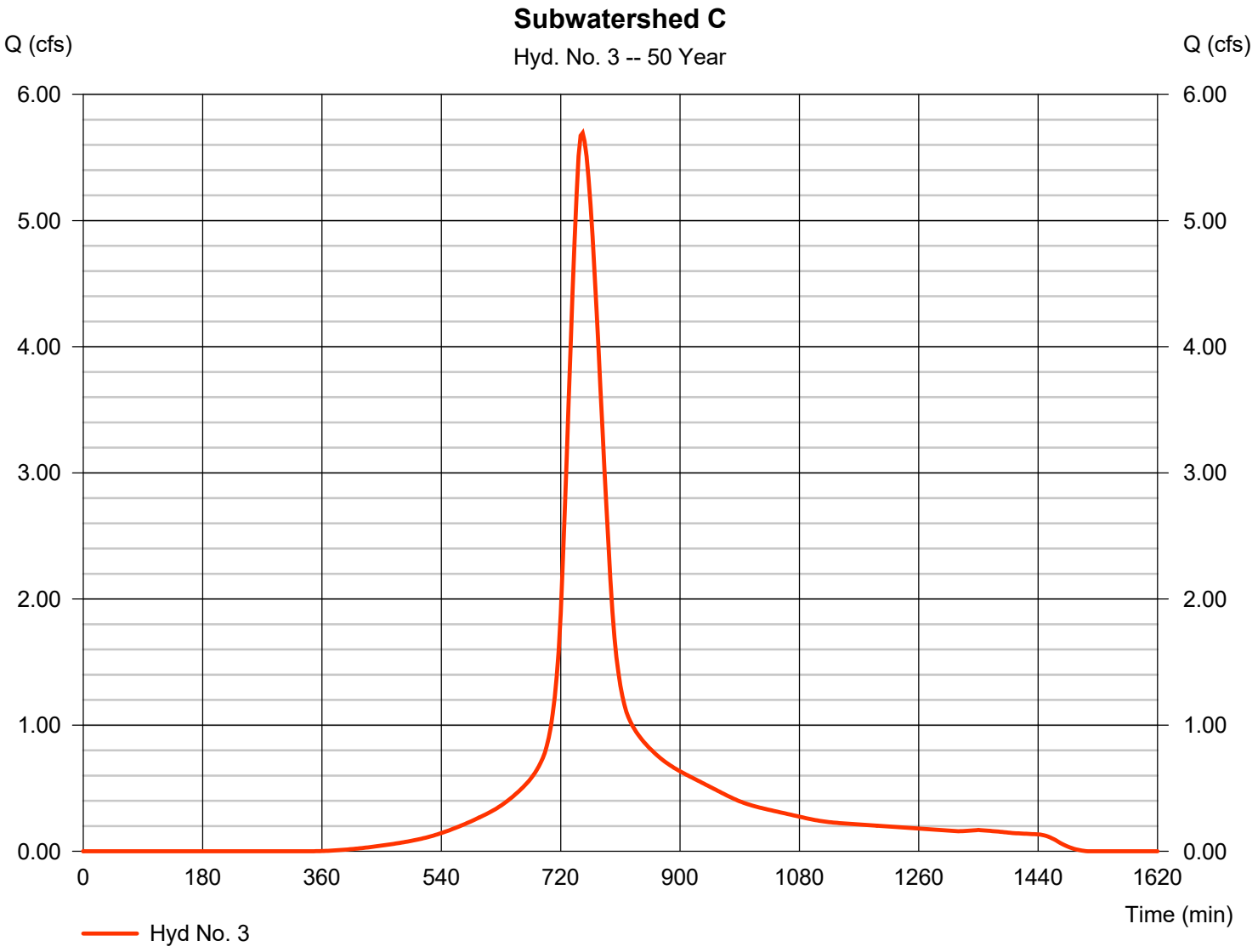


Hydrograph Report

Hyd. No. 3

Subwatershed C

Hydrograph type	= SCS Runoff	Peak discharge	= 5.695 cfs
Storm frequency	= 50 yrs	Time to peak	= 753 min
Time interval	= 3 min	Hyd. volume	= 39,240 cuft
Drainage area	= 1.960 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 48.80 min
Total precip.	= 7.81 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

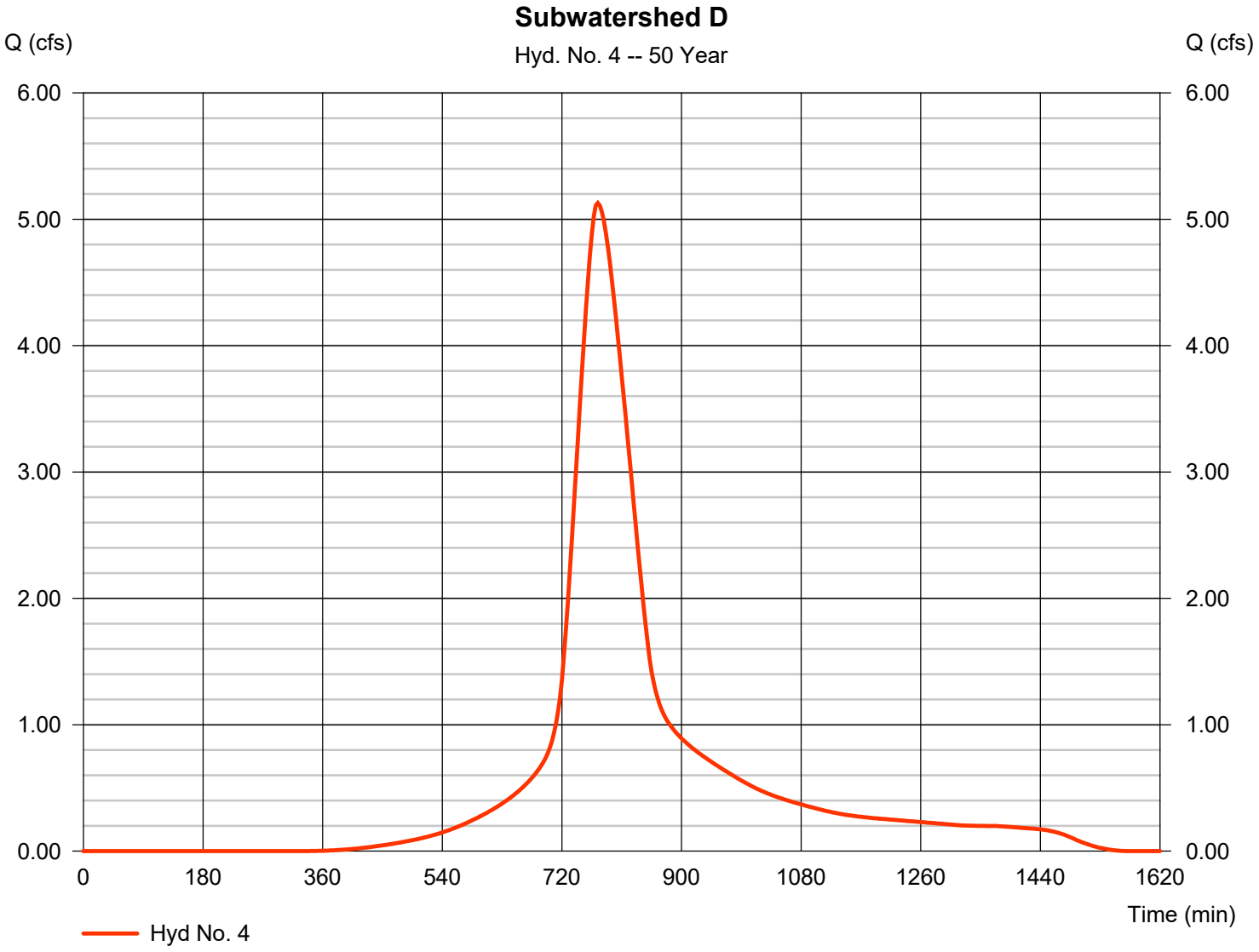


Hydrograph Report

Hyd. No. 4

Subwatershed D

Hydrograph type	=	SCS Runoff	Peak discharge	=	5.129 cfs
Storm frequency	=	50 yrs	Time to peak	=	774 min
Time interval	=	3 min	Hyd. volume	=	48,311 cuft
Drainage area	=	2.410 ac	Curve number	=	81
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	81.20 min
Total precip.	=	7.81 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



