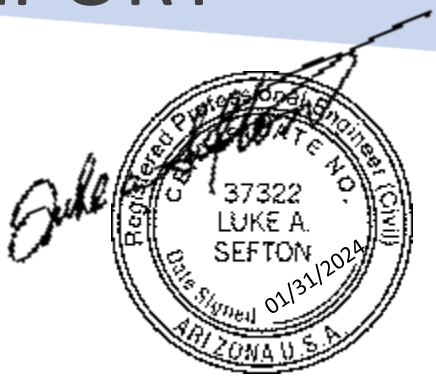
FINISH DRAINAGE REPORT



Prepared for:
RD Olson Development
150 Schnebly Hill Road
Sedona, Arizona 86336

Prepared by:

Sefton Engineering Consultants
Your Ideas to Completion
Surveying • Engineering • Land Planning

100% Veteran Owned

40 Stutz Bearcat Drive Sedona, Arizona 86336

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In affiliation with:
Heritage Land Surveying & Mapping, Inc. with offices in Sedona, Camp Verde & Colorado

CONTENTS

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I. GENERAL LOCATION AND DESCRIPTION

A. PROJECT LOCATION

The proposed development of Oak Creek Heritage Lodge is a commercial development that will be located within the City of Sedona, an incorporated portion of Coconino County, Arizona. The property is located north of the intersection of State Route 179 and Schnebly Hill Road and south of Bear Wallow Road and Schnebly Hill Road. The development is located on parcels identified as APN 401-12-016C, 401-11-001C, 401-11-002F, 401-18-031B, 401-18-031D, 401-18-031G, 401-18-001A, and 401-18-002C within a portion of the Southwest ¼ of Section 8 and the Southeast ¼ of Section 7, Township 17 North, Range 6 East of the Gila & Salt River Meridian. The proposed access point to the development will be located off Schnebly Hill Road.

B. PROPERTY OWNER/DEVELOPER

RD Olson Development
150 Schnebly Hill Road
Sedona, Arizona 86336
Phone:

C. DESCRIPTION OF PROPERTY

The proposed development of Oak Creek Heritage Lodge will consist of 80 guest rooms, a lobby & check-in building, a restaurant & bar, a fitness & spa facility, a service building, and meeting space building. The development will also include a parking lot, paved access to the lobby, service building, and parking lot from Schnebly Hill Road and Bear Wallow. The property encompasses approximately 11.4 acres and is partially developed. Currently three of the parcels that will be a part of the development have residential structures and paved driveways and the other five are undeveloped with well-established trees and shrubs.

Gassaway Creek flows through the proposed site entering the eastern property boundary through a bridge along Schnebly Hill Road. The creek crosses the development in flows in an east to west direction to Oak Creek. The creek has a 100-year peak discharge of 477 cfs according to the City of Sedona 2022 Stormwater Master Plan.

The development sits along the left overbanks of Oak Creek and will therefore be impacted by the 100-year floodplain of Oak Creek as shown on the Preliminary FEMA Flood Insurance Rate Map (FIRM) No. 04005C7657H dated June 30, 2020. The floodplain does not extend completely into the development but is concentrated to areas along the banks of Oak Creek. In addition, the development will be impacted by the floodplain of Gassaway Creek as delineated by the City of Sedona 2022 Stormwater Master Plan.

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The parcels that make up the development is currently zoned Oak Creek Heritage and is surrounded by Single-Family Residential to the north and west, Commercial zone to the south, and Oak Creek Heritage, Single-Family Residential, Planned Development and Special Use to the east.

D. PREVIOUS STUDIES

The property has no previous studies.

II. HYDROLOGY

E. METHODOLOGY

The methodology used for this hydrologic analysis was based on the Rational Method as described within the Arizona Department of Transportation Highway Drainage Design Manual, Volume 2 – Hydrology with guidance from the Coconino County Drainage Design Manual. The hydrologic modeling software HydraFlow Hydrographs was used to calculate the runoff for the pre-development and post-development conditions. The hydrologic calculations used within this report will be used for addressing the post-development design conditions in comparison to the pre-development hydrologic conditions.

F. WATERSHED

The watershed that encompasses the development is approximately 12.4 acres and is bounded by Bear Wallow to the North, Schnebly Hill Road to the east and Oak Creek to the west. Runoff within the watershed is primarily shallow overland sheet flows flowing in a northeast to southwest direction and draining into Oak Creek or Gassaway Creek. Off-site runoff enters the development through Gassaway Creek which crosses Schnebly Hill Road at the eastern property boundary. The creek bisects the development and drains into Oak Creek at the western property boundary. The watershed is a mixture of developed and undeveloped parcels with moderate vegetation cover comprised of grasses, shrubs, and trees.

The hydrologic properties for the on-site basin were determined for both the existing and proposed conditions. The development of Oak Creek Resort will have approximately 2.87 acres of impervious surface. Runoff Coefficients were determined following Figures 2-1 through Figure 2-6 of the ADOT Hydrology Manual based on a Hydrologic Soil Group (HSG) Type 'C' and the amount of vegetation cover. Area weighted runoff coefficients were developed for both existing and proposed conditions. Cover conditions were approximated using aerial photography obtained from the Coconino County GIS server. Table 1 and 2 below provide a summary of the numeric results for the basin weighted runoff coefficient development.

Table 1: Pre & Post Developed Sub-Basin Weighted Runoff Coefficient Properties

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NORTH CLUSTER				
Pre V/s Post Land Use				
Land Type	**Pre-Development**		**Post-Development**	
	Area (Ac)	**C**	**Area (Ac)**	**C**
Pathways	0.00	0.00	1.22	0.90
Building Roof area	0.00	0.00	0.13	0.97
Suburban 20% Impervious	1.63	0.45	0.28	0.45
Composite Co-efficient	**1.628**	**0.450**	**1.628**	**0.828**
SOUTH CLUSTER				
Pre V/s Post Land Use				
Land Type	**Pre-Development**		**Post-Development**	
	Area (Ac)	**C**	**Area (Ac)**	**C**
Pathways	0.00	0.00	1.22	0.72
Building Roof area	0.00	0.00	0.13	0.70
Suburban 20% Impervious	1.63	0.45	0.28	0.29
Composite Co-efficient	**1.628**	**0.450**	**1.628**	**0.641**
CENTRAL CLUSTER				
Pre V/s Post Land Use				
Land Type	**Pre-Development**		**Post-Development**	
	Area (Ac)	**C**	**Area (Ac)**	**C**
Pathways	0.00	0.00	0.57	0.90
Building Roof area	0.00	0.00	0.61	0.96
Suburban 20% Impervious	2.03	0.45	0.86	0.45
Composite Co-efficient	**2.034**	**0.450**	**2.034**	**0.728**
WEST CLUSTER				
Pre V/s Post Land Use				
Land Type	**Pre-Development**		**Post-Development**	
	Area (Ac)	**C**	**Area (Ac)**	**C**
Pathways	0.00	0.00	0.05	0.90
Building Roof area	0.00	0.00	0.10	0.98
Suburban 20% Impervious	0.37	0.45	0.22	0.45
Composite Co-efficient	**0.37**	**0.45**	**0.37**	**0.65**

Time of Concentration paths and length of flow condition (sheet, shallow concentrated, or channel flow) for each basin were determined using on-site topography survey, while the time of concentration duration was estimated within HydraFlow Hydrographs using the TR-55 method. Flow paths were adjusted from existing to proposed conditions and the durations were modified

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to reflect proposed development. Table 3 and 4 below provide a summary of the numeric results for the basin composite time of concentration.

Table 3: Pre-Development Sub-Basin Composite Time of Concentration Properties

Pre-Development Drainage Sub-Basin Site Time of Concentration						
Flow Type	Hydraulic Length (ft)	Slope (ft/ft)	Manning's n	2 Year 24 Hour Depth (in)	Flow Area (sq.ft.)	WP (ft)
Sheet	300	0.03	0.035	2.11	-	-
Shallow Concentrated	300	0.02	-	-	-	-
Channel	-	-	-	-	-	-
Composite Time of Concentration (min)						**9.9**

Table 4: Post-Development Sub-Basin Composite Time of Concentration Properties

Post-Development Drainage Sub-Basin Site Time of Concentration						
Flow Type	Hydraulic Length (ft)	Slope (ft/ft)	Manning's n	2 Year 24 Hour Depth (in)	Flow Area (sq.ft.)	WP (ft)
Sheet	300	0.025	0.020	2.11	-	-
Shallow Concentrated	300	0.035	-	-	-	-
Channel	-	-	-	-	-	-
Composite Time of Concentration (min)						**7.0**

In accordance with the Rational Method, if the calculated time of concentration is below 10 minutes the time of concentration used in the Rational Method equation is a minimum of 10 minutes.

G. RAINFALL

Rainfall intensity values were determined from using NOAA ATLAS 14 Point Precipitation Frequency Estimates data server. The rainfall intensities were utilized within the HydraFlow Hydrographs model. Rainfall is assumed to be uniform over the entirety of the basin being modeled. NOAA Atlas 14 results are provided in Appendix B.

H. HYDROLOGIC RESULTS

Peak discharges for the 2-year, 5-year, 10-year, 25-year, 50-year and 100-year storm events were determined for the pre-development and the post-development of the on-site basin. The post-development hydrologic model utilized the pre-development model and applied the change in hydrologic conditions as a result of the proposed development. The time of concentration and the runoff coefficient were updated to reflect the proposed development. The results generated from the on-site pre-development and post-development hydrologic model are provided in Table 5 and Table 6 below.

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Table 5: Pre-Development Summary Discharges

PRE-DEVELOPMENT DISHARGES (cfs)						
Cluster	**2-yr Peak**	**5-yr Peak**	**10-yr Peak**	**25-yr Peak**	**50-yr Peak**	**100-yr Peak**
North	1.91	2.59	3.16	3.95	4.63	5.35
South	1.04	1.53	1.70	2.13	2.49	2.88
Central	2.30	3.10	3.87	4.84	5.67	6.55
West	0.43	0.58	0.70	0.88	1.03	1.19
Total	**5.68**	**7.79**	**9.43**	**11.80**	**13.81**	**15.98**

Table 6: Post-Development Summary Discharges

POST-DEVELOPMENT DISHARGES (cfs)						
Cluster	**2-yr Peak**	**5-yr Peak**	**10-yr Peak**	**25-yr Peak**	**50-yr Peak**	**100-yr Peak**
North	2.14	2.89	3.53	4.42	5.17	5.98
South	1.80	2.44	2.98	3.72	4.36	5.04
Central	3.81	5.14	6.28	7.85	9.19	10.64
West	0.62	0.83	1.02	1.27	1.49	1.72
Total	**8.36**	**11.31**	**13.80**	**17.26**	**20.21**	**23.38**

As a result of the proposed development, the post-development flows needed to be retained in order to reduce the flows to pre-development conditions. Therefore, a detention basin was added to the post-development model. A detention basin with available storage capacity of **12878 cubic feet** to retain the peak flows to pre-development rates. The peak discharges exiting the detention basin are provided in Table 7 below.

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Table 7: Detention Basin Summary

Cluster	**100Yr Storm** (Cu.Ft/Sec)		Difference (Cft)	First Flush Volume	Required Storage Volume (Cu.Ft)	Provided Storage Volume (Cu.Ft)
	Pre. Development	Post Development				
North	5.35	5.98	378.00	2448	2826	3974
West	1.19	1.72	317.40	266	583	736
Central	6.55	10.64	2451.60	2272	4723	4899.00
South	2.88	5.04	1296.00	1024	2320	3269.00
		Total	**4443.00**	**6009.53**	**10452.53**	**12878.42**
Note - For storage, all the post Development Runoff is considered to retain.						

The detention basin volume was determined utilizing post development flows from the project site only. This will hold the post development discharges and as well as the first flush volume.

In North cluster, decomposed granite is used for the parking lot and driveway. In this area post development flows are not increasing. It is same as the predevelopment, but still the parking lot and driveway can hold **2959 Cubic feet** of water under the decomposed granite considering 40% voids.

The result for the pre-development and post-development hydrologic model has been provided in Appendix D.

III. HYDRAULICS

According to the City of Sedona 2022 Stormwater Master Plan, Gassaway Creek will overtop the right and left overbanks. After doing field visits and taking additional field measurements of Gassaway Creek between Schnebly Hill Road and Oak Creek, The City's HEC-RAS model was revised to include the updated topography. The results show that the 100-year peak discharge does not overtop the banks of Gassaway Creek the entire reach. Only a portion of Gassaway Creek, extending from Schnebly Hill Road to approximately 80 feet downstream will overtop the banks. The other 220 feet of Gassaway Creek will contain the 100-year peak discharge within the banks. The results of the Revised Gassaway Creek HEC-RAS model have been included in Appendix E. The portion of Gassaway Creek that overtops the banks will be modified to contain the 100-year peak discharge as the Grading and Drainage Plans are developed.

Sefton Engineering had reviewed the city's HEC-RAS model of Oak Creek which has manning's roughness coefficient of 0.116 for Gassaway Creek. As the channel will be widened and graded again, sefton engineering has used manning's roughness coefficient of 0.035 at the banks and 0.27 in the channel. The value of 0.27 was calculated using "Guide for selecting manning's roughness coefficients for natural channel and flood plains by United States Geological Survey Water Supply paper 2339".

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IV. SCOUR ANALYSIS

A preliminary scour analysis was performed along the left overbank of Oak Creek to determine the potential impact of lateral scour migration. Visual inspections of the banks and channel revealed areas of observed bedrock and large diameter rocks. Downstream of the development, the State Route 179 bridge provides a stable grade control structure.

Photo 1: 1962 Aerial

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Photo 2: 2022 Aerial

The stability of the banks of Oak Creek along the development is apparent when comparing the aerial photo from 1962 (Photo 1) to the aerial photo from 2022 (Photo 2). From the aerial photos, Oak Creek appears to maintain a consistent channel geometry with no signs of lateral migration. Therefore, no significant channel degradation or lateral scour migration is anticipated.

V. RECOMMENDATION AND CONCLUSION

Utilizing the proposed grading and drainage plan prepared by Sefton Engineering (See Appendix F) the hydraulic and hydrology were modeled to determine the feasibility of the proposed site development in terms of off-site flow routing and on-site detention requirements. The proposed hydrologic and hydraulic conditions models indicate that the proposed drainage improvements which include a series of open channels and underground storm drains to route on-site flows, and the detention requirements are reasonable and can be adequately addressed.

The modeling presented in this report was done at a Phase I Drainage Report level and is considered precise based on the level of detail needed.

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It is the engineer's recommendation that the site be developed as proposed. The plan will satisfy the conditions for design while maintaining a cost-effective, low-maintenance drainage facility. The facility will mitigate any anticipated increase in runoff up to the 100-year storm event because of the proposed development. The facility follows the standards and regulations of the City of Sedona and Coconino County.

- The difference between pre and post development 100-year peak discharge is cubic **feet per second** and along with this the first flush quantity is also considered to determine the volume of the detention basins.
- The increase in runoff flows because of the development was attenuated through a detention basin with a minimum storage capacity of **12,878 cubic feet**. Runoff flows from the on-site basin were directed to this basin for attenuation and treatment. This detention basins even have the capacity of hold the first flush volume of **10452 cubic feet**.
- The proposed buildings located along the banks of Oak Creek will have a Finished Floor Elevation a minimum of 1-foot above the determined Base Flood Elevation of Oak Creek. In addition, the proposed decks that extend into the Floodway of Oak Creek will be cantilevered above the 100-year Base Flood Elevation therefore not impeding the conveyance area.
- Additional measures will be applied which will reduce the amount of post-development runoff and pollutants such as permeable pavers. This action falls in line with the City of Sedona's continued efforts to provide sustainable developments.

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Tim Huskett, PE,
Robert Lane, Public Lands
Cheri Baker, Office Manager
Crockett Saline, PE
David Nicolella, Planner
Leonard Filner, Planner

APPENDIX A

Drainage Map

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RD OLSON DEVELOPMENT

SEDONA, ARIZONA

R.D. OLSON DEVELOPMENT

WATG

Brightview

Sefton Engineering

Eric Brandt Architect

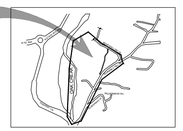
Richard Hubbell & Associates

Hammes Surveying LCC

Kimley-Horn and Associates, Inc.

Registered Professional Engineer (Civil)
CERTIFICATION NO.
37322
LUKE A.
SEFTON
DATE SIGNED
ARIZONA, U.S.A.

PROJECT LOCATION



VICINITY MAP
COTTONWOOD, ARIZONA
NO SCALE

key plan

no.	date	issue
3	1/24/2024	CDS SUBMITTAL 3
2	8/31/2023	CDS SUBMITTAL 2
1	6/1/2023	

Oak Creek
Heritage Lodge

COMPREHENSIVE DESIGN SUBMITTAL
MARCH 28TH, 2023

0 40' 80' 160'
HORIZONTAL SCALE IN FEET
1" = 80'

Contact Arizona 811 at least two full working days before you begin excavation
ARIZONA811
Call 811 or click Arizona811.com

sheet title
PRE DEVELOPMENT FLOWS

project no. 222032
checked by: LS
drawn by: SS

component
C-1

sheet no.
page

RD OLSON DEVELOPMENT

SEDONA, ARIZONA

0 40' 80' 160'

HORIZONTAL SCALE IN FEET
1" = 80'

R.D. OLSON DEVELOPMENT

WATG

Brightview

Sefton Engineering

Eric Brandt Architect

Richard Hubbell & Associates

Hammes Surveying LCC

Kimley-Horn and Associates, Inc.

Registered Professional Engineer (Civil)
CERTIFICATION NO.
37322
LUKE A.
SEFTON
DATE SIGNED
ARIZONA, U.S.A.

key plan

no.	date	issue
3	1/24/2024	CDS SUBMITTAL 3
2	8/31/2023	CDS SUBMITTAL 2
1	6/1/2023	

Oak Creek
Heritage Lodge

COMPREHENSIVE DESIGN SUBMITTAL
MARCH 28TH, 2023

sheet title

POST DEVELOPMENT FLOWS

project no. 222032

checked by: LS

drawn by: SS

component

sheet no. C-2

page

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APPENDIX B

NOAA Atlas 14 Results

201106
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NOAA Atlas 14, Volume 1, Version 5
Location name: Sedona, Arizona, USA*
Latitude: 34.8667°, Longitude: -111.7667°
Elevation: 4252.24 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**2.54** (2.12-3.05)	**3.29** (2.72-3.92)	**4.42** (3.66-5.29)	**5.36** (4.46-6.42)	**6.72** (5.53-7.99)	**7.85** (6.42-9.34)	**9.06** (7.36-10.8)	**10.4** (8.30-12.4)	**12.3** (9.65-14.8)	**13.9** (10.8-16.8)
10-min	**1.94** (1.61-2.32)	**2.50** (2.08-2.99)	**3.36** (2.78-4.02)	**4.09** (3.39-4.88)	**5.11** (4.21-6.08)	**5.97** (4.88-7.11)	**6.90** (5.60-8.21)	**7.89** (6.32-9.41)	**9.35** (7.34-11.2)	**10.6** (8.20-12.8)
15-min	**1.60** (1.34-1.92)	**2.07** (1.72-2.47)	**2.78** (2.30-3.32)	**3.38** (2.80-4.04)	**4.22** (3.48-5.03)	**4.94** (4.04-5.88)	**5.70** (4.62-6.79)	**6.52** (5.22-7.78)	**7.73** (6.07-9.28)	**8.73** (6.78-10.6)
30-min	**1.08** (0.900-1.29)	**1.39** (1.16-1.66)	**1.87** (1.55-2.24)	**2.27** (1.89-2.72)	**2.84** (2.34-3.38)	**3.32** (2.72-3.95)	**3.84** (3.11-4.57)	**4.39** (3.51-5.24)	**5.20** (4.09-6.25)	**5.88** (4.56-7.11)
60-min	**0.668** (0.556-0.799)	**0.862** (0.715-1.03)	**1.16** (0.959-1.39)	**1.41** (1.17-1.68)	**1.76** (1.45-2.09)	**2.06** (1.68-2.45)	**2.38** (1.93-2.83)	**2.72** (2.17-3.24)	**3.22** (2.53-3.87)	**3.64** (2.82-4.40)
2-hr	**0.396** (0.344-0.462)	**0.500** (0.430-0.585)	**0.660** (0.569-0.770)	**0.796** (0.680-0.928)	**0.990** (0.842-1.15)	**1.15** (0.966-1.34)	**1.33** (1.11-1.55)	**1.52** (1.25-1.77)	**1.80** (1.46-2.11)	**2.04** (1.61-2.38)
3-hr	**0.283** (0.249-0.328)	**0.358** (0.316-0.416)	**0.458** (0.401-0.530)	**0.546** (0.476-0.631)	**0.670** (0.579-0.775)	**0.777** (0.667-0.896)	**0.895** (0.757-1.04)	**1.02** (0.854-1.19)	**1.21** (0.994-1.41)	**1.37** (1.10-1.61)
6-hr	**0.173** (0.155-0.192)	**0.215** (0.193-0.239)	**0.267** (0.238-0.296)	**0.313** (0.279-0.347)	**0.378** (0.336-0.421)	**0.431** (0.380-0.479)	**0.490** (0.427-0.546)	**0.551** (0.474-0.617)	**0.641** (0.544-0.724)	**0.714** (0.596-0.812)
12-hr	**0.111** (0.100-0.123)	**0.137** (0.124-0.151)	**0.167** (0.150-0.184)	**0.192** (0.172-0.211)	**0.226** (0.203-0.249)	**0.253** (0.225-0.278)	**0.281** (0.247-0.309)	**0.308** (0.270-0.341)	**0.347** (0.300-0.387)	**0.379** (0.324-0.424)
24-hr	**0.071** (0.064-0.077)	**0.088** (0.080-0.097)	**0.109** (0.100-0.121)	**0.127** (0.115-0.140)	**0.151** (0.136-0.167)	**0.170** (0.153-0.187)	**0.189** (0.169-0.209)	**0.209** (0.187-0.231)	**0.237** (0.209-0.263)	**0.259** (0.226-0.288)
2-day	**0.041** (0.038-0.046)	**0.052** (0.047-0.057)	**0.064** (0.059-0.071)	**0.074** (0.068-0.082)	**0.089** (0.080-0.097)	**0.100** (0.090-0.110)	**0.111** (0.100-0.122)	**0.123** (0.109-0.136)	**0.139** (0.123-0.154)	**0.152** (0.133-0.169)
3-day	**0.030** (0.027-0.033)	**0.037** (0.034-0.041)	**0.046** (0.042-0.051)	**0.054** (0.049-0.059)	**0.064** (0.058-0.071)	**0.073** (0.065-0.080)	**0.081** (0.073-0.089)	**0.090** (0.080-0.099)	**0.103** (0.091-0.114)	**0.113** (0.098-0.125)
4-day	**0.024** (0.022-0.026)	**0.030** (0.027-0.033)	**0.037** (0.034-0.041)	**0.043** (0.040-0.048)	**0.052** (0.047-0.057)	**0.059** (0.053-0.065)	**0.066** (0.059-0.073)	**0.074** (0.066-0.081)	**0.085** (0.074-0.094)	**0.093** (0.081-0.103)
7-day	**0.016** (0.015-0.018)	**0.020** (0.018-0.022)	**0.025** (0.023-0.027)	**0.029** (0.026-0.031)	**0.034** (0.031-0.037)	**0.039** (0.035-0.042)	**0.043** (0.039-0.048)	**0.048** (0.043-0.053)	**0.055** (0.049-0.060)	**0.060** (0.053-0.066)
10-day	**0.013** (0.012-0.014)	**0.016** (0.015-0.017)	**0.020** (0.018-0.022)	**0.023** (0.021-0.025)	**0.026** (0.024-0.029)	**0.030** (0.027-0.032)	**0.033** (0.029-0.036)	**0.036** (0.032-0.039)	**0.040** (0.036-0.044)	**0.043** (0.038-0.048)
20-day	**0.008** (0.008-0.009)	**0.010** (0.009-0.011)	**0.012** (0.011-0.014)	**0.014** (0.013-0.015)	**0.016** (0.015-0.018)	**0.018** (0.016-0.019)	**0.019** (0.018-0.021)	**0.021** (0.019-0.023)	**0.023** (0.021-0.025)	**0.024** (0.022-0.027)
30-day	**0.007** (0.006-0.007)	**0.008** (0.008-0.009)	**0.010** (0.009-0.011)	**0.011** (0.010-0.012)	**0.013** (0.012-0.014)	**0.014** (0.013-0.015)	**0.015** (0.014-0.017)	**0.016** (0.015-0.018)	**0.018** (0.016-0.019)	**0.019** (0.017-0.021)
45-day	**0.005** (0.005-0.006)	**0.006** (0.006-0.007)	**0.008** (0.007-0.009)	**0.009** (0.008-0.010)	**0.010** (0.009-0.011)	**0.011** (0.010-0.012)	**0.012** (0.011-0.013)	**0.013** (0.012-0.014)	**0.014** (0.013-0.016)	**0.015** (0.014-0.017)
60-day	**0.005** (0.004-0.005)	**0.006** (0.005-0.006)	**0.007** (0.006-0.007)	**0.008** (0.007-0.008)	**0.009** (0.008-0.010)	**0.010** (0.009-0.010)	**0.010** (0.009-0.011)	**0.011** (0.010-0.012)	**0.012** (0.011-0.013)	**0.012** (0.011-0.014)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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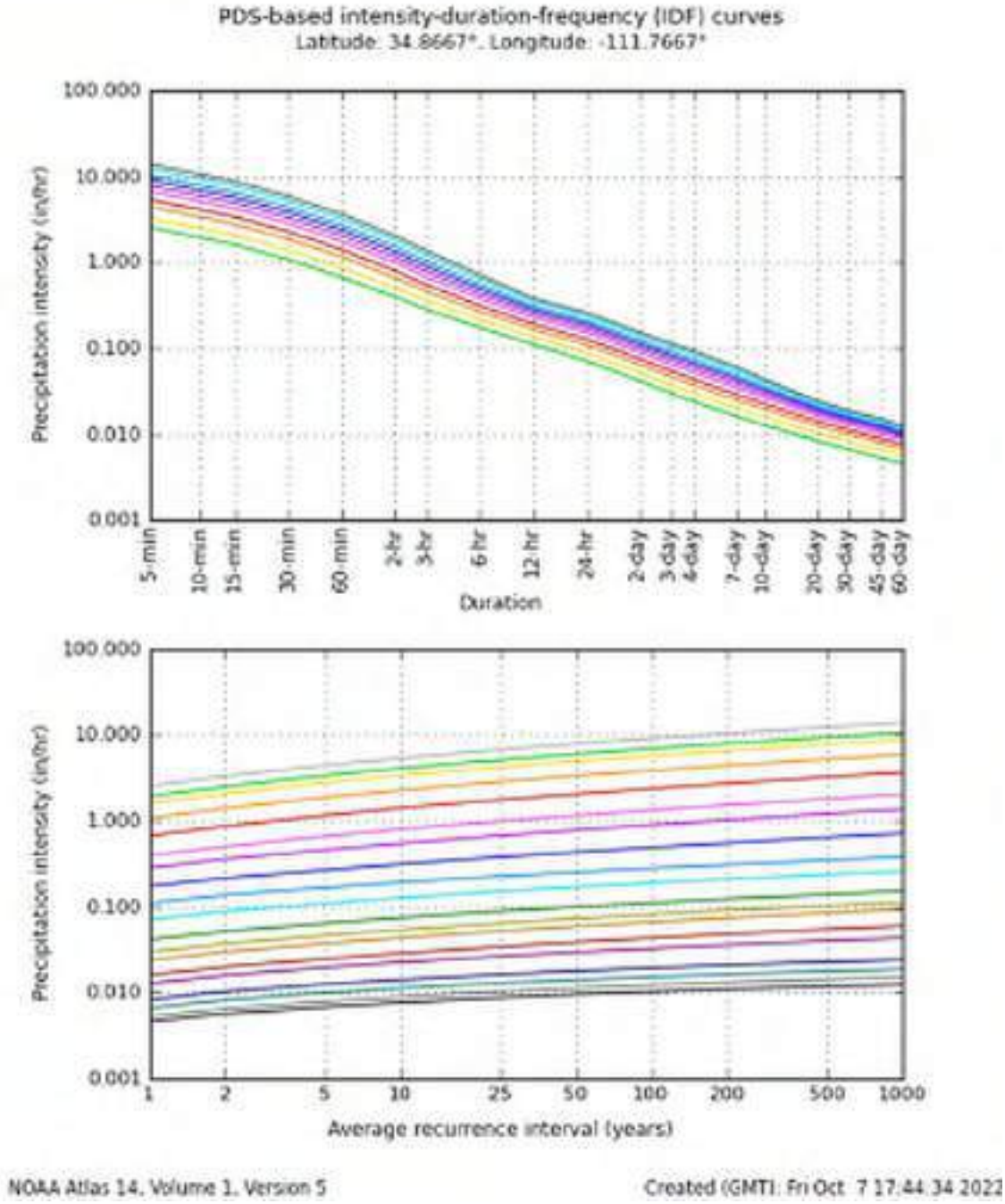
PF graphical



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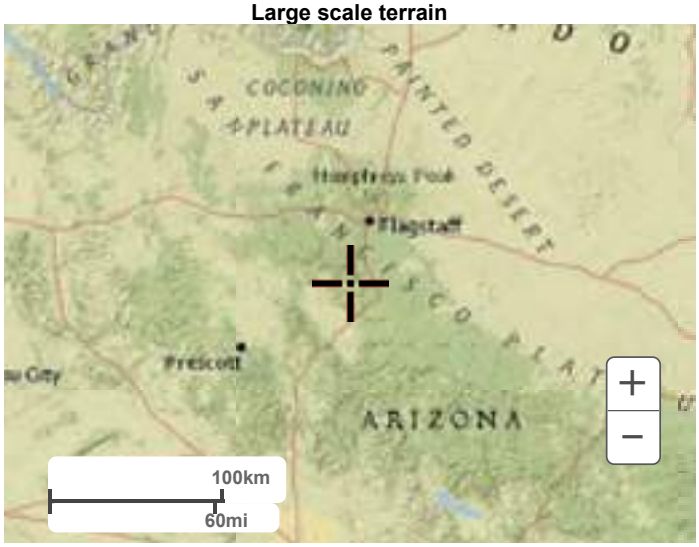
Maps & aerials

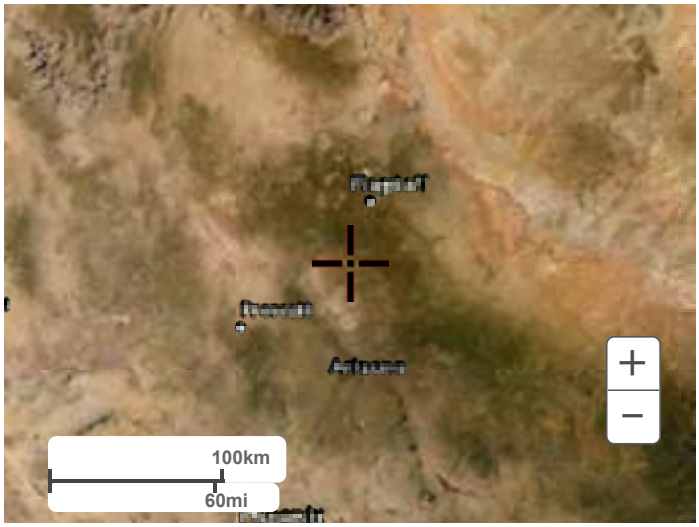
Small scale terrain

Large scale terrain



Large scale map

Large scale aerial



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Disclaimer

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APPENDIX C

ADOT Highway Drainage Design Manual - Hydrology

40 Stutz Bearcat Dr., Sedona, Arizona 86336 ~Phone: (928) 202-3999
Email: info@sefengco.com ~ www.SeftonEngineeringCompany.com
In affiliation with:
Heritage Land Surveying & Mapping, Inc. with offices in Sedona, Camp Verde & Colorado

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APPENDIX D

Hydrologic Model Data and Results

201106
40 Stutz Bearcat Dr., Sedona, Arizona 86336 ~Phone: (928) 202-3999
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In affiliation with:
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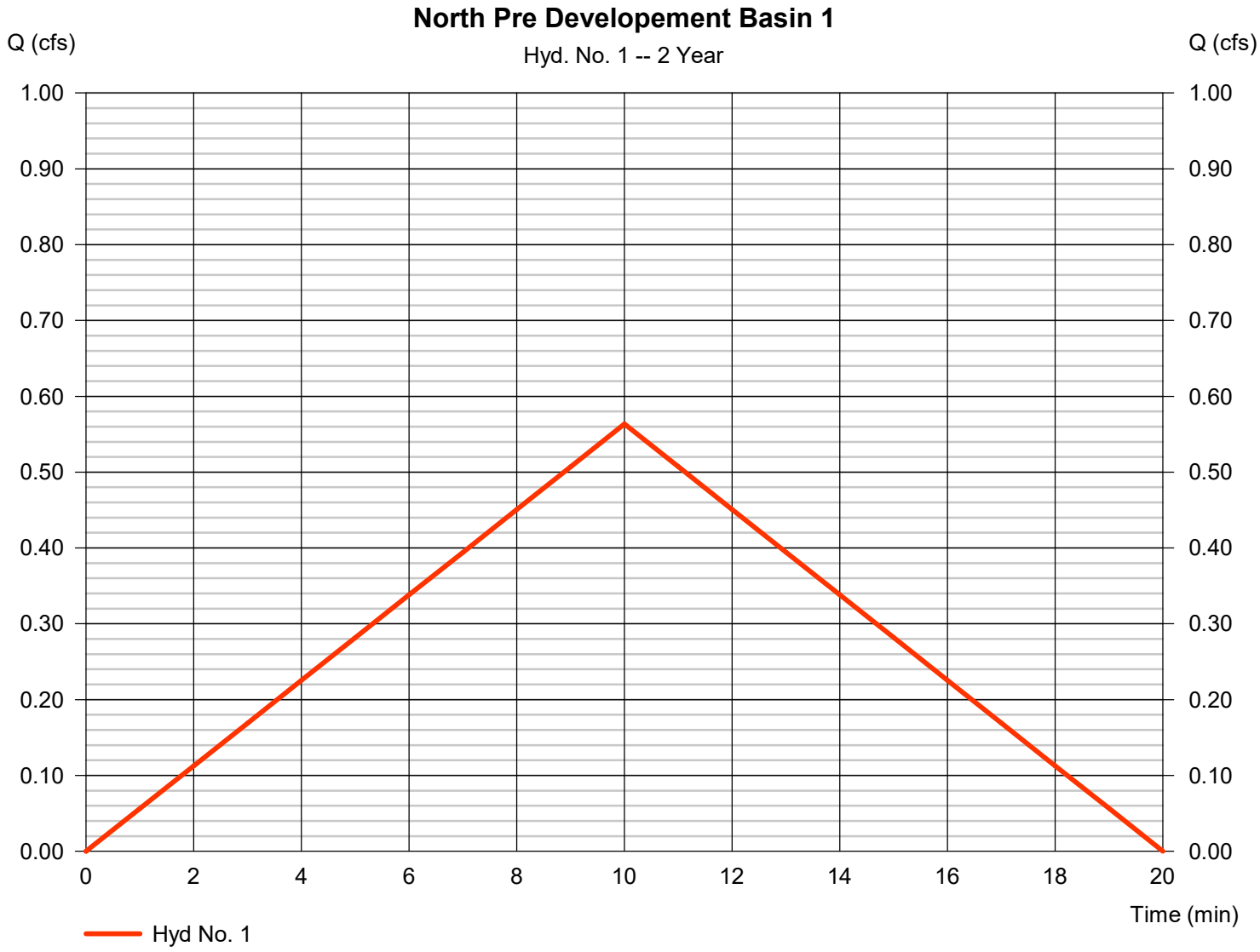
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Wednesday, 01 / 31 / 2024

Hyd. No. 1

North Pre Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	0.564 cfs
Storm frequency	=	2 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	338 cuft
Drainage area	=	0.490 ac	Runoff coeff.	=	0.45
Intensity	=	2.556 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

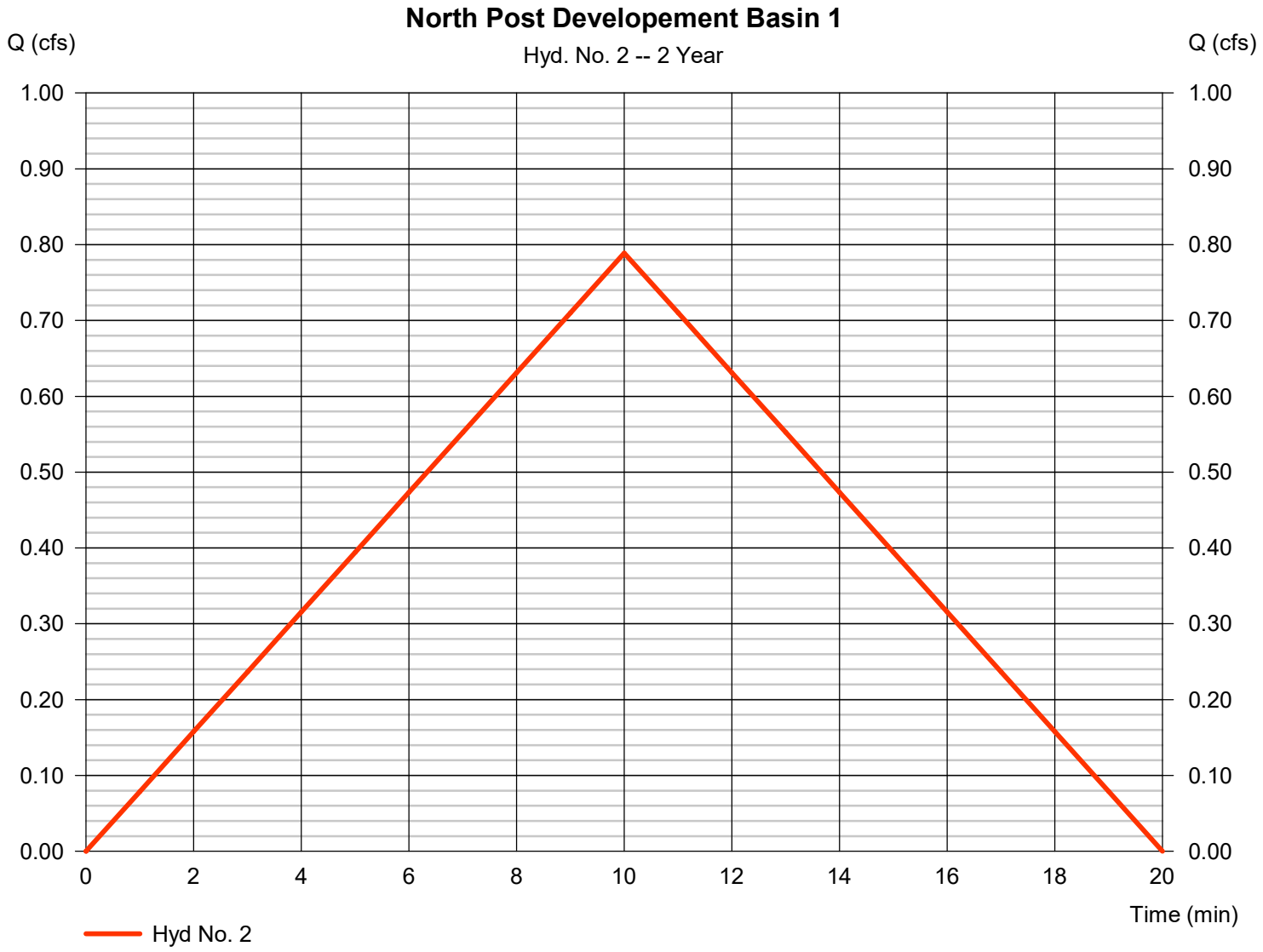


Hydrograph Report

Hyd. No. 2

North Post Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	0.789 cfs
Storm frequency	=	2 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	473 cuft
Drainage area	=	0.490 ac	Runoff coeff.	=	0.63
Intensity	=	2.556 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

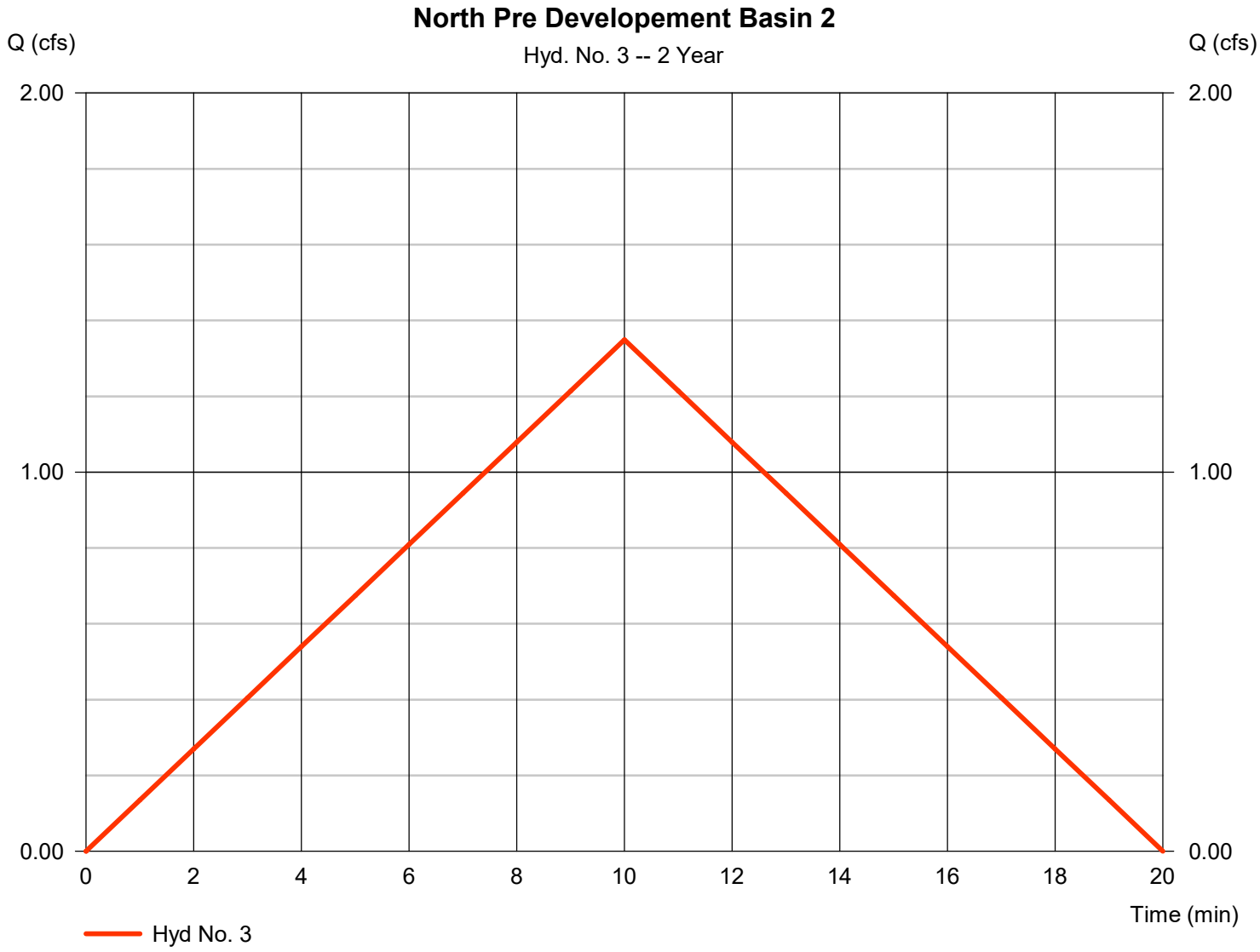


Hydrograph Report

Hyd. No. 3

North Pre Developement Basin 2

Hydrograph type	=	Rational	Peak discharge	=	1.349 cfs
Storm frequency	=	2 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	809 cuft
Drainage area	=	1.173 ac	Runoff coeff.	=	0.45
Intensity	=	2.556 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

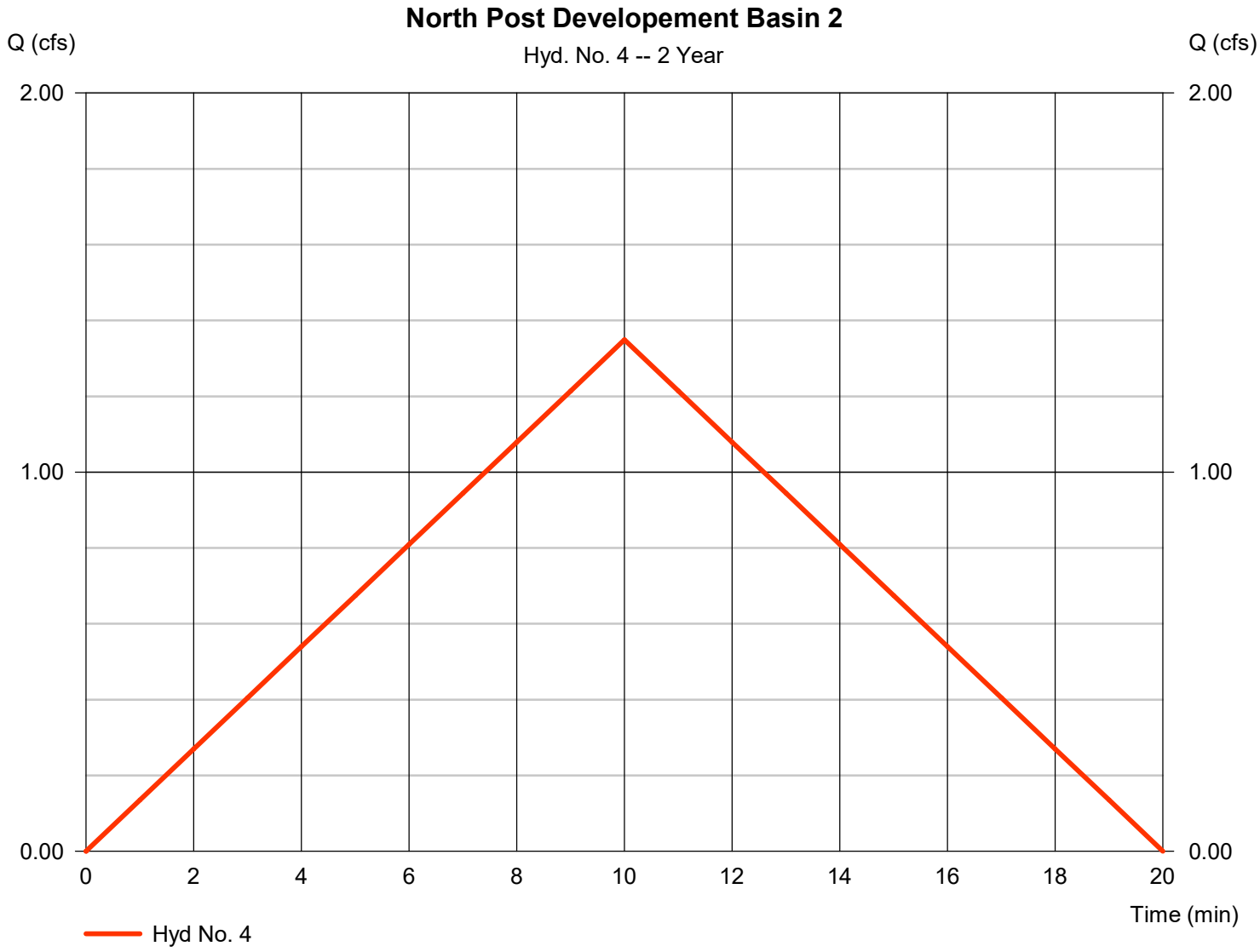


Hydrograph Report

Hyd. No. 4

North Post Developement Basin 2

Hydrograph type	=	Rational	Peak discharge	=	1.349 cfs
Storm frequency	=	2 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	809 cuft
Drainage area	=	1.173 ac	Runoff coeff.	=	0.45
Intensity	=	2.556 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

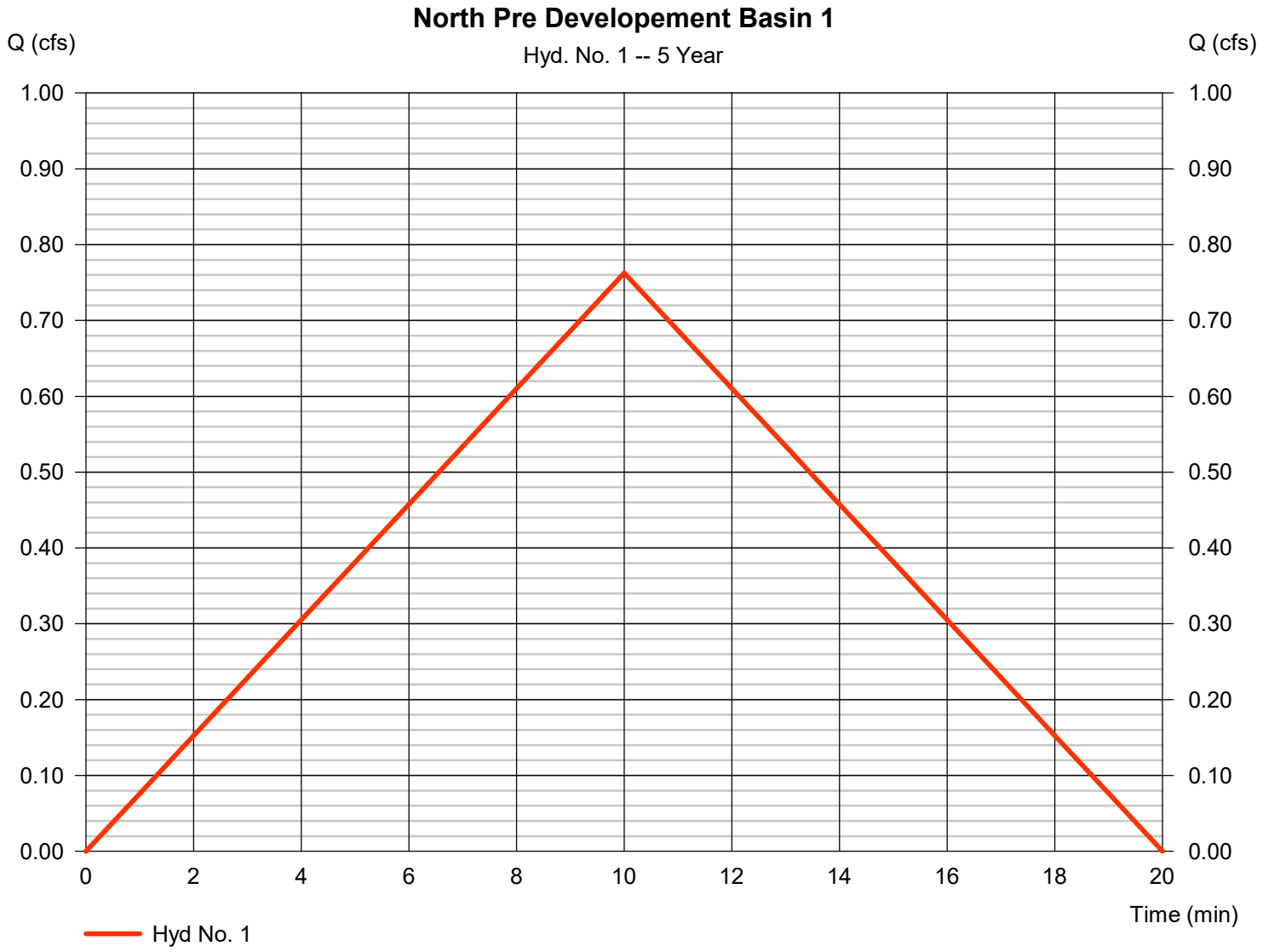


Hydrograph Report

Hyd. No. 1

North Pre Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	0.763 cfs
Storm frequency	=	5 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	458 cuft
Drainage area	=	0.490 ac	Runoff coeff.	=	0.45
Intensity	=	3.459 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

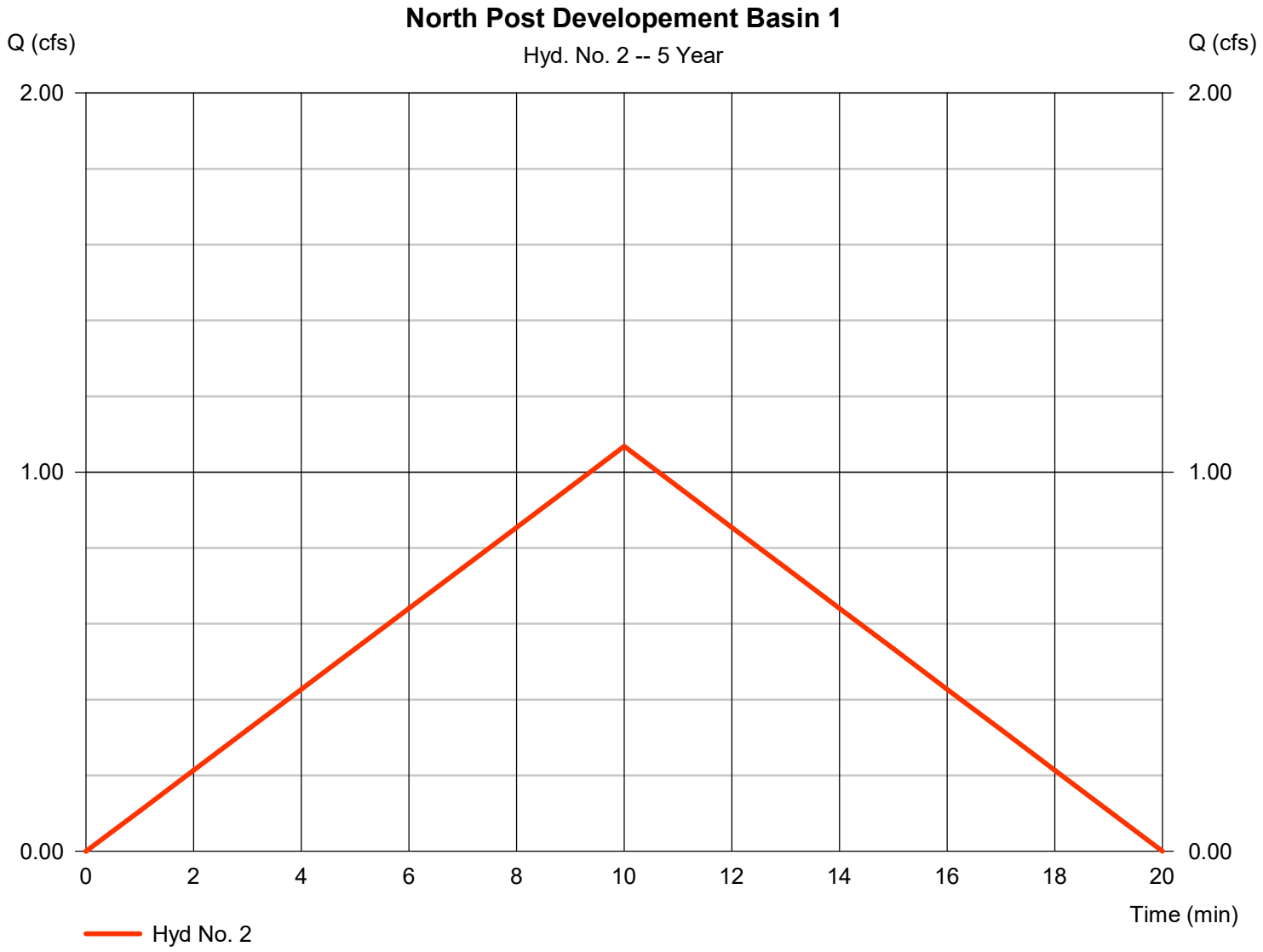


Hydrograph Report

Hyd. No. 2

North Post Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	1.068 cfs
Storm frequency	=	5 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	641 cuft
Drainage area	=	0.490 ac	Runoff coeff.	=	0.63
Intensity	=	3.459 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

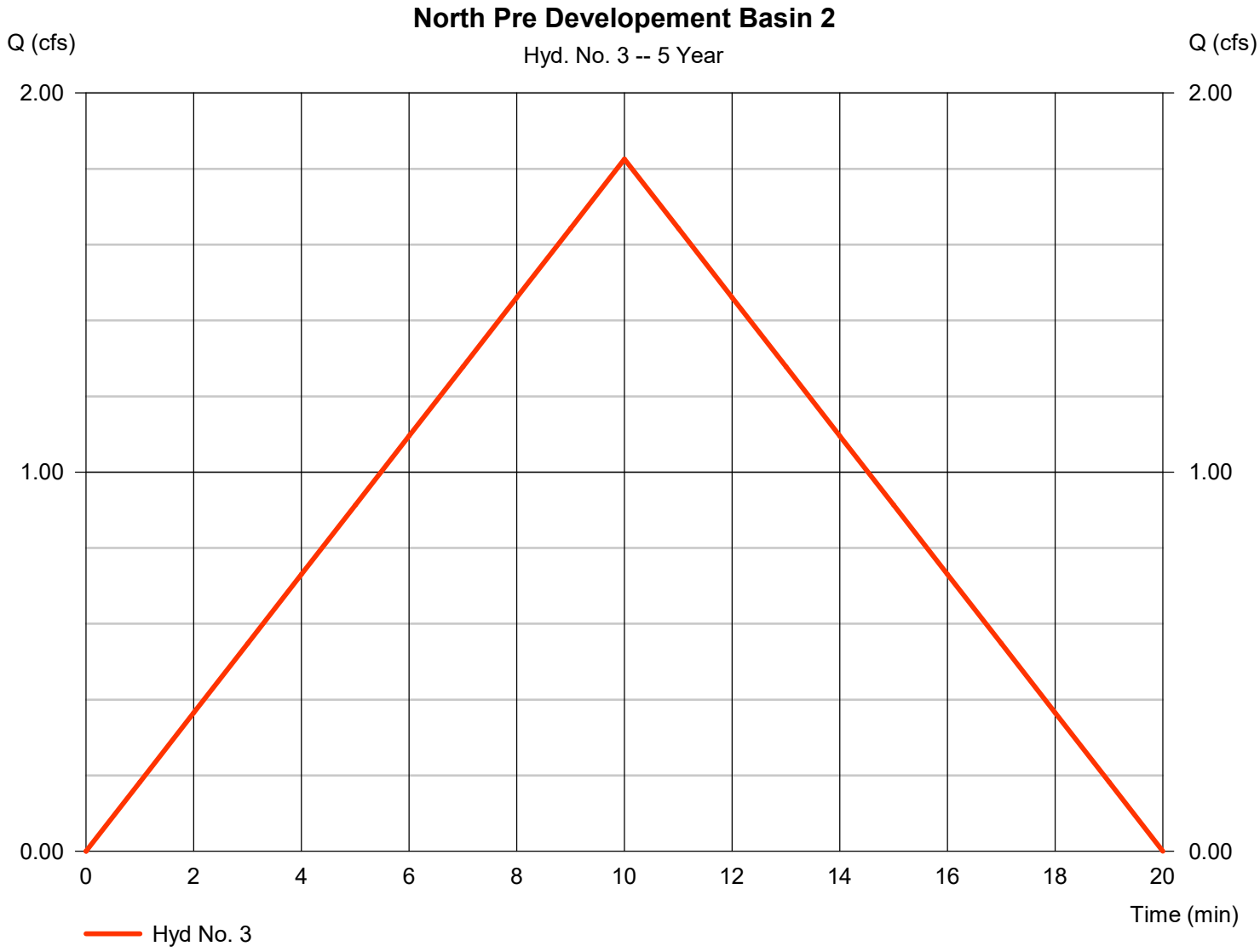


Hydrograph Report

Hyd. No. 3

North Pre Developement Basin 2

Hydrograph type	=	Rational	Peak discharge	=	1.826 cfs
Storm frequency	=	5 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	1,096 cuft
Drainage area	=	1.173 ac	Runoff coeff.	=	0.45
Intensity	=	3.459 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

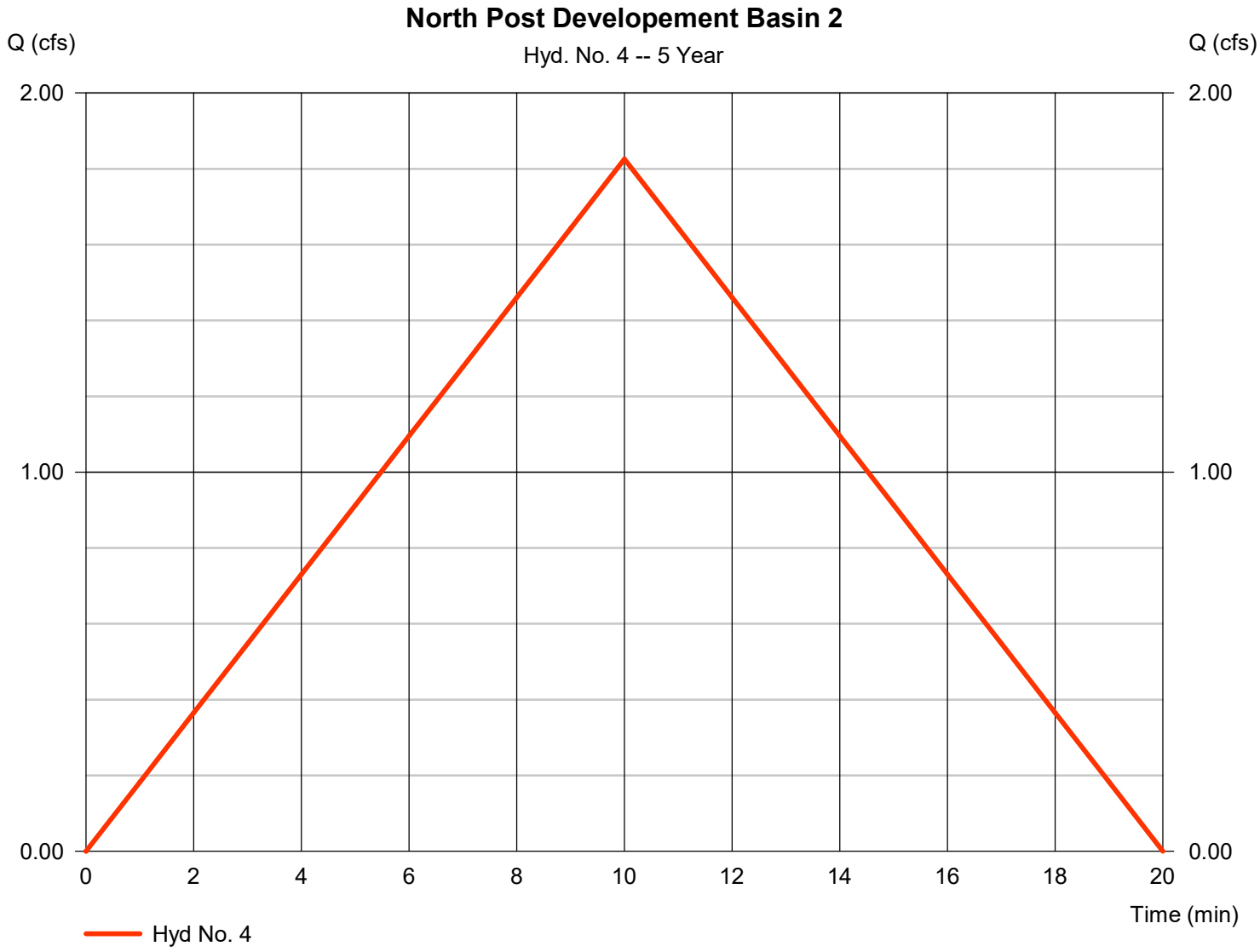


Hydrograph Report

Hyd. No. 4

North Post Developement Basin 2

Hydrograph type	=	Rational	Peak discharge	=	1.826 cfs
Storm frequency	=	5 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	1,096 cuft
Drainage area	=	1.173 ac	Runoff coeff.	=	0.45
Intensity	=	3.459 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

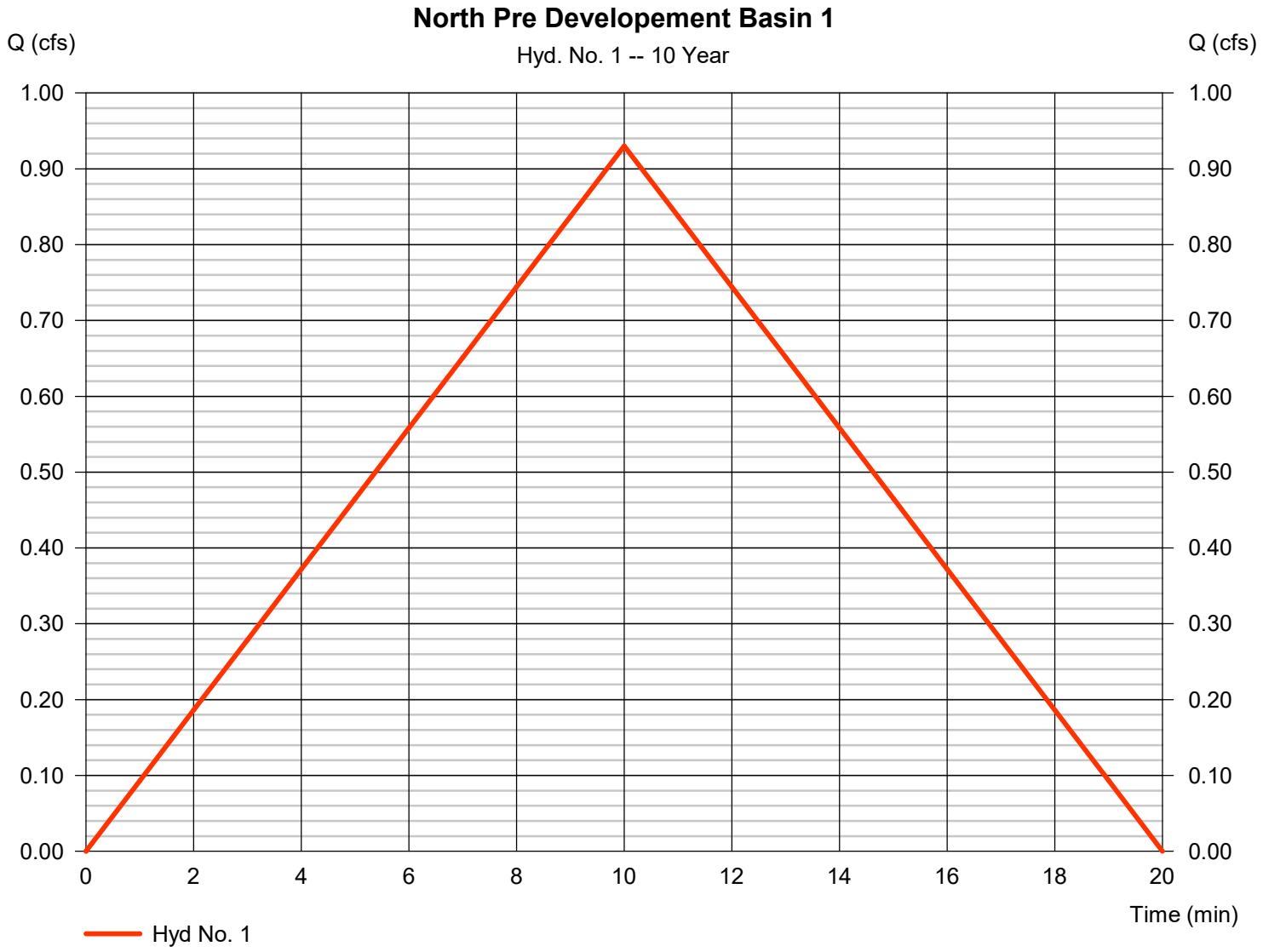


Hydrograph Report

Hyd. No. 1

North Pre Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	0.930 cfs
Storm frequency	=	10 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	558 cuft
Drainage area	=	0.490 ac	Runoff coeff.	=	0.45
Intensity	=	4.219 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

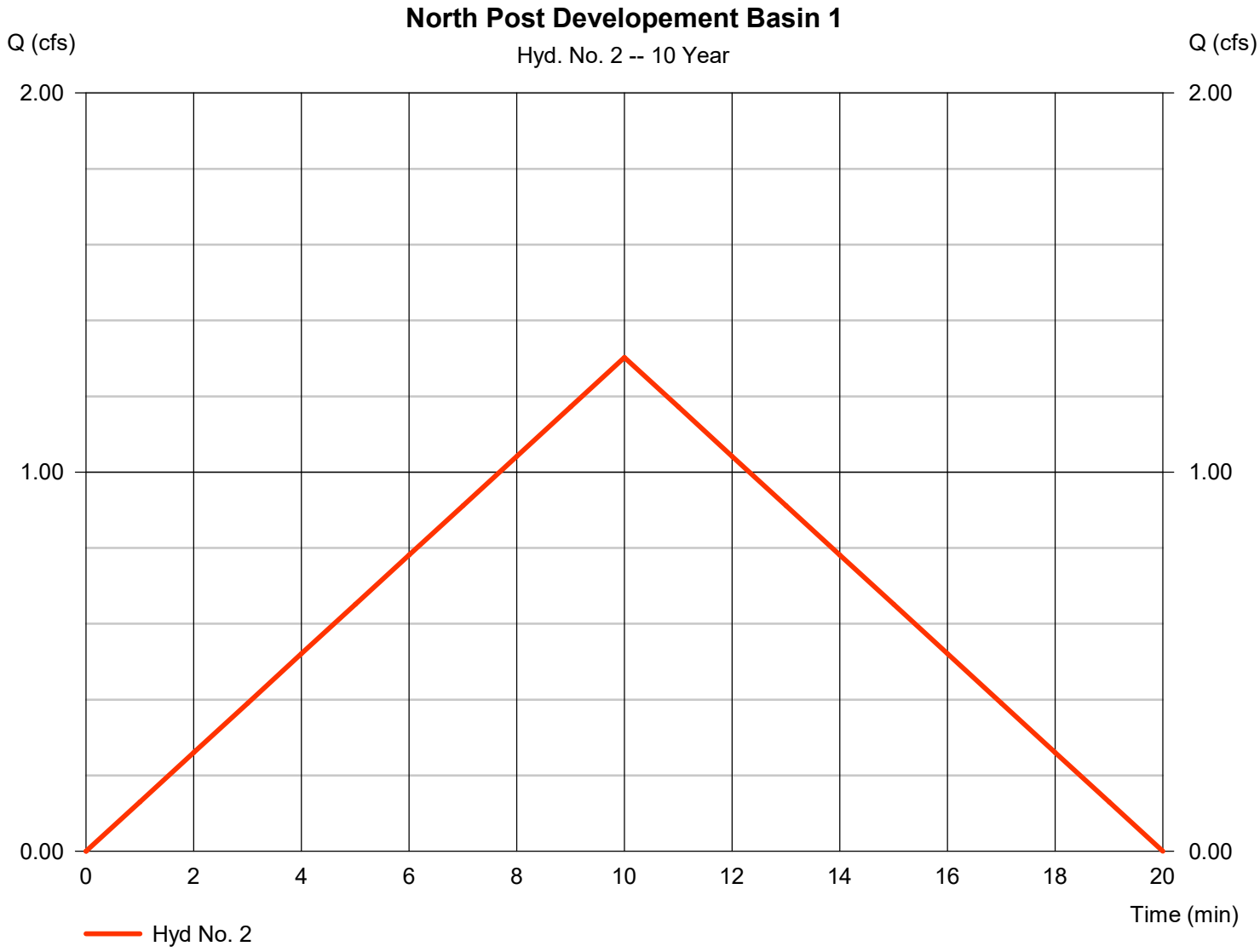


Hydrograph Report

Hyd. No. 2

North Post Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	1.302 cfs
Storm frequency	=	10 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	781 cuft
Drainage area	=	0.490 ac	Runoff coeff.	=	0.63
Intensity	=	4.219 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

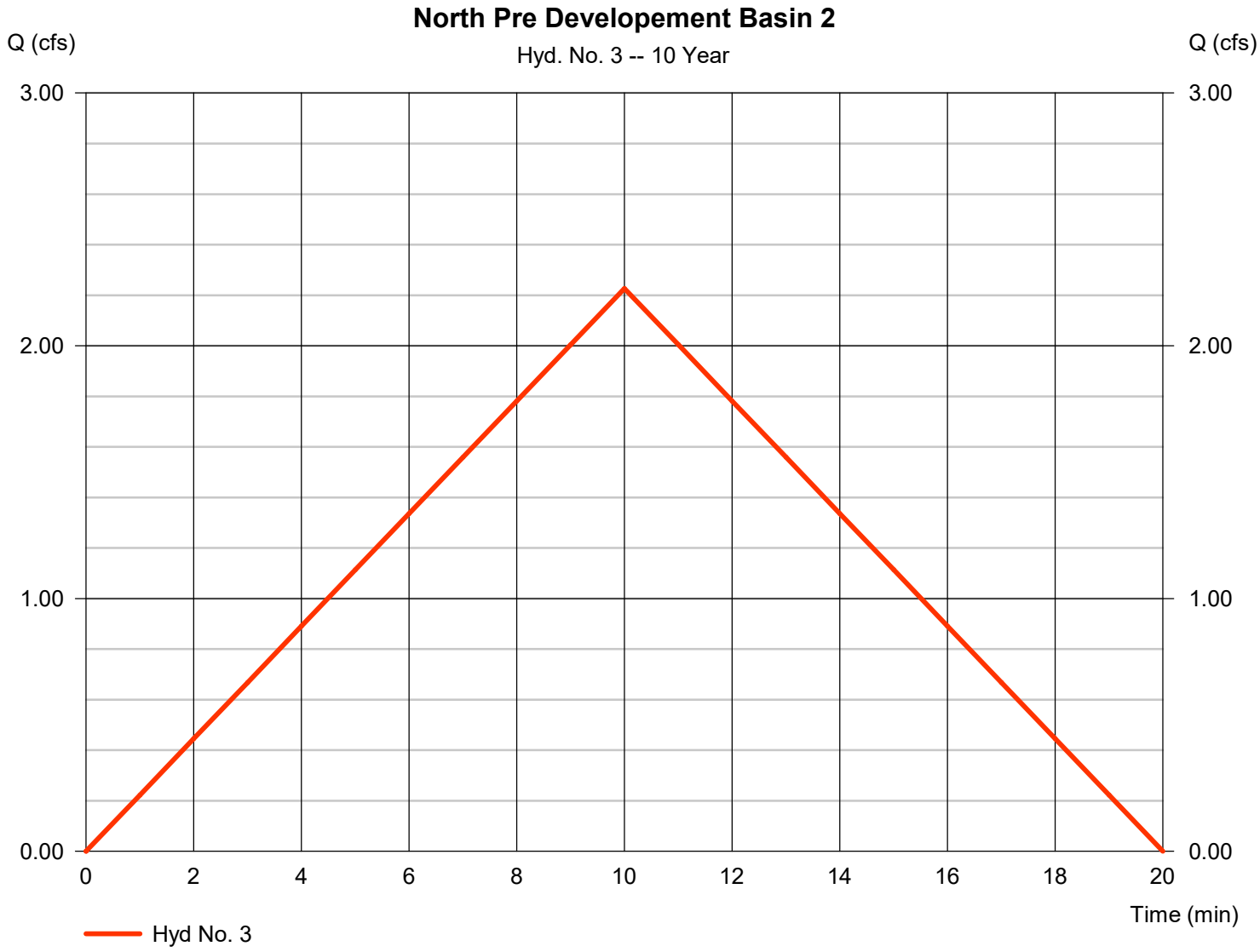


Hydrograph Report

Hyd. No. 3

North Pre Developement Basin 2

Hydrograph type	=	Rational	Peak discharge	=	2.227 cfs
Storm frequency	=	10 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	1,336 cuft
Drainage area	=	1.173 ac	Runoff coeff.	=	0.45
Intensity	=	4.219 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

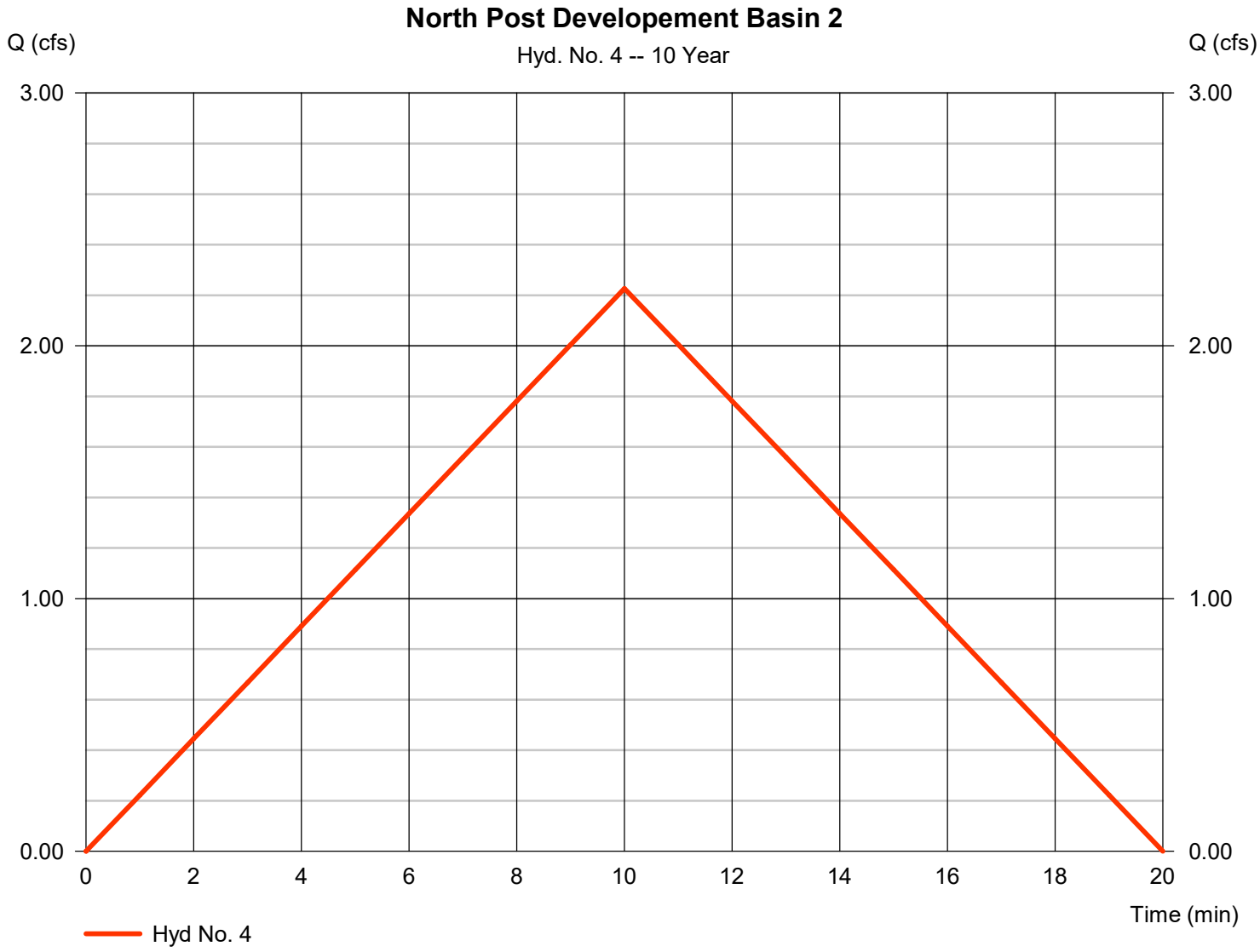


Hydrograph Report

Hyd. No. 4

North Post Developement Basin 2

Hydrograph type	=	Rational	Peak discharge	=	2.227 cfs
Storm frequency	=	10 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	1,336 cuft
Drainage area	=	1.173 ac	Runoff coeff.	=	0.45
Intensity	=	4.219 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

