Garcha Reality LP

Shell Station

Franklin, IN

Site Drainage Report

October 5, 2021

Independent
Land
Surveying

3200 Sycamore CT, Suite 2A
Columbus, IN 47203
Phone: 812-372-0996 – Fax: 812-602-0484

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Garcha Reality LP

Shell Station

Franklin, IN

Professional Certification

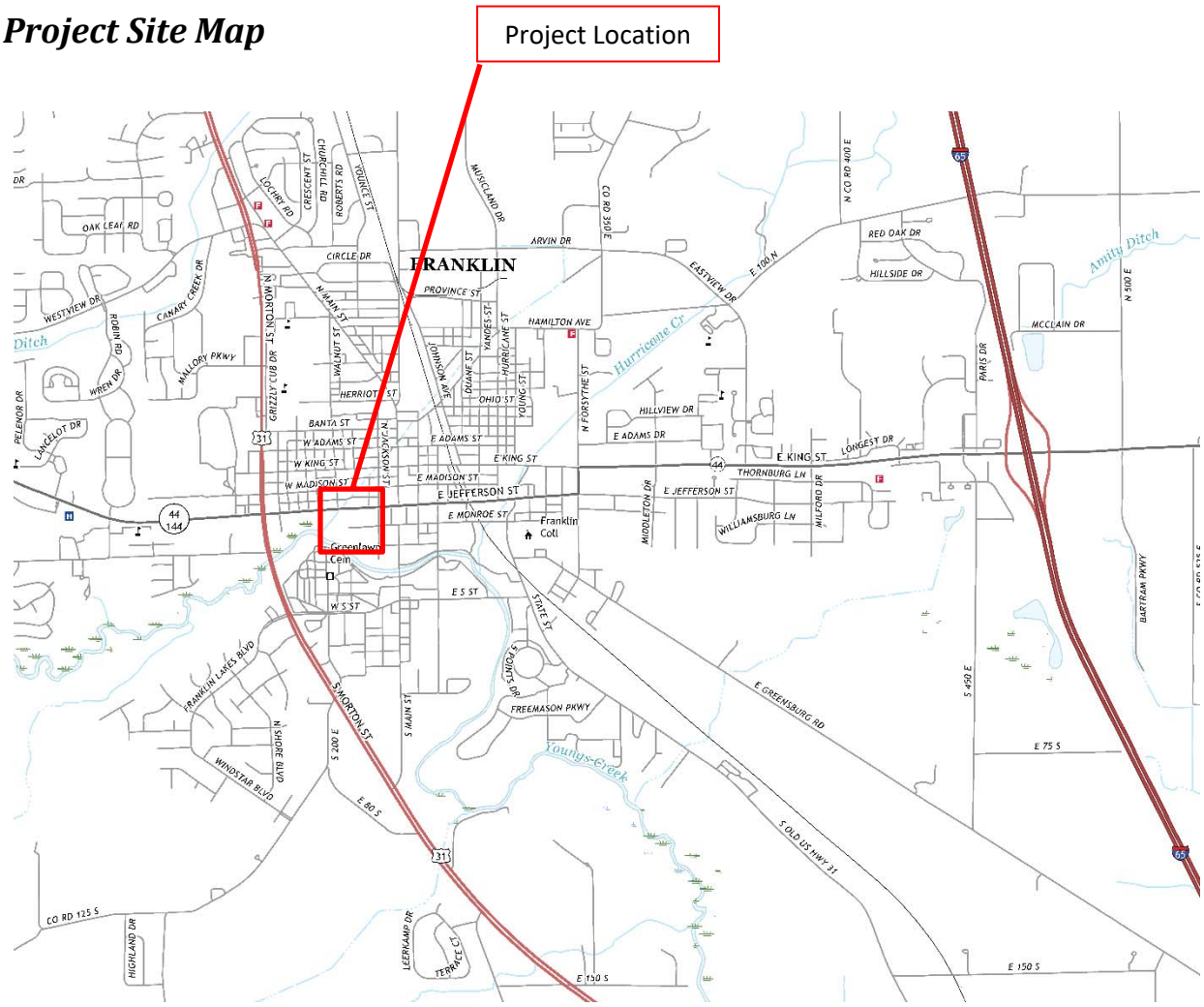
Site Drainage Report

October 5, 2021

James C. Leinart, P.E.
Indiana P.E. No. 10707550

The drainage design and calculations included in this report have been performed by me or under my direction or supervision.

Project Site Map



Introduction

Garcha Reality LP is planning to reconstruct the existing Admiral gas station at 237 West Jefferson Street in Franklin. The existing fuel island will be reused, but the existing building will be razed and a new building will be constructed on the southern portion of the property. The improvements scheduled for this lot include private drives, sanitary, storm and other utilities to allow access and provide infrastructure to serve a proposed building. This lot will be required to meet the City of Franklin's General Drainage Detention Standards for the newly constructed portions of the property.

Pre-Construction Site Photos

Photo 1
Looking East from West Property Line

Photo 2
Looking West at South End of Property from East Property Line

Pre-Construction Site Conditions

This 0.46 acre site is located in Zone AE, which is a Special Flood Hazard Area, on FEMA's FIRM (Map 18081C0231E, Dated January 29, 2021) for this area. The stormwater from the pre-development condition of this lot drains via overland flow to the northeast corner of the property. This site is in the Youngs Creek watershed and all runoff from this site makes it way to Big Blue River via Youngs Creek and Sugar Creek.

Proposed Site Conditions

The proposed construction on this site will include the following improvements:

- A new 3,031 FT^2 building will be constructed on this lot.

- Paved access drives, curbs and parking areas will connect the proposed building to the existing improvements and West Jefferson Street.

- Utility improvements including, but not limited to, sanitary sewer, public water, public electric, public communications, etc. are planned for this project.

- The proposed drainage system will consist of inlets to catch surface water and a stormwater piping system to convey the stormwater to an underground detention system. In addition, the building downspout drains will be connected to the stormwater system via underground piping.

- A stormwater drainage system will be installed in the drive and parking areas north of the proposed building to collect stormwater from the improvements. This system consists of perforated piping encased in stone to act as an underground detention system before entering an outlet control structure that will control the rate of runoff that is discharged from site. The system will have 1.25' of stone installed below the invert of the pipe for storage and to also allow the system to comply with the water quality requirements of the ordinance. The outlet control structure will consist of a precast concrete structure that will have a 2" orifice, which is the minimum size allowed by ordinance 6.19-H, in a weir wall to control the rate the runoff leaves that site. The top of the weir wall will act as an emergency overflow and the elevation will be set at 718.52', which is just above the elevation required to store the critical duration 100YR storm. This emergency overflow will allow the system to function should the orifice become blocked. In addition, this emergency overflow will convey storm excess stormwater from multiple storm events that don't allow the drawdown of the detention system or storms that are larger than the design storms safely from the detention system.

Design Requirements

The site will be designed to comply with the stormwater design standards for the City of Franklin. Highlights of the standards are as follows:

- Runoff Rates:
  - Post development runoff rate for the 10YR storm event shall be less than or equal to the pre-development rate for a 2YR storm event.
  - Post development runoff rate for the 100YR storm event shall be less than or equal to the pre-development rate for a 10YR storm event.

- Stormwater Piping:
  - The minimum allowable pipe size shall be 12 inches in diameter.
  - The minimum allowable pipe flow velocity shall be 2.5 feet per second.
  - The maximum velocity shall be 15 feet per second.

- Detention System:
  - All detention design shall conform to the current Soil Conservation Service hydrograph methods for drainage, or an approved equal as determined by the City Engineer. The design of all drainage facilities shall include analysis of all storm durations (1,2,3,6,12, and 24 hours) to determine the critical peak to be used.

- Off-street Drainage:
  - Storm swale inlets shall be sized to accept a 10-year storm volume with 50% of the inlet clogged and no greater than 9 inches of water pooling above each inlet.

- Detention Facility Specifications:
  - The developer shall be required to provide a water quality detention system that is designed to detain, for over 24 hours after peak run-off from a 24-hour storm, at least 20% of the run-off from either a 1-1/4 inch storm or 1/2 inch of direct runoff, whichever is greater.
  - Outlet pipes from detention facilities must be discharged into a natural ditch, a defined swale, or a discharge control structure that will eliminate erosion downstream. Outlet pipes shall not be discharged onto an existing tillable field.

Drainage Modeling Methodology

The pre-project and post construction conditions were modeled with information from the following sources:

- Site information was collected from a pre-construction site survey, the Bulletin 71 rainfall data and the preliminary plans.

- A Custom Soil Resource Report for Johnson County, Indiana was obtained to determine the NRCS soil classifications.

- The drainage areas were delineated and measured using the existing site survey and aerial imagery in the computer design program AutoCAD Civil 3D.

- The information was input into the stormwater runoff model Hydraflow Hydrographs. This program was used to model the site to calculate both pre-development and post development discharge rates. This program also routes the discharge through a model of the site to determine flow rates for pipes and retention/detention design.

Culverts & Pipes

The pipe flows were calculated to show the 10 Year and 100 Year 1 Hour design flows for each pipe as well as the full flow pipe capacity and resulting velocity. The table below shows the results of this modeling.

Pipe	Material	Upstream INV Elevation	Downstream INV Elevation	Length (FT)	Diameter (in)	Pipe Capacity (CFS)	Pipe Full Flow Velocity (FT/SEC)	10 YR 1 Hour Peak Discharge (CFS)	100 YR 1 Hour Peak Discharge (CFS)
105-104	ADS HP STORM	718.94	718.02	92	12	3.87	4.93	0.19	0.33
104-103	ADS HP STORM	718.02	717.84	18	12	3.87	4.93	0.57	0.92
103-102	ADS HP STORM	717.84	717.38	46	12	3.87	4.93	0.90	1.57
102-101	ADS HP STORM	717.38	717.00	38	12	3.87	4.93	0.90	1.57
202-201	ADS HP STORM	718.02	718.02	33	12	Underground Detention			
201-104	ADS HP STORM	718.02	718.02	17	12	Underground Detention			
Downspouts	PVC	718.33	717.84	97	8	0.93	2.66	0.33	0.58

The inlet grates were also modeled for inlet capacity and ponding depth for the 10 Year 1 Hour storm event to verify that they meet the required 9" maximum ponding depth. The table below shows the result of that modeling:

Structure Number	Casting Manufacturer	Model	10 YR 1 HR Peak Discharge	Maximum Depth (IN)*
105	Neenah	R-1878-A6G	0.19	0.7
201	Neenah	R-1878-A6G	0.23	0.8

**The inlet capacities above were calculated allowing for half of the inlet to be blocked by debris.*

Pre-Development vs. Post Development Results

The table below compares the pre-development peak flows to the post development flow after routing the post development flows through the detention system. For the City of Franklin's requirements, the detention pond flow was calculated for the 1 Hour, 2 Hour, 3 Hour, 6 Hour,

12 Hour and 24 Hour duration storms for both the 10 Year and 100 Year Storm Events. The peak rates have been highlighted. The outlet control structure will have a 2" orifice, which is the minimum size allowed by ordinance 6.19-H to control the rate the runoff leaves that site. This minimum orifice size will allow runoff rates to exceed the ordinance requirements for Pre and Post discharge rates.

Design Storm Event	Pre-Development 2YR (CFS)	Post Development 10YR Pond Outflow (CFS)	Maximum 10YR Pond Elevation (FT)	Maximum Storage Required (FT^3)
1 Hour	0.09	0.44	718.33	199
2 Hour	0.05	0.23	718.23	183
3 Hour	0.07	0.30	718.27	189
6 Hour	0.05	0.19	718.21	180
12 Hour	0.05	0.08	718.14	169
24 Hour	0.04	0.05	718.11	165
	Pre-Development 10YR (CFS)	Post Development 100YR Pond Flow (CFS)	Maximum 100YR Pond Elevation (FT)	Maximum Storage Required (FT^3)
1 Hour	0.23	0.91	718.50	230
2 Hour	0.12	0.54	718.37	206
3 Hour	0.15	0.54	718.37	206
6 Hour	0.11	0.32	718.28	190
12 Hour	0.09	0.13	718.17	175
24 Hour	0.07	0.08	718.14	169

Water Quality

In order to comply with the water quality aspects of the drainage standards, a 1.25' thick stone layer will be installed below the perforated pipe. The amount of drawdown time is shown in the table below. This time will commence after all of the storm runoff has left the underground detention, not after the peak.

Water Quality Area (FT^2)	0.5" Direct Runoff	Volume from 0.5" Runoff (FT^3)	Volume from 1.25" Storm (FT^3)	Largest Volume (FT^3)	20% of Largest Volume (FT^3)	Volume Detained (FT^3)	Drawdown Time* (HRS)
4304	0.5	179	352	352	70.4	75	30

**Drawdown time is based on an assumed infiltration rate of 0.5 IN/HR.*

Conclusion

The computer modeling of this site shows that the increased stormwater runoff from the proposed development of this site can be effectively handled by the proposed drainage system. The site drainage system will reduce the post development flows to match those required by section 6.19 - General Drainage Standards in the City of Franklin's Subdivision Control Ordinance. In addition, the proposed drainage system will comply with the water quality standards by detaining the required volume of water for more than a 24 hour period.

Appendix A

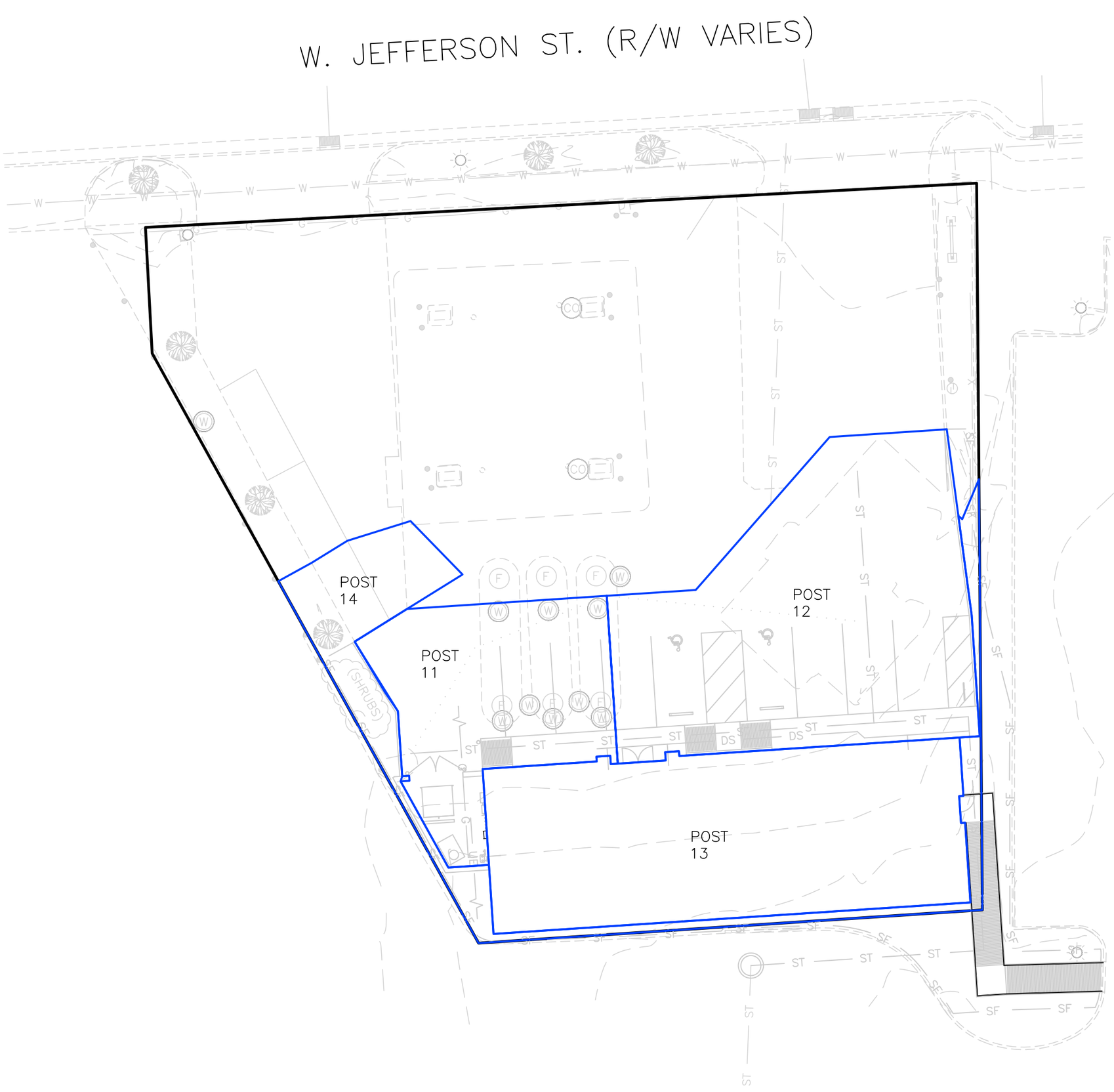
Site Drainage Basin Drawings

GARCHA REALITY LP

PRE–CONSTRUCTION
DRAINAGE AREAS

SHEET: 1 OF 2	JOB NUMBER: 21010	
SCALE: N.T.S.	DWG REVISION DATES	
DRAWN BY: CL	–	–
DWG DATE: 10/05/21	–	–
DWG NAME: 21010 SHELL STATION.dwg		

Independent Land Surveying
www.ilsurveying.com
414 South Main Street
Brownstown, Indiana 47220
Phone: 812–358–2882
Fax: 812–358–2605
3200 Sycamore CT, STE 2A
Columbus, Indiana 47203
Phone: 812–372–0996
Fax: 812–602–0484



GARCHA REALITY LP

POST CONSTRUCTION
DRAINAGE AREAS

SHEET: 2 OF 2	JOB NUMBER: 21010	
SCALE: N.T.S.	DWG REVISION DATES	
DRAWN BY: CL	–	–
DWG DATE: 10/05/21	–	–
DWG NAME: 21010 SHELL STATION.dwg		

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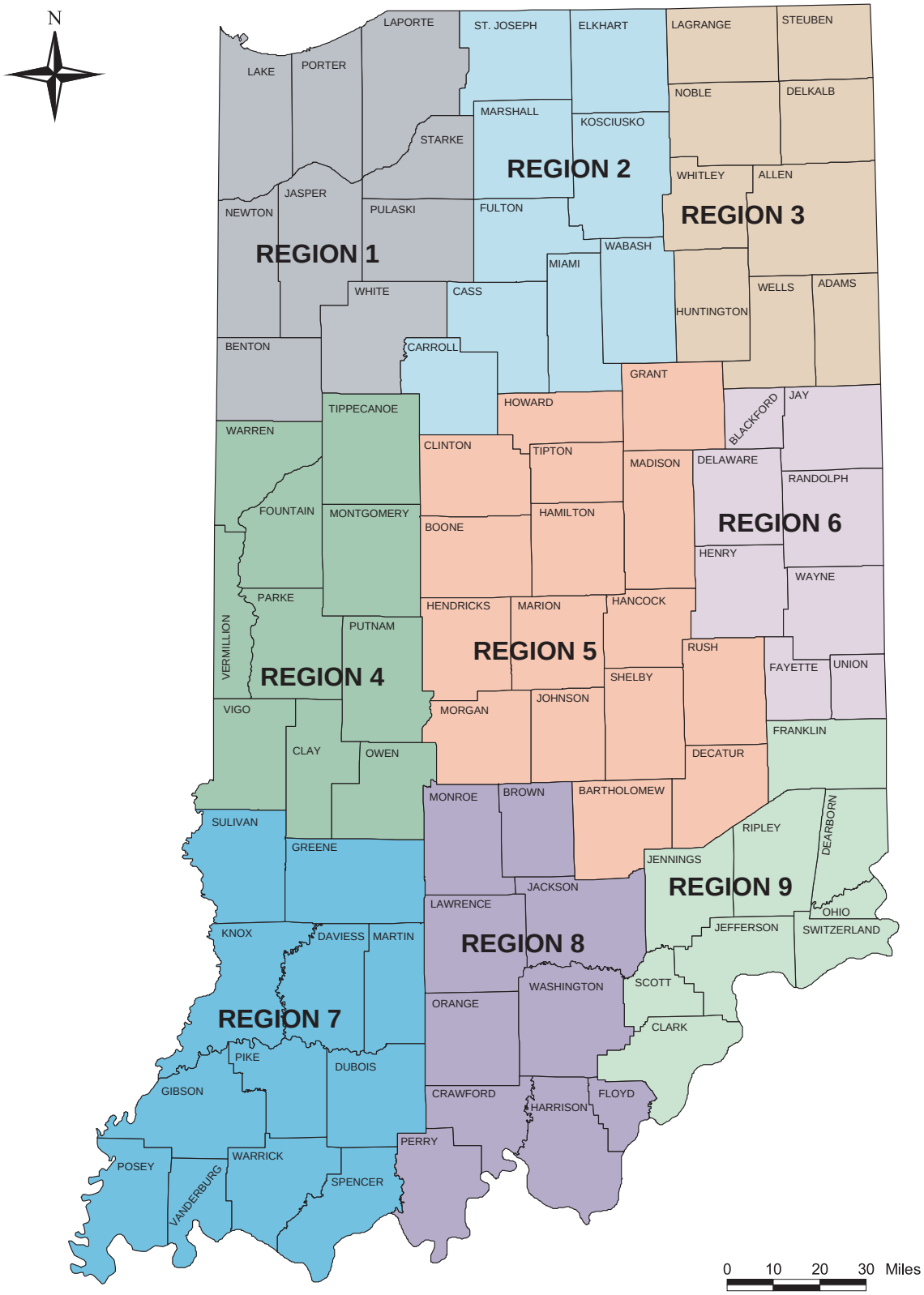
414 South Main Street
Brownstown, Indiana 47220
Phone: 812–358–2882
Fax: 812–358–2605

3200 Sycamore CT, STE 2A
Columbus, Indiana 47203
Phone: 812–372–0996
Fax: 812–602–0484

Appendix B

Rainfall Data

HUFF CLIMATIC REGIONS FOR INDIANA



REFERENCE
RAINFALL FREQUENCY ATLAS
OF THE MIDWEST
BULLETIN 71

STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER

INDIANA DEPARTMENT OF
NATURAL RESOURCES

RAINFALL FREQUENCY ATLAS OF THE MIDWEST -- BULLETIN 71

Sectional Mean Frequency Distributions for Storm Periods of 5 Minutes to 10 Days and Recurrence Intervals of 2 Months to 100 Years in Indiana

Rainfall (inches) for given reccurrence interval

Section	Duration	2-Month	3-Month	4-Month	6-Month	9-Month	1-year	2-year	5-year	10-year	25-year	50-year	100-year
5	10-day	2.13	2.56	2.95	3.47	3.99	4.34	5.06	6.07	6.96	8.36	9.57	10.86
5	5-day	1.73	2.07	2.34	2.71	3.12	3.39	3.97	4.86	5.66	6.91	8.07	9.44
5	72-hr	1.52	1.79	2.02	2.34	2.70	2.93	3.45	4.27	5.04	6.15	7.17	8.31
5	48-hr	1.42	1.66	1.85	2.14	2.47	2.68	3.18	3.94	4.63	5.65	6.56	7.55
5	24-hr	1.35	1.57	1.72	1.99	2.26	2.46	2.92	3.64	4.25	5.16	5.95	6.84
5	18-hr	1.27	1.48	1.62	1.87	2.13	2.31	2.74	3.42	3.99	4.85	5.59	6.43
5	12-hr	1.18	1.37	1.50	1.73	1.97	2.14	2.54	3.17	3.70	4.49	5.18	5.95
5	6-hr	1.02	1.18	1.29	1.50	1.70	1.85	2.19	2.73	3.19	3.87	4.46	5.13
5	3-hr	0.86	1.00	1.10	1.27	1.44	1.57	1.87	2.33	2.72	3.30	3.81	4.38
5	2-hr	0.79	0.92	1.00	1.16	1.32	1.43	1.69	2.11	2.46	2.99	3.45	3.97
5	1-hr	0.64	0.74	0.81	0.94	1.07	1.16	1.37	1.71	2.00	2.43	2.80	3.21
5	30-min	0.50	0.58	0.64	0.74	0.84	0.91	1.08	1.35	1.57	1.91	2.20	2.53
5	15-min	0.36	0.42	0.46	0.53	0.61	0.66	0.79	0.98	1.15	1.39	1.61	1.85
5	10-min	0.29	0.33	0.36	0.42	0.48	0.52	0.61	0.76	0.89	1.08	1.25	1.44
5	5-min	0.17	0.19	0.21	0.24	0.28	0.30	0.35	0.44	0.51	0.62	0.71	0.82
6	10-day	2.13	2.57	2.96	3.48	4.00	4.35	5.00	6.00	6.82	8.30	9.55	11.05
6	5-day	1.62	1.93	2.19	2.54	2.92	3.17	3.75	4.68	5.50	6.90	8.20	9.68
6	72-hr	1.45	1.70	1.92	2.22	2.56	2.78	3.30	4.15	4.98	6.06	7.25	8.55
6	48-hr	1.36	1.59	1.77	2.06	2.36	2.57	3.01	3.73	4.40	5.54	6.55	7.70
6	24-hr	1.26	1.47	1.61	1.86	2.21	2.30	2.76	3.37	3.89	4.65	5.29	6.05
6	18-hr	1.19	1.38	1.51	1.75	1.99	2.16	2.59	3.17	3.66	4.37	4.97	5.69
6	12-hr	1.10	1.28	1.40	1.62	1.84	2.00	2.40	2.93	3.38	4.05	4.60	5.26
6	6-hr	0.95	1.10	1.20	1.39	1.58	1.72	2.07	2.53	2.92	3.49	3.97	4.54
6	3-hr	0.81	0.94	1.03	1.19	1.35	1.47	1.77	2.16	2.49	2.98	3.39	3.87
6	2-hr	0.73	0.85	0.93	1.08	1.22	1.33	1.60	1.95	2.26	2.70	3.07	3.51
6	1-hr	0.59	0.69	0.76	0.87	0.99	1.08	1.30	1.58	1.83	2.19	2.49	2.84
6	30-min	0.47	0.54	0.60	0.69	0.78	0.85	1.02	1.25	1.44	1.72	1.96	2.24
6	15-min	0.34	0.40	0.43	0.50	0.57	0.62	0.75	0.91	1.05	1.26	1.43	1.63
6	10-min	0.26	0.31	0.34	0.39	0.44	0.48	0.58	0.71	0.82	0.98	1.11	1.27
6	5-min	0.15	0.18	0.20	0.23	0.26	0.28	0.33	0.40	0.47	0.56	0.63	0.73

Appendix C

NRCS Soil Reports

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Johnson County, Indiana

Franklin Shell Station

May 19, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Map Scale: 1:389 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 5 10 20 30

Feet
0 15 30 60 90

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Johnson County, Indiana
Survey Area Data: Version 28, Jun 4, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 27, 2019—Sep 26, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
YflA	Fox loam-Urban land complex, 0 to 2 percent slopes	0.5	100.0%
Totals for Area of Interest		**0.5**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Johnson County, Indiana

YflA—Fox loam-Urban land complex, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2w57z
Elevation: 340 to 1,040 feet
Mean annual precipitation: 37 to 46 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 145 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Fox and similar soils: 50 percent
Urban land: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fox

Setting

Landform: Stream terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy outwash over sandy and gravelly outwash

Typical profile

Ap - 0 to 8 inches: loam
Bt1 - 8 to 22 inches: clay loam
Bt2 - 22 to 33 inches: gravelly clay loam
2C - 33 to 79 inches: very gravelly sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 30 to 45 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 55 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: B
Ecological site: F111AY015IN - Dry Outwash Upland
Hydric soil rating: No

Minor Components

Ockley

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F111AY015IN - Dry Outwash Upland
Hydric soil rating: No

Westland, drained

Percent of map unit: 3 percent
Landform: Swales on stream terraces, depressions on stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear, concave
Across-slope shape: Concave
Ecological site: R111AY016IN - Outwash Mollisol
Hydric soil rating: Yes

Whitaker

Percent of map unit: 2 percent
Landform: Stream terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F111AY014IN - Outwash Upland
Hydric soil rating: No

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Appendix D

Hydraflow Hydrographs
1 Hour Storm Data

Hydraflow Table of Contents

2 - Year

10 - Year

100 - Year

Hydrograph Summary Report

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

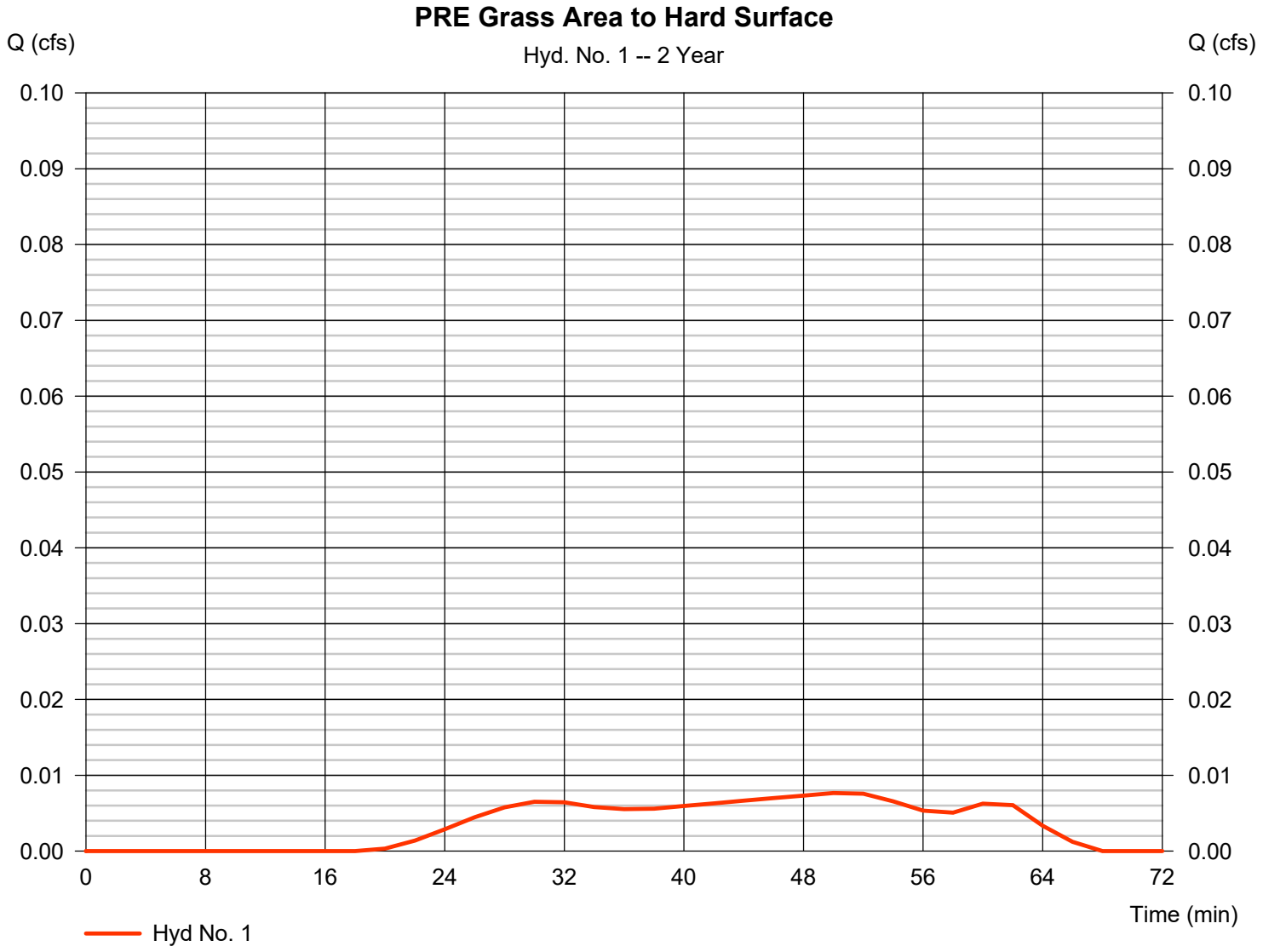
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.008	2	50	15	------	------	------	PRE Grass Area to Hard Surface
2	SCS Runoff	0.088	2	20	179	------	------	------	PRE South
3	SCS Runoff	0.116	2	8	157	------	------	------	POST 11 - STR 105 (105-104)
4	SCS Runoff	0.233	2	8	314	------	------	------	POST 12 - STR 201
5	SCS Runoff	0.204	2	8	274	------	------	------	POST 13-Building-DS
6	SCS Runoff	0.004	2	30	9	------	------	------	POST 14
7	Combine	0.349	2	8	471	3, 4,	------	------	Detention Inflow
8	Reservoir	0.222	2	18	290	7	718.23	183	Detention (104-103)
9	Combine	0.360	2	16	564	5, 8	------	------	103-101
10	Combine	0.360	2	16	574	6, 9	------	------	Total South

Hydrograph Report

Hyd. No. 1

PRE Grass Area to Hard Surface

Hydrograph type	= SCS Runoff	Peak discharge	= 0.008 cfs
Storm frequency	= 2 yrs	Time to peak	= 50 min
Time interval	= 2 min	Hyd. volume	= 15 cuft
Drainage area	= 0.100 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.37 in	Distribution	= Huff-1st
Storm duration	= 1.00 hrs	Shape factor	= 484



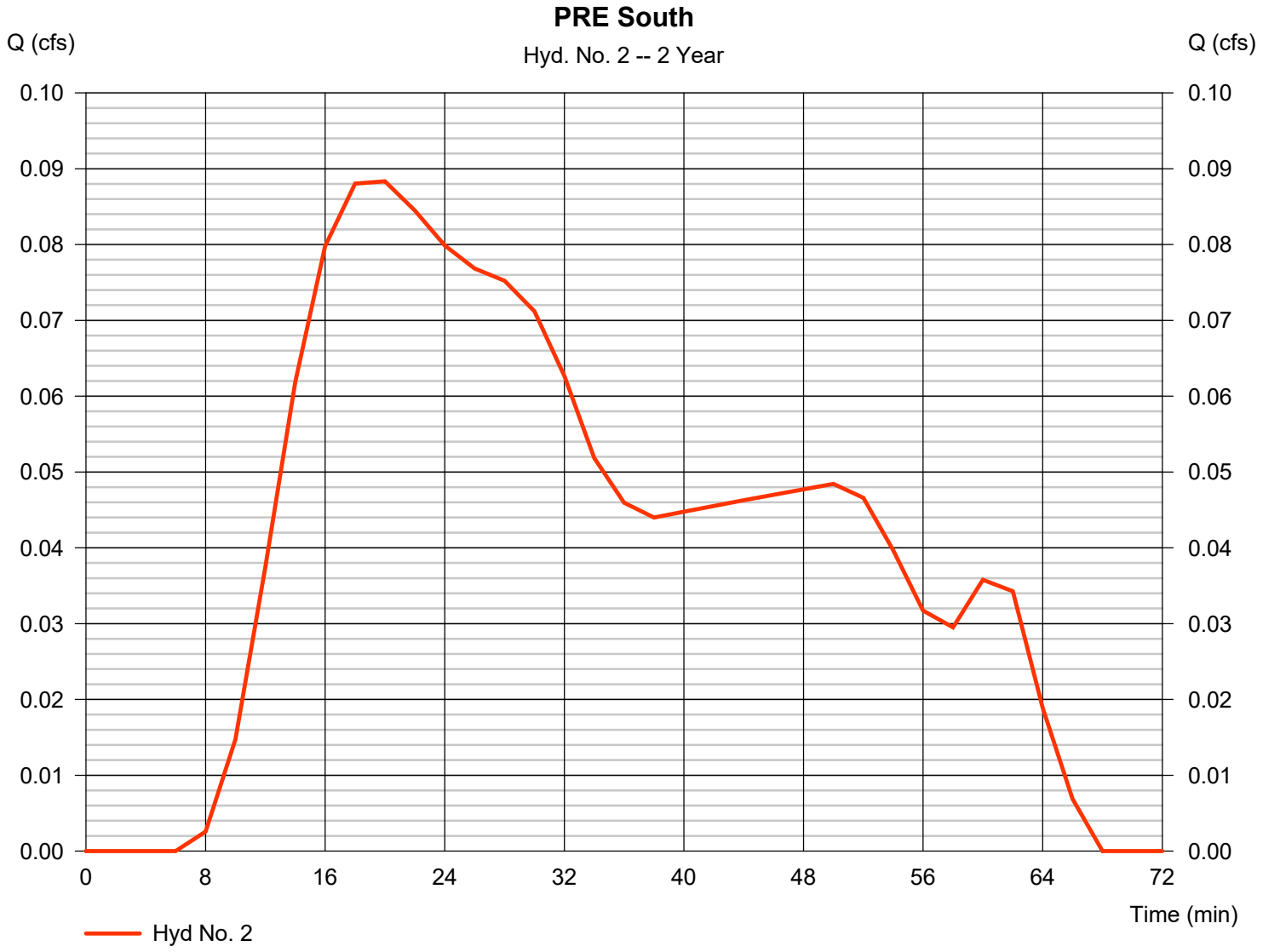
Hydrograph Report

Hyd. No. 2

PRE South

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.088 cfs
Storm frequency	=	2 yrs	Time to peak	=	20 min
Time interval	=	2 min	Hyd. volume	=	179 cuft
Drainage area	=	0.210 ac	Curve number	=	81*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.37 in	Distribution	=	Huff-1st
Storm duration	=	1.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.120 x 69) + (0.090 x 98)] / 0.210

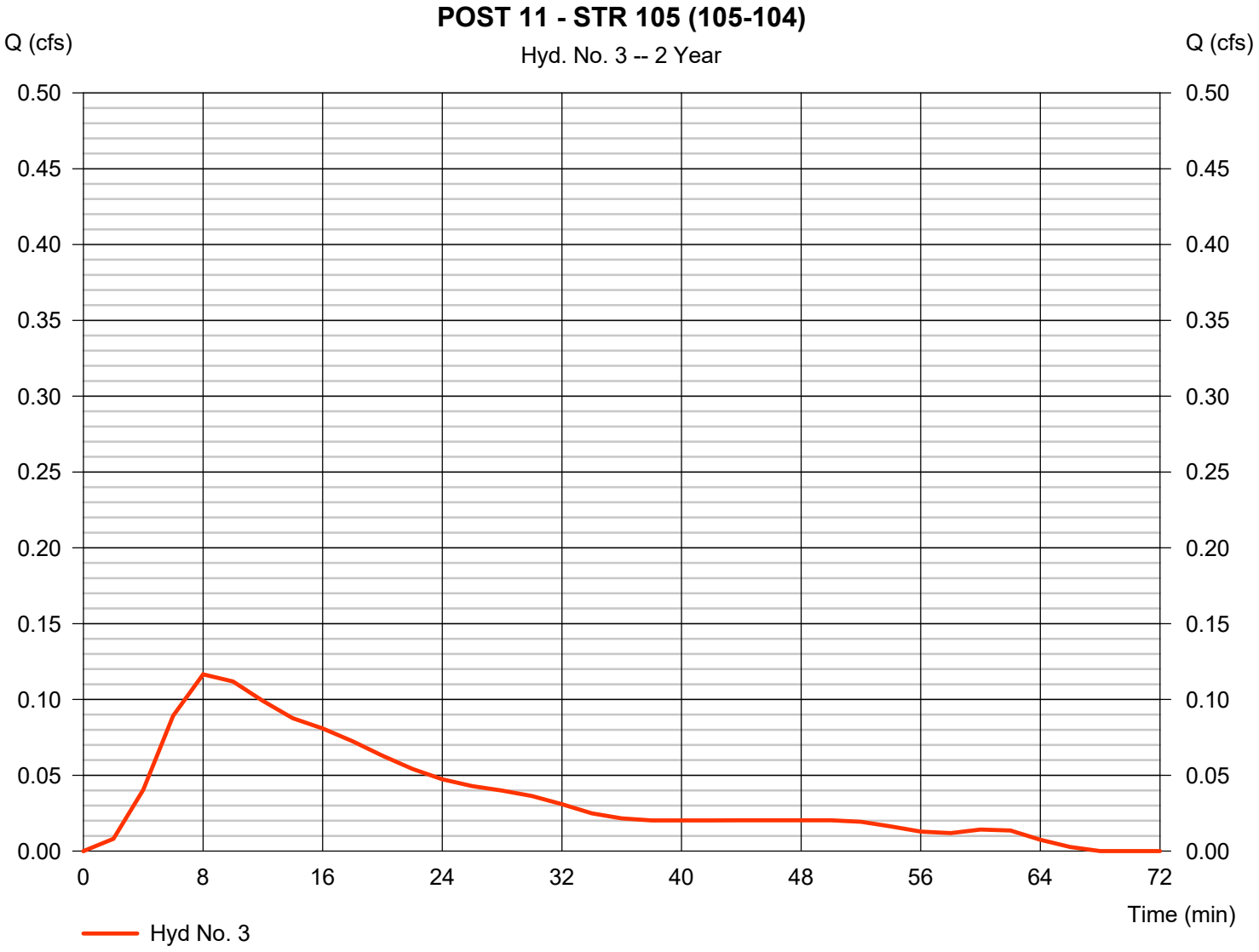


Hydrograph Report

Hyd. No. 3

POST 11 - STR 105 (105-104)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.116 cfs
Storm frequency	= 2 yrs	Time to peak	= 8 min
Time interval	= 2 min	Hyd. volume	= 157 cuft
Drainage area	= 0.040 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.37 in	Distribution	= Huff-1st
Storm duration	= 1.00 hrs	Shape factor	= 484

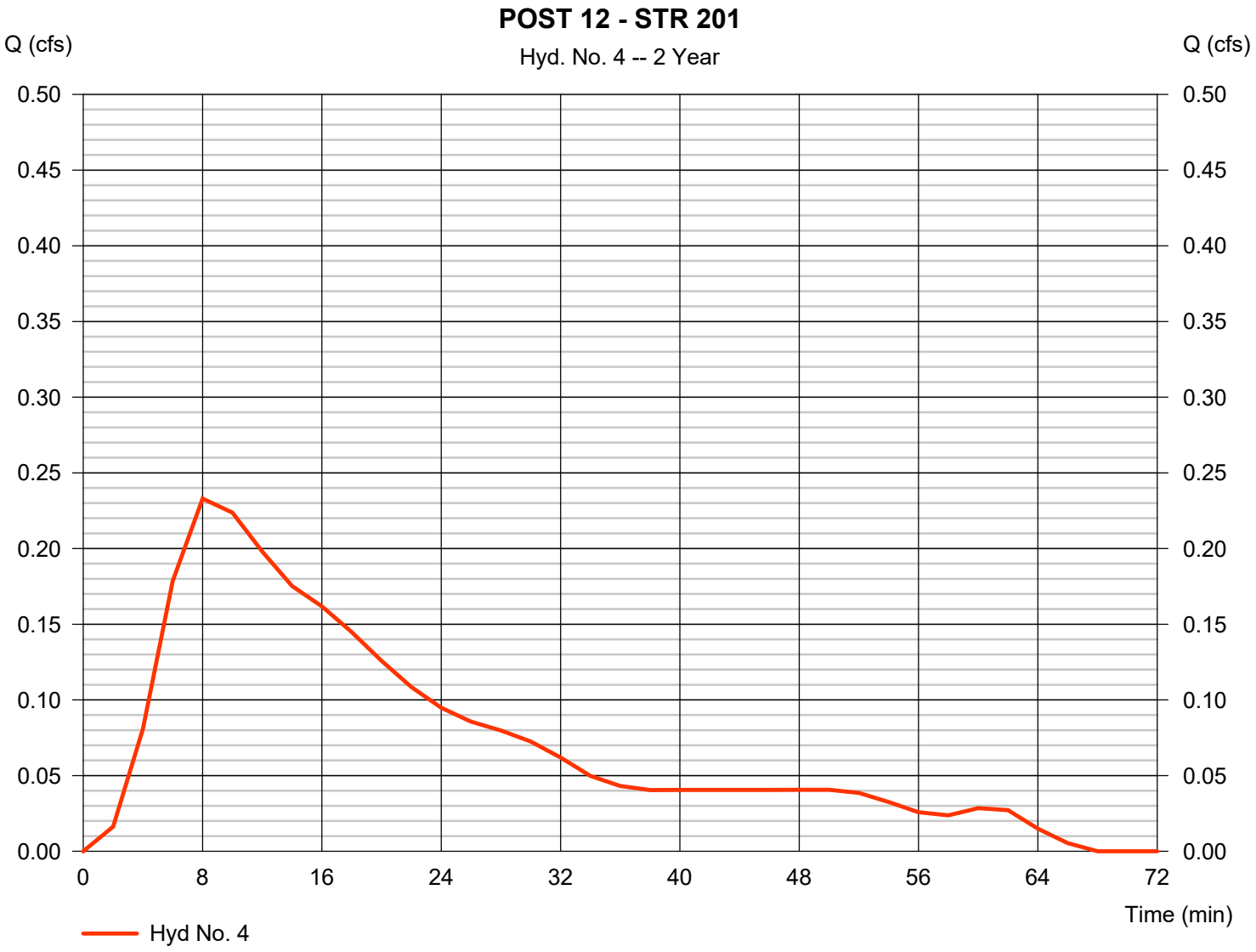


Hydrograph Report

Hyd. No. 4

POST 12 - STR 201

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.233 cfs
Storm frequency	=	2 yrs	Time to peak	=	8 min
Time interval	=	2 min	Hyd. volume	=	314 cuft
Drainage area	=	0.080 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.37 in	Distribution	=	Huff-1st
Storm duration	=	1.00 hrs	Shape factor	=	484



Hydrograph Report

Hyd. No. 5

POST 13-Building-DS

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.204 cfs
Storm frequency	=	2 yrs	Time to peak	=	8 min
Time interval	=	2 min	Hyd. volume	=	274 cuft
Drainage area	=	0.070 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.37 in	Distribution	=	Huff-1st
Storm duration	=	1.00 hrs	Shape factor	=	484

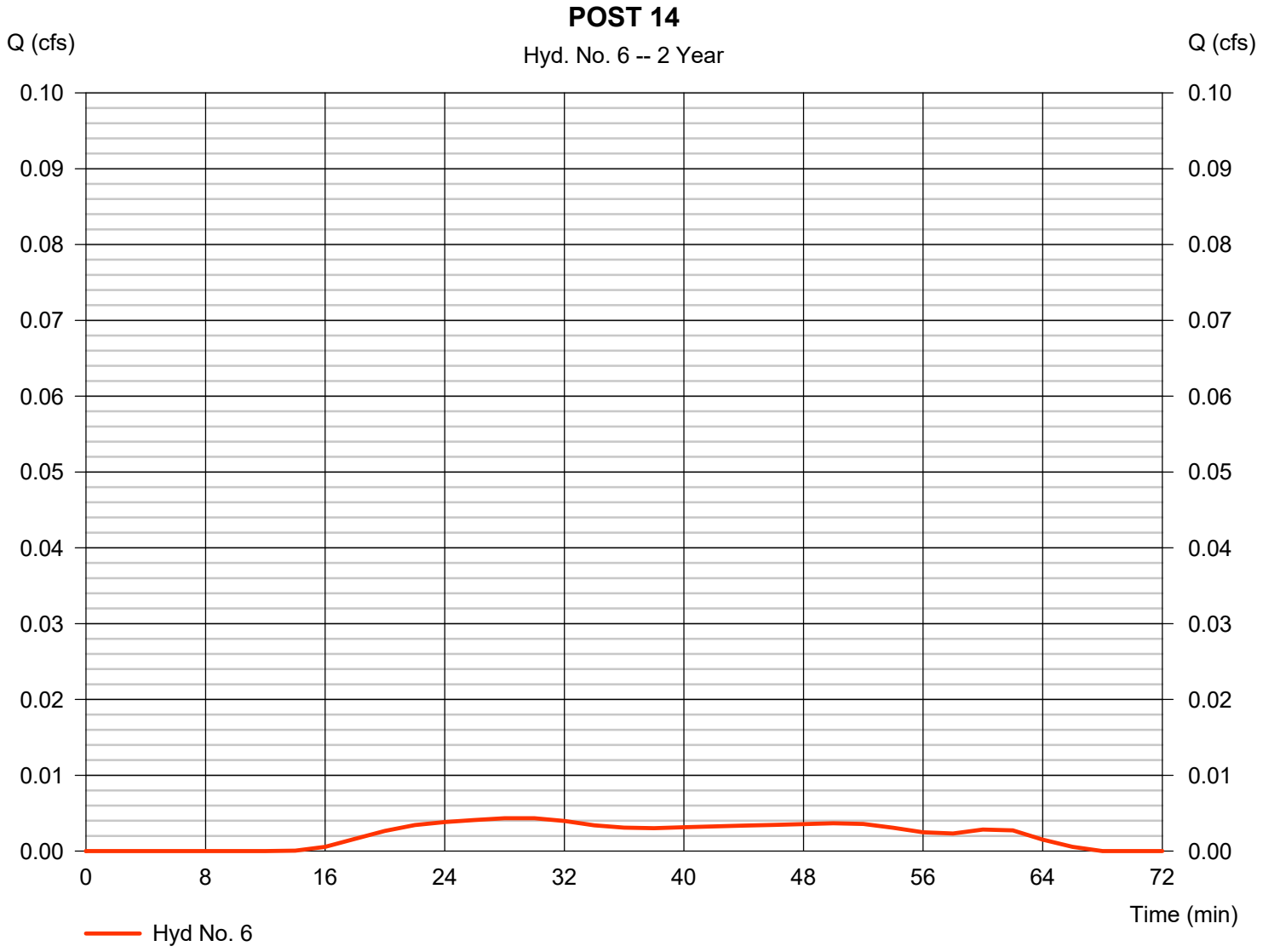
Hydrograph Report

Hyd. No. 6

POST 14

Hydrograph type	= SCS Runoff	Peak discharge	= 0.004 cfs
Storm frequency	= 2 yrs	Time to peak	= 30 min
Time interval	= 2 min	Hyd. volume	= 9 cuft
Drainage area	= 0.030 ac	Curve number	= 73*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.37 in	Distribution	= Huff-1st
Storm duration	= 1.00 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.020 x 61) + (0.010 x 98)] / 0.030

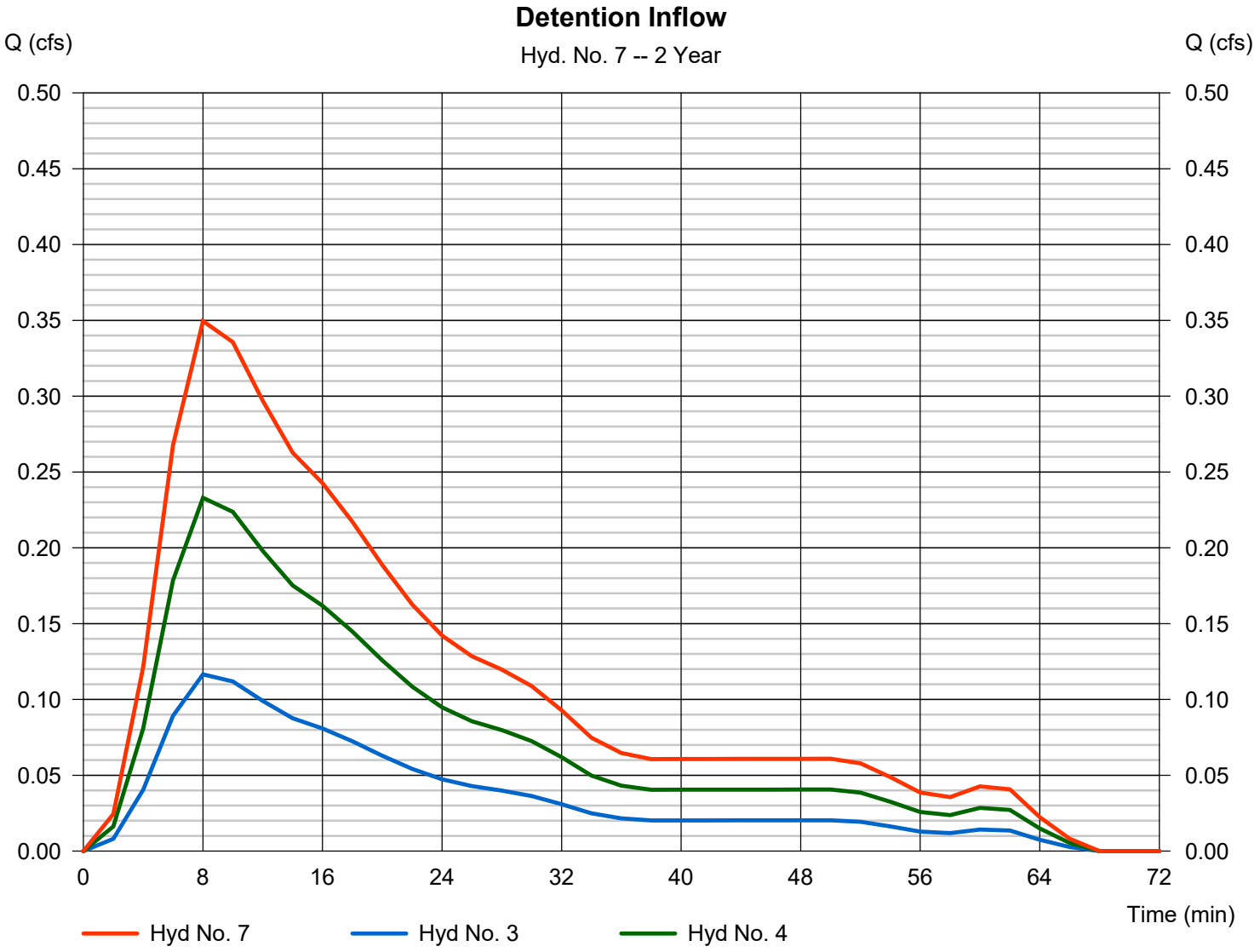


Hydrograph Report

Hyd. No. 7

Detention Inflow

Hydrograph type	=	Combine	Peak discharge	=	0.349 cfs
Storm frequency	=	2 yrs	Time to peak	=	8 min
Time interval	=	2 min	Hyd. volume	=	471 cuft
Inflow hyds.	=	3, 4	Contrib. drain. area	=	0.120 ac



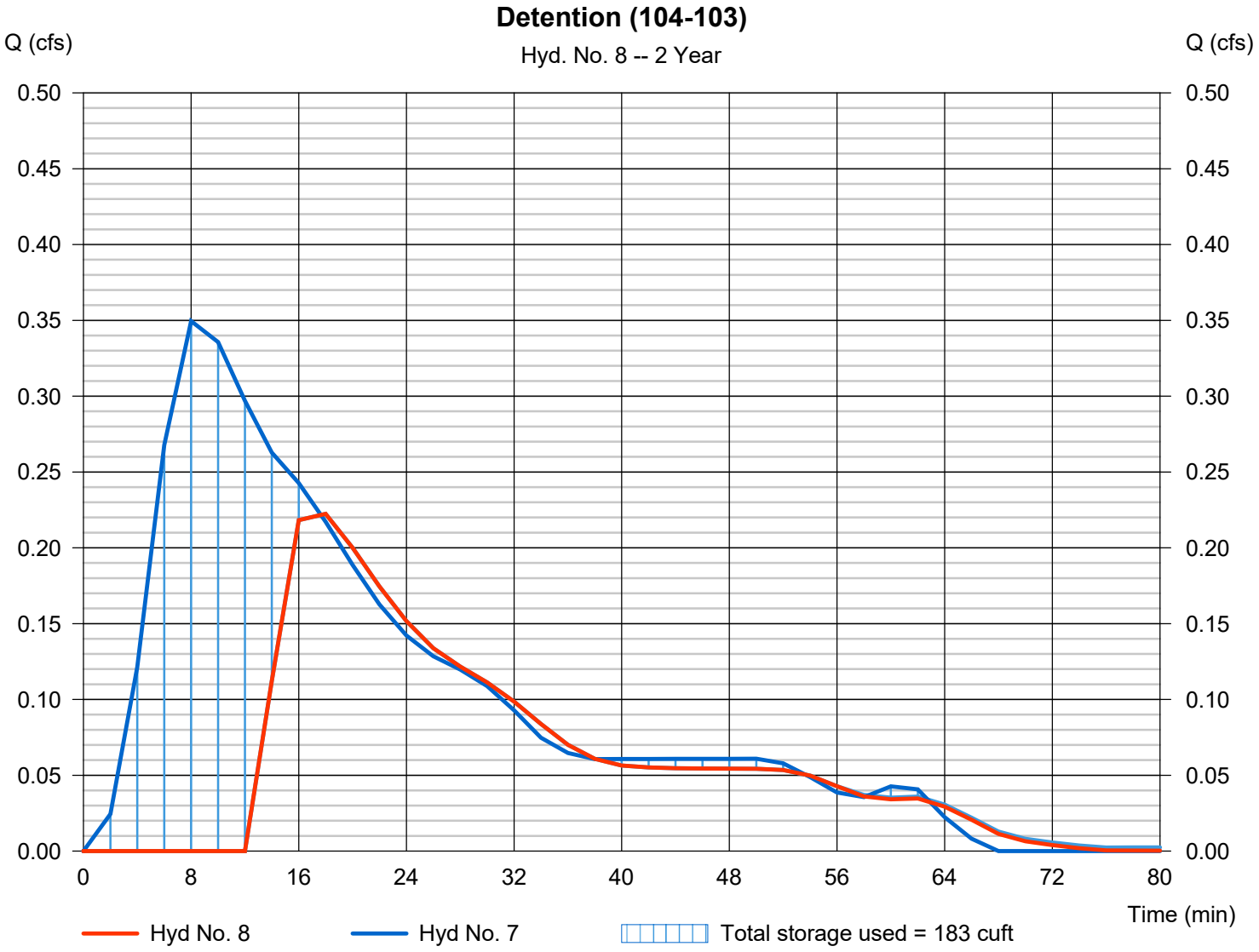
Hydrograph Report

Hyd. No. 8

Detention (104-103)

Hydrograph type	= Reservoir	Peak discharge	= 0.222 cfs
Storm frequency	= 2 yrs	Time to peak	= 18 min
Time interval	= 2 min	Hyd. volume	= 290 cuft
Inflow hyd. No.	= 7 - Detention Inflow	Max. Elevation	= 718.23 ft
Reservoir name	= Proposed Detention	Max. Storage	= 183 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

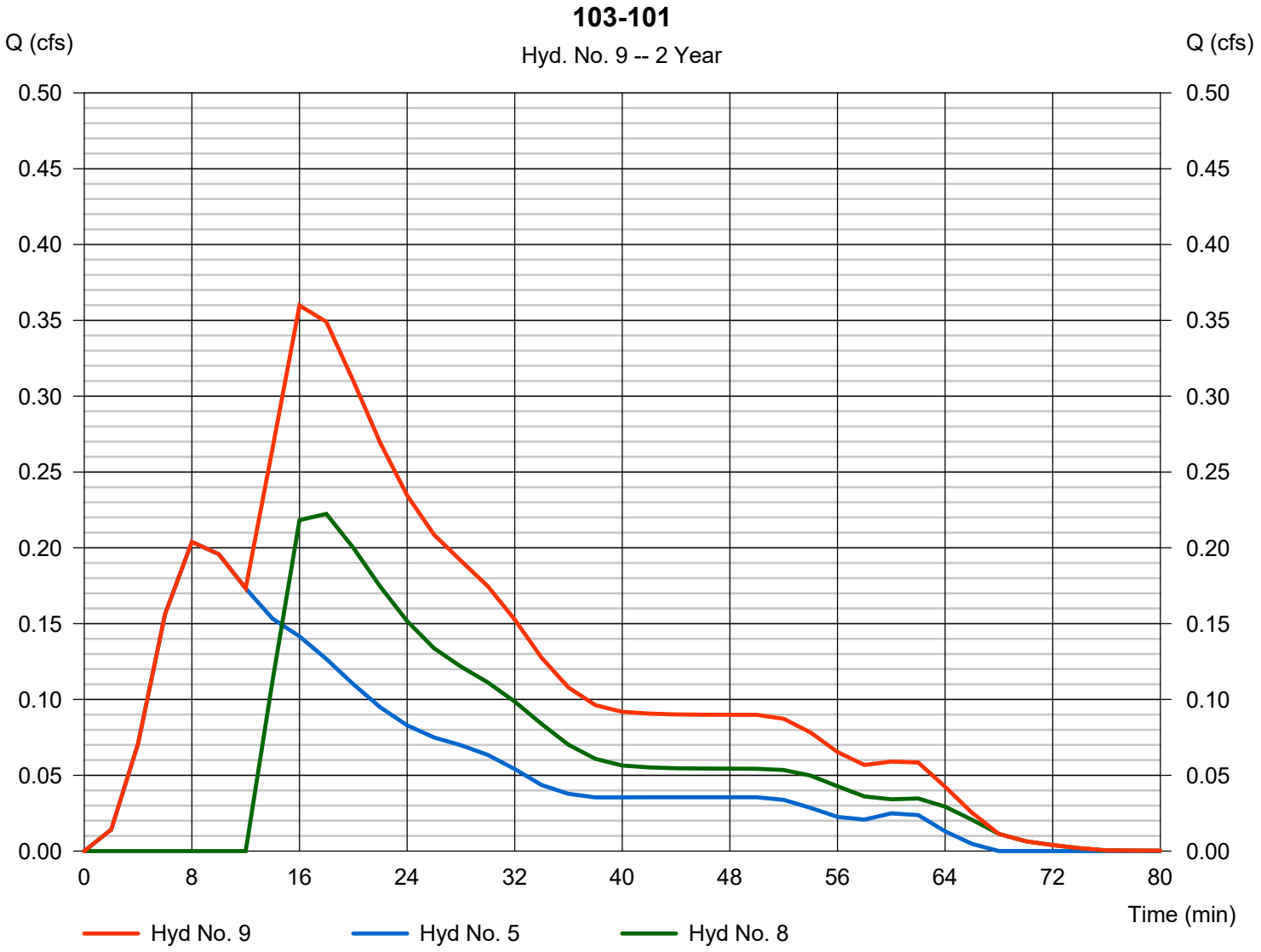


Hydrograph Report

Hyd. No. 9

103-101

Hydrograph type	=	Combine	Peak discharge	=	0.360 cfs
Storm frequency	=	2 yrs	Time to peak	=	16 min
Time interval	=	2 min	Hyd. volume	=	564 cuft
Inflow hyds.	=	5, 8	Contrib. drain. area	=	0.070 ac

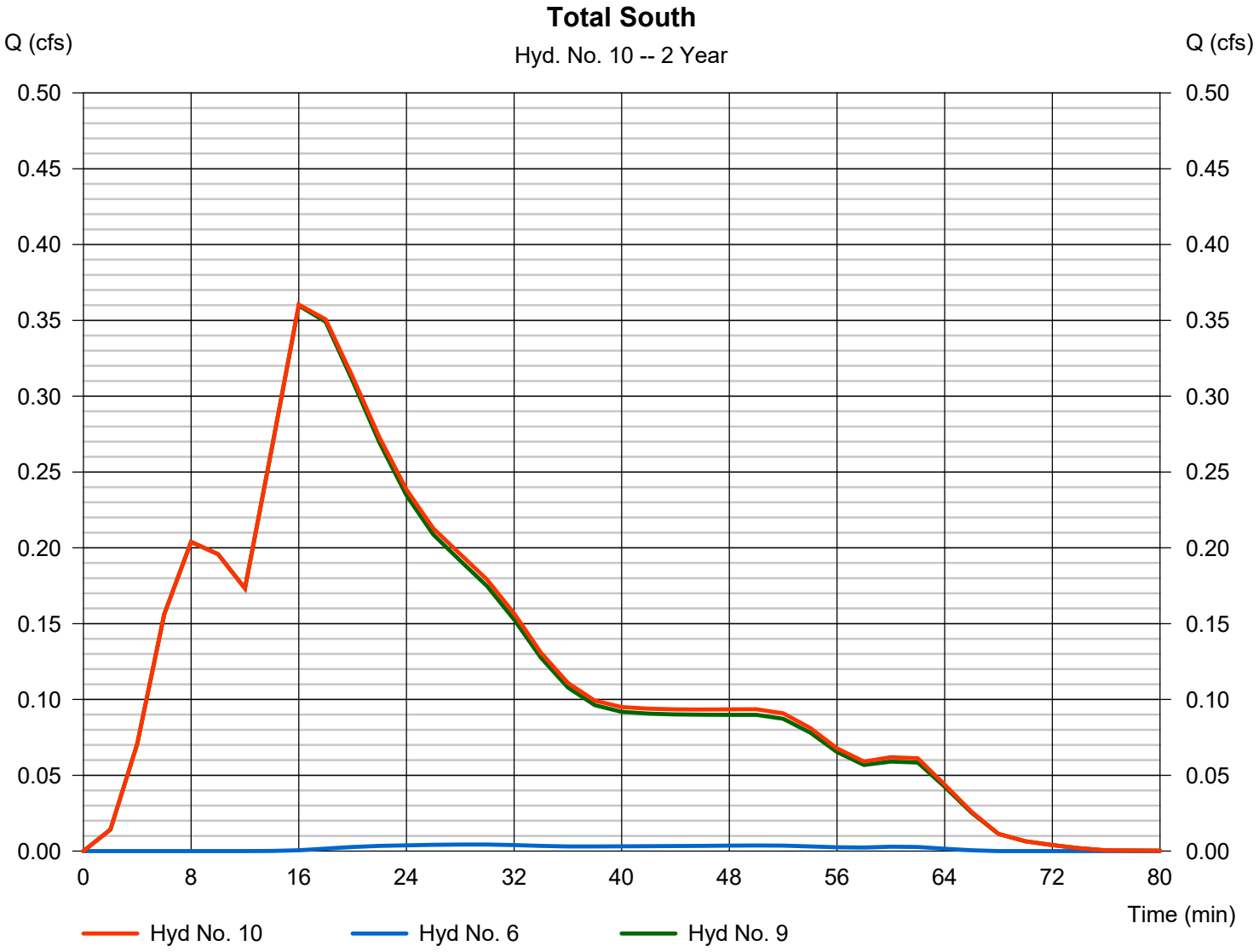


Hydrograph Report

Hyd. No. 10

Total South

Hydrograph type	= Combine	Peak discharge	= 0.360 cfs
Storm frequency	= 2 yrs	Time to peak	= 16 min
Time interval	= 2 min	Hyd. volume	= 574 cuft
Inflow hyds.	= 6, 9	Contrib. drain. area	= 0.030 ac



Hydrograph Summary Report

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

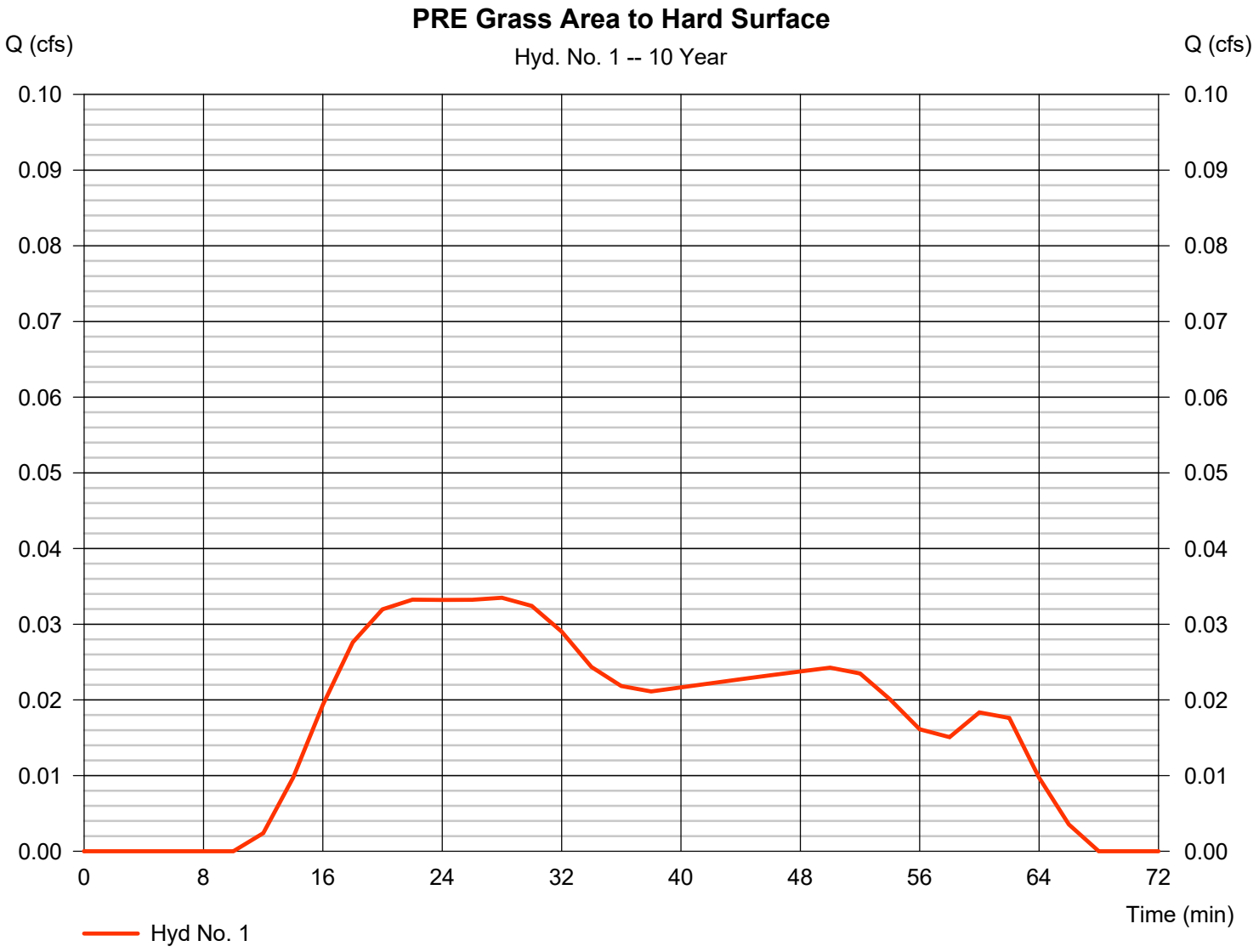
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.033	2	28	74	------	------	------	PRE Grass Area to Hard Surface
2	SCS Runoff	0.230	2	16	432	------	------	------	PRE South
3	SCS Runoff	0.189	2	8	242	------	------	------	POST 11 - STR 105 (105-104)
4	SCS Runoff	0.378	2	8	483	------	------	------	POST 12 - STR 201
5	SCS Runoff	0.331	2	8	423	------	------	------	POST 13-Building-DS
6	SCS Runoff	0.016	2	20	33	------	------	------	POST 14
7	Combine	0.567	2	8	725	3, 4,	------	------	Detention Inflow
8	Reservoir	0.436	2	12	542	7	718.33	199	Detention (104-103)
9	Combine	0.700	2	12	965	5, 8	------	------	103-101
10	Combine	0.705	2	12	998	6, 9	------	------	Total South

Hydrograph Report

Hyd. No. 1

PRE Grass Area to Hard Surface

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.033 cfs
Storm frequency	=	10 yrs	Time to peak	=	28 min
Time interval	=	2 min	Hyd. volume	=	74 cuft
Drainage area	=	0.100 ac	Curve number	=	69
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.00 in	Distribution	=	Huff-1st
Storm duration	=	1.00 hrs	Shape factor	=	484



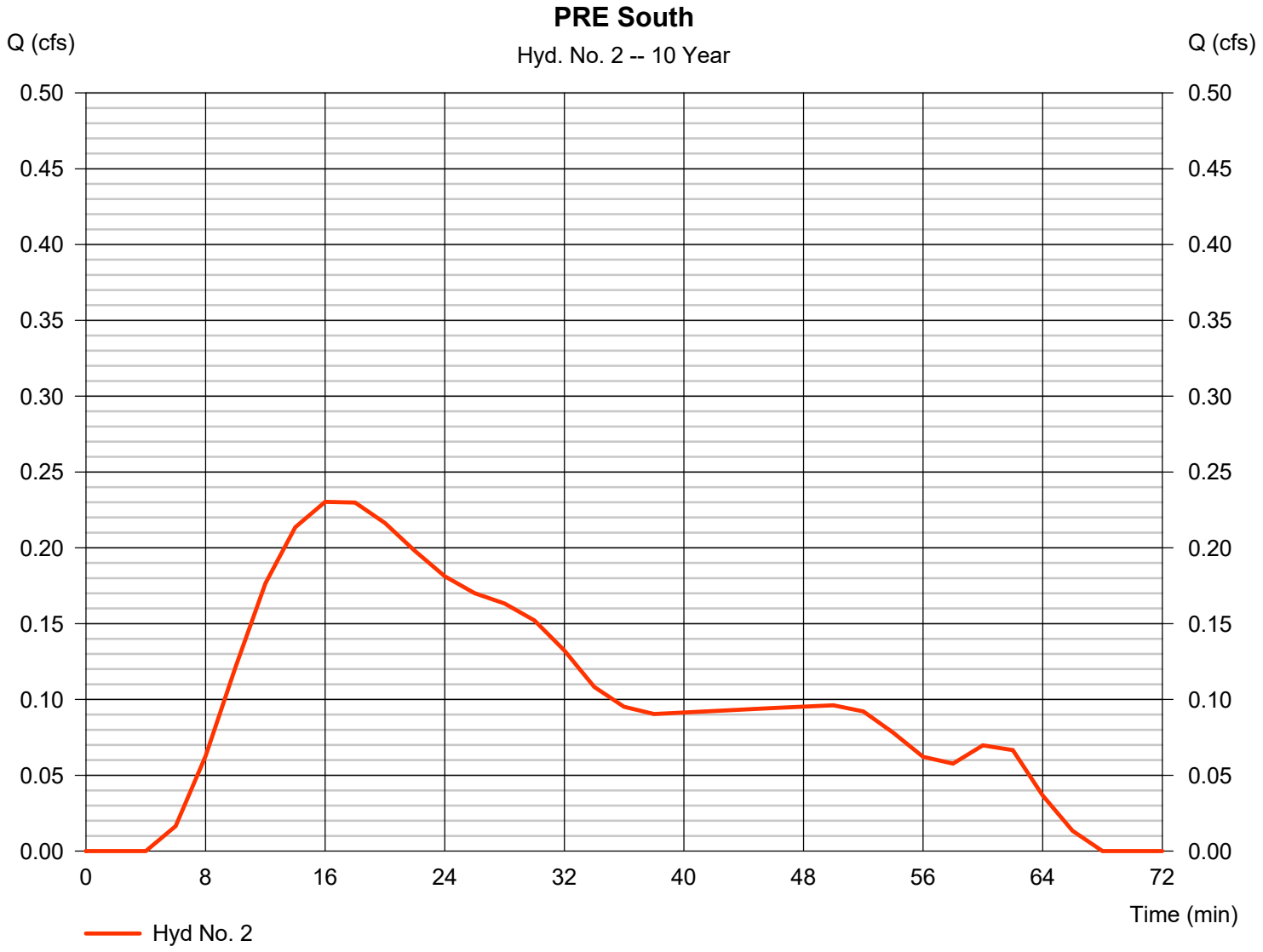
Hydrograph Report

Hyd. No. 2

PRE South

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.230 cfs
Storm frequency	=	10 yrs	Time to peak	=	16 min
Time interval	=	2 min	Hyd. volume	=	432 cuft
Drainage area	=	0.210 ac	Curve number	=	81*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.00 in	Distribution	=	Huff-1st
Storm duration	=	1.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.120 x 69) + (0.090 x 98)] / 0.210

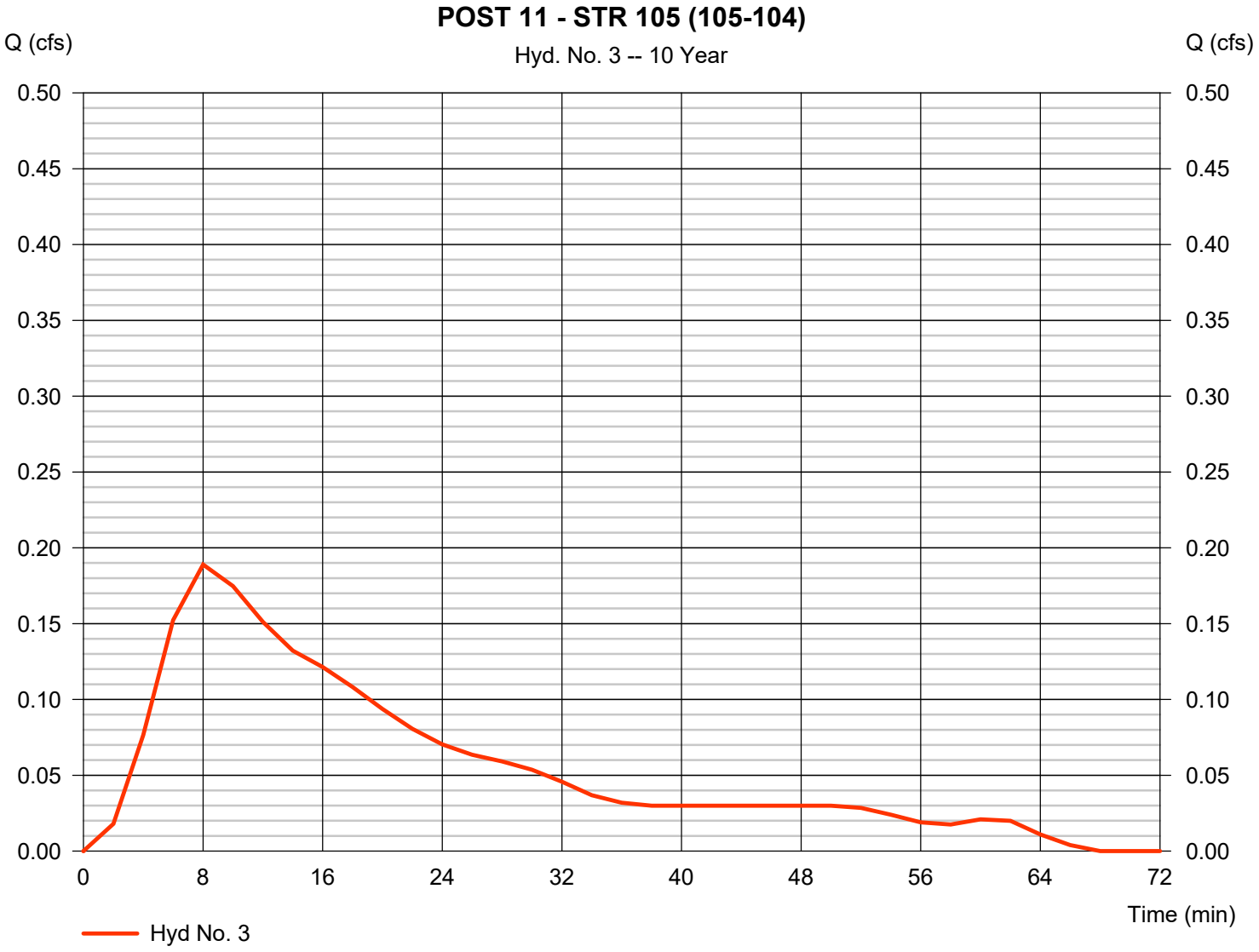


Hydrograph Report

Hyd. No. 3

POST 11 - STR 105 (105-104)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.189 cfs
Storm frequency	= 10 yrs	Time to peak	= 8 min
Time interval	= 2 min	Hyd. volume	= 242 cuft
Drainage area	= 0.040 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.00 in	Distribution	= Huff-1st
Storm duration	= 1.00 hrs	Shape factor	= 484

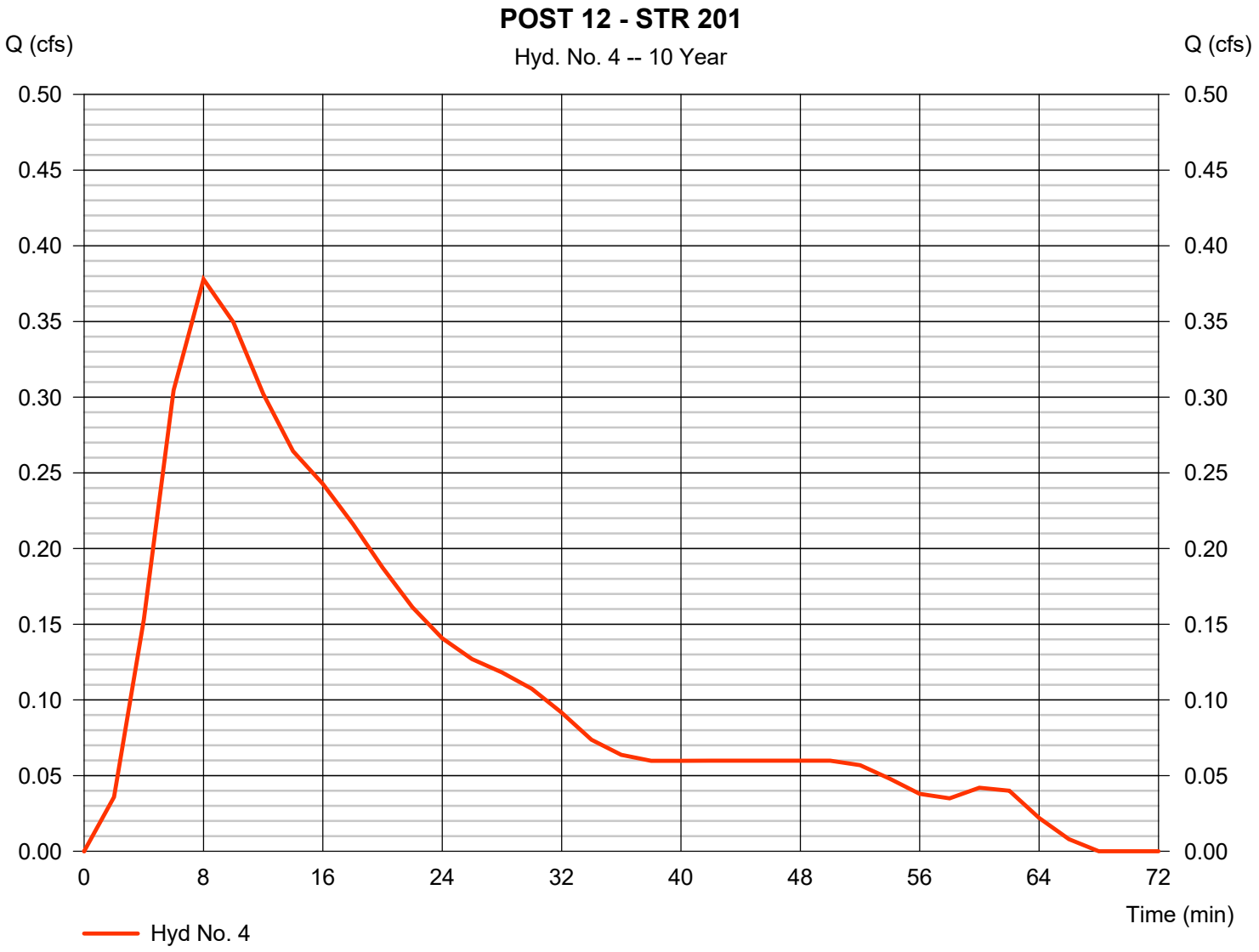


Hydrograph Report

Hyd. No. 4

POST 12 - STR 201

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.378 cfs
Storm frequency	=	10 yrs	Time to peak	=	8 min
Time interval	=	2 min	Hyd. volume	=	483 cuft
Drainage area	=	0.080 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.00 in	Distribution	=	Huff-1st
Storm duration	=	1.00 hrs	Shape factor	=	484



Hydrograph Report

Hyd. No. 5

POST 13-Building-DS

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.331 cfs
Storm frequency	=	10 yrs	Time to peak	=	8 min
Time interval	=	2 min	Hyd. volume	=	423 cuft
Drainage area	=	0.070 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.00 in	Distribution	=	Huff-1st
Storm duration	=	1.00 hrs	Shape factor	=	484

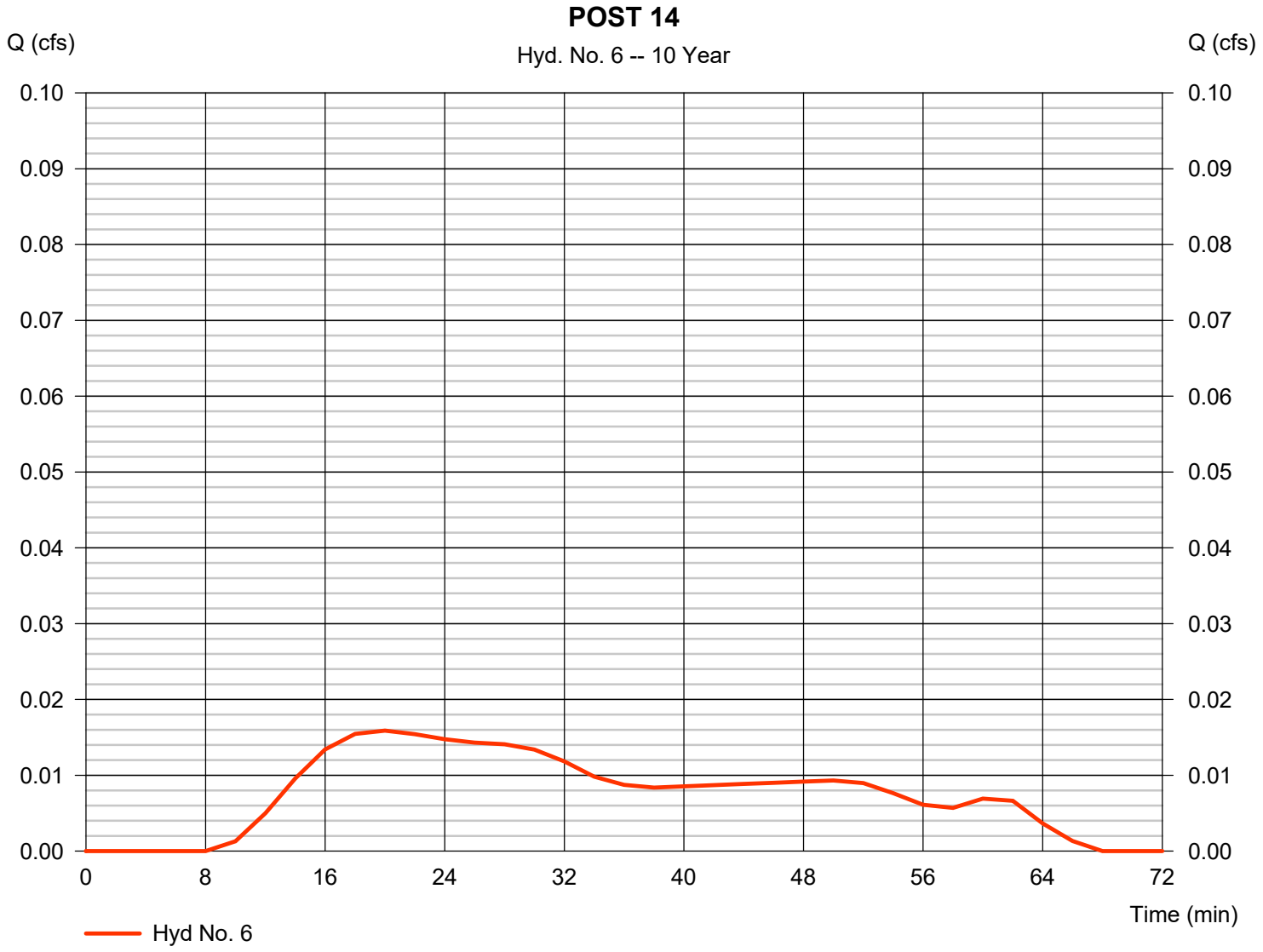
Hydrograph Report

Hyd. No. 6

POST 14

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.016 cfs
Storm frequency	=	10 yrs	Time to peak	=	20 min
Time interval	=	2 min	Hyd. volume	=	33 cuft
Drainage area	=	0.030 ac	Curve number	=	73*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.00 in	Distribution	=	Huff-1st
Storm duration	=	1.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.020 x 61) + (0.010 x 98)] / 0.030

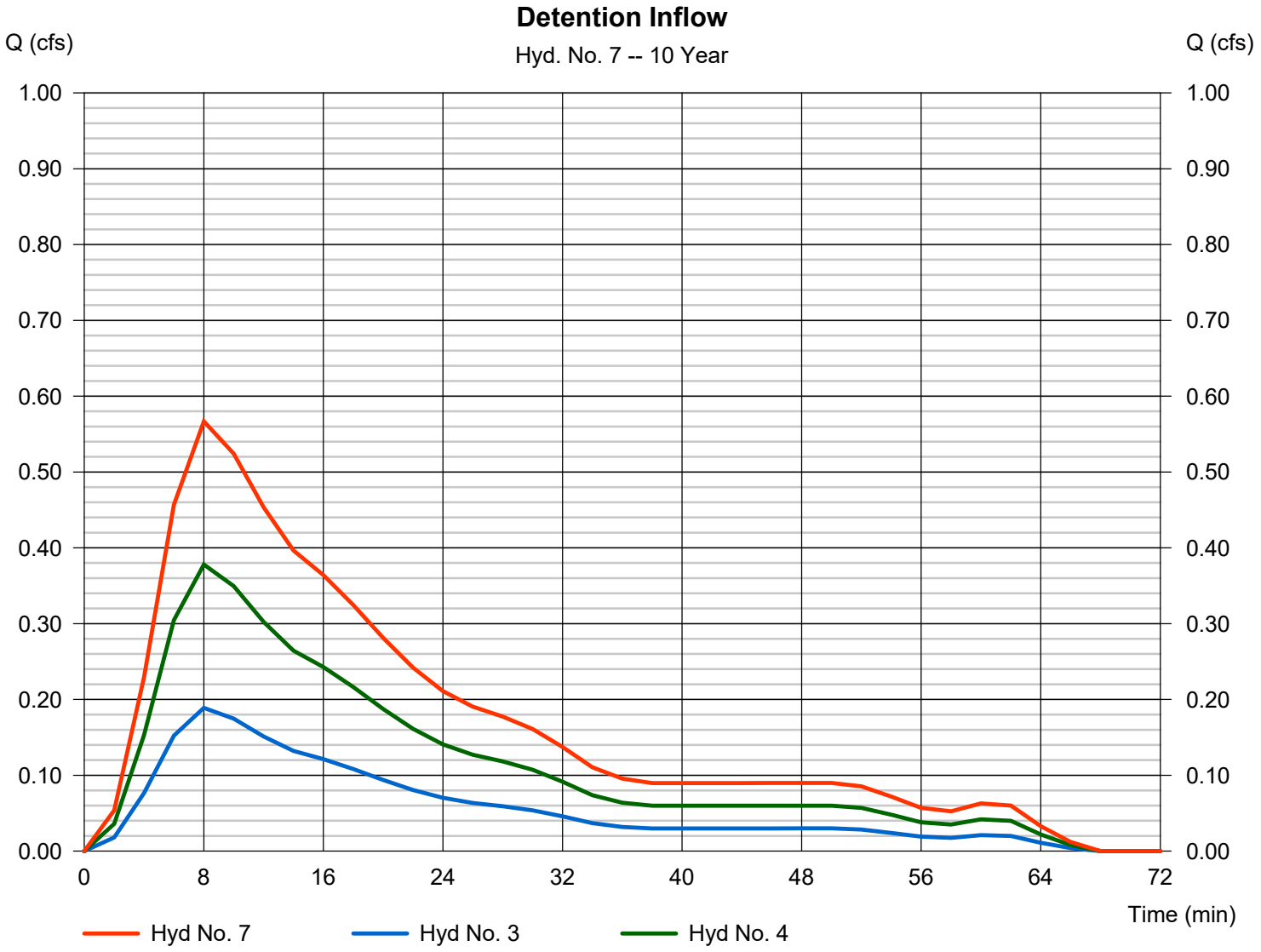


Hydrograph Report

Hyd. No. 7

Detention Inflow

Hydrograph type	=	Combine	Peak discharge	=	0.567 cfs
Storm frequency	=	10 yrs	Time to peak	=	8 min
Time interval	=	2 min	Hyd. volume	=	725 cuft
Inflow hyds.	=	3, 4	Contrib. drain. area	=	0.120 ac



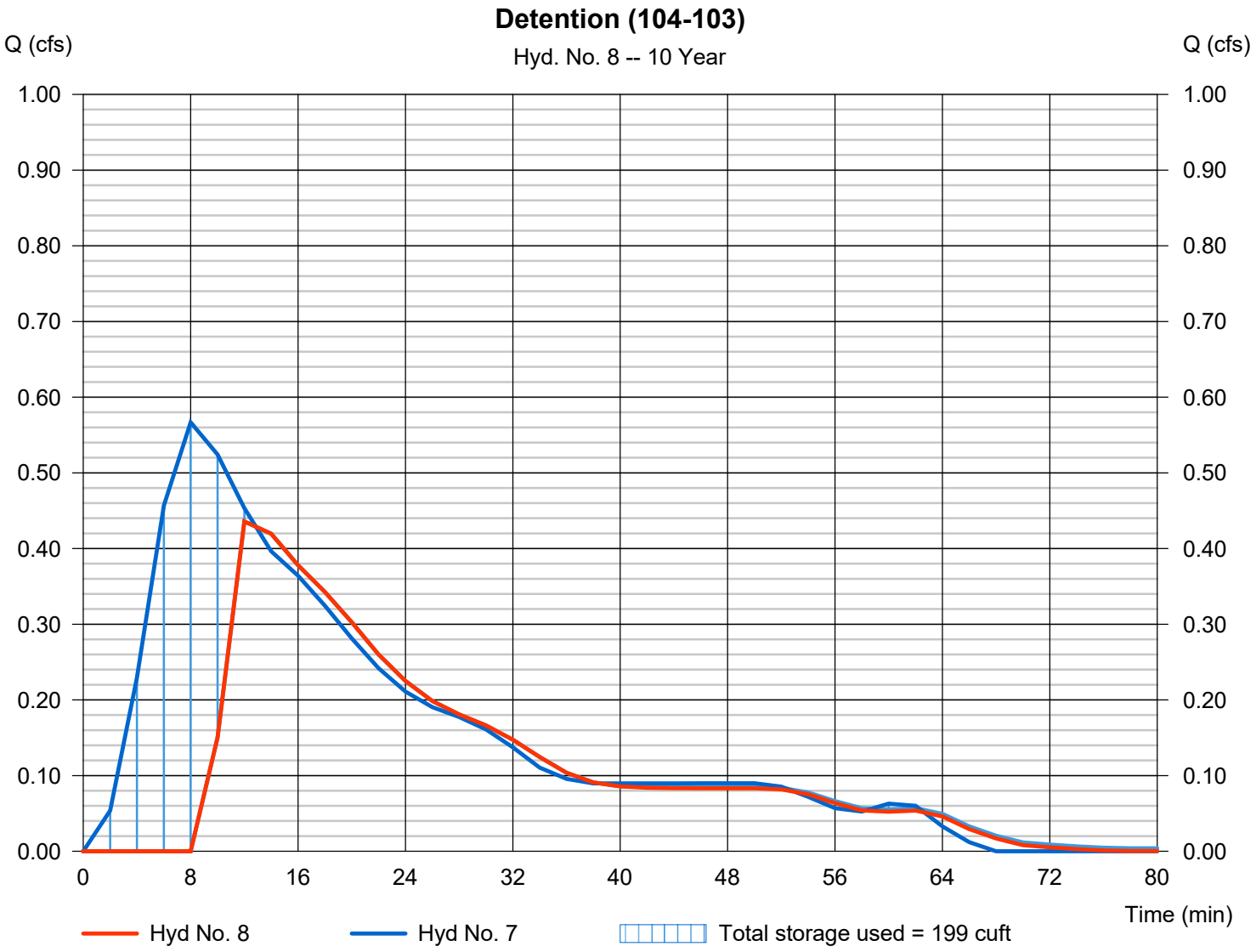
Hydrograph Report

Hyd. No. 8

Detention (104-103)

Hydrograph type	=	Reservoir	Peak discharge	=	0.436 cfs
Storm frequency	=	10 yrs	Time to peak	=	12 min
Time interval	=	2 min	Hyd. volume	=	542 cuft
Inflow hyd. No.	=	7 - Detention Inflow	Max. Elevation	=	718.33 ft
Reservoir name	=	Proposed Detention	Max. Storage	=	199 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

