Tighe&Bond

64 Danbury Road
Wilton, CT 06897

Engineering Report

Prepared For:

**Town of Wilton,
Planning and Zoning Commission**

**December 2023
(Revised April 2024)**

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Section 1
Introduction and Site Conditions

Tighe & Bond has prepared this report at the request of Fuller Development, LLC ("Applicant"), to support their applications to the Town of Wilton Planning & Zoning Commission and Inlands Wetlands Commission for a proposed 8-building residential development with 93 units.

The 64 Danbury Road site is an approximately 4.84-acre unit located on the northern extents of a larger 22.27-acre parcel of land, the entirety of which is bounded by Danbury Road to the west, wooded area and residential properties to the east, and commercial properties to the north and south. The proposed development consists of the construction of a 93-unit residential development, 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 for Copts Brook, the available existing and proposed utilities to service the property, and the proposed soil erosion and sedimentation control measures incorporated during construction.

1.1 Existing Conditions

The existing site consists of an office building with a 15,500 square-foot footprint and at-grade parking. The development site is located within Wilton's DE-5 Design Enterprise District Zone, and the proposal includes a request to apply the DE-5R Design Enterprise Residential District (Overlay) to the site. A significant portion of the site is impervious, including paved parking areas, sidewalks, and building roof area, with landscaping and lawns generally around the perimeter of the site. Utility services include underground water, natural gas, electric, and tele-data, which ultimately connect to service mains and overhead lines in Danbury Road.

The site is located on Danbury Road (Route 7) which is a north-south four lane State maintained major arterial roadway, with dedicated left turn lanes for a traffic light at the main entrance. The roadway is generally 50 feet wide and widens to roughly 60-feet along the frontage of the site to accommodate the aforementioned left turn lanes.

The topography of the site slopes primarily from east to west towards Copts Brook and Route 7. There are a series of catch basins and inlet structures on the existing site, which capture runoff and discharges to 54" RCP along the northern end of the site. The front yard of the property partially lies within the 500-year flood plain for the Norwalk River, while a small part of the middle of the property lies within the 100-year floodplain for

Copts Brook. This floodplain and site hydrology will be discussed in greater detail later in this report.

1.2 Project Proposal

The 8-building residential development with 93 units includes driveways and parking areas throughout the site. The development will use the current entry drive and the same point of access to Danbury Road as the other properties at 50 and 60 Danbury Road. A centrally located clubhouse and pool is proposed for the development immediately adjacent to the existing entry loop roadway. The site development plan also includes a network of sidewalks for pedestrian circulation and retaining walls to minimize the overall development footprint and grading impacts, as well as to establish required finished floor elevations. New utility services for the property are proposed including underground water, natural gas, electric, tel-com and sanitary sewer.

Stormwater management will be accommodated on-site. Surface runoff will be collected in catch basins and inlet structures located throughout the site and tie into the existing drainage infrastructure to be maintained. Underground infiltration systems have been designed to reduce peak flows and provide stormwater treatment, prior to discharge. The stormwater management system has been designed to treat the 0.5-inch water quality volume and remove a high level of pollutants. This will be discussed in greater detail later in the report.

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 33 percent. No drainage class is assigned, and the complex does not meet hydric criteria.

Udorthents-Urban Land Complex (306): Udorthents is a miscellaneous land type used to denote moderately well to excessively drained earthen material which has been so disturbed by cutting, filling, or grading that the original soil profile can no longer be discerned. Udorthents consist of very deep, moderately well drained to excessively drained soils on uplands, terraces and plains. They are highly disturbed soils commonly associated with construction and building or surface mining. Typically, more than 2 feet of the original soil has been removed or it has been covered with more than 2 feet of earthy fill. Texture to a depth of 60 inches, varies from silt loam to extremely gravelly sand. Slopes range from 0 to 35 percent.

Canton and Charlton Fine Sandy Loams (60C & 61C): The Charlton component is typically found on hills, uplands while the Chatfield component is typically found on bedrock-controlled ridges, uplands, bedrock-controlled hills. The parent material of both soils consists of coarse-loamy melt-out till derived from granite and/or schist and/or gneiss with a natural drainage class of well drained. These soil does not meet hydric criteria. Slope ranges from 8 to 15 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 1-inch per hour for the design of the proposed stormwater management systems and are in part based on historic design assumptions used for the site. We believe the estimate is conservative given the soil classifications, furthermore permeability estimates will be field verified at the site prior to the completion of construction documents to confirm the design assumptions are accurate.

1.4 Wetlands

Wetlands soils were delineated and flagged by Otto Theall, professional soil scientist on February and March, 2017 and located in the field by D'Andrea Surveying & Engineering, P.C. Wetland flags and limits are depicted on the project drawing sheets.

Wetland soils documentation is provided in **Appendix B** of this report.

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 Copts Brook and Danbury Road (US Route 7). There are a series of catch basins and inlet structures on the 64 Danbury Road site that capture runoff and discharge to a 54" RCP culvert that crosses Danbury Road and outlets to the Norwalk River. This culvert takes the majority of runoff from 64 Danbury Road as well as from 60 Danbury Road and the recently expanded parking garage. There are three oversized perforated pipes within this existing drainage network that provide nominal storage/infiltration for runoff from the parking areas and one water quality structure that treats a small portion of the parking area as well. In addition, there is an existing subsurface retention system near the site entry from Danbury Road that collects runoff from most of the circular entry drive before discharging it to the 54-inch RCP culvert. The 54" RCP culvert also receives flow from a 24" RCP pipe which conveys runoff from wetlands on the eastern edge of the property to the culvert. The wetlands and the accompanying 24" pipe collect runoff from the wooded area between the eastern property line and Whipple Road. Lastly, the culvert also receives flow from Copts Brook and ultimately conveys the aggregate runoff from all these areas to the Norwalk River. The last segment of the 54" RCP culvert along the southern edge of the property has been designated as Design Point B for our analysis.

There is an additional design point in the northeastern portion of the site which is used to analyze overland flow to Copts Brook, denoted as Design Point A.

The drainage areas for the existing site and contributing areas have been delineated into sub-watershed areas and are shown on the Existing Conditions Watershed Map (Figure EX-WS), which 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** below.

Table 2-1
24-hour Duration Precipitation Depth

	2-Year	10-Year	25-Year	50-Year	100-Year
Depth (in)	3.52	5.38	6.54	7.41	8.34

A breakdown of existing watershed areas, existing volumetric hydrographs, and the 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 shows a portion of the site within Zone X (shaded) Norwalk River 500-year floodplain along Danbury Road, and the floodway and Zone A of Copts Brook, as shown in **Figure 2** in **Appendix A**.

Zone A is studied by approximate methods, and therefore does not have established base flood elevations or a regulatory floodway. Since there is no available base flood data for Copt's Brook, we prepared a hydrologic and hydraulic analysis of the Copt's Brook watershed contributing to the drainage inlet on the site to establish a base flood elevation. Please refer to Section 3, Floodplain Management, for more details.

2.2 Proposed Site Hydrologic and Hydraulic Analysis

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

Under proposed conditions, drainage patterns will generally remain the same, largely flowing in a westerly direction and ultimately discharging to the 54" RCP culvert for Copts Brook. Drainage structures have been located throughout the site to collect stormwater runoff from paved and landscaped surfaces. Due to the various locations of the proposed buildings and the need to maintain a significant portion of the existing drainage network, the proposed drainage system has been split into four different sub-systems around the site. Infiltration systems have been designed for each area to promote infiltration and provide treatment of stormwater runoff. The bottom elevation of each system was also designed to be at or above the elevations for the existing infiltration pipes on site to ensure they are above the known ground water table. Ultimately, these systems converge into a single piped location at the western edge of the site. The existing retention system located adjacent to the main entry at Danbury Road will remain in place and unchanged. The contributing area for this system is minimally impacted by the proposed development plan and any changes to discharge flows will be negligible. Likewise, the 42-inch perforated pipe which receives runoff from 60 Danbury Road will remain in place as well and the proposed stormwater management system has been designed around it.

Lastly, a small portion of the site consisting of lawn area and 7 patios behind Buildings 7 and 8 is captured using area drains and discharged directly to the hillside adjacent to Copts Brook. A riprap apron and level spreader have been designed to reduce outlet velocities and provide erosion control prior to this discharge.

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 systems were also modeled to determine the

effectiveness in reducing peak discharges from the site. **Table 2-2** below 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
Copts Brook (DP-A)	Existing	1.539	4.097	5.932	7.378	8.969
	Proposed	1.538	3.964	5.692	7.047	8.534
	% Reduction	-0.1%	-3.2%	-4.0%	-4.5%	-4.9%
54" RCP Culvert (DP-B)	Existing	15.23	26.25	33.18	40.73	46.31
	Proposed	12.75	23.71	32.78	38.93	45.00
	% Reduction	-16.3%	-9.7%	-1.2%	-4.4%	-2.8%

Table 2-3 provides a summary of the peak volumetric runoff under existing and proposed conditions for the 2, 10, 25, 50, and 100 year storm events.

Table 2-3
Summary of Stormwater Peak Discharge (cfs)

Discharge Location	Condition	Storm Frequency (Years)				
		2	10	25	50	100
Copts Brook (DP-A)	Existing	11,394	27,414	38,948	48,110	58,271
	Proposed	11,183	26,393	37,264	45,872	55,399
	% Reduction	-1.9%	-3.7%	-4.3%	-4.7%	-4.9%
54" RCP Culvert (DP-B)	Existing	63,542	134,100	181,596	218,310	258,337
	Proposed	50,534	114,719	158,930	194,138	232,805
	% Reduction	-20.5%	-14.5%	-12.5%	-11.1%	-9.9%

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 design includes capturing and treating 0.65 inches of rainfall for the water quality volume to remove stormwater pollutants on an average annual basis.

Section 6(B)(i) of the Connecticut DEEP General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems "MS4 General Permit" requires where an existing site exceeds 40 percent directly connected impervious area (DCIA), that one-half of the water quality volume is to be retained onsite. The Town of Wilton is registered under the MS4 General Permit (Registration #GSM000040), and therefore is subject to its provisions and requirements. The project site contains more than 40 percent directly connected impervious area. As a result, the standard for water quality treatment is one half of the 1.3 inch required water quality volume, per Connecticut Stormwater Quality Manual, last updated March 30, 2024.

The infiltration systems have been designed to provide the required treatment volume. **Table 2-4** below summarizes the required and provided treatment volume for the site.

Table 2-4

Summary of Treatment Volume (cu ft)

Infiltration System - 1	**Required Treatment Volume**	5,261
	Provided Treatment Volume	6,035
Infiltration System - 2	**Required Treatment Volume**	809
	Provided Treatment Volume	810
Infiltration System - 3	**Required Treatment Volume**	400
	Provided Treatment Volume	800
Infiltration System - 4	**Required Treatment Volume**	1,875
	Provided Treatment Volume	1,960

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

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. The discharge from the four infiltration systems as well as the inlet flow for Copts Brook to the culvert are modeled as known constant flows, and do not take into account offsetting peaks between their respective hydrographs. Therefore, the analyzed flows within the piped drainage system are very conservative and the available capacity and hydraulic grade lines would only improve when accounting for the delayed time for flow in Copts Brook to peak. The downstream hydraulic grade line of

the 54" RCP Culvert was determined to be 131.90 per joint probability analysis, consistent with the 10-year elevation of the Norwalk River at the discharge location of the culvert. 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. Hydraulic calculation worksheets and storm sewers output results are included in **Appendix E**.

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 (HSG-B) = 69

    c. Landscaped and Lawn Areas (HSG-D) = 84

    d. Wooded Areas (HSG-B) = 55

    e. Wooded Areas (HSG-D) = 77

5. For rational peak flow calculations, runoff coefficients were as follows:

    a. Impervious (Pavement/Roof) areas = 0.90

    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 and Bell Traps: Catch basins and yard drains with sumps and bell traps 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 with several also maintaining bell traps.

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 F.**

Underground Infiltration: Underground Infiltration serves as a primary treatment practice, reduces peak flow rates, and promotes groundwater recharge. The proposed stormwater management system utilizes plastic 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 2-5** below. The pollutant loading calculation sheets are included in **Appendix F**.

Table 2-5
Pollutant Loading Summary

Item	Units	Pollutant					
		TKN	P	TSS	Pb	Cu	Zn
Proposed, Pre-Treatment	lb/yr/1-in	2.685	0.541	142.730	0.203	0.047	0.191
Proposed, Post-Treatment	lb/yr/1-in	1.771	0.230	11.785	0.104	0.022	0.069
Reduction, Pre to Post Treat	---	34%	57%	92%	49%	53%	64%

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.

Stormwater System Outfalls: The stormwater system outfalls shall be inspected two times annually as well as after every major storm, for slope integrity, soil moisture, vegetated

health, soil stability, soil compaction, soil erosion, ponding and sediment accumulation. If the rip rap has been displaced, undermined or damaged, it should be replaced immediately. The channel immediately below the outlet should be checked to see that erosion is not occurring. The downstream channel will be kept clear of obstructions, such as fallen trees, debris, leaves and sediment that could change flow patterns and/or tail water depths in pipes. Repairs must be carried out immediately to avoid additional damage to the outlet protection apron.

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

Section 3
Floodplain Management & Hydraulics

3.0 Background

FEMA studied Copts Brook using approximate methods as a part of the Flood Insurance Study (FIS) for Fairfield County, dated October 16, 2013. Therefore, the entire length of the watercourse was assigned Zone A, with no defined base flood elevation or floodway.

3.1 Basis of Modeling

Since no detailed base flood elevations are available on Copts Brook, Tighe & Bond prepared a hydrologic study of the approximately 490-acre watershed contributory to the 54-inch RCP inlet on the site. We utilized the HEC-HMS hydrologic model, which includes inputs for land coverage, basin area, time of concentration, travel time, and areas of storage. See **Appendix H** for further additional information.

We subdivided the watershed into three watershed subarea, and included two areas of storage. One located on-site immediately upstream of the 54-inch RCP inlet, and the area behind Wilton Acres Road, extending northeasterly to Clover Drive and Westport Road. Storage available on-site was computed using topographic survey data, while storage at Wilton Acres Road was determined using available LiDAR topographic data.

3.2 Flow Rates

Since the FIS did not study Copts Brook using detailed methods, there are no published discharges for the watercourse. The purpose of the hydrologic model was to develop a discharge for the 25- and 100-year events, as well as a corresponding water surface elevation at the inlet to the 54-inch RCP.

Table 3-1
Computed Flow Rates to the 54" RCP Inlet

Return Frequency (years)	Annual Chance Probability	Flow Rate (cfs)
25	4%	120.3
100	1%	163.1

3.3 Water Surface Elevations

We used the storage-discharge feature in concert with the incoming flow rate to develop water surface elevations at the 54-inch RCP inlet for the purposes of creating a base flood elevation for design purposes. **Table 3-2** summarizes the resulting water surface elevations for the 25-year and 100-year events:

Table 3-2
Computed Water Surface Elevations at the 54" RCP Inlet

Return Frequency (years)	Annual Chance Probability	WSEL (NAVD88)
25	4%	137.9
100	1%	139.6

3.4 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.

3.4.1 Equal Conveyance

The proposal does not diminish floodplain storage, and therefore base flood elevations will not increase as a result of the proposal. The additional floodplain storage provided would have the effect of reducing base flood elevations by a de minimis amount.

3.4.2 Compensatory Storage

The footprint for Building 4 is proposed to be within the existing paved parking lot immediately west of Copts Brook. This area is also within the calculated floodplain for Copts Brook. In order to mitigate the impacts of the proposed development, the residential portion of the building which extends over the floodplain will be elevated on

columns to allow potential floodwaters to go under the building while allowing the garage portion outside the floodplain to remain at grade. Since the placement of building columns and a retaining wall within the floodplain would result in a loss of floodplain storage volume, we have proposed revised grading beneath the building footprint to provide additional flood storage. The grading as proposed results in a net cut of approximately 250 CF within the floodplain boundary, compensating for the approximately 40 CF occupied by the columns and retaining walls of the proposed building. The development plan as proposed would therefore increase floodplain storage on-site. Provided in **Table 3-3** below is a summary of the Compensatory Flood Storage volumes being proposed for Copts Brook.

Table 3-3
Compensatory Flood Storage (NAVD88)

Elevation (NAVD88)	100-year Water Surface Elevation (NAVD88)		
	Existing (CF)	Proposed (CF)	Difference (CF)
134.0	-	-	-
135.0	1,112	1,112	0
136.0	2,707	2,707	0
137.0	4,910	4,910	0
138.0	8,101	8,101	0
139.0	12,633	12,633	0
140.0	19,028	19,278	250

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. An existing hydrant is located just north of the site on Danbury Road and a second hydrant is located just south of the main entry to the site. In addition, two new hydrants are proposed within the site to service the proposed development.

The estimated daily water demand for the proposed residential development is approximately 24,300 gallons per day (GPD). The estimated peak hour demand is 68 gallons per minute (GPM), determined using a maximum-to-average-day ratio of 4.0.

4.2 Electric and Tel-Data Service

Electric service to the site is provided by Eversource Electric Company and telephone and cable are provided by Altice and Frontier. Underground primary service lines are located within the main entry loop driveway with an existing electric vault located near the southeastern corner of the existing building.

4.3 Gas Service

Eversource Gas Company provides natural gas service to the site. Eversource Gas Company maintains a gas main in Danbury Road and a service lateral to 60 Danbury Road thru the easement in the main entry loop. The current development plan shows the replacement of the existing gas service lateral within the Eversource easement; however, once service loads are better understood the existing lateral will be evaluated to determine if it can be re-used to service the entire development area.

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

4.4 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 development will connect to the sewer main at the existing manhole in front of the site. WPCA approval will be required for all sewer connections.

The projected wastewater flows associated with the proposed development were calculated based on the 93 residential units – comprised of 31 one-bedroom units, 55 two-bedroom units, and 7 three-bedroom units – for a total of 162 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.

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	93 / 162	150	Per Bedroom	24,300	68

* 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

<u>General</u>

The proposed development is entitled "64 Danbury Road" in Wilton, Connecticut.

Estimated:
Project Start: Spring 2024
Project Completion: Summer 2026

Erosion Control Narrative refers to drawings C-501 through C-504.

The proposed site development will consist of building demolition, clearing and grubbing the existing site, excavation, construction of stormwater management, utilities, and rough grading of building, parking areas, sidewalks and curbing.

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

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 "2024 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.

<u>Construction Sequence – Initial Phase</u>

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.   Begin mass earthwork and construct sediment trap in the vicinity of buildings 7 & 8.
      Construct retaining walls and level building pad as soon as possible after excavated.

8.   Construct the initial storm drainage as shown on the drainage plans.

9.   Install water quality systems and associated drainage network to the maximum
      extent practicable. Grade the area around the storm drainage system as necessary.

10.   Begin rough roadway grading.

11.   Install remaining drainage system to the extent necessary to provide positive
      drainage.

12.   Begin installation of sanitary sewer system, water, and other utilities to extent
      necessary.

13.   Provide silt fence/haybale barrier around soil stockpile area. Provide temporary
      vegetative cover (defined in erosion control notes) on all exposed surfaces.

14.   Begin building construction.

15.   Pave binder course on parking and driveways for non-porous pavement areas.

16.   Establish temporary vegetative cover.

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 "2024 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.

Tighe&Bond

APPENDIX A

N

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33

7

SITE

NORWALK

WESTPORT
DANBURY
DUDLEY
RIDGE LANE
DR.
CLOVER
EXT.

WILTON ACRES #2
WILTON
ACRES #1
Brook
SALEM ROAD
WASHINGTON
Brook
HEAD RD.
ARROW
GRUMMAN
WHIPPLE ROAD
ERDMANN LA. EXT.
ERDMANN
IVY LA.
Cop'ts

WOODCHUCK LANE
LEDGE
RD.
HORSESHOE
PIT
ROAD
ROXBURY LANE
GREENBRIAR LA.
BROADAXE
LANE
BUTTERNUT PL.
WINTON TER.
WINTON DR.
MC FADDEN
RANGE
BITTERSWEET TRAIL
ROAD
HOLLY PL.
MC FADDEN ROAD
DRIVE
CHESSOR
LA.
VALEVIEW
RANGE ROAD
VALEVIEW
RD.
RD.
KENT
HILLS LANE
LANE
NEWSOM LA.
EDITH LANE
WHITE
BOB
LANE
CHIPMUNK
BELDEN
HILL
KENT ROAD
ROAD
OLD
ROAD
RD.
NORWALK
KENSETT
BROOKSIDE RD.
GREAT NOR LANE
AVENUE

CITY OF NORWALK

SCALE IN FEET

0   1000'   2000'

GRAPHIC SCALE

National Flood Hazard Layer FIRMette

73°25'11"W 41°10'18"N

2-01-0739P
2023

Norwalk River

N
N

141 FEET
141.2 FEET
M
138.8 FEET
139 FEET
Zone AE

135 FEET

Zone AE

FLOODWAY
134 FEET
Zone AE

Town of Wilton
090020

131 FEET

Zone A

AREA OF MINIMAL FLOOD HAZARD
Zone X

09001C0391F
eff. 6/18/2010

130.6 FEET
L

130 FEET

127 FEET
Zone AE

i

73°24'34"W 41°9'51"N
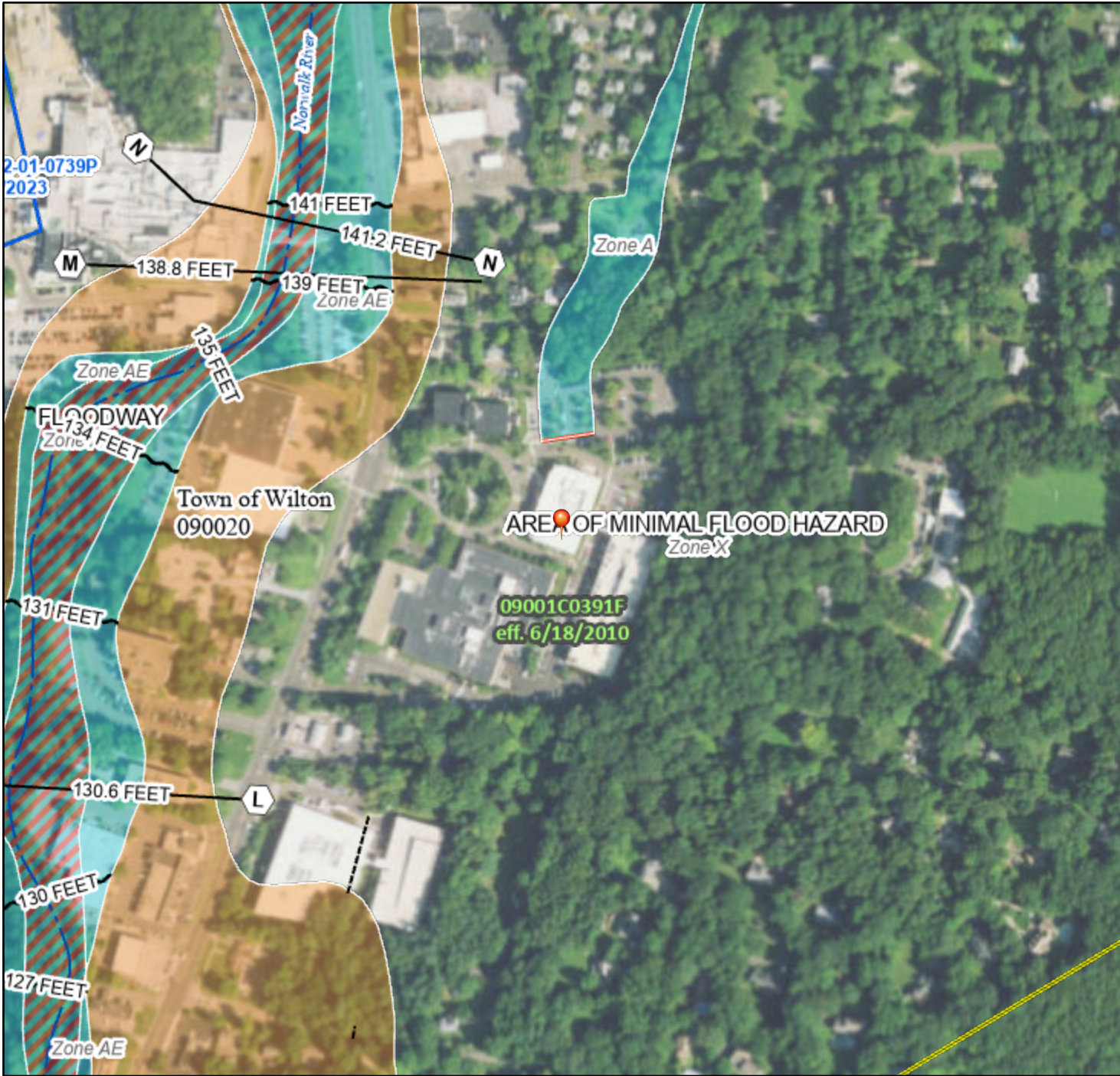
Feet
0   250   500   1,000   1,500   2,000

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		**Without Base Flood Elevation (BFE)** *Zone A, V, A99*
		With BFE or Depth *Zone AE, AO, AH, VE, AR*
		Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD

- **0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile** *Zone X*
- **Future Conditions 1% Annual Chance Flood Hazard** *Zone X*
- **Area with Reduced Flood Risk due to Levee. See Notes.** *Zone X*
- **Area with Flood Risk due to Levee** *Zone D*

OTHER AREAS

- NO SCREEN **Area of Minimal Flood Hazard** *Zone X*
- **Effective LOMRs**
- **Area of Undetermined Flood Hazard** *Zone D*

GENERAL STRUCTURES

- — — — **Channel, Culvert, or Storm Sewer**
- ⊢⊢⊢⊢ **Levee, Dike, or Floodwall**

OTHER FEATURES

- **20.2** **Cross Sections with 1% Annual Chance**
- **17.5** **Water Surface Elevation**
- 8 — — — **Coastal Transect**
- ∿∿∿ 513 ∿∿∿ **Base Flood Elevation Line (BFE)**
- —— **Limit of Study**
- —— **Jurisdiction Boundary**
- — ·· — · **Coastal Transect Baseline**
- — · — **Profile Baseline**
- —— **Hydrographic Feature**

MAP PANELS

- ⊞ **Digital Data Available**
- ☐ **No Digital Data Available**
- ⊠ **Unmapped**

📍 The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 12/4/2023 at 12:02 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

APPENDIX B

Soil Map may not be valid at this scale.

Map Scale: 1:3,470 if printed on A portrait (8.5" x 11") sheet.

Meters
0   50   100   200   300

Feet
0   150   300   600   900

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

Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

11/3/2023
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, Western Part
Survey Area Data: Version 1, Sep 15, 2023

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

Date(s) aerial images were photographed: Oct 21, 2022—Oct 27, 2022

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
3	Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony	D	0.0	0.0%
50B	Sutton fine sandy loam, 3 to 8 percent slopes	B/D	0.4	0.9%
60B	Canton and Charlton fine sandy loams, 3 to 8 percent slopes	B	5.4	10.6%
60C	Canton and Charlton fine sandy loams, 8 to 15 percent slopes	B	8.4	16.7%
61C	Canton and Charlton fine sandy loams, 8 to 15 percent slopes, very stony	B	3.8	7.4%
102	Pootatuck fine sandy loam	A/D	0.1	0.1%
103	Rippowam fine sandy loam	B/D	0.2	0.5%
232B	Haven-Urban land complex, 0 to 8 percent slopes	B	2.5	4.9%
306	Udorthents-Urban land complex	B	11.3	22.4%
307	Urban land	D	18.4	36.3%
W	Water		0.0	0.1%
Totals for Area of Interest			**50.5**	**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

NOAA Atlas 14, Volume 10, Version 3
Location name: Wilton, Connecticut, USA*
Latitude: 41.1679°, Longitude: -73.4146°
Elevation: 141 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

	PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]									
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.365 (0.286-0.461)	0.425 (0.333-0.537)	0.523 (0.408-0.663)	0.604 (0.468-0.770)	0.716 (0.536-0.946)	0.801 (0.586-1.08)	0.888 (0.629-1.23)	0.981 (0.662-1.40)	1.11 (0.719-1.63)	1.21 (0.766-1.82)
10-min	0.518 (0.405-0.654)	0.602 (0.471-0.761)	0.740 (0.577-0.938)	0.855 (0.664-1.09)	1.01 (0.759-1.34)	1.14 (0.831-1.53)	1.26 (0.892-1.75)	1.39 (0.938-1.98)	1.57 (1.02-2.31)	1.71 (1.08-2.57)
15-min	0.609 (0.477-0.769)	0.709 (0.555-0.896)	0.872 (0.680-1.10)	1.01 (0.781-1.28)	1.19 (0.894-1.58)	1.34 (0.977-1.80)	1.48 (1.05-2.06)	1.64 (1.10-2.33)	1.85 (1.20-2.72)	2.02 (1.28-3.03)
30-min	0.849 (0.665-1.07)	0.987 (0.772-1.25)	1.21 (0.946-1.54)	1.40 (1.08-1.78)	1.66 (1.24-2.19)	1.86 (1.36-2.49)	2.06 (1.45-2.84)	2.26 (1.53-3.22)	2.53 (1.64-3.73)	2.74 (1.74-4.12)
60-min	1.09 (0.853-1.38)	1.26 (0.990-1.60)	1.55 (1.21-1.97)	1.79 (1.39-2.28)	2.12 (1.59-2.80)	2.38 (1.74-3.19)	2.63 (1.85-3.63)	2.88 (1.95-4.11)	3.22 (2.09-4.73)	3.47 (2.20-5.20)
2-hr	1.39 (1.10-1.75)	1.64 (1.29-2.06)	2.05 (1.61-2.59)	2.39 (1.87-3.03)	2.86 (2.16-3.76)	3.22 (2.37-4.31)	3.58 (2.56-4.96)	3.98 (2.70-5.64)	4.54 (2.96-6.64)	4.99 (3.17-7.44)
3-hr	1.60 (1.26-2.00)	1.90 (1.50-2.38)	2.39 (1.88-3.00)	2.80 (2.20-3.54)	3.37 (2.55-4.42)	3.79 (2.81-5.08)	4.24 (3.04-5.86)	4.74 (3.21-6.69)	5.45 (3.55-7.94)	6.03 (3.84-8.96)
6-hr	2.01 (1.60-2.50)	2.41 (1.92-2.99)	3.06 (2.42-3.81)	3.60 (2.83-4.51)	4.34 (3.30-5.67)	4.90 (3.65-6.52)	5.48 (3.97-7.57)	6.16 (4.20-8.65)	7.15 (4.68-10.4)	7.98 (5.09-11.8)
12-hr	2.48 (1.99-3.06)	2.99 (2.39-3.69)	3.80 (3.03-4.71)	4.48 (3.55-5.58)	5.42 (4.15-7.04)	6.12 (4.59-8.11)	6.86 (4.99-9.42)	7.72 (5.28-10.8)	8.99 (5.90-12.9)	10.0 (6.43-14.7)
24-hr	2.90 (2.34-3.55)	3.52 (2.84-4.32)	4.54 (3.64-5.58)	5.38 (4.29-6.66)	6.54 (5.05-8.45)	7.41 (5.59-9.77)	8.34 (6.11-11.4)	9.43 (6.47-13.1)	11.1 (7.28-15.8)	12.4 (7.99-18.1)
2-day	3.20 (2.60-3.90)	3.97 (3.22-4.83)	5.21 (4.21-6.36)	6.24 (5.01-7.67)	7.67 (5.95-9.86)	8.72 (6.63-11.5)	9.86 (7.29-13.5)	11.2 (7.74-15.5)	13.4 (8.83-19.0)	15.2 (9.78-22.0)
3-day	3.44 (2.80-4.17)	4.28 (3.48-5.19)	5.65 (4.58-6.87)	6.78 (5.46-8.29)	8.34 (6.50-10.7)	9.50 (7.24-12.4)	10.8 (7.98-14.7)	12.3 (8.47-16.8)	14.6 (9.68-20.7)	16.7 (10.7-24.0)
4-day	3.67 (3.00-4.44)	4.56 (3.72-5.51)	6.00 (4.88-7.28)	7.20 (5.81-8.78)	8.85 (6.91-11.3)	10.1 (7.70-13.1)	11.4 (8.46-15.5)	13.0 (8.98-17.8)	15.5 (10.2-21.8)	17.6 (11.3-25.2)
7-day	4.36 (3.58-5.24)	5.33 (4.37-6.41)	6.90 (5.64-8.32)	8.20 (6.66-9.94)	10.0 (7.83-12.7)	11.3 (8.68-14.7)	12.8 (9.48-17.1)	14.5 (10.0-19.6)	17.0 (11.3-23.8)	19.1 (12.4-27.3)
10-day	5.05 (4.16-6.04)	6.06 (4.99-7.26)	7.71 (6.32-9.27)	9.09 (7.40-11.0)	11.0 (8.61-13.8)	12.4 (9.50-15.9)	13.9 (10.3-18.5)	15.6 (10.9-21.1)	18.1 (12.1-25.3)	20.2 (13.1-28.8)
20-day	7.12 (5.91-8.47)	8.26 (6.84-9.82)	10.1 (8.34-12.1)	11.6 (9.54-14.0)	13.8 (10.8-17.1)	15.4 (11.8-19.5)	17.0 (12.6-22.3)	18.8 (13.2-25.2)	21.2 (14.2-29.4)	23.2 (15.1-32.7)
30-day	8.85 (7.36-10.5)	10.1 (8.37-11.9)	12.1 (9.99-14.3)	13.7 (11.3-16.4)	16.0 (12.6-19.8)	17.8 (13.7-22.3)	19.5 (14.4-25.3)	21.3 (15.0-28.5)	23.7 (15.9-32.7)	25.5 (16.6-36.0)
45-day	11.0 (9.18-13.0)	12.3 (10.3-14.5)	14.5 (12.0-17.1)	16.3 (13.4-19.4)	18.7 (14.8-23.0)	20.7 (15.9-25.8)	22.6 (16.7-29.0)	24.4 (17.2-32.4)	26.8 (18.0-36.8)	28.5 (18.6-39.9)
60-day	12.8 (10.7-15.0)	14.2 (11.9-16.7)	16.5 (13.7-19.5)	18.4 (15.2-21.8)	21.0 (16.7-25.7)	23.1 (17.8-28.7)	25.0 (18.5-32.0)	26.9 (19.0-35.7)	29.3 (19.8-40.1)	31.0 (20.3-43.3)

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

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

Please refer to NOAA Atlas 14 document for more information.

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PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 41.1679°, Longitude: -73.4146°

Average recurrence interval (years)

- 1
- 2
- 5
- 10
- 25
- 50
- 100
- 200
- 500
- 1000

Duration

- 5-min
- 10-min
- 15-min
- 30-min
- 60-min
- 2-hr
- 3-hr
- 6-hr
- 12-hr
- 24-hr
- 2-day
- 3-day
- 4-day
- 7-day
- 10-day
- 20-day
- 30-day
- 45-day
- 60-day

NOAA Atlas 14, Volume 10, Version 3

Created (GMT): Wed Dec 20 14:31:53 2023

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Maps & aerials

Small scale terrain

NOAA Atlas 14, Volume 10, Version 3
Location name: Wilton, Connecticut, USA*
Latitude: 41.1679°, Longitude: -73.4146°
Elevation: 141 ft**

* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]										
Duration	**Average recurrence interval (years)**									
	1	**2**	**5**	**10**	**25**	**50**	**100**	**200**	**500**	**1000**
5-min	4.38 (3.43-5.53)	5.10 (4.00-6.44)	6.28 (4.90-7.96)	7.25 (5.62-9.24)	8.59 (6.43-11.4)	9.61 (7.03-12.9)	10.7 (7.55-14.8)	11.8 (7.94-16.8)	13.3 (8.63-19.6)	14.5 (9.19-21.8)
10-min	3.11 (2.43-3.92)	3.61 (2.83-4.57)	4.44 (3.46-5.63)	5.13 (3.98-6.54)	6.08 (4.55-8.04)	6.81 (4.99-9.16)	7.55 (5.35-10.5)	8.34 (5.63-11.9)	9.43 (6.11-13.9)	10.3 (6.51-15.4)
15-min	2.44 (1.91-3.08)	2.84 (2.22-3.58)	3.49 (2.72-4.42)	4.03 (3.12-5.13)	4.77 (3.58-6.31)	5.34 (3.91-7.18)	5.92 (4.20-8.22)	6.54 (4.42-9.32)	7.39 (4.80-10.9)	8.07 (5.10-12.1)
30-min	1.70 (1.33-2.14)	1.97 (1.54-2.50)	2.42 (1.89-3.07)	2.80 (2.17-3.57)	3.31 (2.48-4.37)	3.71 (2.71-4.98)	4.11 (2.90-5.68)	4.52 (3.05-6.44)	5.07 (3.29-7.46)	5.48 (3.47-8.23)
60-min	1.09 (0.853-1.38)	1.26 (0.990-1.60)	1.55 (1.21-1.97)	1.79 (1.39-2.28)	2.12 (1.59-2.80)	2.38 (1.74-3.19)	2.63 (1.85-3.63)	2.88 (1.95-4.11)	3.22 (2.09-4.73)	3.47 (2.20-5.20)
2-hr	0.696 (0.549-0.873)	0.821 (0.647-1.03)	1.03 (0.805-1.29)	1.20 (0.933-1.52)	1.43 (1.08-1.88)	1.61 (1.18-2.16)	1.79 (1.28-2.48)	1.99 (1.35-2.82)	2.27 (1.48-3.32)	2.49 (1.58-3.72)
3-hr	0.532 (0.421-0.665)	0.632 (0.500-0.791)	0.797 (0.627-1.00)	0.933 (0.730-1.18)	1.12 (0.848-1.47)	1.26 (0.935-1.69)	1.41 (1.01-1.95)	1.58 (1.07-2.23)	1.81 (1.18-2.64)	2.01 (1.28-2.98)
6-hr	0.335 (0.267-0.416)	0.402 (0.319-0.499)	0.510 (0.404-0.636)	0.600 (0.473-0.752)	0.724 (0.551-0.946)	0.817 (0.609-1.09)	0.915 (0.662-1.26)	1.03 (0.701-1.44)	1.19 (0.781-1.73)	1.33 (0.849-1.96)
12-hr	0.206 (0.165-0.254)	0.247 (0.198-0.305)	0.315 (0.251-0.391)	0.372 (0.294-0.463)	0.449 (0.344-0.583)	0.507 (0.380-0.672)	0.569 (0.414-0.782)	0.641 (0.438-0.893)	0.746 (0.489-1.07)	0.834 (0.533-1.22)
24-hr	0.120 (0.097-0.148)	0.146 (0.118-0.180)	0.189 (0.151-0.232)	0.224 (0.178-0.277)	0.272 (0.210-0.352)	0.308 (0.233-0.407)	0.347 (0.254-0.475)	0.392 (0.269-0.544)	0.461 (0.303-0.659)	0.518 (0.332-0.755)
2-day	0.066 (0.054-0.081)	0.082 (0.066-0.100)	0.108 (0.087-0.132)	0.130 (0.104-0.159)	0.159 (0.123-0.205)	0.181 (0.138-0.238)	0.205 (0.151-0.280)	0.234 (0.161-0.322)	0.278 (0.183-0.395)	0.316 (0.203-0.457)
3-day	0.047 (0.038-0.057)	0.059 (0.048-0.072)	0.078 (0.063-0.095)	0.094 (0.075-0.115)	0.115 (0.090-0.148)	0.131 (0.100-0.172)	0.149 (0.110-0.203)	0.170 (0.117-0.233)	0.203 (0.134-0.287)	0.231 (0.149-0.333)
4-day	0.038 (0.031-0.046)	0.047 (0.038-0.057)	0.062 (0.050-0.075)	0.075 (0.060-0.091)	0.092 (0.071-0.117)	0.104 (0.080-0.136)	0.118 (0.088-0.161)	0.135 (0.093-0.185)	0.161 (0.106-0.227)	0.183 (0.118-0.262)
7-day	0.025 (0.021-0.031)	0.031 (0.025-0.038)	0.041 (0.033-0.049)	0.048 (0.039-0.059)	0.059 (0.046-0.075)	0.067 (0.051-0.087)	0.075 (0.056-0.102)	0.086 (0.059-0.116)	0.101 (0.067-0.141)	0.113 (0.073-0.162)
10-day	0.021 (0.017-0.025)	0.025 (0.020-0.030)	0.032 (0.026-0.038)	0.037 (0.030-0.045)	0.045 (0.035-0.057)	0.051 (0.039-0.066)	0.057 (0.042-0.077)	0.065 (0.045-0.088)	0.075 (0.050-0.105)	0.084 (0.054-0.119)
20-day	0.014 (0.012-0.017)	0.017 (0.014-0.020)	0.021 (0.017-0.025)	0.024 (0.019-0.029)	0.028 (0.022-0.035)	0.032 (0.024-0.040)	0.035 (0.026-0.046)	0.039 (0.027-0.052)	0.044 (0.029-0.061)	0.048 (0.031-0.068)
30-day	0.012 (0.010-0.014)	0.013 (0.011-0.016)	0.016 (0.013-0.019)	0.019 (0.015-0.022)	0.022 (0.017-0.027)	0.024 (0.018-0.031)	0.027 (0.020-0.035)	0.029 (0.020-0.039)	0.032 (0.022-0.045)	0.035 (0.023-0.049)
45-day	0.010 (0.008-0.011)	0.011 (0.009-0.013)	0.013 (0.011-0.015)	0.015 (0.012-0.017)	0.017 (0.013-0.021)	0.019 (0.014-0.023)	0.020 (0.015-0.026)	0.022 (0.015-0.030)	0.024 (0.016-0.034)	0.026 (0.017-0.036)
60-day	0.008 (0.007-0.010)	0.009 (0.008-0.011)	0.011 (0.009-0.013)	0.012 (0.010-0.015)	0.014 (0.011-0.017)	0.016 (0.012-0.019)	0.017 (0.012-0.022)	0.018 (0.013-0.024)	0.020 (0.013-0.027)	0.021 (0.014-0.030)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).
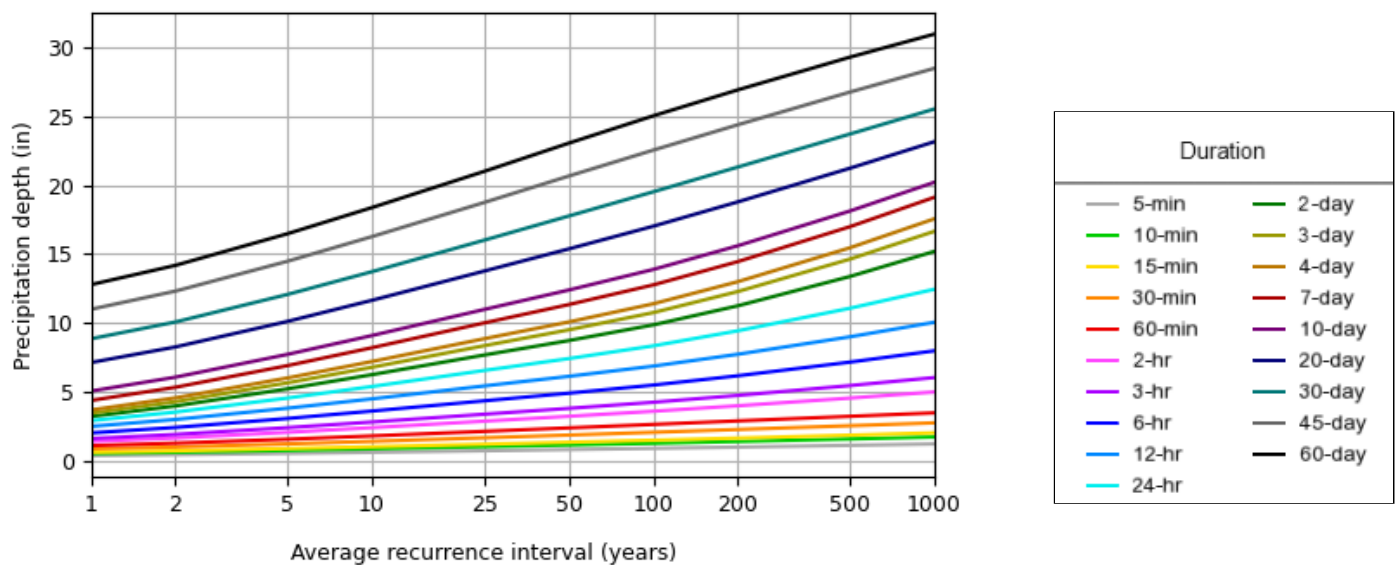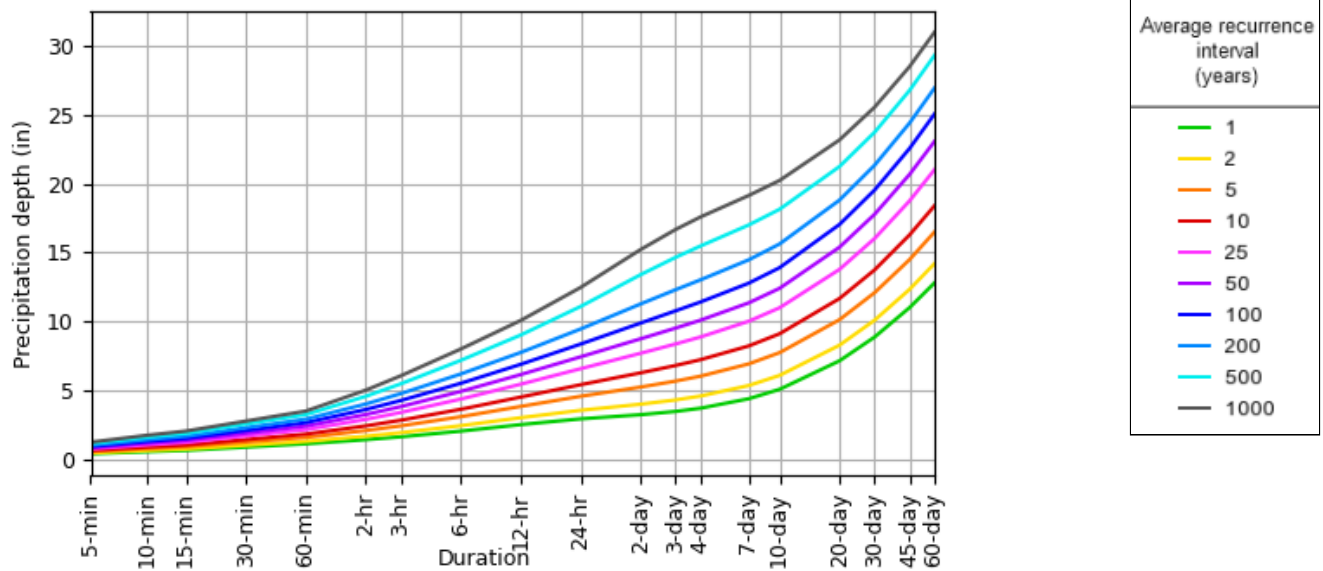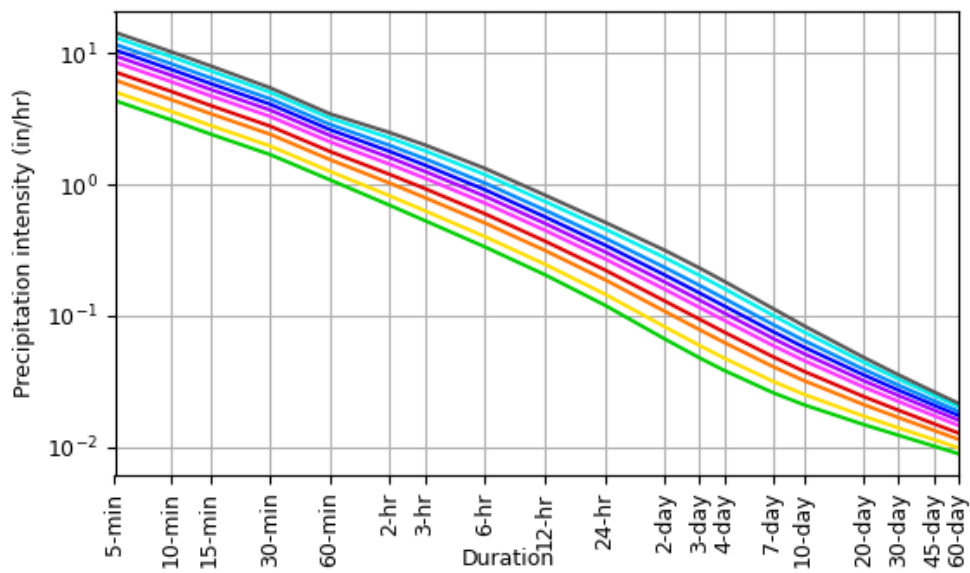
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.
Please refer to NOAA Atlas 14 document for more information.

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PF graphical

PDS-based intensity-duration-frequency (IDF) curves
Latitude: 41.1679°, Longitude: -73.4146°

Average recurrence interval (years)
- 1
- 2
- 5
- 10
- 25
- 50
- 100
- 200
- 500
- 1000

Duration
- 5-min
- 10-min
- 15-min
- 30-min
- 60-min
- 2-hr
- 3-hr
- 6-hr
- 12-hr
- 24-hr
- 2-day
- 3-day
- 4-day
- 7-day
- 10-day
- 20-day
- 30-day
- 45-day
- 60-day

NOAA Atlas 14, Volume 10, Version 3

Created (GMT): Tue Nov 7 15:29:56 2023
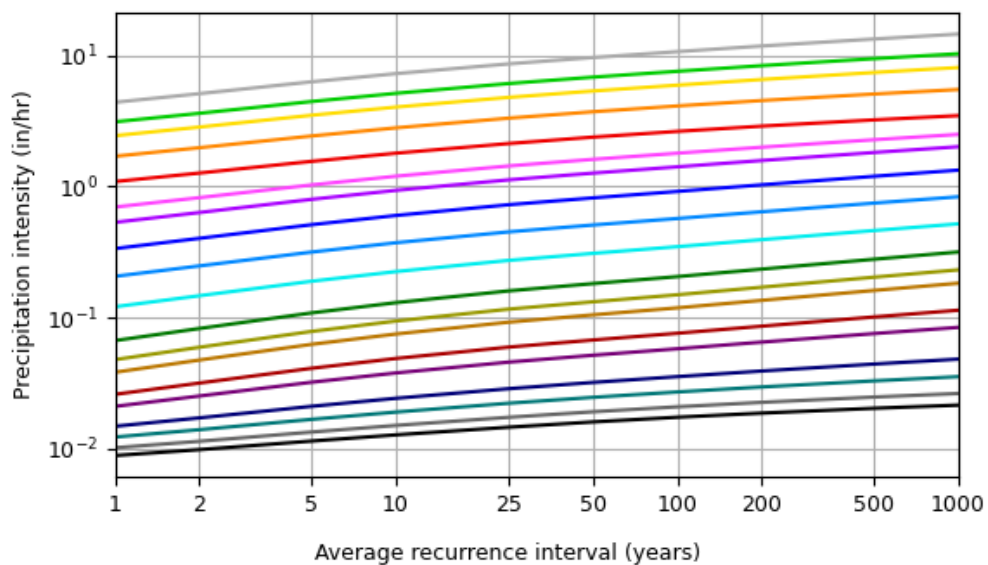
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Maps & aerials

Small scale terrain

Large scale terrain

Large scale map

Large scale aerial
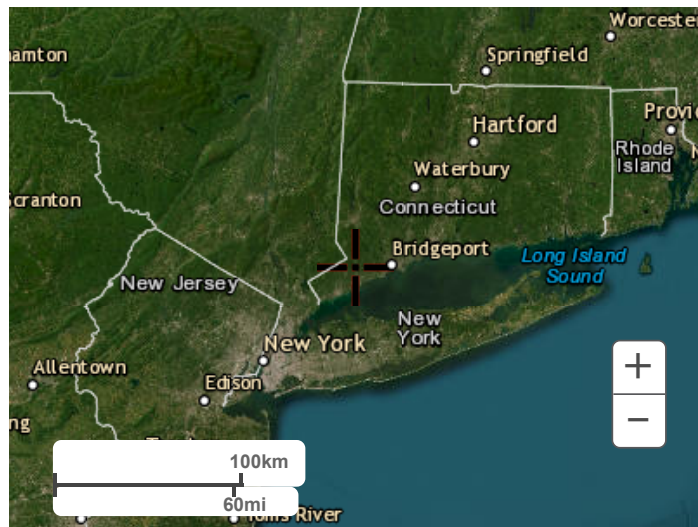
[Back to Top](#)

HOLLYHOCK ROAD

N

TP-4A

TP-6A

TP-1A

TP-5A

TP-2A

TP-3A

TP-2B

VOLLEYBALL COURT

FLAGGED WETLANDS

BASKETBALL COURT

TENNIS COURT

0   60'   120'
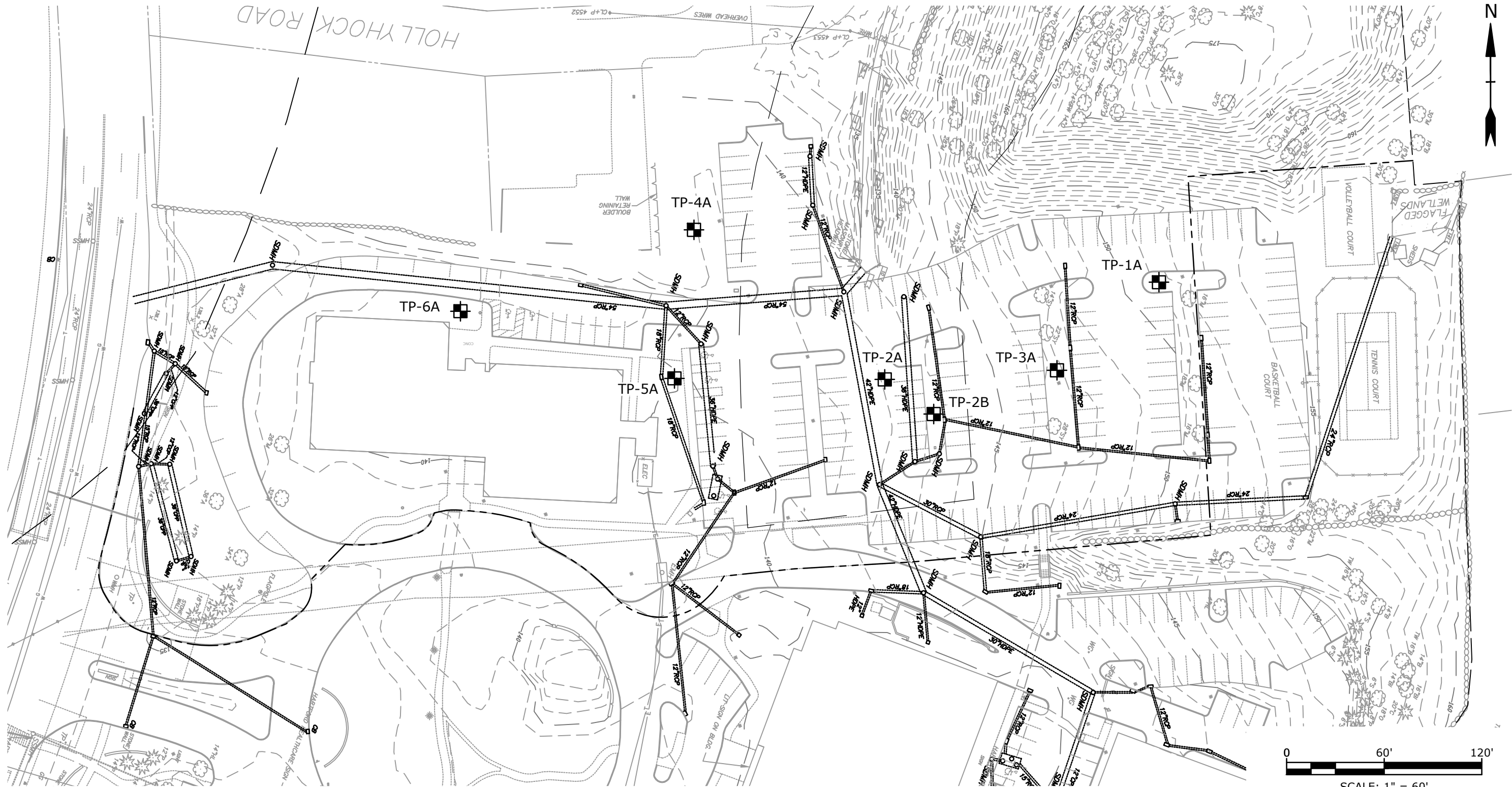
SCALE: 1" = 60'

64 DANBURY ROAD
WILTON, CT

TEST PIT FIGURE

DATE:	2/22/2024	
SCALE:	1"=60'	Tighe&Bond
FIGURE	EX-WS	

Tighe&Bond
Engineers | Environmental Specialists

Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Deep Test Pits**
Prepared By: **NDG**   Date: **March 07-08, 2024**

TP-1A

0' - 6"	Topsoil
6" - 12"	Grey Silty Gravel
12" - 24"	Dark Brown Sandy Loam w/ Gravel
24" - 84"	Tan Sandy Loam w/ Gravel, Cobbles
84"	Ledge

NO MOTTLING
NO GROUNDWATER

TP-2A

0' - 4"	Bituminous Pavement
4" - 12"	Grey Sandy Loam w/ Cosrse Gravel
12" - 60"	Grey Clean Sandy
60" - 108"	3/4" Crushed Stone
108"	Groundwater

NO LEDGE
NO GROUNDWATER

TP-2B

0 - 6"	Topsoil
6" - 24"	Brown Sandy Loam
24" - 84"	Grey Sandy Loam w/ Gravel, Cobbles
84"	Groundwater

NO LEDGE
NO MOTTLING

TP-3A

0 - 6"	Topsoil
6" - 48"	Brown Silty Loam w/ Sand, Gravel
48" - 60"	Reddish Silt
60" - 84"	Brown Silty Loam w/ Sand, Gravel (Wet)
84" - 108"	Brown Silty Loam w/ Sand, Gravel, Cobbles, Boulders (Wet)

NO LEDGE
NO MOTTLING
NO GROUNDWATER (although soil below 60" was very wet)

TP-4A

0 - 6"	Topsoil
6" - 72"	Light brown Sandy Loam w/ Gravel, Cobbles

NO LEDGE
NO MOTTLING
NO GROUNDWATER (although soil below 60" was very wet)

Tighe&Bond
Engineers | Environmental Specialists

Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Deep Test Pits**
Prepared By: **NDG**   Date: **March 07-08, 2024**

<u>TP-5A</u>
0 - 6"   Topsoil
6" - 84"   Light Brown Silty to Clean Sand w/ Cobbles, Boulders
84"   Groundwater

                NO LEDGE
                NO MOTTLING

<u>TP-6A</u>
0 - 6"   Topsoil
6" - 84"   Light Brown Sandy Loam w/ Gravel, Cobbles, Boulders, Debris

Tighe&Bond
Engineers | Environmental Specialists

Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Soil Infiltration Test**
Performed By: **NDG**   Date: **March 07-08 2024** Checked By: **EWL**

Test No: **TP-1A**
Method: Double Ring Infiltrometer
Depth: 5'

Δ Time (min)	Δ Depth Inner Ring (in)	Rate (in/min)	Rate (in/hr)	Comments
				Pre-soak
				Topped Off
10.00	1	0.10	6.00	Refilled
10.00	1	0.10	6.00	Refilled
10.00	3/4	0.08	4.50	Refilled
10.00	3/4	0.08	4.50	Refilled
10.00	3/4	0.08	4.50	Refilled
10.00	3/4	0.08	4.50	End Test

Result   **Avg. Infiltration Rate**   **4.50**

Test No: **TP-2B**
Method: Double Ring Infiltrometer
Depth: 3'

Δ Time (min)	Δ Depth Inner Ring (in)	Rate (in/min)	Rate (in/hr)	Comments
				Pre-soak
				Topped Off
10.00	1/4	0.03	1.50	Refilled
10.00	1/4	0.03	1.50	Refilled
10.00	1/4	0.03	1.50	Refilled
10.00	1/4	0.03	1.50	End Test

Result   **Avg. Infiltration Rate**   **1.50**

Test No: **TP-4A**
Method: Double Ring Infiltrometer
Depth: 6'

Δ Time (min)	Δ Depth Inner Ring (in)	Rate (in/min)	Rate (in/hr)	Comments
				Pre-soak
				Topped Off
10.00	1 1/2	0.15	9.00	Refilled
10.00	1	0.10	6.00	Refilled
10.00	3/4	0.08	4.50	Refilled
10.00	3/4	0.08	4.50	Refilled
10.00	3/4	0.08	4.50	End Test

Result   **Avg. Infiltration Rate**   **4.50**

Test No: **TP-5A**
Method: Double Ring Infiltrometer
Depth: 5'

Δ Time (min)	Δ Depth Inner Ring (in)	Rate (in/min)	Rate (in/hr)	Comments
				Pre-soak
				Topped Off
10.00	3 1/2	0.35	21.00	Refilled
10.00	3 1/2	0.35	21.00	Refilled
10.00	3 1/2	0.35	21.00	Refilled
10.00	3 1/2	0.35	21.00	End Test

Result   **Avg. Infiltration Rate**   **21.00**

Test No: **TP-6A**
Method: Double Ring Infiltrometer
Depth: 5'

Δ Time (min)	Δ Depth Inner Ring (in)	Rate (in/min)	Rate (in/hr)	Comments
				Pre-soak
				Topped Off
1.00	2	2.00	120.00	Refilled
1.00	2	2.00	120.00	Refilled
1.00	2	2.00	120.00	Refilled
1.00	1 1/2	1.50	90.00	Refilled
2.00	1 1/2	0.75	45.00	Refilled
2.00	1 1/2	0.75	45.00	Refilled
2.00	1 1/2	0.75	45.00	Refilled
2.00	1 1/2	0.75	45.00	End Test

Result   **Avg. Infiltration Rate**   **45.00**

SOIL & WETLAND SCIENCE, LLC
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PROFESSIONAL WETLAND SCIENTIST
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EMAIL: soilwetlandsci@aol.com
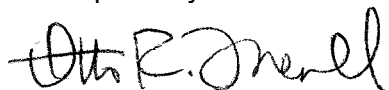
SOIL INVESTIGATION REPORT
40, 50-60 DANBURY ROAD
WILTON, CONNECTICUT
APRIL 10, 2017

I conducted an on-site investigation of the soils on the Perkin-Elmer Corporation properties located 40, 50-60 Danbury Road in Wilton, Connecticut on February 23 and 24, March 9 and April 10, 2017. The examination for wetland soils was conducted in the field by inspection of approximately 300 soil samples taken with spade and auger.

Inland wetlands in Connecticut, according to the Connecticut General Statutes, are lands, including submerged lands, which consist of any of the soil types designated as poorly drained, very poorly drained, alluvial, and floodplain by the National Cooperative Soils Survey of the NRCS. Watercourses include rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs and all other bodies of water, natural or artificial, vernal or intermittent. Intermittent watercourses are to be delineated by a defined permanent channel and bank and the occurrence of two or more of the following characteristics: (A) evidence of scour or deposits of recent alluvium or detritus, (B) the presence of standing or flowing water for a duration longer than a particular storm incident, and (C) the presence of hydrophytic vegetation.

The wetland boundary was marked in the field with red flags numbered 1 through 10, 11 through 40, 47 through 77, 78 through 87, 88 through 141, 139 through 142 and 146 through 150. The wetland soils consist of Aquents (1), Ridgebury, Leicester and Whitman soils, extremely stony (3) and Raypol silt loam (12). The non-wetland soils consist of Haven and Enfield soils (32), Sutton fine sandy loam (50), Canton and Charlton soils (60), Canton and Charlton soils, very stony (61), Udorthents-Urban land complex (306), Urban land (307) and Udorthents, smoothed (308). The soil map units contain inclusions of other soil types. The results of this investigation are subject to change until accepted by the Inland Wetland Commission of the Town of Wilton.

Respectfully submitted:

Otto R. Theall
Professional Soil Scientist

SOIL SURVEY SKETCH MAP
40, 50-60 DANBURY ROAD
WILTON, CONNECTICUT
SOIL & WETLAND SCIENCE, LLC
OTTO R. THEALL
PROFESSIONAL SOIL SCIENTIST
APRIL 10, 2017

SOIL LEGEND:
Wetland Soils:
1 = Aquents
3 = Ridgebury, Leicester & Whitman
12 = Raypol silt loam
Non-wetland Soils:
32 = Haven and Enfield soils
50 = Sutton fine sandy loam
60= Canton and Charlton soils
61= Canton and Charlton soils, v. st
306 = Udorthents-Urban land complex
307 = Urban land
308 = Udorthents, smoothed

"LENNON LANE PARCEL"
1.0841 ACRES
IN "R-1A" ZONE

ZONE BOUNDARY

FLAGGED WETLANDS

FOR GUYS AND ANCHORS
VOL. 66 PG. 305 W.L.R.

PARCEL "B"
MAP NO. 1010 W.L.R.

ASPHALT

PICNIC AREA
MAP NO. 5342 W.E.R.

8.2102 ACRES
IN "DE-5" ZONE

DRAINAGE DITCH

PARKING GARAGE

VORTECHNICS

OIL SEPARATOR

SAN. SEWER
GREASE TRAP

BUILDING
No. 40

BENCHMARK
"U" CUT CUR
ELEV= 135.5
DATUM: NAVD

N 19°18'37" E   146.52

N/F
JOHN DAVIS BURKE
TRUSTEE

HIGHWAY EASEMENT
VOL. 1212 PG. 159 W.L.R.

PARCEL "A-R"
22.2700 ACRES

PARCEL "B
10.8366 A(

DANBURY ROAD (ROUTE 7)
(PUBLIC)

10' DRAINAGE EASEMENT
VOL. 1989 PG. 144 W.L.R.
MAP NO. 5615 W.L.R.

DRAIN EASEMENT
GRANTED TO STATE
OF CONNECTICUT
(MAP REF. NO. 4)

N 20°32'07" E

LIMIT OF HIGHWAY
EASEMENT
VOL. 1212 PG. 59
VOL. 1834 PG. 16

APPENDIX C

EX-WS-3

EX WS-2D

EX WS-2A

EX-WS-2B

EX-WS-2C

EX-WS-2J

EX WS-2F

EX-WS-1

EX-WS-2E

EX-WS-2G

EX WS-2I

COPTS BROOK

DESIGN POINT - A
(OVERLAND FLOW
TO COPTS BROOK)

GRUMMAN HILL ROAD

HOLLYHOCK ROAD

DANBURY ROAD
(ROUTE 7)

DESIGN POINT - B
(EXISTING 54" RCP)

EX-WS-2H

LEGEND

WATERSHED BOUNDARY	— — — —
TIME OF CONCENTRATION	————
PAVEMENT/ROOF	
LANDSCAPED AND LAWNS	
WOODED	

SCALE: 1" = 150'

0   150'   300'

64 DANBURY ROAD
WILTON, CT

EXISTING WATERSHED FIGURE

DATE:	03/28/2024
SCALE:	1"=150'
FIGURE	EX-WS

Tighe&Bond

Designation: **EX WS-01**
Location:

Cover Type	Area, ac	CN	A x CN
Pavement/Roof	0.443	98	43.4273
Landscaped and Lawns (HSG-B)	1.175	69	81.0956
Landscaped and Lawns (HSG-D)	0.080	84	6.6818
Wooded (HSG-B)	1.744	55	95.9318
Wooded (HSG-D)	0.235	77	18.0604
	3.677		245.197

Weighted CN: **66.7**

Time of Concentration

(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	150	0.11	9.83
Segment B - C	0.015	46	0.11	0.42
Segment C - D	0.24	4	0.11	0.54
Segment D - E	0.4	124	0.14	11.53
Segment E - F	0.24	92	0.1	6.91
Segment F - G	0.4	27	0.07	4.49
Segment G - H	0.24	51	0.08	4.71
Segment H - I	0.015	11	0.09	0.14
Segment I - J	0.24	43	0.02	7.15

Total Tc = 45.7 Min.

Note: Overland time of concentration computed using "Kinematic Wave" equation
Gutter and pipe time of concentration computed using Manning's equation

Tighe&Bond
Consulting Engineers
Environmental Specialists

Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Existing CN & Tc Calculations**
Prepared By: **AVC/ZNH**   Date: **March 28, 2024**

Designation: **EX WS-02A**
Location:

Cover Type	Area, ac	CN	A x CN
Pavement/Roof	0.906	98	88.7872
Landscaped and Lawns (HSG-B)	0.074	69	5.1060
Landscaped and Lawns (HSG-D)	0.138	84	11.5895
Wooded (HSG-B)	0.210	55	11.5500
Wooded (HSG-D)	0.129	77	9.9414
	1.457		126.974

Weighted CN: **87**

Time of Concentration

(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	18	0.02	3.56
Segment B - C	0.015	67	0.033	0.91

Total Tc = 4.5 Min.
Minimum Tc = 5.0 (MIN)

Note: Overland time of concentration computed using "Kinematic Wave" equation
Gutter and pipe time of concentration computed using Manning's equation

Designation: **EX WS-02B**
Location:

Cover Type	Area, ac	CN	A x CN
Pavement/Roof	0.006	98	0.5917
Landscaped and Lawns (HSG-B)	0.005	69	0.3738
Landscaped and Lawns (HSG-D)	0.120	84	10.0545
Wooded (HSG-B)	0.029	55	1.6061
Wooded (HSG-D)	0.025	77	1.9604
	0.186		14.586

Weighted CN: **79**

Time of Concentration

(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.4	84	0.072	11.02

Total Tc = 11.0 Min.

Note: Overland time of concentration computed using "Kinematic Wave" equation
Gutter and pipe time of concentration computed using Manning's equation

Designation: **EX WS-02C**
Location:

Cover Type	Area, ac	CN	A x CN
Pavement/Roof	0.391	98	38.3293
Landscaped and Lawns (HSG-D)	0.199	84	16.7287
	0.590		55.058

Weighted CN: **93**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	108	0.08	8.58
Segment B - C	0.015	82	0.067	0.80

Total Tc = 9.4 Min.

Note: Overland time of concentration computed using "Kinematic Wave" equation
Gutter and pipe time of concentration computed using Manning's equation

Designation: **EX WS-02D**
Location:

Cover Type	Area, ac	CN	A x CN
Pavement/Roof	1.683	98	164.9442
Landscaped and Lawns (HSG-D)	0.313	84	26.3300
Wooded (HSG-B)	0.448	55	24.6212
Wooded (HSG-D)	0.018	77	1.3841
	2.462		217.279

Weighted CN: **88**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.4	212	0.18	16.02
Segment B - C	0.24	77	0.12	5.57
Segment C - D	0.015	43	0.045	0.56

Total Tc = 22.1 Min.

Note: Overland time of concentration computed using "Kinematic Wave" equation
Gutter and pipe time of concentration computed using Manning's equation

Tighe&Bond
Consulting Engineers
Environmental Specialists

Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Existing CN & Tc Calculations**
Prepared By: **AVC/ZNH** Date: **March 28, 2024**

Designation: **EX WS-02E**
Location:

Cover Type	Area, ac	CN	A x CN
Pavement/Roof	0.126	98	12.3580
Landscaped and Lawns (HSG-D)	0.020	84	1.6430
	0.146		14.001

Weighted CN: **96**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	6	0.02	1.48
Segment B - C	0.015	94	0.01	1.92

Total Tc = 3.4 Min.
USE 5.0 Min. (MIN)

Note: Overland time of concentration computed using "Kinematic Wave" equation
Gutter and pipe time of concentration computed using Manning's equation

Designation: **EX WS-02F**
Location:

Cover Type	Area, ac	CN	A x CN
Pavement/Roof	0.704	98	68.9667
Landscaped and Lawns (HSG-D)	0.274	84	23.0229
Wooded (HSG-D)	0.034	77	2.6356
	1.012		94.625

Weighted CN: **93**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	35	0.025	5.55

Total Tc = 5.5 Min.

Note: Overland time of concentration computed using "Kinematic Wave" equation
Gutter and pipe time of concentration computed using Manning's equation

Tighe&Bond
Consulting Engineers
Environmental Specialists

Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Existing CN & Tc Calculations**
Prepared By: **AVC/ZNH** Date: **March 28, 2024**

Designation: **EX WS-02G**
Location:

Cover Type	Area, ac	CN	A x CN
Pavement/Roof	0.159	98	15.5459
Landscaped and Lawns (HSG-D)	0.124	84	10.3997
	0.282		25.946

Weighted CN: **92**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	46	0.025	6.91

Total Tc = 6.9 Min.

Note: Overland time of concentration computed using "Kinematic Wave" equation
Gutter and pipe time of concentration computed using Manning's equation

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Designation: **EX WS-02H**
Location:

Cover Type	Area, ac	CN	A x CN
Pavement/Roof	0.166	98	16.2591
Landscaped and Lawns (HSG-D)	0.450	84	37.8309
	0.616		54.090

Weighted CN: **88**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	65	0.025	9.11
Segment B - C	0.015	6	0.02	0.16
Segment C - D	0.25	53	0.025	7.99

Total Tc = 17.3 Min.

Note: Overland time of concentration computed using "Kinematic Wave" equation
Gutter and pipe time of concentration computed using Manning's equation

Designation: **EX WS-02I**
Location:

Cover Type	Area, ac	CN	A x CN
Pavement/Roof	0.577	98	56.5165
Landscaped and Lawns (HSG-D)	0.810	84	68.0311
	1.387		124.548

Weighted CN: 90

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	82	0.06	7.73
Segment B - C	0.015	6	0.02	0.16
Segment C - D	0.25	97	0.04	10.74

Total Tc = 18.6 Min.

Note: Overland time of concentration computed using "Kinematic Wave" equation
Gutter and pipe time of concentration computed using Manning's equation

Designation: **EX WS-02J**
Location:

Cover Type	Area, ac	CN	A x CN
Pavement/Roof	0.343	98	33.5756
	0.343		33.576

Weighted CN: 98

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.015	75	0.02	1.21

Total Tc = 1.2 Min.
USE 5.0 Min. (MIN)

Note: Overland time of concentration computed using "Kinematic Wave" equation
Gutter and pipe time of concentration computed using Manning's equation

Designation: **EX WS-03**
Location:

Cover Type	Area, ac	CN	A x CN
Pavement/Roof	0.358	98	35.0424
Landscaped and Lawns (HSG-B)	1.279	69	88.2510
Wooded (HSG-B)	3.270	55	179.8500
	4.907		303.143

Weighted CN: **62**

Time of Concentration

(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.4	182	0.09	18.71
Segment B - C	0.24	63	0.03	8.26
Segment C - D	0.015	11	0.015	0.29
Segment D - E	0.24	27	0.015	5.53
Segment E - F	0.015	28	0.015	0.62
Segment F - G	0.24	62	0.1	5.04
Segment G - H	0.4	198	0.15	16.31

Total Tc = **54.8** **Min.**
            0.91 **Hrs.**
Total Lag = **0.68** **Hrs.**

Note: Overland time of concentration computed using "Kinematic Wave" equation
        Gutter and pipe time of concentration computed using Manning's equation

Watershed Model Schematic

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Legend

Hyd.	Origin	Description
1	SCS Runoff	EX WS-01
2	SCS Runoff	EX WS-02A
3	SCS Runoff	EX WS-02B
4	SCS Runoff	EX WS-02C
5	SCS Runoff	EX WS-02D
6	SCS Runoff	EX WS-02E
7	SCS Runoff	EX WS-02F
8	SCS Runoff	EX WS-02G
9	SCS Runoff	EX WS-02H
10	SCS Runoff	EX WS-02I
11	SCS Runoff	EX WS-02J
12	SCS Runoff	EX WS-03
13	Reservoir	36 INCH PIPE (#1)
14	Reservoir	TWIN 36IN PIPES (#2)
15	Reservoir	24 INCH PIPE
16	Reservoir	36 INCH PIPE (#2)
17	Reservoir	36 INCH PIPE (#3)
18	Reservoir	TWO 36 INCH PIPES
19	Combine	<no description>
20	Combine	<no description>
21	Combine	Design Point B

Project: Existing-Hydraflow.gpw

Thursday, 04 / 4 / 2024

Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

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	------	------	1.539	-------	-------	4.097	5.932	7.378	8.969	EX WS-01
2	SCS Runoff	------	------	3.631	-------	-------	6.345	8.035	9.296	10.64	EX WS-02A
3	SCS Runoff	------	------	0.283	-------	-------	0.569	0.755	0.895	1.046	EX WS-02B
4	SCS Runoff	------	------	1.664	-------	-------	2.685	3.315	3.785	4.285	EX WS-02C
5	SCS Runoff	------	------	4.374	-------	-------	7.568	9.563	11.05	12.64	EX WS-02D
6	SCS Runoff	------	------	0.468	-------	-------	0.731	0.894	1.015	1.145	EX WS-02E
7	SCS Runoff	------	------	3.039	-------	-------	4.896	6.042	6.897	7.807	EX WS-02F
8	SCS Runoff	------	------	0.774	-------	-------	1.265	1.567	1.793	2.033	EX WS-02G
9	SCS Runoff	------	------	1.152	-------	-------	1.996	2.521	2.913	3.330	EX WS-02H
10	SCS Runoff	------	------	2.779	-------	-------	4.677	5.852	6.727	7.659	EX WS-02I
11	SCS Runoff	------	------	1.132	-------	-------	1.741	2.120	2.404	2.707	EX WS-02J
12	SCS Runoff	------	------	0.834	-------	-------	2.690	4.111	5.256	6.537	EX WS-03
13	Reservoir	2	------	3.618	-------	-------	6.339	8.034	8.911	9.045	36 INCH PIPE (#1)
14	Reservoir	5	------	4.352	-------	-------	7.442	9.452	10.93	12.50	TWIN 36IN PIPES (#2)
15	Reservoir	6	------	0.440	-------	-------	0.701	0.901	1.040	1.127	24 INCH PIPE
16	Reservoir	7	------	2.961	-------	-------	4.789	5.869	6.709	7.323	36 INCH PIPE (#2)
17	Reservoir	9	------	0.057	-------	-------	2.020	3.073	2.890	3.297	36 INCH PIPE (#3)
18	Reservoir	10	------	2.821	-------	-------	4.587	5.764	6.644	7.572	TWO 36 INCH PIPES
19	Combine	3, 4, 13, 14, 15,	------	8.831	-------	-------	14.85	18.63	21.92	25.05	<no description>
20	Combine	8, 11, 12, 16, 17, 18,	------	6.758	-------	-------	11.40	14.87	18.82	22.06	<no description>
21	Combine	19, 20	------	15.23	-------	-------	26.25	33.18	40.73	46.31	Design Point B

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

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	1.539	2	758	11,394	------	------	------	EX WS-01
2	SCS Runoff	3.631	2	724	10,910	------	------	------	EX WS-02A
3	SCS Runoff	0.283	2	730	1,101	------	------	------	EX WS-02B
4	SCS Runoff	1.664	2	726	5,899	------	------	------	EX WS-02C
5	SCS Runoff	4.374	2	736	20,803	------	------	------	EX WS-02D
6	SCS Runoff	0.468	2	724	1,523	------	------	------	EX WS-02E
7	SCS Runoff	3.039	2	724	9,485	------	------	------	EX WS-02F
8	SCS Runoff	0.774	2	726	2,719	------	------	------	EX WS-02G
9	SCS Runoff	1.152	2	732	5,114	------	------	------	EX WS-02H
10	SCS Runoff	2.779	2	732	12,419	------	------	------	EX WS-02I
11	SCS Runoff	1.132	2	724	3,836	------	------	------	EX WS-02J
12	SCS Runoff	0.834	2	798	11,082	------	------	------	EX WS-03
13	Reservoir	3.618	2	724	8,949	2	143.60	1,515	36 INCH PIPE (#1)
14	Reservoir	4.352	2	736	16,179	5	139.00	3,136	TWIN 36IN PIPES (#2)
15	Reservoir	0.440	2	724	690	6	139.60	475	24 INCH PIPE
16	Reservoir	2.961	2	724	6,152	7	139.42	1,180	36 INCH PIPE (#2)
17	Reservoir	0.057	2	916	470	9	137.46	3,649	36 INCH PIPE (#3)
18	Reservoir	2.821	2	728	6,466	10	135.68	2,408	TWO 36 INCH PIPES
19	Combine	8.831	2	726	32,817	3, 4, 13, 14, 15,	------	------	<no description>
20	Combine	6.758	2	728	30,725	8, 11, 12, 16, 17, 18,	------	------	<no description>
21	Combine	15.23	2	728	63,542	19, 20	------	------	Design Point B

Existing-Hydraflow.gpw	Return Period: 2 Year	Thursday, 04 / 4 / 2024

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 1

EX WS-01

Hydrograph type	= SCS Runoff	Peak discharge	= 1.539 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.63 hrs
Time interval	= 2 min	Hyd. volume	= 11,394 cuft
Drainage area	= 3.677 ac	Curve number	= 67
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 45.70 min
Total precip.	= 3.52 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

EX WS-01

Hyd. No. 1 -- 2 Year
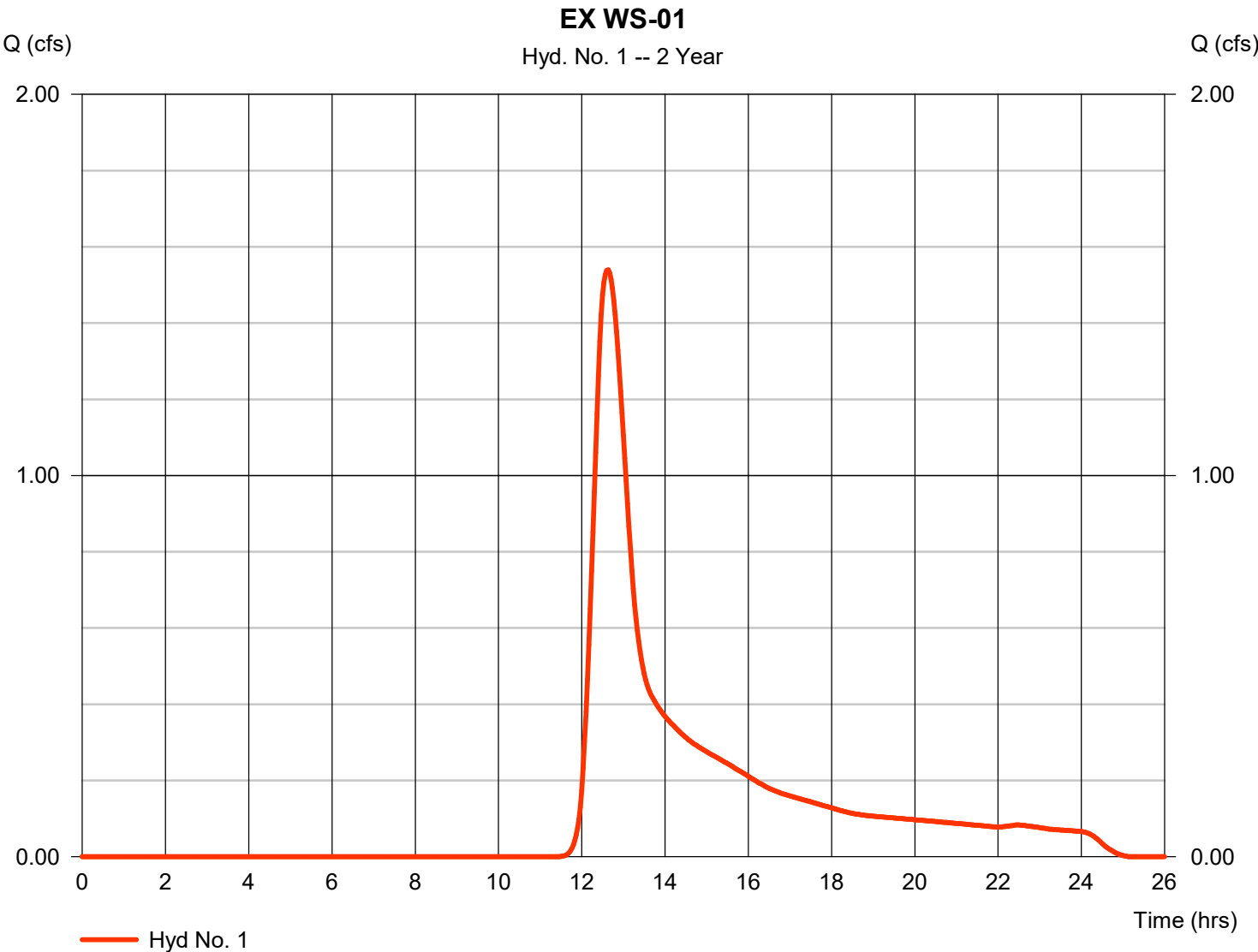
Hyd No. 1

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 2

EX WS-02A

Hydrograph type	= SCS Runoff	Peak discharge	= 3.631 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 10,910 cuft
Drainage area	= 1.457 ac	Curve number	= 87
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.52 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

EX WS-02A

Hyd. No. 2 -- 2 Year

Q (cfs)   Q (cfs)

Hyd No. 2

Time (hrs)
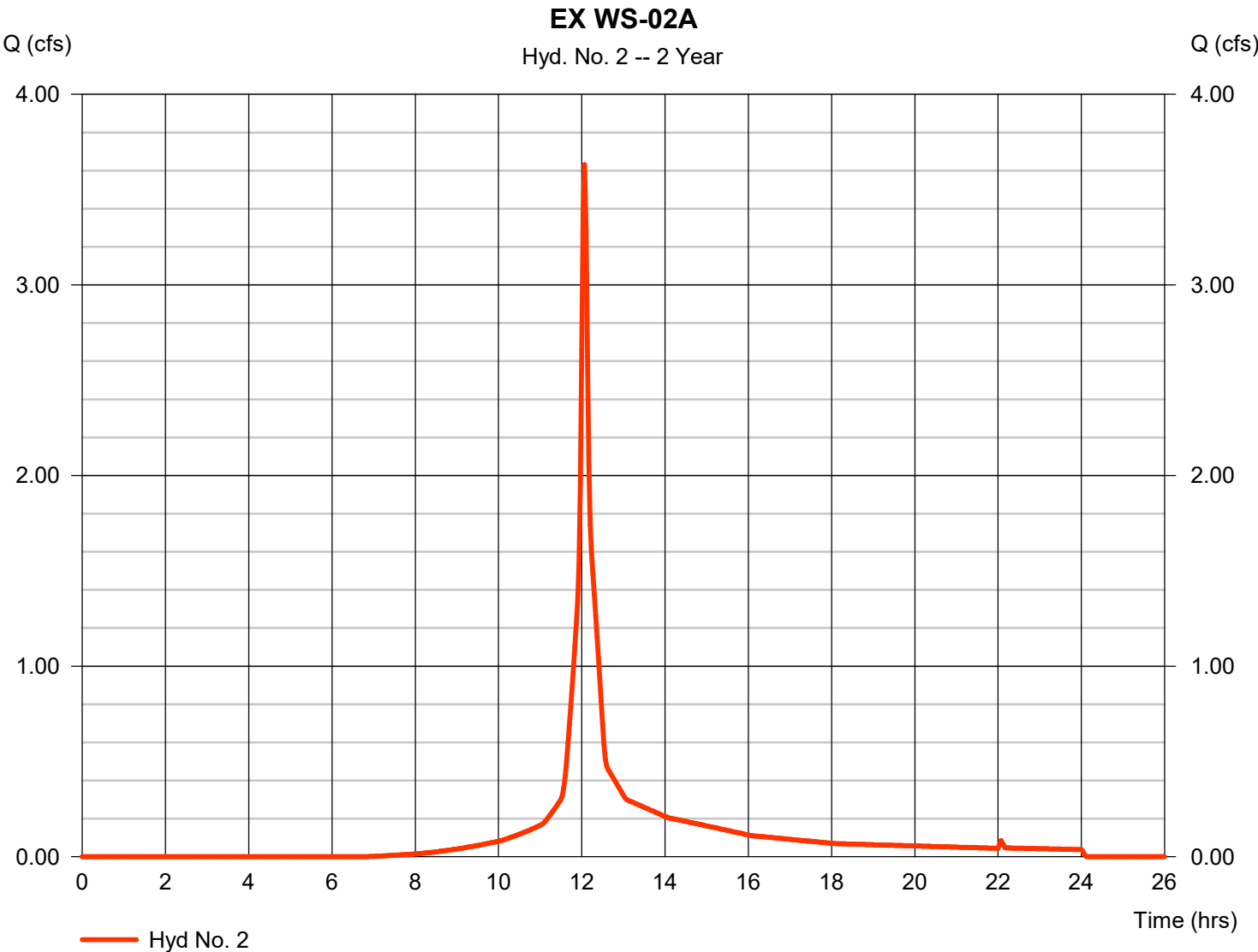
Hydrograph Report

Hyd. No. 3

EX WS-02B

Hydrograph type	= SCS Runoff		Peak discharge	= 0.283 cfs
Storm frequency	= 2 yrs		Time to peak	= 12.17 hrs
Time interval	= 2 min		Hyd. volume	= 1,101 cuft
Drainage area	= 0.186 ac		Curve number	= 79
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 11.00 min
Total precip.	= 3.52 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

EX WS-02B

Hyd. No. 3 -- 2 Year

Q (cfs)

Time (hrs)
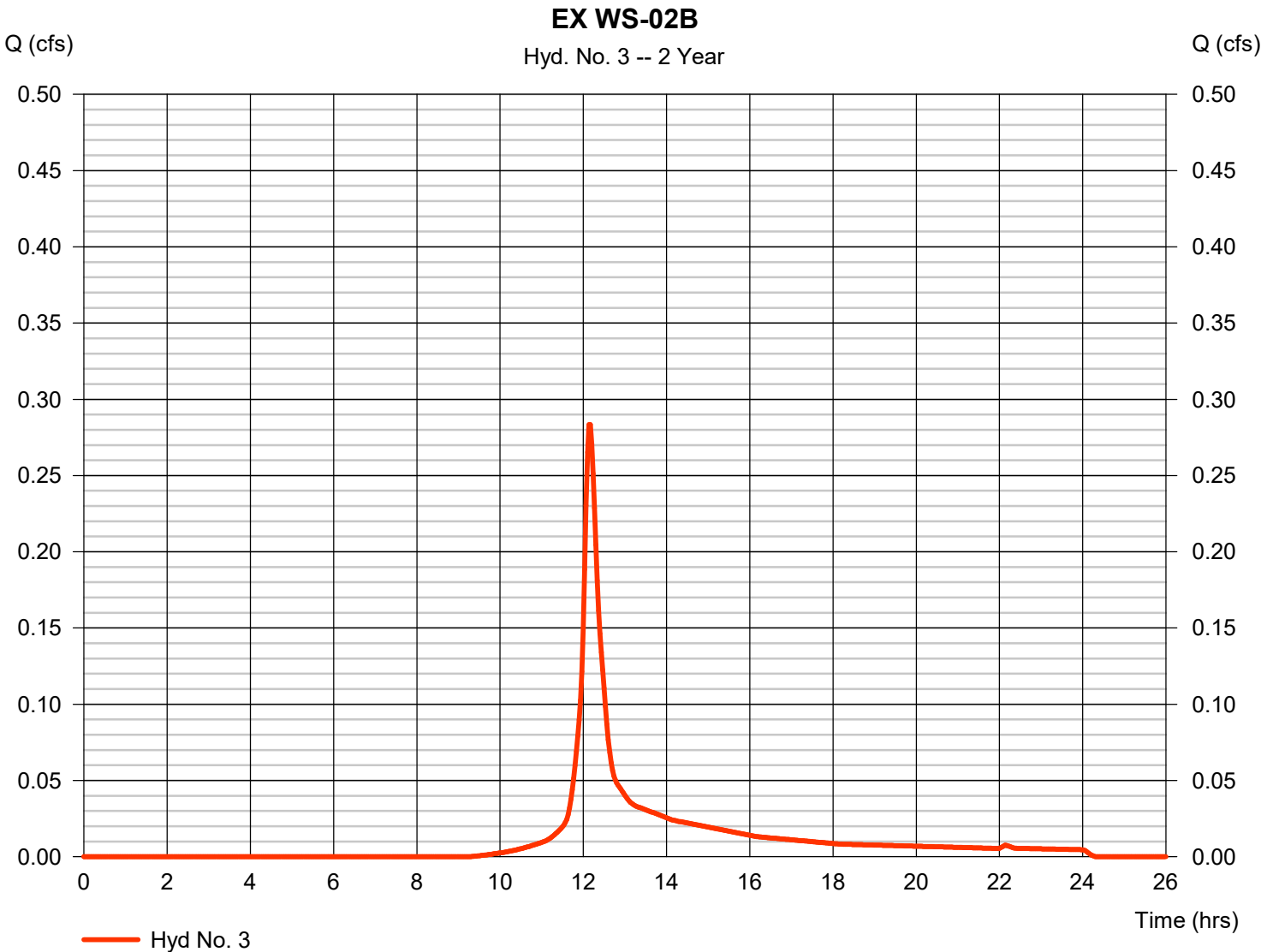
Hyd No. 3

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 4

EX WS-02C

Hydrograph type	= SCS Runoff	Peak discharge	= 1.664 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 5,899 cuft
Drainage area	= 0.590 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 9.40 min
Total precip.	= 3.52 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

EX WS-02C

Hyd. No. 4 -- 2 Year

Q (cfs)

Time (hrs)

Hyd No. 4

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 5

EX WS-02D

Hydrograph type	= SCS Runoff	Peak discharge	= 4.374 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.27 hrs
Time interval	= 2 min	Hyd. volume	= 20,803 cuft
Drainage area	= 2.462 ac	Curve number	= 88
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 22.10 min
Total precip.	= 3.52 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

EX WS-02D
Hyd. No. 5 -- 2 Year

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 6

EX WS-02E

Hydrograph type	= SCS Runoff		Peak discharge	= 0.468 cfs
Storm frequency	= 2 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 1,523 cuft
Drainage area	= 0.146 ac		Curve number	= 96
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.52 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

