STORMWATER MANAGEMENT REPORT

For

Mountain View Villas at Sea Bright, LLC
Sea Bright, NJ 07760

July 31, 2020

PREPARED BY:

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TABLE OF CONTENTS

APPENDICES

Appendix A

- NRCS SURGO Custom Soil Resource Report for Monmouth County, NJ

Appendix B

- Pre-Development Runoff Curve Number (CN)
- Post-Development Runoff Curve Number (CN)
- Hydraflow Hydrographs for Pre and Post-Development Stormwater Management Analysis (2, 10, & 100-year storm events)

Appendix C

- Existing and Proposed Drainage Area map

I. PROJECT DESCRIPTION

This stormwater management report has been prepared to address the impacts of stormwater runoff from the development detailed in the accompanying Site Plans prepared by Engenuity Infrastructure. The project site is located within the Borough of Sea Bright; Block 34 Lots 30.3, 3.04 & Block 33 Lot 20.02 & Block 23 Lot 130, commonly known as 2, 2A, 4-6 Mountain View Way. Mountain View Villas at Sea Bright, LLC is the owner and applicant of the subject lot.

The scope of this development includes the demolition/removal of all existing dwellings and appurtenances onsite and the construction of five (5) new 2.5-story dwellings on each proposed lot. Additionally, the project will also include a small area of roadway, landscaping, a first-floor parking area and driveways.

II. DESIGN METHODOLOGY

A computer generated hydrologic and hydraulic model was developed for the site utilizing the TR-55 methodology for 'Urban Hydrology for Small Watersheds'. A computer program, Hydraflow Hydrographs produced by Intelisolve, was utilized for the computational outputs of the same.

Existing and Proposed sub-drainage areas were delineated within the overall subject drainage area. Drainage areas were separated based upon drainage patterns and their relationship to disconnected and directly connected impervious coverage. Soil data was obtained from current USGS SSURGO Mapping for Monmouth County. Composite Curve Numbers (CN) were calculated manually for input into the computer model, as prepared in accordance with The TR55 methodology. Times of concentration were calculated for each drainage area using TR-55 Sheet Flow, Shallow Concentrated Flow and Channel Flow parameters. Runoff hydrographs were developed using the Soil Conservation Service Type III unit hydrograph, with a shape factor of 484, to develop hydrographs for the 2-, 10-, and 100-year frequencies.

III. PRE-DEVELOPMENT CONDITIONS

The site is presently occupied by two (2) 2-story dwelling units with associated driveways, and accessory structures and amenities. The property is bounded by the improved right-of-way of Mountain View Way to the north and south. The site is separated into two distinct drainage areas. The majority of the site containing 0.636 acres (designated as DA-1) drains in northwesterly direction towards Shrewsbury River. The studied analysis point #1 for drainage area DA-1 is located along the Bulkhead on the western side of the property. The second drainage area DA-2 is located on the eastern side of Ocean avenue and includes the sea wall Lot 130 Block 23.

IV. POST-DEVELOPMENT CONDITIONS

The post-development drainage areas will maintain the existing runoff pattern, with stormwater runoff being directed towards Shrewsbury River. The entire impervious area of indicated as PR DA-1 IMP on the enclosed drainage area map will be directed to the right-of-way of Mountain View Way and then discharged through an inlet to the Shrewsbury River. The remaining grassed portions of drainage area PR DA-1 PER will also be directed to the proposed storm sewer inlet and then discharged to the Shrewsbury River.

The proposed project improvements result in approximately 0.64-acres of disturbance, which does

not exceed the 1.0-acre threshold limit. As such, the project is not considered a Major Development and does not require compliance under the Stormwater Management Rules (N.J.A.C.7:8).

V. DISTURBANCE AND CHANGE IN IMPERVIOUS COVERAGE

Based upon the total lot area the maximum land disturbance for the site is 0.64 acres. This does not meet the one acre of disturbance definition for a Major Development under N.J.A.C. 7:8. The existing portions of the site contain an impervious area of 0.228 acres. The post development impervious coverage includes 0.369 acres. The proposed increase in impervious area is 0.141 acres, which does not meet the NJDEP definition of increasing impervious are by a quarter acre for a water quality requirements of N.J.A.C 7:8.

VI. SOILS

The NRCS SURGO Custom Soil Resource Report for Monmouth County, New Jersey for the site identifies the in-situ soils as USBROA, 0 to 2 percent slopes. This soil type is characterized by sandy eolian deposits and/or sandy marine deposite, and is found to be a member of Hydrologic Soil Group A. A copy of the cited report is included in Appendix A.

VII. RUNOFF COEFFICIENTS

The project site includes four (4) different categories of groundcover for both the existing and proposed conditions. "Runoff curve number for urban areas" from the TR-55 Urban Hydrology for Small Watersheds, Based on Hydrologic Soil Group A, the following 'CN' values were derived:

- Open space, good condition ground cover……..CN = 39
- Gravel……..CN = 76
- Roof…….CN = 98
- Impervious cover (sidewalks, parking areas, roof, & sheds, etc.)……...CN = 98

VIII. TIME OF CONCENTRATION

The time of concentration or Tc is the time is takes runoff to travel from the hydraulically most distant point of the drainage area to the point of analysis in a watershed. The Tc was calculated in accordance with The NRCS Urban Hydrology for Small Watershed TR-55. The maximum sheet flow length utilized in the calculation is 100 ft.

A minimum time of concentration of 6 mins was utilized for analysis and design. This minimum Tc corresponds to the maximum runoff based on drainage area and CN values.

IX. PERMIT REQUIREMENTS

There are floodplains in the immediate project. The project is not located in a Historic District. Permits are required from the NJ Department of Environmental Protection (NJDEP). The total area of disturbance for the project exceeds 5,000-square feet, therefore Soil Erosion and Sediment Control Certification from the Freehold SCD will be required for the project.

X. SUMMARY OF RESULTS

Runoff calculations for the contributing on-site areas for the proposed storm sewer collection and conveyance system are included on the Proposed Drainage Plan and Details.
The construction of the proposed dwelling and associated site improvements will result in no adverse stormwater impacts to the surrounding properties. The project will ultimately result in an increase in peak runoff rates for the site.
Due to the conversion of the exiting open space to impervious area of 0.141 acres, the post development stormwater will be increased by the development, however the increase in will be deminius. As the proposed stormwater conveyance system and proposed runoff will discharge directly to the Shrewsbury River, no adverse impacts are anticipated to any adjacent properties.
Below is a summary of the Pre vs Post-Development Runoff rates and associated reductions for the 2, 10, and 100-year storm events.

Table 1 -Pre to Post development Peak Flow Rates

	2- Year	**10-Year**	**100-Year**
Pre-Development	0.710 cfs	1.158cfs	2.207 cfs
Post-Development	1.226 cfs	1.909 cfs	3.510 cfs
Increase	0.516 cfs	0.751 cfs	1.303 cfs
Percent change	72.7 %	64.9 %	58.6 %

Appendix A

- NRCS SURGO Custom Soil Resource Report for Monmouth County, NJ

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 Monmouth County, New Jersey

Mountain View Villas, Sea Bright

July 21, 2020

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.

Custom Soil Resource Report
Soil Map

Map Scale: 1:473 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 5 10 20 30

Feet: 0 20 40 80 120

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N 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 1:24,000.

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: Monmouth County, New Jersey
Survey Area Data: Version 14, Jun 1, 2020

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

Date(s) aerial images were photographed: Jun 29, 2019—Jul 16, 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
USBROA	Urban land-Brockatonorton complex, 0 to 2 percent slopes, occasionally flooded	0.7	99.1%
WATER	Water	0.0	0.9%
Totals for Area of Interest		**0.7**	**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.

Monmouth County, New Jersey

USBROA—Urban land-Brockatonorton complex, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2ywgs
Elevation: 0 to 20 feet
Mean annual precipitation: 42 to 49 inches
Mean annual air temperature: 52 to 59 degrees F
Frost-free period: 190 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land, occasionally flooded: 50 percent
Brockatonorton, occasionally flooded, and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land, Occasionally Flooded

Setting

Landform: Flats
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear

Properties and qualities

Slope: 0 to 2 percent
Frequency of flooding: Occasional

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Description of Brockatonorton, Occasionally Flooded

Setting

Landform: Dunes, dune fields
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy eolian deposits and/or sandy marine deposits

Typical profile

A - 0 to 3 inches: sand
C - 3 to 24 inches: sand
Cg - 24 to 50 inches: sand
Oese - 50 to 60 inches: mucky peat
Cseg - 60 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (1.98 to 19.98 in/hr)
Depth to water table: About 17 to 30 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to strongly saline (0.0 to 16.0 mmhos/cm)
Available water storage in profile: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Psamments, wet substratum, occasionally flooded

Percent of map unit: 10 percent
Landform: Flats
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

WATER—Water

Map Unit Setting

National map unit symbol: 4j93
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

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Appendix B

- Pre-Development Runoff Curve Number (CN)
- Post-Development Runoff Curve Number (CN)
- Hydraflow Hydrographs for Pre- and Post-Development Stormwater Management Analysis (2, 10, & 100-year storm events)

Project	Mountain View Villas
Job Number	MUHL-00010
Location	Sea Bright, NJ 07760

By MJB Date: 7/27/2020
Checked TCS Date 7/31/2020

PRE Development

Drainage Sub-area **EX DA-1 IMP**

Runoff Curve Number					
ID	Hydrologic Soil Group	Cover Description	CN	Area (Acres)	Product of CN x area
1	A	Asphalt	98	0.079	7.742
2		Roof Area	98	0.099	9.702
3		Gravel Area	76	0.050	3.8
4					
5					
6					
			Totals	**0.228**	**21.244**

CN (weighted) = Product of CN x area / Total area **CN 93**

Project	Mountain View Villas
Job Number	MUHL-00010
Location	Sea Bright, NJ 07760

By PAS Date: 7/22/2020
Checked MJB Date 7/31/2020

PRE Development

Drainage Sub-area **EX DA-1 PER**

Runoff Curve Number					
ID	Hydrologic Soil Group	Cover Description	CN	Area (Acres)	Product of CN x area
1	A	Open Space (Good cond.)	39	0.412	16.068
2					
3					
4					
5					
6					
			Totals	**0.412**	**16.068**

CN (weighted) = Product of CN x area / Total area **CN 39**

Project: Mountain View Villas		By:	MJB	Date: 7/27/2020
Job Number: MUHL-00010		Checked:	TCS	Date: 7/31/2020
Location: Sea Bright				

PRE Development Drainage area: **EX DA-1 PER**

SHEET FLOW	Segment ID:	AB			
1	Surface Descripton	Grass			
2	Manning Roughness Coefficent, n	0.24			
3	Flow Length (100 ft MAX)	78			
4	2-Year 24 hour rainfall, P	3.38			
5	Land Slope (Ft/Ft)	0.005			
6	Time (Hours)	0.330			0.330 Hr

SHALLOW CONCENTRATED FLOW	Segment ID:	BC	CD	DE	
7	Surface Description (paved or unpaved)	PAVED	UNPAVED	UNPAVED	
8	Flow Length, L (ft)	108	85	123	
9	Watercourse slope, s (ft/ft)	0.005	0.005	0.02	
10	Average Velocity, V (figure 3-1)	1.5	1.2	2.2	
11	Time (hr)	0.020	0.020	0.016	0.055 HR

CHANNEL FLOW	Segment ID:				
12	Cross sectional flow area, a (ft^2)				
13	wetted perimeter, pw (ft)				
14	Hydarulic radius, r= a/ pw (ft)				
15	Channel Slope, s (ft/ft)				
16	Manning's roughness coefficent, n				
17	Velocity (ft/S) (USE 3.5 ft/s for DESIGN)				
18	Flow Length (ft)				
19	Time (hr)				

TOTAL TIME OF CONCENTRATION IN DRAINAGE SUBAREA 0.385 Hr

OR

23 Min

Project	Mountain View Villas
Job Number	MUHL-00010
Location	Sea Bright, NJ 07760

By MJB Date: 7/27/2020
Checked TCS Date 7/31/2020

PRE Development

Drainage Sub-area **EX DA-2 IMP**

Runoff Curve Number					
ID	Hydrologic Soil Group	Cover Description	CN	Area (Acres)	Product of CN x area
1	A	Impervious	98	0.018	1.764
2					
3					
4					
5					
6					
			Totals	**0.018**	**1.764**

CN (weighted) = Product of CN x area / Total area **CN 98**

Project	Mountain View Villas
Job Number	MUHL-00010
Location	Sea Bright, NJ 07760

By PAS Date: 7/22/2020
Checked MJB Date 7/31/2020

PRE Development

Drainage Sub-area **EX DA-2 PER**

Runoff Curve Number					
ID	Hydrologic Soil Group	Cover Description	CN	Area (Acres)	Product of CN x area
1	A	Open Space (Good cond.)	39	0.037	1.443
2					
3					
4					
5					
6					
			Totals	**0.037**	**1.443**

CN (weighted) = Product of CN x area / Total area **CN 39**

Project	Mountain View Villas
Project Number	MUHL-00010
Location	Sea Bright, NJ 07760

By PAS Date: 7/21/2020
Checked TCS Date 7/31/2020

POST Development

Drainage Sub-area **PR DA-1 IMP**

Runoff Curve Number					
ID	Hydrologic Soil Group	Cover Description	CN	Area (Acres)	Product of CN x
1	A	Roof area	98	0.180	17.64
2	A	Ashphalt	98	0.190	18.62
3					
4					
5					
6					
			Totals	**0.370**	**36.26**

CN (weighted) = Product of CN x area / Total area **CN 98**

Project	Mountain View Villas
Project Number	MUHL-00010
Location	Sea Bright, NJ 07760

By PAS Date: 7/21/2020
Checked TCS Date 7/31/2020

POST Development

Drainage Sub-area **PR DA-1 PER**

Runoff Curve Number					
ID	Hydrologic Soil Group	Cover Description	CN	Area (Acres)	Product of CN x
1	A	Open space (good cond.)	39	0.270	10.53
2					
3					
4					
5					
6					
			Totals	**0.270**	**10.53**

CN (weighted) = Product of CN x area / Total area **CN 39**

Project: Mountain View Villas		By:	MJB	Date:	7/27/2020
Job Number: MUHL-00010		Checked:	TCS	Date:	7/31/2020
Location: Sea Bright					

POST Development Drainage area: **PR DA-1 PER**

SHEET FLOW	Segment ID:	AB			
1 Surface Descripton		Grass			
2 Manning Roughness Coefficent, n		0.24			
3 Flow Length (100 ft MAX)		77			
4 2-Year 24 hour rainfall, P		3.38			
5 Land Slope (Ft/Ft)		0.015			
6 Time (Hours)		0.211			0.211 Hr
SHALLOW CONCENTRATED FLOW	Segment ID:	BD			
7 Surface Description (paved or unpaved)		PAVED			
8 Flow Length, L (ft)		8			
9 Watercourse slope, s (ft/ft)		0.01			
10 Average Velocity, V (figure 3-1)		2			
11 Time (hr)		0.001			0.001 Hr
CHANNEL FLOW	Segment ID:				
12 Cross sectional flow area, a (ft^2)					
13 wetted perimeter, pw (ft)					
14 Hydarulic radius, r= a/ pw (ft)					
15 Channel Slope, s (ft/ft)					
16 Manning's roughness coefficent, n					
17 Velocity (ft/S) (USE 3.5 ft/s for DESIGN)					
18 Flow Length (ft)					
19 Time (hr)					0.000 Hr

TOTAL TIME OF CONCENTRATION IN DRAINAGE SUBAREA 0.212 Hr

OR

13 Min

Project	Mountain View Villas
Job Number	MUHL-00010
Location	Sea Bright, NJ 07760

By MJB Date: 7/27/2020
Checked TCS Date 7/31/2020

POST Development

Drainage Sub-area **PR DA-2 IMP**

Runoff Curve Number					
ID	Hydrologic Soil Group	Cover Description	CN	Area (Acres)	Product of CN x area
1	A	Impervious	98	0.018	1.764
2					
3					
4					
5					
6					
			Totals	**0.018**	**1.764**

CN (weighted) = Product of CN x area / Total area **CN 98**

Project	Mountain View Villas	By	PAS	Date:	7/22/2020
Job Number	MUHL-00010	Checked	MJB	Date	7/31/2020
Location	Sea Bright, NJ 07760				

POST Development

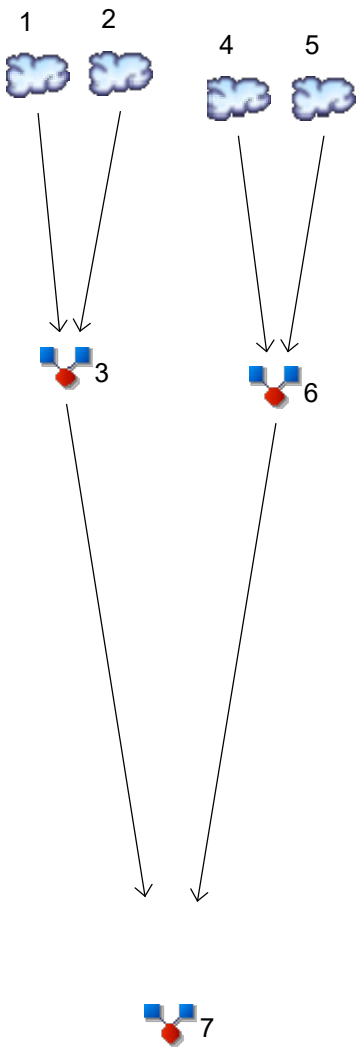
Drainage Sub-area **PR DA-2 PER**

Runoff Curve Number					
ID	Hydrologic Soil Group	Cover Description	CN	Area (Acres)	Product of CN x area
1	A	Open Space (Good cond.)	39	0.037	1.443
2					
3					
4					
5					
6					
			Totals	**0.037**	**1.443**

CN (weighted) = Product of CN x area / Total area

CN	**39**

Watershed Model Schematic



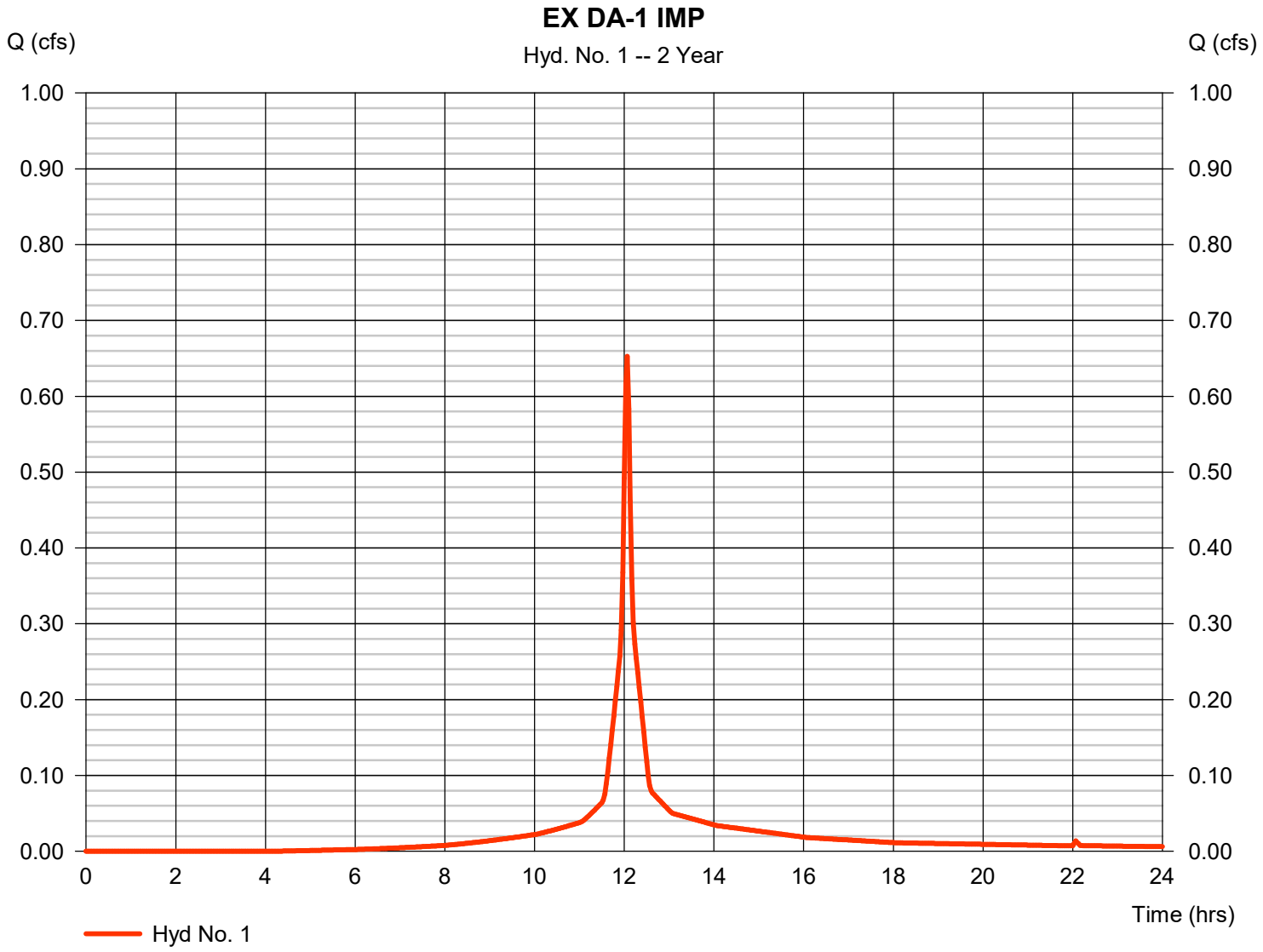
Hydrograph Report

Hyd. No. 1

EX DA-1 IMP

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.653 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.07 hrs
Time interval	=	2 min	Hyd. volume	=	2,032 cuft
Drainage area	=	0.228 ac	Curve number	=	93*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.00 min
Total precip.	=	3.38 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.113 x 98) + (0.117 x 76) + (0.336 x 39)] / 0.228

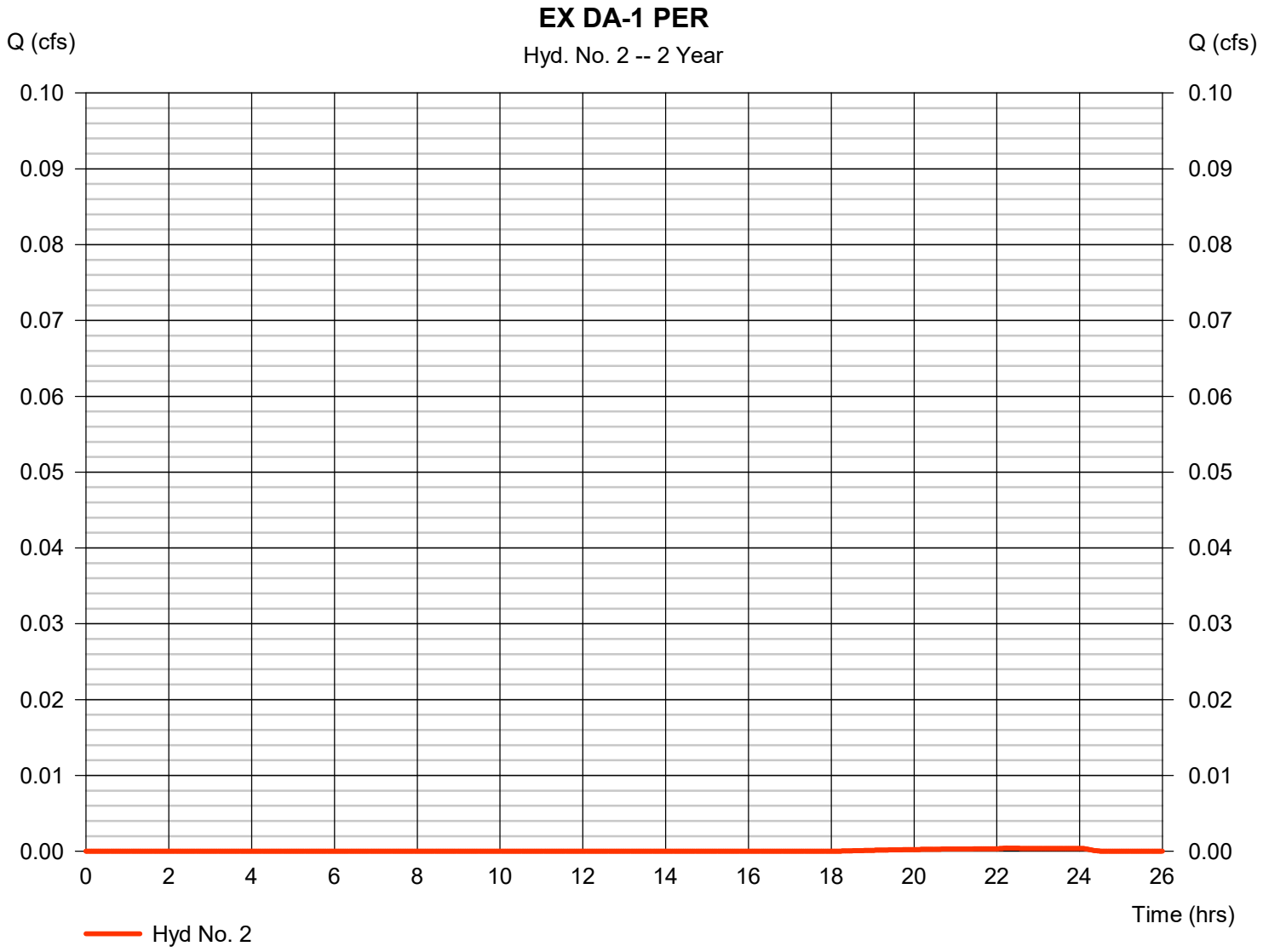


Hydrograph Report

Hyd. No. 2

EX DA-1 PER

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 22.23 hrs
Time interval	= 2 min	Hyd. volume	= 6 cuft
Drainage area	= 0.412 ac	Curve number	= 39
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 23.00 min
Total precip.	= 3.38 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