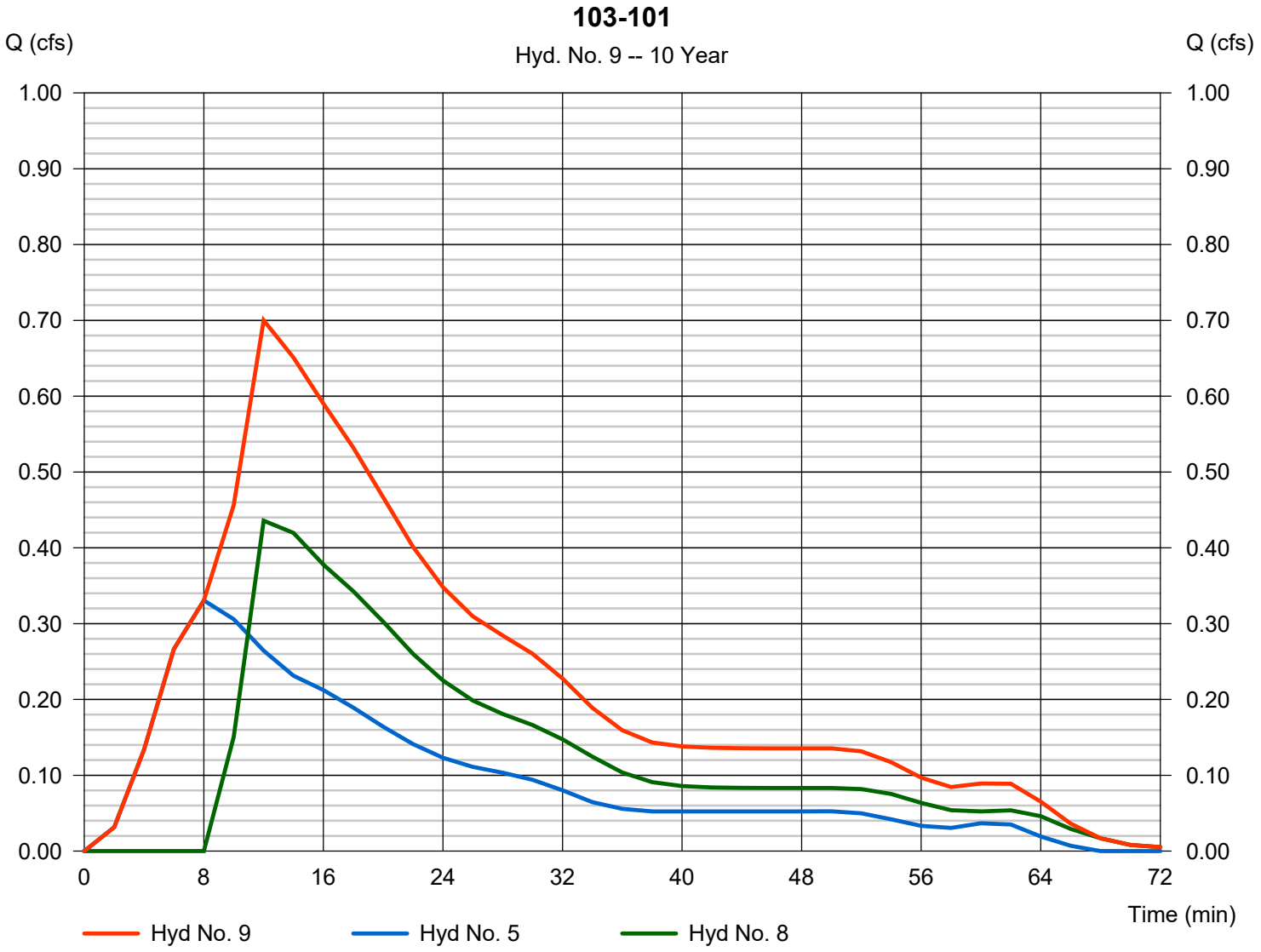


Hydrograph Report

Hyd. No. 9

103-101

Hydrograph type	=	Combine	Peak discharge	=	0.700 cfs
Storm frequency	=	10 yrs	Time to peak	=	12 min
Time interval	=	2 min	Hyd. volume	=	965 cuft
Inflow hyds.	=	5, 8	Contrib. drain. area	=	0.070 ac

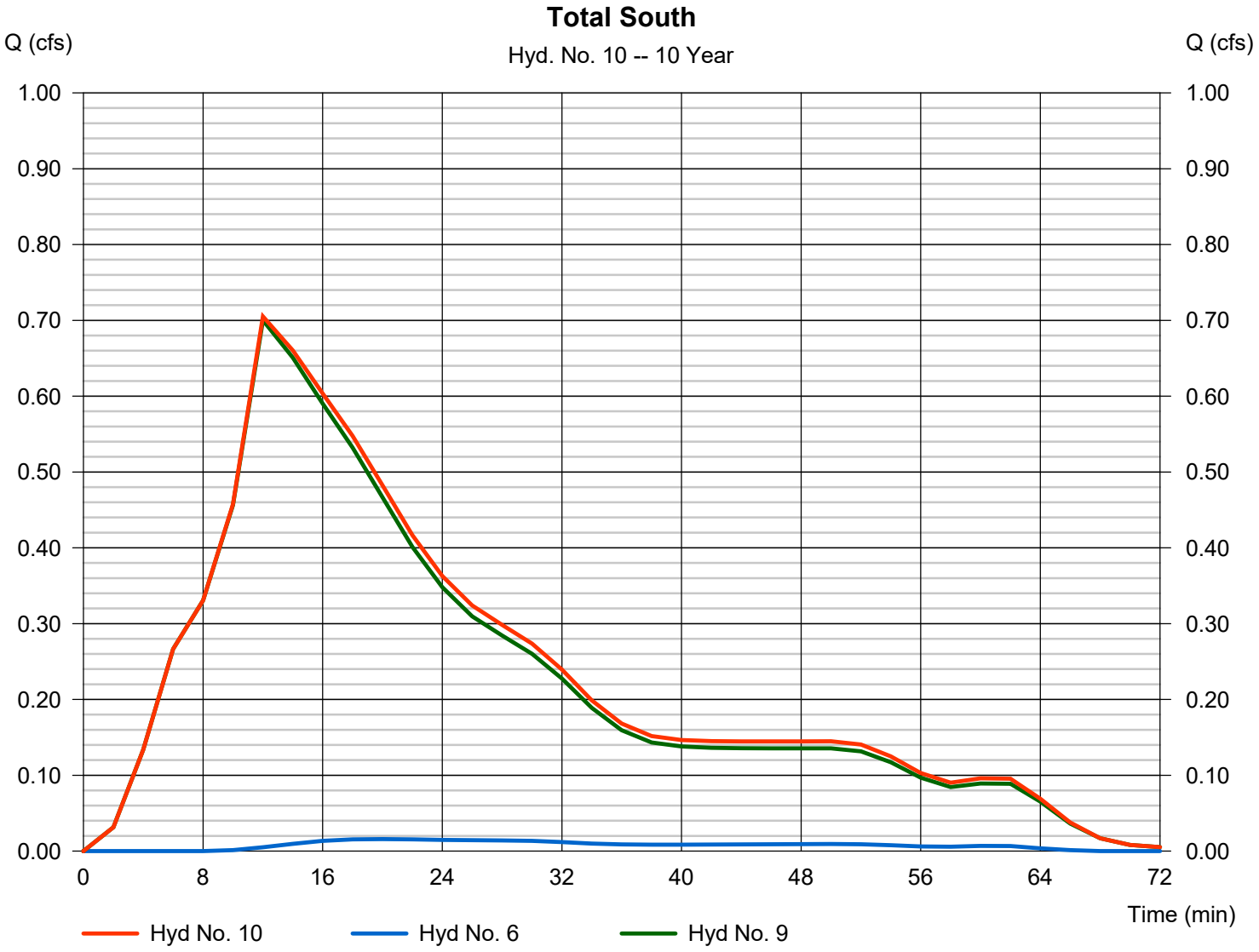


Hydrograph Report

Hyd. No. 10

Total South

Hydrograph type	= Combine	Peak discharge	= 0.705 cfs
Storm frequency	= 10 yrs	Time to peak	= 12 min
Time interval	= 2 min	Hyd. volume	= 998 cuft
Inflow hyds.	= 6, 9	Contrib. drain. area	= 0.030 ac



Hydrograph Summary Report

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

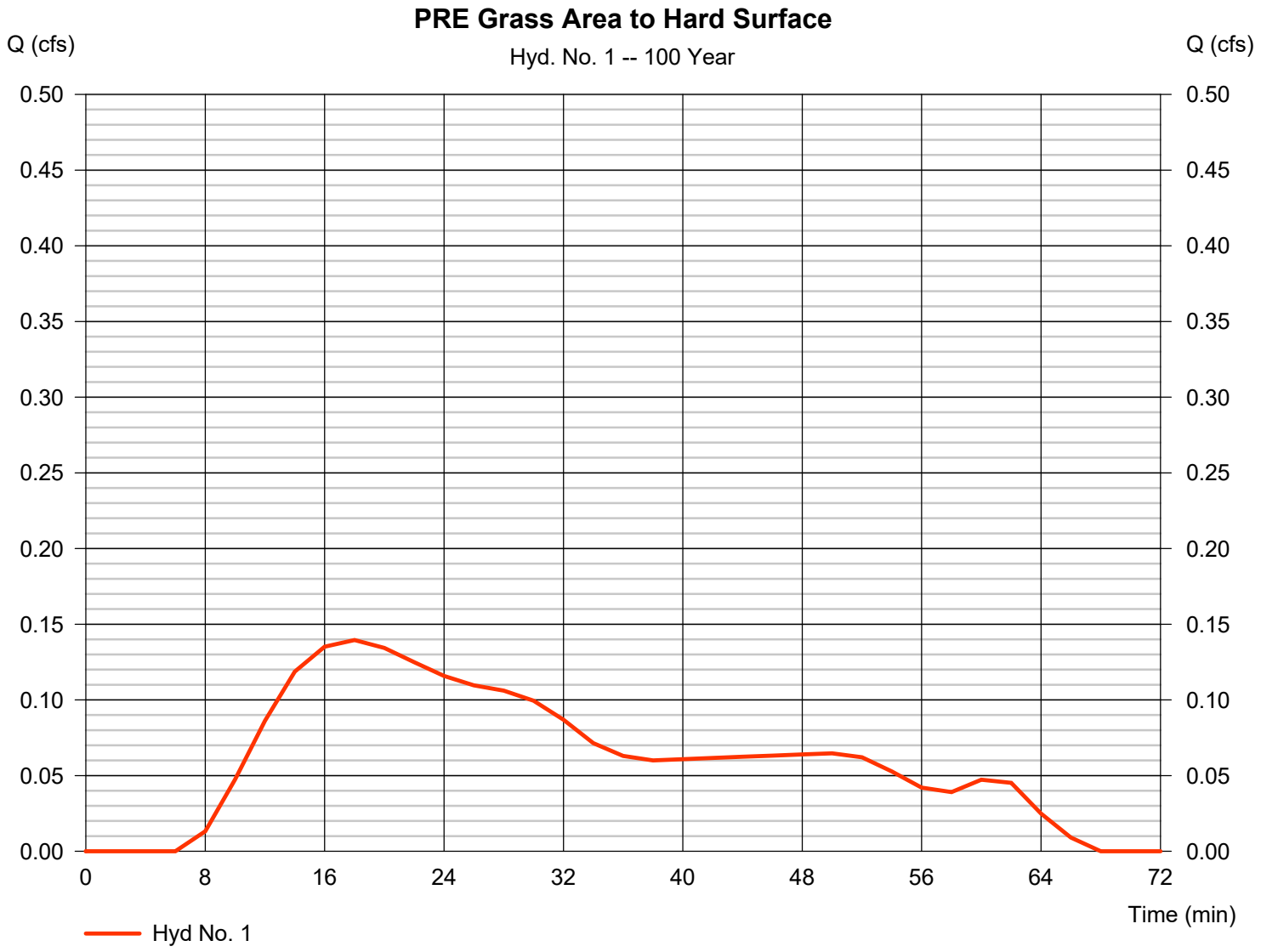
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.140	2	18	265	------	------	------	PRE Grass Area to Hard Surface
2	SCS Runoff	0.589	2	16	1,055	------	------	------	PRE South
3	SCS Runoff	0.330	2	8	405	------	------	------	POST 11 - STR 105 (105-104)
4	SCS Runoff	0.659	2	8	811	------	------	------	POST 12 - STR 201
5	SCS Runoff	0.577	2	8	709	------	------	------	POST 13-Building-DS
6	SCS Runoff	0.054	2	16	101	------	------	------	POST 14
7	Combine	0.989	2	8	1,216	3, 4,	------	------	Detention Inflow
8	Reservoir	0.911	2	10	1,032	7	718.50	230	Detention (104-103)
9	Combine	1.426	2	10	1,742	5, 8	------	------	103-101
10	Combine	1.455	2	10	1,843	6, 9	------	------	Total South

Hydrograph Report

Hyd. No. 1

PRE Grass Area to Hard Surface

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.140 cfs
Storm frequency	=	100 yrs	Time to peak	=	18 min
Time interval	=	2 min	Hyd. volume	=	265 cuft
Drainage area	=	0.100 ac	Curve number	=	69
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.21 in	Distribution	=	Huff-1st
Storm duration	=	1.00 hrs	Shape factor	=	484



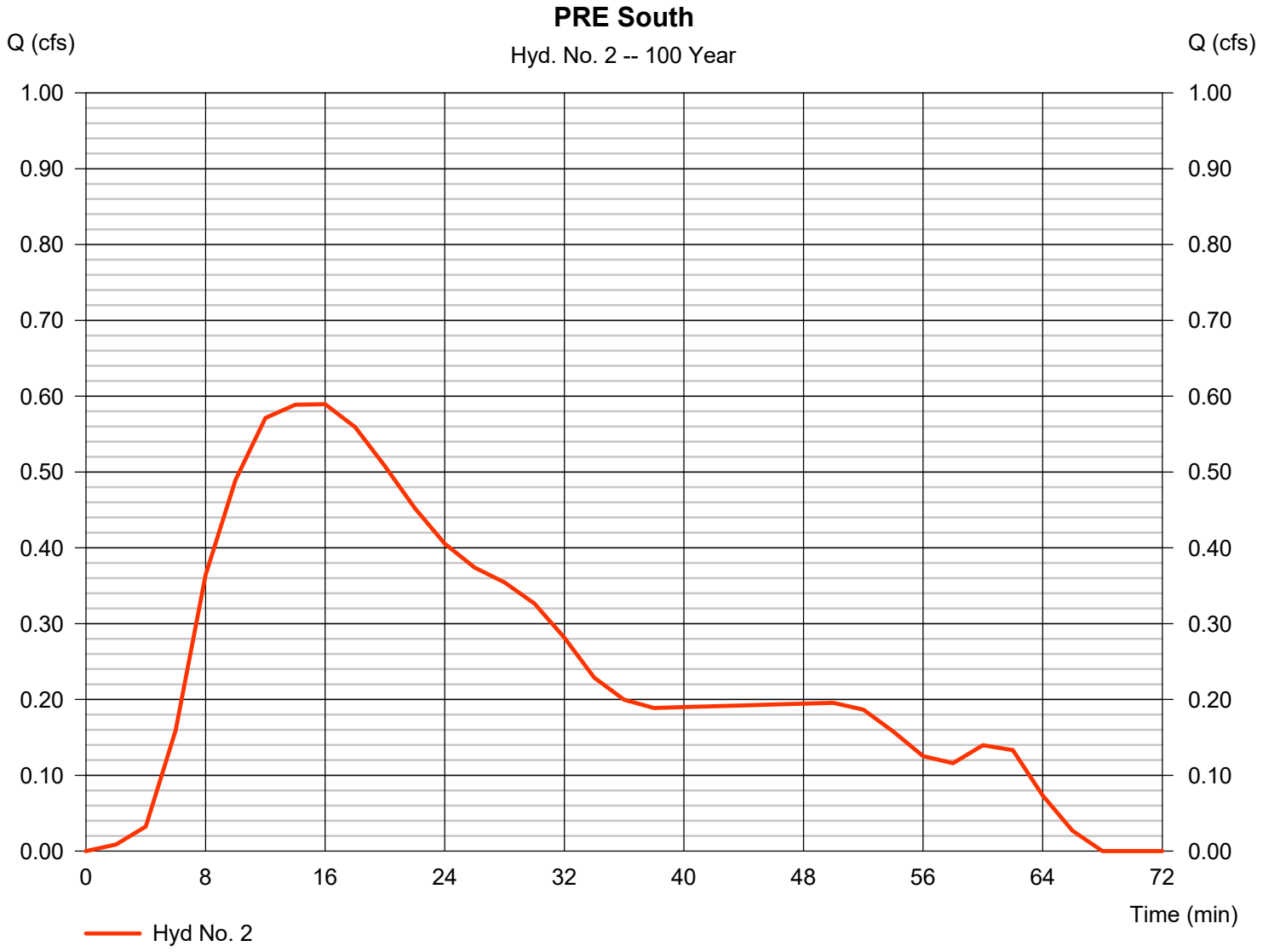
Hydrograph Report

Hyd. No. 2

PRE South

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.589 cfs
Storm frequency	=	100 yrs	Time to peak	=	16 min
Time interval	=	2 min	Hyd. volume	=	1,055 cuft
Drainage area	=	0.210 ac	Curve number	=	81*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.21 in	Distribution	=	Huff-1st
Storm duration	=	1.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.120 x 69) + (0.090 x 98)] / 0.210

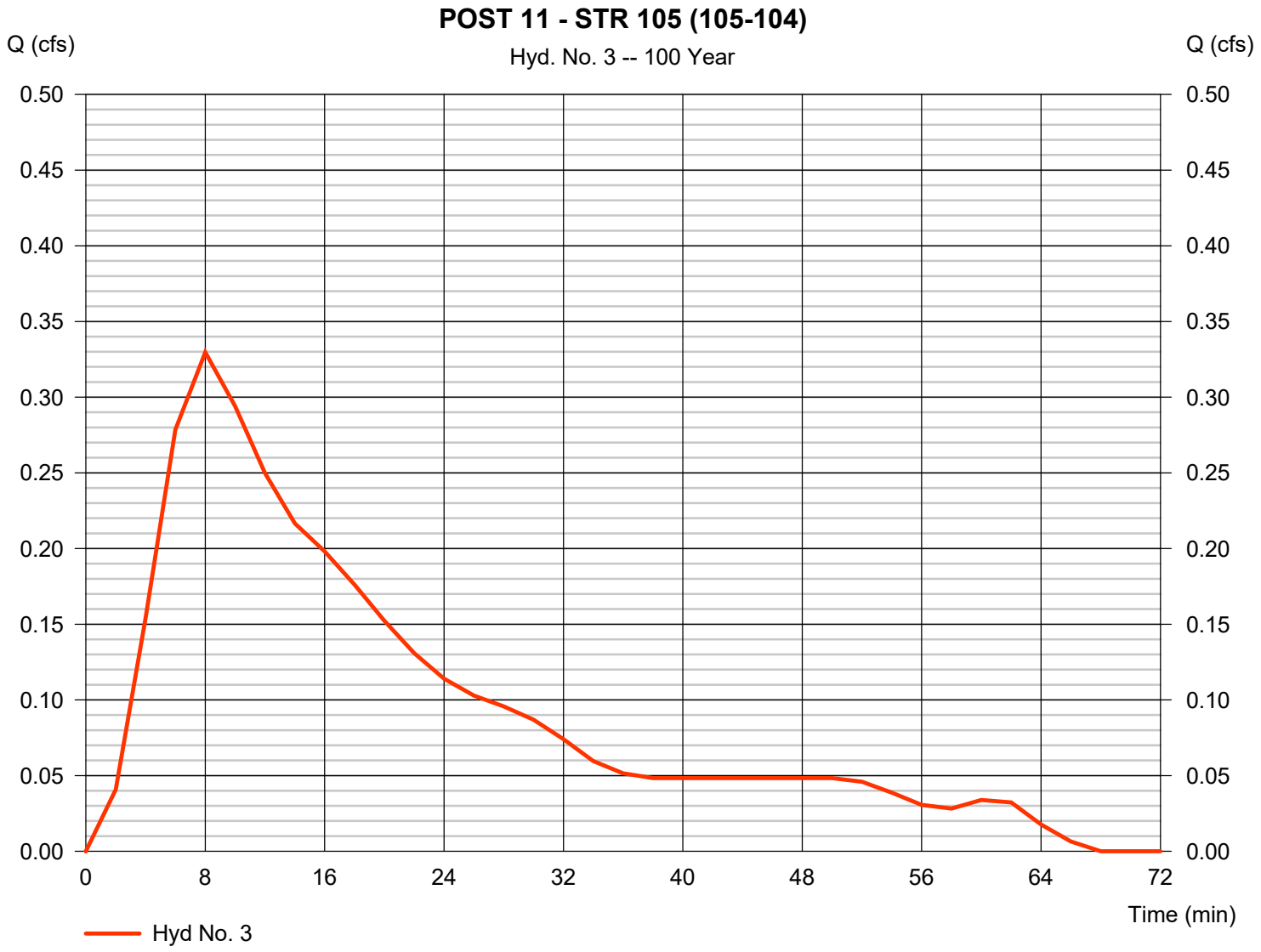


Hydrograph Report

Hyd. No. 3

POST 11 - STR 105 (105-104)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.330 cfs
Storm frequency	= 100 yrs	Time to peak	= 8 min
Time interval	= 2 min	Hyd. volume	= 405 cuft
Drainage area	= 0.040 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.21 in	Distribution	= Huff-1st
Storm duration	= 1.00 hrs	Shape factor	= 484

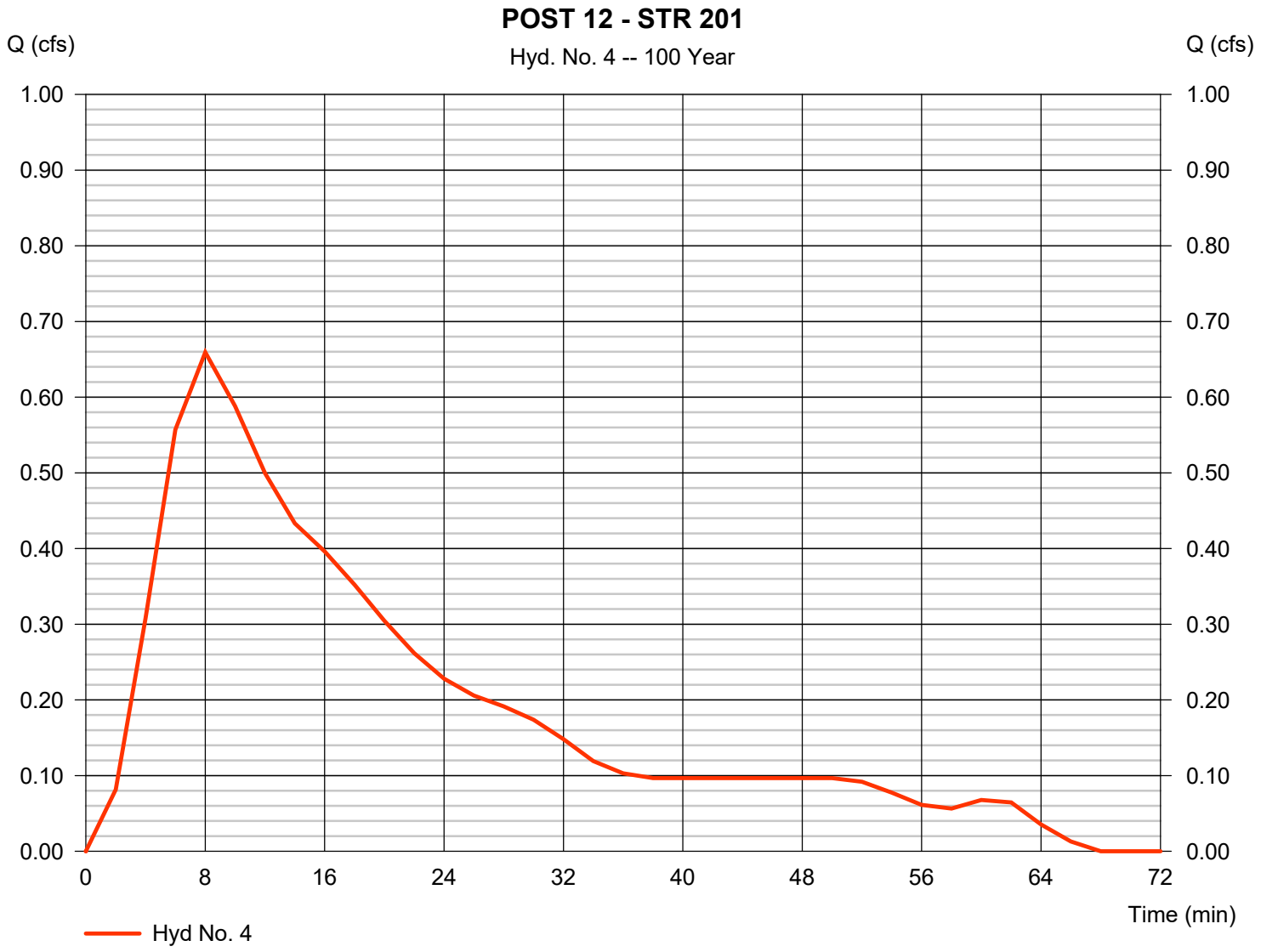


Hydrograph Report

Hyd. No. 4

POST 12 - STR 201

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.659 cfs
Storm frequency	=	100 yrs	Time to peak	=	8 min
Time interval	=	2 min	Hyd. volume	=	811 cuft
Drainage area	=	0.080 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.21 in	Distribution	=	Huff-1st
Storm duration	=	1.00 hrs	Shape factor	=	484



Hydrograph Report

Hyd. No. 5

POST 13-Building-DS

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.577 cfs
Storm frequency	=	100 yrs	Time to peak	=	8 min
Time interval	=	2 min	Hyd. volume	=	709 cuft
Drainage area	=	0.070 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.21 in	Distribution	=	Huff-1st
Storm duration	=	1.00 hrs	Shape factor	=	484

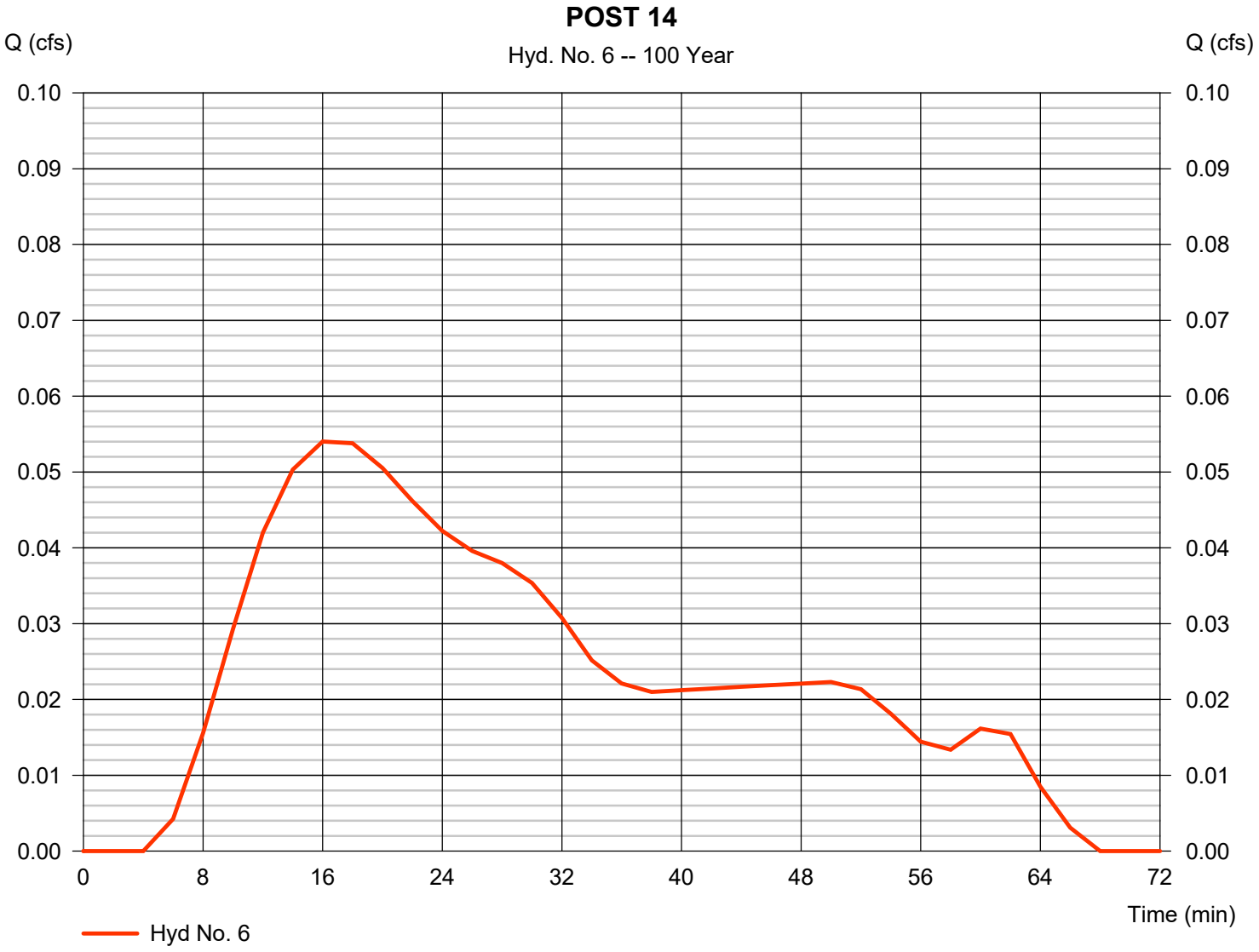
Hydrograph Report

Hyd. No. 6

POST 14

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.054 cfs
Storm frequency	=	100 yrs	Time to peak	=	16 min
Time interval	=	2 min	Hyd. volume	=	101 cuft
Drainage area	=	0.030 ac	Curve number	=	73*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.21 in	Distribution	=	Huff-1st
Storm duration	=	1.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.020 x 61) + (0.010 x 98)] / 0.030

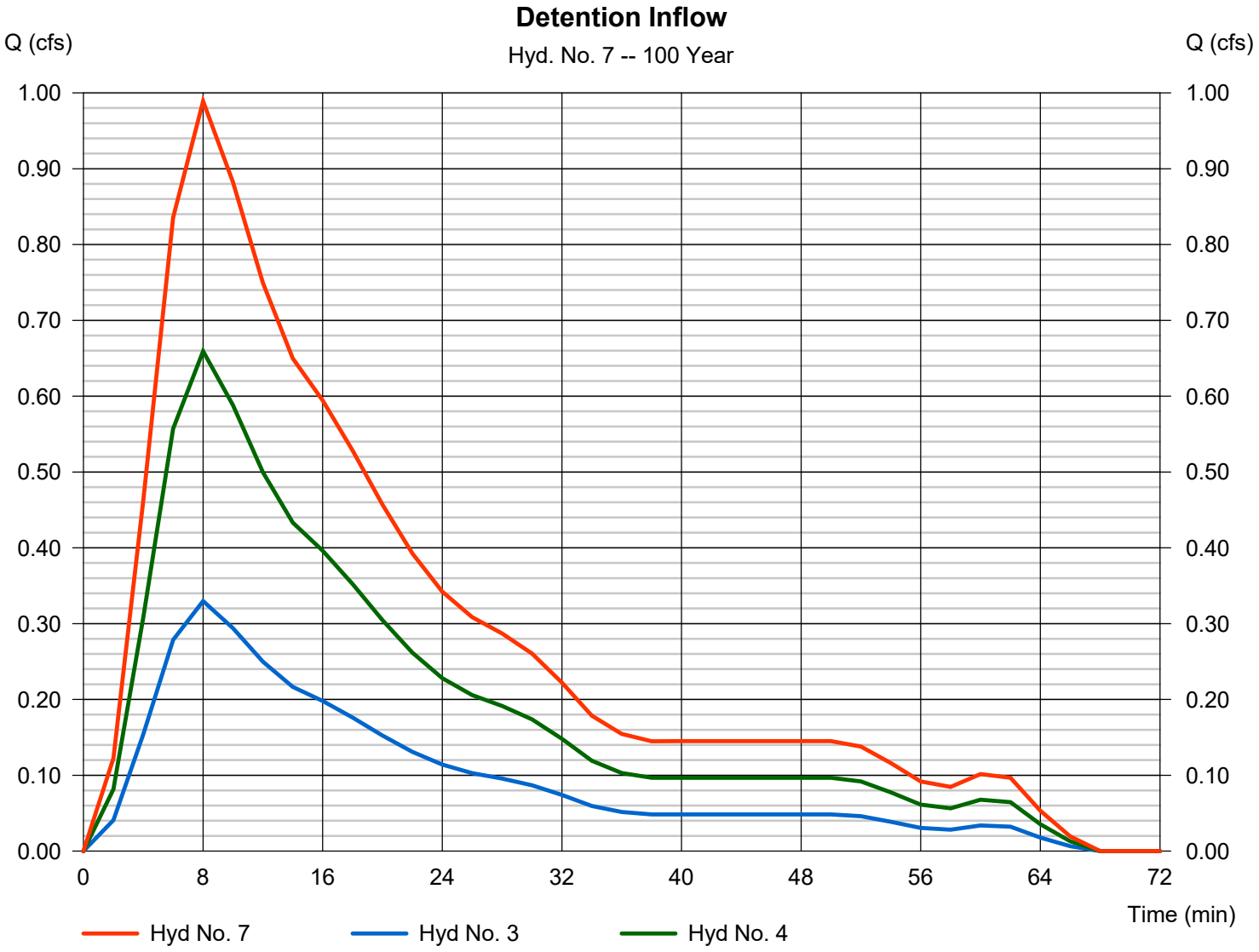


Hydrograph Report

Hyd. No. 7

Detention Inflow

Hydrograph type	=	Combine	Peak discharge	=	0.989 cfs
Storm frequency	=	100 yrs	Time to peak	=	8 min
Time interval	=	2 min	Hyd. volume	=	1,216 cuft
Inflow hyds.	=	3, 4	Contrib. drain. area	=	0.120 ac



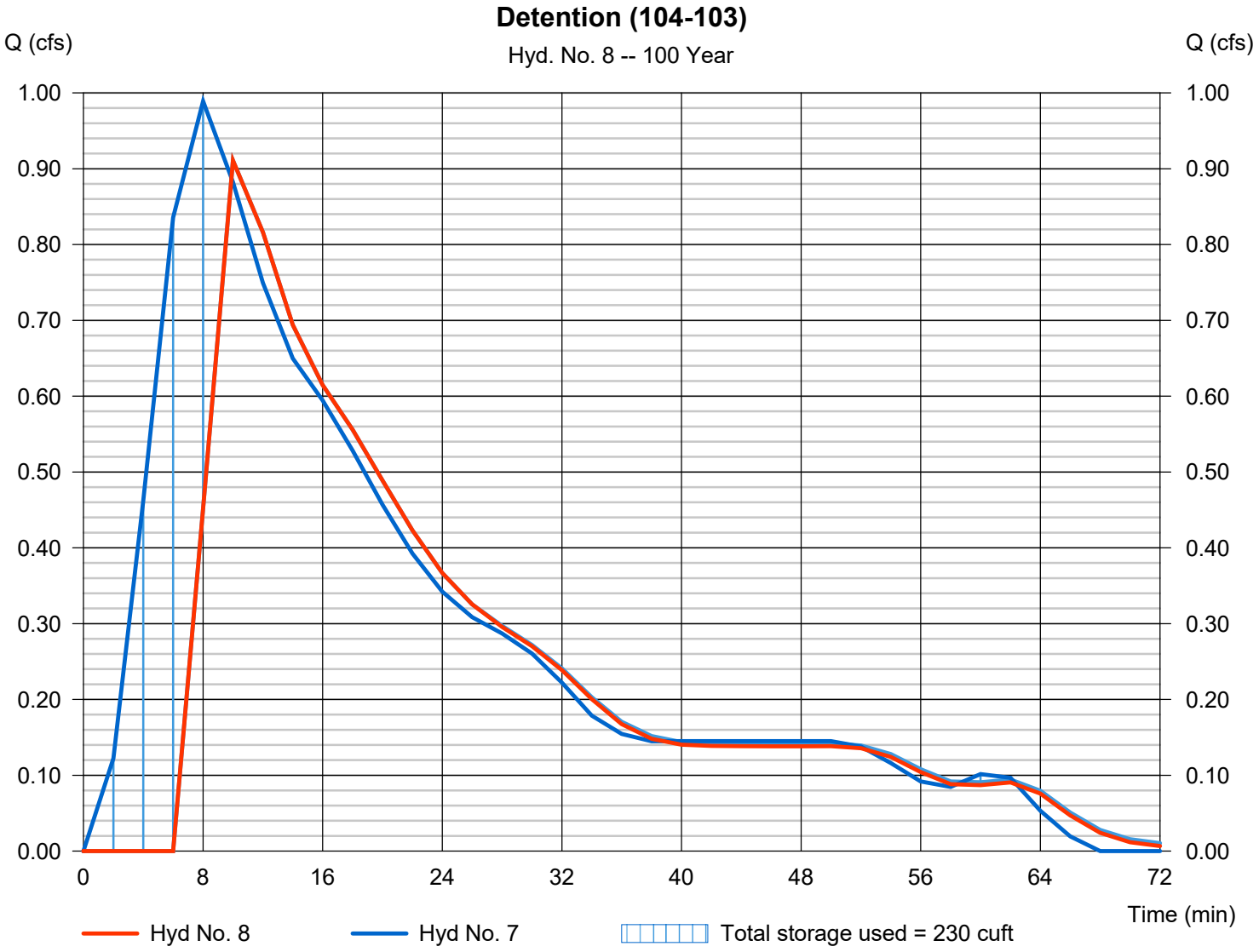
Hydrograph Report

Hyd. No. 8

Detention (104-103)

Hydrograph type	=	Reservoir	Peak discharge	=	0.911 cfs
Storm frequency	=	100 yrs	Time to peak	=	10 min
Time interval	=	2 min	Hyd. volume	=	1,032 cuft
Inflow hyd. No.	=	7 - Detention Inflow	Max. Elevation	=	718.50 ft
Reservoir name	=	Proposed Detention	Max. Storage	=	230 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

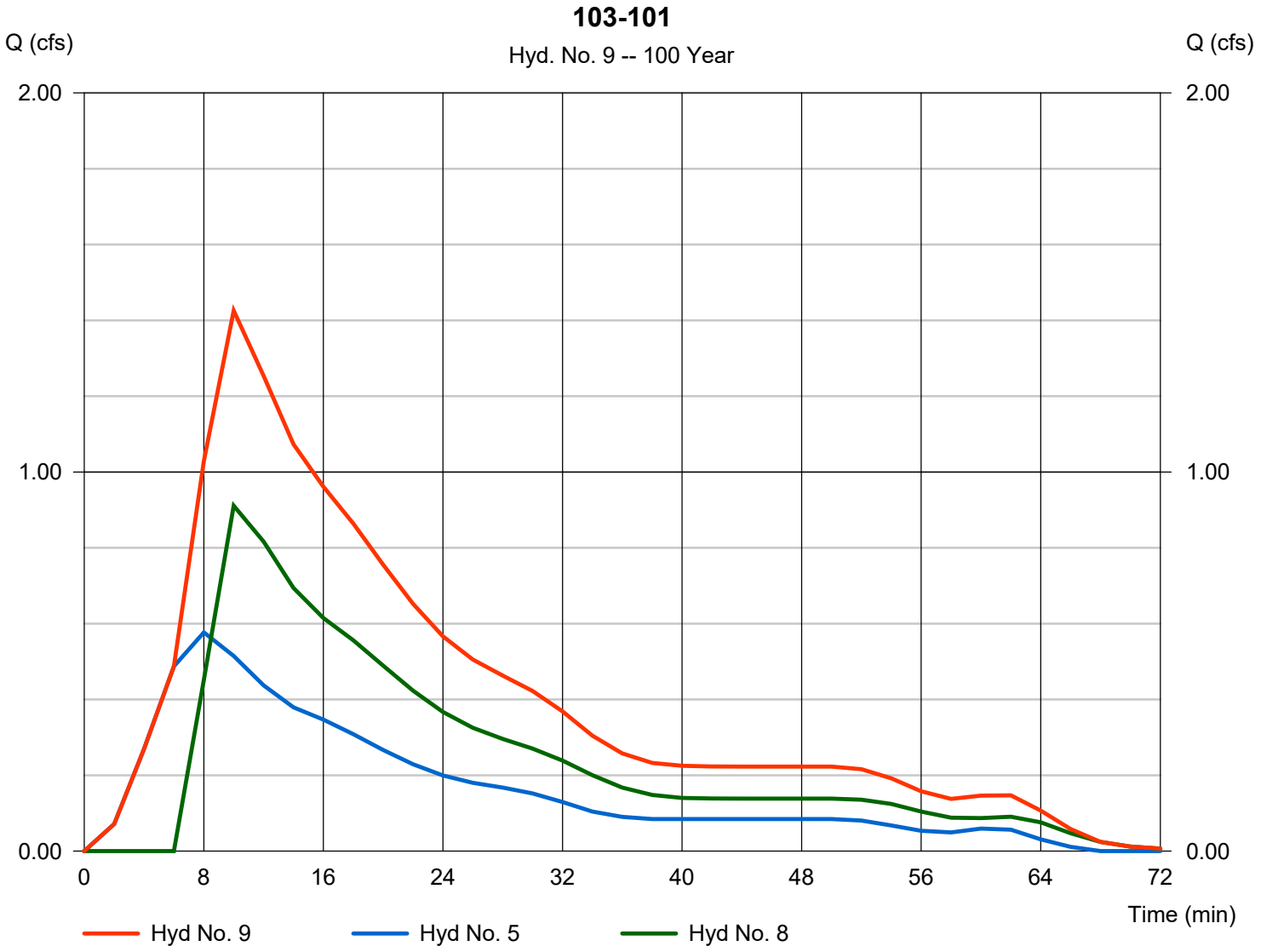


Hydrograph Report

Hyd. No. 9

103-101

Hydrograph type	=	Combine	Peak discharge	=	1.426 cfs
Storm frequency	=	100 yrs	Time to peak	=	10 min
Time interval	=	2 min	Hyd. volume	=	1,742 cuft
Inflow hyds.	=	5, 8	Contrib. drain. area	=	0.070 ac

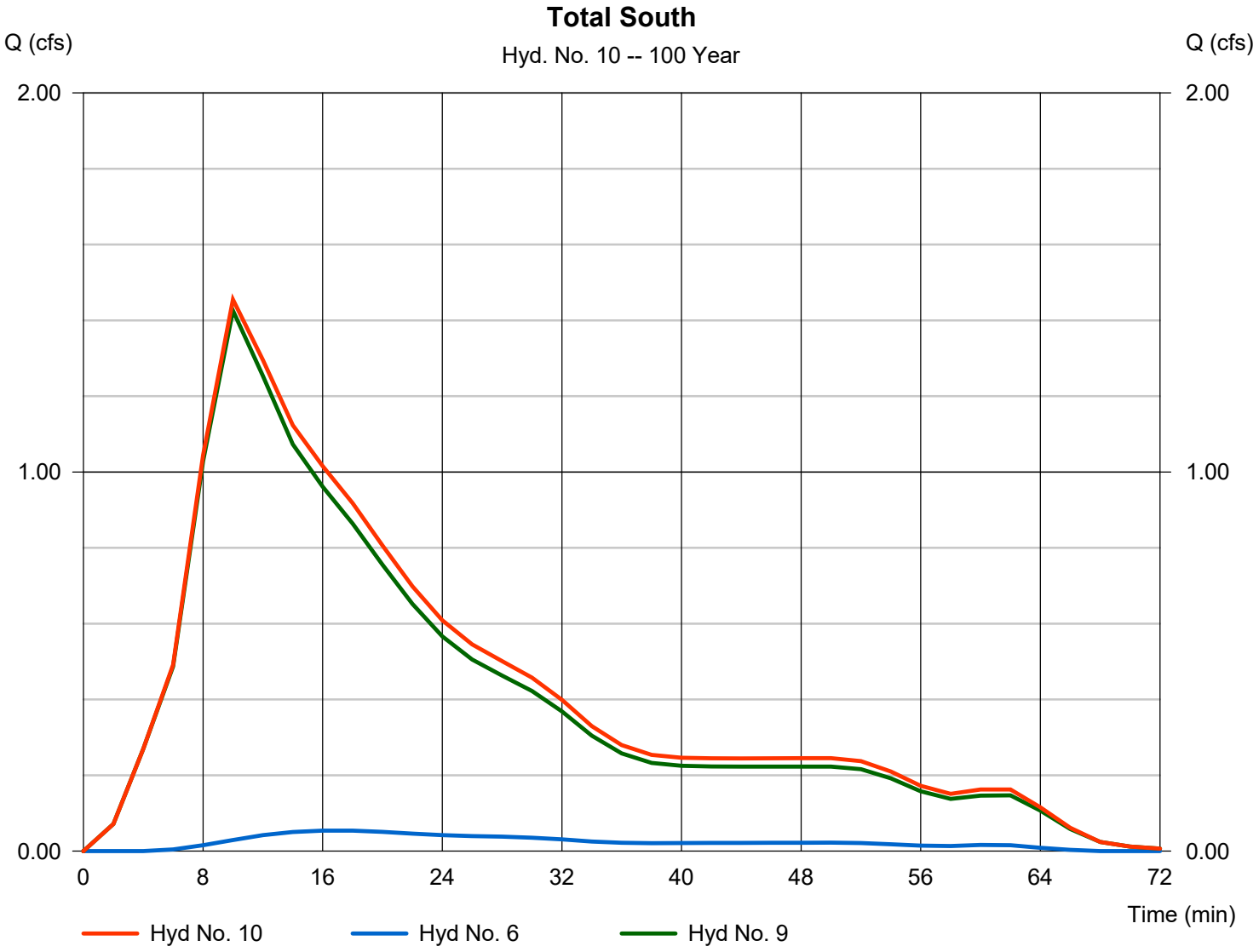


Hydrograph Report

Hyd. No. 10

Total South

Hydrograph type	= Combine	Peak discharge	= 1.455 cfs
Storm frequency	= 100 yrs	Time to peak	= 10 min
Time interval	= 2 min	Hyd. volume	= 1,843 cuft
Inflow hyds.	= 6, 9	Contrib. drain. area	= 0.030 ac



Appendix E

Hydraflow Hydrographs
2 Hour Storm Data

Hydraflow Table of Contents

2 - Year

10 - Year

100 - Year

Hydrograph Summary Report

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

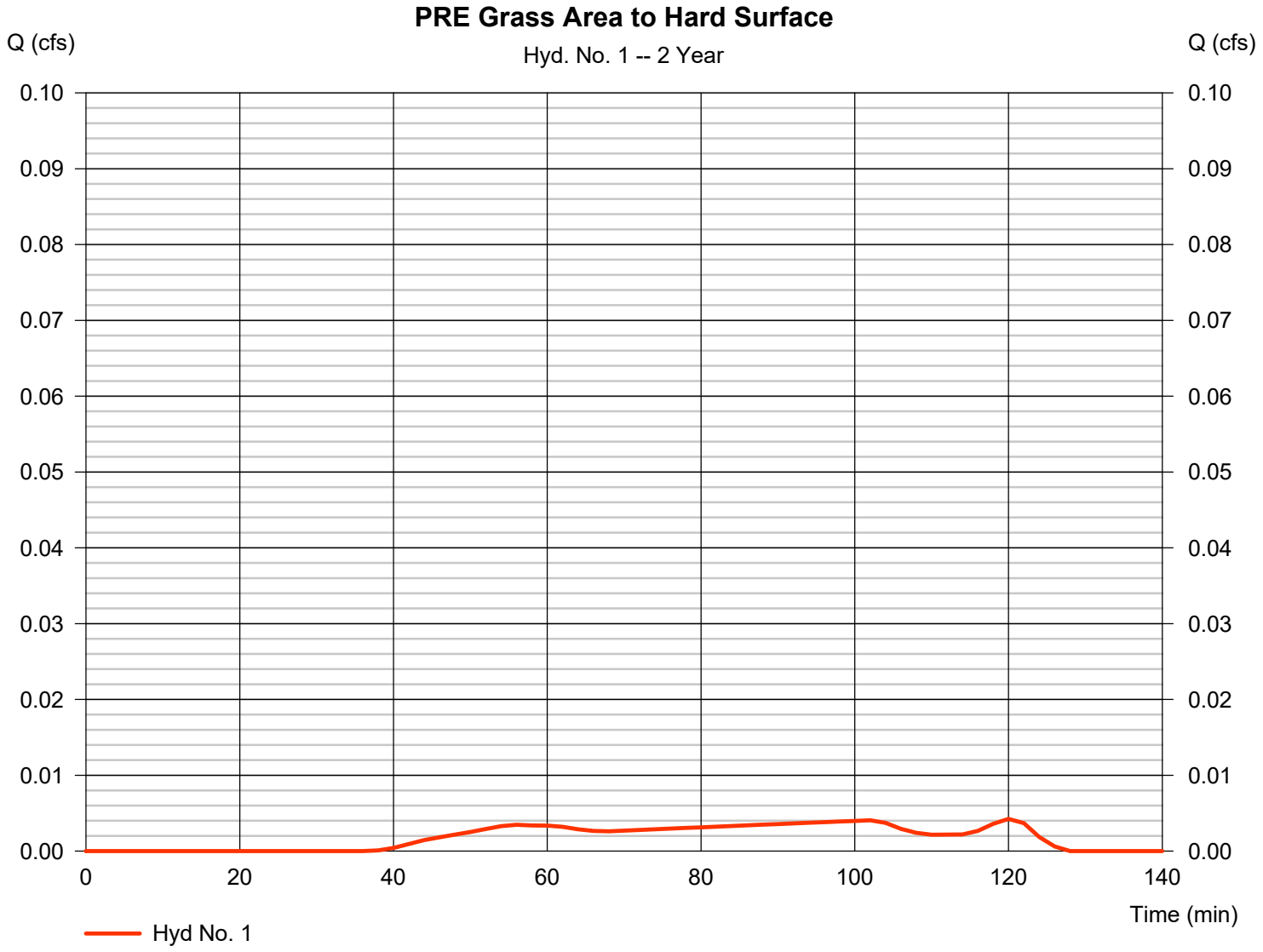
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.004	2	120	15	------	------	------	PRE Grass Area to Hard Surface
2	SCS Runoff	0.046	2	32	179	------	------	------	PRE South
3	SCS Runoff	0.070	2	12	157	------	------	------	POST 11 - STR 105 (105-104)
4	SCS Runoff	0.140	2	12	314	------	------	------	POST 12 - STR 201
5	SCS Runoff	0.122	2	12	274	------	------	------	POST 13-Building-DS
6	SCS Runoff	0.002	2	54	9	------	------	------	POST 14
7	Combine	0.209	2	12	471	3, 4,	------	------	Detention Inflow
8	Reservoir	0.117	2	28	269	7	718.17	173	Detention (104-103)
9	Combine	0.189	2	28	543	5, 8	------	------	103-101
10	Combine	0.189	2	28	552	6, 9	------	------	Total South

Hydrograph Report

Hyd. No. 1

PRE Grass Area to Hard Surface

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.004 cfs
Storm frequency	=	2 yrs	Time to peak	=	120 min
Time interval	=	2 min	Hyd. volume	=	15 cuft
Drainage area	=	0.100 ac	Curve number	=	69
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.37 in	Distribution	=	Huff-1st
Storm duration	=	2.00 hrs	Shape factor	=	484



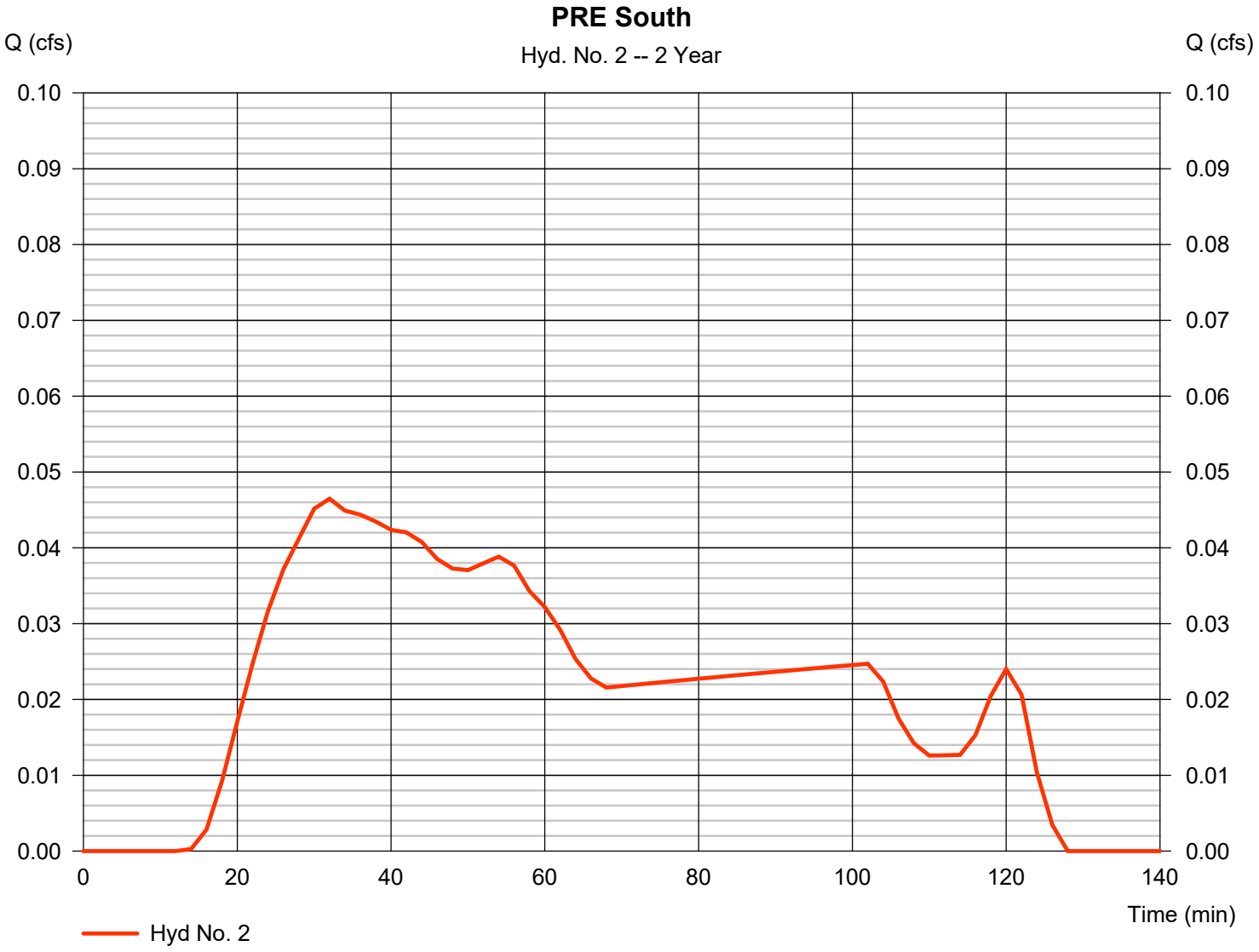
Hydrograph Report

Hyd. No. 2

PRE South

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.046 cfs
Storm frequency	=	2 yrs	Time to peak	=	32 min
Time interval	=	2 min	Hyd. volume	=	179 cuft
Drainage area	=	0.210 ac	Curve number	=	81*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.37 in	Distribution	=	Huff-1st
Storm duration	=	2.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.120 x 69) + (0.090 x 98)] / 0.210

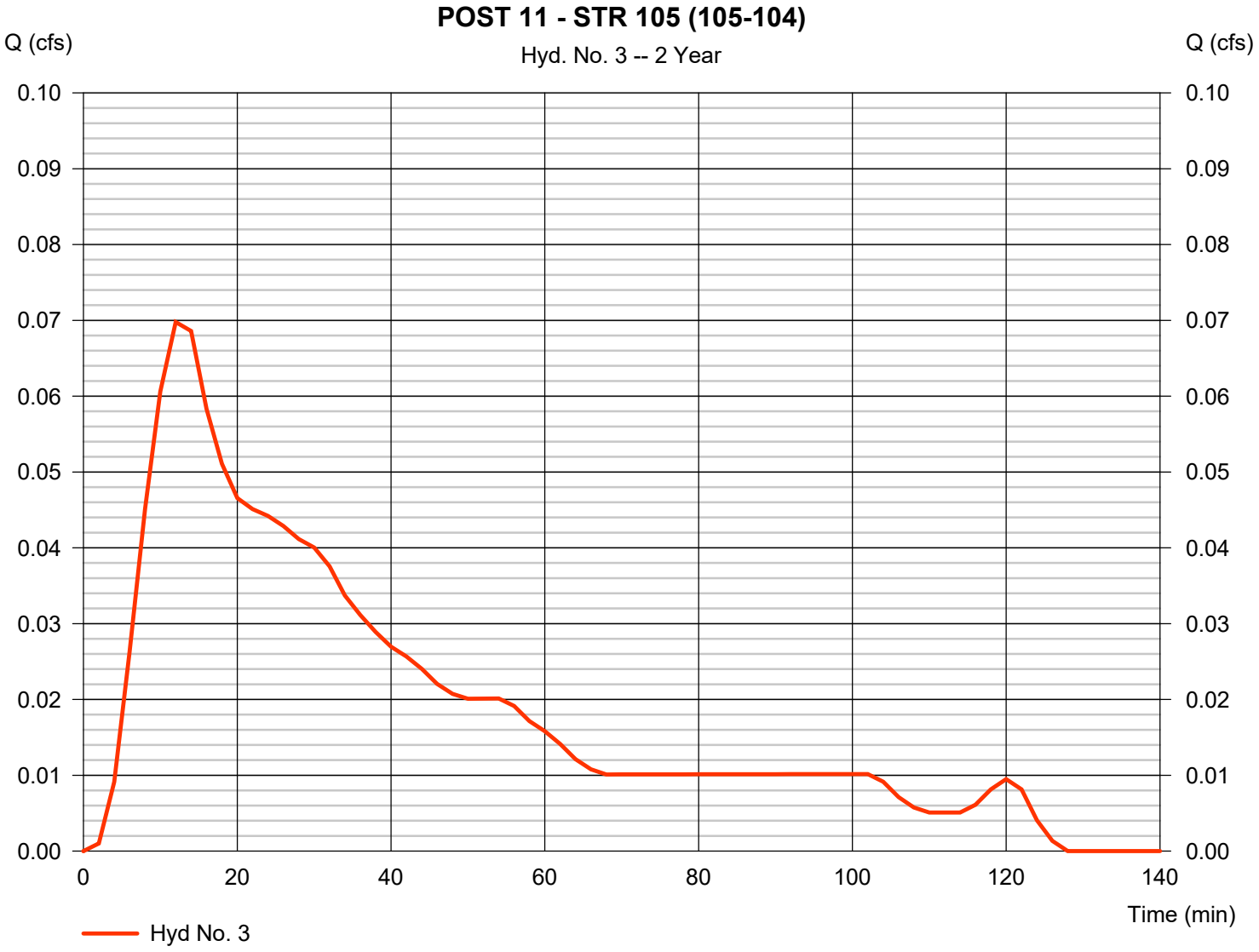


Hydrograph Report

Hyd. No. 3

POST 11 - STR 105 (105-104)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.070 cfs
Storm frequency	= 2 yrs	Time to peak	= 12 min
Time interval	= 2 min	Hyd. volume	= 157 cuft
Drainage area	= 0.040 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.37 in	Distribution	= Huff-1st
Storm duration	= 2.00 hrs	Shape factor	= 484

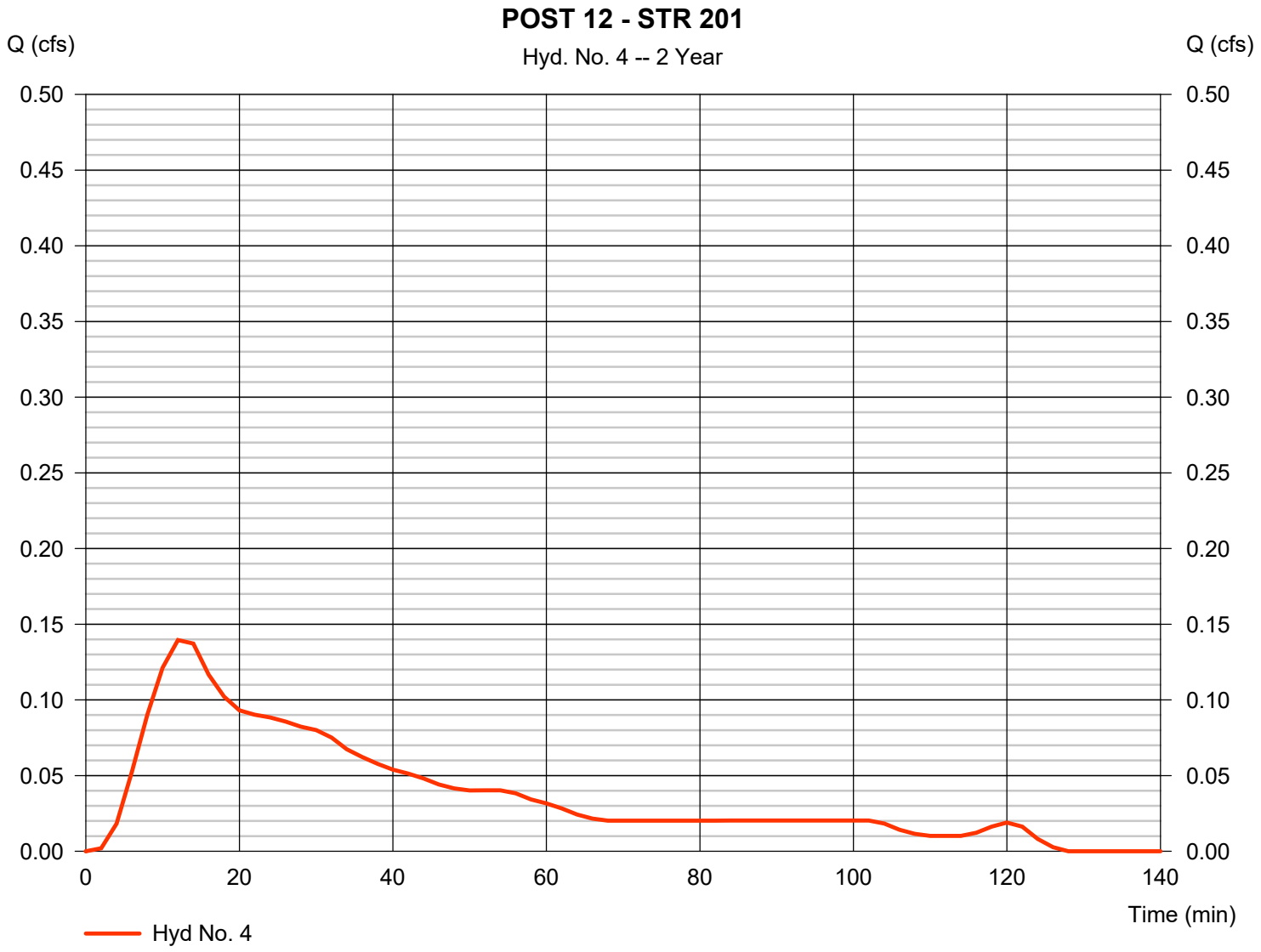


Hydrograph Report

Hyd. No. 4

POST 12 - STR 201

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.140 cfs
Storm frequency	=	2 yrs	Time to peak	=	12 min
Time interval	=	2 min	Hyd. volume	=	314 cuft
Drainage area	=	0.080 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.37 in	Distribution	=	Huff-1st
Storm duration	=	2.00 hrs	Shape factor	=	484

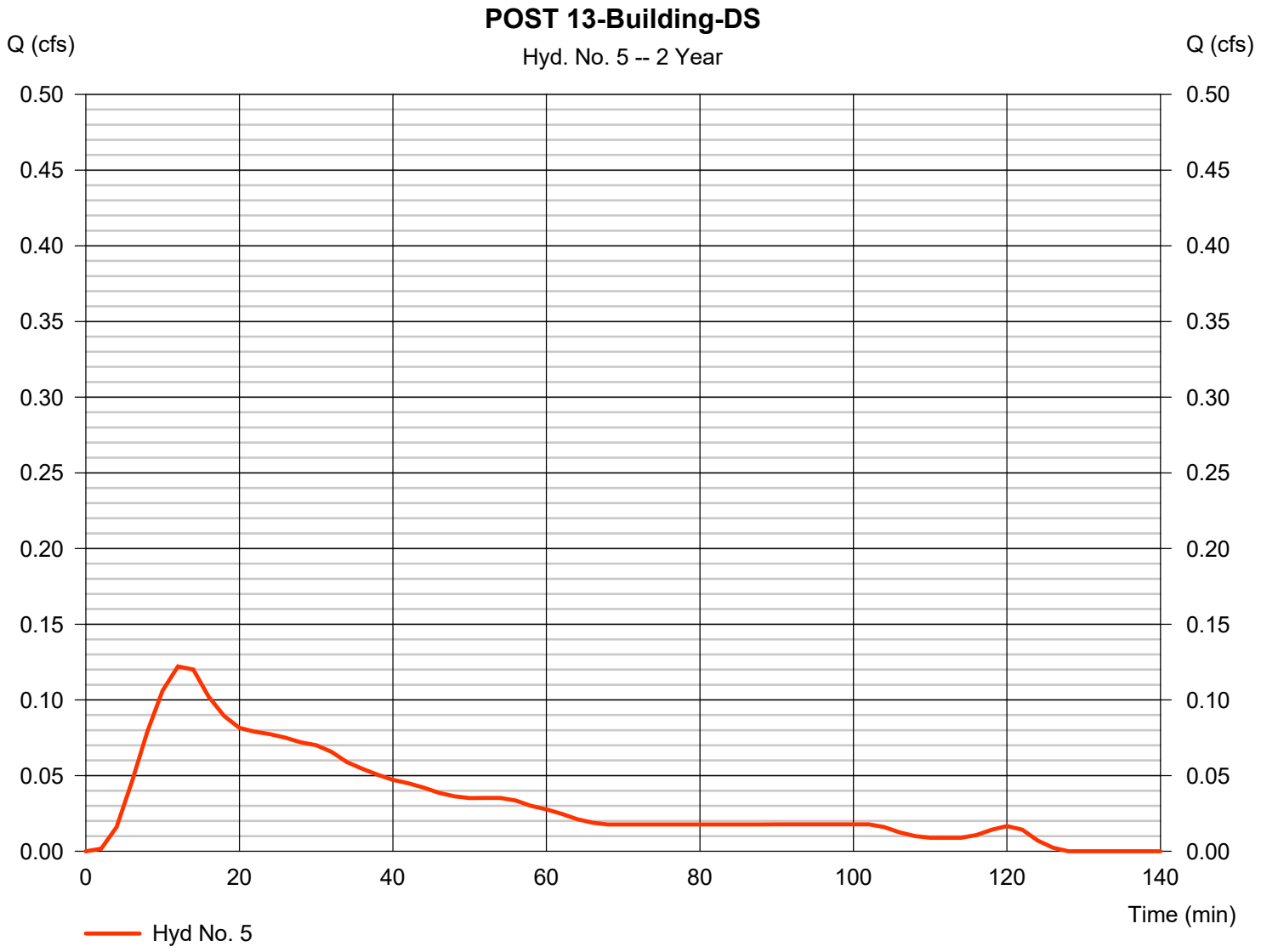


Hydrograph Report

Hyd. No. 5

POST 13-Building-DS

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.122 cfs
Storm frequency	=	2 yrs	Time to peak	=	12 min
Time interval	=	2 min	Hyd. volume	=	274 cuft
Drainage area	=	0.070 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.37 in	Distribution	=	Huff-1st
Storm duration	=	2.00 hrs	Shape factor	=	484



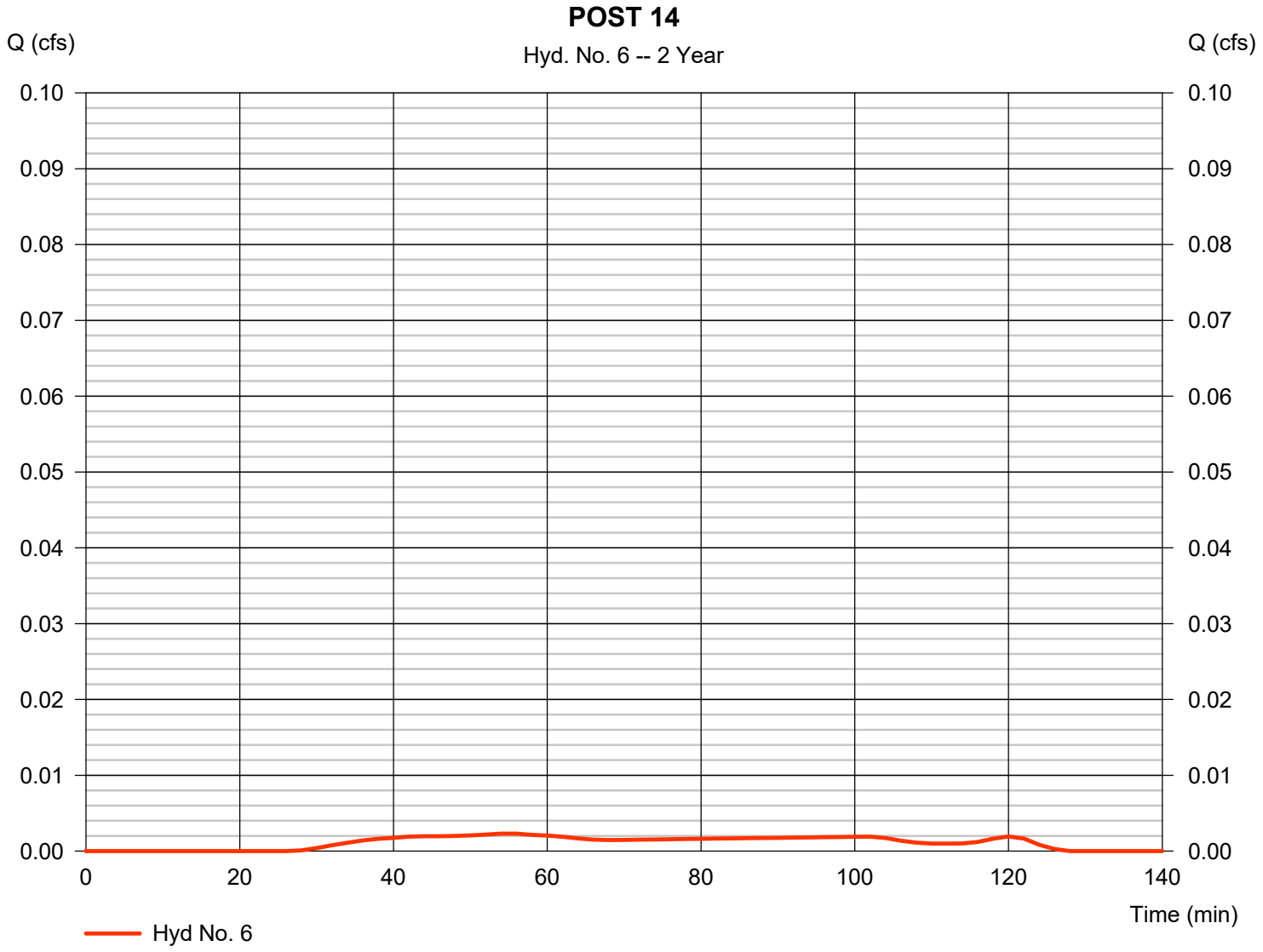
Hydrograph Report

Hyd. No. 6

POST 14

Hydrograph type	= SCS Runoff	Peak discharge	= 0.002 cfs
Storm frequency	= 2 yrs	Time to peak	= 54 min
Time interval	= 2 min	Hyd. volume	= 9 cuft
Drainage area	= 0.030 ac	Curve number	= 73*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.37 in	Distribution	= Huff-1st
Storm duration	= 2.00 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.020 x 61) + (0.010 x 98)] / 0.030

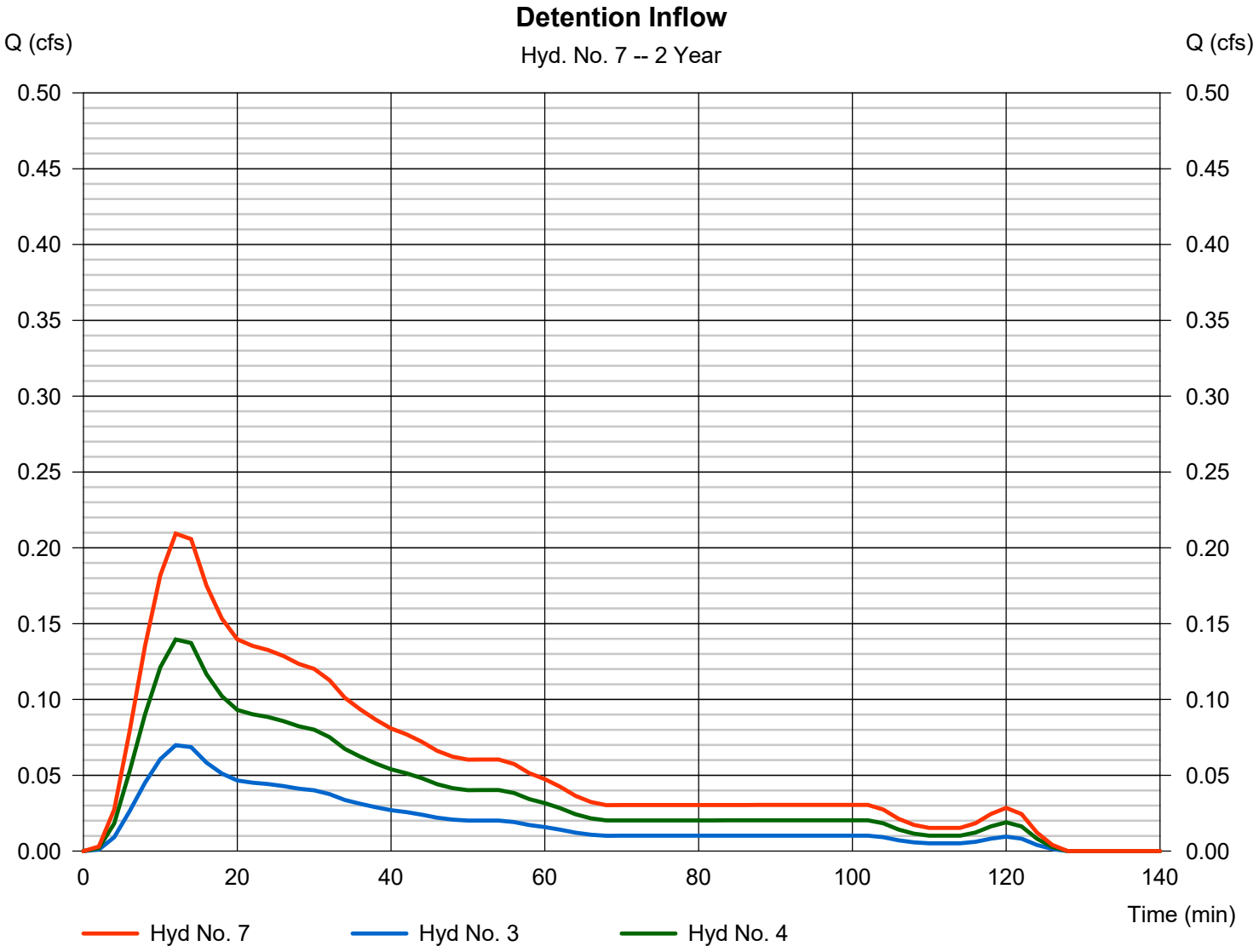


Hydrograph Report

Hyd. No. 7

Detention Inflow

Hydrograph type	=	Combine	Peak discharge	=	0.209 cfs
Storm frequency	=	2 yrs	Time to peak	=	12 min
Time interval	=	2 min	Hyd. volume	=	471 cuft
Inflow hyds.	=	3, 4	Contrib. drain. area	=	0.120 ac



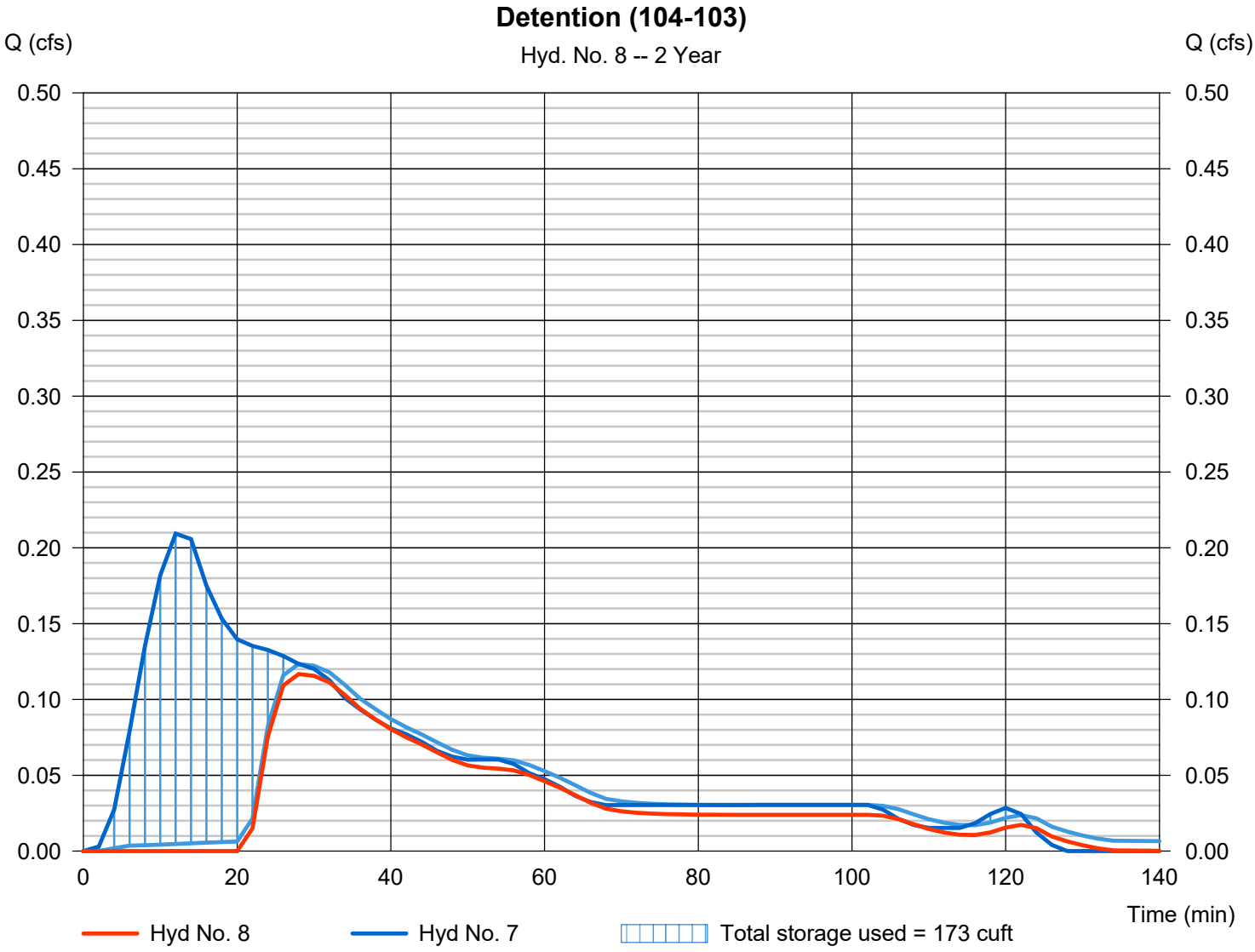
Hydrograph Report

Hyd. No. 8

Detention (104-103)

Hydrograph type	=	Reservoir	Peak discharge	=	0.117 cfs
Storm frequency	=	2 yrs	Time to peak	=	28 min
Time interval	=	2 min	Hyd. volume	=	269 cuft
Inflow hyd. No.	=	7 - Detention Inflow	Max. Elevation	=	718.17 ft
Reservoir name	=	Proposed Detention	Max. Storage	=	173 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

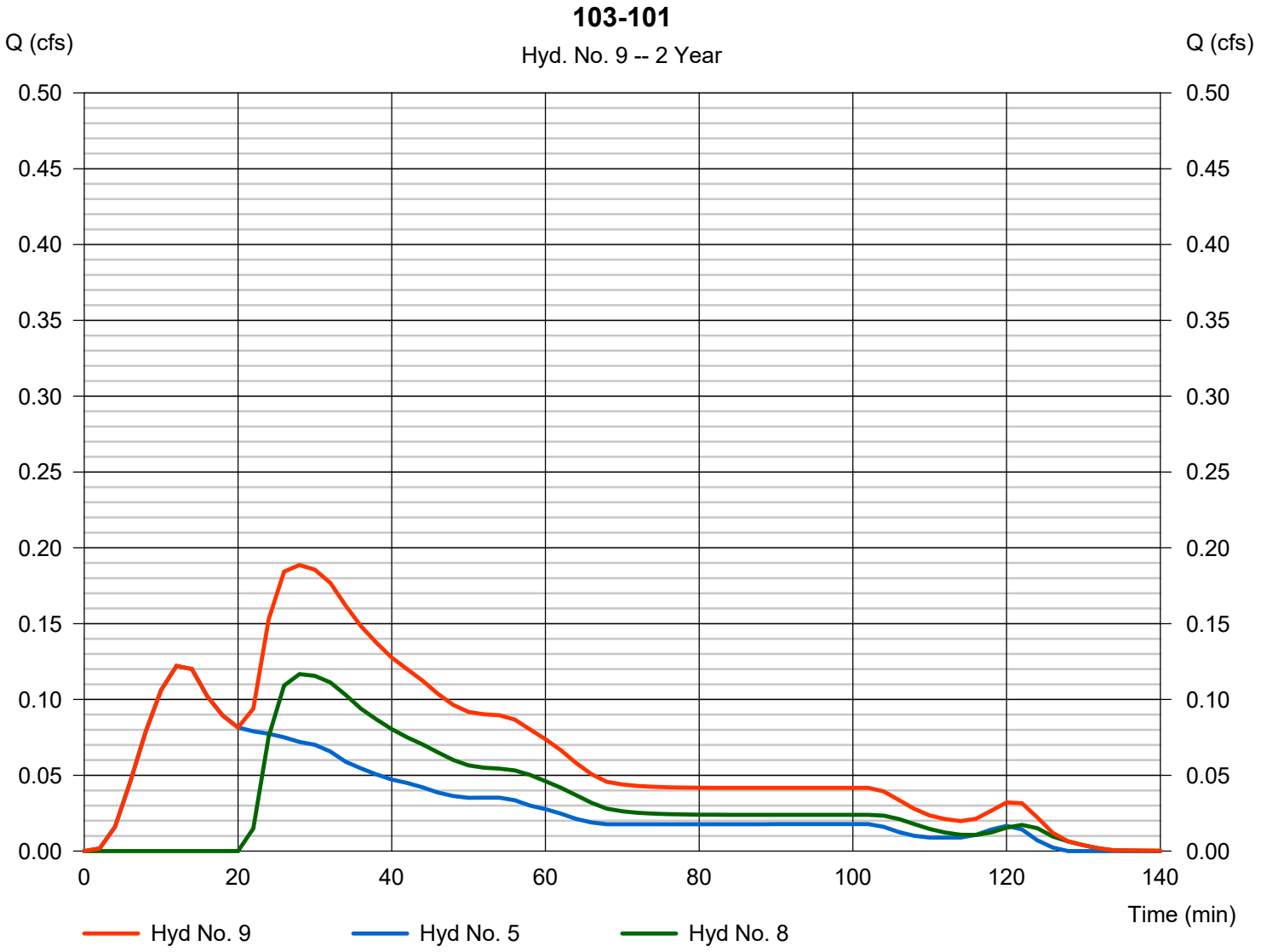


Hydrograph Report

Hyd. No. 9

103-101

Hydrograph type	=	Combine	Peak discharge	=	0.189 cfs
Storm frequency	=	2 yrs	Time to peak	=	28 min
Time interval	=	2 min	Hyd. volume	=	543 cuft
Inflow hyds.	=	5, 8	Contrib. drain. area	=	0.070 ac

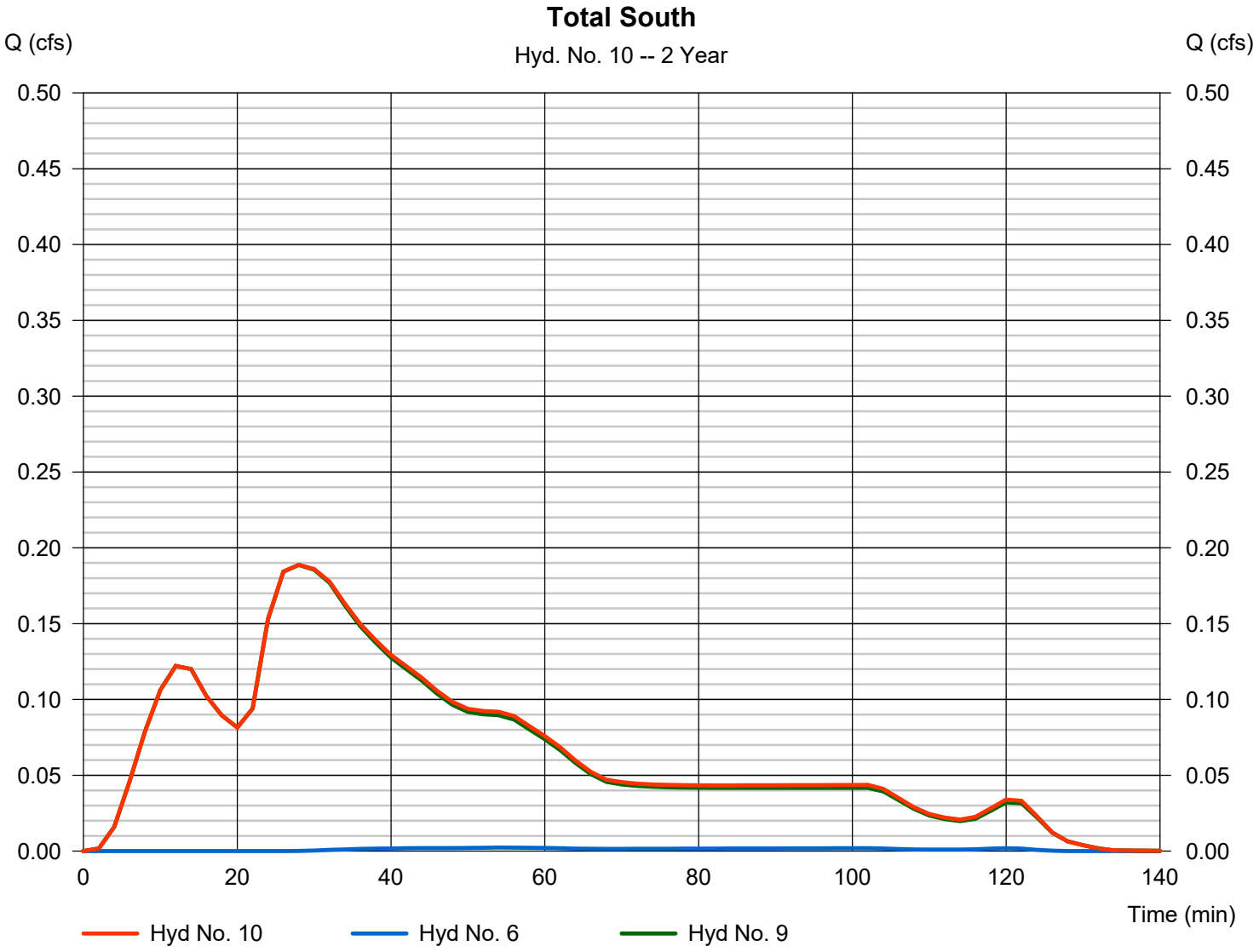


Hydrograph Report

Hyd. No. 10

Total South

Hydrograph type	=	Combine	Peak discharge	=	0.189 cfs
Storm frequency	=	2 yrs	Time to peak	=	28 min
Time interval	=	2 min	Hyd. volume	=	552 cuft
Inflow hyds.	=	6, 9	Contrib. drain. area	=	0.030 ac



Hydrograph Summary Report

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

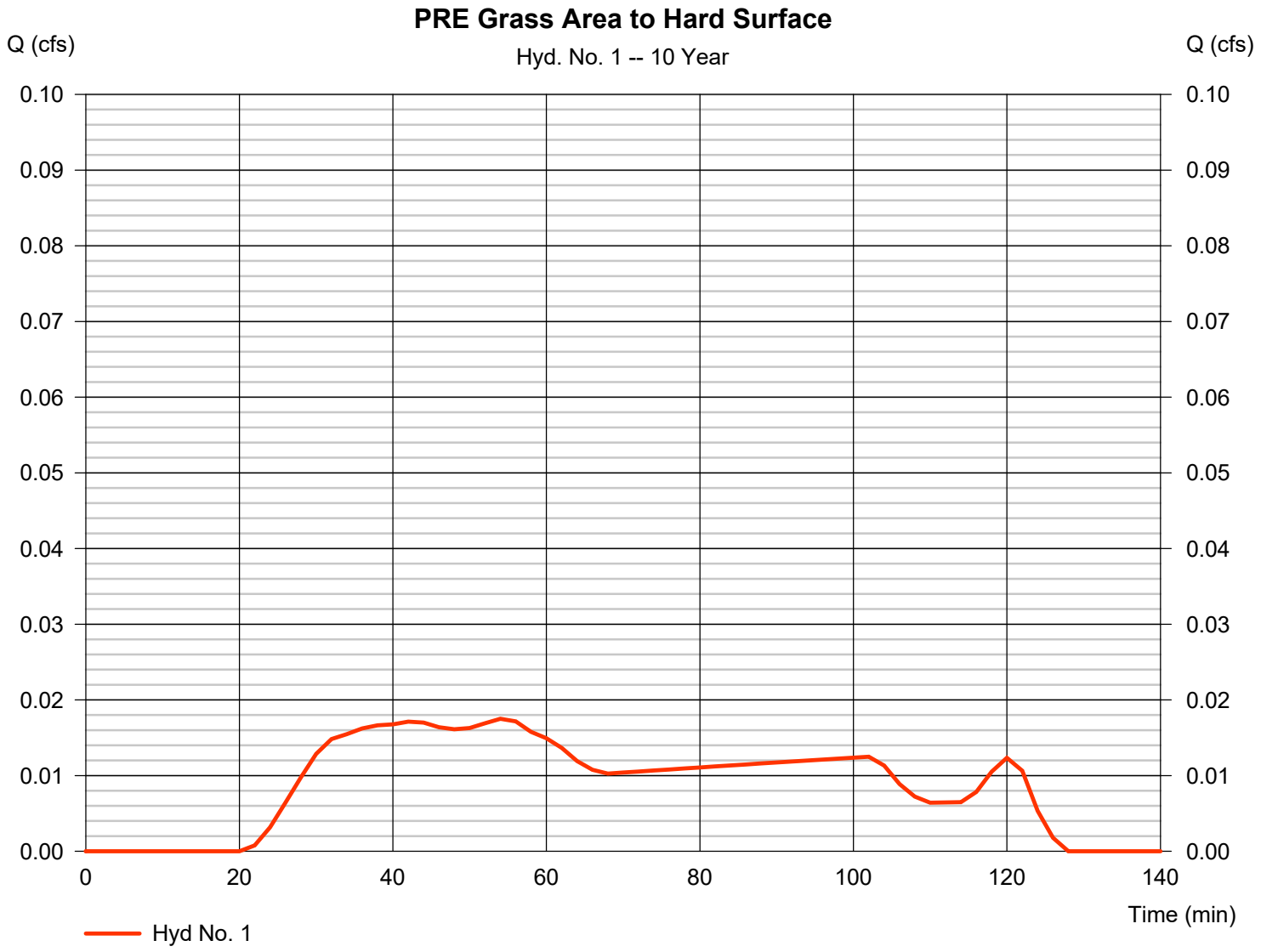
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.018	2	54	74	------	------	------	PRE Grass Area to Hard Surface
2	SCS Runoff	0.122	2	30	432	------	------	------	PRE South
3	SCS Runoff	0.112	2	12	242	------	------	------	POST 11 - STR 105 (105-104)
4	SCS Runoff	0.224	2	12	483	------	------	------	POST 12 - STR 201
5	SCS Runoff	0.196	2	12	423	------	------	------	POST 13-Building-DS
6	SCS Runoff	0.008	2	32	33	------	------	------	POST 14
7	Combine	0.336	2	12	725	3, 4,	------	------	Detention Inflow
8	Reservoir	0.227	2	18	521	7	718.23	183	Detention (104-103)
9	Combine	0.364	2	18	943	5, 8	------	------	103-101
10	Combine	0.365	2	18	976	6, 9	------	------	Total South

Hydrograph Report

Hyd. No. 1

PRE Grass Area to Hard Surface

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.018 cfs
Storm frequency	=	10 yrs	Time to peak	=	54 min
Time interval	=	2 min	Hyd. volume	=	74 cuft
Drainage area	=	0.100 ac	Curve number	=	69
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.00 in	Distribution	=	Huff-1st
Storm duration	=	2.00 hrs	Shape factor	=	484



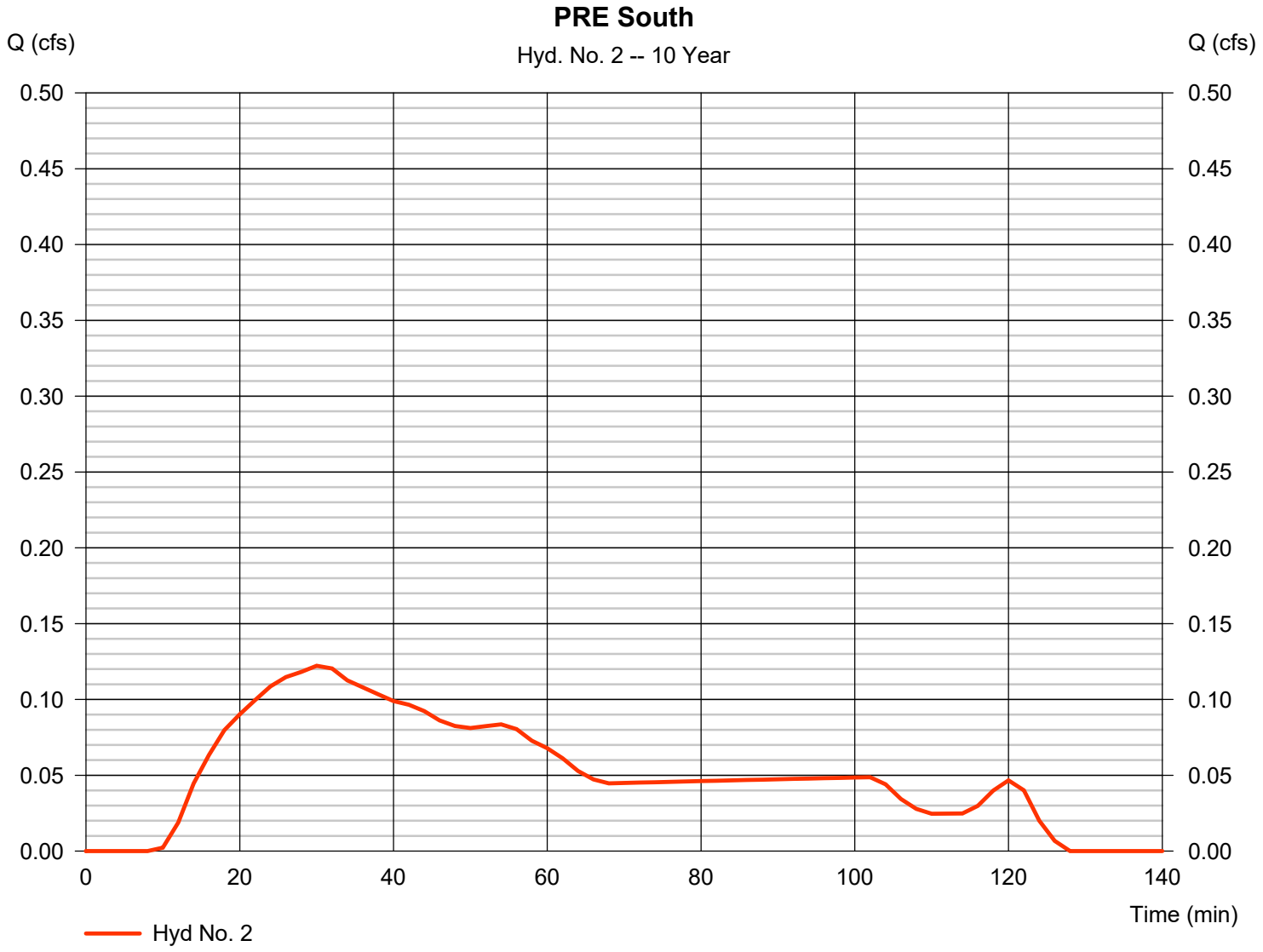
Hydrograph Report

Hyd. No. 2

PRE South

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.122 cfs
Storm frequency	=	10 yrs	Time to peak	=	30 min
Time interval	=	2 min	Hyd. volume	=	432 cuft
Drainage area	=	0.210 ac	Curve number	=	81*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.00 in	Distribution	=	Huff-1st
Storm duration	=	2.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.120 x 69) + (0.090 x 98)] / 0.210