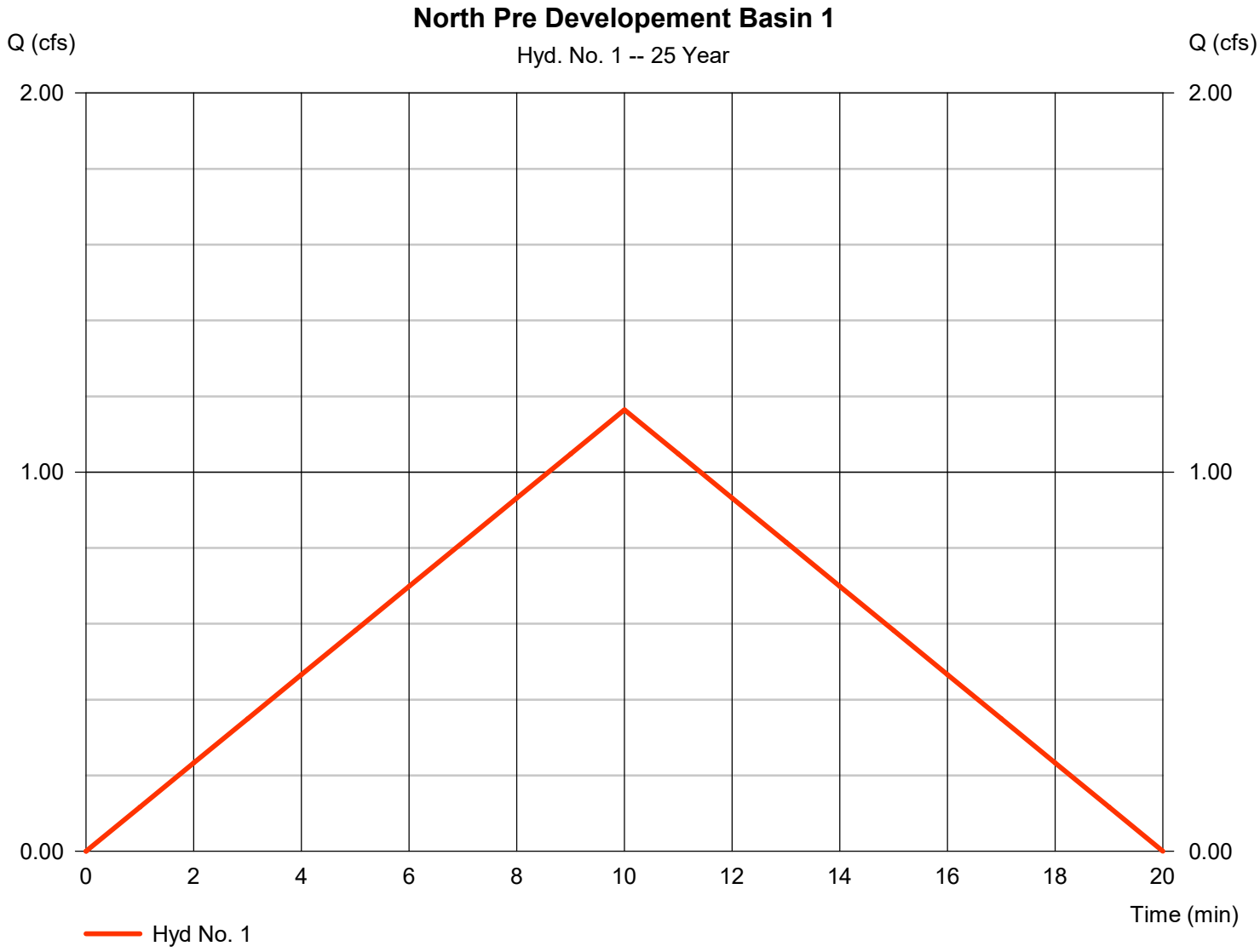


Hydrograph Report

Hyd. No. 1

North Pre Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	1.164 cfs
Storm frequency	=	25 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	699 cuft
Drainage area	=	0.490 ac	Runoff coeff.	=	0.45
Intensity	=	5.280 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

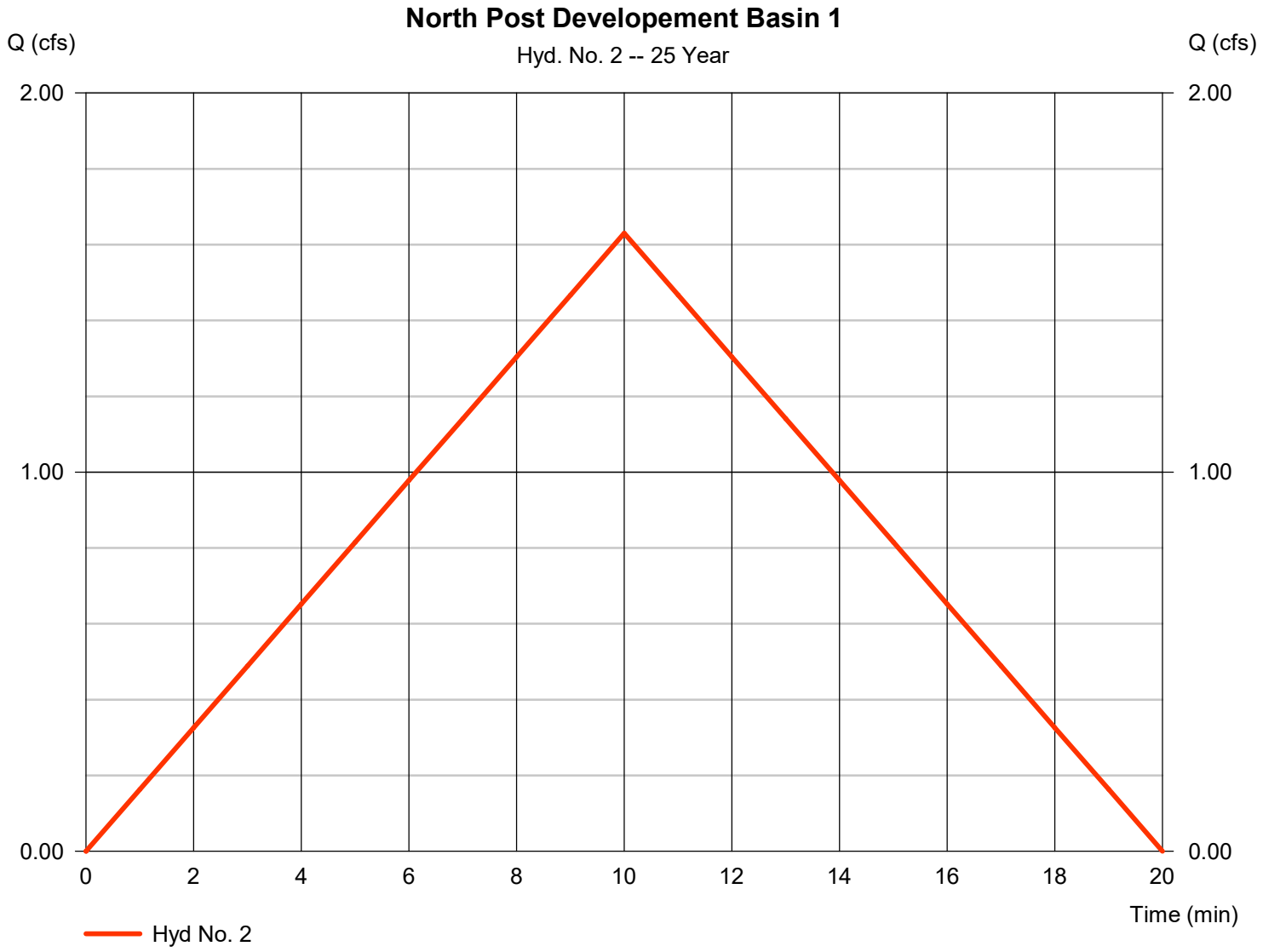


Hydrograph Report

Hyd. No. 2

North Post Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	1.630 cfs
Storm frequency	=	25 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	978 cuft
Drainage area	=	0.490 ac	Runoff coeff.	=	0.63
Intensity	=	5.280 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

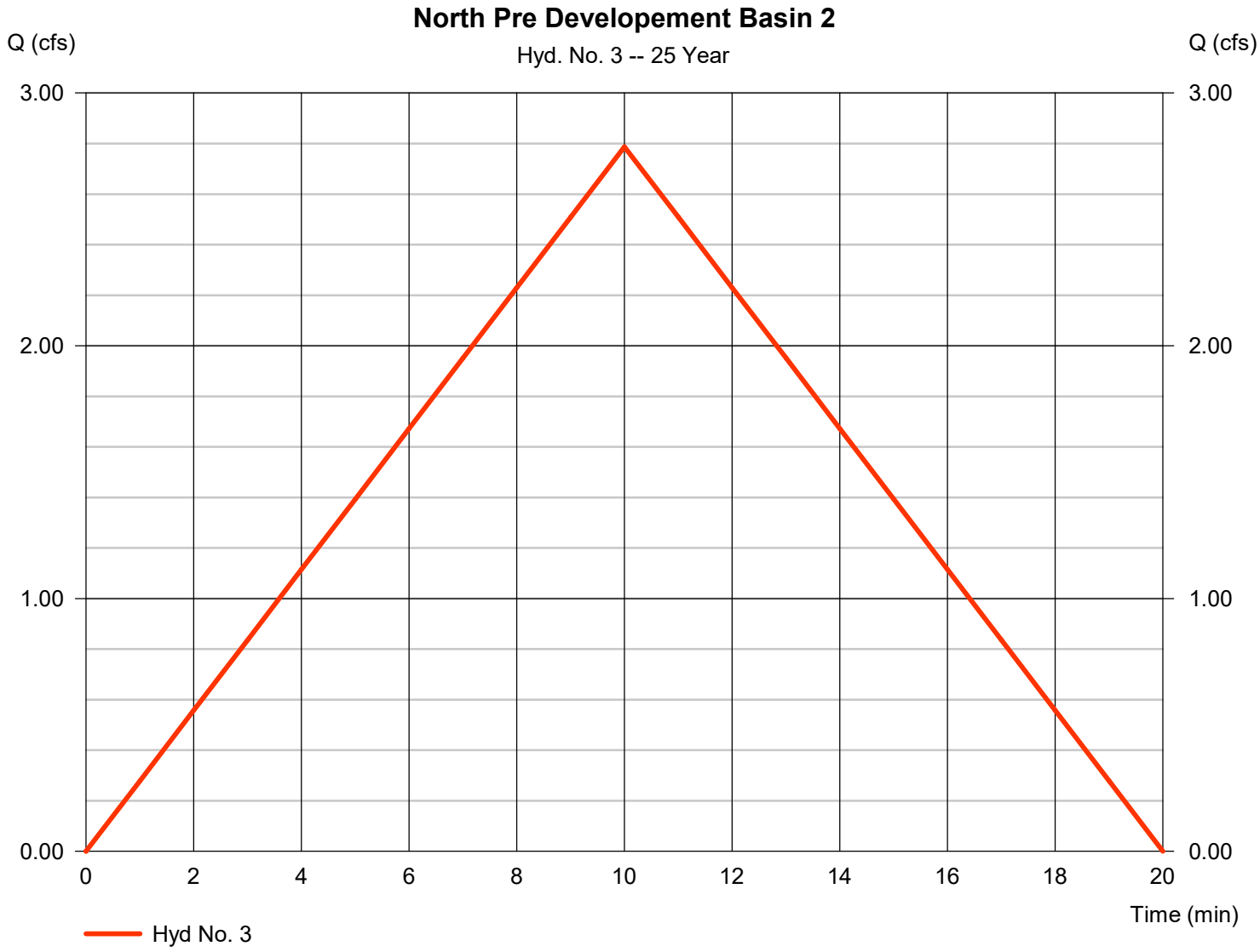


Hydrograph Report

Hyd. No. 3

North Pre Developement Basin 2

Hydrograph type	=	Rational	Peak discharge	=	2.787 cfs
Storm frequency	=	25 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	1,672 cuft
Drainage area	=	1.173 ac	Runoff coeff.	=	0.45
Intensity	=	5.280 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1



Hydrograph Report

Hyd. No. 4

North Post Developement Basin 2

Hydrograph type	=	Rational	Peak discharge	=	2.787 cfs
Storm frequency	=	25 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	1,672 cuft
Drainage area	=	1.173 ac	Runoff coeff.	=	0.45
Intensity	=	5.280 in/hr	Tc by User	=	10.00 min
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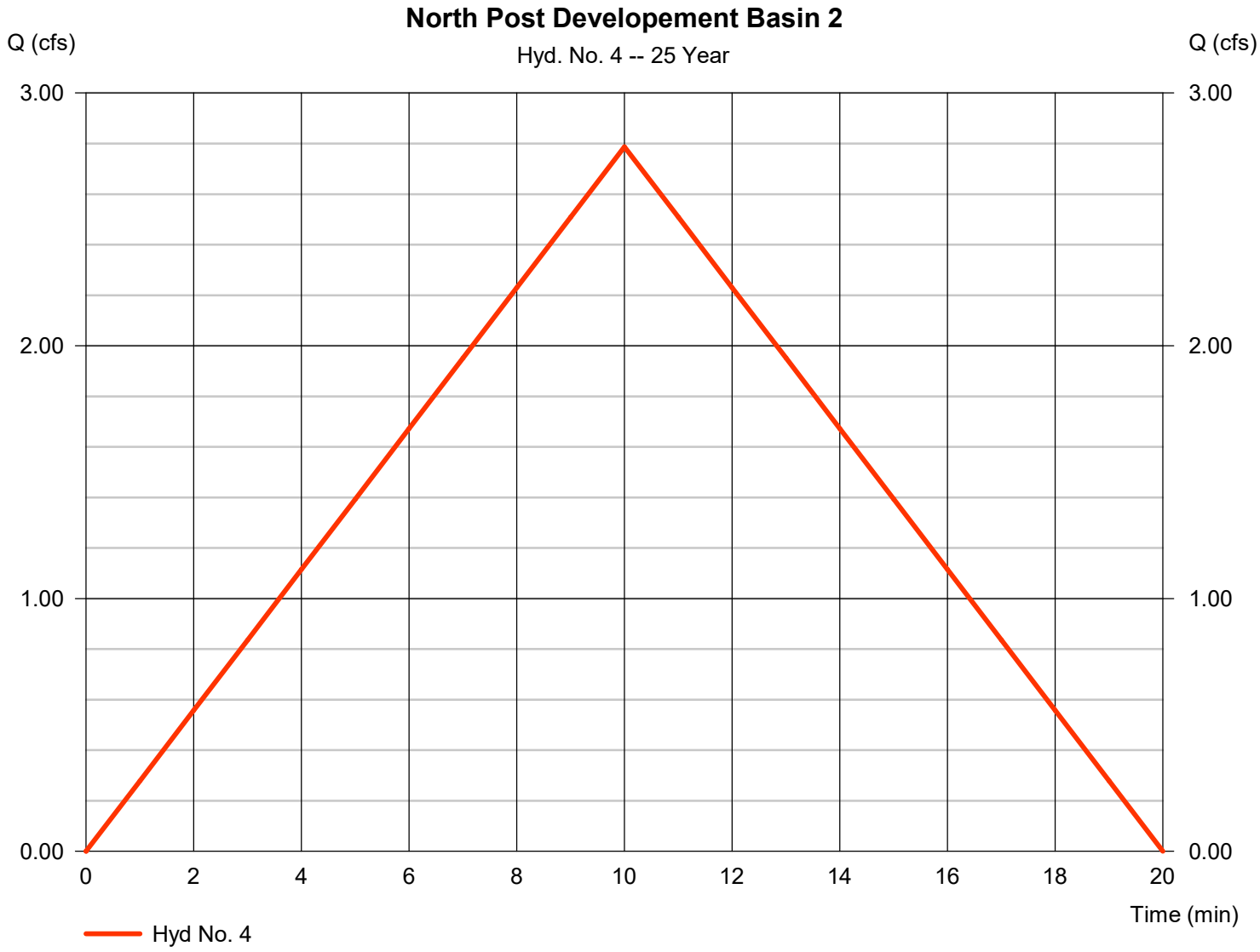

Hydrograph Report

Hyd. No. 1

North Pre Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	1.363 cfs
Storm frequency	=	50 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	818 cuft
Drainage area	=	0.490 ac	Runoff coeff.	=	0.45
Intensity	=	6.182 in/hr	Tc by User	=	10.00 min
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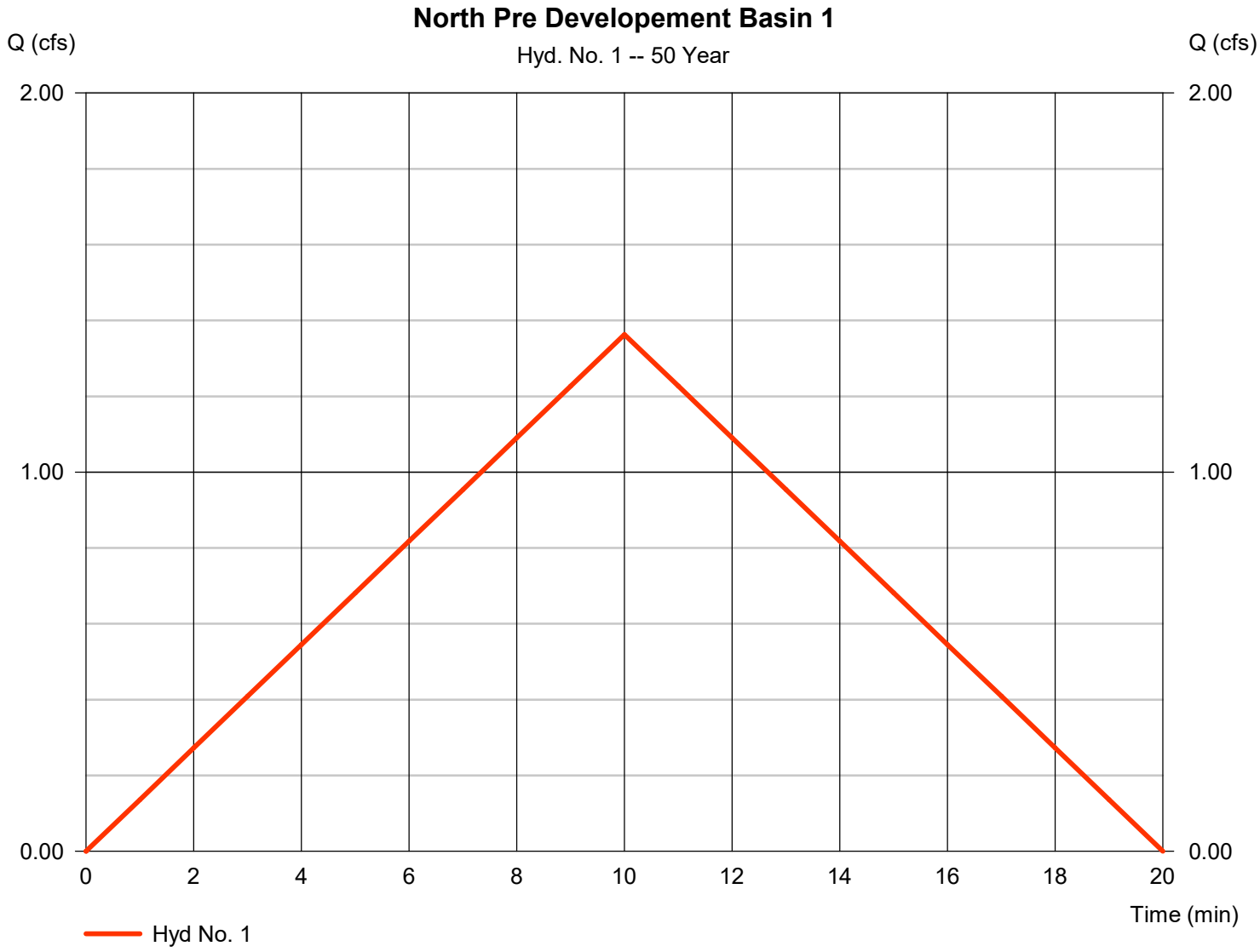
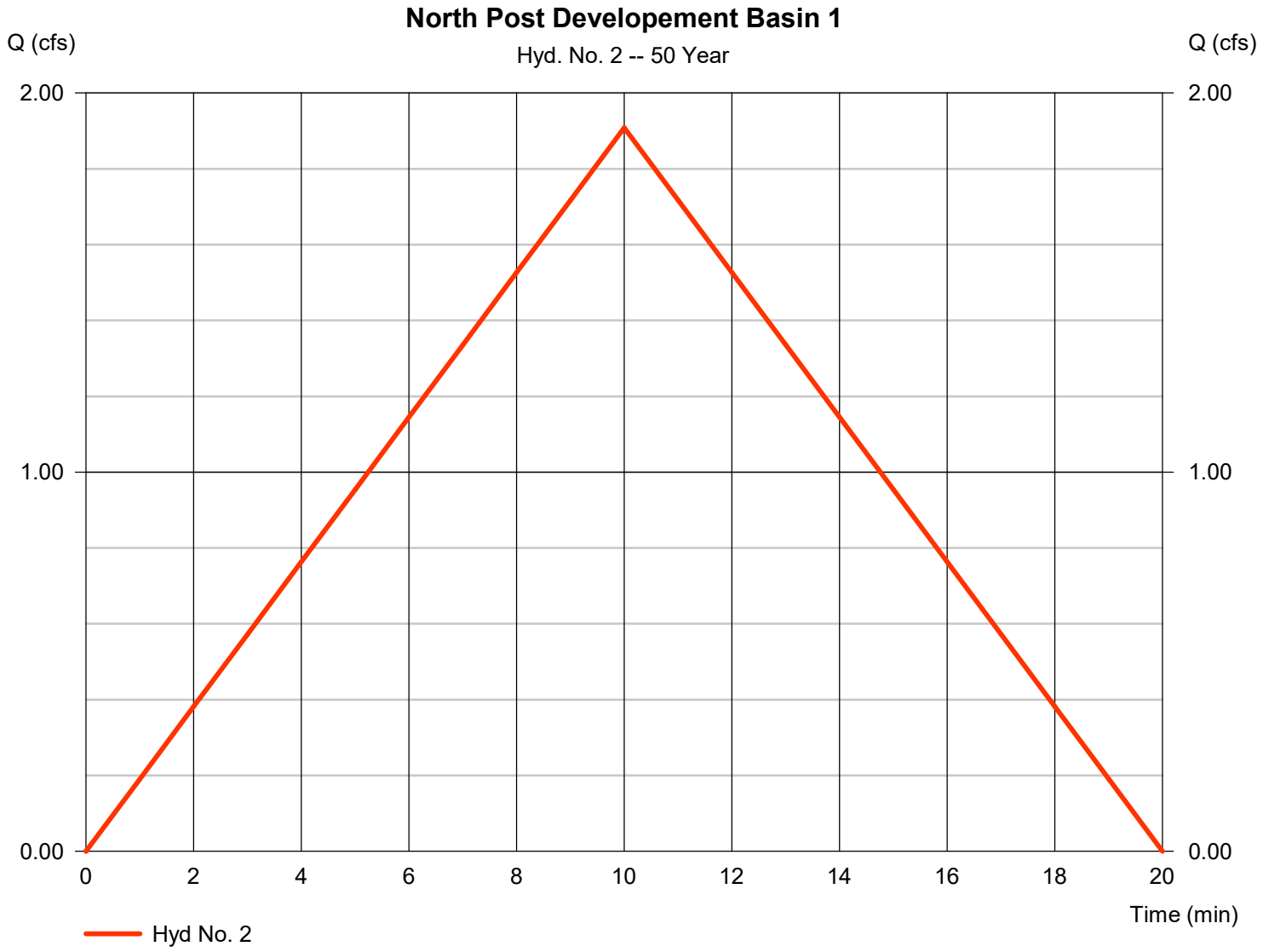


Hydrograph Report

Hyd. No. 2

North Post Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	1.908 cfs
Storm frequency	=	50 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	1,145 cuft
Drainage area	=	0.490 ac	Runoff coeff.	=	0.63
Intensity	=	6.182 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

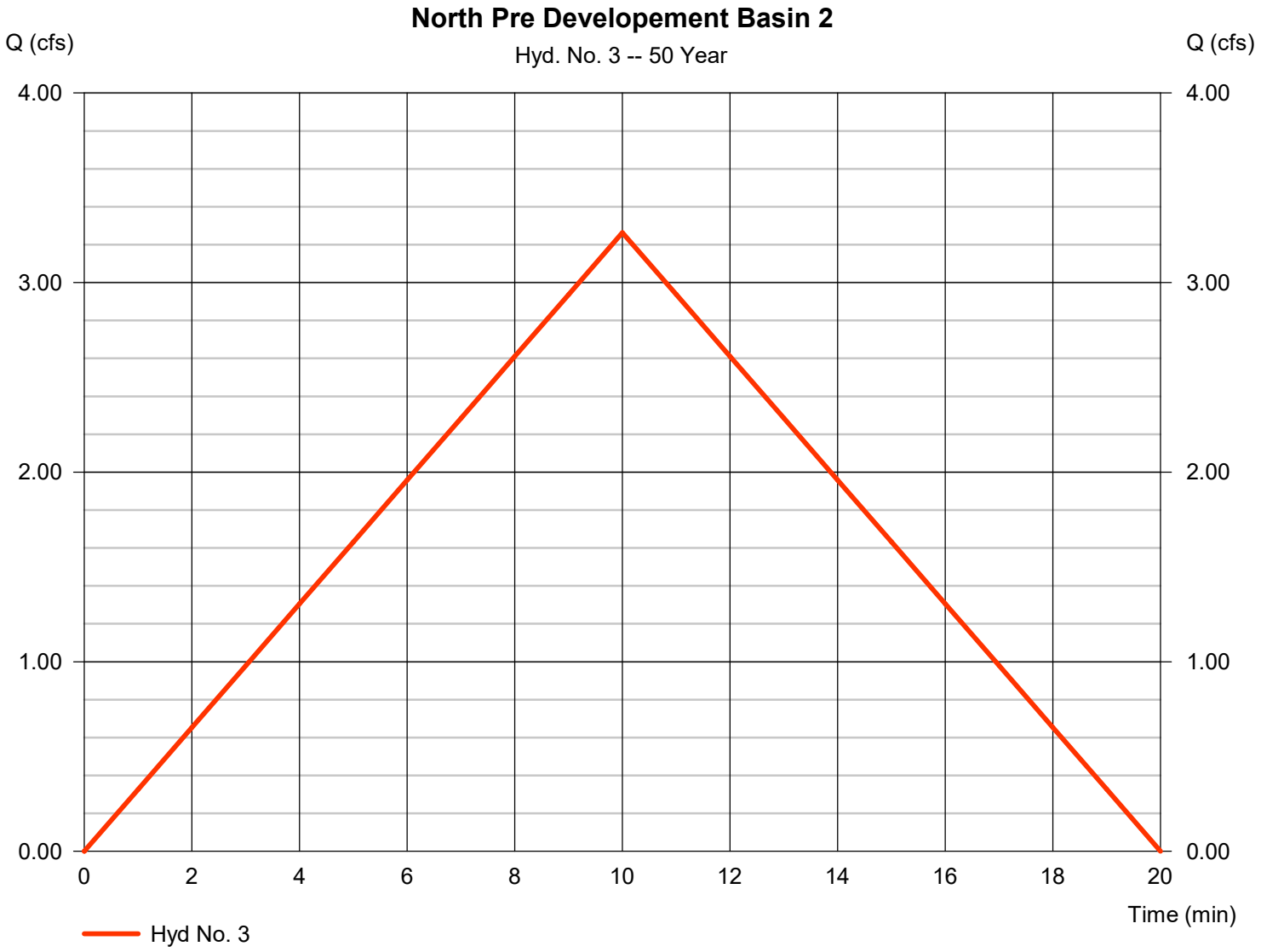


Hydrograph Report

Hyd. No. 3

North Pre Developement Basin 2

Hydrograph type	=	Rational	Peak discharge	=	3.263 cfs
Storm frequency	=	50 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	1,958 cuft
Drainage area	=	1.173 ac	Runoff coeff.	=	0.45
Intensity	=	6.182 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

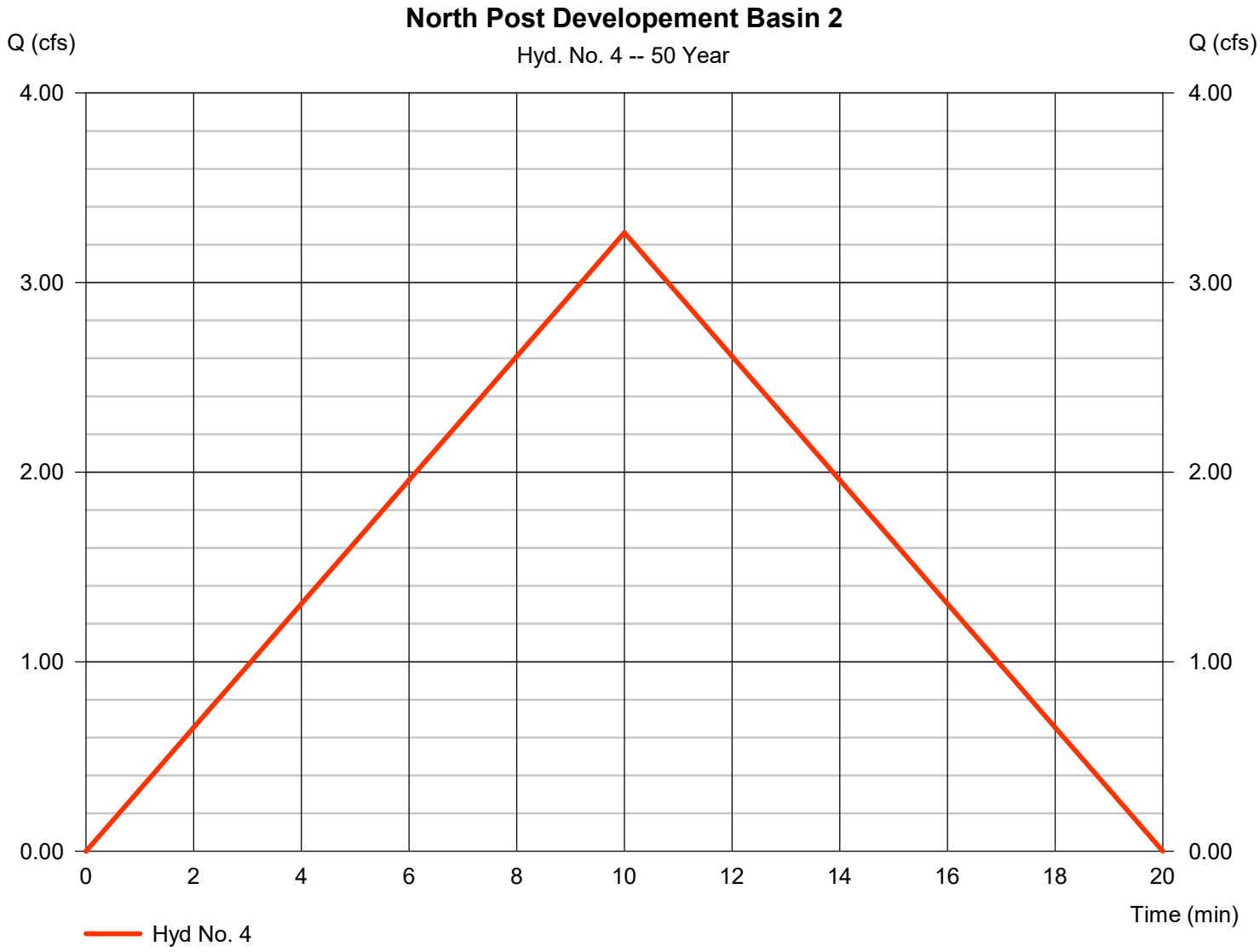


Hydrograph Report

Hyd. No. 4

North Post Developement Basin 2

Hydrograph type	=	Rational	Peak discharge	=	3.263 cfs
Storm frequency	=	50 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	1,958 cuft
Drainage area	=	1.173 ac	Runoff coeff.	=	0.45
Intensity	=	6.182 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

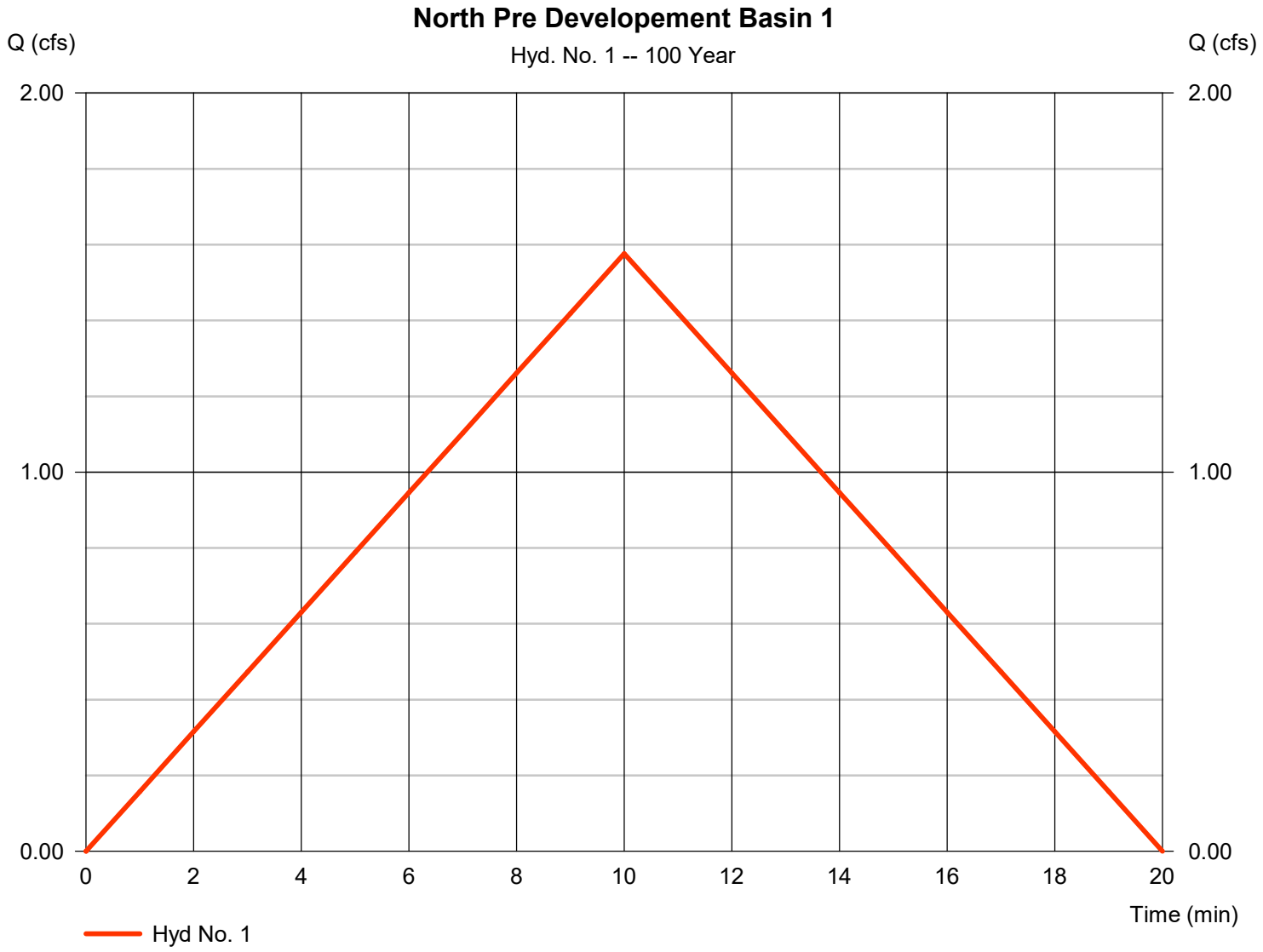


Hydrograph Report

Hyd. No. 1

North Pre Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	1.577 cfs
Storm frequency	=	100 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	946 cuft
Drainage area	=	0.490 ac	Runoff coeff.	=	0.45
Intensity	=	7.150 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

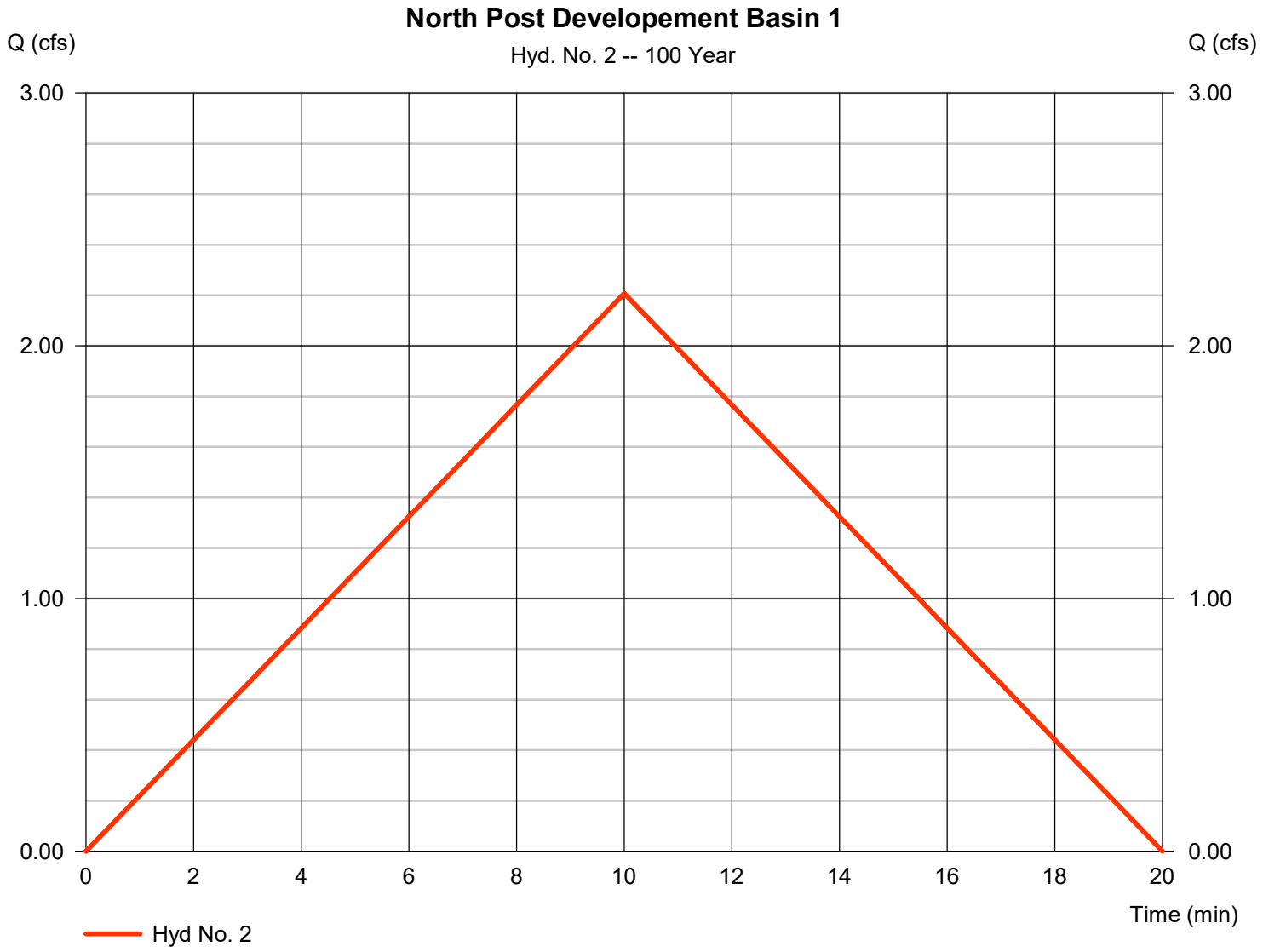


Hydrograph Report

Hyd. No. 2

North Post Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	2.207 cfs
Storm frequency	=	100 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	1,324 cuft
Drainage area	=	0.490 ac	Runoff coeff.	=	0.63
Intensity	=	7.150 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

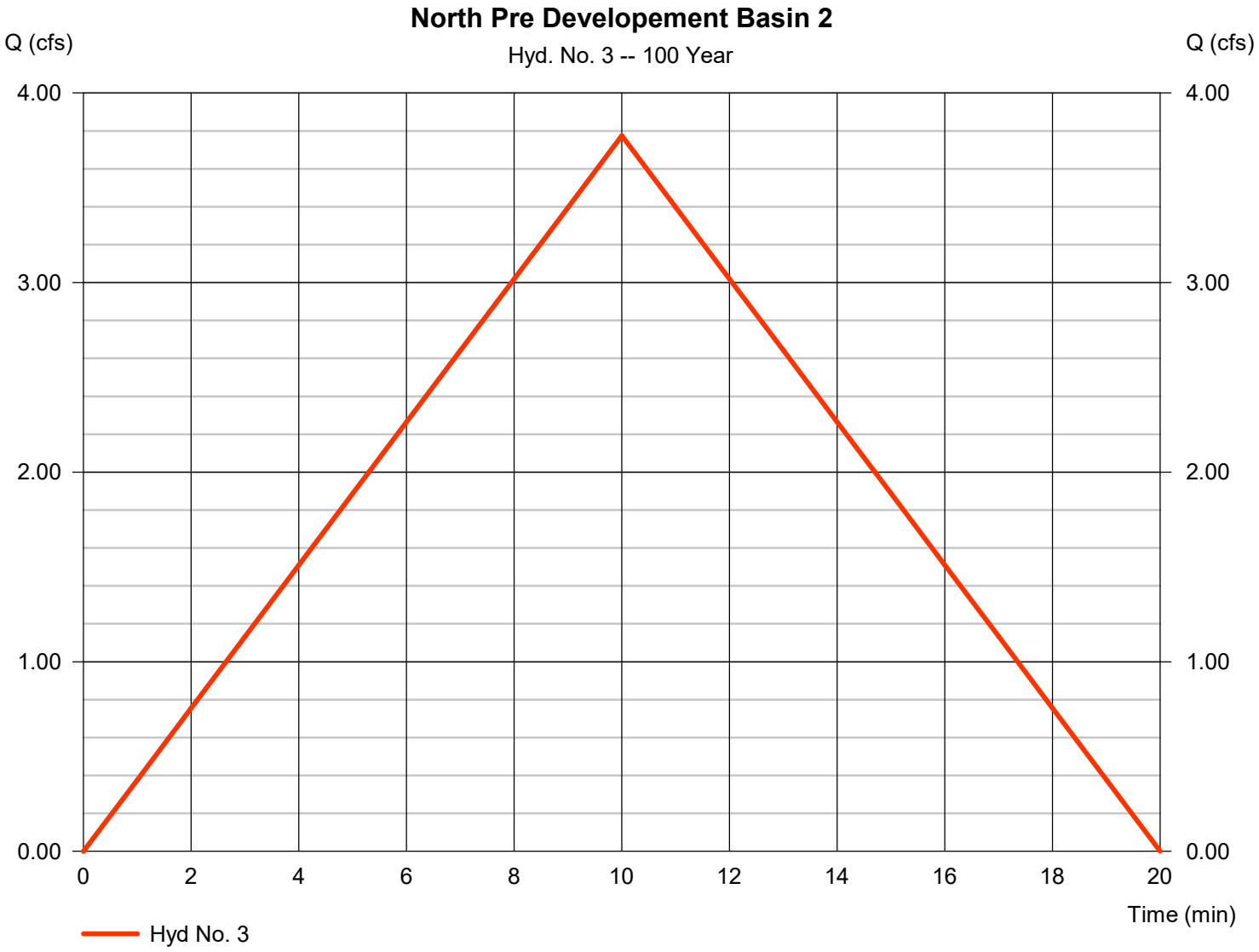


Hydrograph Report

Hyd. No. 3

North Pre Developement Basin 2

Hydrograph type	=	Rational	Peak discharge	=	3.774 cfs
Storm frequency	=	100 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	2,265 cuft
Drainage area	=	1.173 ac	Runoff coeff.	=	0.45
Intensity	=	7.150 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

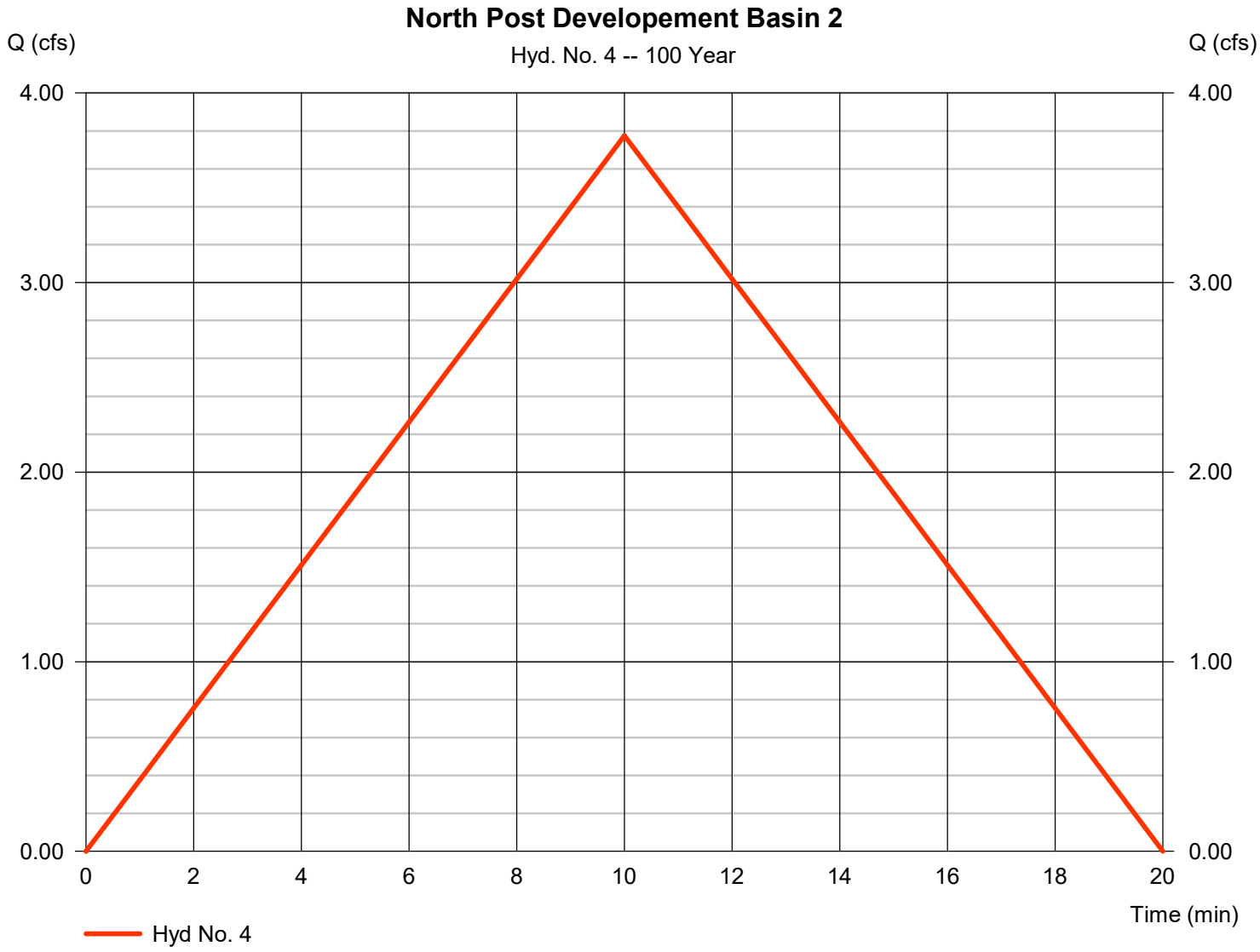


Hydrograph Report

Hyd. No. 4

North Post Developement Basin 2

Hydrograph type	=	Rational	Peak discharge	=	3.774 cfs
Storm frequency	=	100 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	2,265 cuft
Drainage area	=	1.173 ac	Runoff coeff.	=	0.45
Intensity	=	7.150 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1



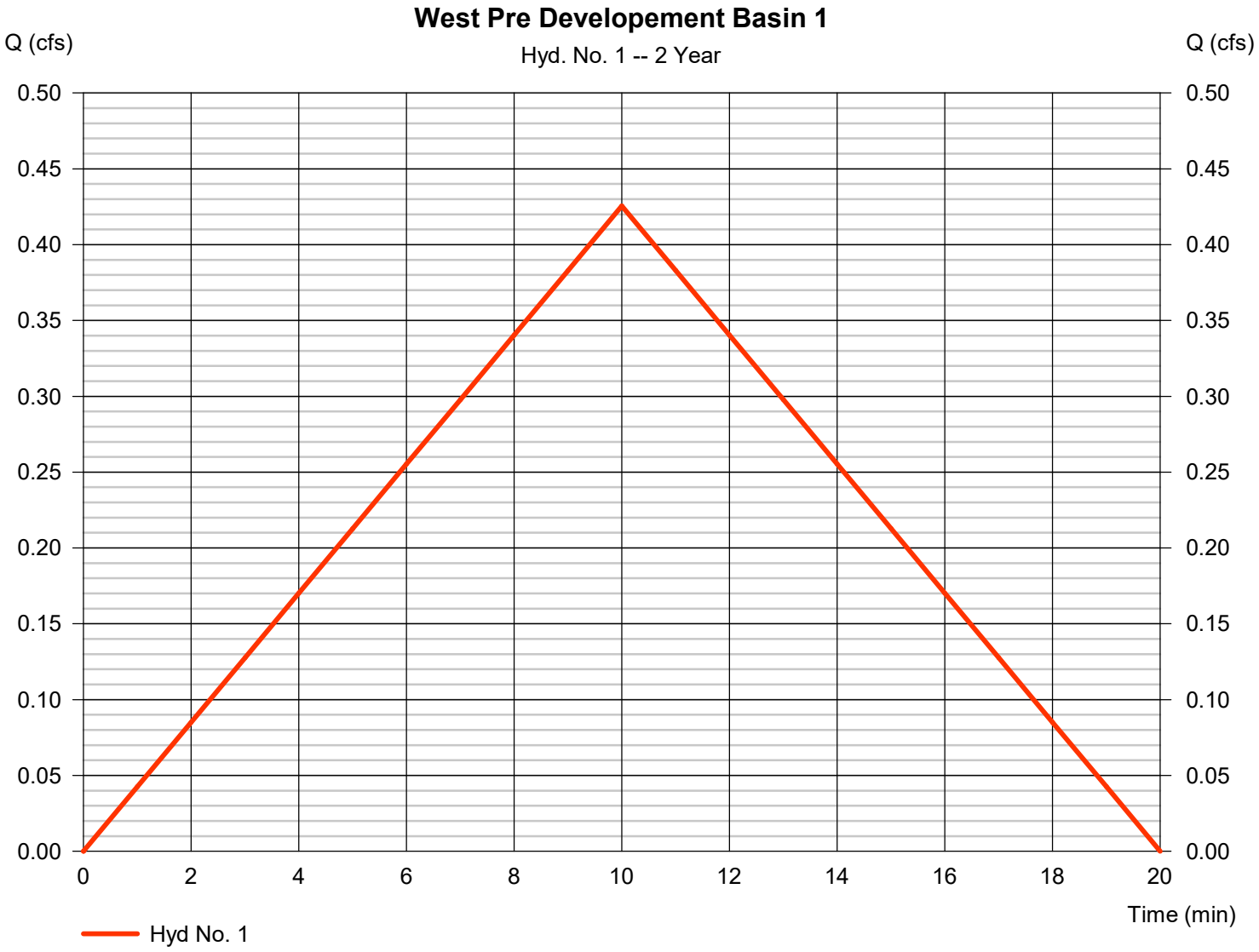
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Wednesday, 01 / 31 / 2024

Hyd. No. 1

West Pre Developement Basin 1

Hydrograph type	= Rational	Peak discharge	= 0.426 cfs
Storm frequency	= 2 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 255 cuft
Drainage area	= 0.370 ac	Runoff coeff.	= 0.45
Intensity	= 2.556 in/hr	Tc by User	= 10.00 min
IDF Curve	= Sedona.IDF	Asc/Rec limb fact	= 1/1

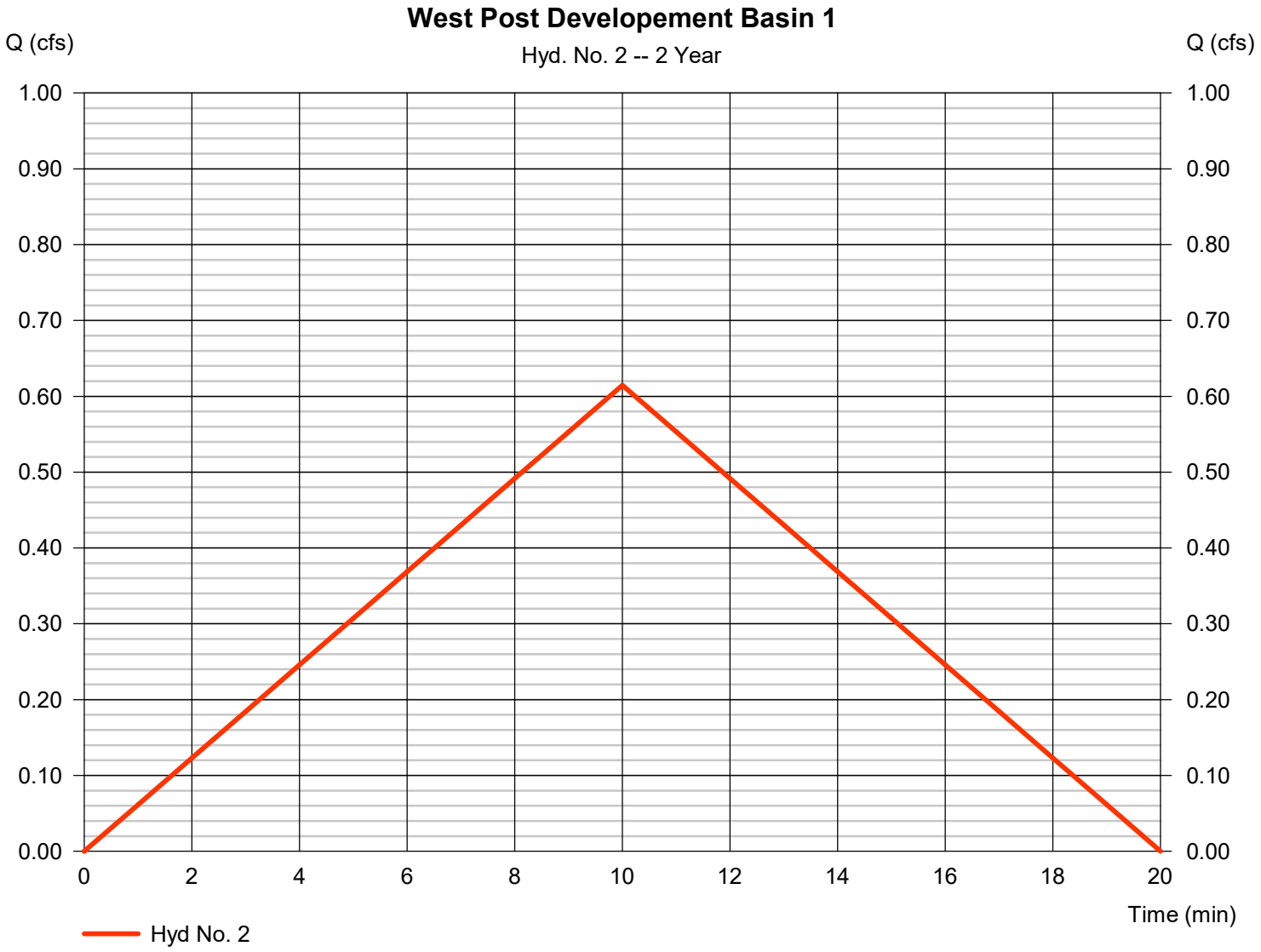


Hydrograph Report

Hyd. No. 2

West Post Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	0.615 cfs
Storm frequency	=	2 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	369 cuft
Drainage area	=	0.370 ac	Runoff coeff.	=	0.65
Intensity	=	2.556 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

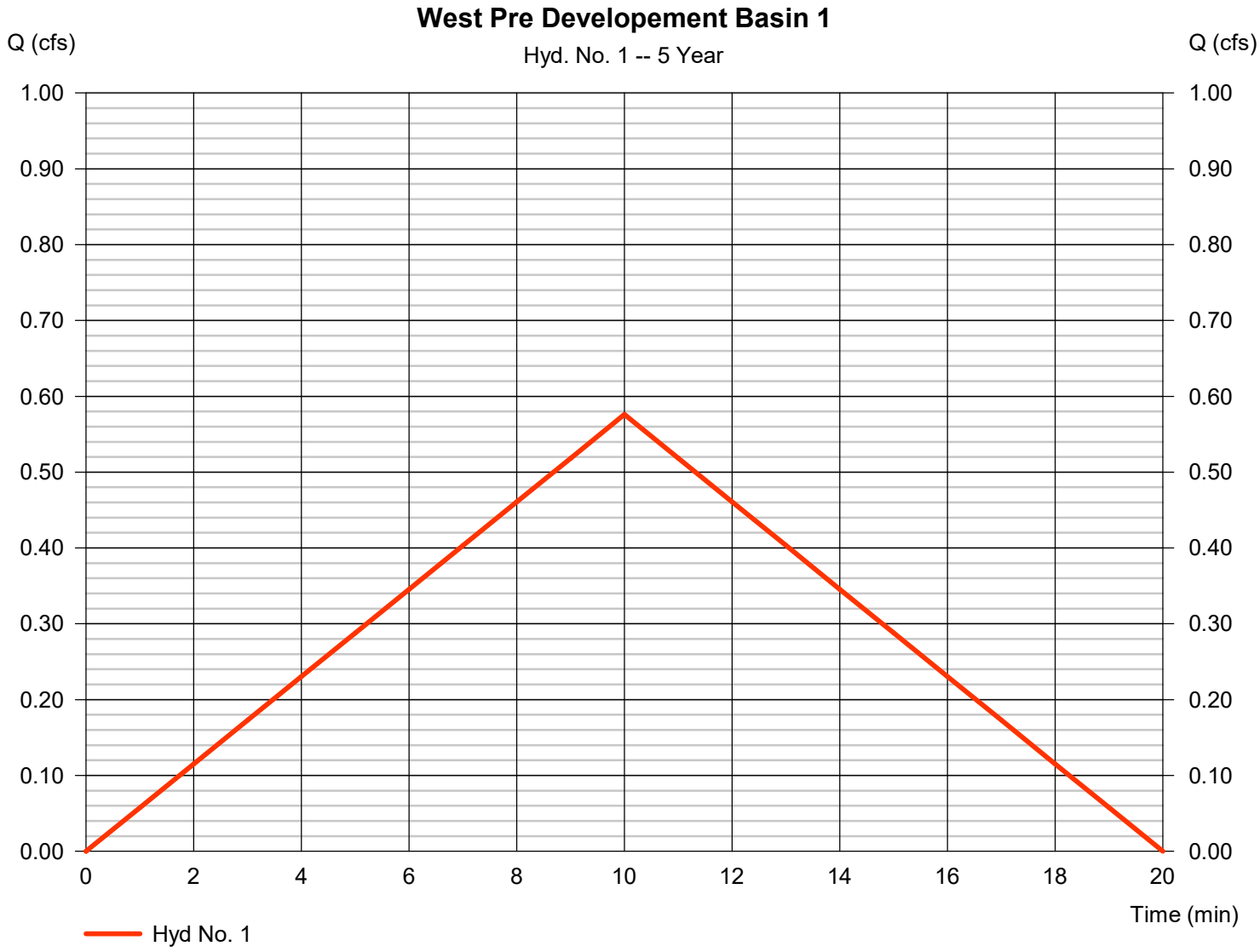


Hydrograph Report

Hyd. No. 1

West Pre Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	0.576 cfs
Storm frequency	=	5 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	346 cuft
Drainage area	=	0.370 ac	Runoff coeff.	=	0.45
Intensity	=	3.459 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

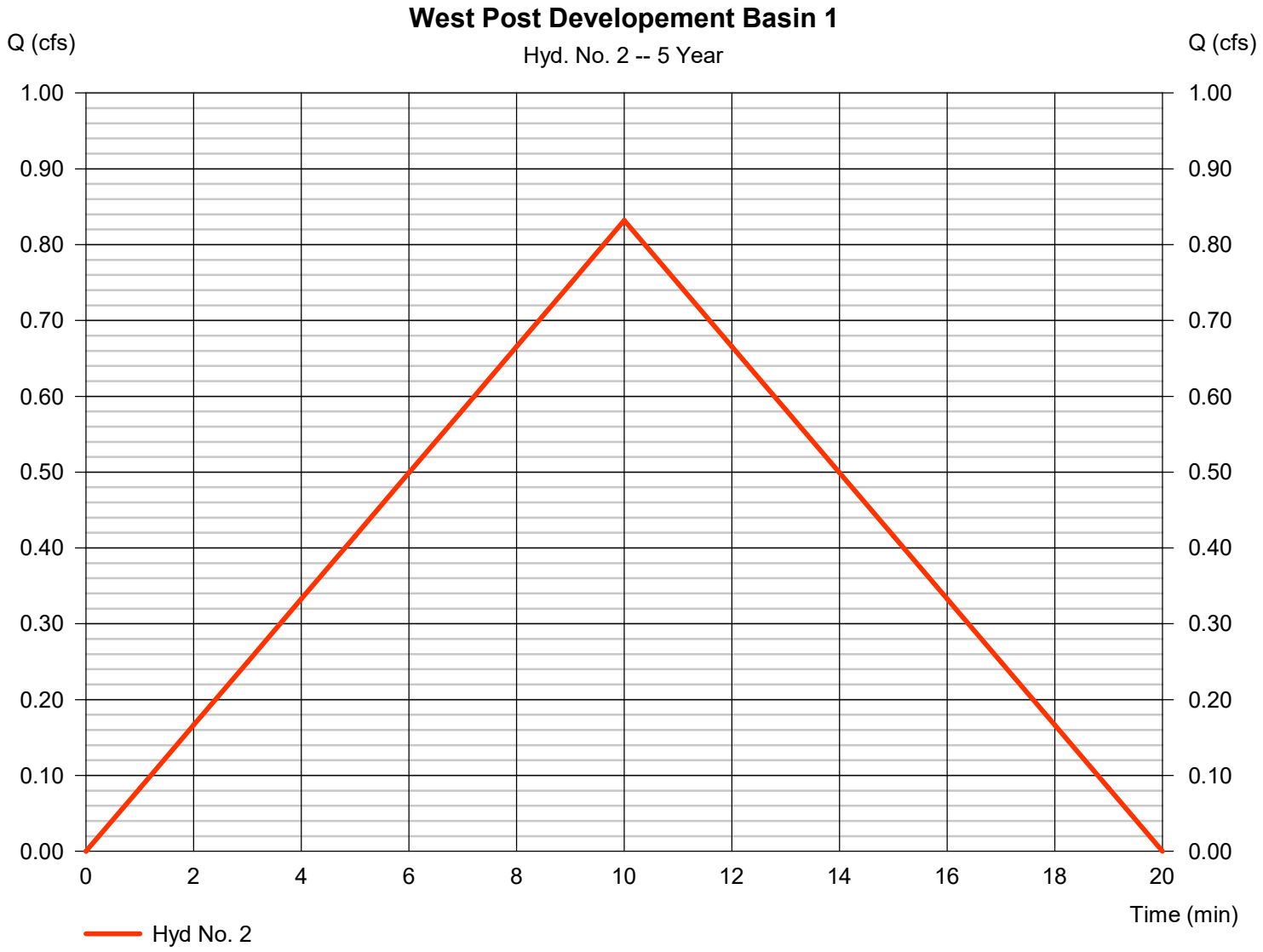


Hydrograph Report

Hyd. No. 2

West Post Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	0.832 cfs
Storm frequency	=	5 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	499 cuft
Drainage area	=	0.370 ac	Runoff coeff.	=	0.65
Intensity	=	3.459 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

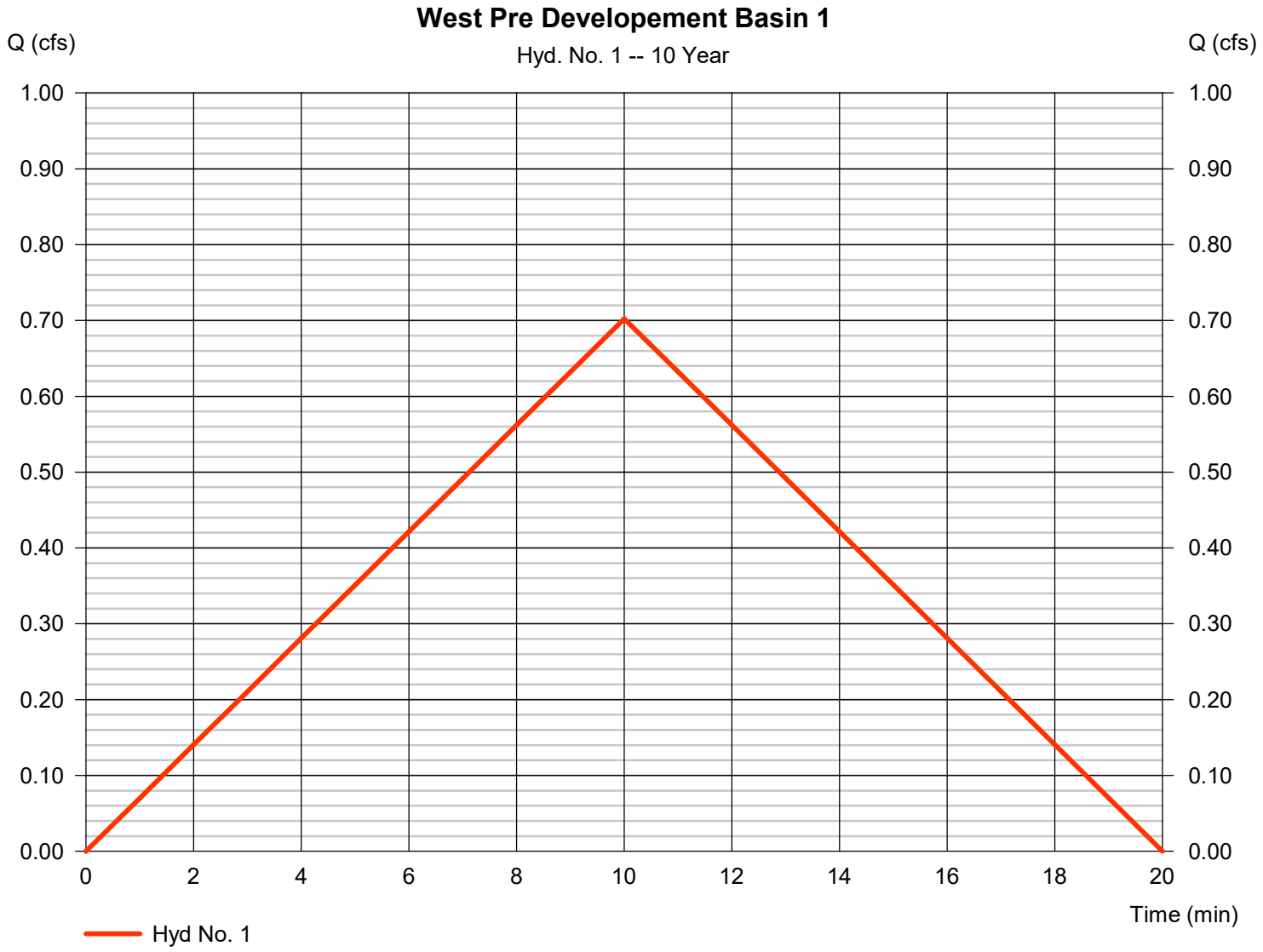


Hydrograph Report

Hyd. No. 1

West Pre Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	0.702 cfs
Storm frequency	=	10 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	421 cuft
Drainage area	=	0.370 ac	Runoff coeff.	=	0.45
Intensity	=	4.219 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

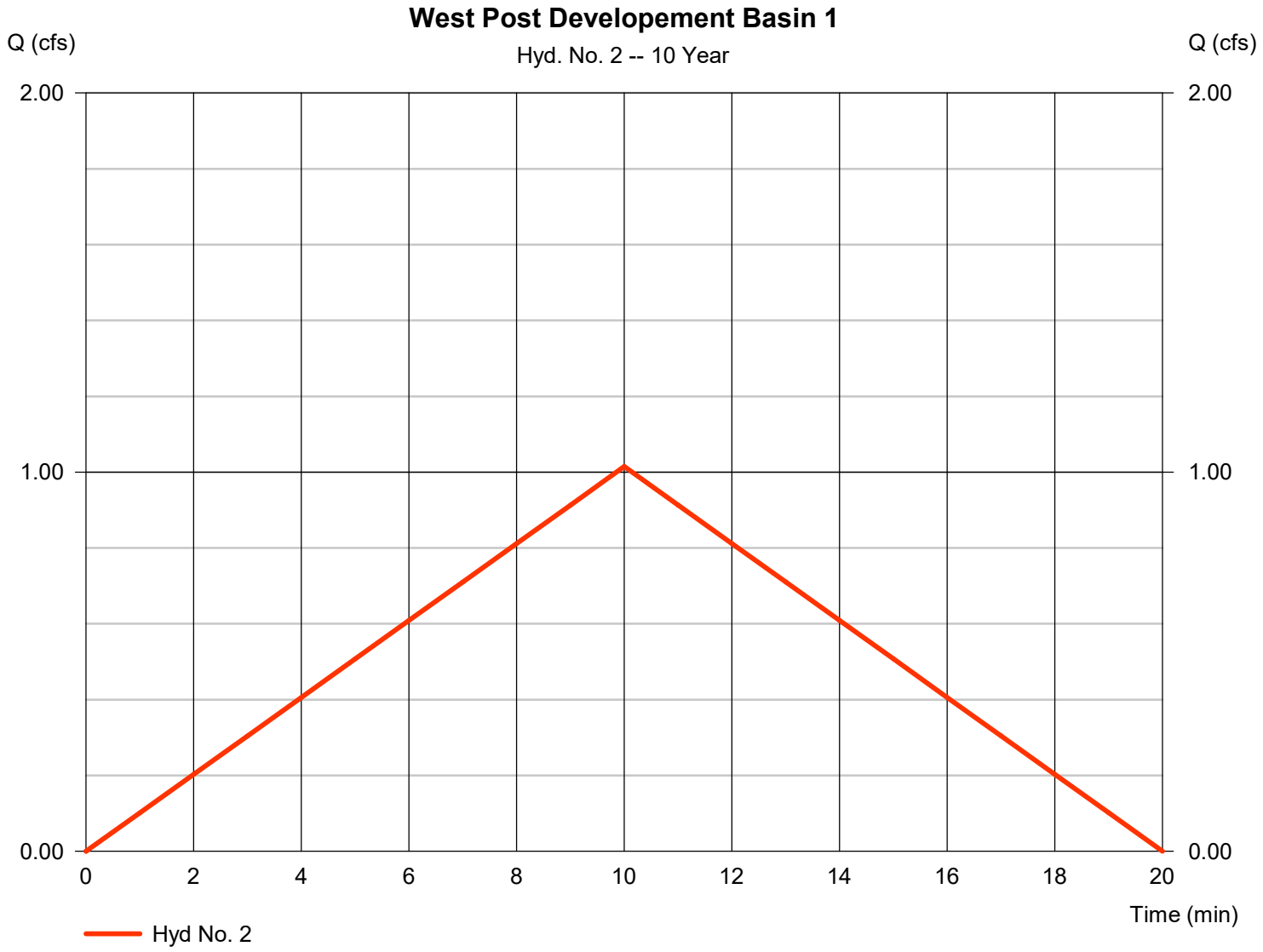


Hydrograph Report

Hyd. No. 2

West Post Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	1.015 cfs
Storm frequency	=	10 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	609 cuft
Drainage area	=	0.370 ac	Runoff coeff.	=	0.65
Intensity	=	4.219 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

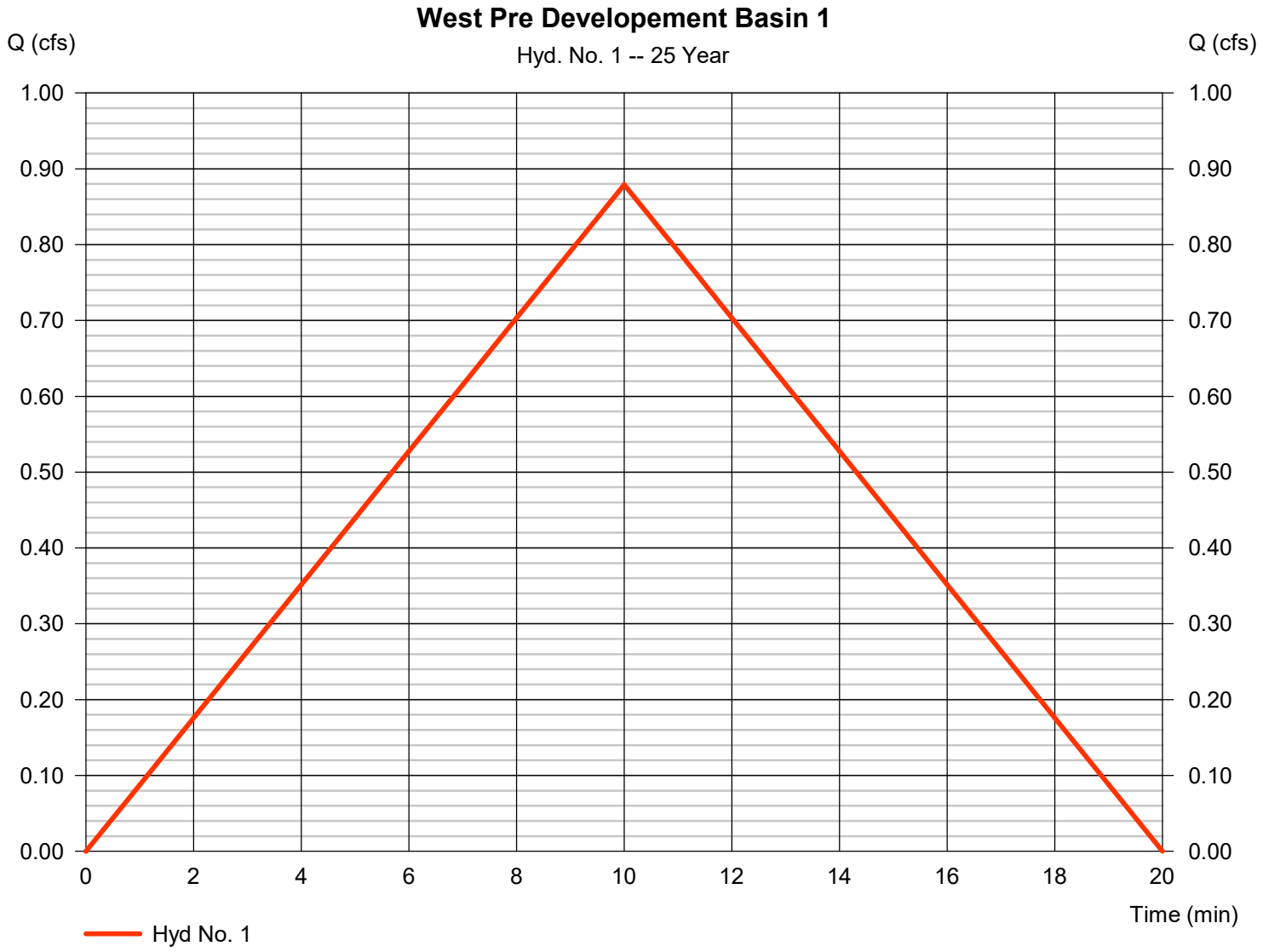


Hydrograph Report

Hyd. No. 1

West Pre Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	0.879 cfs
Storm frequency	=	25 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	527 cuft
Drainage area	=	0.370 ac	Runoff coeff.	=	0.45
Intensity	=	5.280 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