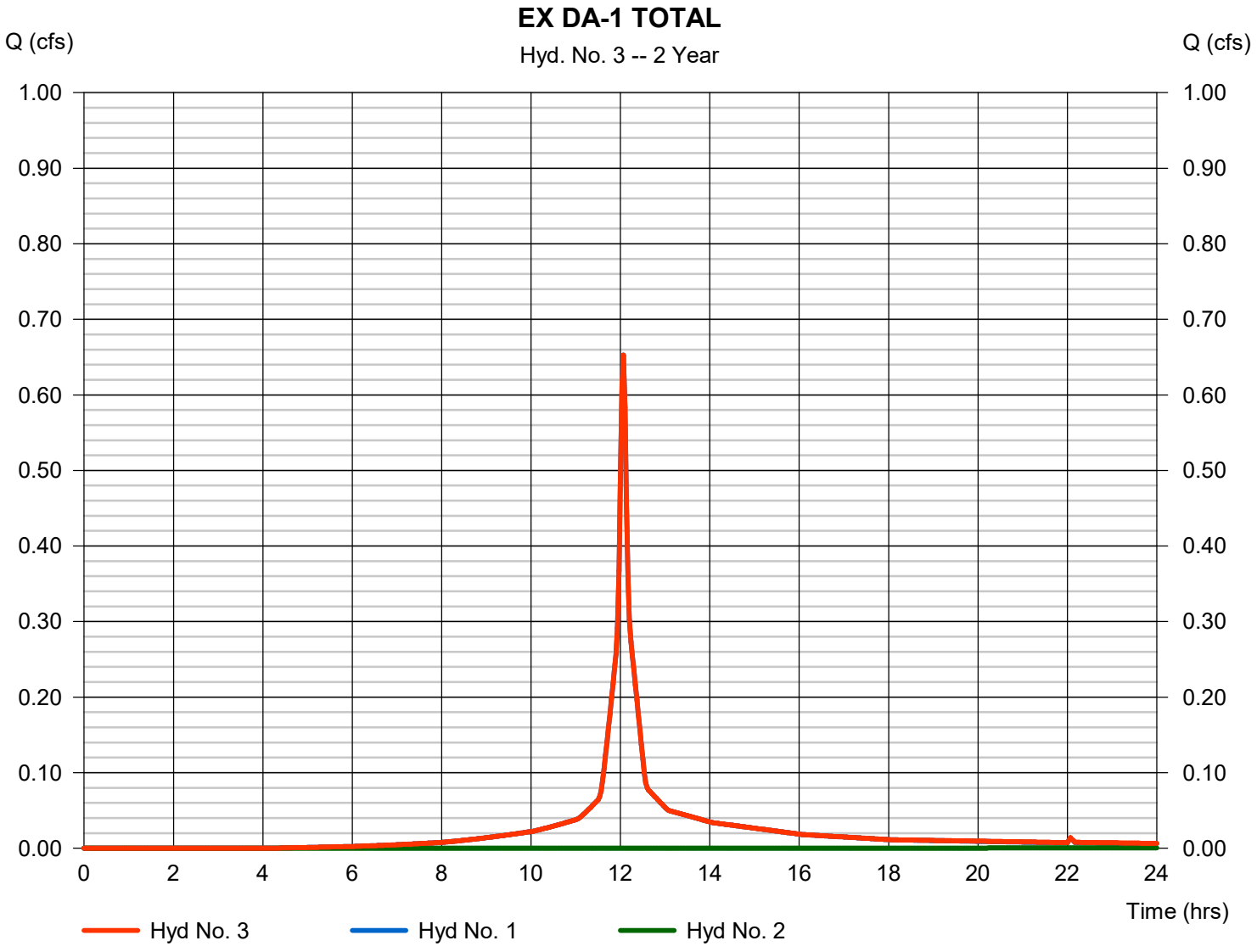


Hydrograph Report

Hyd. No. 3

EX DA-1 TOTAL

Hydrograph type	= Combine	Peak discharge	= 0.653 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 2,038 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 0.640 ac



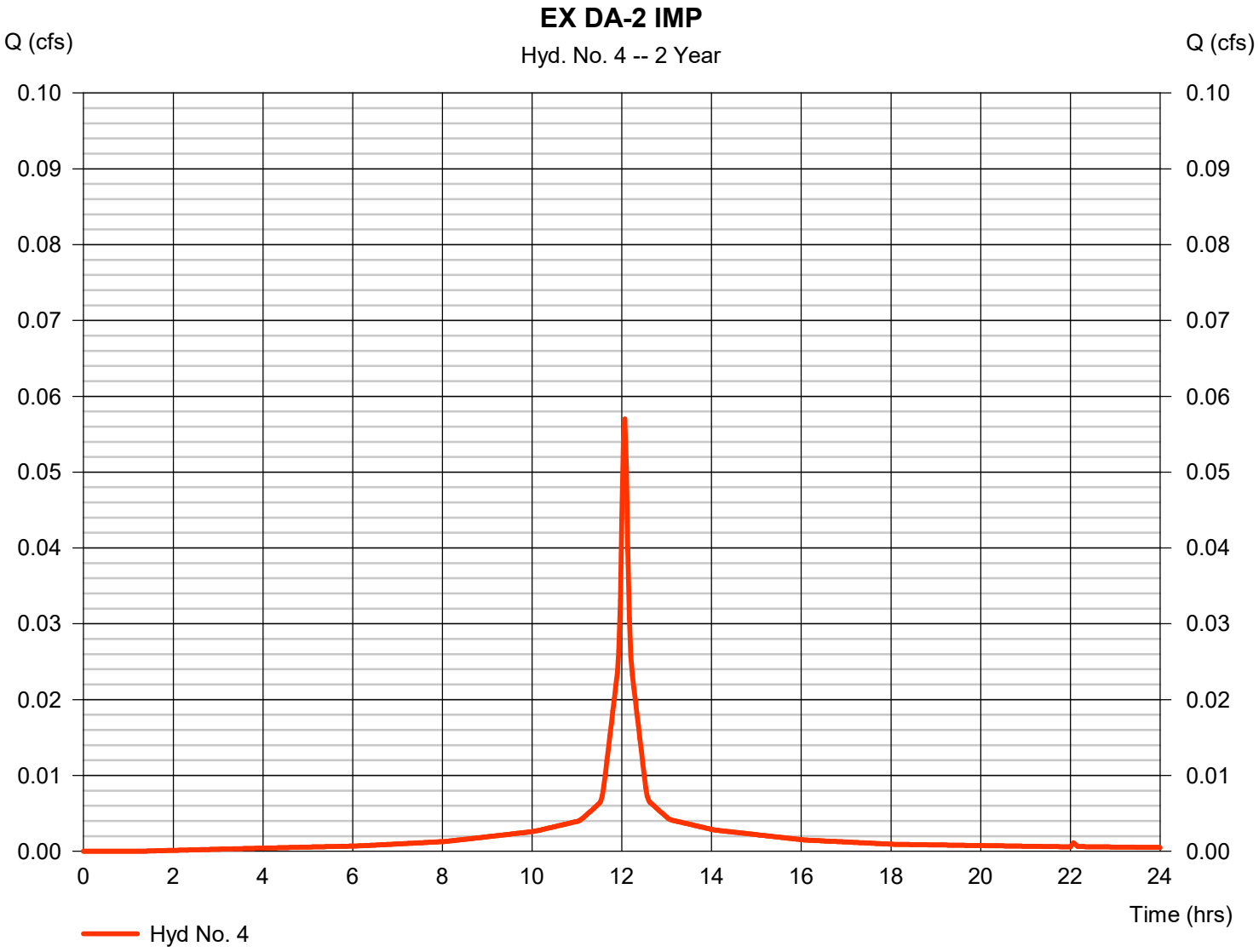
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 07 / 31 / 2020

Hyd. No. 4

EX DA-2 IMP

Hydrograph type	= SCS Runoff	Peak discharge	= 0.057 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 193 cuft
Drainage area	= 0.018 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.38 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

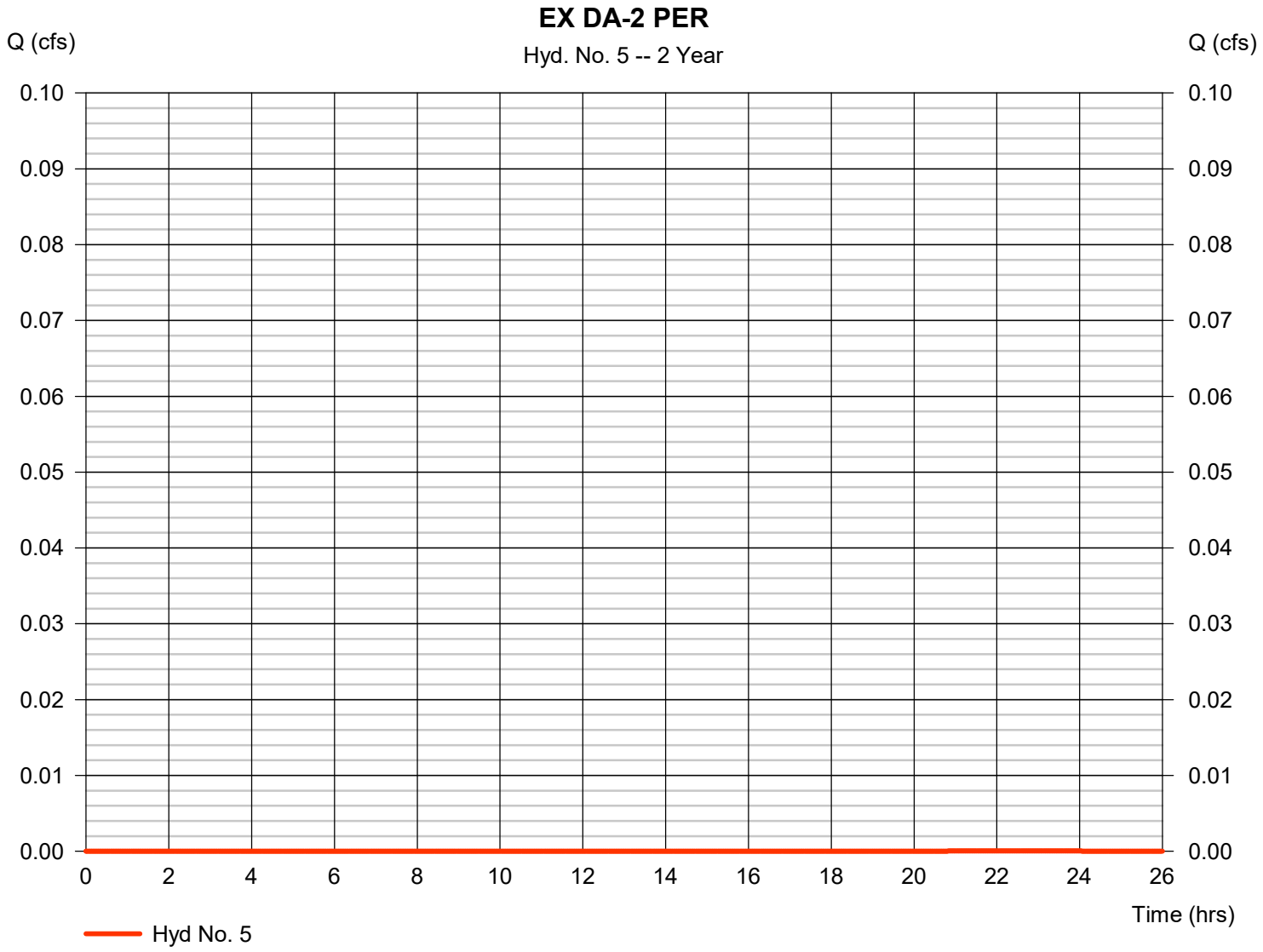


Hydrograph Report

Hyd. No. 5

EX DA-2 PER

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 22.07 hrs
Time interval	= 2 min	Hyd. volume	= 1 cuft
Drainage area	= 0.037 ac	Curve number	= 39
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.38 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

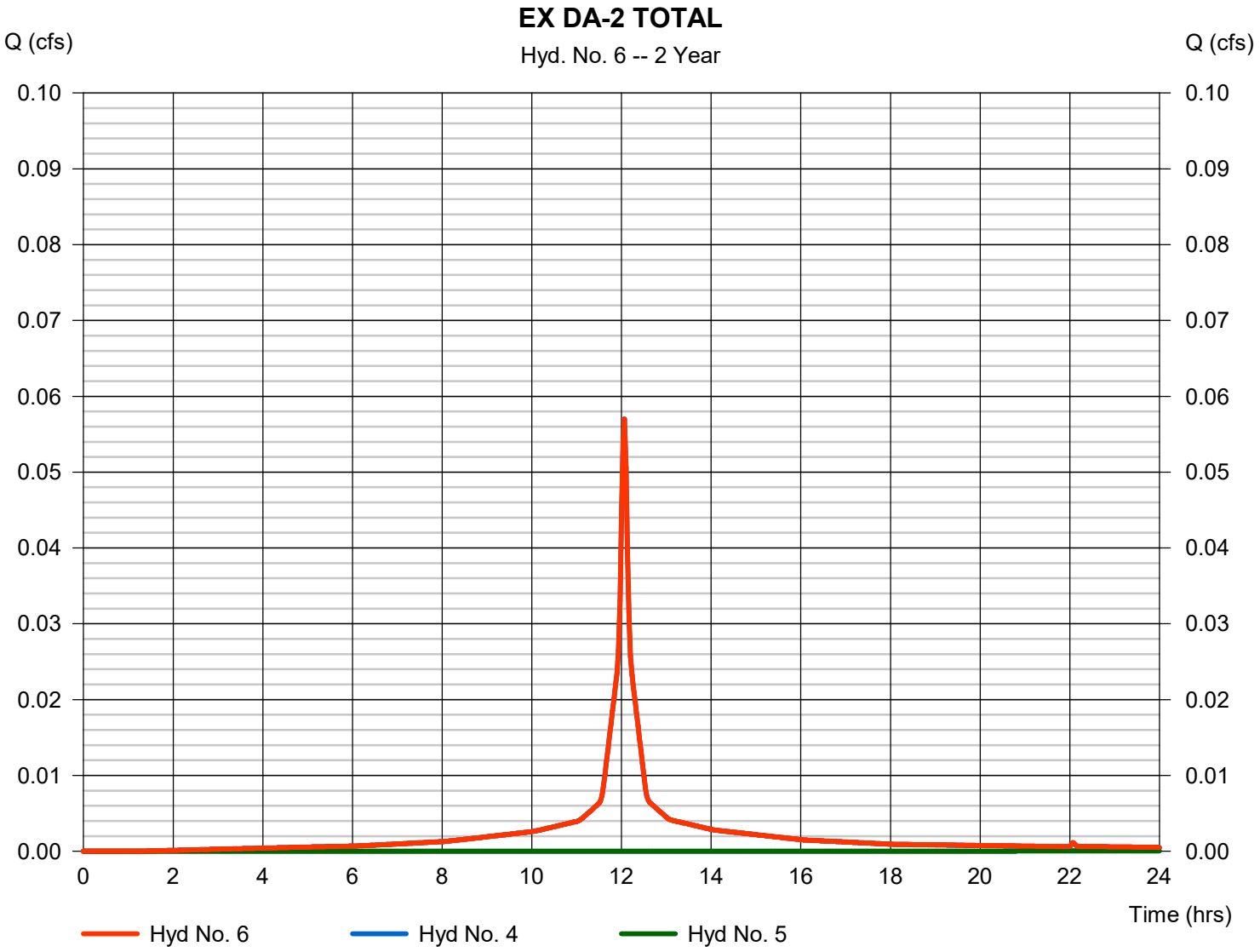


Hydrograph Report

Hyd. No. 6

EX DA-2 TOTAL

Hydrograph type	= Combine	Peak discharge	= 0.057 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 193 cuft
Inflow hyds.	= 4, 5	Contrib. drain. area	= 0.055 ac

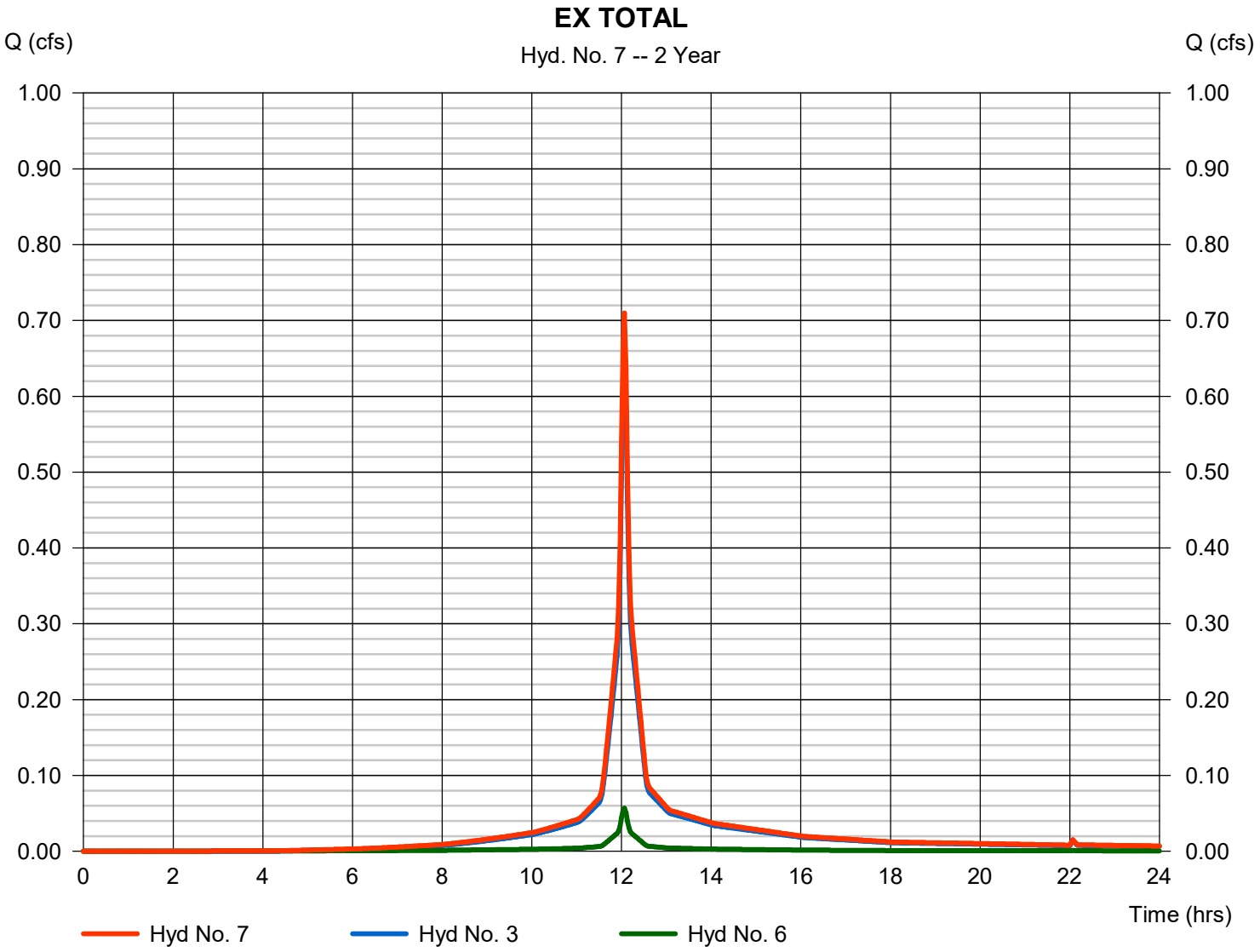


Hydrograph Report

Hyd. No. 7

EX TOTAL

Hydrograph type	= Combine	Peak discharge	= 0.710 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 2,231 cuft
Inflow hyds.	= 3, 6	Contrib. drain. area	= 0.000 ac



Hydrograph Report

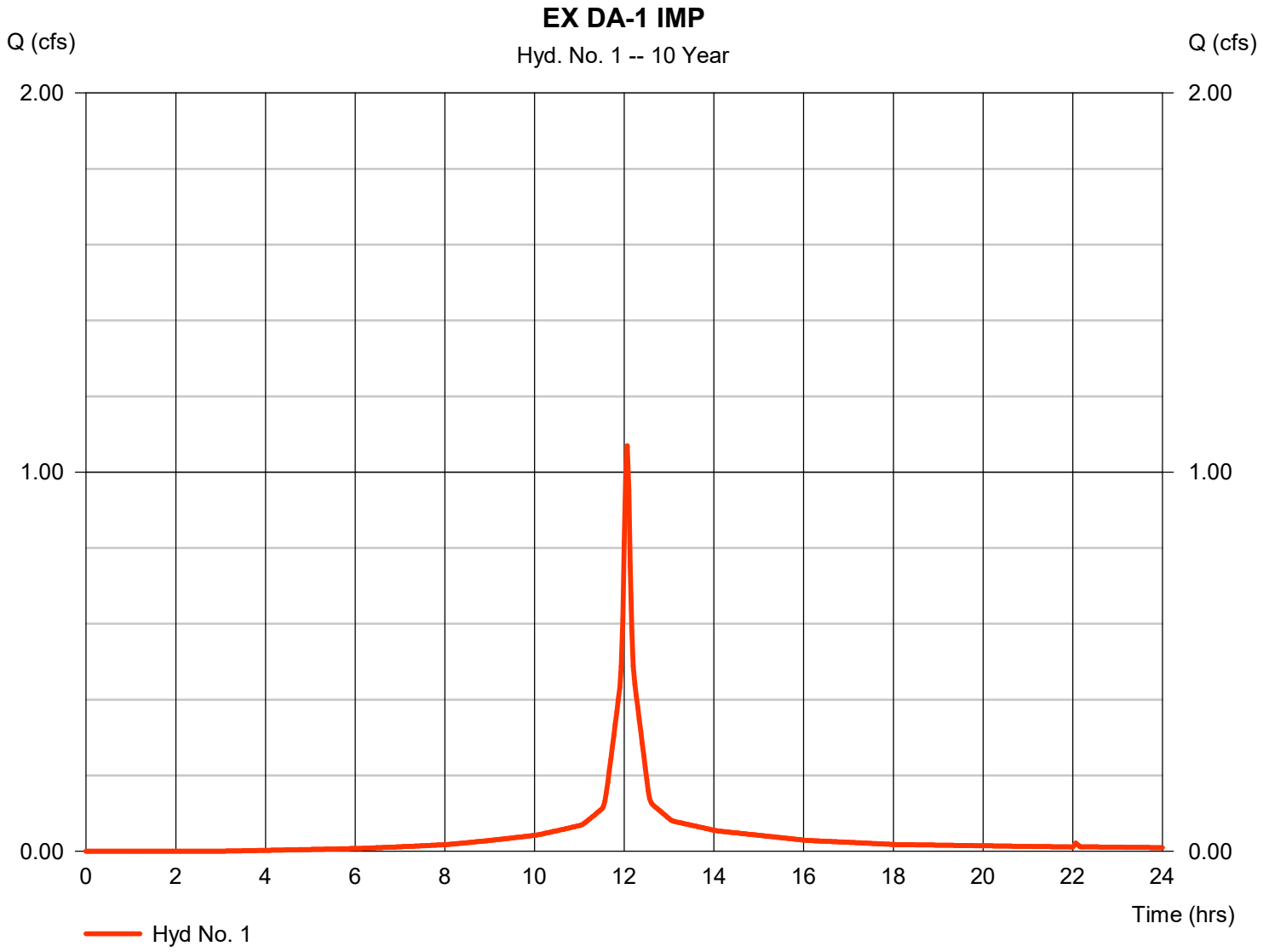
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 07 / 31 / 2020

