

141 Danbury Road
Wilton, Connecticut

ENGINEERING REPORT

Prepared For:

FDSPIN 141 DR, LLC
1 North Water Street, Suite 100
South Norwalk, CT 06854

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Section 1

Introduction and Site Conditions

Tighe & Bond has prepared this report at the request of FDSPIN 141 DR LLC ("Applicant"), to support their applications to the Town of Wilton Planning & Zoning Commission and Inlands Wetlands Commission for a proposed 4½ story multi-family residential building with 173 apartments.

The project site is located on a 4.28-acre parcel bounded by Danbury Road to the east, the Norwalk River to the west, and commercial properties to the north and south. The proposed development consists of the construction of a 173-unit residential building, at-grade parking, stormwater management systems, utility services, lighting, and associated landscaping. Refer to **Figure 1**, Site Location Map, in **Appendix A**.

Tighe & Bond has inspected the property and analyzed available soils, drainage, utility, wetland, and topographic information. Drainage calculations and stormwater management design have been prepared in accordance with the 2000 Connecticut Department of Transportation (CTDOT) Drainage Manual, and the Connecticut Department of Energy and Environmental (DEEP) Protection 2004 Stormwater Quality Manual. The drainage calculations include a hydrologic and hydraulic analysis of the existing conditions and the proposed development. Specifically, the calculations include an analysis of the on-site stormwater management measures and their performance in handling peak flow attenuation and pollutant removals. The report also includes a summary of the site floodplain management, the available existing and proposed utilities to serve the property, and the proposed soil erosion and sedimentation control measures incorporated during construction.

1.1 Existing Conditions

The existing site consists of a 47,000 square foot commercial building with at-grade parking. The 4.28-acre parcel is located within Wilton's DE-5 Design Enterprise District Zone. A significant portion of the site is impervious with paved parking areas, sidewalks, and building, with landscaping and lawns generally around the perimeter of the site. Utility services to the site include underground water, natural gas, overhead electric, and tele-data, connecting to service mains in Danbury Road.

The site is located on Danbury Road (Route 7) which is a north-south three lane State maintained major arterial roadway. The roadway is generally 40 feet wide along the frontage of the site with two lanes northbound and one lane southbound.

The topography of the site generally slopes from east to west towards the Norwalk River. Due to the lack of drainage structures within the property, stormwater runoff flows overland across the paved and landscaped surfaces. The Norwalk River runs adjacent to the western edge of the property, flowing from north to south. Approximately one third of the property lies within the Special Flood Hazard Zone AE of the Norwalk River.

1.2 Project Proposal

The proposed 4½ story multi-family residential building will be home to 173 apartments consisting of one-bedroom (37), two-bedroom (122), and three-bedroom (14) units. The

proposed building is situated in the central portion of the site, with driveway and parking areas along the northern and southern sides. The ground floor will include surface parking spaces (covered and uncovered) as well as utility/trash rooms and building access points. All uncovered parking will be screened from view by landscaping. The existing driveway into the property will be widened to accommodate the traffic to and from the site, with dedicated turning lanes onto Danbury Road. The western end of the property will be converted into green space with associated landscaping and walking paths along the Norwalk River. New utility services to the property are proposed including underground water, natural gas, electric, and tele-data.

Stormwater management will be accommodated on-site. Surface runoff will be collected in catch basins and inlet structures located throughout the site. Underground infiltration and porous pavement systems have been designed to reduce peak flows and provide stormwater treatment, prior to discharge into the Norwalk River. The stormwater management system has been designed to treat the water quality volume and remove a high level of pollutants.

1.3 Site Soils

The U.S. Department of Agriculture's National Resource Conservation Service (NRCS) Web Soil Survey indicates the following soil types are present on the site:

Urban Land (307): Urban land is mostly covered by streets, parking lots, buildings, and other structures of urban areas. Slopes range from 0 to 45 percent. No drainage class is assigned, and the complex does not meet hydric criteria.

Rippowam Fine Sandy Loam (103): This series consist of very deep, poorly drained loamy soils formed in alluvial sediments. They are nearly level soils on flood plains subject to frequent flooding. Slope ranges from 0 to 3 percent.

A copy of the NRCS Soil Resource Report is included in **Appendix B** of this report.

Soil permeability for the site was estimated to be 2 inches per hour for the design of the proposed stormwater management systems. Estimates were conservative based on the soil classifications observed in the soil exploration program previously performed on site by GZA Environmental, LLC. Permeability estimates will be confirmed in the field prior to the completion of construction documents. See **Appendix B** of this report for boring logs and observed groundwater elevations.

1.4 Wetlands

Wetlands soils were delineated and flagged by William Kenny Associates LLC, William L. Kenny, soil scientist on March 15, 2021 and located in the field by D'Andrea Surveying & Engineering, P.C. Wetland flags and limits are depicted on the project drawing sheets.

Section 2

Stormwater Management

2.1 Existing Site Hydrologic Analysis

To review the impact of the proposed development on the existing site, an existing conditions hydrologic analysis was performed. Under existing conditions, stormwater runoff from the site generally flows from east to west towards the Norwalk River. Since there are no catch basins or inlet structures on the existing site, runoff flows overland and discharges to the river at the western end of the site. The edge of the river along the property has been designated as the design point for the analysis. The drainage area of the existing site has been delineated into sub-watershed areas. The Existing Conditions Watershed Map (Figure WM-01) is included in **Appendix C** of this report.

Impervious and pervious areas, weighted curve number, and time of concentration were calculated for each watershed area and developed into hydrologic model to determine the project's peak flow and volume, as part of the comparative hydrology analysis. Precipitation data for the hydrologic modeling were developed from NOAA's Atlas 14 Point Precipitation Frequency Estimates online utility. The site specific precipitation depths for a 24-hour durations storm are shown in **Table 2-1**.

Table 2-1
24-hour Duration Precipitation Depth

	2-Year	10-Year	25-Year	50-Year	100-Year
Depth (in)	3.54	5.40	6.57	7.44	8.37

A breakdown of existing watershed areas, existing volumetric hydrographs, and existing watershed map are included in **Appendix C** of this report.

2.1.1 Floodplain Management

The Federal Emergency Management Agency's Flood Insurance Rate Map (FIRM) for Fairfield County, effective June 18, 2010 and revised October 16, 2013 shows a portion of the site within the floodway and Zone AE of the Norwalk River, as shown in **Figure 2** in **Appendix A**. Refer to **Section 3 Floodplain Management & Hydraulics** of this report for additional information.

2.2 Proposed Site Hydrologic and Hydraulic Analysis

A stormwater management system has been designed for the proposed development to reduce peak flows and improve water quality for the site. The proposed drainage system consists of catch basins and inlets throughout the development site as well as water quality structures, underground infiltration systems, porous pavement systems, and outlet protection. The stormwater management system will maintain existing drainage patterns and utilize Best Management Practices for stormwater treatment.

Under proposed conditions, drainage patterns will generally remain the same, flowing in a westerly direction and ultimately discharging to the Norwalk River. Drainage structures

have been located throughout the site to collect stormwater runoff from paved and landscaped surfaces. Due to the location of the proposed building in the central portion of the site, the drainage system has been split into northern and southern systems around the building. Infiltration systems and porous pavement systems have been designed and located on either side of the proposed building, promoting infiltration and treatment of the stormwater runoff. These systems converge into a single outlet pipe located at the western end of the building, with a single outlet located at the southwestern corner of the site. A riprap apron and level spreader have been designed to reduce outlet velocities and provide erosion control prior to discharge to the Norwalk River.

2.2.1 Proposed Site Hydrology

The proposed conditions hydrologic analysis consists of sub-watershed areas at each inlet structure of the development property. For each proposed watershed area, weighted curve numbers and times of concentration were calculated and utilized in the proposed conditions hydrologic model. The infiltration and porous pavement systems were also modeled to determine the effectiveness in reducing peak discharges from the site.

Table 2-2 provides a summary of the peak discharges under existing and proposed conditions for the 2, 10, 25, 50, and 100 year storm events.

Table 2-2
Summary of Stormwater Peak Discharge (cfs)

Discharge Location	Condition	Storm Frequency (Years)				
		2	10	25	50	100
Norwalk River	Existing	7.662	13.50	17.25	20.05	23.05
	Proposed	1.636	6.762	10.69	13.64	17.35

The proposed conditions watershed map, curve number and time of concentration worksheets, and volumetric hydrographs are included in **Appendix D**.

2.2.2 Water Quality Volume

The water quality volume (WQV) is equivalent to the first inch of runoff from the site that should be captured and treated in order to remove a majority of stormwater pollutants on an average annual basis. For the proposed development, the infiltration and porous pavement systems have been designed to provide the required WQV. **Table 2-3** summarizes the required and provided WQV for the site.

Table 2-3
Summary of Water Quality Volume (cu ft)

Required WQV		10,603
Provided WQV	North Infiltration System	2,912
	South Infiltration System	4,284
	North Porous Pavement System	2,191
	South Porous Pavement System	1,415
Total Provided WQV		10,802

The water quality volume calculation sheets are included in **Appendix E**.

2.2.3 Hydraulic Capacity and Outlet Velocity

The stormwater collection system has been designed to convey the 25-year storm event as required by the CTDOT 2000 Drainage Manual. The system was designed by analyzing sub-areas corresponding to each inlet structure and calculating weighted runoff coefficients and times of concentration. These values were entered into a storm sewers model using Hydraflow Storm Sewers Extension for AutoCAD Civil 3D 2018, Version 2018.3. Based upon this analysis, the proposed storm system has the capacity to convey the 25-year storm event. At the outlet of the system, a riprap apron and level spreader have been designed to reduce outlet velocities and prevent scour along slopes. Hydraulic calculation worksheets and storm sewers output results are included in **Appendix F**.

2.3 Method of Hydrology and Hydraulic Analysis

The following storm drainage design criteria were used for all drainage pipe systems:

1. Design storm rainfall data from NOAA Atlas 14 Point Precipitation Frequency Estimates
2. Piped storm drainage system and the outlets are designed for a 25-year storm event.
3. Minimum time of concentration = 5 minutes
4. For SCS peak flow calculations, Curve Number were as follows:
 - a. Impervious (Pavement/Roof Areas) = 98
 - b. Landscaped and Lawn Areas = 69
5. For rational peak flow calculations, runoff coefficients were as follows:

- a. Impervious (Pavement/Roof) areas = 0.95
 - b. Landscaped and Lawn Areas = 0.30
- 6. Minimum diameter of pipes = 12 inches, excluding roof leaders, underdrains, yard drains and foundation drains
 - 7. Minimum pipe slope = 0.5 percent
 - 8. Watershed areas delineated using polylines in AutoCAD Civil 3D 2018.
 - 9. Comparative hydrology analyzed using Hydraflow Hydrographs Extension for AutoCAD Civil 3D 2018, Version 2018.3
 - 10. Storm drainage system analyzed using Hydraflow Storm Sewers Extension for AutoCAD Civil 3D 2018, Version 2018.3

2.4 Best Management Practices

The stormwater management plan for the proposed site uses "Best Management Practices" (BMPs) to remove a high percentage of sediments in accordance with the Connecticut Department of Energy and Environmental Protection "Stormwater General Permit Criteria".

The BMPs include:

Catch Basins and Yard Drains with Sumps: Catch basins and yard drains with sumps collect sediment and prevent discharge of oil and other pollutants into the storm drainage system. All new catch basins and yard drains on-site will have 24-inch sumps.

Hydrodynamic Separators: Hydrodynamic separators serve as pretreatment and prevent transport of oils and sediment further downstream. The proposed stormwater management system utilizes Contech CDS units prior to discharge into the underground infiltration systems. The Contech CDS units have been sized in accordance with the 2004 CTDEEP Stormwater Quality Manual. Sizing calculations are provided in **Appendix E**.

Underground Infiltration: Underground Infiltration serves as a primary treatment practice, reduces peak flow rates, and promotes groundwater recharge. The proposed stormwater management system utilizes concrete chambers surrounded by stone and filter fabric and an outlet control structure designed to attenuate peak flows.

Level Spreader: Level Spreaders serve as a secondary treatment practice that are utilized to reduce stormwater discharge velocities to non-erosive levels.

2.5 Pollutant Loading Analysis

Pollutant loadings for the existing and proposed conditions were calculated using the method prescribed by Debo and Reese in "Municipal Stormwater Management", 1995. This method determines the mass of pollutant loading by inputting the fraction of

impervious area, the contributing area, the mean annual rainfall, and the event mean concentration of pollutant (EMC). The EMC is based upon the pollutant analyzed and the general characteristic of the contributing area – residential, commercial, or open space.

For the proposed conditions, the contributing area was further broken down into contributing areas to certain best management practices (BMPs). Pollutant loading reductions were taken at certain BMPs, depending upon the removal efficiency of the BMP as stated in the 2003 edition of Debo and Reese. Pollutant removal efficiencies for proprietary products were taken from a report entitled "Final Report: Stormwater Treatment Devices Section 319 Project" submitted to the Connecticut Department of Environmental Protection, Bureau of Water Management by the University of Connecticut Department of Natural Resources Management and Engineering, April 15, 2002. This report provides results of field testing for pollutant removal on different types of proprietary stormwater treatment devices installed throughout the State of Connecticut. Based upon these pollutant reductions, we have determined that pollutant loadings will be less for the proposed conditions, as shown in **Table 2-4** below. The pollutant loading calculation sheets are included in **Appendix E**.

Table 2-4
Pollutant Loading Summary

Item	Units	Pollutant					
		TKN	P	TSS	Pb	Cu	Zn
Proposed, Pre-Treatment	lb/yr/1-in	0.456	0.092	24.226	0.035	0.008	0.032
Proposed, Post-Treatment	lb/yr/1-in	0.284	0.037	5.121	0.015	0.003	0.009
Reduction, Pre to Post Treat	---	38%	59%	79%	57%	60%	71%

2.6 Stormwater Maintenance and Inspection Schedule

Stormwater management systems require periodic maintenance to ensure they function as designed. The initial inspection will be made during an intense rainfall to check the adequacy of the catch basins, roof leaders, piping, hydrodynamic separators, underground infiltration systems, and system outlet.

The following is a checklist of items that will be checked and maintained during scheduled maintenance operations.

Drainage Structures: The Owner will be responsible for cleaning the catch basins, yard drains, manholes, piping, and outlet protection on their property. A Connecticut licensed hauler shall clean the sumps, and legally dispose of removed sand at an off-site location. The road sand may not be reused or stored on-site. As part of the hauling contract, the hauler shall notify the Owner in writing where the material is being disposed.

Each catch basin and yard drain shall be inspected every four months, with one inspection occurring during the month of April. Any debris occurring within one foot from the bottom of each sump shall be removed by Vacuum "Vactor" type of maintenance equipment.

Maintain a log of inspections. Remove organic matter, sand, and debris from catch basins as necessary and dispose of legally.

Hydrodynamic Separator: The Contech CDS Units (hydrodynamic separator) will be skimmed and oil and scum removed. In a separate operation, silt, sand, and sediment will be removed. Once the structure is cleaned of debris, the chamber will be refilled with clean water to prevent wash through of debris and oil during next storm event.

Underground Infiltration: The underground infiltration system will be cleaned of all silt, debris and sediment from the inlet structure, outlet structure and the chamber lengths. The outlet control structure will be inspected and cleaned to make sure nothing is clogging the discharge pipe.

Level Spreader: The level spreader shall be inspected two times annually. Regular maintenance includes removing accumulated debris and sediment, checking for erosion, vegetative bare spots, and removing invasive plant species or tree saplings.

Pavement: Paved areas shall be swept periodically by the Owner to clean trash and other debris. The Owner will sweep paved areas on its property in the spring to remove winter accumulations of road sand.

Perform a visual inspection of paved areas four times per year with one inspection after the last snowfall, but no later than April 1. Sweep accumulated sediment and debris from the paved areas. Clean paved areas as necessary during the remainder of the year.

Maintenance & Inspection Forms are included in **Appendix G**.

Section 3

Floodplain Management & Hydraulics

3.0 Background

The Norwalk River was studied by FEMA as a part of the Flood Insurance Study (FIS) for Fairfield County, dated June 18, 2010. The 2010 FIS updated the modeling of the Norwalk River that was originally done for the 1982 Town of Wilton Flood Insurance Study by incorporating Letters of Map Revision issued between 1982 and 2010. The river system itself was not restudied. It is important to note that the vertical datum of the two studies was changed from the National Geodetic Vertical Datum of 1929 (NGVD29, prior to 1973 also known as the Sea Level Datum of 1929) to the North American Vertical Datum of 1988 (NAVD88). The modeling data provided by FEMA is in the NGVD29 datum and the reported water surface elevations in the 2010 FIS are in the NAVD88 datum.

The National Oceanic and Atmospheric Administration (NOAA) offers an online utility, VERTCON, to calculate the difference between the two datums at a given latitude and longitude coordinate. In the area of the project, the NGVD29 datum is 1.07 feet higher than the NAVD88 datum. Refer to the VERTCON conversion in **Appendix H**.

3.1 Basis of Modeling

Tighe & Bond obtained a copy of the hydraulic model from FEMA for the Norwalk River. This model was used for the hydraulic analysis of the project since it is the effective FEMA model for the project area. The model was developed using the U.S. Army Corps of Engineers HEC-RAS hydraulic analysis modeling environment.

3.1.1 Calibrated Model

To verify the accuracy of the modeling provided by FEMA, a model was created to replicate the data in the FIS. This is the calibrated model, also known as the duplicate effective model. The calibrated model encompasses the Norwalk River, generally spanning from Wolfpit Road to Kent Road in Wilton, corresponding with cross sections O and K of the FIS, respectively. The project site at 141 Danbury Road falls between cross sections O and N of the model. The comparison of the 100-year (1% chance) calibrated model water surface elevations with the elevations reported in the FIS Floodway Table are summarized in **Table 3-1**. The output table of the calibrated model is included in **Appendix H**.

Table 3-1
Calibrated Model Output

FIS Cross Section Identifier	Calibrated Model Cross Section Number	Water Surface Elevation (NAVD88)	
		Floodway Data Table	Calibrated Model
K	21745	123.4	123.41
L	22765	130.6	130.57
M	24525	138.8	138.69
N	24597	141.2	140.19
O	29920	153.1	152.89

As shown in the table, the water surface elevations of the Calibrated Model closely mirror the values reported in the FIS Floodway Table. Slight variations in water surface elevations can be attributed to the differences between the HEC-2 and HEC-RAS modeling environments. The effective modeling and data provided by FEMA of the Norwalk River is in or has been developed from HEC-2 modeling. The HEC-RAS modeling environment is the successor to HEC-2 and is FEMA's current standard for flood studies. Based on the results shown, the Calibrated Model is suitable for modeling the proposed conditions of the project.

3.2 Flow Rates

The established flow rates for the Norwalk River are documented in Volume 1 of the FIS. Tighe & Bond is not challenging the flow rates established by the FIS and will be using the rates for modeling existing and proposed conditions. The flow rates for the river at the location of the site based on the FIS are summarized in **Table 3-2**. See **Appendix H** for a copy of the Norwalk River discharges included in the FIS.

Table 3-2
FIS Norwalk River Flow Rates at the Site

Return Frequency (years)	Annual Chance Probability	Flow Rate (cfs)
10	10%	2,980
50	2%	5,840
100	1%	7,455
500	0.2%	12,505

3.3 Existing Conditions Model

In order to best evaluate the impact of the proposed project, we inserted cross sections into the effective model to create an existing conditions model, also known as the corrected effective model. Due to the spacing of the sections in the effective model, the variations in floodplain topography are not accurately reflected in the vicinity of the project area. A total of four cross sections were added to the model and developed from the topographic survey of the site. Since the topographic survey is in the NAVD88 datum, the elevations of the geometry points were converted to NGVD29 before entering into the model. **Figure 3** in **Appendix A** shows the locations of the cross sections through the project site. **Table 3-3** summarizes the resulting water surface elevations of the added sections in the existing conditions model.

Table 3-3
Existing Conditions 100-Year Water Surface Elevations (NAVD88)

Existing Conditions Model Added Sections	100-year Water Surface Elevation (NAVD88)
28020	146.48
27930	146.47
27830	146.46
27790	146.46

Refer to **Appendix H** for the model output table of the existing conditions model.

3.4 Proposed Conditions Model

The next step in the modeling process is to determine the resultant water surface elevations of the project, including the proposed building and grading changes. We modified the appropriate sections in the Existing Conditions model accordingly. **Table 3-4a** and **3-4b** compare the proposed conditions results to the existing conditions for the 100-year and 10-year events, respectively.

Table 3-4a
100-Year Water Surface Elevation Comparison (NAVD88)

Section	100-year Water Surface Elevation (NAVD88)		
	Existing	Proposed	Difference
28020	146.48	146.48	0.00
27930	146.47	146.47	0.00
27830	146.46	146.46	0.00
27790	146.46	146.46	0.00

Table 3-4b
10-Year Water Surface Elevation Comparison (NAVD88)

Section	10-year Water Surface Elevation (NAVD88)		
	Existing	Proposed	Difference
28020	144.93	144.93	0.00
27930	144.93	144.93	0.00
27830	144.92	144.92	0.00
27790	144.92	144.92	0.00

Based upon the hydraulic analysis, the proposed construction will not adversely impact 100-year and 10-year flood elevations along the Norwalk River.

3.5 Compliance with Local Floodplain Regulations

Section 29-9.F.7 of the Wilton Zoning Regulations requires the following:

- k. **Equal Conveyance:** Within the floodplain, except those areas which are tidally influenced, as designated on the Flood Insurance Rate Map (FIRM) for the community, encroachments resulting from filling, new construction or substantial improvements involving an increase in footprint of the structure, are prohibited unless the applicant provides certification by a registered professional engineer demonstrating, with supporting hydrologic and hydraulic analyses performed in accordance with standard engineering practice, that such encroachments shall not result in any (0.00 feet) increase in flood levels (base flood elevation). Work within the floodplain and the land adjacent to the floodplain, including work to provide compensatory storage shall not be constructed in such a way so as to cause an increase in flood stage or flood velocity.
- l. **Compensatory Storage:** The water holding capacity of the floodplain, except those areas which are tidally influenced, shall not be reduced. Any reduction caused by filling, new construction or substantial improvements involving an increase in footprint to the structure, shall be compensated for by deepening and/or widening of the floodplain, storage shall be provided on-site, unless easements have been gained from adjacent property owners; it shall be provided within the same hydraulic reach and a volume not previously used for flood storage; it shall be hydraulically comparable and incrementally equal to the theoretical volume of flood water at each elevation, up to and including the 100-year flood elevation, which would be displaced by the proposed project. Such compensatory volume shall have an unrestricted hydraulic connection to the same waterway or water body. Compensatory storage can be provided off-site if approved by the municipality.

3.5.1 Equal Conveyance

As shown in Table 3-4a, there are no increases in the base flood elevation as a result of the project, so the equal conveyance requirement has been met.

3.5.2 Compensatory Storage

The placement of the building columns and stairways within the floodplain would result in a loss of floodplain storage. Therefore, we propose revised grading to mitigate against the loss of flood storage volume. The grading as proposed results in a net cut of approximately 440 CY within the floodplain boundary, compensating for the approximate 40 CY occupied by the columns and stairways of the proposed building. The project as proposed would not decrease floodplain storage on-site.

Section 4 Site Utility Services

4.1 Water and Fire Protection Services

Water and fire protection services to the site will be provided by The Aquarion Water Company (Aquarion). Services to the proposed buildings will be fed from the reported 12-inch main located in Danbury Road. Existing hydrants are located in the vicinity of the project site on the west and east sides of Danbury Road.

The estimated daily water demand for the proposed residential development is approximately 48,450 gallons per day (GPD). The estimated peak hour demand is 101 gallons per minute (GPM), determined using a maximum-to-average-day ratio of 3.0.

4.2 Electric Service

Electric service to the site is provided by Eversource Electric Company. Overhead primary service lines are located on the west side of Danbury Road and enter the site from the north.

4.3 Gas Service

Eversource Gas Company provides natural gas service to the project area. Eversource Gas Company maintains a 12-inch gas main located in Danbury Road.

Once the estimated peak demand for the total project is determined, Eversource Gas Company will provide a letter of service availability.

4.4 Tele-Data and Cable TV Services

Frontier Communications provides local and long-distance telephone service to the project area and also offers high speed internet and business data services. The existing network in this area is composed of a combination of overhead lines and underground ductbanks. The existing service is provided overhead on the north side of the building. There is also an existing utility pole on the project site along the southerly property line that provides overhead services for 131 Danbury Road. These overhead wires and the routing for this building will need to be relocated in order to accommodate the proposed site improvements. Easements are not identified on the record documents for this utility pole or the service lines.

Telephone service to the proposed development would be provided underground from a utility pole in the adjacent street. The exact location of the service connections will be coordinated with the utility owner during the final design process.

Altice USA provides cable service as well as high speed internet access to the project area. The majority of the existing network runs overhead and follows the same alignment as the telephone service.

4.5 Sanitary Sewer Service

The project site is located within the Wilton WPCA Sewershed.

Based on available Town maps, there is a 24-inch gravity sanitary sewer located in Danbury Road. The proposed building will connect to the existing sewage system by constructing a manhole over the existing sewer pipe in the adjacent street frontage. WPCA approval will be required for all sewer connections.

The projected wastewater flows associated with the proposed development were calculated based on the 173 residential units with 323 total bedrooms and a flow rate of 150 gallons per day (GPD) per bedroom. A peaking factor of 4 was applied to the average daily flows to estimate peak flows. **Table 4-1** below summarizes the projected average and peak daily sanitary sewer flows for the site. Refer to **Appendix J** for a full breakdown of the sanitary sewer flow calculations.

Table 4-1 - Projected Average and Peak Daily Sanitary Sewer Flows

Wastewater Requirements					
Development		Design Criteria		Average Daily Flow (GPD)	Peak Flow (GPM)*
Use	Units / Bedrooms	GPD	Unit		
Residential	173 / 323	150	Per Bedroom	48,450	135

* Peak factor of 4 was applied to average daily flows to estimate peak flows; New England Interstate Water Pollution Control Commission, 2011.

Section 5

Soil Erosion and Sedimentation Control

5.1 SESC Narrative

General

The proposed development is entitled "141 Danbury Road" in Wilton, Connecticut.

Estimated:

Project Start: Fall 2021

Project Completion: Spring 2022

Erosion Control Narrative refers to drawings C-501 through C-503.

The proposed site development will consist of building demolition, clearing and grubbing the existing site, excavation, construction of sedimentation/detention basins, and rough grading of building, parking areas, sidewalks and curbing.

The development is located in Wilton, Connecticut and is located on Danbury Road.

The stormwater management measures will address the stormwater quality once the site has been constructed and stabilized. Sedimentation and erosion control measures will be installed during construction which will minimize adverse impacts from construction activities.

All sedimentation and erosion control measures proposed for this development have been designed in accordance with the "2002 Connecticut Guidelines for Soil Erosion and Sedimentation Control" as published by the Connecticut Council on Soil Erosion and Water Conservation. Additional guidelines have also been followed that are available from the Connecticut Department of Environmental Protection as recommended for sedimentation control during construction activities.

Construction Sequence – Initial Phase

1. Conduct a pre-construction meeting with the Owner or Owner's Representative, Town Engineer, Design Engineer, Site Engineer, Contractor and Site Superintendent to establish the limits of construction, construction procedures and material stockpile areas.
2. Field stake the limits of construction.
3. Install all applicable soil and erosion control measures around the perimeter of the site to the extent possible. this will include siltation fence around the project as shown on the plans.
4. Install construction access road and anti-tracking pavement in the areas as shown on the plans. All construction access shall be into the site through the anti-tracking pads.

5. Establish temporary staging area.
6. Begin building demolition and pavement removal.
7. Construct the initial storm drainage and sedimentation trap as shown on the plans.
8. Install water quality systems and associated drainage network to the maximum extent practicable. Grade the area around the storm drainage system as necessary.
9. Begin rough roadway grading.
10. Install remaining drainage system to the extent necessary to provide positive drainage.
11. Begin installation of sanitary sewer system, water, and other utilities to extent necessary.
12. Provide silt fence/haybale barrier around soil stockpile area. Provide temporary vegetative cover (defined in erosion control notes) on all exposed surfaces.
13. Begin building construction.
14. Pave binder course on parking and driveways for non-porous pavement areas.
15. Establish temporary vegetative cover.
16. Construct drainage and subbase for porous pavement and place porous pavement course

Construction Sequence – Final Phase

1. Repair perimeter sediment & erosion controls as needed.
2. Clean/replace controls from previous phase as needed.
3. Fine grade site.
4. Continue construction of building.
5. Complete construction of sidewalks.
6. Establish final vegetative cover and landscaping.
7. Pave surface course on roadways.
8. Remove erosion controls when site is stabilized.

5.2 Soil Erosion and Sedimentation Control Notes

1. All sedimentation and erosion control measures shall be constructed in accordance with the standards and specifications of the "2002 Connecticut Guidelines for Soil Erosion and Sediment Control", DEP Bulletin No. 34, and all amendments and addenda thereto as published by the Connecticut Department of Environmental Protection.
2. Land disturbance shall be kept to the minimum necessary for construction operations.
3. All erosion control measures shall be installed as shown on the plan and elsewhere as ordered by the engineer.
4. All catch basins shall be protected with a silt sacks, haybale ring, silt fence or block and stone inlet protection throughout the construction period and until all disturbed areas are thoroughly stabilized.
5. Whenever possible, erosion and sediment control measures shall be installed prior to construction. See "Erosion Control Narrative".
6. Additional control measures shall be installed during the construction period as ordered by the engineer.
7. All sedimentation and erosion control measures shall be maintained in effective condition throughout the construction period.
8. Sediment removed shall be disposed of offsite or in a manner as required by the Engineer.
9. The construction contractor shall be responsible for construction and maintenance of all control measures throughout the construction period.
10. All disturbed areas to be left exposed for more than 30 days shall be protected with a temporary vegetative cover. Seed these areas with perennial ryegrass at the rate of 40 lbs. per acre (1 lb. per 1,000 sq. ft). Apply soil amendments and mulch as required to establish a uniform stand of vegetation over all disturbed areas.
11. The construction contractor shall utilize approved methods/materials for preventing the blowing and movement of dust from exposed soil surfaces onto adjacent properties and site areas.
12. The construction contractor shall maintain a supply of silt fence/haybales and anti-tracking crushed stone on site for emergency repairs.
13. All drainage structures shall be periodically inspected weekly by the construction contractor and cleaned to prevent the build-up of silt.
14. The construction contractor shall carefully coordinate the placement of erosion control measures with the phasing of construction.
15. Keep all paved surfaces clean. Sweep and scrape before forecasted storms.

16. Treat all unpaved surface with 4" minimum of topsoil prior to final stabilization.
17. Haybale barriers and silt fencing shall be installed along the toe of critical cut and fill slopes.
18. The contractor shall notify the Town officials prior to the installation of erosion controls, cutting of trees, or any excavation.
19. All trucks leaving the site must be covered.
20. Some control measures are permanent. These structures shall be cleaned and replenished at the end of construction. locations of the permanent control structures are shown on the drainage plans.
21. All sedimentation and erosion controls shall be checked weekly and/or after each rain fall event. Necessary repairs shall be made without delay.
22. Prior to any forecasted rainfall, erosion and sediment controls shall be inspected and repaired as necessary.
23. After all disturbed areas have been stabilized, erosion controls may be removed once authorization to do so has been secured from the Owner. Disturbed areas shall be seeded and mulched.
24. All embankment slopes 3:1 or greater to be stabilized with erosion control blanket, North American Green SC150BN or approved equivalent, unless otherwise noted on plans.

APPENDIX A



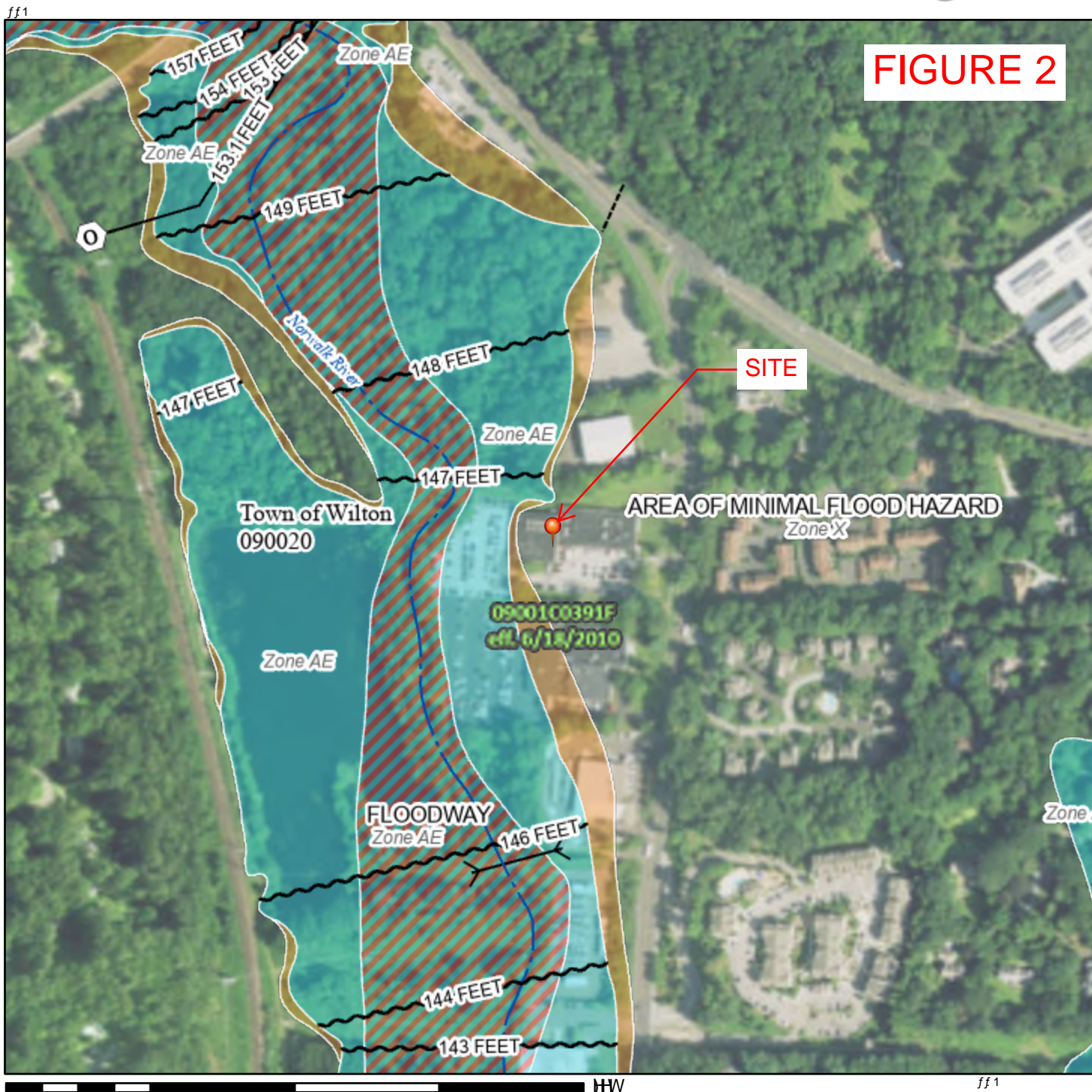
141 DANBURY ROAD
WILTON, CONNECTICUT

SITE LOCATION MAP



FIGURE 1

FIGURE 2



FHQS

4)637 75(6)55 57

63.52
63.55

LWKRW %DHJPRGPHDWLRQ %
=RHS 9 \$
LWK%RUFBWK =RHS 2.5 9 \$
\$HODWRLU,PRRG

26.52
26.5

\$000 800HJPRG-EPUG \$HJ/
R 0000 F00HJPRGZWKDHUHH
G\$WKOHW/WK0RQHRRW RU ZWKGUU
DUHD/R OHW/WK0RQHVV0UHOH;Q;
XWUH800.WLRQ/\$000
800HJPRG-EPUG =RHS;
\$HJZWK\$G\$GPRG\$WNGHWR
HWH 6H RWHV =RHS;
\$HJZWKJPRG\$WNGHWRHWH =RHS'

26.55

\$HJDR 0000 PRRG-EPUG =RHS;
(HFWLYHJ/
\$HJDR 00WHUHQGPRG-EPUG =RHS'

63.55

--- 80000 80YHUW RU 8VRURZU
||||| HWHLN RU PRRG00

26
63.5

8URW/6FWLRQ/ZWK\$000 800H
DWU 6UJPHOHVWLRQ
--- 80WDD 7UDDFW
%DHJPRGPHDWLRQLQH %
LEW R 6VXG
-XULVLFWLRQ%8000A
--- 80WDD 7UDDFW %DWOLQH
3URLOH%DWOLQH
43URUDSLFJ)DWUH

63.56

LLWDD DWD\$D000H
RLJLWDD DWD\$D000H
8000G



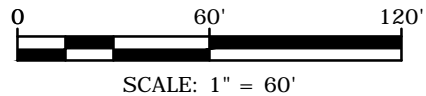
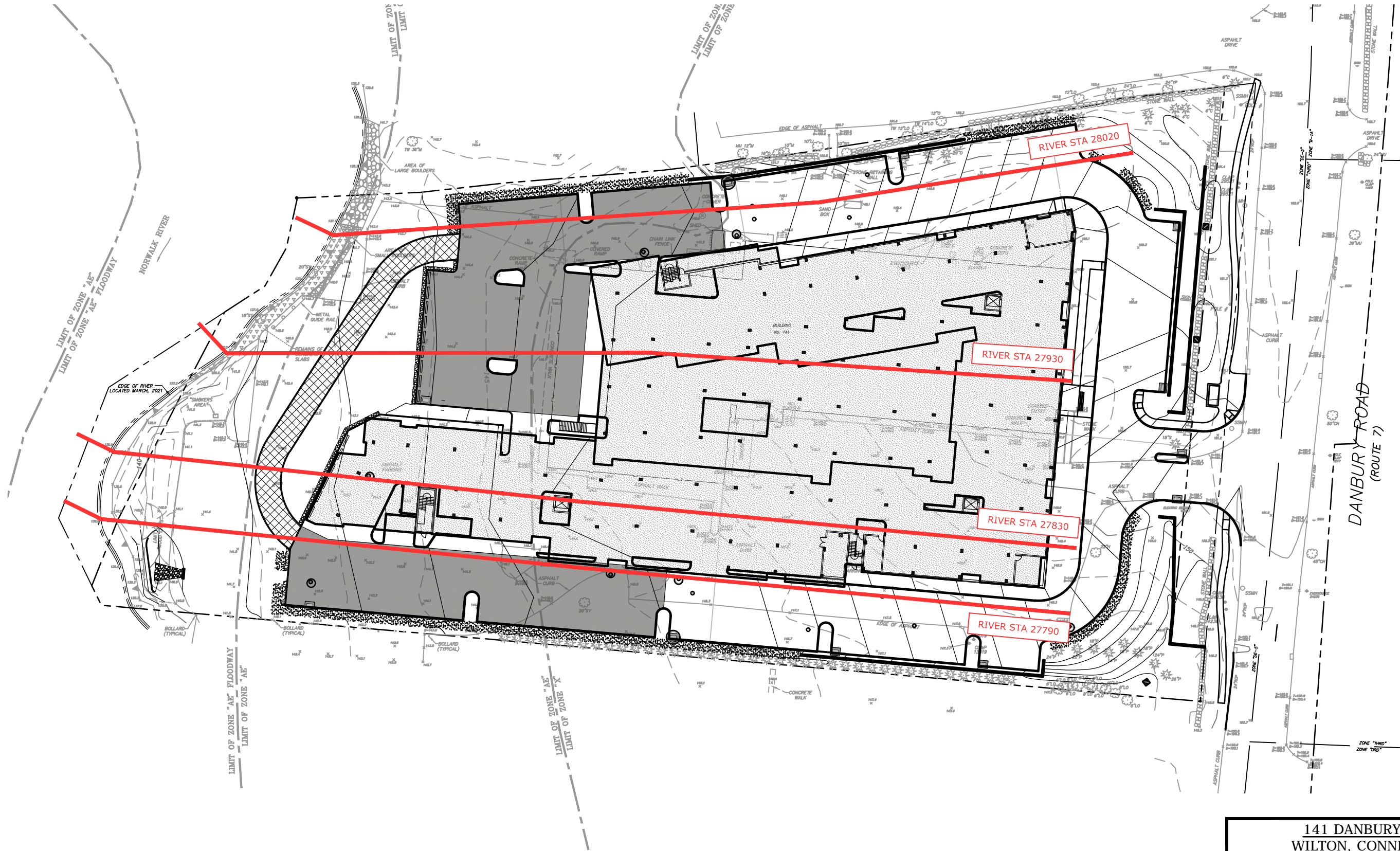
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SLQV VHOHFWHGHWHXHU DQGGRH/QRW UHJH
DQDWKRLWDLVYHSURSUW,ORFDWLRQ

7KLVBSF80LHVZWKJWVWDD0UG/IRU WKHXHR
GLJWDD IORRGS/LI LW LVQRW YRLGDV GHVULHG\$0RZ
7KHEDF8V80F80LHVZWKJWV EDH8S
DFXUR WDD0UG/

7KHIORRGPUGLQRUBWLRQLV GHULYHGGLUHFWO\IURPWH
DWKRLWDLVYHJZEYUHLFV/SURLGHG8 7KLVBS
ZV H8RUWHGRQ DV 3 DQGGRW QRW
UHOHFW F00H/RU DQ00QV V8HIXQV WRWKLVLGDWH00G
WLR 7KHJ00GHIIFWLYHLQRUBWLRQBF00HRU
B888V8UWHGGEQZ00VDRYU WLR

7KLVBSL8HLVYRLGLI WKHQRURU RUHR WKHROORZQBS
H0RQVGRQRW D88DU EDH8SL8H IORRGPQH00H0V
OHJ0G VDDHEDU BSFJHDLRQGDWH F80WALGHVLIHJV
)8800 Q8H D0G)8HIFWLYHGVMH D8L8H/IRU
X000G00GXRGUQLJGDJH/F00QRV BHXHGIRU
UHODWRLUSURWHV

Plotted On: Jul 09, 2021 9:30am By: TAS
Tighe & Bondi: J:\V\F0173 Fuller\002 141 Danbury Road\Drawings\HEC-RAS\Norwalk River - 141 Danbury Rd\141 DBR Cross Section Loc.dwg



141 DANBURY ROAD
WILTON, CONNECTICUT

CROSS SECTION LOCATION MAP

DATE: 07/09/2021
SCALE: 1" = 60'
FIGURE: 3

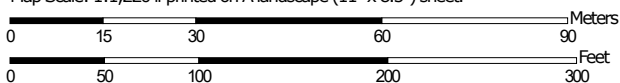
Tighe&Bond

APPENDIX B

Hydrologic Soil Group—State of Connecticut (141 Danbury Road)



Map Scale: 1:1,220 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84



**Natural Resources
Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

5/3/2021
Page 1 of 4

MAP LEGEND

Area of Interest (AOI)









Area of Interest (AOI)

Soils

Soil Rating Polygons





-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

Soil Rating Lines

-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

Soil Rating Points






-  A
-  A/D
-  B
-  B/D

-  C
-  C/D
-  D
-  Not rated or not available

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 1:12,000.

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: State of Connecticut
Survey Area Data: Version 20, Jun 9, 2020

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

Date(s) aerial images were photographed: Dec 31, 2009—Oct 5, 2016

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
103	Rippowam fine sandy loam	B/D	0.7	13.8%
307	Urban land	D	4.4	83.3%
W	Water		0.2	2.8%
Totals for Area of Interest			5.3	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Boring Co. GZA Drilling

Type

CASING

SAMPLER

GROUNDWATER READINGS

Foreman Al Augustine

I.D./O.D.

1 3/8" / 2"

GZA Rep. ClareAnn Walsh

Hammer Wt.

140 *Ihsa*

Date Start 5/30/92 End 5/30/92

Hammer Fall

30 in

GS.Elev. Datum

Other

Location

[illegible]

1. Soil samples field screened with a 10.2 eV portable HNU photoionization detector for volatile organic compounds (VOCs). "N" indicates sample sent to laboratory for additional analysis.
2. Sample wet.
3. 10 feet of 2-inch, schedule 40, threaded, flush-jointed, 10-slot PVC screen set at approximately 17 feet below grade. Well completed to ground surface with 2-inch, schedule 40, threaded, flush-jointed, solid PVC riser. Filter sand placed in annulus around well from 17 to 5 feet below grade. Bentonite seal placed from 5 to 4 feet below grade. Annulus around well backfilled with auger spoils from 4 to 0 feet below grade. Well capped with steel stick-up casing cemented in place.
4. E.O.B. = End of Boring.

stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

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(203) 268-0808

141 Danbury Road
Wilton, Connecticut

BORING NO. MW-5
PAGE 1 OF 1
FILE NO. 50642
CHKD. BY: JMB

Boring Co.		Type	CASING 4 1/4" HSA	SAMPLER Split Spoon	GROUNDWATER READINGS				
Drillman	Al Augustine	I.D./O.D.		1 3/8" / 2"	Date	Time	Depth	Casing	Stab. Time
GZA Rep.	ClareAnn Walsh	Hammer Wt.		140 lbs.	5/30/92	1745	9.0'	10.0'	0 hrs.
Date Start	5/30/92	End	5/30/92	Hammer Fall					
IS.Elev.		Datum		Other					

C B A L S O N W G S	Sample Information					SAMPLE DESCRIPTION & CLASSIFICATION	Stratum Description	R E M K S	Equipment Installed	
	No.	Pen./ Rec.	Depth (Ft.)	Blows/6"	Field Testing (ppm)					
	S-1	24/8	0.5-2.5	1-2-4-6	ND	Loose, dark brown SILT, some fine Sand, trace coarse Sand.	TOPSOIL	1	Flush mount cover	
							0.5'		Auger Spoils	
									Riser	
5	S-2	24/6	4.0-6.0	16-22-24-25	0.2*	Medium dense, brown, fine to medium SAND and grey ROCK FRAGMENTS, little fine rounded Gravel.			Bentonite Seal	
	S-3	24/12	6.0-8.0	27-24-28-31	ND	Dense ROCK FRAGMENTS and fine to coarse SAND, trace fine rounded Gravel.				
	S-4	24/20	8.0-10.0	8-20-30-13	ND	Dense, brown, fine to coarse SAND, some fine rounded Gravel, trace Rock Fragments.	FINE TO COARSE SAND AND GRAVEL	2	Screen	
10	S-5	24/14	10.0-12.0	7-9-18-20	ND	Medium dense, brown, fine to coarse SAND and ROCK FRAGMENTS, trace fine rounded Gravel.			Sand	
15	S-6	24/18	15.0-17.0	WDR-12-18	ND	Brown, fine SAND, 2" lens of dark brown, coarse Sand, returns to brown, fine Sand below lens.	16.0'			
							FINE SAND			
	S-7	24/12	18.0-20.0	6-12-13-10	ND	Medium dense, brown, fine SAND and ROCK FRAGMENTS, trace fine rounded Gravel.	20.0' E.O.B.	3		
20										
25										

- Soil samples field screened with a 10.2 eV portable HNu photoionization detector for volatile organic compounds (VOCs). "*" Indicates sample sent to laboratory for additional analysis.
- Sample wet.
- 10 feet of 2-inch, schedule 40, threaded, flush-jointed, 10-slot PVC screen set at approximately 18 feet below grade. Well completed to ground surface with 2-inch, schedule 40, threaded, flush-jointed, solid PVC riser. Filter sand placed in annulus around well from 18 to 6 feet below grade. Bentonite seal placed from 6 to 5 feet below grade. Annulus around well backfilled with drill cuttings from 5 to 1 feet below grade. Well capped with flush-mount well cover cemented in place.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

BORING NO. MW-5

Boring Co.	GZA Drilling	Type	4" HSA	Split Spoon	GROUNDWATER READINGS				
					Date	Time	Depth	Casing	Stab. Time
Foreman	Al Augustine	I.D./O.D.		1 3/8" / 2"	5/30/92	1715	11.1'	out	4 hrs.
32A Rep.	ClareAnn Walsh	Hammer Wt.		140 lbs.					
Date Start	5/30/92	End	5/30/92	Hammer Fall					
IS Elev.		Datum		Other					
Location									

D E P T H F E E T	C B A L S O N W G S	Sample Information					SAMPLE DESCRIPTION & CLASSIFICATION	Stratum Description	R E M A I N S	Equipment Installed	
		No.	Pen./ Rec.	Depth (ft.)	Blows/6"	Field Testing (ppm)				Steel Casing	
		S-1	24/8	0-2.0	4-12-27-50	ND	Top 4": TOPSOIL. Bottom 4": Fine to coarse SAND, trace Rock Fragments.	TOPSOIL 0.25'	1		Concrete
											Auger Spoils
											Riser
5		S-2	24/16	4.0-6.0	4-5-6-4	ND*	Medium dense, dark brown TOPSOIL, some Silt, trace Brick Fragments (FILL).	FILL			Bentonite Seal
		S-3	24/19	6.0-8.0	4-4-8-16	ND	Medium dense, dark brown TOPSOIL, some Silt, trace Brick Fragments (FILL) grading to grey-brown, fine Sand.				
		S-4	24/10	8.0-10.0	10-15-18-21	ND	Medium dense, grey, fine to coarse SAND, and ROCK fragments.	8.0'			
10		S-5	24/8	10.0-12.0	20-24-16-12	ND	Dense, grey, fine to coarse SAND and ROCK FRAGMENTS.	FINE TO COARSE SAND	2		Screen
											Sand
15		S-6	24/0	15.0-17.0	4-4-5-4	ND	Loose, grey, fine SAND.	15.0'			
20		S-7	24/8	19.0-21.0	5-6-10-8	ND	Medium dense, grey, fine SAND, trace fine, rounded Gravel.	21.0' E.O.B.	3		
									4		
25											

1. Soil samples field screened with a 11.7 eV portable HNU photoionization detector for volatile organic compounds (VOCs). "ND" Indicates sample sent to laboratory for additional analysis.
2. Sample wet.
3. Soil sample screened with a 10.2 eV portable HNU.
4. 10 feet of 2-inch, schedule 40, threaded, flush-jointed, 10-slot PVC screen set at approximately 19 feet below grade. Well completed to ground surface with 2-inch, schedule 40, threaded, flush-jointed, solid PVC riser. Filter sand placed in annulus around well from 19 to 7 feet below grade. Bentonite seal placed from 7 to 6 feet below grade. Annulus around well backfilled with auger spoils from 6 to 0 feet below grade. Well capped with stick-up casing cemented in place.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

		CASING	SAMPLER
Boring Co.	<u>GZA Drilling</u>	<u>4 1/4" HSA</u>	<u>Split Spoon</u>
Foreman	<u>Al Augustine</u>		<u>1 3/8" / 2"</u>
IZA Rep.	<u>ClareAnn Walsh</u>		<u>140 lbs.</u>
Date Start	<u>5/30/92</u> End <u>5/30/92</u>		<u>30 in.</u>
IS.Elev.	<u> </u> Datum <u> </u>		
Location			

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab. Time
5/30/92	---	7.8'	15.0'	0 hrs.

[illegible]

1. Soil samples field screened with a 11.7eV portable HNu photoionization detector for volatile organic compounds (VOCs). "*" Indicates sample sent to laboratory for additional analysis.
2. Sample wet.
3. 10 feet of 2-inch, schedule 40, threaded, flush-jointed, 10-slot PVC screen set at approximately 15 feet below grade. Well completed to ground surface with 2-inch, schedule 40, threaded, flush-jointed, solid PVC riser. Filter sand placed in annulus around well from 15 to 3 feet below grade. Bentonite seal placed from 3 to 2 feet below grade. Annulus around well backfilled with auger spoils from 2 to 1 feet below grade. Well capped with a flush-mounted well cover cemented in place.

stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

BORING NO. MW-8

Boring Co.	<u>GZA Drilling</u>	Type	<u>2 3/4" HSA</u>	<u>Split Spoon</u>
Foreman	<u>Al Augustine</u>	I.D./O.D.		<u>1 3/8" / 2"</u>
QA Rep.	<u>ClareAnn Walsh</u>	Hammer Wt.		<u>140 lbs.</u>
Date Start	<u>5/31/92</u> End <u>5/31/92</u>	Hammer Fall		<u>30 in.</u>
S.Elev.	<u> </u> Datum <u> </u>	Other		<u> </u>
Location	<u> </u>			<u> </u>

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab. Time

[illegible]

1. Soil samples field screened with a 10.2 eV portable HNU photoionization detector for volatile organic compounds (VOCs). "*" indicates sample sent to laboratory for additional analysis.
2. Sample wet.
3. E.O.B. = End of Boring.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

204 Spring Hill Road
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(203) 268-0808

141 Danbury Road

Wilton, Connecticut

BORING NO. A-2

PAGE 1 OF

FILE NO. 50642

CHKD. BY: JMB

Boring Co. GZA Drilling

Foreman Al Augustine

IA Rep. ClareAnn Walsh

Date Start 5/31/92 End 5/31/92

S.Elev. _____ Datum _____

Location _____

Type

I.D./O.D.

Hammer Wt.

Hammer Fall

Other

CASING

 $\frac{1}{4} 1/4''$

HSA

SAMPLER

Split Spoon

1 3/8" / 2"

140 lbs

30 in

4" USA

4" USA

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab. Time

[illegible]

1. Soil samples field screened with a 10.2 eV portable HNu photoionization detector for volatile organic compounds (VOCs). "u" Indicates sample sent to laboratory for additional analysis.
2. Sample wet.
3. E.O.B. = End of Boring.

atification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

BORING NO. A-2

A GEOENVIRONMENTAL, INC.
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 Trumbull, Connecticut 06611
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141 Danbury Road

Wilton, Connecticut

BORING NO. B-3

PAGE 1 OF 1
 FILE NO. 50642
 CHKD. BY: JMB

Boring Co.		Type	CASING	SAMPLER	GROUNDWATER READINGS				
GZA Drilling		2 1/2" HSA Split Spoon			Date	Time	Depth	Casing	Stab. Time
Ron Holman		I.D./O.D.		1 3/8" / 2"	6/13/92	---	8.0'	8.0'	0 hrs.
L. McKee, P. Crowell		Hammer Wt.		140 lbs.					
Date Start 6/13/92 End 6/13/92		Hammer Fall		30 in.					
Elev. Datum		Other							
Location See Plan									

Depth (Feet)	C S N W G	B L S O N W G	Sample Information					SAMPLE DESCRIPTION & CLASSIFICATION	Stratum Description	R E M K S	Equipment Installed
			No.	Pen./ Rec.	Depth (Feet)	Blows/6"	Field Testing (ppm)				
1			S-1	24/14	0-2.0	3-2-7-15	1/0.8	Loose, brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.	TOPSOIL 0.3'	1	None
2											
3											
4			S-2	24/10	2.0-4.0	12-19-24-29	0.4/0.6	Dense, brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.	FINE TO COARSE SAND AND GRAVEL		
5											
6											
7			S-3	24/16	4.0-6.0	16-20-44-66	0.2/0.6	Very dense, brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.			
8											
9											
10			S-4	24/21	6.0-8.0	29-26-26-40	0.4/0.6	Top 3": Brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt. Bottom 18": Brown, fine to medium SAND, little Silt.	6.3' FINE TO MEDIUM SAND		
11											
12											
13			S-5	24/15	8.0-10.0	20-19-16-13	0.2/0.6	Dense, brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.	8.0' FINE TO COARSE SAND AND GRAVEL	2	
14											
15											
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R 1. Soil samples field screened for volatile organic compounds with an 11.7 eV portable HNU Model PI-101 photoionization detector. 1/0.8 = meter response of sample/meter response of background conditions.
 ppm = parts per million.
 2. Sample wet at approximately 8 feet below grade.
 3. Boring ended at approximately 10 feet below grade. E.O.B. = End of Boring.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

BORING NO. B-3

A GEOENVIRONMENTAL, INC.
Engineers and Scientists
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141 Danbury Road
Wilton, Connecticut

BORING NO. B-4
PAGE 1 OF 1
FILE NO. 50642
CHKD. BY: JMB

Boring Co.		Type		CASING	SAMPLER	GROUNDWATER READINGS				
GZA Drilling		2 1/2" HSA		Split Spoon		Date	Time	Depth	Casing	Stab. Time
Personnel: Ron Holman		I.D./O.D.		1 3/8" / 2"						
GZA Rep. L. McKee, P. Crowell		Hammer Wt.		140 lbs.						
Date Start: 6/13/92 End: 6/13/92		Hammer Fall		30 in.						
Elev. Datum		Other								
Location: See Plan										

C B A L S O N W G S	Sample Information					SAMPLE DESCRIPTION & CLASSIFICATION	Stratum Description	R E M K S	Equipment Installed
	No.	Pen./ Rec.	Depth (Ft.)	Blows/6"	Field Testing (ppm)				
1	S-1	24/16	0-2.0	3-16-18-21	0.6/0.6	Top 6": Brown to black TOPSOIL. Bottom 10": Brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.	TOPSOIL 0.5'	1	None
4	S-2	6/6	4.0-4.5	64-10/0"	NS	Very dense, fine to coarse SAND and fine to coarse GRAVEL, little Silt.	FINE TO COARSE SAND AND GRAVEL	2	
5	S-3	0/0	5.0	10/0"	NS	No recovery.	5.0' E.O.B.		
6									
7									
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1. Soil samples field screened for volatile organic compounds with an 11.7 eV portable HNU Model PI-101 photoionization detector. 1/0.8 = meter response of sample/meter response of background conditions.
ppm = parts per million.
2. Boring ended at approximately 5 feet below grade due to auger and spoon refusal. E.O.B. = End of Boring.
NS = No sample

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

BORING NO. B-4

Boring Co.		Type		CASING	SAMPLER	GROUNDWATER READINGS				
GZA Drilling		2 1/2" HSA		Split Spoon						
Foreman Ron Holman		I.D./O.D.		1 3/8" / 2"						
GZA Rep. L. McKee, P. Crowell		Hammer Wt.		140 lbs.	Date	Time	Depth	Casing	Stab. Time	
Date Start 6/13/92 End 6/13/92		Hammer Fall		30 in.	6/13/92	---	8.0'	8.0'	0 hrs.	
GS.Elev. Datum		Other								
Location See plan (4 feet east of B-4)										

DEPTH	C.B.A.S.O.N.W.S.	Sample Information					SAMPLE DESCRIPTION & CLASSIFICATION	Stratum Description	REMARKS	Equipment Installed
		No.	Pen./Rec.	Depth (Ft.)	Blows/6"	Field Testing (ppm)				
1									1	None
2								SEE B-4		
3										
4		S-1	24/14	4.0-6.0	22-27-42-22	0.4/0.4	Very dense, brown, fine to coarse SAND and fine to coarse GRAVEL, little silt.			
5										
6		S-2	24/18	6.0-8.0	18-16-15-16	0.6/0.4	Dense, brown, fine to coarse SAND and fine GRAVEL, little silt.	FINE TO COARSE SAND AND GRAVEL		
7										
8		S-3	24/14	8.0-10.0	14-15-21-30	0.6/0.6	Dense, brown, fine to coarse SAND and fine to coarse GRAVEL, little silt, trace Organics.		2	
9										
10										
11								10.0' E.O.B.	3	
12										
13										
14										

1. Soil samples field screened for volatile organic compounds with an 11.7 eV portable HNU Model PI-101 photoionization detector. 1/0.8 = meter response of sample/meter response of background conditions.
ppm = parts per million.
2. Sample wet at approximately 8 feet below grade.
3. Boring ended at approximately 10 feet below grade. E.O.B. = End of Boring.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

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Wilton, Connecticut

BORING NO. B-5

PAGE 1 OF 1
FILE NO. 50642
CHKD. BY: JMB

Boring Co.		Type	CASING	SAMPLER	GROUNDWATER READINGS				
GZA Drilling		2 1/2" HSA Split Spoon			Date	Time	Depth	Casing	Stab. Time
Foreman Ron Holman		I.D./O.D.		1 3/8" / 2"	6/13/92	---	8.0'	8.0'	0 hrs.
GZA Rep. L. McKee, P. Crowell		Hammer Wt.		140 lbs.					
Date Start 6/13/92 End 6/13/92		Hammer Fall		30 in.					
IS.Elev. Datum		Other							
Location See plan									

D E P T H F E E T	C S A M P L E N O.	Sample Information				SAMPLE DESCRIPTION & CLASSIFICATION	Stratum Description	R E M A R K S	Equipment Installed
		No.	Pen./ Rec.	Depth (Ft.)	Blows/6"	Field Testing (ppm)			
1	S-1	24/4	0-2.0	1-2-14-24	0.4/0.4	Top 2": Brown to black TOPSOIL. Bottom 2": Brown, medium to coarse SAND and fine to coarse GRAVEL, trace Silt.	TOPSOIL 0.2'	1	None
2	S-2	12/12	2.0-3.0	13-56	0.4/0.4	Very dense, brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.	FINE TO COARSE SAND AND GRAVEL		
3									
4	S-3	24/14	4.0-6.0	16-30-34-34	0.4/0.4	Very dense, brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.			
5									
6	S-4	24/19	6.0-8.0	32-28-60-53	0.4/0.4	Very dense, brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.	8.0' FINE TO COARSE SAND	2	
7									
8	S-5	24/14	8.0-10.0	12-17-19-18	0.2/0.2	Dense, brown, fine to medium SAND, little fine to coarse Gravel, little Silt.	10.0' E.O.B.	3	
9									
10									
11									
12									
13									
14									

1. Soil samples field screened for volatile organic compounds with an 11.7 eV portable HNU Model PI-101 photoionization detector. 1/0.8 = meter response of sample/meter response of background conditions. ppm = parts per million.

2. Sample wet at approximately 8 feet below grade.

3. Boring ended at approximately 10 feet below grade. E.O.B. = End of Boring.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

BORING NO. B-5

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Wilton, Connecticut

BORING NO. B-6

PAGE 1 OF 1
FILE NO. 50642
CHKD. BY: JMB

Boring Co.		Type		CASING	SAMPLER	GROUNDWATER READINGS				
GZA Drilling		2 1/2" HSA		Split Spoon						
Foreman	Ron Holman	I.D./O.D.	1 3/8" / 2"							
GZA Rep.	L. McKee, P. Crowell	Hammer Wt.	140 lbs.							
Date Start	6/13/92	End	6/13/92	Hammer Fall	30 in.					
GS.Elev.	Datum	Other								
Location	See plan									

D E P T H	C B A L S O N W G S	Sample Information					SAMPLE DESCRIPTION & CLASSIFICATION	Stratum Description	R E M K S	Equipment Installed
		No.	Pen./ Rec.	Depth (Ft.)	Blows/6"	Field Testing (ppm)				
1		S-1	24/15	0-2.0	6-13-15-27	0.6/0.6	Top 4": Brown to black TOPSOIL. Bottom 11": Brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.	TOPSOIL 0.3'	1	- - - - -
2										
3										
4		S-2	24/15	4.0-6.0	22-27-61-61	0.4/0.8	Very dense, brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.	FINE TO COARSE SAND AND GRAVEL		
5										
6		S-3	24/20	6.0-8.0	50-34-44-46	0.6/0.8	Very dense, brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.			
7										
8		S-4	24/16	8.0-10.0	26-50-41-19	0.6/0.8	Very dense, brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.		2	
9										
10								10.0' E.O.B.	3	
11										
12										
13										
14										

1. Soil samples field screened for volatile organic compounds with an 11.7 eV portable HNU Model PI-101 photoionization detector. 1/0.8 = meter response of sample/meter response of background conditions.
ppm = parts per million.
2. Sample wet at approximately 8.5 feet below grade.
3. Boring ended at approximately 10 feet below grade. E.O.B. = End of Boring.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

BORING NO. B-6

Boring Co.	GZA Drilling	Type	CASING	SAMPLER	GROUNDWATER READINGS				
			2 1/2" HSA	Split Spoon	Date	Time	Depth	Casing	Stab. Time
Foreman	Ron Holman	I.D./O.D.		1 3/8" / 2"	6/13/92	---	8.5'	8.0'	0 hrs.
GZA Rep.	L. McKee, P. Crowell	Hammer Wt.		140 lbs.					
Date Start	6/13/92	End	6/13/92	Hammer Fall					
GS.Elev.		Datum		Other					
Location	See plan								

D E P T H	C B A L S O N W G S	Sample Information					SAMPLE DESCRIPTION & CLASSIFICATION	Stratum Description	R E M K S	Equipment Installed
		No.	Pen./ Rec.	Depth (Ft.)	Blows/6"	Field Testing (ppm)				
1		S-1	24/16	0-2.0	6-10-18-27	0.8/0.8	Top 10": Brown to black TOPSOIL, little fine to coarse Gravel. Bottom 6": Brown, fine to coarse SAND and fine to coarse GRAVEL, little silt.	TOPSOIL 0.8'	1	None
2										
3										
4		S-2	24/18	4.0-6.0	20-26-23-25	0.8/0.8	Dense, brown, fine to coarse SAND and fine to coarse GRAVEL, trace silt.	FINE TO COARSE SAND AND GRAVEL		
5										
6		S-3	24/15	6.0-8.0	25-31-38-39	0.8/1.0	Very dense, brown, fine to coarse SAND and fine to coarse GRAVEL, trace silt.			
7										
8		S-4	24/15	8.0-10.0	21-15-13-24	0.8/1.0	Medium dense, brown, fine to coarse SAND and fine to coarse GRAVEL, little silt.		2	
9										
10										
11								10.0' E.O.B.	3	
12										
13										
14										

1. Soil samples field screened for volatile organic compounds with an 11.7 eV portable HNu Model PI-101 photoionization detector. 1/0.8 = meter response of sample/meter response of background conditions.
ppm = parts per million.
2. Sample wet at approximately 8.5 feet below grade.
3. Boring ended at approximately 10 feet below grade. E.O.B. = End of Boring.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

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Wilton, Connecticut

BORING NO. B-8

PAGE 1 OF 1
FILE NO. 50642
CHKD. BY: JHB

Boring Co. GZA Drilling Type 2 1/2" HSA Split Spoon
Foreman Ron Holman I.D./O.D. 1 3/8" / 2"
GZA Rep. L. McKee, P. Crowell Hammer Wt. 140 lbs.
Date Start 6/13/92 End 6/13/92 Hammer Fall 30 in.
GS.Elev. Datum Other
Location See plan

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab. Time
6/13/92	---	10.0'	8.0'	0 hrs.

DEPTH	C.B.S.O.N.W.G.S.	Sample Information					SAMPLE DESCRIPTION & CLASSIFICATION	Stratum Description	REMARKS	Equipment Installed
		No.	Pen./Rec.	Depth (Ft.)	Blows/6"	Field Testing (ppm)				
1		S-1	24/12	0-2.0	4-8-26-24	0.8/0.8	Top 4": Brown TOPSOIL and ORGANICS. Bottom 8": Light grey, tan, brown, fine to coarse SAND, some fine to coarse Gravel, little Silt.	TOPSOIL 0.8'	1	None
2										
3										
4		S-2	24/10	4.0-6.0	26-48-49-37	0.8/0.8	Very dense, brown, grey, orange, fine to coarse SAND and fine to coarse GRAVEL, trace Silt.	FINE TO COARSE SAND AND GRAVEL		
5										
6		S-3	24/17	6.0-8.0	37-22-50-34	0.8/0.8	Top 9": Brown, fine to coarse SAND and fine to coarse GRAVEL, trace Silt. Bottom 8": Orange to brown, fine SAND, little fine to coarse Gravel, little Silt.	6.8' FINE SAND		
7										
8		S-4	24/18	8.0-10.0	14-9-9-15	0.8/0.8	Medium dense, brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.	8.0' FINE TO COARSE SAND AND GRAVEL	2	
9										
10										
11								10.0' E.O.B.	3	
12										
13										
14										

1. Soil samples field screened for volatile organic compounds with an 11.7 eV portable HNU Model PI-101 photoionization detector. 1/0.8 = meter response of sample/meter response of background conditions.
ppm = parts per million.
2. Sample wet at approximately 10 feet below grade.
3. Boring ended at approximately 10 feet below grade. E.O.B. = End of Boring.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

BORING NO. B-8

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141 Danbury Road

Wilton, Connecticut

BORING NO. B-9

PAGE 1 OF 1
FILE NO. 50642
CHKD. BY: JMB

Boring Co.		Type	CASING	SAMPLER	GROUNDWATER READINGS				
GZA Drilling			2" HSA	Split Spoon	Date	Time	Depth	Casing	Stab. Time
Foreman Ron Holman		I.D./O.D.		1 3/8" / 2"	6/13/92	---	9.0'	8.0'	0 hrs.
GZA Rep. L. McKee, P. Crowell		Hammer Wt.		140 lbs.					
Date Start 6/13/92 End 6/13/92		Hammer Fall		30 in.					
GS.Elev. Datum		Other							
Location See plan									

D E P T H	C B A L S O N W G S	Sample Information					SAMPLE DESCRIPTION & CLASSIFICATION	Stratum Description	R E M A I N S	Equipment Installed
		No.	Pen./ Rec.	Depth (Ft.)	Blows/6"	Field Testing (ppm)				
1		S-1	24/16	0-2.0	3-6-8-12	0.6/0.6	Top 4": Brown to black TOPSOIL. Bottom 12": Brown, fine to coarse SAND and fine to coarse GRAVEL, little Silt.	TOPSOIL 0.3'	1	None
2		S-2	24/16	2.0-4.0	16-20-17-17	0.6/0.6	Dense, brown, fine to coarse SAND and fine to coarse GRAVEL, trace Silt.	FINE TO COARSE SAND AND GRAVEL		
3										
4		S-3	24/18	4.0-6.0	23-22-29-30	0.6/0.6	Dense, brown, fine to coarse SAND and fine to coarse GRAVEL, trace Silt.			
5										
6		S-4	24/16	6.0-8.0	44-37-54-50	0.6/0.6	Very dense, brown, fine to coarse SAND and fine to coarse GRAVEL, trace Silt.	8.0' FINE SAND	2	
7										
8		S-5	24/18	8.0-10.0	21-13-12-12	0.2/0.6	Top 6": Grey, fine SAND, some fine to coarse Gravel, little Silt. Bottom 12": Brown, fine to coarse SAND, trace Silt.	8.5' FINE TO COARSE SAND		
9						0.4/0.6		10.0' E.O.B.	3	
10										
11										
12										
13										
14										

- REMARKS
- Soil samples field screened for volatile organic compounds with an 11.7 eV portable HNU Model PI-101 photoionization detector. 1/0.8 = meter response of sample/meter response of background conditions. ppm = parts per million.
 - Sample wet at approximately 9 feet below grade.
 - Boring ended at approximately 10 feet below grade. E.O.B. = End of Boring.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

BORING NO. B-9

GZA GEOENVIRONMENTAL, INC.
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Wilton, Connecticut

BORING NO. B-10

PAGE 1 OF 1

FILE NO. 50642

CHKD. BY: JMR

Boring Co. GZA Drilling Type 2 1/2" HSA Split Spoon
Foreman Ron Holman I.D./O.D. 1 3/8" / 2"
GZA Rep. L. McKee, P. Crowell Hammer Wt. 140 lbs.
Date Start 6/13/92 End 6/13/92 Hammer Fall 30 in.
GS.Elev. Datum Other
Location See plan

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab. Time
6/13/92	---	6.5'	4.0'	0 hrs.

DEPTH Feet	C B S O N G S	Sample Information					SAMPLE DESCRIPTION & CLASSIFICATION	Stratum Description	REMARKS	Equipment Installed
		No.	Pen./ Rec.	Depth (Ft.)	Blows/6"	Field Testing (ppm)				
1		S-1	24/7	0-2.0	4-7-3-3	0.6/0.6	Top 4": Brown to black TOPSOIL. Bottom 3": Brown, fine to coarse SAND and fine to coarse GRAVEL, little silt.	TOPSOIL 0.3'	1	None
2		S-1A	24/3	2.0-4.0	7-8-7-7	0.6/0.6	Medium dense, brown, fine SAND, some fine to coarse Gravel, little silt.	FINE SAND (ORGANICS FROM 4-6')		
3										
4		S-2	24/2	4.0-6.0	1-3-4-7	0.8/0.6	Loose, brown to black, fine SAND, little fine Gravel, little organic silt.			
5										
6		S-3	24/10	6.0-8.0	14-17-14-27	0.6/0.6	Dense, brown, fine to coarse SAND and fine to coarse GRAVEL, some silt.	6.0' FINE TO COARSE SAND	2	
7										
8										
9								8.0' E.O.B.	3	
10										
11										
12										
13										
14										

1. Soil samples field screened for volatile organic compounds with an 11.7 eV portable HNU Model PI-101 photoionization detector. 1/0.8 = meter response of sample/meter response of background conditions.
2. Sample wet at approximately 6.5 feet below grade.
3. Boring ended at approximately 8 feet below grade. E.O.B. = End of Boring.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

BORING NO. B-10

Boring Co.		Type		CASING	SAMPLER	GROUNDWATER READINGS				
GZA Drilling		I.D./O.D.		2 1/2" HSA	Split Spoon	Date	Time	Depth	Casing	Stab. Time
Foreman Ron Holman					1 3/8" / 2"	6/13/92	---	10.0'	8.0'	0 hrs.
GZA Rep. L. McKee, P. Crowell		Hammer Wt.			140 lbs.					
Date Start 6/13/92 End 6/13/92		Hammer Fall			30 in.					
GS. Elev. Datum		Other								
Location See plan										

D E P T H	C B A L S O N W G S	Sample Information					SAMPLE DESCRIPTION & CLASSIFICATION	Stratum Description	R E M K S	Equipment Installed
		No.	Pen./ Rec.	Depth (Ft.)	Blows/6"	Field Testing (ppm)				
1		S-1	24/12	0.3-2.3	16-13-7-5	0.6/0.6	Medium dense, brown, fine SAND, some fine Gravel, trace silt, (Black Organic Silt in tip of spoon).	ASPHALT 0.3'	1	None
2										
3										
4		S-2	24/2	4.0-6.0	17-14-21-19	0.4/0.6	Dense, brown, coarse GRAVEL.	FINE TO COARSE SAND AND GRAVEL (ORGANIC SILT AT 2')		
5										
6		S-3	24/14	6.0-8.0	22-31-30-27	0.6/0.6	Very dense, brown, fine to coarse SAND and fine to coarse GRAVEL, trace silt.			
7										
8		S-4	24/16	8.0-10.0	42-45-30-20	0.4/0.6	Top 8": Grey, fine to coarse GRAVEL, some fine Sand, trace silt. Bottom 8": Orange to brown, fine to coarse SAND, some fine Gravel, little silt.		2	
9										
10										
11								10.0' E.O.B.	3	
12										
13										
14										

REMARKS

- Soil samples field screened for volatile organic compounds with an 11.7 eV portable HNu Model PI-101 photoionization detector. 1/0.8 = meter response of sample/meter response of background conditions.
- ppm = parts per million.
- Sample wet at approximately 10 feet below grade.
- Boring ended at approximately 10 feet below grade. E.O.B. = End of Boring.

Stratification lines represent approximate boundaries between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

TABLE 1
GROUNDWATER ELEVATION DATA: 11/2/93
141 DANBURY ROAD
WILTON, CONNECTICUT

LOCATION	REFERENCE ELEVATION	DEPTH TO WATER (FT)	WATER TABLE ELEVATION
MW-1	99.14	12.60	86.54
MW-2	100.57	14.33	86.24
MW-3	98.56	12.18	86.38
MW-4	96.24	10.51	85.73
MW-5	94.53	9.24	85.29
MW-6	96.43	11.35	85.08
MW-7	94.73	9.75	84.98
MW-8	88.89	4.00	84.89

NOTES:

1. Reference elevation: are top of PVC monitor wells based on relative difference to an arbitrary benchmark established on center of a manhole cover along the eastern property line which was assumed to be 100 feet above mean sea level.

APPENDIX C

Name: **EX-WS-01**

Location: Southern Site

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	1.932	98	189.314
Landscaped and Lawns	0.872	69	60.183
			249.497

Total Area: **2.804**CN: **89**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.24	3.54	100	0.015	15.2

Shallow Concentrated Flow Travel Time					
Segment ID	Cover	Flow Length (ft)	Slope (ft/ft)	V (ft/s)	Time (min)
B-C	Paved	580	0.020	2.87	3.4

Total Tc (min) = **18.6**Name: **EX-WS-02**

Location: Northern Site

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.059	98	5.739
Landscaped and Lawns	1.040	69	71.728
			77.467

Total Area: **1.098**CN: **71**

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.24	3.54	130	0.035	13.4

Shallow Concentrated Flow Travel Time					
Segment ID	Cover	Flow Length (ft)	Slope (ft/ft)	V (ft/s)	Time (min)
B-C	Unpaved	410	0.020	2.28	3.0

Total Tc (min) = **16.4**

References:

NRCS Technical Release 55

ConnDOT Drainage Manual, Chapter 6

Project No. **F0173-002**

Date: **05/07/21**

Prepared By: **TAS**

141 Danbury Road
Wilton, CT
Existing CN & Tc Worksheet



Name: **EX-RF-01**

Location: Existing Building

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.775	98	75.932
Landscaped and Lawns	0.000	69	0.000
			75.932

Total Area: 0.775

CN: 98

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.015	3.54	60	0.015	1.1

Total Tc (min) = 1.1

Minimum Tc = 5.0

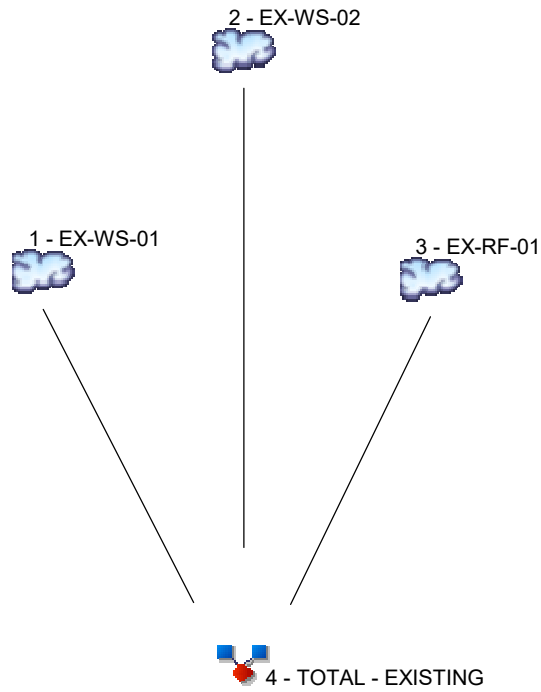
References:

NRCS Technical Release 55

ConnDOT Drainage Manual, Chapter 6

Watershed Model Schematic

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3



Legend

Hyd.	Origin	Description
1	SCS Runoff	EX-WS-01
2	SCS Runoff	EX-WS-02
3	SCS Runoff	EX-RF-01
4	Combine	TOTAL - EXISTING

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

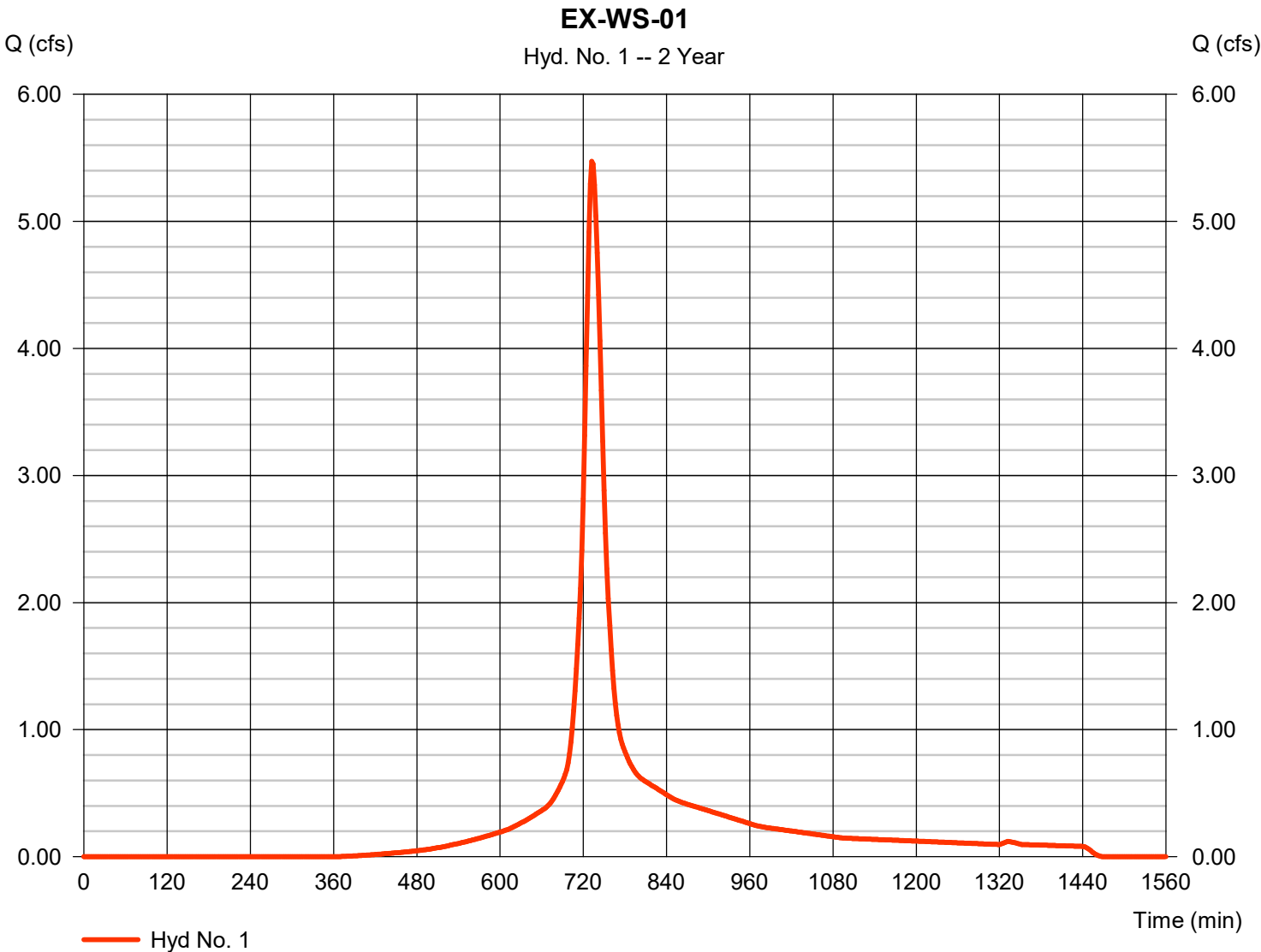
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	5.474	2	732	24,369	-----	-----	-----	EX-WS-01
2	SCS Runoff	0.975	2	732	4,233	-----	-----	-----	EX-WS-02
3	SCS Runoff	2.573	2	724	8,720	-----	-----	-----	EX-RF-01
4	Combine	7.662	2	730	37,453	1, 2, 3	-----	-----	TOTAL - EXISTING
F0173-02 Hydrographs - Existing.gpw					Return Period: 2 Year			Monday, 05 / 24 / 2021	

Hydrograph Report

Hyd. No. 1

EX-WS-01

Hydrograph type	= SCS Runoff	Peak discharge	= 5.474 cfs
Storm frequency	= 2 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 24,369 cuft
Drainage area	= 2.804 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.60 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



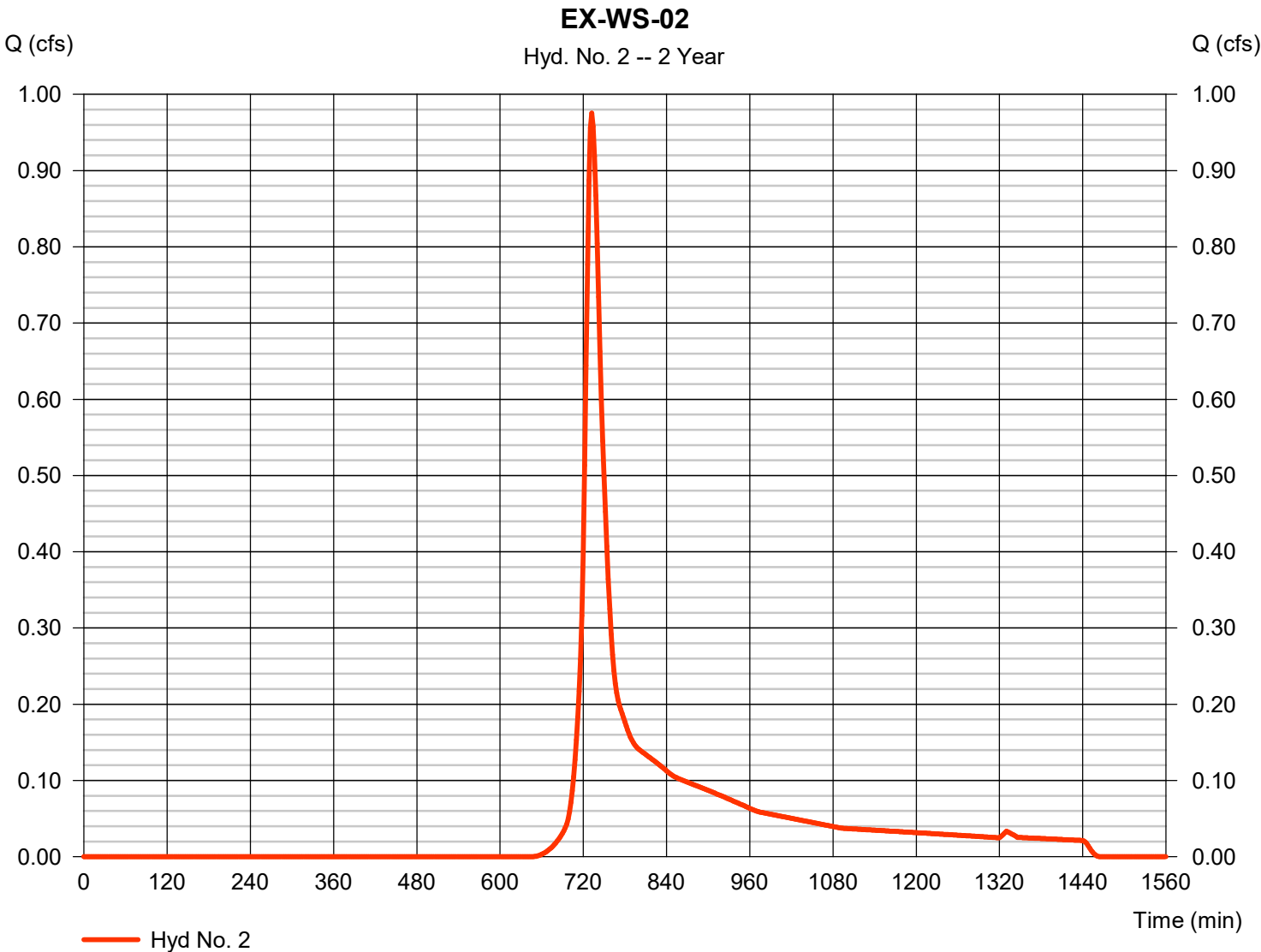
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3
Monday, 05 / 24 / 2021

Hyd. No. 2

EX-WS-02

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.975 cfs
Storm frequency	=	2 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	4,233 cuft
Drainage area	=	1.098 ac	Curve number	=	71
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	16.40 min
Total precip.	=	3.54 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

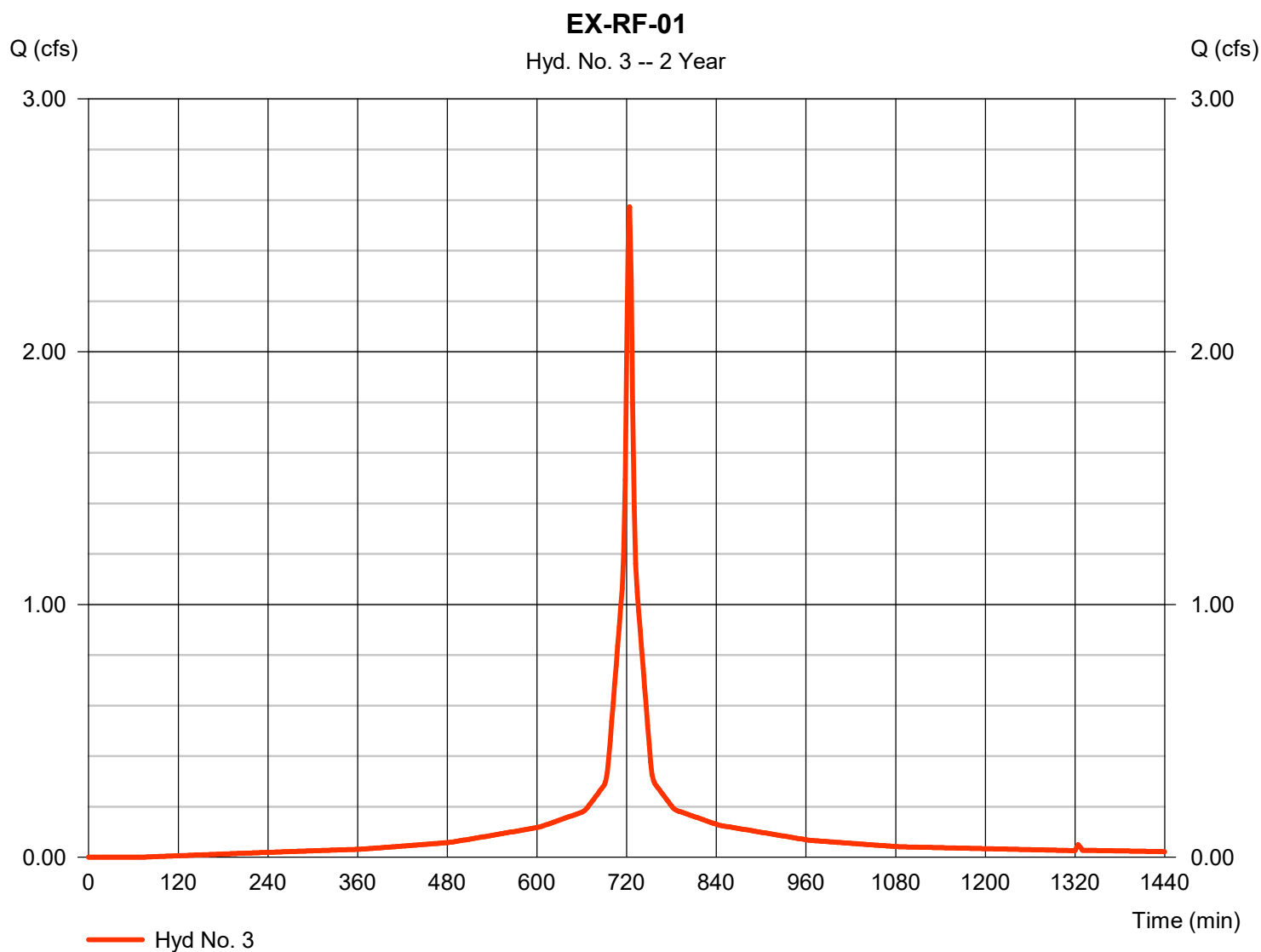
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Monday, 05 / 24 / 2021

Hyd. No. 3

EX-RF-01

Hydrograph type	= SCS Runoff	Peak discharge	= 2.573 cfs
Storm frequency	= 2 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 8,720 cuft
Drainage area	= 0.775 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

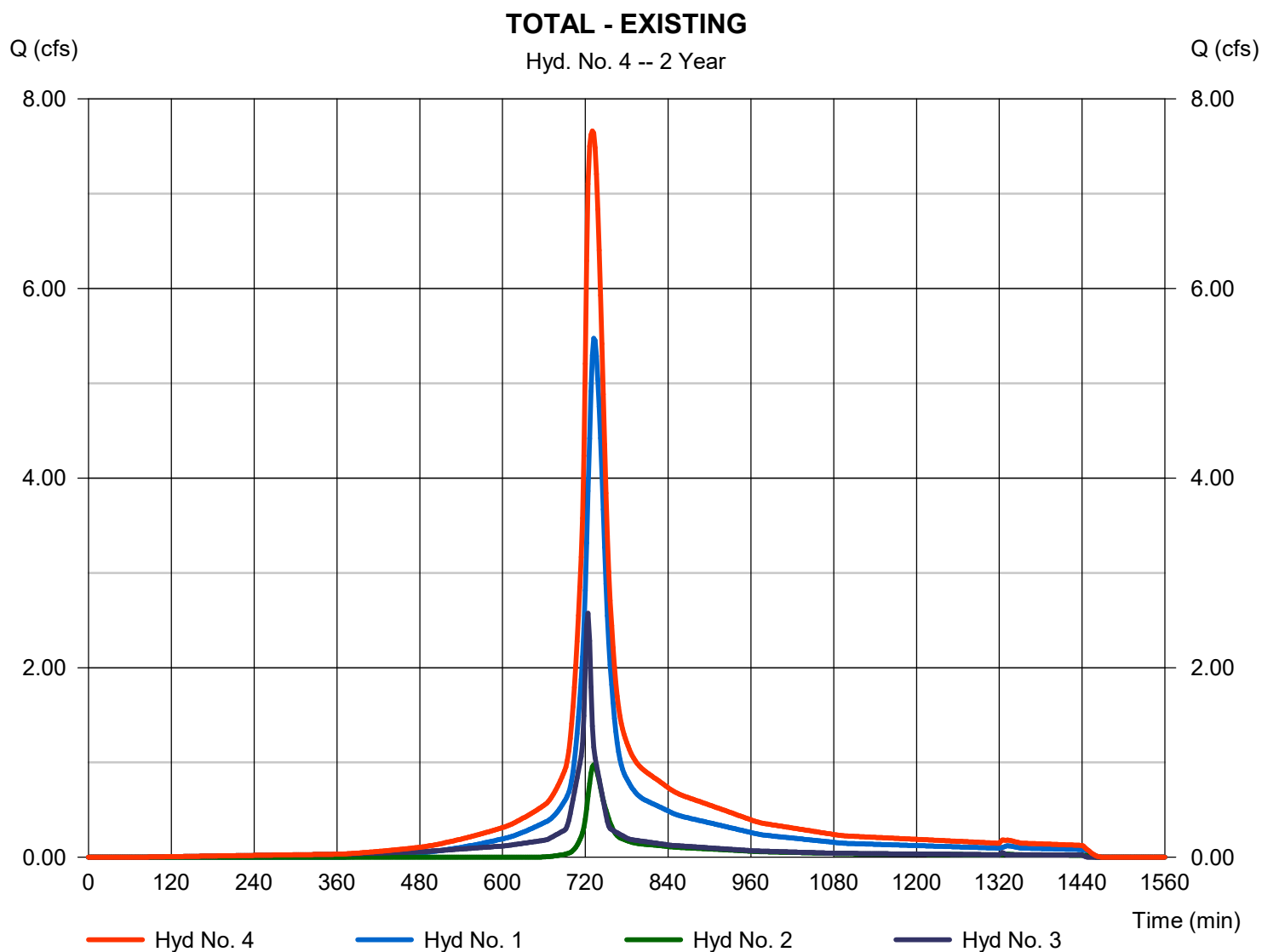
Monday, 05 / 24 / 2021

Hyd. No. 4

TOTAL - EXISTING

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 2 min
Inflow hyds. = 1, 2, 3

Peak discharge = 7.662 cfs
Time to peak = 730 min
Hyd. volume = 37,453 cuft
Contrib. drain. area = 4.677 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

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	9.316	2	732	42,301	-----	-----	-----	EX-WS-01
2	SCS Runoff	2.287	2	732	9,417	-----	-----	-----	EX-WS-02
3	SCS Runoff	3.949	2	724	13,616	-----	-----	-----	EX-RF-01
4	Combine	13.50	2	730	65,561	1, 2, 3	-----	-----	TOTAL - EXISTING
F0173-02 Hydrographs - Existing.gpw					Return Period: 10 Year			Monday, 05 / 24 / 2021	

Hydrograph Report

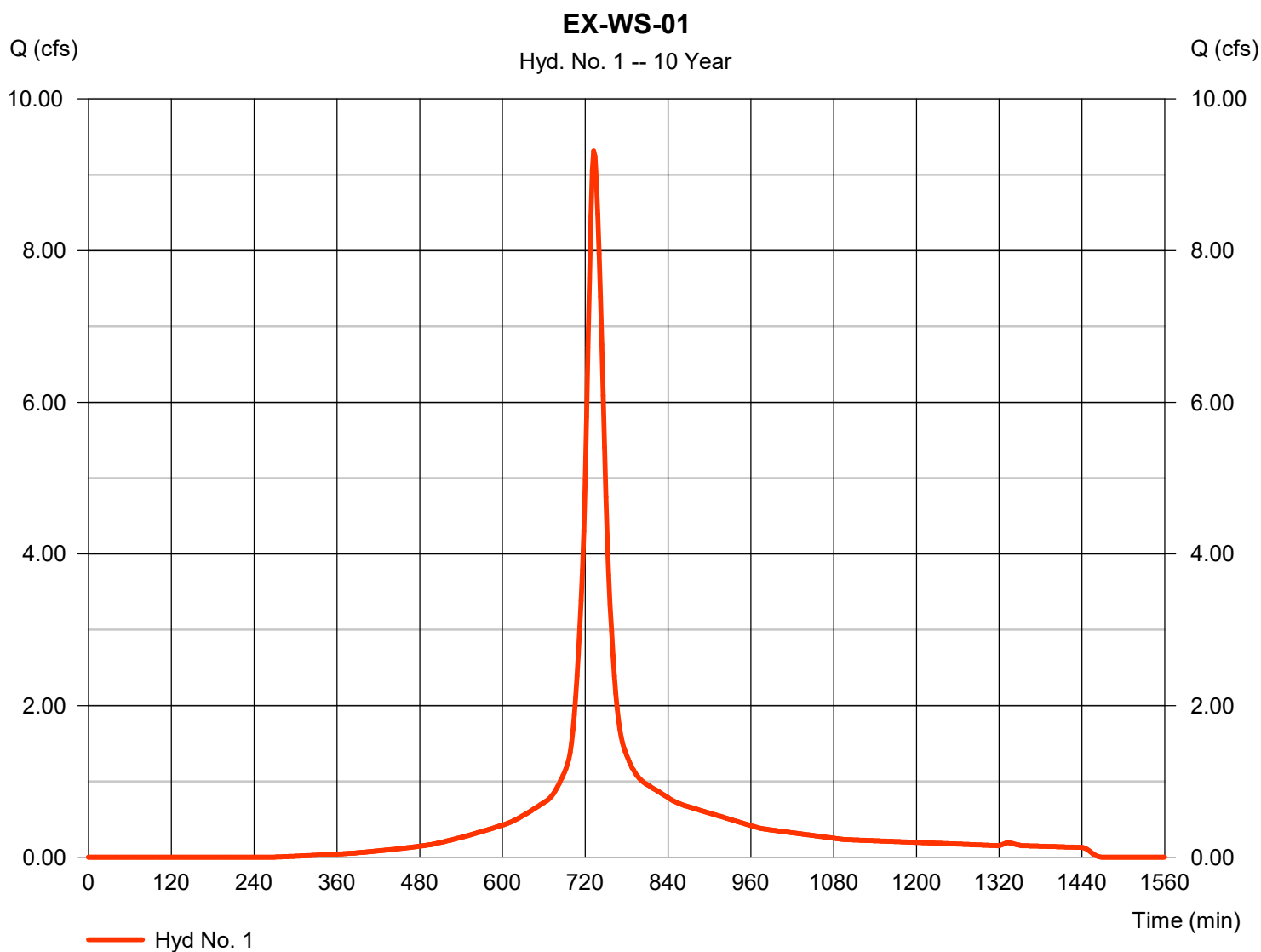
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Monday, 05 / 24 / 2021

Hyd. No. 1

EX-WS-01

Hydrograph type	= SCS Runoff	Peak discharge	= 9.316 cfs
Storm frequency	= 10 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 42,301 cuft
Drainage area	= 2.804 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.60 min
Total precip.	= 5.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

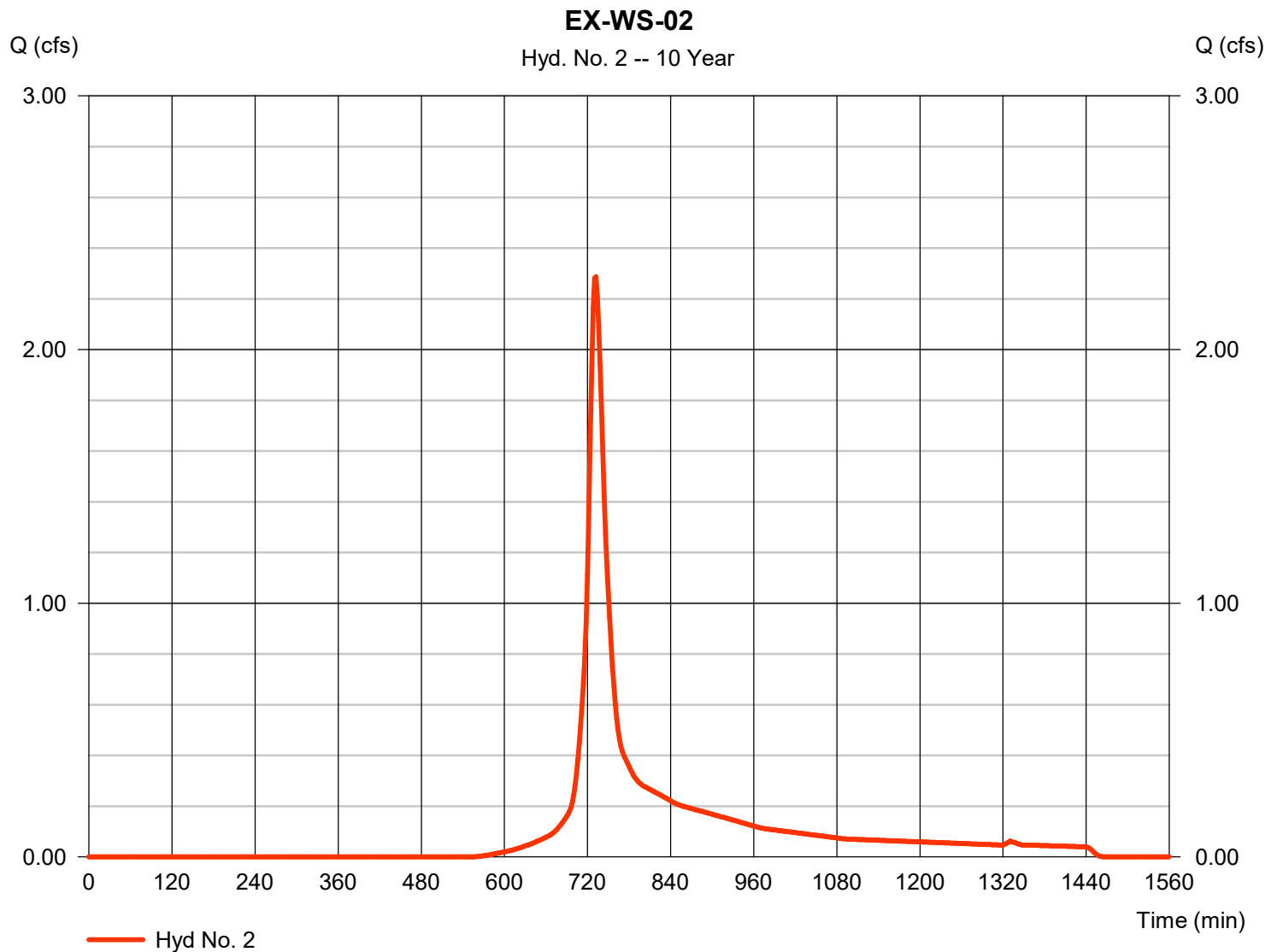
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Monday, 05 / 24 / 2021

Hyd. No. 2

EX-WS-02

Hydrograph type	= SCS Runoff	Peak discharge	= 2.287 cfs
Storm frequency	= 10 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 9,417 cuft
Drainage area	= 1.098 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 16.40 min
Total precip.	= 5.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

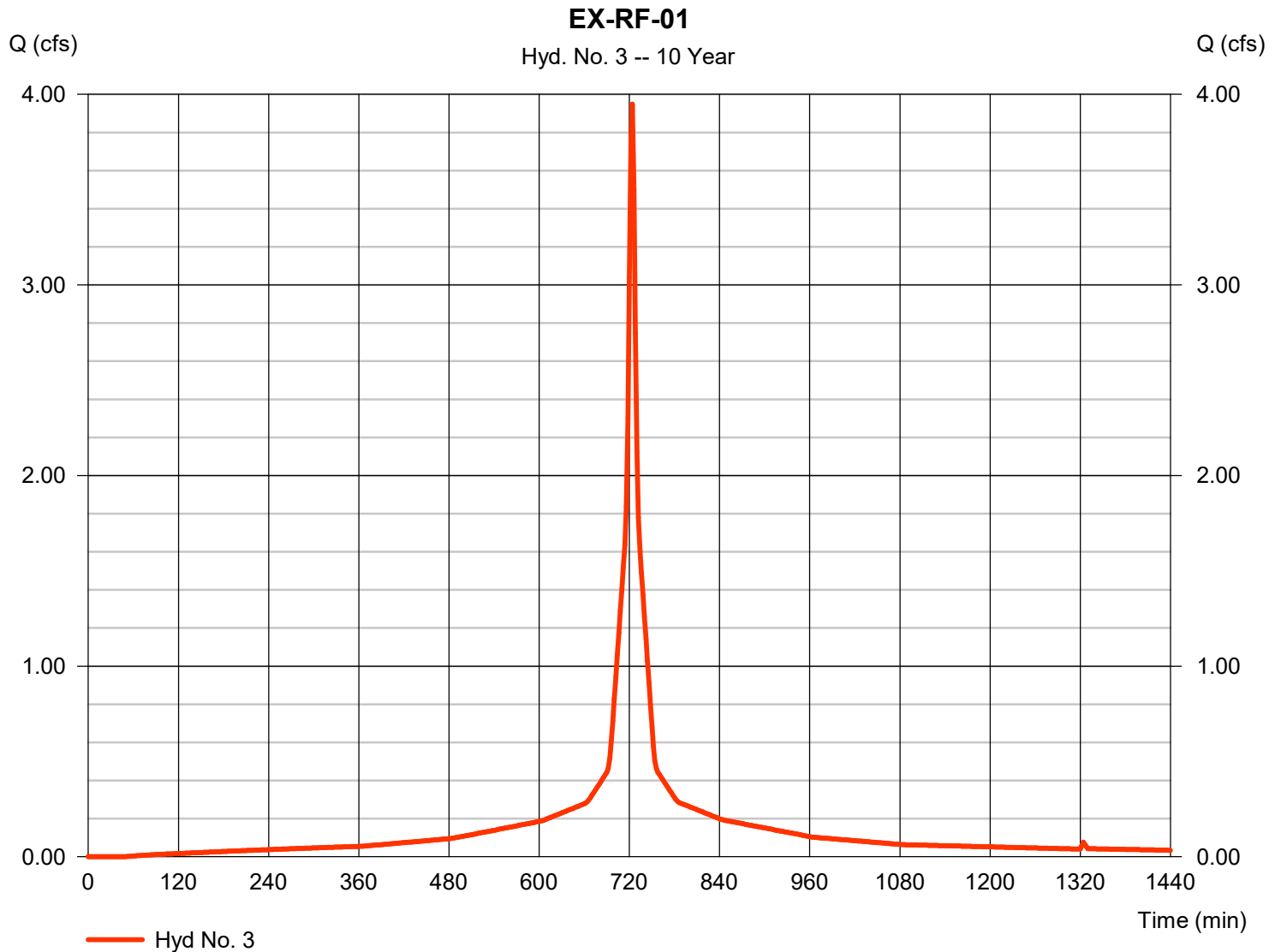
Monday, 05 / 24 / 2021

Hyd. No. 3

EX-RF-01

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 2 min
 Drainage area = 0.775 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 5.40 in
 Storm duration = 24 hrs

Peak discharge = 3.949 cfs
 Time to peak = 724 min
 Hyd. volume = 13,616 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

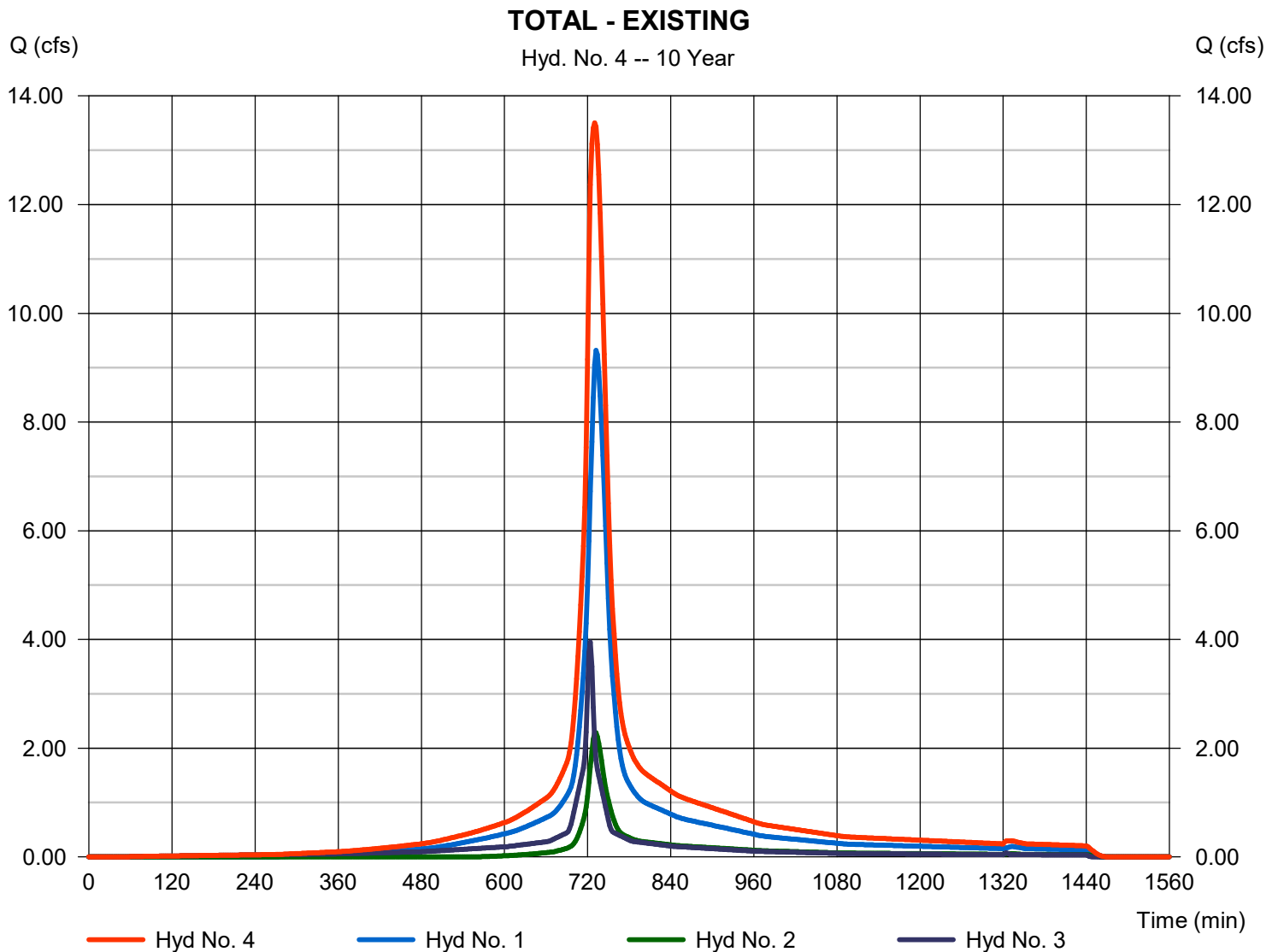
Monday, 05 / 24 / 2021

Hyd. No. 4

TOTAL - EXISTING

Hydrograph type = Combine
 Storm frequency = 10 yrs
 Time interval = 2 min
 Inflow hyds. = 1, 2, 3

Peak discharge = 13.50 cfs
 Time to peak = 730 min
 Hyd. volume = 65,561 cuft
 Contrib. drain. area = 4.677 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

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	11.72	2	732	53,834	-----	-----	-----	EX-WS-01
2	SCS Runoff	3.202	2	730	13,075	-----	-----	-----	EX-WS-02
3	SCS Runoff	4.812	2	724	16,698	-----	-----	-----	EX-RF-01
4	Combine	17.25	2	730	83,894	1, 2, 3	-----	-----	TOTAL - EXISTING
F0173-02 Hydrographs - Existing.gpw					Return Period: 25 Year			Monday, 05 / 24 / 2021	

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

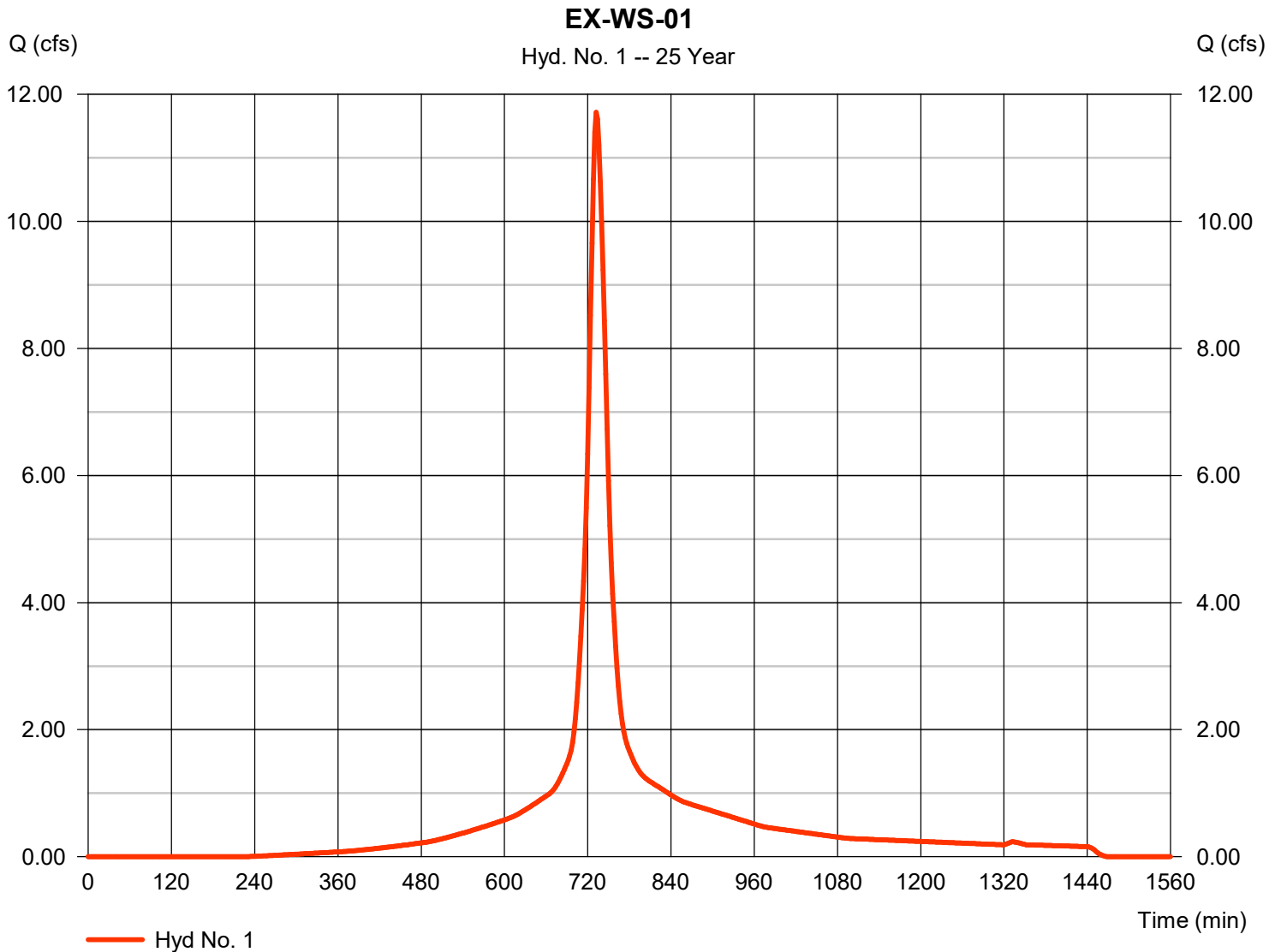
Monday, 05 / 24 / 2021

Hyd. No. 1

EX-WS-01

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 2 min
 Drainage area = 2.804 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 6.57 in
 Storm duration = 24 hrs

Peak discharge = 11.72 cfs
 Time to peak = 732 min
 Hyd. volume = 53,834 cuft
 Curve number = 89
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 18.60 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