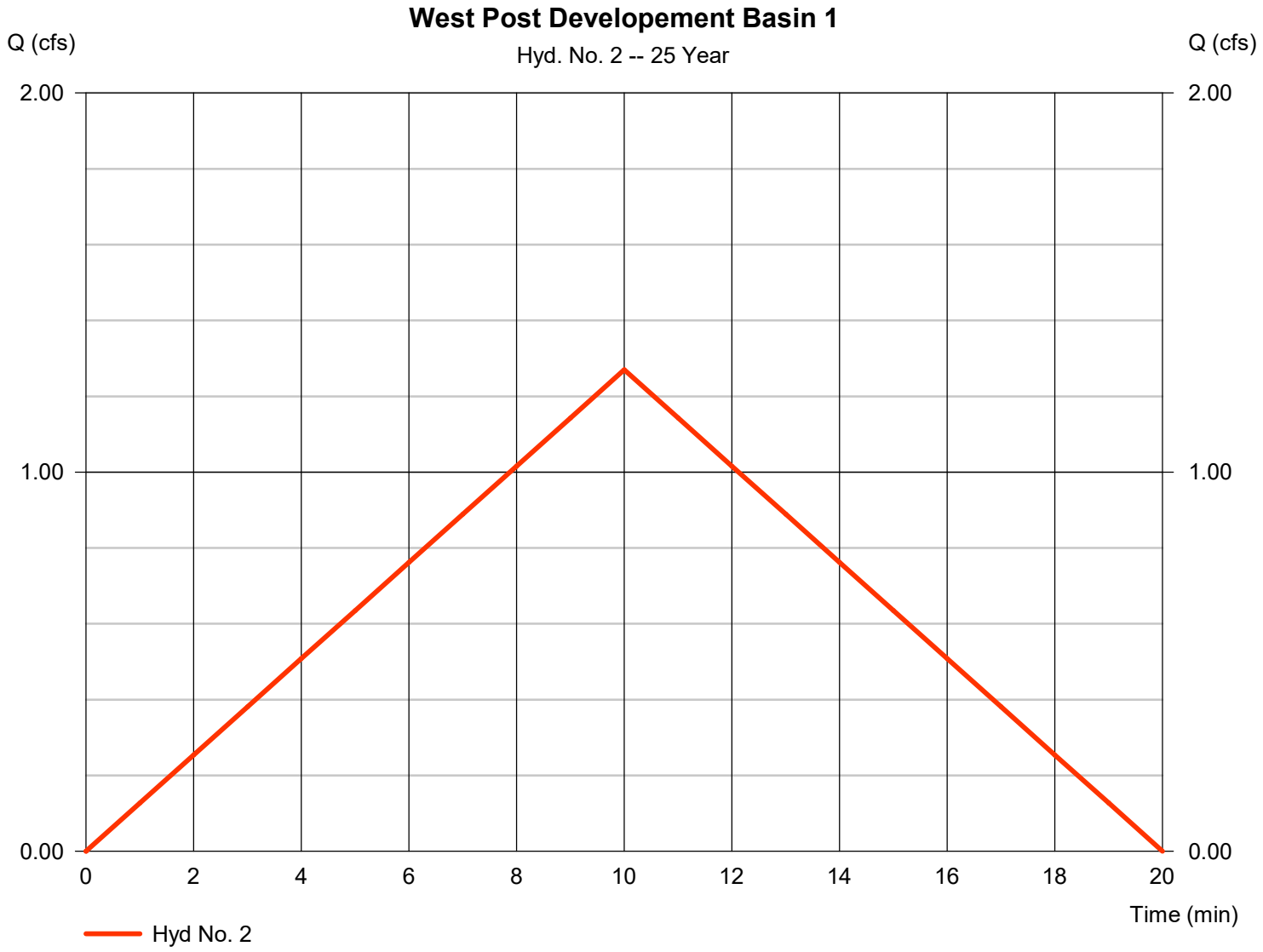


Hydrograph Report

Hyd. No. 2

West Post Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	1.270 cfs
Storm frequency	=	25 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	762 cuft
Drainage area	=	0.370 ac	Runoff coeff.	=	0.65
Intensity	=	5.280 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

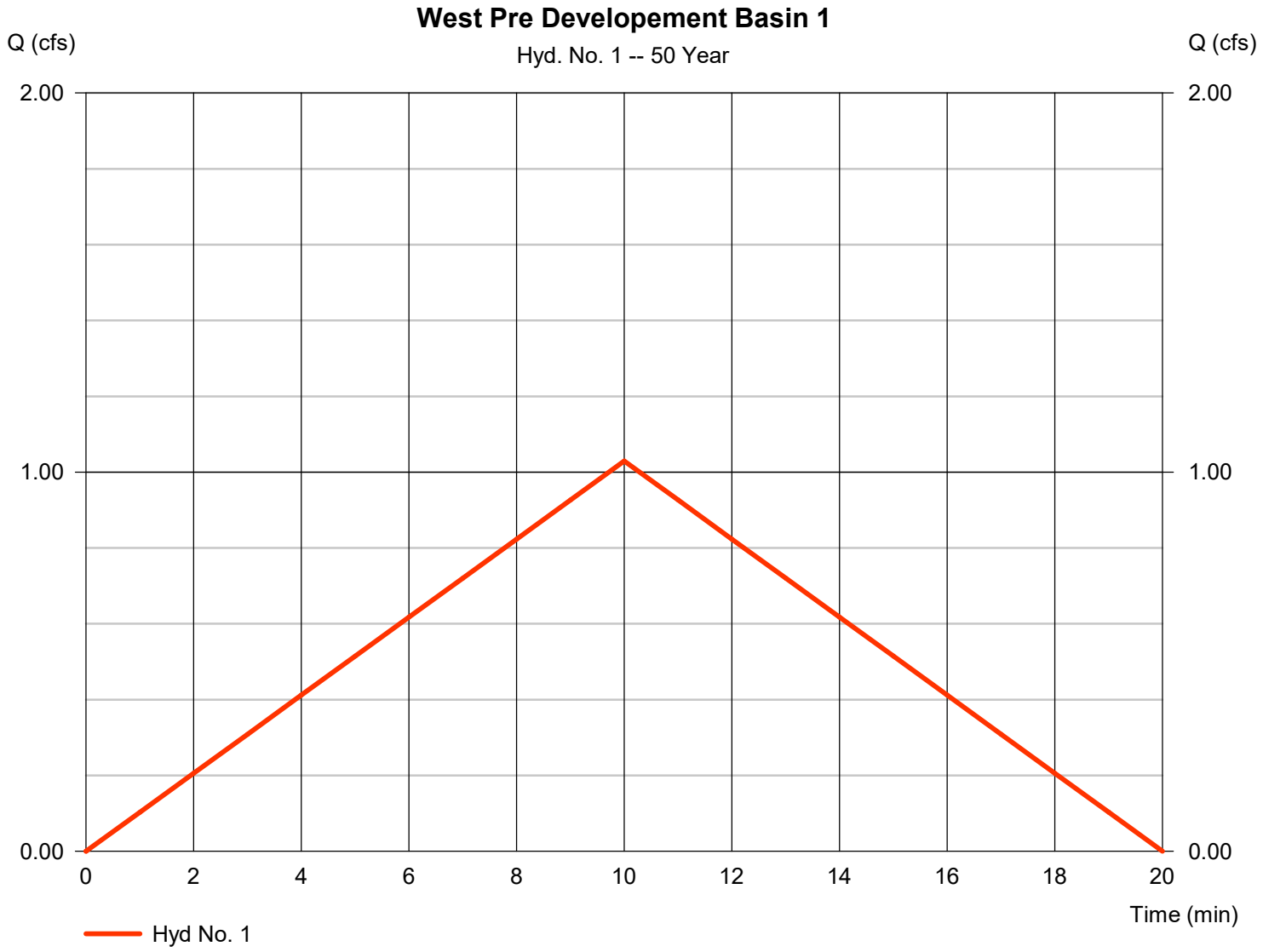


Hydrograph Report

Hyd. No. 1

West Pre Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	1.029 cfs
Storm frequency	=	50 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	618 cuft
Drainage area	=	0.370 ac	Runoff coeff.	=	0.45
Intensity	=	6.182 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

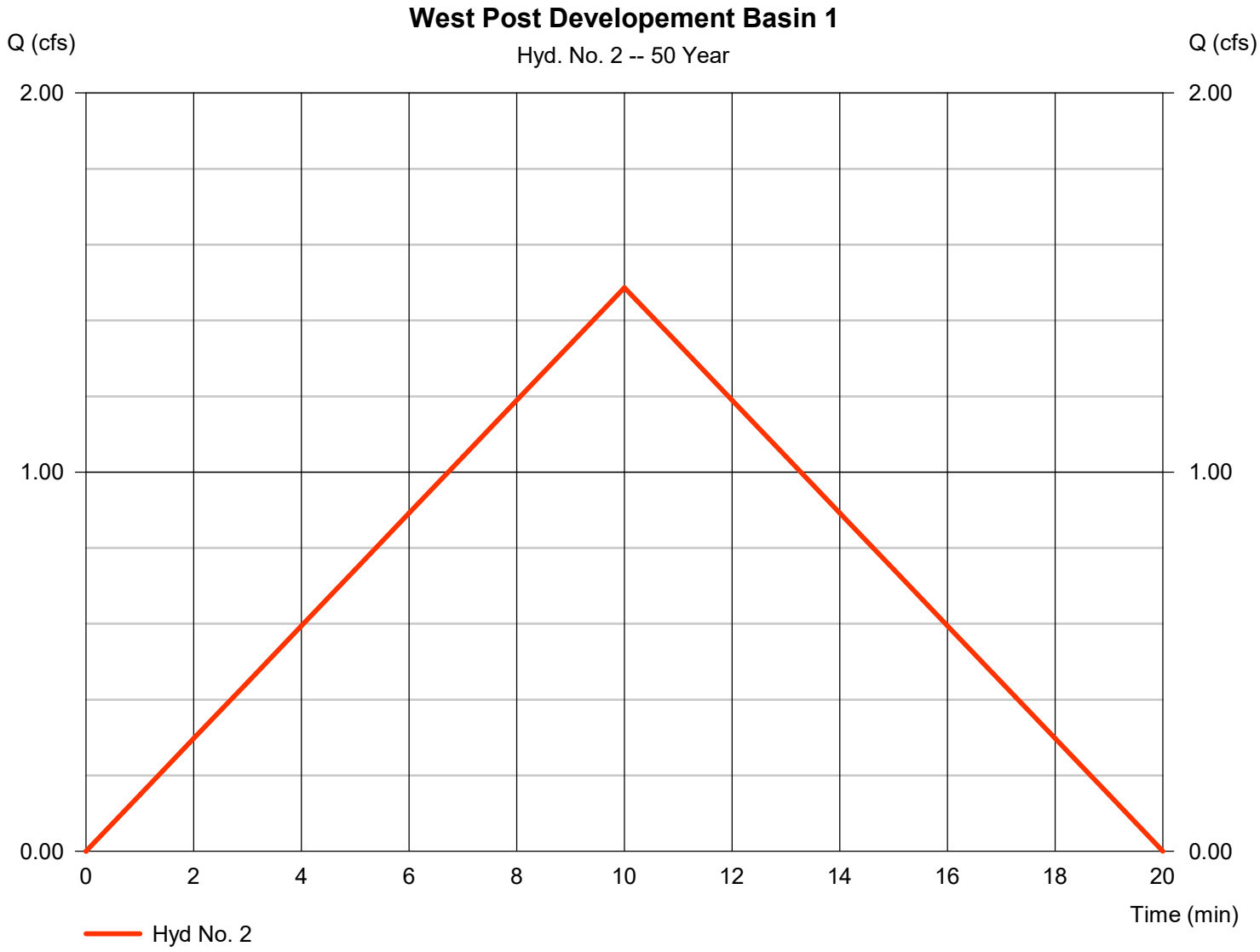


Hydrograph Report

Hyd. No. 2

West Post Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	1.487 cfs
Storm frequency	=	50 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	892 cuft
Drainage area	=	0.370 ac	Runoff coeff.	=	0.65
Intensity	=	6.182 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

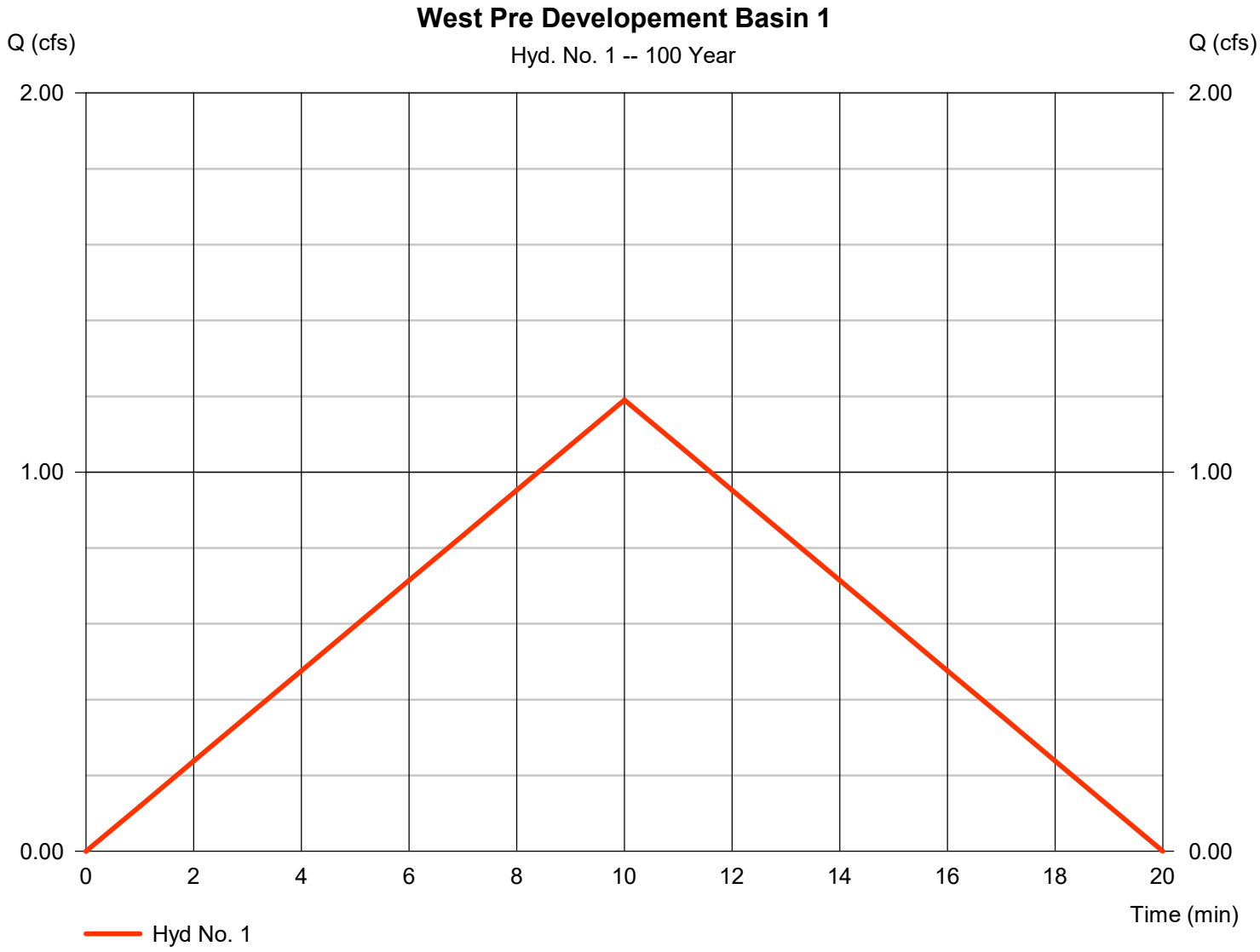


Hydrograph Report

Hyd. No. 1

West Pre Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	1.191 cfs
Storm frequency	=	100 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	714 cuft
Drainage area	=	0.370 ac	Runoff coeff.	=	0.45
Intensity	=	7.150 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

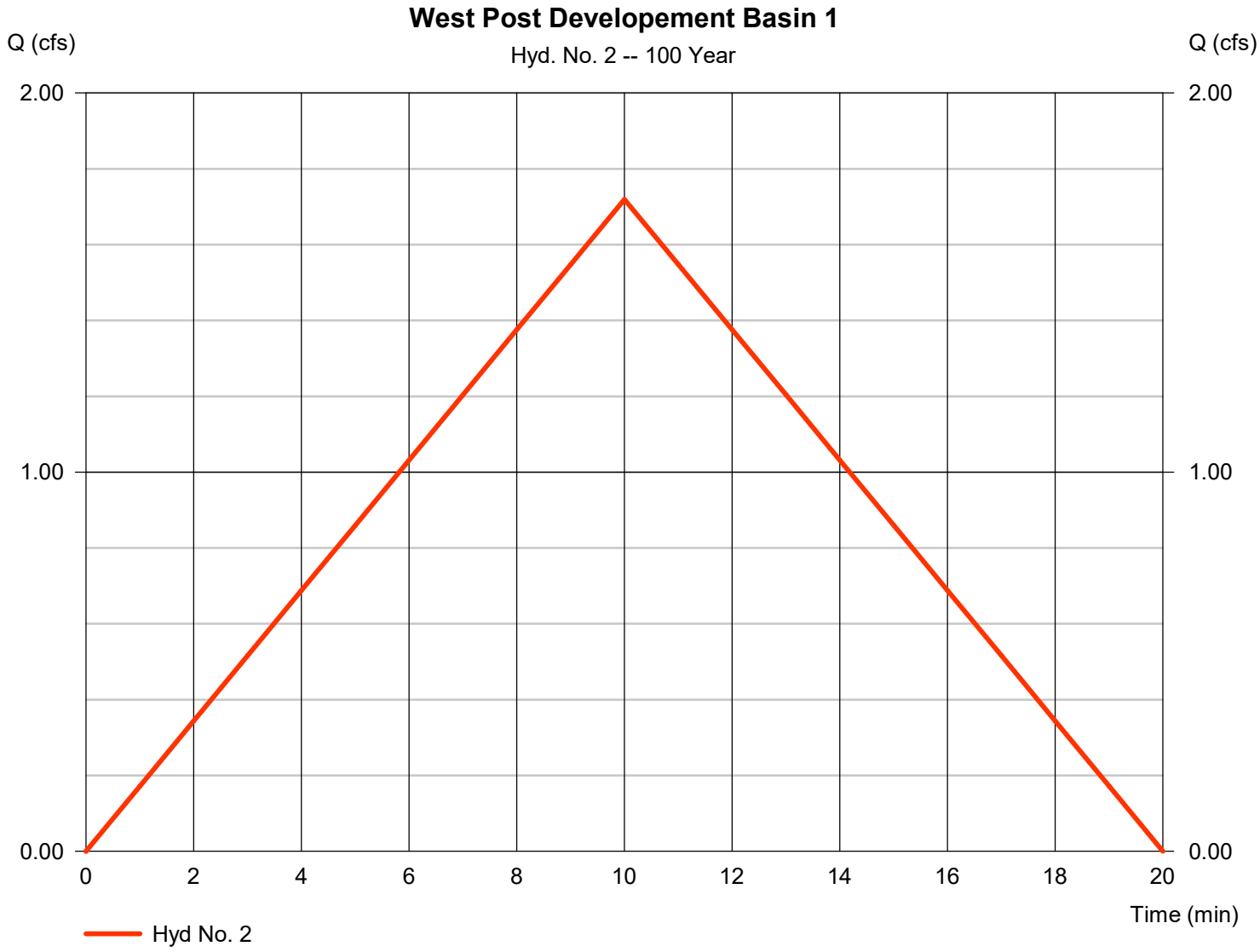


Hydrograph Report

Hyd. No. 2

West Post Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	1.720 cfs
Storm frequency	=	100 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	1,032 cuft
Drainage area	=	0.370 ac	Runoff coeff.	=	0.65
Intensity	=	7.150 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1



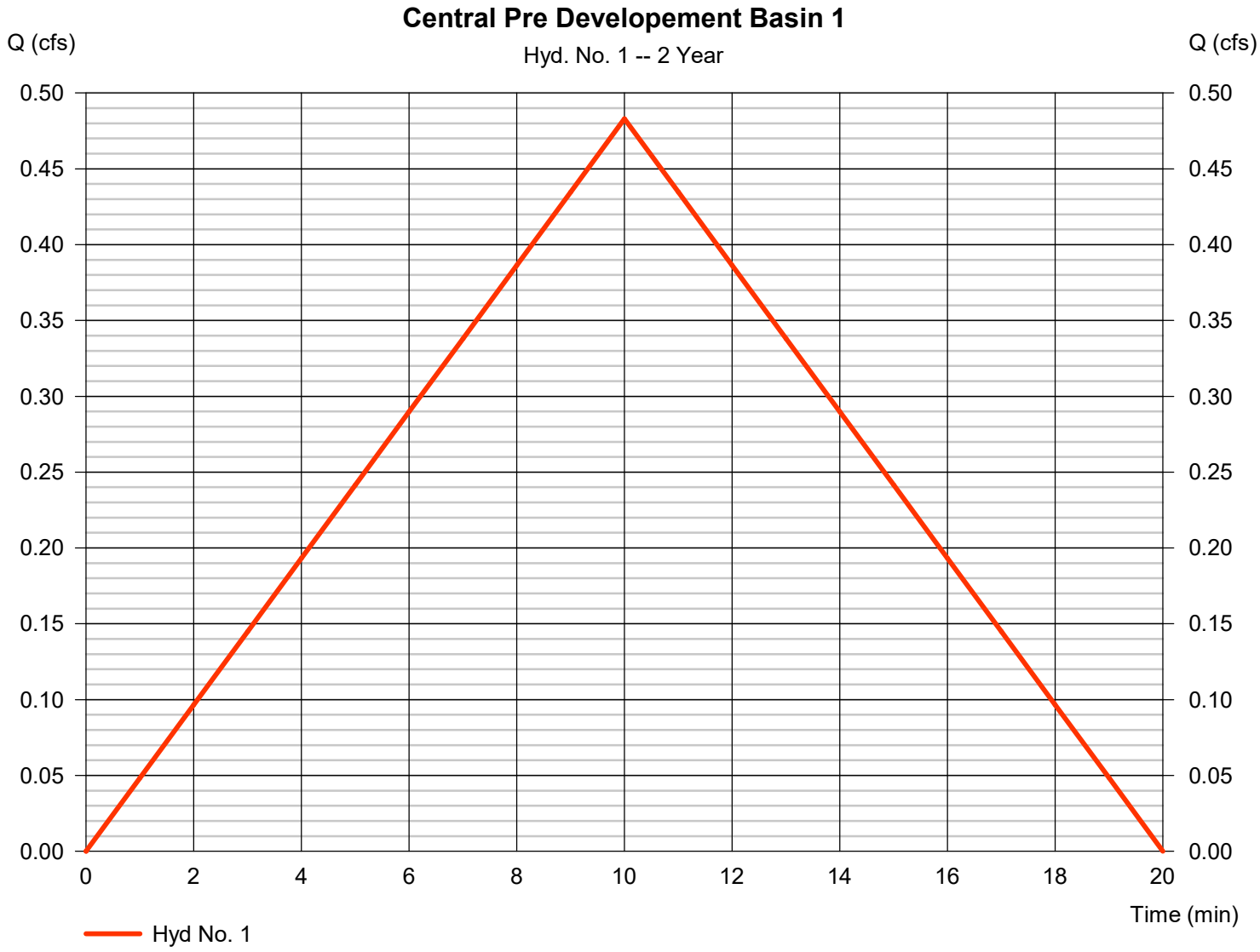
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Wednesday, 01 / 31 / 2024

Hyd. No. 1

Central Pre Developement Basin 1

Hydrograph type	= Rational	Peak discharge	= 0.483 cfs
Storm frequency	= 2 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 290 cuft
Drainage area	= 0.420 ac	Runoff coeff.	= 0.45
Intensity	= 2.556 in/hr	Tc by User	= 10.00 min
IDF Curve	= Sedona.IDF	Asc/Rec limb fact	= 1/1

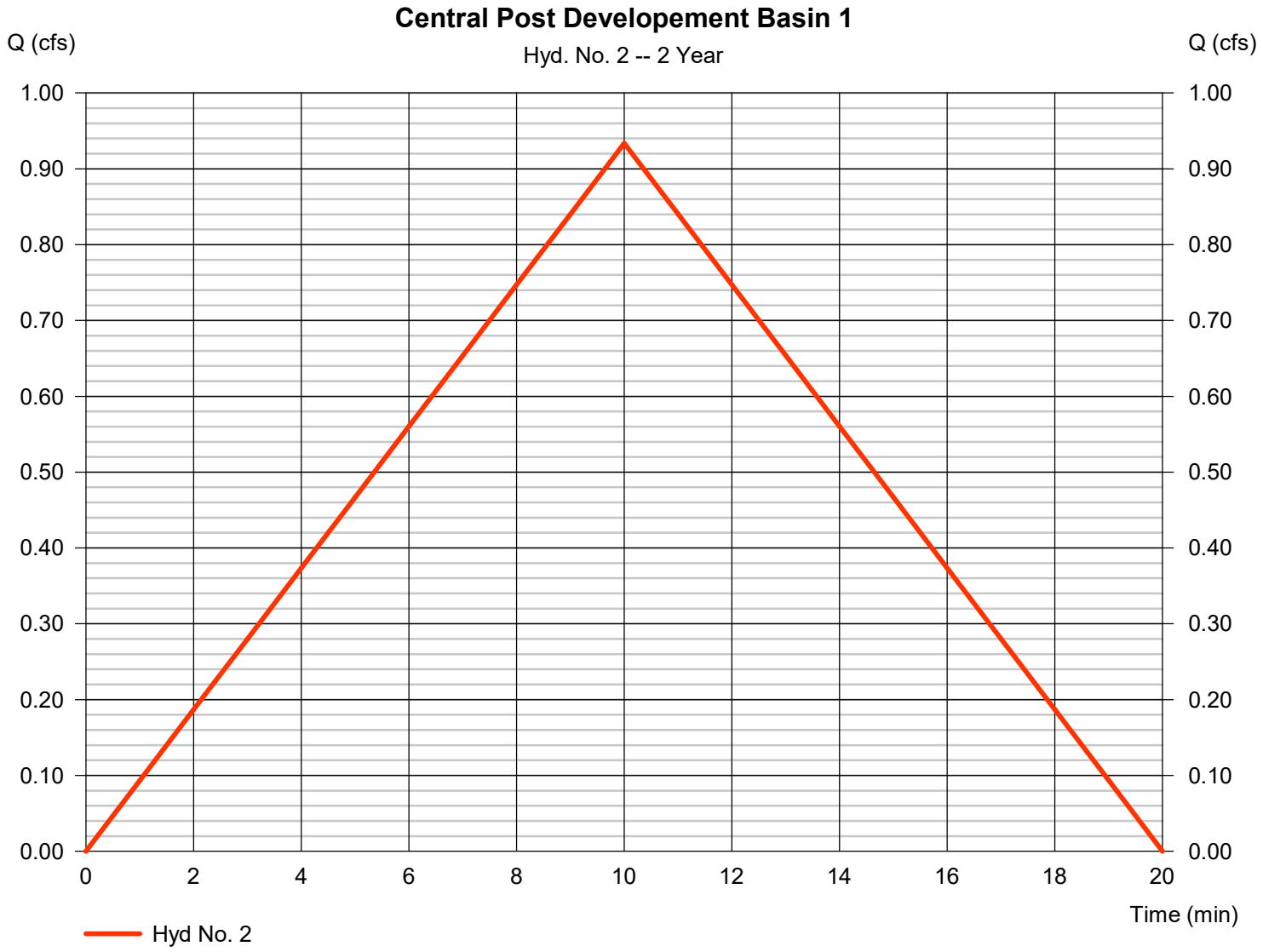


Hydrograph Report

Hyd. No. 2

Central Post Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	0.934 cfs
Storm frequency	=	2 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	560 cuft
Drainage area	=	0.420 ac	Runoff coeff.	=	0.87
Intensity	=	2.556 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

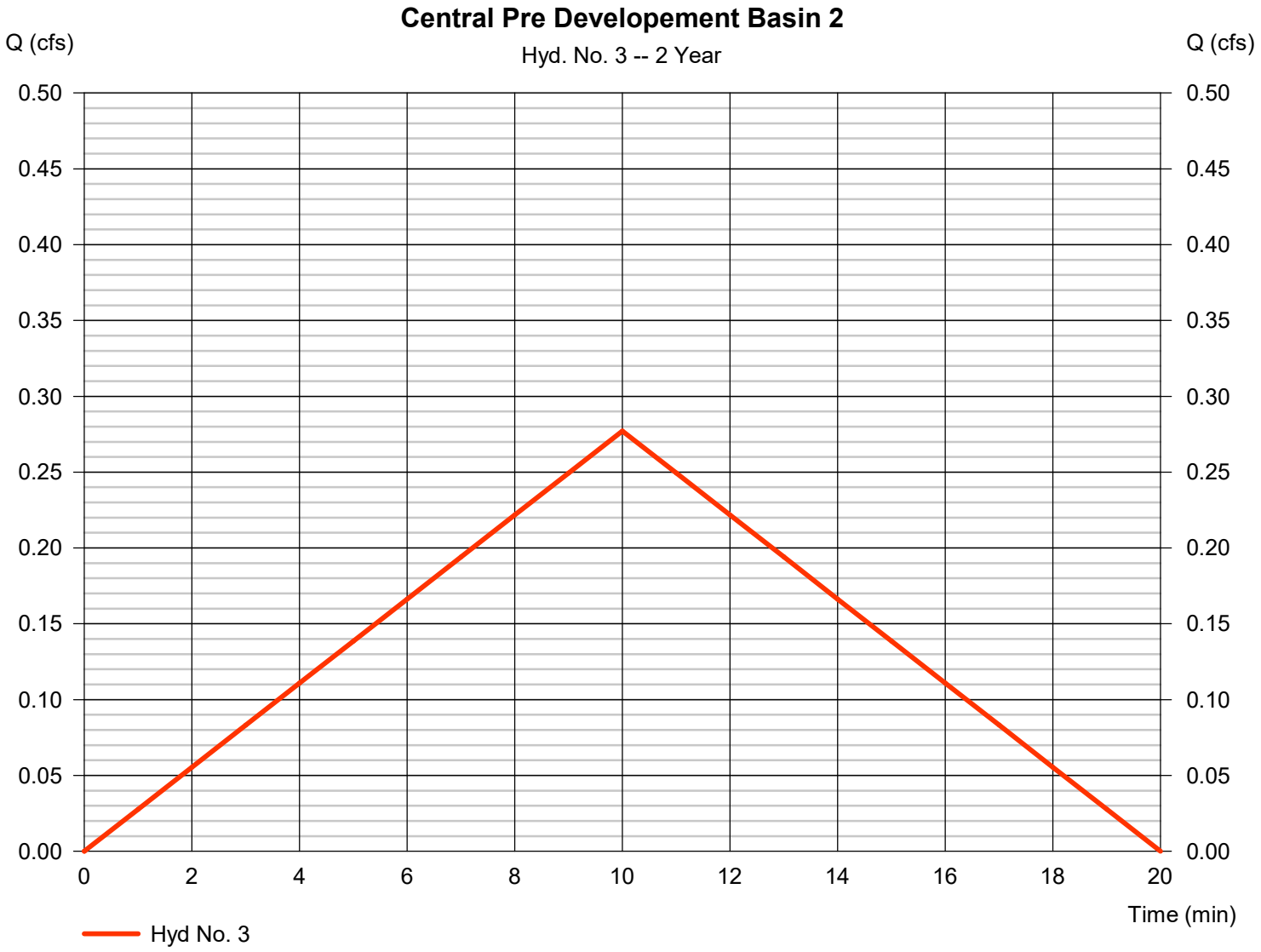


Hydrograph Report

Hyd. No. 3

Central Pre Developement Basin 2

Hydrograph type	=	Rational	Peak discharge	=	0.277 cfs
Storm frequency	=	2 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	166 cuft
Drainage area	=	0.241 ac	Runoff coeff.	=	0.45
Intensity	=	2.556 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

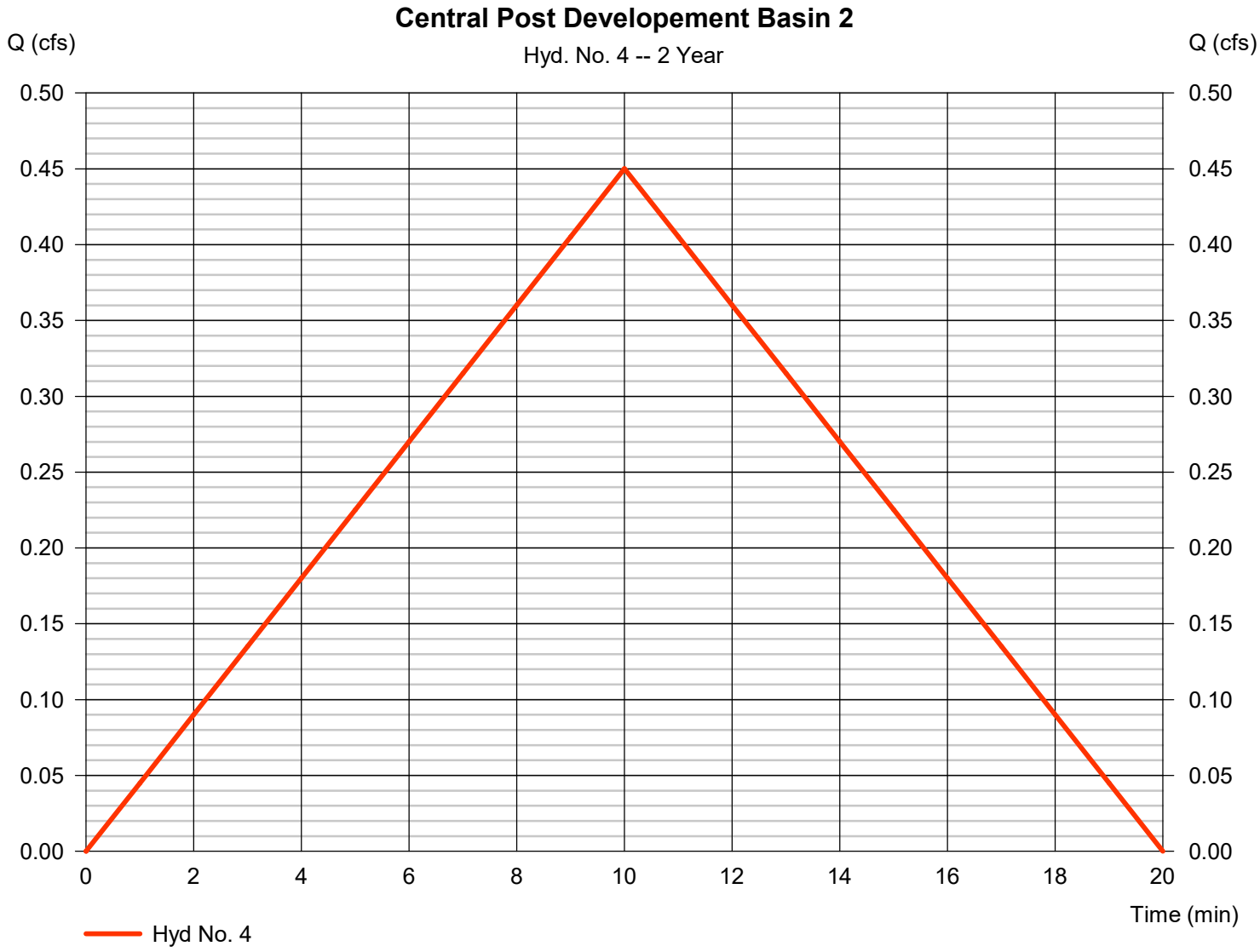


Hydrograph Report

Hyd. No. 4

Central Post Developement Basin 2

Hydrograph type	=	Rational	Peak discharge	=	0.450 cfs
Storm frequency	=	2 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	270 cuft
Drainage area	=	0.241 ac	Runoff coeff.	=	0.731
Intensity	=	2.556 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1



Hydrograph Report

Hyd. No. 5

Central Pre Developement Basin 3

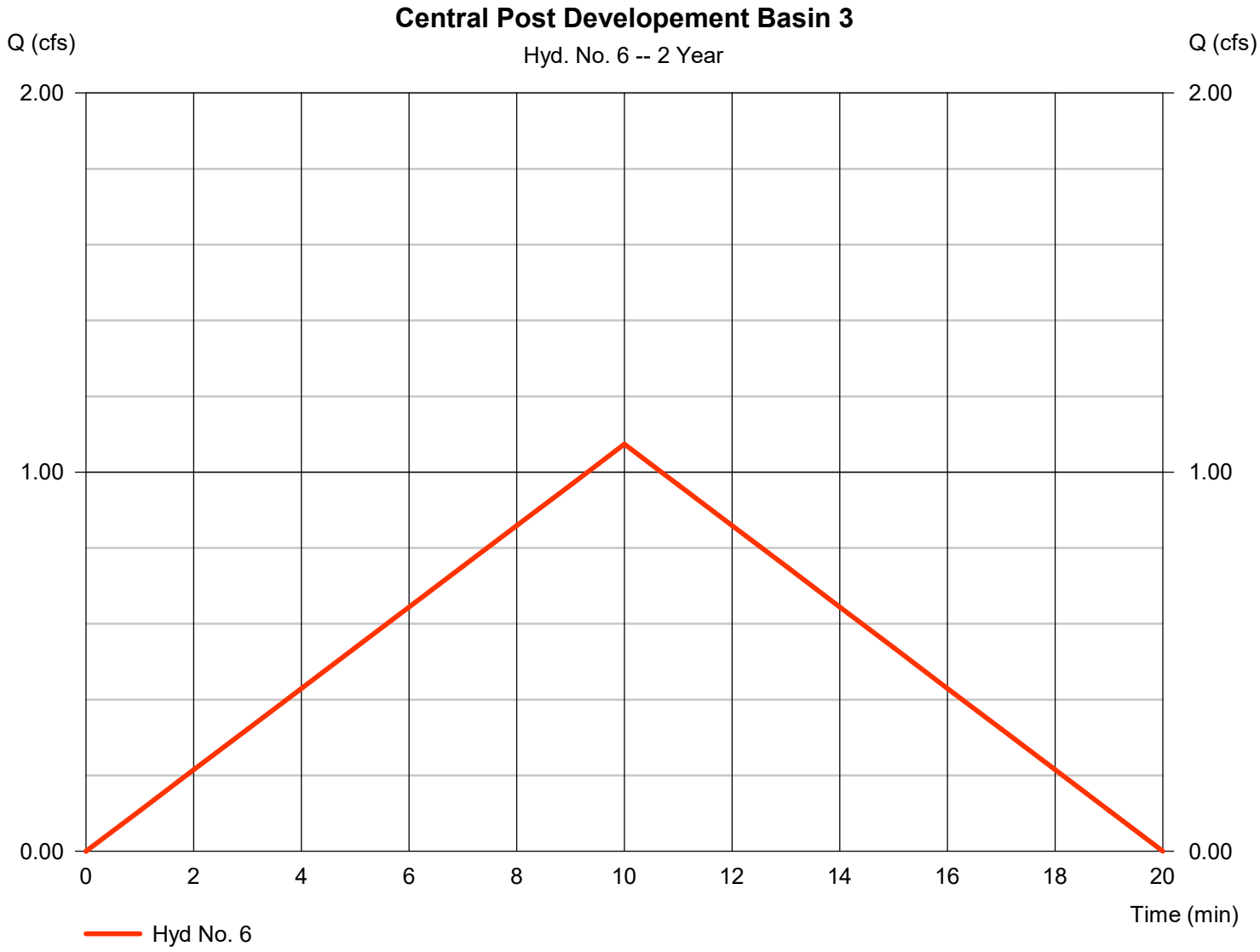
Hydrograph type	=	Rational	Peak discharge	=	0.652 cfs
Storm frequency	=	2 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	391 cuft
Drainage area	=	0.567 ac	Runoff coeff.	=	0.45
Intensity	=	2.556 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

Hydrograph Report

Hyd. No. 6

Central Post Developement Basin 3

Hydrograph type	=	Rational	Peak discharge	=	1.074 cfs
Storm frequency	=	2 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	644 cuft
Drainage area	=	0.567 ac	Runoff coeff.	=	0.741
Intensity	=	2.556 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1



Hydrograph Report

Hyd. No. 7

Central Pre Developement Basin 4

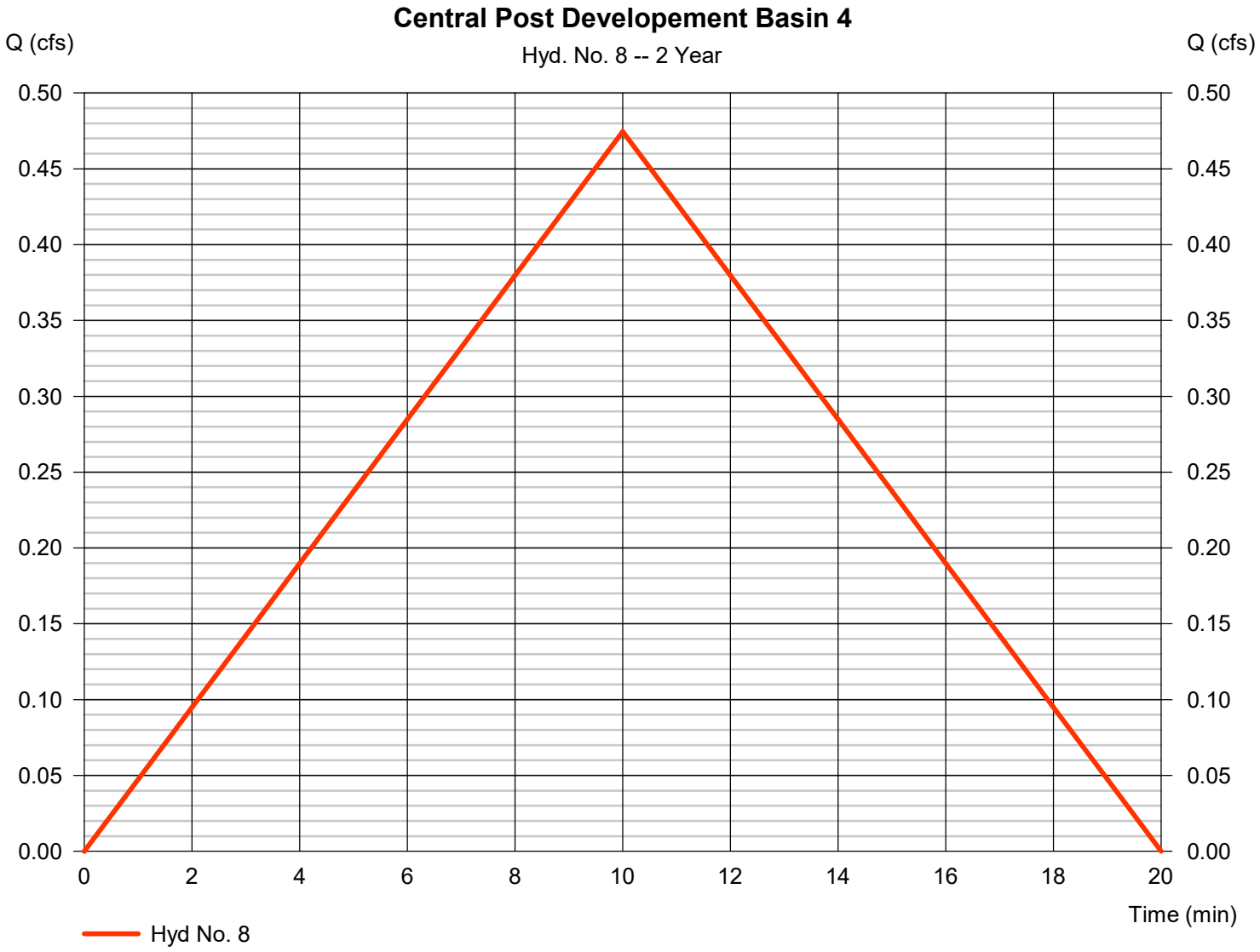
Hydrograph type	= Rational	Peak discharge	= 0.346 cfs
Storm frequency	= 2 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 208 cuft
Drainage area	= 0.301 ac	Runoff coeff.	= 0.45
Intensity	= 2.556 in/hr	Tc by User	= 10.00 min
IDF Curve	= Sedona.IDF	Asc/Rec limb fact	= 1/1

Hydrograph Report

Hyd. No. 8

Central Post Developement Basin 4

Hydrograph type	=	Rational	Peak discharge	=	0.475 cfs
Storm frequency	=	2 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	285 cuft
Drainage area	=	0.301 ac	Runoff coeff.	=	0.617
Intensity	=	2.556 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1



Hydrograph Report

Hyd. No. 9

Central Pre Developement Basin 5

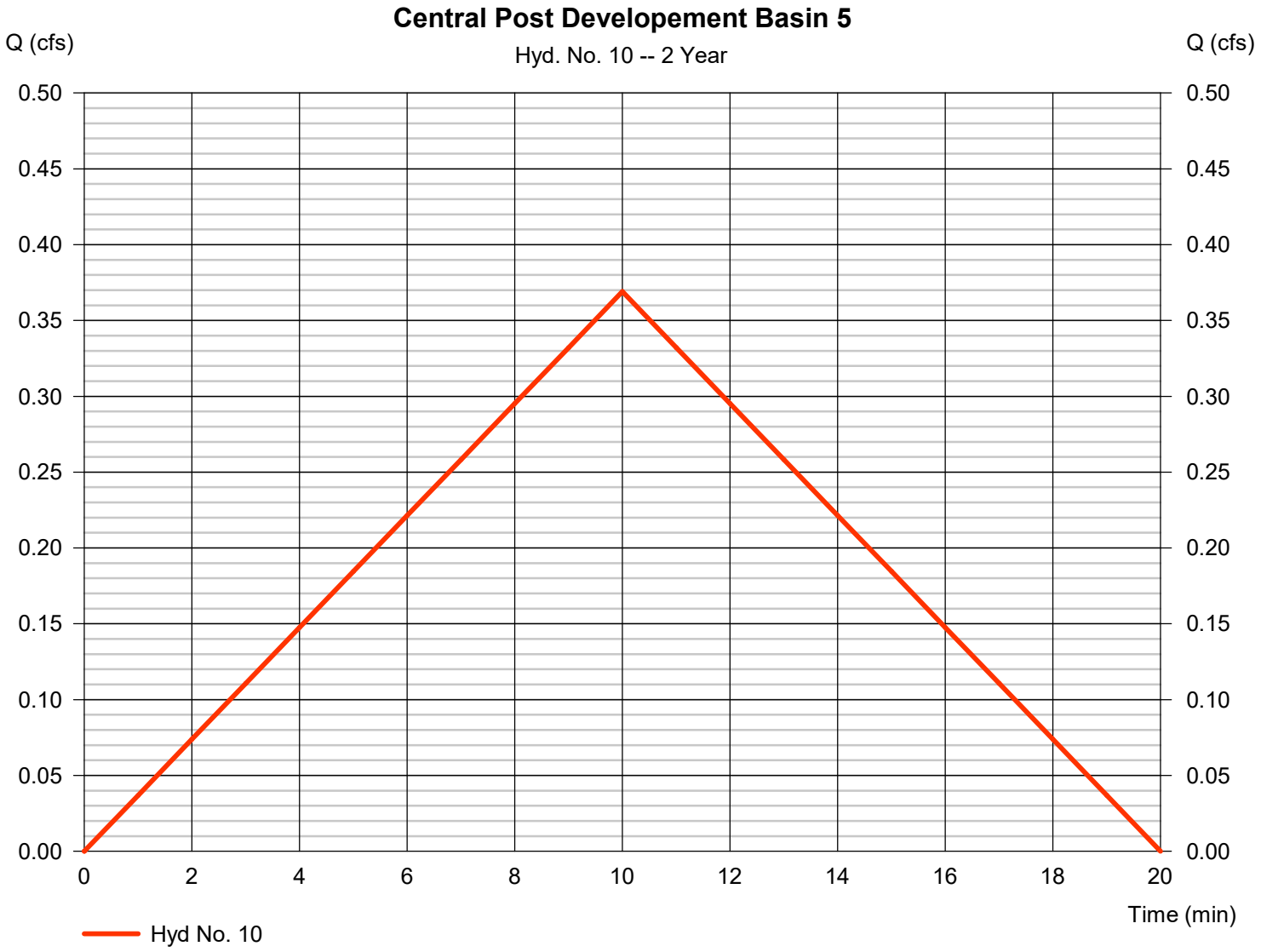
Hydrograph type	=	Rational	Peak discharge	=	0.175 cfs
Storm frequency	=	2 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	105 cuft
Drainage area	=	0.152 ac	Runoff coeff.	=	0.45
Intensity	=	2.556 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

Hydrograph Report

Hyd. No. 10

Central Post Developement Basin 5

Hydrograph type	=	Rational	Peak discharge	=	0.369 cfs
Storm frequency	=	2 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	221 cuft
Drainage area	=	0.152 ac	Runoff coeff.	=	0.95
Intensity	=	2.556 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

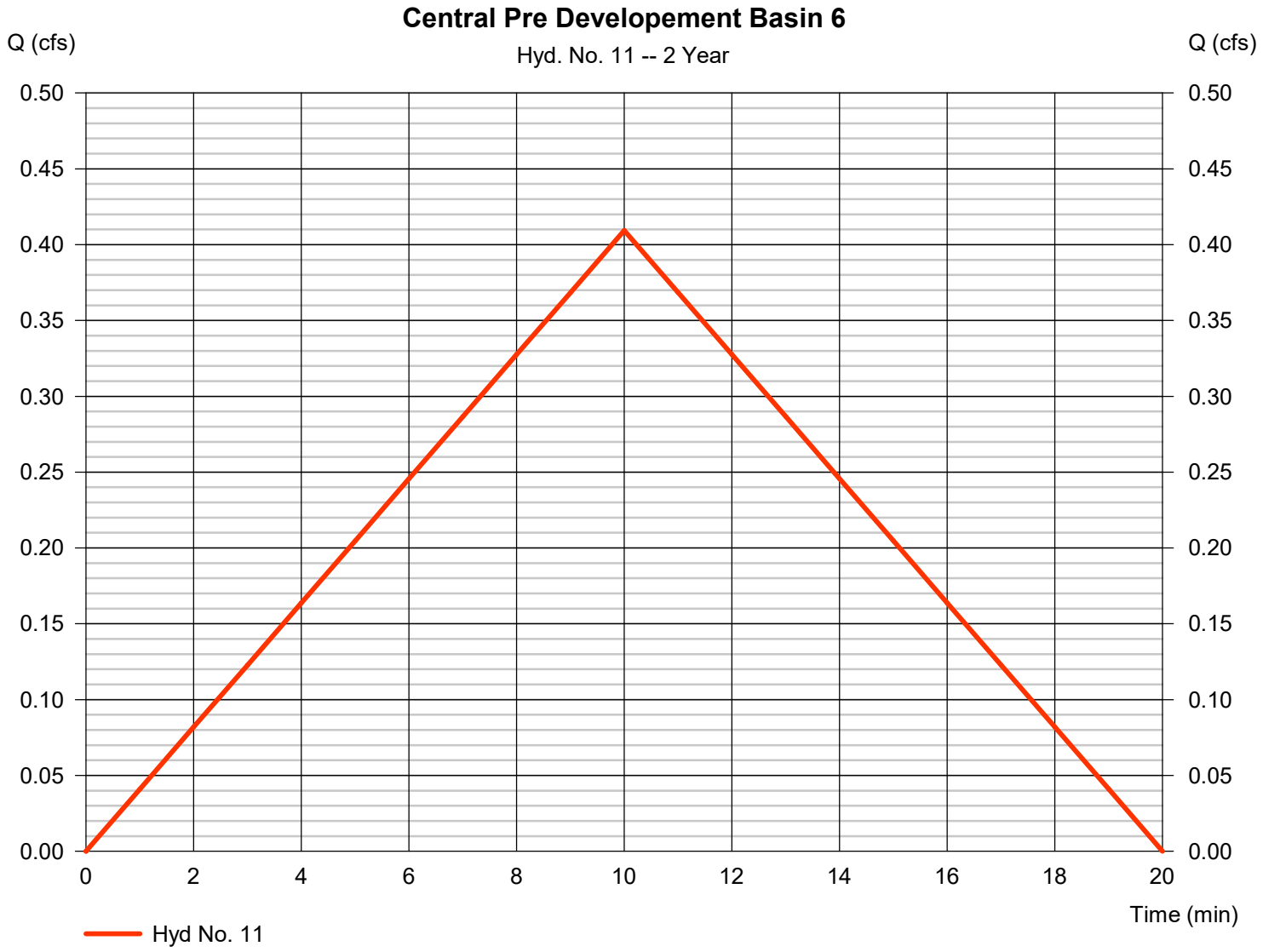


Hydrograph Report

Hyd. No. 11

Central Pre Developement Basin 6

Hydrograph type	=	Rational	Peak discharge	=	0.409 cfs
Storm frequency	=	2 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	246 cuft
Drainage area	=	0.356 ac	Runoff coeff.	=	0.45
Intensity	=	2.556 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

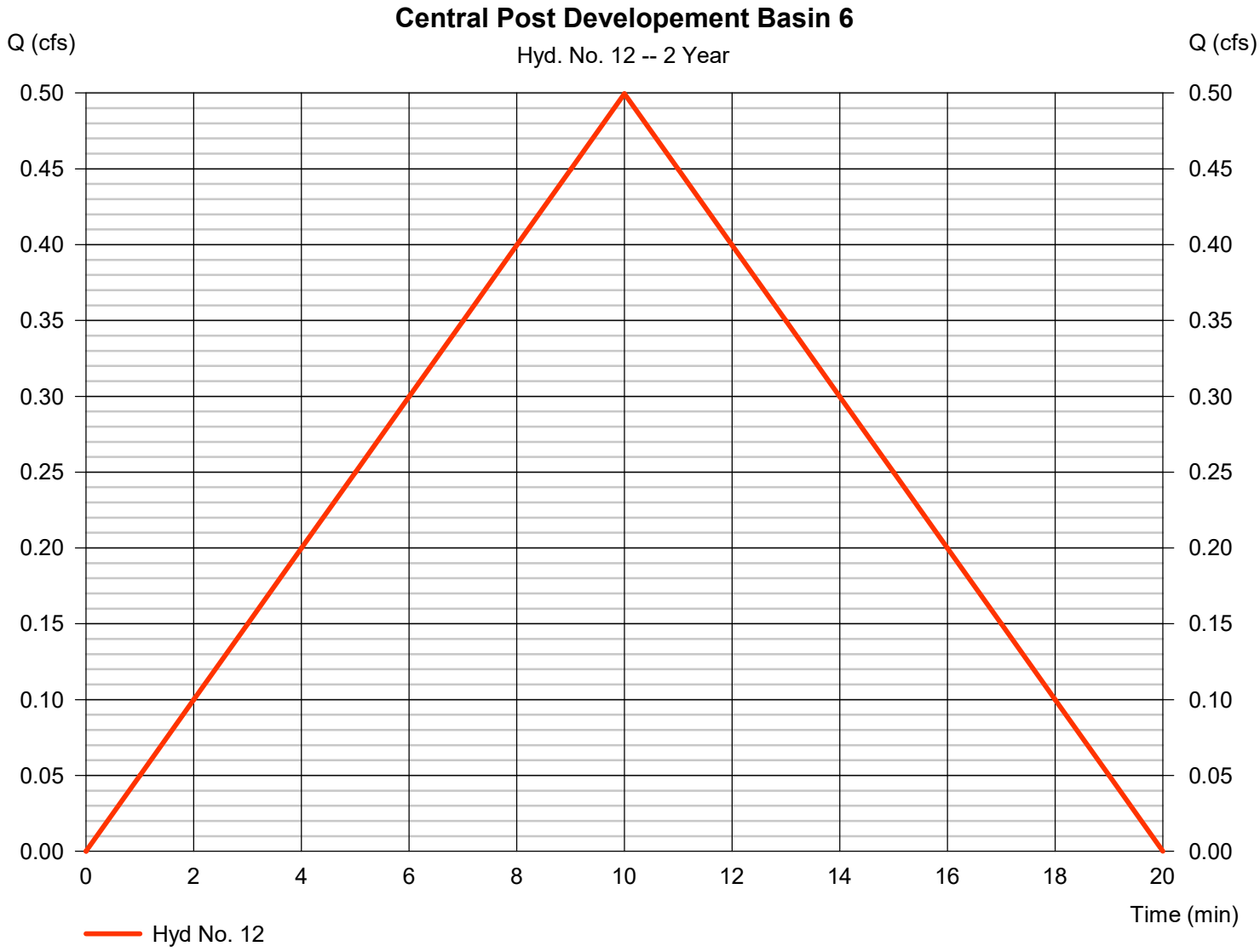


Hydrograph Report

Hyd. No. 12

Central Post Developement Basin 6

Hydrograph type	=	Rational	Peak discharge	=	0.499 cfs
Storm frequency	=	2 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	300 cuft
Drainage area	=	0.356 ac	Runoff coeff.	=	0.549
Intensity	=	2.556 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

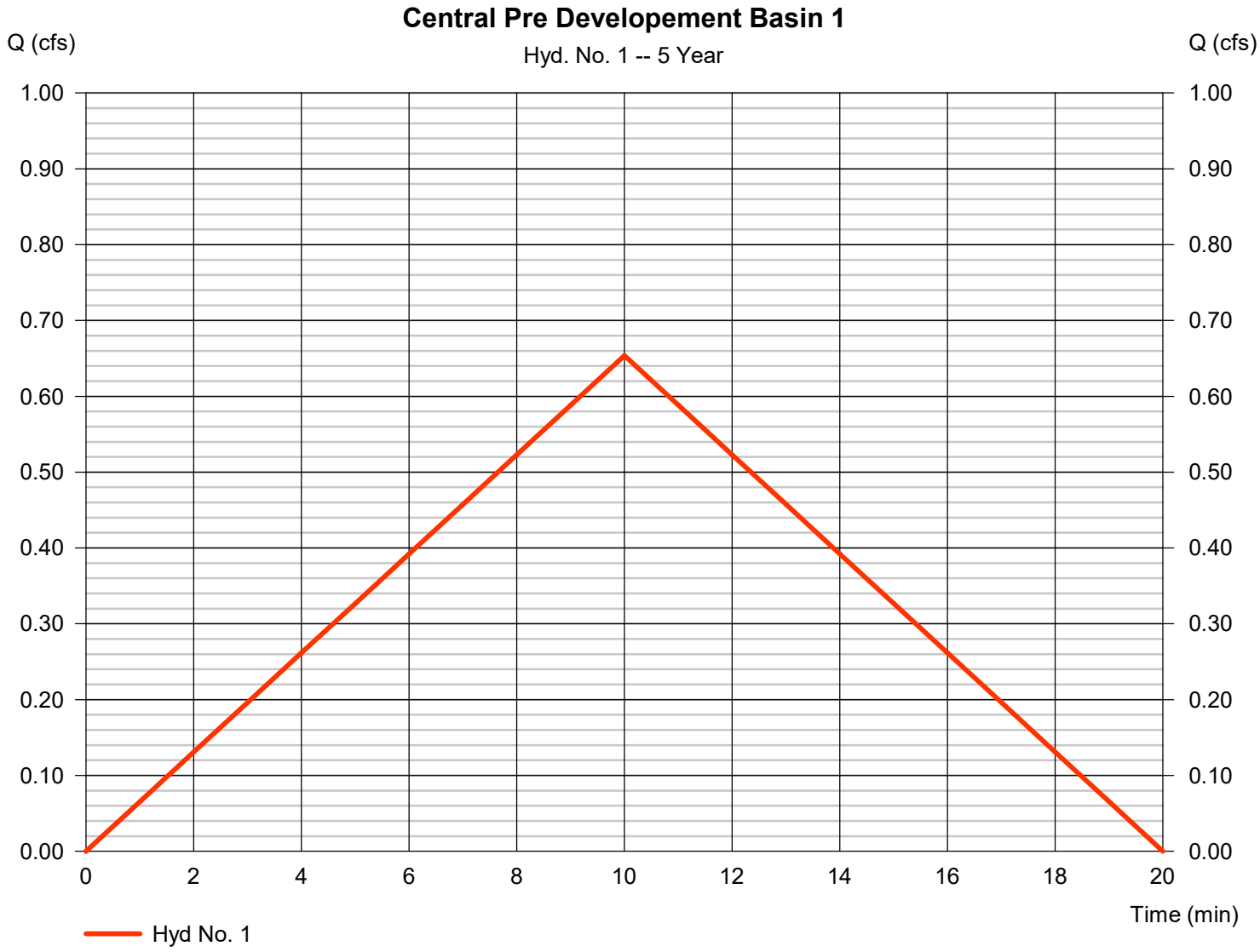


Hydrograph Report

Hyd. No. 1

Central Pre Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	0.654 cfs
Storm frequency	=	5 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	392 cuft
Drainage area	=	0.420 ac	Runoff coeff.	=	0.45
Intensity	=	3.459 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

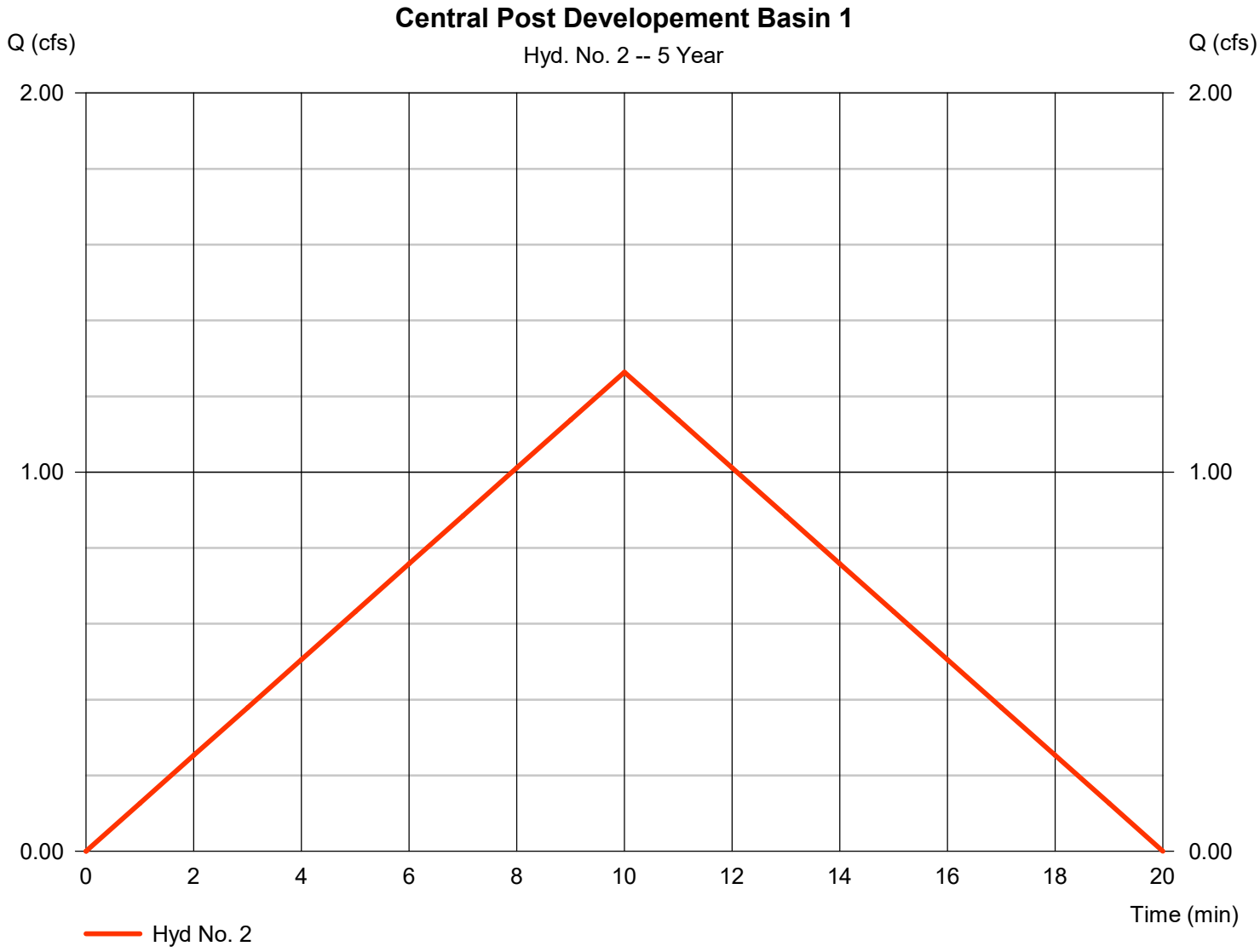


Hydrograph Report

Hyd. No. 2

Central Post Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	1.264 cfs
Storm frequency	=	5 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	758 cuft
Drainage area	=	0.420 ac	Runoff coeff.	=	0.87
Intensity	=	3.459 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1



Hydrograph Report

Hyd. No. 3

Central Pre Developement Basin 2

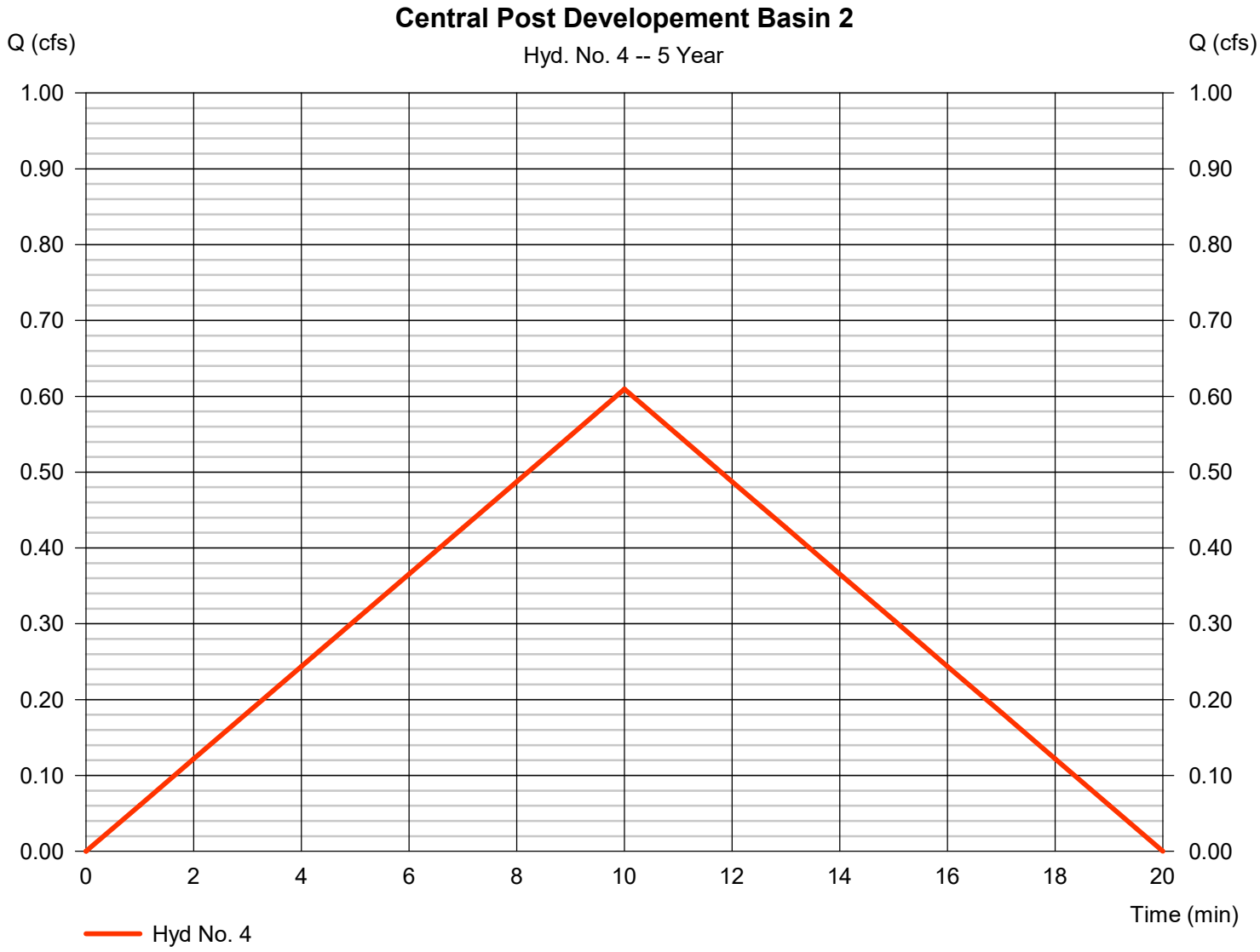
Hydrograph type	= Rational	Peak discharge	= 0.375 cfs
Storm frequency	= 5 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 225 cuft
Drainage area	= 0.241 ac	Runoff coeff.	= 0.45
Intensity	= 3.459 in/hr	Tc by User	= 10.00 min
IDF Curve	= Sedona.IDF	Asc/Rec limb fact	= 1/1

Hydrograph Report

Hyd. No. 4

Central Post Developement Basin 2

Hydrograph type	=	Rational	Peak discharge	=	0.609 cfs
Storm frequency	=	5 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	366 cuft
Drainage area	=	0.241 ac	Runoff coeff.	=	0.731
Intensity	=	3.459 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1



Hydrograph Report

Hyd. No. 5

Central Pre Developement Basin 3

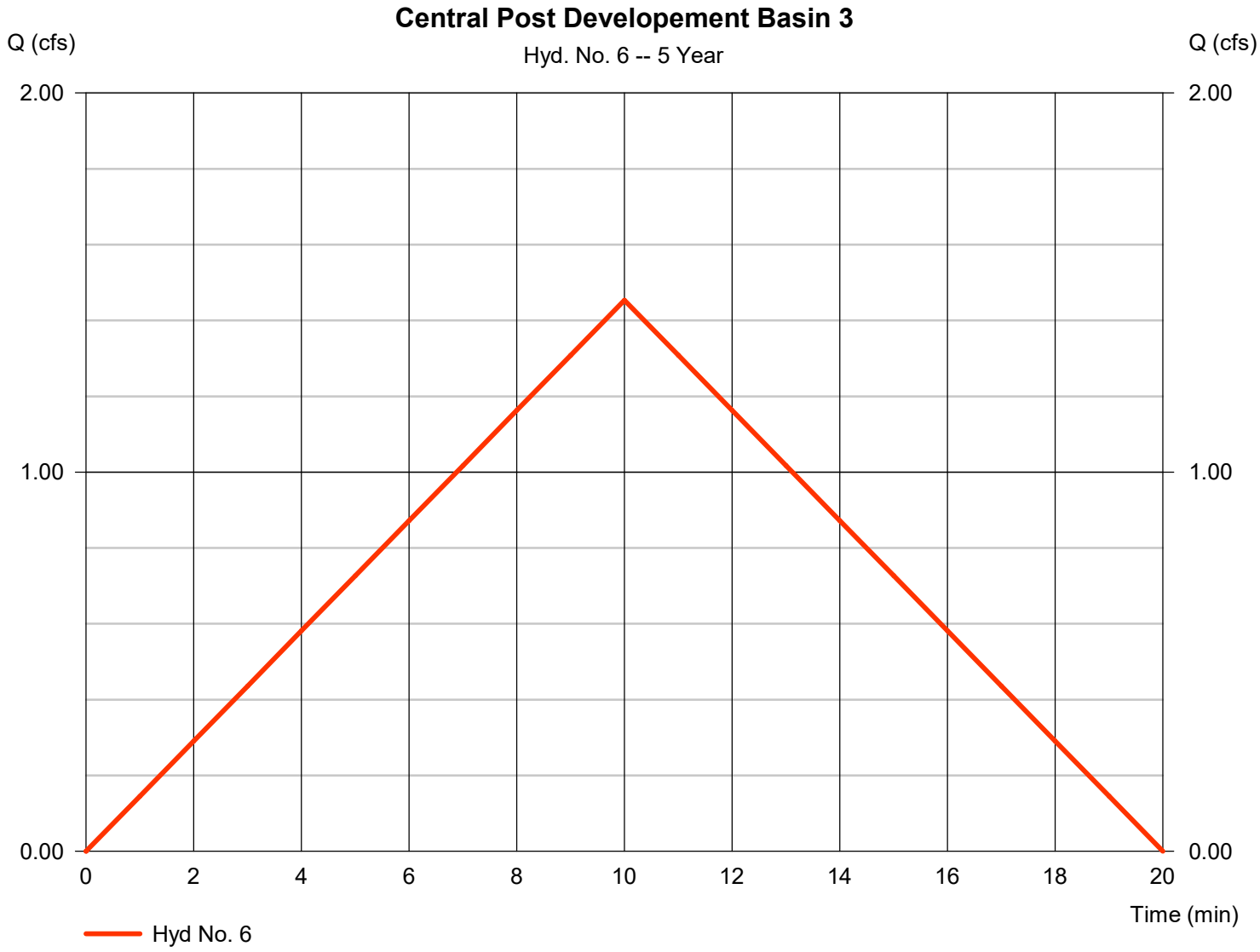
Hydrograph type	=	Rational	Peak discharge	=	0.883 cfs
Storm frequency	=	5 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	530 cuft
Drainage area	=	0.567 ac	Runoff coeff.	=	0.45
Intensity	=	3.459 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

Hydrograph Report

Hyd. No. 6

Central Post Developement Basin 3

Hydrograph type	=	Rational	Peak discharge	=	1.453 cfs
Storm frequency	=	5 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	872 cuft
Drainage area	=	0.567 ac	Runoff coeff.	=	0.741
Intensity	=	3.459 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

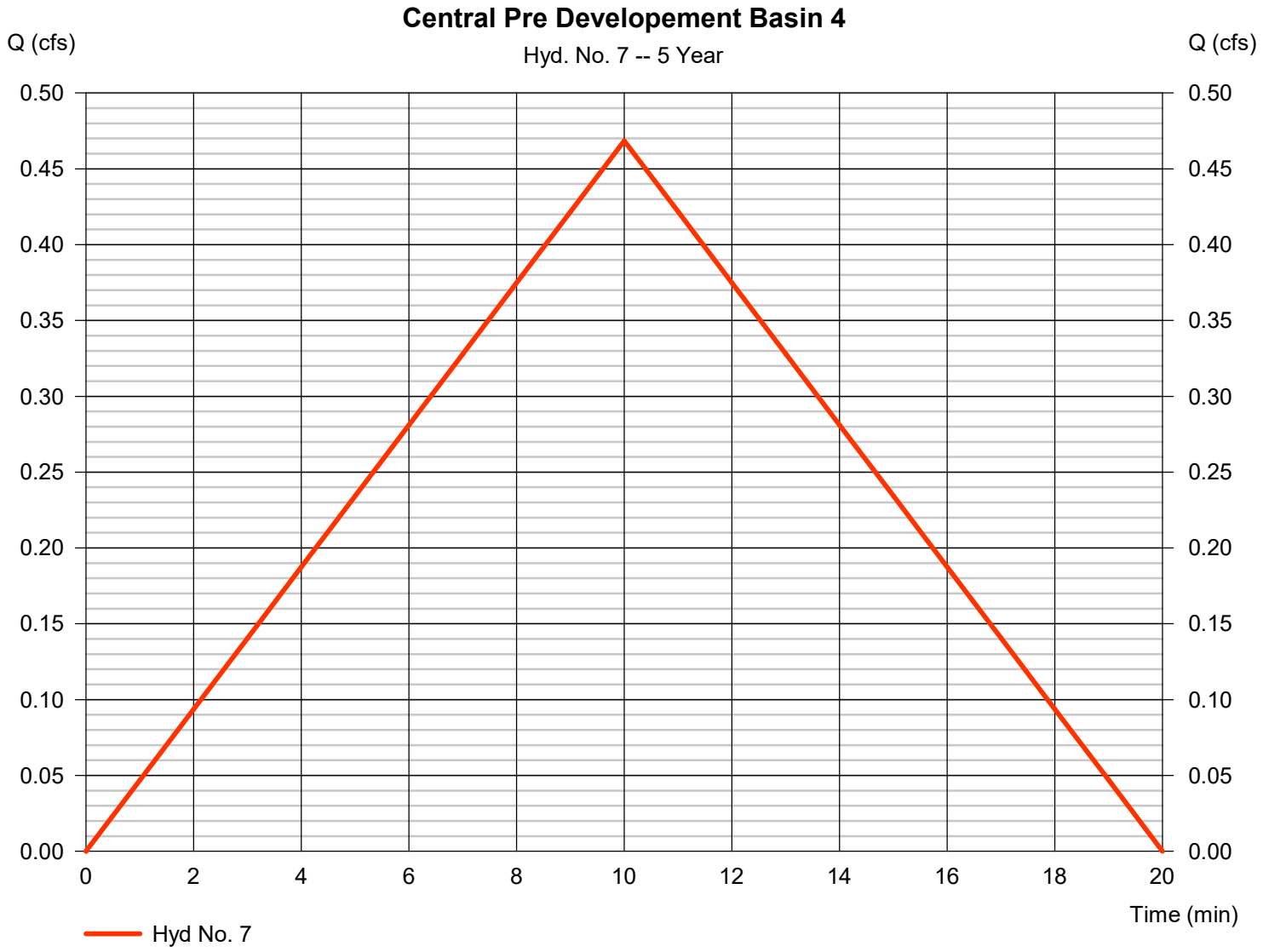


Hydrograph Report

Hyd. No. 7

Central Pre Developement Basin 4

Hydrograph type	=	Rational	Peak discharge	=	0.469 cfs
Storm frequency	=	5 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	281 cuft
Drainage area	=	0.301 ac	Runoff coeff.	=	0.45
Intensity	=	3.459 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