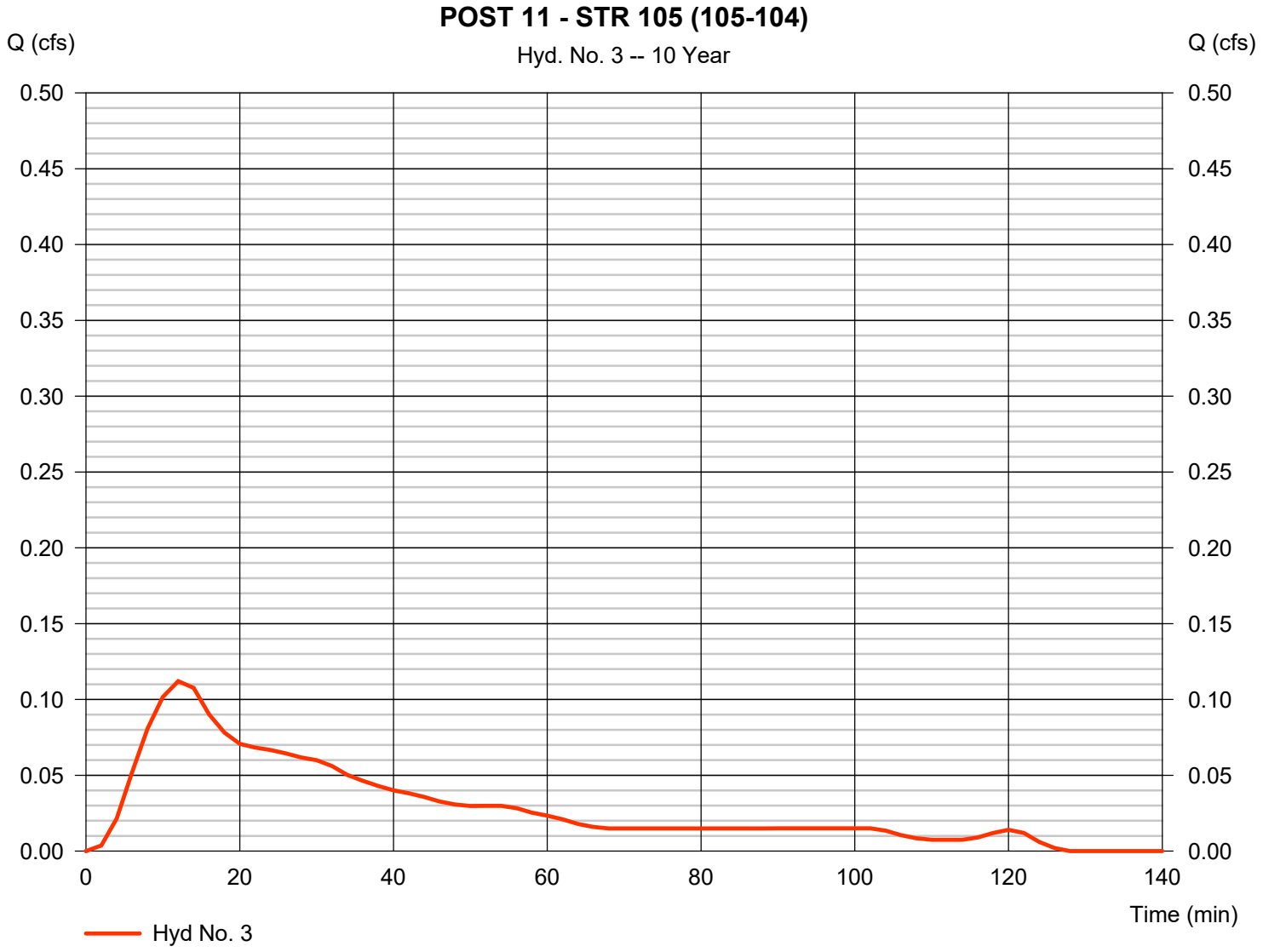


Hydrograph Report

Hyd. No. 3

POST 11 - STR 105 (105-104)

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.112 cfs
Storm frequency	=	10 yrs	Time to peak	=	12 min
Time interval	=	2 min	Hyd. volume	=	242 cuft
Drainage area	=	0.040 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.00 in	Distribution	=	Huff-1st
Storm duration	=	2.00 hrs	Shape factor	=	484

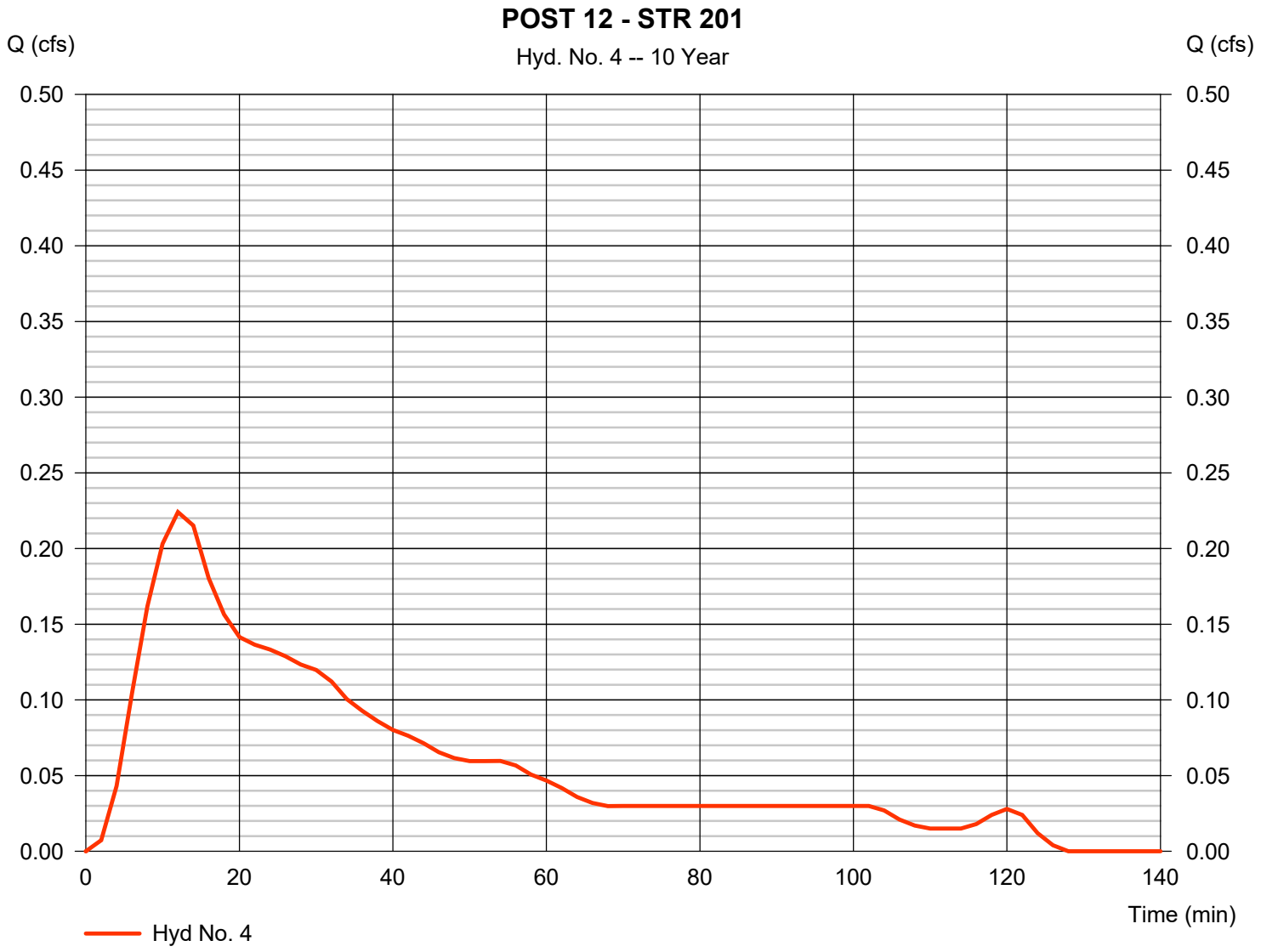


Hydrograph Report

Hyd. No. 4

POST 12 - STR 201

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.224 cfs
Storm frequency	=	10 yrs	Time to peak	=	12 min
Time interval	=	2 min	Hyd. volume	=	483 cuft
Drainage area	=	0.080 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.00 in	Distribution	=	Huff-1st
Storm duration	=	2.00 hrs	Shape factor	=	484

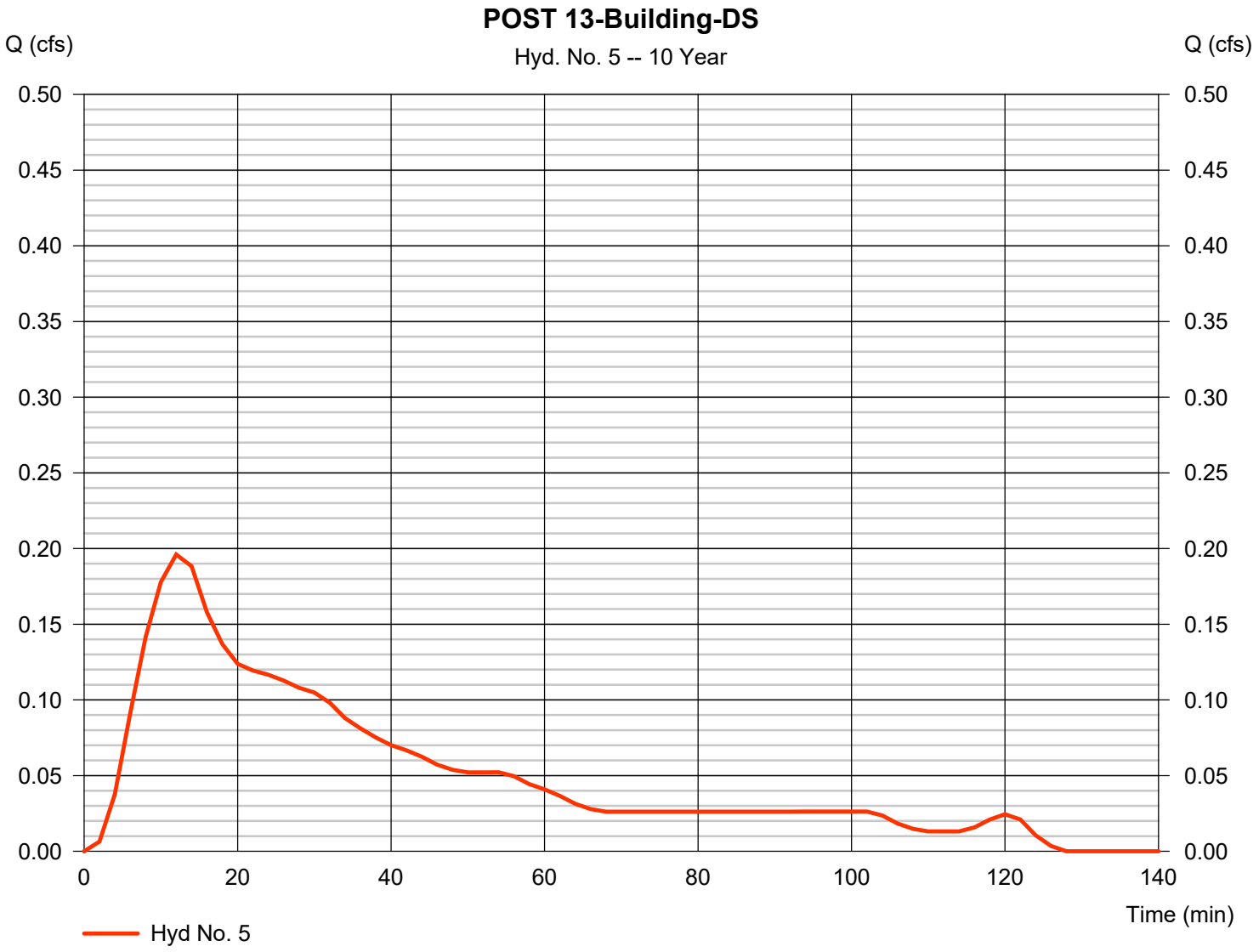


Hydrograph Report

Hyd. No. 5

POST 13-Building-DS

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.196 cfs
Storm frequency	=	10 yrs	Time to peak	=	12 min
Time interval	=	2 min	Hyd. volume	=	423 cuft
Drainage area	=	0.070 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.00 in	Distribution	=	Huff-1st
Storm duration	=	2.00 hrs	Shape factor	=	484



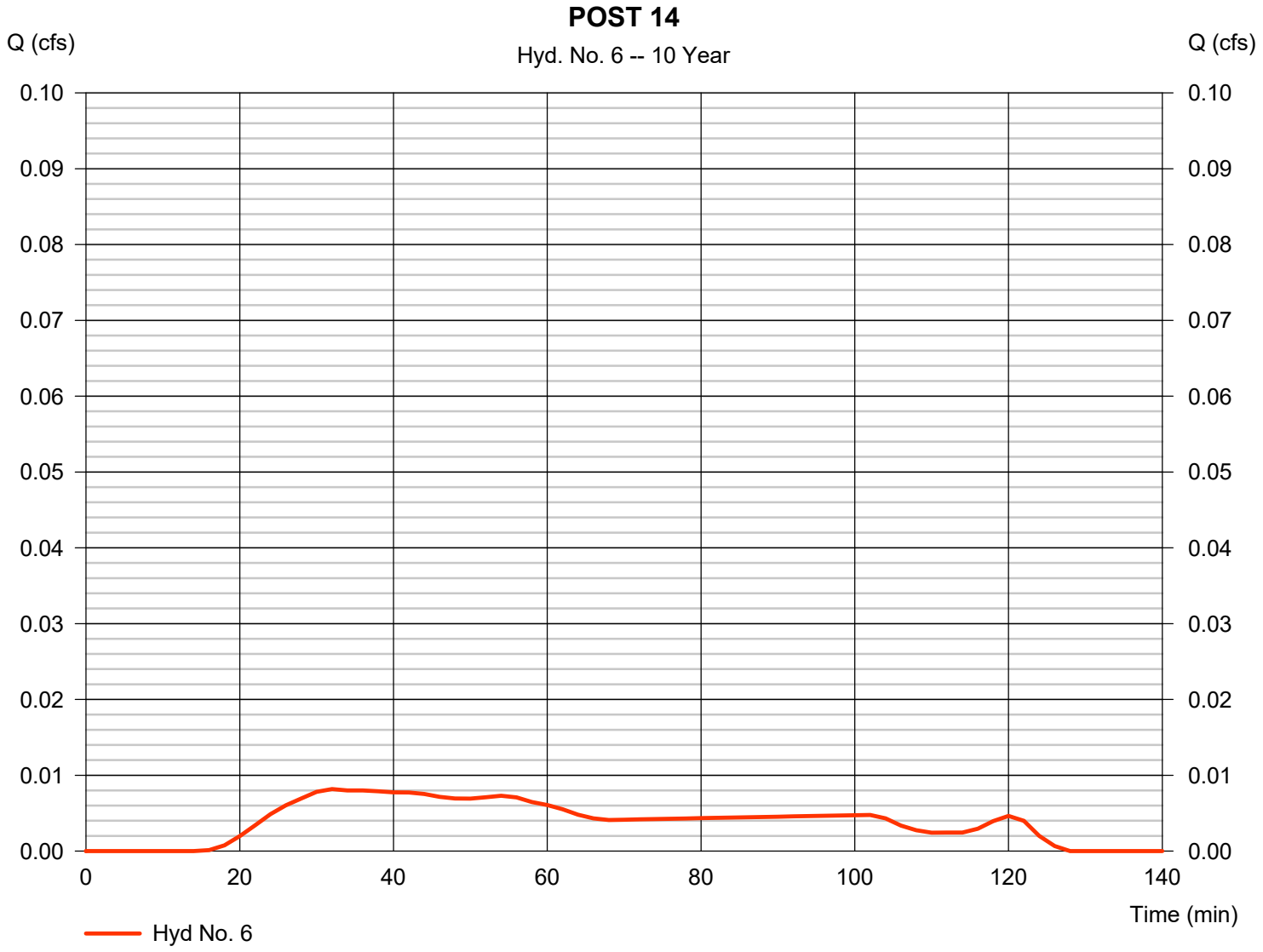
Hydrograph Report

Hyd. No. 6

POST 14

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.008 cfs
Storm frequency	=	10 yrs	Time to peak	=	32 min
Time interval	=	2 min	Hyd. volume	=	33 cuft
Drainage area	=	0.030 ac	Curve number	=	73*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.00 in	Distribution	=	Huff-1st
Storm duration	=	2.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.020 x 61) + (0.010 x 98)] / 0.030

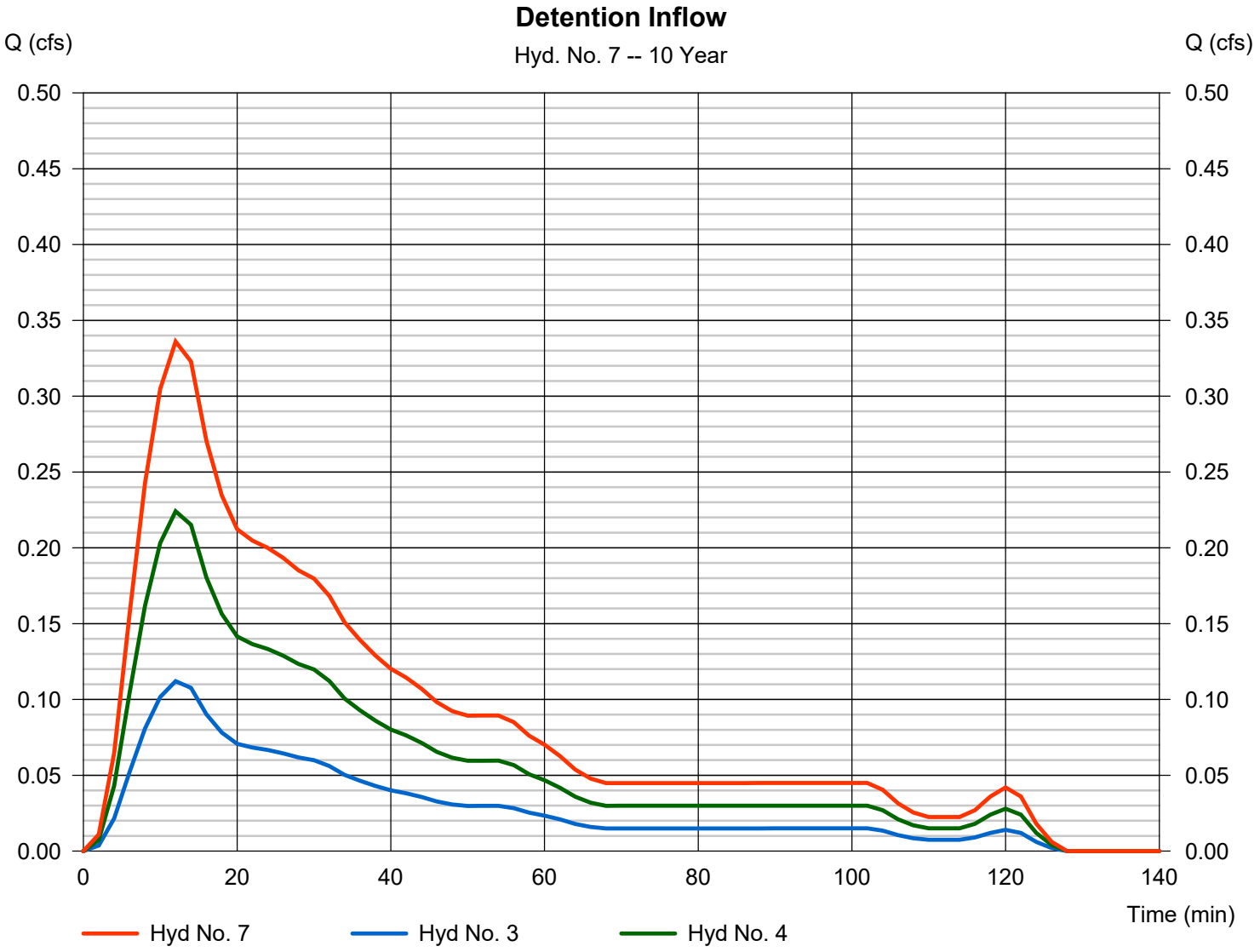


Hydrograph Report

Hyd. No. 7

Detention Inflow

Hydrograph type	=	Combine	Peak discharge	=	0.336 cfs
Storm frequency	=	10 yrs	Time to peak	=	12 min
Time interval	=	2 min	Hyd. volume	=	725 cuft
Inflow hyds.	=	3, 4	Contrib. drain. area	=	0.120 ac



Hydrograph Report

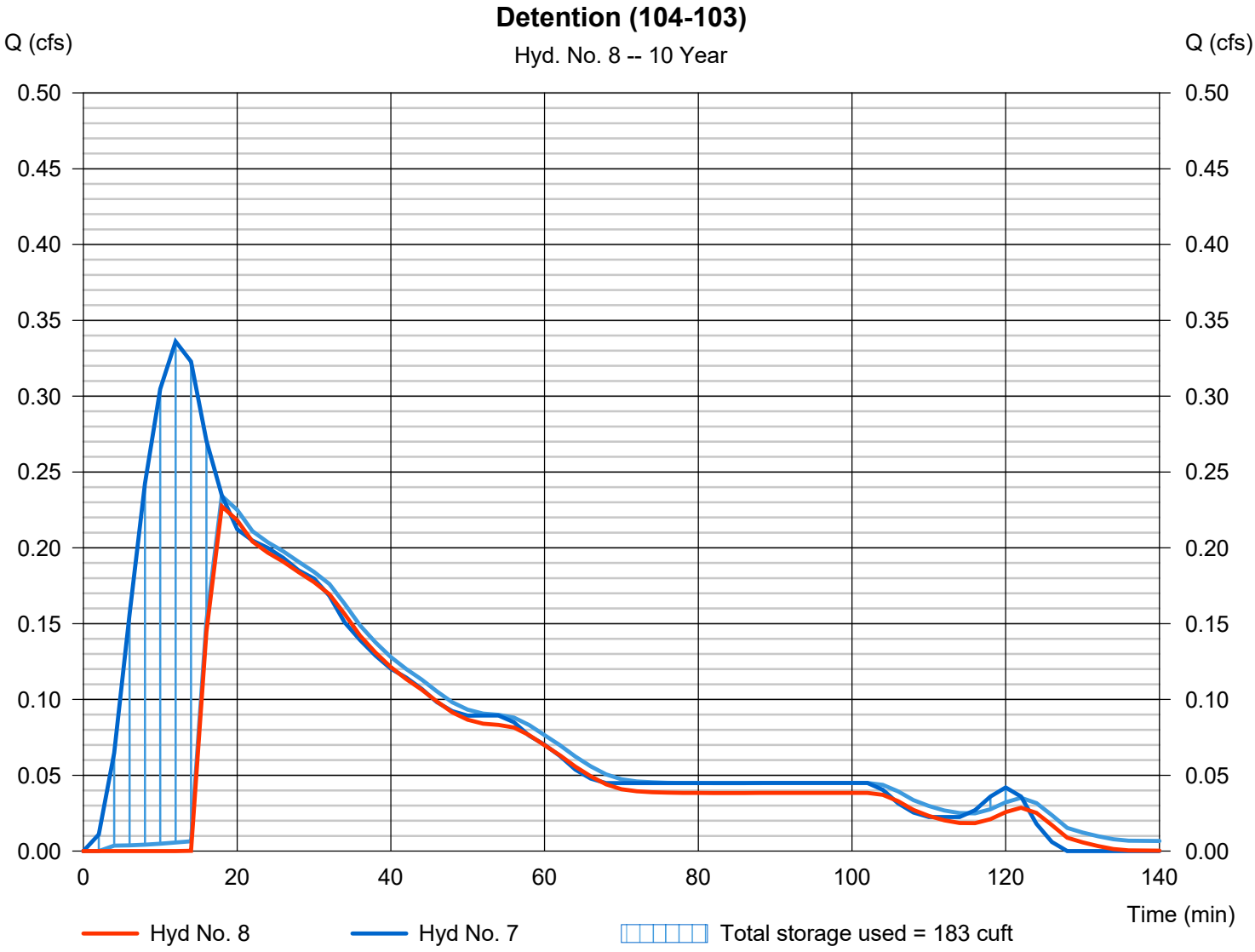
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 10 / 5 / 2021

Hyd. No. 8

Detention (104-103)

Hydrograph type	=	Reservoir	Peak discharge	=	0.227 cfs
Storm frequency	=	10 yrs	Time to peak	=	18 min
Time interval	=	2 min	Hyd. volume	=	521 cuft
Inflow hyd. No.	=	7 - Detention Inflow	Max. Elevation	=	718.23 ft
Reservoir name	=	Proposed Detention	Max. Storage	=	183 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

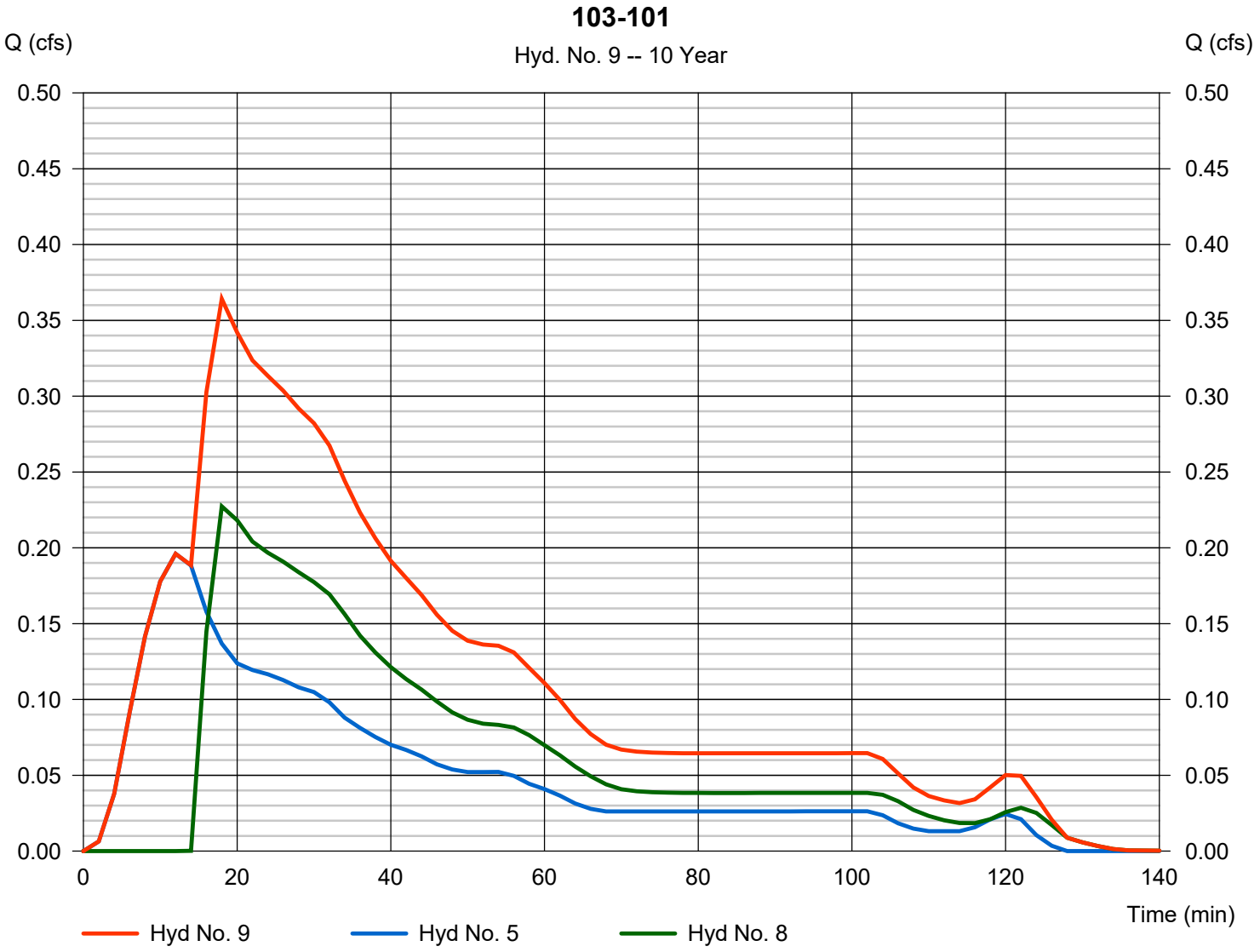


Hydrograph Report

Hyd. No. 9

103-101

Hydrograph type	=	Combine	Peak discharge	=	0.364 cfs
Storm frequency	=	10 yrs	Time to peak	=	18 min
Time interval	=	2 min	Hyd. volume	=	943 cuft
Inflow hyds.	=	5, 8	Contrib. drain. area	=	0.070 ac

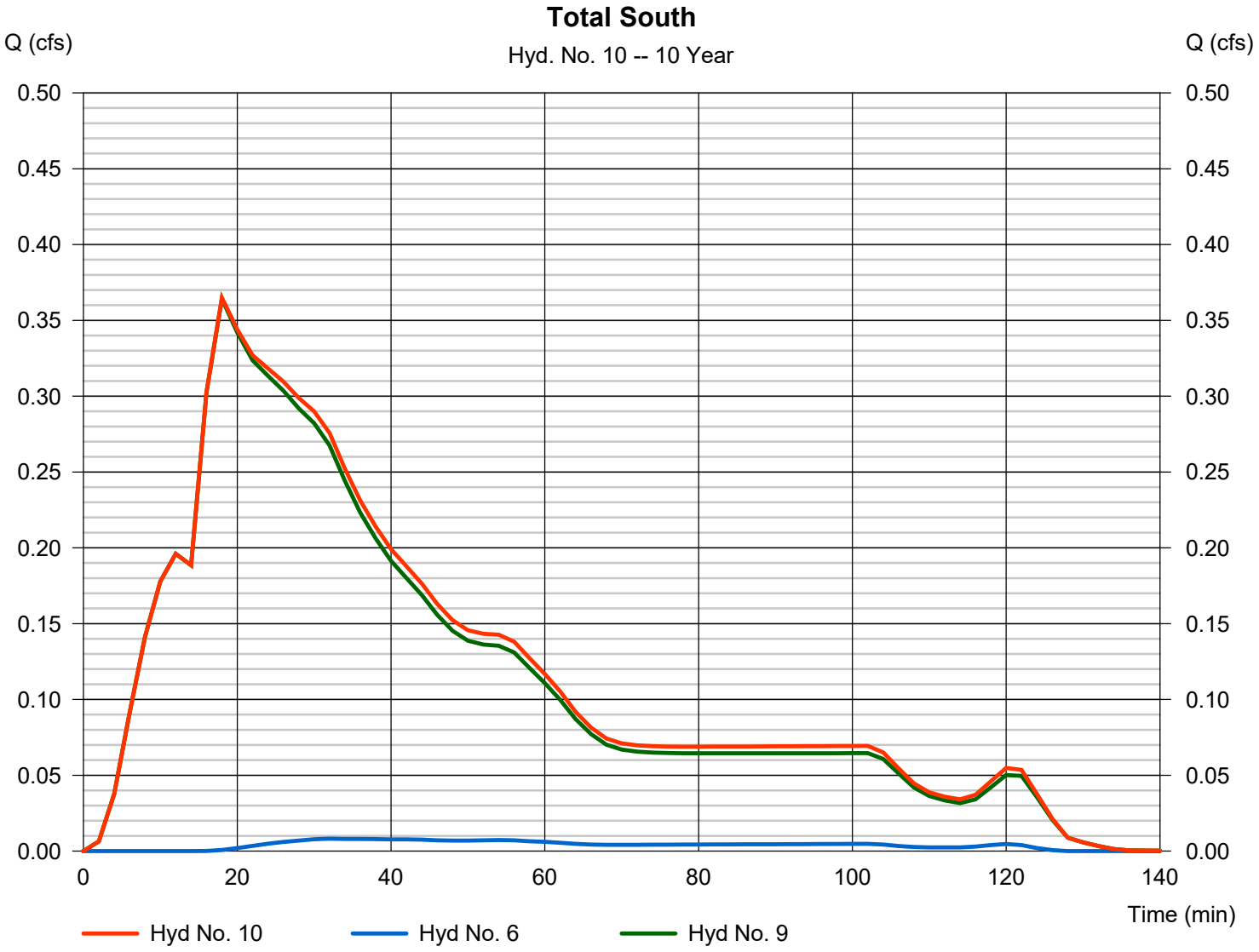


Hydrograph Report

Hyd. No. 10

Total South

Hydrograph type	=	Combine	Peak discharge	=	0.365 cfs
Storm frequency	=	10 yrs	Time to peak	=	18 min
Time interval	=	2 min	Hyd. volume	=	976 cuft
Inflow hyds.	=	6, 9	Contrib. drain. area	=	0.030 ac



Hydrograph Summary Report

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

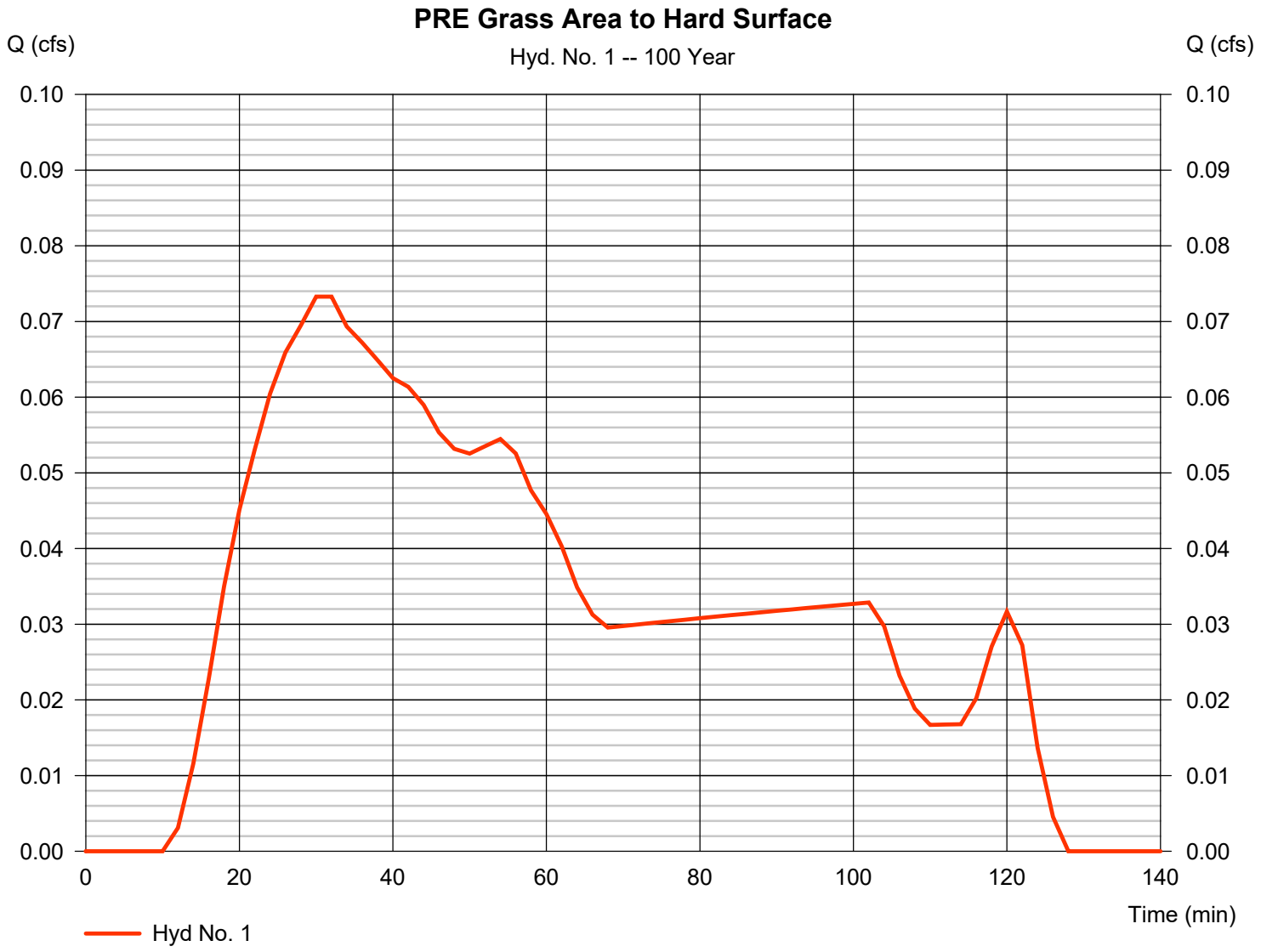
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.073	2	32	267	------	------	------	PRE Grass Area to Hard Surface
2	SCS Runoff	0.303	2	30	1,055	------	------	------	PRE South
3	SCS Runoff	0.192	2	12	405	------	------	------	POST 11 - STR 105 (105-104)
4	SCS Runoff	0.385	2	12	811	------	------	------	POST 12 - STR 201
5	SCS Runoff	0.337	2	12	709	------	------	------	POST 13-Building-DS
6	SCS Runoff	0.029	2	30	101	------	------	------	POST 14
7	Combine	0.577	2	12	1,216	3, 4,	------	------	Detention Inflow
8	Reservoir	0.536	2	14	1,010	7	718.37	206	Detention (104-103)
9	Combine	0.854	2	14	1,719	5, 8	------	------	103-101
10	Combine	0.865	2	14	1,820	6, 9	------	------	Total South

Hydrograph Report

Hyd. No. 1

PRE Grass Area to Hard Surface

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.073 cfs
Storm frequency	=	100 yrs	Time to peak	=	32 min
Time interval	=	2 min	Hyd. volume	=	267 cuft
Drainage area	=	0.100 ac	Curve number	=	69
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.21 in	Distribution	=	Huff-1st
Storm duration	=	2.00 hrs	Shape factor	=	484



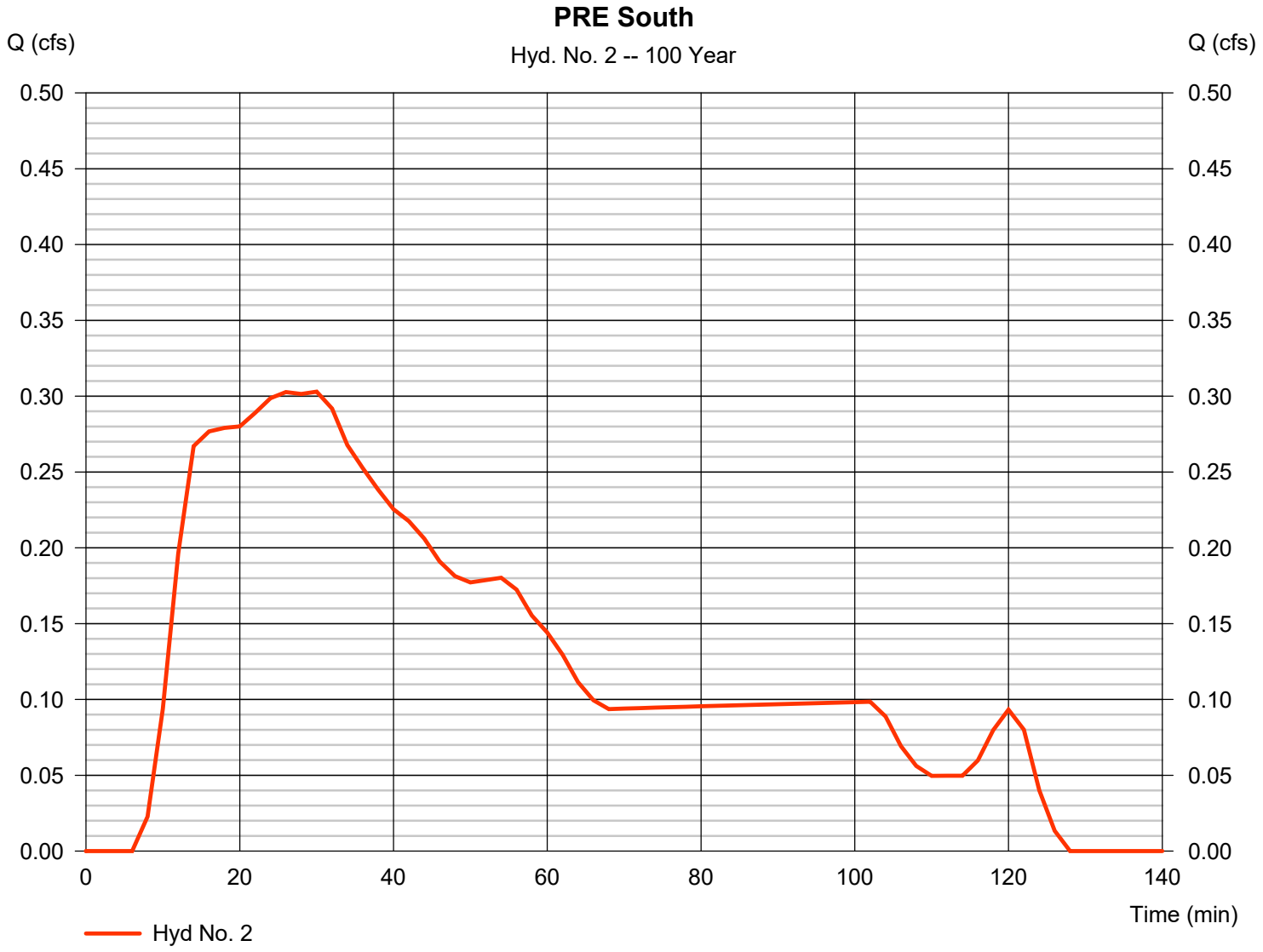
Hydrograph Report

Hyd. No. 2

PRE South

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.303 cfs
Storm frequency	=	100 yrs	Time to peak	=	30 min
Time interval	=	2 min	Hyd. volume	=	1,055 cuft
Drainage area	=	0.210 ac	Curve number	=	81*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.21 in	Distribution	=	Huff-1st
Storm duration	=	2.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.120 x 69) + (0.090 x 98)] / 0.210

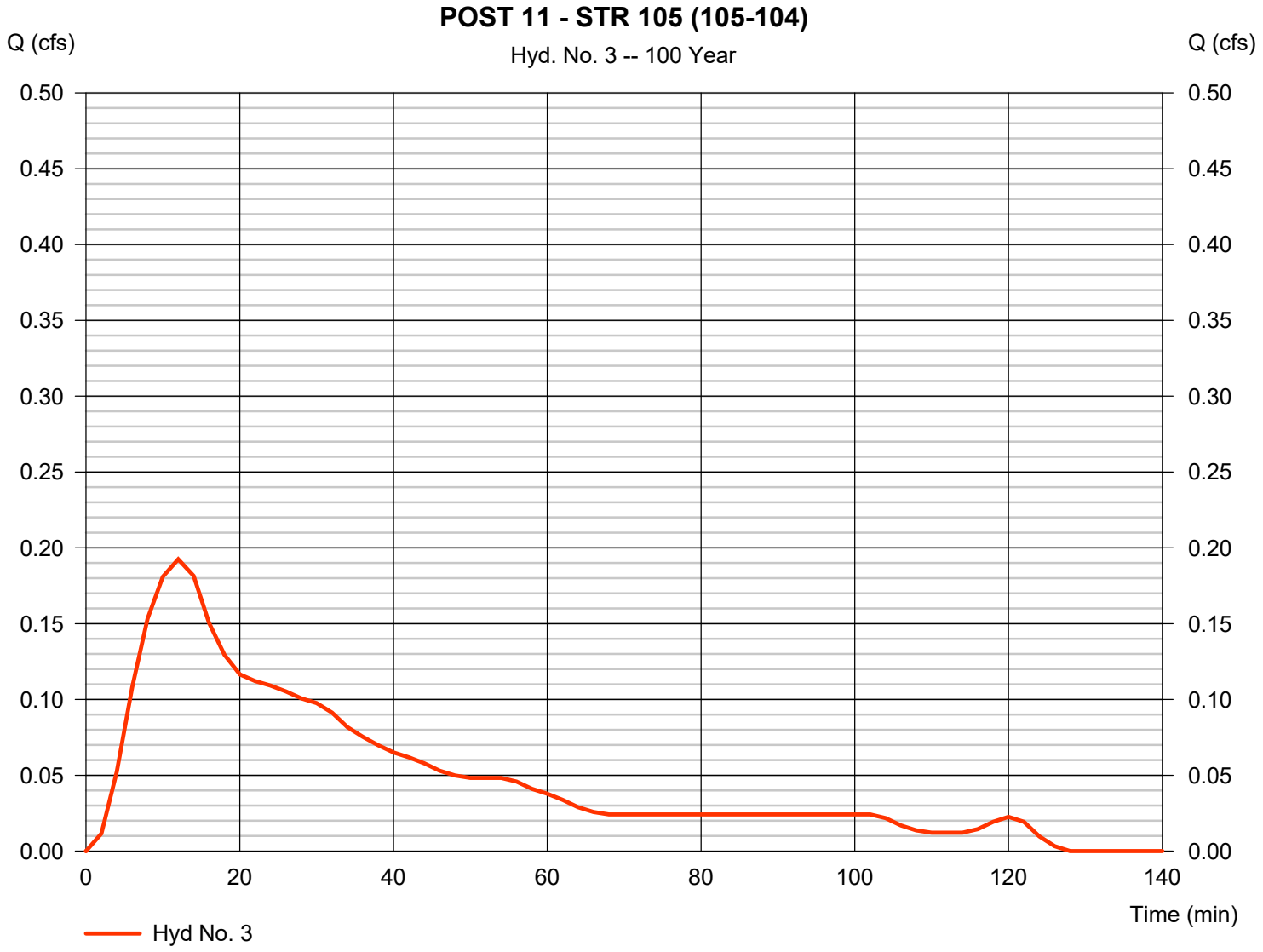


Hydrograph Report

Hyd. No. 3

POST 11 - STR 105 (105-104)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.192 cfs
Storm frequency	= 100 yrs	Time to peak	= 12 min
Time interval	= 2 min	Hyd. volume	= 405 cuft
Drainage area	= 0.040 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.21 in	Distribution	= Huff-1st
Storm duration	= 2.00 hrs	Shape factor	= 484

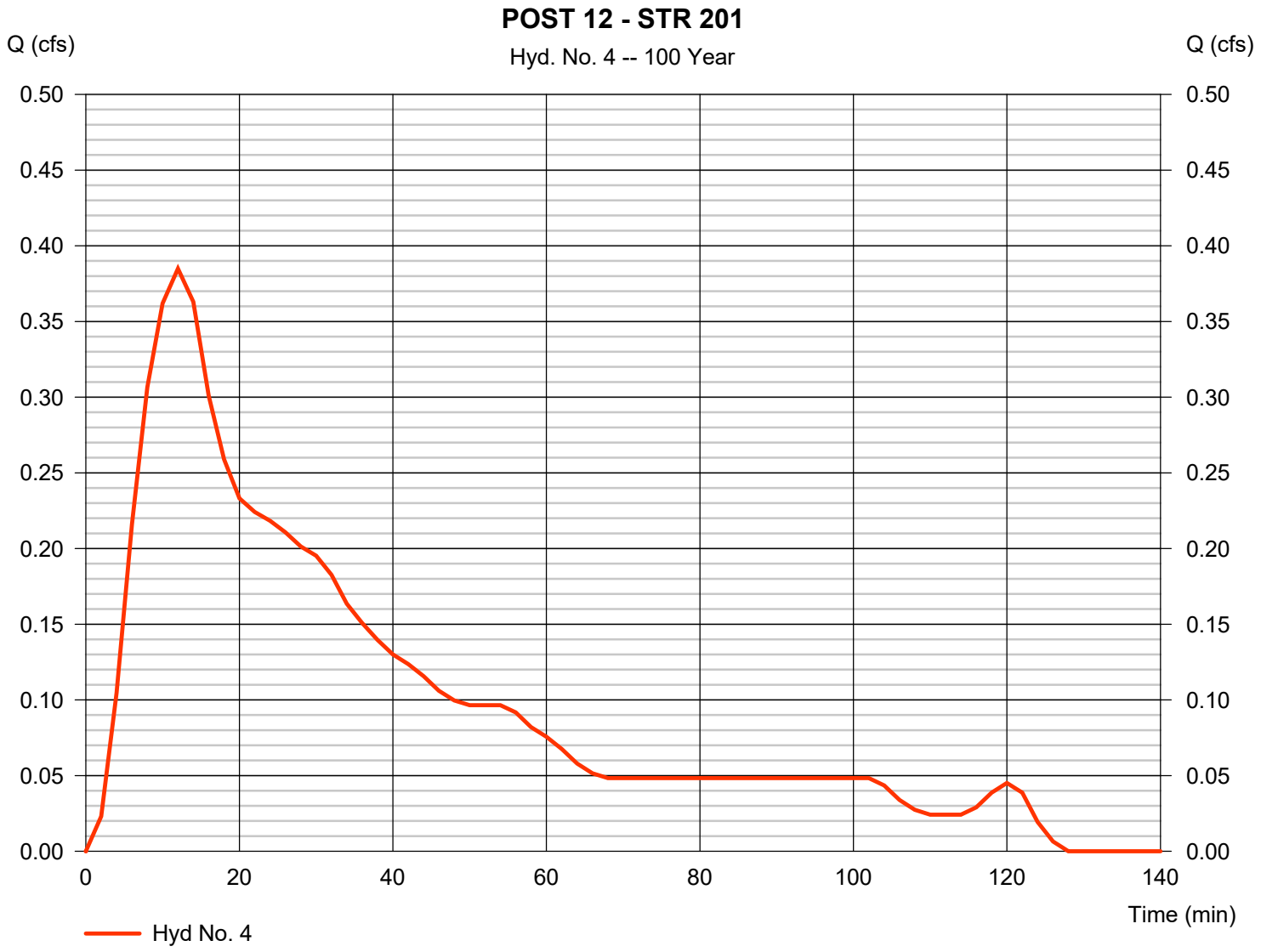


Hydrograph Report

Hyd. No. 4

POST 12 - STR 201

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.385 cfs
Storm frequency	=	100 yrs	Time to peak	=	12 min
Time interval	=	2 min	Hyd. volume	=	811 cuft
Drainage area	=	0.080 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.21 in	Distribution	=	Huff-1st
Storm duration	=	2.00 hrs	Shape factor	=	484

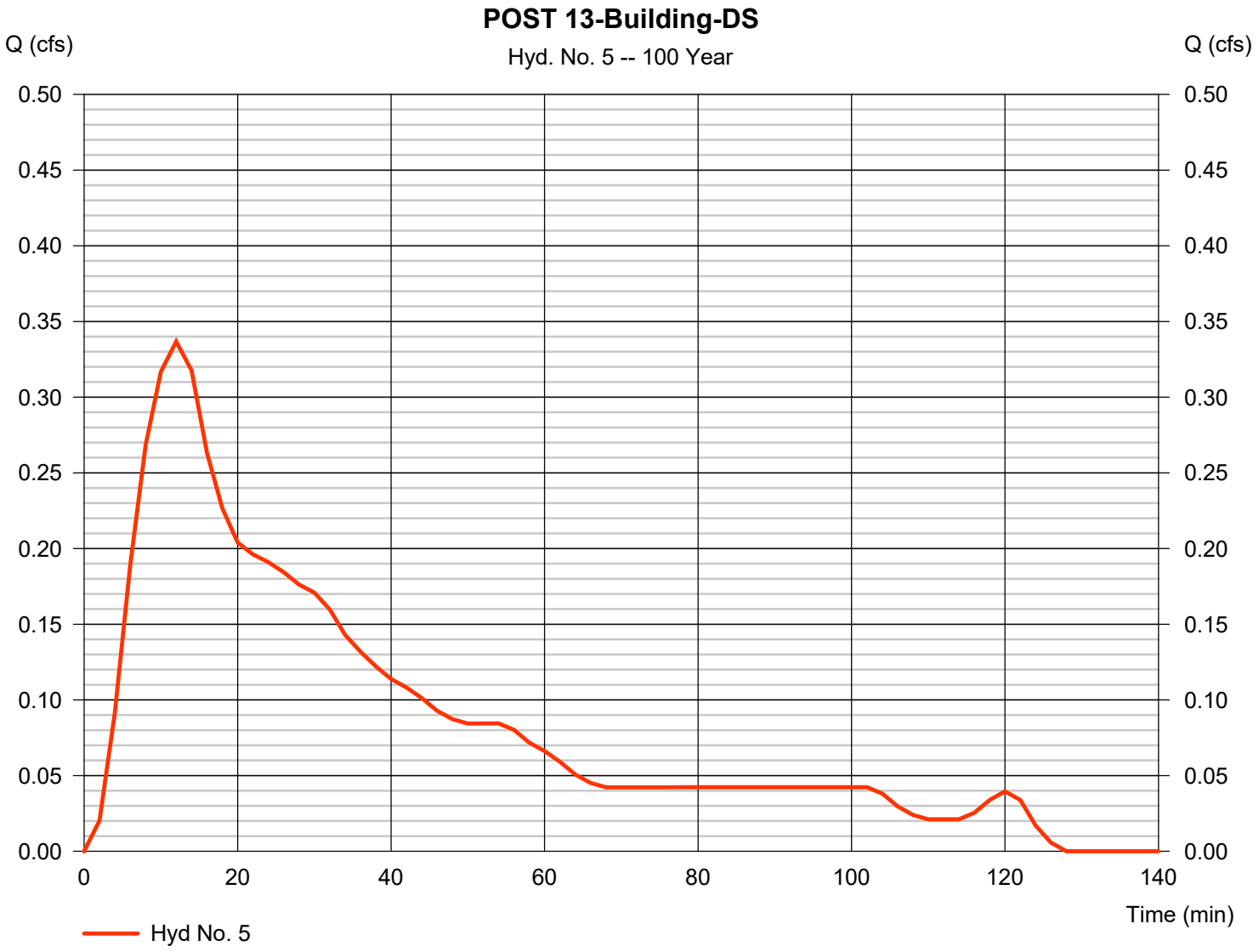


Hydrograph Report

Hyd. No. 5

POST 13-Building-DS

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.337 cfs
Storm frequency	=	100 yrs	Time to peak	=	12 min
Time interval	=	2 min	Hyd. volume	=	709 cuft
Drainage area	=	0.070 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.21 in	Distribution	=	Huff-1st
Storm duration	=	2.00 hrs	Shape factor	=	484



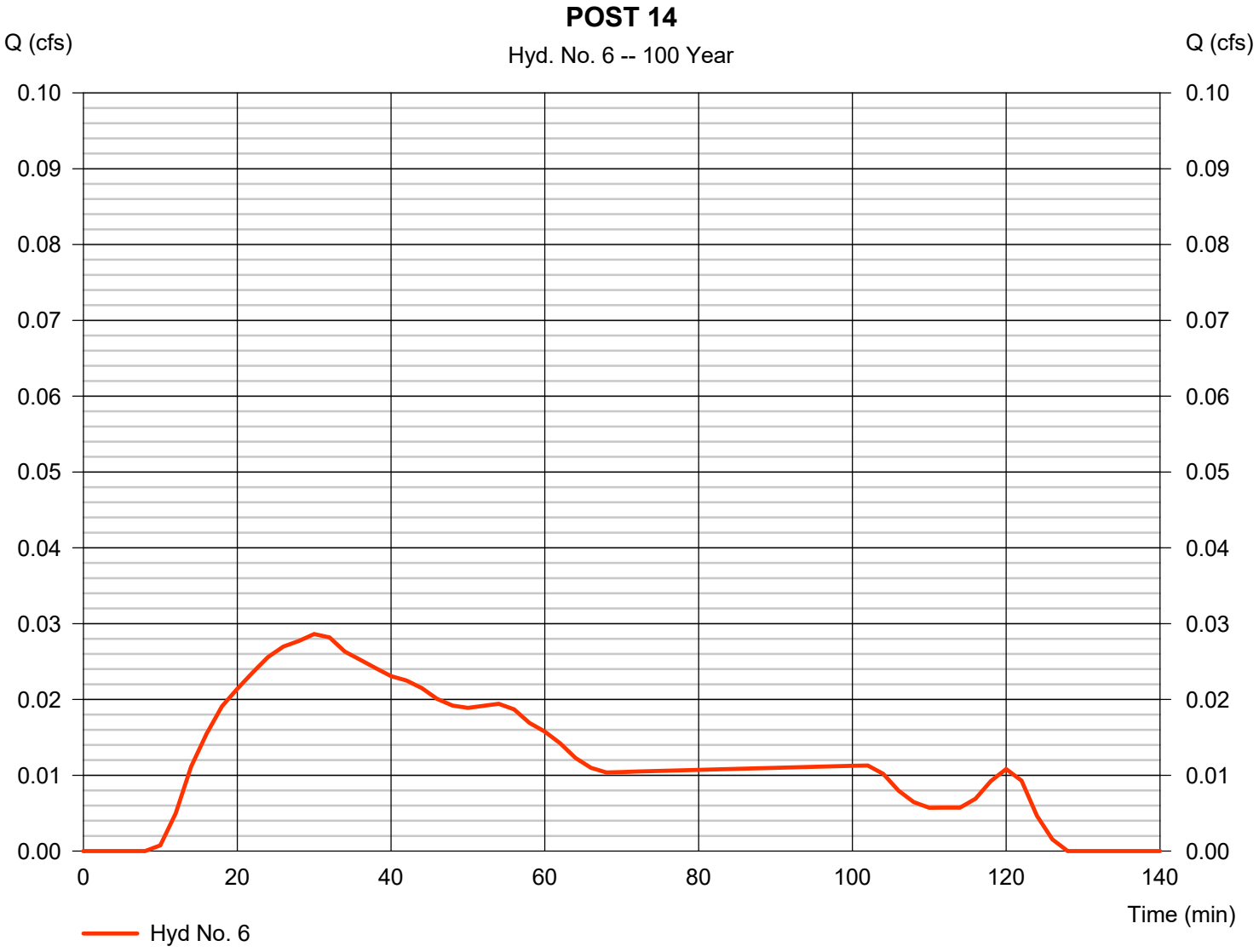
Hydrograph Report

Hyd. No. 6

POST 14

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.029 cfs
Storm frequency	=	100 yrs	Time to peak	=	30 min
Time interval	=	2 min	Hyd. volume	=	101 cuft
Drainage area	=	0.030 ac	Curve number	=	73*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.21 in	Distribution	=	Huff-1st
Storm duration	=	2.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.020 x 61) + (0.010 x 98)] / 0.030

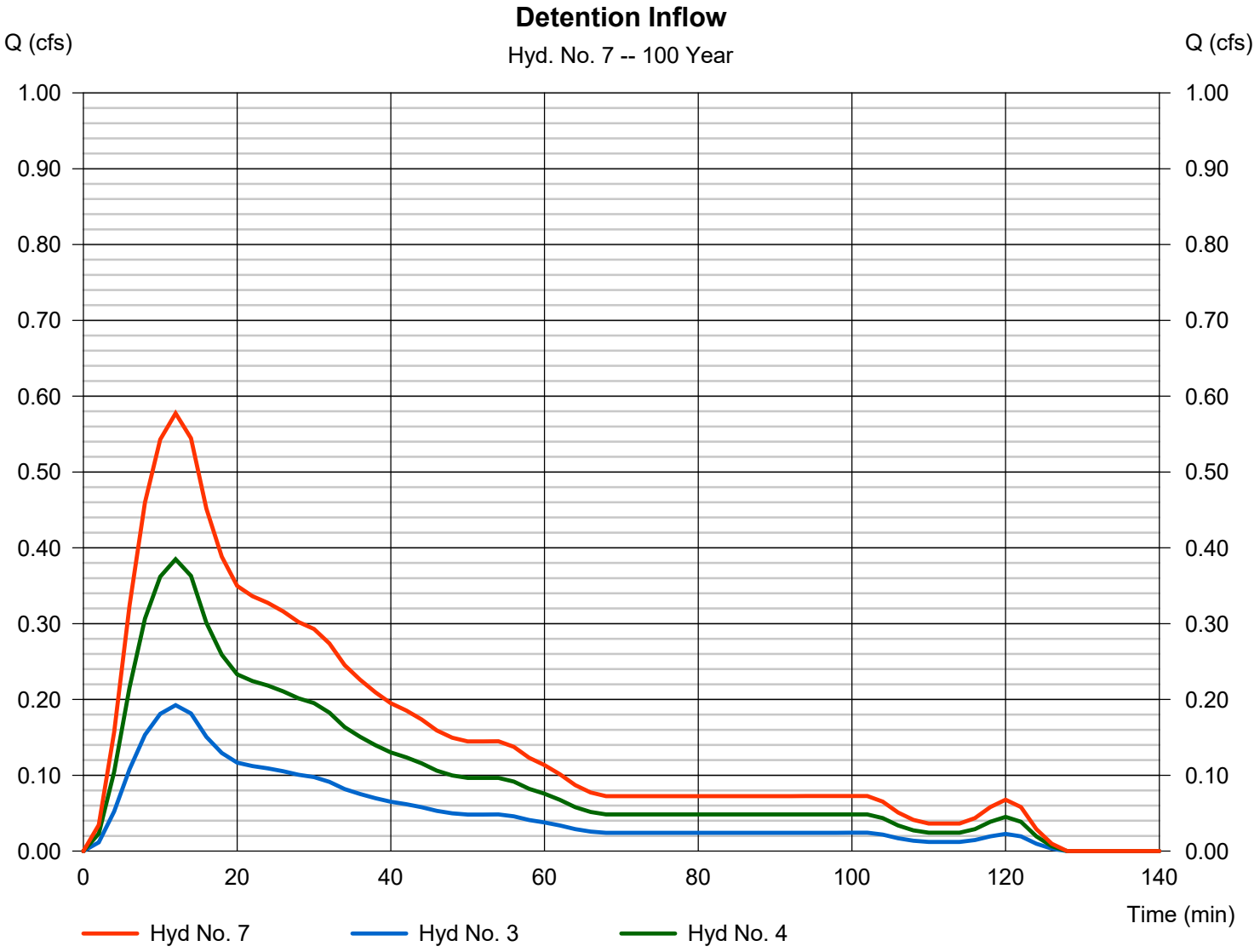


Hydrograph Report

Hyd. No. 7

Detention Inflow

Hydrograph type	=	Combine	Peak discharge	=	0.577 cfs
Storm frequency	=	100 yrs	Time to peak	=	12 min
Time interval	=	2 min	Hyd. volume	=	1,216 cuft
Inflow hyds.	=	3, 4	Contrib. drain. area	=	0.120 ac



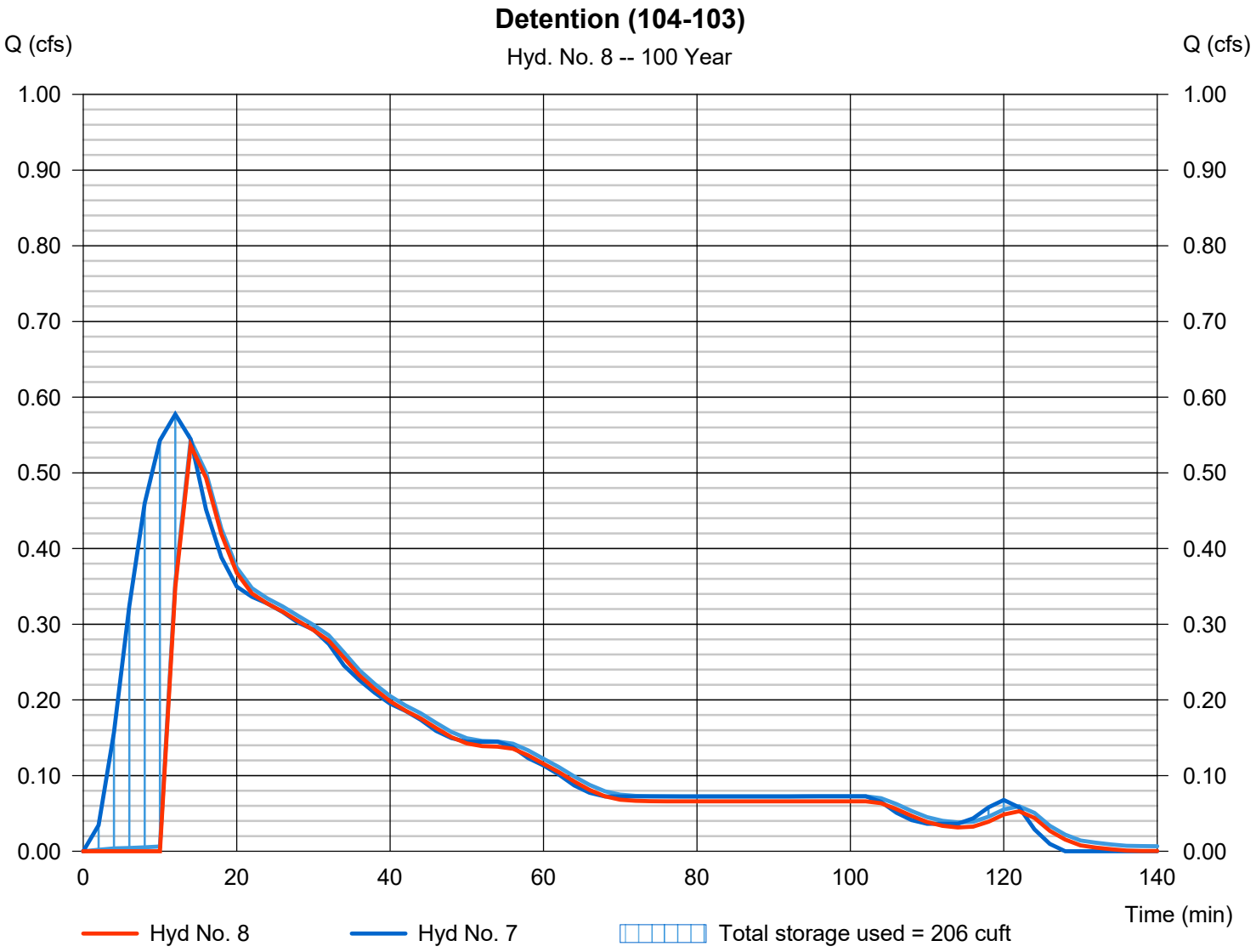
Hydrograph Report

Hyd. No. 8

Detention (104-103)

Hydrograph type	=	Reservoir	Peak discharge	=	0.536 cfs
Storm frequency	=	100 yrs	Time to peak	=	14 min
Time interval	=	2 min	Hyd. volume	=	1,010 cuft
Inflow hyd. No.	=	7 - Detention Inflow	Max. Elevation	=	718.37 ft
Reservoir name	=	Proposed Detention	Max. Storage	=	206 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

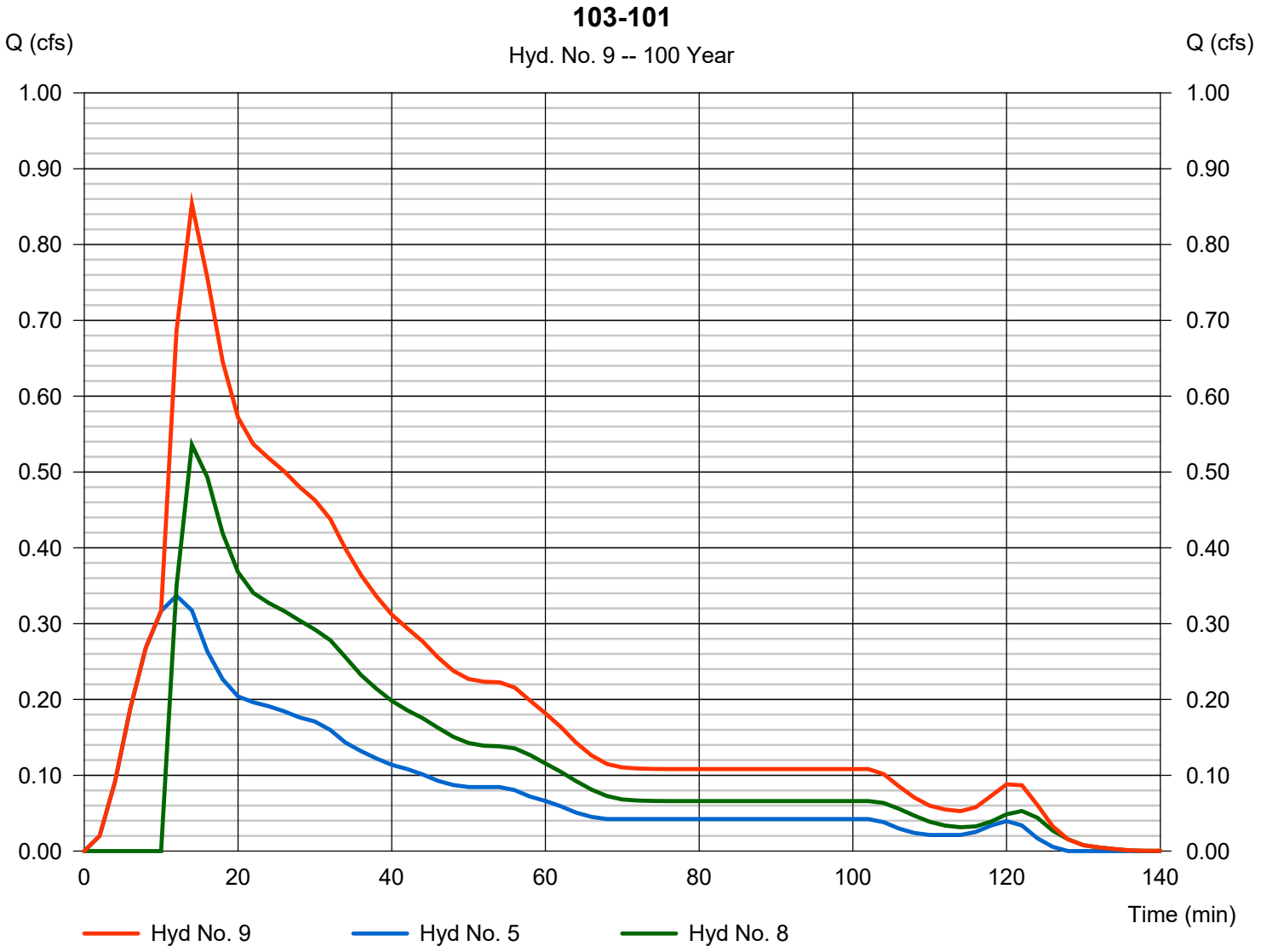


Hydrograph Report

Hyd. No. 9

103-101

Hydrograph type	=	Combine	Peak discharge	=	0.854 cfs
Storm frequency	=	100 yrs	Time to peak	=	14 min
Time interval	=	2 min	Hyd. volume	=	1,719 cuft
Inflow hyds.	=	5, 8	Contrib. drain. area	=	0.070 ac

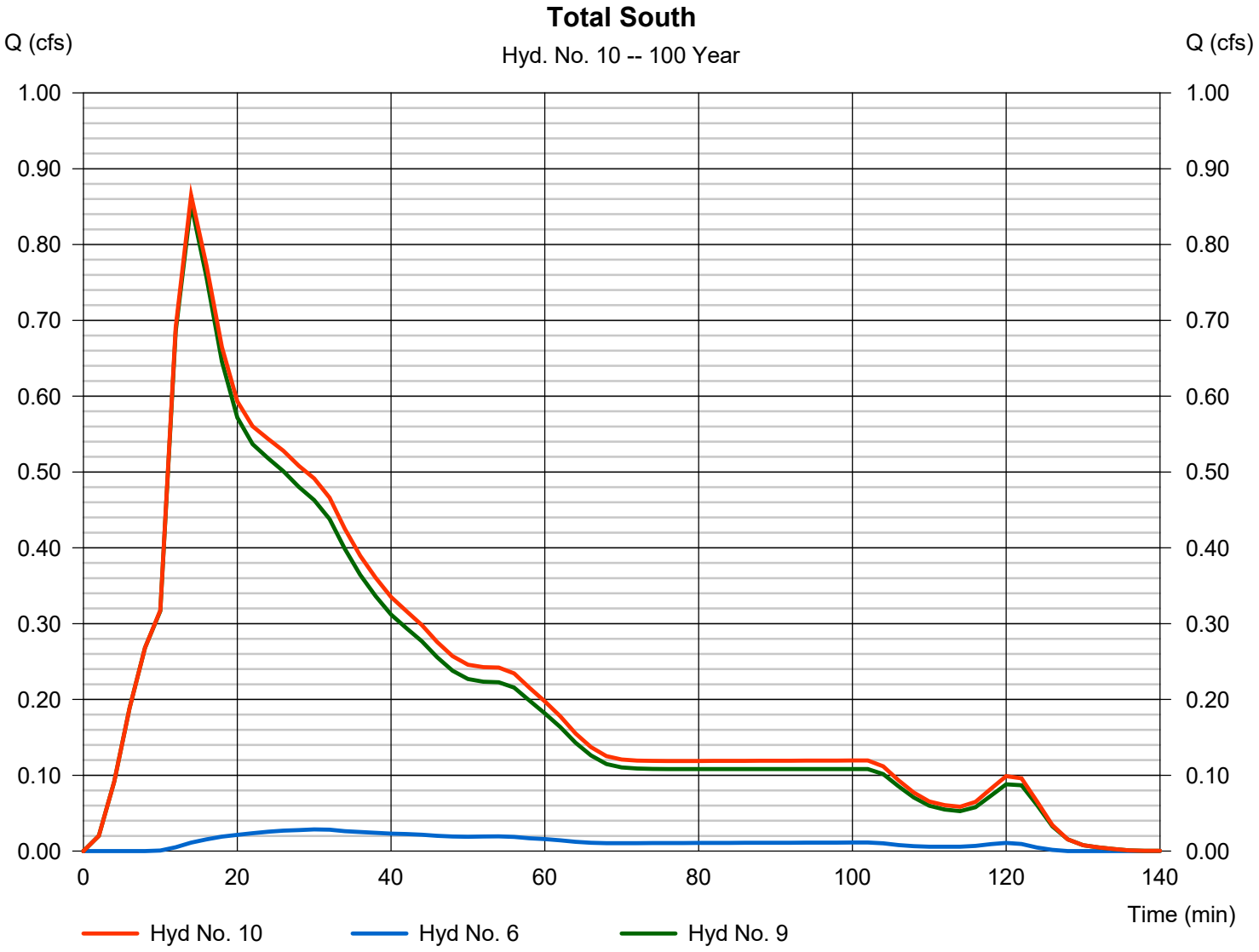


Hydrograph Report

Hyd. No. 10

Total South

Hydrograph type	= Combine	Peak discharge	= 0.865 cfs
Storm frequency	= 100 yrs	Time to peak	= 14 min
Time interval	= 2 min	Hyd. volume	= 1,820 cuft
Inflow hyds.	= 6, 9	Contrib. drain. area	= 0.030 ac



Appendix F

Hydraflow Hydrographs
3 Hour Storm Data

Hydraflow Table of Contents

21010 03HR.gpw

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 10 / 5 / 2021

2 - Year

10 - Year

100 - Year

Hydrograph Summary Report

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

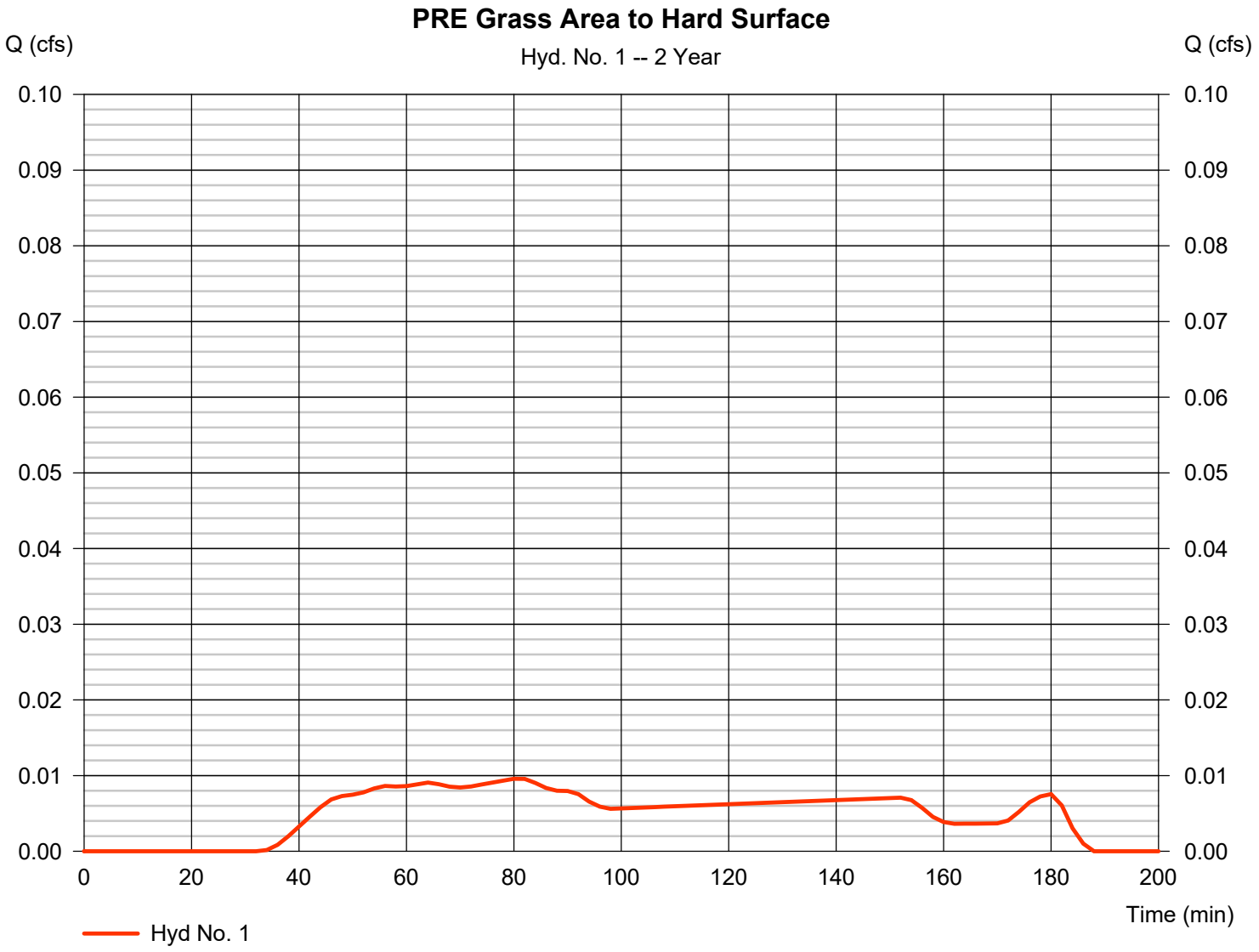
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.010	2	80	59	------	------	------	PRE Grass Area to Hard Surface
2	SCS Runoff	0.071	2	46	374	------	------	------	PRE South
3	SCS Runoff	0.072	2	18	224	------	------	------	POST 11 - STR 105 (105-104)
4	SCS Runoff	0.144	2	18	448	------	------	------	POST 12 - STR 201
5	SCS Runoff	0.126	2	18	392	------	------	------	POST 13-Building-DS
6	SCS Runoff	0.004	2	46	27	------	------	------	POST 14
7	Combine	0.216	2	18	672	3, 4,	------	------	Detention Inflow
8	Reservoir	0.128	2	26	447	7	718.17	175	Detention (104-103)
9	Combine	0.206	2	26	839	5, 8	------	------	103-101
10	Combine	0.206	2	26	866	6, 9	------	------	Total South

Hydrograph Report

Hyd. No. 1

PRE Grass Area to Hard Surface

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.010 cfs
Storm frequency	=	2 yrs	Time to peak	=	80 min
Time interval	=	2 min	Hyd. volume	=	59 cuft
Drainage area	=	0.100 ac	Curve number	=	69
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.87 in	Distribution	=	Huff-1st
Storm duration	=	3.00 hrs	Shape factor	=	484



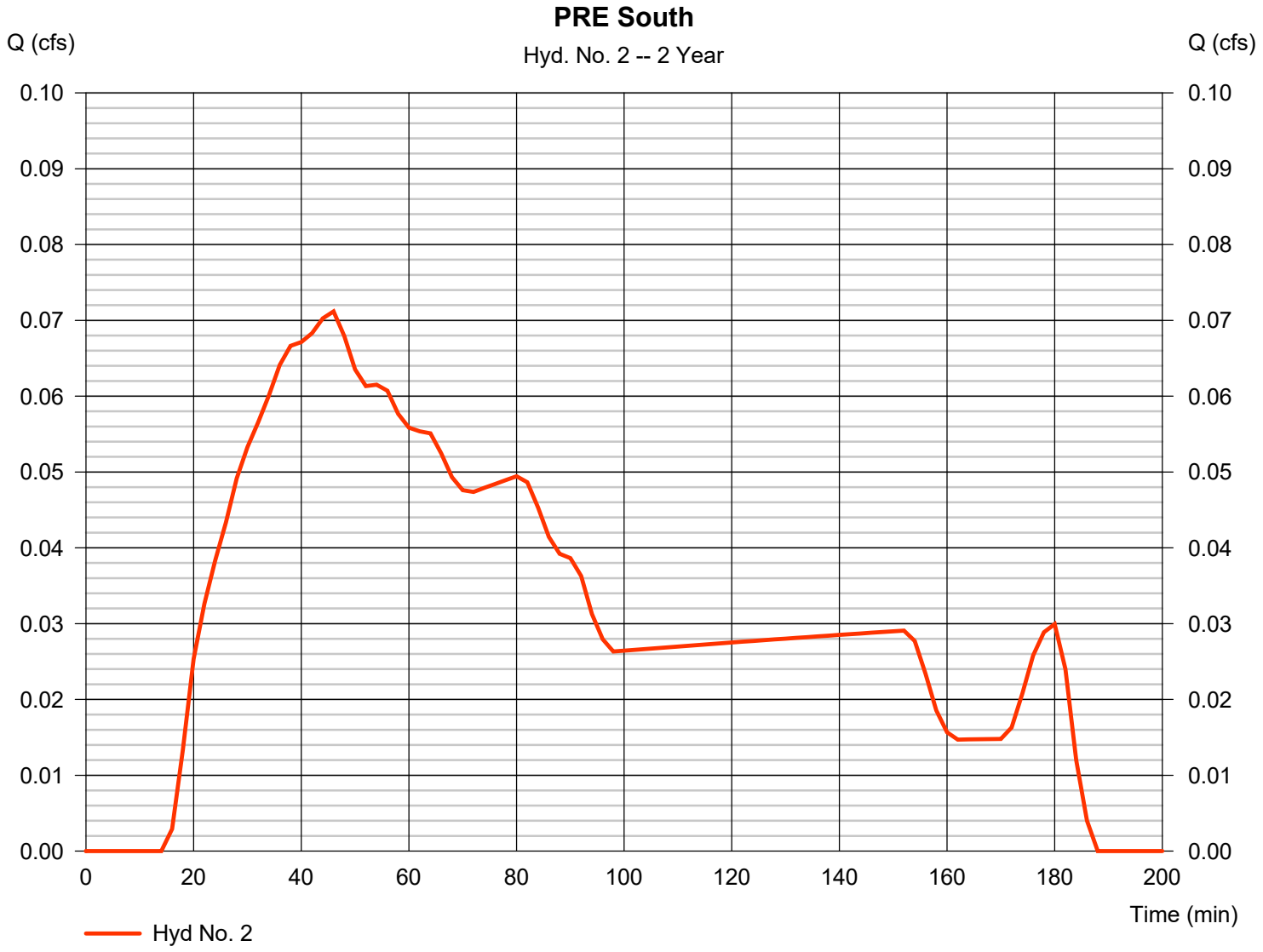
Hydrograph Report

Hyd. No. 2

PRE South

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.071 cfs
Storm frequency	=	2 yrs	Time to peak	=	46 min
Time interval	=	2 min	Hyd. volume	=	374 cuft
Drainage area	=	0.210 ac	Curve number	=	81*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.87 in	Distribution	=	Huff-1st
Storm duration	=	3.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.120 x 69) + (0.090 x 98)] / 0.210

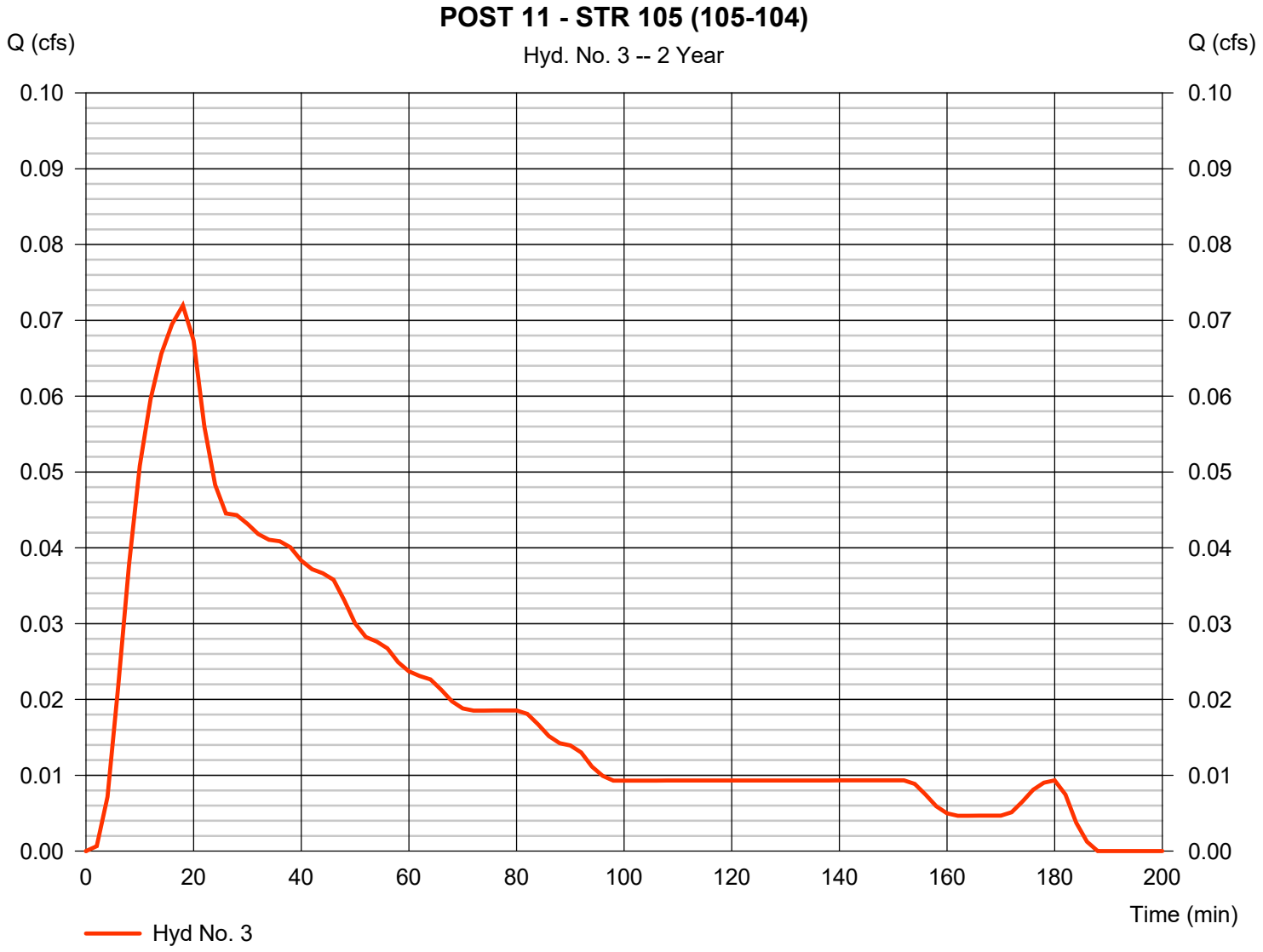


Hydrograph Report

Hyd. No. 3

POST 11 - STR 105 (105-104)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.072 cfs
Storm frequency	= 2 yrs	Time to peak	= 18 min
Time interval	= 2 min	Hyd. volume	= 224 cuft
Drainage area	= 0.040 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.87 in	Distribution	= Huff-1st
Storm duration	= 3.00 hrs	Shape factor	= 484

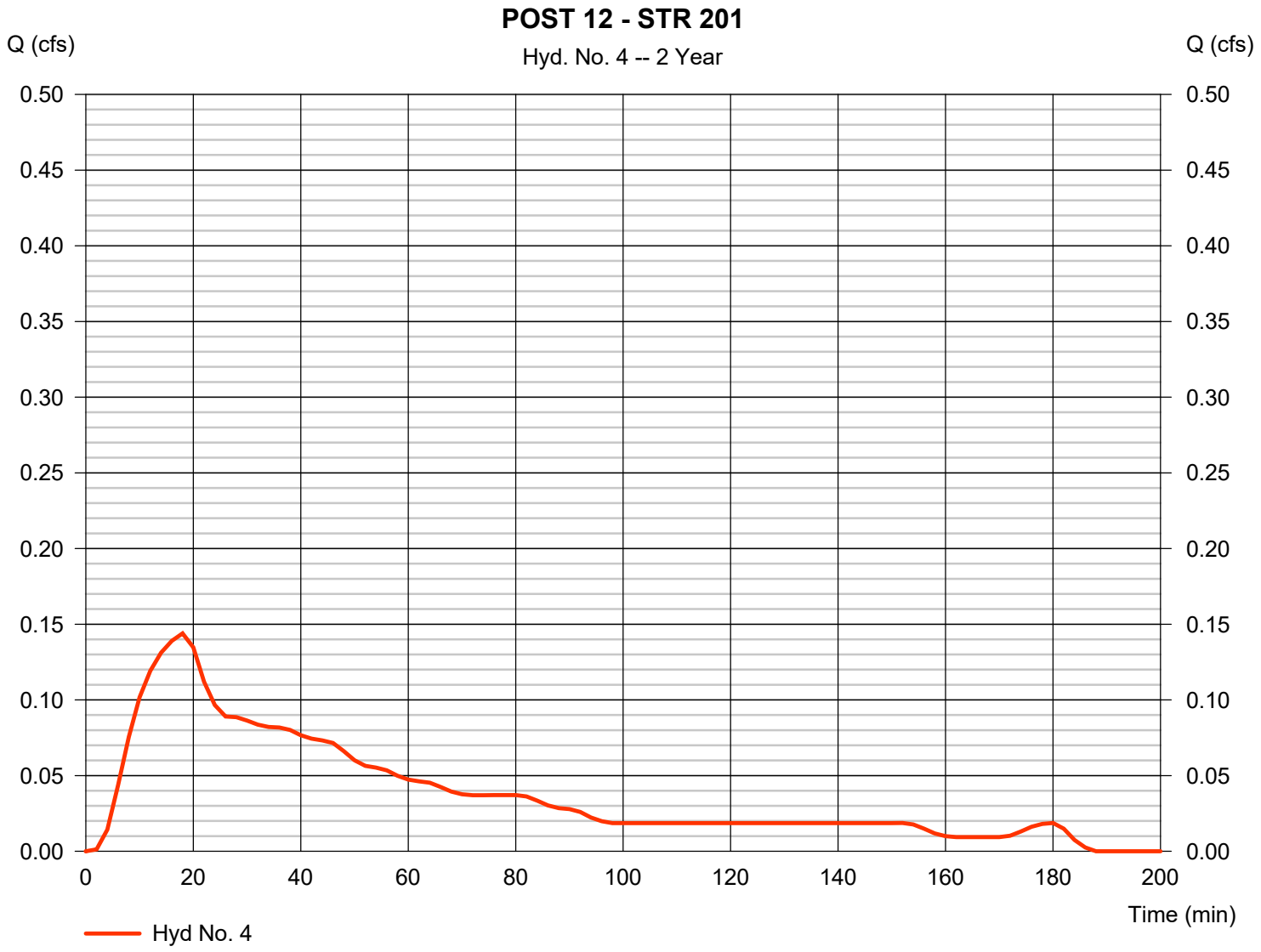


Hydrograph Report

Hyd. No. 4

POST 12 - STR 201

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.144 cfs
Storm frequency	=	2 yrs	Time to peak	=	18 min
Time interval	=	2 min	Hyd. volume	=	448 cuft
Drainage area	=	0.080 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.87 in	Distribution	=	Huff-1st
Storm duration	=	3.00 hrs	Shape factor	=	484

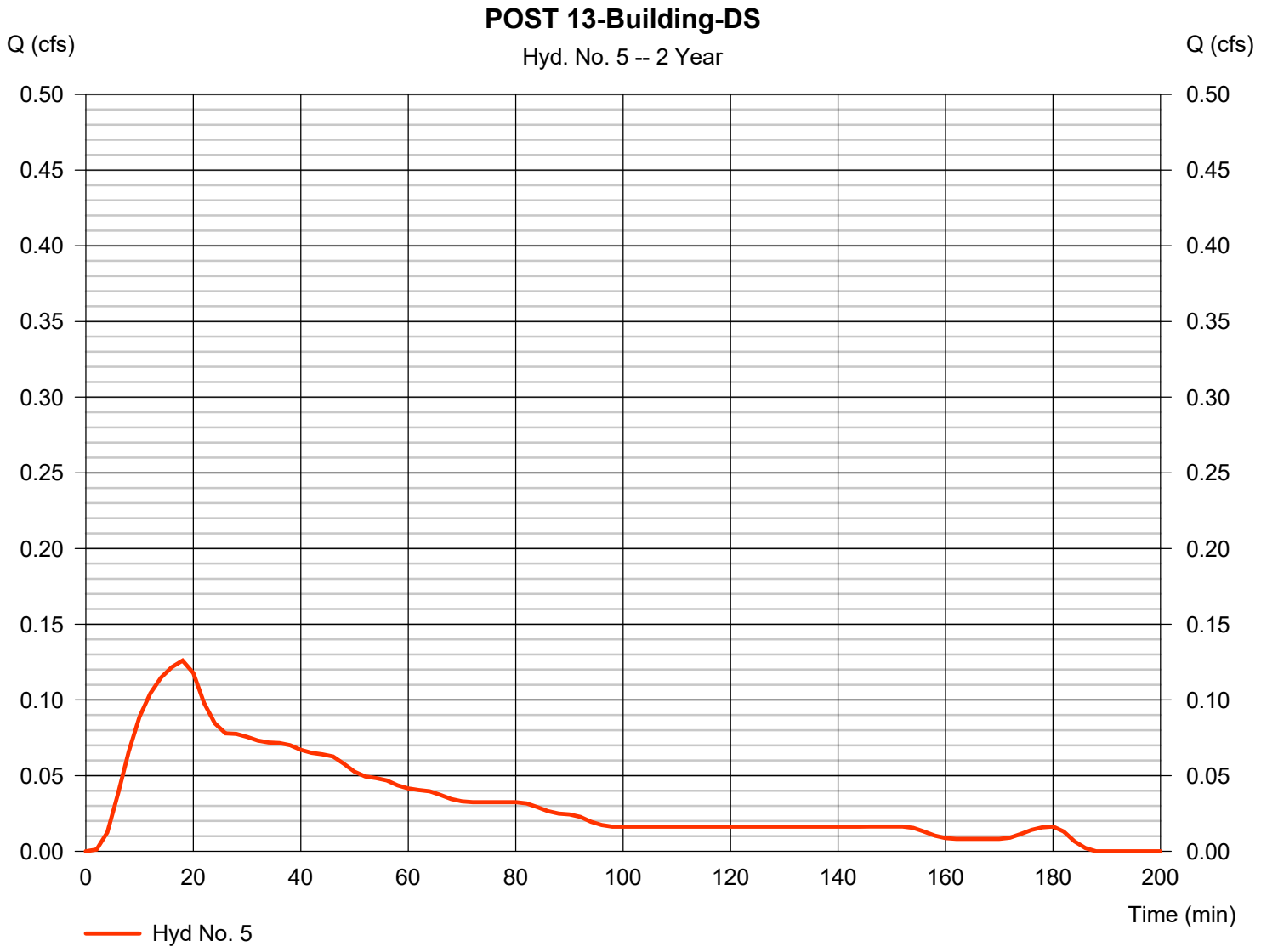


Hydrograph Report

Hyd. No. 5

POST 13-Building-DS

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.126 cfs
Storm frequency	=	2 yrs	Time to peak	=	18 min
Time interval	=	2 min	Hyd. volume	=	392 cuft
Drainage area	=	0.070 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.87 in	Distribution	=	Huff-1st
Storm duration	=	3.00 hrs	Shape factor	=	484