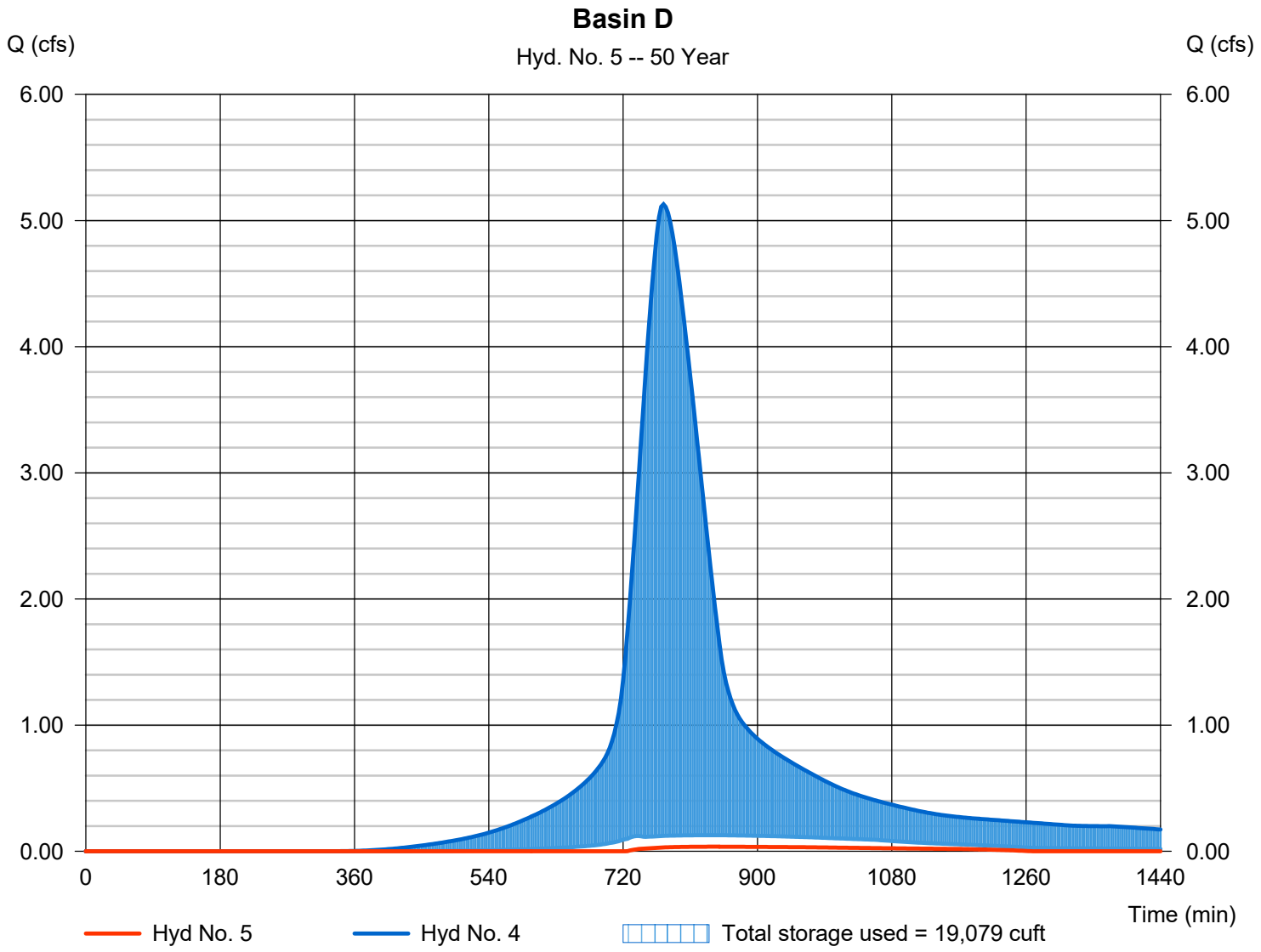
Hydrograph Report

Hyd. No. 5

Basin D

Hydrograph type	=	Reservoir	Peak discharge	=	0.036 cfs
Storm frequency	=	50 yrs	Time to peak	=	840 min
Time interval	=	3 min	Hyd. volume	=	816 cuft
Inflow hyd. No.	=	4 - Subwatershed D	Max. Elevation	=	66.44 ft
Reservoir name	=	Basin D Pond	Max. Storage	=	19,079 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



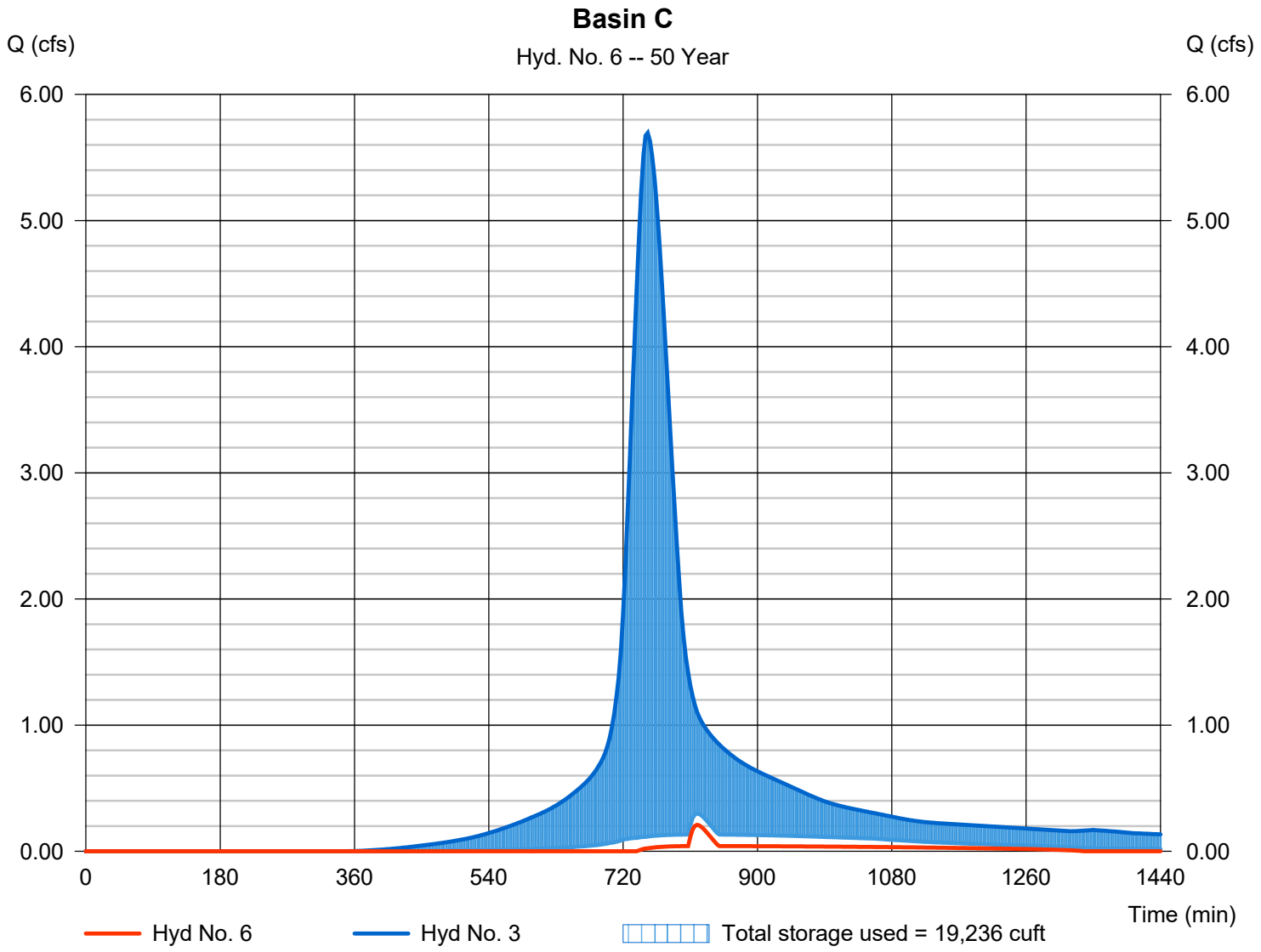
Hydrograph Report

Hyd. No. 6

Basin C

Hydrograph type	=	Reservoir	Peak discharge	=	0.209 cfs
Storm frequency	=	50 yrs	Time to peak	=	819 min
Time interval	=	3 min	Hyd. volume	=	1,334 cuft
Inflow hyd. No.	=	3 - Subwatershed C	Max. Elevation	=	67.02 ft
Reservoir name	=	Basin C Pond	Max. Storage	=	19,236 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

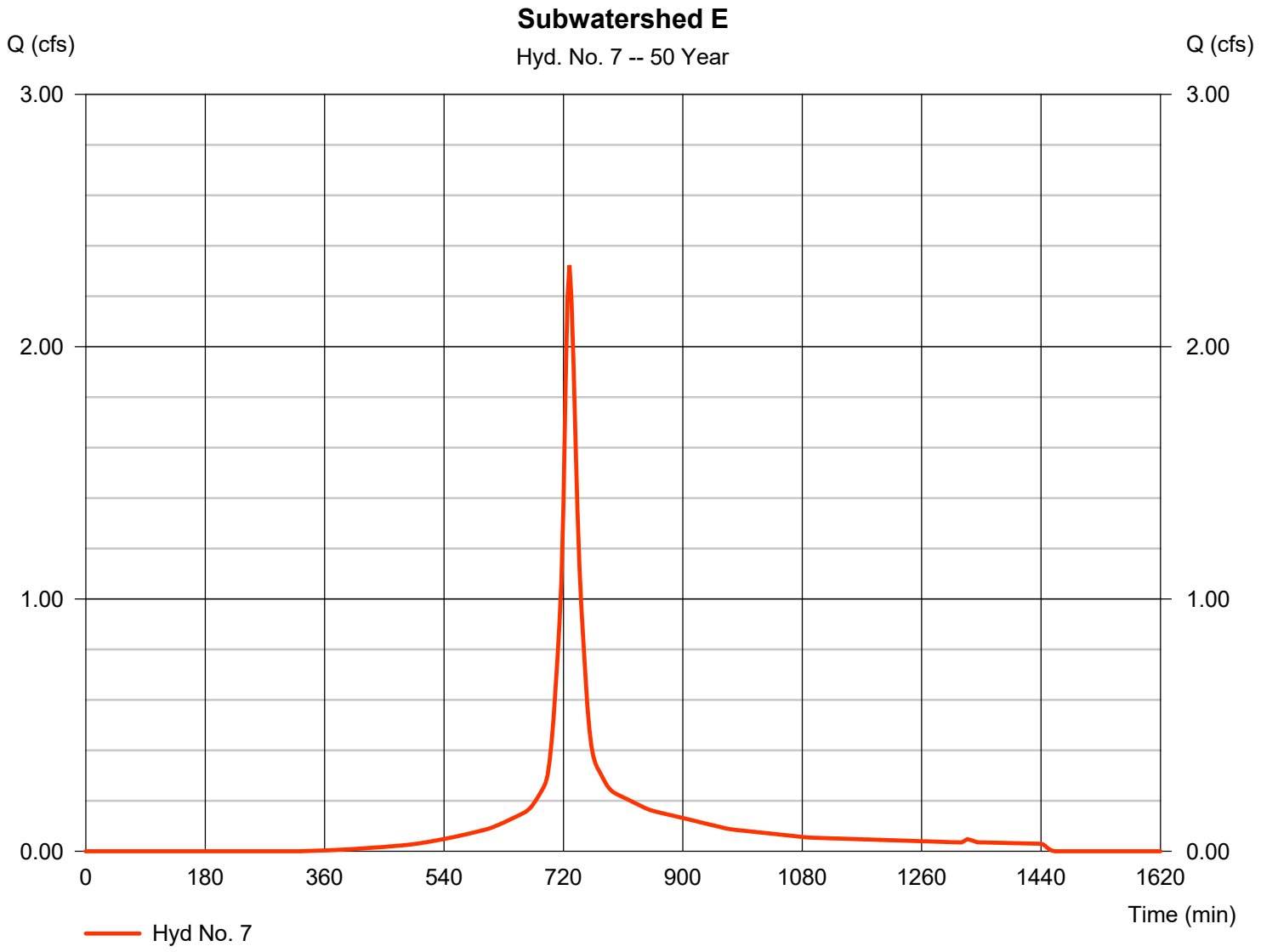


Hydrograph Report

Hyd. No. 7

Subwatershed E

Hydrograph type	= SCS Runoff	Peak discharge	= 2.324 cfs
Storm frequency	= 50 yrs	Time to peak	= 729 min
Time interval	= 3 min	Hyd. volume	= 9,289 cuft
Drainage area	= 0.460 ac	Curve number	= 81
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 13.50 min
Total precip.	= 7.81 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