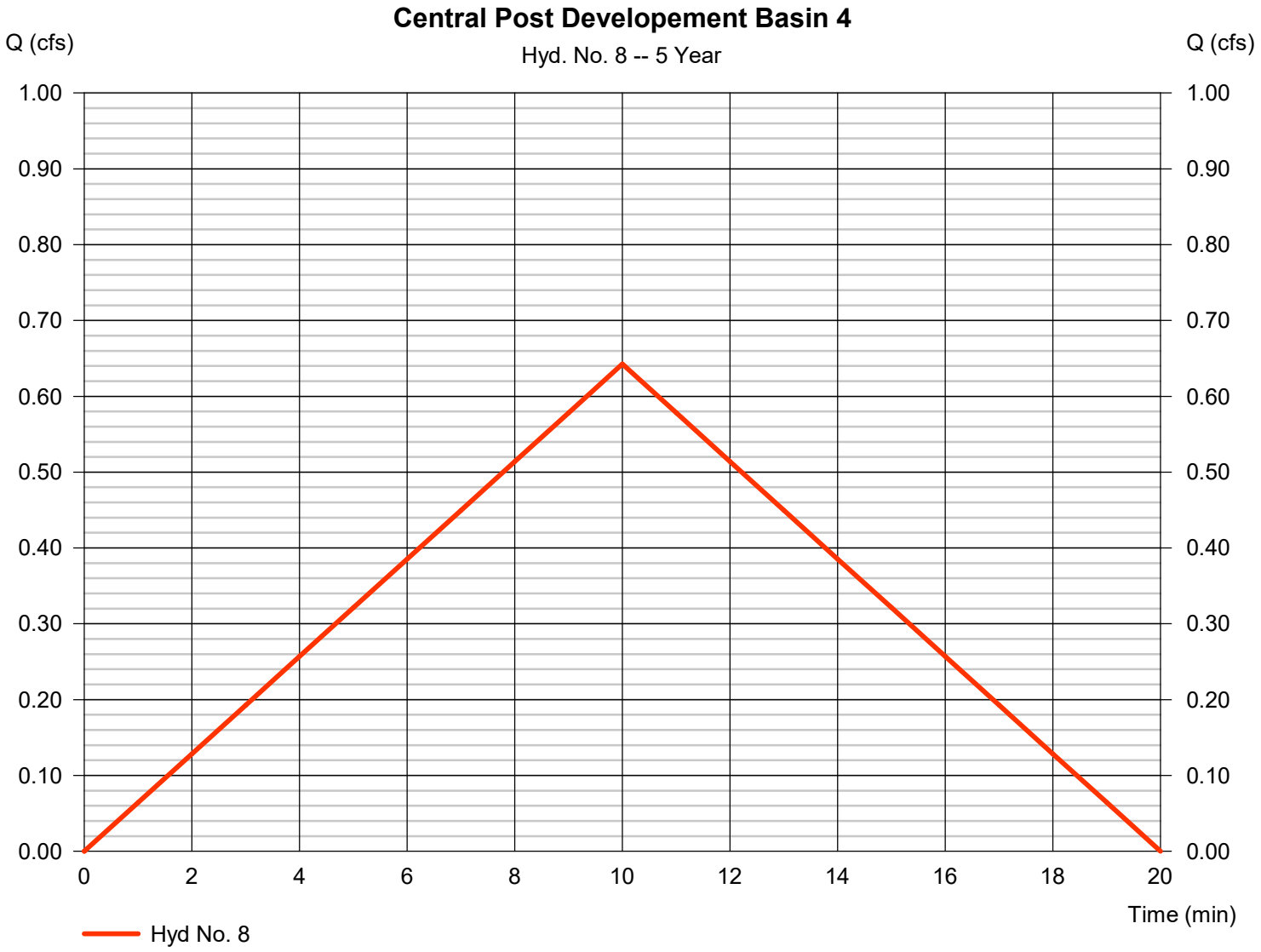


Hydrograph Report

Hyd. No. 8

Central Post Developement Basin 4

Hydrograph type	=	Rational	Peak discharge	=	0.642 cfs
Storm frequency	=	5 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	385 cuft
Drainage area	=	0.301 ac	Runoff coeff.	=	0.617
Intensity	=	3.459 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

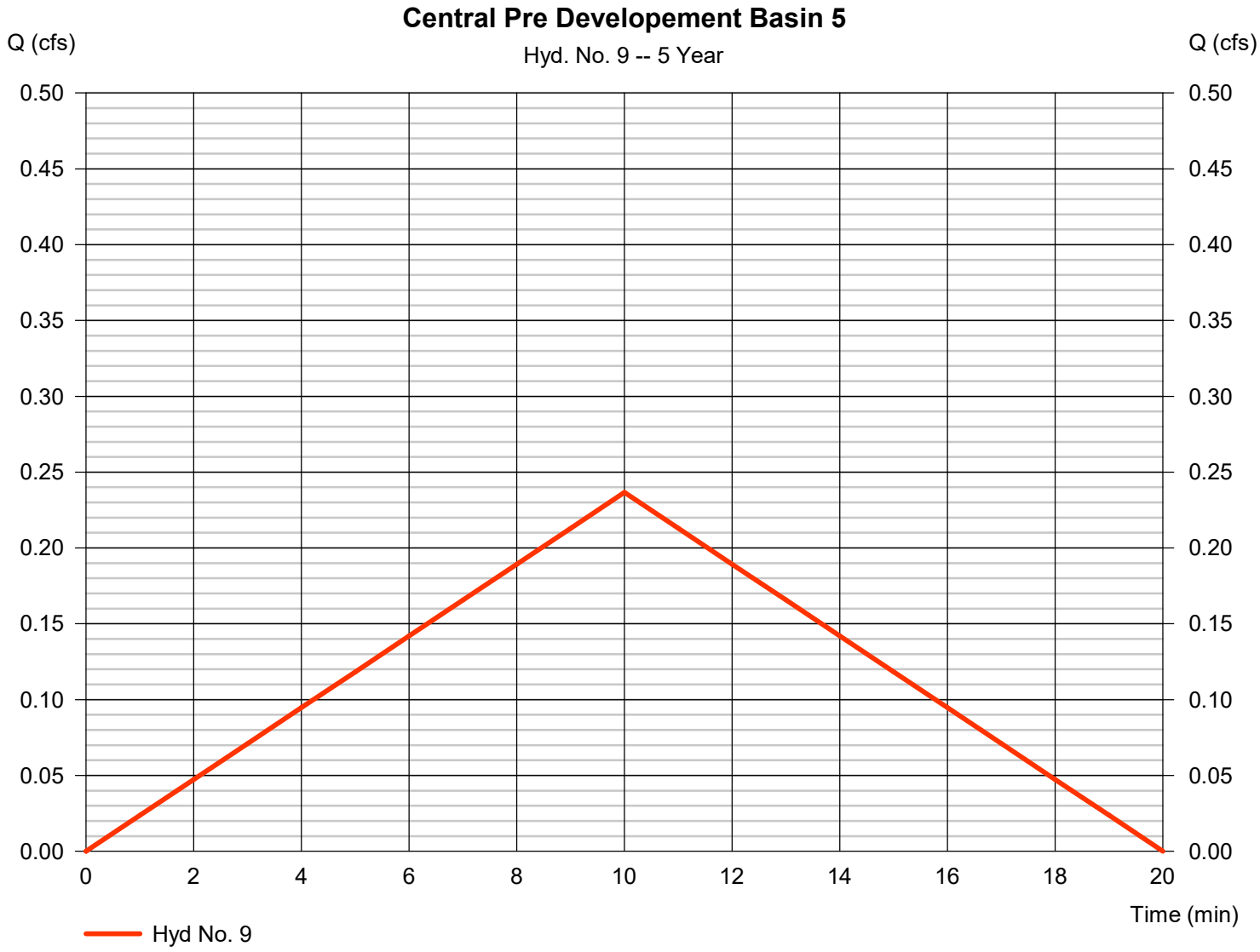


Hydrograph Report

Hyd. No. 9

Central Pre Developement Basin 5

Hydrograph type	=	Rational	Peak discharge	=	0.237 cfs
Storm frequency	=	5 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	142 cuft
Drainage area	=	0.152 ac	Runoff coeff.	=	0.45
Intensity	=	3.459 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

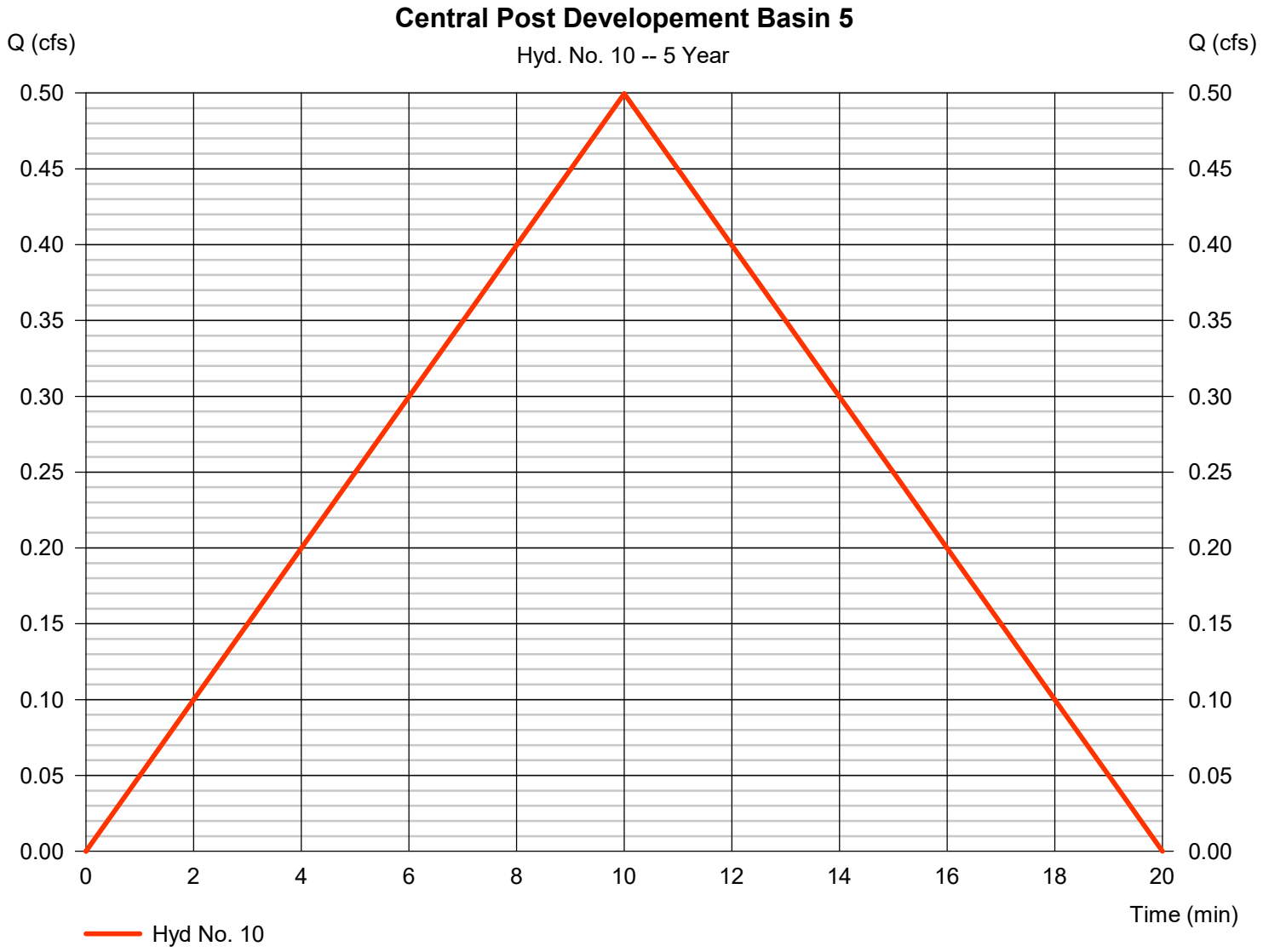


Hydrograph Report

Hyd. No. 10

Central Post Developement Basin 5

Hydrograph type	=	Rational	Peak discharge	=	0.500 cfs
Storm frequency	=	5 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	300 cuft
Drainage area	=	0.152 ac	Runoff coeff.	=	0.95
Intensity	=	3.459 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

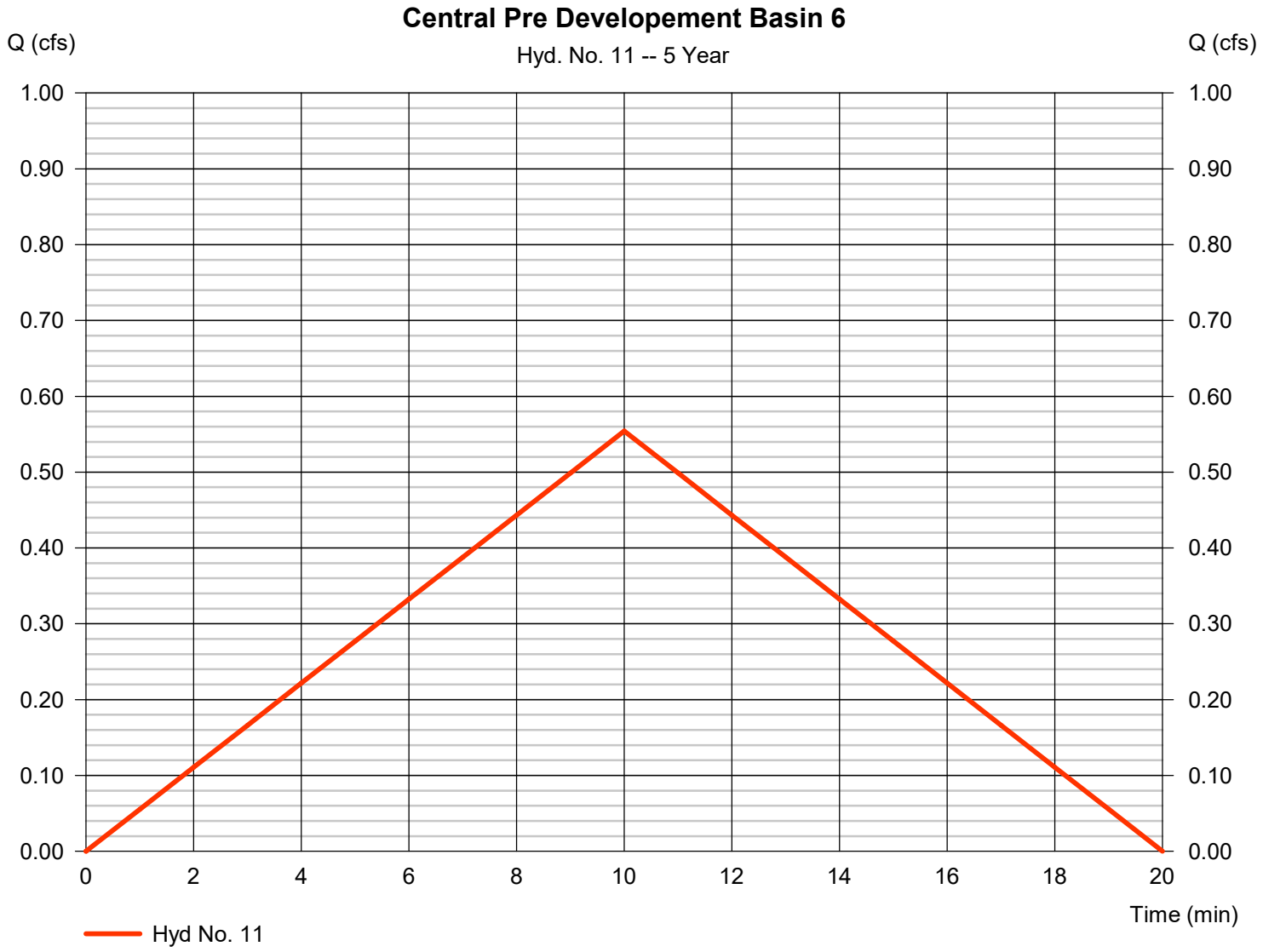


Hydrograph Report

Hyd. No. 11

Central Pre Developement Basin 6

Hydrograph type	=	Rational	Peak discharge	=	0.554 cfs
Storm frequency	=	5 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	332 cuft
Drainage area	=	0.356 ac	Runoff coeff.	=	0.45
Intensity	=	3.459 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

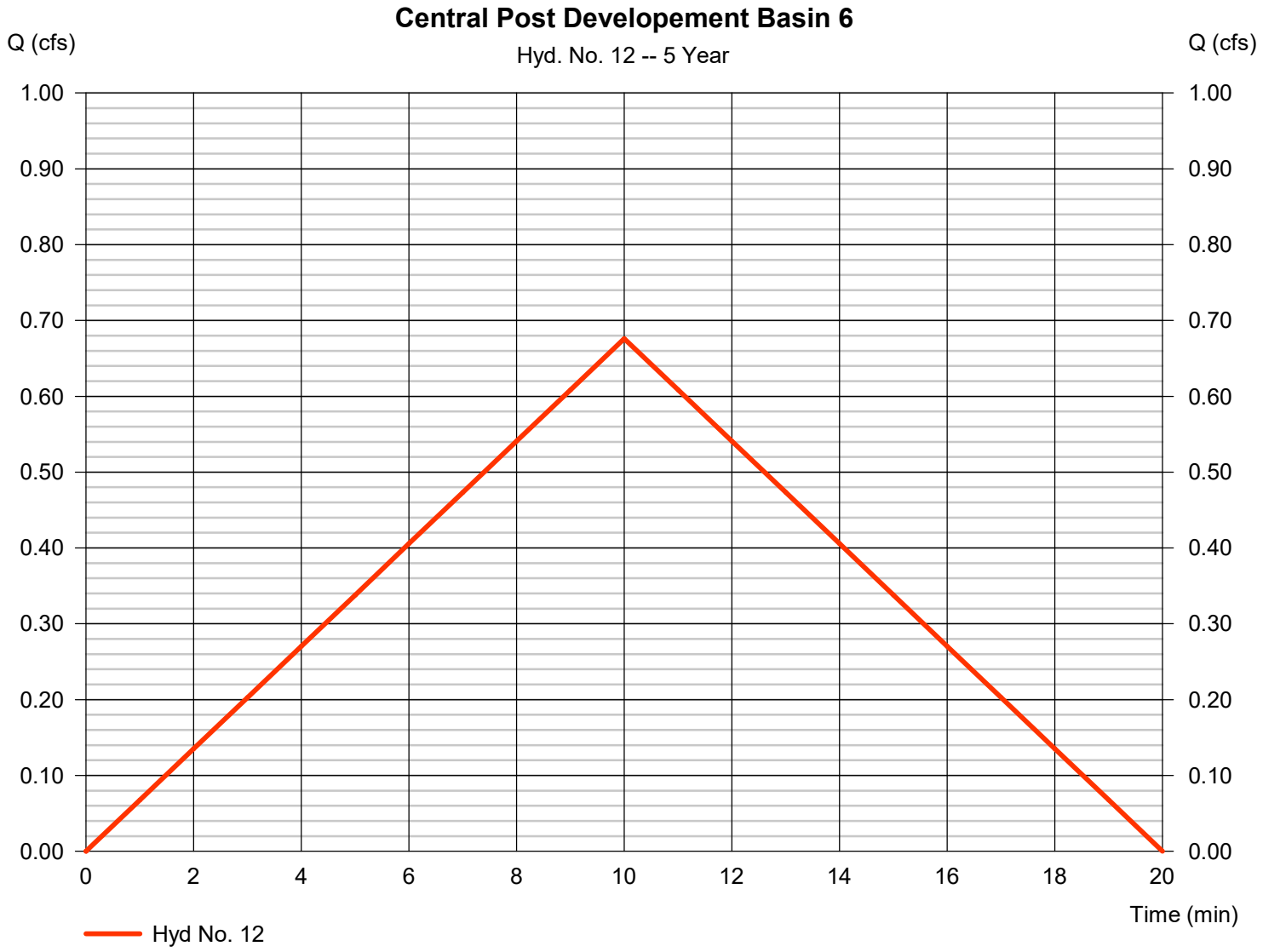


Hydrograph Report

Hyd. No. 12

Central Post Developement Basin 6

Hydrograph type	=	Rational	Peak discharge	=	0.676 cfs
Storm frequency	=	5 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	406 cuft
Drainage area	=	0.356 ac	Runoff coeff.	=	0.549
Intensity	=	3.459 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

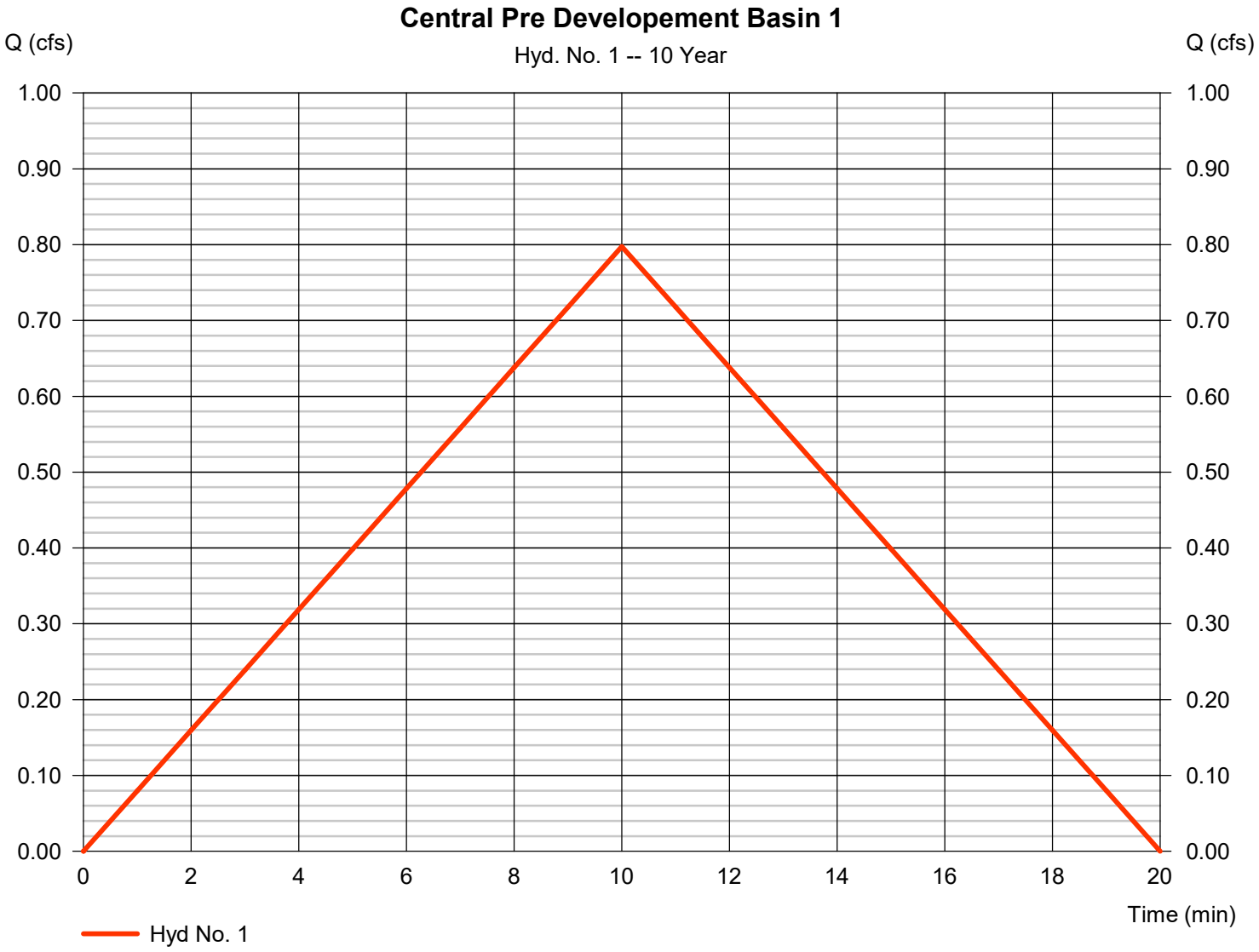


Hydrograph Report

Hyd. No. 1

Central Pre Developement Basin 1

Hydrograph type	= Rational	Peak discharge	= 0.797 cfs
Storm frequency	= 10 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 478 cuft
Drainage area	= 0.420 ac	Runoff coeff.	= 0.45
Intensity	= 4.219 in/hr	Tc by User	= 10.00 min
IDF Curve	= Sedona.IDF	Asc/Rec limb fact	= 1/1

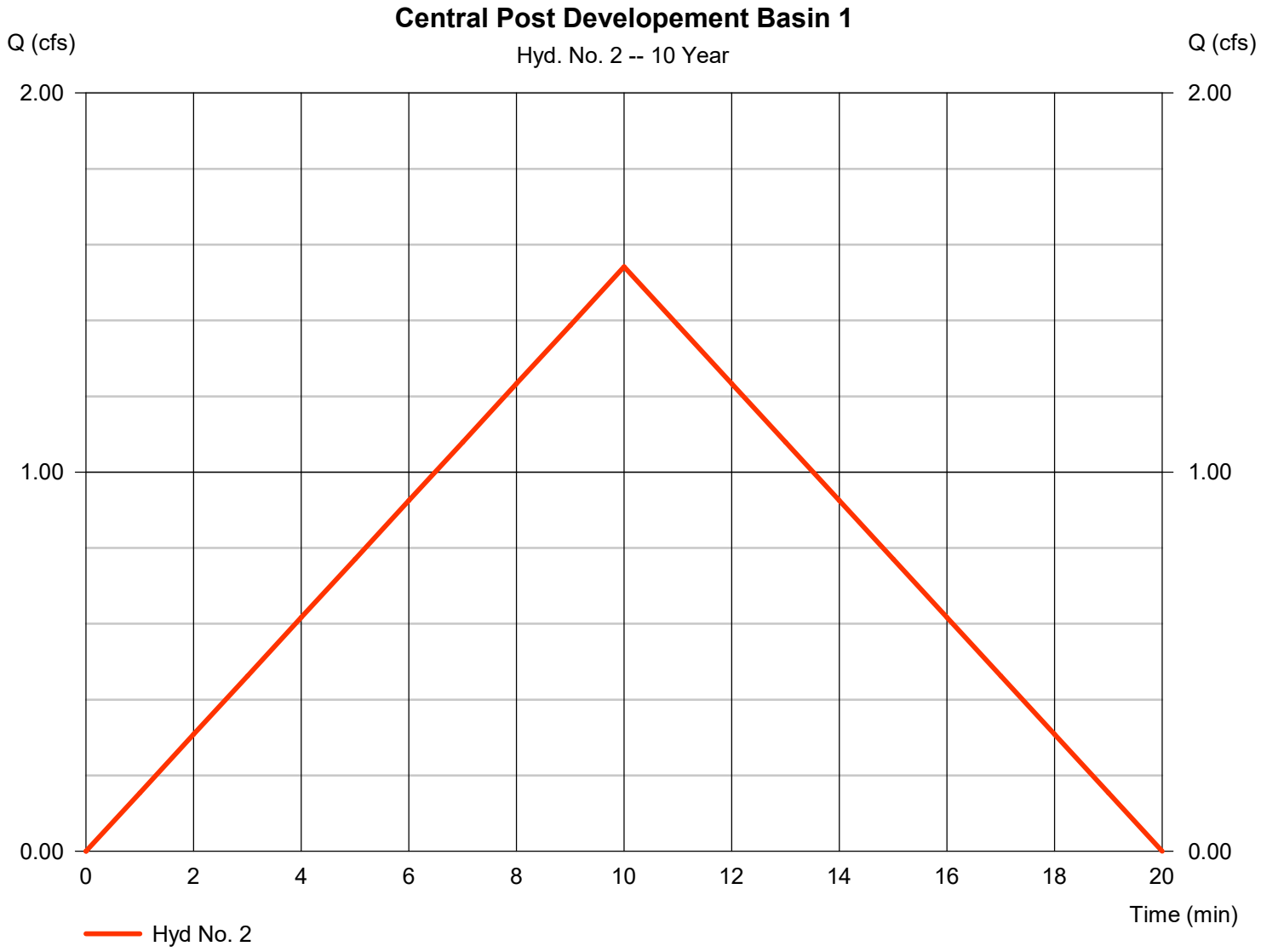


Hydrograph Report

Hyd. No. 2

Central Post Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	1.542 cfs
Storm frequency	=	10 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	925 cuft
Drainage area	=	0.420 ac	Runoff coeff.	=	0.87
Intensity	=	4.219 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1



Hydrograph Report

Hyd. No. 3

Central Pre Developement Basin 2

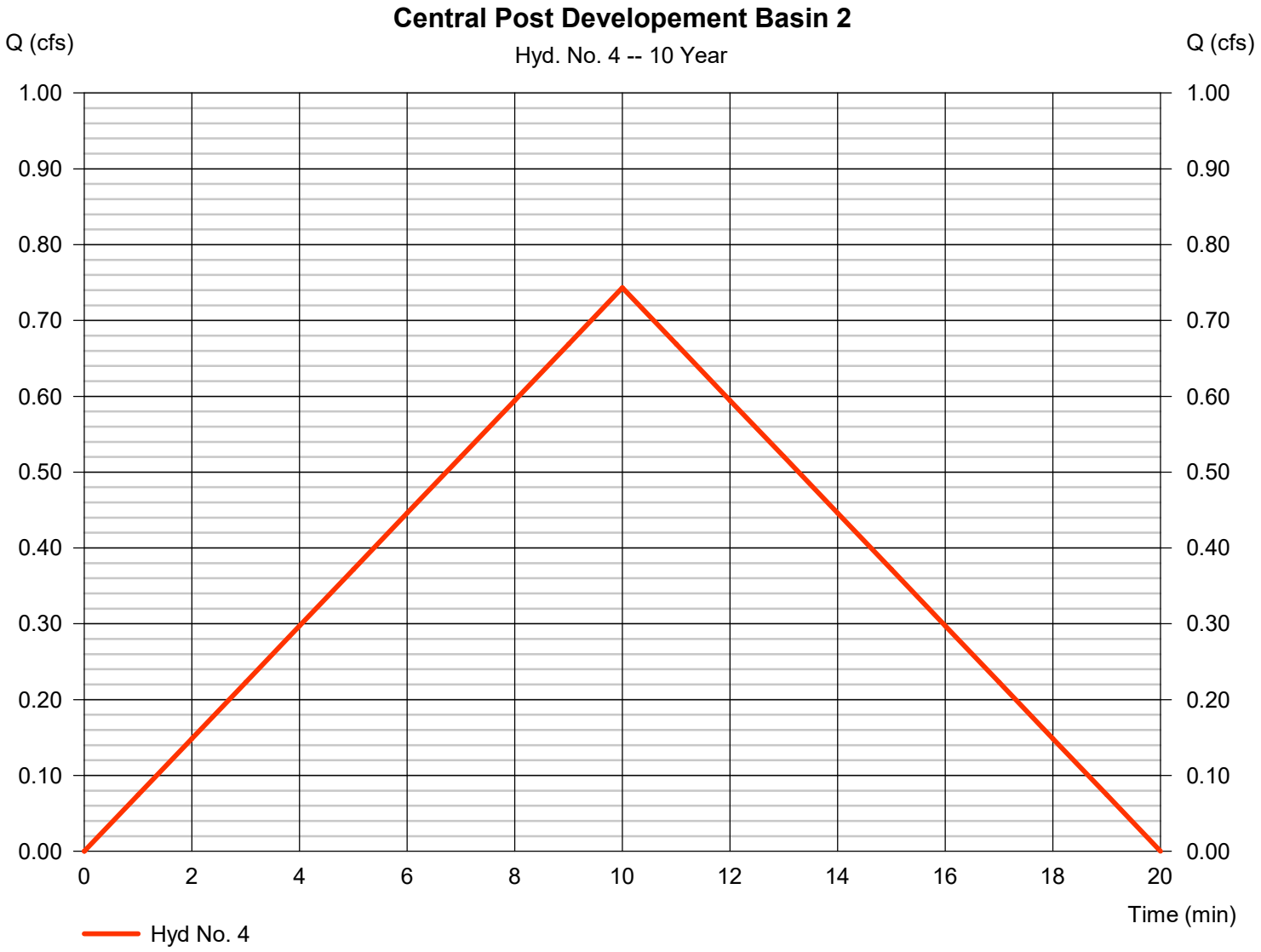
Hydrograph type	= Rational	Peak discharge	= 0.458 cfs
Storm frequency	= 10 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 275 cuft
Drainage area	= 0.241 ac	Runoff coeff.	= 0.45
Intensity	= 4.219 in/hr	Tc by User	= 10.00 min
IDF Curve	= Sedona.IDF	Asc/Rec limb fact	= 1/1

Hydrograph Report

Hyd. No. 4

Central Post Developement Basin 2

Hydrograph type	=	Rational	Peak discharge	=	0.743 cfs
Storm frequency	=	10 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	446 cuft
Drainage area	=	0.241 ac	Runoff coeff.	=	0.731
Intensity	=	4.219 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

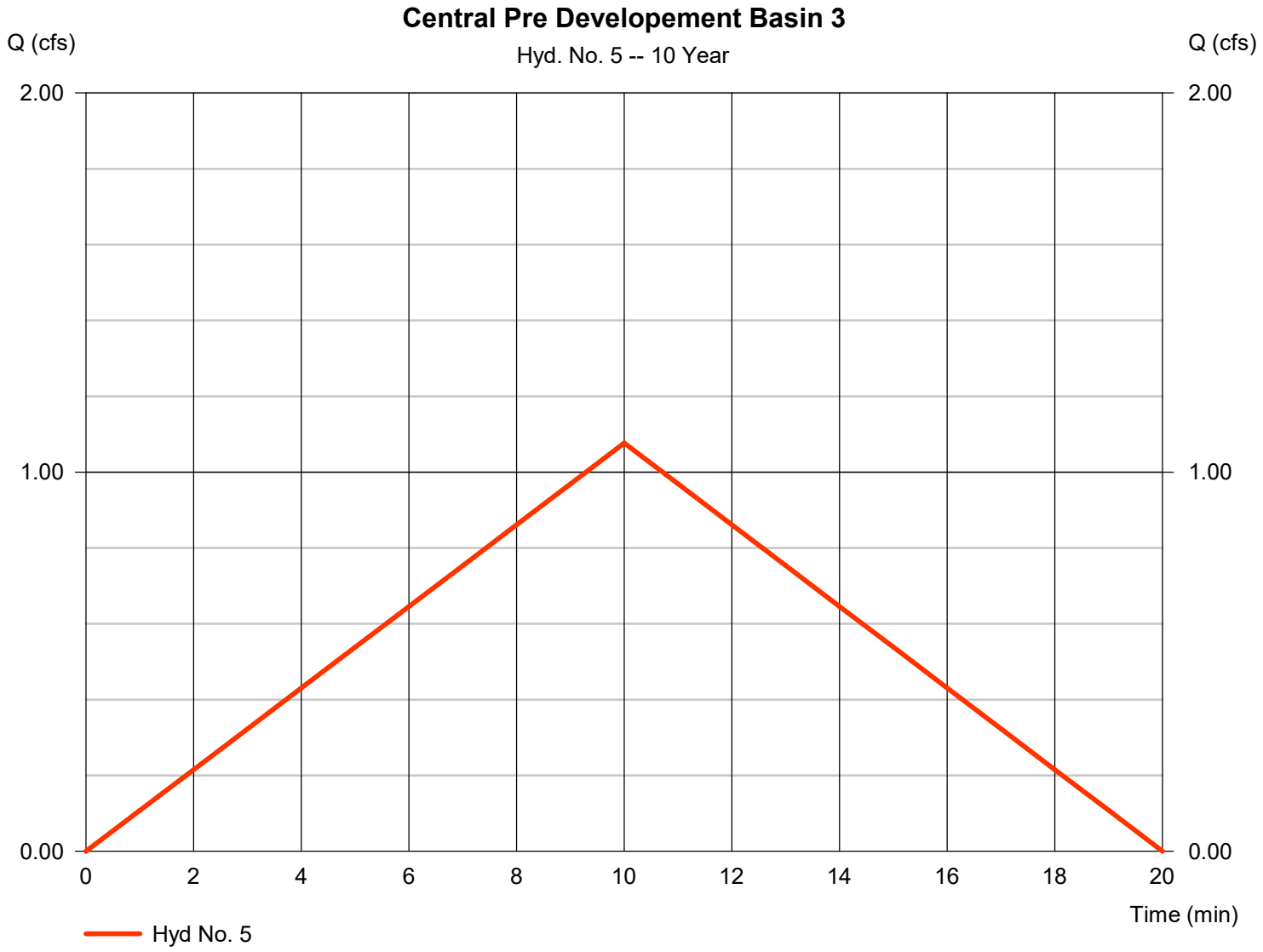


Hydrograph Report

Hyd. No. 5

Central Pre Developement Basin 3

Hydrograph type	= Rational	Peak discharge	= 1.076 cfs
Storm frequency	= 10 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 646 cuft
Drainage area	= 0.567 ac	Runoff coeff.	= 0.45
Intensity	= 4.219 in/hr	Tc by User	= 10.00 min
IDF Curve	= Sedona.IDF	Asc/Rec limb fact	= 1/1

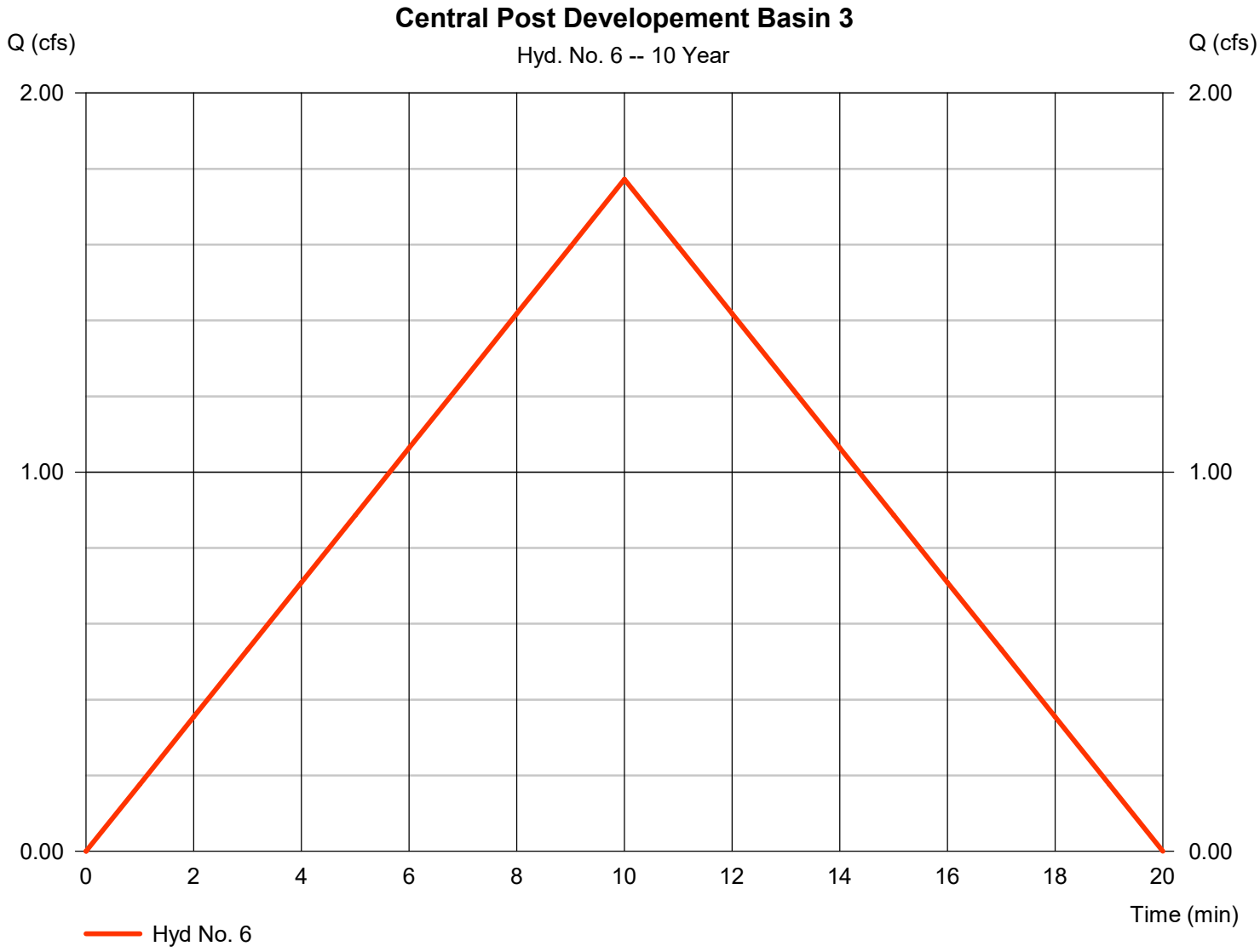


Hydrograph Report

Hyd. No. 6

Central Post Developement Basin 3

Hydrograph type	=	Rational	Peak discharge	=	1.773 cfs
Storm frequency	=	10 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	1,064 cuft
Drainage area	=	0.567 ac	Runoff coeff.	=	0.741
Intensity	=	4.219 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1



Hydrograph Report

Hyd. No. 7

Central Pre Developement Basin 4

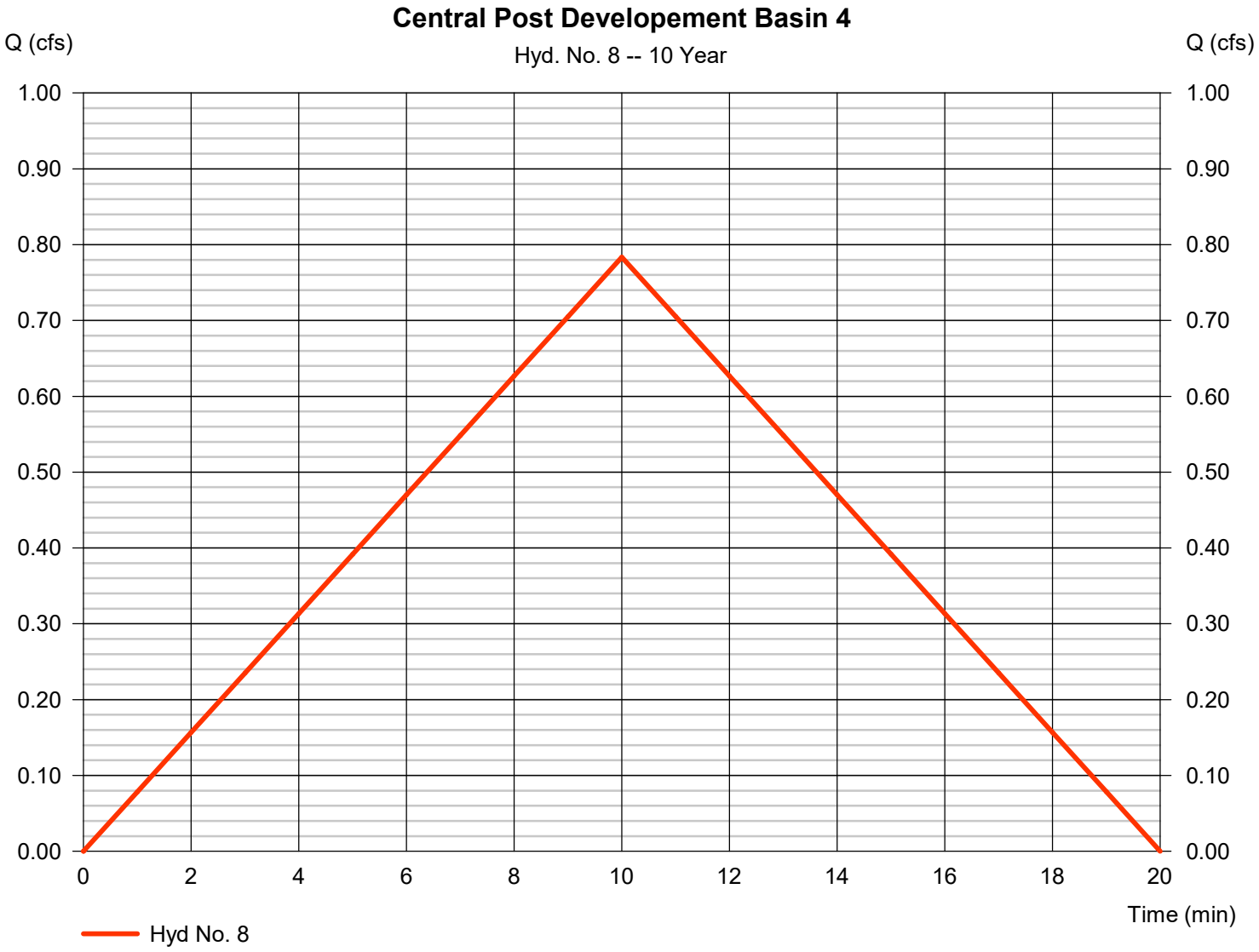
Hydrograph type	=	Rational	Peak discharge	=	0.571 cfs
Storm frequency	=	10 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	343 cuft
Drainage area	=	0.301 ac	Runoff coeff.	=	0.45
Intensity	=	4.219 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

Hydrograph Report

Hyd. No. 8

Central Post Developement Basin 4

Hydrograph type	= Rational	Peak discharge	= 0.784 cfs
Storm frequency	= 10 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 470 cuft
Drainage area	= 0.301 ac	Runoff coeff.	= 0.617
Intensity	= 4.219 in/hr	Tc by User	= 10.00 min
IDF Curve	= Sedona.IDF	Asc/Rec limb fact	= 1/1

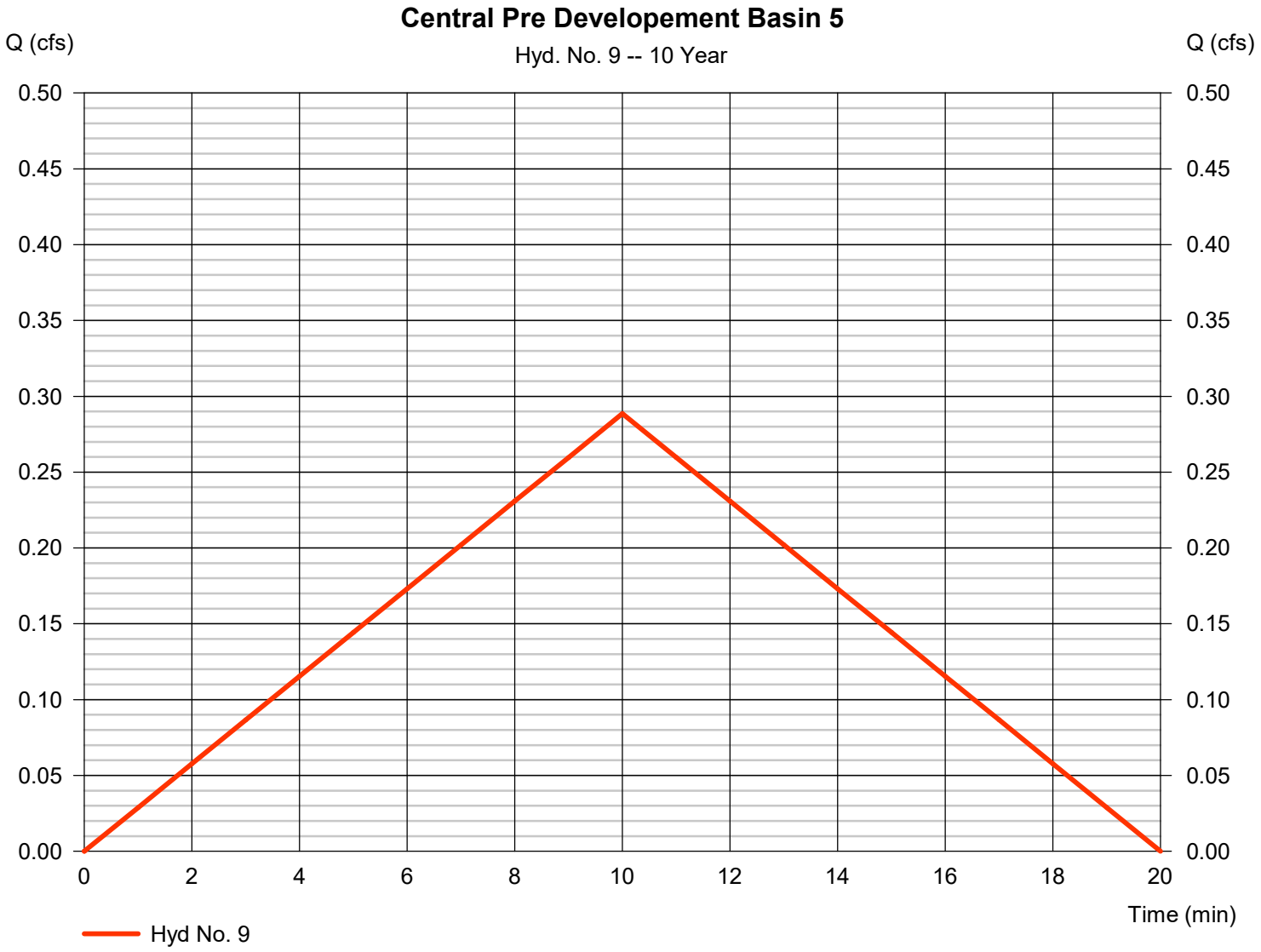


Hydrograph Report

Hyd. No. 9

Central Pre Developement Basin 5

Hydrograph type	=	Rational	Peak discharge	=	0.289 cfs
Storm frequency	=	10 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	173 cuft
Drainage area	=	0.152 ac	Runoff coeff.	=	0.45
Intensity	=	4.219 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

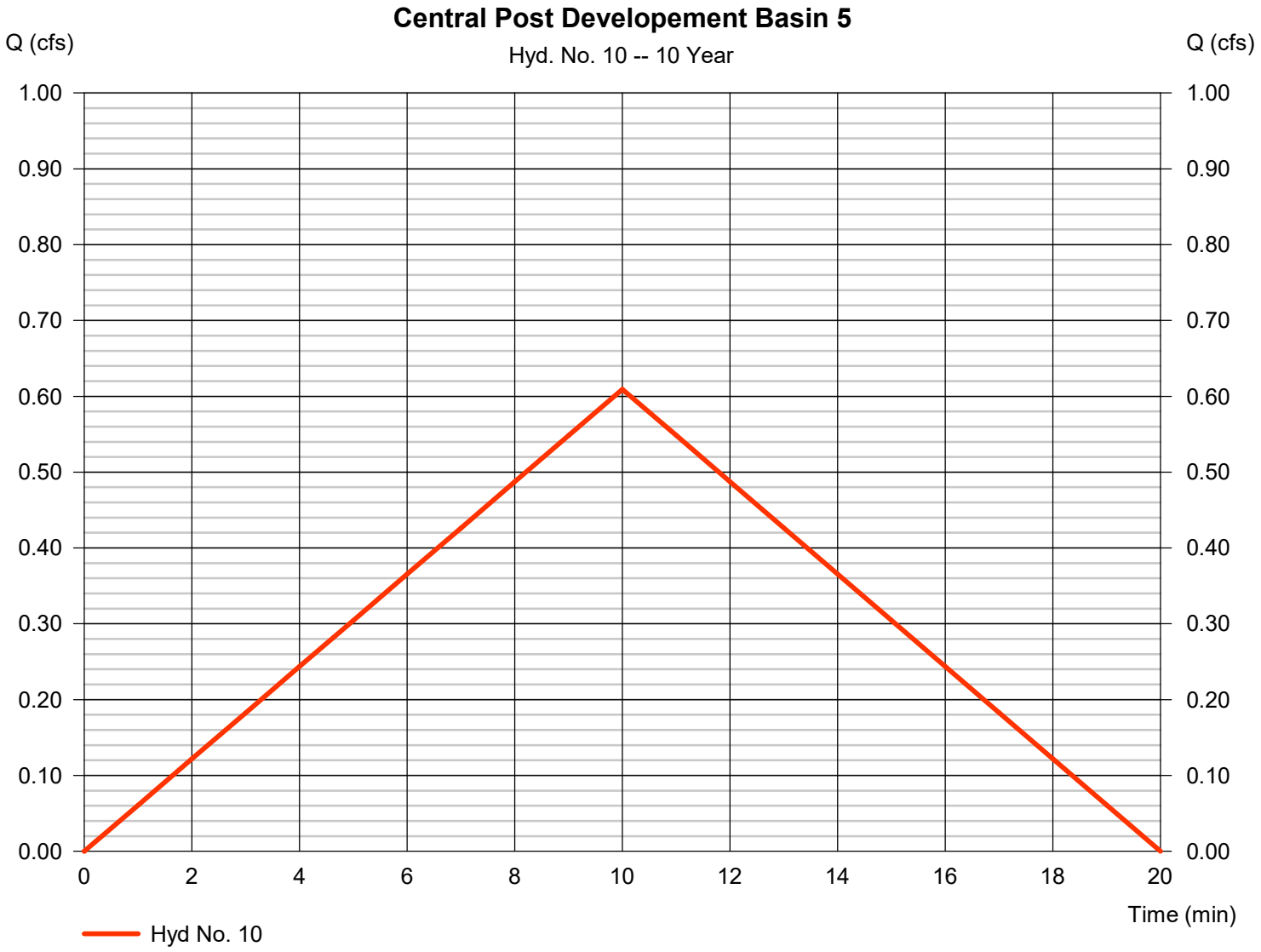


Hydrograph Report

Hyd. No. 10

Central Post Developement Basin 5

Hydrograph type	=	Rational	Peak discharge	=	0.609 cfs
Storm frequency	=	10 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	366 cuft
Drainage area	=	0.152 ac	Runoff coeff.	=	0.95
Intensity	=	4.219 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1



Hydrograph Report

Hyd. No. 11

Central Pre Developement Basin 6

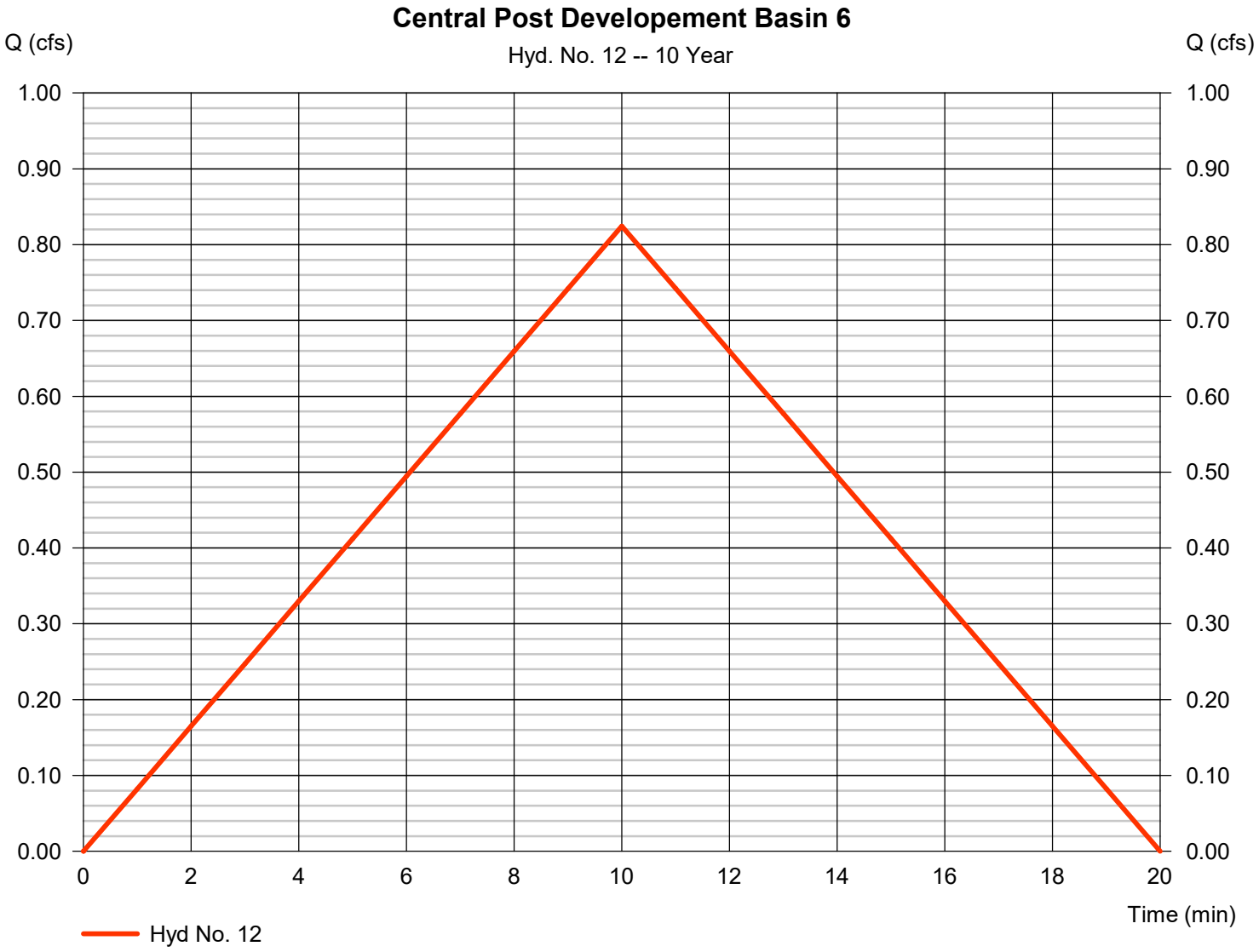
Hydrograph type	= Rational	Peak discharge	= 0.676 cfs
Storm frequency	= 10 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 406 cuft
Drainage area	= 0.356 ac	Runoff coeff.	= 0.45
Intensity	= 4.219 in/hr	Tc by User	= 10.00 min
IDF Curve	= Sedona.IDF	Asc/Rec limb fact	= 1/1

Hydrograph Report

Hyd. No. 12

Central Post Developement Basin 6

Hydrograph type	= Rational	Peak discharge	= 0.825 cfs
Storm frequency	= 10 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 495 cuft
Drainage area	= 0.356 ac	Runoff coeff.	= 0.549
Intensity	= 4.219 in/hr	Tc by User	= 10.00 min
IDF Curve	= Sedona.IDF	Asc/Rec limb fact	= 1/1

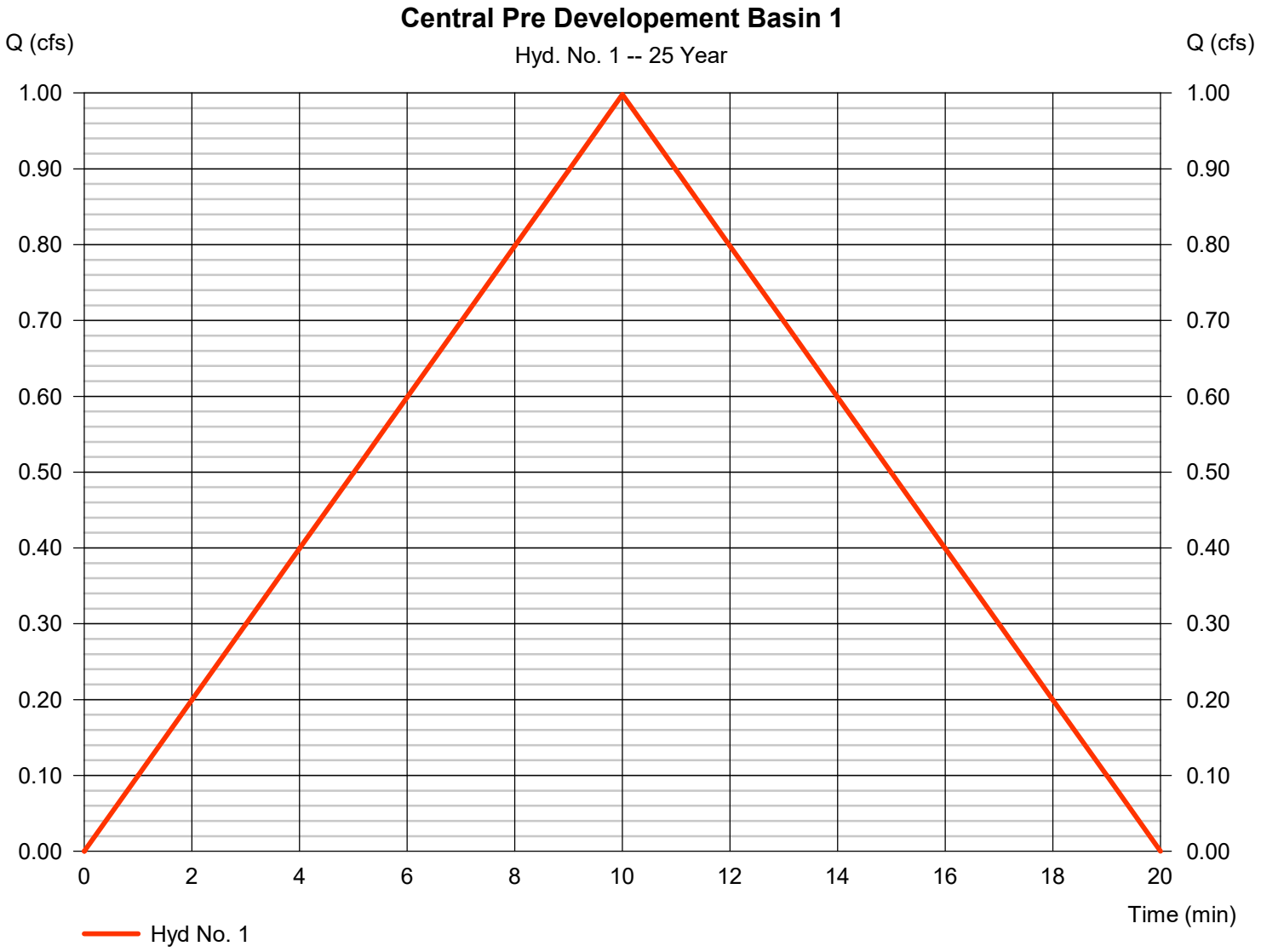


Hydrograph Report

Hyd. No. 1

Central Pre Developement Basin 1

Hydrograph type	= Rational	Peak discharge	= 0.998 cfs
Storm frequency	= 25 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 599 cuft
Drainage area	= 0.420 ac	Runoff coeff.	= 0.45
Intensity	= 5.280 in/hr	Tc by User	= 10.00 min
IDF Curve	= Sedona.IDF	Asc/Rec limb fact	= 1/1

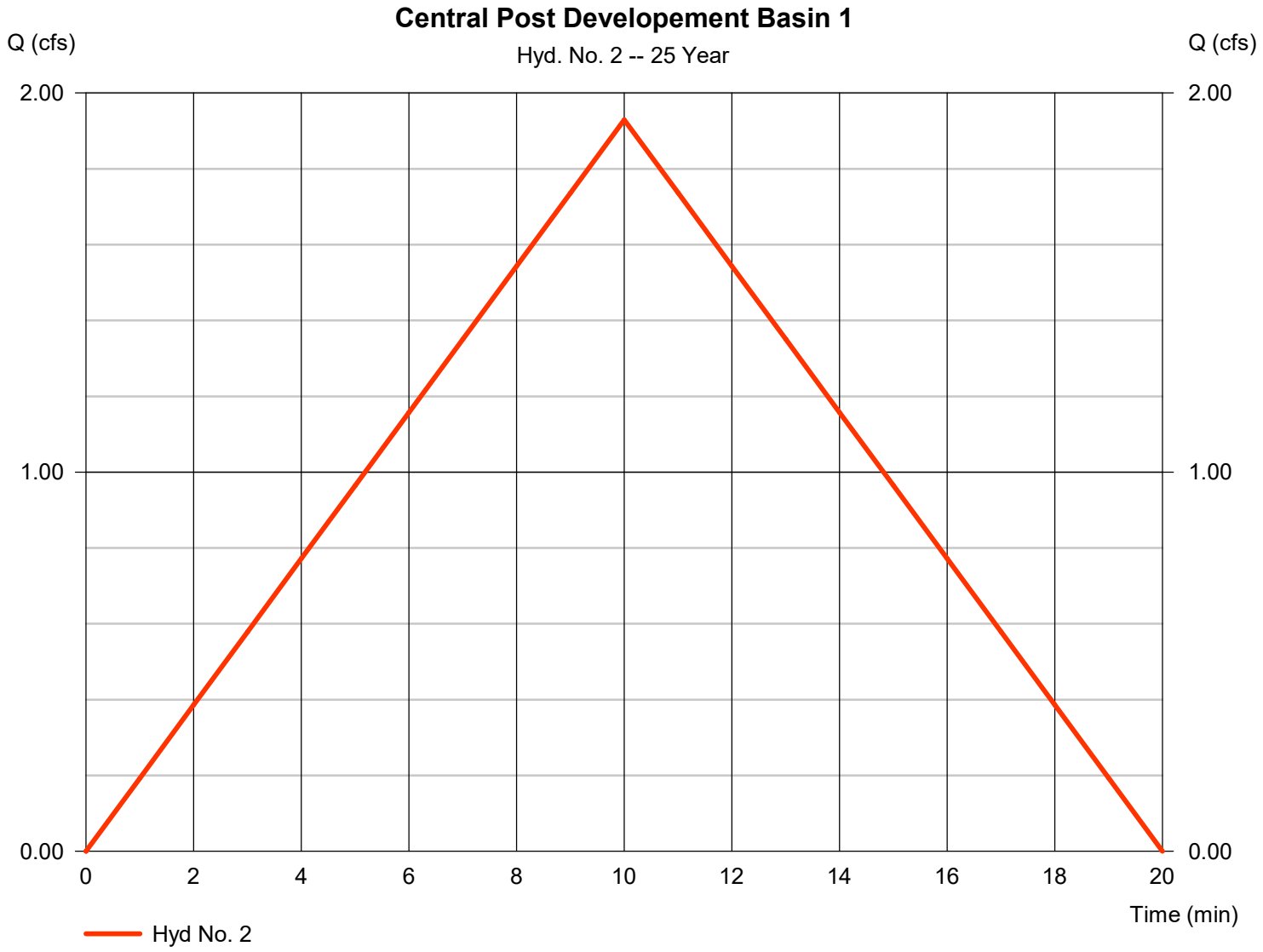


Hydrograph Report

Hyd. No. 2

Central Post Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	1.929 cfs
Storm frequency	=	25 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	1,158 cuft
Drainage area	=	0.420 ac	Runoff coeff.	=	0.87
Intensity	=	5.280 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1



Hydrograph Report

Hyd. No. 3

Central Pre Developement Basin 2

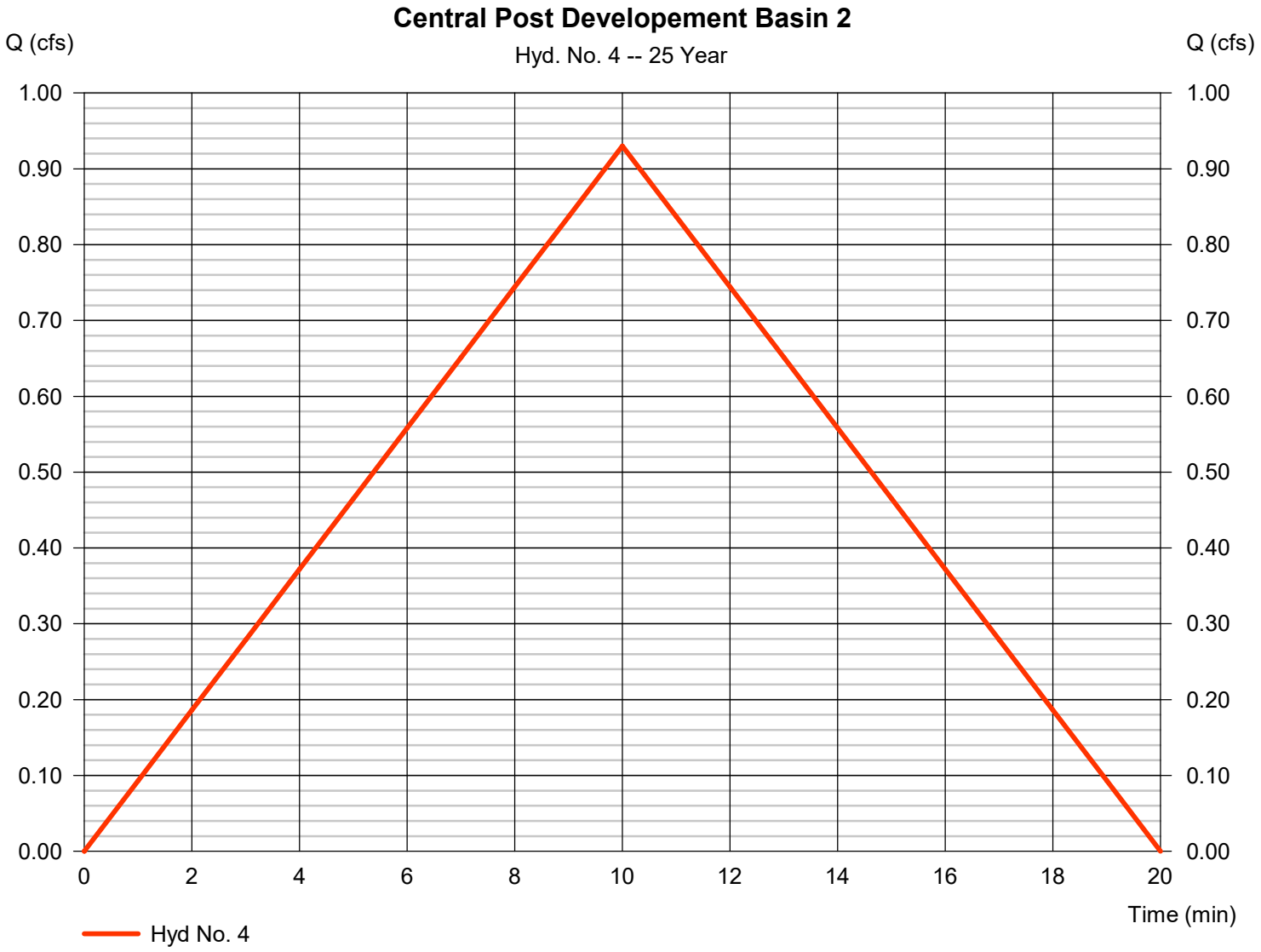
Hydrograph type	=	Rational	Peak discharge	=	0.573 cfs
Storm frequency	=	25 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	344 cuft
Drainage area	=	0.241 ac	Runoff coeff.	=	0.45
Intensity	=	5.280 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

Hydrograph Report

Hyd. No. 4

Central Post Developement Basin 2

Hydrograph type	=	Rational	Peak discharge	=	0.930 cfs
Storm frequency	=	25 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	558 cuft
Drainage area	=	0.241 ac	Runoff coeff.	=	0.731
Intensity	=	5.280 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

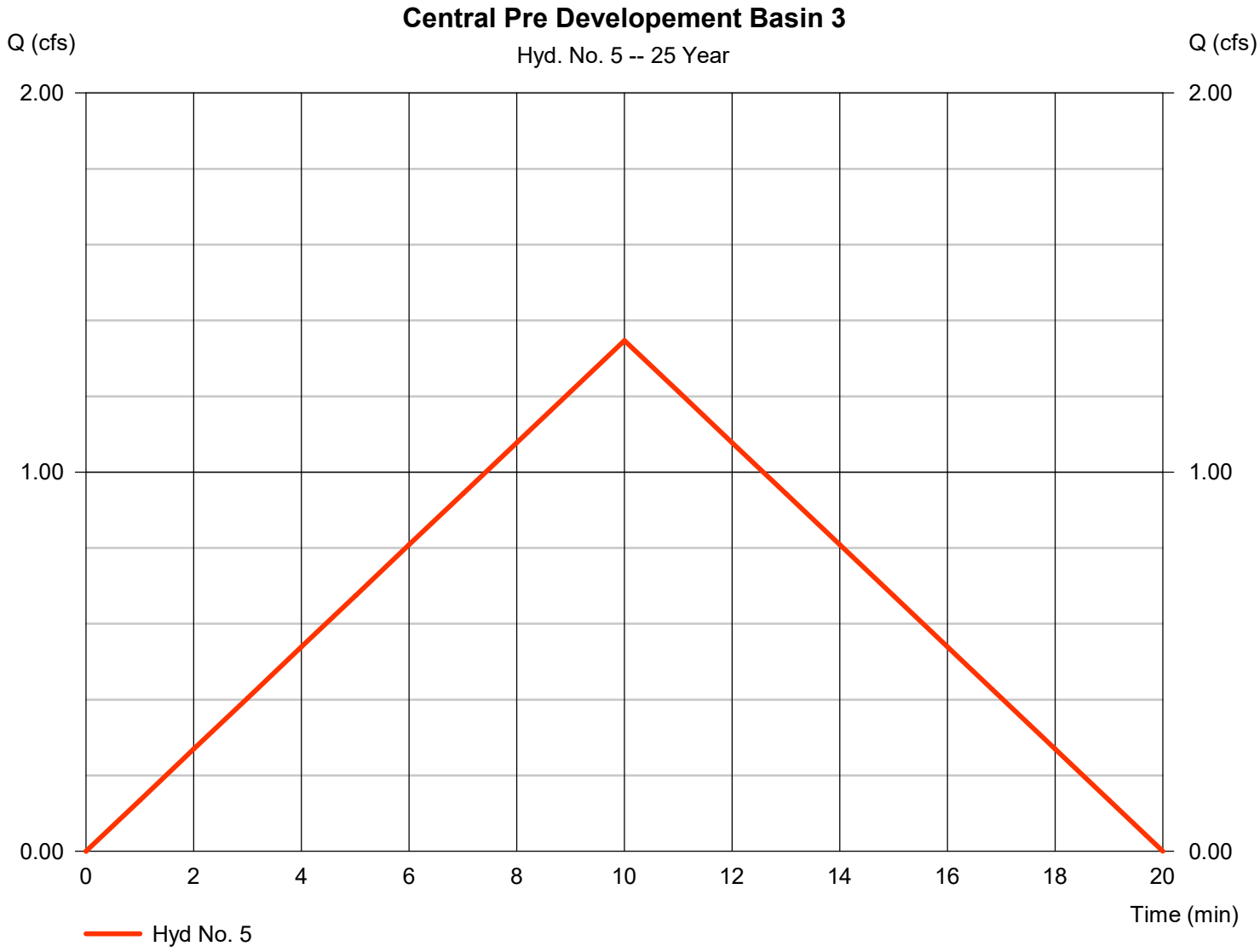


Hydrograph Report

Hyd. No. 5

Central Pre Developement Basin 3

Hydrograph type	=	Rational	Peak discharge	=	1.347 cfs
Storm frequency	=	25 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	808 cuft
Drainage area	=	0.567 ac	Runoff coeff.	=	0.45
Intensity	=	5.280 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

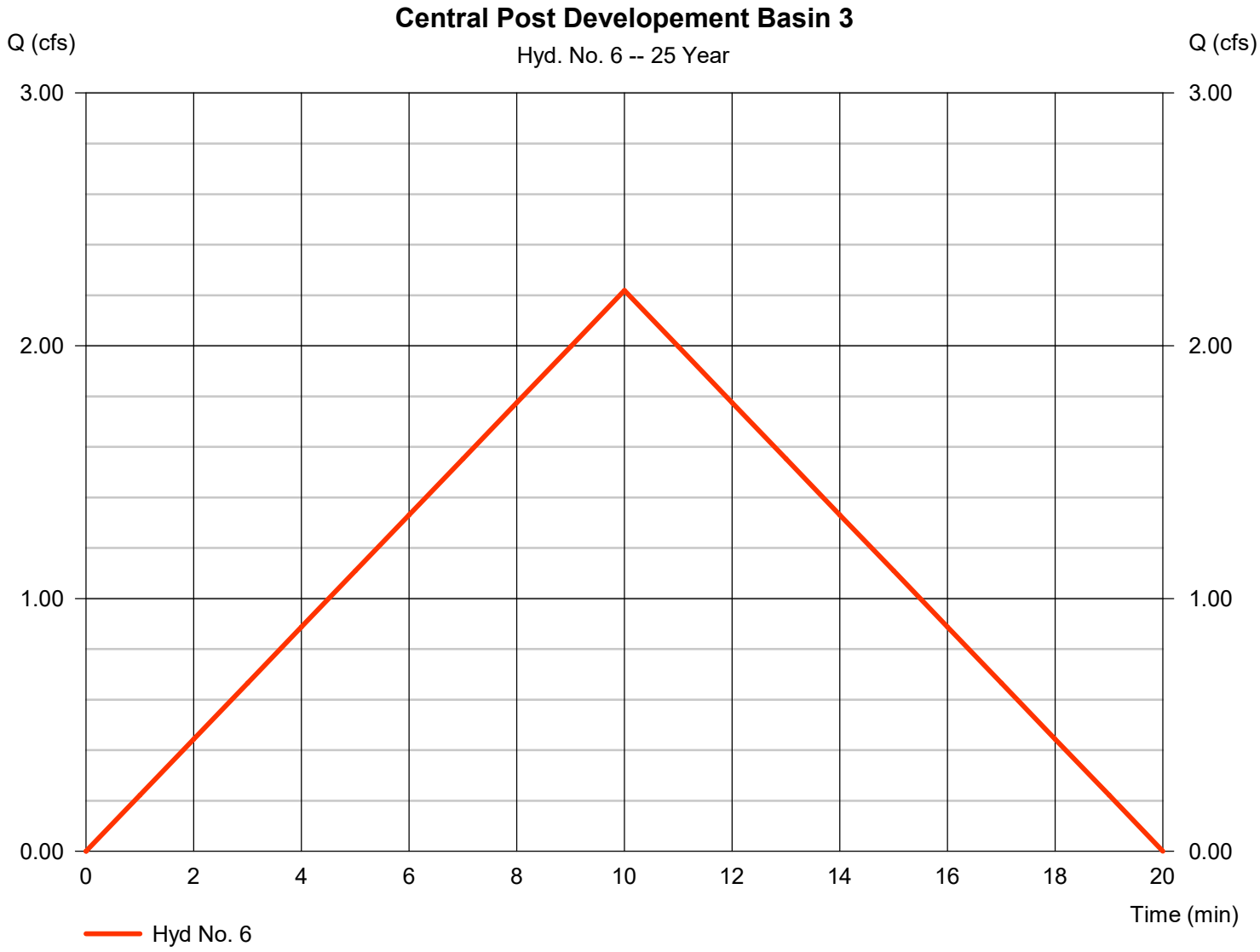


Hydrograph Report

Hyd. No. 6

Central Post Developement Basin 3

Hydrograph type	=	Rational	Peak discharge	=	2.218 cfs
Storm frequency	=	25 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	1,331 cuft
Drainage area	=	0.567 ac	Runoff coeff.	=	0.741
Intensity	=	5.280 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