EX WS-02E

Hyd. No. 6 -- 2 Year
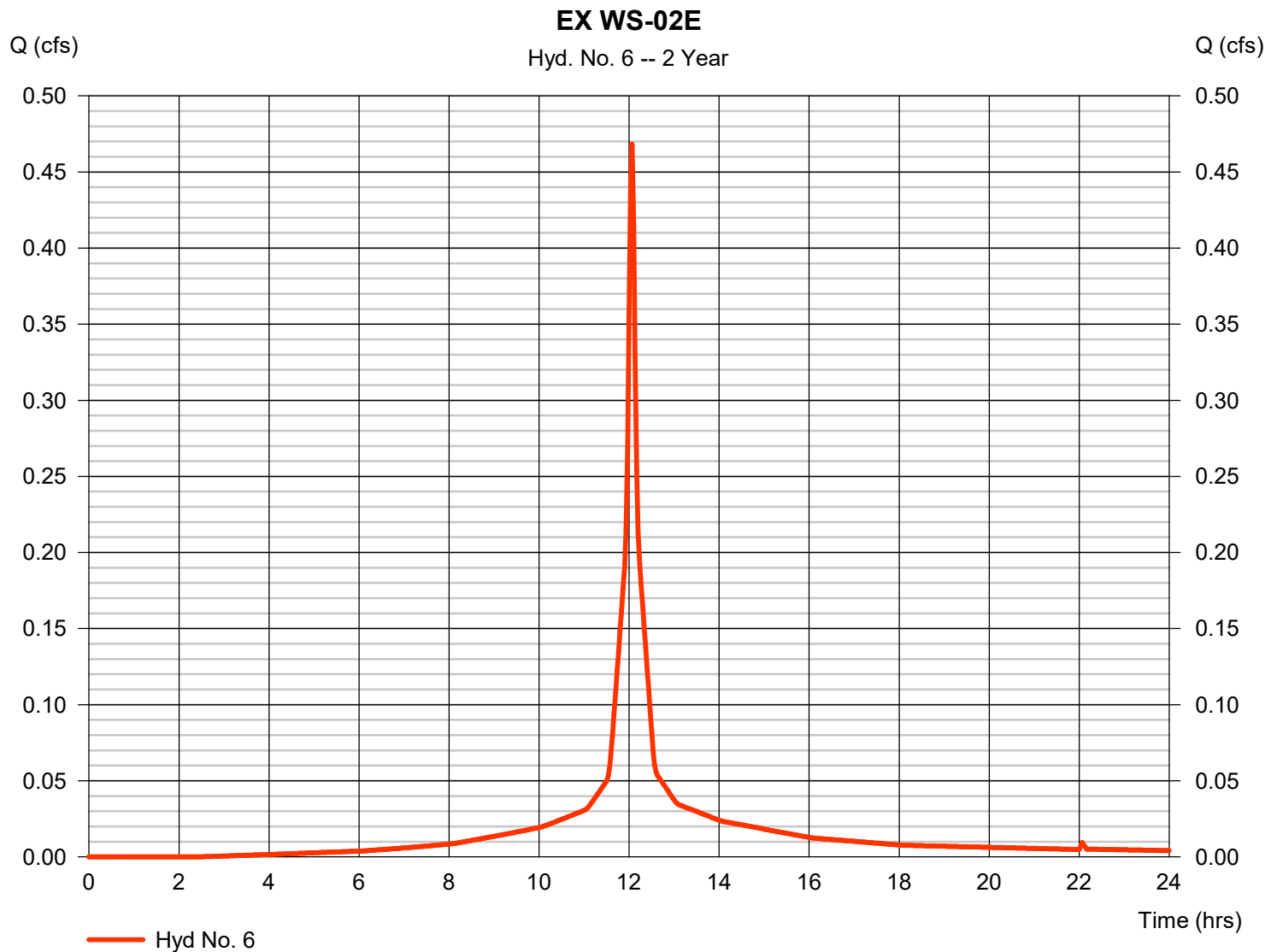
— Hyd No. 6

Hydrograph Report

Hyd. No. 7

EX WS-02F

Hydrograph type	= SCS Runoff		Peak discharge	= 3.039 cfs
Storm frequency	= 2 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 9,485 cuft
Drainage area	= 1.012 ac		Curve number	= 93
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 5.50 min
Total precip.	= 3.52 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

EX WS-02F

Hyd. No. 7 -- 2 Year

Q (cfs)

Time (hrs)
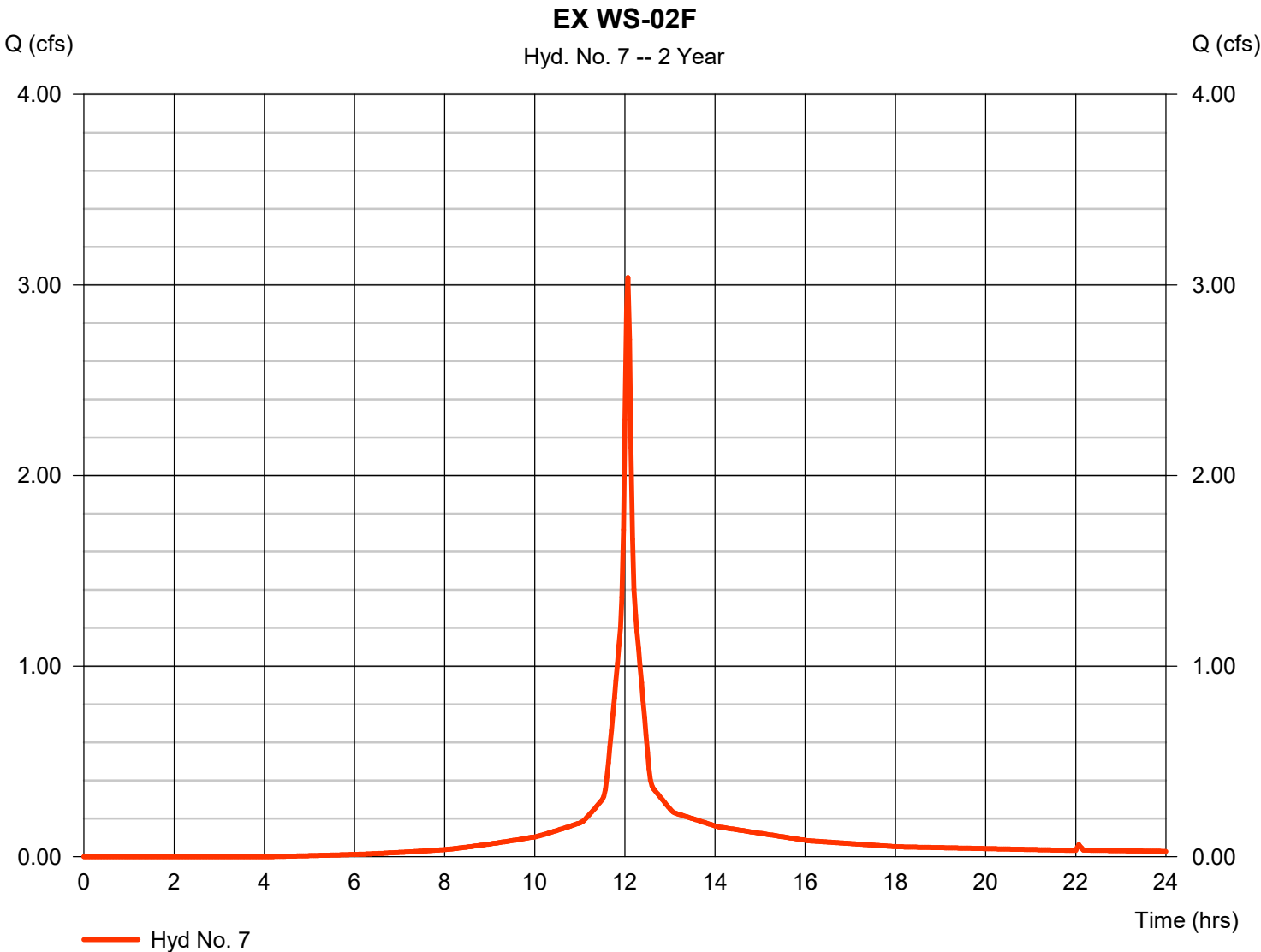
Hyd No. 7

Hydrograph Report

Hyd. No. 8

EX WS-02G

Hydrograph type	= SCS Runoff	Peak discharge	= 0.774 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 2,719 cuft
Drainage area	= 0.282 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.90 min
Total precip.	= 3.52 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

EX WS-02G

Hyd. No. 8 -- 2 Year

Q (cfs)

Time (hrs)
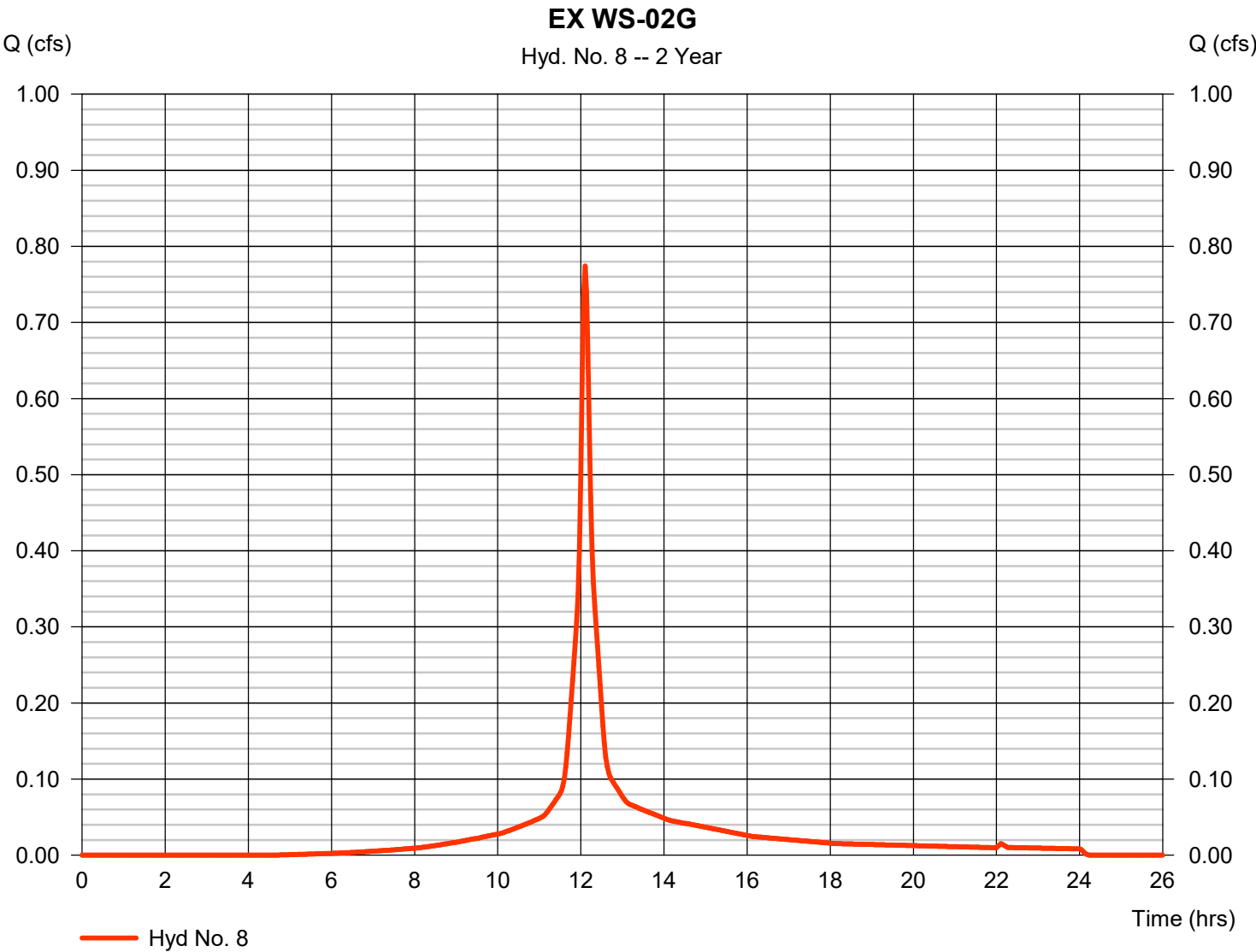
— Hyd No. 8

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 9

EX WS-02H

Hydrograph type	= SCS Runoff		Peak discharge	= 1.152 cfs
Storm frequency	= 2 yrs		Time to peak	= 12.20 hrs
Time interval	= 2 min		Hyd. volume	= 5,114 cuft
Drainage area	= 0.616 ac		Curve number	= 88
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 17.30 min
Total precip.	= 3.52 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

EX WS-02H

Hyd. No. 9 -- 2 Year

Hydrograph Report

Thursday, 04 / 4 / 2024
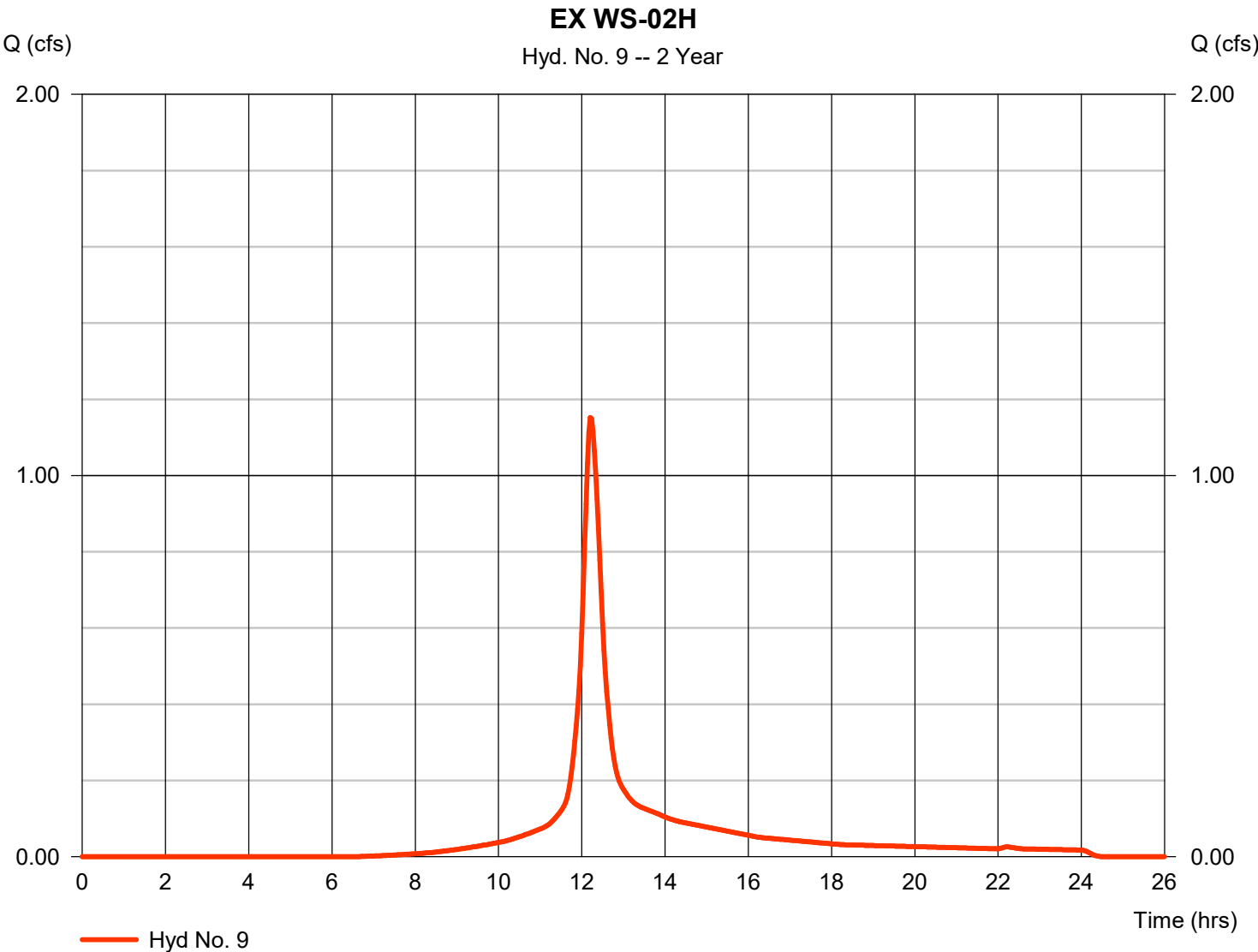
Hyd. No. 10

EX WS-02I

Hydrograph type	= SCS Runoff	Peak discharge	= 2.779 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 12,419 cuft
Drainage area	= 1.387 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.60 min
Total precip.	= 3.52 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

EX WS-02I

Hyd. No. 10 -- 2 Year
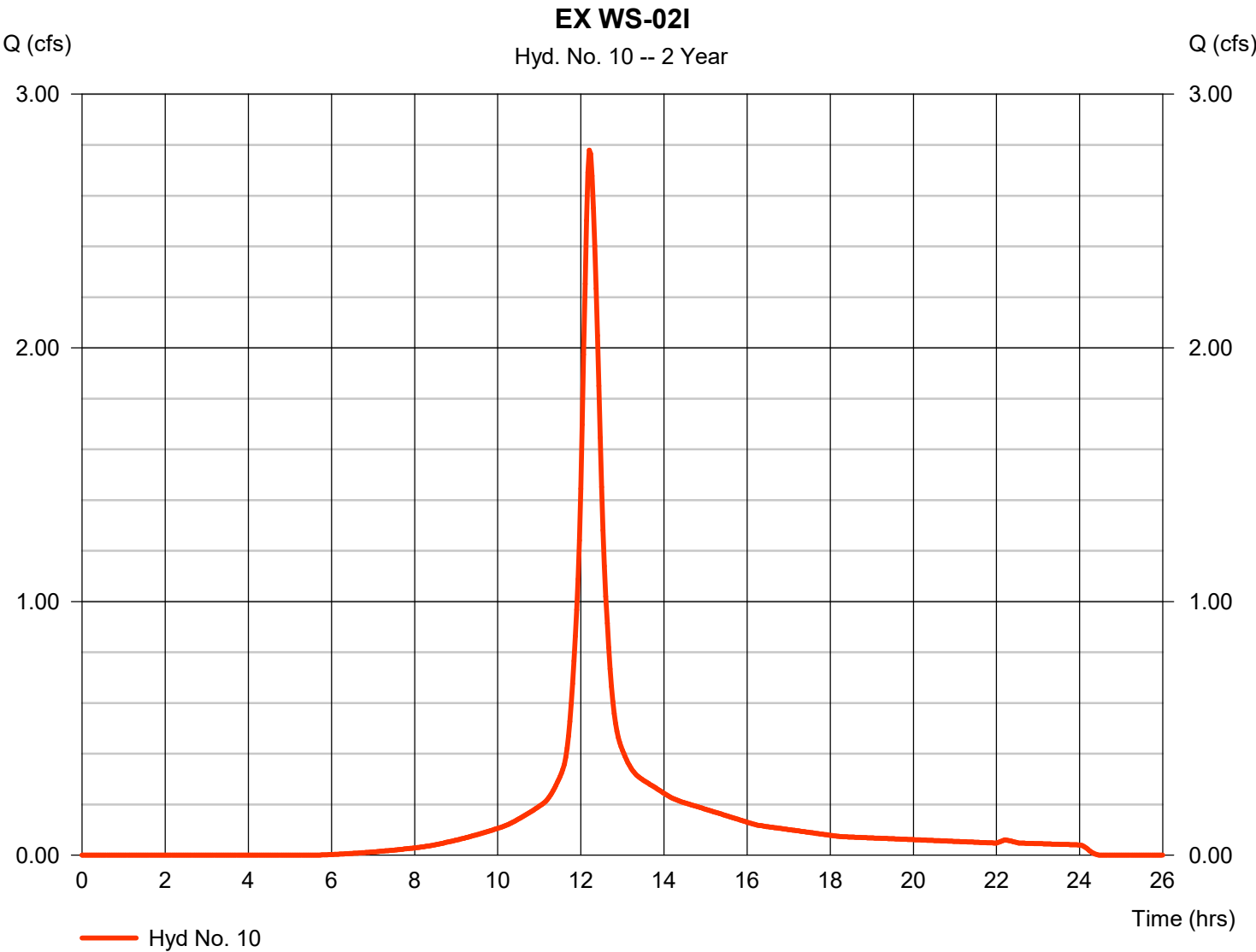
Hyd No. 10

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 11

EX WS-02J

Hydrograph type	= SCS Runoff		Peak discharge	= 1.132 cfs
Storm frequency	= 2 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 3,836 cuft
Drainage area	= 0.343 ac		Curve number	= 98
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.52 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

EX WS-02J

Hyd. No. 11 -- 2 Year

Q (cfs)

Time (hrs)
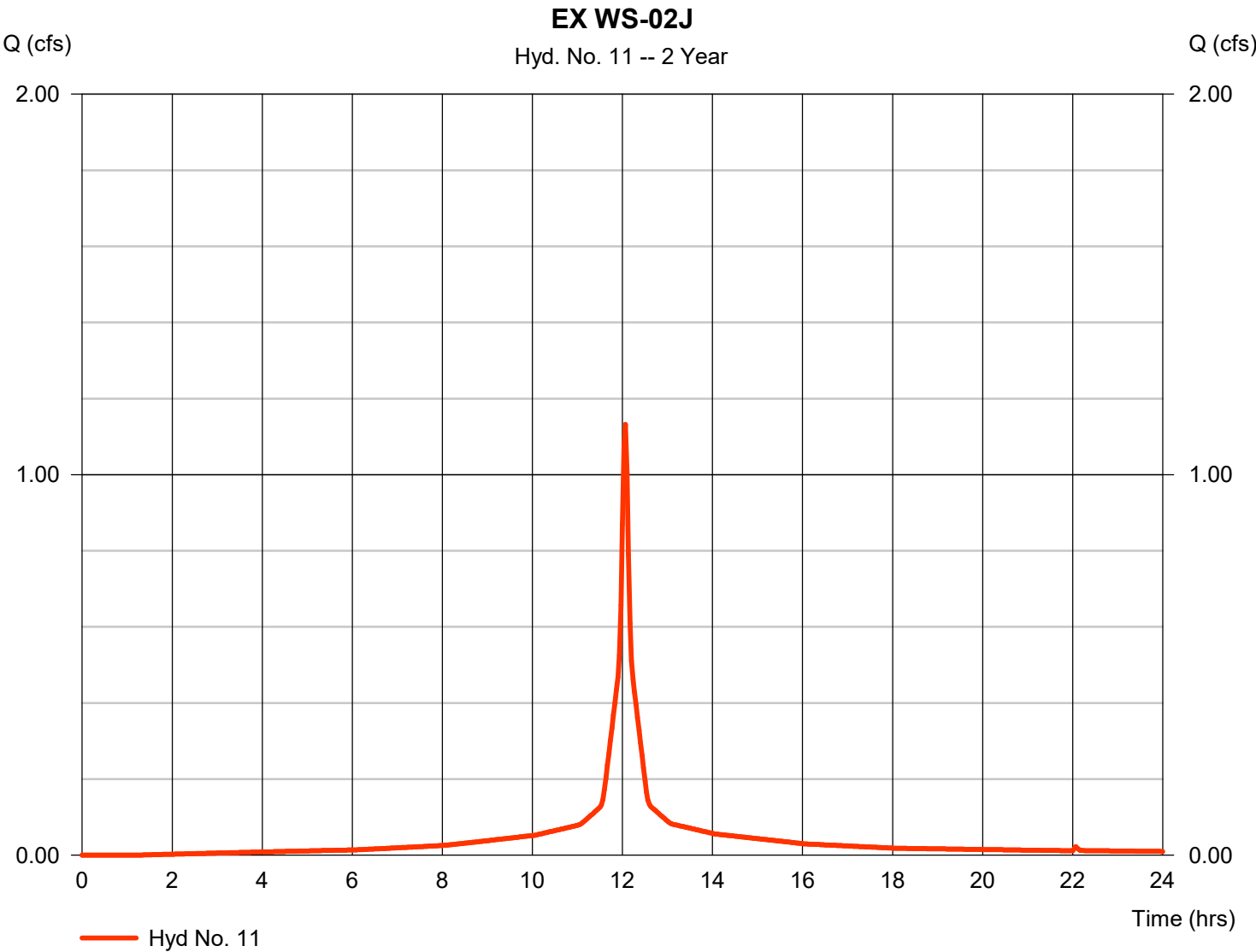
Hyd No. 11

Hydrograph Report

Hyd. No. 12

EX WS-03

Hydrograph type	= SCS Runoff		Peak discharge	= 0.834 cfs
Storm frequency	= 2 yrs		Time to peak	= 13.30 hrs
Time interval	= 2 min		Hyd. volume	= 11,082 cuft
Drainage area	= 4.907 ac		Curve number	= 62
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 95.00 min
Total precip.	= 3.52 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

EX WS-03

Hyd. No. 12 -- 2 Year
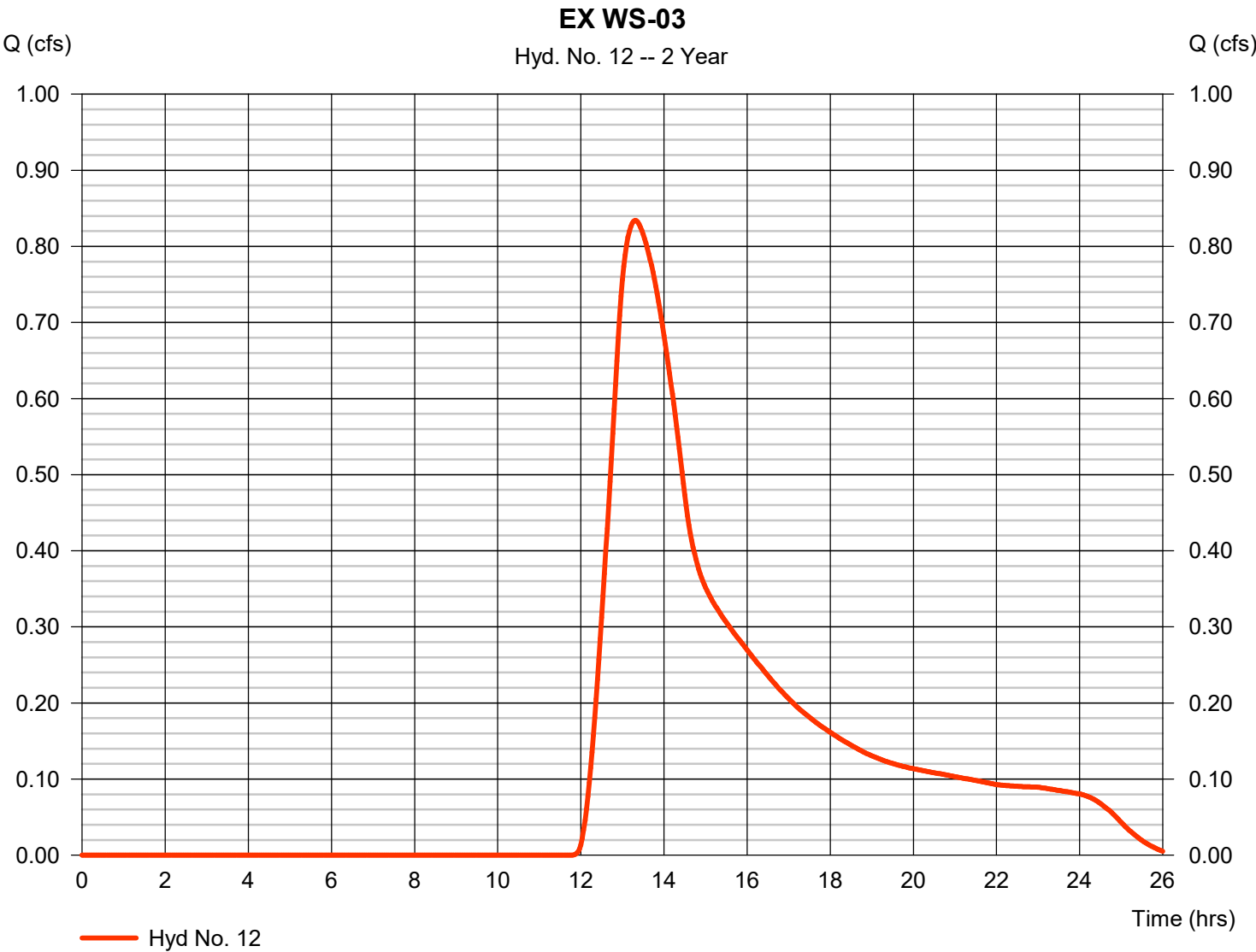
Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 13

36 INCH PIPE (#1)

Hydrograph type	= Reservoir		Peak discharge	= 3.618 cfs
Storm frequency	= 2 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 8,949 cuft
Inflow hyd. No.	= 2 - EX WS-02A		Max. Elevation	= 143.60 ft
Reservoir name	= 36IN - 1		Max. Storage	= 1,515 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

36 INCH PIPE (#1)

Hyd. No. 13 -- 2 Year

Hyd No. 13   Hyd No. 2   Total storage used = 1,515 cuft

Pond Report

Pond No. 4 - 36IN - 1

Pond Data

UG Chambers -Invert elev. = 134.30 ft, Rise x Span = 3.00 x 3.00 ft, Barrel Len = 102.00 ft, No. Barrels = 1, Slope = 0.00%, Headers = No
Contours-User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 142.90 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	133.80	n/a	0	0
0.35	134.15	n/a	71	71
0.70	134.50	n/a	84	155
1.05	134.85	n/a	113	269
1.40	135.20	n/a	126	395
1.75	135.55	n/a	133	528
2.10	135.90	n/a	136	663
2.45	136.25	n/a	134	798
2.80	136.60	n/a	130	927
3.15	136.95	n/a	120	1,047
3.50	137.30	n/a	100	1,147
9.10	142.90	00	0	1,147
12.00	144.00	1,055	1,530	2,677

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 12.00	Inactive	Inactive	Inactive
Span (in)	= 12.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 137.70	0.00	0.00	0.00
Length (ft)	= 26.00	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)	= 60.00	Inactive	Inactive	Inactive
Crest El. (ft)	= 143.50	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Broad	---	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 0.750 (by Contour)			
TW Elev. (ft)	= 0.00			

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

Stage / Discharge

Hydrograph Report
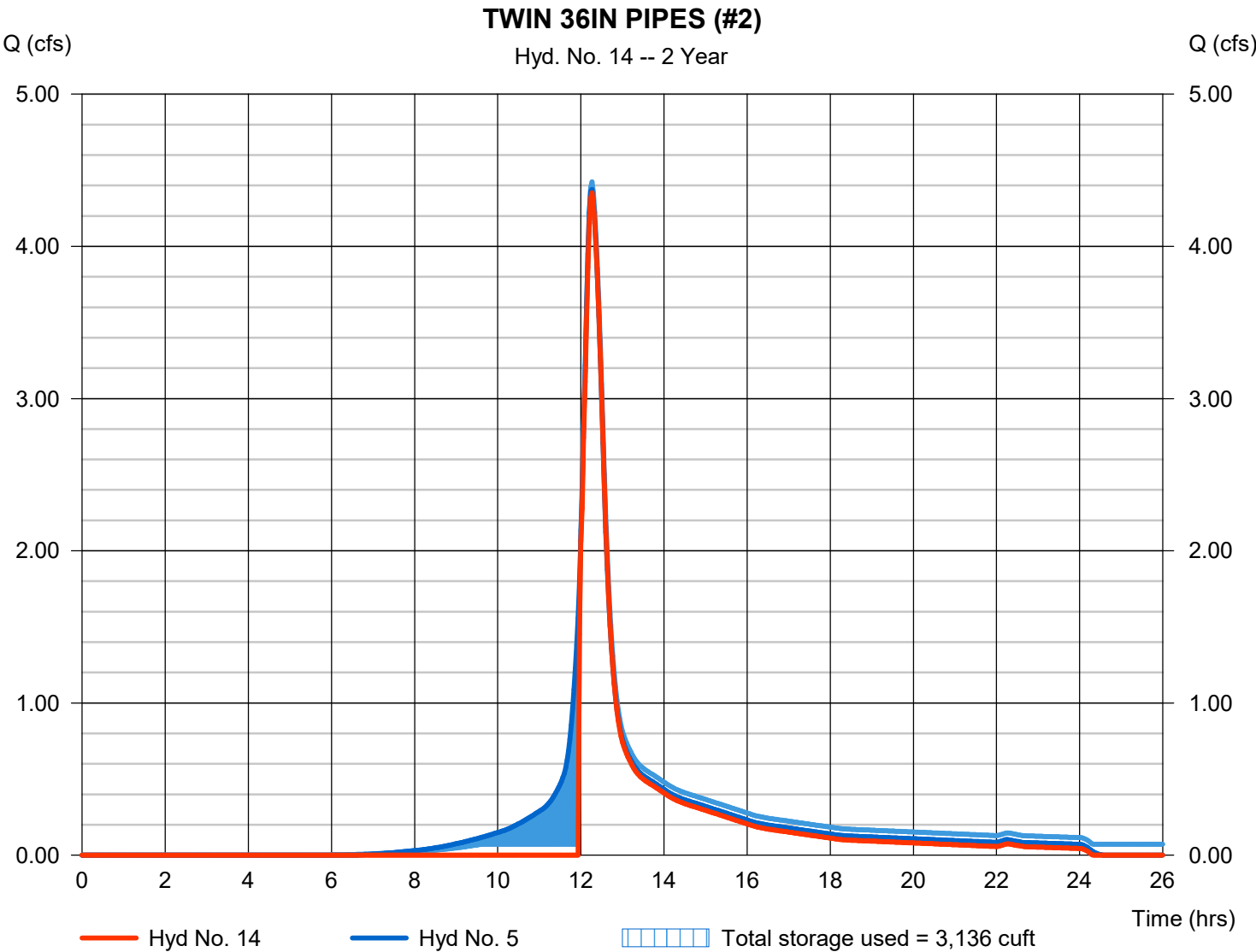
Hyd. No. 14

TWIN 36IN PIPES (#2)

Hydrograph type	= Reservoir	Peak discharge	= 4.352 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.27 hrs
Time interval	= 2 min	Hyd. volume	= 16,179 cuft
Inflow hyd. No.	= 5 - EX WS-02D	Max. Elevation	= 139.00 ft
Reservoir name	= Northern Twin 36IN	Max. Storage	= 3,136 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

TWIN 36IN PIPES (#2)
Hyd. No. 14 -- 2 Year

Hyd No. 14 Hyd No. 5 Total storage used = 3,136 cuft

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Thursday, 04 / 4 / 2024

Pond No. 6 - Northern Twin 36IN

Pond Data

UG Chambers -Invert elev. = 131.00 ft, Rise x Span = 3.00 x 3.00 ft, Barrel Len = 120.00 ft, No. Barrels = 2, Slope = 0.00%, Headers = No
Contours-User-defined contour area. Average end area method. Invert = 130.50 ft, Void = 40.00%. Begining Elevation = 138.30 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	130.50	n/a	0	0
0.35	130.85	n/a	168	168
0.70	131.20	n/a	197	365
1.05	131.55	n/a	267	632
1.40	131.90	n/a	297	929
1.75	132.25	n/a	313	1,242
2.10	132.60	n/a	319	1,561
2.45	132.95	n/a	316	1,877
2.80	133.30	n/a	305	2,182
3.15	133.65	n/a	282	2,464
3.50	134.00	n/a	234	2,698
7.80	138.30	01	2	2,701
8.50	139.00	1,250	438	3,138
9.50	140.00	7,570	4,410	7,548

Culvert / Orifice Structures

	[A]	**[B]**	**[C]**	**[PrfRsr]**
Rise (in)	= 30.00	0.00	0.00	0.00
Span (in)	= 30.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 134.20	0.00	0.00	0.00
Length (ft)	= 69.00	0.00	0.00	0.00
Slope (%)	= 0.50	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	No	No	No

Weir Structures

	[A]	**[B]**	**[C]**	**[D]**
Crest Len (ft)	= 15.00	0.00	0.00	0.00
Crest El. (ft)	= 138.80	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Broad	---	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 1.000 (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).
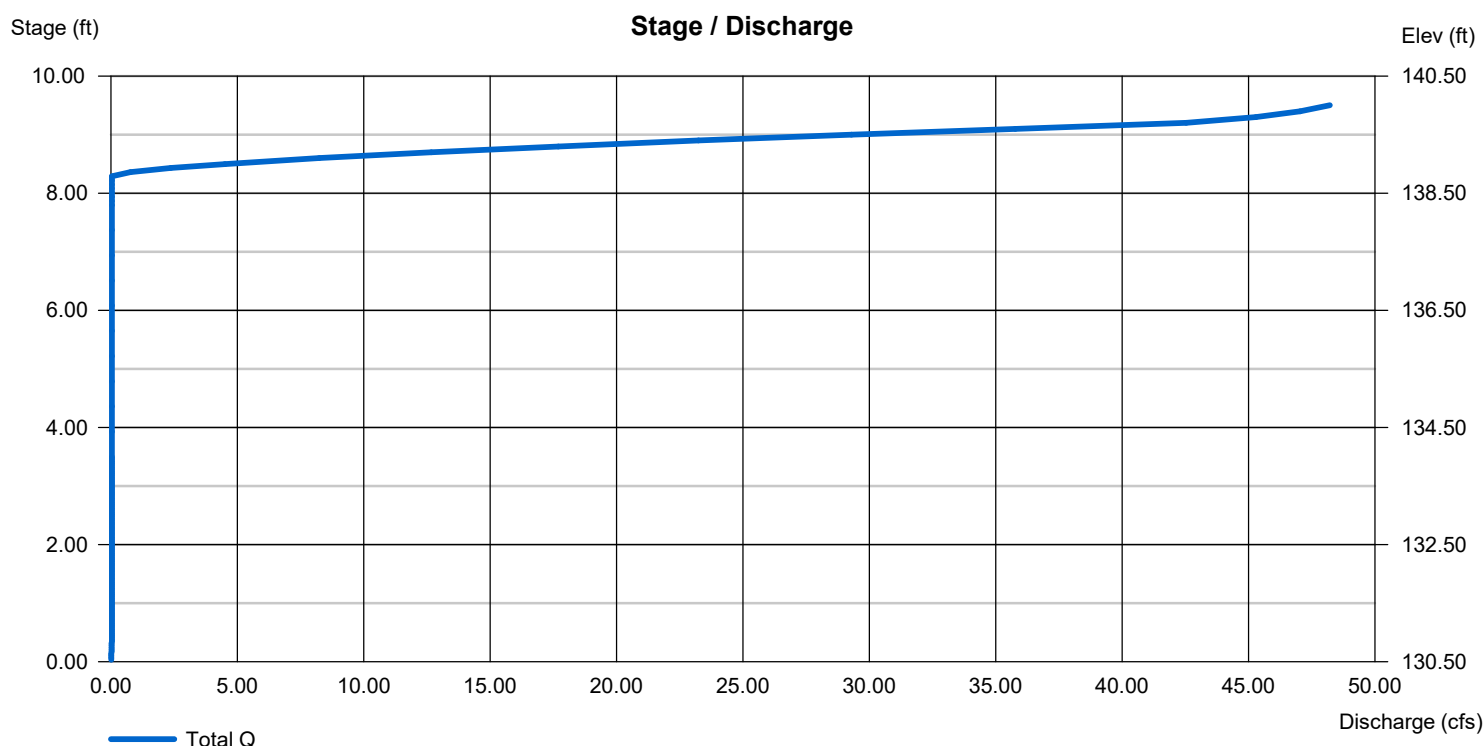
Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 15

24 INCH PIPE

Hydrograph type	= Reservoir		Peak discharge	= 0.440 cfs
Storm frequency	= 2 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 690 cuft
Inflow hyd. No.	= 6 - EX WS-02E		Max. Elevation	= 139.60 ft
Reservoir name	= 24IN		Max. Storage	= 475 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

24 INCH PIPE

Hyd. No. 15 -- 2 Year

Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021   Thursday, 04 / 4 / 2024
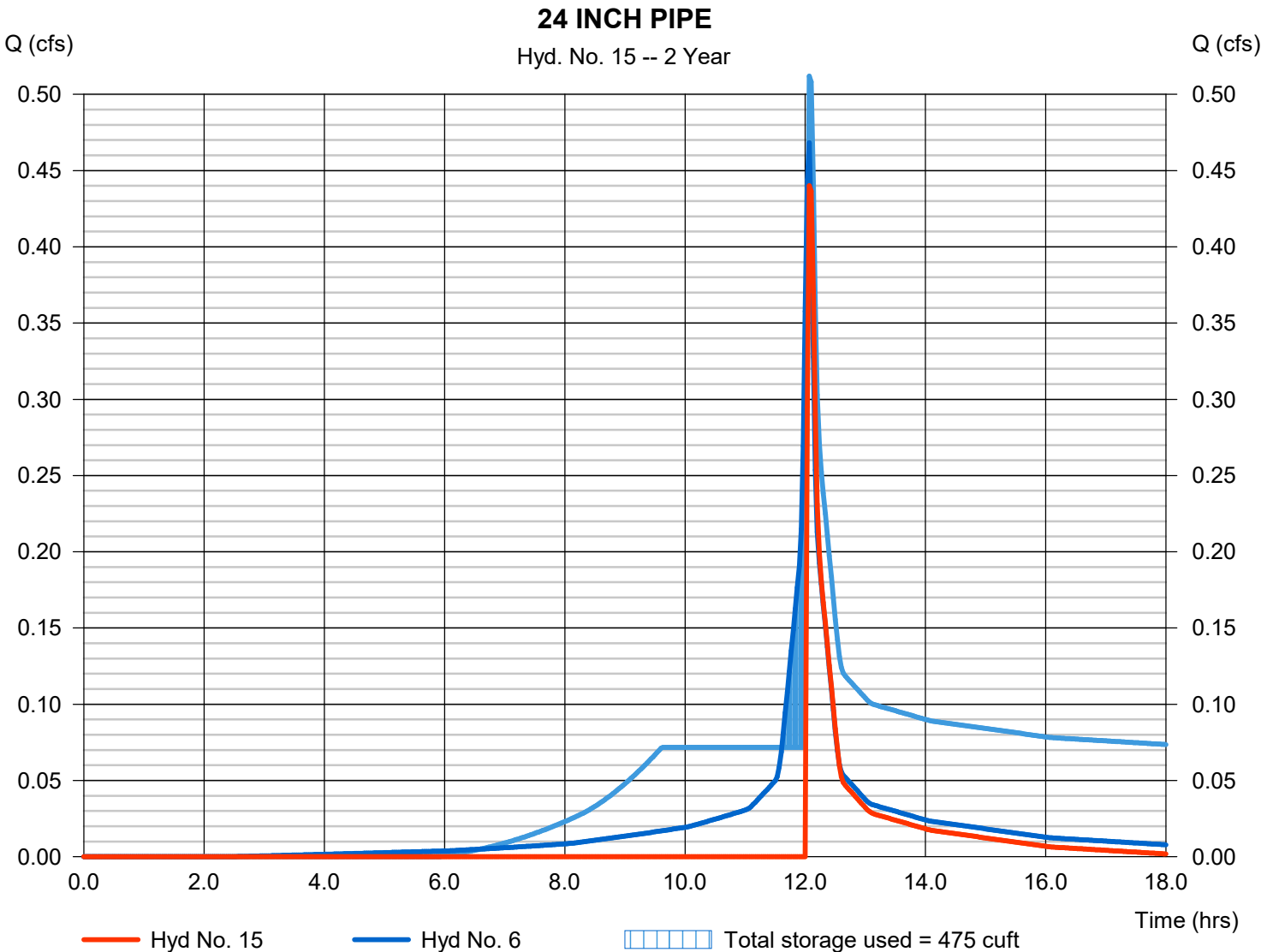
Pond No. 5 - 24IN

Pond Data

UG Chambers -Invert elev. = 135.00 ft, Rise x Span = 2.00 x 2.00 ft, Barrel Len = 29.00 ft, No. Barrels = 1, Slope = 0.00%, Headers = No
Contours-User-defined contour areas. Average End area method. Invert elev. = 134.50 ft. Water height = 2.50 ft. Void = 40.00%. Begining Elevation = 139.10 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	134.50	n/a	0	0
0.25	134.75	n/a	12	12
0.50	135.00	n/a	12	23
0.75	135.25	n/a	16	39
1.00	135.50	n/a	18	57
1.25	135.75	n/a	20	77
1.50	136.00	n/a	20	97
1.75	136.25	n/a	20	117
2.00	136.50	n/a	20	137
2.25	136.75	n/a	18	155
2.50	137.00	n/a	16	171
4.60	139.10	01	1	172
5.50	140.00	1,212	546	718

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 12.00	Inactive	Inactive	Inactive
Span (in)	= 12.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 137.10	0.00	0.00	0.00
Length (ft)	= 55.00	0.00	0.00	0.00
Slope (%)	= 2.00	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)	= 30.00	Inactive	Inactive	Inactive
Crest El. (ft)	= 139.60	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Broad	---	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 2.250 (by Contour)			
TW Elev. (ft)	= 0.00			

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

Stage / Discharge
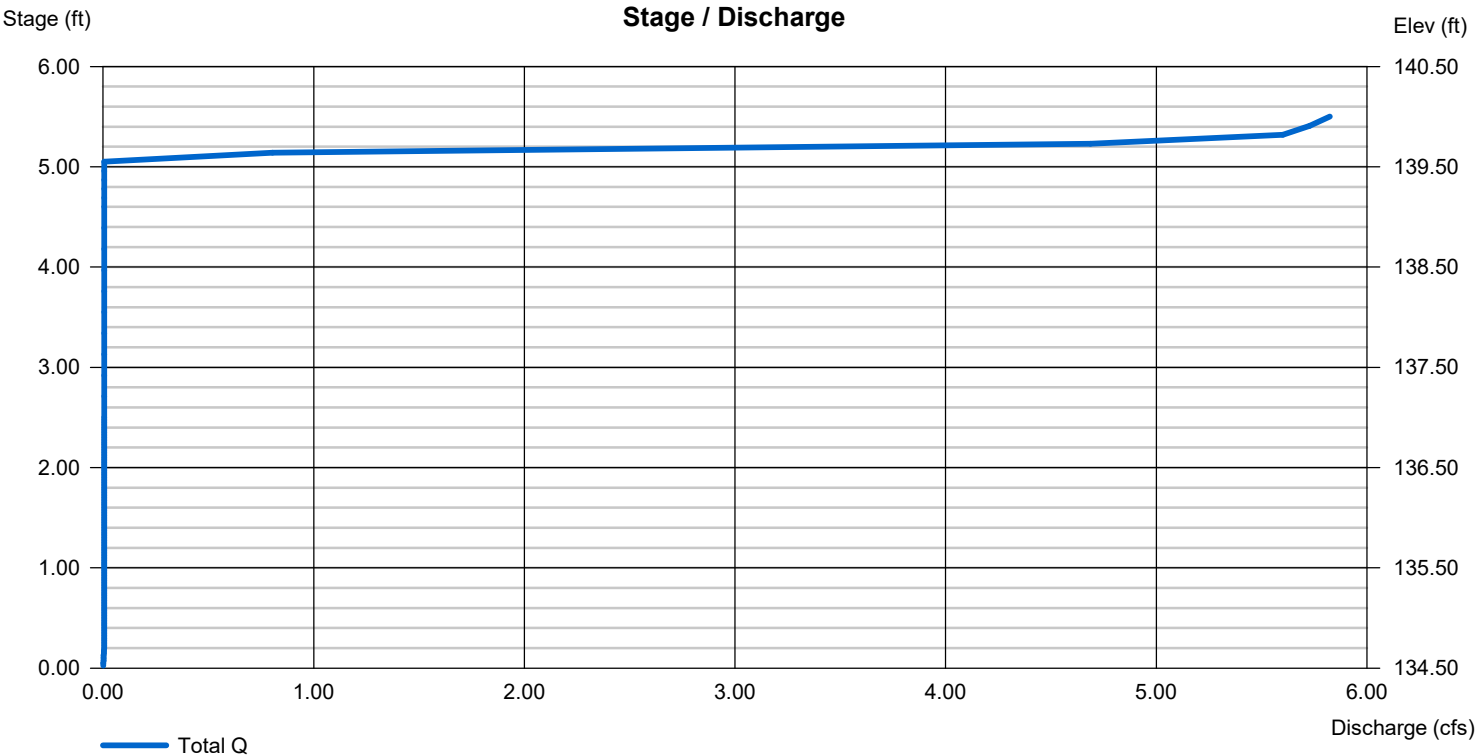
Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 16

36 INCH PIPE (#2)

Hydrograph type	= Reservoir	Peak discharge	= 2.961 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 6,152 cuft
Inflow hyd. No.	= 7 - EX WS-02F	Max. Elevation	= 139.42 ft
Reservoir name	= 36in - 2	Max. Storage	= 1,180 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

36 INCH PIPE (#2)
Hyd. No. 16 -- 2 Year

Hyd No. 16   Hyd No. 7   Total storage used = 1,180 cuft

Pond Report

Pond No. 1 - 36in - 2

Pond Data

UG Chambers -Invert elev. = 133.00 ft, Rise x Span = 3.00 x 3.00 ft, Barrel Len = 70.00 ft, No. Barrels = 1, Slope = 0.00%, Headers = No
Contours -User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 139.20 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	132.50	n/a	0	0
0.35	132.85	n/a	49	49
0.70	133.20	n/a	58	107
1.05	133.55	n/a	78	184
1.40	133.90	n/a	87	271
1.75	134.25	n/a	91	362
2.10	134.60	n/a	93	455
2.45	134.95	n/a	92	547
2.80	135.30	n/a	89	636
3.15	135.65	n/a	82	719
3.50	136.00	n/a	68	787
6.70	139.20	01	2	789
7.40	139.90	3,493	1,223	2,012

Culvert / Orifice Structures

	[A]	**[B]**	**[C]**	**[PrfRsr]**
Rise (in)	= 12.00	Inactive	Inactive	Inactive
Span (in)	= 12.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 135.20	0.00	0.00	0.00
Length (ft)	= 30.00	0.00	0.00	0.00
Slope (%)	= 2.00	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)	= 20.00	Inactive	Inactive	Inactive
Crest El. (ft)	= 139.30	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Broad	---	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 5.000 (by Contour)			
TW Elev. (ft)	= 0.00			

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

Stage / Discharge
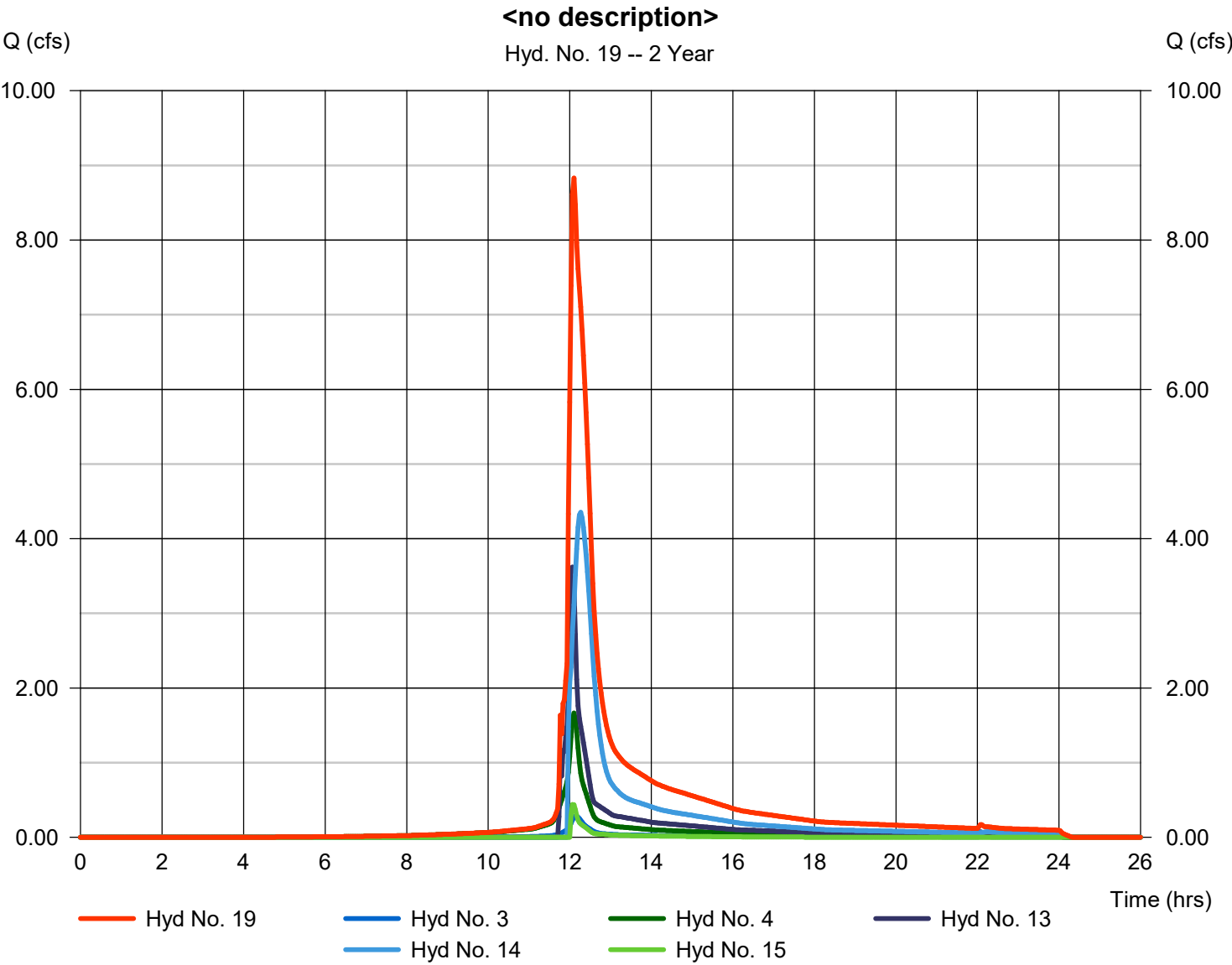
Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 17

36 INCH PIPE (#3)

Hydrograph type	= Reservoir		Peak discharge	= 0.057 cfs	
Storm frequency	= 2 yrs		Time to peak	= 15.27 hrs	
Time interval	= 2 min		Hyd. volume	= 470 cuft	
Inflow hyd. No.	= 9 - EX WS-02H		Max. Elevation	= 137.46 ft	
Reservoir name	= 36in - 3		Max. Storage	= 3,649 cuft	

Storage Indication method used. Exfiltration extracted from Outflow.

36 INCH PIPE (#3)

Hyd. No. 17 -- 2 Year

Hyd No. 17   Hyd No. 9   Total storage used = 3,649 cuft

Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021   Thursday, 04 / 4 / 2024

Pond No. 3 - 36in - 3

Pond Data

UG Chambers -Invert elev. = 129.00 ft, Rise x Span = 3.00 x 3.00 ft, Barrel Len = 30.00 ft, No. Barrels = 1, Slope = 0.00%, Headers = No
Enclosure- User defined contour areas. Average End area method for volume calculation. Begining Elevation = 136.20 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	128.50	n/a	0	0
0.35	128.85	n/a	21	21
0.70	129.20	n/a	25	46
1.05	129.55	n/a	33	79
1.40	129.90	n/a	37	116
1.75	130.25	n/a	39	155
2.10	130.60	n/a	40	195
2.45	130.95	n/a	40	235
2.80	131.30	n/a	38	273
3.15	131.65	n/a	35	308
3.50	132.00	n/a	29	337
7.20	136.20	01	2	339
9.00	138.00	5,250	4,726	5,065

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 15.00	Inactive	Inactive	Inactive
Span (in)	= 15.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 130.90	0.00	0.00	0.00
Length (ft)	= 13.00	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)	= 100.00	Inactive	Inactive	Inactive
Crest El. (ft)	= 137.50	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Broad	---	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 5.000 (by Contour)			
TW Elev. (ft)	= 0.00			

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

Stage / Discharge

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 18

TWO 36 INCH PIPES

Hydrograph type	= Reservoir		Peak discharge	= 2.821 cfs
Storm frequency	= 2 yrs		Time to peak	= 12.13 hrs
Time interval	= 2 min		Hyd. volume	= 6,466 cuft
Inflow hyd. No.	= 10 - EX WS-02I		Max. Elevation	= 135.68 ft
Reservoir name	= TWIN 36IN		Max. Storage	= 2,408 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

TWO 36 INCH PIPES

Hyd. No. 18 -- 2 Year

Hyd No. 18   Hyd No. 10   Total storage used = 2,408 cuft

Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021   Thursday, 04 / 4 / 2024
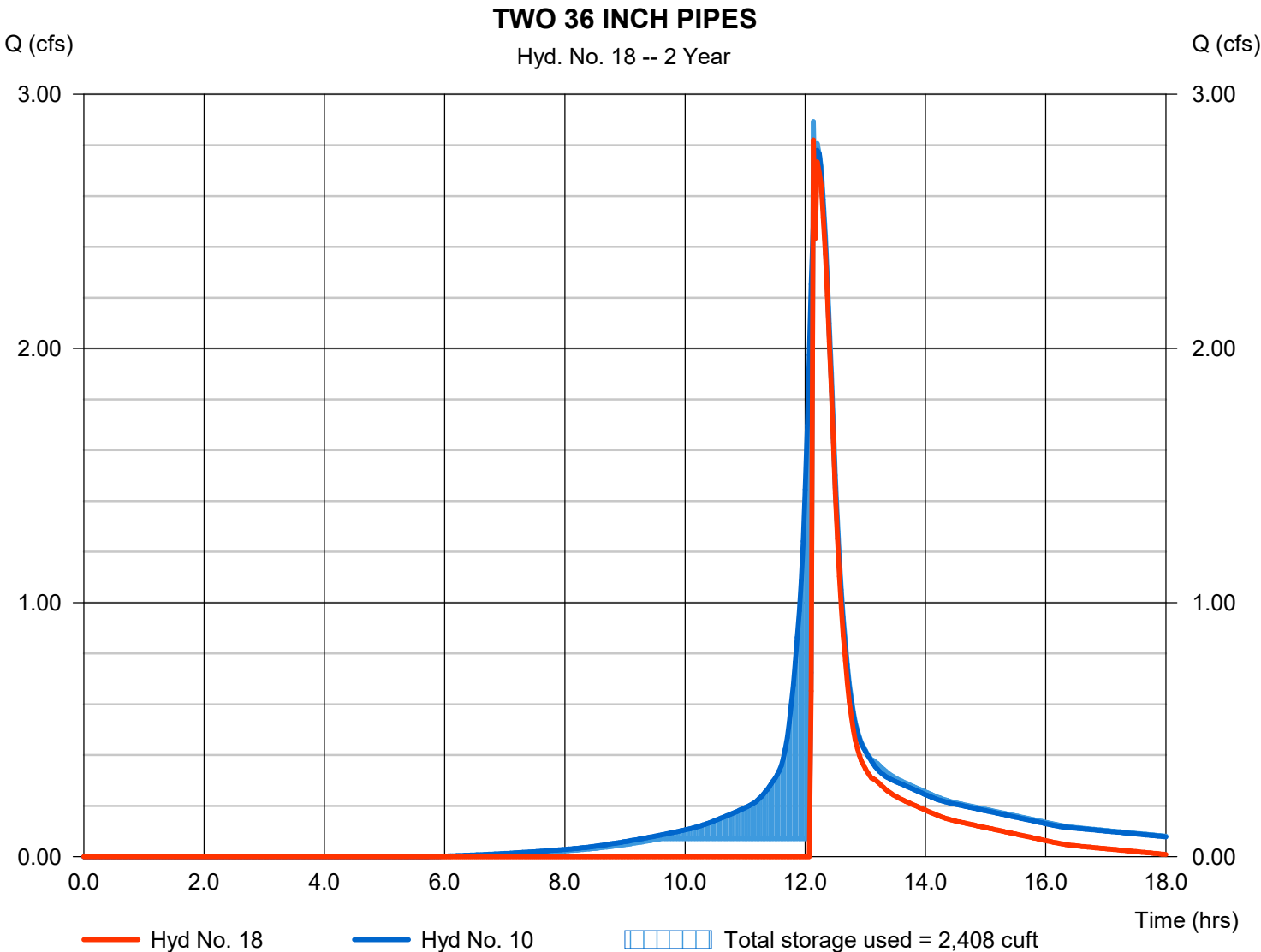
Pond No. 2 - TWIN 36IN

Pond Data

UG Chambers - Invert elev. = 127.50 ft, Rise x Span = 3.00 x 3.00 ft, Barrel Len = 62.00 ft, No. Barrels = 2, Slope = 0.00%, Headers = No
Contours - User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 134.90 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	127.00	n/a	0	0
0.35	127.35	n/a	87	87
0.70	127.70	n/a	102	189
1.05	128.05	n/a	138	327
1.40	128.40	n/a	153	480
1.75	128.75	n/a	162	642
2.10	129.10	n/a	165	806
2.45	129.45	n/a	163	970
2.80	129.80	n/a	157	1,127
3.15	130.15	n/a	146	1,273
3.50	130.50	n/a	121	1,394
7.90	134.90	01	2	1,396
8.80	135.80	2,590	1,166	2,562

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 15.00	Inactive	Inactive	Inactive
Span (in)	= 15.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 129.60	0.00	0.00	0.00
Length (ft)	= 70.00	0.00	0.00	0.00
Slope (%)	= 2.00	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)	= 33.00	Inactive	Inactive	Inactive
Crest El. (ft)	= 135.60	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Broad	---	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 5.000 (by Contour)			
TW Elev. (ft)	= 0.00			

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

Stage / Discharge

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 19

<no description>

Hydrograph type	= Combine	Peak discharge	= 8.831 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 32,817 cuft
Inflow hyds.	= 3, 4, 13, 14, 15	Contrib. drain. area	= 0.776 ac

<no description>

Hyd. No. 19 -- 2 Year

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 20

<no description>

Hydrograph type	= Combine		Peak discharge	= 6.758 cfs
Storm frequency	= 2 yrs		Time to peak	= 12.13 hrs
Time interval	= 2 min		Hyd. volume	= 30,725 cuft
Inflow hyds.	= 8, 11, 12, 16, 17, 18		Contrib. drain. area	= 5.532 ac

<no description>

Hyd. No. 20 -- 2 Year

Legend: Hyd No. 20, Hyd No. 8, Hyd No. 11, Hyd No. 12, Hyd No. 16, Hyd No. 17, Hyd No. 18

Hydrograph Report

Thursday, 04 / 4 / 2024
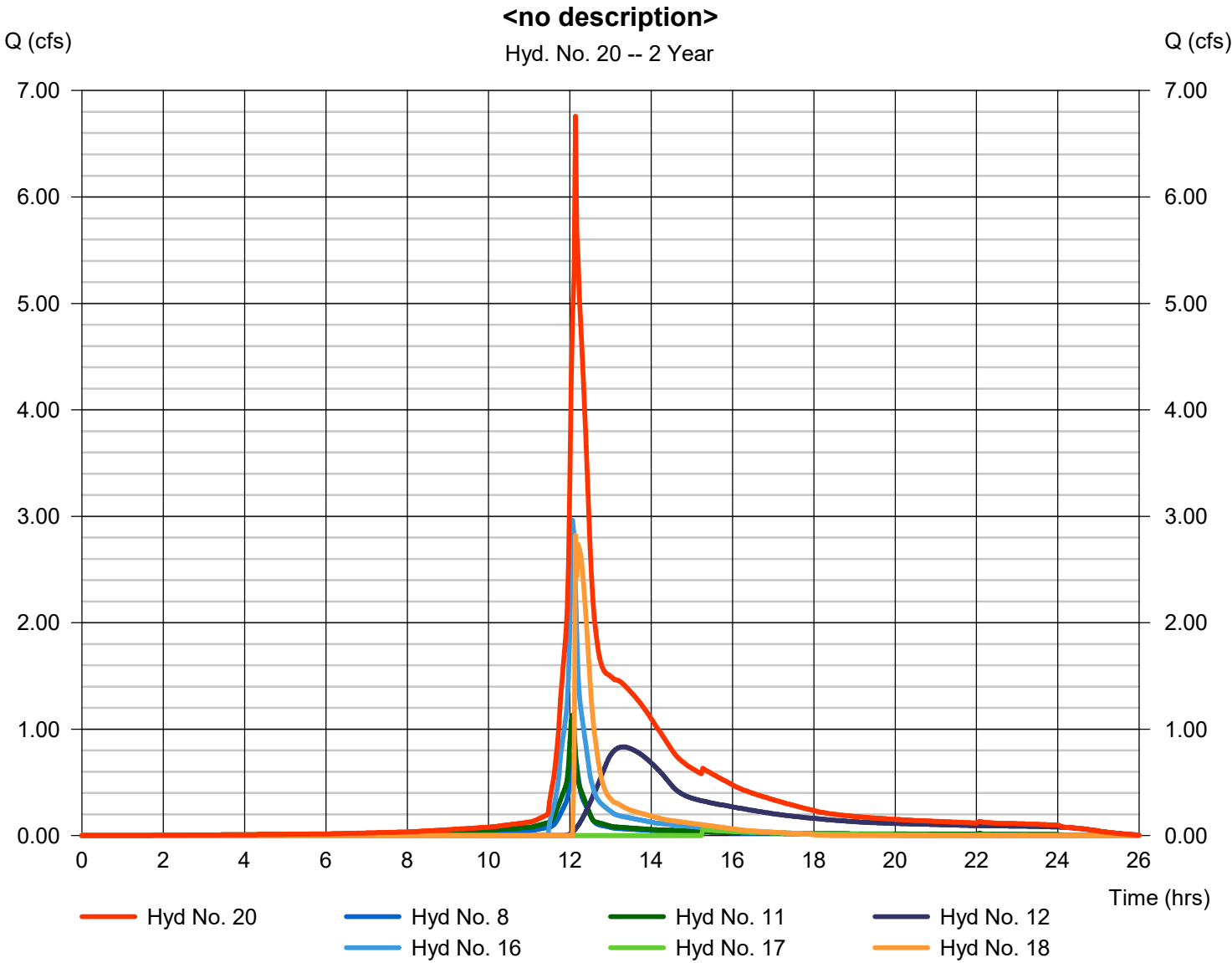
Hyd. No. 21

Design Point B

Hydrograph type	= Combine		Peak discharge	= 15.23 cfs
Storm frequency	= 2 yrs		Time to peak	= 12.13 hrs
Time interval	= 2 min		Hyd. volume	= 63,542 cuft
Inflow hyds.	= 19, 20		Contrib. drain. area	= 0.000 ac
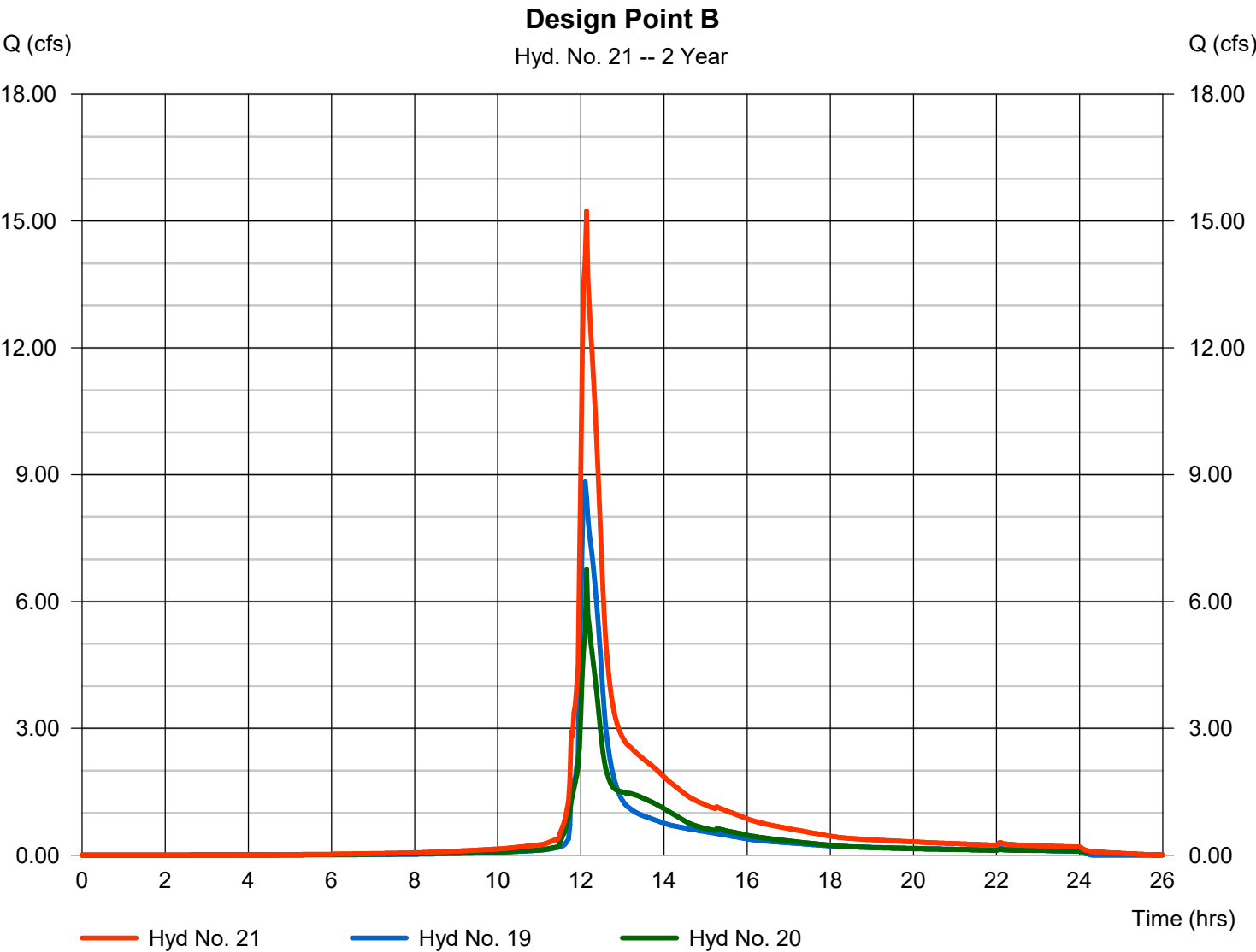
Design Point B

Hyd. No. 21 -- 2 Year

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

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	4.097	2	754	27,414	------	------	------	EX WS-01
2	SCS Runoff	6.345	2	724	19,469	------	------	------	EX WS-02A
3	SCS Runoff	0.569	2	728	2,180	------	------	------	EX WS-02B
4	SCS Runoff	2.685	2	726	9,791	------	------	------	EX WS-02C
5	SCS Runoff	7.568	2	734	36,669	------	------	------	EX WS-02D
6	SCS Runoff	0.731	2	724	2,440	------	------	------	EX WS-02E
7	SCS Runoff	4.896	2	724	15,744	------	------	------	EX WS-02F
8	SCS Runoff	1.265	2	726	4,567	------	------	------	EX WS-02G
9	SCS Runoff	1.996	2	732	9,014	------	------	------	EX WS-02H
10	SCS Runoff	4.677	2	732	21,366	------	------	------	EX WS-02I
11	SCS Runoff	1.741	2	724	6,003	------	------	------	EX WS-02J
12	SCS Runoff	2.690	2	790	29,764	------	------	------	EX WS-03
13	Reservoir	6.339	2	724	17,448	2	143.69	1,562	36 INCH PIPE (#1)
14	Reservoir	7.442	2	738	31,857	5	139.08	3,489	TWIN 36IN PIPES (#2)
15	Reservoir	0.701	2	724	1,554	6	139.63	493	24 INCH PIPE
16	Reservoir	4.789	2	724	12,060	7	139.47	1,264	36 INCH PIPE (#2)
17	Reservoir	2.020	2	740	4,253	9	137.49	3,713	36 INCH PIPE (#3)
18	Reservoir	4.587	2	732	14,622	10	135.72	2,457	TWO 36 INCH PIPES
19	Combine	14.85	2	726	62,831	3, 4, 13, 14, 15,	------	------	<no description>
20	Combine	11.40	2	726	71,269	8, 11, 12, 16, 17, 18,	------	------	<no description>
21	Combine	26.25	2	726	134,100	19, 20	------	------	Design Point B

Existing-Hydraflow.gpw	Return Period: 10 Year	Thursday, 04 / 4 / 2024

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 1

EX WS-01

Hydrograph type	= SCS Runoff	Peak discharge	= 4.097 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.57 hrs
Time interval	= 2 min	Hyd. volume	= 27,414 cuft
Drainage area	= 3.677 ac	Curve number	= 67
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 45.70 min
Total precip.	= 5.38 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

EX WS-01

Hyd. No. 1 -- 10 Year
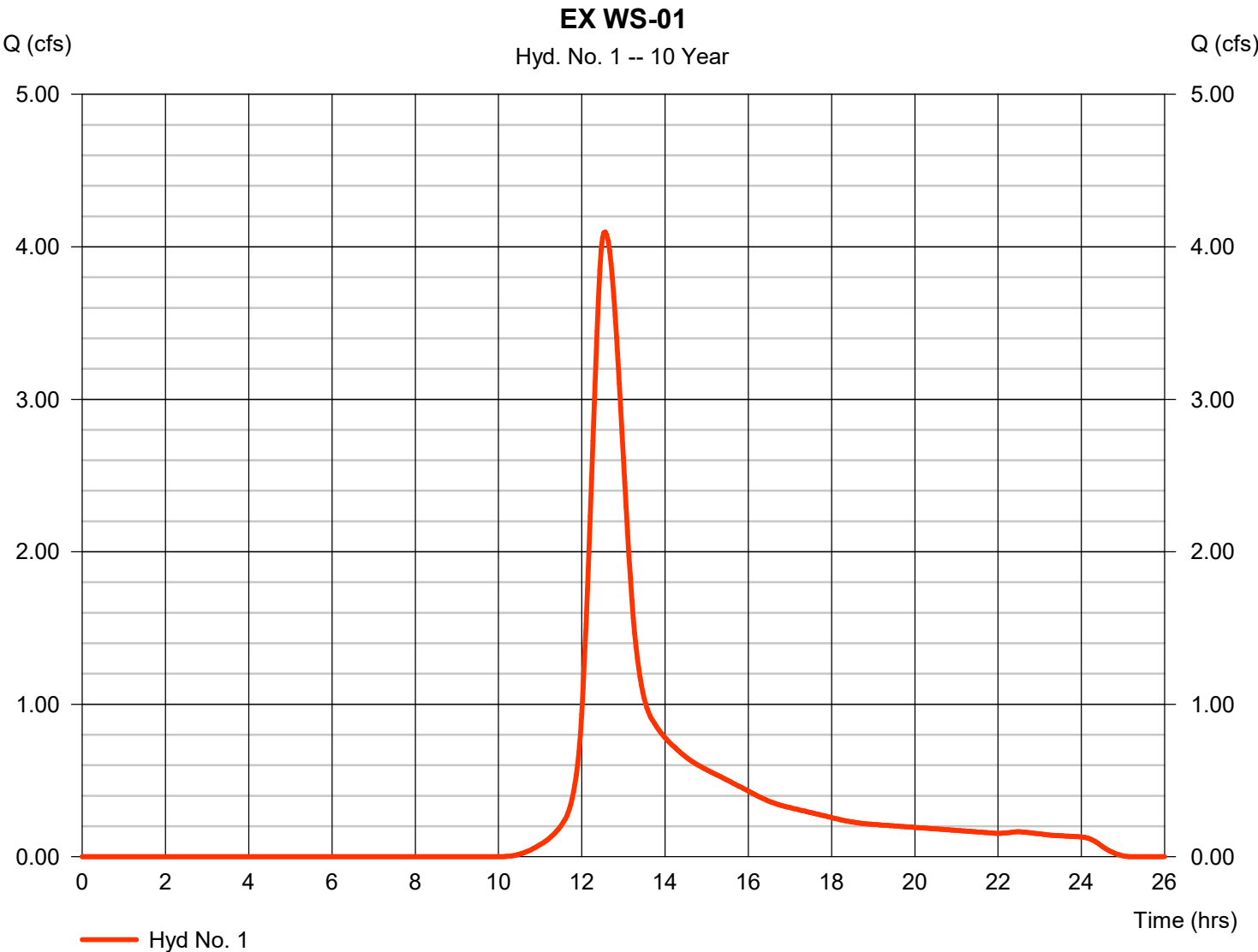
Hydrograph Report

Hyd. No. 2

EX WS-02A

Hydrograph type	= SCS Runoff	Peak discharge	= 6.345 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 19,469 cuft
Drainage area	= 1.457 ac	Curve number	= 87
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.38 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

EX WS-02A

Hyd. No. 2 -- 10 Year

Q (cfs)

Time (hrs)
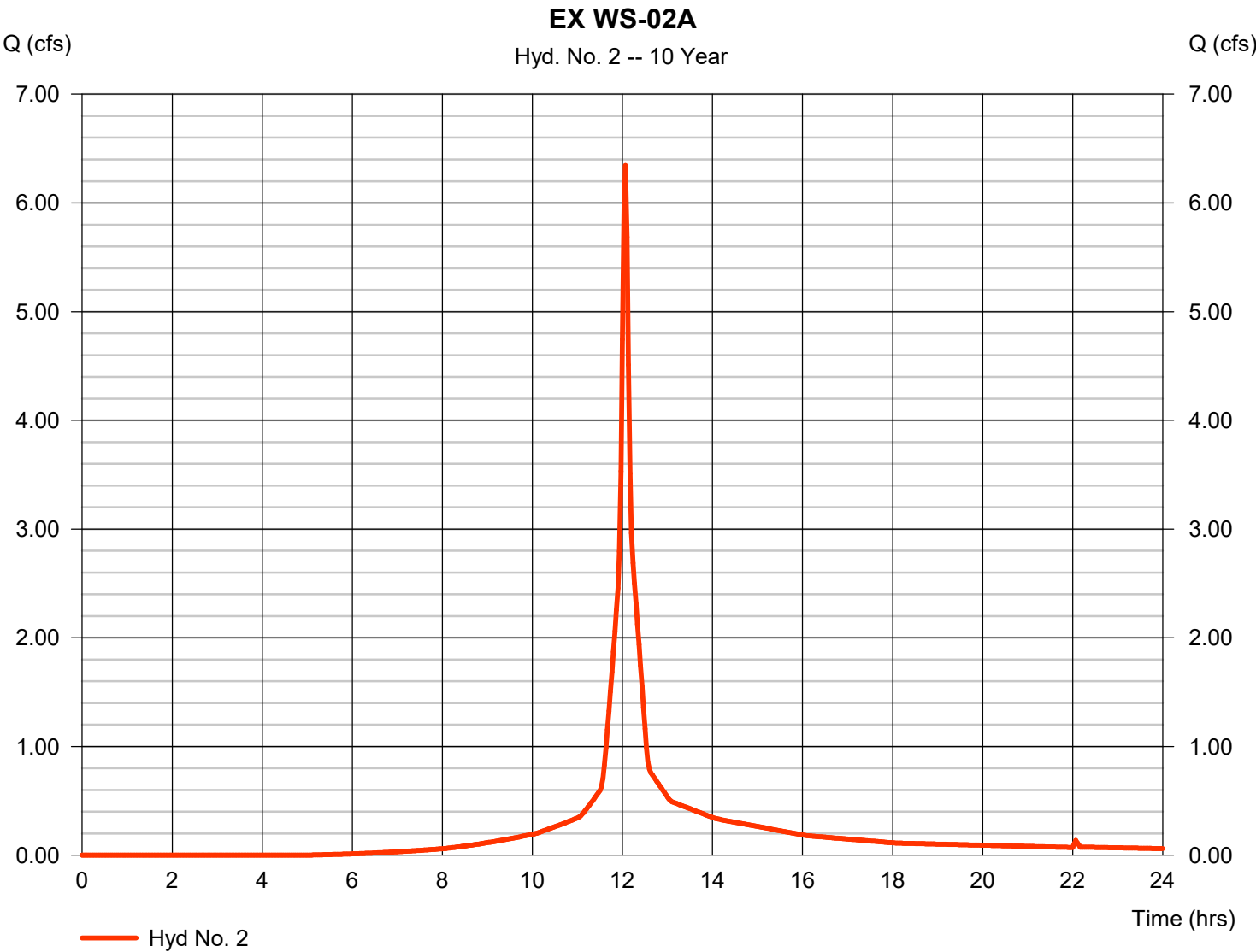
— Hyd No. 2

Hydrograph Report

Hyd. No. 3

EX WS-02B

Hydrograph type	= SCS Runoff		Peak discharge	= 0.569 cfs
Storm frequency	= 10 yrs		Time to peak	= 12.13 hrs
Time interval	= 2 min		Hyd. volume	= 2,180 cuft
Drainage area	= 0.186 ac		Curve number	= 79
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 11.00 min
Total precip.	= 5.38 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

EX WS-02B

Hyd. No. 3 -- 10 Year
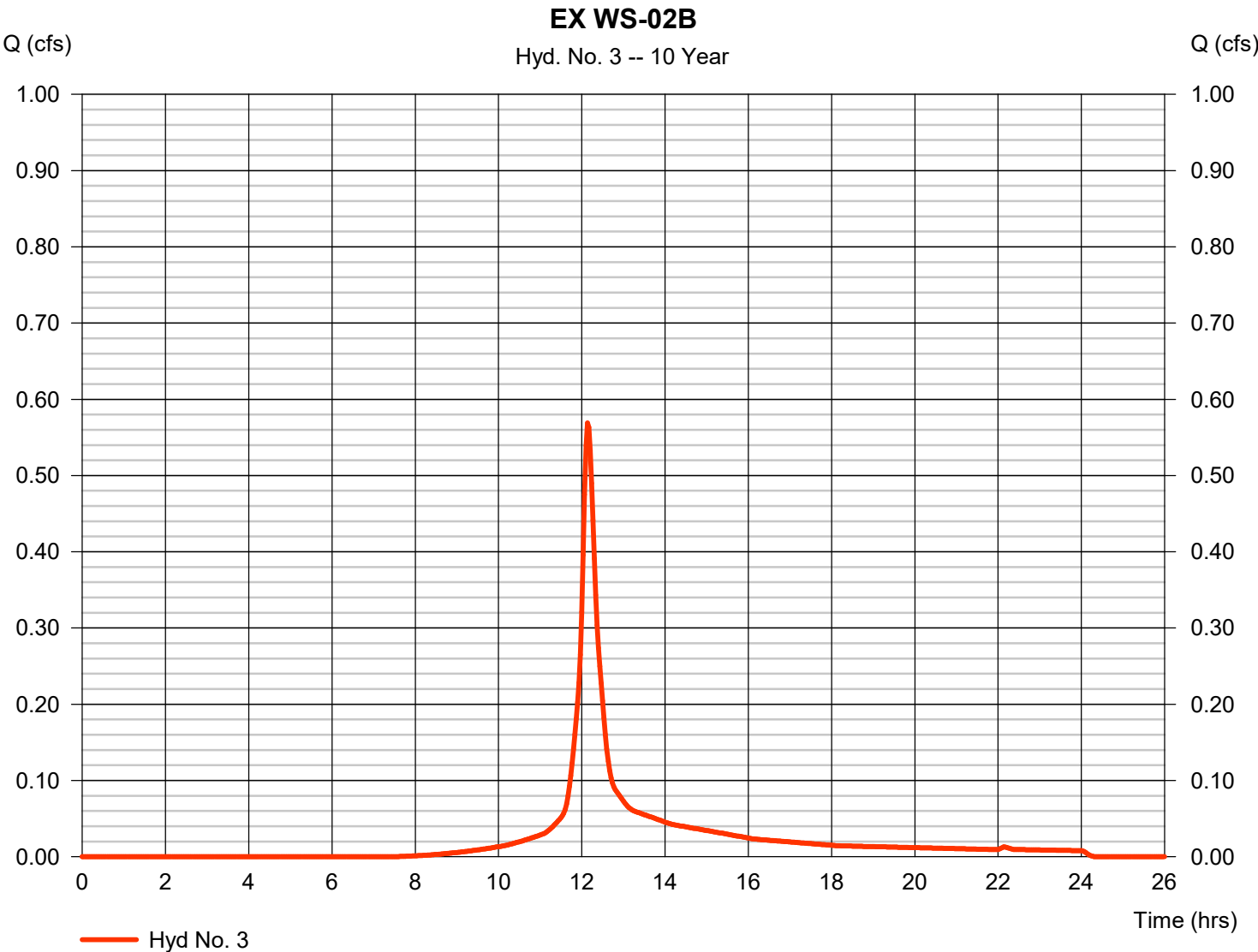
Hyd No. 3

Hydrograph Report

Hyd. No. 4

EX WS-02C

Hydrograph type	= SCS Runoff		Peak discharge	= 2.685 cfs
Storm frequency	= 10 yrs		Time to peak	= 12.10 hrs
Time interval	= 2 min		Hyd. volume	= 9,791 cuft
Drainage area	= 0.590 ac		Curve number	= 93
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 9.40 min
Total precip.	= 5.38 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

EX WS-02C

Hyd. No. 4 -- 10 Year

Hyd No. 4

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 5

EX WS-02D

Hydrograph type	= SCS Runoff		Peak discharge	= 7.568 cfs
Storm frequency	= 10 yrs		Time to peak	= 12.23 hrs
Time interval	= 2 min		Hyd. volume	= 36,669 cuft
Drainage area	= 2.462 ac		Curve number	= 88
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 22.10 min
Total precip.	= 5.38 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

EX WS-02D

Hyd. No. 5 -- 10 Year

Hyd No. 5

Hydrograph Report

Hyd. No. 6

EX WS-02E

Hydrograph type	= SCS Runoff		Peak discharge	= 0.731 cfs
Storm frequency	= 10 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 2,440 cuft
Drainage area	= 0.146 ac		Curve number	= 96
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.38 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

EX WS-02E

Hyd. No. 6 -- 10 Year
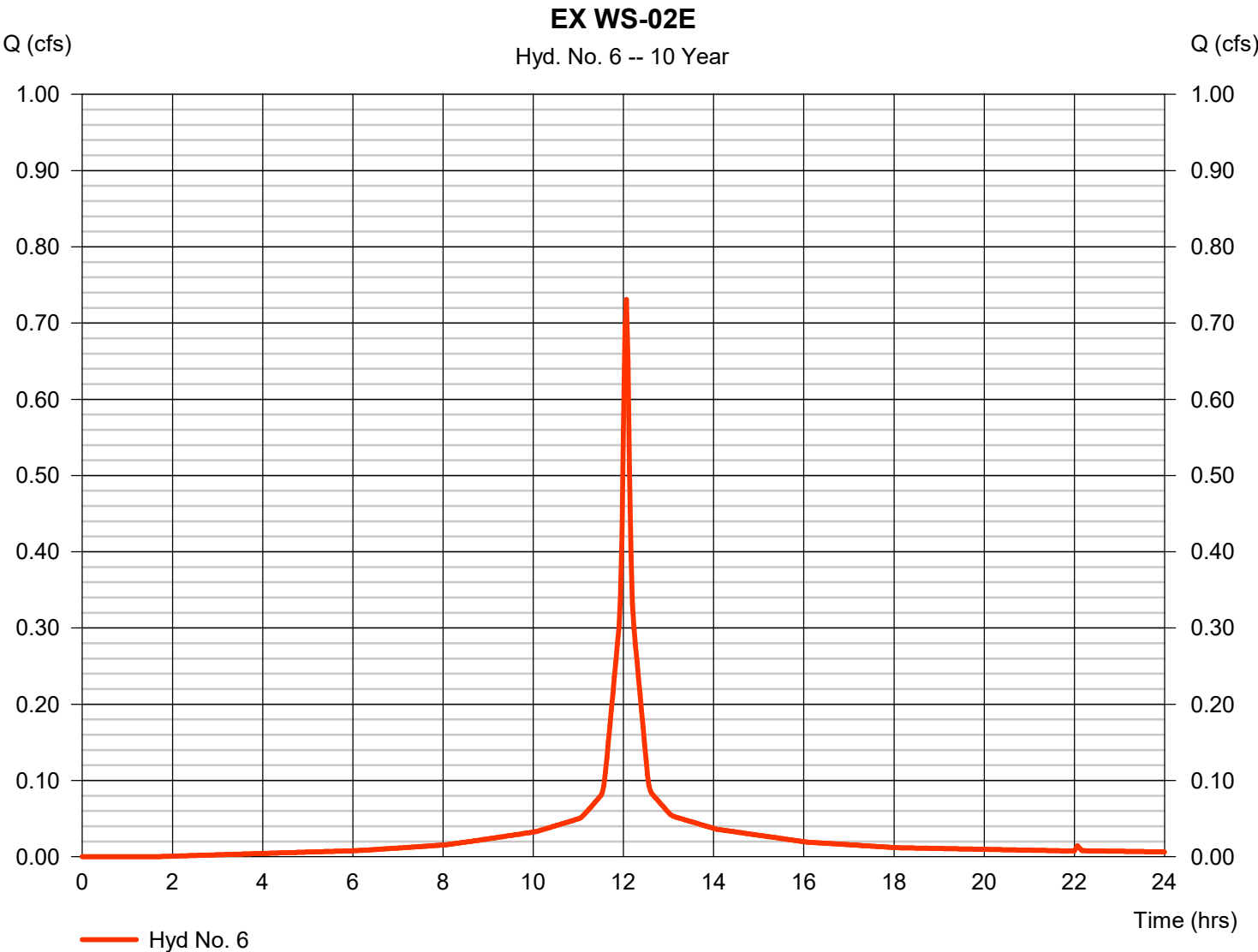
Hydrograph Report

Hyd. No. 7

EX WS-02F

Hydrograph type	= SCS Runoff		Peak discharge	= 4.896 cfs
Storm frequency	= 10 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 15,744 cuft
Drainage area	= 1.012 ac		Curve number	= 93
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 5.50 min
Total precip.	= 5.38 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

EX WS-02F

Hyd. No. 7 -- 10 Year
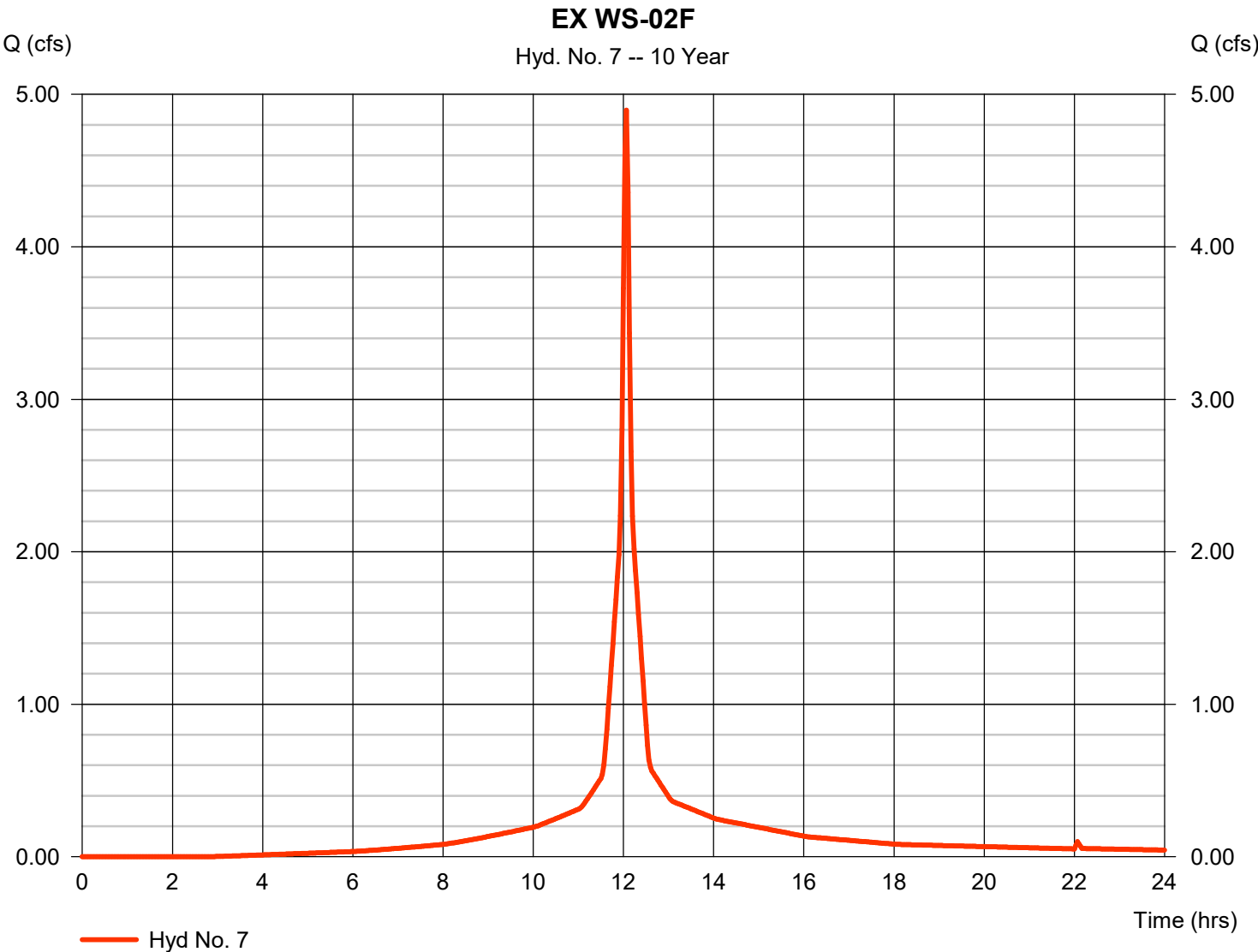
— Hyd No. 7

Hydrograph Report

Hyd. No. 8

EX WS-02G

Hydrograph type	= SCS Runoff		Peak discharge	= 1.265 cfs
Storm frequency	= 10 yrs		Time to peak	= 12.10 hrs
Time interval	= 2 min		Hyd. volume	= 4,567 cuft
Drainage area	= 0.282 ac		Curve number	= 92
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 6.90 min
Total precip.	= 5.38 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

EX WS-02G

Hyd. No. 8 -- 10 Year

Q (cfs)