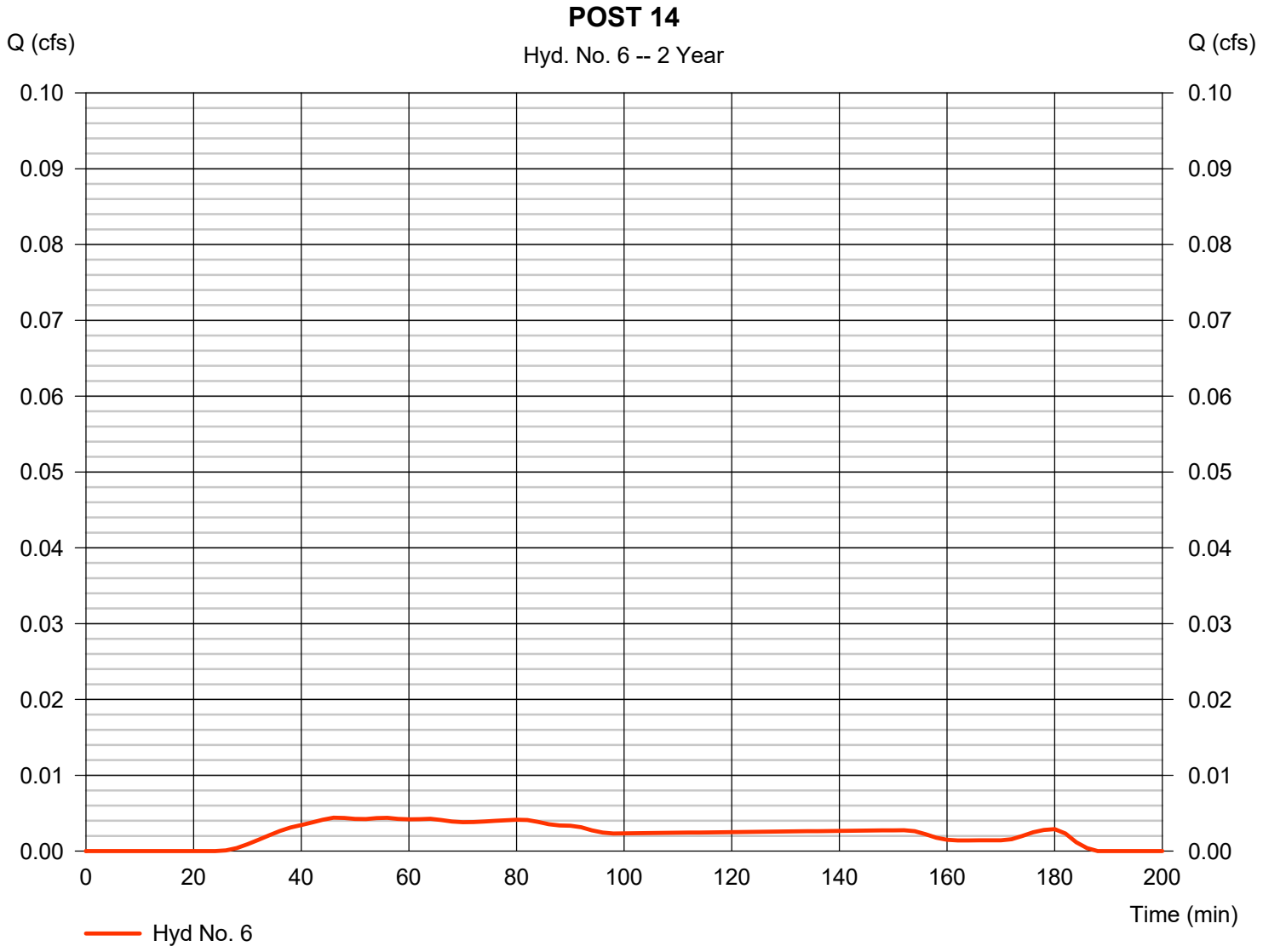
Hydrograph Report

Hyd. No. 6

POST 14

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.004 cfs
Storm frequency	=	2 yrs	Time to peak	=	46 min
Time interval	=	2 min	Hyd. volume	=	27 cuft
Drainage area	=	0.030 ac	Curve number	=	73*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.87 in	Distribution	=	Huff-1st
Storm duration	=	3.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.020 x 61) + (0.010 x 98)] / 0.030

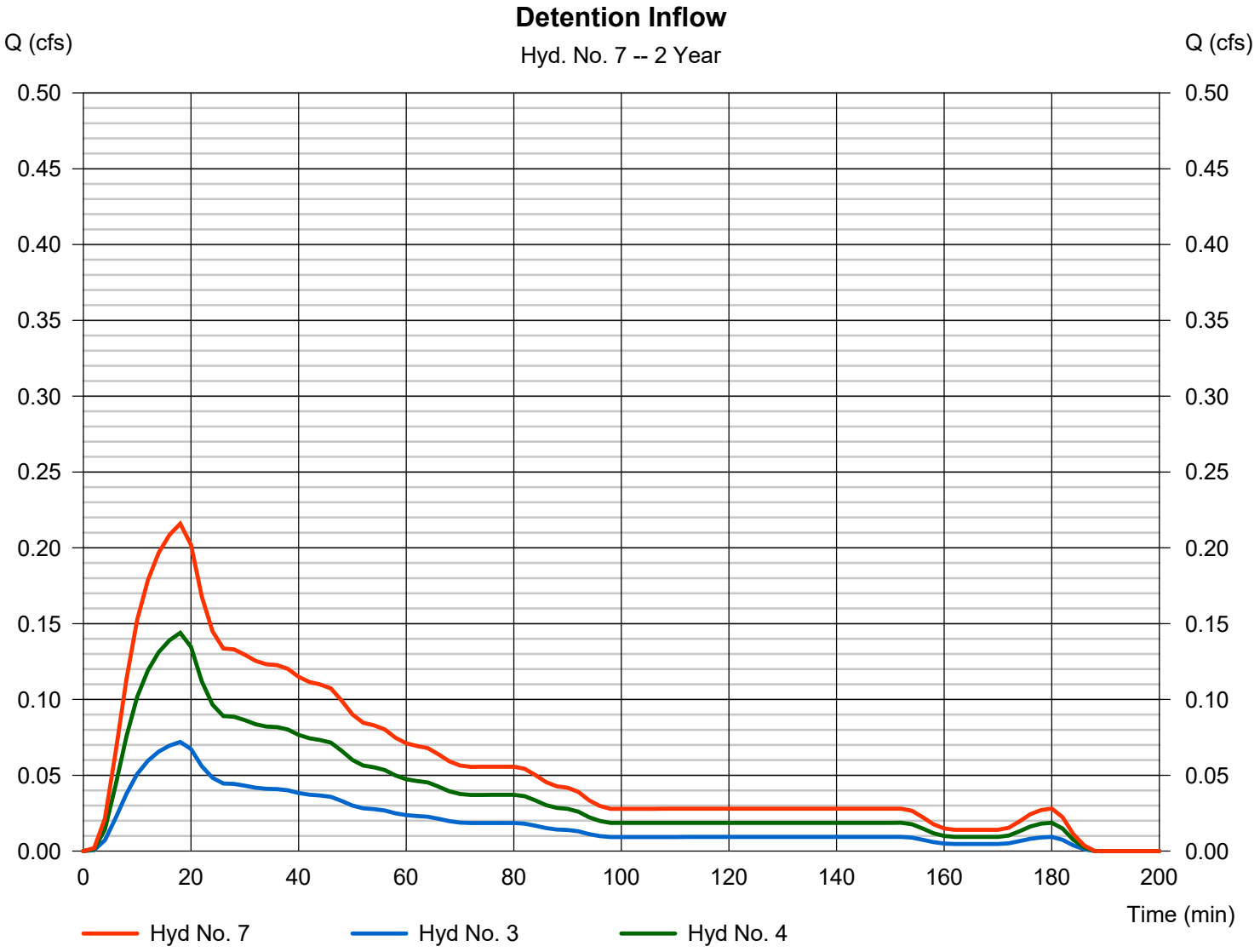


Hydrograph Report

Hyd. No. 7

Detention Inflow

Hydrograph type	=	Combine	Peak discharge	=	0.216 cfs
Storm frequency	=	2 yrs	Time to peak	=	18 min
Time interval	=	2 min	Hyd. volume	=	672 cuft
Inflow hyds.	=	3, 4	Contrib. drain. area	=	0.120 ac



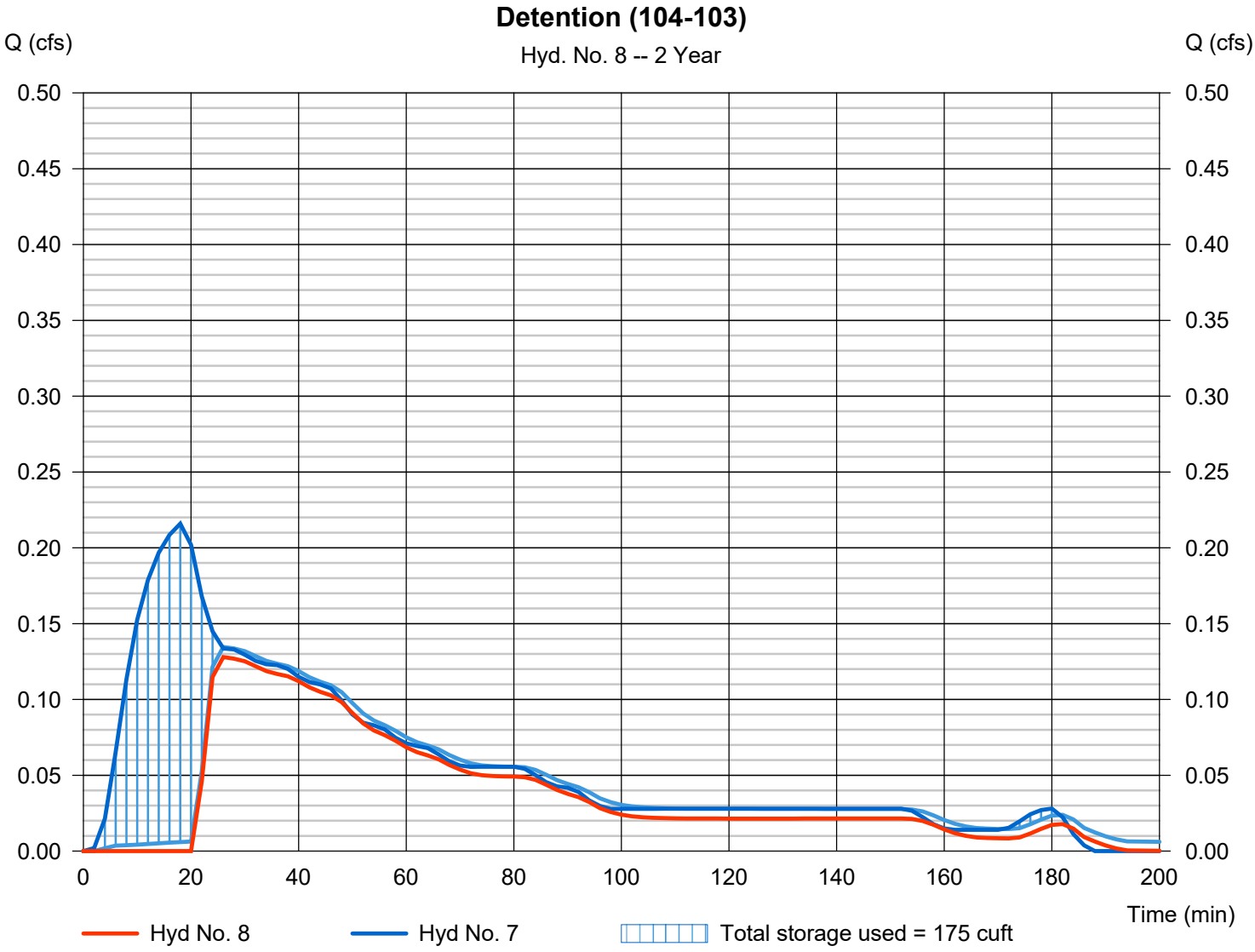
Hydrograph Report

Hyd. No. 8

Detention (104-103)

Hydrograph type	= Reservoir	Peak discharge	= 0.128 cfs
Storm frequency	= 2 yrs	Time to peak	= 26 min
Time interval	= 2 min	Hyd. volume	= 447 cuft
Inflow hyd. No.	= 7 - Detention Inflow	Max. Elevation	= 718.17 ft
Reservoir name	= Proposed Detention	Max. Storage	= 175 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

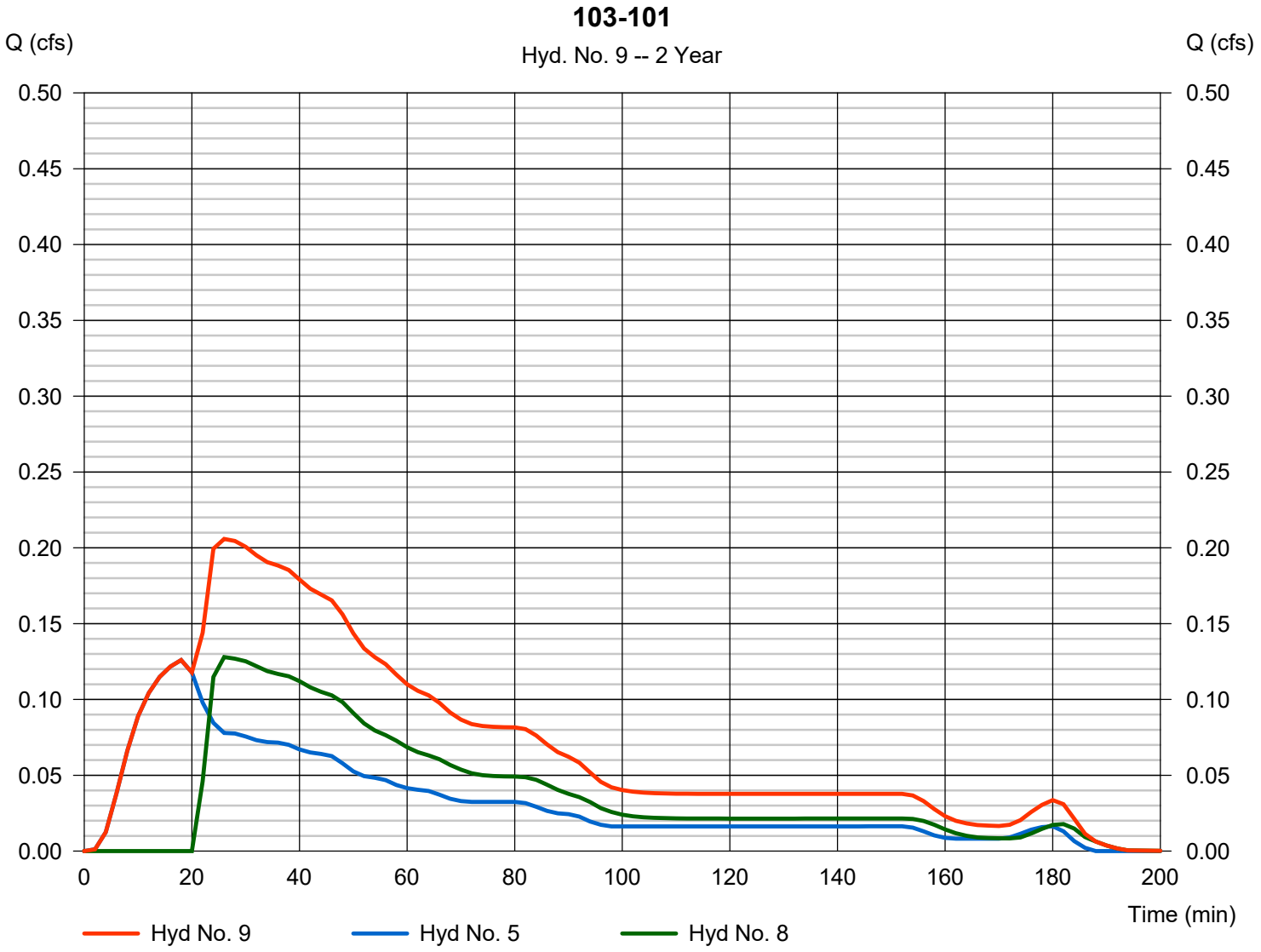


Hydrograph Report

Hyd. No. 9

103-101

Hydrograph type	=	Combine	Peak discharge	=	0.206 cfs
Storm frequency	=	2 yrs	Time to peak	=	26 min
Time interval	=	2 min	Hyd. volume	=	839 cuft
Inflow hyds.	=	5, 8	Contrib. drain. area	=	0.070 ac

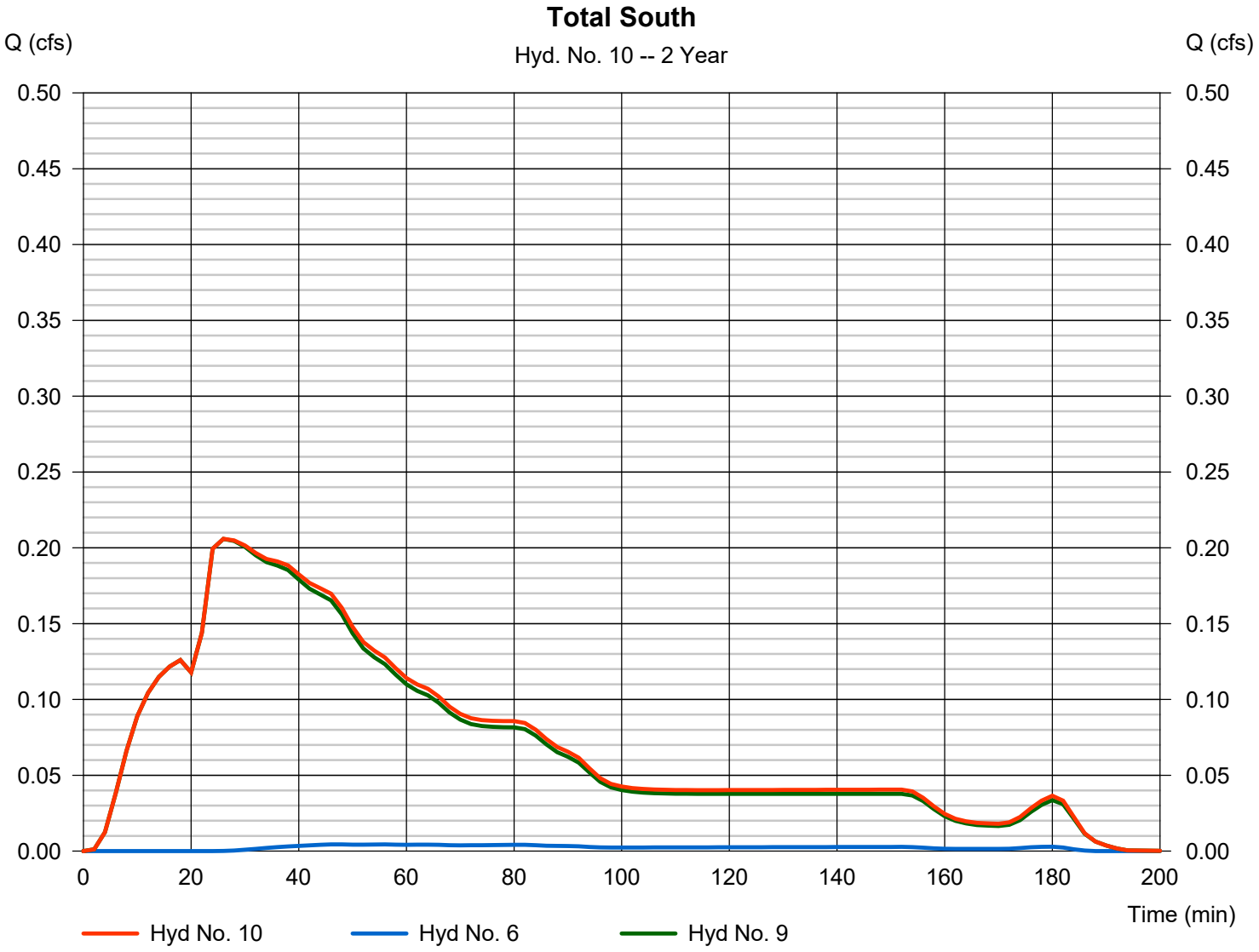


Hydrograph Report

Hyd. No. 10

Total South

Hydrograph type	= Combine	Peak discharge	= 0.206 cfs
Storm frequency	= 2 yrs	Time to peak	= 26 min
Time interval	= 2 min	Hyd. volume	= 866 cuft
Inflow hyds.	= 6, 9	Contrib. drain. area	= 0.030 ac



Hydrograph Summary Report

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

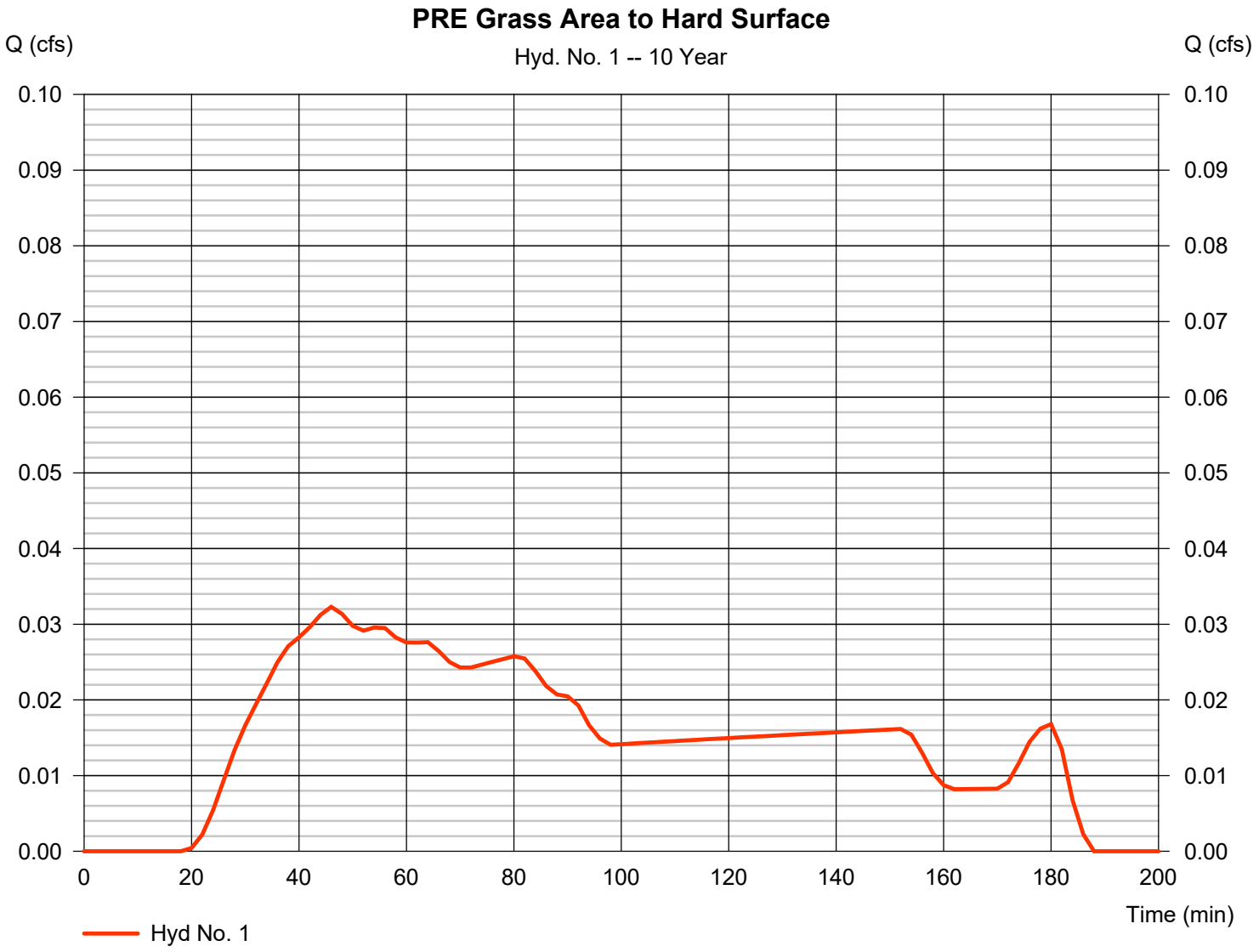
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.032	2	46	179	------	------	------	PRE Grass Area to Hard Surface
2	SCS Runoff	0.151	2	38	788	------	------	------	PRE South
3	SCS Runoff	0.110	2	18	339	------	------	------	POST 11 - STR 105 (105-104)
4	SCS Runoff	0.220	2	18	678	------	------	------	POST 12 - STR 201
5	SCS Runoff	0.192	2	18	593	------	------	------	POST 13-Building-DS
6	SCS Runoff	0.013	2	46	70	------	------	------	POST 14
7	Combine	0.330	2	18	1,017	3, 4,	------	------	Detention Inflow
8	Reservoir	0.304	2	20	789	7	718.27	189	Detention (104-103)
9	Combine	0.482	2	20	1,382	5, 8	------	------	103-101
10	Combine	0.485	2	20	1,453	6, 9	------	------	Total South

Hydrograph Report

Hyd. No. 1

PRE Grass Area to Hard Surface

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.032 cfs
Storm frequency	=	10 yrs	Time to peak	=	46 min
Time interval	=	2 min	Hyd. volume	=	179 cuft
Drainage area	=	0.100 ac	Curve number	=	69
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.72 in	Distribution	=	Huff-1st
Storm duration	=	3.00 hrs	Shape factor	=	484



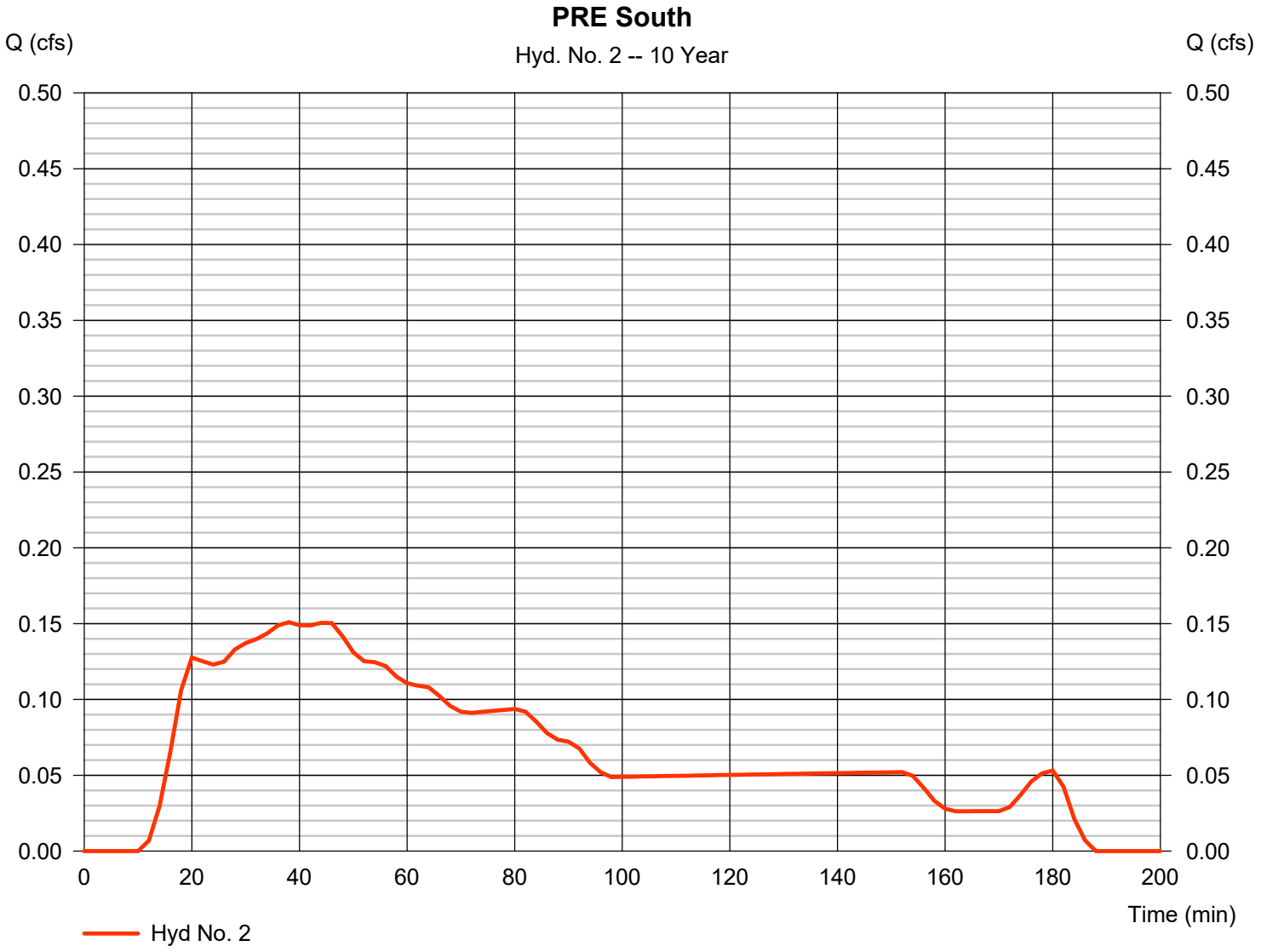
Hydrograph Report

Hyd. No. 2

PRE South

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.151 cfs
Storm frequency	=	10 yrs	Time to peak	=	38 min
Time interval	=	2 min	Hyd. volume	=	788 cuft
Drainage area	=	0.210 ac	Curve number	=	81*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.72 in	Distribution	=	Huff-1st
Storm duration	=	3.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.120 x 69) + (0.090 x 98)] / 0.210

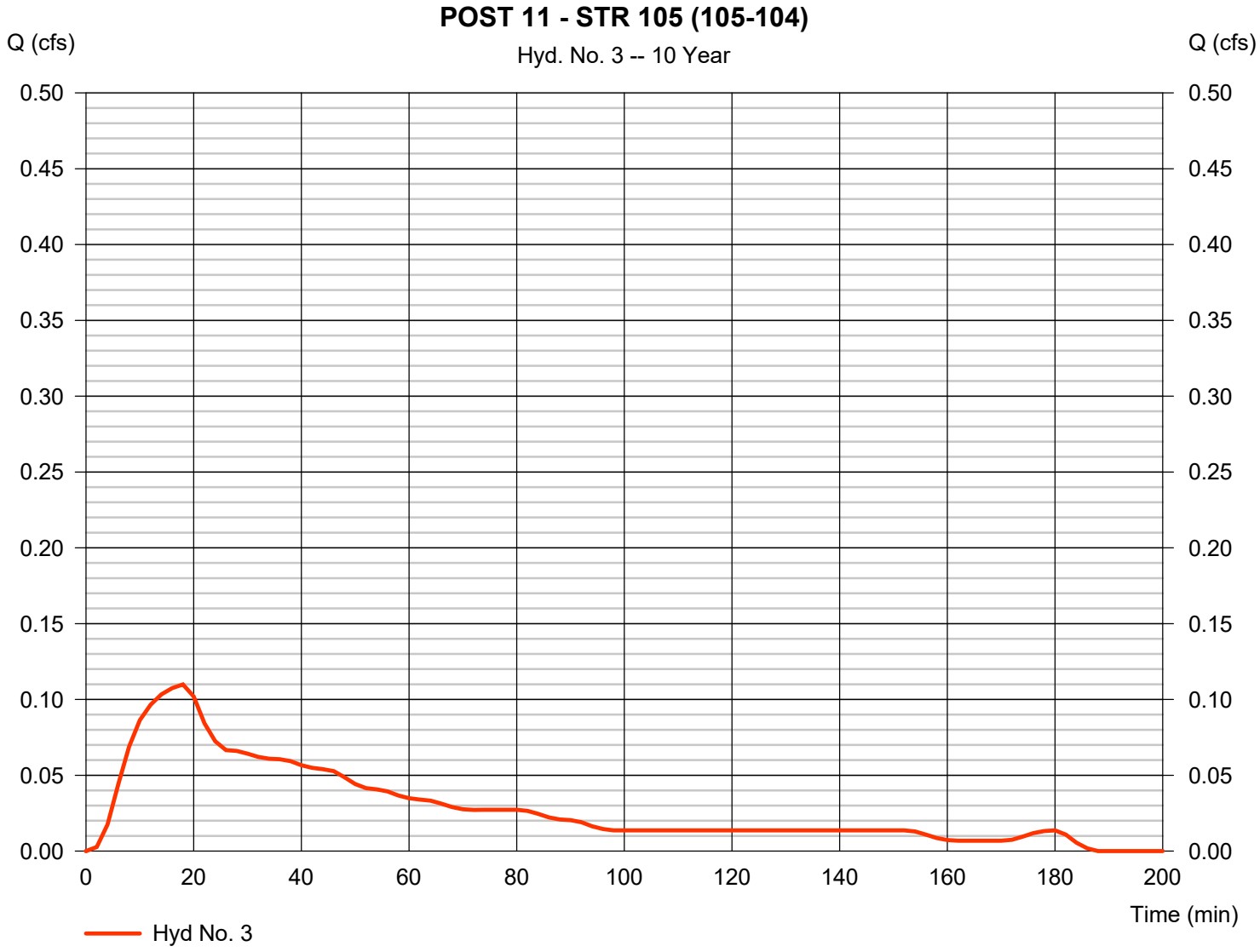


Hydrograph Report

Hyd. No. 3

POST 11 - STR 105 (105-104)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.110 cfs
Storm frequency	= 10 yrs	Time to peak	= 18 min
Time interval	= 2 min	Hyd. volume	= 339 cuft
Drainage area	= 0.040 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.72 in	Distribution	= Huff-1st
Storm duration	= 3.00 hrs	Shape factor	= 484

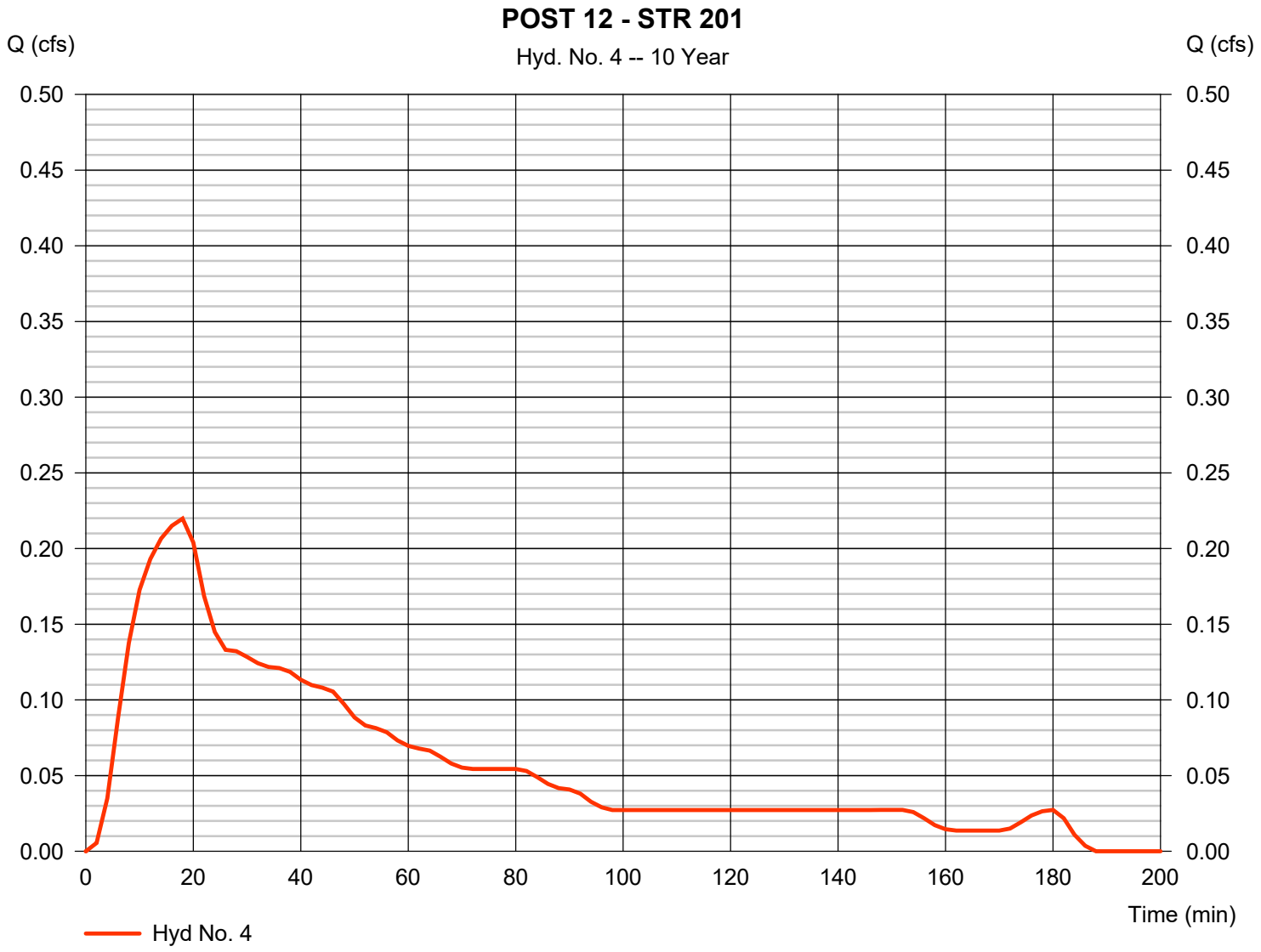


Hydrograph Report

Hyd. No. 4

POST 12 - STR 201

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.220 cfs
Storm frequency	=	10 yrs	Time to peak	=	18 min
Time interval	=	2 min	Hyd. volume	=	678 cuft
Drainage area	=	0.080 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.72 in	Distribution	=	Huff-1st
Storm duration	=	3.00 hrs	Shape factor	=	484

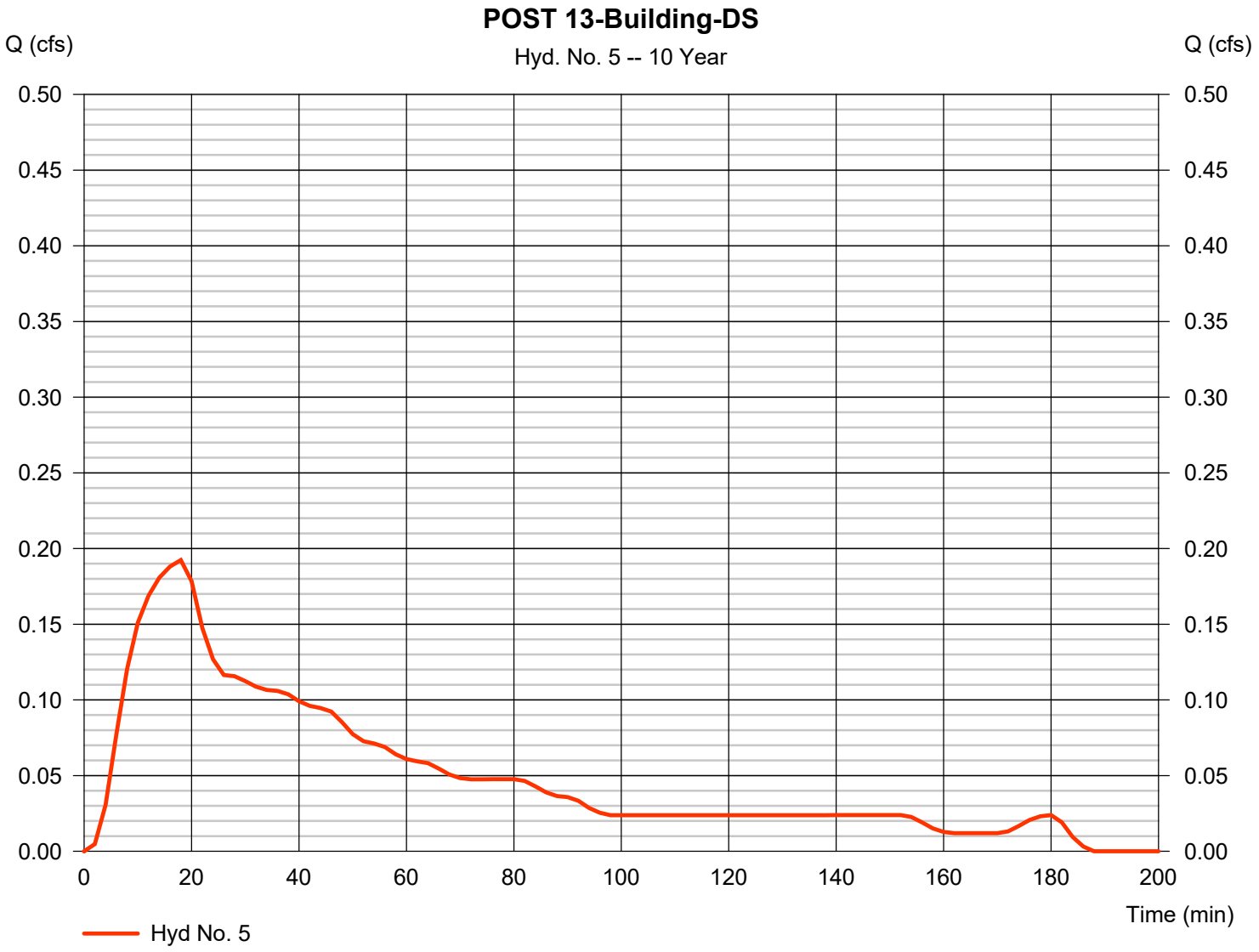


Hydrograph Report

Hyd. No. 5

POST 13-Building-DS

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.192 cfs
Storm frequency	=	10 yrs	Time to peak	=	18 min
Time interval	=	2 min	Hyd. volume	=	593 cuft
Drainage area	=	0.070 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.72 in	Distribution	=	Huff-1st
Storm duration	=	3.00 hrs	Shape factor	=	484



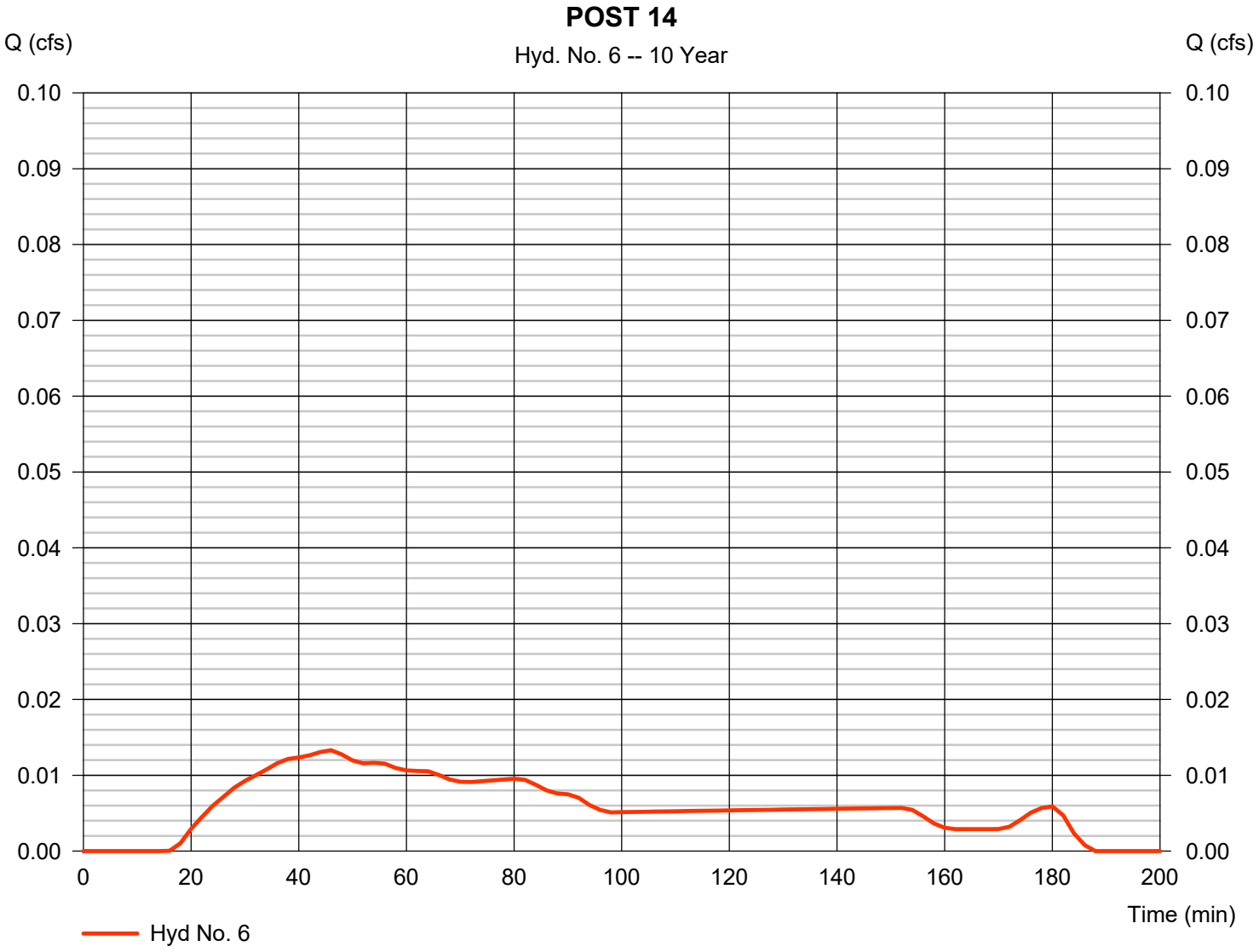
Hydrograph Report

Hyd. No. 6

POST 14

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.013 cfs
Storm frequency	=	10 yrs	Time to peak	=	46 min
Time interval	=	2 min	Hyd. volume	=	70 cuft
Drainage area	=	0.030 ac	Curve number	=	73*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.72 in	Distribution	=	Huff-1st
Storm duration	=	3.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.020 x 61) + (0.010 x 98)] / 0.030

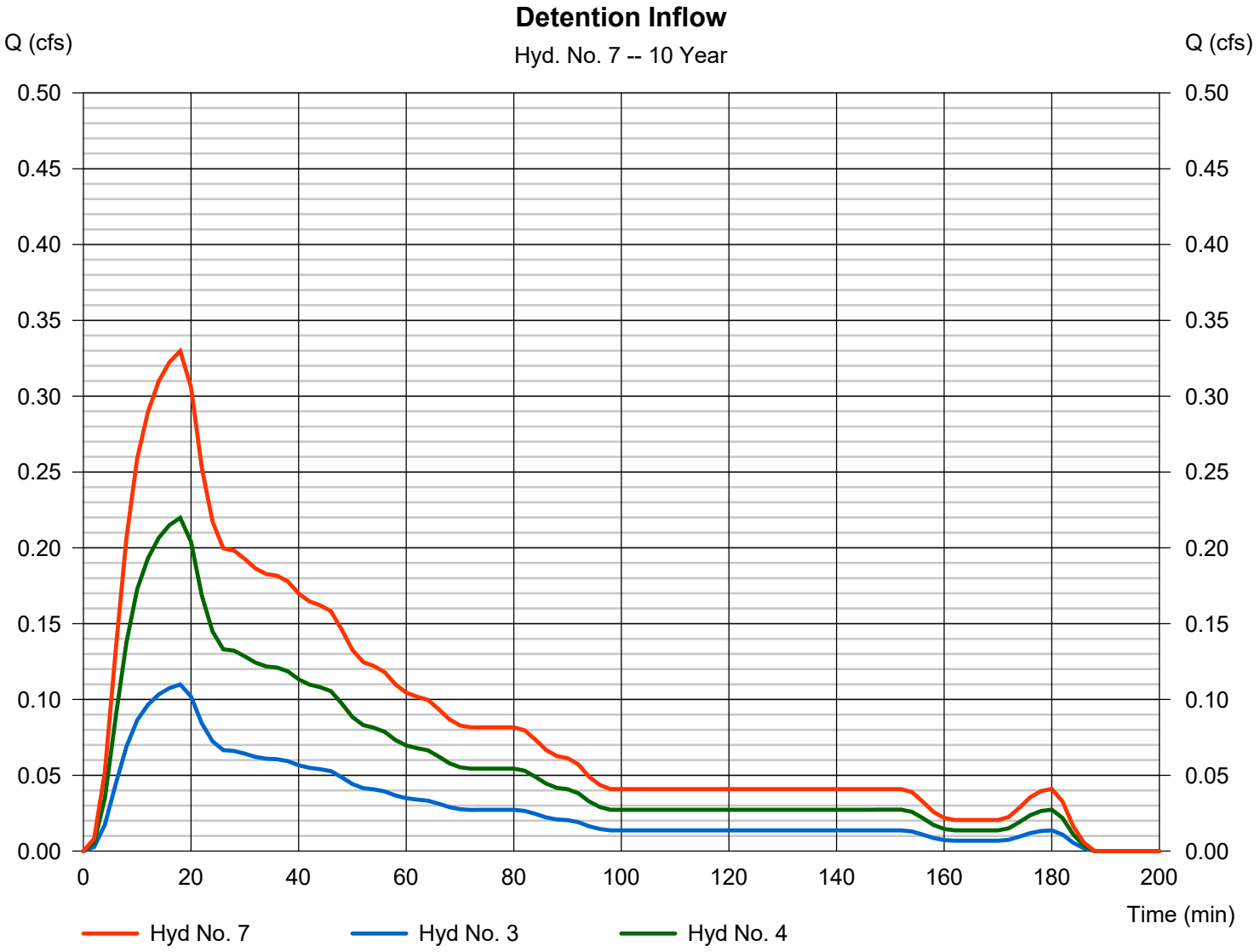


Hydrograph Report

Hyd. No. 7

Detention Inflow

Hydrograph type	=	Combine	Peak discharge	=	0.330 cfs
Storm frequency	=	10 yrs	Time to peak	=	18 min
Time interval	=	2 min	Hyd. volume	=	1,017 cuft
Inflow hyds.	=	3, 4	Contrib. drain. area	=	0.120 ac



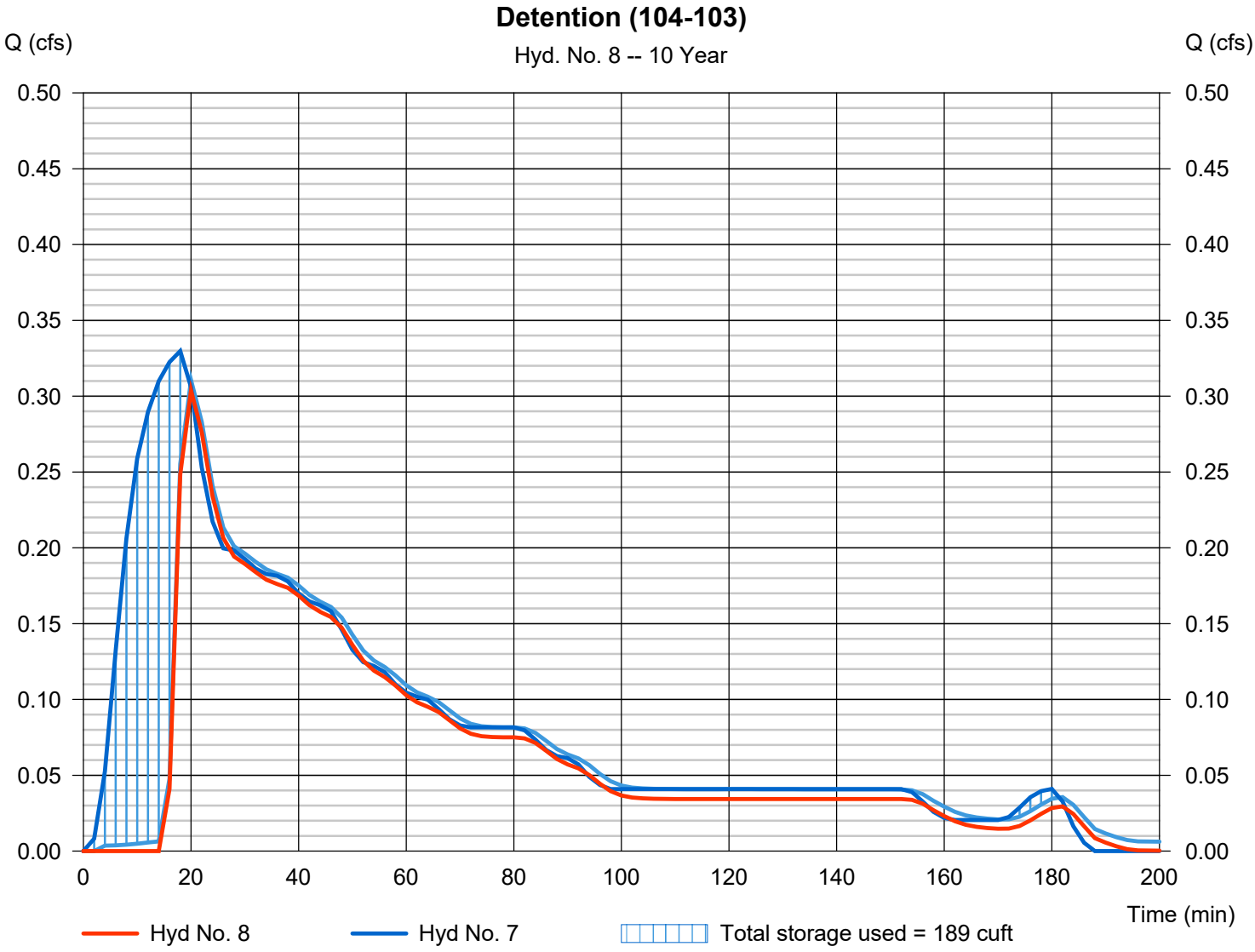
Hydrograph Report

Hyd. No. 8

Detention (104-103)

Hydrograph type	=	Reservoir	Peak discharge	=	0.304 cfs
Storm frequency	=	10 yrs	Time to peak	=	20 min
Time interval	=	2 min	Hyd. volume	=	789 cuft
Inflow hyd. No.	=	7 - Detention Inflow	Max. Elevation	=	718.27 ft
Reservoir name	=	Proposed Detention	Max. Storage	=	189 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

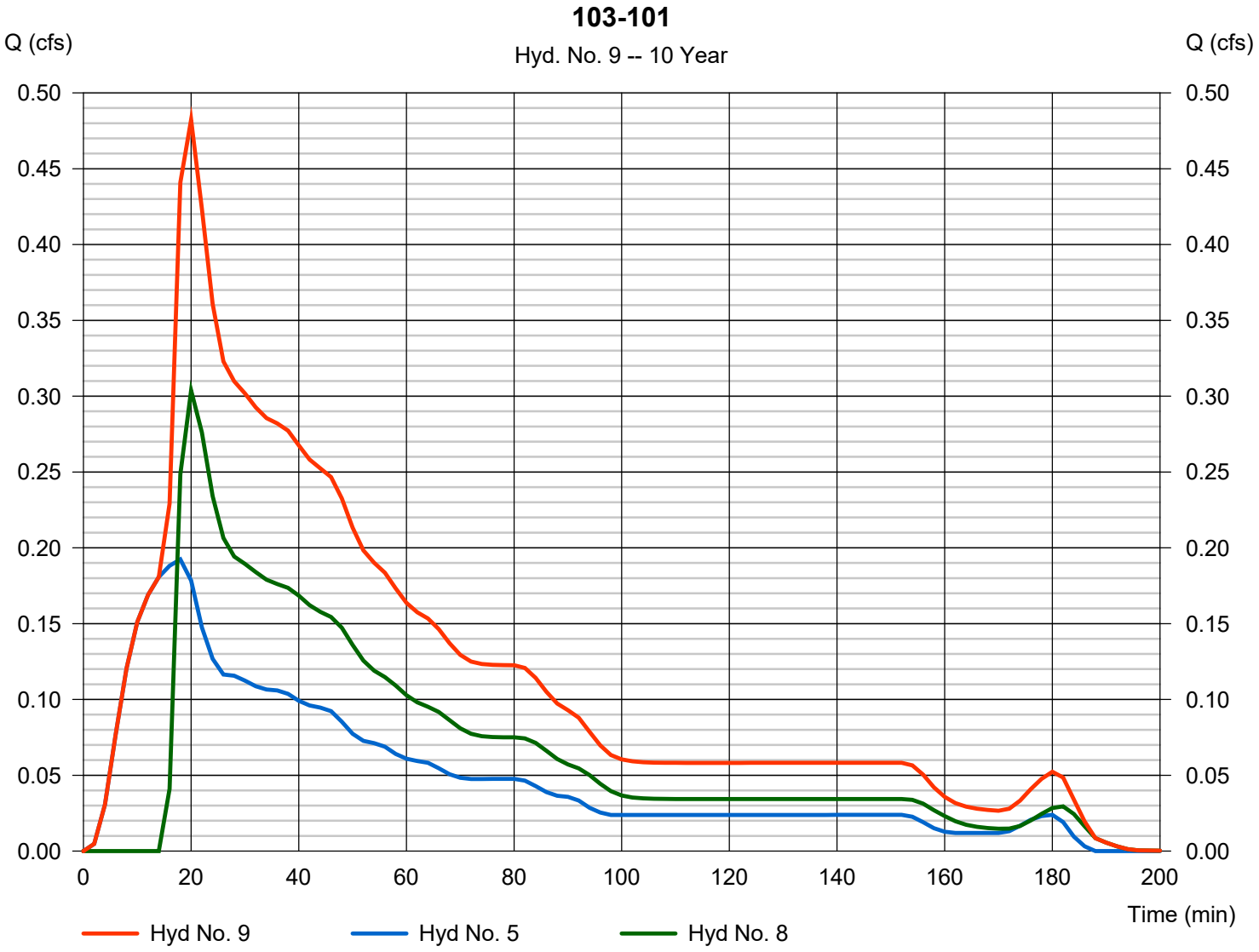


Hydrograph Report

Hyd. No. 9

103-101

Hydrograph type	= Combine	Peak discharge	= 0.482 cfs
Storm frequency	= 10 yrs	Time to peak	= 20 min
Time interval	= 2 min	Hyd. volume	= 1,382 cuft
Inflow hyds.	= 5, 8	Contrib. drain. area	= 0.070 ac

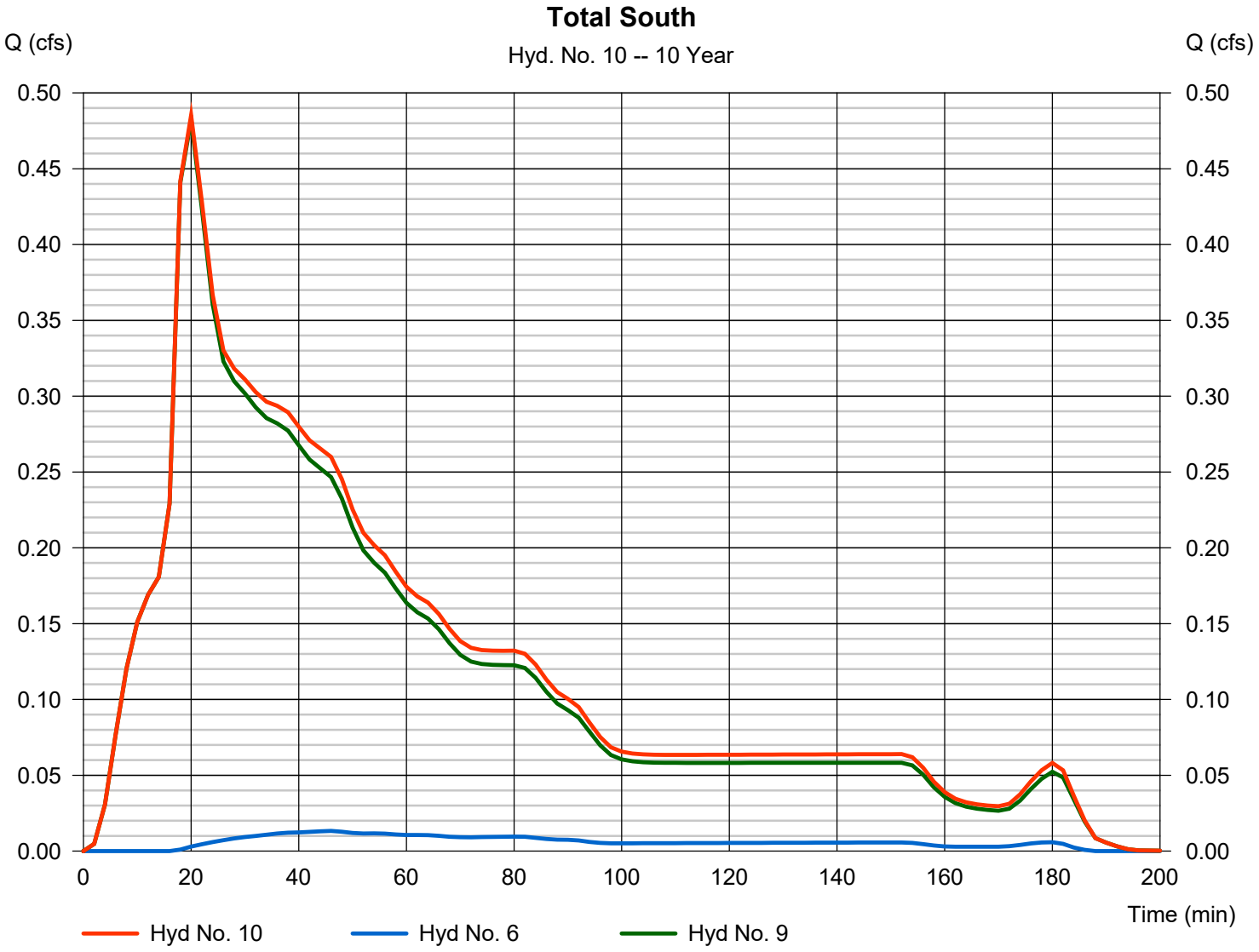


Hydrograph Report

Hyd. No. 10

Total South

Hydrograph type	= Combine	Peak discharge	= 0.485 cfs
Storm frequency	= 10 yrs	Time to peak	= 20 min
Time interval	= 2 min	Hyd. volume	= 1,453 cuft
Inflow hyds.	= 6, 9	Contrib. drain. area	= 0.030 ac



Hydrograph Summary Report

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

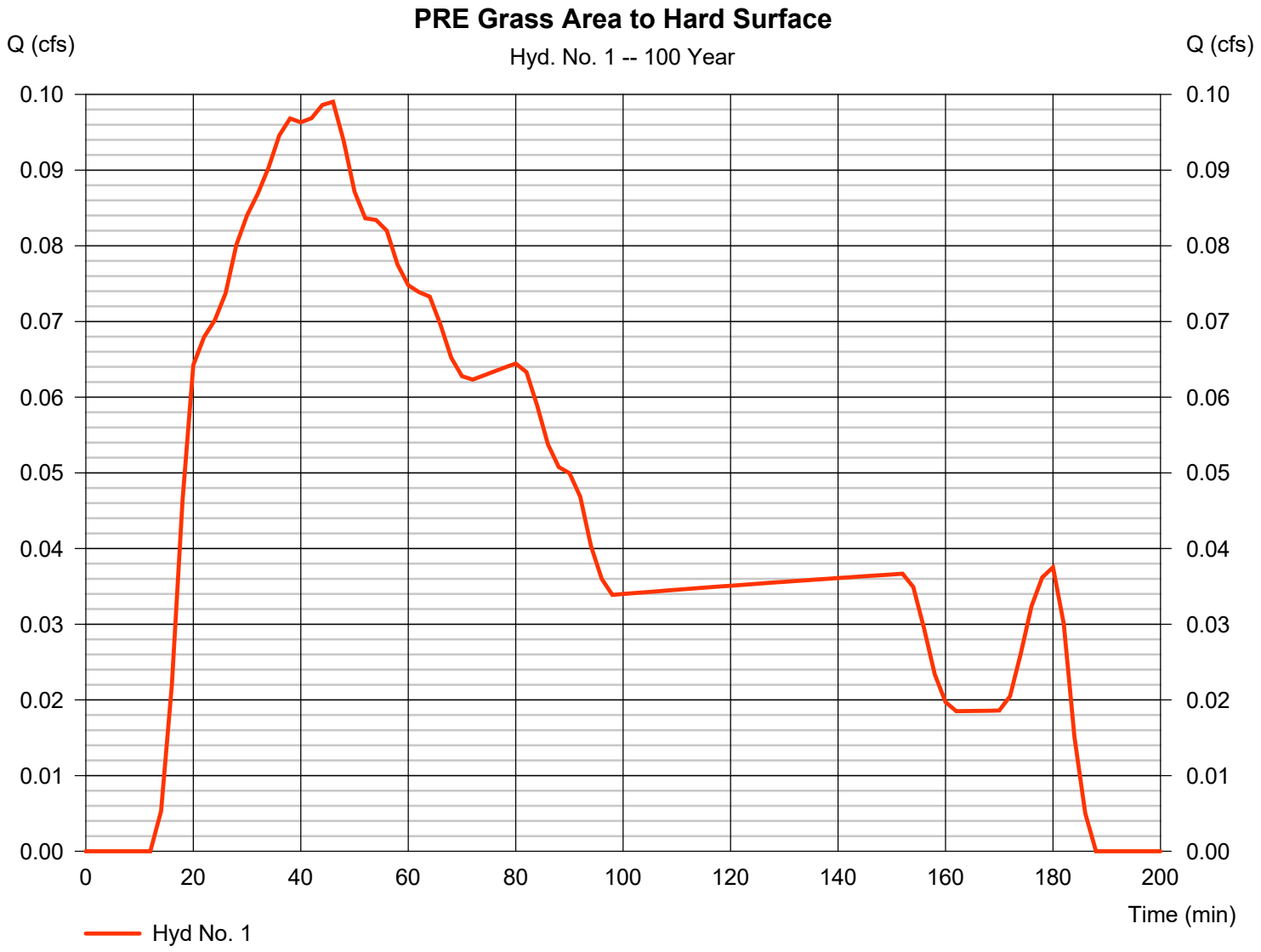
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.099	2	46	517	------	------	------	PRE Grass Area to Hard Surface
2	SCS Runoff	0.403	2	20	1,747	------	------	------	PRE South
3	SCS Runoff	0.183	2	18	564	------	------	------	POST 11 - STR 105 (105-104)
4	SCS Runoff	0.366	2	18	1,128	------	------	------	POST 12 - STR 201
5	SCS Runoff	0.320	2	18	987	------	------	------	POST 13-Building-DS
6	SCS Runoff	0.035	2	38	184	------	------	------	POST 14
7	Combine	0.549	2	18	1,692	3, 4,	------	------	Detention Inflow
8	Reservoir	0.538	2	18	1,463	7	718.37	206	Detention (104-103)
9	Combine	0.858	2	18	2,450	5, 8	------	------	103-101
10	Combine	0.883	2	18	2,634	6, 9	------	------	Total South

Hydrograph Report

Hyd. No. 1

PRE Grass Area to Hard Surface

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.099 cfs
Storm frequency	=	100 yrs	Time to peak	=	46 min
Time interval	=	2 min	Hyd. volume	=	517 cuft
Drainage area	=	0.100 ac	Curve number	=	69
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	4.38 in	Distribution	=	Huff-1st
Storm duration	=	3.00 hrs	Shape factor	=	484



Hydrograph Report

Hyd. No. 2

PRE South

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.403 cfs
Storm frequency	=	100 yrs	Time to peak	=	20 min
Time interval	=	2 min	Hyd. volume	=	1,747 cuft
Drainage area	=	0.210 ac	Curve number	=	81*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	4.38 in	Distribution	=	Huff-1st
Storm duration	=	3.00 hrs	Shape factor	=	484

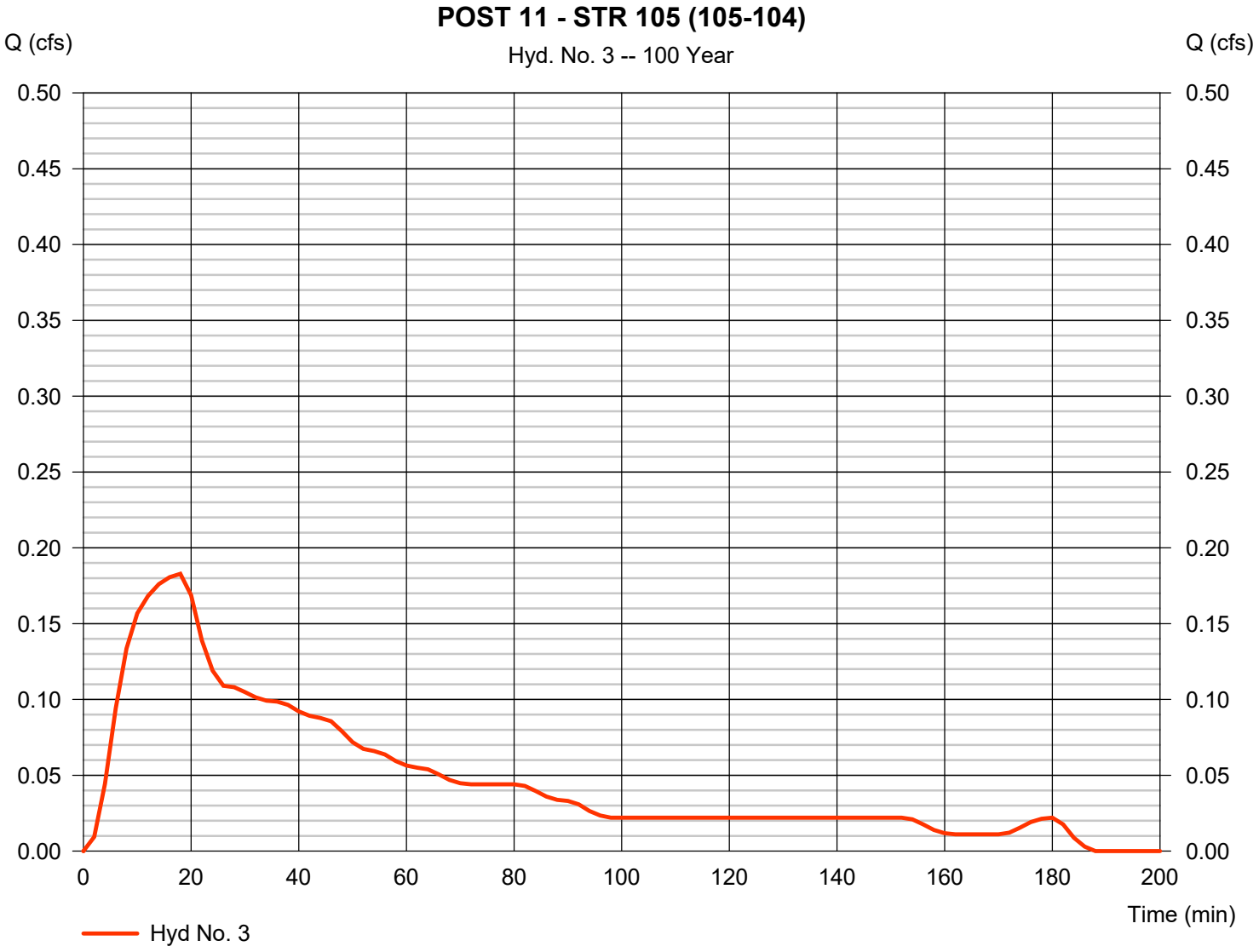
* Composite (Area/CN) = [(0.120 x 69) + (0.090 x 98)] / 0.210

Hydrograph Report

Hyd. No. 3

POST 11 - STR 105 (105-104)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.183 cfs
Storm frequency	= 100 yrs	Time to peak	= 18 min
Time interval	= 2 min	Hyd. volume	= 564 cuft
Drainage area	= 0.040 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.38 in	Distribution	= Huff-1st
Storm duration	= 3.00 hrs	Shape factor	= 484

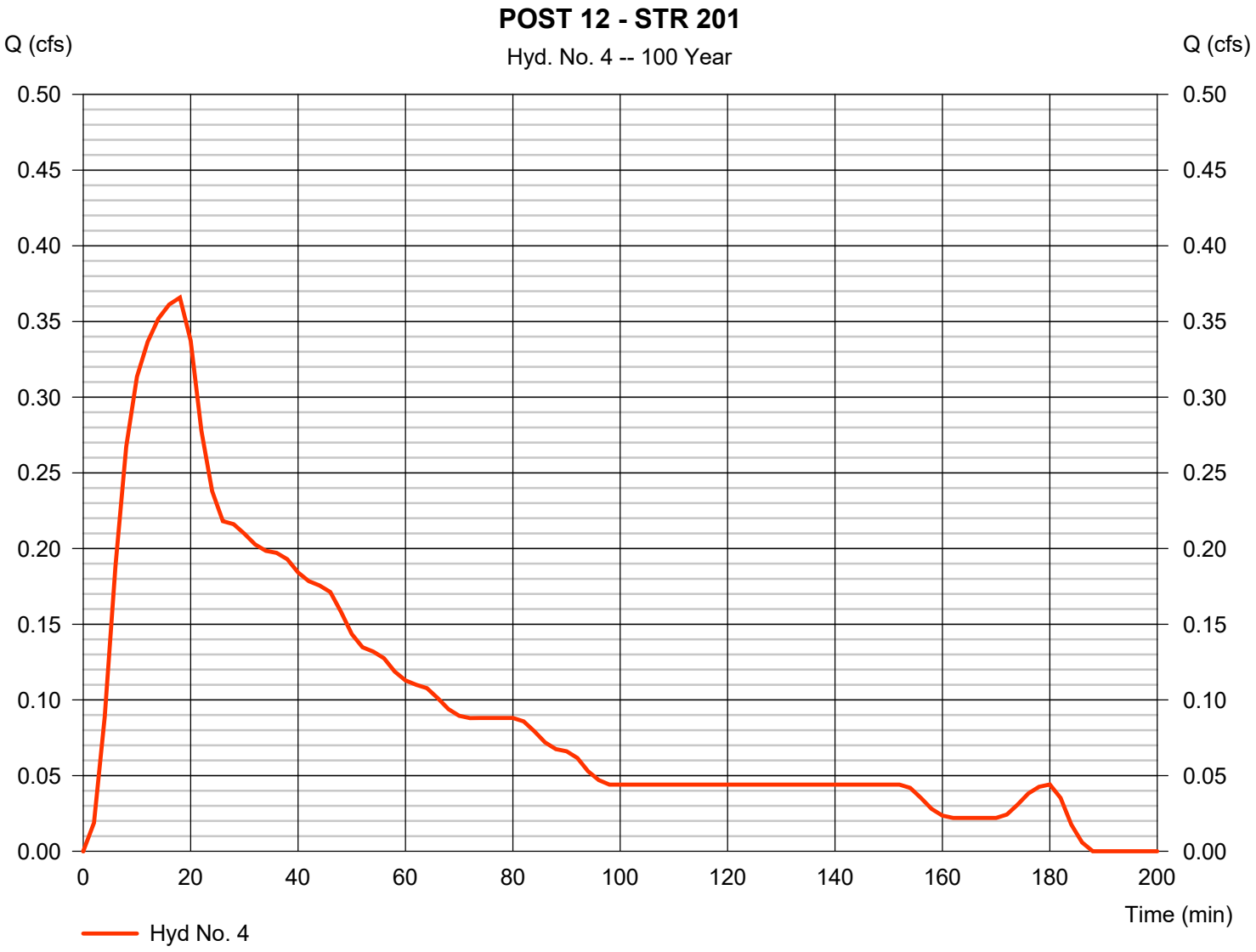


Hydrograph Report

Hyd. No. 4

POST 12 - STR 201

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.366 cfs
Storm frequency	=	100 yrs	Time to peak	=	18 min
Time interval	=	2 min	Hyd. volume	=	1,128 cuft
Drainage area	=	0.080 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	4.38 in	Distribution	=	Huff-1st
Storm duration	=	3.00 hrs	Shape factor	=	484

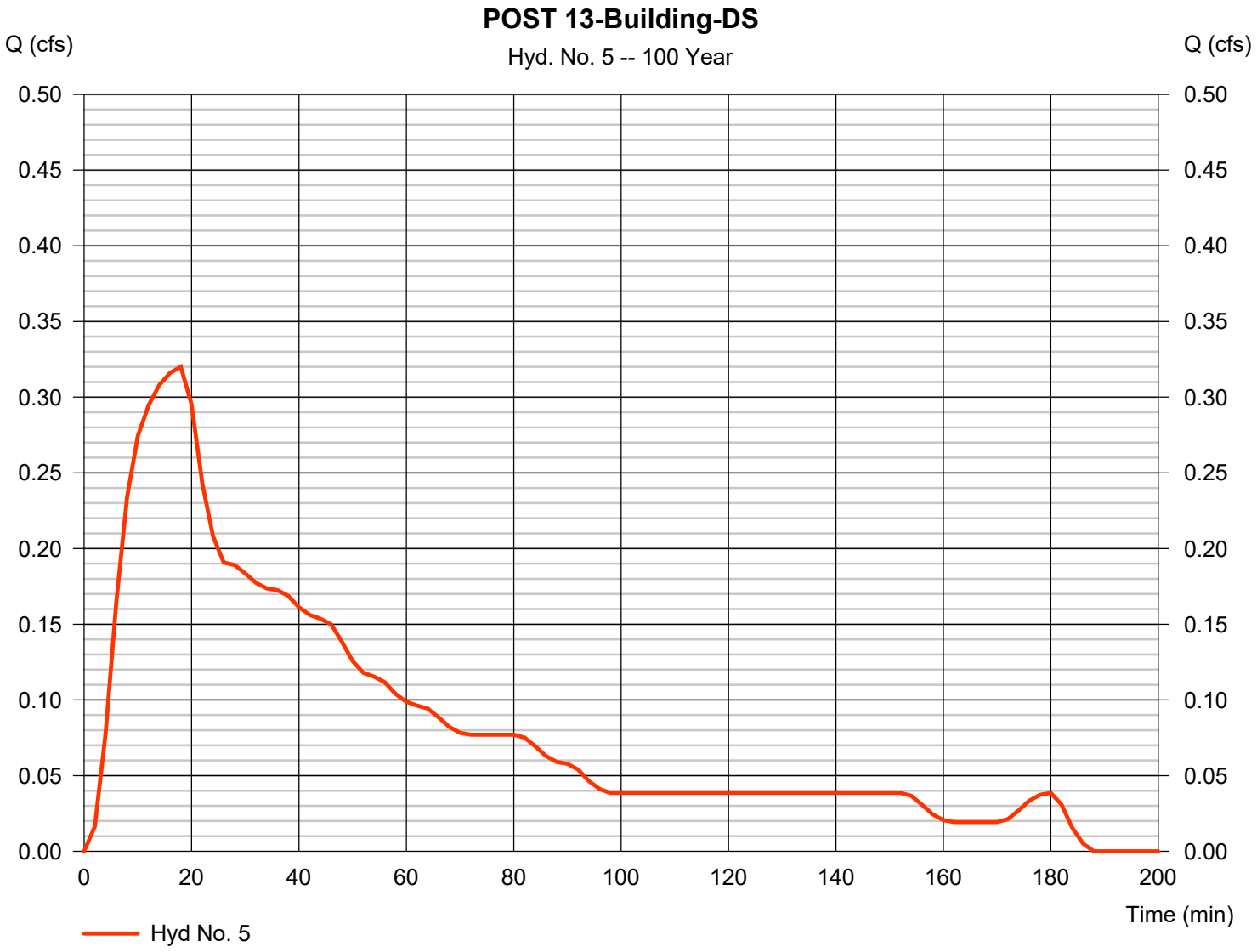


Hydrograph Report

Hyd. No. 5

POST 13-Building-DS

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.320 cfs
Storm frequency	=	100 yrs	Time to peak	=	18 min
Time interval	=	2 min	Hyd. volume	=	987 cuft
Drainage area	=	0.070 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	4.38 in	Distribution	=	Huff-1st
Storm duration	=	3.00 hrs	Shape factor	=	484



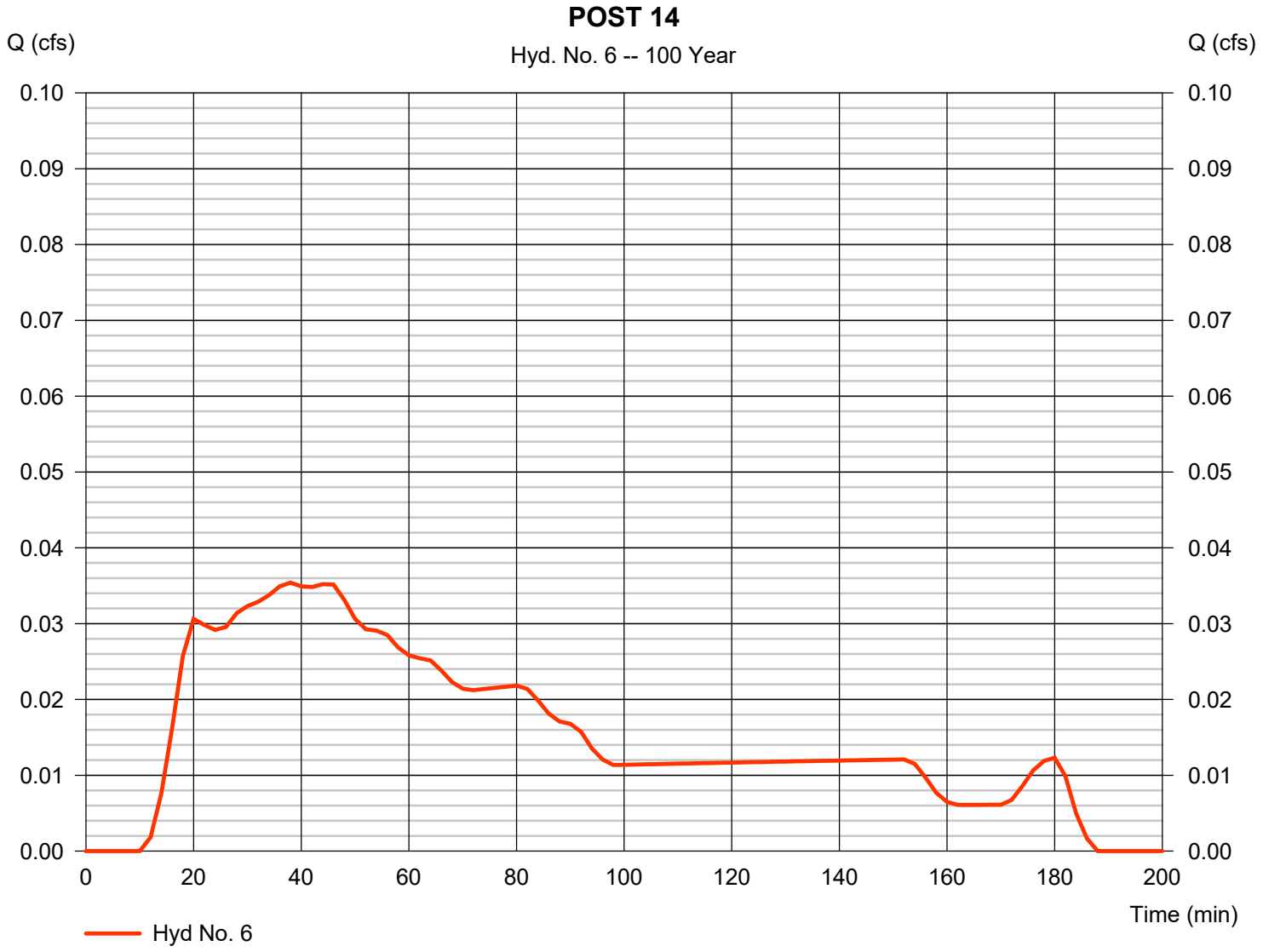
Hydrograph Report

Hyd. No. 6

POST 14

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.035 cfs
Storm frequency	=	100 yrs	Time to peak	=	38 min
Time interval	=	2 min	Hyd. volume	=	184 cuft
Drainage area	=	0.030 ac	Curve number	=	73*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	4.38 in	Distribution	=	Huff-1st
Storm duration	=	3.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.020 x 61) + (0.010 x 98)] / 0.030

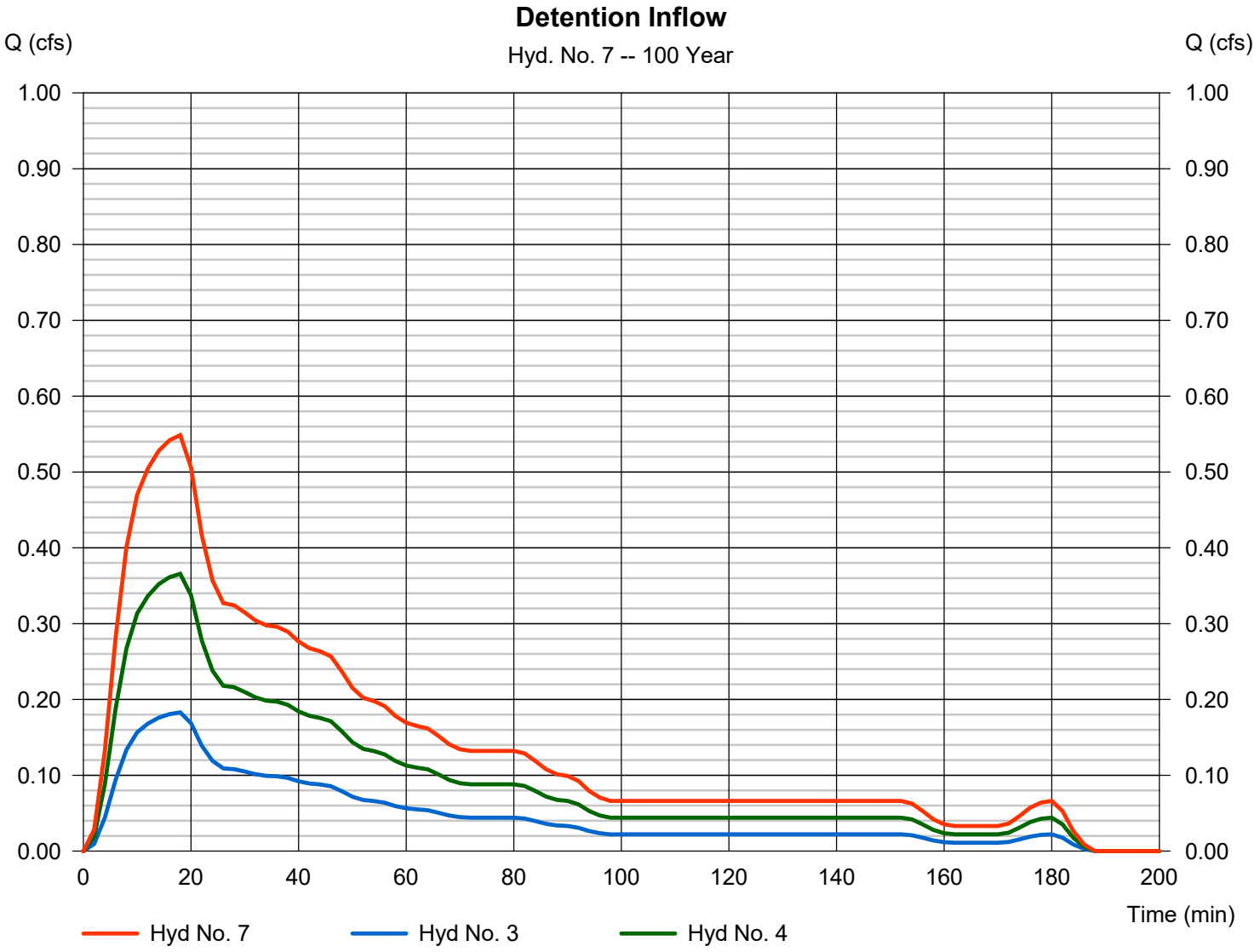


Hydrograph Report

Hyd. No. 7

Detention Inflow

Hydrograph type	=	Combine	Peak discharge	=	0.549 cfs
Storm frequency	=	100 yrs	Time to peak	=	18 min
Time interval	=	2 min	Hyd. volume	=	1,692 cuft
Inflow hyds.	=	3, 4	Contrib. drain. area	=	0.120 ac



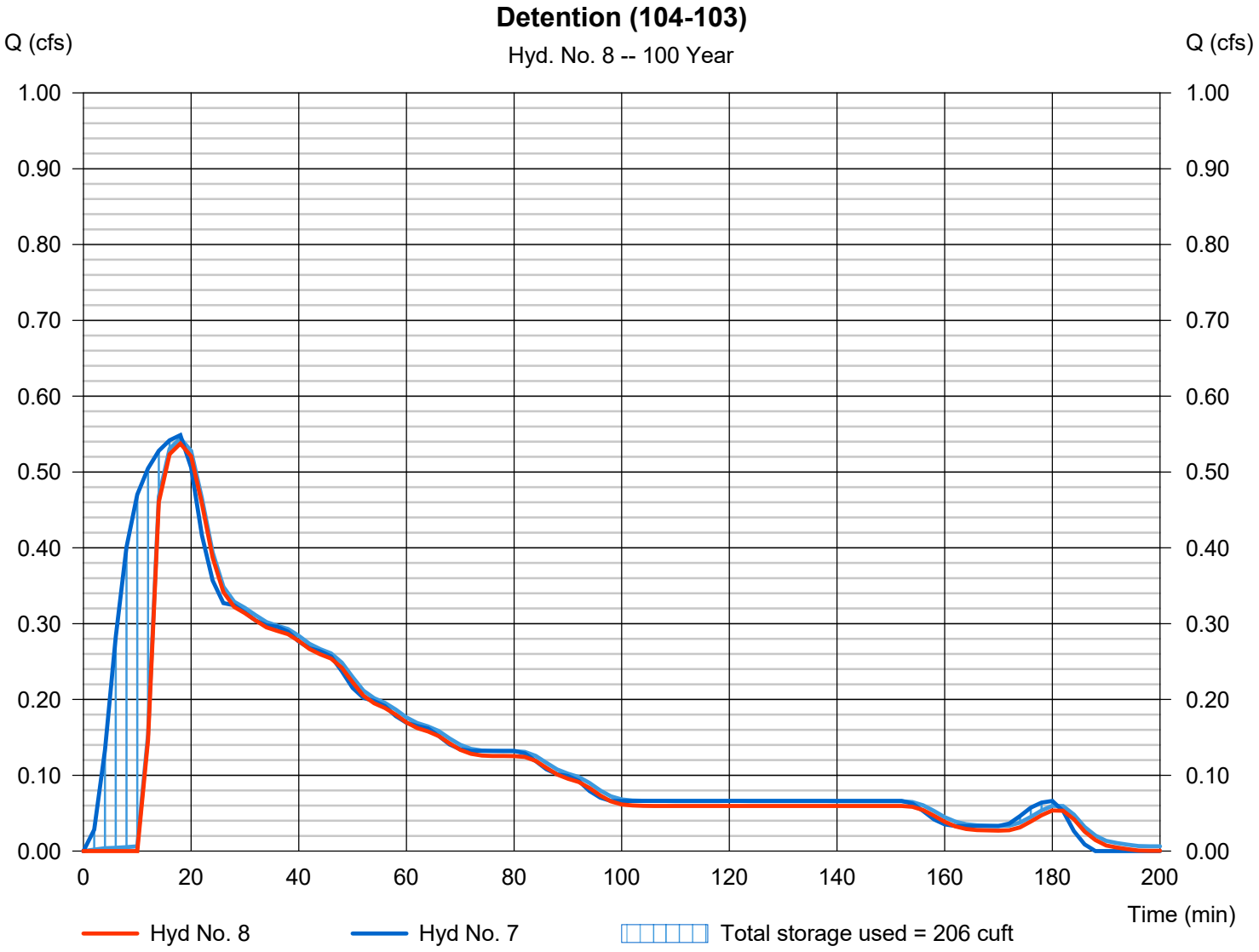
Hydrograph Report

Hyd. No. 8

Detention (104-103)

Hydrograph type	=	Reservoir	Peak discharge	=	0.538 cfs
Storm frequency	=	100 yrs	Time to peak	=	18 min
Time interval	=	2 min	Hyd. volume	=	1,463 cuft
Inflow hyd. No.	=	7 - Detention Inflow	Max. Elevation	=	718.37 ft
Reservoir name	=	Proposed Detention	Max. Storage	=	206 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

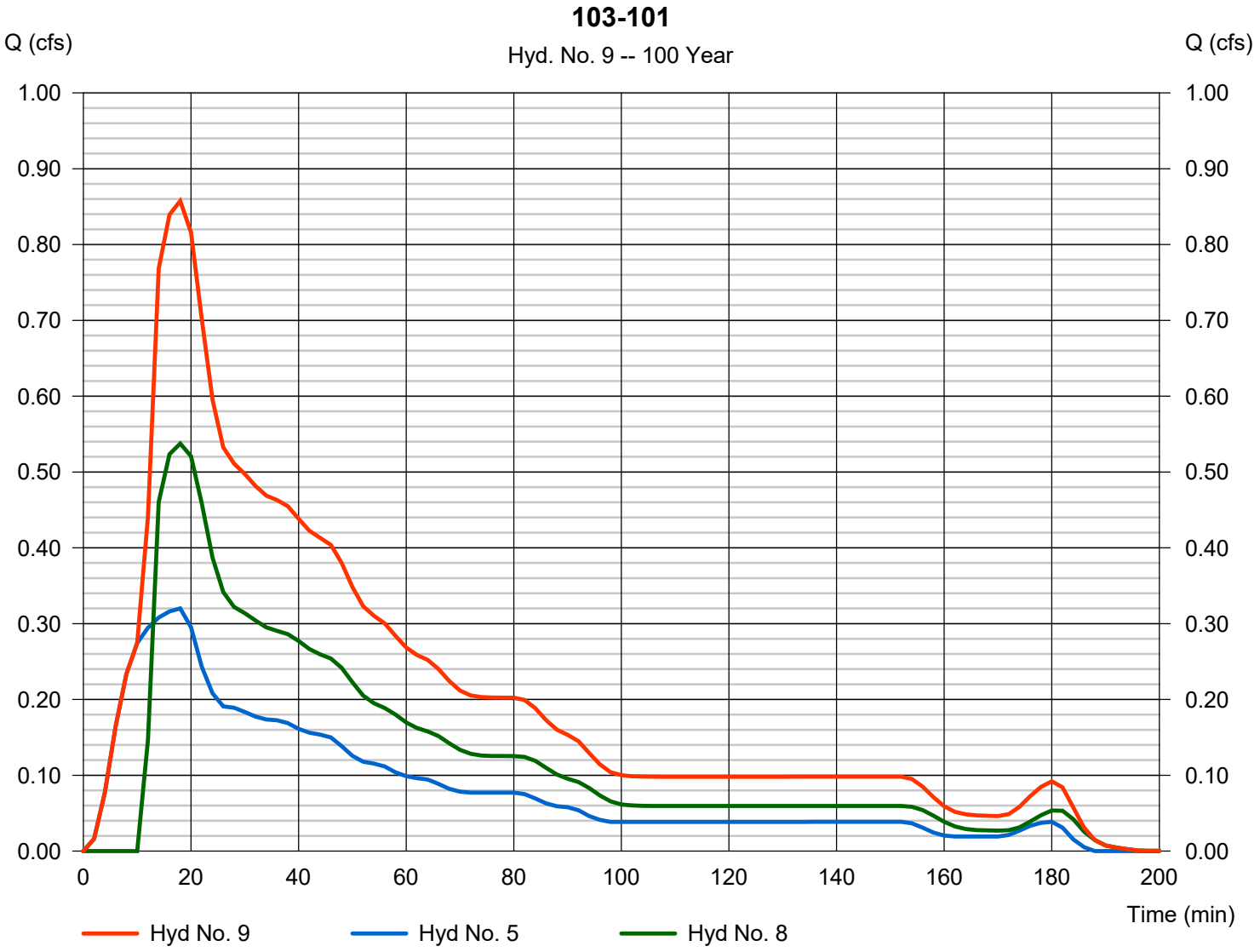


Hydrograph Report

Hyd. No. 9

103-101

Hydrograph type	=	Combine	Peak discharge	=	0.858 cfs
Storm frequency	=	100 yrs	Time to peak	=	18 min
Time interval	=	2 min	Hyd. volume	=	2,450 cuft
Inflow hyds.	=	5, 8	Contrib. drain. area	=	0.070 ac