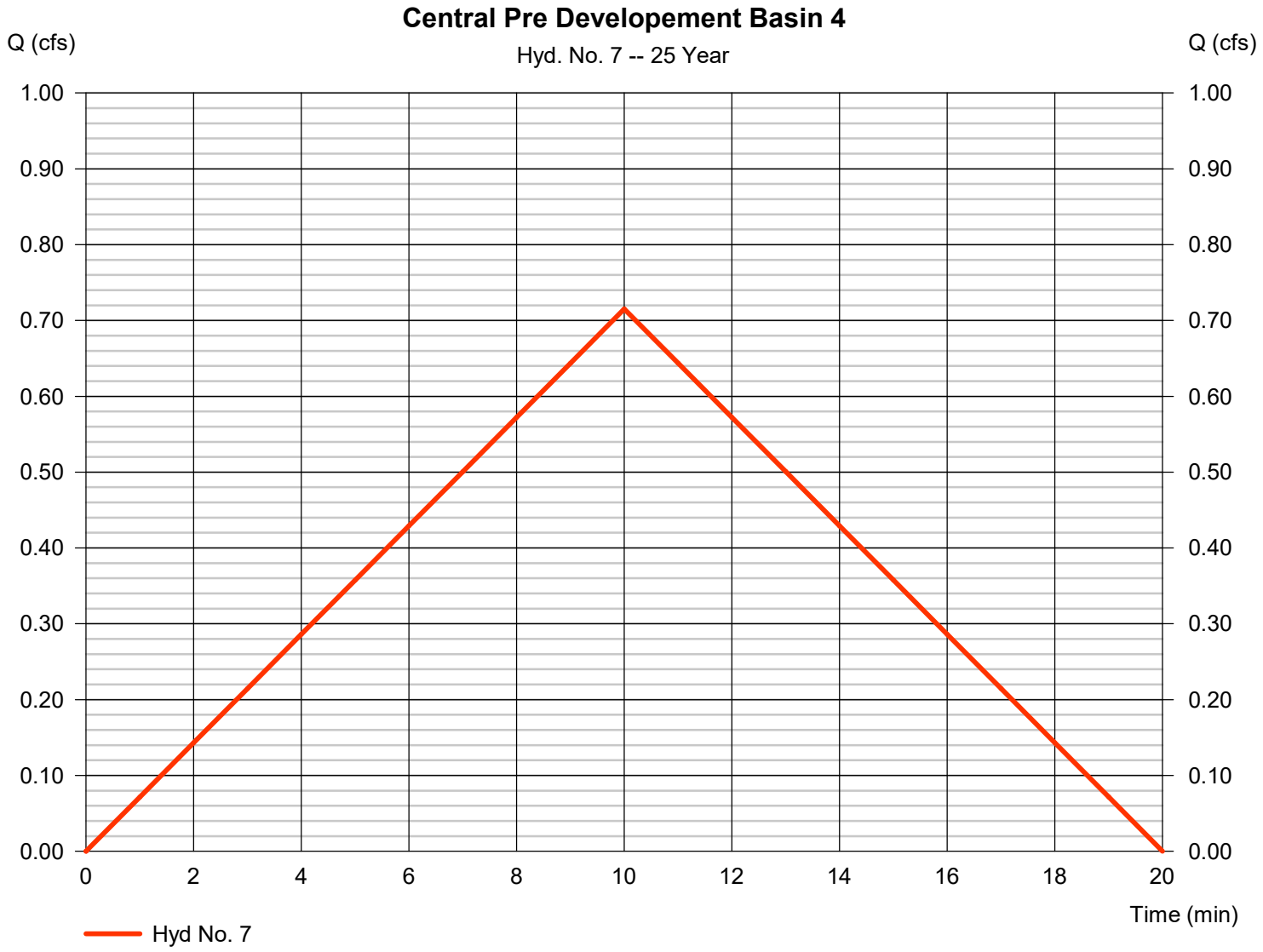


Hydrograph Report

Hyd. No. 7

Central Pre Developement Basin 4

Hydrograph type	=	Rational	Peak discharge	=	0.715 cfs
Storm frequency	=	25 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	429 cuft
Drainage area	=	0.301 ac	Runoff coeff.	=	0.45
Intensity	=	5.280 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

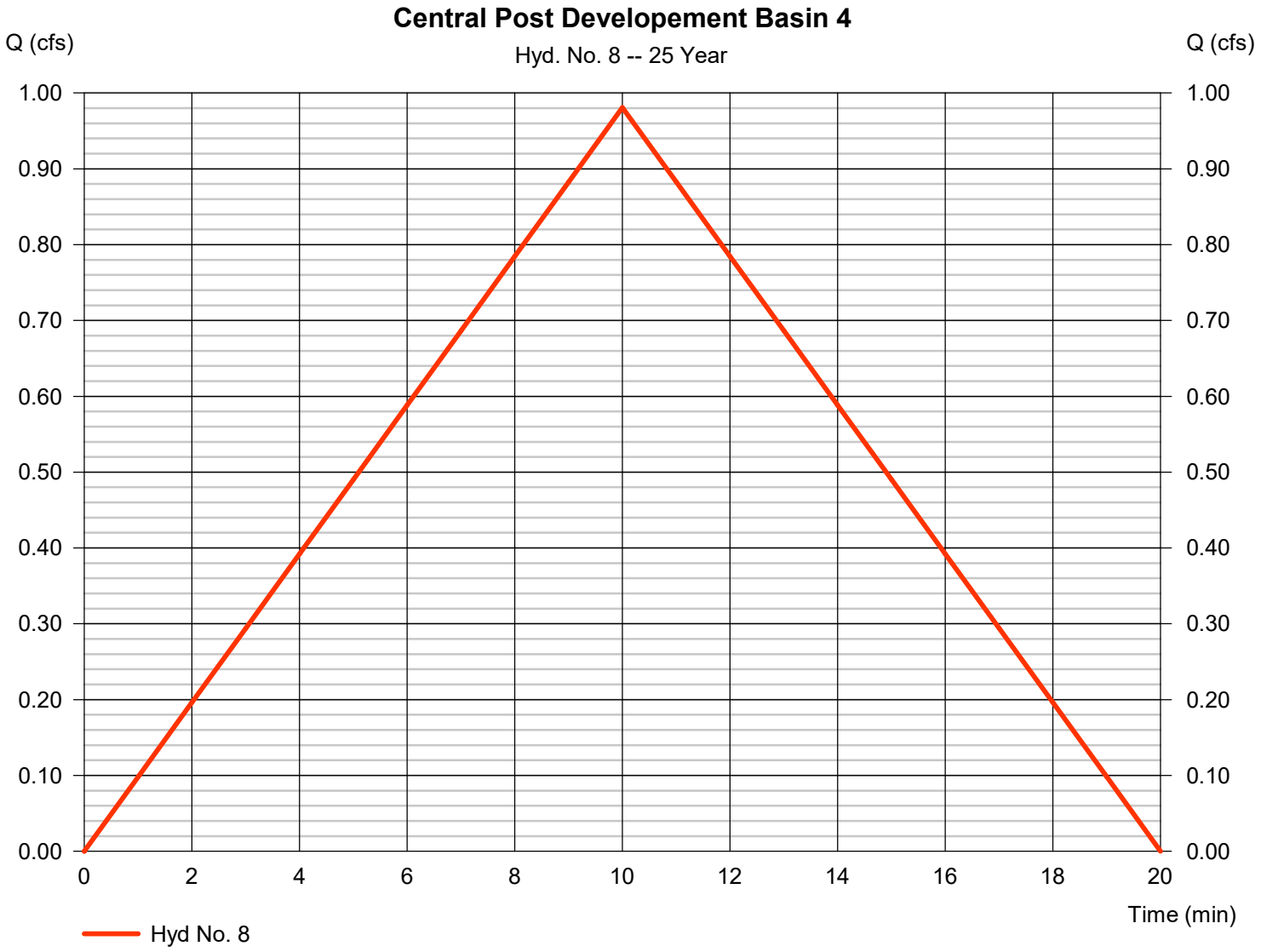


Hydrograph Report

Hyd. No. 8

Central Post Developement Basin 4

Hydrograph type	=	Rational	Peak discharge	=	0.981 cfs
Storm frequency	=	25 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	588 cuft
Drainage area	=	0.301 ac	Runoff coeff.	=	0.617
Intensity	=	5.280 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1



Hydrograph Report

Hyd. No. 9

Central Pre Developement Basin 5

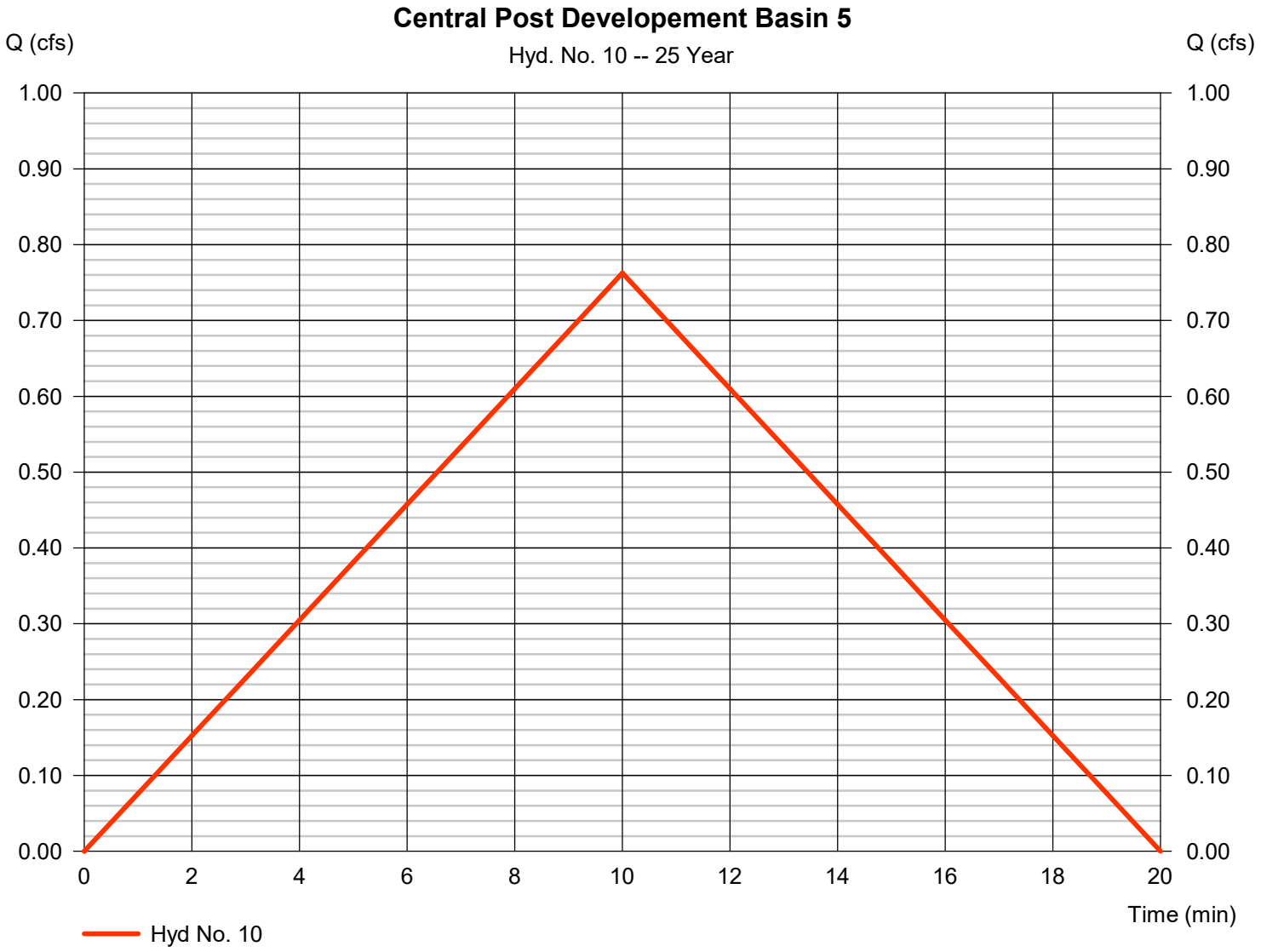
Hydrograph type	=	Rational	Peak discharge	=	0.361 cfs
Storm frequency	=	25 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	217 cuft
Drainage area	=	0.152 ac	Runoff coeff.	=	0.45
Intensity	=	5.280 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

Hydrograph Report

Hyd. No. 10

Central Post Developement Basin 5

Hydrograph type	=	Rational	Peak discharge	=	0.762 cfs
Storm frequency	=	25 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	457 cuft
Drainage area	=	0.152 ac	Runoff coeff.	=	0.95
Intensity	=	5.280 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1



Hydrograph Report

Hyd. No. 11

Central Pre Developement Basin 6

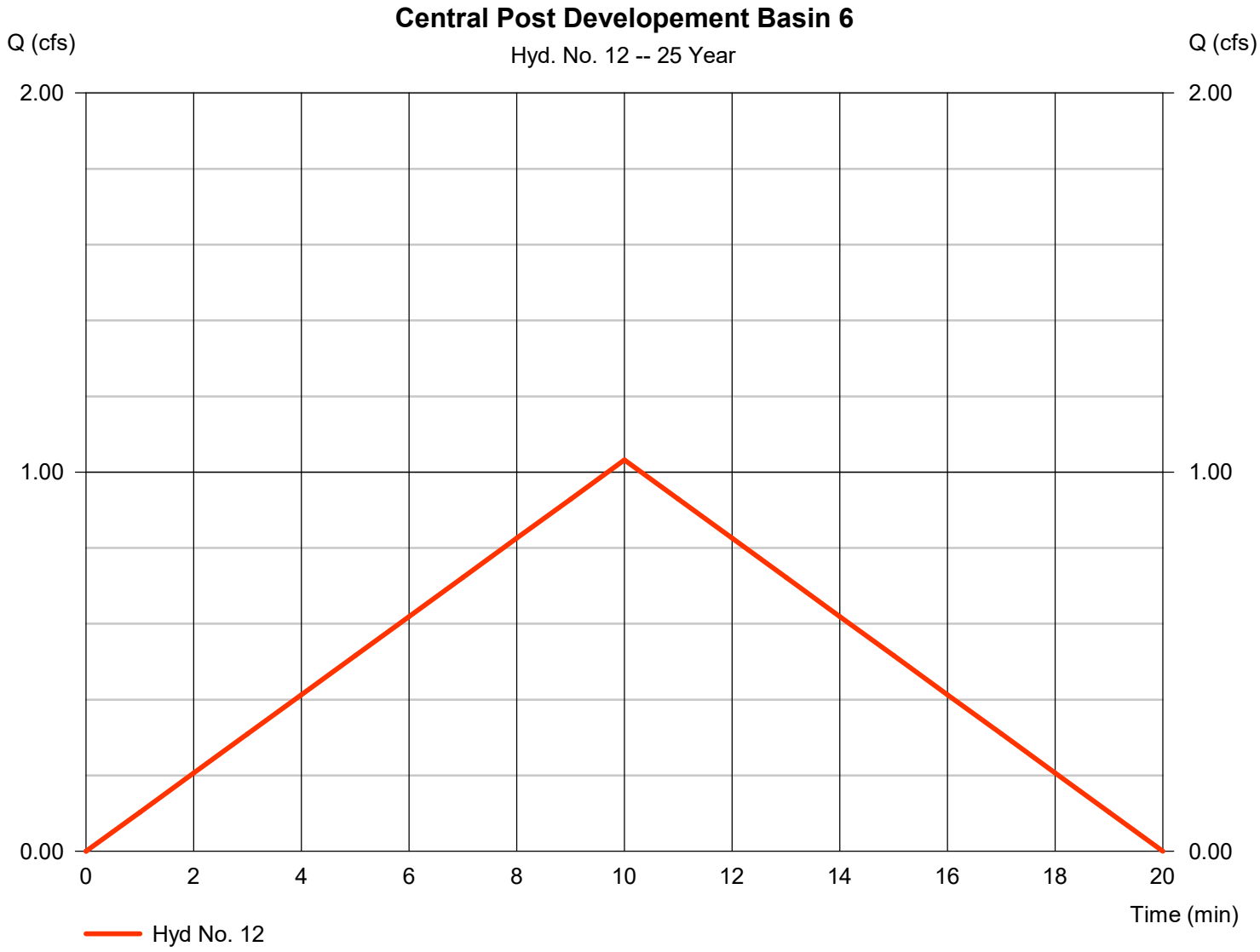
Hydrograph type	=	Rational	Peak discharge	=	0.846 cfs
Storm frequency	=	25 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	508 cuft
Drainage area	=	0.356 ac	Runoff coeff.	=	0.45
Intensity	=	5.280 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

Hydrograph Report

Hyd. No. 12

Central Post Developement Basin 6

Hydrograph type	=	Rational	Peak discharge	=	1.032 cfs
Storm frequency	=	25 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	619 cuft
Drainage area	=	0.356 ac	Runoff coeff.	=	0.549
Intensity	=	5.280 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

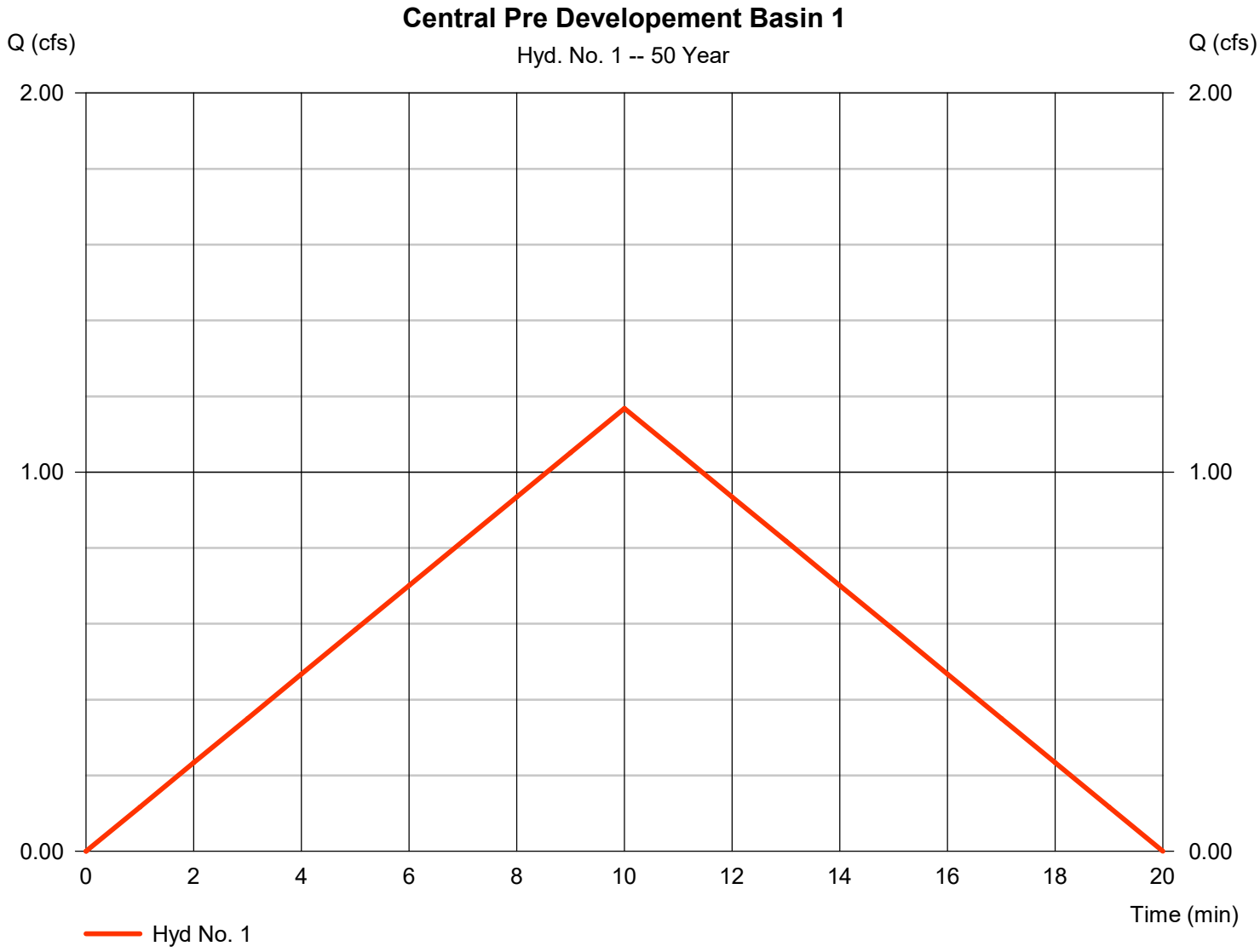


Hydrograph Report

Hyd. No. 1

Central Pre Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	1.168 cfs
Storm frequency	=	50 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	701 cuft
Drainage area	=	0.420 ac	Runoff coeff.	=	0.45
Intensity	=	6.182 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

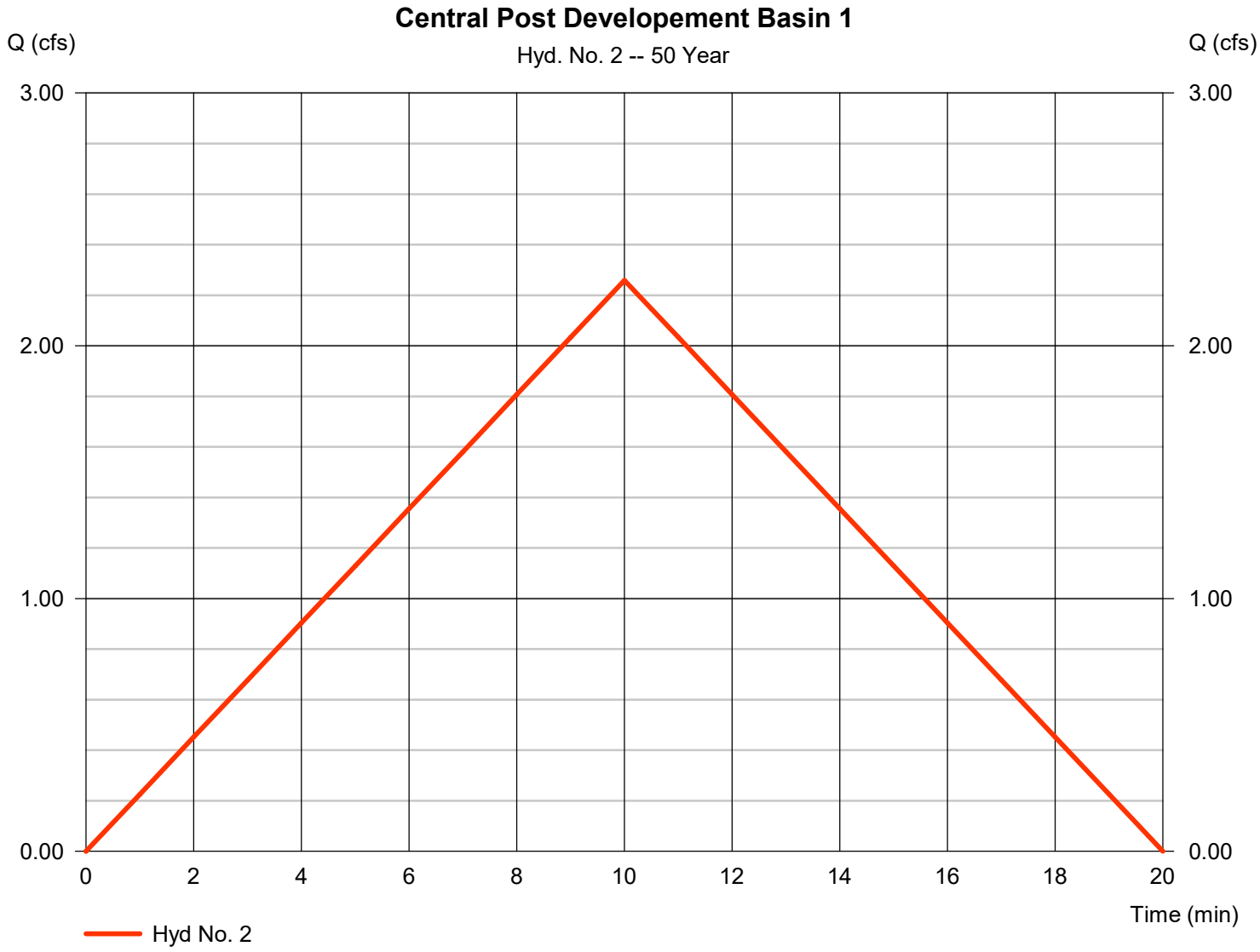


Hydrograph Report

Hyd. No. 2

Central Post Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	2.259 cfs
Storm frequency	=	50 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	1,355 cuft
Drainage area	=	0.420 ac	Runoff coeff.	=	0.87
Intensity	=	6.182 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

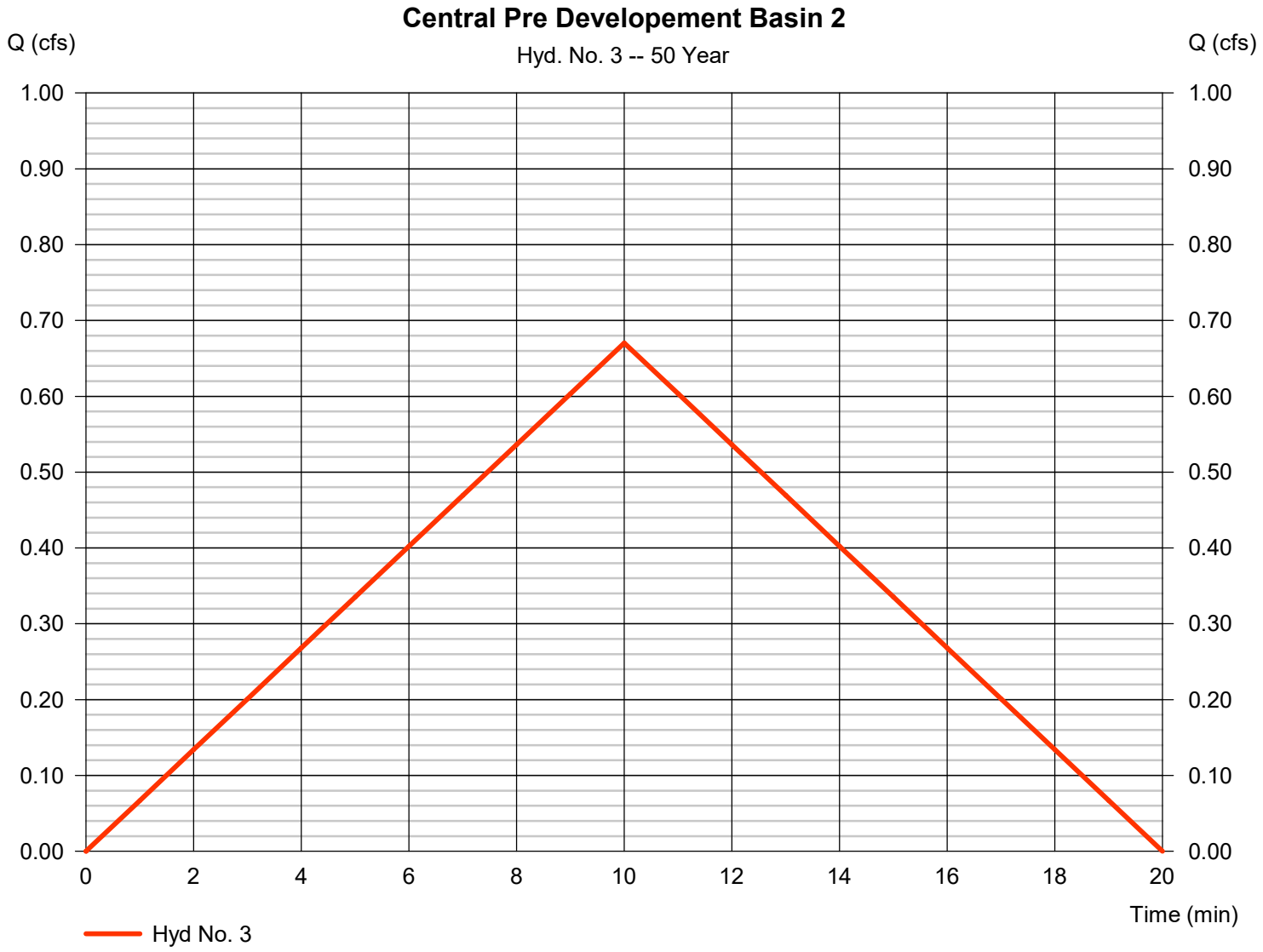


Hydrograph Report

Hyd. No. 3

Central Pre Developement Basin 2

Hydrograph type	=	Rational	Peak discharge	=	0.670 cfs
Storm frequency	=	50 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	402 cuft
Drainage area	=	0.241 ac	Runoff coeff.	=	0.45
Intensity	=	6.182 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

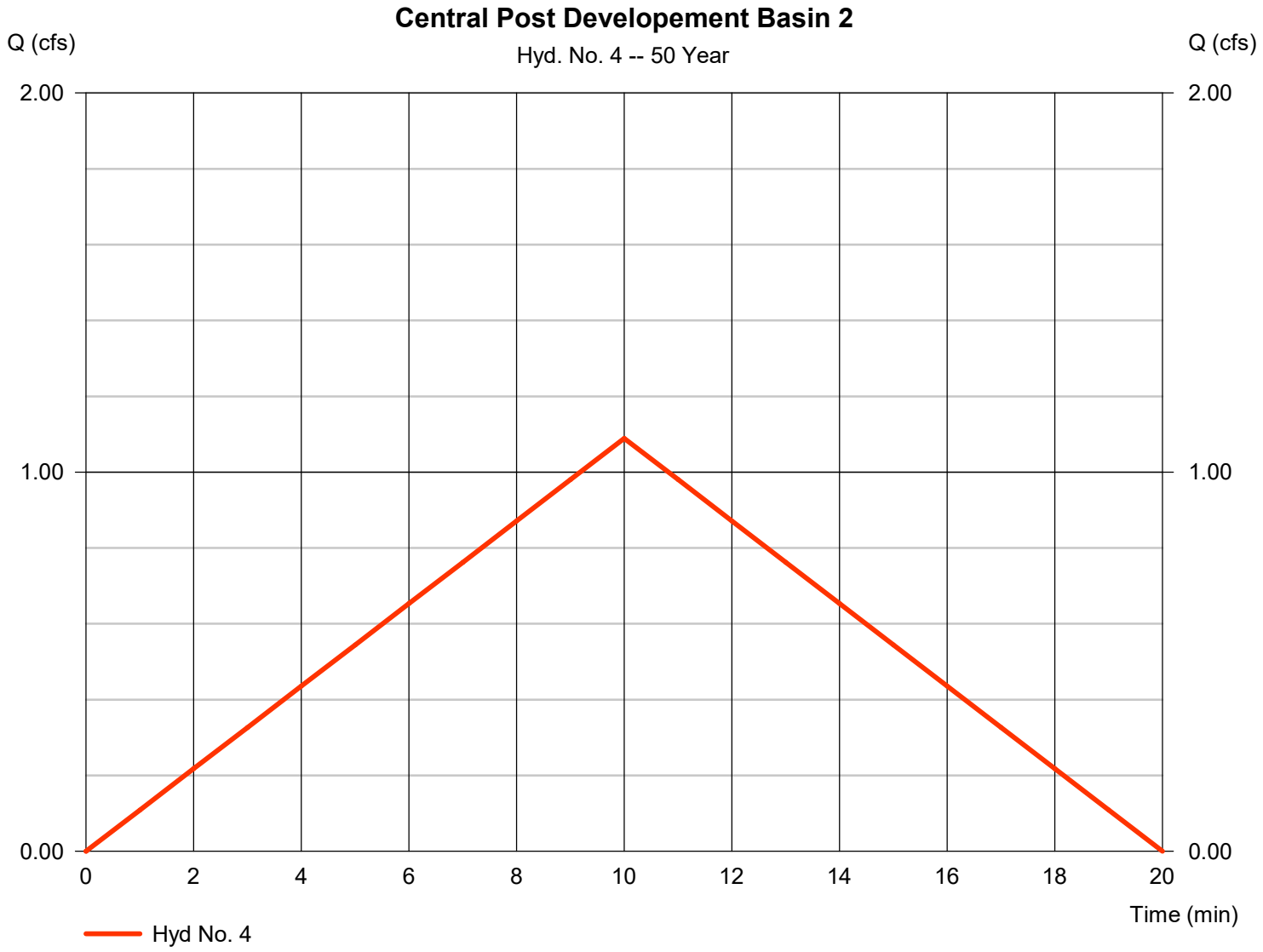


Hydrograph Report

Hyd. No. 4

Central Post Developement Basin 2

Hydrograph type	=	Rational	Peak discharge	=	1.089 cfs
Storm frequency	=	50 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	653 cuft
Drainage area	=	0.241 ac	Runoff coeff.	=	0.731
Intensity	=	6.182 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

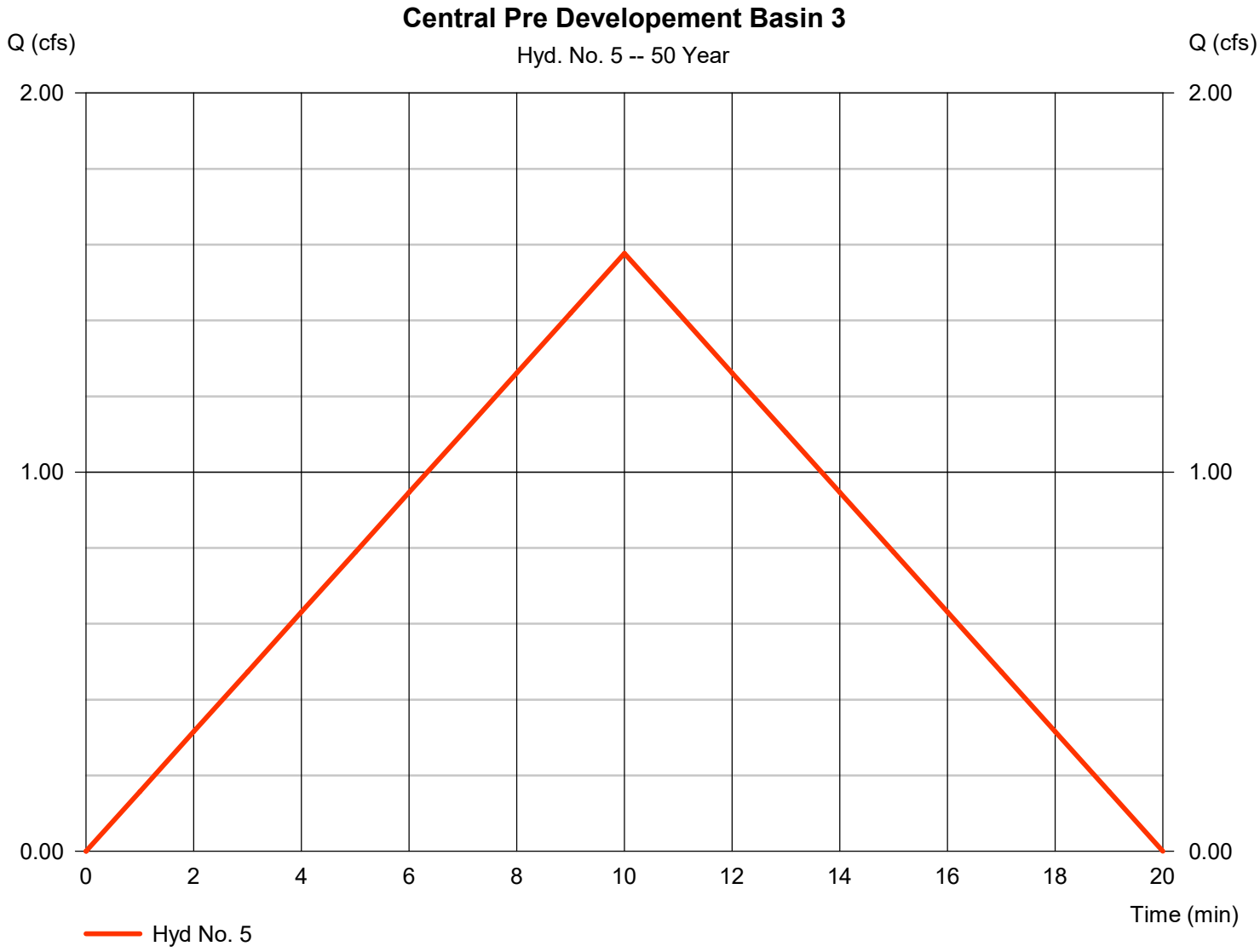


Hydrograph Report

Hyd. No. 5

Central Pre Developement Basin 3

Hydrograph type	=	Rational	Peak discharge	=	1.577 cfs
Storm frequency	=	50 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	946 cuft
Drainage area	=	0.567 ac	Runoff coeff.	=	0.45
Intensity	=	6.182 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

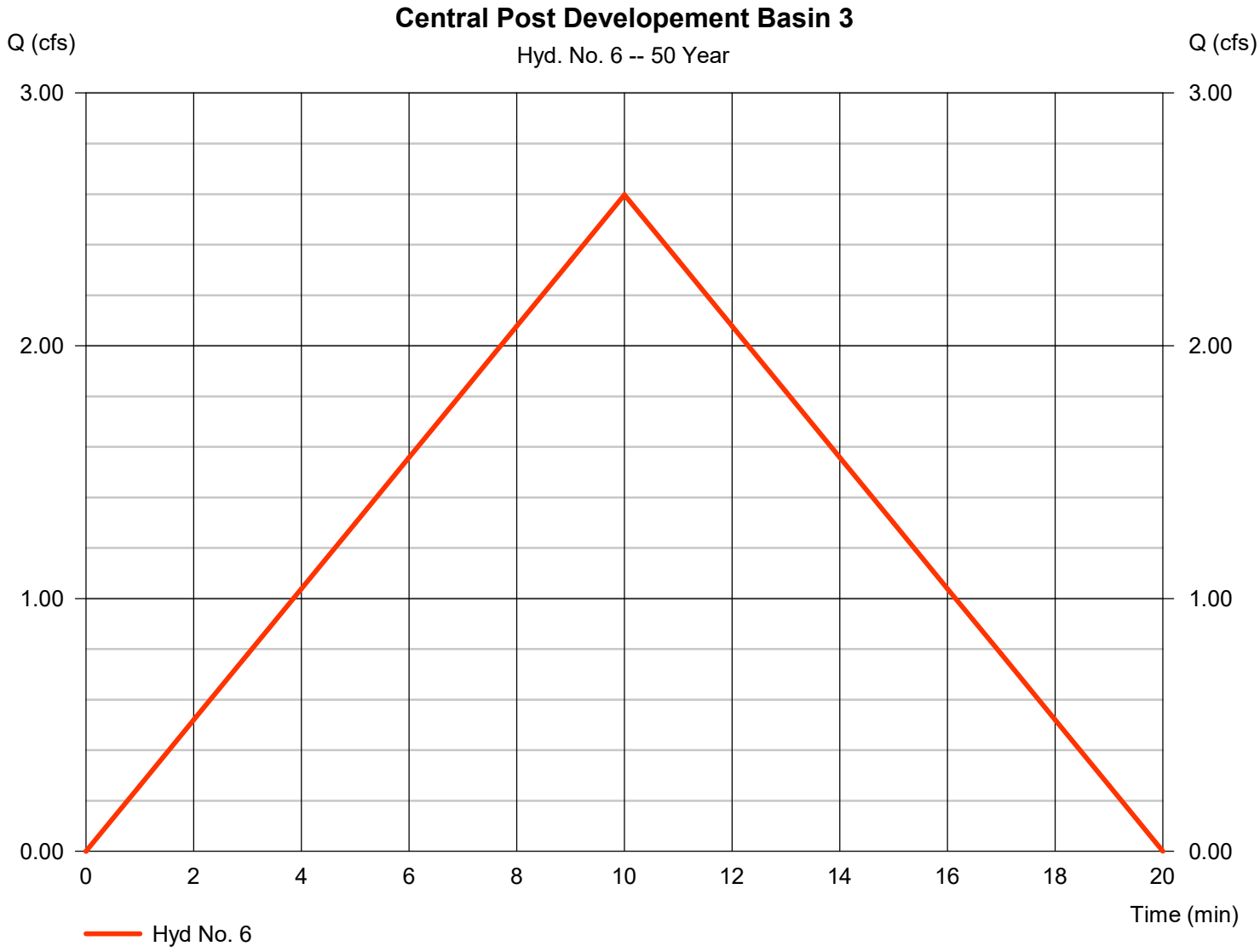


Hydrograph Report

Hyd. No. 6

Central Post Developement Basin 3

Hydrograph type	=	Rational	Peak discharge	=	2.597 cfs
Storm frequency	=	50 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	1,558 cuft
Drainage area	=	0.567 ac	Runoff coeff.	=	0.741
Intensity	=	6.182 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

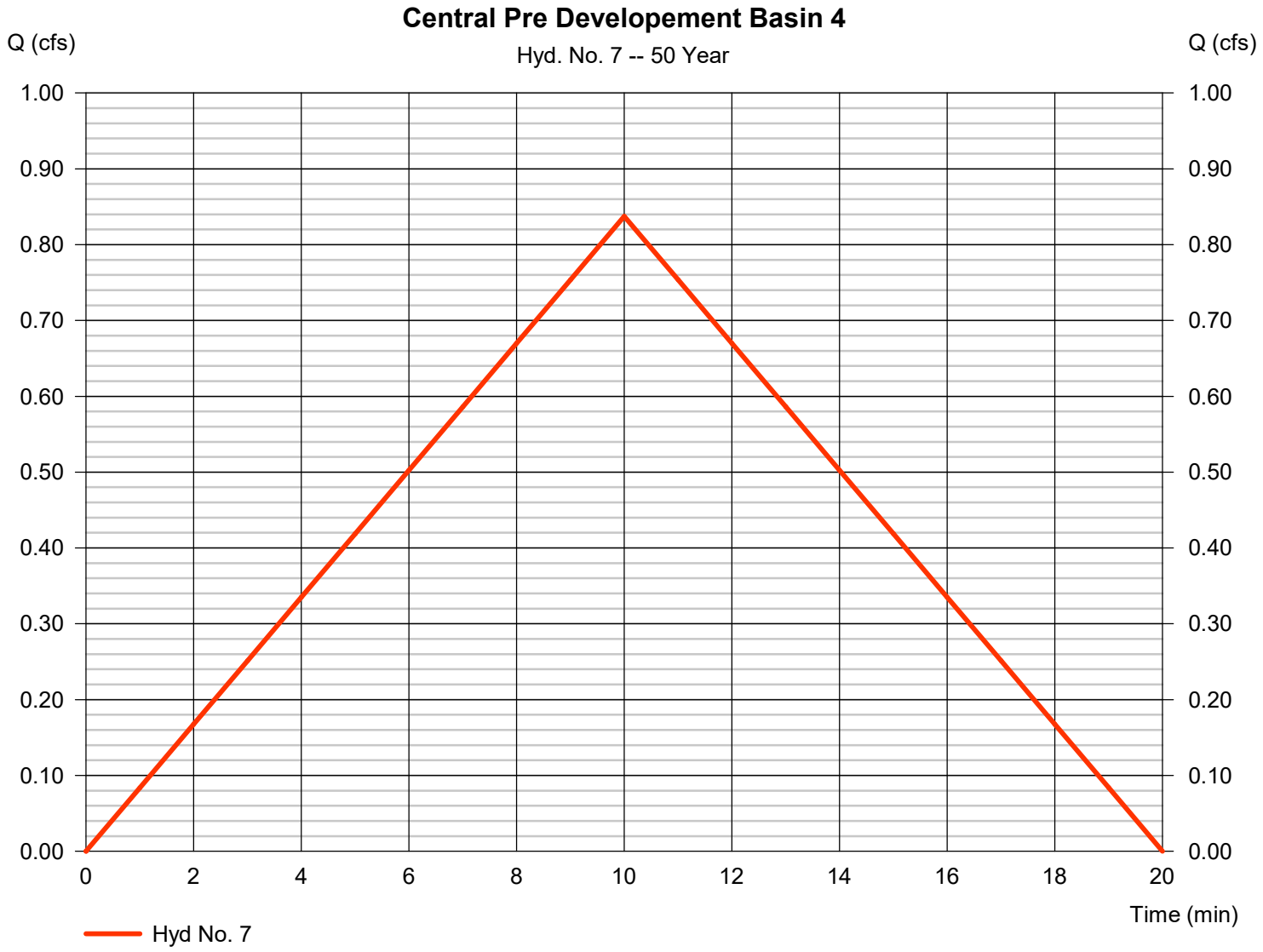


Hydrograph Report

Hyd. No. 7

Central Pre Developement Basin 4

Hydrograph type	=	Rational	Peak discharge	=	0.837 cfs
Storm frequency	=	50 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	502 cuft
Drainage area	=	0.301 ac	Runoff coeff.	=	0.45
Intensity	=	6.182 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

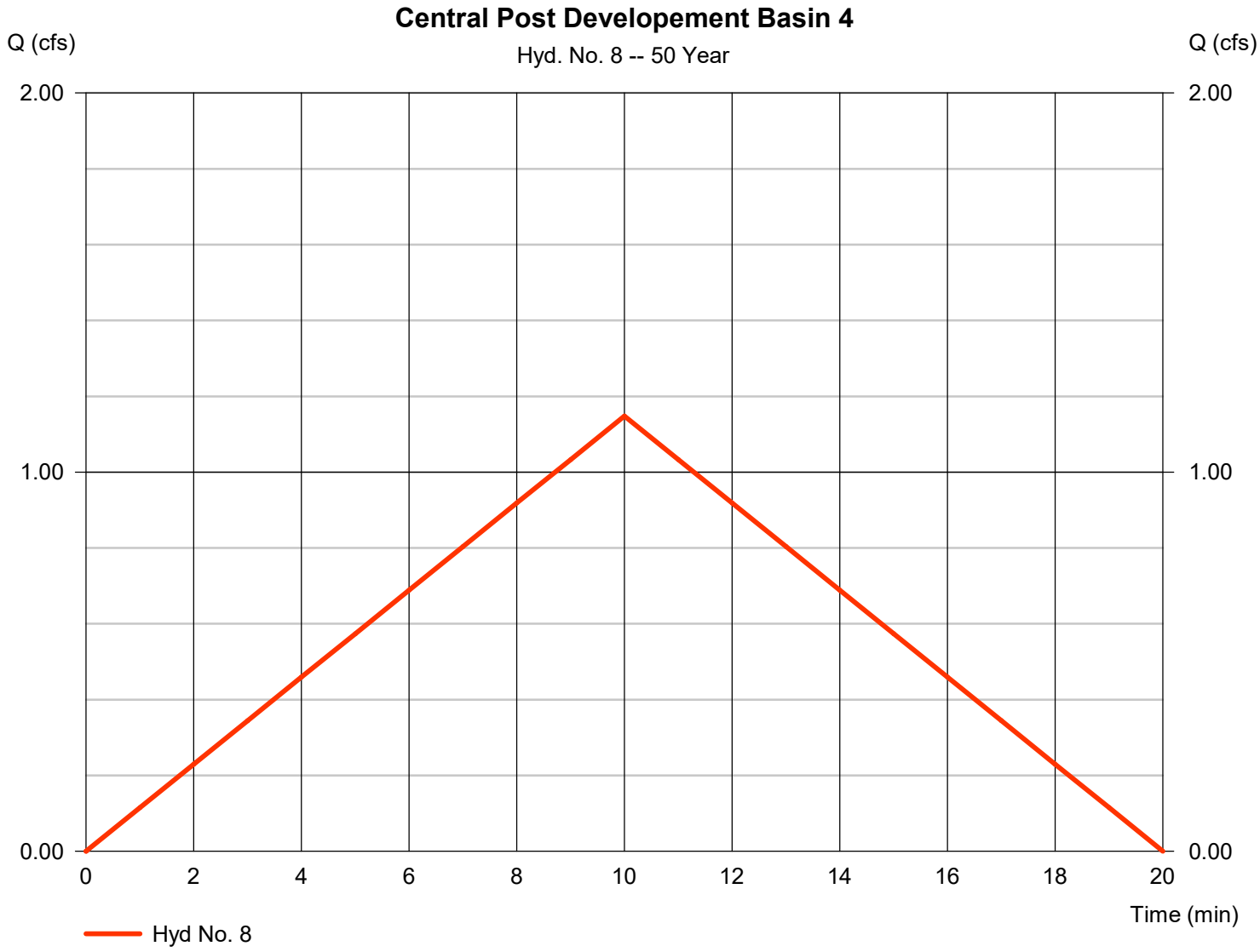


Hydrograph Report

Hyd. No. 8

Central Post Developement Basin 4

Hydrograph type	=	Rational	Peak discharge	=	1.148 cfs
Storm frequency	=	50 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	689 cuft
Drainage area	=	0.301 ac	Runoff coeff.	=	0.617
Intensity	=	6.182 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

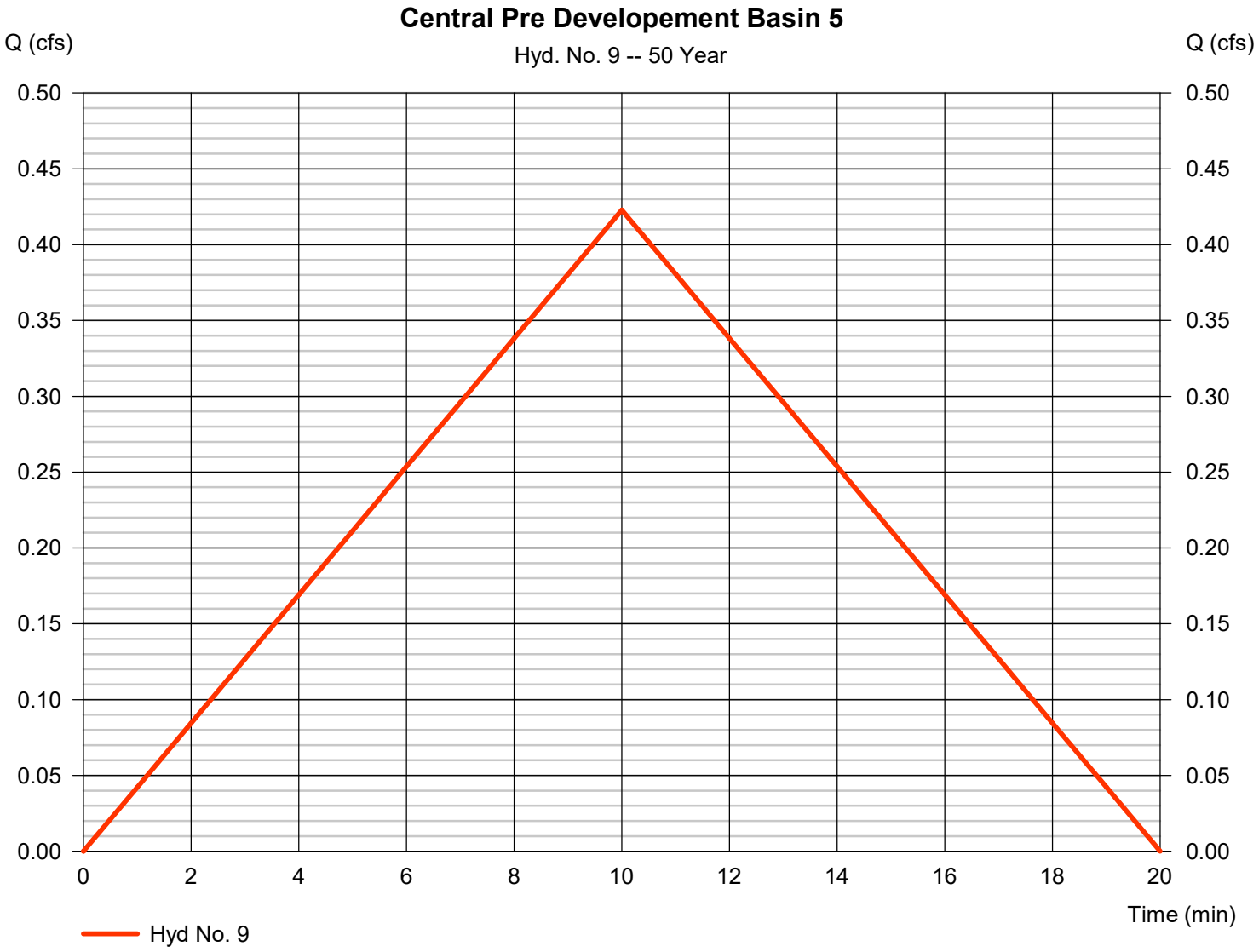


Hydrograph Report

Hyd. No. 9

Central Pre Developement Basin 5

Hydrograph type	=	Rational	Peak discharge	=	0.423 cfs
Storm frequency	=	50 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	254 cuft
Drainage area	=	0.152 ac	Runoff coeff.	=	0.45
Intensity	=	6.182 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

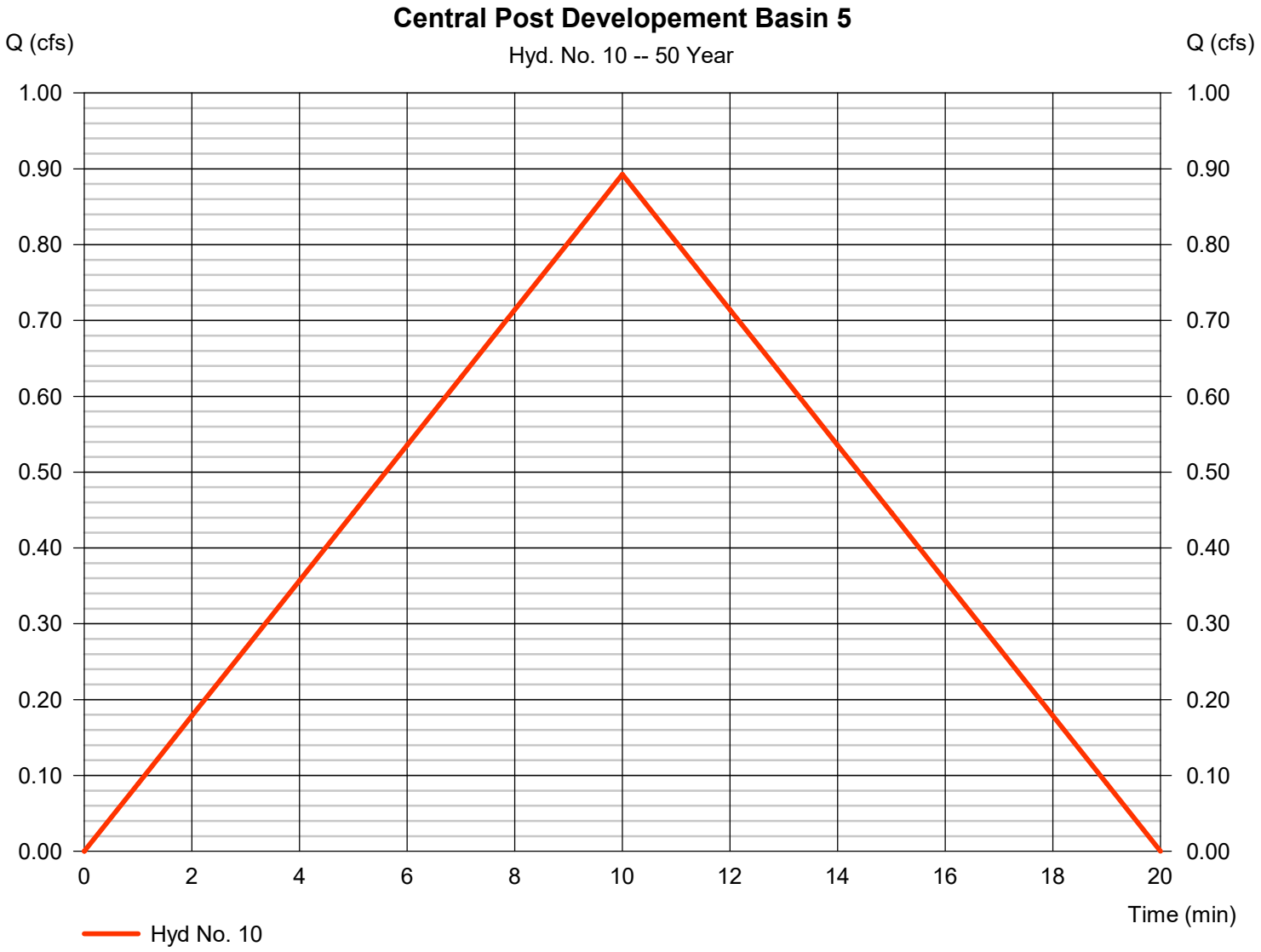


Hydrograph Report

Hyd. No. 10

Central Post Developement Basin 5

Hydrograph type	=	Rational	Peak discharge	=	0.893 cfs
Storm frequency	=	50 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	536 cuft
Drainage area	=	0.152 ac	Runoff coeff.	=	0.95
Intensity	=	6.182 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

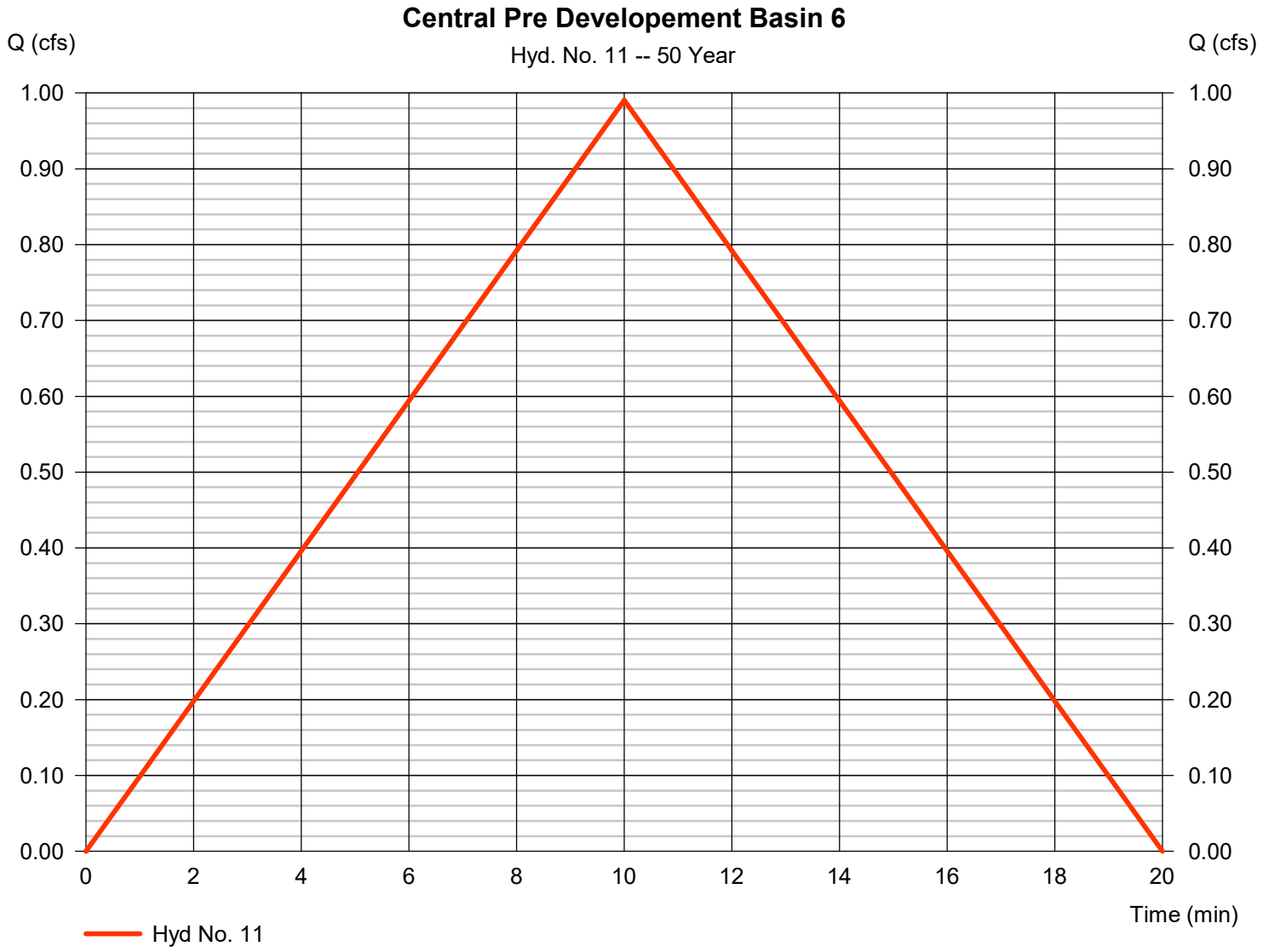


Hydrograph Report

Hyd. No. 11

Central Pre Developement Basin 6

Hydrograph type	=	Rational	Peak discharge	=	0.990 cfs
Storm frequency	=	50 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	594 cuft
Drainage area	=	0.356 ac	Runoff coeff.	=	0.45
Intensity	=	6.182 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

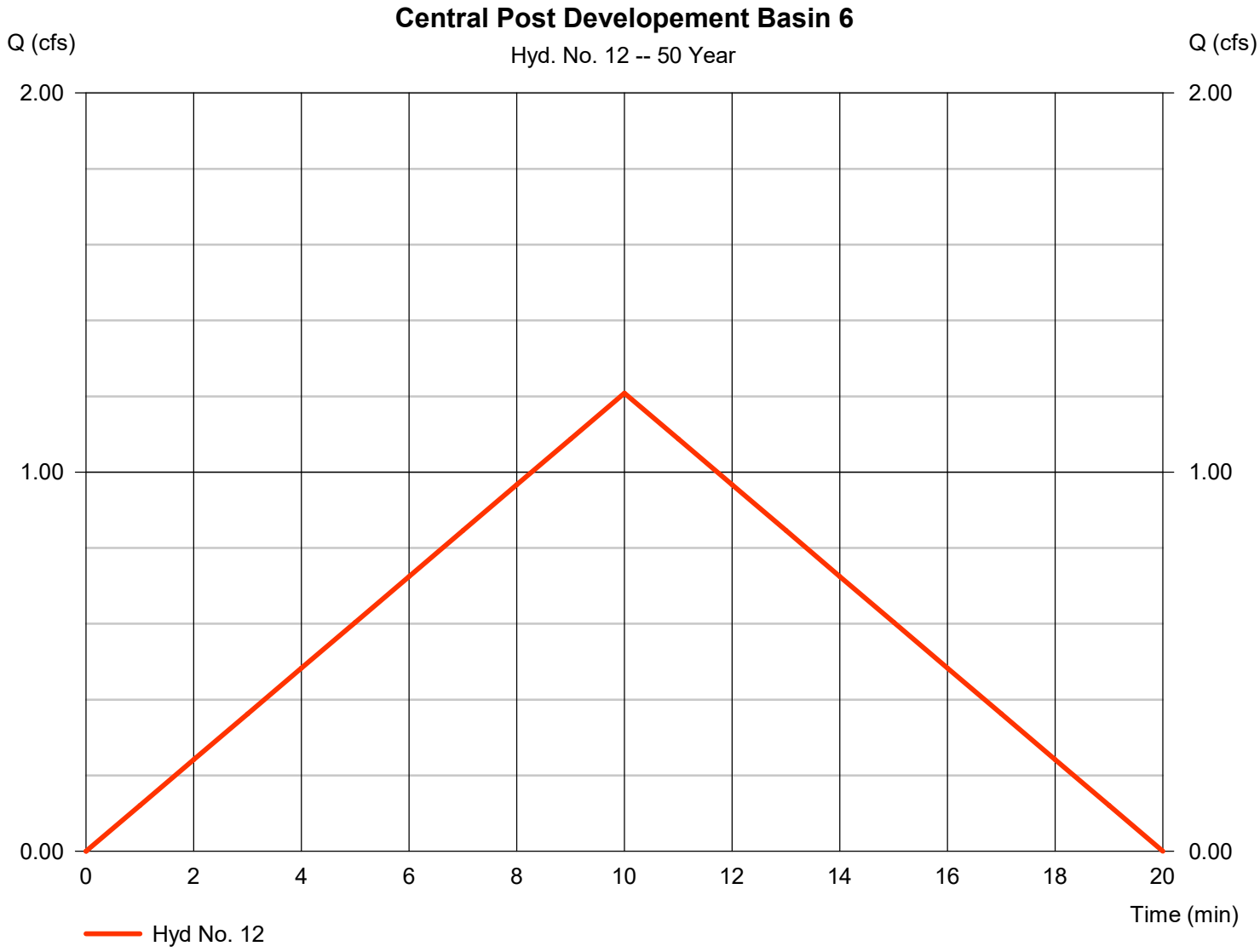


Hydrograph Report

Hyd. No. 12

Central Post Developement Basin 6

Hydrograph type	=	Rational	Peak discharge	=	1.208 cfs
Storm frequency	=	50 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	725 cuft
Drainage area	=	0.356 ac	Runoff coeff.	=	0.549
Intensity	=	6.182 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

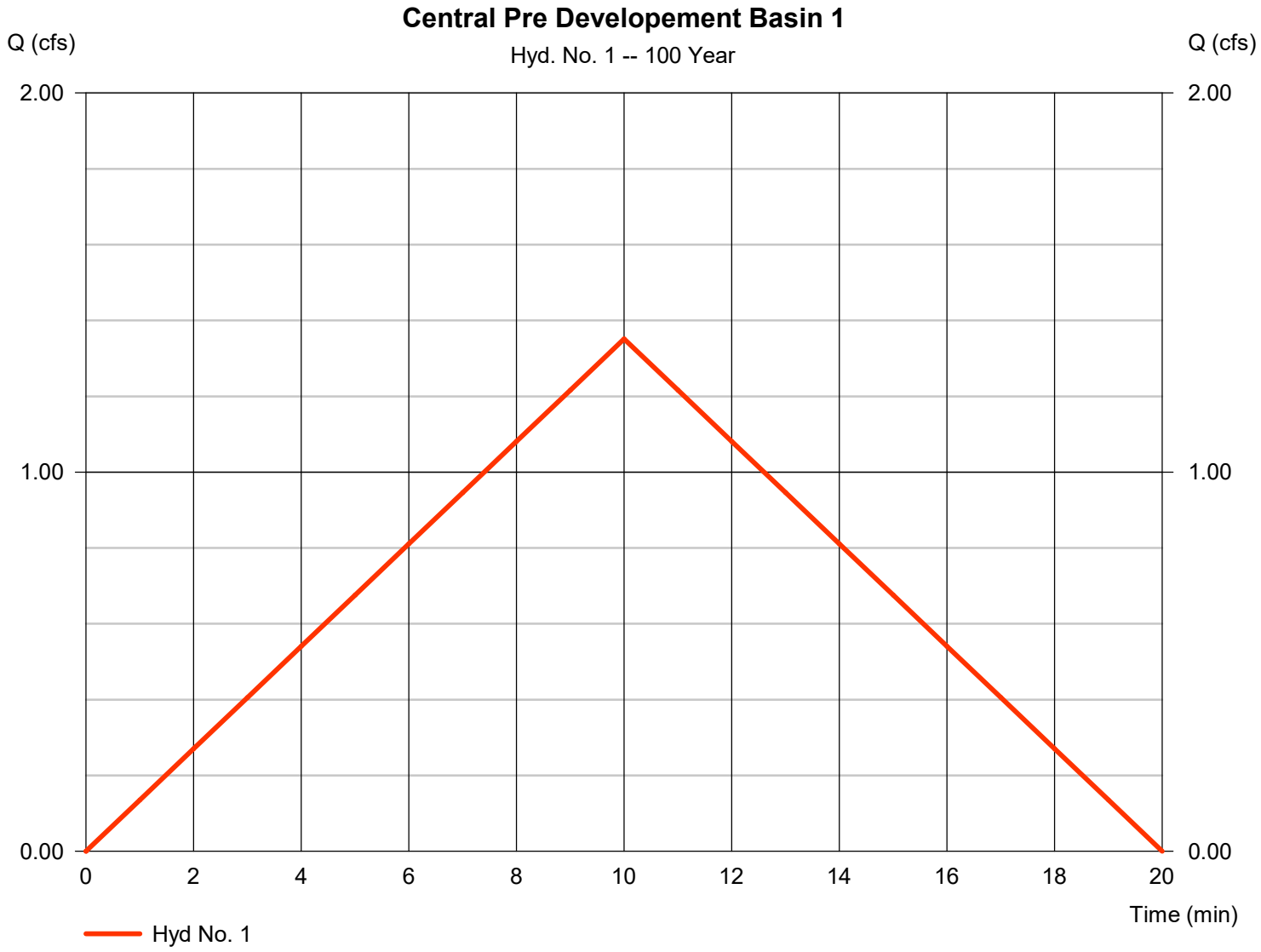


Hydrograph Report

Hyd. No. 1

Central Pre Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	1.351 cfs
Storm frequency	=	100 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	811 cuft
Drainage area	=	0.420 ac	Runoff coeff.	=	0.45
Intensity	=	7.150 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

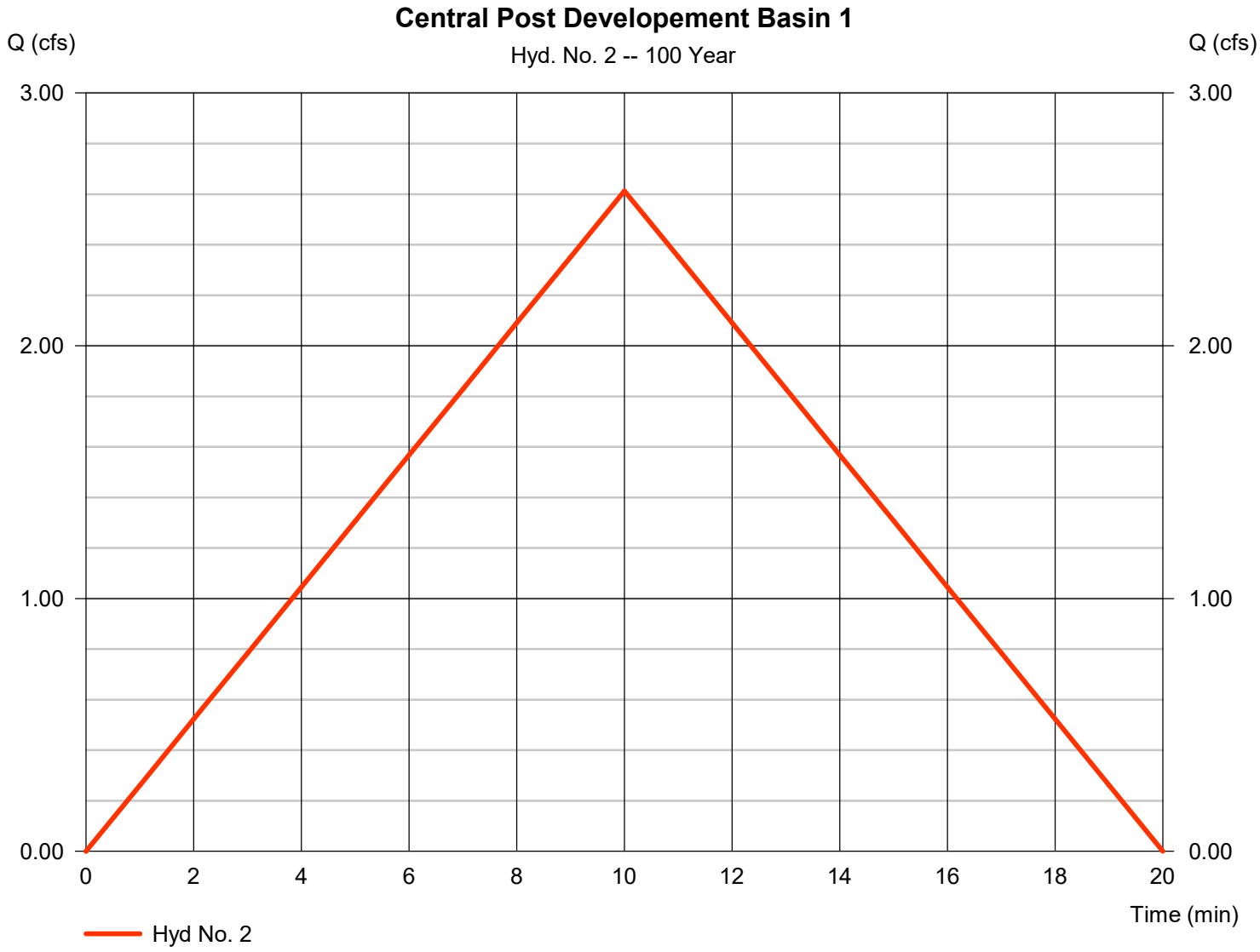


Hydrograph Report

Hyd. No. 2

Central Post Developement Basin 1

Hydrograph type	=	Rational	Peak discharge	=	2.613 cfs
Storm frequency	=	100 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	1,568 cuft
Drainage area	=	0.420 ac	Runoff coeff.	=	0.87
Intensity	=	7.150 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

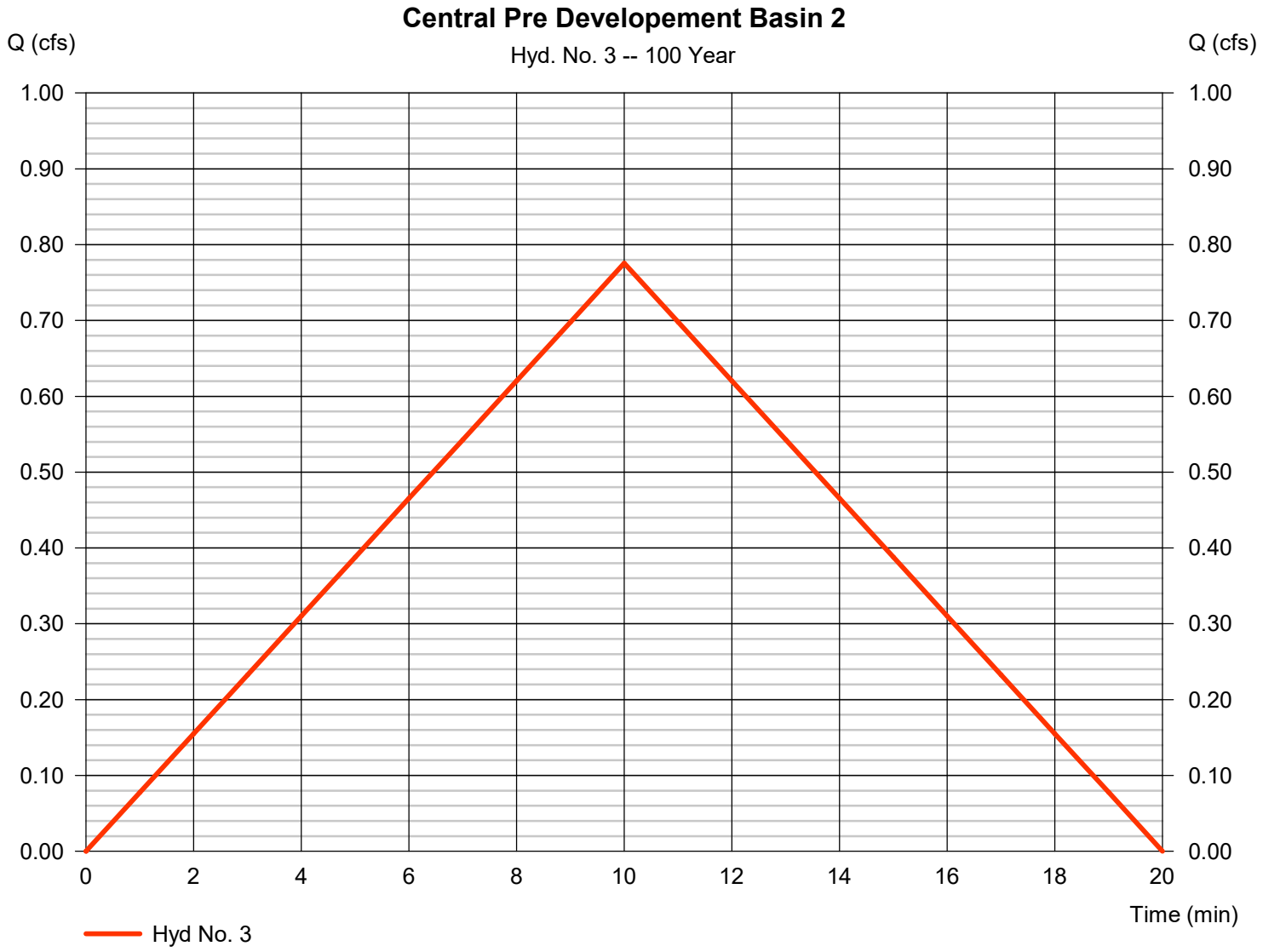


Hydrograph Report

Hyd. No. 3

Central Pre Developement Basin 2

Hydrograph type	=	Rational	Peak discharge	=	0.775 cfs
Storm frequency	=	100 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	465 cuft
Drainage area	=	0.241 ac	Runoff coeff.	=	0.45
Intensity	=	7.150 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

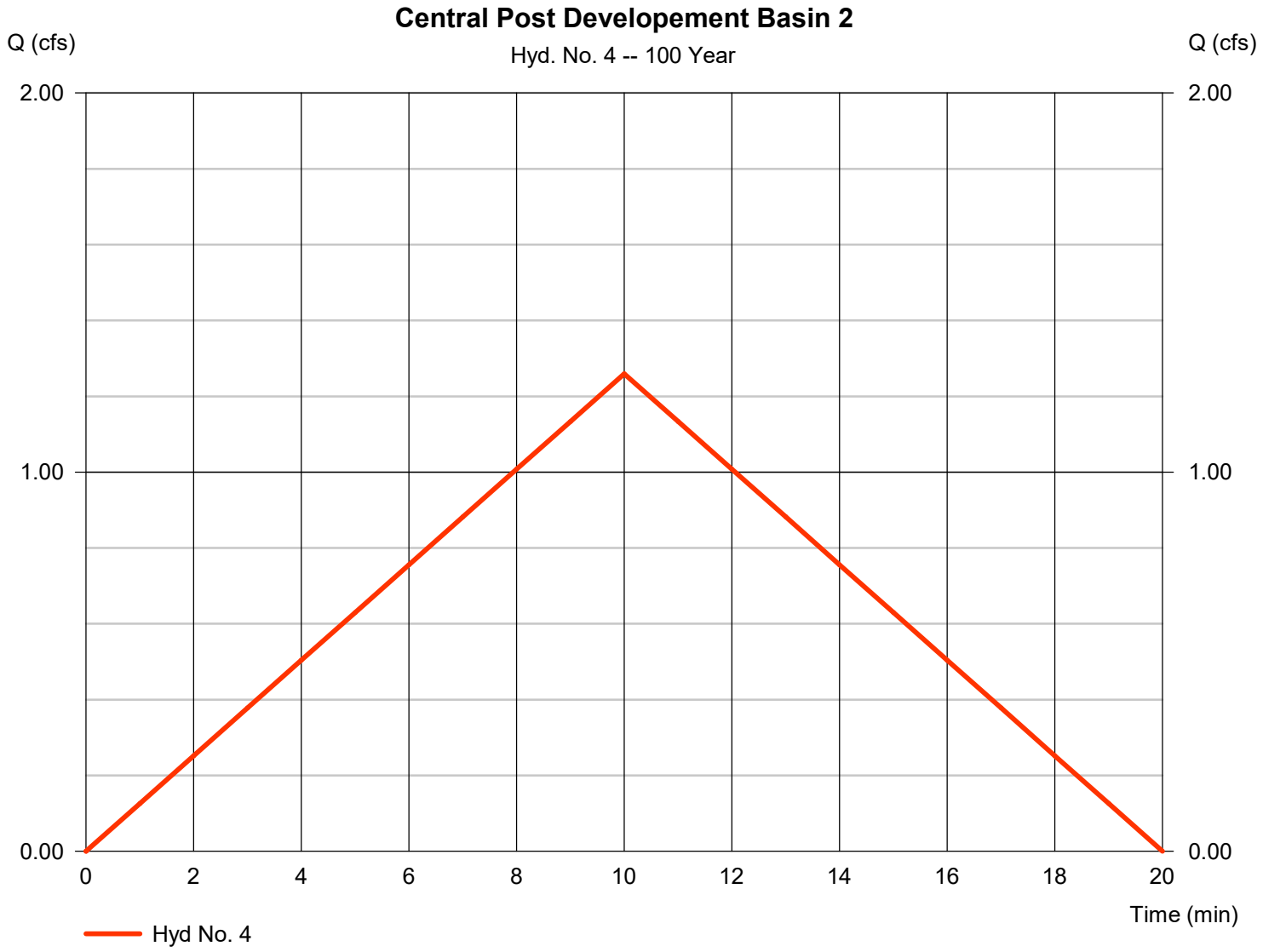


Hydrograph Report

Hyd. No. 4

Central Post Developement Basin 2

Hydrograph type	=	Rational	Peak discharge	=	1.260 cfs
Storm frequency	=	100 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	756 cuft
Drainage area	=	0.241 ac	Runoff coeff.	=	0.731
Intensity	=	7.150 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