Time (hrs)
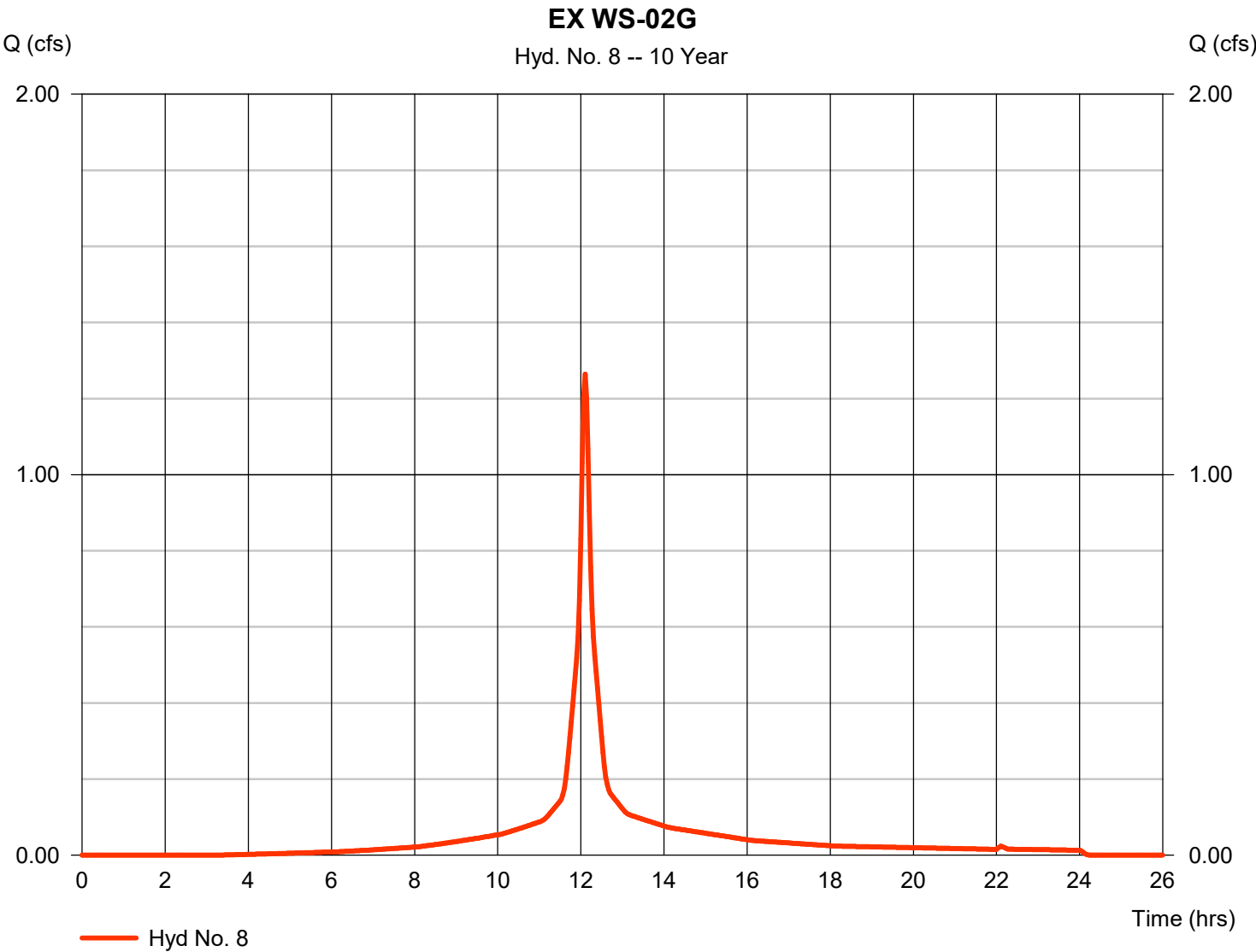
Hyd No. 8

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 9

EX WS-02H

Hydrograph type	= SCS Runoff	Peak discharge	= 1.996 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 9,014 cuft
Drainage area	= 0.616 ac	Curve number	= 88
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 17.30 min
Total precip.	= 5.38 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

EX WS-02H

Hyd. No. 9 -- 10 Year
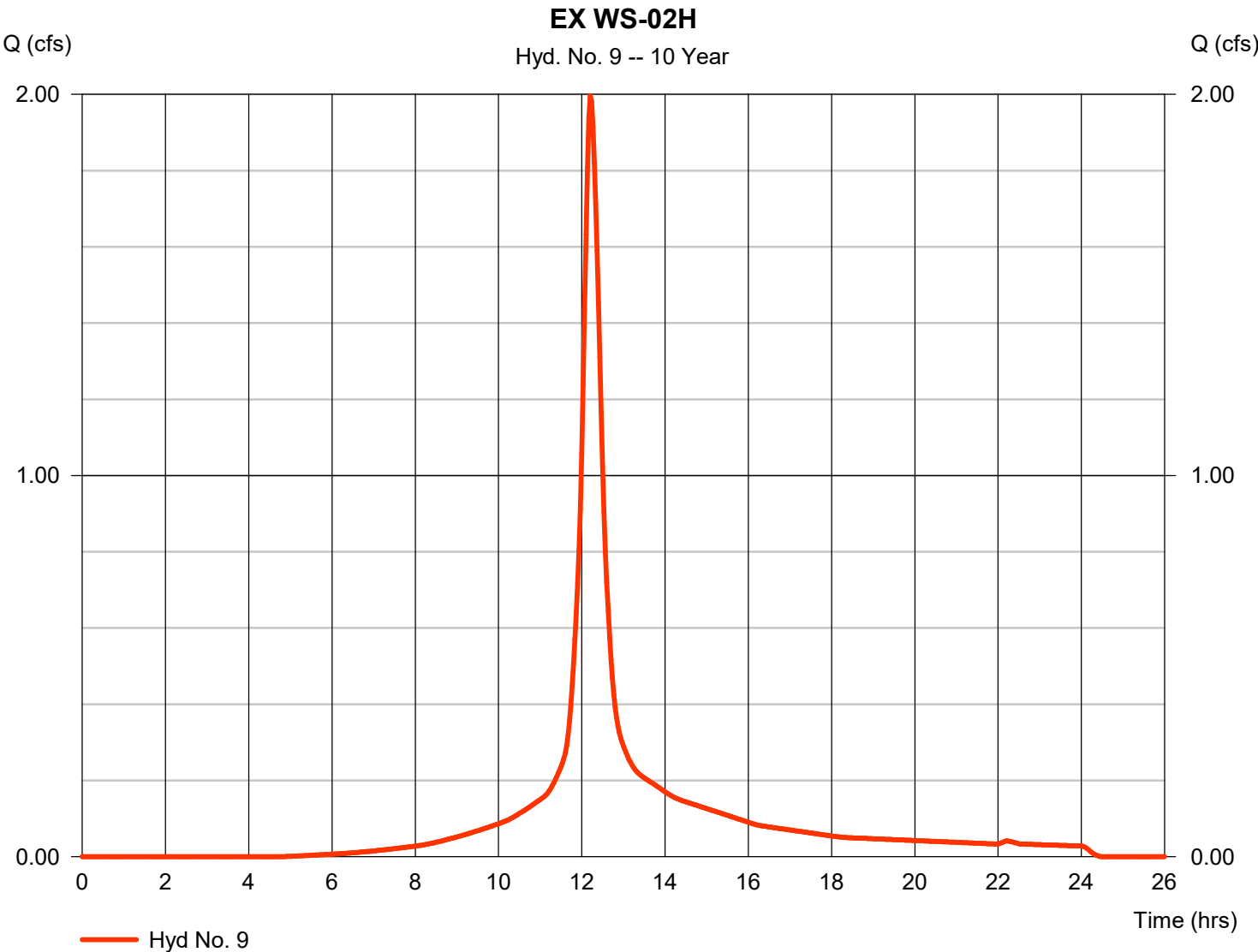
Hyd No. 9

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 10

EX WS-02I

Hydrograph type	= SCS Runoff		Peak discharge	= 4.677 cfs
Storm frequency	= 10 yrs		Time to peak	= 12.20 hrs
Time interval	= 2 min		Hyd. volume	= 21,366 cuft
Drainage area	= 1.387 ac		Curve number	= 90
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 18.60 min
Total precip.	= 5.38 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

EX WS-02I

Hyd. No. 10 -- 10 Year

Q (cfs)

Time (hrs)
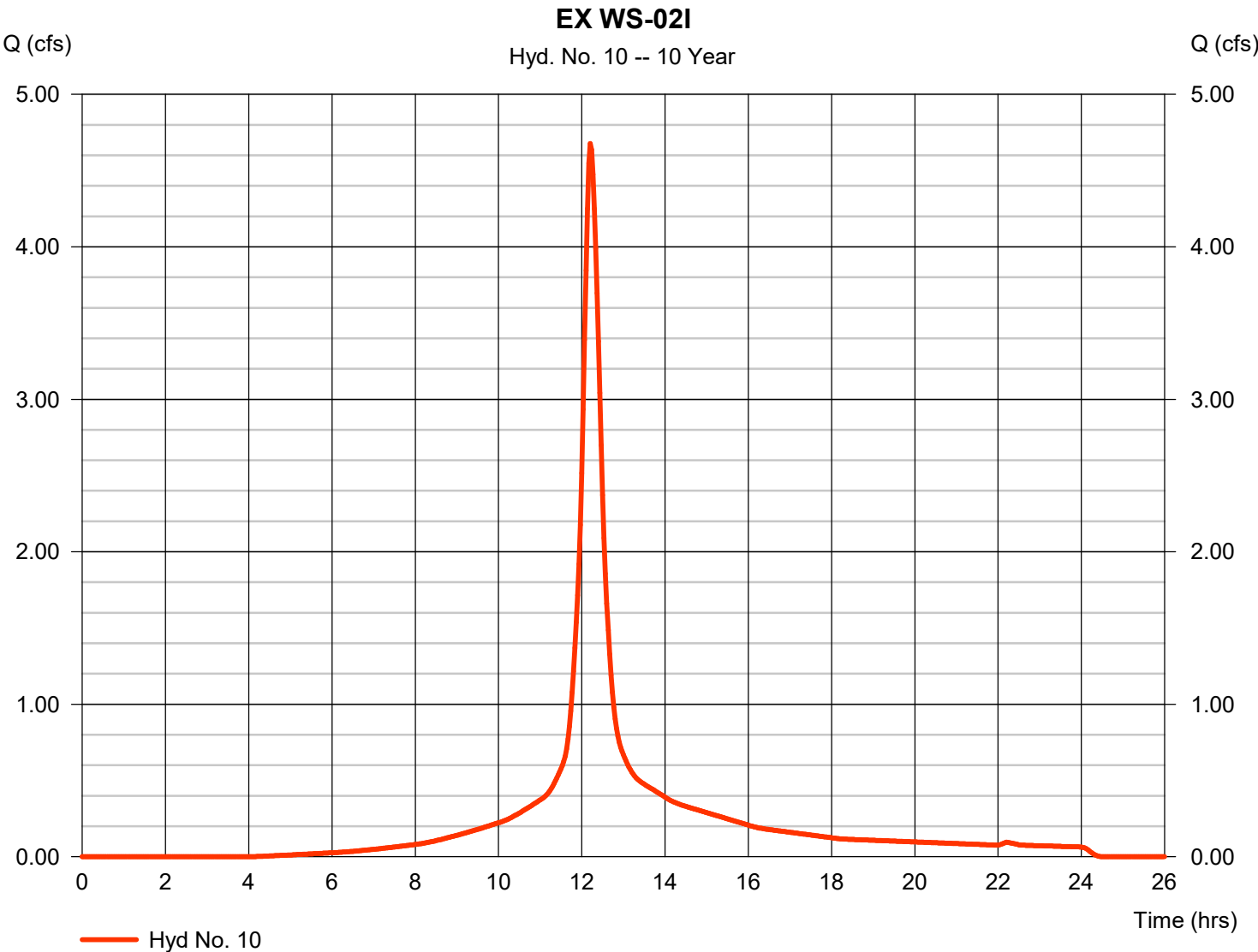
—— Hyd No. 10

Hydrograph Report

Hyd. No. 11

EX WS-02J

Hydrograph type	= SCS Runoff		Peak discharge	= 1.741 cfs
Storm frequency	= 10 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 6,003 cuft
Drainage area	= 0.343 ac		Curve number	= 98
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.38 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

EX WS-02J

Hyd. No. 11 -- 10 Year
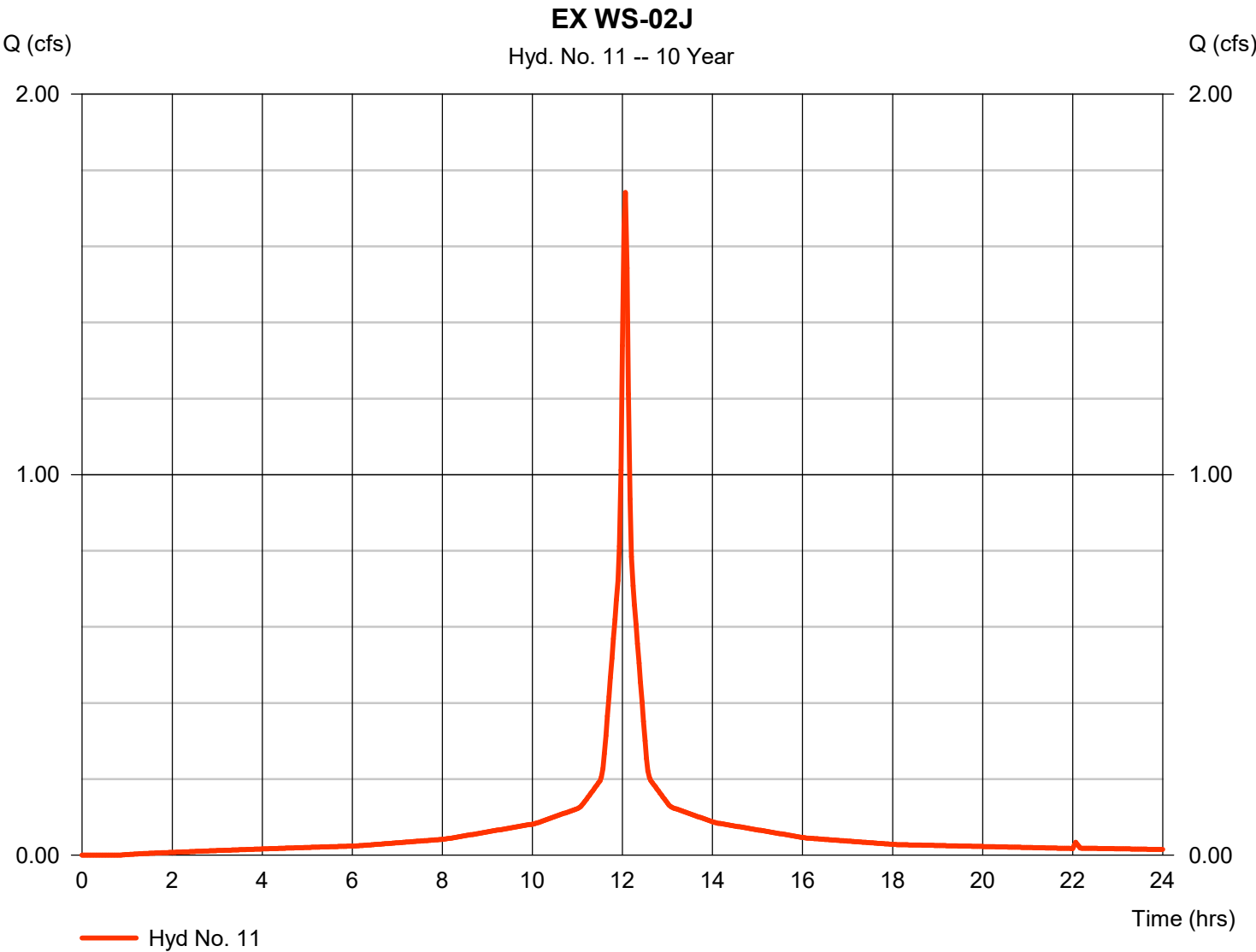
Hyd No. 11

Hydrograph Report

Hyd. No. 12

EX WS-03

Hydrograph type	= SCS Runoff	Peak discharge	= 2.690 cfs
Storm frequency	= 10 yrs	Time to peak	= 13.17 hrs
Time interval	= 2 min	Hyd. volume	= 29,764 cuft
Drainage area	= 4.907 ac	Curve number	= 62
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 95.00 min
Total precip.	= 5.38 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

EX WS-03

Hyd. No. 12 -- 10 Year
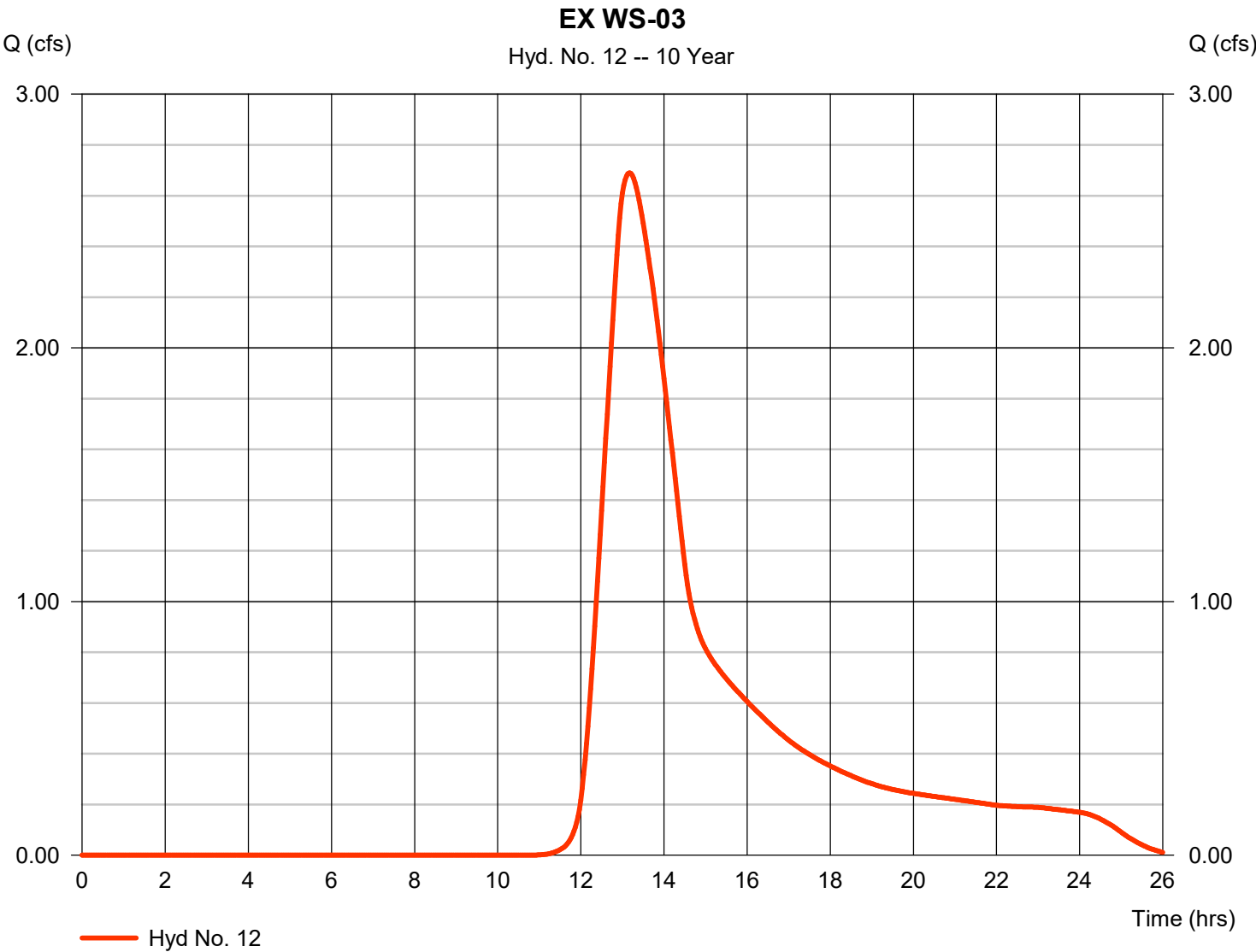
— Hyd No. 12

Hydrograph Report

Hyd. No. 13

36 INCH PIPE (#1)

Hydrograph type	= Reservoir		Peak discharge	= 6.339 cfs
Storm frequency	= 10 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 17,448 cuft
Inflow hyd. No.	= 2 - EX WS-02A		Max. Elevation	= 143.69 ft
Reservoir name	= 36IN - 1		Max. Storage	= 1,562 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

36 INCH PIPE (#1)

Hyd. No. 13 -- 10 Year

Hyd No. 13 — Hyd No. 2 — Total storage used = 1,562 cuft

Hydrograph Report

Hyd. No. 14

TWIN 36IN PIPES (#2)

Hydrograph type	= Reservoir	Peak discharge	= 7.442 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.30 hrs
Time interval	= 2 min	Hyd. volume	= 31,857 cuft
Inflow hyd. No.	= 5 - EX WS-02D	Max. Elevation	= 139.08 ft
Reservoir name	= Northern Twin 36IN	Max. Storage	= 3,489 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

TWIN 36IN PIPES (#2)

Hyd. No. 14 -- 10 Year

Legend: Hyd No. 14, Hyd No. 5, Total storage used = 3,489 cuft

Hydrograph Report

Hyd. No. 15

24 INCH PIPE

Hydrograph type	= Reservoir		Peak discharge	= 0.701 cfs
Storm frequency	= 10 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 1,554 cuft
Inflow hyd. No.	= 6 - EX WS-02E		Max. Elevation	= 139.63 ft
Reservoir name	= 24IN		Max. Storage	= 493 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

24 INCH PIPE

Hyd. No. 15 -- 10 Year

Legend: Hyd No. 15 — Hyd No. 6 — Total storage used = 493 cuft

Hydrograph Report

Thursday, 04 / 4 / 2024
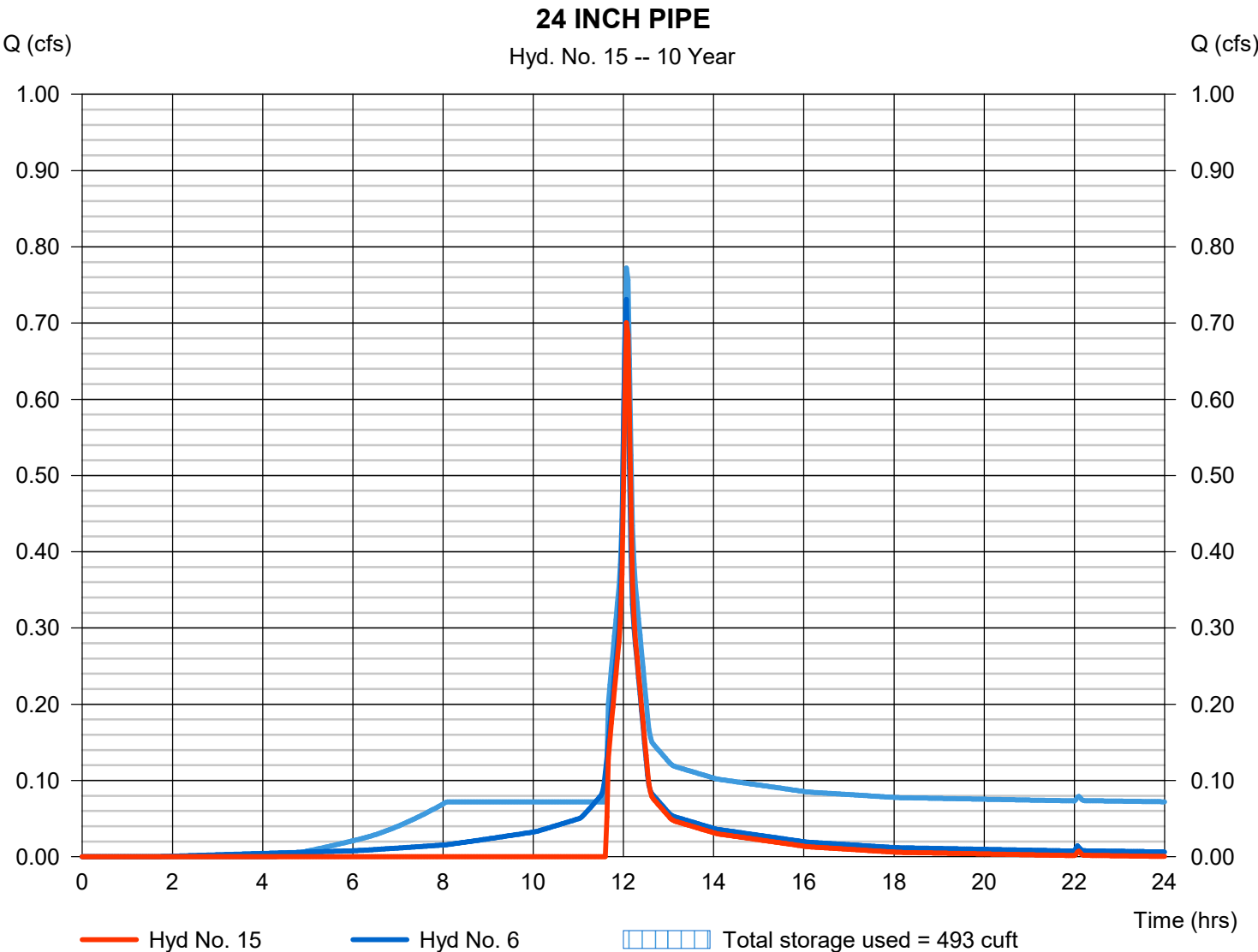
Hyd. No. 16

36 INCH PIPE (#2)

Hydrograph type	= Reservoir	Peak discharge	= 4.789 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 12,060 cuft
Inflow hyd. No.	= 7 - EX WS-02F	Max. Elevation	= 139.47 ft
Reservoir name	= 36in - 2	Max. Storage	= 1,264 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

36 INCH PIPE (#2)

Hyd. No. 16 -- 10 Year

Q (cfs)

Hyd No. 16   Hyd No. 7   Total storage used = 1,264 cuft

Time (hrs)

Hydrograph Report

Thursday, 04 / 4 / 2024
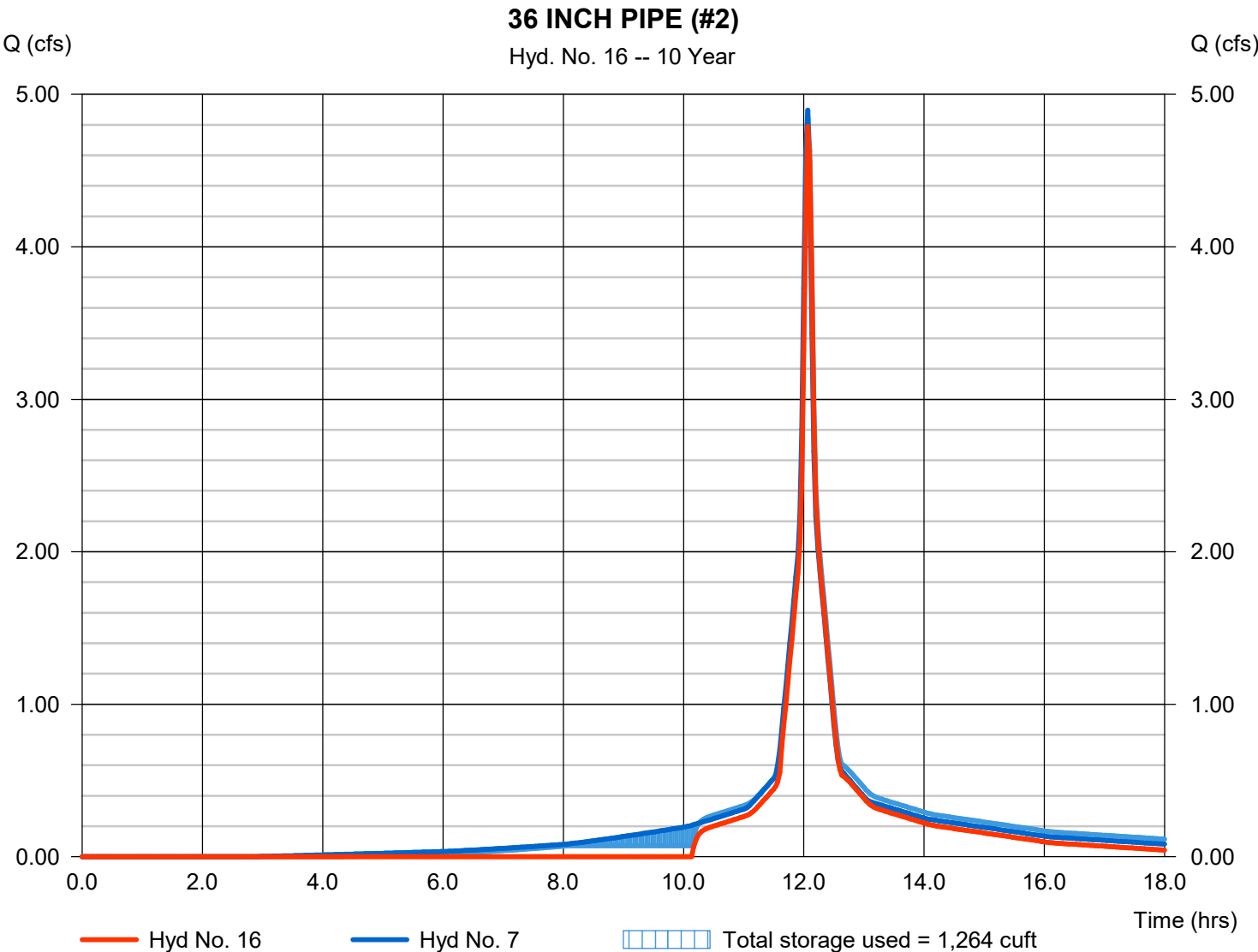
Hyd. No. 17

36 INCH PIPE (#3)

Hydrograph type	= Reservoir		Peak discharge	= 2.020 cfs
Storm frequency	= 10 yrs		Time to peak	= 12.33 hrs
Time interval	= 2 min		Hyd. volume	= 4,253 cuft
Inflow hyd. No.	= 9 - EX WS-02H		Max. Elevation	= 137.49 ft
Reservoir name	= 36in - 3		Max. Storage	= 3,713 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
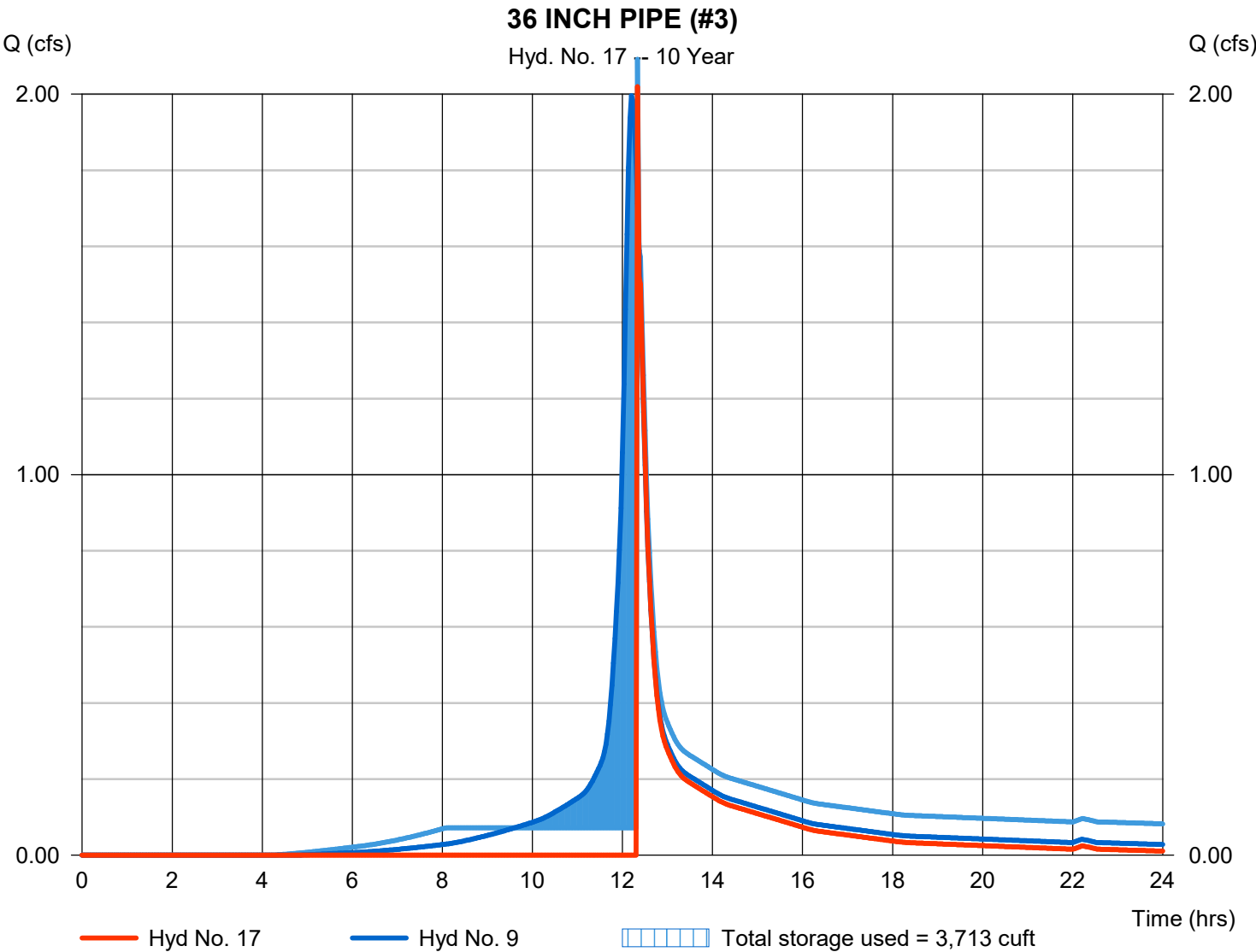
36 INCH PIPE (#3)
Hyd. No. 17 -- 10 Year

Hyd No. 17   Hyd No. 9   Total storage used = 3,713 cuft

Hydrograph Report

Hyd. No. 18

TWO 36 INCH PIPES

Hydrograph type	= Reservoir	Peak discharge	= 4.587 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 14,622 cuft
Inflow hyd. No.	= 10 - EX WS-02I	Max. Elevation	= 135.72 ft
Reservoir name	= TWIN 36IN	Max. Storage	= 2,457 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

TWO 36 INCH PIPES

Hyd. No. 18 -- 10 Year

Hydrograph Report

Hyd. No. 19

<no description>
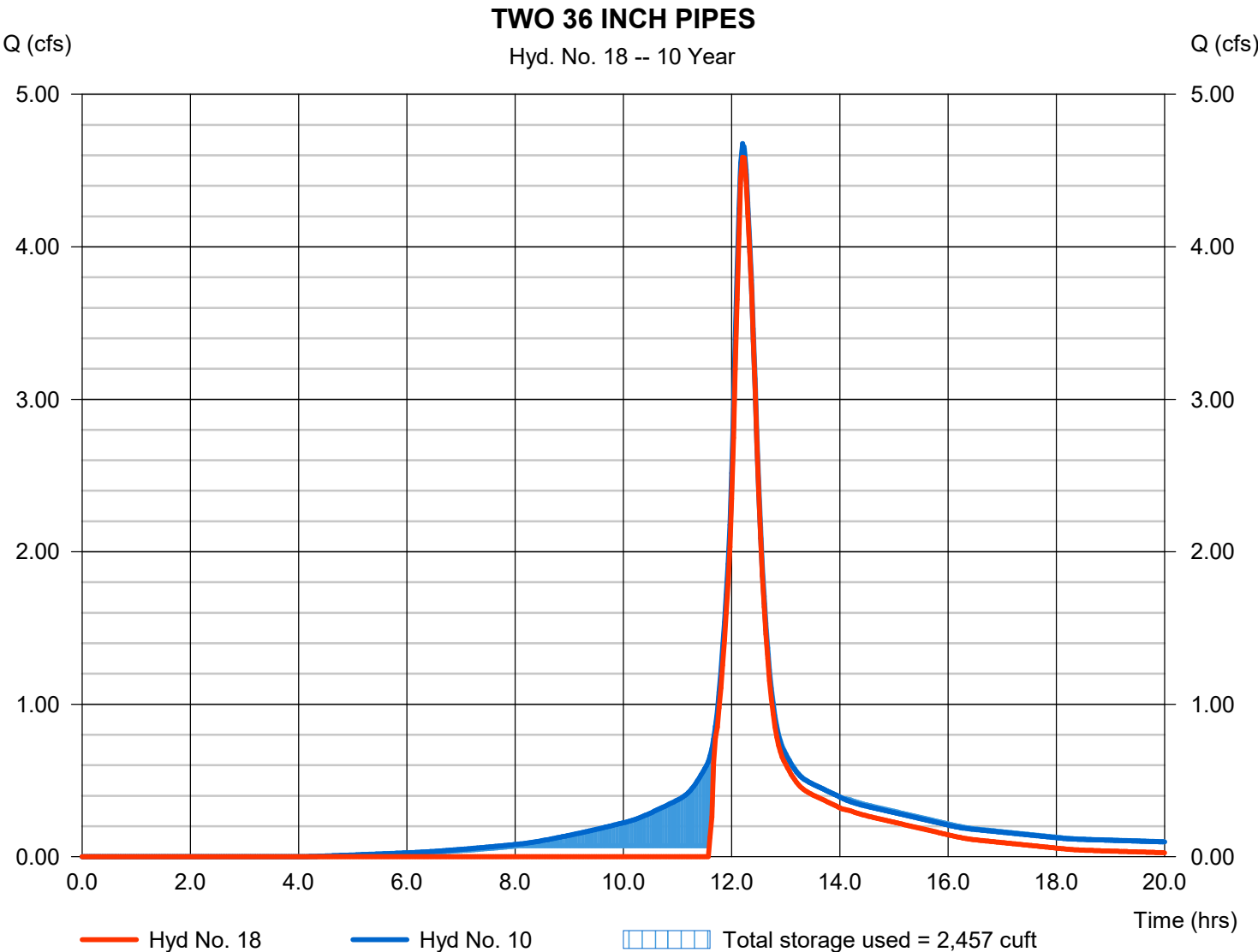
Hydrograph type	= Combine	Peak discharge	= 14.85 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 62,831 cuft
Inflow hyds.	= 3, 4, 13, 14, 15	Contrib. drain. area	= 0.776 ac

<no description>
Hyd. No. 19 -- 10 Year

Legend: Hyd No. 19, Hyd No. 3, Hyd No. 4, Hyd No. 13, Hyd No. 14, Hyd No. 15
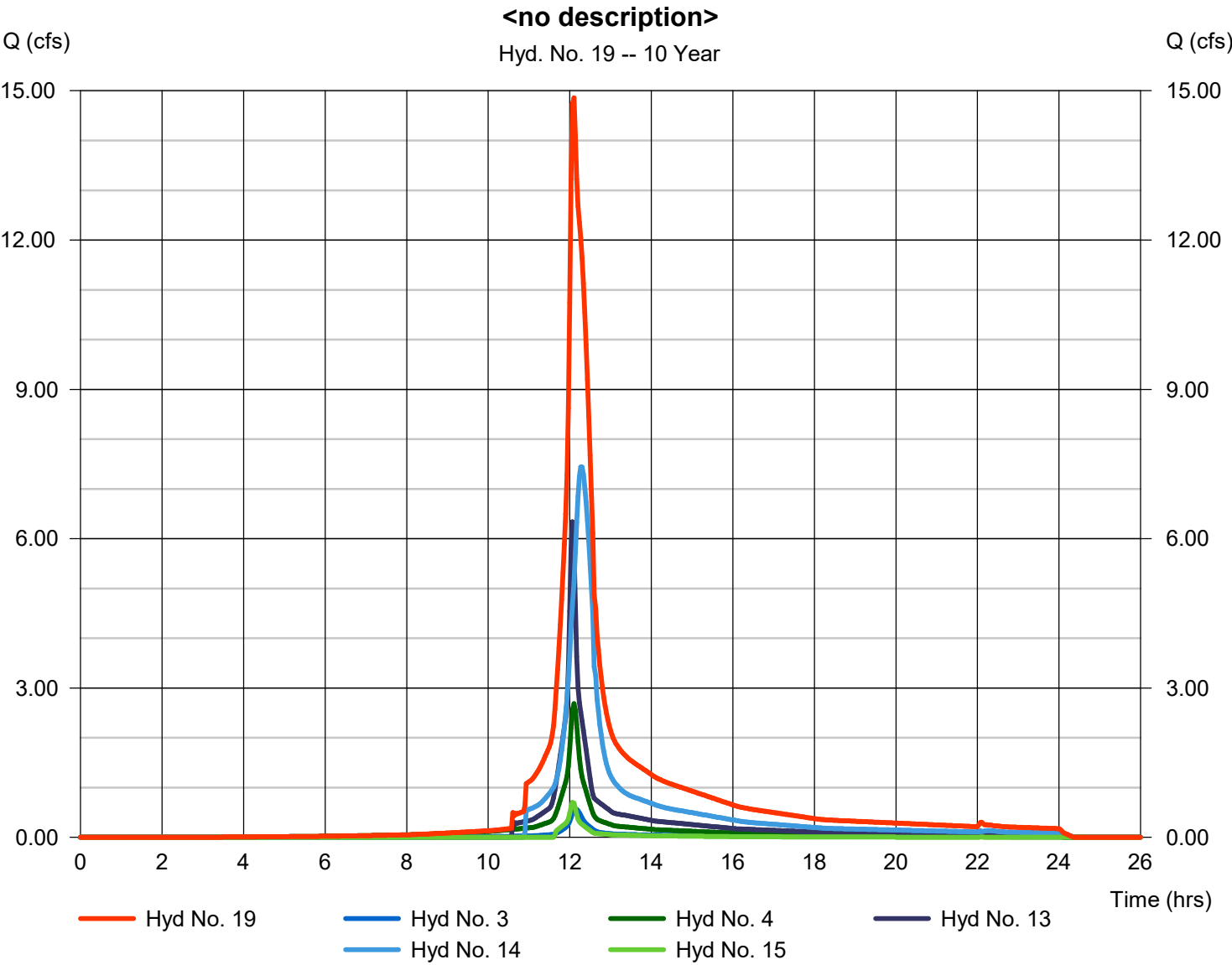
Hydrograph Report

Hyd. No. 20

<no description>

Hydrograph type	= Combine	Peak discharge	= 11.40 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 71,269 cuft
Inflow hyds.	= 8, 11, 12, 16, 17, 18	Contrib. drain. area	= 5.532 ac

<no description>

Hyd. No. 20 -- 10 Year

Hyd No. 20 — Hyd No. 8 — Hyd No. 11 — Hyd No. 12 — Hyd No. 16 — Hyd No. 17 — Hyd No. 18

Hydrograph Report

Thursday, 04 / 4 / 2024
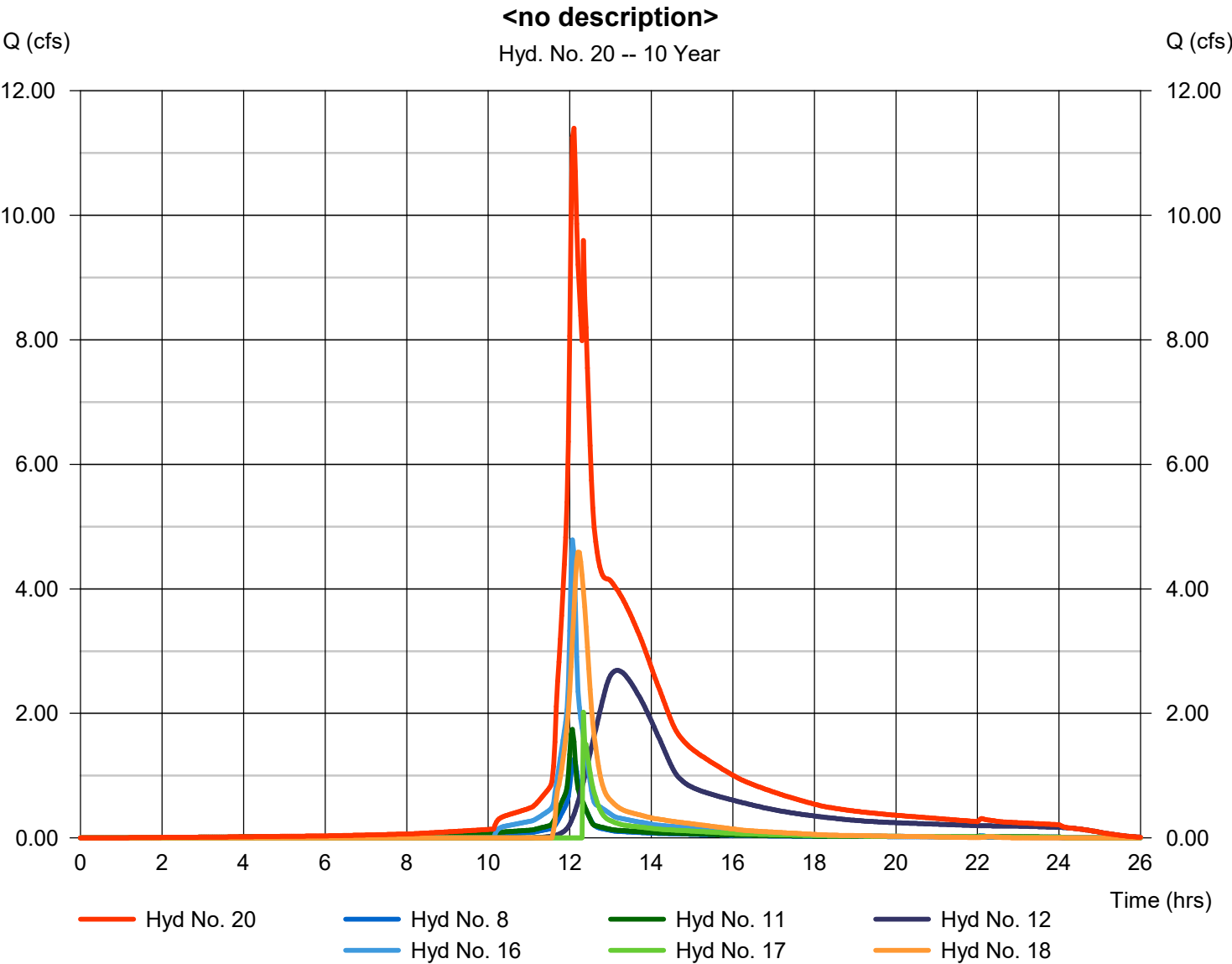
Hyd. No. 21

Design Point B

Hydrograph type	= Combine		Peak discharge	= 26.25 cfs
Storm frequency	= 10 yrs		Time to peak	= 12.10 hrs
Time interval	= 2 min		Hyd. volume	= 134,100 cuft
Inflow hyds.	= 19, 20		Contrib. drain. area	= 0.000 ac
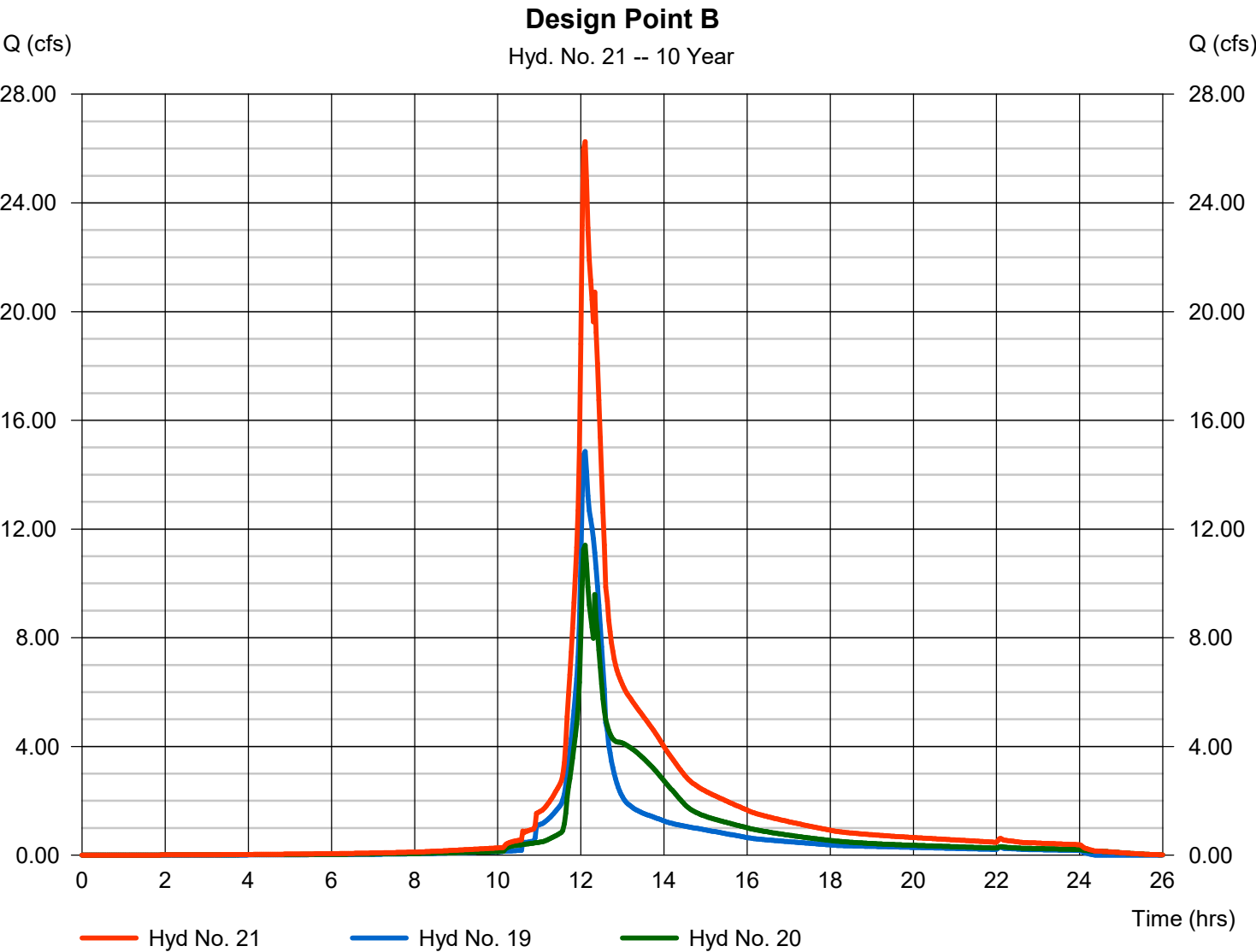
Design Point B

Hyd. No. 21 -- 10 Year

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

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	5.932	2	752	38,948	------	------	------	EX WS-01
2	SCS Runoff	8.035	2	724	24,968	------	------	------	EX WS-02A
3	SCS Runoff	0.755	2	728	2,900	------	------	------	EX WS-02B
4	SCS Runoff	3.315	2	726	12,242	------	------	------	EX WS-02C
5	SCS Runoff	9.563	2	734	46,823	------	------	------	EX WS-02D
6	SCS Runoff	0.894	2	724	3,014	------	------	------	EX WS-02E
7	SCS Runoff	6.042	2	724	19,686	------	------	------	EX WS-02F
8	SCS Runoff	1.567	2	726	5,734	------	------	------	EX WS-02G
9	SCS Runoff	2.521	2	732	11,510	------	------	------	EX WS-02H
10	SCS Runoff	5.852	2	732	27,051	------	------	------	EX WS-02I
11	SCS Runoff	2.120	2	724	7,355	------	------	------	EX WS-02J
12	SCS Runoff	4.111	2	788	43,770	------	------	------	EX WS-03
13	Reservoir	8.034	2	724	22,921	2	143.74	1,591	36 INCH PIPE (#1)
14	Reservoir	9.452	2	736	41,926	5	139.13	3,703	TWIN 36IN PIPES (#2)
15	Reservoir	0.901	2	724	2,112	6	139.64	501	24 INCH PIPE
16	Reservoir	5.869	2	724	15,877	7	139.50	1,321	36 INCH PIPE (#2)
17	Reservoir	3.073	2	732	6,695	9	137.50	3,747	36 INCH PIPE (#3)
18	Reservoir	5.764	2	732	20,064	10	135.74	2,481	TWO 36 INCH PIPES
19	Combine	18.63	2	726	82,102	3, 4, 13, 14, 15,	------	------	<no description>
20	Combine	14.87	2	732	99,494	8, 11, 12, 16, 17, 18,	------	------	<no description>
21	Combine	33.18	2	726	181,596	19, 20	------	------	Design Point B

Existing-Hydraflow.gpw | Return Period: 25 Year | Thursday, 04 / 4 / 2024

Hydrograph Report

Hyd. No. 1

EX WS-01

Hydrograph type	= SCS Runoff		Peak discharge	= 5.932 cfs
Storm frequency	= 25 yrs		Time to peak	= 12.53 hrs
Time interval	= 2 min		Hyd. volume	= 38,948 cuft
Drainage area	= 3.677 ac		Curve number	= 67
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 45.70 min
Total precip.	= 6.54 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

EX WS-01
Hyd. No. 1 -- 25 Year

Hyd No. 1

Hydrograph Report

Thursday, 04 / 4 / 2024
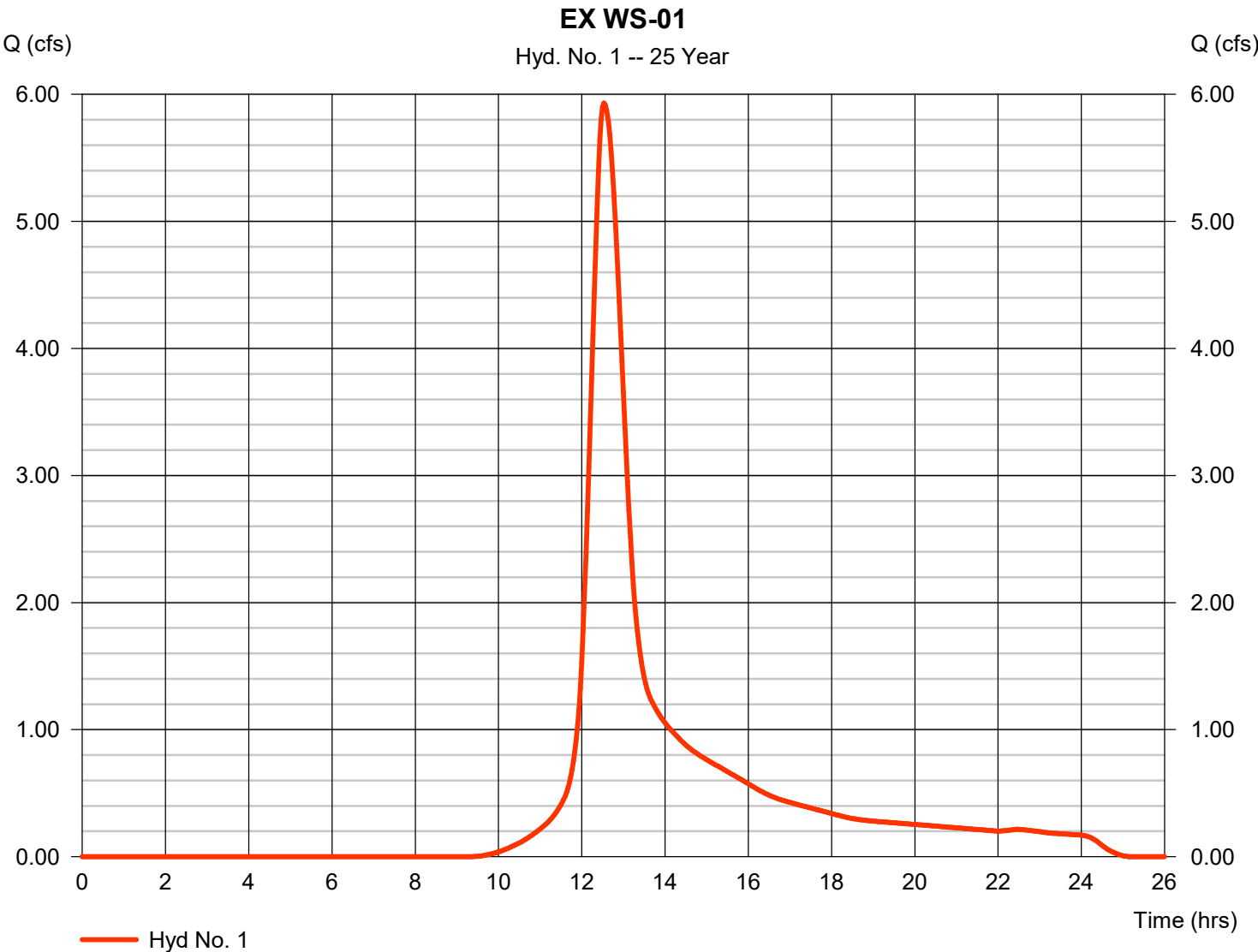
Hyd. No. 2

EX WS-02A

Hydrograph type	= SCS Runoff	Peak discharge	= 8.035 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 24,968 cuft
Drainage area	= 1.457 ac	Curve number	= 87
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

EX WS-02A

Hyd. No. 2 -- 25 Year
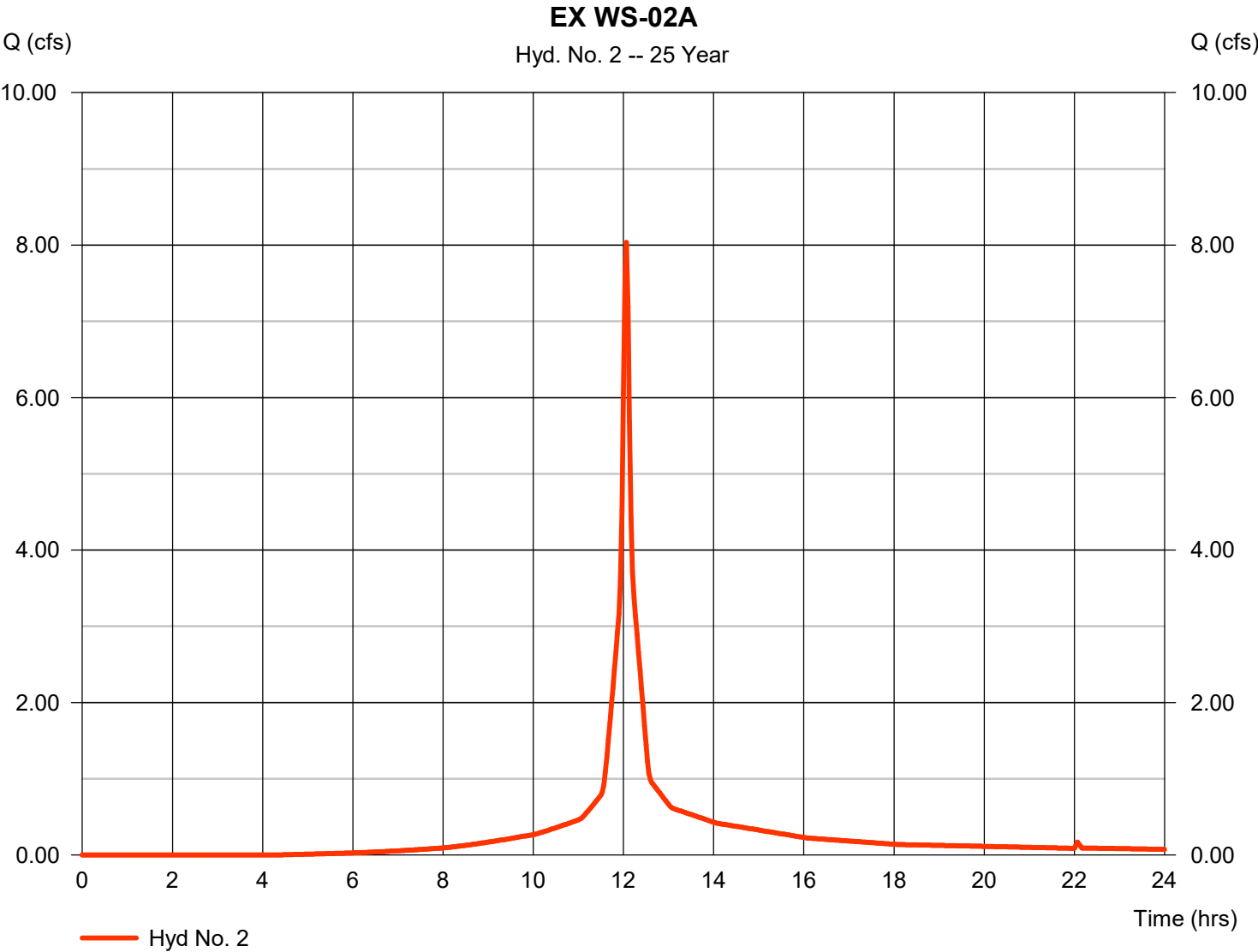
Hyd No. 2

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 3

EX WS-02B

Hydrograph type	= SCS Runoff	Peak discharge	= 0.755 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 2,900 cuft
Drainage area	= 0.186 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.00 min
Total precip.	= 6.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

EX WS-02B

Hyd. No. 3 -- 25 Year
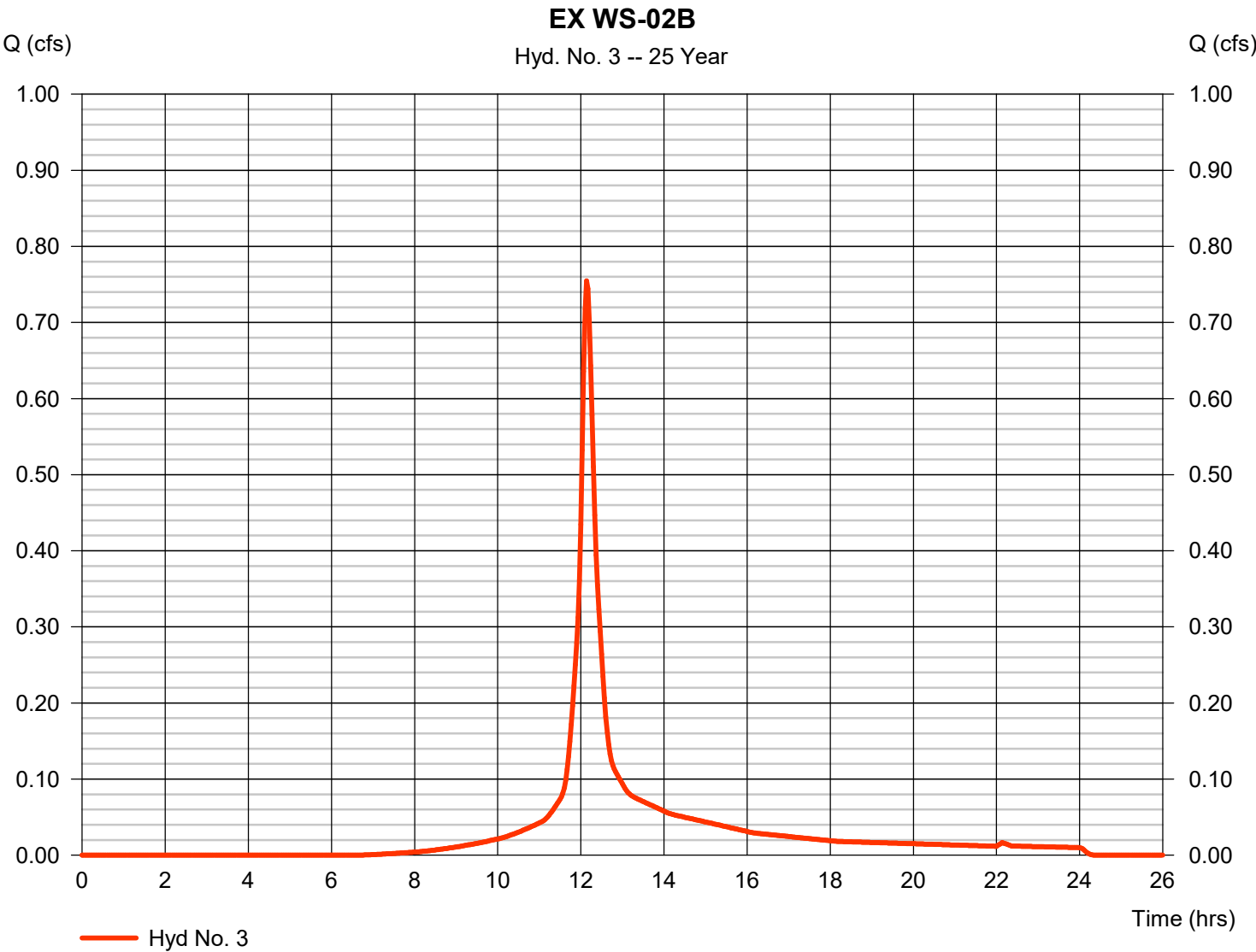
Hyd No. 3

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 4

EX WS-02C

Hydrograph type	= SCS Runoff		Peak discharge	= 3.315 cfs
Storm frequency	= 25 yrs		Time to peak	= 12.10 hrs
Time interval	= 2 min		Hyd. volume	= 12,242 cuft
Drainage area	= 0.590 ac		Curve number	= 93
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 9.40 min
Total precip.	= 6.54 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

EX WS-02C

Hyd. No. 4 -- 25 Year

Hyd No. 4

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 5

EX WS-02D

Hydrograph type	= SCS Runoff		Peak discharge	= 9.563 cfs
Storm frequency	= 25 yrs		Time to peak	= 12.23 hrs
Time interval	= 2 min		Hyd. volume	= 46,823 cuft
Drainage area	= 2.462 ac		Curve number	= 88
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 22.10 min
Total precip.	= 6.54 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

EX WS-02D
Hyd. No. 5 -- 25 Year

Hydrograph Report

Hyd. No. 6

EX WS-02E

Hydrograph type	= SCS Runoff	Peak discharge	= 0.894 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 3,014 cuft
Drainage area	= 0.146 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

EX WS-02E

Hyd. No. 6 -- 25 Year
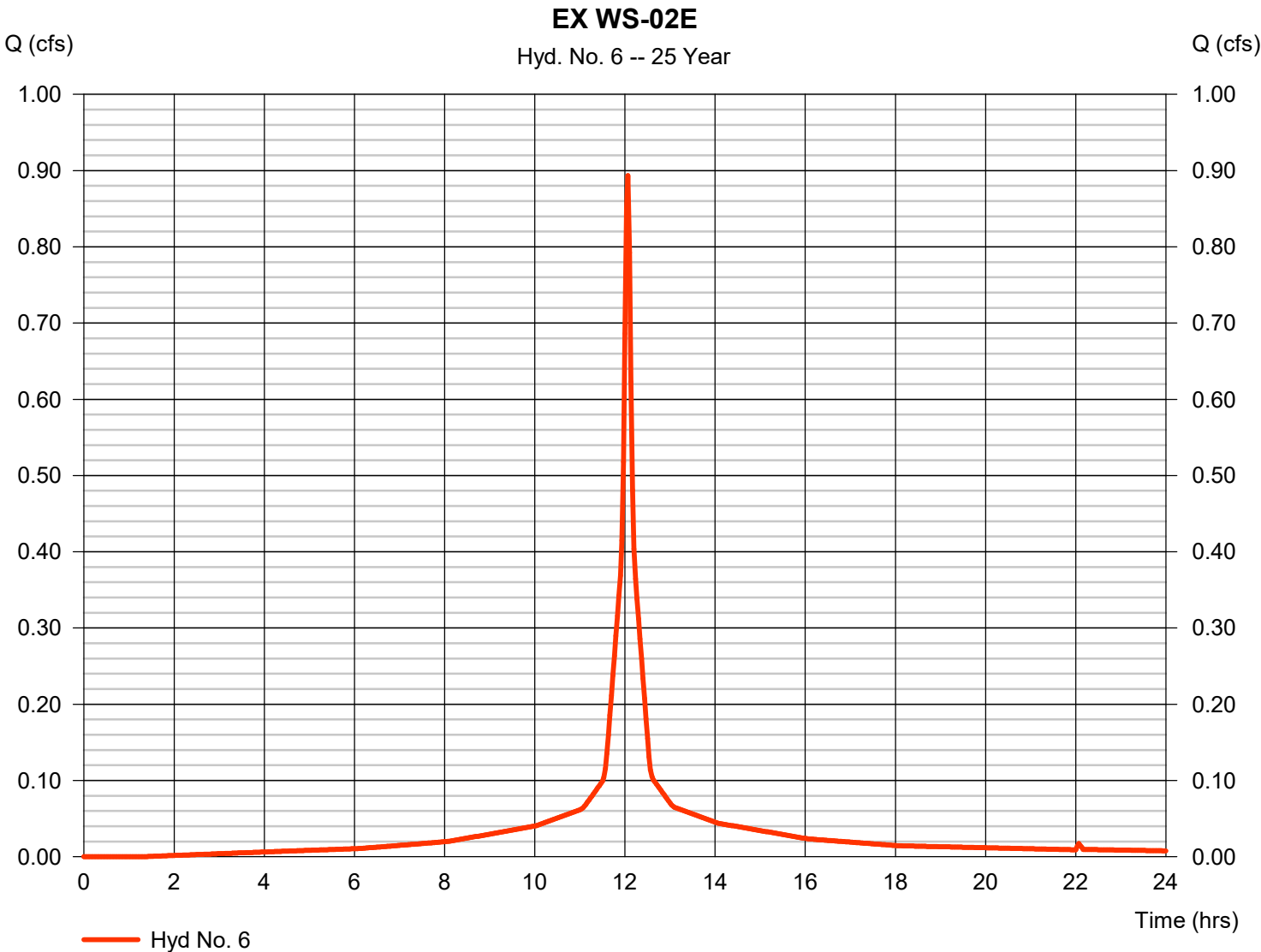
Hyd No. 6

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 7

EX WS-02F

Hydrograph type	= SCS Runoff	Peak discharge	= 6.042 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 19,686 cuft
Drainage area	= 1.012 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.50 min
Total precip.	= 6.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

EX WS-02F

Hyd. No. 7 -- 25 Year
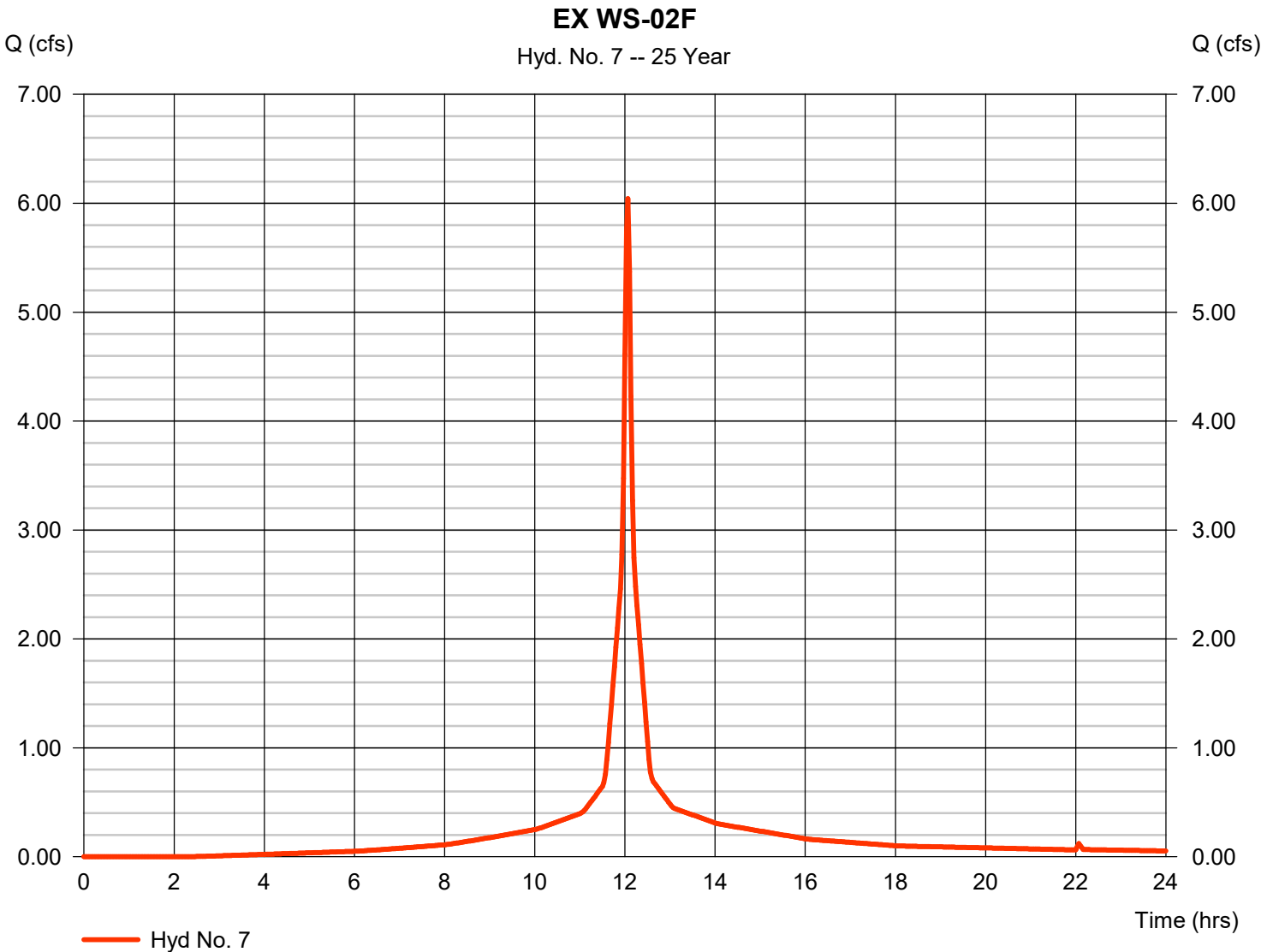
— Hyd No. 7

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 8

EX WS-02G

Hydrograph type	= SCS Runoff	Peak discharge	= 1.567 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 5,734 cuft
Drainage area	= 0.282 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.90 min
Total precip.	= 6.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

EX WS-02G

Hyd. No. 8 -- 25 Year
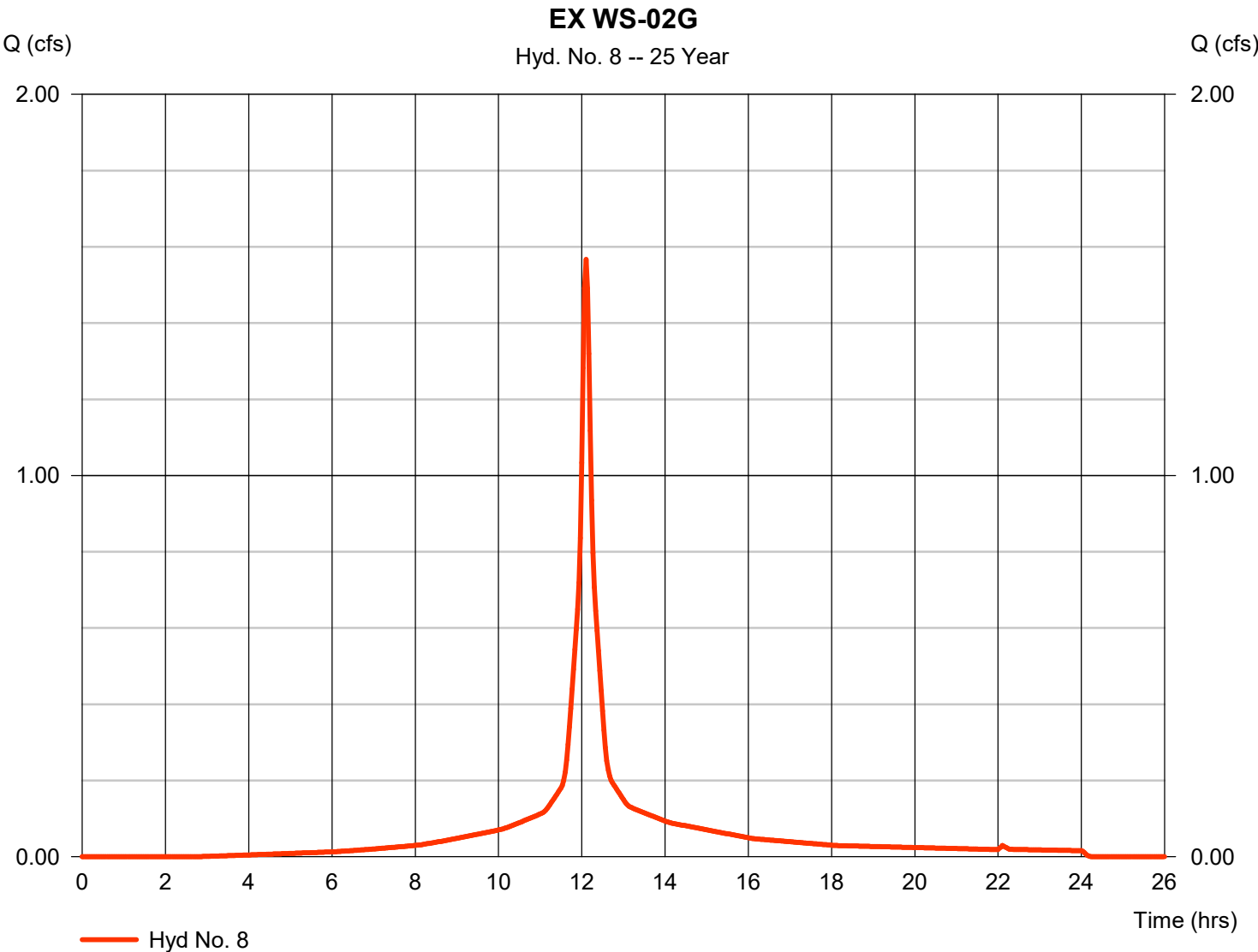
Hyd No. 8

Hydrograph Report

Hyd. No. 9

EX WS-02H

Hydrograph type	= SCS Runoff	Peak discharge	= 2.521 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 11,510 cuft
Drainage area	= 0.616 ac	Curve number	= 88
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 17.30 min
Total precip.	= 6.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

EX WS-02H

Hyd. No. 9 -- 25 Year
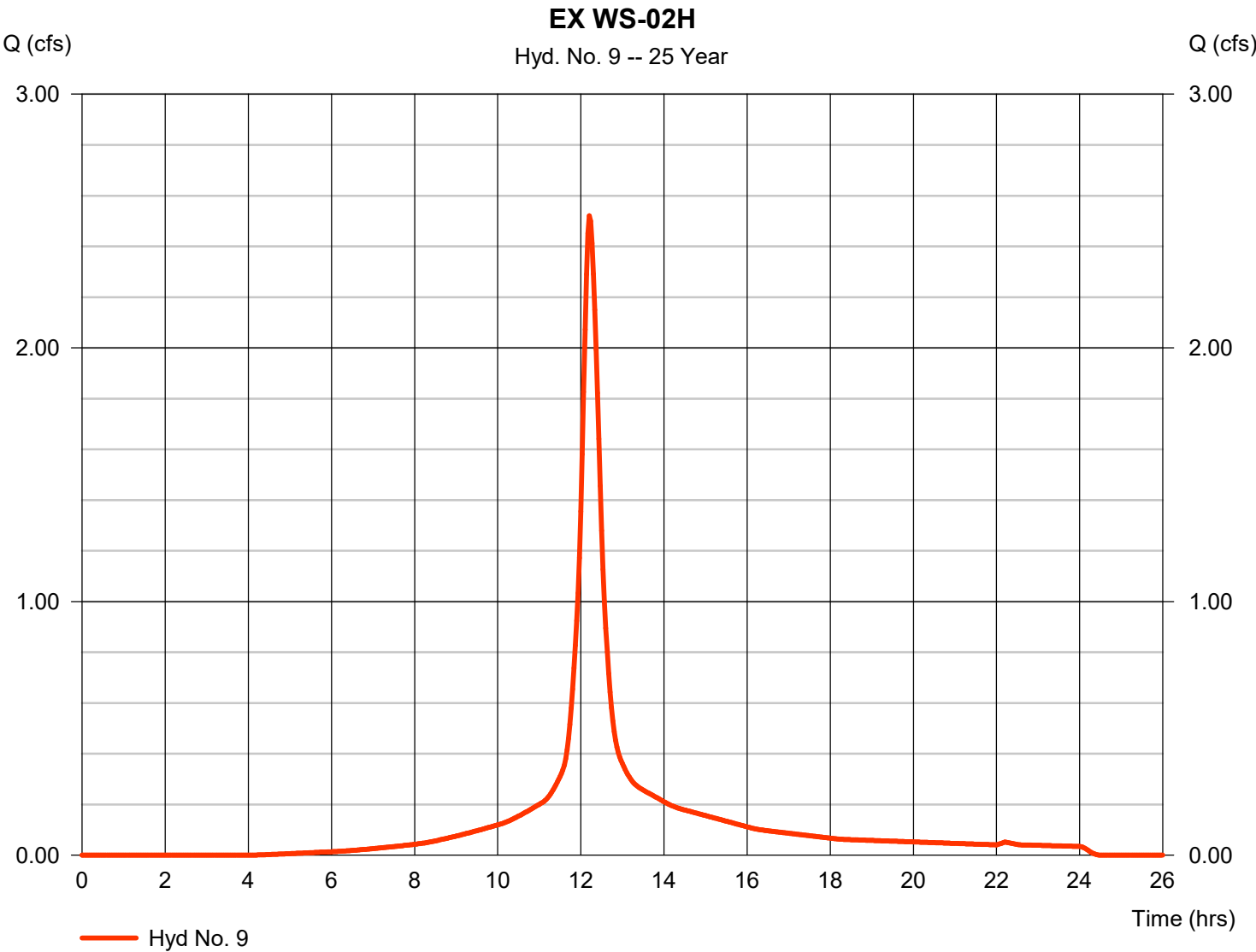
Hydrograph Report

Hyd. No. 10

EX WS-02I

Hydrograph type	= SCS Runoff	Peak discharge	= 5.852 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 27,051 cuft
Drainage area	= 1.387 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.60 min
Total precip.	= 6.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

EX WS-02I

Hyd. No. 10 -- 25 Year

Hyd No. 10

Hydrograph Report

Thursday, 04 / 4 / 2024
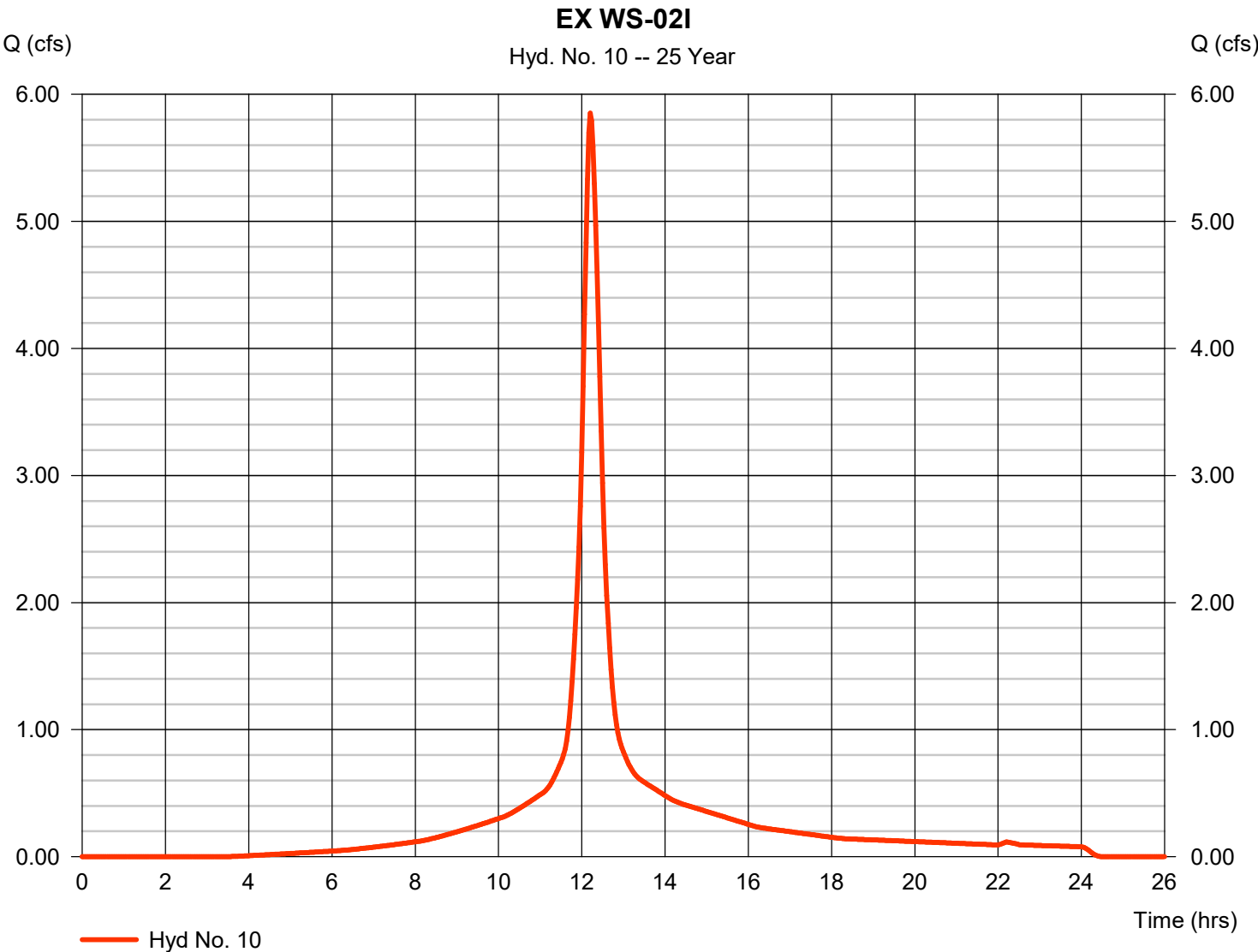
Hyd. No. 11

EX WS-02J

Hydrograph type	= SCS Runoff	Peak discharge	= 2.120 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 7,355 cuft
Drainage area	= 0.343 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

EX WS-02J

Hyd. No. 11 -- 25 Year
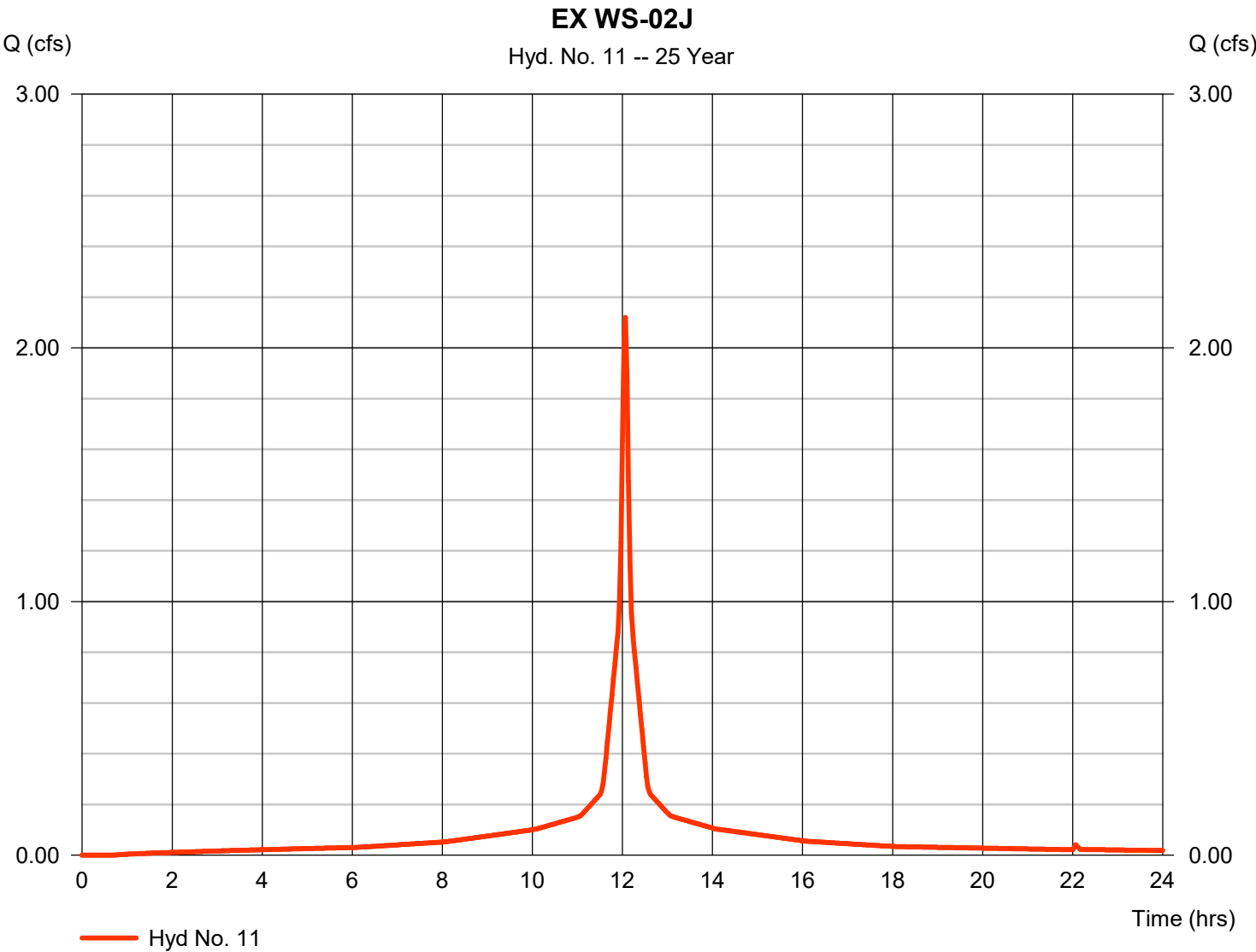
Hyd No. 11

Hydrograph Report

Hyd. No. 12

EX WS-03

Hydrograph type	= SCS Runoff		Peak discharge	= 4.111 cfs
Storm frequency	= 25 yrs		Time to peak	= 13.13 hrs
Time interval	= 2 min		Hyd. volume	= 43,770 cuft
Drainage area	= 4.907 ac		Curve number	= 62
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 95.00 min
Total precip.	= 6.54 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

EX WS-03

Hyd. No. 12 -- 25 Year
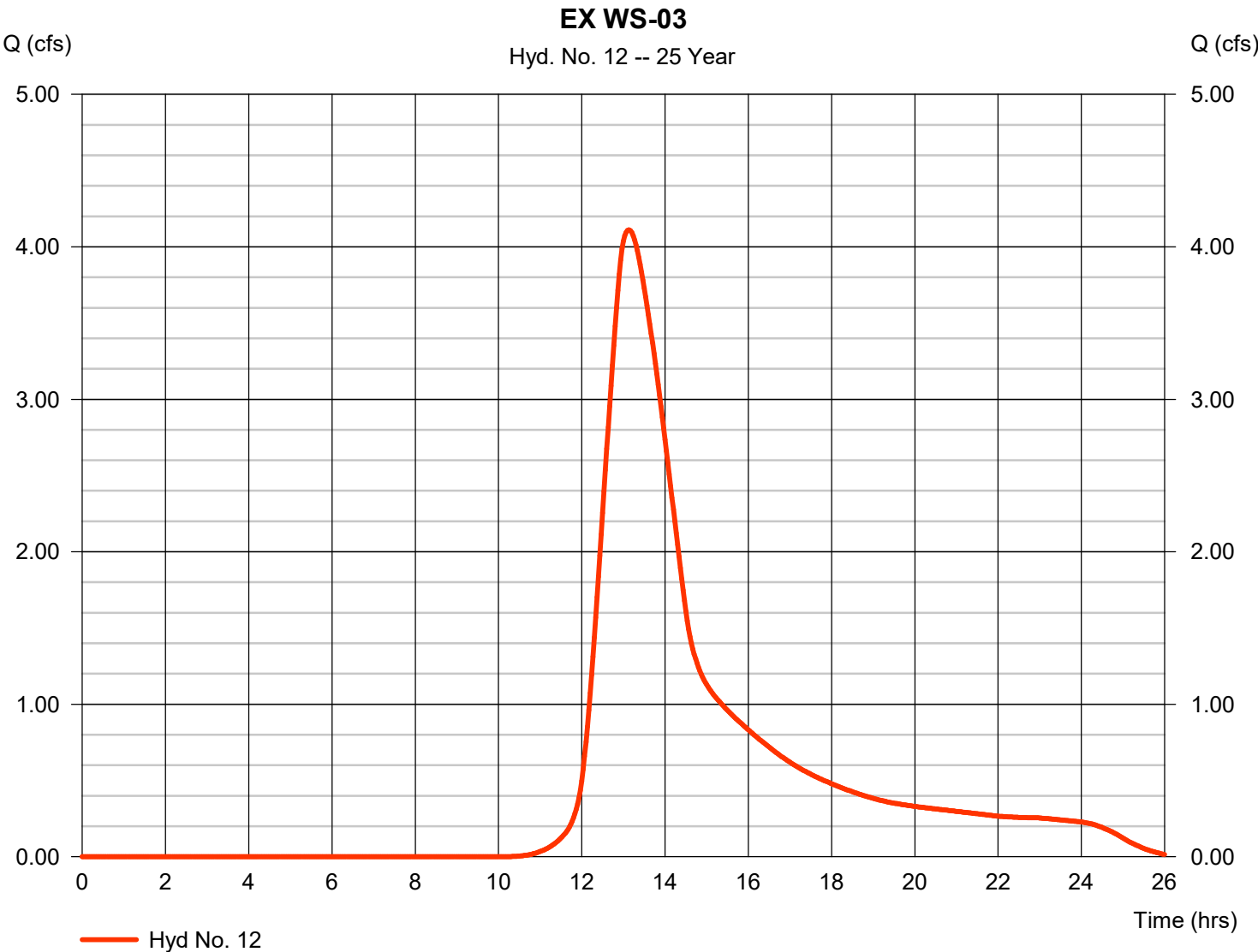
Hydrograph Report

Hyd. No. 13

36 INCH PIPE (#1)

Hydrograph type	= Reservoir	Peak discharge	= 8.034 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 22,921 cuft
Inflow hyd. No.	= 2 - EX WS-02A	Max. Elevation	= 143.74 ft
Reservoir name	= 36IN - 1	Max. Storage	= 1,591 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

36 INCH PIPE (#1)

Hyd. No. 13 -- 25 Year

Q (cfs)

Time (hrs)

Hyd No. 13   Hyd No. 2   Total storage used = 1,591 cuft

Hydrograph Report

　　　　　　　　　　　Thursday, 04 / 4 / 2024

Hyd. No. 14

TWIN 36IN PIPES (#2)

Hydrograph type	= Reservoir		Peak discharge	= 9.452 cfs
Storm frequency	= 25 yrs		Time to peak	= 12.27 hrs
Time interval	= 2 min		Hyd. volume	= 41,926 cuft
Inflow hyd. No.	= 5 - EX WS-02D		Max. Elevation	= 139.13 ft
Reservoir name	= Northern Twin 36IN		Max. Storage	= 3,703 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

TWIN 36IN PIPES (#2)