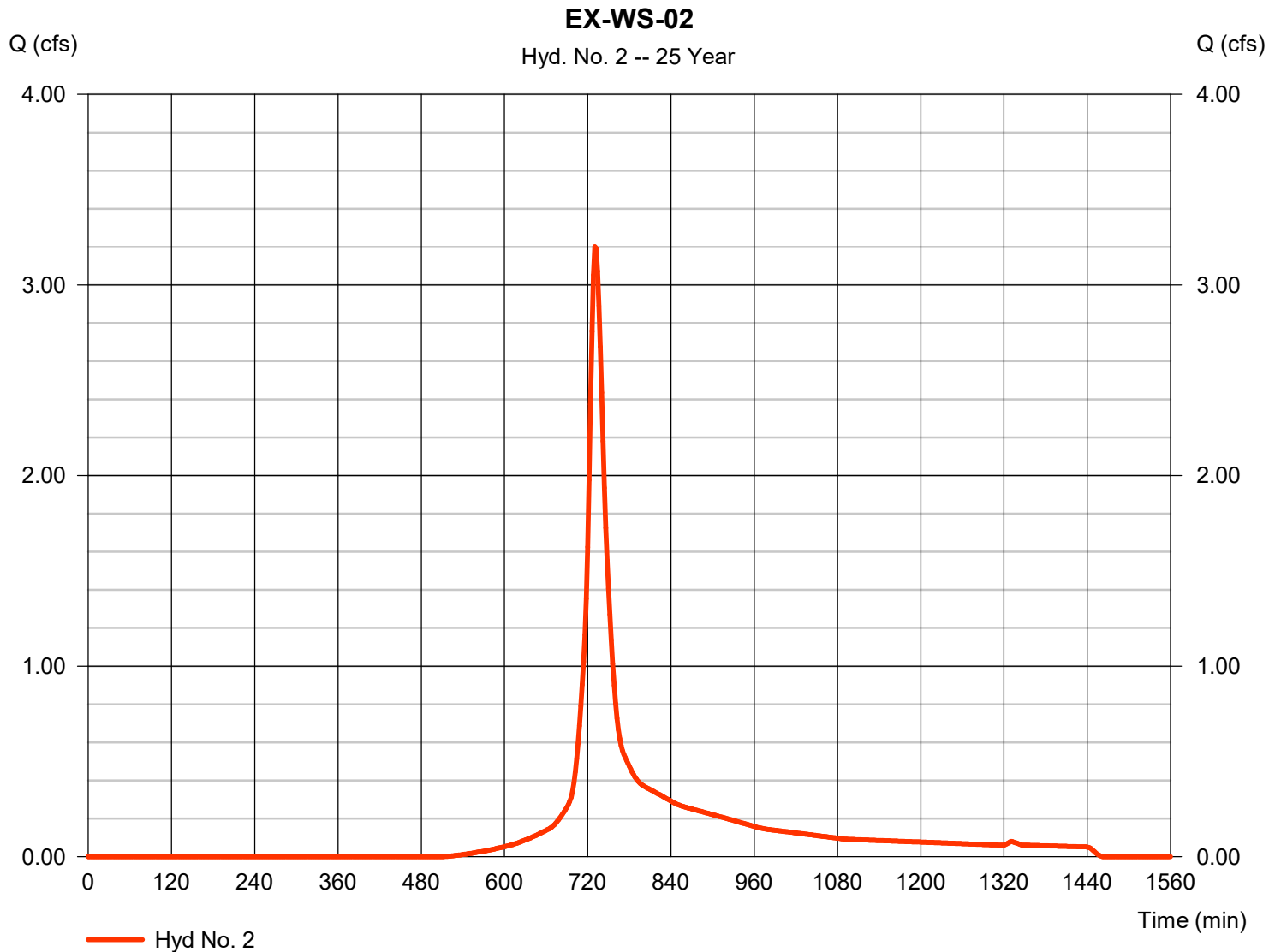
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Monday, 05 / 24 / 2021

Hyd. No. 2

EX-WS-02

Hydrograph type	= SCS Runoff	Peak discharge	= 3.202 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 13,075 cuft
Drainage area	= 1.098 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 16.40 min
Total precip.	= 6.57 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

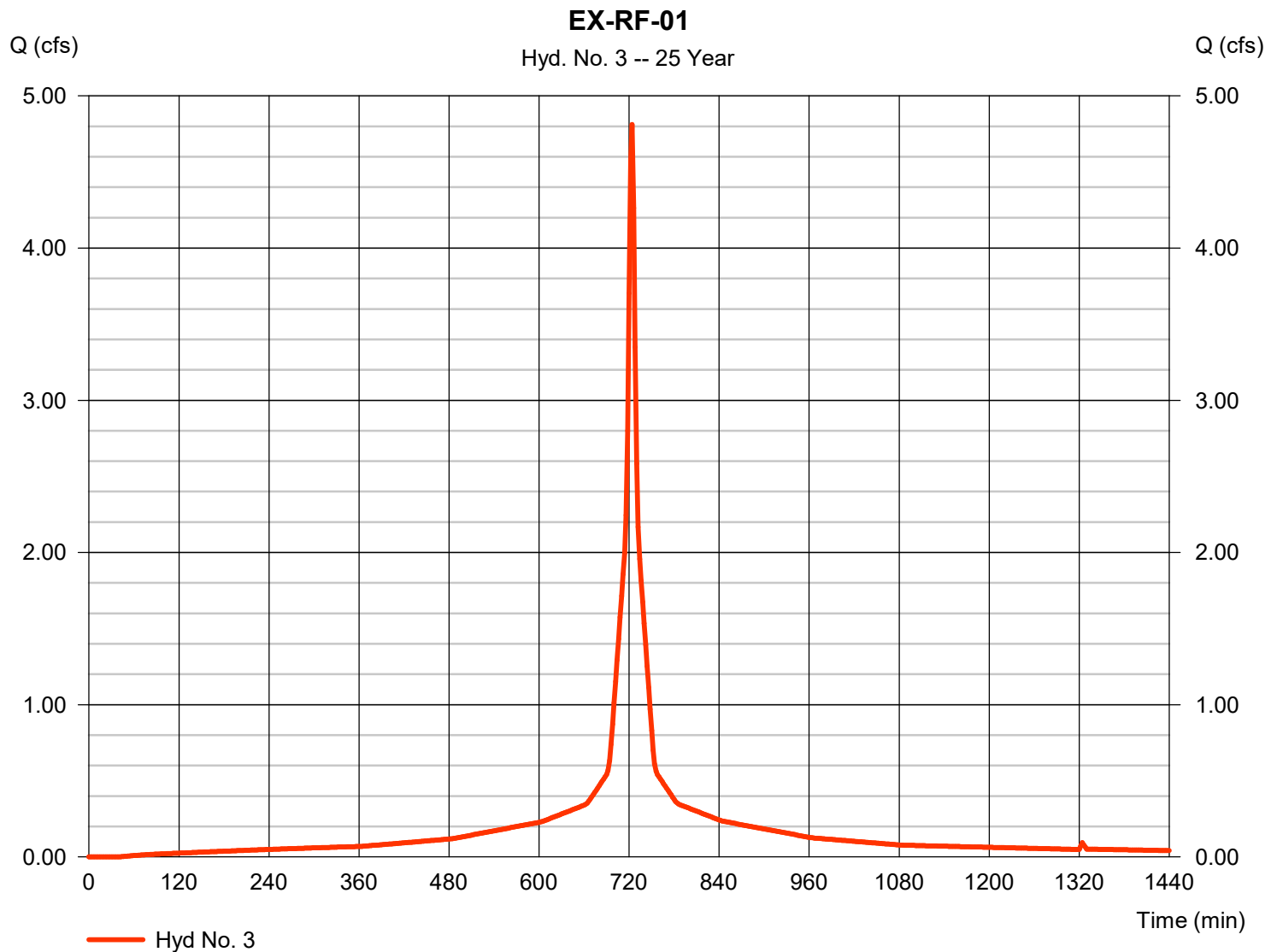
Monday, 05 / 24 / 2021

Hyd. No. 3

EX-RF-01

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 2 min
 Drainage area = 0.775 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 6.57 in
 Storm duration = 24 hrs

Peak discharge = 4.812 cfs
 Time to peak = 724 min
 Hyd. volume = 16,698 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

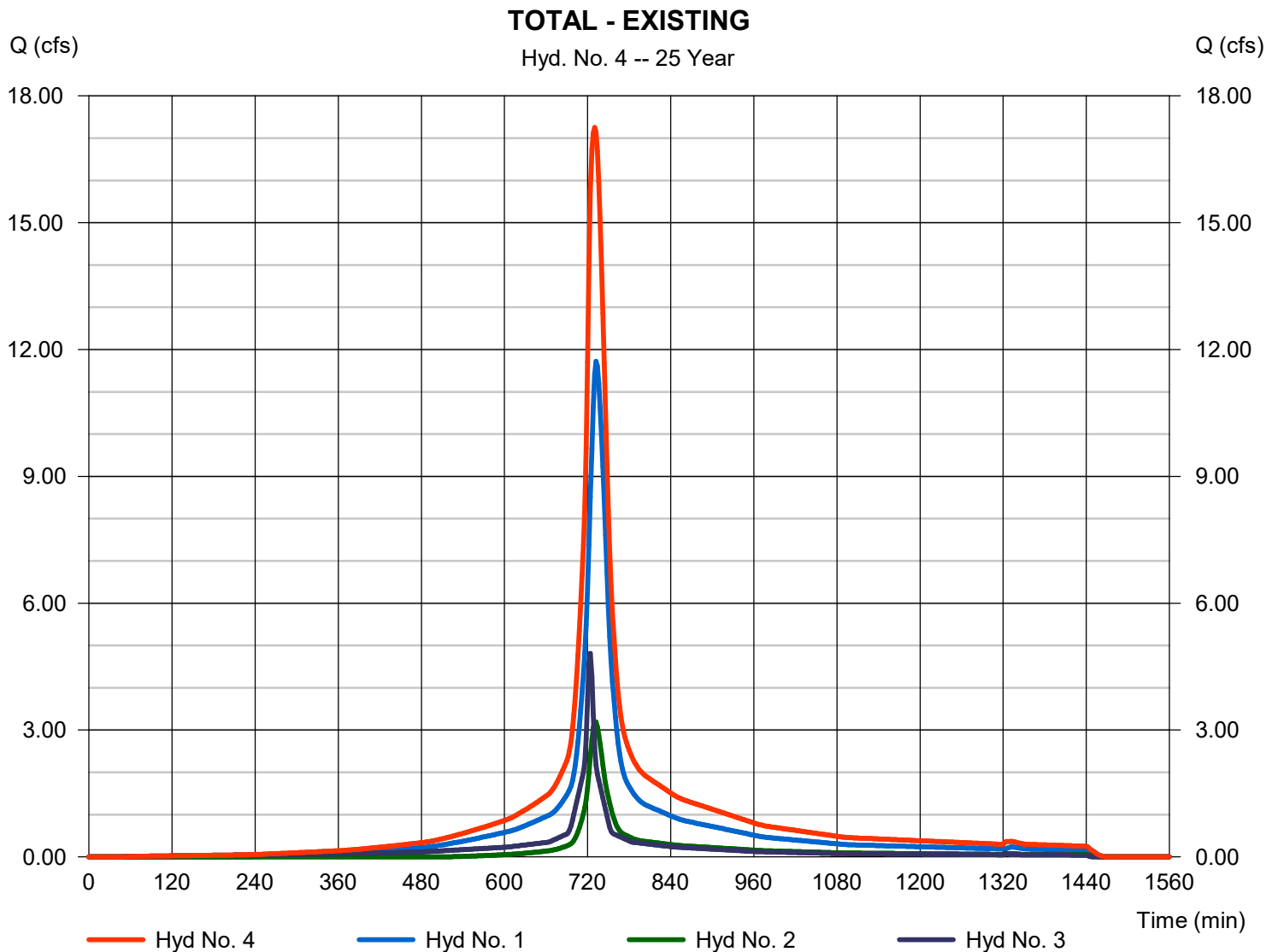
Monday, 05 / 24 / 2021

Hyd. No. 4

TOTAL - EXISTING

Hydrograph type = Combine
 Storm frequency = 25 yrs
 Time interval = 2 min
 Inflow hyds. = 1, 2, 3

Peak discharge = 17.25 cfs
 Time to peak = 730 min
 Hyd. volume = 83,894 cuft
 Contrib. drain. area = 4.677 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

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	13.50	2	732	62,477	-----	-----	-----	EX-WS-01
2	SCS Runoff	3.910	2	730	15,920	-----	-----	-----	EX-WS-02
3	SCS Runoff	5.454	2	724	18,991	-----	-----	-----	EX-RF-01
4	Combine	20.05	2	730	97,722	1, 2, 3	-----	-----	TOTAL - EXISTING
F0173-02 Hydrographs - Existing.gpw					Return Period: 50 Year			Monday, 05 / 24 / 2021	

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

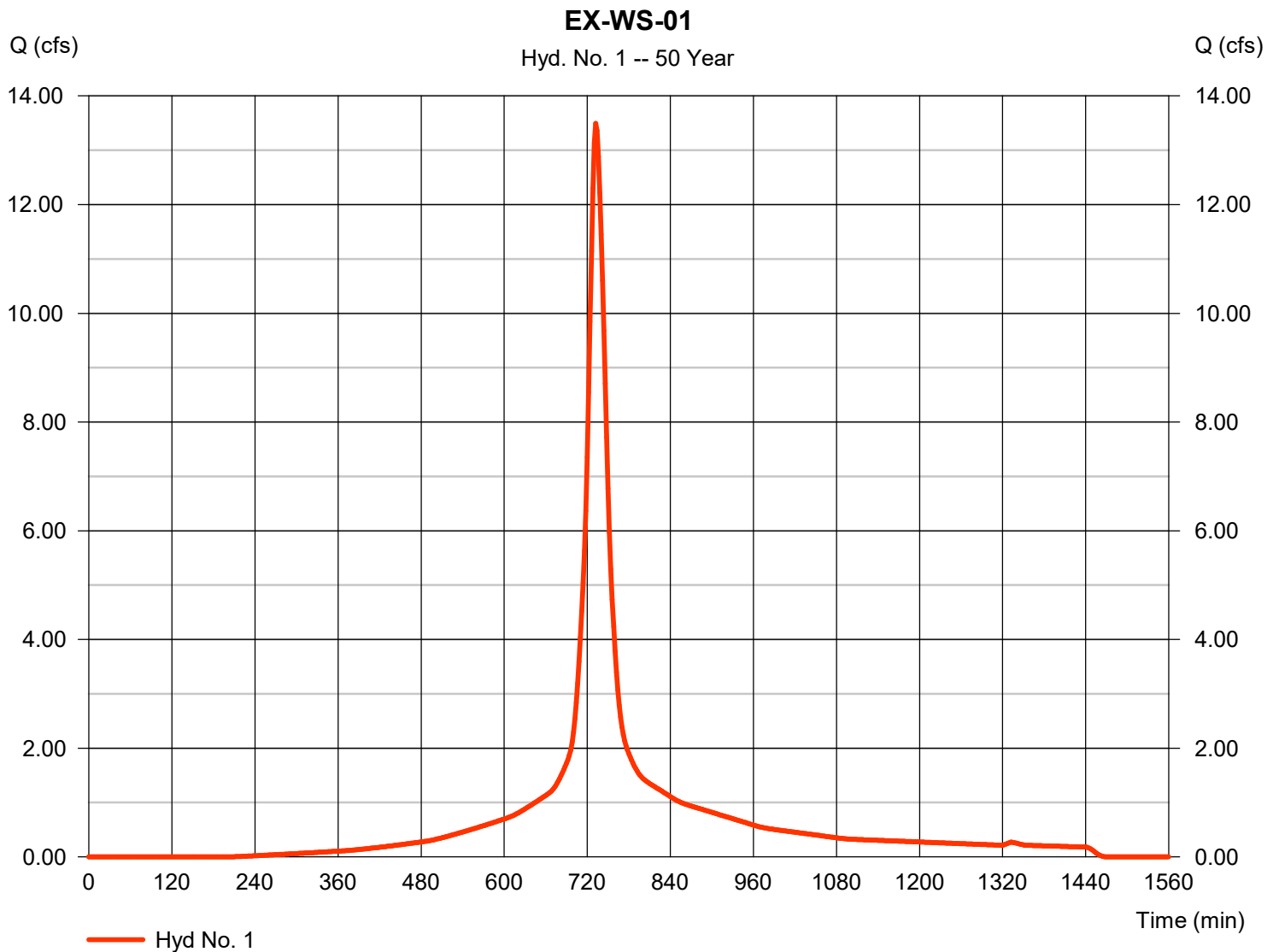
Monday, 05 / 24 / 2021

Hyd. No. 1

EX-WS-01

Hydrograph type = SCS Runoff
 Storm frequency = 50 yrs
 Time interval = 2 min
 Drainage area = 2.804 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 7.44 in
 Storm duration = 24 hrs

Peak discharge = 13.50 cfs
 Time to peak = 732 min
 Hyd. volume = 62,477 cuft
 Curve number = 89
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 18.60 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

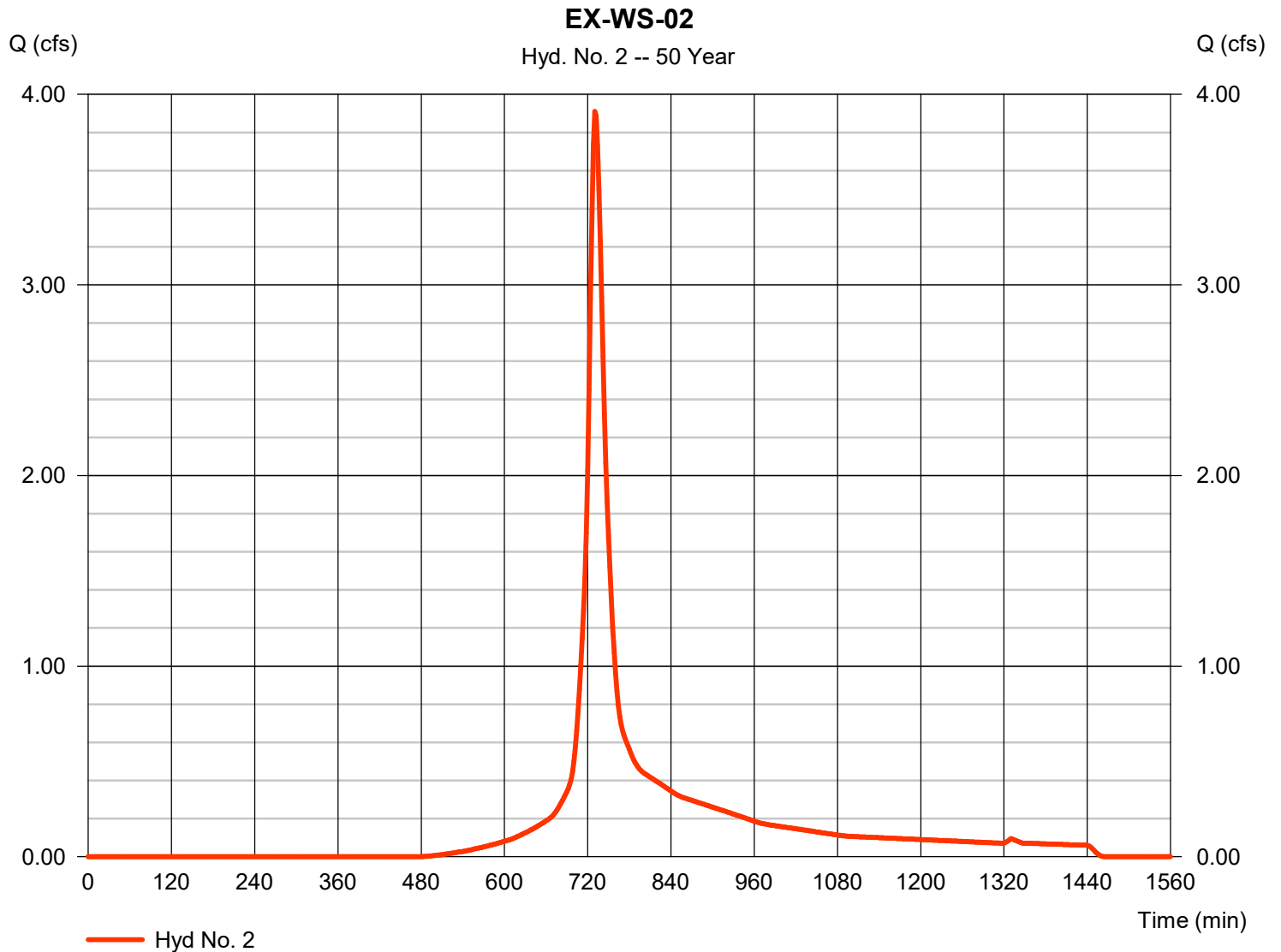
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Monday, 05 / 24 / 2021

Hyd. No. 2

EX-WS-02

Hydrograph type	= SCS Runoff	Peak discharge	= 3.910 cfs
Storm frequency	= 50 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 15,920 cuft
Drainage area	= 1.098 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 16.40 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

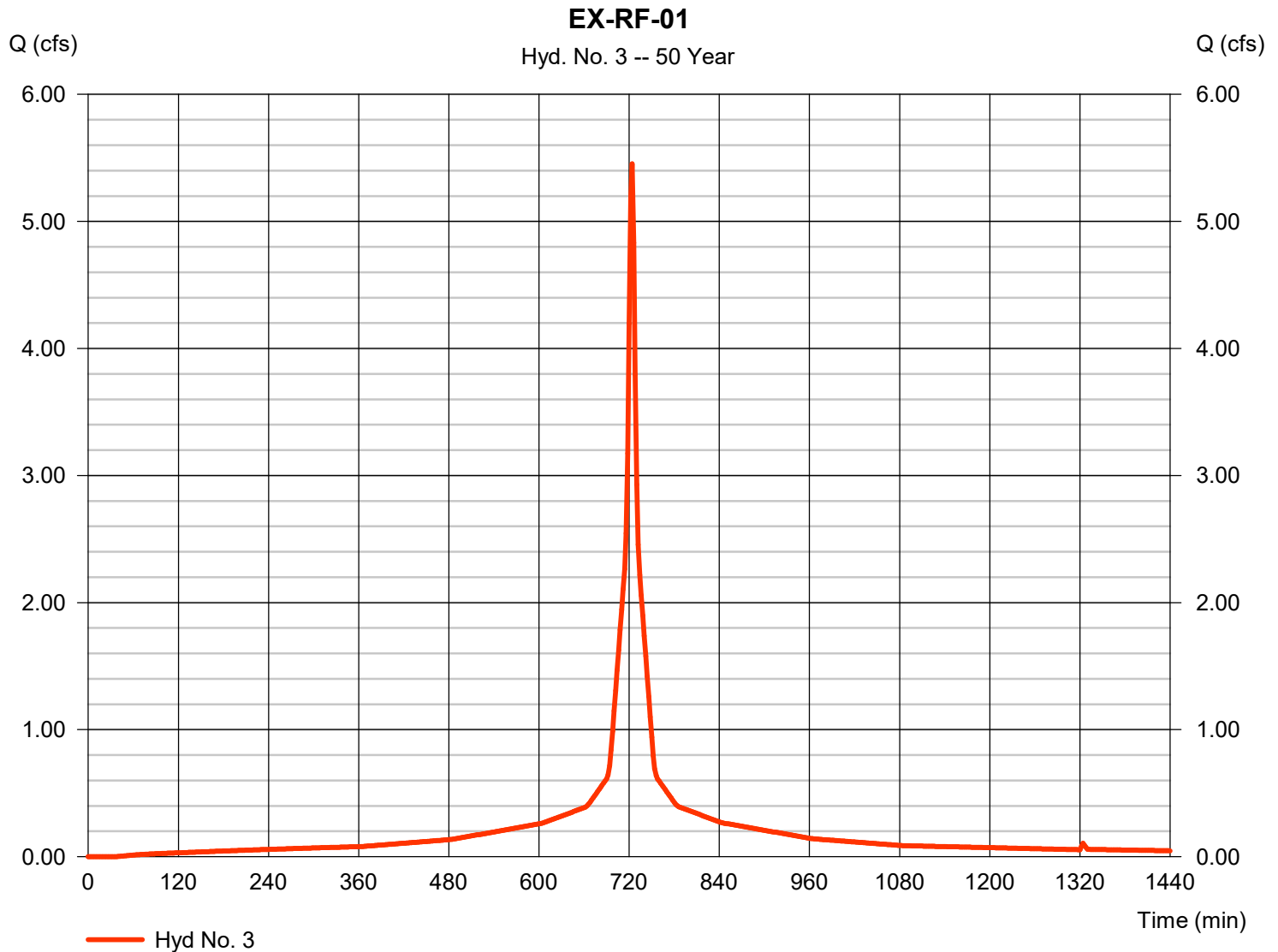
Monday, 05 / 24 / 2021

Hyd. No. 3

EX-RF-01

Hydrograph type = SCS Runoff
 Storm frequency = 50 yrs
 Time interval = 2 min
 Drainage area = 0.775 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 7.44 in
 Storm duration = 24 hrs

Peak discharge = 5.454 cfs
 Time to peak = 724 min
 Hyd. volume = 18,991 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

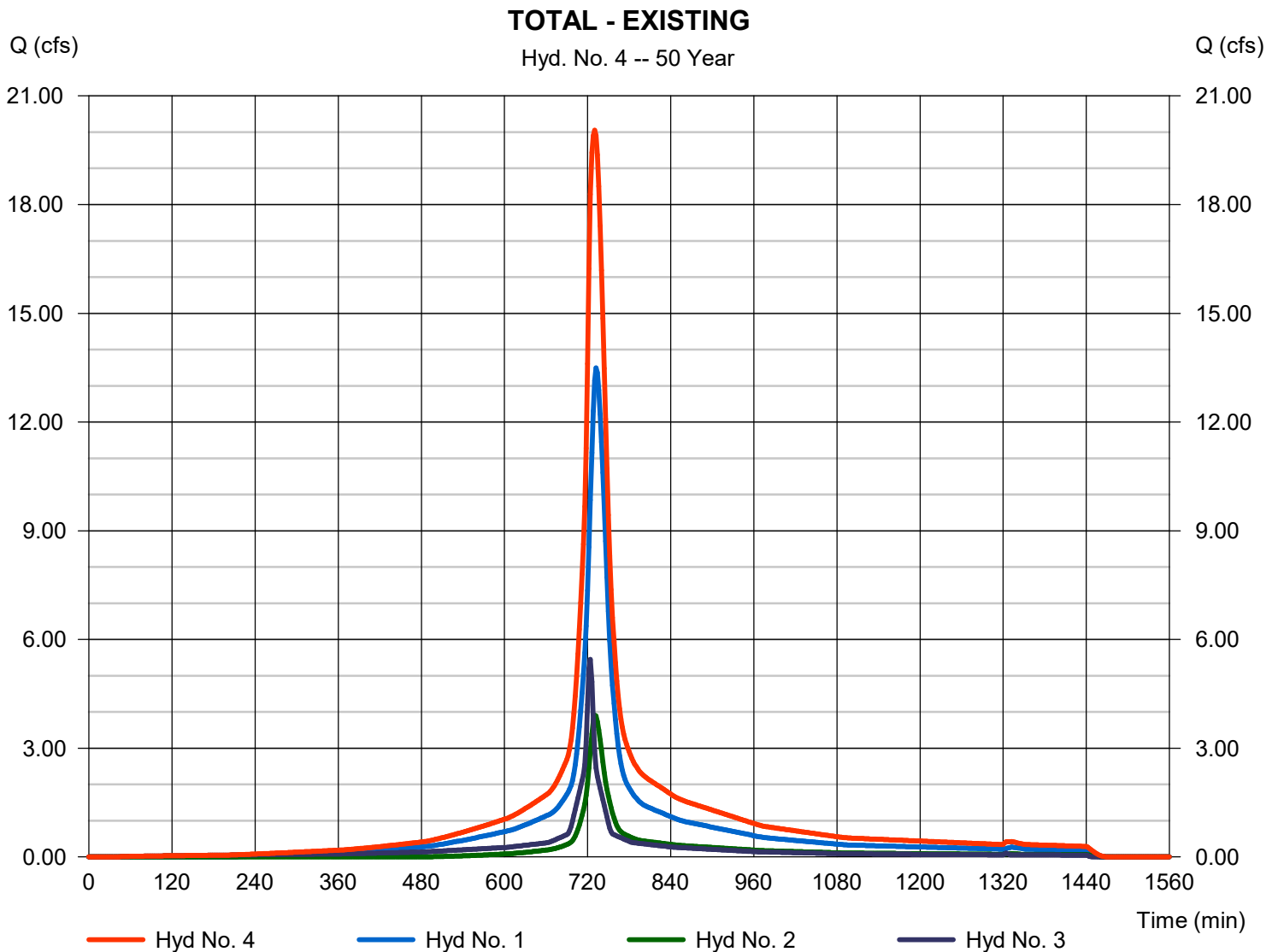
Monday, 05 / 24 / 2021

Hyd. No. 4

TOTAL - EXISTING

Hydrograph type = Combine
 Storm frequency = 50 yrs
 Time interval = 2 min
 Inflow hyds. = 1, 2, 3

Peak discharge = 20.05 cfs
 Time to peak = 730 min
 Hyd. volume = 97,722 cuft
 Contrib. drain. area = 4.677 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

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	15.39	2	732	71,759	-----	-----	-----	EX-WS-01
2	SCS Runoff	4.680	2	730	19,050	-----	-----	-----	EX-WS-02
3	SCS Runoff	6.139	2	724	21,442	-----	-----	-----	EX-RF-01
4	Combine	23.05	2	730	112,636	1, 2, 3	-----	-----	TOTAL - EXISTING
F0173-02 Hydrographs - Existing.gpw					Return Period: 100 Year			Monday, 05 / 24 / 2021	

Hydrograph Report

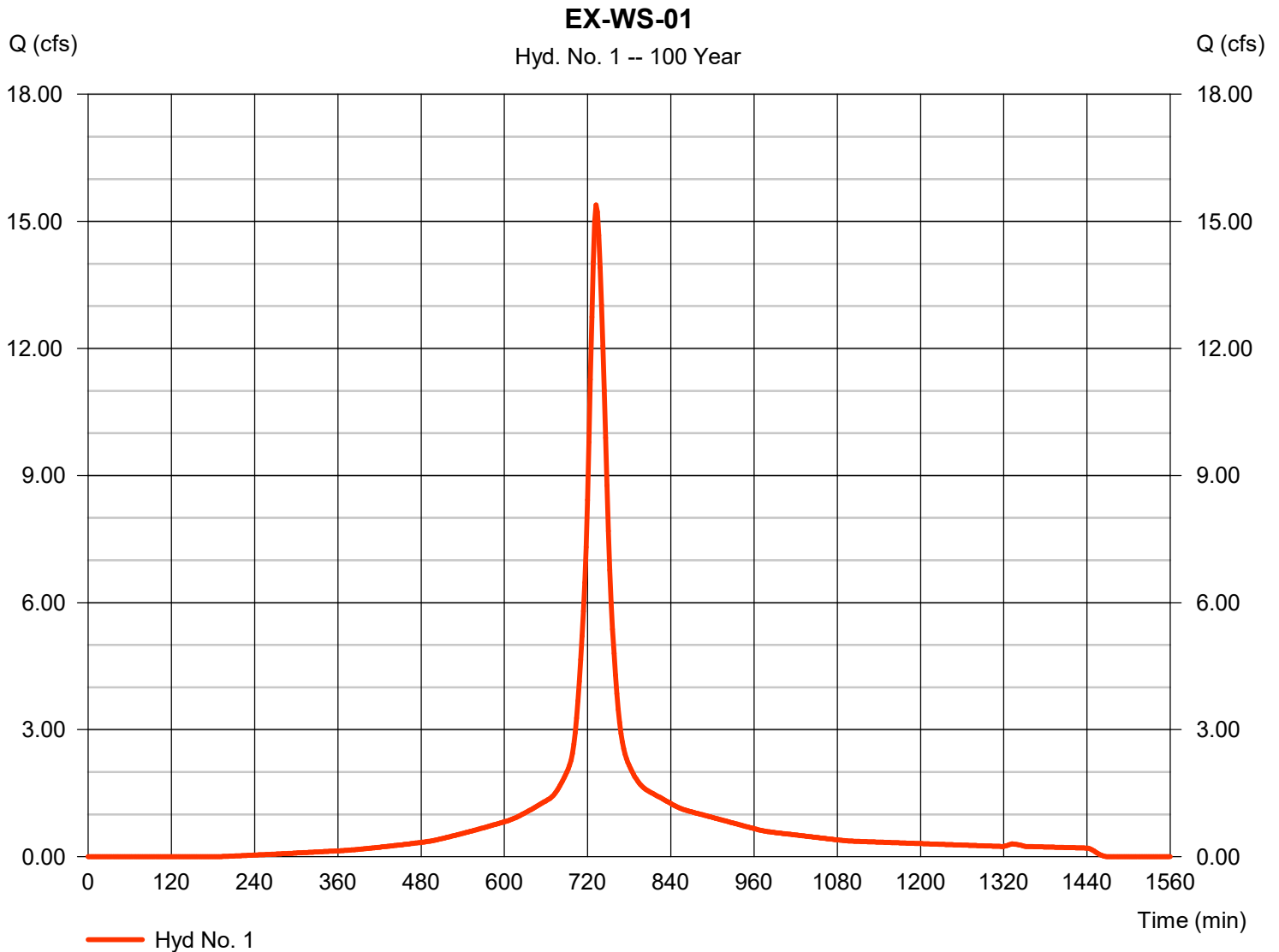
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Monday, 05 / 24 / 2021

Hyd. No. 1

EX-WS-01

Hydrograph type	= SCS Runoff	Peak discharge	= 15.39 cfs
Storm frequency	= 100 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 71,759 cuft
Drainage area	= 2.804 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.60 min
Total precip.	= 8.37 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

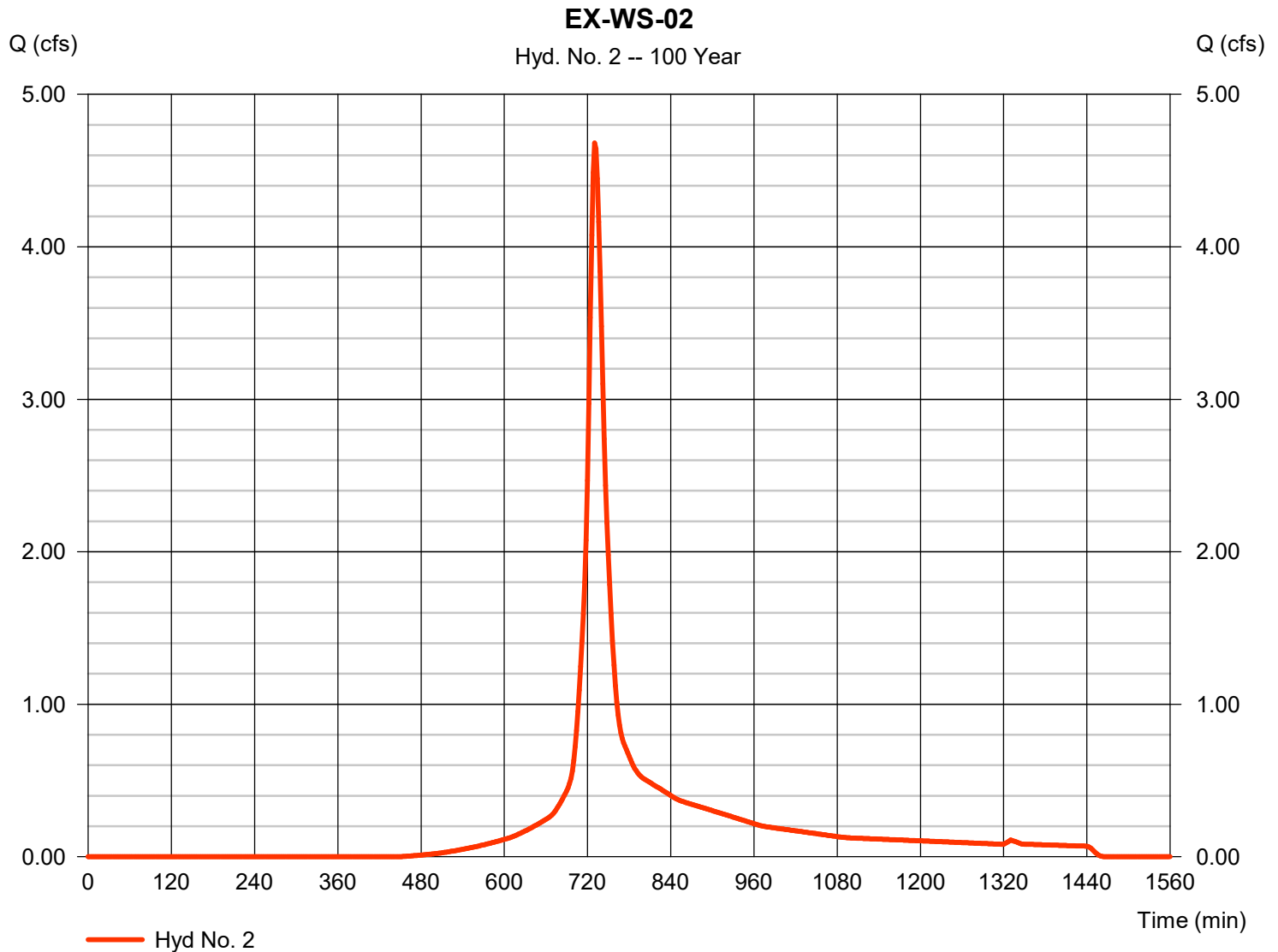
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Monday, 05 / 24 / 2021

Hyd. No. 2

EX-WS-02

Hydrograph type	= SCS Runoff	Peak discharge	= 4.680 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 19,050 cuft
Drainage area	= 1.098 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 16.40 min
Total precip.	= 8.37 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

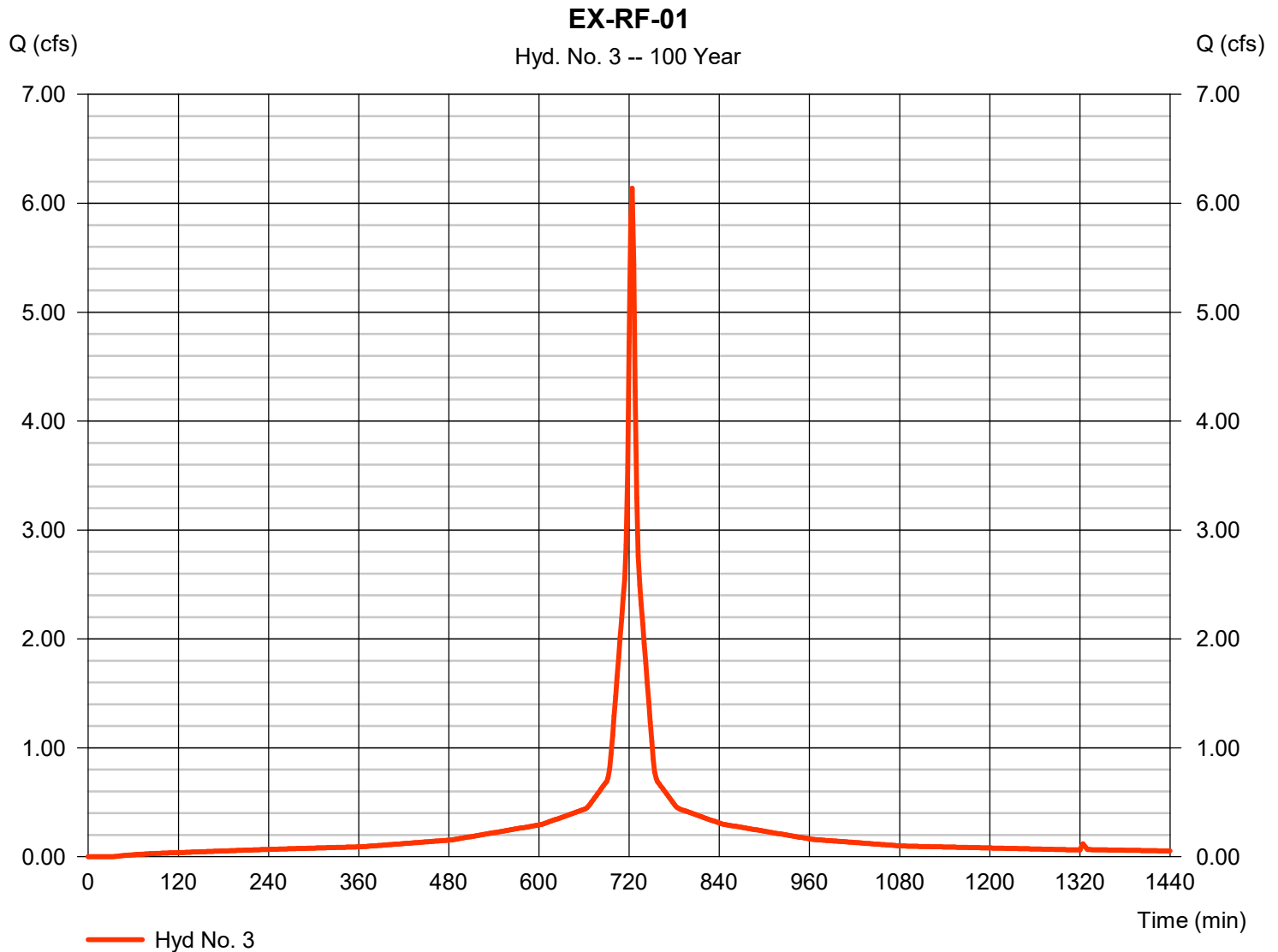
Monday, 05 / 24 / 2021

Hyd. No. 3

EX-RF-01

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 2 min
 Drainage area = 0.775 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 8.37 in
 Storm duration = 24 hrs

Peak discharge = 6.139 cfs
 Time to peak = 724 min
 Hyd. volume = 21,442 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

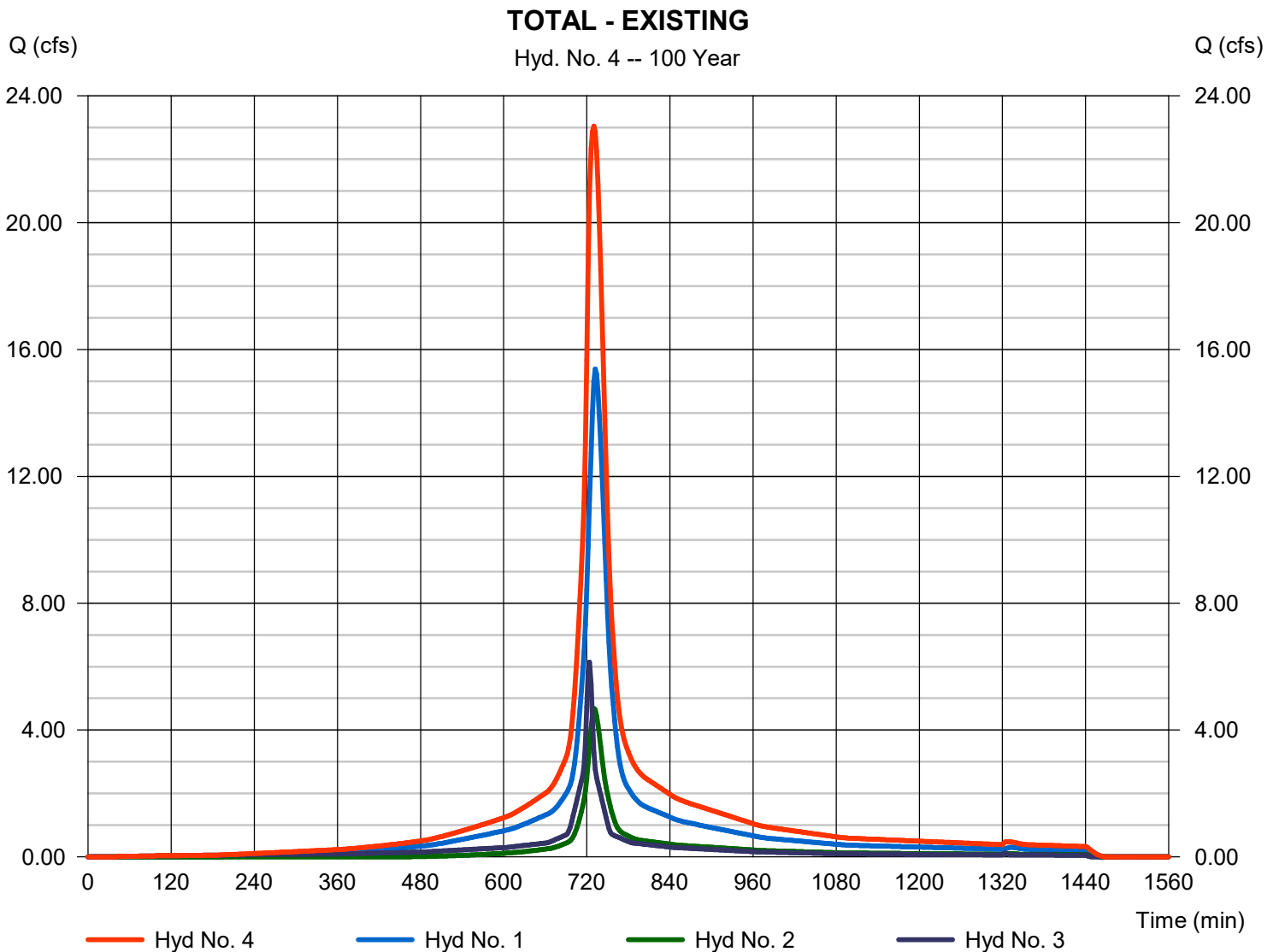
Monday, 05 / 24 / 2021

Hyd. No. 4

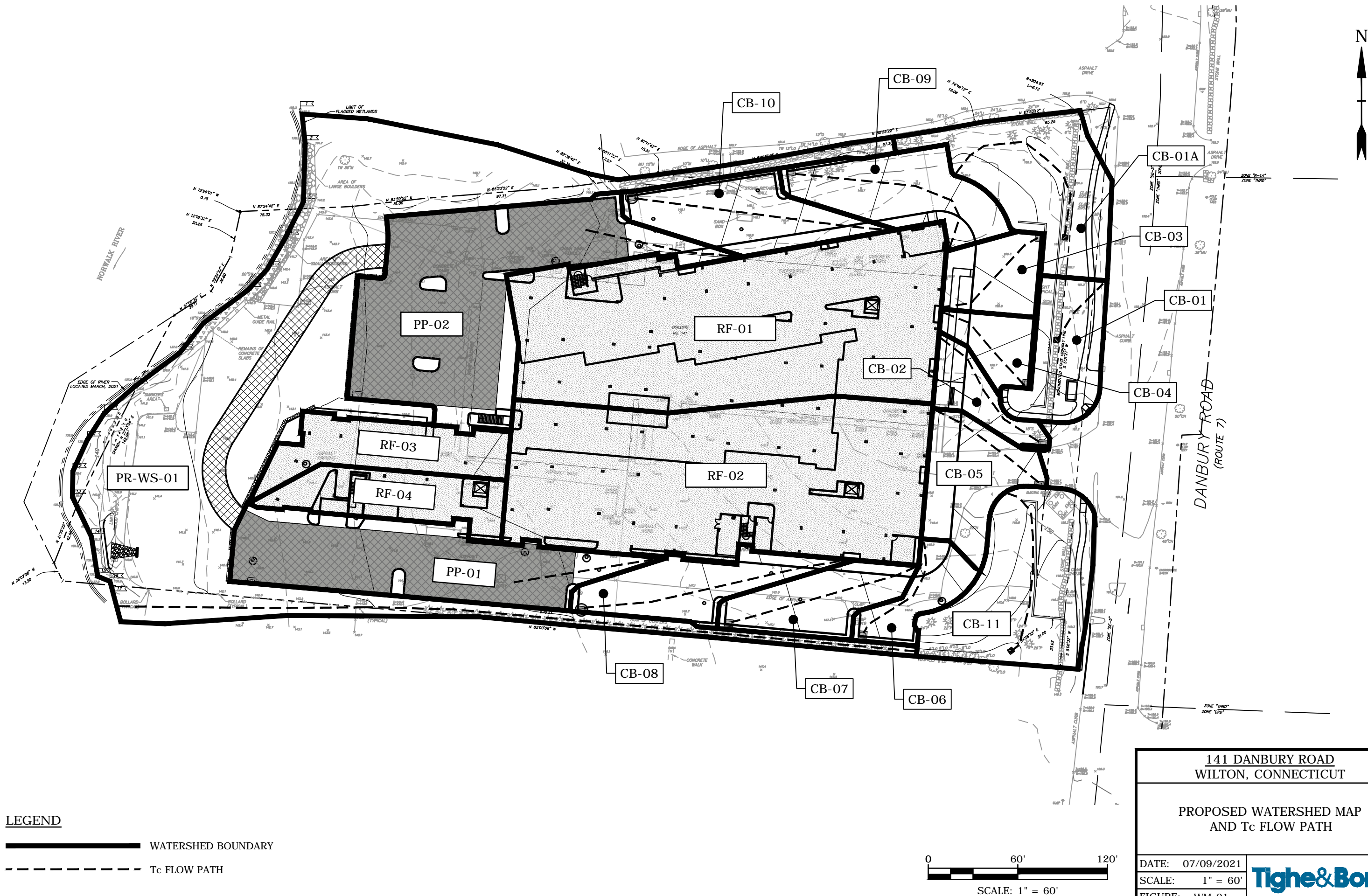
TOTAL - EXISTING

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 2 min
 Inflow hyds. = 1, 2, 3

Peak discharge = 23.05 cfs
 Time to peak = 730 min
 Hyd. volume = 112,636 cuft
 Contrib. drain. area = 4.677 ac

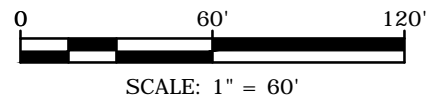


Plotted On: Jul 09, 2021 9:58am By: TAS
Tighe & Bondi: J:\F0173 Fuller\002 141 Danbury Road\Design\Stormwater\F0173-02-C-WM-01.dwg



LEGEND

- WATERSHED BOUNDARY
- Tc FLOW PATH



141 DANBURY ROAD
WILTON, CONNECTICUT

PROPOSED WATERSHED MAP
AND Tc FLOW PATH

DATE: 07/09/2021
SCALE: 1" = 60'
FIGURE: WM-01

Tighe&Bond

Name: **CB-01**

Location: Proposed Yard Drain - Front Lawn

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.025	98	2.470
Landscaped and Lawns	0.082	69	5.682
			8.152

Total Area: 0.108CN: 76

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.24	3.54	130	0.030	14.2

Total Tc (min) = 14.2Name: **CB-01A**

Location: Proposed Yard Drain - Front Lawn

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.008	98	0.778
Landscaped and Lawns	0.186	69	12.827
			13.606

Total Area: 0.194CN: 70

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.24	3.54	50	0.020	7.8

Total Tc (min) = 7.8

References:

NRCS Technical Release 55

ConnDOT Drainage Manual, Chapter 6

Name: **CB-02****Location:** Proposed Catch Basin - Driveway

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.043	98	4.252
Landscaped and Lawns	0.010	69	0.719
			4.971

Total Area: 0.054**CN:** 92**Time of Concentration:**

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.015	3.54	98	0.050	1.0

Total Tc (min) = 1.0**Minimum Tc =** 5.0**Name:** **CB-03****Location:** Proposed Catch Basin - Parking Area East

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.057	98	5.620
Landscaped and Lawns	0.016	69	1.137
			6.757

Total Area: 0.074**CN:** 92**Time of Concentration:**

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.24	3.54	20	0.020	3.7
B-C	0.015	3.54	60	0.033	0.8

Total Tc (min) = 4.5**Minimum Tc =** 5.0

References:

NRCS Technical Release 55

ConnDOT Drainage Manual, Chapter 6

Name: CB-04

Location: Proposed Catch Basin - Parking Area East

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.044	98	4.320
Landscaped and Lawns	0.009	69	0.604
			4.923

Total Area: 0.053

CN: 93

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.24	3.54	20	0.020	3.7
B-C	0.015	3.54	55	0.045	0.7

Total Tc (min) = 4.4

Minimum Tc = 5.0

Name: CB-05

Location: Proposed Catch Basin - Driveway

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.076	98	7.451
Landscaped and Lawns	0.039	69	2.706
			10.157

Total Area: 0.115

CN: 88

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.24	3.54	20	0.020	3.7
B-C	0.015	3.54	65	0.040	0.8

Total Tc (min) = 4.5

Minimum Tc = 5.0

References:

NRCS Technical Release 55

ConnDOT Drainage Manual, Chapter 6

Name: CB-06

Location: Proposed Catch Basin - Parking Area South

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.047	98	4.628
Landscaped and Lawns	0.015	69	1.006
			5.634

Total Area: 0.062

CN: 91

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.24	3.54	22	0.020	4.0
B-C	0.015	3.54	58	0.025	0.9

Total Tc (min) = 4.9

Minimum Tc = 5.0

Name: CB-07

Location: Proposed Catch Basin - Parking Area South

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.081	98	7.915
Landscaped and Lawns	0.018	69	1.243
			9.158

Total Area: 0.099

CN: 93

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.24	3.54	15	0.020	3.0
B-C	0.015	3.54	115	0.035	1.3

Total Tc (min) = 4.3

Minimum Tc = 5.0

References:

NRCS Technical Release 55

ConnDOT Drainage Manual, Chapter 6

Name: CB-08

Location: Proposed Catch Basin - Parking Area South

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.094	98	9.249
Landscaped and Lawns	0.017	69	1.180
			10.429

Total Area: 0.111

CN: 94

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.24	3.54	30	0.040	3.9
B-C	0.015	3.54	140	0.035	1.5

Total Tc (min) = 5.5

Name: CB-09

Location: Proposed Catch Basin - Parking Area North

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.117	98	11.445
Landscaped and Lawns	0.020	69	1.375
			12.820

Total Area: 0.137

CN: 94

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.24	3.54	20	0.020	3.7
B-C	0.015	3.54	120	1.000	0.4

Total Tc (min) = 4.1

Minimum Tc = 5.0

References:

NRCS Technical Release 55

ConnDOT Drainage Manual, Chapter 6

Name: CB-10

Location: Proposed Catch Basin - Parking Area North

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.104	98	10.153
Landscaped and Lawns	0.029	69	2.020
			12.173

Total Area: 0.133

CN: 92

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.24	3.54	30	0.040	3.9
B-C	0.015	3.54	135	1.000	0.4

Total Tc (min) = 4.3

Minimum Tc = 5.0

Name: CB-11

Location: Proposed Yard Drain - Southeast Corner Site

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.010	98	0.990
Landscaped and Lawns	0.217	69	14.945
			15.935

Total Area: 0.227

CN: 70

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.24	3.54	120	0.050	10.9

Total Tc (min) = 10.9

References:

NRCS Technical Release 55

ConnDOT Drainage Manual, Chapter 6

Name: PP-01**Location:** Proposed Porous Pavement - Southwest Parking Area

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.266	98	26.077
Landscaped and Lawns	0.005	69	0.317
			26.394

Total Area: 0.271**CN:** 98**Time of Concentration:**

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.015	3.54	100	0.020	1.5

Total Tc (min) = 1.5**Minimum Tc =** 5.0**Name:** PP-02**Location:** Proposed Porous Pavement - Northwest Parking Area

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.393	98	38.505
Landscaped and Lawns	0.026	69	1.777
			40.282

Total Area: 0.419**CN:** 96**Time of Concentration:**

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.24	3.54	40	0.040	4.9
B-C	0.015	3.54	60	0.016	1.1

Total Tc (min) = 6.0**References:**

NRCS Technical Release 55

ConnDOT Drainage Manual, Chapter 6

Name: RF-01**Location:** Proposed Building - North

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.668	98	65.466
Landscaped and Lawns	0.000	69	0.000
			65.466

Total Area: 0.668**CN:** 98**Time of Concentration:**

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.015	3.54	50	0.015	1.0

Total Tc (min) = 1.0**Minimum Tc =** 5.0**Name:** RF-02**Location:** Proposed Building - South

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.653	98	63.954
Landscaped and Lawns	0.000	69	0.000
			63.954

Total Area: 0.653**CN:** 98**Time of Concentration:**

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.015	3.54	50	0.015	1.0

Total Tc (min) = 1.0**Minimum Tc =** 5.0**References:**

NRCS Technical Release 55

ConnDOT Drainage Manual, Chapter 6

Name: RF-03**Location:** Proposed Building - Northwest

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.120	98	11.807
Landscaped and Lawns	0.000	69	0.000
			11.807

Total Area: 0.120**CN:** 98**Time of Concentration:**

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.015	3.54	50	0.015	1.0

Total Tc (min) = 1.0**Minimum Tc =** 5.0**Name:** RF-04**Location:** Proposed Building - Southwest

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.115	98	11.274
Landscaped and Lawns	0.000	69	0.000
			11.274

Total Area: 0.115**CN:** 98**Time of Concentration:**

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.015	3.54	50	0.015	1.0

Total Tc (min) = 1.0**Minimum Tc =** 5.0**References:**

NRCS Technical Release 55

ConnDOT Drainage Manual, Chapter 6

Name: **PR-WS-01**

Location: Site - West

Cover Type	Area (ac)	CN	A x CN
Pavement / Impervious	0.065	98	6.412
Landscaped and Lawns	0.975	69	67.267
			73.679

Total Area: 1.040CN: 71

Time of Concentration:

71

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.24	3.54	130	0.008	24.1

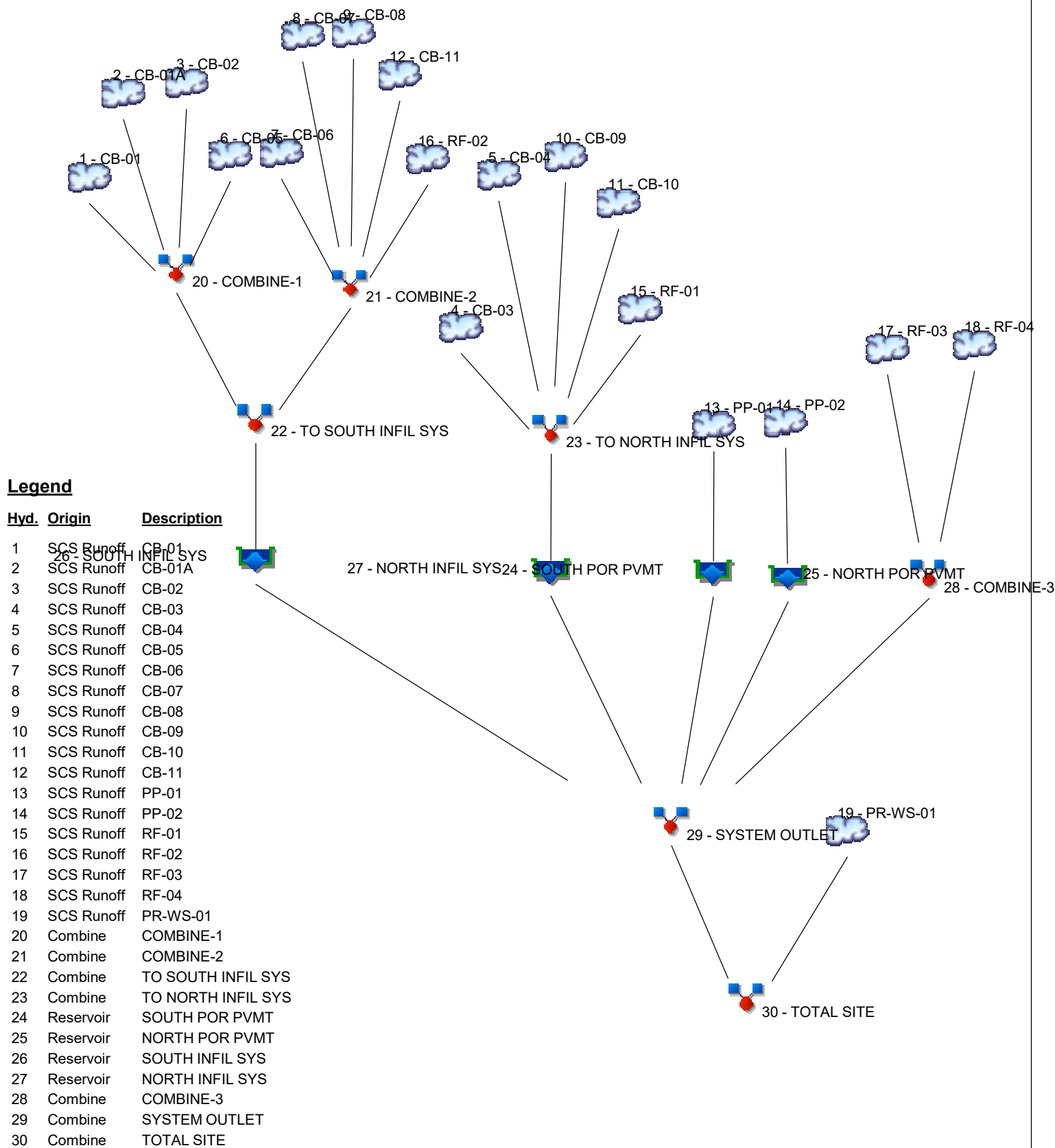
Shallow Concentrated Flow Travel Time					
Segment ID	Cover	Flow Length (ft)	Slope (ft/ft)	V (ft/s)	Time (min)
B-C	Unpaved	240	0.013	1.80	2.2
C-D	Paved	165	0.013	2.27	1.2

Total Tc (min) = 27.6

References:

NRCS Technical Release 55

ConnDOT Drainage Manual, Chapter 6



Legend

Hyd.	Origin	Description
1	SCS Runoff	CB-01
2	SCS Runoff	CB-01A
3	SCS Runoff	CB-02
4	SCS Runoff	CB-03
5	SCS Runoff	CB-04
6	SCS Runoff	CB-05
7	SCS Runoff	CB-06
8	SCS Runoff	CB-07
9	SCS Runoff	CB-08
10	SCS Runoff	CB-09
11	SCS Runoff	CB-10
12	SCS Runoff	CB-11
13	SCS Runoff	PP-01
14	SCS Runoff	PP-02
15	SCS Runoff	RF-01
16	SCS Runoff	RF-02
17	SCS Runoff	RF-03
18	SCS Runoff	RF-04
19	SCS Runoff	PR-WS-01
20	Combine	COMBINE-1
21	Combine	COMBINE-2
22	Combine	TO SOUTH INFIL SYS
23	Combine	TO NORTH INFIL SYS
24	Reservoir	SOUTH POR PVMT
25	Reservoir	NORTH POR PVMT
26	Reservoir	SOUTH INFIL SYS
27	Reservoir	NORTH INFIL SYS
28	Combine	COMBINE-3
29	Combine	SYSTEM OUTLET
30	Combine	TOTAL SITE

Hydrograph Return Period Recap

Hydratflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	-----	-----	0.128	-----	-----	0.269	0.364	0.436	0.514	CB-01
2	SCS Runoff	-----	-----	0.195	-----	-----	0.475	0.671	0.822	0.987	CB-01A
3	SCS Runoff	-----	-----	0.159	-----	-----	0.259	0.321	0.366	0.415	CB-02
4	SCS Runoff	-----	-----	0.218	-----	-----	0.354	0.439	0.502	0.569	CB-03
5	SCS Runoff	-----	-----	0.160	-----	-----	0.257	0.318	0.363	0.410	CB-04
6	SCS Runoff	-----	-----	0.299	-----	-----	0.513	0.648	0.747	0.852	CB-05
7	SCS Runoff	-----	-----	0.177	-----	-----	0.292	0.364	0.417	0.473	CB-06
8	SCS Runoff	-----	-----	0.299	-----	-----	0.481	0.594	0.678	0.767	CB-07
9	SCS Runoff	-----	-----	0.344	-----	-----	0.546	0.672	0.766	0.865	CB-08
10	SCS Runoff	-----	-----	0.424	-----	-----	0.674	0.830	0.945	1.068	CB-09
11	SCS Runoff	-----	-----	0.392	-----	-----	0.637	0.790	0.902	1.023	CB-10
12	SCS Runoff	-----	-----	0.212	-----	-----	0.510	0.720	0.883	1.061	CB-11
13	SCS Runoff	-----	-----	0.900	-----	-----	1.381	1.683	1.907	2.147	PP-01
14	SCS Runoff	-----	-----	1.352	-----	-----	2.106	2.577	2.926	3.298	PP-02
15	SCS Runoff	-----	-----	2.218	-----	-----	3.404	4.148	4.701	5.291	RF-01
16	SCS Runoff	-----	-----	2.168	-----	-----	3.327	4.055	4.595	5.172	RF-02
17	SCS Runoff	-----	-----	0.398	-----	-----	0.611	0.745	0.844	0.951	RF-03
18	SCS Runoff	-----	-----	0.382	-----	-----	0.586	0.714	0.809	0.911	RF-04
19	SCS Runoff	-----	-----	0.734	-----	-----	1.726	2.421	2.955	3.537	PR-WS-01
20	Combine	1, 2, 3, 6,	-----	0.722	-----	-----	1.409	1.865	2.210	2.583	COMBINE-1
21	Combine	7, 8, 9, 12, 16,	-----	3.147	-----	-----	5.059	6.276	7.186	8.161	COMBINE-2
22	Combine	20, 21	-----	3.869	-----	-----	6.468	8.142	9.396	10.74	TO SOUTH INFIL SYS
23	Combine	4, 5, 10, 11, 15,	-----	3.412	-----	-----	5.327	6.525	7.413	8.361	TO NORTH INFIL SYS
24	Reservoir	13	-----	0.000	-----	-----	0.000	0.036	0.106	0.191	SOUTH POR PVMT
25	Reservoir	14	-----	0.000	-----	-----	0.000	0.031	0.105	0.200	NORTH POR PVMT
26	Reservoir	22	-----	0.241	-----	-----	2.347	3.888	5.328	7.056	SOUTH INFIL SYS
27	Reservoir	23	-----	0.583	-----	-----	2.771	4.442	5.575	6.513	NORTH INFIL SYS
28	Combine	17, 18,	-----	0.780	-----	-----	1.197	1.459	1.654	1.861	COMBINE-3
29	Combine	24, 25, 26, 27, 28	-----	0.917	-----	-----	5.271	8.975	11.51	14.90	SYSTEM OUTLET
30	Combine	19, 29	-----	1.636	-----	-----	6.762	10.69	13.64	17.35	TOTAL SITE
Proj. file: F0173-02 Hydrographs - Proposed.gpw										Friday, 07 / 9 / 2021	

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

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	0.128	2	732	533	-----	-----	-----	CB-01
2	SCS Runoff	0.195	2	728	727	-----	-----	-----	CB-01A
3	SCS Runoff	0.159	2	724	492	-----	-----	-----	CB-02
4	SCS Runoff	0.218	2	724	674	-----	-----	-----	CB-03
5	SCS Runoff	0.160	2	724	500	-----	-----	-----	CB-04
6	SCS Runoff	0.299	2	724	902	-----	-----	-----	CB-05
7	SCS Runoff	0.177	2	724	544	-----	-----	-----	CB-06
8	SCS Runoff	0.299	2	724	934	-----	-----	-----	CB-07
9	SCS Runoff	0.344	2	724	1,086	-----	-----	-----	CB-08
10	SCS Runoff	0.424	2	724	1,340	-----	-----	-----	CB-09
11	SCS Runoff	0.392	2	724	1,211	-----	-----	-----	CB-10
12	SCS Runoff	0.212	2	730	878	-----	-----	-----	CB-11
13	SCS Runoff	0.900	2	724	3,049	-----	-----	-----	PP-01
14	SCS Runoff	1.352	2	724	4,399	-----	-----	-----	PP-02
15	SCS Runoff	2.218	2	724	7,516	-----	-----	-----	RF-01
16	SCS Runoff	2.168	2	724	7,347	-----	-----	-----	RF-02
17	SCS Runoff	0.398	2	724	1,350	-----	-----	-----	RF-03
18	SCS Runoff	0.382	2	724	1,294	-----	-----	-----	RF-04
19	SCS Runoff	0.734	2	742	4,104	-----	-----	-----	PR-WS-01
20	Combine	0.722	2	724	2,654	1, 2, 3, 6,	-----	-----	COMBINE-1
21	Combine	3.147	2	724	10,790	7, 8, 9, 12, 16,	-----	-----	COMBINE-2
22	Combine	3.869	2	724	13,444	20, 21	-----	-----	TO SOUTH INFIL SYS
23	Combine	3.412	2	724	11,241	4, 5, 10, 11, 15,	-----	-----	TO NORTH INFIL SYS
24	Reservoir	0.000	2	760	0	13	141.82	897	SOUTH POR PVMT
25	Reservoir	0.000	2	732	0	14	141.31	1,336	NORTH POR PVMT
26	Reservoir	0.241	2	760	1,021	22	143.05	5,230	SOUTH INFIL SYS
27	Reservoir	0.583	2	746	1,717	23	143.36	4,356	NORTH INFIL SYS
28	Combine	0.780	2	724	2,644	17, 18,	-----	-----	COMBINE-3
29	Combine	0.917	2	748	5,382	24, 25, 26, 27, 28	-----	-----	SYSTEM OUTLET
30	Combine	1.636	2	746	9,487	19, 29	-----	-----	TOTAL SITE
F0173-02 Hydrographs - Proposed.gpw					Return Period: 2 Year			Friday, 07 / 9 / 2021	

Hydrograph Report

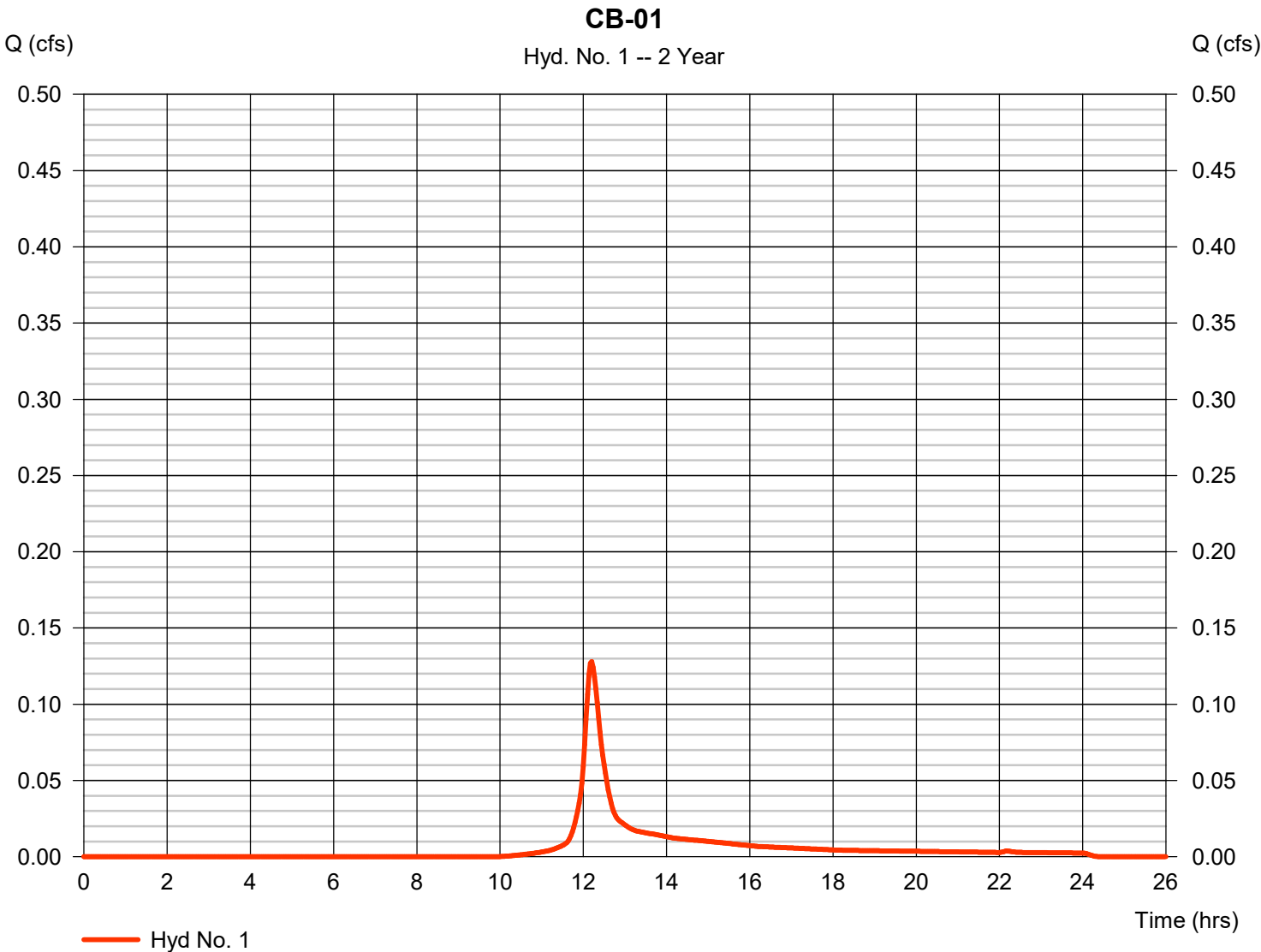
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

Hyd. No. 1

CB-01

Hydrograph type	= SCS Runoff	Peak discharge	= 0.128 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 533 cuft
Drainage area	= 0.108 ac	Curve number	= 76
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 14.20 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

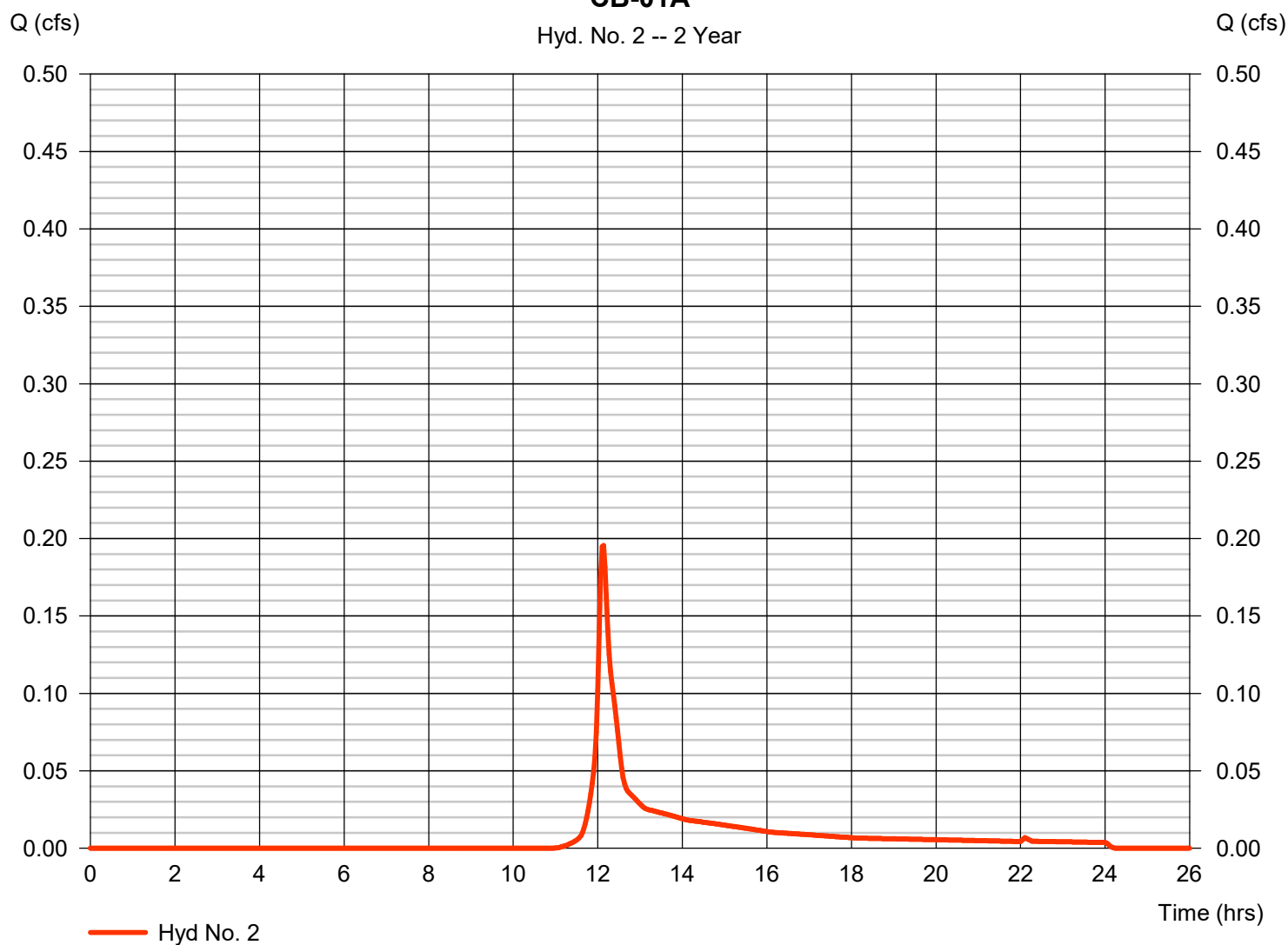
Hyd. No. 2

CB-01A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.195 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 727 cuft
Drainage area	= 0.194 ac	Curve number	= 70
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 7.80 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

CB-01A

Hyd. No. 2 -- 2 Year



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

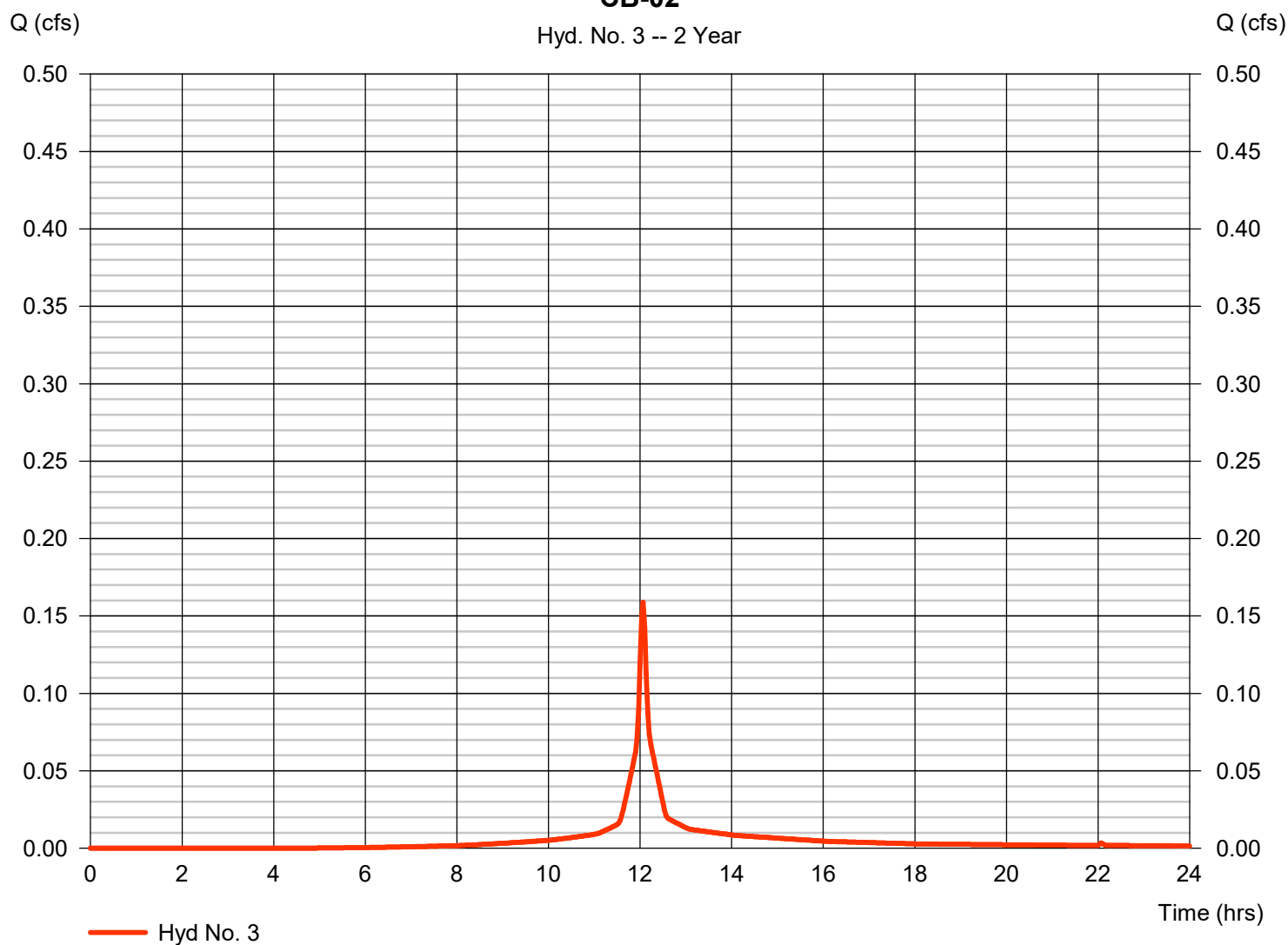
Hyd. No. 3

CB-02

Hydrograph type	= SCS Runoff	Peak discharge	= 0.159 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 492 cuft
Drainage area	= 0.054 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

CB-02

Hyd. No. 3 -- 2 Year



Hydrograph Report

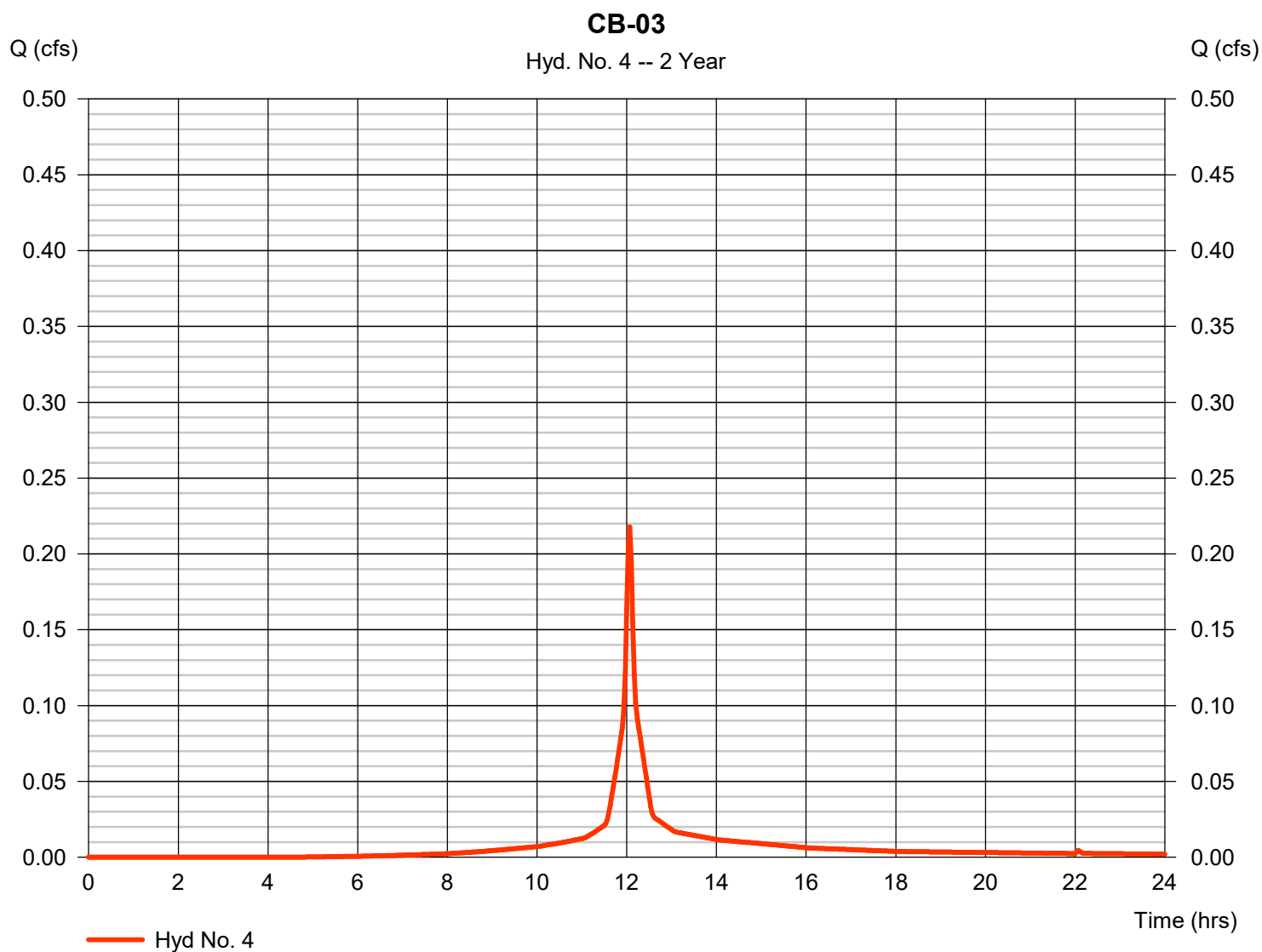
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

Hyd. No. 4

CB-03

Hydrograph type	= SCS Runoff	Peak discharge	= 0.218 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 674 cuft
Drainage area	= 0.074 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

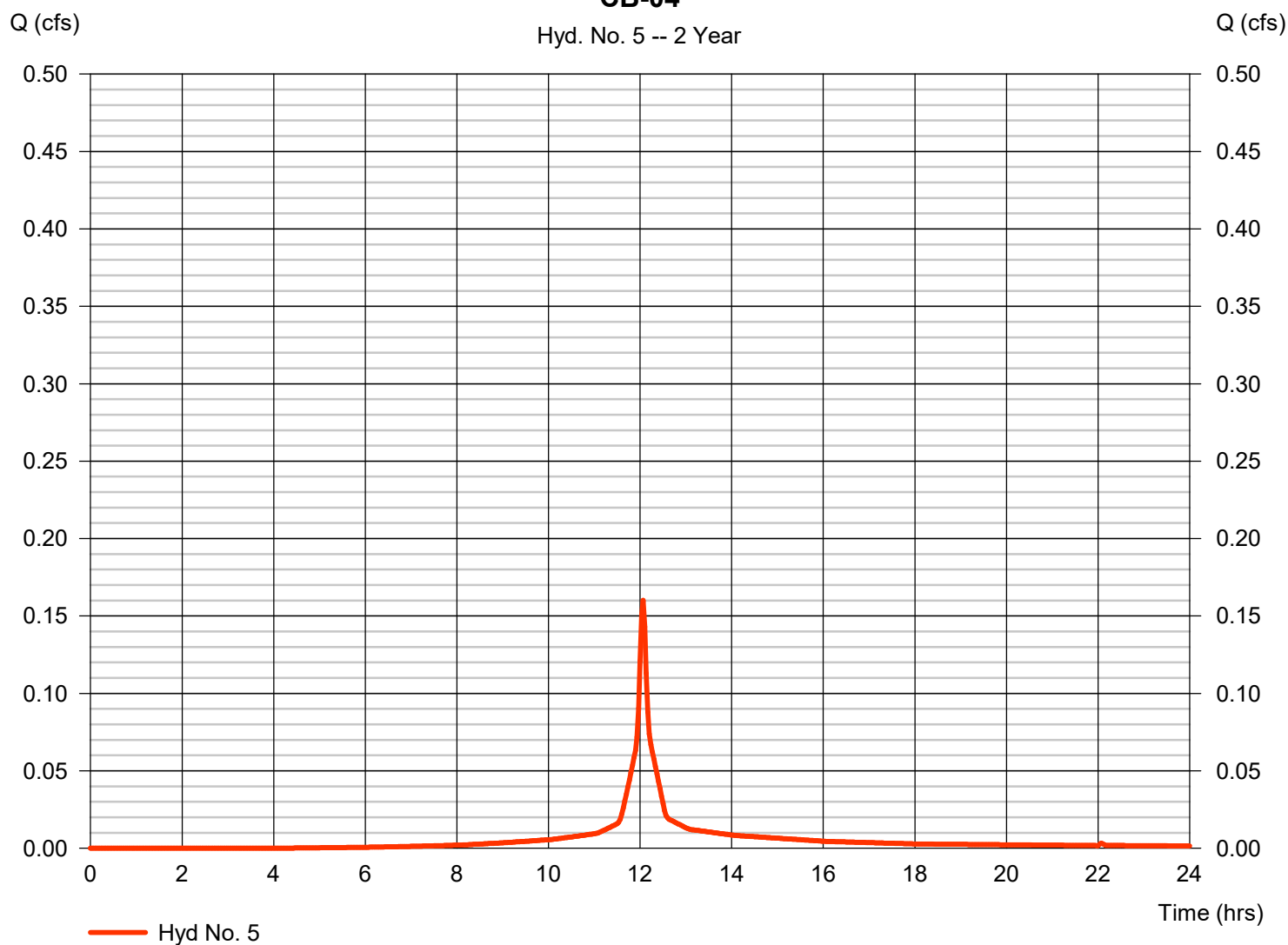
Hyd. No. 5

CB-04

Hydrograph type	= SCS Runoff	Peak discharge	= 0.160 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 500 cuft
Drainage area	= 0.053 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

CB-04

Hyd. No. 5 -- 2 Year



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

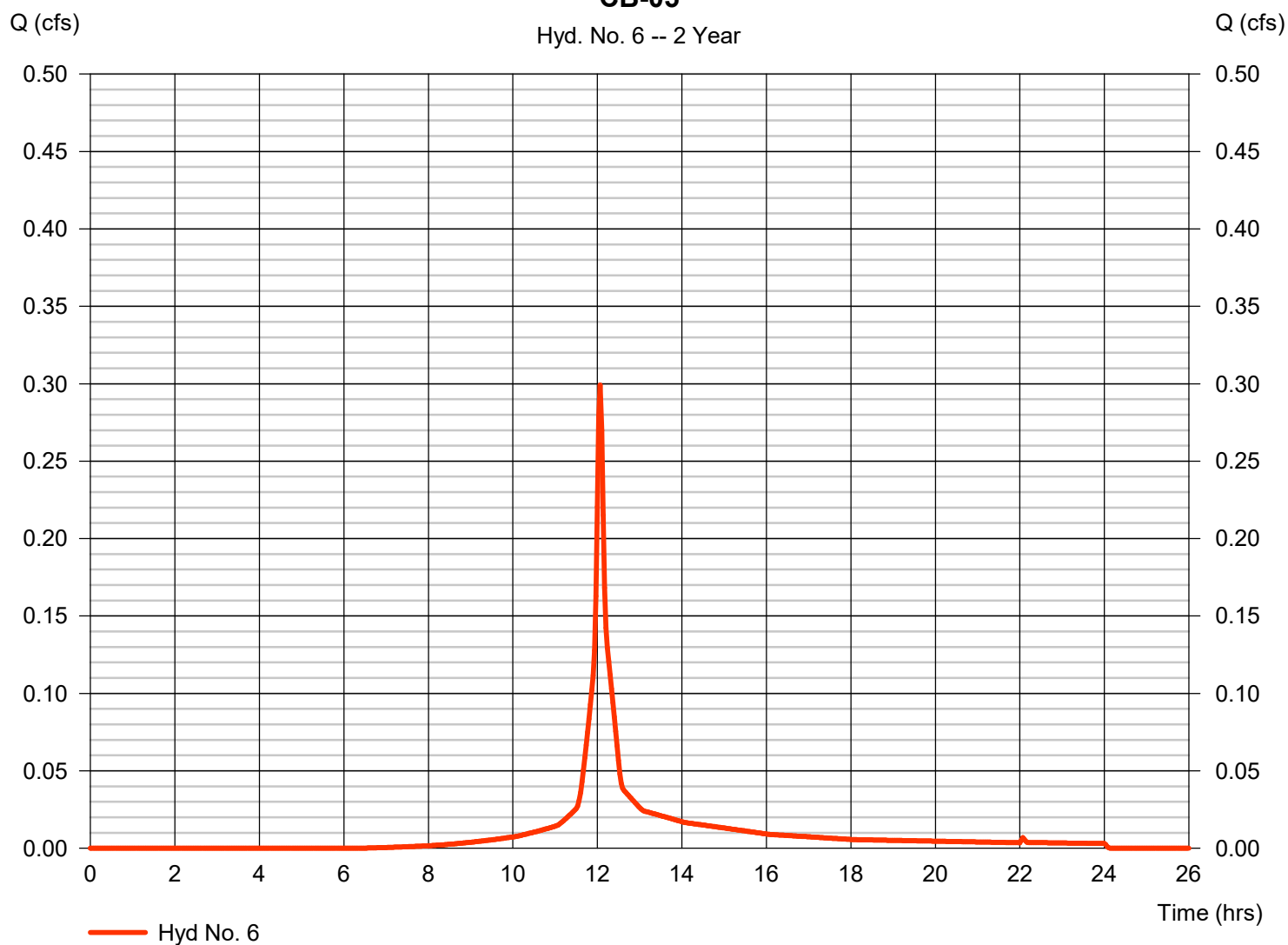
Hyd. No. 6

CB-05

Hydrograph type	= SCS Runoff	Peak discharge	= 0.299 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 902 cuft
Drainage area	= 0.115 ac	Curve number	= 88
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

CB-05

Hyd. No. 6 -- 2 Year



Hydrograph Report

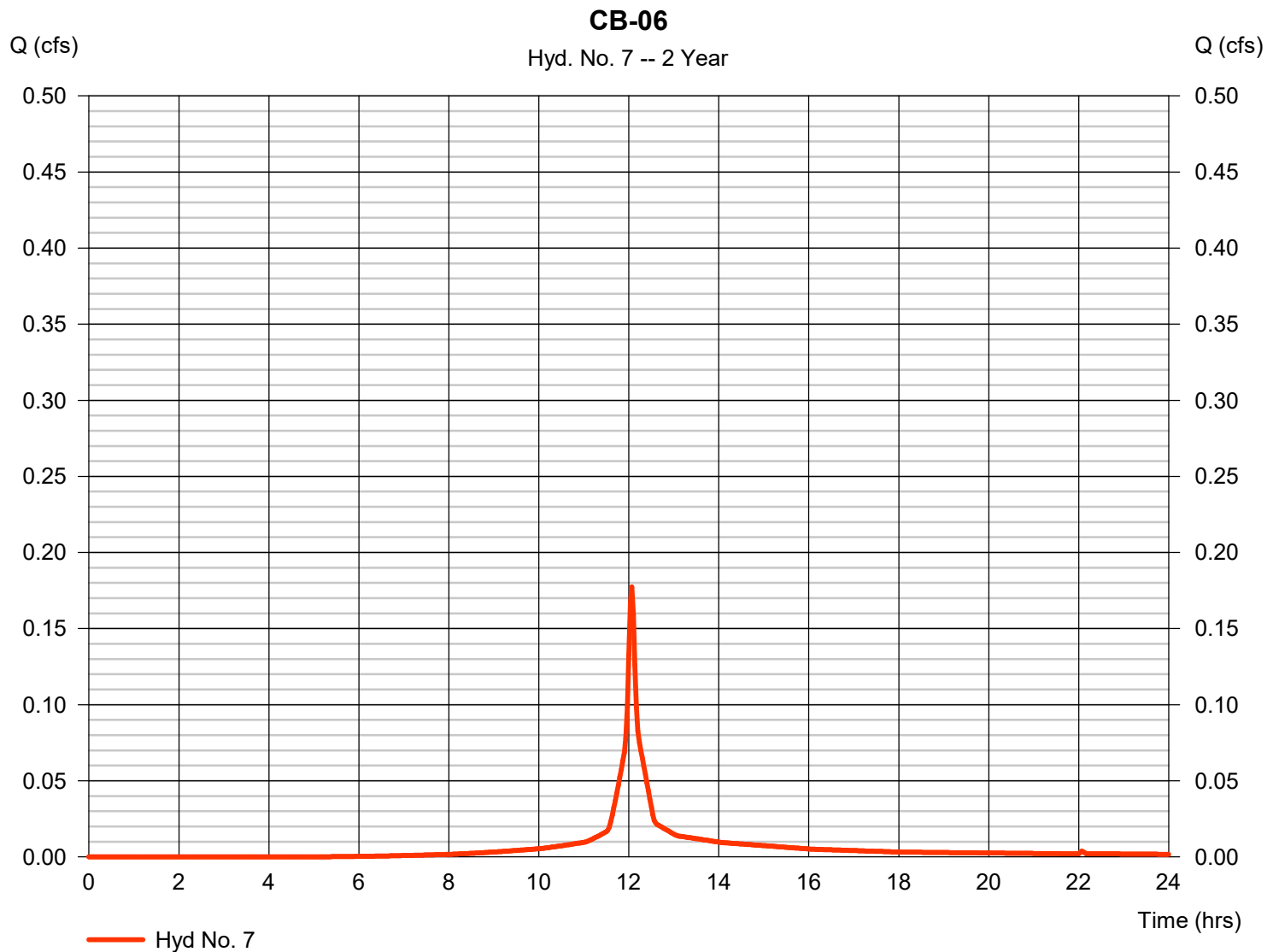
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

Hyd. No. 7

CB-06

Hydrograph type	= SCS Runoff	Peak discharge	= 0.177 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 544 cuft
Drainage area	= 0.062 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

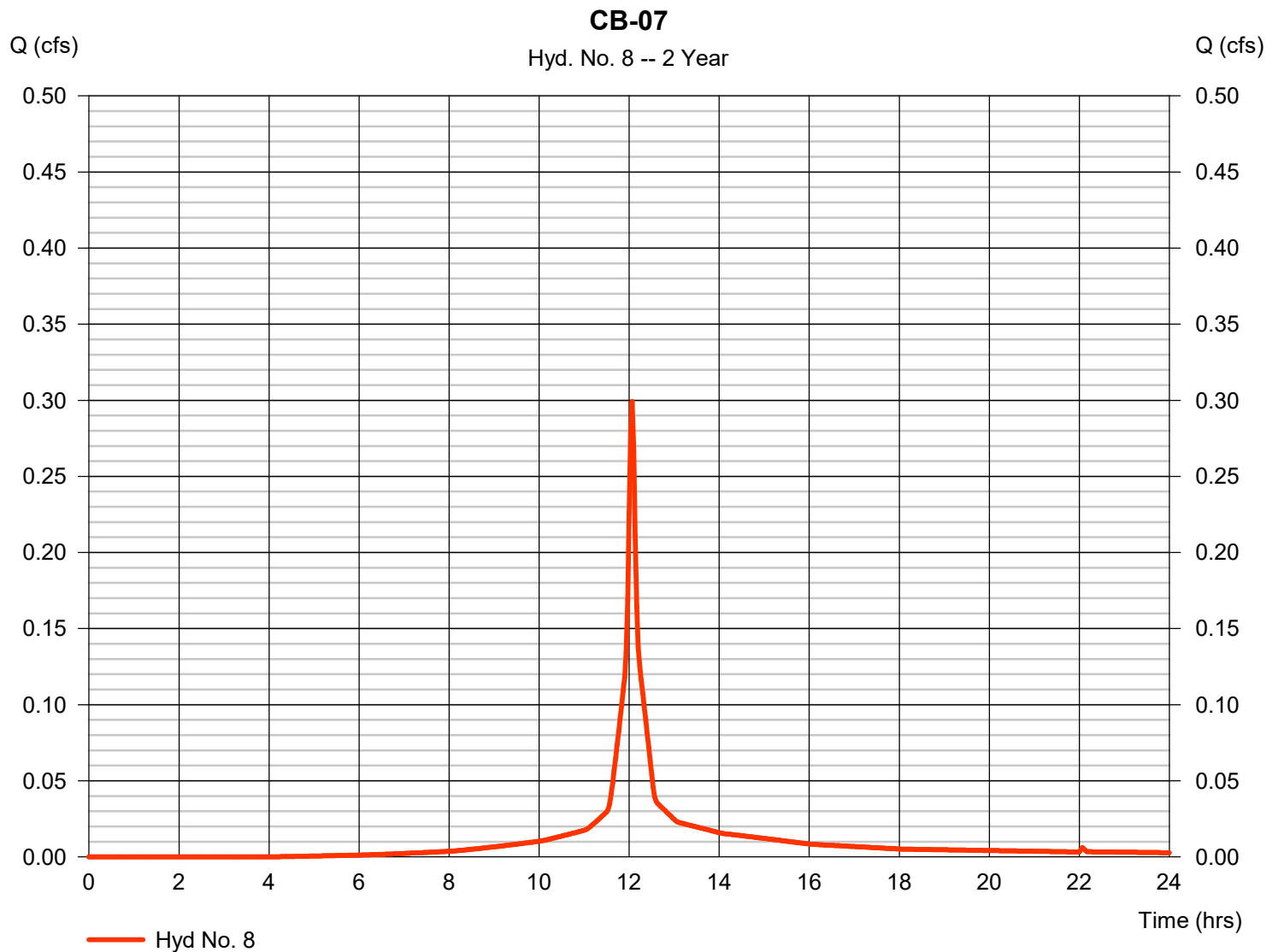
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

Hyd. No. 8

CB-07

Hydrograph type	= SCS Runoff	Peak discharge	= 0.299 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 934 cuft
Drainage area	= 0.099 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

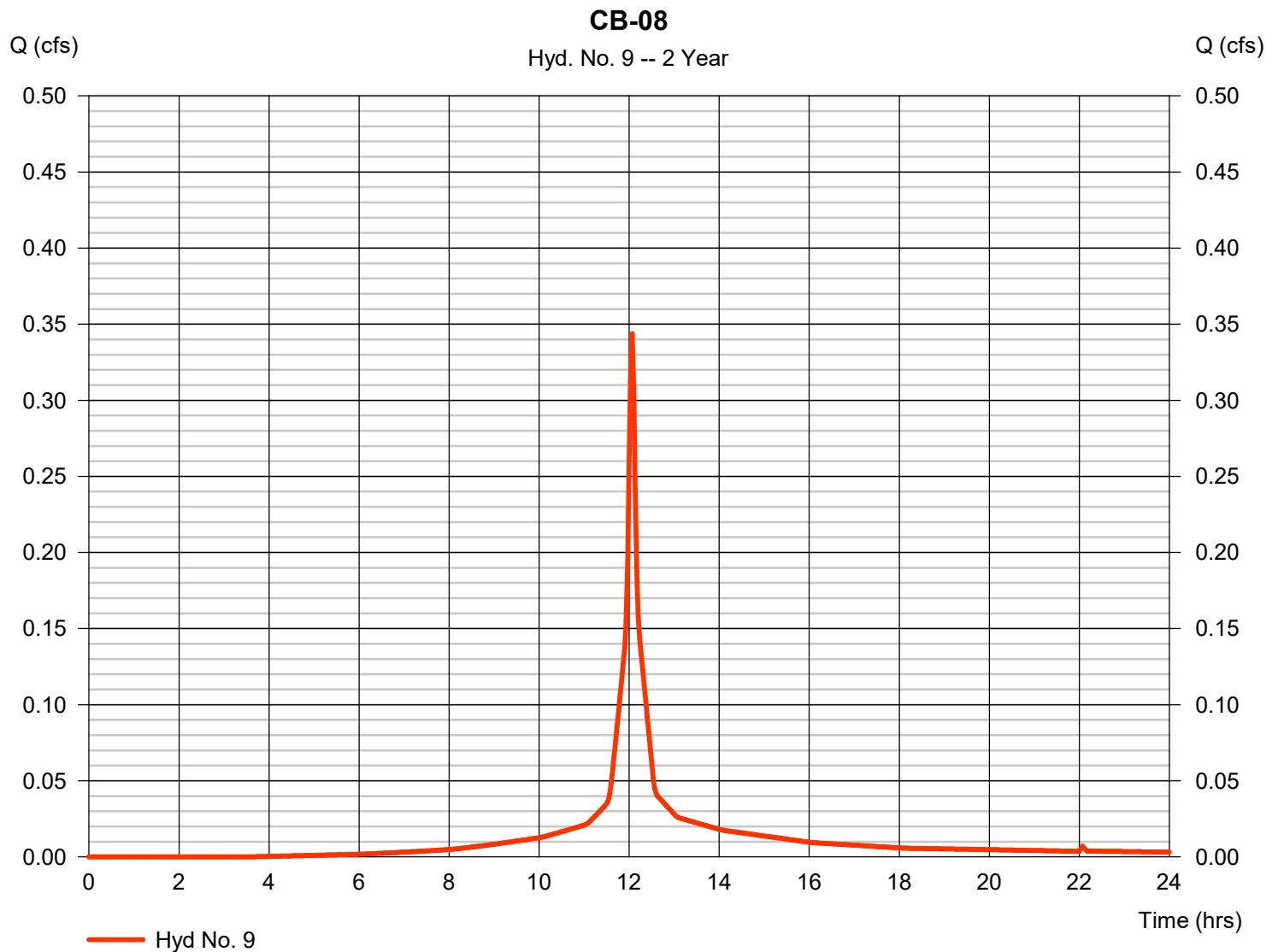
Friday, 07 / 9 / 2021

Hyd. No. 9

CB-08

Hydrograph type = SCS Runoff
 Storm frequency = 2 yrs
 Time interval = 2 min
 Drainage area = 0.111 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 3.54 in
 Storm duration = 24 hrs

Peak discharge = 0.344 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 1,086 cuft
 Curve number = 94
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.50 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

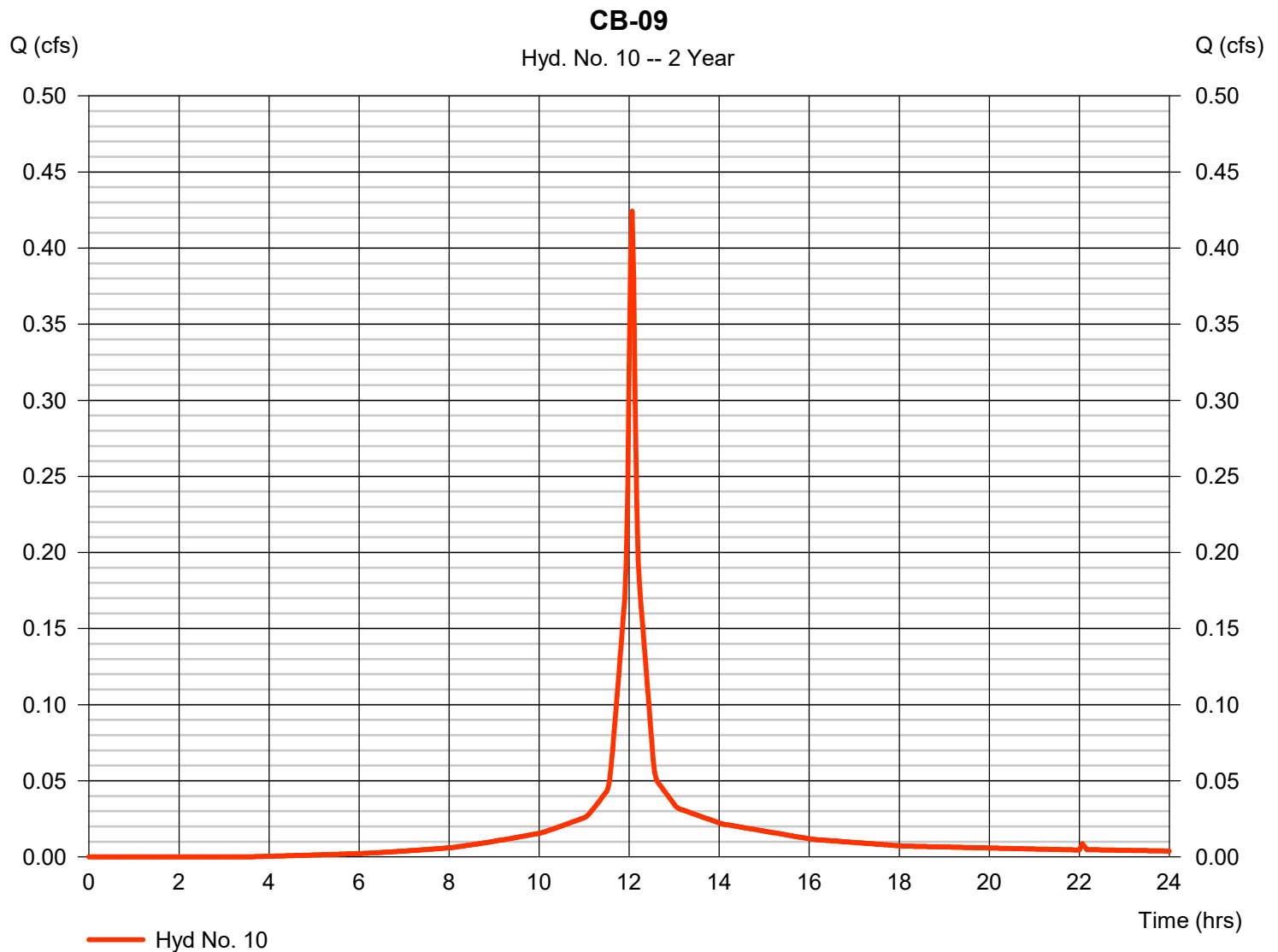
Friday, 07 / 9 / 2021

Hyd. No. 10

CB-09

Hydrograph type = SCS Runoff
 Storm frequency = 2 yrs
 Time interval = 2 min
 Drainage area = 0.137 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 3.54 in
 Storm duration = 24 hrs

Peak discharge = 0.424 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 1,340 cuft
 Curve number = 94
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

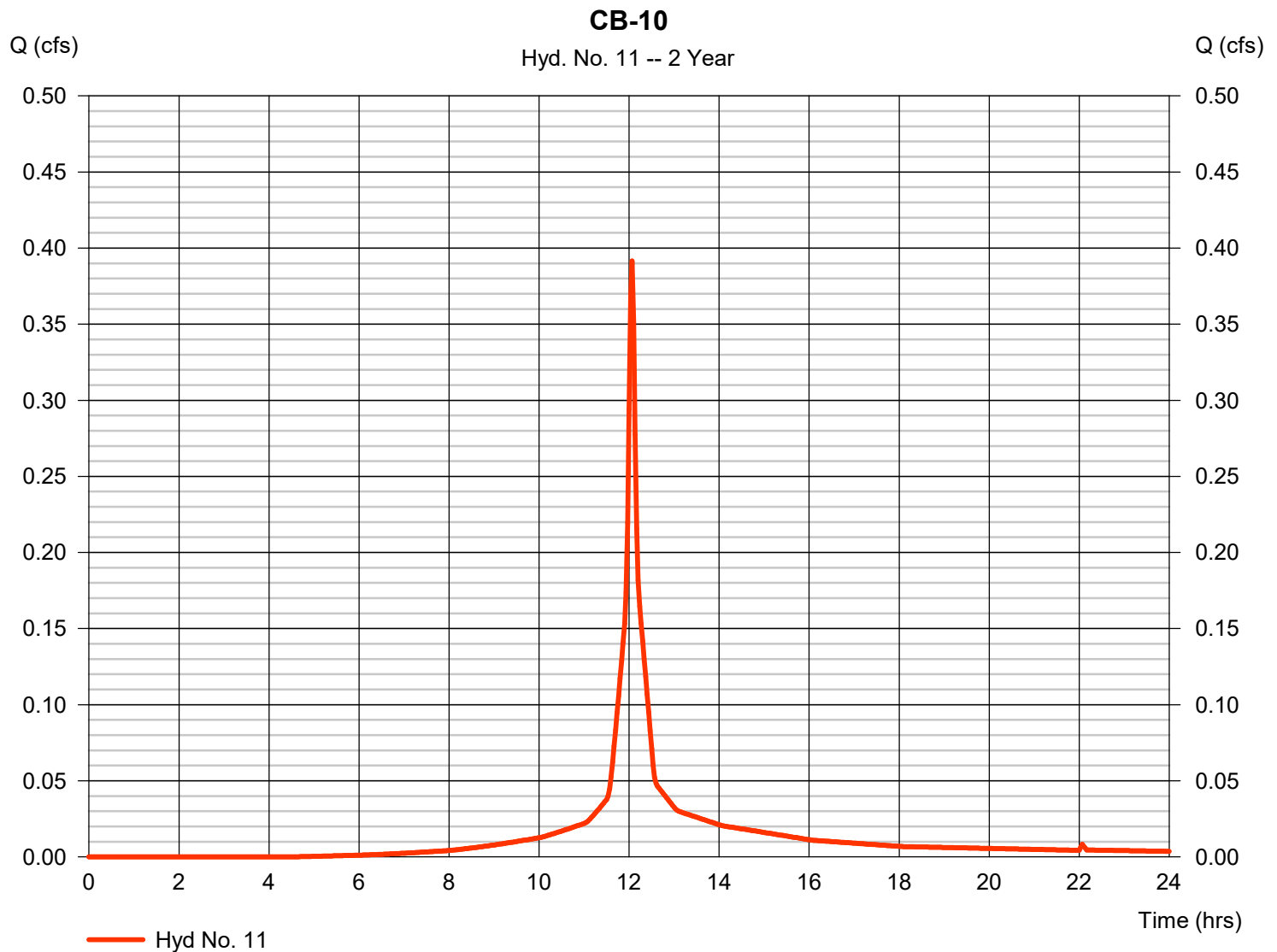
Friday, 07 / 9 / 2021

Hyd. No. 11

CB-10

Hydrograph type = SCS Runoff
 Storm frequency = 2 yrs
 Time interval = 2 min
 Drainage area = 0.133 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 3.54 in
 Storm duration = 24 hrs

Peak discharge = 0.392 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 1,211 cuft
 Curve number = 92
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

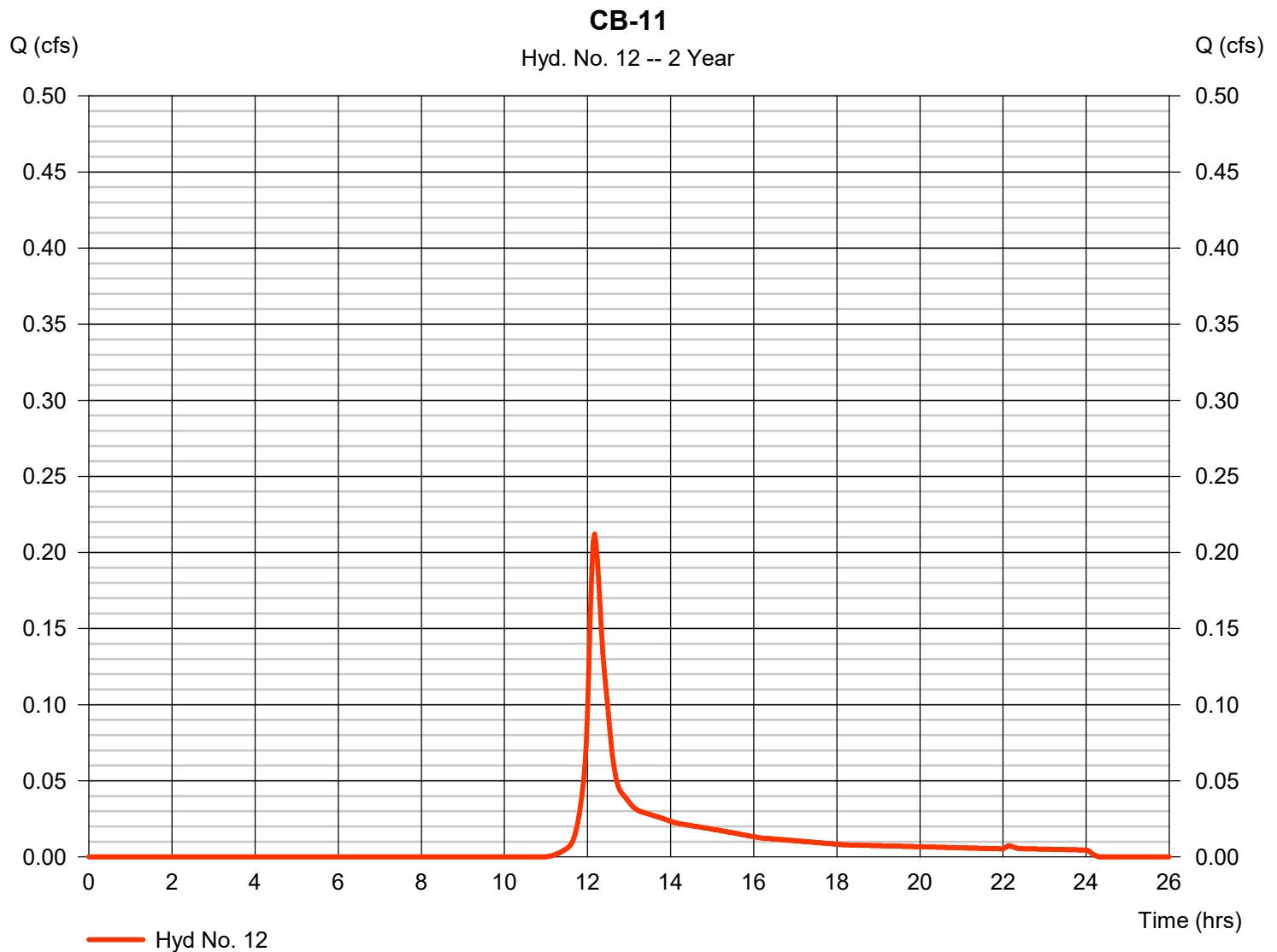
Friday, 07 / 9 / 2021

Hyd. No. 12

CB-11

Hydrograph type = SCS Runoff
 Storm frequency = 2 yrs
 Time interval = 2 min
 Drainage area = 0.227 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 3.54 in
 Storm duration = 24 hrs

Peak discharge = 0.212 cfs
 Time to peak = 12.17 hrs
 Hyd. volume = 878 cuft
 Curve number = 70
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 10.90 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