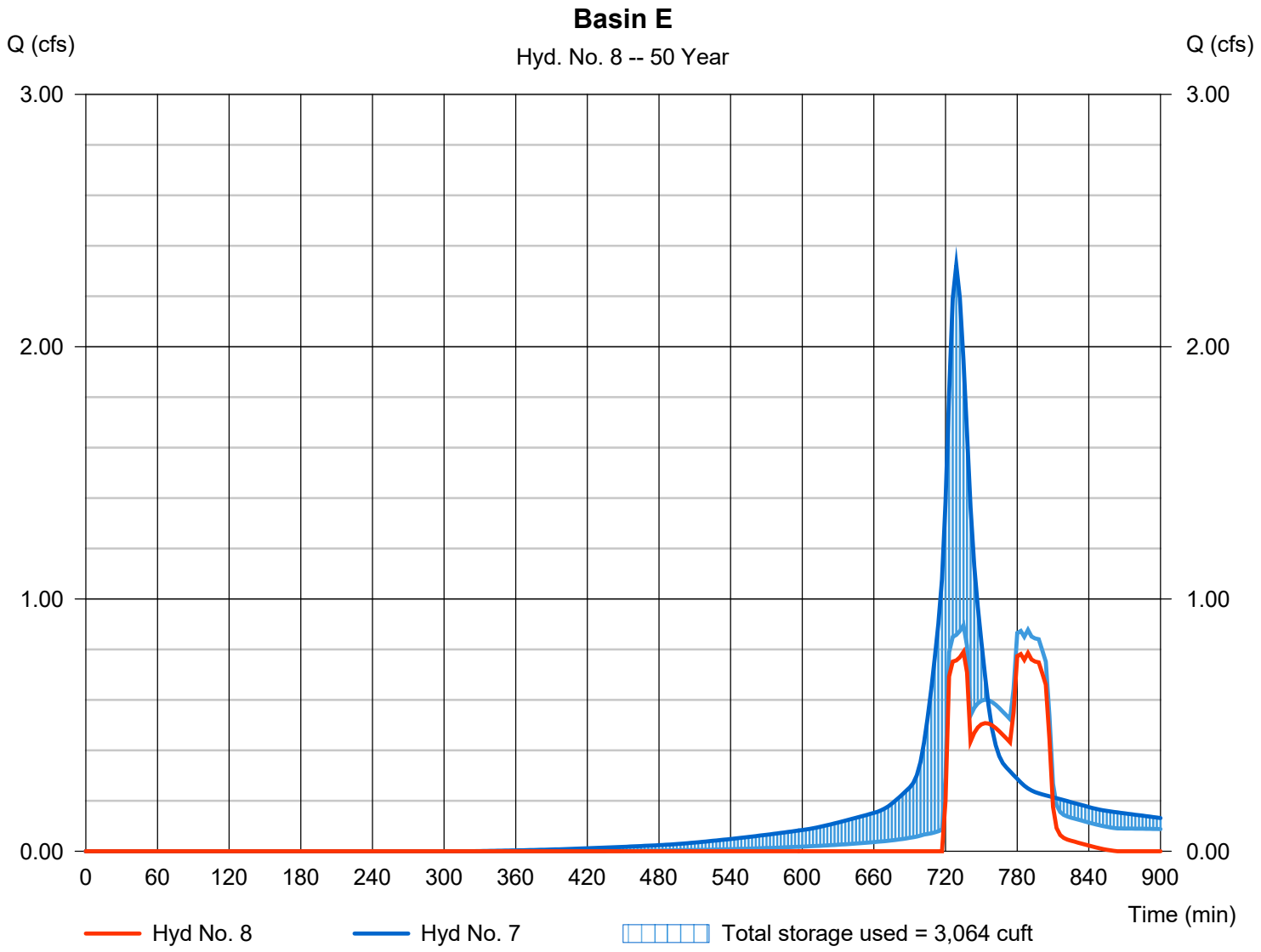
Hydrograph Report

Hyd. No. 8

Basin E

Hydrograph type	=	Reservoir	Peak discharge	=	0.790 cfs
Storm frequency	=	50 yrs	Time to peak	=	735 min
Time interval	=	3 min	Hyd. volume	=	3,383 cuft
Inflow hyd. No.	=	7 - Subwatershed E	Max. Elevation	=	63.36 ft
Reservoir name	=	Basin E Pond	Max. Storage	=	3,064 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

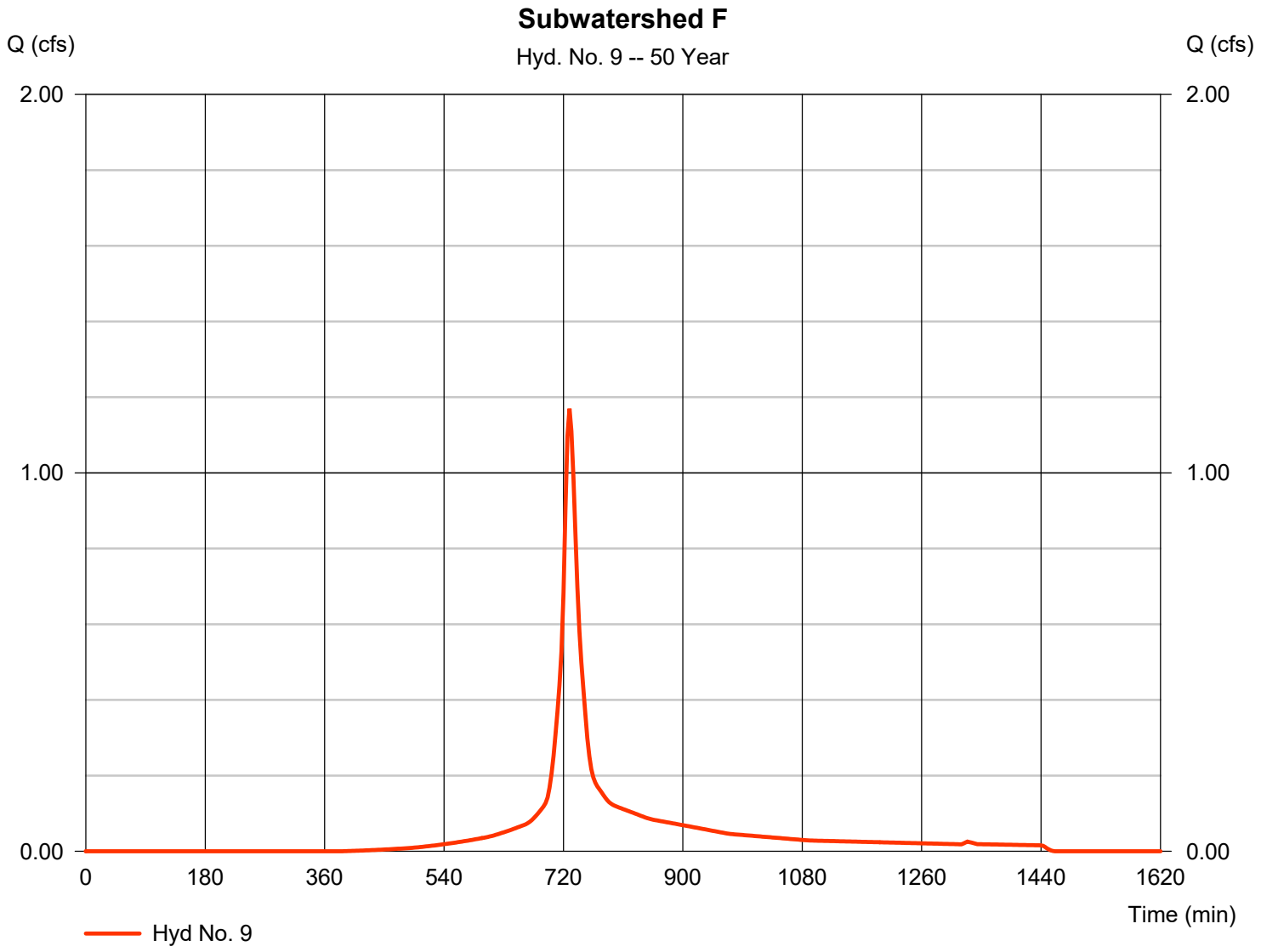


Hydrograph Report

Hyd. No. 9

Subwatershed F

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.170 cfs
Storm frequency	=	50 yrs	Time to peak	=	729 min
Time interval	=	3 min	Hyd. volume	=	4,629 cuft
Drainage area	=	0.250 ac	Curve number	=	77
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	12.10 min
Total precip.	=	7.81 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



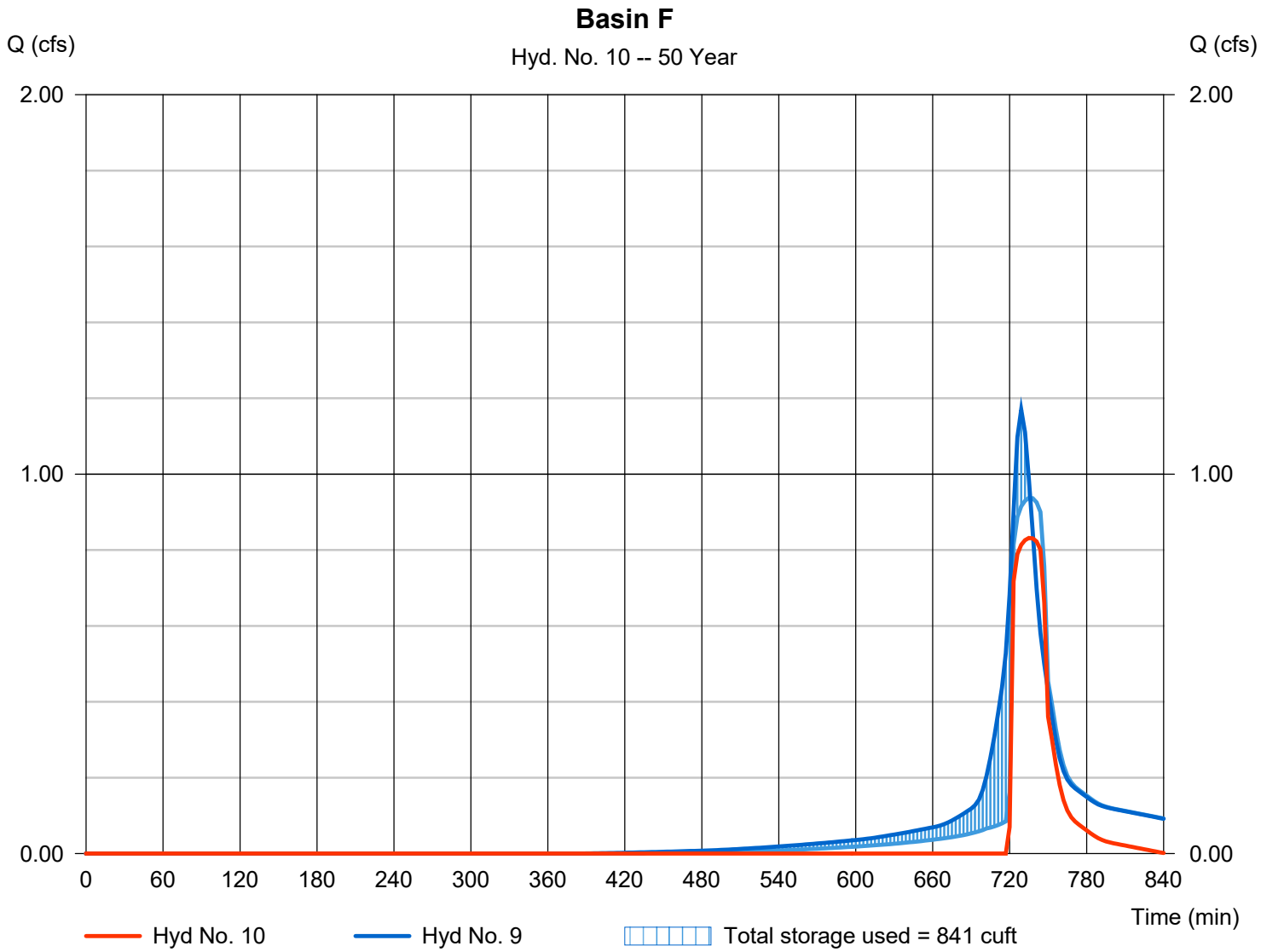
Hydrograph Report

Hyd. No. 10

Basin F

Hydrograph type	=	Reservoir	Peak discharge	=	0.832 cfs
Storm frequency	=	50 yrs	Time to peak	=	735 min
Time interval	=	3 min	Hyd. volume	=	1,677 cuft
Inflow hyd. No.	=	9 - Subwatershed F	Max. Elevation	=	62.79 ft
Reservoir name	=	Basin F Pond	Max. Storage	=	841 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