Hyd. No. 14 -- 25 Year

Hyd No. 14　　　Hyd No. 5　　　Total storage used = 3,703 cuft

Hydrograph Report

Hyd. No. 15

24 INCH PIPE

Hydrograph type	= Reservoir		Peak discharge	= 0.901 cfs
Storm frequency	= 25 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 2,112 cuft
Inflow hyd. No.	= 6 - EX WS-02E		Max. Elevation	= 139.64 ft
Reservoir name	= 24IN		Max. Storage	= 501 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
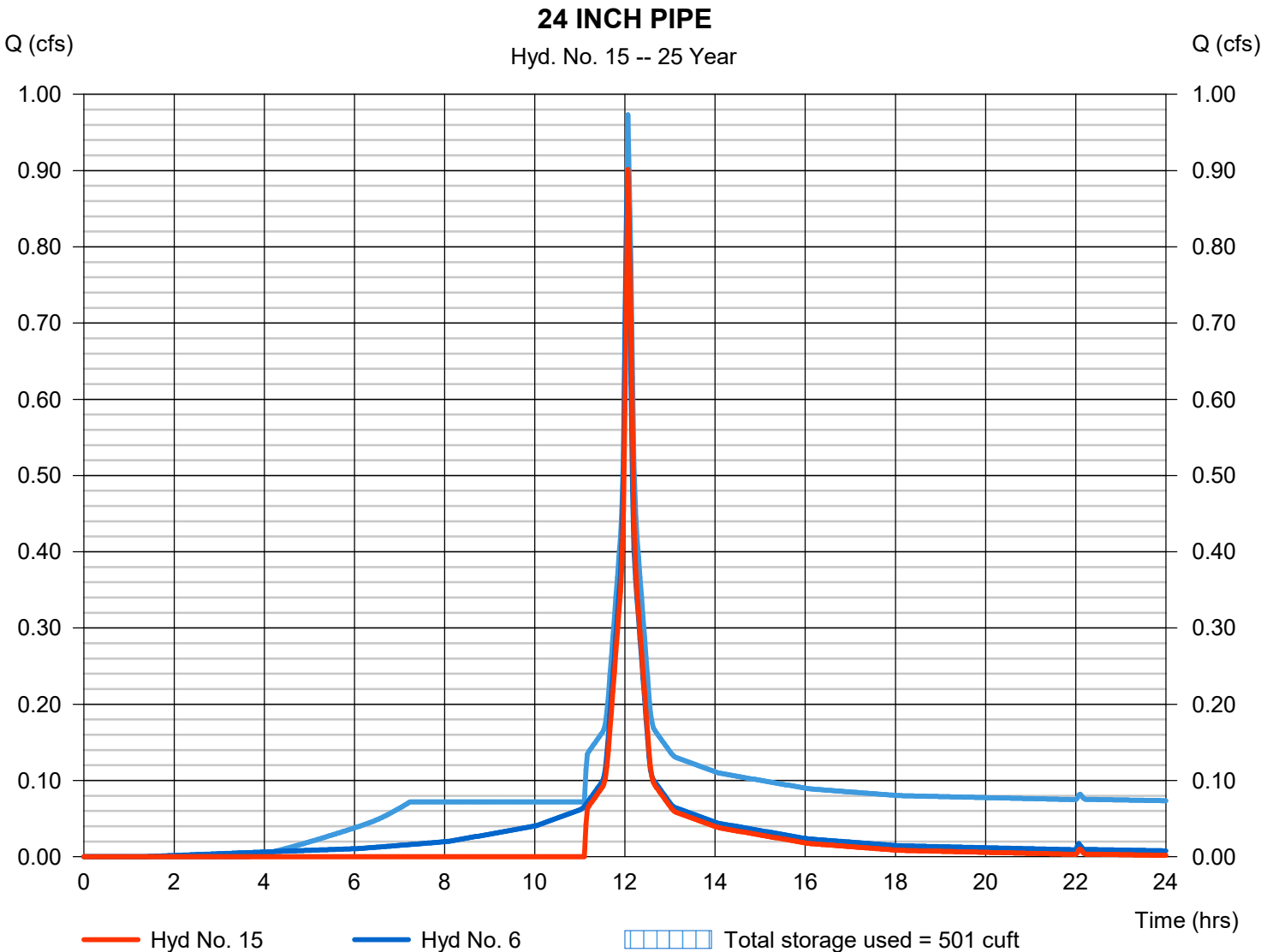
24 INCH PIPE
Hyd. No. 15 -- 25 Year

Hyd No. 15   Hyd No. 6   Total storage used = 501 cuft

Hydrograph Report

Hyd. No. 16

36 INCH PIPE (#2)

Hydrograph type	= Reservoir		Peak discharge	= 5.869 cfs
Storm frequency	= 25 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 15,877 cuft
Inflow hyd. No.	= 7 - EX WS-02F		Max. Elevation	= 139.50 ft
Reservoir name	= 36in - 2		Max. Storage	= 1,321 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
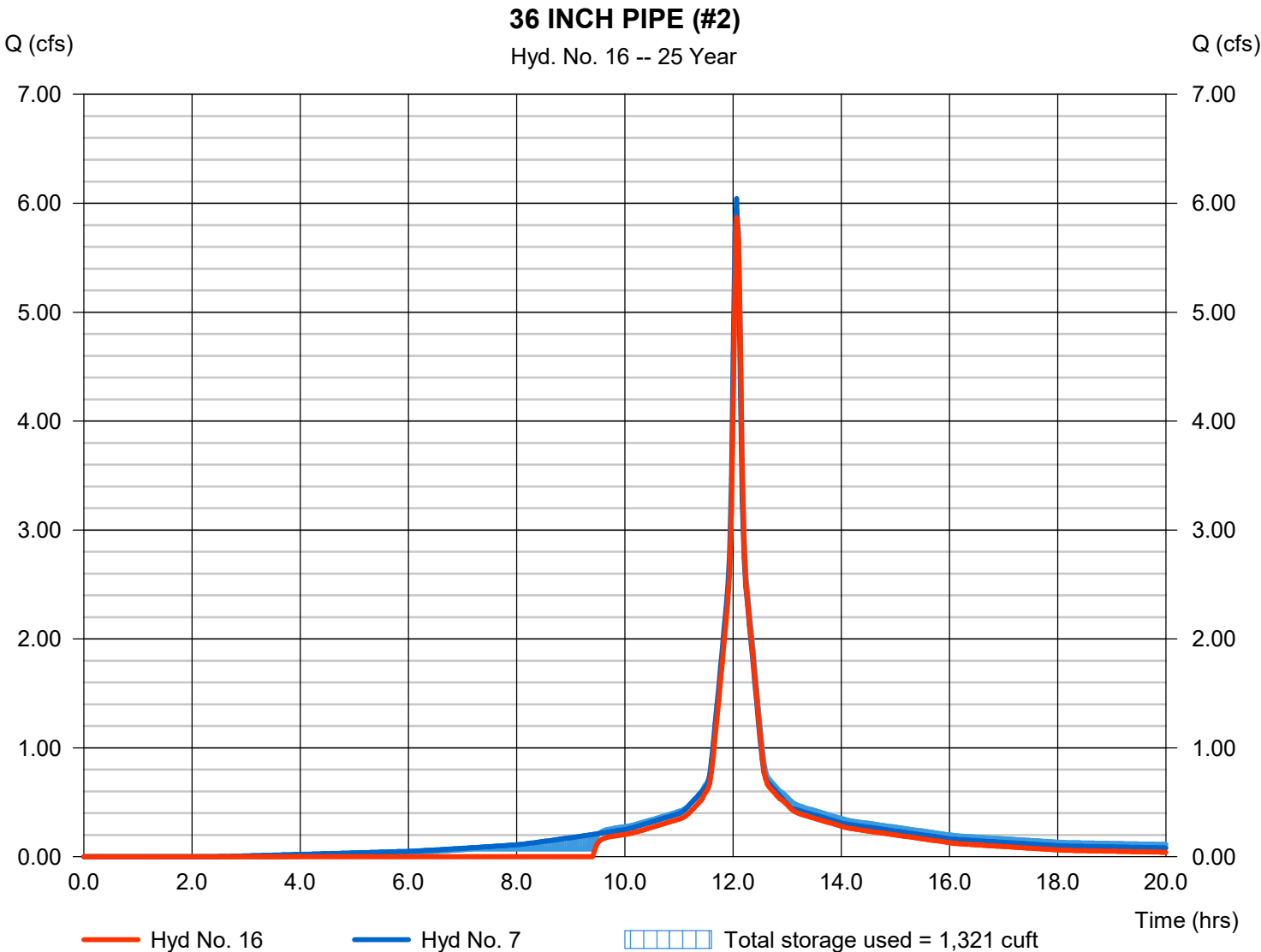
36 INCH PIPE (#2)

Hyd. No. 16 -- 25 Year

Legend: Hyd No. 16 — Hyd No. 7 — Total storage used = 1,321 cuft

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 17

36 INCH PIPE (#3)

Hydrograph type	= Reservoir		Peak discharge	= 3.073 cfs
Storm frequency	= 25 yrs		Time to peak	= 12.20 hrs
Time interval	= 2 min		Hyd. volume	= 6,695 cuft
Inflow hyd. No.	= 9 - EX WS-02H		Max. Elevation	= 137.50 ft
Reservoir name	= 36in - 3		Max. Storage	= 3,747 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
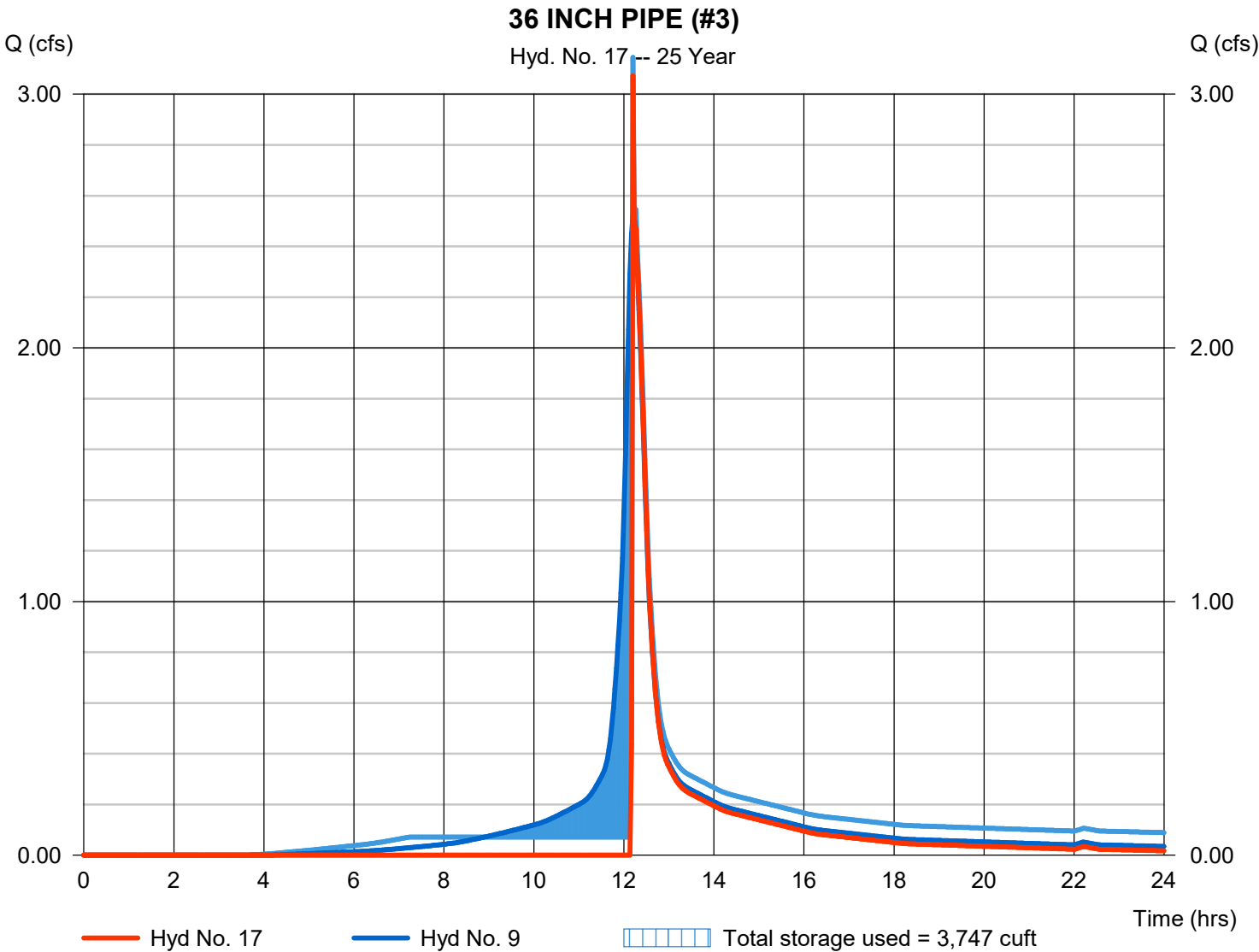
36 INCH PIPE (#3)

Hyd. No. 17 -- 25 Year

Legend: Hyd No. 17 — Hyd No. 9 — Total storage used = 3,747 cuft

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 18

TWO 36 INCH PIPES

Hydrograph type	= Reservoir	Peak discharge	= 5.764 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 20,064 cuft
Inflow hyd. No.	= 10 - EX WS-02I	Max. Elevation	= 135.74 ft
Reservoir name	= TWIN 36IN	Max. Storage	= 2,481 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
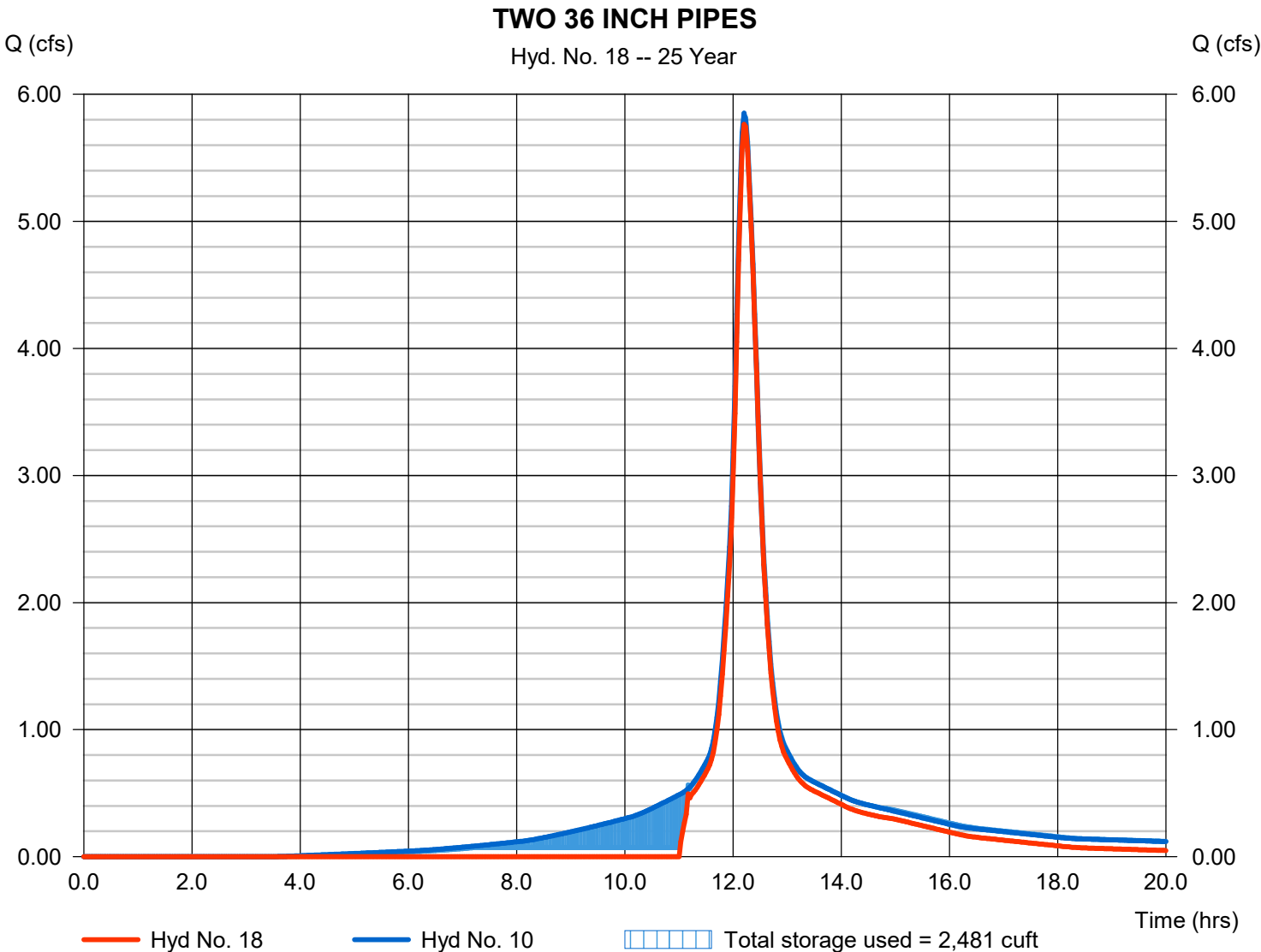
TWO 36 INCH PIPES

Hyd. No. 18 -- 25 Year

Hyd No. 18   Hyd No. 10   Total storage used = 2,481 cuft

Hydrograph Report

Hyd. No. 19

<no description>

Hydrograph type	= Combine	Peak discharge	= 18.63 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 82,102 cuft
Inflow hyds.	= 3, 4, 13, 14, 15	Contrib. drain. area	= 0.776 ac

<no description>

Hyd. No. 19 -- 25 Year

Legend: Hyd No. 19, Hyd No. 3, Hyd No. 4, Hyd No. 13, Hyd No. 14, Hyd No. 15

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 20

<no description>
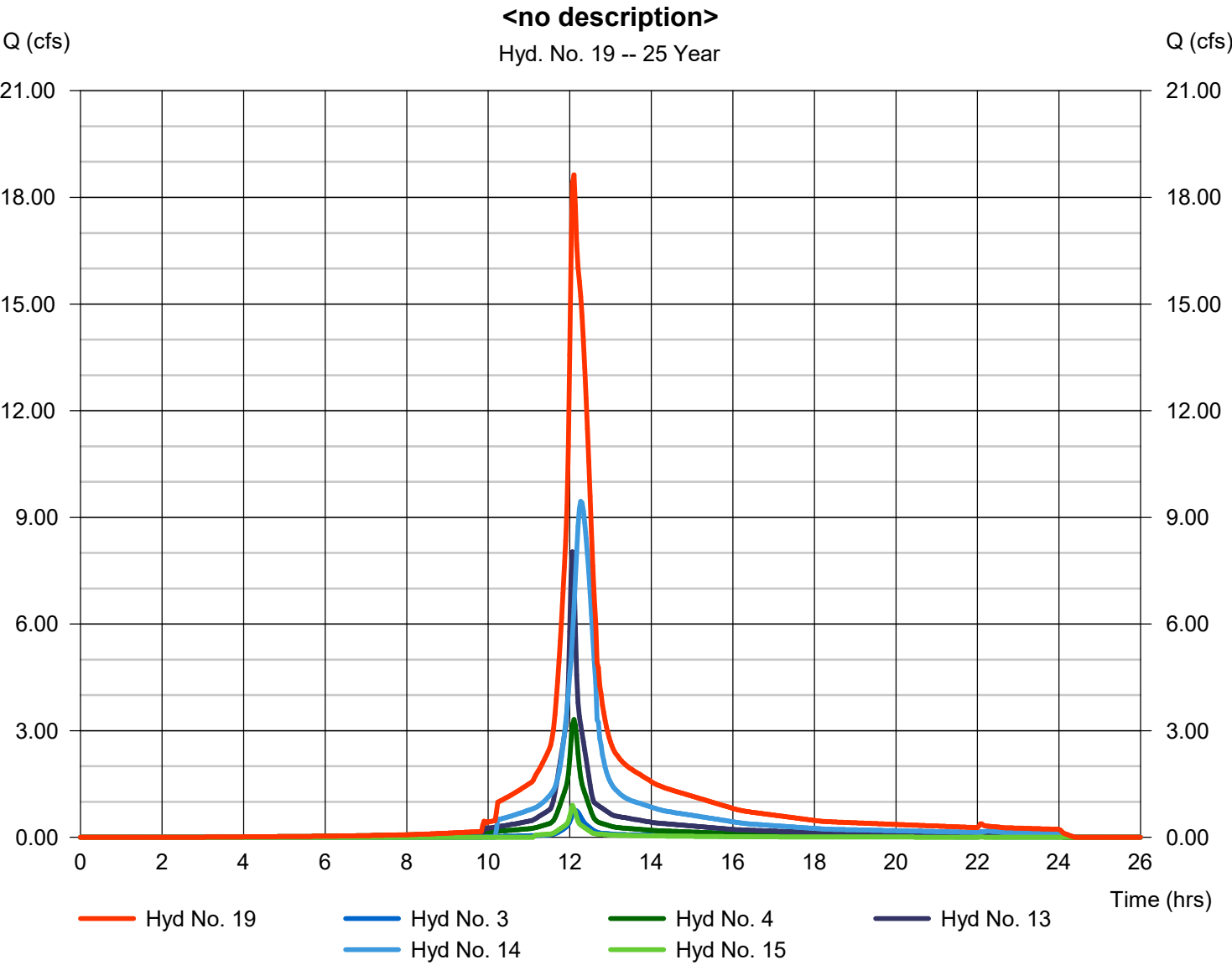
Hydrograph type	= Combine	Peak discharge	= 14.87 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 99,494 cuft
Inflow hyds.	= 8, 11, 12, 16, 17, 18	Contrib. drain. area	= 5.532 ac

<no description>
Hyd. No. 20 -- 25 Year

Hydrograph Report

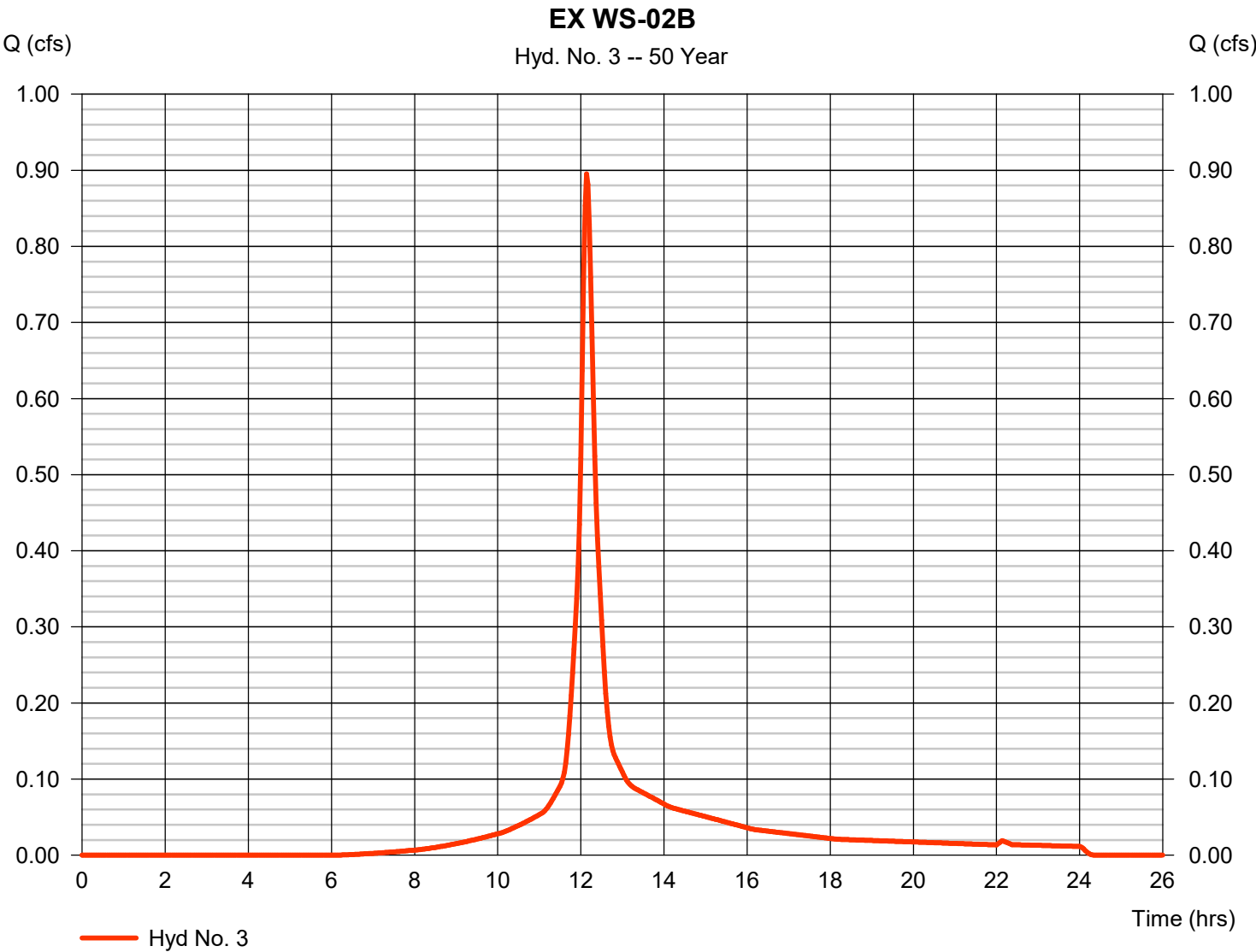Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021   Thursday, 04 / 4 / 2024
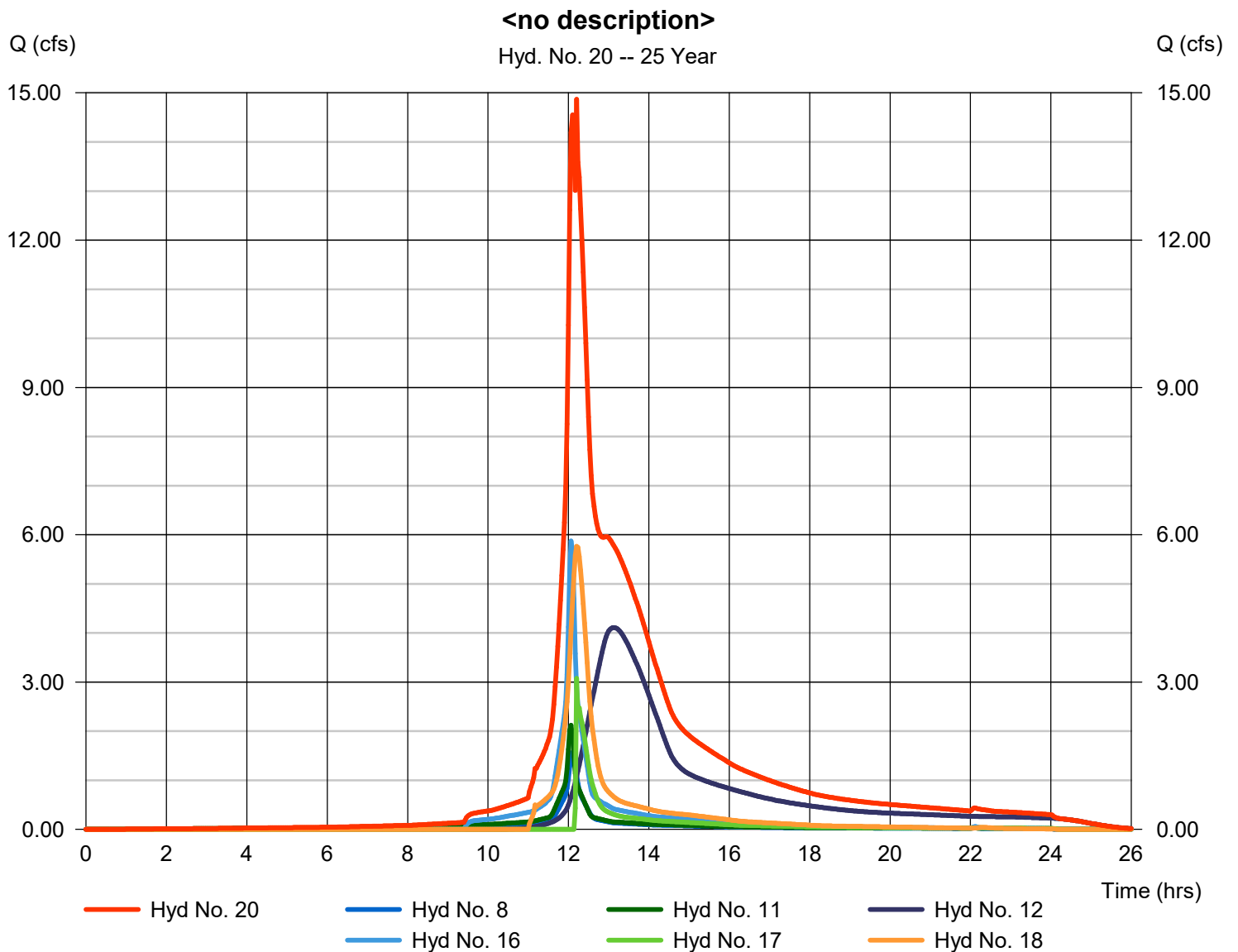
Hyd. No. 21

Design Point B

Hydrograph type	= Combine	Peak discharge	= 33.18 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 181,596 cuft
Inflow hyds.	= 19, 20	Contrib. drain. area	= 0.000 ac
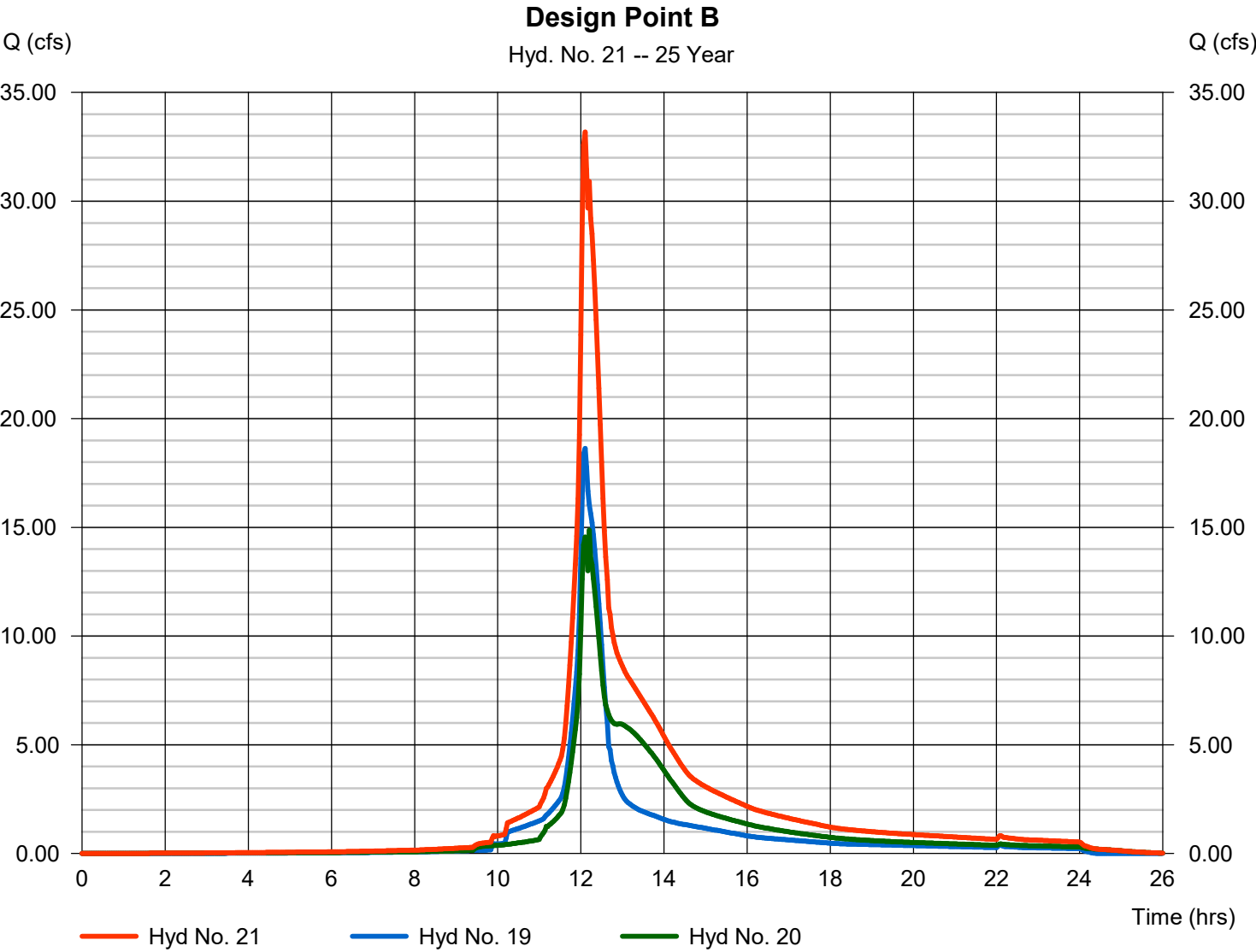
Design Point B

Hyd. No. 21 -- 25 Year

Legend: Hyd No. 21, Hyd No. 19, Hyd No. 20

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

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	7.378	2	752	48,110	------	------	------	EX WS-01
2	SCS Runoff	9.296	2	724	29,137	------	------	------	EX WS-02A
3	SCS Runoff	0.895	2	728	3,454	------	------	------	EX WS-02B
4	SCS Runoff	3.785	2	726	14,087	------	------	------	EX WS-02C
5	SCS Runoff	11.05	2	734	54,511	------	------	------	EX WS-02D
6	SCS Runoff	1.015	2	724	3,444	------	------	------	EX WS-02E
7	SCS Runoff	6.897	2	724	22,653	------	------	------	EX WS-02F
8	SCS Runoff	1.793	2	726	6,613	------	------	------	EX WS-02G
9	SCS Runoff	2.913	2	732	13,399	------	------	------	EX WS-02H
10	SCS Runoff	6.727	2	732	31,344	------	------	------	EX WS-02I
11	SCS Runoff	2.404	2	724	8,370	------	------	------	EX WS-02J
12	SCS Runoff	5.256	2	786	55,086	------	------	------	EX WS-03
13	Reservoir	8.911	2	724	27,074	2	143.83	1,636	36 INCH PIPE (#1)
14	Reservoir	10.93	2	736	49,562	5	139.16	3,851	TWIN 36IN PIPES (#2)
15	Reservoir	1.040	2	724	2,535	6	139.65	503	24 INCH PIPE
16	Reservoir	6.709	2	724	18,771	7	139.53	1,368	36 INCH PIPE (#2)
17	Reservoir	2.890	2	732	8,550	9	137.50	3,741	36 INCH PIPE (#3)
18	Reservoir	6.644	2	732	24,209	10	135.75	2,499	TWO 36 INCH PIPES
19	Combine	21.92	2	726	96,711	3, 4, 13, 14, 15,	------	------	<no description>
20	Combine	18.82	2	726	121,599	8, 11, 12, 16, 17, 18,	------	------	<no description>
21	Combine	40.73	2	726	218,310	19, 20	------	------	Design Point B

Existing-Hydraflow.gpw	Return Period: 50 Year	Thursday, 04 / 4 / 2024

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 1

EX WS-01

Hydrograph type	= SCS Runoff		Peak discharge	= 7.378 cfs
Storm frequency	= 50 yrs		Time to peak	= 12.53 hrs
Time interval	= 2 min		Hyd. volume	= 48,110 cuft
Drainage area	= 3.677 ac		Curve number	= 67
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 45.70 min
Total precip.	= 7.41 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

EX WS-01

Hyd. No. 1 -- 50 Year
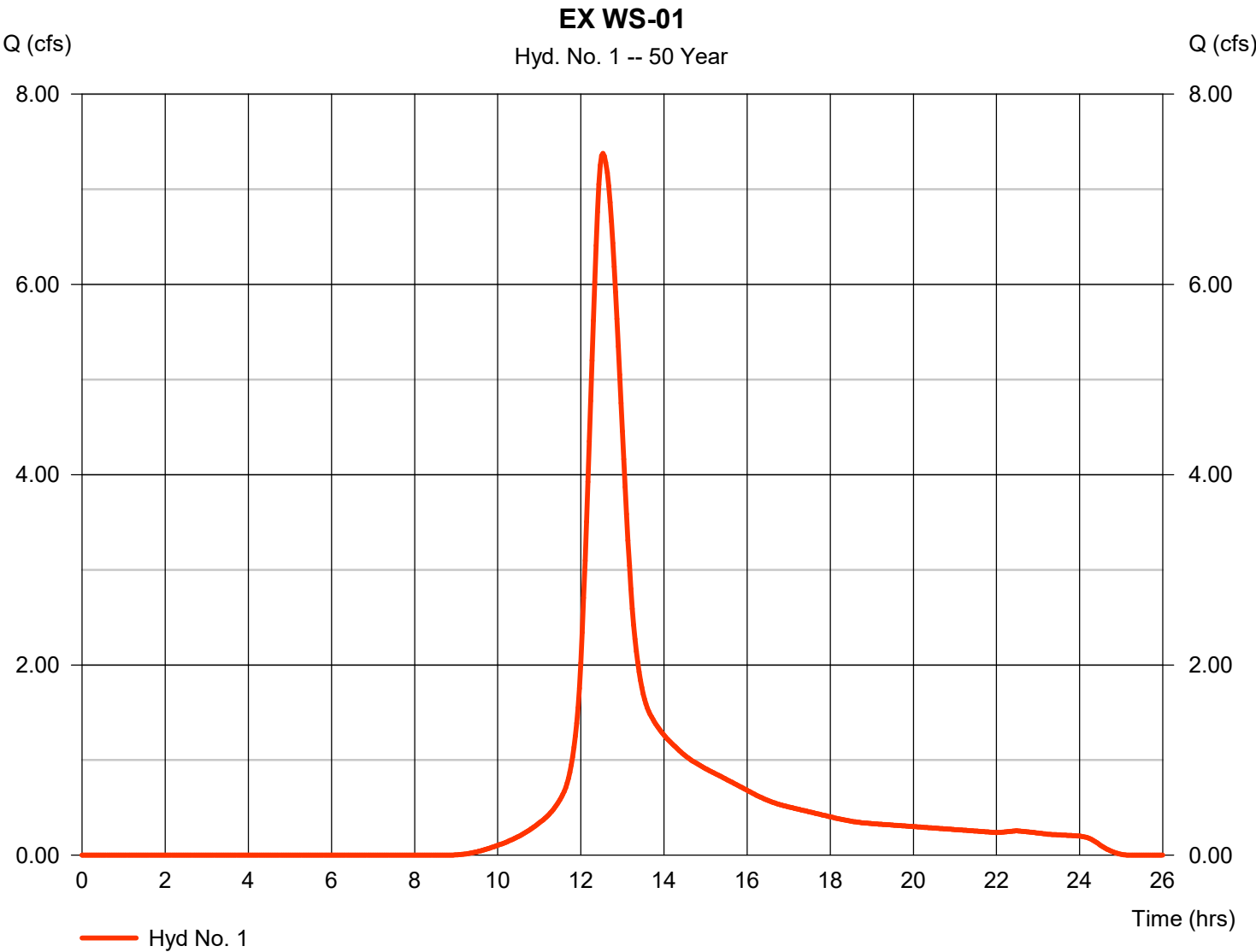
Hyd No. 1

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 2

EX WS-02A

Hydrograph type	= SCS Runoff		Peak discharge	= 9.296 cfs
Storm frequency	= 50 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 29,137 cuft
Drainage area	= 1.457 ac		Curve number	= 87
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.41 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484
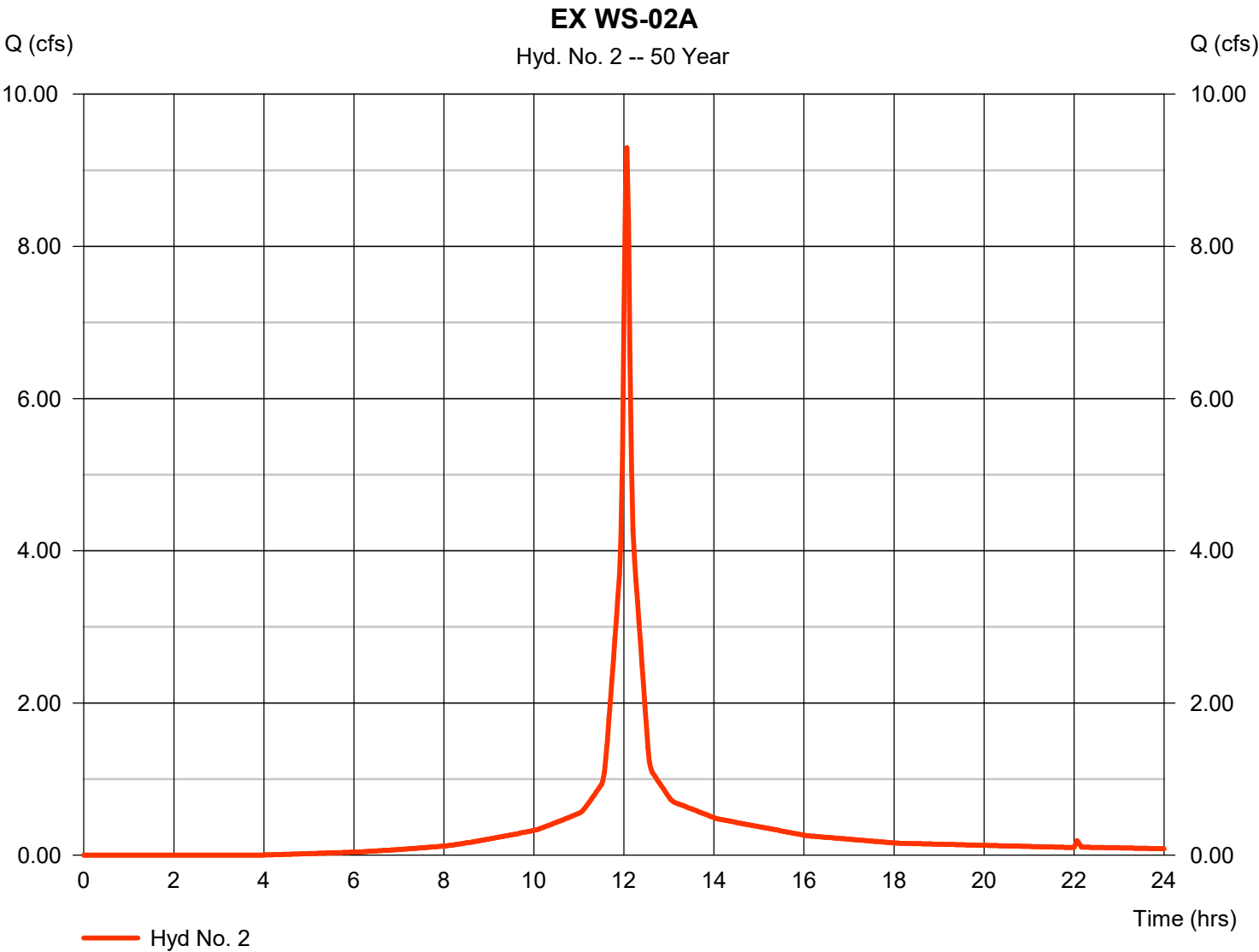
EX WS-02A
Hyd. No. 2 -- 50 Year

Hydrograph Report

Hyd. No. 3

EX WS-02B

Hydrograph type	= SCS Runoff		Peak discharge	= 0.895 cfs
Storm frequency	= 50 yrs		Time to peak	= 12.13 hrs
Time interval	= 2 min		Hyd. volume	= 3,454 cuft
Drainage area	= 0.186 ac		Curve number	= 79
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 11.00 min
Total precip.	= 7.41 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

EX WS-02B

Hyd. No. 3 -- 50 Year

Hyd No. 3

Hydrograph Report

Hyd. No. 4

EX WS-02C

Hydrograph type	= SCS Runoff	Peak discharge	= 3.785 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 14,087 cuft
Drainage area	= 0.590 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 9.40 min
Total precip.	= 7.41 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

EX WS-02C

Hyd. No. 4 -- 50 Year

─── Hyd No. 4

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 5

EX WS-02D

Hydrograph type	= SCS Runoff		Peak discharge	= 11.05 cfs
Storm frequency	= 50 yrs		Time to peak	= 12.23 hrs
Time interval	= 2 min		Hyd. volume	= 54,511 cuft
Drainage area	= 2.462 ac		Curve number	= 88
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 22.10 min
Total precip.	= 7.41 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

EX WS-02D
Hyd. No. 5 -- 50 Year

Hyd No. 5

Hydrograph Report

Hyd. No. 6

EX WS-02E

Hydrograph type	= SCS Runoff	Peak discharge	= 1.015 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 3,444 cuft
Drainage area	= 0.146 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.41 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

EX WS-02E

Hyd. No. 6 -- 50 Year
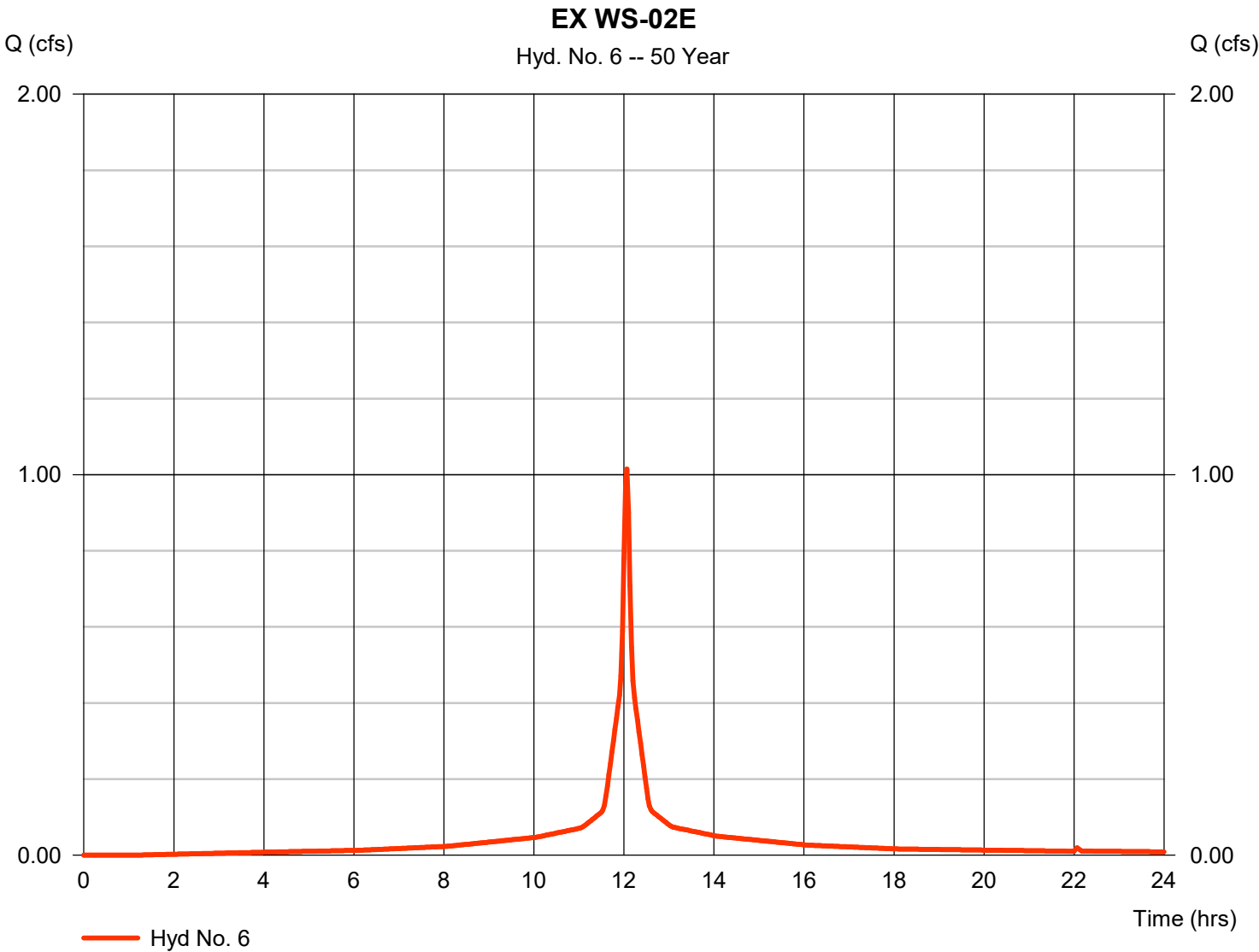
Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 7

EX WS-02F

Hydrograph type	= SCS Runoff	Peak discharge	= 6.897 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 22,653 cuft
Drainage area	= 1.012 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.50 min
Total precip.	= 7.41 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

EX WS-02F

Hyd. No. 7 -- 50 Year
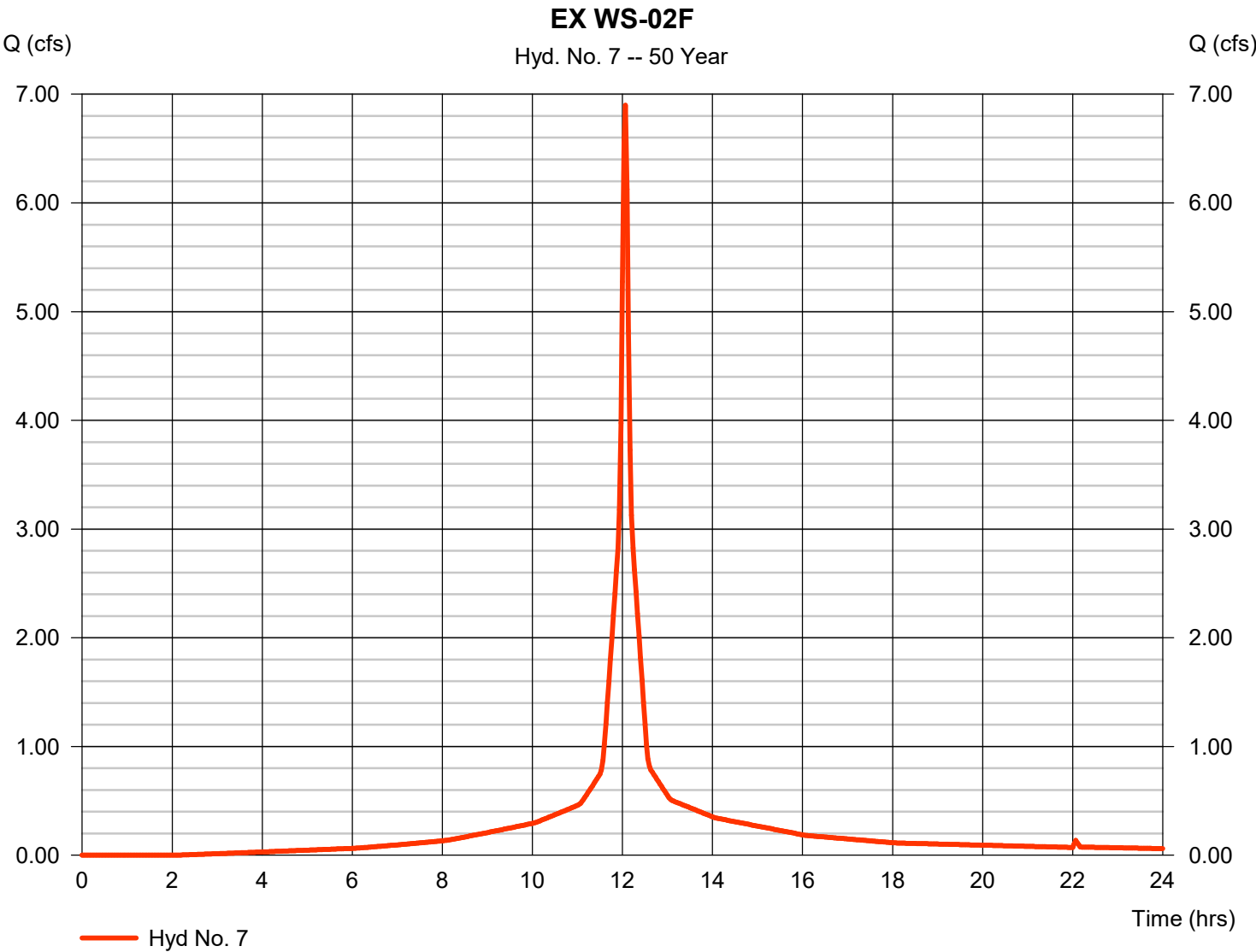
--- Hyd No. 7

Hydrograph Report

Hyd. No. 8

EX WS-02G

Hydrograph type	= SCS Runoff	Peak discharge	= 1.793 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 6,613 cuft
Drainage area	= 0.282 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.90 min
Total precip.	= 7.41 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

EX WS-02G

Hyd. No. 8 -- 50 Year
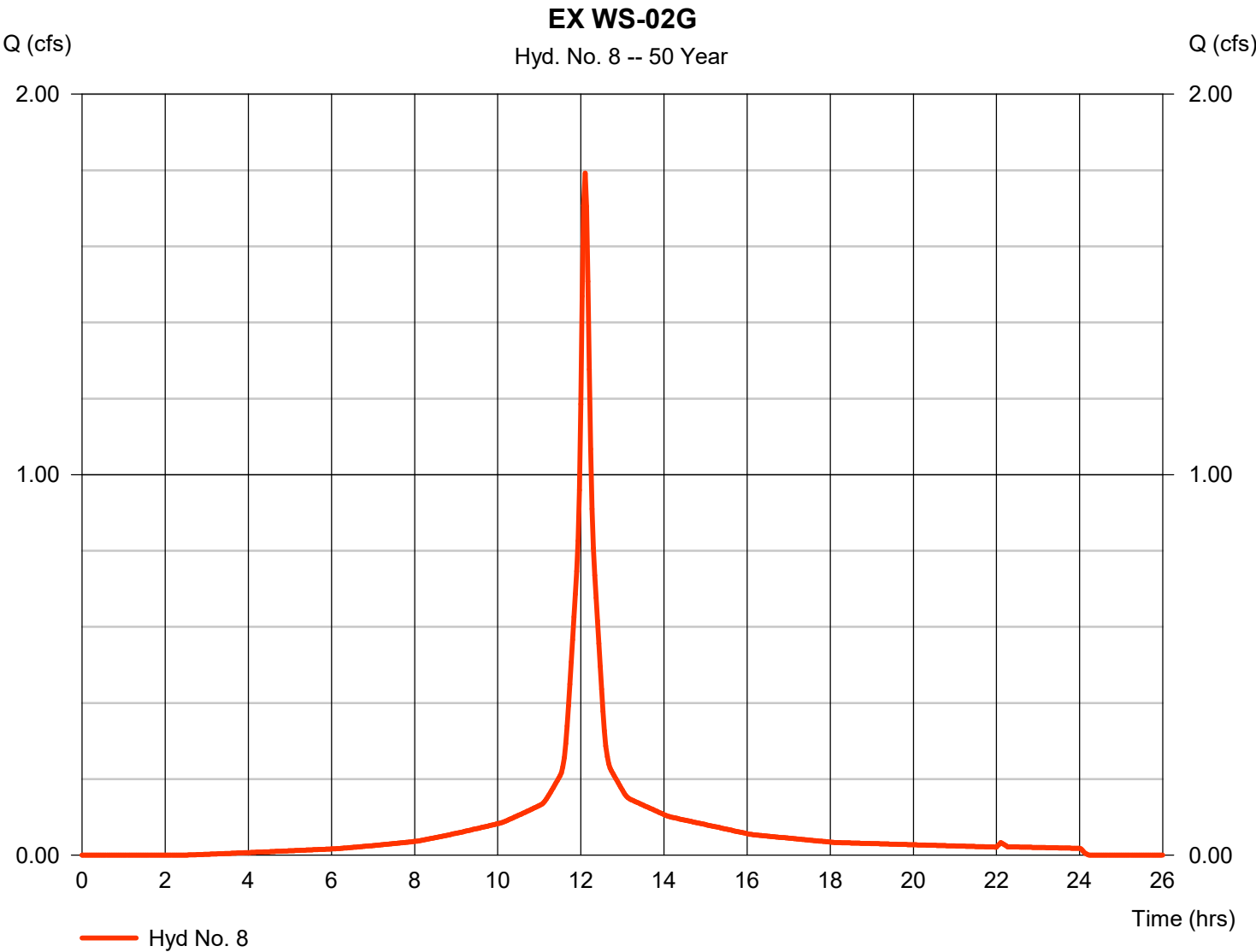
Hyd No. 8

Hydrograph Report

Hyd. No. 9

EX WS-02H

Hydrograph type	= SCS Runoff		Peak discharge	= 2.913 cfs
Storm frequency	= 50 yrs		Time to peak	= 12.20 hrs
Time interval	= 2 min		Hyd. volume	= 13,399 cuft
Drainage area	= 0.616 ac		Curve number	= 88
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 17.30 min
Total precip.	= 7.41 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

EX WS-02H

Hyd. No. 9 -- 50 Year

Legend: — Hyd No. 9
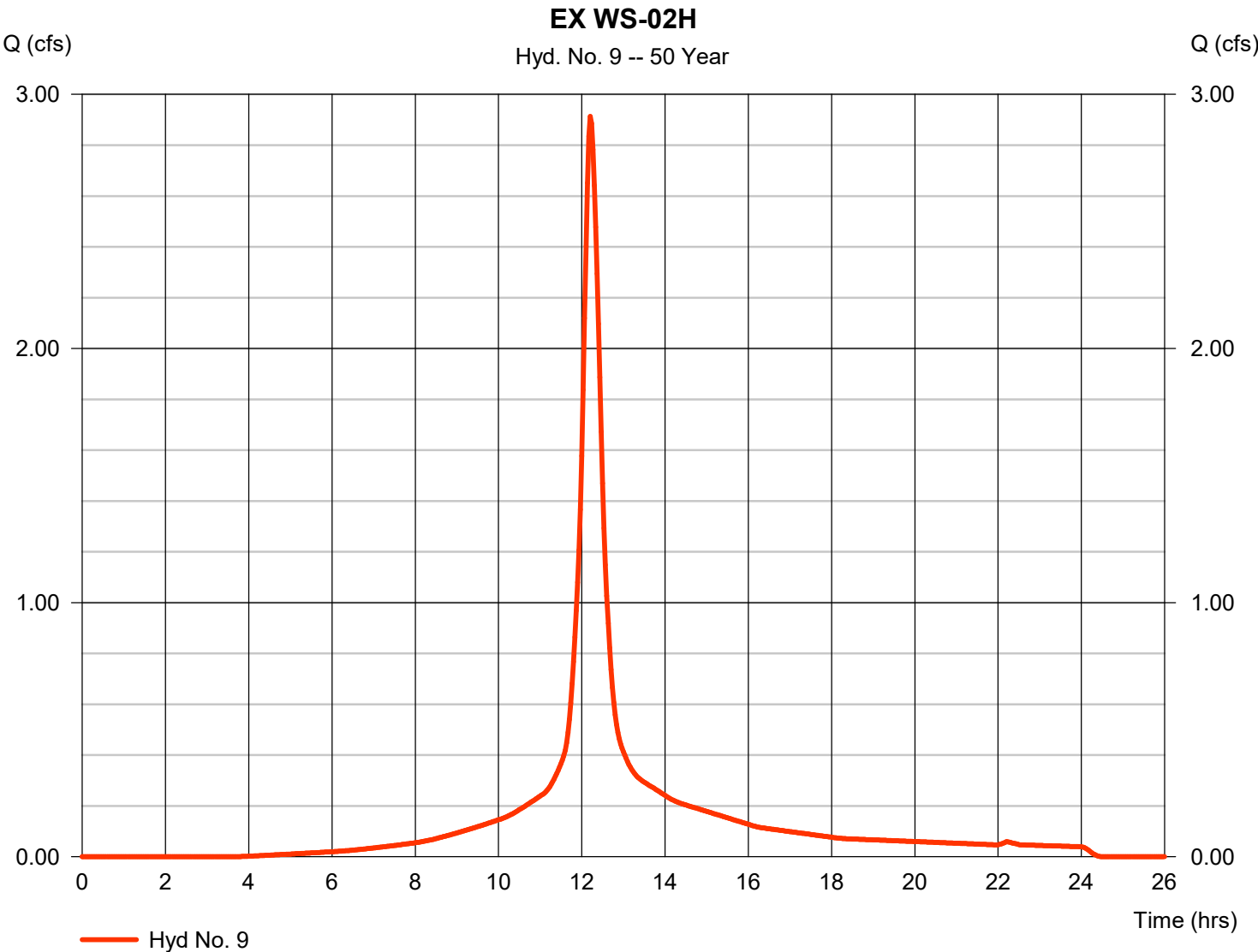
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021   Thursday, 04 / 4 / 2024

Hyd. No. 10

EX WS-02I

Hydrograph type	= SCS Runoff		Peak discharge	= 6.727 cfs
Storm frequency	= 50 yrs		Time to peak	= 12.20 hrs
Time interval	= 2 min		Hyd. volume	= 31,344 cuft
Drainage area	= 1.387 ac		Curve number	= 90
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 18.60 min
Total precip.	= 7.41 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

EX WS-02I

Hyd. No. 10 -- 50 Year

Hydrograph Report

　　　　　　　　　Thursday, 04 / 4 / 2024
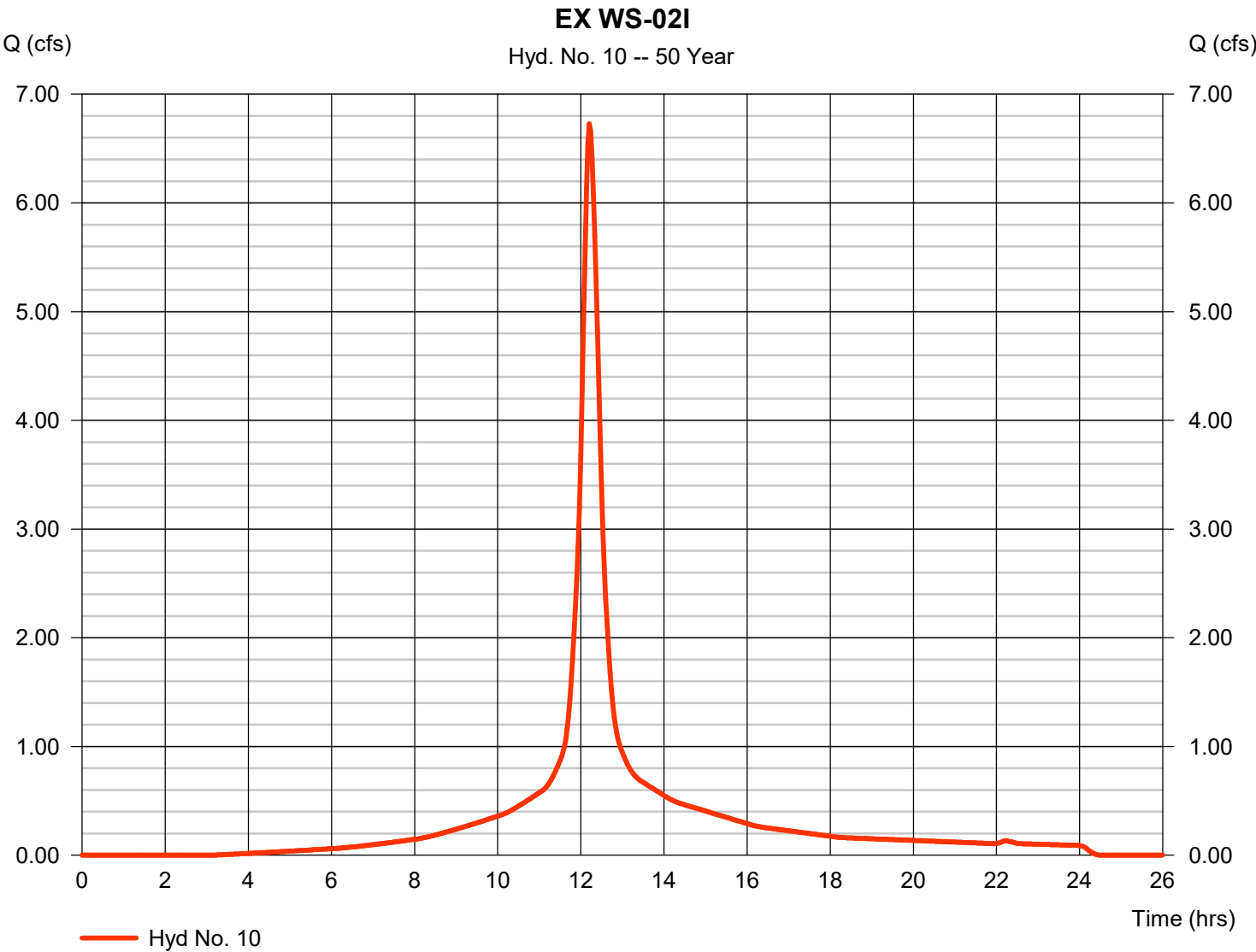
Hyd. No. 11

EX WS-02J

Hydrograph type	= SCS Runoff		Peak discharge	= 2.404 cfs
Storm frequency	= 50 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 8,370 cuft
Drainage area	= 0.343 ac		Curve number	= 98
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.41 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

EX WS-02J

Hyd. No. 11 -- 50 Year
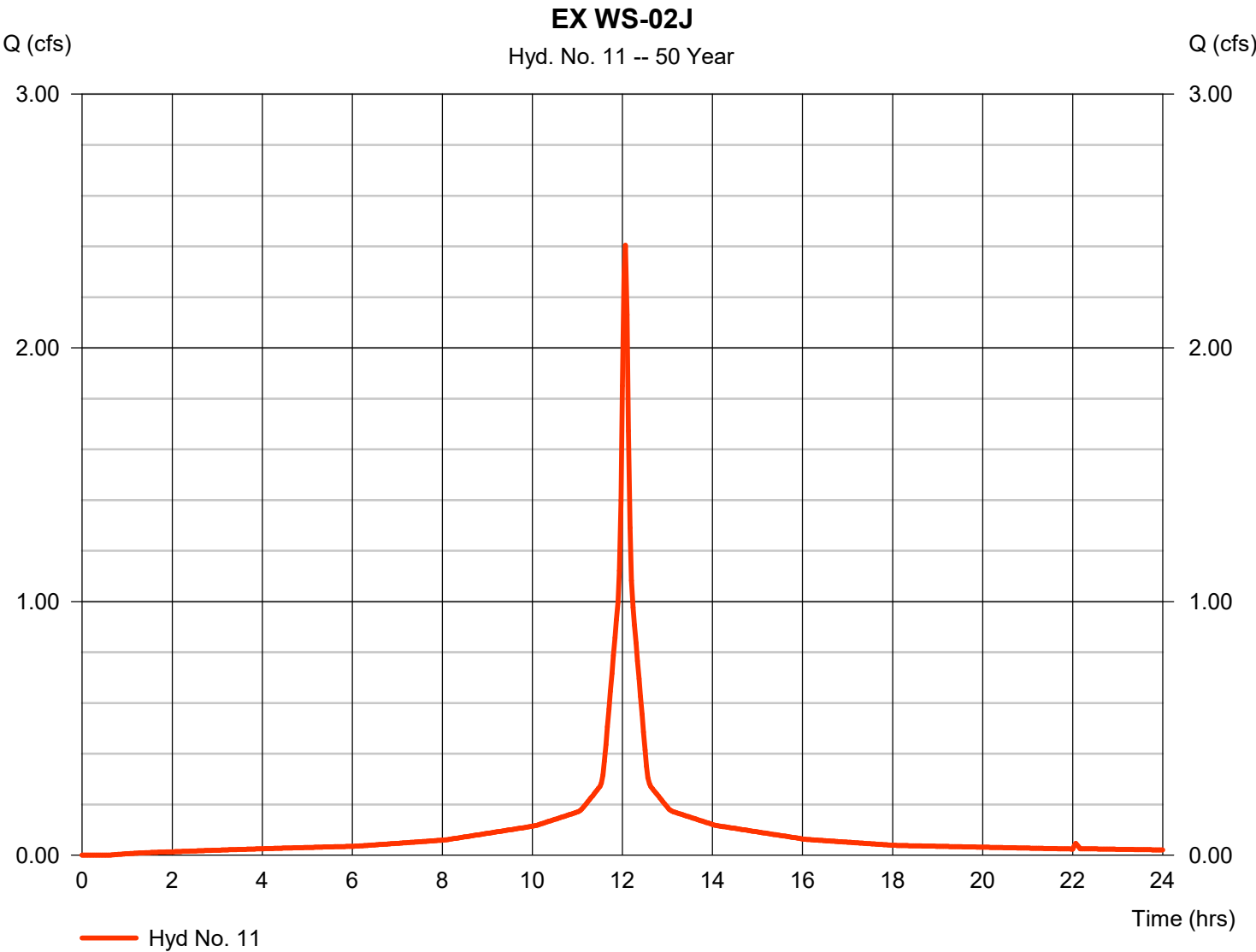
Hyd No. 11

Hydrograph Report

Hyd. No. 12

EX WS-03

Hydrograph type	= SCS Runoff		Peak discharge	= 5.256 cfs
Storm frequency	= 50 yrs		Time to peak	= 13.10 hrs
Time interval	= 2 min		Hyd. volume	= 55,086 cuft
Drainage area	= 4.907 ac		Curve number	= 62
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 95.00 min
Total precip.	= 7.41 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

EX WS-03

Hyd. No. 12 -- 50 Year

Q (cfs)

Q (cfs)

Time (hrs)
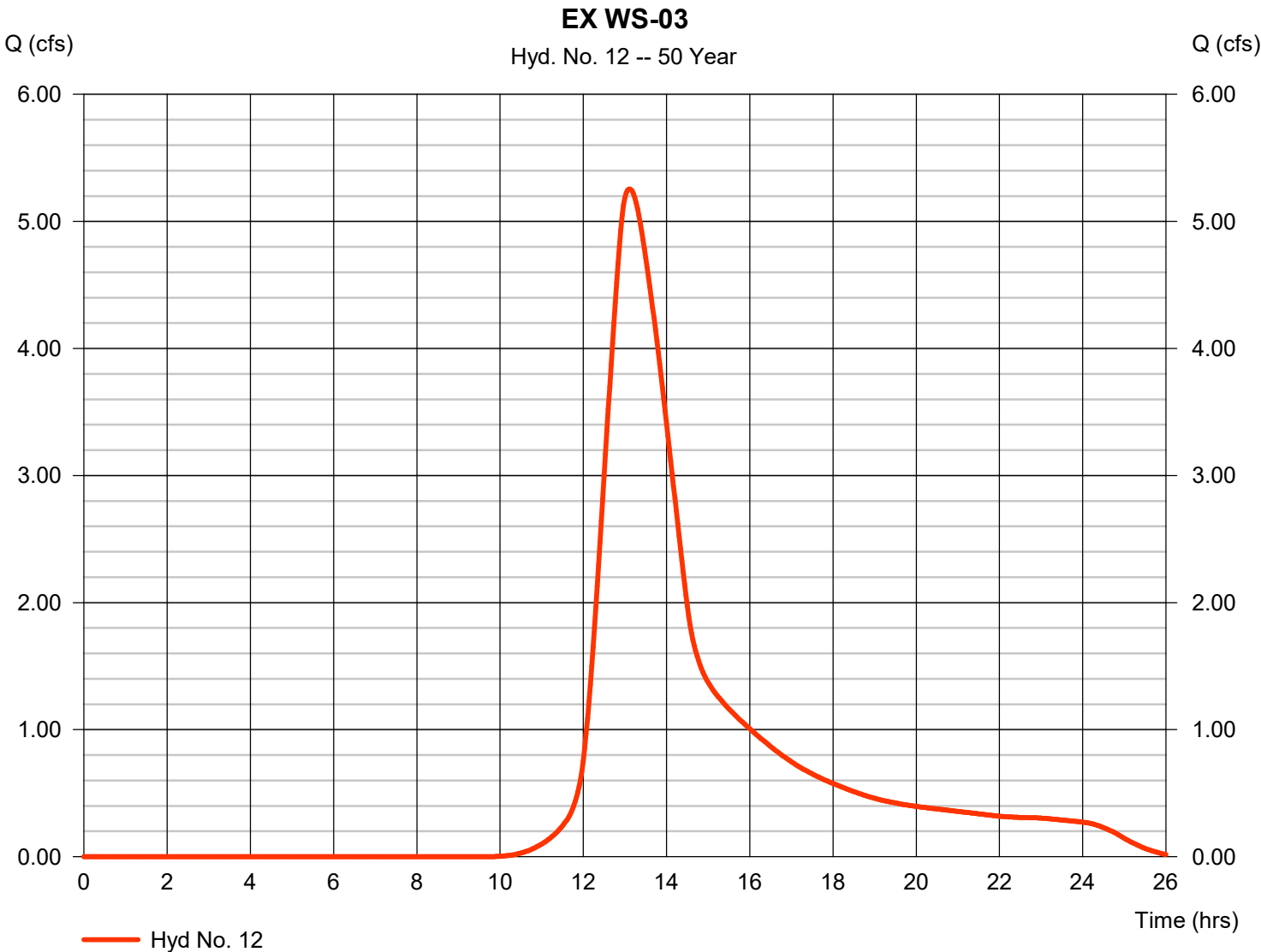
— Hyd No. 12

Hydrograph Report

Hyd. No. 13

36 INCH PIPE (#1)

Hydrograph type	= Reservoir		Peak discharge	= 8.911 cfs
Storm frequency	= 50 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 27,074 cuft
Inflow hyd. No.	= 2 - EX WS-02A		Max. Elevation	= 143.83 ft
Reservoir name	= 36IN - 1		Max. Storage	= 1,636 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

36 INCH PIPE (#1)

Hyd. No. 13 -- 50 Year

Hyd No. 13   Hyd No. 2   Total storage used = 1,636 cuft

Hydrograph Report

Hyd. No. 14

TWIN 36IN PIPES (#2)

Hydrograph type	= Reservoir	Peak discharge	= 10.93 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.27 hrs
Time interval	= 2 min	Hyd. volume	= 49,562 cuft
Inflow hyd. No.	= 5 - EX WS-02D	Max. Elevation	= 139.16 ft
Reservoir name	= Northern Twin 36IN	Max. Storage	= 3,851 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

TWIN 36IN PIPES (#2)

Hyd. No. 14 -- 50 Year

Hyd No. 14   Hyd No. 5   Total storage used = 3,851 cuft

Time (hrs)

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 15

24 INCH PIPE

Hydrograph type	= Reservoir	Peak discharge	= 1.040 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 2,535 cuft
Inflow hyd. No.	= 6 - EX WS-02E	Max. Elevation	= 139.65 ft
Reservoir name	= 24IN	Max. Storage	= 503 cuft

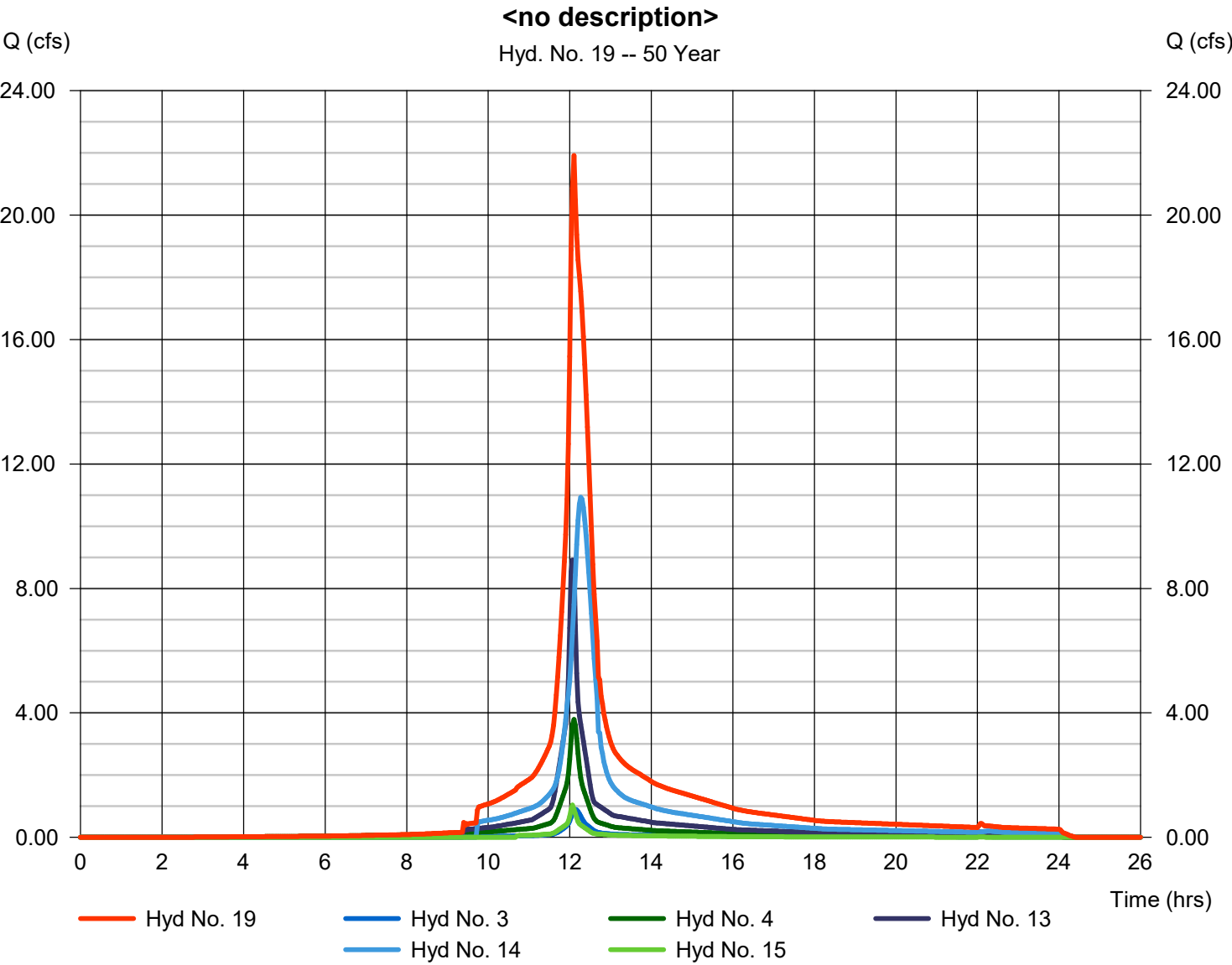Storage Indication method used. Exfiltration extracted from Outflow.
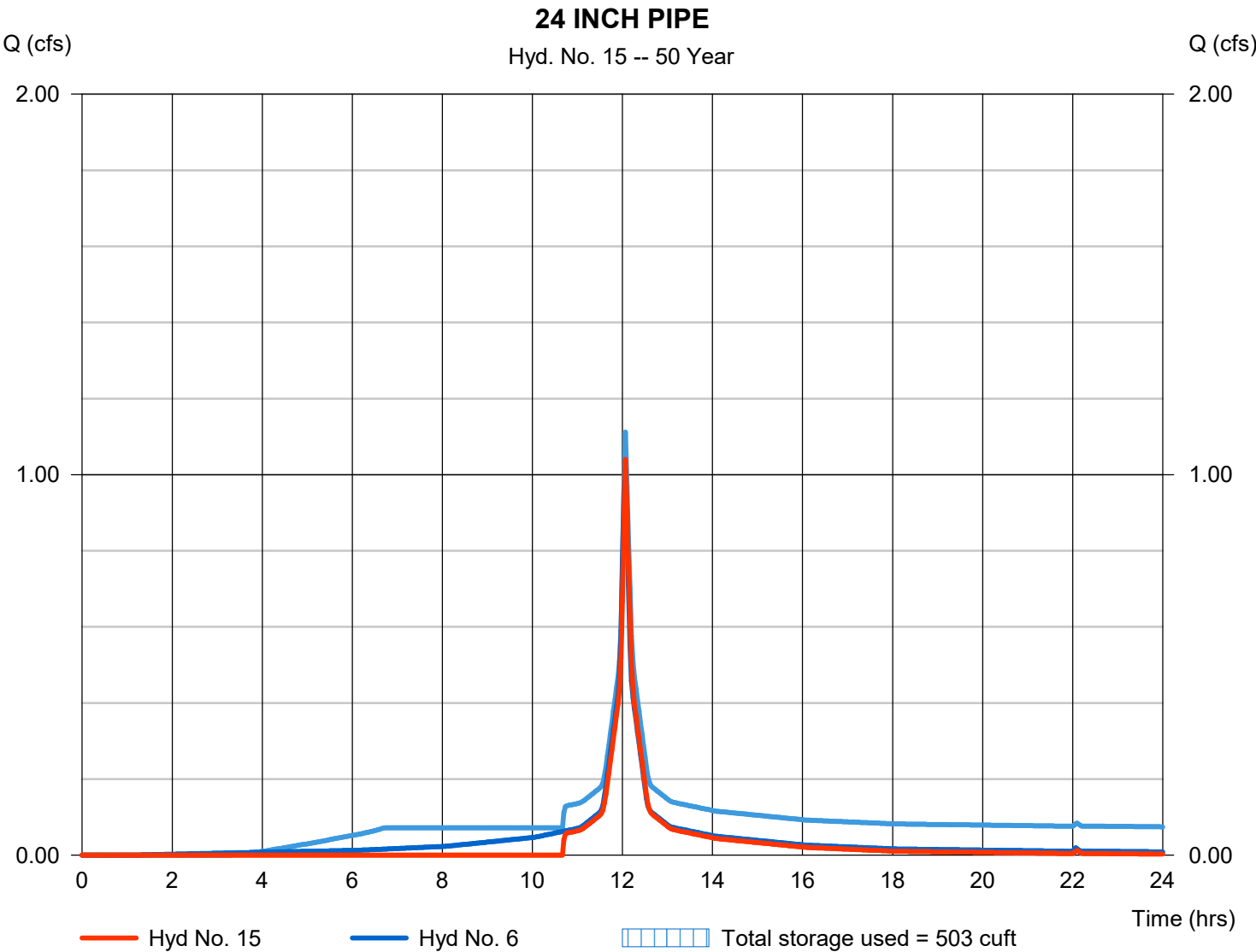
24 INCH PIPE

Hyd. No. 15 -- 50 Year

| Hyd No. 15 | Hyd No. 6 | Total storage used = 503 cuft |

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 16

36 INCH PIPE (#2)

Hydrograph type	= Reservoir	Peak discharge	= 6.709 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 18,771 cuft
Inflow hyd. No.	= 7 - EX WS-02F	Max. Elevation	= 139.53 ft
Reservoir name	= 36in - 2	Max. Storage	= 1,368 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
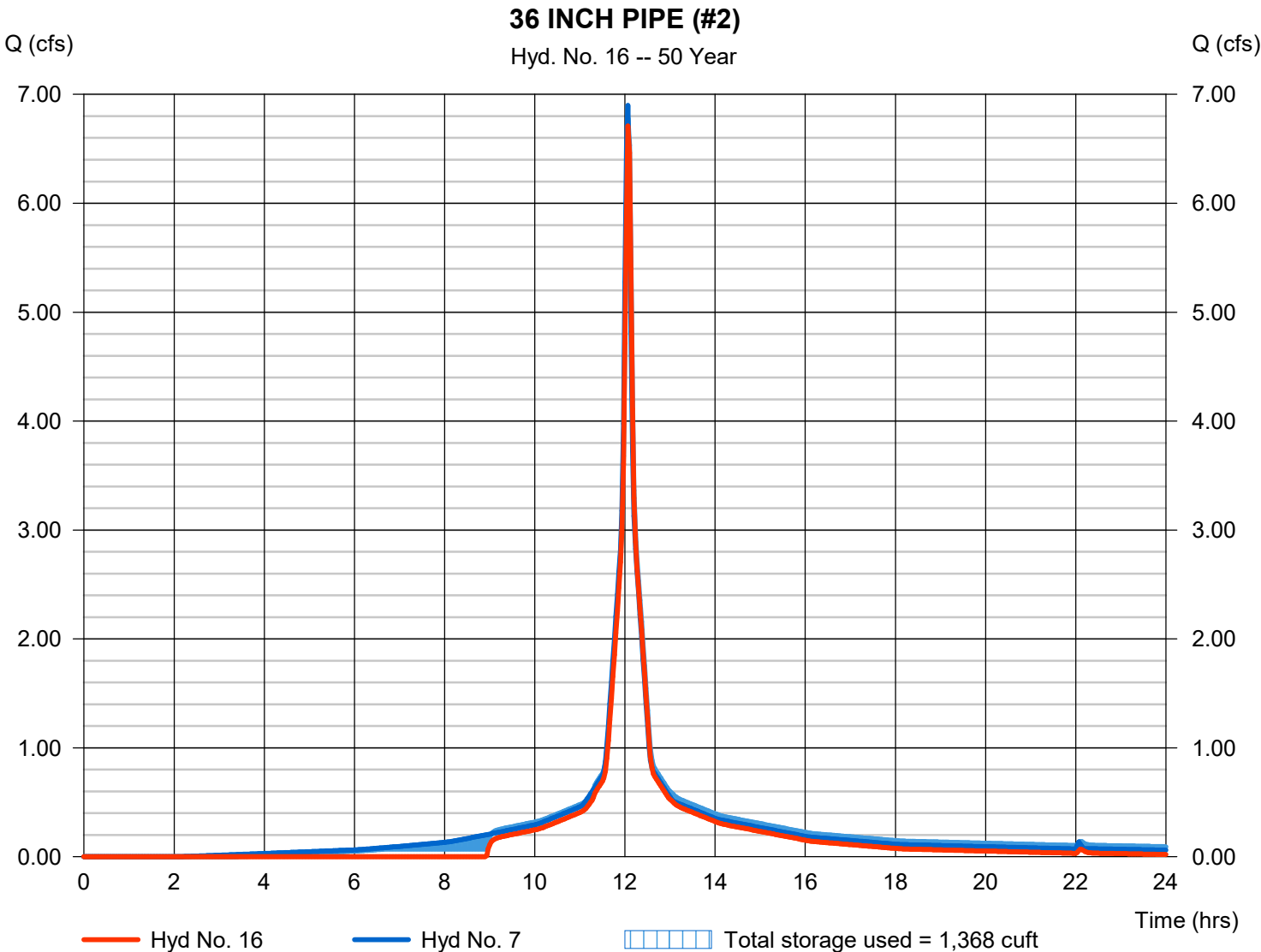
36 INCH PIPE (#2)

Hyd. No. 16 -- 50 Year

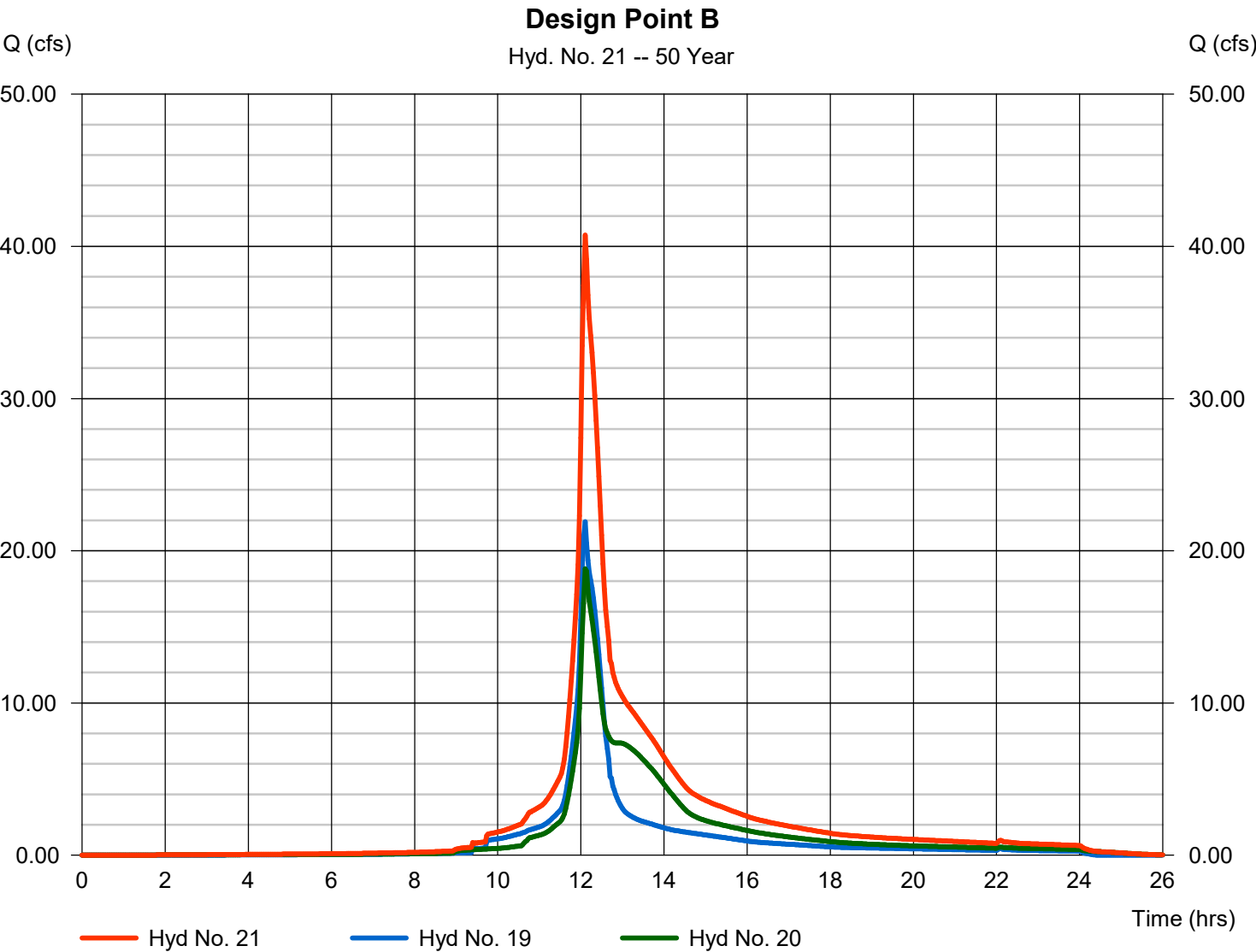Hyd No. 16   Hyd No. 7   Total storage used = 1,368 cuft

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021   Thursday, 04 / 4 / 2024

Hyd. No. 17

36 INCH PIPE (#3)

Hydrograph type	= Reservoir		Peak discharge	= 2.890 cfs
Storm frequency	= 50 yrs		Time to peak	= 12.20 hrs
Time interval	= 2 min		Hyd. volume	= 8,550 cuft
Inflow hyd. No.	= 9 - EX WS-02H		Max. Elevation	= 137.50 ft
Reservoir name	= 36in - 3		Max. Storage	= 3,741 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
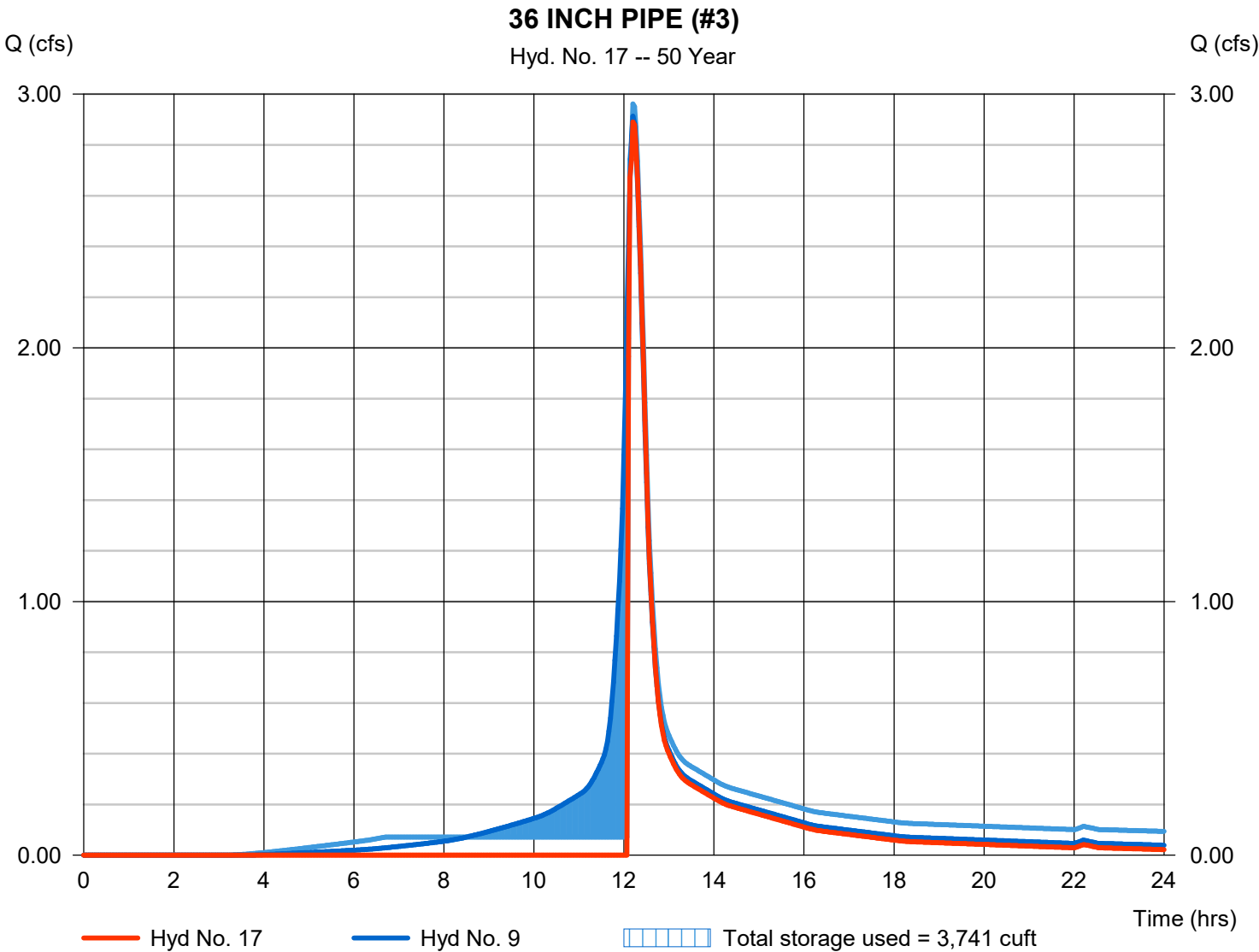
36 INCH PIPE (#3)

Hyd. No. 17 -- 50 Year

Legend: ── Hyd No. 17   ── Hyd No. 9   Total storage used = 3,741 cuft

Hydrograph Report

Hyd. No. 18

TWO 36 INCH PIPES

Hydrograph type	= Reservoir		Peak discharge	= 6.644 cfs
Storm frequency	= 50 yrs		Time to peak	= 12.20 hrs
Time interval	= 2 min		Hyd. volume	= 24,209 cuft
Inflow hyd. No.	= 10 - EX WS-02I		Max. Elevation	= 135.75 ft
Reservoir name	= TWIN 36IN		Max. Storage	= 2,499 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