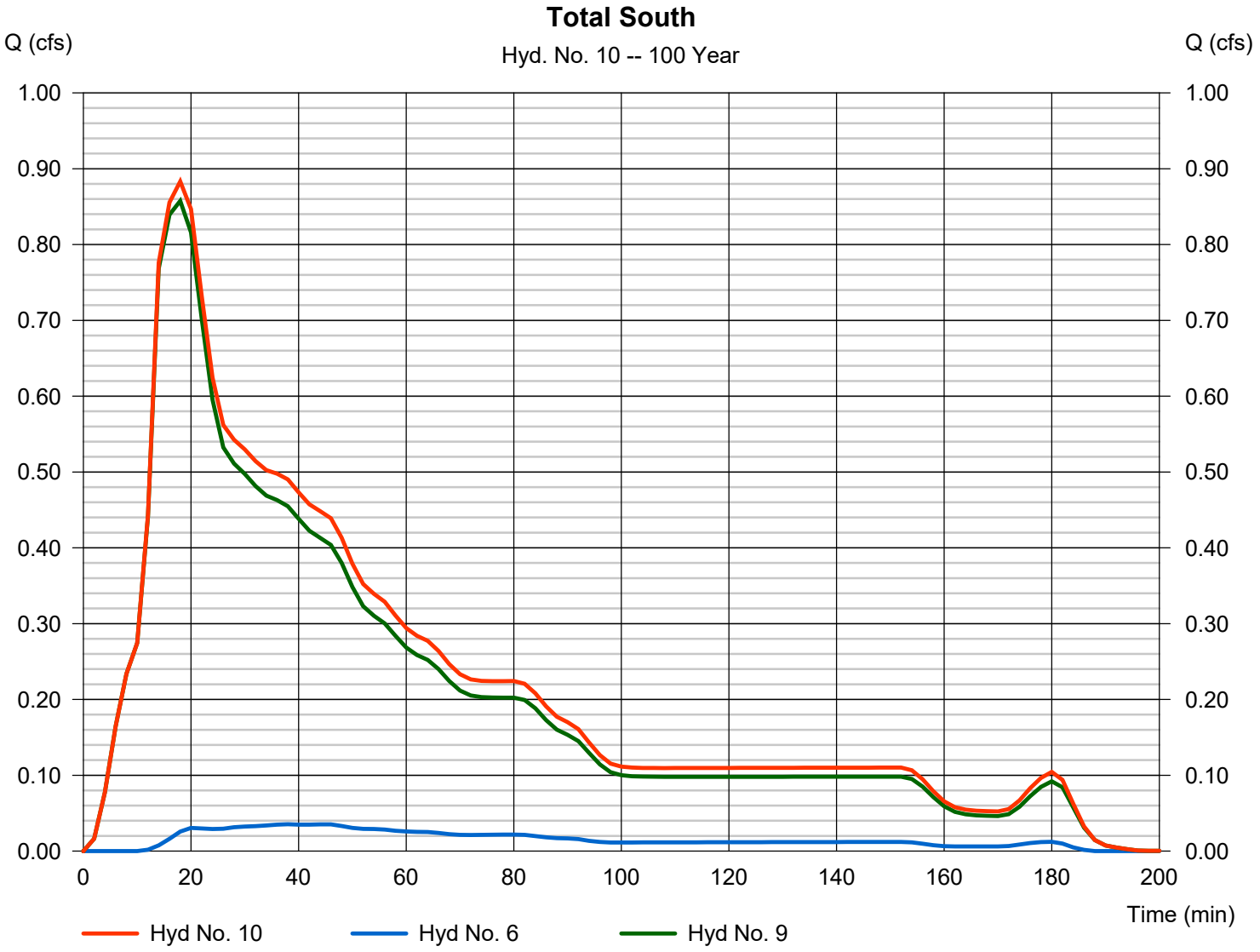


Hydrograph Report

Hyd. No. 10

Total South

Hydrograph type	= Combine	Peak discharge	= 0.883 cfs
Storm frequency	= 100 yrs	Time to peak	= 18 min
Time interval	= 2 min	Hyd. volume	= 2,634 cuft
Inflow hyds.	= 6, 9	Contrib. drain. area	= 0.030 ac



Appendix G

Hydraflow Hydrographs
6 Hour Storm Data

Hydraflow Table of Contents

2 - Year

10 - Year

100 - Year

Hydrograph Summary Report

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

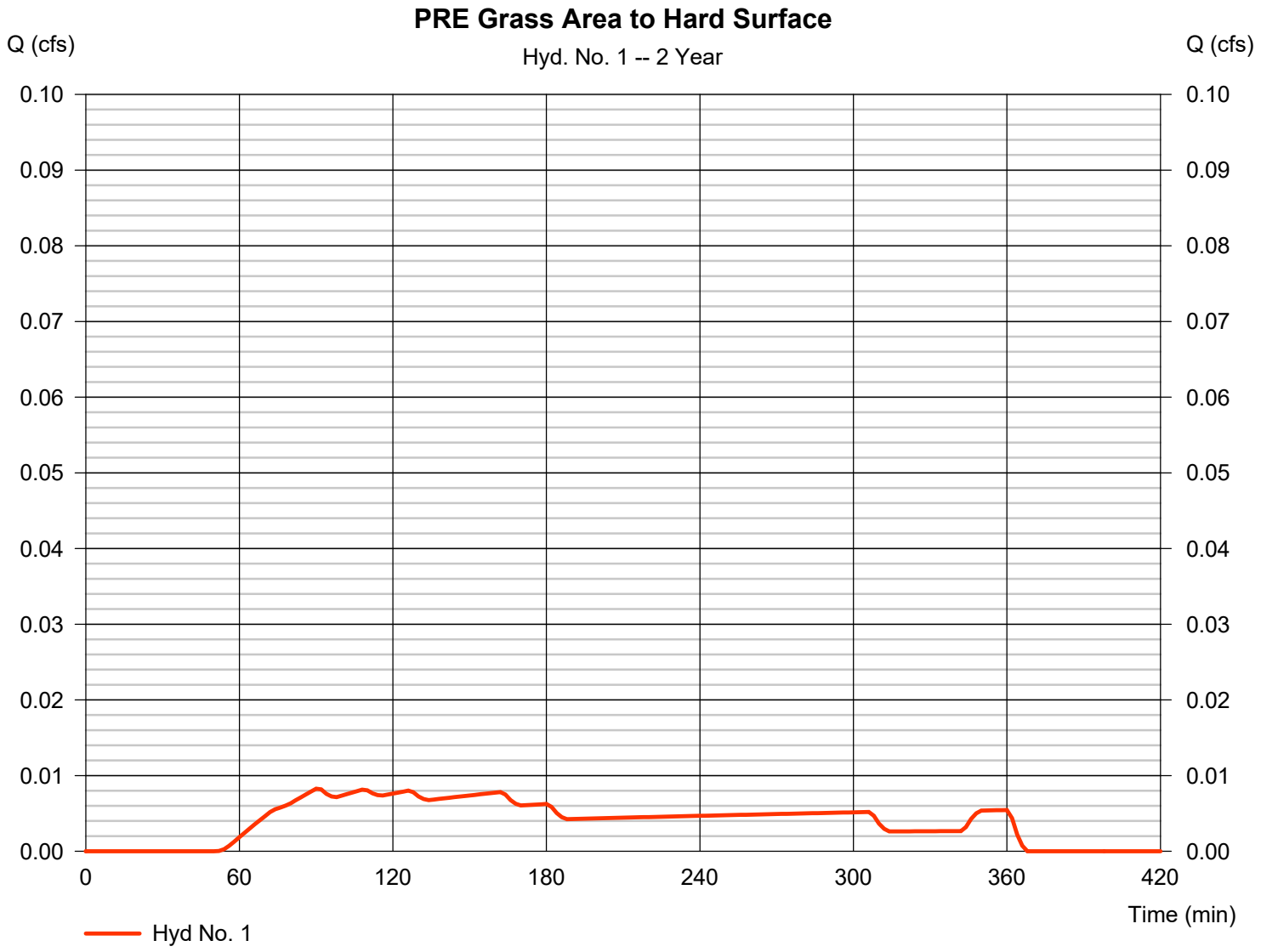
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.008	2	90	98	------	------	------	PRE Grass Area to Hard Surface
2	SCS Runoff	0.052	2	90	520	------	------	------	PRE South
3	SCS Runoff	0.044	2	36	267	------	------	------	POST 11 - STR 105 (105-104)
4	SCS Runoff	0.088	2	36	534	------	------	------	POST 12 - STR 201
5	SCS Runoff	0.077	2	36	468	------	------	------	POST 13-Building-DS
6	SCS Runoff	0.004	2	90	42	------	------	------	POST 14
7	Combine	0.132	2	36	802	3, 4,	------	------	Detention Inflow
8	Reservoir	0.107	2	38	509	7	718.16	173	Detention (104-103)
9	Combine	0.178	2	38	977	5, 8	------	------	103-101
10	Combine	0.178	2	38	1,018	6, 9	------	------	Total South

Hydrograph Report

Hyd. No. 1

PRE Grass Area to Hard Surface

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.008 cfs
Storm frequency	=	2 yrs	Time to peak	=	90 min
Time interval	=	2 min	Hyd. volume	=	98 cuft
Drainage area	=	0.100 ac	Curve number	=	69
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.19 in	Distribution	=	Huff-1st
Storm duration	=	6.00 hrs	Shape factor	=	484



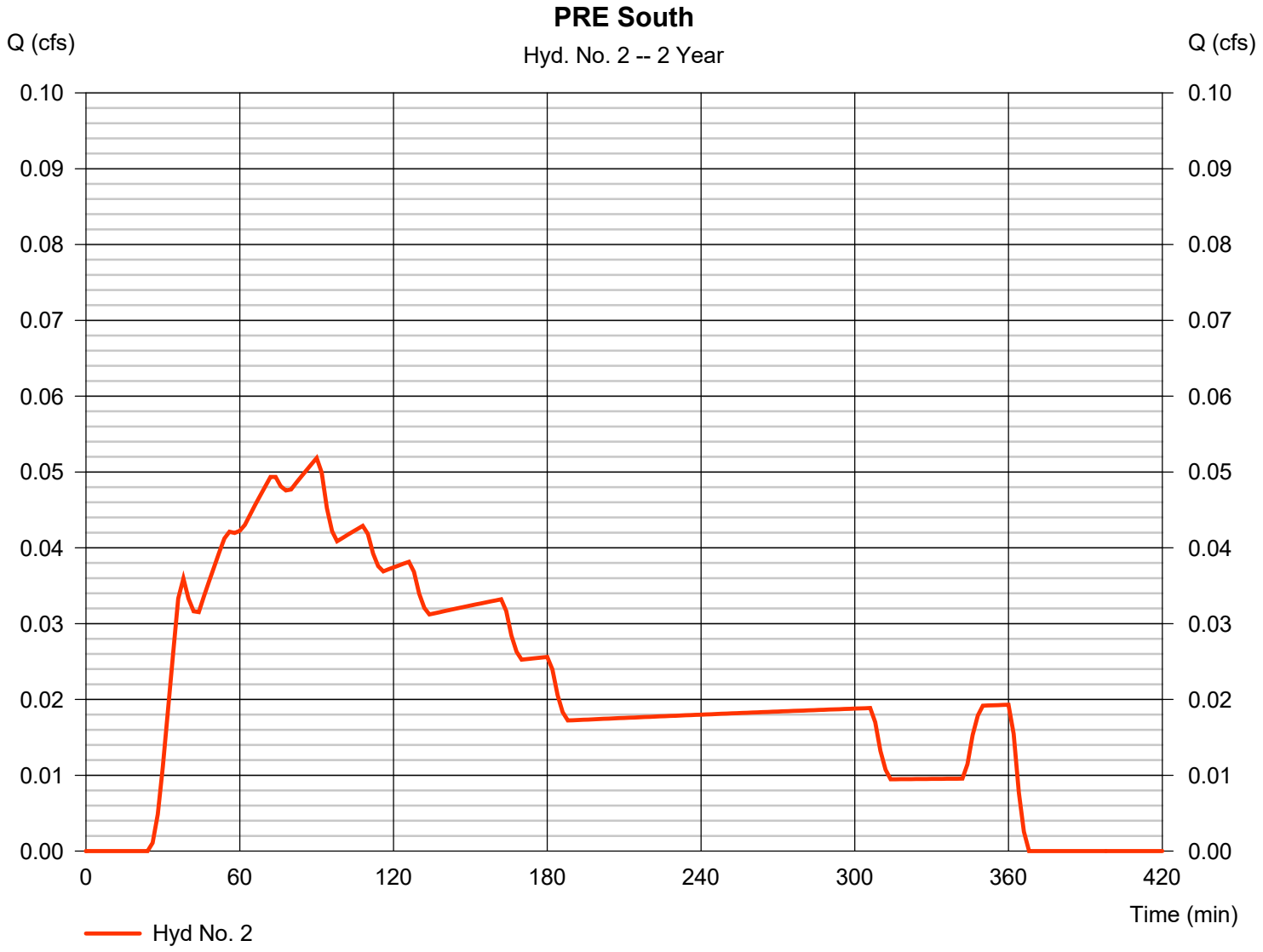
Hydrograph Report

Hyd. No. 2

PRE South

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.052 cfs
Storm frequency	=	2 yrs	Time to peak	=	90 min
Time interval	=	2 min	Hyd. volume	=	520 cuft
Drainage area	=	0.210 ac	Curve number	=	81*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.19 in	Distribution	=	Huff-1st
Storm duration	=	6.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.120 x 69) + (0.090 x 98)] / 0.210

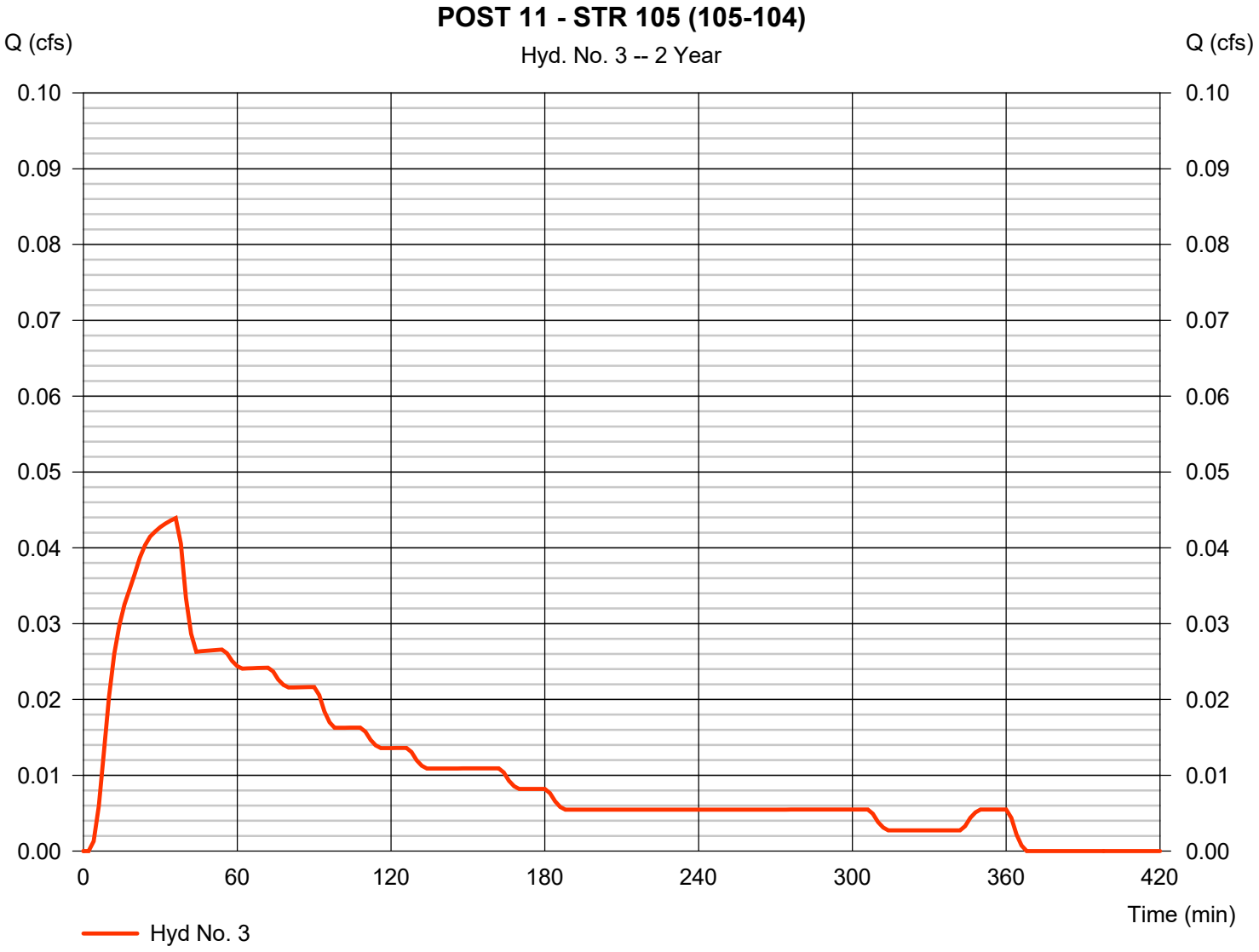


Hydrograph Report

Hyd. No. 3

POST 11 - STR 105 (105-104)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.044 cfs
Storm frequency	= 2 yrs	Time to peak	= 36 min
Time interval	= 2 min	Hyd. volume	= 267 cuft
Drainage area	= 0.040 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.19 in	Distribution	= Huff-1st
Storm duration	= 6.00 hrs	Shape factor	= 484

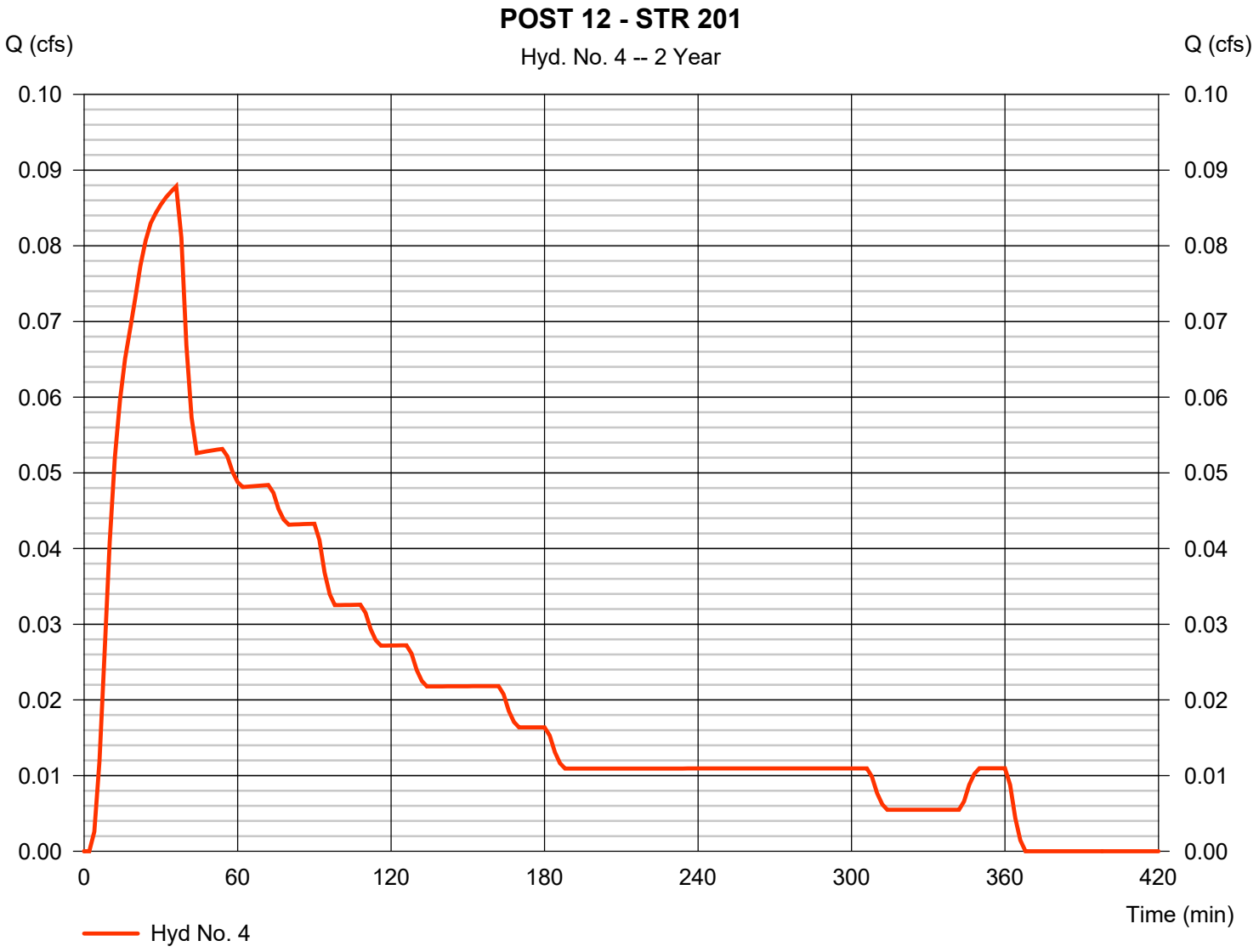


Hydrograph Report

Hyd. No. 4

POST 12 - STR 201

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.088 cfs
Storm frequency	=	2 yrs	Time to peak	=	36 min
Time interval	=	2 min	Hyd. volume	=	534 cuft
Drainage area	=	0.080 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.19 in	Distribution	=	Huff-1st
Storm duration	=	6.00 hrs	Shape factor	=	484

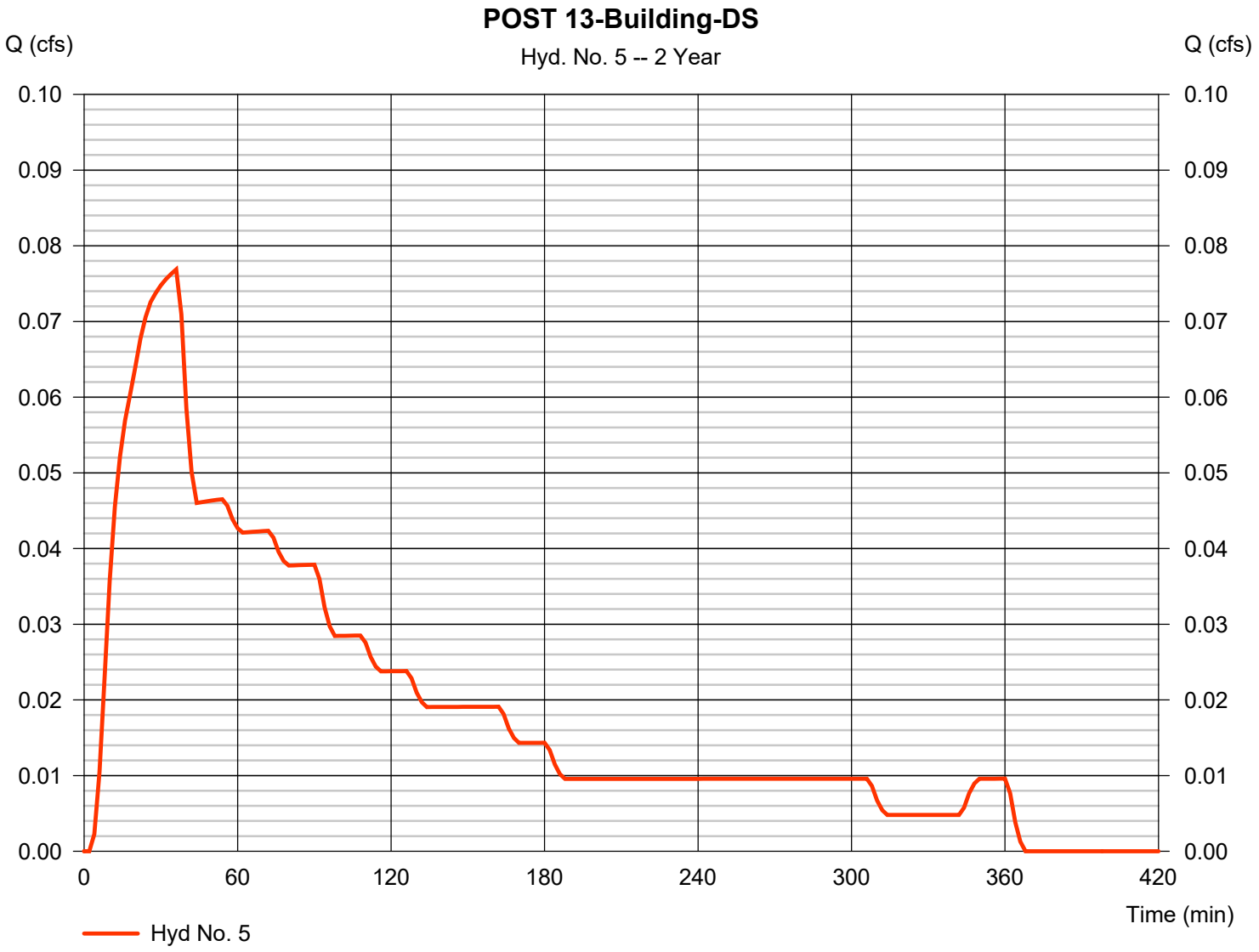


Hydrograph Report

Hyd. No. 5

POST 13-Building-DS

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.077 cfs
Storm frequency	=	2 yrs	Time to peak	=	36 min
Time interval	=	2 min	Hyd. volume	=	468 cuft
Drainage area	=	0.070 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.19 in	Distribution	=	Huff-1st
Storm duration	=	6.00 hrs	Shape factor	=	484



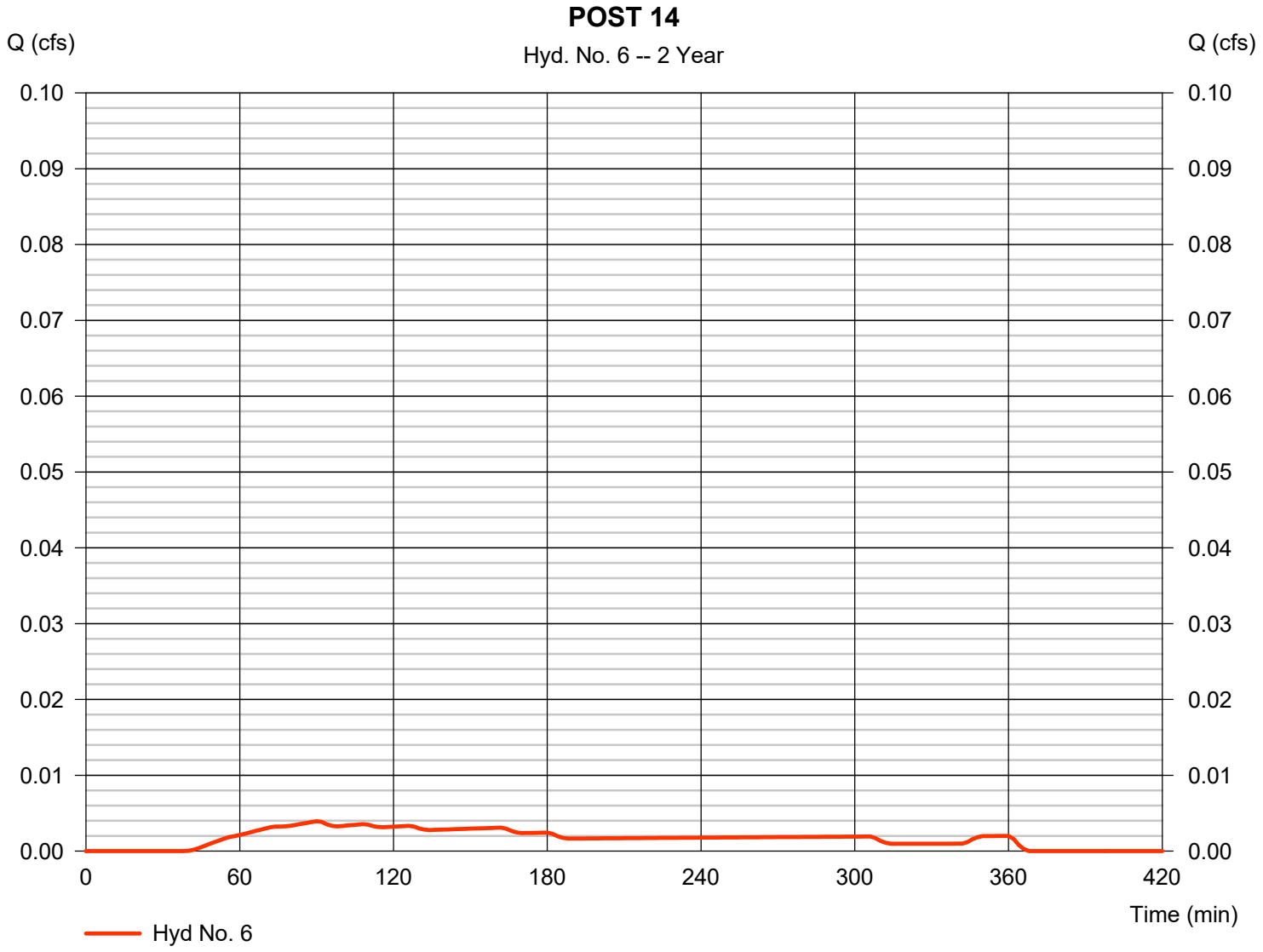
Hydrograph Report

Hyd. No. 6

POST 14

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.004 cfs
Storm frequency	=	2 yrs	Time to peak	=	90 min
Time interval	=	2 min	Hyd. volume	=	42 cuft
Drainage area	=	0.030 ac	Curve number	=	73*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.19 in	Distribution	=	Huff-1st
Storm duration	=	6.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.020 x 61) + (0.010 x 98)] / 0.030

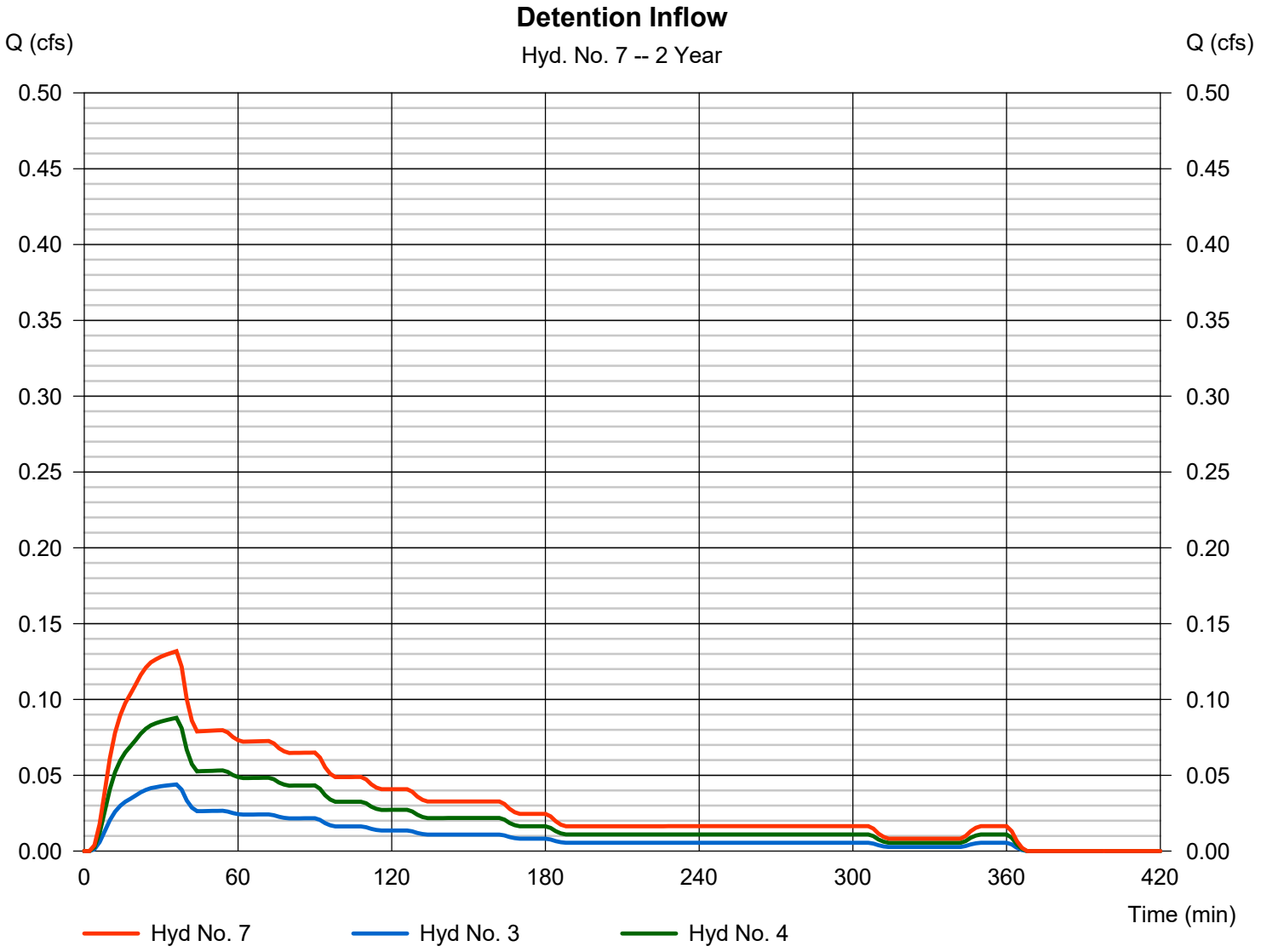


Hydrograph Report

Hyd. No. 7

Detention Inflow

Hydrograph type	=	Combine	Peak discharge	=	0.132 cfs
Storm frequency	=	2 yrs	Time to peak	=	36 min
Time interval	=	2 min	Hyd. volume	=	802 cuft
Inflow hyds.	=	3, 4	Contrib. drain. area	=	0.120 ac



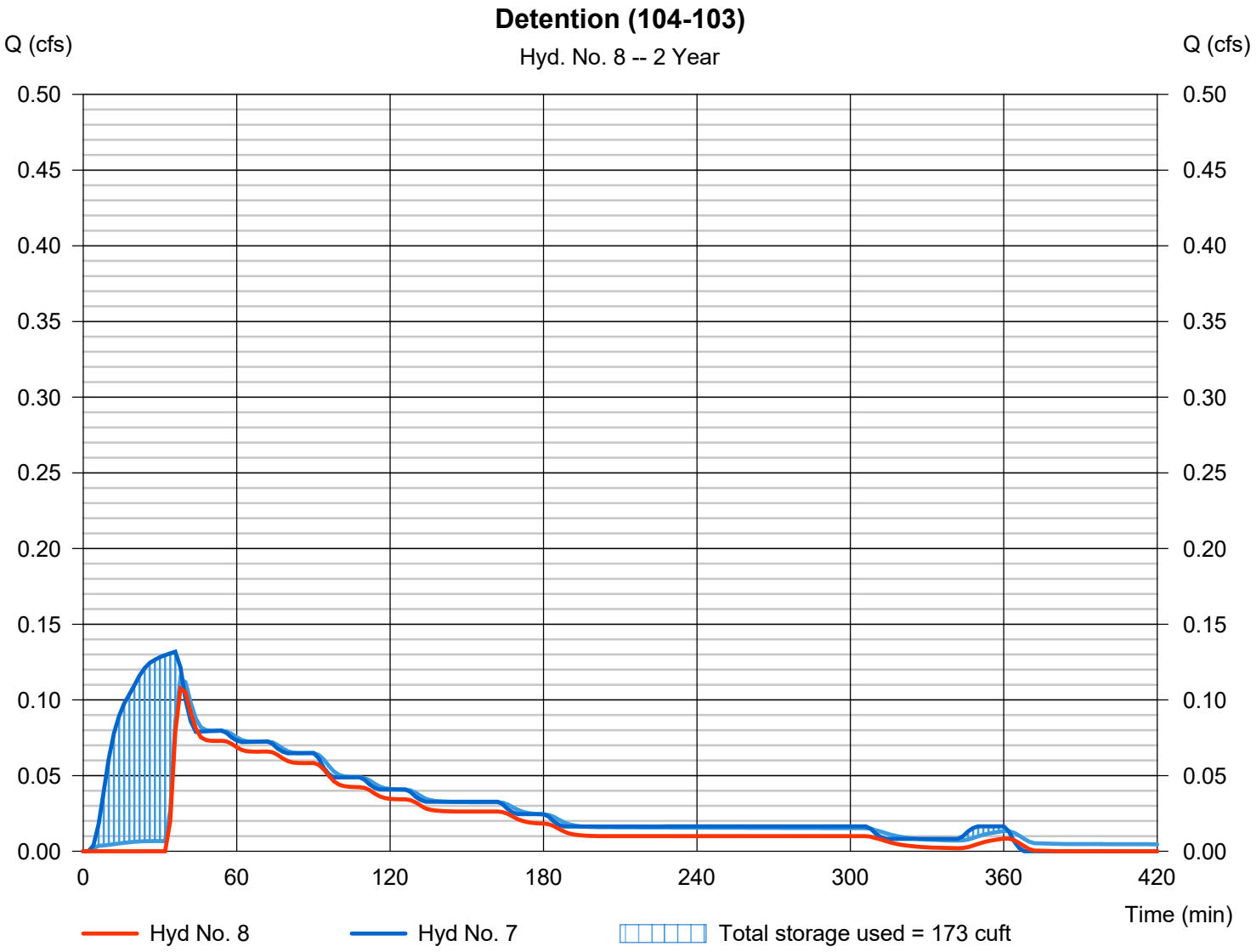
Hydrograph Report

Hyd. No. 8

Detention (104-103)

Hydrograph type	=	Reservoir	Peak discharge	=	0.107 cfs
Storm frequency	=	2 yrs	Time to peak	=	38 min
Time interval	=	2 min	Hyd. volume	=	509 cuft
Inflow hyd. No.	=	7 - Detention Inflow	Max. Elevation	=	718.16 ft
Reservoir name	=	Proposed Detention	Max. Storage	=	173 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

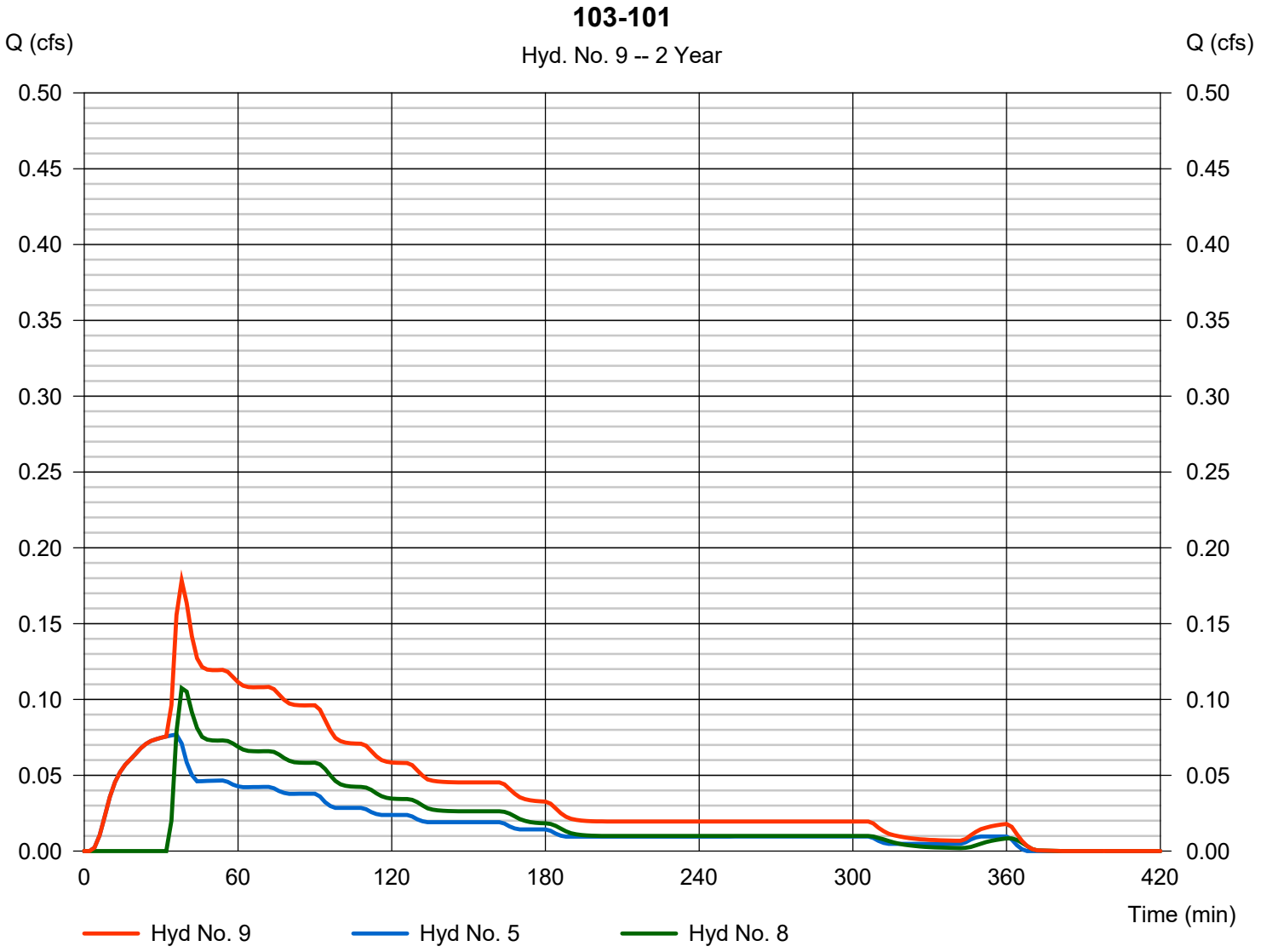


Hydrograph Report

Hyd. No. 9

103-101

Hydrograph type	=	Combine	Peak discharge	=	0.178 cfs
Storm frequency	=	2 yrs	Time to peak	=	38 min
Time interval	=	2 min	Hyd. volume	=	977 cuft
Inflow hyds.	=	5, 8	Contrib. drain. area	=	0.070 ac

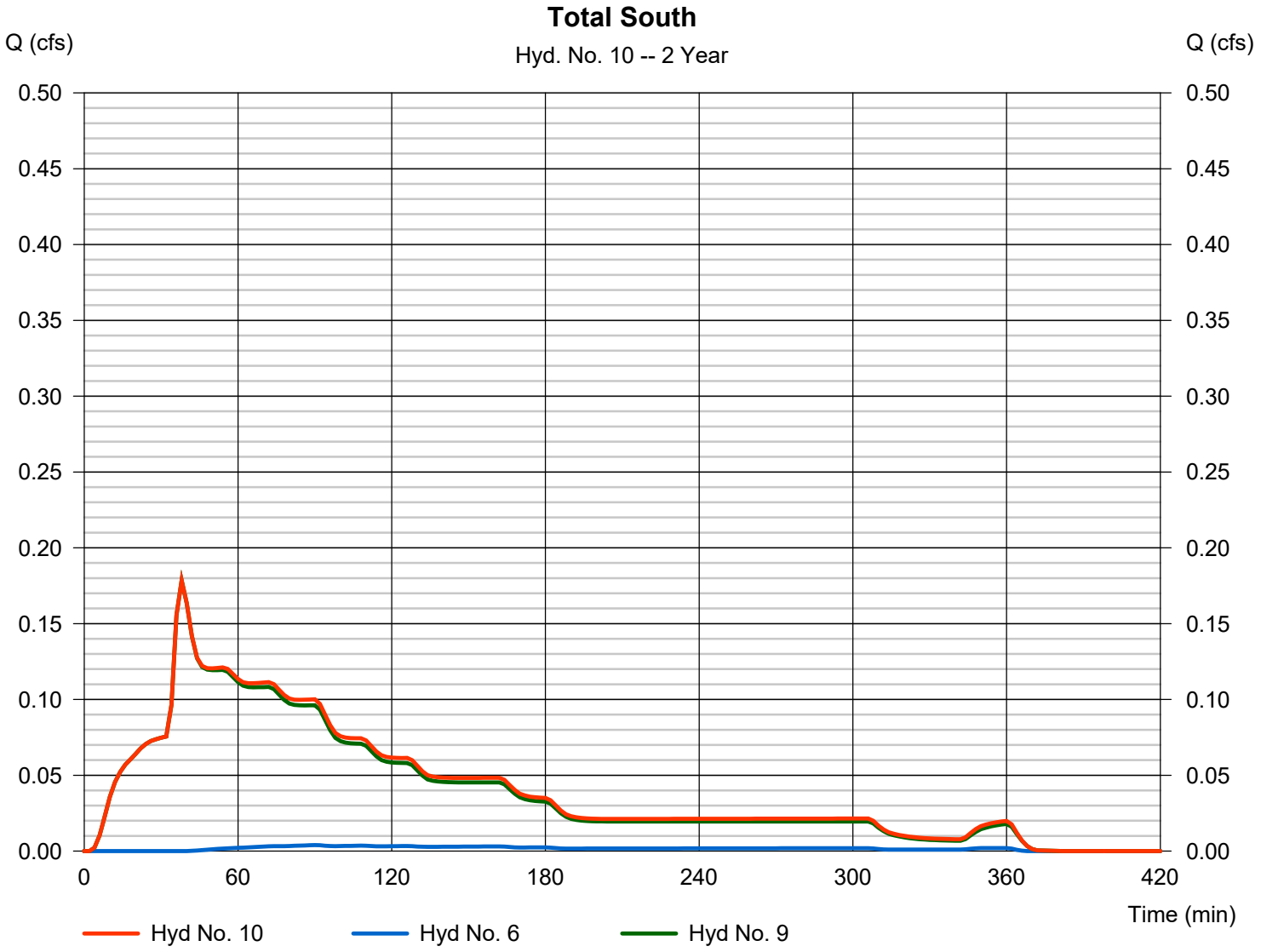


Hydrograph Report

Hyd. No. 10

Total South

Hydrograph type	=	Combine	Peak discharge	=	0.178 cfs
Storm frequency	=	2 yrs	Time to peak	=	38 min
Time interval	=	2 min	Hyd. volume	=	1,018 cuft
Inflow hyds.	=	6, 9	Contrib. drain. area	=	0.030 ac



Hydrograph Summary Report

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

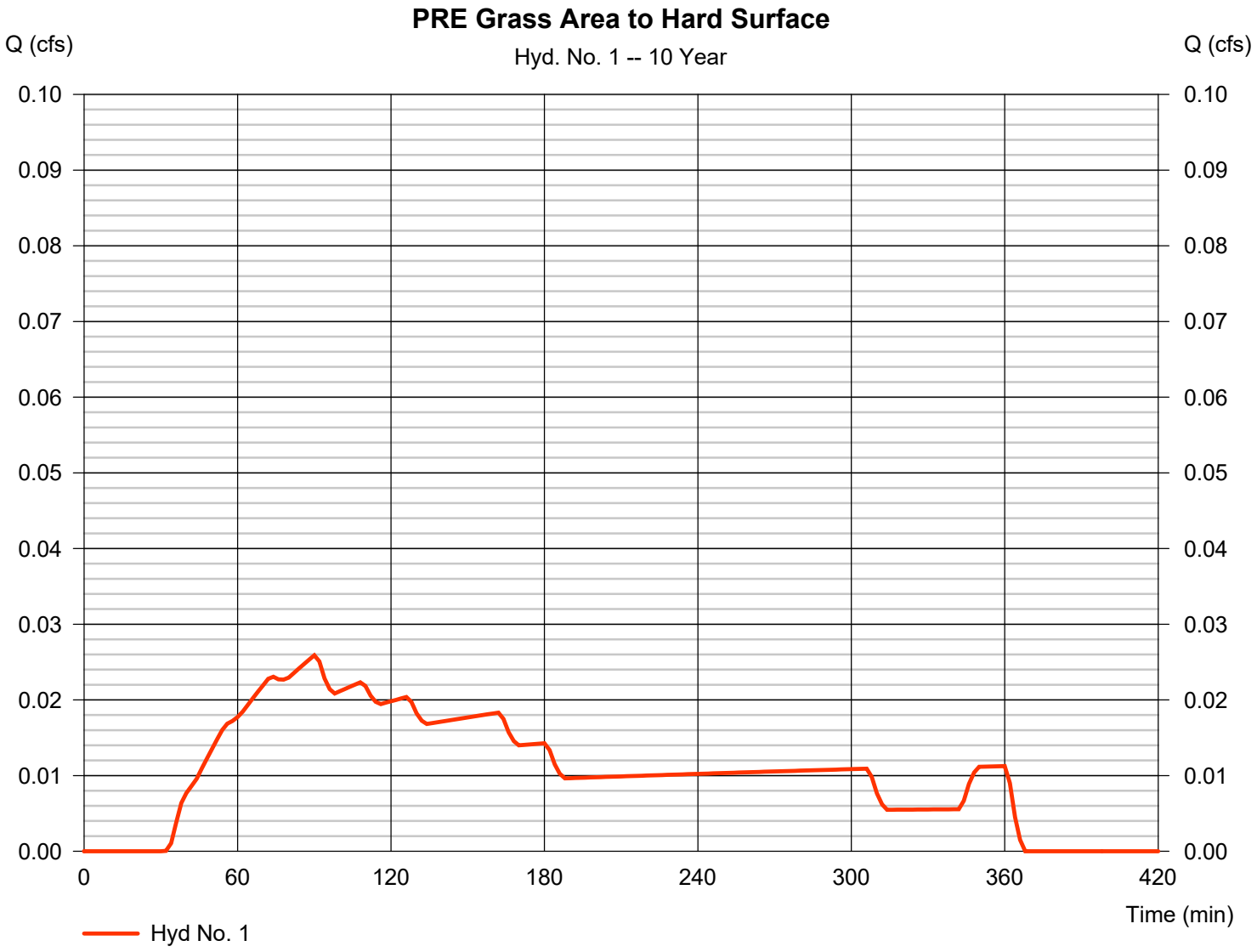
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.026	2	90	263	------	------	------	PRE Grass Area to Hard Surface
2	SCS Runoff	0.110	2	36	1,044	------	------	------	PRE South
3	SCS Runoff	0.066	2	36	403	------	------	------	POST 11 - STR 105 (105-104)
4	SCS Runoff	0.132	2	36	805	------	------	------	POST 12 - STR 201
5	SCS Runoff	0.116	2	36	705	------	------	------	POST 13-Building-DS
6	SCS Runoff	0.010	2	90	100	------	------	------	POST 14
7	Combine	0.198	2	36	1,208	3, 4,	------	------	Detention Inflow
8	Reservoir	0.191	2	36	912	7	718.21	180	Detention (104-103)
9	Combine	0.306	2	36	1,617	5, 8	------	------	103-101
10	Combine	0.311	2	36	1,717	6, 9	------	------	Total South

Hydrograph Report

Hyd. No. 1

PRE Grass Area to Hard Surface

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.026 cfs
Storm frequency	=	10 yrs	Time to peak	=	90 min
Time interval	=	2 min	Hyd. volume	=	263 cuft
Drainage area	=	0.100 ac	Curve number	=	69
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.19 in	Distribution	=	Huff-1st
Storm duration	=	6.00 hrs	Shape factor	=	484



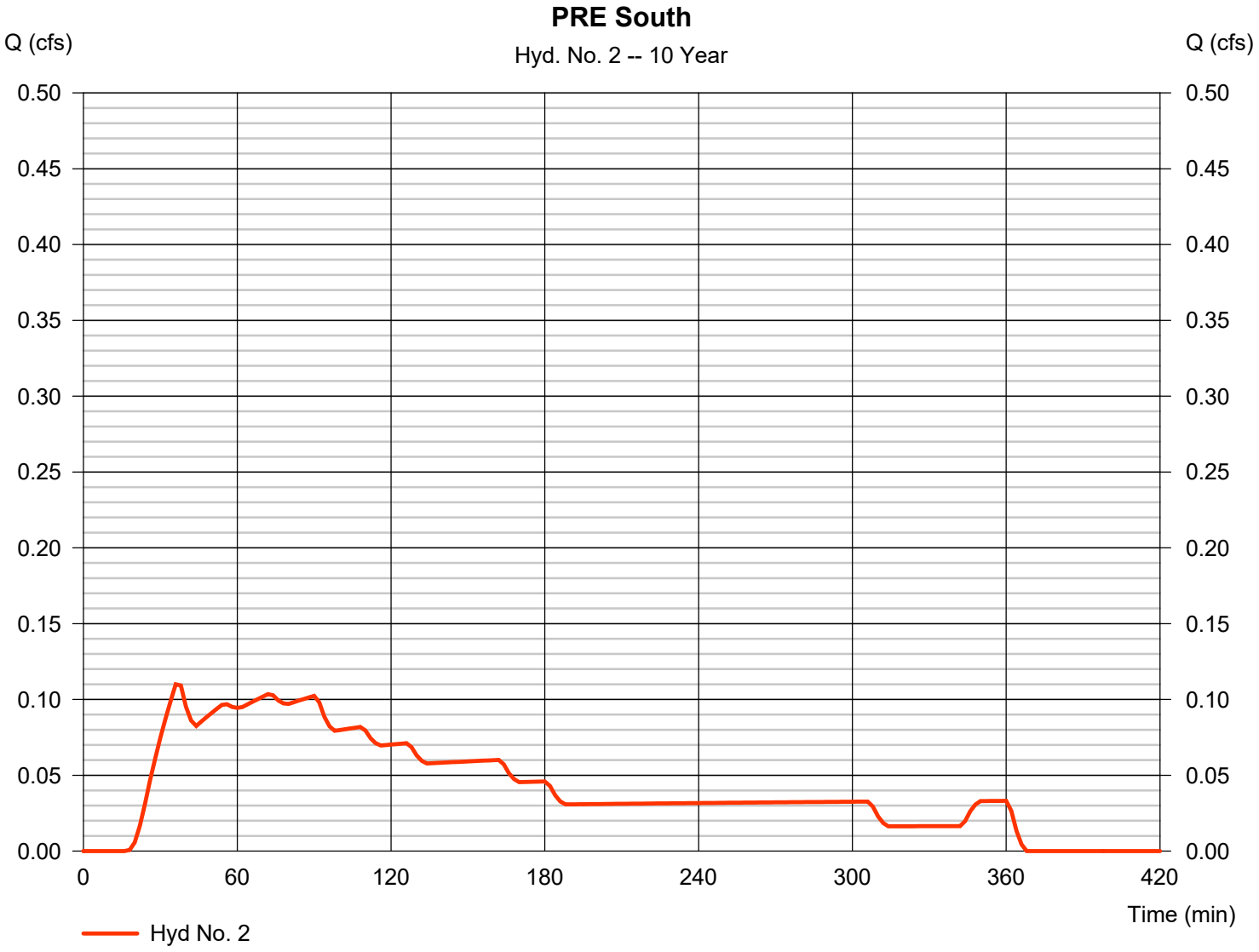
Hydrograph Report

Hyd. No. 2

PRE South

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.110 cfs
Storm frequency	=	10 yrs	Time to peak	=	36 min
Time interval	=	2 min	Hyd. volume	=	1,044 cuft
Drainage area	=	0.210 ac	Curve number	=	81*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.19 in	Distribution	=	Huff-1st
Storm duration	=	6.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.120 x 69) + (0.090 x 98)] / 0.210

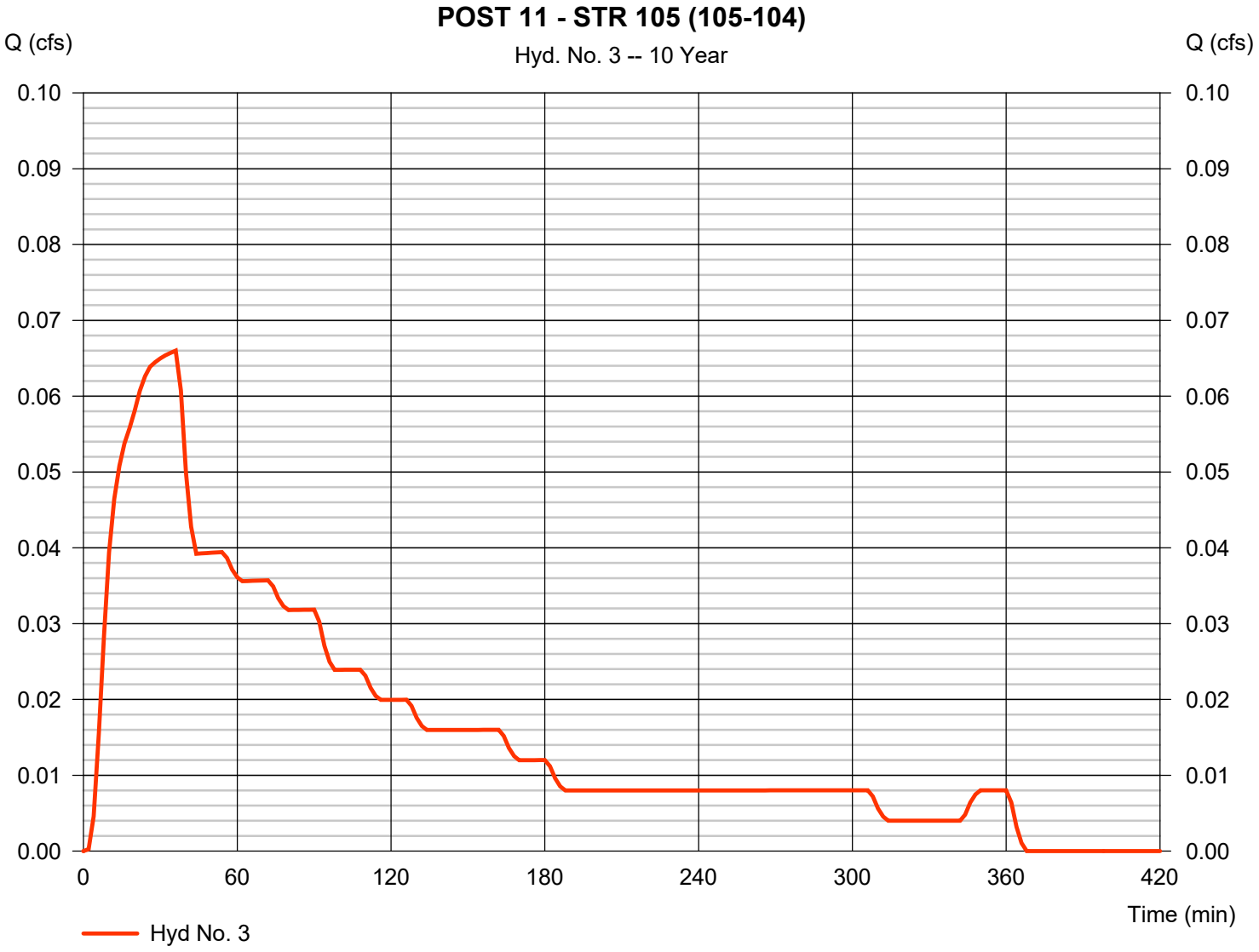


Hydrograph Report

Hyd. No. 3

POST 11 - STR 105 (105-104)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.066 cfs
Storm frequency	= 10 yrs	Time to peak	= 36 min
Time interval	= 2 min	Hyd. volume	= 403 cuft
Drainage area	= 0.040 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.19 in	Distribution	= Huff-1st
Storm duration	= 6.00 hrs	Shape factor	= 484

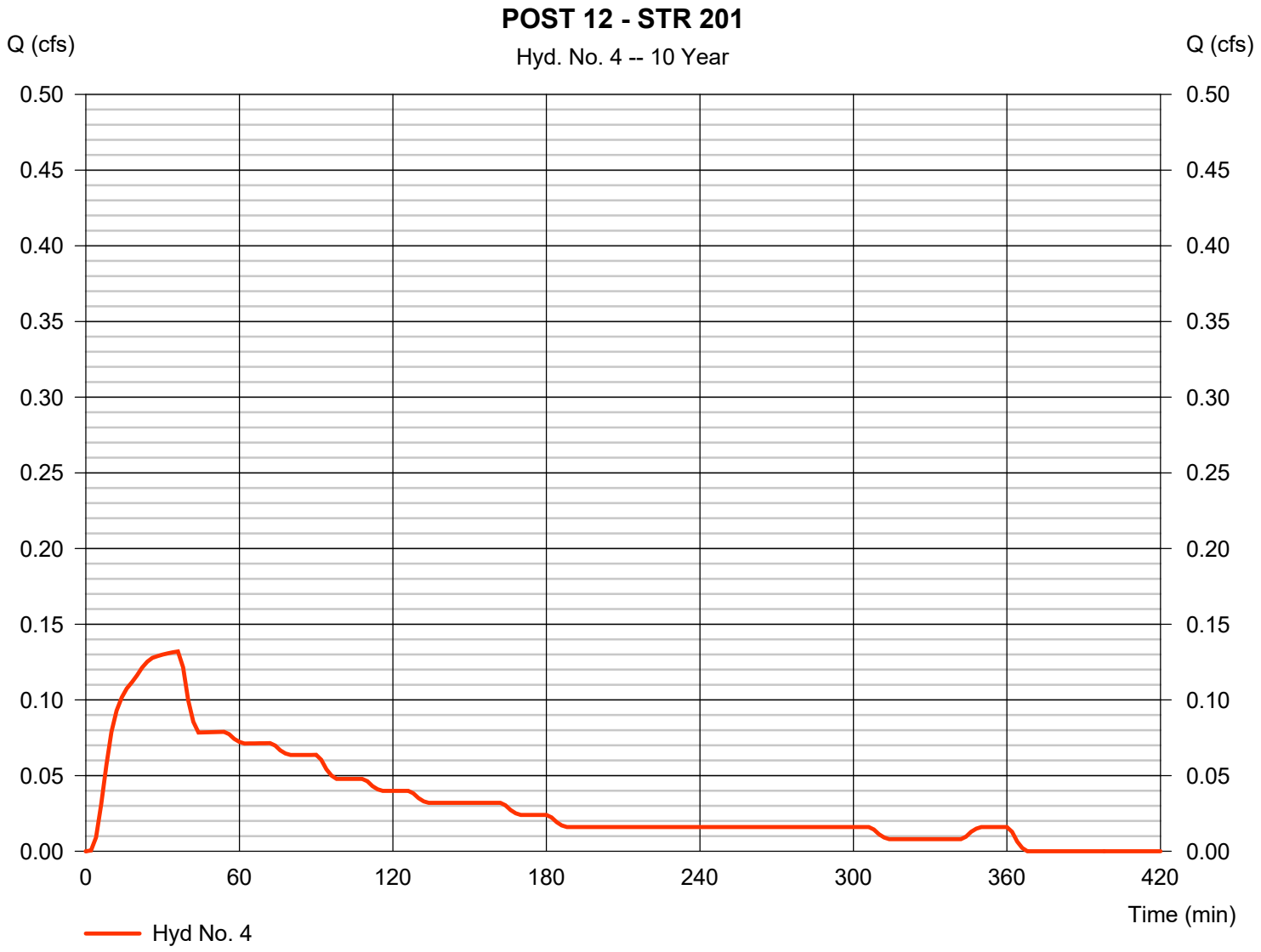


Hydrograph Report

Hyd. No. 4

POST 12 - STR 201

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.132 cfs
Storm frequency	=	10 yrs	Time to peak	=	36 min
Time interval	=	2 min	Hyd. volume	=	805 cuft
Drainage area	=	0.080 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.19 in	Distribution	=	Huff-1st
Storm duration	=	6.00 hrs	Shape factor	=	484

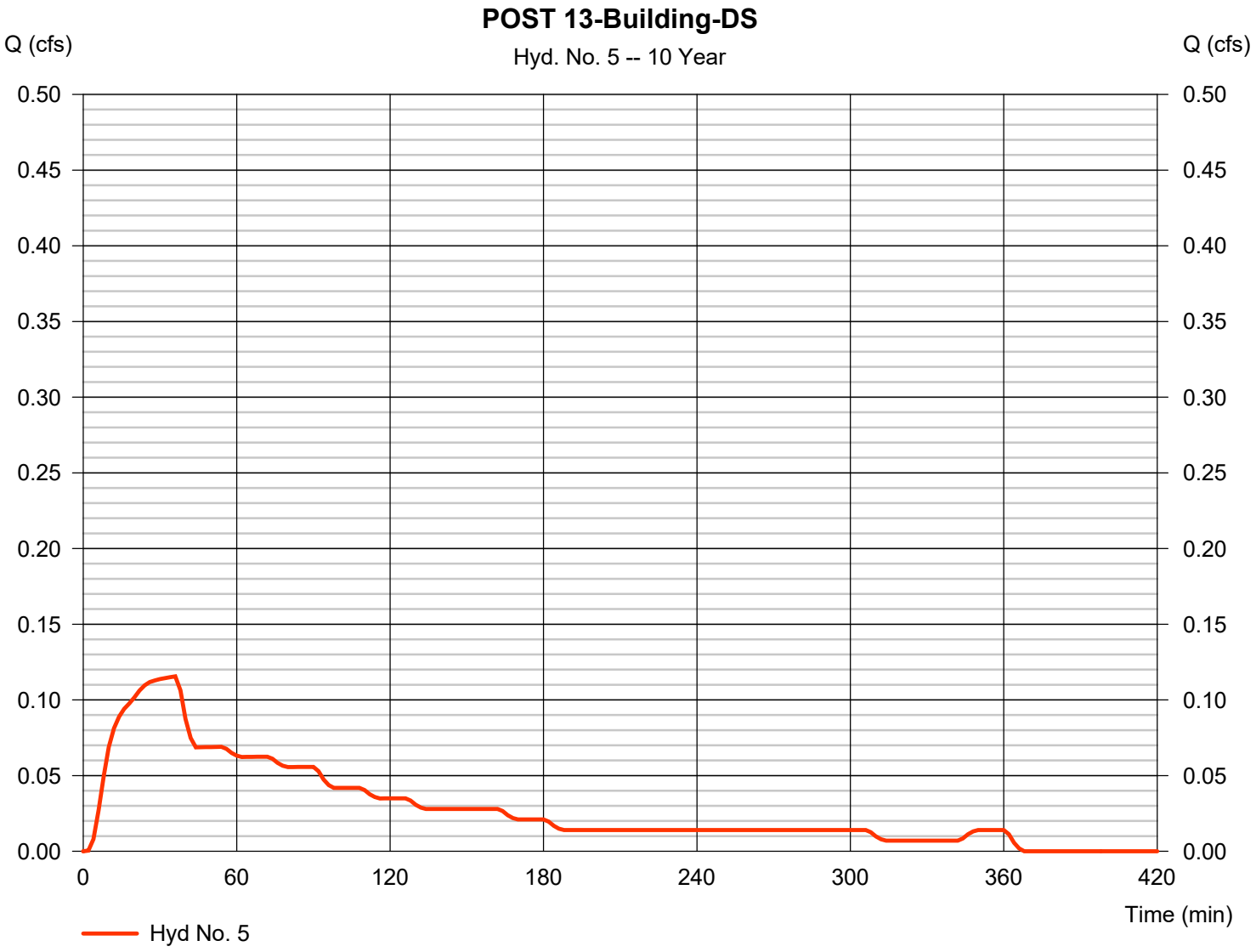


Hydrograph Report

Hyd. No. 5

POST 13-Building-DS

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.116 cfs
Storm frequency	=	10 yrs	Time to peak	=	36 min
Time interval	=	2 min	Hyd. volume	=	705 cuft
Drainage area	=	0.070 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.19 in	Distribution	=	Huff-1st
Storm duration	=	6.00 hrs	Shape factor	=	484



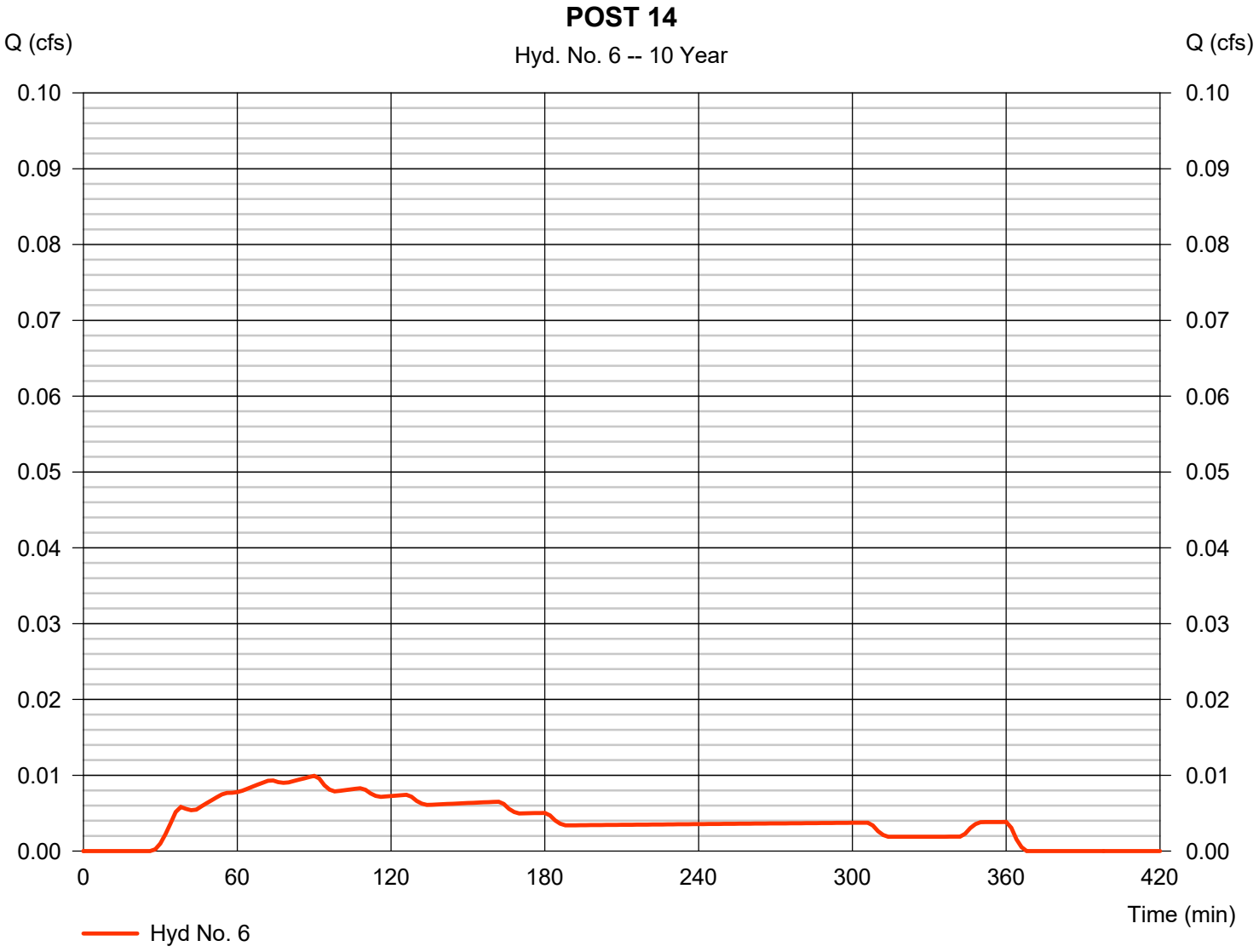
Hydrograph Report

Hyd. No. 6

POST 14

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.010 cfs
Storm frequency	=	10 yrs	Time to peak	=	90 min
Time interval	=	2 min	Hyd. volume	=	100 cuft
Drainage area	=	0.030 ac	Curve number	=	73*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.19 in	Distribution	=	Huff-1st
Storm duration	=	6.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.020 x 61) + (0.010 x 98)] / 0.030

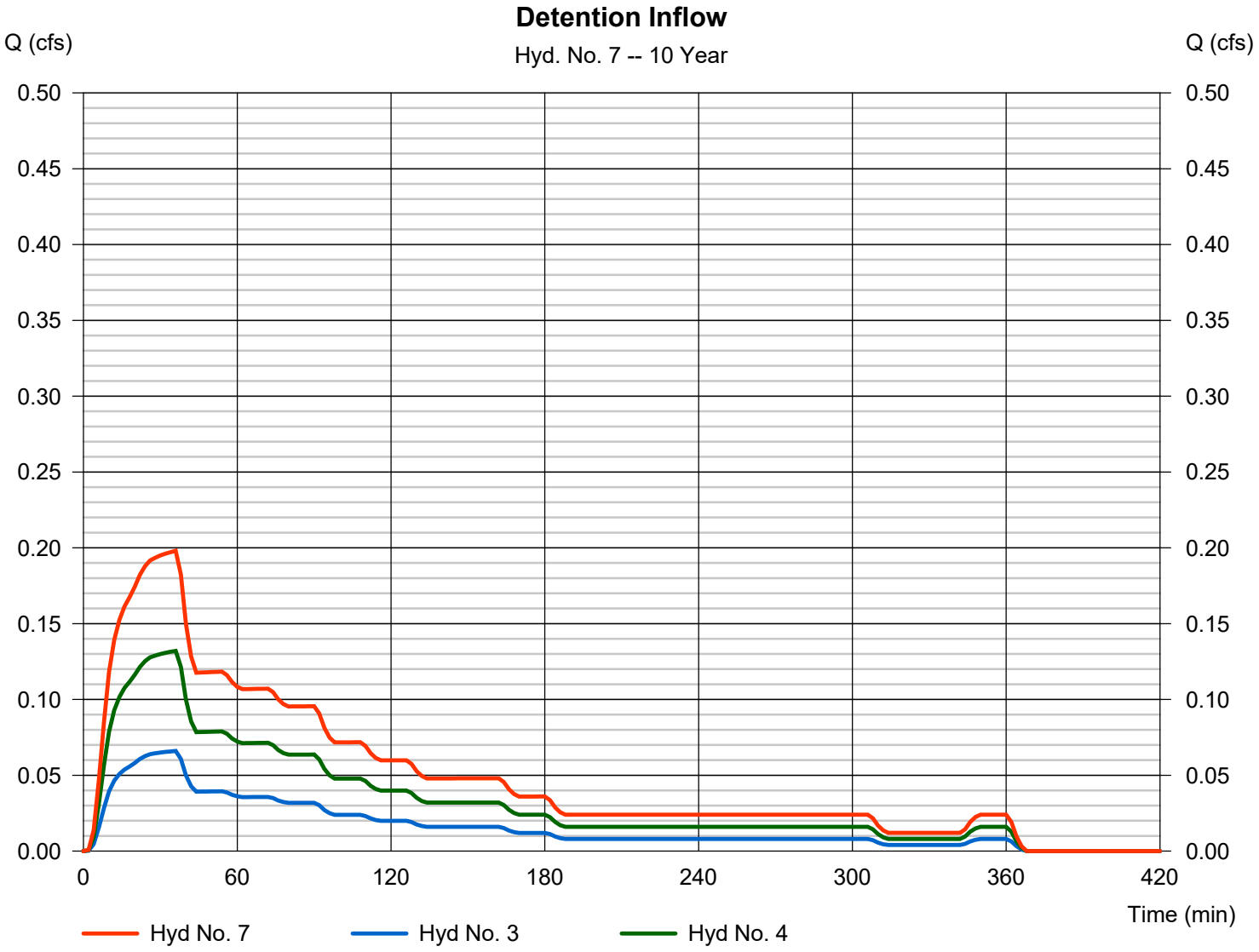


Hydrograph Report

Hyd. No. 7

Detention Inflow

Hydrograph type	=	Combine	Peak discharge	=	0.198 cfs
Storm frequency	=	10 yrs	Time to peak	=	36 min
Time interval	=	2 min	Hyd. volume	=	1,208 cuft
Inflow hyds.	=	3, 4	Contrib. drain. area	=	0.120 ac



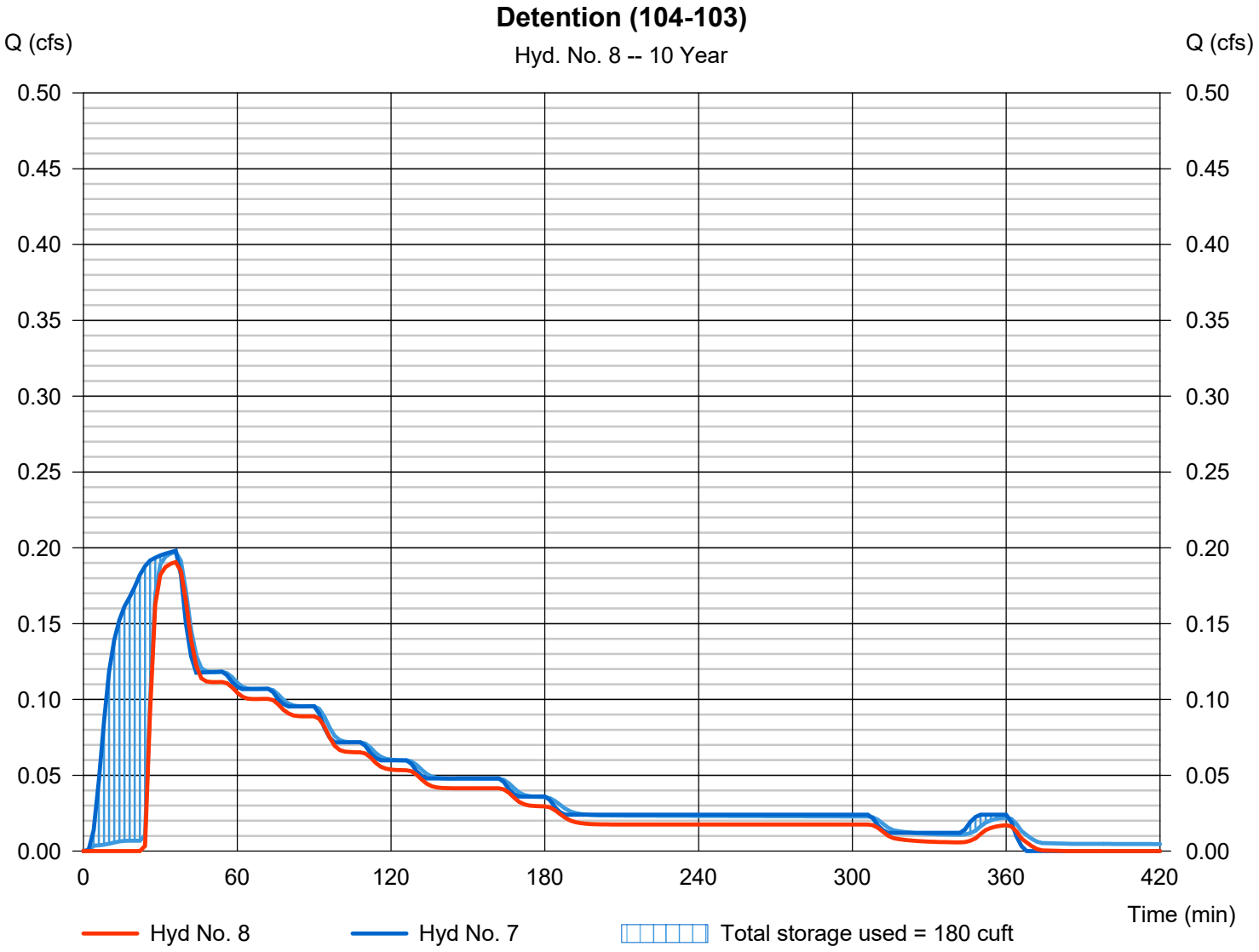
Hydrograph Report

Hyd. No. 8

Detention (104-103)

Hydrograph type	=	Reservoir	Peak discharge	=	0.191 cfs
Storm frequency	=	10 yrs	Time to peak	=	36 min
Time interval	=	2 min	Hyd. volume	=	912 cuft
Inflow hyd. No.	=	7 - Detention Inflow	Max. Elevation	=	718.21 ft
Reservoir name	=	Proposed Detention	Max. Storage	=	180 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

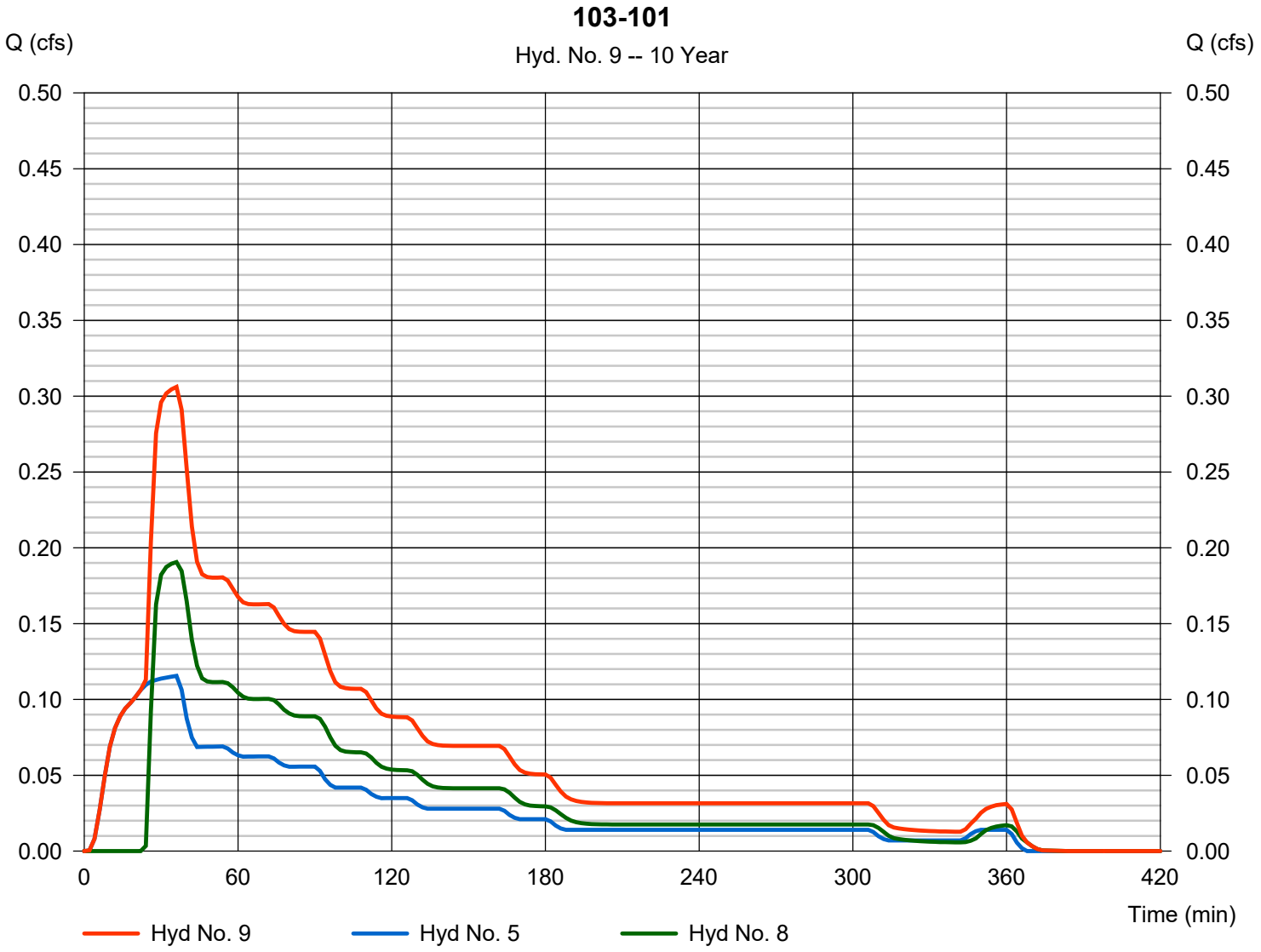


Hydrograph Report

Hyd. No. 9

103-101

Hydrograph type	=	Combine	Peak discharge	=	0.306 cfs
Storm frequency	=	10 yrs	Time to peak	=	36 min
Time interval	=	2 min	Hyd. volume	=	1,617 cuft
Inflow hyds.	=	5, 8	Contrib. drain. area	=	0.070 ac

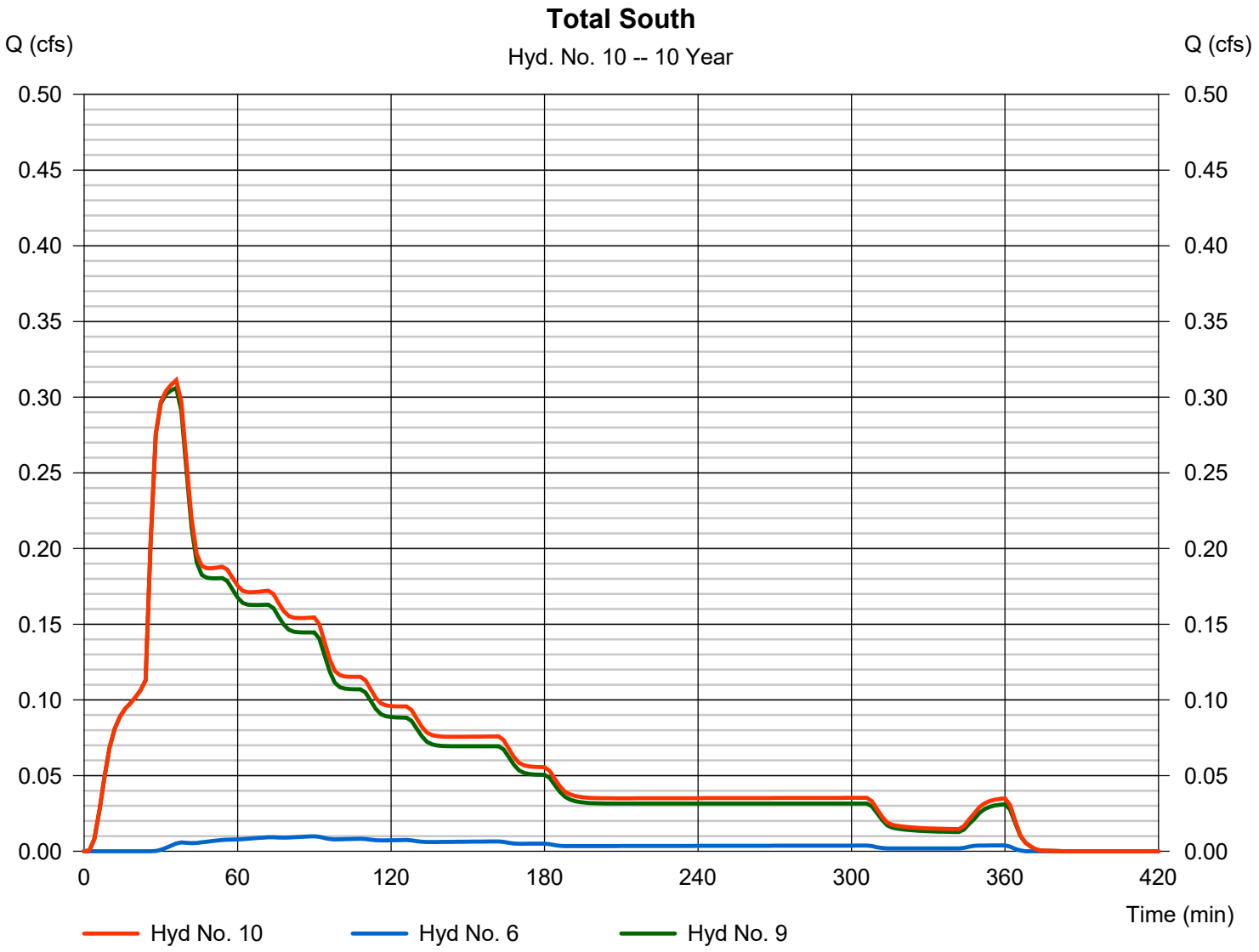


Hydrograph Report

Hyd. No. 10

Total South

Hydrograph type	=	Combine	Peak discharge	=	0.311 cfs
Storm frequency	=	10 yrs	Time to peak	=	36 min
Time interval	=	2 min	Hyd. volume	=	1,717 cuft
Inflow hyds.	=	6, 9	Contrib. drain. area	=	0.030 ac



Hydrograph Summary Report

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

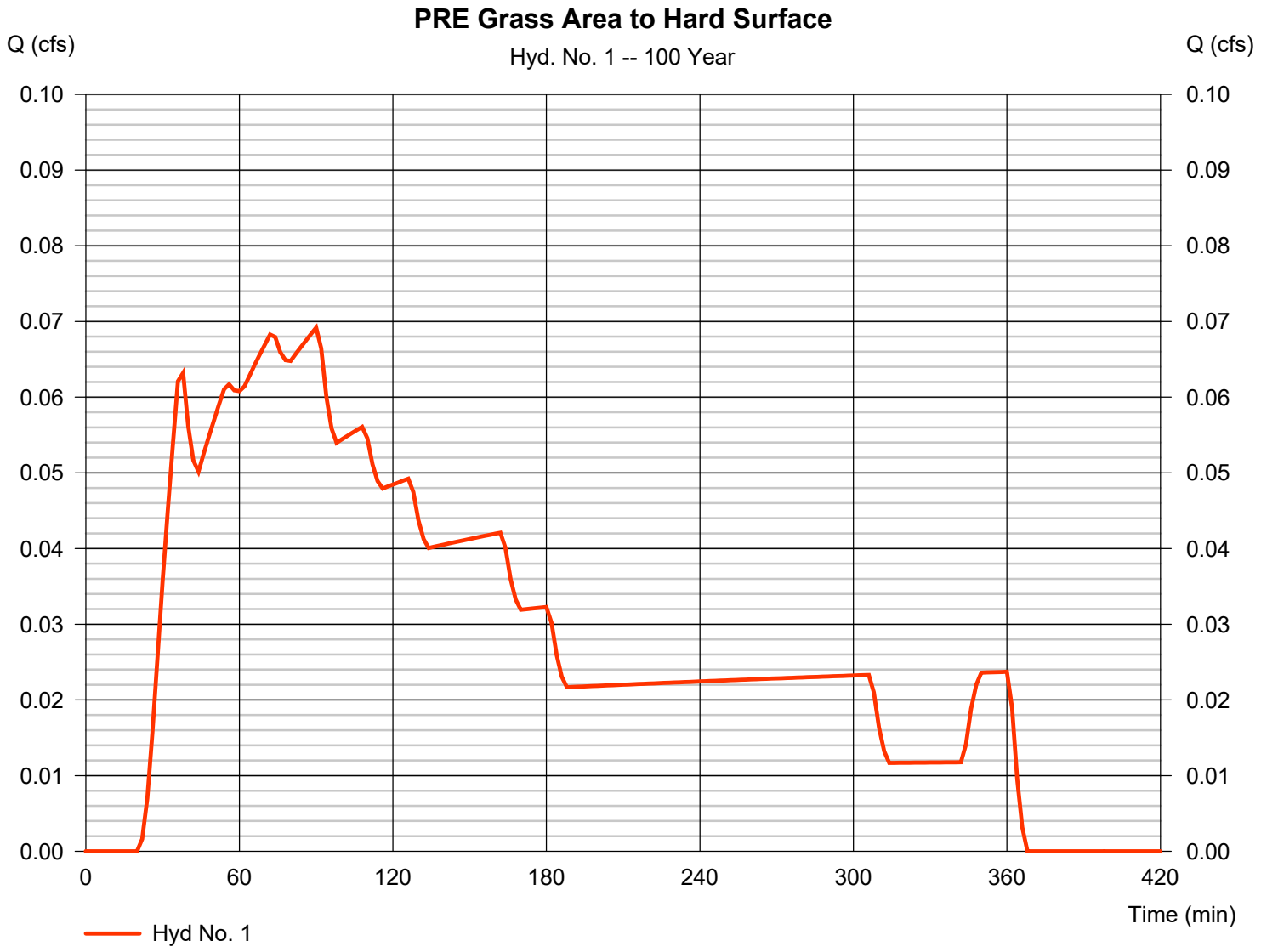
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.069	2	90	698	------	------	------	PRE Grass Area to Hard Surface
2	SCS Runoff	0.300	2	36	2,216	------	------	------	PRE South
3	SCS Runoff	0.108	2	36	666	------	------	------	POST 11 - STR 105 (105-104)
4	SCS Runoff	0.217	2	36	1,332	------	------	------	POST 12 - STR 201
5	SCS Runoff	0.189	2	36	1,166	------	------	------	POST 13-Building-DS
6	SCS Runoff	0.026	2	36	243	------	------	------	POST 14
7	Combine	0.325	2	36	1,998	3, 4,	------	------	Detention Inflow
8	Reservoir	0.317	2	36	1,699	7	718.28	190	Detention (104-103)
9	Combine	0.507	2	36	2,865	5, 8	------	------	103-101
10	Combine	0.533	2	36	3,108	6, 9	------	------	Total South

Hydrograph Report

Hyd. No. 1

PRE Grass Area to Hard Surface

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.069 cfs
Storm frequency	=	100 yrs	Time to peak	=	90 min
Time interval	=	2 min	Hyd. volume	=	698 cuft
Drainage area	=	0.100 ac	Curve number	=	69
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.13 in	Distribution	=	Huff-1st
Storm duration	=	6.00 hrs	Shape factor	=	484



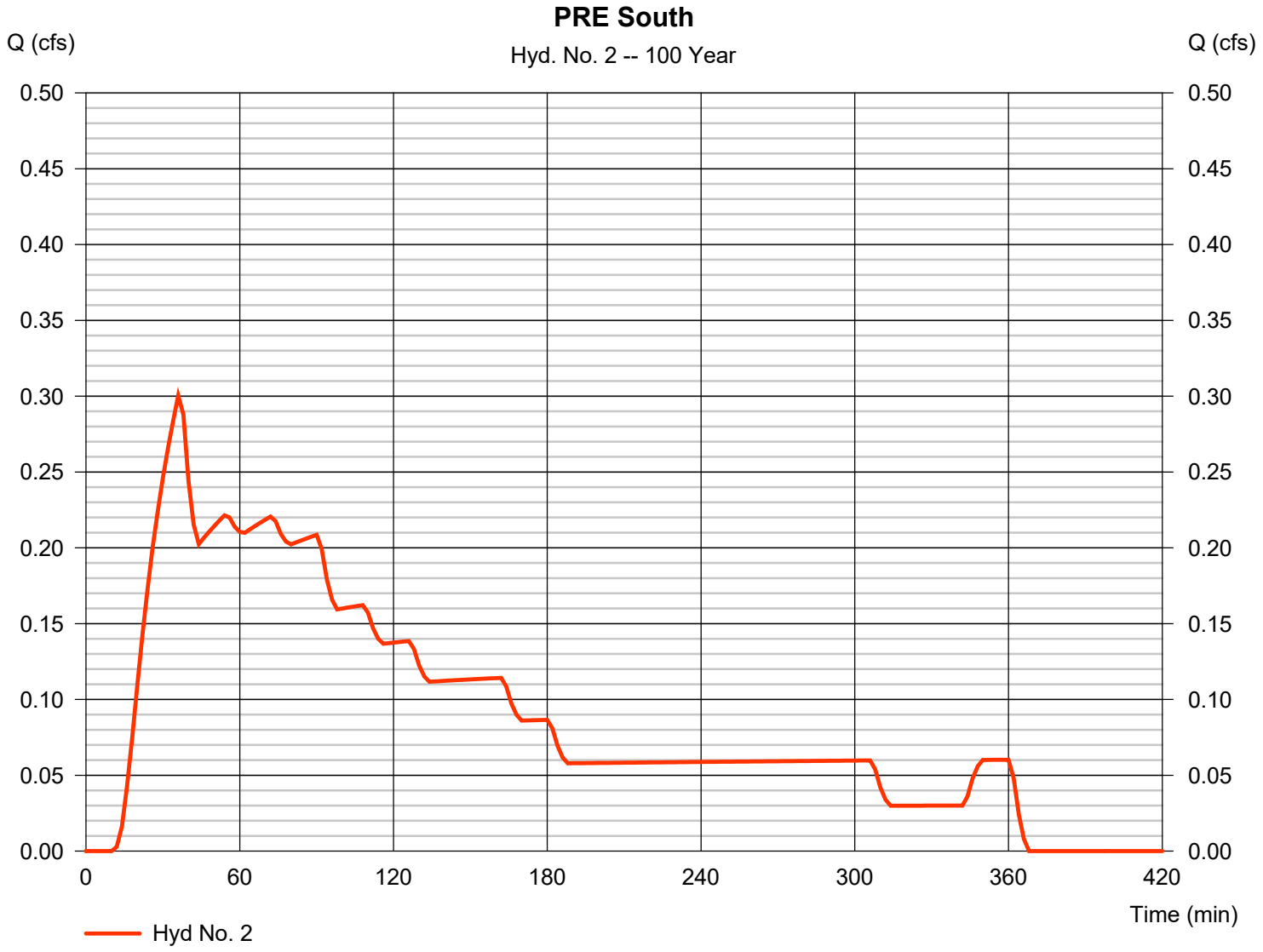
Hydrograph Report

Hyd. No. 2

PRE South

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.300 cfs
Storm frequency	=	100 yrs	Time to peak	=	36 min
Time interval	=	2 min	Hyd. volume	=	2,216 cuft
Drainage area	=	0.210 ac	Curve number	=	81*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.13 in	Distribution	=	Huff-1st
Storm duration	=	6.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.120 x 69) + (0.090 x 98)] / 0.210