Hyd. No. 1

EX DA-1 IMP

Hydrograph type	= SCS Runoff	Peak discharge	= 1.070 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 3,433 cuft
Drainage area	= 0.228 ac	Curve number	= 93*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 5.23 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.113 x 98) + (0.117 x 76) + (0.336 x 39)] / 0.228



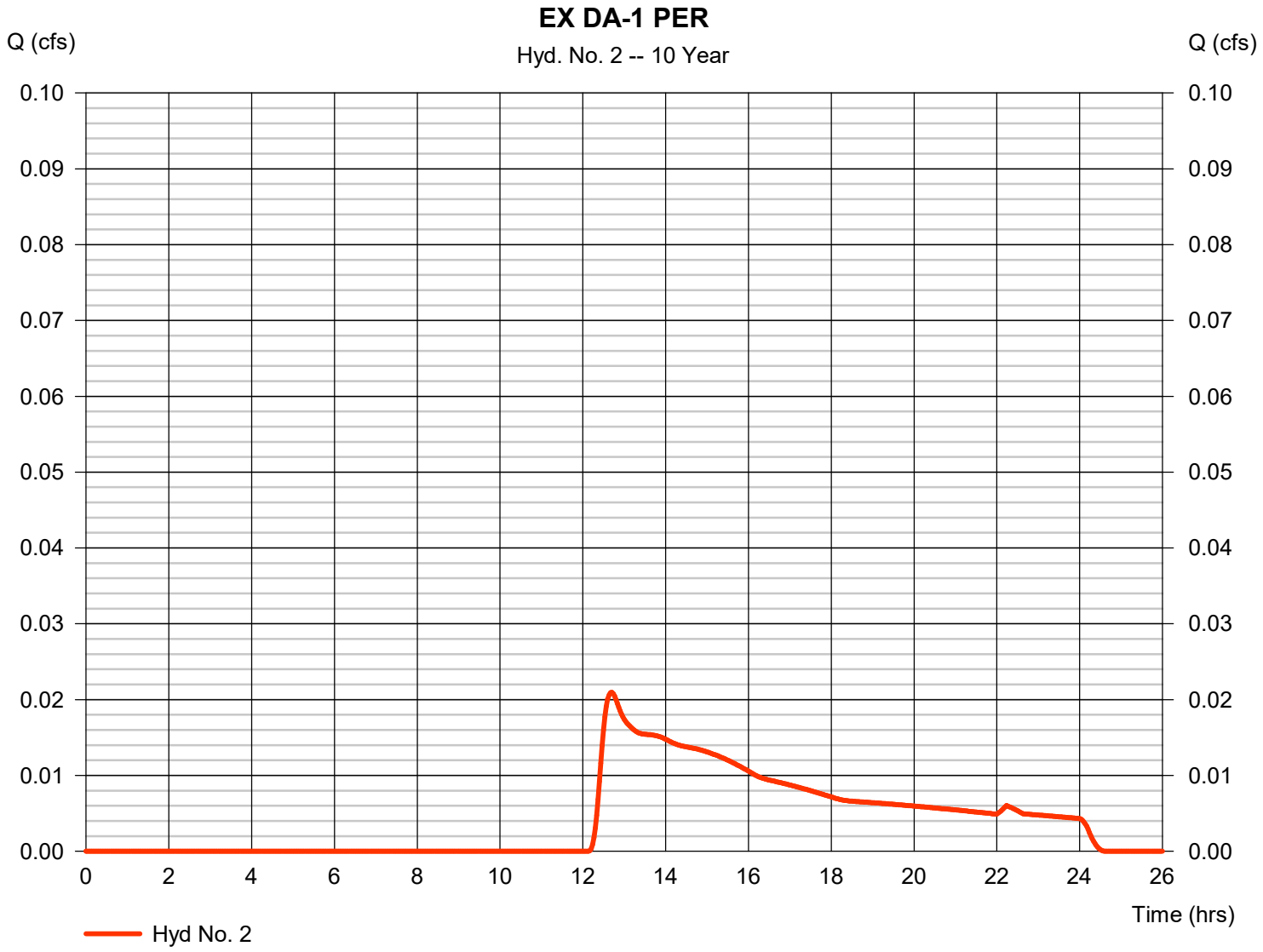
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 07 / 31 / 2020

Hyd. No. 2

EX DA-1 PER

Hydrograph type	= SCS Runoff	Peak discharge	= 0.021 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.70 hrs
Time interval	= 2 min	Hyd. volume	= 379 cuft
Drainage area	= 0.412 ac	Curve number	= 39
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 23.00 min
Total precip.	= 5.23 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

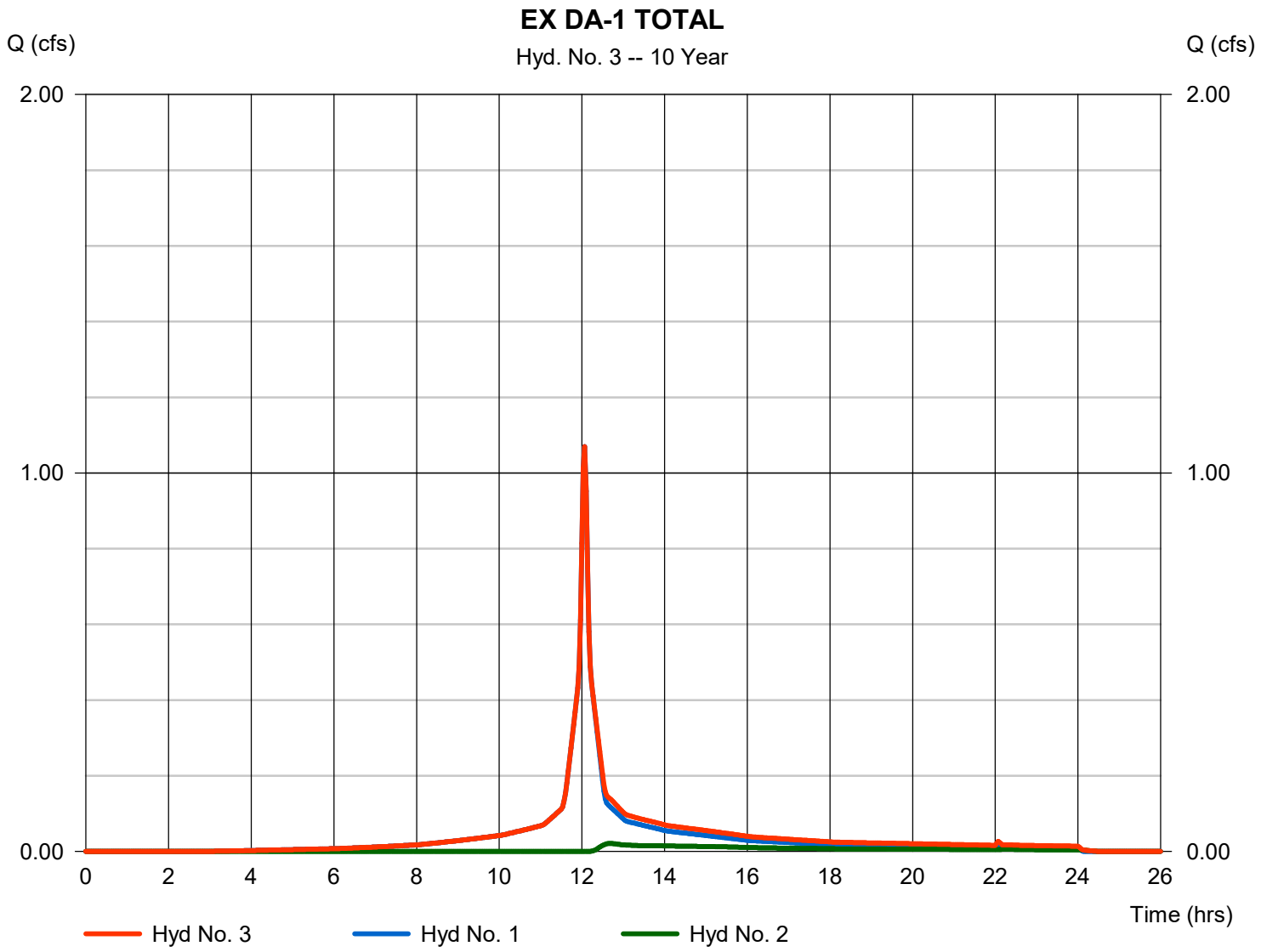


Hydrograph Report

Hyd. No. 3

EX DA-1 TOTAL

Hydrograph type	= Combine	Peak discharge	= 1.070 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 3,812 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 0.640 ac

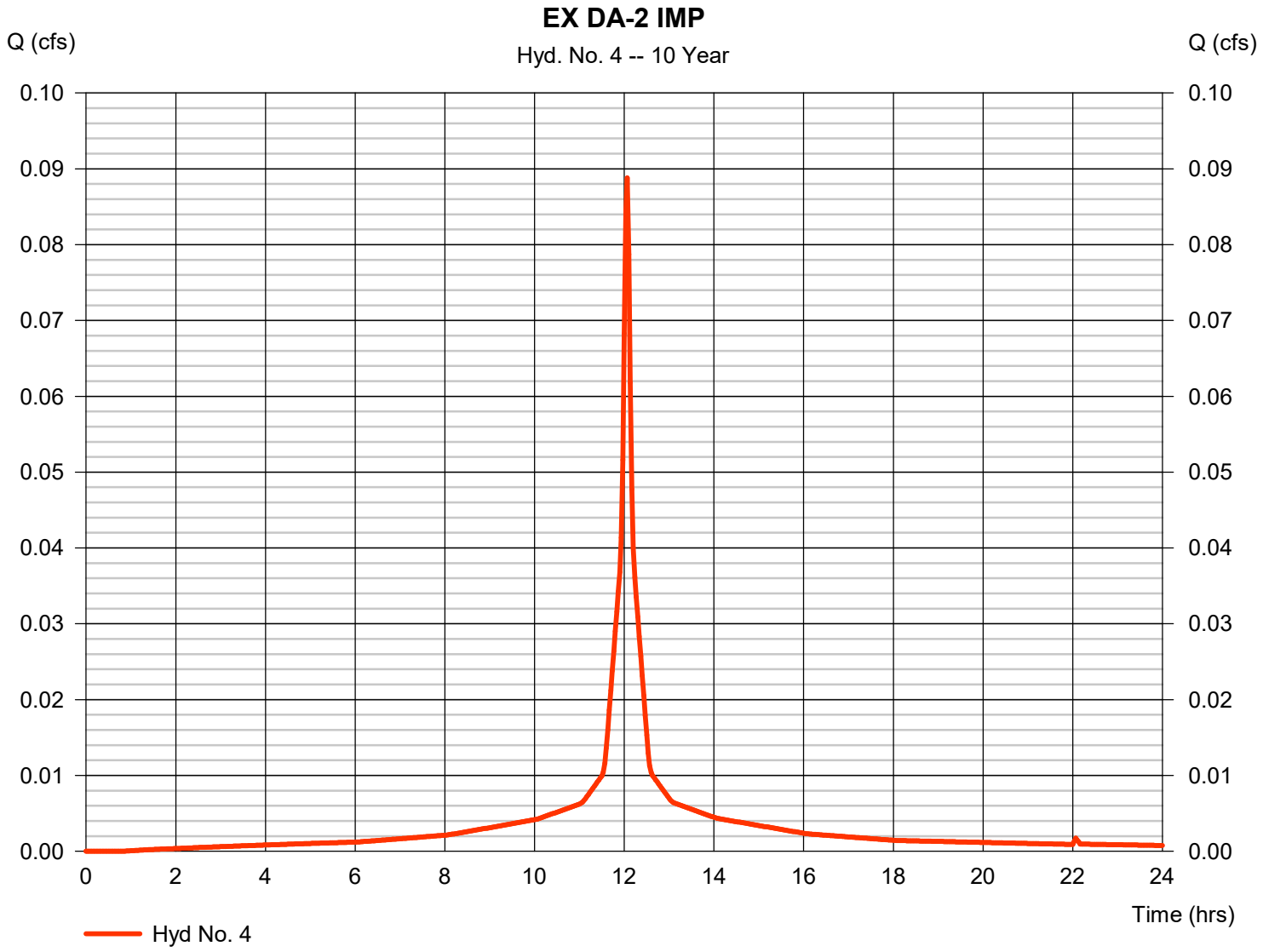


Hydrograph Report

Hyd. No. 4

EX DA-2 IMP

Hydrograph type	= SCS Runoff	Peak discharge	= 0.089 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 306 cuft
Drainage area	= 0.018 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 5.23 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

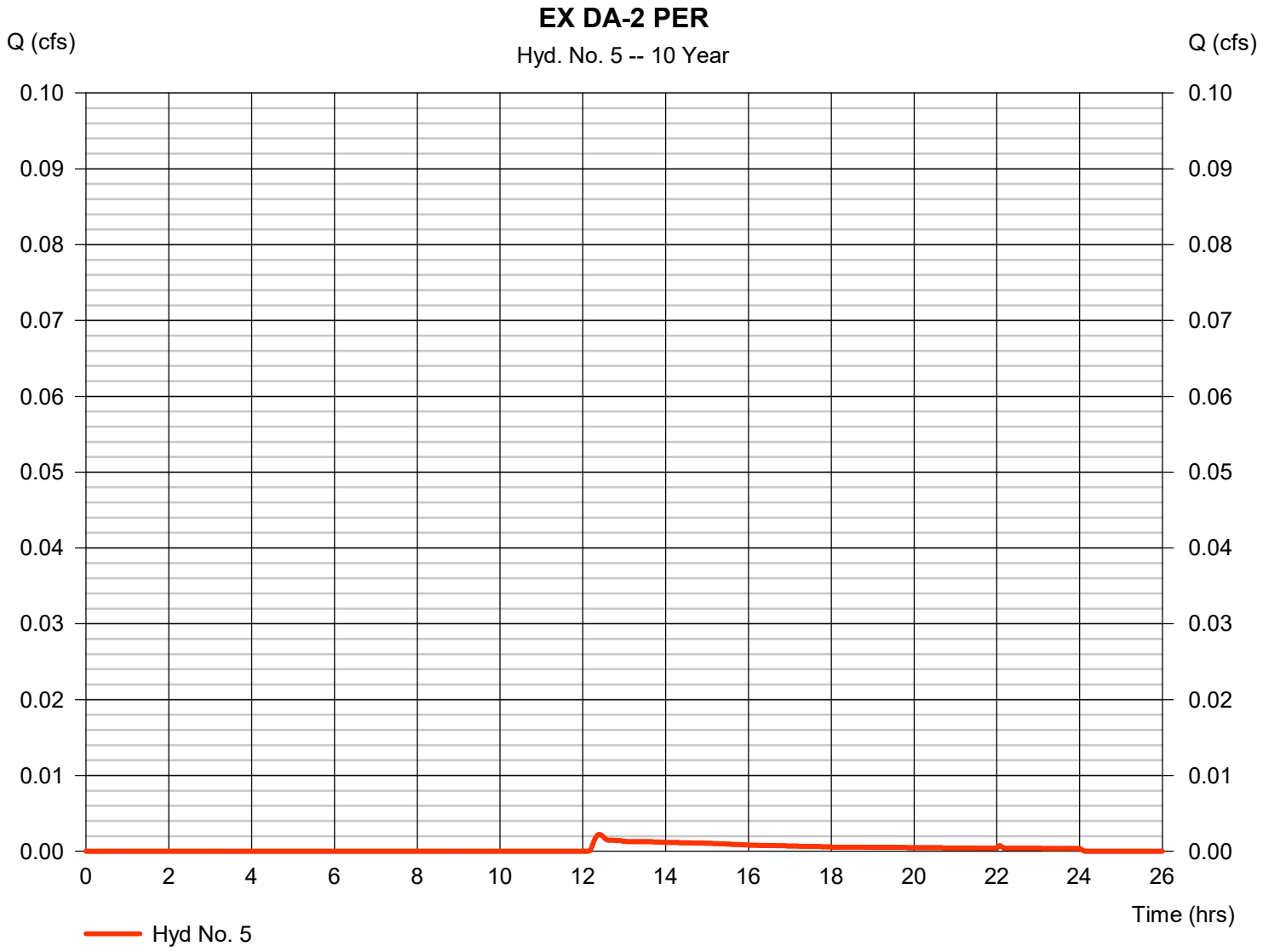


Hydrograph Report

Hyd. No. 5

EX DA-2 PER

Hydrograph type	= SCS Runoff	Peak discharge	= 0.002 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.40 hrs
Time interval	= 2 min	Hyd. volume	= 31 cuft
Drainage area	= 0.037 ac	Curve number	= 39
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 5.23 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

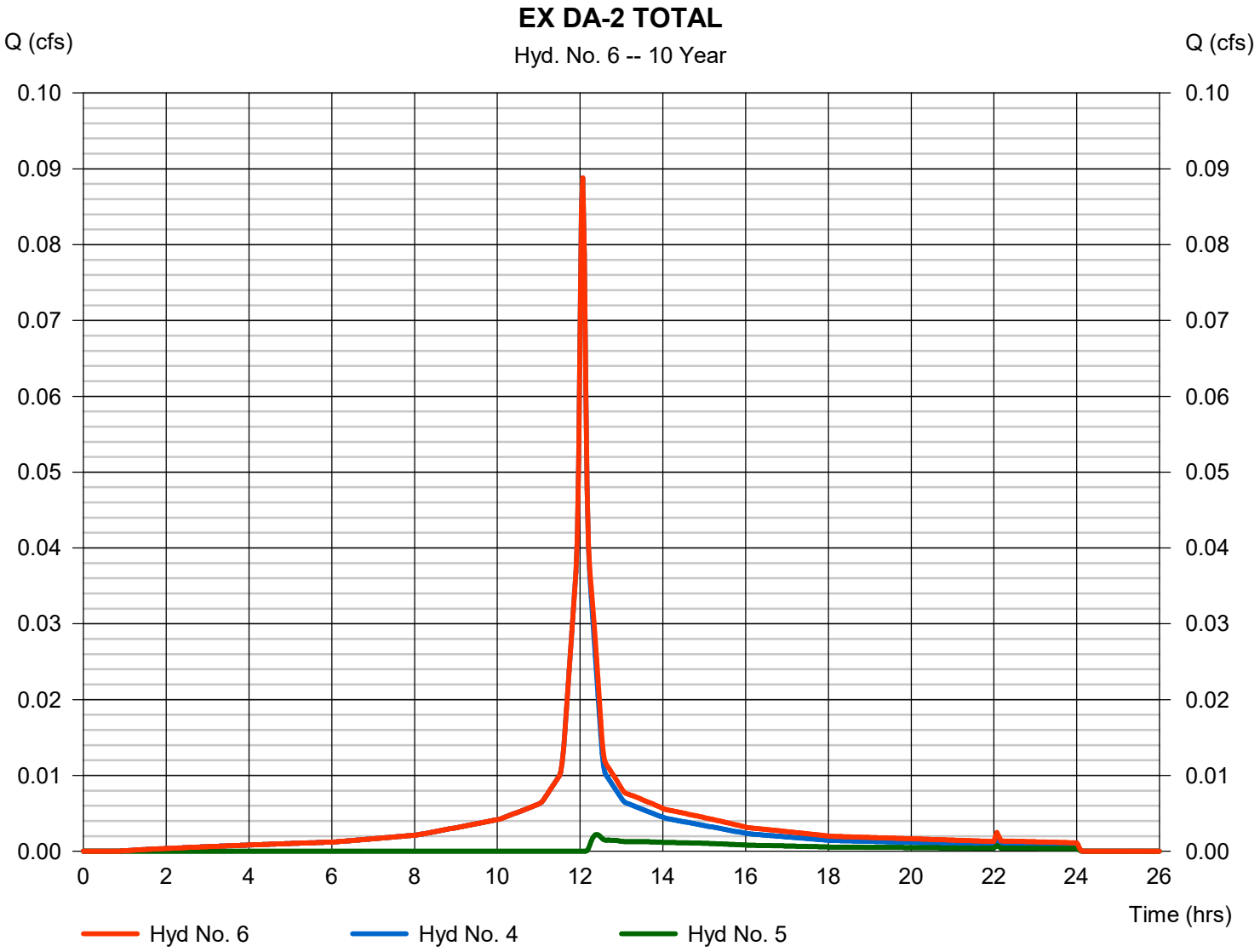


Hydrograph Report

Hyd. No. 6

EX DA-2 TOTAL

Hydrograph type	= Combine	Peak discharge	= 0.089 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 337 cuft
Inflow hyds.	= 4, 5	Contrib. drain. area	= 0.055 ac

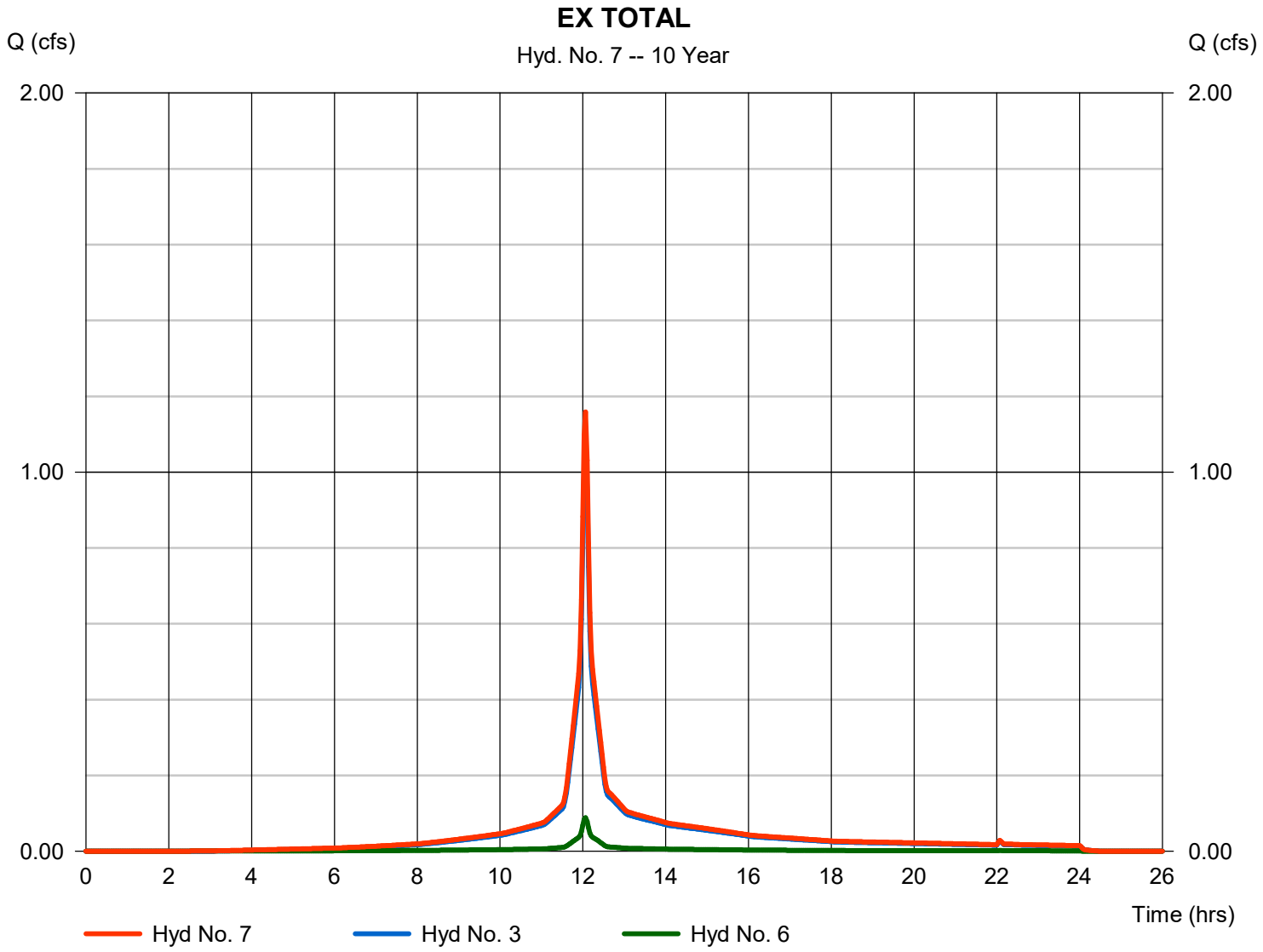


Hydrograph Report

Hyd. No. 7

EX TOTAL

Hydrograph type	= Combine	Peak discharge	= 1.158 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 4,149 cuft
Inflow hyds.	= 3, 6	Contrib. drain. area	= 0.000 ac