TWO 36 INCH PIPES

Hyd. No. 18 -- 50 Year

Hyd No. 18   Hyd No. 10   Total storage used = 2,499 cuft

Hydrograph Report

Hyd. No. 19

<no description>
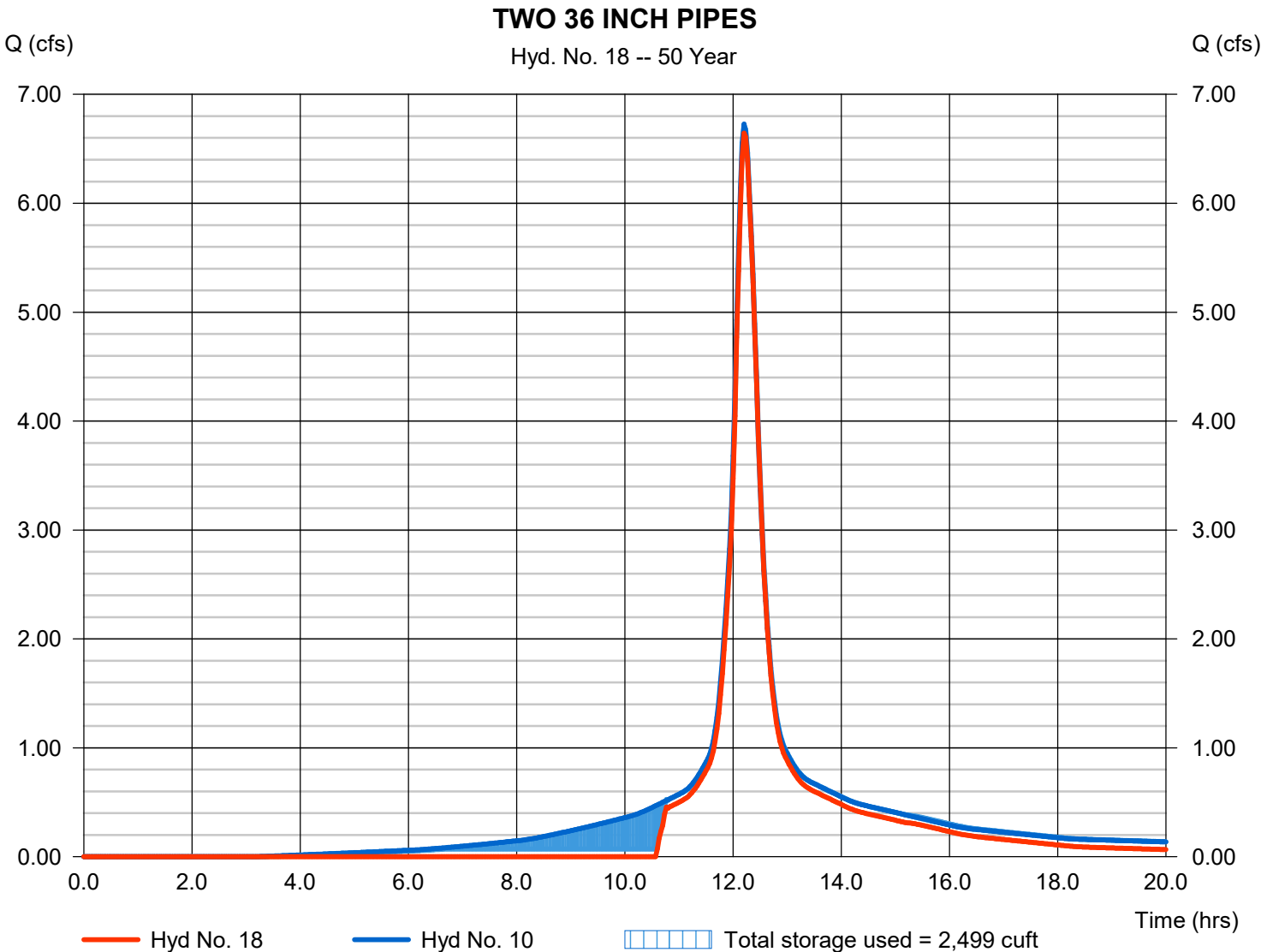
Hydrograph type	= Combine	Peak discharge	= 21.92 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 96,711 cuft
Inflow hyds.	= 3, 4, 13, 14, 15	Contrib. drain. area	= 0.776 ac

<no description>

Hyd. No. 19 -- 50 Year

Hyd No. 19   Hyd No. 3   Hyd No. 4   Hyd No. 13   Hyd No. 14   Hyd No. 15

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 20

<no description>

Hydrograph type	= Combine	Peak discharge	= 18.82 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 121,599 cuft
Inflow hyds.	= 8, 11, 12, 16, 17, 18	Contrib. drain. area	= 5.532 ac

<no description>

Hyd. No. 20 -- 50 Year
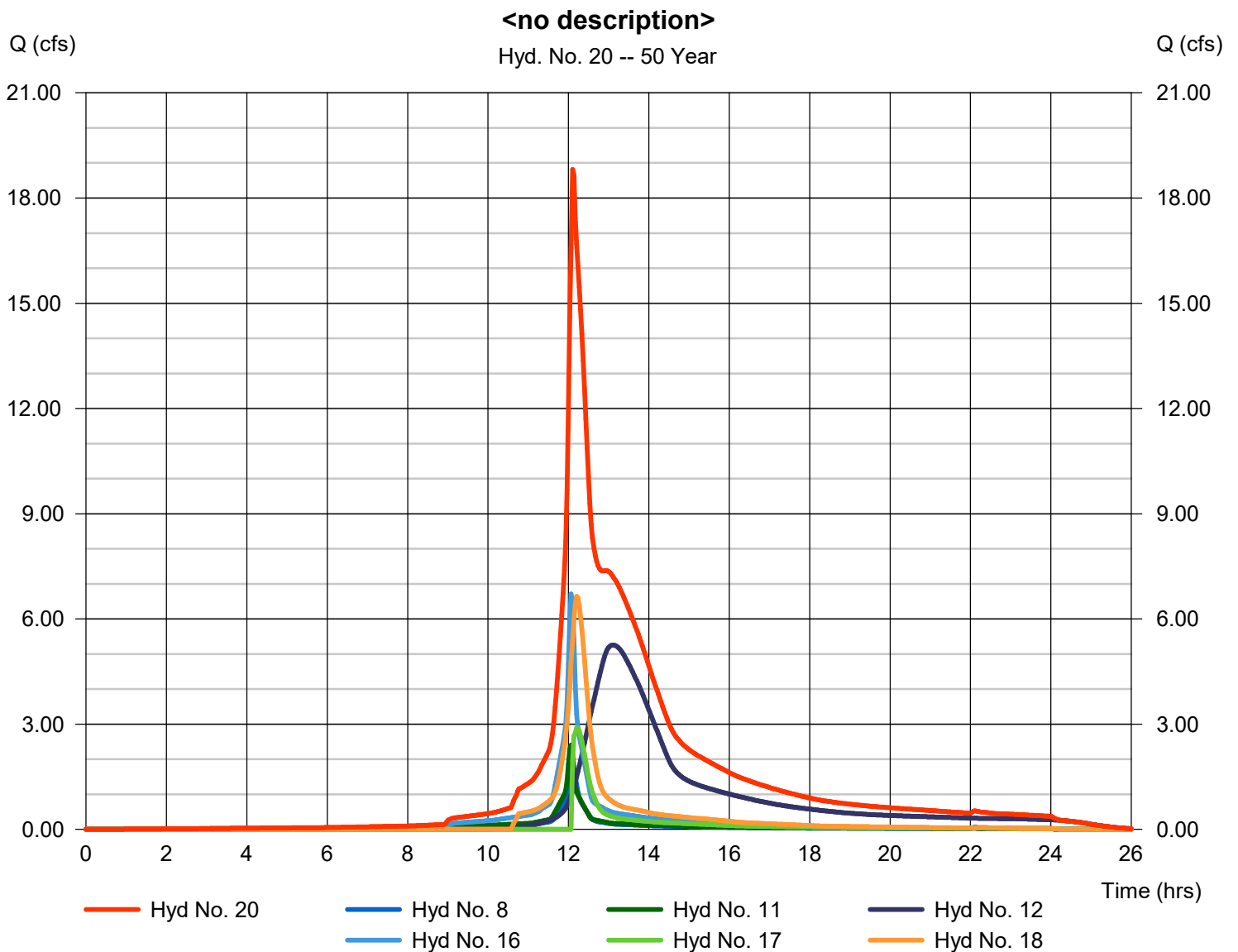
Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 21

Design Point B

Hydrograph type	= Combine	Peak discharge	= 40.73 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 218,310 cuft
Inflow hyds.	= 19, 20	Contrib. drain. area	= 0.000 ac

Design Point B

Hyd. No. 21 -- 50 Year

Q (cfs)

Time (hrs)

Hyd No. 21   Hyd No. 19   Hyd No. 20

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

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	8.969	2	752	58,271	------	------	------	EX WS-01
2	SCS Runoff	10.64	2	724	33,623	------	------	------	EX WS-02A
3	SCS Runoff	1.046	2	728	4,056	------	------	------	EX WS-02B
4	SCS Runoff	4.285	2	726	16,063	------	------	------	EX WS-02C
5	SCS Runoff	12.64	2	734	62,774	------	------	------	EX WS-02D
6	SCS Runoff	1.145	2	724	3,905	------	------	------	EX WS-02E
7	SCS Runoff	7.807	2	724	25,830	------	------	------	EX WS-02F
8	SCS Runoff	2.033	2	726	7,555	------	------	------	EX WS-02G
9	SCS Runoff	3.330	2	732	15,431	------	------	------	EX WS-02H
10	SCS Runoff	7.659	2	732	35,951	------	------	------	EX WS-02I
11	SCS Runoff	2.707	2	724	9,455	------	------	------	EX WS-02J
12	SCS Runoff	6.537	2	786	67,780	------	------	------	EX WS-03
13	Reservoir	9.045	2	726	31,545	2	144.45	1,964	36 INCH PIPE (#1)
14	Reservoir	12.50	2	736	57,780	5	139.20	4,007	TWIN 36IN PIPES (#2)
15	Reservoir	1.127	2	724	2,988	6	139.65	504	24 INCH PIPE
16	Reservoir	7.323	2	726	21,887	7	139.57	1,435	36 INCH PIPE (#2)
17	Reservoir	3.297	2	732	10,550	9	137.50	3,755	36 INCH PIPE (#3)
18	Reservoir	7.572	2	732	28,677	10	135.77	2,517	TWO 36 INCH PIPES
19	Combine	25.05	2	730	112,433	3, 4, 13, 14, 15,	------	------	<no description>
20	Combine	22.06	2	726	145,904	8, 11, 12, 16, 17, 18,	------	------	<no description>
21	Combine	46.31	2	728	258,337	19, 20	------	------	Design Point B

Existing-Hydraflow.gpw	Return Period: 100 Year	Thursday, 04 / 4 / 2024

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 1

EX WS-01

Hydrograph type	= SCS Runoff	Peak discharge	= 8.969 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.53 hrs
Time interval	= 2 min	Hyd. volume	= 58,271 cuft
Drainage area	= 3.677 ac	Curve number	= 67
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 45.70 min
Total precip.	= 8.34 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

EX WS-01

Hyd. No. 1 -- 100 Year
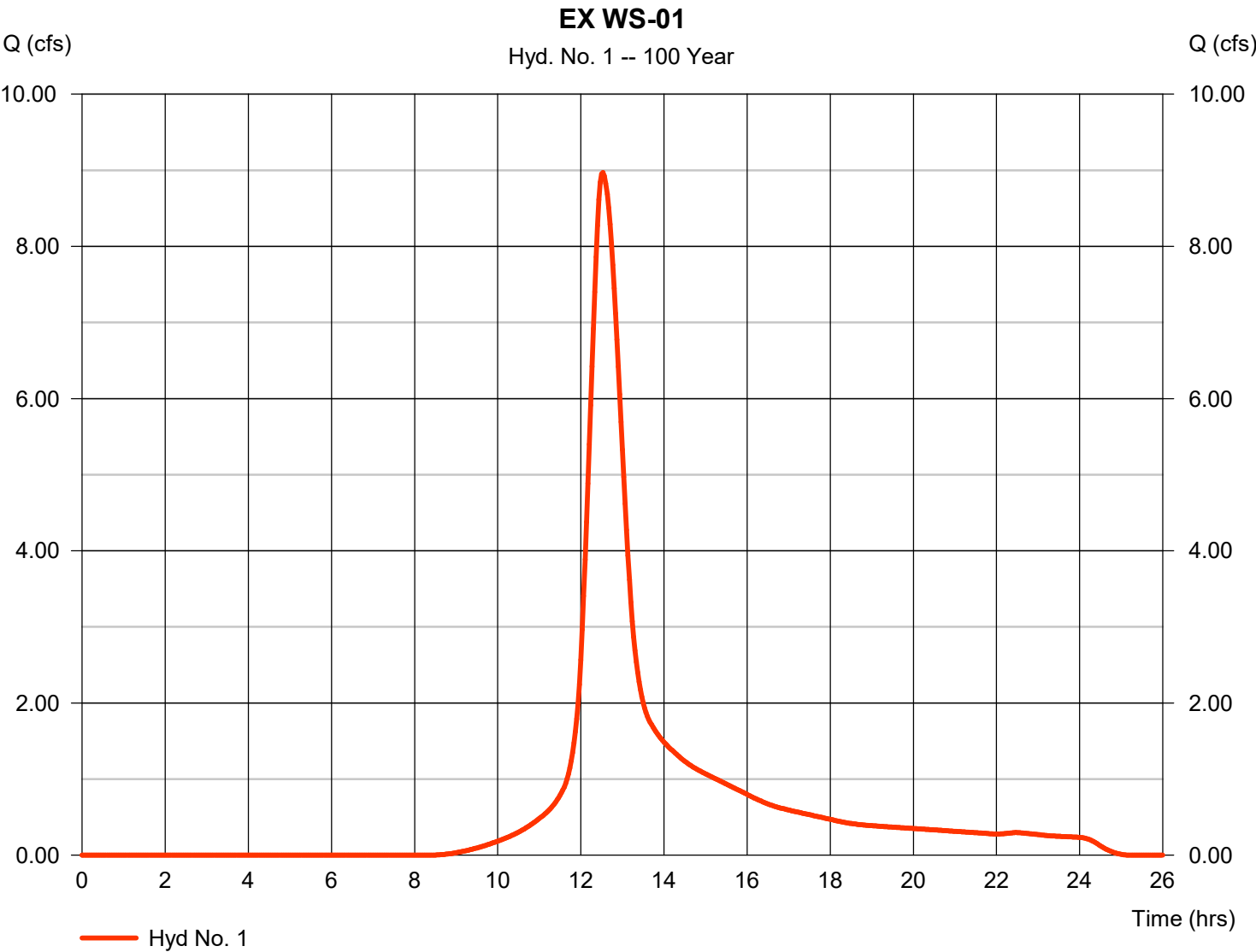
Hydrograph Report

Hyd. No. 2

EX WS-02A

Hydrograph type	= SCS Runoff		Peak discharge	= 10.64 cfs
Storm frequency	= 100 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 33,623 cuft
Drainage area	= 1.457 ac		Curve number	= 87
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 5.00 min
Total precip.	= 8.34 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

EX WS-02A

Hyd. No. 2 -- 100 Year
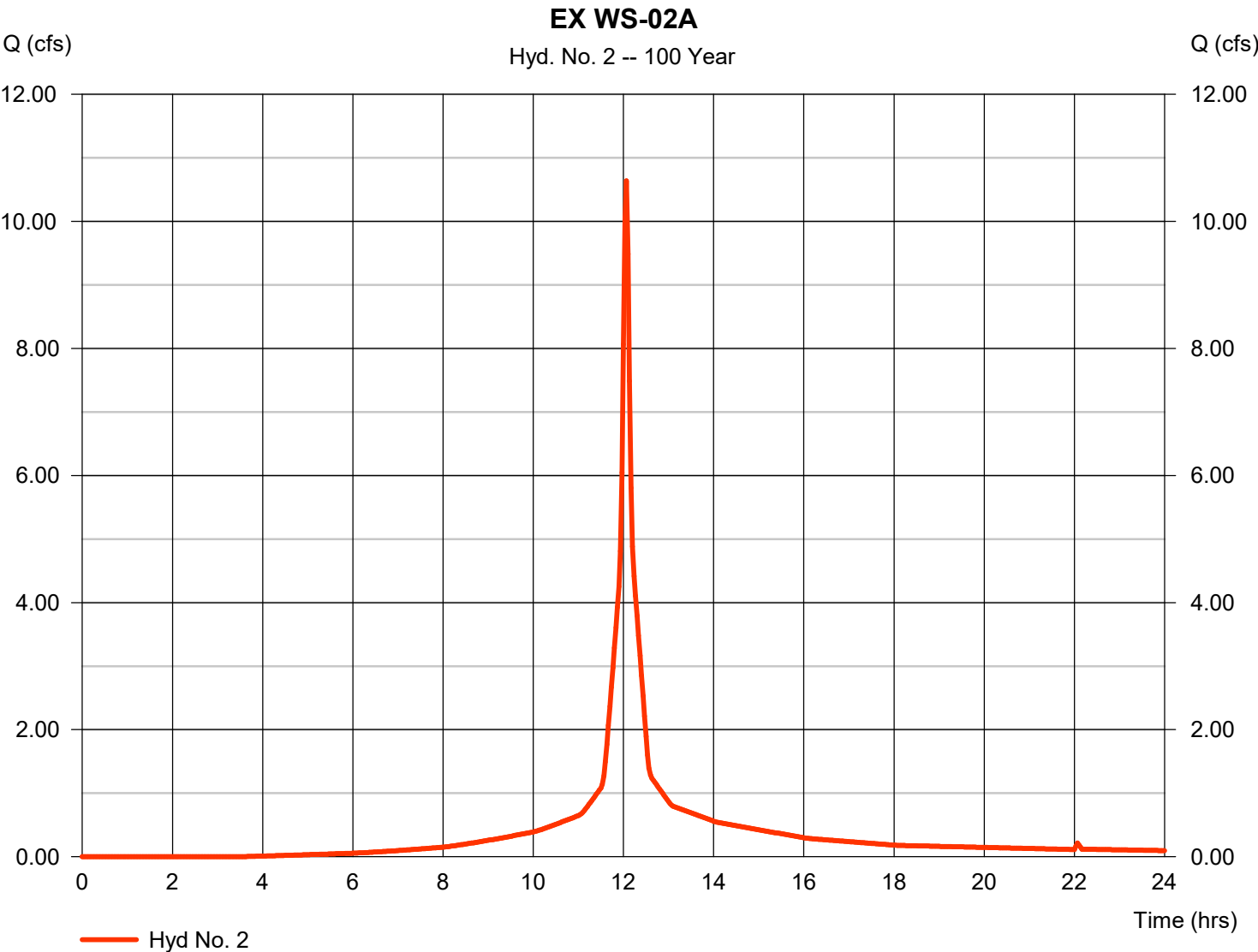
Hyd No. 2

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 3

EX WS-02B

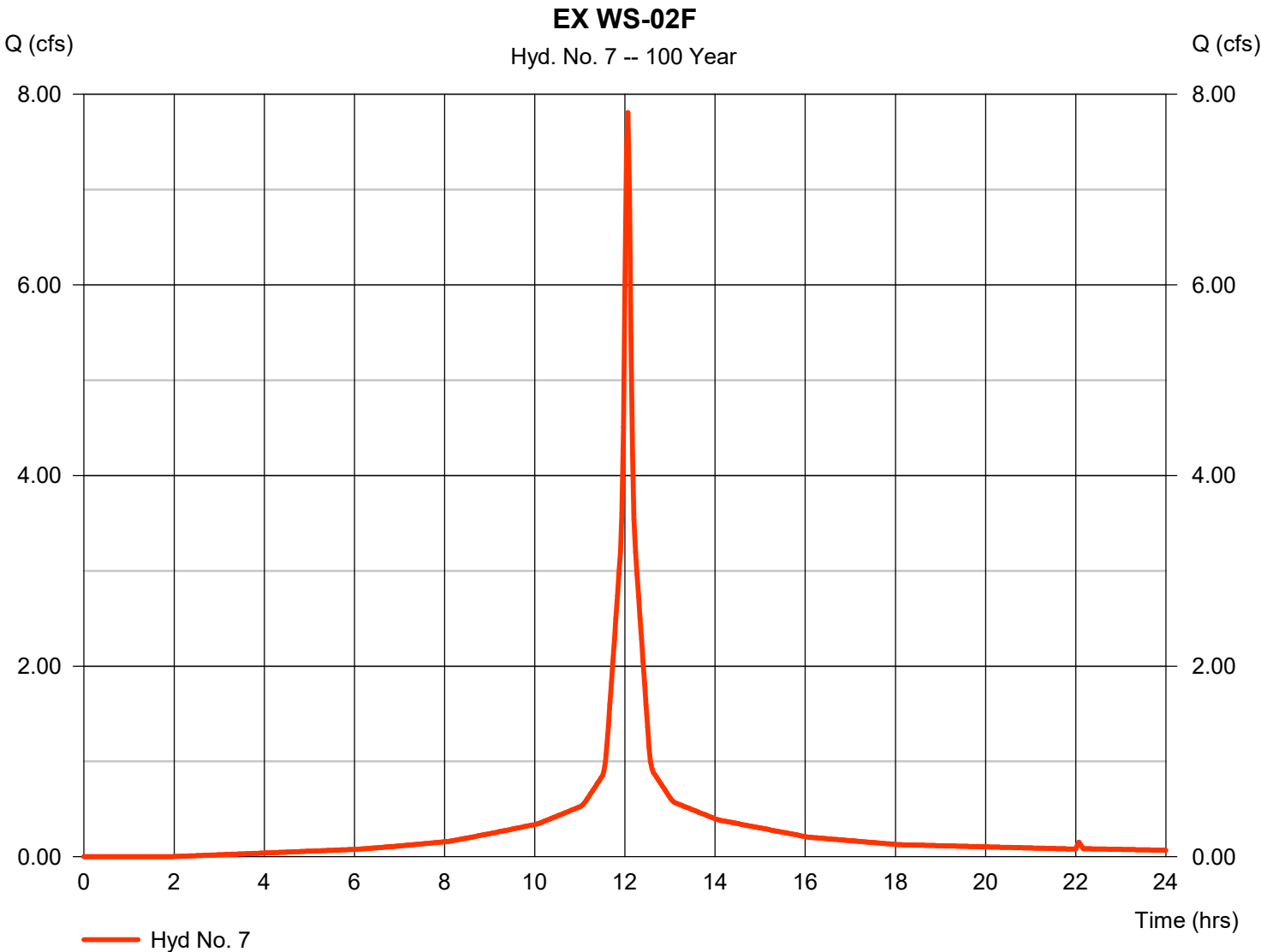|				
Hydrograph type	= SCS Runoff		Peak discharge	= 1.046 cfs
Storm frequency	= 100 yrs		Time to peak	= 12.13 hrs
Time interval	= 2 min		Hyd. volume	= 4,056 cuft
Drainage area	= 0.186 ac		Curve number	= 79
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 11.00 min
Total precip.	= 8.34 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

EX WS-02B

Hyd. No. 3 -- 100 Year

Hydrograph Report

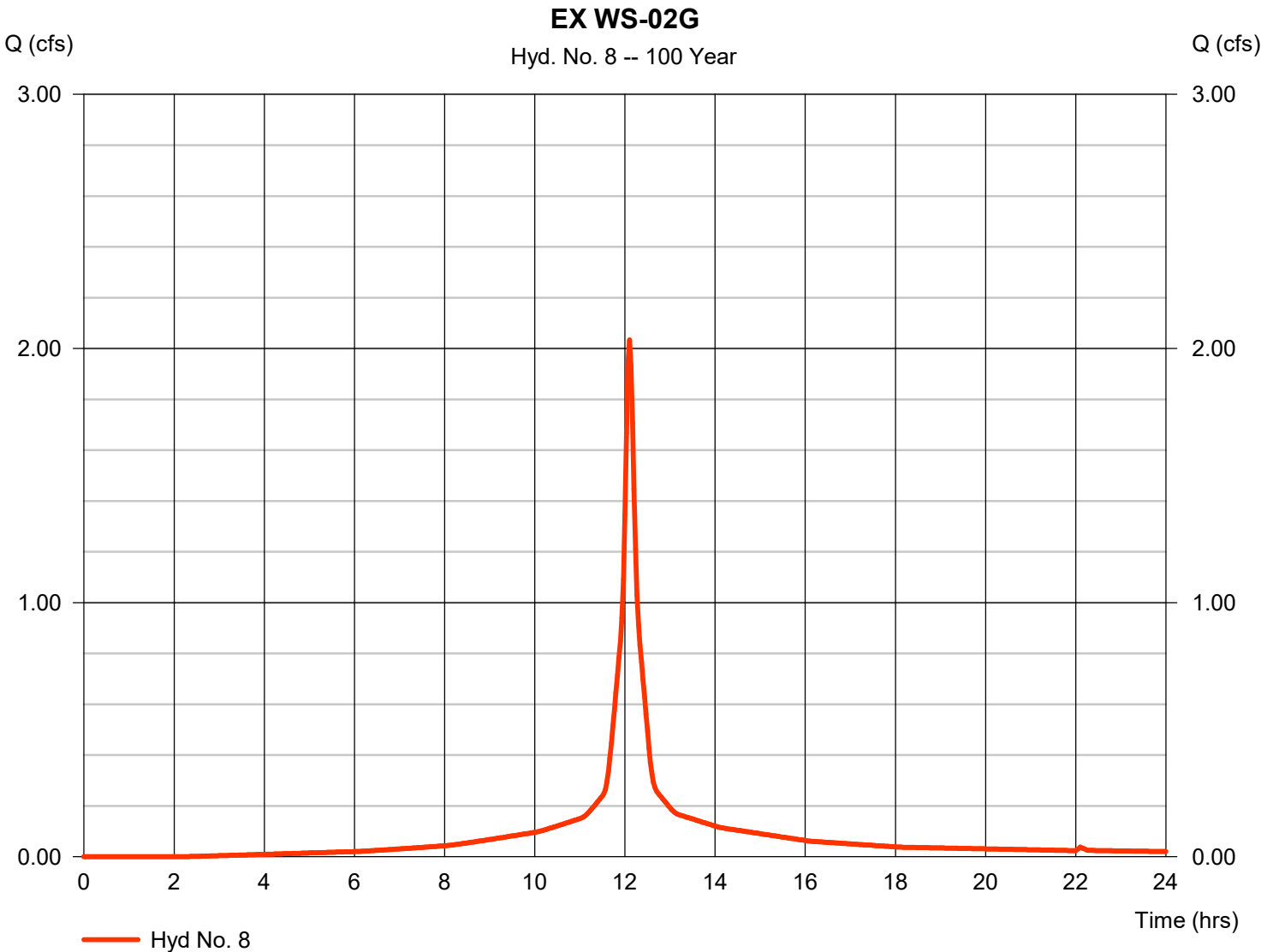Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Thursday, 04 / 4 / 2024
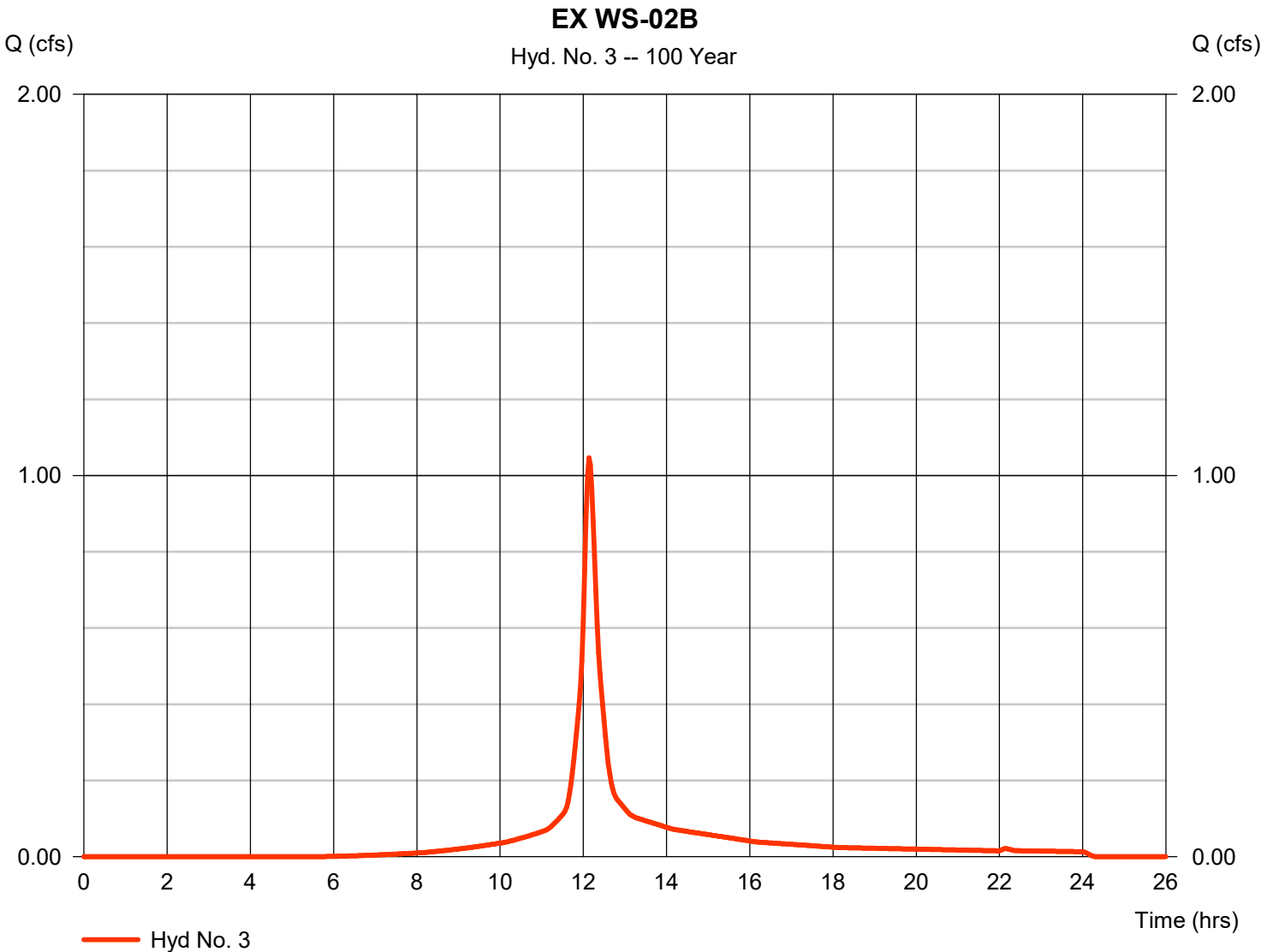
Hyd. No. 4

EX WS-02C

Hydrograph type	= SCS Runoff	Peak discharge	= 4.285 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 16,063 cuft
Drainage area	= 0.590 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 9.40 min
Total precip.	= 8.34 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

EX WS-02C

Hyd. No. 4 -- 100 Year

— Hyd No. 4

Hydrograph Report

Hyd. No. 5

EX WS-02D

Hydrograph type	= SCS Runoff	Peak discharge	= 12.64 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.23 hrs
Time interval	= 2 min	Hyd. volume	= 62,774 cuft
Drainage area	= 2.462 ac	Curve number	= 88
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 22.10 min
Total precip.	= 8.34 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

EX WS-02D

Hyd. No. 5 -- 100 Year

Hyd No. 5

Hydrograph Report

Hyd. No. 6

EX WS-02E

Hydrograph type	= SCS Runoff		Peak discharge	= 1.145 cfs
Storm frequency	= 100 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 3,905 cuft
Drainage area	= 0.146 ac		Curve number	= 96
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 5.00 min
Total precip.	= 8.34 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

EX WS-02E

Hyd. No. 6 -- 100 Year

Q (cfs)

Time (hrs)
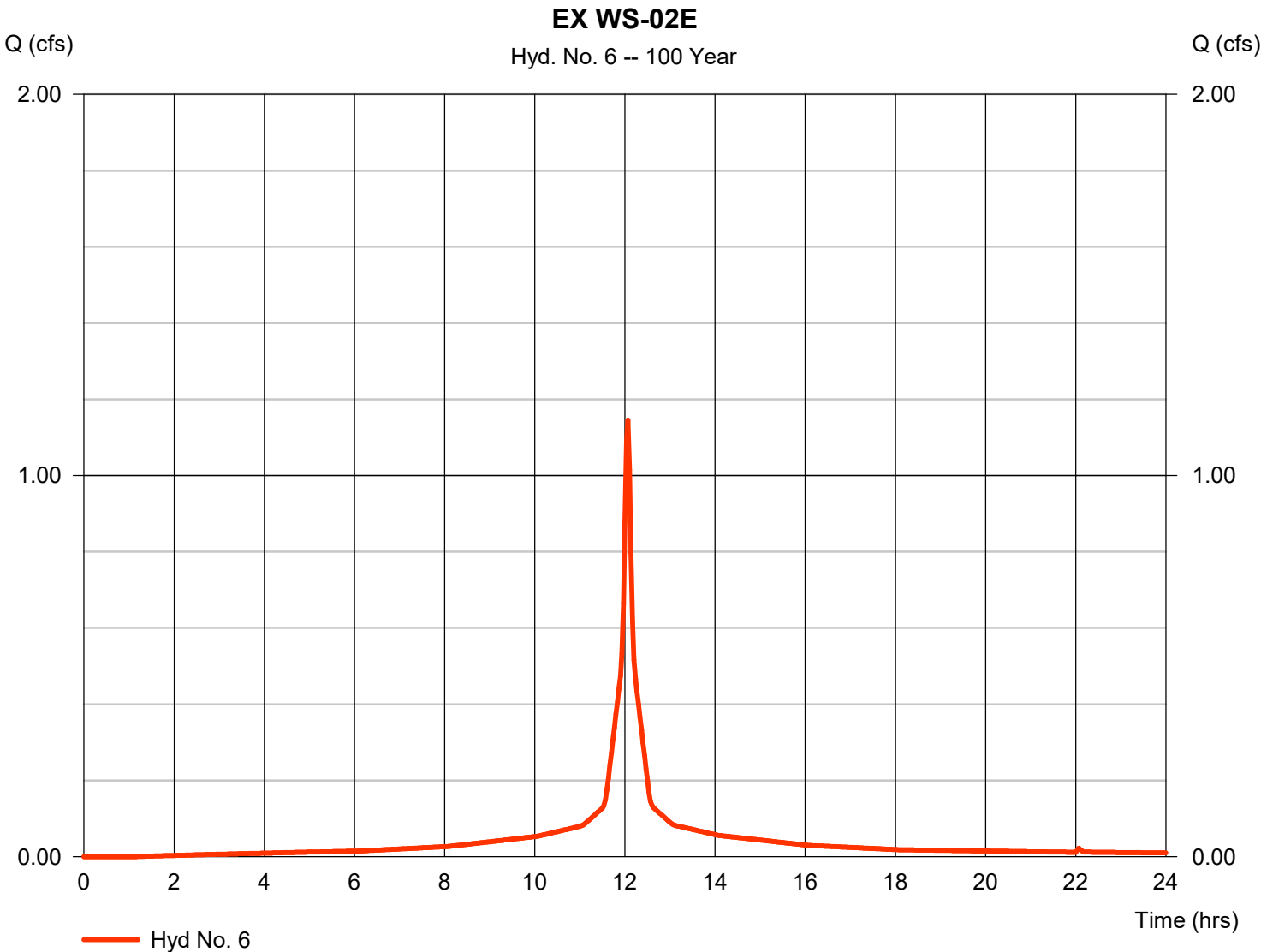
Hyd No. 6

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 7

EX WS-02F

Hydrograph type	= SCS Runoff	Peak discharge	= 7.807 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 25,830 cuft
Drainage area	= 1.012 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.50 min
Total precip.	= 8.34 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

EX WS-02F

Hyd. No. 7 -- 100 Year

— Hyd No. 7

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 8

EX WS-02G

Hydrograph type	= SCS Runoff		Peak discharge	=	2.033 cfs
Storm frequency	= 100 yrs		Time to peak	=	12.10 hrs
Time interval	= 2 min		Hyd. volume	=	7,555 cuft
Drainage area	= 0.282 ac		Curve number	=	92
Basin Slope	= 0.0 %		Hydraulic length	=	0 ft
Tc method	= User		Time of conc. (Tc)	=	6.90 min
Total precip.	= 8.34 in		Distribution	=	Type III
Storm duration	= 24 hrs		Shape factor	=	484

EX WS-02G

Hyd. No. 8 -- 100 Year

Hyd No. 8

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 9

EX WS-02H

Hydrograph type	= SCS Runoff	Peak discharge	= 3.330 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 15,431 cuft
Drainage area	= 0.616 ac	Curve number	= 88
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 17.30 min
Total precip.	= 8.34 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

EX WS-02H

Hyd. No. 9 -- 100 Year
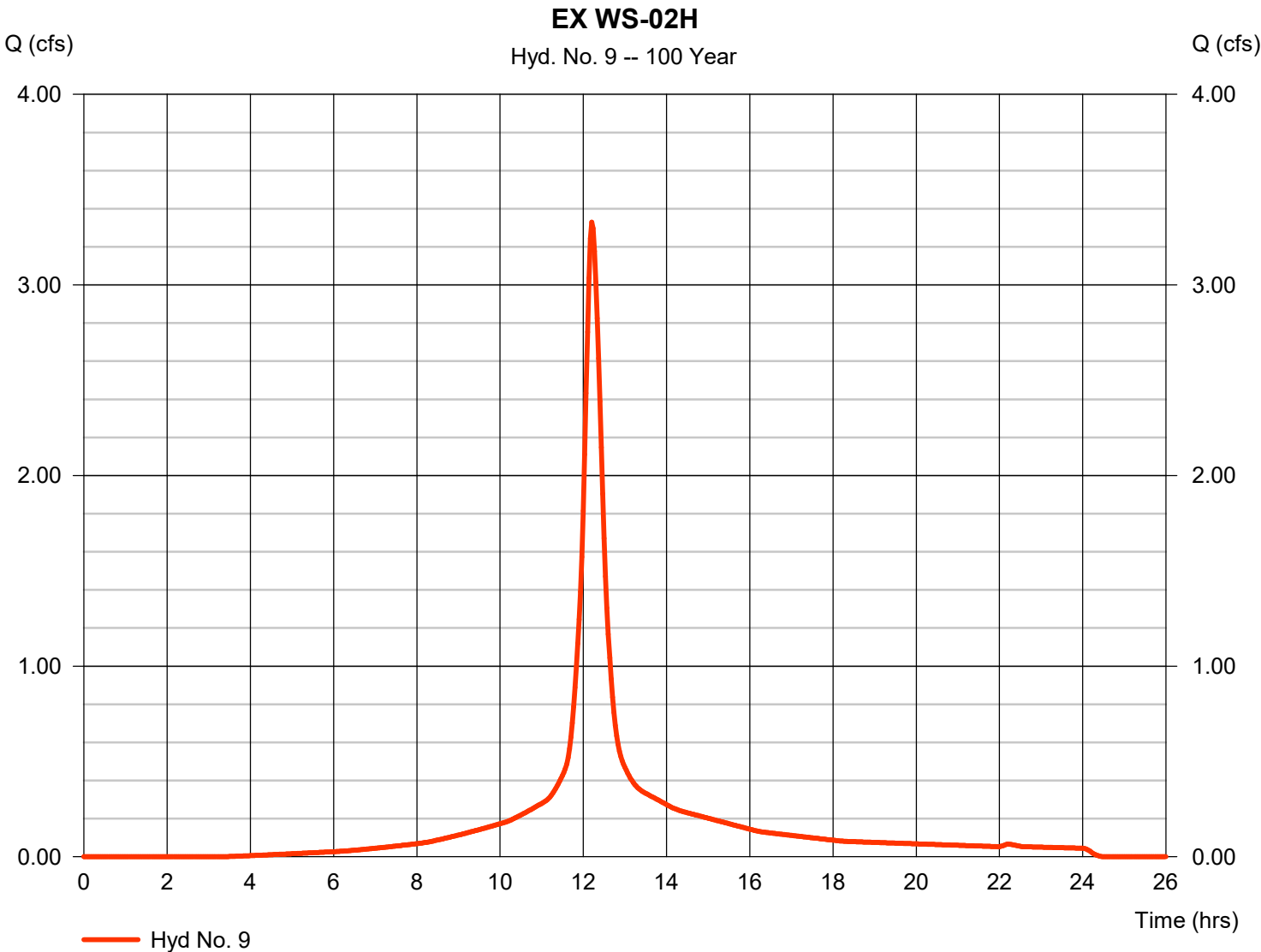
Hyd No. 9

Hydrograph Report

Hyd. No. 10

EX WS-02I

Hydrograph type	= SCS Runoff		Peak discharge	= 7.659 cfs
Storm frequency	= 100 yrs		Time to peak	= 12.20 hrs
Time interval	= 2 min		Hyd. volume	= 35,951 cuft
Drainage area	= 1.387 ac		Curve number	= 90
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 18.60 min
Total precip.	= 8.34 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

EX WS-02I

Hyd. No. 10 -- 100 Year

Q (cfs)

Time (hrs)
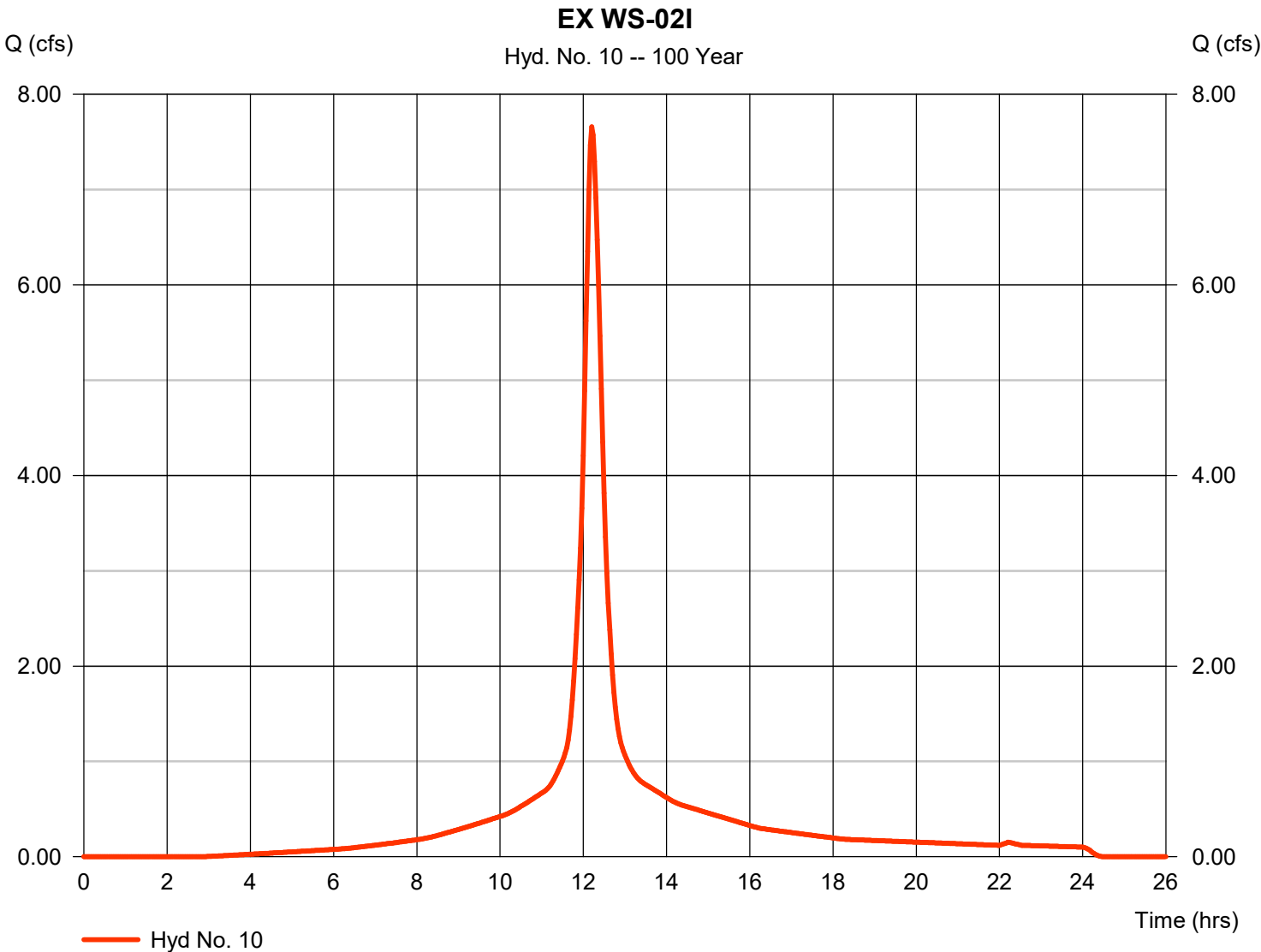
Hyd No. 10

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 11

EX WS-02J

Hydrograph type	= SCS Runoff		Peak discharge	= 2.707 cfs
Storm frequency	= 100 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 9,455 cuft
Drainage area	= 0.343 ac		Curve number	= 98
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 5.00 min
Total precip.	= 8.34 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

EX WS-02J

Hyd. No. 11 -- 100 Year
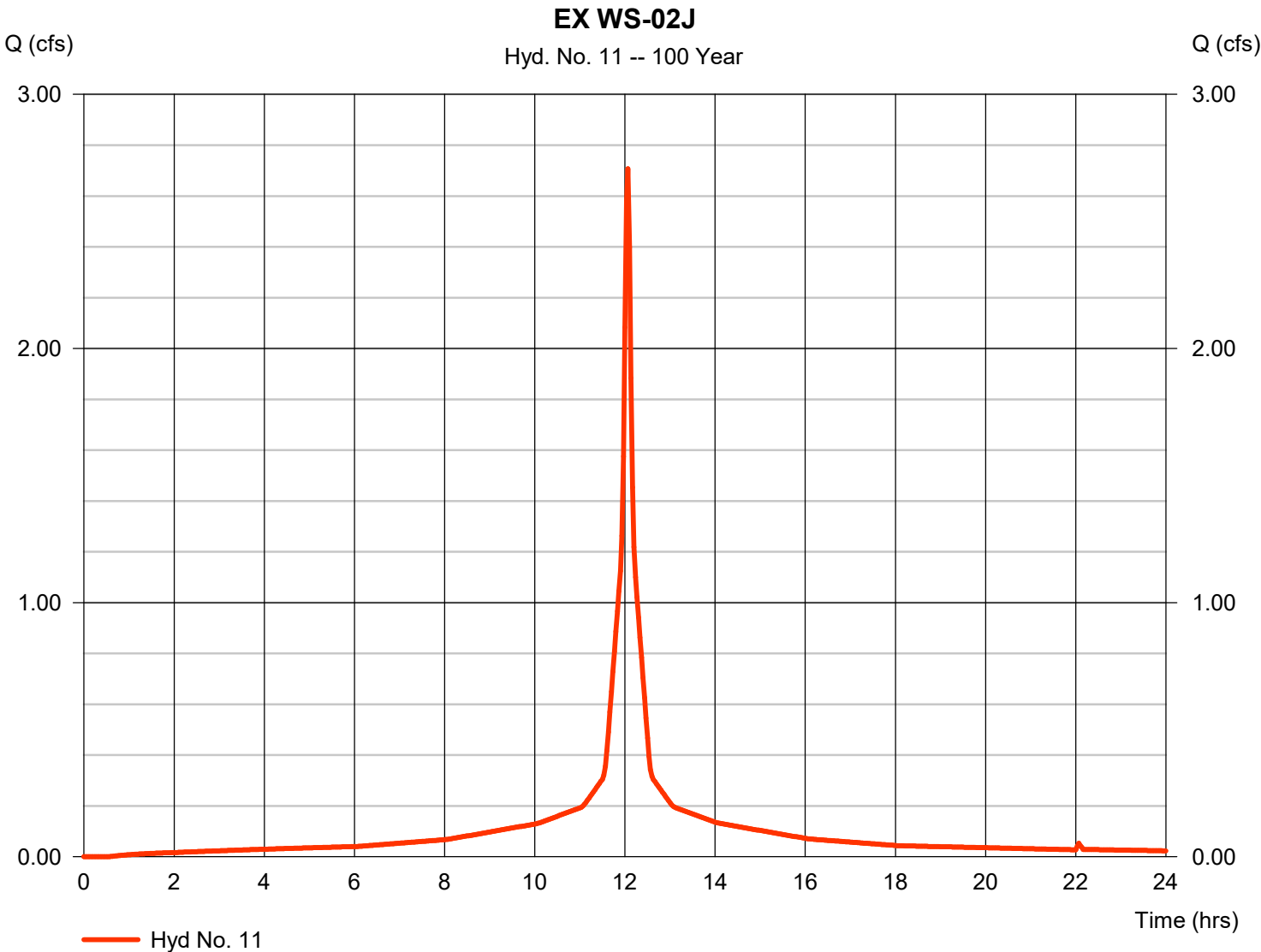
Hydrograph Report

Hyd. No. 12

EX WS-03

Hydrograph type	= SCS Runoff	Peak discharge	= 6.537 cfs
Storm frequency	= 100 yrs	Time to peak	= 13.10 hrs
Time interval	= 2 min	Hyd. volume	= 67,780 cuft
Drainage area	= 4.907 ac	Curve number	= 62
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 95.00 min
Total precip.	= 8.34 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

EX WS-03

Hyd. No. 12 -- 100 Year
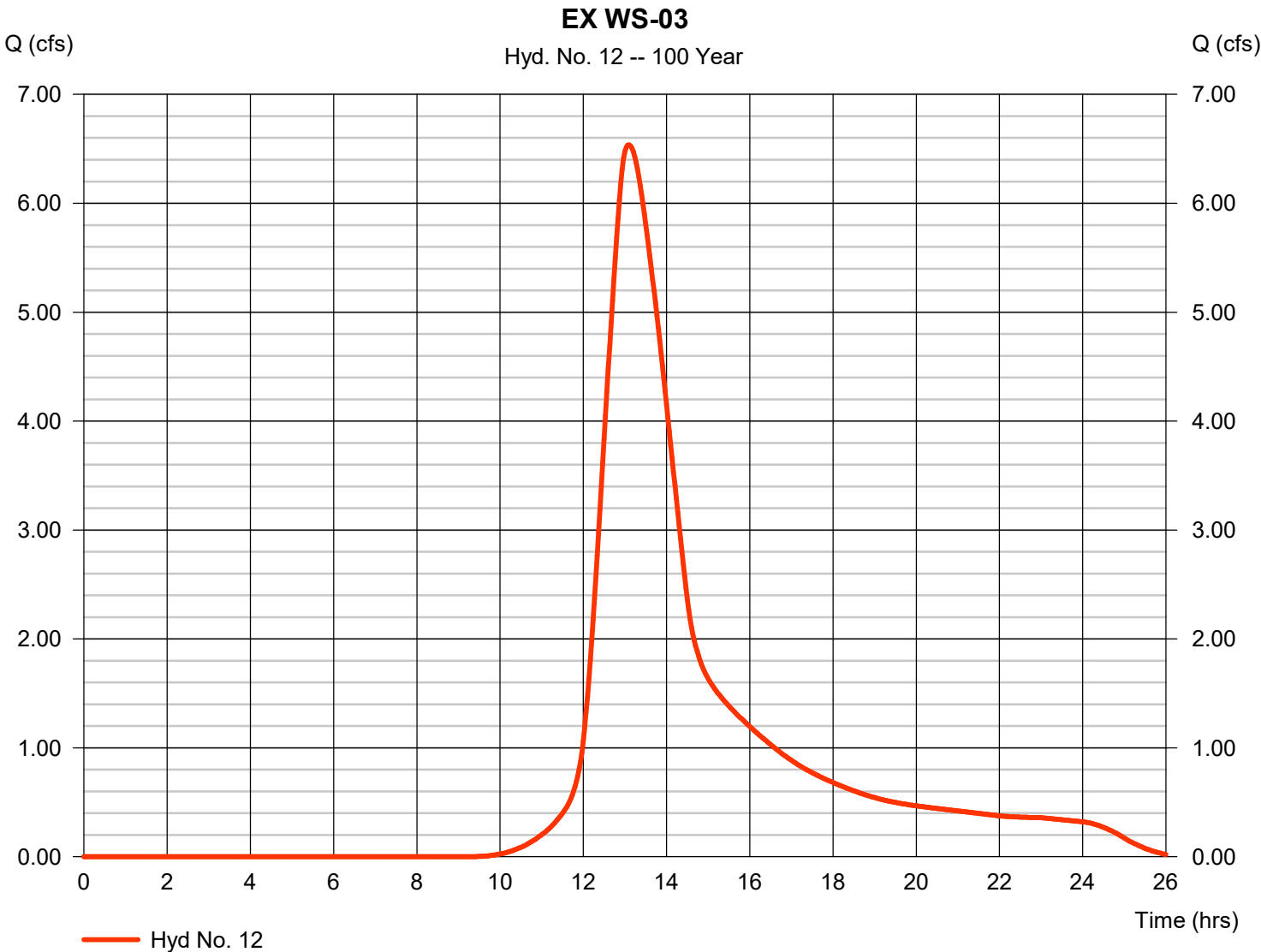
Hyd No. 12

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 13

36 INCH PIPE (#1)

Hydrograph type	= Reservoir	Peak discharge	= 9.045 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 31,545 cuft
Inflow hyd. No.	= 2 - EX WS-02A	Max. Elevation	= 144.45 ft
Reservoir name	= 36IN - 1	Max. Storage	= 1,964 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

36 INCH PIPE (#1)

Hyd. No. 13 -- 100 Year

Hyd No. 13   Hyd No. 2   Total storage used = 1,964 cuft

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 14

TWIN 36IN PIPES (#2)

Hydrograph type	= Reservoir		Peak discharge	= 12.50 cfs
Storm frequency	= 100 yrs		Time to peak	= 12.27 hrs
Time interval	= 2 min		Hyd. volume	= 57,780 cuft
Inflow hyd. No.	= 5 - EX WS-02D		Max. Elevation	= 139.20 ft
Reservoir name	= Northern Twin 36IN		Max. Storage	= 4,007 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

TWIN 36IN PIPES (#2)
Hyd. No. 14 -- 100 Year

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 15

24 INCH PIPE

Hydrograph type	= Reservoir		Peak discharge	= 1.127 cfs
Storm frequency	= 100 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 2,988 cuft
Inflow hyd. No.	= 6 - EX WS-02E		Max. Elevation	= 139.65 ft
Reservoir name	= 24IN		Max. Storage	= 504 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
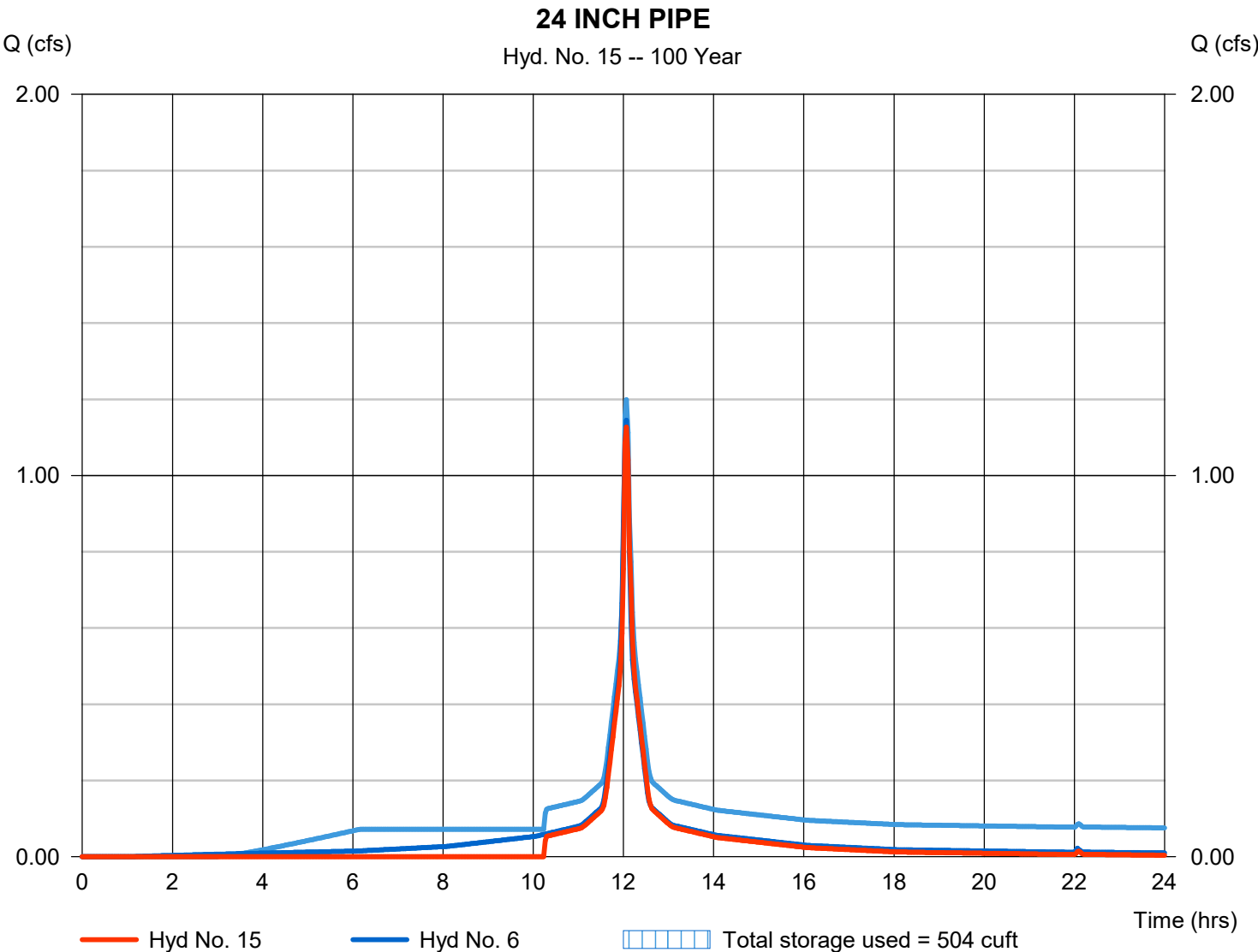
24 INCH PIPE
Hyd. No. 15 -- 100 Year

Legend: Hyd No. 15   Hyd No. 6   Total storage used = 504 cuft

Hydrograph Report

Hyd. No. 16

36 INCH PIPE (#2)

Hydrograph type	= Reservoir		Peak discharge	= 7.323 cfs
Storm frequency	= 100 yrs		Time to peak	= 12.10 hrs
Time interval	= 2 min		Hyd. volume	= 21,887 cuft
Inflow hyd. No.	= 7 - EX WS-02F		Max. Elevation	= 139.57 ft
Reservoir name	= 36in - 2		Max. Storage	= 1,435 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
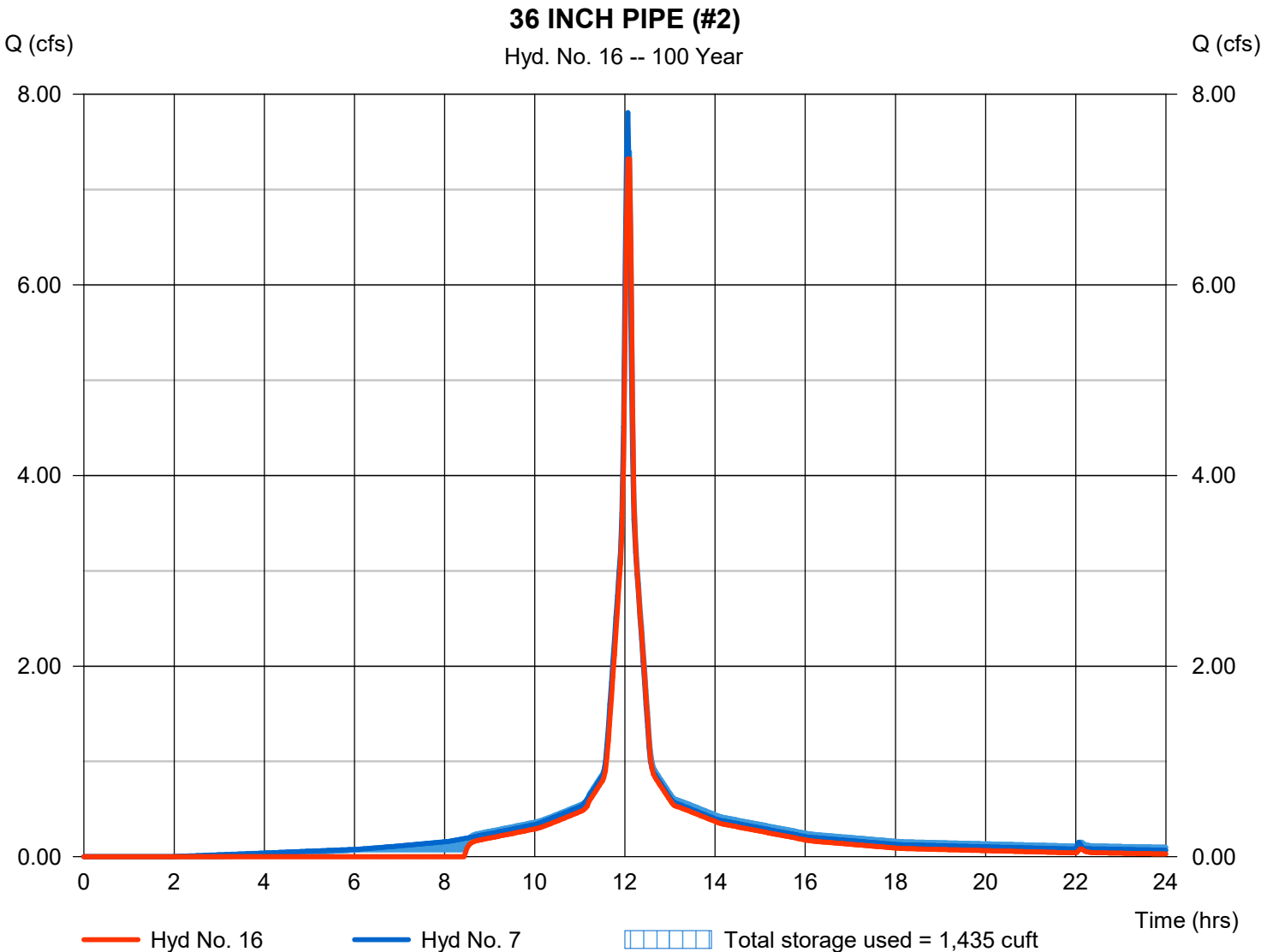
36 INCH PIPE (#2)

Hyd. No. 16 -- 100 Year

Hyd No. 16   Hyd No. 7   Total storage used = 1,435 cuft

Hydrograph Report

Hyd. No. 17

36 INCH PIPE (#3)

Hydrograph type	= Reservoir		Peak discharge	= 3.297 cfs
Storm frequency	= 100 yrs		Time to peak	= 12.20 hrs
Time interval	= 2 min		Hyd. volume	= 10,550 cuft
Inflow hyd. No.	= 9 - EX WS-02H		Max. Elevation	= 137.50 ft
Reservoir name	= 36in - 3		Max. Storage	= 3,755 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
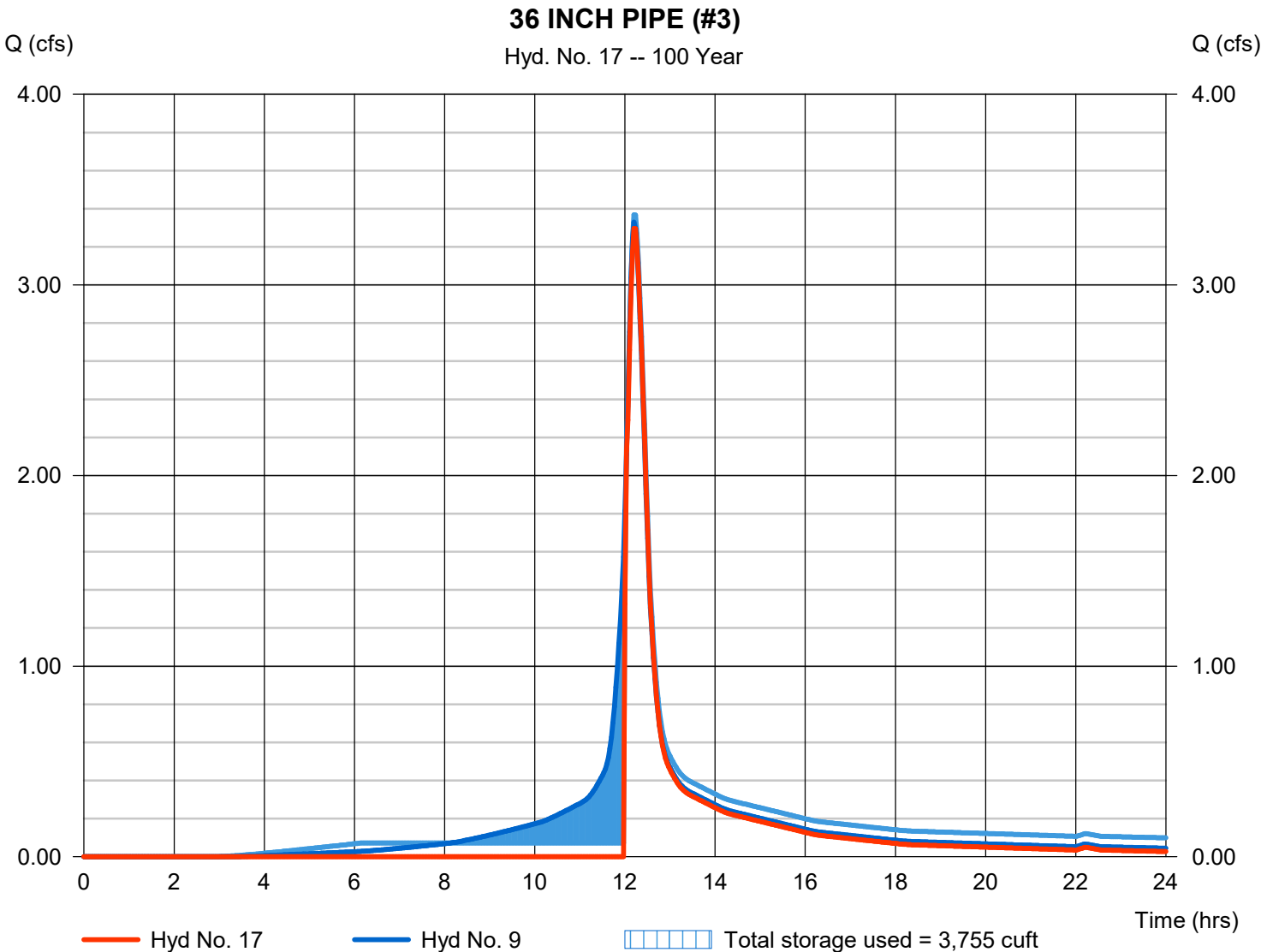
36 INCH PIPE (#3)
Hyd. No. 17 -- 100 Year

Legend: Hyd No. 17 | Hyd No. 9 | Total storage used = 3,755 cuft

Hydrograph Report

Hyd. No. 18

TWO 36 INCH PIPES

Hydrograph type	= Reservoir	Peak discharge	= 7.572 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 28,677 cuft
Inflow hyd. No.	= 10 - EX WS-02I	Max. Elevation	= 135.77 ft
Reservoir name	= TWIN 36IN	Max. Storage	= 2,517 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

TWO 36 INCH PIPES

Hyd. No. 18 -- 100 Year

Q (cfs)

Time (hrs)

— Hyd No. 18   — Hyd No. 10   Total storage used = 2,517 cuft

Hydrograph Report

Hyd. No. 19

<no description>

Hydrograph type	= Combine	Peak discharge	= 25.05 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 112,433 cuft
Inflow hyds.	= 3, 4, 13, 14, 15	Contrib. drain. area	= 0.776 ac

<no description>

Hyd. No. 19 -- 100 Year

Legend:
- Hyd No. 19
- Hyd No. 3
- Hyd No. 4
- Hyd No. 13
- Hyd No. 14
- Hyd No. 15

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 20

<no description>

Hydrograph type	= Combine		Peak discharge	= 22.06 cfs
Storm frequency	= 100 yrs		Time to peak	= 12.10 hrs
Time interval	= 2 min		Hyd. volume	= 145,904 cuft
Inflow hyds.	= 8, 11, 12, 16, 17, 18		Contrib. drain. area	= 5.532 ac

<no description>
Hyd. No. 20 -- 100 Year

Legend: Hyd No. 20, Hyd No. 8, Hyd No. 11, Hyd No. 12, Hyd No. 16, Hyd No. 17, Hyd No. 18

Hydrograph Report

Hyd. No. 21

Design Point B

Hydrograph type	= Combine		Peak discharge	= 46.31 cfs
Storm frequency	= 100 yrs		Time to peak	= 12.13 hrs
Time interval	= 2 min		Hyd. volume	= 258,337 cuft
Inflow hyds.	= 19, 20		Contrib. drain. area	= 0.000 ac

Design Point B
Hyd. No. 21 -- 100 Year

Legend: Hyd No. 21 — Hyd No. 19 — Hyd No. 20

Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	**D**	**E**	**(N/A)**
1	0.0000	0.0000	0.0000	--------
2	23.2694	3.7000	0.7019	--------
3	0.0000	0.0000	0.0000	--------
5	28.1517	3.6000	0.6982	--------
10	33.4115	3.8000	0.7042	--------
25	38.5092	3.6000	0.6982	--------
50	42.7840	3.6000	0.6957	--------
100	48.0560	3.6000	0.6997	--------

File name: WILTON.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	**10**	**15**	**20**	**25**	**30**	**35**	**40**	**45**	**50**	**55**	**60**
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	5.10	3.71	2.98	2.52	2.21	1.97	1.79	1.64	1.52	1.42	1.33	1.26
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.27	4.55	3.66	3.10	2.71	2.42	2.20	2.02	1.87	1.75	1.64	1.55
10	7.22	5.26	4.23	3.58	3.13	2.80	2.54	2.33	2.16	2.02	1.90	1.79
25	8.57	6.22	5.00	4.24	3.70	3.31	3.00	2.76	2.56	2.39	2.24	2.12
50	9.57	6.96	5.60	4.74	4.15	3.71	3.37	3.09	2.87	2.68	2.52	2.38
100	10.66	7.74	6.22	5.26	4.60	4.11	3.73	3.43	3.17	2.96	2.79	2.63

Tc = time in minutes. Values may exceed 60.

Precip. file name: J:\T\T5000 Toll Brothers\012 Woodbridge Village\Calculations\Stormwater\WOODBRIDGE.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	**2-yr**	**3-yr**	**5-yr**	**10-yr**	**25-yr**	**50-yr**	**100-yr**
SCS 24-hour	2.95	3.52	0.00	4.65	5.38	6.54	7.41	8.34
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hydraflow Table of Contents

25 - Year

50 - Year

100 - Year

Tighe&Bond

APPENDIX D

PR-WS-2A

PR-WS-2B(I)

EX-WS-3

EX WS-2D

EX-WS-1

COPTS BROOK

PR-WS-2C

PR-WS-2B(II)

PR-WS-2F

DESIGN POINT - A
(OVERLAND FLOW
TO COPTS BROOK)

PR-WS-2E

PR-WS-2G(I)

PR-WS-2I

PR-WS-2G(III)

PR-WS-2G(II)

DESIGN POINT - B
(EXISTING 54" RCP)

EX-WS-2H

GRUMMAN HILL ROAD

HOLLYHOCK ROAD

DANBURY ROAD
(ROUTE 7)

LEGEND

WATERSHED BOUNDARY

TIME OF CONCENTRATION

PAVEMENT/ROOF

LANDSCAPED AND LAWNS

WOODED

0   150'   300'

SCALE: 1" = 150'

64 DANBURY ROAD
WILTON, CT

PROPOSED WATERSHED FIGURE

DATE: 03/29/2024

SCALE: 1"=150'

FIGURE   PR-WS

Tighe&Bond

Tighe & Bond: J:\F\F0173 Fuller\001 64 Danbury Rd\Calculations\Stormwater\Figures\F0173-001-PR-WS-FIGURE.dwg

Tighe&Bond

Consulting Engineers
Environmental Specialists

Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Proposed CN & Tc Calculations**
Prepared By: **AVC/ZNH**   Date: **March 28, 2024**

Designation: **PR WS-01**
Location:

Cover Type	Area, ac	CN	A x CN
Pavement/Roof	0.468	98	45.8728
Landscaped and Lawns (HSG-B)	1.502	69	103.6077
Landscaped and Lawns (HSG-D)	0.173	84	14.5207
Wooded (HSG-B)	1.263	55	69.1919
Wooded (HSG-D)	0.000	77	0.0000
	3.405		233.193

Weighted CN: 68

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	150	0.11	9.83
Segment B - C	0.015	46	0.11	0.42
Segment C - D	0.24	4	0.11	0.54
Segment D - E	0.4	124	0.14	11.53
Segment E - F	0.24	92	0.1	6.91
Segment F - G	0.4	27	0.07	4.49
Segment G - H	0.24	51	0.08	4.71
Segment H - I	0.015	11	0.09	0.14
Segment I - J	0.24	43	0.02	7.15

Total Tc   =   45.7   Min.

Note: Overland time of concentration computed using "Kinematic Wave" equation
Gutter and pipe time of concentration computed using Manning's equation

Tighe&Bond
Consulting Engineers
Environmental Specialists

Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Proposed CN & Tc Calculations**
Prepared By: **AVC/ZNH**   Date: **March 28, 2024**

Designation: **PR WS-02A**
Location:

Cover Type	Area, ac	CN	A x CN
Pavement/Roof	1.228	98	120.3440
Landscaped and Lawns (HSG-B)	0.056	69	3.8640
Landscaped and Lawns (HSG-D)	0.077	84	6.4680
	1.361		130.676

Weighted CN: **96**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	5	0.020	1.3
Segment B - C	0.015	143	0.040	1.5

Total Tc = 2.8 Min.
Minimum Tc = 5.0 (MIN)

Note: Overland time of concentration computed using "Kinematic Wave" equation
Gutter and pipe time of concentration computed using Manning's equation

Designation: **PR WS-02B(I)**
Location:

Cover Type	Area, ac	CN	A x CN
Pavement/Roof	0.281	98	27.5462
Landscaped and Lawns (HSG-B)	0.022	69	1.5302
Landscaped and Lawns (HSG-D)	0.166	84	13.9653
Wooded (HSG-B)	0.064	55	3.5341
Wooded (HSG-D)	0.023	77	1.7535
	0.557		48.329

Weighted CN: **87**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.4	52	0.11	6.34
Segment B - C	0.24	3	0.11	0.43
Segment C - D	0.015	43	0.04	0.59

Total Tc = 7.4 Min.

Note: Overland time of concentration computed using "Kinematic Wave" equation
Gutter and pipe time of concentration computed using Manning's equation

Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Proposed CN & Tc Calculations**
Prepared By: **AVC/ZNH**   Date: **March 28, 2024**

Designation: **PR WS-02B(II)**
Location:

Cover Type	Area, ac	CN	A x CN
Pavement/Roof	0.031	98	3.0777
Landscaped and Lawns (HSG-D)	0.101	84	8.4887
	0.132		11.566

Weighted CN: **87**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	15	0.1	1.62

Shallow Concentrated Flow					
Segment		Slope (ft/ft)	V (ft/s)	Length (ft)	Time (min.)
Segment B - C	unpaved	0.045	3.42	125	0.6
Segment C - D	unpaved	0.150	6.25	125	0.3

Total Tc   =   2.6   Min.
USE 5.0 Min. (MIN)

Note: Overland time of concentration computed using "Kinematic Wave" equation
Gutter and pipe time of concentration computed using Manning's equation

Designation: **PR WS-02C**
Location:

Cover Type	Area, ac	CN	A x CN
Pavement/Roof	0.391	98	38.3293
Landscaped and Lawns (HSG-D)	0.185	84	15.5697
	0.576		53.899

Weighted CN: **93**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	108	0.08	8.58
Segment B - C	0.015	82	0.067	0.80

Total Tc   =   9.4   Min.

Note: Overland time of concentration computed using "Kinematic Wave" equation
Gutter and pipe time of concentration computed using Manning's equation

Designation: **PR WS-02D**
        Location:

Cover Type	Area, ac	CN	A x CN
Pavement/Roof	1.683	98	164.9397
Landscaped and Lawns (HSG-D)	0.313	84	26.3281
Wooded (HSG-B)	0.448	55	24.6212
Wooded (HSG-D)	0.018	77	1.3823
	2.462		217.271

Weighted CN: **88**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.4	212	0.18	16.02
Segment B - C	0.24	77	0.12	5.57
Segment C - D	0.015	43	0.045	0.56

Total Tc = 22.1 Min.

Note: Overland time of concentration computed using "Kinematic Wave" equation
           Gutter and pipe time of concentration computed using Manning's equation

Designation: **PR WS-02E**
        Location:

Cover Type	Area, ac	CN	A x CN
Pavement/Roof	0.177	98	17.3030
Landscaped and Lawns (HSG-B)	0.011	69	0.7793
Landscaped and Lawns (HSG-D)	0.015	84	1.2322
	0.203		19.315

Weighted CN: **95**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	22	0.02	4.18
Segment B - C	0.015	44	0.02	0.79

Total Tc = 5.0 Min.

Note: Overland time of concentration computed using "Kinematic Wave" equation
           Gutter and pipe time of concentration computed using Manning's equation

Designation: **PR WS-02F**
Location:

Cover Type	Area, ac	CN	A x CN
Pavement/Roof	0.826	98	80.9512
Landscaped and Lawns (HSG-D)	0.197	84	16.5686
	1.023		97.520

Weighted CN: **95**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	31	0.025	5.04

Total Tc = 5.0 Min.

Note: Overland time of concentration computed using "Kinematic Wave" equation
Gutter and pipe time of concentration computed using Manning's equation

Designation: **PR WS-02G(I)**
Location:

Cover Type	Area, ac	CN	A x CN
Pavement/Roof	0.415	98	40.6700
Landscaped and Lawns (HSG-D)	0.079	84	6.6360
	0.494		47.306

Weighted CN: **96**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	20	0.05	2.69
Segment B - C	0.015	32	0.04	0.47

Total Tc = 3.2 Min.
USE 5.0 Min.(MIN)

Note: Overland time of concentration computed using "Kinematic Wave" equation
Gutter and pipe time of concentration computed using Manning's equation

Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Proposed CN & Tc Calculations**
Prepared By: **AVC/ZNH** Date: **March 28, 2024**

Tighe&Bond
Consulting Engineers
Environmental Specialists

Designation: **PR WS-02G(II)**
Location:

Cover Type	Area, ac	CN	A x CN
Pavement/Roof	0.357	98	34.9860
Landscaped and Lawns (HSG-D)	0.077	84	6.4680
	0.434		41.454

Weighted CN: **96**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	8	0.02	1.86
Segment B - C	0.015	50	0.02	0.88

Total Tc = 2.7 Min.

USE 5.0 Min. (MIN)

Note: Overland time of concentration computed using "Kinematic Wave" equation
Gutter and pipe time of concentration computed using Manning's equation

Designation: **PR WS-02H**
Location:

Cover Type	Area, ac	CN	A x CN
Pavement/Roof	0.037	98	3.6260
Landscaped and Lawns (HSG-D)	0.230	84	19.3358
	0.267		22.962

Weighted CN: **86**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	45	0.04	5.62
Segment B - C	0.015	6	0.02	0.16
Segment C - D	0.25	53	0.025	7.99

Total Tc = 13.8 Min.

Note: Overland time of concentration computed using "Kinematic Wave" equation
Gutter and pipe time of concentration computed using Manning's equation

Designation: **PR WS-02I**
Location:

Cover Type	Area, ac	CN	A x CN
Pavement/Roof	0.613	98	60.0329
Landscaped and Lawns (HSG-D)	0.684	84	57.4270
	1.296		117.460

Weighted CN: **91**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	82	0.06	7.73
Segment B - C	0.015	6	0.02	0.16
Segment C - D	0.25	97	0.04	10.74

Total Tc = 18.6 Min.

Note: Overland time of concentration computed using "Kinematic Wave" equation
Gutter and pipe time of concentration computed using Manning's equation

Designation: **PR WS-03**
Location:

Cover Type	Area, ac	CN	A x CN
Pavement/Roof	0.358	98	35.0424
Landscaped and Lawns (HSG-B)	1.314	69	90.6660
Wooded (HSG-B)	3.165	55	174.0750
	4.837		299.783

Weighted CN: **62**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.4	182	0.09	18.71
Segment B - C	0.24	63	0.03	8.26
Segment C - D	0.015	11	0.015	0.29
Segment D - E	0.24	27	0.015	5.53
Segment E - F	0.015	28	0.015	0.62
Segment F - G	0.24	62	0.1	5.04
Segment G - H	0.4	198	0.15	16.31

Total Tc = 54.8 Min.
0.91 Hrs.
Total Lag = 0.68 Hrs.