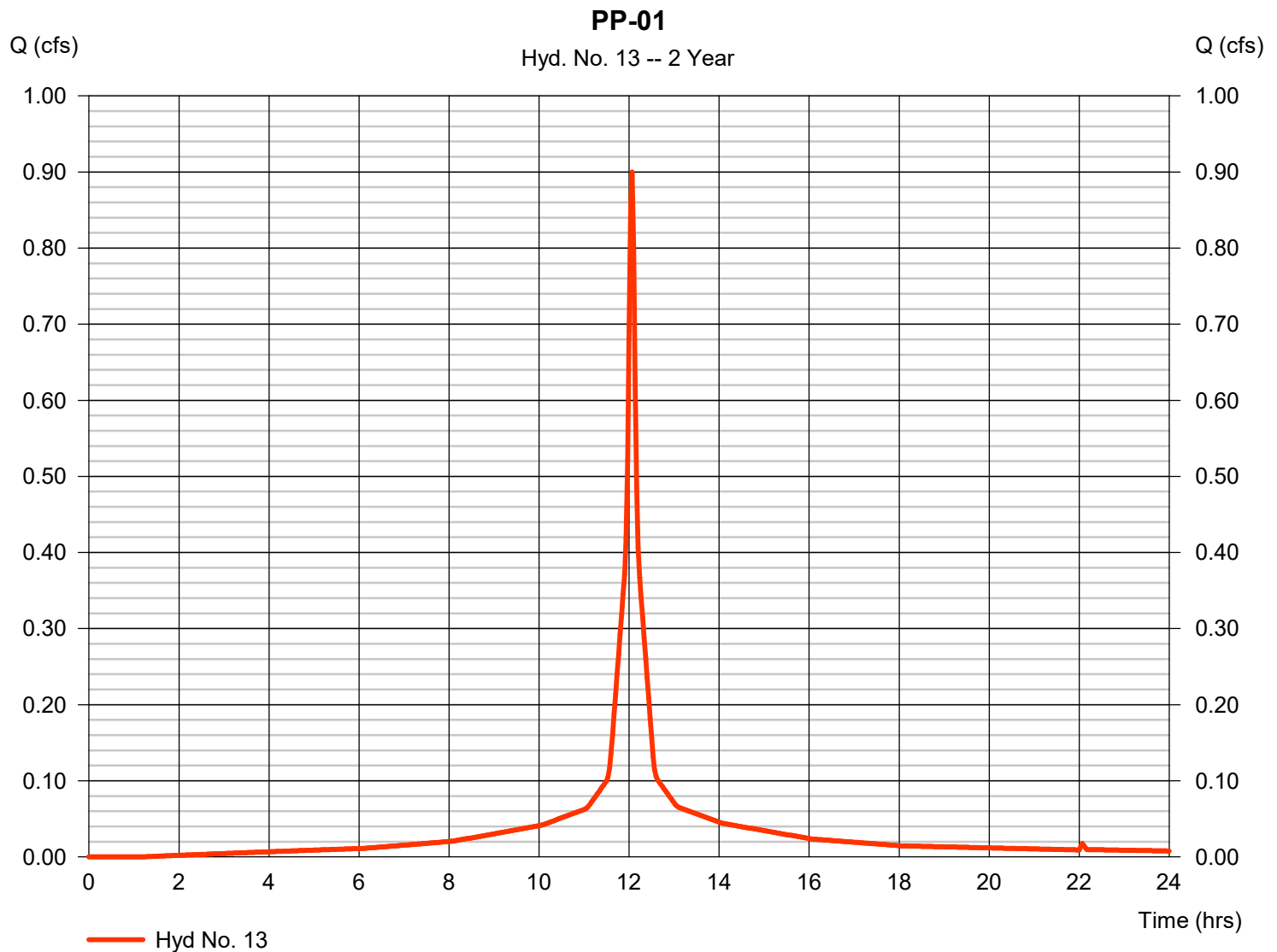
Friday, 07 / 9 / 2021

Hyd. No. 13

PP-01

Hydrograph type = SCS Runoff
 Storm frequency = 2 yrs
 Time interval = 2 min
 Drainage area = 0.271 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 3.54 in
 Storm duration = 24 hrs

Peak discharge = 0.900 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 3,049 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

Hyd. No. 14

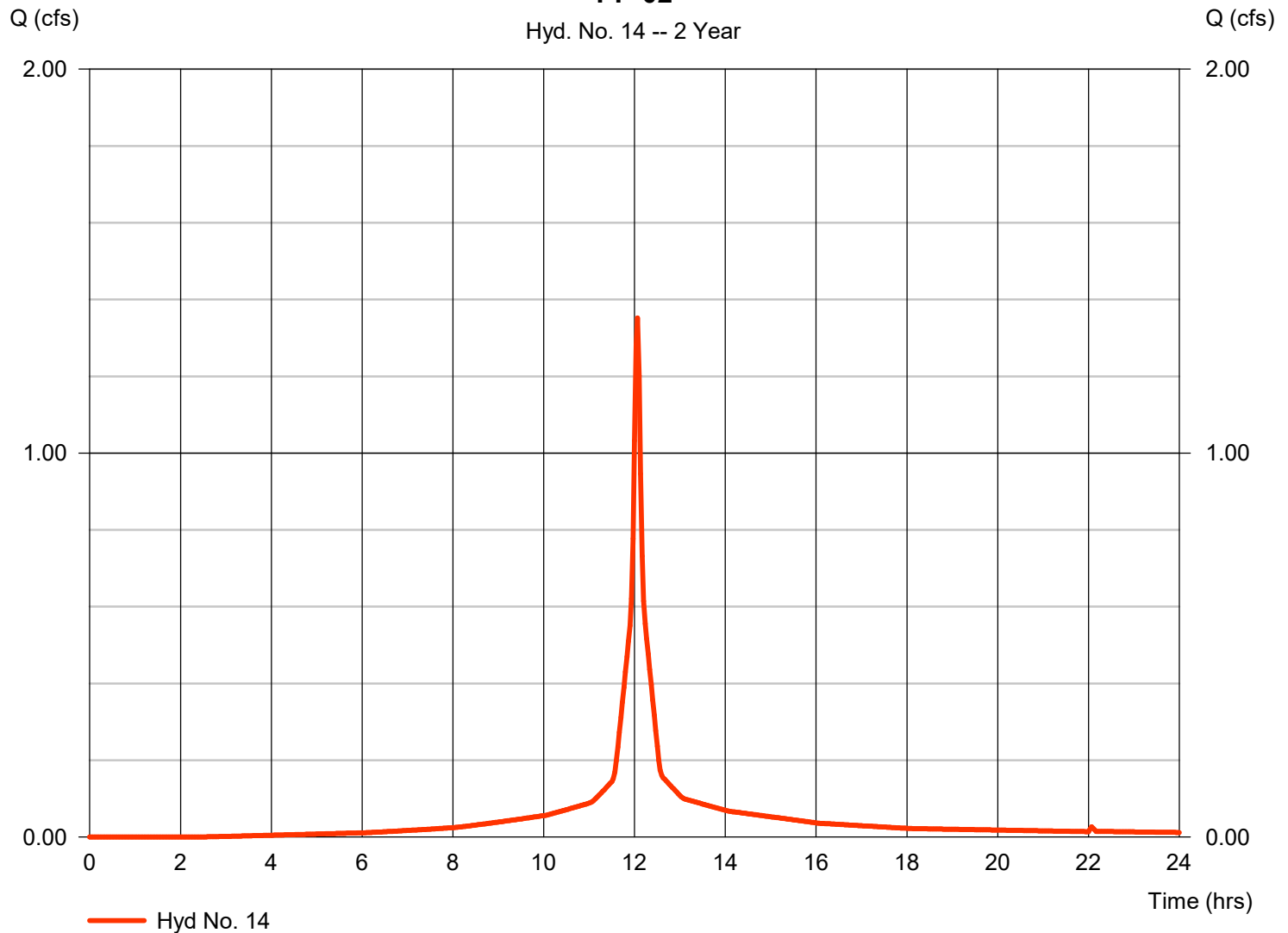
PP-02

Hydrograph type = SCS Runoff
 Storm frequency = 2 yrs
 Time interval = 2 min
 Drainage area = 0.419 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 3.54 in
 Storm duration = 24 hrs

Peak discharge = 1.352 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 4,399 cuft
 Curve number = 96
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 6.00 min
 Distribution = Type III
 Shape factor = 484

PP-02

Hyd. No. 14 -- 2 Year



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

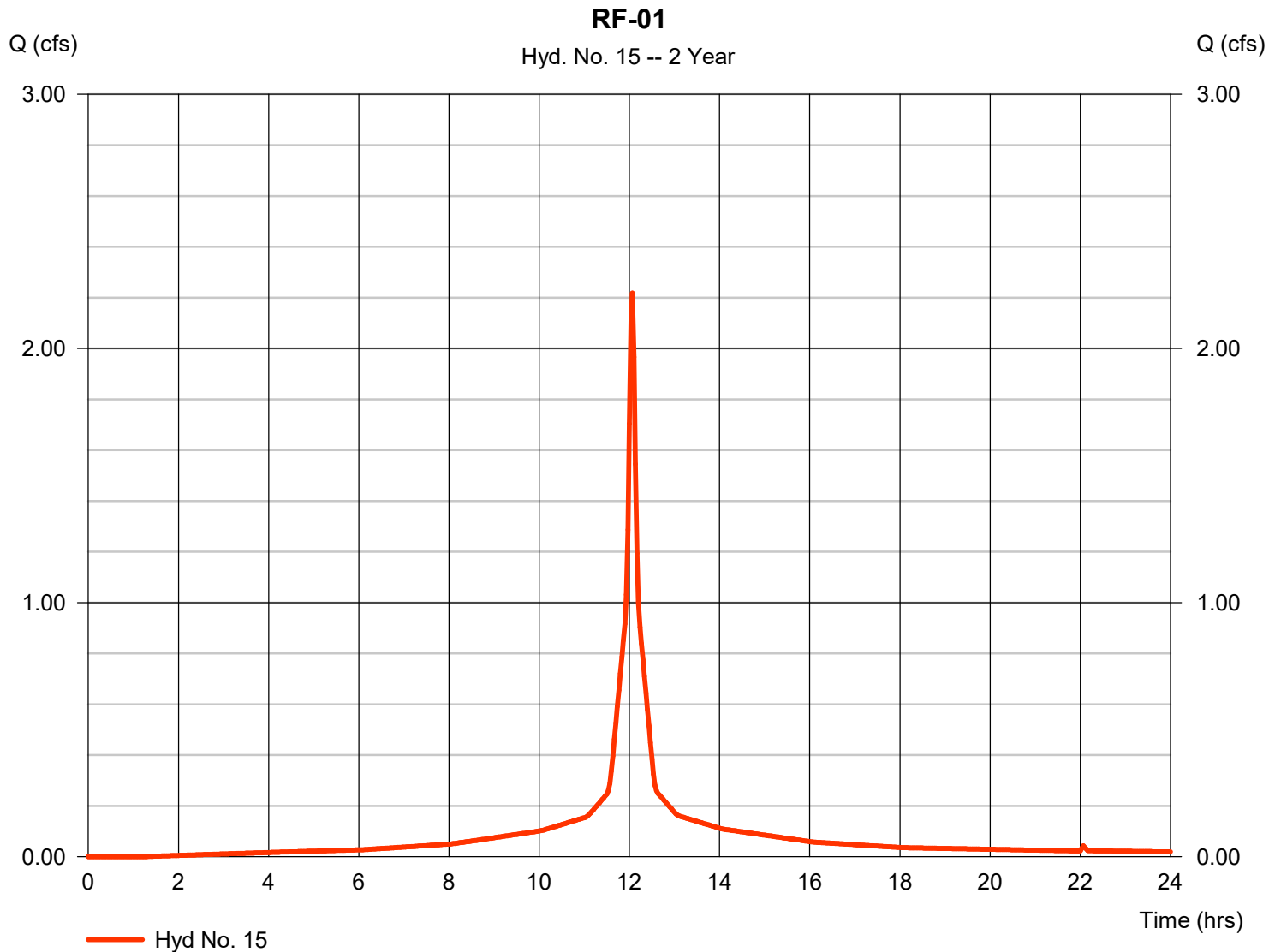
Friday, 07 / 9 / 2021

Hyd. No. 15

RF-01

Hydrograph type = SCS Runoff
 Storm frequency = 2 yrs
 Time interval = 2 min
 Drainage area = 0.668 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 3.54 in
 Storm duration = 24 hrs

Peak discharge = 2.218 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 7,516 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

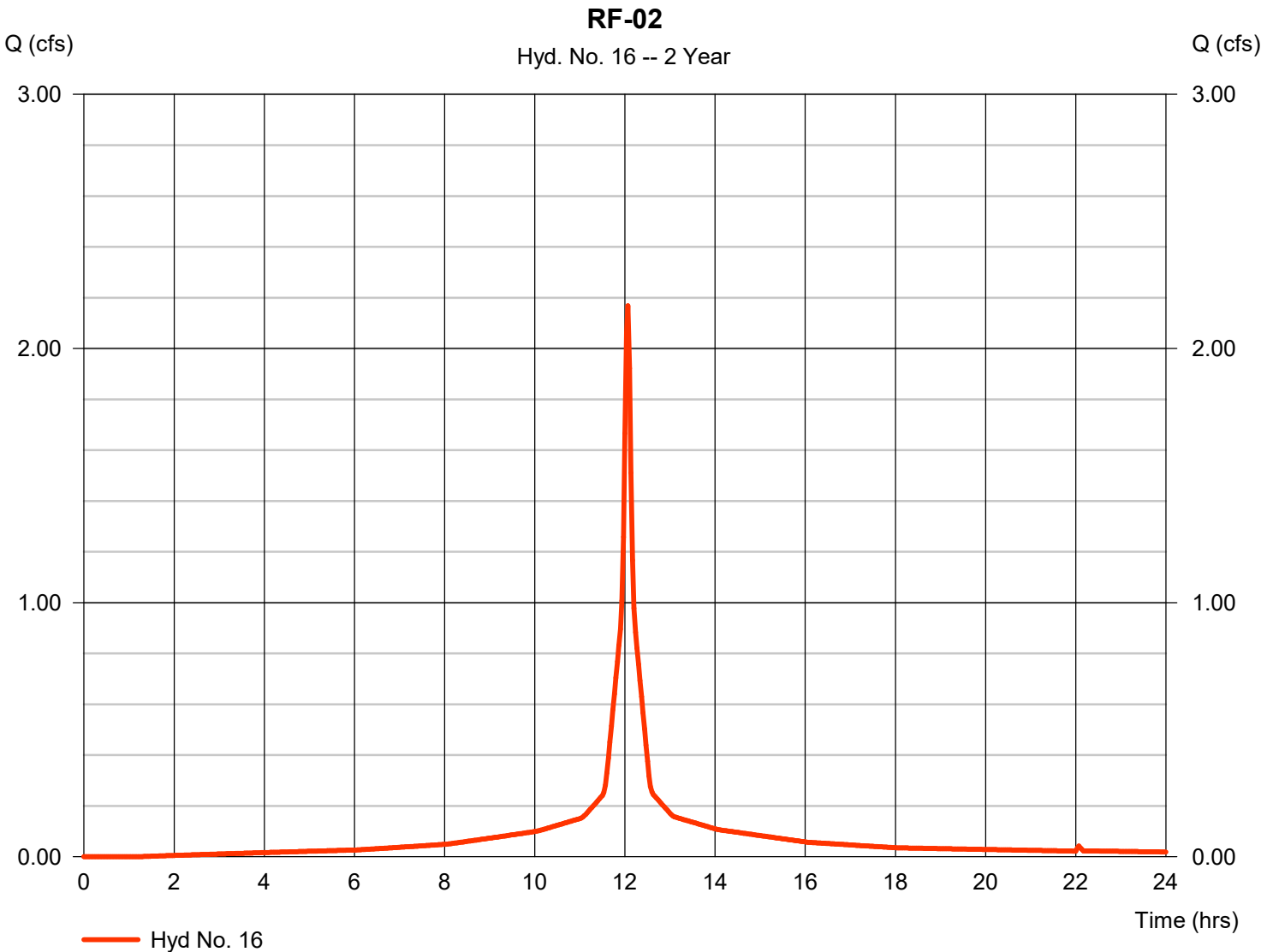
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

Hyd. No. 16

RF-02

Hydrograph type	= SCS Runoff	Peak discharge	= 2.168 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 7,347 cuft
Drainage area	= 0.653 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

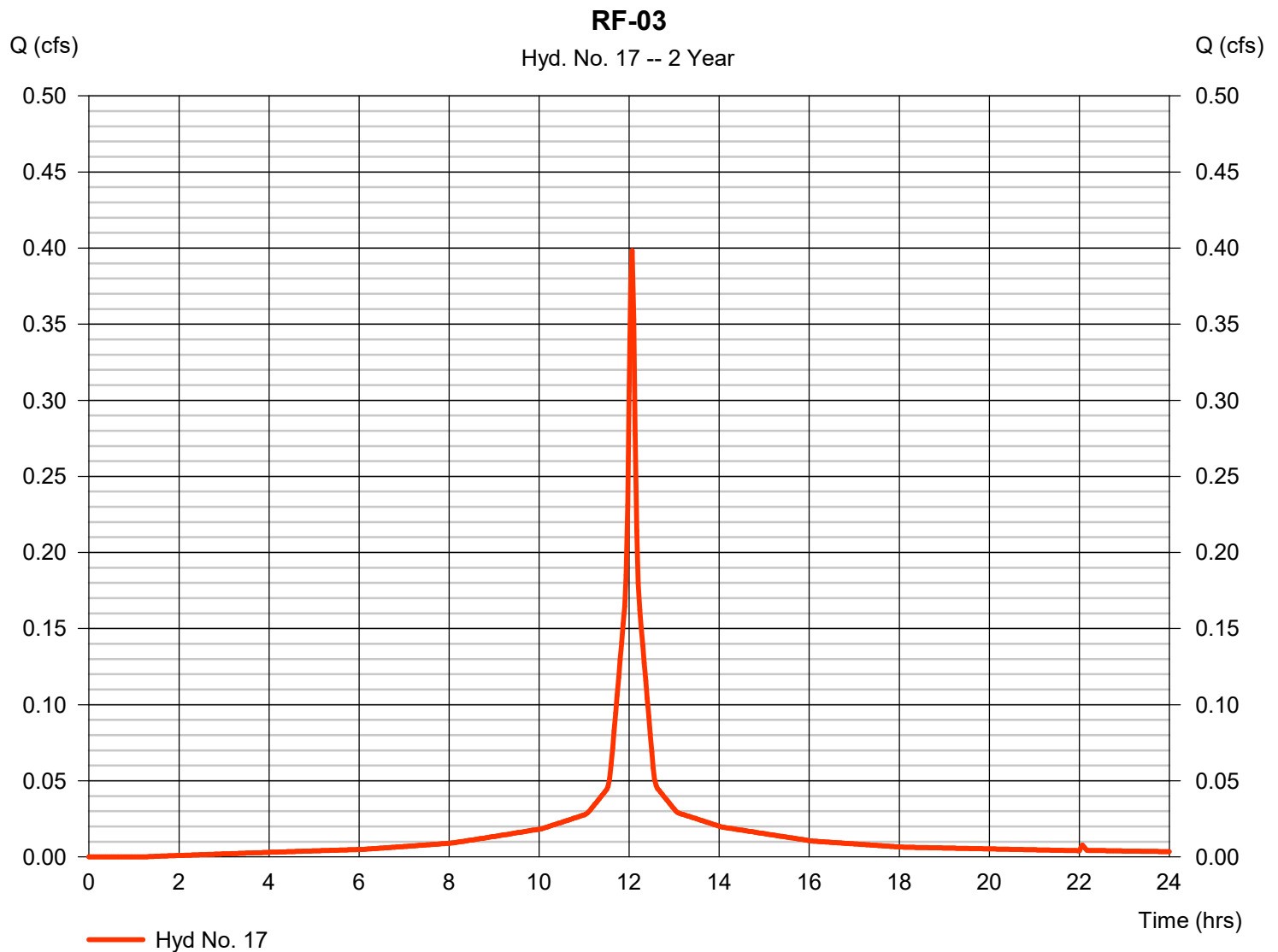
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

Hyd. No. 17

RF-03

Hydrograph type	= SCS Runoff	Peak discharge	= 0.398 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,350 cuft
Drainage area	= 0.120 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

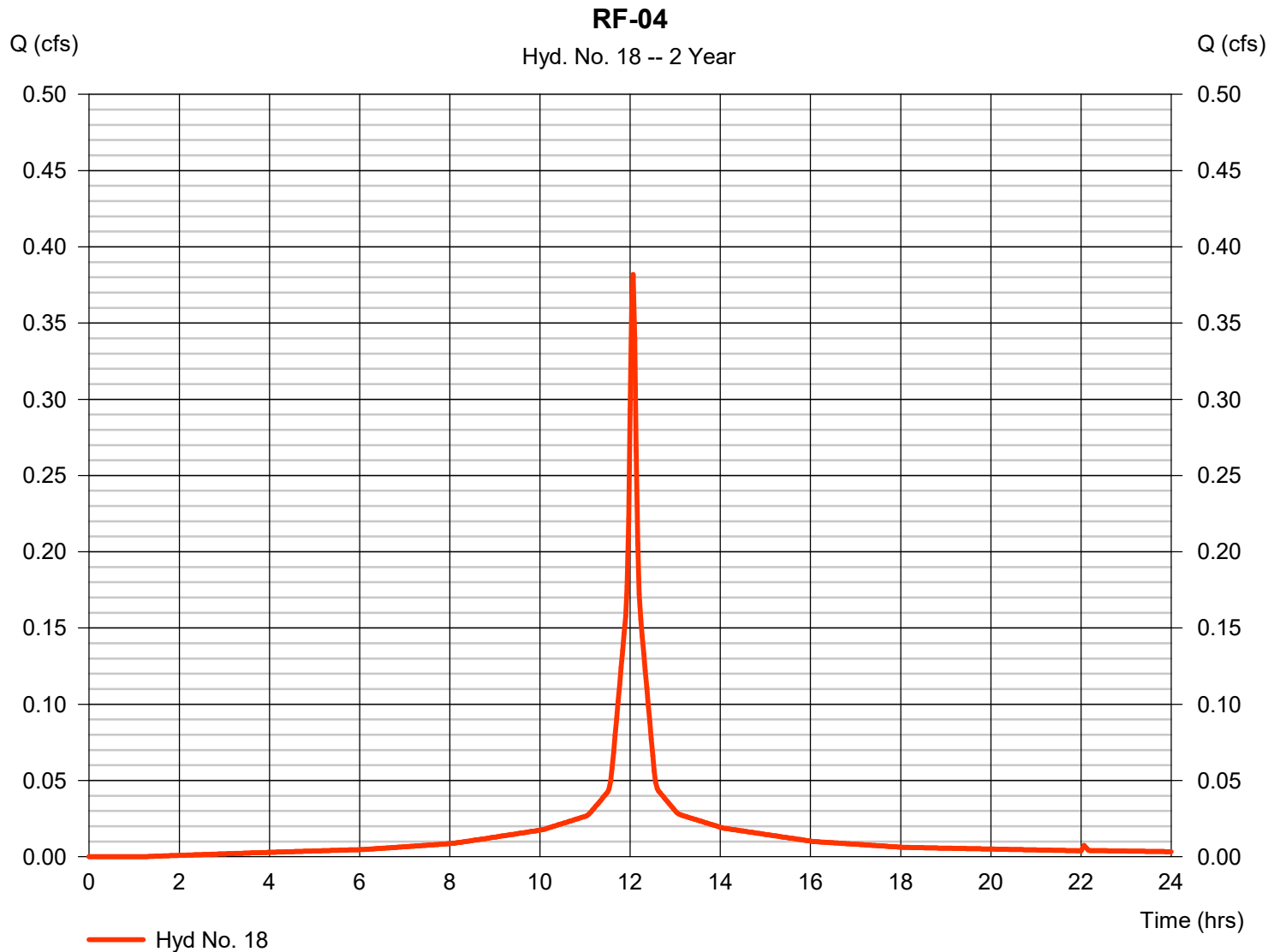
Friday, 07 / 9 / 2021

Hyd. No. 18

RF-04

Hydrograph type = SCS Runoff
 Storm frequency = 2 yrs
 Time interval = 2 min
 Drainage area = 0.115 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 3.54 in
 Storm duration = 24 hrs

Peak discharge = 0.382 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 1,294 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

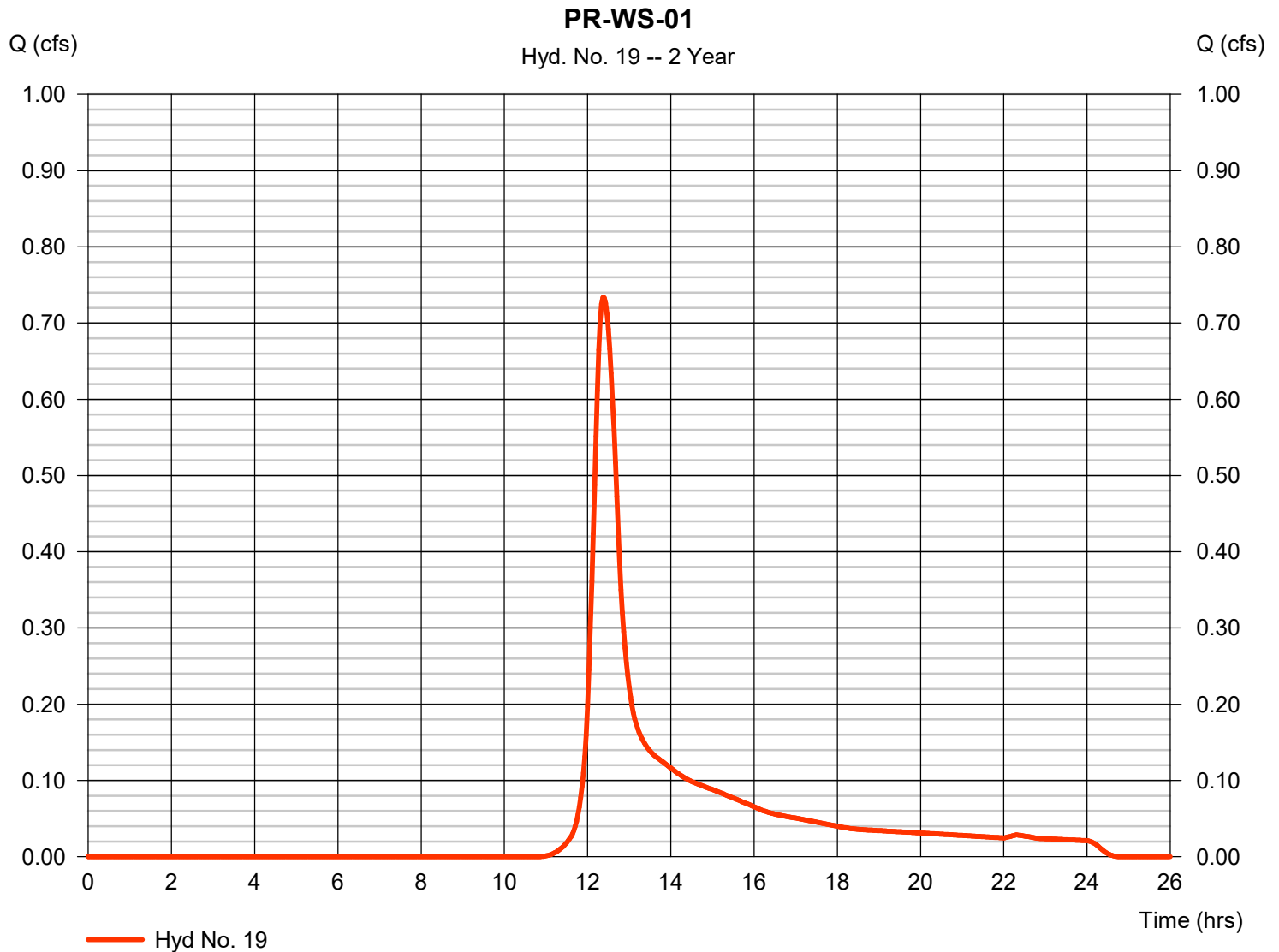
Friday, 07 / 9 / 2021

Hyd. No. 19

PR-WS-01

Hydrograph type = SCS Runoff
 Storm frequency = 2 yrs
 Time interval = 2 min
 Drainage area = 1.038 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 3.54 in
 Storm duration = 24 hrs

Peak discharge = 0.734 cfs
 Time to peak = 12.37 hrs
 Hyd. volume = 4,104 cuft
 Curve number = 71
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 27.60 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

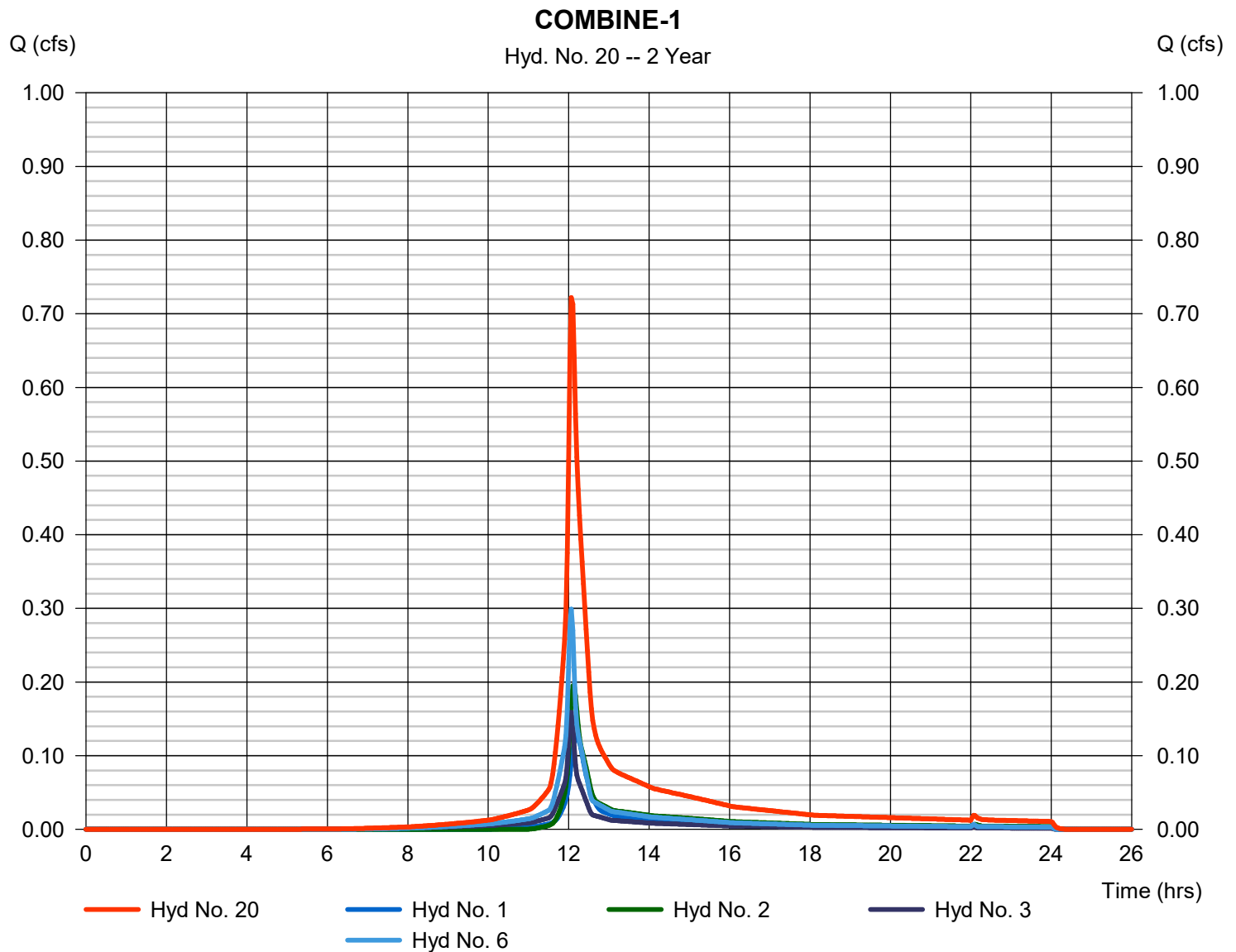
Friday, 07 / 9 / 2021

Hyd. No. 20

COMBINE-1

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 2 min
Inflow hyds. = 1, 2, 3, 6

Peak discharge = 0.722 cfs
Time to peak = 12.07 hrs
Hyd. volume = 2,654 cuft
Contrib. drain. area = 0.471 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

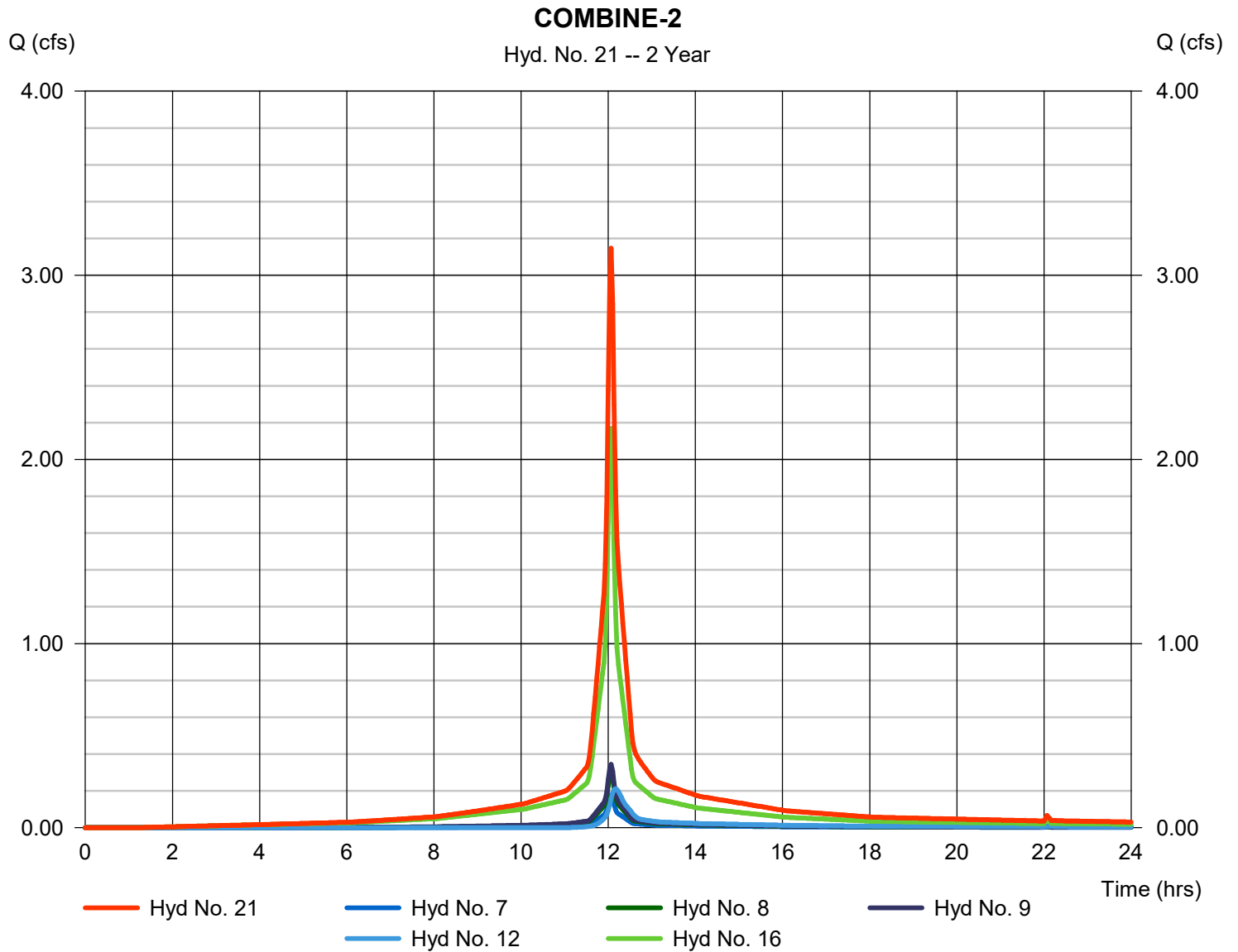
Friday, 07 / 9 / 2021

Hyd. No. 21

COMBINE-2

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 2 min
Inflow hyds. = 7, 8, 9, 12, 16

Peak discharge = 3.147 cfs
Time to peak = 12.07 hrs
Hyd. volume = 10,790 cuft
Contrib. drain. area = 1.152 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

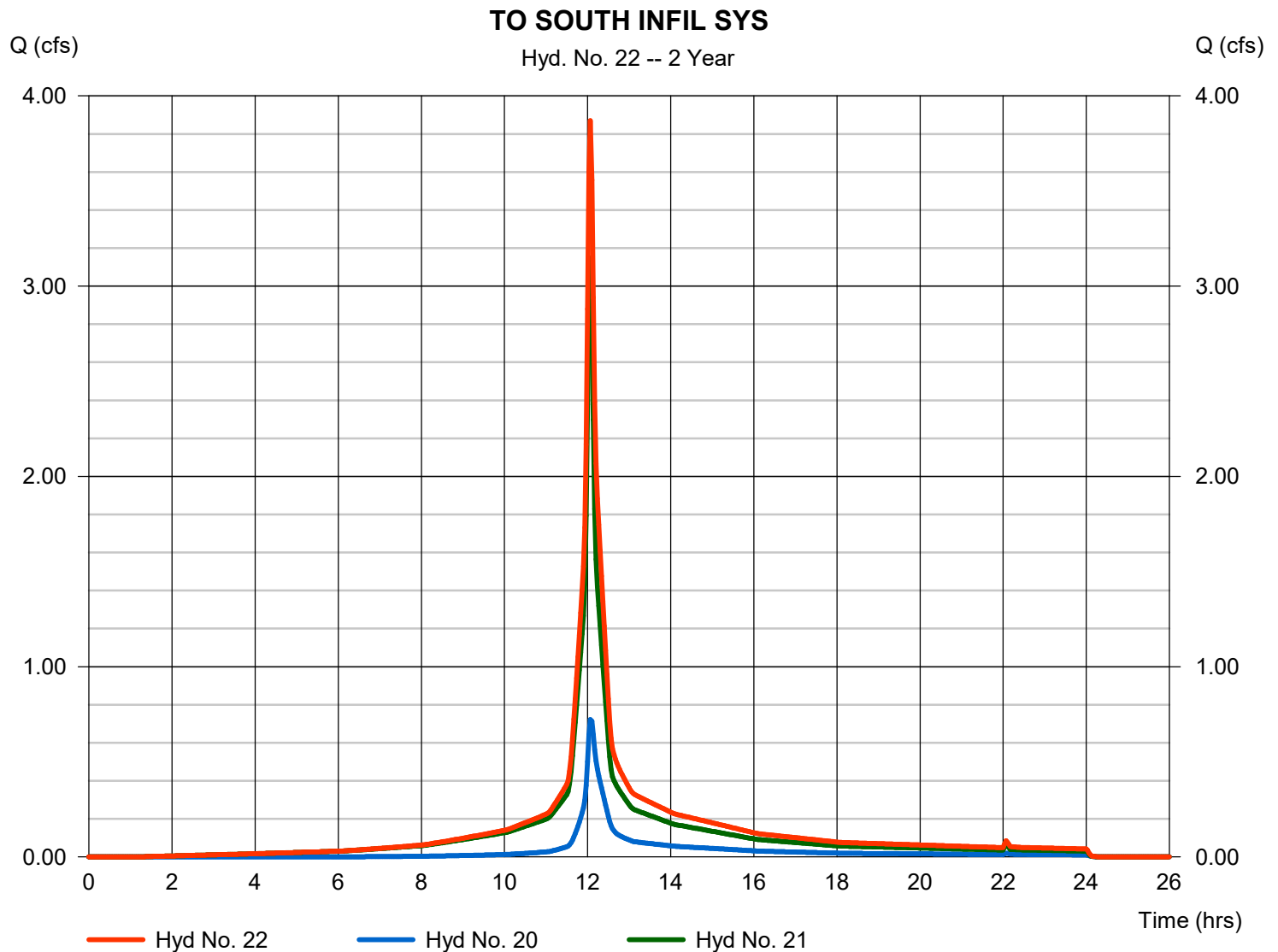
Friday, 07 / 9 / 2021

Hyd. No. 22

TO SOUTH INFIL SYS

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 2 min
Inflow hyds. = 20, 21

Peak discharge = 3.869 cfs
Time to peak = 12.07 hrs
Hyd. volume = 13,444 cuft
Contrib. drain. area = 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

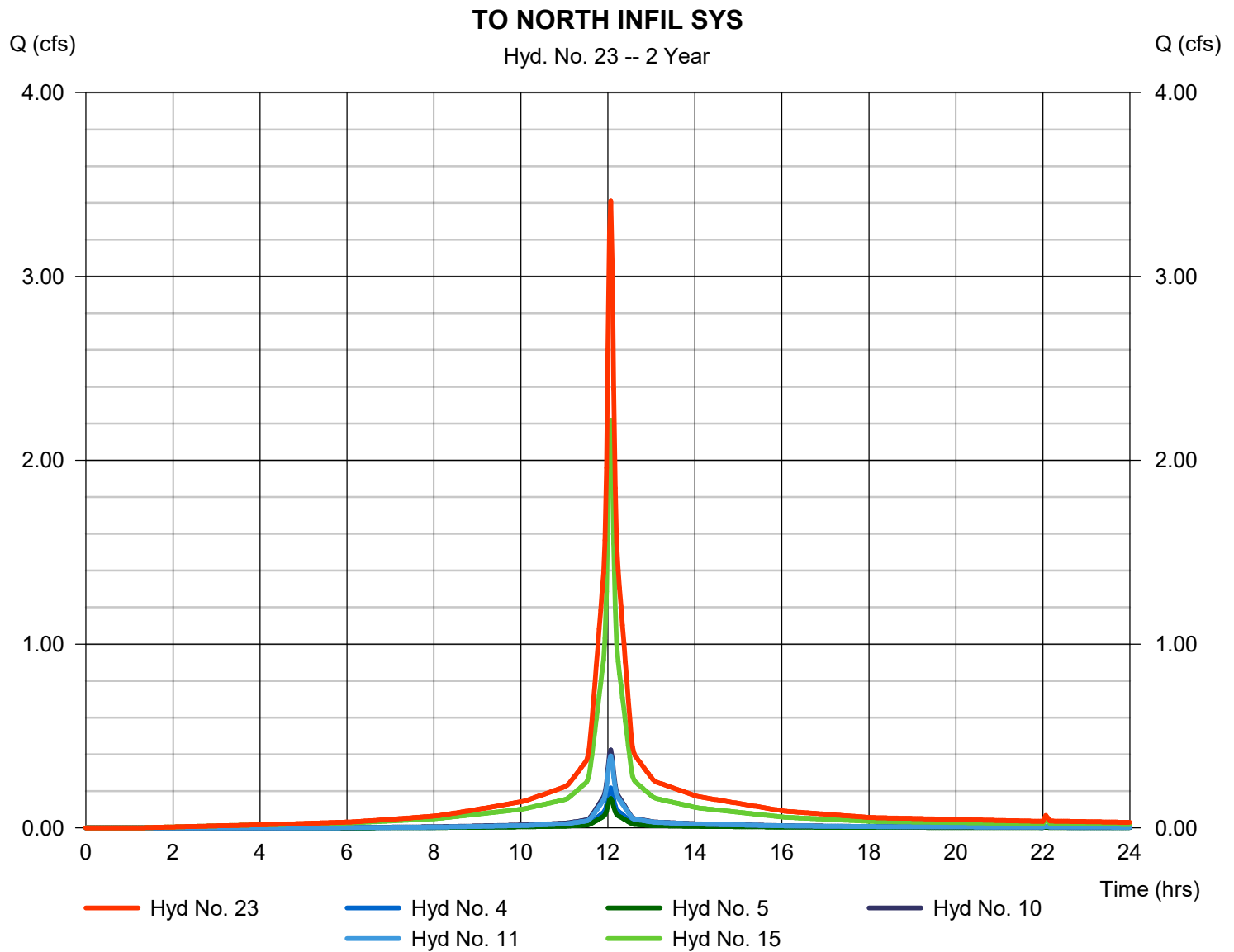
Friday, 07 / 9 / 2021

Hyd. No. 23

TO NORTH INFIL SYS

Hydrograph type = Combine
 Storm frequency = 2 yrs
 Time interval = 2 min
 Inflow hyds. = 4, 5, 10, 11, 15

Peak discharge = 3.412 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 11,241 cuft
 Contrib. drain. area = 1.065 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

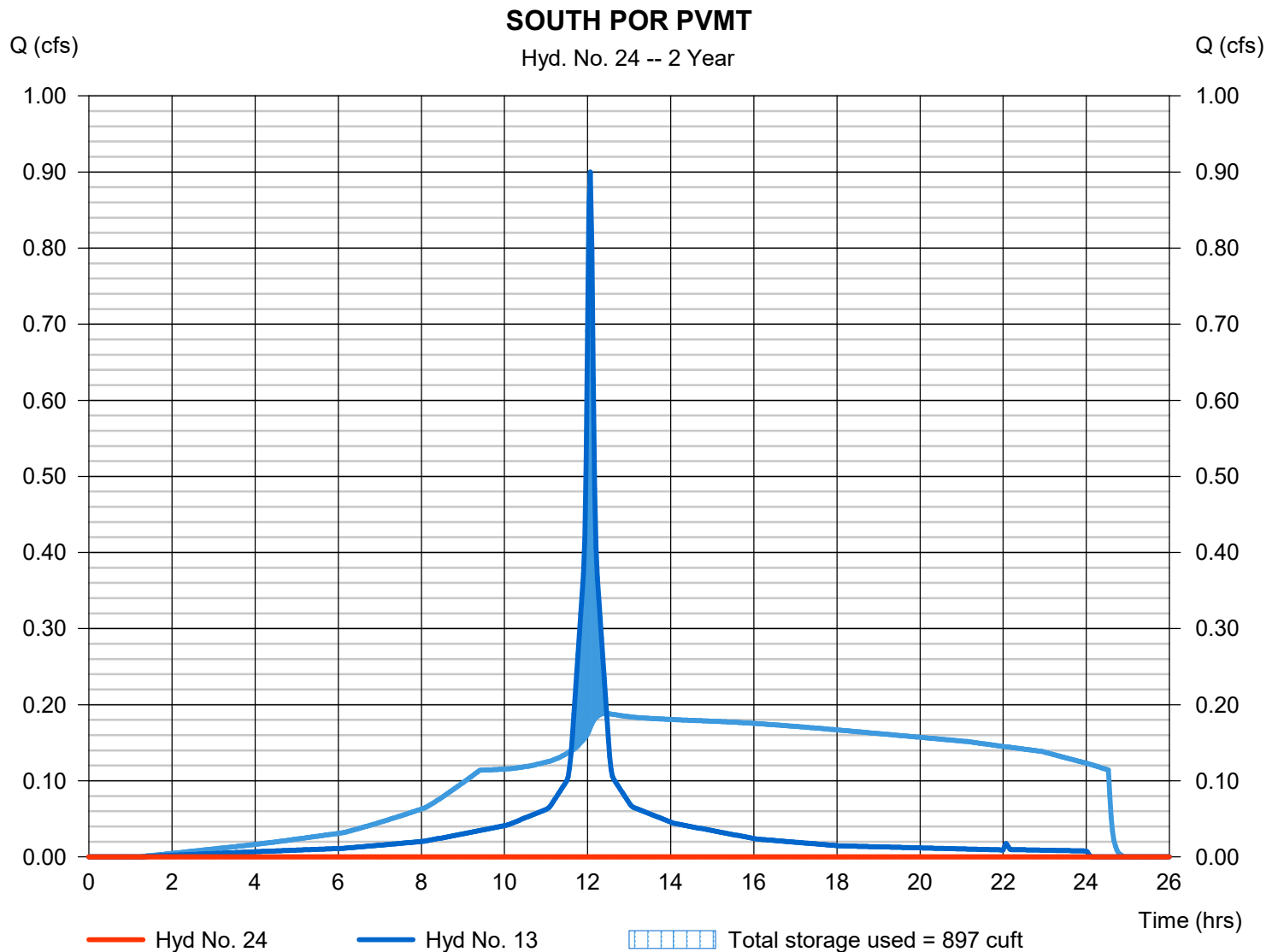
Friday, 07 / 9 / 2021

Hyd. No. 24

SOUTH POR PVMT

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.67 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 13 - PP-01	Max. Elevation	= 141.82 ft
Reservoir name	= SOUTH POROUS PVMT	Max. Storage	= 897 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond No. 3 - SOUTH POROUS PVMT

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Beginning Elevation = 141.50 ft. Voids = 30.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	141.50	9,430	0	0
0.50	142.00	9,430	1,414	1,414
1.00	142.50	9,430	1,414	2,829

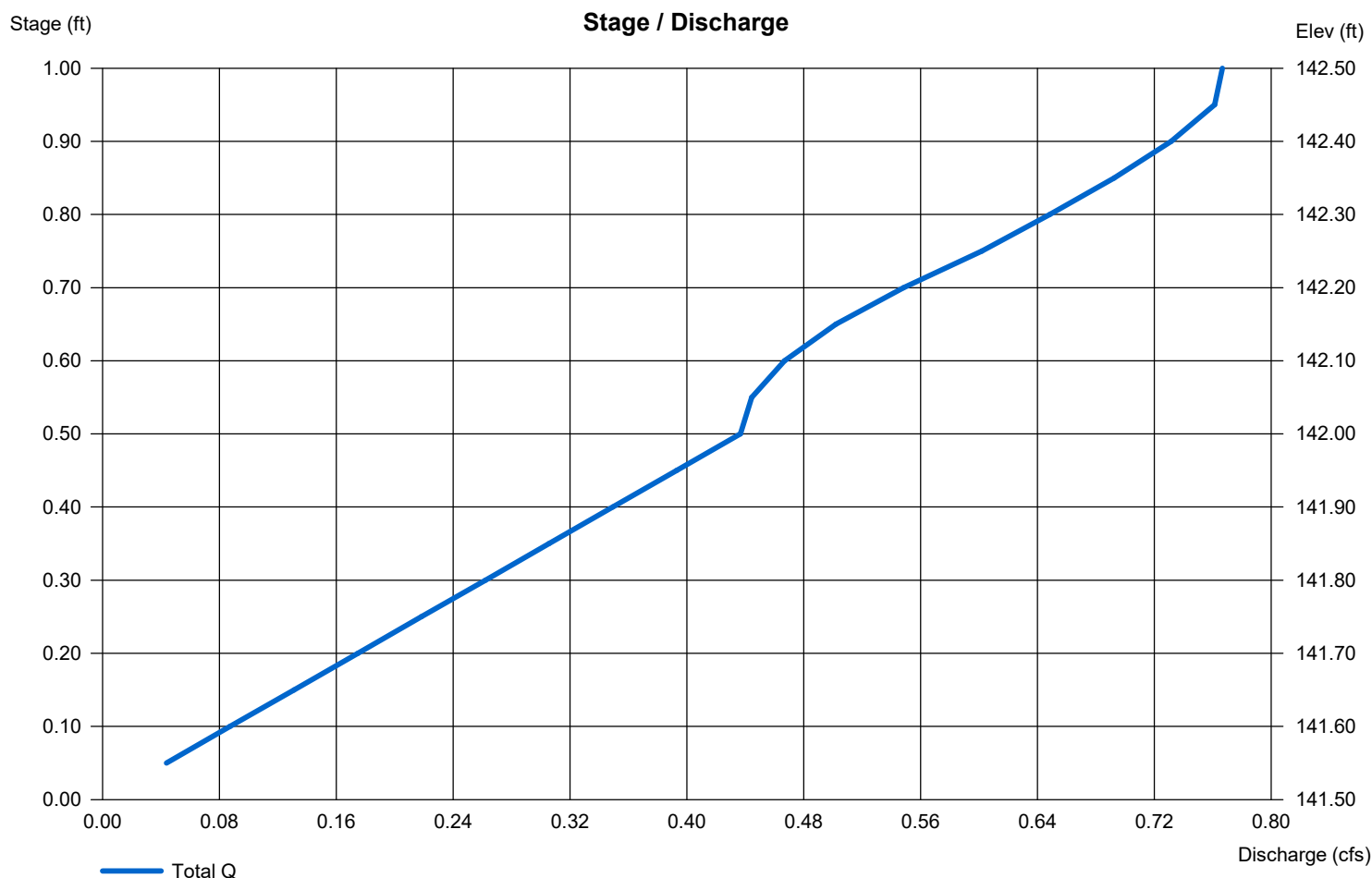
Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 6.00	0.00	0.00	0.00
Span (in)	= 6.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 142.00	0.00	0.00	0.00
Length (ft)	= 10.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 2.000 (by Contour)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

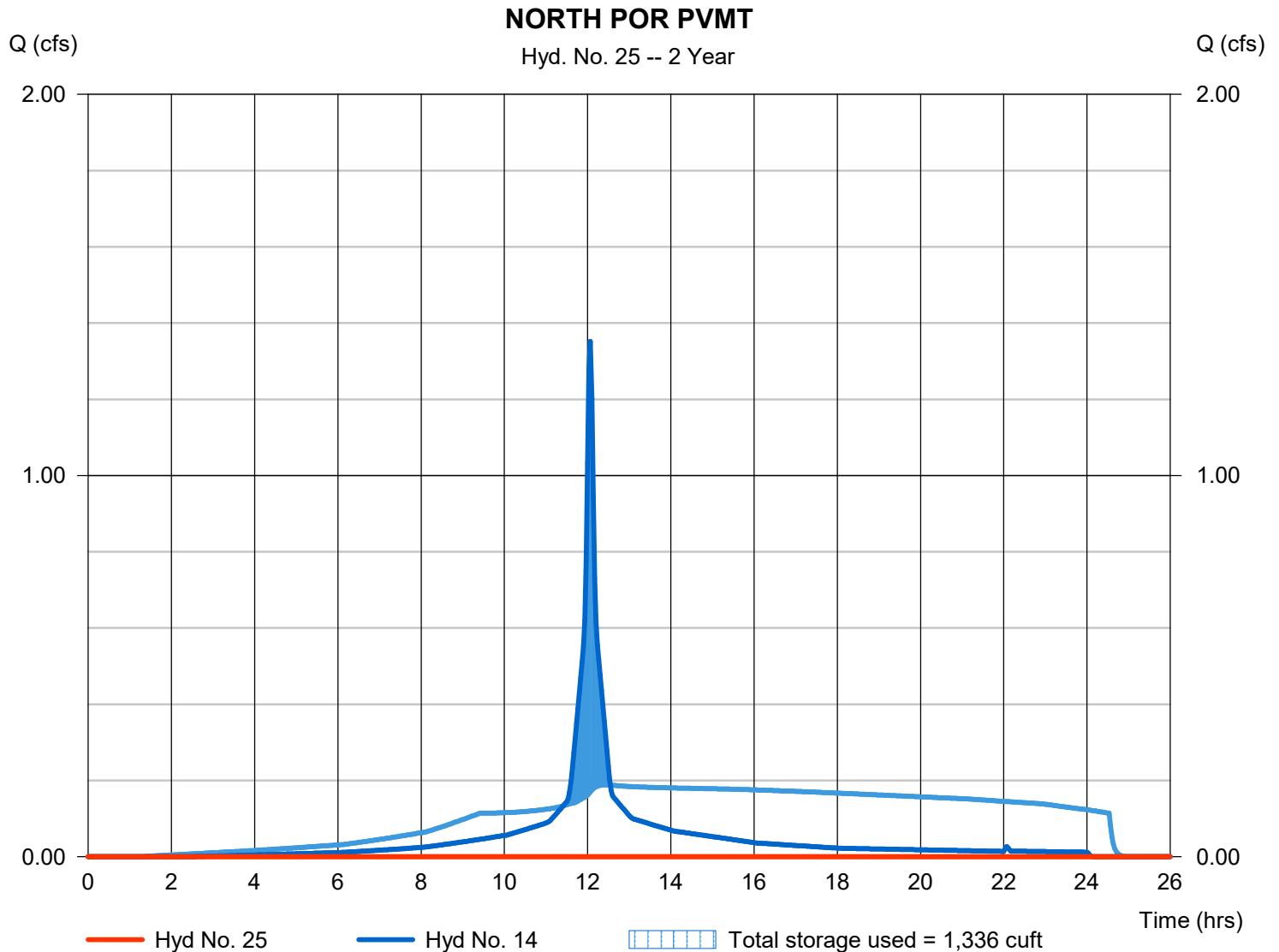
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Hyd. No. 25

NORTH POR PVMT

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 14 - PP-02	Max. Elevation	= 141.31 ft
Reservoir name	= NORTH POROUS PVMT	Max. Storage	= 1,336 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

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Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

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Pond No. 4 - NORTH POROUS PVMT

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Beginning Elevation = 141.00 ft. Voids = 30.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	141.00	14,607	0	0
0.50	141.50	14,607	2,191	2,191
1.00	142.00	14,607	2,191	4,382

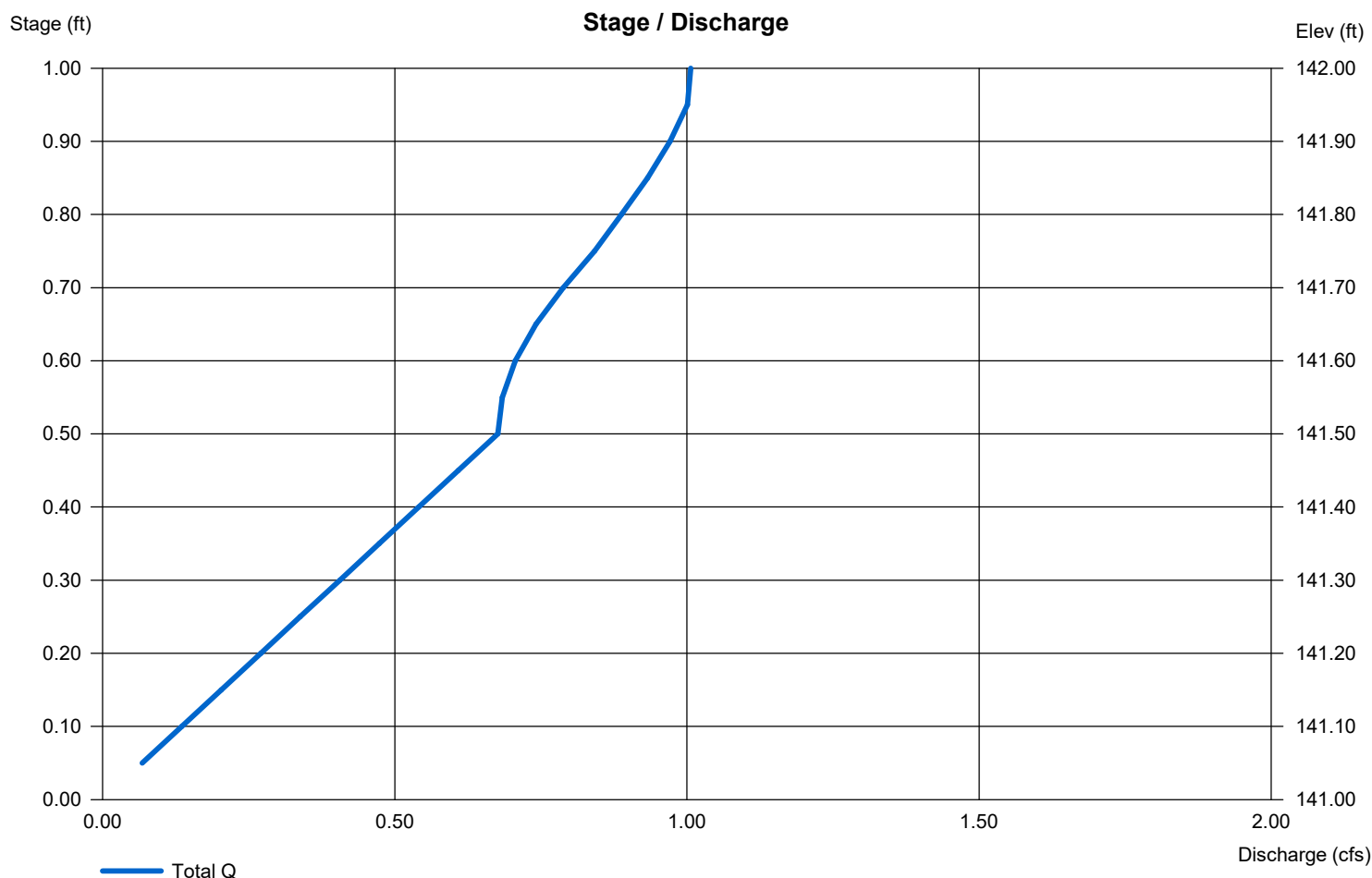
Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 6.00	0.00	0.00	0.00
Span (in)	= 6.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 141.50	0.00	0.00	0.00
Length (ft)	= 10.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 2.000 (by Contour)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

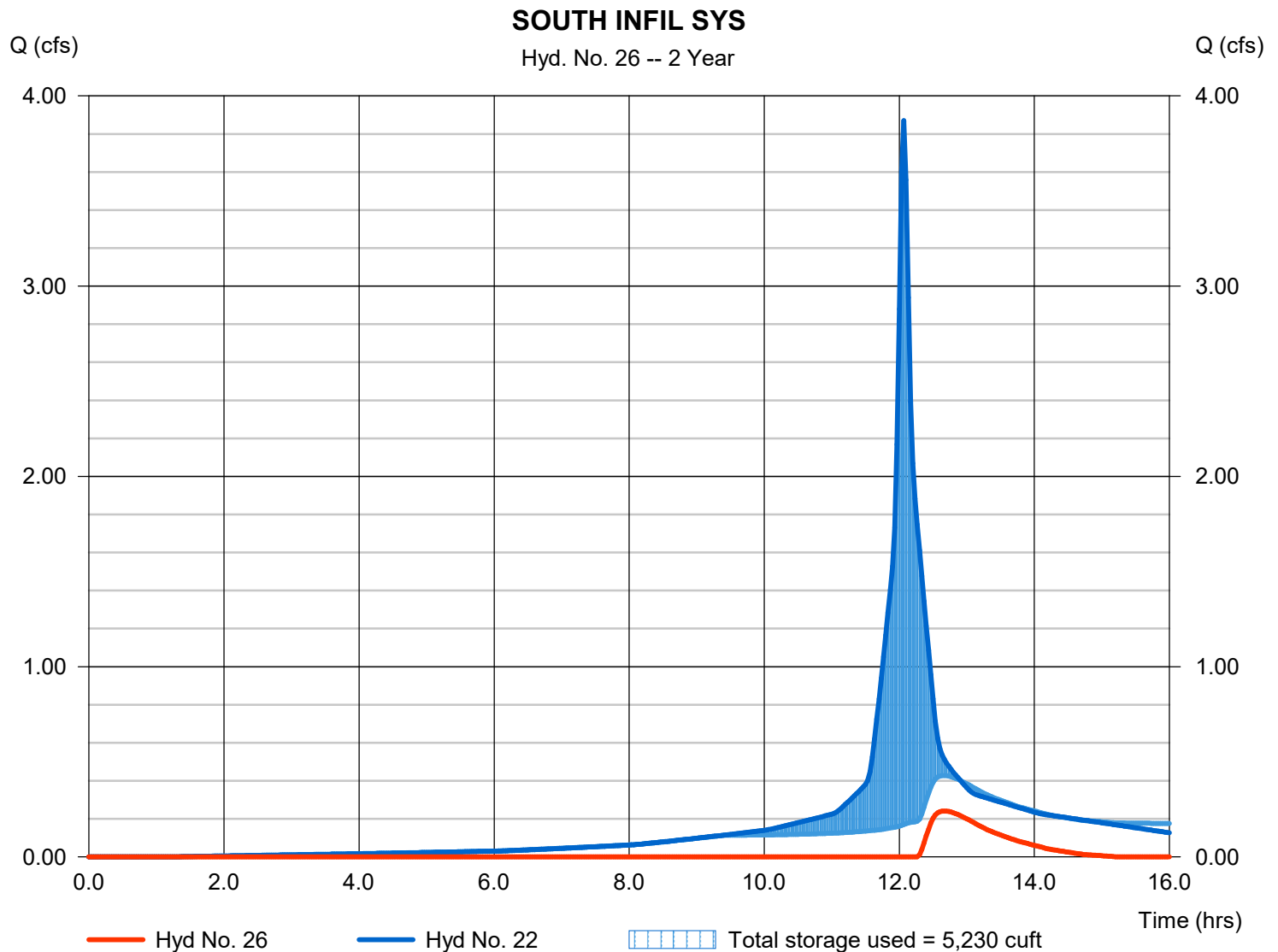
Friday, 07 / 9 / 2021

Hyd. No. 26

SOUTH INFIL SYS

Hydrograph type	= Reservoir	Peak discharge	= 0.241 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.67 hrs
Time interval	= 2 min	Hyd. volume	= 1,021 cuft
Inflow hyd. No.	= 22 - TO SOUTH INFIL SYS	Max. Elevation	= 143.05 ft
Reservoir name	= SOUTH INFIL SYS	Max. Storage	= 5,230 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond No. 1 - SOUTH INFIL SYS

Pond Data

UG Chambers -Invert elev. = 142.00 ft, Rise x Span = 2.00 x 7.00 ft, Barrel Len = 170.00 ft, No. Barrels = 3, Slope = 0.00%, Headers = Yes
Encasement -Invert elev. = 141.00 ft, Width = 7.00 ft, Height = 4.00 ft, Voids = 30.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	141.00	n/a	0	0
0.40	141.40	n/a	464	464
0.80	141.80	n/a	464	928
1.20	142.20	n/a	1,005	1,932
1.60	142.60	n/a	1,546	3,478
2.00	143.00	n/a	1,546	5,024
2.40	143.40	n/a	1,546	6,570
2.80	143.80	n/a	1,546	8,116
3.20	144.20	n/a	1,005	9,121
3.60	144.60	n/a	464	9,584
4.00	145.00	n/a	464	10,048

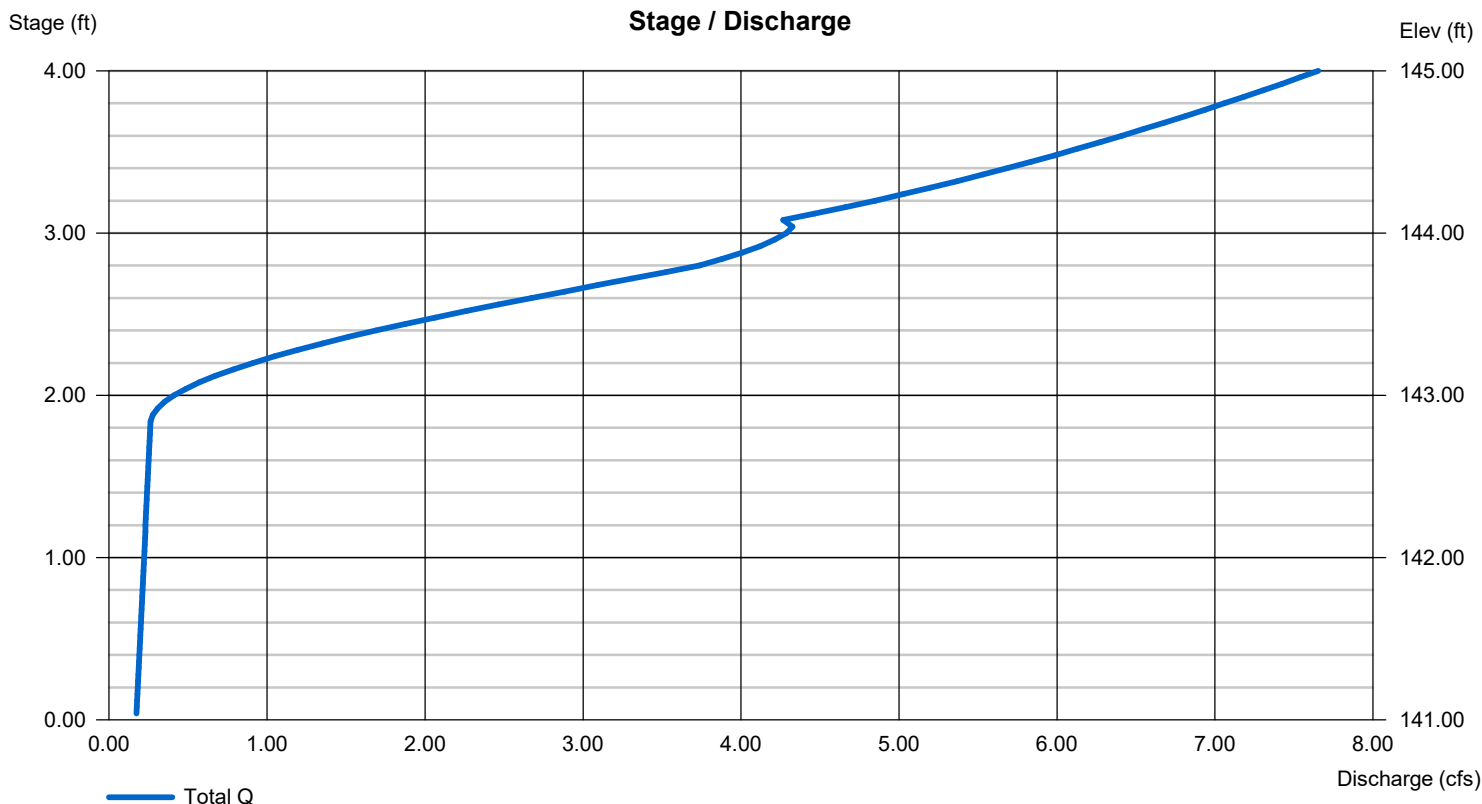
Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 15.00	Inactive	0.00	0.00
Span (in)	= 15.00	0.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 142.83	0.00	0.00	0.00
Length (ft)	= 38.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	Inactive	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 2.000 (by Wet area)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



Hydrograph Report

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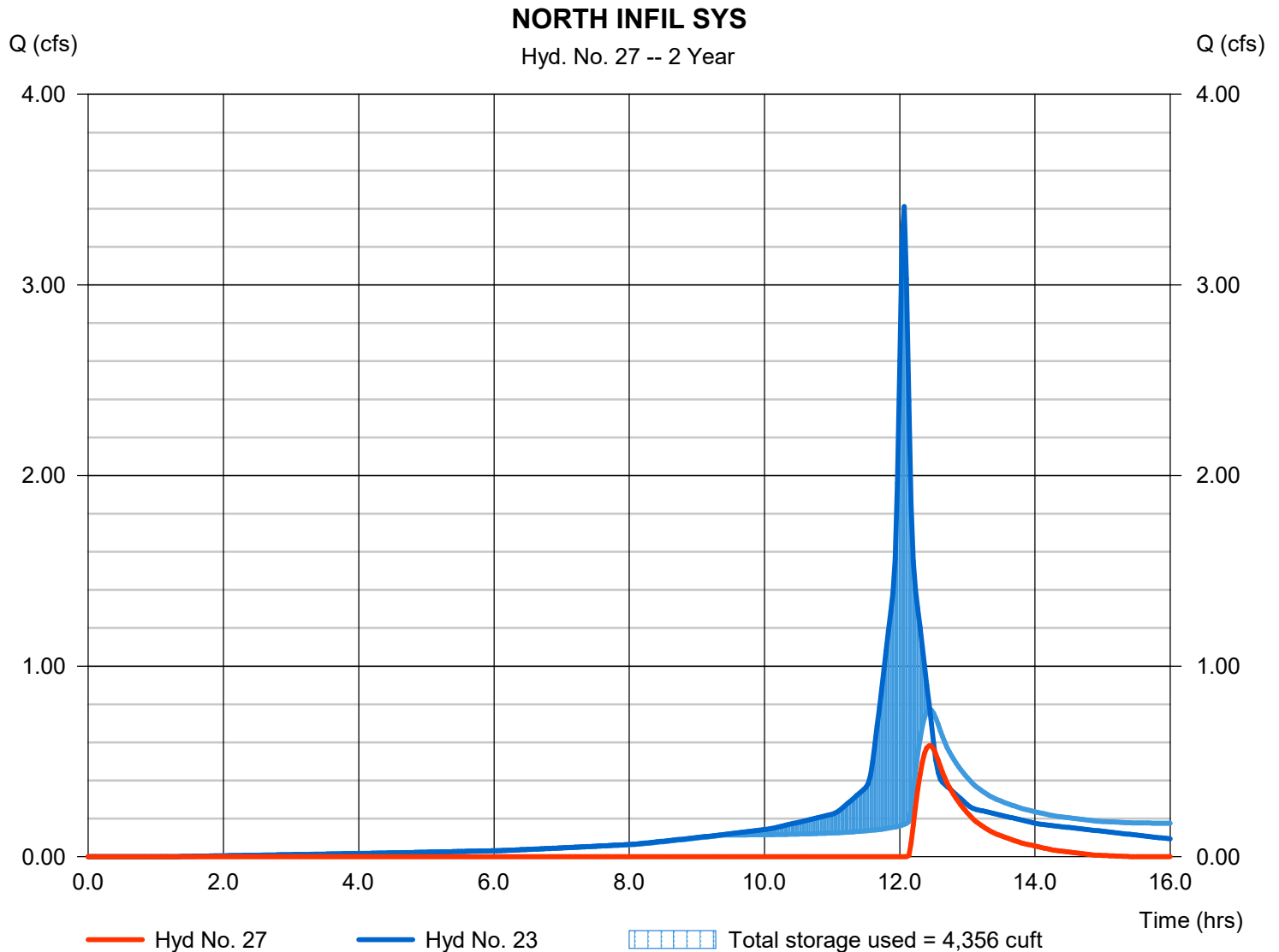
Friday, 07 / 9 / 2021

Hyd. No. 27

NORTH INFIL SYS

Hydrograph type	= Reservoir	Peak discharge	= 0.583 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.43 hrs
Time interval	= 2 min	Hyd. volume	= 1,717 cuft
Inflow hyd. No.	= 23 - TO NORTH INFIL SYS	Max. Elevation	= 143.36 ft
Reservoir name	= NORTH INFIL SYS	Max. Storage	= 4,356 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond No. 2 - NORTH INFIL SYS

Pond Data

UG Chambers -Invert elev. = 142.00 ft, Rise x Span = 2.00 x 7.00 ft, Barrel Len = 80.00 ft, No. Barrels = 4, Slope = 0.00%, Headers = Yes
Encasement -Invert elev. = 141.00 ft, Width = 7.00 ft, Height = 4.00 ft, Voids = 30.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	141.00	n/a	0	0
0.40	141.40	n/a	316	316
0.80	141.80	n/a	316	632
1.20	142.20	n/a	684	1,316
1.60	142.60	n/a	1,053	2,369
2.00	143.00	n/a	1,053	3,422
2.40	143.40	n/a	1,053	4,475
2.80	143.80	n/a	1,053	5,528
3.20	144.20	n/a	684	6,213
3.60	144.60	n/a	316	6,528
4.00	145.00	n/a	316	6,844

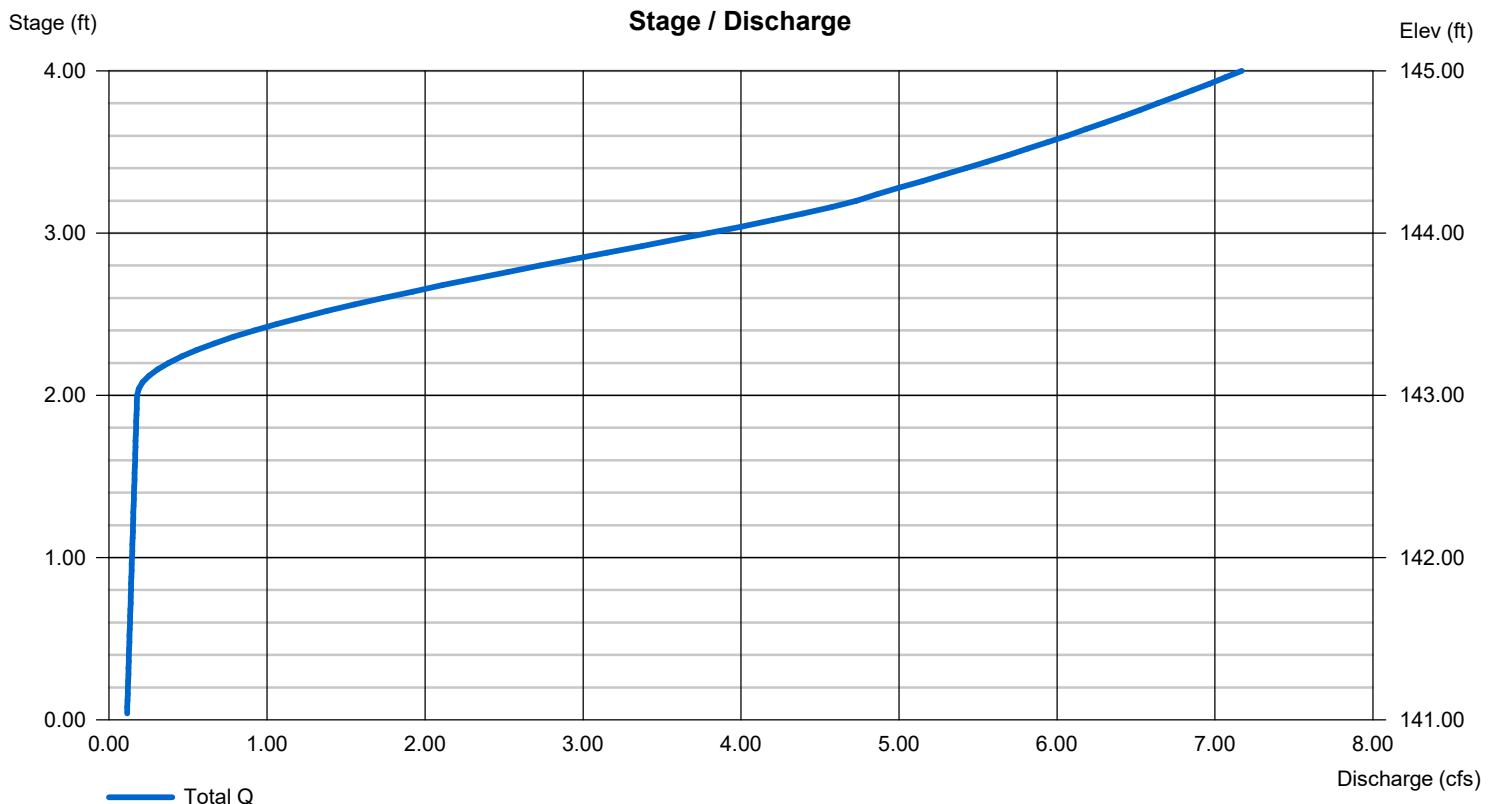
Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 15.00	Inactive	0.00	0.00
Span (in)	= 15.00	0.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 143.00	0.00	0.00	0.00
Length (ft)	= 50.00	0.00	0.00	0.00
Slope (%)	= 1.50	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	Inactive	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 2.000 (by Wet area)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

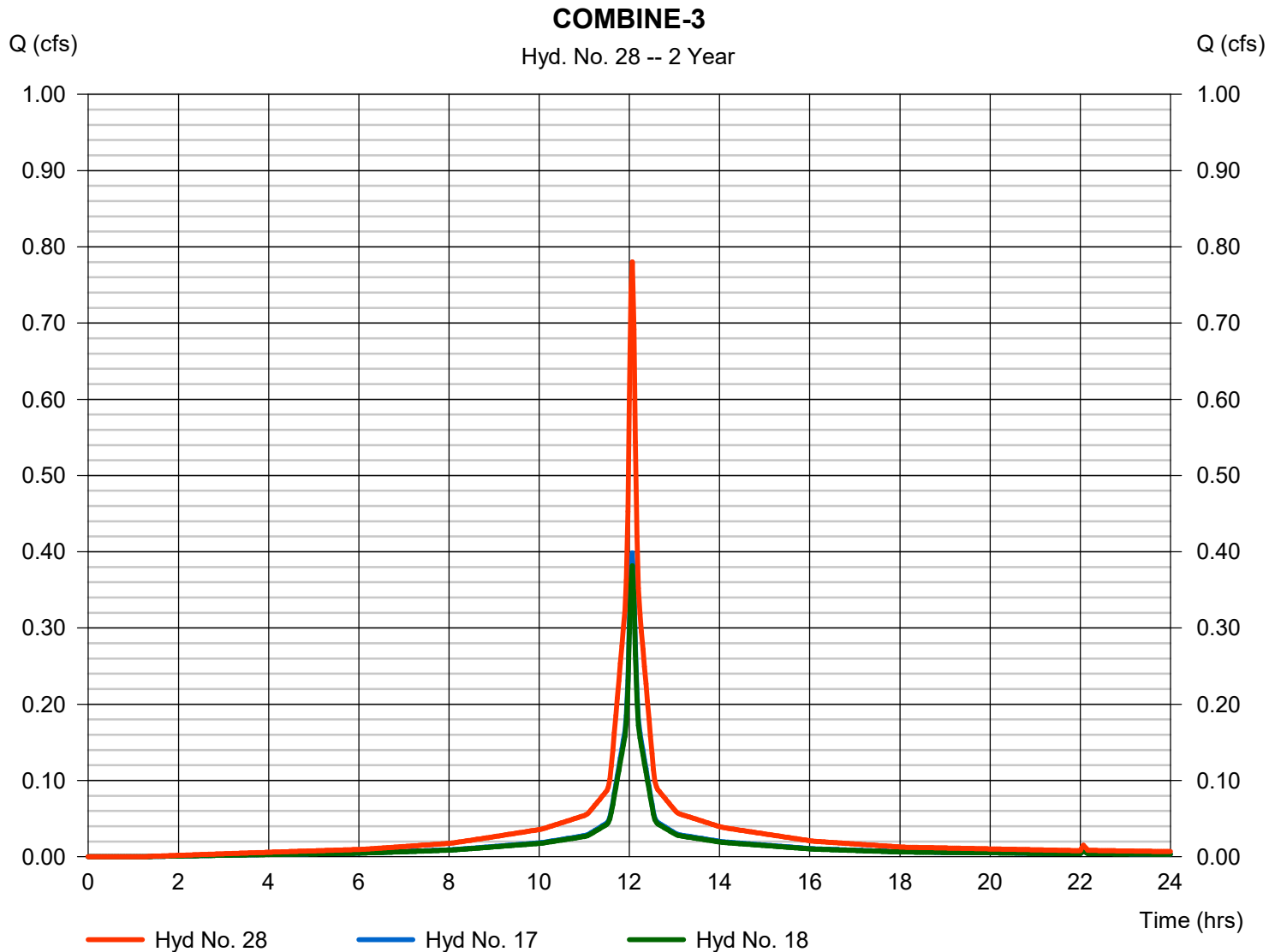
Friday, 07 / 9 / 2021

Hyd. No. 28

COMBINE-3

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 2 min
Inflow hyds. = 17, 18

Peak discharge = 0.780 cfs
Time to peak = 12.07 hrs
Hyd. volume = 2,644 cuft
Contrib. drain. area = 0.235 ac



Hydrograph Report

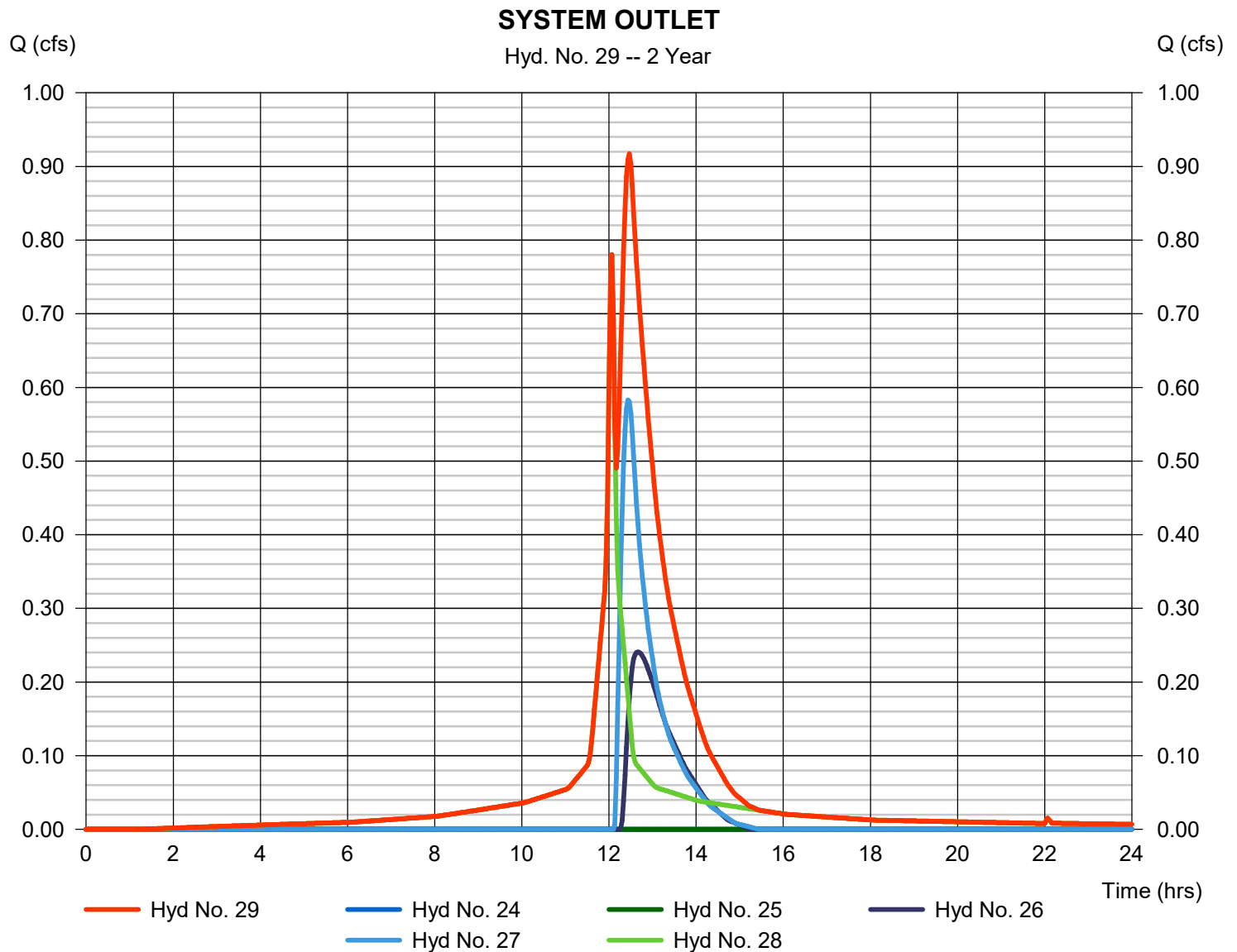
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

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Hyd. No. 29

SYSTEM OUTLET

Hydrograph type	= Combine	Peak discharge	= 0.917 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.47 hrs
Time interval	= 2 min	Hyd. volume	= 5,382 cuft
Inflow hyds.	= 24, 25, 26, 27, 28	Contrib. drain. area	= 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

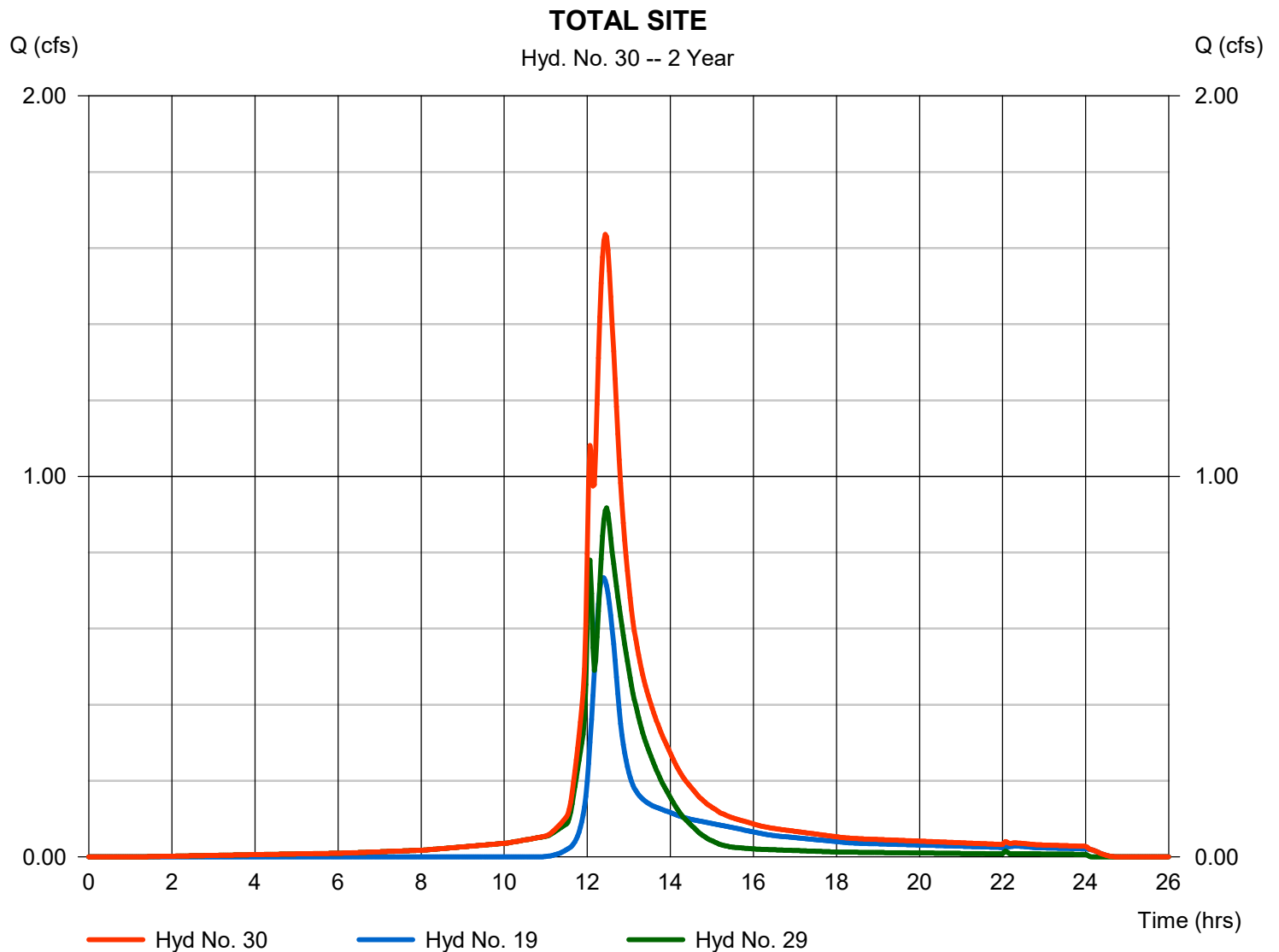
Friday, 07 / 9 / 2021

Hyd. No. 30

TOTAL SITE

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 2 min
Inflow hyds. = 19, 29

Peak discharge = 1.636 cfs
Time to peak = 12.43 hrs
Hyd. volume = 9,487 cuft
Contrib. drain. area = 1.038 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

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	0.269	2	730	1,097	-----	-----	-----	CB-01
2	SCS Runoff	0.475	2	726	1,646	-----	-----	-----	CB-01A
3	SCS Runoff	0.259	2	724	823	-----	-----	-----	CB-02
4	SCS Runoff	0.354	2	724	1,128	-----	-----	-----	CB-03
5	SCS Runoff	0.257	2	724	828	-----	-----	-----	CB-04
6	SCS Runoff	0.513	2	724	1,585	-----	-----	-----	CB-05
7	SCS Runoff	0.292	2	724	922	-----	-----	-----	CB-06
8	SCS Runoff	0.481	2	724	1,547	-----	-----	-----	CB-07
9	SCS Runoff	0.546	2	724	1,777	-----	-----	-----	CB-08
10	SCS Runoff	0.674	2	724	2,193	-----	-----	-----	CB-09
11	SCS Runoff	0.637	2	724	2,028	-----	-----	-----	CB-10
12	SCS Runoff	0.510	2	730	1,986	-----	-----	-----	CB-11
13	SCS Runoff	1.381	2	724	4,761	-----	-----	-----	PP-01
14	SCS Runoff	2.106	2	724	7,030	-----	-----	-----	PP-02
15	SCS Runoff	3.404	2	724	11,736	-----	-----	-----	RF-01
16	SCS Runoff	3.327	2	724	11,473	-----	-----	-----	RF-02
17	SCS Runoff	0.611	2	724	2,108	-----	-----	-----	RF-03
18	SCS Runoff	0.586	2	724	2,020	-----	-----	-----	RF-04
19	SCS Runoff	1.726	2	740	9,131	-----	-----	-----	PR-WS-01
20	Combine	1.409	2	724	5,151	1, 2, 3, 6,	-----	-----	COMBINE-1
21	Combine	5.059	2	724	17,705	7, 8, 9, 12, 16,	-----	-----	COMBINE-2
22	Combine	6.468	2	724	22,856	20, 21	-----	-----	TO SOUTH INFIL SYS
23	Combine	5.327	2	724	17,913	4, 5, 10, 11, 15,	-----	-----	TO NORTH INFIL SYS
24	Reservoir	0.000	2	806	0	13	141.99	1,380	SOUTH POR PVMT
25	Reservoir	0.000	2	720	0	14	141.48	2,094	NORTH POR PVMT
26	Reservoir	2.347	2	738	7,350	22	143.60	7,323	SOUTH INFIL SYS
27	Reservoir	2.771	2	730	6,391	23	143.85	5,607	NORTH INFIL SYS
28	Combine	1.197	2	724	4,129	17, 18,	-----	-----	COMBINE-3
29	Combine	5.271	2	732	17,870	24, 25, 26, 27, 28	-----	-----	SYSTEM OUTLET
30	Combine	6.762	2	736	27,001	19, 29	-----	-----	TOTAL SITE
F0173-02 Hydrographs - Proposed.gpw					Return Period: 10 Year			Friday, 07 / 9 / 2021	

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

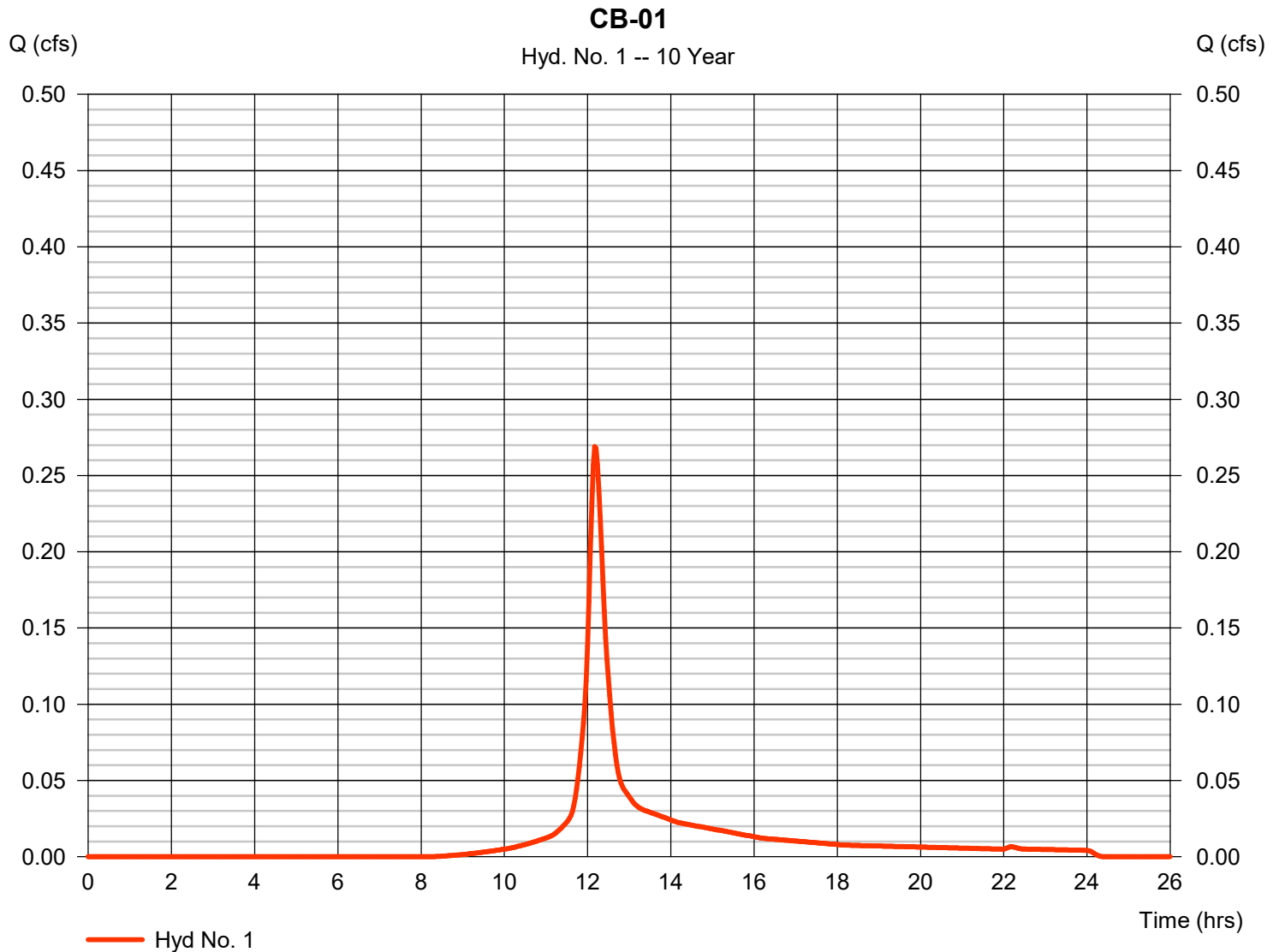
Friday, 07 / 9 / 2021

Hyd. No. 1

CB-01

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 2 min
 Drainage area = 0.108 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 5.40 in
 Storm duration = 24 hrs

Peak discharge = 0.269 cfs
 Time to peak = 12.17 hrs
 Hyd. volume = 1,097 cuft
 Curve number = 76
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 14.20 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

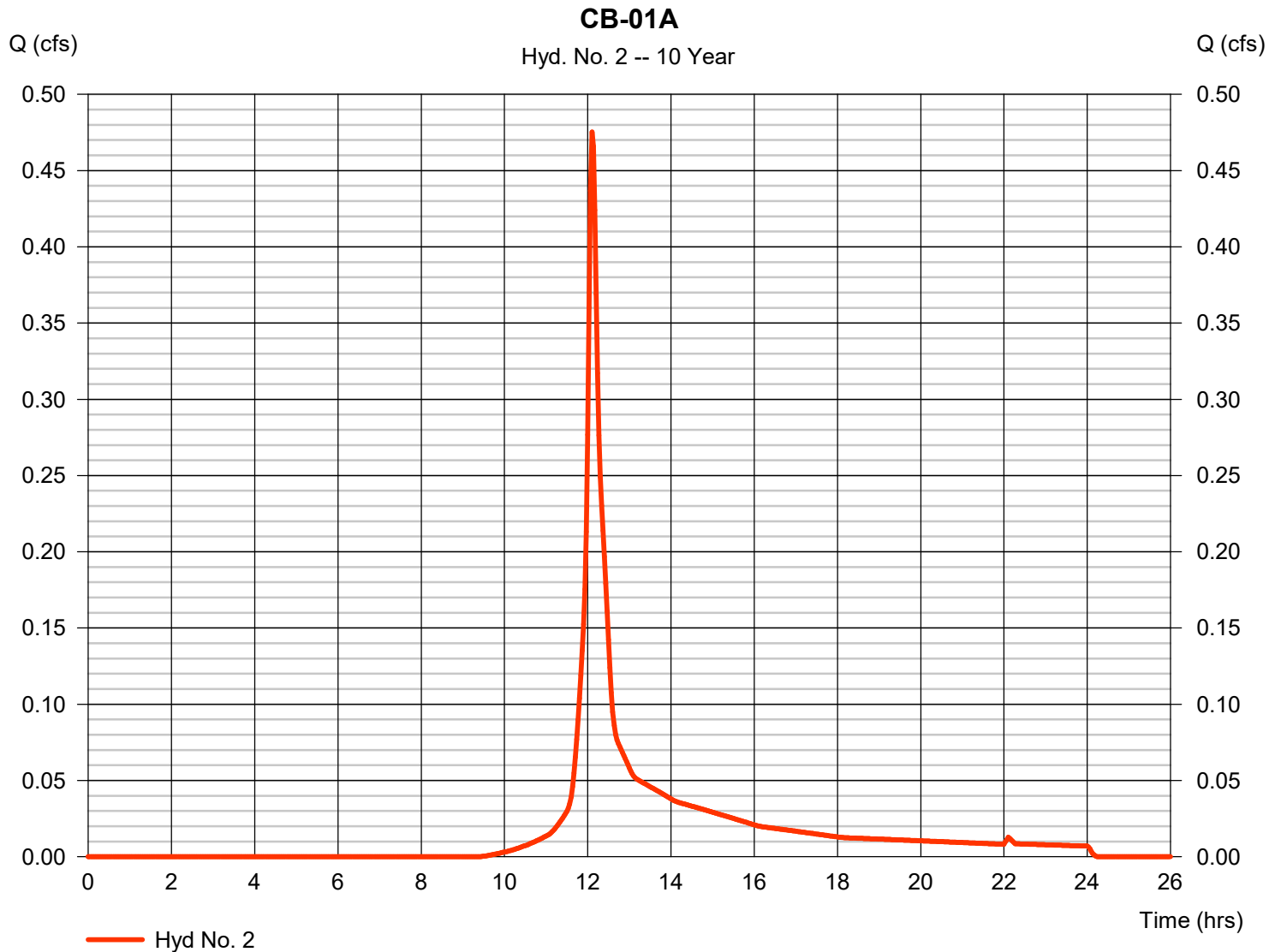
Friday, 07 / 9 / 2021

Hyd. No. 2

CB-01A

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 2 min
 Drainage area = 0.194 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 5.40 in
 Storm duration = 24 hrs

Peak discharge = 0.475 cfs
 Time to peak = 12.10 hrs
 Hyd. volume = 1,646 cuft
 Curve number = 70
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 7.80 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

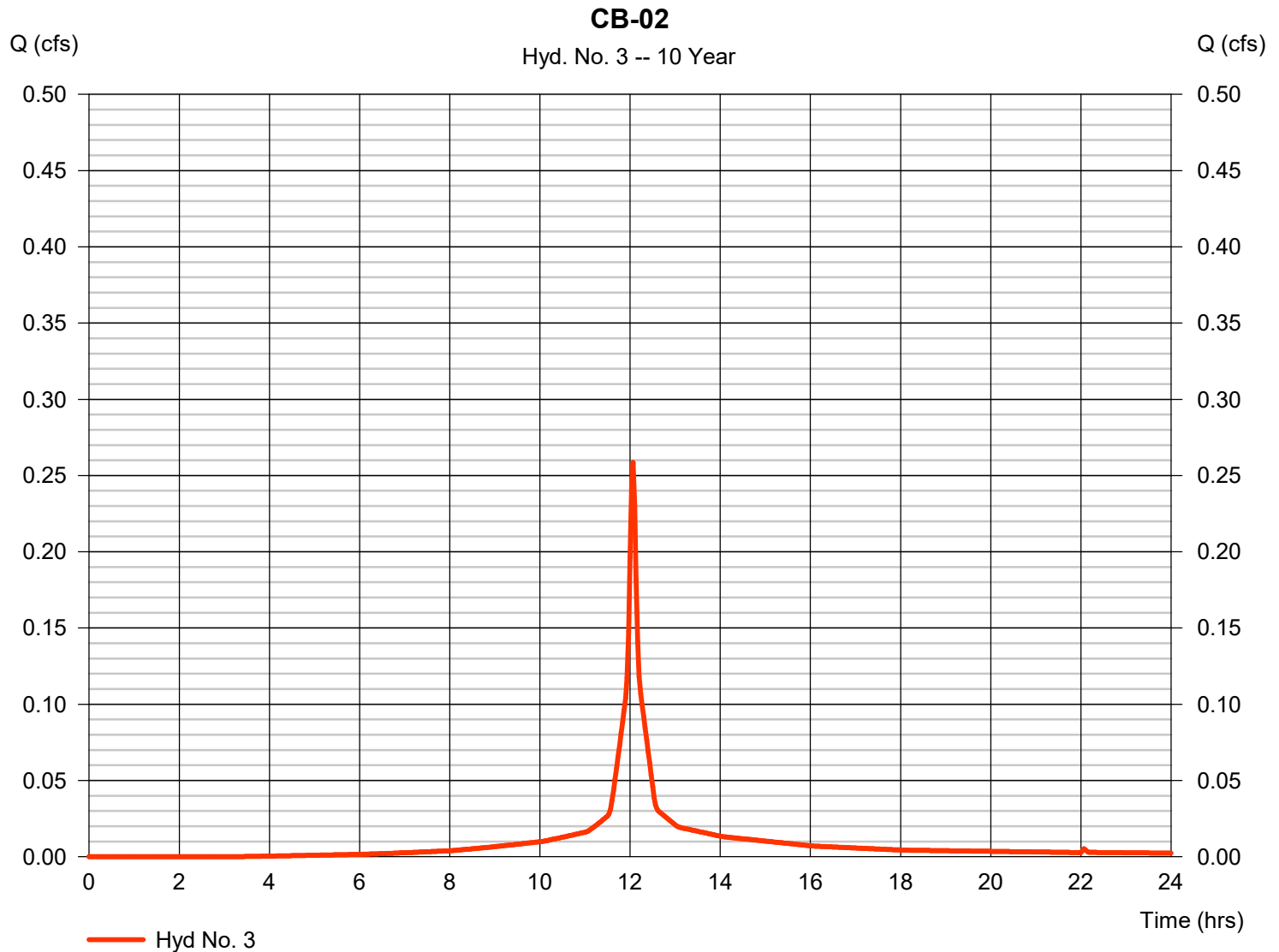
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Friday, 07 / 9 / 2021

Hyd. No. 3

CB-02

Hydrograph type	= SCS Runoff	Peak discharge	= 0.259 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 823 cuft
Drainage area	= 0.054 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

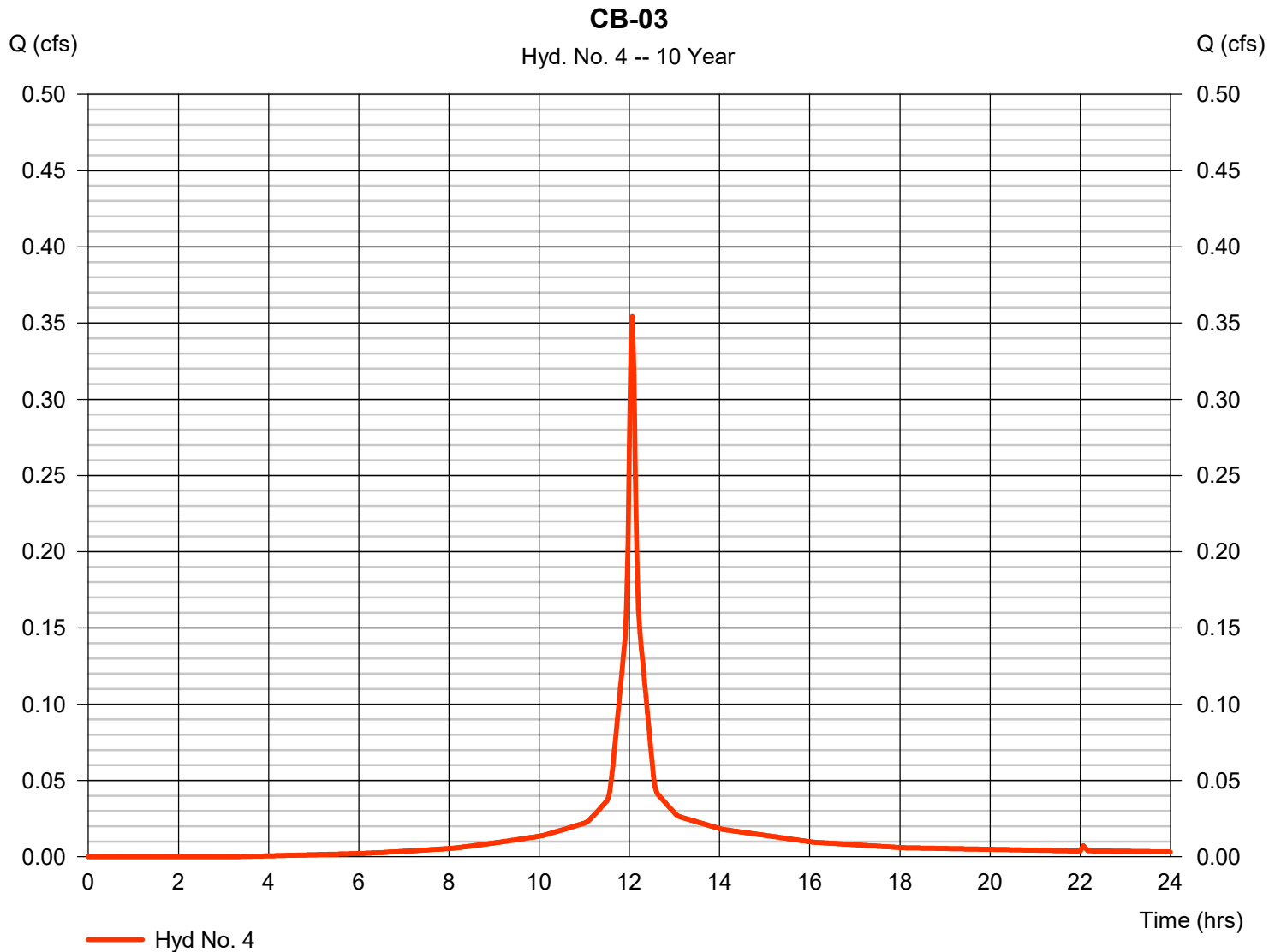
Friday, 07 / 9 / 2021

Hyd. No. 4

CB-03

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 2 min
 Drainage area = 0.074 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 5.40 in
 Storm duration = 24 hrs

Peak discharge = 0.354 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 1,128 cuft
 Curve number = 92
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

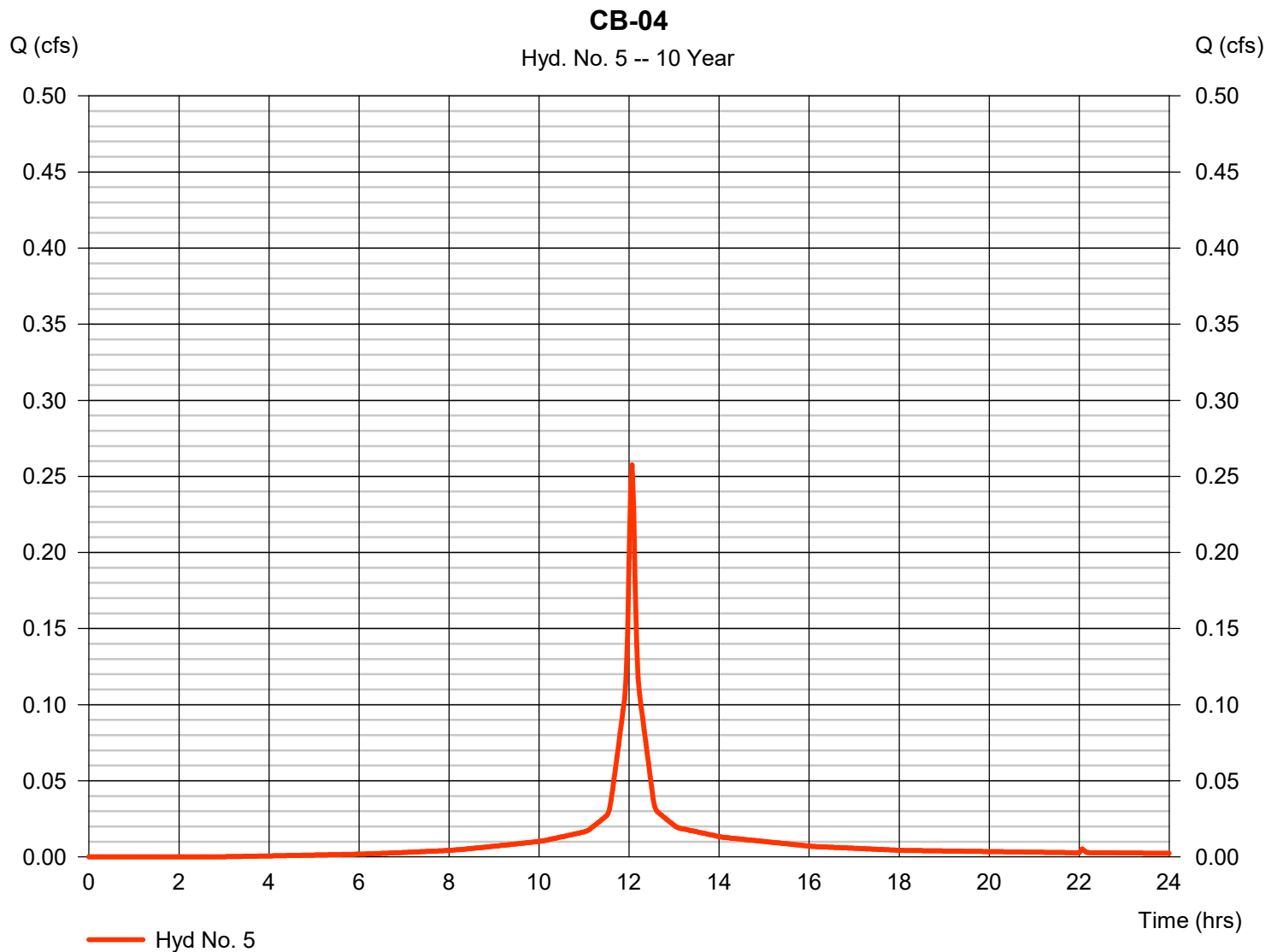
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

Hyd. No. 5

CB-04

Hydrograph type	= SCS Runoff	Peak discharge	= 0.257 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 828 cuft
Drainage area	= 0.053 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

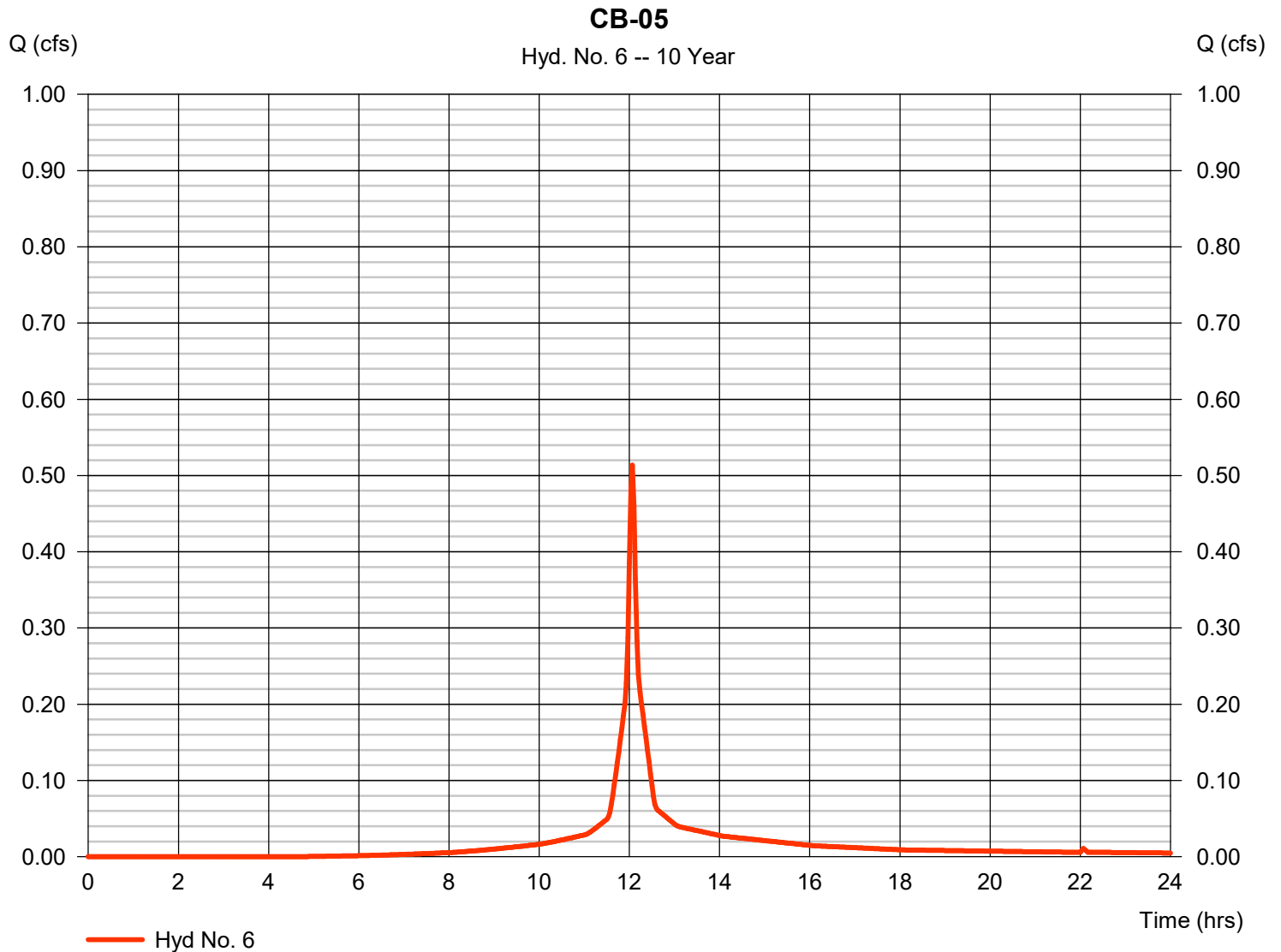
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

Hyd. No. 6

CB-05

Hydrograph type	= SCS Runoff	Peak discharge	= 0.513 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,585 cuft
Drainage area	= 0.115 ac	Curve number	= 88
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