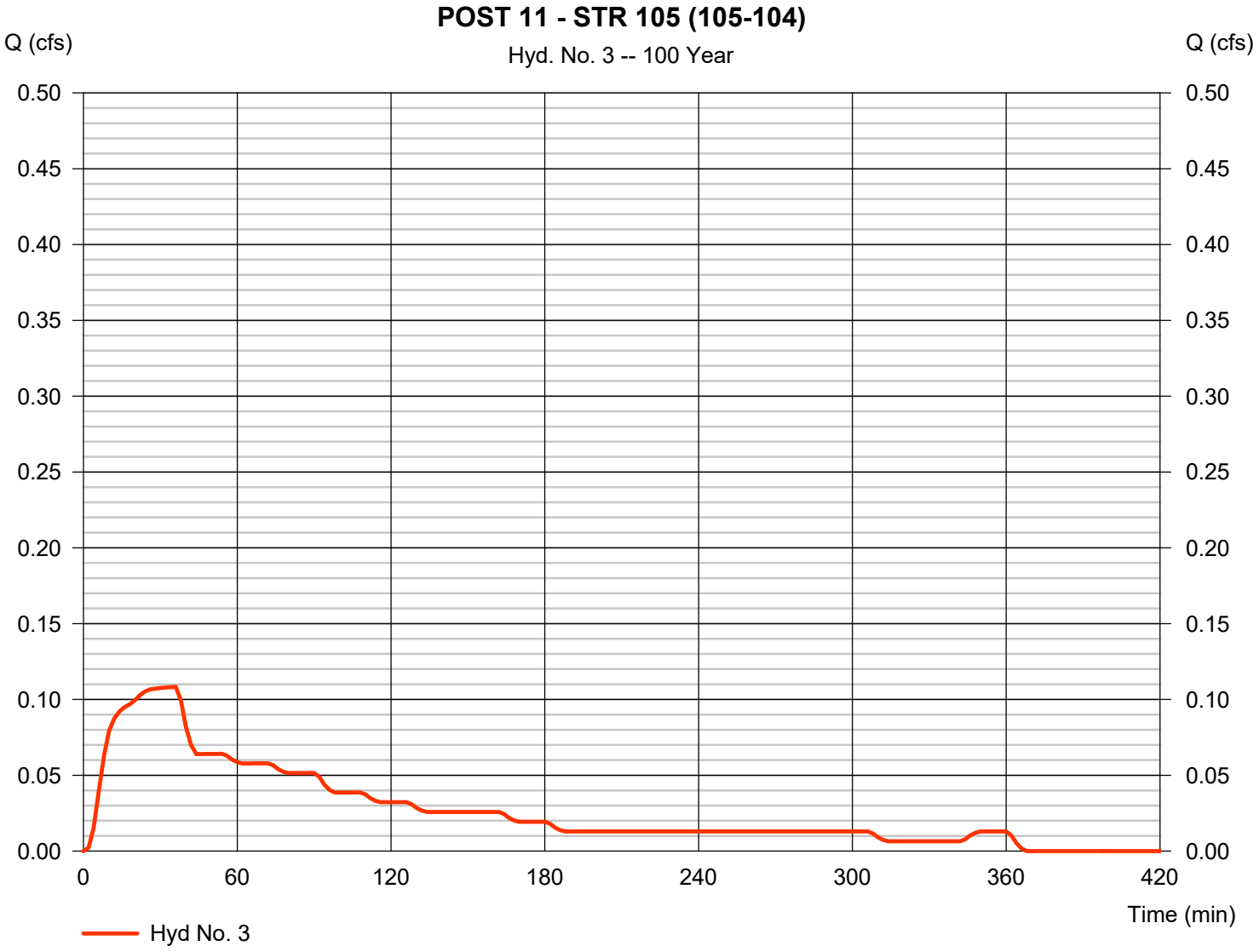


Hydrograph Report

Hyd. No. 3

POST 11 - STR 105 (105-104)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.108 cfs
Storm frequency	= 100 yrs	Time to peak	= 36 min
Time interval	= 2 min	Hyd. volume	= 666 cuft
Drainage area	= 0.040 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.13 in	Distribution	= Huff-1st
Storm duration	= 6.00 hrs	Shape factor	= 484

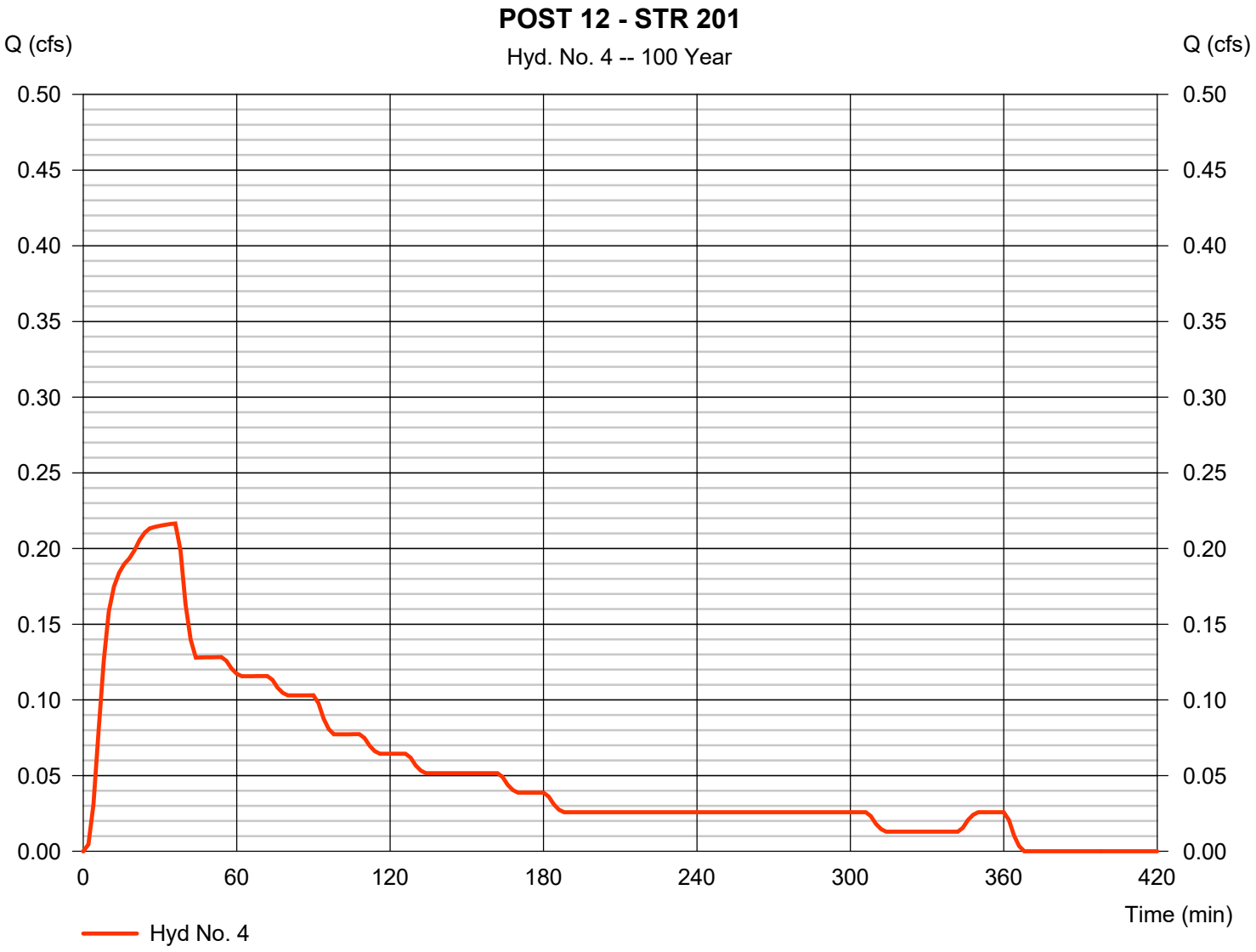


Hydrograph Report

Hyd. No. 4

POST 12 - STR 201

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.217 cfs
Storm frequency	=	100 yrs	Time to peak	=	36 min
Time interval	=	2 min	Hyd. volume	=	1,332 cuft
Drainage area	=	0.080 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.13 in	Distribution	=	Huff-1st
Storm duration	=	6.00 hrs	Shape factor	=	484

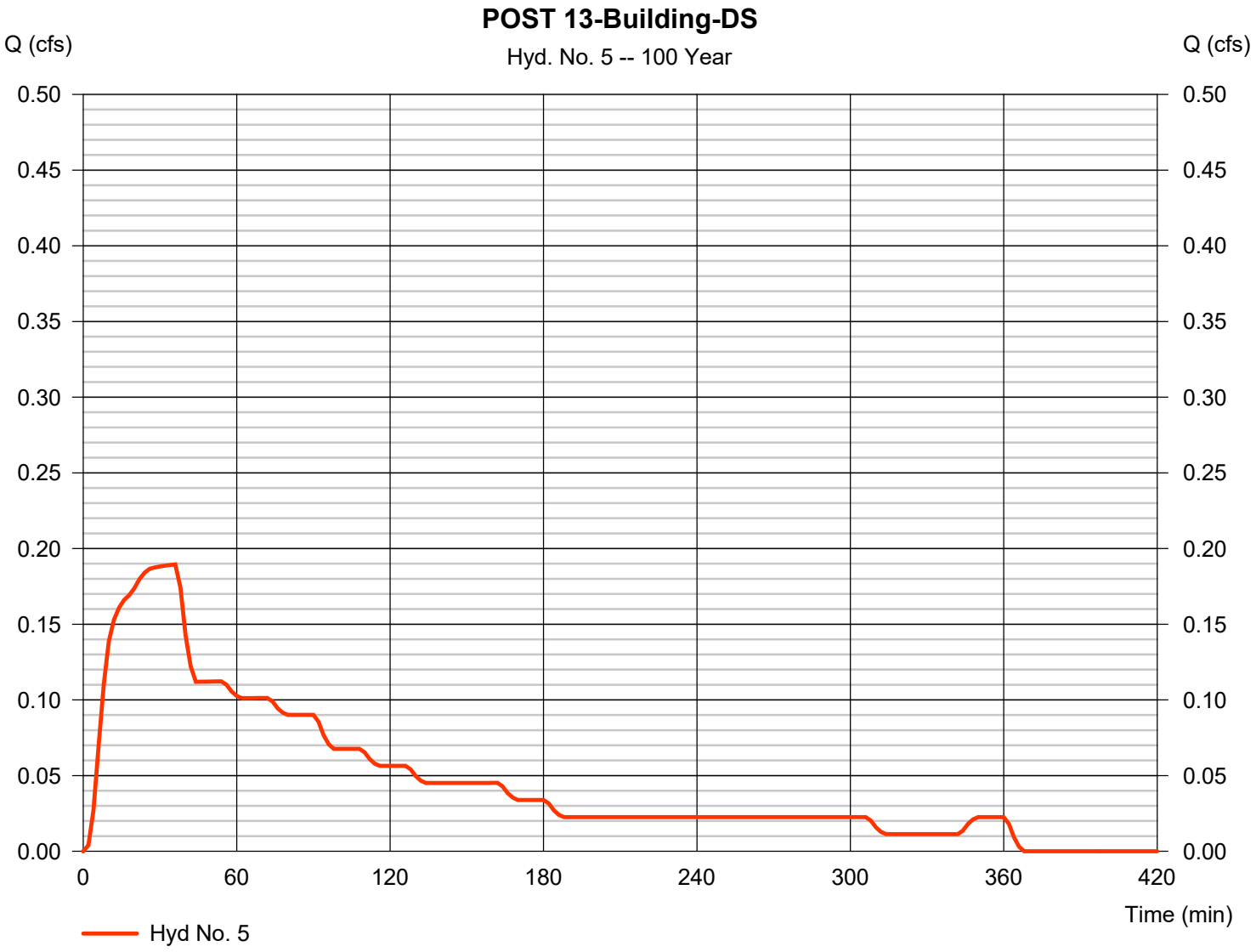


Hydrograph Report

Hyd. No. 5

POST 13-Building-DS

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.189 cfs
Storm frequency	=	100 yrs	Time to peak	=	36 min
Time interval	=	2 min	Hyd. volume	=	1,166 cuft
Drainage area	=	0.070 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.13 in	Distribution	=	Huff-1st
Storm duration	=	6.00 hrs	Shape factor	=	484



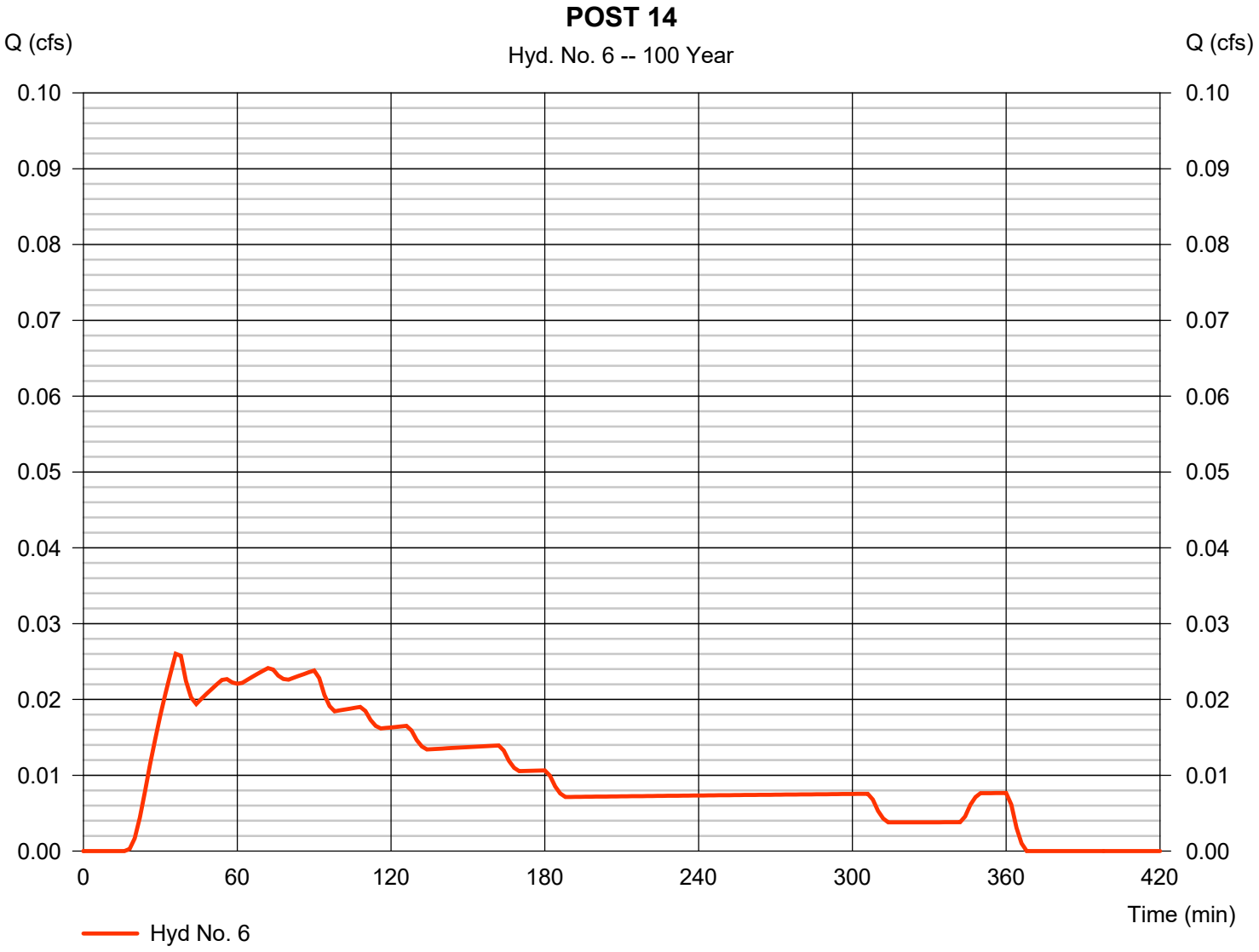
Hydrograph Report

Hyd. No. 6

POST 14

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.026 cfs
Storm frequency	=	100 yrs	Time to peak	=	36 min
Time interval	=	2 min	Hyd. volume	=	243 cuft
Drainage area	=	0.030 ac	Curve number	=	73*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.13 in	Distribution	=	Huff-1st
Storm duration	=	6.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.020 x 61) + (0.010 x 98)] / 0.030

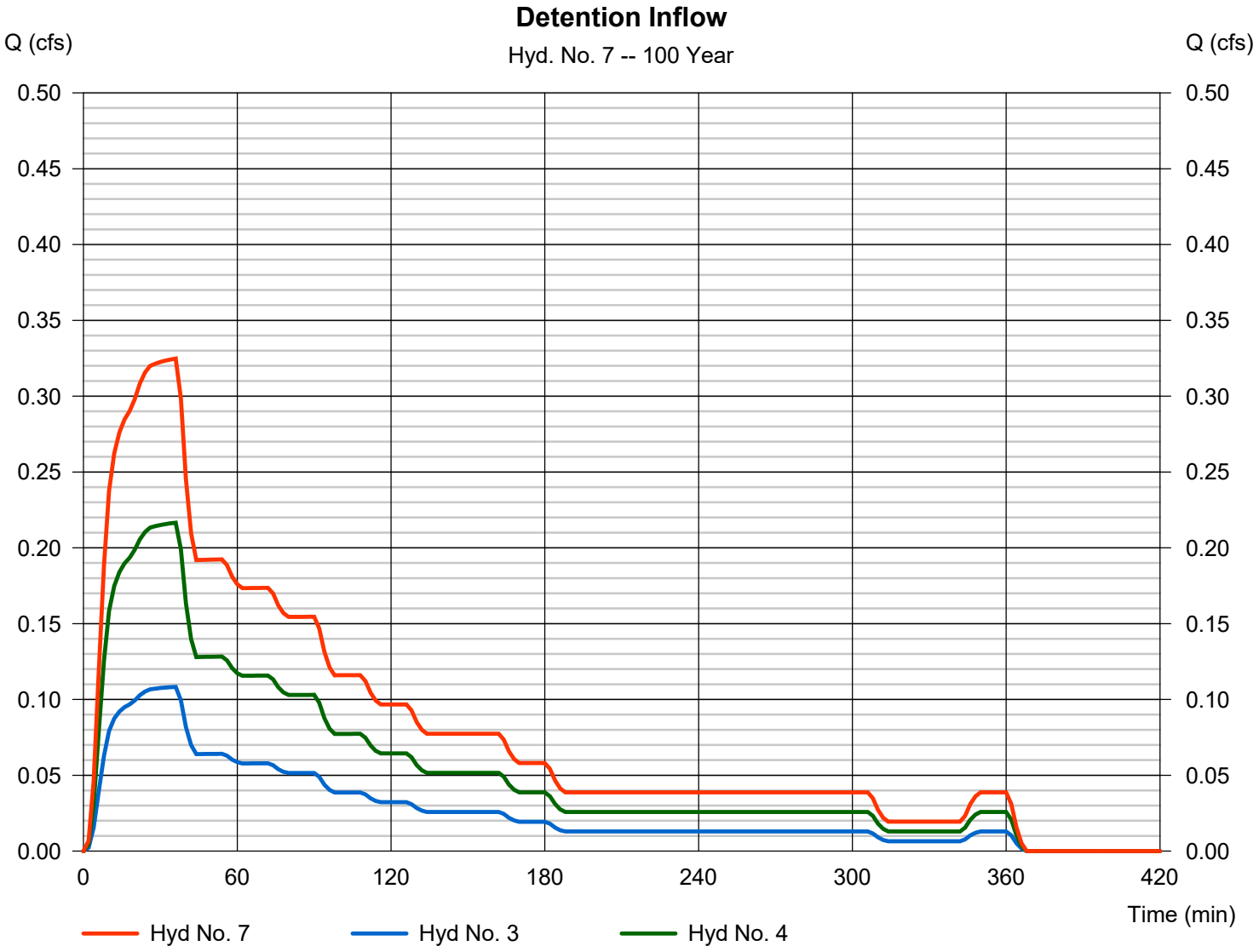


Hydrograph Report

Hyd. No. 7

Detention Inflow

Hydrograph type	=	Combine	Peak discharge	=	0.325 cfs
Storm frequency	=	100 yrs	Time to peak	=	36 min
Time interval	=	2 min	Hyd. volume	=	1,998 cuft
Inflow hyds.	=	3, 4	Contrib. drain. area	=	0.120 ac



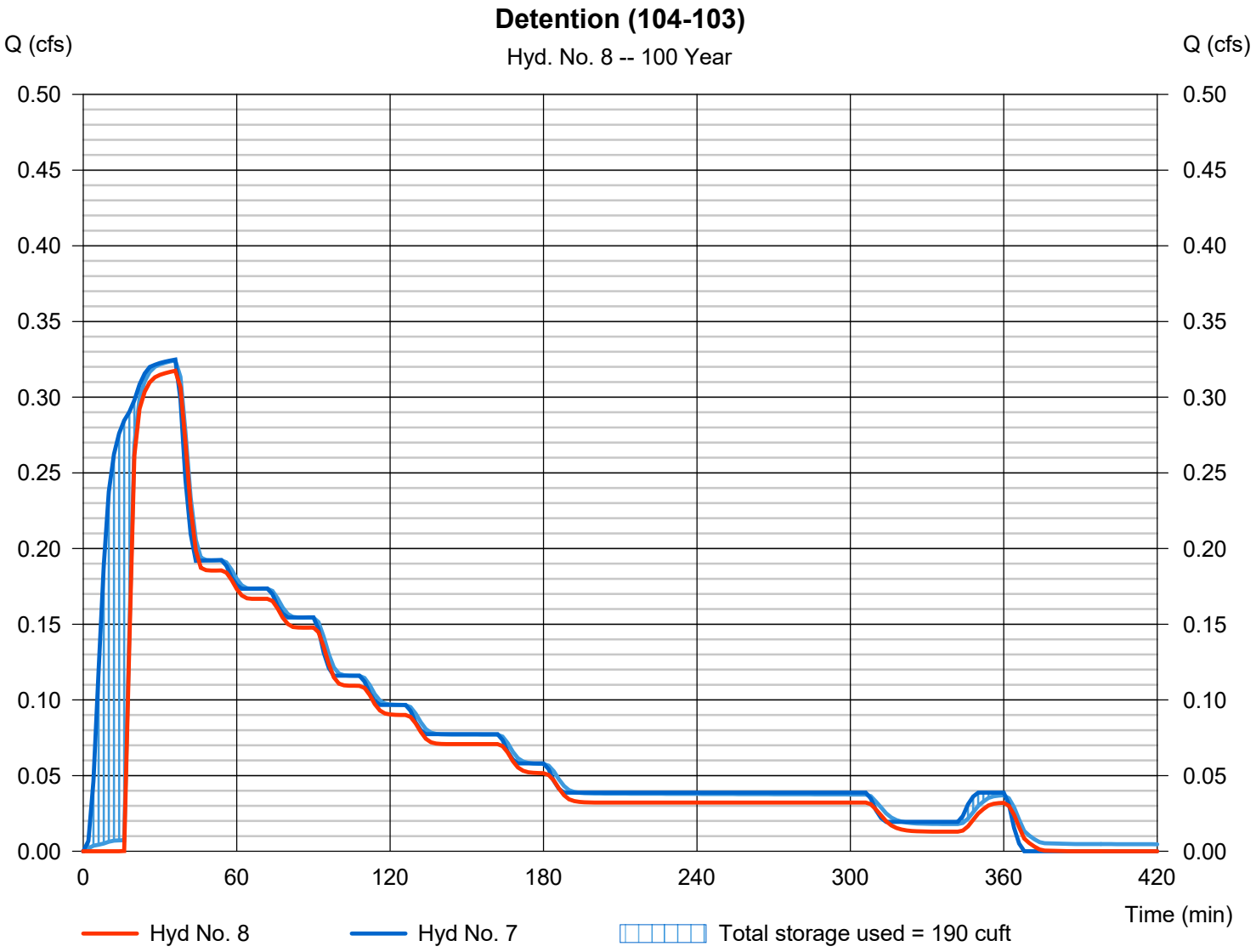
Hydrograph Report

Hyd. No. 8

Detention (104-103)

Hydrograph type	=	Reservoir	Peak discharge	=	0.317 cfs
Storm frequency	=	100 yrs	Time to peak	=	36 min
Time interval	=	2 min	Hyd. volume	=	1,699 cuft
Inflow hyd. No.	=	7 - Detention Inflow	Max. Elevation	=	718.28 ft
Reservoir name	=	Proposed Detention	Max. Storage	=	190 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

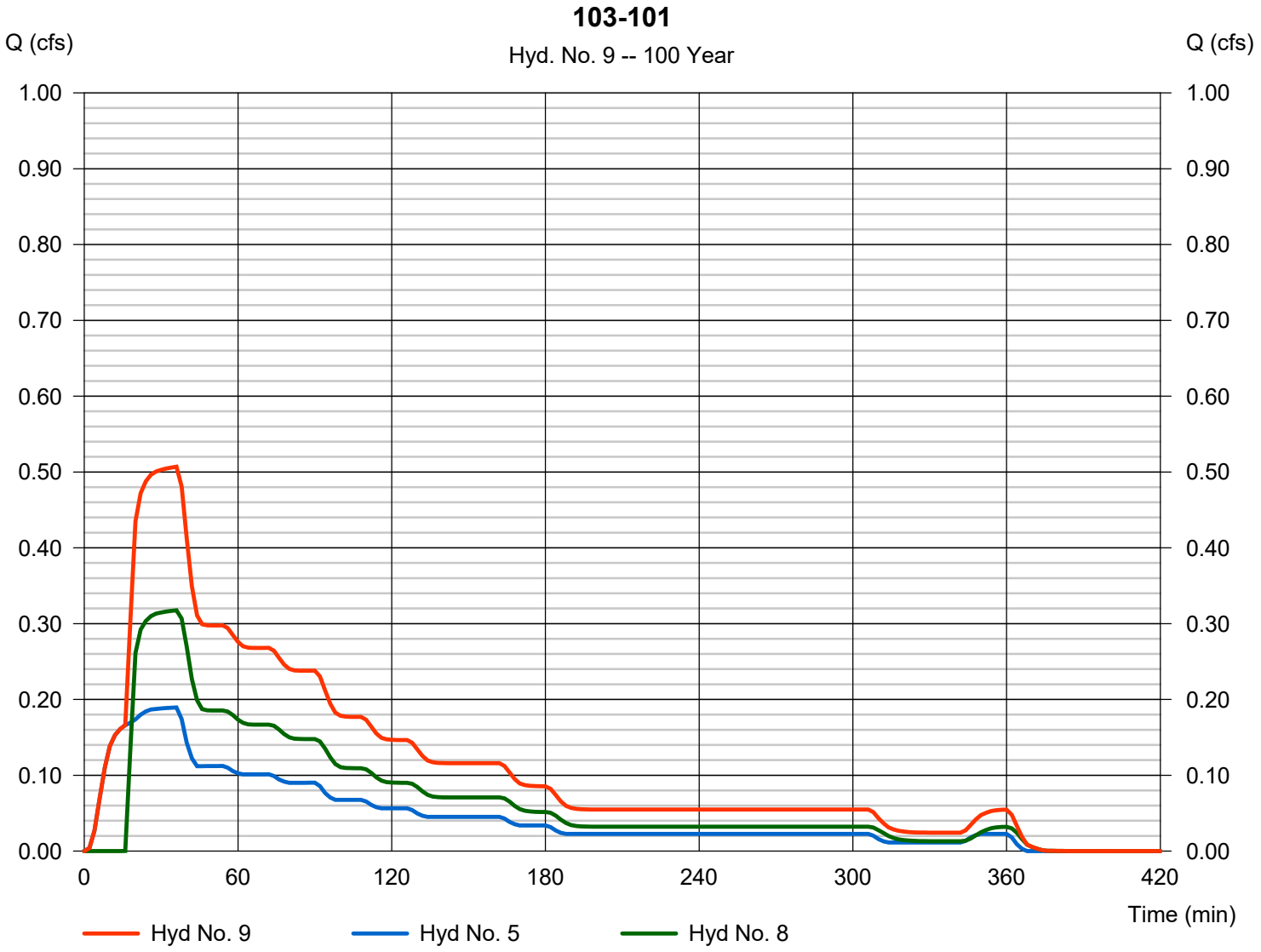


Hydrograph Report

Hyd. No. 9

103-101

Hydrograph type	=	Combine	Peak discharge	=	0.507 cfs
Storm frequency	=	100 yrs	Time to peak	=	36 min
Time interval	=	2 min	Hyd. volume	=	2,865 cuft
Inflow hyds.	=	5, 8	Contrib. drain. area	=	0.070 ac

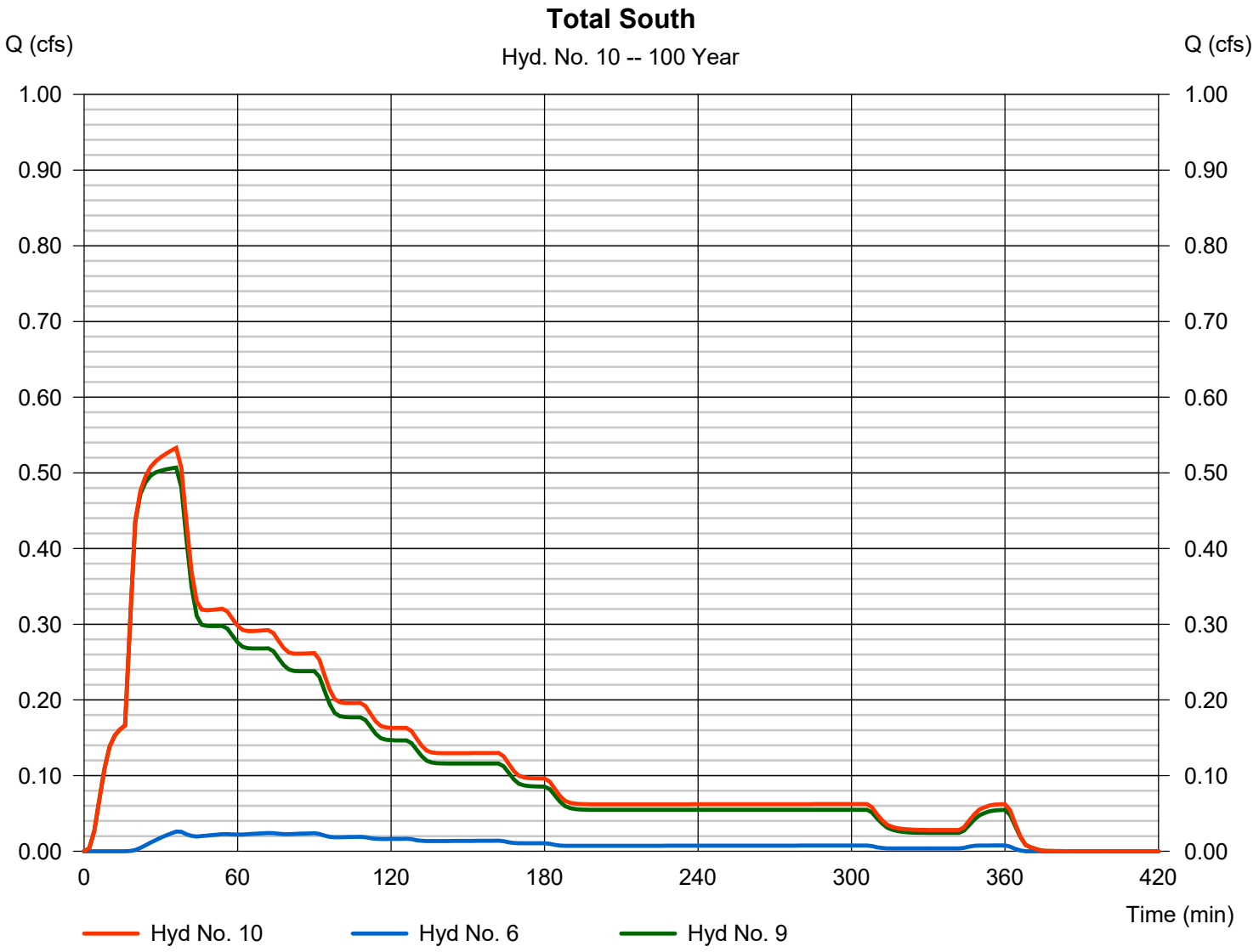


Hydrograph Report

Hyd. No. 10

Total South

Hydrograph type	=	Combine	Peak discharge	=	0.533 cfs
Storm frequency	=	100 yrs	Time to peak	=	36 min
Time interval	=	2 min	Hyd. volume	=	3,108 cuft
Inflow hyds.	=	6, 9	Contrib. drain. area	=	0.030 ac



Appendix H

Hydraflow Hydrographs
12 Hour Storm Data

Hydraflow Table of Contents

2 - Year

10 - Year

100 - Year

Hydrograph Summary Report

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

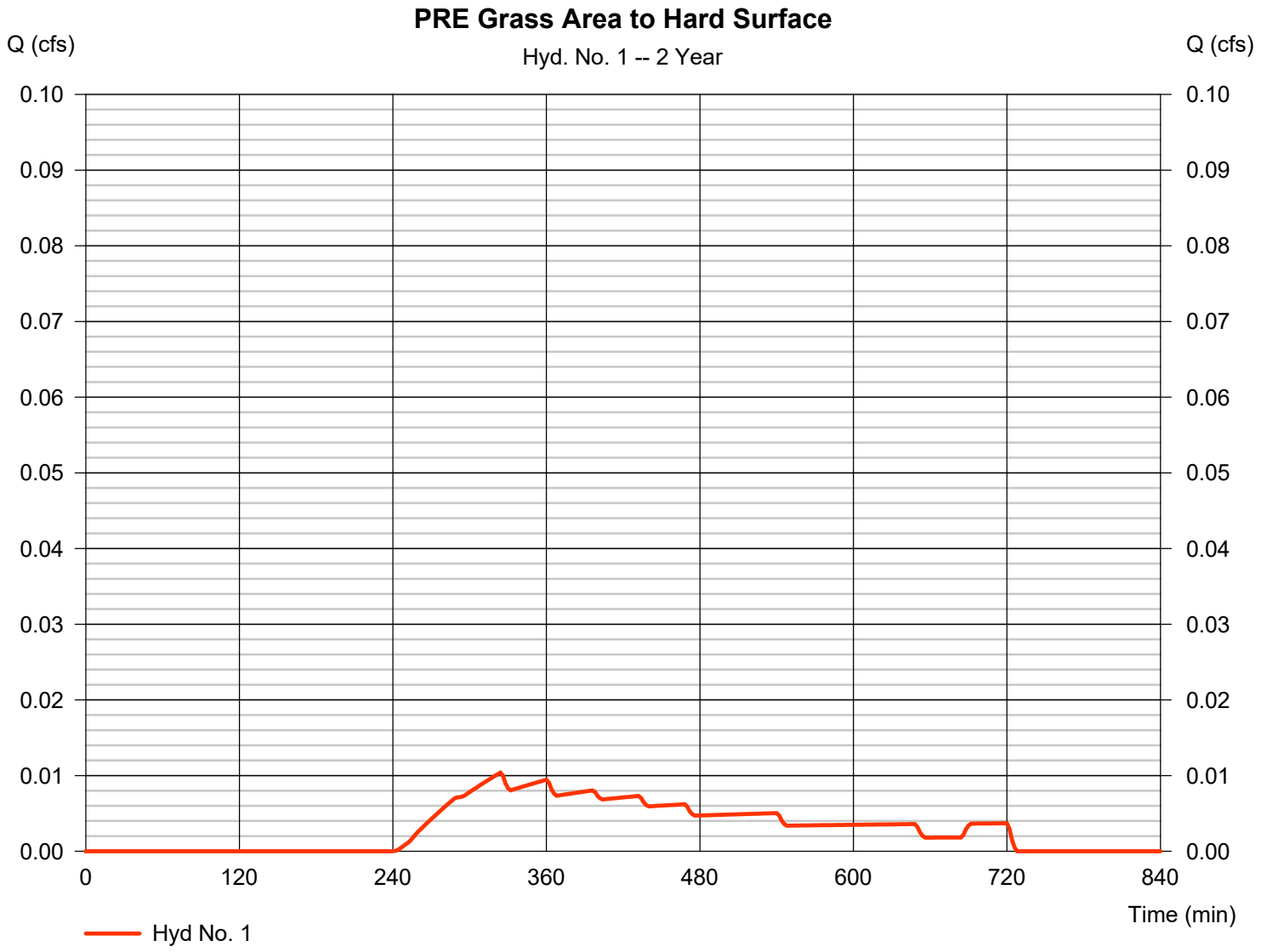
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.010	2	324	149	------	------	------	PRE Grass Area to Hard Surface
2	SCS Runoff	0.049	2	324	694	------	------	------	PRE South
3	SCS Runoff	0.019	2	288	315	------	------	------	POST 11 - STR 105 (105-104)
4	SCS Runoff	0.038	2	288	629	------	------	------	POST 12 - STR 201
5	SCS Runoff	0.033	2	288	550	------	------	------	POST 13-Building-DS
6	SCS Runoff	0.004	2	324	60	------	------	------	POST 14
7	Combine	0.056	2	288	944	3, 4,	------	------	Detention Inflow
8	Reservoir	0.050	2	288	542	7	718.11	166	Detention (104-103)
9	Combine	0.083	2	288	1,093	5, 8	------	------	103-101
10	Combine	0.086	2	288	1,153	6, 9	------	------	Total South

Hydrograph Report

Hyd. No. 1

PRE Grass Area to Hard Surface

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.010 cfs
Storm frequency	=	2 yrs	Time to peak	=	324 min
Time interval	=	2 min	Hyd. volume	=	149 cuft
Drainage area	=	0.100 ac	Curve number	=	69
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.54 in	Distribution	=	Huff-2nd
Storm duration	=	12.00 hrs	Shape factor	=	484



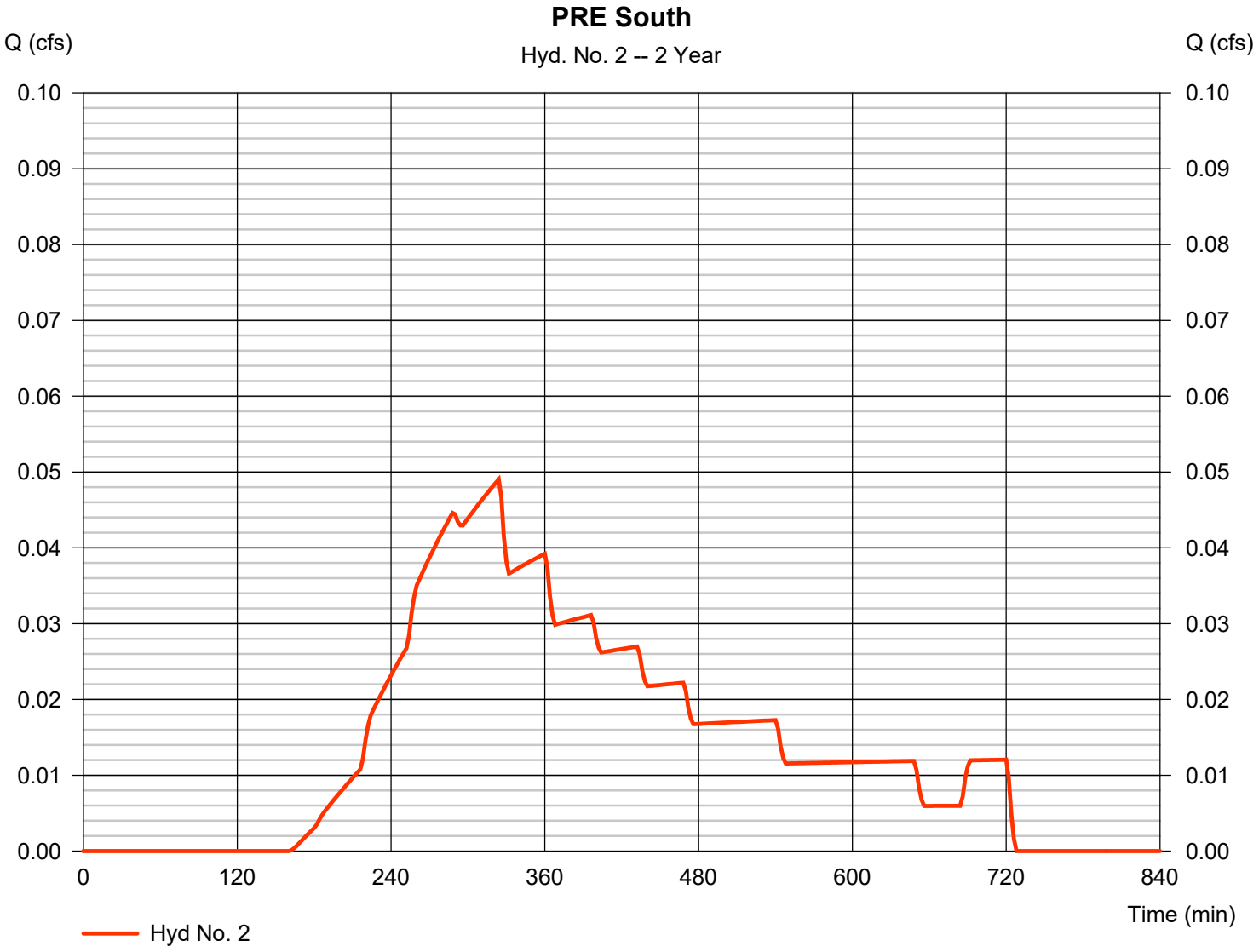
Hydrograph Report

Hyd. No. 2

PRE South

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.049 cfs
Storm frequency	=	2 yrs	Time to peak	=	324 min
Time interval	=	2 min	Hyd. volume	=	694 cuft
Drainage area	=	0.210 ac	Curve number	=	81*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.54 in	Distribution	=	Huff-2nd
Storm duration	=	12.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.120 x 69) + (0.090 x 98)] / 0.210

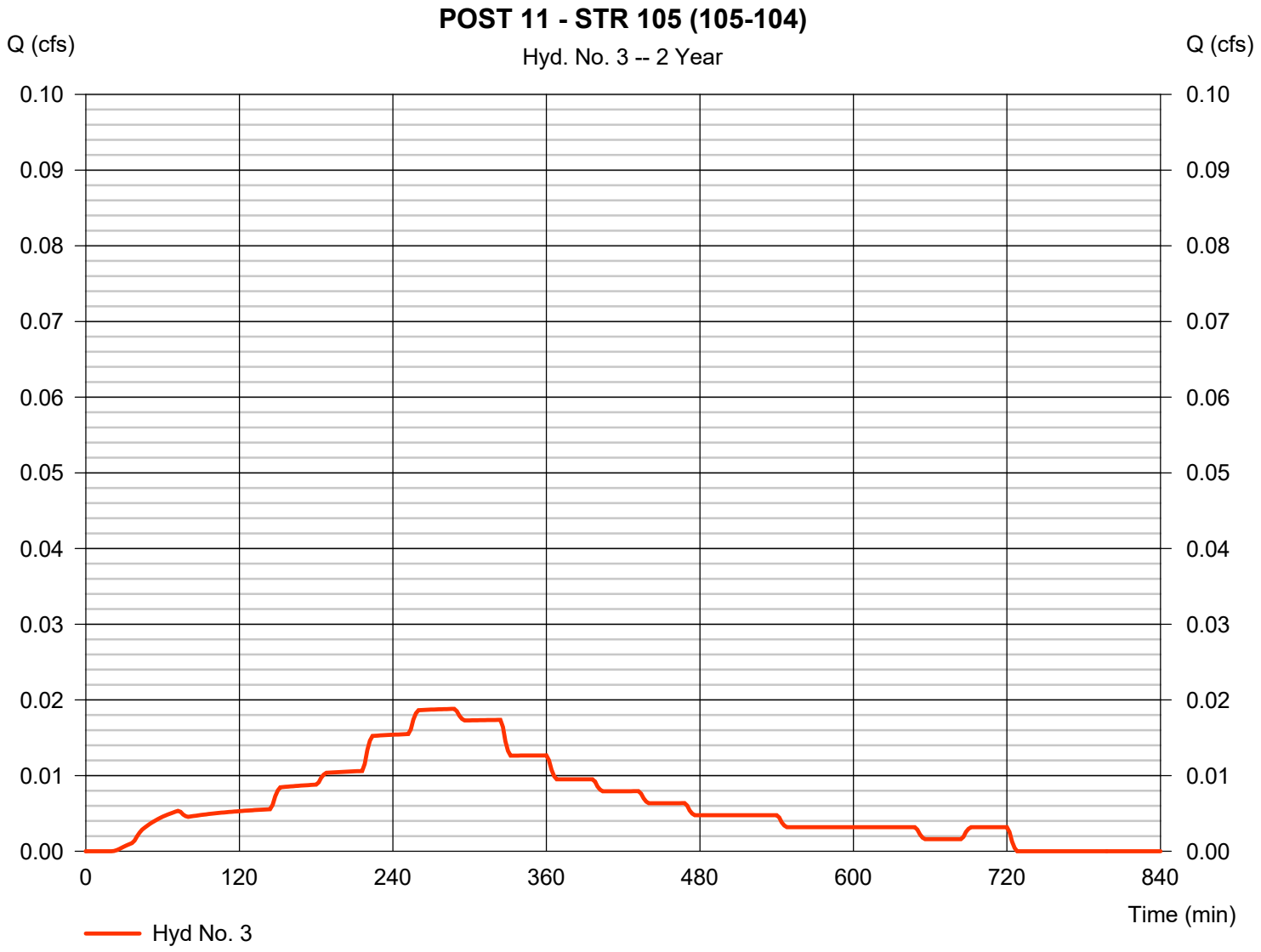


Hydrograph Report

Hyd. No. 3

POST 11 - STR 105 (105-104)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.019 cfs
Storm frequency	= 2 yrs	Time to peak	= 288 min
Time interval	= 2 min	Hyd. volume	= 315 cuft
Drainage area	= 0.040 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.54 in	Distribution	= Huff-2nd
Storm duration	= 12.00 hrs	Shape factor	= 484

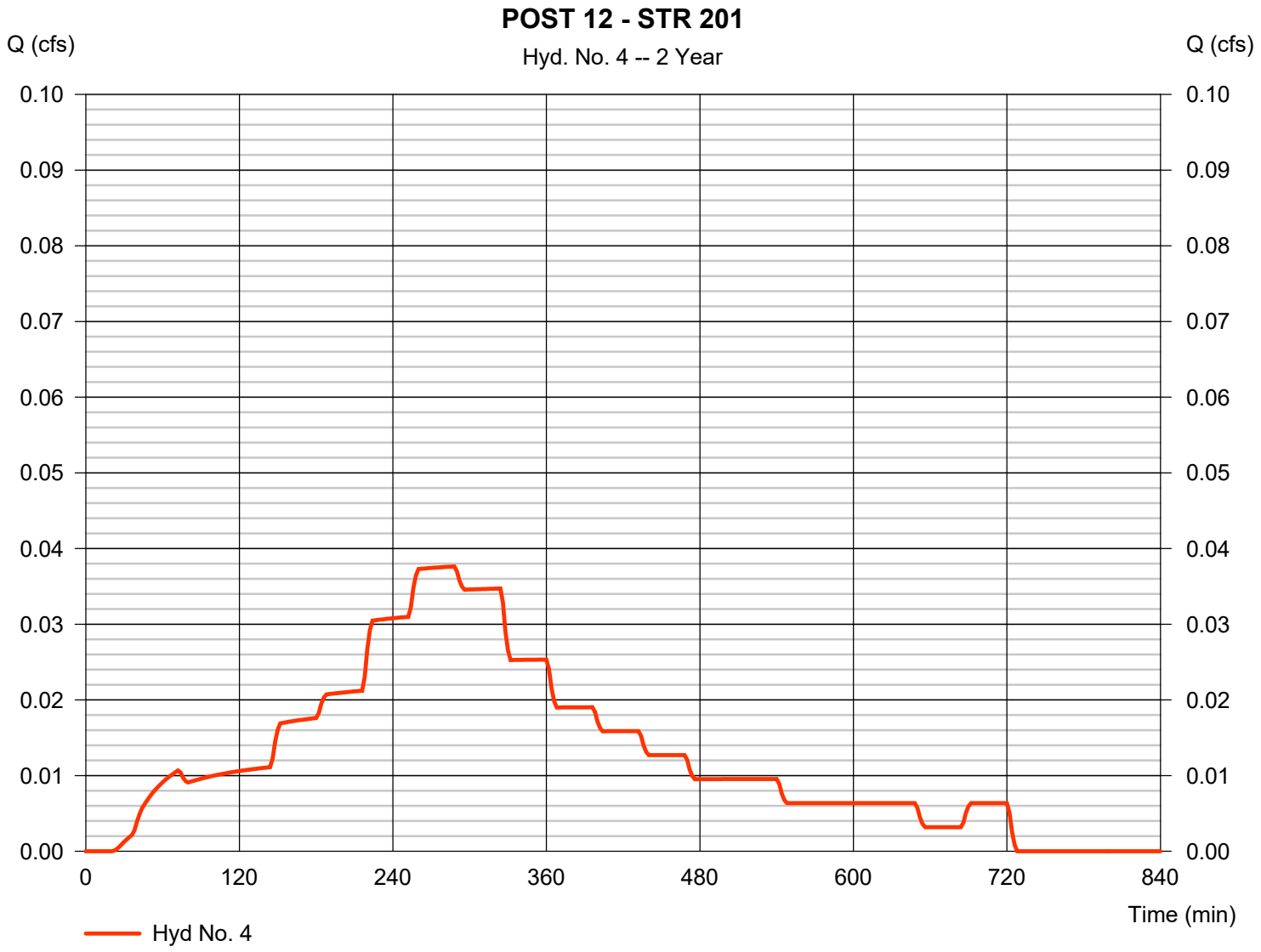


Hydrograph Report

Hyd. No. 4

POST 12 - STR 201

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.038 cfs
Storm frequency	=	2 yrs	Time to peak	=	288 min
Time interval	=	2 min	Hyd. volume	=	629 cuft
Drainage area	=	0.080 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.54 in	Distribution	=	Huff-2nd
Storm duration	=	12.00 hrs	Shape factor	=	484

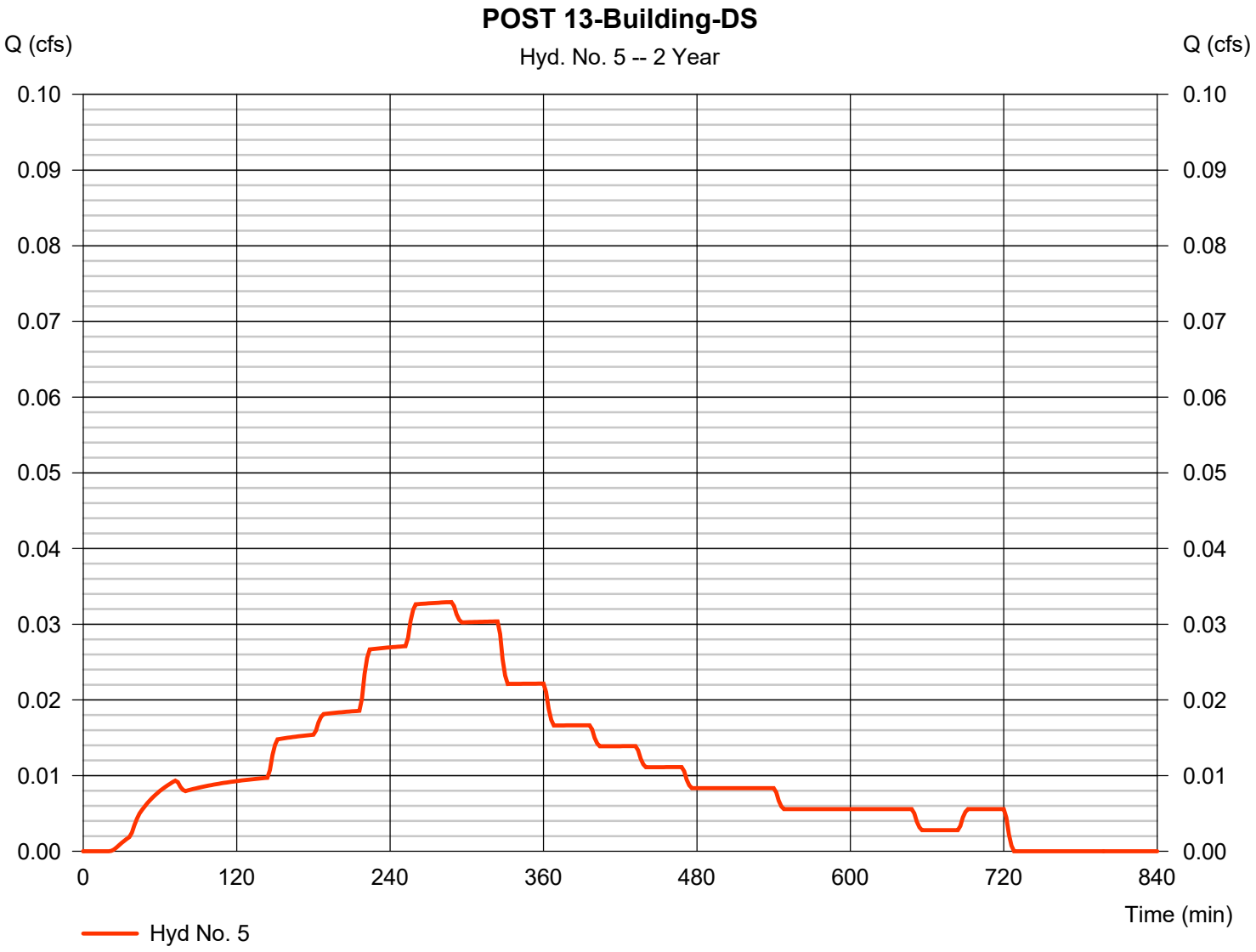


Hydrograph Report

Hyd. No. 5

POST 13-Building-DS

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.033 cfs
Storm frequency	=	2 yrs	Time to peak	=	288 min
Time interval	=	2 min	Hyd. volume	=	550 cuft
Drainage area	=	0.070 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.54 in	Distribution	=	Huff-2nd
Storm duration	=	12.00 hrs	Shape factor	=	484



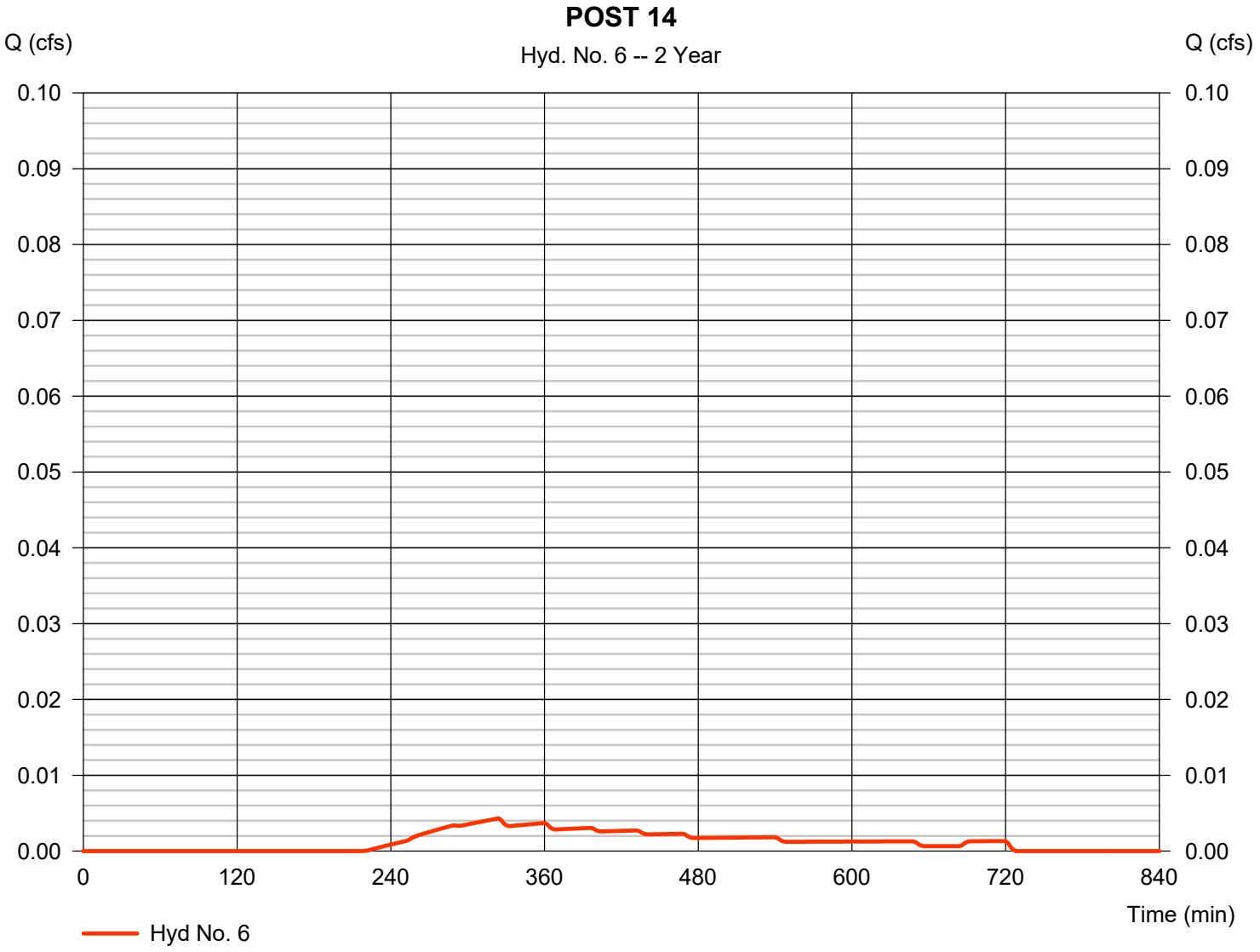
Hydrograph Report

Hyd. No. 6

POST 14

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.004 cfs
Storm frequency	=	2 yrs	Time to peak	=	324 min
Time interval	=	2 min	Hyd. volume	=	60 cuft
Drainage area	=	0.030 ac	Curve number	=	73*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.54 in	Distribution	=	Huff-2nd
Storm duration	=	12.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.020 x 61) + (0.010 x 98)] / 0.030

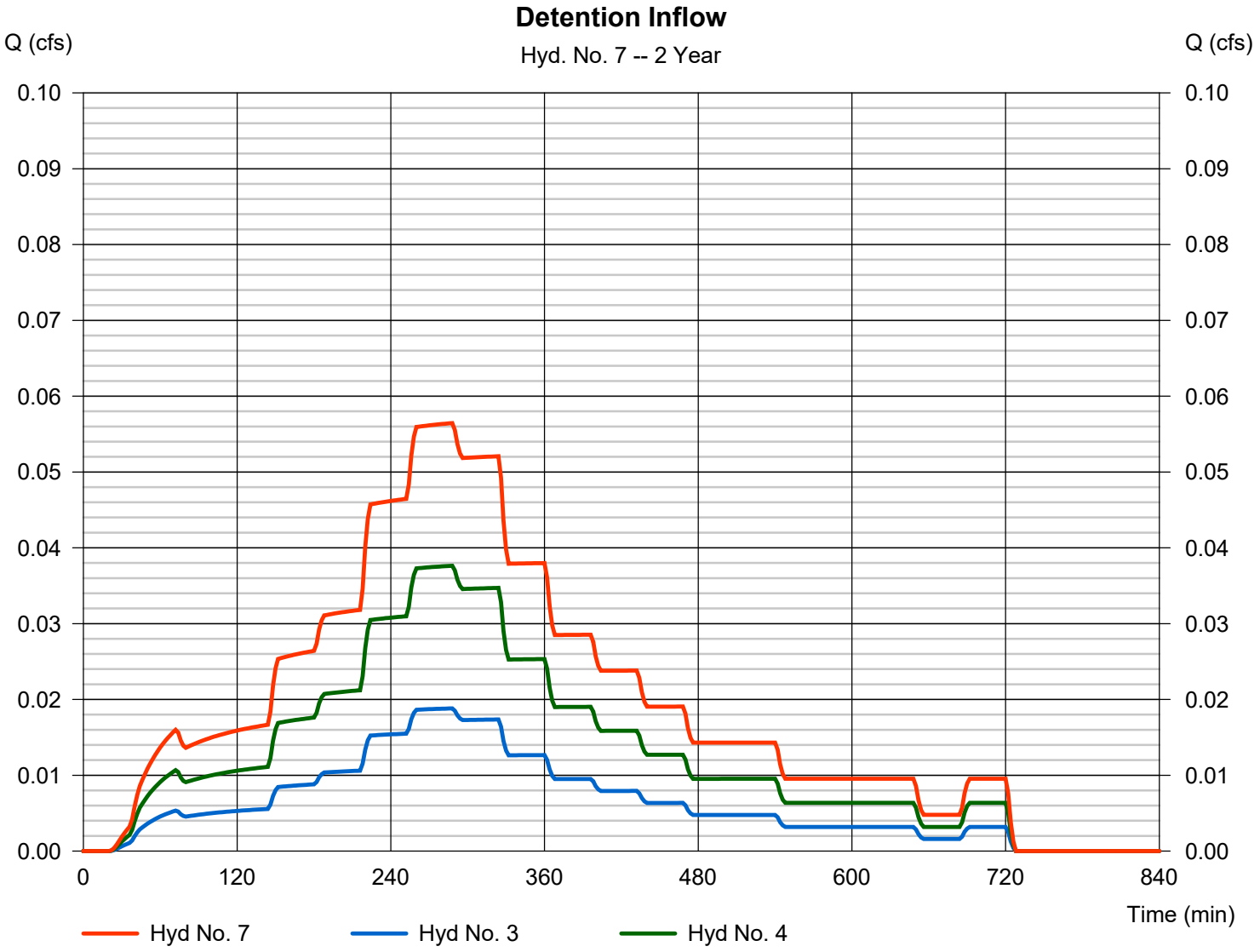


Hydrograph Report

Hyd. No. 7

Detention Inflow

Hydrograph type	=	Combine	Peak discharge	=	0.056 cfs
Storm frequency	=	2 yrs	Time to peak	=	288 min
Time interval	=	2 min	Hyd. volume	=	944 cuft
Inflow hyds.	=	3, 4	Contrib. drain. area	=	0.120 ac



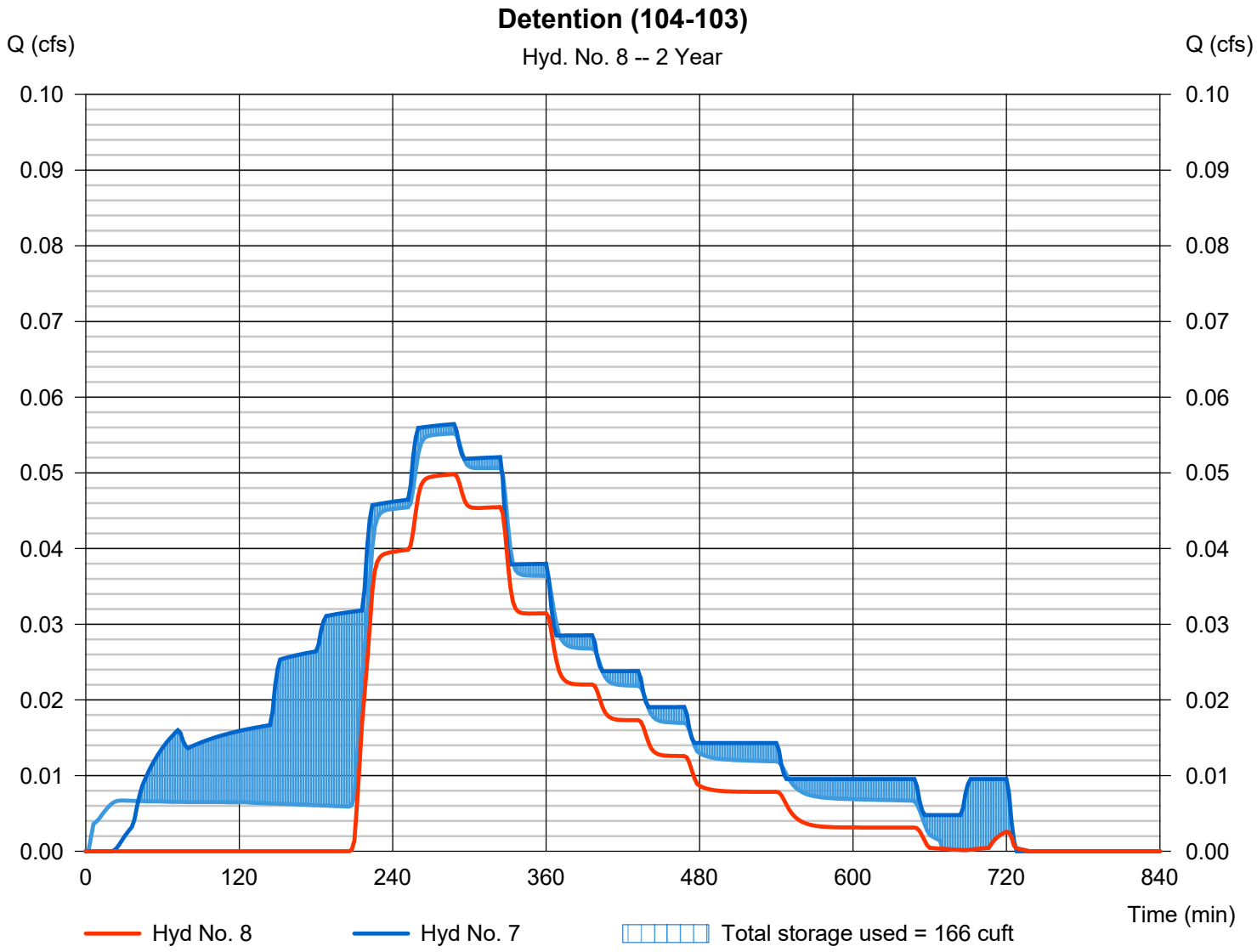
Hydrograph Report

Hyd. No. 8

Detention (104-103)

Hydrograph type	=	Reservoir	Peak discharge	=	0.050 cfs
Storm frequency	=	2 yrs	Time to peak	=	288 min
Time interval	=	2 min	Hyd. volume	=	542 cuft
Inflow hyd. No.	=	7 - Detention Inflow	Max. Elevation	=	718.11 ft
Reservoir name	=	Proposed Detention	Max. Storage	=	166 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

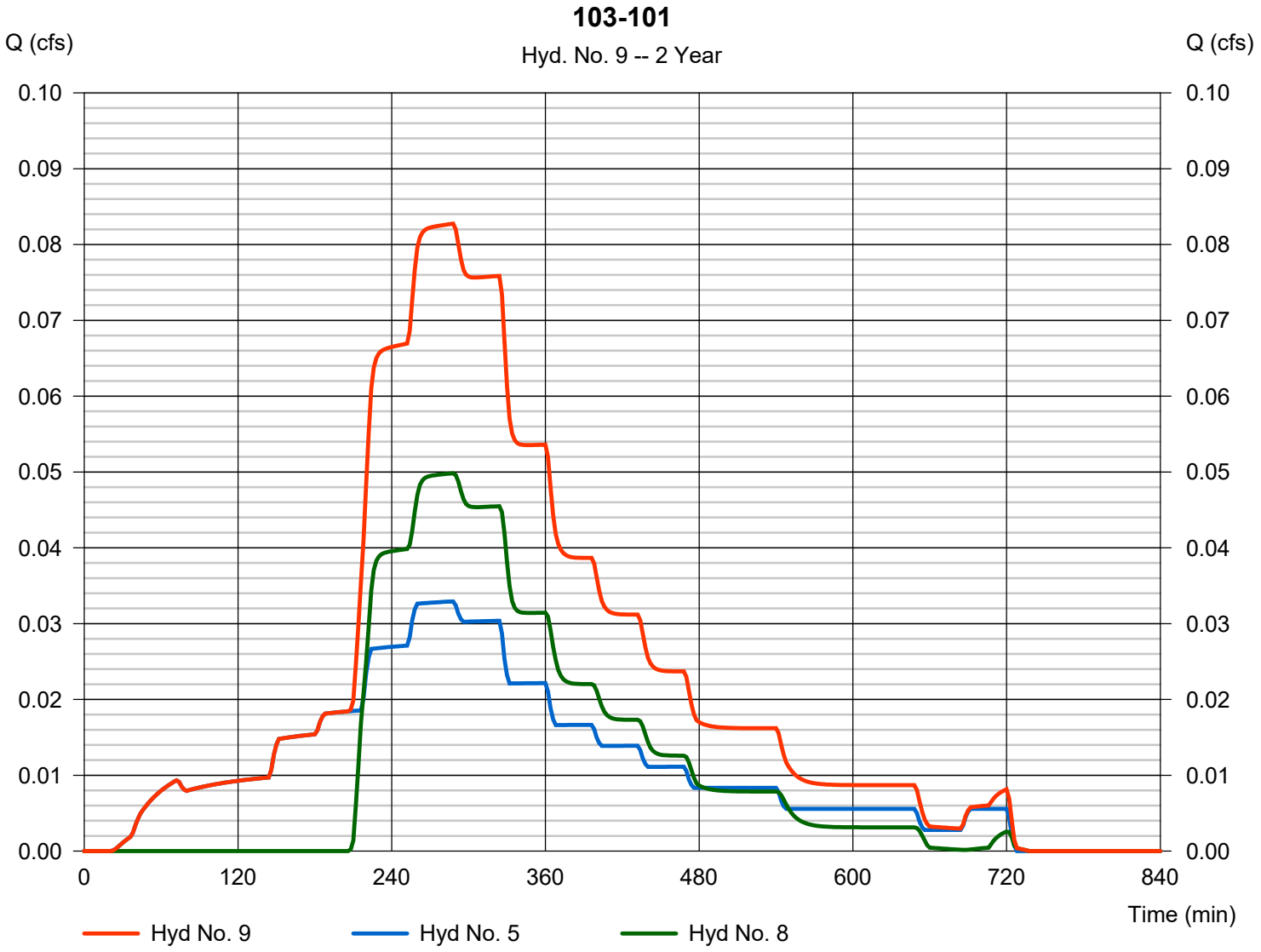


Hydrograph Report

Hyd. No. 9

103-101

Hydrograph type	=	Combine	Peak discharge	=	0.083 cfs
Storm frequency	=	2 yrs	Time to peak	=	288 min
Time interval	=	2 min	Hyd. volume	=	1,093 cuft
Inflow hyds.	=	5, 8	Contrib. drain. area	=	0.070 ac

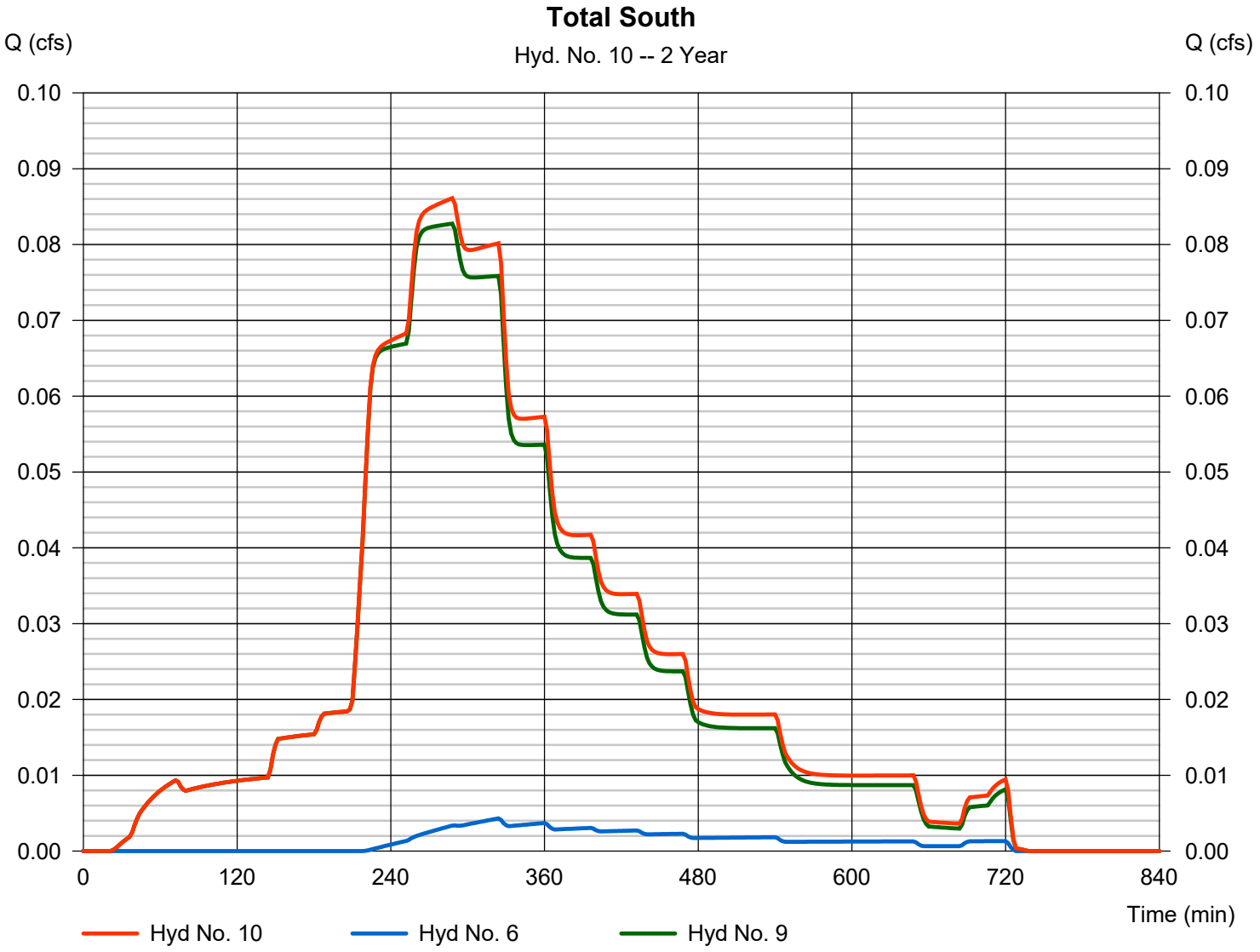


Hydrograph Report

Hyd. No. 10

Total South

Hydrograph type	= Combine	Peak discharge	= 0.086 cfs
Storm frequency	= 2 yrs	Time to peak	= 288 min
Time interval	= 2 min	Hyd. volume	= 1,153 cuft
Inflow hyds.	= 6, 9	Contrib. drain. area	= 0.030 ac



Hydrograph Summary Report

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

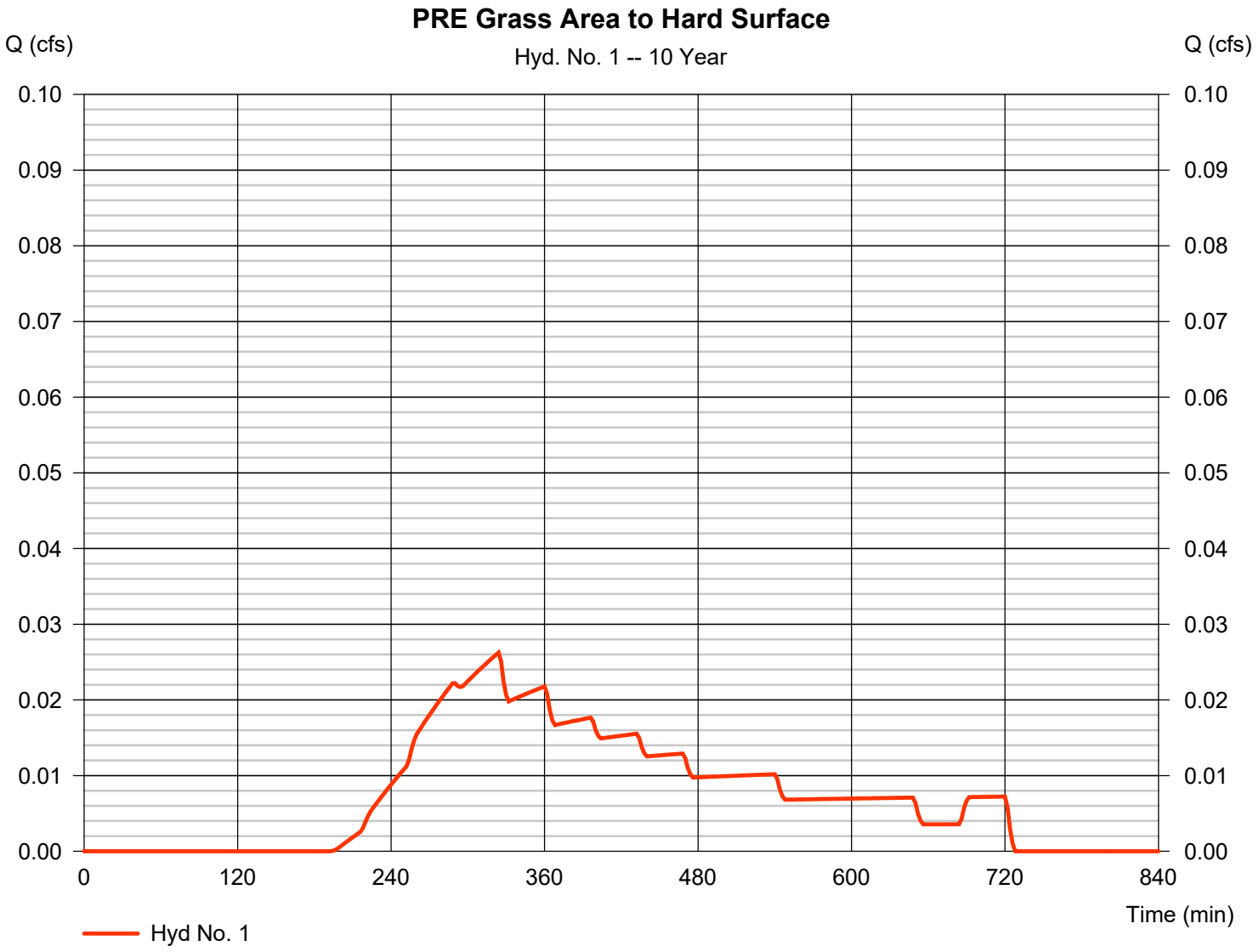
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.026	2	324	366	------	------	------	PRE Grass Area to Hard Surface
2	SCS Runoff	0.091	2	324	1,338	------	------	------	PRE South
3	SCS Runoff	0.028	2	288	472	------	------	------	POST 11 - STR 105 (105-104)
4	SCS Runoff	0.055	2	288	944	------	------	------	POST 12 - STR 201
5	SCS Runoff	0.048	2	288	826	------	------	------	POST 13-Building-DS
6	SCS Runoff	0.010	2	324	134	------	------	------	POST 14
7	Combine	0.083	2	288	1,415	3, 4,	------	------	Detention Inflow
8	Reservoir	0.076	2	288	1,002	7	718.14	169	Detention (104-103)
9	Combine	0.125	2	288	1,827	5, 8	------	------	103-101
10	Combine	0.133	2	288	1,962	6, 9	------	------	Total South

Hydrograph Report

Hyd. No. 1

PRE Grass Area to Hard Surface

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.026 cfs
Storm frequency	=	10 yrs	Time to peak	=	324 min
Time interval	=	2 min	Hyd. volume	=	366 cuft
Drainage area	=	0.100 ac	Curve number	=	69
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.70 in	Distribution	=	Huff-2nd
Storm duration	=	12.00 hrs	Shape factor	=	484



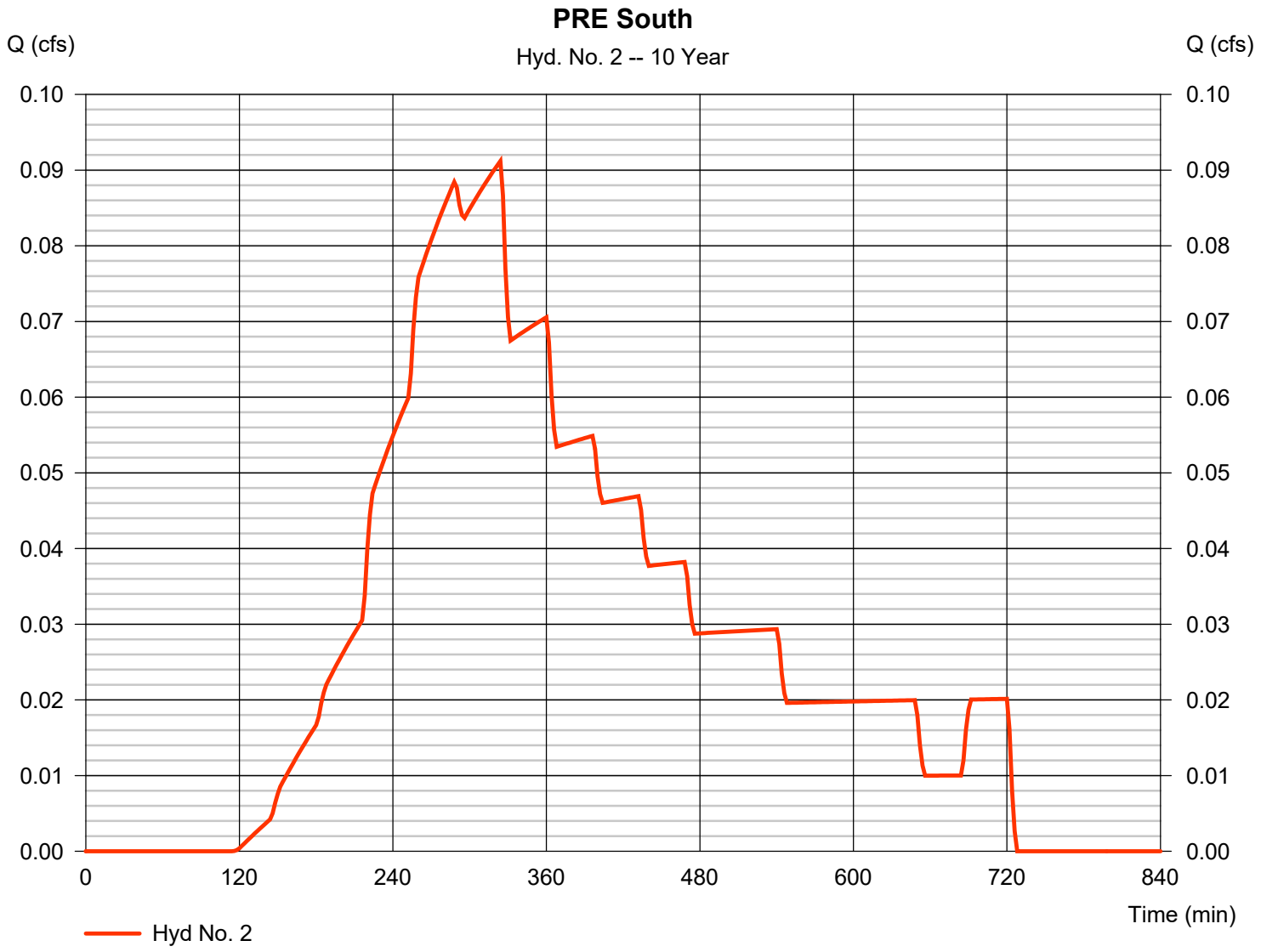
Hydrograph Report

Hyd. No. 2

PRE South

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.091 cfs
Storm frequency	=	10 yrs	Time to peak	=	324 min
Time interval	=	2 min	Hyd. volume	=	1,338 cuft
Drainage area	=	0.210 ac	Curve number	=	81*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.70 in	Distribution	=	Huff-2nd
Storm duration	=	12.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.120 x 69) + (0.090 x 98)] / 0.210

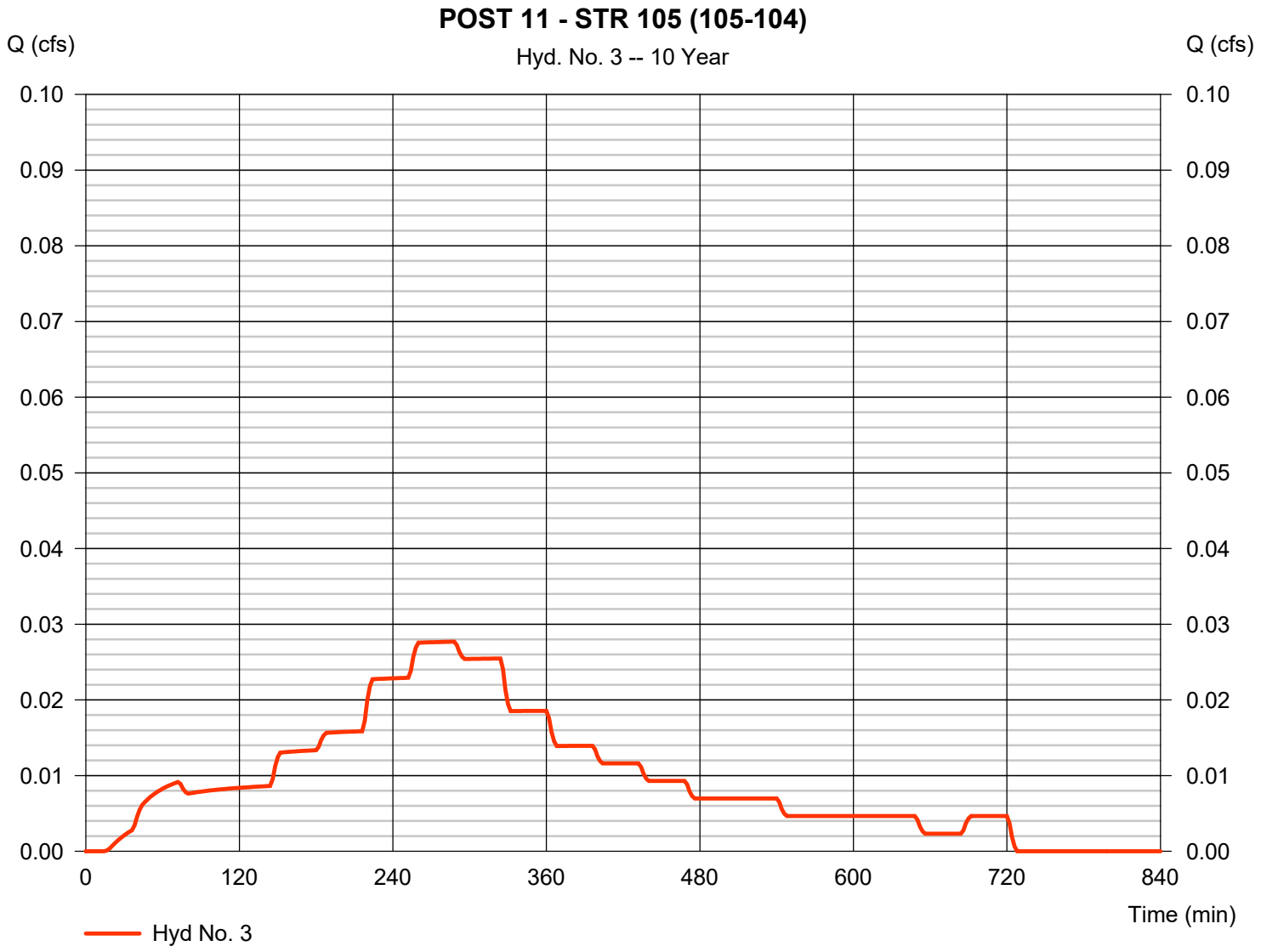


Hydrograph Report

Hyd. No. 3

POST 11 - STR 105 (105-104)

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.028 cfs
Storm frequency	=	10 yrs	Time to peak	=	288 min
Time interval	=	2 min	Hyd. volume	=	472 cuft
Drainage area	=	0.040 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.70 in	Distribution	=	Huff-2nd
Storm duration	=	12.00 hrs	Shape factor	=	484

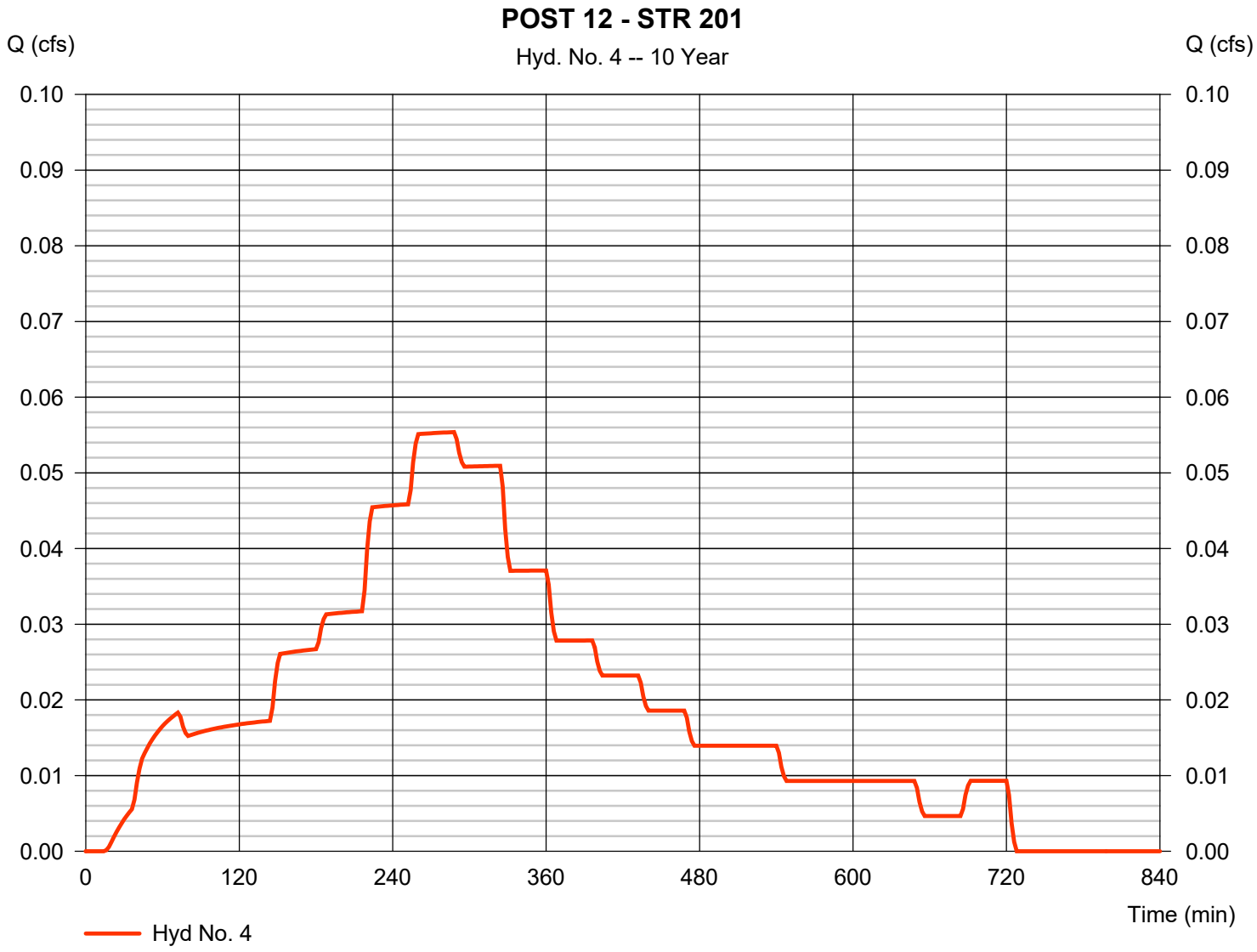


Hydrograph Report

Hyd. No. 4

POST 12 - STR 201

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.055 cfs
Storm frequency	=	10 yrs	Time to peak	=	288 min
Time interval	=	2 min	Hyd. volume	=	944 cuft
Drainage area	=	0.080 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.70 in	Distribution	=	Huff-2nd
Storm duration	=	12.00 hrs	Shape factor	=	484

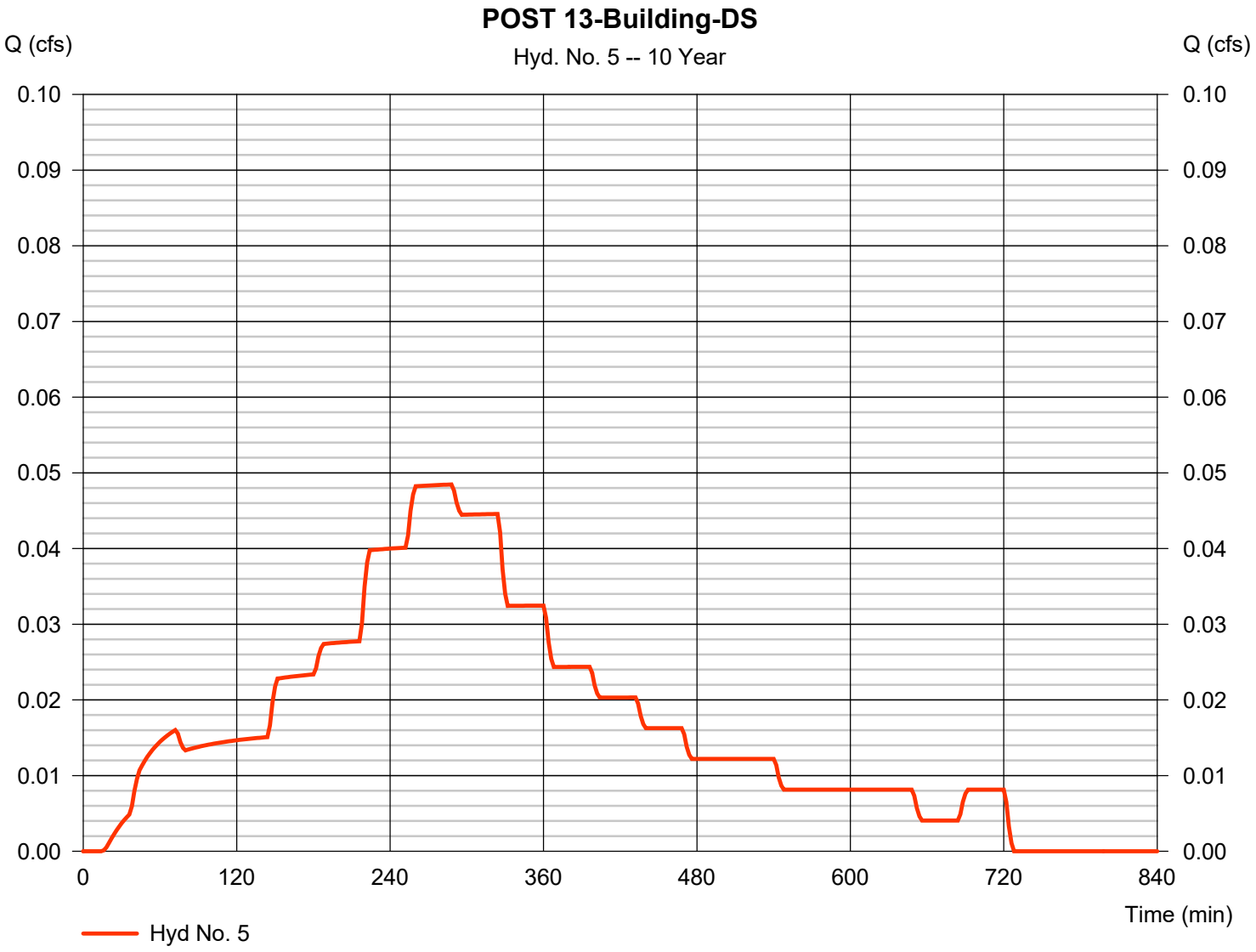


Hydrograph Report

Hyd. No. 5

POST 13-Building-DS

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.048 cfs
Storm frequency	=	10 yrs	Time to peak	=	288 min
Time interval	=	2 min	Hyd. volume	=	826 cuft
Drainage area	=	0.070 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.70 in	Distribution	=	Huff-2nd
Storm duration	=	12.00 hrs	Shape factor	=	484



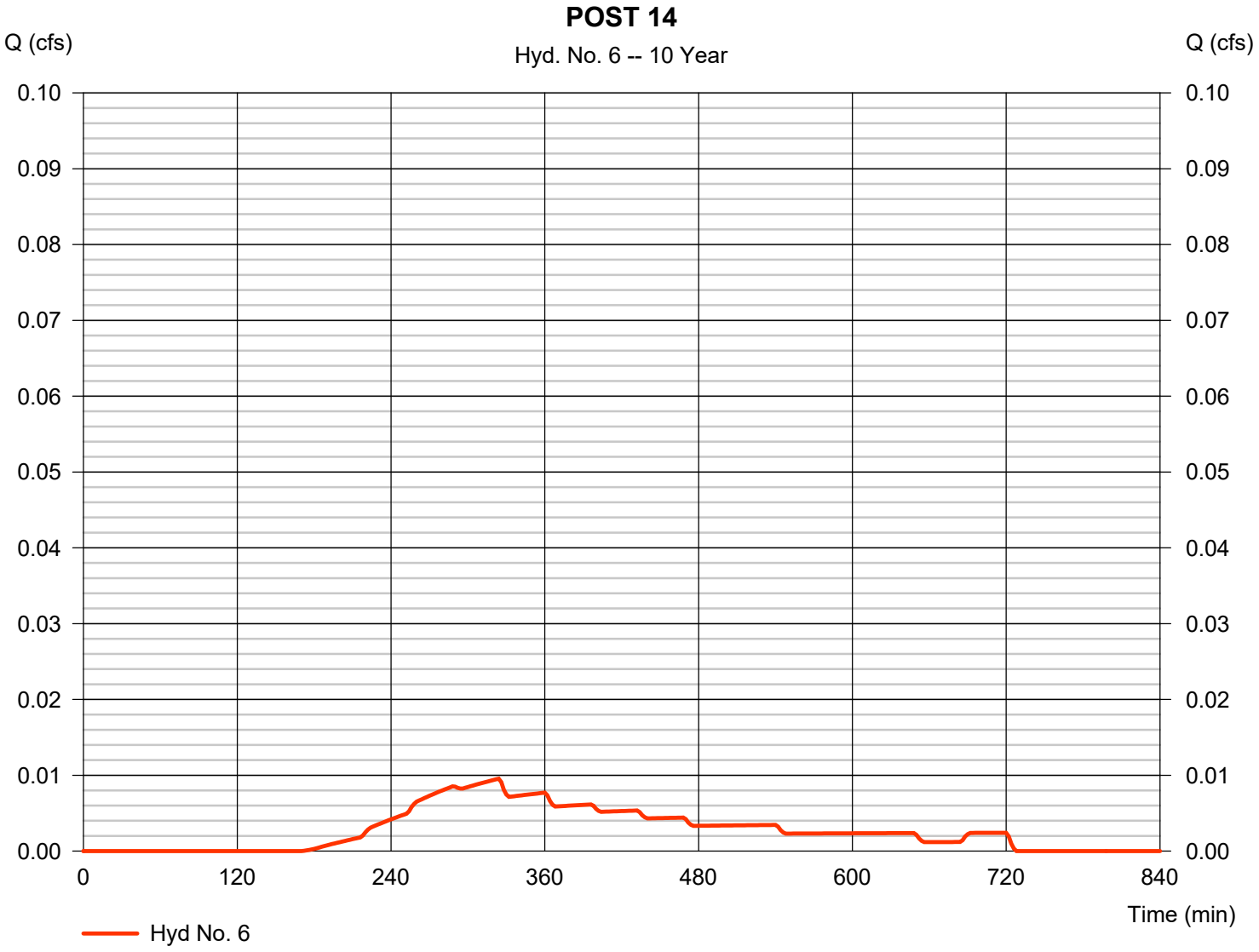
Hydrograph Report

Hyd. No. 6

POST 14

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.010 cfs
Storm frequency	=	10 yrs	Time to peak	=	324 min
Time interval	=	2 min	Hyd. volume	=	134 cuft
Drainage area	=	0.030 ac	Curve number	=	73*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.70 in	Distribution	=	Huff-2nd
Storm duration	=	12.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.020 x 61) + (0.010 x 98)] / 0.030