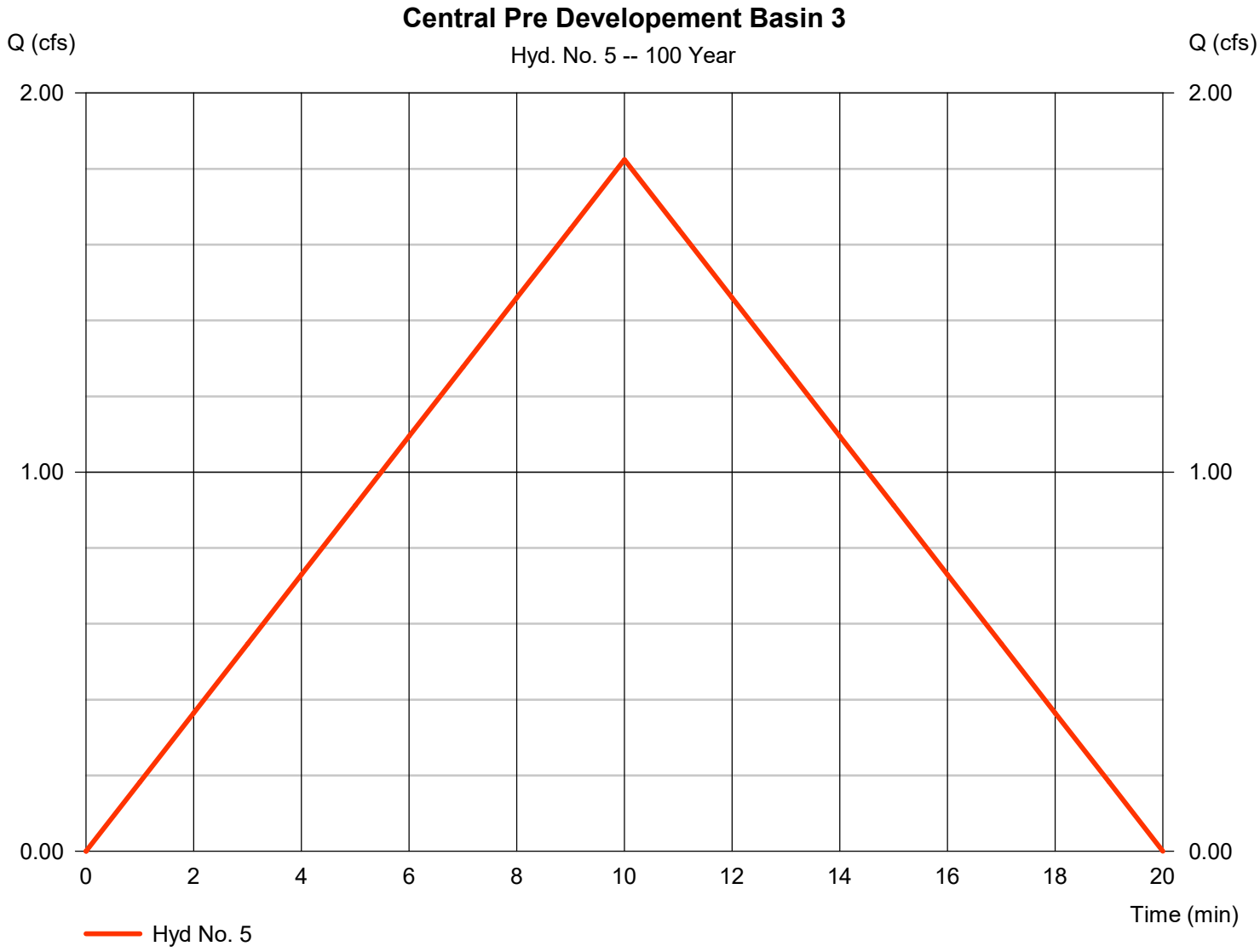


Hydrograph Report

Hyd. No. 5

Central Pre Developement Basin 3

Hydrograph type	=	Rational	Peak discharge	=	1.824 cfs
Storm frequency	=	100 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	1,095 cuft
Drainage area	=	0.567 ac	Runoff coeff.	=	0.45
Intensity	=	7.150 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

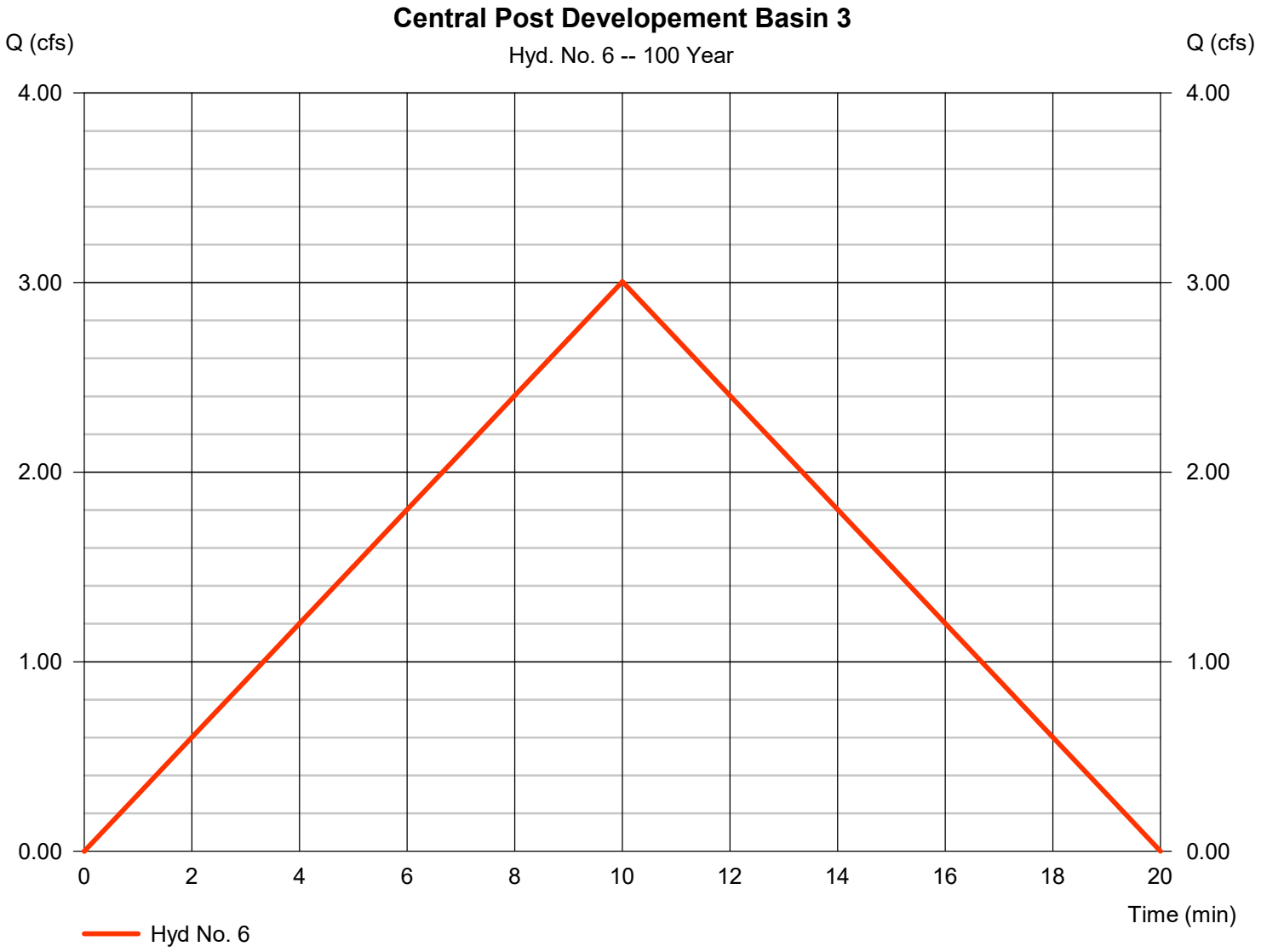


Hydrograph Report

Hyd. No. 6

Central Post Developement Basin 3

Hydrograph type	=	Rational	Peak discharge	=	3.004 cfs
Storm frequency	=	100 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	1,803 cuft
Drainage area	=	0.567 ac	Runoff coeff.	=	0.741
Intensity	=	7.150 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

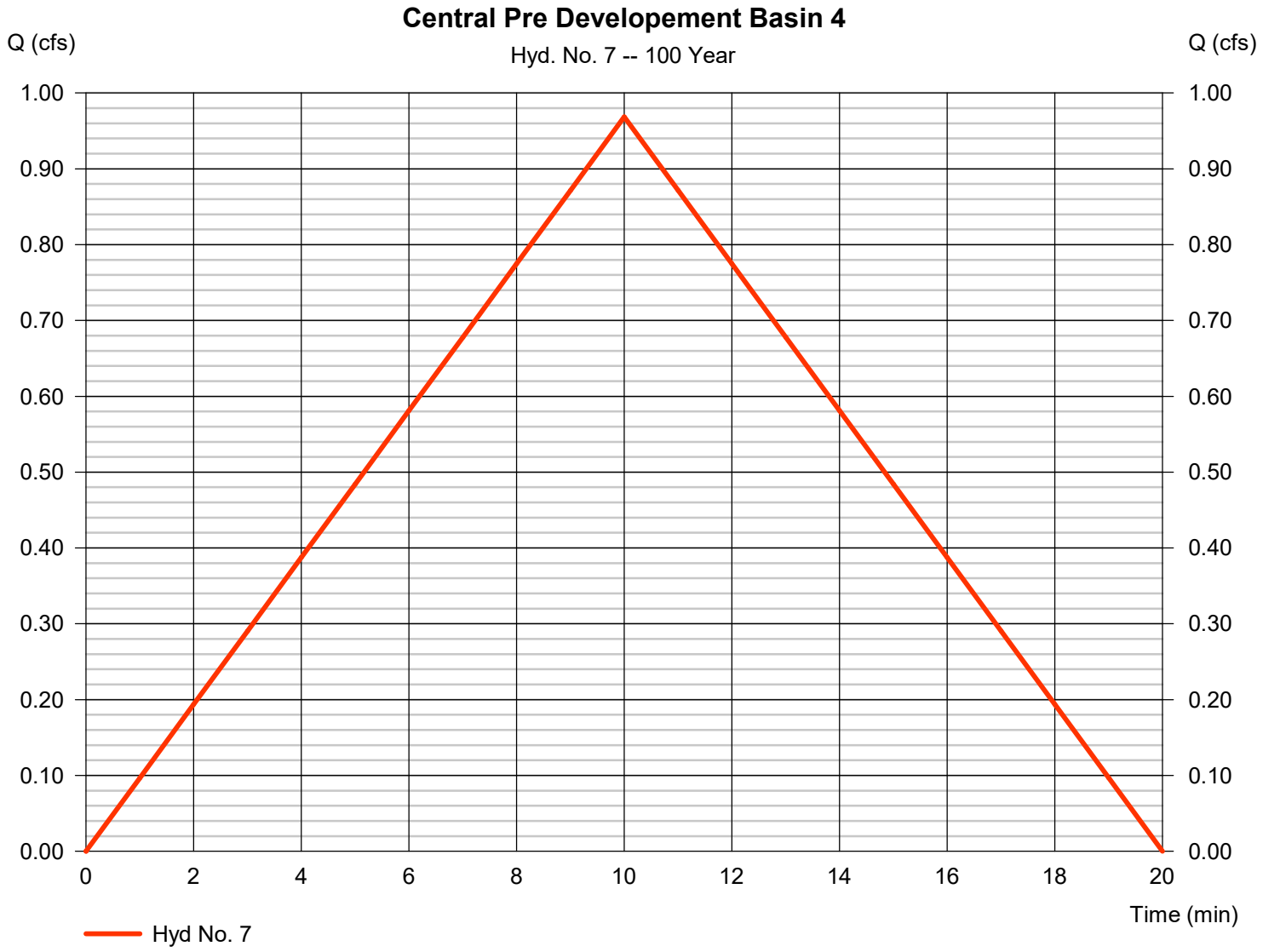


Hydrograph Report

Hyd. No. 7

Central Pre Developement Basin 4

Hydrograph type	=	Rational	Peak discharge	=	0.969 cfs
Storm frequency	=	100 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	581 cuft
Drainage area	=	0.301 ac	Runoff coeff.	=	0.45
Intensity	=	7.150 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

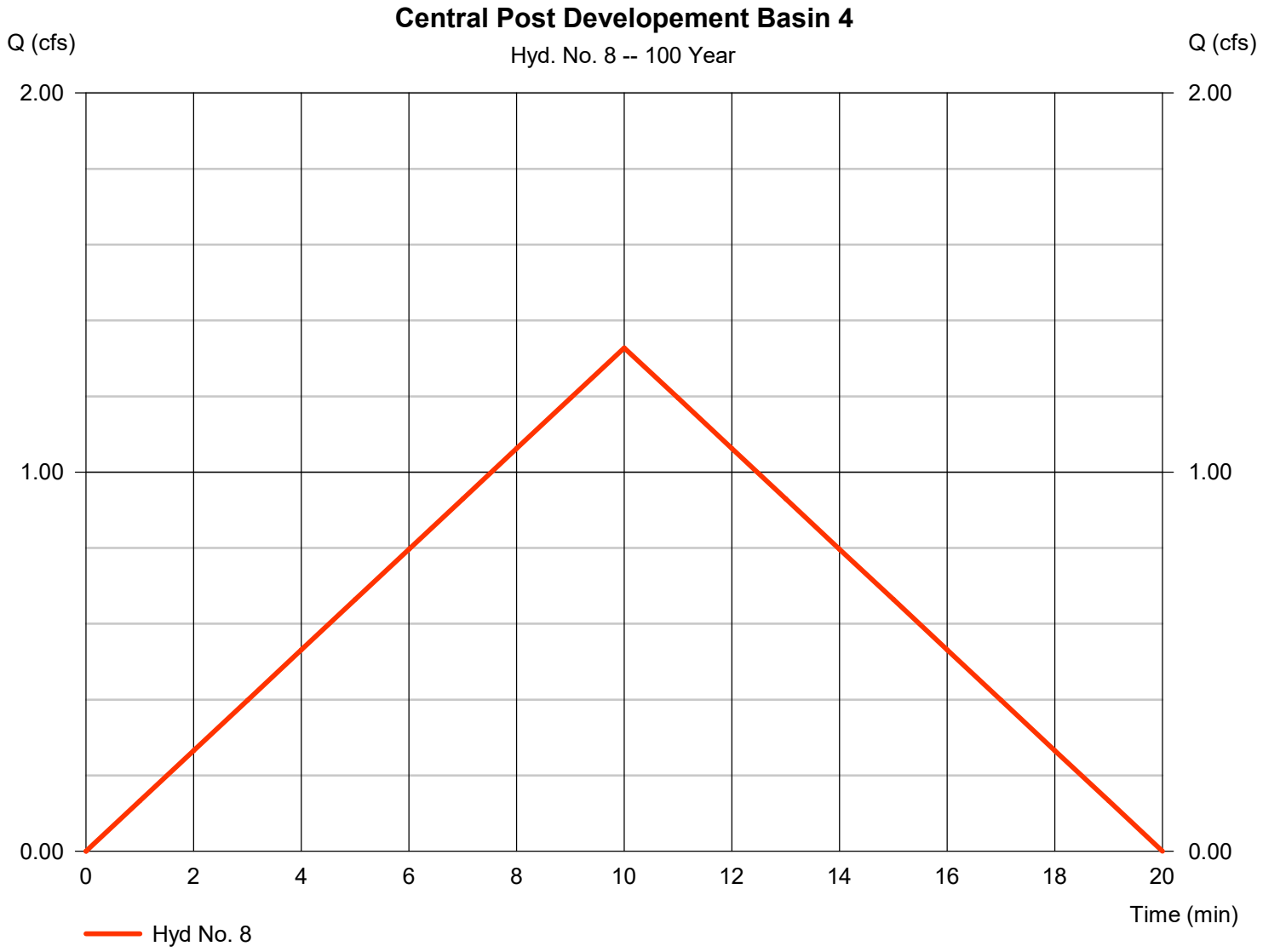


Hydrograph Report

Hyd. No. 8

Central Post Developement Basin 4

Hydrograph type	=	Rational	Peak discharge	=	1.328 cfs
Storm frequency	=	100 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	797 cuft
Drainage area	=	0.301 ac	Runoff coeff.	=	0.617
Intensity	=	7.150 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

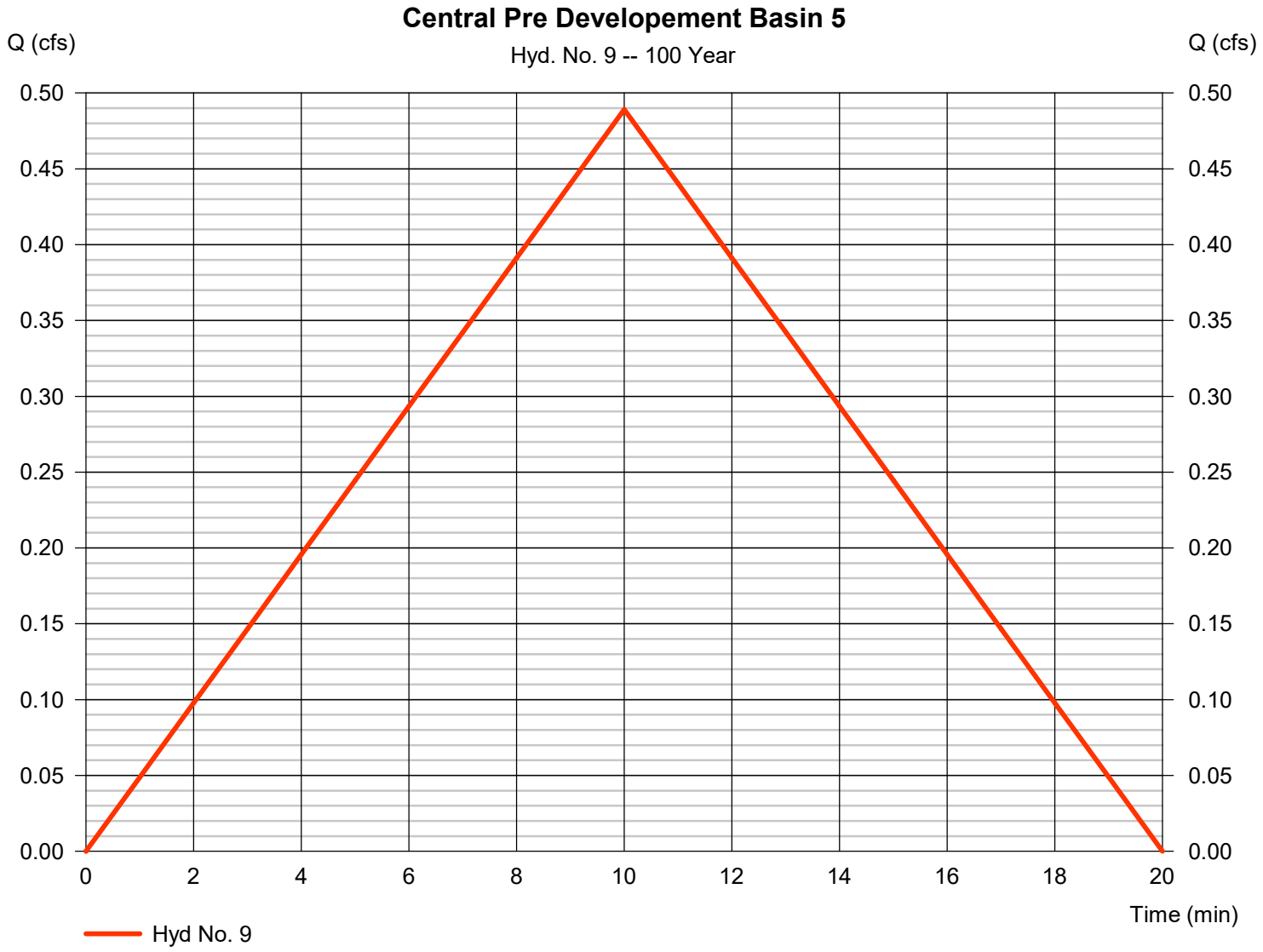


Hydrograph Report

Hyd. No. 9

Central Pre Developement Basin 5

Hydrograph type	=	Rational	Peak discharge	=	0.489 cfs
Storm frequency	=	100 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	293 cuft
Drainage area	=	0.152 ac	Runoff coeff.	=	0.45
Intensity	=	7.150 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

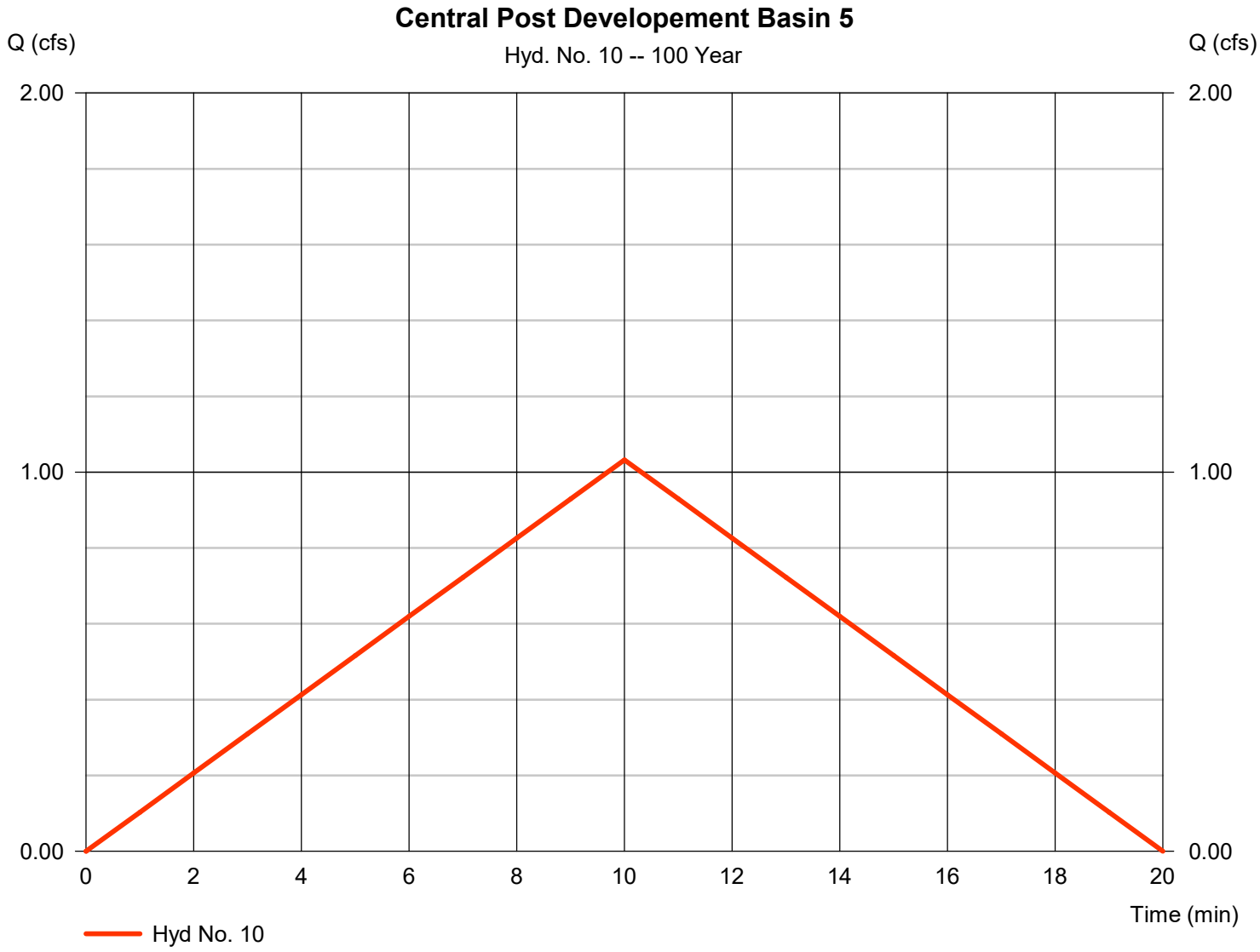


Hydrograph Report

Hyd. No. 10

Central Post Developement Basin 5

Hydrograph type	=	Rational	Peak discharge	=	1.033 cfs
Storm frequency	=	100 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	620 cuft
Drainage area	=	0.152 ac	Runoff coeff.	=	0.95
Intensity	=	7.150 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

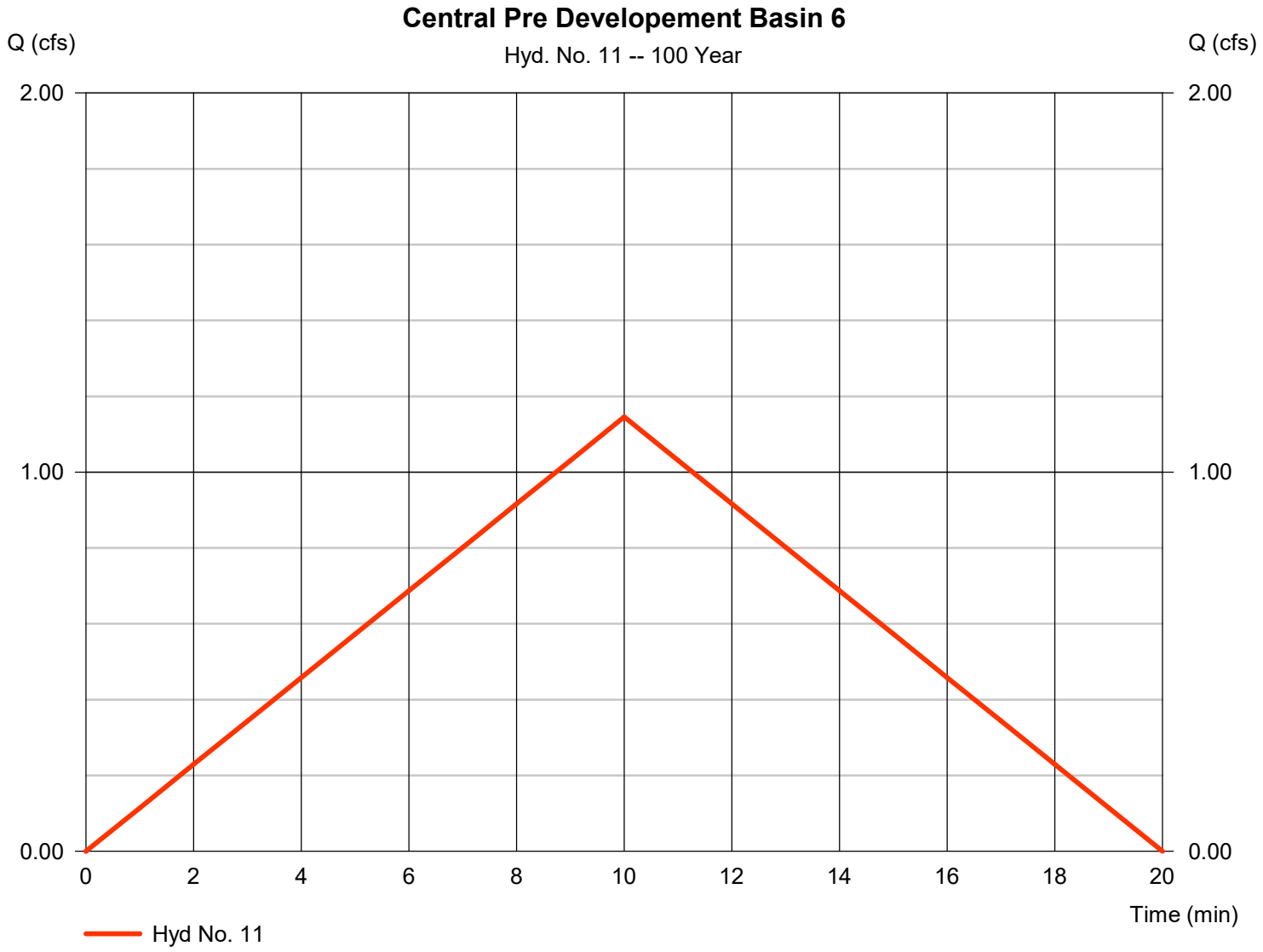


Hydrograph Report

Hyd. No. 11

Central Pre Developement Basin 6

Hydrograph type	=	Rational	Peak discharge	=	1.145 cfs
Storm frequency	=	100 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	687 cuft
Drainage area	=	0.356 ac	Runoff coeff.	=	0.45
Intensity	=	7.150 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

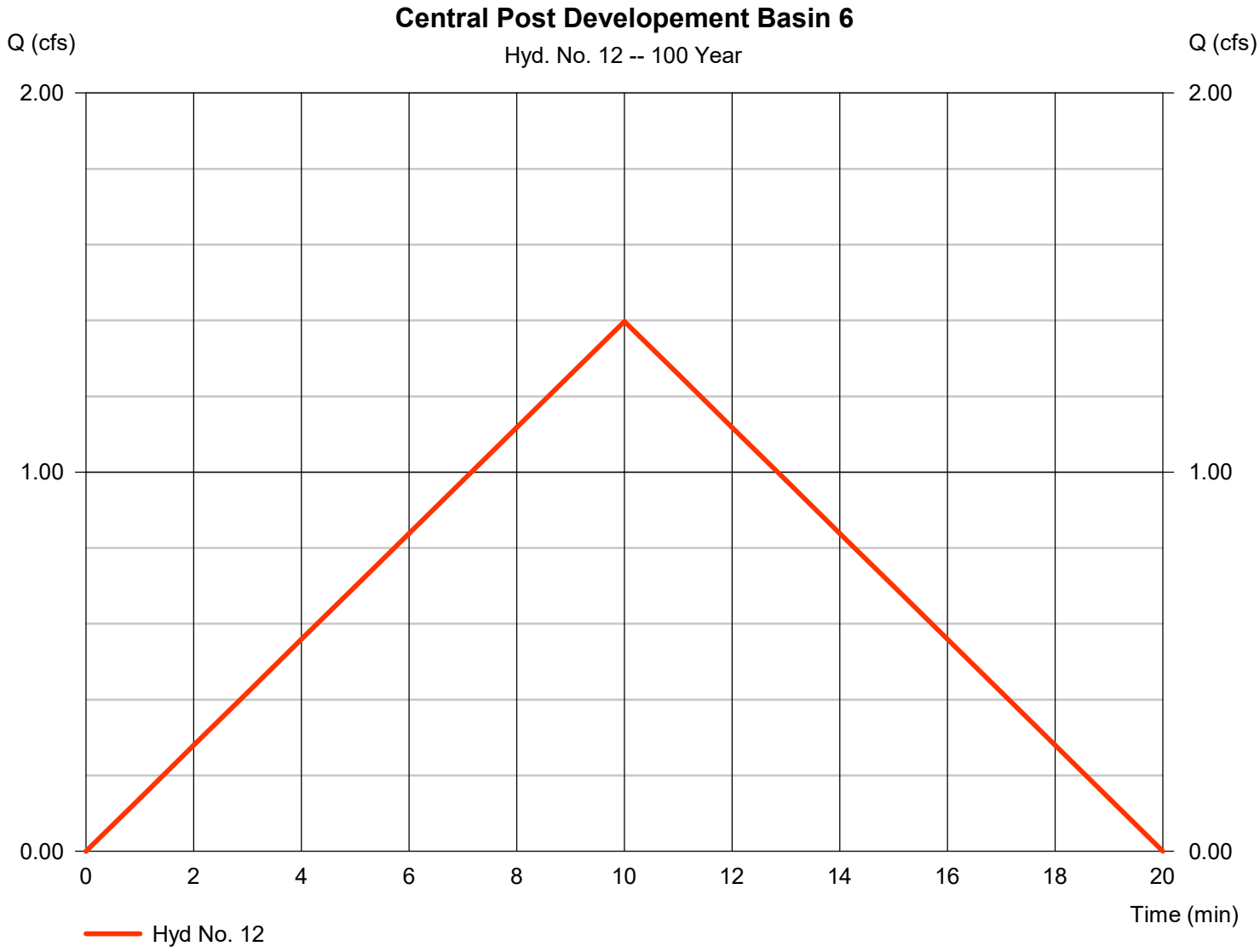


Hydrograph Report

Hyd. No. 12

Central Post Developement Basin 6

Hydrograph type	=	Rational	Peak discharge	=	1.397 cfs
Storm frequency	=	100 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	838 cuft
Drainage area	=	0.356 ac	Runoff coeff.	=	0.549
Intensity	=	7.150 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1



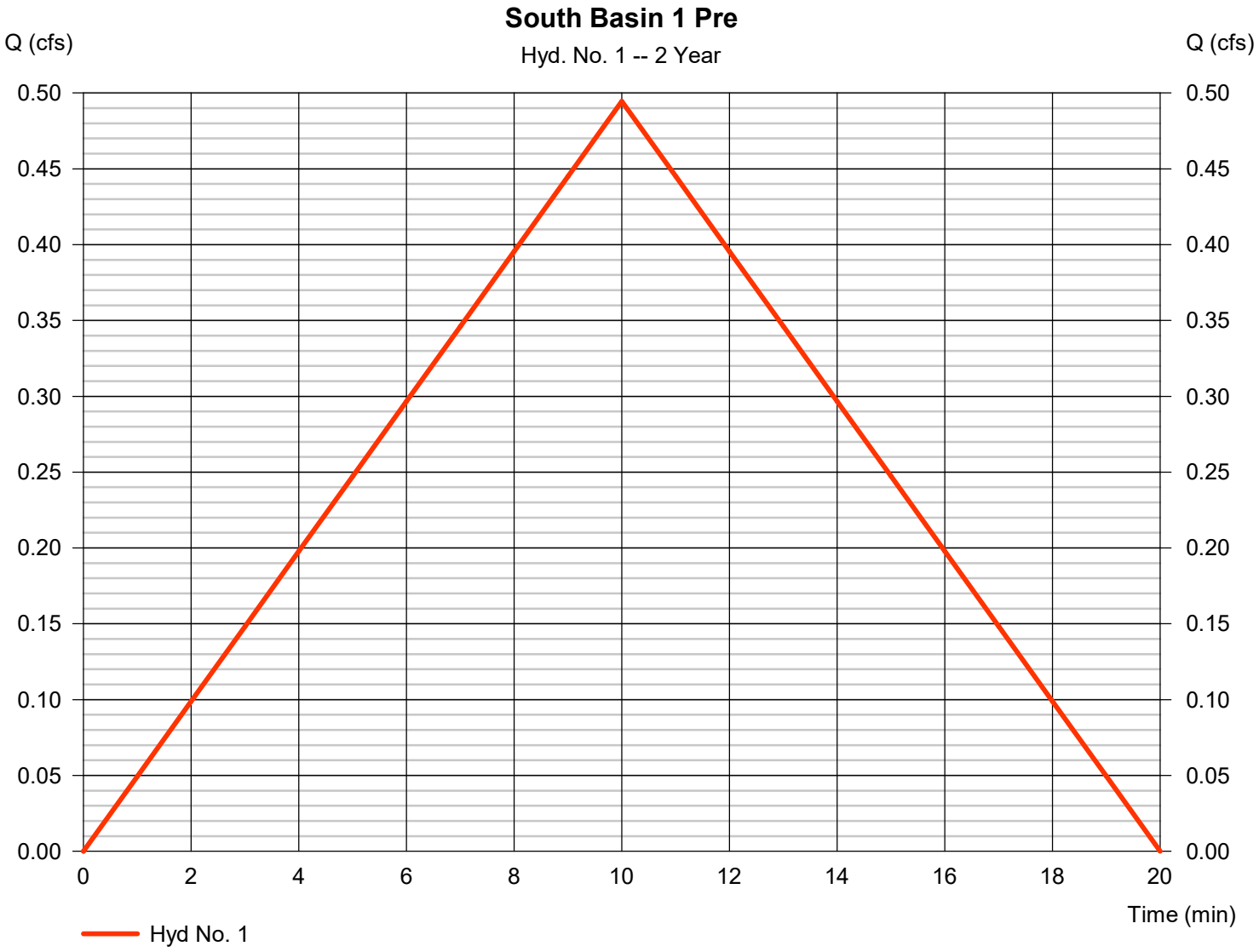
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Wednesday, 01 / 31 / 2024

Hyd. No. 1

South Basin 1 Pre

Hydrograph type	= Rational	Peak discharge	= 0.495 cfs
Storm frequency	= 2 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 297 cuft
Drainage area	= 0.430 ac	Runoff coeff.	= 0.45
Intensity	= 2.556 in/hr	Tc by User	= 10.00 min
IDF Curve	= Sedona.IDF	Asc/Rec limb fact	= 1/1

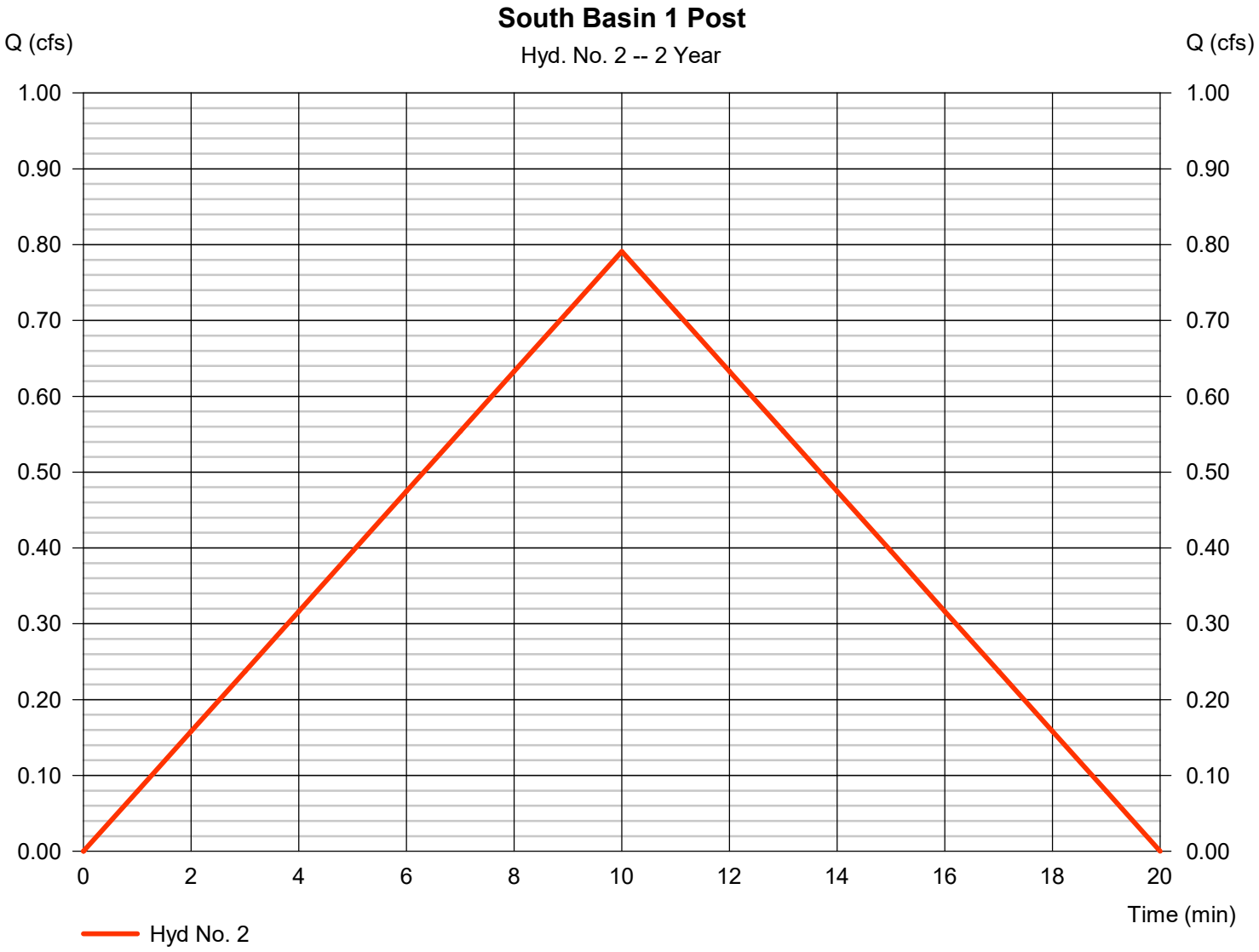


Hydrograph Report

Hyd. No. 2

South Basin 1 Post

Hydrograph type	=	Rational	Peak discharge	=	0.791 cfs
Storm frequency	=	2 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	475 cuft
Drainage area	=	0.430 ac	Runoff coeff.	=	0.72
Intensity	=	2.556 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

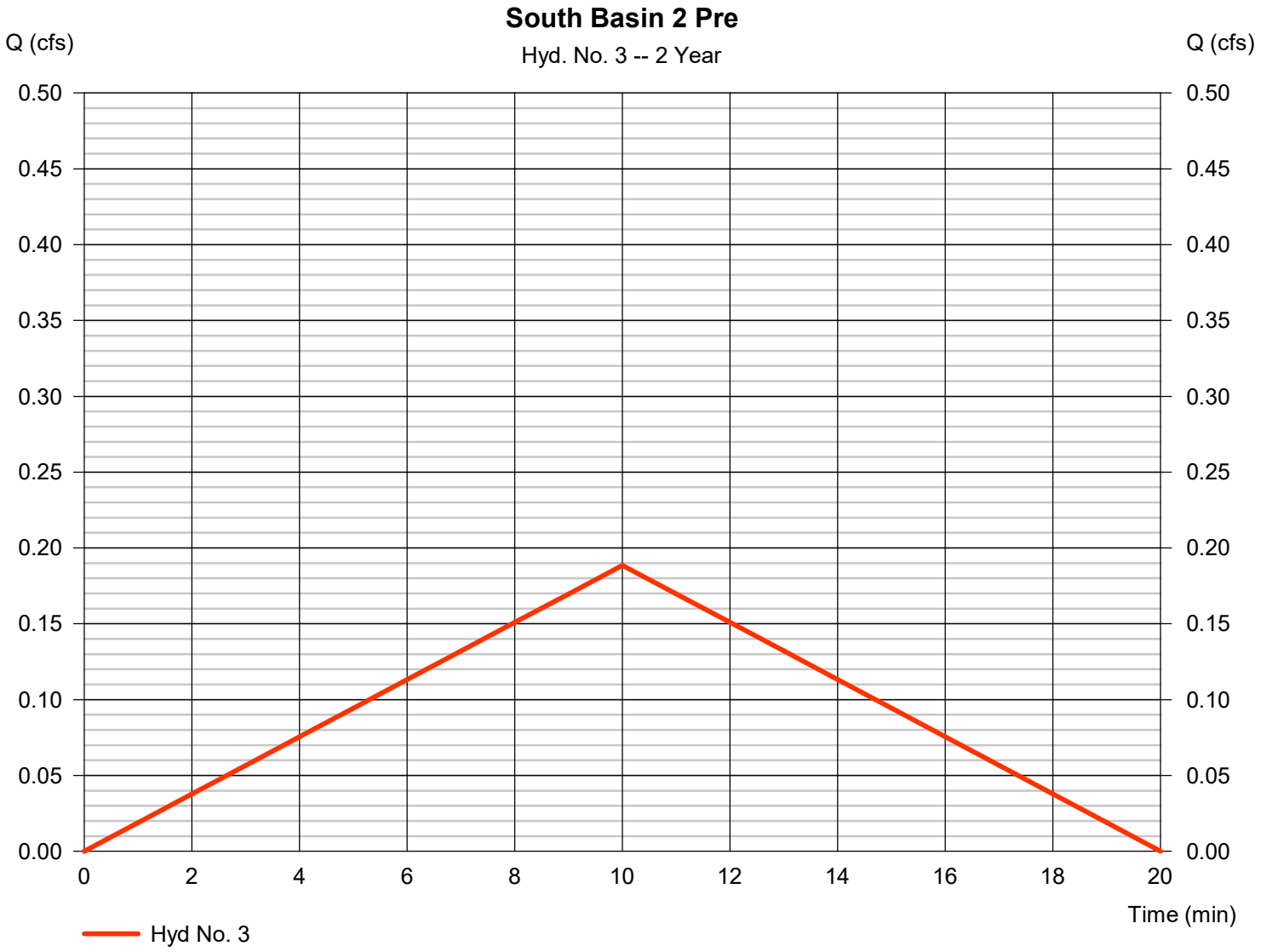


Hydrograph Report

Hyd. No. 3

South Basin 2 Pre

Hydrograph type	=	Rational	Peak discharge	=	0.189 cfs
Storm frequency	=	2 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	113 cuft
Drainage area	=	0.164 ac	Runoff coeff.	=	0.45
Intensity	=	2.556 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

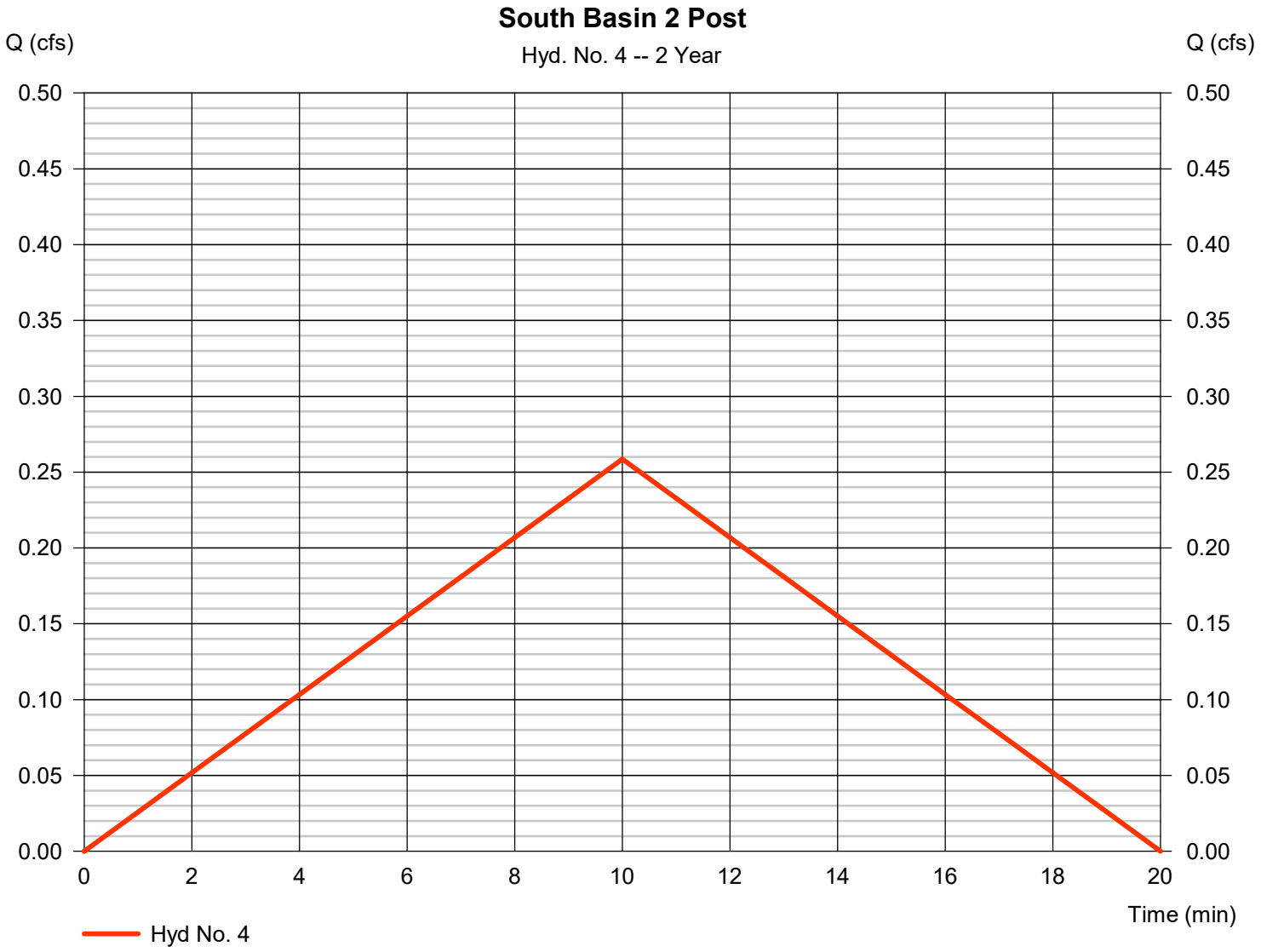


Hydrograph Report

Hyd. No. 4

South Basin 2 Post

Hydrograph type	=	Rational	Peak discharge	=	0.259 cfs
Storm frequency	=	2 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	155 cuft
Drainage area	=	0.164 ac	Runoff coeff.	=	0.617
Intensity	=	2.556 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

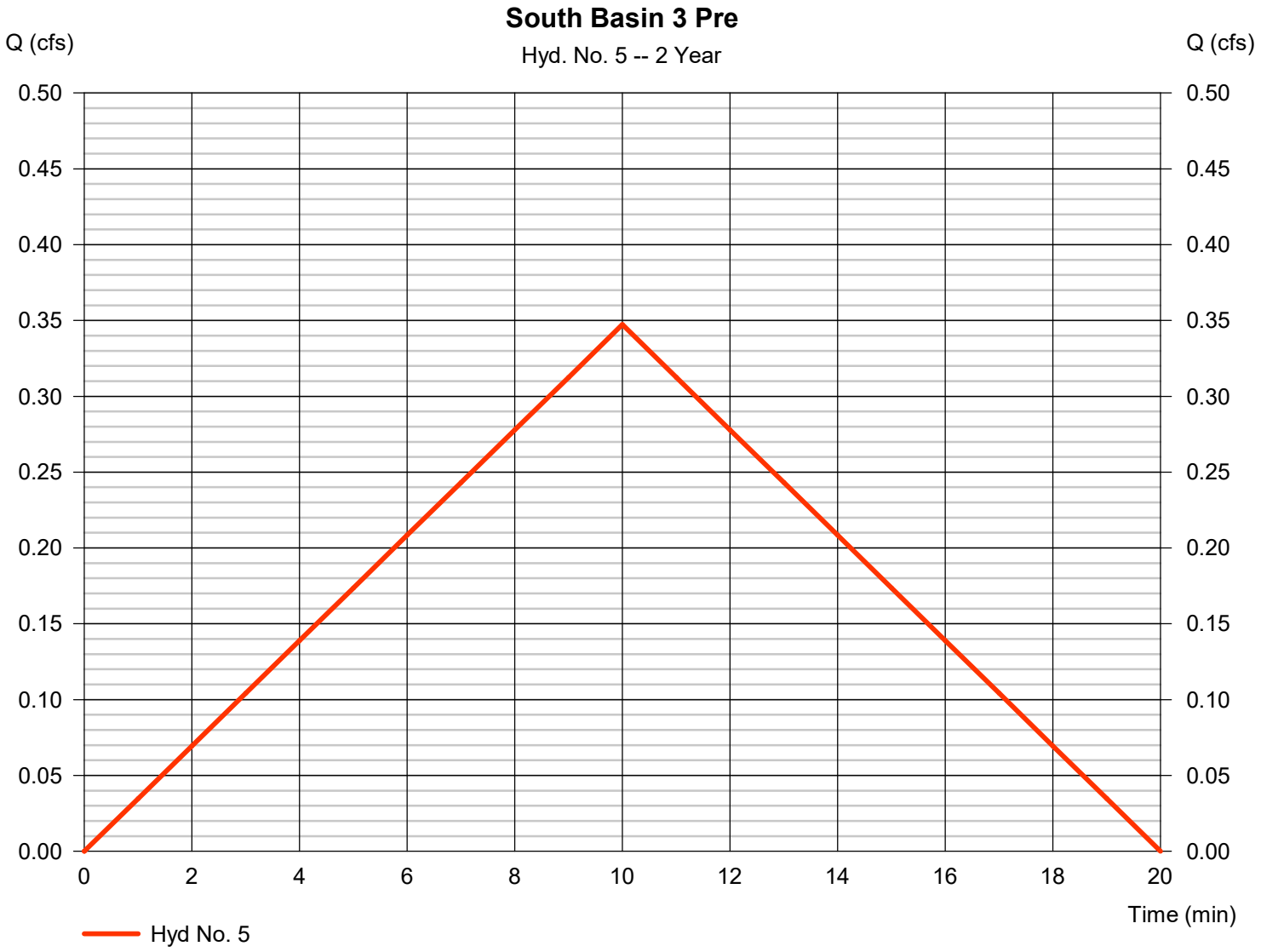


Hydrograph Report

Hyd. No. 5

South Basin 3 Pre

Hydrograph type	=	Rational	Peak discharge	=	0.347 cfs
Storm frequency	=	2 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	208 cuft
Drainage area	=	0.302 ac	Runoff coeff.	=	0.45
Intensity	=	2.556 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

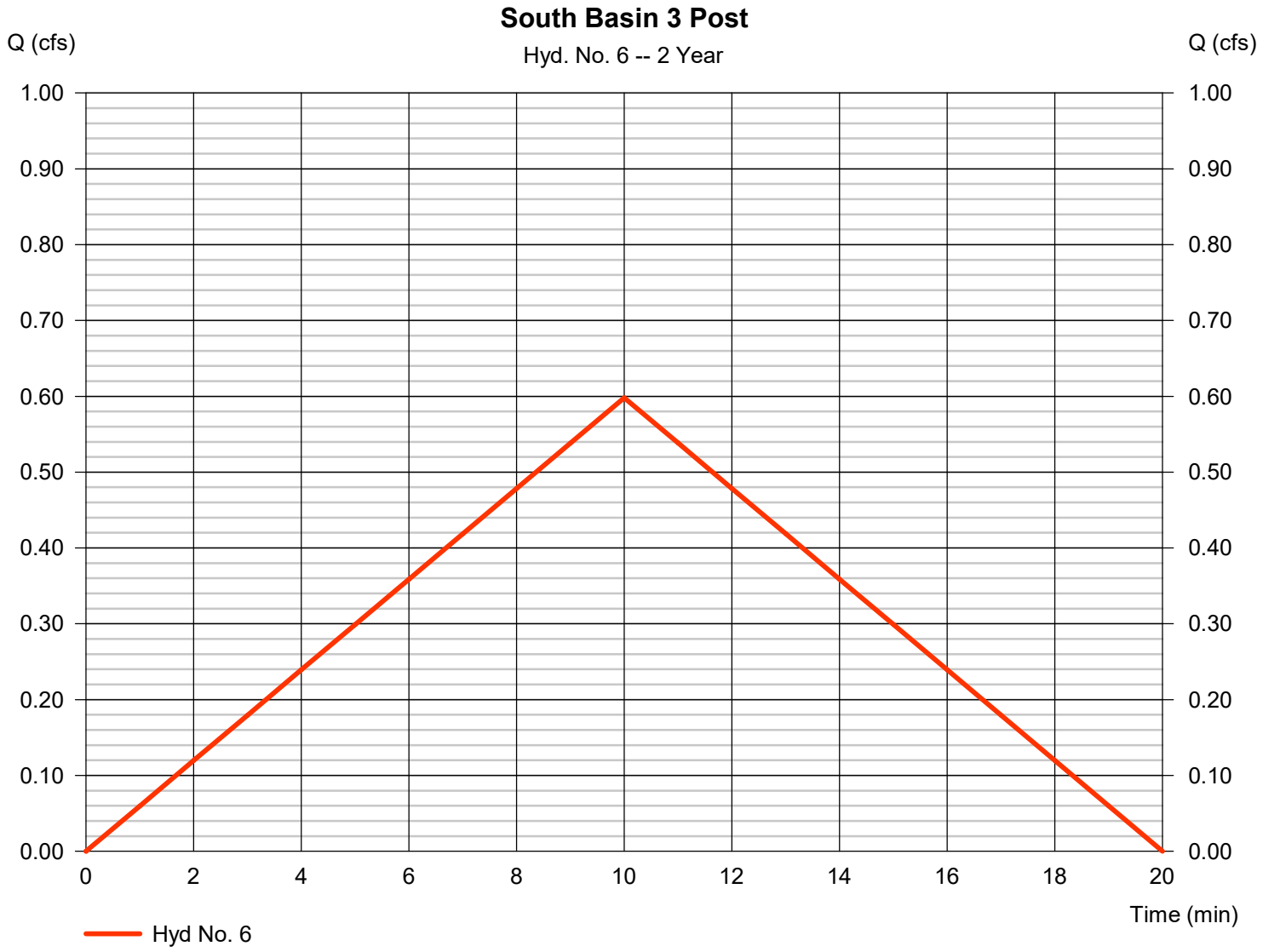


Hydrograph Report

Hyd. No. 6

South Basin 3 Post

Hydrograph type	=	Rational	Peak discharge	=	0.598 cfs
Storm frequency	=	2 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	359 cuft
Drainage area	=	0.302 ac	Runoff coeff.	=	0.775
Intensity	=	2.556 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

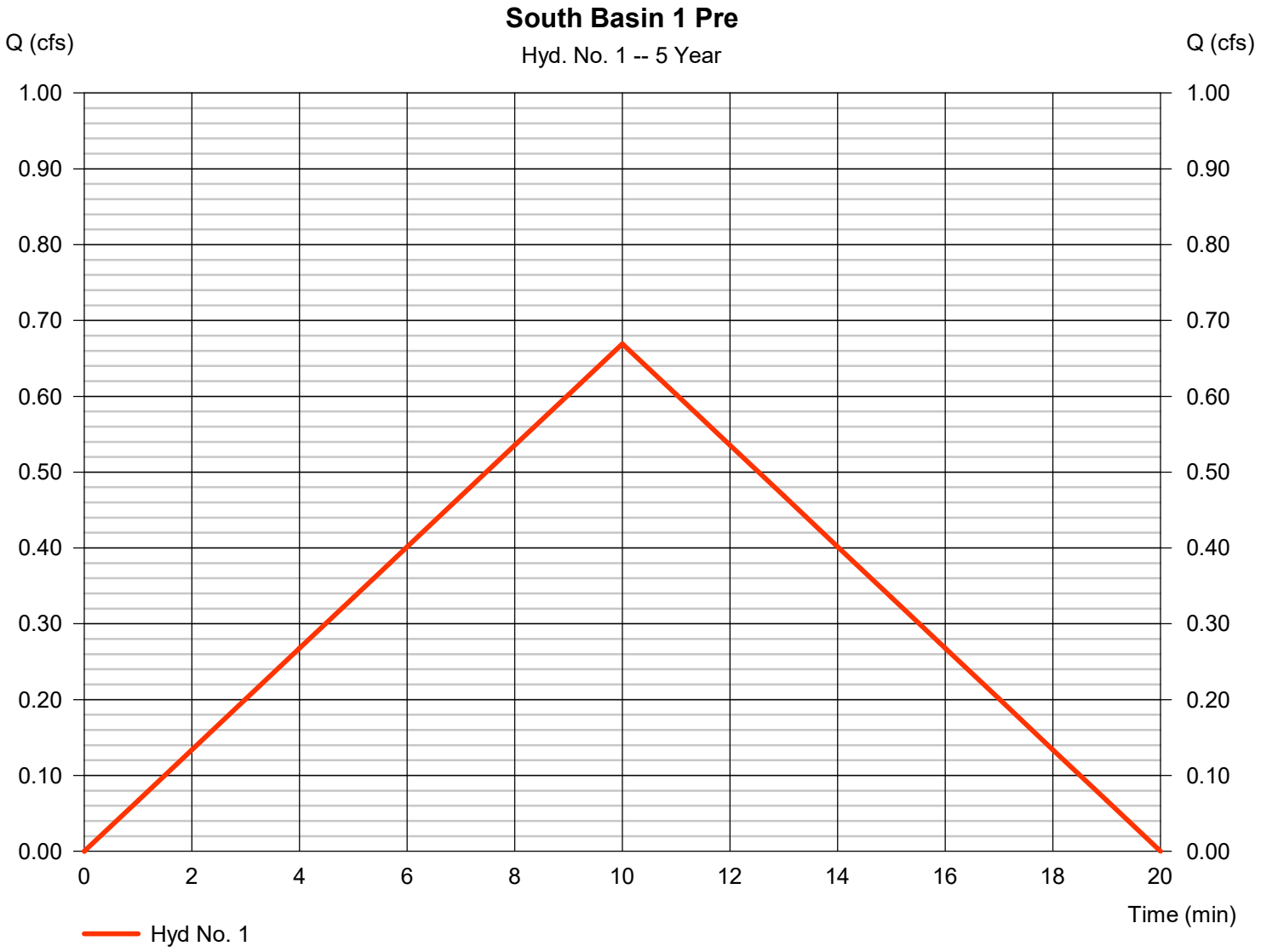


Hydrograph Report

Hyd. No. 1

South Basin 1 Pre

Hydrograph type	=	Rational	Peak discharge	=	0.669 cfs
Storm frequency	=	5 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	402 cuft
Drainage area	=	0.430 ac	Runoff coeff.	=	0.45
Intensity	=	3.459 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

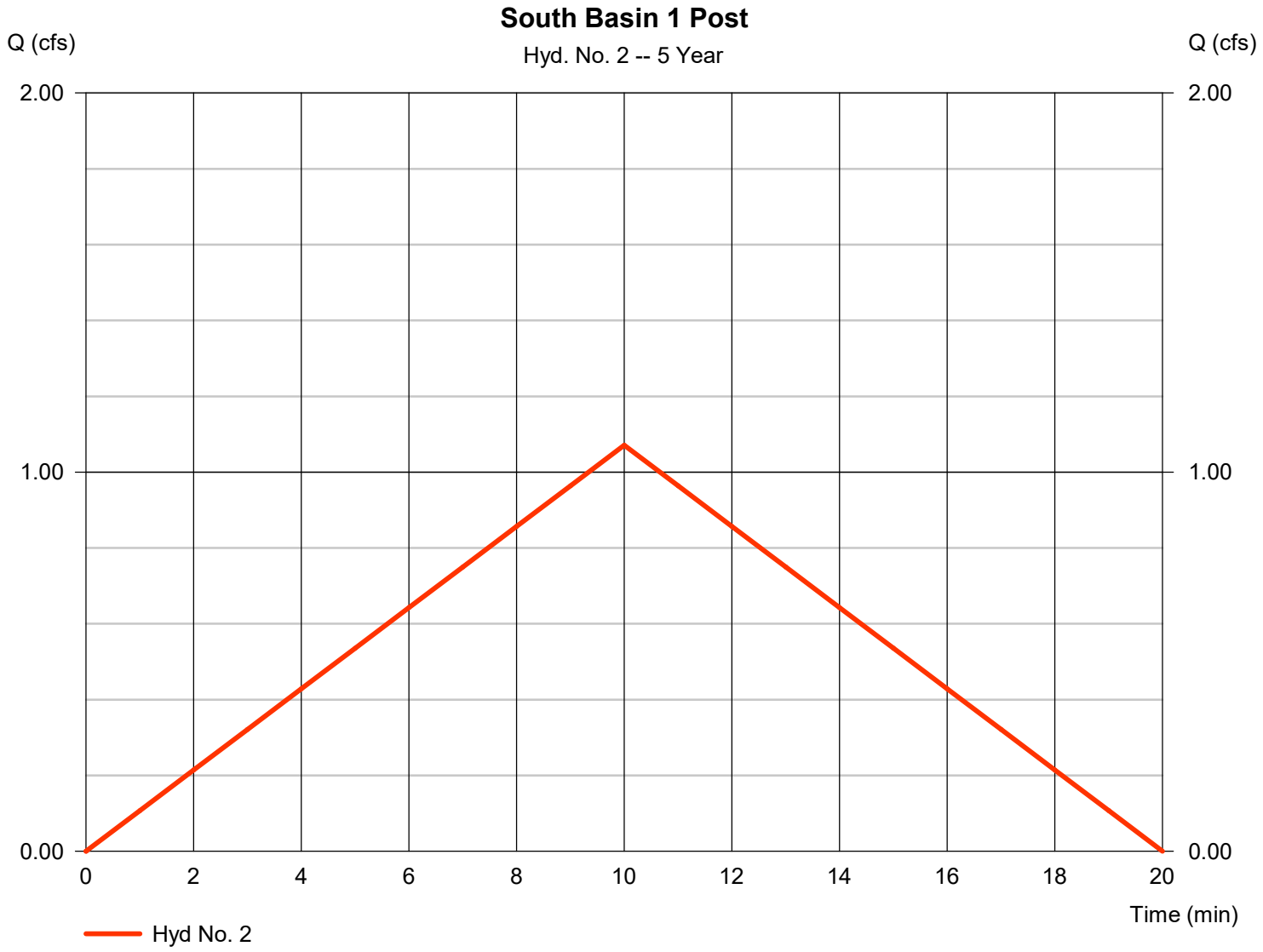


Hydrograph Report

Hyd. No. 2

South Basin 1 Post

Hydrograph type	=	Rational	Peak discharge	=	1.071 cfs
Storm frequency	=	5 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	643 cuft
Drainage area	=	0.430 ac	Runoff coeff.	=	0.72
Intensity	=	3.459 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

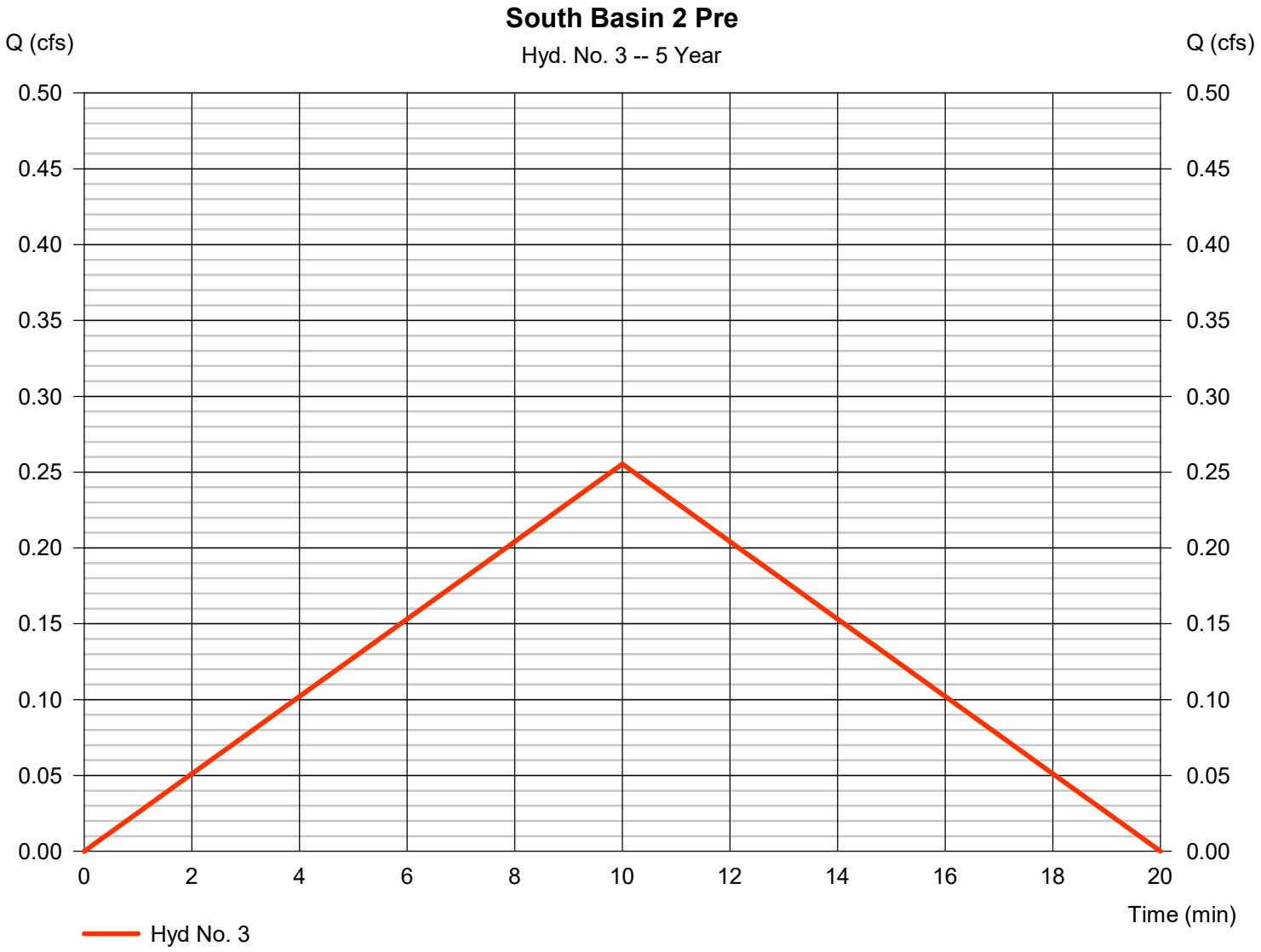


Hydrograph Report

Hyd. No. 3

South Basin 2 Pre

Hydrograph type	=	Rational	Peak discharge	=	0.255 cfs
Storm frequency	=	5 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	153 cuft
Drainage area	=	0.164 ac	Runoff coeff.	=	0.45
Intensity	=	3.459 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

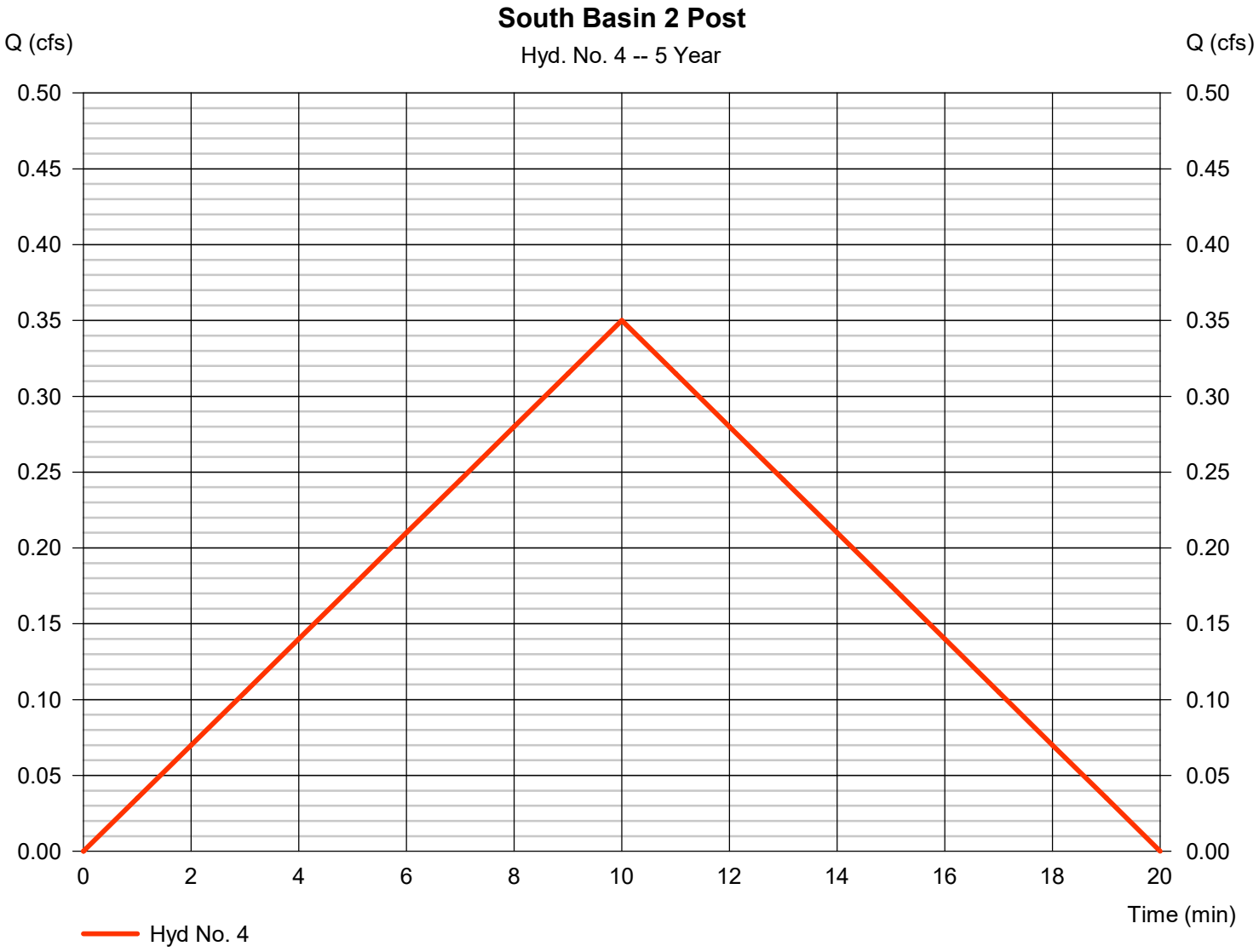


Hydrograph Report

Hyd. No. 4

South Basin 2 Post

Hydrograph type	=	Rational	Peak discharge	=	0.350 cfs
Storm frequency	=	5 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	210 cuft
Drainage area	=	0.164 ac	Runoff coeff.	=	0.617
Intensity	=	3.459 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

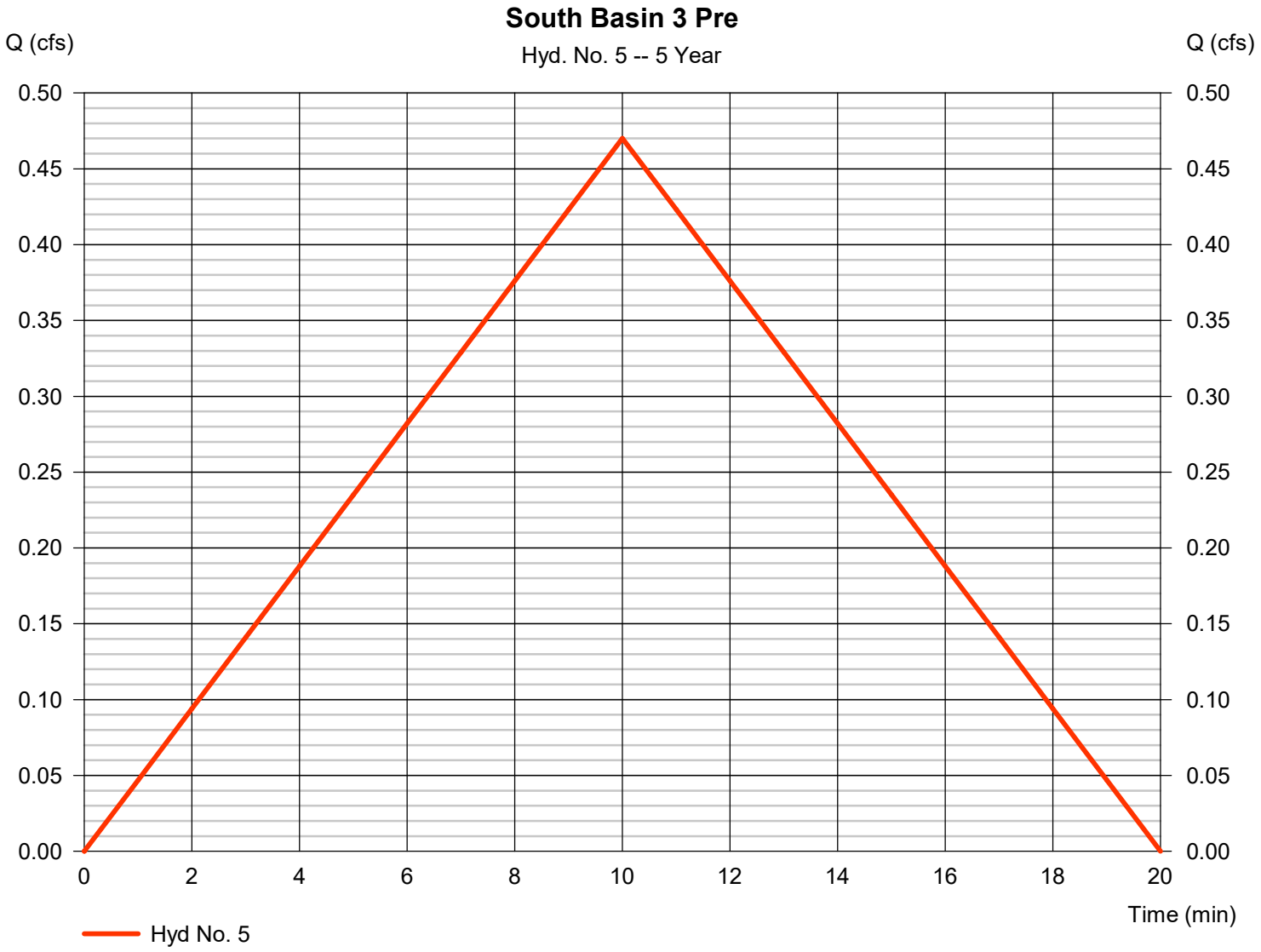


Hydrograph Report

Hyd. No. 5

South Basin 3 Pre

Hydrograph type	=	Rational	Peak discharge	=	0.470 cfs
Storm frequency	=	5 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	282 cuft
Drainage area	=	0.302 ac	Runoff coeff.	=	0.45
Intensity	=	3.459 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