Hydrograph Report

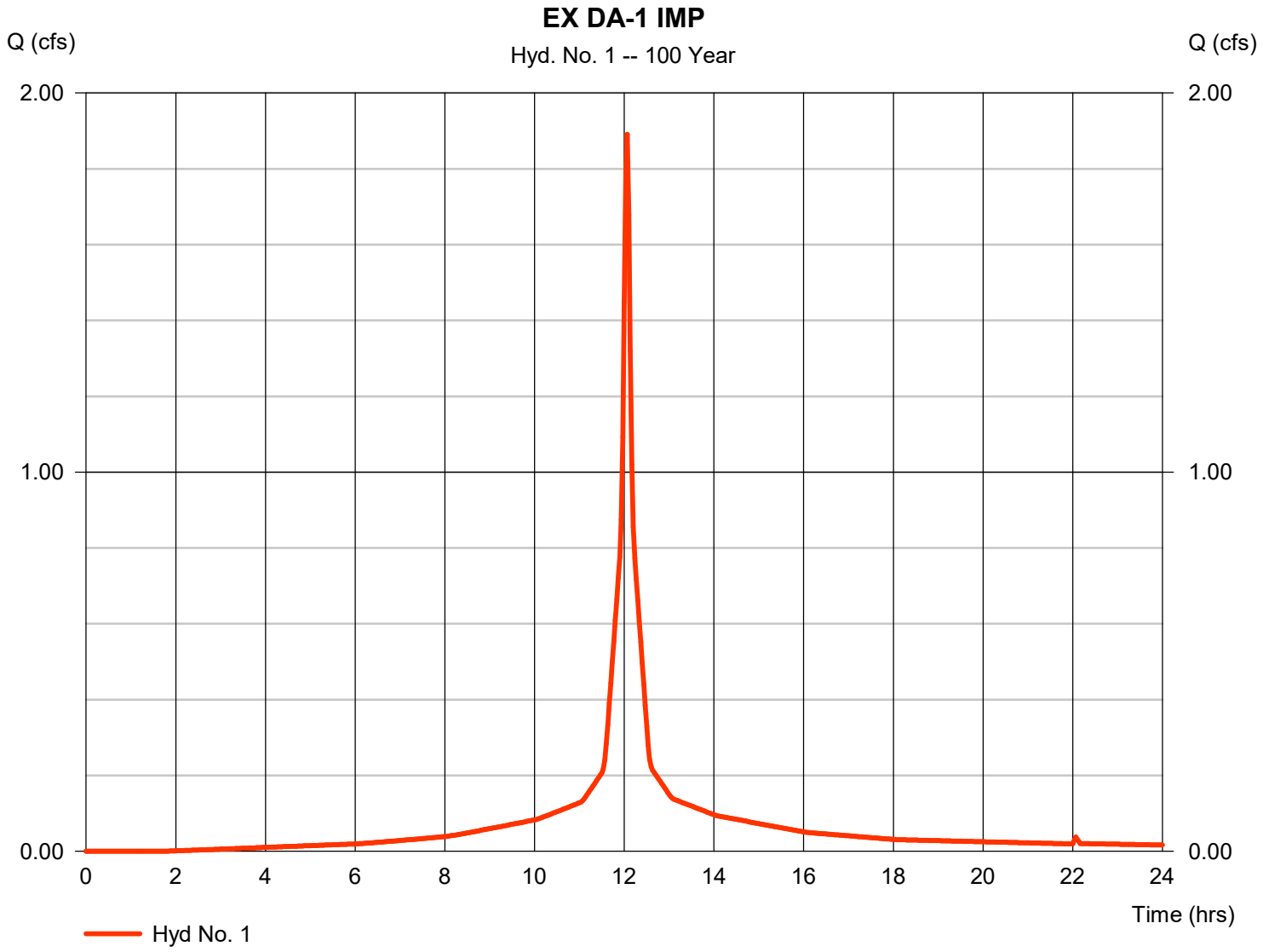
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 07 / 31 / 2020

Hyd. No. 1

EX DA-1 IMP

Hydrograph type	= SCS Runoff	Peak discharge	= 1.891 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 6,282 cuft
Drainage area	= 0.228 ac	Curve number	= 93*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 8.94 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.113 x 98) + (0.117 x 76) + (0.336 x 39)] / 0.228



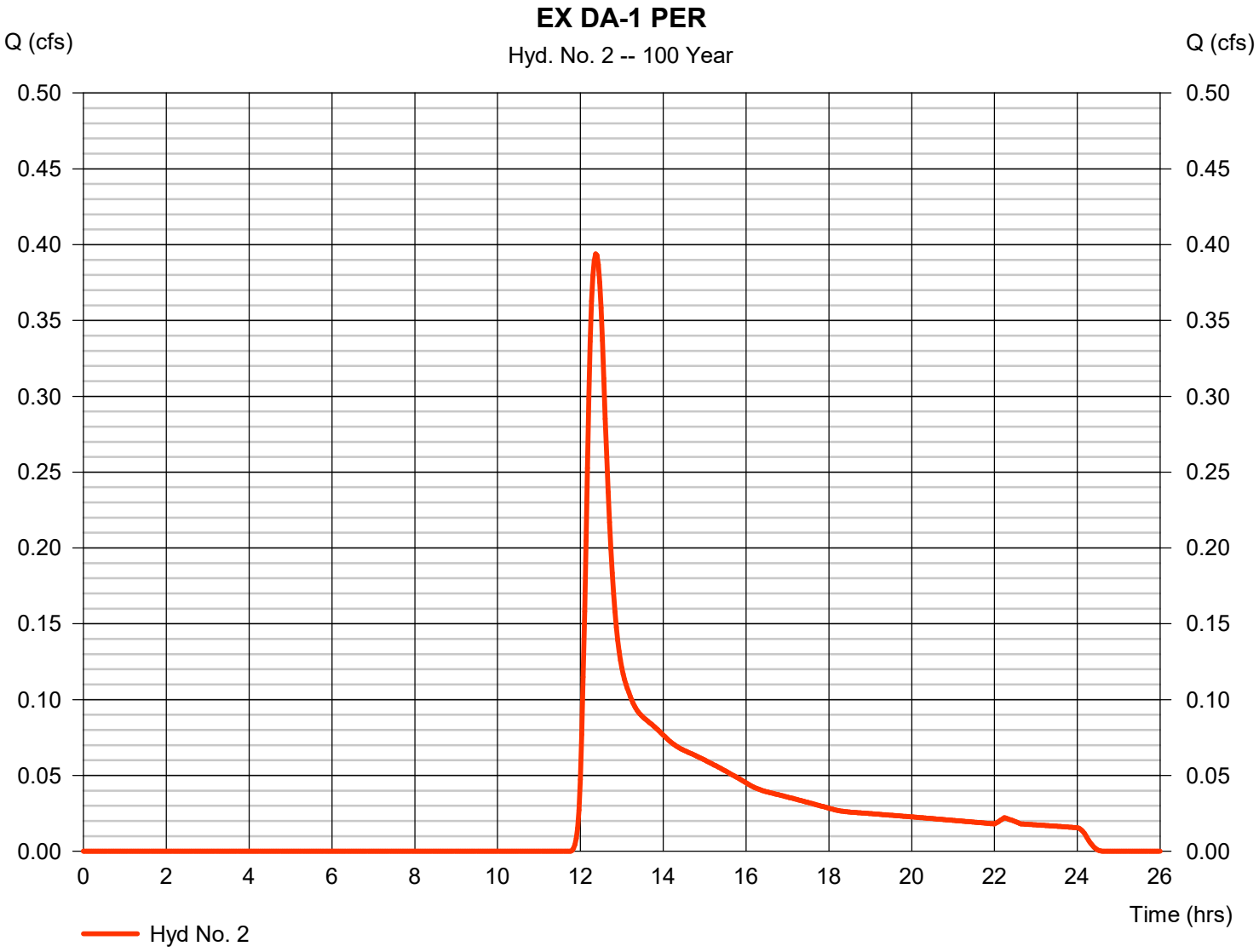
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 07 / 31 / 2020

Hyd. No. 2

EX DA-1 PER

Hydrograph type	= SCS Runoff	Peak discharge	= 0.394 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.37 hrs
Time interval	= 2 min	Hyd. volume	= 2,397 cuft
Drainage area	= 0.412 ac	Curve number	= 39
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 23.00 min
Total precip.	= 8.94 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



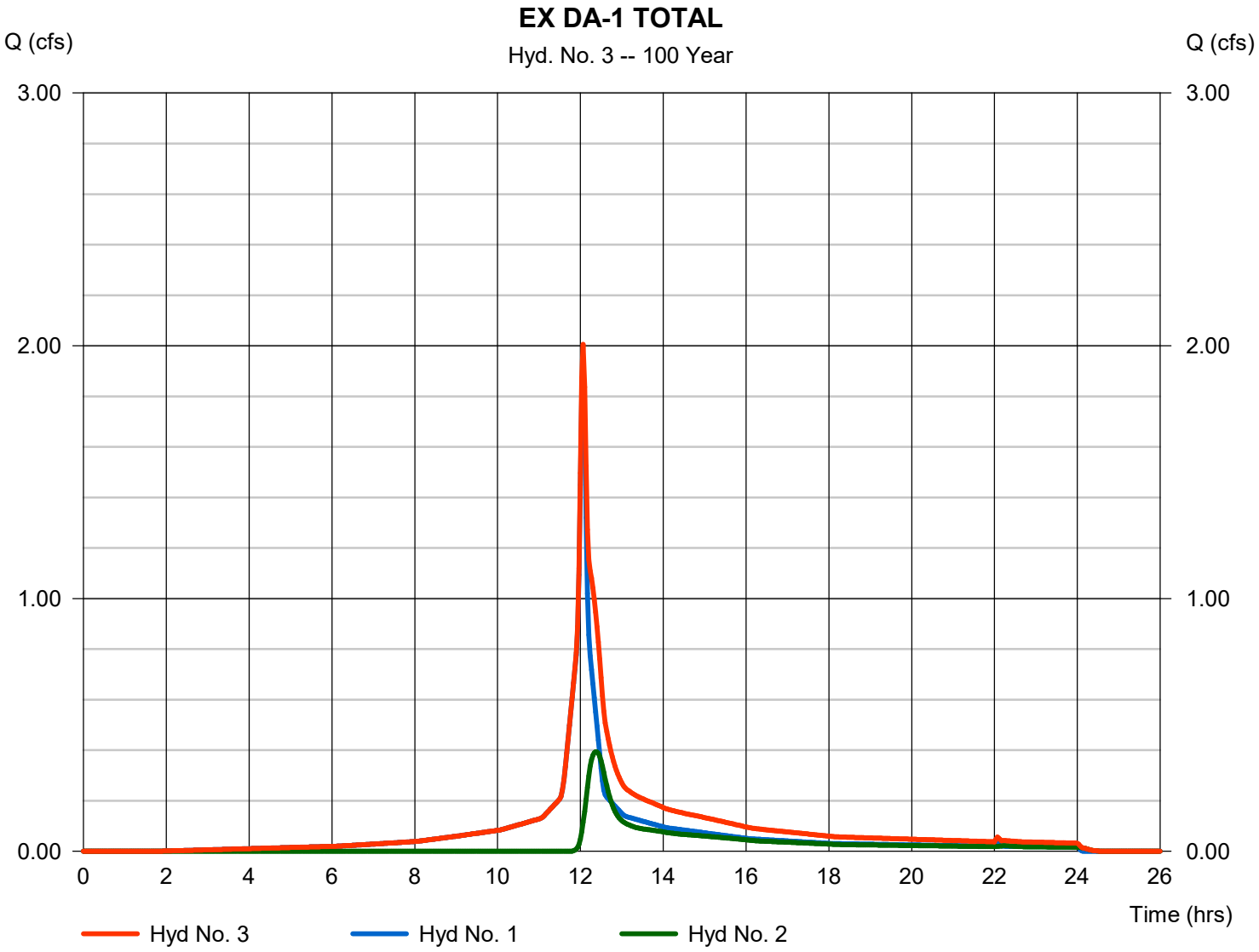
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 07 / 31 / 2020

Hyd. No. 3

EX DA-1 TOTAL

Hydrograph type	= Combine	Peak discharge	= 2.006 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 8,679 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 0.640 ac



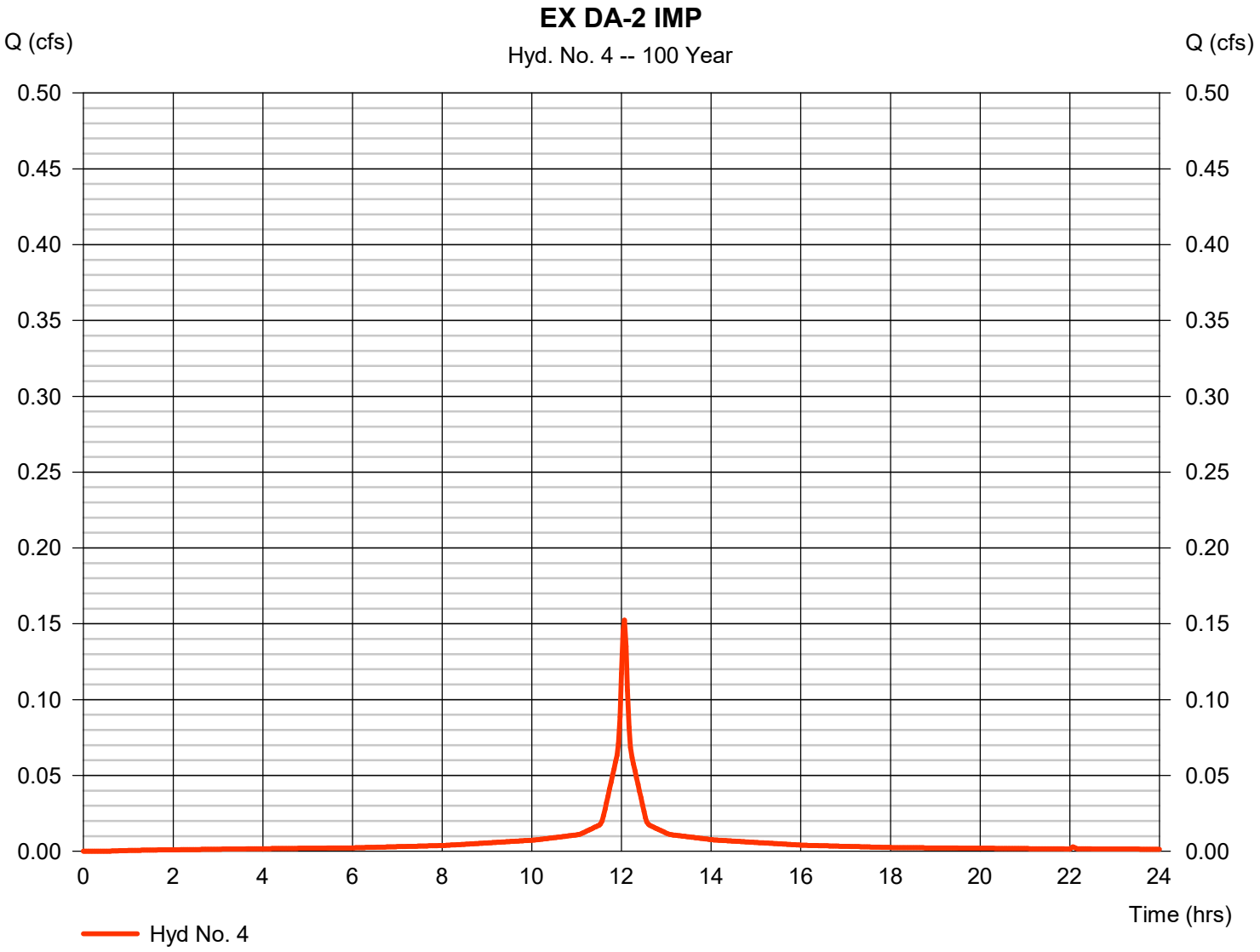
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 07 / 31 / 2020

Hyd. No. 4

EX DA-2 IMP

Hydrograph type	= SCS Runoff	Peak discharge	= 0.152 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 533 cuft
Drainage area	= 0.018 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 8.94 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



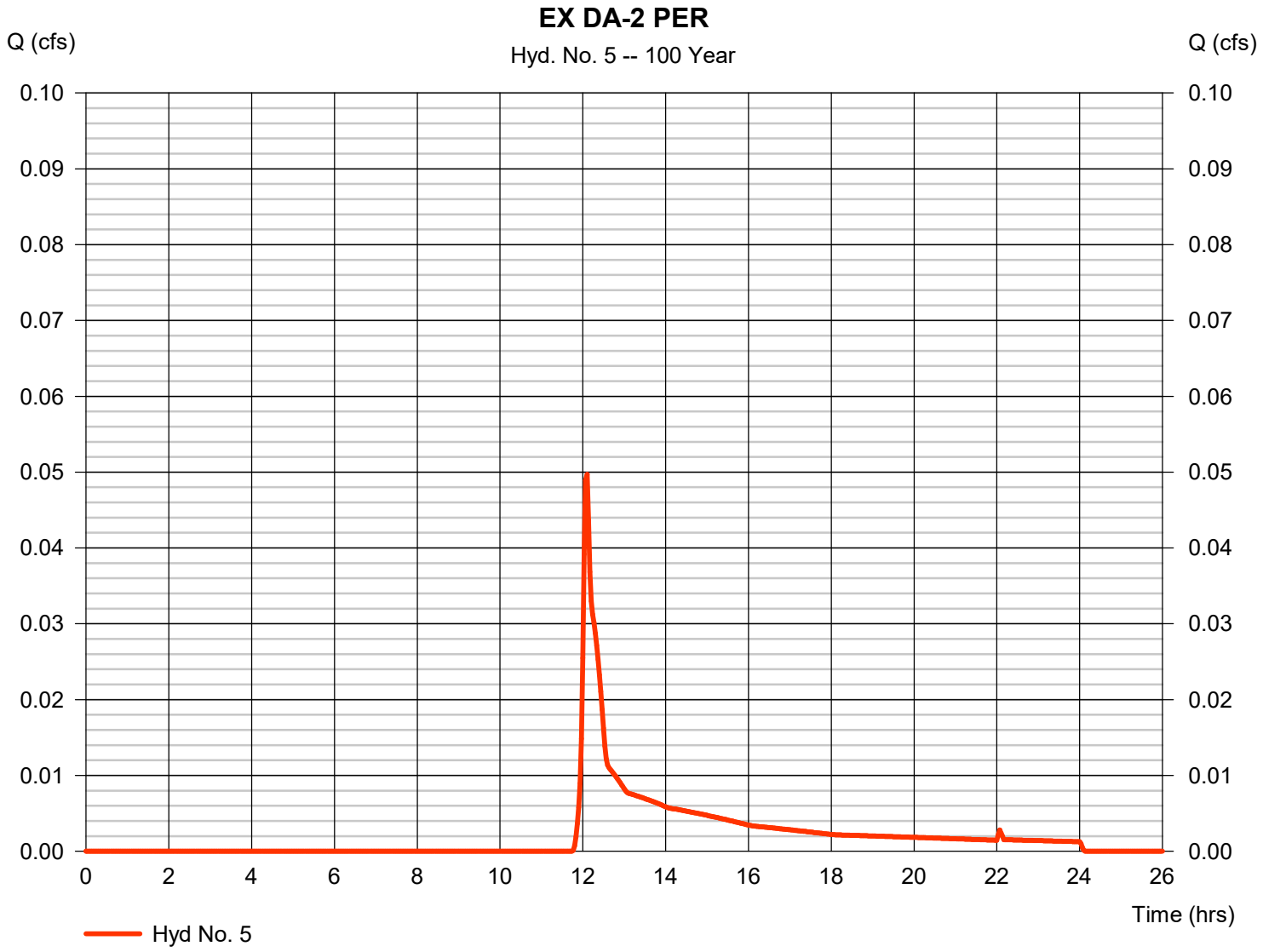
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 07 / 31 / 2020

Hyd. No. 5

EX DA-2 PER

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.050 cfs
Storm frequency	=	100 yrs	Time to peak	=	12.10 hrs
Time interval	=	2 min	Hyd. volume	=	198 cuft
Drainage area	=	0.037 ac	Curve number	=	39
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.00 min
Total precip.	=	8.94 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

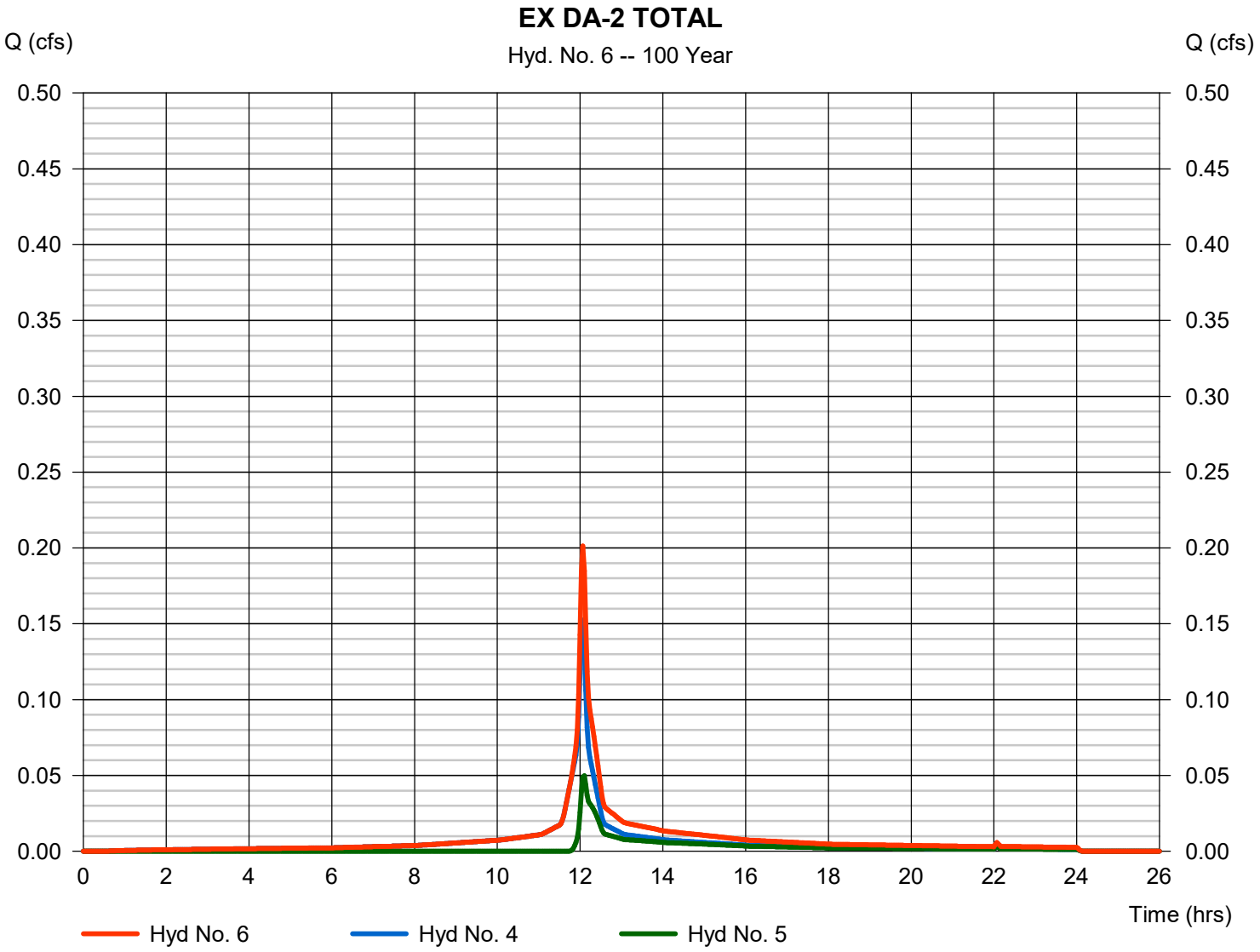


Hydrograph Report

Hyd. No. 6

EX DA-2 TOTAL

Hydrograph type	= Combine	Peak discharge	= 0.201 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 731 cuft
Inflow hyds.	= 4, 5	Contrib. drain. area	= 0.055 ac