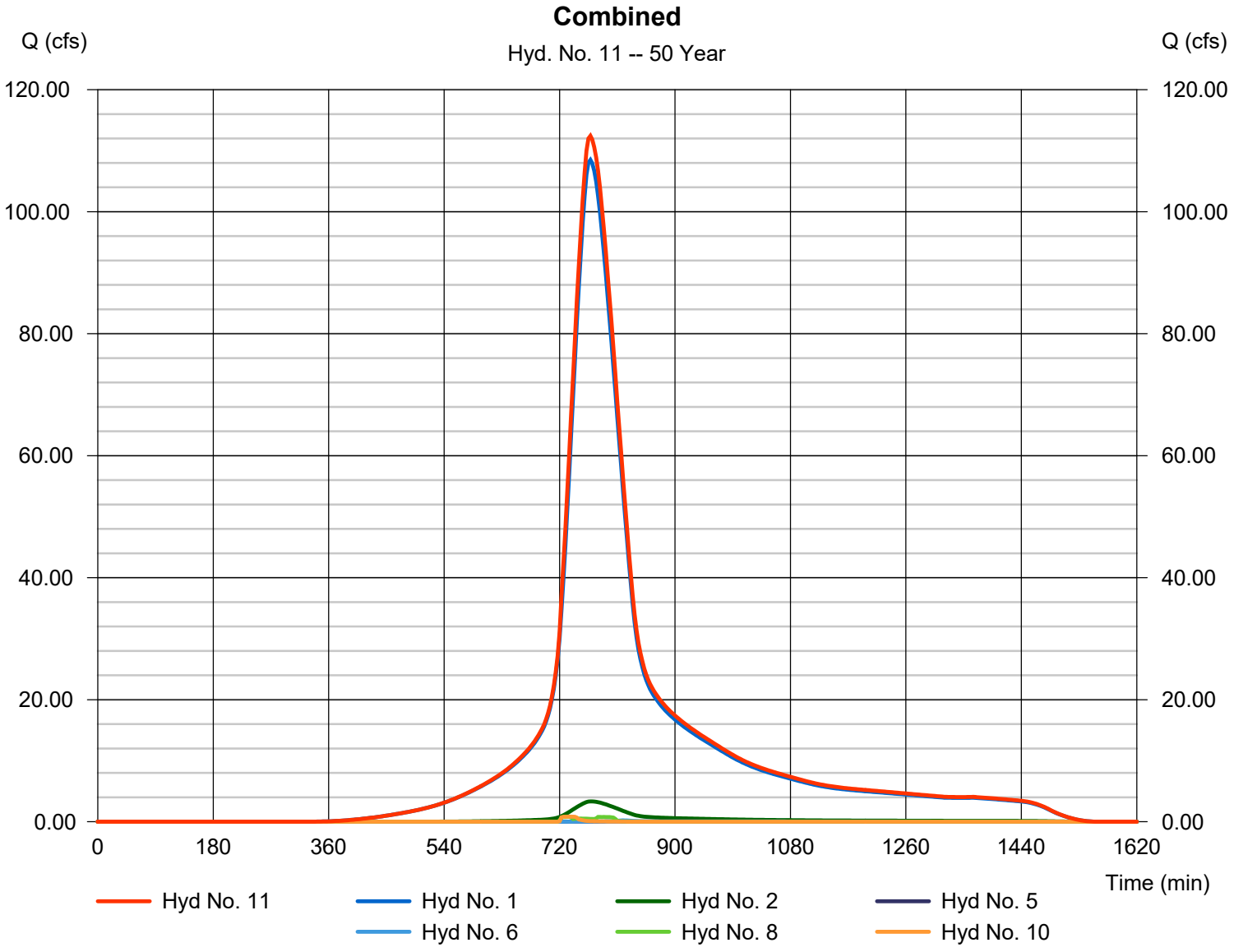


Hydrograph Report

Hyd. No. 11

Combined

Hydrograph type	=	Combine	Peak discharge	=	112.42 cfs
Storm frequency	=	50 yrs	Time to peak	=	768 min
Time interval	=	3 min	Hyd. volume	=	984,428 cuft
Inflow hyds.	=	1, 2, 5, 6, 8, 10	Contrib. drain. area	=	48.810 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

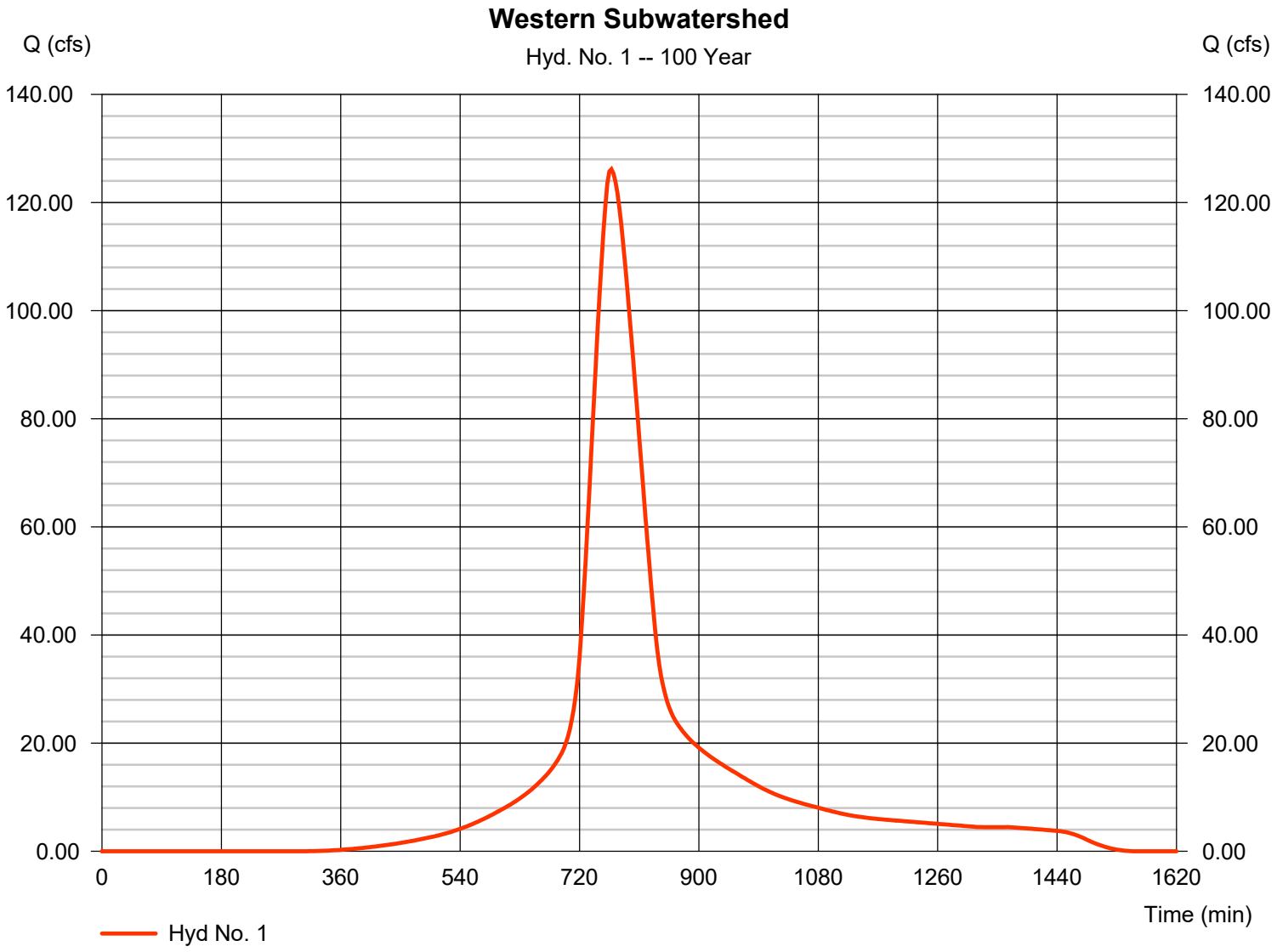
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	126.17	3	768	1,108,113	------	------	------	Western Subwatershed
2	SCS Runoff	3.994	3	768	34,646	------	------	------	Eastern Subwatershed
3	SCS Runoff	6.635	3	753	45,950	------	------	------	Subwatershed C
4	SCS Runoff	5.967	3	774	56,451	------	------	------	Subwatershed D
5	Reservoir	0.039	3	843	946	4	66.69	22,774	Basin D
6	Reservoir	1.508	3	795	5,521	3	67.23	20,767	Basin C
7	SCS Runoff	2.698	3	729	10,855	------	------	------	Subwatershed E
8	Reservoir	0.822	3	801	4,463	7	63.38	3,636	Basin E
9	SCS Runoff	1.373	3	729	5,457	------	------	------	Subwatershed F
10	Reservoir	0.841	3	738	2,213	9	63.01	994	Basin F
11	Combine	130.95	3	768	1,155,903	1, 2, 5, 6, 8, 10	------	------	Combined

Hydrograph Report

Hyd. No. 1

Western Subwatershed

Hydrograph type	=	SCS Runoff	Peak discharge	=	126.17 cfs
Storm frequency	=	100 yrs	Time to peak	=	768 min
Time interval	=	3 min	Hyd. volume	=	1,108,113 cuft
Drainage area	=	46.960 ac	Curve number	=	81
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	72.90 min
Total precip.	=	8.80 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