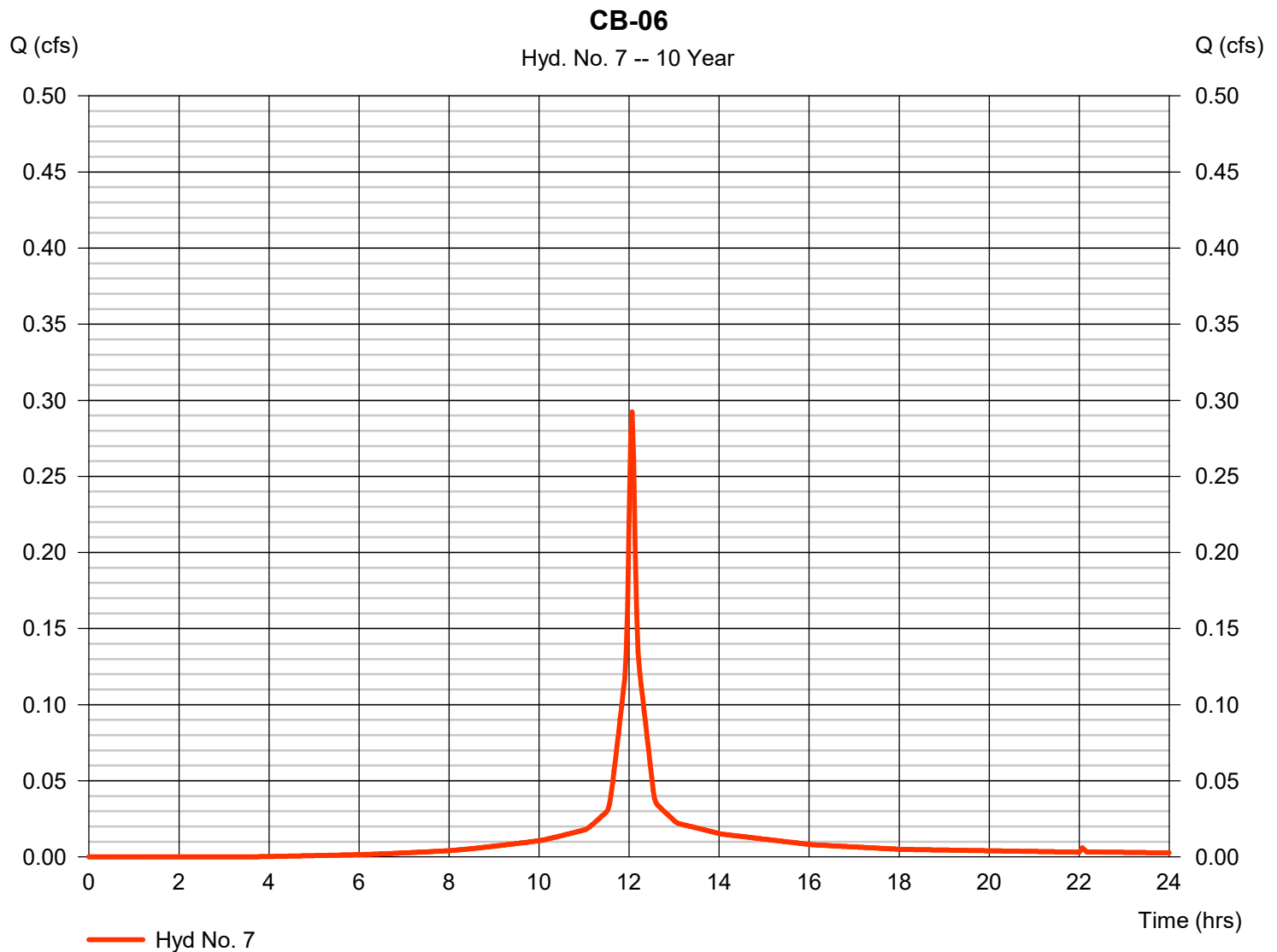
Friday, 07 / 9 / 2021

Hyd. No. 7

CB-06

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 2 min
 Drainage area = 0.062 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 5.40 in
 Storm duration = 24 hrs

Peak discharge = 0.292 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 922 cuft
 Curve number = 91
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

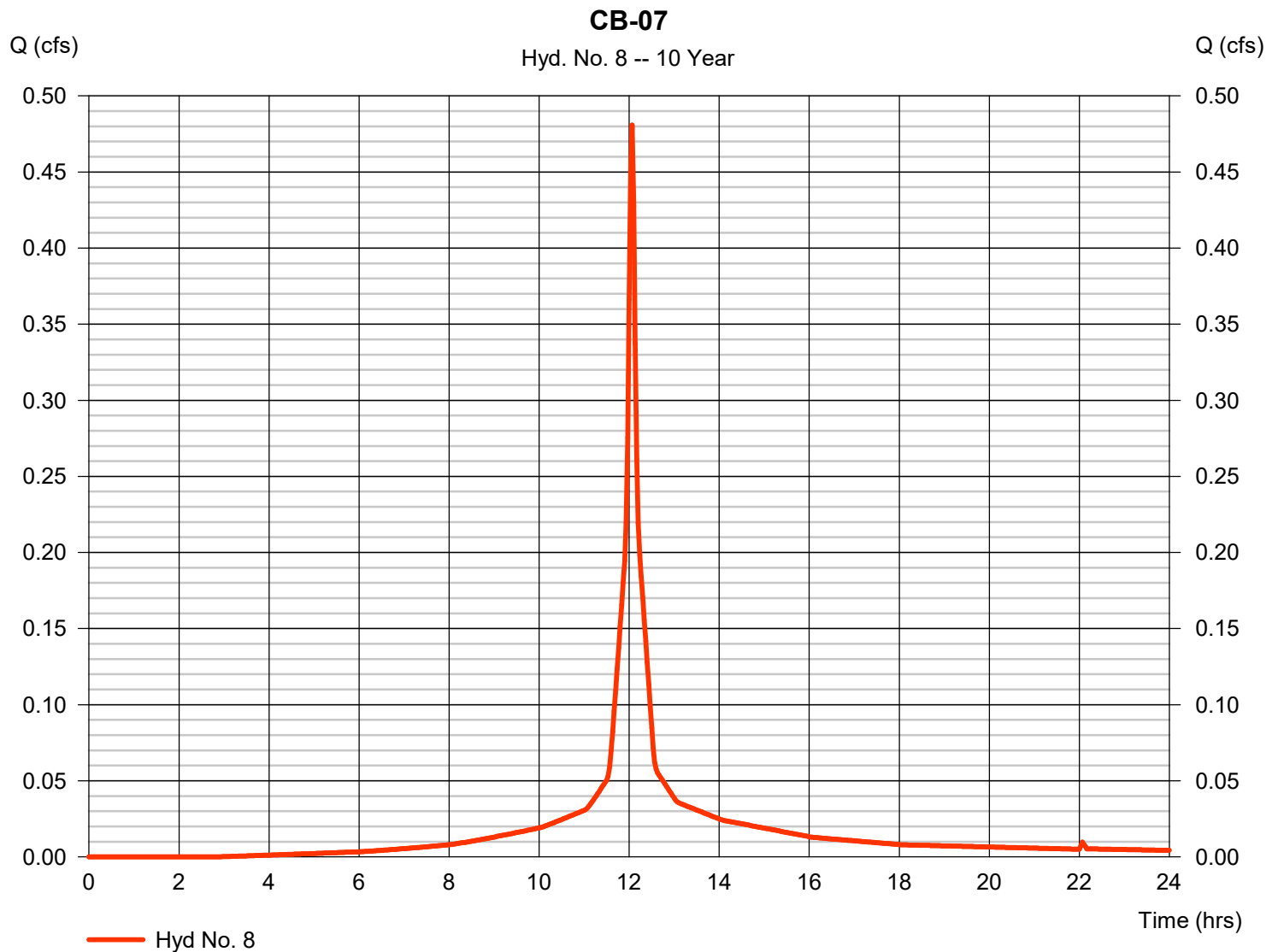
Friday, 07 / 9 / 2021

Hyd. No. 8

CB-07

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 2 min
 Drainage area = 0.099 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 5.40 in
 Storm duration = 24 hrs

Peak discharge = 0.481 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 1,547 cuft
 Curve number = 93
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

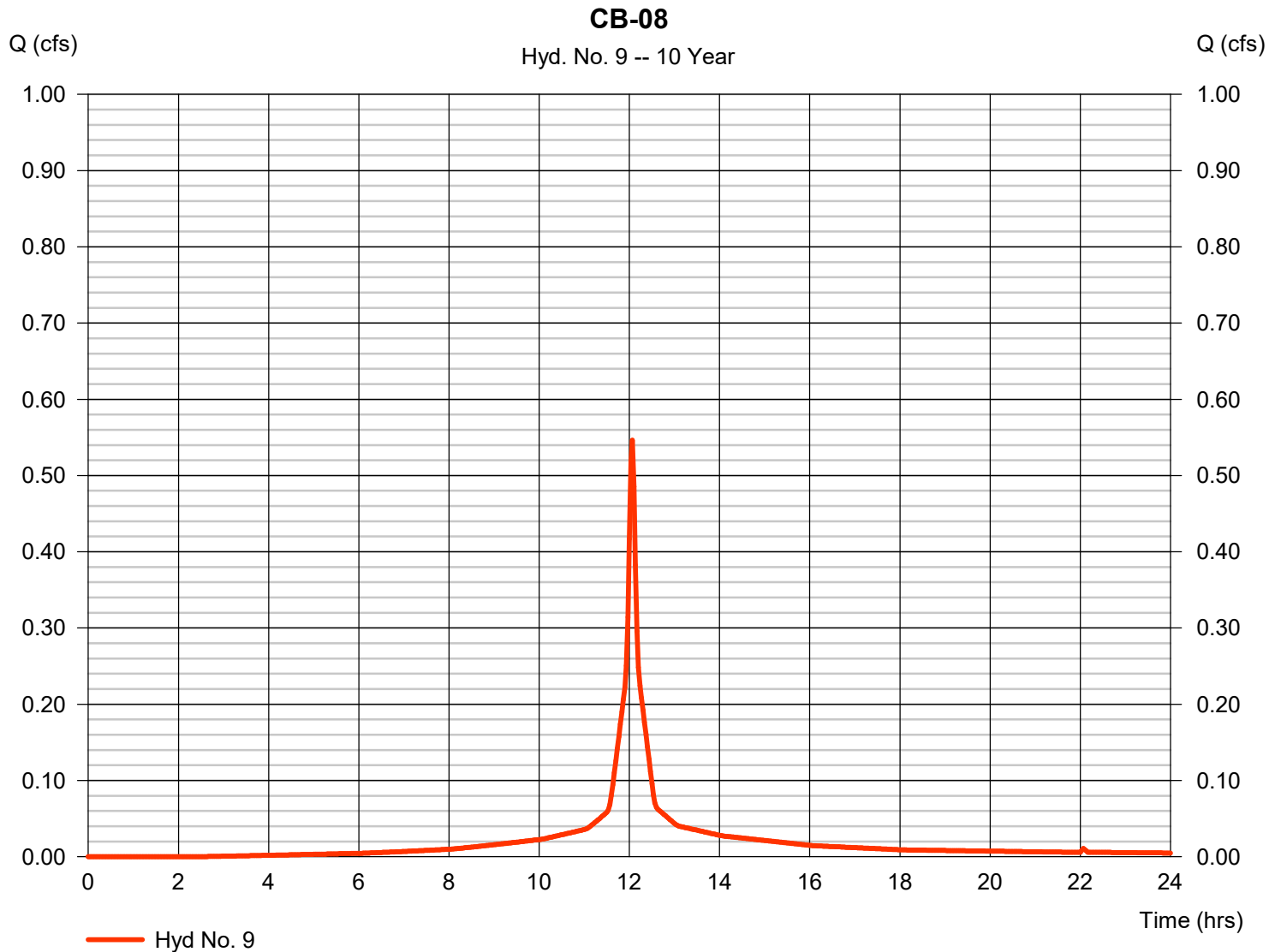
Friday, 07 / 9 / 2021

Hyd. No. 9

CB-08

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 2 min
 Drainage area = 0.111 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 5.40 in
 Storm duration = 24 hrs

Peak discharge = 0.546 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 1,777 cuft
 Curve number = 94
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.50 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

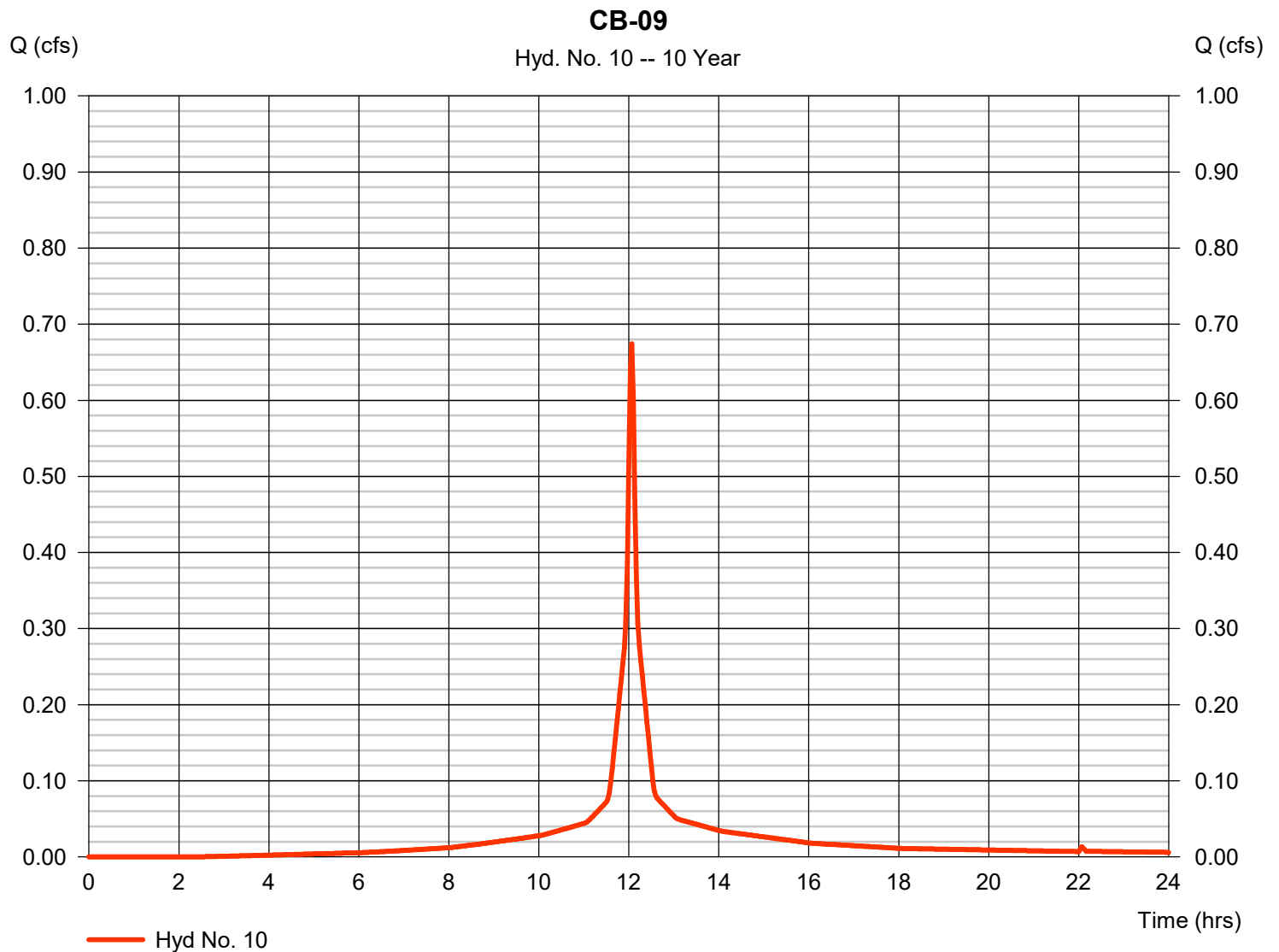
Friday, 07 / 9 / 2021

Hyd. No. 10

CB-09

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 2 min
 Drainage area = 0.137 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 5.40 in
 Storm duration = 24 hrs

Peak discharge = 0.674 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 2,193 cuft
 Curve number = 94
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

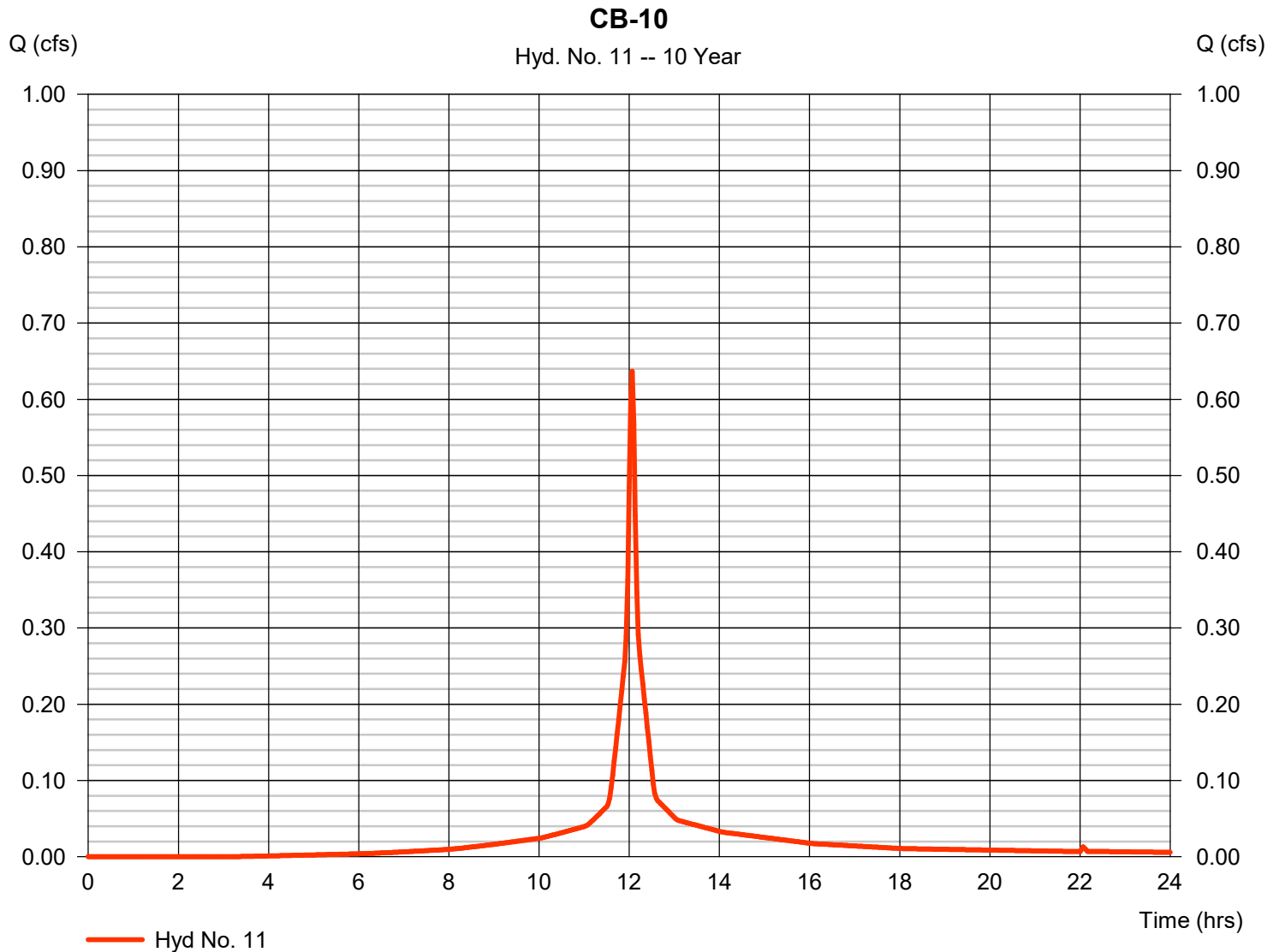
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Friday, 07 / 9 / 2021

Hyd. No. 11

CB-10

Hydrograph type	= SCS Runoff	Peak discharge	= 0.637 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 2,028 cuft
Drainage area	= 0.133 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

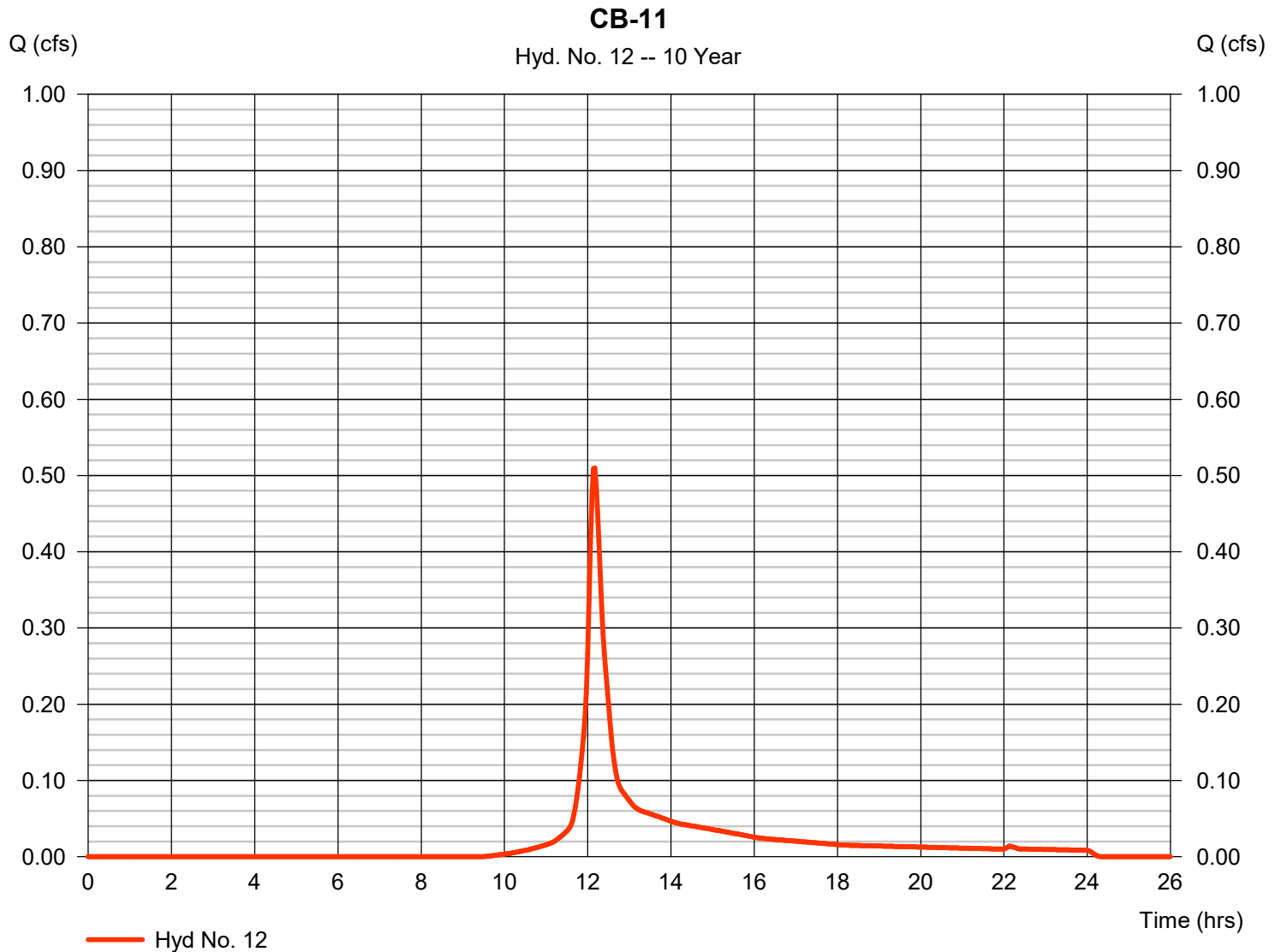
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Hyd. No. 12

CB-11

Hydrograph type	= SCS Runoff	Peak discharge	= 0.510 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 1,986 cuft
Drainage area	= 0.227 ac	Curve number	= 70
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.90 min
Total precip.	= 5.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

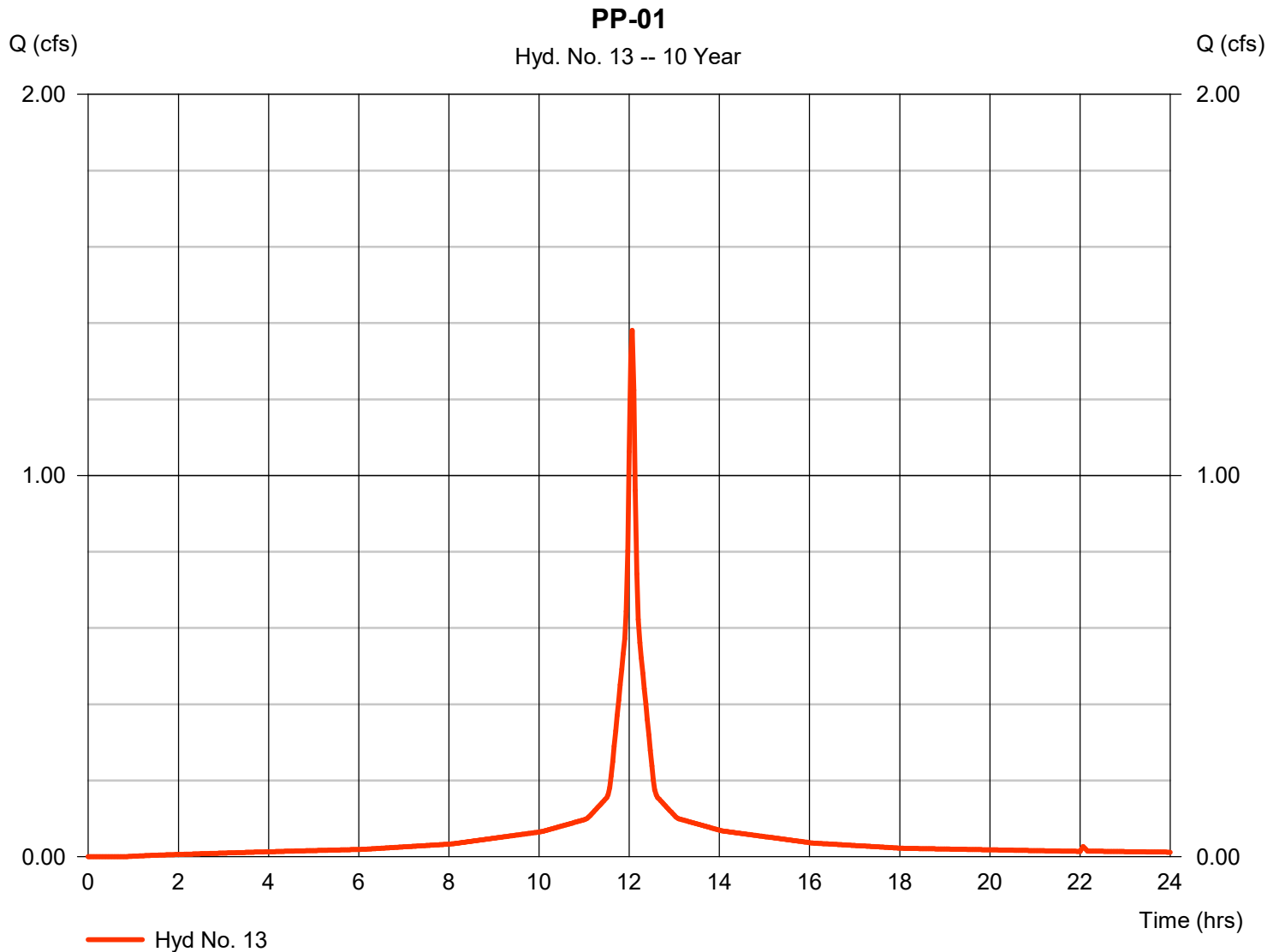
Friday, 07 / 9 / 2021

Hyd. No. 13

PP-01

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 2 min
 Drainage area = 0.271 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 5.40 in
 Storm duration = 24 hrs

Peak discharge = 1.381 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 4,761 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

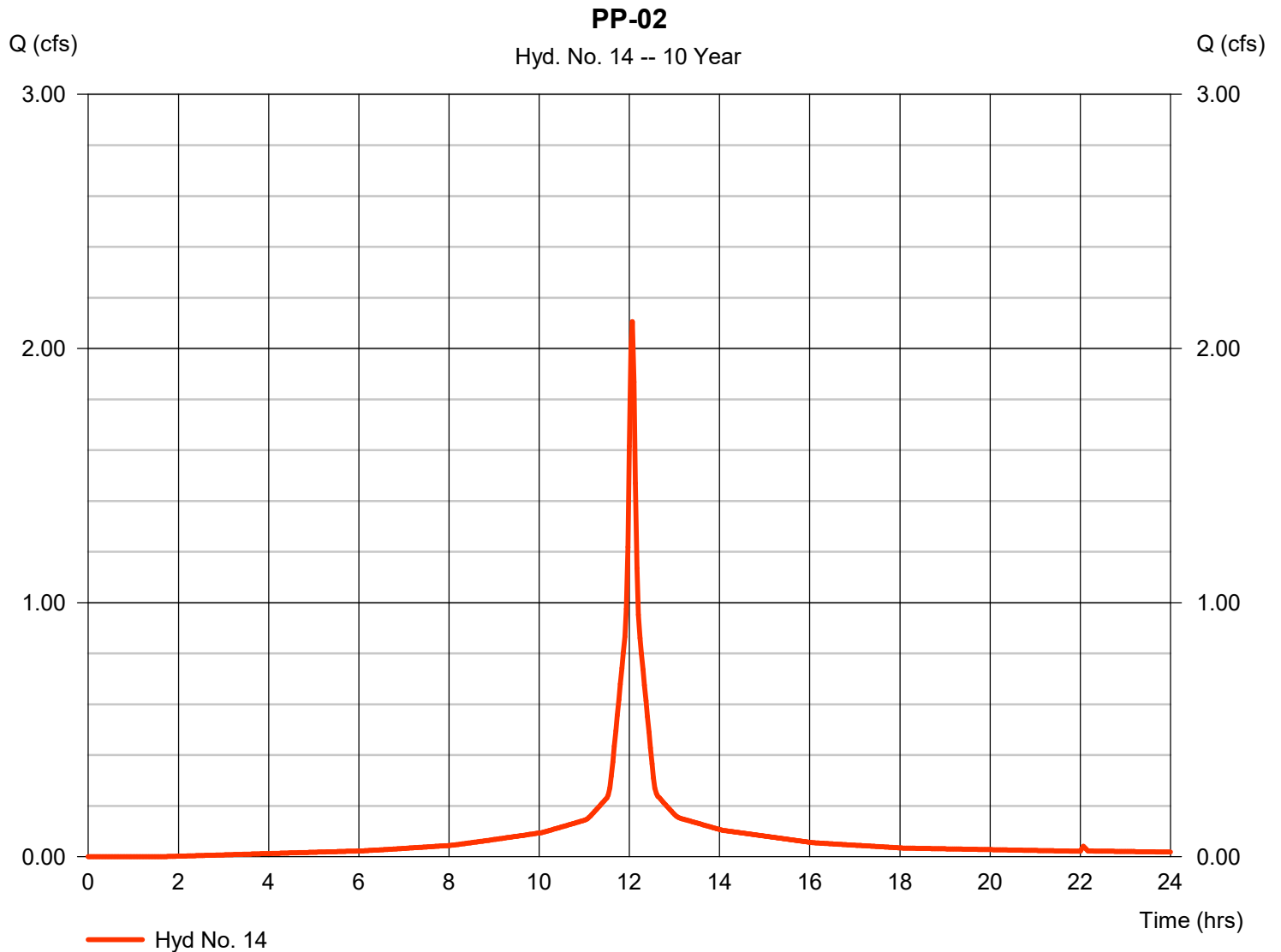
Friday, 07 / 9 / 2021

Hyd. No. 14

PP-02

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 2 min
 Drainage area = 0.419 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 5.40 in
 Storm duration = 24 hrs

Peak discharge = 2.106 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 7,030 cuft
 Curve number = 96
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 6.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

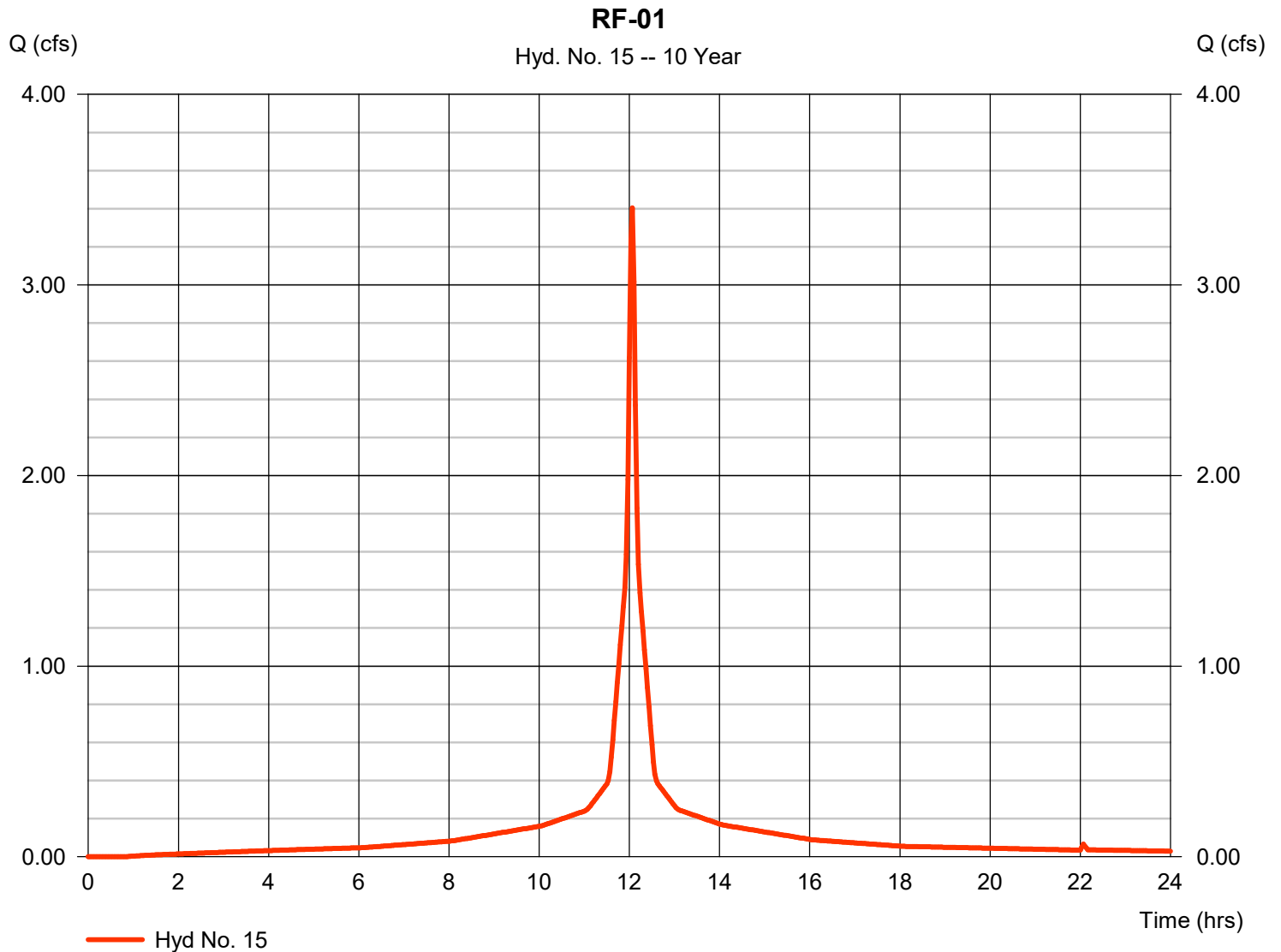
Friday, 07 / 9 / 2021

Hyd. No. 15

RF-01

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 2 min
 Drainage area = 0.668 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 5.40 in
 Storm duration = 24 hrs

Peak discharge = 3.404 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 11,736 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

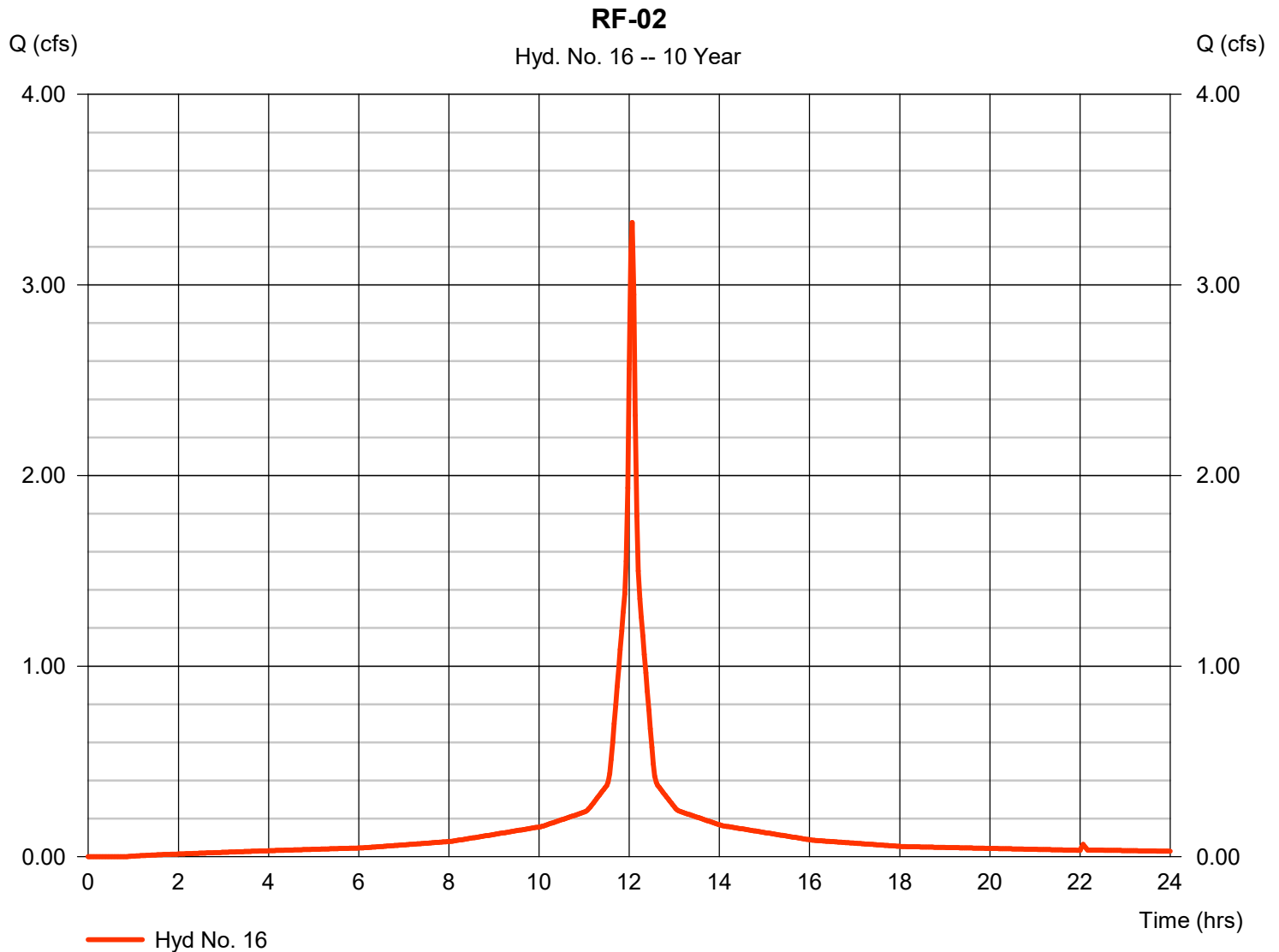
Friday, 07 / 9 / 2021

Hyd. No. 16

RF-02

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 2 min
 Drainage area = 0.653 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 5.40 in
 Storm duration = 24 hrs

Peak discharge = 3.327 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 11,473 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

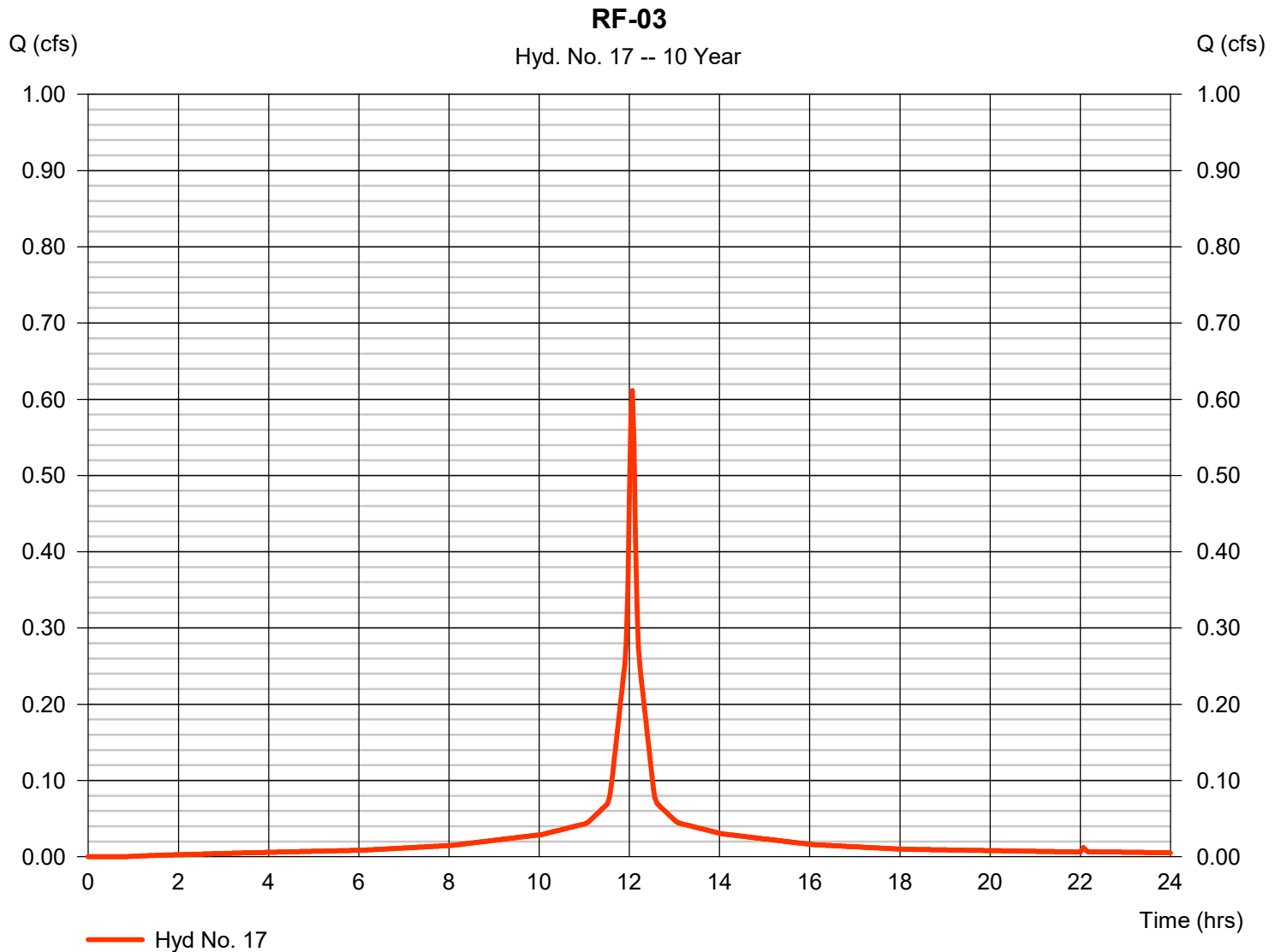
Friday, 07 / 9 / 2021

Hyd. No. 17

RF-03

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 2 min
 Drainage area = 0.120 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 5.40 in
 Storm duration = 24 hrs

Peak discharge = 0.611 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 2,108 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

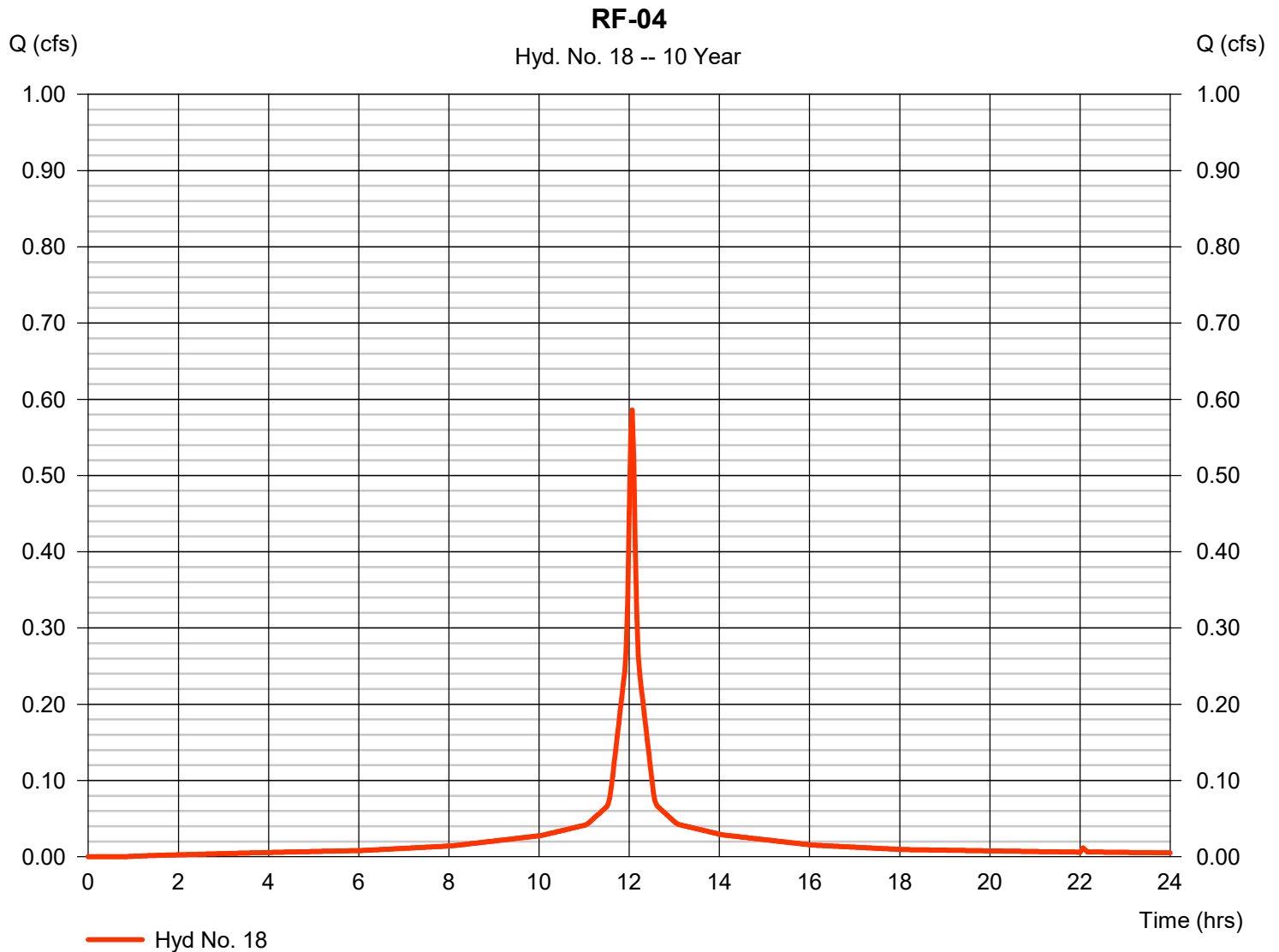
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

Hyd. No. 18

RF-04

Hydrograph type	= SCS Runoff	Peak discharge	= 0.586 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 2,020 cuft
Drainage area	= 0.115 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

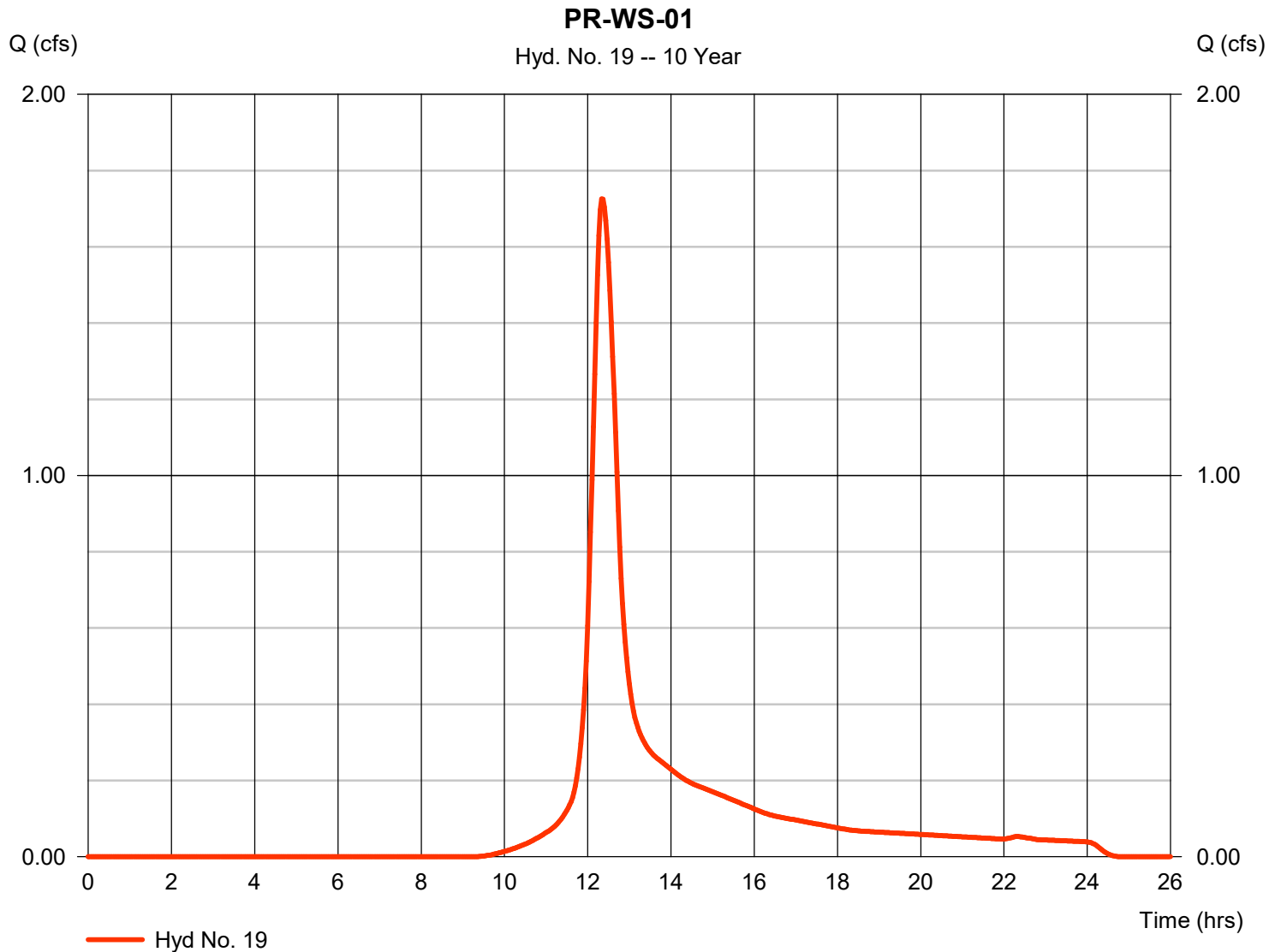
Friday, 07 / 9 / 2021

Hyd. No. 19

PR-WS-01

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 2 min
 Drainage area = 1.038 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 5.40 in
 Storm duration = 24 hrs

Peak discharge = 1.726 cfs
 Time to peak = 12.33 hrs
 Hyd. volume = 9,131 cuft
 Curve number = 71
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 27.60 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

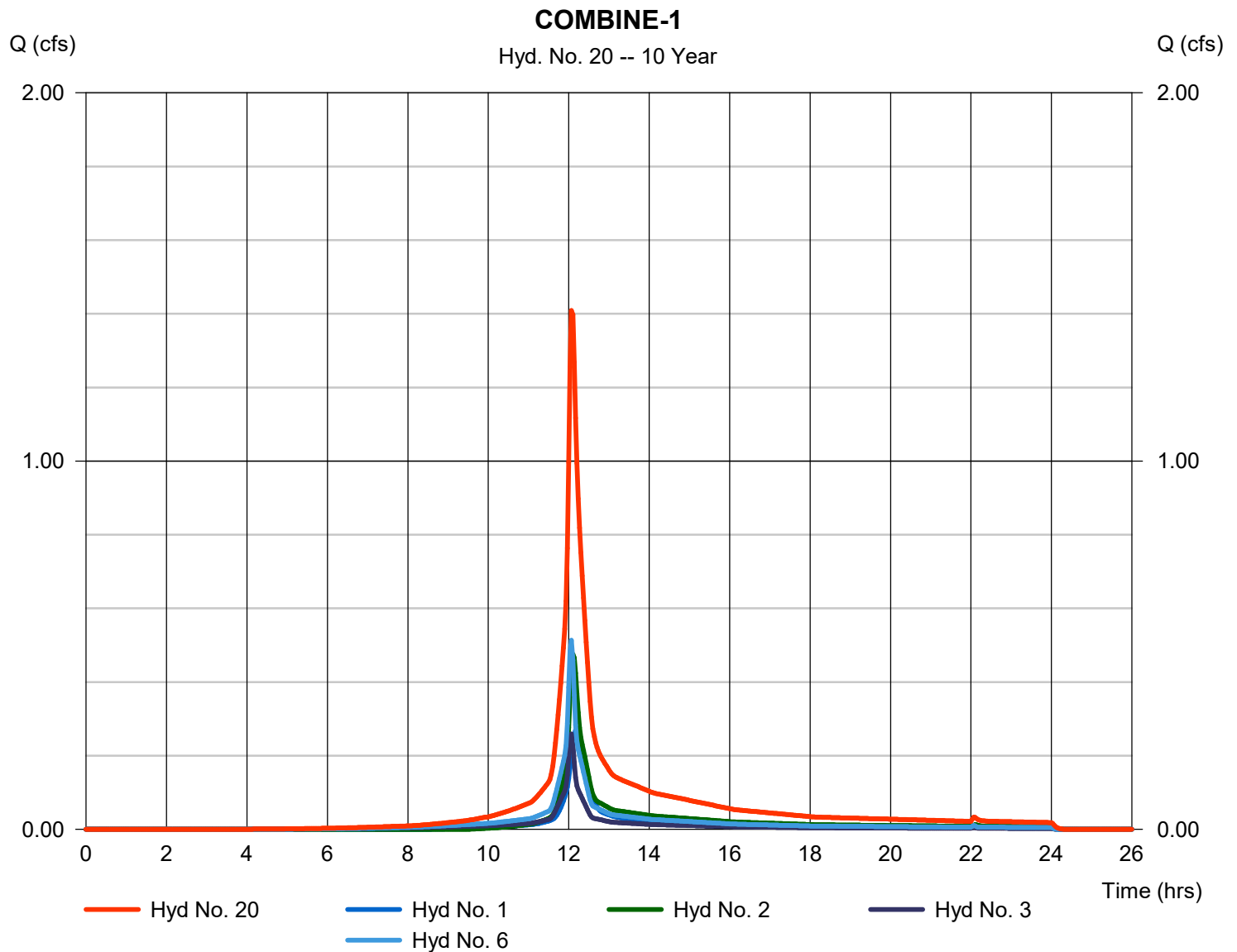
Friday, 07 / 9 / 2021

Hyd. No. 20

COMBINE-1

Hydrograph type = Combine
 Storm frequency = 10 yrs
 Time interval = 2 min
 Inflow hyds. = 1, 2, 3, 6

Peak discharge = 1.409 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 5,151 cuft
 Contrib. drain. area = 0.471 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

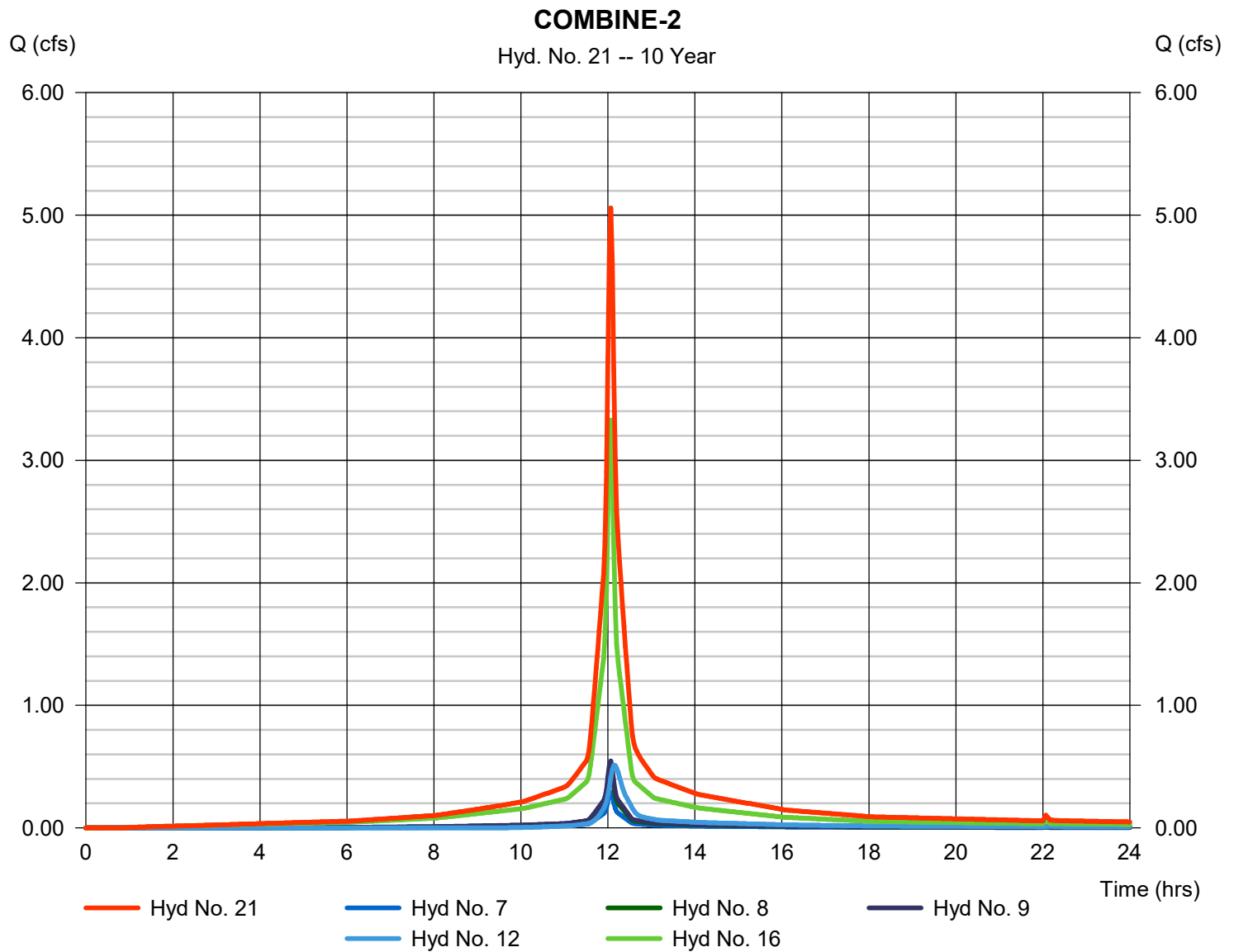
Friday, 07 / 9 / 2021

Hyd. No. 21

COMBINE-2

Hydrograph type = Combine
 Storm frequency = 10 yrs
 Time interval = 2 min
 Inflow hyds. = 7, 8, 9, 12, 16

Peak discharge = 5.059 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 17,705 cuft
 Contrib. drain. area = 1.152 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

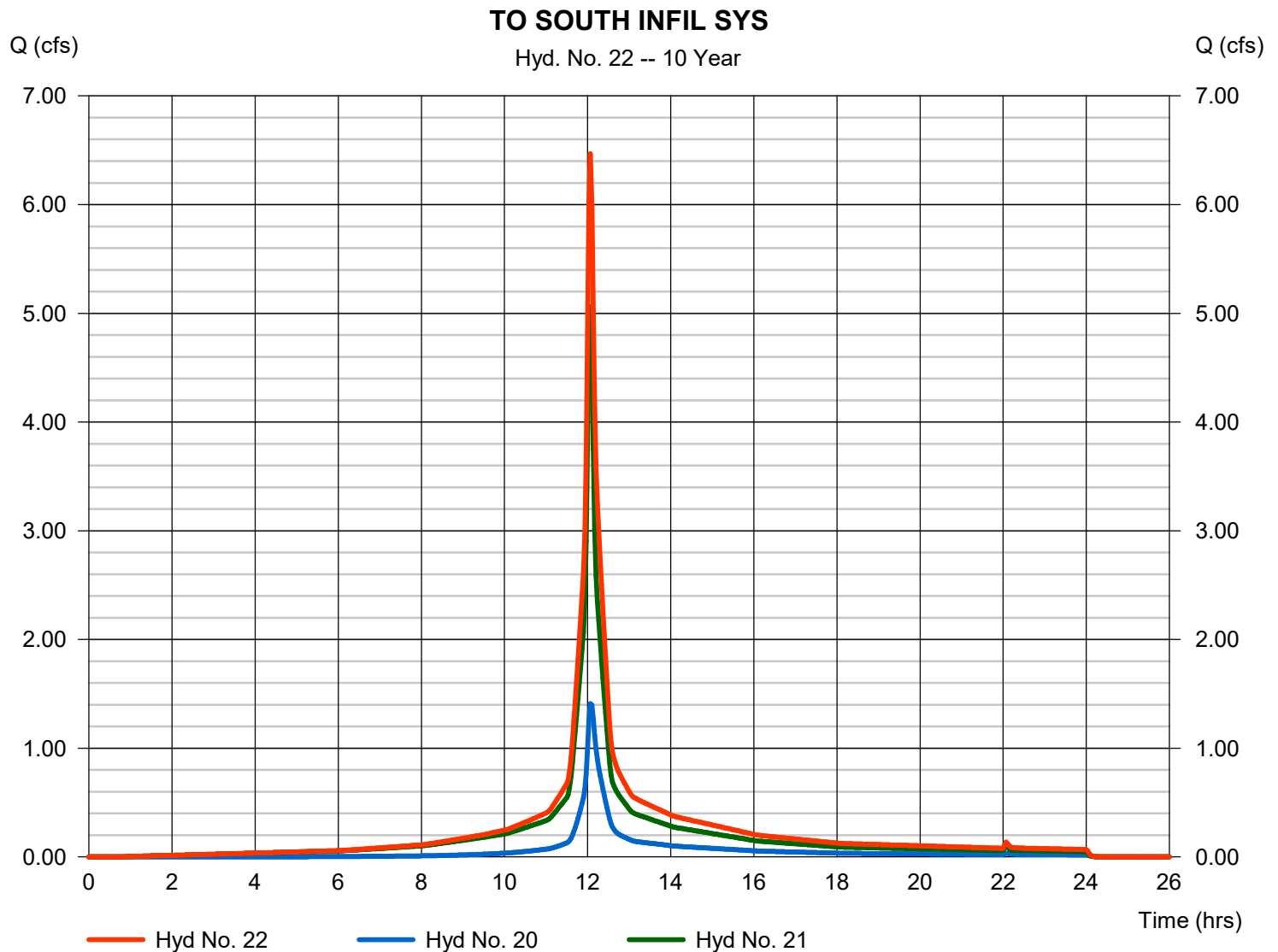
Friday, 07 / 9 / 2021

Hyd. No. 22

TO SOUTH INFIL SYS

Hydrograph type = Combine
 Storm frequency = 10 yrs
 Time interval = 2 min
 Inflow hyds. = 20, 21

Peak discharge = 6.468 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 22,856 cuft
 Contrib. drain. area = 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

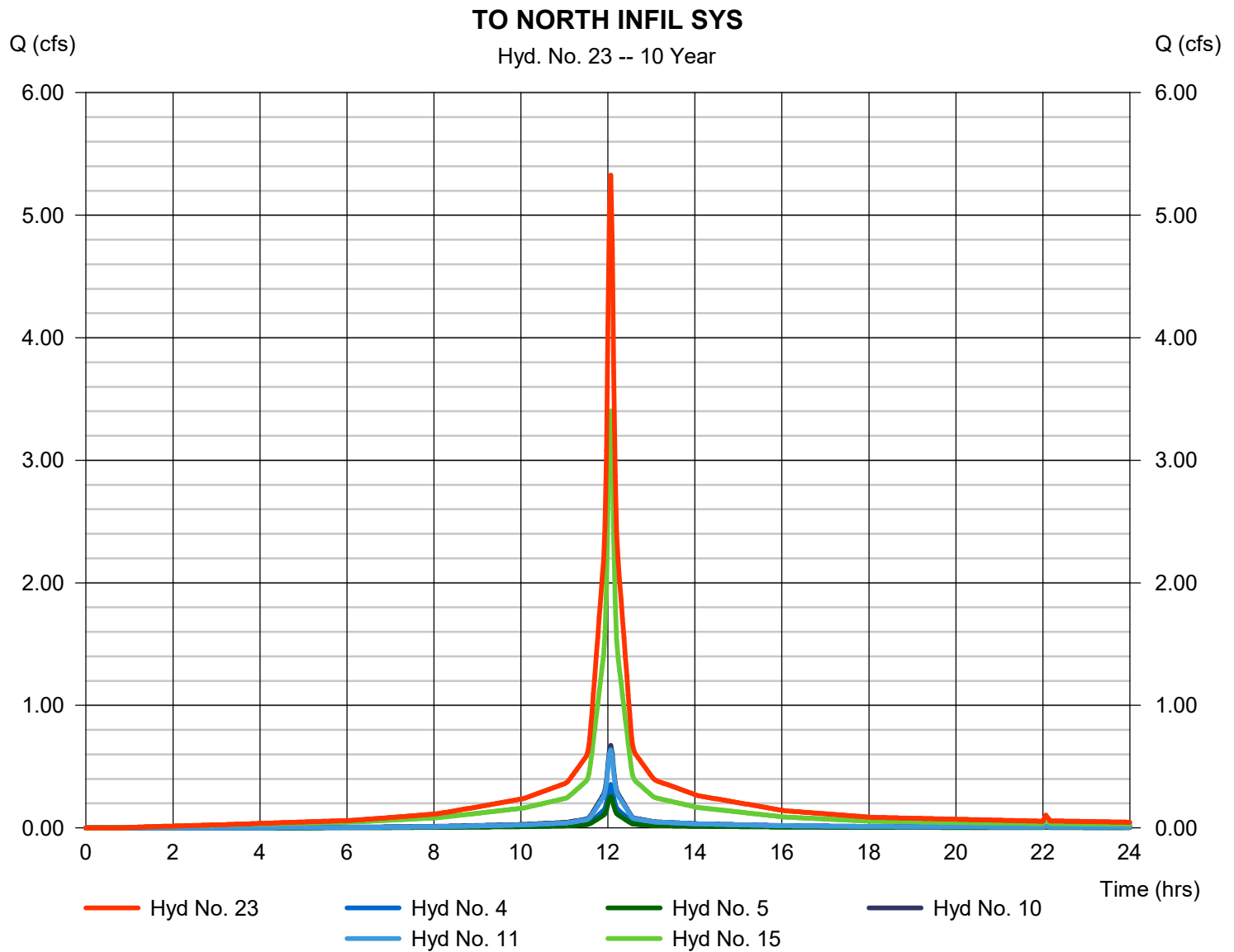
Friday, 07 / 9 / 2021

Hyd. No. 23

TO NORTH INFIL SYS

Hydrograph type = Combine
 Storm frequency = 10 yrs
 Time interval = 2 min
 Inflow hyds. = 4, 5, 10, 11, 15

Peak discharge = 5.327 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 17,913 cuft
 Contrib. drain. area = 1.065 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

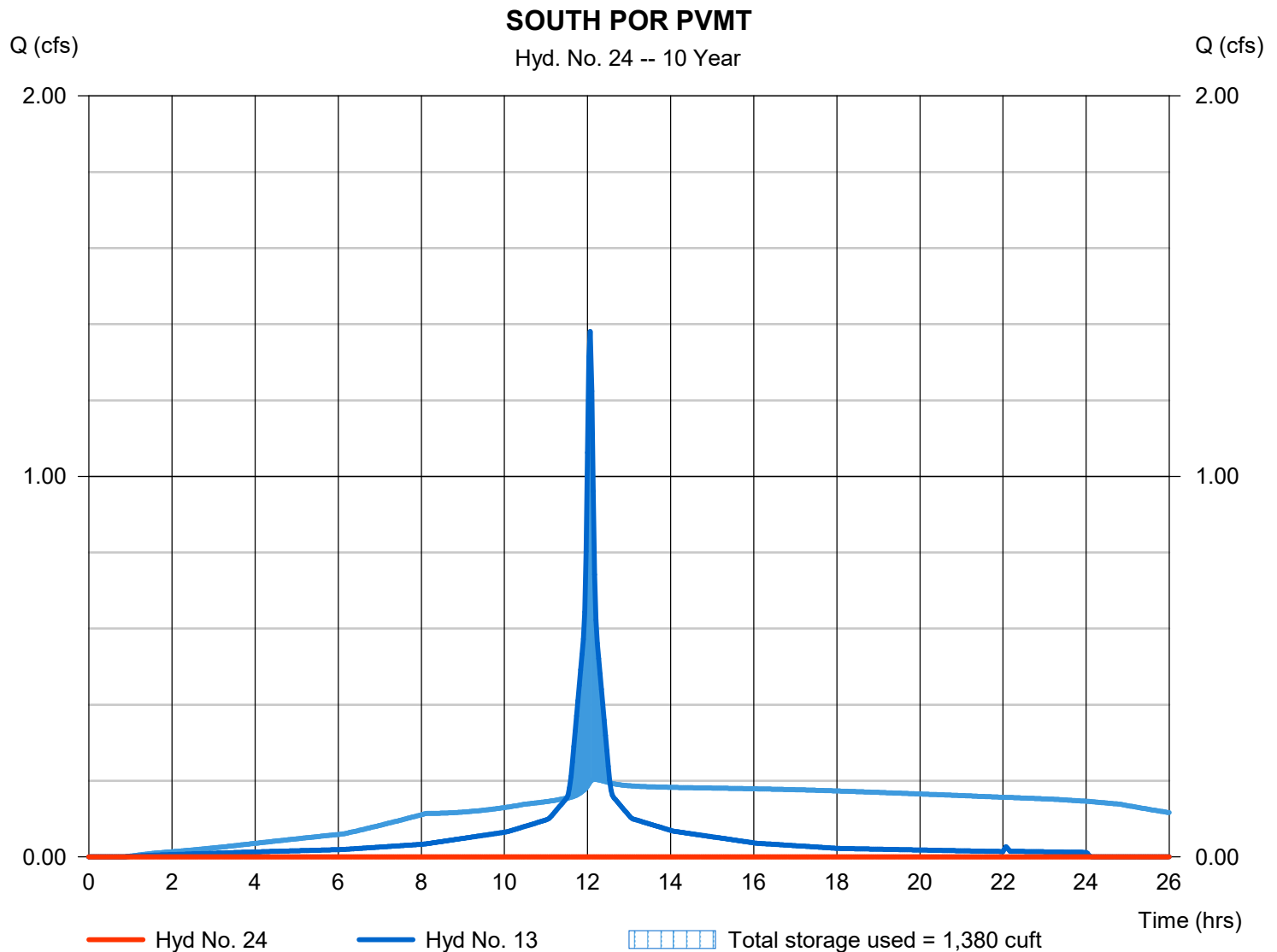
Friday, 07 / 9 / 2021

Hyd. No. 24

SOUTH POR PVMT

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= 13.43 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 13 - PP-01	Max. Elevation	= 141.99 ft
Reservoir name	= SOUTH POROUS PVMT	Max. Storage	= 1,380 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

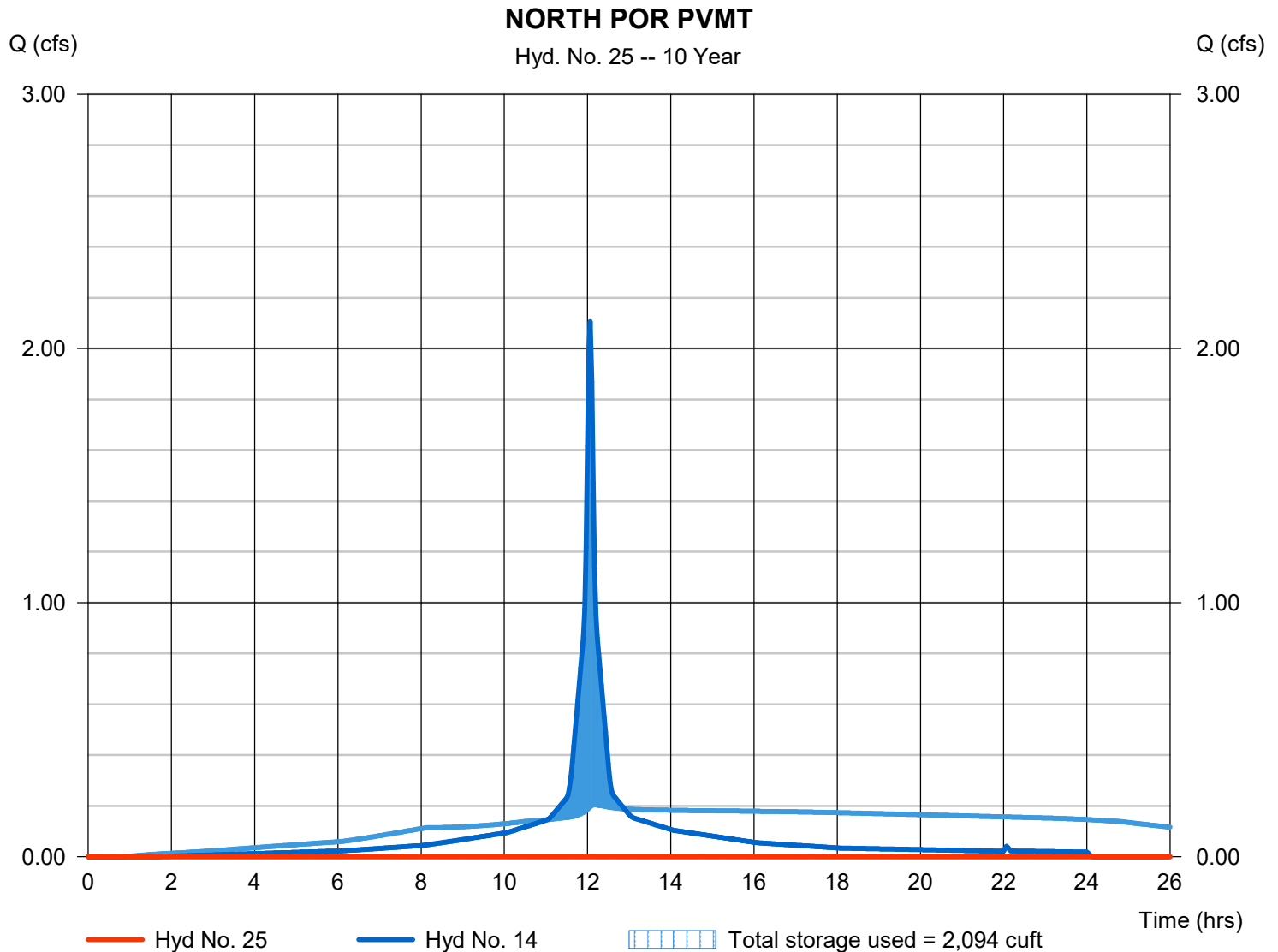
Friday, 07 / 9 / 2021

Hyd. No. 25

NORTH POR PVMT

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 14 - PP-02	Max. Elevation	= 141.48 ft
Reservoir name	= NORTH POROUS PVMT	Max. Storage	= 2,094 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

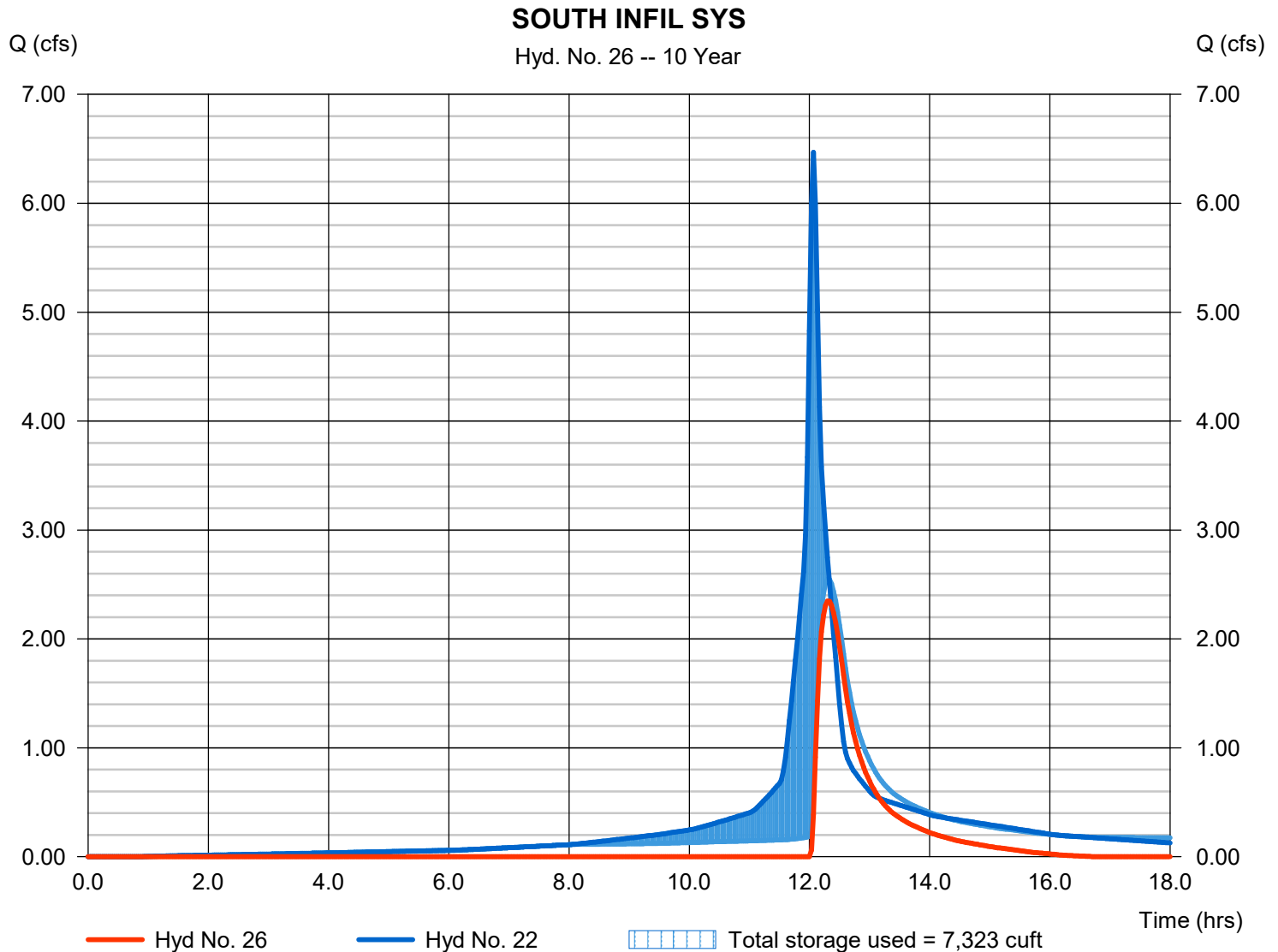
Friday, 07 / 9 / 2021

Hyd. No. 26

SOUTH INFIL SYS

Hydrograph type	= Reservoir	Peak discharge	= 2.347 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.30 hrs
Time interval	= 2 min	Hyd. volume	= 7,350 cuft
Inflow hyd. No.	= 22 - TO SOUTH INFIL SYS	Max. Elevation	= 143.60 ft
Reservoir name	= SOUTH INFIL SYS	Max. Storage	= 7,323 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

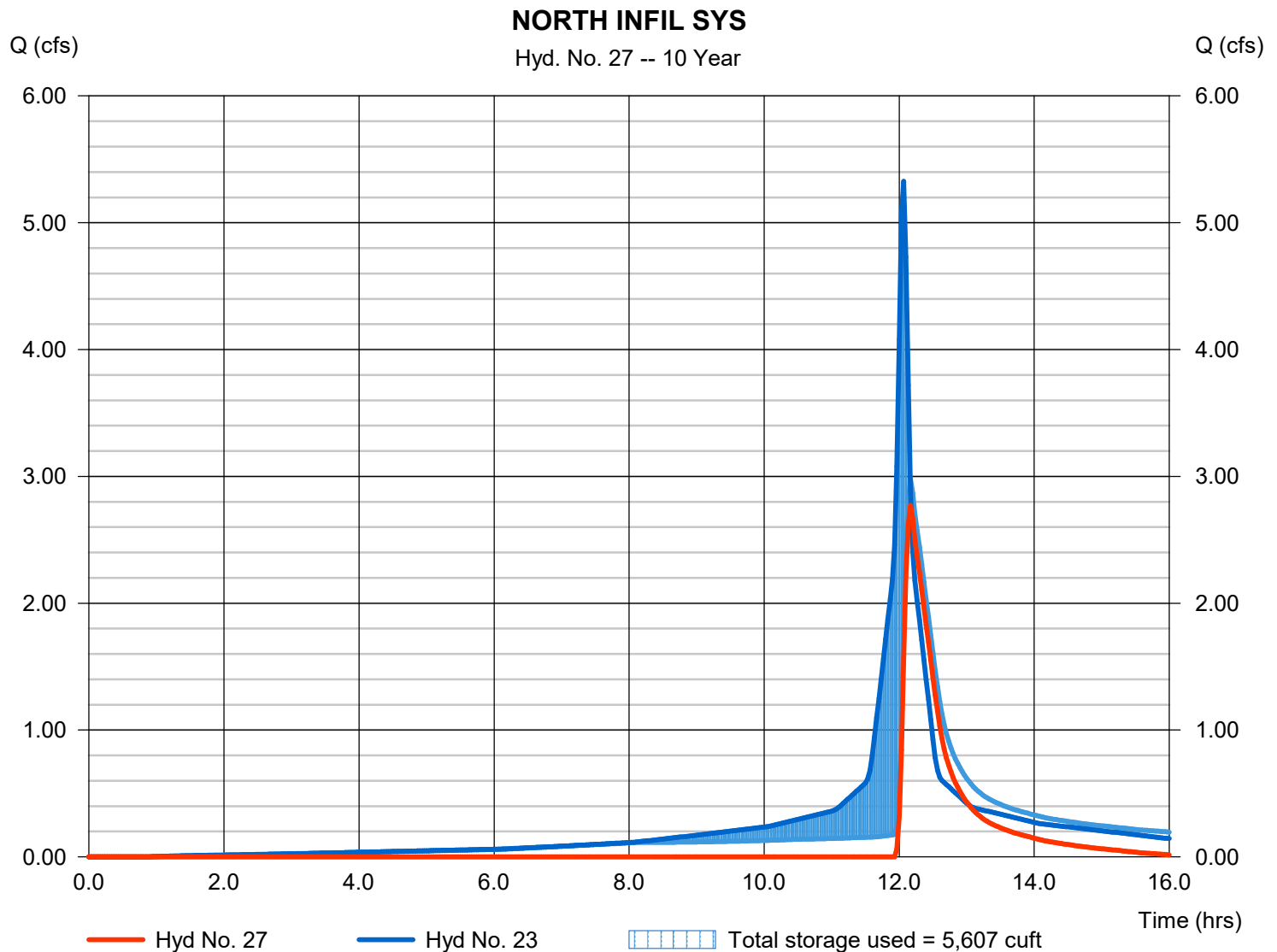
Friday, 07 / 9 / 2021

Hyd. No. 27

NORTH INFIL SYS

Hydrograph type	= Reservoir	Peak discharge	= 2.771 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 6,391 cuft
Inflow hyd. No.	= 23 - TO NORTH INFIL SYS	Max. Elevation	= 143.85 ft
Reservoir name	= NORTH INFIL SYS	Max. Storage	= 5,607 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

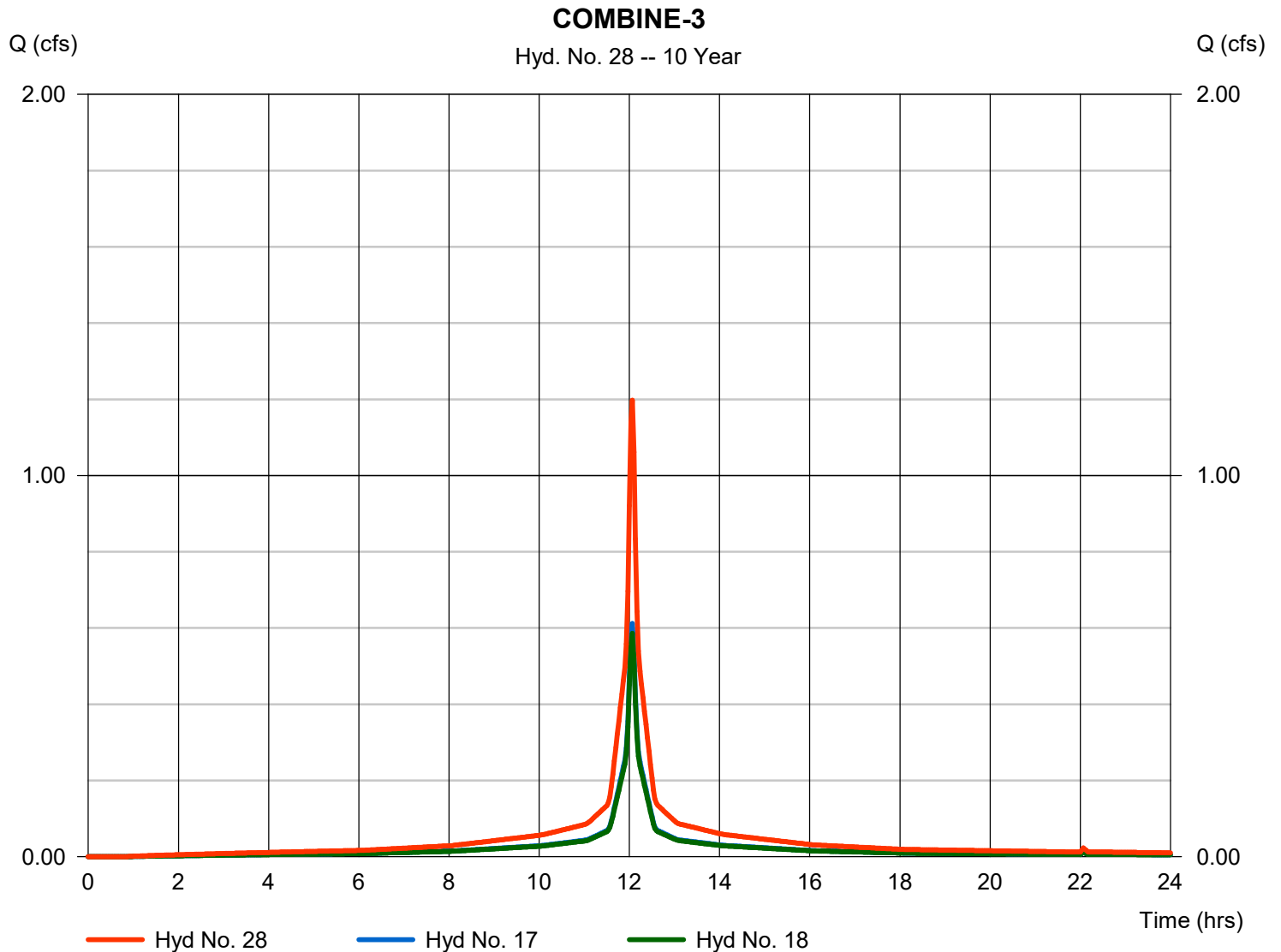
Friday, 07 / 9 / 2021

Hyd. No. 28

COMBINE-3

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 2 min
Inflow hyds. = 17, 18

Peak discharge = 1.197 cfs
Time to peak = 12.07 hrs
Hyd. volume = 4,129 cuft
Contrib. drain. area = 0.235 ac



Hydrograph Report

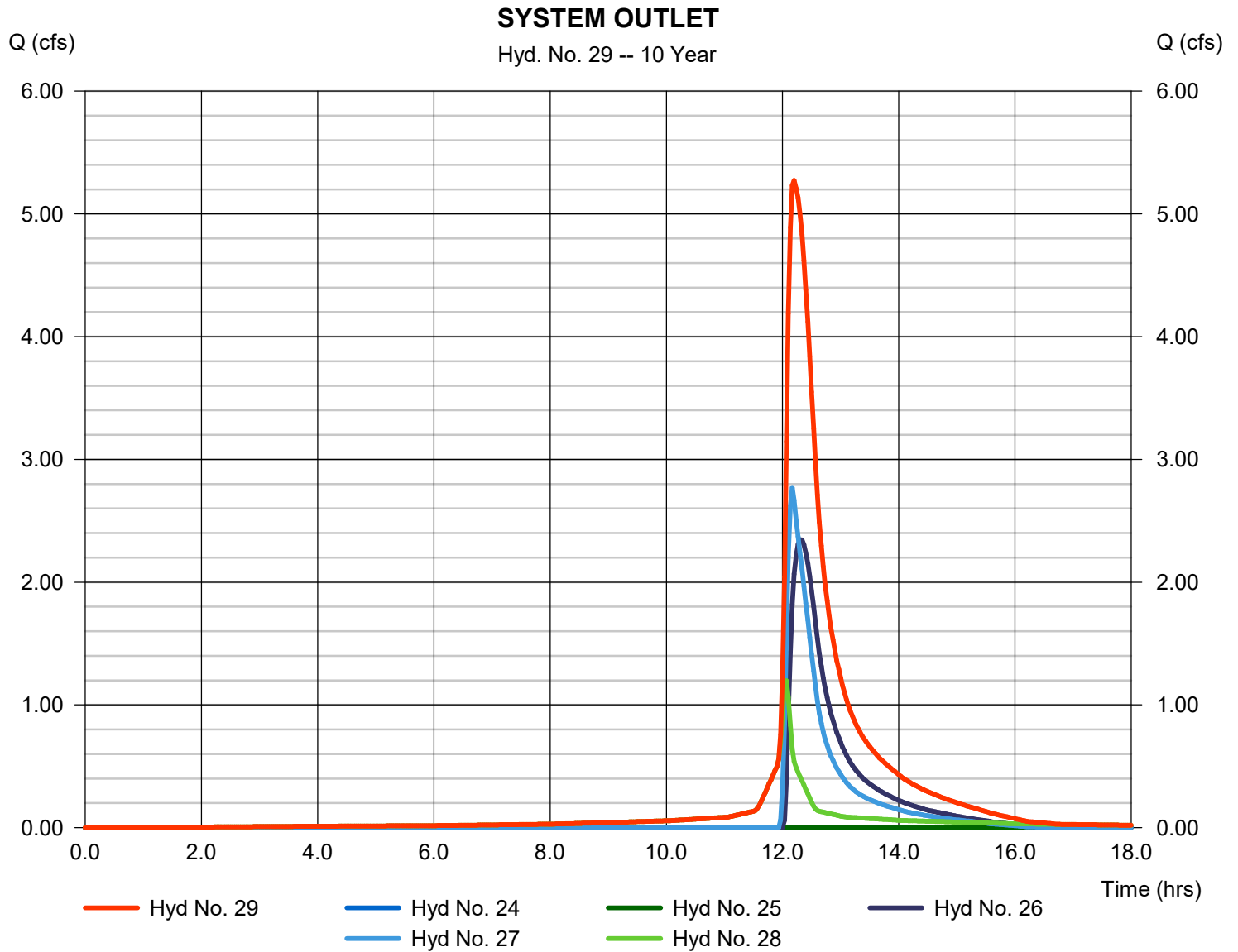
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

Hyd. No. 29

SYSTEM OUTLET

Hydrograph type	= Combine	Peak discharge	= 5.271 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 17,870 cuft
Inflow hyds.	= 24, 25, 26, 27, 28	Contrib. drain. area	= 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

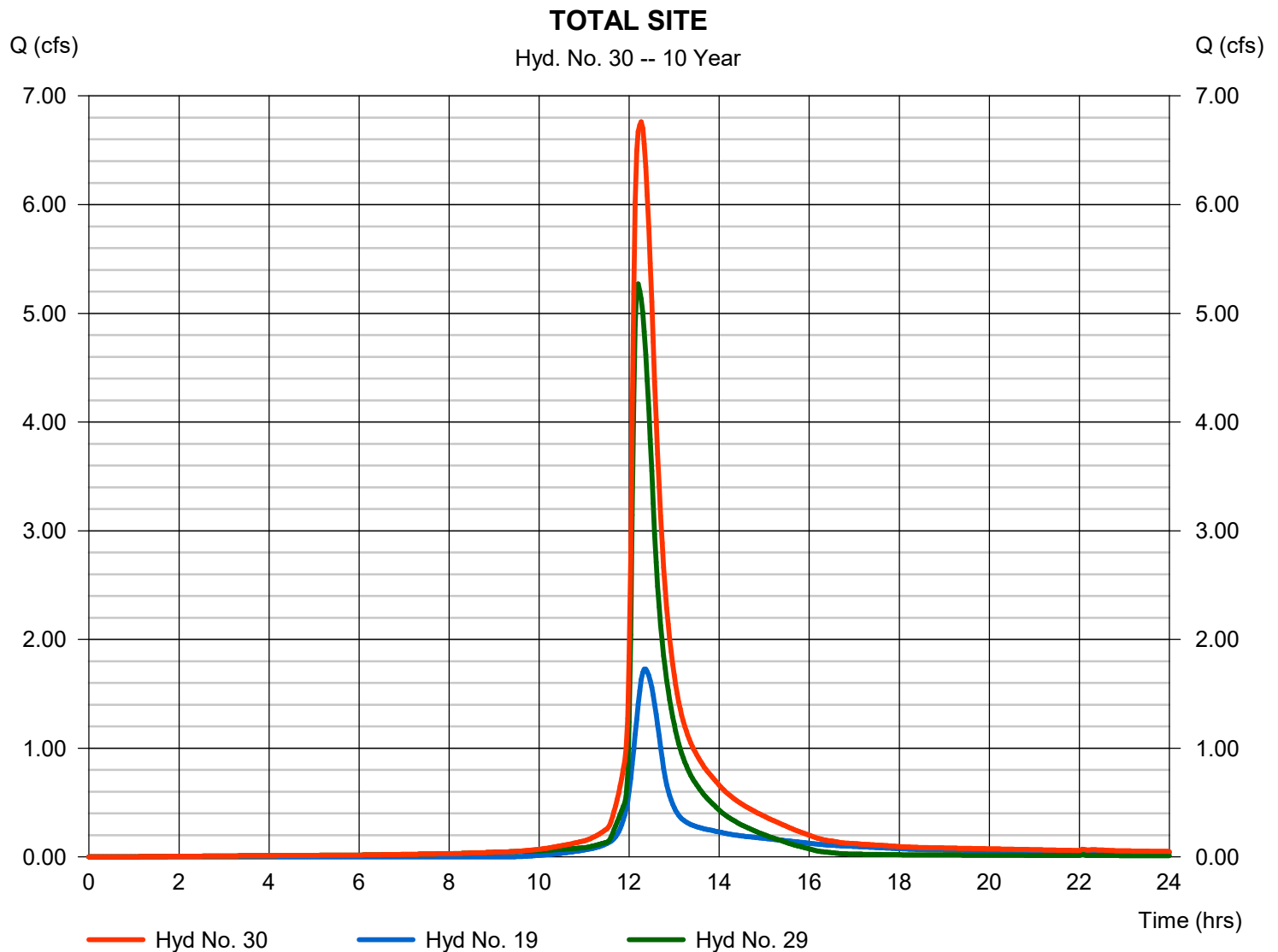
Friday, 07 / 9 / 2021

Hyd. No. 30

TOTAL SITE

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 2 min
Inflow hyds. = 19, 29

Peak discharge = 6.762 cfs
Time to peak = 12.27 hrs
Hyd. volume = 27,001 cuft
Contrib. drain. area = 1.038 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

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	0.364	2	730	1,482	-----	-----	-----	CB-01
2	SCS Runoff	0.671	2	726	2,299	-----	-----	-----	CB-01A
3	SCS Runoff	0.321	2	724	1,035	-----	-----	-----	CB-02
4	SCS Runoff	0.439	2	724	1,418	-----	-----	-----	CB-03
5	SCS Runoff	0.318	2	724	1,036	-----	-----	-----	CB-04
6	SCS Runoff	0.648	2	724	2,026	-----	-----	-----	CB-05
7	SCS Runoff	0.364	2	724	1,164	-----	-----	-----	CB-06
8	SCS Runoff	0.594	2	724	1,936	-----	-----	-----	CB-07
9	SCS Runoff	0.672	2	724	2,214	-----	-----	-----	CB-08
10	SCS Runoff	0.830	2	724	2,733	-----	-----	-----	CB-09
11	SCS Runoff	0.790	2	724	2,548	-----	-----	-----	CB-10
12	SCS Runoff	0.720	2	728	2,774	-----	-----	-----	CB-11
13	SCS Runoff	1.683	2	724	5,839	-----	-----	-----	PP-01
14	SCS Runoff	2.577	2	724	8,691	-----	-----	-----	PP-02
15	SCS Runoff	4.148	2	724	14,393	-----	-----	-----	RF-01
16	SCS Runoff	4.055	2	724	14,070	-----	-----	-----	RF-02
17	SCS Runoff	0.745	2	724	2,586	-----	-----	-----	RF-03
18	SCS Runoff	0.714	2	724	2,478	-----	-----	-----	RF-04
19	SCS Runoff	2.421	2	740	12,677	-----	-----	-----	PR-WS-01
20	Combine	1.865	2	724	6,841	1, 2, 3, 6,	-----	-----	COMBINE-1
21	Combine	6.276	2	724	22,157	7, 8, 9, 12, 16,	-----	-----	COMBINE-2
22	Combine	8.142	2	724	28,998	20, 21	-----	-----	TO SOUTH INFIL SYS
23	Combine	6.525	2	724	22,128	4, 5, 10, 11, 15,	-----	-----	TO NORTH INFIL SYS
24	Reservoir	0.036	2	742	49	13	142.11	1,721	SOUTH POR PVMT
25	Reservoir	0.031	2	744	42	14	141.60	2,632	NORTH POR PVMT
26	Reservoir	3.888	2	734	11,946	22	143.96	8,508	SOUTH INFIL SYS
27	Reservoir	4.442	2	728	9,585	23	144.19	6,181	NORTH INFIL SYS
28	Combine	1.459	2	724	5,063	17, 18,	-----	-----	COMBINE-3
29	Combine	8.975	2	728	26,685	24, 25, 26, 27, 28	-----	-----	SYSTEM OUTLET
30	Combine	10.69	2	730	39,362	19, 29	-----	-----	TOTAL SITE
F0173-02 Hydrographs - Proposed.gpw					Return Period: 25 Year			Friday, 07 / 9 / 2021	

Hydrograph Report

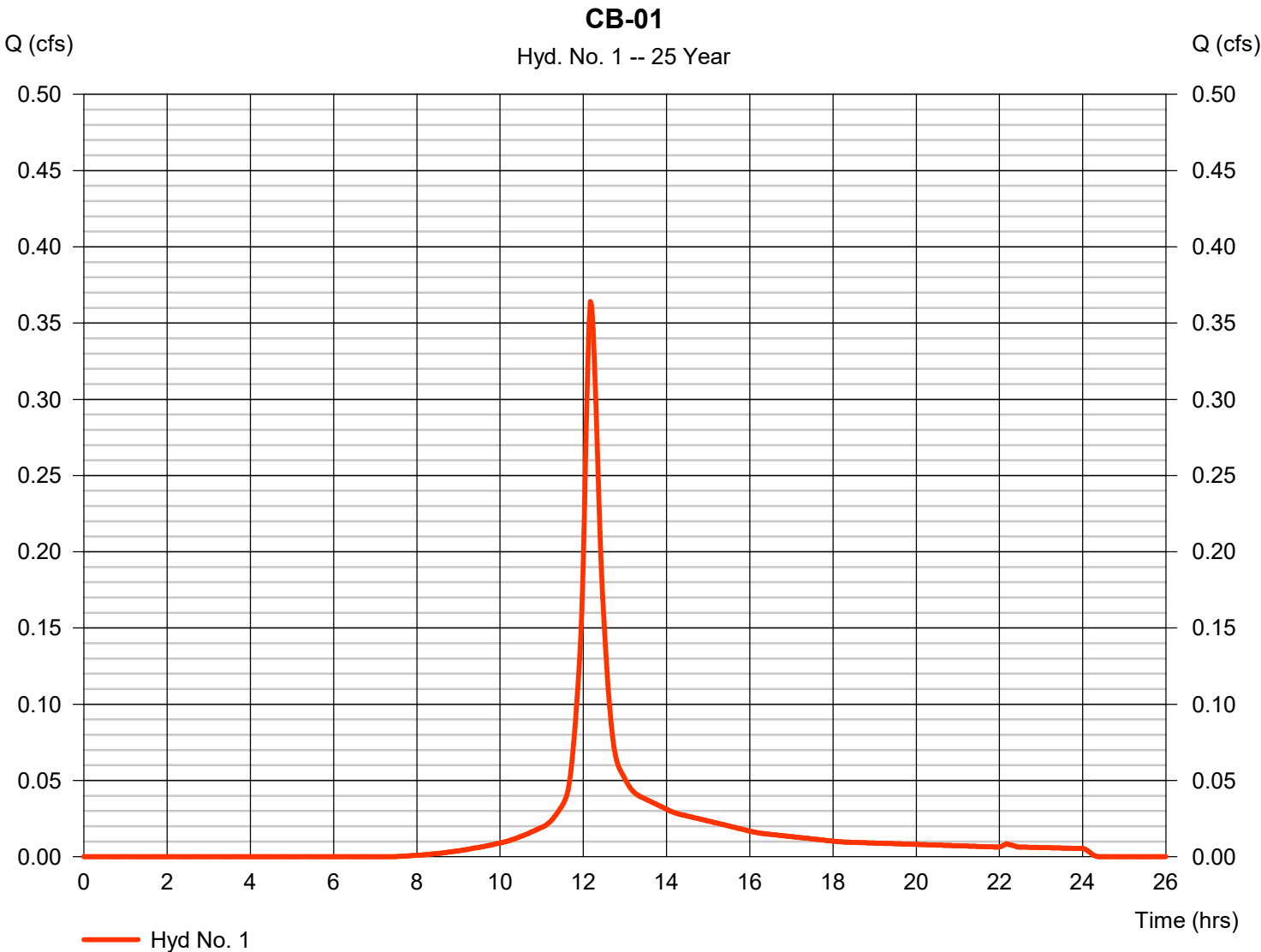
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

Hyd. No. 1

CB-01

Hydrograph type	= SCS Runoff	Peak discharge	= 0.364 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 1,482 cuft
Drainage area	= 0.108 ac	Curve number	= 76
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 14.20 min
Total precip.	= 6.57 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

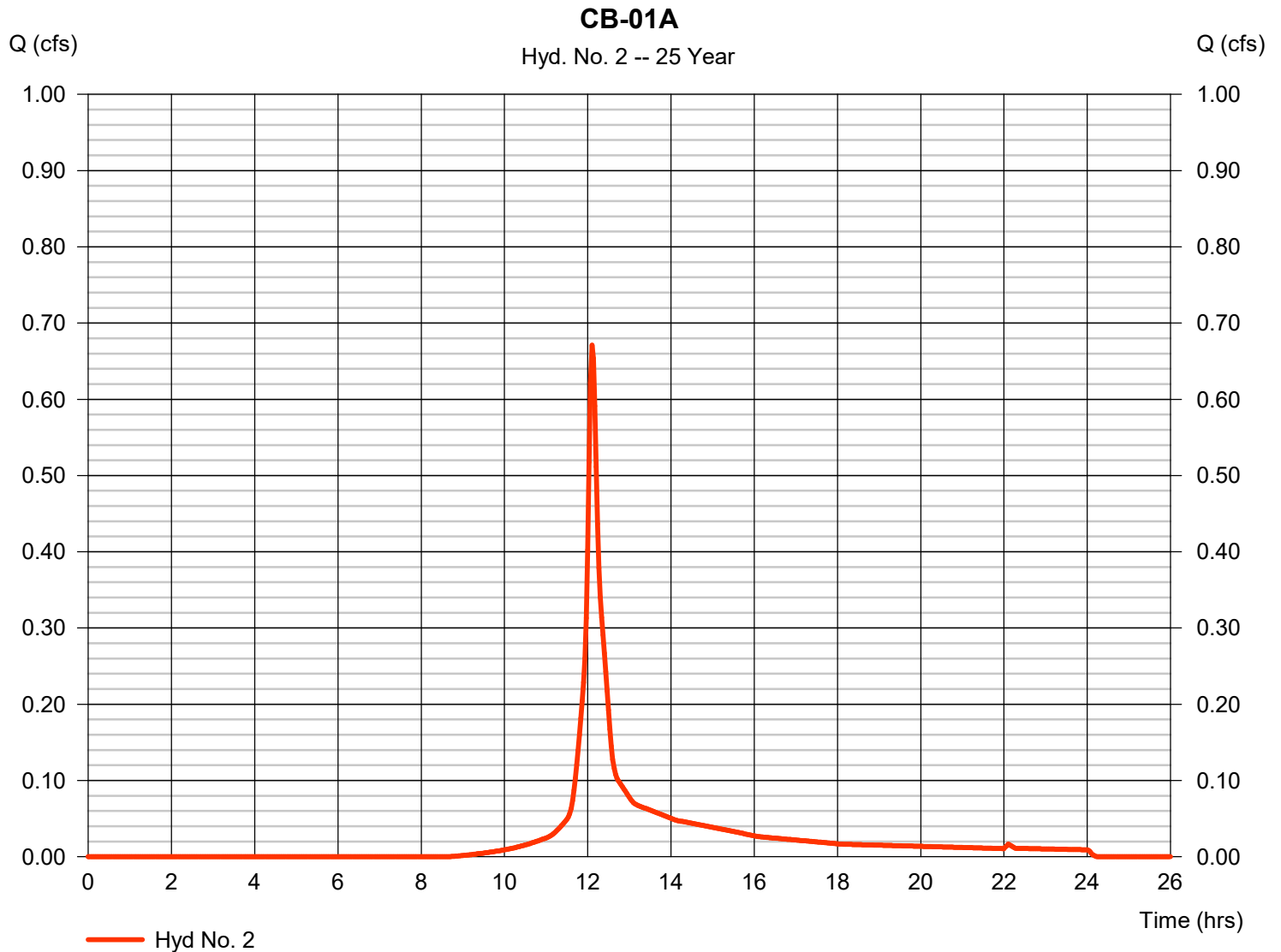
Friday, 07 / 9 / 2021

Hyd. No. 2

CB-01A

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 2 min
 Drainage area = 0.194 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 6.57 in
 Storm duration = 24 hrs

Peak discharge = 0.671 cfs
 Time to peak = 12.10 hrs
 Hyd. volume = 2,299 cuft
 Curve number = 70
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 7.80 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

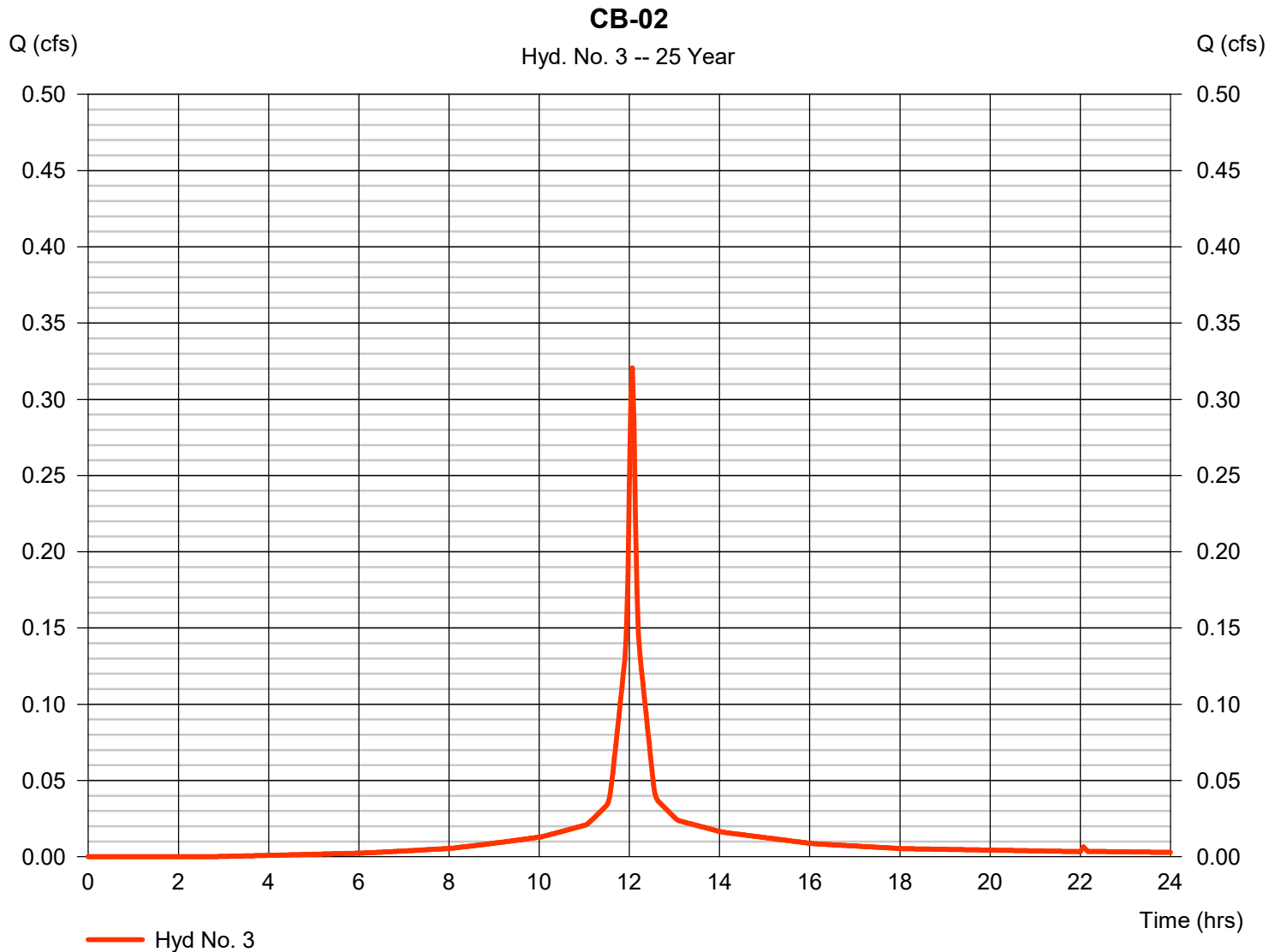
Friday, 07 / 9 / 2021

Hyd. No. 3

CB-02

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 2 min
 Drainage area = 0.054 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 6.57 in
 Storm duration = 24 hrs

Peak discharge = 0.321 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 1,035 cuft
 Curve number = 92
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

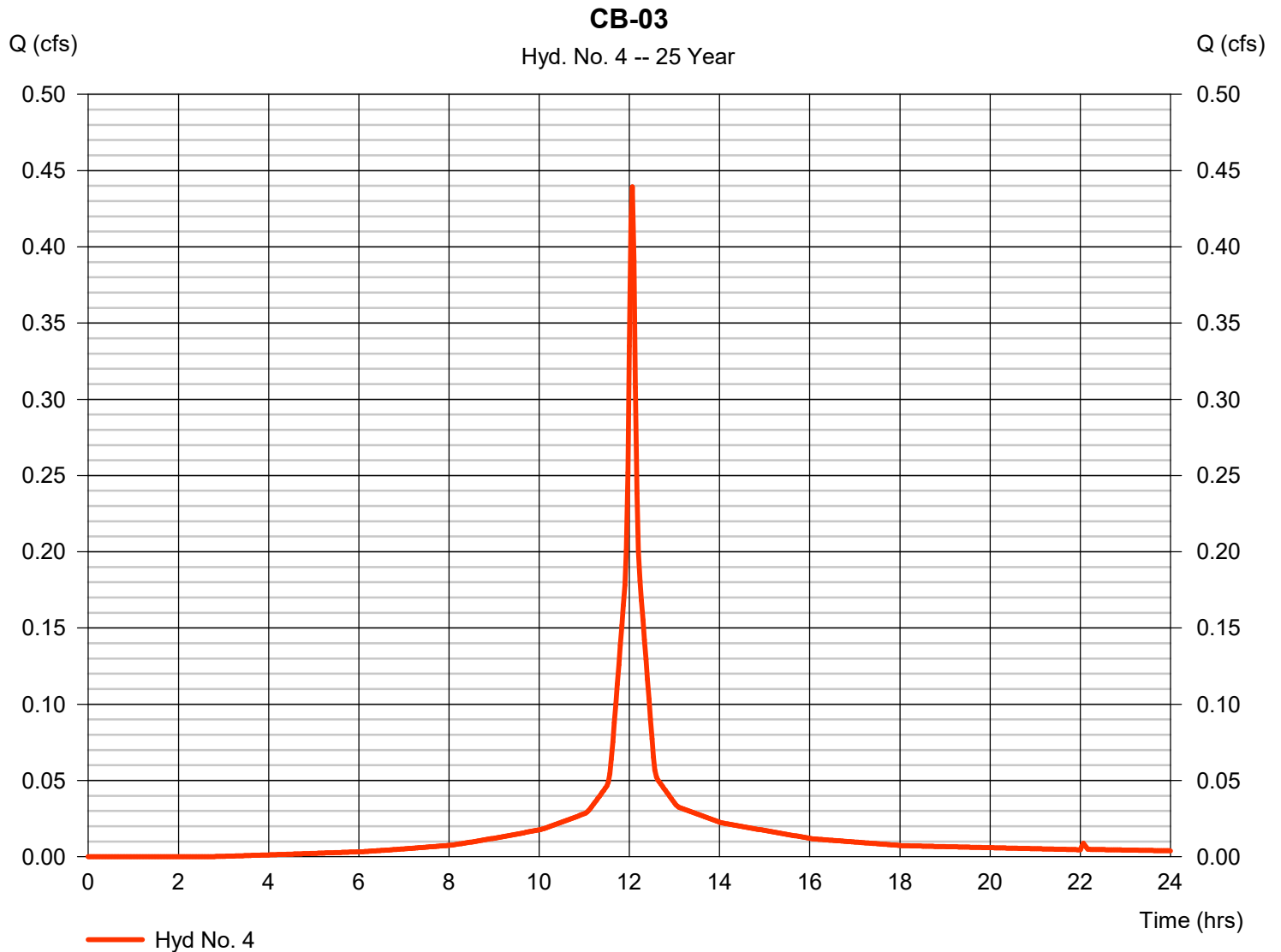
Friday, 07 / 9 / 2021

Hyd. No. 4

CB-03

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 2 min
 Drainage area = 0.074 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 6.57 in
 Storm duration = 24 hrs

Peak discharge = 0.439 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 1,418 cuft
 Curve number = 92
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

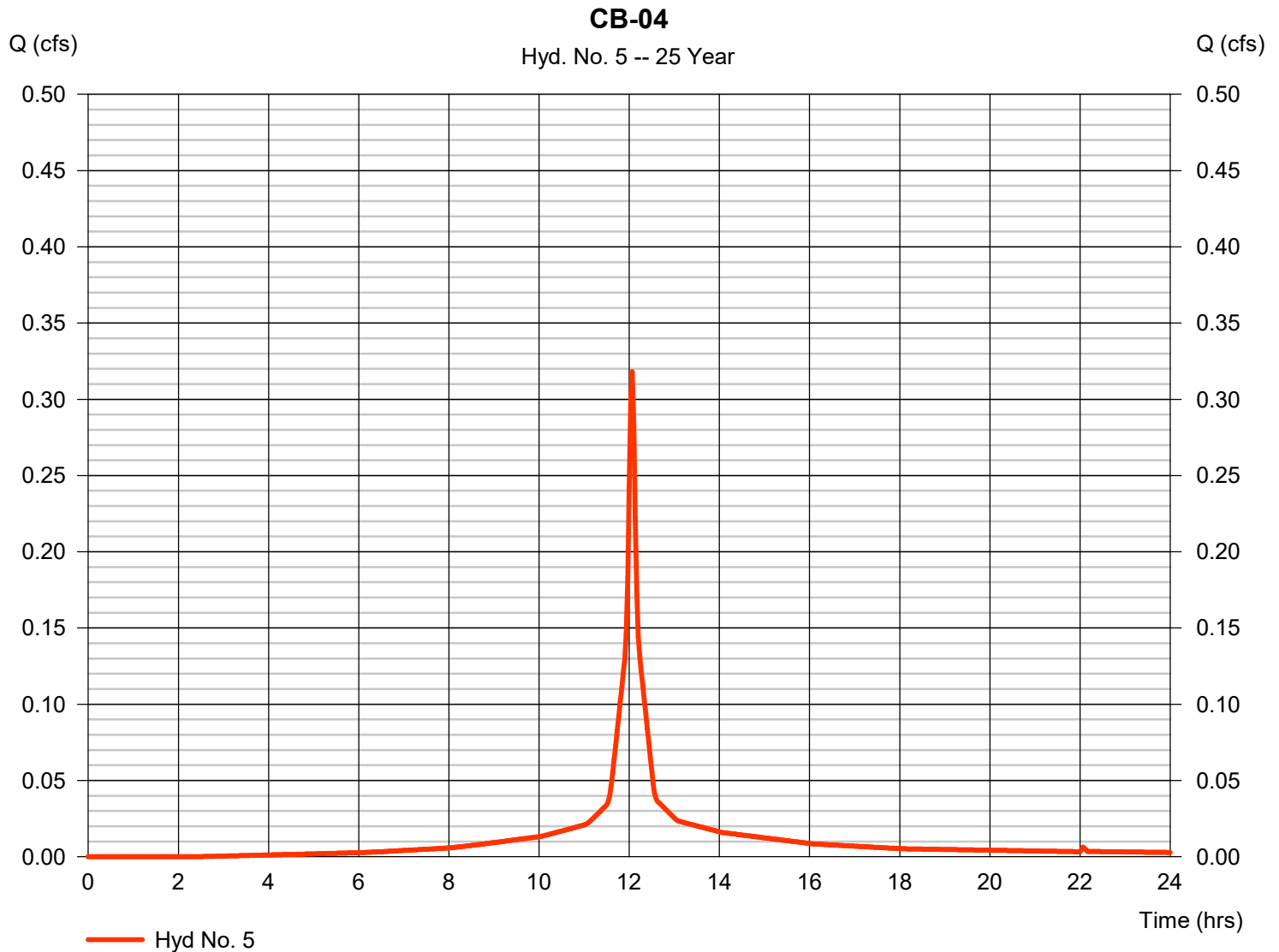
Friday, 07 / 9 / 2021

Hyd. No. 5

CB-04

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 2 min
 Drainage area = 0.053 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 6.57 in
 Storm duration = 24 hrs