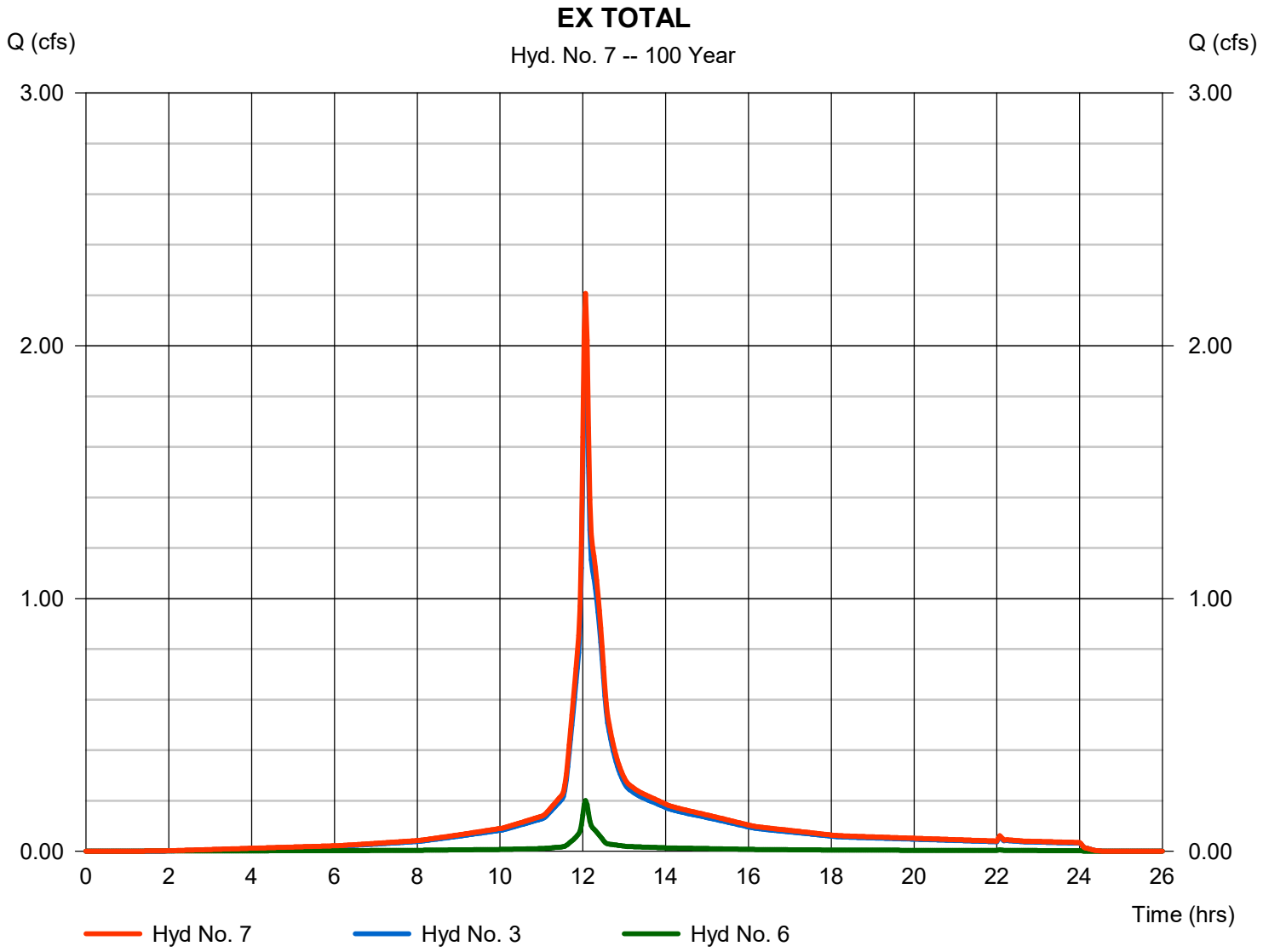


Hydrograph Report

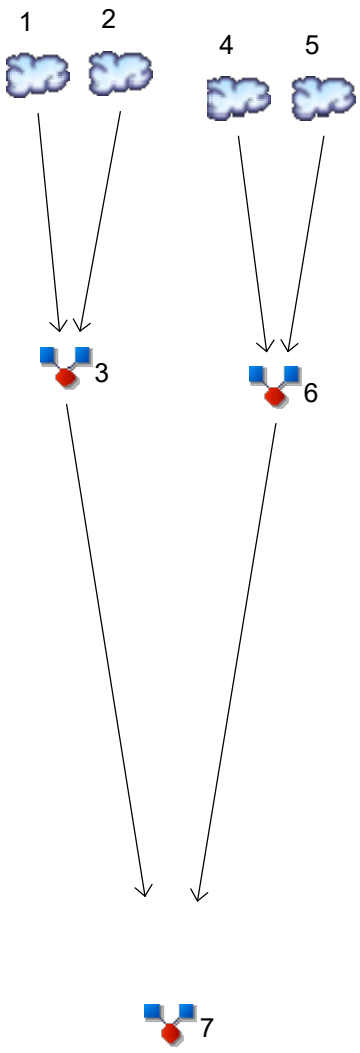
Hyd. No. 7

EX TOTAL

Hydrograph type	= Combine	Peak discharge	= 2.207 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 9,410 cuft
Inflow hyds.	= 3, 6	Contrib. drain. area	= 0.000 ac



Watershed Model Schematic



Hydrograph Report

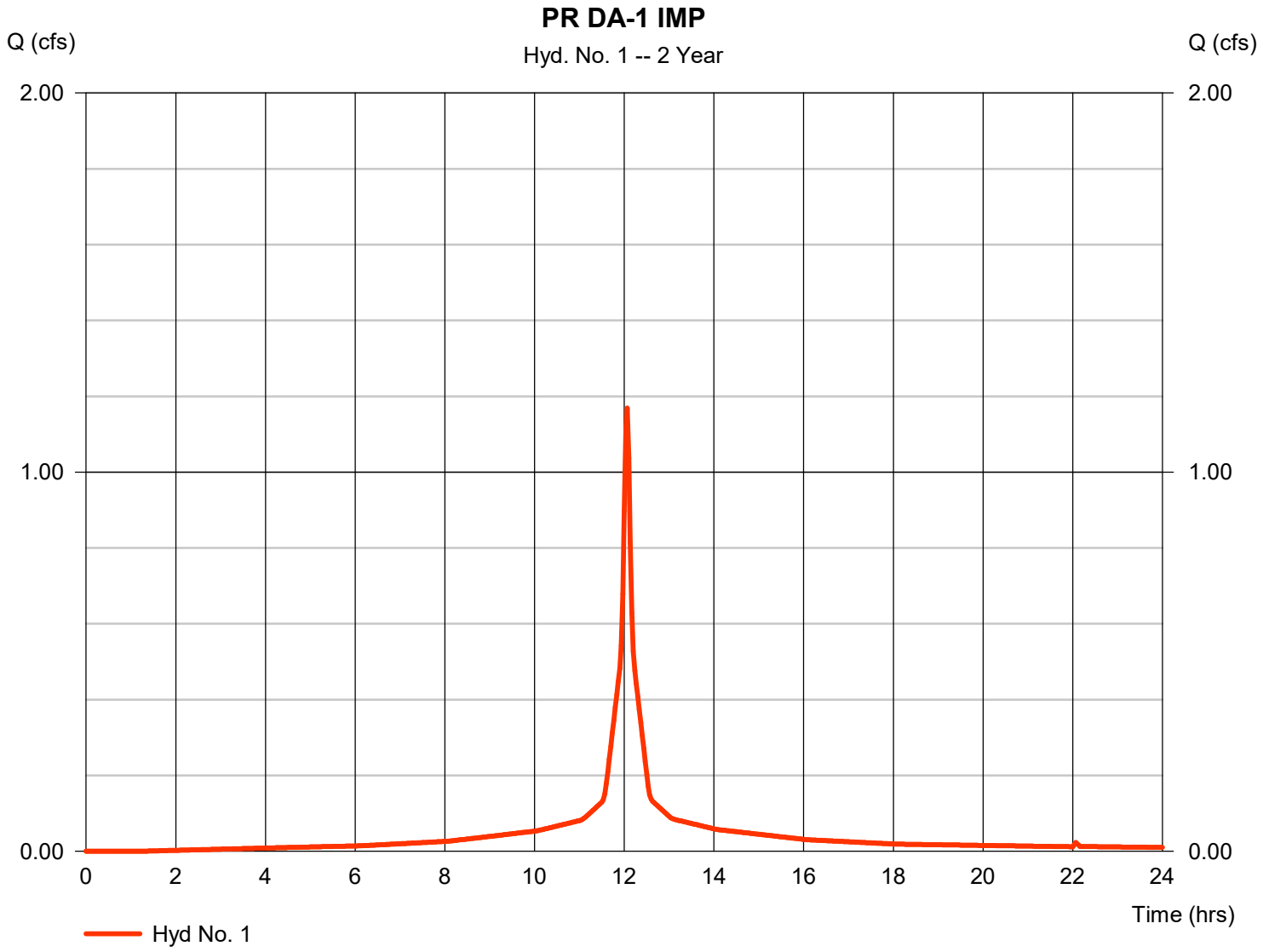
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 07 / 31 / 2020

Hyd. No. 1

PR DA-1 IMP

Hydrograph type	= SCS Runoff	Peak discharge	= 1.169 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 3,952 cuft
Drainage area	= 0.369 ac	Curve number	= 98*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.38 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.113 x 98) + (0.117 x 76) + (0.336 x 39)] / 0.369



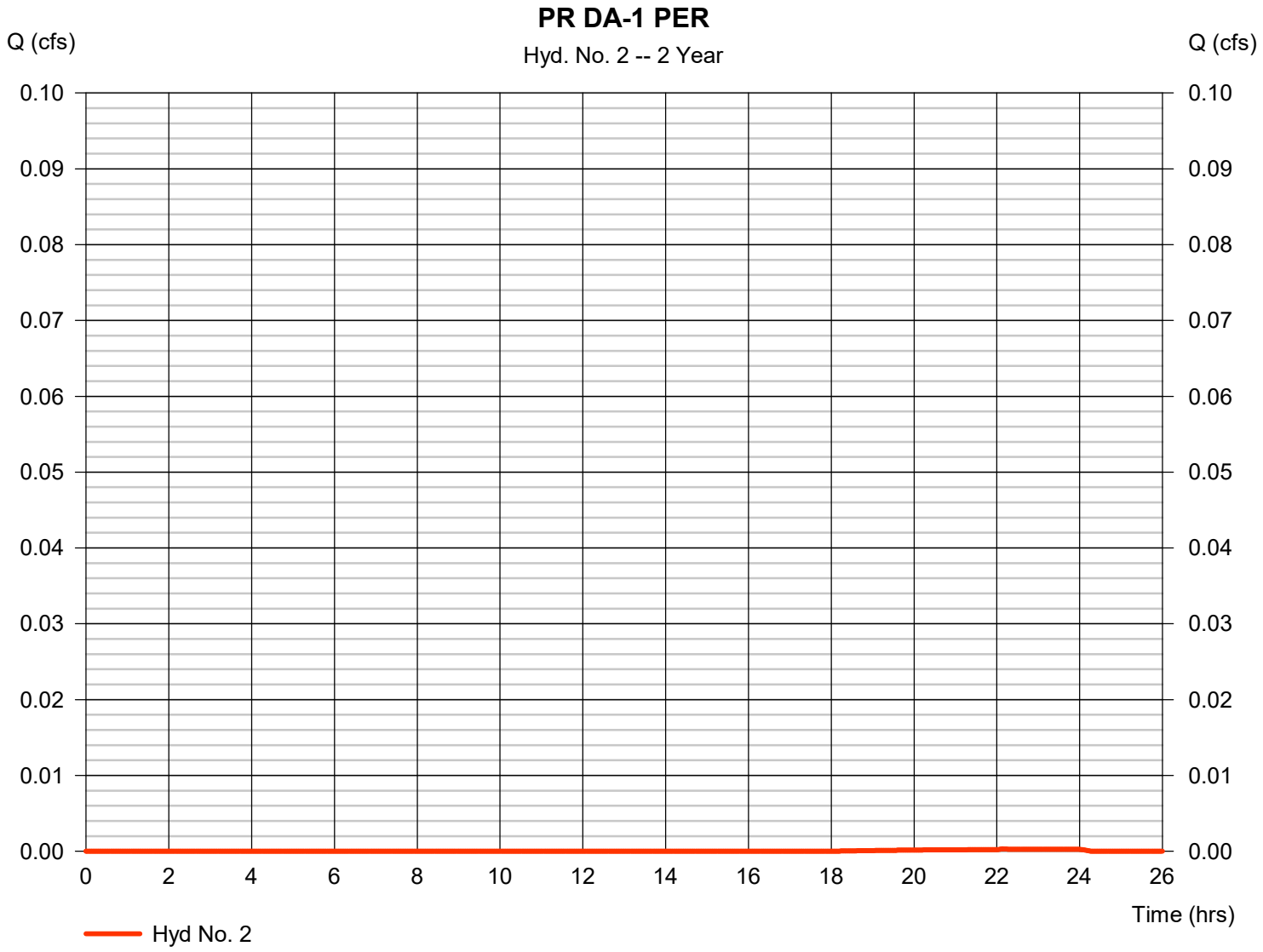
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 07 / 31 / 2020

Hyd. No. 2

PR DA-1 PER

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 22.13 hrs
Time interval	= 2 min	Hyd. volume	= 4 cuft
Drainage area	= 0.267 ac	Curve number	= 39
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.00 min
Total precip.	= 3.38 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

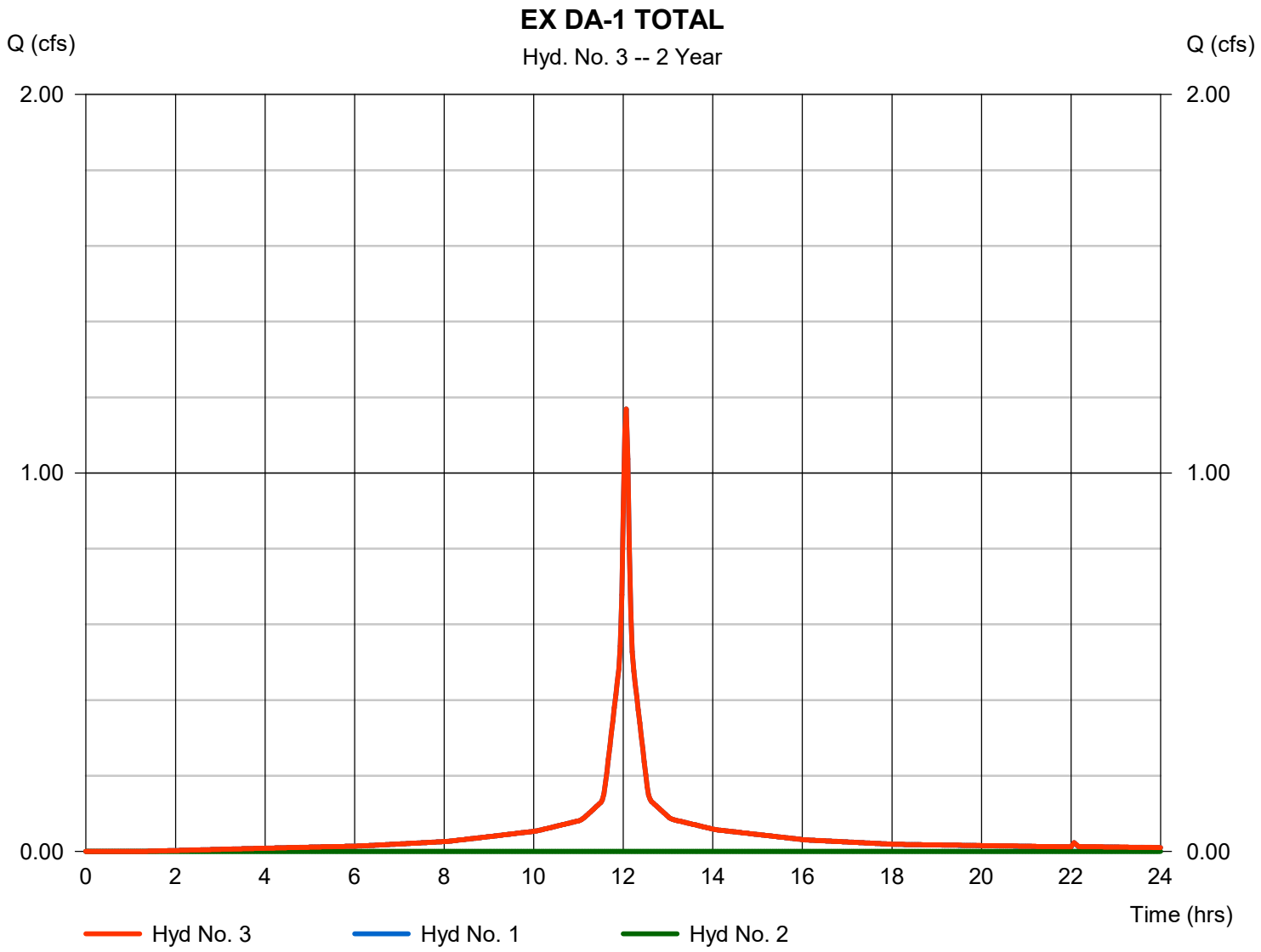


Hydrograph Report

Hyd. No. 3

EX DA-1 TOTAL

Hydrograph type	= Combine	Peak discharge	= 1.169 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 3,956 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 0.636 ac

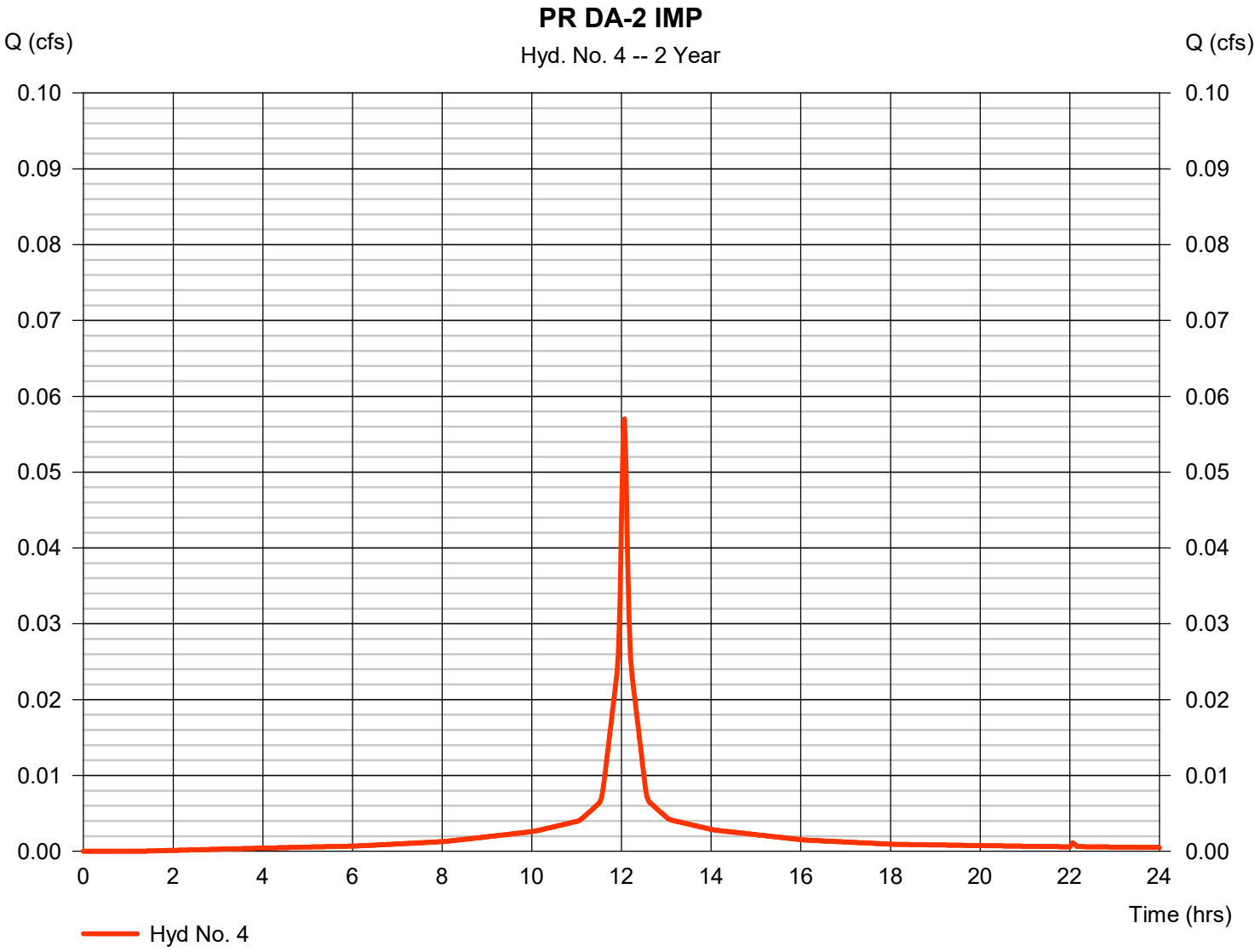


Hydrograph Report

Hyd. No. 4

PR DA-2 IMP

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.057 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.07 hrs
Time interval	=	2 min	Hyd. volume	=	193 cuft
Drainage area	=	0.018 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.00 min
Total precip.	=	3.38 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