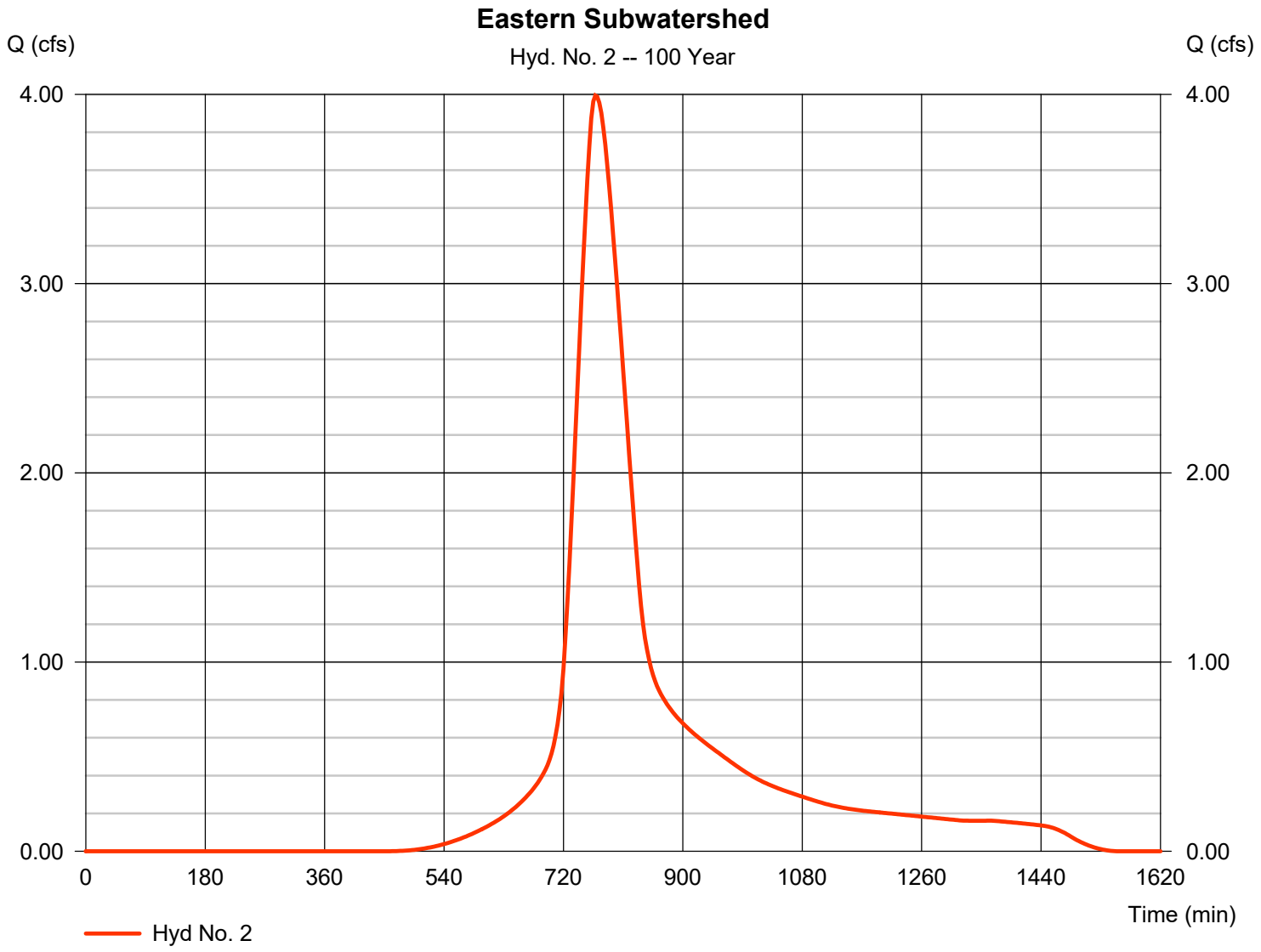


Hydrograph Report

Hyd. No. 2

Eastern Subwatershed

Hydrograph type	= SCS Runoff	Peak discharge	= 3.994 cfs
Storm frequency	= 100 yrs	Time to peak	= 768 min
Time interval	= 3 min	Hyd. volume	= 34,646 cuft
Drainage area	= 1.850 ac	Curve number	= 70
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 73.00 min
Total precip.	= 8.80 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

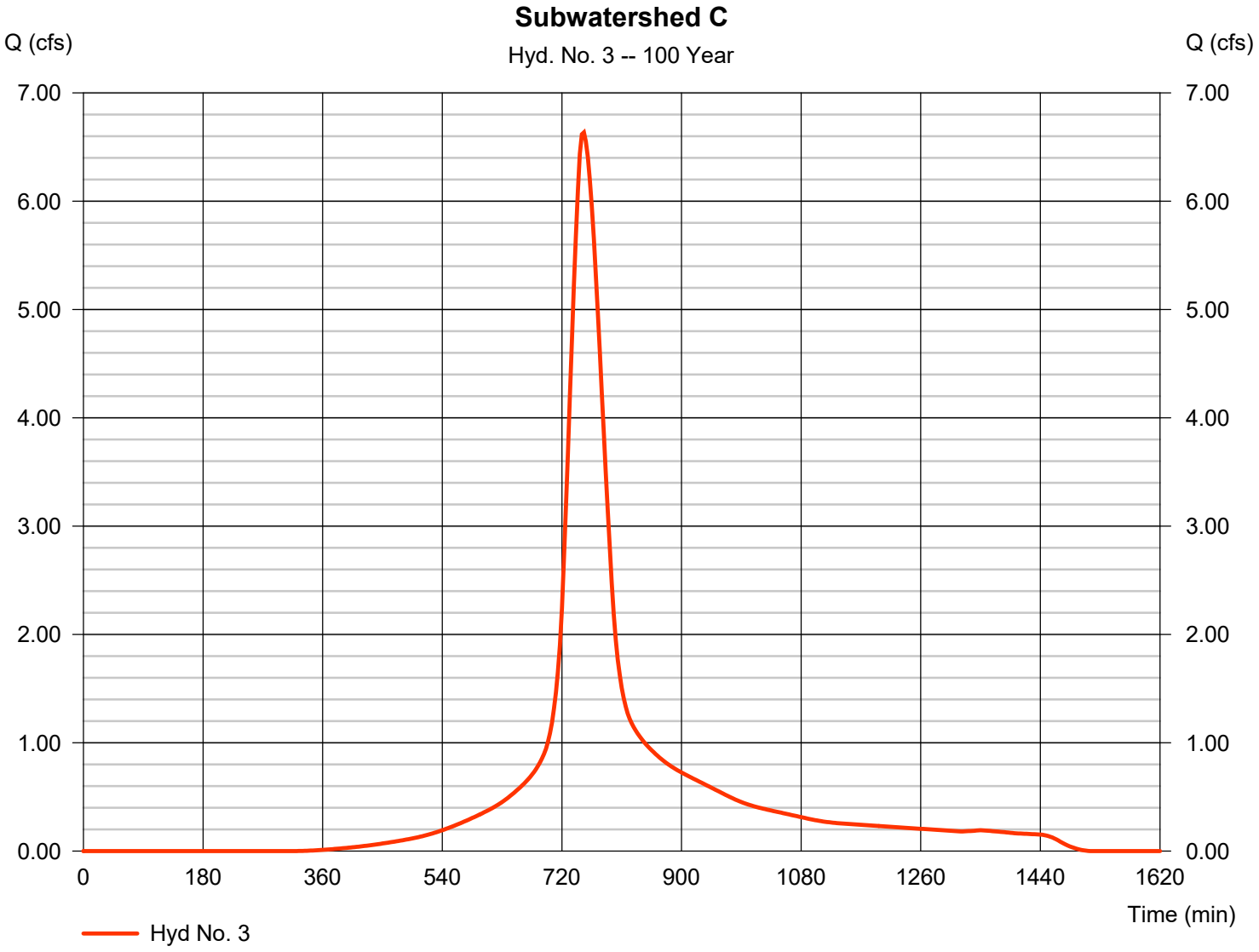


Hydrograph Report

Hyd. No. 3

Subwatershed C

Hydrograph type	=	SCS Runoff	Peak discharge	=	6.635 cfs
Storm frequency	=	100 yrs	Time to peak	=	753 min
Time interval	=	3 min	Hyd. volume	=	45,950 cuft
Drainage area	=	1.960 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	48.80 min
Total precip.	=	8.80 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