Peak discharge = 0.318 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 1,036 cuft
 Curve number = 93
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

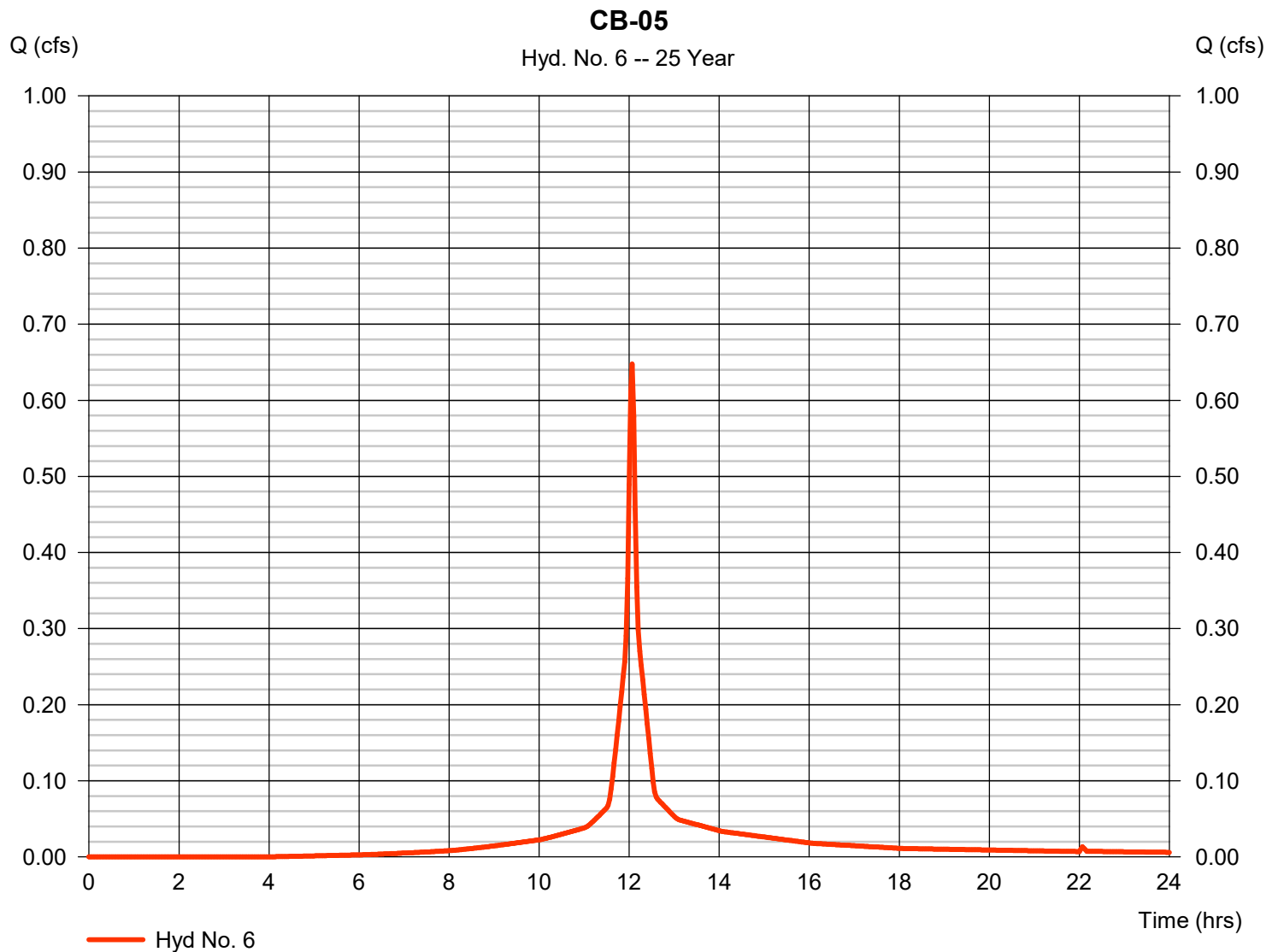
Friday, 07 / 9 / 2021

Hyd. No. 6

CB-05

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 2 min
 Drainage area = 0.115 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 6.57 in
 Storm duration = 24 hrs

Peak discharge = 0.648 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 2,026 cuft
 Curve number = 88
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

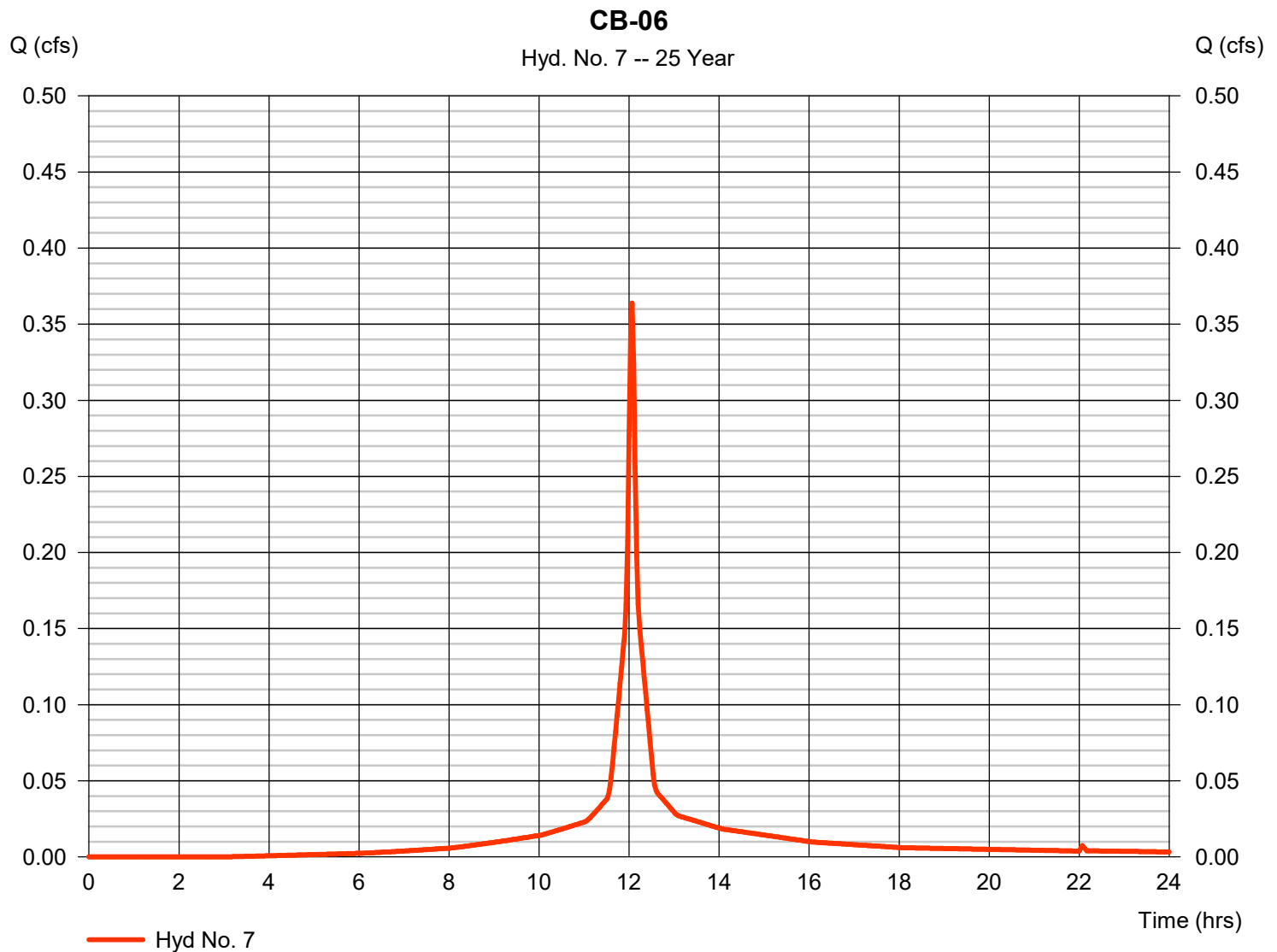
Friday, 07 / 9 / 2021

Hyd. No. 7

CB-06

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 2 min
 Drainage area = 0.062 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 6.57 in
 Storm duration = 24 hrs

Peak discharge = 0.364 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 1,164 cuft
 Curve number = 91
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

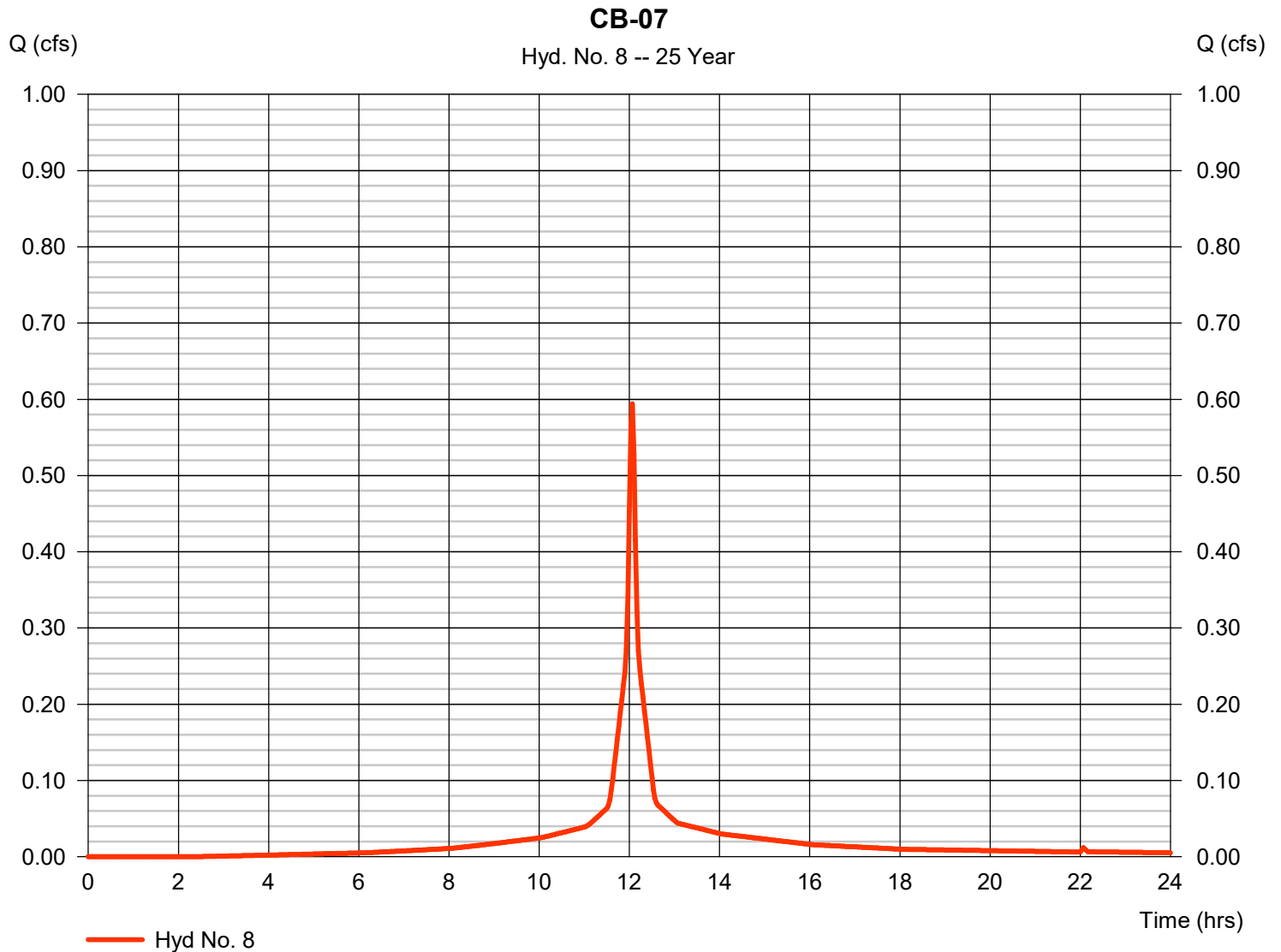
Friday, 07 / 9 / 2021

Hyd. No. 8

CB-07

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 2 min
 Drainage area = 0.099 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 6.57 in
 Storm duration = 24 hrs

Peak discharge = 0.594 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 1,936 cuft
 Curve number = 93
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

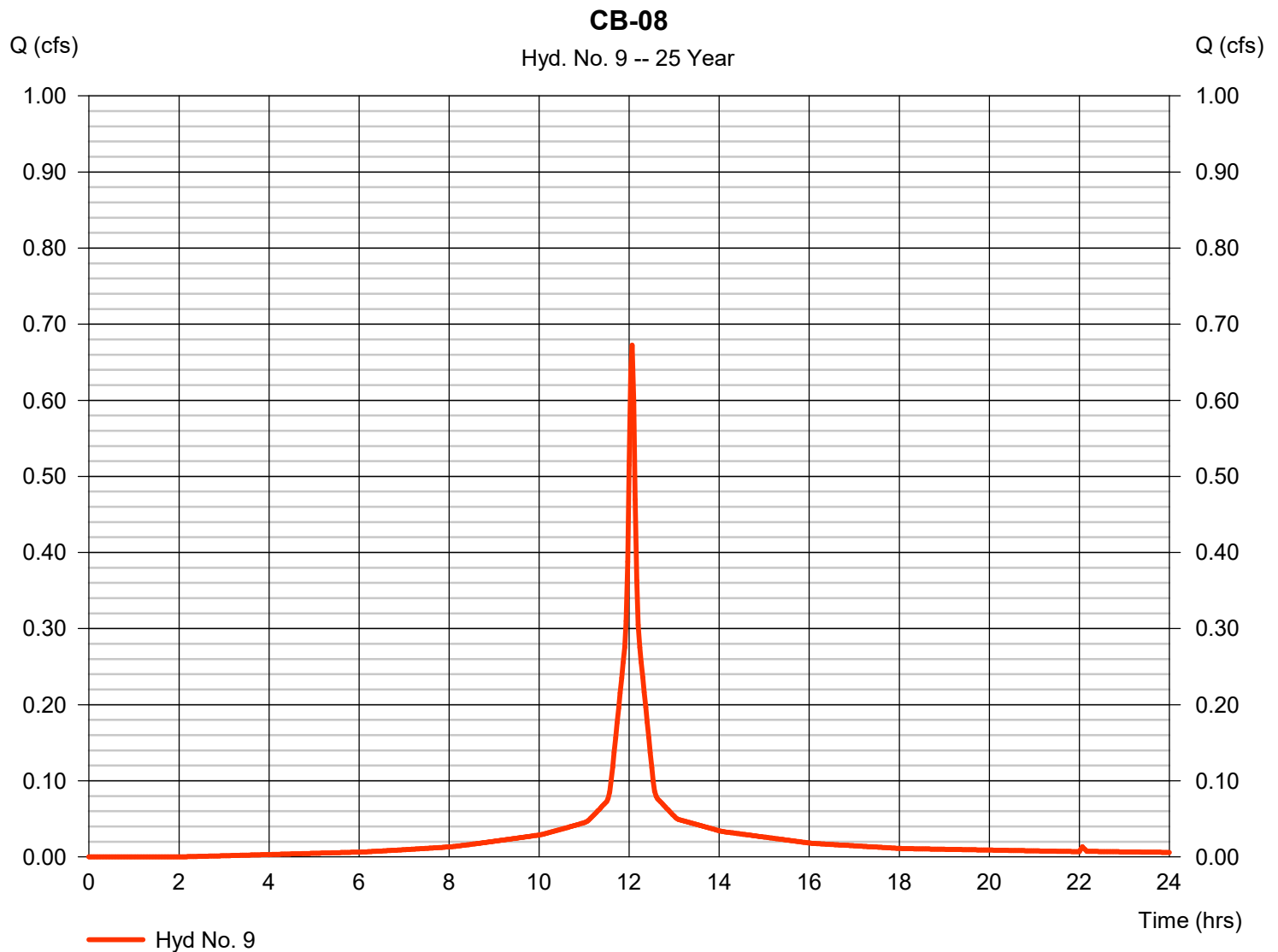
Friday, 07 / 9 / 2021

Hyd. No. 9

CB-08

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 2 min
 Drainage area = 0.111 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 6.57 in
 Storm duration = 24 hrs

Peak discharge = 0.672 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 2,214 cuft
 Curve number = 94
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.50 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

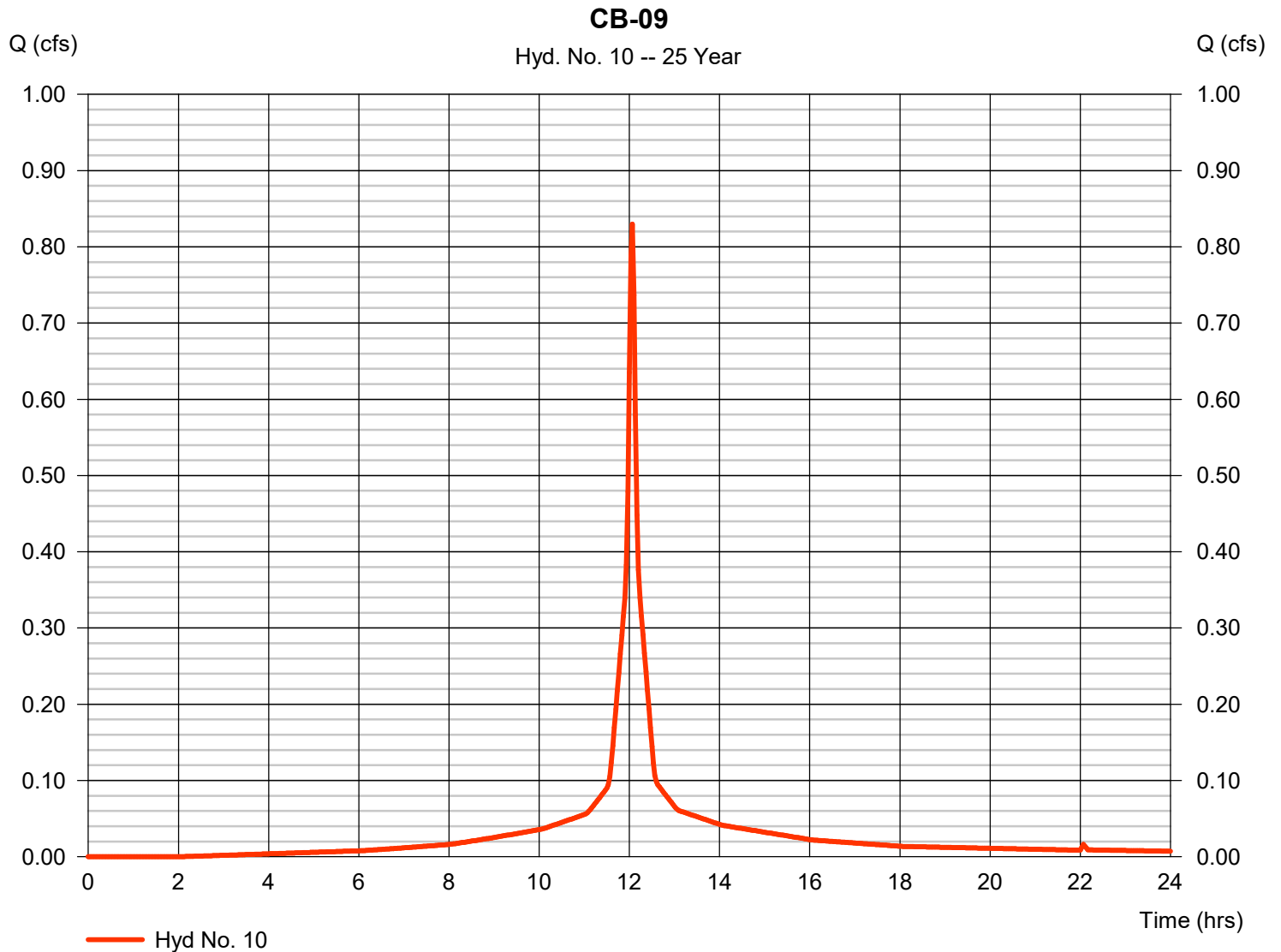
Friday, 07 / 9 / 2021

Hyd. No. 10

CB-09

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 2 min
 Drainage area = 0.137 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 6.57 in
 Storm duration = 24 hrs

Peak discharge = 0.830 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 2,733 cuft
 Curve number = 94
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

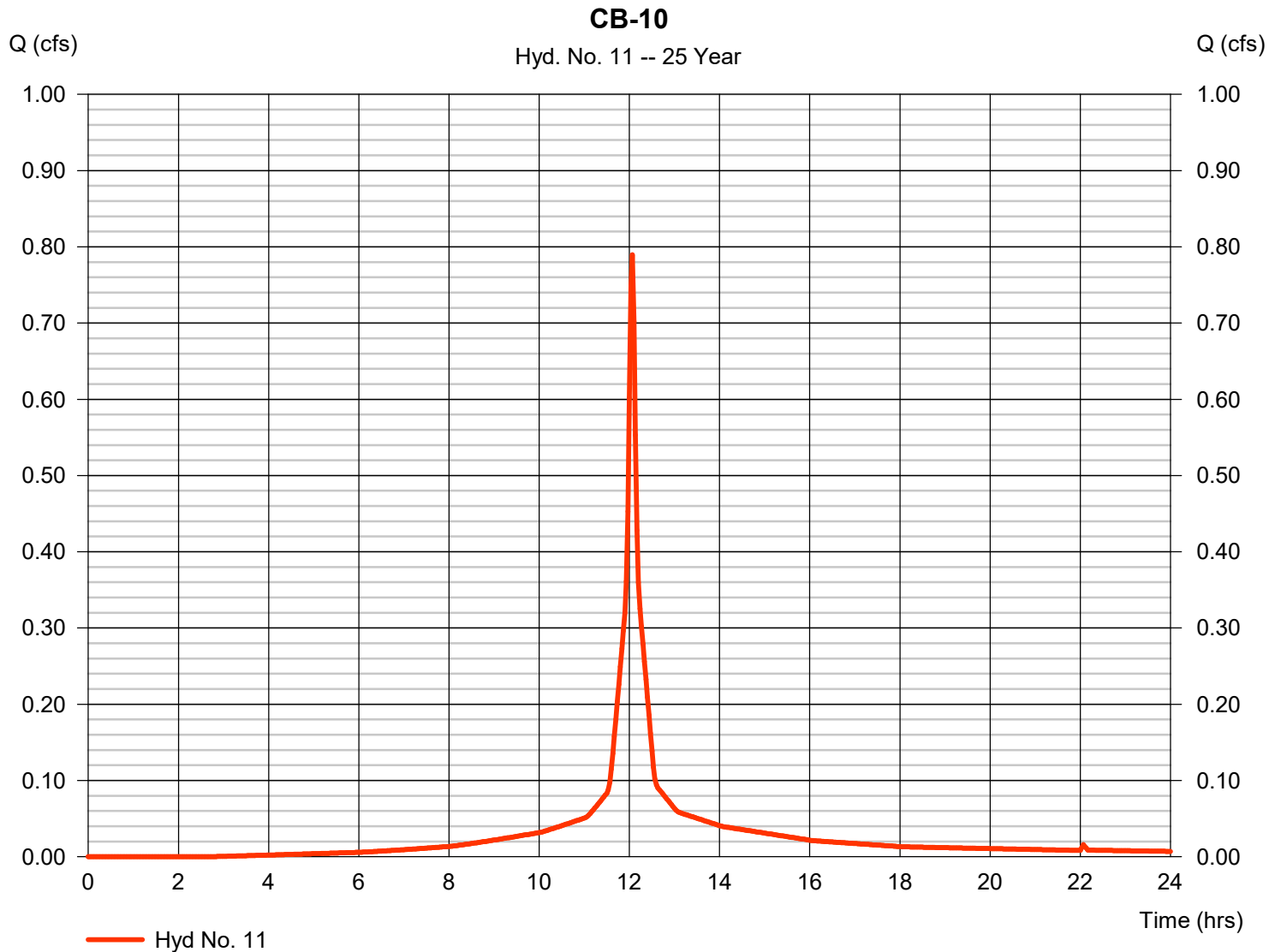
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

Hyd. No. 11

CB-10

Hydrograph type	= SCS Runoff	Peak discharge	= 0.790 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 2,548 cuft
Drainage area	= 0.133 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.57 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

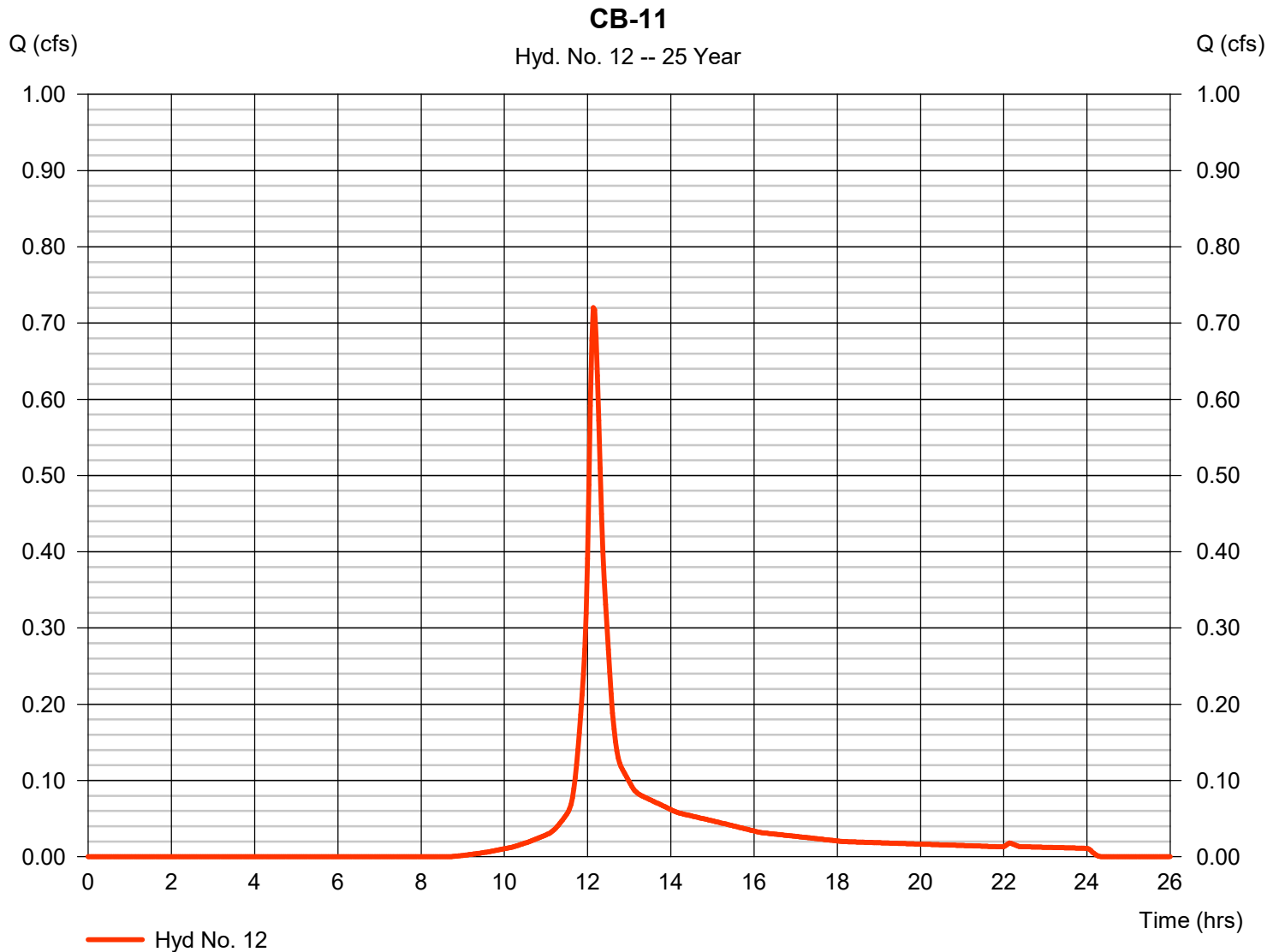
Friday, 07 / 9 / 2021

Hyd. No. 12

CB-11

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 2 min
 Drainage area = 0.227 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 6.57 in
 Storm duration = 24 hrs

Peak discharge = 0.720 cfs
 Time to peak = 12.13 hrs
 Hyd. volume = 2,774 cuft
 Curve number = 70
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 10.90 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

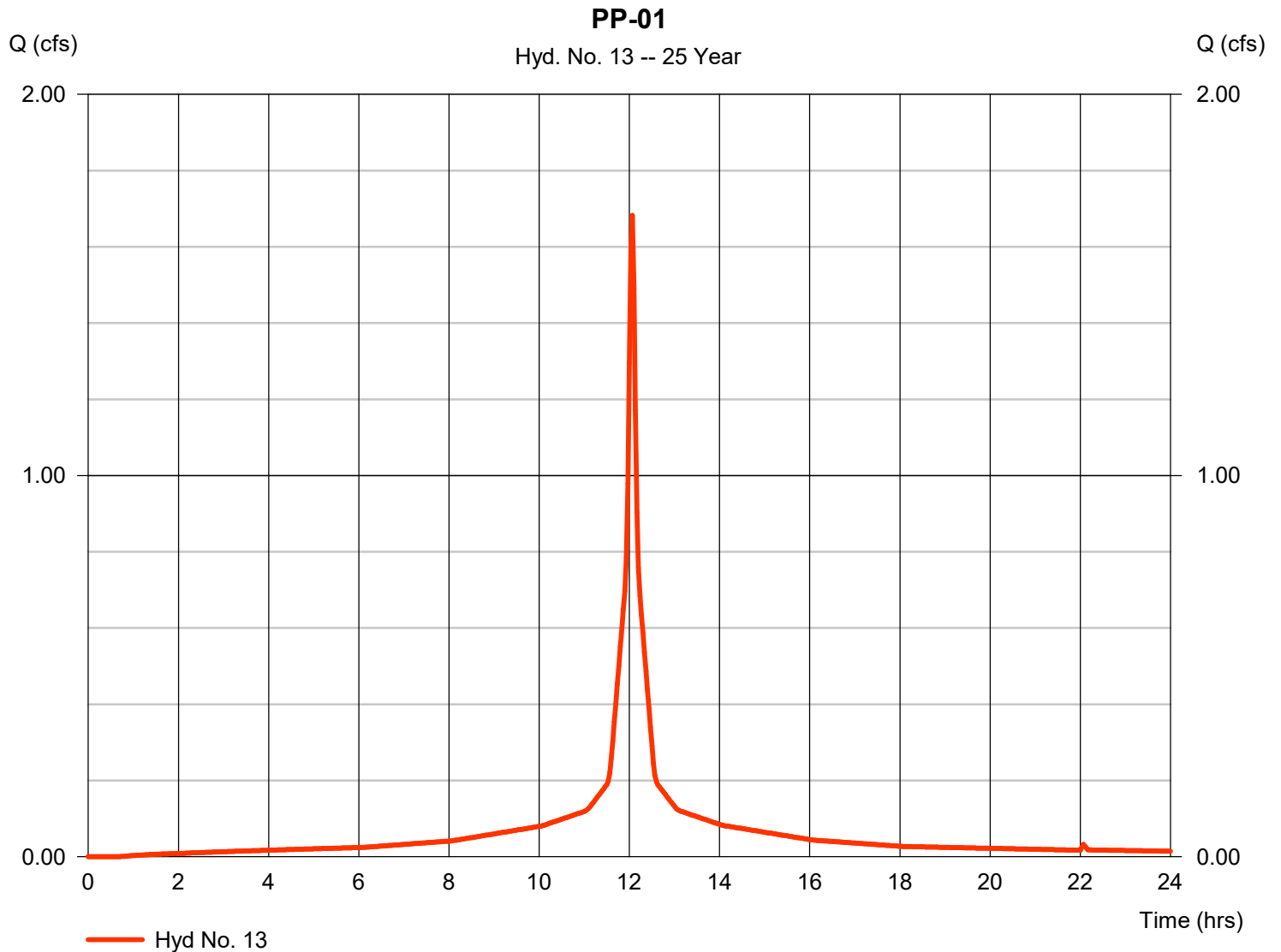
Friday, 07 / 9 / 2021

Hyd. No. 13

PP-01

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 2 min
 Drainage area = 0.271 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 6.57 in
 Storm duration = 24 hrs

Peak discharge = 1.683 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 5,839 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

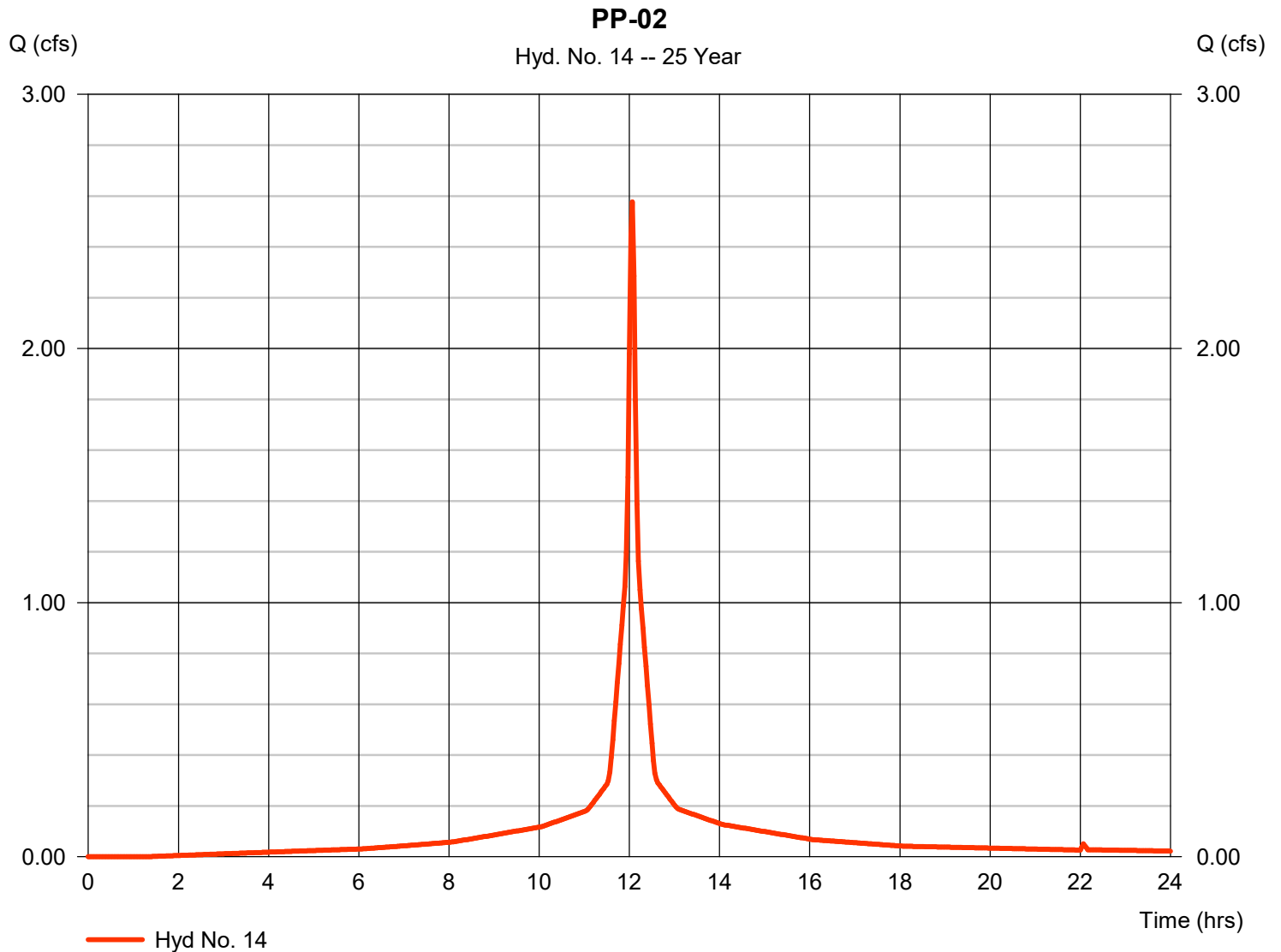
Friday, 07 / 9 / 2021

Hyd. No. 14

PP-02

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 2 min
 Drainage area = 0.419 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 6.57 in
 Storm duration = 24 hrs

Peak discharge = 2.577 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 8,691 cuft
 Curve number = 96
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 6.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

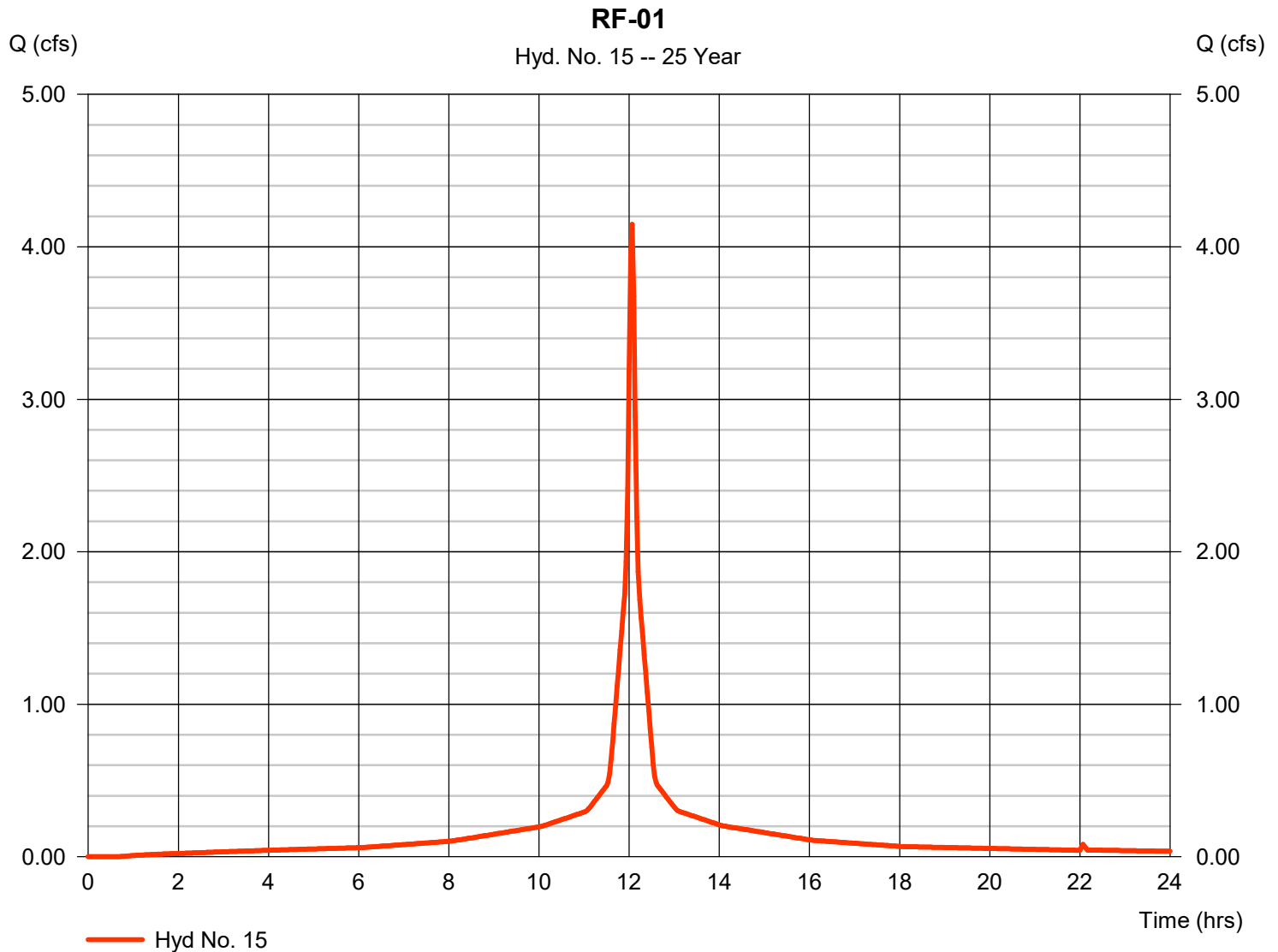
Friday, 07 / 9 / 2021

Hyd. No. 15

RF-01

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 2 min
 Drainage area = 0.668 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 6.57 in
 Storm duration = 24 hrs

Peak discharge = 4.148 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 14,393 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

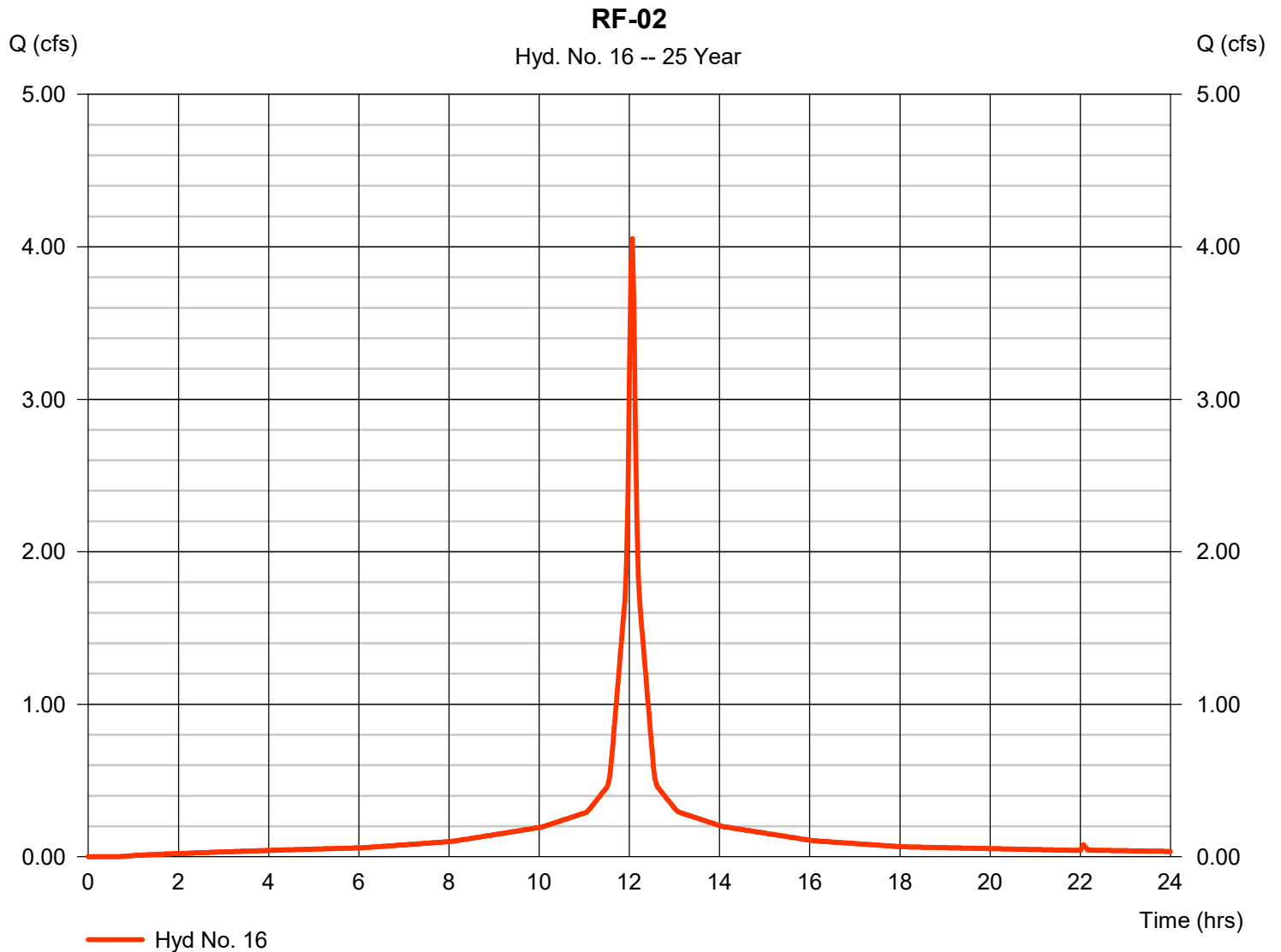
Friday, 07 / 9 / 2021

Hyd. No. 16

RF-02

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 2 min
 Drainage area = 0.653 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 6.57 in
 Storm duration = 24 hrs

Peak discharge = 4.055 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 14,070 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

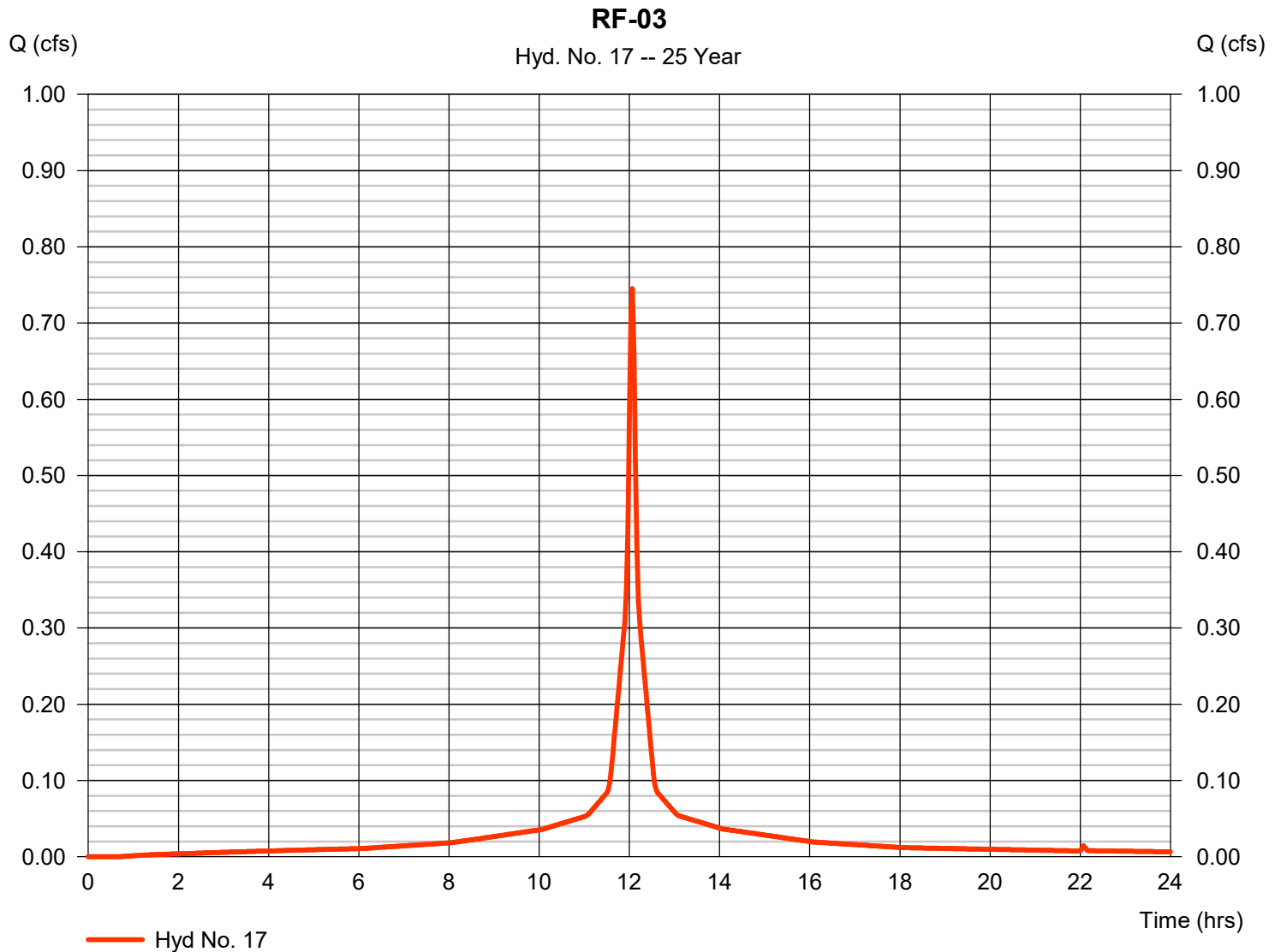
Friday, 07 / 9 / 2021

Hyd. No. 17

RF-03

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 2 min
 Drainage area = 0.120 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 6.57 in
 Storm duration = 24 hrs

Peak discharge = 0.745 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 2,586 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

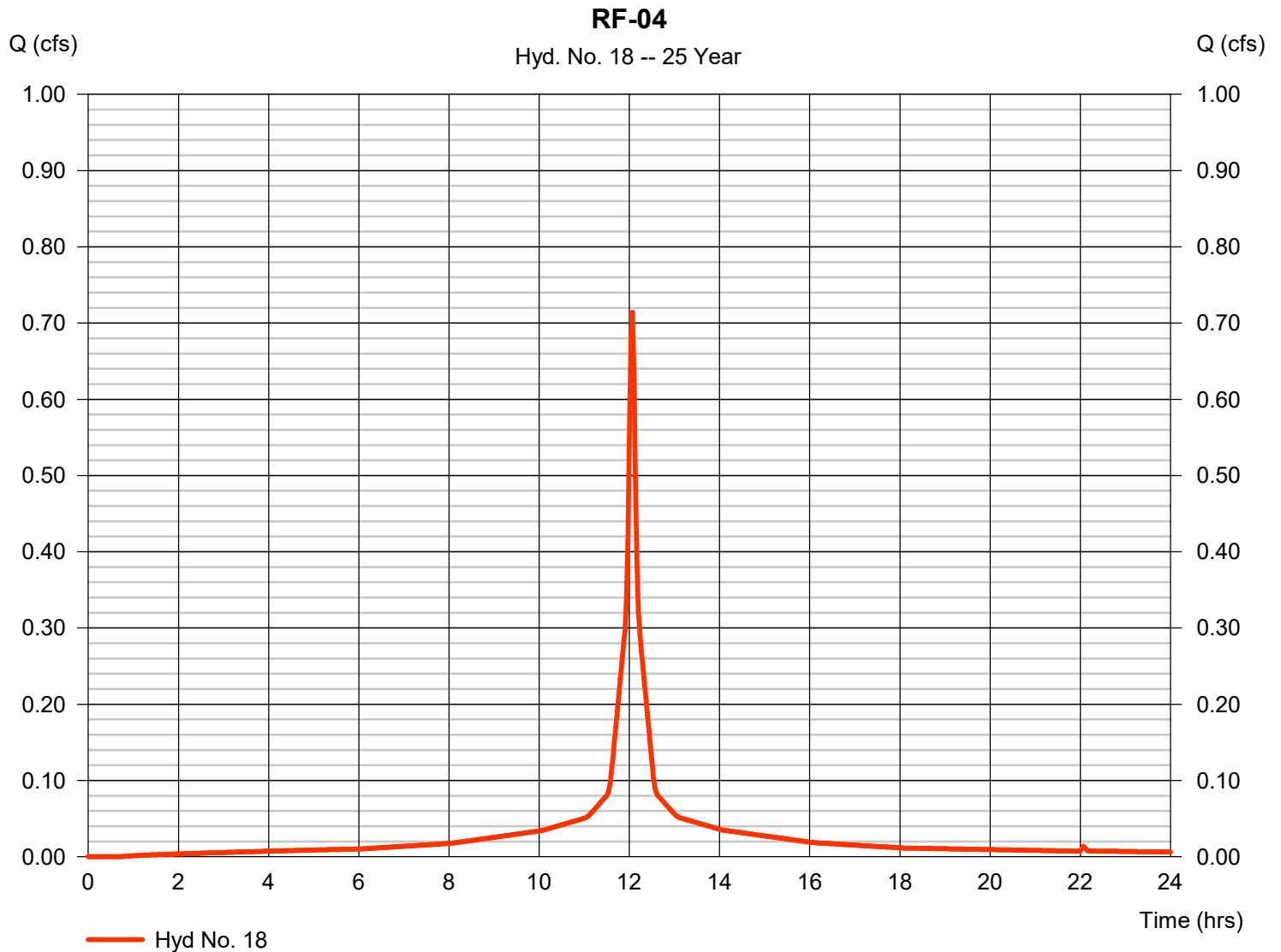
Friday, 07 / 9 / 2021

Hyd. No. 18

RF-04

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 2 min
 Drainage area = 0.115 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 6.57 in
 Storm duration = 24 hrs

Peak discharge = 0.714 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 2,478 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

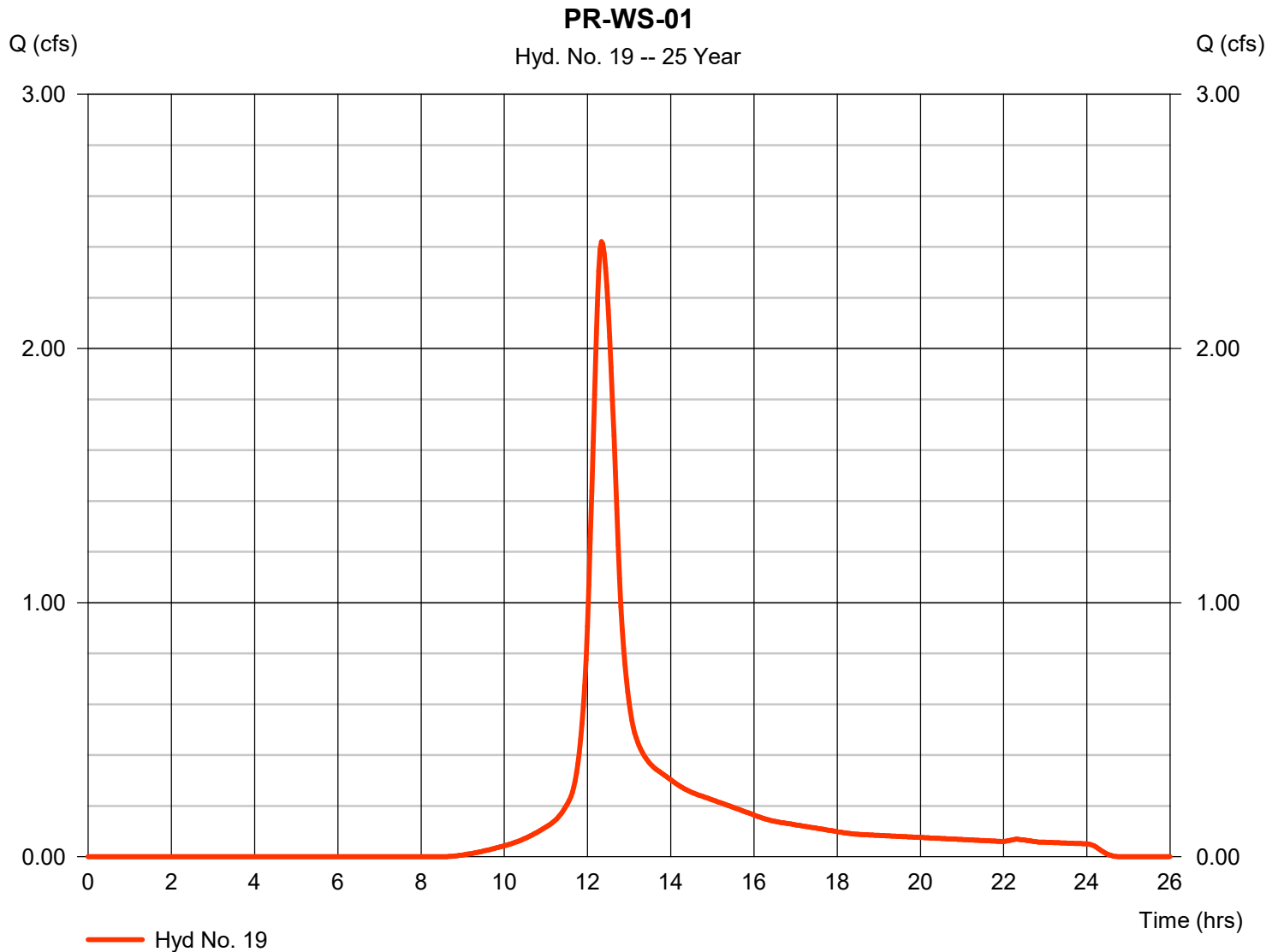
Friday, 07 / 9 / 2021

Hyd. No. 19

PR-WS-01

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 2 min
 Drainage area = 1.038 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 6.57 in
 Storm duration = 24 hrs

Peak discharge = 2.421 cfs
 Time to peak = 12.33 hrs
 Hyd. volume = 12,677 cuft
 Curve number = 71
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 27.60 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

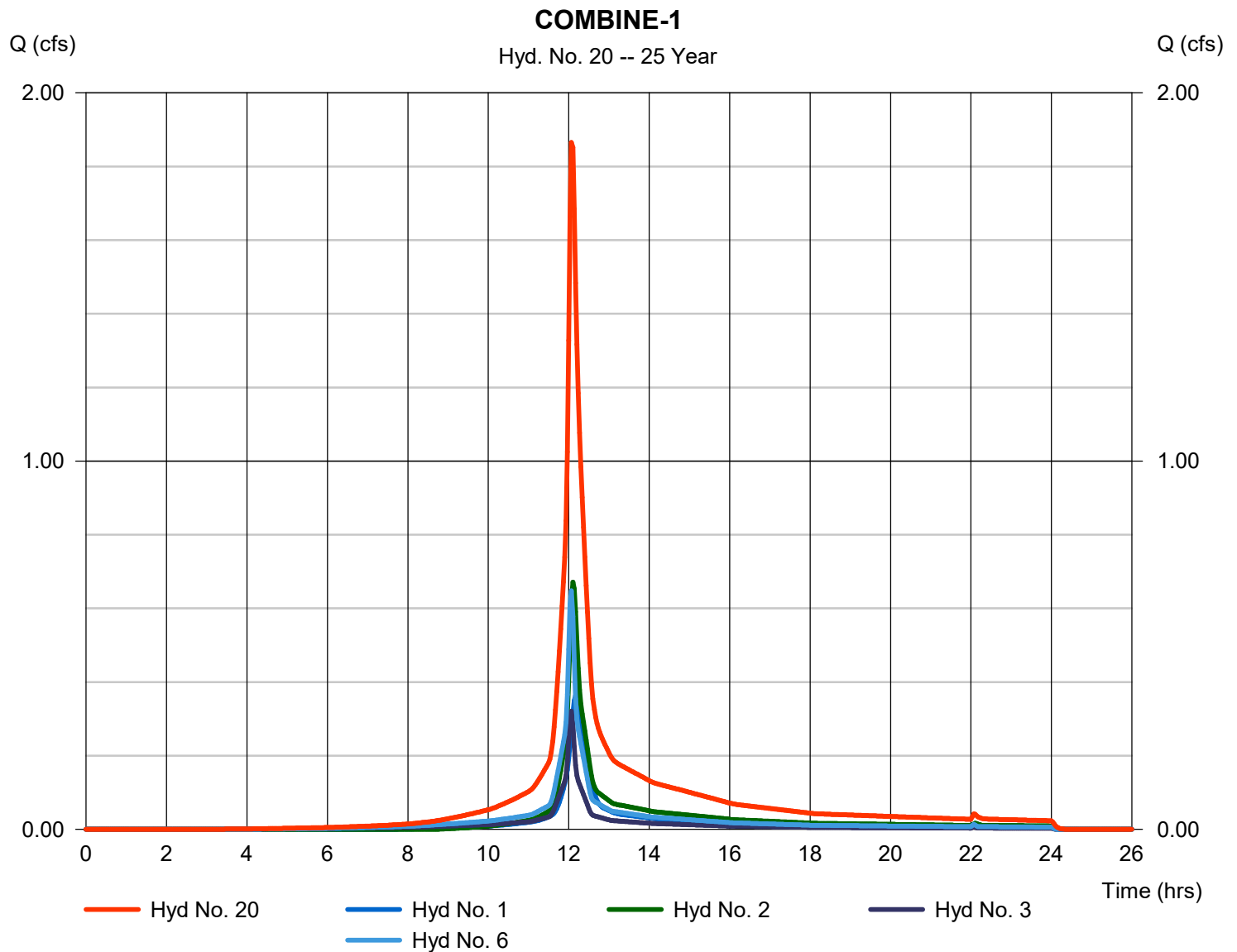
Friday, 07 / 9 / 2021

Hyd. No. 20

COMBINE-1

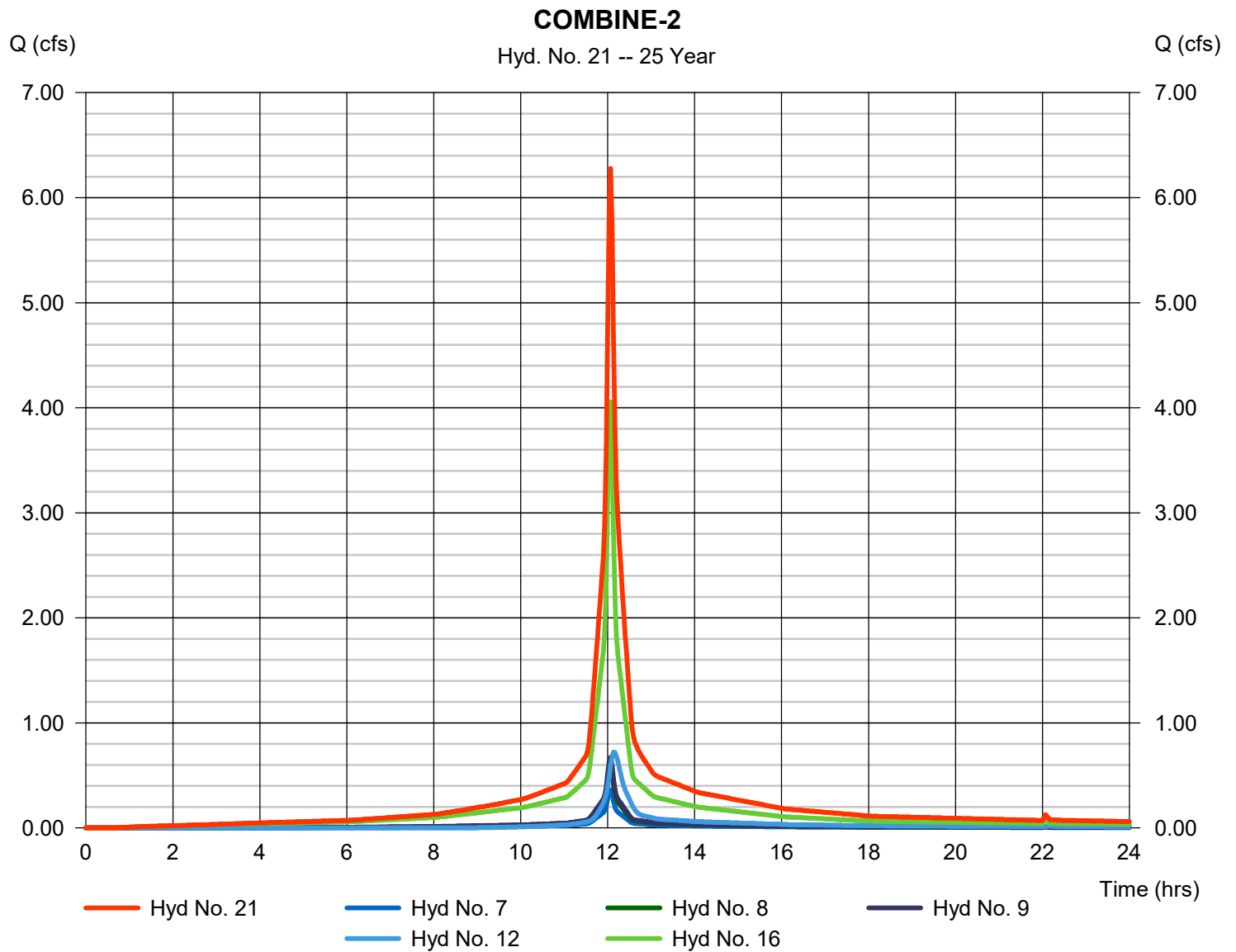
Hydrograph type = Combine
 Storm frequency = 25 yrs
 Time interval = 2 min
 Inflow hyds. = 1, 2, 3, 6

Peak discharge = 1.865 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 6,841 cuft
 Contrib. drain. area = 0.471 ac



COMBINE-2

Peak discharge = 6.276 cfs
Time to peak = 12.07 hrs
Hyd. volume = 22,157 cuft
Contrib. drain. area = 1.152 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

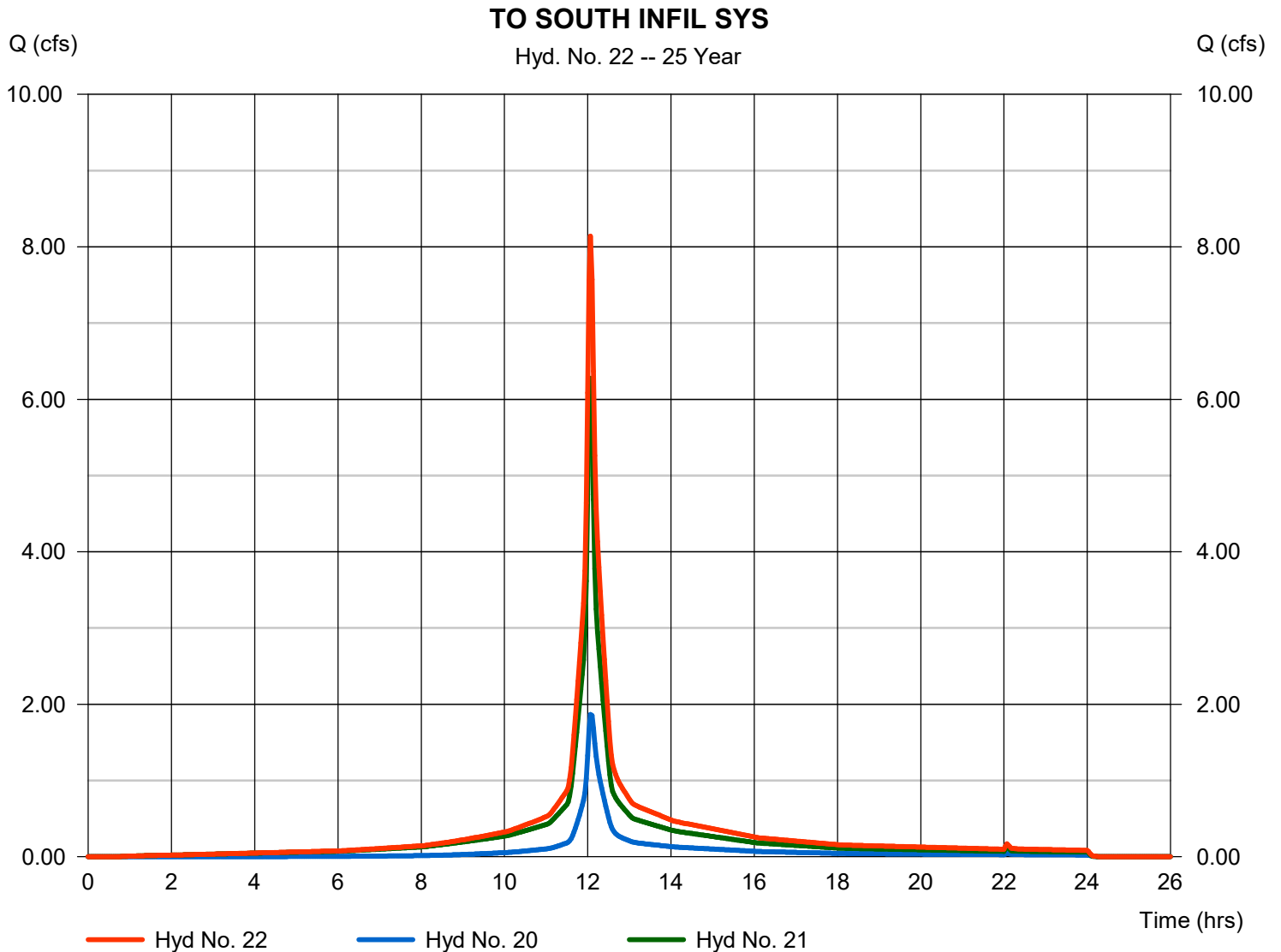
Friday, 07 / 9 / 2021

Hyd. No. 22

TO SOUTH INFIL SYS

Hydrograph type = Combine
Storm frequency = 25 yrs
Time interval = 2 min
Inflow hyds. = 20, 21

Peak discharge = 8.142 cfs
Time to peak = 12.07 hrs
Hyd. volume = 28,998 cuft
Contrib. drain. area = 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

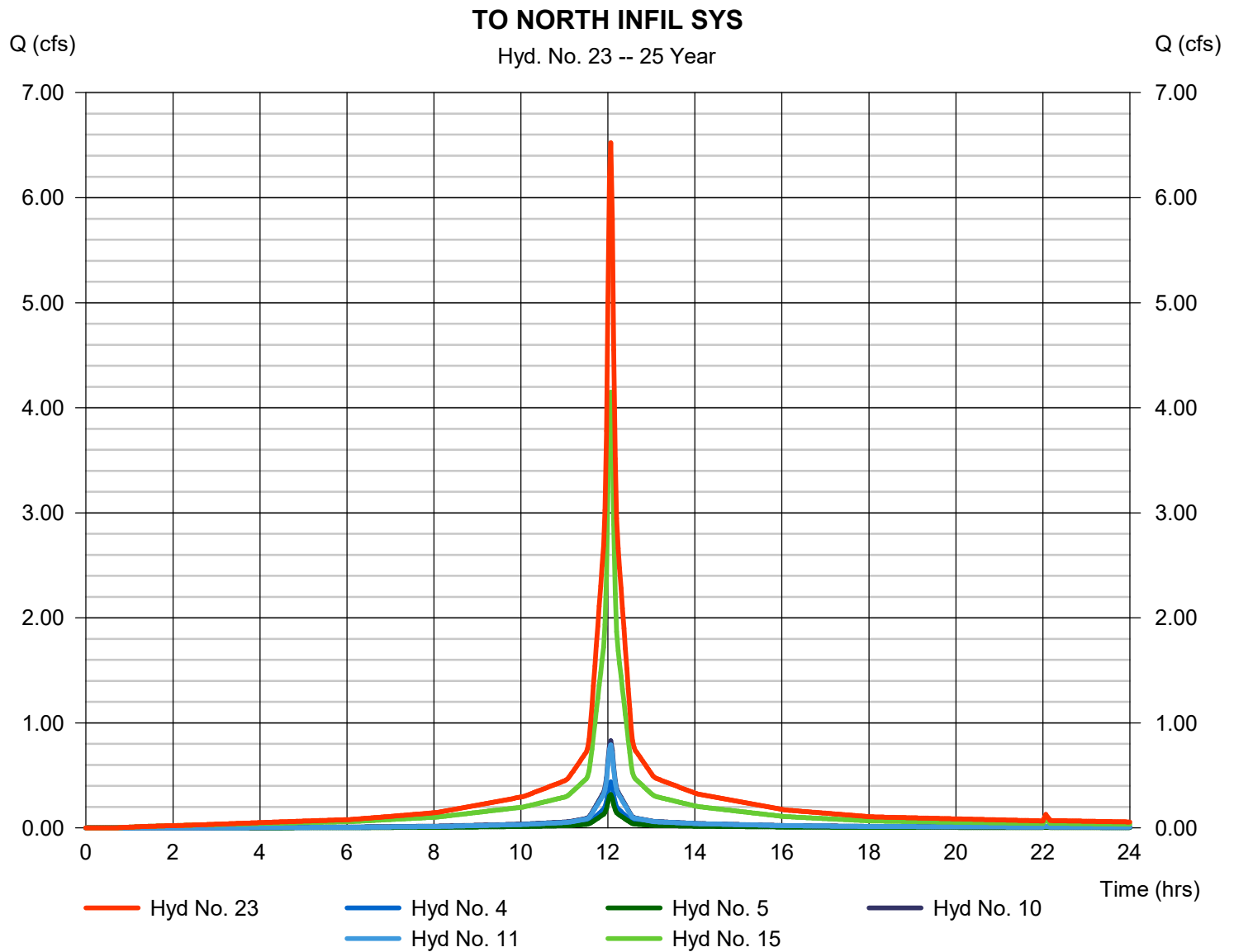
Friday, 07 / 9 / 2021

Hyd. No. 23

TO NORTH INFIL SYS

Hydrograph type = Combine
 Storm frequency = 25 yrs
 Time interval = 2 min
 Inflow hyds. = 4, 5, 10, 11, 15

Peak discharge = 6.525 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 22,128 cuft
 Contrib. drain. area = 1.065 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

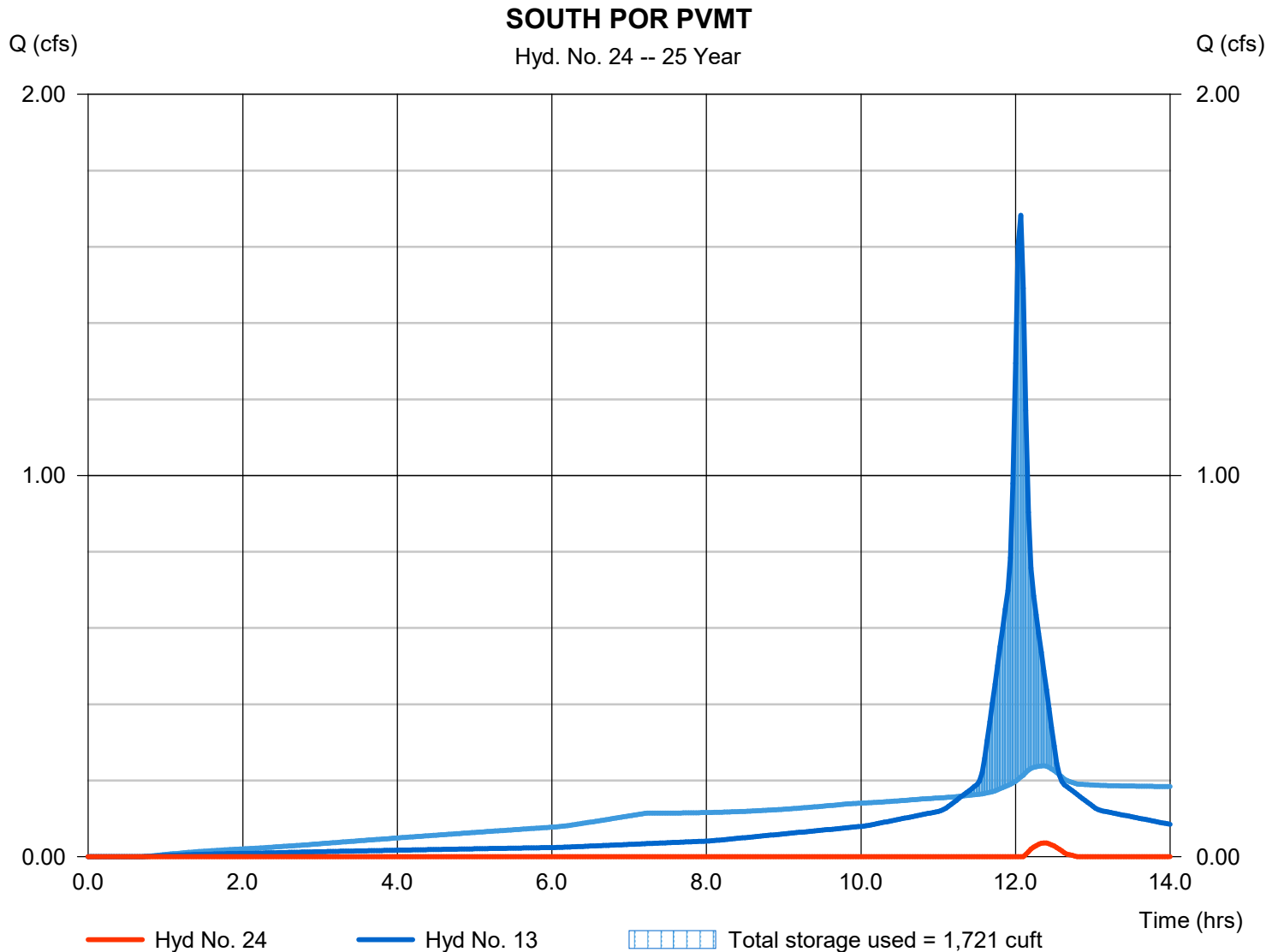
Friday, 07 / 9 / 2021

Hyd. No. 24

SOUTH POR PVMT

Hydrograph type	= Reservoir	Peak discharge	= 0.036 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.37 hrs
Time interval	= 2 min	Hyd. volume	= 49 cuft
Inflow hyd. No.	= 13 - PP-01	Max. Elevation	= 142.11 ft
Reservoir name	= SOUTH POROUS PVMT	Max. Storage	= 1,721 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

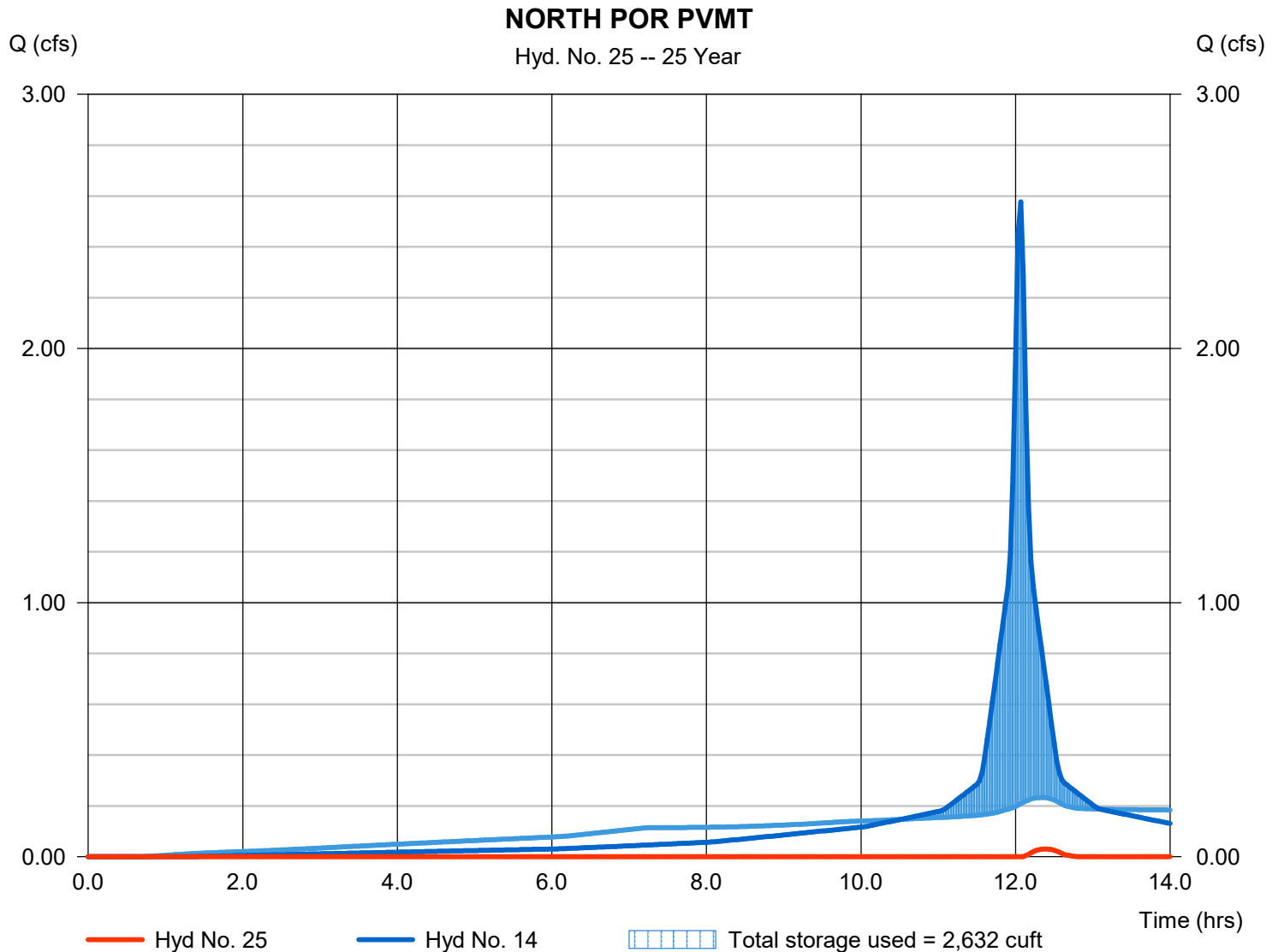
Friday, 07 / 9 / 2021

Hyd. No. 25

NORTH POR PVMT

Hydrograph type	= Reservoir	Peak discharge	= 0.031 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.40 hrs
Time interval	= 2 min	Hyd. volume	= 42 cuft
Inflow hyd. No.	= 14 - PP-02	Max. Elevation	= 141.60 ft
Reservoir name	= NORTH POROUS PVMT	Max. Storage	= 2,632 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

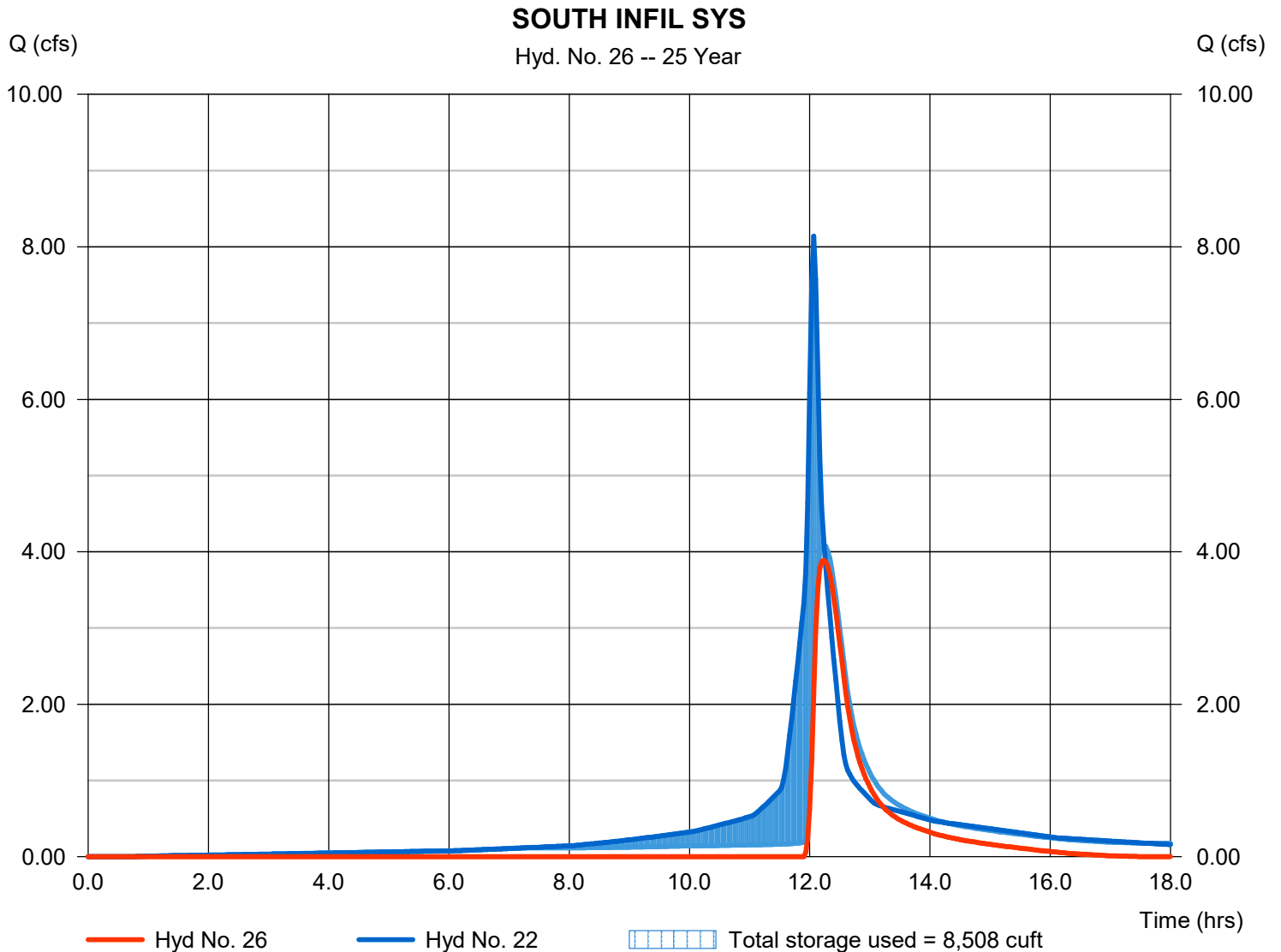
Friday, 07 / 9 / 2021

Hyd. No. 26

SOUTH INFIL SYS

Hydrograph type	= Reservoir	Peak discharge	= 3.888 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.23 hrs
Time interval	= 2 min	Hyd. volume	= 11,946 cuft
Inflow hyd. No.	= 22 - TO SOUTH INFIL SYS	Max. Elevation	= 143.96 ft
Reservoir name	= SOUTH INFIL SYS	Max. Storage	= 8,508 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

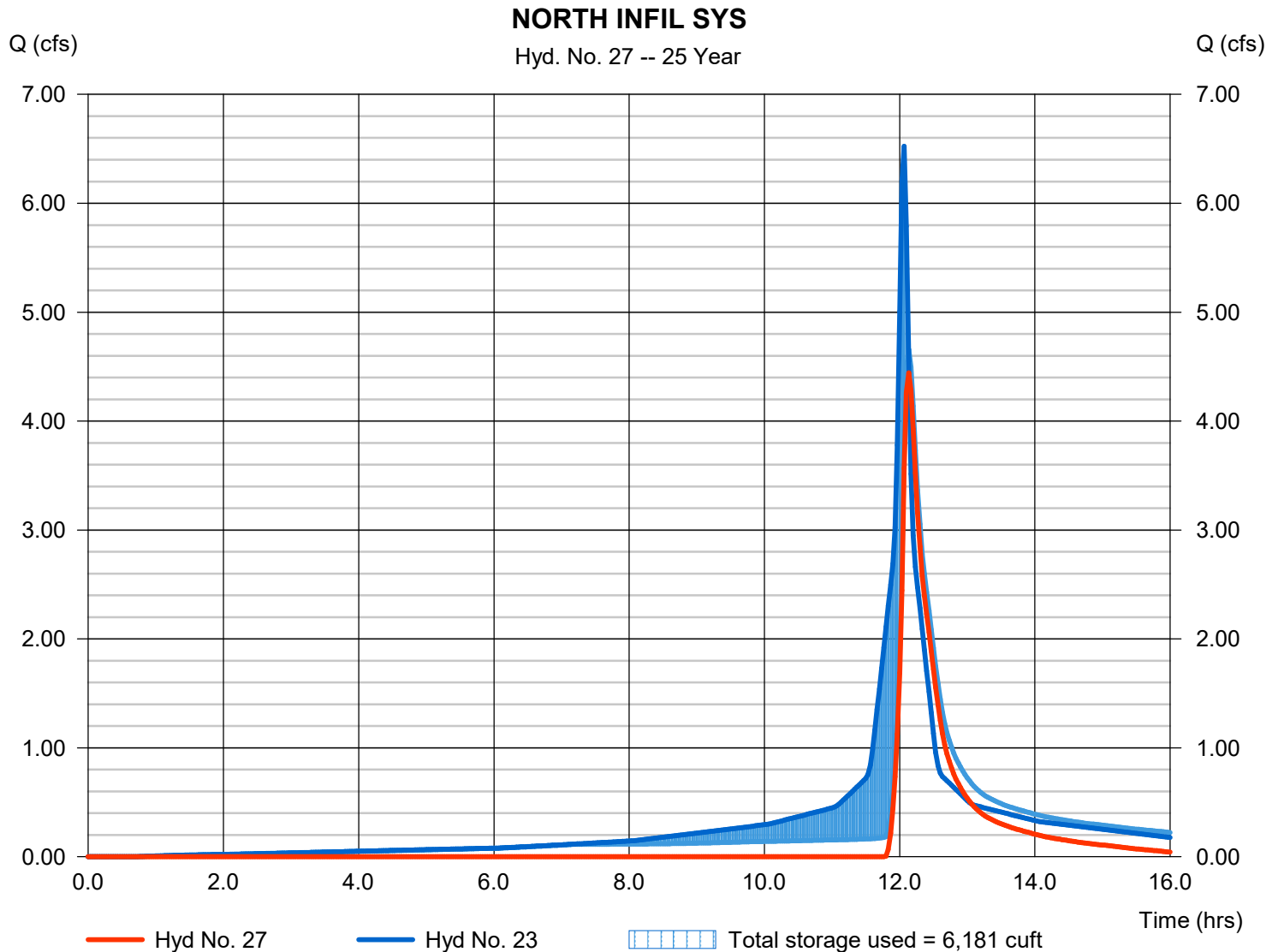
Friday, 07 / 9 / 2021

Hyd. No. 27

NORTH INFIL SYS

Hydrograph type	= Reservoir	Peak discharge	= 4.442 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 9,585 cuft
Inflow hyd. No.	= 23 - TO NORTH INFIL SYS	Max. Elevation	= 144.19 ft
Reservoir name	= NORTH INFIL SYS	Max. Storage	= 6,181 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

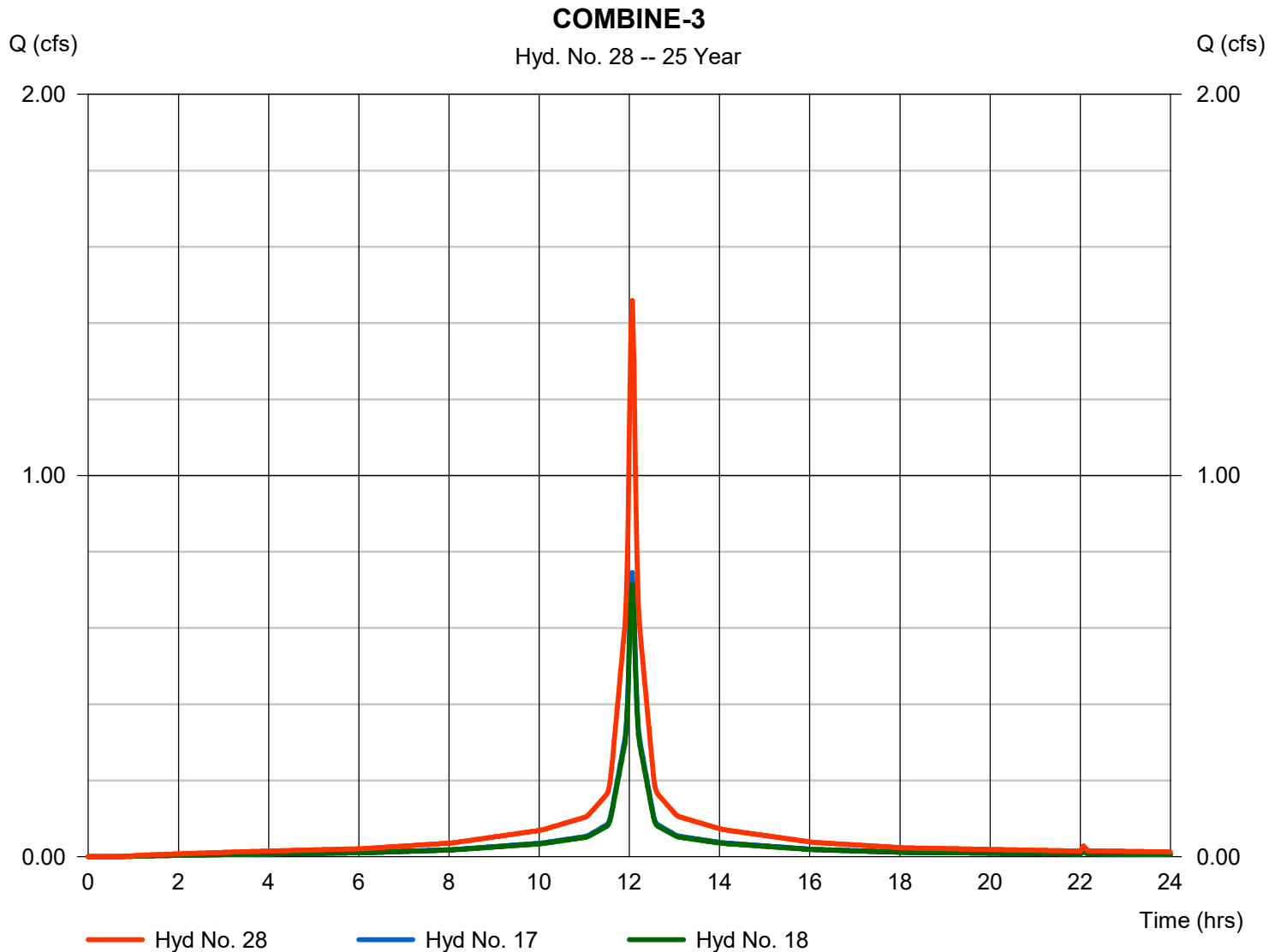
Friday, 07 / 9 / 2021

Hyd. No. 28

COMBINE-3

Hydrograph type = Combine
Storm frequency = 25 yrs
Time interval = 2 min
Inflow hyds. = 17, 18

Peak discharge = 1.459 cfs
Time to peak = 12.07 hrs
Hyd. volume = 5,063 cuft
Contrib. drain. area = 0.235 ac



Hydrograph Report

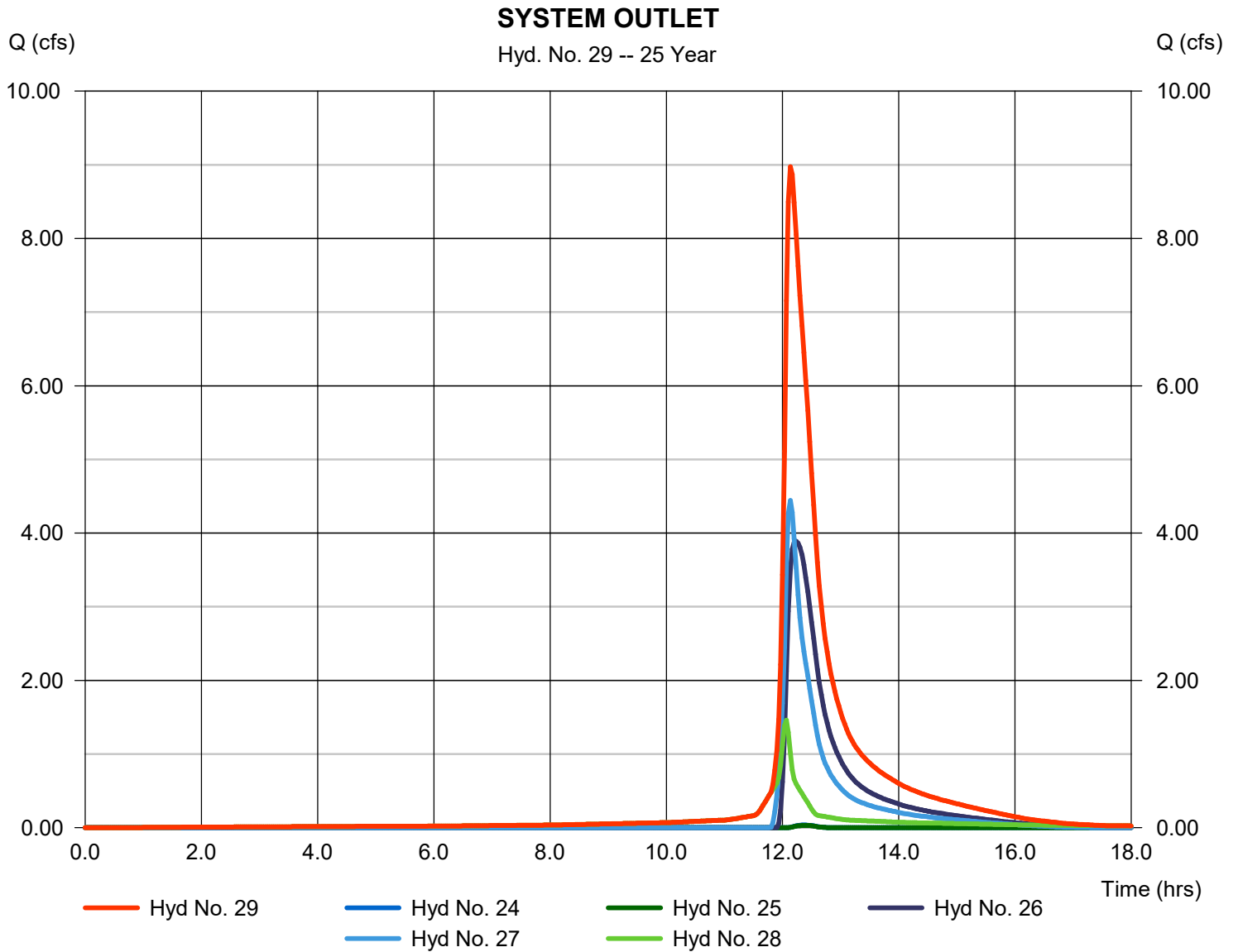
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

Hyd. No. 29

SYSTEM OUTLET

Hydrograph type	= Combine	Peak discharge	= 8.975 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 26,685 cuft
Inflow hyds.	= 24, 25, 26, 27, 28	Contrib. drain. area	= 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

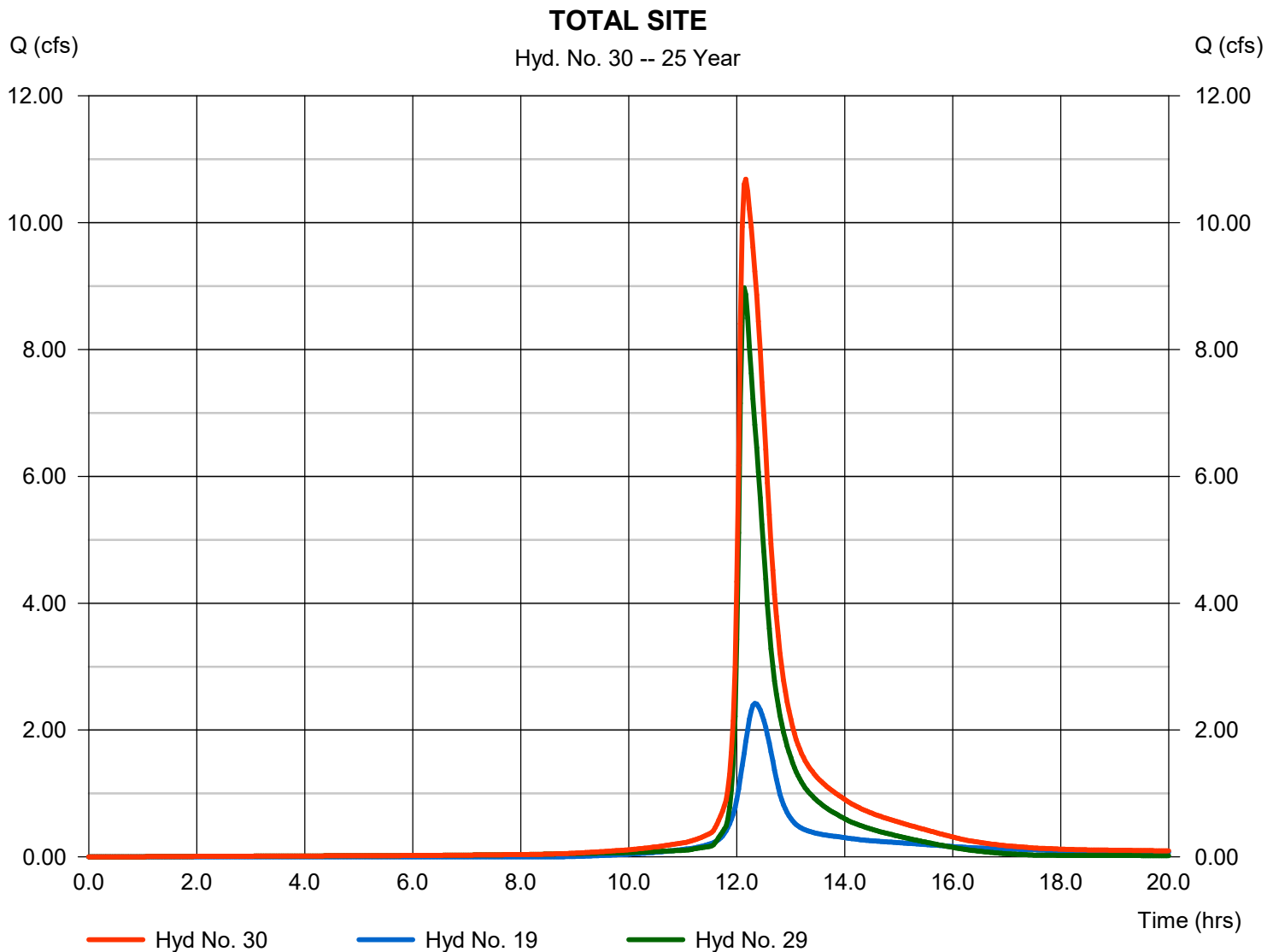
Friday, 07 / 9 / 2021

Hyd. No. 30

TOTAL SITE

Hydrograph type = Combine
Storm frequency = 25 yrs
Time interval = 2 min
Inflow hyds. = 19, 29

Peak discharge = 10.69 cfs
Time to peak = 12.17 hrs
Hyd. volume = 39,362 cuft
Contrib. drain. area = 1.038 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

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	0.436	2	730	1,778	-----	-----	-----	CB-01
2	SCS Runoff	0.822	2	726	2,808	-----	-----	-----	CB-01A
3	SCS Runoff	0.366	2	724	1,193	-----	-----	-----	CB-02
4	SCS Runoff	0.502	2	724	1,634	-----	-----	-----	CB-03
5	SCS Runoff	0.363	2	724	1,192	-----	-----	-----	CB-04
6	SCS Runoff	0.747	2	724	2,357	-----	-----	-----	CB-05
7	SCS Runoff	0.417	2	724	1,344	-----	-----	-----	CB-06
8	SCS Runoff	0.678	2	724	2,226	-----	-----	-----	CB-07
9	SCS Runoff	0.766	2	724	2,540	-----	-----	-----	CB-08
10	SCS Runoff	0.945	2	724	3,136	-----	-----	-----	CB-09
11	SCS Runoff	0.902	2	724	2,937	-----	-----	-----	CB-10
12	SCS Runoff	0.883	2	728	3,388	-----	-----	-----	CB-11
13	SCS Runoff	1.907	2	724	6,641	-----	-----	-----	PP-01
14	SCS Runoff	2.926	2	724	9,928	-----	-----	-----	PP-02
15	SCS Runoff	4.701	2	724	16,369	-----	-----	-----	RF-01
16	SCS Runoff	4.595	2	724	16,001	-----	-----	-----	RF-02
17	SCS Runoff	0.844	2	724	2,941	-----	-----	-----	RF-03
18	SCS Runoff	0.809	2	724	2,818	-----	-----	-----	RF-04
19	SCS Runoff	2.955	2	740	15,436	-----	-----	-----	PR-WS-01
20	Combine	2.210	2	724	8,135	1, 2, 3, 6,	-----	-----	COMBINE-1
21	Combine	7.186	2	724	25,500	7, 8, 9, 12, 16,	-----	-----	COMBINE-2
22	Combine	9.396	2	724	33,635	20, 21	-----	-----	TO SOUTH INFIL SYS
23	Combine	7.413	2	724	25,268	4, 5, 10, 11, 15,	-----	-----	TO NORTH INFIL SYS
24	Reservoir	0.106	2	742	184	13	142.19	1,961	SOUTH POR PVMT
25	Reservoir	0.105	2	744	188	14	141.69	3,036	NORTH POR PVMT
26	Reservoir	5.328	2	732	15,547	22	144.41	9,347	SOUTH INFIL SYS
27	Reservoir	5.575	2	728	12,049	23	144.56	6,462	NORTH INFIL SYS
28	Combine	1.654	2	724	5,759	17, 18,	-----	-----	COMBINE-3
29	Combine	11.51	2	728	33,726	24, 25, 26, 27, 28	-----	-----	SYSTEM OUTLET
30	Combine	13.64	2	730	49,162	19, 29	-----	-----	TOTAL SITE
F0173-02 Hydrographs - Proposed.gpw					Return Period: 50 Year			Friday, 07 / 9 / 2021	

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

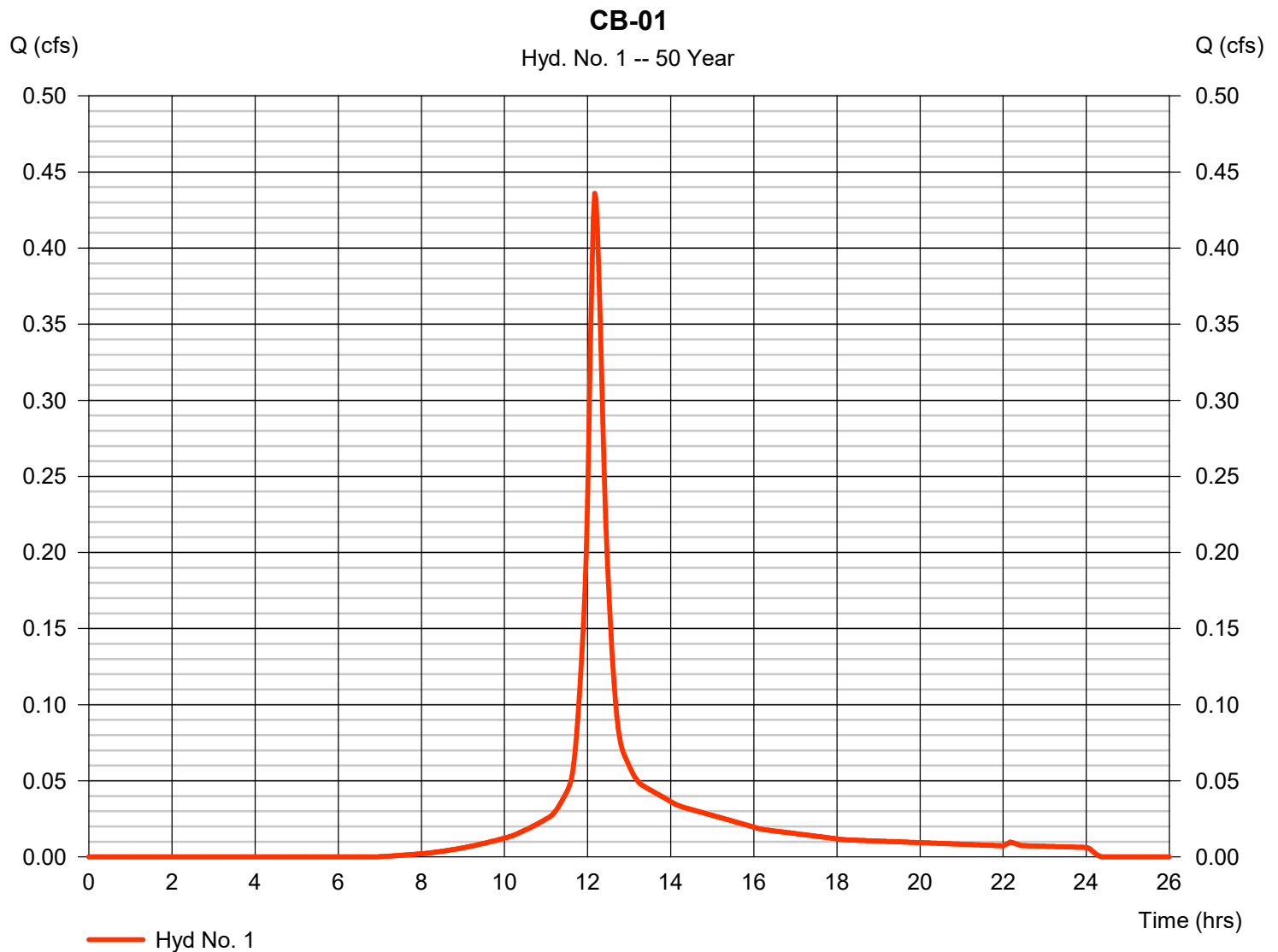
Friday, 07 / 9 / 2021

Hyd. No. 1

CB-01

Hydrograph type = SCS Runoff
Storm frequency = 50 yrs
Time interval = 2 min
Drainage area = 0.108 ac
Basin Slope = 0.0 %
Tc method = User
Total precip. = 7.44 in
Storm duration = 24 hrs

Peak discharge = 0.436 cfs
Time to peak = 12.17 hrs
Hyd. volume = 1,778 cuft
Curve number = 76
Hydraulic length = 0 ft
Time of conc. (Tc) = 14.20 min
Distribution = Type III
Shape factor = 484



Hydrograph Report

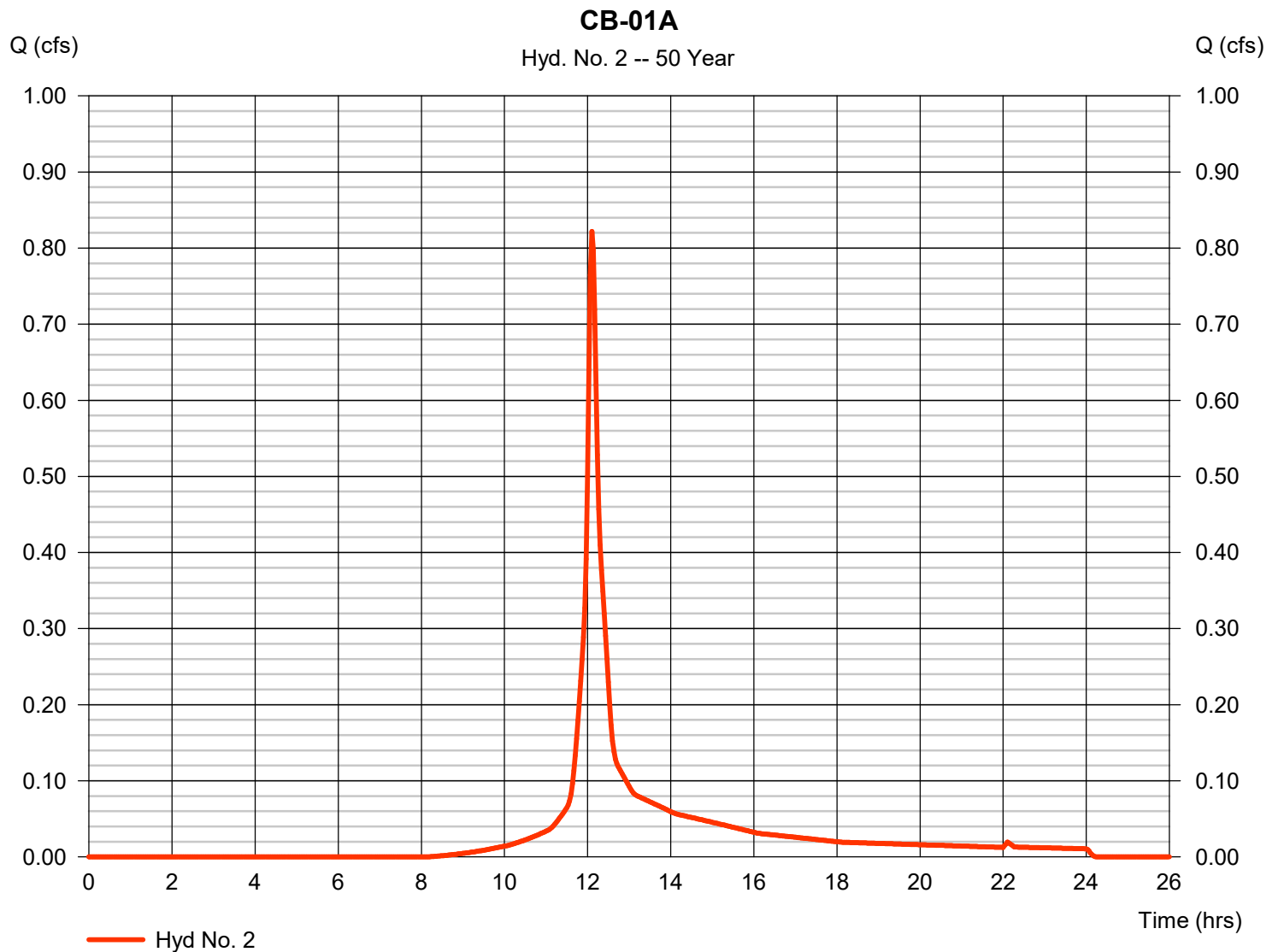
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

Hyd. No. 2

CB-01A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.822 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 2,808 cuft
Drainage area	= 0.194 ac	Curve number	= 70
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 7.80 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

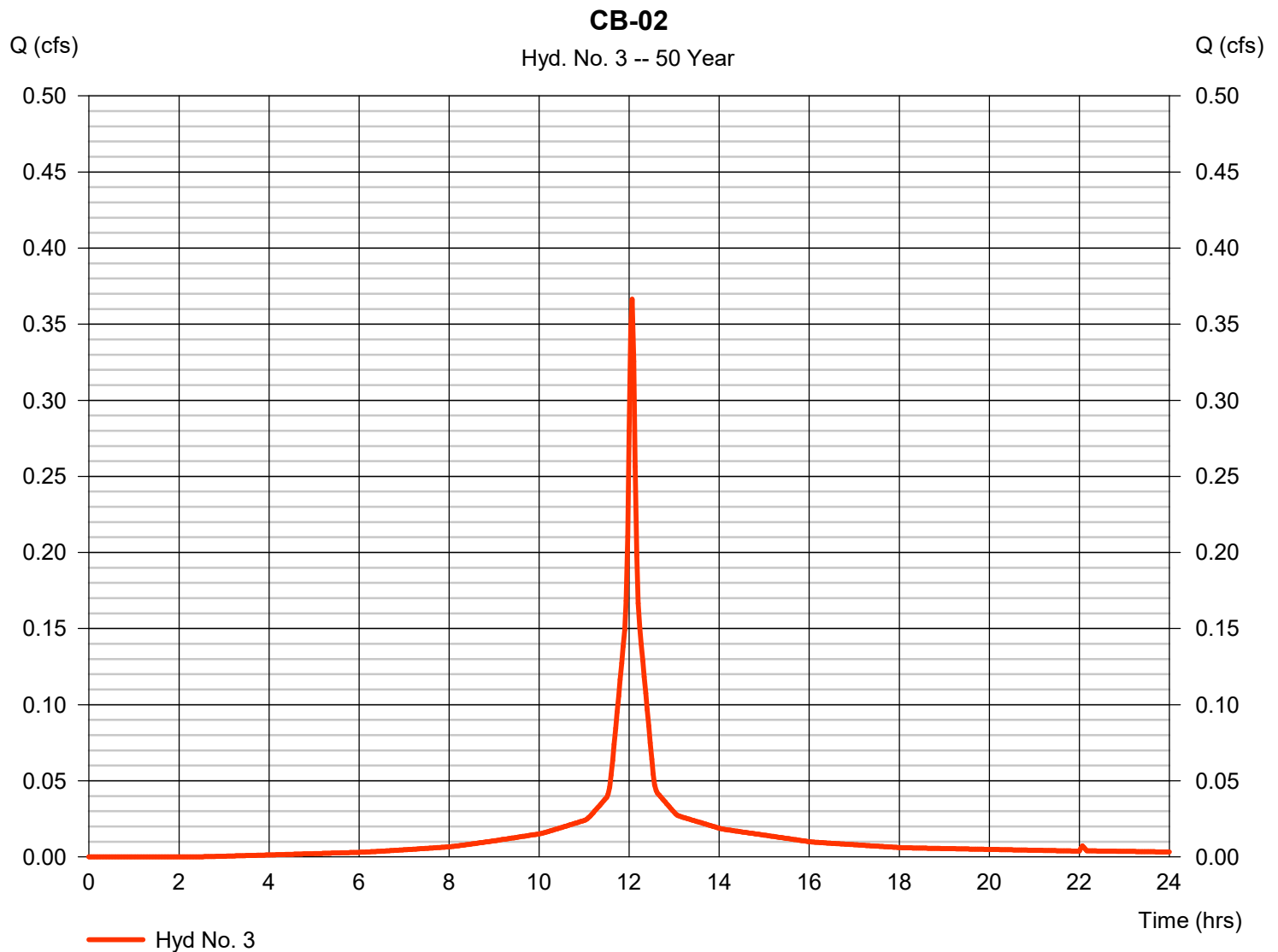
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

Hyd. No. 3

CB-02

Hydrograph type	= SCS Runoff	Peak discharge	= 0.366 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,193 cuft
Drainage area	= 0.054 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