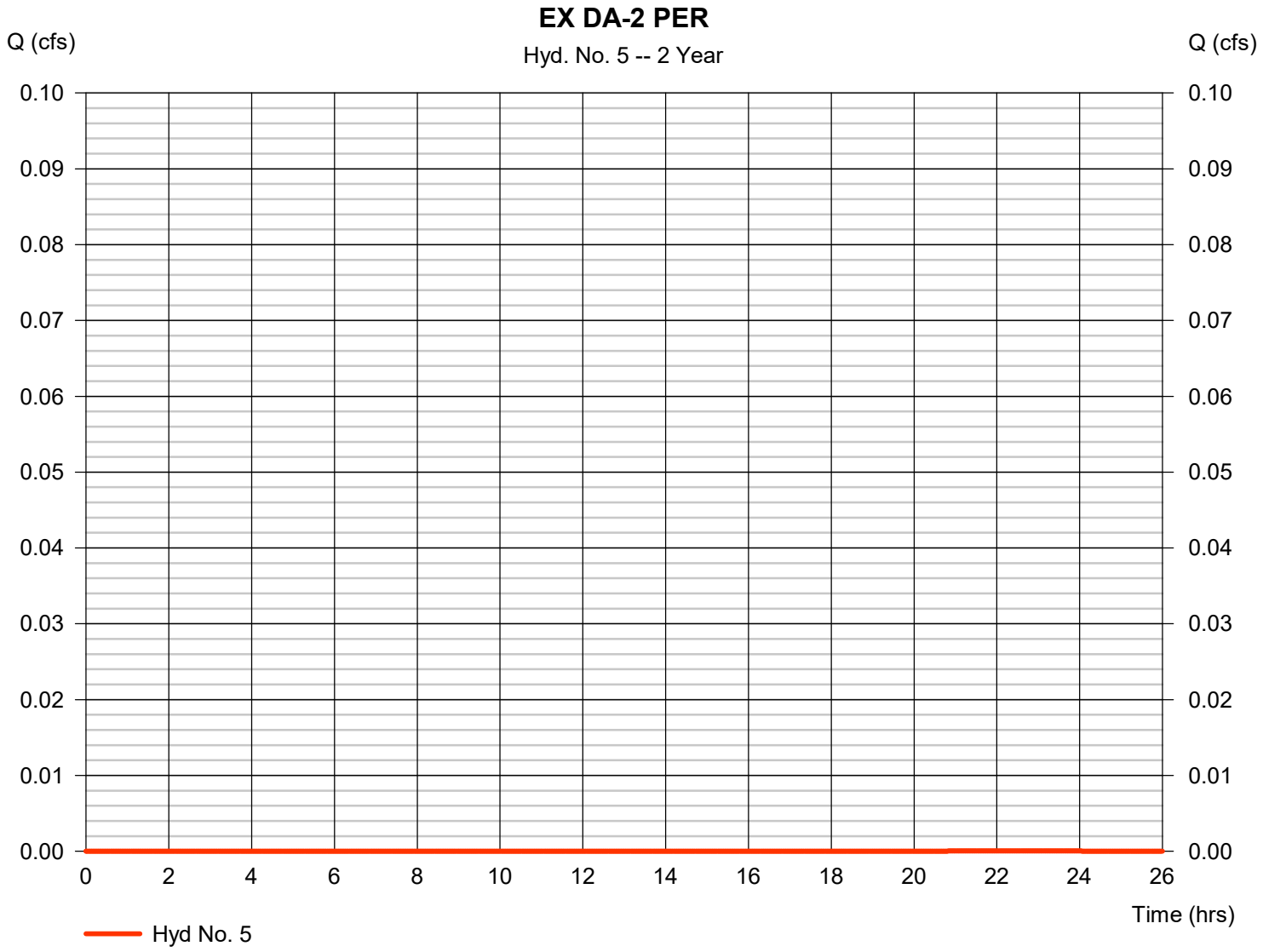


Hydrograph Report

Hyd. No. 5

EX DA-2 PER

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 22.07 hrs
Time interval	= 2 min	Hyd. volume	= 1 cuft
Drainage area	= 0.037 ac	Curve number	= 39
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.38 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

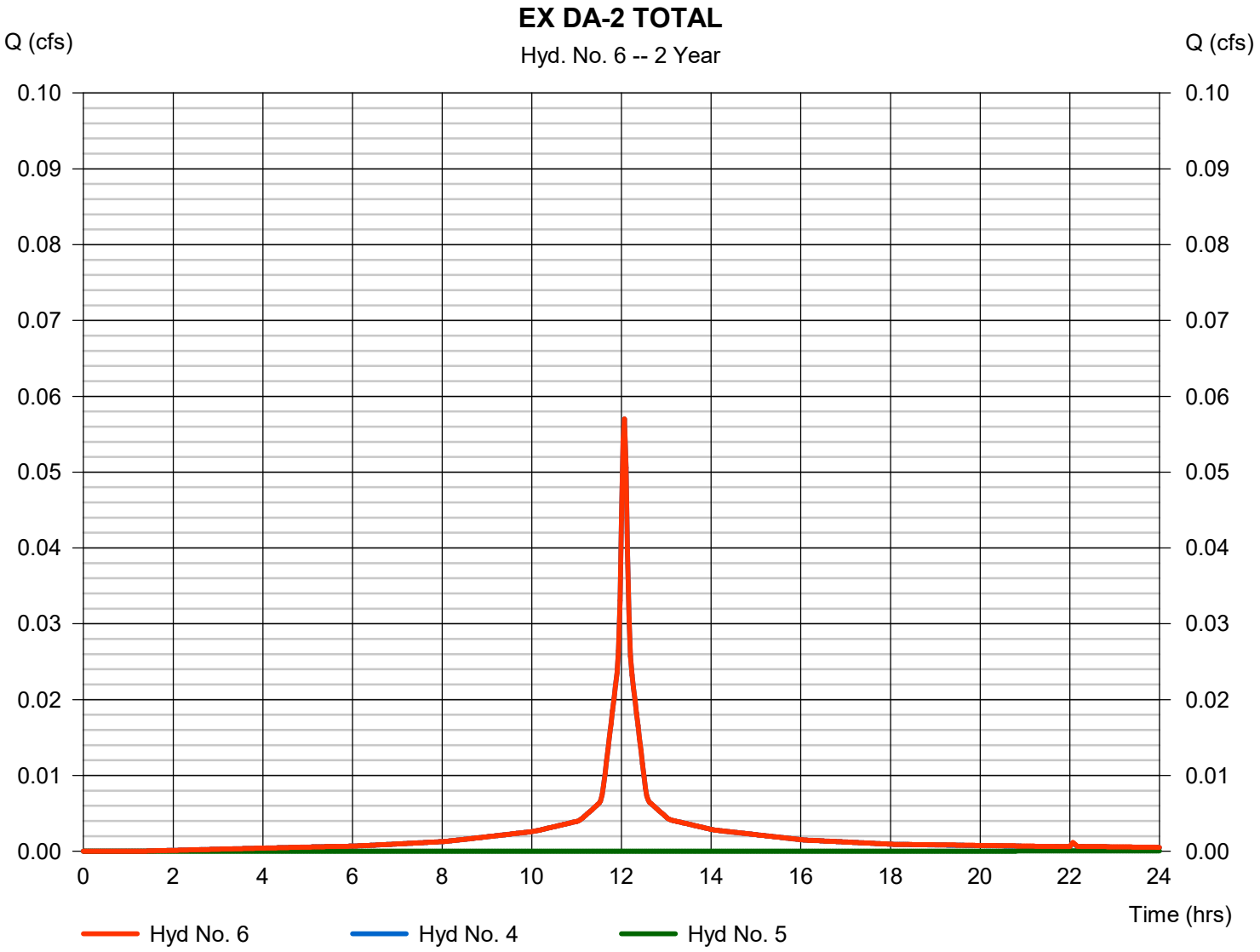


Hydrograph Report

Hyd. No. 6

EX DA-2 TOTAL

Hydrograph type	= Combine	Peak discharge	= 0.057 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 193 cuft
Inflow hyds.	= 4, 5	Contrib. drain. area	= 0.055 ac

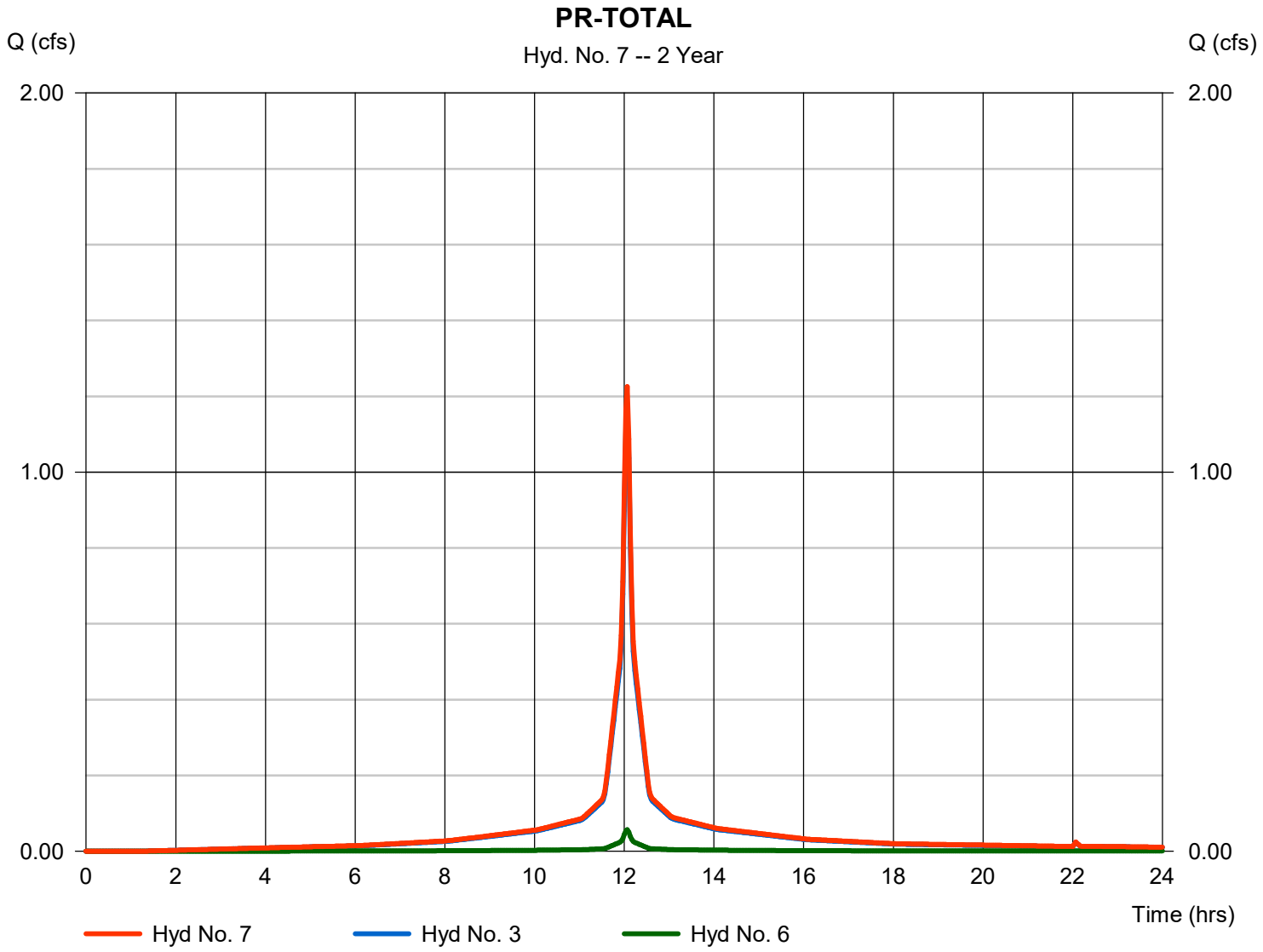


Hydrograph Report

Hyd. No. 7

PR-TOTAL

Hydrograph type	= Combine	Peak discharge	= 1.226 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 4,149 cuft
Inflow hyds.	= 3, 6	Contrib. drain. area	= 0.000 ac



Hydrograph Report

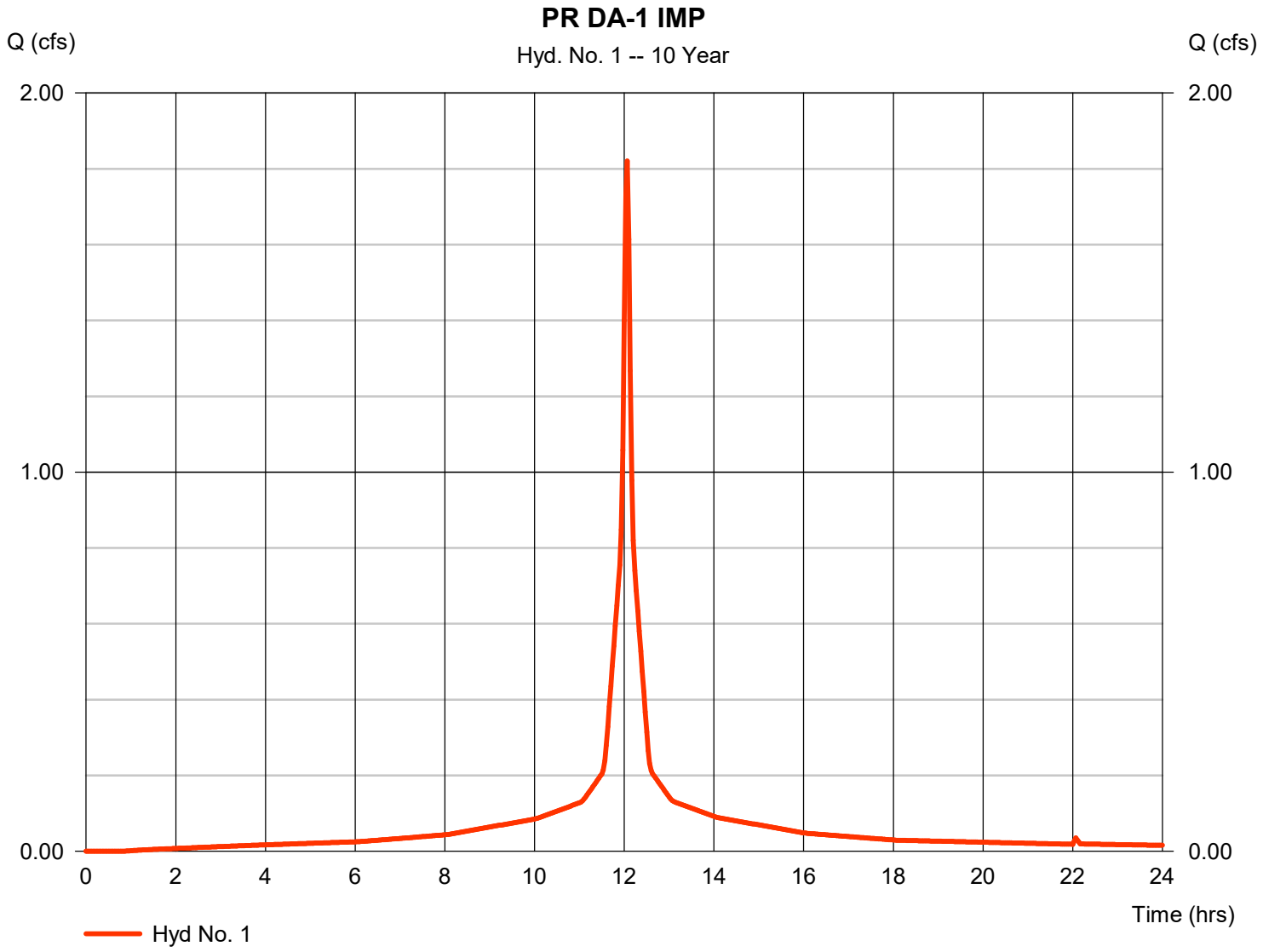
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 07 / 31 / 2020

Hyd. No. 1

PR DA-1 IMP

Hydrograph type	= SCS Runoff	Peak discharge	= 1.821 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 6,270 cuft
Drainage area	= 0.369 ac	Curve number	= 98*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 5.23 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.113 x 98) + (0.117 x 76) + (0.336 x 39)] / 0.369

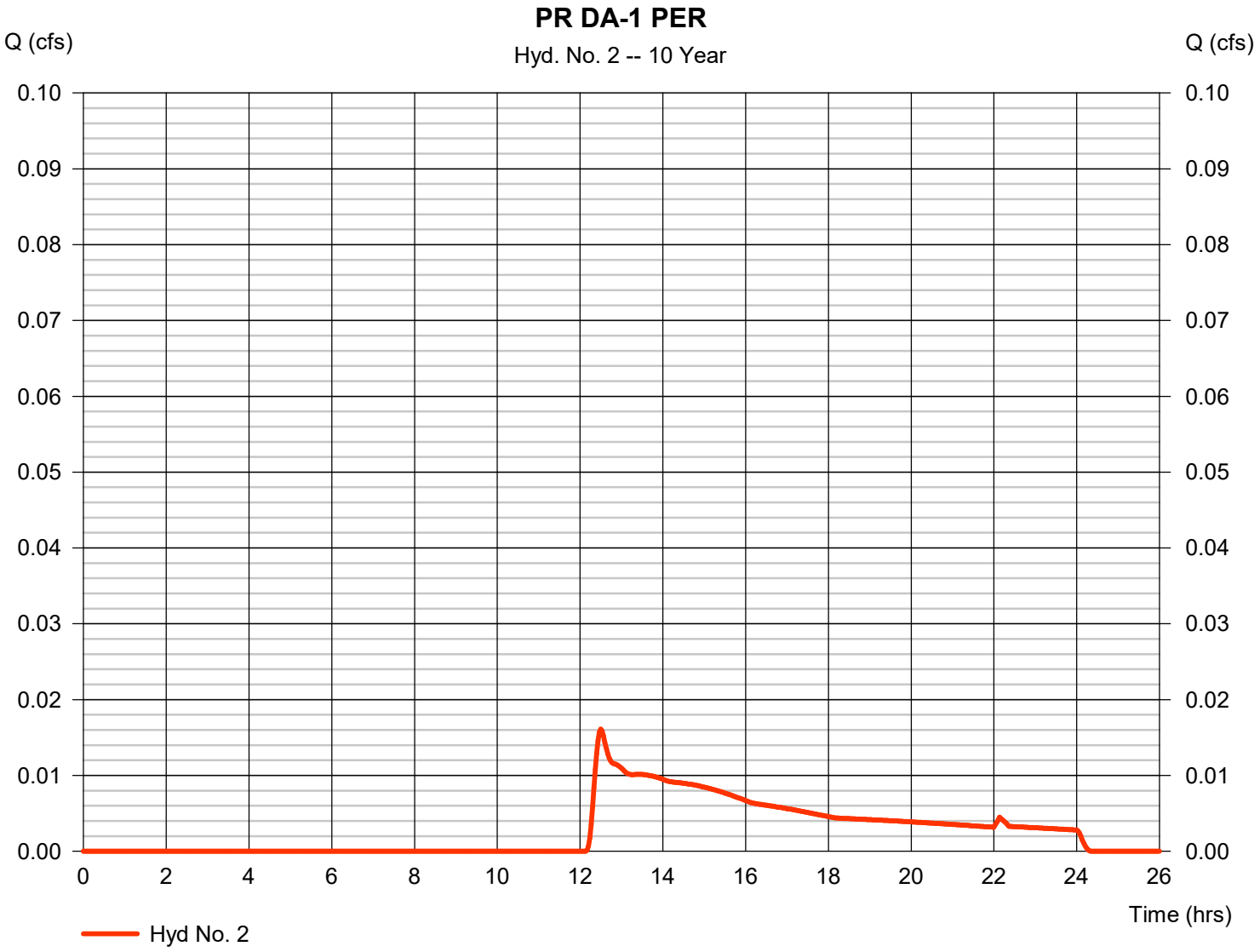


Hydrograph Report

Hyd. No. 2

PR DA-1 PER

Hydrograph type	= SCS Runoff	Peak discharge	= 0.016 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.50 hrs
Time interval	= 2 min	Hyd. volume	= 249 cuft
Drainage area	= 0.267 ac	Curve number	= 39
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.00 min
Total precip.	= 5.23 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

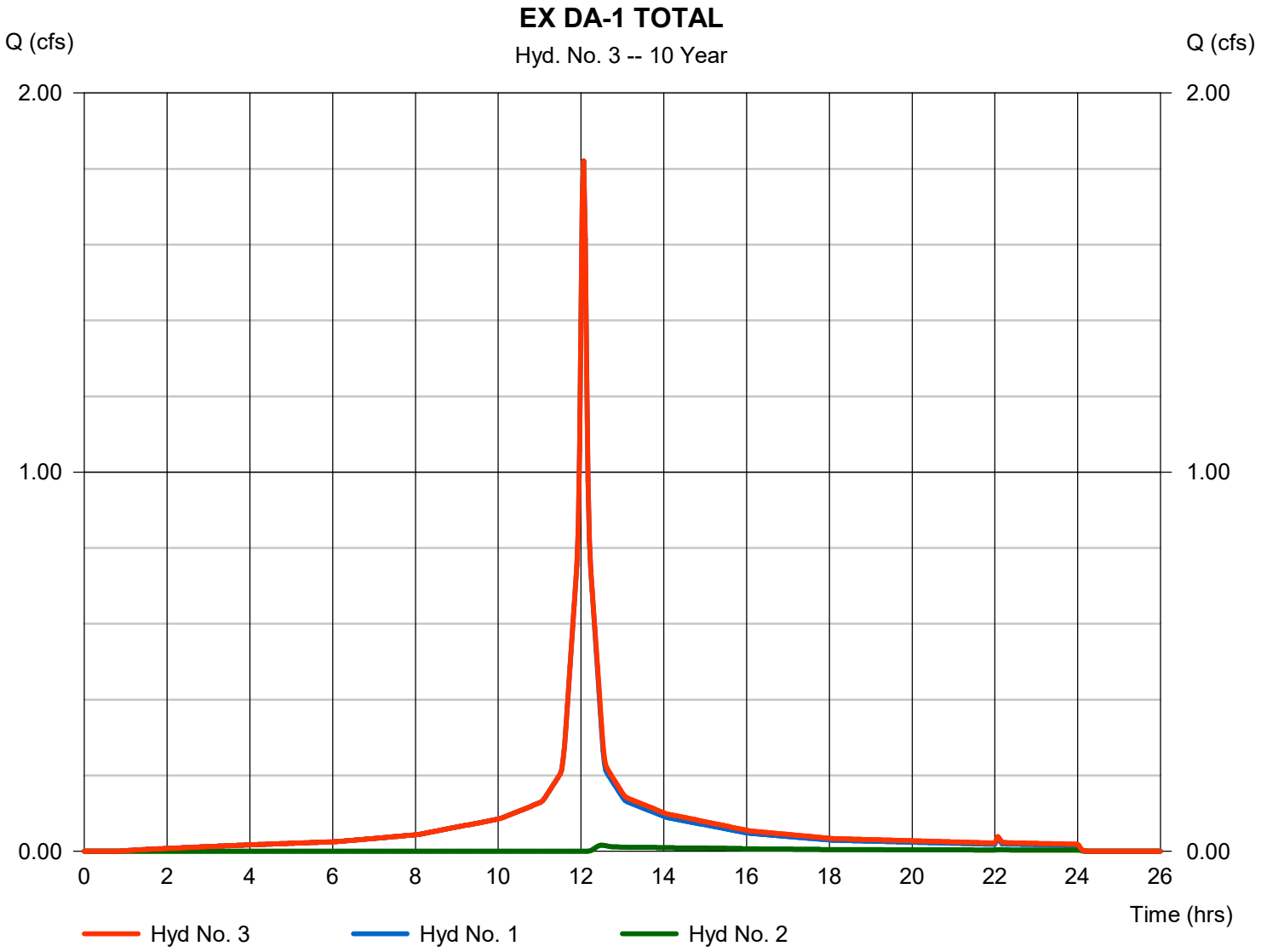


Hydrograph Report

Hyd. No. 3

EX DA-1 TOTAL

Hydrograph type	= Combine	Peak discharge	= 1.821 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 6,519 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 0.636 ac