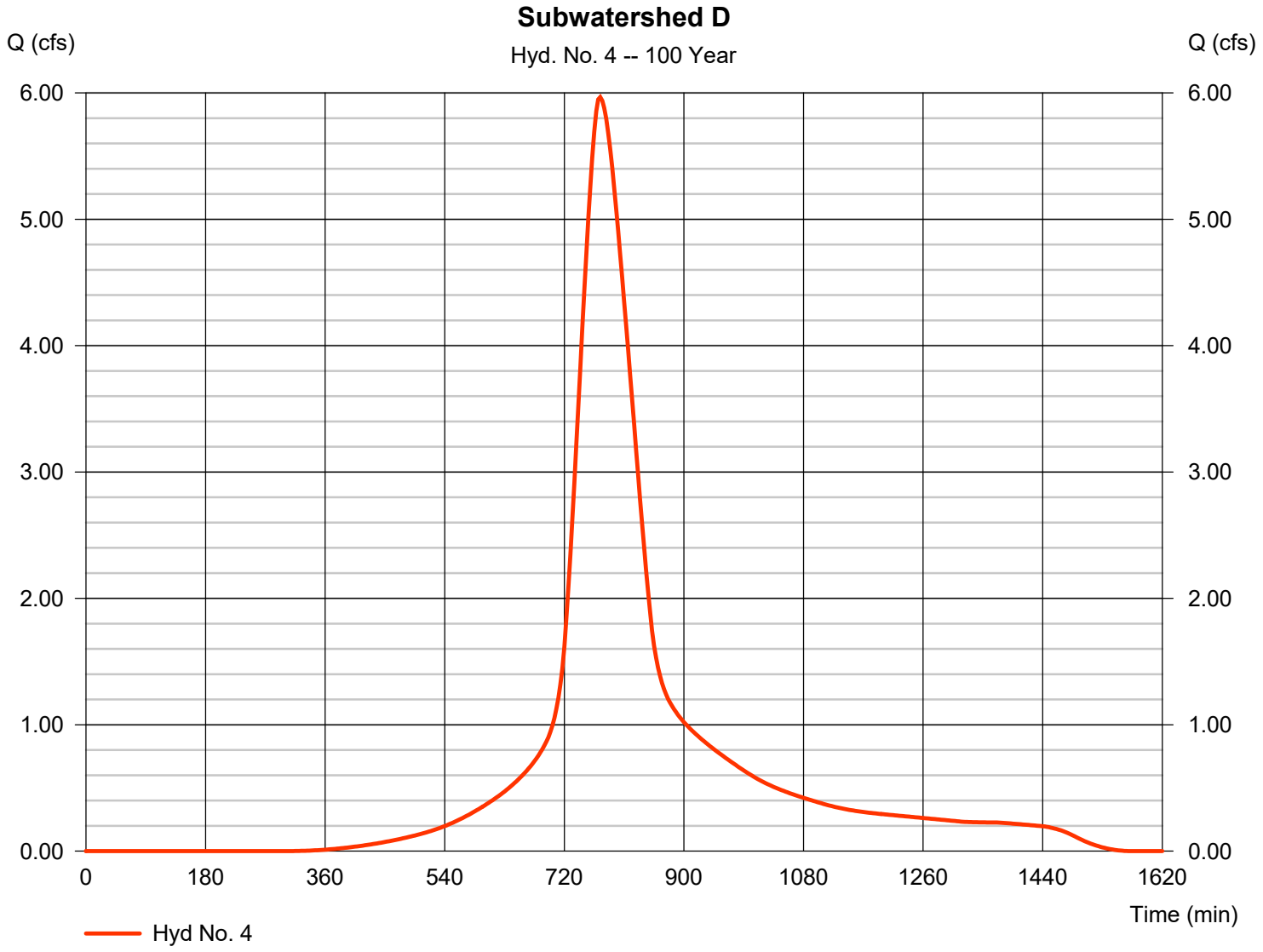


Hydrograph Report

Hyd. No. 4

Subwatershed D

Hydrograph type	=	SCS Runoff	Peak discharge	=	5.967 cfs
Storm frequency	=	100 yrs	Time to peak	=	774 min
Time interval	=	3 min	Hyd. volume	=	56,451 cuft
Drainage area	=	2.410 ac	Curve number	=	81
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	81.20 min
Total precip.	=	8.80 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



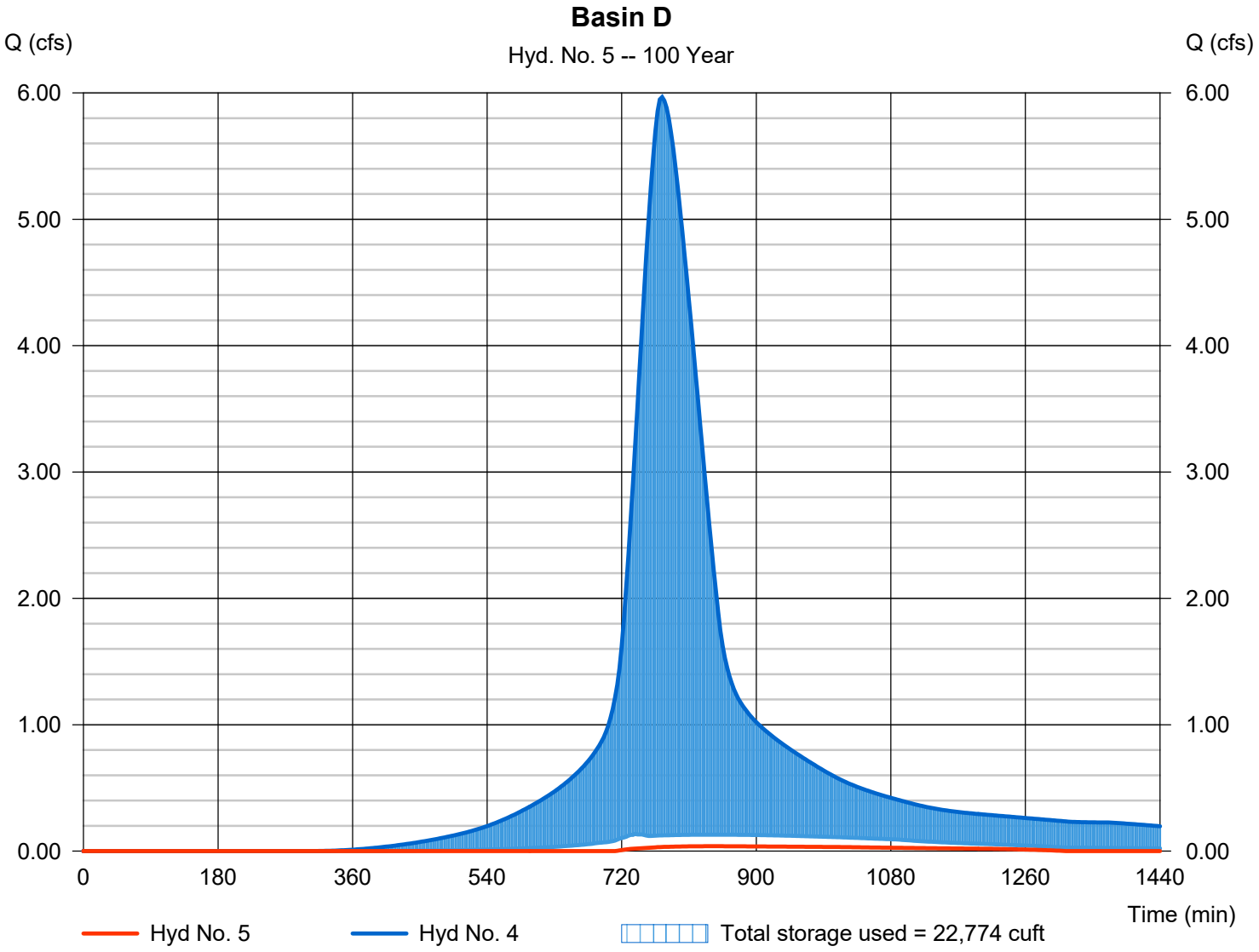
Hydrograph Report

Hyd. No. 5

Basin D

Hydrograph type	=	Reservoir	Peak discharge	=	0.039 cfs
Storm frequency	=	100 yrs	Time to peak	=	843 min
Time interval	=	3 min	Hyd. volume	=	946 cuft
Inflow hyd. No.	=	4 - Subwatershed D	Max. Elevation	=	66.69 ft
Reservoir name	=	Basin D Pond	Max. Storage	=	22,774 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



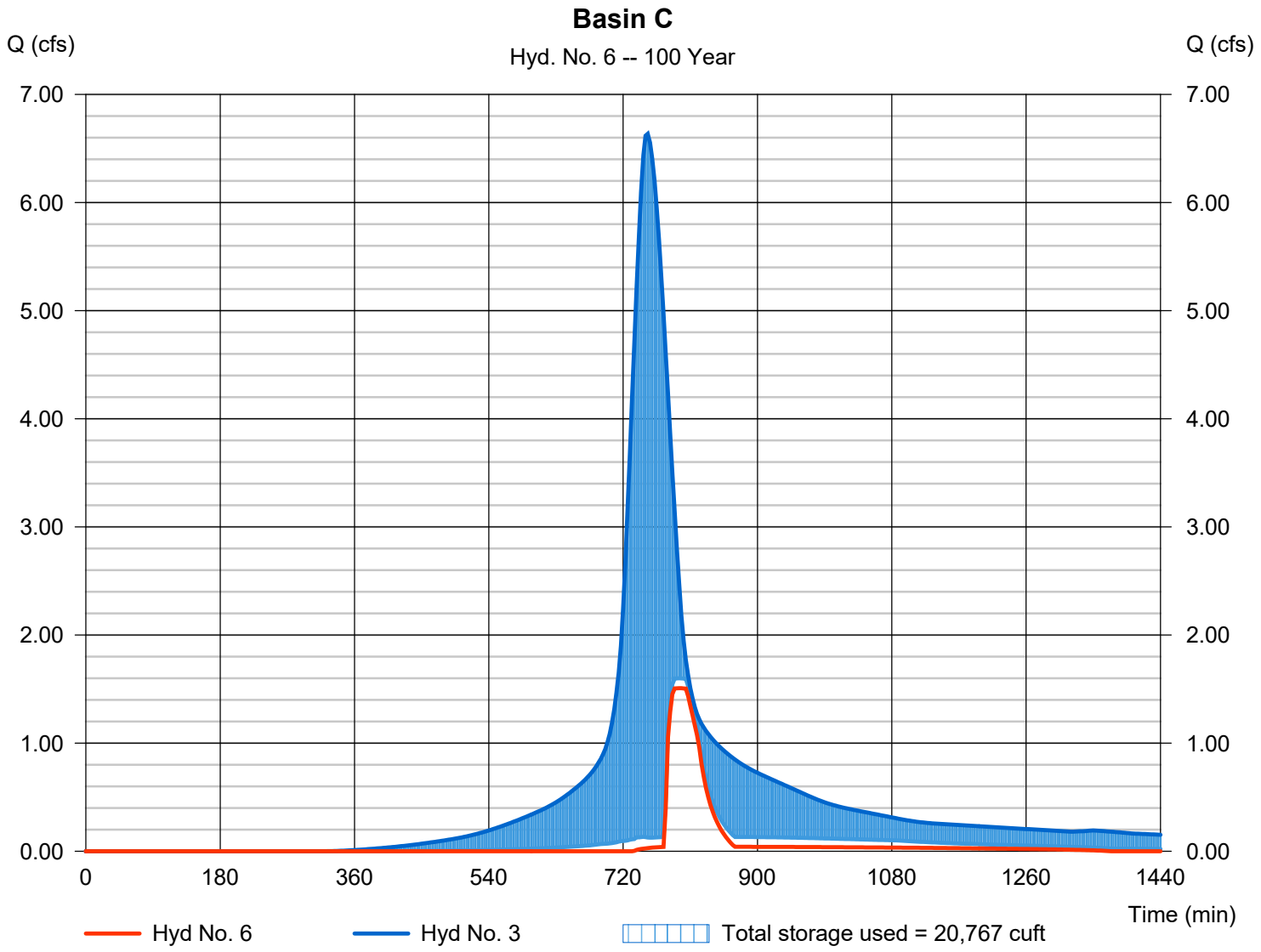
Hydrograph Report

Hyd. No. 6

Basin C

Hydrograph type	=	Reservoir	Peak discharge	=	1.508 cfs
Storm frequency	=	100 yrs	Time to peak	=	795 min
Time interval	=	3 min	Hyd. volume	=	5,521 cuft
Inflow hyd. No.	=	3 - Subwatershed C	Max. Elevation	=	67.23 ft
Reservoir name	=	Basin C Pond	Max. Storage	=	20,767 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