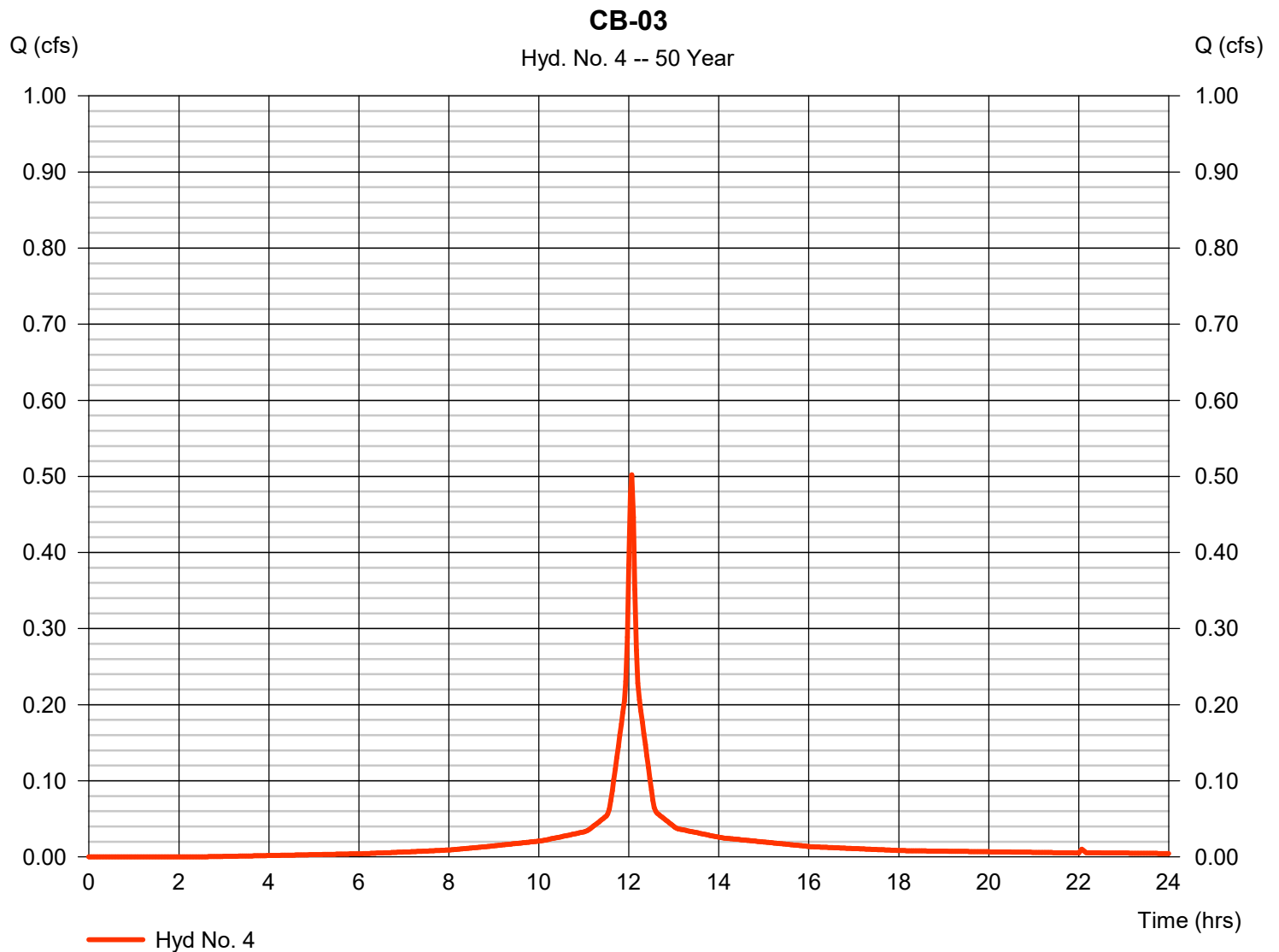
Friday, 07 / 9 / 2021

Hyd. No. 4

CB-03

Hydrograph type = SCS Runoff
 Storm frequency = 50 yrs
 Time interval = 2 min
 Drainage area = 0.074 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 7.44 in
 Storm duration = 24 hrs

Peak discharge = 0.502 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 1,634 cuft
 Curve number = 92
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

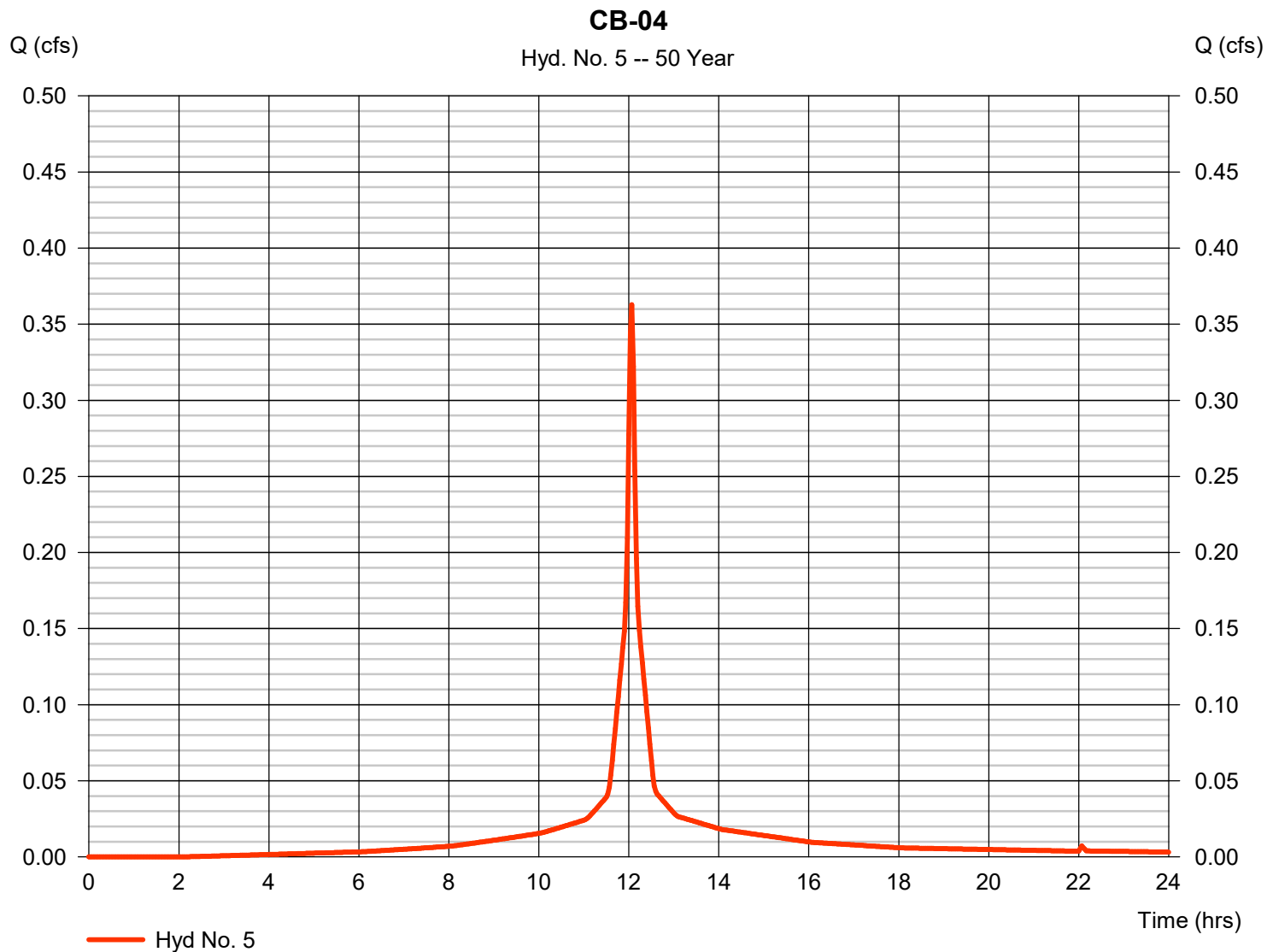
Friday, 07 / 9 / 2021

Hyd. No. 5

CB-04

Hydrograph type = SCS Runoff
 Storm frequency = 50 yrs
 Time interval = 2 min
 Drainage area = 0.053 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 7.44 in
 Storm duration = 24 hrs

Peak discharge = 0.363 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 1,192 cuft
 Curve number = 93
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

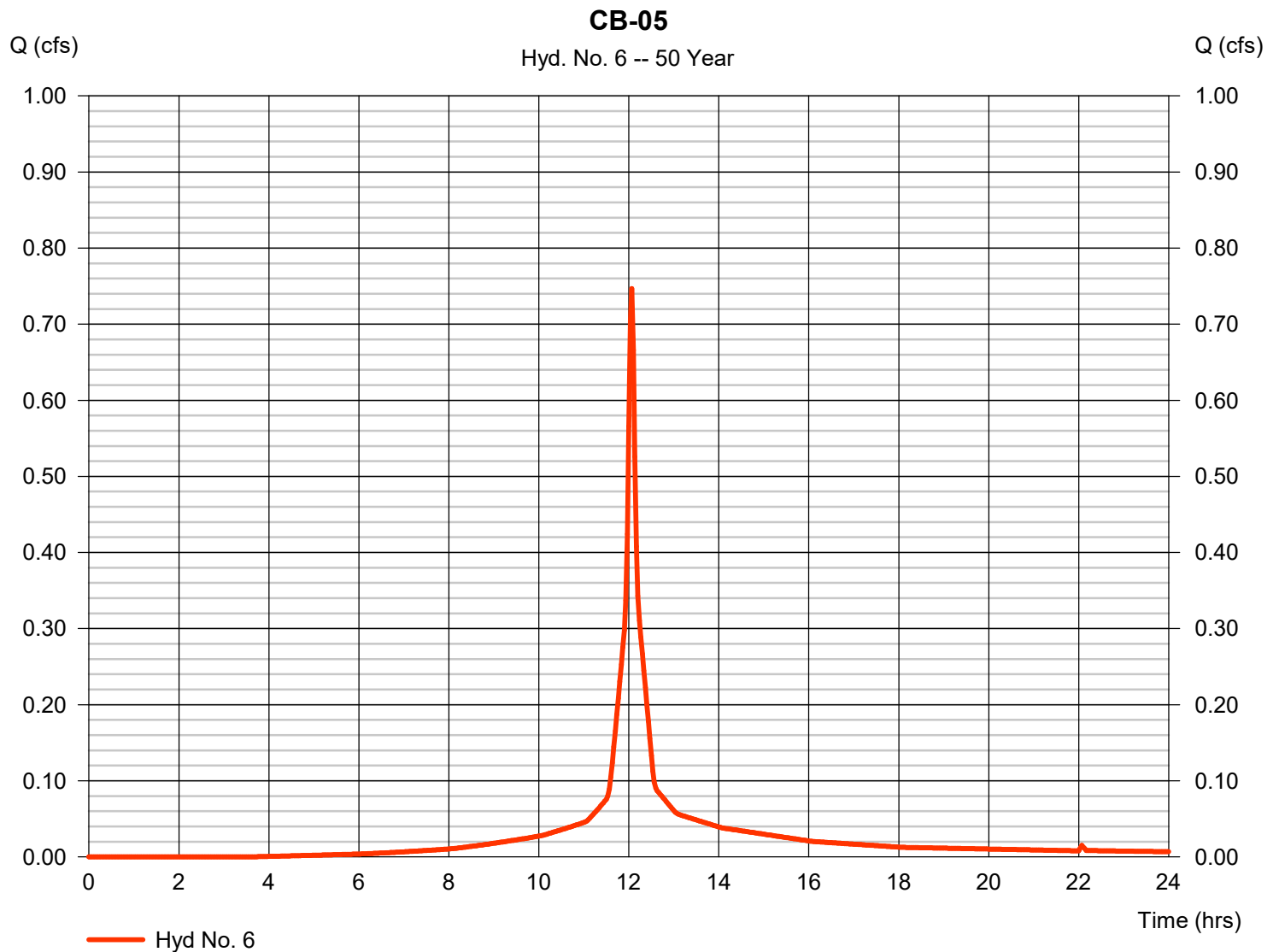
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

Hyd. No. 6

CB-05

Hydrograph type	= SCS Runoff	Peak discharge	= 0.747 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 2,357 cuft
Drainage area	= 0.115 ac	Curve number	= 88
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

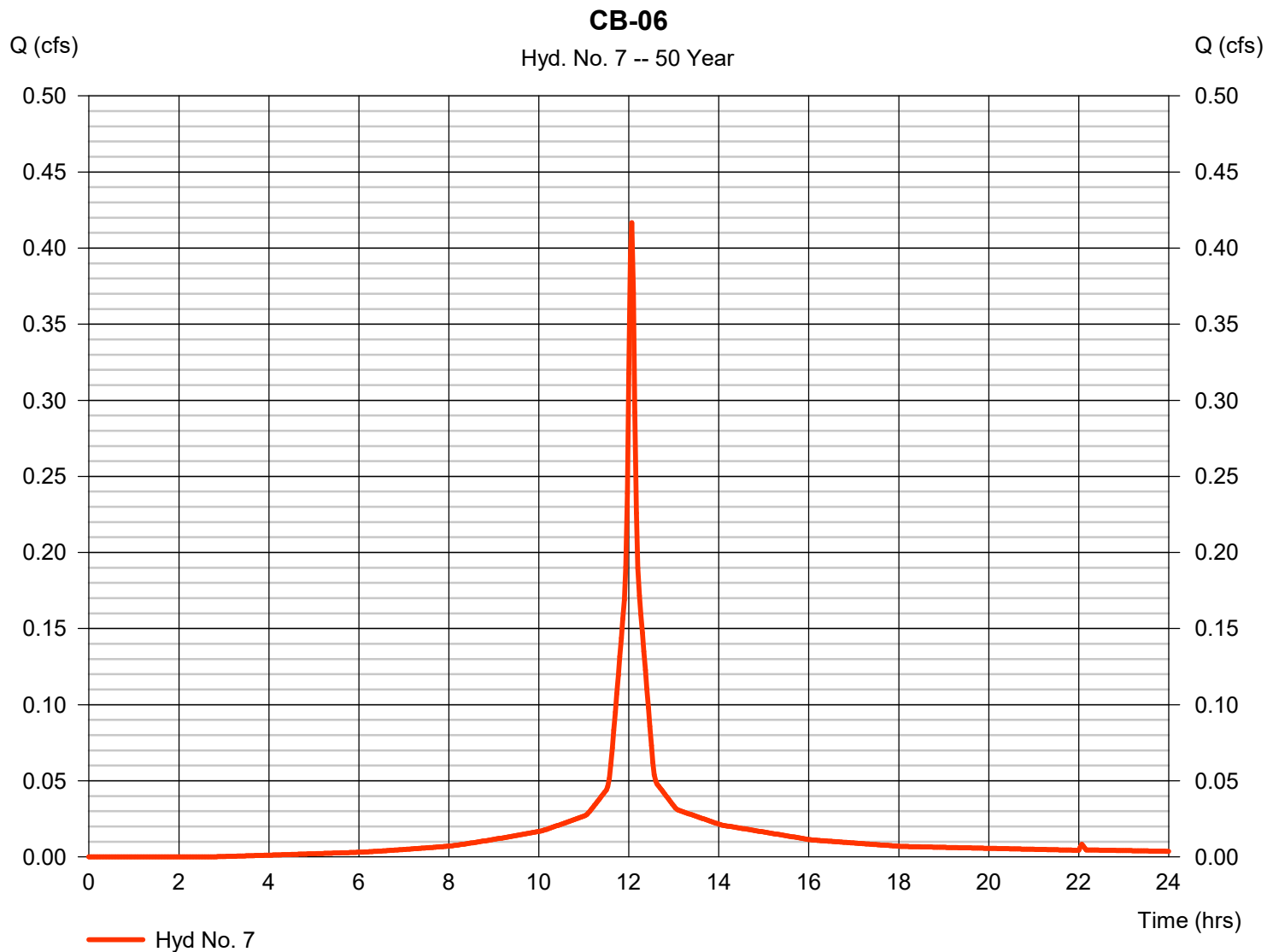
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

Hyd. No. 7

CB-06

Hydrograph type	= SCS Runoff	Peak discharge	= 0.417 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,344 cuft
Drainage area	= 0.062 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

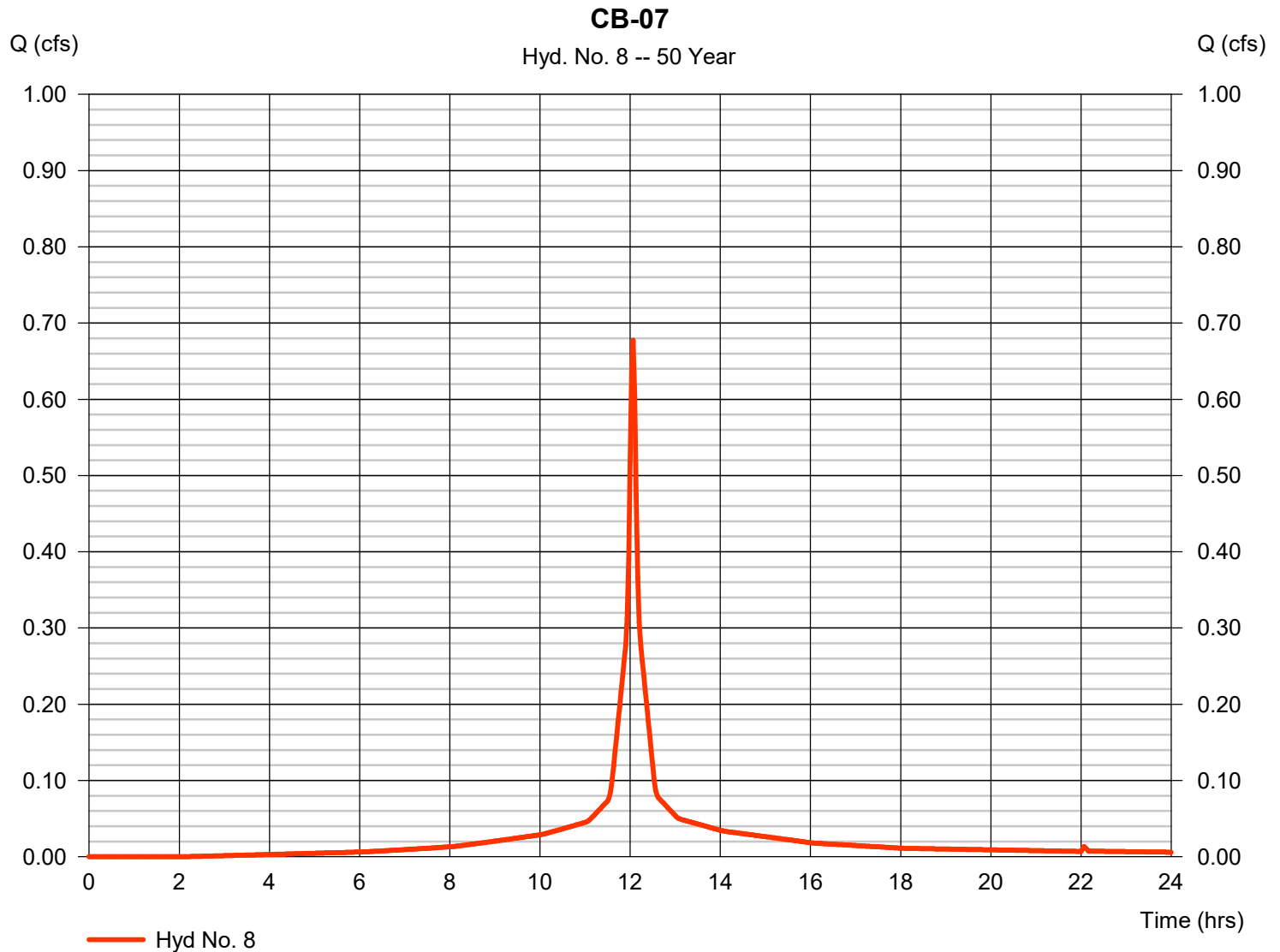
Friday, 07 / 9 / 2021

Hyd. No. 8

CB-07

Hydrograph type = SCS Runoff
 Storm frequency = 50 yrs
 Time interval = 2 min
 Drainage area = 0.099 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 7.44 in
 Storm duration = 24 hrs

Peak discharge = 0.678 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 2,226 cuft
 Curve number = 93
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

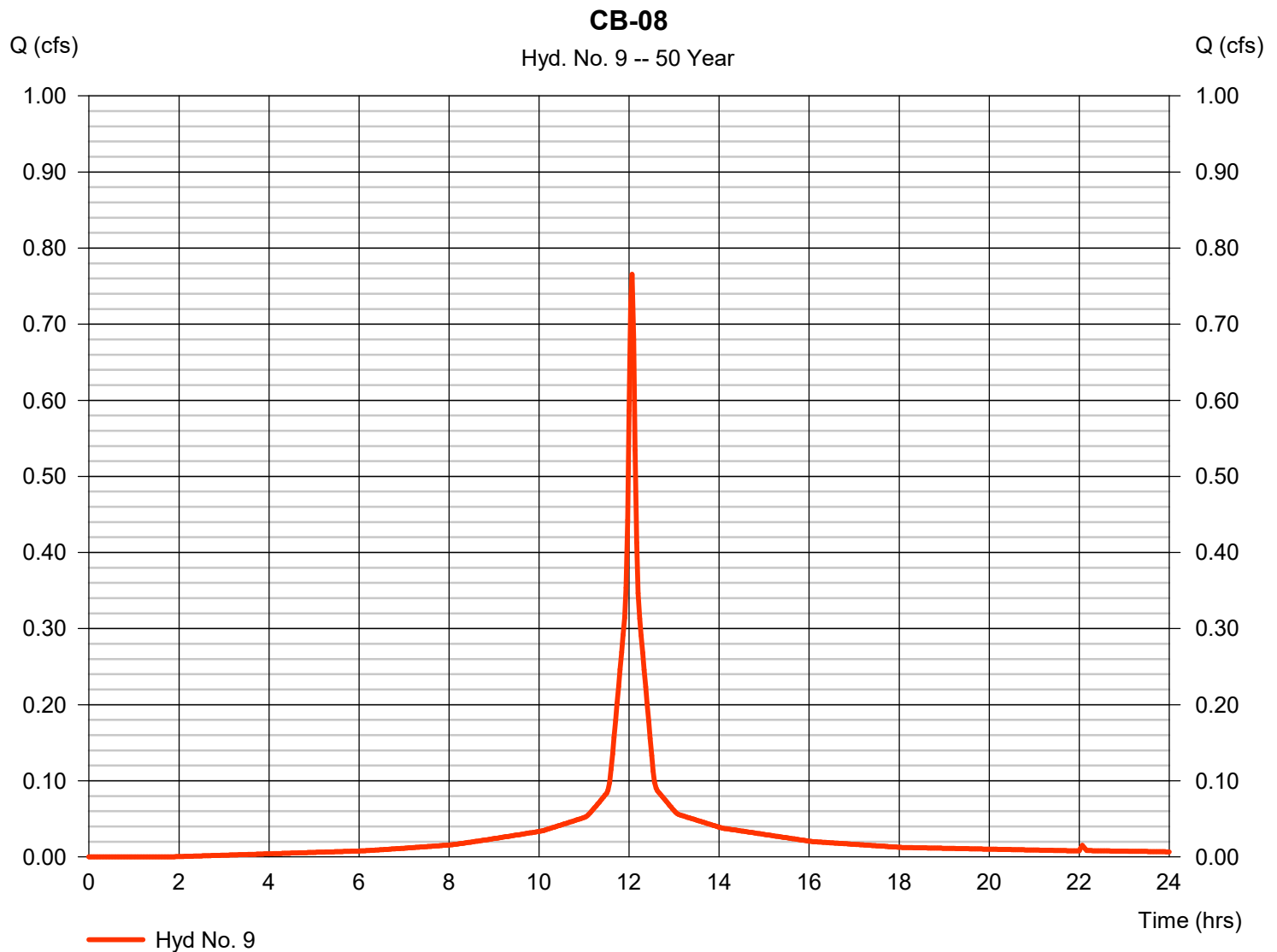
Friday, 07 / 9 / 2021

Hyd. No. 9

CB-08

Hydrograph type = SCS Runoff
 Storm frequency = 50 yrs
 Time interval = 2 min
 Drainage area = 0.111 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 7.44 in
 Storm duration = 24 hrs

Peak discharge = 0.766 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 2,540 cuft
 Curve number = 94
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.50 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

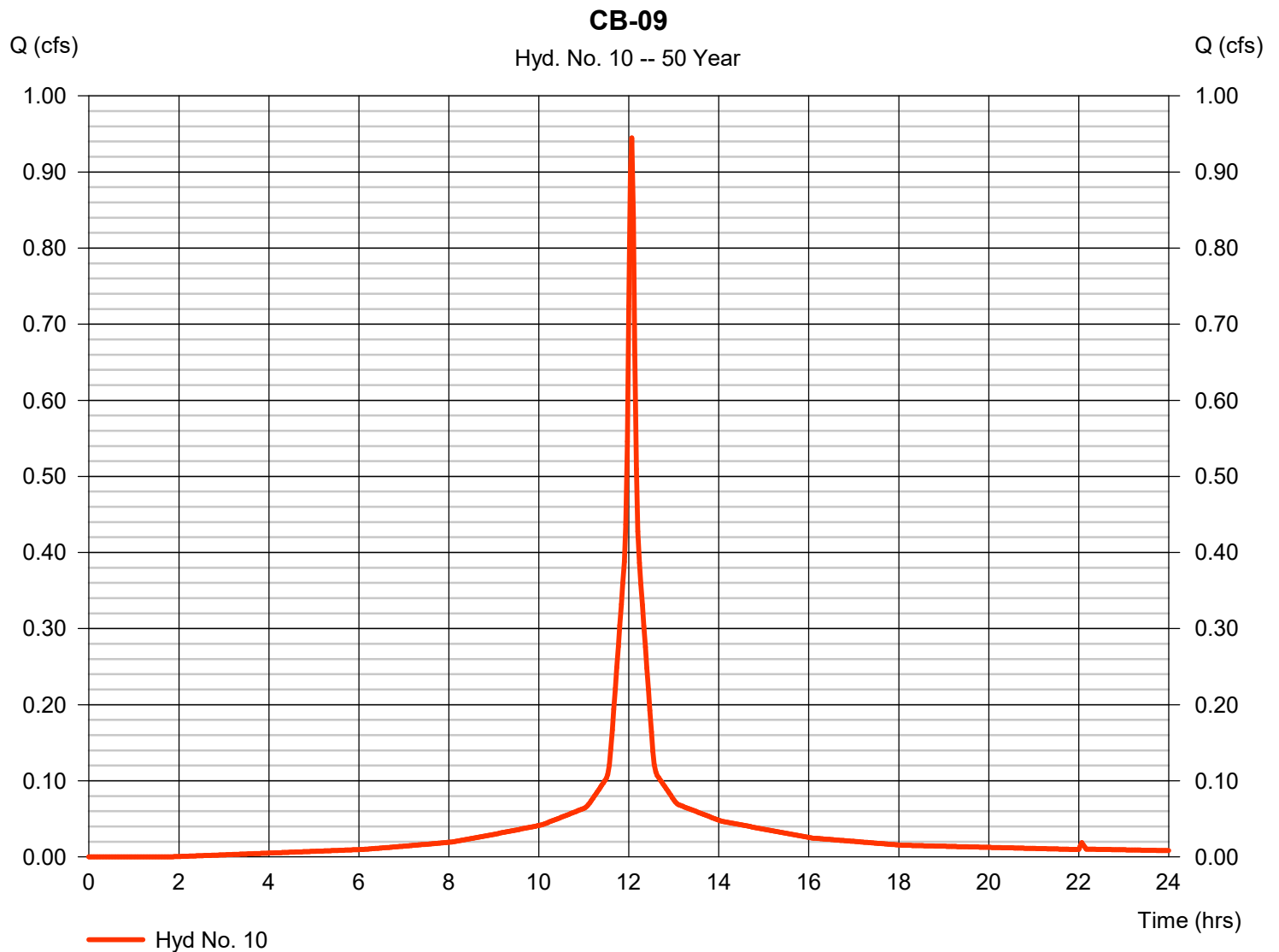
Friday, 07 / 9 / 2021

Hyd. No. 10

CB-09

Hydrograph type = SCS Runoff
 Storm frequency = 50 yrs
 Time interval = 2 min
 Drainage area = 0.137 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 7.44 in
 Storm duration = 24 hrs

Peak discharge = 0.945 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 3,136 cuft
 Curve number = 94
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

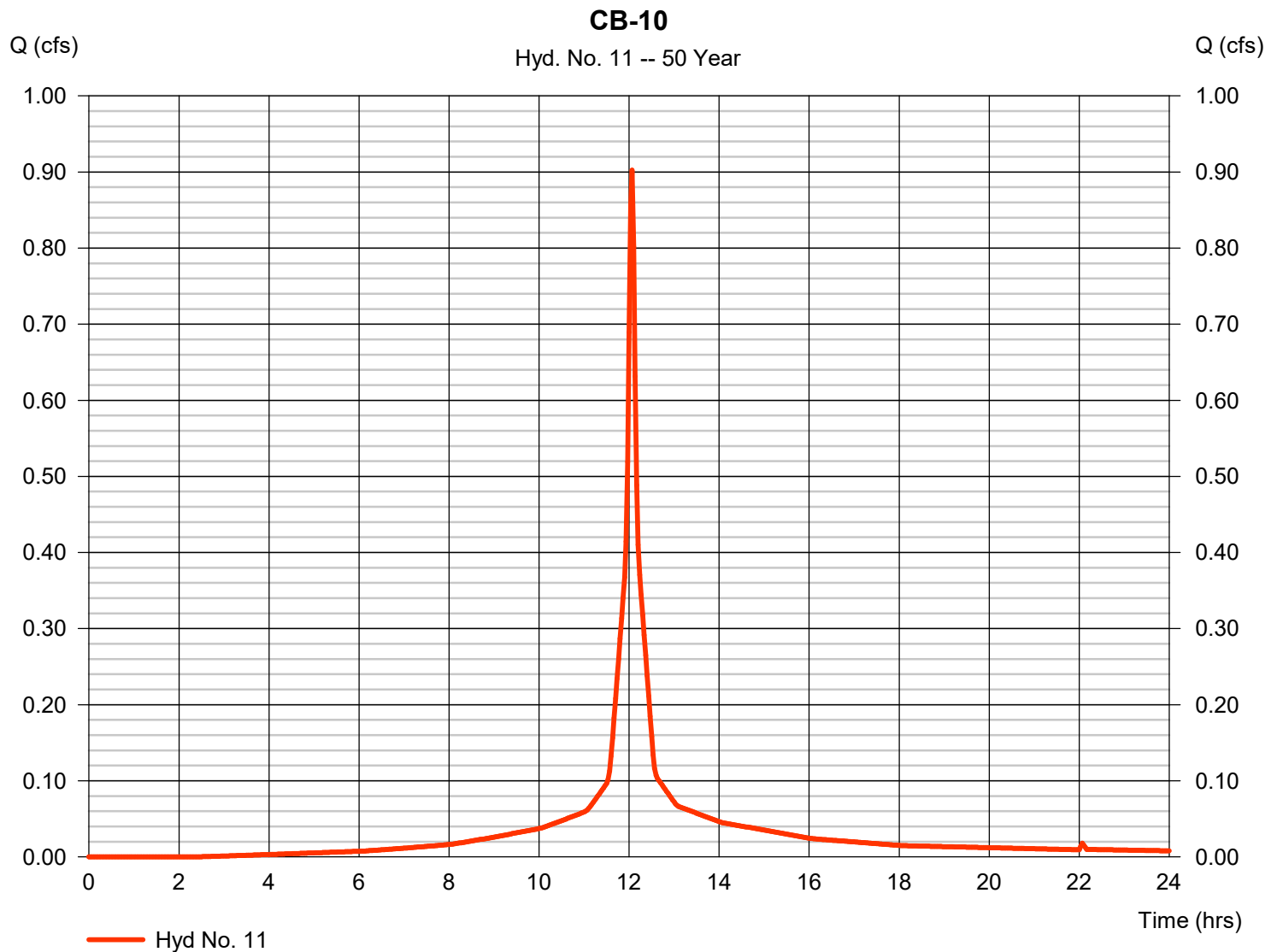
Friday, 07 / 9 / 2021

Hyd. No. 11

CB-10

Hydrograph type = SCS Runoff
 Storm frequency = 50 yrs
 Time interval = 2 min
 Drainage area = 0.133 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 7.44 in
 Storm duration = 24 hrs

Peak discharge = 0.902 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 2,937 cuft
 Curve number = 92
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

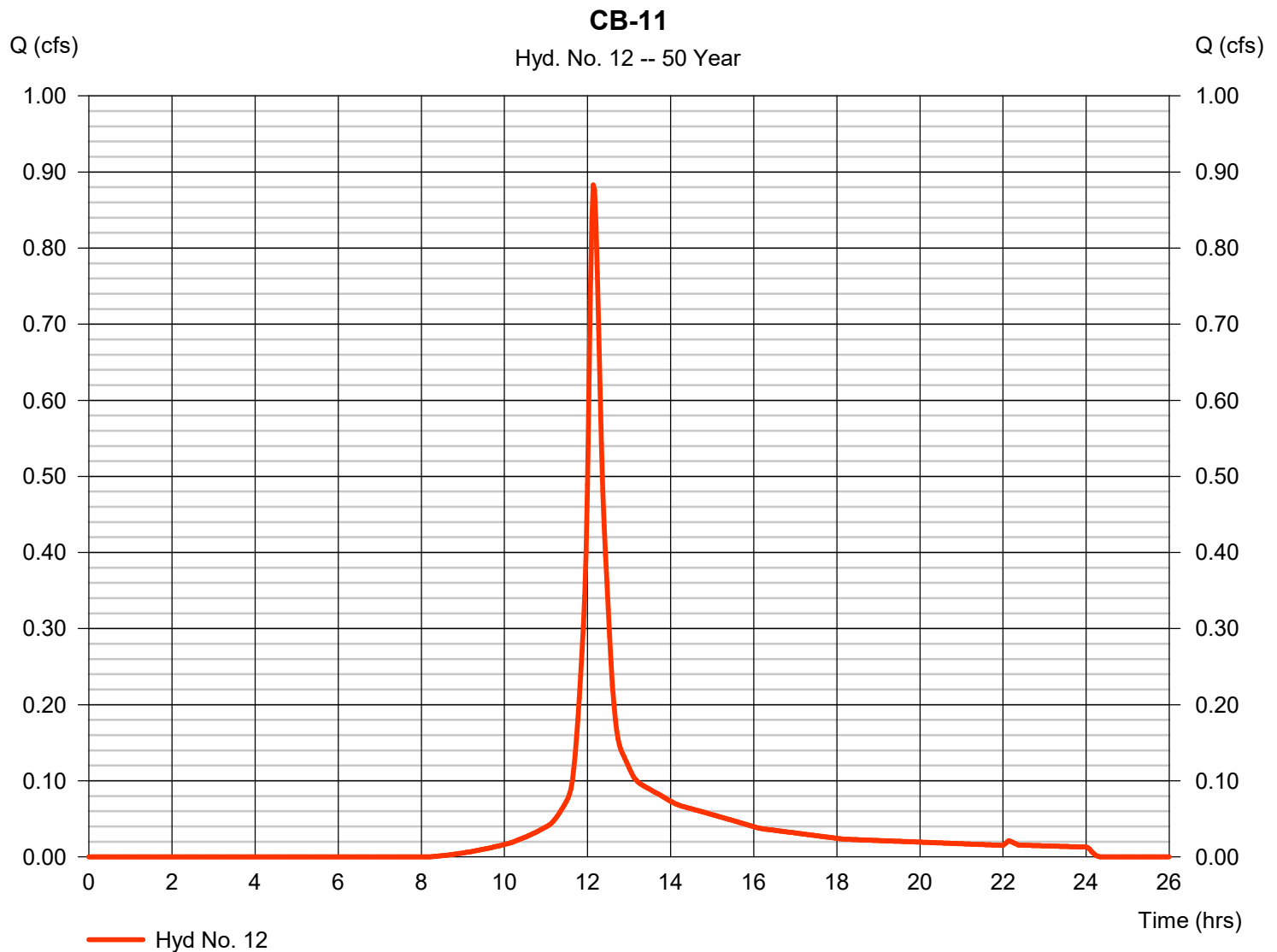
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

Hyd. No. 12

CB-11

Hydrograph type	= SCS Runoff	Peak discharge	= 0.883 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 3,388 cuft
Drainage area	= 0.227 ac	Curve number	= 70
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.90 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

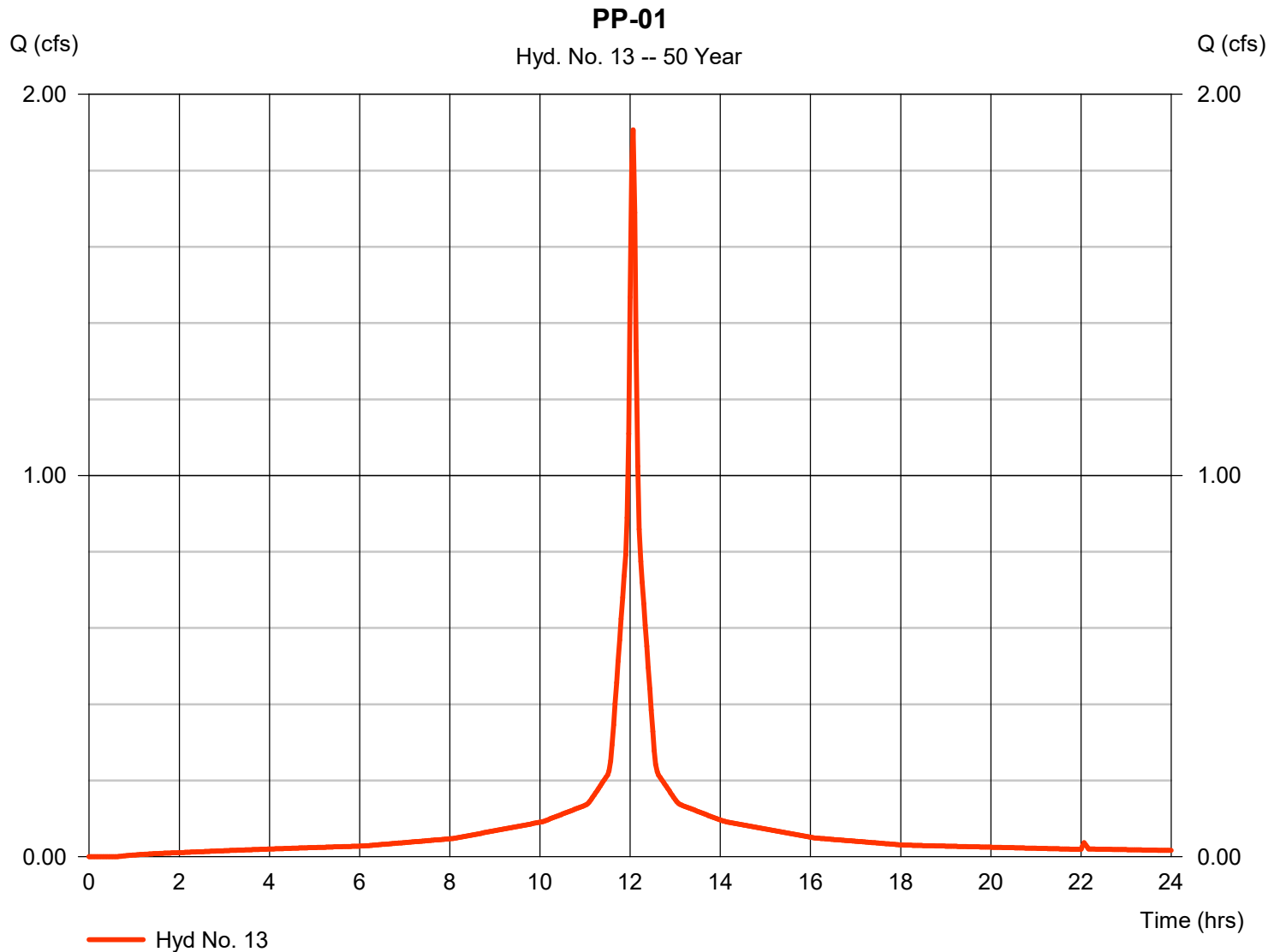
Friday, 07 / 9 / 2021

Hyd. No. 13

PP-01

Hydrograph type = SCS Runoff
 Storm frequency = 50 yrs
 Time interval = 2 min
 Drainage area = 0.271 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 7.44 in
 Storm duration = 24 hrs

Peak discharge = 1.907 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 6,641 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

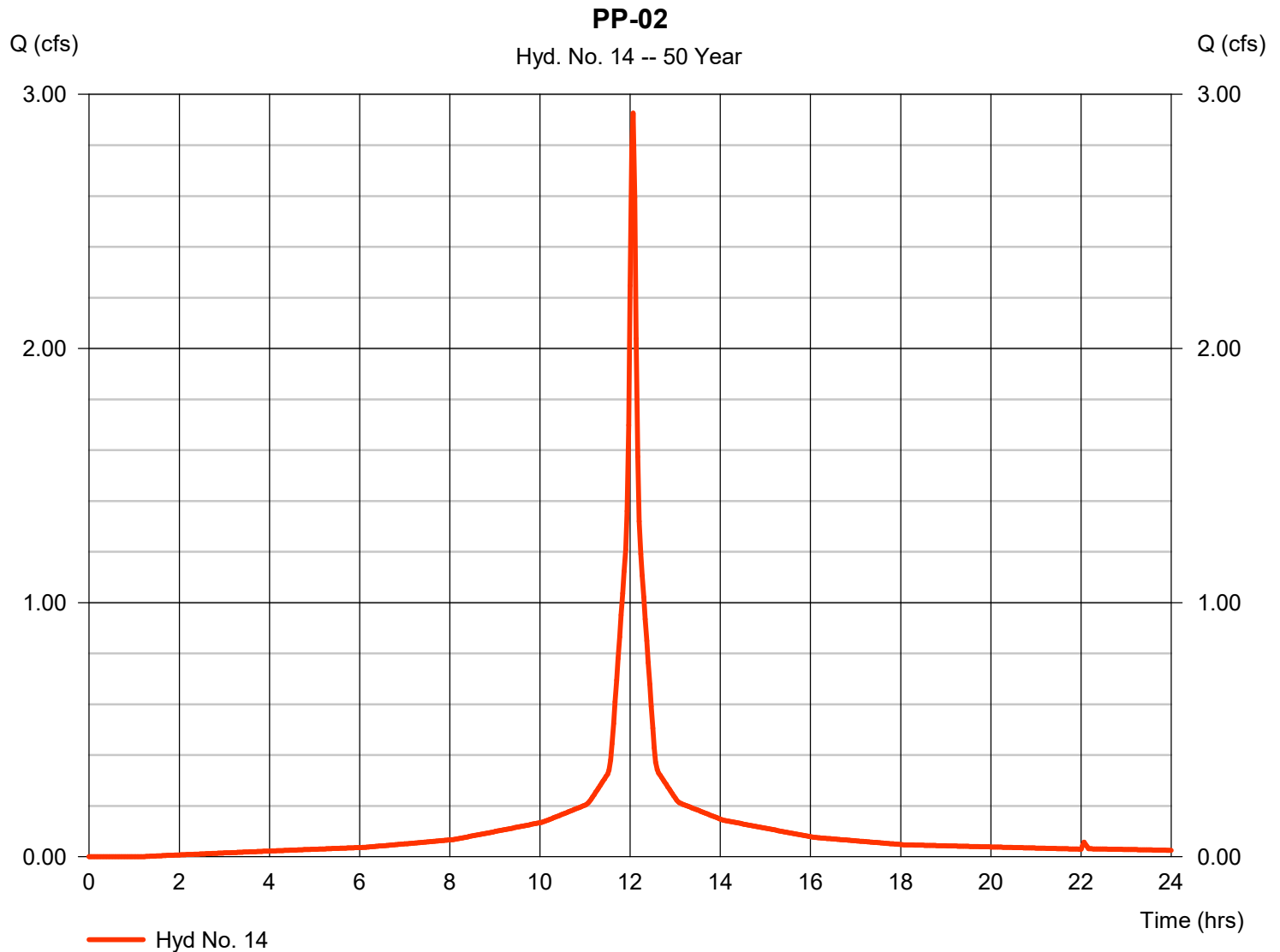
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

Hyd. No. 14

PP-02

Hydrograph type	= SCS Runoff	Peak discharge	= 2.926 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 9,928 cuft
Drainage area	= 0.419 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

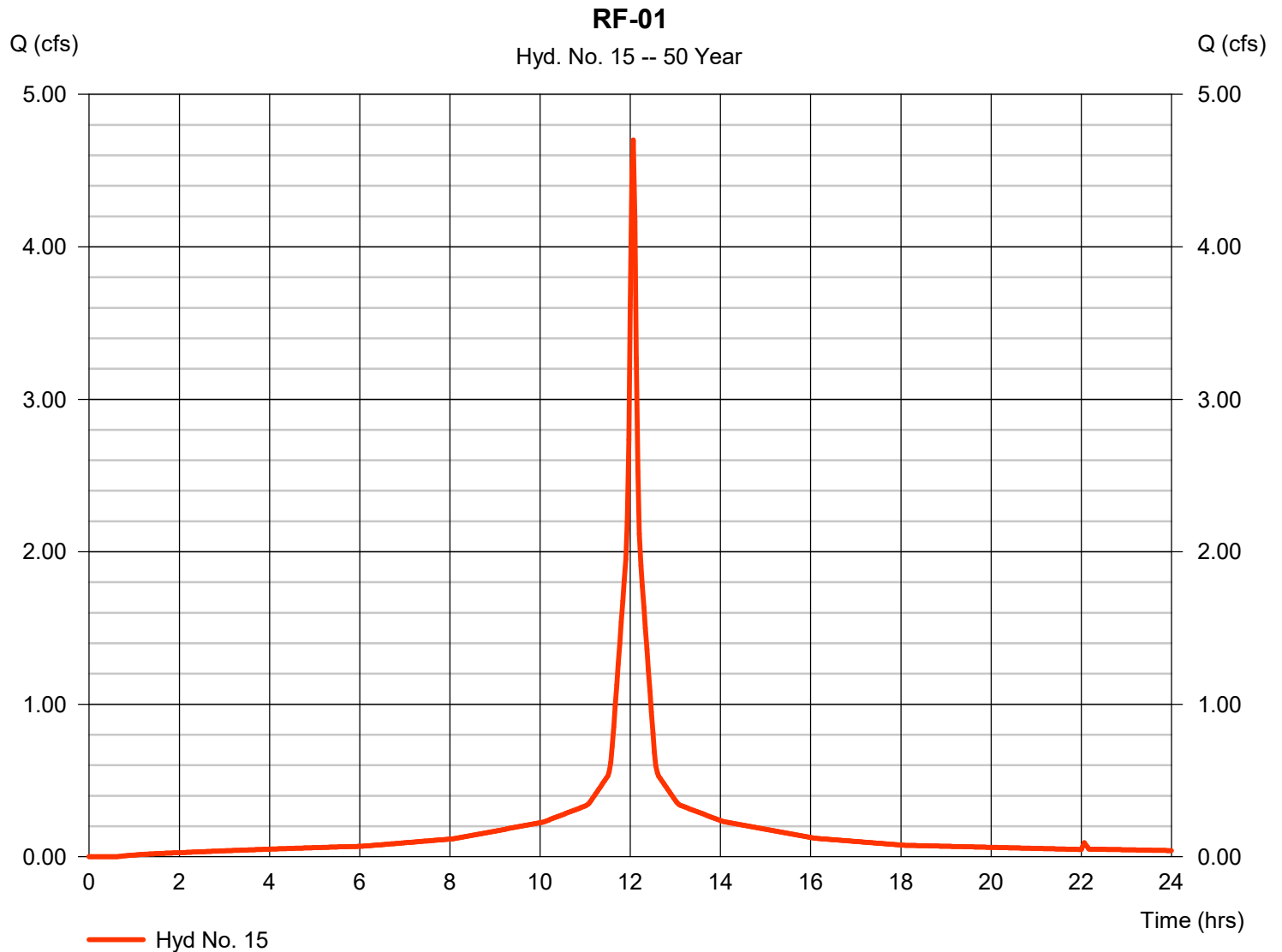
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

Hyd. No. 15

RF-01

Hydrograph type	= SCS Runoff	Peak discharge	= 4.701 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 16,369 cuft
Drainage area	= 0.668 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

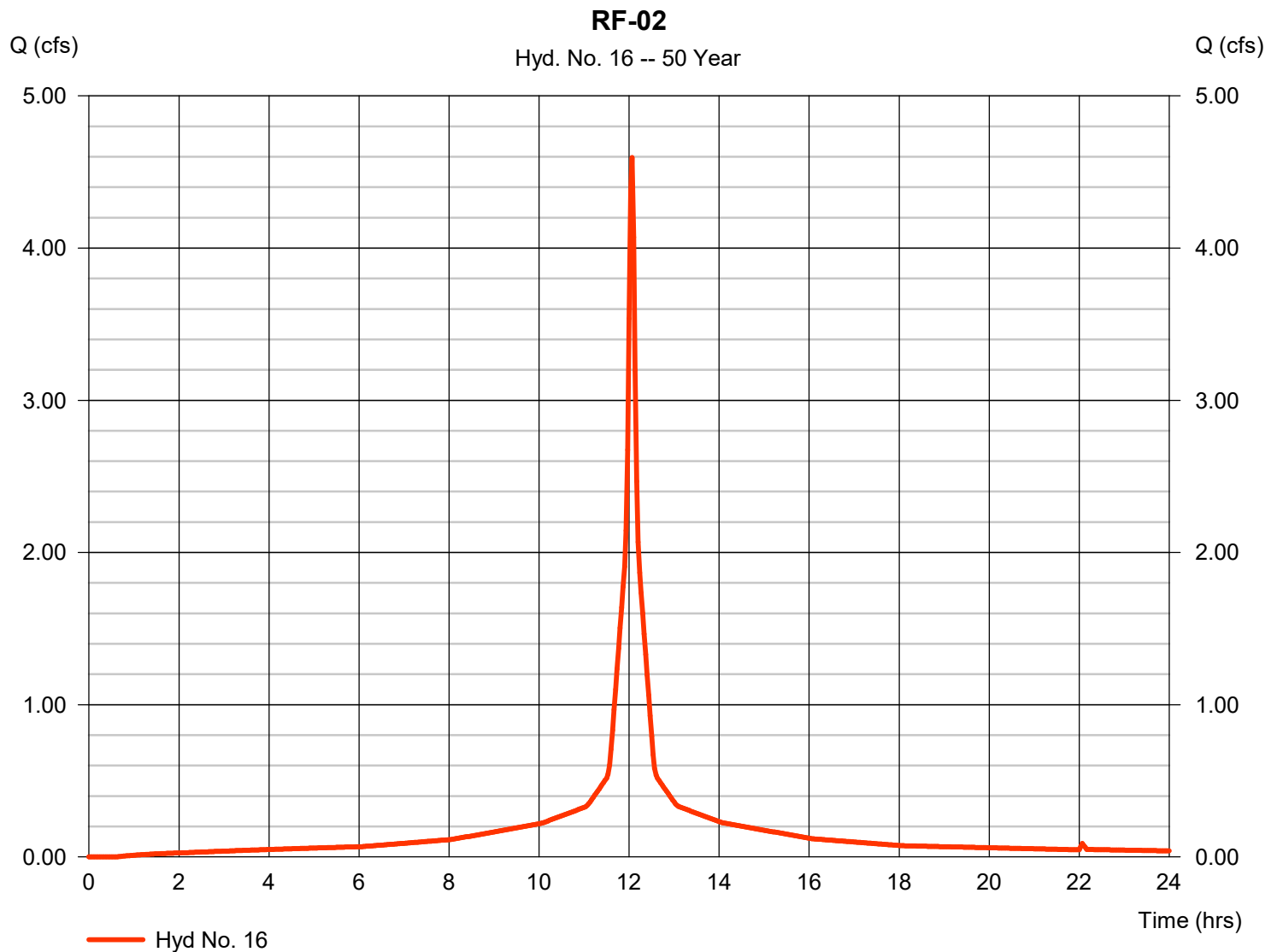
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

Hyd. No. 16

RF-02

Hydrograph type	= SCS Runoff	Peak discharge	= 4.595 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 16,001 cuft
Drainage area	= 0.653 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

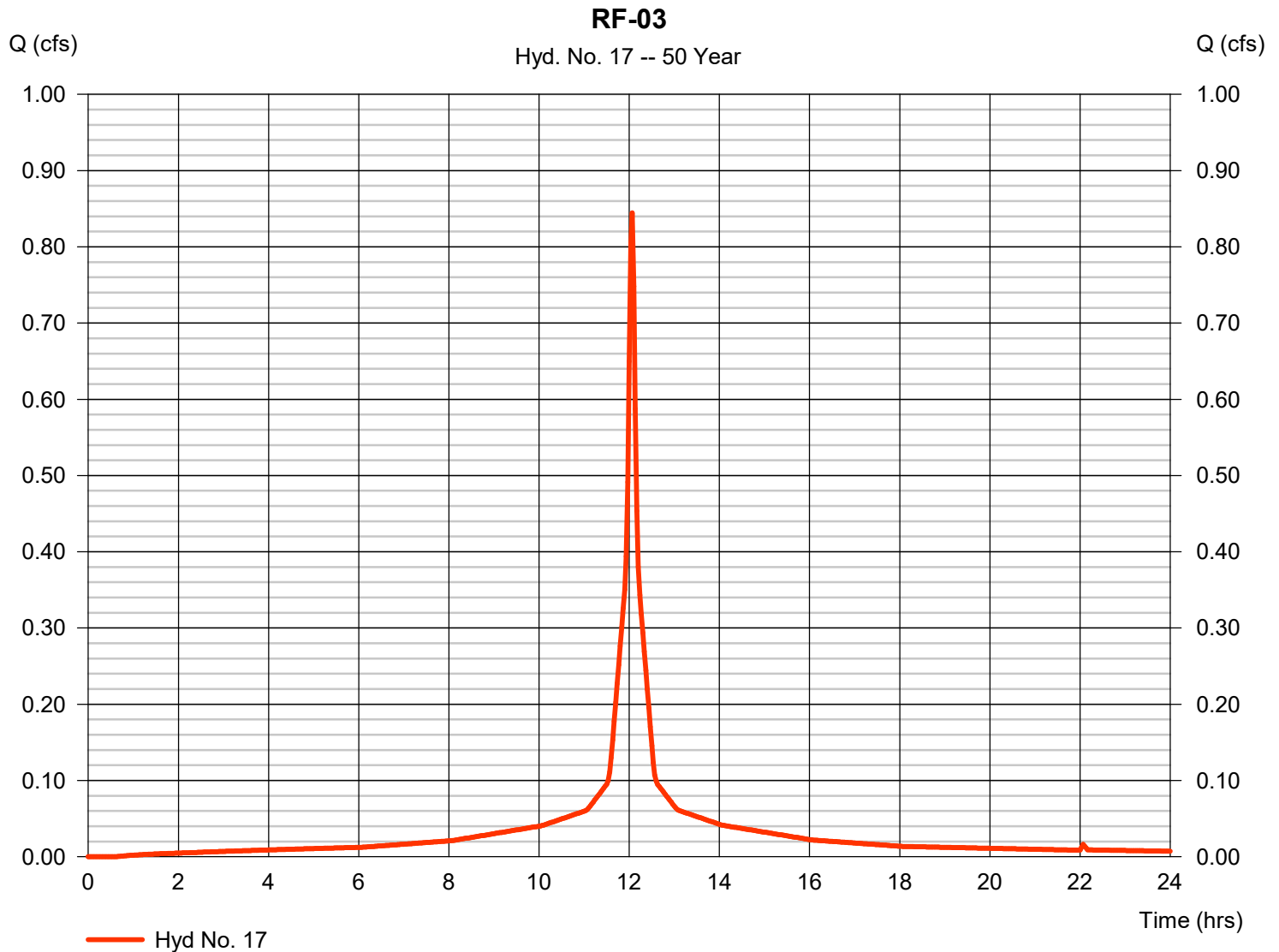
Friday, 07 / 9 / 2021

Hyd. No. 17

RF-03

Hydrograph type = SCS Runoff
 Storm frequency = 50 yrs
 Time interval = 2 min
 Drainage area = 0.120 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 7.44 in
 Storm duration = 24 hrs

Peak discharge = 0.844 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 2,941 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

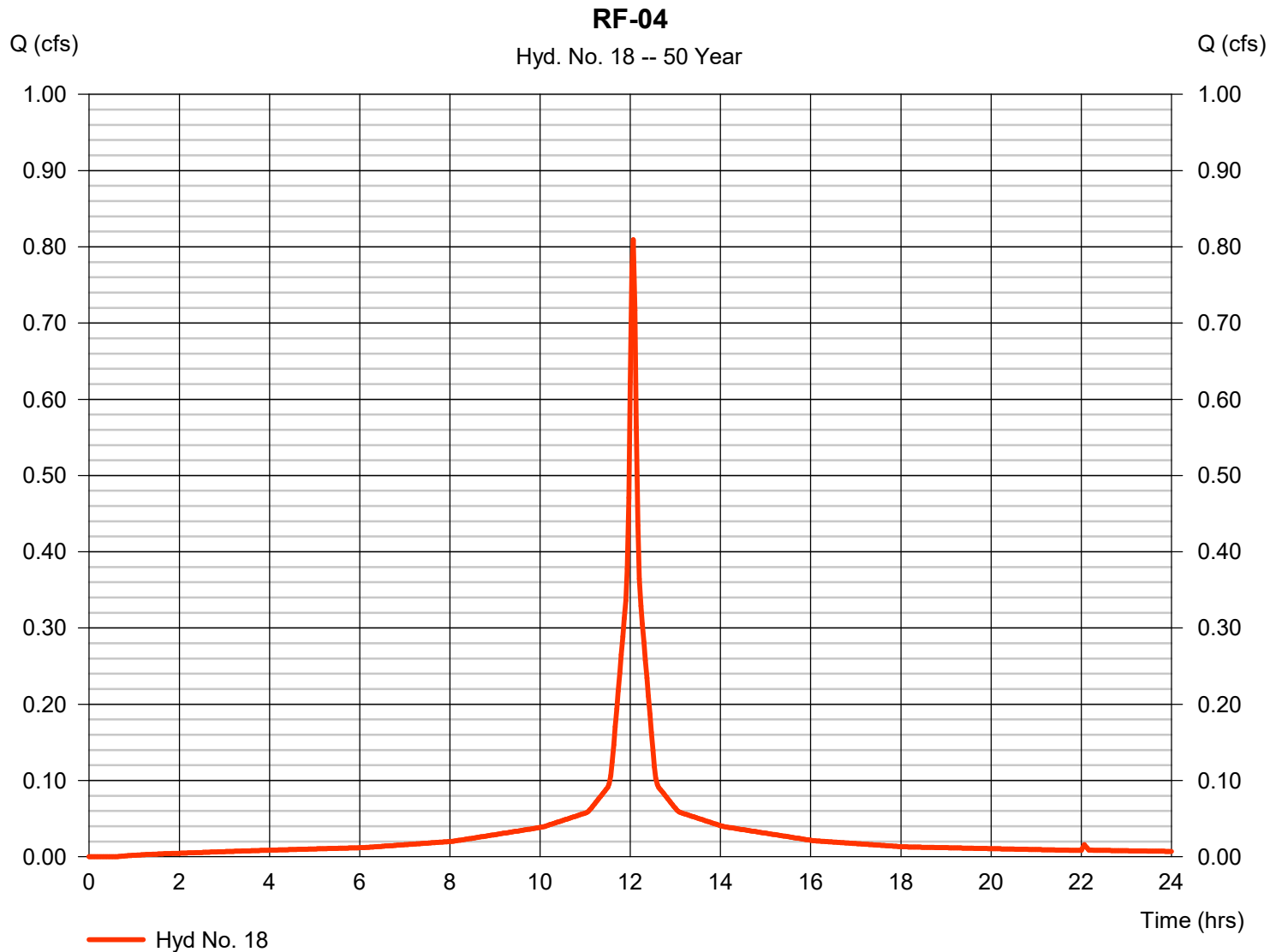
Friday, 07 / 9 / 2021

Hyd. No. 18

RF-04

Hydrograph type = SCS Runoff
 Storm frequency = 50 yrs
 Time interval = 2 min
 Drainage area = 0.115 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 7.44 in
 Storm duration = 24 hrs

Peak discharge = 0.809 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 2,818 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

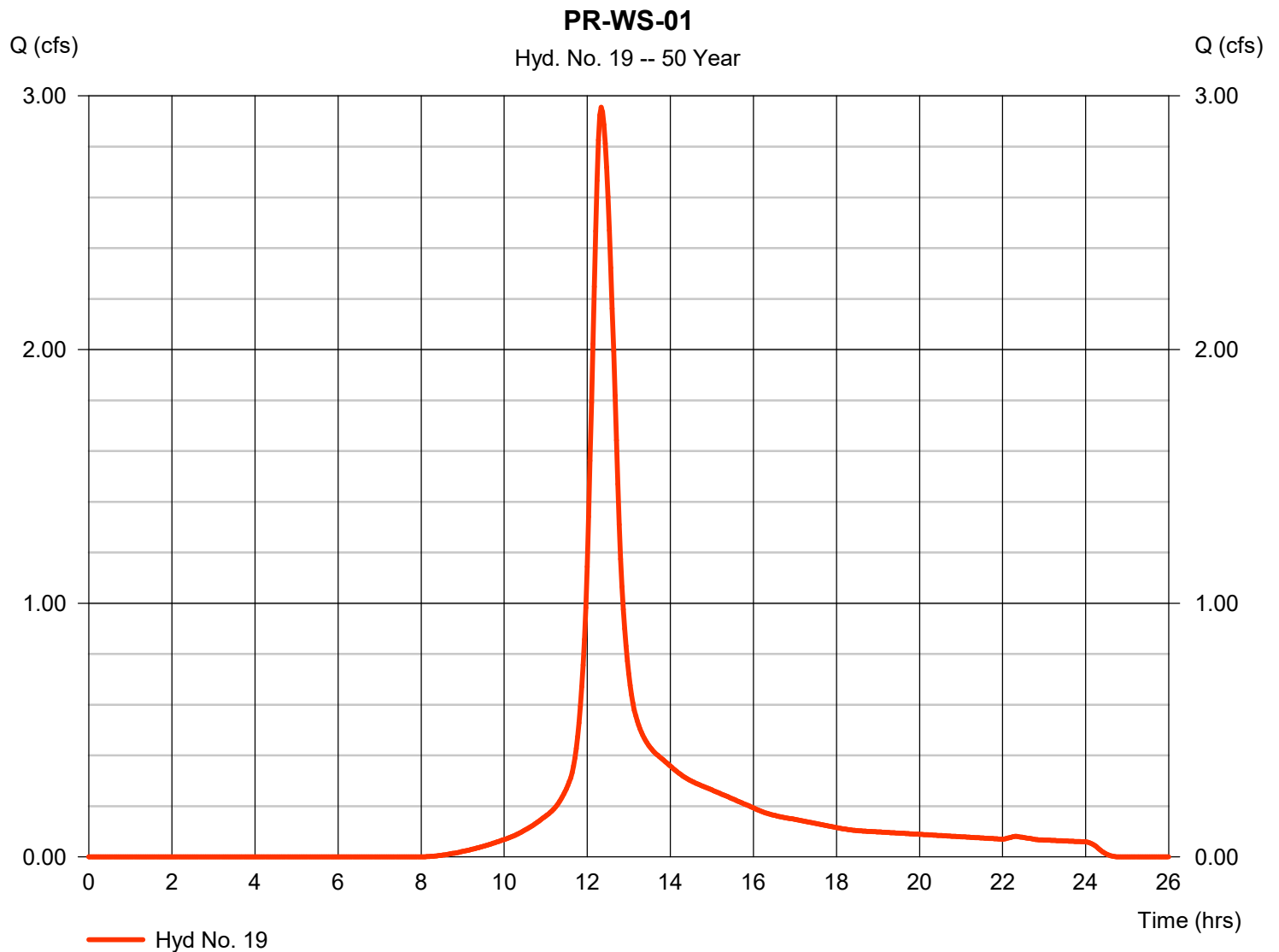
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

Hyd. No. 19

PR-WS-01

Hydrograph type	= SCS Runoff	Peak discharge	= 2.955 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.33 hrs
Time interval	= 2 min	Hyd. volume	= 15,436 cuft
Drainage area	= 1.038 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 27.60 min
Total precip.	= 7.44 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

120

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

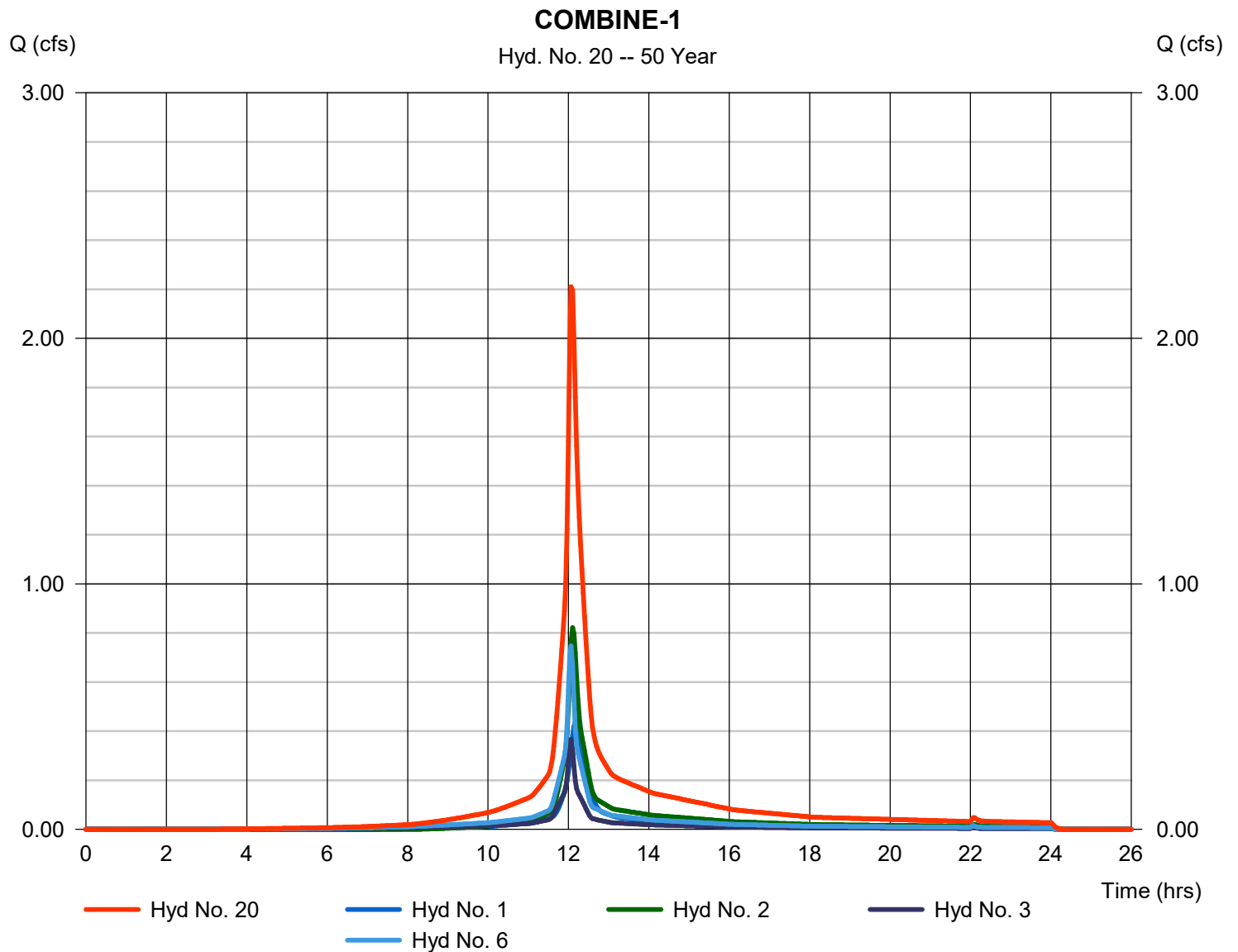
Friday, 07 / 9 / 2021

Hyd. No. 20

COMBINE-1

Hydrograph type = Combine
Storm frequency = 50 yrs
Time interval = 2 min
Inflow hyds. = 1, 2, 3, 6

Peak discharge = 2.210 cfs
Time to peak = 12.07 hrs
Hyd. volume = 8,135 cuft
Contrib. drain. area = 0.471 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

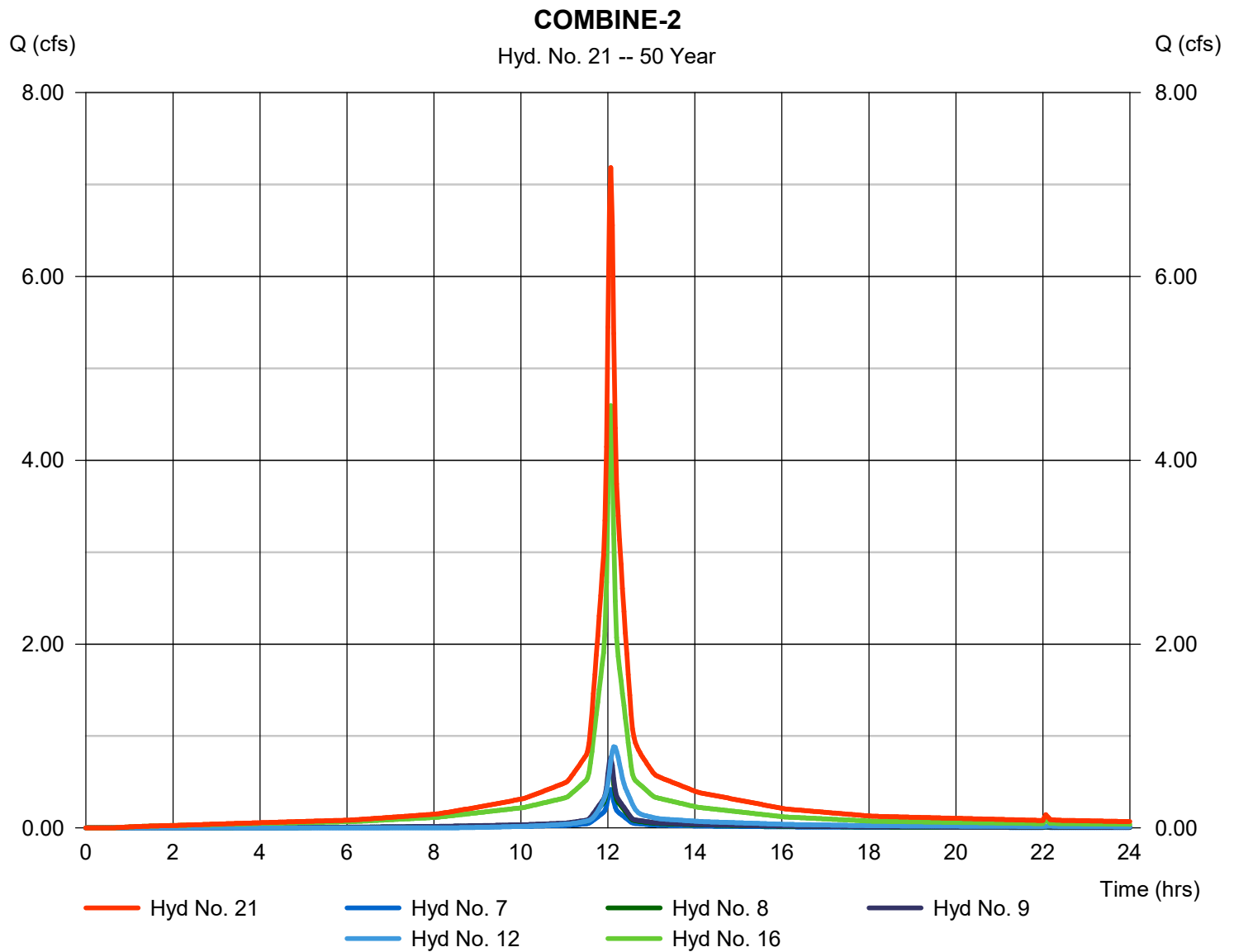
Friday, 07 / 9 / 2021

Hyd. No. 21

COMBINE-2

Hydrograph type = Combine
Storm frequency = 50 yrs
Time interval = 2 min
Inflow hyds. = 7, 8, 9, 12, 16

Peak discharge = 7.186 cfs
Time to peak = 12.07 hrs
Hyd. volume = 25,500 cuft
Contrib. drain. area = 1.152 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

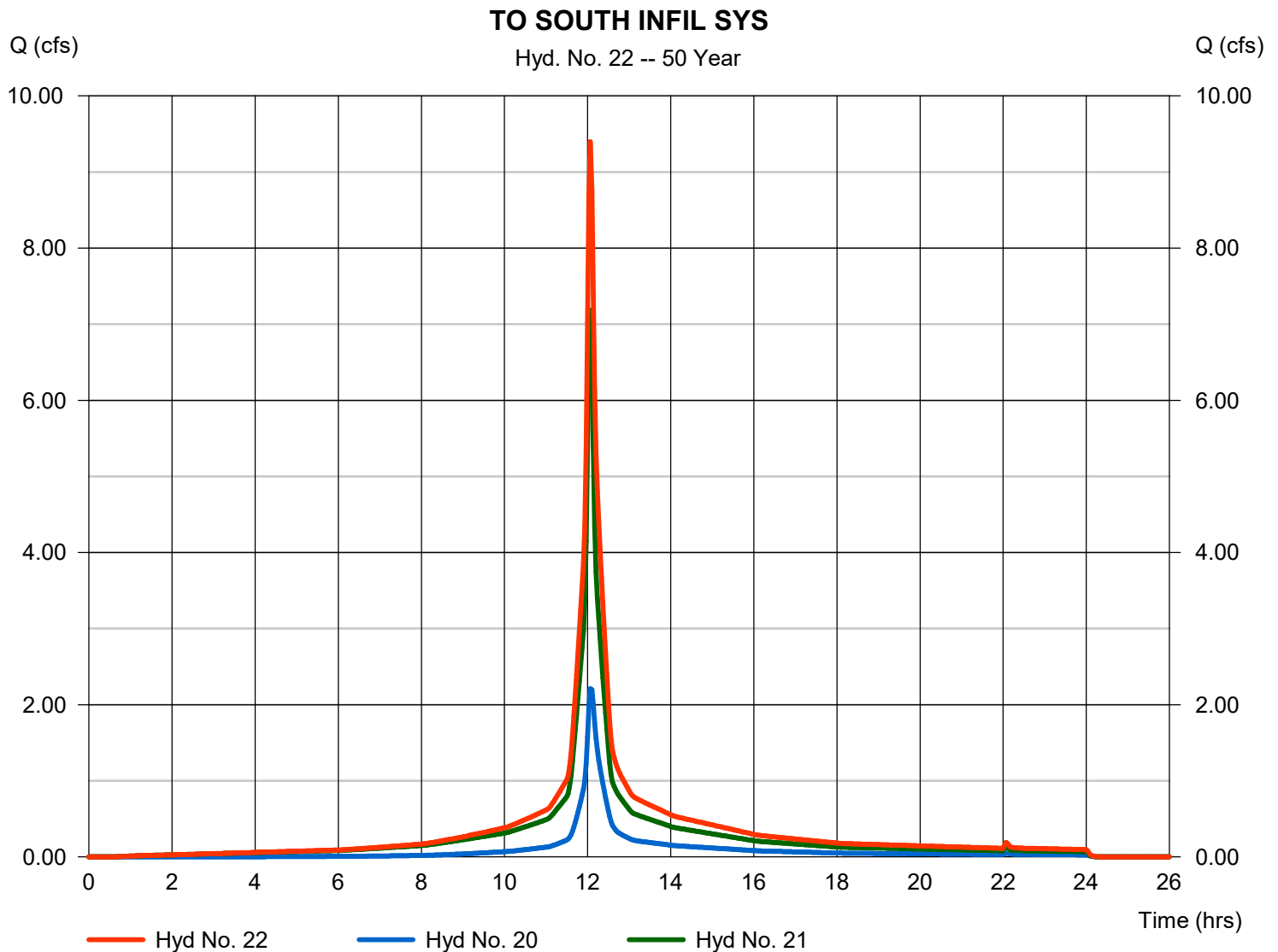
Friday, 07 / 9 / 2021

Hyd. No. 22

TO SOUTH INFIL SYS

Hydrograph type = Combine
Storm frequency = 50 yrs
Time interval = 2 min
Inflow hyds. = 20, 21

Peak discharge = 9.396 cfs
Time to peak = 12.07 hrs
Hyd. volume = 33,635 cuft
Contrib. drain. area = 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

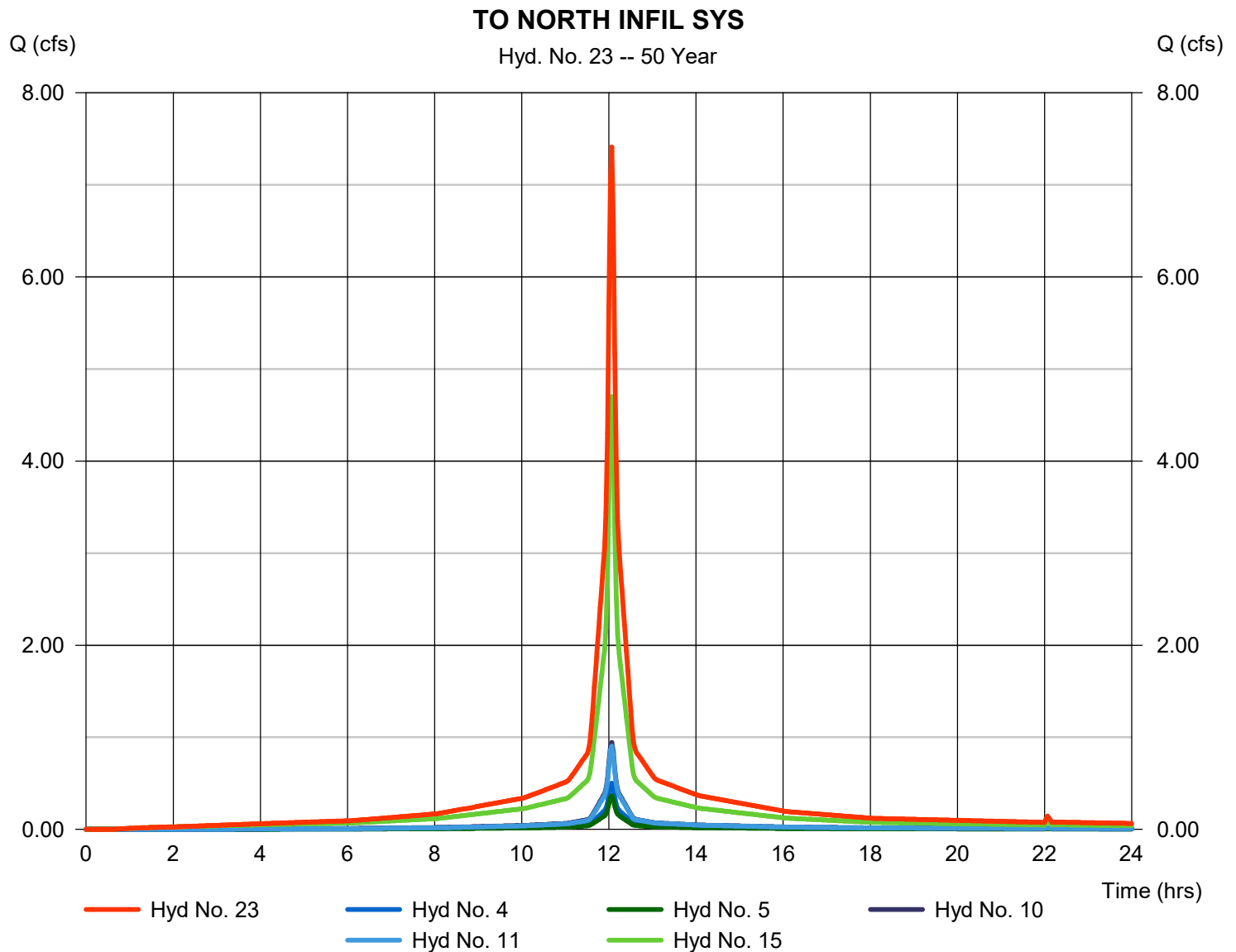
Friday, 07 / 9 / 2021

Hyd. No. 23

TO NORTH INFIL SYS

Hydrograph type = Combine
Storm frequency = 50 yrs
Time interval = 2 min
Inflow hyds. = 4, 5, 10, 11, 15

Peak discharge = 7.413 cfs
Time to peak = 12.07 hrs
Hyd. volume = 25,268 cuft
Contrib. drain. area = 1.065 ac



Hydrograph Report

124

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

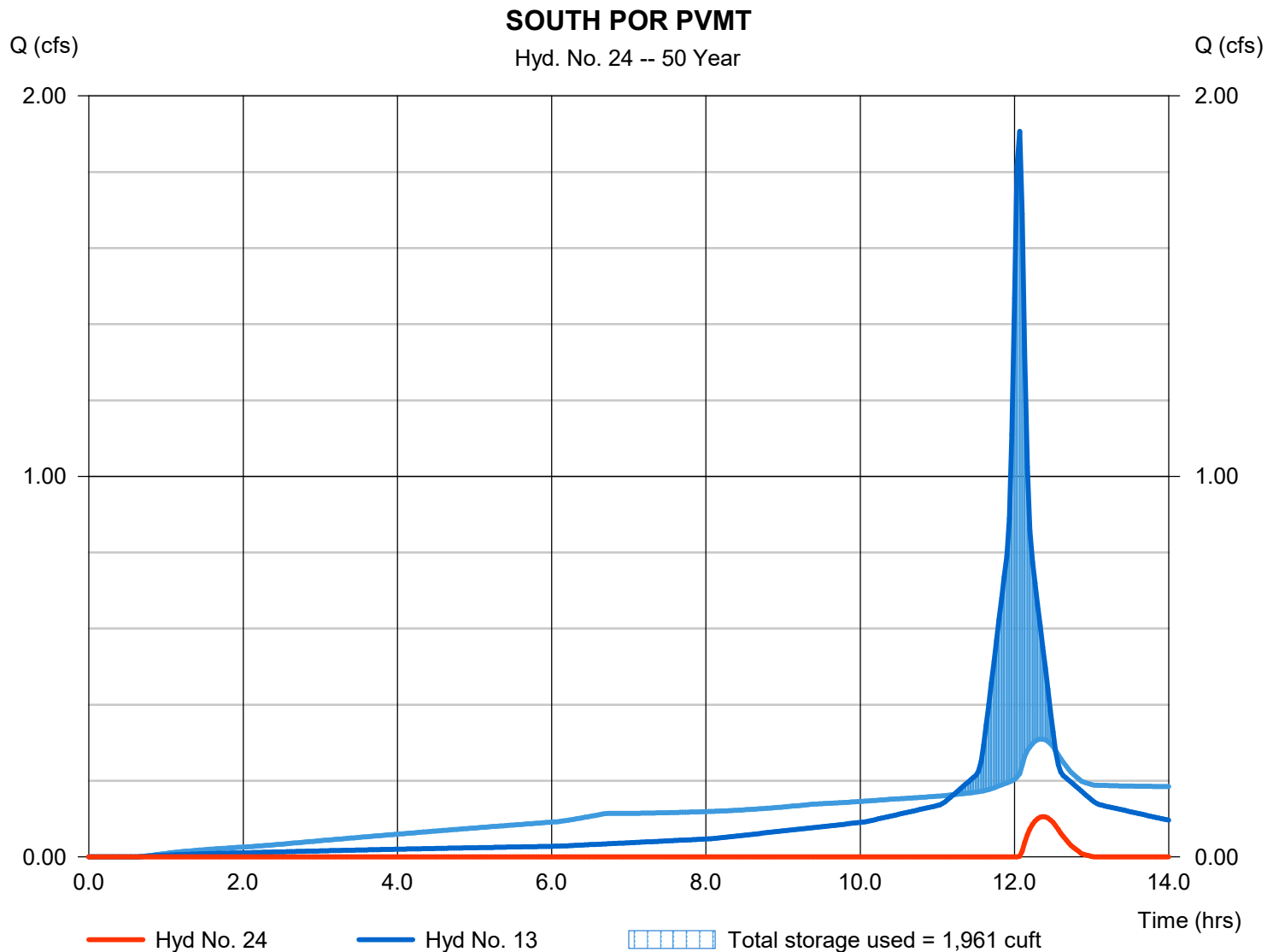
Friday, 07 / 9 / 2021

Hyd. No. 24

SOUTH POR PVMT

Hydrograph type	= Reservoir	Peak discharge	= 0.106 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.37 hrs
Time interval	= 2 min	Hyd. volume	= 184 cuft
Inflow hyd. No.	= 13 - PP-01	Max. Elevation	= 142.19 ft
Reservoir name	= SOUTH POROUS PVMT	Max. Storage	= 1,961 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

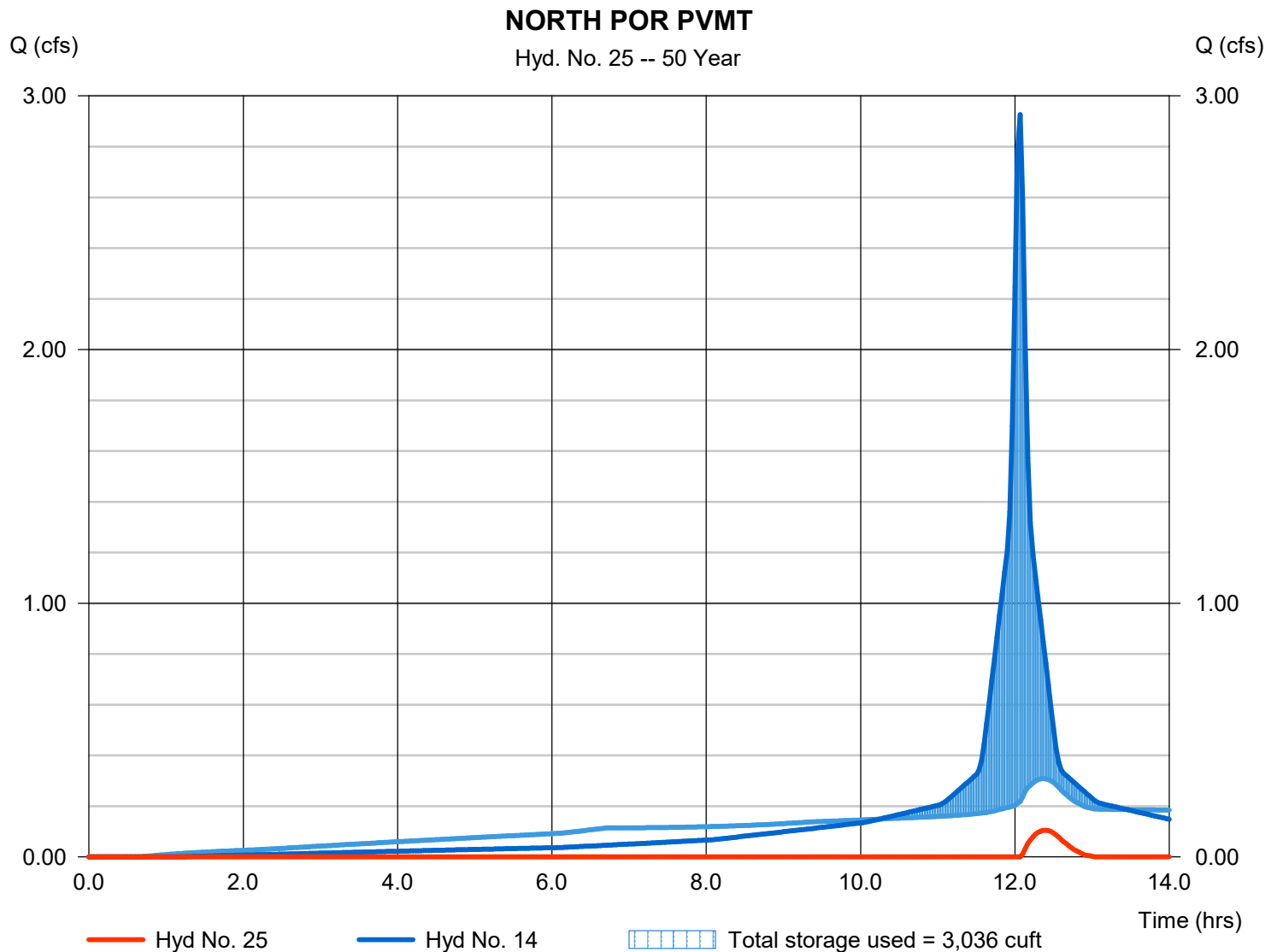
Friday, 07 / 9 / 2021

Hyd. No. 25

NORTH POR PVMT

Hydrograph type	= Reservoir	Peak discharge	= 0.105 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.40 hrs
Time interval	= 2 min	Hyd. volume	= 188 cuft
Inflow hyd. No.	= 14 - PP-02	Max. Elevation	= 141.69 ft
Reservoir name	= NORTH POROUS PVMT	Max. Storage	= 3,036 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

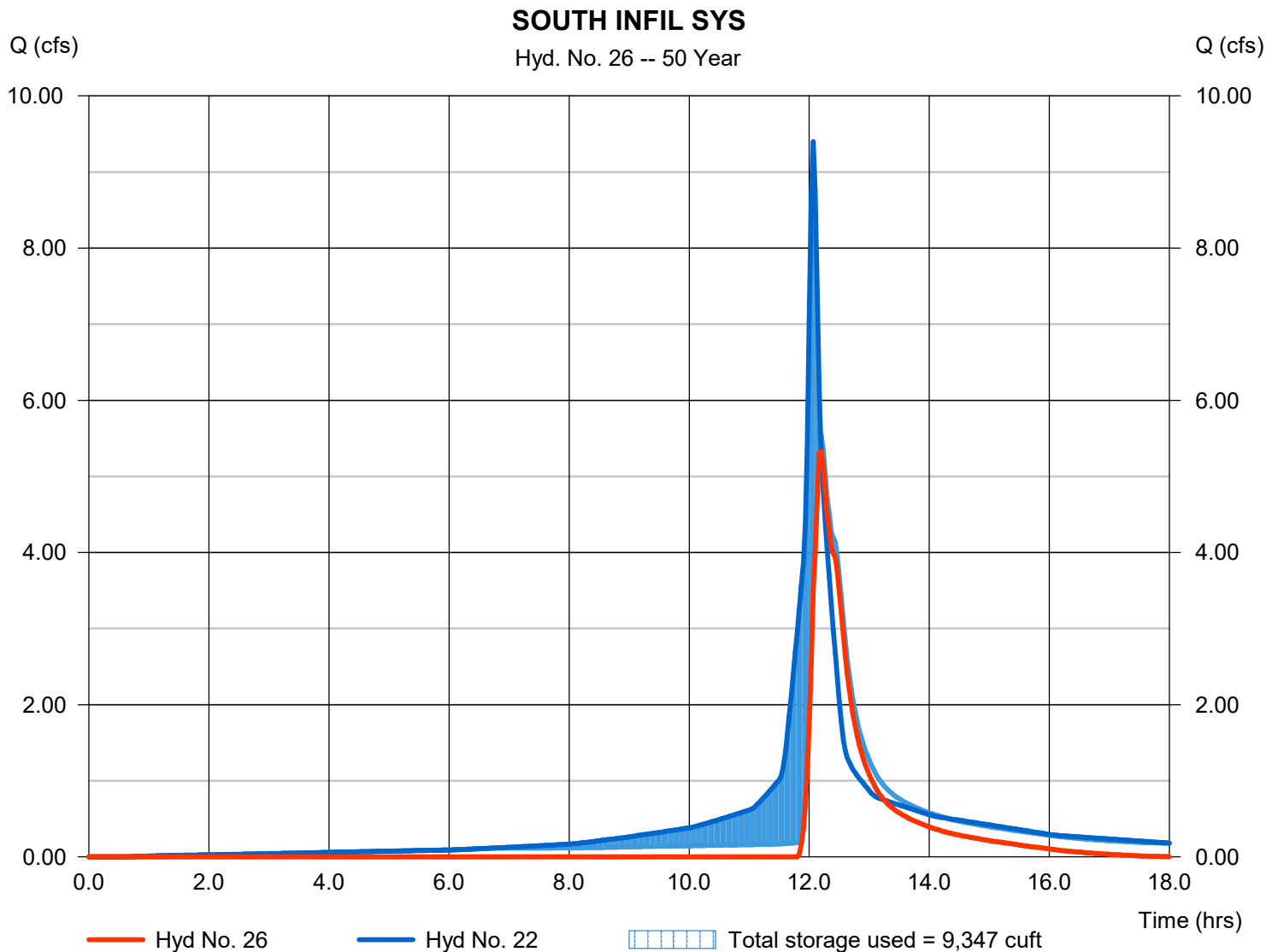
Friday, 07 / 9 / 2021

Hyd. No. 26

SOUTH INFIL SYS

Hydrograph type	= Reservoir	Peak discharge	= 5.328 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 15,547 cuft
Inflow hyd. No.	= 22 - TO SOUTH INFIL SYS	Max. Elevation	= 144.41 ft
Reservoir name	= SOUTH INFIL SYS	Max. Storage	= 9,347 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

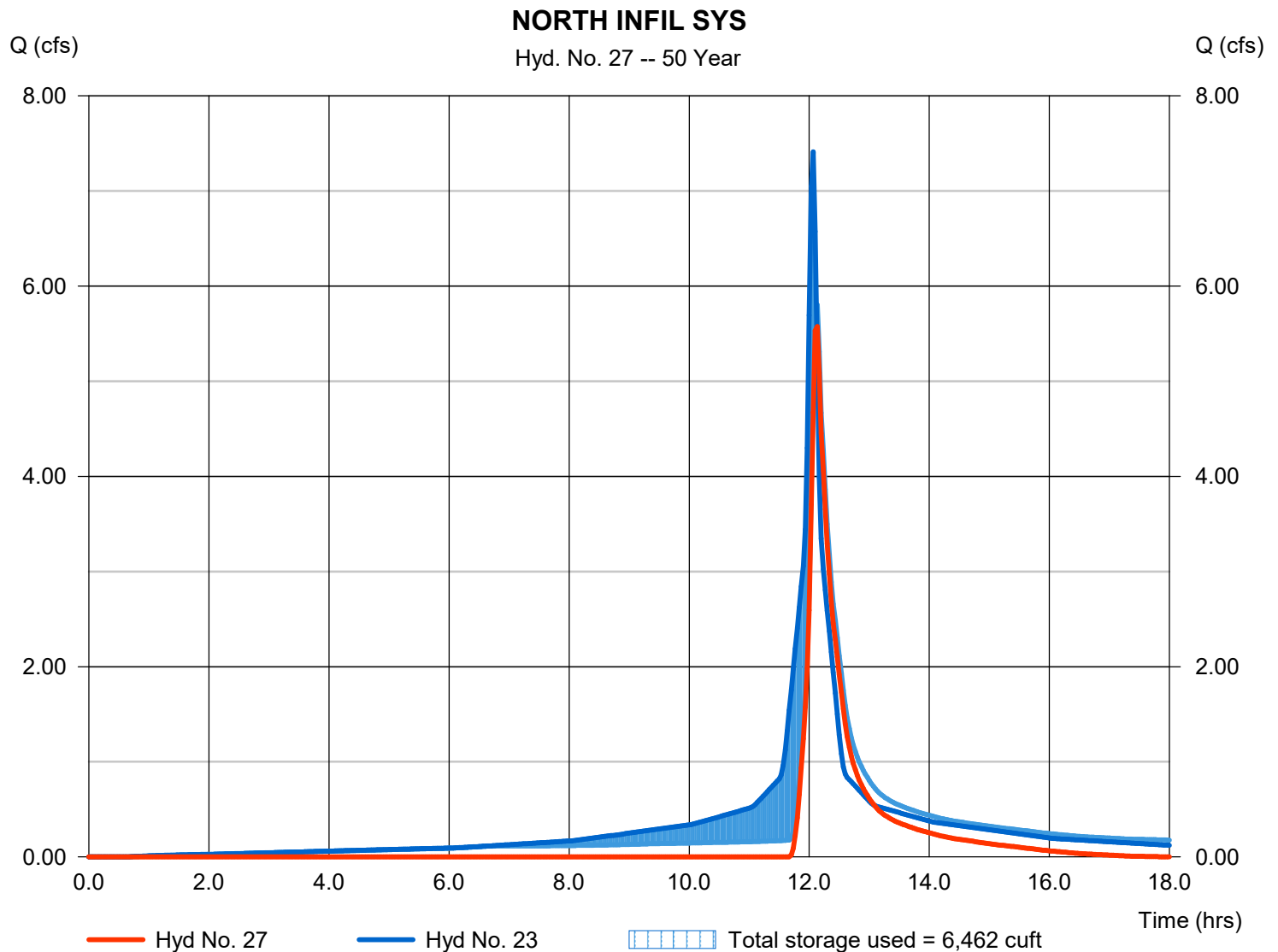
Friday, 07 / 9 / 2021

Hyd. No. 27

NORTH INFIL SYS

Hydrograph type	= Reservoir	Peak discharge	= 5.575 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 12,049 cuft
Inflow hyd. No.	= 23 - TO NORTH INFIL SYS	Max. Elevation	= 144.56 ft
Reservoir name	= NORTH INFIL SYS	Max. Storage	= 6,462 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

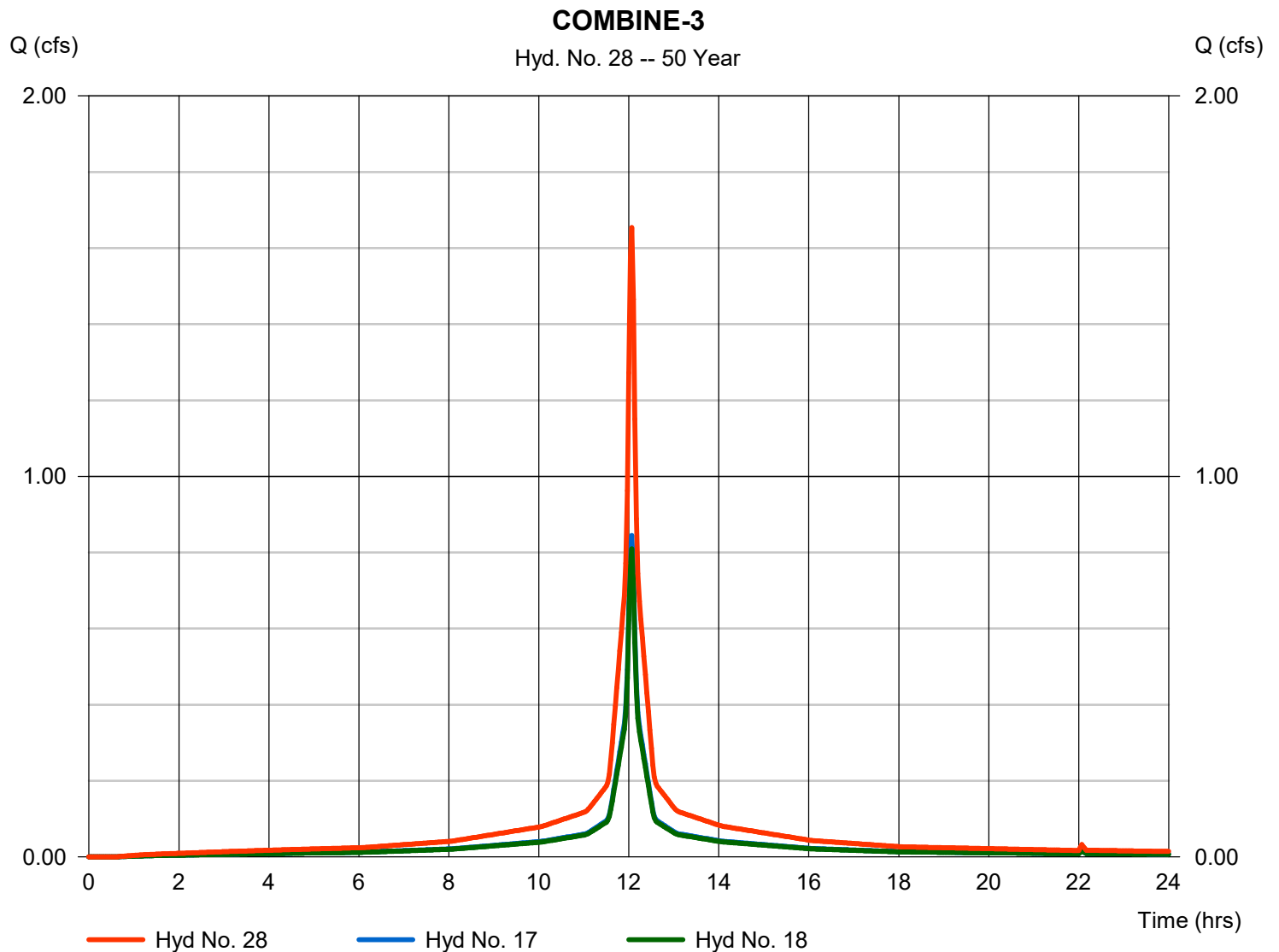
Friday, 07 / 9 / 2021

Hyd. No. 28

COMBINE-3

Hydrograph type = Combine
Storm frequency = 50 yrs
Time interval = 2 min
Inflow hyds. = 17, 18

Peak discharge = 1.654 cfs
Time to peak = 12.07 hrs
Hyd. volume = 5,759 cuft
Contrib. drain. area = 0.235 ac



Hydrograph Report

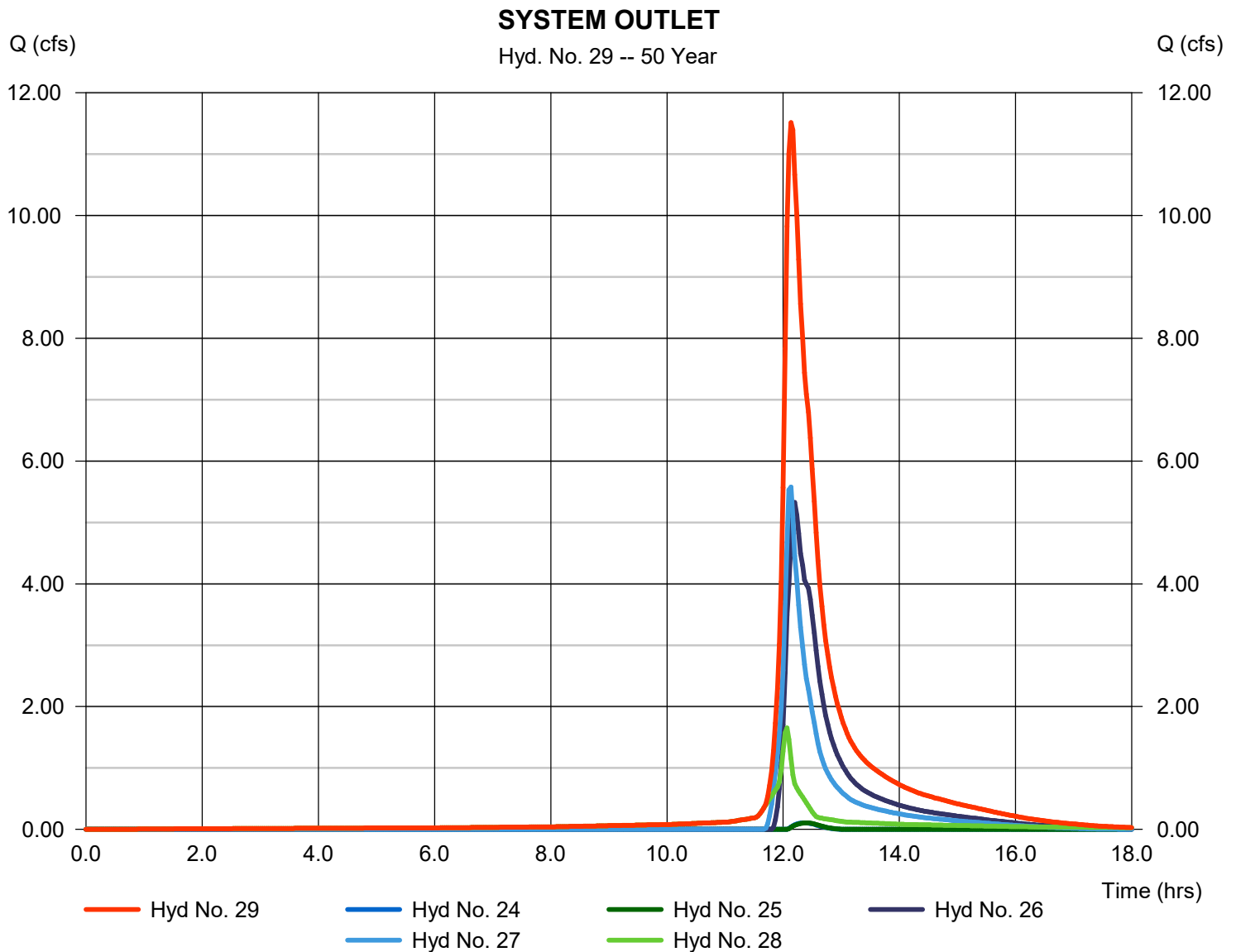
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

Hyd. No. 29

SYSTEM OUTLET

Hydrograph type	= Combine	Peak discharge	= 11.51 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 33,726 cuft
Inflow hyds.	= 24, 25, 26, 27, 28	Contrib. drain. area	= 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

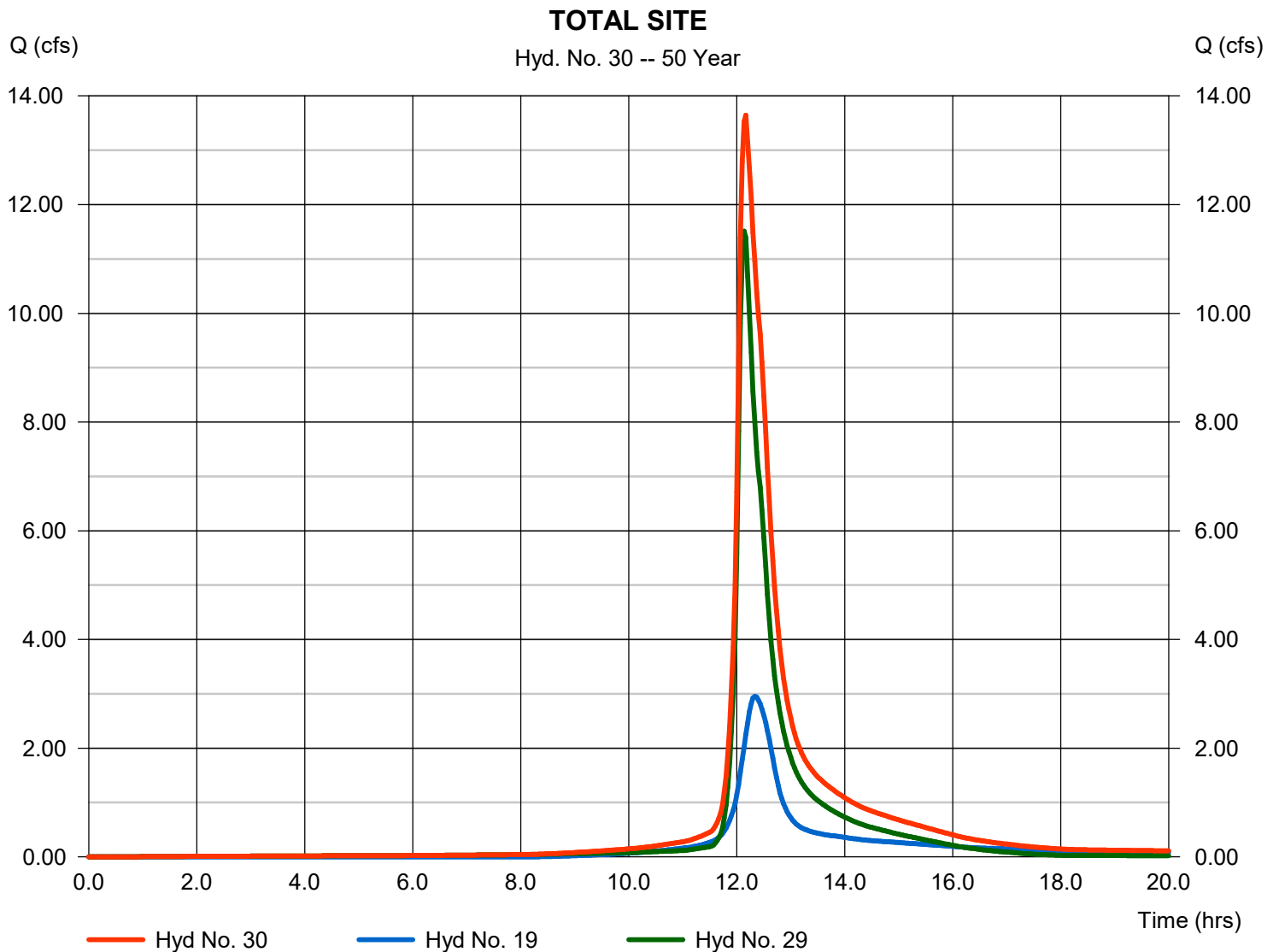
Friday, 07 / 9 / 2021

Hyd. No. 30

TOTAL SITE

Hydrograph type = Combine
Storm frequency = 50 yrs
Time interval = 2 min
Inflow hyds. = 19, 29

Peak discharge = 13.64 cfs
Time to peak = 12.17 hrs
Hyd. volume = 49,162 cuft
Contrib. drain. area = 1.038 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

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	0.514	2	730	2,101	-----	-----	-----	CB-01
2	SCS Runoff	0.987	2	726	3,369	-----	-----	-----	CB-01A
3	SCS Runoff	0.415	2	724	1,362	-----	-----	-----	CB-02
4	SCS Runoff	0.569	2	724	1,866	-----	-----	-----	CB-03
5	SCS Runoff	0.410	2	724	1,358	-----	-----	-----	CB-04
6	SCS Runoff	0.852	2	724	2,712	-----	-----	-----	CB-05
7	SCS Runoff	0.473	2	724	1,538	-----	-----	-----	CB-06
8	SCS Runoff	0.767	2	724	2,537	-----	-----	-----	CB-07
9	SCS Runoff	0.865	2	724	2,890	-----	-----	-----	CB-08
10	SCS Runoff	1.068	2	724	3,567	-----	-----	-----	CB-09
11	SCS Runoff	1.023	2	724	3,354	-----	-----	-----	CB-10
12	SCS Runoff	1.061	2	728	4,065	-----	-----	-----	CB-11
13	SCS Runoff	2.147	2	724	7,498	-----	-----	-----	PP-01
14	SCS Runoff	3.298	2	724	11,250	-----	-----	-----	PP-02
15	SCS Runoff	5.291	2	724	18,482	-----	-----	-----	RF-01
16	SCS Runoff	5.172	2	724	18,067	-----	-----	-----	RF-02
17	SCS Runoff	0.951	2	724	3,320	-----	-----	-----	RF-03
18	SCS Runoff	0.911	2	724	3,182	-----	-----	-----	RF-04
19	SCS Runoff	3.537	2	740	18,471	-----	-----	-----	PR-WS-01
20	Combine	2.583	2	724	9,543	1, 2, 3, 6,	-----	-----	COMBINE-1
21	Combine	8.161	2	724	29,097	7, 8, 9, 12, 16,	-----	-----	COMBINE-2
22	Combine	10.74	2	724	38,640	20, 21	-----	-----	TO SOUTH INFIL SYS
23	Combine	8.361	2	724	28,626	4, 5, 10, 11, 15,	-----	-----	TO NORTH INFIL SYS
24	Reservoir	0.191	2	742	397	13	142.28	2,200	SOUTH POR PVMT
25	Reservoir	0.200	2	744	446	14	141.79	3,450	NORTH POR PVMT
26	Reservoir	7.056	2	730	19,539	22	144.94	9,955	SOUTH INFIL SYS
27	Reservoir	6.513	2	726	14,748	23	144.89	6,718	NORTH INFIL SYS
28	Combine	1.861	2	724	6,502	17, 18,	-----	-----	COMBINE-3
29	Combine	14.90	2	728	41,632	24, 25, 26, 27, 28	-----	-----	SYSTEM OUTLET
30	Combine	17.35	2	728	60,103	19, 29	-----	-----	TOTAL SITE
F0173-02 Hydrographs - Proposed.gpw					Return Period: 100 Year			Friday, 07 / 9 / 2021	

Hydrograph Report

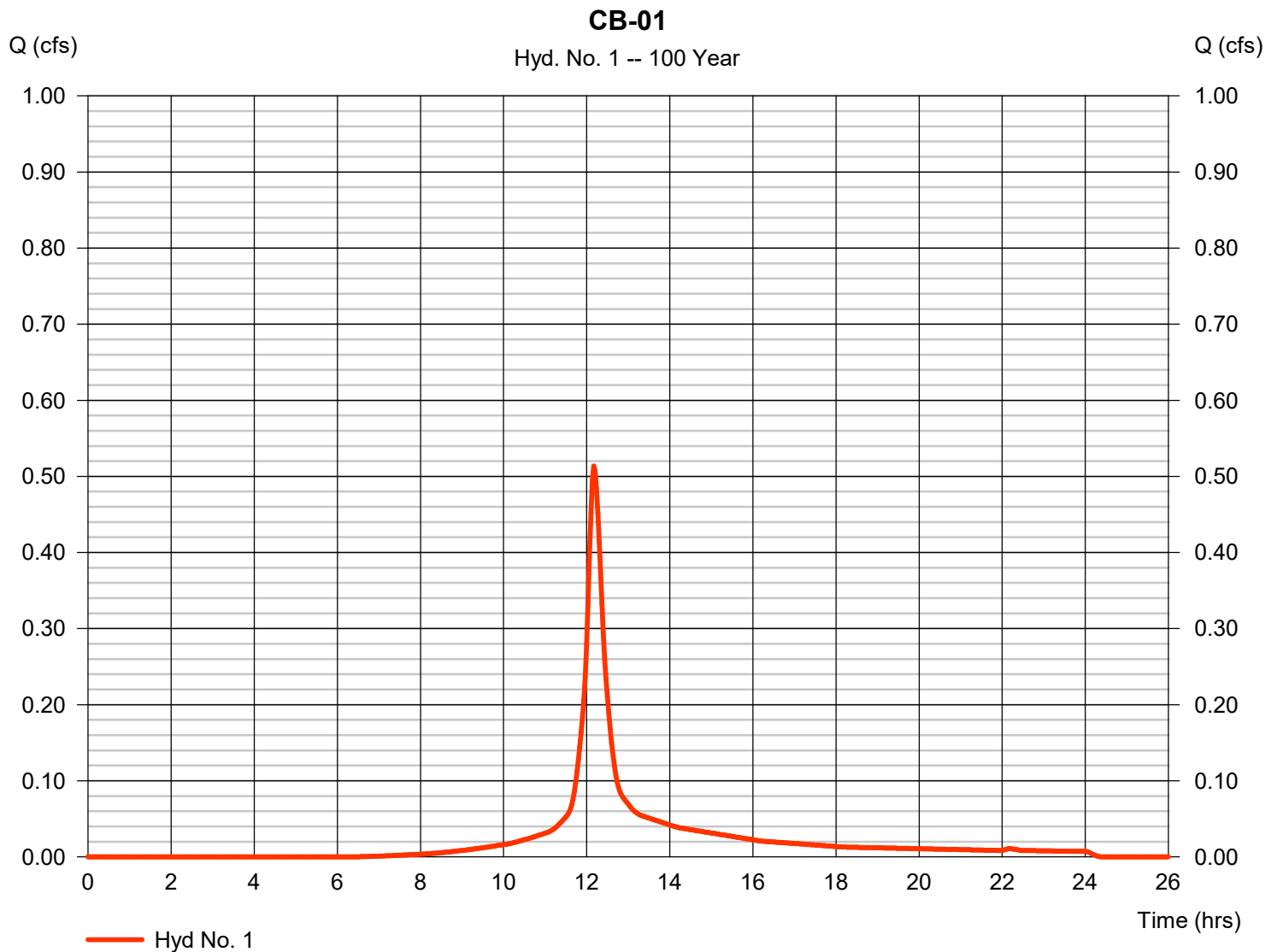
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

Hyd. No. 1

CB-01

Hydrograph type	= SCS Runoff	Peak discharge	= 0.514 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 2,101 cuft
Drainage area	= 0.108 ac	Curve number	= 76
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 14.20 min
Total precip.	= 8.37 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