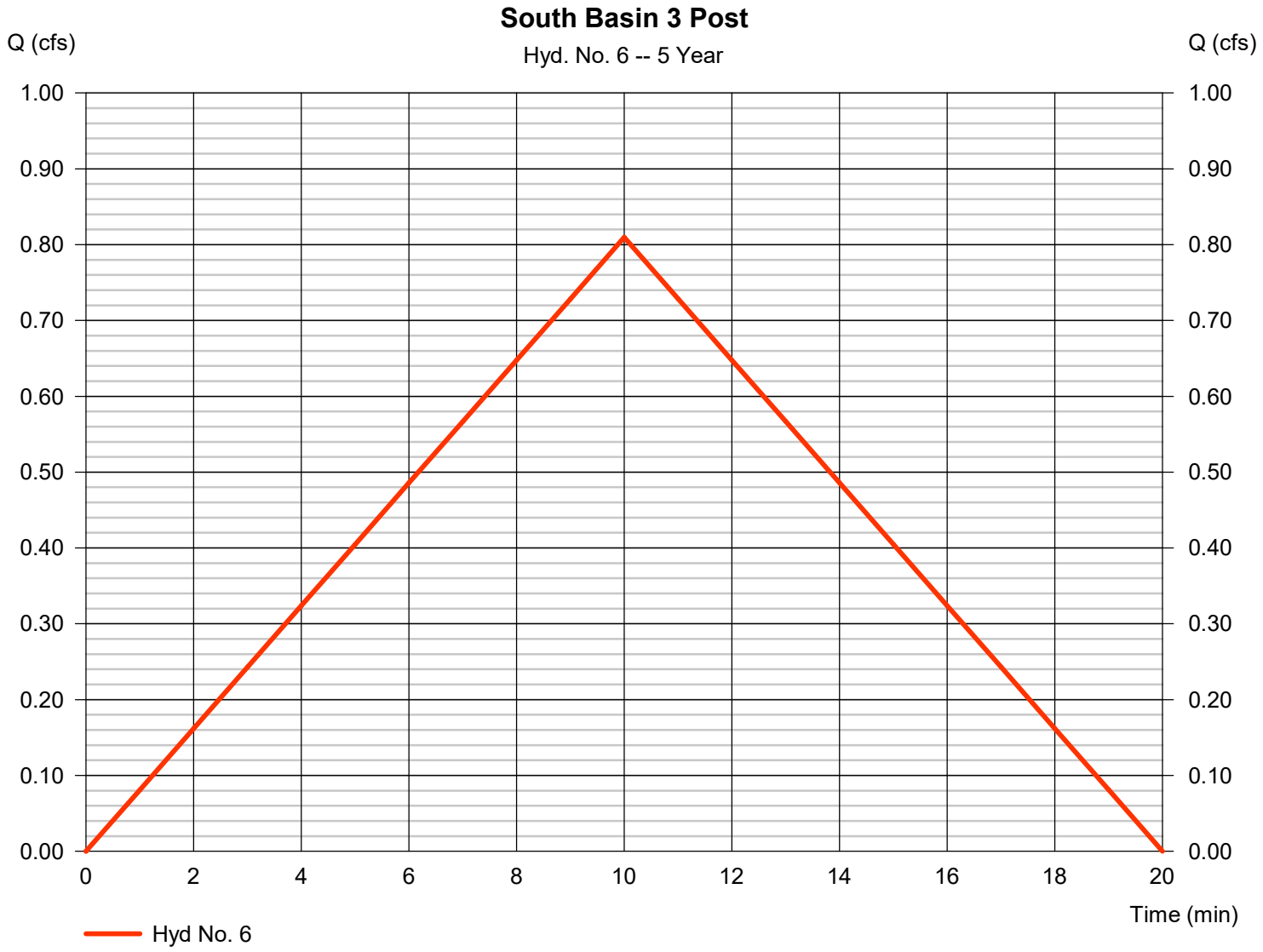


Hydrograph Report

Hyd. No. 6

South Basin 3 Post

Hydrograph type	=	Rational	Peak discharge	=	0.810 cfs
Storm frequency	=	5 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	486 cuft
Drainage area	=	0.302 ac	Runoff coeff.	=	0.775
Intensity	=	3.459 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

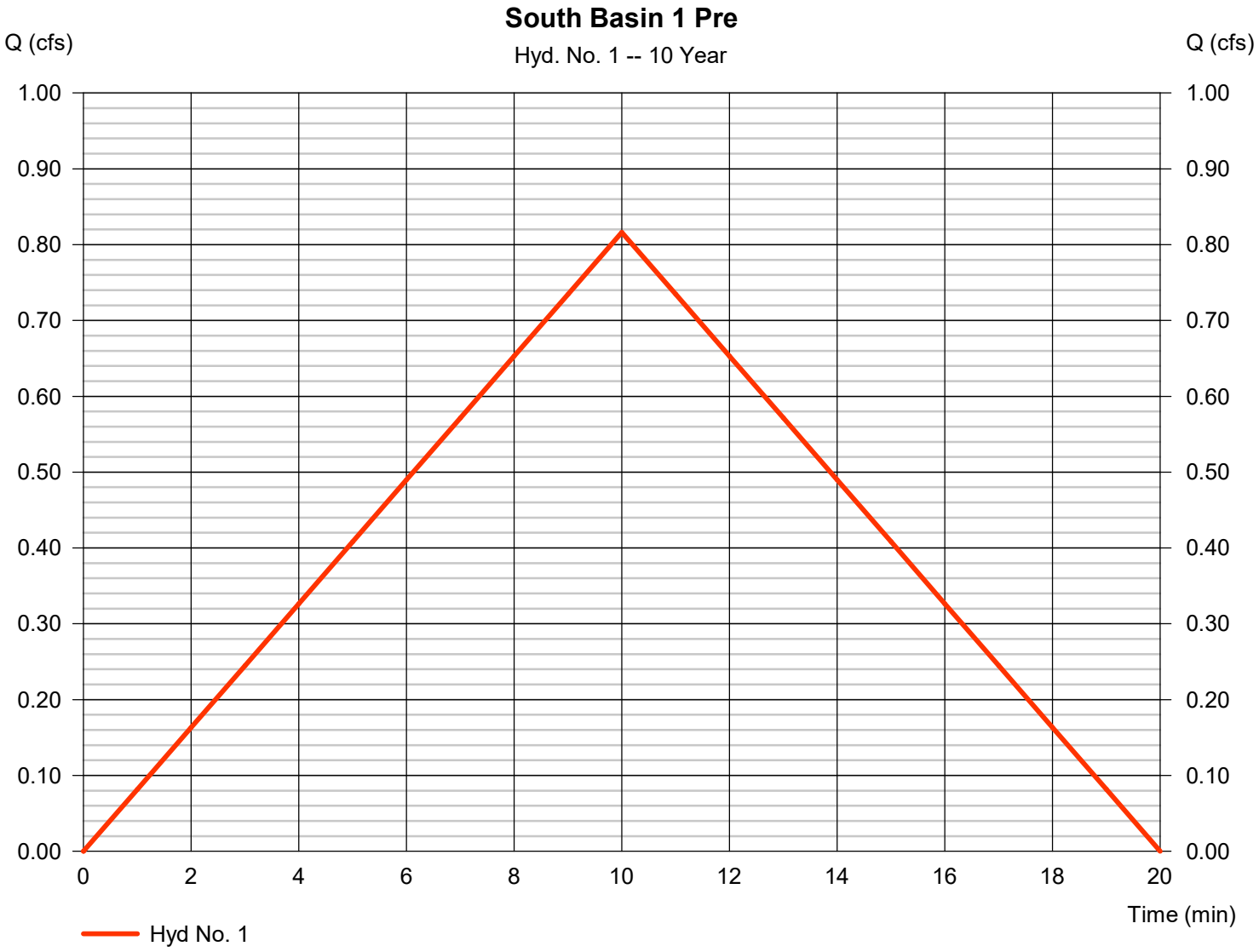


Hydrograph Report

Hyd. No. 1

South Basin 1 Pre

Hydrograph type	=	Rational	Peak discharge	=	0.816 cfs
Storm frequency	=	10 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	490 cuft
Drainage area	=	0.430 ac	Runoff coeff.	=	0.45
Intensity	=	4.219 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

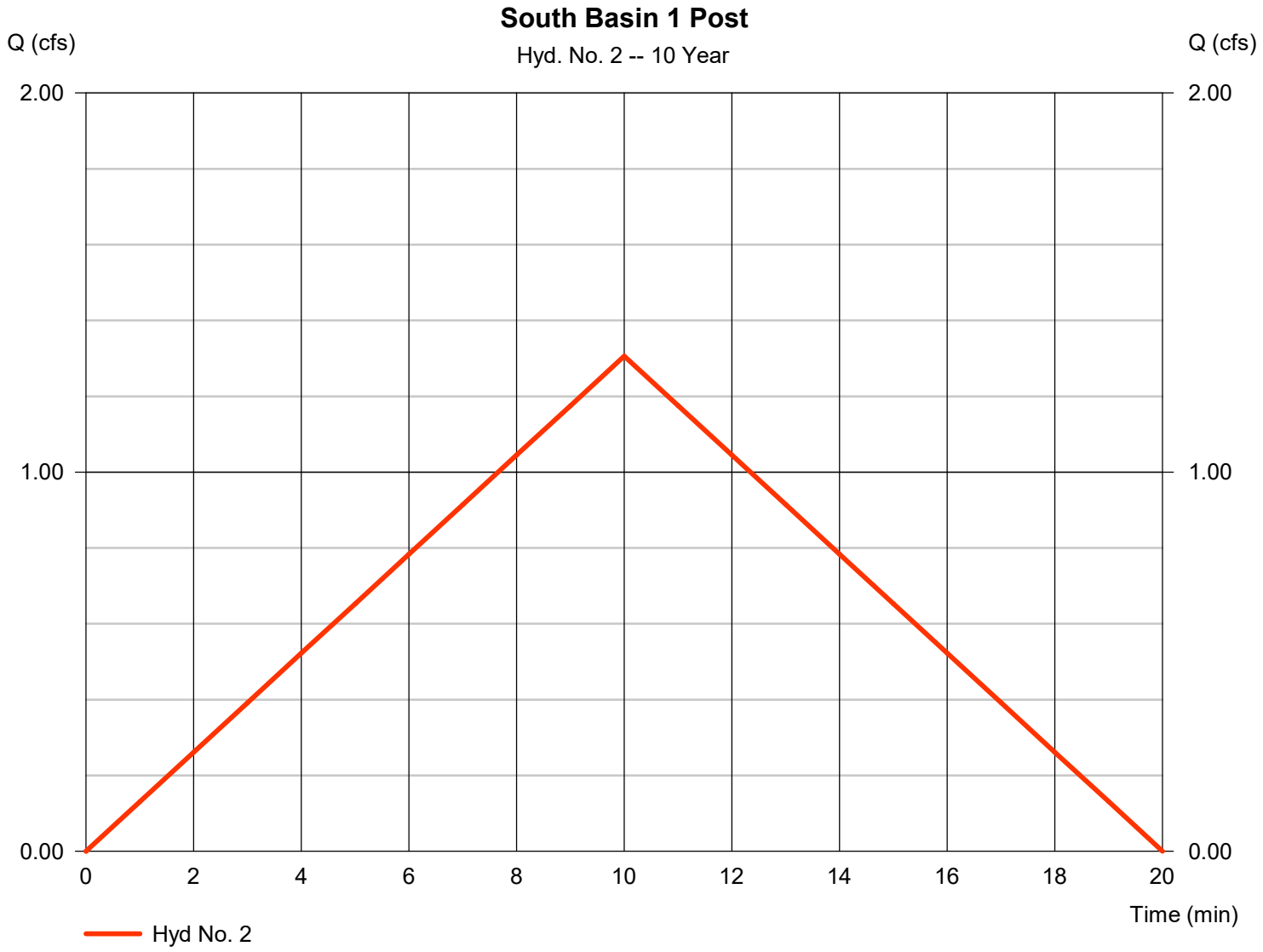


Hydrograph Report

Hyd. No. 2

South Basin 1 Post

Hydrograph type	=	Rational	Peak discharge	=	1.306 cfs
Storm frequency	=	10 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	784 cuft
Drainage area	=	0.430 ac	Runoff coeff.	=	0.72
Intensity	=	4.219 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

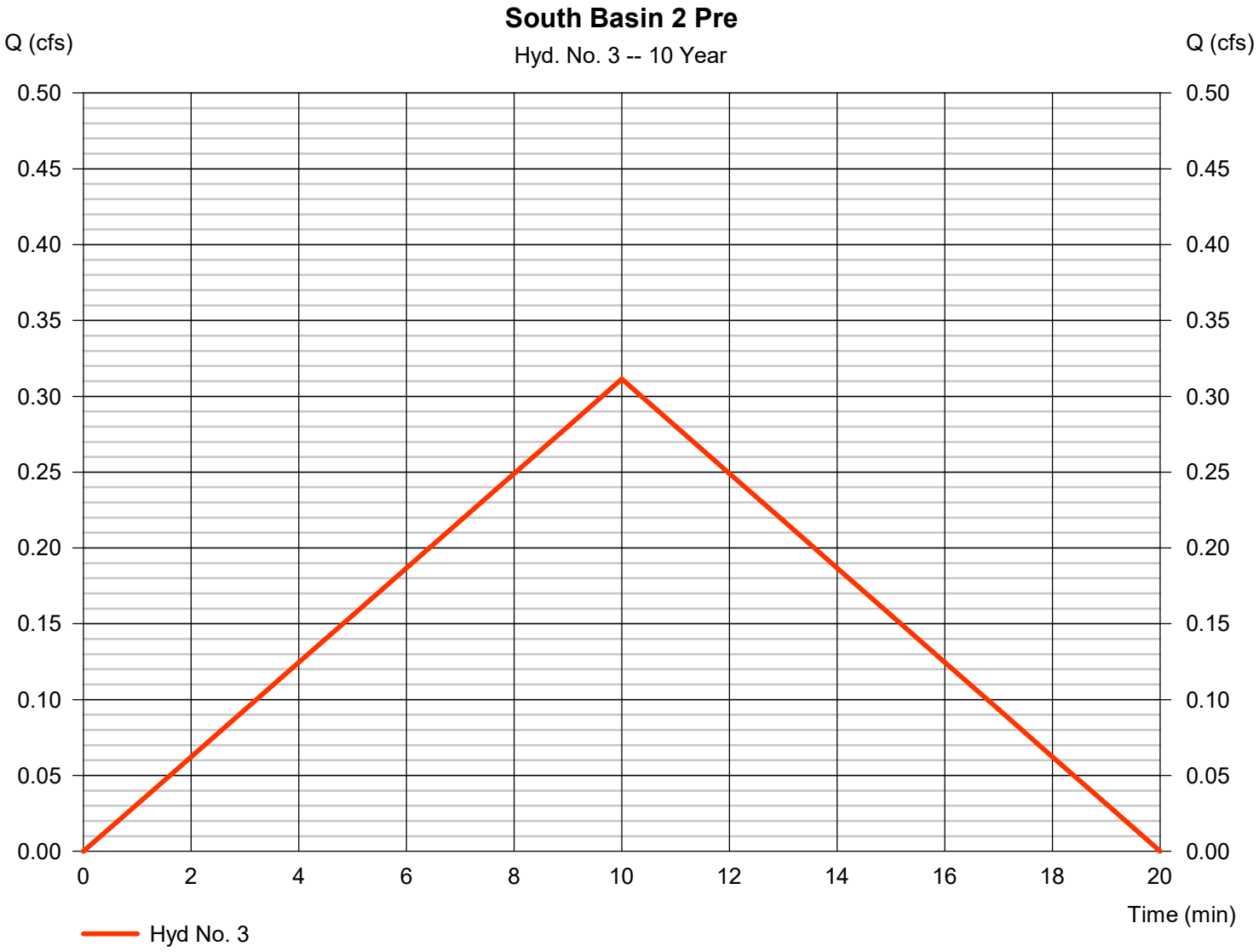


Hydrograph Report

Hyd. No. 3

South Basin 2 Pre

Hydrograph type	=	Rational	Peak discharge	=	0.311 cfs
Storm frequency	=	10 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	187 cuft
Drainage area	=	0.164 ac	Runoff coeff.	=	0.45
Intensity	=	4.219 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

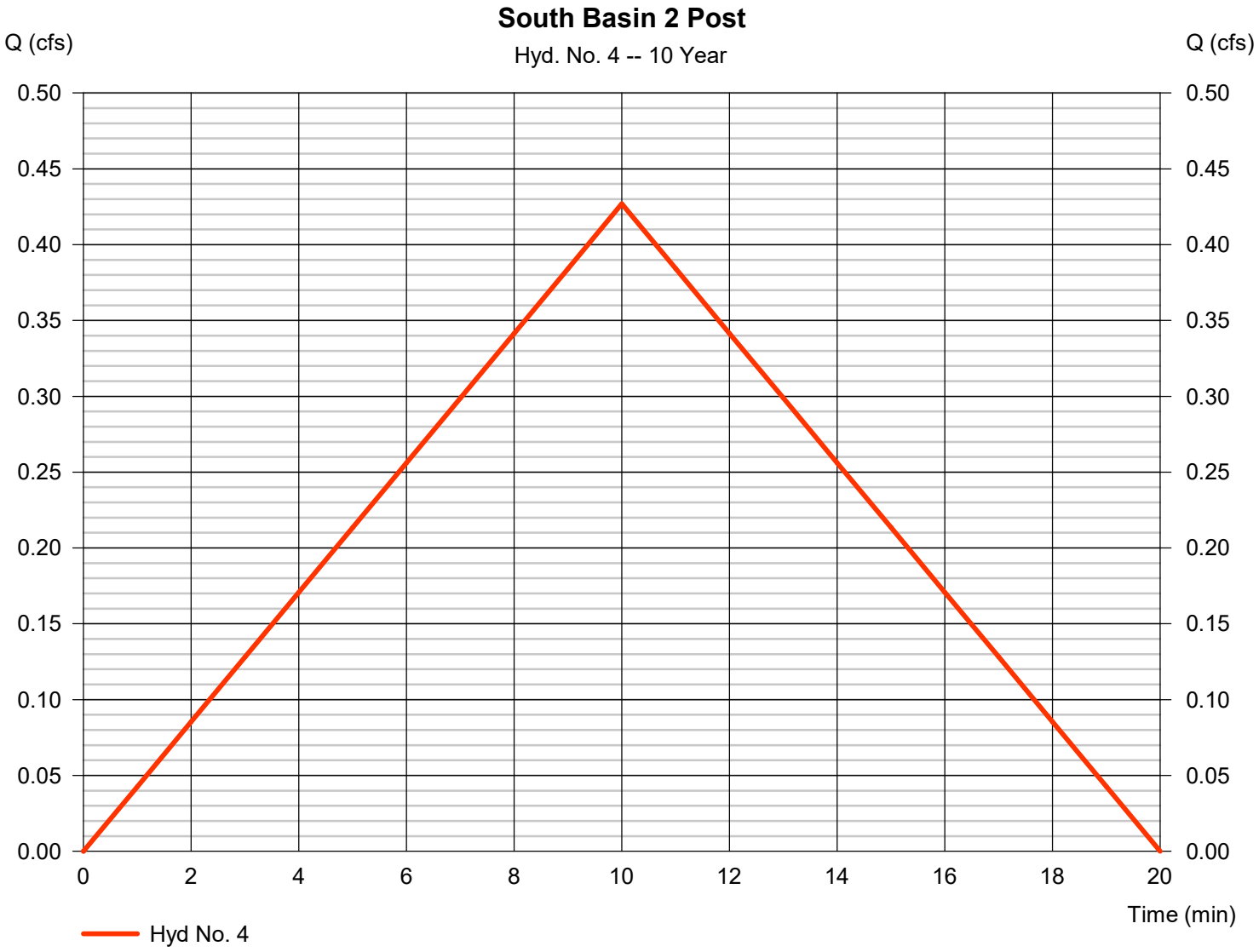


Hydrograph Report

Hyd. No. 4

South Basin 2 Post

Hydrograph type	=	Rational	Peak discharge	=	0.427 cfs
Storm frequency	=	10 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	256 cuft
Drainage area	=	0.164 ac	Runoff coeff.	=	0.617
Intensity	=	4.219 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

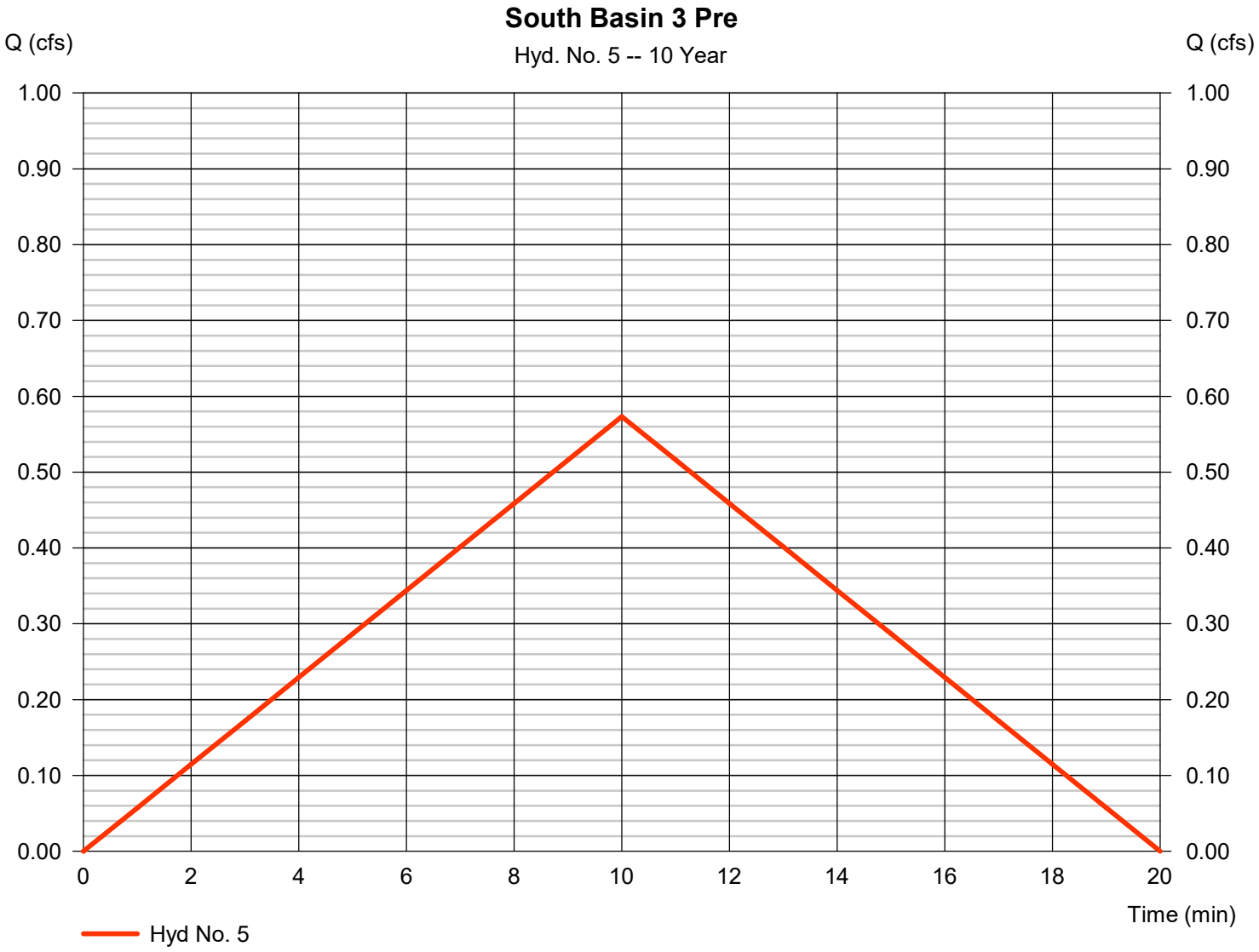


Hydrograph Report

Hyd. No. 5

South Basin 3 Pre

Hydrograph type	=	Rational	Peak discharge	=	0.573 cfs
Storm frequency	=	10 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	344 cuft
Drainage area	=	0.302 ac	Runoff coeff.	=	0.45
Intensity	=	4.219 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

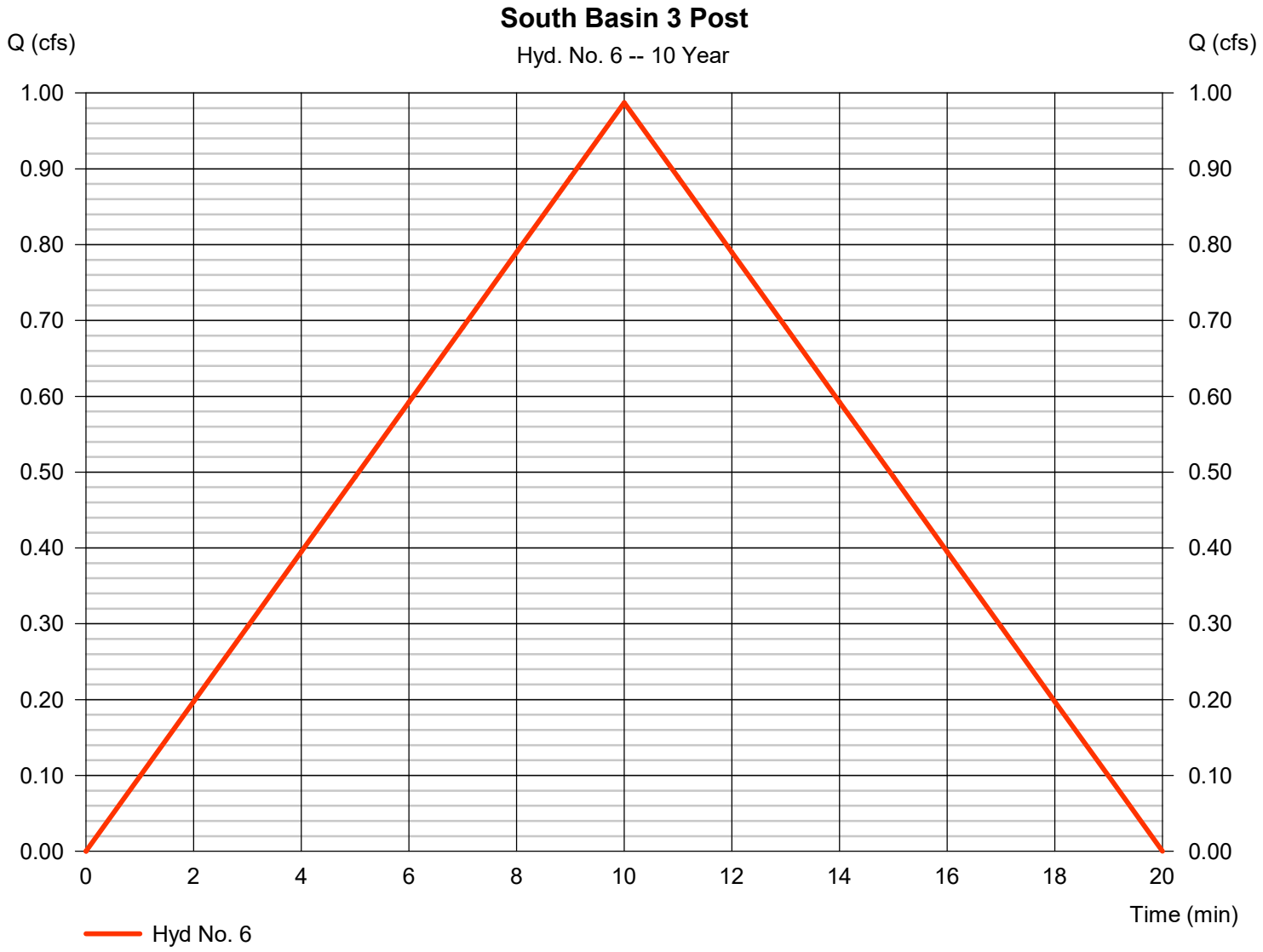


Hydrograph Report

Hyd. No. 6

South Basin 3 Post

Hydrograph type	=	Rational	Peak discharge	=	0.987 cfs
Storm frequency	=	10 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	592 cuft
Drainage area	=	0.302 ac	Runoff coeff.	=	0.775
Intensity	=	4.219 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

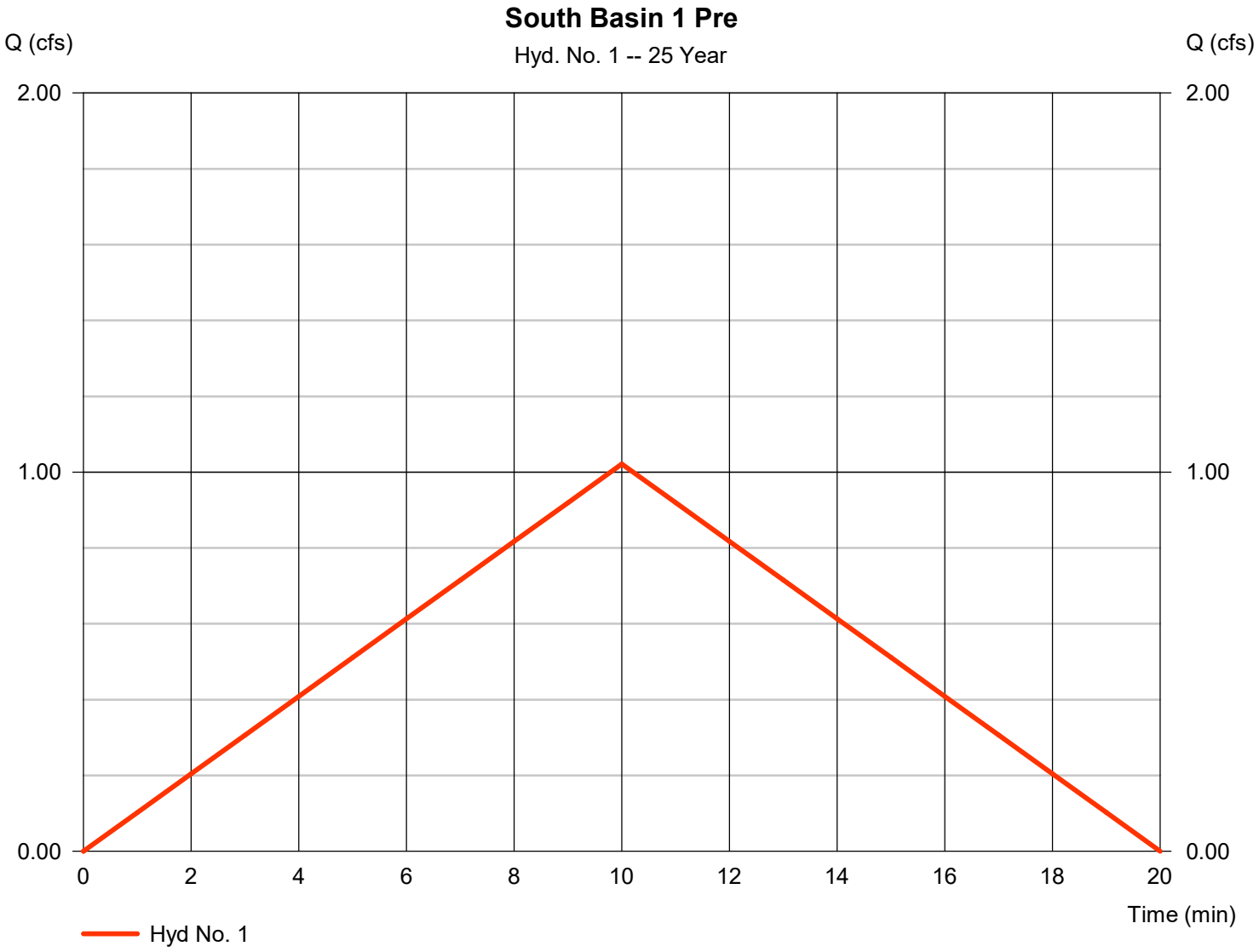


Hydrograph Report

Hyd. No. 1

South Basin 1 Pre

Hydrograph type	=	Rational	Peak discharge	=	1.022 cfs
Storm frequency	=	25 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	613 cuft
Drainage area	=	0.430 ac	Runoff coeff.	=	0.45
Intensity	=	5.280 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

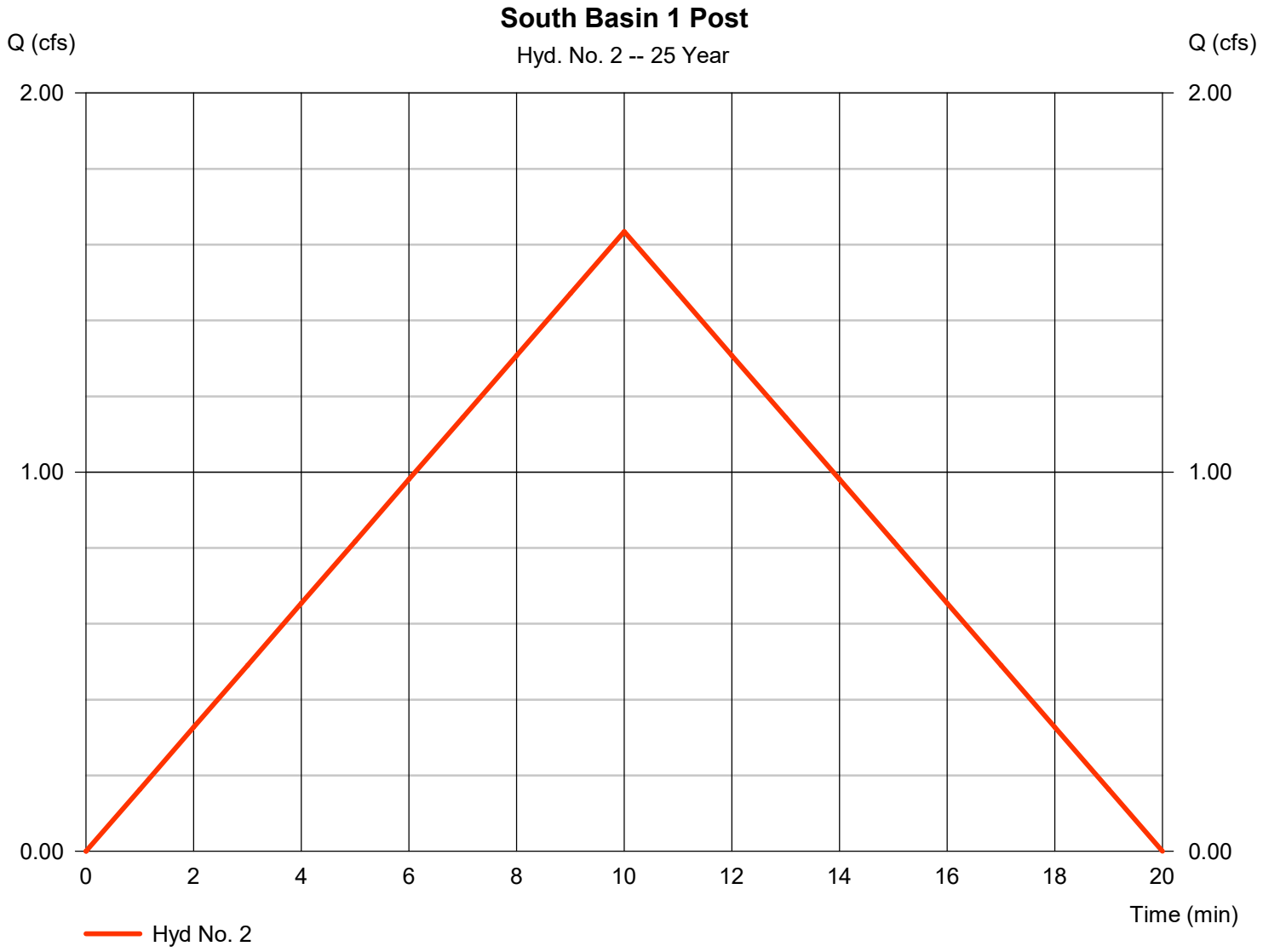


Hydrograph Report

Hyd. No. 2

South Basin 1 Post

Hydrograph type	=	Rational	Peak discharge	=	1.635 cfs
Storm frequency	=	25 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	981 cuft
Drainage area	=	0.430 ac	Runoff coeff.	=	0.72
Intensity	=	5.280 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

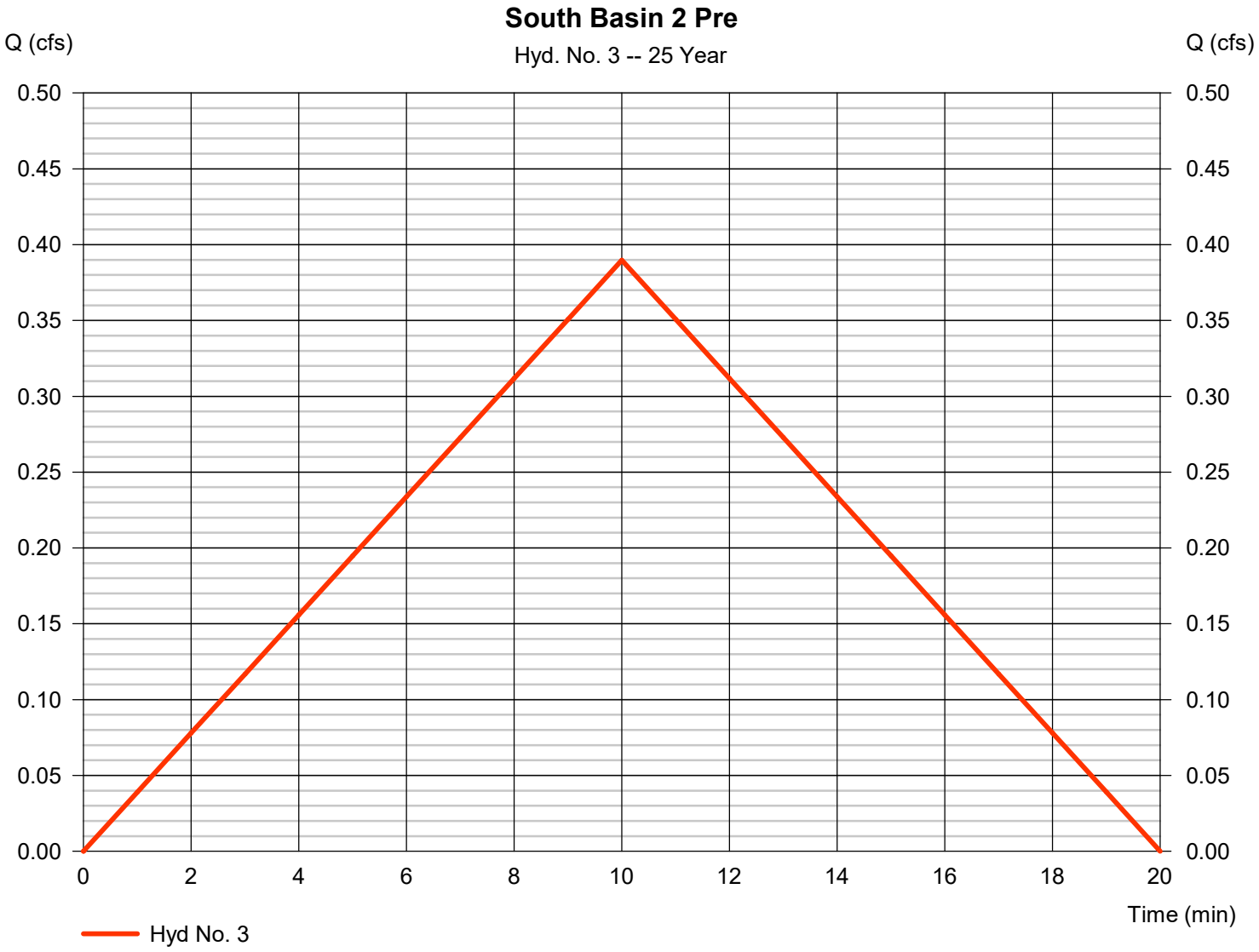


Hydrograph Report

Hyd. No. 3

South Basin 2 Pre

Hydrograph type	=	Rational	Peak discharge	=	0.390 cfs
Storm frequency	=	25 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	234 cuft
Drainage area	=	0.164 ac	Runoff coeff.	=	0.45
Intensity	=	5.280 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

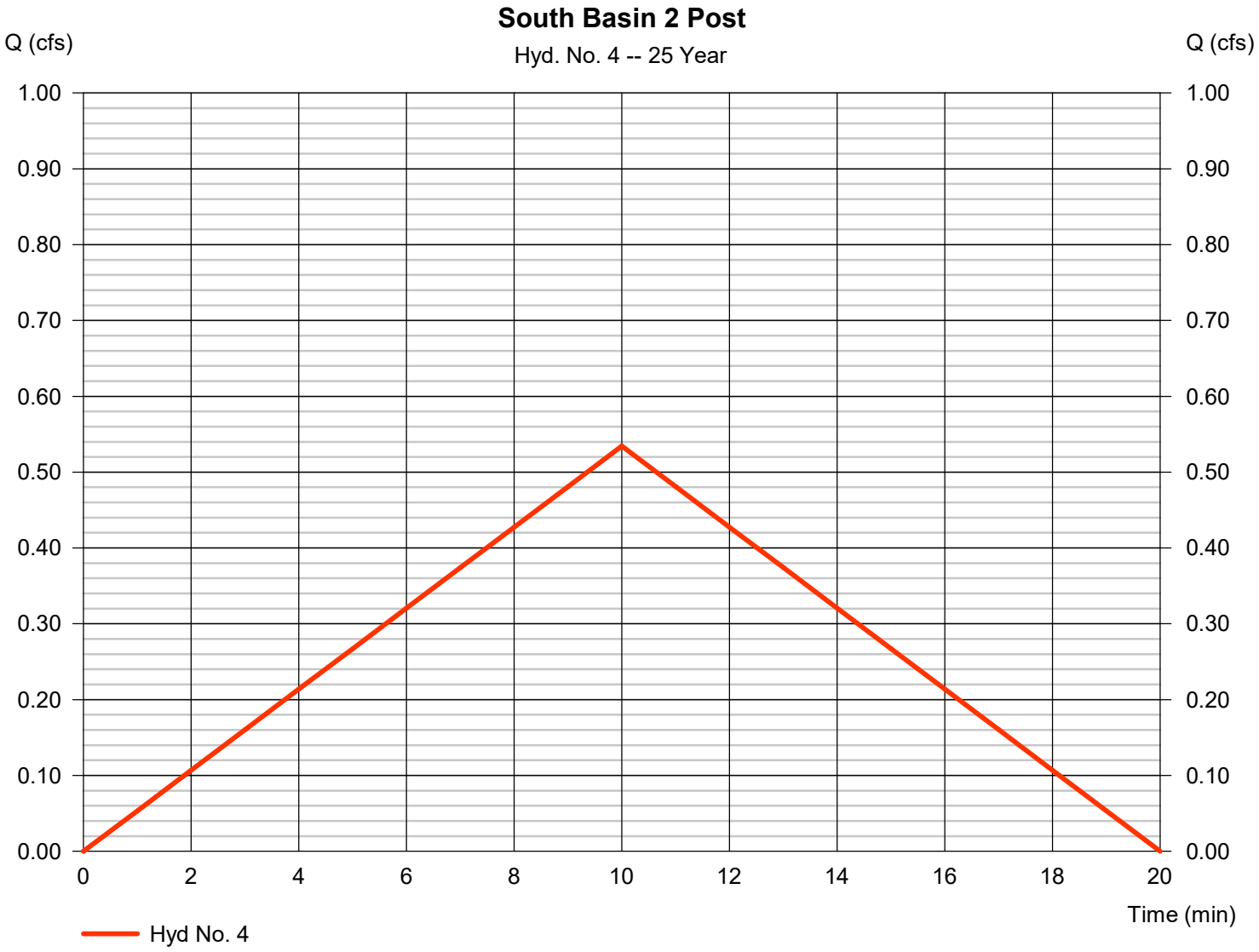


Hydrograph Report

Hyd. No. 4

South Basin 2 Post

Hydrograph type	=	Rational	Peak discharge	=	0.534 cfs
Storm frequency	=	25 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	321 cuft
Drainage area	=	0.164 ac	Runoff coeff.	=	0.617
Intensity	=	5.280 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

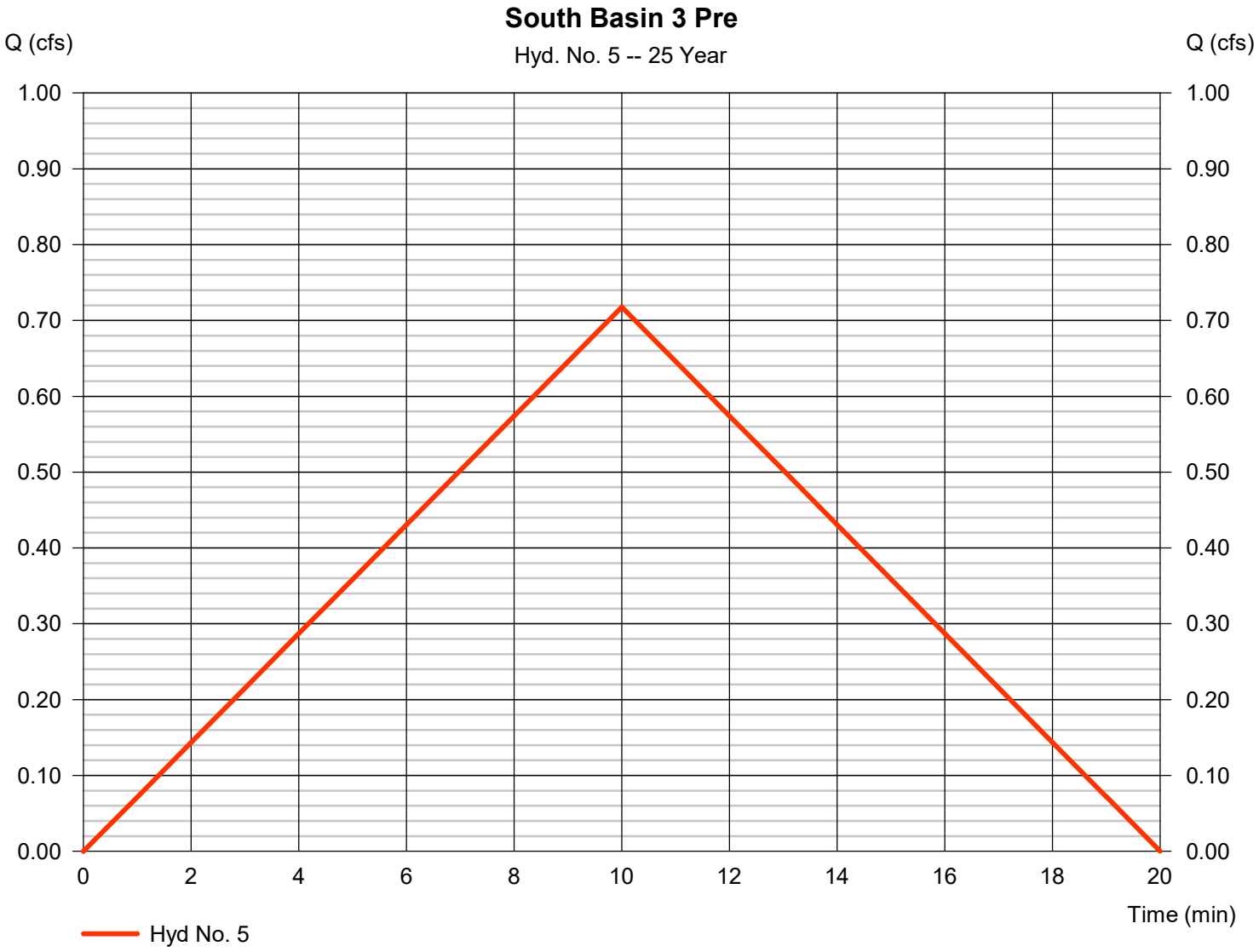


Hydrograph Report

Hyd. No. 5

South Basin 3 Pre

Hydrograph type	=	Rational	Peak discharge	=	0.718 cfs
Storm frequency	=	25 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	431 cuft
Drainage area	=	0.302 ac	Runoff coeff.	=	0.45
Intensity	=	5.280 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

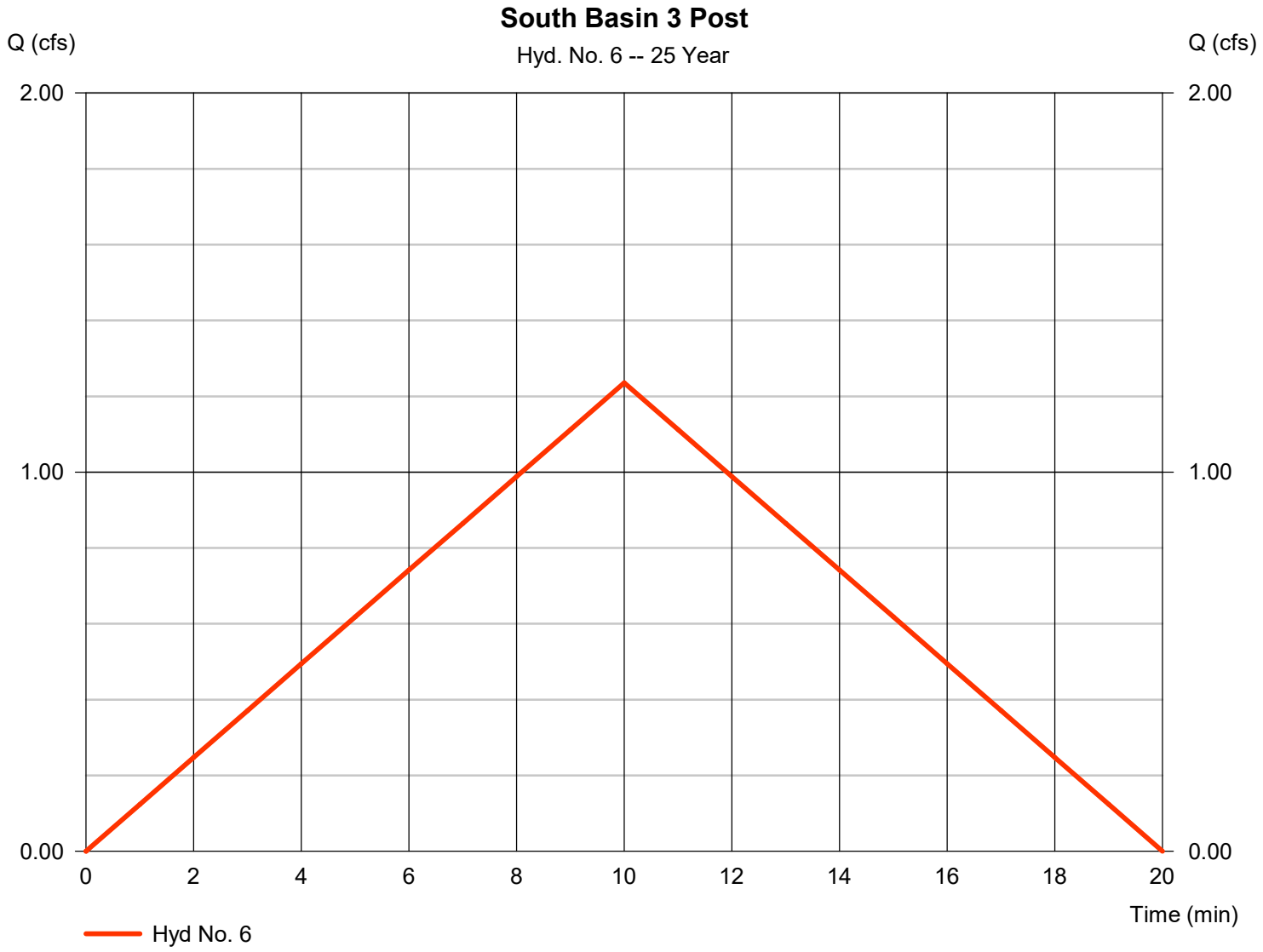


Hydrograph Report

Hyd. No. 6

South Basin 3 Post

Hydrograph type	=	Rational	Peak discharge	=	1.236 cfs
Storm frequency	=	25 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	741 cuft
Drainage area	=	0.302 ac	Runoff coeff.	=	0.775
Intensity	=	5.280 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

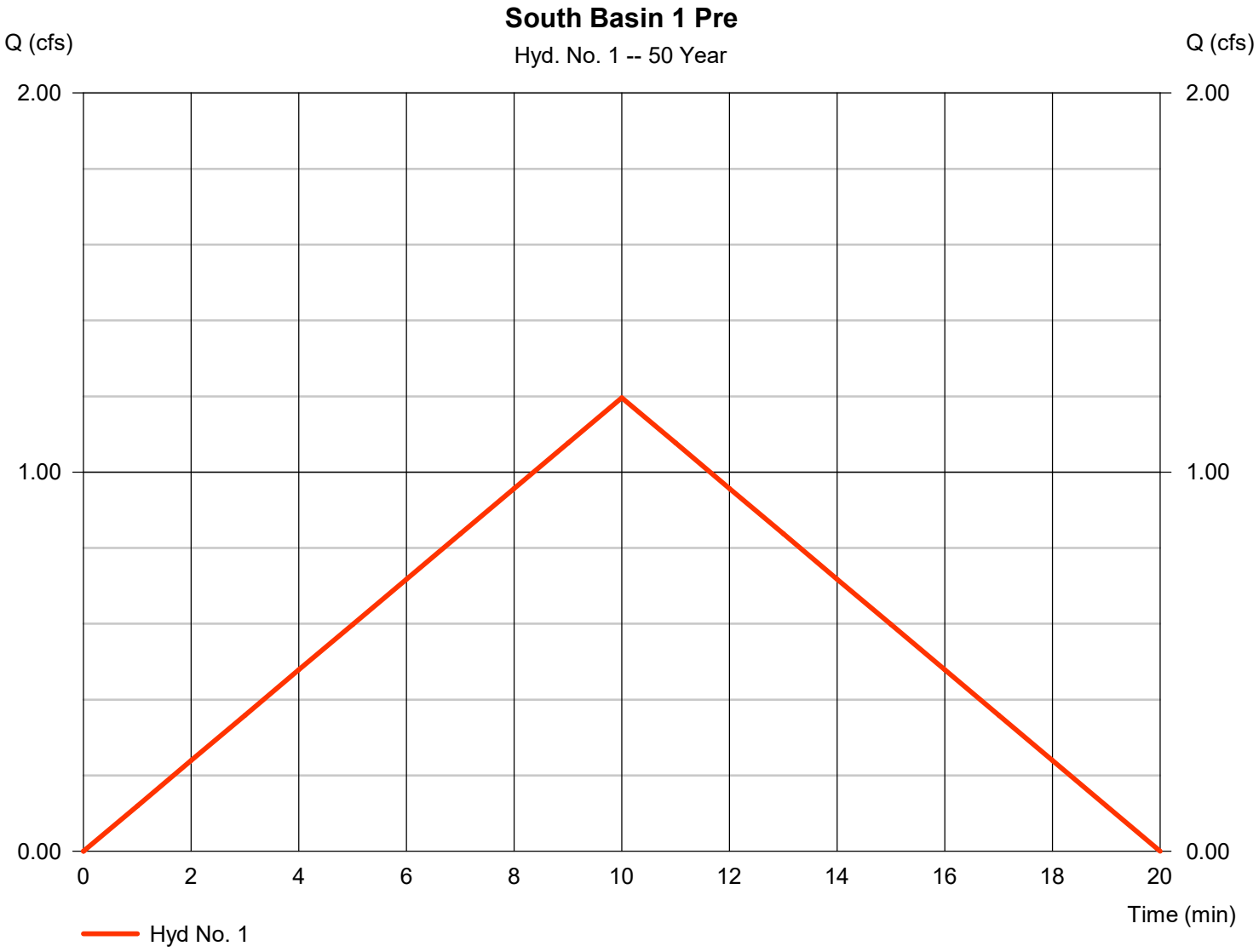


Hydrograph Report

Hyd. No. 1

South Basin 1 Pre

Hydrograph type	=	Rational	Peak discharge	=	1.196 cfs
Storm frequency	=	50 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	718 cuft
Drainage area	=	0.430 ac	Runoff coeff.	=	0.45
Intensity	=	6.182 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

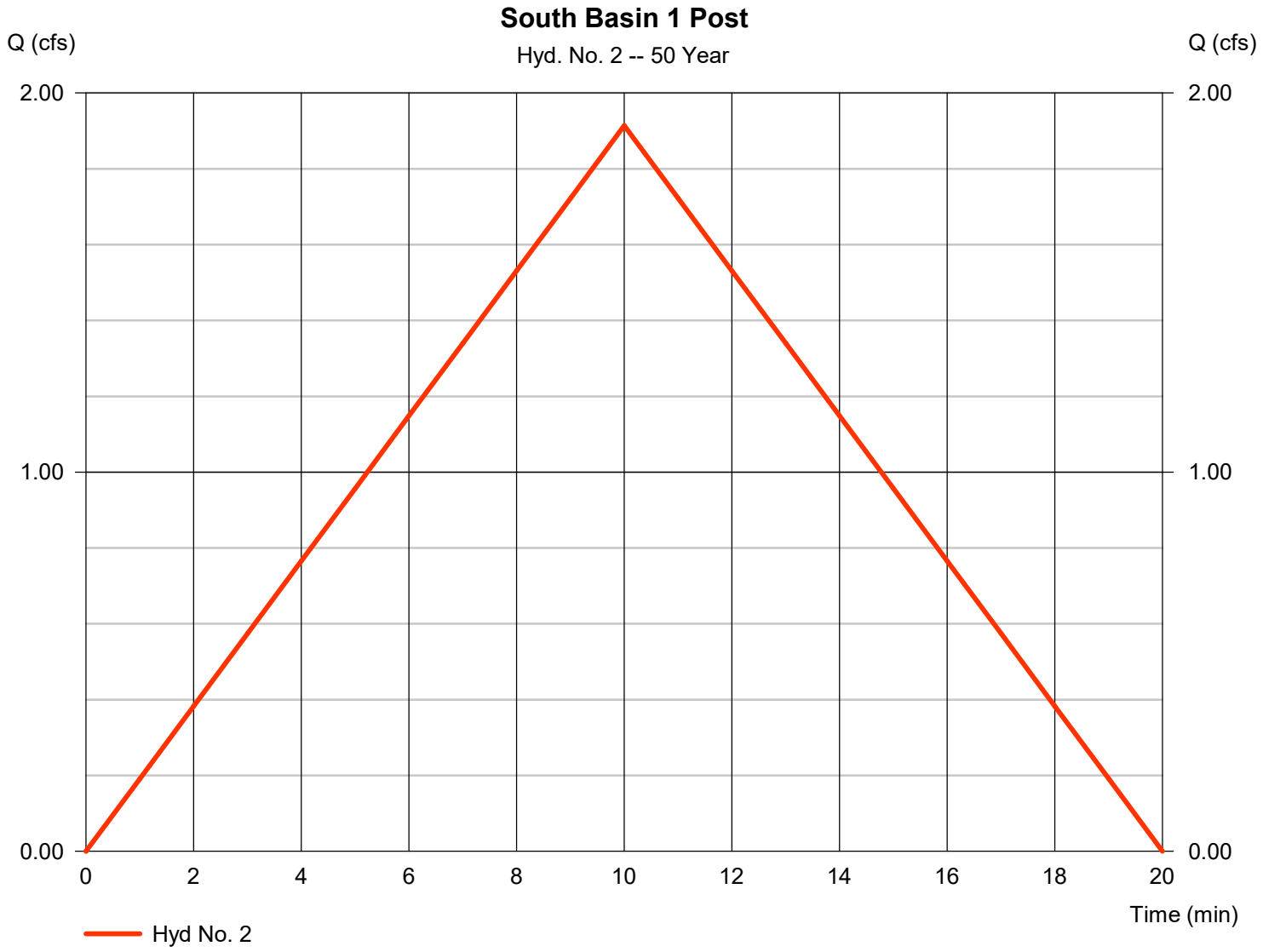


Hydrograph Report

Hyd. No. 2

South Basin 1 Post

Hydrograph type	=	Rational	Peak discharge	=	1.914 cfs
Storm frequency	=	50 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	1,148 cuft
Drainage area	=	0.430 ac	Runoff coeff.	=	0.72
Intensity	=	6.182 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

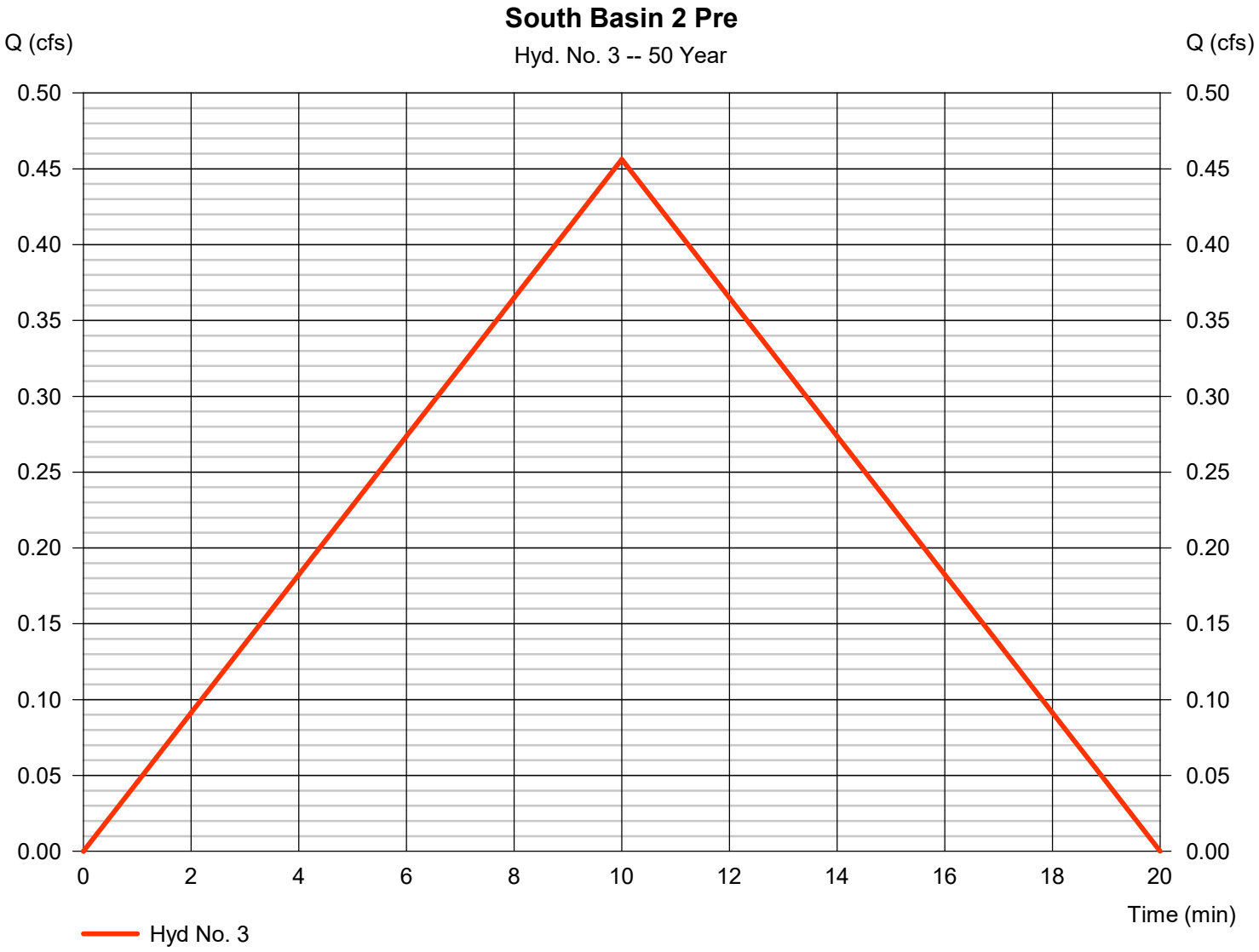


Hydrograph Report

Hyd. No. 3

South Basin 2 Pre

Hydrograph type	=	Rational	Peak discharge	=	0.456 cfs
Storm frequency	=	50 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	274 cuft
Drainage area	=	0.164 ac	Runoff coeff.	=	0.45
Intensity	=	6.182 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

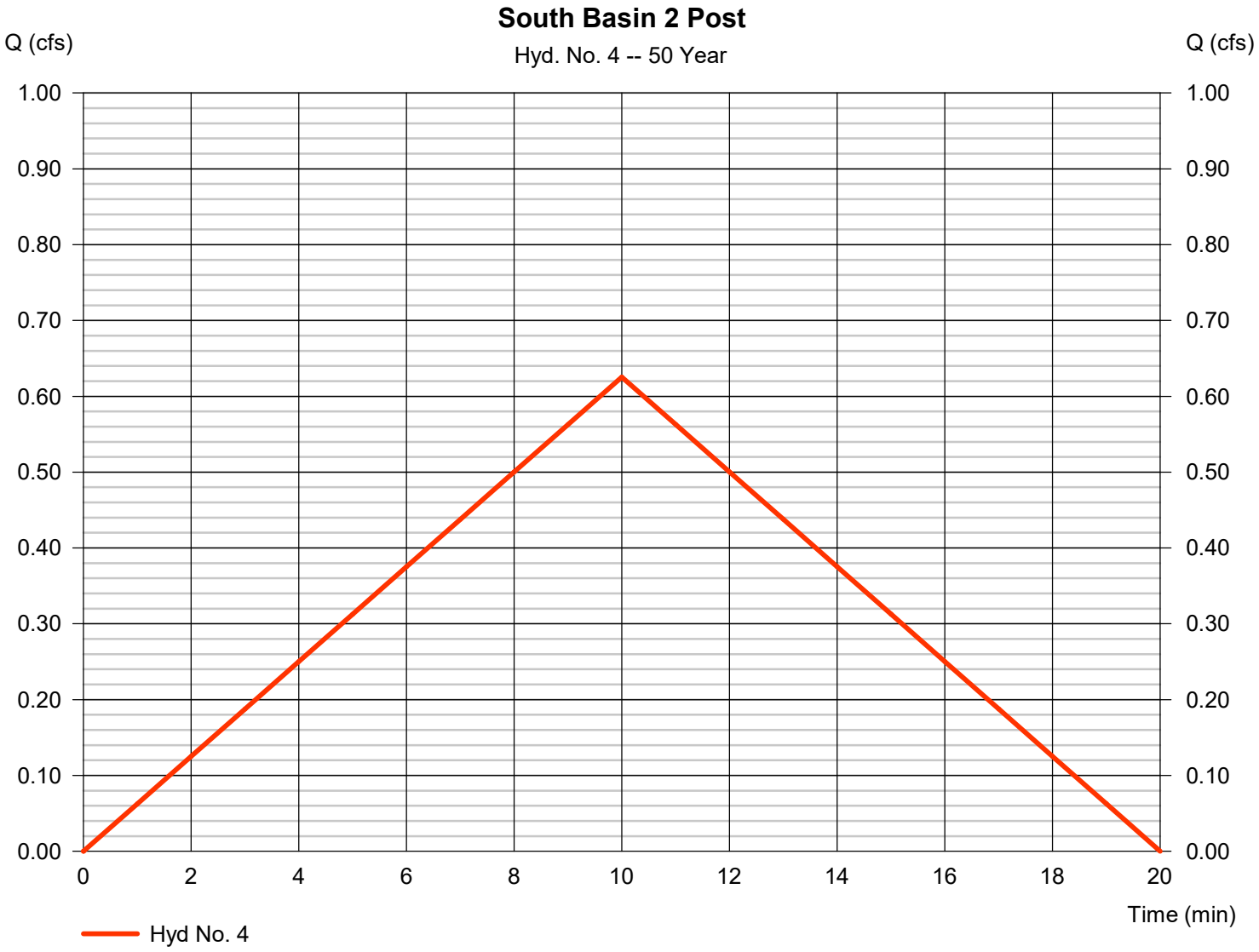


Hydrograph Report

Hyd. No. 4

South Basin 2 Post

Hydrograph type	=	Rational	Peak discharge	=	0.626 cfs
Storm frequency	=	50 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	375 cuft
Drainage area	=	0.164 ac	Runoff coeff.	=	0.617
Intensity	=	6.182 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

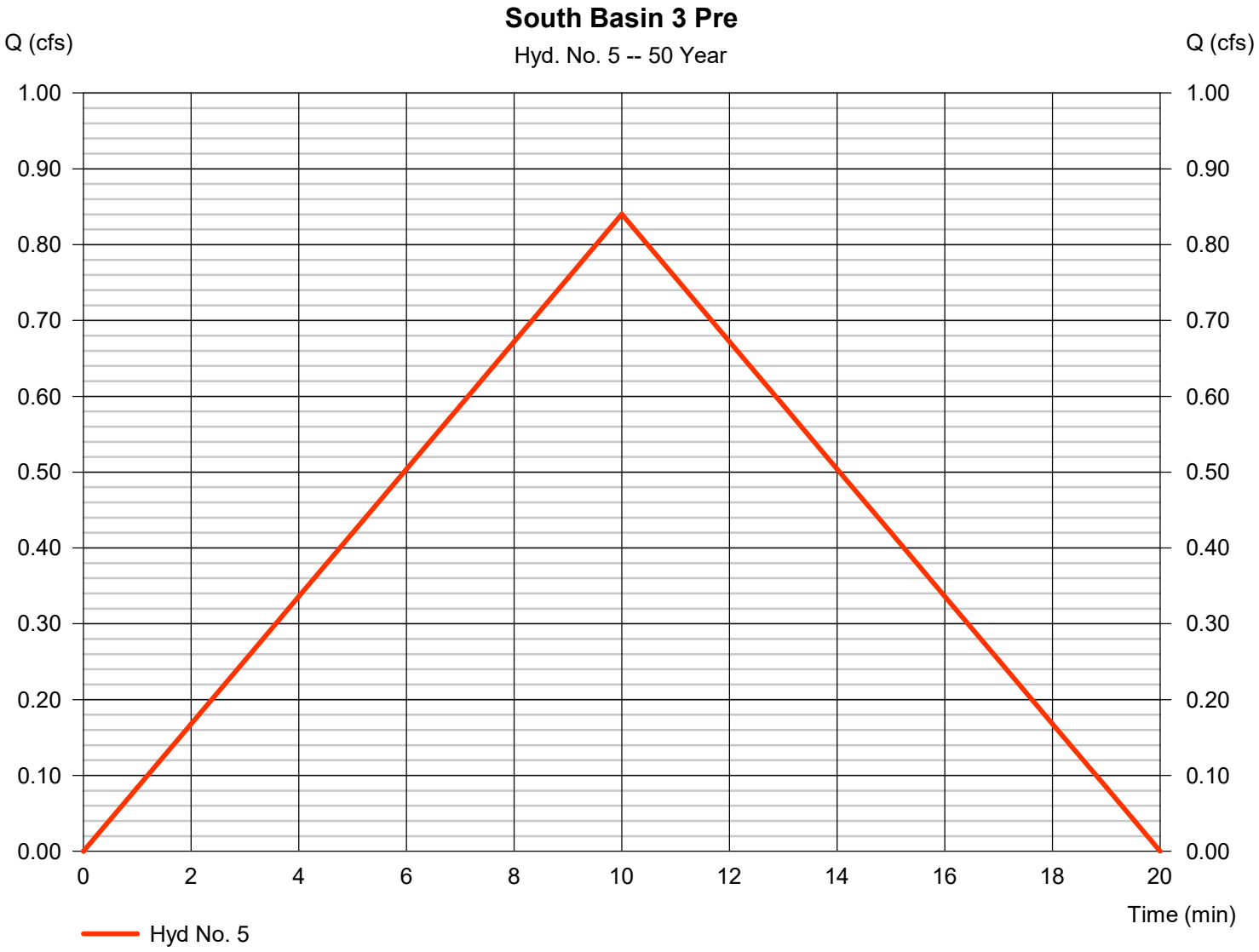


Hydrograph Report

Hyd. No. 5

South Basin 3 Pre

Hydrograph type	=	Rational	Peak discharge	=	0.840 cfs
Storm frequency	=	50 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	504 cuft
Drainage area	=	0.302 ac	Runoff coeff.	=	0.45
Intensity	=	6.182 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

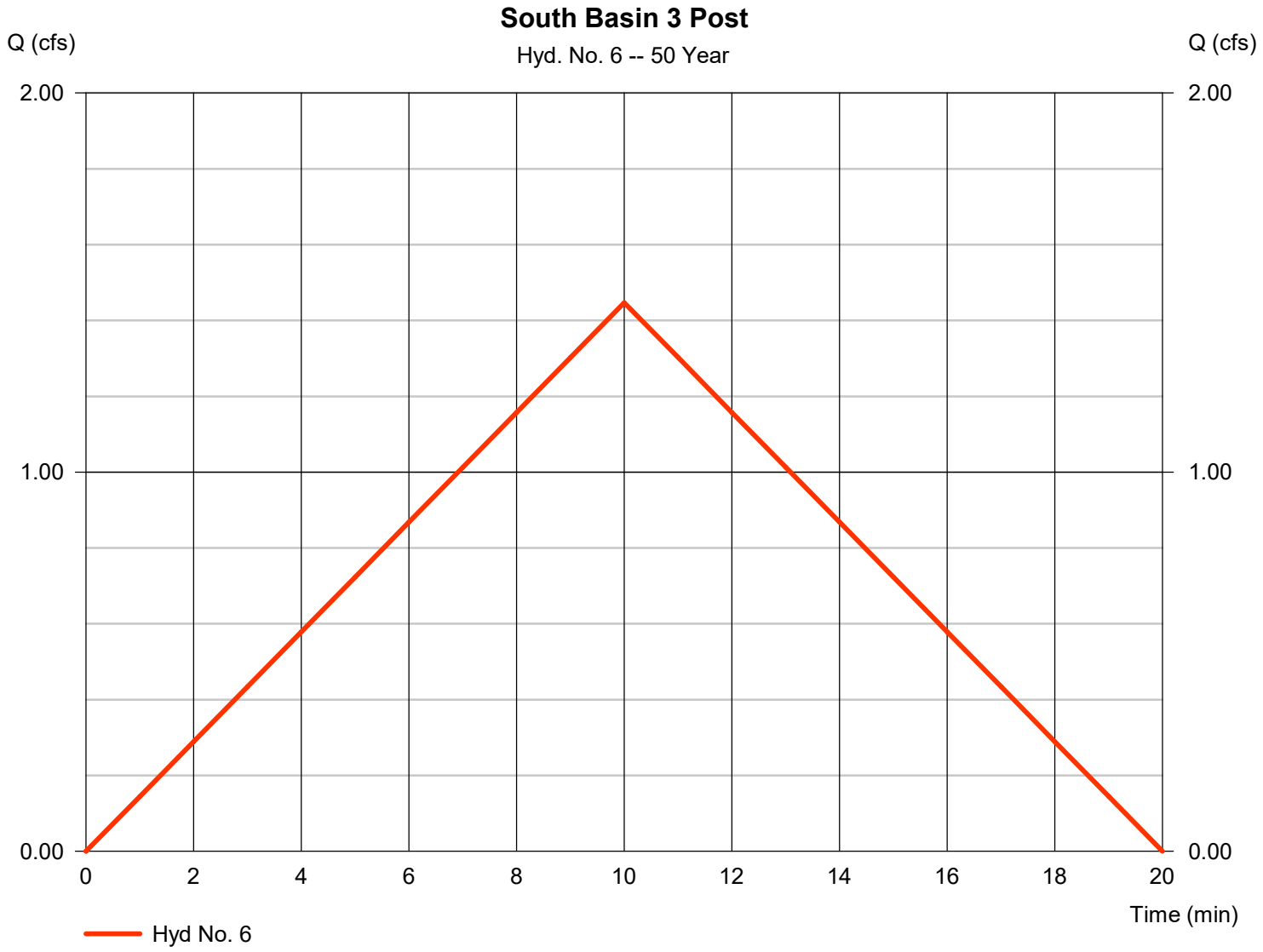


Hydrograph Report

Hyd. No. 6

South Basin 3 Post

Hydrograph type	=	Rational	Peak discharge	=	1.447 cfs
Storm frequency	=	50 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	868 cuft
Drainage area	=	0.302 ac	Runoff coeff.	=	0.775
Intensity	=	6.182 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

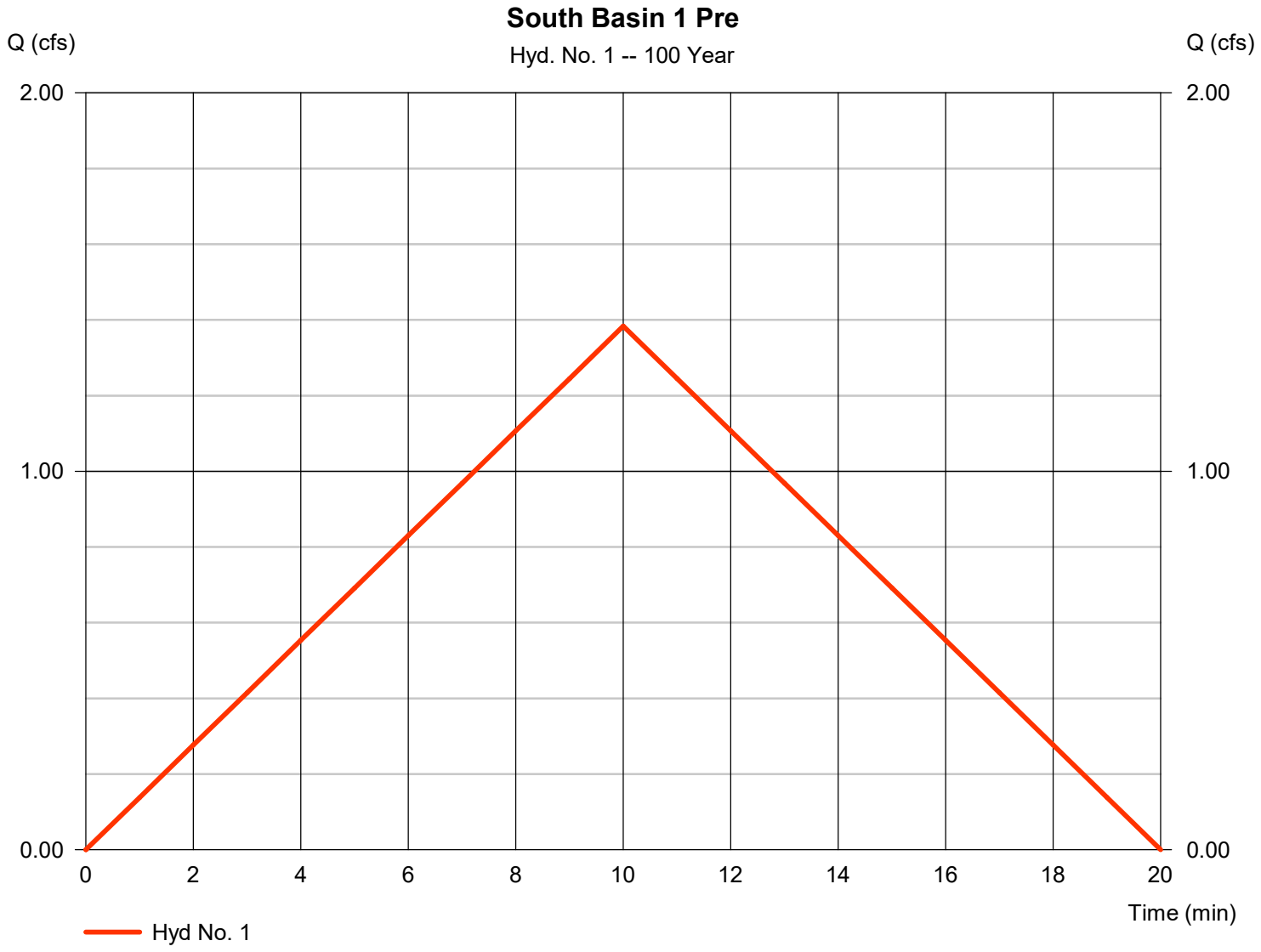


Hydrograph Report

Hyd. No. 1

South Basin 1 Pre

Hydrograph type	=	Rational	Peak discharge	=	1.384 cfs
Storm frequency	=	100 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	830 cuft
Drainage area	=	0.430 ac	Runoff coeff.	=	0.45
Intensity	=	7.150 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