Note: Overland time of concentration computed using "Kinematic Wave" equation
Gutter and pipe time of concentration computed using Manning's equation

Watershed Model Schematic

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Legend

Hyd.	Origin	Description
1	SCS Runoff	PR WS-01
2	SCS Runoff	PR WS-02B(I)
3	SCS Runoff	PR WS-02B(III)
4	SCS Runoff	PR WS-02C
5	SCS Runoff	PR WS-02D
6	SCS Runoff	PR WS-02E
7	SCS Runoff	PR WS-02F
8	SCS Runoff	PR WS-02A
9	SCS Runoff	PR WS-02G(I)
10	SCS Runoff	PR WS-02G(II)
11	SCS Runoff	PR WS-02H
12	SCS Runoff	PR WS-02I
13	SCS Runoff	PR WS-03
14	Reservoir	TWIN 36IN PIPES (#2)
15	Reservoir	INFIL-3
16	Reservoir	INIFL-4
17	Reservoir	36 INCH PIPE (#3)
18	Reservoir	TWO 36 INCH PIPES
19	Combine	<no description>
20	Reservoir	INFIL-2
21	Combine	<no description>
22	Reservoir	INFIL-1
23	Combine	<no description>
24	Combine	<no description>
25	Combine	<no description>

Project: J:\F\F0173 Fuller\001 64 Danbury Rd\Calculations\Stormwater___ Town Comments Proposed-Hydraflow.gpw

Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	------	-------	1.538	-------	-------	3.964	5.692	7.047	8.534	PR WS-01
2	SCS Runoff	------	-------	1.299	-------	-------	2.276	2.885	3.339	3.823	PR WS-02B(I)
3	SCS Runoff	------	-------	0.329	-------	-------	0.575	0.728	0.842	0.964	PR WS-02B(III)
4	SCS Runoff	------	-------	1.625	-------	-------	2.622	3.236	3.695	4.184	PR WS-02C
5	SCS Runoff	------	-------	4.374	-------	-------	7.568	9.563	11.05	12.64	PR WS-02D
6	SCS Runoff	------	-------	0.639	-------	-------	1.006	1.234	1.404	1.585	PR WS-02E
7	SCS Runoff	------	-------	3.218	-------	-------	5.072	6.217	7.074	7.986	PR WS-02F
8	SCS Runoff	------	-------	4.365	-------	-------	6.814	8.330	9.464	10.67	PR WS-02A
9	SCS Runoff	------	-------	1.584	-------	-------	2.473	3.024	3.435	3.874	PR WS-02G(I)
10	SCS Runoff	------	-------	1.392	-------	-------	2.173	2.656	3.018	3.404	PR WS-02G(II)
11	SCS Runoff	------	-------	0.491	-------	-------	0.876	1.116	1.296	1.488	PR WS-02H
12	SCS Runoff	------	-------	2.681	-------	-------	4.450	5.543	6.358	7.225	PR WS-02I
13	SCS Runoff	------	-------	0.822	-------	-------	2.651	4.052	5.181	6.444	PR WS-03
14	Reservoir	5	-------	4.352	-------	-------	7.442	9.452	10.93	12.50	TWIN 36IN PIPES (#2)
15	Reservoir	6	-------	0.000	-------	-------	0.256	0.490	0.660	0.819	INFIL-3
16	Reservoir	7	-------	2.634	-------	-------	4.598	5.631	6.410	7.203	INIFL-4
17	Reservoir	11	-------	0.000	-------	-------	0.000	0.000	0.087	0.269	36 INCH PIPE (#3)
18	Reservoir	12	-------	2.770	-------	-------	4.369	5.460	6.274	7.140	TWO 36 INCH PIPES
19	Combine	4, 14,	-------	5.322	-------	-------	8.811	11.17	12.90	14.74	<no description>
20	Reservoir	10	-------	0.849	-------	-------	1.539	1.854	2.083	2.326	INFIL-2
21	Combine	8, 9,	-------	5.950	-------	-------	9.287	11.35	12.90	14.55	<no description>
22	Reservoir	21	-------	0.573	-------	-------	3.162	6.146	7.770	9.071	INFIL-1
23	Combine	2, 3, 15, 19,	-------	6.557	-------	-------	10.90	14.07	16.46	18.90	<no description>
24	Combine	13, 17, 18, 20,	-------	3.679	-------	-------	6.316	8.206	9.661	11.25	<no description>
25	Combine	16, 22, 23, 24	-------	12.75	-------	-------	23.71	32.78	38.93	45.00	<no description>

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

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	1.538	2	756	11,183	------	------	------	PR WS-01
2	SCS Runoff	1.299	2	726	4,449	------	------	------	PR WS-02B(I)
3	SCS Runoff	0.329	2	724	988	------	------	------	PR WS-02B(III)
4	SCS Runoff	1.625	2	726	5,759	------	------	------	PR WS-02C
5	SCS Runoff	4.374	2	736	20,803	------	------	------	PR WS-02D
6	SCS Runoff	0.639	2	724	2,044	------	------	------	PR WS-02E
7	SCS Runoff	3.218	2	724	10,300	------	------	------	PR WS-02F
8	SCS Runoff	4.365	2	724	14,196	------	------	------	PR WS-02A
9	SCS Runoff	1.584	2	724	5,153	------	------	------	PR WS-02G(I)
10	SCS Runoff	1.392	2	724	4,527	------	------	------	PR WS-02G(II)
11	SCS Runoff	0.491	2	730	2,000	------	------	------	PR WS-02H
12	SCS Runoff	2.681	2	732	12,044	------	------	------	PR WS-02I
13	SCS Runoff	0.822	2	798	10,924	------	------	------	PR WS-03
14	Reservoir	4.352	2	736	16,179	5	139.00	3,136	TWIN 36IN PIPES (#2)
15	Reservoir	0.000	2	634	0	6	135.52	717	INFIL-3
16	Reservoir	2.634	2	726	3,558	7	136.82	2,494	INIFL-4
17	Reservoir	0.000	2	724	0	11	131.44	1,262	36 INCH PIPE (#3)
18	Reservoir	2.770	2	728	6,100	12	135.68	2,407	TWO 36 INCH PIPES
19	Combine	5.322	2	732	21,938	4, 14,	------	------	<no description>
20	Reservoir	0.849	2	728	1,186	10	134.09	1,080	INFIL-2
21	Combine	5.950	2	724	19,349	8, 9,	------	------	<no description>
22	Reservoir	0.573	2	750	1,391	21	134.85	6,983	INFIL-1
23	Combine	6.557	2	728	27,375	2, 3, 15, 19,	------	------	<no description>
24	Combine	3.679	2	728	18,210	13, 17, 18, 20,	------	------	<no description>
25	Combine	12.75	2	728	50,534	16, 22, 23, 24	------	------	<no description>

Hydrograph Report

     Thursday, 04 / 4 / 2024

Hyd. No. 1

PR WS-01

Hydrograph type	= SCS Runoff		Peak discharge	= 1.538 cfs
Storm frequency	= 2 yrs		Time to peak	= 12.60 hrs
Time interval	= 2 min		Hyd. volume	= 11,183 cuft
Drainage area	= 3.405 ac		Curve number	= 68
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 45.70 min
Total precip.	= 3.52 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

PR WS-01

Hyd. No. 1 -- 2 Year

Q (cfs)

Hyd No. 1

Hydrograph Report

Thursday, 04 / 4 / 2024
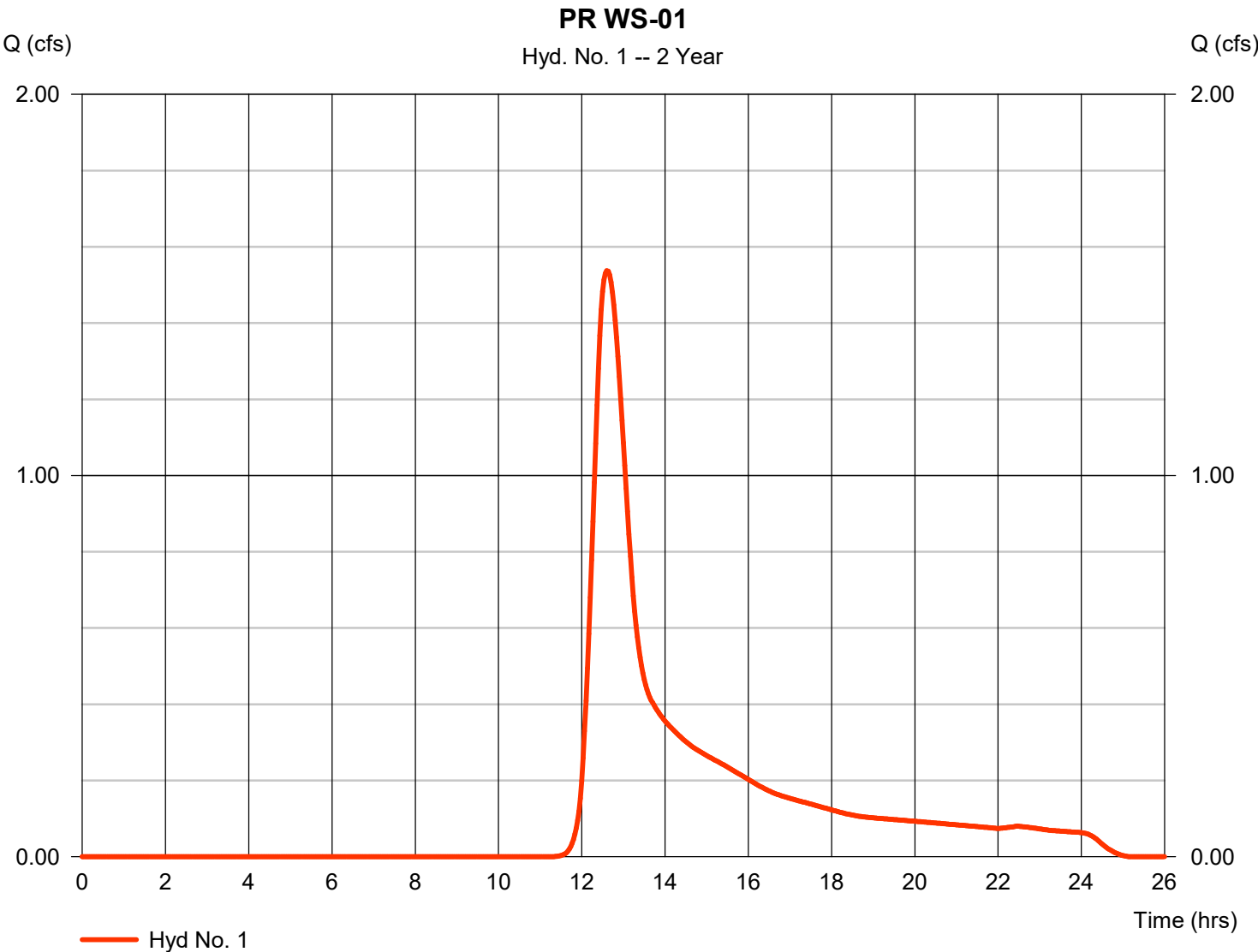
Hyd. No. 2

PR WS-02B(I)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.299 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 4,449 cuft
Drainage area	= 0.557 ac	Curve number	= 87
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 7.40 min
Total precip.	= 3.52 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02B(I)
Hyd. No. 2 -- 2 Year
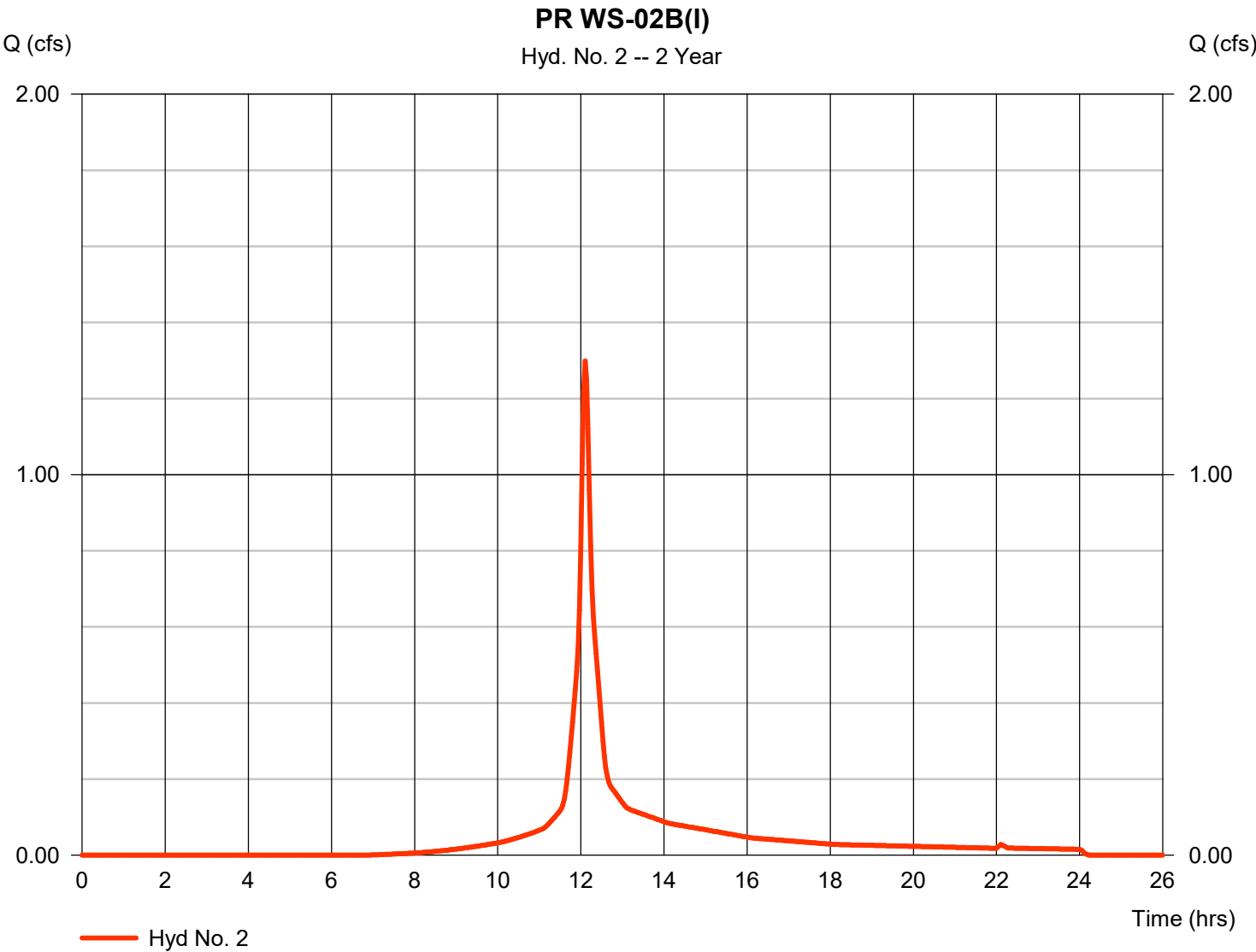
Hydrograph Report

Hyd. No. 3

PR WS-02B(III)

Hydrograph type	= SCS Runoff		Peak discharge	= 0.329 cfs
Storm frequency	= 2 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 988 cuft
Drainage area	= 0.132 ac		Curve number	= 87
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.52 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

PR WS-02B(III)

Hyd. No. 3 -- 2 Year
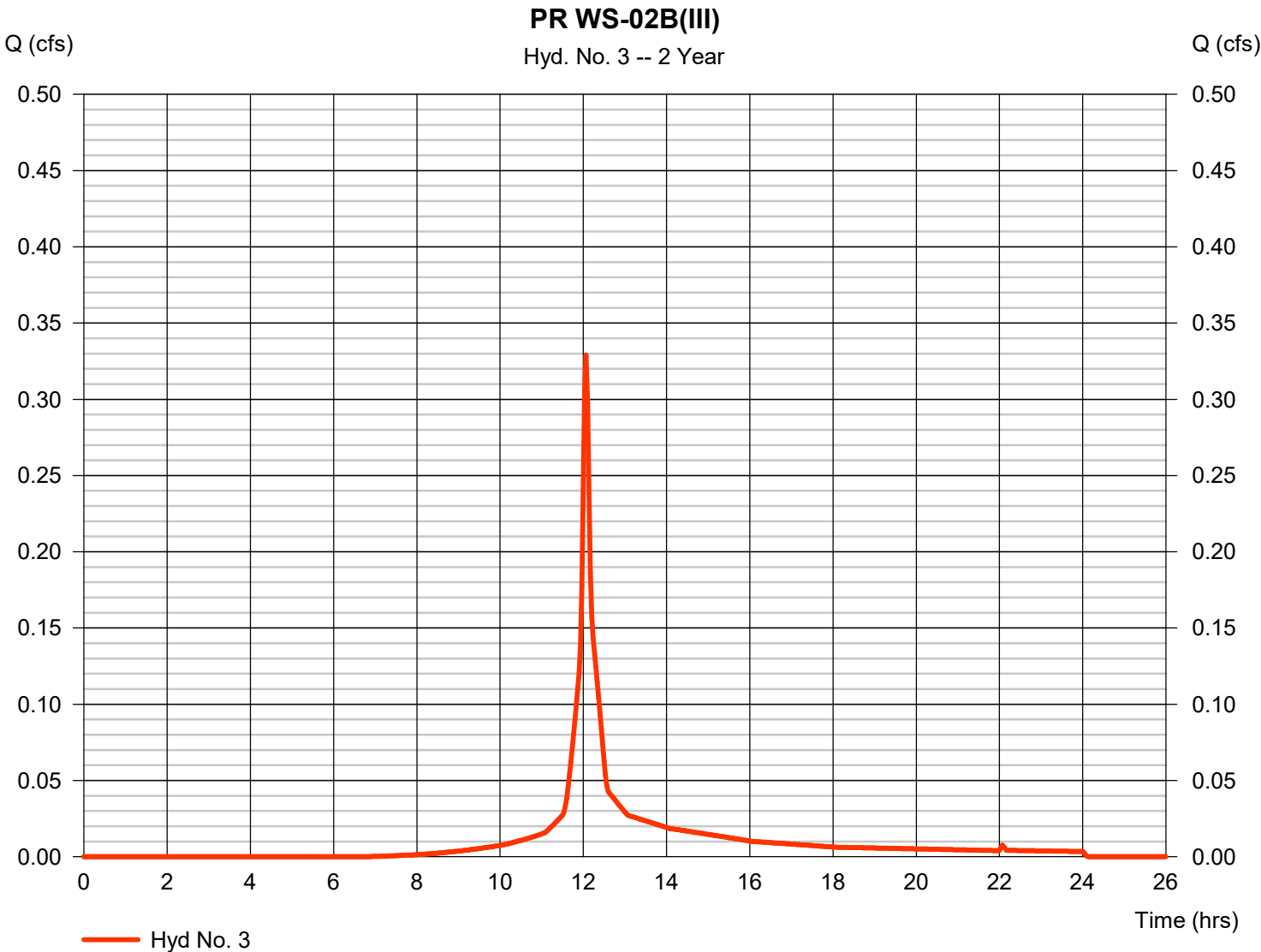
— Hyd No. 3

Hydrograph Report

Hyd. No. 4

PR WS-02C

Hydrograph type	= SCS Runoff		Peak discharge	= 1.625 cfs
Storm frequency	= 2 yrs		Time to peak	= 12.10 hrs
Time interval	= 2 min		Hyd. volume	= 5,759 cuft
Drainage area	= 0.576 ac		Curve number	= 93
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 9.40 min
Total precip.	= 3.52 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

PR WS-02C

Hyd. No. 4 -- 2 Year

— Hyd No. 4

Hydrograph Report

　　　　　　　Thursday, 04 / 4 / 2024

Hyd. No. 5

PR WS-02D

Hydrograph type	= SCS Runoff	Peak discharge	= 4.374 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.27 hrs
Time interval	= 2 min	Hyd. volume	= 20,803 cuft
Drainage area	= 2.462 ac	Curve number	= 88
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 22.10 min
Total precip.	= 3.52 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02D

Hyd. No. 5 -- 2 Year

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 6

PR WS-02E

Hydrograph type	= SCS Runoff	Peak discharge	= 0.639 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 2,044 cuft
Drainage area	= 0.203 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.52 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02E

Hyd. No. 6 -- 2 Year
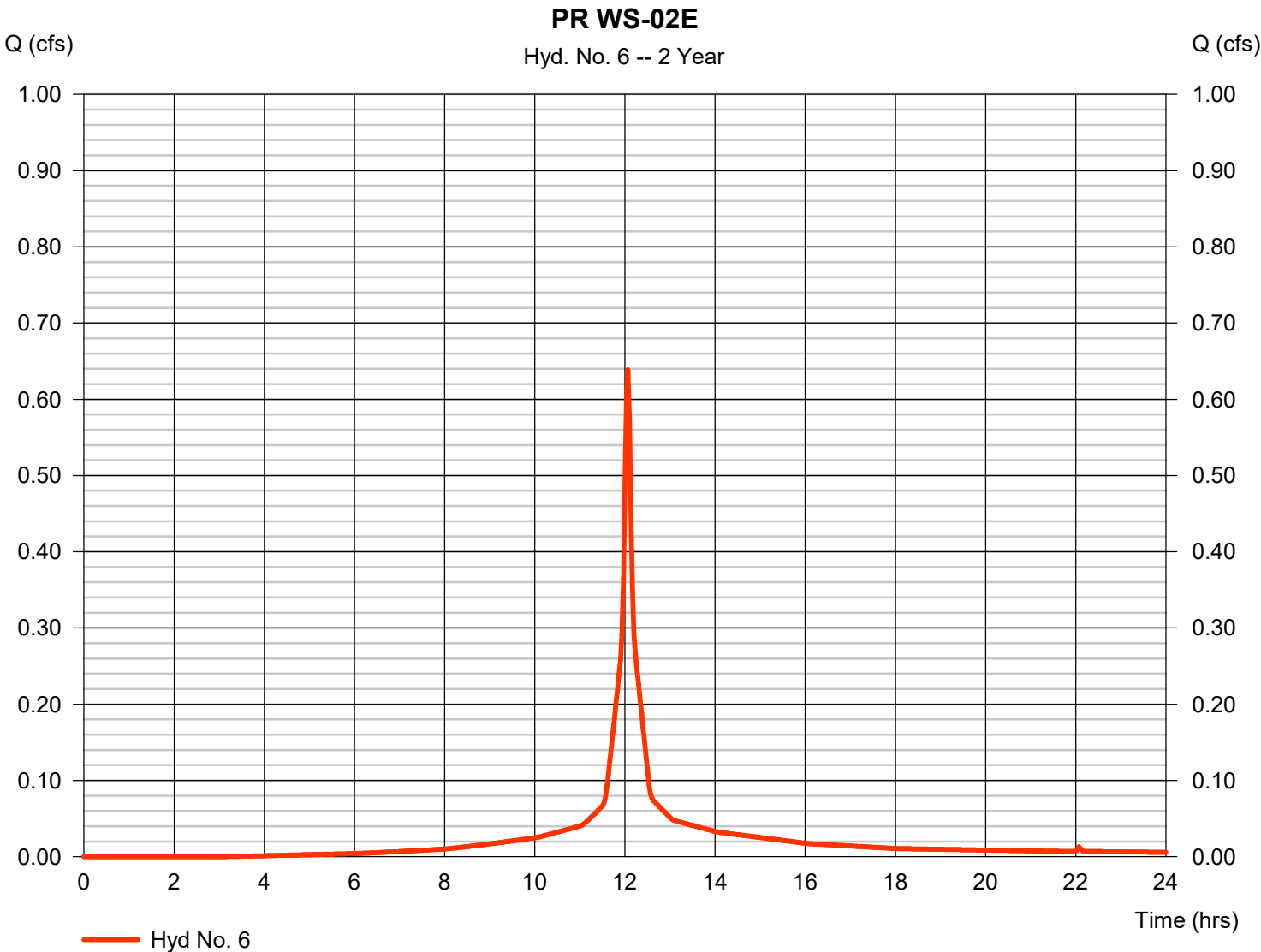
Hyd No. 6

Hydrograph Report

Hyd. No. 7

PR WS-02F

Hydrograph type	= SCS Runoff	Peak discharge	= 3.218 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 10,300 cuft
Drainage area	= 1.023 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.52 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02F

Hyd. No. 7 -- 2 Year

--- Hyd No. 7

Hydrograph Report

Thursday, 04 / 4 / 2024
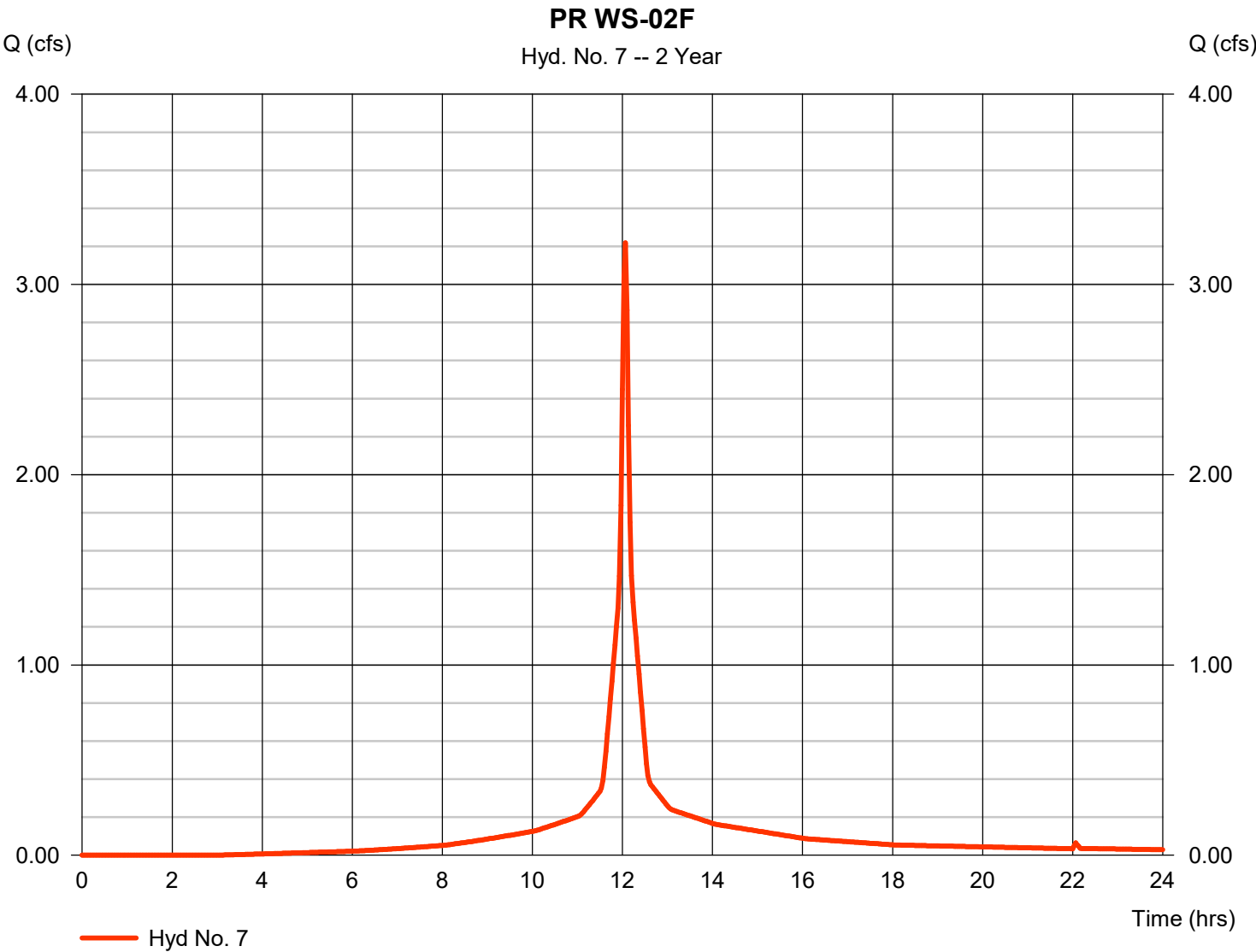
Hyd. No. 8

PR WS-02A

Hydrograph type	= SCS Runoff	Peak discharge	= 4.365 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 14,196 cuft
Drainage area	= 1.361 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.52 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02A

Hyd. No. 8 -- 2 Year
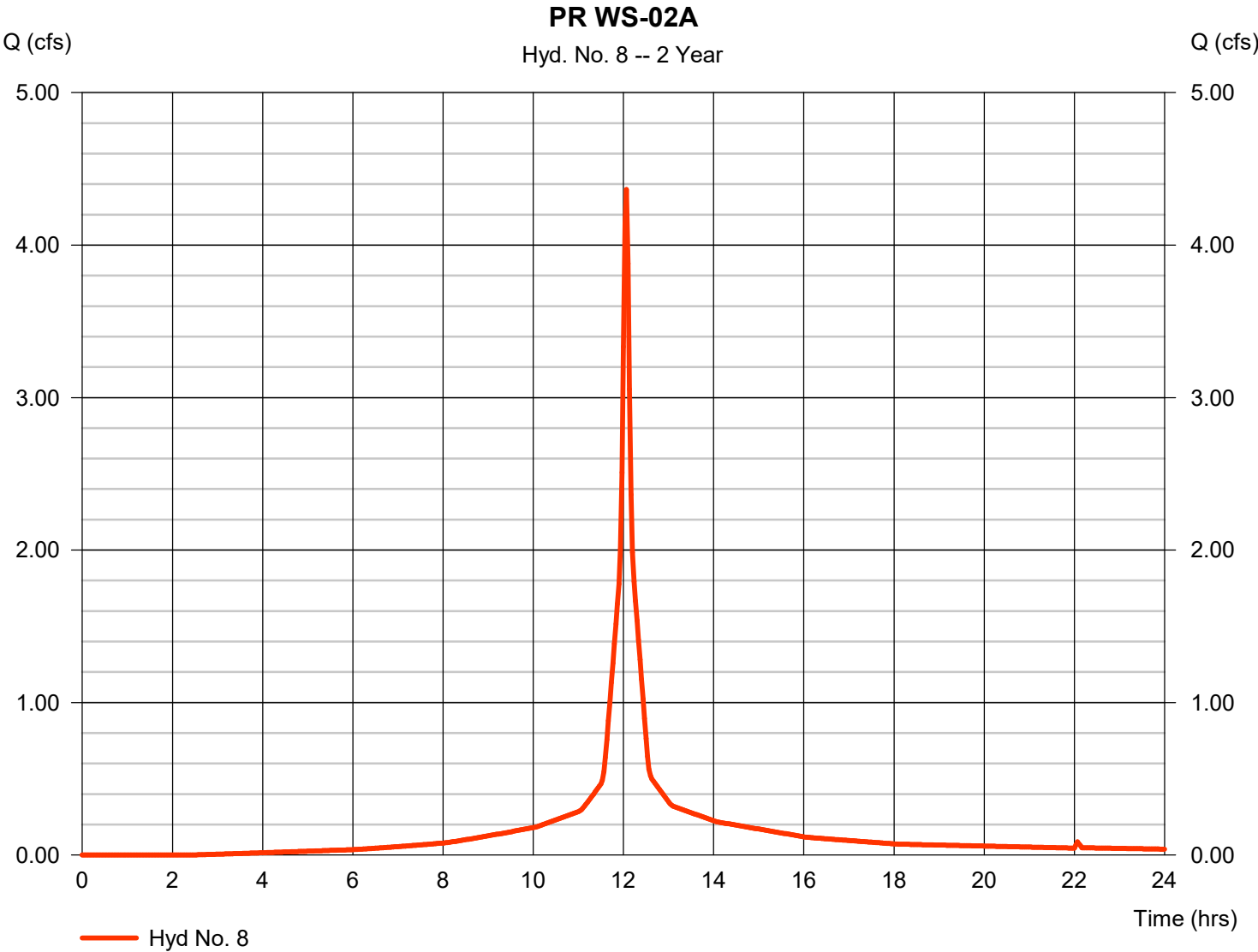
Hyd No. 8

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 9

PR WS-02G(I)

Hydrograph type	= SCS Runoff		Peak discharge	= 1.584 cfs
Storm frequency	= 2 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 5,153 cuft
Drainage area	= 0.494 ac		Curve number	= 96
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.52 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

PR WS-02G(I)

Hyd. No. 9 -- 2 Year

Hydrograph Report

Thursday, 04 / 4 / 2024
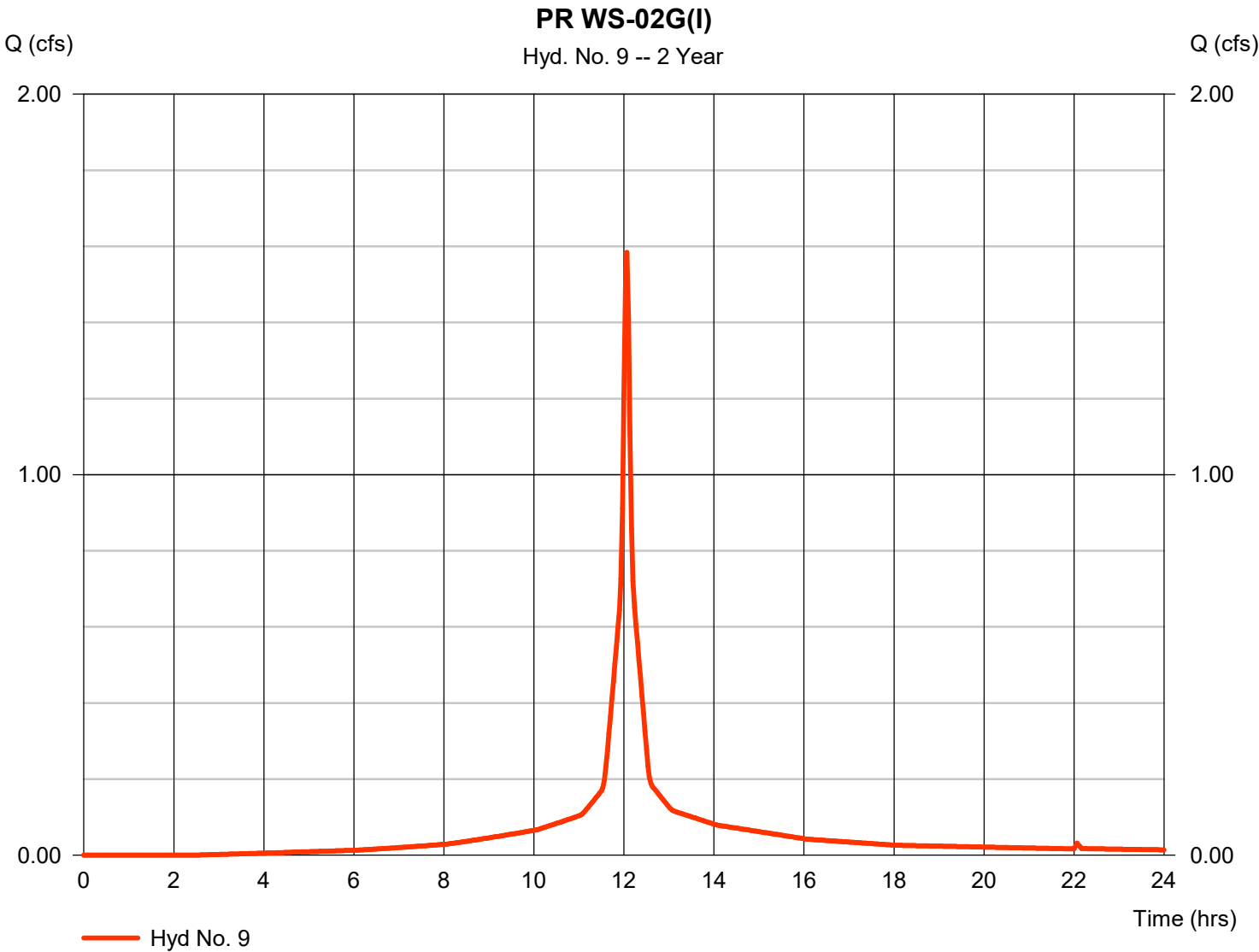
Hyd. No. 10

PR WS-02G(II)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.392 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 4,527 cuft
Drainage area	= 0.434 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.52 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02G(II)

Hyd. No. 10 -- 2 Year
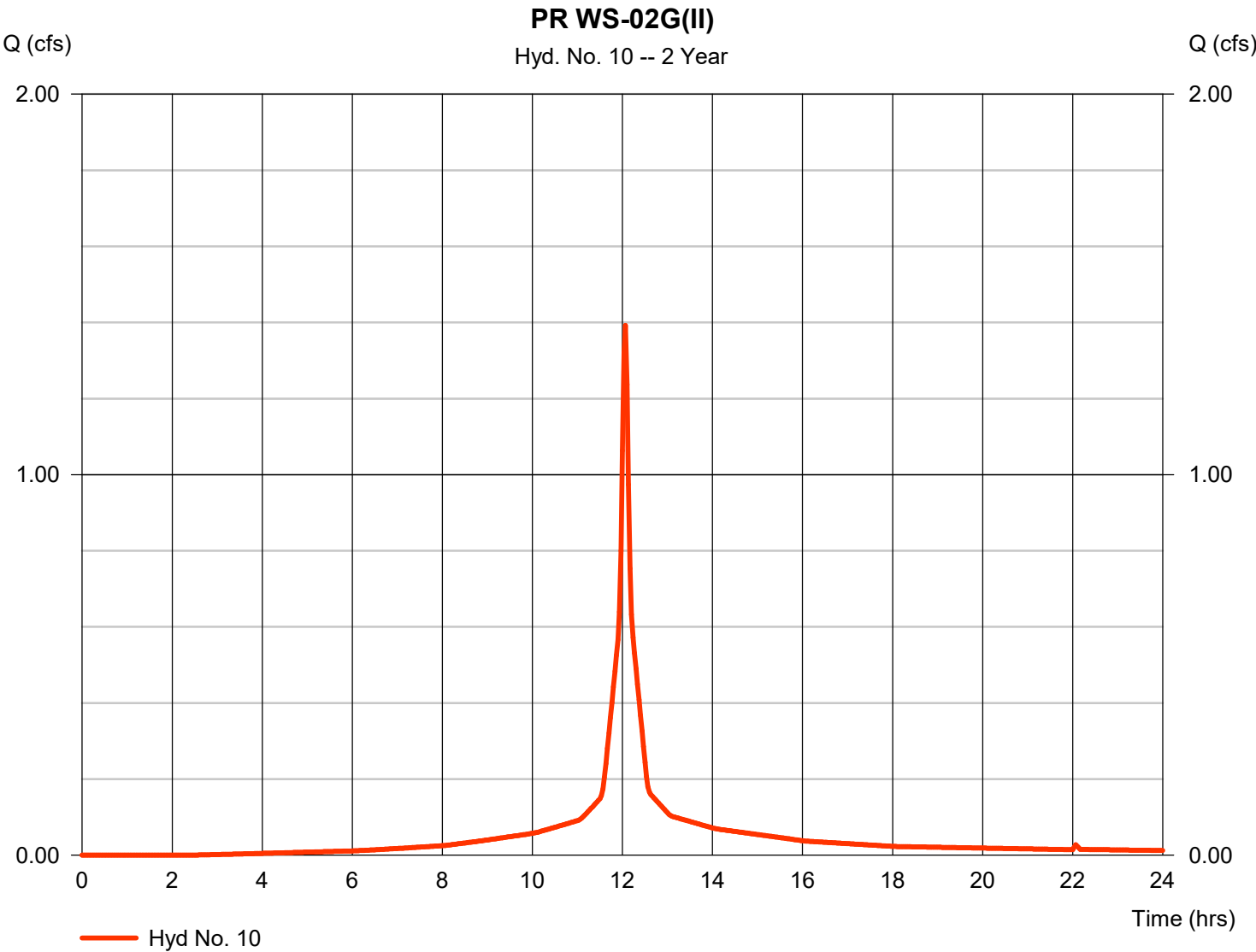
Hyd No. 10

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 11

PR WS-02H

Hydrograph type	= SCS Runoff	Peak discharge	= 0.491 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 2,000 cuft
Drainage area	= 0.267 ac	Curve number	= 86
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.80 min
Total precip.	= 3.52 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02H

Hyd. No. 11 -- 2 Year

Hyd No. 11

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Thursday, 04 / 4 / 2024

Hyd. No. 12

PR WS-02I

Hydrograph type	= SCS Runoff	Peak discharge	= 2.681 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 12,044 cuft
Drainage area	= 1.296 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.60 min
Total precip.	= 3.52 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02I

Hyd. No. 12 -- 2 Year

Hydrograph Report

Hyd. No. 13

PR WS-03

Hydrograph type	= SCS Runoff	Peak discharge	= 0.822 cfs
Storm frequency	= 2 yrs	Time to peak	= 13.30 hrs
Time interval	= 2 min	Hyd. volume	= 10,924 cuft
Drainage area	= 4.837 ac	Curve number	= 62
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 95.00 min
Total precip.	= 3.52 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-03

Hyd. No. 13 -- 2 Year

Hyd No. 13

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Hyd. No. 14

TWIN 36IN PIPES (#2)

Hydrograph type	= Reservoir		Peak discharge	= 4.352 cfs
Storm frequency	= 2 yrs		Time to peak	= 12.27 hrs
Time interval	= 2 min		Hyd. volume	= 16,179 cuft
Inflow hyd. No.	= 5 - PR WS-02D		Max. Elevation	= 139.00 ft
Reservoir name	= Northern Twin 36IN		Max. Storage	= 3,136 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

TWIN 36IN PIPES (#2)
Hyd. No. 14 -- 2 Year
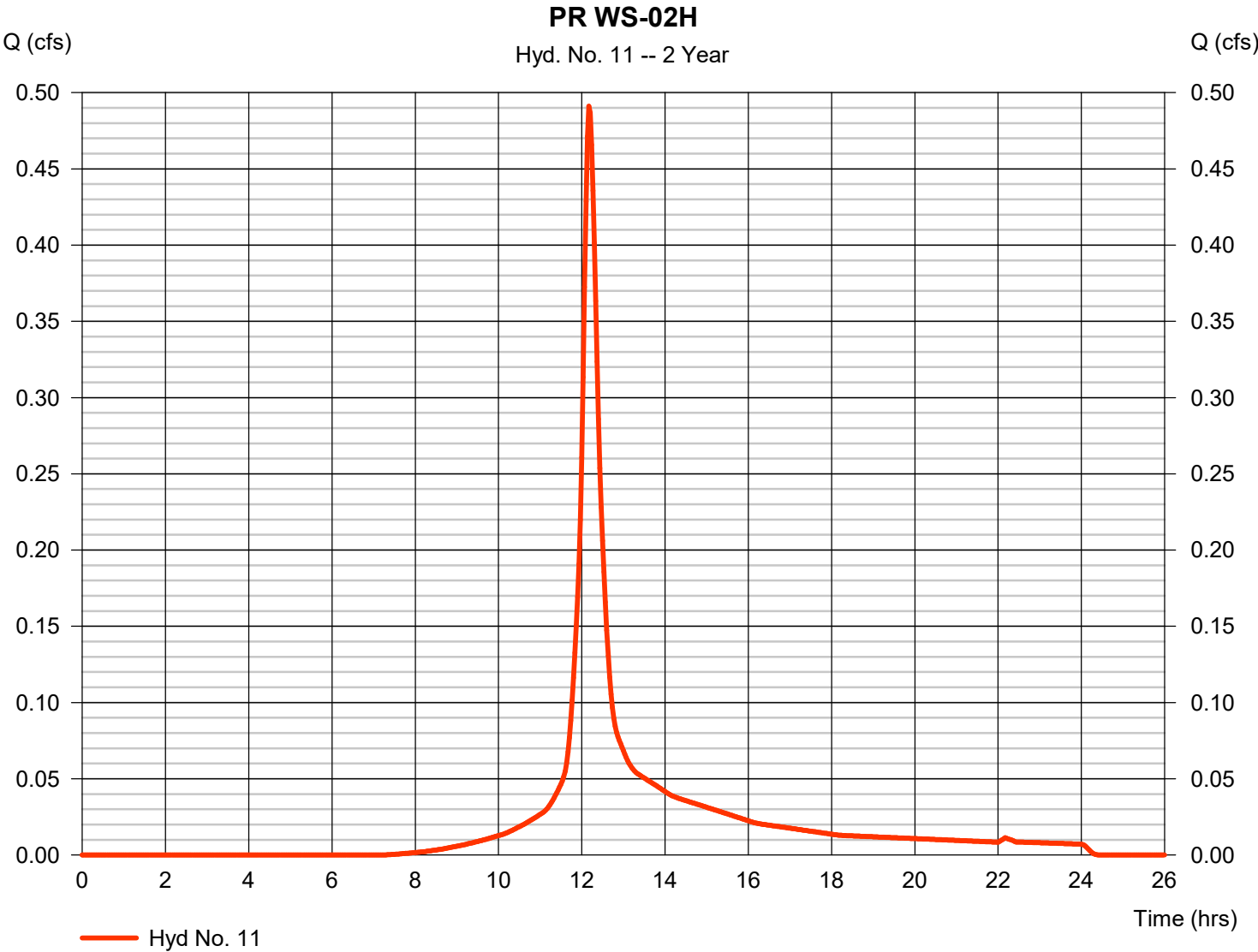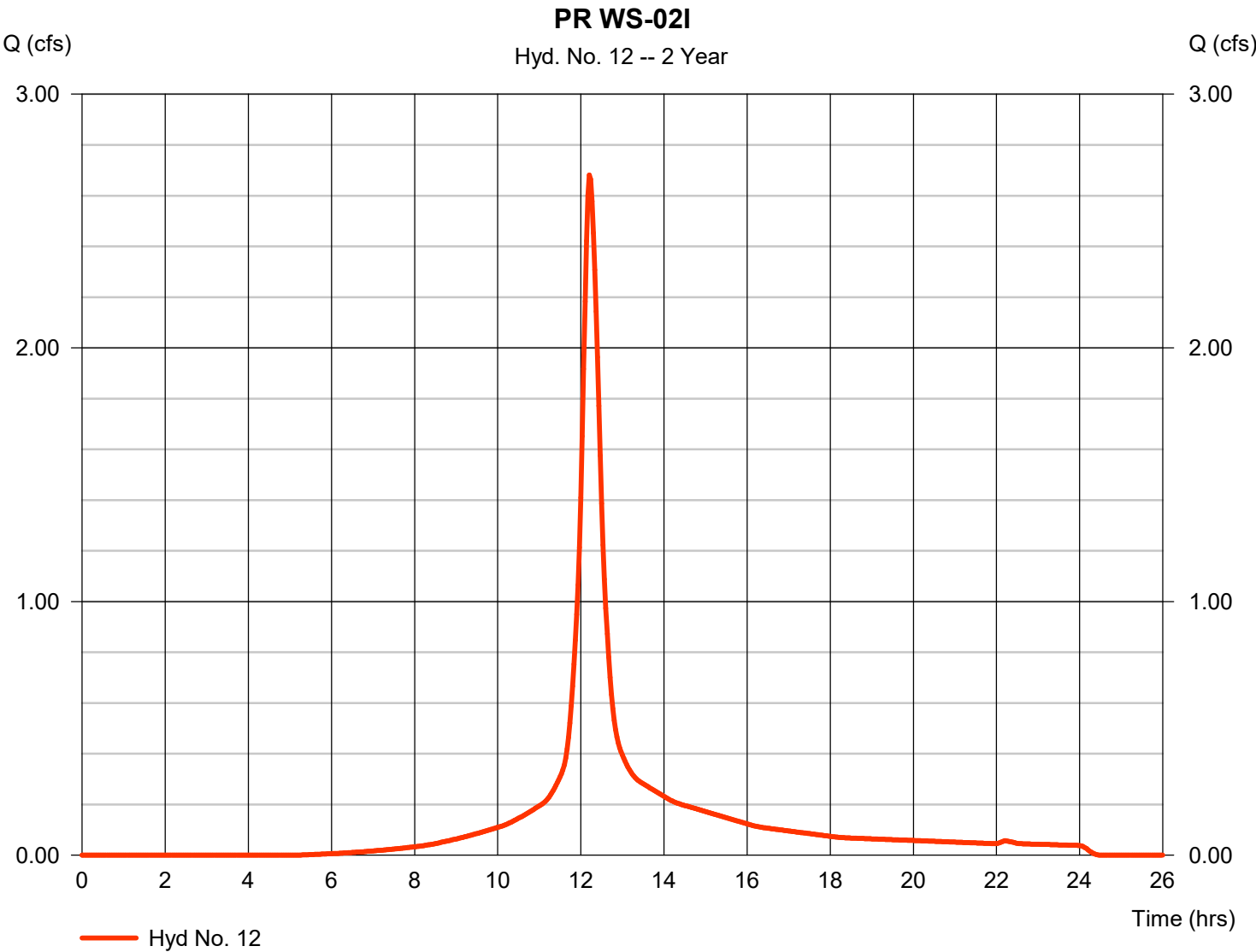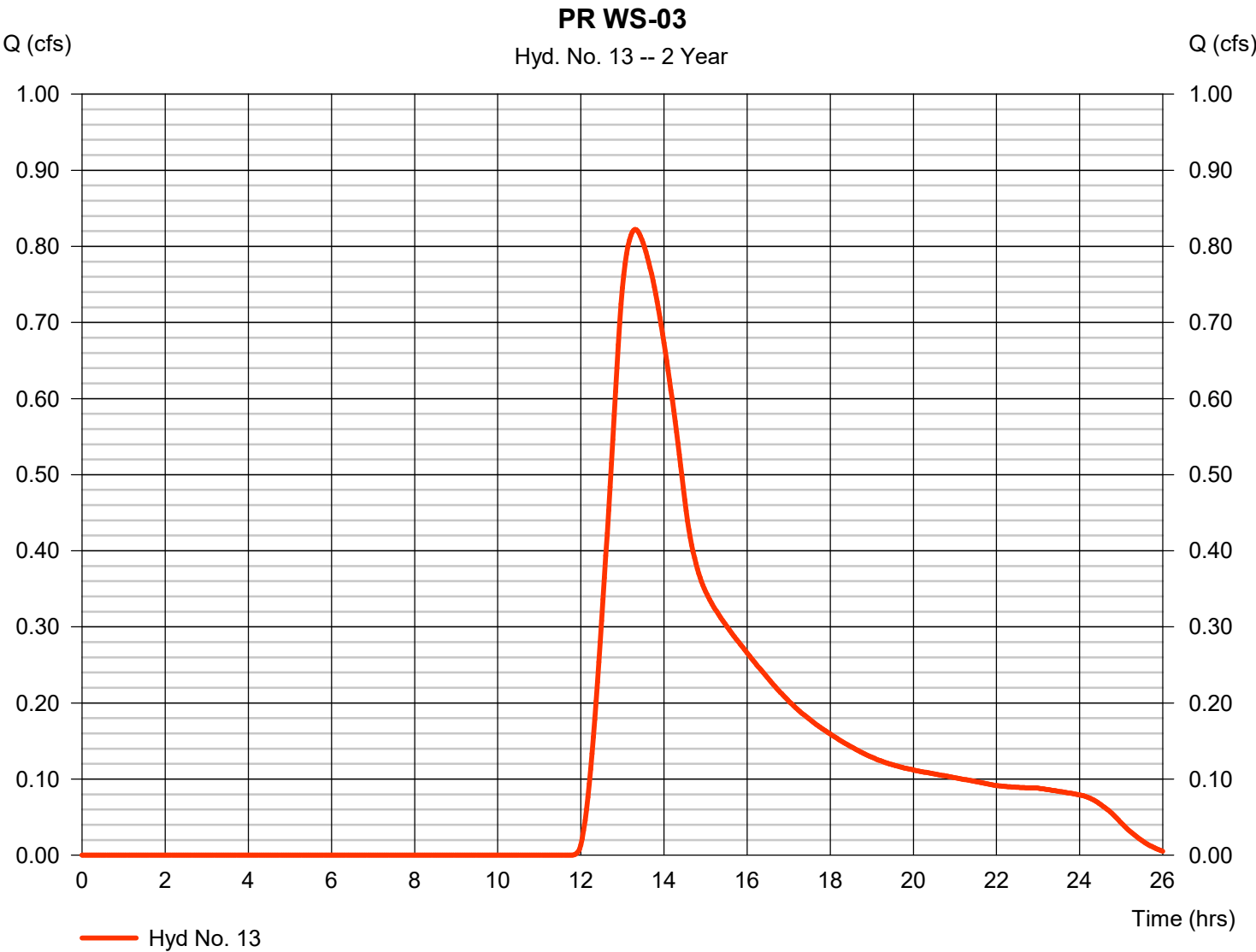
Legend: Hyd No. 14, Hyd No. 5, Total storage used = 3,136 cuft

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021   Thursday, 04 / 4 / 2024

Pond No. 6 - Northern Twin 36IN

Pond Data

UG Chambers - Invert elev. = 131.00 ft, Rise x Span = 3.00 x 3.00 ft, Barrel Len = 120.00 ft, No. Barrels = 2, Slope = 0.00%, Headers = No
Enclosure- User-defined contour area. Average end area method for volume calculation. Begining Elevation = 138.30 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	130.50	n/a	0	0
0.35	130.85	n/a	168	168
0.70	131.20	n/a	197	365
1.05	131.55	n/a	267	632
1.40	131.90	n/a	297	929
1.75	132.25	n/a	313	1,242
2.10	132.60	n/a	319	1,561
2.45	132.95	n/a	316	1,877
2.80	133.30	n/a	305	2,182
3.15	133.65	n/a	282	2,464
3.50	134.00	n/a	234	2,698
7.80	138.30	01	2	2,701
8.50	139.00	1,250	438	3,138
9.50	140.00	7,570	4,410	7,548

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 30.00	Inactive	Inactive	Inactive
Span (in)	= 30.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 134.20	0.00	0.00	0.00
Length (ft)	= 69.00	0.00	0.00	0.00
Slope (%)	= 0.50	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	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 15.00	Inactive	Inactive	Inactive
Crest El. (ft)	= 138.80	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Broad	---	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 1.000 (by Contour)			
TW Elev. (ft)	= 0.00			

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

Stage / Discharge

Total Q

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 15

INFIL-3

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 10.57 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 6 - PR WS-02E	Max. Elevation	= 135.52 ft
Reservoir name	= INFIL-3	Max. Storage	= 717 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

INFIL-3

Hyd. No. 15 -- 2 Year

Hyd No. 15   Hyd No. 6   Total storage used = 717 cuft

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021   Thursday, 04 / 4 / 2024
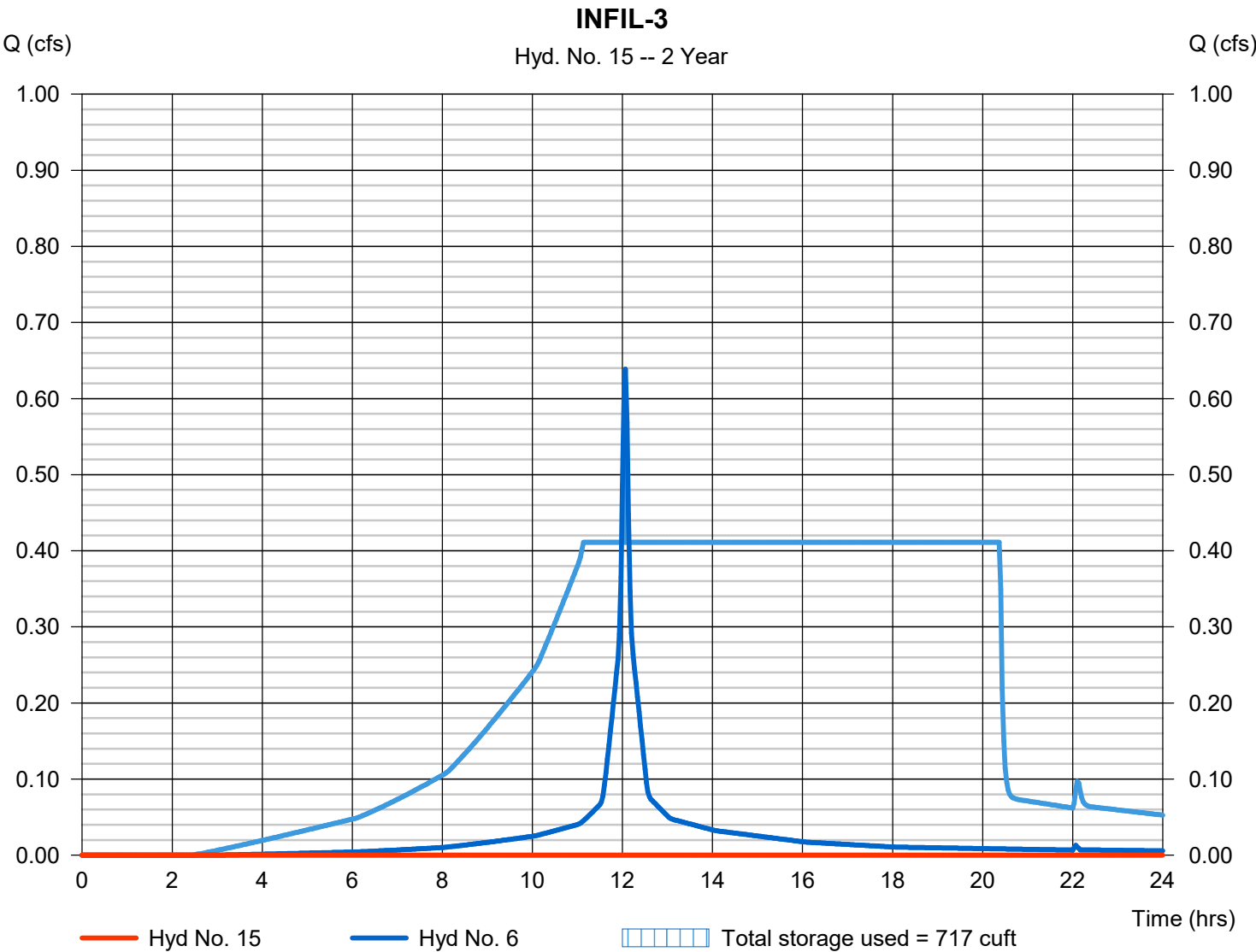
Pond No. 2 - INFIL-3

Pond Data

UG Chambers -Invert elev. = 136.00 ft, Rise x Span = 1.33 x 1.65 ft, Barrel Len = 102.88 ft, No. Barrels = 3, Slope = 0.00%, Headers = No
Encasement -Invert elev. = 135.50 ft, Width = 3.83 ft, Height = 2.33 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	135.50	n/a	0	0
0.23	135.73	n/a	110	110
0.47	135.97	n/a	110	220
0.70	136.20	n/a	171	391
0.93	136.43	n/a	179	570
1.17	136.66	n/a	175	745
1.40	136.90	n/a	168	913
1.63	137.13	n/a	156	1,069
1.86	137.36	n/a	132	1,201
2.10	137.60	n/a	110	1,311
2.33	137.83	n/a	110	1,421

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 6.00	Inactive	Inactive	Inactive
Span (in)	= 6.00	0.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 136.75	0.00	0.00	0.00
Length (ft)	= 28.00	0.00	0.00	0.00
Slope (%)	= 2.70	1.00	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	Inactive	Inactive	Inactive
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Broad	---	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 2.250 (by Contour)			
TW Elev. (ft)	= 0.00			

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

Stage / Discharge
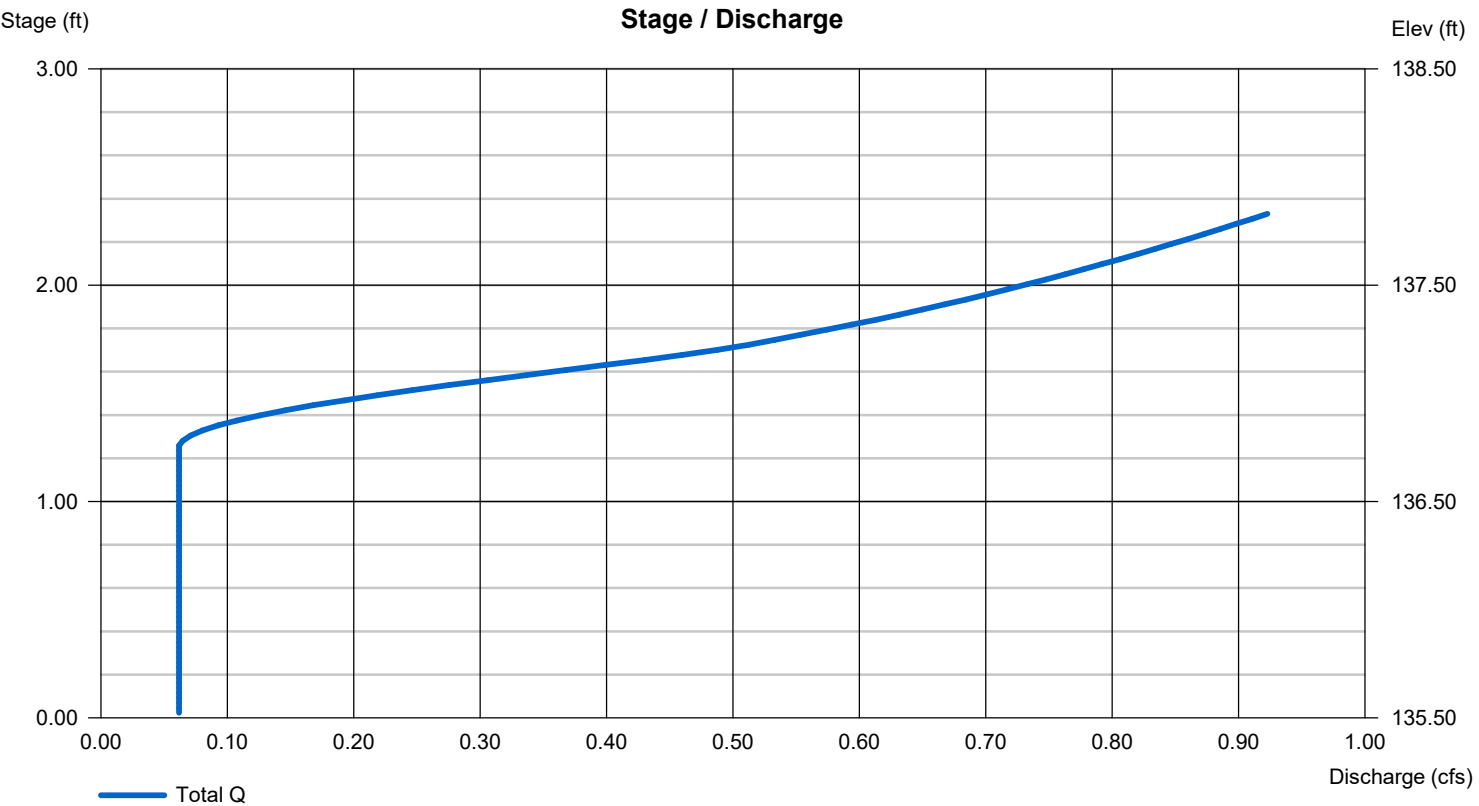
Hydrograph Report

Hyd. No. 16

INIFL-4

Hydrograph type	= Reservoir	Peak discharge	= 2.634 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 3,558 cuft
Inflow hyd. No.	= 7 - PR WS-02F	Max. Elevation	= 136.82 ft
Reservoir name	= INIFL-4	Max. Storage	= 2,494 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

INIFL-4

Hyd. No. 16 -- 2 Year

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021
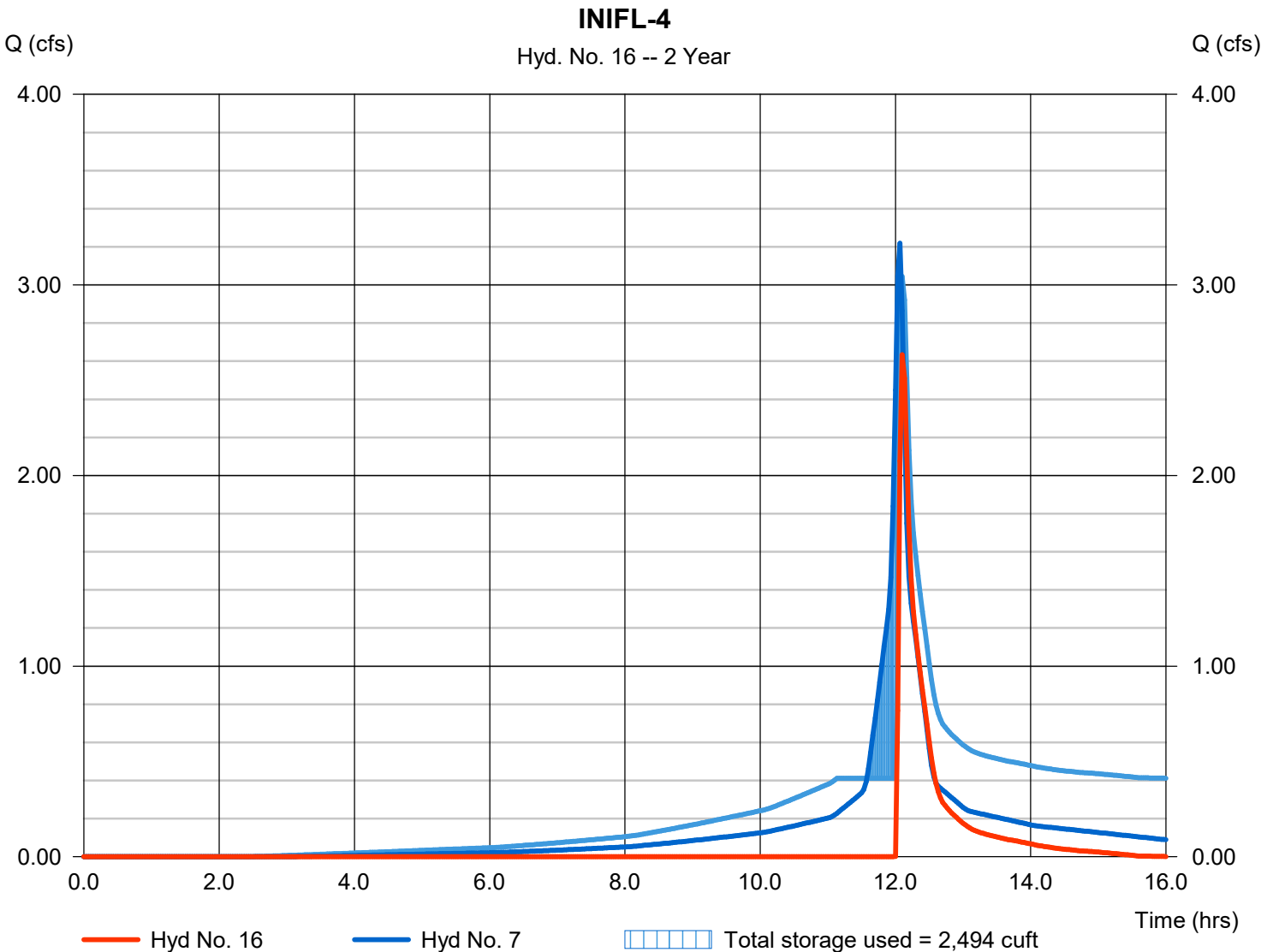
Pond No. 3 - INIFL-4

Pond Data

UG Chambers - Invert elev. = 133.75 ft, Rise x Span = 3.75 x 4.90 ft, Barrel Len = 63.06 ft, No. Barrels = 2, Slope = 0.00%, Headers = No
Encasement - Invert elev. = 133.00 ft, Width = 7.79 ft, Height = 5.50 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	133.00	n/a	0	0
0.55	133.55	n/a	216	216
1.10	134.10	n/a	346	562
1.65	134.65	n/a	417	979
2.20	135.20	n/a	410	1,389
2.75	135.75	n/a	397	1,786
3.30	136.30	n/a	378	2,164
3.85	136.85	n/a	350	2,513
4.40	137.40	n/a	303	2,816
4.95	137.95	n/a	222	3,038
5.50	138.50	n/a	216	3,254

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)	= 136.00	0.00	0.00	0.00
Length (ft)	= 29.00	0.00	0.00	0.00
Slope (%)	= 9.10	1.00	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)	= 5.000 (by Contour)			
TW Elev. (ft)	= 0.00			

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

Stage / Discharge

Total Q

Hydrograph Report

Hyd. No. 17

36 INCH PIPE (#3)

Hydrograph type	= Reservoir		Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 0 cuft
Inflow hyd. No.	= 11 - PR WS-02H		Max. Elevation	= 131.44 ft
Reservoir name	= 36IN - 3		Max. Storage	= 1,262 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

36 INCH PIPE (#3)

Hyd. No. 17 -- 2 Year

Hyd No. 17   Hyd No. 11   Total storage used = 1,262 cuft

Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021   Thursday, 04 / 4 / 2024

Pond No. 4 - 36IN - 3
Pond Data

UG Chambers - Invert elev. = 129.00 ft, Rise x Span = 3.00 x 3.00 ft, Barrel Len = 30.00 ft, No. Barrels = 1, Slope = 0.00%, Headers = No
Encasement user-defined, Invert elev. = 128.50 ft, Width = 5.00 ft, Height = 3.50 ft, Voids = 40.00% Beging Elevation = 136.20 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	128.50	n/a	0	0
0.35	128.85	n/a	21	21
0.70	129.20	n/a	25	46
1.05	129.55	n/a	33	79
1.40	129.90	n/a	37	116
1.75	130.25	n/a	39	155
2.10	130.60	n/a	40	195
2.45	130.95	n/a	40	235
2.80	131.30	n/a	38	273
3.15	131.65	n/a	35	308
3.50	132.00	n/a	29	337
7.20	136.20	01	2	339
9.00	137.50	5,250	4,726	5,065

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 15.00	Inactive	Inactive	Inactive
Span (in)	= 15.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 130.90	0.00	0.00	0.00
Length (ft)	= 13.00	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)	= 100.00	Inactive	Inactive	Inactive
Crest El. (ft)	= 137.50	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)	= 5.000 (by Contour)			
TW Elev. (ft)	= 0.00			

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

Stage / Discharge

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 18

TWO 36 INCH PIPES

Hydrograph type	= Reservoir		Peak discharge	= 2.770 cfs
Storm frequency	= 2 yrs		Time to peak	= 12.13 hrs
Time interval	= 2 min		Hyd. volume	= 6,100 cuft
Inflow hyd. No.	= 12 - PR WS-02I		Max. Elevation	= 135.68 ft
Reservoir name	= TWIN 36IN		Max. Storage	= 2,407 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

TWO 36 INCH PIPES

Hyd. No. 18 -- 2 Year

Hyd No. 18   Hyd No. 12   Total storage used = 2,407 cuft

Pond Report

Pond No. 5 - TWIN 36IN

Pond Data

UG Chambers - Invert elev. = 127.50 ft, Rise x Span = 3.00 x 3.00 ft, Barrel Len = 62.00 ft, No. Barrels = 2, Slope = 0.00%, Headers = No
Enclosure - User-defined contour areas. Average End area method used for volume calculation. Begining Elevation = 134.90 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	127.00	n/a	0	0
0.35	127.35	n/a	87	87
0.70	127.70	n/a	102	189
1.05	128.05	n/a	138	327
1.40	128.40	n/a	153	480
1.75	128.75	n/a	162	642
2.10	129.10	n/a	165	806
2.45	129.45	n/a	163	970
2.80	129.80	n/a	157	1,127
3.15	130.15	n/a	146	1,273
3.50	130.50	n/a	121	1,394
7.90	134.90	01	2	1,396
8.80	135.80	2,590	1,166	2,562

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 15.00	Inactive	Inactive	Inactive
Span (in)	= 15.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 129.60	0.00	0.00	0.00
Length (ft)	= 70.00	0.00	0.00	0.00
Slope (%)	= 2.00	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)	= 33.00	Inactive	Inactive	Inactive
Crest El. (ft)	= 135.60	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Broad	---	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 5.000 (by Contour)			
TW Elev. (ft)	= 0.00			

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

Stage / Discharge
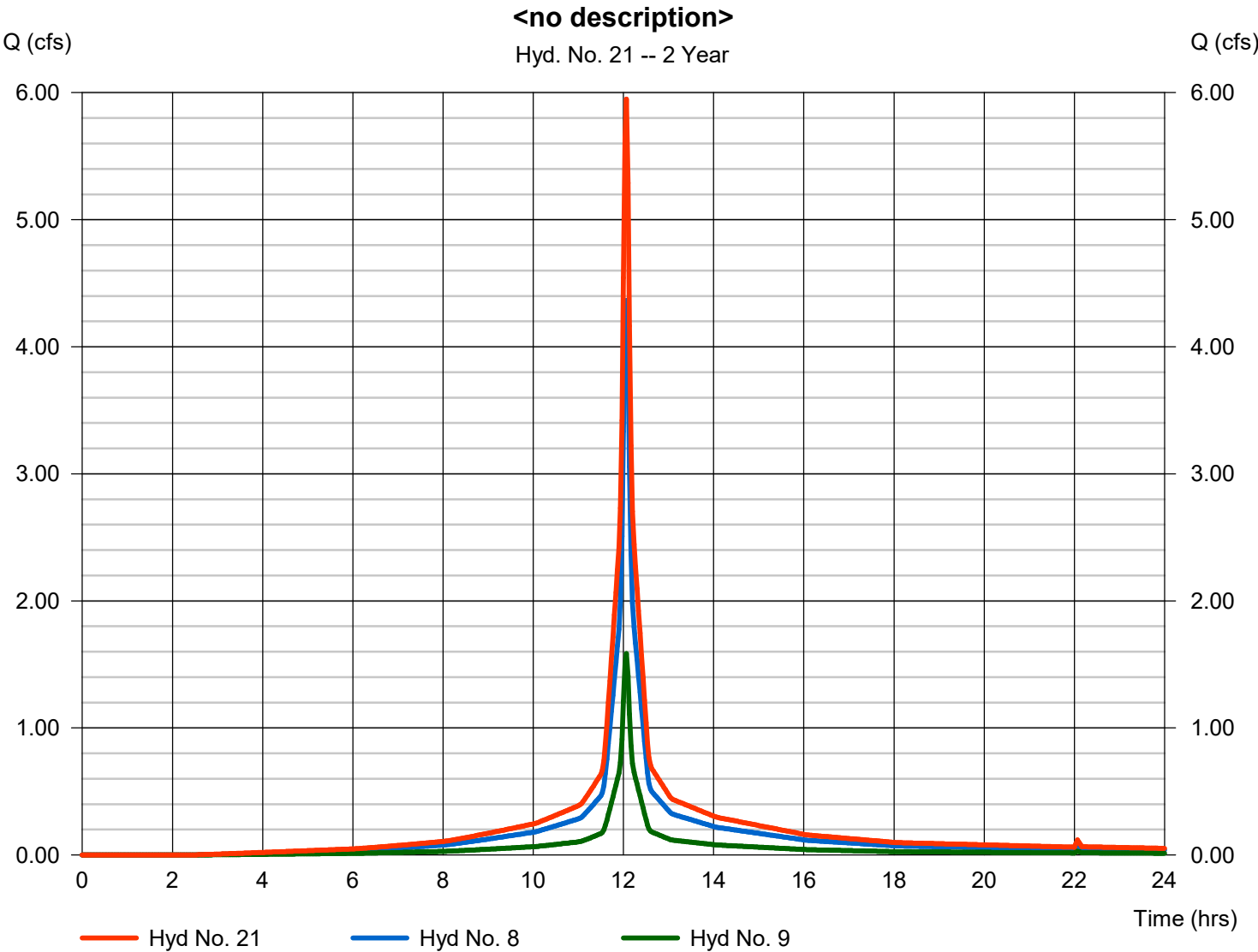
— Total Q

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 19

\<no description\>

Hydrograph type	= Combine		Peak discharge	= 5.322 cfs
Storm frequency	= 2 yrs		Time to peak	= 12.20 hrs
Time interval	= 2 min		Hyd. volume	= 21,938 cuft
Inflow hyds.	= 4, 14		Contrib. drain. area	= 0.576 ac
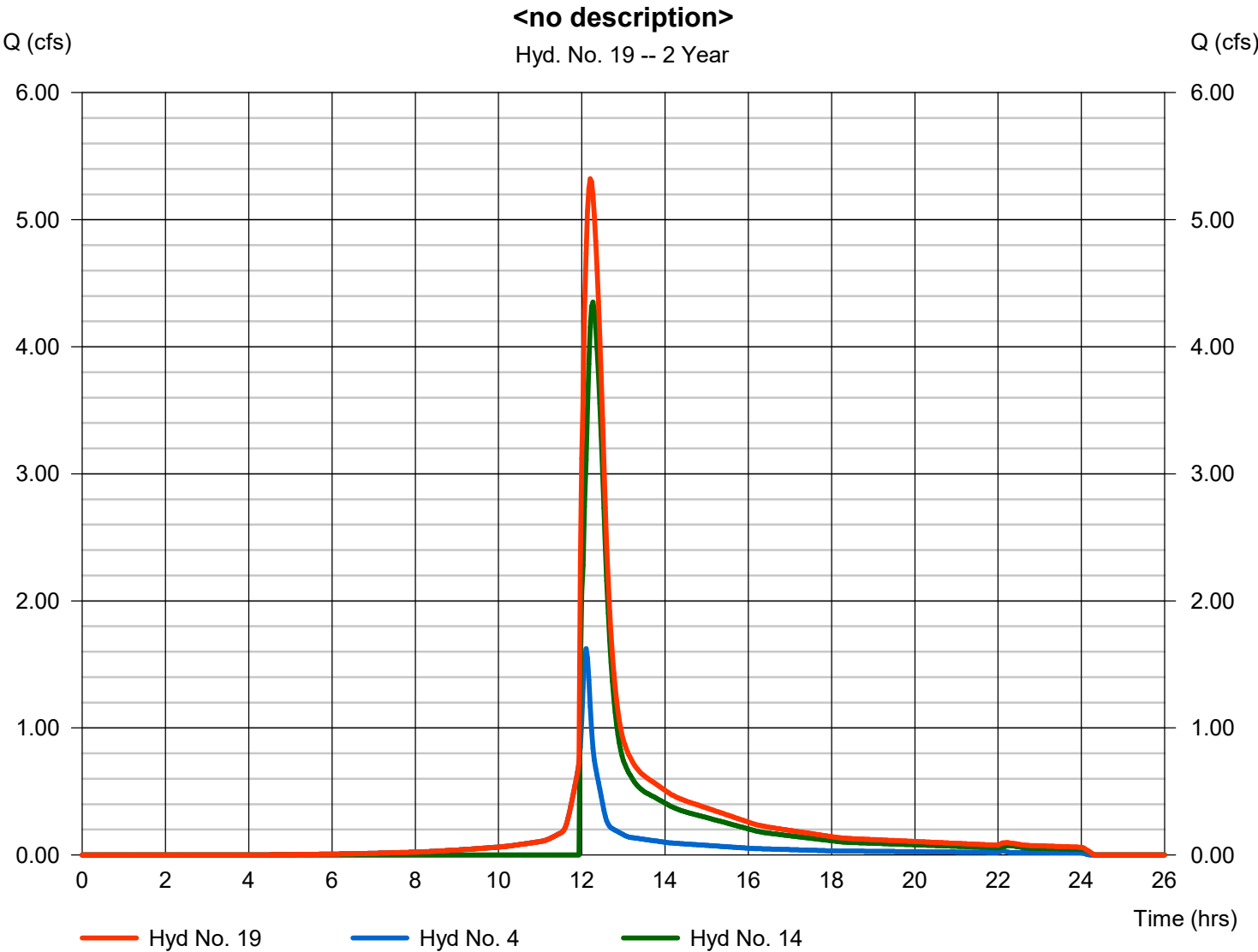
\<no description\>

Hyd. No. 19 -- 2 Year

Legend: ── Hyd No. 19   ── Hyd No. 4   ── Hyd No. 14

Hydrograph Report

Hyd. No. 20

INFIL-2

Hydrograph type	= Reservoir		Peak discharge	= 0.849 cfs
Storm frequency	= 2 yrs		Time to peak	= 12.13 hrs
Time interval	= 2 min		Hyd. volume	= 1,186 cuft
Inflow hyd. No.	= 10 - PR WS-02G(II)		Max. Elevation	= 134.09 ft
Reservoir name	= INFIL-2		Max. Storage	= 1,080 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

INFIL-2

Hyd. No. 20 -- 2 Year

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021   Thursday, 04 / 4 / 2024
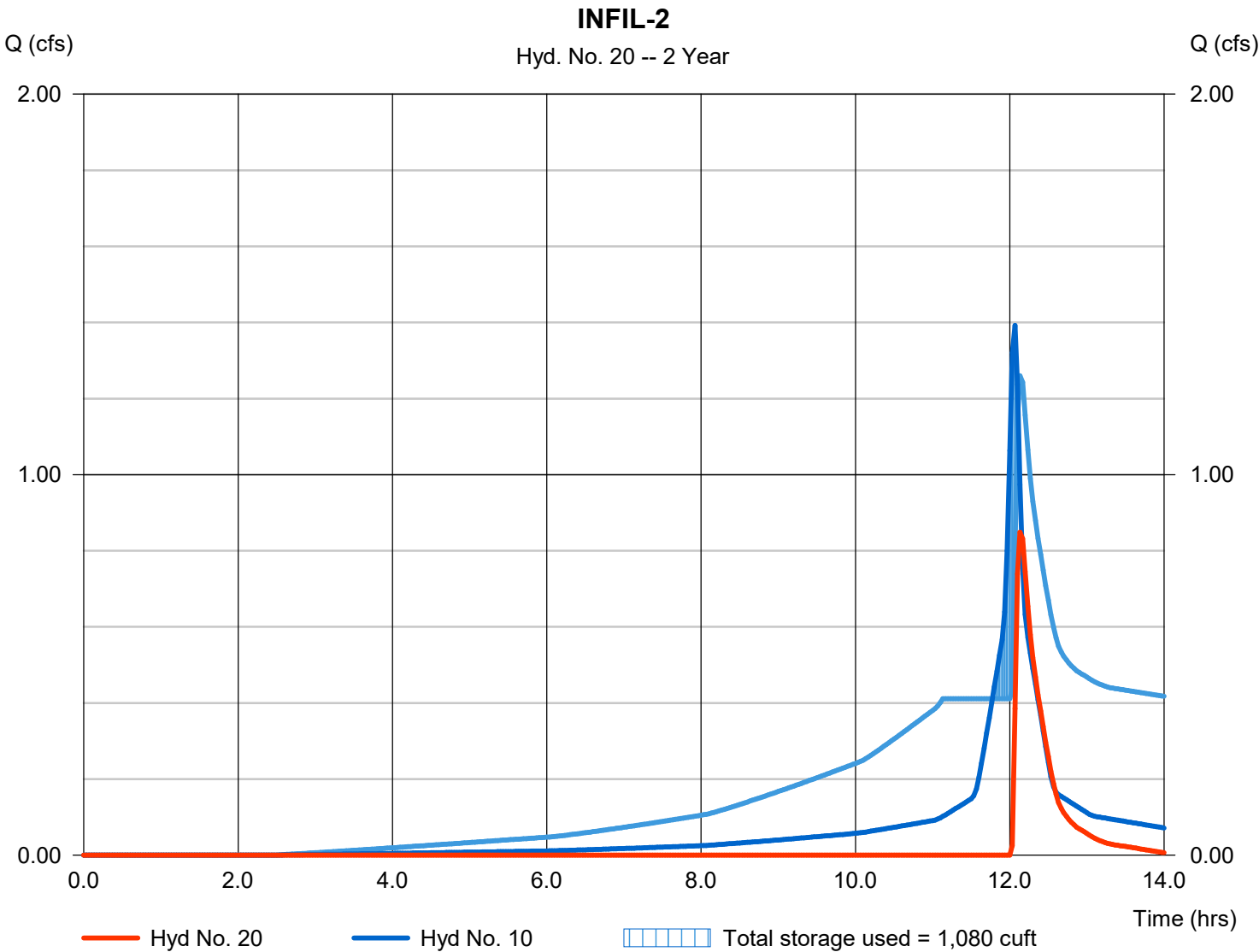
Pond No. 12 - INFIL-2

Pond Data

UG Chambers -Invert elev. = 132.25 ft, Rise x Span = 3.75 x 4.95 ft, Barrel Len = 77.40 ft, No. Barrels = 1, Slope = 0.00%, Headers = No
Encasement -Invert elev. = 131.50 ft, Width = 8.42 ft, Height = 5.50 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	131.50	n/a	0	0
0.55	132.05	n/a	143	143
1.10	132.60	n/a	224	367
1.65	133.15	n/a	268	635
2.20	133.70	n/a	263	899
2.75	134.25	n/a	256	1,154
3.30	134.80	n/a	244	1,398
3.85	135.35	n/a	226	1,624
4.40	135.90	n/a	197	1,821
4.95	136.45	n/a	147	1,968
5.50	137.00	n/a	143	2,111

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 8.00	Inactive	0.00	0.00
Span (in)	= 8.00	0.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 133.50	0.00	0.00	0.00
Length (ft)	= 28.00	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	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	= 25 degV	---	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 5.000 (by Contour)			
TW Elev. (ft)	= 0.00			

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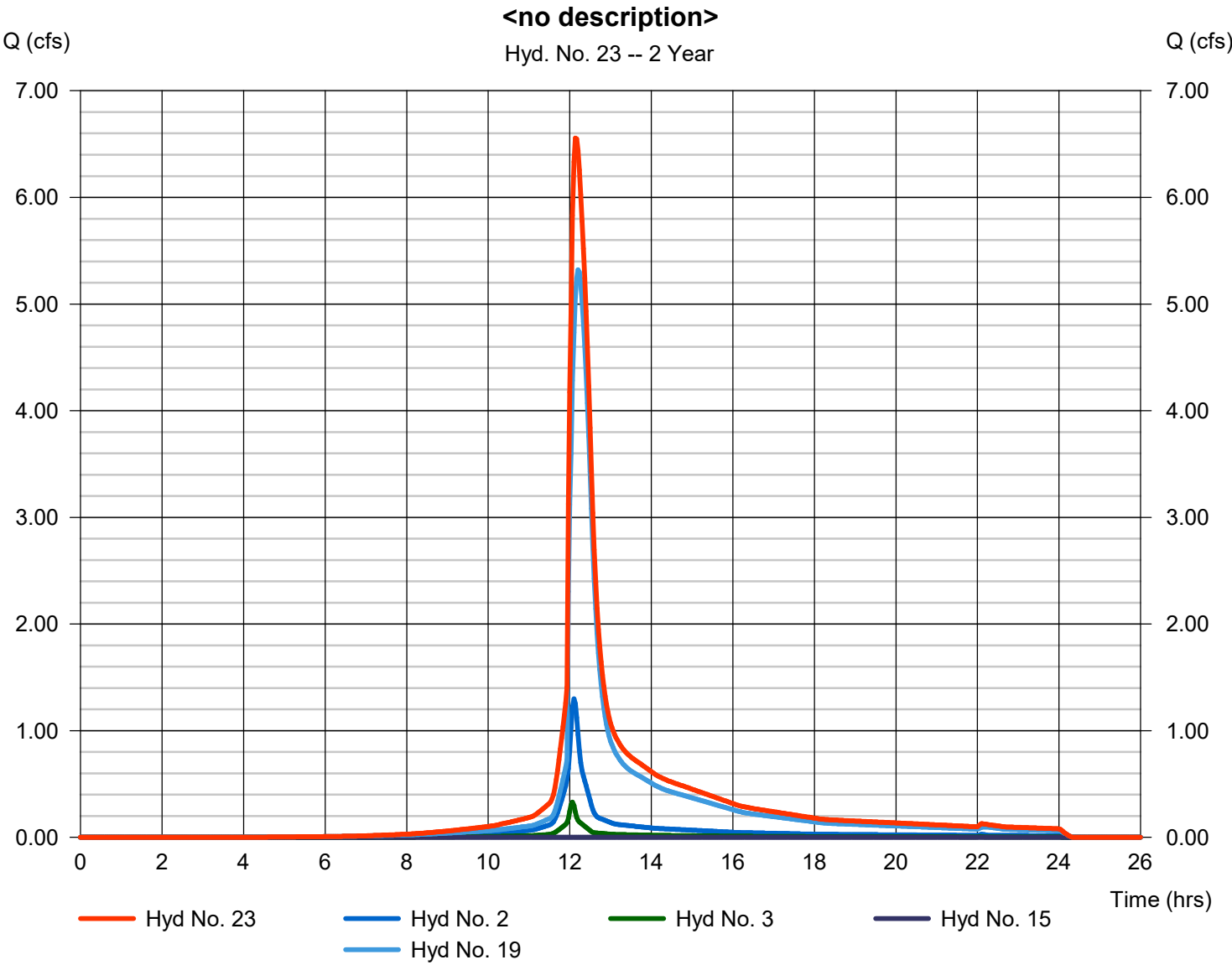

Stage / Discharge

Total Q

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 21

<no description>
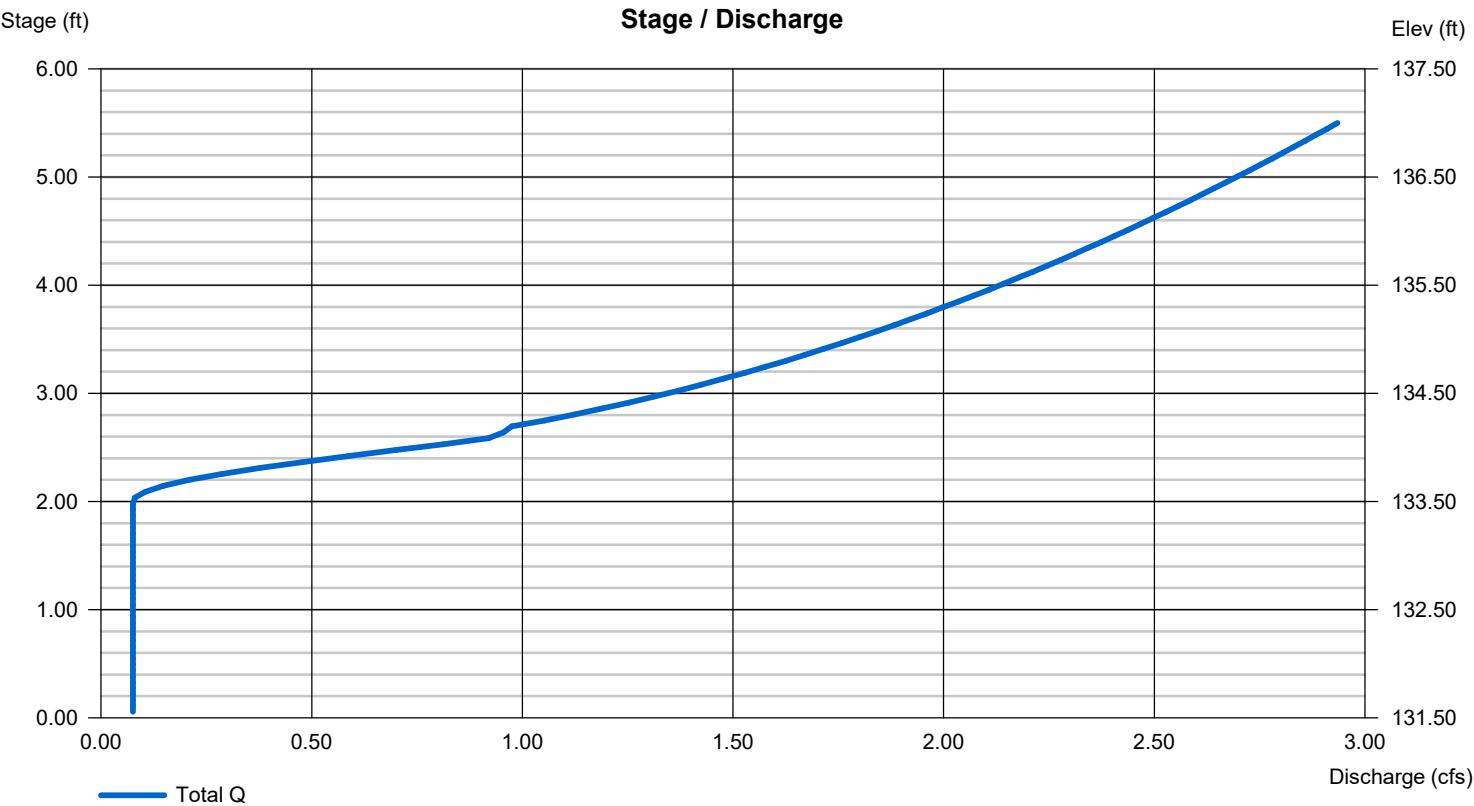
Hydrograph type	= Combine	Peak discharge	= 5.950 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 19,349 cuft
Inflow hyds.	= 8, 9	Contrib. drain. area	= 1.855 ac

<no description>

Hyd. No. 21 -- 2 Year

Q (cfs)

Q (cfs)

Time (hrs)

Hyd No. 21   Hyd No. 8   Hyd No. 9

Hydrograph Report

Hyd. No. 22

INFIL-1

Hydrograph type	= Reservoir		Peak discharge	= 0.573 cfs
Storm frequency	= 2 yrs		Time to peak	= 12.50 hrs
Time interval	= 2 min		Hyd. volume	= 1,391 cuft
Inflow hyd. No.	= 21 - <no description>		Max. Elevation	= 134.85 ft
Reservoir name	= INFIL-1		Max. Storage	= 6,983 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

INFIL-1

Hyd. No. 22 -- 2 Year

Legend: Hyd No. 22, Hyd No. 21, Total storage used = 6,983 cuft

Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021   Thursday, 04 / 4 / 2024
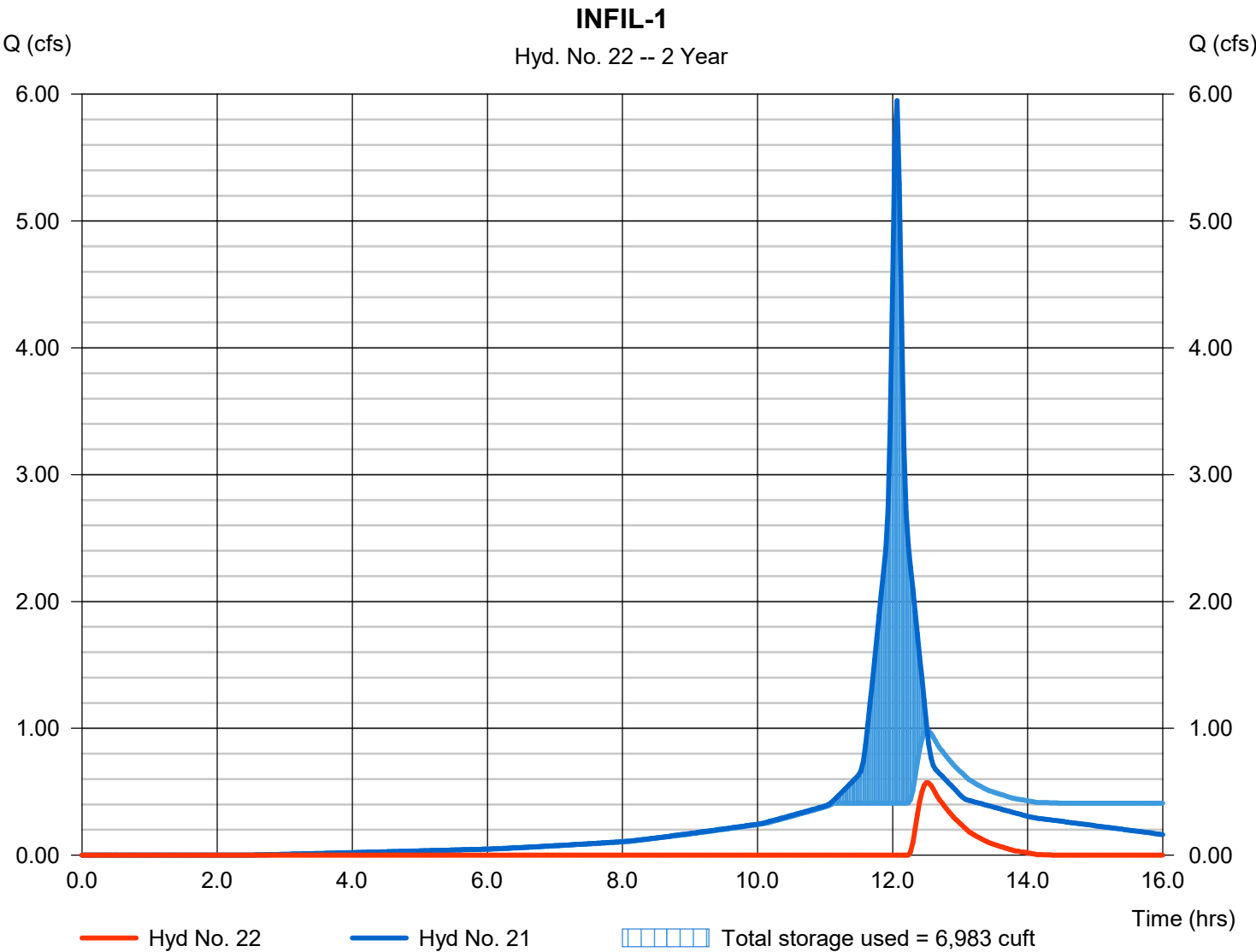
Pond No. 7 - INFIL-1

Pond Data

UG Chambers - Invert elev. = 132.75 ft, Rise x Span = 3.75 x 5.41 ft, Barrel Len = 227.97 ft, No. Barrels = 2, Slope = 0.00%, Headers = No
Encasement - Invert elev. = 132.00 ft, Width = 7.79 ft, Height = 5.50 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	132.00	n/a	0	0
0.55	132.55	n/a	782	782
1.10	133.10	n/a	1,299	2,080
1.65	133.65	n/a	1,584	3,664
2.20	134.20	n/a	1,554	5,218
2.75	134.75	n/a	1,503	6,721
3.30	135.30	n/a	1,427	8,149
3.85	135.85	n/a	1,314	9,463
4.40	136.40	n/a	1,127	10,589
4.95	136.95	n/a	804	11,394
5.50	137.50	n/a	782	12,175

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)	= 134.50	0.00	0.00	0.00
Length (ft)	= 20.00	0.00	0.00	0.00
Slope (%)	= 1.00	1.00	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)	= 5.000 (by Contour)			
TW Elev. (ft)	= 0.00			

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

Stage / Discharge

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 23

<no description>

Hydrograph type	= Combine		Peak discharge	= 6.557 cfs
Storm frequency	= 2 yrs		Time to peak	= 12.13 hrs
Time interval	= 2 min		Hyd. volume	= 27,375 cuft
Inflow hyds.	= 2, 3, 15, 19		Contrib. drain. area	= 0.689 ac

<no description>
Hyd. No. 23 -- 2 Year

Q (cfs)

Time (hrs)

Hyd No. 23   Hyd No. 2   Hyd No. 3   Hyd No. 15
Hyd No. 19

Hydrograph Report

Hyd. No. 24

<no description>

Hydrograph type	= Combine		Peak discharge	= 3.679 cfs
Storm frequency	= 2 yrs		Time to peak	= 12.13 hrs
Time interval	= 2 min		Hyd. volume	= 18,210 cuft
Inflow hyds.	= 13, 17, 18, 20		Contrib. drain. area	= 4.837 ac
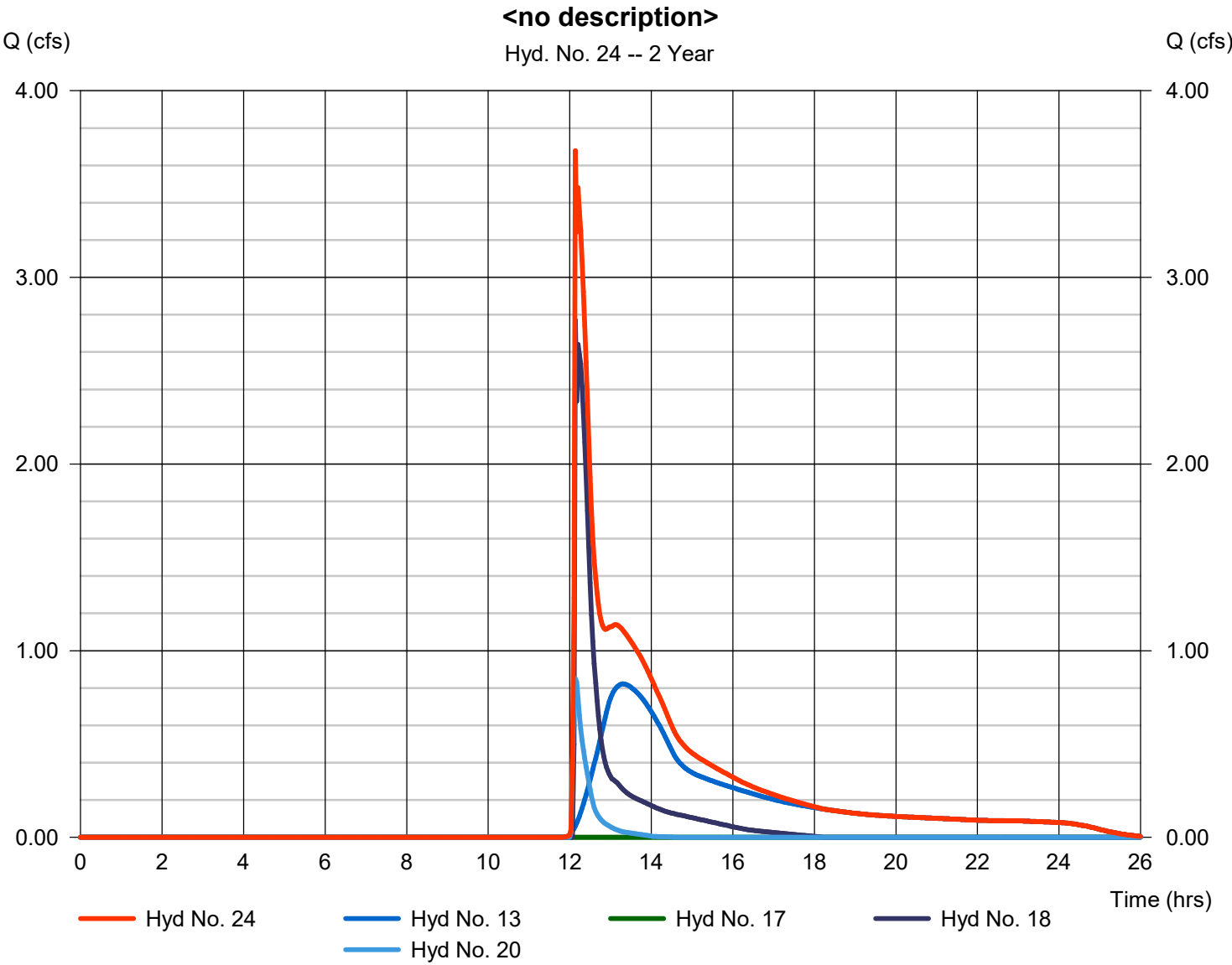
<no description>

Hyd. No. 24 -- 2 Year

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 25

<no description>

Hydrograph type	= Combine	Peak discharge	= 12.75 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 50,534 cuft
Inflow hyds.	= 16, 22, 23, 24	Contrib. drain. area	= 0.000 ac

<no description>

Hyd. No. 25 -- 2 Year

Hydrograph Summary Report

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	3.964	2	752	26,393	------	------	------	PR WS-01
2	SCS Runoff	2.276	2	726	7,939	------	------	------	PR WS-02B(I)
3	SCS Runoff	0.575	2	724	1,764	------	------	------	PR WS-02B(III)
4	SCS Runoff	2.622	2	726	9,558	------	------	------	PR WS-02C
5	SCS Runoff	7.568	2	734	36,669	------	------	------	PR WS-02D
6	SCS Runoff	1.006	2	724	3,313	------	------	------	PR WS-02E
7	SCS Runoff	5.072	2	724	16,697	------	------	------	PR WS-02F
8	SCS Runoff	6.814	2	724	22,743	------	------	------	PR WS-02A
9	SCS Runoff	2.473	2	724	8,255	------	------	------	PR WS-02G(I)
10	SCS Runoff	2.173	2	724	7,252	------	------	------	PR WS-02G(II)
11	SCS Runoff	0.876	2	730	3,613	------	------	------	PR WS-02H
12	SCS Runoff	4.450	2	732	20,472	------	------	------	PR WS-02I
13	SCS Runoff	2.651	2	790	29,339	------	------	------	PR WS-03
14	Reservoir	7.442	2	738	31,857	5	139.08	3,489	TWIN 36IN PIPES (#2)
15	Reservoir	0.256	2	740	538	6	137.07	1,028	INFIL-3
16	Reservoir	4.598	2	726	8,520	7	137.23	2,720	INIFL-4
17	Reservoir	0.000	2	700	0	11	131.44	2,645	36 INCH PIPE (#3)
18	Reservoir	4.369	2	732	13,692	12	135.72	2,453	TWO 36 INCH PIPES
19	Combine	8.811	2	734	41,416	4, 14,	------	------	<no description>
20	Reservoir	1.539	2	728	3,027	10	134.79	1,393	INFIL-2
21	Combine	9.287	2	724	30,998	8, 9,	------	------	<no description>
22	Reservoir	3.162	2	736	8,485	21	135.72	9,160	INFIL-1
23	Combine	10.90	2	730	51,656	2, 3, 15, 19,	------	------	<no description>
24	Combine	6.316	2	732	46,058	13, 17, 18, 20,	------	------	<no description>
25	Combine	23.71	2	728	114,719	16, 22, 23, 24	------	------	<no description>

Hydrograph Report

Hyd. No. 1

PR WS-01

Hydrograph type	= SCS Runoff		Peak discharge	= 3.964 cfs
Storm frequency	= 10 yrs		Time to peak	= 12.53 hrs
Time interval	= 2 min		Hyd. volume	= 26,393 cuft
Drainage area	= 3.405 ac		Curve number	= 68
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 45.70 min
Total precip.	= 5.38 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