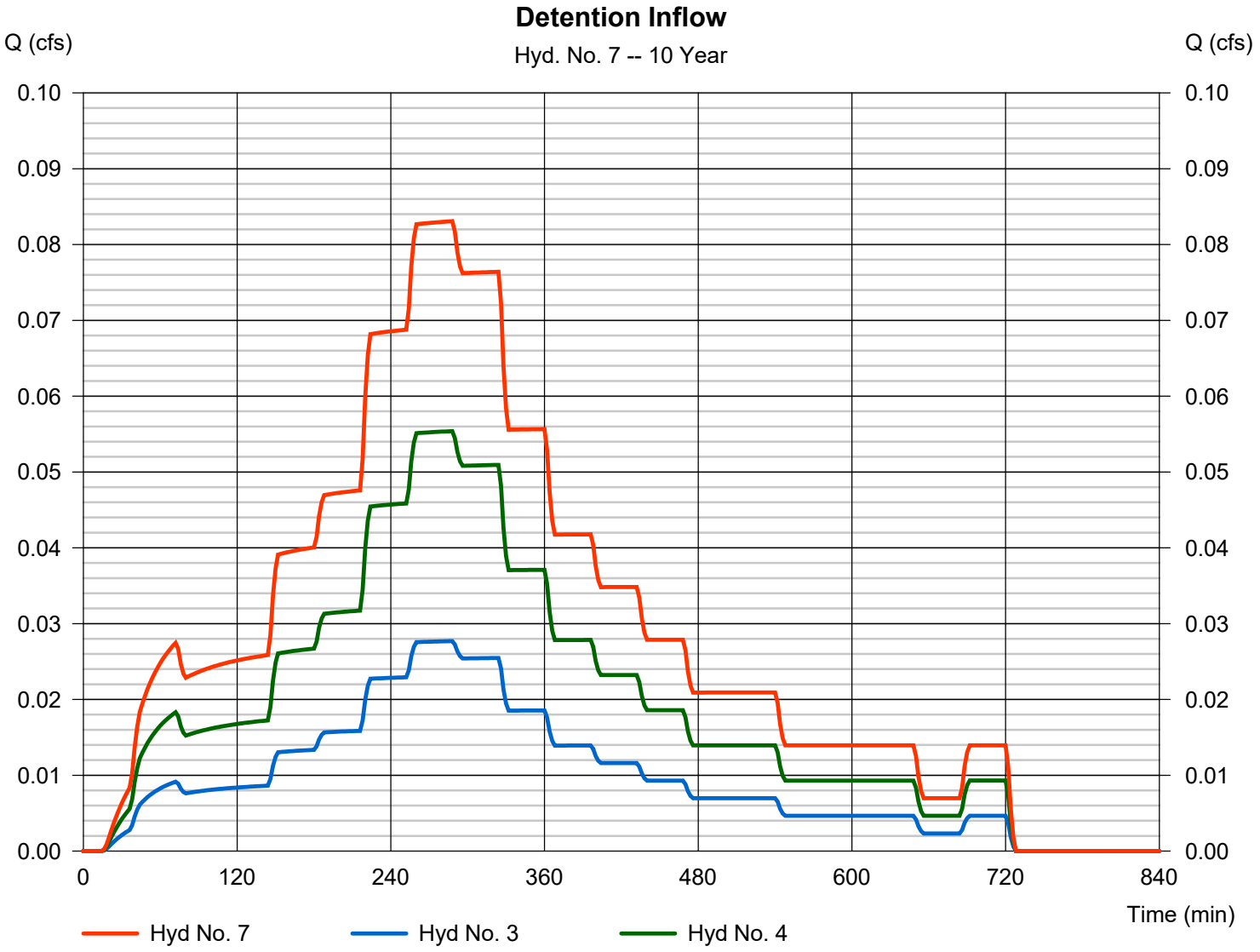


Hydrograph Report

Hyd. No. 7

Detention Inflow

Hydrograph type	=	Combine	Peak discharge	=	0.083 cfs
Storm frequency	=	10 yrs	Time to peak	=	288 min
Time interval	=	2 min	Hyd. volume	=	1,415 cuft
Inflow hyds.	=	3, 4	Contrib. drain. area	=	0.120 ac



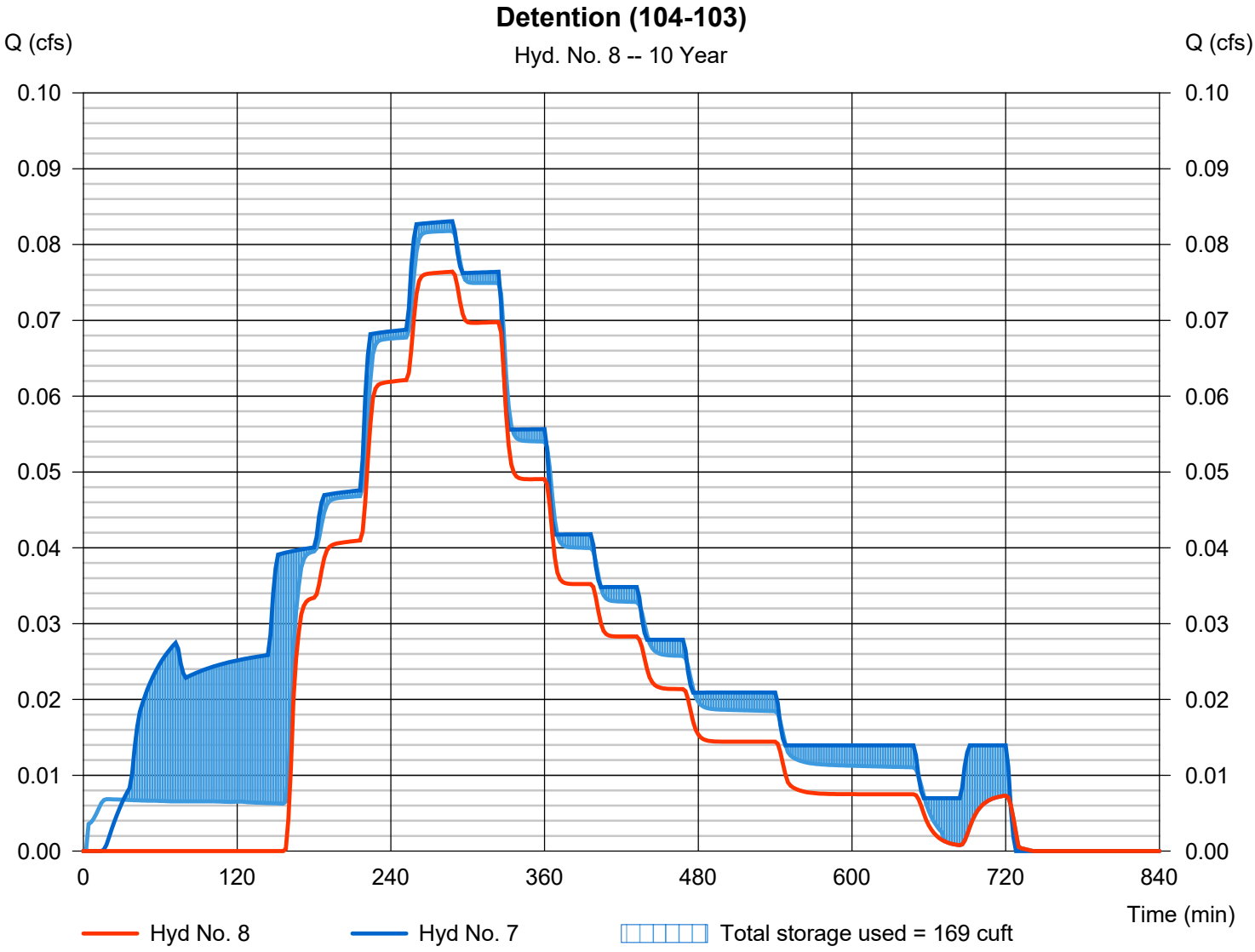
Hydrograph Report

Hyd. No. 8

Detention (104-103)

Hydrograph type	=	Reservoir	Peak discharge	=	0.076 cfs
Storm frequency	=	10 yrs	Time to peak	=	288 min
Time interval	=	2 min	Hyd. volume	=	1,002 cuft
Inflow hyd. No.	=	7 - Detention Inflow	Max. Elevation	=	718.14 ft
Reservoir name	=	Proposed Detention	Max. Storage	=	169 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

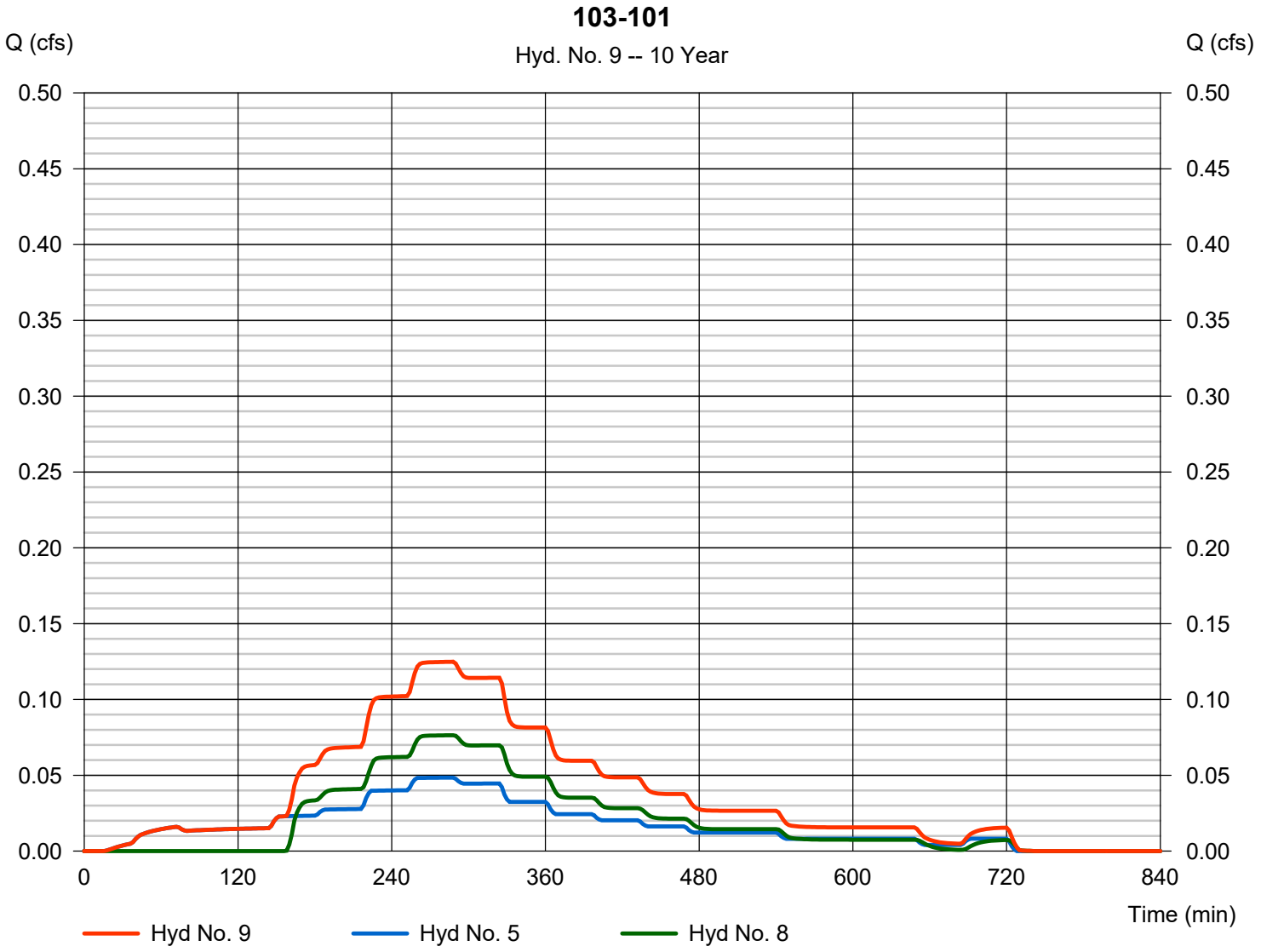


Hydrograph Report

Hyd. No. 9

103-101

Hydrograph type	=	Combine	Peak discharge	=	0.125 cfs
Storm frequency	=	10 yrs	Time to peak	=	288 min
Time interval	=	2 min	Hyd. volume	=	1,827 cuft
Inflow hyds.	=	5, 8	Contrib. drain. area	=	0.070 ac

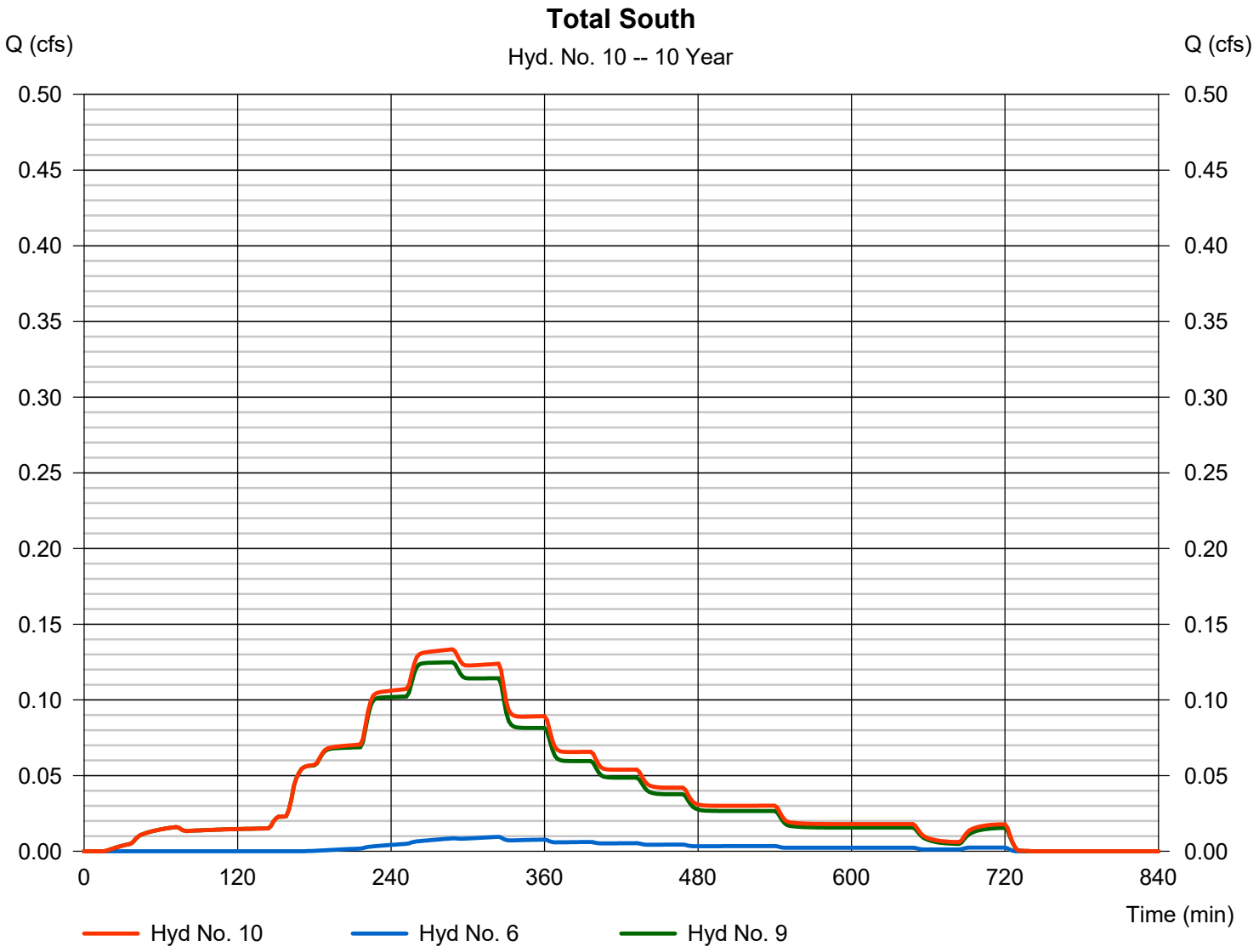


Hydrograph Report

Hyd. No. 10

Total South

Hydrograph type	=	Combine	Peak discharge	=	0.133 cfs
Storm frequency	=	10 yrs	Time to peak	=	288 min
Time interval	=	2 min	Hyd. volume	=	1,962 cuft
Inflow hyds.	=	6, 9	Contrib. drain. area	=	0.030 ac



Hydrograph Summary Report

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

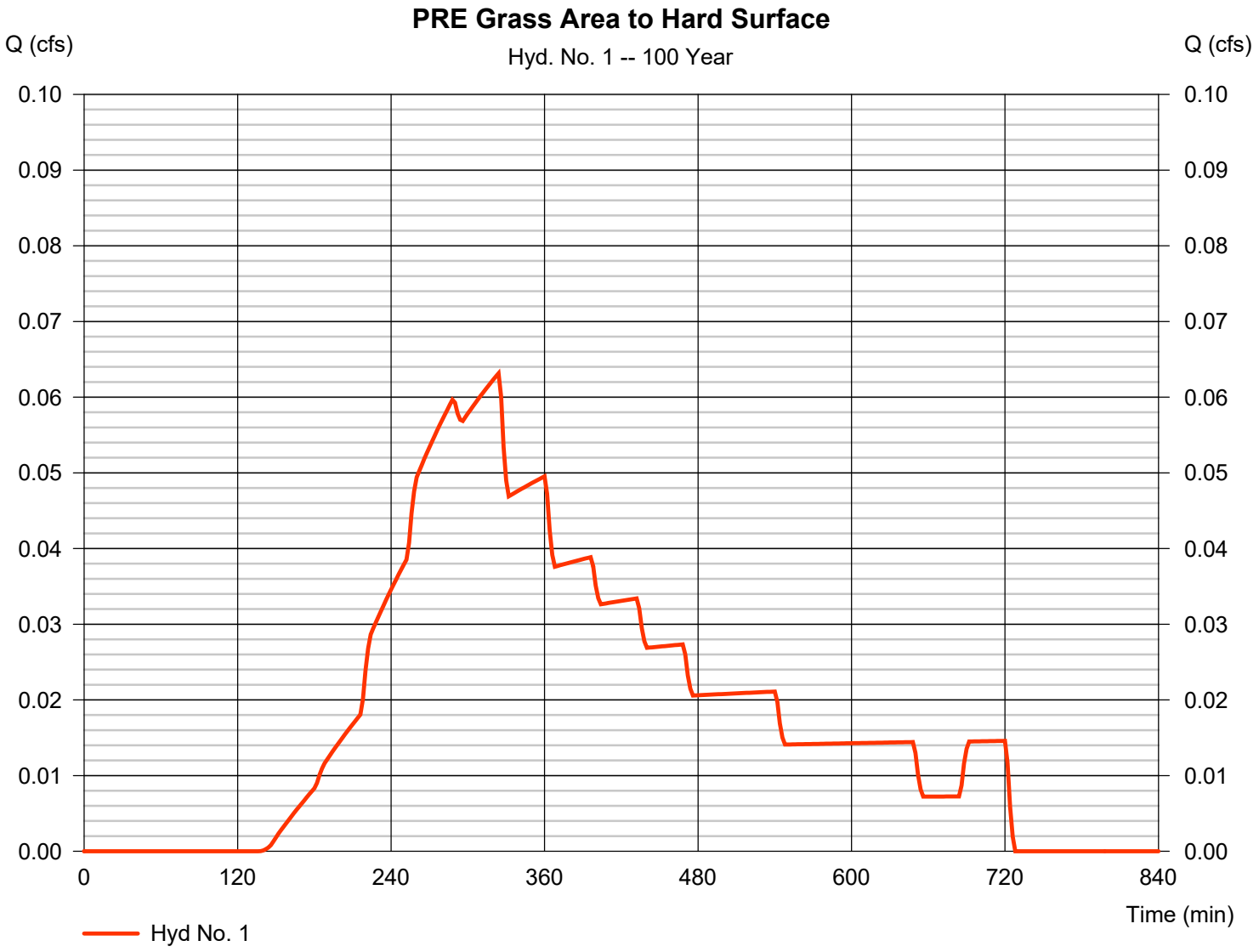
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.063	2	324	910	------	------	------	PRE Grass Area to Hard Surface
2	SCS Runoff	0.181	2	288	2,743	------	------	------	PRE South
3	SCS Runoff	0.045	2	288	778	------	------	------	POST 11 - STR 105 (105-104)
4	SCS Runoff	0.090	2	288	1,555	------	------	------	POST 12 - STR 201
5	SCS Runoff	0.078	2	288	1,361	------	------	------	POST 13-Building-DS
6	SCS Runoff	0.021	2	324	311	------	------	------	POST 14
7	Combine	0.134	2	288	2,333	3, 4,	------	------	Detention Inflow
8	Reservoir	0.128	2	288	1,907	7	718.17	175	Detention (104-103)
9	Combine	0.206	2	288	3,268	5, 8	------	------	103-101
10	Combine	0.227	2	288	3,579	6, 9	------	------	Total South

Hydrograph Report

Hyd. No. 1

PRE Grass Area to Hard Surface

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.063 cfs
Storm frequency	=	100 yrs	Time to peak	=	324 min
Time interval	=	2 min	Hyd. volume	=	910 cuft
Drainage area	=	0.100 ac	Curve number	=	69
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.95 in	Distribution	=	Huff-2nd
Storm duration	=	12.00 hrs	Shape factor	=	484



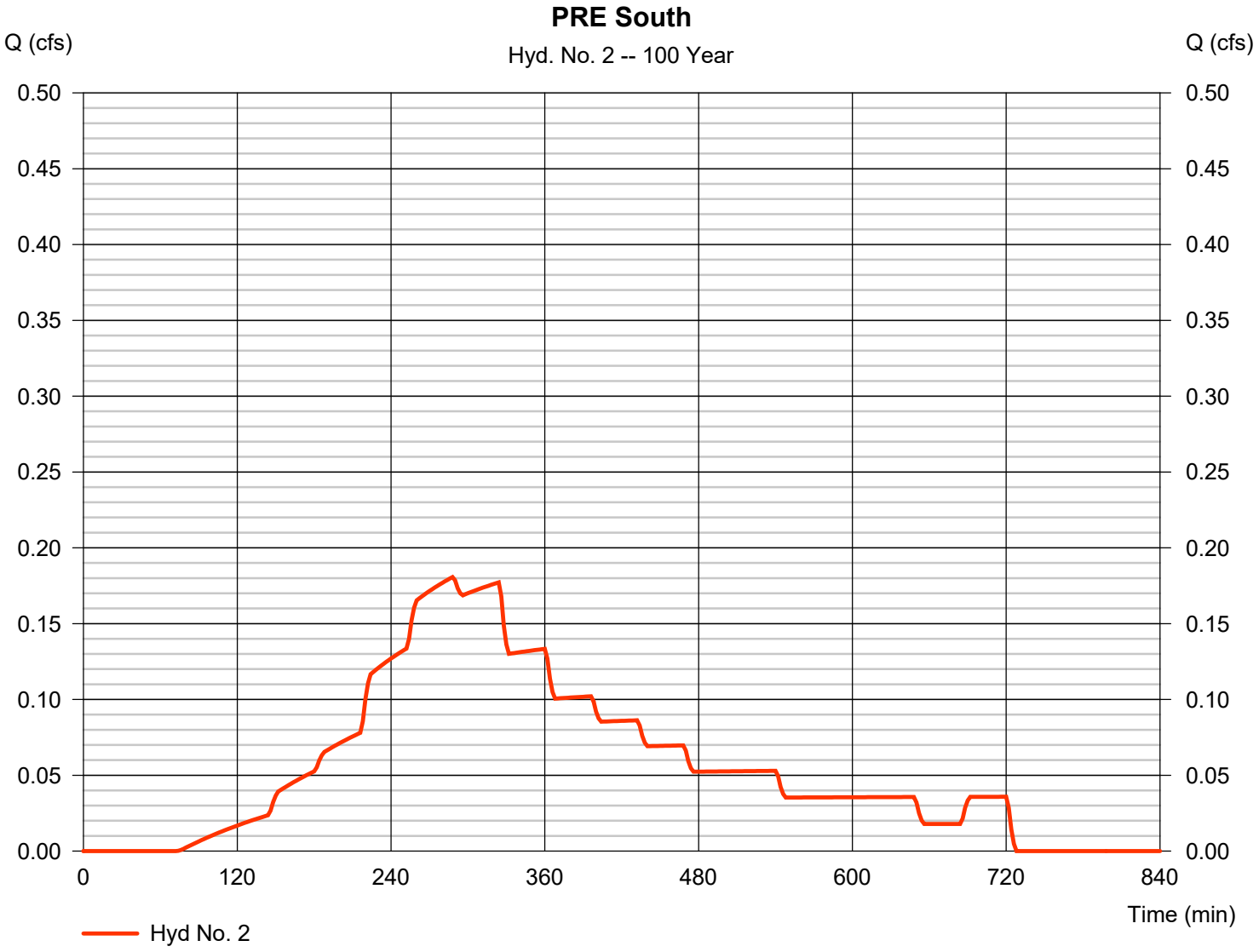
Hydrograph Report

Hyd. No. 2

PRE South

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.181 cfs
Storm frequency	=	100 yrs	Time to peak	=	288 min
Time interval	=	2 min	Hyd. volume	=	2,743 cuft
Drainage area	=	0.210 ac	Curve number	=	81*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.95 in	Distribution	=	Huff-2nd
Storm duration	=	12.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.120 x 69) + (0.090 x 98)] / 0.210

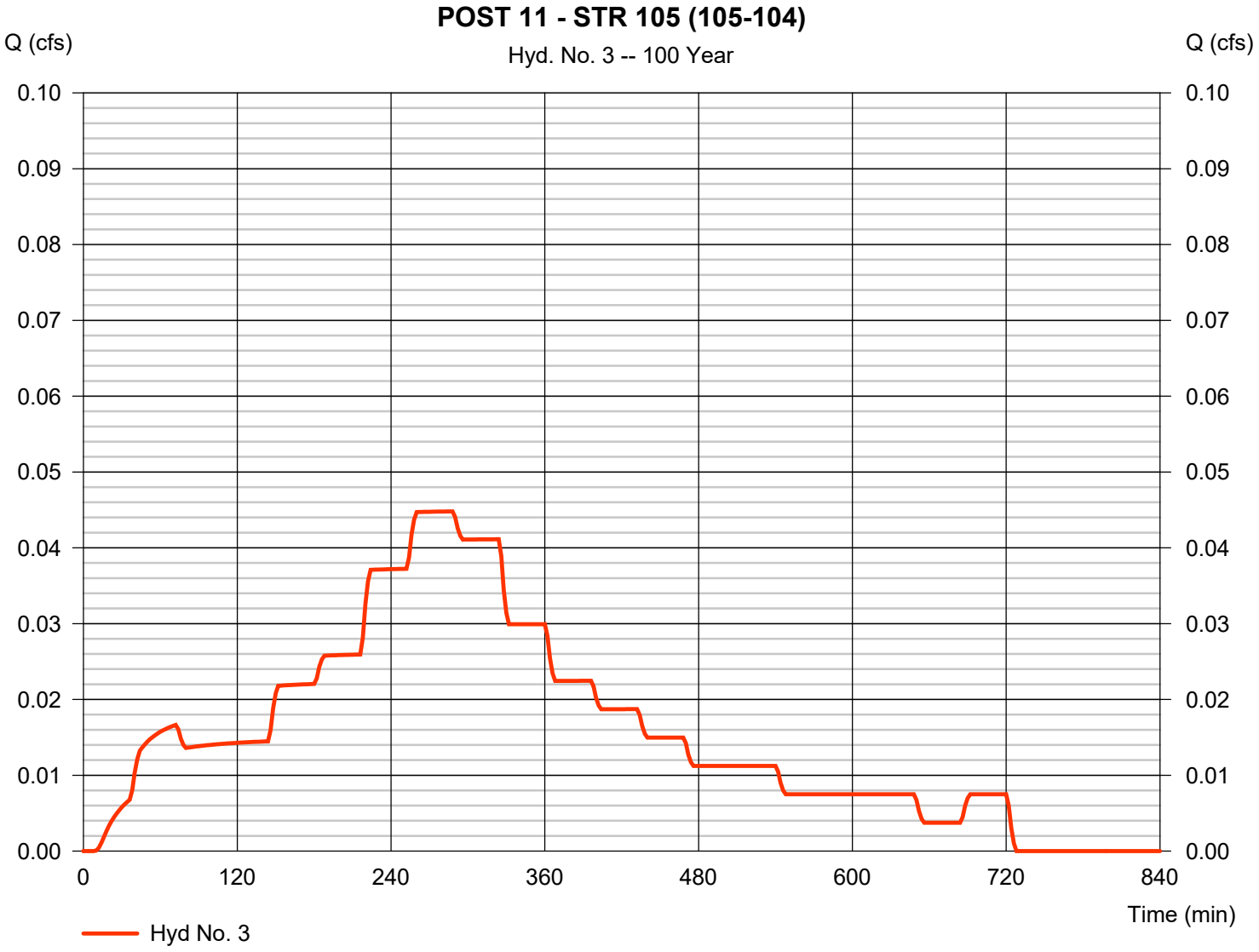


Hydrograph Report

Hyd. No. 3

POST 11 - STR 105 (105-104)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.045 cfs
Storm frequency	= 100 yrs	Time to peak	= 288 min
Time interval	= 2 min	Hyd. volume	= 778 cuft
Drainage area	= 0.040 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.95 in	Distribution	= Huff-2nd
Storm duration	= 12.00 hrs	Shape factor	= 484

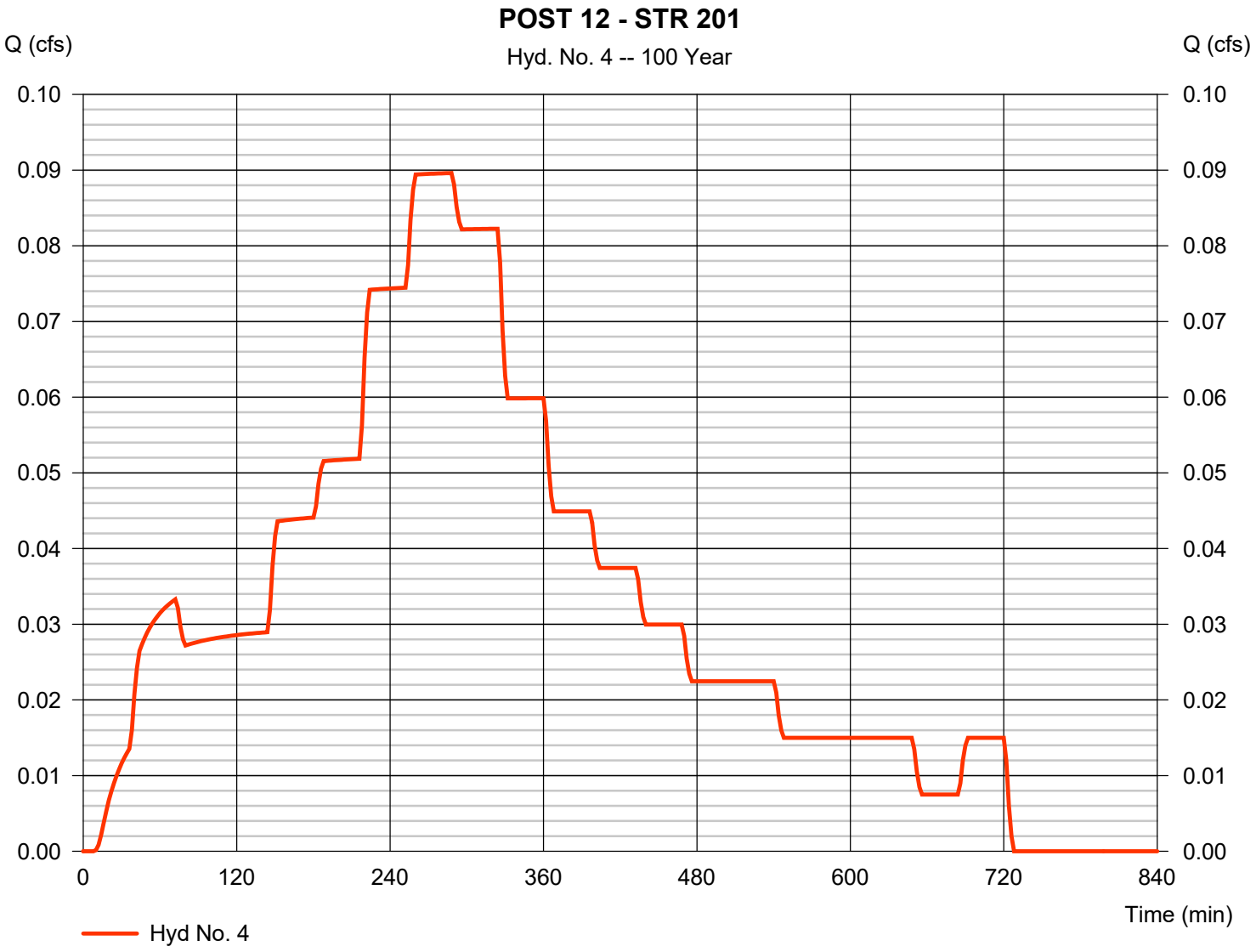


Hydrograph Report

Hyd. No. 4

POST 12 - STR 201

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.090 cfs
Storm frequency	=	100 yrs	Time to peak	=	288 min
Time interval	=	2 min	Hyd. volume	=	1,555 cuft
Drainage area	=	0.080 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.95 in	Distribution	=	Huff-2nd
Storm duration	=	12.00 hrs	Shape factor	=	484

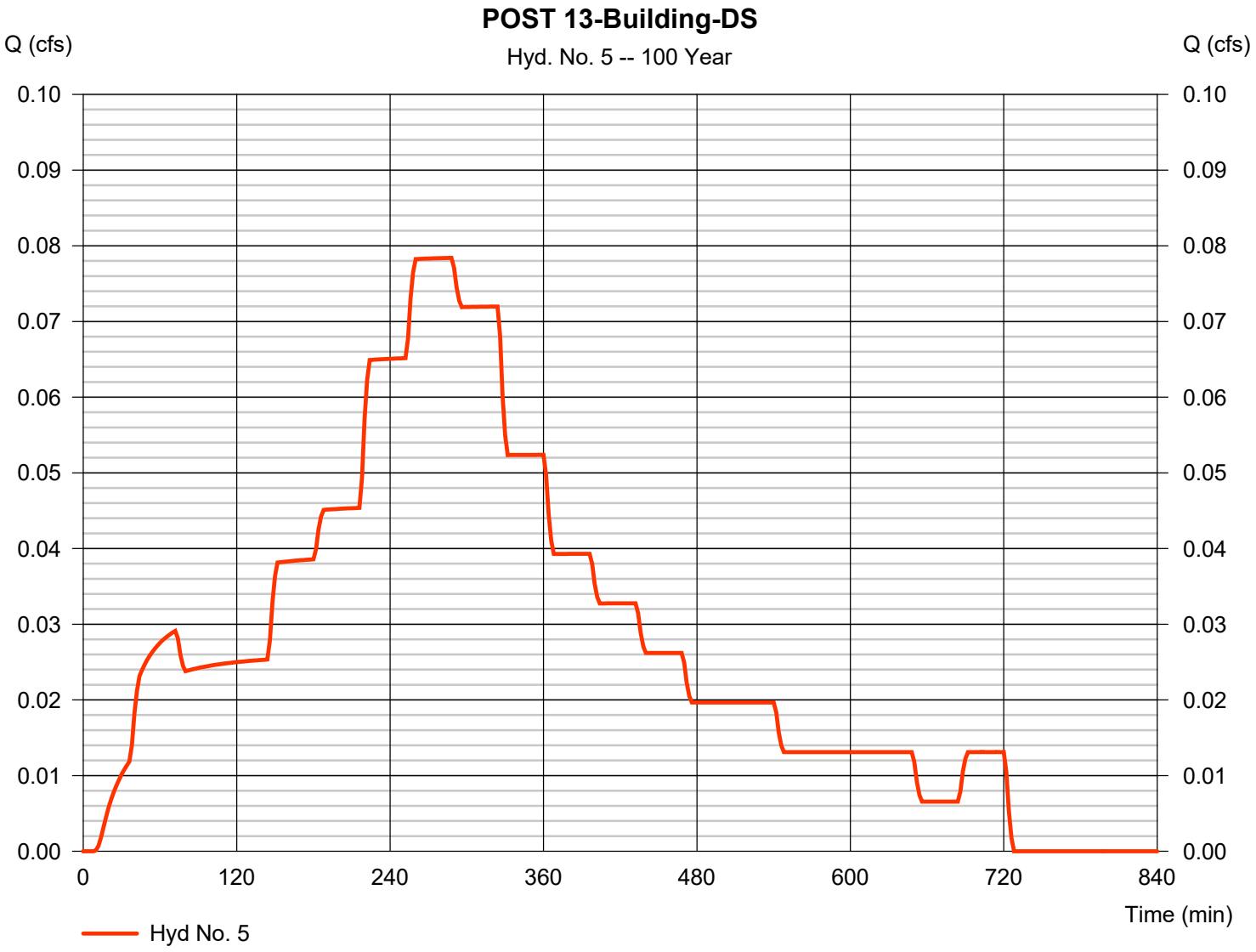


Hydrograph Report

Hyd. No. 5

POST 13-Building-DS

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.078 cfs
Storm frequency	=	100 yrs	Time to peak	=	288 min
Time interval	=	2 min	Hyd. volume	=	1,361 cuft
Drainage area	=	0.070 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.95 in	Distribution	=	Huff-2nd
Storm duration	=	12.00 hrs	Shape factor	=	484



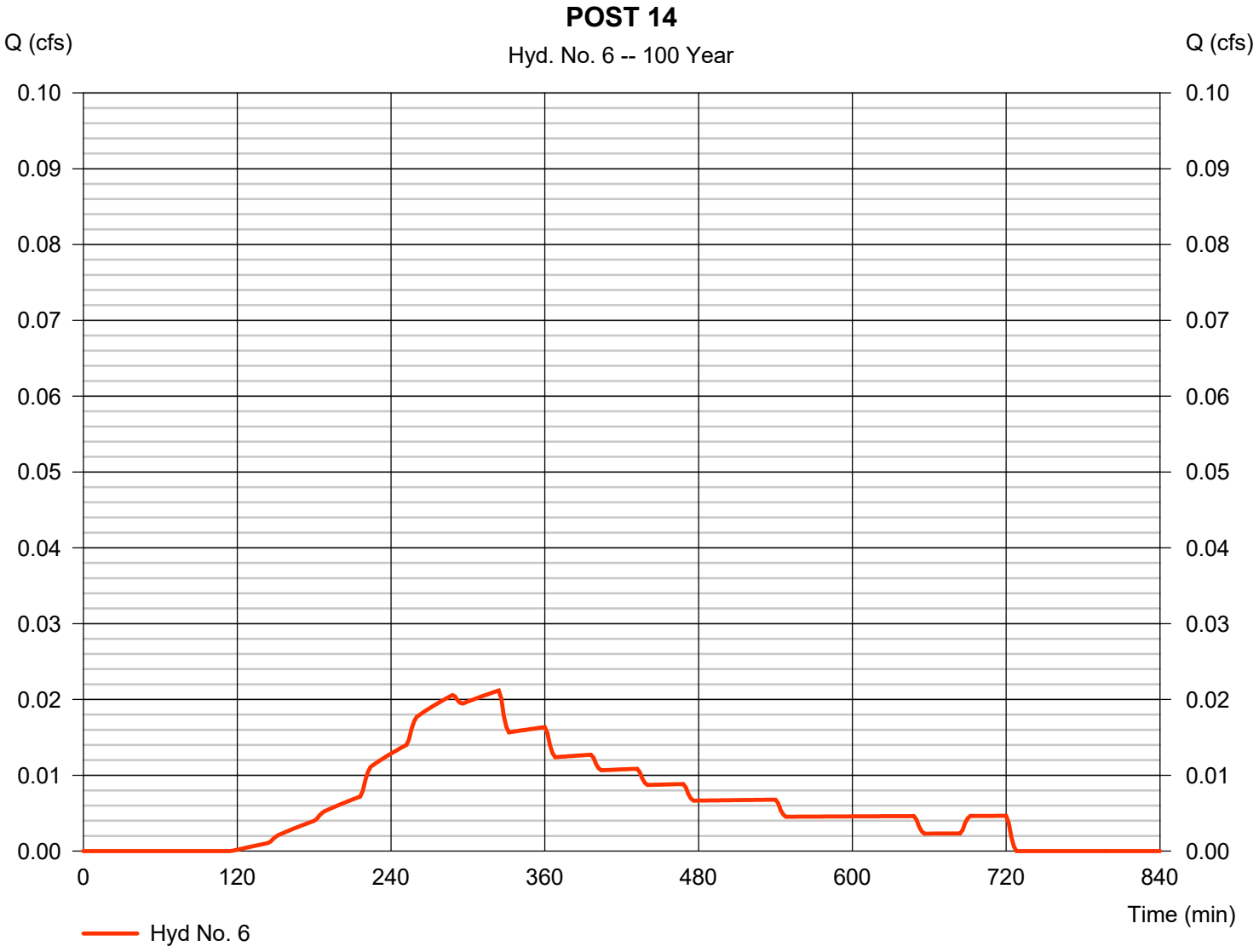
Hydrograph Report

Hyd. No. 6

POST 14

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.021 cfs
Storm frequency	=	100 yrs	Time to peak	=	324 min
Time interval	=	2 min	Hyd. volume	=	311 cuft
Drainage area	=	0.030 ac	Curve number	=	73*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.95 in	Distribution	=	Huff-2nd
Storm duration	=	12.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.020 x 61) + (0.010 x 98)] / 0.030

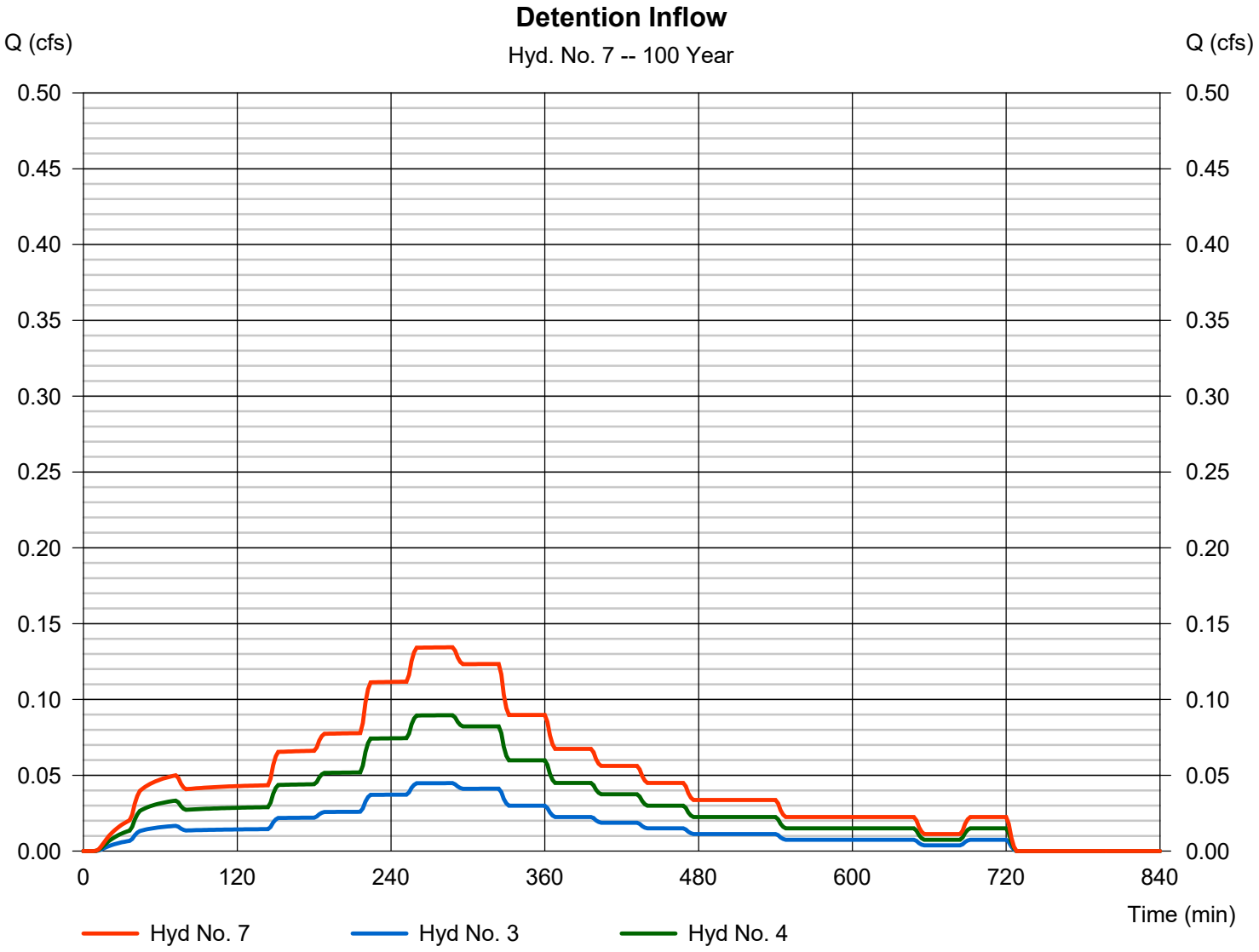


Hydrograph Report

Hyd. No. 7

Detention Inflow

Hydrograph type	=	Combine	Peak discharge	=	0.134 cfs
Storm frequency	=	100 yrs	Time to peak	=	288 min
Time interval	=	2 min	Hyd. volume	=	2,333 cuft
Inflow hyds.	=	3, 4	Contrib. drain. area	=	0.120 ac



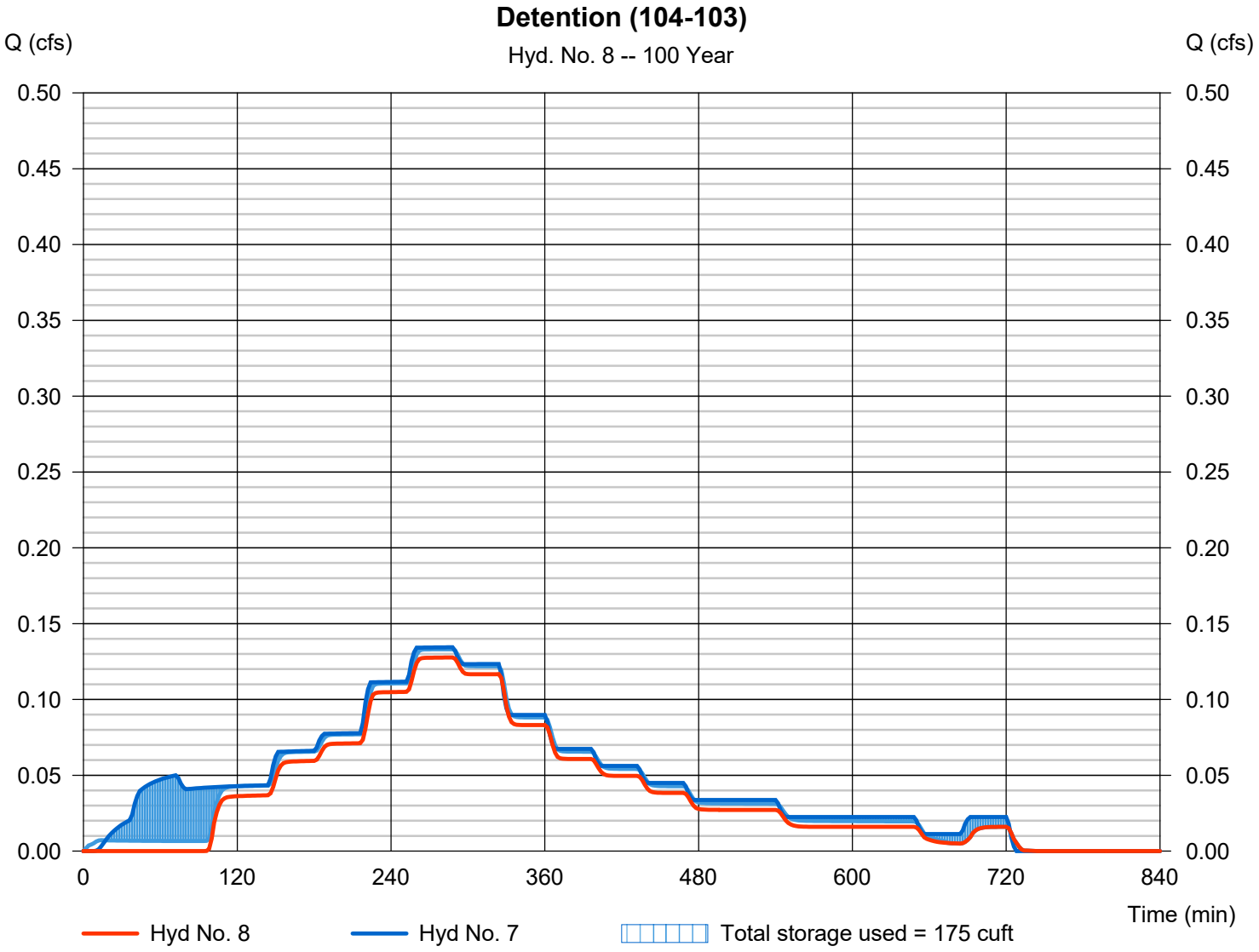
Hydrograph Report

Hyd. No. 8

Detention (104-103)

Hydrograph type	=	Reservoir	Peak discharge	=	0.128 cfs
Storm frequency	=	100 yrs	Time to peak	=	288 min
Time interval	=	2 min	Hyd. volume	=	1,907 cuft
Inflow hyd. No.	=	7 - Detention Inflow	Max. Elevation	=	718.17 ft
Reservoir name	=	Proposed Detention	Max. Storage	=	175 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

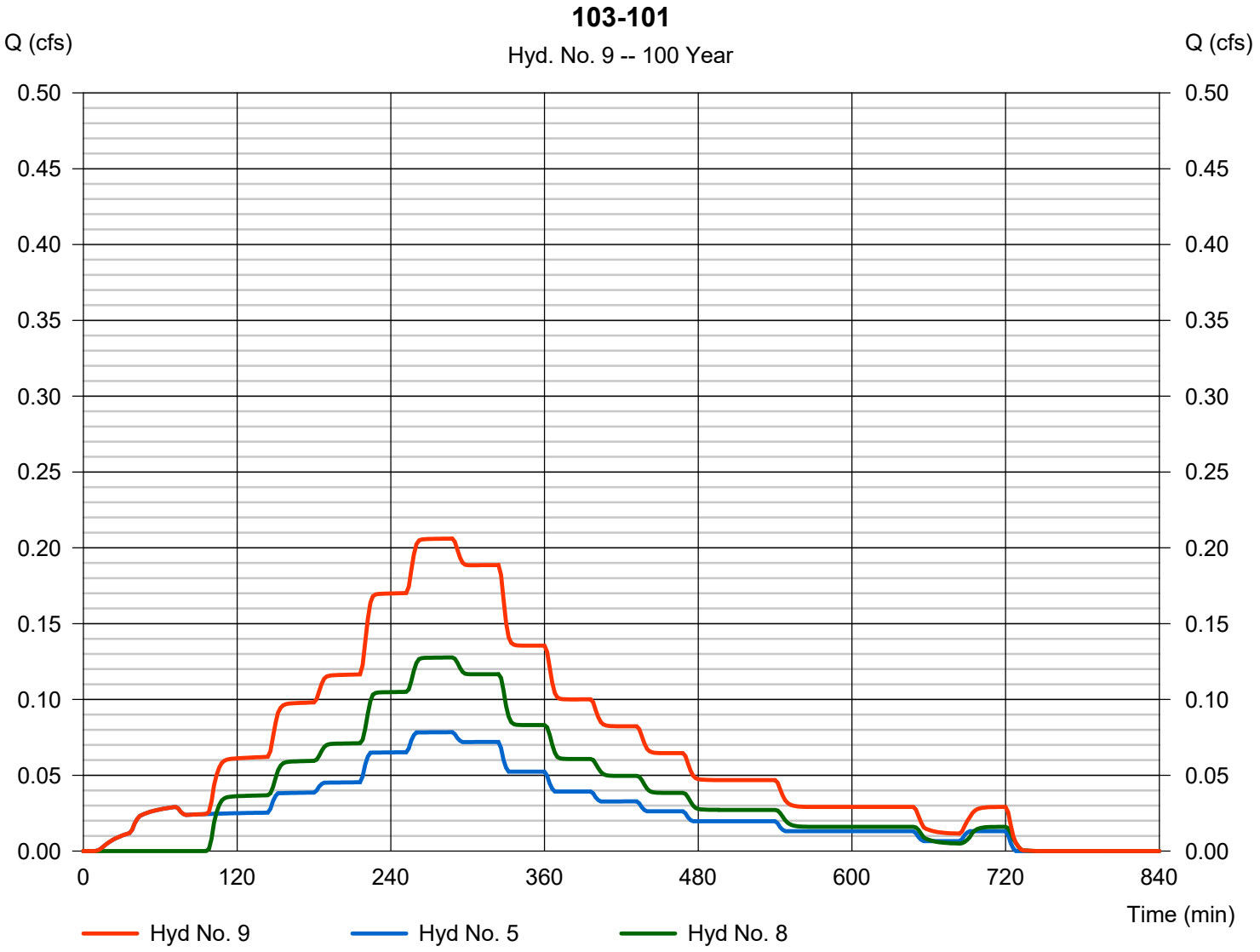


Hydrograph Report

Hyd. No. 9

103-101

Hydrograph type	=	Combine	Peak discharge	=	0.206 cfs
Storm frequency	=	100 yrs	Time to peak	=	288 min
Time interval	=	2 min	Hyd. volume	=	3,268 cuft
Inflow hyds.	=	5, 8	Contrib. drain. area	=	0.070 ac

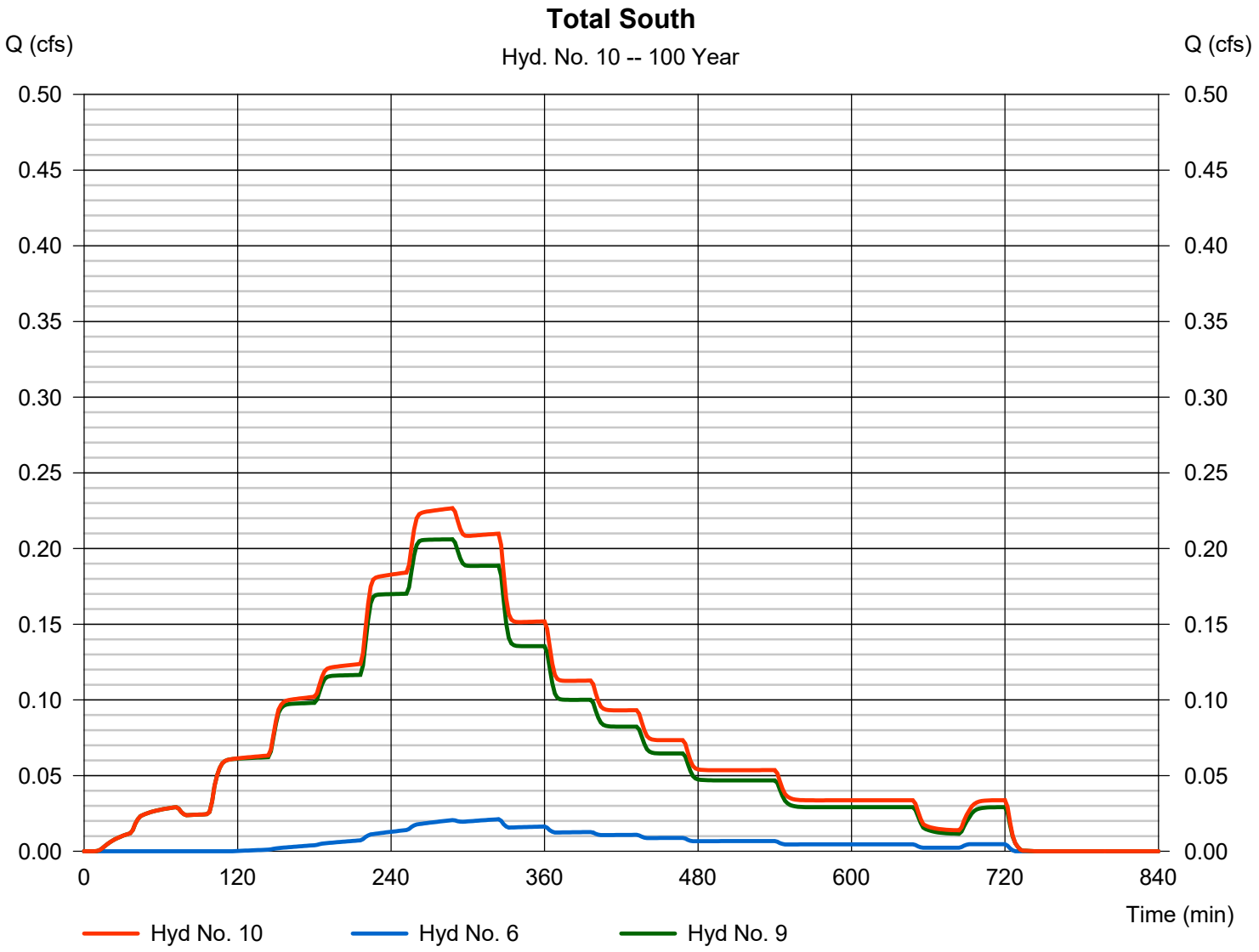


Hydrograph Report

Hyd. No. 10

Total South

Hydrograph type	=	Combine	Peak discharge	=	0.227 cfs
Storm frequency	=	100 yrs	Time to peak	=	288 min
Time interval	=	2 min	Hyd. volume	=	3,579 cuft
Inflow hyds.	=	6, 9	Contrib. drain. area	=	0.030 ac



Appendix I

Hydraflow Hydrographs
24 Hour Storm Data

Hydraflow Table of Contents

2 - Year

10 - Year

100 - Year

Hydrograph Summary Report

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

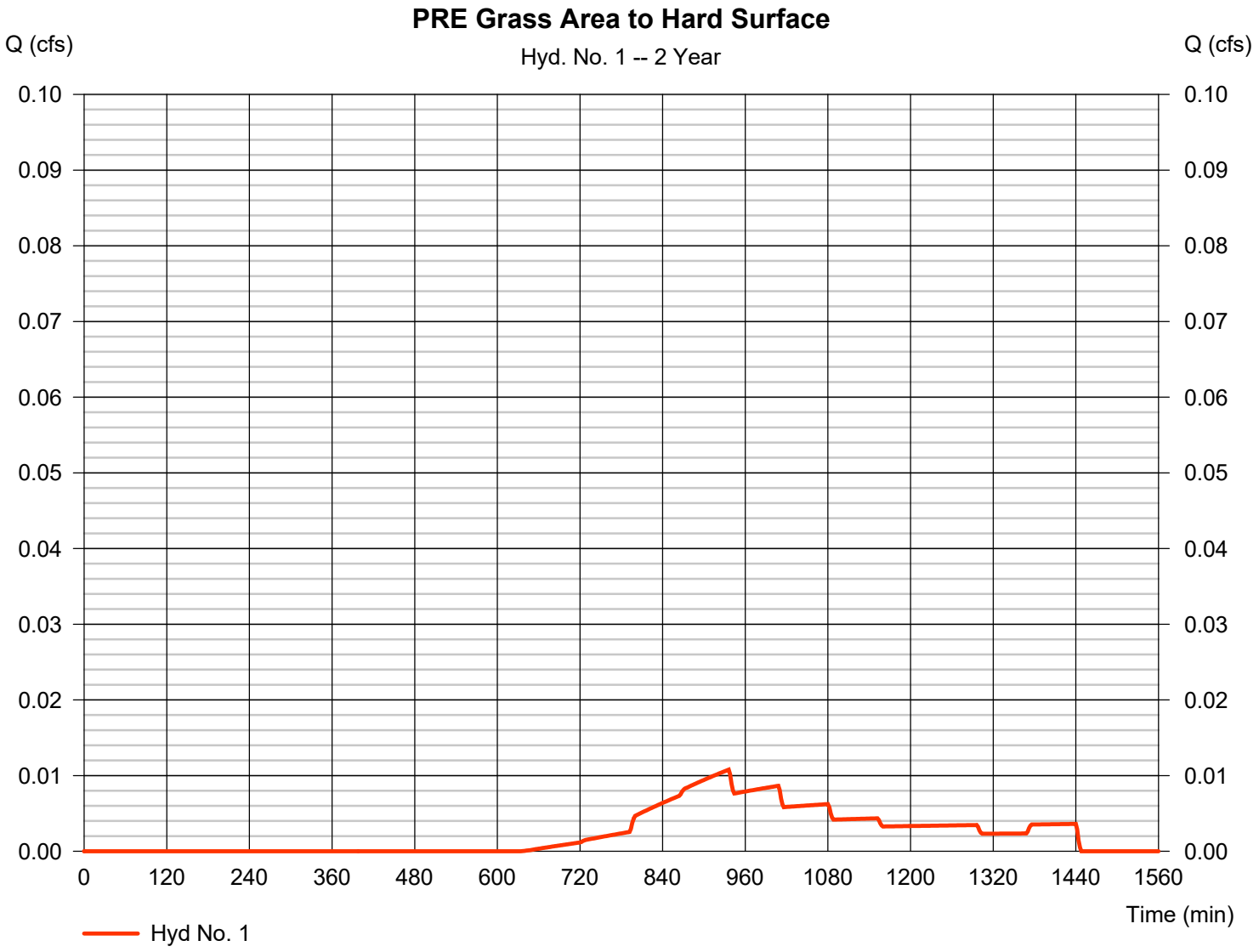
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.011	2	936	213	------	------	------	PRE Grass Area to Hard Surface
2	SCS Runoff	0.040	2	936	895	------	------	------	PRE South
3	SCS Runoff	0.012	2	936	366	------	------	------	POST 11 - STR 105 (105-104)
4	SCS Runoff	0.024	2	936	732	------	------	------	POST 12 - STR 201
5	SCS Runoff	0.021	2	936	640	------	------	------	POST 13-Building-DS
6	SCS Runoff	0.004	2	936	83	------	------	------	POST 14
7	Combine	0.036	2	936	1,098	3, 4,	------	------	Detention Inflow
8	Reservoir	0.029	2	936	483	7	718.09	162	Detention (104-103)
9	Combine	0.050	2	936	1,123	5, 8	------	------	103-101
10	Combine	0.054	2	936	1,206	6, 9	------	------	Total South

Hydrograph Report

Hyd. No. 1

PRE Grass Area to Hard Surface

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.011 cfs
Storm frequency	=	2 yrs	Time to peak	=	936 min
Time interval	=	2 min	Hyd. volume	=	213 cuft
Drainage area	=	0.100 ac	Curve number	=	69
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.92 in	Distribution	=	Huff-3rd
Storm duration	=	24.00 hrs	Shape factor	=	484



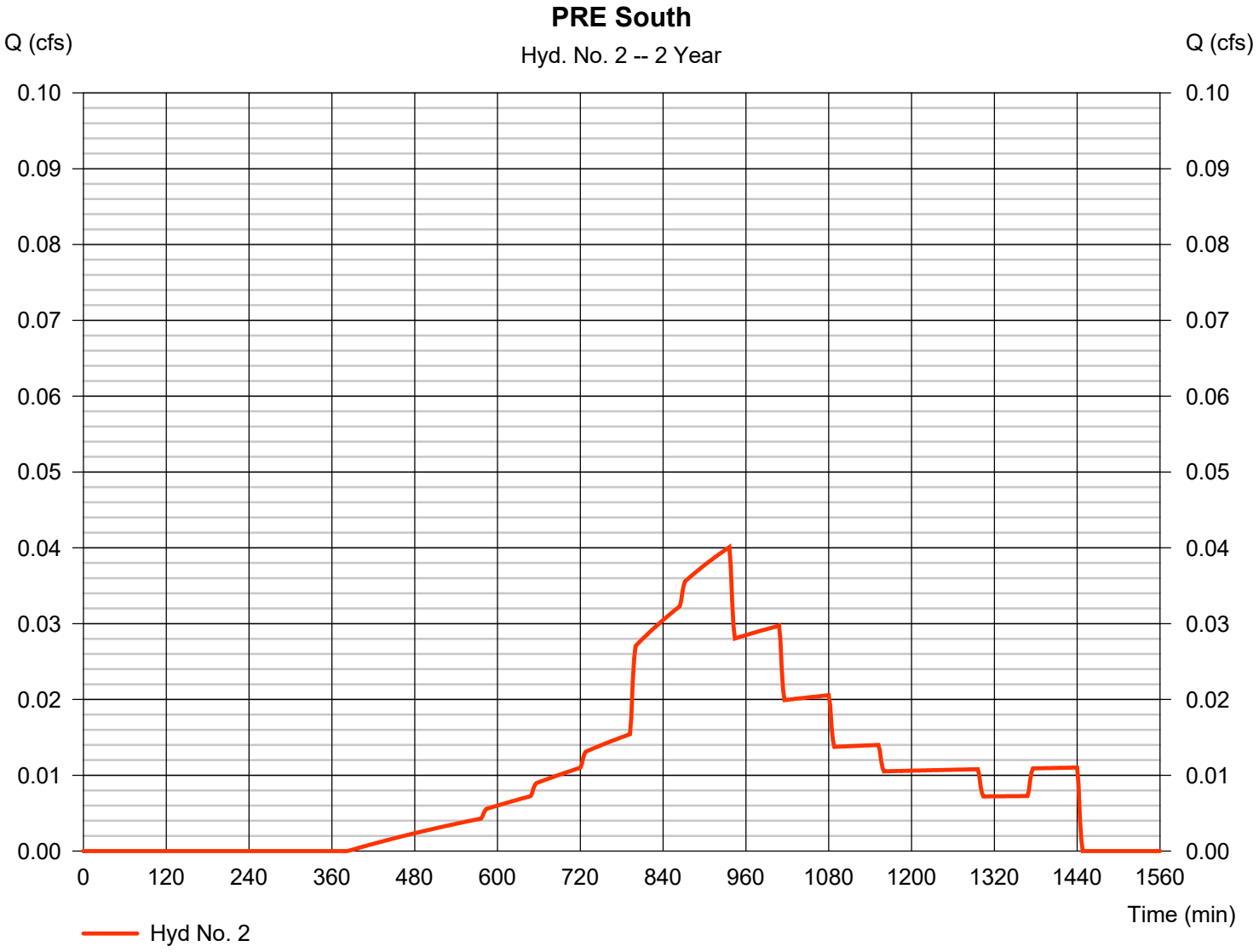
Hydrograph Report

Hyd. No. 2

PRE South

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.040 cfs
Storm frequency	=	2 yrs	Time to peak	=	936 min
Time interval	=	2 min	Hyd. volume	=	895 cuft
Drainage area	=	0.210 ac	Curve number	=	81*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.92 in	Distribution	=	Huff-3rd
Storm duration	=	24.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.120 x 69) + (0.090 x 98)] / 0.210

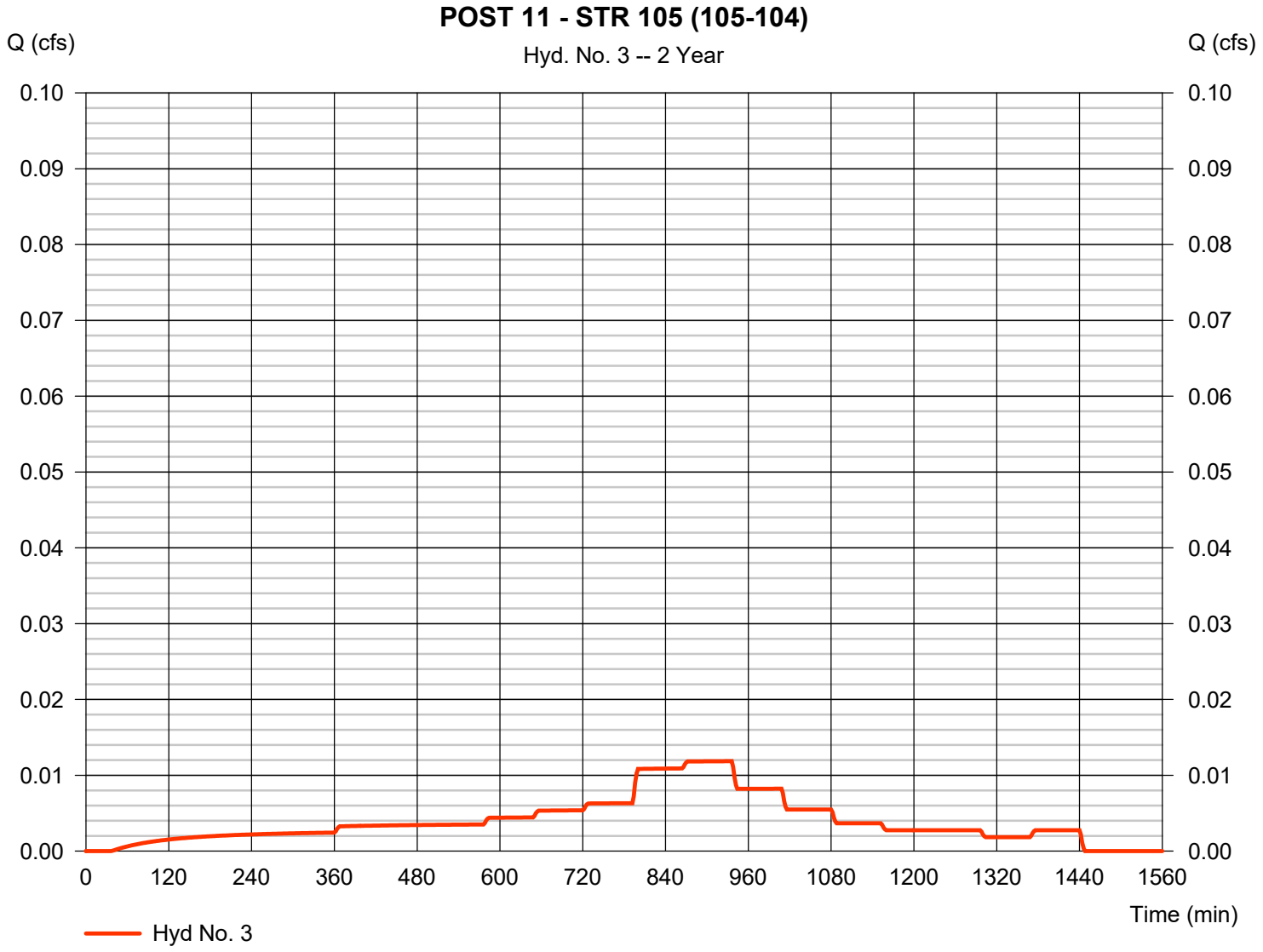


Hydrograph Report

Hyd. No. 3

POST 11 - STR 105 (105-104)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.012 cfs
Storm frequency	= 2 yrs	Time to peak	= 936 min
Time interval	= 2 min	Hyd. volume	= 366 cuft
Drainage area	= 0.040 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.92 in	Distribution	= Huff-3rd
Storm duration	= 24.00 hrs	Shape factor	= 484

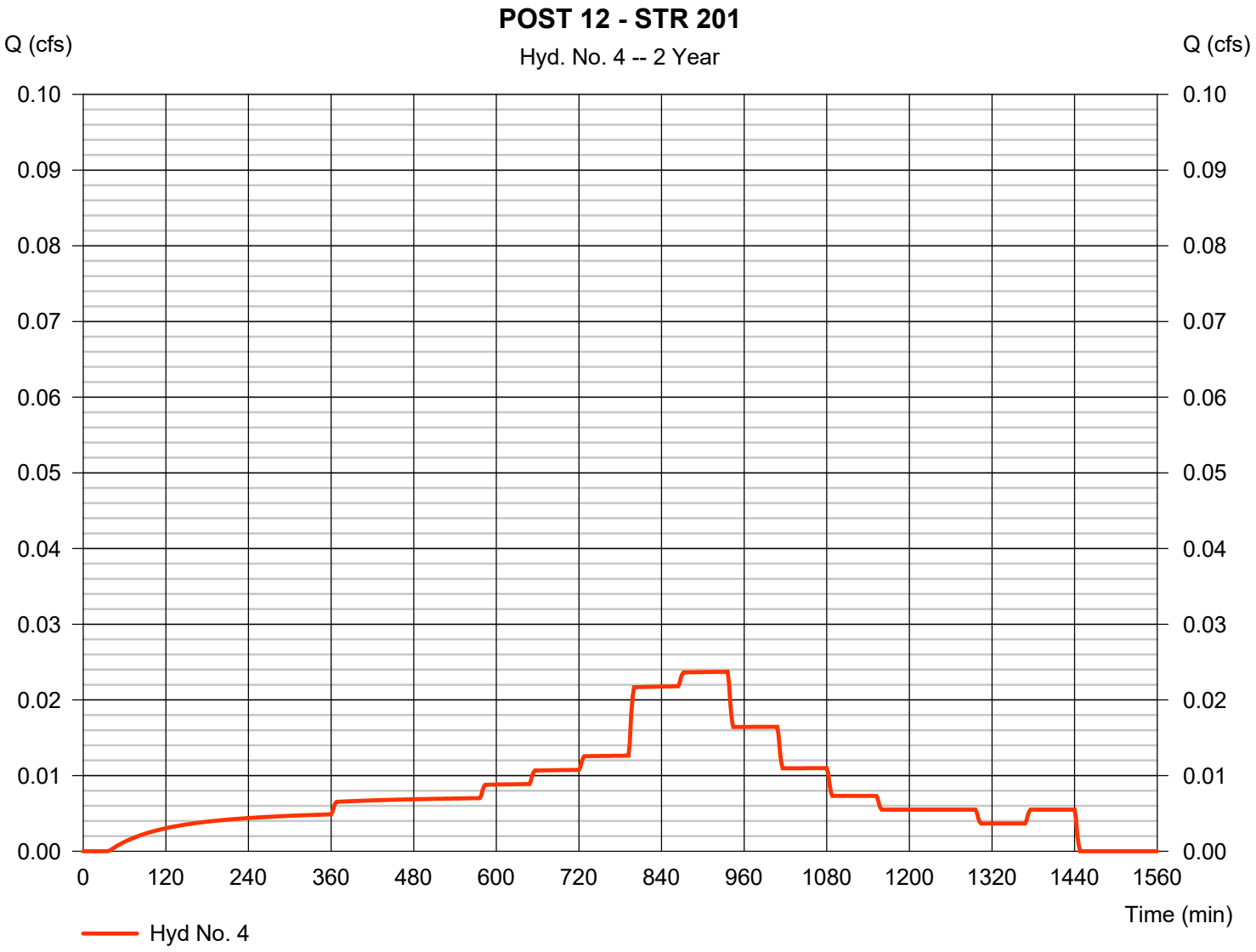


Hydrograph Report

Hyd. No. 4

POST 12 - STR 201

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.024 cfs
Storm frequency	=	2 yrs	Time to peak	=	936 min
Time interval	=	2 min	Hyd. volume	=	732 cuft
Drainage area	=	0.080 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.92 in	Distribution	=	Huff-3rd
Storm duration	=	24.00 hrs	Shape factor	=	484

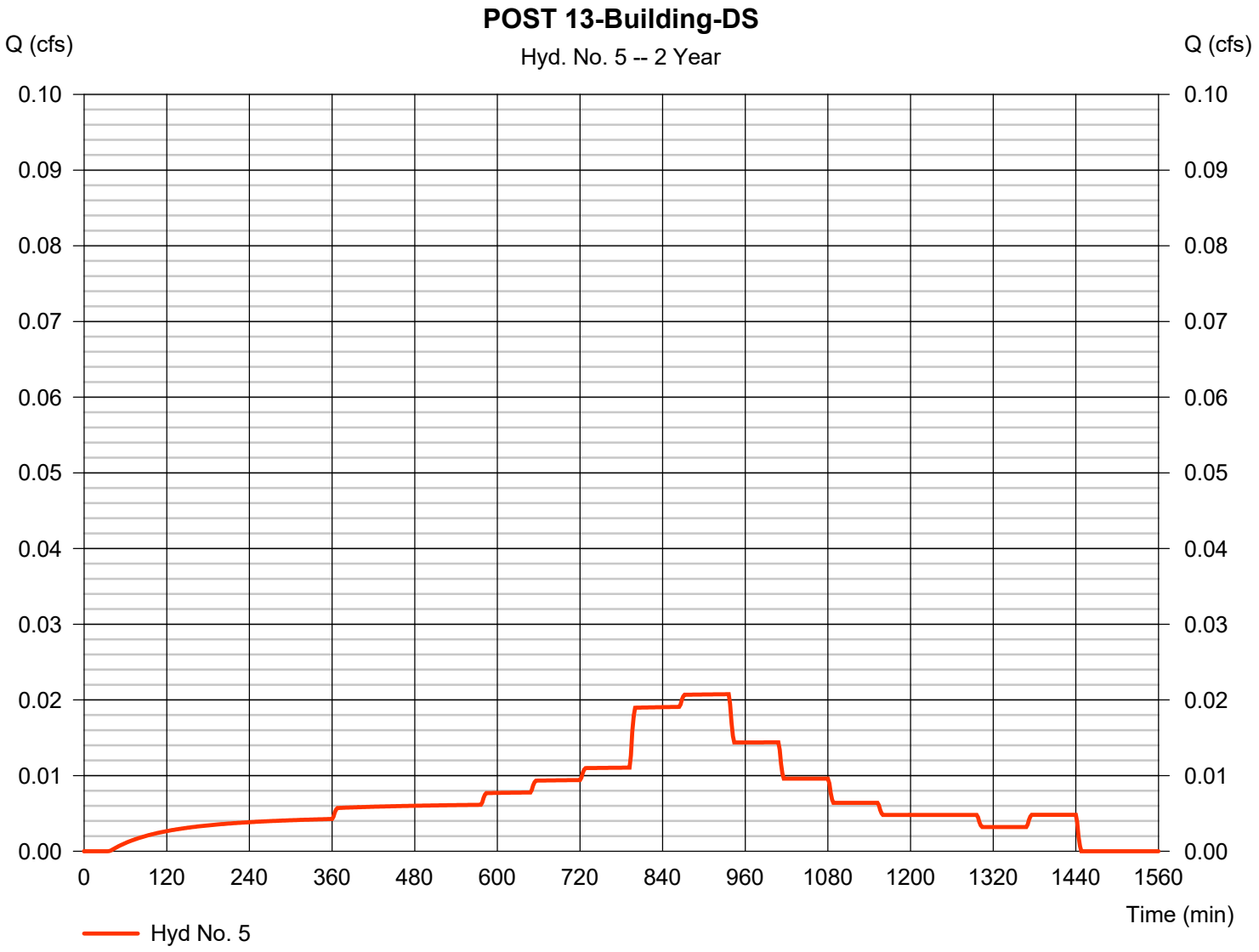


Hydrograph Report

Hyd. No. 5

POST 13-Building-DS

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.021 cfs
Storm frequency	=	2 yrs	Time to peak	=	936 min
Time interval	=	2 min	Hyd. volume	=	640 cuft
Drainage area	=	0.070 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.92 in	Distribution	=	Huff-3rd
Storm duration	=	24.00 hrs	Shape factor	=	484



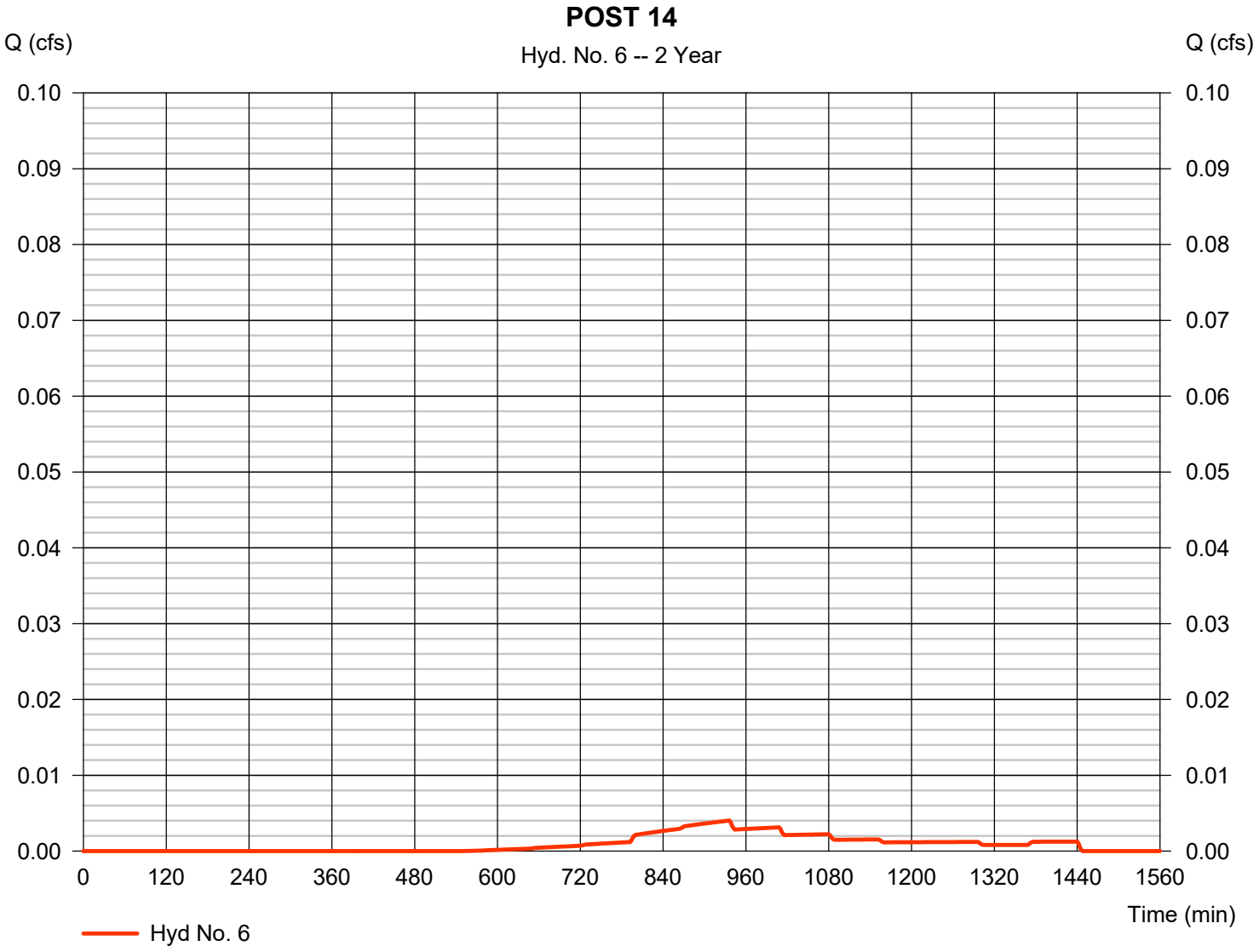
Hydrograph Report

Hyd. No. 6

POST 14

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.004 cfs
Storm frequency	=	2 yrs	Time to peak	=	936 min
Time interval	=	2 min	Hyd. volume	=	83 cuft
Drainage area	=	0.030 ac	Curve number	=	73*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.92 in	Distribution	=	Huff-3rd
Storm duration	=	24.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.020 x 61) + (0.010 x 98)] / 0.030

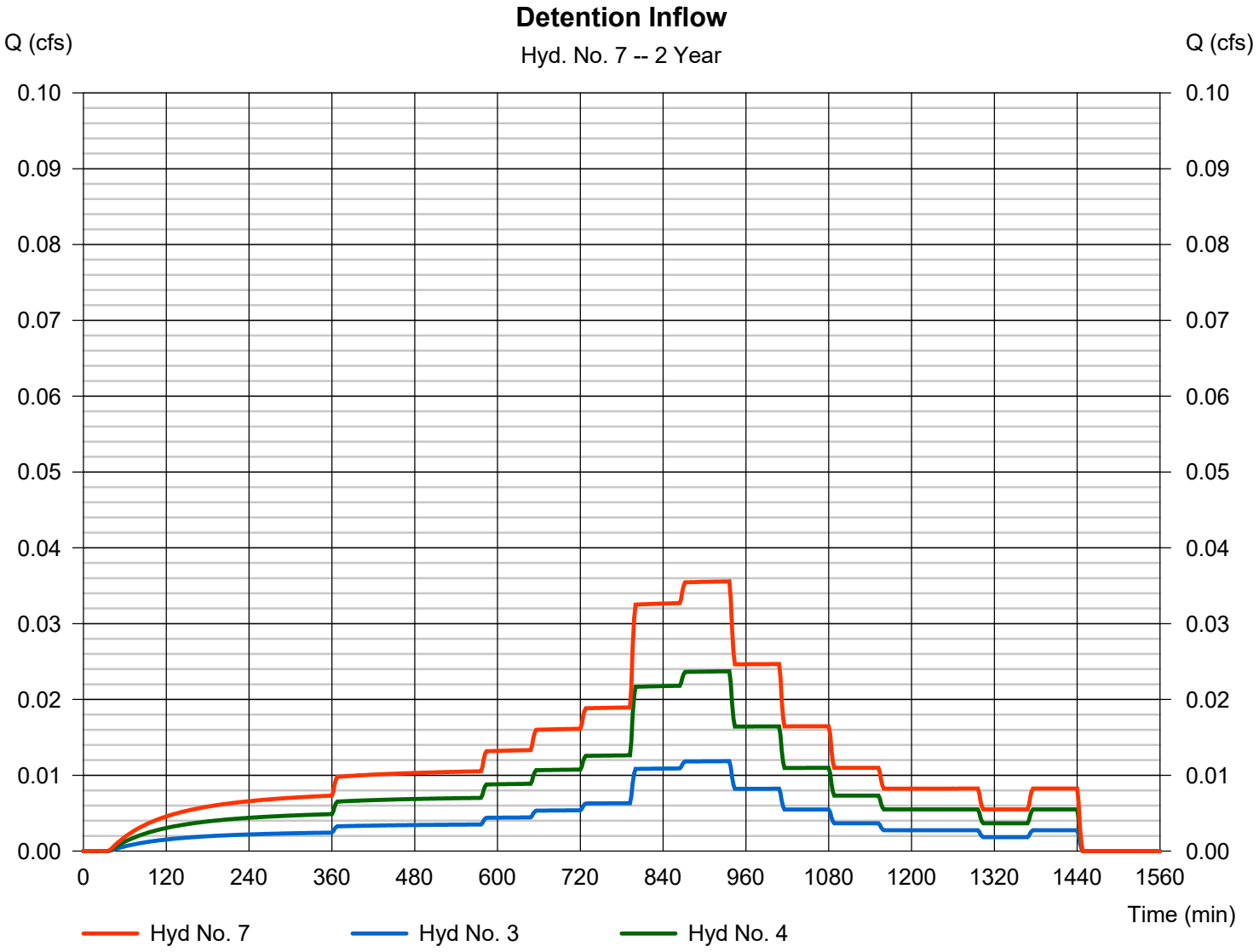


Hydrograph Report

Hyd. No. 7

Detention Inflow

Hydrograph type	=	Combine	Peak discharge	=	0.036 cfs
Storm frequency	=	2 yrs	Time to peak	=	936 min
Time interval	=	2 min	Hyd. volume	=	1,098 cuft
Inflow hyds.	=	3, 4	Contrib. drain. area	=	0.120 ac



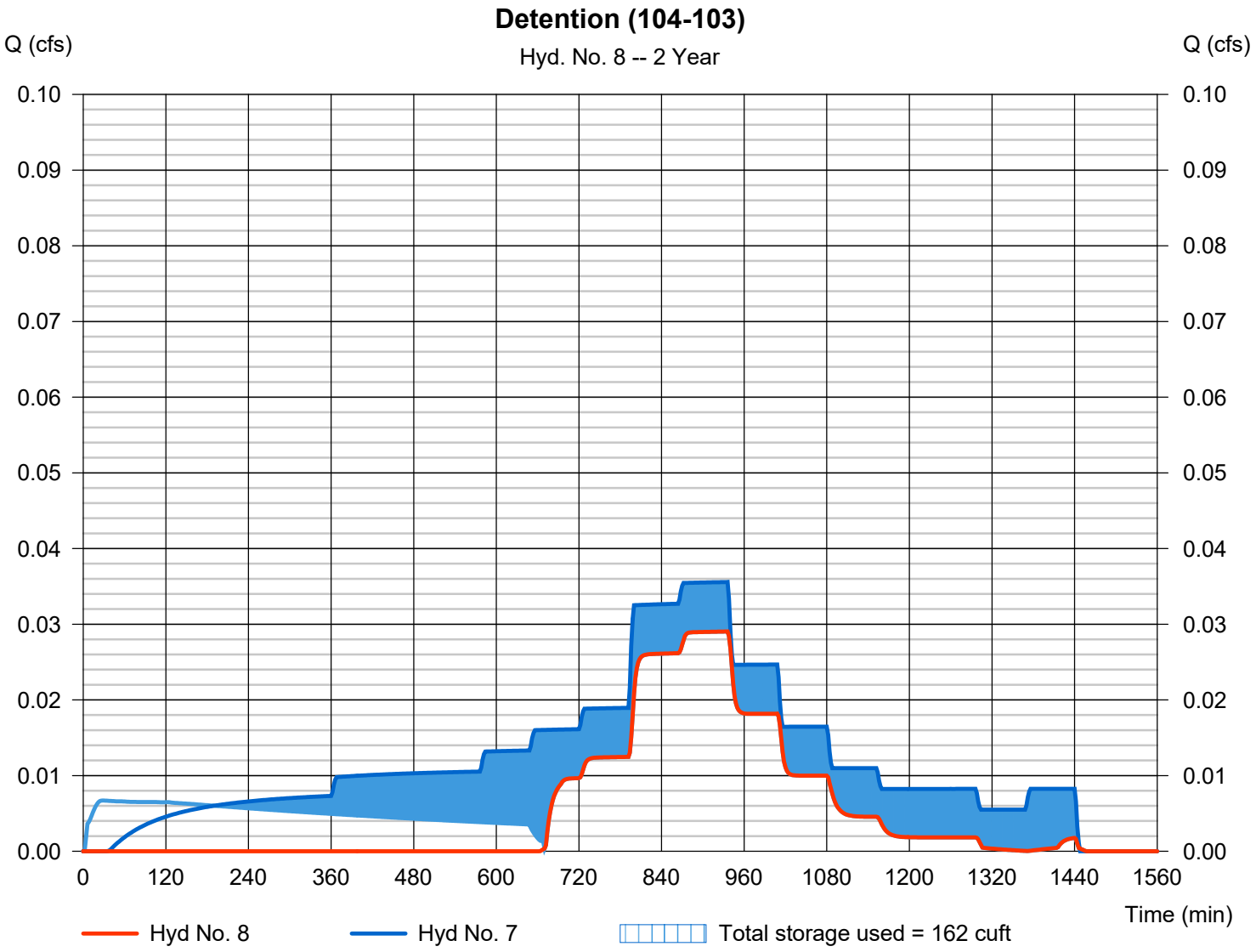
Hydrograph Report

Hyd. No. 8

Detention (104-103)

Hydrograph type	=	Reservoir	Peak discharge	=	0.029 cfs
Storm frequency	=	2 yrs	Time to peak	=	936 min
Time interval	=	2 min	Hyd. volume	=	483 cuft
Inflow hyd. No.	=	7 - Detention Inflow	Max. Elevation	=	718.09 ft
Reservoir name	=	Proposed Detention	Max. Storage	=	162 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

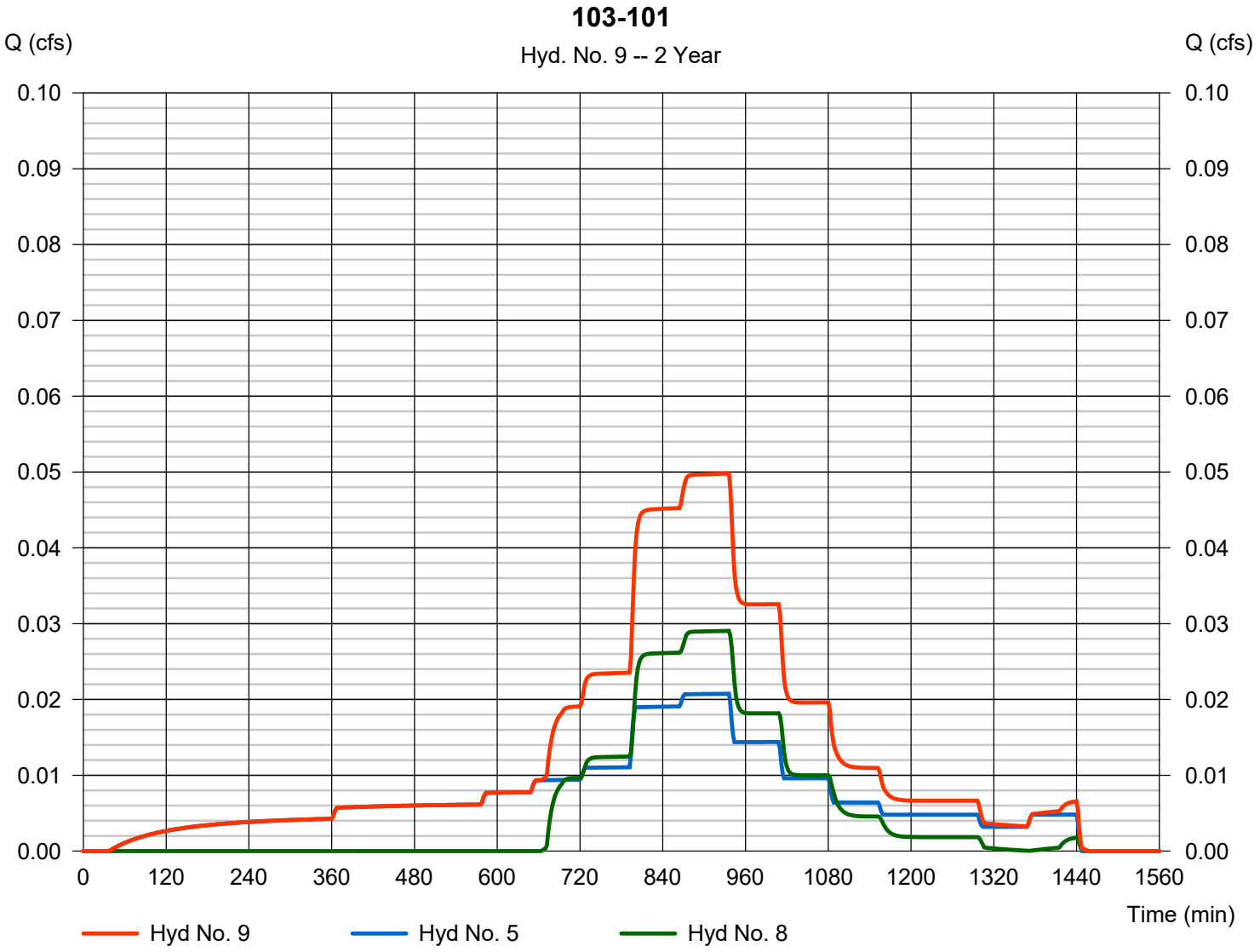


Hydrograph Report

Hyd. No. 9

103-101

Hydrograph type	=	Combine	Peak discharge	=	0.050 cfs
Storm frequency	=	2 yrs	Time to peak	=	936 min
Time interval	=	2 min	Hyd. volume	=	1,123 cuft
Inflow hyds.	=	5, 8	Contrib. drain. area	=	0.070 ac