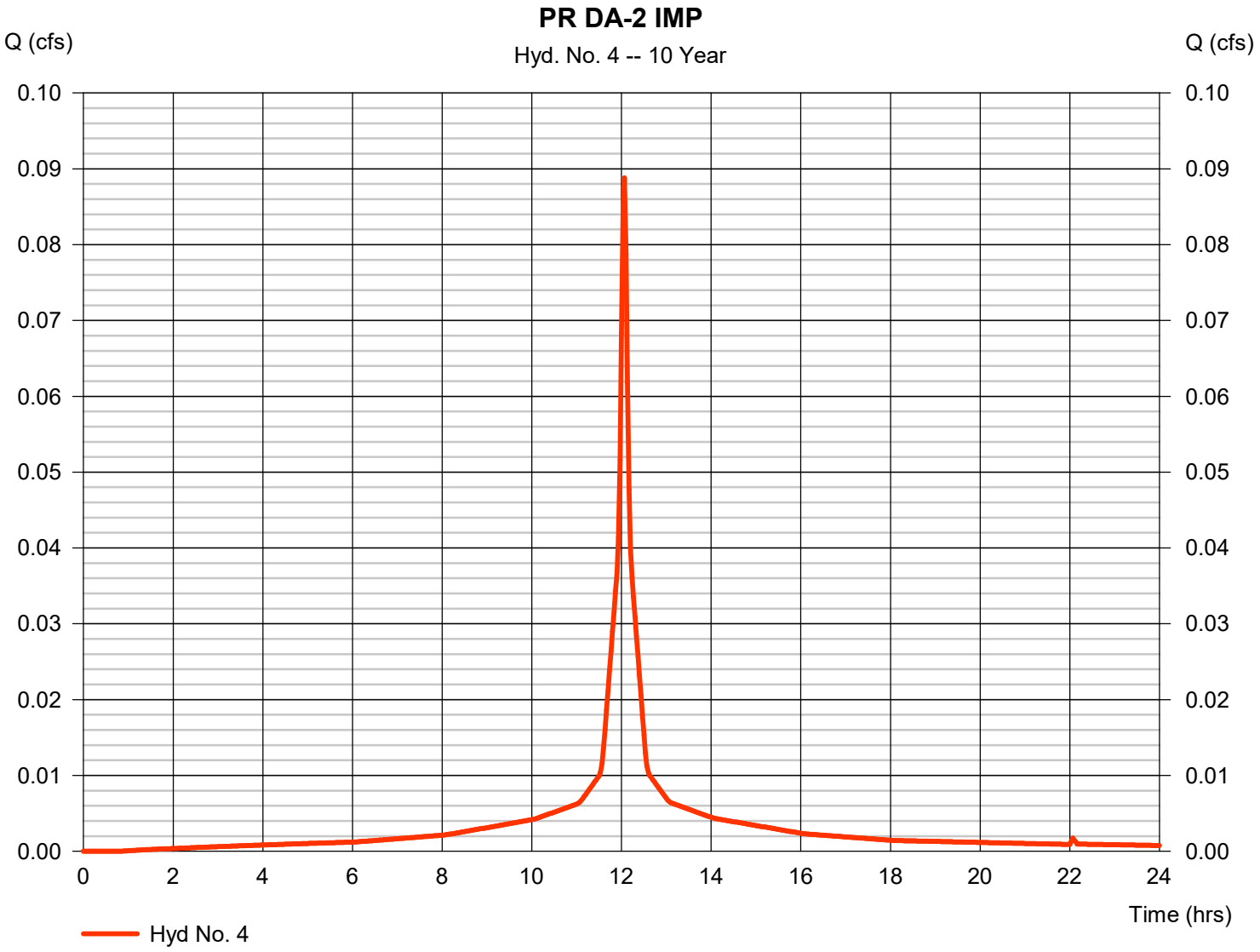
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 07 / 31 / 2020

Hyd. No. 4

PR DA-2 IMP

Hydrograph type	= SCS Runoff	Peak discharge	= 0.089 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 306 cuft
Drainage area	= 0.018 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 5.23 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



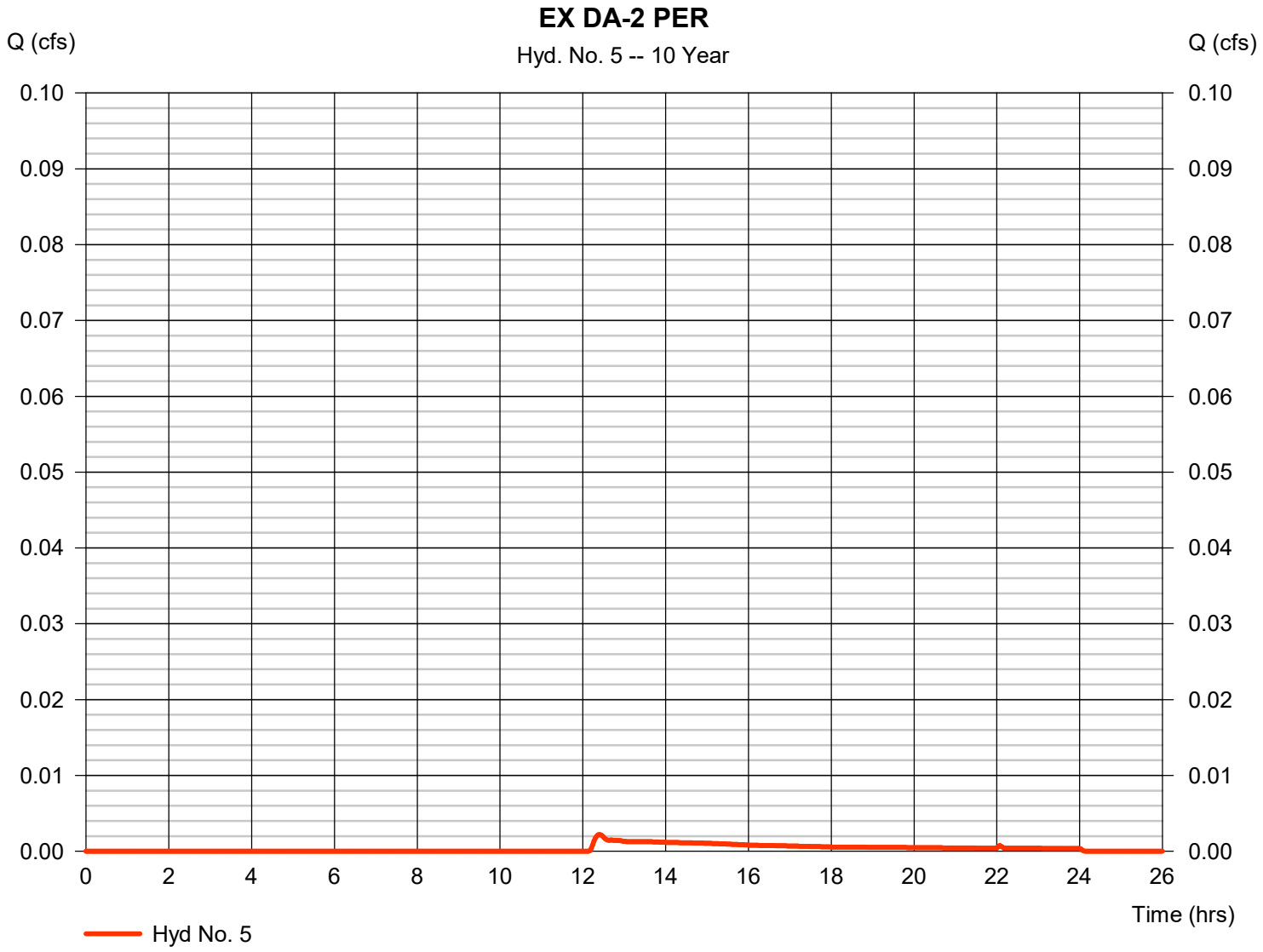
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 07 / 31 / 2020

Hyd. No. 5

EX DA-2 PER

Hydrograph type	= SCS Runoff	Peak discharge	= 0.002 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.40 hrs
Time interval	= 2 min	Hyd. volume	= 31 cuft
Drainage area	= 0.037 ac	Curve number	= 39
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 5.23 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

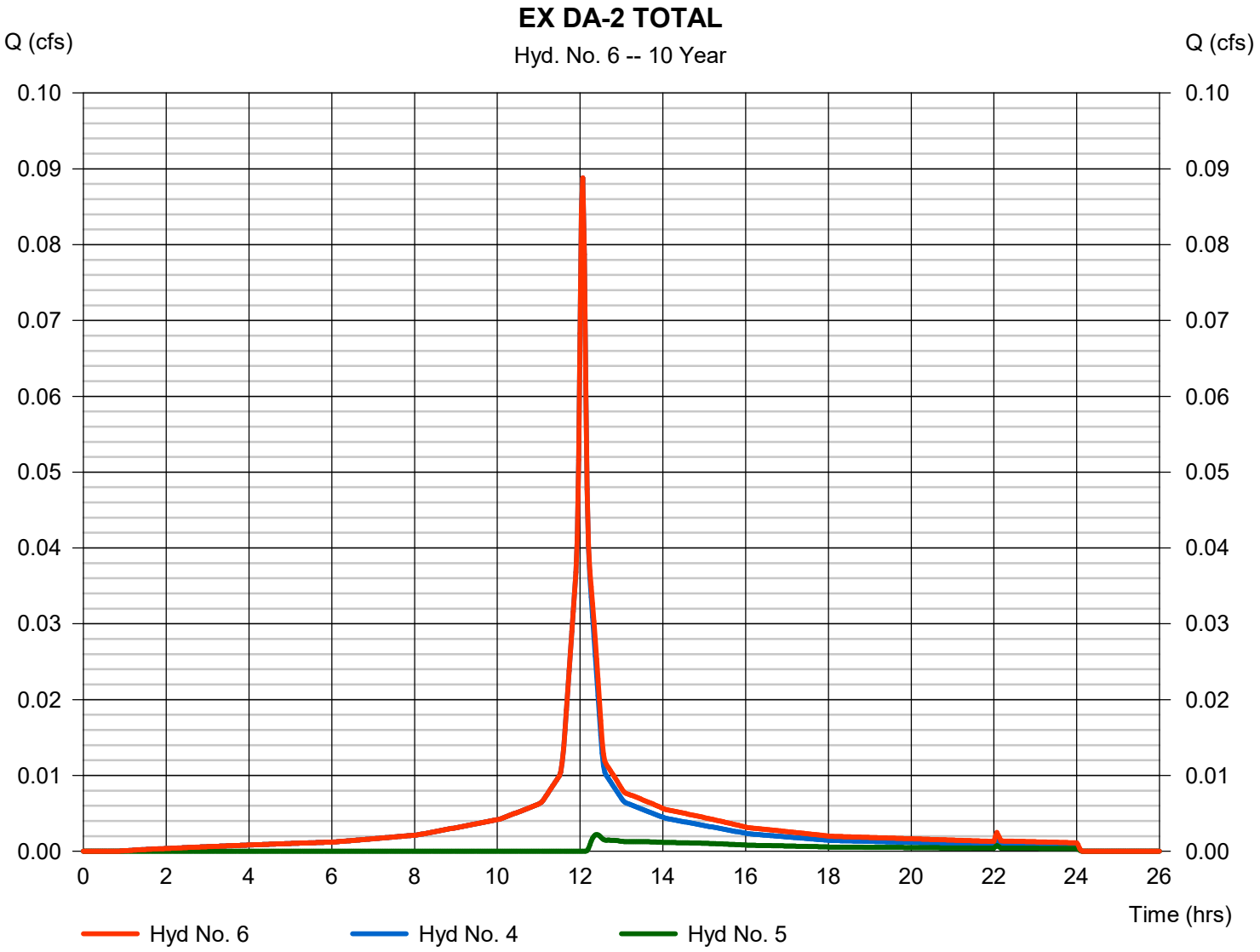


Hydrograph Report

Hyd. No. 6

EX DA-2 TOTAL

Hydrograph type	= Combine	Peak discharge	= 0.089 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 337 cuft
Inflow hyds.	= 4, 5	Contrib. drain. area	= 0.055 ac



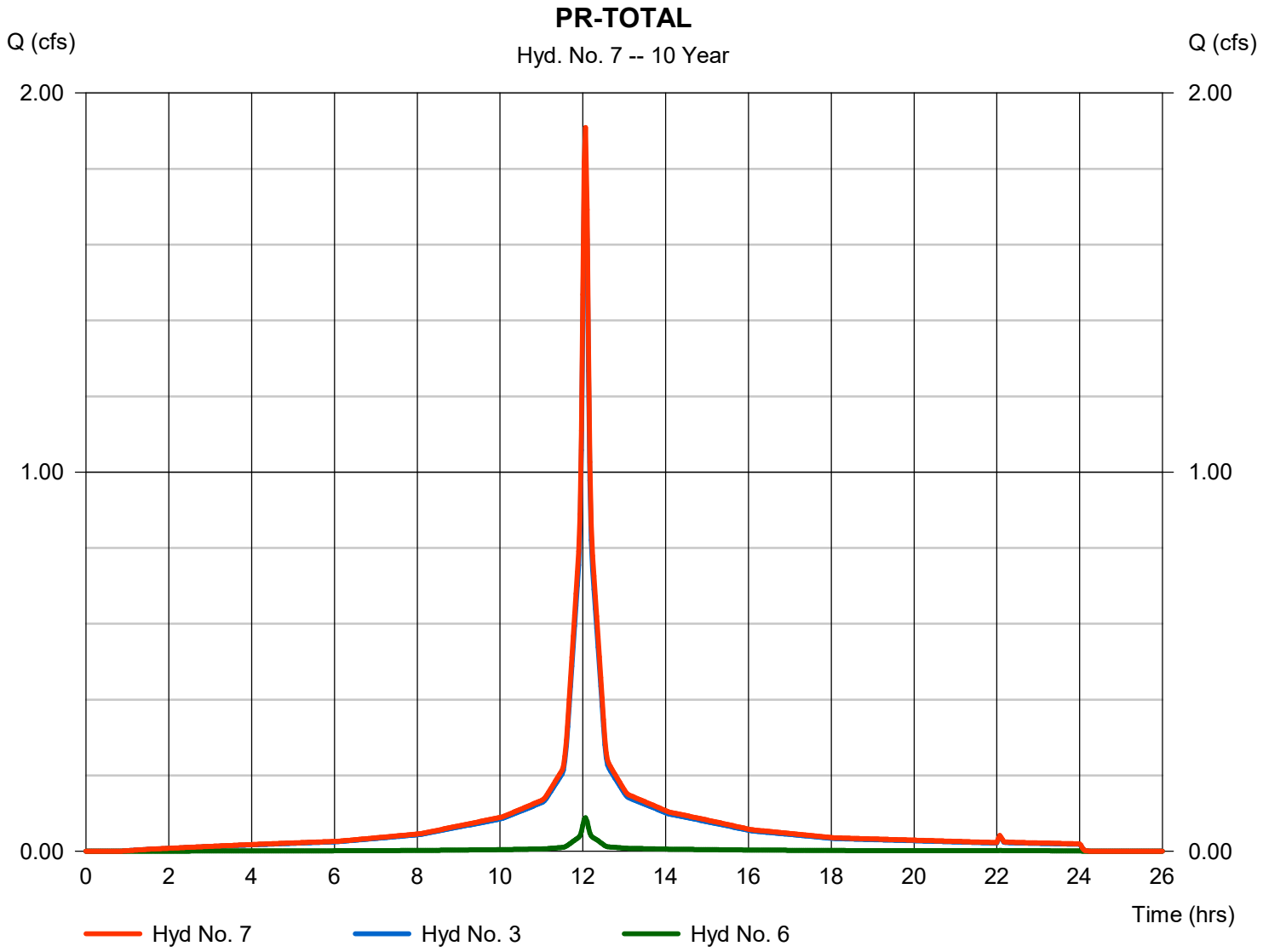
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 07 / 31 / 2020

Hyd. No. 7

PR-TOTAL

Hydrograph type	= Combine	Peak discharge	= 1.909 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 6,856 cuft
Inflow hyds.	= 3, 6	Contrib. drain. area	= 0.000 ac



Hydrograph Report

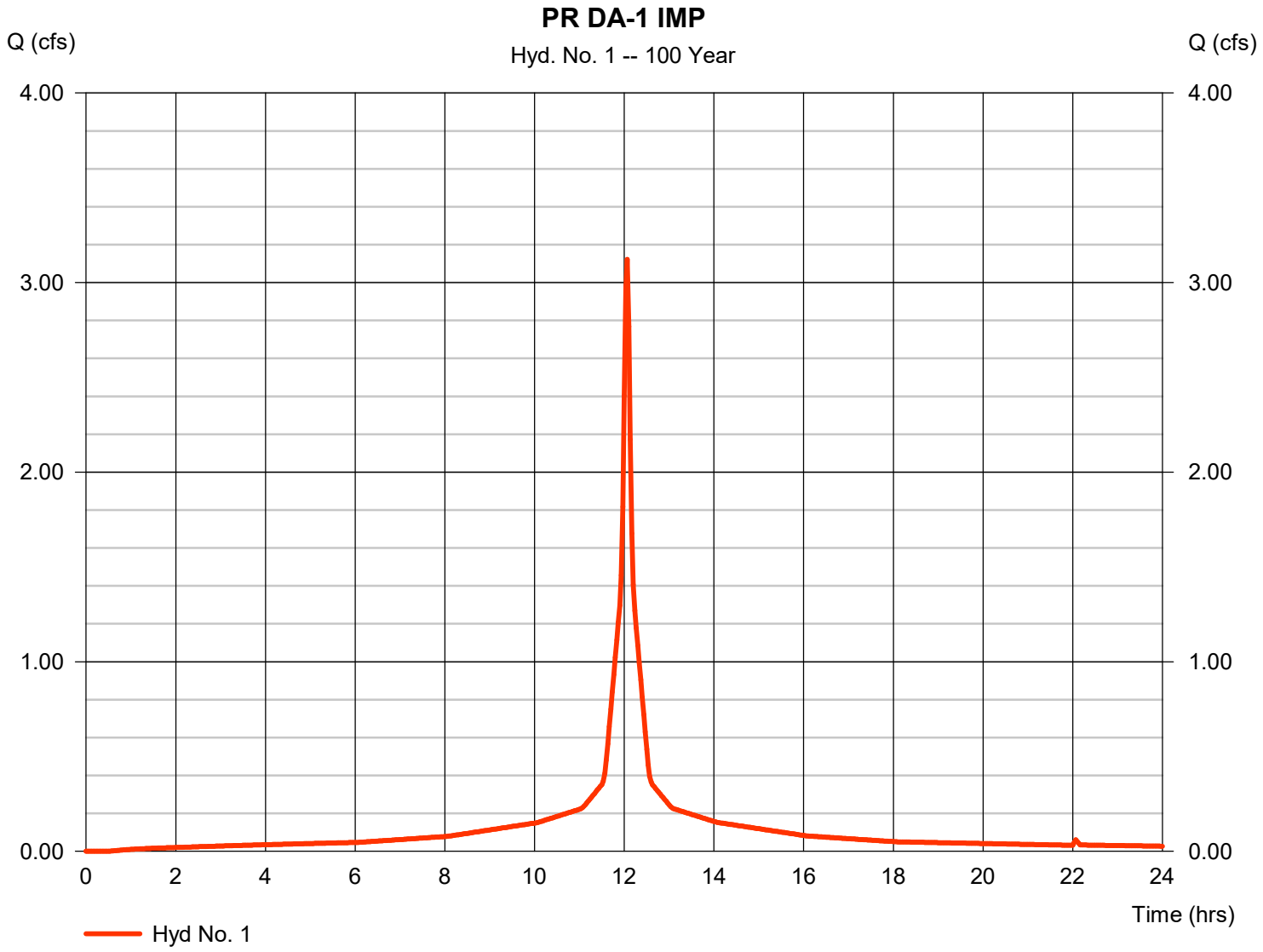
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 07 / 31 / 2020

Hyd. No. 1

PR DA-1 IMP

Hydrograph type	=	SCS Runoff	Peak discharge	=	3.123 cfs
Storm frequency	=	100 yrs	Time to peak	=	12.07 hrs
Time interval	=	2 min	Hyd. volume	=	10,925 cuft
Drainage area	=	0.369 ac	Curve number	=	98*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.00 min
Total precip.	=	8.94 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.113 x 98) + (0.117 x 76) + (0.336 x 39)] / 0.369



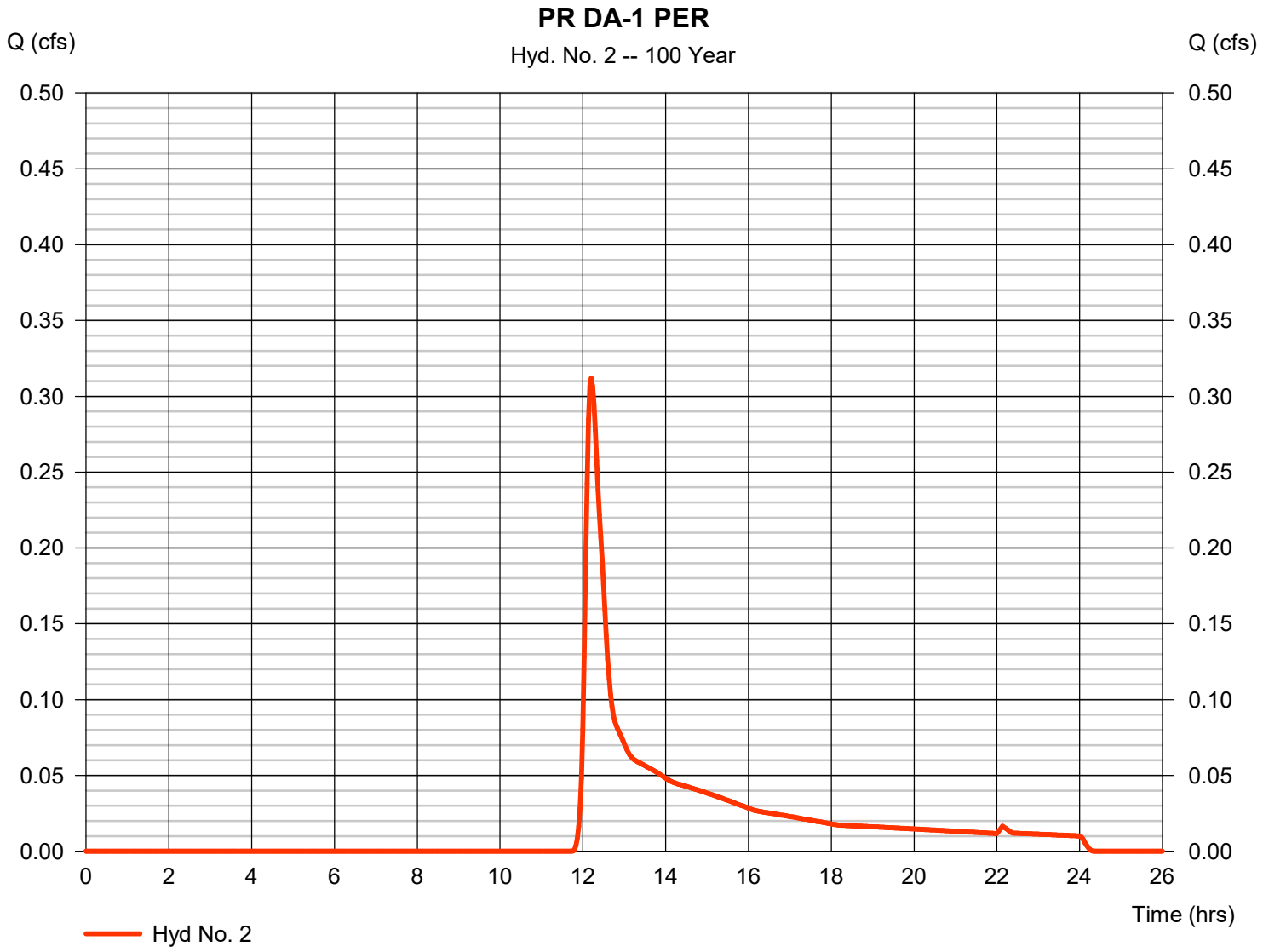
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 07 / 31 / 2020

Hyd. No. 2

PR DA-1 PER

Hydrograph type	= SCS Runoff	Peak discharge	= 0.312 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 1,574 cuft
Drainage area	= 0.267 ac	Curve number	= 39
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.00 min
Total precip.	= 8.94 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