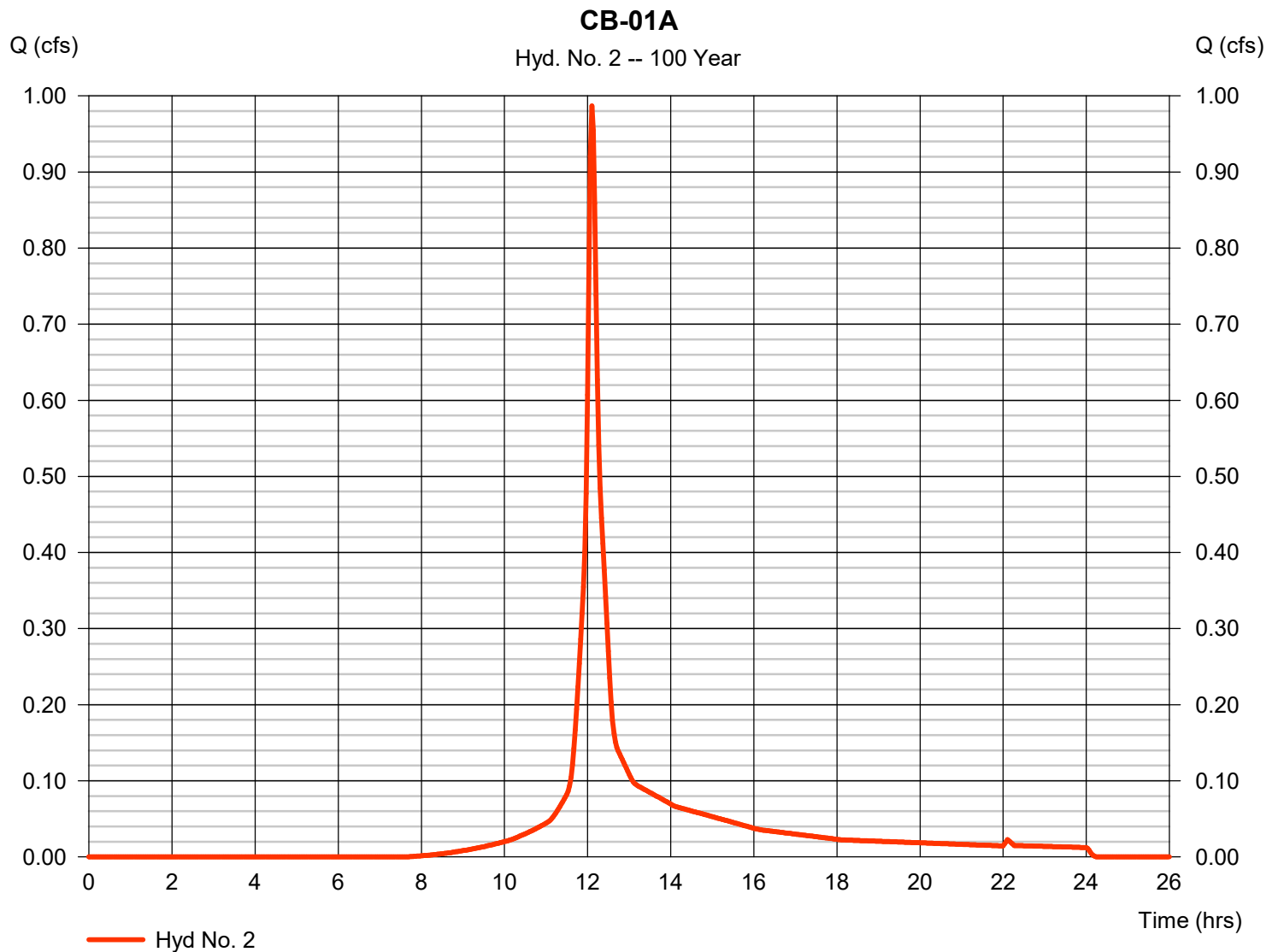
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

Hyd. No. 2

CB-01A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.987 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 3,369 cuft
Drainage area	= 0.194 ac	Curve number	= 70
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 7.80 min
Total precip.	= 8.37 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

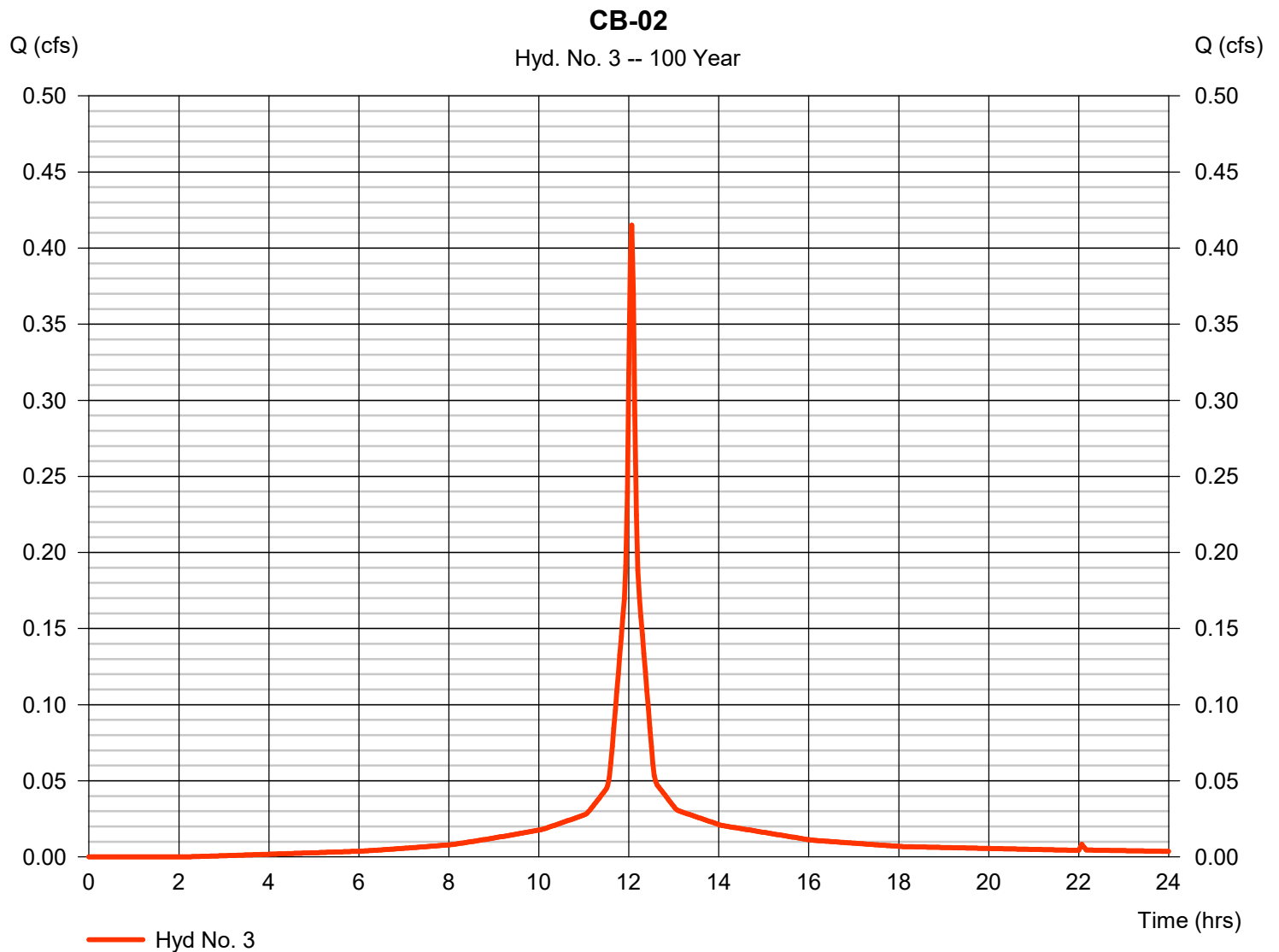
Friday, 07 / 9 / 2021

Hyd. No. 3

CB-02

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 2 min
 Drainage area = 0.054 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 8.37 in
 Storm duration = 24 hrs

Peak discharge = 0.415 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 1,362 cuft
 Curve number = 92
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

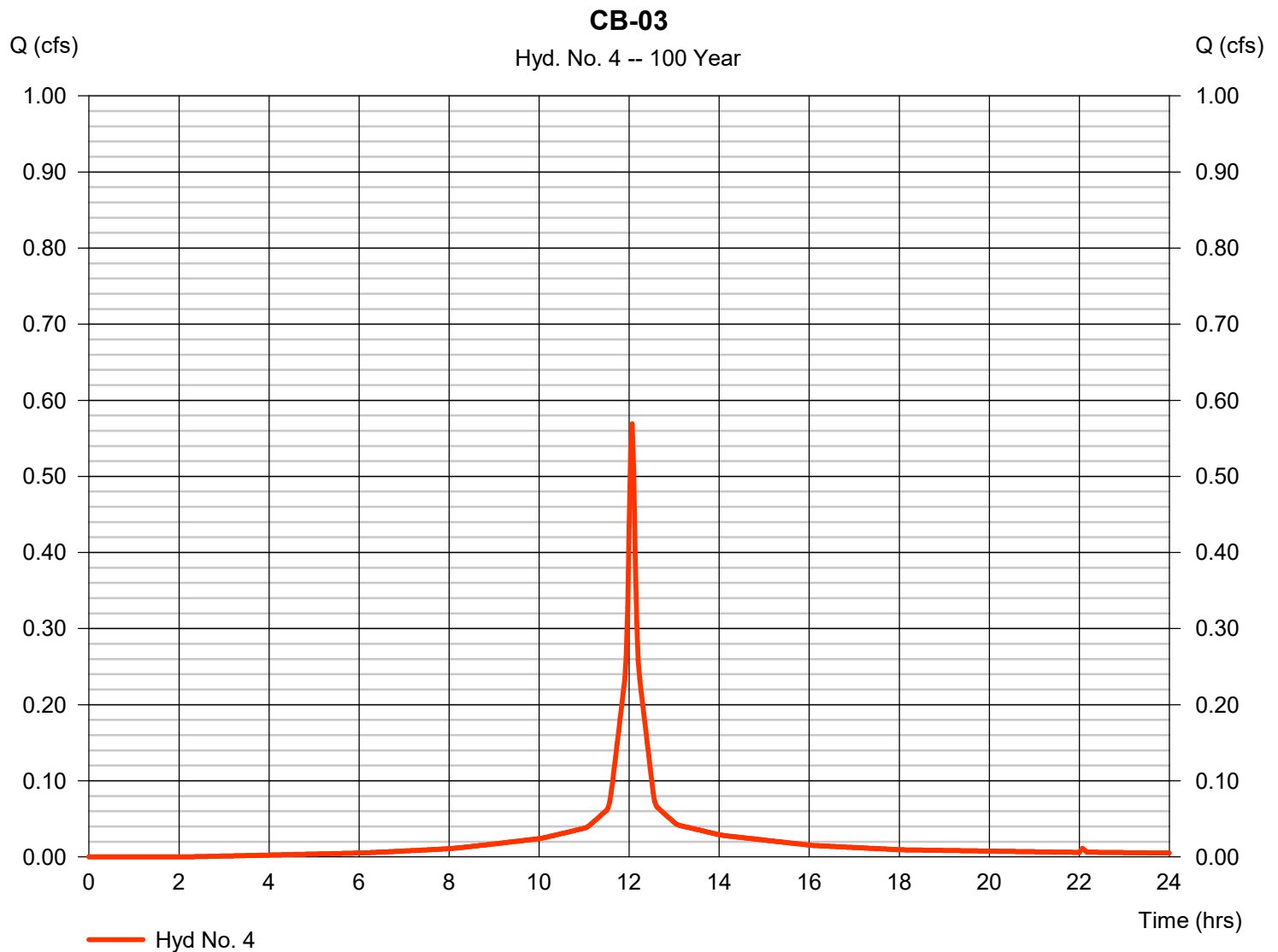
Friday, 07 / 9 / 2021

Hyd. No. 4

CB-03

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 2 min
 Drainage area = 0.074 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 8.37 in
 Storm duration = 24 hrs

Peak discharge = 0.569 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 1,866 cuft
 Curve number = 92
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

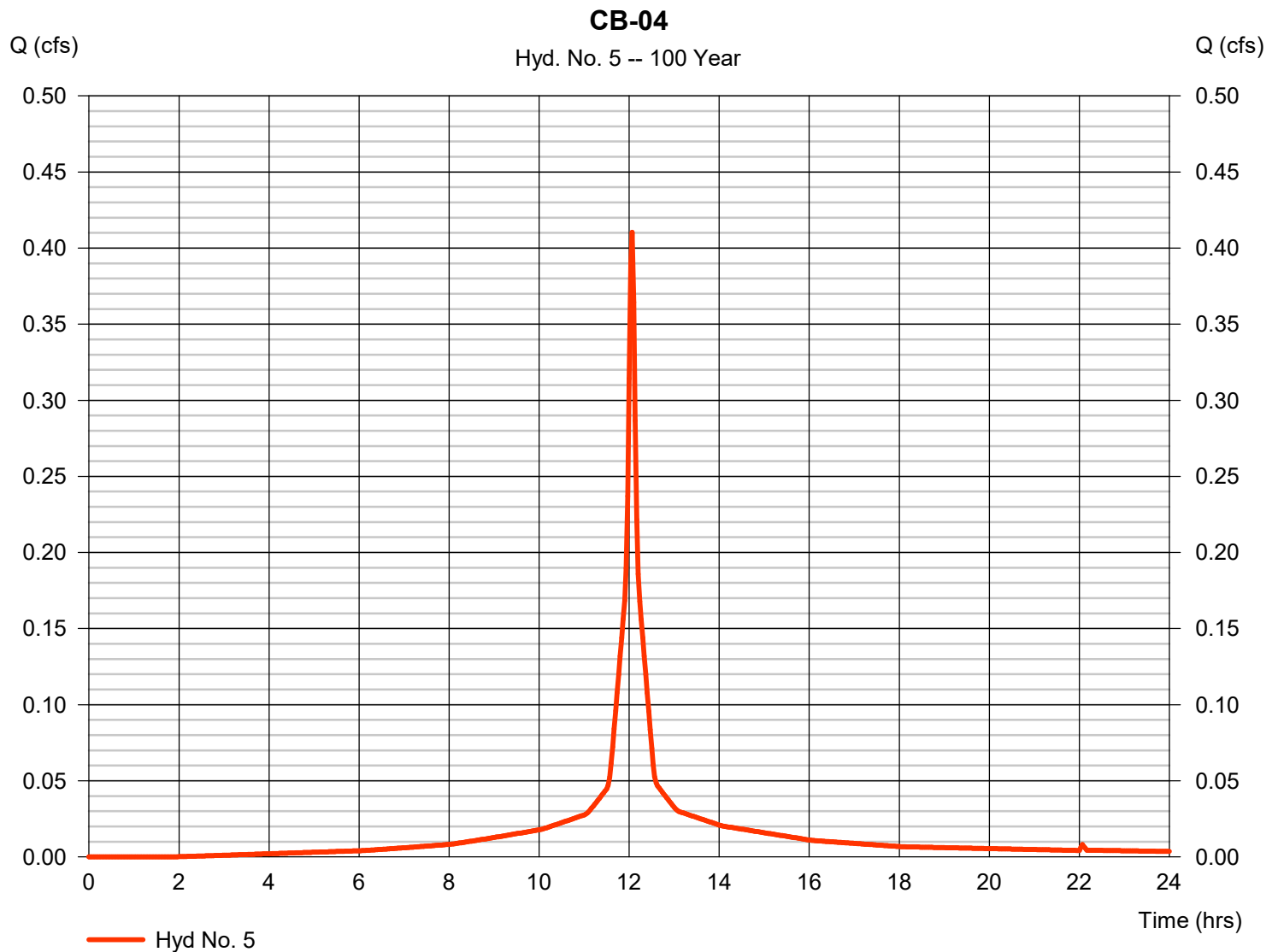
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

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Hyd. No. 5

CB-04

Hydrograph type	= SCS Runoff	Peak discharge	= 0.410 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,358 cuft
Drainage area	= 0.053 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 8.37 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

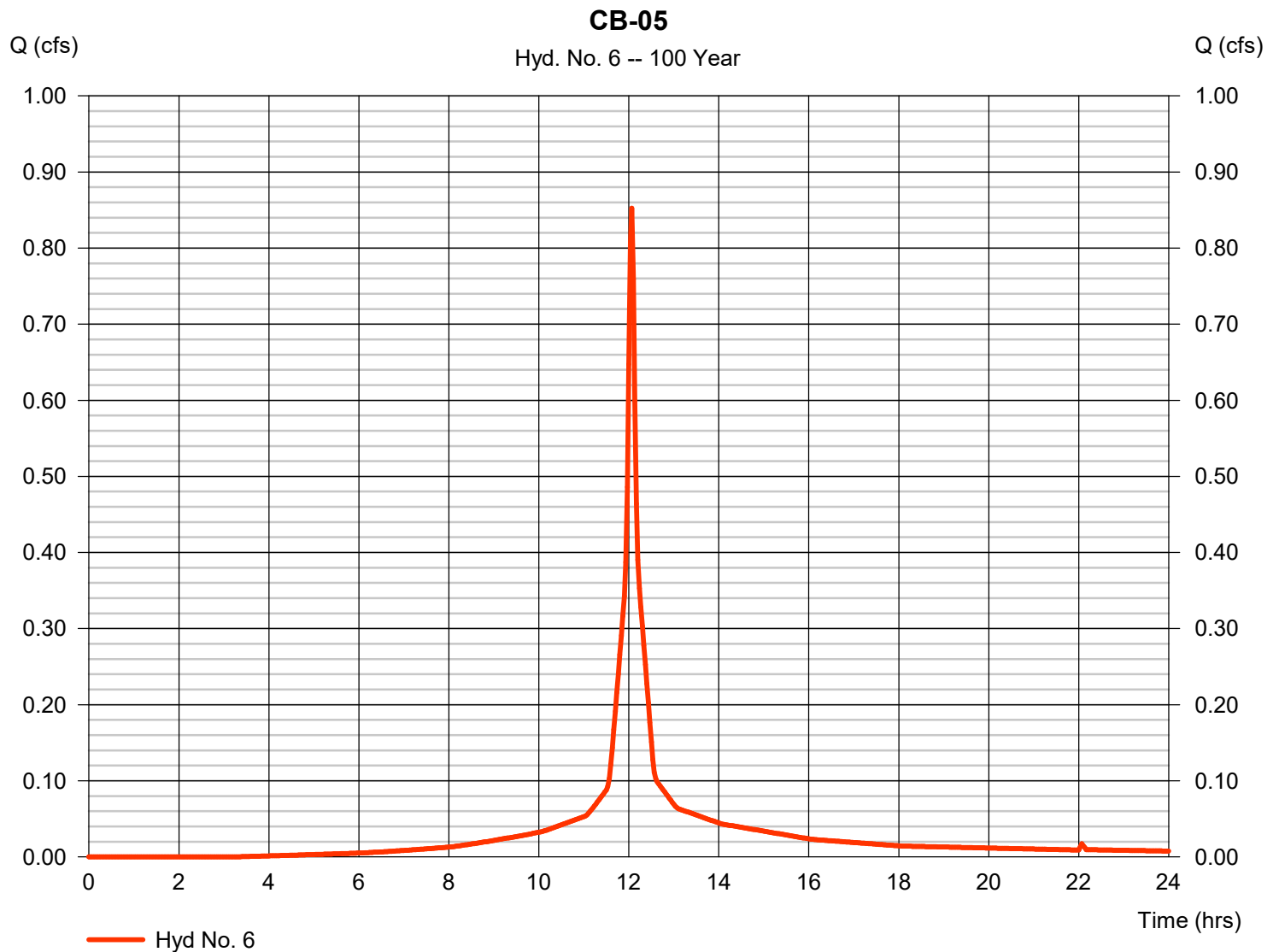
Friday, 07 / 9 / 2021

Hyd. No. 6

CB-05

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 2 min
 Drainage area = 0.115 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 8.37 in
 Storm duration = 24 hrs

Peak discharge = 0.852 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 2,712 cuft
 Curve number = 88
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

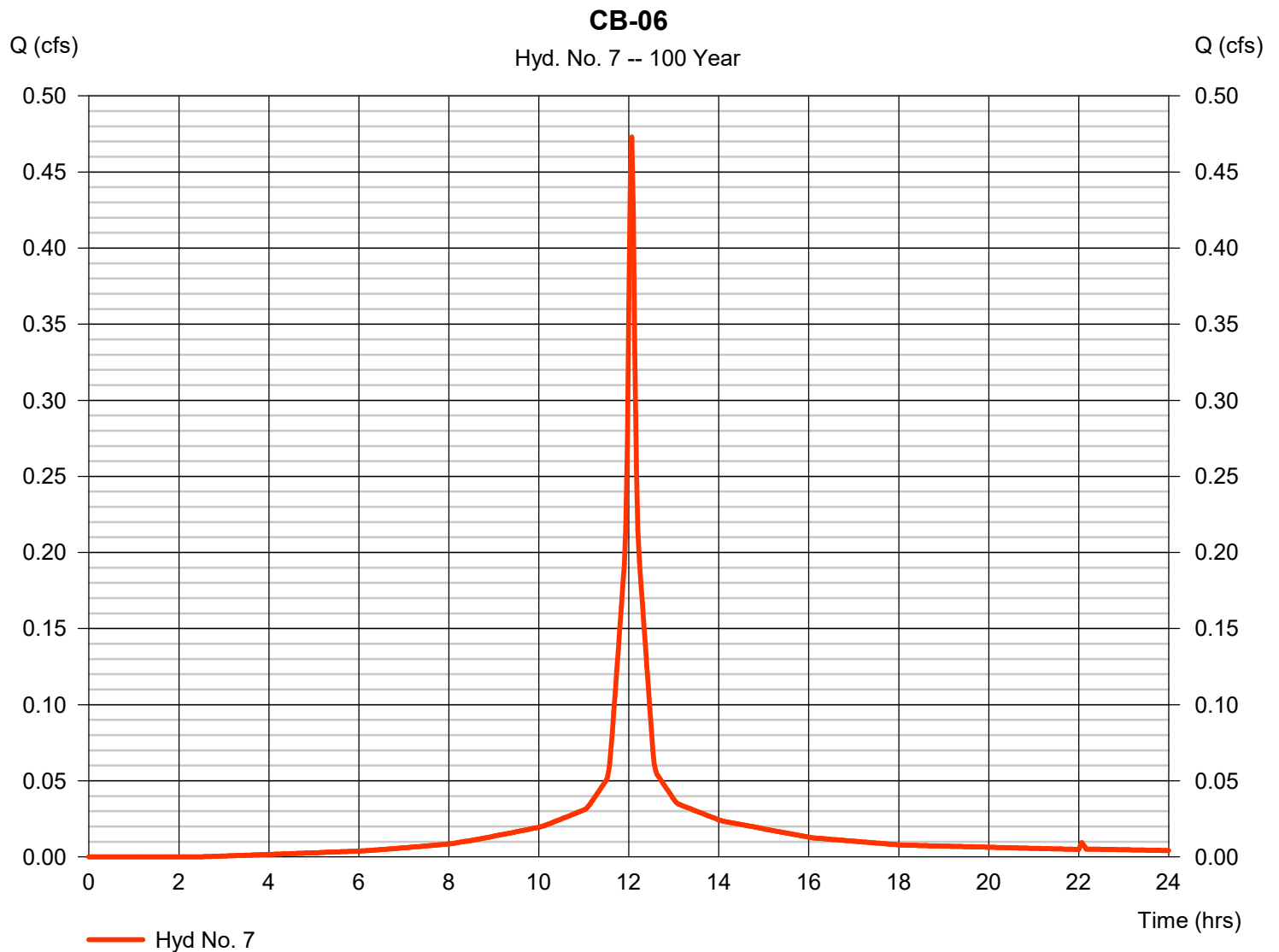
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

Hyd. No. 7

CB-06

Hydrograph type	= SCS Runoff	Peak discharge	= 0.473 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,538 cuft
Drainage area	= 0.062 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 8.37 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

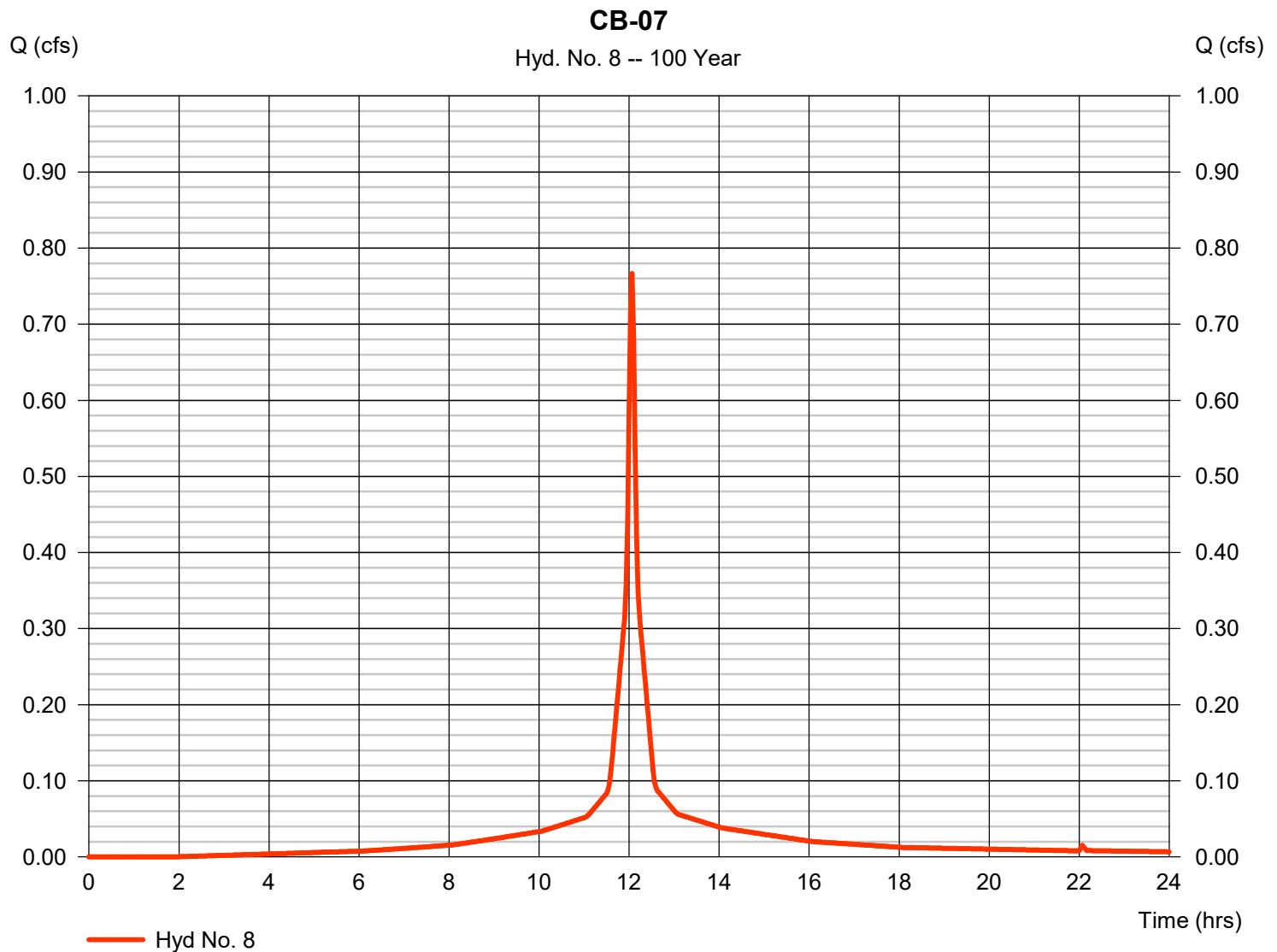
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

Hyd. No. 8

CB-07

Hydrograph type	= SCS Runoff	Peak discharge	= 0.767 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 2,537 cuft
Drainage area	= 0.099 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 8.37 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

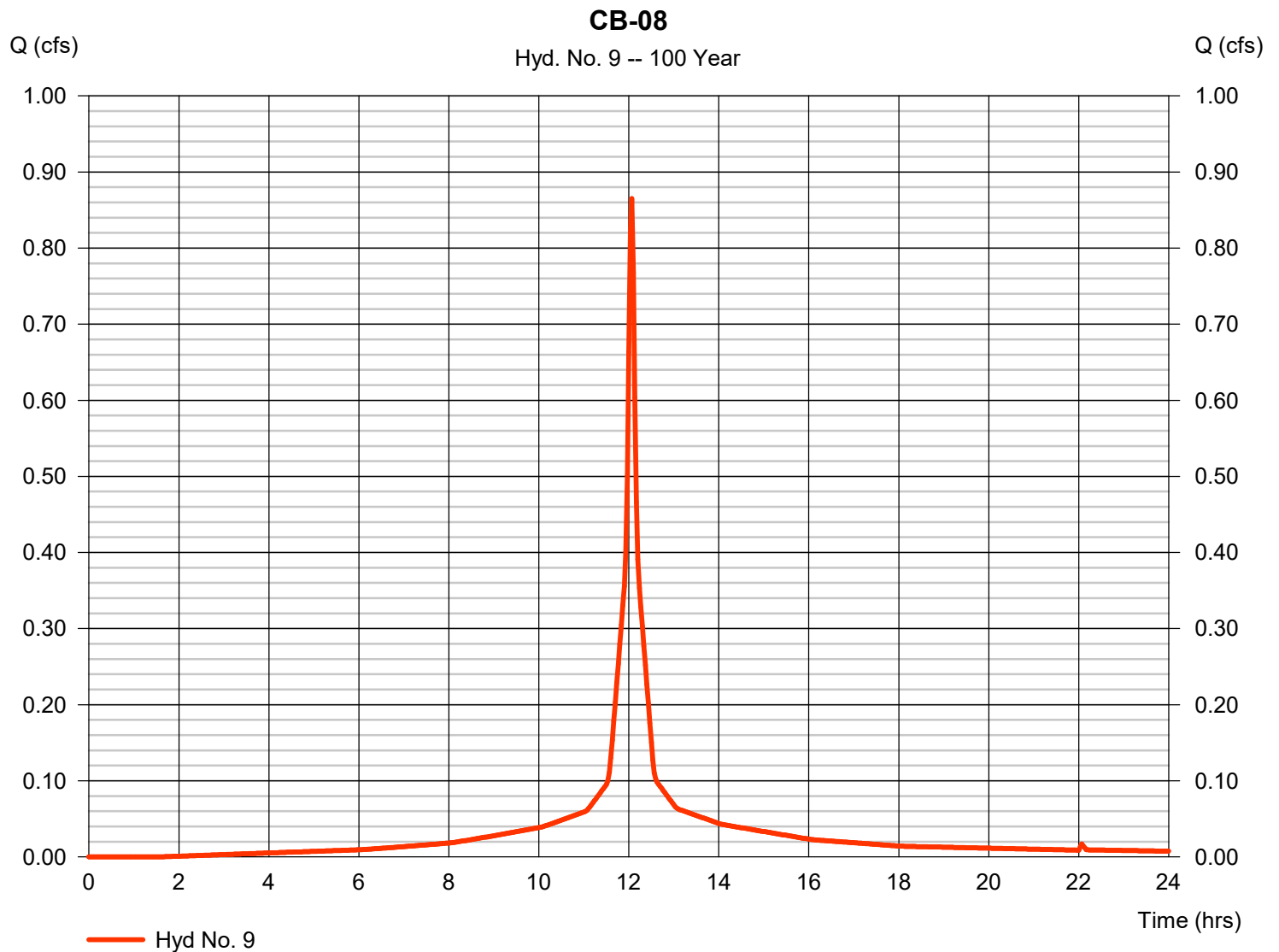
Friday, 07 / 9 / 2021

Hyd. No. 9

CB-08

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 2 min
 Drainage area = 0.111 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 8.37 in
 Storm duration = 24 hrs

Peak discharge = 0.865 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 2,890 cuft
 Curve number = 94
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.50 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

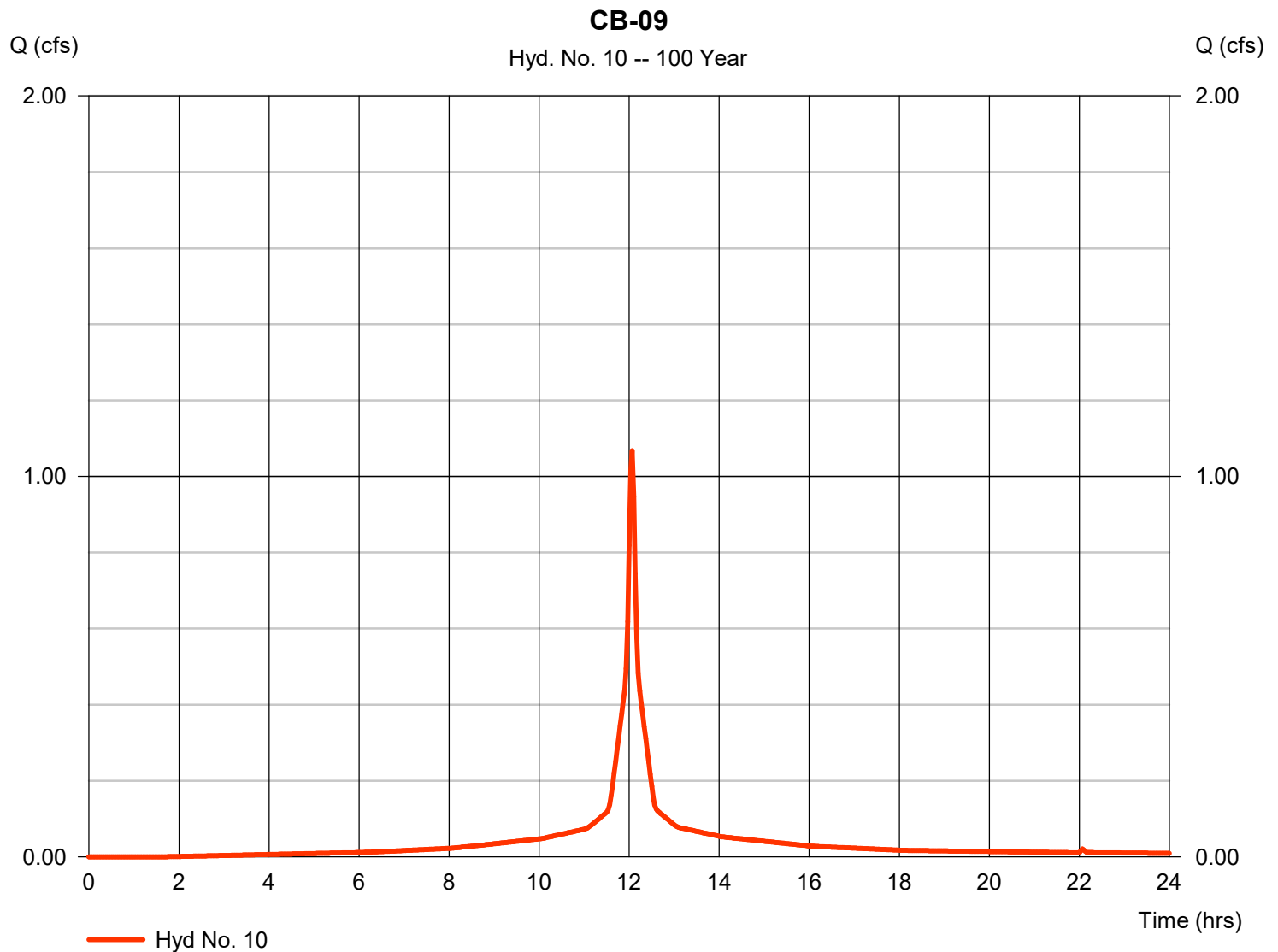
Friday, 07 / 9 / 2021

Hyd. No. 10

CB-09

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 2 min
 Drainage area = 0.137 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 8.37 in
 Storm duration = 24 hrs

Peak discharge = 1.068 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 3,567 cuft
 Curve number = 94
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

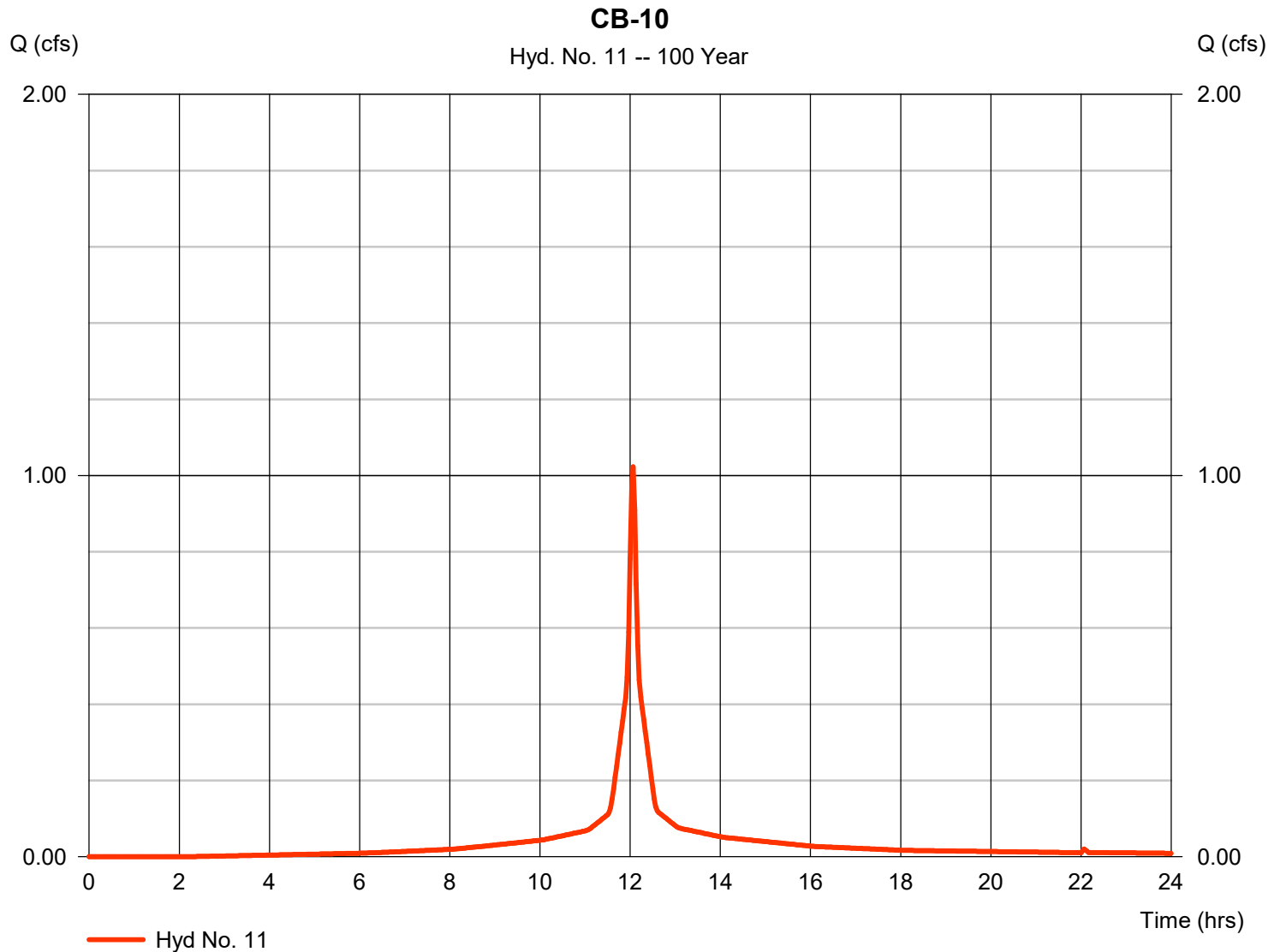
Friday, 07 / 9 / 2021

Hyd. No. 11

CB-10

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 2 min
 Drainage area = 0.133 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 8.37 in
 Storm duration = 24 hrs

Peak discharge = 1.023 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 3,354 cuft
 Curve number = 92
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

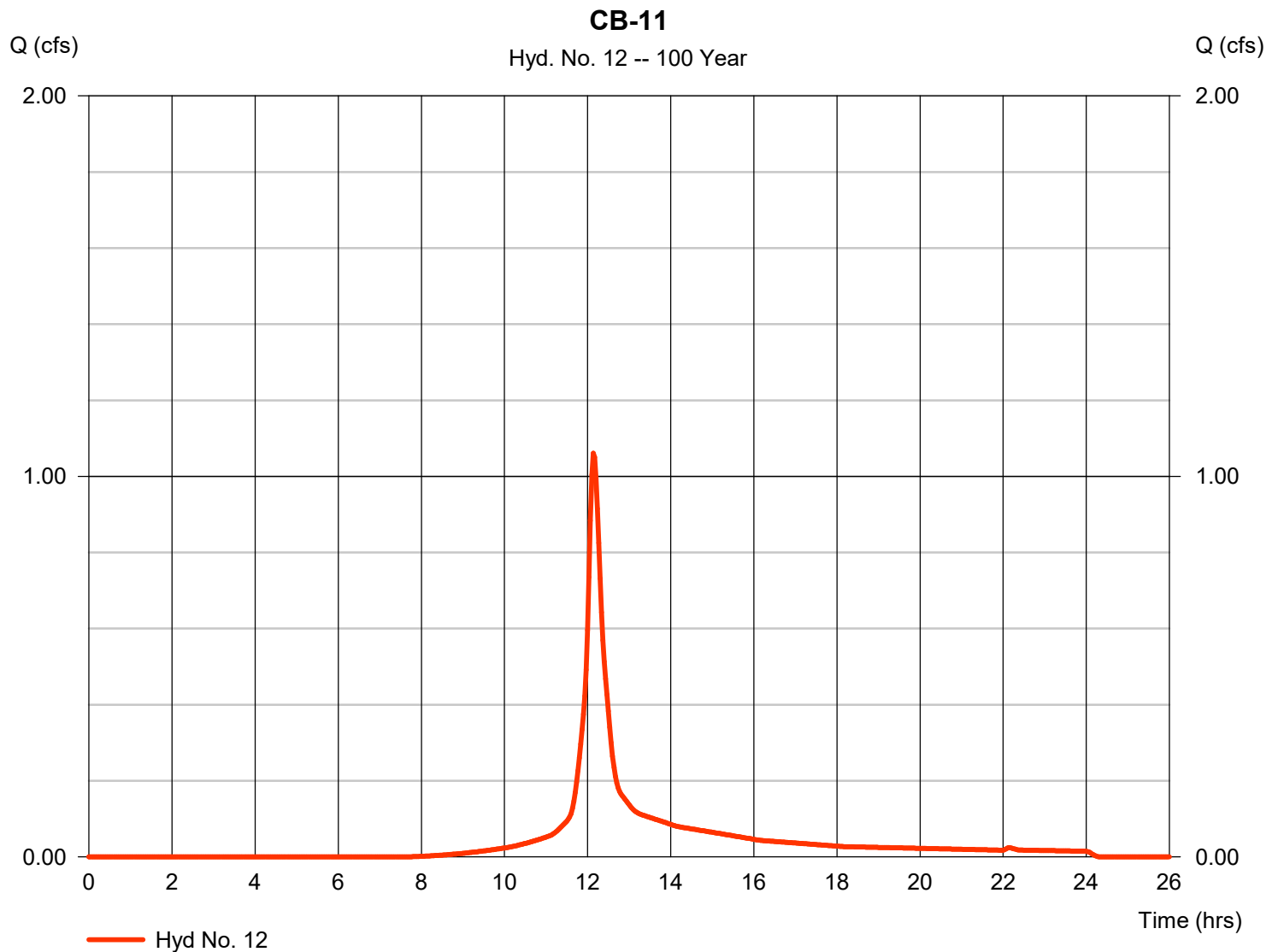
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

Hyd. No. 12

CB-11

Hydrograph type	= SCS Runoff	Peak discharge	= 1.061 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 4,065 cuft
Drainage area	= 0.227 ac	Curve number	= 70
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.90 min
Total precip.	= 8.37 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

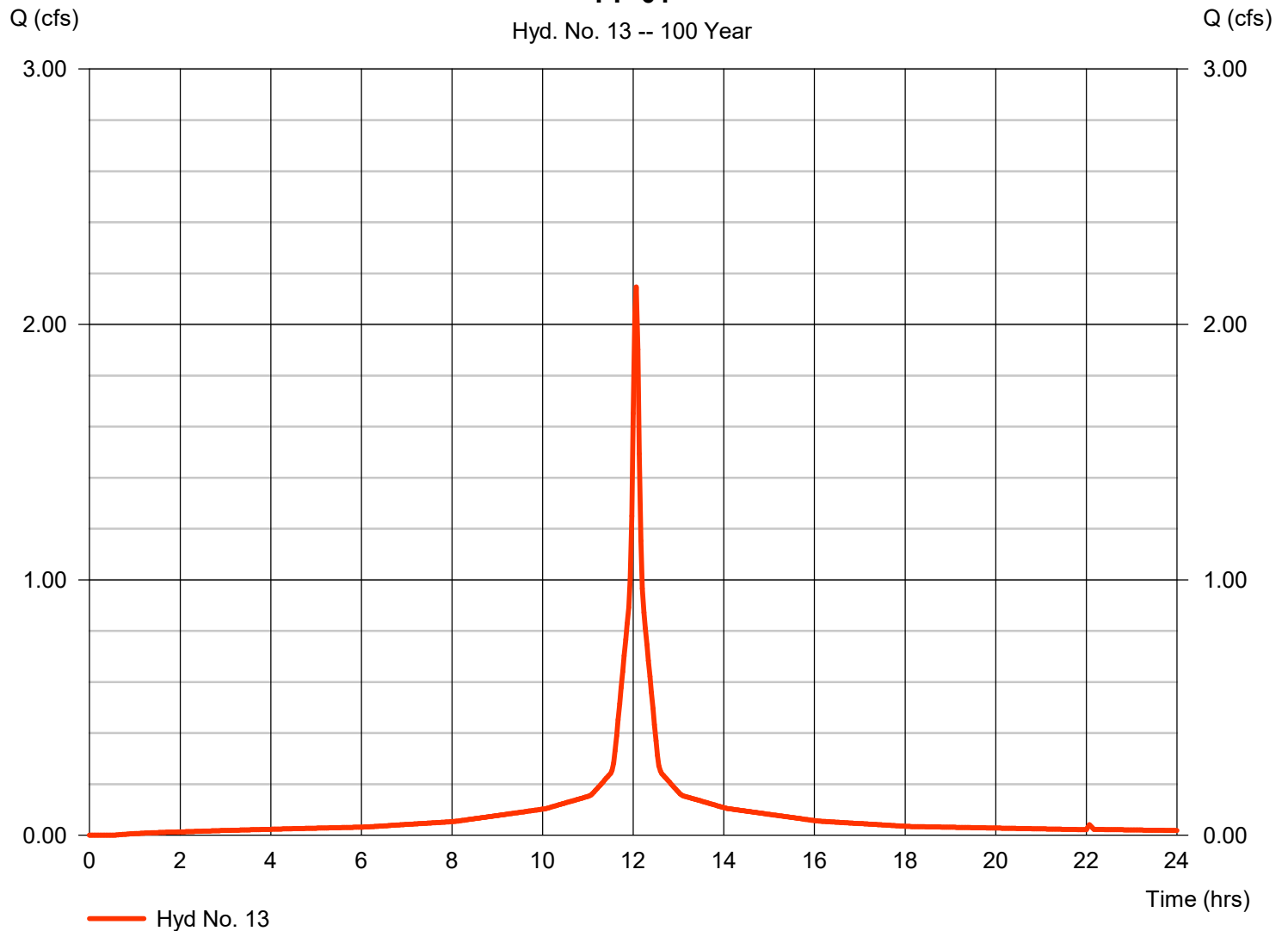
Friday, 07 / 9 / 2021

Hyd. No. 13

PP-01

Hydrograph type	= SCS Runoff	Peak discharge	= 2.147 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 7,498 cuft
Drainage area	= 0.271 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 8.37 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PP-01



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

Hyd. No. 14

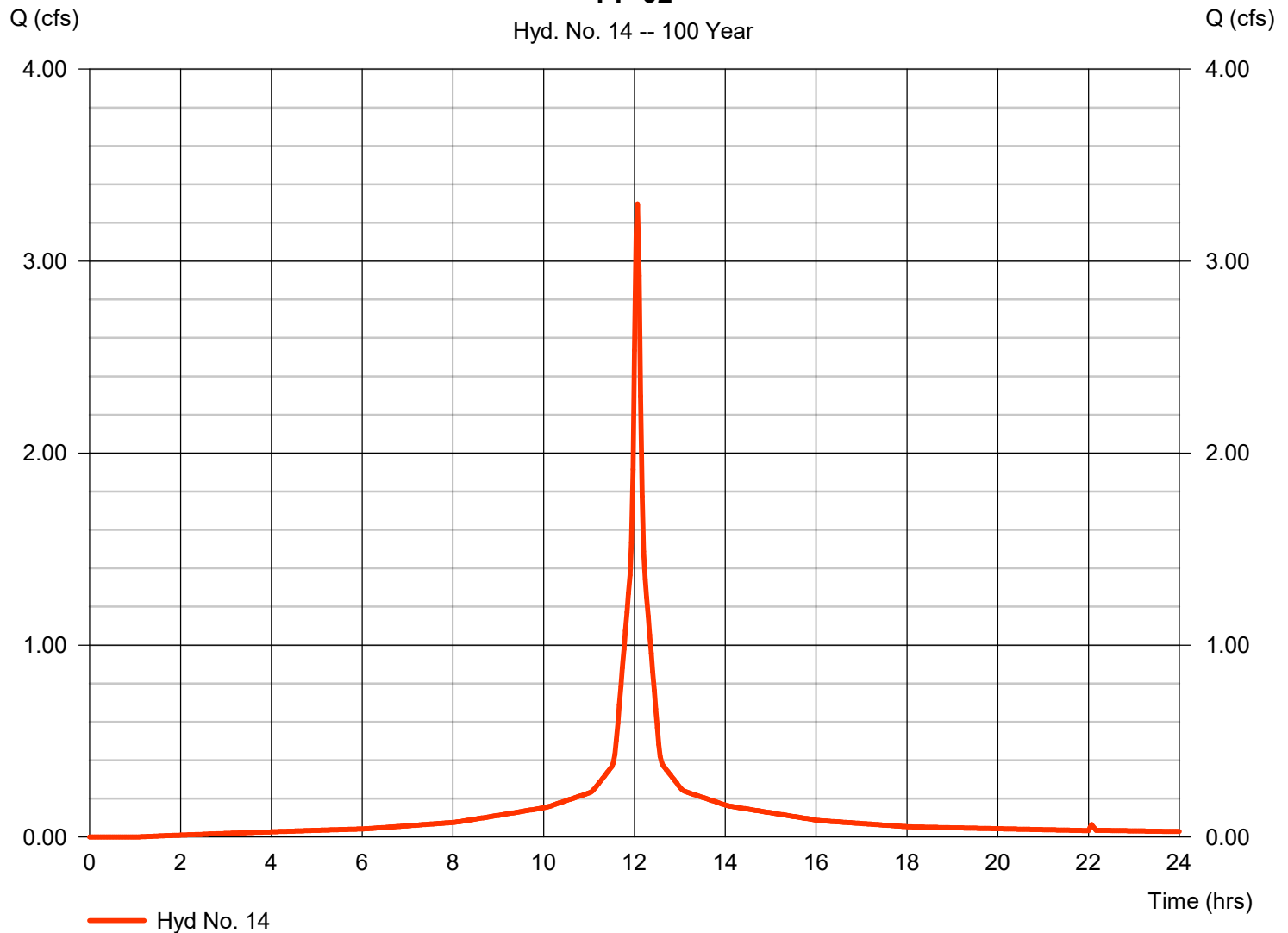
PP-02

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Time interval = 2 min
Drainage area = 0.419 ac
Basin Slope = 0.0 %
Tc method = User
Total precip. = 8.37 in
Storm duration = 24 hrs

Peak discharge = 3.298 cfs
Time to peak = 12.07 hrs
Hyd. volume = 11,250 cuft
Curve number = 96
Hydraulic length = 0 ft
Time of conc. (Tc) = 6.00 min
Distribution = Type III
Shape factor = 484

PP-02

Hyd. No. 14 -- 100 Year



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

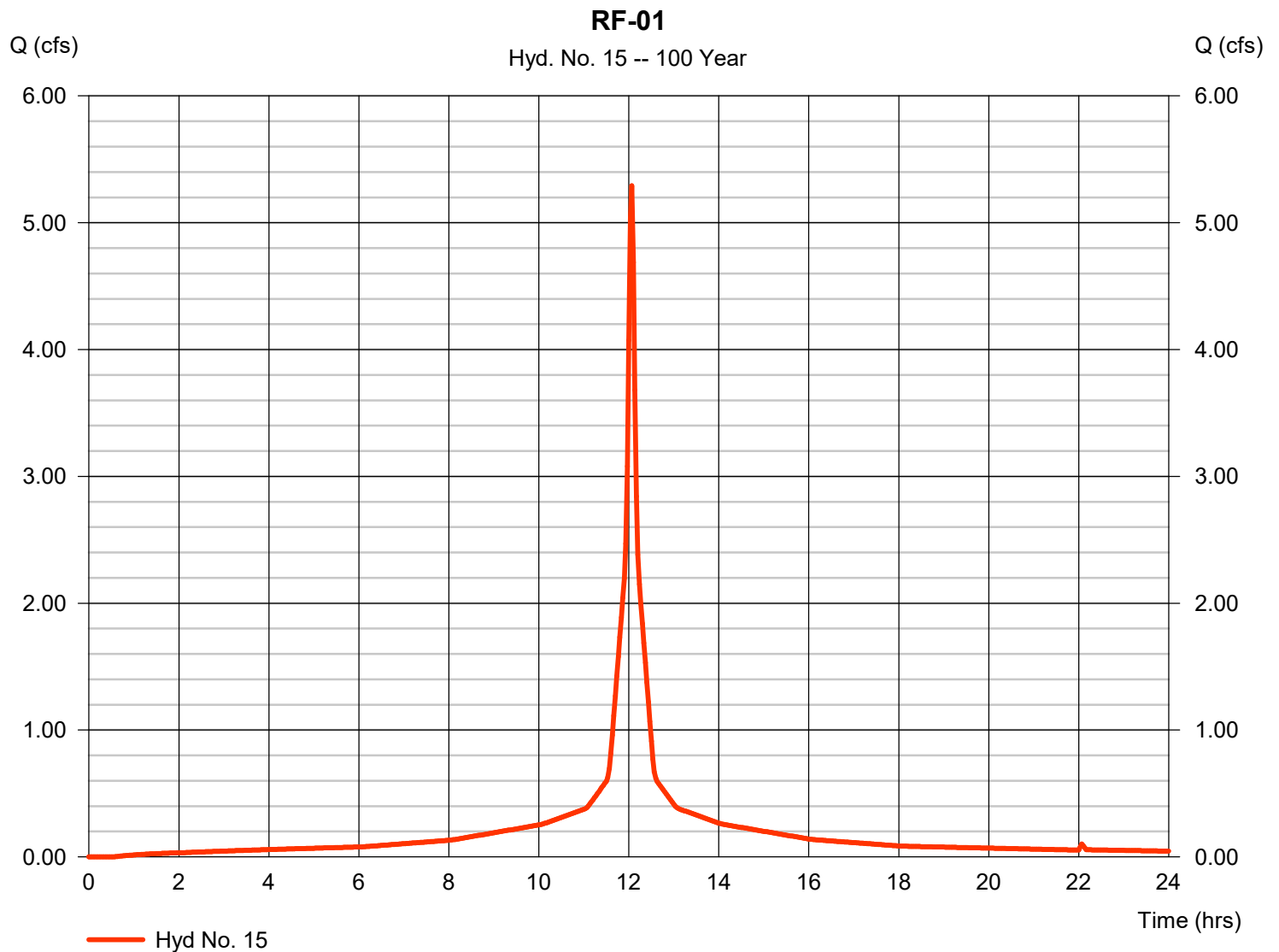
Friday, 07 / 9 / 2021

Hyd. No. 15

RF-01

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 2 min
 Drainage area = 0.668 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 8.37 in
 Storm duration = 24 hrs

Peak discharge = 5.291 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 18,482 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

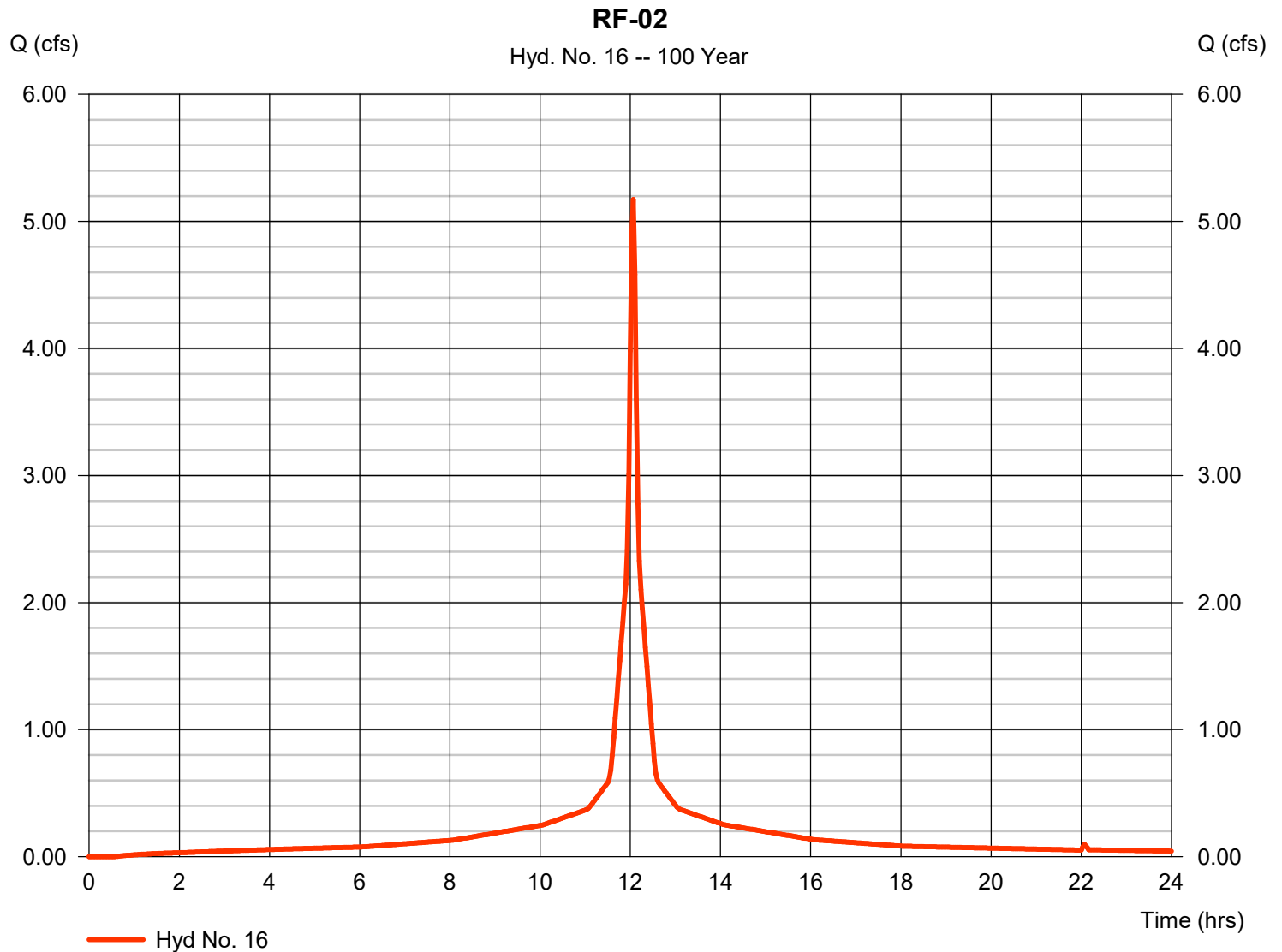
Friday, 07 / 9 / 2021

Hyd. No. 16

RF-02

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 2 min
 Drainage area = 0.653 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 8.37 in
 Storm duration = 24 hrs

Peak discharge = 5.172 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 18,067 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

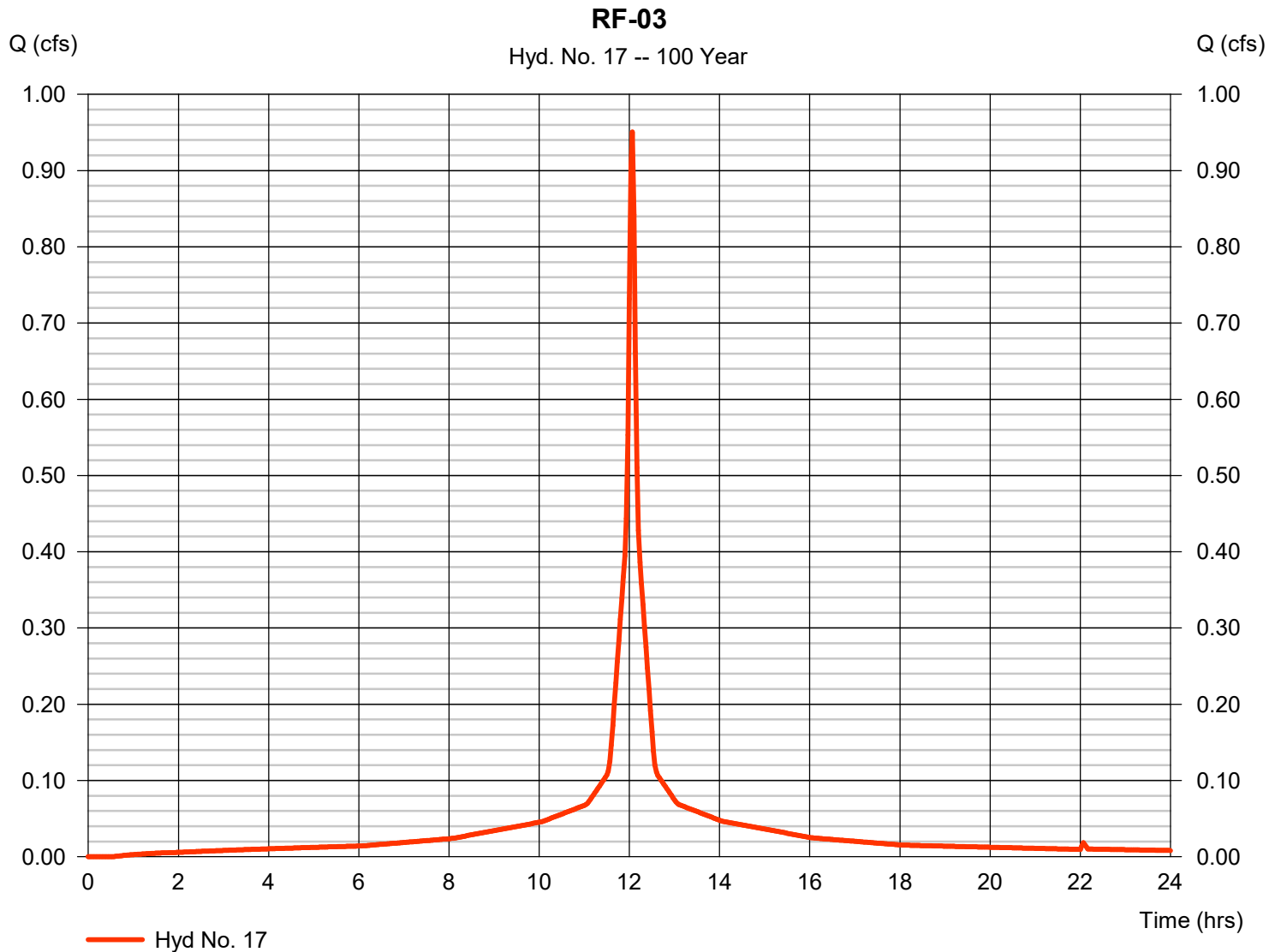
Friday, 07 / 9 / 2021

Hyd. No. 17

RF-03

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 2 min
 Drainage area = 0.120 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 8.37 in
 Storm duration = 24 hrs

Peak discharge = 0.951 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 3,320 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

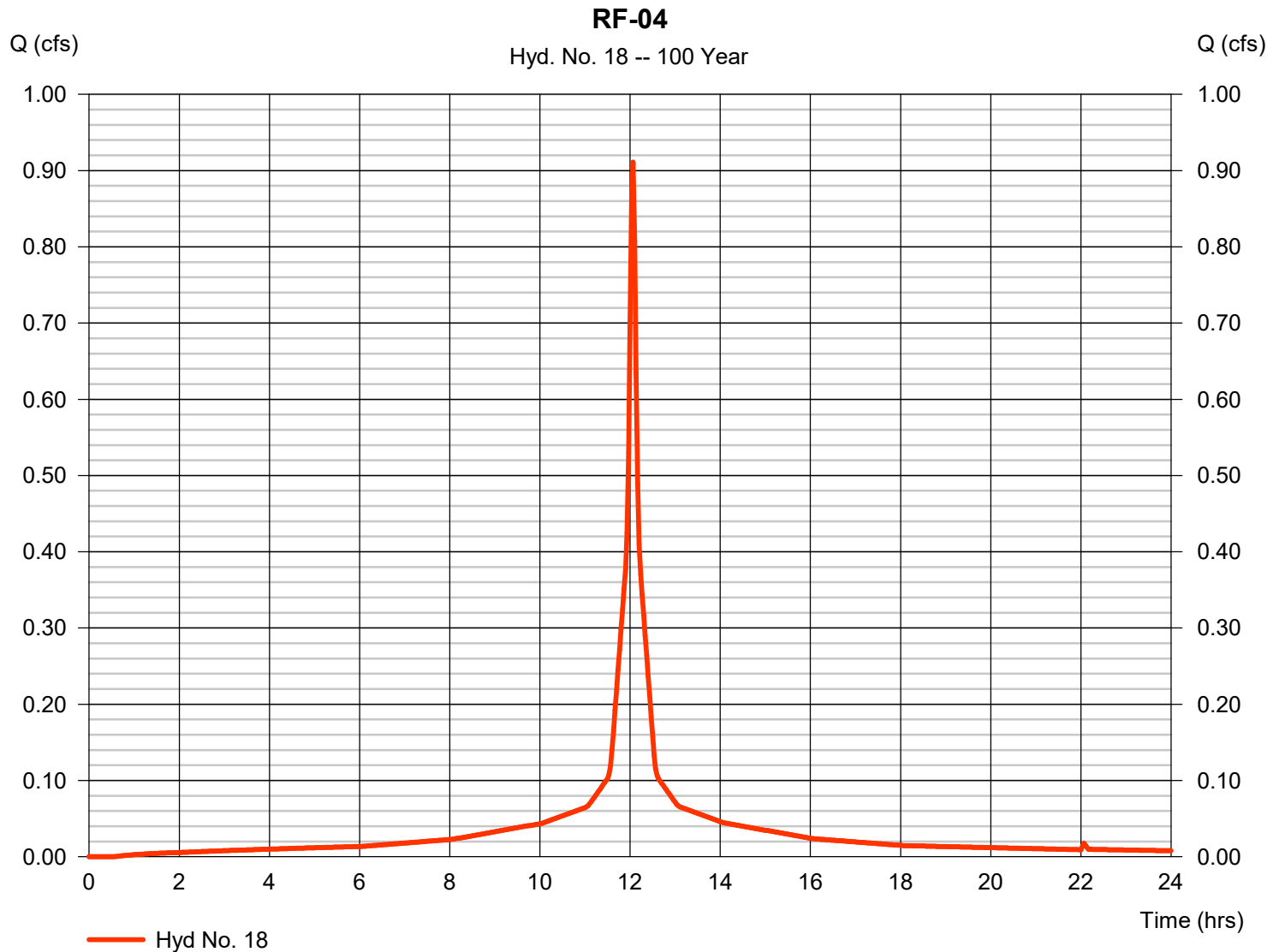
Friday, 07 / 9 / 2021

Hyd. No. 18

RF-04

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 2 min
 Drainage area = 0.115 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 8.37 in
 Storm duration = 24 hrs

Peak discharge = 0.911 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 3,182 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

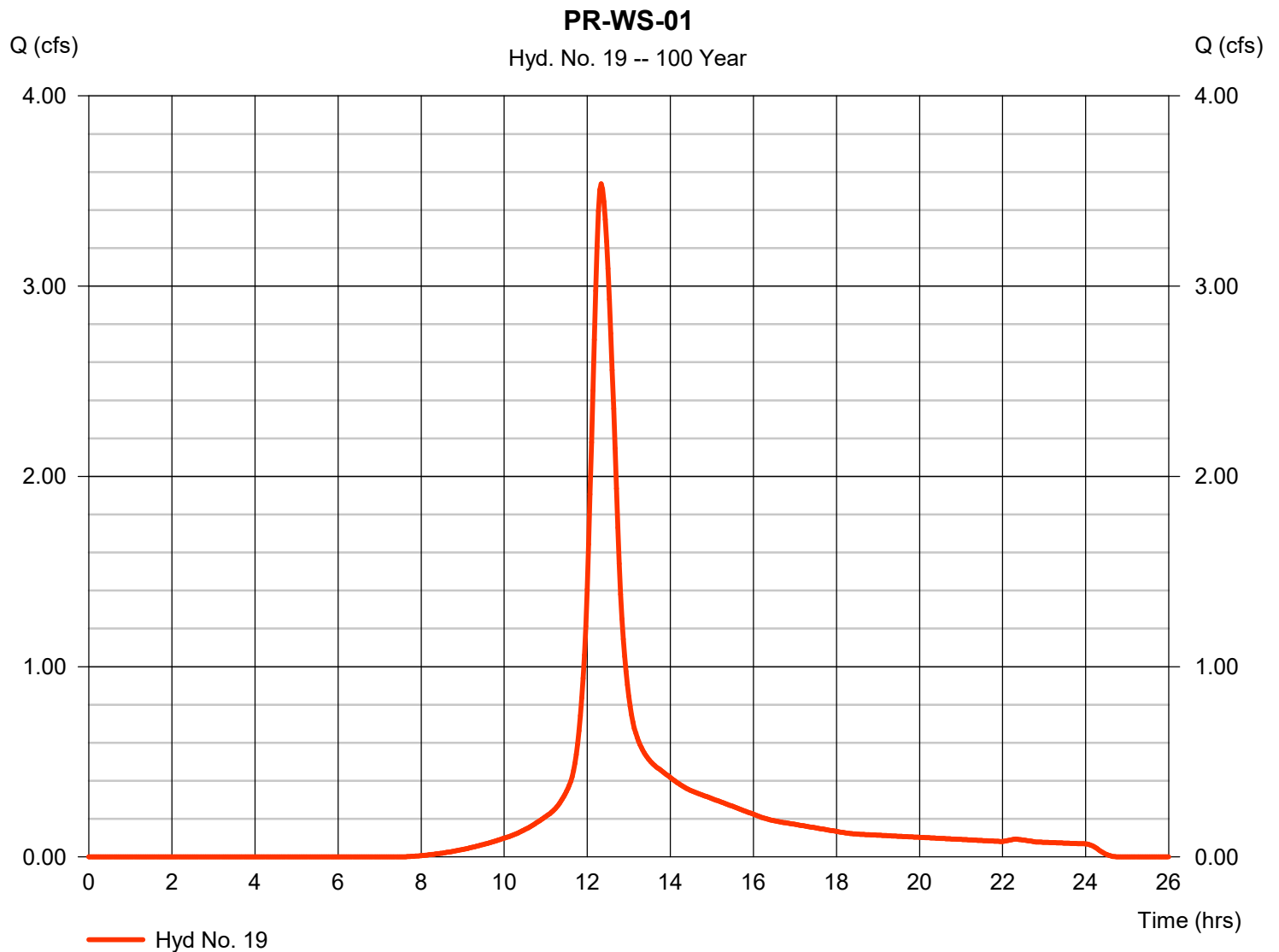
Friday, 07 / 9 / 2021

Hyd. No. 19

PR-WS-01

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 2 min
 Drainage area = 1.038 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 8.37 in
 Storm duration = 24 hrs

Peak discharge = 3.537 cfs
 Time to peak = 12.33 hrs
 Hyd. volume = 18,471 cuft
 Curve number = 71
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 27.60 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

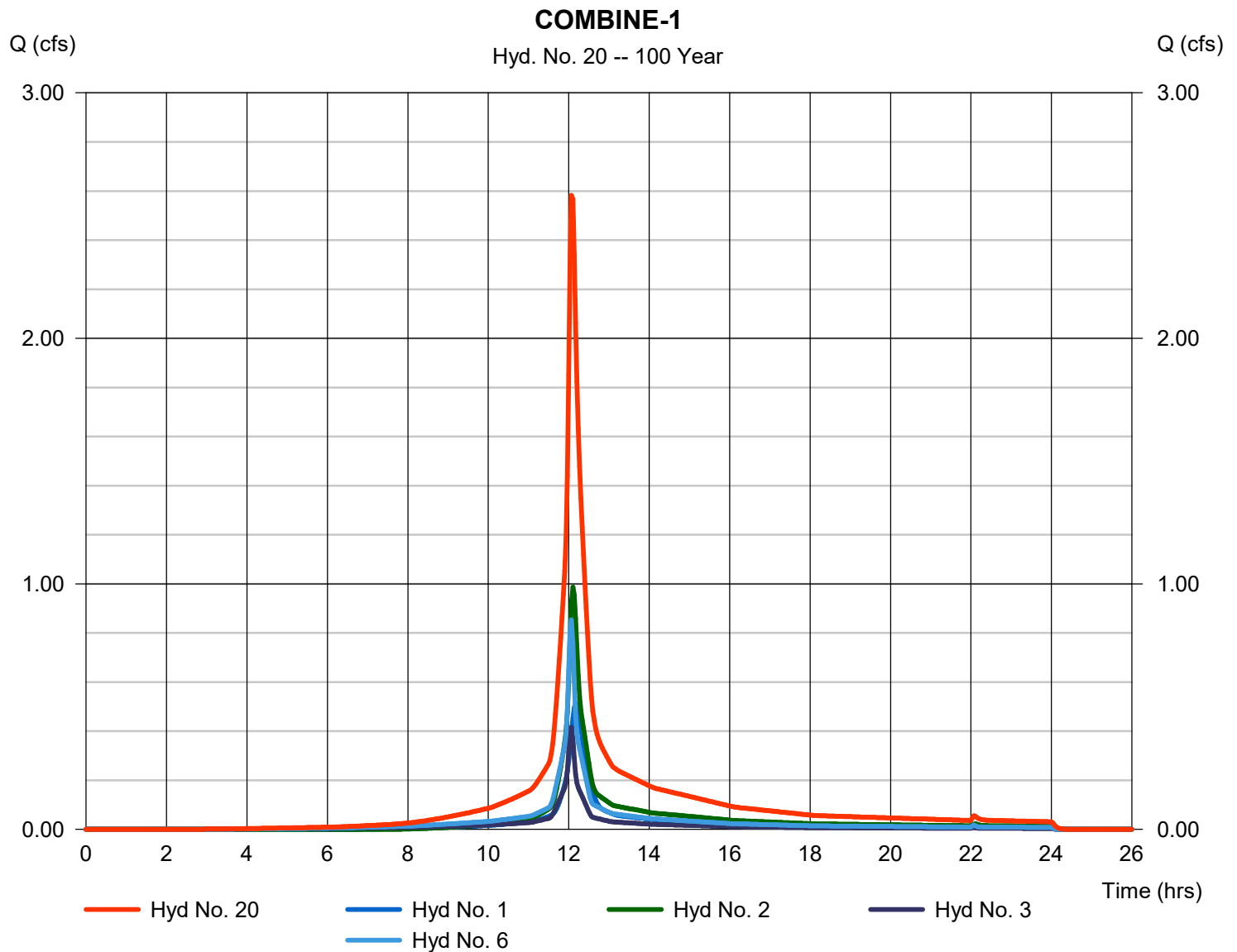
Friday, 07 / 9 / 2021

Hyd. No. 20

COMBINE-1

Hydrograph type = Combine
Storm frequency = 100 yrs
Time interval = 2 min
Inflow hyds. = 1, 2, 3, 6

Peak discharge = 2.583 cfs
Time to peak = 12.07 hrs
Hyd. volume = 9,543 cuft
Contrib. drain. area = 0.471 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

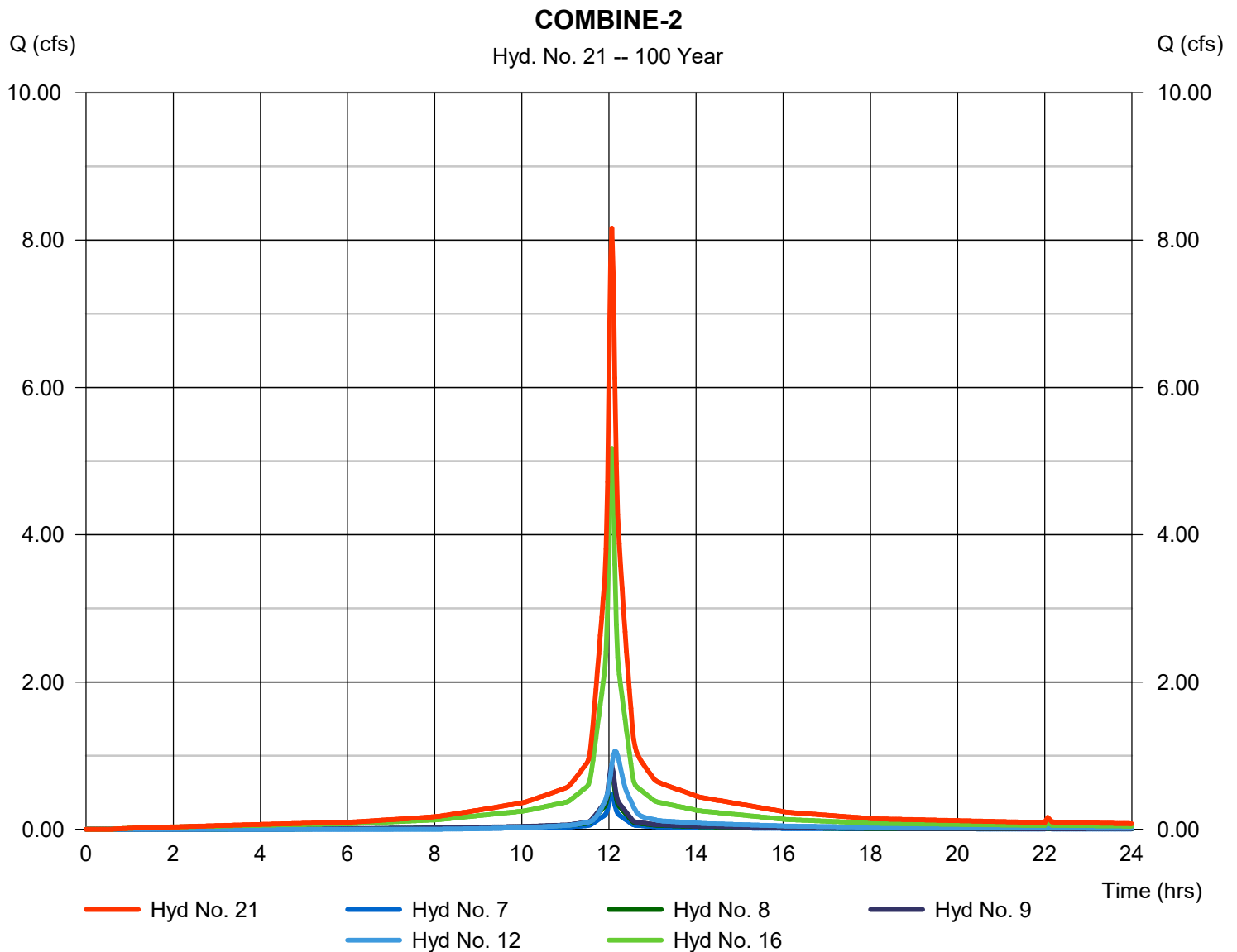
Friday, 07 / 9 / 2021

Hyd. No. 21

COMBINE-2

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 2 min
 Inflow hyds. = 7, 8, 9, 12, 16

Peak discharge = 8.161 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 29,097 cuft
 Contrib. drain. area = 1.152 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

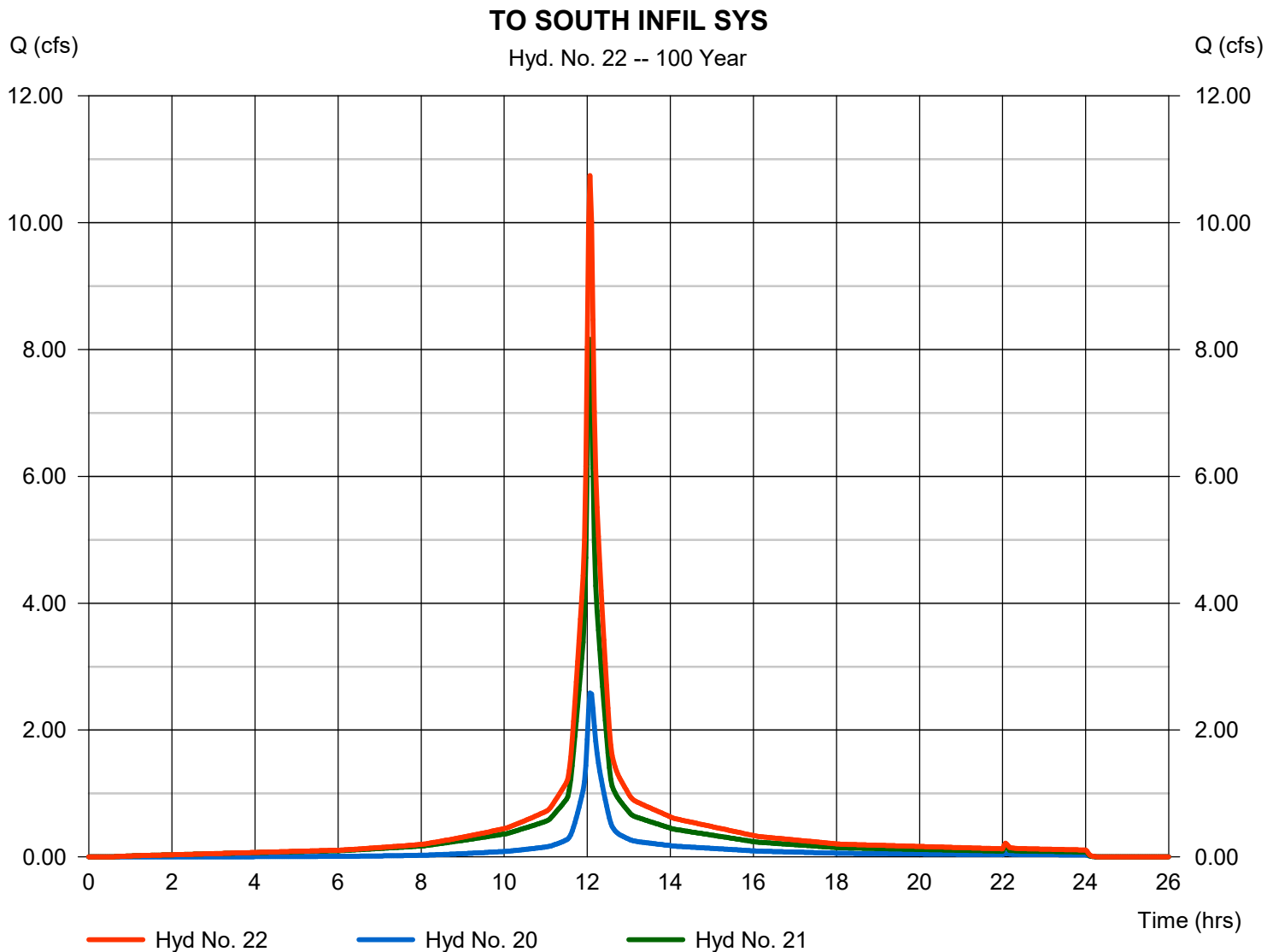
Friday, 07 / 9 / 2021

Hyd. No. 22

TO SOUTH INFIL SYS

Hydrograph type = Combine
Storm frequency = 100 yrs
Time interval = 2 min
Inflow hyds. = 20, 21

Peak discharge = 10.74 cfs
Time to peak = 12.07 hrs
Hyd. volume = 38,640 cuft
Contrib. drain. area = 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

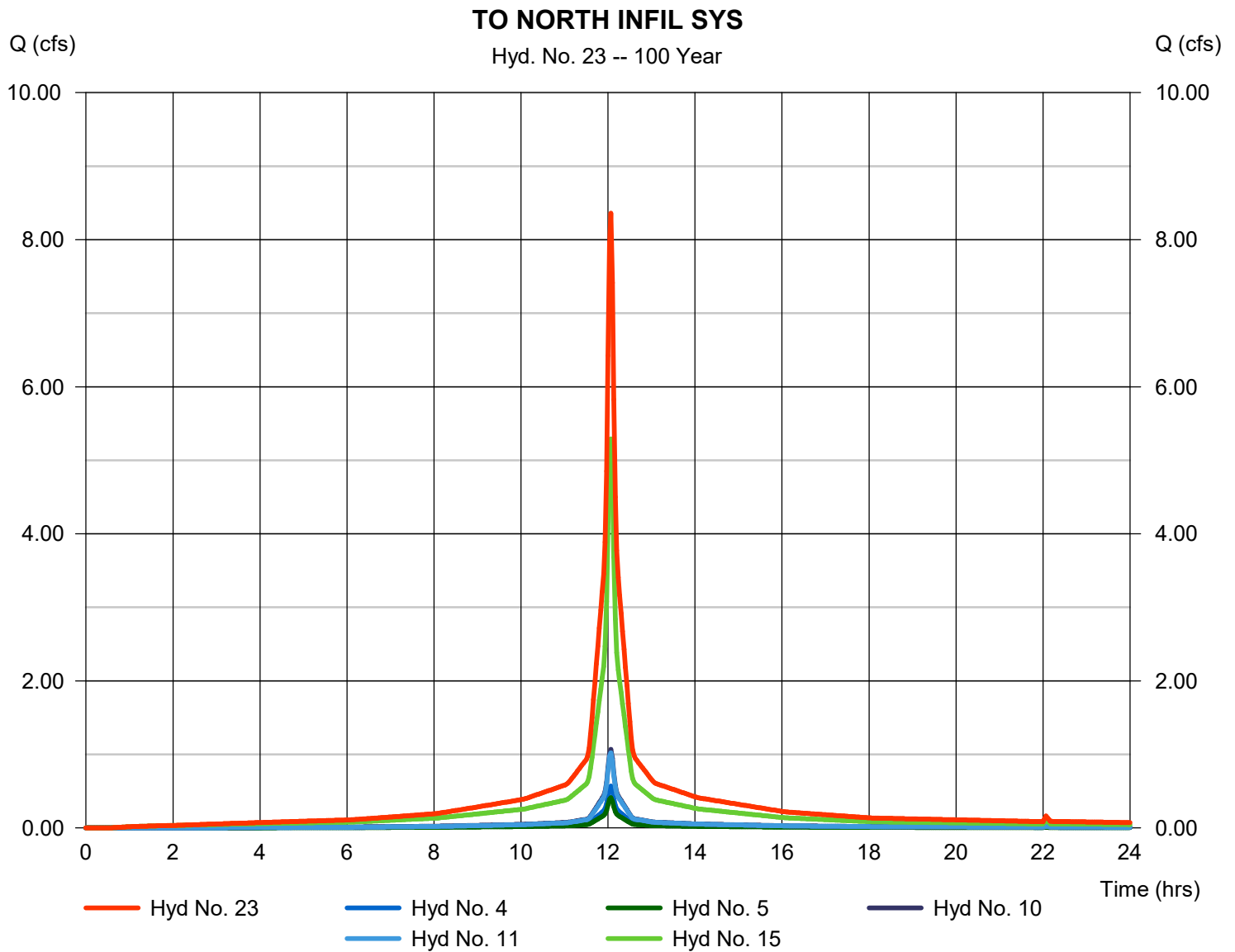
Friday, 07 / 9 / 2021

Hyd. No. 23

TO NORTH INFIL SYS

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 2 min
 Inflow hyds. = 4, 5, 10, 11, 15

Peak discharge = 8.361 cfs
 Time to peak = 12.07 hrs
 Hyd. volume = 28,626 cuft
 Contrib. drain. area = 1.065 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

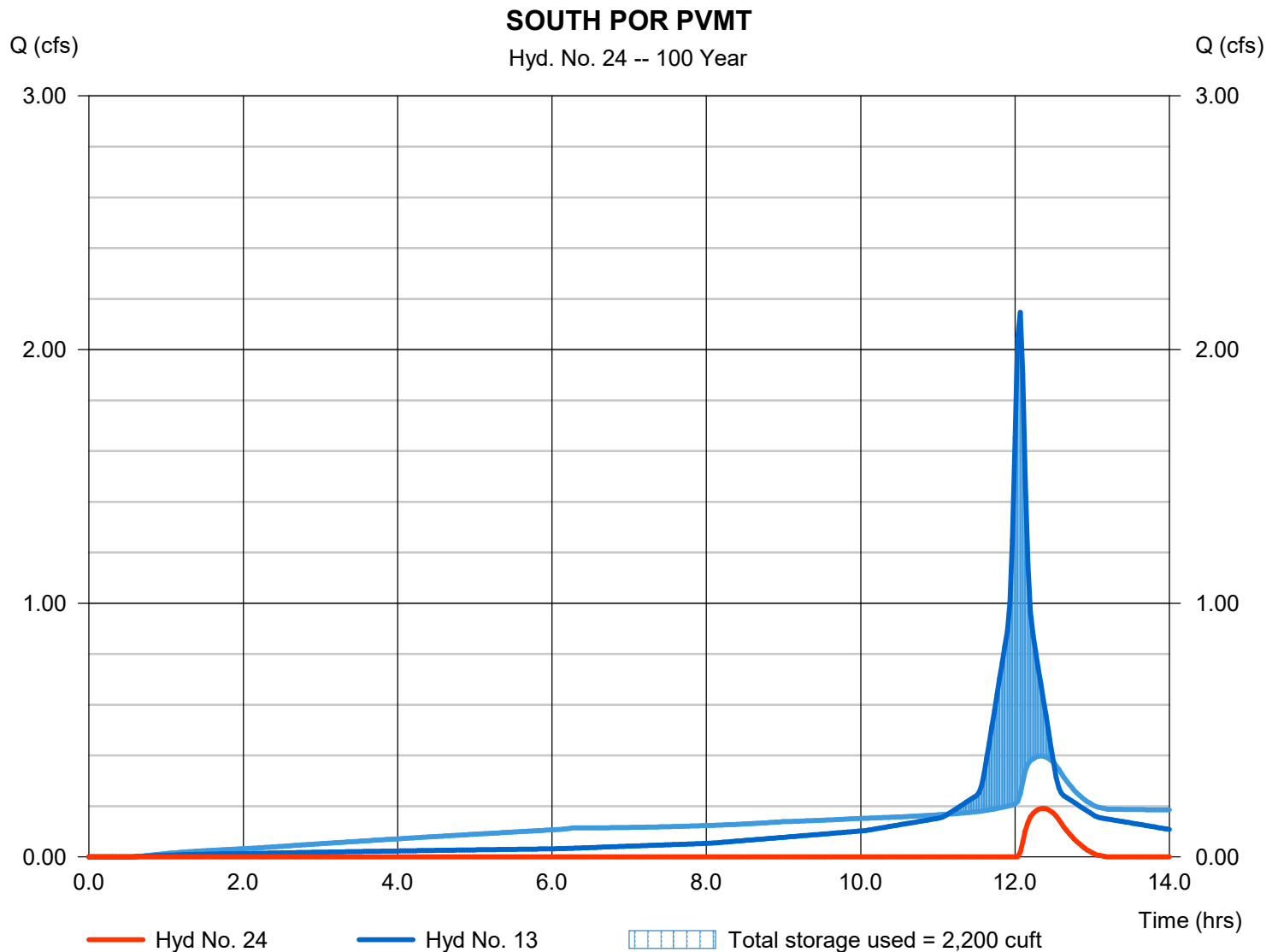
Friday, 07 / 9 / 2021

Hyd. No. 24

SOUTH POR PVMT

Hydrograph type	= Reservoir	Peak discharge	= 0.191 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.37 hrs
Time interval	= 2 min	Hyd. volume	= 397 cuft
Inflow hyd. No.	= 13 - PP-01	Max. Elevation	= 142.28 ft
Reservoir name	= SOUTH POROUS PVMT	Max. Storage	= 2,200 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

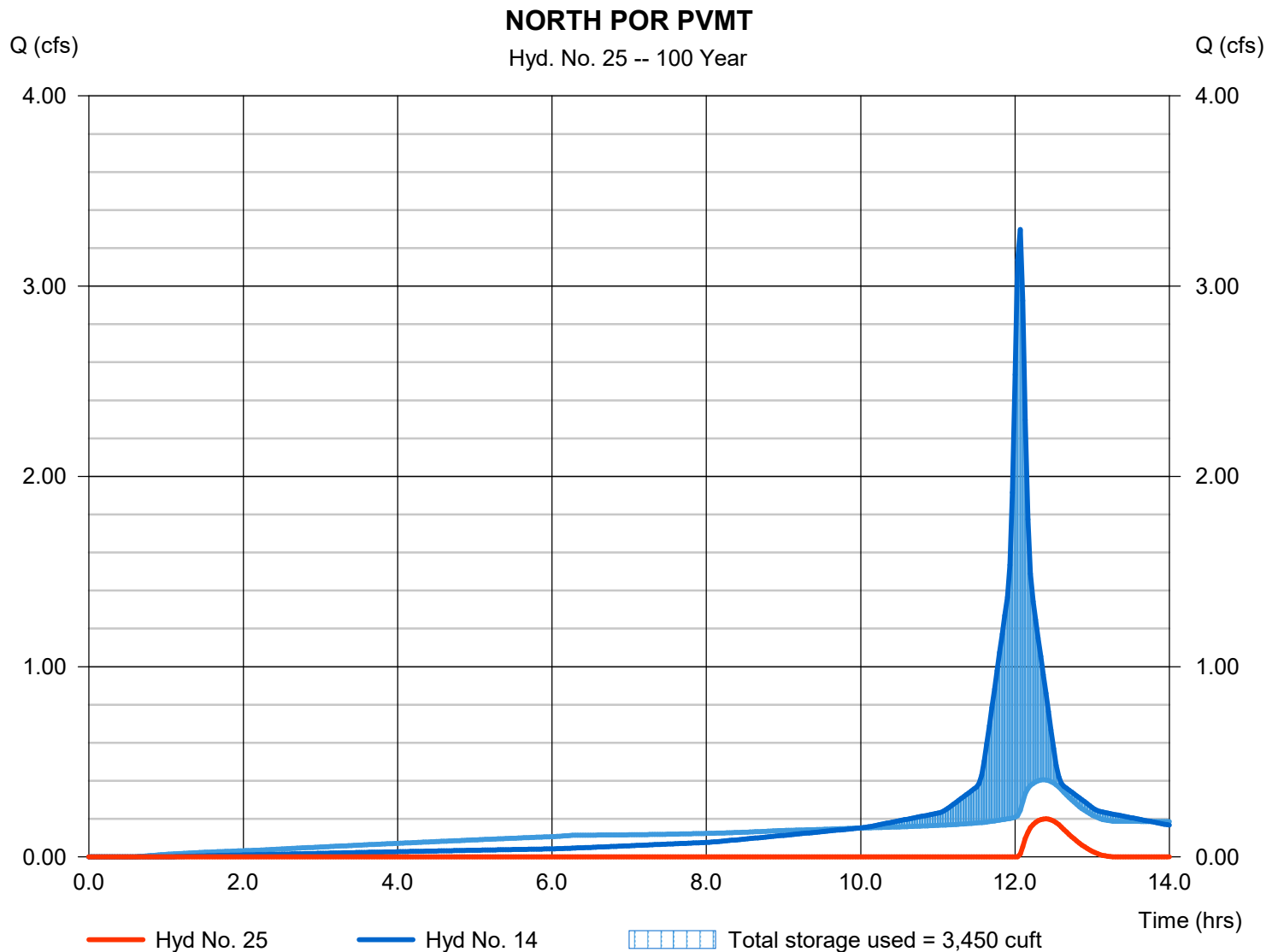
Friday, 07 / 9 / 2021

Hyd. No. 25

NORTH POR PVMT

Hydrograph type	= Reservoir	Peak discharge	= 0.200 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.40 hrs
Time interval	= 2 min	Hyd. volume	= 446 cuft
Inflow hyd. No.	= 14 - PP-02	Max. Elevation	= 141.79 ft
Reservoir name	= NORTH POROUS PVMT	Max. Storage	= 3,450 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

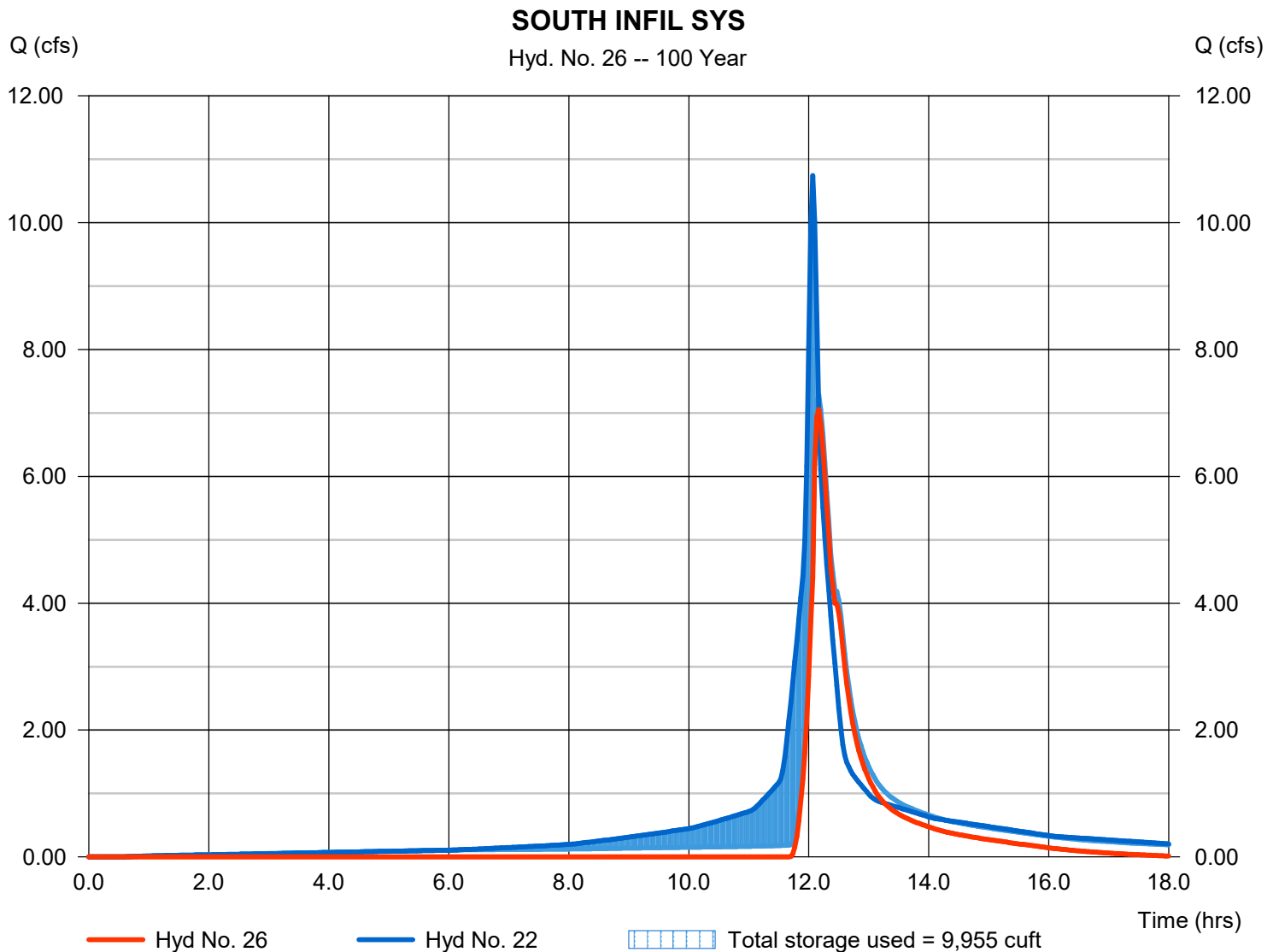
Friday, 07 / 9 / 2021

Hyd. No. 26

SOUTH INFIL SYS

Hydrograph type	= Reservoir	Peak discharge	= 7.056 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 19,539 cuft
Inflow hyd. No.	= 22 - TO SOUTH INFIL SYS	Max. Elevation	= 144.94 ft
Reservoir name	= SOUTH INFIL SYS	Max. Storage	= 9,955 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

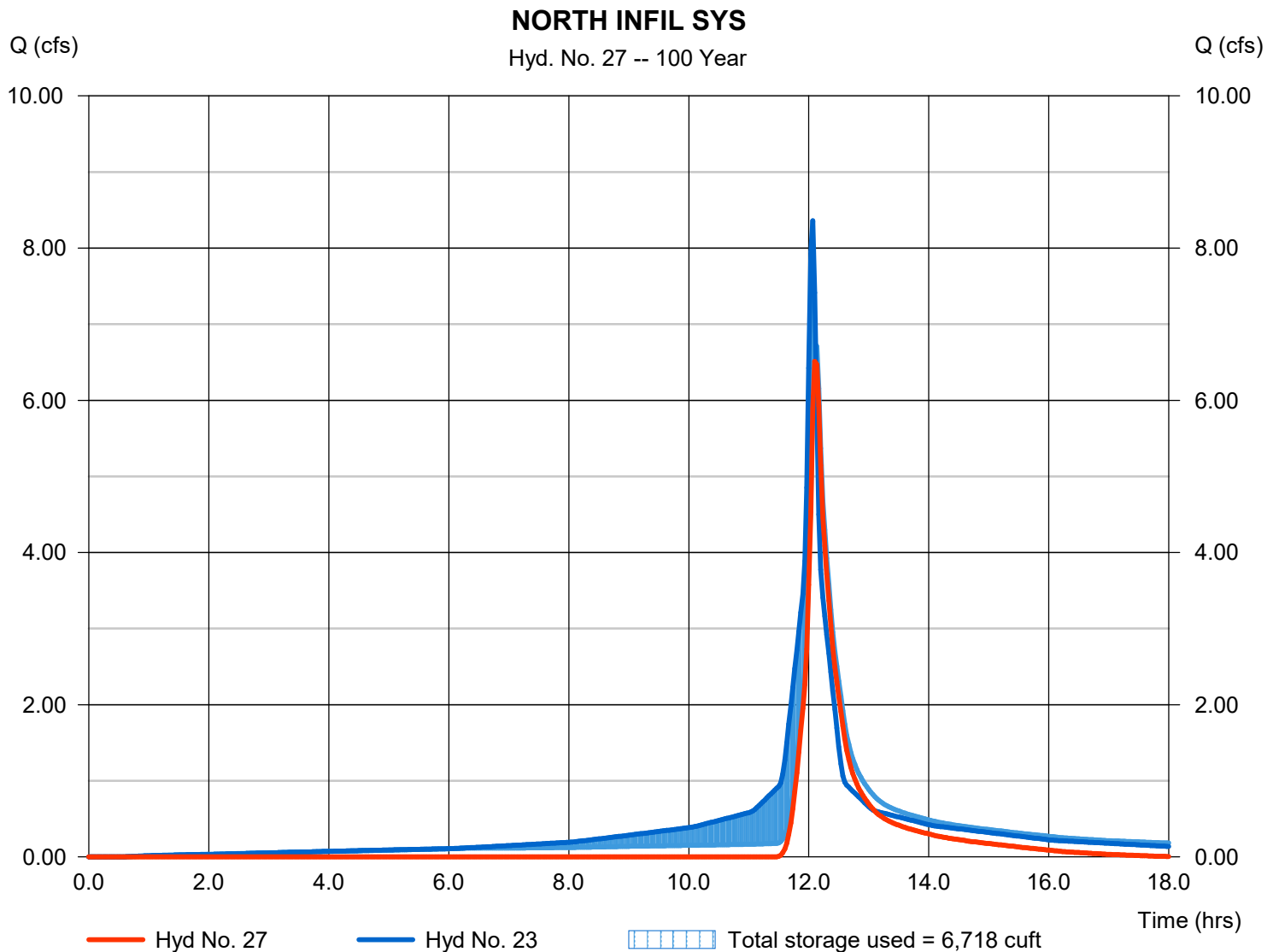
Friday, 07 / 9 / 2021

Hyd. No. 27

NORTH INFIL SYS

Hydrograph type	= Reservoir	Peak discharge	= 6.513 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 14,748 cuft
Inflow hyd. No.	= 23 - TO NORTH INFIL SYS	Max. Elevation	= 144.89 ft
Reservoir name	= NORTH INFIL SYS	Max. Storage	= 6,718 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

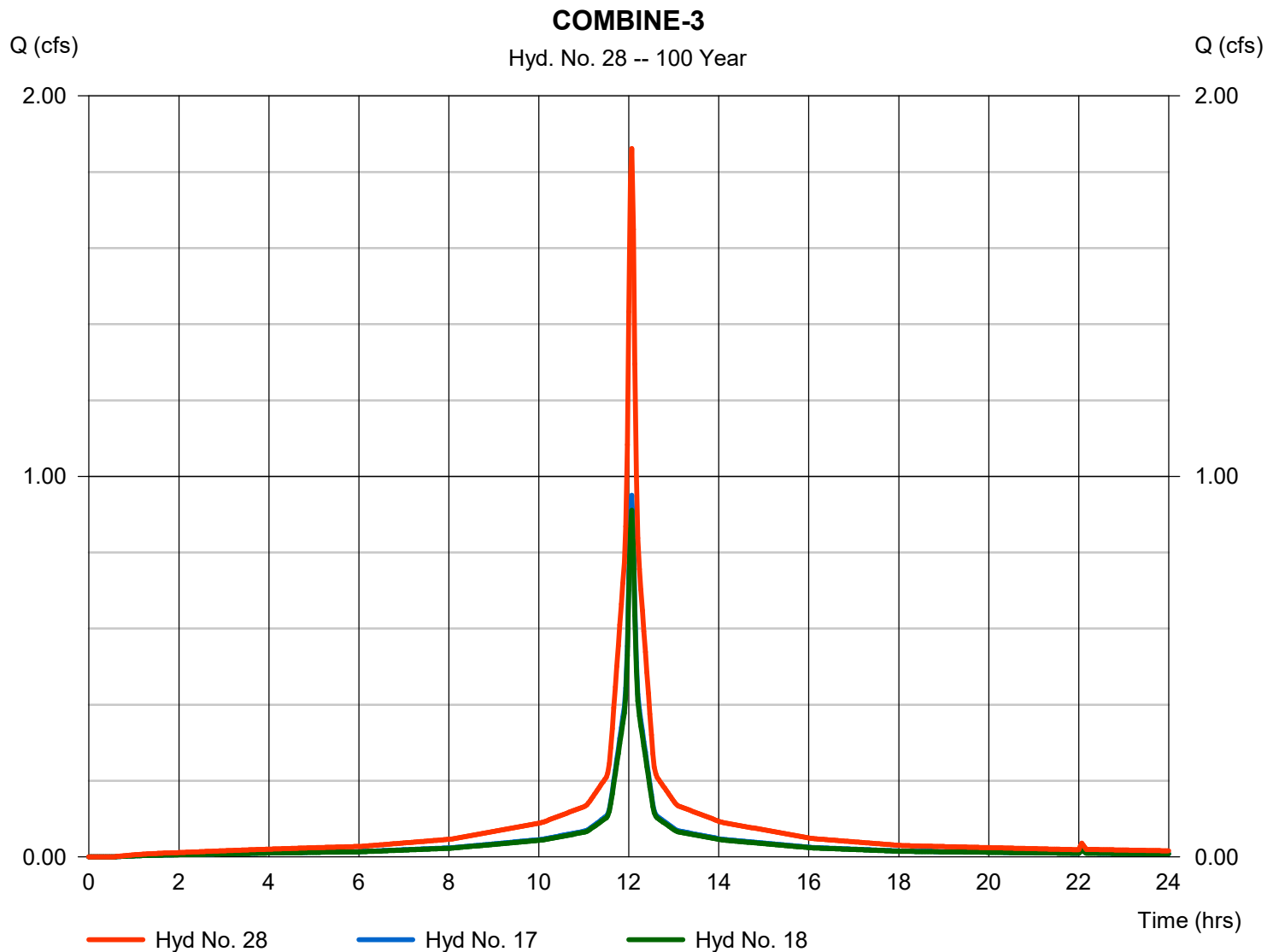
Friday, 07 / 9 / 2021

Hyd. No. 28

COMBINE-3

Hydrograph type = Combine
Storm frequency = 100 yrs
Time interval = 2 min
Inflow hyds. = 17, 18

Peak discharge = 1.861 cfs
Time to peak = 12.07 hrs
Hyd. volume = 6,502 cuft
Contrib. drain. area = 0.235 ac



Hydrograph Report

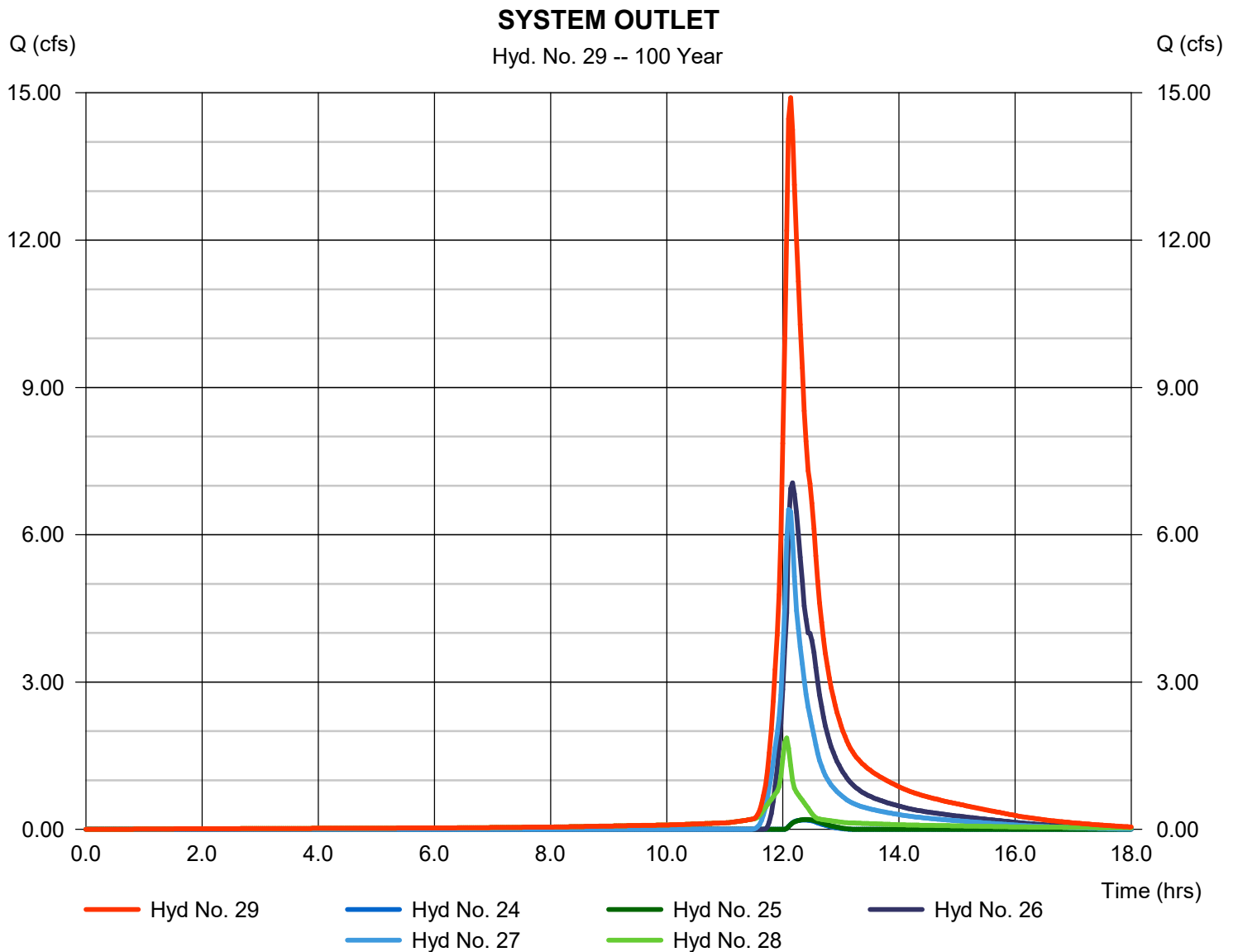
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

Friday, 07 / 9 / 2021

Hyd. No. 29

SYSTEM OUTLET

Hydrograph type	= Combine	Peak discharge	= 14.90 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 41,632 cuft
Inflow hyds.	= 24, 25, 26, 27, 28	Contrib. drain. area	= 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

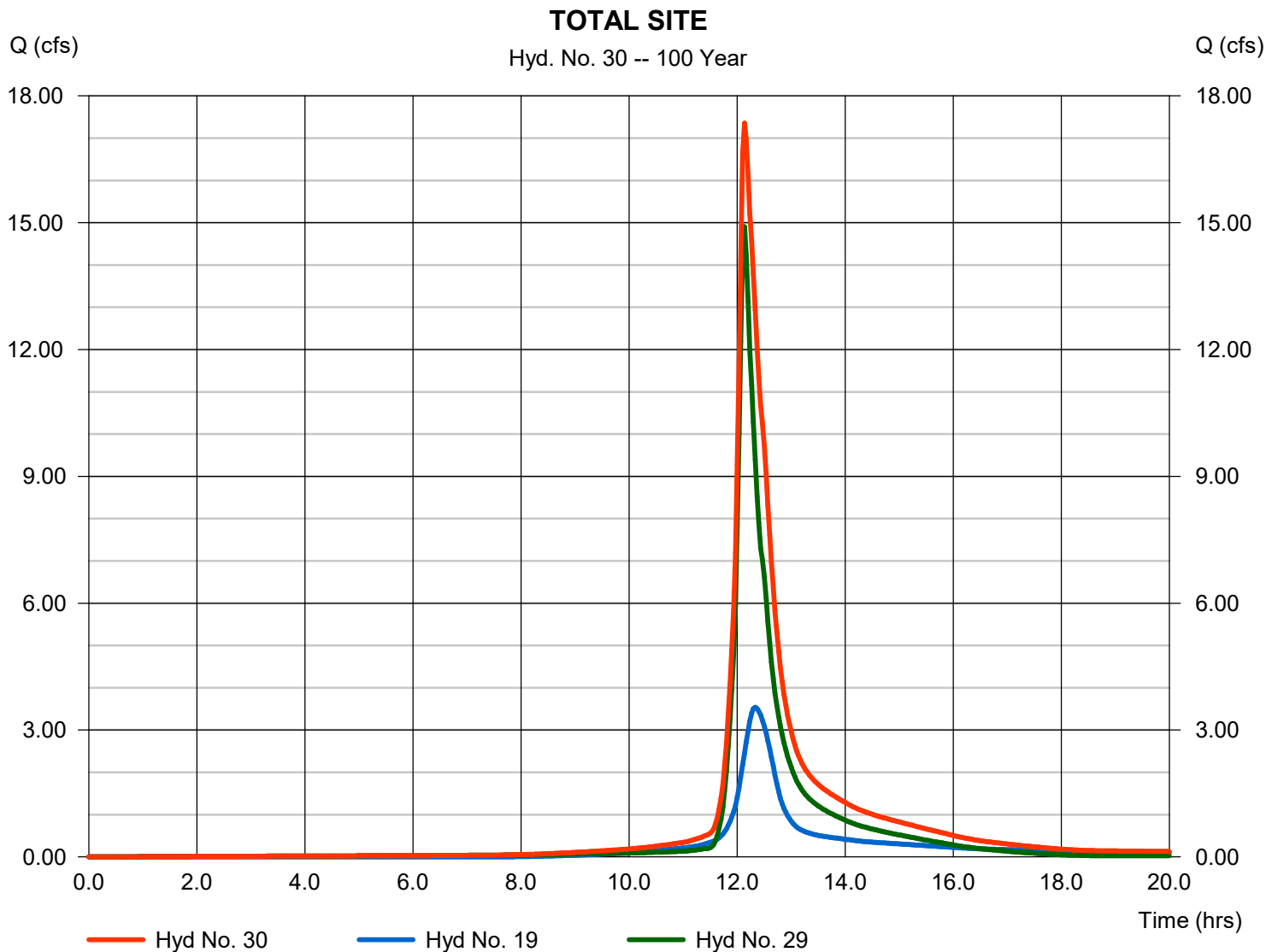
Friday, 07 / 9 / 2021

Hyd. No. 30

TOTAL SITE

Hydrograph type = Combine
Storm frequency = 100 yrs
Time interval = 2 min
Inflow hyds. = 19, 29

Peak discharge = 17.35 cfs
Time to peak = 12.13 hrs
Hyd. volume = 60,103 cuft
Contrib. drain. area = 1.038 ac



APPENDIX E

Required Water Quality Volume (WQV)

141 Danbury Road

Site Area in Acres, A	=	4.651	ac
Impervious Area in Acres	=	2.987	ac
Percent Impervious Cover, I	=	64.2	%
Volumetric Runoff Coefficient, R			
$R = 0.05 + 0.009(I)$	=	0.628	

Water Quality Volume (WQV)

$$WQV = \frac{(1'')(R)(A)}{12}$$

=	0.243	ac·ft
=	10,603	cf

Provided Water Quality Volume

North Infiltration System	=	2,912	cf
South Infiltration System	=	4,284	cf
North Porous Pavement System	=	2,191	cf
South Porous Pavement System	=	1,415	cf
	=	10,802	cf

Required Water Quality Flow (WQF)

Water Quality Volume, WQV = 0.243 ac-ft
 Drainage Area, A = 4.651 ac

Runoff Depth in Watershed inches, Q

$$Q = \frac{WQV \times 12}{A} = 0.628 \text{ in}$$

Design Precipitation in inches, P = 1 in

Runoff Curve Number, CN

$$CN = \frac{1000}{[10 + 5P + 10Q - 10(Q^2 + 1.25QP)^{\frac{1}{2}}]} = 96$$

From Table 4-1 in Chapter 4 of TR-55

Initial Abstraction, I_a = 0.083 in

I_a / P = 0.083

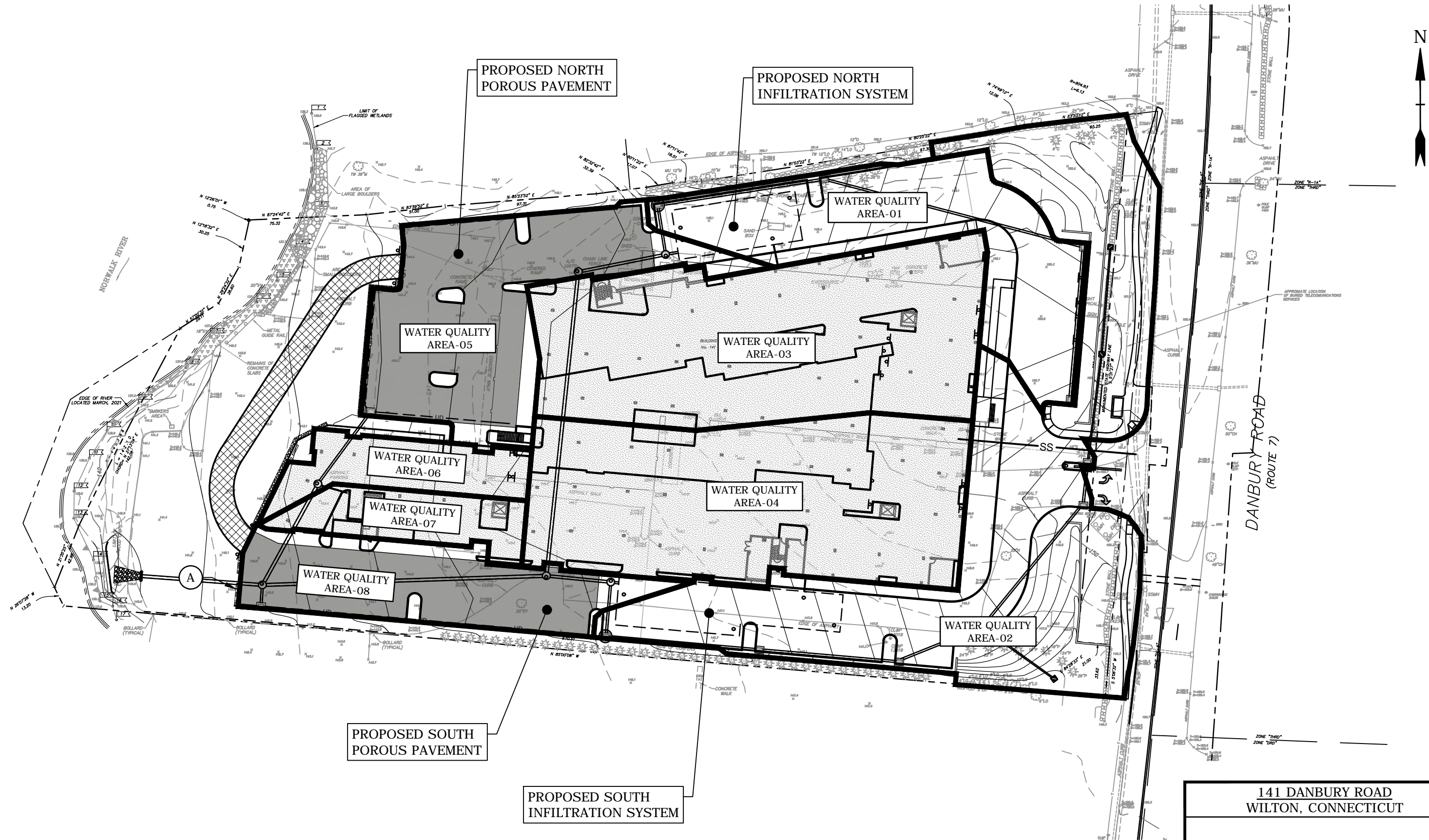
From Exhibit 4-III in Chapter 4 of TR-55

q_u = Unit Peak Discharge = 650 csm/in

Water Quality Flow (WQF)

$$WQF = (q_u)(A)(Q) = 2.97 \text{ cfs}$$

Plotted On: Jul 09, 2021 11:52am By: TAS
Tighe & Bondi: J:\F0173 Fuller\002 141 Danbury Road\Design\Stormwater\F0173-02-C-Proposed Water Quality Map.dwg



Water Quality Area 1

Item	Units	Pollutant					
		TKN	P	TSS	Pb	Cu	Zn
Proposed, Pre Treatment	lb/yr/1-in	0.067	0.013	3.550	0.005	0.001	0.005
Proposed, Post Treatment	lb/yr/1-in	0.040	0.003	0.359	0.002	0.000	0.000
Reduction, Pre to Post Treat	---	40%	78%	90%	64%	70%	90%

Water Quality Area 2

Item	Units	Pollutant					
		TKN	P	TSS	Pb	Cu	Zn
Proposed, Pre Treatment	lb/yr/1-in	0.183	0.037	9.715	0.014	0.003	0.013
Proposed, Post Treatment	lb/yr/1-in	0.109	0.008	0.983	0.005	0.001	0.001
Reduction, Pre to Post Treat	---	40%	78%	90%	64%	70%	90%

Water Quality Area 3

Item	Units	Pollutant					
		TKN	P	TSS	Pb	Cu	Zn
Proposed, Pre Treatment	lb/yr/1-in	0.043	0.009	2.293	0.003	0.001	0.003
Proposed, Post Treatment	lb/yr/1-in	0.031	0.006	1.261	0.002	0.001	0.002
Reduction, Pre to Post Treat	---	27%	33%	45%	32%	32%	32%

Water Quality Area 4

Item	Units	Pollutant					
		TKN	P	TSS	Pb	Cu	Zn
Proposed, Pre Treatment	lb/yr/1-in	0.042	0.008	2.240	0.003	0.001	0.003
Proposed, Post Treatment	lb/yr/1-in	0.031	0.006	1.232	0.002	0.000	0.002
Reduction, Pre to Post Treat	---	27%	33%	45%	32%	32%	32%

Water Quality Area 5

Item	Units	Pollutant					
		TKN	P	TSS	Pb	Cu	Zn
Proposed, Pre Treatment	lb/yr/1-in	0.080	0.016	4.261	0.006	0.001	0.006
Proposed, Post Treatment	lb/yr/1-in	0.048	0.010	0.852	0.002	0.001	0.002
Reduction, Pre to Post Treat	---	40%	40%	80%	60%	60%	60%

Water Quality Area 6

Item	Units	Pollutant					
		TKN	P	TSS	Pb	Cu	Zn
Proposed, Pre Treatment	lb/yr/1-in	0.000	0.000	0.000	0.000	0.000	0.000
Proposed, Post Treatment	lb/yr/1-in	0.000	0.000	0.000	0.000	0.000	0.000
Reduction, Pre to Post Treat	---	---	---	---	---	---	---

Water Quality Area 7

Item	Units	Pollutant					
		TKN	P	TSS	Pb	Cu	Zn
Proposed, Pre Treatment	lb/yr/1-in	0.000	0.000	0.000	0.000	0.000	0.000
Proposed, Post Treatment	lb/yr/1-in	0.000	0.000	0.000	0.000	0.000	0.000
Reduction, Pre to Post Treat	---	---	---	---	---	---	---

Water Quality Area 8

Item	Units	Pollutant					
		TKN	P	TSS	Pb	Cu	Zn
Proposed, Pre Treatment	lb/yr/1-in	0.041	0.008	2.165	0.003	0.001	0.003
Proposed, Post Treatment	lb/yr/1-in	0.024	0.005	0.433	0.001	0.000	0.001
Reduction, Pre to Post Treat	---	40%	40%	80%	60%	60%	60%

Total Site

Item	Units	Pollutant					
		TKN	P	TSS	Pb	Cu	Zn
Proposed, Pre Treatment	lb/yr/1-in	0.456	0.092	24.226	0.035	0.008	0.032
Proposed, Post Treatment	lb/yr/1-in	0.284	0.037	5.121	0.015	0.003	0.009
Reduction, Pre to Post Treat	---	38%	59%	79%	57%	60%	71%

Loading Calculation

Location: **Area 1**
 Rainfall: 1 inches
 Impervious Fraction: 0.32

Condition: **Proposed**

Total Area = 0.396 acres

Pollutant	<u>Residential</u>		<u>Weighted</u>	
	A (acres)	EMC (mg/L)	EMC (mg/L)	L (lbs/yr)
Total Nitrogen (N)	0.396	1.900	1.900	0.067
Total Phosphorus (P)	0.396	0.383	0.383	0.013
Total Suspended Solids	0.396	101.0	101.0	3.6
Lead	0.396	0.144	0.144	0.005
Copper	0.396	0.033	0.033	0.001
Zinc	0.396	0.135	0.135	0.005
$L = 0.2266 * EMC * [0.15 + 0.75 * I] * P * A$				
L	Pollution Loading (lbs/year)			
EMC	Mean Event Mean Concentration (mg/L)			
I	Fraction of Impervious Acres (acres)			
P	Annual Rainfall (in)			
A	Watershed Area (acres)			

Notes:

- Pollution loading calculated using *Municipal Stormwater Management, Second Edition* by Debo & Reese, pgs. 193-195

Location: **Area 1** Condition: **Proposed**
Rainfall: 1 inches
Impervious Fraction: 0.32 Total Area = 0.396 acres
BMP: **Deep Sump Catch Basins**

Pollutant	Lin 1 (lbs)	Sum L (lbs)	RR (%)	Lremoved (lbs)	Lout (lbs)
Total Nitrogen (N)	0.067	0.067	0	0.00	0.067
Total Phosphorus (P)	0.013	0.013	0	0.00	0.013
Total Suspended Solids	3.550	3.6	20	0.71	2.8
Lead	0.005	0.005	0	0.00	0.005
Copper	0.001	0.001	0	0.00	0.001
Zinc	0.005	0.005	0	0.00	0.005
Lin 1	Pollutant Load Area 1				
Sum L	Sum of Pollutant Load to this BMP				
RR	Removal rate in percentage				
Lout	Pollutant Load out of BMP				

Notes:

1. Pollution loading calculated using *Municipal Stormwater Management, Second Edition*, by Debo & Reese, pgs. 193-195.
2. Pollutant removal rates for Rain Garden/Infiltration Trench and Wet Pond taken from *Municipal Stormwater Management, Second Edition*, by Debo & Reese, Tbl. 13-13, p. 748.
3. Pollutant removal rates for Vortech Stormwater Quality Unit and Deep Sump Catch Basins taken from *Final Report, Stormwater Treatment Devices Section 319 Project, Project #99-07*, Submitted to CT DEP April 15, 2002.
4. Pollutant removal rates for Ultra Urban Filter Catch Basin inserts taken from *Final Report: Sediment Removal from Simulated Stormwater Runoff by Abtech Industries, Inc. UltraUrban Filter-CO in Laboratory Flume Tests*, Submitted by Stan Galicki, Ph.D., Millsaps College December 9th, 2009.