PR WS-01

Hyd. No. 1 -- 10 Year
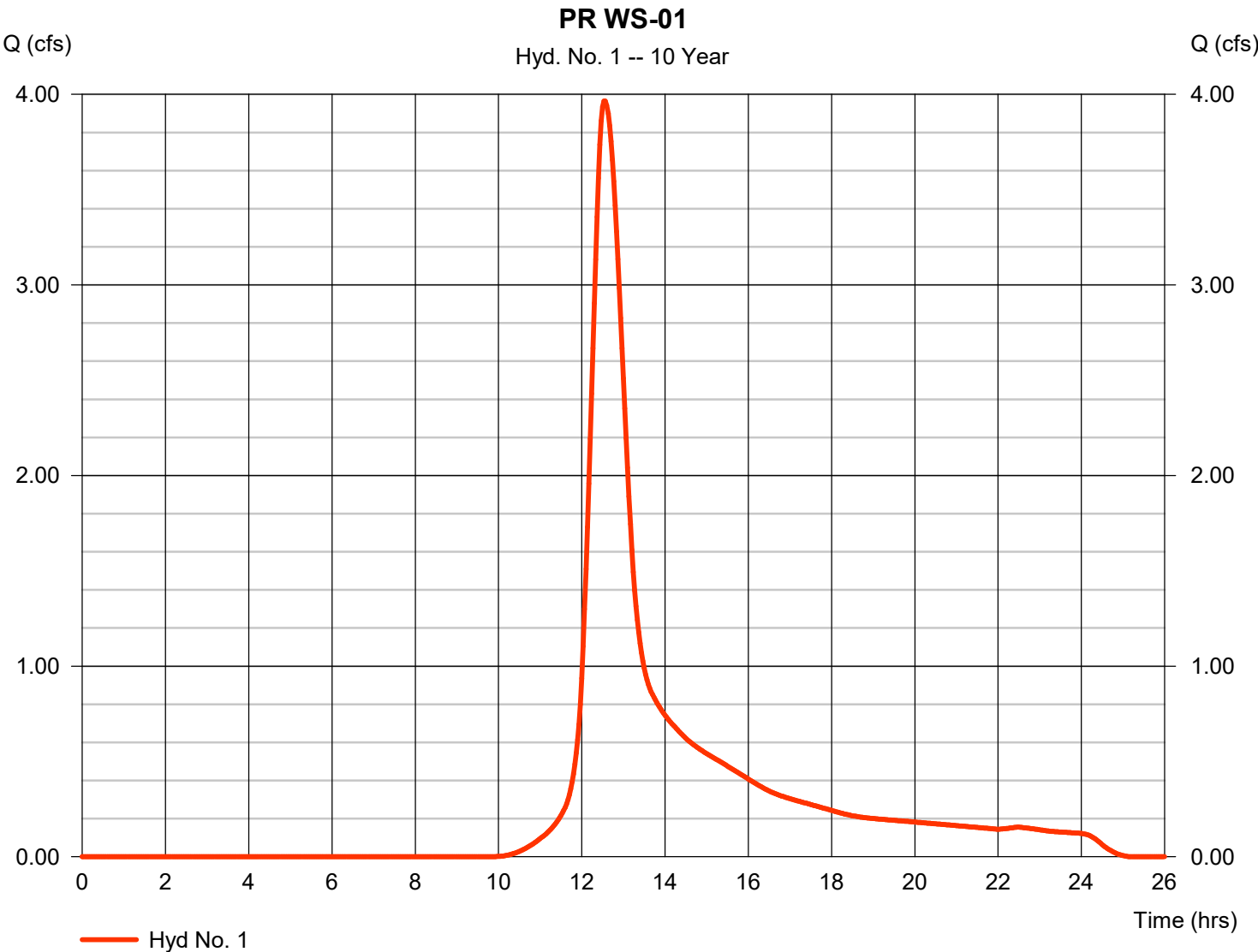
Hyd No. 1

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 2

PR WS-02B(I)

Hydrograph type	= SCS Runoff	Peak discharge	= 2.276 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 7,939 cuft
Drainage area	= 0.557 ac	Curve number	= 87
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 7.40 min
Total precip.	= 5.38 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02B(I)

Hyd. No. 2 -- 10 Year
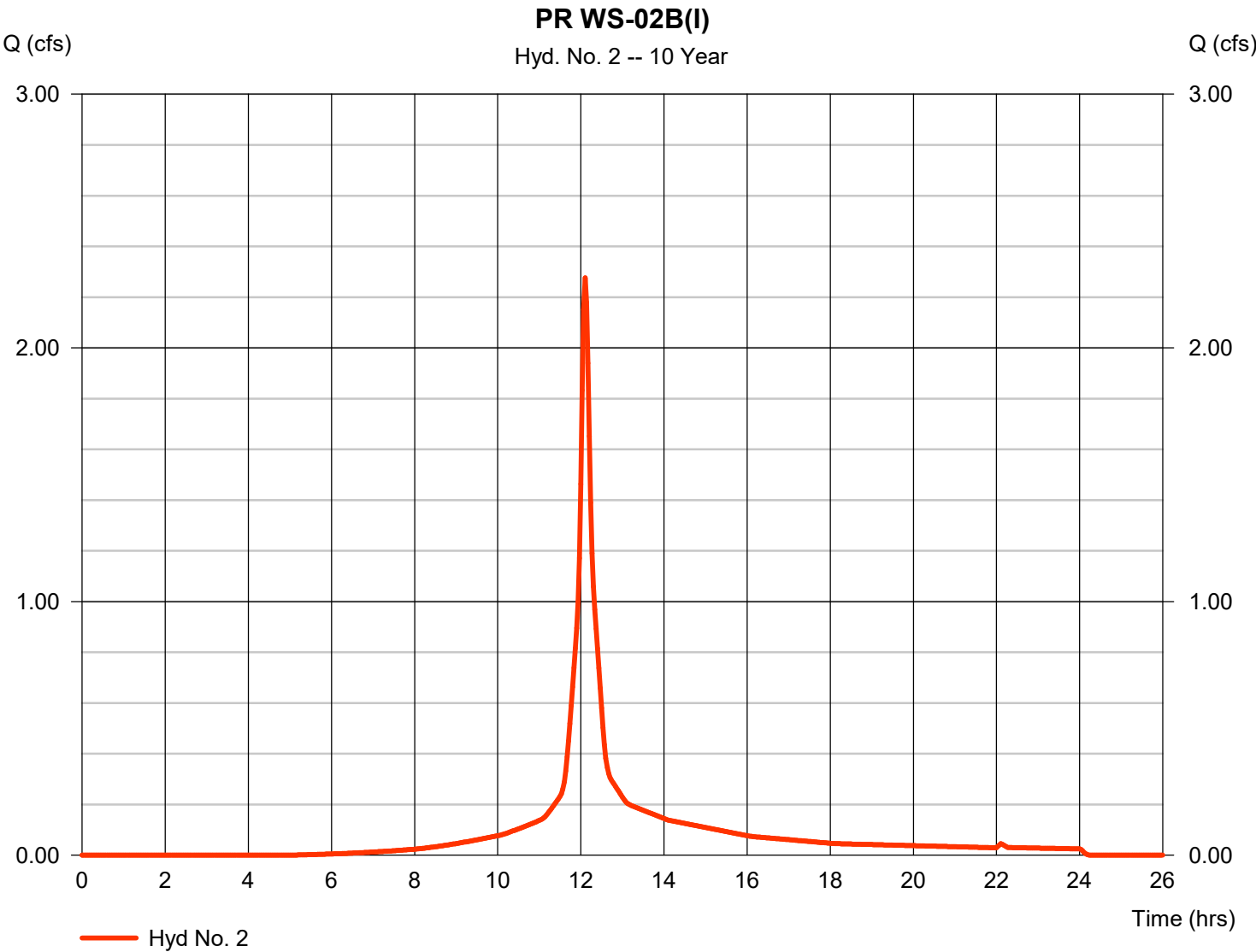
Hyd No. 2

Hydrograph Report

Hyd. No. 3

PR WS-02B(III)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.575 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,764 cuft
Drainage area	= 0.132 ac	Curve number	= 87
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.38 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02B(III)

Hyd. No. 3 -- 10 Year

Q (cfs) vs Time (hrs)
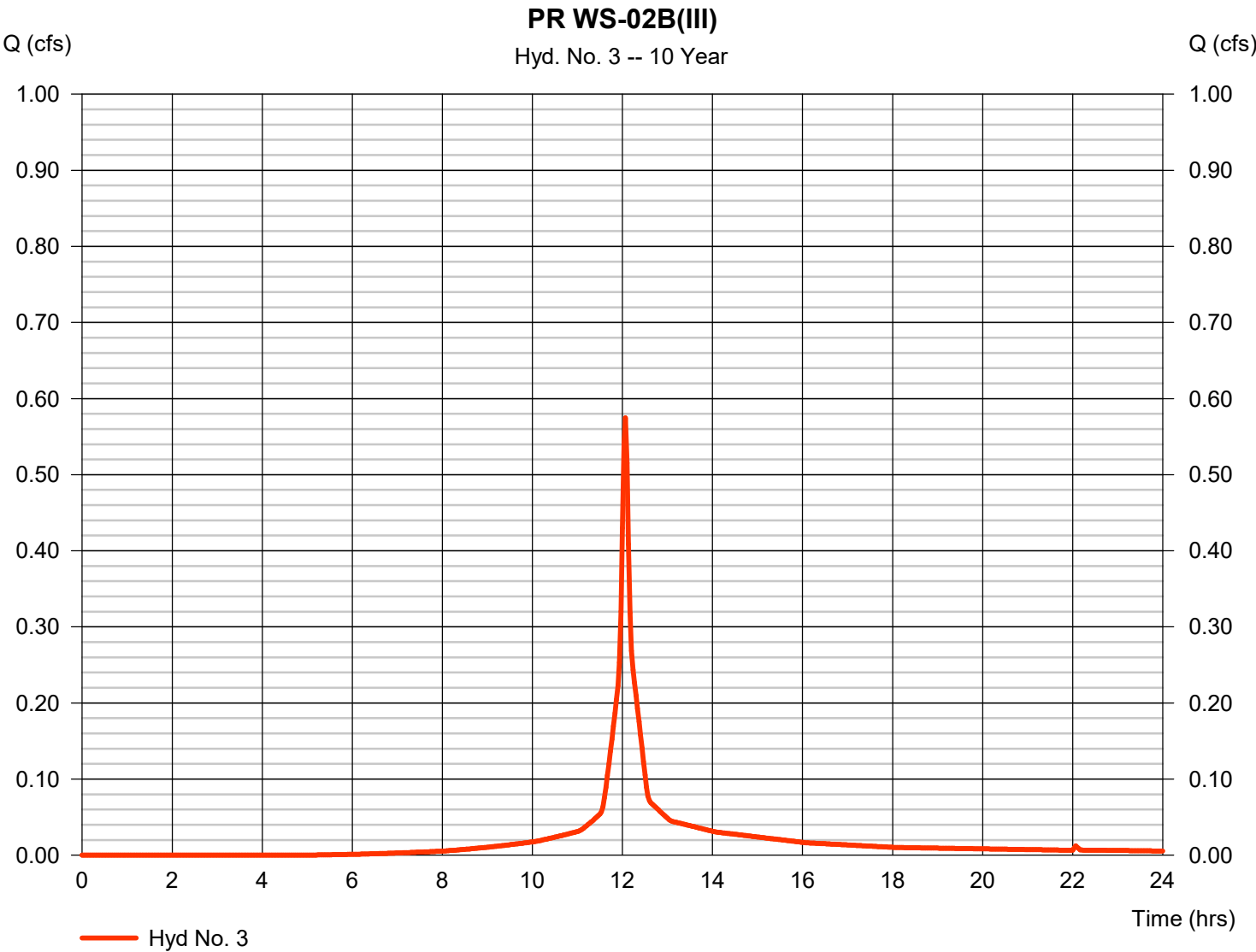
— Hyd No. 3

Hydrograph Report

Hyd. No. 4

PR WS-02C

Hydrograph type	= SCS Runoff	Peak discharge	= 2.622 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 9,558 cuft
Drainage area	= 0.576 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 9.40 min
Total precip.	= 5.38 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02C

Hyd. No. 4 -- 10 Year

Hyd No. 4

Hydrograph Report

Hyd. No. 5

PR WS-02D

Hydrograph type	= SCS Runoff	Peak discharge	= 7.568 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.23 hrs
Time interval	= 2 min	Hyd. volume	= 36,669 cuft
Drainage area	= 2.462 ac	Curve number	= 88
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 22.10 min
Total precip.	= 5.38 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02D

Hyd. No. 5 -- 10 Year

— Hyd No. 5

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021   Thursday, 04 / 4 / 2024

Hyd. No. 6

PR WS-02E

Hydrograph type	= SCS Runoff	Peak discharge	= 1.006 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 3,313 cuft
Drainage area	= 0.203 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.38 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02E

Hyd. No. 6 -- 10 Year
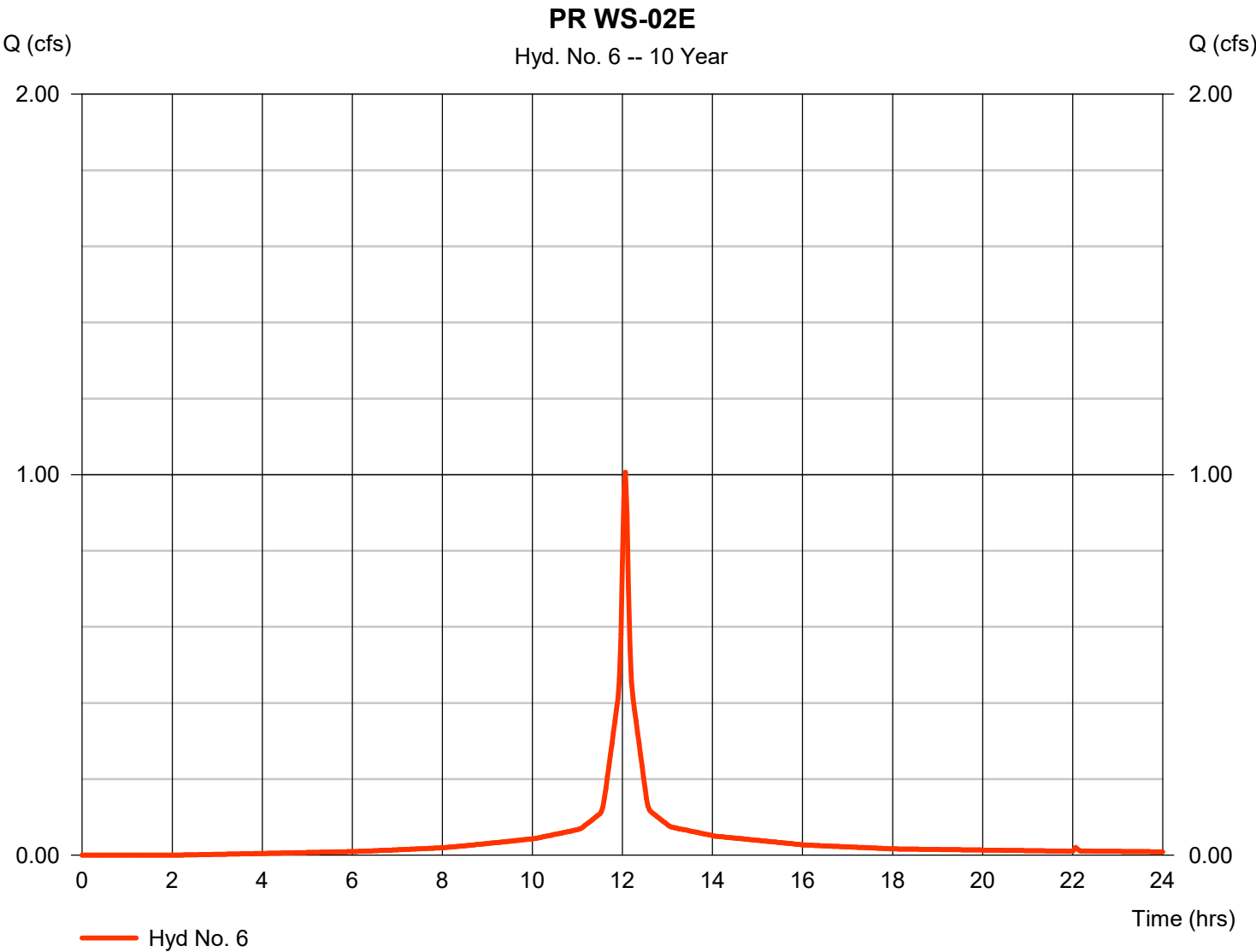
Hydrograph Report

Hyd. No. 7

PR WS-02F

Hydrograph type	= SCS Runoff		Peak discharge	= 5.072 cfs
Storm frequency	= 10 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 16,697 cuft
Drainage area	= 1.023 ac		Curve number	= 95
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.38 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

PR WS-02F

Hyd. No. 7 -- 10 Year
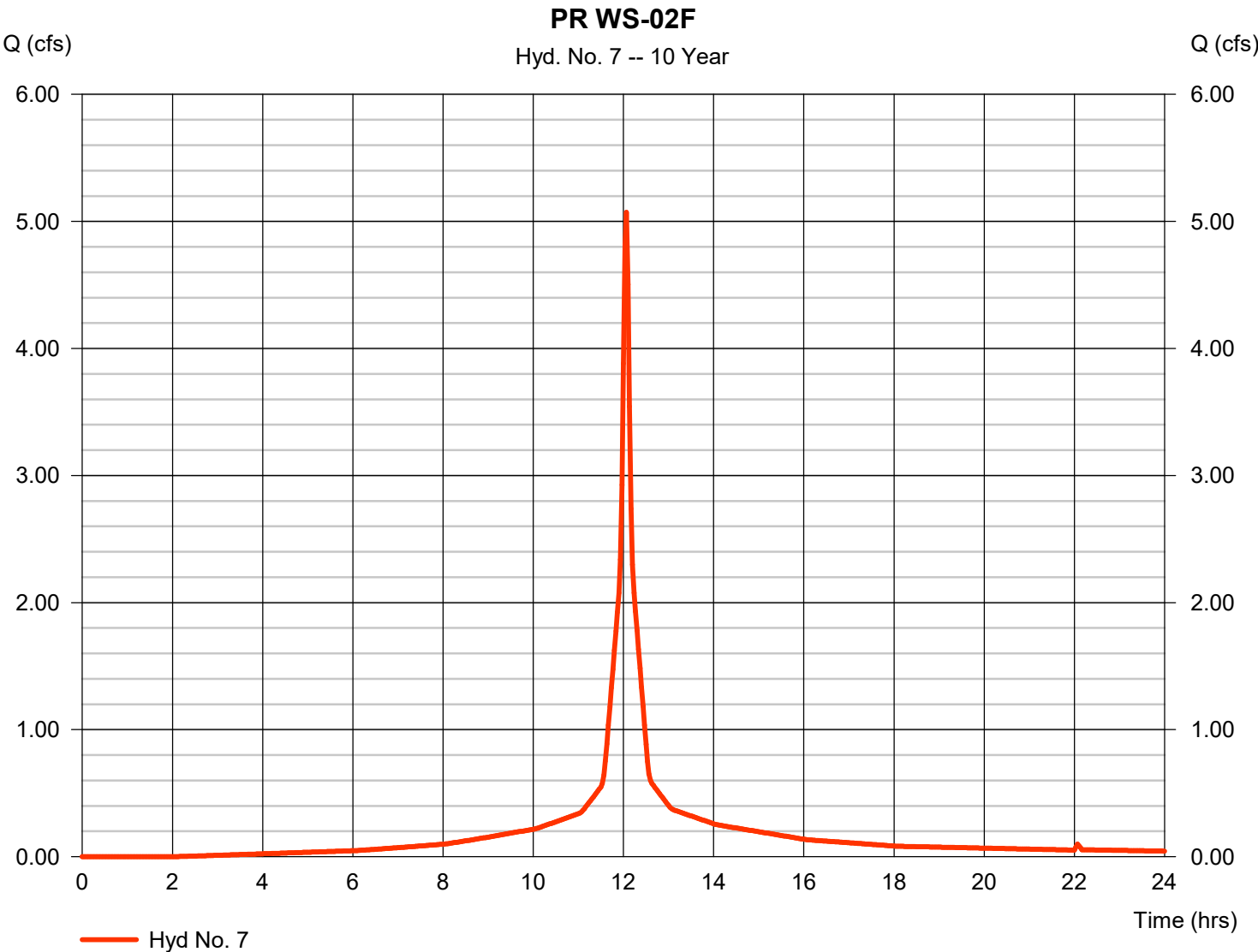
Hyd No. 7

Hydrograph Report

Hyd. No. 8

PR WS-02A

Hydrograph type	= SCS Runoff	Peak discharge	= 6.814 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 22,743 cuft
Drainage area	= 1.361 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.38 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02A

Hyd. No. 8 -- 10 Year

Q (cfs)
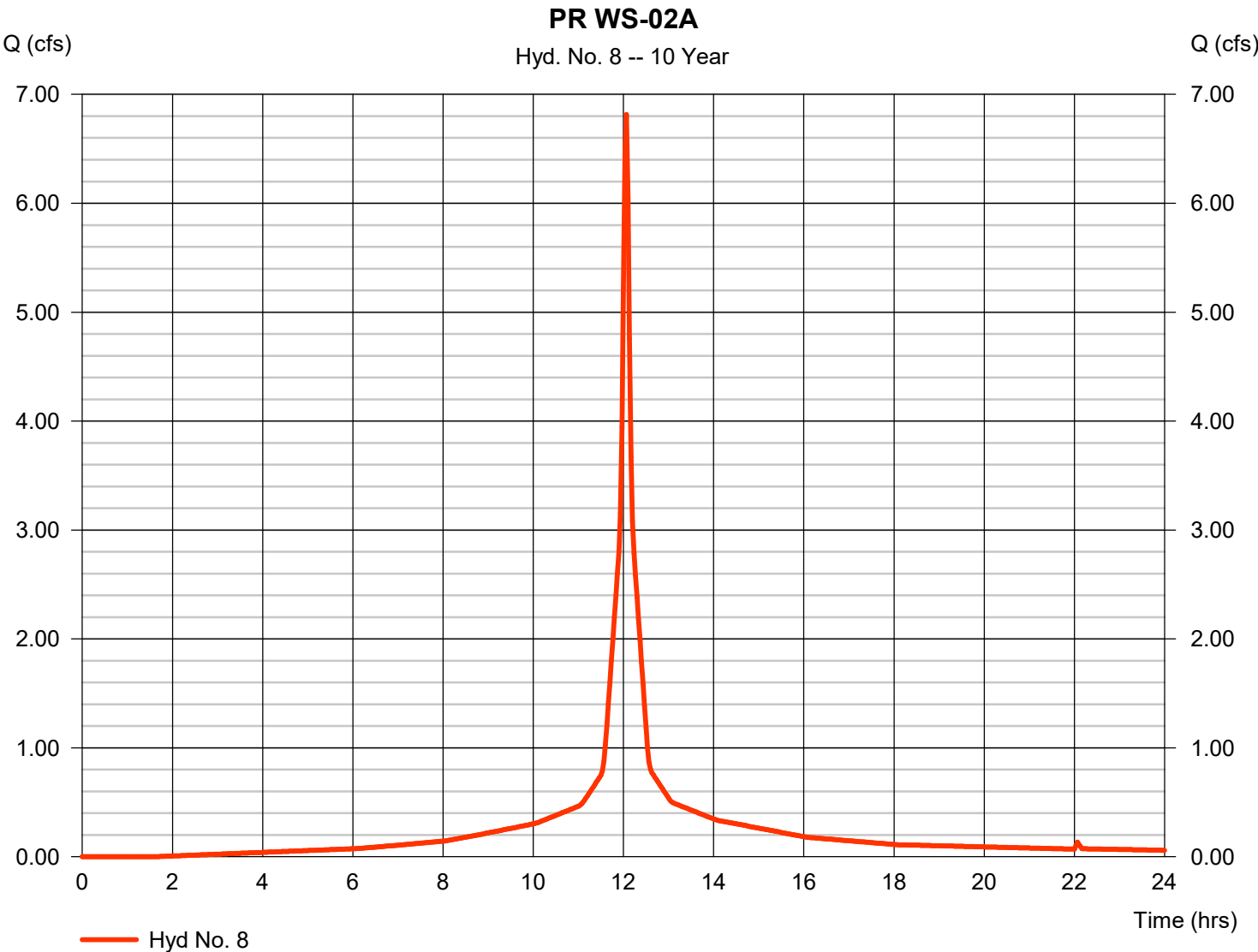
— Hyd No. 8

Hydrograph Report

Hyd. No. 9

PR WS-02G(I)

Hydrograph type	= SCS Runoff	Peak discharge	= 2.473 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 8,255 cuft
Drainage area	= 0.494 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.38 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02G(I)

Hyd. No. 9 -- 10 Year

Hydrograph Report

Thursday, 04 / 4 / 2024
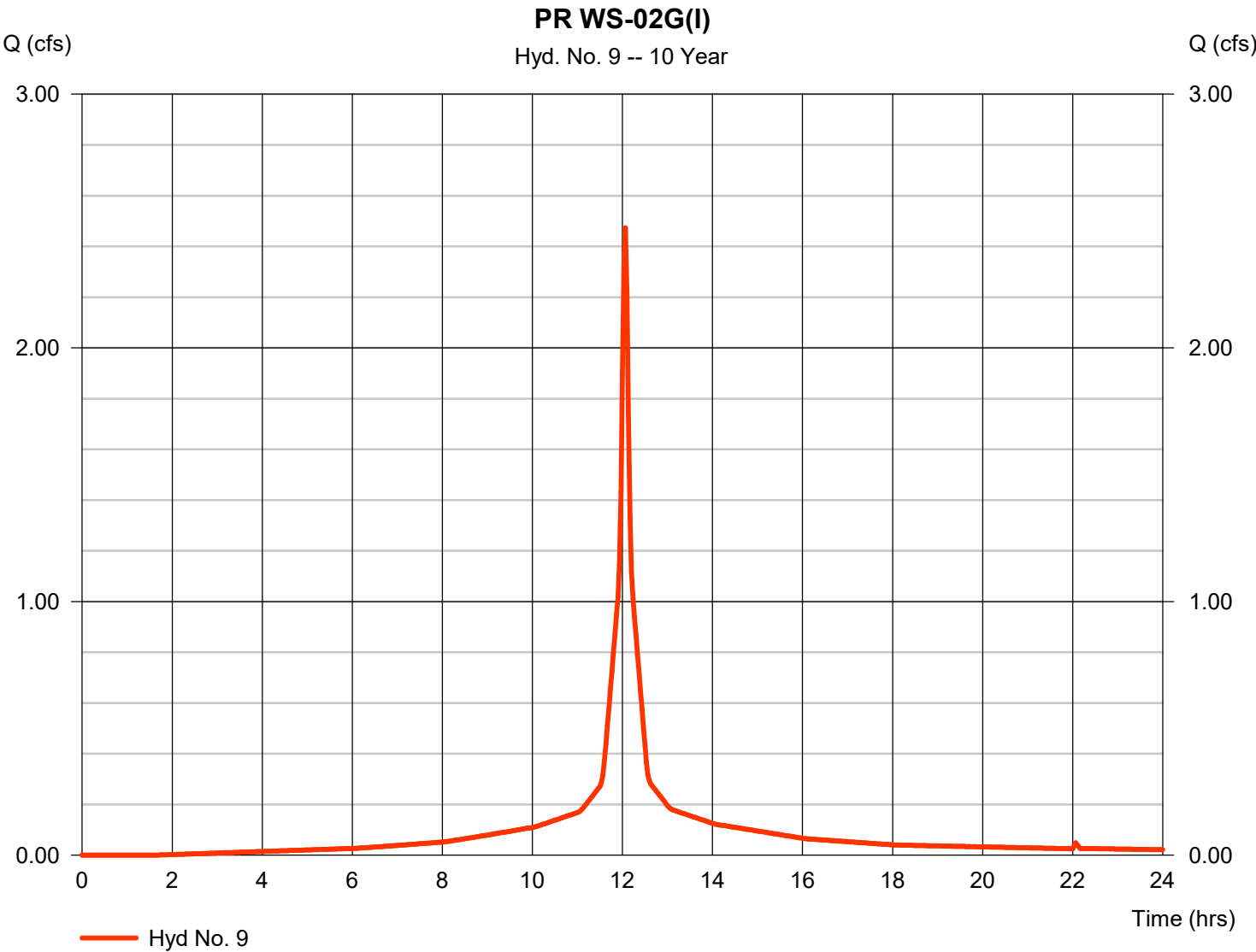
Hyd. No. 10

PR WS-02G(II)

Hydrograph type	= SCS Runoff	Peak discharge	= 2.173 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 7,252 cuft
Drainage area	= 0.434 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.38 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02G(II)

Hyd. No. 10 -- 10 Year

Q (cfs)

Time (hrs)
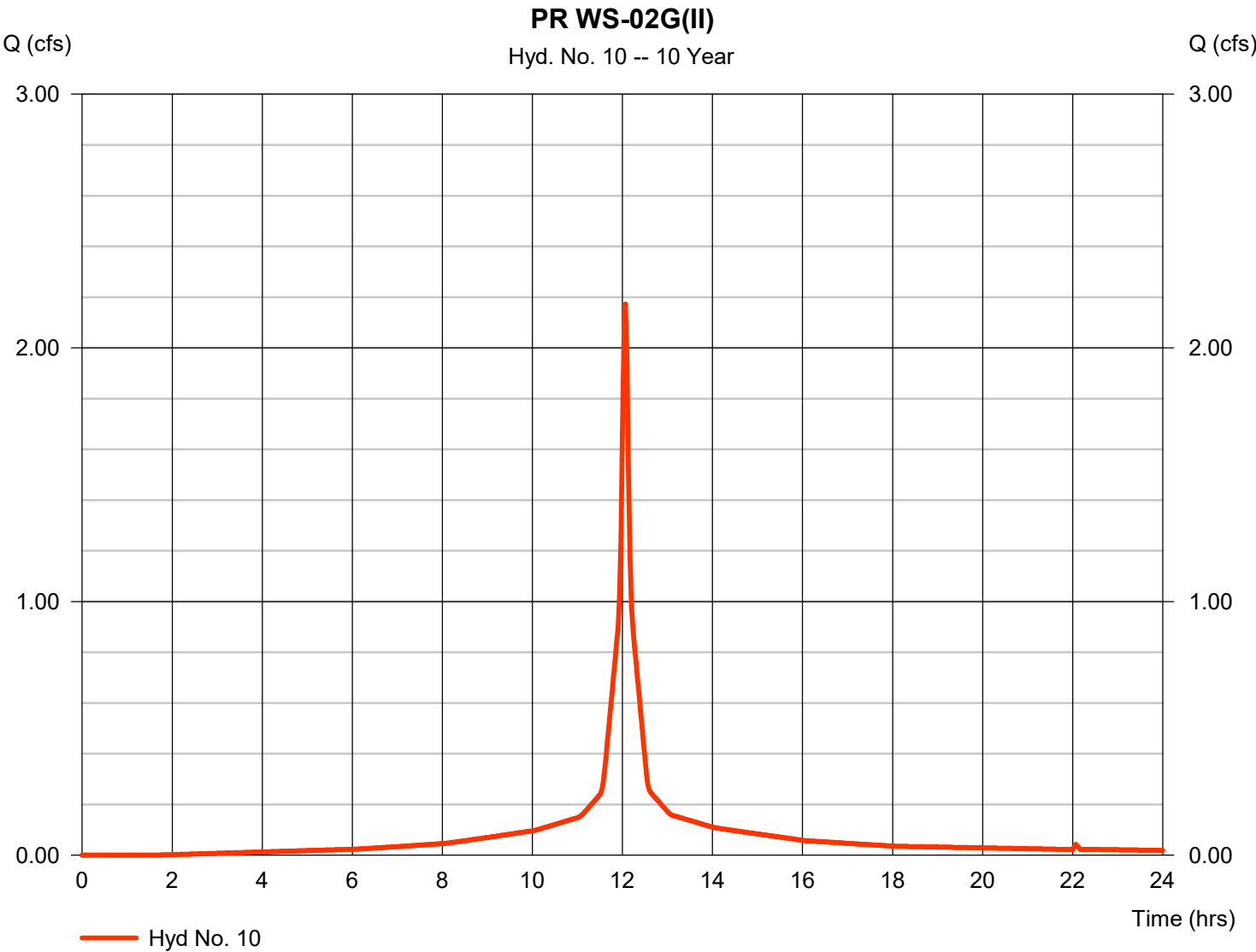
— Hyd No. 10

Hydrograph Report

　　　Thursday, 04 / 4 / 2024

Hyd. No. 11

PR WS-02H

Hydrograph type	= SCS Runoff	Peak discharge	= 0.876 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 3,613 cuft
Drainage area	= 0.267 ac	Curve number	= 86
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.80 min
Total precip.	= 5.38 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02H

Hyd. No. 11 -- 10 Year
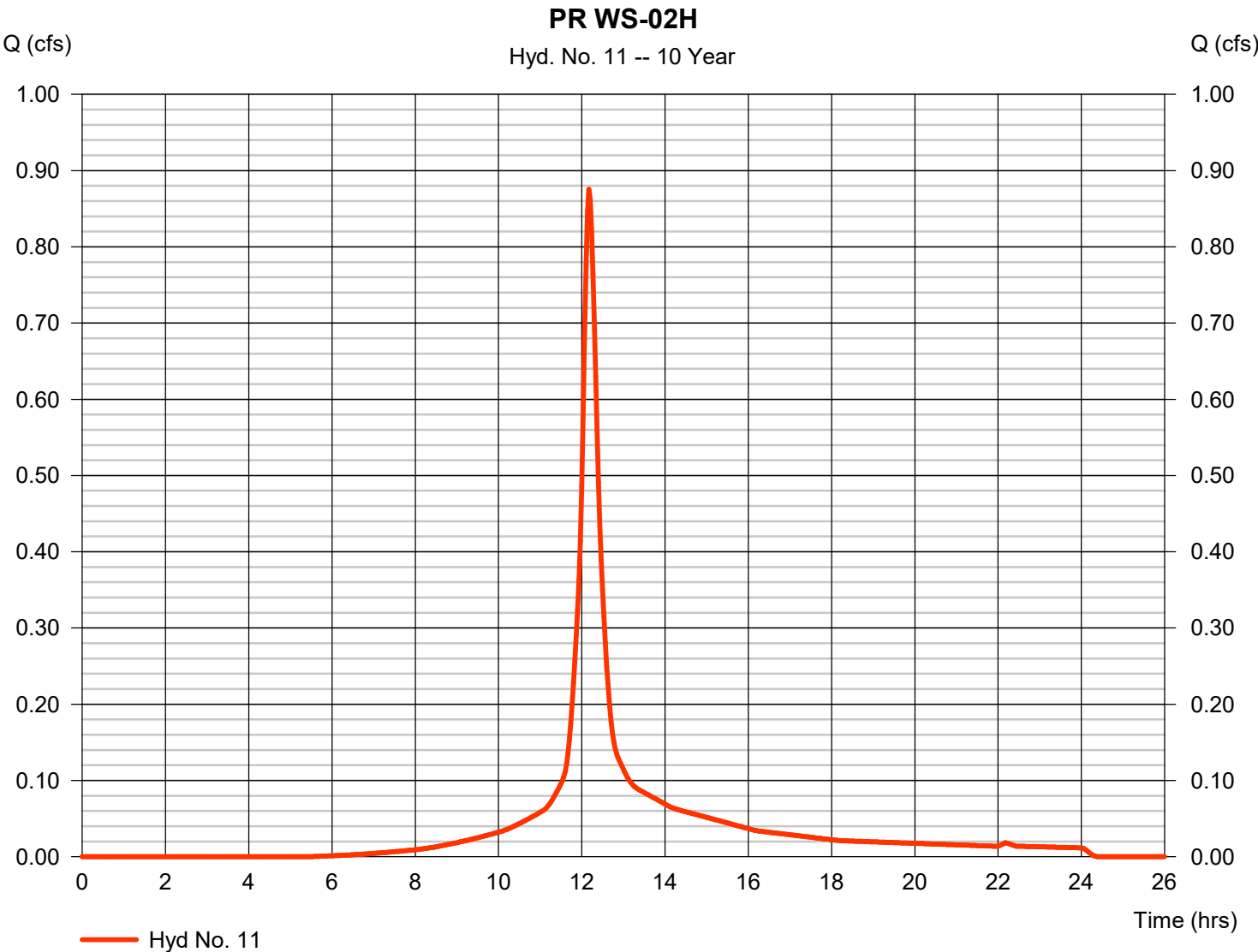
Hyd No. 11

Hydrograph Report

Hyd. No. 12

PR WS-02I

Hydrograph type	= SCS Runoff	Peak discharge	= 4.450 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 20,472 cuft
Drainage area	= 1.296 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.60 min
Total precip.	= 5.38 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02I

Hyd. No. 12 -- 10 Year

Q (cfs)   Q (cfs)

--- Hyd No. 12

Time (hrs)

Hydrograph Report

Thursday, 04 / 4 / 2024
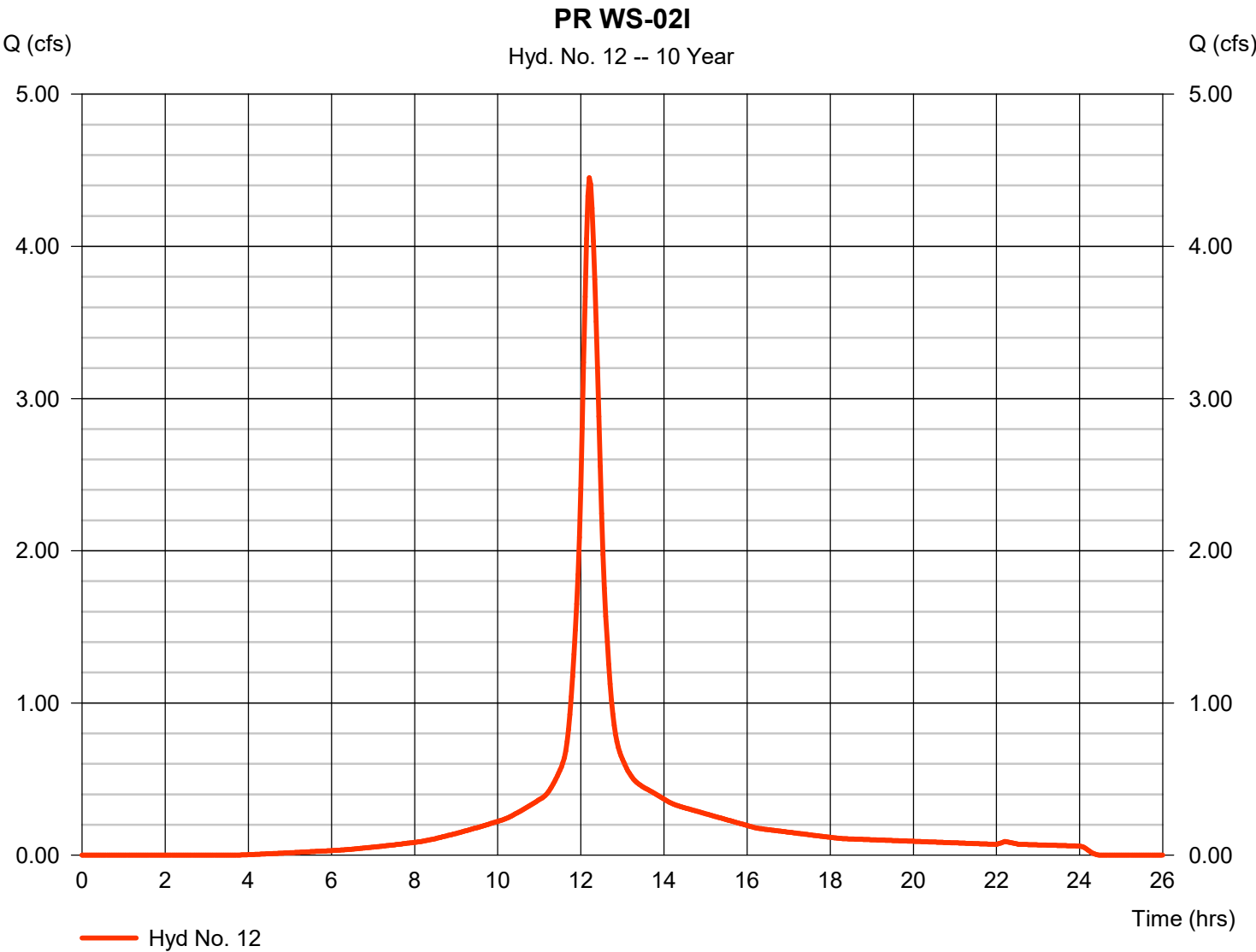
Hyd. No. 13

PR WS-03

Hydrograph type	= SCS Runoff		Peak discharge	= 2.651 cfs
Storm frequency	= 10 yrs		Time to peak	= 13.17 hrs
Time interval	= 2 min		Hyd. volume	= 29,339 cuft
Drainage area	= 4.837 ac		Curve number	= 62
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 95.00 min
Total precip.	= 5.38 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

PR WS-03

Hyd. No. 13 -- 10 Year

Hyd No. 13

Hydrograph Report

Hyd. No. 14

TWIN 36IN PIPES (#2)

Hydrograph type	= Reservoir	Peak discharge	= 7.442 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.30 hrs
Time interval	= 2 min	Hyd. volume	= 31,857 cuft
Inflow hyd. No.	= 5 - PR WS-02D	Max. Elevation	= 139.08 ft
Reservoir name	= Northern Twin 36IN	Max. Storage	= 3,489 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

TWIN 36IN PIPES (#2)
Hyd. No. 14 -- 10 Year

Hyd No. 14   Hyd No. 5   Total storage used = 3,489 cuft

Hydrograph Report

Hyd. No. 15

INFIL-3

Hydrograph type	= Reservoir	Peak discharge	= 0.256 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.33 hrs
Time interval	= 2 min	Hyd. volume	= 538 cuft
Inflow hyd. No.	= 6 - PR WS-02E	Max. Elevation	= 137.07 ft
Reservoir name	= INFIL-3	Max. Storage	= 1,028 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

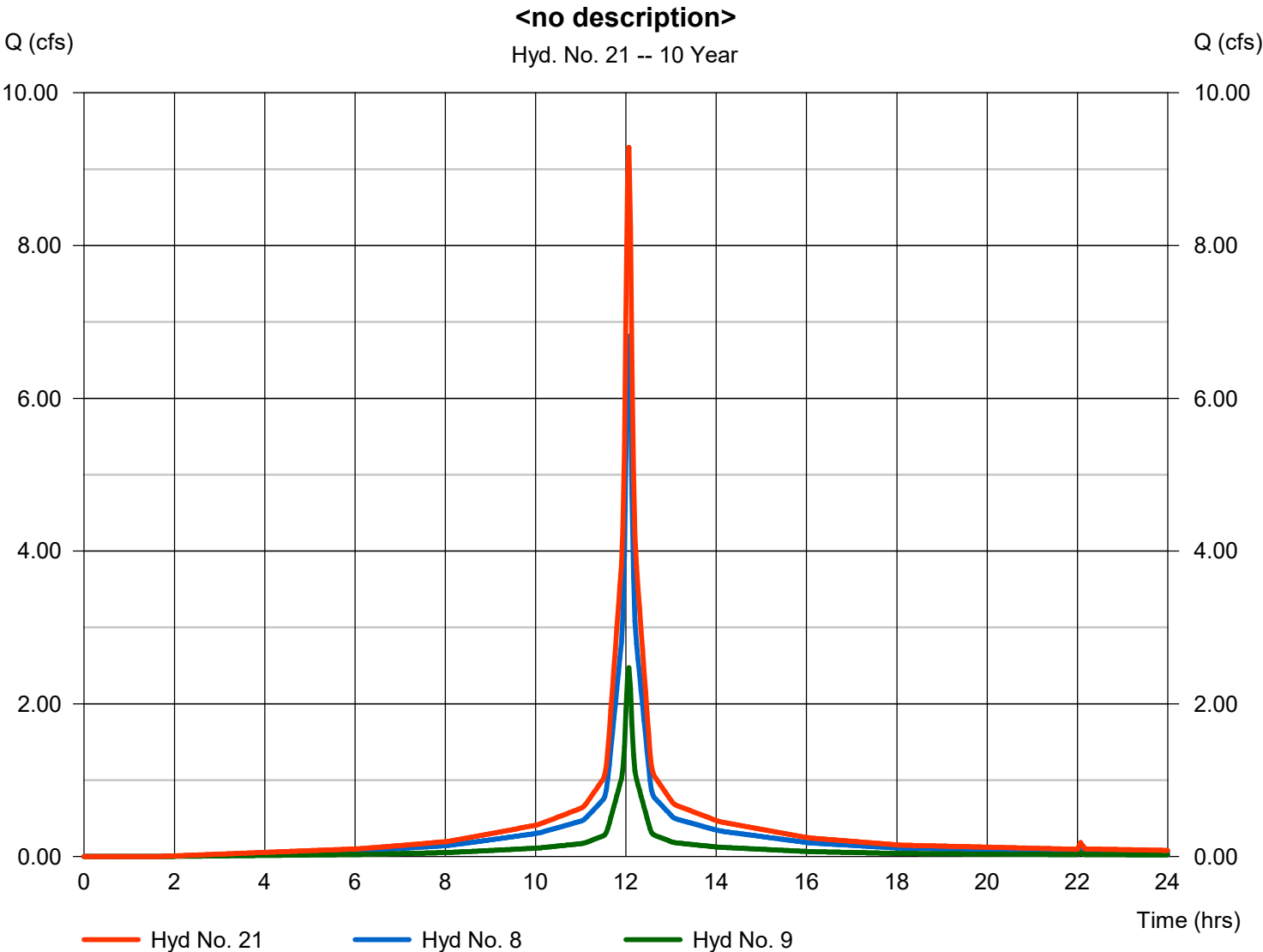**INFIL-3**

Hyd. No. 15 -- 10 Year

Hyd No. 15   Hyd No. 6   Total storage used = 1,028 cuft

Hydrograph Report

Thursday, 04 / 4 / 2024
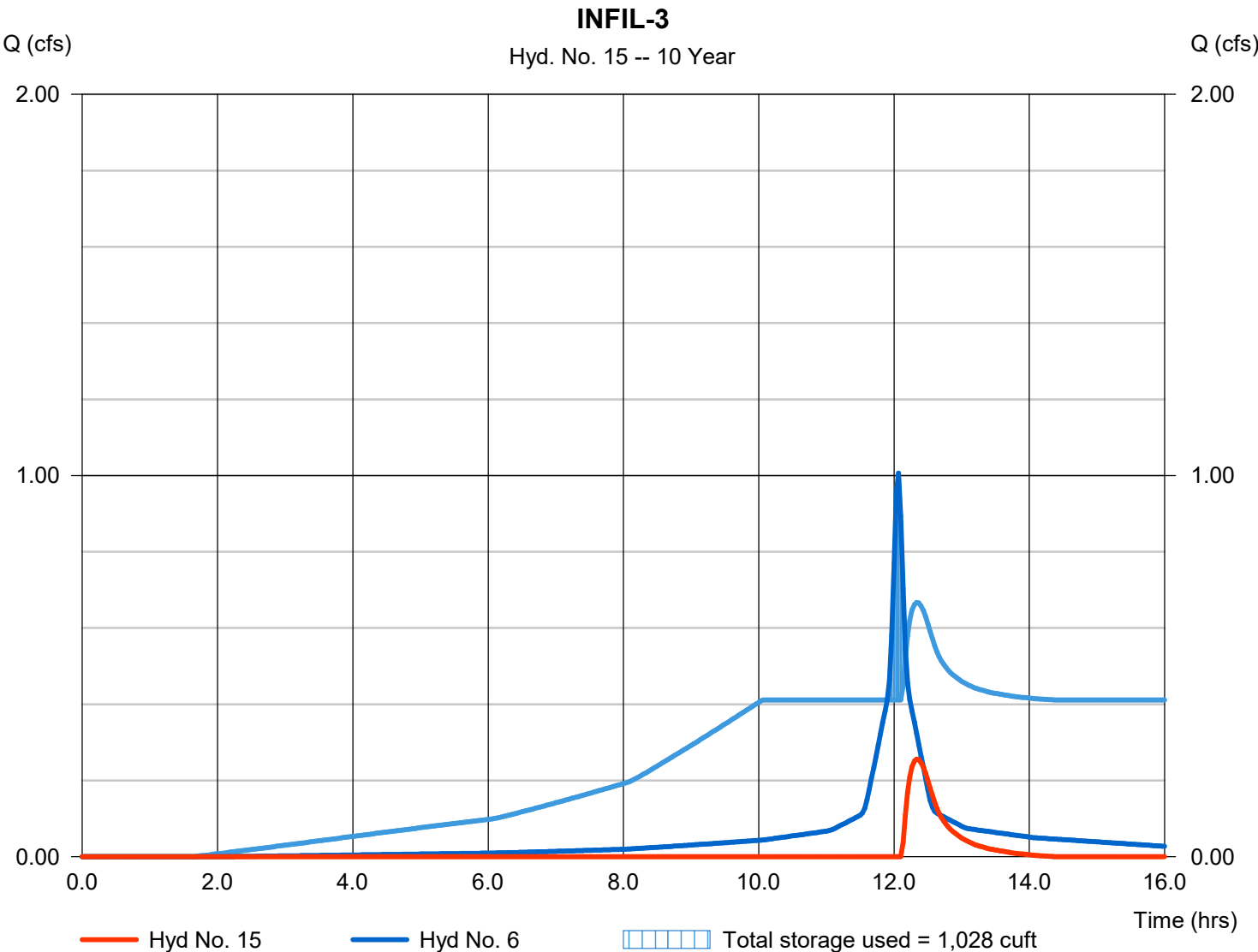
Hyd. No. 16

INIFL-4

Hydrograph type	= Reservoir		Peak discharge	= 4.598 cfs
Storm frequency	= 10 yrs		Time to peak	= 12.10 hrs
Time interval	= 2 min		Hyd. volume	= 8,520 cuft
Inflow hyd. No.	= 7 - PR WS-02F		Max. Elevation	= 137.23 ft
Reservoir name	= INIFL-4		Max. Storage	= 2,720 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
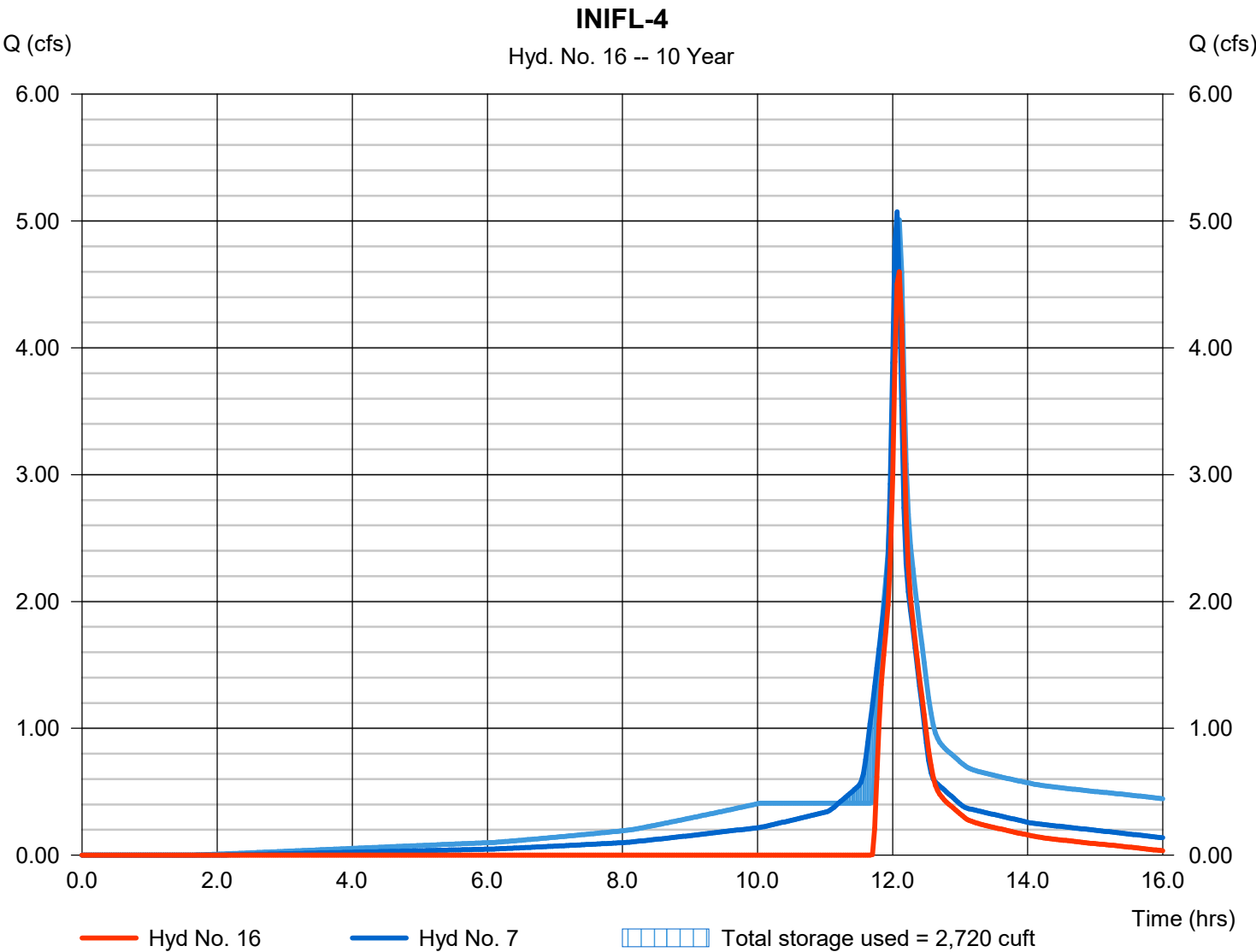
INIFL-4

Hyd. No. 16 -- 10 Year

Legend: Hyd No. 16 (red), Hyd No. 7 (blue), Total storage used = 2,720 cuft

Hydrograph Report

Hyd. No. 17

36 INCH PIPE (#3)

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.67 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 11 - PR WS-02H	Max. Elevation	= 131.44 ft
Reservoir name	= 36IN - 3	Max. Storage	= 2,645 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
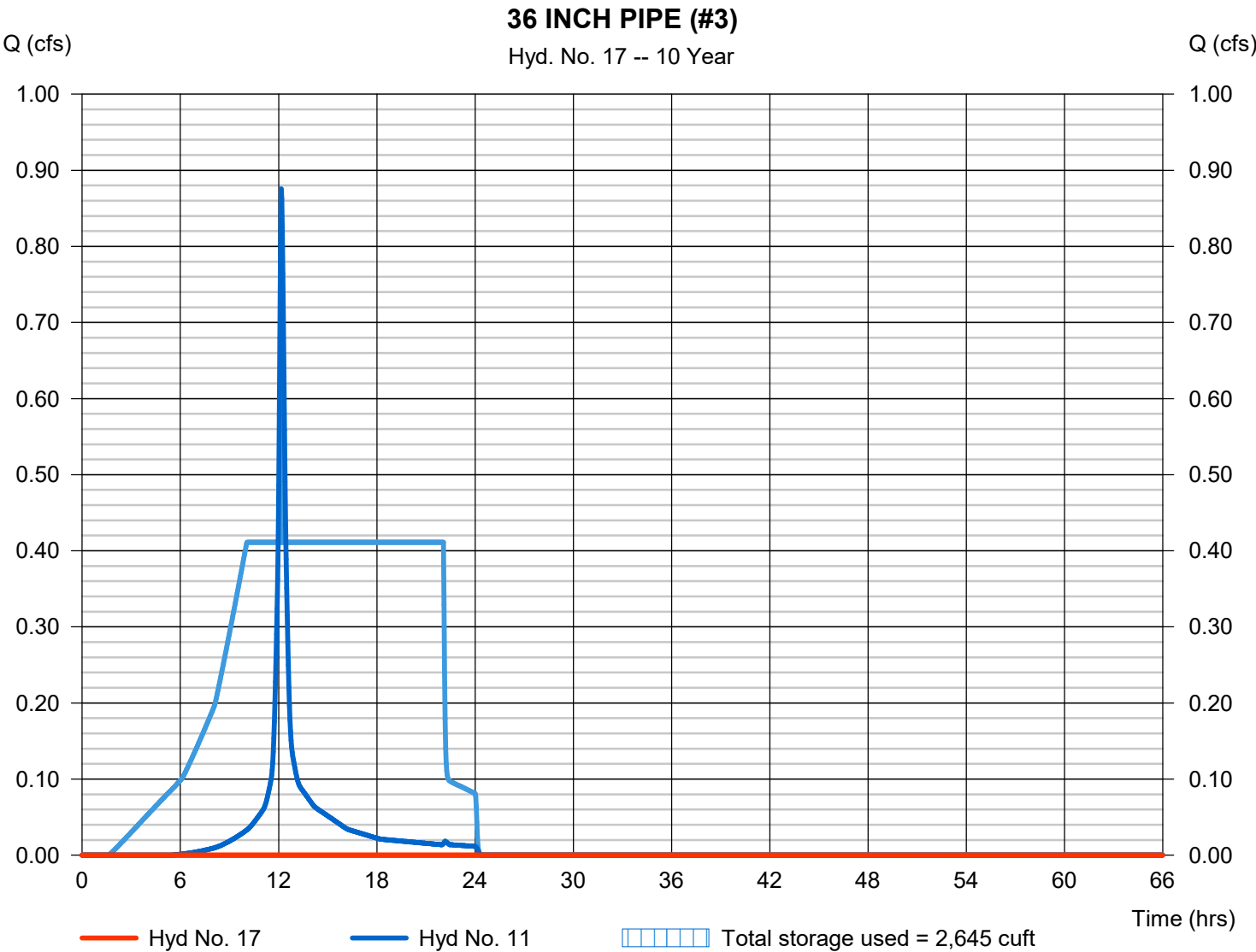
36 INCH PIPE (#3)

Hyd. No. 17 -- 10 Year

Hyd No. 17   Hyd No. 11   Total storage used = 2,645 cuft

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 18

TWO 36 INCH PIPES

Hydrograph type	= Reservoir		Peak discharge	= 4.369 cfs
Storm frequency	= 10 yrs		Time to peak	= 12.20 hrs
Time interval	= 2 min		Hyd. volume	= 13,692 cuft
Inflow hyd. No.	= 12 - PR WS-02I		Max. Elevation	= 135.72 ft
Reservoir name	= TWIN 36IN		Max. Storage	= 2,453 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

TWO 36 INCH PIPES
Hyd. No. 18 -- 10 Year

Legend: Hyd No. 18   Hyd No. 12   Total storage used = 2,453 cuft

Hydrograph Report

       Thursday, 04 / 4 / 2024

Hyd. No. 19

<no description>
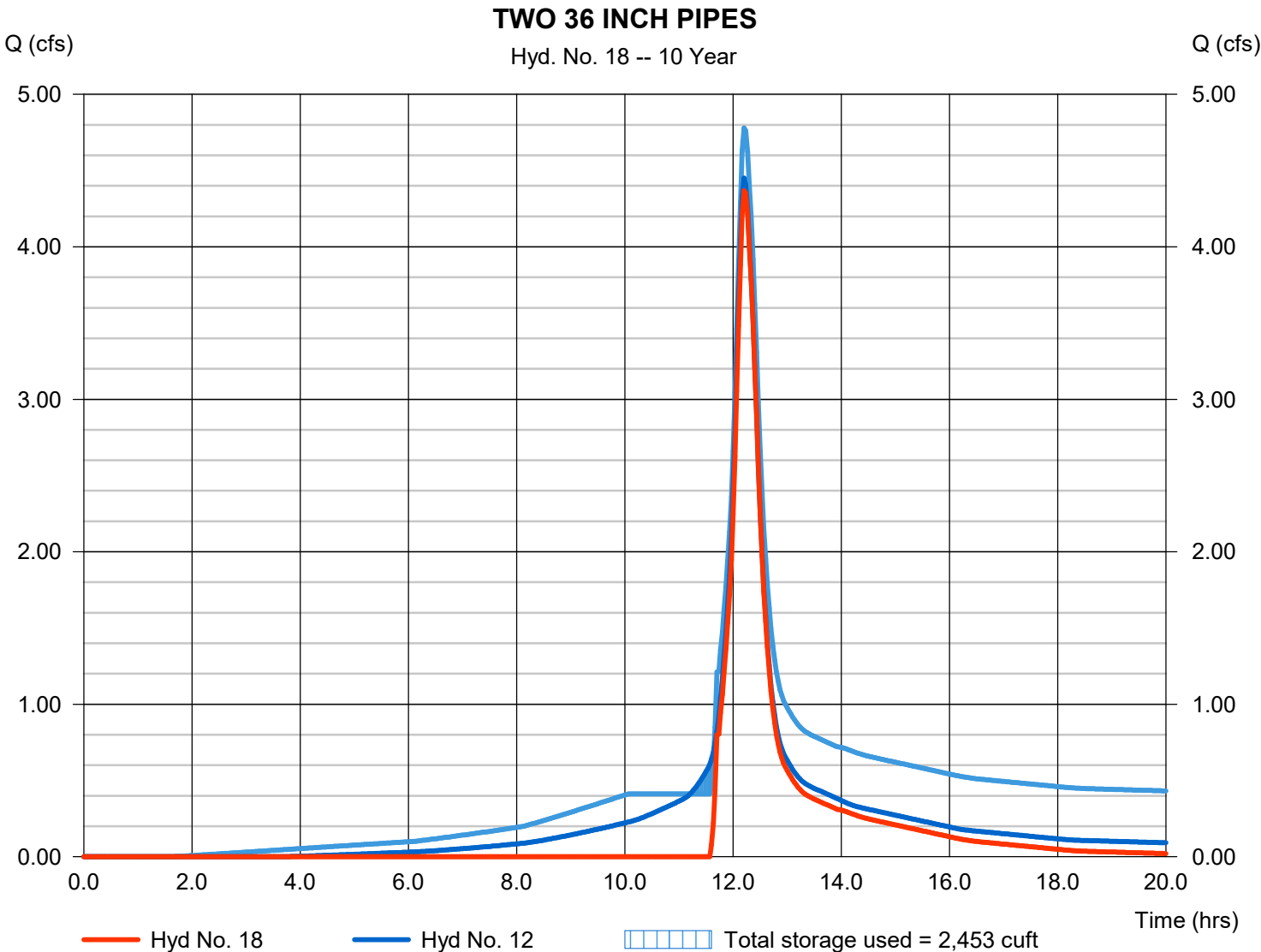
Hydrograph type	= Combine	Peak discharge	= 8.811 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.23 hrs
Time interval	= 2 min	Hyd. volume	= 41,416 cuft
Inflow hyds.	= 4, 14	Contrib. drain. area	= 0.576 ac
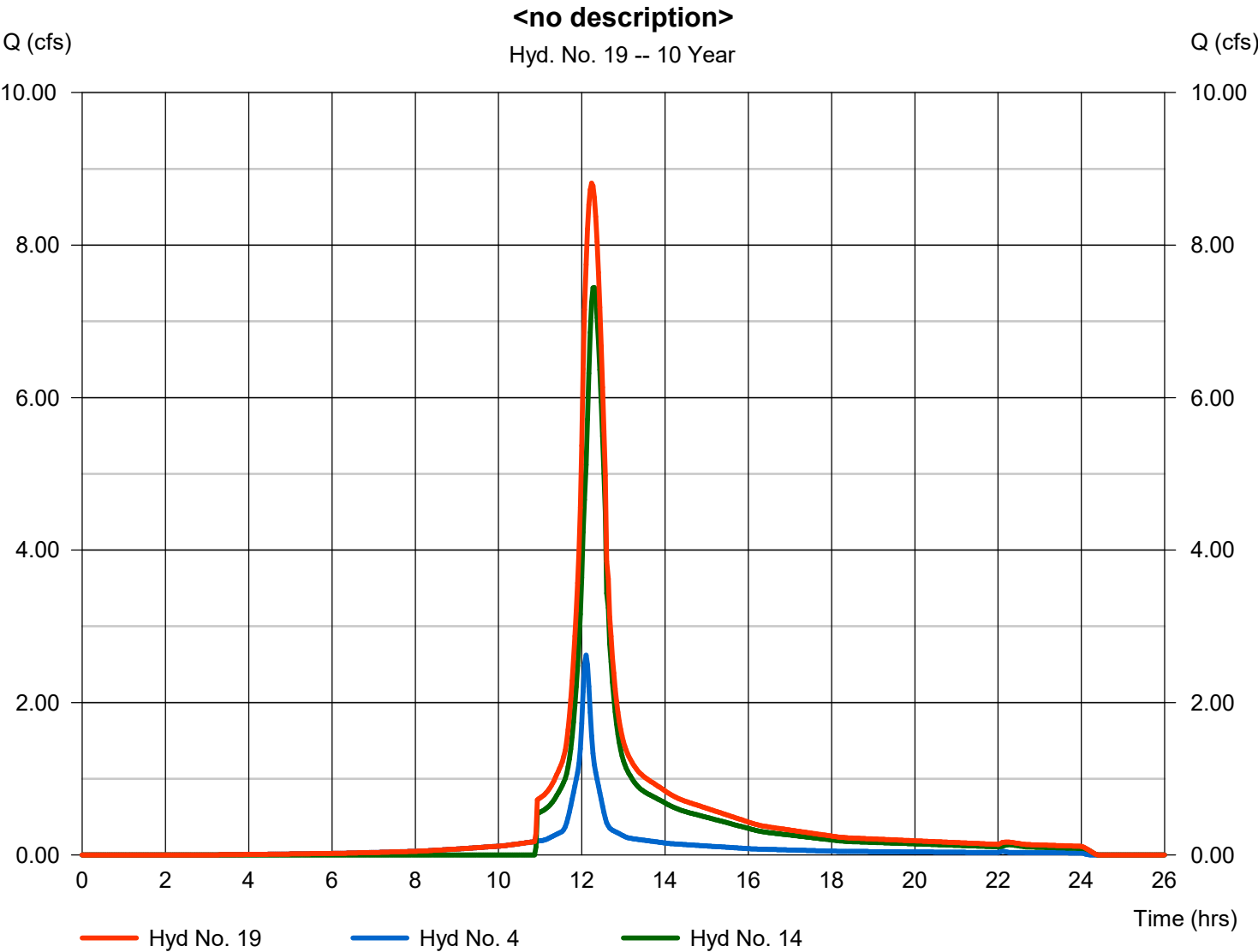
<no description>

Hyd. No. 19 -- 10 Year

Q (cfs)

Time (hrs)

Hyd No. 19   Hyd No. 4   Hyd No. 14

Hydrograph Report

Hyd. No. 20

INFIL-2

Hydrograph type	= Reservoir	Peak discharge	= 1.539 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 3,027 cuft
Inflow hyd. No.	= 10 - PR WS-02G(II)	Max. Elevation	= 134.79 ft
Reservoir name	= INFIL-2	Max. Storage	= 1,393 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
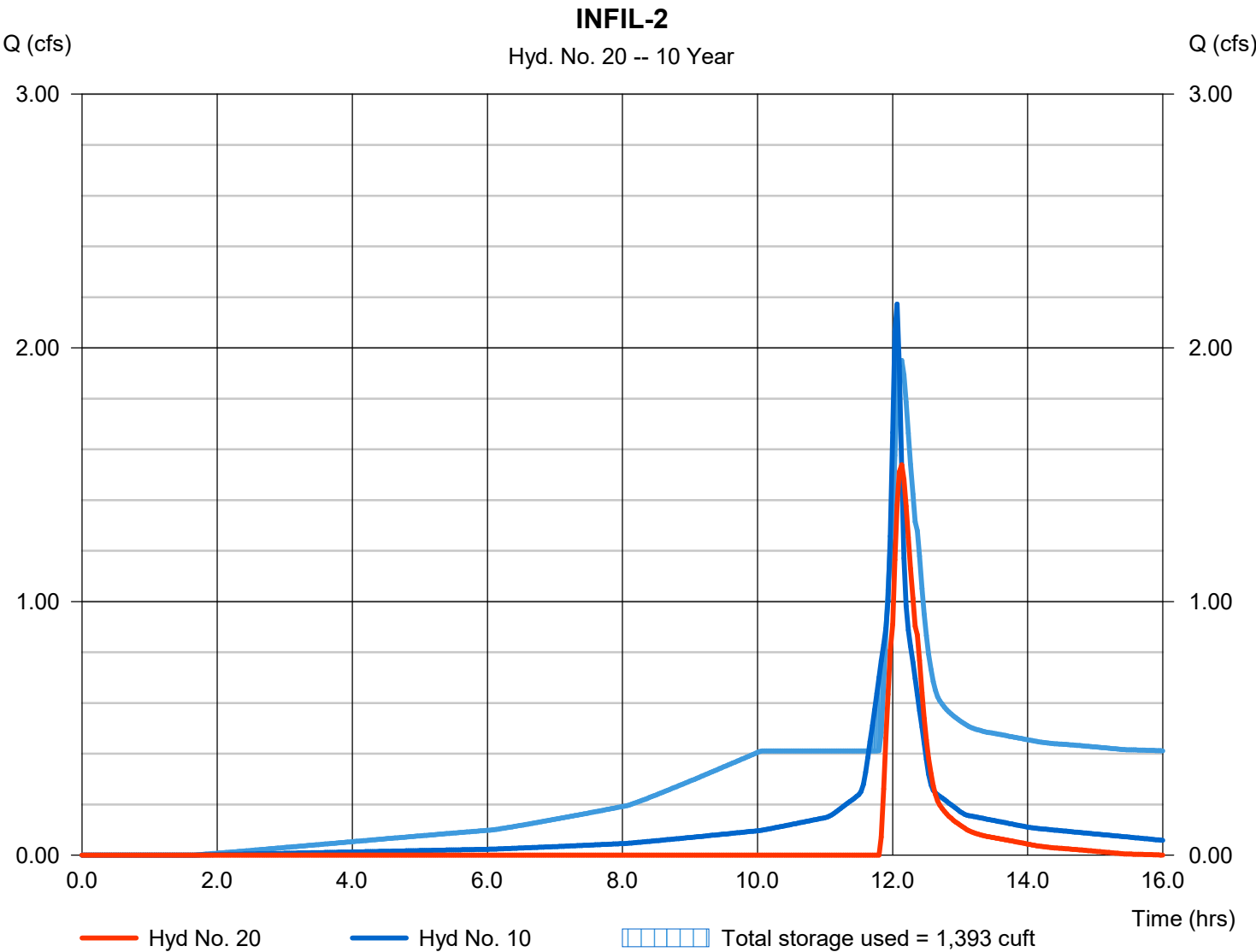
INFIL-2

Hyd. No. 20 -- 10 Year

Legend: Hyd No. 20 — Hyd No. 10 — Total storage used = 1,393 cuft

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 21

<no description>

Hydrograph type	= Combine	Peak discharge	= 9.287 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 30,998 cuft
Inflow hyds.	= 8, 9	Contrib. drain. area	= 1.855 ac

<no description>

Hyd. No. 21 -- 10 Year

Q (cfs) ... Q (cfs)

Time (hrs)

Hyd No. 21   Hyd No. 8   Hyd No. 9

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021   Thursday, 04 / 4 / 2024

Hyd. No. 22

INFIL-1

Hydrograph type	= Reservoir		Peak discharge	= 3.162 cfs
Storm frequency	= 10 yrs		Time to peak	= 12.27 hrs
Time interval	= 2 min		Hyd. volume	= 8,485 cuft
Inflow hyd. No.	= 21 - <no description>		Max. Elevation	= 135.72 ft
Reservoir name	= INFIL-1		Max. Storage	= 9,160 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

INFIL-1

Hyd. No. 22 -- 10 Year

Hyd No. 22   Hyd No. 21   Total storage used = 9,160 cuft

Hydrograph Report

Hyd. No. 23

<no description>
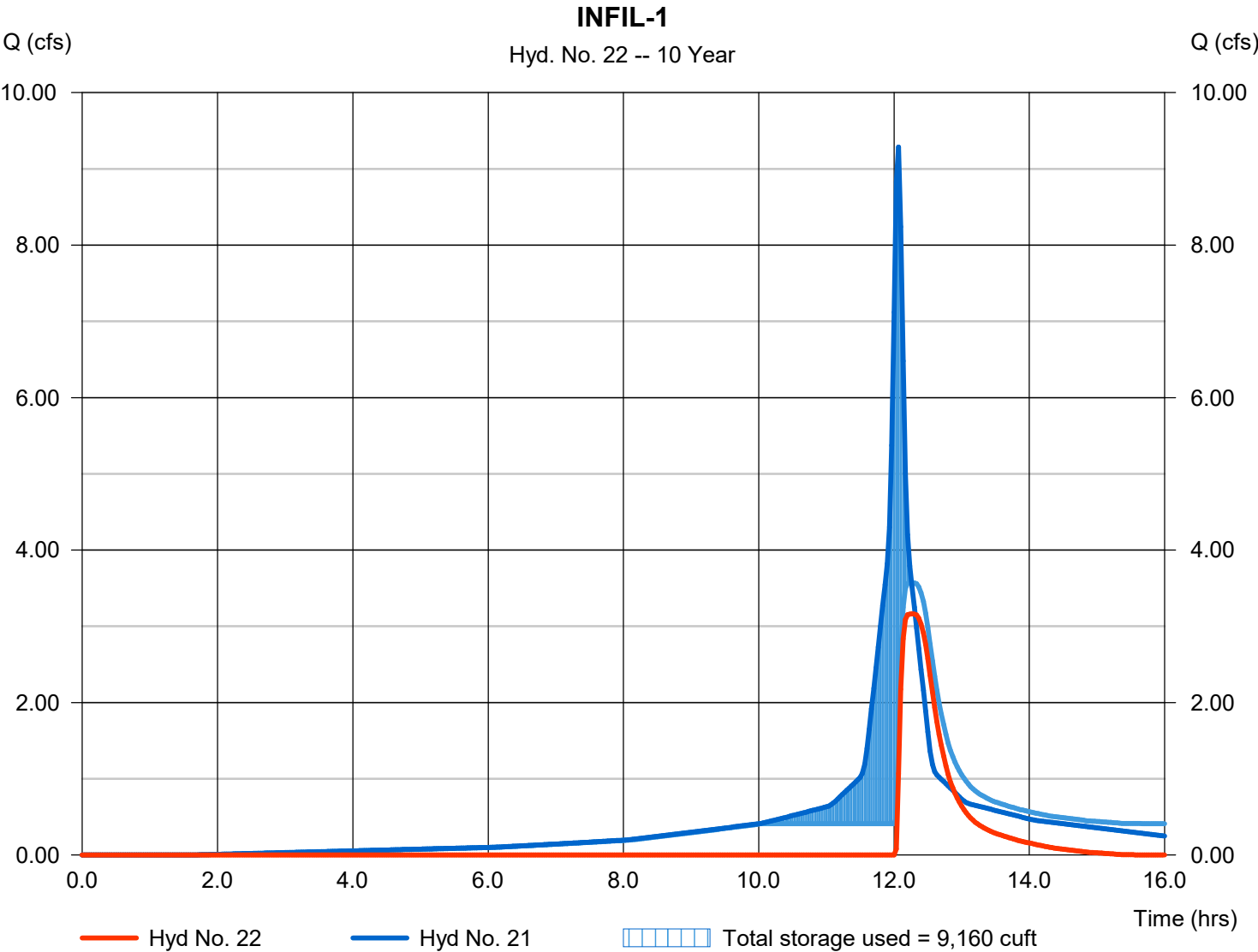
Hydrograph type	= Combine		Peak discharge	= 10.90 cfs
Storm frequency	= 10 yrs		Time to peak	= 12.17 hrs
Time interval	= 2 min		Hyd. volume	= 51,656 cuft
Inflow hyds.	= 2, 3, 15, 19		Contrib. drain. area	= 0.689 ac

<no description>

Hyd. No. 23 -- 10 Year

Legend: Hyd No. 23, Hyd No. 2, Hyd No. 3, Hyd No. 15, Hyd No. 19

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 24

<no description>
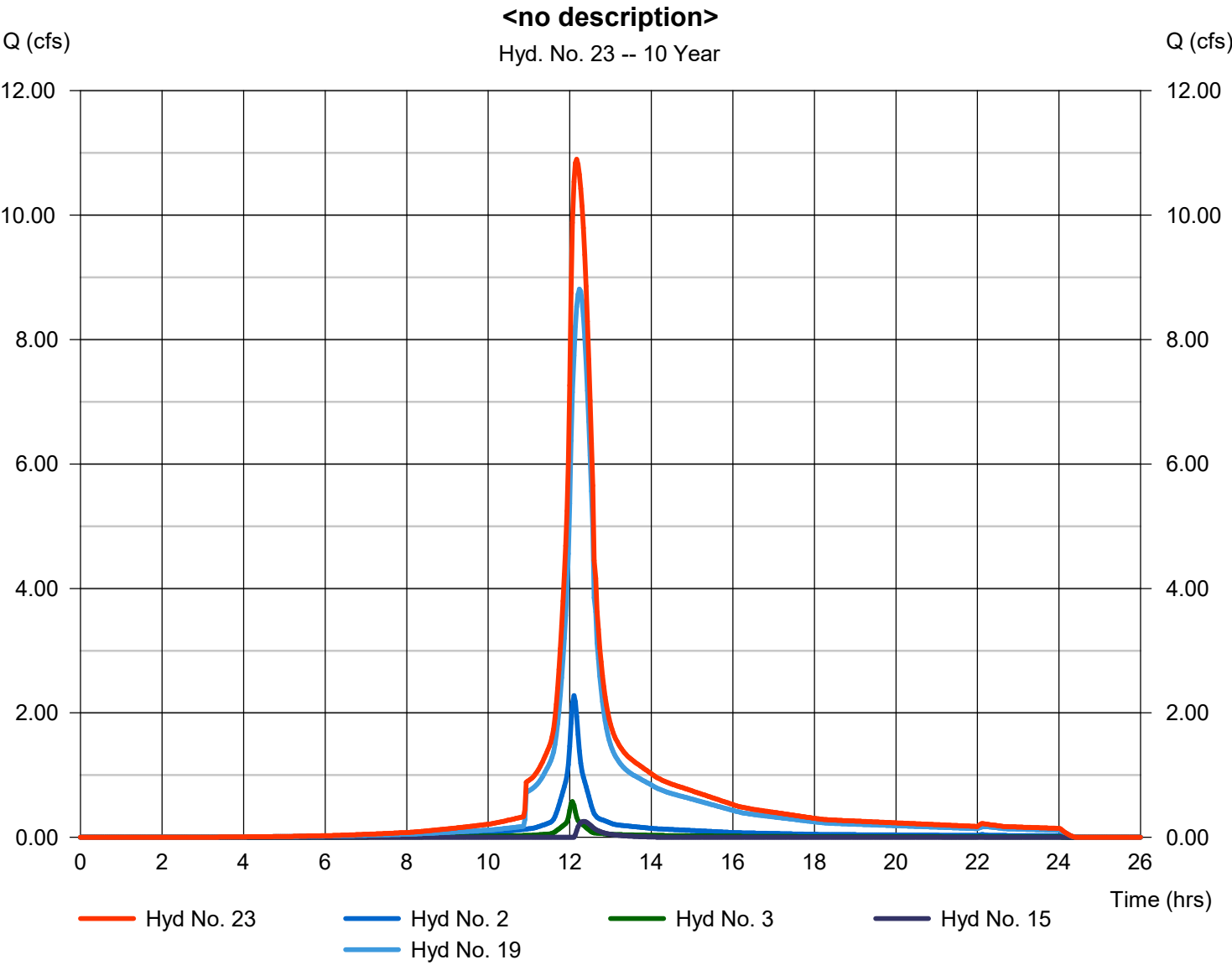
Hydrograph type	= Combine		Peak discharge	= 6.316 cfs
Storm frequency	= 10 yrs		Time to peak	= 12.20 hrs
Time interval	= 2 min		Hyd. volume	= 46,058 cuft
Inflow hyds.	= 13, 17, 18, 20		Contrib. drain. area	= 4.837 ac
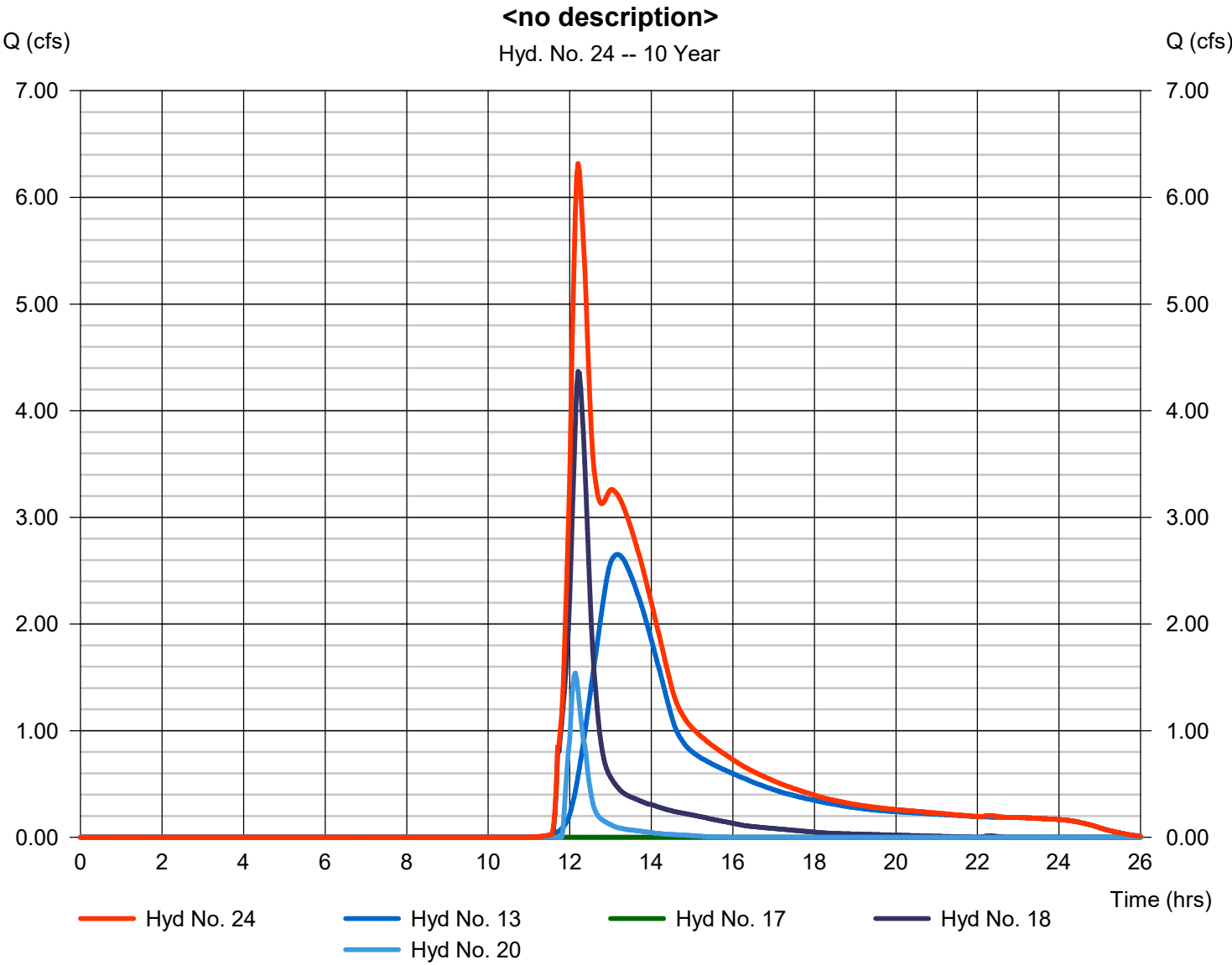
<no description>
Hyd. No. 24 -- 10 Year

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 25

<no description>

Hydrograph type	= Combine		Peak discharge	= 23.71 cfs
Storm frequency	= 10 yrs		Time to peak	= 12.13 hrs
Time interval	= 2 min		Hyd. volume	= 114,719 cuft
Inflow hyds.	= 16, 22, 23, 24		Contrib. drain. area	= 0.000 ac

<no description>
Hyd. No. 25 -- 10 Year

Legend: Hyd No. 25 — Hyd No. 16 — Hyd No. 22 — Hyd No. 23 — Hyd No. 24

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

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	5.692	2	752	37,264	------	------	------	PR WS-01
2	SCS Runoff	2.885	2	726	10,181	------	------	------	PR WS-02B(I)
3	SCS Runoff	0.728	2	724	2,262	------	------	------	PR WS-02B(III)
4	SCS Runoff	3.236	2	726	11,952	------	------	------	PR WS-02C
5	SCS Runoff	9.563	2	734	46,823	------	------	------	PR WS-02D
6	SCS Runoff	1.234	2	724	4,109	------	------	------	PR WS-02E
7	SCS Runoff	6.217	2	724	20,708	------	------	------	PR WS-02F
8	SCS Runoff	8.330	2	724	28,092	------	------	------	PR WS-02A
9	SCS Runoff	3.024	2	724	10,197	------	------	------	PR WS-02G(I)
10	SCS Runoff	2.656	2	724	8,958	------	------	------	PR WS-02G(II)
11	SCS Runoff	1.116	2	730	4,653	------	------	------	PR WS-02H
12	SCS Runoff	5.543	2	732	25,812	------	------	------	PR WS-02I
13	SCS Runoff	4.052	2	788	43,145	------	------	------	PR WS-03
14	Reservoir	9.452	2	736	41,926	5	139.13	3,703	TWIN 36IN PIPES (#2)
15	Reservoir	0.490	2	732	1,019	6	137.27	1,147	INFIL-3
16	Reservoir	5.631	2	726	11,834	7	137.53	2,870	INIFL-4
17	Reservoir	0.000	2	668	0	11	131.44	3,602	36 INCH PIPE (#3)
18	Reservoir	5.460	2	732	18,770	12	135.73	2,475	TWO 36 INCH PIPES
19	Combine	11.17	2	734	53,878	4, 14,	------	------	<no description>
20	Reservoir	1.854	2	728	4,305	10	135.20	1,561	INFIL-2
21	Combine	11.35	2	724	38,289	8, 9,	------	------	<no description>
22	Reservoir	6.146	2	730	13,535	21	136.31	10,413	INFIL-1
23	Combine	14.07	2	730	67,341	2, 3, 15, 19,	------	------	<no description>
24	Combine	8.206	2	732	66,220	13, 17, 18, 20,	------	------	<no description>
25	Combine	32.78	2	728	158,930	16, 22, 23, 24	------	------	<no description>

Hydrograph Report

Hyd. No. 1

PR WS-01

Hydrograph type	= SCS Runoff	Peak discharge	= 5.692 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.53 hrs
Time interval	= 2 min	Hyd. volume	= 37,264 cuft
Drainage area	= 3.405 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 45.70 min
Total precip.	= 6.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-01

Hyd. No. 1 -- 25 Year
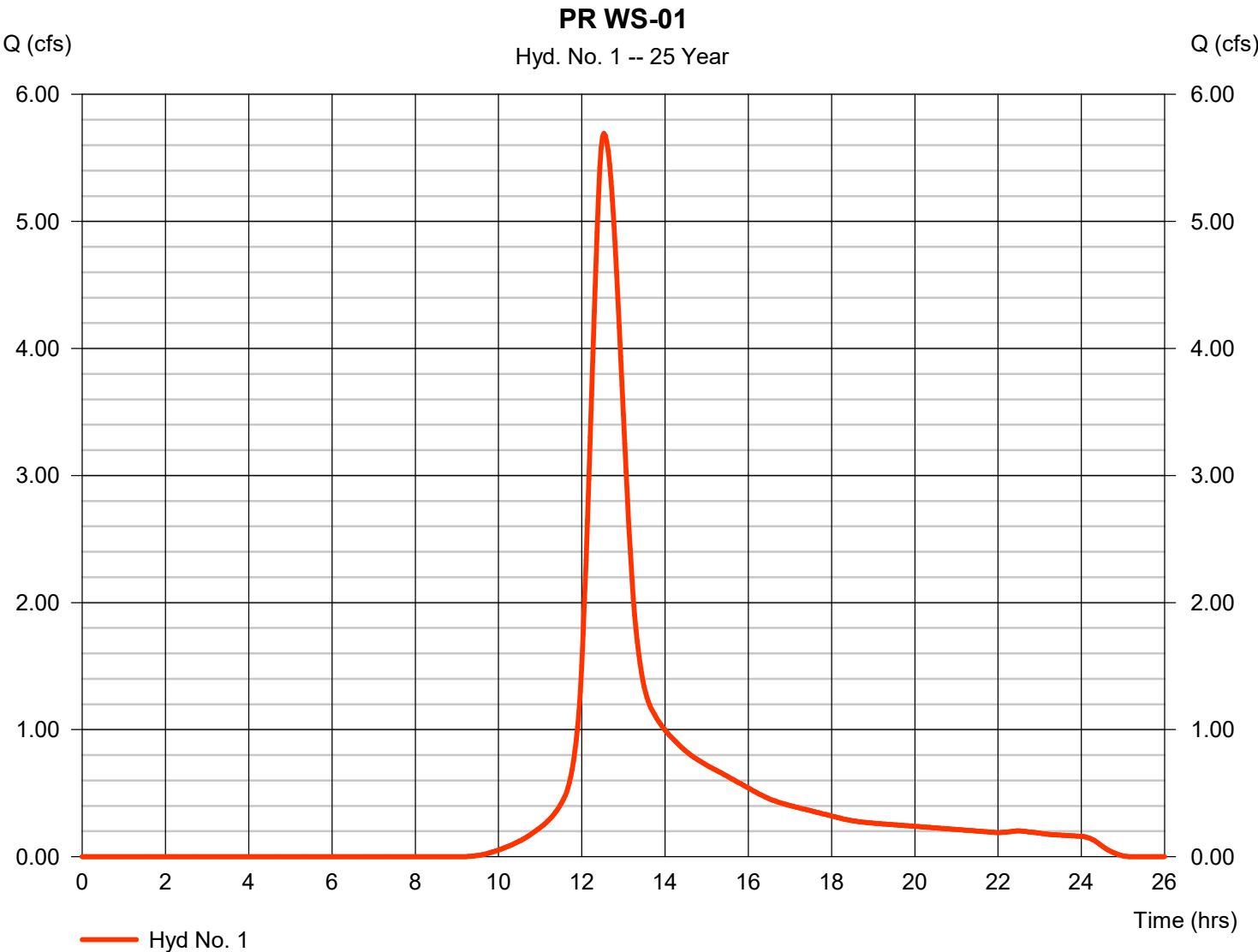
Hydrograph Report

Hyd. No. 2

PR WS-02B(I)

Hydrograph type	= SCS Runoff	Peak discharge	= 2.885 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 10,181 cuft
Drainage area	= 0.557 ac	Curve number	= 87
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 7.40 min
Total precip.	= 6.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02B(I)

Hyd. No. 2 -- 25 Year
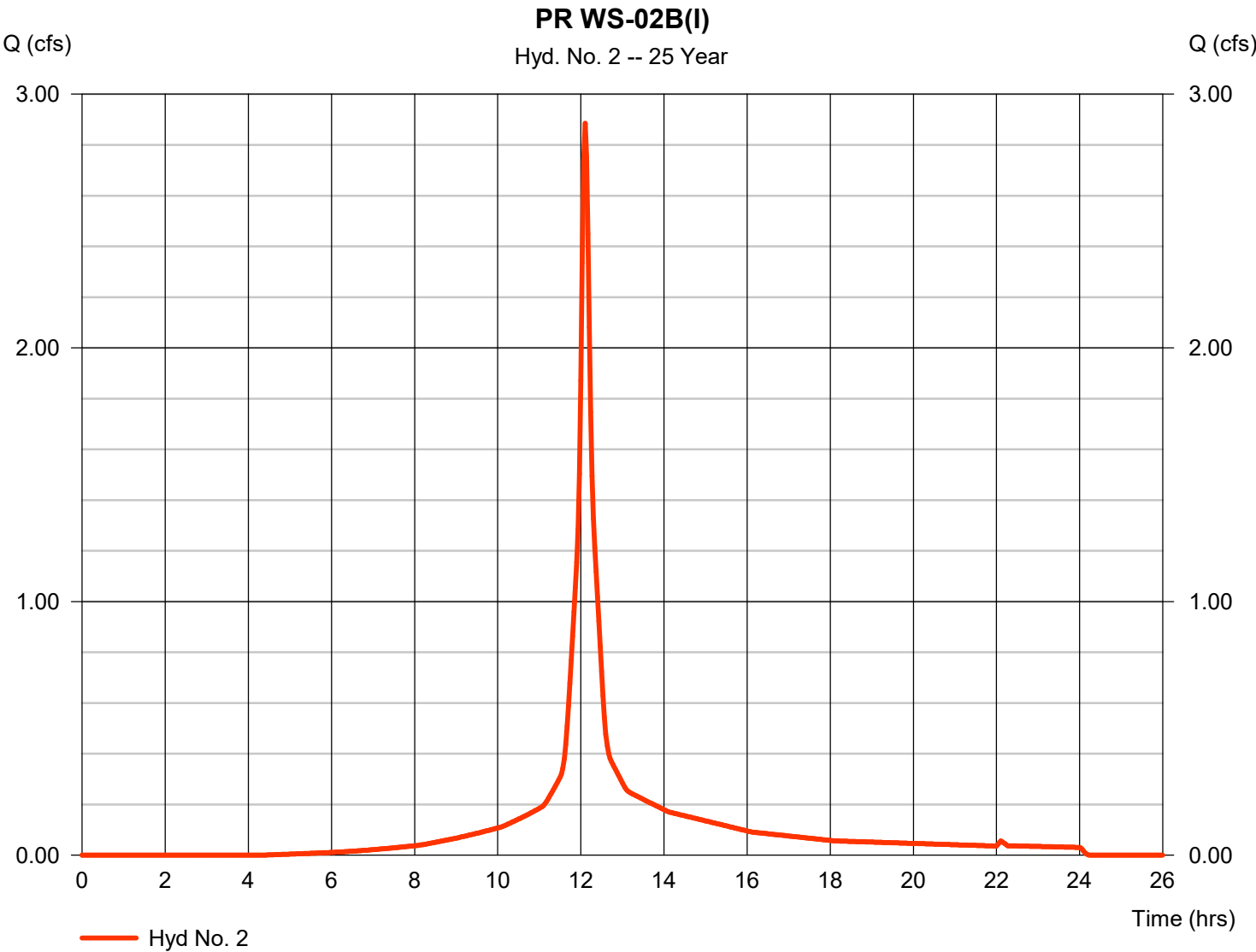
Hyd No. 2

Hydrograph Report

Hyd. No. 3

PR WS-02B(III)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.728 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 2,262 cuft
Drainage area	= 0.132 ac	Curve number	= 87
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02B(III)