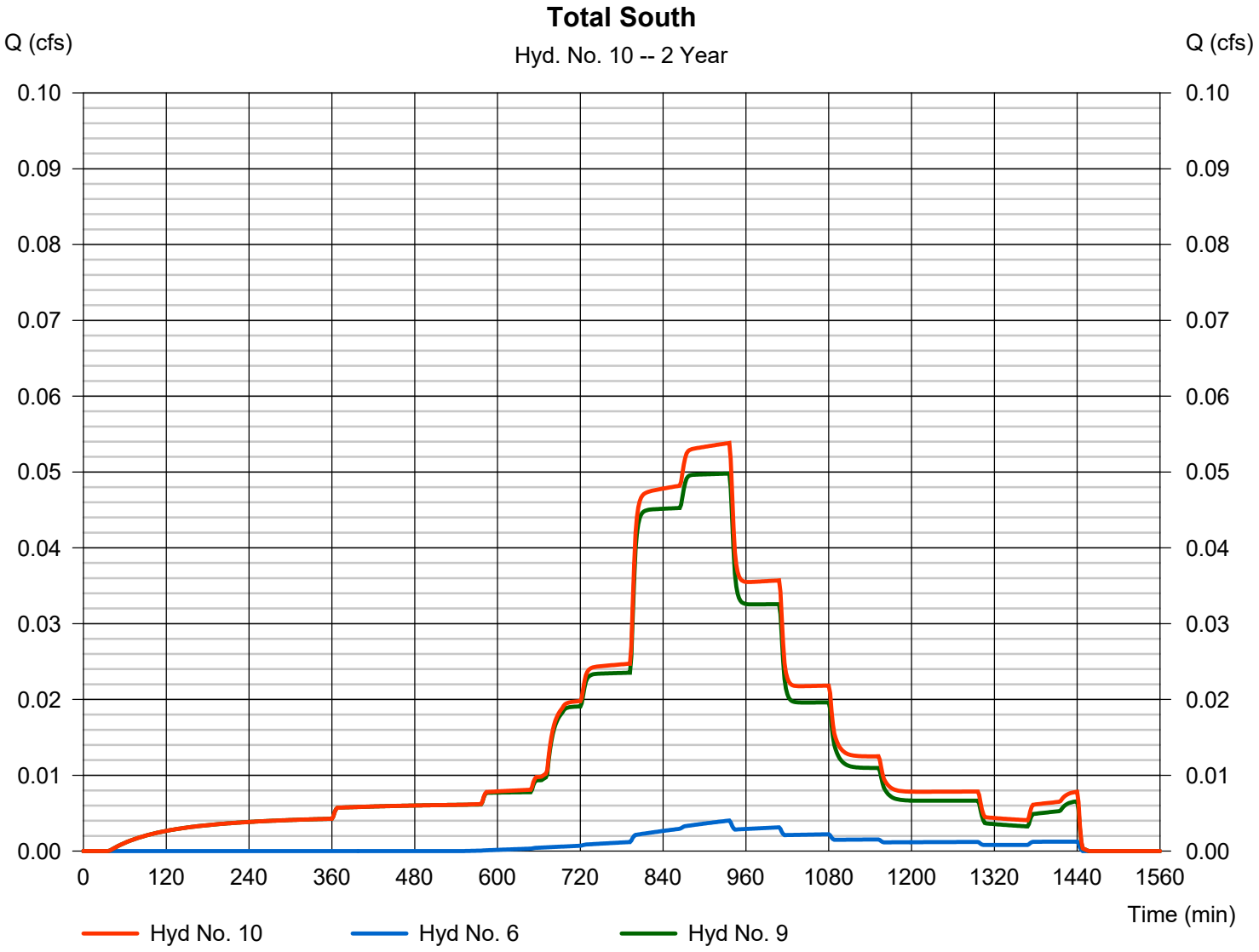


Hydrograph Report

Hyd. No. 10

Total South

Hydrograph type	= Combine	Peak discharge	= 0.054 cfs
Storm frequency	= 2 yrs	Time to peak	= 936 min
Time interval	= 2 min	Hyd. volume	= 1,206 cuft
Inflow hyds.	= 6, 9	Contrib. drain. area	= 0.030 ac



Hydrograph Summary Report

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

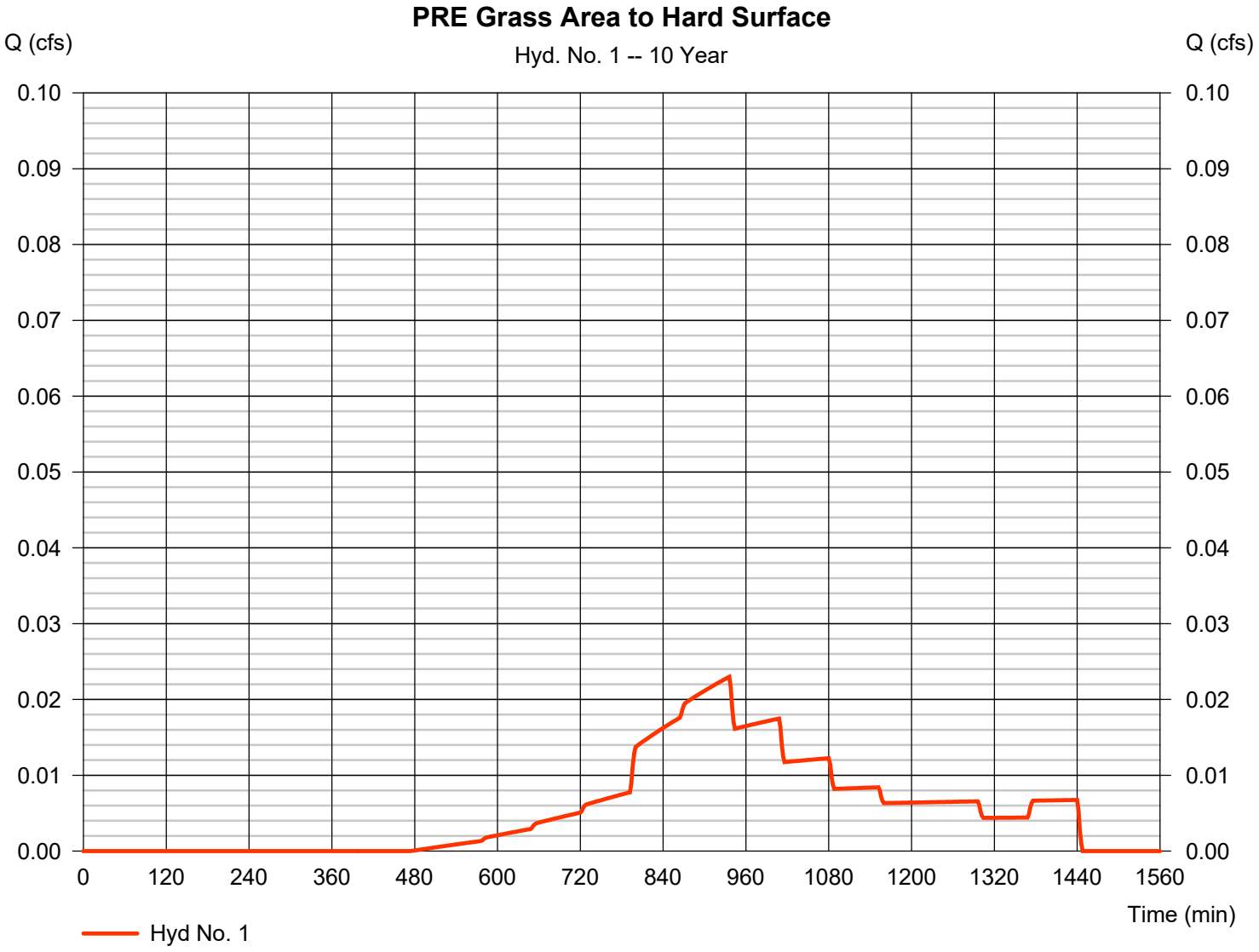
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.023	2	936	487	------	------	------	PRE Grass Area to Hard Surface
2	SCS Runoff	0.070	2	936	1,667	------	------	------	PRE South
3	SCS Runoff	0.017	2	936	546	------	------	------	POST 11 - STR 105 (105-104)
4	SCS Runoff	0.035	2	936	1,093	------	------	------	POST 12 - STR 201
5	SCS Runoff	0.030	2	936	956	------	------	------	POST 13-Building-DS
6	SCS Runoff	0.008	2	936	175	------	------	------	POST 14
7	Combine	0.052	2	936	1,639	3, 4,	------	------	Detention Inflow
8	Reservoir	0.045	2	936	986	7	718.11	165	Detention (104-103)
9	Combine	0.076	2	936	1,942	5, 8	------	------	103-101
10	Combine	0.084	2	936	2,117	6, 9	------	------	Total South

Hydrograph Report

Hyd. No. 1

PRE Grass Area to Hard Surface

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.023 cfs
Storm frequency	=	10 yrs	Time to peak	=	936 min
Time interval	=	2 min	Hyd. volume	=	487 cuft
Drainage area	=	0.100 ac	Curve number	=	69
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	4.25 in	Distribution	=	Huff-3rd
Storm duration	=	24.00 hrs	Shape factor	=	484



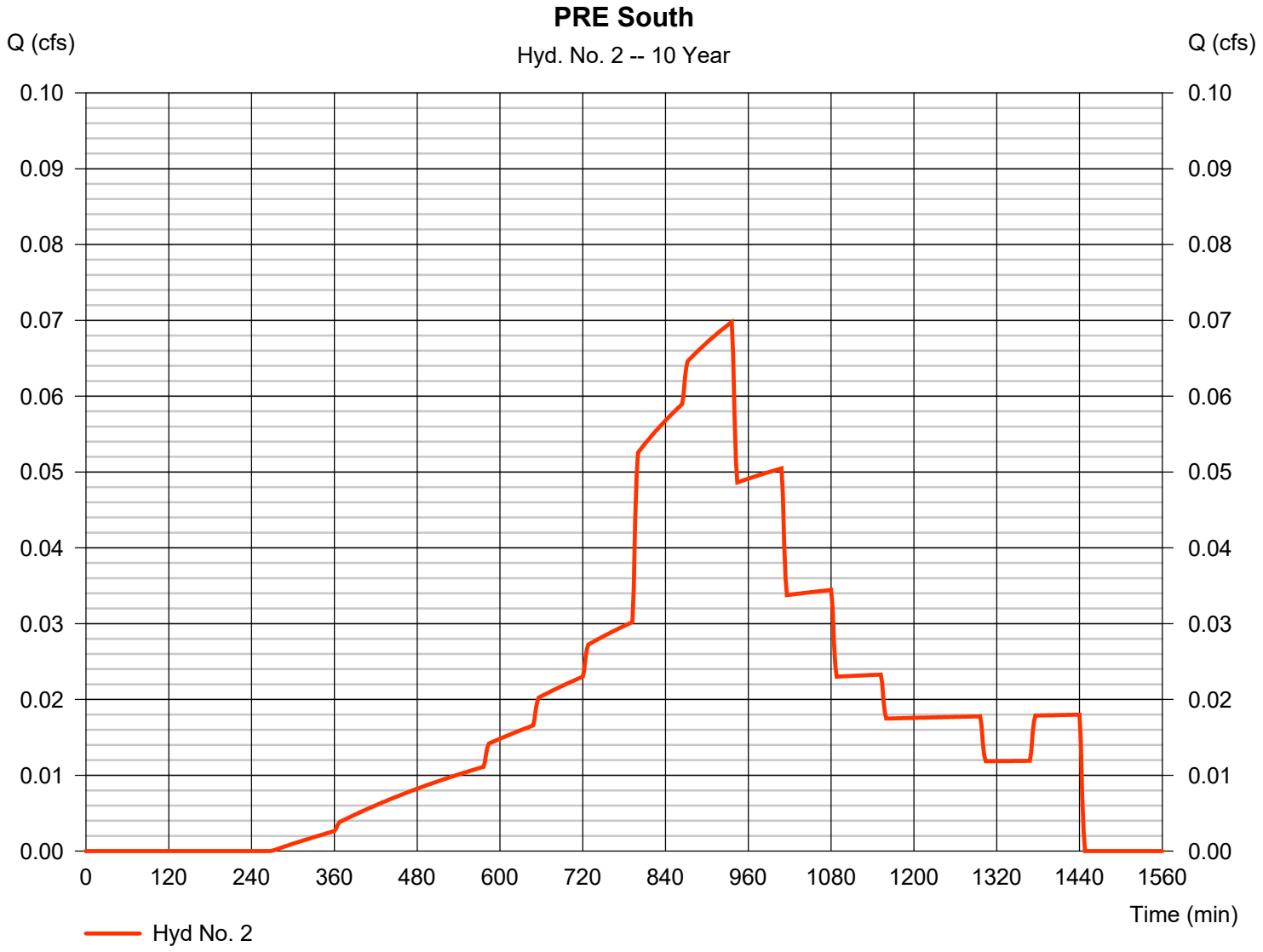
Hydrograph Report

Hyd. No. 2

PRE South

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.070 cfs
Storm frequency	=	10 yrs	Time to peak	=	936 min
Time interval	=	2 min	Hyd. volume	=	1,667 cuft
Drainage area	=	0.210 ac	Curve number	=	81*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	4.25 in	Distribution	=	Huff-3rd
Storm duration	=	24.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.120 x 69) + (0.090 x 98)] / 0.210

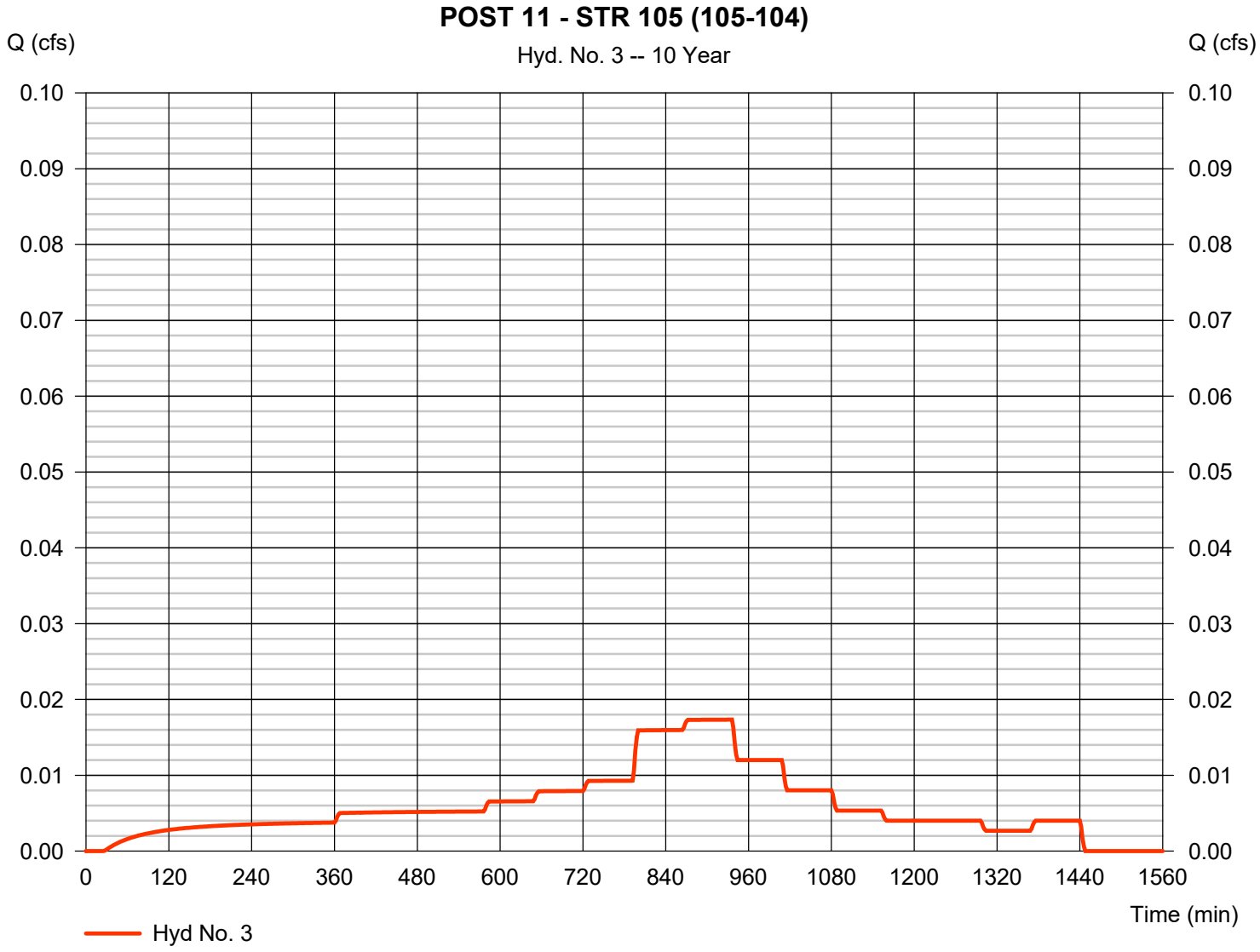


Hydrograph Report

Hyd. No. 3

POST 11 - STR 105 (105-104)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.017 cfs
Storm frequency	= 10 yrs	Time to peak	= 936 min
Time interval	= 2 min	Hyd. volume	= 546 cuft
Drainage area	= 0.040 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.25 in	Distribution	= Huff-3rd
Storm duration	= 24.00 hrs	Shape factor	= 484

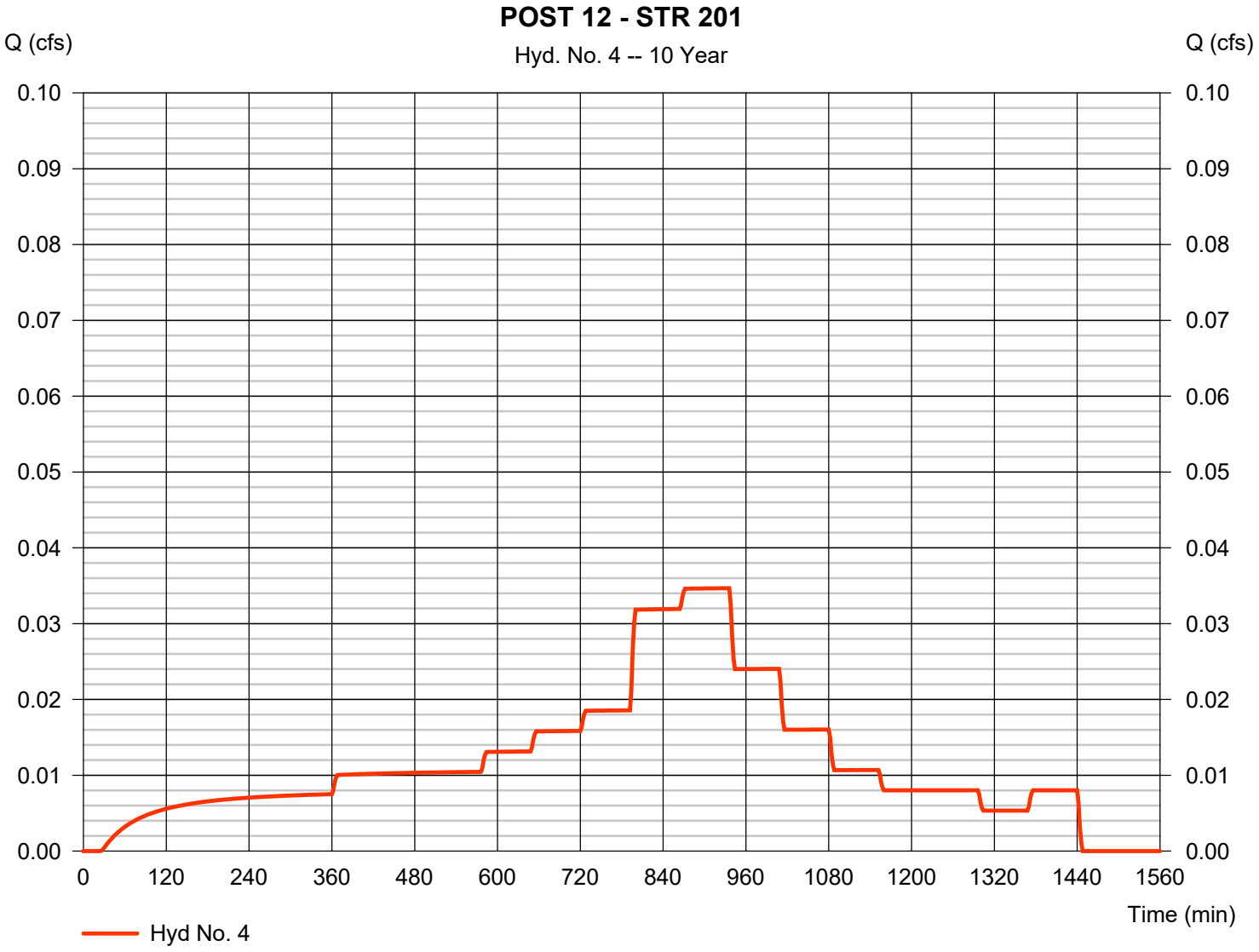


Hydrograph Report

Hyd. No. 4

POST 12 - STR 201

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.035 cfs
Storm frequency	=	10 yrs	Time to peak	=	936 min
Time interval	=	2 min	Hyd. volume	=	1,093 cuft
Drainage area	=	0.080 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	4.25 in	Distribution	=	Huff-3rd
Storm duration	=	24.00 hrs	Shape factor	=	484

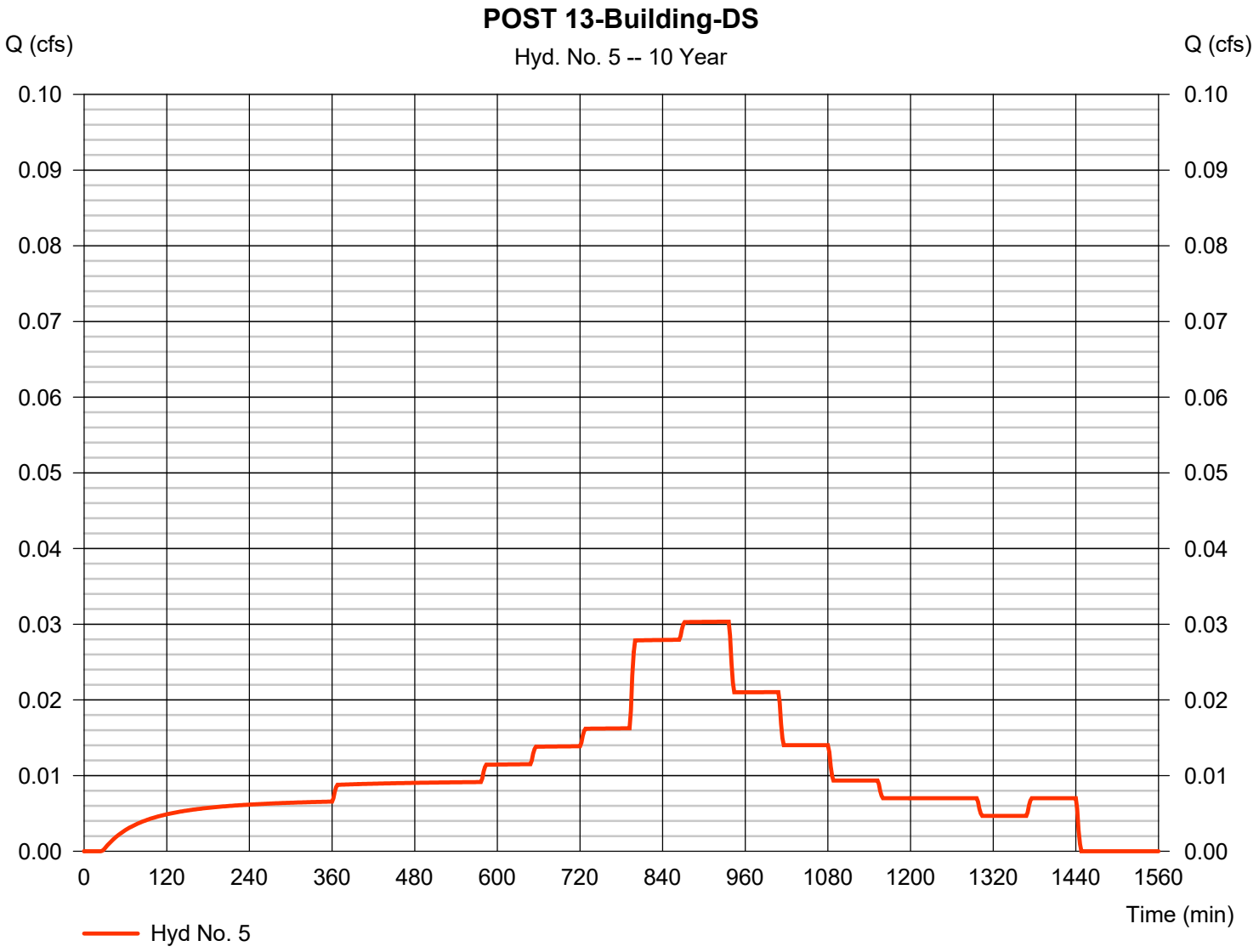


Hydrograph Report

Hyd. No. 5

POST 13-Building-DS

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.030 cfs
Storm frequency	=	10 yrs	Time to peak	=	936 min
Time interval	=	2 min	Hyd. volume	=	956 cuft
Drainage area	=	0.070 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	4.25 in	Distribution	=	Huff-3rd
Storm duration	=	24.00 hrs	Shape factor	=	484



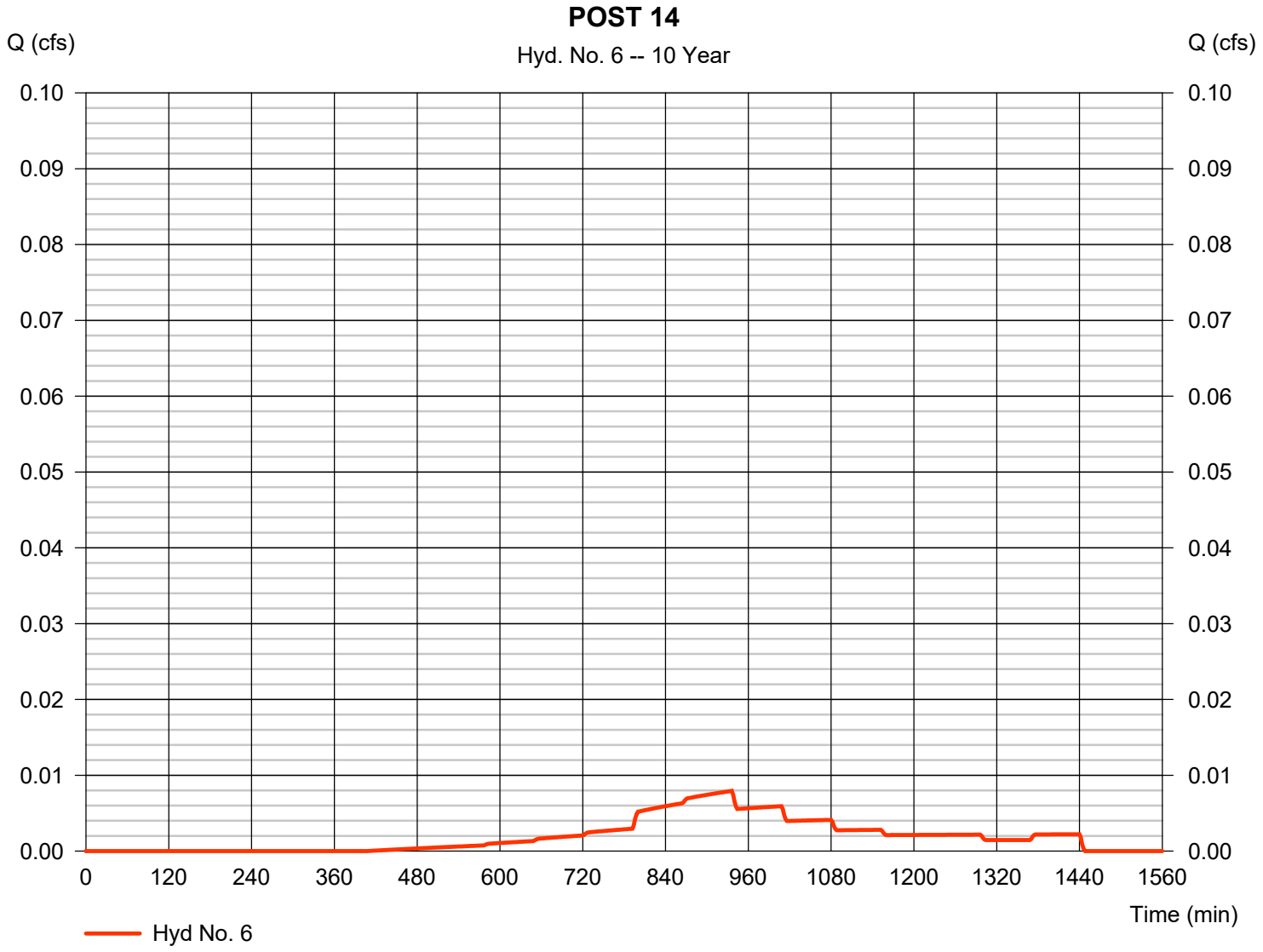
Hydrograph Report

Hyd. No. 6

POST 14

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.008 cfs
Storm frequency	=	10 yrs	Time to peak	=	936 min
Time interval	=	2 min	Hyd. volume	=	175 cuft
Drainage area	=	0.030 ac	Curve number	=	73*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	4.25 in	Distribution	=	Huff-3rd
Storm duration	=	24.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.020 x 61) + (0.010 x 98)] / 0.030

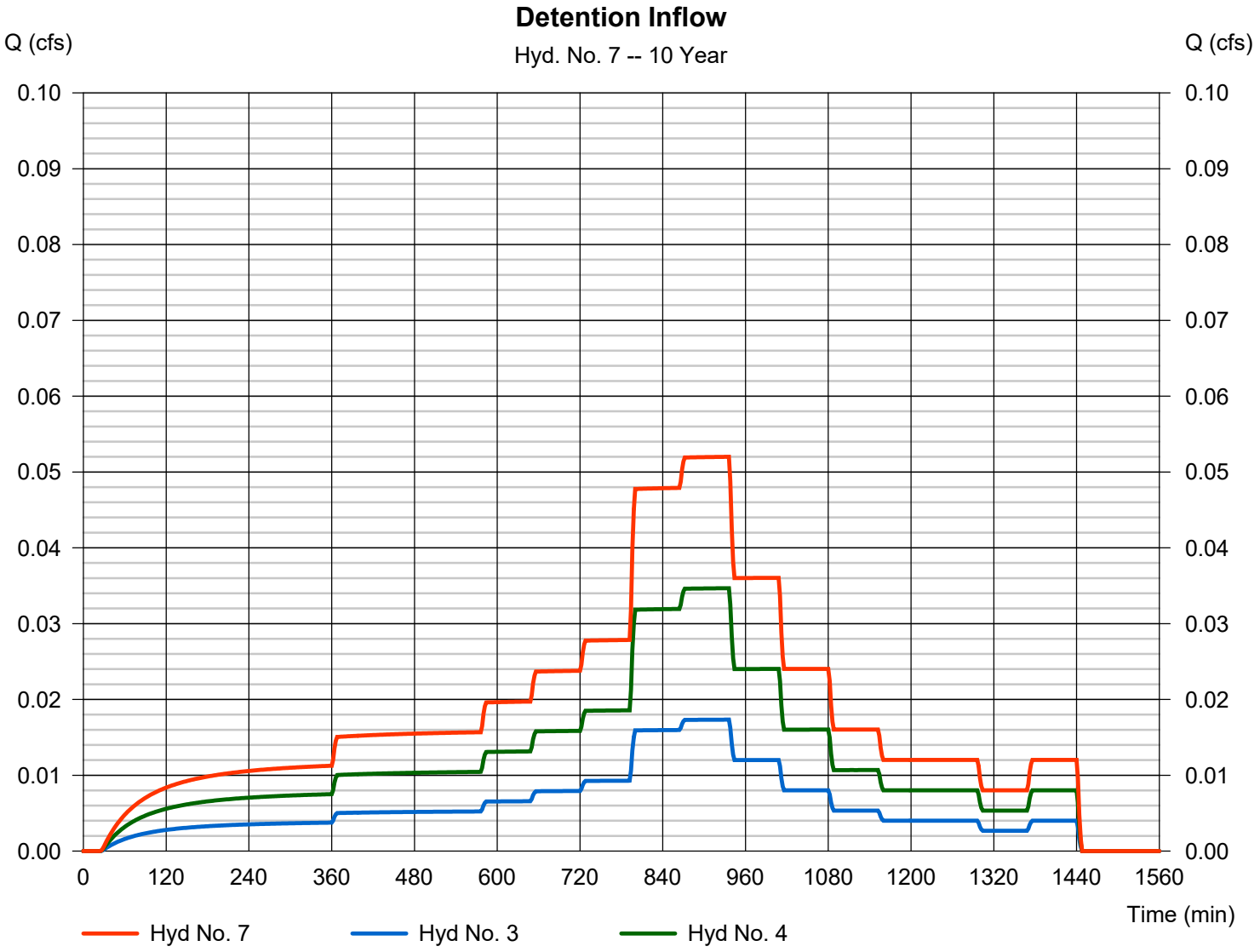


Hydrograph Report

Hyd. No. 7

Detention Inflow

Hydrograph type	=	Combine	Peak discharge	=	0.052 cfs
Storm frequency	=	10 yrs	Time to peak	=	936 min
Time interval	=	2 min	Hyd. volume	=	1,639 cuft
Inflow hyds.	=	3, 4	Contrib. drain. area	=	0.120 ac



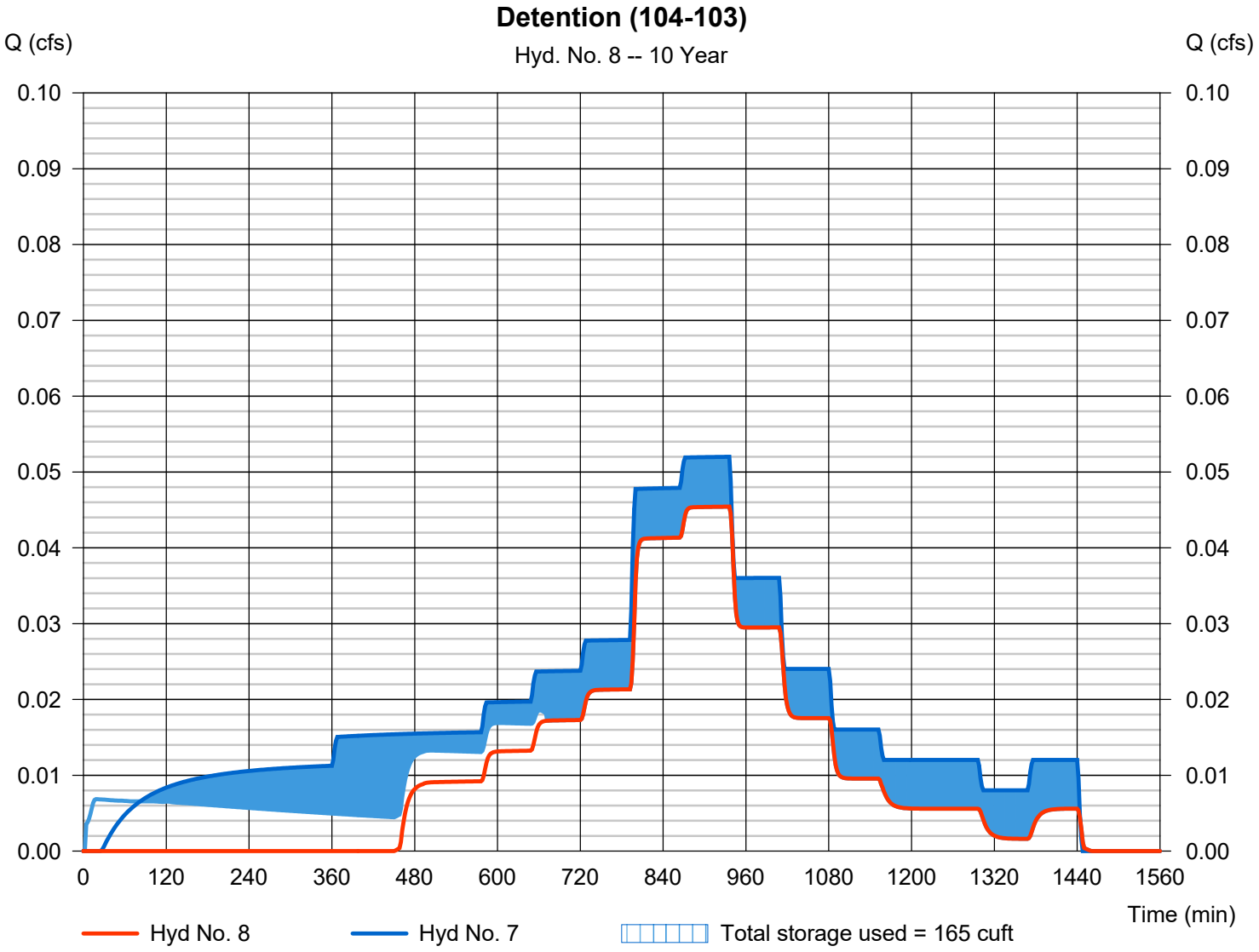
Hydrograph Report

Hyd. No. 8

Detention (104-103)

Hydrograph type	=	Reservoir	Peak discharge	=	0.045 cfs
Storm frequency	=	10 yrs	Time to peak	=	936 min
Time interval	=	2 min	Hyd. volume	=	986 cuft
Inflow hyd. No.	=	7 - Detention Inflow	Max. Elevation	=	718.11 ft
Reservoir name	=	Proposed Detention	Max. Storage	=	165 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

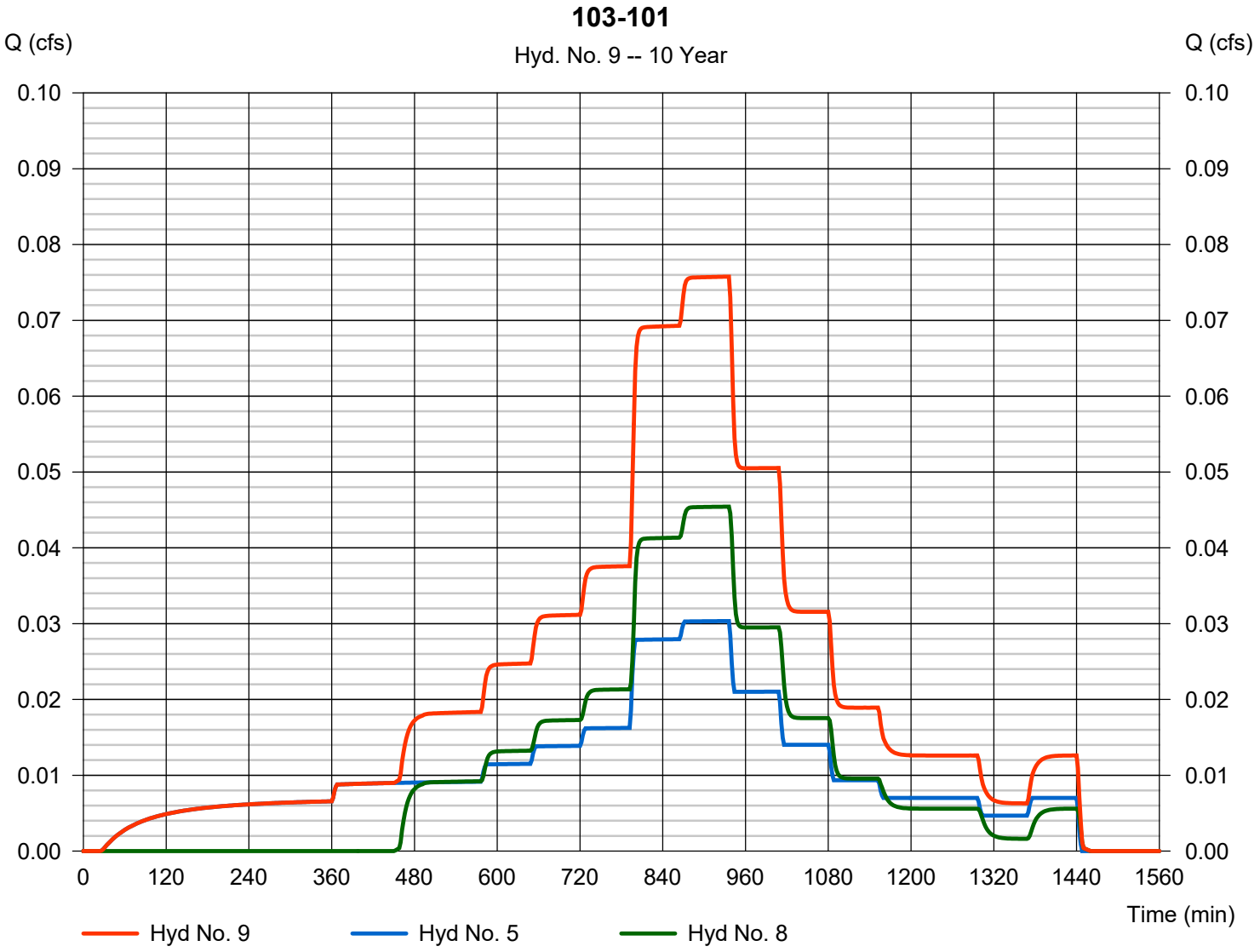


Hydrograph Report

Hyd. No. 9

103-101

Hydrograph type	=	Combine	Peak discharge	=	0.076 cfs
Storm frequency	=	10 yrs	Time to peak	=	936 min
Time interval	=	2 min	Hyd. volume	=	1,942 cuft
Inflow hyds.	=	5, 8	Contrib. drain. area	=	0.070 ac

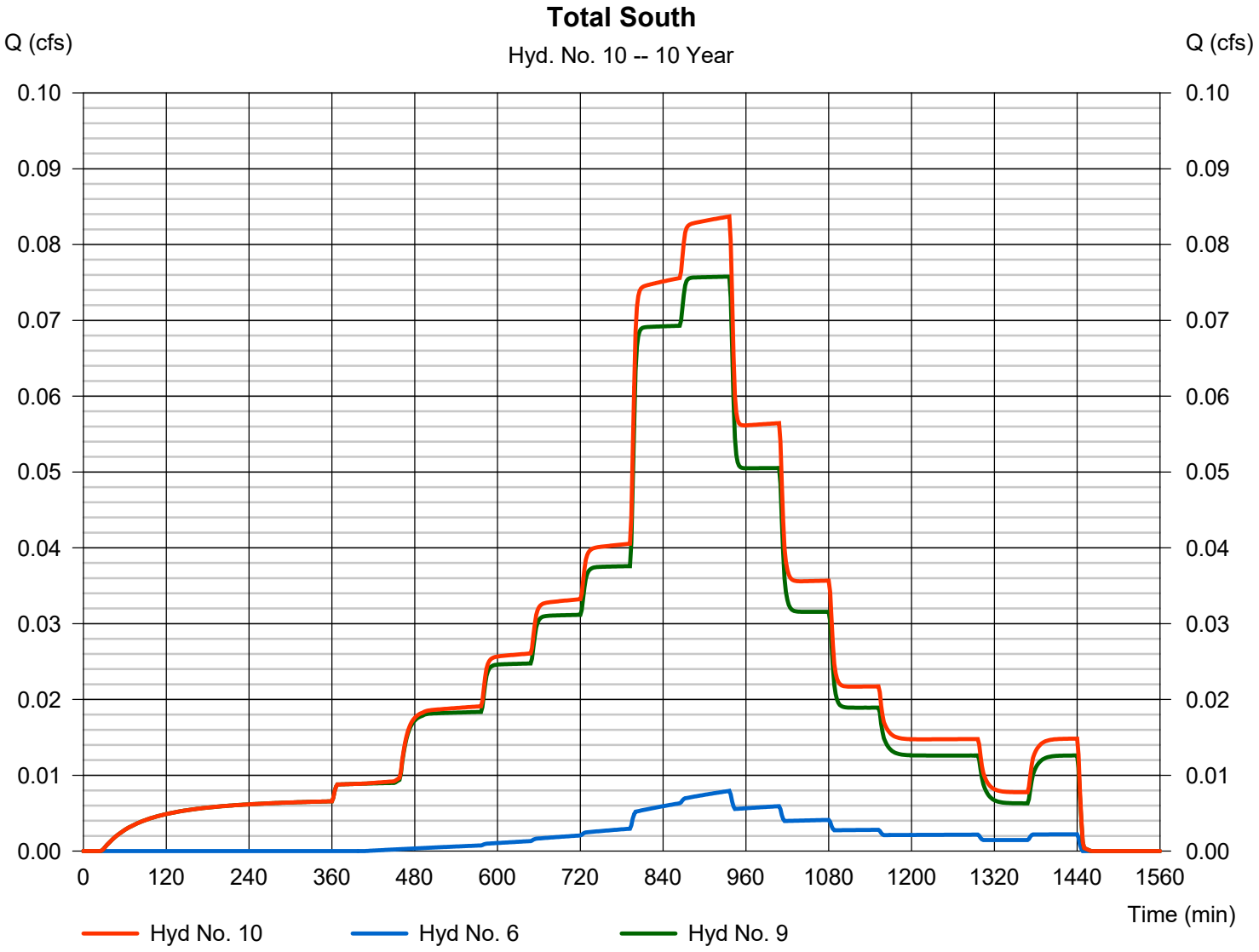


Hydrograph Report

Hyd. No. 10

Total South

Hydrograph type	=	Combine	Peak discharge	=	0.084 cfs
Storm frequency	=	10 yrs	Time to peak	=	936 min
Time interval	=	2 min	Hyd. volume	=	2,117 cuft
Inflow hyds.	=	6, 9	Contrib. drain. area	=	0.030 ac



Hydrograph Summary Report

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

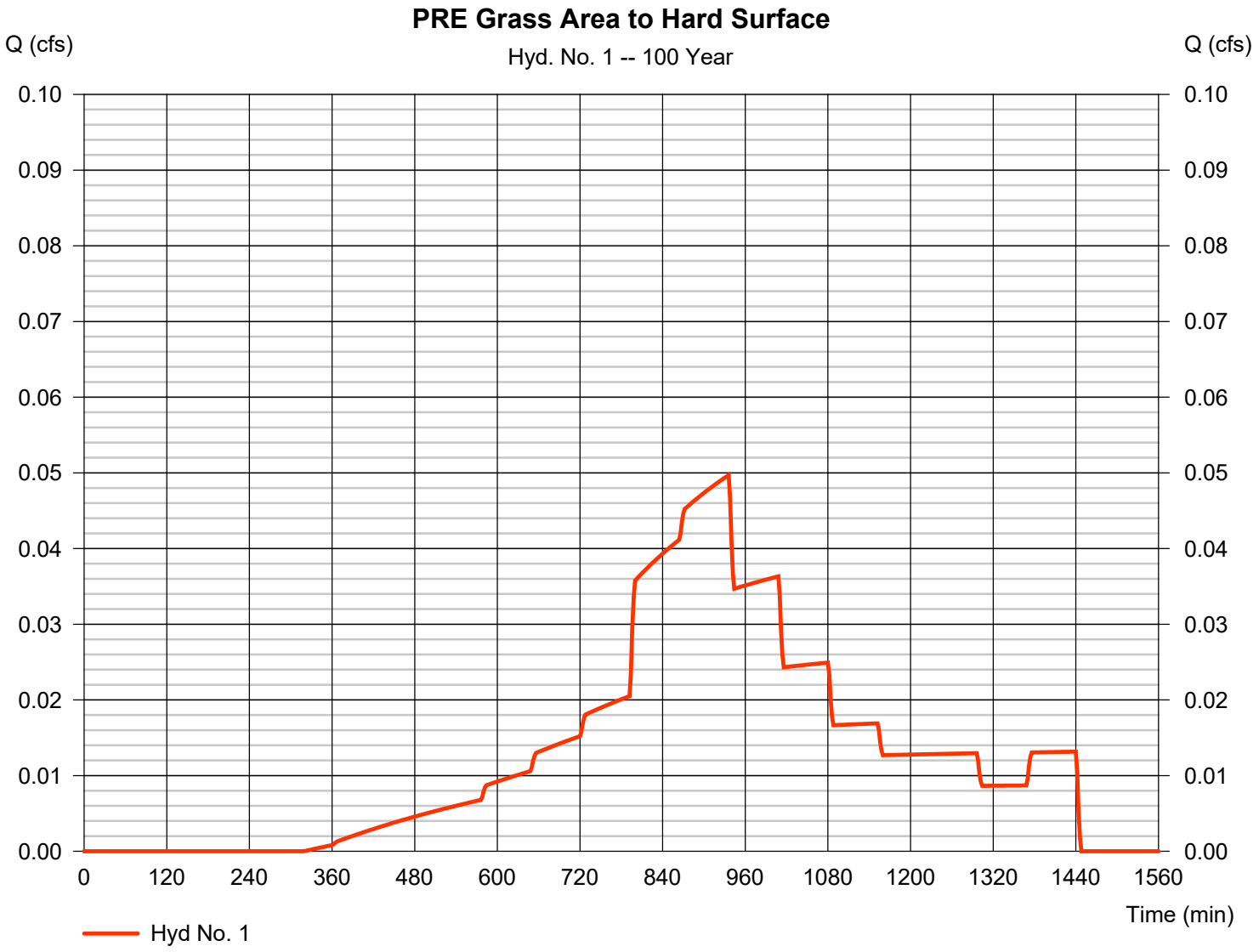
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.050	2	936	1,151	------	------	------	PRE Grass Area to Hard Surface
2	SCS Runoff	0.129	2	936	3,328	------	------	------	PRE South
3	SCS Runoff	0.028	2	936	899	------	------	------	POST 11 - STR 105 (105-104)
4	SCS Runoff	0.056	2	936	1,797	------	------	------	POST 12 - STR 201
5	SCS Runoff	0.049	2	936	1,572	------	------	------	POST 13-Building-DS
6	SCS Runoff	0.016	2	936	388	------	------	------	POST 14
7	Combine	0.084	2	936	2,696	3, 4,	------	------	Detention Inflow
8	Reservoir	0.077	2	936	2,010	7	718.14	169	Detention (104-103)
9	Combine	0.126	2	936	3,583	5, 8	------	------	103-101
10	Combine	0.142	2	936	3,971	6, 9	------	------	Total South

Hydrograph Report

Hyd. No. 1

PRE Grass Area to Hard Surface

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.050 cfs
Storm frequency	=	100 yrs	Time to peak	=	936 min
Time interval	=	2 min	Hyd. volume	=	1,151 cuft
Drainage area	=	0.100 ac	Curve number	=	69
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	6.84 in	Distribution	=	Huff-3rd
Storm duration	=	24.00 hrs	Shape factor	=	484



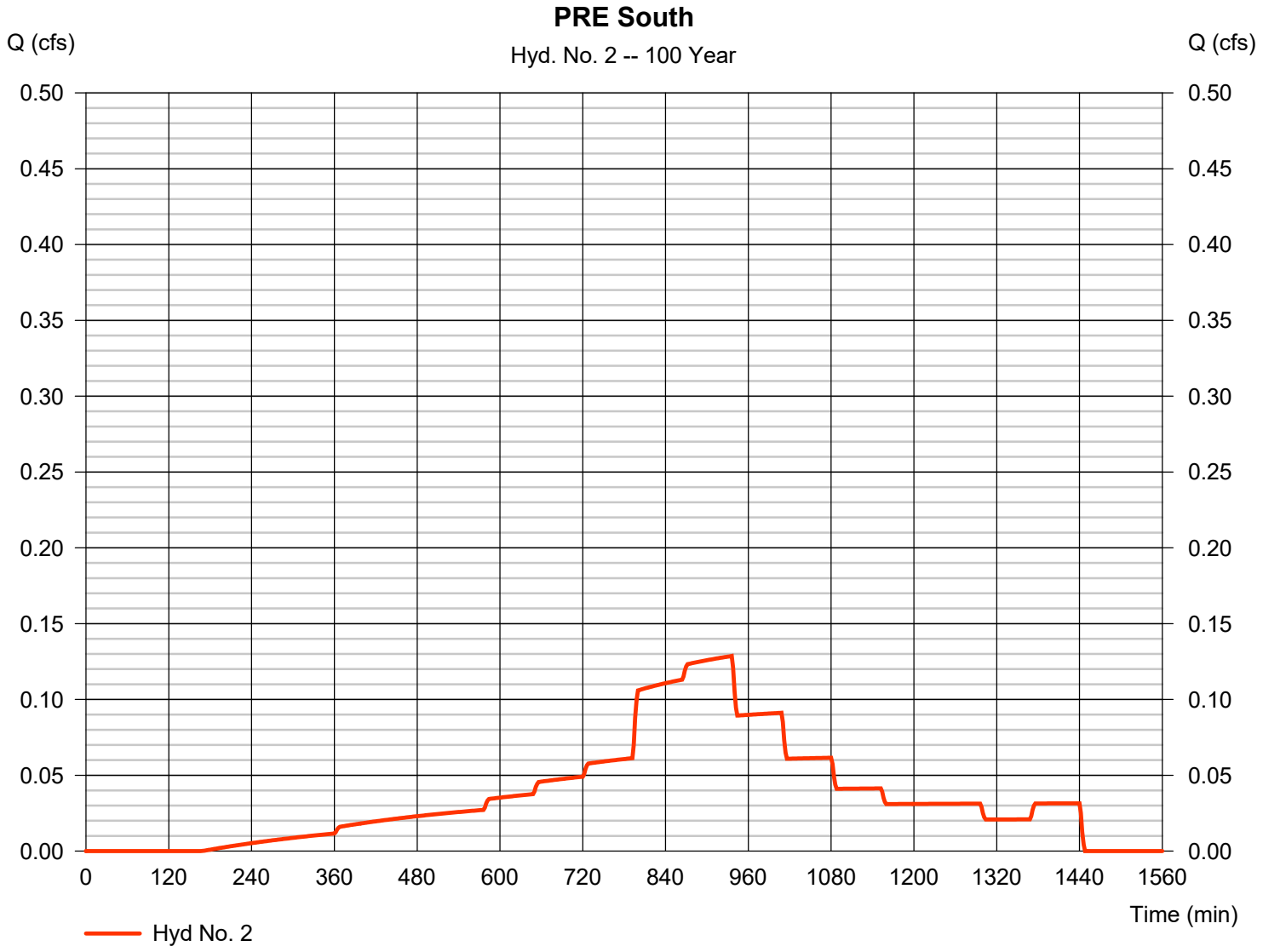
Hydrograph Report

Hyd. No. 2

PRE South

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.129 cfs
Storm frequency	=	100 yrs	Time to peak	=	936 min
Time interval	=	2 min	Hyd. volume	=	3,328 cuft
Drainage area	=	0.210 ac	Curve number	=	81*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	6.84 in	Distribution	=	Huff-3rd
Storm duration	=	24.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.120 x 69) + (0.090 x 98)] / 0.210

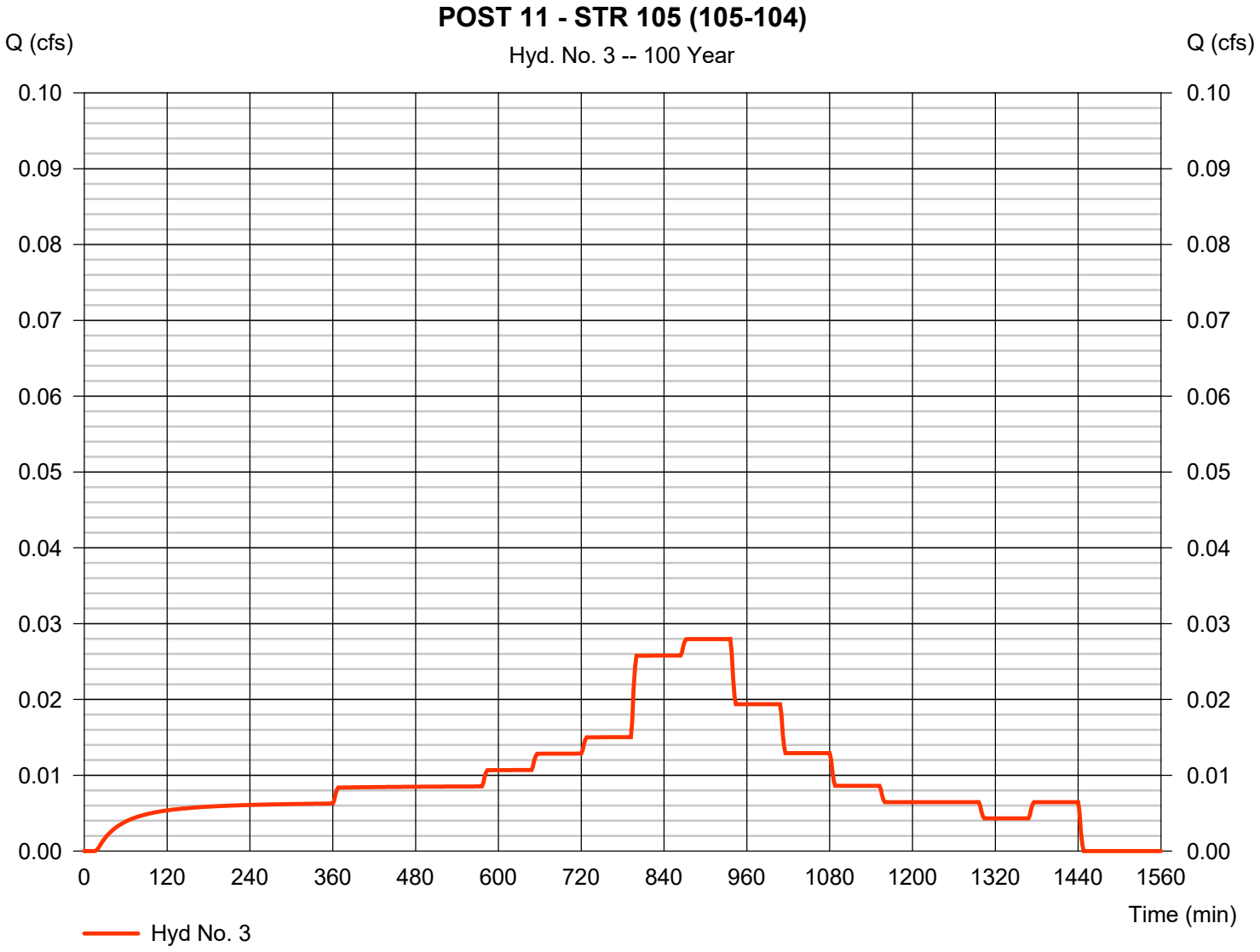


Hydrograph Report

Hyd. No. 3

POST 11 - STR 105 (105-104)

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.028 cfs
Storm frequency	=	100 yrs	Time to peak	=	936 min
Time interval	=	2 min	Hyd. volume	=	899 cuft
Drainage area	=	0.040 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	6.84 in	Distribution	=	Huff-3rd
Storm duration	=	24.00 hrs	Shape factor	=	484

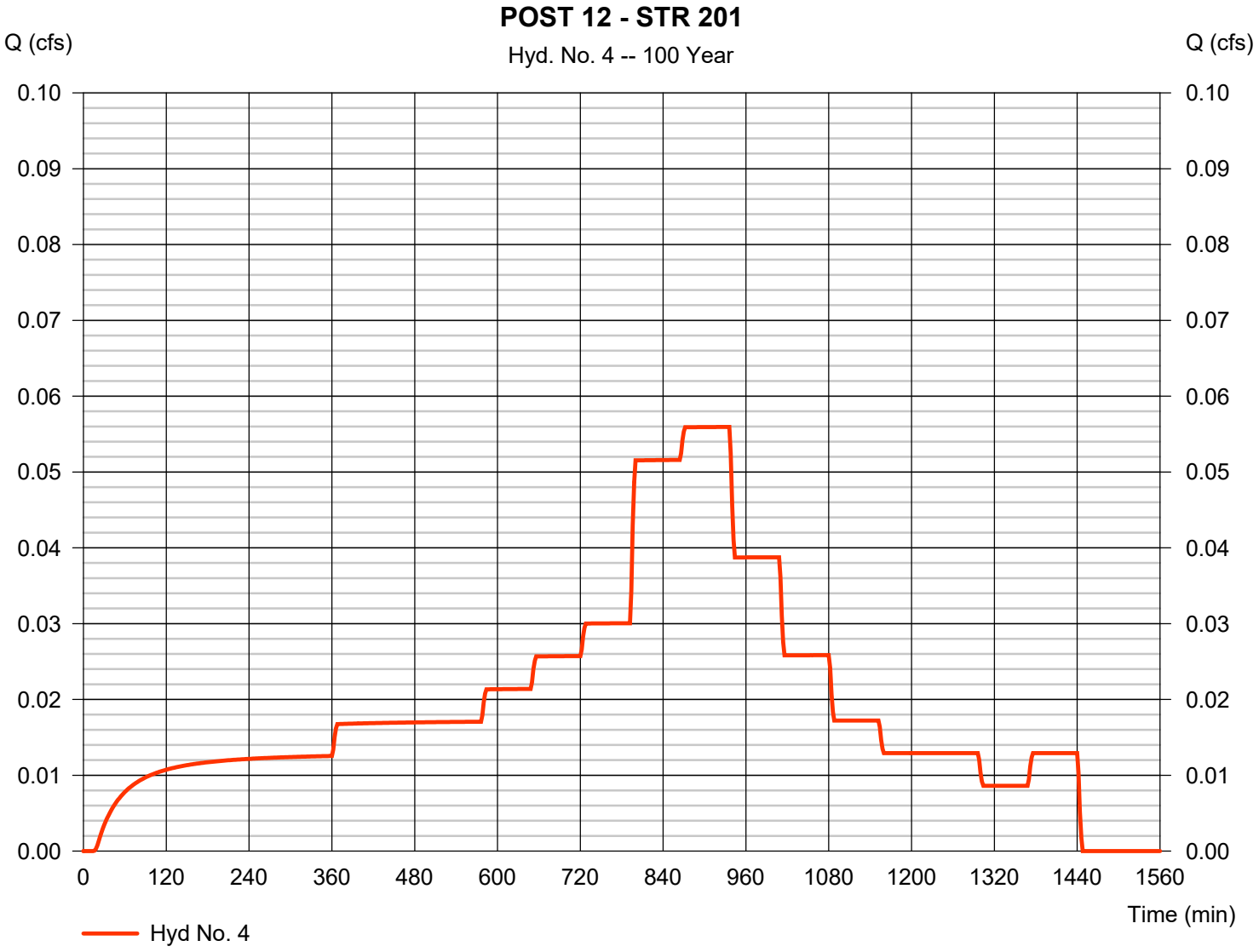


Hydrograph Report

Hyd. No. 4

POST 12 - STR 201

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.056 cfs
Storm frequency	=	100 yrs	Time to peak	=	936 min
Time interval	=	2 min	Hyd. volume	=	1,797 cuft
Drainage area	=	0.080 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	6.84 in	Distribution	=	Huff-3rd
Storm duration	=	24.00 hrs	Shape factor	=	484

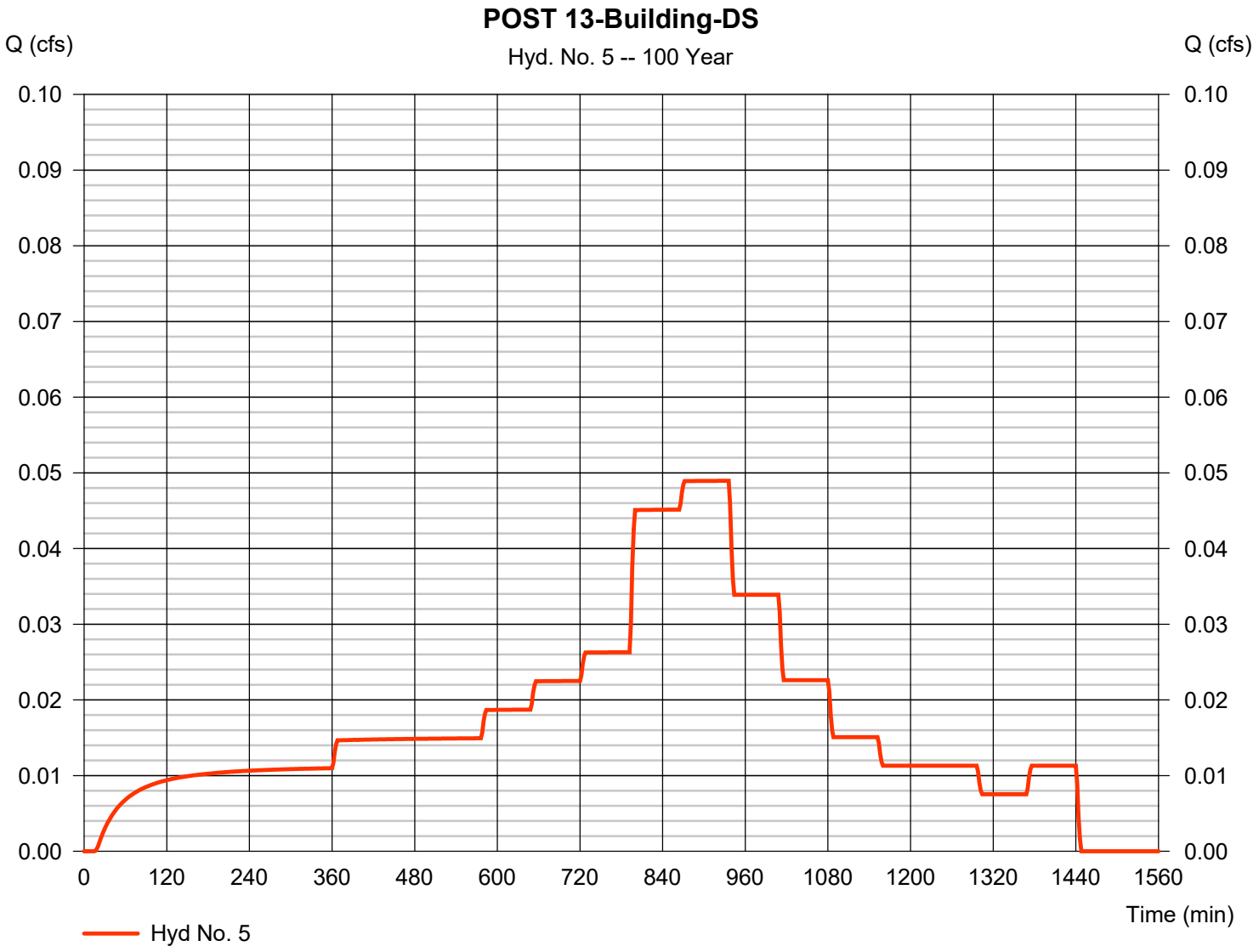


Hydrograph Report

Hyd. No. 5

POST 13-Building-DS

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.049 cfs
Storm frequency	=	100 yrs	Time to peak	=	936 min
Time interval	=	2 min	Hyd. volume	=	1,572 cuft
Drainage area	=	0.070 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	6.84 in	Distribution	=	Huff-3rd
Storm duration	=	24.00 hrs	Shape factor	=	484



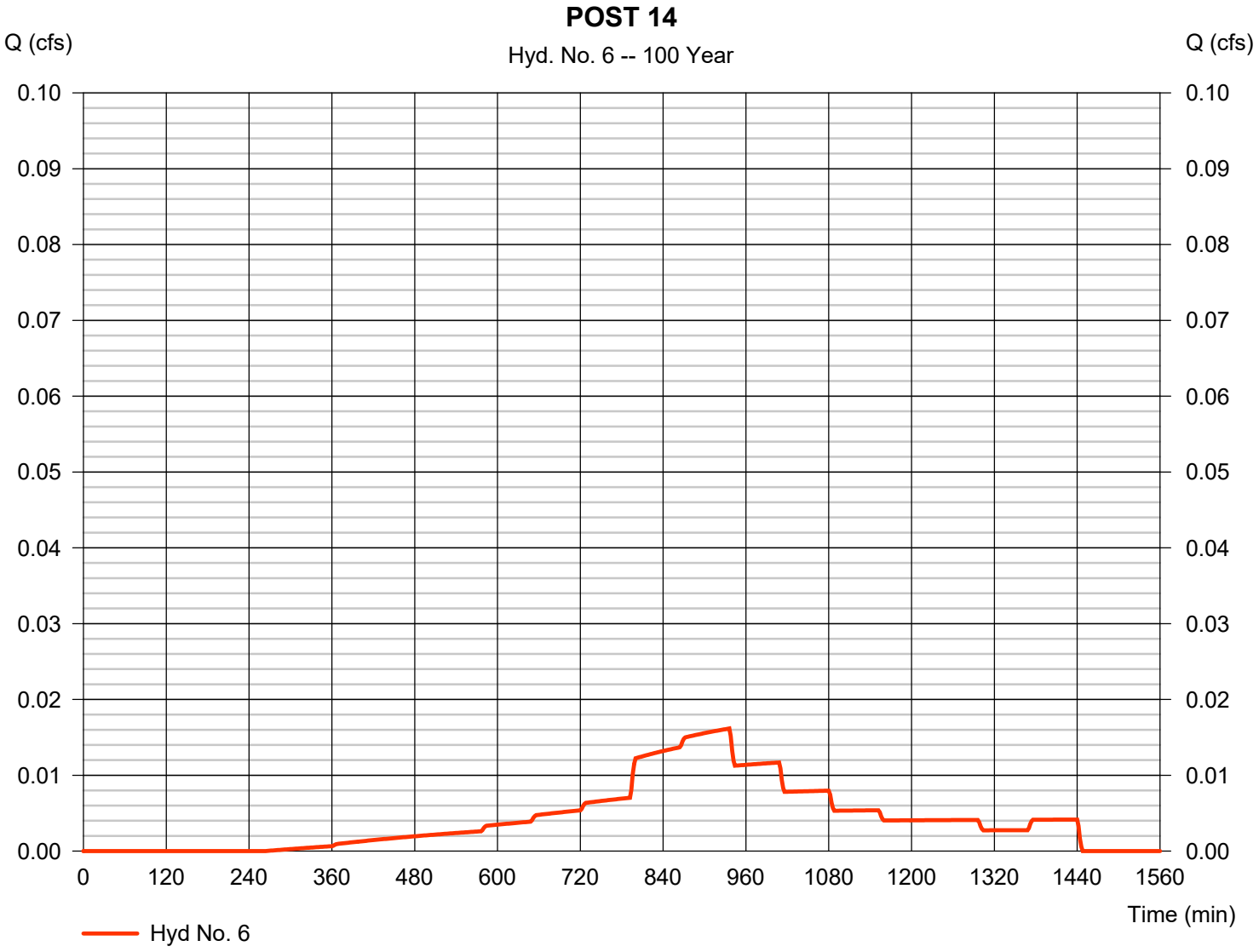
Hydrograph Report

Hyd. No. 6

POST 14

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.016 cfs
Storm frequency	=	100 yrs	Time to peak	=	936 min
Time interval	=	2 min	Hyd. volume	=	388 cuft
Drainage area	=	0.030 ac	Curve number	=	73*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	6.84 in	Distribution	=	Huff-3rd
Storm duration	=	24.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.020 x 61) + (0.010 x 98)] / 0.030

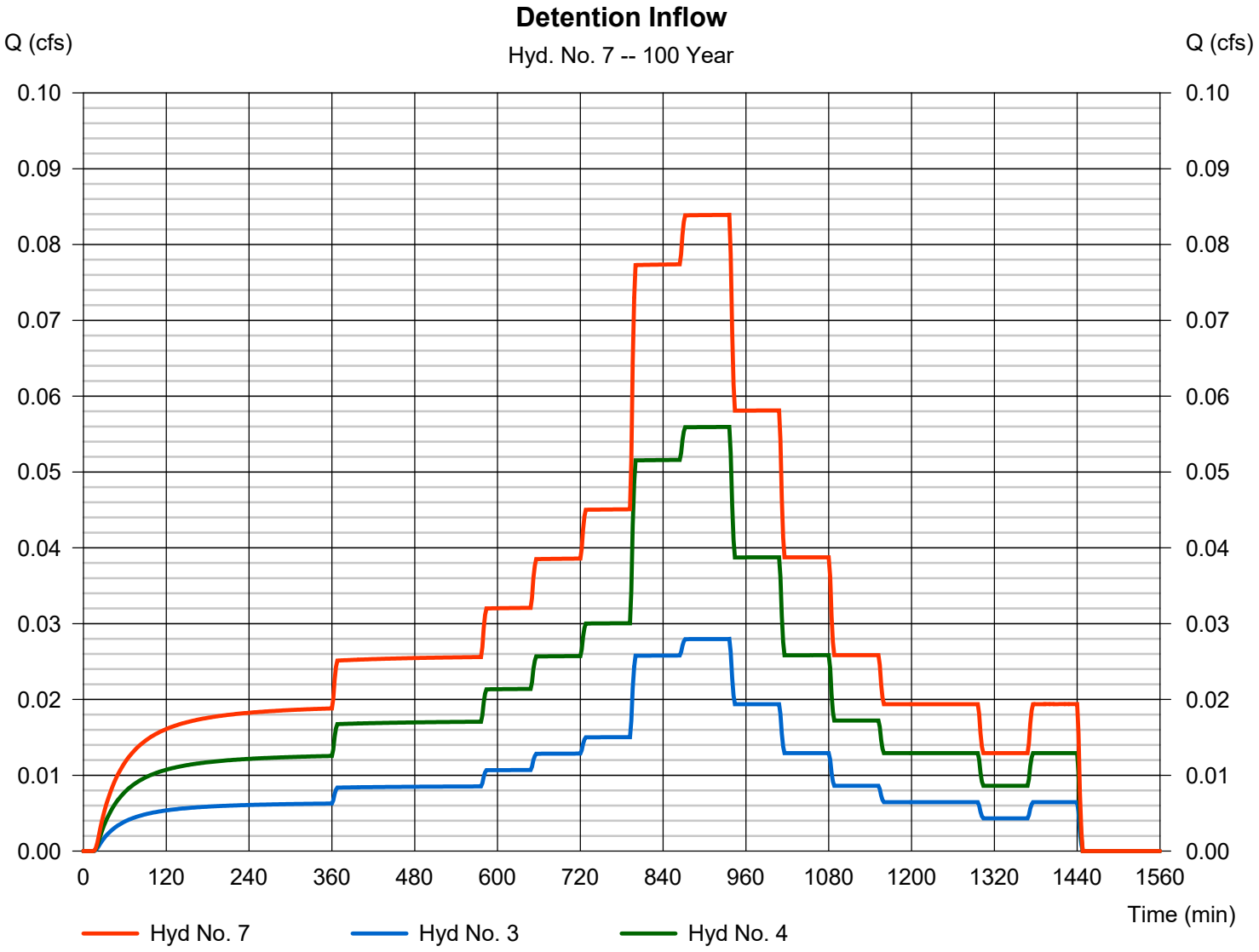


Hydrograph Report

Hyd. No. 7

Detention Inflow

Hydrograph type	=	Combine	Peak discharge	=	0.084 cfs
Storm frequency	=	100 yrs	Time to peak	=	936 min
Time interval	=	2 min	Hyd. volume	=	2,696 cuft
Inflow hyds.	=	3, 4	Contrib. drain. area	=	0.120 ac



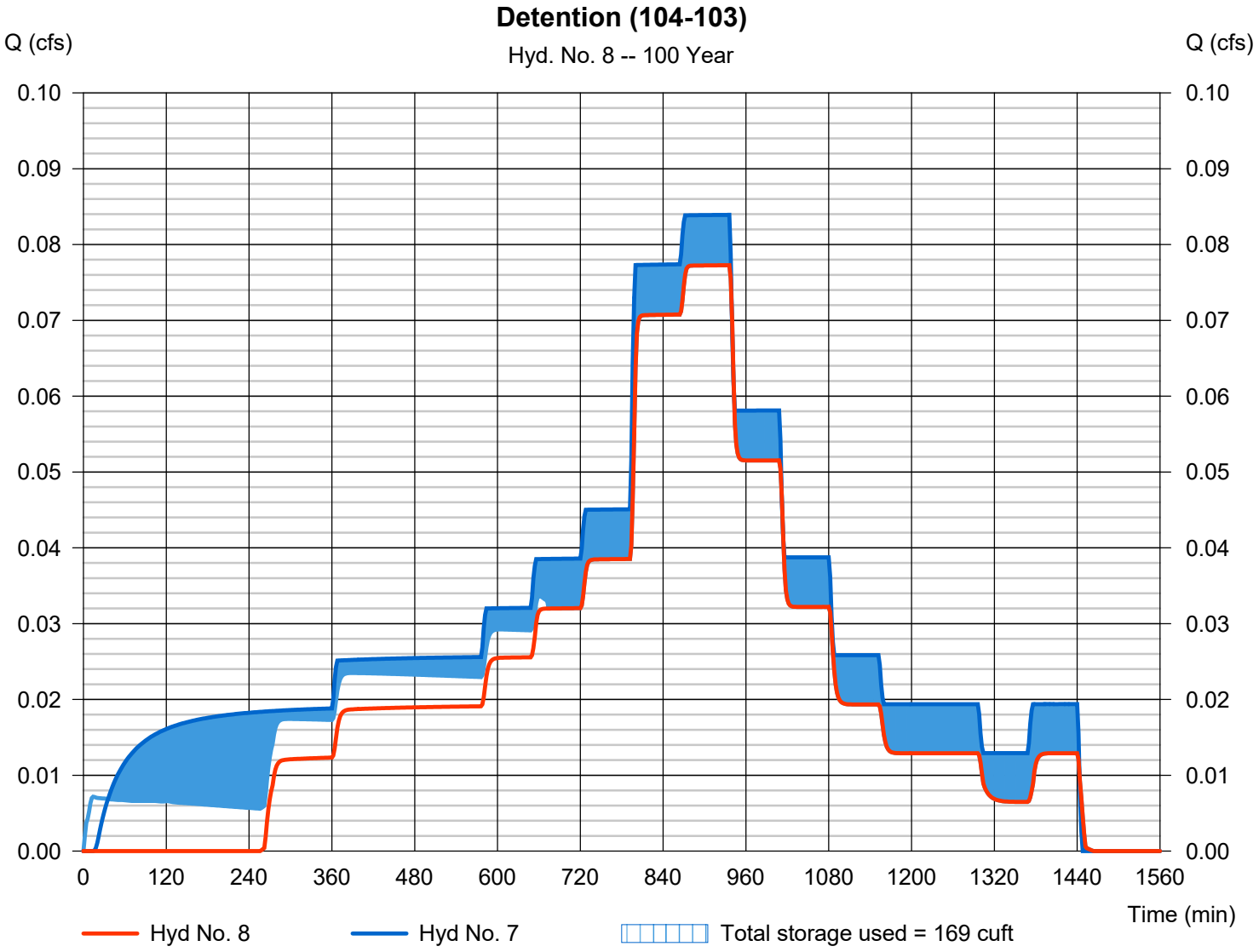
Hydrograph Report

Hyd. No. 8

Detention (104-103)

Hydrograph type	=	Reservoir	Peak discharge	=	0.077 cfs
Storm frequency	=	100 yrs	Time to peak	=	936 min
Time interval	=	2 min	Hyd. volume	=	2,010 cuft
Inflow hyd. No.	=	7 - Detention Inflow	Max. Elevation	=	718.14 ft
Reservoir name	=	Proposed Detention	Max. Storage	=	169 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

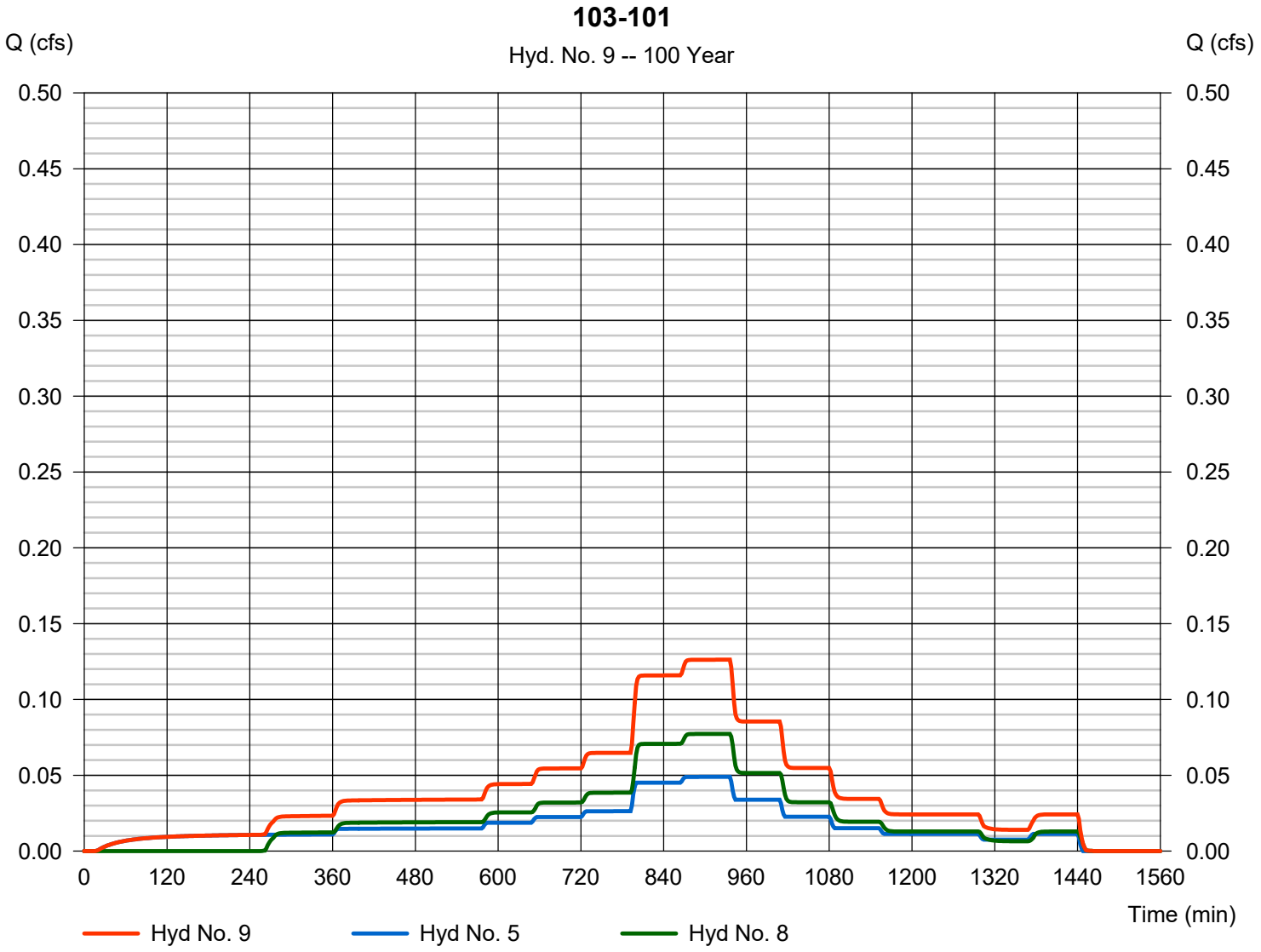


Hydrograph Report

Hyd. No. 9

103-101

Hydrograph type	=	Combine	Peak discharge	=	0.126 cfs
Storm frequency	=	100 yrs	Time to peak	=	936 min
Time interval	=	2 min	Hyd. volume	=	3,583 cuft
Inflow hyds.	=	5, 8	Contrib. drain. area	=	0.070 ac

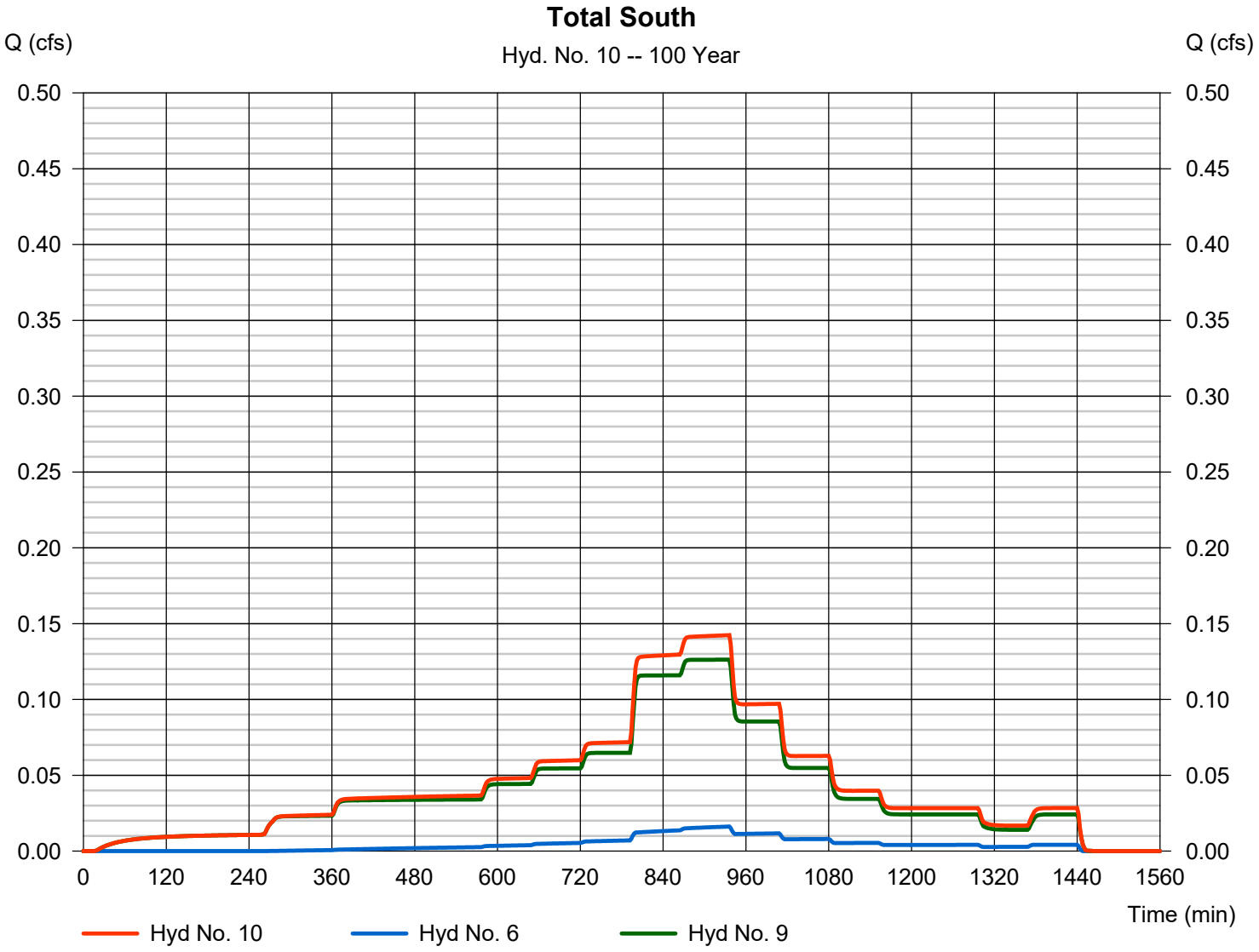


Hydrograph Report

Hyd. No. 10

Total South

Hydrograph type	=	Combine	Peak discharge	=	0.142 cfs
Storm frequency	=	100 yrs	Time to peak	=	936 min
Time interval	=	2 min	Hyd. volume	=	3,971 cuft
Inflow hyds.	=	6, 9	Contrib. drain. area	=	0.030 ac



Appendix J

Hydraflow Hydrographs
Water Quality Storm Data

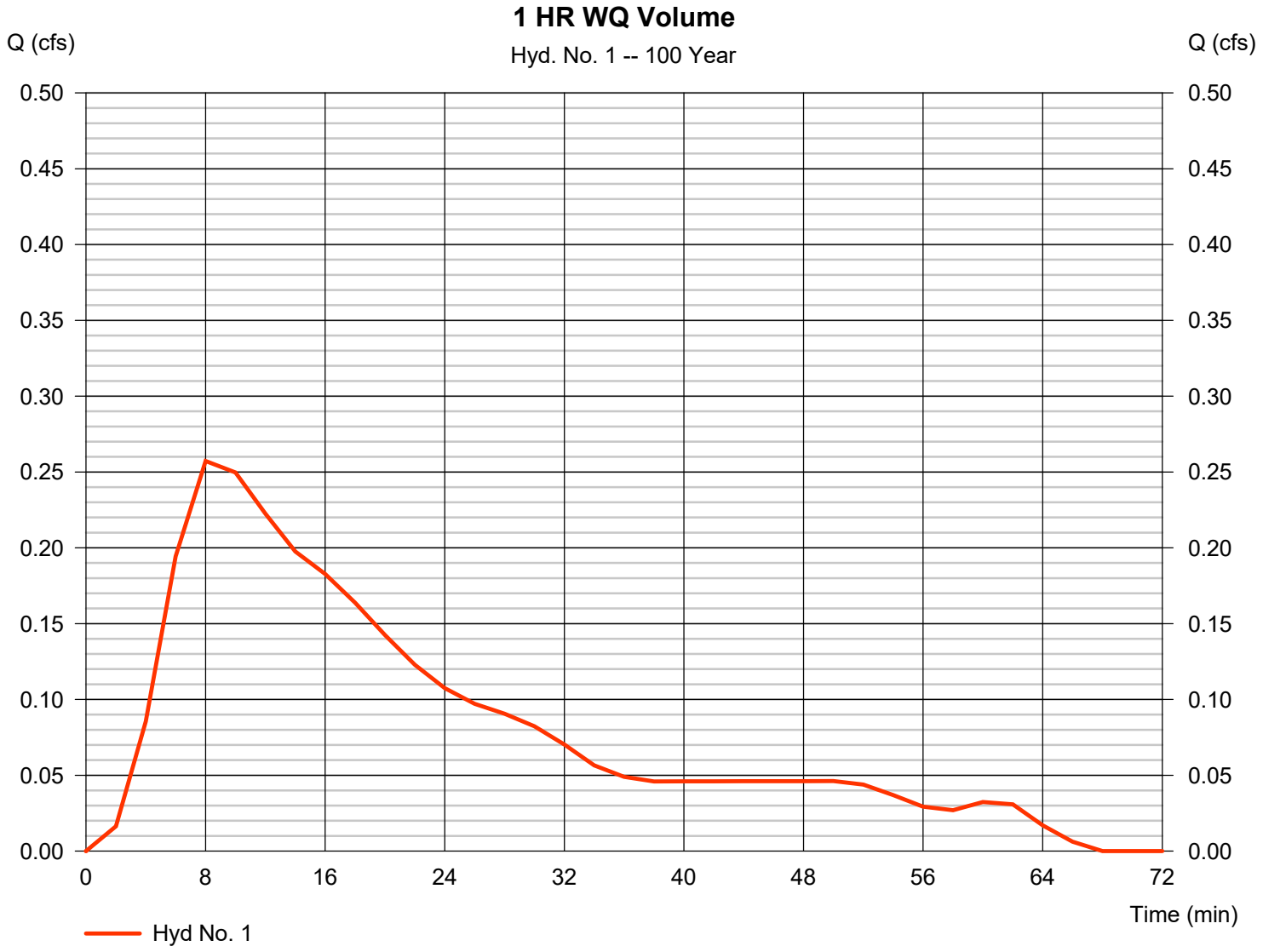
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 10 / 5 / 2021

Hyd. No. 1

1 HR WQ Volume

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.257 cfs
Storm frequency	=	100 yrs	Time to peak	=	8 min
Time interval	=	2 min	Hyd. volume	=	352 cuft
Drainage area	=	0.100 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.25 in	Distribution	=	Huff-1st
Storm duration	=	1.00 hrs	Shape factor	=	484

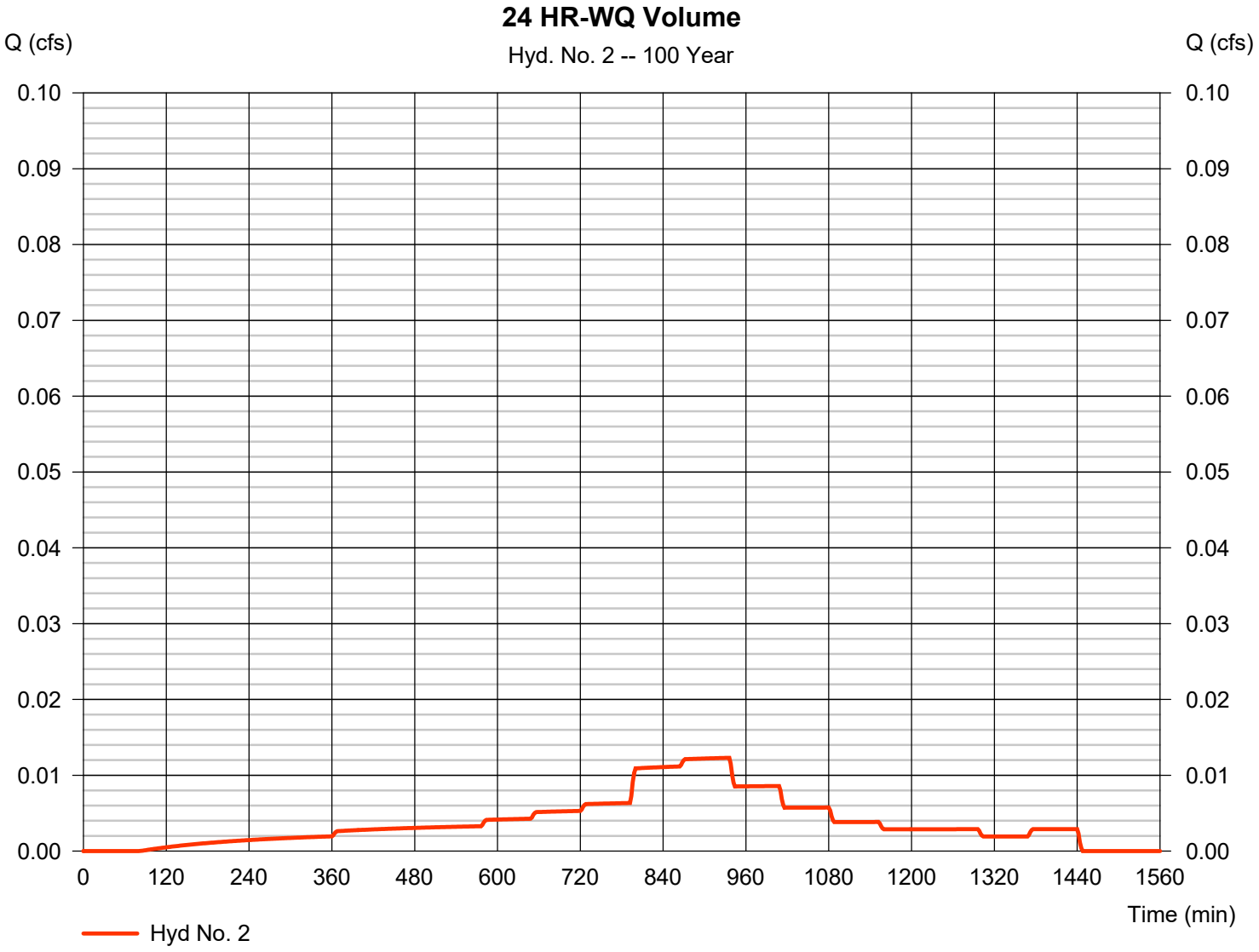


Hydrograph Report

Hyd. No. 2

24 HR-WQ Volume

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.012 cfs
Storm frequency	=	100 yrs	Time to peak	=	936 min
Time interval	=	2 min	Hyd. volume	=	352 cuft
Drainage area	=	0.100 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.25 in	Distribution	=	Huff-3rd
Storm duration	=	24.00 hrs	Shape factor	=	484



Appendix K

Outlet Control Emergency Weir Capacity Data

Weir Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Oct 5 2021

Emergency Spillway Weir

Rectangular Weir

Crest	= Sharp
Bottom Length (ft)	= 3.20
Total Depth (ft)	= 0.50

Calculations

Weir Coeff. Cw	= 3.33
Compute by:	Known Depth
Known Depth (ft)	= 0.50

Highlighted

Depth (ft)	= 0.50
Q (cfs)	= 3.767
Area (sqft)	= 1.60
Velocity (ft/s)	= 2.35
Top Width (ft)	= 3.20