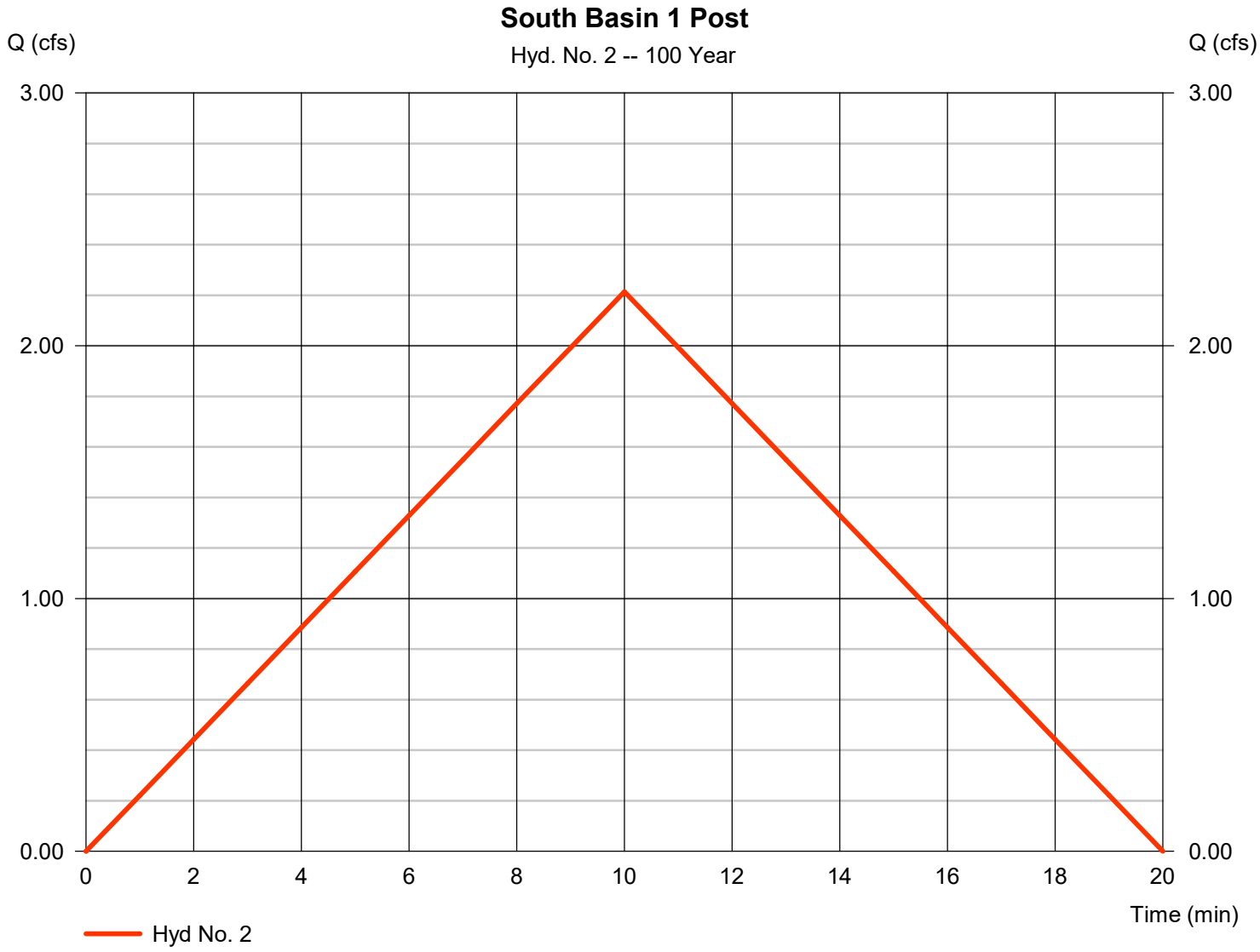


Hydrograph Report

Hyd. No. 2

South Basin 1 Post

Hydrograph type	=	Rational	Peak discharge	=	2.214 cfs
Storm frequency	=	100 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	1,328 cuft
Drainage area	=	0.430 ac	Runoff coeff.	=	0.72
Intensity	=	7.150 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

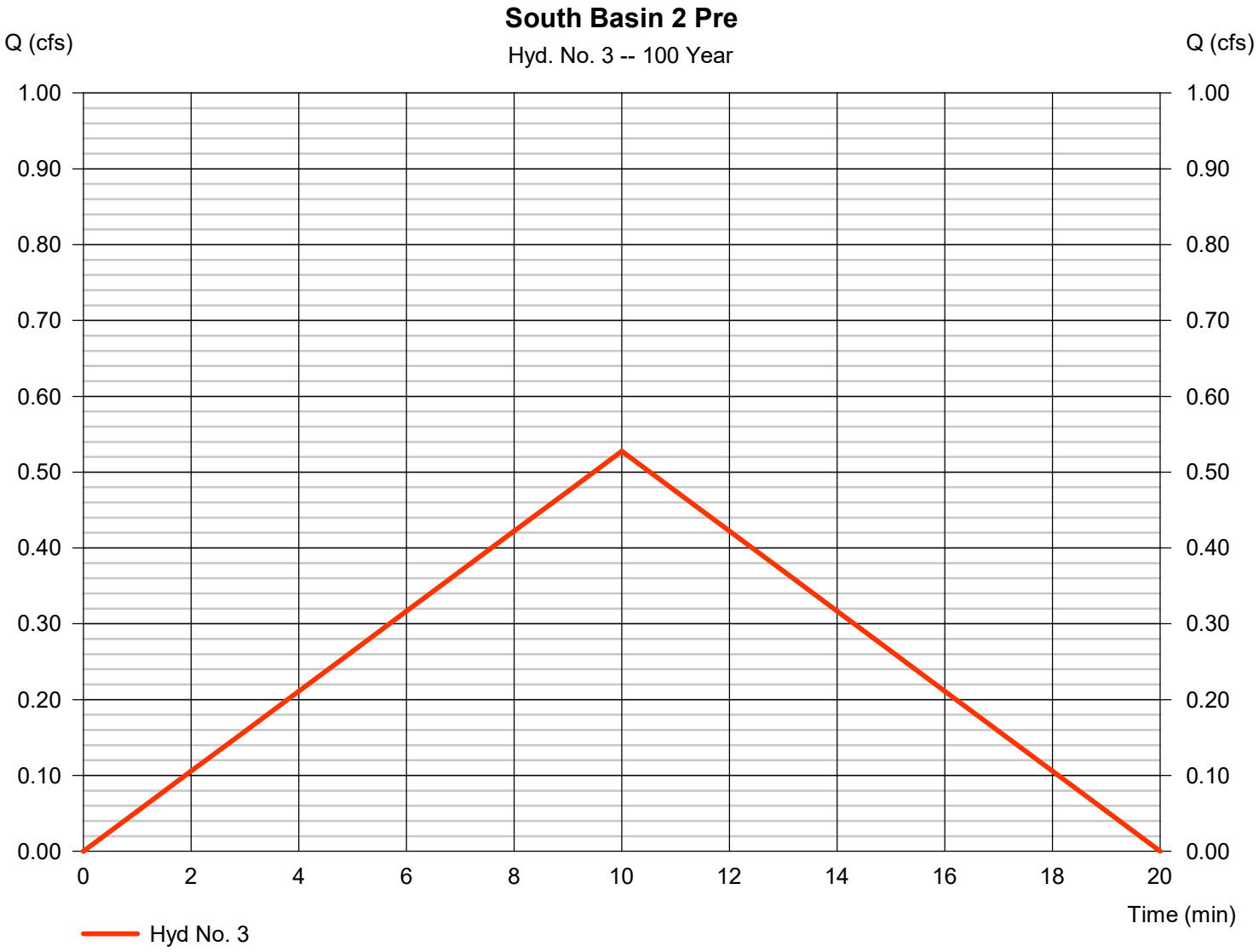


Hydrograph Report

Hyd. No. 3

South Basin 2 Pre

Hydrograph type	=	Rational	Peak discharge	=	0.528 cfs
Storm frequency	=	100 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	317 cuft
Drainage area	=	0.164 ac	Runoff coeff.	=	0.45
Intensity	=	7.150 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

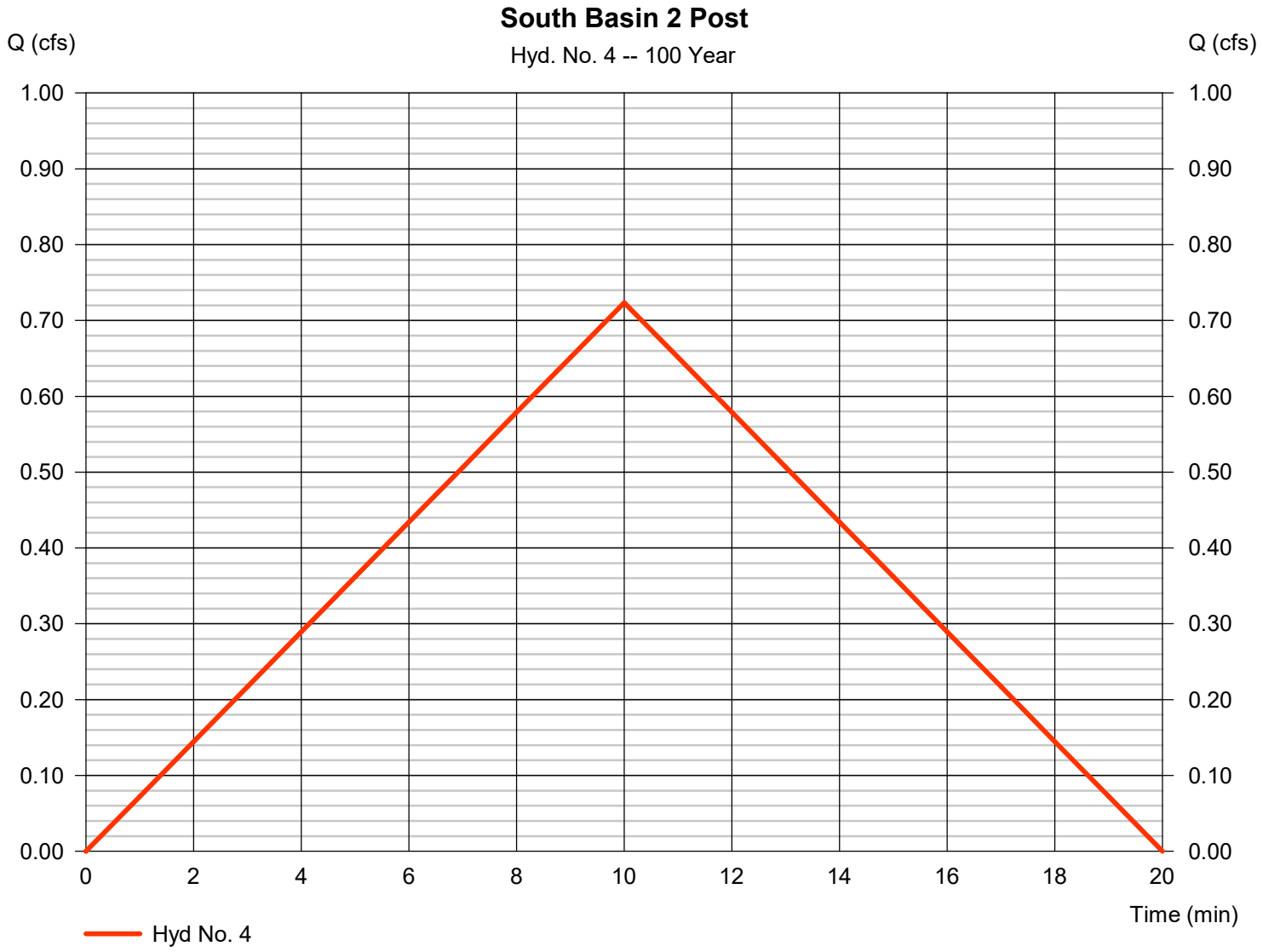


Hydrograph Report

Hyd. No. 4

South Basin 2 Post

Hydrograph type	=	Rational	Peak discharge	=	0.724 cfs
Storm frequency	=	100 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	434 cuft
Drainage area	=	0.164 ac	Runoff coeff.	=	0.617
Intensity	=	7.150 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

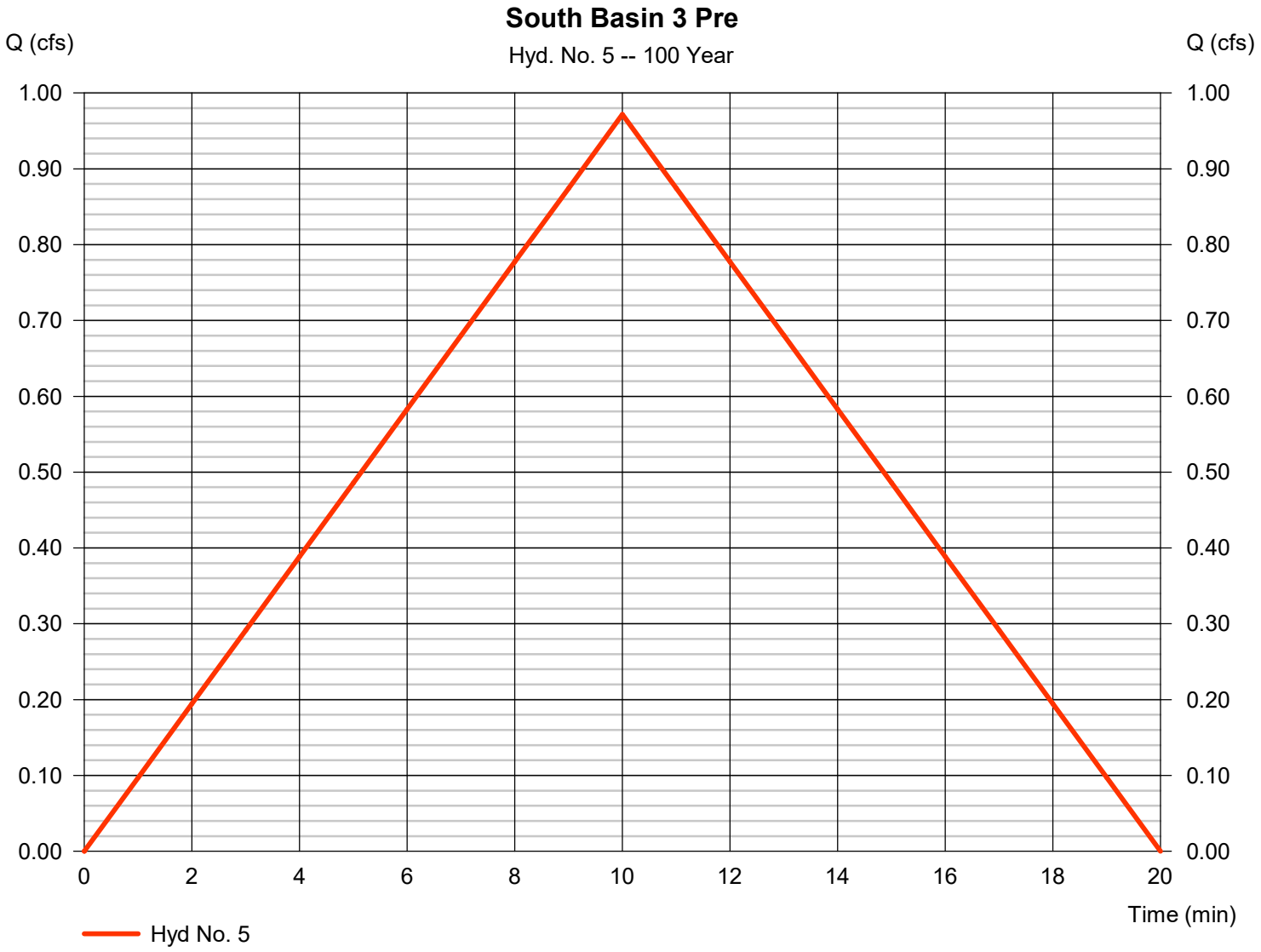


Hydrograph Report

Hyd. No. 5

South Basin 3 Pre

Hydrograph type	=	Rational	Peak discharge	=	0.972 cfs
Storm frequency	=	100 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	583 cuft
Drainage area	=	0.302 ac	Runoff coeff.	=	0.45
Intensity	=	7.150 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

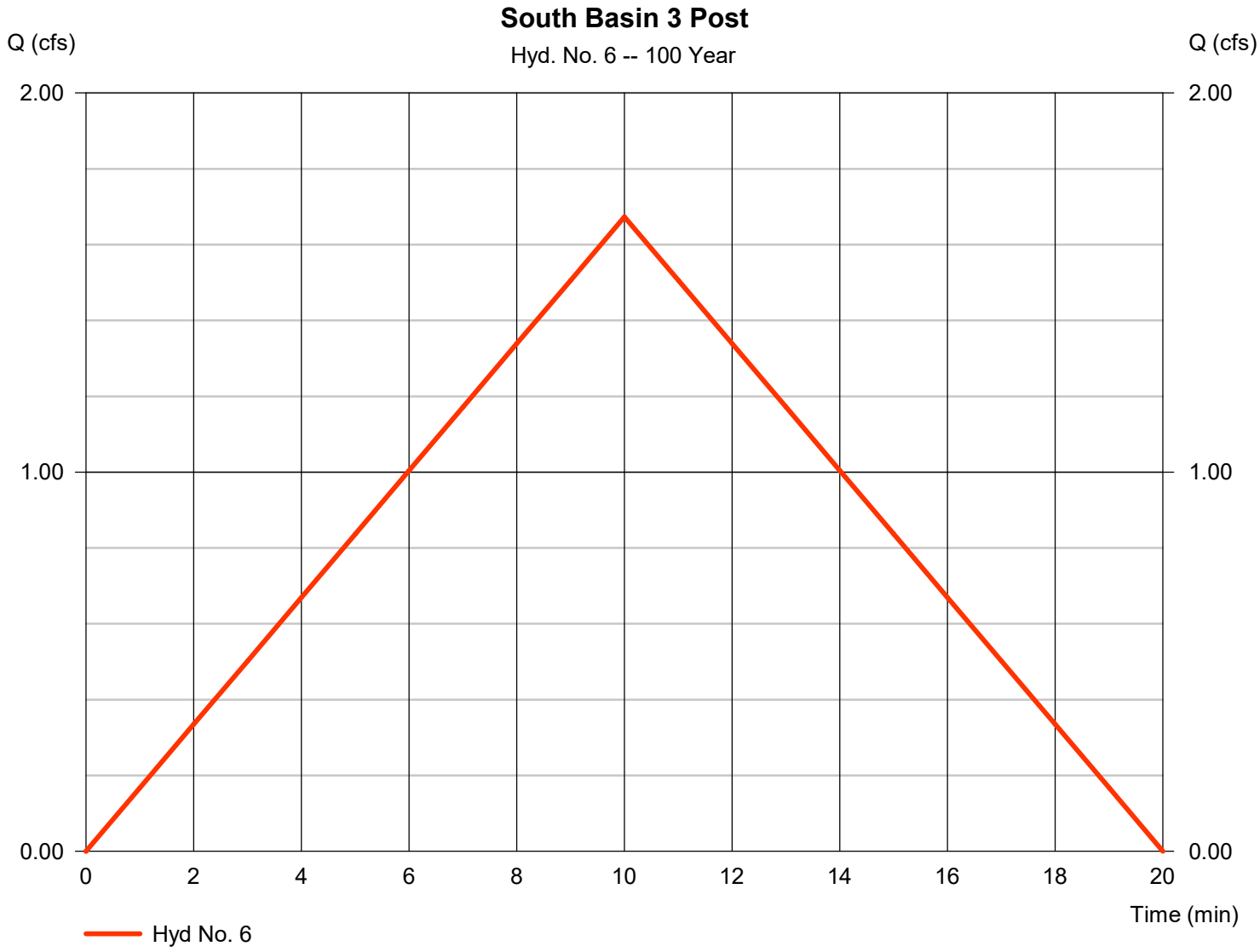


Hydrograph Report

Hyd. No. 6

South Basin 3 Post

Hydrograph type	=	Rational	Peak discharge	=	1.674 cfs
Storm frequency	=	100 yrs	Time to peak	=	10 min
Time interval	=	1 min	Hyd. volume	=	1,004 cuft
Drainage area	=	0.302 ac	Runoff coeff.	=	0.775
Intensity	=	7.150 in/hr	Tc by User	=	10.00 min
IDF Curve	=	Sedona.IDF	Asc/Rec limb fact	=	1/1

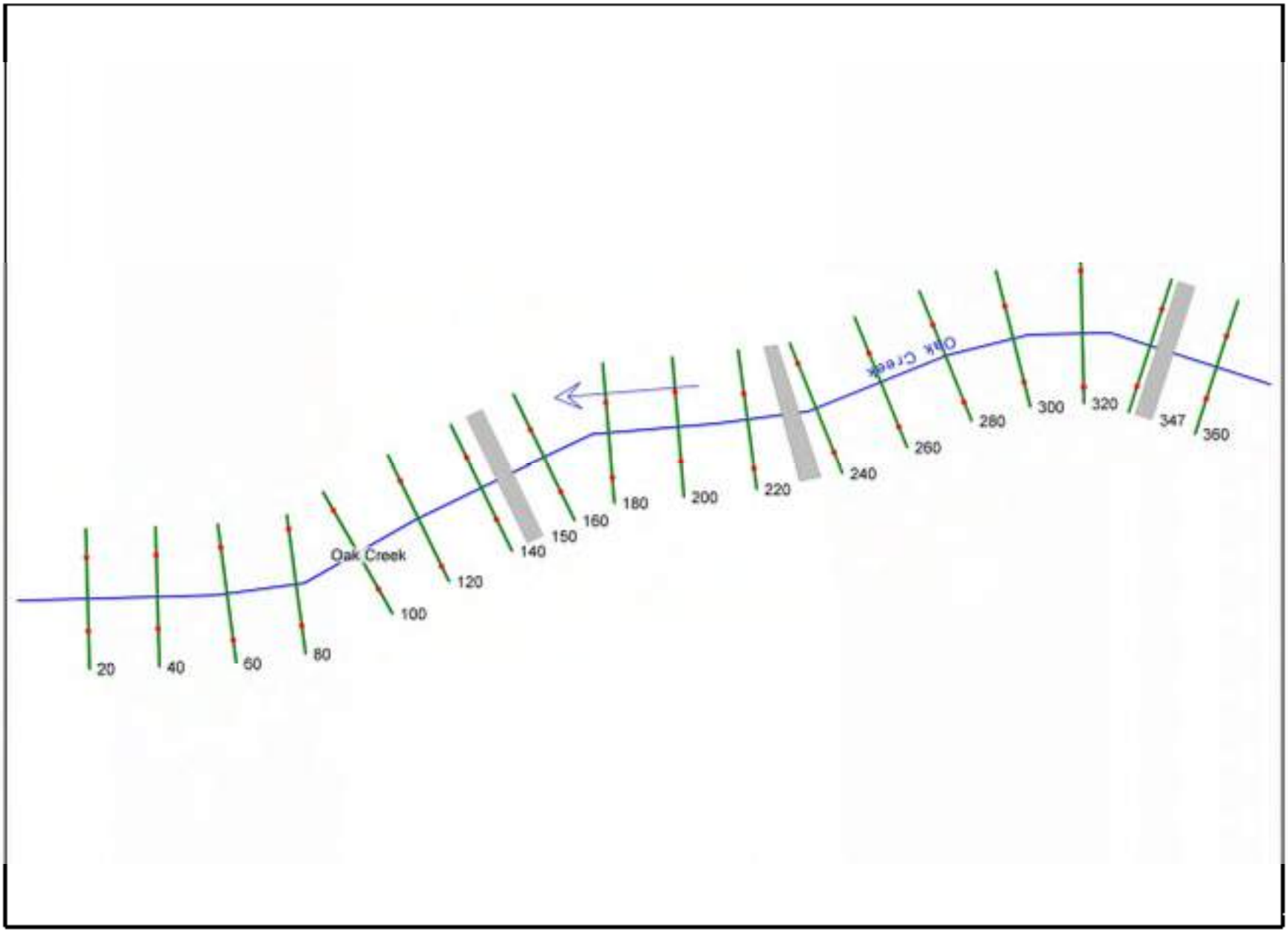


Luke Sefton, PE, CFM
Tim Huskett, PE,
Robert Lane, Public Lands
Cheri Baker, Office Manager
Crockett Saline, PE
David Nicolella, Planner
Leonard Filner, Planner

APPENDIX E

HEC-RAS Model Results for Gassaway Creek

201106
40 Stutz Bearcat Dr., Sedona, Arizona 86336 ~Phone: (928) 202-3999
Email: info@sefengco.com ~ www.SeftonEngineeringCompany.com
In affiliation with:
Heritage Land Surveying & Mapping, Inc. with offices in Sedona, Camp Verde & Colorado


Oak Creek
Oak Creek
20
40
60
80
100
120
140
150
160
180
200
220
240
260
280
300
320
347
360

HEC-RAS HEC-RAS 6.3.1 September 2022
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X      X   X     X  X    X
X     X  X        X           X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X           X  X     X    X        X
X     X  X        X    X      X   X    X    X        X
X     X  XXXXXX    XXXX       X    X   X    X   XXXXX
```

PROJECT DATA
Project Title: rdo
Project File : hecrasprojectfile.prj
Run Date and Time: 31-01-2024 16:32:39

Project in English units

PLAN DATA

Plan Title: Plan 13
Plan File : C:\Users\jakka\OneDrive\Documentos\201106_RDO\Drawings\RDO HEC-RAS Model\240104\hecrasprojectfile.p13

Geometry Title: geometry file w/3 bridge and edited c/s
Geometry File : C:\Users\jakka\OneDrive\Documentos\201106_RDO\Drawings\RDO HEC-RAS Model\240104\hecrasprojectfile.g01

Flow Title : flow data
Flow File : C:\Users\jakka\OneDrive\Documentos\201106_RDO\Drawings\RDO HEC-RAS Model\240104\hecrasprojectfile.f01

Plan Summary Information:

Number of:	Cross Sections	= 18	Multiple Openings	=	0
	Culverts	= 0	Inline Structures	=	0
	Bridges	= 3	Lateral Structures	=	0

Computational Information

```
    Water surface calculation tolerance  =  0.01
    Critical depth calculation tolerance =  0.01
    Maximum number of iterations         =  20
    Maximum difference tolerance         =  0.3
    Flow tolerance factor                =  0.001

Computation Options
    Critical depth computed only where necessary
    Conveyance Calculation Method: At breaks in n values only
    Friction Slope Method:         Average Conveyance
    Computational Flow Regime:     Subcritical Flow




FLOW DATA

Flow Title: flow data
Flow File : C:\Users\jakka\OneDrive\Documentos\201106_RDO\Drawings\RDO HEC-RAS
Model\240104\hecrasprojectfile.f01

Flow Data (cfs)

  River           Reach           RS                  PF 1
  Oak Creek       Oak Creek       360                  480


Boundary Conditions


  River           Reach           Profile                       Upstream
     Downstream


  Oak Creek       Oak Creek       PF 1
   Normal S = 0.06




GEOMETRY DATA

Geometry Title: geometry file w/3 bridge and edited c/s
Geometry File : C:\Users\jakka\OneDrive\Documentos\201106_RDO\Drawings\RDO HEC-RAS
Model\240104\hecrasprojectfile.g01

CROSS SECTION
```

RIVER: Oak Creek
REACH: Oak Creek RS: 360

INPUT
Description:
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	4213.92	.7999992	4213.68	3.060001	4213.33	5.02	4213.34	8.950001	4213.68
9.16	4213.75	9.25	4213.7	10.48	4213.62	14.3	4213.39	14.96	4212.31
15.35	4211.85	18.52	4211.53	19.85	4211.4	21.03	4211.35	21.77	4211.45
22.92	4211.66	24.45	4211.83	26.78	4212.18	28.15	4212.72	29.35	4213.33
30.28	4213.58	32.12	4214.1	34.52	4213.95	36.15	4214.28	36.47	4214.34
37.77	4214.59	38.09	4214.62	39.4	4214.75	40	4214.8		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	10.48	.027	29.35	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
10.48	29.35	20.07	20	20.04	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	4216.37	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.32	Wt. n-Val.	0.035	0.027	0.035
W.S. Elev (ft)	4216.05	Reach Len. (ft)	13.00	13.00	13.00
Crit W.S. (ft)	4214.87	Flow Area (sq ft)	26.47	71.95	20.10
E.G. Slope (ft/ft)	0.001518	Area (sq ft)	26.47	71.95	20.10
Q Total (cfs)	480.00	Flow (cfs)	71.39	361.92	46.69
Top Width (ft)	40.00	Top Width (ft)	10.48	18.87	10.65
Vel Total (ft/s)	4.05	Avg. Vel. (ft/s)	2.70	5.03	2.32
Max Chl Dpth (ft)	4.70	Hydr. Depth (ft)	2.53	3.81	1.89
Conv. Total (cfs)	12317.9	Conv. (cfs)	1832.1	9287.7	1198.1
Length Wtd. (ft)	13.00	Wetted Per. (ft)	12.71	20.03	12.08
Min Ch El (ft)	4211.35	Shear (lb/sq ft)	0.20	0.34	0.16
Alpha	1.26	Stream Power (lb/ft s)	0.53	1.71	0.37

Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	0.00	0.42	0.01
C & E Loss (ft)	0.11	Cum SA (acres)	0.00	0.14	0.00

Warning: The cross-section end points had to be extended vertically for the computed water surface.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

BRIDGE

RIVER: Oak Creek
REACH: Oak Creek RS: 347

INPUT
Description:
Distance from Upstream XS = 13
Deck/Roadway Width = 5
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 6

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	4218	0	11.4	4218.57	0	11.5	4218.57	4217.57
28.4	4219.46	4218.46	28.5	4219.46	0	40	4220	0

Upstream Bridge Cross Section Data
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	4213.92	.8	4213.68	3.06	4213.33	5.02	4213.34	8.95	4213.68
9.16	4213.75	9.25	4213.7	10.48	4213.62	14.3	4213.39	14.96	4212.31
15.35	4211.85	18.52	4210.65	19.85	4210.65	21.03	4210.65	21.77	4210.65
22.92	4211.22	24.45	4211.83	26.78	4212.18	28.15	4212.72	29.35	4213.33
30.28	4213.58	32.12	4214.1	34.52	4213.95	36.15	4214.28	36.47	4214.34
37.77	4214.59	38.09	4214.62	39.4	4214.75	40	4214.8		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val

```
       0     .03    9.16     .05   32.12     .03

Bank Sta: Left   Right    Coeff Contr.   Expan.
         10.48   29.35             .1       .3

Downstream  Deck/Roadway Coordinates
    num=       6
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0    4218       0    12.4  4218.6       0    12.5  4218.6  4217.6
    27.4 4219.38 4218.38    27.5 4219.38       0      40    4220    4219

Downstream Bridge Cross Section Data
Station Elevation Data    num=      29
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 4213.92    1.94 4214.49    4.21 4214.54    5.23 4214.36    6.08 4213.98
    6.92 4213.66    7.68  4213.4    8.81 4213.01    9.89 4212.56   12.19 4211.66
   15.82 4210.25   18.55 4210.25   20.01 4210.25   20.71 4210.25   21.63 4210.24
   23.55 4210.29   25.19  4210.3   28.66 4212.01   29.75 4212.61   31.03 4213.19
   32.07 4213.45   33.17  4213.8   34.52 4213.95   36.15 4214.28   36.47 4214.34
   37.77 4214.59   38.09 4214.62    39.4 4214.75      40  4214.8

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035    7.68    .027   31.03    .035

Bank Sta: Left   Right    Coeff Contr.   Expan.
          7.68   31.03             .1       .3

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .98
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Energy Only

Additional Bridge Parameters
       Add Friction component to Momentum
       Do not add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
```

Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT Profile #PF 1

E.G. US. (ft)	4216.37	Element	Inside BR US
Inside BR DS			
W.S. US. (ft)	4216.05	E.G. Elev (ft)	4216.20
4215.26			
Q Total (cfs)	480.00	W.S. Elev (ft)	4214.76
4213.69			
Q Bridge (cfs)	480.00	Crit W.S. (ft)	4214.76
4213.69			
Q Weir (cfs)		Max Chl Dpth (ft)	4.11
3.45			
Weir Sta Lft (ft)		Vel Total (ft/s)	9.64
10.07			
Weir Sta Rgt (ft)		Flow Area (sq ft)	49.78
47.68			
Weir Submerg		Froude # Chl	0.84
0.96			
Weir Max Depth (ft)		Specif Force (cu ft)	225.35
227.48			
Min El Weir Flow (ft)	4218.01	Hydr Depth (ft)	2.95
3.20			
Min El Prs (ft)	4218.46	W.P. Total (ft)	21.44
19.82			
Delta EG (ft)	1.65	Conv. Total (cfs)	2594.1
4711.5			
Delta WS (ft)	2.49	Top Width (ft)	16.90
14.90			
BR Open Area (sq ft)	104.82	Frctn Loss (ft)	0.09
0.02			
BR Open Vel (ft/s)	10.07	C & E Loss (ft)	0.01
0.12			
BR Sluice Coef		Shear Total (lb/sq ft)	4.96
1.56			
BR Sel Method	Energy only	Power Total (lb/ft s)	47.86
15.69			

Warning: For the final momentum answer at the bridge, the upstream energy was computed lower than the downstream
energy. This is not physically possible, the momentum answer has been disregarded.
Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical
depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream

conveyance) is less than 0.7 or greater than
1.4. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical
depth for the water surface and continued on with the calculations.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.

CROSS SECTION

RIVER: Oak Creek
REACH: Oak Creek RS: 340

INPUT
Description:
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	4213.92	1.94	4214.49	4.21	4214.54	5.23	4214.36	6.08	4213.98
6.92	4213.66	7.68	4213.4	8.81	4213.01	9.89	4212.56	12.19	4211.66
15.82	4210.25	18.55	4210.25	20.01	4210.25	20.71	4210.25	21.63	4210.24
23.55	4210.29	25.19	4210.3	28.66	4212.01	29.75	4212.61	31.03	4213.19
32.07	4213.45	33.17	4213.8	34.52	4213.95	36.15	4214.28	36.47	4214.34
37.77	4214.59	38.09	4214.62	39.4	4214.75	40	4214.8		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	7.68	.027	31.03	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
7.68	31.03	22.98	20	16.93	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	4214.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.16	Wt. n-Val.	0.035	0.027	0.035
W.S. Elev (ft)	4213.56	Reach Len. (ft)	22.98	20.00	16.93
Crit W.S. (ft)	4213.56	Flow Area (sq ft)	0.04	55.40	

0.26					
E.G. Slope (ft/ft)	0.008393	Area (sq ft)	0.04	55.40	
0.26					
Q Total (cfs)	480.00	Flow (cfs)	0.02	479.64	
0.33					
Top Width (ft)	25.18	Top Width (ft)	0.45	23.35	
1.37					
Vel Total (ft/s)	8.62	Avg. Vel. (ft/s)	0.68	8.66	
1.26					
Max Chl Dpth (ft)	3.32	Hydr. Depth (ft)	0.08	2.37	
0.19					
Conv. Total (cfs)	5239.3	Conv. (cfs)	0.3	5235.4	
3.6					
Length Wtd. (ft)	20.00	Wetted Per. (ft)	0.48	24.62	
1.42					
Min Ch El (ft)	4210.24	Shear (lb/sq ft)	0.04	1.18	
0.10					
Alpha	1.01	Stream Power (lb/ft s)	0.03	10.21	
0.12					
Frctn Loss (ft)	0.13	Cum Volume (acre-ft)	0.00	0.39	
0.00					
C & E Loss (ft)	0.11	Cum SA (acres)	0.00	0.13	
0.00					

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Oak Creek
REACH: Oak Creek RS: 320

INPUT
Description:
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	4212.58	1.35	4212.88	2.25	4213.07	3.49	4213.72	4.6	4213.9
5.34	4213.45	7.1	4212.05	7.84	4211.61	8.45	4211.16	9.19	4210.76

```
   10.07 4210.36   10.55 4210.15   11.54 4209.86   12.51 4209.48   14.04 4209.44
   18.79 4209.46   19.94 4209.46   20.91 4209.44   22.11 4209.42   24.92 4209.46
      27 4210.77   28.03 4211.37   29.18 4211.94   29.88 4212.17   30.78 4212.46
   32.38 4212.85   33.13 4212.98    34.1 4213.24   37.93 4214.12    38.1 4214.25
   38.12 4214.25   38.25 4214.26   38.79  4214.3      40 4214.39

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .035     4.6    .027   37.93    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           4.6   37.93            21.92      20   18.15             .1       .3
Left Levee      Station=    4.62      Elevation= 4213.91

CROSS SECTION OUTPUT  Profile #PF 1


  E.G. Elev (ft)          4213.72    Element                    Left OB    Channel
 Right OB
  Vel Head (ft)              0.80    Wt. n-Val.                             0.027

  W.S. Elev (ft)          4212.92    Reach Len. (ft)             21.92      20.00
   18.15
  Crit W.S. (ft)          4212.50    Flow Area (sq ft)                      66.82

  E.G. Slope (ft/ft)     0.005464    Area (sq ft)                           66.82

  Q Total (cfs)            480.00    Flow (cfs)                            480.00

  Top Width (ft)            26.75    Top Width (ft)                         26.75

  Vel Total (ft/s)           7.18    Avg. Vel. (ft/s)                        7.18

  Max Chl Dpth (ft)          3.50    Hydr. Depth (ft)                        2.50

  Conv. Total (cfs)         6493.6    Conv. (cfs)                           6493.6

  Length Wtd. (ft)          20.00    Wetted Per. (ft)                       28.47

  Min Ch El (ft)          4209.42    Shear (lb/sq ft)                        0.80

  Alpha                      1.00    Stream Power (lb/ft s)                  5.75

  Frctn Loss (ft)            0.14    Cum Volume (acre-ft)        0.00       0.37
    0.00
  C & E Loss (ft)            0.05    Cum SA (acres)              0.00       0.12
    0.00
```

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION

RIVER: Oak Creek
REACH: Oak Creek RS: 300

INPUT
Description:
Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	4212.14	1.78	4212.47	2.68	4212.59	3.38	4212.72	4.57	4213.03
6.04	4213.22	7.14	4212.91	7.84	4212.31	9.04	4211.65	9.26	4211.38
9.4	4211.17	9.8	4210.95	9.92	4210.77	10.43	4210.43	10.95	4210.02
12.1	4209.23	12.66	4208.67	17.44	4208.69	19.97	4208.76	21.05	4208.8
21.68	4208.82	22.04	4208.81	23.1	4208.8	23.57	4209.1	25.92	4210.83
27.45	4212.02	28.48	4212.61	29	4212.88	29.65	4212.99	31.76	4213.37
33.57	4213.34	34.15	4213.29	35.18	4213.31	35.72	4213.4	35.88	4213.43
36.27	4213.46	37.87	4213.47	39.58	4213.58	40	4213.61		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	7.14	.027	29.65	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
7.14	29.65	21.19	20	18.79	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	4213.52	Element	Left OB	Channel
Right OB				
Vel Head (ft)	1.32	Wt. n-Val.	0.035	0.027
W.S. Elev (ft)	4212.20	Reach Len. (ft)	21.19	20.00
18.79				
Crit W.S. (ft)	4212.20	Flow Area (sq ft)	0.01	51.99
E.G. Slope (ft/ft)	0.008985	Area (sq ft)	0.01	51.99
Q Total (cfs)	480.00	Flow (cfs)	0.00	480.00
Top Width (ft)	20.02	Top Width (ft)	0.31	19.71
Vel Total (ft/s)	9.23	Avg. Vel. (ft/s)	0.33	9.23

Max Chl Dpth (ft)	3.53	Hydr. Depth (ft)	0.03	2.64
Conv. Total (cfs)	5063.9	Conv. (cfs)	0.0	5063.9
Length Wtd. (ft)	20.00	Wetted Per. (ft)	0.37	22.08
Min Ch El (ft)	4208.67	Shear (lb/sq ft)	0.01	1.32
Alpha	1.00	Stream Power (lb/ft s)	0.00	12.19
Frctn Loss (ft)	0.18	Cum Volume (acre-ft)	0.00	0.34
0.00				
C & E Loss (ft)	0.00	Cum SA (acres)	0.00	0.11
0.00				

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Oak Creek
REACH: Oak Creek RS: 280

INPUT
Description:
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
.05	4212.1	.79	4212.28	2.84	4212.78	4.64	4213.13	5.68	4212.9
6.42	4212.38	7.71	4211.4	8.7	4211.01	10.25	4210.16	10.97	4209.47
11.7	4208.57	12.1	4207.9	19.95	4207.87	20.21	4207.86	20.71	4207.89
21.53	4207.89	22.12	4208.78	23.98	4210.25	28.6	4212.66	28.67	4212.69
29.54	4213.06	30.04	4213.15	33.1	4213.99	33.13	4214	33.76	4214.06
35.42	4214.19	37.43	4214.2	39.29	4214.06	40	4214.02		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
.05	.035	5.68	.027	29.54	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5.68	29.54	20.01	20	20.01	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	4213.07	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.34	Wt. n-Val.		0.027	
W.S. Elev (ft)	4211.74	Reach Len. (ft)	20.01	20.00	20.01
Crit W.S. (ft)	4211.74	Flow Area (sq ft)		51.77	
E.G. Slope (ft/ft)	0.009297	Area (sq ft)		51.77	
Q Total (cfs)	480.00	Flow (cfs)		480.00	
Top Width (ft)	19.57	Top Width (ft)		19.57	
Vel Total (ft/s)	9.27	Avg. Vel. (ft/s)		9.27	
Max Chl Dpth (ft)	3.88	Hydr. Depth (ft)		2.65	
Conv. Total (cfs)	4978.2	Conv. (cfs)		4978.2	
Length Wtd. (ft)	20.00	Wetted Per. (ft)		22.41	
Min Ch El (ft)	4207.86	Shear (lb/sq ft)		1.34	
Alpha	1.00	Stream Power (lb/ft s)		12.43	
Frctn Loss (ft)	0.19	Cum Volume (acre-ft)		0.32	0.00
C & E Loss (ft)	0.00	Cum SA (acres)		0.10	0.00

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical
depth for the water surface and continued on with the calculations.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.

CROSS SECTION

RIVER: Oak Creek
REACH: Oak Creek RS: 260

INPUT
Description:
Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	4211.46	.65	4211.59	1.83	4211.88	2.37	4212.01	2.86	4212.16
4.12	4212.53	5.43	4212.42	6.13	4212.25	10.76	4210.04	11.16	4209.72
12.31	4208.72	13.7	4207.6	14.06	4207.25	17.46	4207.24	19.26	4207.28
20.05	4207.29	21.56	4207.29	23.44	4209.46	24.05	4209.9	25.46	4210.74
27.41	4211.95	28.84	4212.46	29.9	4212.83	31.37	4213.37	32.43	4213.29
33.69	4213.26	36.73	4213.2	36.78	4213.19	36.91	4213.19	39.86	4213.24
40	4213.26								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	6.13	.027	28.84	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
6.13	28.84	20.01	20	20.01	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	4212.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.38	Wt. n-Val.		0.027	
W.S. Elev (ft)	4211.41	Reach Len. (ft)	20.01	20.00	20.01
Crit W.S. (ft)	4211.41	Flow Area (sq ft)		50.86	
E.G. Slope (ft/ft)	0.009359	Area (sq ft)		50.86	
Q Total (cfs)	480.00	Flow (cfs)		480.00	
Top Width (ft)	18.66	Top Width (ft)		18.66	
Vel Total (ft/s)	9.44	Avg. Vel. (ft/s)		9.44	
Max Chl Dpth (ft)	4.17	Hydr. Depth (ft)		2.73	
Conv. Total (cfs)	4961.5	Conv. (cfs)		4961.5	
Length Wtd. (ft)	20.00	Wetted Per. (ft)		21.55	
Min Ch El (ft)	4207.24	Shear (lb/sq ft)		1.38	

Alpha	1.00	Stream Power (lb/ft s)	13.02
Frctn Loss (ft)	0.19	Cum Volume (acre-ft)	0.29
0.00			
C & E Loss (ft)	0.03	Cum SA (acres)	0.09
0.00			

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical
depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.

CROSS SECTION

RIVER: Oak Creek
REACH: Oak Creek RS: 240

INPUT
Description:
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	4211.32	1.35	4211.62	3.4	4211.83	5.09	4211.61	6.29	4211.24
8.09	4210.69	10.46	4209.89	11.43	4209.34	14.24	4207.54	15.95	4205.84
19.34	4205.84	19.97	4205.86	20.73	4205.86	21.18	4205.87	23.23	4207.55
25.37	4208.72	25.85	4208.88	26.3	4209.08	26.64	4209.22	27.11	4209.39
29.24	4210.33	33.83	4211.38	34.84	4211.63	36.01	4211.89	38.02	4211.8
40	4211.19								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	6.29	.027	33.83	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
6.29	33.83	17.72	20	21.99	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	4211.69	Element	Left OB Channel

Right OB					
Vel Head (ft)	1.30	Wt. n-Val.			0.027
W.S. Elev (ft)	4210.39	Reach Len. (ft)	5.00	5.00	5.00
Crit W.S. (ft)	4210.39	Flow Area (sq ft)			52.58
E.G. Slope (ft/ft)	0.009257	Area (sq ft)			52.58
Q Total (cfs)	480.00	Flow (cfs)			480.00
Top Width (ft)	20.54	Top Width (ft)			20.54
Vel Total (ft/s)	9.13	Avg. Vel. (ft/s)			9.13
Max Chl Dpth (ft)	4.55	Hydr. Depth (ft)			2.56
Conv. Total (cfs)	4988.9	Conv. (cfs)			4988.9
Length Wtd. (ft)	5.00	Wetted Per. (ft)			23.23
Min Ch El (ft)	4205.84	Shear (lb/sq ft)			1.31
Alpha	1.00	Stream Power (lb/ft s)			11.94
Frctn Loss (ft)	0.08	Cum Volume (acre-ft)			0.27
0.00					
C & E Loss (ft)	0.00	Cum SA (acres)			0.09
0.00					

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

BRIDGE

RIVER: Oak Creek
REACH: Oak Creek RS: 235

```
INPUT
Description:
Distance from Upstream XS =       5
Deck/Roadway Width        =       5
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
     3.5    4211    4210      33  4213.5  4212.5

Upstream Bridge Cross Section Data
Station Elevation Data    num=      26
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 4211.32    1.35 4211.62     3.4 4211.83    5.09 4211.61    6.29 4211.24
    8.09 4210.69   10.46 4209.89   11.43 4209.34   14.24 4207.54   15.95 4205.56
   19.34 4205.56   19.97 4205.56   20.73 4205.56   21.18 4205.56   23.23 4207.55
   25.37 4208.72   25.85 4208.88    26.3 4209.08   26.64 4209.22   27.11 4209.39
   29.24 4210.33   33.83 4211.38   34.84 4211.63   36.01 4211.89   38.02  4211.8
      40 4211.19

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .03   11.43     .05   29.24     .03

Bank Sta: Left   Right    Coeff Contr.   Expan.
          6.29   33.83             .1       .3

Downstream  Deck/Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       5    4211    4210    34.5  4213.5  4212.5

Downstream Bridge Cross Section Data
Station Elevation Data    num=      30
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 4209.76    1.89 4210.04    4.24 4210.35    5.86 4210.18    6.65  4209.9
    8.83 4209.04    9.44  4208.8    9.83 4208.59   11.18 4207.77   15.14 4205.11
   15.53 4205.14   16.25 4205.14   19.48 4205.14   19.92 4205.14   20.08 4205.14
   22.67 4205.14   23.64 4205.84   25.24 4207.86   27.45  4210.4   28.04 4210.76
   28.68 4210.93   29.32 4210.94   30.36 4210.95   32.16  4210.9   32.62 4210.89
    34.1 4210.86   36.25 4210.81   38.13 4210.77   39.59 4210.75      40 4210.74

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .03    9.83     .05   28.04     .03

Bank Sta: Left   Right    Coeff Contr.   Expan.
          5.86   27.45             .1       .3

Upstream Embankment side slope             =       0 horiz. to 1.0 vertical
```

```
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .98
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Energy Only

Additional Bridge Parameters
       Add Friction component to Momentum
       Do not add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT  Profile #PF 1


  E.G. US. (ft)              4211.69    Element                 Inside BR US
Inside BR DS
  W.S. US. (ft)              4210.39    E.G. Elev (ft)              4211.59
4210.57
  Q Total (cfs)               480.00    W.S. Elev (ft)              4210.27
4209.35
  Q Bridge (cfs)              480.00    Crit W.S. (ft)              4210.27
4209.15
  Q Weir (cfs)                          Max Chl Dpth (ft)             4.71
  4.24
  Weir Sta Lft (ft)                     Vel Total (ft/s)              9.19
  8.85
  Weir Sta Rgt (ft)                     Flow Area (sq ft)            52.22
 54.22
  Weir Submerg                          Froude # Chl                  1.00
  0.91
  Weir Max Depth (ft)                   Specif Force (cu ft)        233.79
231.06
  Min El Weir Flow (ft)      4211.20    Hydr Depth (ft)               2.64
  2.93
  Min El Prs (ft)            4212.50    W.P. Total (ft)              22.84
 21.59
  Delta EG (ft)                 1.29    Conv. Total (cfs)           2794.7
3078.0
```

Delta WS (ft)	1.45	Top Width (ft)	19.78
18.50			
BR Open Area (sq ft)	79.42	Frctn Loss (ft)	0.13
0.14			
BR Open Vel (ft/s)	9.19	C & E Loss (ft)	0.03
0.02			
BR Sluice Coef		Shear Total (lb/sq ft)	4.21
3.81			
BR Sel Method	Energy only	Power Total (lb/ft s)	38.70
33.76			

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Oak Creek
REACH: Oak Creek RS: 220

INPUT
Description:
Station Elevation Data num= 30

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	4209.76	1.89	4210.04	4.24	4210.35	5.86	4210.18	6.650002	4209.9
8.83	4209.04	9.44	4208.8	9.83	4208.59	11.18	4207.77	15.14	4205.11
15.53	4204.83	16.25	4204.81	19.48	4204.76	19.92	4204.75	20.08	4204.78
22.67	4204.86	23.64	4205.84	25.24	4207.86	27.45	4210.4	28.04	4210.76
28.68	4210.93	29.32	4210.94	30.36	4210.95	32.16	4210.9	32.62	4210.89
34.1	4210.86	36.25	4210.81	38.13	4210.77	39.59	4210.75	40	4210.74

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	5.86	.027	27.45	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5.86	27.45	19.61	20	20.49	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	4210.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.46	Wt. n-Val.		0.027	
W.S. Elev (ft)	4208.94	Reach Len. (ft)	19.61	20.00	20.49
Crit W.S. (ft)	4208.94	Flow Area (sq ft)		49.49	
E.G. Slope (ft/ft)	0.009396	Area (sq ft)		49.49	
Q Total (cfs)	480.00	Flow (cfs)		480.00	
Top Width (ft)	17.09	Top Width (ft)		17.09	
Vel Total (ft/s)	9.70	Avg. Vel. (ft/s)		9.70	
Max Chl Dpth (ft)	4.19	Hydr. Depth (ft)		2.90	
Conv. Total (cfs)	4951.9	Conv. (cfs)		4951.9	
Length Wtd. (ft)	20.00	Wetted Per. (ft)		20.19	
Min Ch El (ft)	4204.75	Shear (lb/sq ft)		1.44	
Alpha	1.00	Stream Power (lb/ft s)		13.95	
Frctn Loss (ft)	0.19	Cum Volume (acre-ft)		0.24	
0.00					
C & E Loss (ft)	0.02	Cum SA (acres)		0.08	
0.00					

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical
depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The

program defaulted to critical depth.

CROSS SECTION

RIVER: Oak Creek
REACH: Oak Creek RS: 200

INPUT
Description:
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	4209.15	1.330002	4209.1	3.9	4209.18	5.88	4209.11	7.1	4209.04
10	4208.12	11.09	4207.52	11.83	4207.08	13	4206.46	13.5	4206.09
16.97	4203.74	18.66	4203.75	19.99	4203.71	21.65	4203.7	22.29	4203.73
24.45	4203.75	24.95	4204.24	27.52	4206.35	28.42	4207.36	29.14	4207.85
30.01	4208.49	31.99	4209.05	32.96	4209.07	36	4209.08	38.61	4209.07
40	4209.05								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	10	.027	30.01	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
10	30.01	20.03	20	20.13	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	4209.11	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.41	Wt. n-Val.		0.027	
W.S. Elev (ft)	4207.71	Reach Len. (ft)	20.03	20.00	20.13
Crit W.S. (ft)	4207.71	Flow Area (sq ft)		50.45	
E.G. Slope (ft/ft)	0.009202	Area (sq ft)		50.45	
Q Total (cfs)	480.00	Flow (cfs)		480.00	
Top Width (ft)	18.17	Top Width (ft)		18.17	
Vel Total (ft/s)	9.51	Avg. Vel. (ft/s)		9.51	
Max Chl Dpth (ft)	4.00	Hydr. Depth (ft)		2.78	
Conv. Total (cfs)	5003.9	Conv. (cfs)		5003.9	
Length Wtd. (ft)	20.00	Wetted Per. (ft)		20.85	

Min Ch El (ft)	4203.70	Shear (lb/sq ft)	1.39
Alpha	1.00	Stream Power (lb/ft s)	13.22
Frctn Loss (ft)	0.18	Cum Volume (acre-ft)	0.22
0.00			
C & E Loss (ft)	0.00	Cum SA (acres)	0.07
0.00			

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical
depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.

CROSS SECTION

RIVER: Oak Creek
REACH: Oak Creek RS: 180

INPUT
Description:
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	4207.81	.61	4207.82	1.13	4207.83	2.34	4208.17	4.94	4208.09
7.14	4207.14	7.82	4206.57	8.47	4206.05	9.55	4205.19	13.9	4202.34
15.89	4202.35	19.34	4202.32	19.88	4202.34	20.33	4202.32	20.91	4202.34
21.25	4202.32	22.96	4203.71	25.74	4205.72	28.69	4207.43	29.05	4207.72
29.77	4207.9	30.31	4208.02	31.53	4208.19	32.62	4208.26	33.8	4208.4
36.35	4207.93	37.52	4207.85	40	4207.46				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	7.14	.027	28.69	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
7.14	28.69	22.51	20	15.42	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	4207.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.39	Wt. n-Val.		0.027	
W.S. Elev (ft)	4206.27	Reach Len. (ft)	22.51	20.00	15.42
Crit W.S. (ft)	4206.27	Flow Area (sq ft)		50.70	
E.G. Slope (ft/ft)	0.009147	Area (sq ft)		50.70	
Q Total (cfs)	480.00	Flow (cfs)		480.00	
Top Width (ft)	18.50	Top Width (ft)		18.50	
Vel Total (ft/s)	9.47	Avg. Vel. (ft/s)		9.47	
Max Chl Dpth (ft)	3.95	Hydr. Depth (ft)		2.74	
Conv. Total (cfs)	5018.8	Conv. (cfs)		5018.8	
Length Wtd. (ft)	20.00	Wetted Per. (ft)		21.02	
Min Ch El (ft)	4202.32	Shear (lb/sq ft)		1.38	
Alpha	1.00	Stream Power (lb/ft s)		13.04	
Frctn Loss (ft)	0.19	Cum Volume (acre-ft)		0.20	0.00
C & E Loss (ft)	0.02	Cum SA (acres)		0.06	0.00

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Oak Creek

REACH: Oak Creek RS: 160

INPUT
Description:
Station Elevation Data num= 30

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	4207.49	3499985	4207.47	2.610001	4207.38	3.360001	4207.36	4.919998	4207.29
6.709999	4207.22	8.639999	4206.66	9	4206.55	10.88	4204.6	11.83	4203.9
13.75	4201.51	14.56	4200.77	19.99	4200.87	20	4200.87	20.31	4200.85
22.15	4200.93	22.54	4200.93	22.85	4201.09	25.04	4204.19	25.26	4204.48
25.55	4204.7	26.01	4205.05	28.76	4206.28	31.44	4207.34	32.68	4207.17
33.89	4207.03	36.57	4206.84	38.05	4206.66	39.37	4206.67	40	4206.72

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	9	.027	28.76	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
9	28.76	20.13	20	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	4206.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.57	Wt. n-Val.		0.027	
W.S. Elev (ft)	4204.97	Reach Len. (ft)	10.00	10.00	10.00
Crit W.S. (ft)	4204.97	Flow Area (sq ft)		47.74	
E.G. Slope (ft/ft)	0.009879	Area (sq ft)		47.74	
Q Total (cfs)	480.00	Flow (cfs)		480.00	
Top Width (ft)	15.38	Top Width (ft)		15.38	
Vel Total (ft/s)	10.06	Avg. Vel. (ft/s)		10.06	
Max Chl Dpth (ft)	4.20	Hydr. Depth (ft)		3.10	
Conv. Total (cfs)	4829.2	Conv. (cfs)		4829.2	
Length Wtd. (ft)	10.00	Wetted Per. (ft)		19.15	
Min Ch El (ft)	4200.77	Shear (lb/sq ft)		1.54	
Alpha	1.00	Stream Power (lb/ft s)		15.46	
Frctn Loss (ft)	0.17	Cum Volume (acre-ft)		0.18	

```
    0.00
  C & E Loss (ft)             0.00    Cum SA (acres)                          0.05
    0.00
```

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

BRIDGE

RIVER: Oak Creek
REACH: Oak Creek RS: 150

INPUT
Description:
Distance from Upstream XS = 10
Deck/Roadway Width = 5
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 2

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	4208	4207	27.1	4206.5	4205.5

Upstream Bridge Cross Section Data
Station Elevation Data num= 30

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	4207.49	.35	4207.47	2.61	4207.38	3.36	4207.36	4.92	4207.29
6.71	4207.22	8.64	4206.66	9	4206.55	10.88	4204.6	11.83	4203.9
13.75	4201.51	14.56	4200.4	19.99	4200.4	20	4200.4	20.31	4200.4
22.15	4200.4	22.54	4200.93	22.85	4201.09	25.04	4204.19	25.26	4204.48
25.55	4204.7	26.01	4205.05	28.76	4206.28	31.44	4207.34	32.68	4207.17
33.89	4207.03	36.57	4206.84	38.05	4206.66	39.37	4206.67	40	4206.72

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	8.64	.05	28.76	.03

Bank Sta: Left	Right	Coeff Contr.	Expan.
9	28.76	.1	.3

```
Downstream  Deck/Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0    4208    4207    27.5  4206.5  4205.5

Downstream Bridge Cross Section Data
Station Elevation Data    num=      29
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 4207.11    1.52 4206.97    3.27 4206.76    6.12 4206.68     7.7 4206.57
    8.26 4206.56    9.04 4206.53    9.24 4206.29    9.98 4205.67   11.27 4204.64
   12.48 4203.63   15.26 4201.06    16.7    4200   18.32    4200   19.11    4200
   19.65    4200   20.35    4200    23.1    4200   24.81 4201.58   27.74 4204.13
   29.63  4205.3   30.38 4206.04   31.04 4206.43   31.48 4206.41   34.28 4206.36
   35.27 4206.34   37.36 4206.34   38.71 4206.35      40 4206.19

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .03    9.04     .05   31.04     .03

Bank Sta: Left   Right    Coeff Contr.   Expan.
          9.98   29.63             .1       .3

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .98
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Energy Only

Additional Bridge Parameters
       Add Friction component to Momentum
       Do not add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT  Profile #PF 1
```

E.G. US. (ft)	4206.54	Element	Inside BR US
Inside BR DS			
W.S. US. (ft)	4204.97	E.G. Elev (ft)	4206.30
4205.80			
Q Total (cfs)	480.00	W.S. Elev (ft)	4204.73
4204.33			
Q Bridge (cfs)	480.00	Crit W.S. (ft)	4204.73
4204.33			
Q Weir (cfs)		Max Chl Dpth (ft)	4.33
4.33			
Weir Sta Lft (ft)		Vel Total (ft/s)	10.05
9.72			
Weir Sta Rgt (ft)		Flow Area (sq ft)	47.78
49.40			
Weir Submerg		Froude # Chl	0.99
0.82			
Weir Max Depth (ft)		Specif Force (cu ft)	242.62
236.60			
Min El Weir Flow (ft)	4205.55	Hydr Depth (ft)	3.22
3.01			
Min El Prs (ft)	4206.50	W.P. Total (ft)	18.98
20.47			
Delta EG (ft)	0.84	Conv. Total (cfs)	2627.8
2640.6			
Delta WS (ft)	0.79	Top Width (ft)	14.84
16.42			
BR Open Area (sq ft)	68.45	Frctn Loss (ft)	0.17
0.08			
BR Open Vel (ft/s)	10.05	C & E Loss (ft)	0.03
0.01			
BR Sluice Coef		Shear Total (lb/sq ft)	5.24
4.98			
BR Sel Method	Energy only	Power Total (lb/ft s)	52.67
48.36			

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical
depth for the water surface and continued on with the calculations.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical
depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than

1.4. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.

CROSS SECTION

RIVER: Oak Creek
REACH: Oak Creek RS: 140

INPUT
Description:
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	4207.11	1.52	4206.97	3.27	4206.76	6.119999	4206.68	7.700001	4206.57
8.26	4206.56	9.040001	4206.53	9.24	4206.29	9.98	4205.67	11.27	4204.64
12.48	4203.63	15.26	4201.06	16.7	4199.83	18.32	4199.82	19.11	4199.81
19.65	4199.79	20.35	4199.78	23.1	4199.78	24.81	4201.58	27.74	4204.13
29.63	4205.3	30.38	4206.04	31.04	4206.43	31.48	4206.41	34.28	4206.36
35.27	4206.34	37.36	4206.34	38.71	4206.35	40	4206.19		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	9.98	.027	29.63	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
9.98	29.63	20.02	20	20	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	4205.70	Element	Left OB	Channel
Right OB				
Vel Head (ft)	1.52	Wt. n-Val.		0.027
W.S. Elev (ft)	4204.18	Reach Len. (ft)	20.02	20.00
20.00				
Crit W.S. (ft)	4204.18	Flow Area (sq ft)		48.56
E.G. Slope (ft/ft)	0.009492	Area (sq ft)		48.56
Q Total (cfs)	480.00	Flow (cfs)		480.00
Top Width (ft)	16.00	Top Width (ft)		16.00
Vel Total (ft/s)	9.89	Avg. Vel. (ft/s)		9.89

Max Chl Dpth (ft)	4.40	Hydr. Depth (ft)	3.04
Conv. Total (cfs)	4926.6	Conv. (cfs)	4926.6
Length Wtd. (ft)	20.00	Wetted Per. (ft)	19.40
Min Ch El (ft)	4199.78	Shear (lb/sq ft)	1.48
Alpha	1.00	Stream Power (lb/ft s)	14.67
Frctn Loss (ft)	0.19	Cum Volume (acre-ft)	0.15
0.00			
C & E Loss (ft)	0.00	Cum SA (acres)	0.05
0.00			

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Oak Creek
REACH: Oak Creek RS: 120

INPUT
Description:
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	4206.97	1.16	4206.89	3.93	4205.91	4.16	4205.84	4.790001	4205.62
9.32	4204.22	11.11	4202.92	12.24	4202.04	16.07	4198.67	17.08	4198.63
19.52	4198.6	20.75	4198.61	22.33	4199.93	24.36	4201.42	27.49	4203.79
30.35	4205.56	31.11	4206.03	31.8	4206.04	31.92	4206.04	32.22	4206.05
33.81	4206.08	34.94	4206.09	37.09	4206.14	39.37	4206.16	40	4206.18

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	4.790001	.027	31.92	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
4.790001	31.92	20.89	20	19.35	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	4204.84	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.51	Wt. n-Val.		0.027	
W.S. Elev (ft)	4203.33	Reach Len. (ft)	20.89	20.00	19.35
Crit W.S. (ft)	4203.33	Flow Area (sq ft)		48.64	
E.G. Slope (ft/ft)	0.009593	Area (sq ft)		48.64	
Q Total (cfs)	480.00	Flow (cfs)		480.00	
Top Width (ft)	16.32	Top Width (ft)		16.32	
Vel Total (ft/s)	9.87	Avg. Vel. (ft/s)		9.87	
Max Chl Dpth (ft)	4.72	Hydr. Depth (ft)		2.98	
Conv. Total (cfs)	4900.8	Conv. (cfs)		4900.8	
Length Wtd. (ft)	20.00	Wetted Per. (ft)		19.64	
Min Ch El (ft)	4198.60	Shear (lb/sq ft)		1.48	
Alpha	1.00	Stream Power (lb/ft s)		14.64	
Frctn Loss (ft)	0.14	Cum Volume (acre-ft)		0.13	0.00
C & E Loss (ft)	0.16	Cum SA (acres)		0.04	0.00

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Oak Creek
REACH: Oak Creek RS: 100

INPUT
Description:
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	4206.85	.75	4206.68	3.48	4205.74	.669998	4205.37	4.93	4205.29
7.93	4205.2	10.8	4203.4	11.43	4202.67	13.81	4200.52	15.8	4197.3
17.87	4197.3	19.7	4197.3	21.16	4197.3	23.12	4197.3	28.48	4202.27
31.31	4204.75	32.09	4205.04	32.84	4205.18	33.92	4205.5	34.05	4205.54
36.21	4206.04	36.99	4206.27	37.43	4206.38	38.99	4206.49	40	4206.57

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	7.93	.027	33.92	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
7.93	33.92	13.94	20	22.9	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	4203.39	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.99	Wt. n-Val.		0.027
W.S. Elev (ft)	4202.40	Reach Len. (ft)	13.94	20.00
22.90				
Crit W.S. (ft)		Flow Area (sq ft)		60.21
E.G. Slope (ft/ft)	0.005285	Area (sq ft)		60.21
Q Total (cfs)	480.00	Flow (cfs)		480.00
Top Width (ft)	16.89	Top Width (ft)		16.89
Vel Total (ft/s)	7.97	Avg. Vel. (ft/s)		7.97
Max Chl Dpth (ft)	5.10	Hydr. Depth (ft)		3.56
Conv. Total (cfs)	6602.4	Conv. (cfs)		6602.4
Length Wtd. (ft)	20.00	Wetted Per. (ft)		21.41
Min Ch El (ft)	4197.30	Shear (lb/sq ft)		0.93

Alpha	1.00	Stream Power (lb/ft s)	7.40
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	0.11
0.00			
C & E Loss (ft)	0.15	Cum SA (acres)	0.03
0.00			

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Oak Creek
REACH: Oak Creek RS: 80

INPUT
Description:
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	4207.21	1.830002	4207.15	4.09	4207.02	4.34	42077.080002		4206.84
8.02	4206.75	12.27	4202.45	12.44	4202.24	12.97	4201.6	13.28	4201.45
16.63	4197.39	17.13	4196.46	19.36	4196.5	20.75	4196.49	26.34	4196.61
28.55	4199.9	29.41	4200.7	30.33	4201.57	36	4203.84	36.25	4203.93
36.38	4203.95	37.48	4204.27	39.96	4205.06	40	4205.06		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	8.02	.027	36	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
8.02	36	20.19	20	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	4203.17	Element	Left OB Channel Right OB
Vel Head (ft)	0.48	Wt. n-Val.	0.027
W.S. Elev (ft)	4202.69	Reach Len. (ft)	20.19 20.00 20.08
Crit W.S. (ft)		Flow Area (sq ft)	86.25

E.G. Slope (ft/ft)	0.002144	Area (sq ft)	86.25
Q Total (cfs)	480.00	Flow (cfs)	480.00
Top Width (ft)	21.08	Top Width (ft)	21.08
Vel Total (ft/s)	5.57	Avg. Vel. (ft/s)	5.57
Max Chl Dpth (ft)	6.23	Hydr. Depth (ft)	4.09
Conv. Total (cfs)	10367.6	Conv. (cfs)	10367.6
Length Wtd. (ft)	20.00	Wetted Per. (ft)	26.72
Min Ch El (ft)	4196.46	Shear (lb/sq ft)	0.43
Alpha	1.00	Stream Power (lb/ft s)	2.40
Frctn Loss (ft)	0.08	Cum Volume (acre-ft)	0.07
0.00			
C & E Loss (ft)	0.11	Cum SA (acres)	0.02
0.00			

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Oak Creek
REACH: Oak Creek RS: 60

INPUT
Description:
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	4206.73	6.6999982	4206.64	2.66	4206.54	2.830002	4206.486	.400002	4204.87
6.52	4204.82	6.529999	4204.82	6.540001	4204.81	11	4202.77	13.22	4201.75
15.91	4198.58	17.8	4195.31	19.63	4195.31	20.1	4195.3	21.52	4195.26
22.87	4198.26	23.54	4199.26	25.32	4200.26	27.02	4200.71	30.71	4202.05
31.61	4202.55	33.36	4203.41	34.74	4204.08	35.19	4204.21	38.74	4205.85
38.77	4205.86	40	4205.89						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	6.540001	.027	33.36	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
6.540001	33.36	18.65	20	20.96	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	4202.98	Element	Left OB	Channel
Right OB				
Vel Head (ft)	1.56	Wt. n-Val.		0.027
W.S. Elev (ft)	4201.42	Reach Len. (ft)	18.65	20.00
20.96				
Crit W.S. (ft)	4201.42	Flow Area (sq ft)		47.91
E.G. Slope (ft/ft)	0.011446	Area (sq ft)		47.91
Q Total (cfs)	480.00	Flow (cfs)		480.00
Top Width (ft)	15.46	Top Width (ft)		15.46
Vel Total (ft/s)	10.02	Avg. Vel. (ft/s)		10.02
Max Chl Dpth (ft)	6.16	Hydr. Depth (ft)		3.10
Conv. Total (cfs)	4486.5	Conv. (cfs)		4486.5
Length Wtd. (ft)	20.00	Wetted Per. (ft)		21.58
Min Ch El (ft)	4195.26	Shear (lb/sq ft)		1.59
Alpha	1.00	Stream Power (lb/ft s)		15.89
Frctn Loss (ft)	0.23	Cum Volume (acre-ft)		0.04
0.00				
C & E Loss (ft)	0.02	Cum SA (acres)		0.01
0.00				

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical
depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.

CROSS SECTION

RIVER: Oak Creek
REACH: Oak Creek RS: 40

INPUT
Description:
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	4205.83.6199989		4205.83.360001		4205.768.690001		4203.46	10.84	4202.5
11.84	4202.06	16.62	4194.78	17.26	4193.91	18.87	4193.58	20	4193.98
21.83	4194.64	21.85	4194.71	23.82	4198.08	23.94	4198.12	24.01	4198.16
24.37	4198.33	31.36	4202.68	31.92	4202.78	33.23	4203.02	35.36	4204.83
37.42	4205.09	39.37	4205.1	40	4205.1				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	10.84	.027	31.92	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
10.84	31.92	20	20	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	4201.36	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.77	Wt. n-Val.		0.027	
W.S. Elev (ft)	4199.59	Reach Len. (ft)	20.00	20.00	20.00
Crit W.S. (ft)	4199.59	Flow Area (sq ft)		45.04	
E.G. Slope (ft/ft)	0.011526	Area (sq ft)		45.04	
Q Total (cfs)	480.00	Flow (cfs)		480.00	
Top Width (ft)	12.94	Top Width (ft)		12.94	
Vel Total (ft/s)	10.66	Avg. Vel. (ft/s)		10.66	
Max Chl Dpth (ft)	6.01	Hydr. Depth (ft)		3.48	
Conv. Total (cfs)	4471.0	Conv. (cfs)		4471.0	

Length Wtd. (ft)	20.00	Wetted Per. (ft)	18.59
Min Ch El (ft)	4193.58	Shear (lb/sq ft)	1.74
Alpha	1.00	Stream Power (lb/ft s)	18.58
Frctn Loss (ft)	0.24	Cum Volume (acre-ft)	0.02
0.00			
C & E Loss (ft)	0.11	Cum SA (acres)	0.01
0.00			

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Oak Creek
REACH: Oak Creek RS: 20

INPUT
Description:
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	4203.18	2.439999	4203.46	3.73	4203.44	6.369999	4203.58	7.73	4203.36
10.68	4202.47	11.15	4202.33	12.79	4201.4	13.18	4201.2	13.72	4200.84
16.62	4194.19	16.82	4193.88	17.18	4193.88	17.24	4193.87	20	4193.94
23.64	4194.03	25.06	4194	25.29	4193.99	26.71	4196.47	26.78	4196.62
27.45	4195.53	31.74	4190.94	31.76	4190.99	33.61	4194.89	35.74	4197.31
37.69	4197.66	39.74	4197.77	40	4197.76				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	10.68	.027	31.76	.035

Bank Sta: Left	Right	Coeff Contr.	Expan.
10.68	31.76	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	4198.17	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.39	Wt. n-Val.		0.027	0.035
W.S. Elev (ft)	4196.78	Reach Len. (ft)			
Crit W.S. (ft)	4196.78	Flow Area (sq ft)		43.99	8.69
E.G. Slope (ft/ft)	0.012821	Area (sq ft)		43.99	8.69
Q Total (cfs)	480.00	Flow (cfs)		430.99	49.01
Top Width (ft)	19.79	Top Width (ft)		16.27	3.52
Vel Total (ft/s)	9.11	Avg. Vel. (ft/s)		9.80	5.64
Max Chl Dpth (ft)	5.84	Hydr. Depth (ft)		2.70	2.47
Conv. Total (cfs)	4239.1	Conv. (cfs)		3806.3	432.8
Length Wtd. (ft)		Wetted Per. (ft)		22.31	6.84
Min Ch El (ft)	4190.94	Shear (lb/sq ft)		1.58	1.02
Alpha	1.08	Stream Power (lb/ft s)		15.46	5.74
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

Warning: Slope too steep for slope area to converge during supercritical flow calculations (normal depth is below critical
depth). Water surface set to critical depth.

SUMMARY OF MANNING'S N VALUES

River:Oak Creek

Reach	River Sta.	n1	n2	n3
Oak Creek	360	.035	.027	.035
Oak Creek	347	Bridge		
Oak Creek	340	.035	.027	.035

Oak Creek	320	.035	.027	.035
Oak Creek	300	.035	.027	.035
Oak Creek	280	.035	.027	.035
Oak Creek	260	.035	.027	.035
Oak Creek	240	.035	.027	.035
Oak Creek	235	Bridge		
Oak Creek	220	.035	.027	.035
Oak Creek	200	.035	.027	.035
Oak Creek	180	.035	.027	.035
Oak Creek	160	.035	.027	.035
Oak Creek	150	Bridge		
Oak Creek	140	.035	.027	.035
Oak Creek	120	.035	.027	.035
Oak Creek	100	.035	.027	.035
Oak Creek	80	.035	.027	.035
Oak Creek	60	.035	.027	.035
Oak Creek	40	.035	.027	.035
Oak Creek	20	.035	.027	.035

SUMMARY OF REACH LENGTHS

River: Oak Creek

Reach	River Sta.	Left	Channel	Right
Oak Creek	360	20.07	20	20.04
Oak Creek	347	Bridge		
Oak Creek	340	22.98	20	16.93
Oak Creek	320	21.92	20	18.15
Oak Creek	300	21.19	20	18.79
Oak Creek	280	20.01	20	20.01
Oak Creek	260	20.01	20	20.01
Oak Creek	240	17.72	20	21.99
Oak Creek	235	Bridge		
Oak Creek	220	19.61	20	20.49
Oak Creek	200	20.03	20	20.13
Oak Creek	180	22.51	20	15.42
Oak Creek	160	20.13	20	20
Oak Creek	150	Bridge		
Oak Creek	140	20.02	20	20
Oak Creek	120	20.89	20	19.35
Oak Creek	100	13.94	20	22.9
Oak Creek	80	20.19	20	20.08
Oak Creek	60	18.65	20	20.96
Oak Creek	40	20	20	20
Oak Creek	20			

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Oak Creek

Reach	River Sta.	Contr.	Expan.
Oak Creek	360	.1	.3
Oak Creek	347	Bridge	
Oak Creek	340	.1	.3
Oak Creek	320	.1	.3
Oak Creek	300	.1	.3
Oak Creek	280	.1	.3
Oak Creek	260	.1	.3
Oak Creek	240	.1	.3
Oak Creek	235	Bridge	
Oak Creek	220	.1	.3
Oak Creek	200	.1	.3
Oak Creek	180	.1	.3
Oak Creek	160	.1	.3
Oak Creek	150	Bridge	
Oak Creek	140	.1	.3
Oak Creek	120	.1	.3
Oak Creek	100	.1	.3
Oak Creek	80	.1	.3
Oak Creek	60	.1	.3
Oak Creek	40	.1	.3
Oak Creek	20	.1	.3