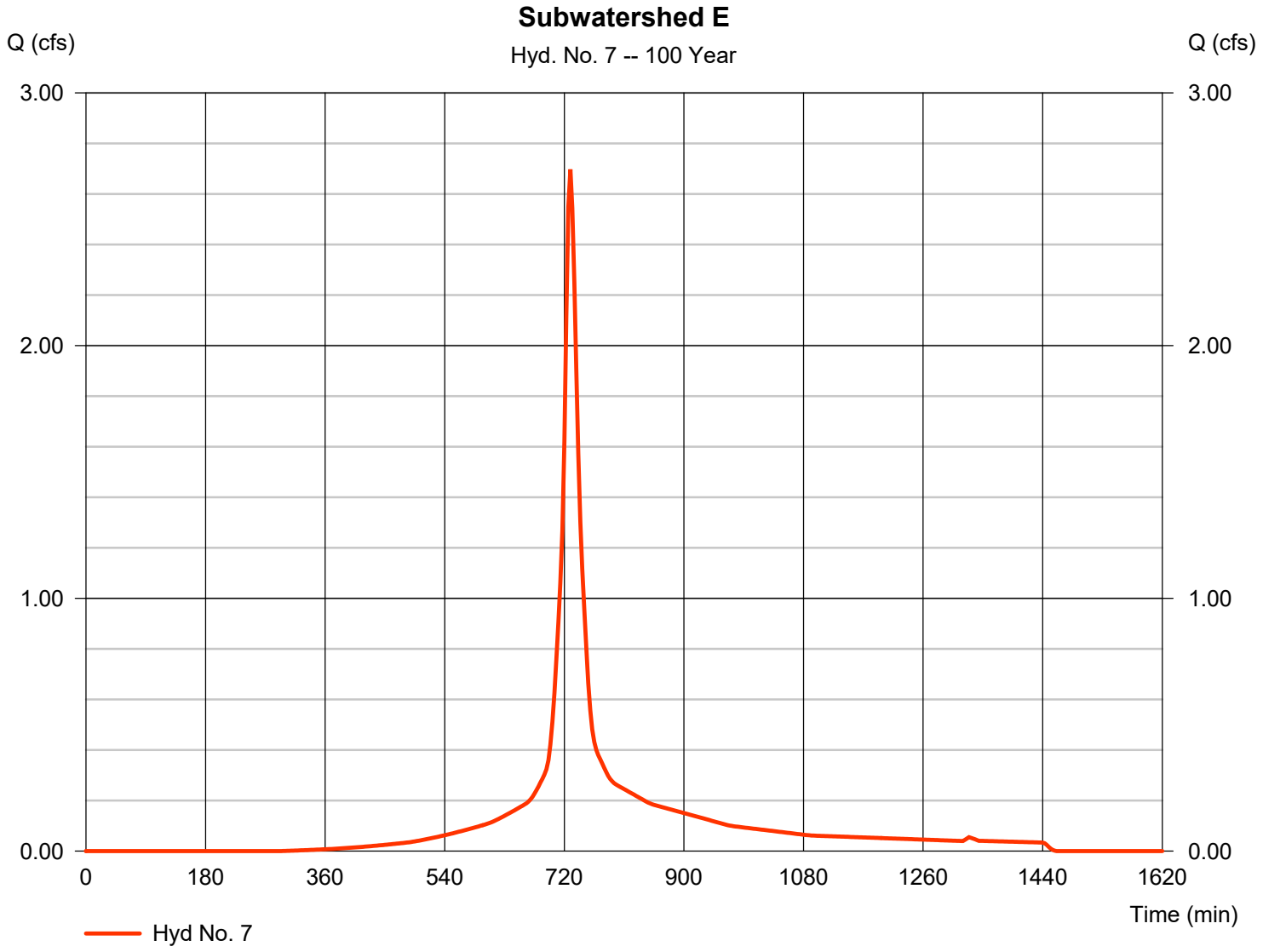


Hydrograph Report

Hyd. No. 7

Subwatershed E

Hydrograph type	= SCS Runoff	Peak discharge	= 2.698 cfs
Storm frequency	= 100 yrs	Time to peak	= 729 min
Time interval	= 3 min	Hyd. volume	= 10,855 cuft
Drainage area	= 0.460 ac	Curve number	= 81
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 13.50 min
Total precip.	= 8.80 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

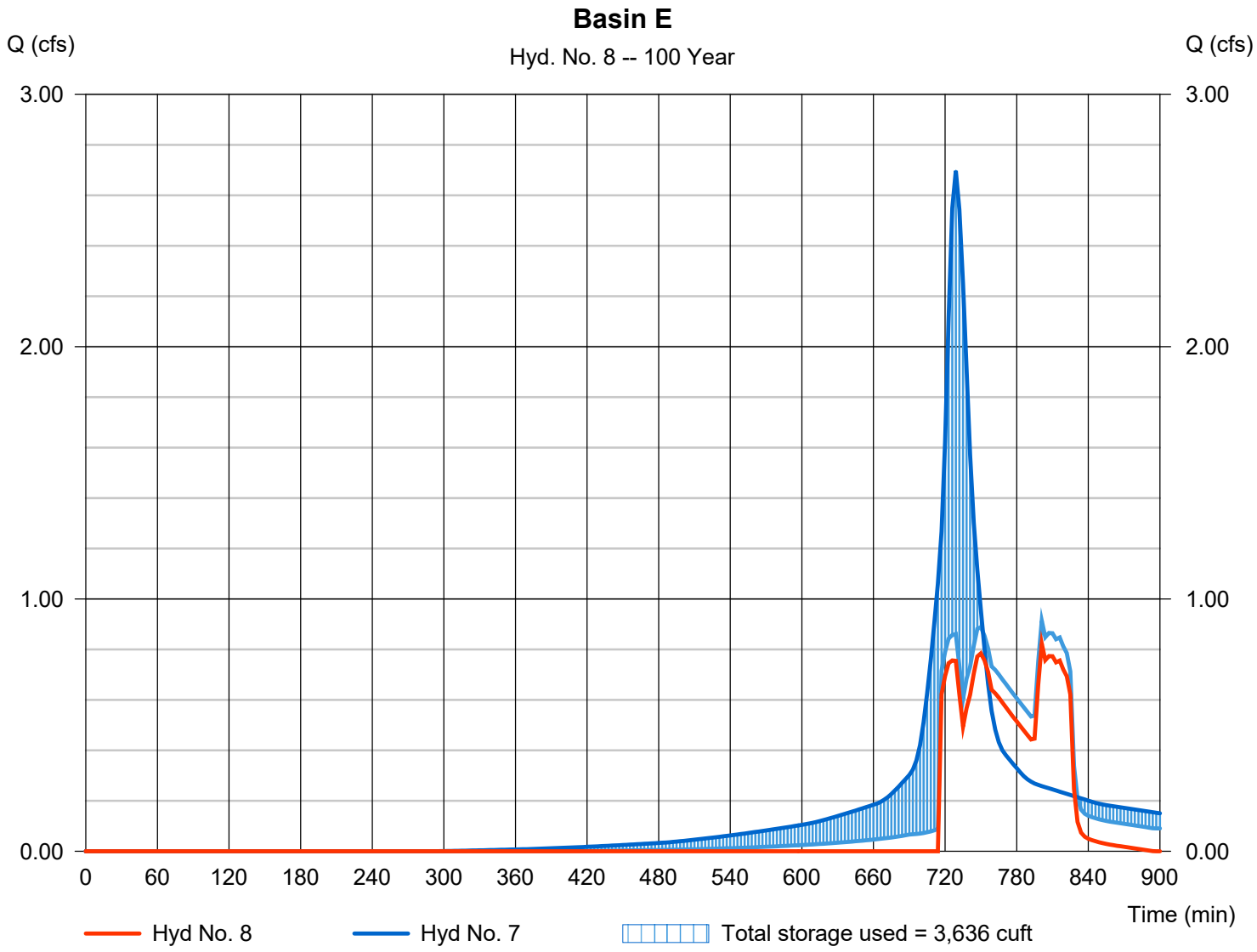
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Thursday, 04 / 7 / 2022

Hyd. No. 8

Basin E

Hydrograph type	=	Reservoir	Peak discharge	=	0.822 cfs
Storm frequency	=	100 yrs	Time to peak	=	801 min
Time interval	=	3 min	Hyd. volume	=	4,463 cuft
Inflow hyd. No.	=	7 - Subwatershed E	Max. Elevation	=	63.38 ft
Reservoir name	=	Basin E Pond	Max. Storage	=	3,636 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

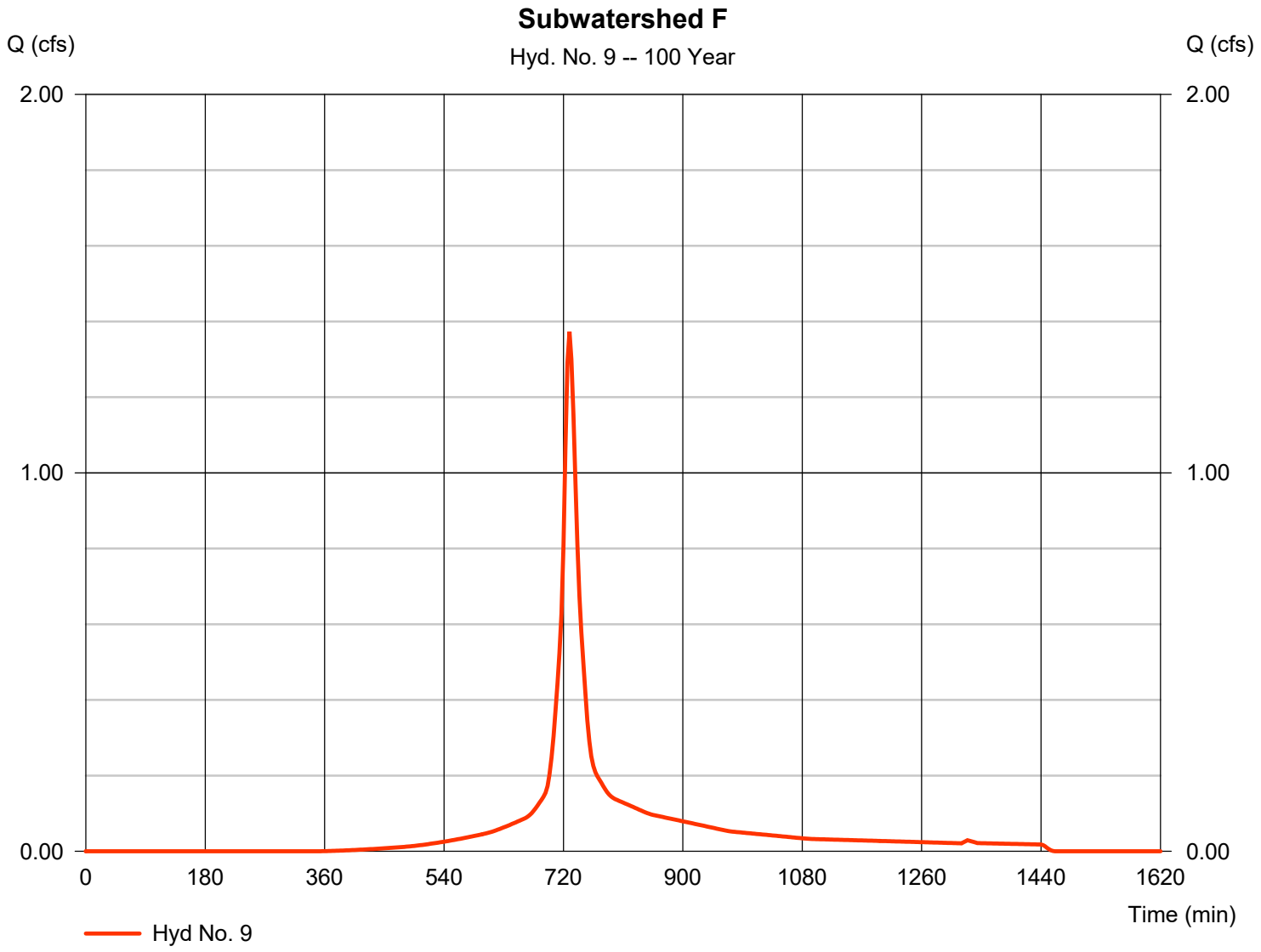


Hydrograph Report

Hyd. No. 9

Subwatershed F

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.373 cfs
Storm frequency	=	100 yrs	Time to peak	=	729 min
Time interval	=	3 min	Hyd. volume	=	5,457 cuft
Drainage area	=	0.250 ac	Curve number	=	77
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	12.10 min
Total precip.	=	8.80 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