Location: **Area 1** Condition: **Proposed**
Rainfall: 1 inches
Impervious Fraction: 0.32 Total Area = 0.396 acres
BMP: **Water Quality Structure**

Pollutant	Lin 1 (lbs)	Sum L (lbs)	RR (%)	Lremoved (lbs)	Lout (lbs)
Total Nitrogen (N)	0.067	0.067	18.3	0.01	0.055
Total Phosphorus (P)	0.013	0.013	66.9	0.01	0.004
Total Suspended Solids	2.840	2.8	77	2.19	0.7
Lead	0.005	0.005	46.5	0.00	0.003
Copper	0.001	0.001	56.2	0.00	0.001
Zinc	0.005	0.005	85.3	0.00	0.001
Lin 1	Pollutant Load Out of Deep Sump Catch Basins BMP				
Sum L	Sum of Pollutant Load to this BMP				
RR	Removal rate in percentage				
Lout	Pollutant Load out of BMP				

Notes:

1. Pollution loading calculated using *Municipal Stormwater Management, Second Edition*, by Debo & Reese, pgs. 193-195.
2. Pollutant removal rates for Rain Garden/Infiltration Trench and Wet Pond taken from *Municipal Stormwater Management, Second Edition*, by Debo & Reese, Tbl. 13-13, p. 748.
3. Pollutant removal rates for Vortech Stormwater Quality Unit and Deep Sump Catch Basins taken from *Final Report, Stormwater Treatment Devices Section 319 Project, Project #99-07*, Submitted to CT DEP April 15, 2002.
4. Pollutant removal rates for Ultra Urban Filter Catch Basin inserts taken from *Final Report: Sediment Removal from Simulated Stormwater Runoff by Abtech Industries, Inc. UltraUrban Filter-CO in Laboratory Flume Tests*, Submitted by Stan Galicki, Ph.D., Millsaps College December 9th, 2009.

Location: **Area 1** Condition: **Proposed**
Rainfall: 1 inches
Impervious Fraction: 0.32 Total Area = 0.396 acres
BMP: **Infiltration System**

Pollutant	Lin 1 (lbs)	Sum L (lbs)	RR (-)	Lremoved (lbs)	Lout (lbs)
Total Nitrogen (N)	0.055	0.055	27	0.01	0.040
Total Phosphorus (P)	0.004	0.004	33	0.00	0.003
Total Suspended Solids	0.653	0.7	45	0.29	0.359
Lead	0.003	0.003	32	0.00	0.002
Copper	0.001	0.001	32	0.00	0.000
Zinc	0.001	0.001	32	0.00	0.000
Lin 1	Pollutant Load out from WQS				
Sum L	Sum of Pollutant Load to this BMP				
RR	Removal rate in percentage				
Lout	Pollutant Load out of BMP				

Notes:

1. Pollution loading calculated using *Municipal Stormwater Management, Second Edition*, by Debo & Reese, pgs. 193-195.
2. Pollutant removal rates for Rain Garden/Infiltration Trench and Wet Pond taken from *Municipal Stormwater Management, Second Edition*, by Debo & Reese, Tbl. 13-13, p. 748.
3. Pollutant removal rates for Vortech Stormwater Quality Unit and Deep Sump Catch Basins taken from *Final Report, Stormwater Treatment Devices Section 319 Project, Project #99-07*, Submitted to CT DEP April 15, 2002.
4. Pollutant removal rates for Ultra Urban Filter Catch Basin inserts taken from *Final Report: Sediment Removal from Simulated Stormwater Runoff by Abtech Industries, Inc. UltraUrban Filter-CO in Laboratory Flume Tests*, Submitted by Stan Galicki, Ph.D., Millsaps College December 9th, 2009.

Loading Calculation

Location: **Area 2** Condition: **Proposed**
 Rainfall: 1 inches
 Impervious Fraction: 0.38 Total Area = 0.969 acres

Pollutant	<u>Residential</u>		<u>Weighted</u>	
	A (acres)	EMC (mg/L)	EMC (mg/L)	L (lbs/yr)
Total Nitrogen (N)	0.969	1.900	1.900	0.183
Total Phosphorus (P)	0.969	0.383	0.383	0.037
Total Suspended Solids	0.969	101.0	101.0	9.7
Lead	0.969	0.144	0.144	0.014
Copper	0.969	0.033	0.033	0.003
Zinc	0.969	0.135	0.135	0.013
$L = 0.2266 * EMC * [0.15 + 0.75 * I] * P * A$				
L	Pollution Loading (lbs/year)			
EMC	Mean Event Mean Concentration (mg/L)			
I	Fraction of Impervious Acres (acres)			
P	Annual Rainfall (in)			
A	Watershed Area (acres)			

Notes:

- Pollution loading calculated using *Municipal Stormwater Management, Second Edition* by Debo & Reese, pgs. 193-195

Location: **Area 2** Condition: **Proposed**
Rainfall: 1 inches
Impervious Fraction: 0.38 Total Area = 0.969 acres
BMP: **Deep Sump Catch Basins**

Pollutant	Lin 1 (lbs)	Sum L (lbs)	RR (%)	Lremoved (lbs)	Lout (lbs)
Total Nitrogen (N)	0.183	0.183	0	0.00	0.183
Total Phosphorus (P)	0.037	0.037	0	0.00	0.037
Total Suspended Solids	9.715	9.7	20	1.94	7.8
Lead	0.014	0.014	0	0.00	0.014
Copper	0.003	0.003	0	0.00	0.003
Zinc	0.013	0.013	0	0.00	0.013
Lin 1	Pollutant Load Area 1				
Sum L	Sum of Pollutant Load to this BMP				
RR	Removal rate in percentage				
Lout	Pollutant Load out of BMP				

Notes:

1. Pollution loading calculated using *Municipal Stormwater Management, Second Edition*, by Debo & Reese, pgs. 193-195.
2. Pollutant removal rates for Rain Garden/Infiltration Trench and Wet Pond taken from *Municipal Stormwater Management, Second Edition*, by Debo & Reese, Tbl. 13-13, p. 748.
3. Pollutant removal rates for Vortech Stormwater Quality Unit and Deep Sump Catch Basins taken from *Final Report, Stormwater Treatment Devices Section 319 Project, Project #99-07*, Submitted to CT DEP April 15, 2002.
4. Pollutant removal rates for Ultra Urban Filter Catch Basin inserts taken from *Final Report: Sediment Removal from Simulated Stormwater Runoff by Abtech Industries, Inc. UltraUrban Filter-CO in Laboratory Flume Tests*, Submitted by Stan Galicki, Ph.D., Millsaps College December 9th, 2009.

Location: **Area 2** Condition: **Proposed**
Rainfall: 1 inches
Impervious Fraction: 0.38 Total Area = 0.969 acres
BMP: **Water Quality Structure**

Pollutant	Lin 1 (lbs)	Sum L (lbs)	RR (%)	Lremoved (lbs)	Lout (lbs)
Total Nitrogen (N)	0.183	0.183	18.3	0.03	0.149
Total Phosphorus (P)	0.037	0.037	66.9	0.02	0.012
Total Suspended Solids	7.772	7.8	77	5.98	1.8
Lead	0.014	0.014	46.5	0.01	0.007
Copper	0.003	0.003	56.2	0.00	0.001
Zinc	0.013	0.013	85.3	0.01	0.002
Lin 1	Pollutant Load Out of Deep Sump Catch Basins BMP				
Sum L	Sum of Pollutant Load to this BMP				
RR	Removal rate in percentage				
Lout	Pollutant Load out of BMP				

Notes:

1. Pollution loading calculated using *Municipal Stormwater Management, Second Edition*, by Debo & Reese, pgs. 193-195.
2. Pollutant removal rates for Rain Garden/Infiltration Trench and Wet Pond taken from *Municipal Stormwater Management, Second Edition*, by Debo & Reese, Tbl. 13-13, p. 748.
3. Pollutant removal rates for Vortech Stormwater Quality Unit and Deep Sump Catch Basins taken from *Final Report, Stormwater Treatment Devices Section 319 Project, Project #99-07*, Submitted to CT DEP April 15, 2002.
4. Pollutant removal rates for Ultra Urban Filter Catch Basin inserts taken from *Final Report: Sediment Removal from Simulated Stormwater Runoff by Abtech Industries, Inc. UltraUrban Filter-CO in Laboratory Flume Tests*, Submitted by Stan Galicki, Ph.D., Millsaps College December 9th, 2009.

Location: **Area 2** Condition: **Proposed**
Rainfall: 1 inches
Impervious Fraction: 0.38 Total Area = 0.969 acres
BMP: **Infiltration System**

Pollutant	Lin 1 (lbs)	Sum L (lbs)	RR (-)	Lremoved (lbs)	Lout (lbs)
Total Nitrogen (N)	0.149	0.149	27	0.04	0.109
Total Phosphorus (P)	0.012	0.012	33	0.00	0.008
Total Suspended Solids	1.788	1.8	45	0.80	1.0
Lead	0.007	0.007	32	0.00	0.005
Copper	0.001	0.001	32	0.00	0.001
Zinc	0.002	0.002	32	0.00	0.001
Lin 1	Pollutant Load out from WQS				
Sum L	Sum of Pollutant Load to this BMP				
RR	Removal rate in percentage				
Lout	Pollutant Load out of BMP				

Notes:

1. Pollution loading calculated using *Municipal Stormwater Management, Second Edition*, by Debo & Reese, pgs. 193-195.
2. Pollutant removal rates for Rain Garden/Infiltration Trench and Wet Pond taken from *Municipal Stormwater Management, Second Edition*, by Debo & Reese, Tbl. 13-13, p. 748.
3. Pollutant removal rates for Vortech Stormwater Quality Unit and Deep Sump Catch Basins taken from *Final Report, Stormwater Treatment Devices Section 319 Project, Project #99-07*, Submitted to CT DEP April 15, 2002.
4. Pollutant removal rates for Ultra Urban Filter Catch Basin inserts taken from *Final Report: Sediment Removal from Simulated Stormwater Runoff by Abtech Industries, Inc. UltraUrban Filter-CO in Laboratory Flume Tests*, Submitted by Stan Galicki, Ph.D., Millsaps College December 9th, 2009.

Loading Calculation

Location: **Area 3** Condition: **Proposed**
 Rainfall: 1 inches
 Impervious Fraction: 0.00 Total Area = 0.668 acres

Pollutant	<u>Residential</u>		<u>Weighted</u>	
	A (acres)	EMC (mg/L)	EMC (mg/L)	L (lbs/yr)
Total Nitrogen (N)	0.668	1.900	1.900	0.043
Total Phosphorus (P)	0.668	0.383	0.383	0.009
Total Suspended Solids	0.668	101.0	101.0	2.3
Lead	0.668	0.144	0.144	0.003
Copper	0.668	0.033	0.033	0.001
Zinc	0.668	0.135	0.135	0.003
$L = 0.2266 * EMC * [0.15 + 0.75 * I] * P * A$				
L	Pollution Loading (lbs/year)			
EMC	Mean Event Mean Concentration (mg/L)			
I	Fraction of Impervious Acres (acres)			
P	Annual Rainfall (in)			
A	Watershed Area (acres)			

Notes:

- Pollution loading calculated using *Municipal Stormwater Management, Second Edition* by Debo & Reese, pgs. 193-195

Location: **Area 3** Condition: **Proposed**
Rainfall: 1 inches
Impervious Fraction: 0.00 Total Area = 0.668 acres
BMP: **Infiltration System**

Pollutant	Lin 1 (lbs)	Sum L (lbs)	RR (-)	Lremoved (lbs)	Lout (lbs)
Total Nitrogen (N)	0.043	0.043	27	0.01	0.031
Total Phosphorus (P)	0.009	0.009	33	0.00	0.006
Total Suspended Solids	2.293	2.3	45	1.03	1.3
Lead	0.003	0.003	32	0.00	0.002
Copper	0.001	0.001	32	0.00	0.001
Zinc	0.003	0.003	32	0.00	0.002
Lin 1	Pollutant Load out from WQS				
Sum L	Sum of Pollutant Load to this BMP				
RR	Removal rate in percentage				
Lout	Pollutant Load out of BMP				

Notes:

1. Pollution loading calculated using *Municipal Stormwater Management, Second Edition*, by Debo & Reese, pgs. 193-195.
2. Pollutant removal rates for Rain Garden/Infiltration Trench and Wet Pond taken from *Municipal Stormwater Management, Second Edition*, by Debo & Reese, Tbl. 13-13, p. 748.
3. Pollutant removal rates for Vortech Stormwater Quality Unit and Deep Sump Catch Basins taken from *Final Report, Stormwater Treatment Devices Section 319 Project, Project #99-07*, Submitted to CT DEP April 15, 2002.
4. Pollutant removal rates for Ultra Urban Filter Catch Basin inserts taken from *Final Report: Sediment Removal from Simulated Stormwater Runoff by Abtech Industries, Inc. UltraUrban Filter-CO in Laboratory Flume Tests*, Submitted by Stan Galicki, Ph.D., Millsaps College December 9th, 2009.

Loading Calculation

Location: **Area 4** Condition: **Proposed**
 Rainfall: 1 inches
 Impervious Fraction: 0.00 Total Area = 0.653 acres

Pollutant	<u>Residential</u>		<u>Weighted</u>	
	A (acres)	EMC (mg/L)	EMC (mg/L)	L (lbs/yr)
Total Nitrogen (N)	0.653	1.900	1.900	0.042
Total Phosphorus (P)	0.653	0.383	0.383	0.008
Total Suspended Solids	0.653	101.0	101.0	2.2
Lead	0.653	0.144	0.144	0.003
Copper	0.653	0.033	0.033	0.001
Zinc	0.653	0.135	0.135	0.003
$L = 0.2266 * EMC * [0.15 + 0.75*I] * P * A$				
L	Pollution Loading (lbs/year)			
EMC	Mean Event Mean Concentration (mg/L)			
I	Fraction of Impervious Acres (acres)			
P	Annual Rainfall (in)			
A	Watershed Area (acres)			

Notes:

- Pollution loading calculated using *Municipal Stormwater Management, Second Edition* by Debo & Reese, pgs. 193-195

Location: **Area 4** Condition: **Proposed**
Rainfall: 1 inches
Impervious Fraction: 0.00 Total Area = 0.653 acres
BMP: **Infiltration System**

Pollutant	Lin 1 (lbs)	Sum L (lbs)	RR (-)	Lremoved (lbs)	Lout (lbs)
Total Nitrogen (N)	0.042	0.042	27	0.01	0.031
Total Phosphorus (P)	0.008	0.008	33	0.00	0.006
Total Suspended Solids	2.240	2.2	45	1.01	1.2
Lead	0.003	0.003	32	0.00	0.002
Copper	0.001	0.001	32	0.00	0.000
Zinc	0.003	0.003	32	0.00	0.002
Lin 1	Pollutant Load out from WQS				
Sum L	Sum of Pollutant Load to this BMP				
RR	Removal rate in percentage				
Lout	Pollutant Load out of BMP				

Notes:

1. Pollution loading calculated using *Municipal Stormwater Management, Second Edition*, by Debo & Reese, pgs. 193-195.
2. Pollutant removal rates for Rain Garden/Infiltration Trench and Wet Pond taken from *Municipal Stormwater Management, Second Edition*, by Debo & Reese, Tbl. 13-13, p. 748.
3. Pollutant removal rates for Vortech Stormwater Quality Unit and Deep Sump Catch Basins taken from *Final Report, Stormwater Treatment Devices Section 319 Project, Project #99-07*, Submitted to CT DEP April 15, 2002.
4. Pollutant removal rates for Ultra Urban Filter Catch Basin inserts taken from *Final Report: Sediment Removal from Simulated Stormwater Runoff by Abtech Industries, Inc. UltraUrban Filter-CO in Laboratory Flume Tests*, Submitted by Stan Galicki, Ph.D., Millsaps College December 9th, 2009.

Loading Calculation

Location: **Area 5** Condition: **Proposed**
 Rainfall: 1 inches
 Impervious Fraction: 0.39 Total Area = 0.419 acres

Pollutant	<u>Residential</u>		<u>Weighted</u>	
	A (acres)	EMC (mg/L)	EMC (mg/L)	L (lbs/yr)
Total Nitrogen (N)	0.419	1.900	1.900	0.080
Total Phosphorus (P)	0.419	0.383	0.383	0.016
Total Suspended Solids	0.419	101.0	101.0	4.3
Lead	0.419	0.144	0.144	0.006
Copper	0.419	0.033	0.033	0.001
Zinc	0.419	0.135	0.135	0.006
$L = 0.2266 * EMC * [0.15 + 0.75 * I] * P * A$				
L	Pollution Loading (lbs/year)			
EMC	Mean Event Mean Concentration (mg/L)			
I	Fraction of Impervious Acres (acres)			
P	Annual Rainfall (in)			
A	Watershed Area (acres)			

Notes:

- Pollution loading calculated using *Municipal Stormwater Management, Second Edition* by Debo & Reese, pgs. 193-195

Location: **Area 5** Condition: **Proposed**
Rainfall: 1 inches
Impervious Fraction: 0.39 Total Area = 0.419 acres
BMP: **Porous Pavement**

Pollutant	Lin 1 (lbs)	Sum L (lbs)	RR (-)	Lremoved (lbs)	Lout (lbs)
Total Nitrogen (N)	0.080	0.080	40	0.03	0.048
Total Phosphorus (P)	0.016	0.016	40	0.01	0.010
Total Suspended Solids	4.261	4.3	80	3.41	0.9
Lead	0.006	0.006	60	0.00	0.002
Copper	0.001	0.001	60	0.00	0.001
Zinc	0.006	0.006	60	0.00	0.002
Lin 1	Pollutant Load out from WQS				
Sum L	Sum of Pollutant Load to this BMP				
RR	Removal rate in percentage				
Lout	Pollutant Load out of BMP				

Notes:

1. Pollution loading calculated using *Municipal Stormwater Management, Second Edition*, by Debo & Reese, pgs. 193-195.
2. Pollutant removal rates for Rain Garden/Infiltration Trench and Wet Pond taken from *Municipal Stormwater Management, Second Edition*, by Debo & Reese, Tbl. 13-13, p. 748.
3. Pollutant removal rates for Vortech Stormwater Quality Unit and Deep Sump Catch Basins taken from *Final Report, Stormwater Treatment Devices Section 319 Project, Project #99-07*, Submitted to CT DEP April 15, 2002.
4. Pollutant removal rates for Ultra Urban Filter Catch Basin inserts taken from *Final Report: Sediment Removal from Simulated Stormwater Runoff by Abtech Industries, Inc. UltraUrban Filter-CO in Laboratory Flume Tests*, Submitted by Stan Galicki, Ph.D., Millsaps College December 9th, 2009.

Loading Calculation

Location: **Area 8** Condition: **Proposed**
 Rainfall: 1 inches
 Impervious Fraction: 0.27 Total Area = 0.271 acres

Pollutant	<u>Residential</u>		<u>Weighted</u>	
	A (acres)	EMC (mg/L)	EMC (mg/L)	L (lbs/yr)
Total Nitrogen (N)	0.271	1.900	1.900	0.041
Total Phosphorus (P)	0.271	0.383	0.383	0.008
Total Suspended Solids	0.271	101.0	101.0	2.2
Lead	0.271	0.144	0.144	0.003
Copper	0.271	0.033	0.033	0.001
Zinc	0.271	0.135	0.135	0.003
$L = 0.2266 * EMC * [0.15 + 0.75 * I] * P * A$				
L	Pollution Loading (lbs/year)			
EMC	Mean Event Mean Concentration (mg/L)			
I	Fraction of Impervious Acres (acres)			
P	Annual Rainfall (in)			
A	Watershed Area (acres)			

Notes:

- Pollution loading calculated using *Municipal Stormwater Management, Second Edition* by Debo & Reese, pgs. 193-195

Location: **Area 8** Condition: **Proposed**
Rainfall: 1 inches
Impervious Fraction: 0.27 Total Area = 0.271 acres
BMP: **Porous Pavement**

Pollutant	Lin 1 (lbs)	Sum L (lbs)	RR (-)	Lremoved (lbs)	Lout (lbs)
Total Nitrogen (N)	0.041	0.041	40	0.02	0.024
Total Phosphorus (P)	0.008	0.008	40	0.00	0.005
Total Suspended Solids	2.165	2.2	80	1.73	0.4
Lead	0.003	0.003	60	0.00	0.001
Copper	0.001	0.001	60	0.00	0.000
Zinc	0.003	0.003	60	0.00	0.001
Lin 1	Pollutant Load out from WQS				
Sum L	Sum of Pollutant Load to this BMP				
RR	Removal rate in percentage				
Lout	Pollutant Load out of BMP				

Notes:

1. Pollution loading calculated using *Municipal Stormwater Management, Second Edition*, by Debo & Reese, pgs. 193-195.
2. Pollutant removal rates for Rain Garden/Infiltration Trench and Wet Pond taken from *Municipal Stormwater Management, Second Edition*, by Debo & Reese, Tbl. 13-13, p. 748.
3. Pollutant removal rates for Vortech Stormwater Quality Unit and Deep Sump Catch Basins taken from *Final Report, Stormwater Treatment Devices Section 319 Project, Project #99-07*, Submitted to CT DEP April 15, 2002.
4. Pollutant removal rates for Ultra Urban Filter Catch Basin inserts taken from *Final Report: Sediment Removal from Simulated Stormwater Runoff by Abtech Industries, Inc. UltraUrban Filter-CO in Laboratory Flume Tests*, Submitted by Stan Galicki, Ph.D., Millsaps College December 9th, 2009.

Name: **CB-01****Location:** Proposed Yard Drain - Front Lawn

Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.025	0.95	0.024
Landscaped and Lawns	0.082	0.30	0.025
			0.049

Total Area: **0.108****C:** **0.45****Time of Concentration:**

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.24	3.54	130	0.030	14.2

Total Tc (min) = **14.2****Name:** **CB-01A****Location:** Proposed Yard Drain - Front Lawn

Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.008	0.95	0.008
Landscaped and Lawns	0.186	0.30	0.056
			0.063

Total Area: **0.194****C:** **0.33****Time of Concentration:**

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.24	3.54	50	0.020	7.8

Total Tc (min) = **7.8**

Name: CB-02**Location:** Proposed Catch Basin - Driveway

Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.043	0.95	0.041
Landscaped and Lawns	0.010	0.30	0.003
			0.044

Total Area: 0.054**C:** 0.82**Time of Concentration:**

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.015	3.54	98	0.050	1.0

Total Tc (min) = 1.0**Minimum Tc =** 5.0**Name: CB-03****Location:** Proposed Catch Basin - Parking Area East

Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.057	0.95	0.054
Landscaped and Lawns	0.016	0.30	0.005
			0.059

Total Area: 0.074**C:** 0.80**Time of Concentration:**

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.24	3.54	20	0.020	3.7
B-C	0.015	3.54	60	0.033	0.8

Total Tc (min) = 4.5**Minimum Tc =** 5.0

Name: CB-04

Location: Proposed Catch Basin - Parking Area East

Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.044	0.95	0.042
Landscaped and Lawns	0.009	0.30	0.003
			0.044

Total Area: 0.053

C: 0.84

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.24	3.54	20	0.020	3.7
B-C	0.015	3.54	55	0.045	0.7

Total Tc (min) = 4.4

Minimum Tc = 5.0

Name: CB-05

Location: Proposed Catch Basin - Driveway

Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.076	0.95	0.072
Landscaped and Lawns	0.039	0.30	0.012
			0.084

Total Area: 0.115

C: 0.73

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.24	3.54	20	0.020	3.7
B-C	0.015	3.54	65	0.040	0.8

Total Tc (min) = 4.5

Minimum Tc = 5.0

Name: CB-06

Location: Proposed Catch Basin - Parking Area South

Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.047	0.95	0.045
Landscaped and Lawns	0.015	0.30	0.004
			0.049

Total Area: 0.062

C: 0.80

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.24	3.54	22	0.020	4.0
B-C	0.015	3.54	58	0.025	0.9

Total Tc (min) = 4.9

Minimum Tc = 5.0

Name: CB-07

Location: Proposed Catch Basin - Parking Area South

Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.081	0.95	0.077
Landscaped and Lawns	0.018	0.30	0.005
			0.082

Total Area: 0.099

C: 0.83

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.24	3.54	15	0.020	3.0
B-C	0.015	3.54	115	0.035	1.3

Total Tc (min) = 4.3

Minimum Tc = 5.0

Name: CB-08**Location:** Proposed Catch Basin - Parking Area South

Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.094	0.95	0.090
Landscaped and Lawns	0.017	0.30	0.005
			0.095

Total Area: 0.111**C:** 0.85**Time of Concentration:**

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.24	3.54	30	0.040	3.9
B-C	0.015	3.54	140	0.035	1.5

Total Tc (min) = 5.5**Name: CB-09****Location:** Proposed Catch Basin - Parking Area North

Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.117	0.95	0.111
Landscaped and Lawns	0.020	0.30	0.006
			0.117

Total Area: 0.137**C:** 0.86**Time of Concentration:**

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.24	3.54	20	0.020	3.7
B-C	0.015	3.54	120	1.000	0.4

Total Tc (min) = 4.1**Minimum Tc =** 5.0

Name: CB-10

Location: Proposed Catch Basin - Parking Area North

Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.104	0.95	0.098
Landscaped and Lawns	0.029	0.30	0.009
			0.107

Total Area: 0.133

C: 0.81

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.24	3.54	30	0.040	3.9
B-C	0.015	3.54	135	1.000	0.4

Total Tc (min) = 4.3

Minimum Tc = 5.0

Name: CB-11

Location: Proposed Yard Drain - Southeast Corner Site

Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.010	0.95	0.010
Landscaped and Lawns	0.217	0.30	0.065
			0.075

Total Area: 0.227

C: 0.33

Time of Concentration:

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.24	3.54	120	0.050	10.9

Total Tc (min) = 10.9

Name: RF-01**Location:** Proposed Building - North

Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.668	0.95	0.635
Landscaped and Lawns	0.000	0.30	0.000
			0.635

Total Area: 0.668**C:** 0.95**Time of Concentration:**

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.015	3.54	50	0.015	1.0

Total Tc (min) = 1.0**Minimum Tc =** 5.0**Name:** RF-02**Location:** Proposed Building - South

Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.653	0.95	0.620
Landscaped and Lawns	0.000	0.30	0.000
			0.620

Total Area: 0.653**C:** 0.95**Time of Concentration:**

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.015	3.54	50	0.015	1.0

Total Tc (min) = 1.0**Minimum Tc =** 5.0

Name: RF-03**Location:** Proposed Building - Northwest

Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.120	0.95	0.114
Landscaped and Lawns	0.000	0.30	0.000
			0.114

Total Area: 0.120**C:** 0.95**Time of Concentration:**

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.015	3.54	50	0.015	1.0

Total Tc (min) = 1.0**Minimum Tc =** 5.0**Name:** RF-04**Location:** Proposed Building - Southwest

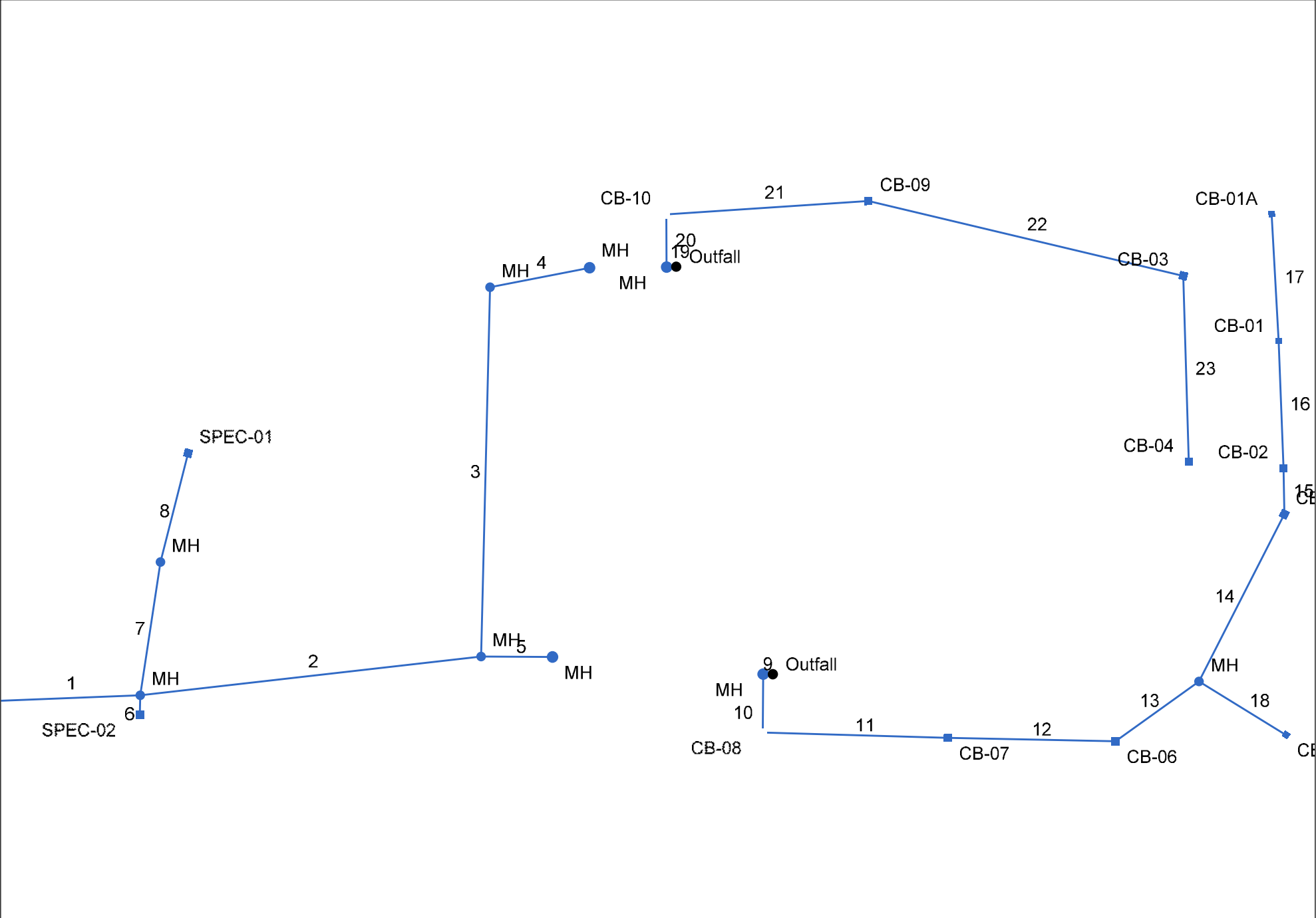
Cover Type	Area (ac)	C	A x C
Pavement / Impervious	0.115	0.95	0.109
Landscaped and Lawns	0.000	0.30	0.000
			0.109

Total Area: 0.115**C:** 0.95**Time of Concentration:**

Sheet-Flow Travel Time					
Segment ID	"n"	P ₂ (in)	Flow Length (ft)	Slope (ft/ft)	Time (min)
A-B	0.015	3.54	50	0.015	1.0

Total Tc (min) = 1.0**Minimum Tc =** 5.0

Hydraflow Storm Sewers Extension for Autodesk® AutoCAD® Civil 3D® Plan



Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (l)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr	Total		Incr	Total	Inlet	Syst					Size	Slope	Dn	Up	Dn	Up	Dn	Up	
		(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	76.000	0.00	0.24	0.00	0.00	0.22	0.0	27.9	3.5	9.14	8.04	5.17	18	0.50	138.50	138.88	140.44	140.93	141.50	142.82	
2	1	178.000	0.00	0.00	0.00	0.00	0.00	0.0	1.2	0.0	8.30	11.05	4.70	18	0.94	138.88	140.56	141.35	142.29	142.82	145.79	
3	2	192.000	0.00	0.00	0.00	0.00	0.00	0.0	0.2	0.0	4.40	9.85	3.15	18	0.75	140.56	142.00	142.63	142.93	145.79	145.97	
4	3	52.600	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	4.40	9.65	4.34	15	1.90	142.00	143.00	143.15	143.85	145.97	146.50	
5	2	37.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	3.90	7.00	5.28	15	1.00	142.63	143.00	143.30	143.80	145.79	146.33	
6	1	10.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.04	14.07	0.05	12	13.30	138.88	140.21	141.35	141.35	142.82	144.30	
7	1	70.000	0.24	0.24	0.95	0.22	0.22	5.0	25.5	3.7	0.85	8.04	0.48	18	0.50	138.88	139.23	141.35	141.35	142.82	143.80	
8	7	58.500	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.03	2.72	0.04	12	0.50	139.23	139.52	141.35	141.35	143.80	143.90	
9	End	5.000	0.00	0.97	0.00	0.00	0.54	0.0	16.6	4.7	2.56	0.00	3.26	12	0.00	142.00	142.00	143.84	143.86	146.33	146.33	
10	9	30.400	0.11	0.97	0.85	0.09	0.54	5.5	16.4	4.7	2.57	2.80	3.28	12	0.53	143.00	143.16	144.03	144.16	146.33	146.10	
11	10	96.000	0.10	0.86	0.83	0.08	0.45	5.0	15.9	4.8	2.17	3.32	2.97	12	0.74	143.16	143.87	144.41	144.68	146.10	148.30	
12	11	87.000	0.06	0.76	0.80	0.05	0.37	5.0	15.6	4.9	1.79	3.33	4.10	12	0.75	144.38	145.03	144.90	145.60	148.30	151.60	
13	12	53.300	0.00	0.70	0.00	0.00	0.32	0.0	15.3	4.9	1.56	3.34	3.54	12	0.75	145.03	145.43	145.60	145.96	151.60	153.50	
14	13	97.600	0.12	0.47	0.73	0.08	0.24	5.0	14.9	5.0	1.21	3.85	3.87	12	0.99	146.39	147.36	146.78	147.82	153.50	0.00	
15	14	23.900	0.05	0.36	0.82	0.04	0.16	5.0	14.7	5.1	0.79	3.87	2.60	12	1.00	147.36	147.60	147.82	147.97	0.00	152.50	
16	15	66.300	0.11	0.30	0.45	0.05	0.11	14.2	14.2	5.2	0.58	2.38	2.10	10	1.01	147.36	148.03	147.97	148.36	152.50	150.70	
17	16	66.000	0.19	0.19	0.33	0.06	0.06	7.8	7.8	7.0	0.45	2.39	2.42	10	1.02	148.03	148.70	148.36	148.99	150.70	150.70	
18	13	53.000	0.23	0.23	0.33	0.07	0.07	10.9	10.9	6.0	0.45	1.69	1.79	10	0.51	145.43	145.70	145.96	146.02	153.50	147.70	
19	End	5.000	0.00	0.40	0.00	0.00	0.33	0.0	7.6	7.1	2.34	0.00	2.98	12	0.00	142.00	142.00	143.79	143.81	146.50	146.50	
20	19	27.400	0.13	0.40	0.81	0.11	0.33	5.0	7.5	7.2	2.36	3.38	3.69	12	0.77	143.00	143.21	143.95	143.87	146.50	146.30	
21	20	105.100	0.14	0.26	0.86	0.12	0.22	5.0	7.0	7.4	1.64	6.36	3.38	12	2.72	143.21	146.07	143.87	146.61	146.30	149.70	
22	21	167.900	0.07	0.13	0.80	0.06	0.10	5.0	5.8	8.0	0.83	6.09	2.47	12	2.50	146.07	150.26	146.61	150.64	149.70	154.70	
23	22	96.700	0.05	0.05	0.84	0.04	0.04	5.0	5.0	8.6	0.38	4.71	1.90	12	1.49	150.26	151.70	150.64	151.95	154.70	154.70	
Project File: F0173-02 Storm Sewers Model.stm																Number of lines: 23				Run Date: 7/9/2021		
NOTES: Intensity = 38.51 / (Inlet time + 3.60) ^ 0.70; Return period =Yrs. 25 ; c = cir e = ellip b = box																						

**141 Danbury Road
Residential Development
Wilton, Connecticut**

Maintenance and Inspection Plan

July 2021

The initial inspection will be made during an intense rainfall to check the adequacy of the catch basins, roof leaders, piping, hydrodynamic separators, underground infiltration systems, and system outlet.

The following is a checklist of items that will be checked and maintained during scheduled maintenance operations.

Drainage Structures: The Owner will be responsible for cleaning the catch basins, yard drains, manholes, piping, and outlet protection on their property. A Connecticut licensed hauler shall clean the sumps, and legally dispose of removed sand at an off-site location. The road sand may not be reused or stored on-site. As part of the hauling contract, the hauler shall notify the Owner in writing where the material is being disposed.

Each catch basin and yard drain shall be inspected every four months, with one inspection occurring during the month of April. Any debris occurring within one foot from the bottom of each sump shall be removed by Vacuum "Vactor" type of maintenance equipment. Maintain a log of inspections. Remove organic matter, sand, and debris from catch basins as necessary and dispose of legally.

Hydrodynamic Separator: The Contech CDS units (hydrodynamic separator) will be skimmed and oil and scum removed. In a separate operation, silt, sand, and sediment will be removed. Once the structure is cleaned of debris, the chamber will be refilled with clean water to prevent wash through of debris and oil during next storm event.

Underground Infiltration: The underground infiltration system will be cleaned of all silt, debris and sediment from the inlet structure, outlet structure and the chamber lengths. The outlet control structure will be inspected and cleaned to make sure nothing is clogging the discharge pipe.

Level Spreader: The level spreader shall be inspected two times annually. Regular maintenance includes removing accumulated debris and sediment, checking for erosion, vegetative bare spots, and removing invasive plant species or tree saplings.

Pavement: Paved areas shall be swept periodically by the Owner to clean trash and other debris. The Owner will sweep paved areas on its property in the spring to remove winter accumulations of road sand.

Perform a visual inspection of paved areas four times per year with one inspection after the last snowfall, but no later than April 1. Sweep accumulated sediment and debris from the paved areas. Clean paved areas as necessary during the remainder of the year.

Drainage Structures Inspection

Each catch basin and yard drain shall be inspected every four months, with one inspection occurring during the month of April. Any debris occurring within one foot from the bottom of each sump shall be removed by Vacuum "Vactor" type of maintenance equipment. Maintain a log of inspections. Remove organic matter, sand, and debris from catch basins as necessary and dispose of legally.

Date (MM/DD/YY)	Company/Person	Supervising Team Member	Comments

Underground Infiltration

The underground infiltration system shall be inspected annually and will be cleaned of all silt, debris and sediment from the inlet structure, outlet structure and the chamber lengths. The outlet control structure will be inspected and cleaned to make sure nothing is clogging the discharge pipe.

Date (MM/DD/YY)	Company/Person	Supervising Team Member	Comments

Pavement Inspection

Perform a visual inspection of paved areas four times per year with one inspection after the last snowfall, but no later than April 1. Sweep accumulated sediment and debris from the paved areas. Clean paved areas as necessary during the remainder of the year.

Date (MM/DD/YY)	Company/Person	Supervising Team Member	Comments

Questions concerning the VERTCON process may be mailed to [_NGS](#)

Latitude: 41.179

Longitude: 073.417

NGVD 29 height:

Datum shift(NAVD 88 minus NGVD 29): -0.329 meter = -1.07 feet

TABLE 5 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	10- PERCENT- ANNUAL- CHANCE	PEAK DISCHARGES (cfs)		
			2- PERCENT- ANNUAL- CHANCE	1- PERCENT- ANNUAL- CHANCE	0.2- PERCENT- ANNUAL- CHANCE
NOROTON RIVER - continued					
At Jelliff Mill Road	4.38	520	890	1,080	1,900
Upstream of Mead Park	1.90	220	390	460	820
Upstream of Wahackne Road	0.79	90	160	200	340
Upstream of Greenley Road	0.43	50	90	110	190
NORTH FARRAR BROOK					
At the confluence with the Pequonnock River (Upper Reach)	0.46	100	245	350	780
At the Trumbull-Monroe corporate limits	0.03	10	25	35	80
NORWALK RIVER					
Upstream of confluence of Betts Pond Brook	57.6	4,100	9,500	14,000	16,250
Upstream of confluence of Silvermine River	32.8	2,600	6,300	9,100	20,000
At Kent Road	30.0	2,980	5,840	7,455	12,505
Downstream of confluence of Comstock Brook	25.7	2,680	5,280	6,735	11,295
Upstream of confluence of Comstock Brook	18.4	1,845	3,660	4,675	7,840
Downstream of confluence of Gilbert and Bennett Brooks	13.8	1,425	2,865	3,655	6,135
Upstream of confluence of Gilbert and Bennett Brooks	12.3	1,205	2,445	3,125	5,240
Downstream of the confluence of Cooper Pond Brook	11.13	1,010	2,085	2,665	4,475
Upstream of the confluence of Cooper Pond Brook	8.73	665	1,250	1,595	2,680

Norwalk River

Calibrated (Duplicate Effective) Model Output Table

HEC-RAS Plan: DE River: RIVER-1 Reach: Reach-1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach-1	29920	10%	2980.00	147.00	152.32	152.32	153.29	0.004454	9.23	671.47	438.66	0.75
Reach-1	29920	2%	5840.00	147.00	153.56	153.56	154.60	0.004481	10.83	1400.71	673.09	0.79
Reach-1	29920	1%	7455.00	147.00	153.96	153.96	155.12	0.004919	11.86	1676.50	693.44	0.83
Reach-1	29920	0.2%	12505.00	147.00	154.99	154.99	156.40	0.005722	14.14	2414.85	738.35	0.92
Reach-1	29760	10%	2980.00	142.20	148.53		149.01	0.001498	5.62	583.13	179.68	0.44
Reach-1	29760	2%	5840.00	142.20	151.31		151.93	0.001165	6.63	1125.96	211.79	0.42
Reach-1	29760	1%	7455.00	142.20	152.19		152.97	0.001276	7.45	1317.25	222.00	0.44
Reach-1	29760	0.2%	12505.00	142.20	154.28		155.51	0.001589	9.59	1814.00	255.42	0.51
Reach-1	28240	10%	2980.00	138.00	145.34		146.30	0.002090	7.99	445.85	151.41	0.55
Reach-1	28240	2%	5840.00	138.00	146.52	146.52	148.75	0.004139	12.55	696.60	258.98	0.79
Reach-1	28240	1%	7455.00	138.00	147.71	147.71	149.80	0.003506	12.69	1059.97	366.77	0.75
Reach-1	28240	0.2%	12505.00	138.00	149.76	149.76	151.98	0.003397	14.32	1979.91	552.23	0.76
Reach-1	27468	10%	2980.00	132.10	145.99		145.99	0.000005	0.60	9140.64	793.45	0.03
Reach-1	27468	2%	5840.00	132.10	146.99		146.99	0.000017	1.11	9943.03	813.12	0.05
Reach-1	27468	1%	7455.00	132.10	147.53		147.54	0.000024	1.37	10389.13	832.33	0.06
Reach-1	27468	0.2%	12505.00	132.10	148.85		148.88	0.000052	2.13	11529.28	890.79	0.10
Reach-1	27110	10%	2980.00	136.60	145.97		145.99	0.000064	1.74	4765.52	962.48	0.10
Reach-1	27110	2%	5840.00	136.60	146.94		146.97	0.000148	2.83	5707.19	991.44	0.16
Reach-1	27110	1%	7455.00	136.60	147.46		147.51	0.000187	3.29	6234.70	1005.58	0.18
Reach-1	27110	0.2%	12505.00	136.60	148.74		148.82	0.000304	4.52	7518.38	1009.50	0.23
Reach-1	27025	10%	2980.00	135.50	145.63	141.84	145.90	0.000562	5.28	1759.35	880.05	0.30
Reach-1	27025	2%	5840.00	135.50	145.74	145.59	146.68	0.001965	9.96	1855.68	883.55	0.56
Reach-1	27025	1%	7455.00	135.50	146.24	146.03	147.20	0.002112	10.68	2304.78	899.67	0.59
Reach-1	27025	0.2%	12505.00	135.50	147.33	147.10	148.46	0.002654	12.81	3304.65	934.56	0.67
Reach-1	27020		Bridge									
Reach-1	27015	10%	2980.00	135.50	141.85	141.85	144.38	0.006857	13.22	278.63	62.97	0.97
Reach-1	27015	2%	5840.00	135.50	145.62	145.62	146.66	0.002172	10.38	1752.24	879.80	0.59
Reach-1	27015	1%	7455.00	135.50	146.08	146.08	147.18	0.002399	11.26	2163.67	894.64	0.63
Reach-1	27015	0.2%	12505.00	135.50	147.11	147.11	148.43	0.003090	13.64	3099.86	927.52	0.72
Reach-1	26680	10%	2980.00	134.00	140.31	140.08	141.21	0.004091	9.97	762.74	365.85	0.74
Reach-1	26680	2%	5840.00	134.00	142.16		142.88	0.003007	10.34	1642.26	560.63	0.67
Reach-1	26680	1%	7455.00	134.00	142.90		143.58	0.002777	10.58	2066.21	590.20	0.65
Reach-1	26680	0.2%	12505.00	134.00	145.35		145.79	0.001646	9.70	3857.15	759.13	0.52
Reach-1	26209	10%	2980.00	133.40	140.62		140.66	0.000240	1.93	2591.95	867.42	0.17
Reach-1	26209	2%	5840.00	133.40	142.35		142.41	0.000238	2.43	4170.98	944.15	0.18
Reach-1	26209	1%	7455.00	133.40	143.05		143.12	0.000251	2.70	4830.47	949.47	0.19
Reach-1	26209	0.2%	12505.00	133.40	145.37		145.47	0.000223	3.12	7059.39	967.22	0.19
Reach-1	26136	10%	2980.00	130.20	139.77	136.89	140.44	0.001214	7.36	865.42	504.59	0.44
Reach-1	26136	2%	5840.00	130.20	141.38	140.68	142.16	0.001499	9.14	1847.21	666.49	0.50
Reach-1	26136	1%	7455.00	130.20	142.12	141.28	142.88	0.001499	9.56	2353.38	704.50	0.50
Reach-1	26136	0.2%	12505.00	130.20	144.86	142.59	145.33	0.000938	8.76	4394.50	760.00	0.41
Reach-1	26127.5		Bridge									
Reach-1	26119	10%	2980.00	131.30	138.62	136.96	138.86	0.001012	5.17	1356.28	541.45	0.36
Reach-1	26119	2%	5840.00	131.30	141.25	138.61	141.42	0.000572	4.88	3054.77	719.80	0.28
Reach-1	26119	1%	7455.00	131.30	142.26	138.86	142.42	0.000529	5.03	3791.17	742.95	0.28
Reach-1	26119	0.2%	12505.00	131.30	144.97	140.05	145.13	0.000437	5.35	5865.51	778.00	0.26
Reach-1	26058	10%	2980.00	131.30	138.53		138.79	0.001092	5.33	1309.05	531.38	0.37
Reach-1	26058	2%	5840.00	131.30	141.22		141.38	0.000586	4.92	3026.55	717.66	0.29
Reach-1	26058	1%	7455.00	131.30	142.22		142.38	0.000539	5.06	3764.56	742.33	0.28
Reach-1	26058	0.2%	12505.00	131.30	144.94		145.10	0.000442	5.37	5843.13	778.00	0.26
Reach-1	25358	10%	2980.00	131.00	137.99		138.13	0.000739	4.81	1594.08	436.94	0.33
Reach-1	25358	2%	5840.00	131.00	140.85		140.99	0.000527	5.13	2885.35	468.88	0.29
Reach-1	25358	1%	7455.00	131.00	141.84		142.00	0.000548	5.59	3368.25	501.77	0.30
Reach-1	25358	0.2%	12505.00	131.00	144.56		144.76	0.000543	6.48	5013.74	635.86	0.31
Reach-1	24597	10%	2980.00	127.90	137.54		137.72	0.000415	3.74	908.33	167.21	0.22
Reach-1	24597	2%	5840.00	127.90	140.33		140.60	0.000462	4.72	1477.03	282.08	0.24
Reach-1	24597	1%	7455.00	127.90	141.26		141.58	0.000532	5.33	1784.39	487.39	0.26
Reach-1	24597	0.2%	12505.00	127.90	143.91		144.30	0.000614	6.50	3259.65	576.34	0.29
Reach-1	24560	10%	2980.00	127.90	137.15	132.79	137.67	0.001052	5.78	515.90	160.44	0.35
Reach-1	24560	2%	5840.00	127.90	140.28	135.20	140.58	0.000520	4.99	1376.45	274.15	0.26

HEC-RAS Plan: DE River: RIVER-1 Reach: Reach-1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach-1	24560	1%	7455.00	127.90	141.24	136.38	141.56	0.000537	5.35	1773.46	485.12	0.26
Reach-1	24560	0.2%	12505.00	127.90	143.88	139.30	144.28	0.000619	6.52	3245.22	576.17	0.29
Reach-1	24542.5		Bridge									
Reach-1	24525	10%	2980.00	127.20	135.27	133.49	136.46	0.003361	9.08	507.48	212.95	0.60
Reach-1	24525	2%	5840.00	127.20	138.57	136.74	139.62	0.002188	9.45	1358.71	342.03	0.52
Reach-1	24525	1%	7455.00	127.20	139.76	137.71	140.91	0.002189	10.16	1844.44	449.44	0.53
Reach-1	24525	0.2%	12505.00	127.20	142.35	139.79	143.79	0.002461	12.32	3395.84	811.45	0.58
Reach-1	24457	10%	2980.00	127.20	133.42	133.42	136.00	0.007504	12.96	249.76	64.13	1.00
Reach-1	24457	2%	5840.00	127.20	136.74	136.74	139.26	0.004358	13.68	858.70	241.86	0.82
Reach-1	24457	1%	7455.00	127.20	137.78	137.78	140.54	0.004328	14.71	1121.20	262.63	0.84
Reach-1	24457	0.2%	12505.00	127.20	140.59	140.59	143.45	0.003743	16.22	2228.03	492.18	0.81
Reach-1	24105	10%	2980.00	124.80	132.65	130.63	133.44	0.002381	7.13	417.66	78.83	0.55
Reach-1	24105	2%	5840.00	124.80	134.63	132.93	136.19	0.003492	10.03	582.32	262.38	0.69
Reach-1	24105	1%	7455.00	124.80	135.37	134.00	137.42	0.004065	11.49	665.70	391.75	0.75
Reach-1	24105	0.2%	12505.00	124.80	138.50	137.57	139.49	0.001714	9.47	3845.46	1520.09	0.52
Reach-1	23805	10%	2980.00	124.00	132.38		132.87	0.001170	6.13	997.32	331.23	0.41
Reach-1	23805	2%	5840.00	124.00	134.65		135.32	0.001300	7.78	1933.43	474.68	0.45
Reach-1	23805	1%	7455.00	124.00	136.65		136.39	0.001316	8.38	2427.76	508.37	0.46
Reach-1	23805	0.2%	12505.00	124.00	138.18		138.99	0.001278	9.55	4409.49	1582.59	0.47
Reach-1	23415	10%	2980.00	123.00	129.81	129.81	131.82	0.006096	11.90	404.45	161.55	0.89
Reach-1	23415	2%	5840.00	123.00	132.27	132.27	134.30	0.004596	13.19	1159.47	343.43	0.82
Reach-1	23415	1%	7455.00	123.00	133.11	133.11	135.33	0.004719	14.27	1451.84	358.59	0.84
Reach-1	23415	0.2%	12505.00	123.00	135.13	135.13	137.89	0.005069	16.96	2245.13	422.31	0.91
Reach-1	23171	10%	2980.00	120.30	128.75		129.48	0.002604	6.87	455.76	121.38	0.57
Reach-1	23171	2%	5840.00	120.30	129.79	129.12	131.57	0.005575	10.79	599.24	177.93	0.81
Reach-1	23171	1%	7455.00	120.30	131.12	130.85	132.49	0.003967	9.91	913.48	264.15	0.67
Reach-1	23171	0.2%	12505.00	120.30	134.35		135.16	0.001732	7.84	1880.08	333.29	0.44
Reach-1	23036	10%	2980.00	121.70	128.65		129.15	0.001483	5.59	564.12	284.35	0.43
Reach-1	23036	2%	5840.00	121.70	130.47		130.96	0.000752	4.61	1111.41	319.70	0.31
Reach-1	23036	1%	7455.00	121.70	131.62		132.07	0.000479	3.98	1491.73	341.41	0.25
Reach-1	23036	0.2%	12505.00	121.70	134.55		134.98	0.000237	3.32	2572.37	391.51	0.18
Reach-1	22916	10%	2980.00	121.00	128.01	126.93	128.88	0.002603	8.01	570.82	302.03	0.57
Reach-1	22916	2%	5840.00	121.00	130.41		130.84	0.000999	6.20	1483.60	430.42	0.38
Reach-1	22916	1%	7455.00	121.00	131.63		131.97	0.000628	5.38	2037.14	480.80	0.31
Reach-1	22916	0.2%	12505.00	121.00	134.63		134.90	0.000281	4.31	3712.15	632.31	0.21
Reach-1	22765	10%	2980.00	114.20	128.49		128.58	0.000149	2.53	1428.22	234.62	0.13
Reach-1	22765	2%	5840.00	114.20	130.48		130.70	0.000299	3.96	2020.14	395.39	0.19
Reach-1	22765	1%	7455.00	114.20	131.64		131.87	0.000301	4.19	2548.37	511.91	0.19
Reach-1	22765	0.2%	12505.00	114.20	134.64		134.84	0.000240	4.22	4324.67	669.64	0.17
Reach-1	22450	10%	2980.00	116.90	127.63	124.78	128.38	0.006142	7.39	605.20	384.22	0.48
Reach-1	22450	2%	5840.00	116.90	130.27		130.51	0.001575	4.56	1791.09	483.52	0.26
Reach-1	22450	1%	7455.00	116.90	131.48		131.70	0.001059	4.04	2388.82	500.92	0.21
Reach-1	22450	0.2%	12505.00	116.90	134.54		134.71	0.000615	3.62	4362.75	1054.32	0.17
Reach-1	22140	10%	2980.00	117.00	124.05	124.05	126.26	0.006734	12.84	391.36	132.65	0.95
Reach-1	22140	2%	5840.00	117.00	126.77	126.77	129.42	0.005440	14.96	889.23	205.48	0.91
Reach-1	22140	1%	7455.00	117.00	127.84	127.84	130.78	0.005382	16.12	1119.61	224.02	0.92
Reach-1	22140	0.2%	12505.00	117.00	131.26	131.26	134.04	0.003953	16.95	2349.42	658.06	0.83
Reach-1	21825	10%	2980.00	115.90	121.80	121.75	123.65	0.007981	11.17	314.54	84.21	0.97
Reach-1	21825	2%	5840.00	115.90	124.12	124.12	126.73	0.006551	13.42	604.08	179.14	0.94
Reach-1	21825	1%	7455.00	115.90	125.26	125.26	128.03	0.005781	14.07	847.23	239.90	0.91
Reach-1	21825	0.2%	12505.00	115.90	131.24	127.79	132.45	0.001436	10.39	3430.35	1045.30	0.50
Reach-1	21770	10%	2980.00	115.40	122.06	120.08	122.97	0.002174	7.62	390.83	103.38	0.55
Reach-1	21770	2%	5840.00	115.40	124.17	122.36	126.07	0.003067	11.07	527.79	119.93	0.68
Reach-1	21770	1%	7455.00	115.40	125.08	123.47	127.59	0.003503	12.70	587.15	127.10	0.74
Reach-1	21770	0.2%	12505.00	115.40	130.39	126.53	132.19	0.001574	11.58	2432.53	932.61	0.54
Reach-1	21757.5		Bridge									
Reach-1	21745	10%	2980.00	115.40	121.95	120.08	122.89	0.002314	7.77	383.57	102.50	0.56
Reach-1	21745	2%	5840.00	115.40	123.88	122.36	125.93	0.003470	11.48	508.60	117.61	0.72
Reach-1	21745	1%	7455.00	115.40	124.48	123.47	127.36	0.004410	13.60	547.97	122.37	0.83
Reach-1	21745	0.2%	12505.00	115.40	126.94	126.53	131.79	0.005288	17.67	707.72	141.67	0.94

HEC-RAS Plan: DE River: RIVER-1 Reach: Reach-1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach-1	21695	10%	2980.00	114.20	121.74	120.15	122.74	0.003025	8.01	371.94	69.60	0.61
Reach-1	21695	2%	5840.00	114.20	123.69	122.46	125.72	0.004430	11.42	511.32	74.77	0.76
Reach-1	21695	1%	7455.00	114.20	124.27	123.52	127.08	0.005624	13.46	557.56	87.09	0.87
Reach-1	21695	0.2%	12505.00	114.20	127.45	127.45	130.78	0.004531	14.98	1124.07	292.57	0.82
Reach-1	21285	10%	2980.00	114.30	119.50	119.17	120.92	0.006772	9.55	312.25	87.08	0.88
Reach-1	21285	2%	5840.00	114.30	121.70	121.16	123.70	0.005436	11.42	567.01	229.63	0.85
Reach-1	21285	1%	7455.00	114.30	122.75	122.75	124.74	0.004638	11.68	907.52	396.78	0.80
Reach-1	21285	0.2%	12505.00	114.30	124.70	124.69	126.86	0.004103	13.05	1782.33	518.61	0.79

Norwalk River

Existing Conditions (Corrected Effective) Model Output Table

HEC-RAS Plan: EXIST River: RIVER-1 Reach: Reach-1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach-1	29920	10%	2980.00	147.00	152.32	152.32	153.29	0.004454	9.23	671.47	438.66	0.75
Reach-1	29920	2%	5840.00	147.00	153.56	153.56	154.60	0.004481	10.83	1400.71	673.09	0.79
Reach-1	29920	1%	7455.00	147.00	153.96	153.96	155.12	0.004919	11.86	1676.50	693.44	0.83
Reach-1	29920	0.2%	12505.00	147.00	154.99	154.99	156.40	0.005722	14.14	2414.85	738.35	0.92
Reach-1	29760	10%	2980.00	142.20	148.53		149.01	0.001498	5.62	583.07	179.68	0.44
Reach-1	29760	2%	5840.00	142.20	151.31		151.93	0.001165	6.63	1125.96	211.79	0.42
Reach-1	29760	1%	7455.00	142.20	152.19		152.97	0.001276	7.45	1317.25	222.00	0.44
Reach-1	29760	0.2%	12505.00	142.20	154.28		155.51	0.001589	9.59	1814.00	255.42	0.51
Reach-1	28240	10%	2980.00	138.00	145.39		146.32	0.002036	7.92	452.97	156.57	0.54
Reach-1	28240	2%	5840.00	138.00	146.52	146.52	148.75	0.004139	12.55	696.60	258.98	0.79
Reach-1	28240	1%	7455.00	138.00	147.71	147.71	149.80	0.003506	12.69	1059.97	366.77	0.75
Reach-1	28240	0.2%	12505.00	138.00	149.76	149.76	151.98	0.003397	14.32	1979.91	552.23	0.76
Reach-1	28020	10%	2980.00	136.33	146.00		146.01	0.000055	1.53	4394.50	676.05	0.09
Reach-1	28020	2%	5840.00	136.33	147.00		147.03	0.000131	2.54	5105.56	745.73	0.14
Reach-1	28020	1%	7455.00	136.33	147.55		147.59	0.000166	2.97	5519.40	766.71	0.16
Reach-1	28020	0.2%	12505.00	136.33	148.88		148.97	0.000263	4.06	6569.85	803.73	0.21
Reach-1	27930	10%	2980.00	135.65	146.00		146.01	0.000046	1.46	4590.19	721.01	0.08
Reach-1	27930	2%	5840.00	135.65	146.99		147.02	0.000106	2.38	5340.23	774.68	0.13
Reach-1	27930	1%	7455.00	135.65	147.54		147.58	0.000132	2.76	5765.37	785.36	0.15
Reach-1	27930	0.2%	12505.00	135.65	148.86		148.95	0.000207	3.72	6803.94	788.32	0.19
Reach-1	27830	10%	2980.00	134.60	145.99		146.00	0.000037	1.37	4836.61	785.83	0.08
Reach-1	27830	2%	5840.00	134.60	146.98		147.01	0.000084	2.20	5662.42	869.13	0.12
Reach-1	27830	1%	7455.00	134.60	147.53		147.57	0.000104	2.52	6148.13	920.10	0.13
Reach-1	27830	0.2%	12505.00	134.60	148.85		148.92	0.000153	3.29	7437.92	1023.96	0.16
Reach-1	27790	10%	2980.00	134.60	145.99		146.00	0.000035	1.33	4920.80	803.92	0.08
Reach-1	27790	2%	5840.00	134.60	146.98		147.01	0.000079	2.13	5783.83	928.44	0.11
Reach-1	27790	1%	7455.00	134.60	147.53		147.56	0.000097	2.43	6299.40	970.45	0.13
Reach-1	27790	0.2%	12505.00	134.60	148.85		148.92	0.000139	3.14	7665.44	1110.26	0.16
Reach-1	27468	10%	2980.00	132.10	145.99		145.99	0.000005	0.60	9140.64	793.45	0.03
Reach-1	27468	2%	5840.00	132.10	146.99		146.99	0.000017	1.11	9943.03	813.12	0.05
Reach-1	27468	1%	7455.00	132.10	147.53		147.54	0.000024	1.37	10389.13	832.33	0.06
Reach-1	27468	0.2%	12505.00	132.10	148.85		148.88	0.000052	2.13	11529.28	890.79	0.10
Reach-1	27110	10%	2980.00	136.60	145.97		145.99	0.000064	1.74	4765.52	962.48	0.10
Reach-1	27110	2%	5840.00	136.60	146.94		146.97	0.000148	2.83	5707.19	991.44	0.16
Reach-1	27110	1%	7455.00	136.60	147.46		147.51	0.000187	3.29	6234.70	1005.58	0.18
Reach-1	27110	0.2%	12505.00	136.60	148.74		148.82	0.000304	4.52	7518.38	1009.50	0.23
Reach-1	27025	10%	2980.00	135.50	145.63	141.84	145.90	0.000562	5.28	1759.35	880.05	0.30
Reach-1	27025	2%	5840.00	135.50	145.74	145.59	146.68	0.001965	9.96	1855.68	883.55	0.56
Reach-1	27025	1%	7455.00	135.50	146.24	146.03	147.20	0.002112	10.68	2304.78	899.67	0.59
Reach-1	27025	0.2%	12505.00	135.50	147.33	147.10	148.46	0.002654	12.81	3304.65	934.56	0.67
Reach-1	27020		Bridge									
Reach-1	27015	10%	2980.00	135.50	141.85	141.85	144.38	0.006857	13.22	278.63	62.97	0.97
Reach-1	27015	2%	5840.00	135.50	145.62	145.62	146.66	0.002172	10.38	1752.24	879.80	0.59
Reach-1	27015	1%	7455.00	135.50	146.08	146.08	147.18	0.002399	11.26	2163.67	894.64	0.63
Reach-1	27015	0.2%	12505.00	135.50	147.11	147.11	148.43	0.003090	13.64	3099.86	927.52	0.72
Reach-1	26680	10%	2980.00	134.00	140.25	140.08	141.20	0.004316	10.17	742.52	359.88	0.76
Reach-1	26680	2%	5840.00	134.00	142.16		142.88	0.003007	10.34	1642.30	560.63	0.67
Reach-1	26680	1%	7455.00	134.00	142.89		143.57	0.002787	10.60	2063.23	590.00	0.65
Reach-1	26680	0.2%	12505.00	134.00	145.43		145.86	0.001574	9.53	3920.70	759.51	0.51
Reach-1	26209	10%	2980.00	133.40	140.59		140.63	0.000247	1.94	2566.09	865.64	0.17
Reach-1	26209	2%	5840.00	133.40	142.35		142.41	0.000238	2.43	4171.02	944.15	0.18
Reach-1	26209	1%	7455.00	133.40	143.04		143.12	0.000252	2.70	4826.43	949.44	0.19
Reach-1	26209	0.2%	12505.00	133.40	145.45		145.54	0.000216	3.09	7137.65	967.83	0.18
Reach-1	26136	10%	2980.00	130.20	139.70	136.89	140.40	0.001266	7.48	832.78	483.49	0.44
Reach-1	26136	2%	5840.00	130.20	141.38	140.68	142.16	0.001499	9.14	1847.30	666.49	0.50
Reach-1	26136	1%	7455.00	130.20	142.10	141.28	142.87	0.001511	9.59	2344.50	703.85	0.51
Reach-1	26136	0.2%	12505.00	130.20	144.97	142.59	145.41	0.000893	8.59	4476.35	760.00	0.40
Reach-1	26127.5		Bridge									
Reach-1	26119	10%	2980.00	131.30	137.79	136.96	139.43	0.004828	10.33	305.18	444.27	0.76
Reach-1	26119	2%	5840.00	131.30	141.23	138.61	141.40	0.000580	4.90	3038.66	718.58	0.29

HEC-RAS Plan: EXIST River: RIVER-1 Reach: Reach-1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach-1	26119	1%	7455.00	131.30	142.25	138.86	142.41	0.000532	5.04	3781.94	742.73	0.28
Reach-1	26119	0.2%	12505.00	131.30	145.07	140.05	145.23	0.000420	5.27	5944.93	778.00	0.26
Reach-1	26058	10%	2980.00	131.30	138.31		138.63	0.001328	5.74	1195.20	506.31	0.41
Reach-1	26058	2%	5840.00	131.30	141.19		141.36	0.000594	4.95	3010.05	716.41	0.29
Reach-1	26058	1%	7455.00	131.30	142.21		142.37	0.000543	5.08	3755.15	742.11	0.28
Reach-1	26058	0.2%	12505.00	131.30	145.04		145.20	0.000425	5.29	5923.49	778.00	0.26
Reach-1	25358	10%	2980.00	131.00	137.60		137.79	0.000999	5.37	1424.10	432.76	0.38
Reach-1	25358	2%	5840.00	131.00	140.82		140.96	0.000534	5.16	2872.39	468.02	0.29
Reach-1	25358	1%	7455.00	131.00	141.83		141.99	0.000552	5.61	3360.84	499.89	0.30
Reach-1	25358	0.2%	12505.00	131.00	144.68		144.87	0.000522	6.39	5088.72	636.70	0.31
Reach-1	25340	10%	2980.00	128.10	137.58		137.77	0.000473	4.58	1994.04	375.83	0.27
Reach-1	25340	2%	5840.00	128.10	140.68		140.94	0.000504	5.76	3250.24	506.40	0.29
Reach-1	25340	1%	7455.00	128.10	141.64		141.96	0.000587	6.55	3740.65	512.66	0.32
Reach-1	25340	0.2%	12505.00	128.10	144.36		144.83	0.000718	8.22	5237.84	696.11	0.37
Reach-1	25334	10%	2980.00	130.31	137.63		137.75	0.000522	3.87	1572.58	347.27	0.27
Reach-1	25334	2%	5840.00	130.31	140.75		140.90	0.000405	4.43	2715.70	411.08	0.25
Reach-1	25334	1%	7455.00	130.31	141.74		141.92	0.000444	4.96	3149.10	457.22	0.27
Reach-1	25334	0.2%	12505.00	130.31	144.51		144.76	0.000483	6.04	4441.00	475.13	0.29
Reach-1	24975	10%	2980.00	129.20	135.57	135.57	137.16	0.005532	10.62	402.65	172.24	0.83
Reach-1	24975	2%	5840.00	129.20	139.83		140.59	0.001521	8.36	1283.40	362.15	0.48
Reach-1	24975	1%	7455.00	129.20	140.90		141.61	0.001359	8.49	1683.39	414.42	0.46
Reach-1	24975	0.2%	12505.00	129.20	144.14		144.54	0.000656	7.07	3094.75	445.51	0.34
Reach-1	24922	10%	2980.00	127.89	135.50		136.32	0.002194	7.76	556.72	155.93	0.55
Reach-1	24922	2%	5840.00	127.89	139.90		140.47	0.000917	7.14	1431.97	374.77	0.38
Reach-1	24922	1%	7455.00	127.89	140.97		141.50	0.000829	7.23	1850.23	441.04	0.37
Reach-1	24922	0.2%	12505.00	127.89	144.18		144.49	0.000415	6.01	3438.02	506.44	0.27
Reach-1	24677	10%	2980.00	127.87	135.59		135.88	0.000688	4.52	855.68	167.98	0.31
Reach-1	24677	2%	5840.00	127.87	139.95		140.24	0.000405	4.83	1817.72	331.75	0.25
Reach-1	24677	1%	7455.00	127.87	140.94		141.30	0.000460	5.44	2180.83	396.78	0.28
Reach-1	24677	0.2%	12505.00	127.87	143.91		144.36	0.000485	6.46	3377.85	405.00	0.29
Reach-1	24620	10%	2980.00	128.90	134.41	133.97	135.69	0.005035	9.23	402.42	166.53	0.77
Reach-1	24620	2%	5840.00	128.90	139.56		140.17	0.001035	6.96	1443.21	273.89	0.40
Reach-1	24620	1%	7455.00	128.90	140.48		141.22	0.001143	7.78	1737.87	369.05	0.42
Reach-1	24620	0.2%	12505.00	128.90	143.60		144.30	0.000901	8.22	3001.58	410.00	0.39
Reach-1	24597	10%	2980.00	127.30	134.90		135.41	0.001279	5.88	709.79	201.22	0.40
Reach-1	24597	2%	5840.00	127.30	139.69		140.09	0.000572	5.66	1863.48	322.73	0.30
Reach-1	24597	1%	7455.00	127.30	140.63		141.12	0.000653	6.38	2207.50	395.10	0.32
Reach-1	24597	0.2%	12505.00	127.30	143.74		144.22	0.000567	6.91	3499.24	421.00	0.31
Reach-1	24570	10%	2980.00	127.60	134.33	132.31	135.31	0.002228	7.94	375.39	104.89	0.56
Reach-1	24570	2%	5840.00	127.60	138.87	134.73	140.00	0.001290	8.69	958.27	316.33	0.47
Reach-1	24570	1%	7455.00	127.60	139.43	135.90	140.99	0.001698	10.31	1145.22	348.43	0.54
Reach-1	24570	0.2%	12505.00	127.60	142.91	140.91	144.13	0.001176	10.26	3114.93	807.05	0.47
Reach-1	24542.5		Bridge									
Reach-1	24540	10%	2980.00	127.60	134.18		135.21	0.002423	8.14	366.09	101.22	0.58
Reach-1	24540	2%	5840.00	127.60	137.37	134.72	139.01	0.002223	10.32	679.47	187.99	0.60
Reach-1	24540	1%	7455.00	127.60	138.19	135.88	140.32	0.002630	11.88	844.91	232.45	0.66
Reach-1	24540	0.2%	12505.00	127.60	142.97	140.68	144.09	0.001107	9.98	3240.15	809.73	0.46
Reach-1	24485	10%	2980.00	126.30	133.05		134.80	0.004960	10.97	339.74	65.99	0.79
Reach-1	24485	2%	5840.00	126.30	135.42	135.42	138.41	0.006522	14.55	576.27	136.90	0.94
Reach-1	24485	1%	7455.00	126.30	136.91	136.91	139.86	0.005771	14.75	837.67	207.98	0.90
Reach-1	24485	0.2%	12505.00	126.30	139.57	139.57	143.21	0.005456	17.09	1473.62	250.14	0.92
Reach-1	24430	10%	2980.00	126.60	133.65		134.19	0.004131	5.91	504.51	89.39	0.44
Reach-1	24430	2%	5840.00	126.60	136.49		137.13	0.003507	6.76	1121.38	251.35	0.41
Reach-1	24430	1%	7455.00	126.60	137.85		138.46	0.002969	6.88	1464.10	254.64	0.39
Reach-1	24430	0.2%	12505.00	126.60	140.49		141.28	0.002984	8.11	2145.07	261.05	0.41
Reach-1	24401	10%	2980.00	124.66	133.66		134.04	0.003118	4.88	610.18	102.03	0.35
Reach-1	24401	2%	5840.00	124.66	136.40		137.02	0.003389	6.39	985.38	198.56	0.39
Reach-1	24401	1%	7455.00	124.66	137.67		138.37	0.003234	6.86	1278.84	257.49	0.39
Reach-1	24401	0.2%	12505.00	124.66	140.31		141.18	0.003245	8.07	2049.16	332.83	0.41
Reach-1	24381	10%	2980.00	124.66	133.34		133.96	0.001781	7.05	527.73	91.46	0.49

HEC-RAS Plan: EXIST River: RIVER-1 Reach: Reach-1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach-1	24381	2%	5840.00	124.66	135.78		136.91	0.002413	9.59	770.10	118.58	0.59
Reach-1	24381	1%	7455.00	124.66	136.85		138.24	0.002563	10.71	931.57	185.57	0.62
Reach-1	24381	0.2%	12505.00	124.66	139.22	137.46	141.03	0.002745	12.89	1531.13	330.29	0.66
Reach-1	24180	10%	2980.00	124.70	133.06		133.61	0.001495	5.98	502.38	92.91	0.44
Reach-1	24180	2%	5840.00	124.70	135.48		136.44	0.001803	7.95	844.89	259.49	0.51
Reach-1	24180	1%	7455.00	124.70	136.78	133.49	137.70	0.001560	8.02	1209.32	290.98	0.48
Reach-1	24180	0.2%	12505.00	124.70	139.53	136.93	140.38	0.001281	8.35	2316.16	451.50	0.45
Reach-1	24105	10%	2980.00	124.80	132.53		133.42	0.003018	7.59	392.78	80.10	0.60
Reach-1	24105	2%	5840.00	124.80	134.54		136.18	0.004147	10.27	570.55	100.04	0.73
Reach-1	24105	1%	7455.00	124.80	135.32	134.24	137.40	0.004605	11.57	660.02	164.97	0.79
Reach-1	24105	0.2%	12505.00	124.80	137.64	137.25	140.07	0.003869	12.93	1098.93	201.62	0.76
Reach-1	23805	10%	2980.00	124.00	132.40		132.79	0.001004	5.69	1165.28	312.50	0.38
Reach-1	23805	2%	5840.00	124.00	134.69		135.27	0.001156	7.36	2038.14	469.70	0.42
Reach-1	23805	1%	7455.00	124.00	135.70		136.34	0.001191	7.99	2548.56	544.98	0.44
Reach-1	23805	0.2%	12505.00	124.00	138.21		138.97	0.001211	9.31	4063.59	641.58	0.46
Reach-1	23415	10%	2980.00	123.00	129.81	129.81	131.82	0.006096	11.90	404.45	161.55	0.89
Reach-1	23415	2%	5840.00	123.00	132.27	132.27	134.30	0.004596	13.19	1159.47	343.43	0.82
Reach-1	23415	1%	7455.00	123.00	133.11	133.11	135.33	0.004719	14.27	1451.84	358.59	0.84
Reach-1	23415	0.2%	12505.00	123.00	135.13	135.13	137.89	0.005069	16.96	2245.13	422.31	0.91
Reach-1	23171	10%	2980.00	120.30	128.75		129.48	0.002604	6.87	455.76	121.38	0.57
Reach-1	23171	2%	5840.00	120.30	129.79	129.12	131.57	0.005575	10.79	599.24	177.93	0.81
Reach-1	23171	1%	7455.00	120.30	131.12	130.85	132.49	0.003967	9.91	913.48	264.15	0.67
Reach-1	23171	0.2%	12505.00	120.30	134.35		135.16	0.001732	7.84	1880.08	333.29	0.44
Reach-1	23036	10%	2980.00	121.70	128.65		129.15	0.001483	5.59	564.12	284.35	0.43
Reach-1	23036	2%	5840.00	121.70	130.47		130.96	0.000752	4.61	1111.41	319.70	0.31
Reach-1	23036	1%	7455.00	121.70	131.62		132.07	0.000479	3.98	1491.73	341.41	0.25
Reach-1	23036	0.2%	12505.00	121.70	134.55		134.98	0.000237	3.32	2572.37	391.51	0.18
Reach-1	22916	10%	2980.00	121.00	128.01	126.93	128.88	0.002603	8.01	570.82	302.03	0.57
Reach-1	22916	2%	5840.00	121.00	130.41		130.84	0.000999	6.20	1483.60	430.42	0.38
Reach-1	22916	1%	7455.00	121.00	131.63		131.97	0.000628	5.38	2037.14	480.80	0.31
Reach-1	22916	0.2%	12505.00	121.00	134.63		134.90	0.000281	4.31	3712.15	632.31	0.21
Reach-1	22765	10%	2980.00	114.20	128.49		128.58	0.000149	2.53	1428.22	234.62	0.13
Reach-1	22765	2%	5840.00	114.20	130.48		130.70	0.000299	3.96	2020.14	395.39	0.19
Reach-1	22765	1%	7455.00	114.20	131.64		131.87	0.000301	4.19	2548.37	511.91	0.19
Reach-1	22765	0.2%	12505.00	114.20	134.64		134.84	0.000240	4.22	4324.67	669.64	0.17
Reach-1	22450	10%	2980.00	116.90	127.63	124.78	128.38	0.006142	7.39	605.20	384.22	0.48
Reach-1	22450	2%	5840.00	116.90	130.27		130.51	0.001575	4.56	1791.09	483.52	0.26
Reach-1	22450	1%	7455.00	116.90	131.48		131.70	0.001059	4.04	2388.82	500.92	0.21
Reach-1	22450	0.2%	12505.00	116.90	134.54		134.71	0.000615	3.62	4362.75	1054.32	0.17
Reach-1	22140	10%	2980.00	117.00	124.05	124.05	126.26	0.006734	12.84	391.36	132.65	0.95
Reach-1	22140	2%	5840.00	117.00	126.77	126.77	129.42	0.005440	14.96	889.23	205.48	0.91
Reach-1	22140	1%	7455.00	117.00	127.84	127.84	130.78	0.005382	16.12	1119.61	224.02	0.92
Reach-1	22140	0.2%	12505.00	117.00	131.26	131.26	134.04	0.003953	16.95	2349.42	658.06	0.83
Reach-1	21825	10%	2980.00	115.90	121.80	121.75	123.65	0.007981	11.17	314.54	84.21	0.97
Reach-1	21825	2%	5840.00	115.90	124.12	124.12	126.73	0.006551	13.42	604.08	179.14	0.94
Reach-1	21825	1%	7455.00	115.90	125.26	125.26	128.03	0.005781	14.07	847.23	239.90	0.91
Reach-1	21825	0.2%	12505.00	115.90	131.24	127.79	132.45	0.001436	10.39	3430.35	1045.30	0.50
Reach-1	21770	10%	2980.00	115.40	122.06	120.08	122.97	0.002174	7.62	390.83	103.38	0.55
Reach-1	21770	2%	5840.00	115.40	124.17	122.36	126.07	0.003067	11.07	527.79	119.93	0.68
Reach-1	21770	1%	7455.00	115.40	125.08	123.47	127.59	0.003503	12.70	587.15	127.10	0.74
Reach-1	21770	0.2%	12505.00	115.40	130.39	126.53	132.19	0.001574	11.58	2432.53	932.61	0.54
Reach-1	21757.5		Bridge									
Reach-1	21745	10%	2980.00	115.40	121.95	120.08	122.89	0.002314	7.77	383.57	102.50	0.56
Reach-1	21745	2%	5840.00	115.40	123.88	122.36	125.93	0.003470	11.48	508.60	117.61	0.72
Reach-1	21745	1%	7455.00	115.40	124.48	123.47	127.36	0.004410	13.60	547.97	122.37	0.83
Reach-1	21745	0.2%	12505.00	115.40	126.94	126.53	131.79	0.005288	17.67	707.72	141.67	0.94
Reach-1	21695	10%	2980.00	114.20	121.74	120.15	122.74	0.003025	8.01	371.94	69.60	0.61
Reach-1	21695	2%	5840.00	114.20	123.69	122.46	125.72	0.004430	11.42	511.32	74.77	0.76
Reach-1	21695	1%	7455.00	114.20	124.27	123.52	127.08	0.005624	13.46	557.56	87.09	0.87
Reach-1	21695	0.2%	12505.00	114.20	127.45	127.45	130.78	0.004531	14.98	1124.07	292.57	0.82

HEC-RAS Plan: EXIST River: RIVER-1 Reach: Reach-1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach-1	21285	10%	2980.00	114.30	119.50	119.17	120.92	0.006772	9.55	312.25	87.08	0.88
Reach-1	21285	2%	5840.00	114.30	121.70	121.16	123.70	0.005436	11.42	567.01	229.63	0.85
Reach-1	21285	1%	7455.00	114.30	122.75	122.75	124.74	0.004638	11.68	907.52	396.78	0.80
Reach-1	21285	0.2%	12505.00	114.30	124.70	124.69	126.86	0.004103	13.05	1782.33	518.61	0.79

Norwalk River

Proposed Conditions Model Output Table

HEC-RAS Plan: PROPOSED River: RIVER-1 Reach: Reach-1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach-1	29920	10%	2980.00	147.00	152.32	152.32	153.29	0.004454	9.23	671.47	438.66	0.75
Reach-1	29920	2%	5840.00	147.00	153.56	153.56	154.60	0.004481	10.83	1400.71	673.09	0.79
Reach-1	29920	1%	7455.00	147.00	153.96	153.96	155.12	0.004919	11.86	1676.50	693.44	0.83
Reach-1	29920	0.2%	12505.00	147.00	154.99	154.99	156.40	0.005722	14.14	2414.85	738.35	0.92
Reach-1	29760	10%	2980.00	142.20	148.53		149.01	0.001498	5.62	583.07	179.68	0.44
Reach-1	29760	2%	5840.00	142.20	151.31		151.93	0.001165	6.63	1125.96	211.79	0.42
Reach-1	29760	1%	7455.00	142.20	152.19		152.97	0.001276	7.45	1317.25	222.00	0.44
Reach-1	29760	0.2%	12505.00	142.20	154.28		155.51	0.001589	9.59	1814.00	255.42	0.51
Reach-1	28240	10%	2980.00	138.00	145.39		146.33	0.002035	7.92	453.14	156.69	0.54
Reach-1	28240	2%	5840.00	138.00	146.52	146.52	148.75	0.004139	12.55	696.60	258.98	0.79
Reach-1	28240	1%	7455.00	138.00	147.71	147.71	149.80	0.003506	12.69	1059.97	366.77	0.75
Reach-1	28240	0.2%	12505.00	138.00	149.76	149.76	151.98	0.003397	14.32	1979.91	552.23	0.76
Reach-1	28020	10%	2980.00	136.33	146.00		146.01	0.000055	1.53	4419.69	705.50	0.09
Reach-1	28020	2%	5840.00	136.33	147.00		147.04	0.000130	2.53	5181.72	802.47	0.14
Reach-1	28020	1%	7455.00	136.33	147.55		147.59	0.000163	2.94	5632.11	838.83	0.16
Reach-1	28020	0.2%	12505.00	136.33	148.89		148.97	0.000246	3.92	6797.17	892.67	0.20
Reach-1	27930	10%	2980.00	135.65	146.00		146.01	0.000049	1.51	4606.87	734.08	0.09
Reach-1	27930	2%	5840.00	135.65	146.99		147.02	0.000116	2.50	5386.72	818.88	0.14
Reach-1	27930	1%	7455.00	135.65	147.54		147.58	0.000146	2.90	5847.71	863.80	0.16
Reach-1	27930	0.2%	12505.00	135.65	148.87		148.94	0.000221	3.85	7100.18	1055.04	0.20
Reach-1	27830	10%	2980.00	134.60	145.99		146.00	0.000041	1.44	4845.93	788.10	0.08
Reach-1	27830	2%	5840.00	134.60	146.99		147.01	0.000096	2.34	5676.92	876.39	0.13
Reach-1	27830	1%	7455.00	134.60	147.53		147.57	0.000120	2.70	6166.04	914.94	0.14
Reach-1	27830	0.2%	12505.00	134.60	148.86		148.92	0.000180	3.57	7478.45	1102.15	0.18
Reach-1	27790	10%	2980.00	134.60	145.99		146.00	0.000039	1.40	4934.34	818.72	0.08
Reach-1	27790	2%	5840.00	134.60	146.98		147.01	0.000089	2.25	5799.61	916.21	0.12
Reach-1	27790	1%	7455.00	134.60	147.53		147.56	0.000109	2.58	6306.18	946.93	0.14
Reach-1	27790	0.2%	12505.00	134.60	148.85		148.92	0.000161	3.38	7600.04	999.96	0.17
Reach-1	27468	10%	2980.00	132.10	145.99		145.99	0.000005	0.60	9140.64	793.45	0.03
Reach-1	27468	2%	5840.00	132.10	146.99		146.99	0.000017	1.11	9943.03	813.12	0.05
Reach-1	27468	1%	7455.00	132.10	147.53		147.54	0.000024	1.37	10389.13	832.33	0.06
Reach-1	27468	0.2%	12505.00	132.10	148.85		148.88	0.000052	2.13	11529.28	890.79	0.10
Reach-1	27110	10%	2980.00	136.60	145.97		145.99	0.000064	1.74	4765.52	962.48	0.10
Reach-1	27110	2%	5840.00	136.60	146.94		146.97	0.000148	2.83	5707.19	991.44	0.16
Reach-1	27110	1%	7455.00	136.60	147.46		147.51	0.000187	3.29	6234.70	1005.58	0.18
Reach-1	27110	0.2%	12505.00	136.60	148.74		148.82	0.000304	4.52	7518.38	1009.50	0.23
Reach-1	27025	10%	2980.00	135.50	145.63	141.84	145.90	0.000562	5.28	1759.35	880.05	0.30
Reach-1	27025	2%	5840.00	135.50	145.74	145.59	146.68	0.001965	9.96	1855.68	883.55	0.56
Reach-1	27025	1%	7455.00	135.50	146.24	146.03	147.20	0.002112	10.68	2304.78	899.67	0.59
Reach-1	27025	0.2%	12505.00	135.50	147.33	147.10	148.46	0.002654	12.81	3304.65	934.56	0.67
Reach-1	27020		Bridge									
Reach-1	27015	10%	2980.00	135.50	141.85	141.85	144.38	0.006857	13.22	278.63	62.97	0.97
Reach-1	27015	2%	5840.00	135.50	145.62	145.62	146.66	0.002172	10.38	1752.24	879.80	0.59
Reach-1	27015	1%	7455.00	135.50	146.08	146.08	147.18	0.002399	11.26	2163.67	894.64	0.63
Reach-1	27015	0.2%	12505.00	135.50	147.11	147.11	148.43	0.003090	13.64	3099.86	927.52	0.72
Reach-1	26680	10%	2980.00	134.00	140.25	140.08	141.20	0.004316	10.17	742.52	359.88	0.76
Reach-1	26680	2%	5840.00	134.00	142.16		142.88	0.003007	10.34	1642.30	560.63	0.67
Reach-1	26680	1%	7455.00	134.00	142.89		143.57	0.002787	10.60	2063.23	590.00	0.65
Reach-1	26680	0.2%	12505.00	134.00	145.43		145.86	0.001574	9.53	3920.70	759.51	0.51
Reach-1	26209	10%	2980.00	133.40	140.59		140.63	0.000247	1.94	2566.09	865.64	0.17
Reach-1	26209	2%	5840.00	133.40	142.35		142.41	0.000238	2.43	4171.02	944.15	0.18
Reach-1	26209	1%	7455.00	133.40	143.04		143.12	0.000252	2.70	4826.43	949.44	0.19
Reach-1	26209	0.2%	12505.00	133.40	145.45		145.54	0.000216	3.09	7137.65	967.83	0.18
Reach-1	26136	10%	2980.00	130.20	139.70	136.89	140.40	0.001266	7.48	832.78	483.49	0.44
Reach-1	26136	2%	5840.00	130.20	141.38	140.68	142.16	0.001499	9.14	1847.30	666.49	0.50
Reach-1	26136	1%	7455.00	130.20	142.10	141.28	142.87	0.001511	9.59	2344.50	703.85	0.51
Reach-1	26136	0.2%	12505.00	130.20	144.97	142.59	145.41	0.000893	8.59	4476.35	760.00	0.40
Reach-1	26127.5		Bridge									
Reach-1	26119	10%	2980.00	131.30	137.79	136.96	139.43	0.004828	10.33	305.18	444.27	0.76
Reach-1	26119	2%	5840.00	131.30	141.23	138.61	141.40	0.000580	4.90	3038.66	718.58	0.29

HEC-RAS Plan: PROPOSED River: RIVER-1 Reach: Reach-1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach-1	26119	1%	7455.00	131.30	142.25	138.86	142.41	0.000532	5.04	3781.94	742.73	0.28
Reach-1	26119	0.2%	12505.00	131.30	145.07	140.05	145.23	0.000420	5.27	5944.93	778.00	0.26
Reach-1	26058	10%	2980.00	131.30	138.31		138.63	0.001328	5.74	1195.20	506.31	0.41
Reach-1	26058	2%	5840.00	131.30	141.19		141.36	0.000594	4.95	3010.05	716.41	0.29
Reach-1	26058	1%	7455.00	131.30	142.21		142.37	0.000543	5.08	3755.15	742.11	0.28
Reach-1	26058	0.2%	12505.00	131.30	145.04		145.20	0.000425	5.29	5923.49	778.00	0.26
Reach-1	25358	10%	2980.00	131.00	137.60		137.79	0.000999	5.37	1424.10	432.76	0.38
Reach-1	25358	2%	5840.00	131.00	140.82		140.96	0.000534	5.16	2872.39	468.02	0.29
Reach-1	25358	1%	7455.00	131.00	141.83		141.99	0.000552	5.61	3360.84	499.89	0.30
Reach-1	25358	0.2%	12505.00	131.00	144.68		144.87	0.000522	6.39	5088.72	636.70	0.31
Reach-1	25340	10%	2980.00	128.10	137.58		137.77	0.000473	4.58	1994.04	375.83	0.27
Reach-1	25340	2%	5840.00	128.10	140.68		140.94	0.000504	5.76	3250.24	506.40	0.29
Reach-1	25340	1%	7455.00	128.10	141.64		141.96	0.000587	6.55	3740.65	512.66	0.32
Reach-1	25340	0.2%	12505.00	128.10	144.36		144.83	0.000718	8.22	5237.84	696.11	0.37
Reach-1	25334	10%	2980.00	130.31	137.63		137.75	0.000522	3.87	1572.58	347.27	0.27
Reach-1	25334	2%	5840.00	130.31	140.75		140.90	0.000405	4.43	2715.70	411.08	0.25
Reach-1	25334	1%	7455.00	130.31	141.74		141.92	0.000444	4.96	3149.10	457.22	0.27
Reach-1	25334	0.2%	12505.00	130.31	144.51		144.76	0.000483	6.04	4441.00	475.13	0.29
Reach-1	24975	10%	2980.00	129.20	135.57	135.57	137.16	0.005532	10.62	402.65	172.24	0.83
Reach-1	24975	2%	5840.00	129.20	139.83		140.59	0.001521	8.36	1283.40	362.15	0.48
Reach-1	24975	1%	7455.00	129.20	140.90		141.61	0.001359	8.49	1683.39	414.42	0.46
Reach-1	24975	0.2%	12505.00	129.20	144.14		144.54	0.000656	7.07	3094.75	445.51	0.34
Reach-1	24922	10%	2980.00	127.89	135.50		136.32	0.002194	7.76	556.72	155.93	0.55
Reach-1	24922	2%	5840.00	127.89	139.90		140.47	0.000917	7.14	1431.97	374.77	0.38
Reach-1	24922	1%	7455.00	127.89	140.97		141.50	0.000829	7.23	1850.23	441.04	0.37
Reach-1	24922	0.2%	12505.00	127.89	144.18		144.49	0.000415	6.01	3438.02	506.44	0.27
Reach-1	24677	10%	2980.00	127.87	135.59		135.88	0.000688	4.52	855.68	167.98	0.31
Reach-1	24677	2%	5840.00	127.87	139.95		140.24	0.000405	4.83	1817.72	331.75	0.25
Reach-1	24677	1%	7455.00	127.87	140.94		141.30	0.000460	5.44	2180.83	396.78	0.28
Reach-1	24677	0.2%	12505.00	127.87	143.91		144.36	0.000485	6.46	3377.85	405.00	0.29
Reach-1	24620	10%	2980.00	128.90	134.41	133.97	135.69	0.005035	9.23	402.42	166.53	0.77
Reach-1	24620	2%	5840.00	128.90	139.56		140.17	0.001035	6.96	1443.21	273.89	0.40
Reach-1	24620	1%	7455.00	128.90	140.48		141.22	0.001143	7.78	1737.87	369.05	0.42
Reach-1	24620	0.2%	12505.00	128.90	143.60		144.30	0.000901	8.22	3001.58	410.00	0.39
Reach-1	24597	10%	2980.00	127.30	134.90		135.41	0.001279	5.88	709.79	201.22	0.40
Reach-1	24597	2%	5840.00	127.30	139.69		140.09	0.000572	5.66	1863.48	322.73	0.30
Reach-1	24597	1%	7455.00	127.30	140.63		141.12	0.000653	6.38	2207.50	395.10	0.32
Reach-1	24597	0.2%	12505.00	127.30	143.74		144.22	0.000567	6.91	3499.24	421.00	0.31
Reach-1	24570	10%	2980.00	127.60	134.33	132.31	135.31	0.002228	7.94	375.39	104.89	0.56
Reach-1	24570	2%	5840.00	127.60	138.87	134.73	140.00	0.001290	8.69	958.27	316.33	0.47
Reach-1	24570	1%	7455.00	127.60	139.43	135.90	140.99	0.001698	10.31	1145.22	348.43	0.54
Reach-1	24570	0.2%	12505.00	127.60	142.91	140.91	144.13	0.001176	10.26	3114.93	807.05	0.47
Reach-1	24542.5		Bridge									
Reach-1	24540	10%	2980.00	127.60	134.18		135.21	0.002423	8.14	366.09	101.22	0.58
Reach-1	24540	2%	5840.00	127.60	137.37	134.72	139.01	0.002223	10.32	679.47	187.99	0.60
Reach-1	24540	1%	7455.00	127.60	138.19	135.88	140.32	0.002630	11.88	844.91	232.45	0.66
Reach-1	24540	0.2%	12505.00	127.60	142.97	140.68	144.09	0.001107	9.98	3240.15	809.73	0.46
Reach-1	24485	10%	2980.00	126.30	133.05		134.80	0.004960	10.97	339.74	65.99	0.79
Reach-1	24485	2%	5840.00	126.30	135.42	135.42	138.41	0.006522	14.55	576.27	136.90	0.94
Reach-1	24485	1%	7455.00	126.30	136.91	136.91	139.86	0.005771	14.75	837.67	207.98	0.90
Reach-1	24485	0.2%	12505.00	126.30	139.57	139.57	143.21	0.005456	17.09	1473.62	250.14	0.92
Reach-1	24430	10%	2980.00	126.60	133.65		134.19	0.004131	5.91	504.51	89.39	0.44
Reach-1	24430	2%	5840.00	126.60	136.49		137.13	0.003507	6.76	1121.38	251.35	0.41
Reach-1	24430	1%	7455.00	126.60	137.85		138.46	0.002969	6.88	1464.10	254.64	0.39
Reach-1	24430	0.2%	12505.00	126.60	140.49		141.28	0.002984	8.11	2145.07	261.05	0.41
Reach-1	24401	10%	2980.00	124.66	133.66		134.04	0.003118	4.88	610.18	102.03	0.35
Reach-1	24401	2%	5840.00	124.66	136.40		137.02	0.003389	6.39	985.38	198.56	0.39
Reach-1	24401	1%	7455.00	124.66	137.67		138.37	0.003234	6.86	1278.84	257.49	0.39
Reach-1	24401	0.2%	12505.00	124.66	140.31		141.18	0.003245	8.07	2049.16	332.83	0.41
Reach-1	24381	10%	2980.00	124.66	133.34		133.96	0.001781	7.05	527.73	91.46	0.49

HEC-RAS Plan: PROPOSED River: RIVER-1 Reach: Reach-1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach-1	24381	2%	5840.00	124.66	135.78		136.91	0.002413	9.59	770.10	118.58	0.59
Reach-1	24381	1%	7455.00	124.66	136.85		138.24	0.002563	10.71	931.57	185.57	0.62
Reach-1	24381	0.2%	12505.00	124.66	139.22	137.46	141.03	0.002745	12.89	1531.13	330.29	0.66
Reach-1	24180	10%	2980.00	124.70	133.06		133.61	0.001495	5.98	502.38	92.91	0.44
Reach-1	24180	2%	5840.00	124.70	135.48		136.44	0.001803	7.95	844.89	259.49	0.51
Reach-1	24180	1%	7455.00	124.70	136.78	133.49	137.70	0.001560	8.02	1209.32	290.98	0.48
Reach-1	24180	0.2%	12505.00	124.70	139.53	136.93	140.38	0.001281	8.35	2316.16	451.50	0.45
Reach-1	24105	10%	2980.00	124.80	132.53		133.42	0.003018	7.59	392.78	80.10	0.60
Reach-1	24105	2%	5840.00	124.80	134.54		136.18	0.004147	10.27	570.55	100.04	0.73
Reach-1	24105	1%	7455.00	124.80	135.32	134.24	137.40	0.004605	11.57	660.02	164.97	0.79
Reach-1	24105	0.2%	12505.00	124.80	137.64	137.25	140.07	0.003869	12.93	1098.93	201.62	0.76
Reach-1	23805	10%	2980.00	124.00	132.40		132.79	0.001004	5.69	1165.28	312.50	0.38
Reach-1	23805	2%	5840.00	124.00	134.69		135.27	0.001156	7.36	2038.14	469.70	0.42
Reach-1	23805	1%	7455.00	124.00	135.70		136.34	0.001191	7.99	2548.56	544.98	0.44
Reach-1	23805	0.2%	12505.00	124.00	138.21		138.97	0.001211	9.31	4063.59	641.58	0.46
Reach-1	23415	10%	2980.00	123.00	129.81	129.81	131.82	0.006096	11.90	404.45	161.55	0.89
Reach-1	23415	2%	5840.00	123.00	132.27	132.27	134.30	0.004596	13.19	1159.47	343.43	0.82
Reach-1	23415	1%	7455.00	123.00	133.11	133.11	135.33	0.004719	14.27	1451.84	358.59	0.84
Reach-1	23415	0.2%	12505.00	123.00	135.13	135.13	137.89	0.005069	16.96	2245.13	422.31	0.91
Reach-1	23171	10%	2980.00	120.30	128.75		129.48	0.002604	6.87	455.76	121.38	0.57
Reach-1	23171	2%	5840.00	120.30	129.79	129.12	131.57	0.005575	10.79	599.24	177.93	0.81
Reach-1	23171	1%	7455.00	120.30	131.12	130.85	132.49	0.003967	9.91	913.48	264.15	0.67
Reach-1	23171	0.2%	12505.00	120.30	134.35		135.16	0.001732	7.84	1880.08	333.29	0.44
Reach-1	23036	10%	2980.00	121.70	128.65		129.15	0.001483	5.59	564.12	284.35	0.43
Reach-1	23036	2%	5840.00	121.70	130.47		130.96	0.000752	4.61	1111.41	319.70	0.31
Reach-1	23036	1%	7455.00	121.70	131.62		132.07	0.000479	3.98	1491.73	341.41	0.25
Reach-1	23036	0.2%	12505.00	121.70	134.55		134.98	0.000237	3.32	2572.37	391.51	0.18
Reach-1	22916	10%	2980.00	121.00	128.01	126.93	128.88	0.002603	8.01	570.82	302.03	0.57
Reach-1	22916	2%	5840.00	121.00	130.41		130.84	0.000999	6.20	1483.60	430.42	0.38
Reach-1	22916	1%	7455.00	121.00	131.63		131.97	0.000628	5.38	2037.14	480.80	0.31
Reach-1	22916	0.2%	12505.00	121.00	134.63		134.90	0.000281	4.31	3712.15	632.31	0.21
Reach-1	22765	10%	2980.00	114.20	128.49		128.58	0.000149	2.53	1428.22	234.62	0.13
Reach-1	22765	2%	5840.00	114.20	130.48		130.70	0.000299	3.96	2020.14	395.39	0.19
Reach-1	22765	1%	7455.00	114.20	131.64		131.87	0.000301	4.19	2548.37	511.91	0.19
Reach-1	22765	0.2%	12505.00	114.20	134.64		134.84	0.000240	4.22	4324.67	669.64	0.17
Reach-1	22450	10%	2980.00	116.90	127.63	124.78	128.38	0.006142	7.39	605.20	384.22	0.48
Reach-1	22450	2%	5840.00	116.90	130.27		130.51	0.001575	4.56	1791.09	483.52	0.26
Reach-1	22450	1%	7455.00	116.90	131.48		131.70	0.001059	4.04	2388.82	500.92	0.21
Reach-1	22450	0.2%	12505.00	116.90	134.54		134.71	0.000615	3.62	4362.75	1054.32	0.17
Reach-1	22140	10%	2980.00	117.00	124.05	124.05	126.26	0.006734	12.84	391.36	132.65	0.95
Reach-1	22140	2%	5840.00	117.00	126.77	126.77	129.42	0.005440	14.96	889.23	205.48	0.91
Reach-1	22140	1%	7455.00	117.00	127.84	127.84	130.78	0.005382	16.12	1119.61	224.02	0.92
Reach-1	22140	0.2%	12505.00	117.00	131.26	131.26	134.04	0.003953	16.95	2349.42	658.06	0.83
Reach-1	21825	10%	2980.00	115.90	121.80	121.75	123.65	0.007981	11.17	314.54	84.21	0.97
Reach-1	21825	2%	5840.00	115.90	124.12	124.12	126.73	0.006551	13.42	604.08	179.14	0.94
Reach-1	21825	1%	7455.00	115.90	125.26	125.26	128.03	0.005781	14.07	847.23	239.90	0.91
Reach-1	21825	0.2%	12505.00	115.90	131.24	127.79	132.45	0.001436	10.39	3430.35	1045.30	0.50
Reach-1	21770	10%	2980.00	115.40	122.06	120.08	122.97	0.002174	7.62	390.83	103.38	0.55
Reach-1	21770	2%	5840.00	115.40	124.17	122.36	126.07	0.003067	11.07	527.79	119.93	0.68
Reach-1	21770	1%	7455.00	115.40	125.08	123.47	127.59	0.003503	12.70	587.15	127.10	0.74
Reach-1	21770	0.2%	12505.00	115.40	130.39	126.53	132.19	0.001574	11.58	2432.53	932.61	0.54
Reach-1	21757.5		Bridge									
Reach-1	21745	10%	2980.00	115.40	121.95	120.08	122.89	0.002314	7.77	383.57	102.50	0.56
Reach-1	21745	2%	5840.00	115.40	123.88	122.36	125.93	0.003470	11.48	508.60	117.61	0.72
Reach-1	21745	1%	7455.00	115.40	124.48	123.47	127.36	0.004410	13.60	547.97	122.37	0.83
Reach-1	21745	0.2%	12505.00	115.40	126.94	126.53	131.79	0.005288	17.67	707.72	141.67	0.94
Reach-1	21695	10%	2980.00	114.20	121.74	120.15	122.74	0.003025	8.01	371.94	69.60	0.61
Reach-1	21695	2%	5840.00	114.20	123.69	122.46	125.72	0.004430	11.42	511.32	74.77	0.76
Reach-1	21695	1%	7455.00	114.20	124.27	123.52	127.08	0.005624	13.46	557.56	87.09	0.87
Reach-1	21695	0.2%	12505.00	114.20	127.45	127.45	130.78	0.004531	14.98	1124.07	292.57	0.82

HEC-RAS Plan: PROPOSED River: RIVER-1 Reach: Reach-1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach-1	21285	10%	2980.00	114.30	119.50	119.17	120.92	0.006772	9.55	312.25	87.08	0.88
Reach-1	21285	2%	5840.00	114.30	121.70	121.16	123.70	0.005436	11.42	567.01	229.63	0.85
Reach-1	21285	1%	7455.00	114.30	122.75	122.75	124.74	0.004638	11.68	907.52	396.78	0.80
Reach-1	21285	0.2%	12505.00	114.30	124.70	124.69	126.86	0.004103	13.05	1782.33	518.61	0.79

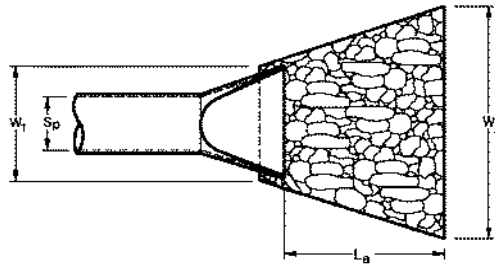
Riprap Apron

Invert Elevation = 138.50 ft
Tailwater Elevation = 140.44 ft
Tailwater Depth (TW) = 1.94 ft
Inside Pipe Diameter (S_p) = 1.50 ft
Pipe Discharge (Q) = 9.14 cfs
Outlet Velocity (V) = 5.17 ft/s

Apron Type

Type A Riprap Apron (Minimum Tailwater Condition) $TW < 0.5R_p$
Type B Riprap Apron (Maximum Tailwater Condition) $TW \geq 0.5R_p$
 $TW = 1.94 > 0.5R_p$

Use Type B Apron



Apron Length

Type B Riprap Apron (Maximum Tailwater Condition) $TW \geq 0.5R_p$
 $L_a = (3.0(Q-5)/S_p^{1.5}) + 10.0$

$L_a = 16.76$ ft

Apron Width

Type B Riprap Apron (Maximum Tailwater Condition) $TW \geq 0.5R_p$
 $W_1 = 3 \cdot S_p$
 $W_2 = 3 \cdot S_p + 0.4L_a$

$W_1 = 4.50$ ft
 $W_2 = 11.20$ ft

Riprap Specification

Outlet Velocity (V)=	0-8 ft/s	Modified
Outlet Velocity (V)=	8-10 ft/s	Intermediate
Outlet Velocity (V)=	10-14 ft/s	Standard

Outlet Velocity (V)= 5.170 ft/s Use Modified Riprap

Outlet protection has been designed in accordance with the Section 11.13 of the ConnDOT Drainage Manual

Temporary Sediment Trap 01

Sediment Storage Volume

Drainage Area	=	2.4	acres
Initial Storage Volume	=	134	cy/ac
Required Storage	=	322	cy
	=	8,683	cf
Min Wet Storage (1/2 Required Storage)	=	4,342	cf

Wet Storage Volume

$$V_w = 0.85 * A_w * D_w$$

V_w , Wet Storage Volume	=	7064	cf
D_w , Maximum Depth (Low Point in Trap to Base of Outlet)	=	3	ft
A_w , Surface Area of the Flooded Area at the Base of the Outlet	=	2770	sf

Dry Storage Volume

$$V_d = [(A_w + A_d) / 2] * D_d$$

A_w , Surface Area of the Flooded Area at the Base of the Outlet	=	2770	sf
A_d , Surface Area of the Flooded Area at the Top of the Outlet	=	3237	sf
D_d , Depth (Base to the top of the Outlet)	=	1	ft
V_d, Dry Storage Volume	=	3004	cf

Provided Storage Volume

Wet Storage	=	7064	cf
	=	262	cy
Dry Storage	=	3004	cf
	=	111	cy
Total Provided Storage	=	10067	cf
	=	373	cy

Calculated in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control Section 5-11



Project Name: **141 Danbury Road**
Project Number: **F0173-02**
Project Location: **Wilton, CT**
Description: **Sanitary Sewer Flow Calculation**
Prepared By: **TAS** Date: **July 14, 2021**

141 Danbury Road

Total Bedrooms

			Bedrooms
1 Bedroom Units =	37	x 1	37
2 Bedroom Units =	122	x 2	244
3 Bedroom Units =	14	x 3	42

Total Residential Units = 173

323 **Total Bedrooms**

Average Daily & Peak Flow

323 Units
150 GPD per Bedroom

Average Flow = 323 x 150
Average Flow = **48,450** **GPD**

Peak Flow Factor = 4

Peak Flow = **193,800** **GPD**
= **135** **GPM**

Sanitary Sewer Lateral Capacity

6" PVC Gravity Lateral

$$\text{Capacity} = \frac{1.49 \times R^{2/3} \times S^{1/2} \times A}{n}$$

R = 0.125
S = 2% = 0.020
A = 0.196
n = 0.010

Capacity = **668,400** **GPD**