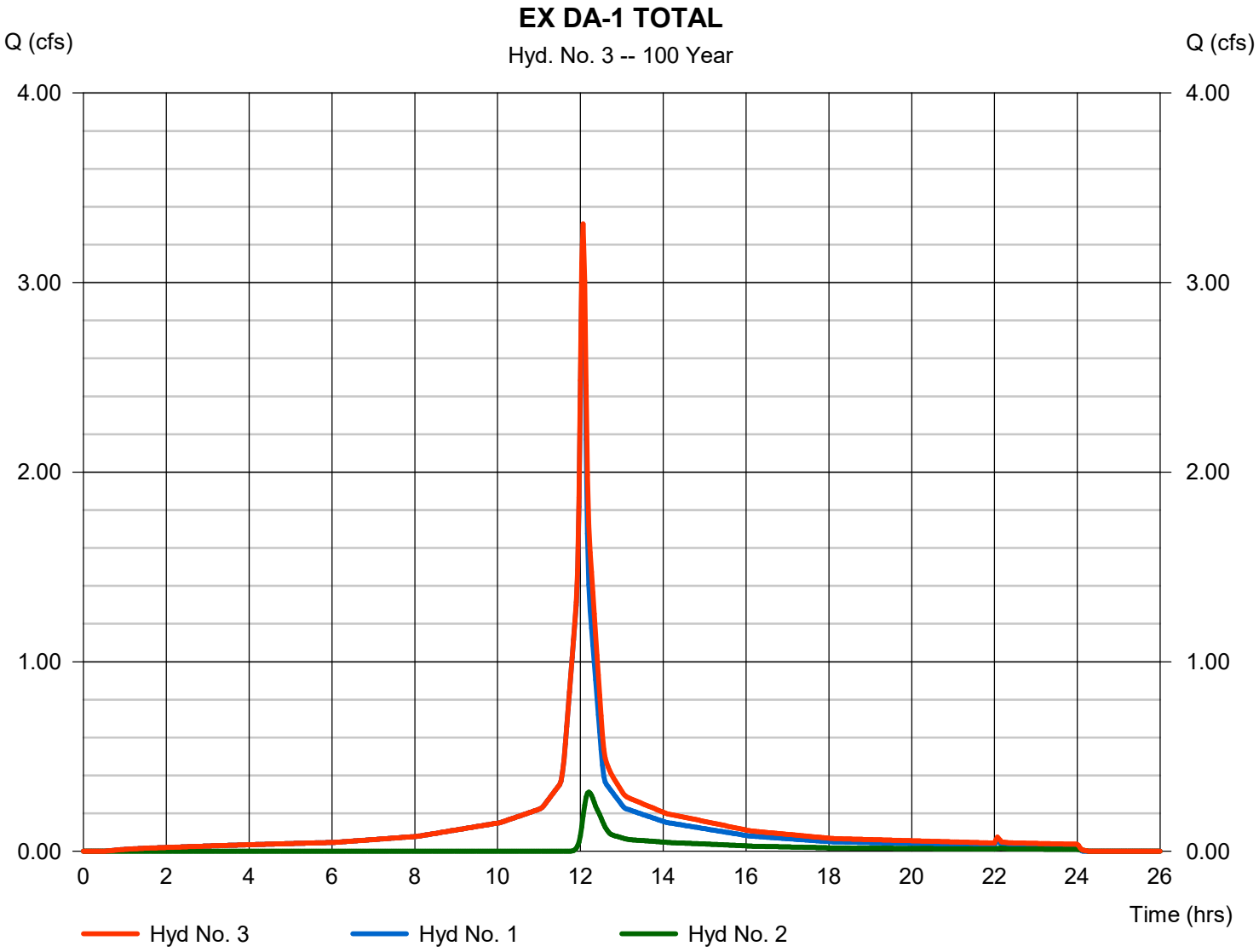


Hydrograph Report

Hyd. No. 3

EX DA-1 TOTAL

Hydrograph type	= Combine	Peak discharge	= 3.309 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 12,498 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 0.636 ac

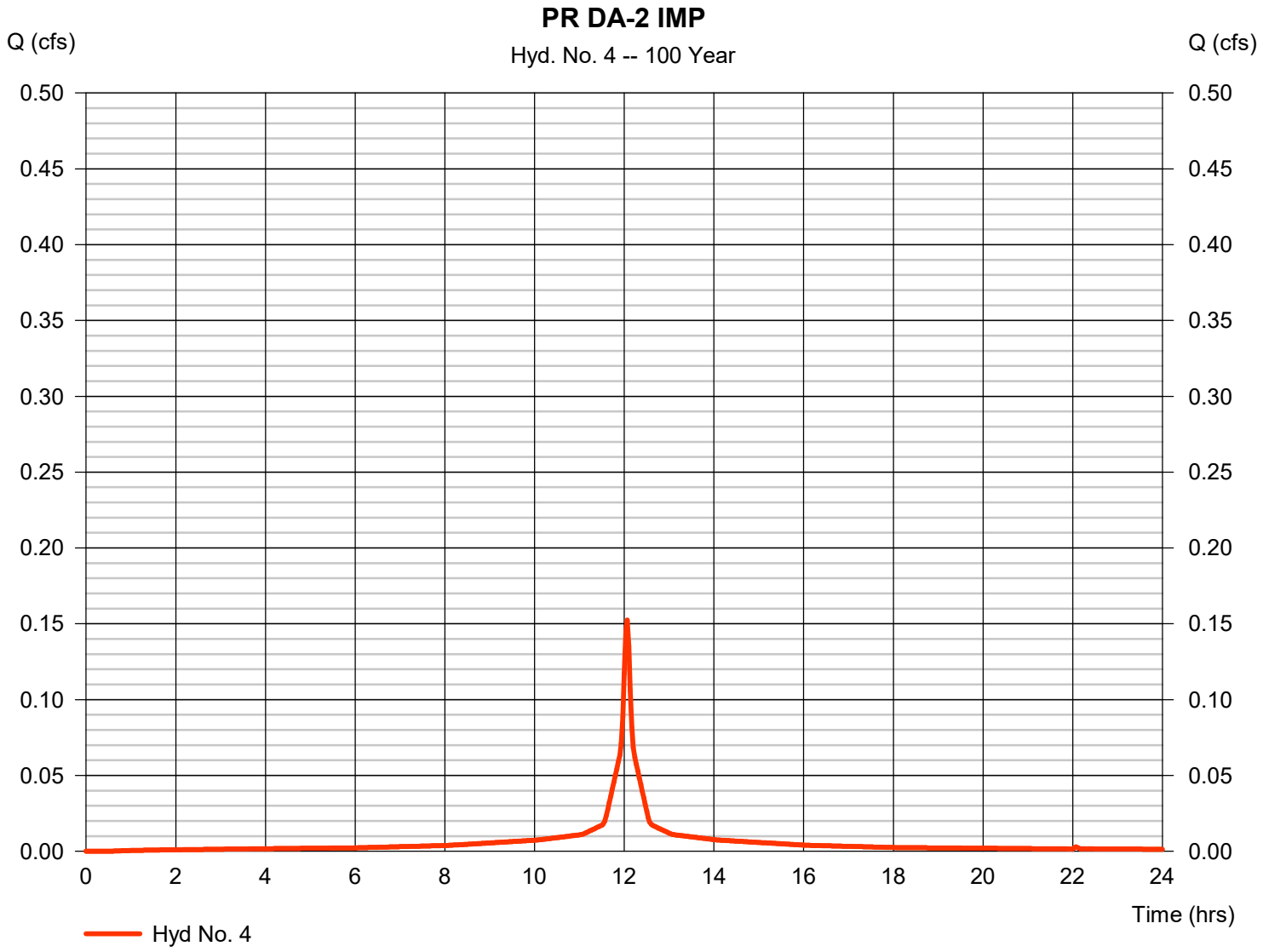


Hydrograph Report

Hyd. No. 4

PR DA-2 IMP

Hydrograph type	= SCS Runoff	Peak discharge	= 0.152 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 533 cuft
Drainage area	= 0.018 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 8.94 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



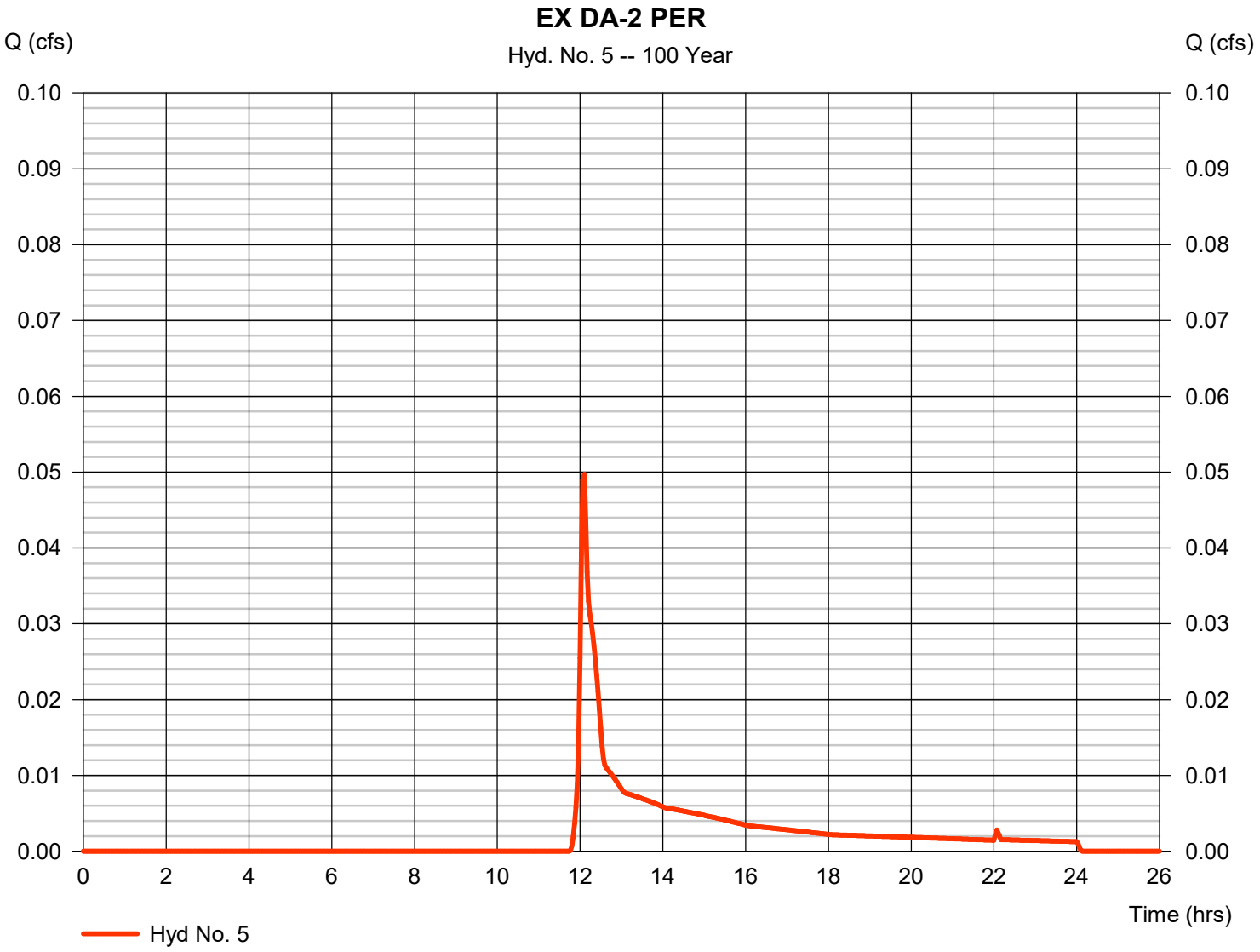
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 07 / 31 / 2020

Hyd. No. 5

EX DA-2 PER

Hydrograph type	= SCS Runoff	Peak discharge	= 0.050 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 198 cuft
Drainage area	= 0.037 ac	Curve number	= 39
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 8.94 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

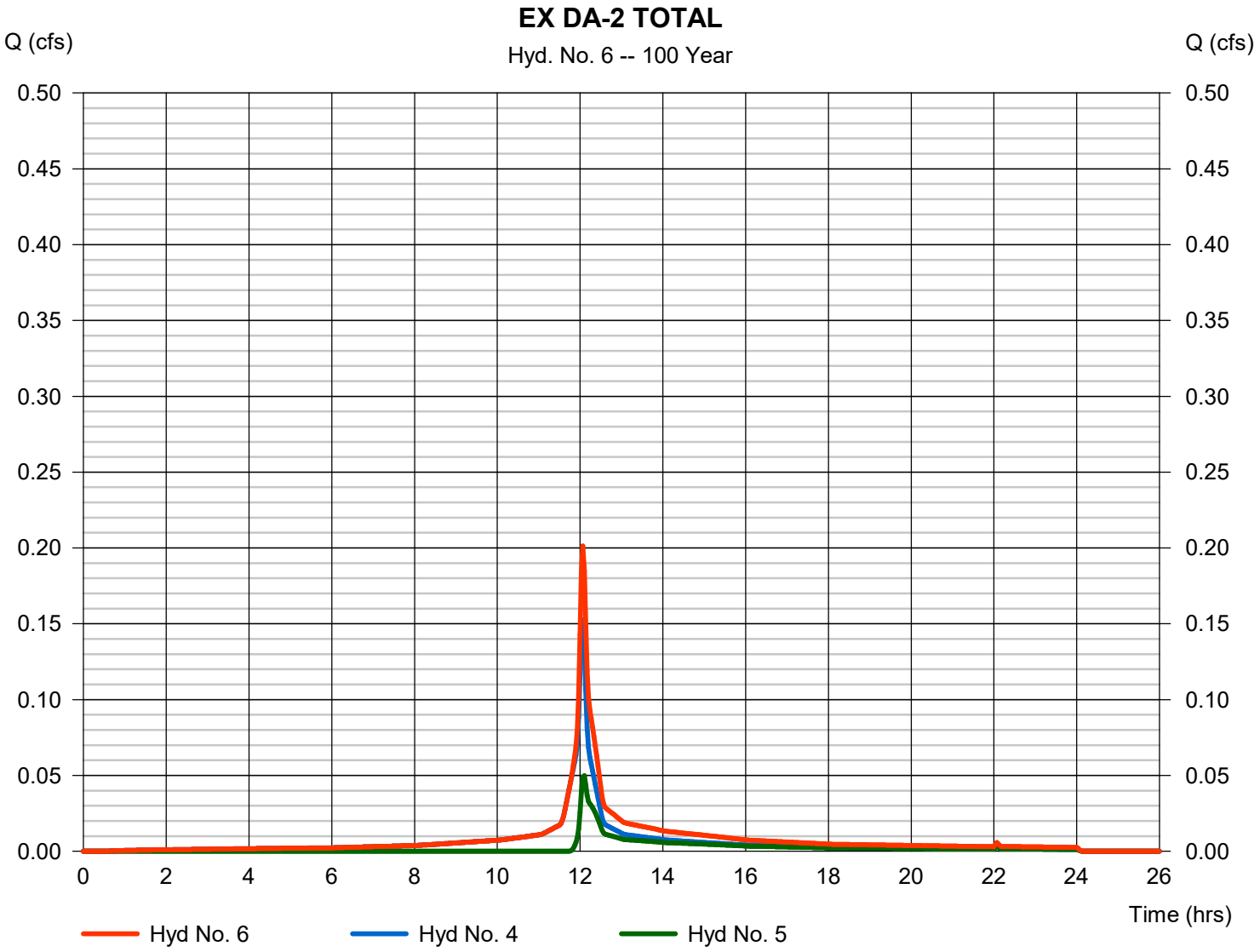


Hydrograph Report

Hyd. No. 6

EX DA-2 TOTAL

Hydrograph type	= Combine	Peak discharge	= 0.201 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 731 cuft
Inflow hyds.	= 4, 5	Contrib. drain. area	= 0.055 ac

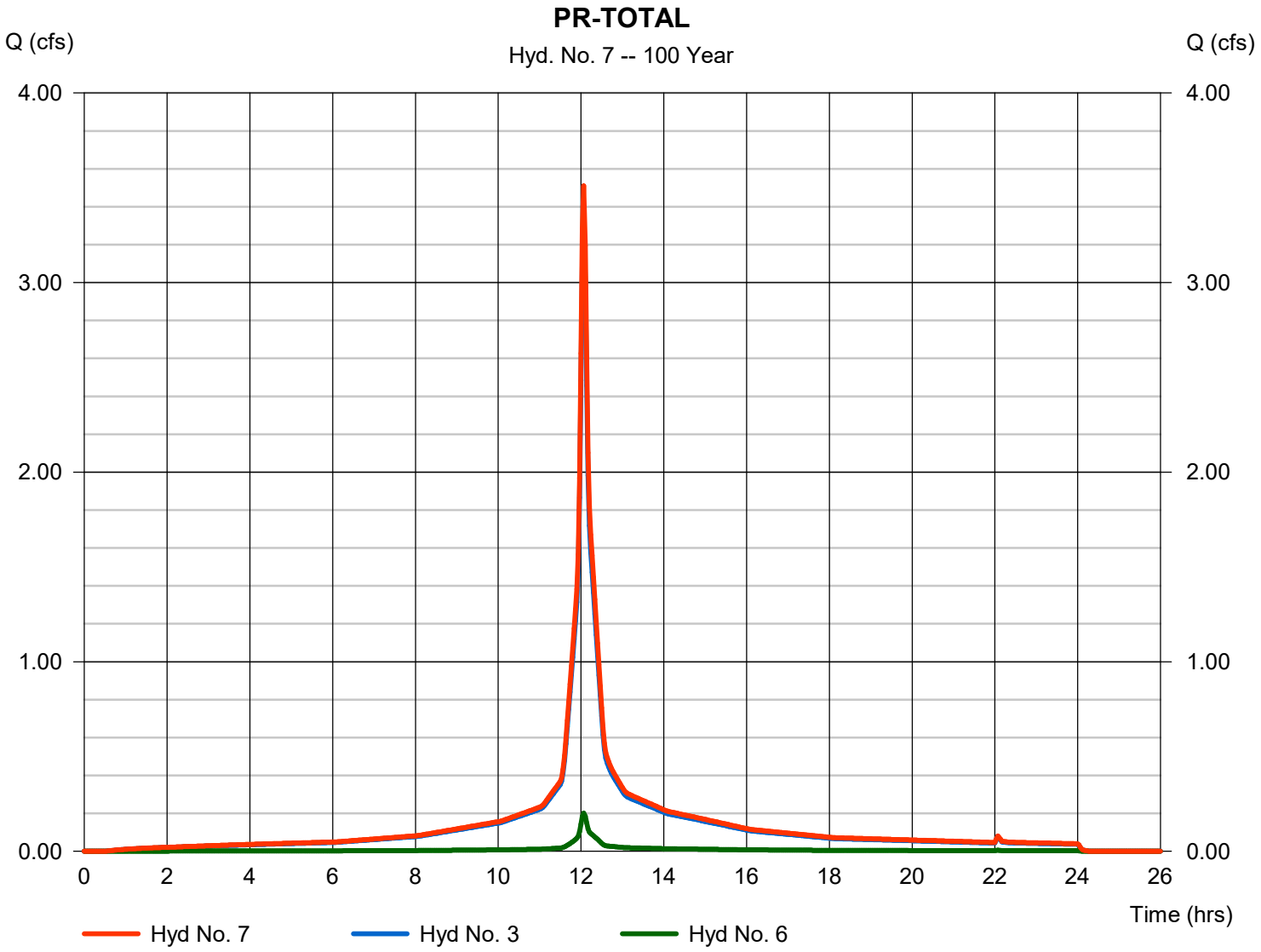


Hydrograph Report

Hyd. No. 7

PR-TOTAL

Hydrograph type	= Combine	Peak discharge	= 3.510 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 13,229 cuft
Inflow hyds.	= 3, 6	Contrib. drain. area	= 0.000 ac



Appendix D

- Existing and Proposed Drainage Area map

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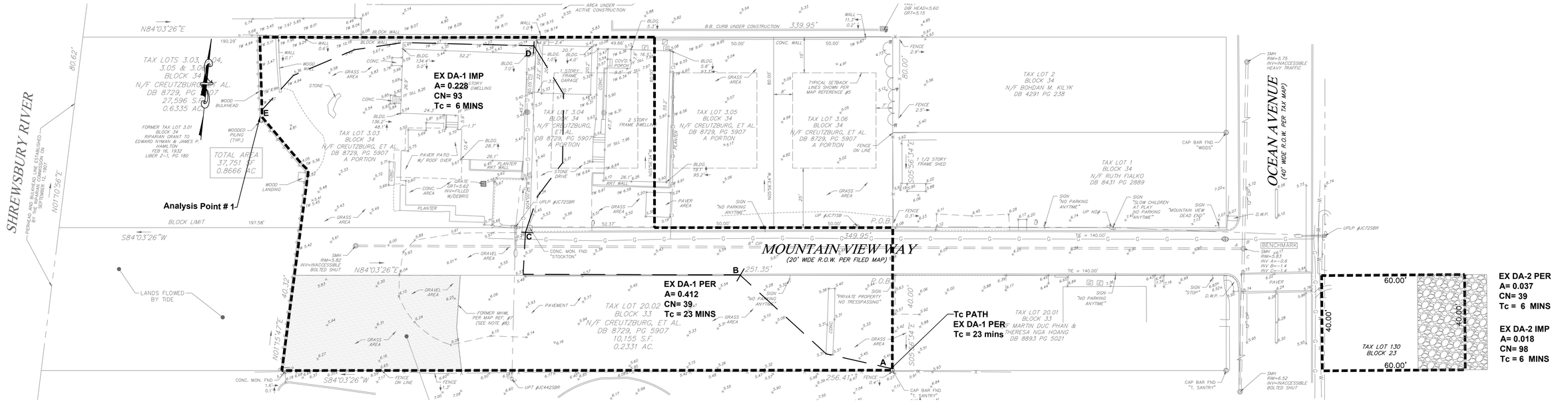
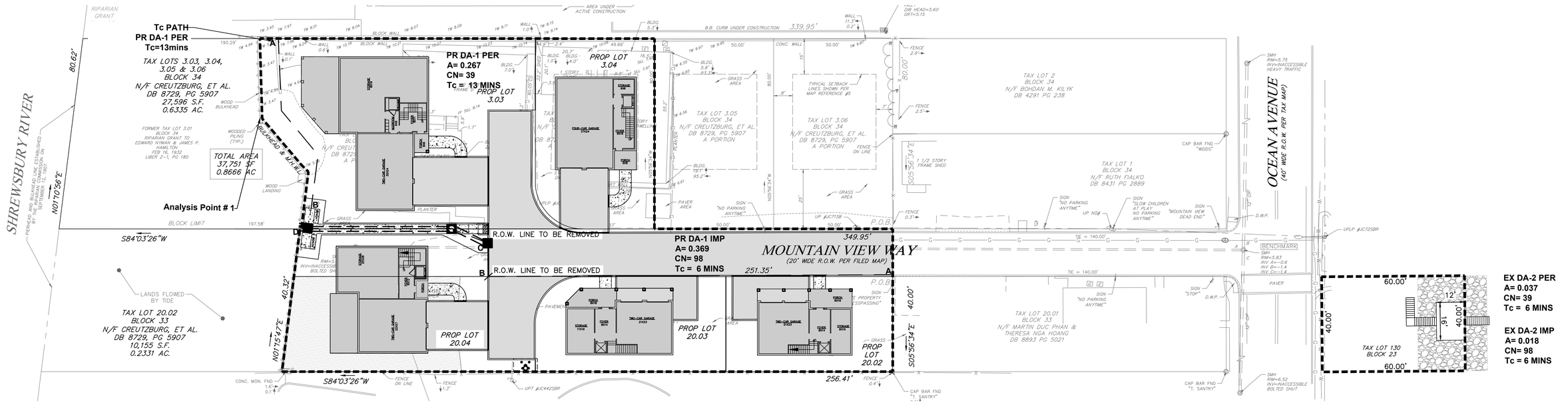


EXISTING DRAINAGE AREA MAP



PROPOSED DRAINAGE AREA MAP

GRAPHIC SCALE
20 0 10 20
(IN FEET)
1 inch = 20 ft.

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: PAS
DRAWN BY: PAS
SHEET CHK'D BY: JJF
CROSS CHK'D BY: MCM
APPROVED BY: JJF
DATE: JUNE 12, 2020

ENGENUITY INFRASTRUCTURE
GALLERIA: 2 BRIDGE AVE., SUITE 323
RED BANK, NJ 07701
732.741.3176
ENGENUITYNJ.COM

UTILITY, CONSTRUCTION, & DIMENSION PLAN
TAX BLOCK 33, LOT 20.02, TAX BLOCK 34, LOTS 3.03 & 3.04, TAX BLOCK 23, LOT 130
BOROUGH OF SEA BRIGHT
MONMOUTH COUNTY, NJ

OWNER / DEVELOPER / APPLICANT:
MOUNTAIN VIEW VILLAS AT SEA BRIGHT, LLC
754 HYSLIP AVENUE
WESTFIELD, NJ 07090
(908) 264-8016

JACLYN J. FLOR, P.E., P.P., C.M.E
CONSULTING ENGINEER
LICENSED PROFESSIONAL ENGINEER
STATE OF NJ LICENCE NO. 24GE045426
CERTIFICATE OF AUTHORIZATION 24GA28268000

06/12/2020
DATE

PROJECT NO. MUHL-00010
DRAWING
DA
SHEET NO.
1 OF 1

NOT FOR CONSTRUCTION

FILE NAME: N:\Muhlgeier\MUHL-00010\Calculations and Reports\Drainage\MUHL-00010_Drainage Area Map.dwg