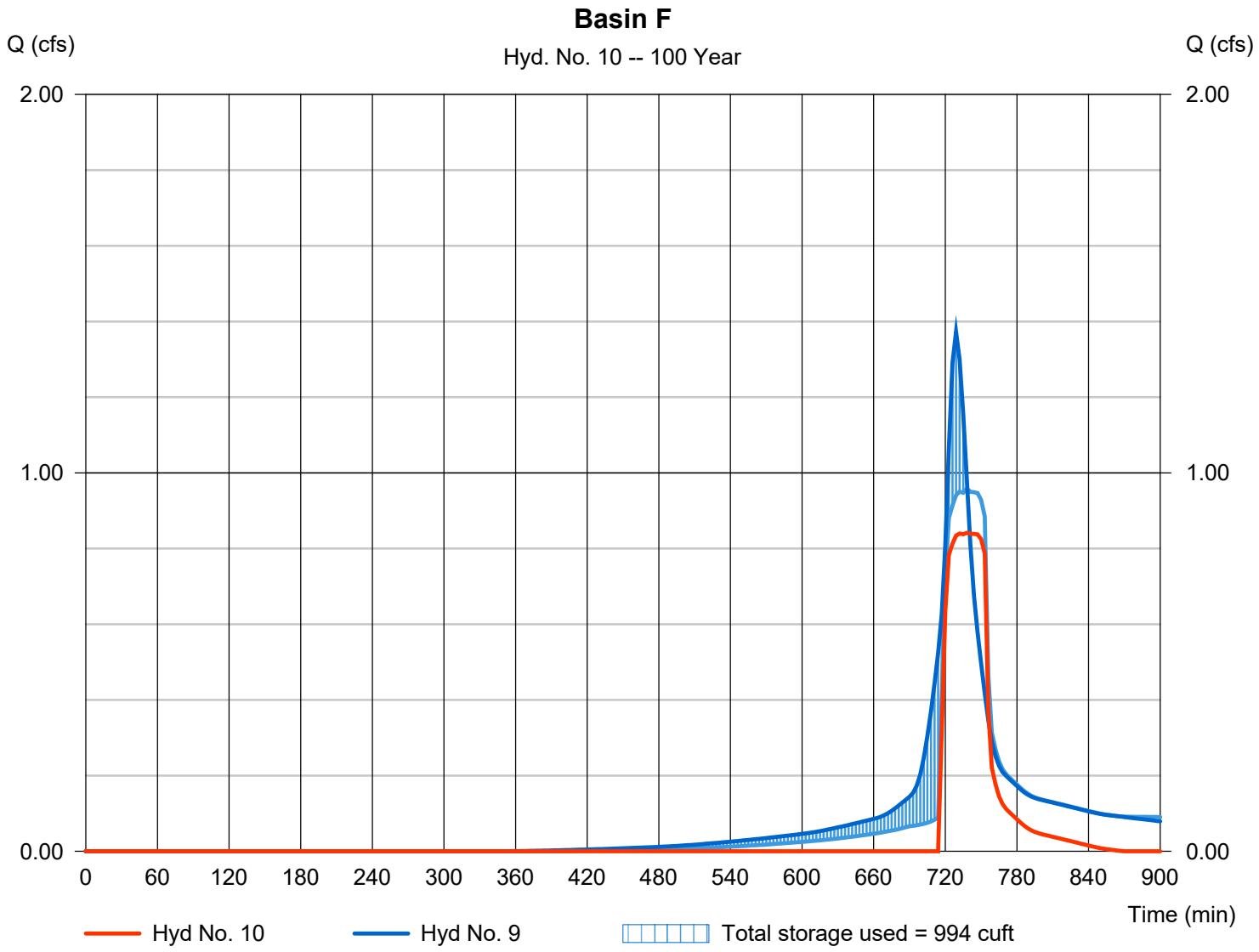
Hydrograph Report

Hyd. No. 10

Basin F

Hydrograph type	=	Reservoir	Peak discharge	=	0.841 cfs
Storm frequency	=	100 yrs	Time to peak	=	738 min
Time interval	=	3 min	Hyd. volume	=	2,213 cuft
Inflow hyd. No.	=	9 - Subwatershed F	Max. Elevation	=	63.01 ft
Reservoir name	=	Basin F Pond	Max. Storage	=	994 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

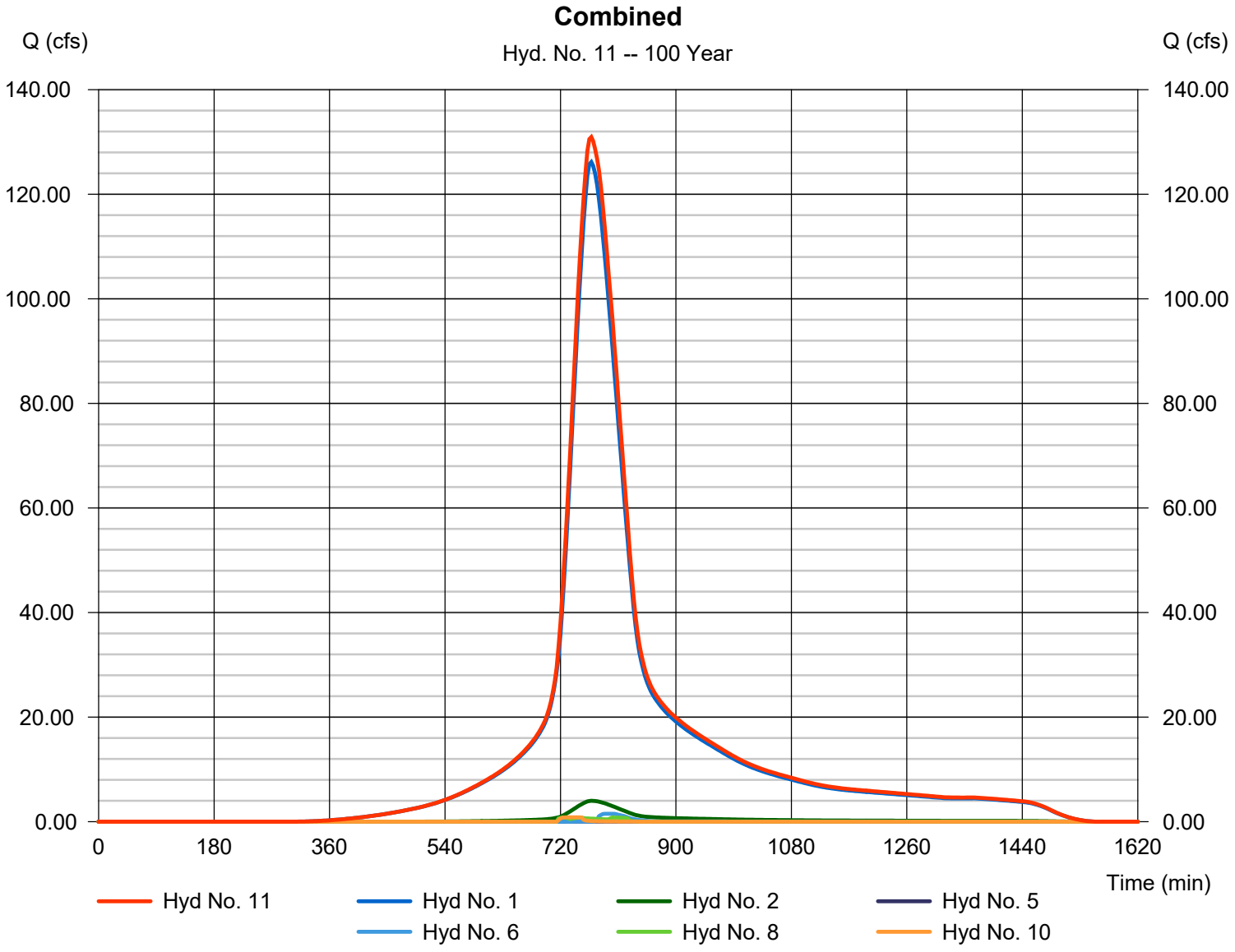


Hydrograph Report

Hyd. No. 11

Combined

Hydrograph type	=	Combine	Peak discharge	=	130.95 cfs
Storm frequency	=	100 yrs	Time to peak	=	768 min
Time interval	=	3 min	Hyd. volume	=	1,155,903 cuft
Inflow hyds.	=	1, 2, 5, 6, 8, 10	Contrib. drain. area	=	48.810 ac



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	69.8703	13.1000	0.8658	--------
3	0.0000	0.0000	0.0000	--------
5	79.2597	14.6000	0.8369	--------
10	88.2351	15.5000	0.8279	--------
25	102.6072	16.5000	0.8217	--------
50	114.8193	17.2000	0.8199	--------
100	127.1596	17.8000	0.8186	--------

File name: SampleFHA.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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	5.69	4.61	3.89	3.38	2.99	2.69	2.44	2.24	2.07	1.93	1.81	1.70
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.57	5.43	4.65	4.08	3.65	3.30	3.02	2.79	2.59	2.42	2.27	2.15
10	7.24	6.04	5.21	4.59	4.12	3.74	3.43	3.17	2.95	2.77	2.60	2.46
25	8.25	6.95	6.03	5.34	4.80	4.38	4.02	3.73	3.48	3.26	3.07	2.91
50	9.04	7.65	6.66	5.92	5.34	4.87	4.49	4.16	3.88	3.65	3.44	3.25
100	9.83	8.36	7.30	6.50	5.87	5.36	4.94	4.59	4.29	4.03	3.80	3.60

Tc = time in minutes. Values may exceed 60.

Precip. file name: Sample.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	2.86	3.43	4.36	5.12	6.18	6.97	7.81	8.80
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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