Hyd. No. 3 -- 25 Year
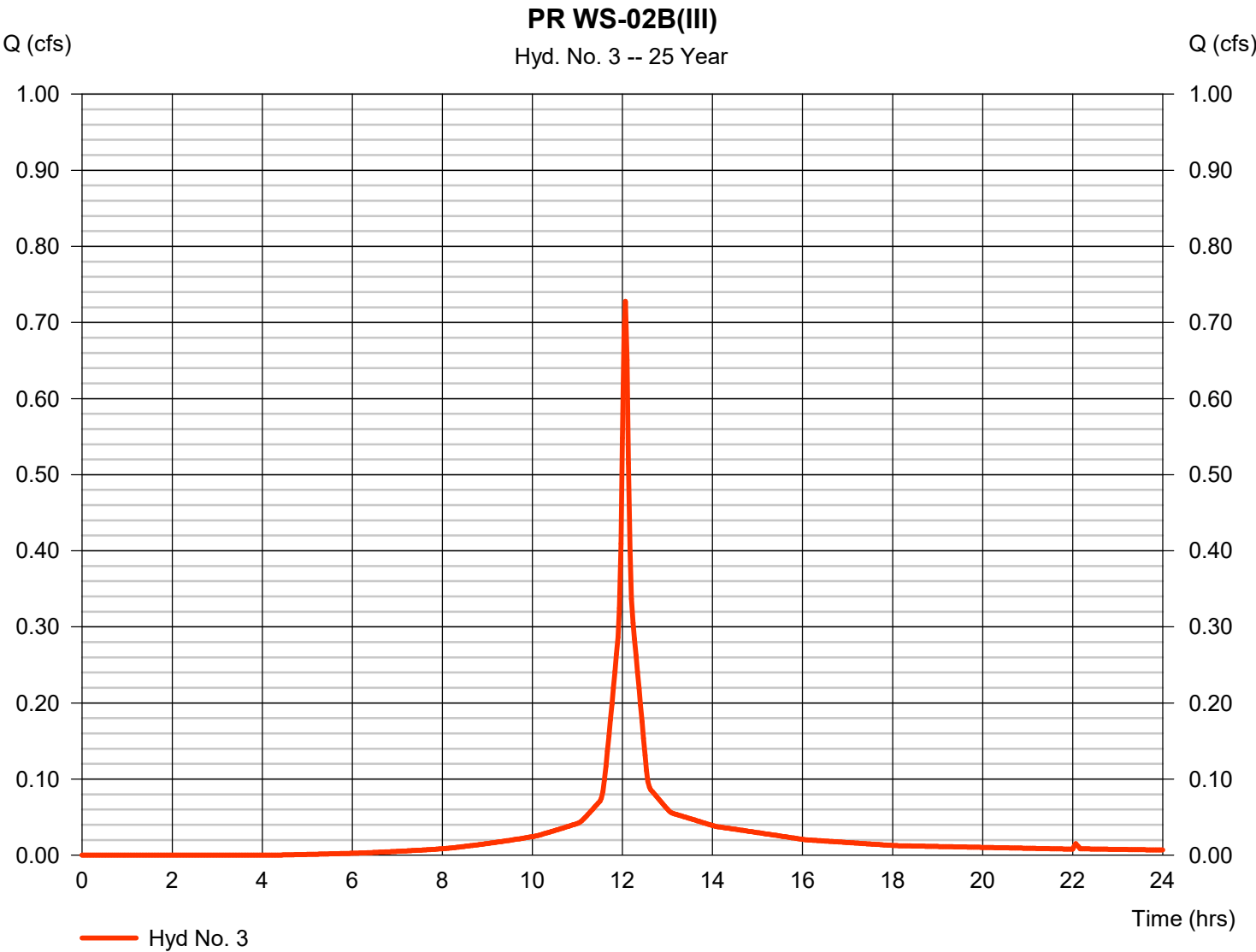
Hyd No. 3

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 4

PR WS-02C

Hydrograph type	= SCS Runoff	Peak discharge	= 3.236 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 11,952 cuft
Drainage area	= 0.576 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 9.40 min
Total precip.	= 6.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02C

Hyd. No. 4 -- 25 Year

Hyd No. 4

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 5

PR WS-02D

Hydrograph type	= SCS Runoff	Peak discharge	= 9.563 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.23 hrs
Time interval	= 2 min	Hyd. volume	= 46,823 cuft
Drainage area	= 2.462 ac	Curve number	= 88
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 22.10 min
Total precip.	= 6.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02D
Hyd. No. 5 -- 25 Year

Hyd No. 5

Hydrograph Report

Hyd. No. 6

PR WS-02E

Hydrograph type	= SCS Runoff		Peak discharge	= 1.234 cfs
Storm frequency	= 25 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 4,109 cuft
Drainage area	= 0.203 ac		Curve number	= 95
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.54 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

PR WS-02E

Hyd. No. 6 -- 25 Year
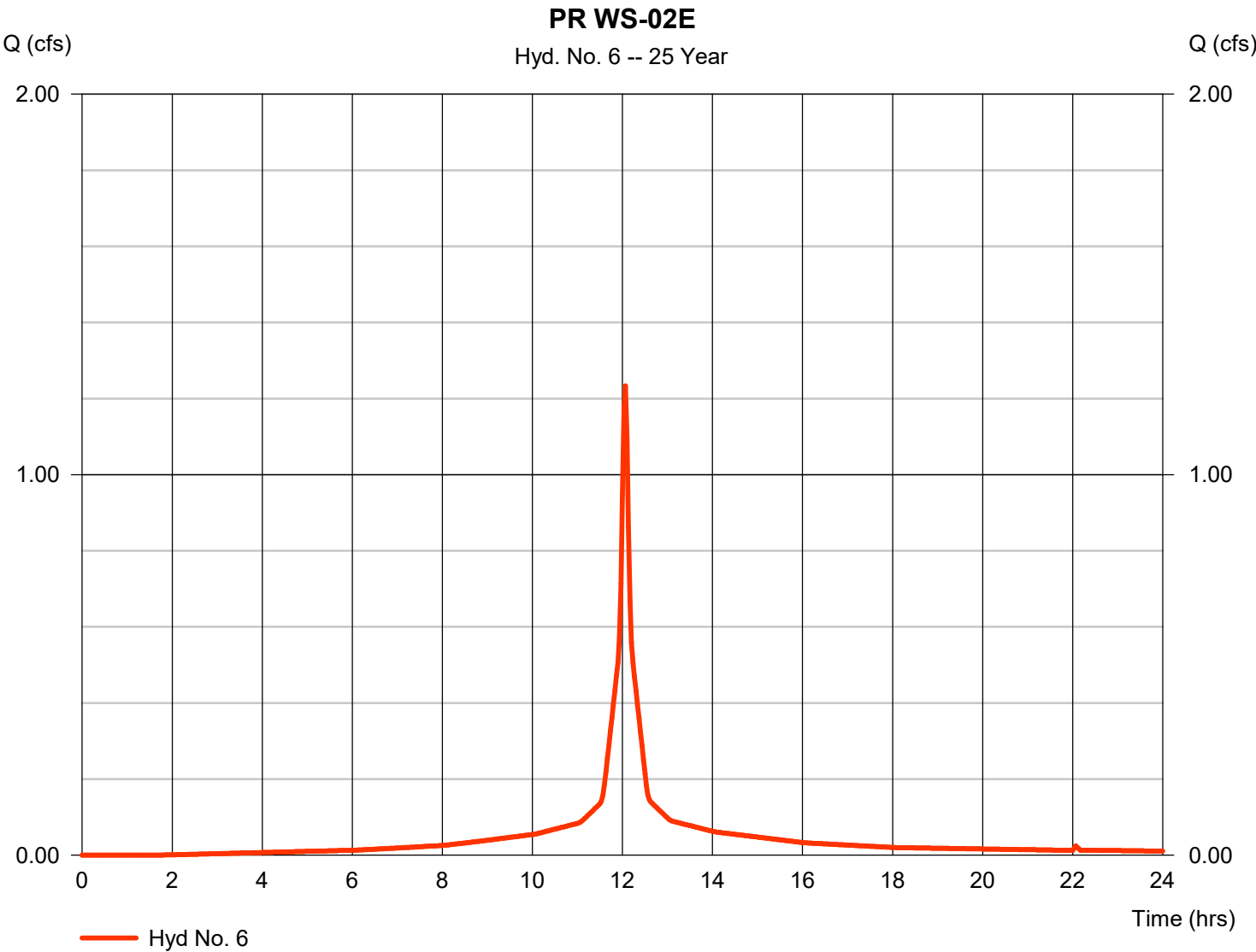
— Hyd No. 6

Hydrograph Report

Hyd. No. 7

PR WS-02F

Hydrograph type	= SCS Runoff		Peak discharge	= 6.217 cfs
Storm frequency	= 25 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 20,708 cuft
Drainage area	= 1.023 ac		Curve number	= 95
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.54 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

PR WS-02F

Hyd. No. 7 -- 25 Year

Hyd No. 7

Hydrograph Report

Thursday, 04 / 4 / 2024
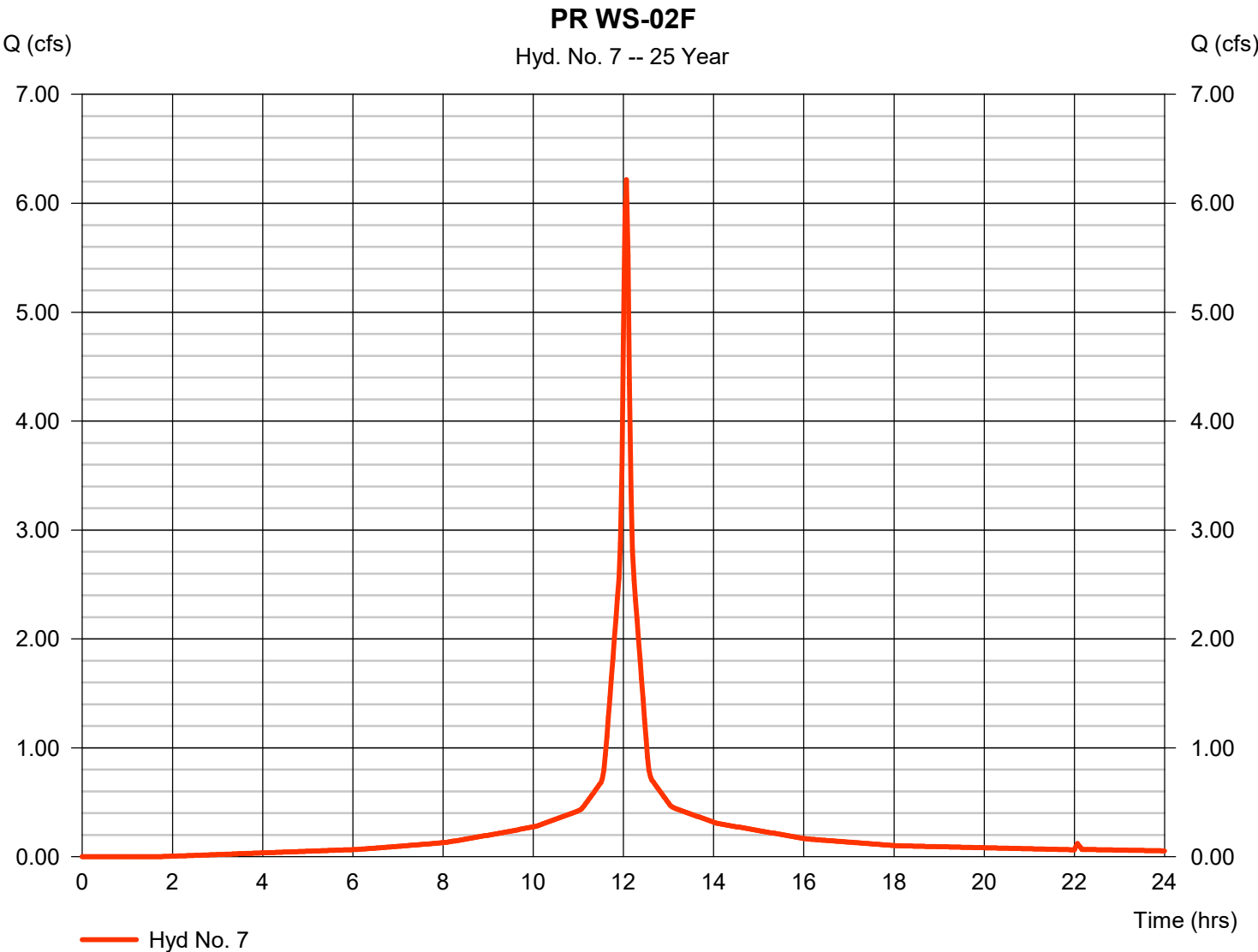
Hyd. No. 8

PR WS-02A

Hydrograph type	= SCS Runoff		Peak discharge	= 8.330 cfs
Storm frequency	= 25 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 28,092 cuft
Drainage area	= 1.361 ac		Curve number	= 96
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.54 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

PR WS-02A

Hyd. No. 8 -- 25 Year
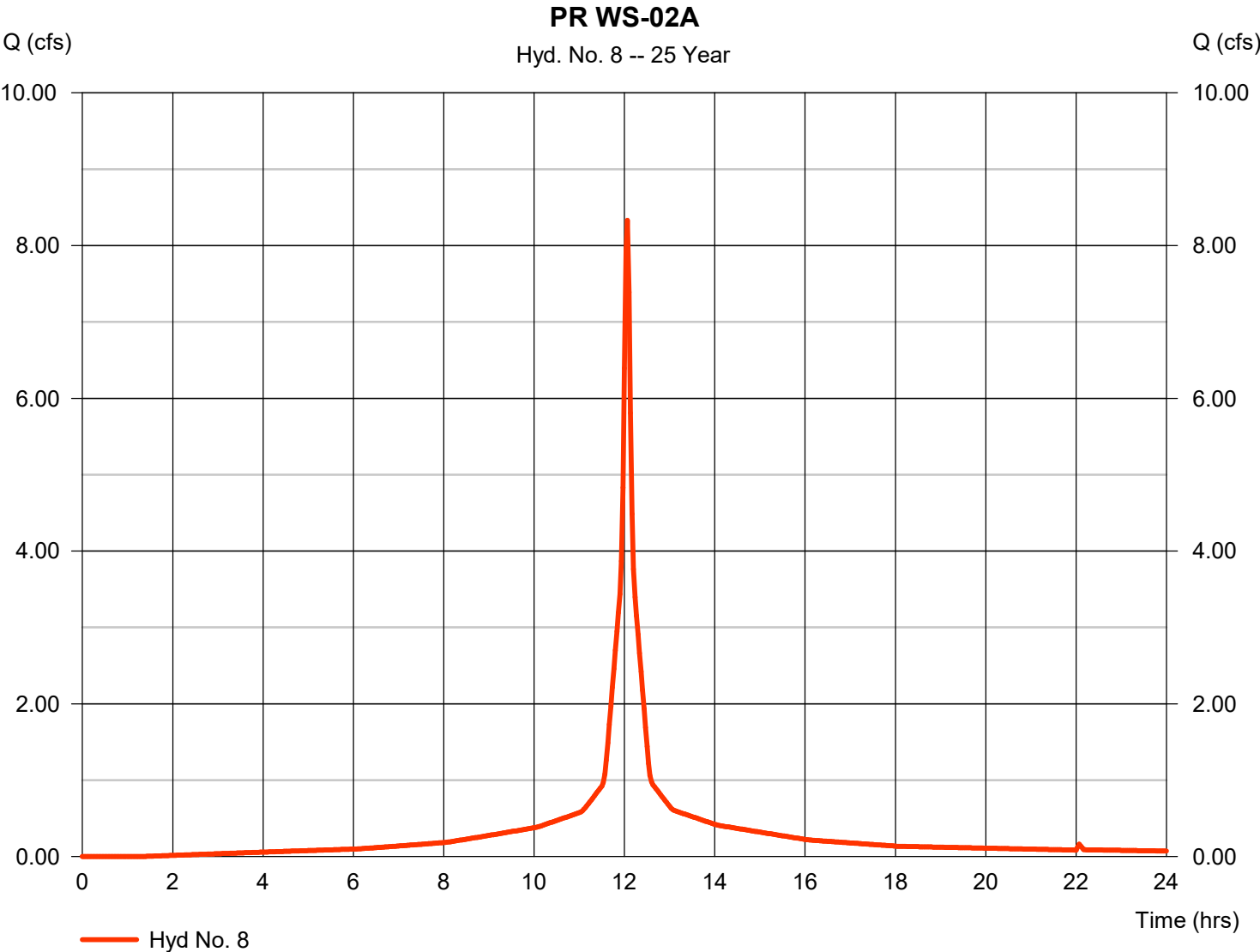
— Hyd No. 8

Hydrograph Report

Hyd. No. 9

PR WS-02G(I)

Hydrograph type	= SCS Runoff	Peak discharge	= 3.024 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 10,197 cuft
Drainage area	= 0.494 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02G(I)

Hyd. No. 9 -- 25 Year
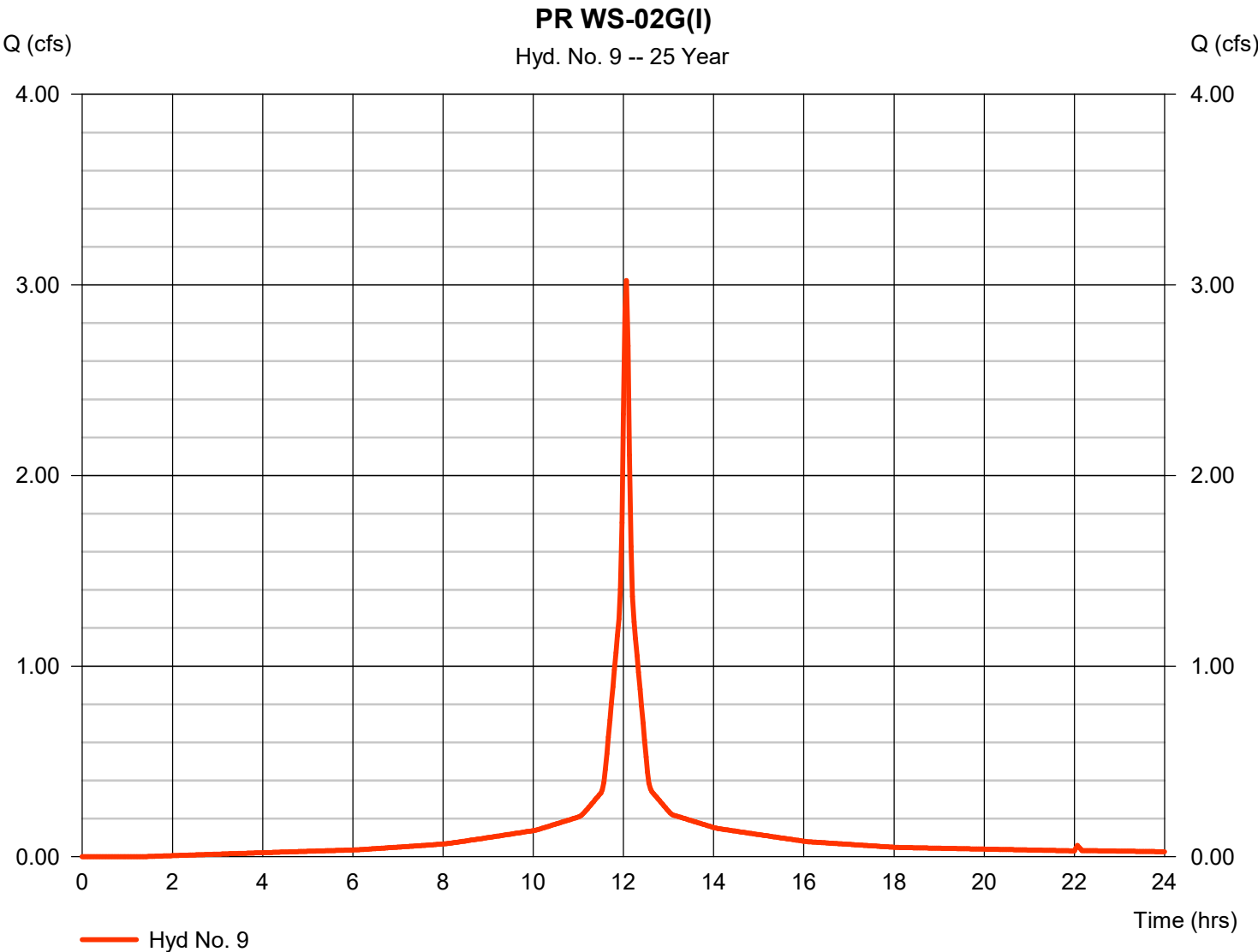
Hyd No. 9

Hydrograph Report

Hyd. No. 10

PR WS-02G(II)

Hydrograph type	= SCS Runoff		Peak discharge	= 2.656 cfs
Storm frequency	= 25 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 8,958 cuft
Drainage area	= 0.434 ac		Curve number	= 96
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.54 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

PR WS-02G(II)

Hyd. No. 10 -- 25 Year

Hyd No. 10

Hydrograph Report

Thursday, 04 / 4 / 2024
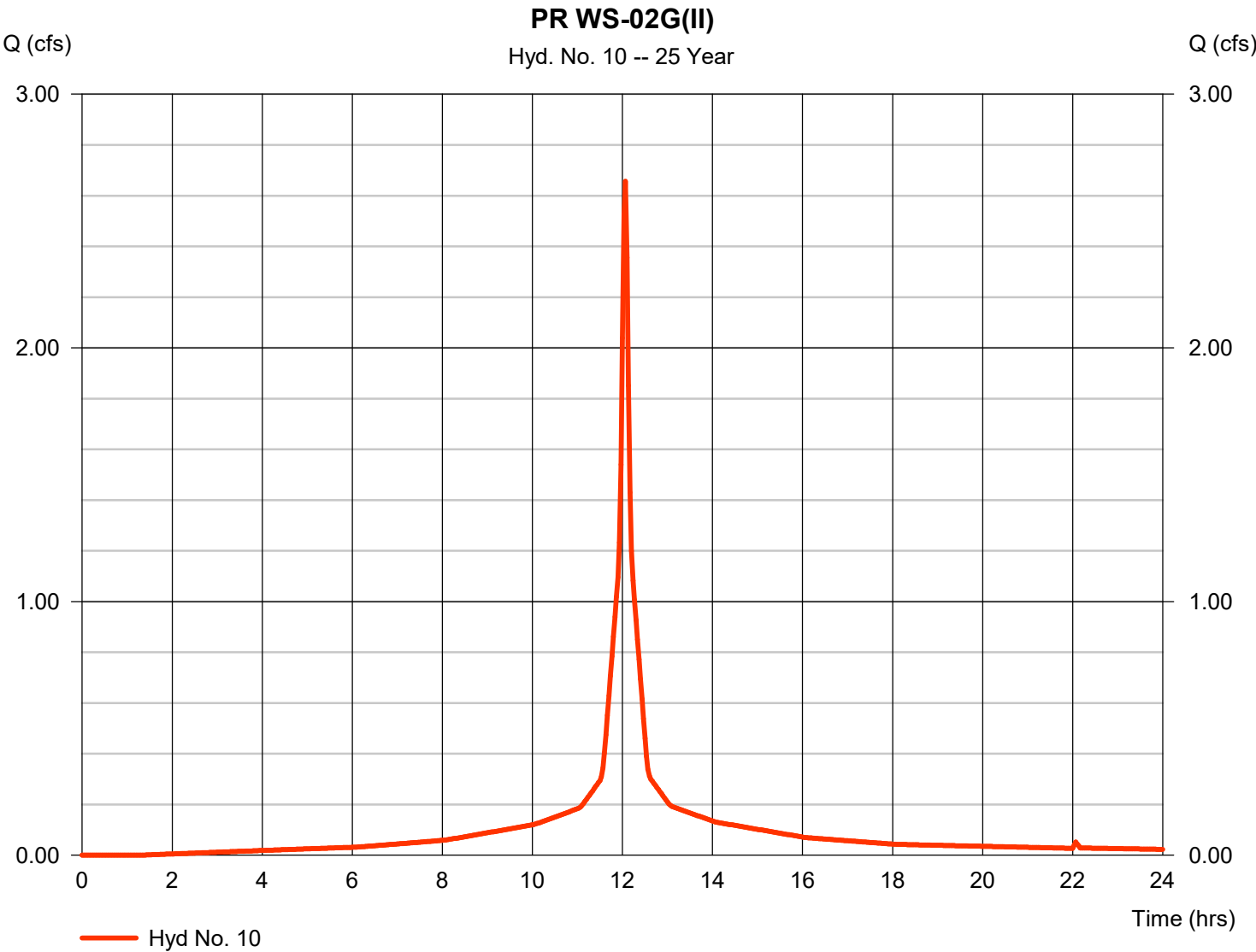
Hyd. No. 11

PR WS-02H

Hydrograph type	= SCS Runoff		Peak discharge	= 1.116 cfs
Storm frequency	= 25 yrs		Time to peak	= 12.17 hrs
Time interval	= 2 min		Hyd. volume	= 4,653 cuft
Drainage area	= 0.267 ac		Curve number	= 86
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 13.80 min
Total precip.	= 6.54 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

PR WS-02H

Hyd. No. 11 -- 25 Year
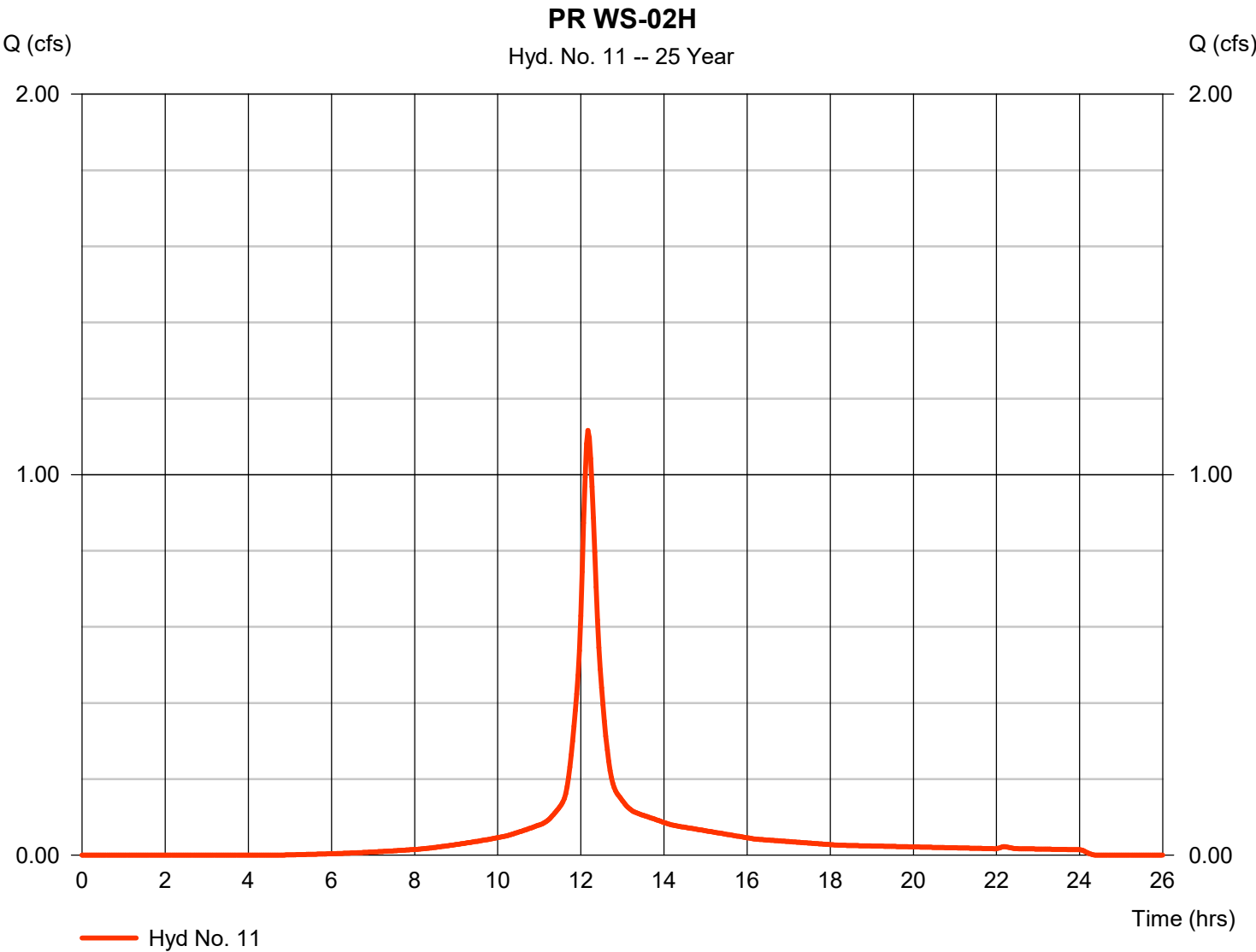
Hyd No. 11

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 12

PR WS-02I

Hydrograph type	= SCS Runoff	Peak discharge	= 5.543 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 25,812 cuft
Drainage area	= 1.296 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.60 min
Total precip.	= 6.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02I

Hyd. No. 12 -- 25 Year

Hyd No. 12

Hydrograph Report

Thursday, 04 / 4 / 2024
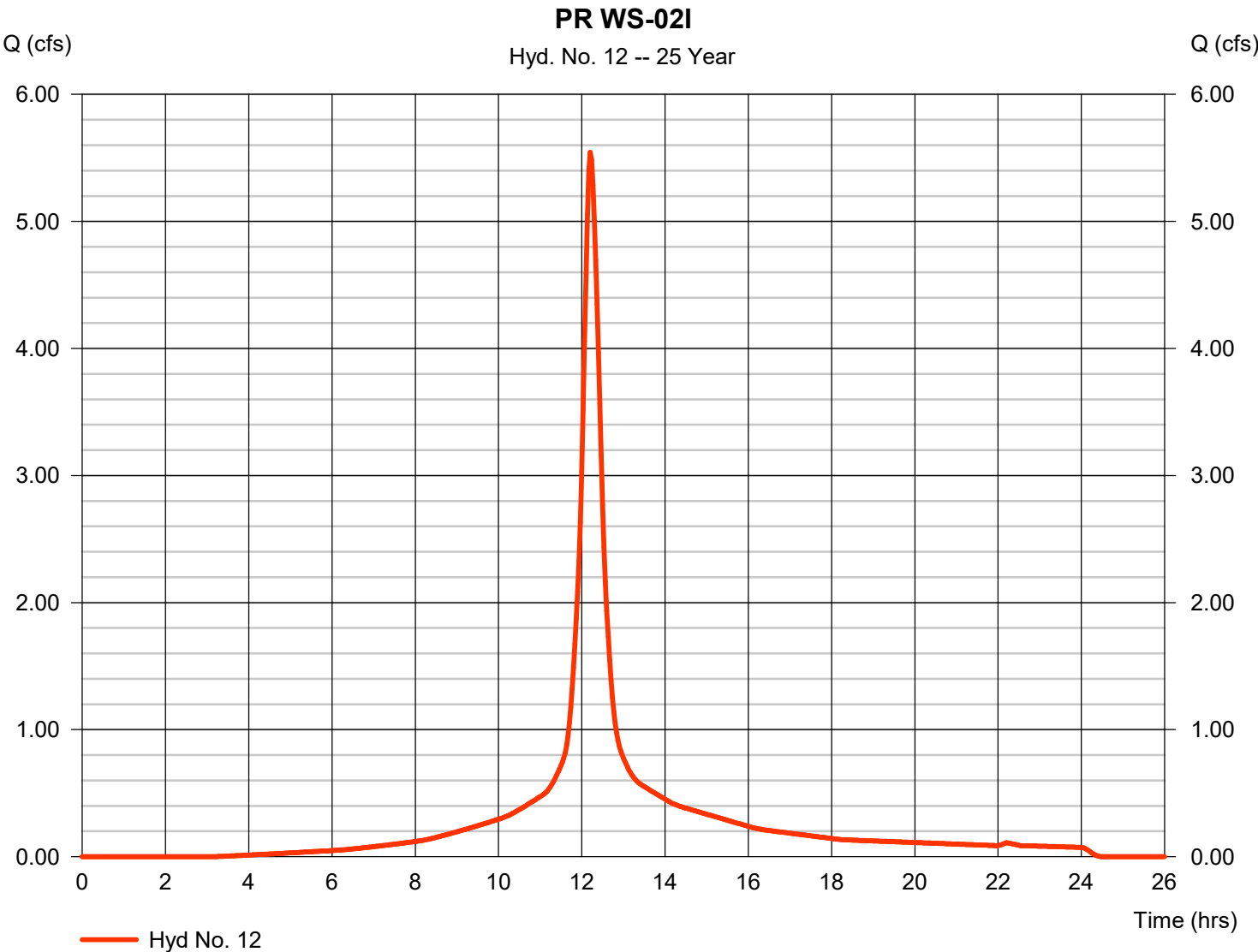
Hyd. No. 13

PR WS-03

Hydrograph type	= SCS Runoff	Peak discharge	= 4.052 cfs
Storm frequency	= 25 yrs	Time to peak	= 13.13 hrs
Time interval	= 2 min	Hyd. volume	= 43,145 cuft
Drainage area	= 4.837 ac	Curve number	= 62
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 95.00 min
Total precip.	= 6.54 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-03

Hyd. No. 13 -- 25 Year

Hyd No. 13

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 14

TWIN 36IN PIPES (#2)

Hydrograph type	= Reservoir	Peak discharge	= 9.452 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.27 hrs
Time interval	= 2 min	Hyd. volume	= 41,926 cuft
Inflow hyd. No.	= 5 - PR WS-02D	Max. Elevation	= 139.13 ft
Reservoir name	= Northern Twin 36IN	Max. Storage	= 3,703 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

TWIN 36IN PIPES (#2)
Hyd. No. 14 -- 25 Year

Hyd No. 14   Hyd No. 5   Total storage used = 3,703 cuft

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 15

INFIL-3

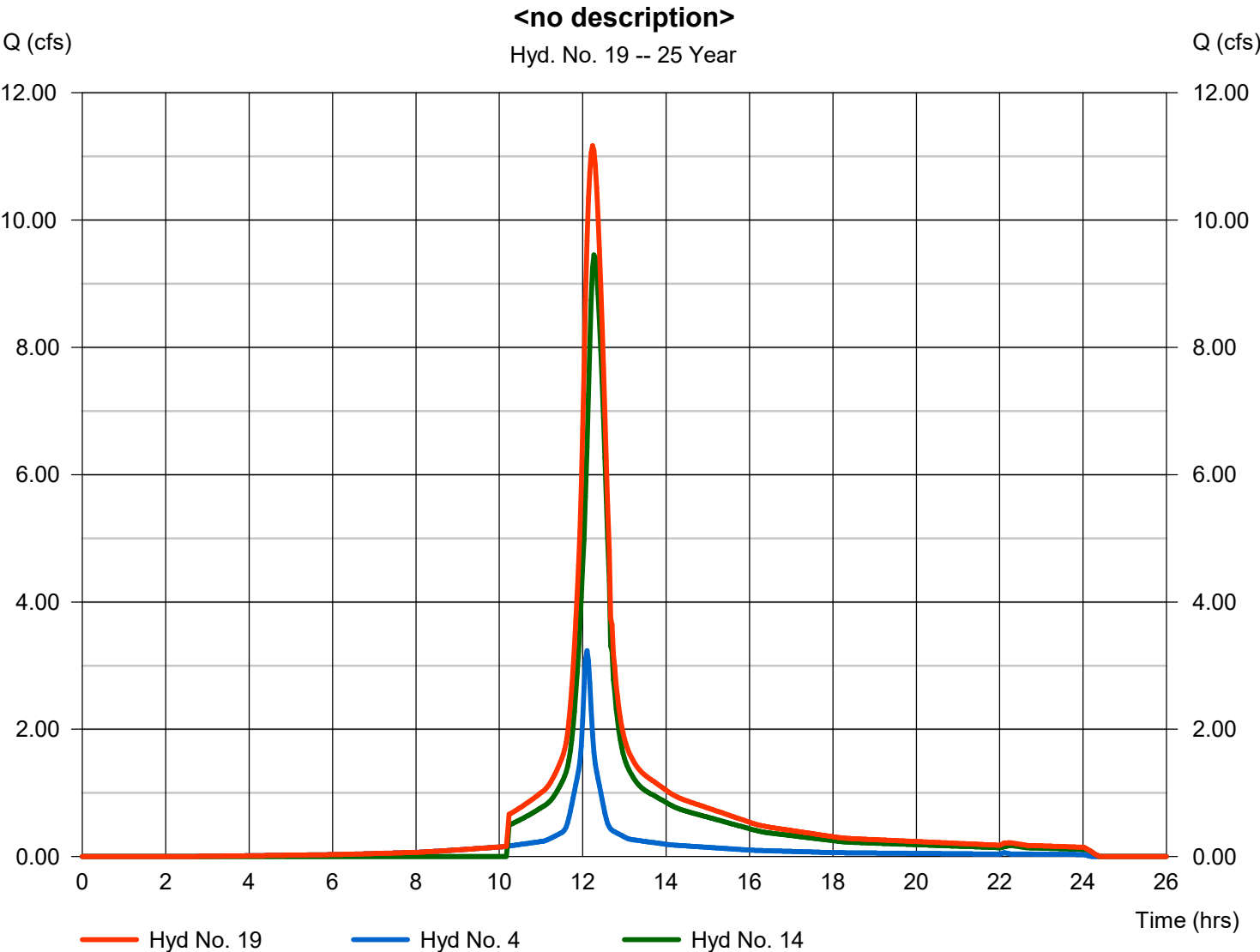|			
Hydrograph type	= Reservoir	Peak discharge	= 0.490 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 1,019 cuft
Inflow hyd. No.	= 6 - PR WS-02E	Max. Elevation	= 137.27 ft
Reservoir name	= INFIL-3	Max. Storage	= 1,147 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
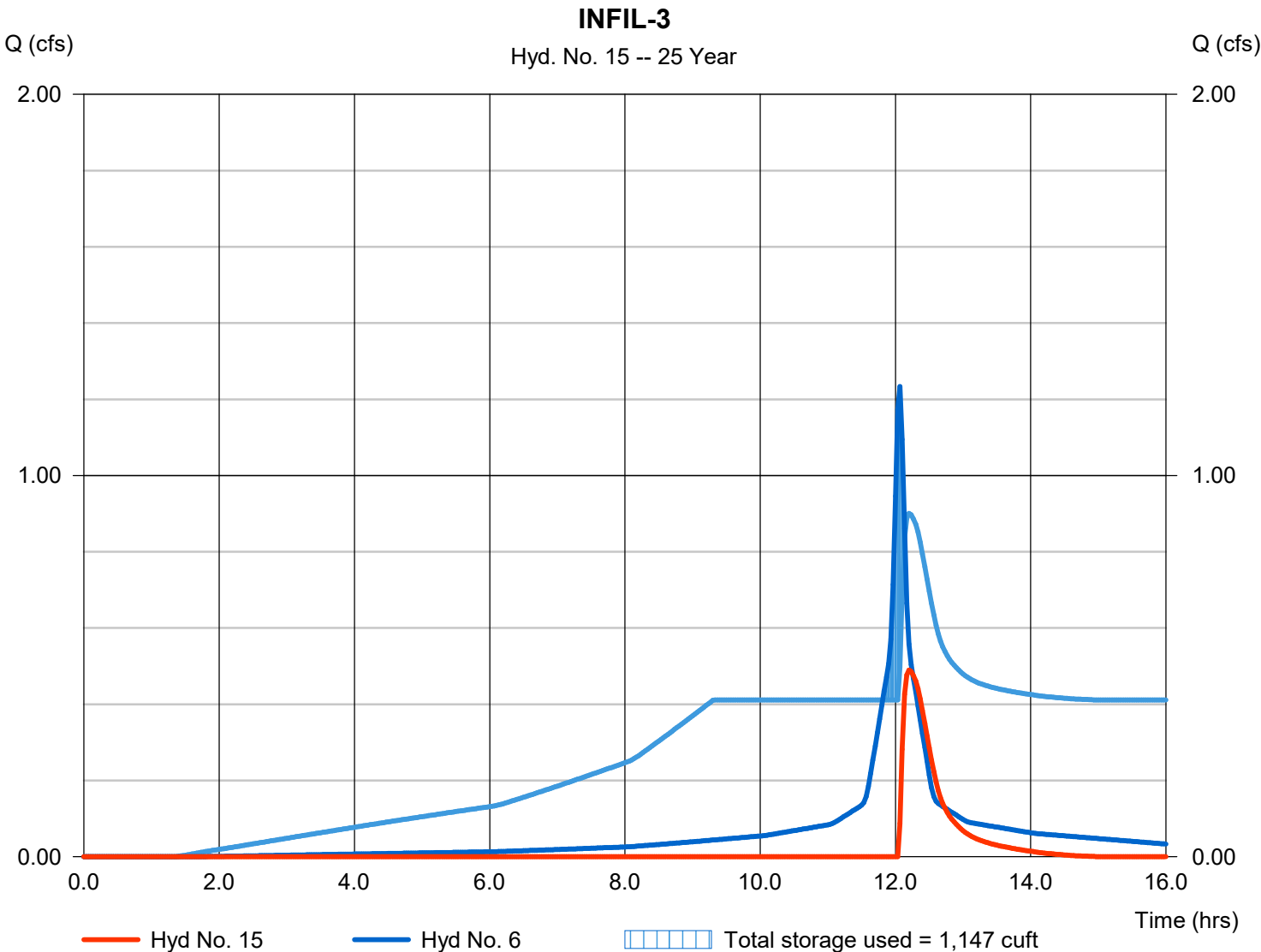
INFIL-3
Hyd. No. 15 -- 25 Year

Hyd No. 15   Hyd No. 6   Total storage used = 1,147 cuft

Hydrograph Report

Hyd. No. 16

INIFL-4

Hydrograph type	= Reservoir	Peak discharge	= 5.631 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 11,834 cuft
Inflow hyd. No.	= 7 - PR WS-02F	Max. Elevation	= 137.53 ft
Reservoir name	= INIFL-4	Max. Storage	= 2,870 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
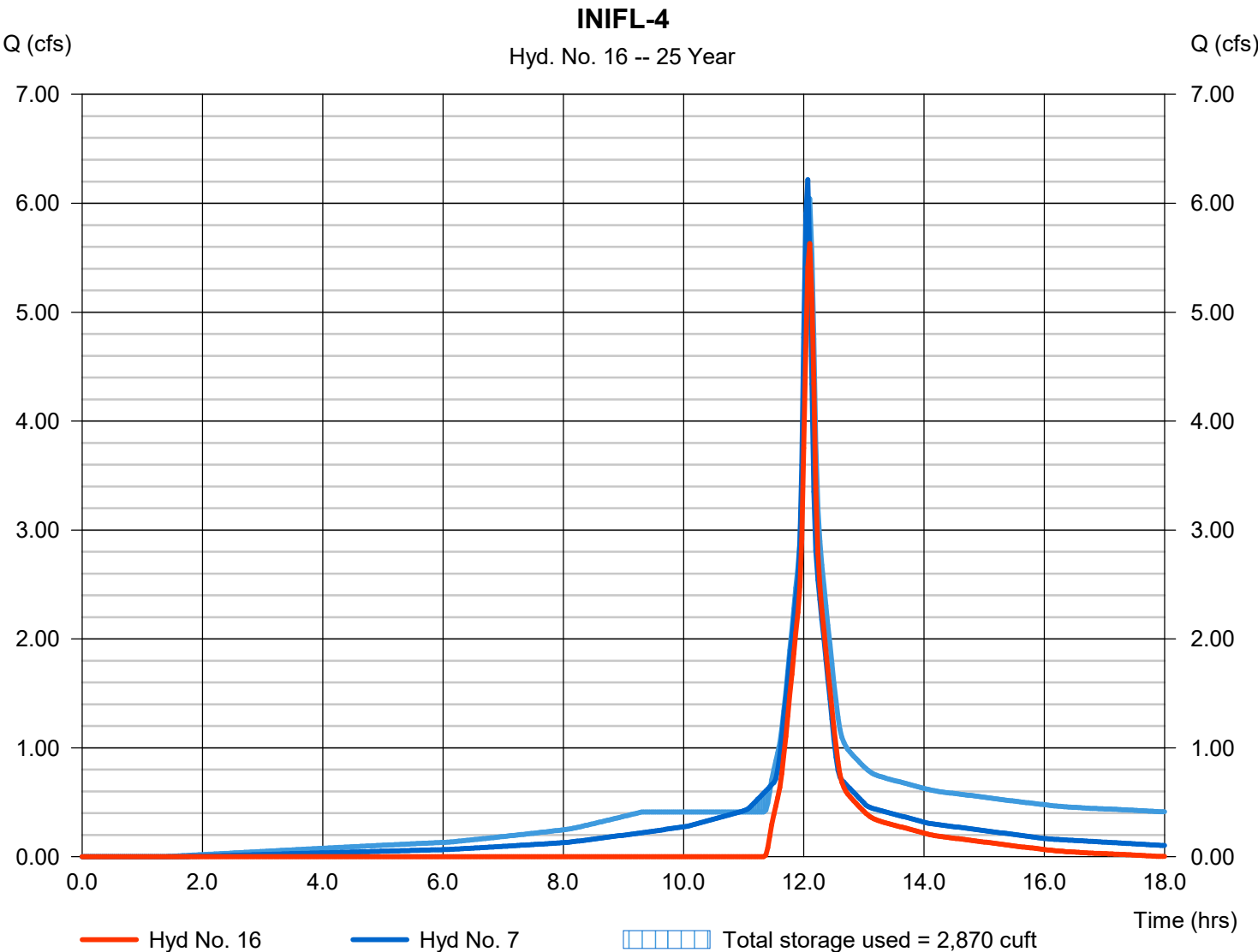
INIFL-4
Hyd. No. 16 -- 25 Year

Hyd No. 16   Hyd No. 7   Total storage used = 2,870 cuft

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 17

36 INCH PIPE (#3)

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.13 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 11 - PR WS-02H	Max. Elevation	= 131.44 ft
Reservoir name	= 36IN - 3	Max. Storage	= 3,602 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
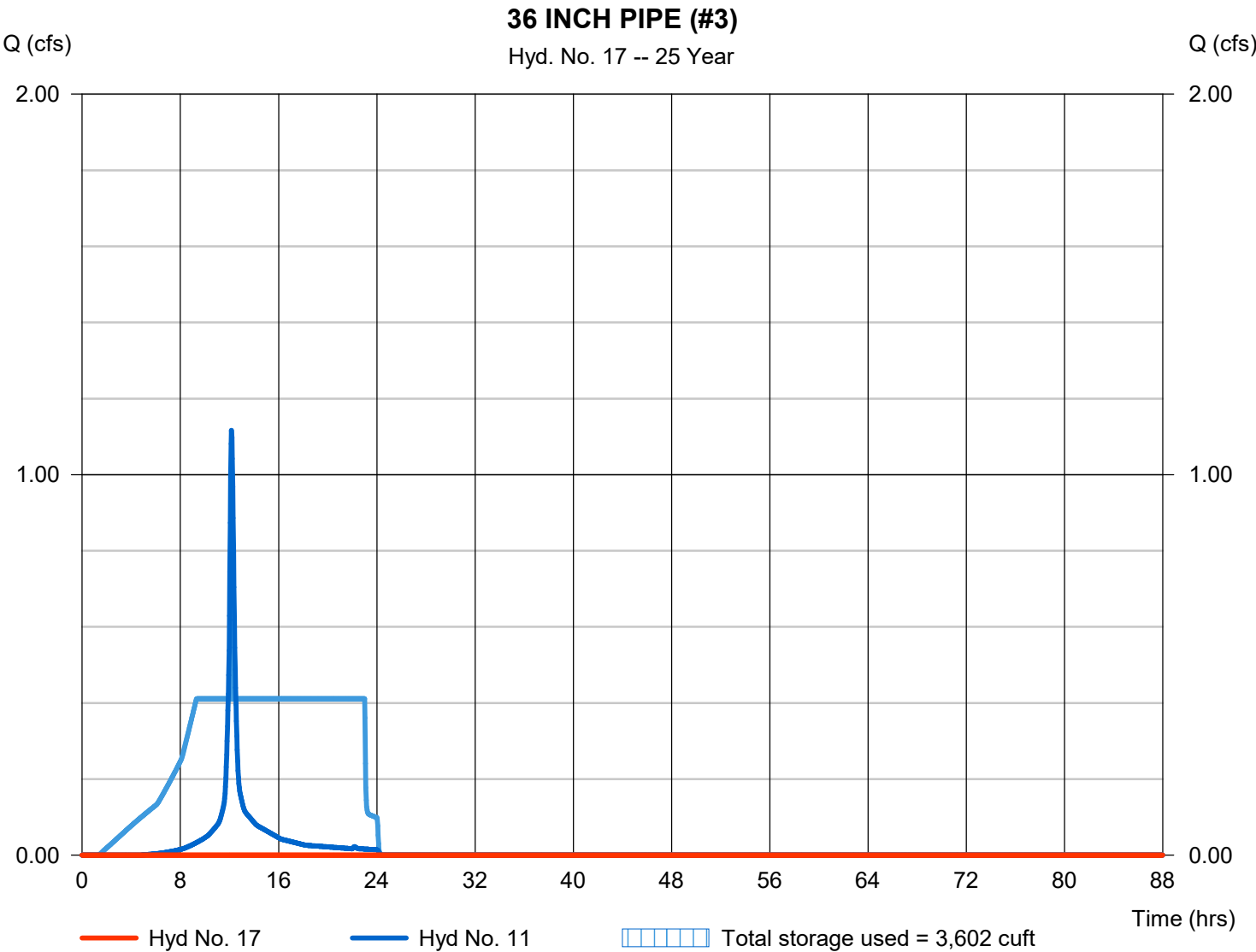
36 INCH PIPE (#3)

Hyd. No. 17 -- 25 Year

Legend: Hyd No. 17, Hyd No. 11, Total storage used = 3,602 cuft

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 18

TWO 36 INCH PIPES

Hydrograph type	= Reservoir		Peak discharge	= 5.460 cfs
Storm frequency	= 25 yrs		Time to peak	= 12.20 hrs
Time interval	= 2 min		Hyd. volume	= 18,770 cuft
Inflow hyd. No.	= 12 - PR WS-02I		Max. Elevation	= 135.73 ft
Reservoir name	= TWIN 36IN		Max. Storage	= 2,475 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

TWO 36 INCH PIPES
Hyd. No. 18 -- 25 Year

Hyd No. 18   Hyd No. 12   Total storage used = 2,475 cuft

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 19

<no description>
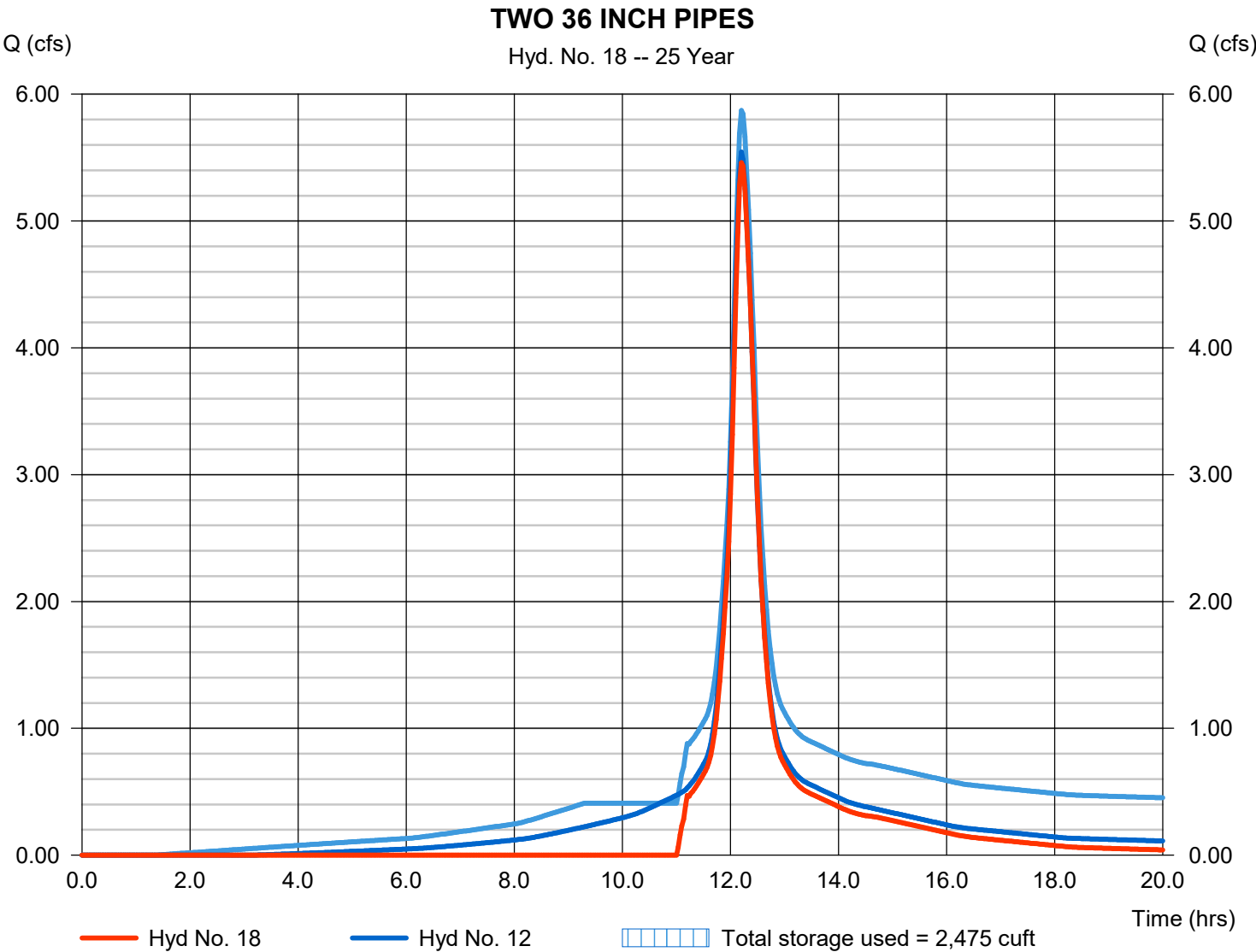
Hydrograph type	= Combine		Peak discharge	= 11.17 cfs
Storm frequency	= 25 yrs		Time to peak	= 12.23 hrs
Time interval	= 2 min		Hyd. volume	= 53,878 cuft
Inflow hyds.	= 4, 14		Contrib. drain. area	= 0.576 ac

<no description>
Hyd. No. 19 -- 25 Year

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 20

INFIL-2

Hydrograph type	= Reservoir		Peak discharge	= 1.854 cfs
Storm frequency	= 25 yrs		Time to peak	= 12.13 hrs
Time interval	= 2 min		Hyd. volume	= 4,305 cuft
Inflow hyd. No.	= 10 - PR WS-02G(II)		Max. Elevation	= 135.20 ft
Reservoir name	= INFIL-2		Max. Storage	= 1,561 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

INFIL-2
Hyd. No. 20 -- 25 Year

Legend: Hyd No. 20, Hyd No. 10, Total storage used = 1,561 cuft

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 21

<no description>
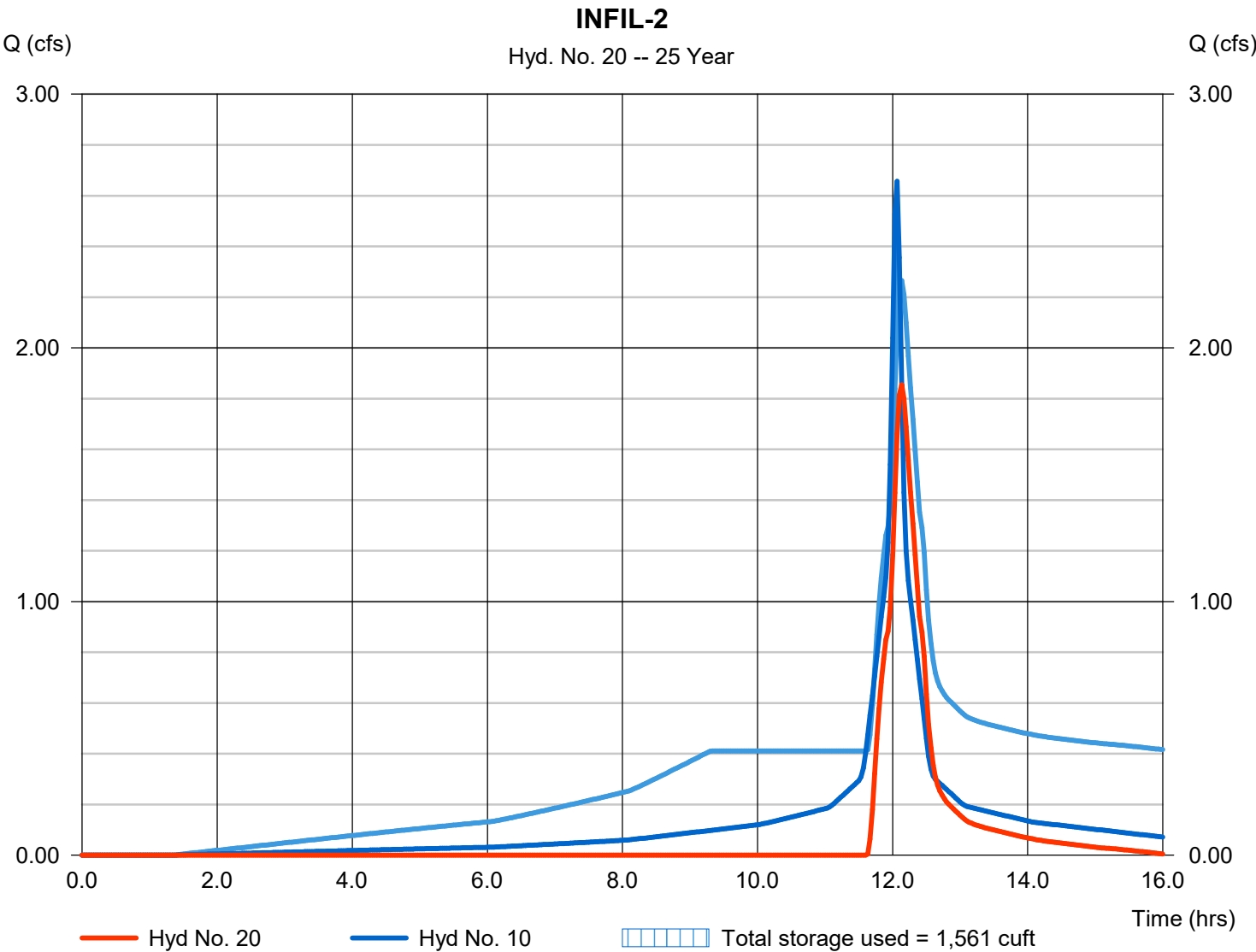
Hydrograph type	= Combine	Peak discharge	= 11.35 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 38,289 cuft
Inflow hyds.	= 8, 9	Contrib. drain. area	= 1.855 ac

<no description>
Hyd. No. 21 -- 25 Year
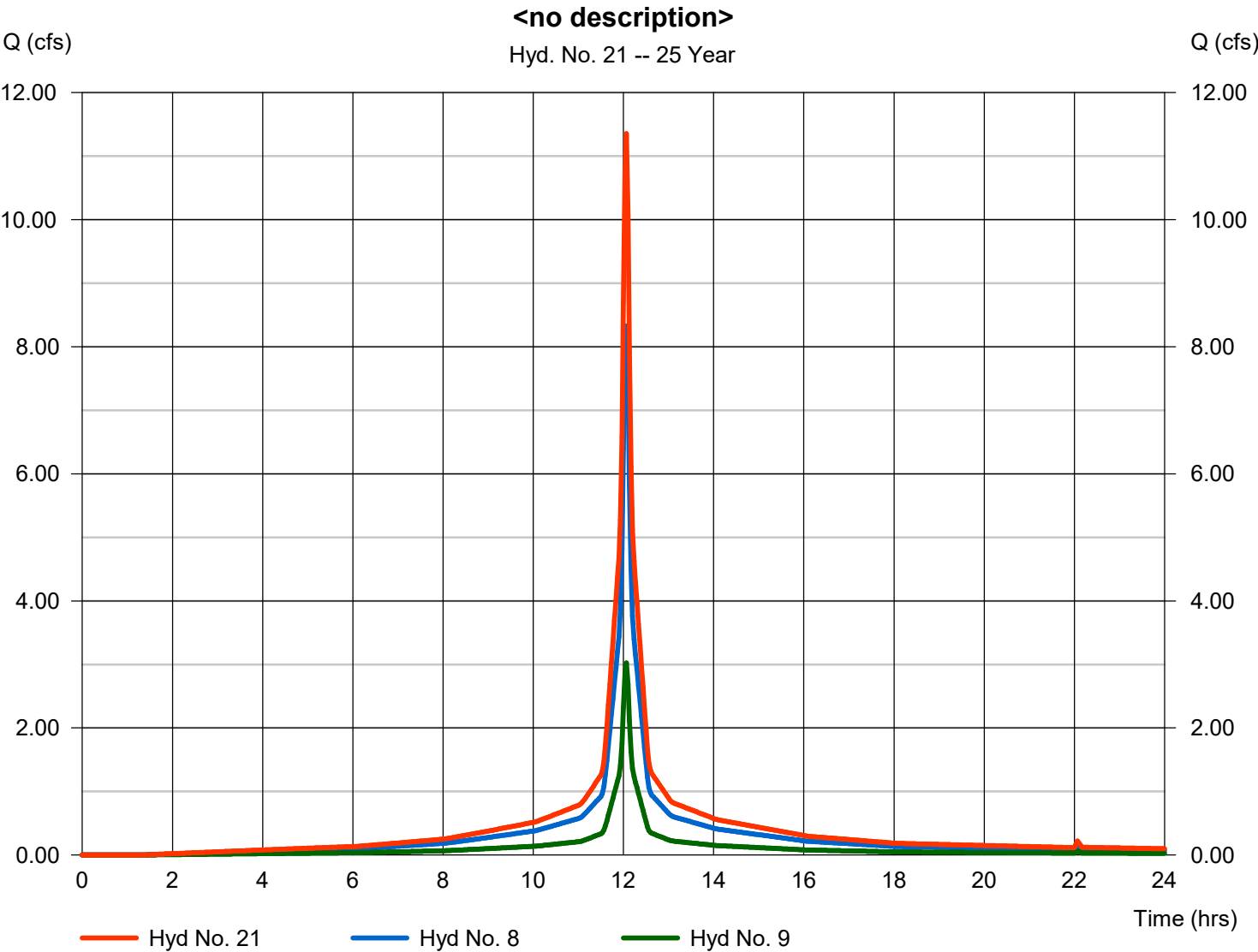
Hydrograph Report

Hyd. No. 22

INFIL-1

Hydrograph type	= Reservoir		Peak discharge	= 6.146 cfs
Storm frequency	= 25 yrs		Time to peak	= 12.17 hrs
Time interval	= 2 min		Hyd. volume	= 13,535 cuft
Inflow hyd. No.	= 21 - <no description>		Max. Elevation	= 136.31 ft
Reservoir name	= INFIL-1		Max. Storage	= 10,413 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

INFIL-1

Hyd. No. 22 -- 25 Year

Legend: Hyd No. 22 — Hyd No. 21 — Total storage used = 10,413 cuft

Hydrograph Report

Hyd. No. 23

<no description>
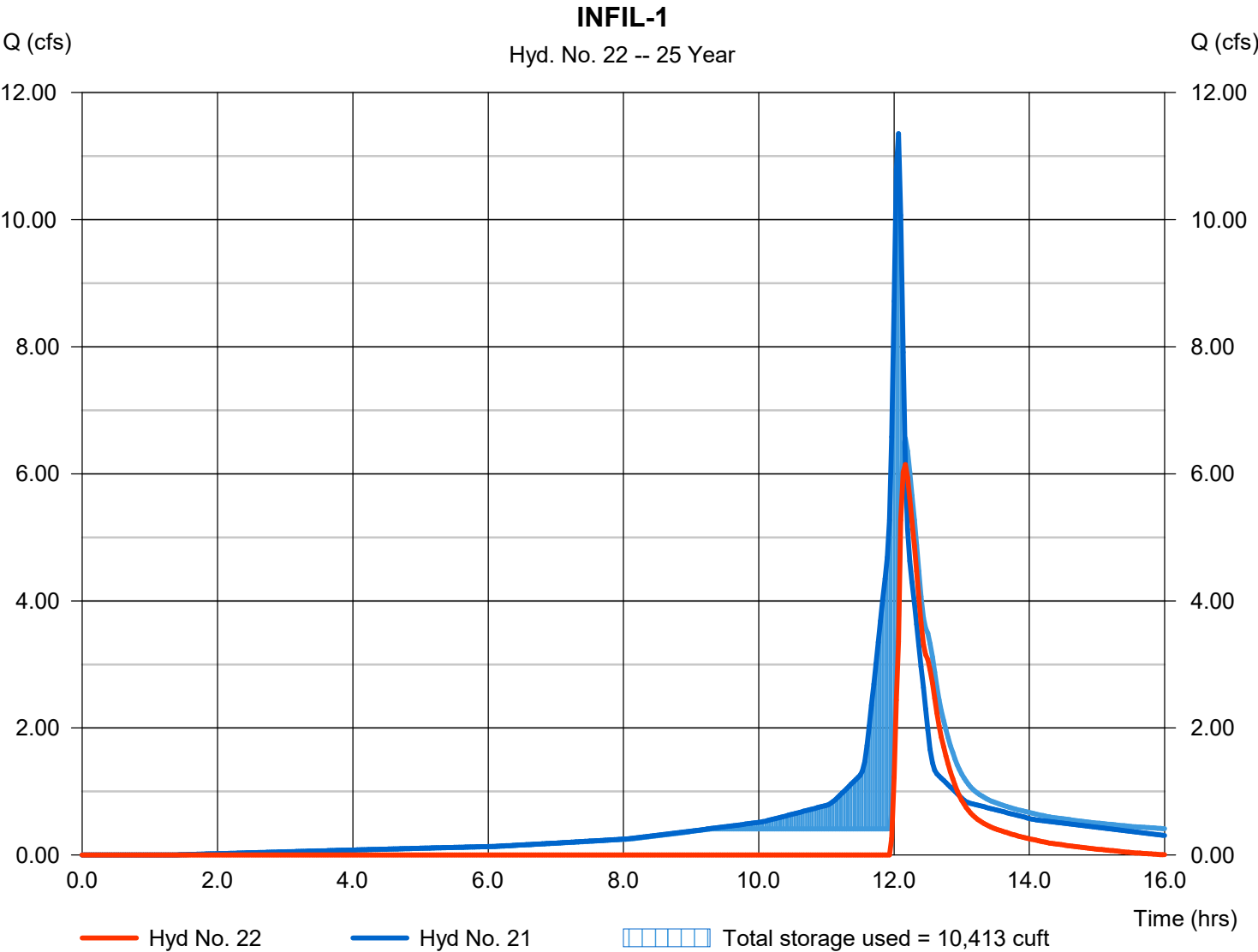
Hydrograph type	= Combine		Peak discharge	= 14.07 cfs
Storm frequency	= 25 yrs		Time to peak	= 12.17 hrs
Time interval	= 2 min		Hyd. volume	= 67,341 cuft
Inflow hyds.	= 2, 3, 15, 19		Contrib. drain. area	= 0.689 ac

<no description>

Hyd. No. 23 -- 25 Year

Hydrograph Report

Hyd. No. 24

<no description>
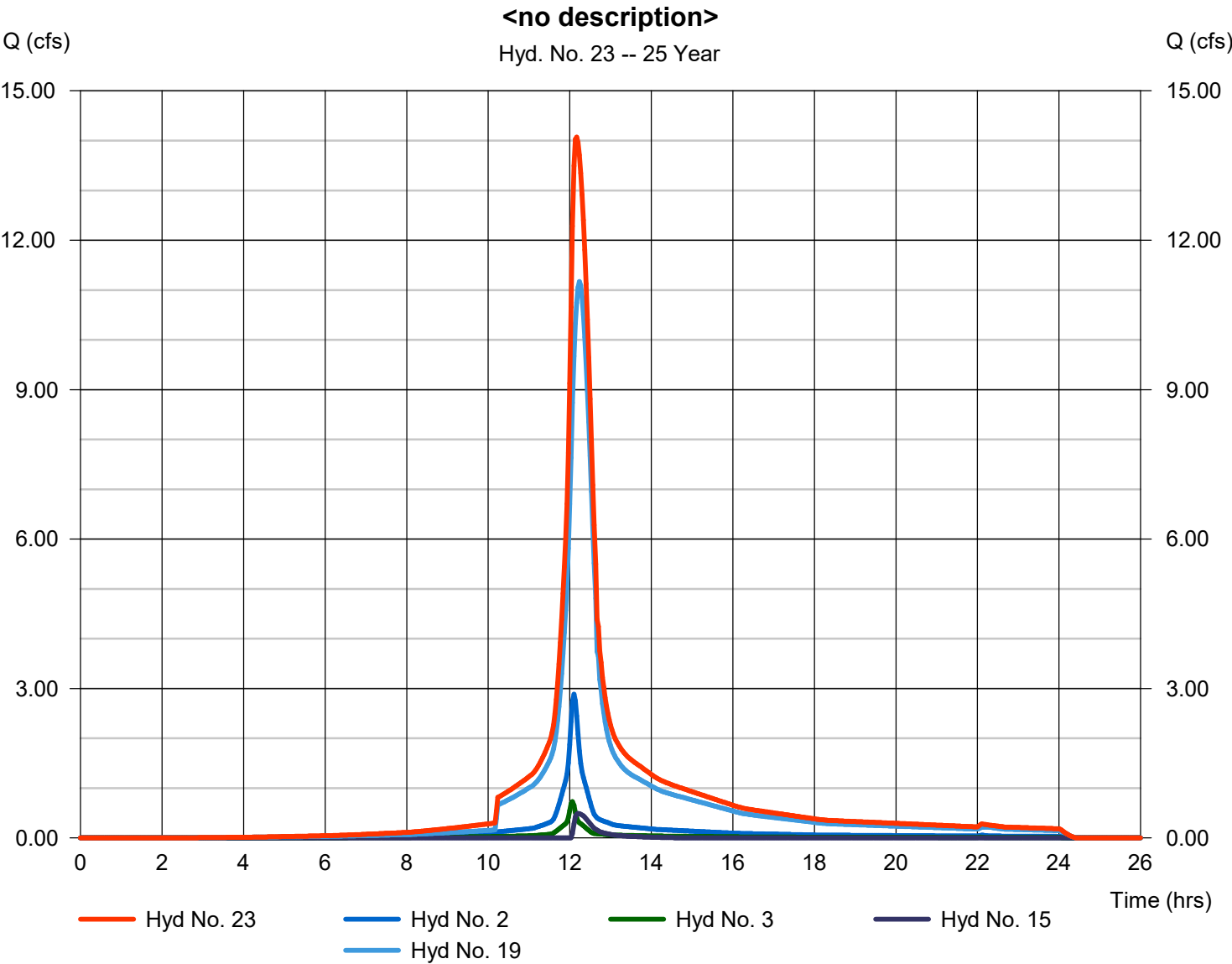
Hydrograph type	= Combine		Peak discharge	= 8.206 cfs
Storm frequency	= 25 yrs		Time to peak	= 12.20 hrs
Time interval	= 2 min		Hyd. volume	= 66,220 cuft
Inflow hyds.	= 13, 17, 18, 20		Contrib. drain. area	= 4.837 ac

<no description>

Hyd. No. 24 -- 25 Year

Q (cfs)

Q (cfs)

Time (hrs)

Hyd No. 24   Hyd No. 13   Hyd No. 17   Hyd No. 18
Hyd No. 20

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 25

<no description>
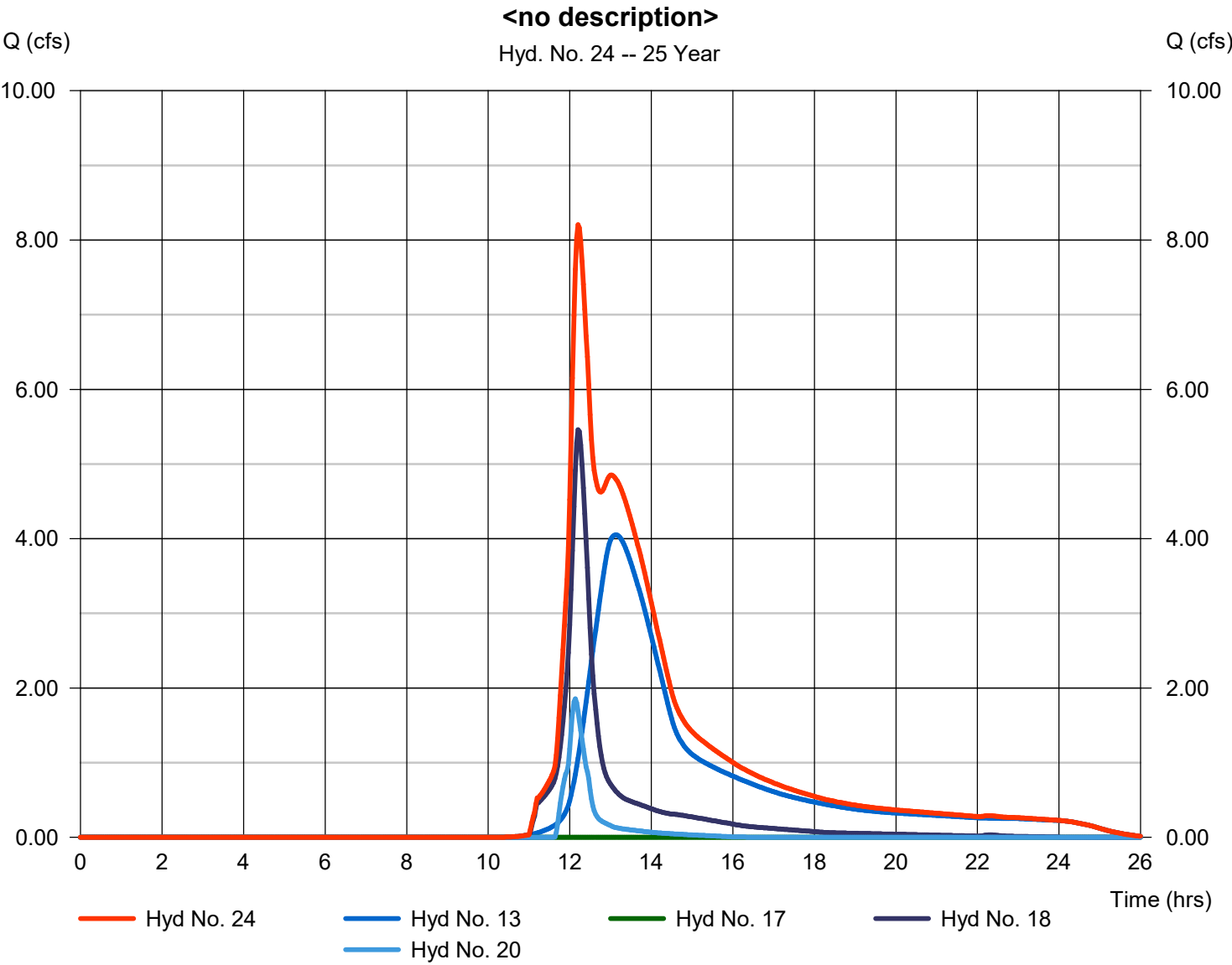
Hydrograph type	= Combine		Peak discharge	= 32.78 cfs
Storm frequency	= 25 yrs		Time to peak	= 12.13 hrs
Time interval	= 2 min		Hyd. volume	= 158,930 cuft
Inflow hyds.	= 16, 22, 23, 24		Contrib. drain. area	= 0.000 ac

<no description>
Hyd. No. 25 -- 25 Year

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

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	7.047	2	752	45,872	------	------	------	PR WS-01
2	SCS Runoff	3.339	2	726	11,881	------	------	------	PR WS-02B(I)
3	SCS Runoff	0.842	2	724	2,640	------	------	------	PR WS-02B(III)
4	SCS Runoff	3.695	2	726	13,753	------	------	------	PR WS-02C
5	SCS Runoff	11.05	2	734	54,511	------	------	------	PR WS-02D
6	SCS Runoff	1.404	2	724	4,707	------	------	------	PR WS-02E
7	SCS Runoff	7.074	2	724	23,722	------	------	------	PR WS-02F
8	SCS Runoff	9.464	2	724	32,109	------	------	------	PR WS-02A
9	SCS Runoff	3.435	2	724	11,654	------	------	------	PR WS-02G(I)
10	SCS Runoff	3.018	2	724	10,239	------	------	------	PR WS-02G(II)
11	SCS Runoff	1.296	2	730	5,444	------	------	------	PR WS-02H
12	SCS Runoff	6.358	2	732	29,838	------	------	------	PR WS-02I
13	SCS Runoff	5.181	2	786	54,300	------	------	------	PR WS-03
14	Reservoir	10.93	2	736	49,562	5	139.16	3,851	TWIN 36IN PIPES (#2)
15	Reservoir	0.660	2	730	1,407	6	137.49	1,259	INFIL-3
16	Reservoir	6.410	2	726	14,402	7	137.80	2,978	INIFL-4
17	Reservoir	0.087	2	842	702	11	137.46	3,650	36 INCH PIPE (#3)
18	Reservoir	6.274	2	732	22,648	12	135.75	2,491	TWO 36 INCH PIPES
19	Combine	12.90	2	734	63,315	4, 14,	------	------	<no description>
20	Reservoir	2.083	2	728	5,300	10	135.54	1,692	INFIL-2
21	Combine	12.90	2	724	43,763	8, 9,	------	------	<no description>
22	Reservoir	7.770	2	728	17,543	21	136.85	11,254	INFIL-1
23	Combine	16.46	2	730	79,243	2, 3, 15, 19,	------	------	<no description>
24	Combine	9.661	2	732	82,950	13, 17, 18, 20,	------	------	<no description>
25	Combine	38.93	2	728	194,138	16, 22, 23, 24	------	------	<no description>

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 1

PR WS-01

Hydrograph type	= SCS Runoff	Peak discharge	= 7.047 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.53 hrs
Time interval	= 2 min	Hyd. volume	= 45,872 cuft
Drainage area	= 3.405 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 45.70 min
Total precip.	= 7.41 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-01

Hyd. No. 1 -- 50 Year
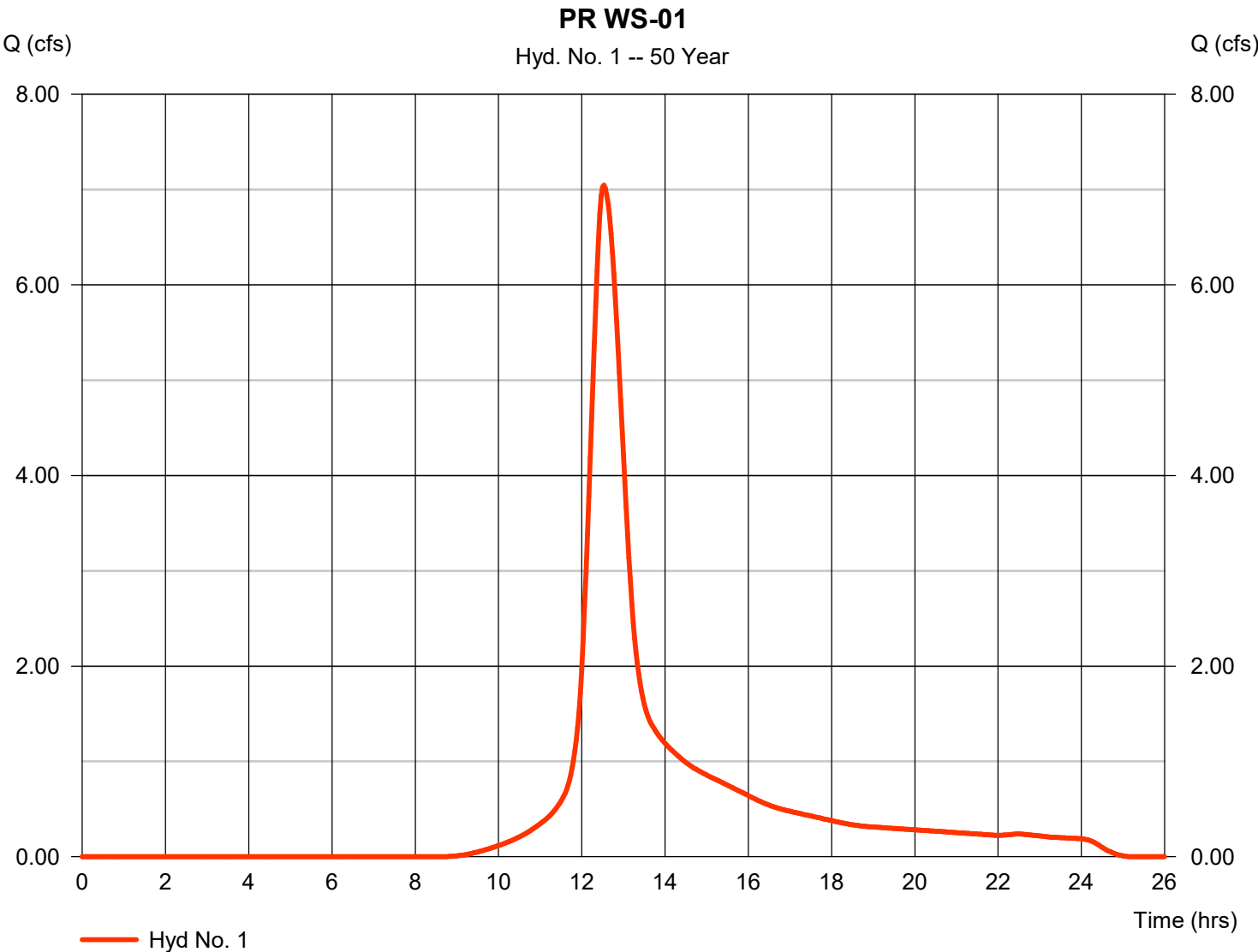
Hyd No. 1

Hydrograph Report

Hyd. No. 2

PR WS-02B(I)

Hydrograph type	= SCS Runoff	Peak discharge	= 3.339 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 11,881 cuft
Drainage area	= 0.557 ac	Curve number	= 87
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 7.40 min
Total precip.	= 7.41 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02B(I)

Hyd. No. 2 -- 50 Year

Hyd No. 2

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 3

PR WS-02B(III)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.842 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 2,640 cuft
Drainage area	= 0.132 ac	Curve number	= 87
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.41 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02B(III)

Hyd. No. 3 -- 50 Year

Hyd No. 3

Hydrograph Report

Hyd. No. 4

PR WS-02C

Hydrograph type	= SCS Runoff	Peak discharge	= 3.695 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 13,753 cuft
Drainage area	= 0.576 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 9.40 min
Total precip.	= 7.41 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02C

Hyd. No. 4 -- 50 Year

Hydrograph Report

Hyd. No. 5

PR WS-02D

Hydrograph type	= SCS Runoff		Peak discharge	= 11.05 cfs
Storm frequency	= 50 yrs		Time to peak	= 12.23 hrs
Time interval	= 2 min		Hyd. volume	= 54,511 cuft
Drainage area	= 2.462 ac		Curve number	= 88
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 22.10 min
Total precip.	= 7.41 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

PR WS-02D
Hyd. No. 5 -- 50 Year

Q (cfs)

Hyd No. 5

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021　　　　　　　Thursday, 04 / 4 / 2024

Hyd. No. 6

PR WS-02E

Hydrograph type	= SCS Runoff	Peak discharge	= 1.404 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 4,707 cuft
Drainage area	= 0.203 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.41 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02E

Hyd. No. 6 -- 50 Year
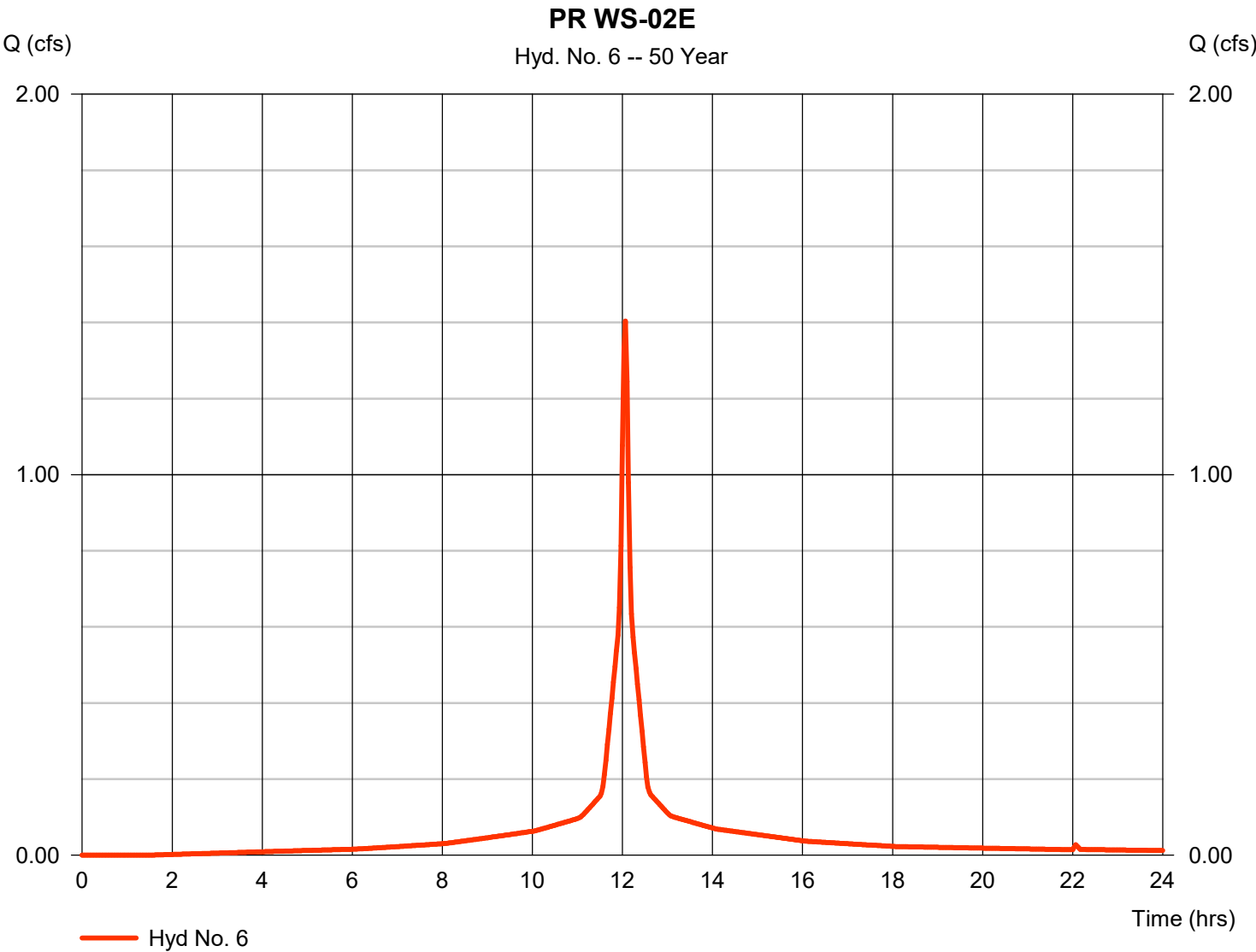
Hydrograph Report

Hyd. No. 7

PR WS-02F

Hydrograph type	= SCS Runoff		Peak discharge	= 7.074 cfs
Storm frequency	= 50 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 23,722 cuft
Drainage area	= 1.023 ac		Curve number	= 95
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.41 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

PR WS-02F

Hyd. No. 7 -- 50 Year

Hyd No. 7

Hydrograph Report

Thursday, 04 / 4 / 2024
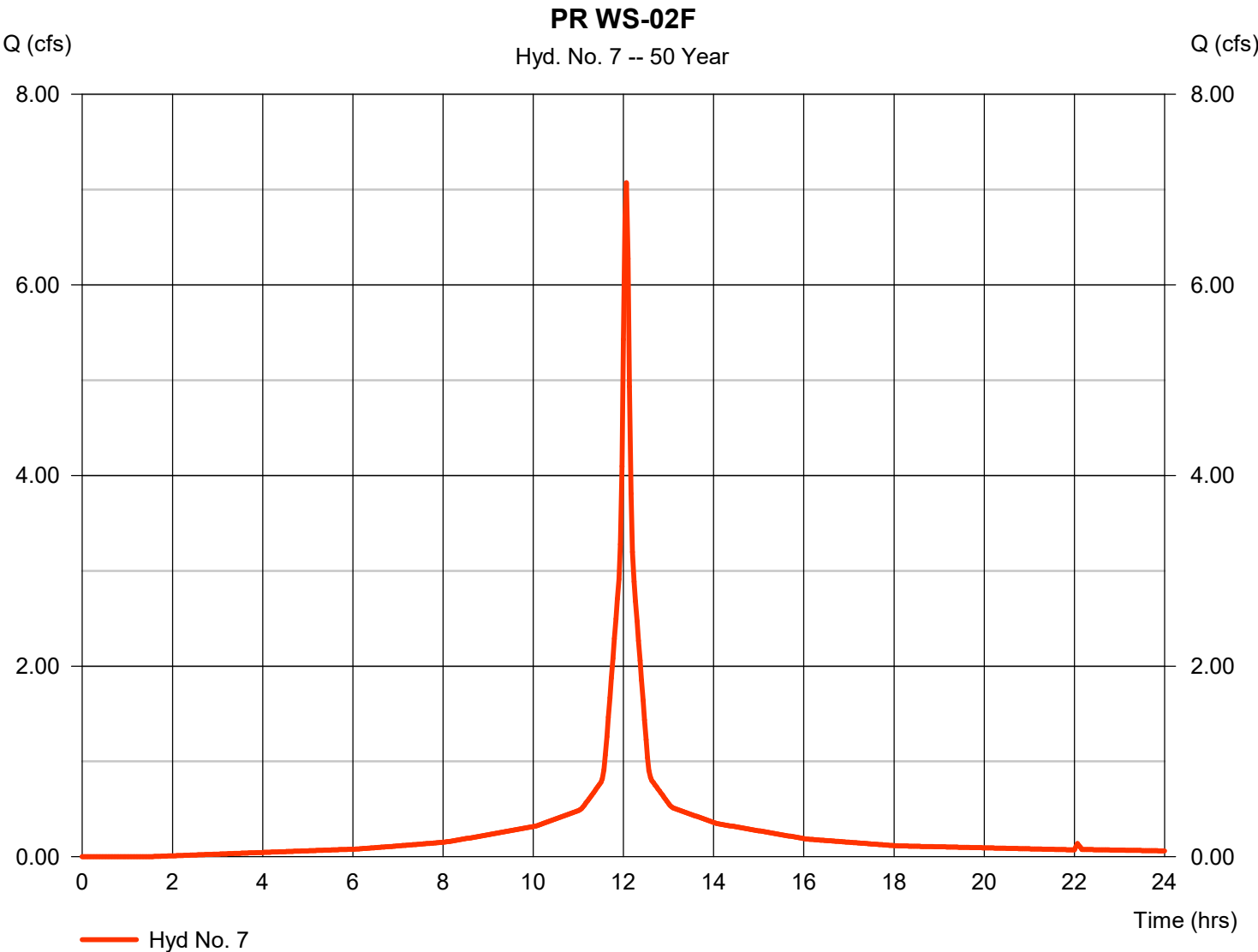
Hyd. No. 8

PR WS-02A

Hydrograph type	= SCS Runoff	Peak discharge	= 9.464 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 32,109 cuft
Drainage area	= 1.361 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.41 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02A

Hyd. No. 8 -- 50 Year
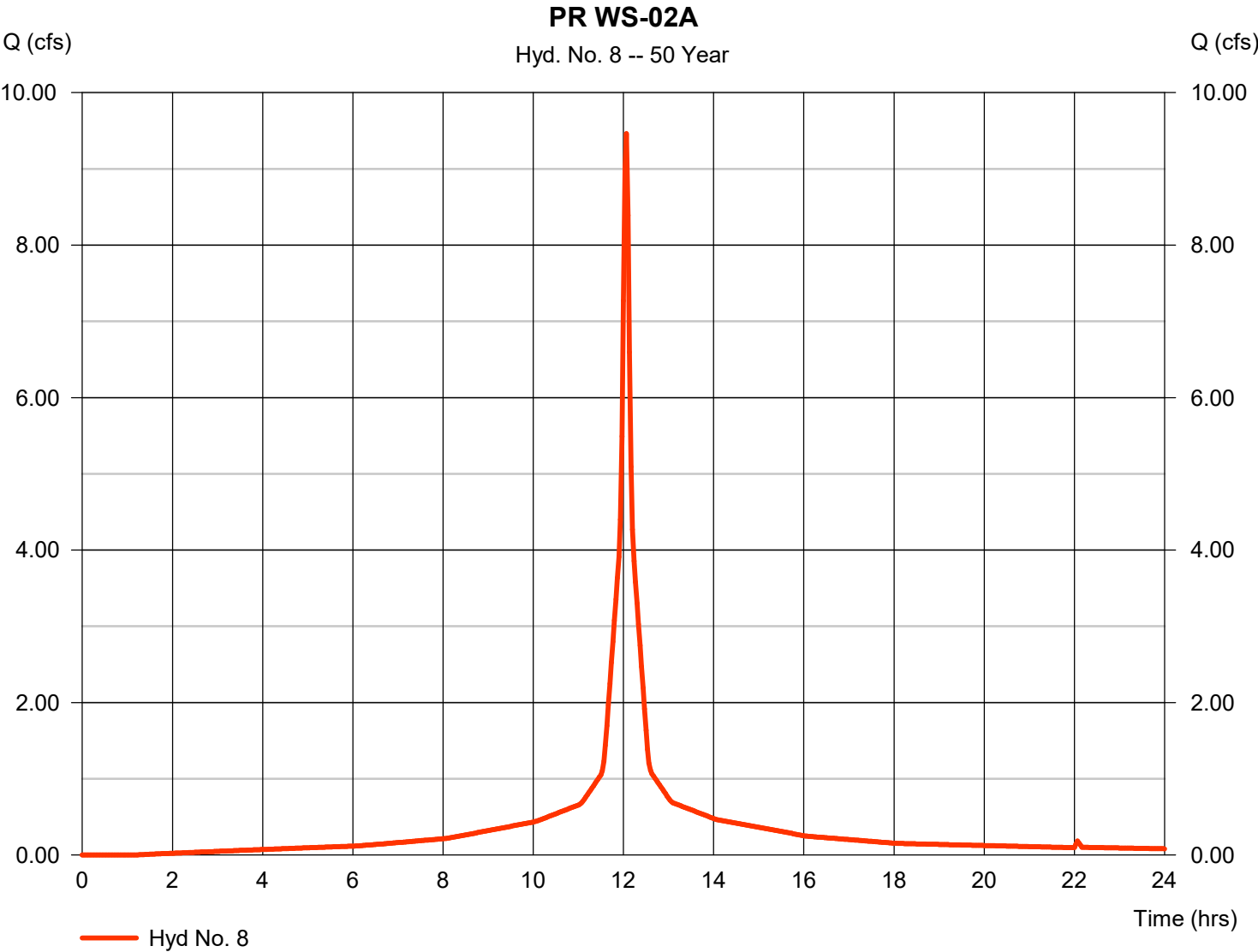
Hyd No. 8

Hydrograph Report

Hyd. No. 9

PR WS-02G(I)

Hydrograph type	= SCS Runoff		Peak discharge	= 3.435 cfs
Storm frequency	= 50 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 11,654 cuft
Drainage area	= 0.494 ac		Curve number	= 96
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.41 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484
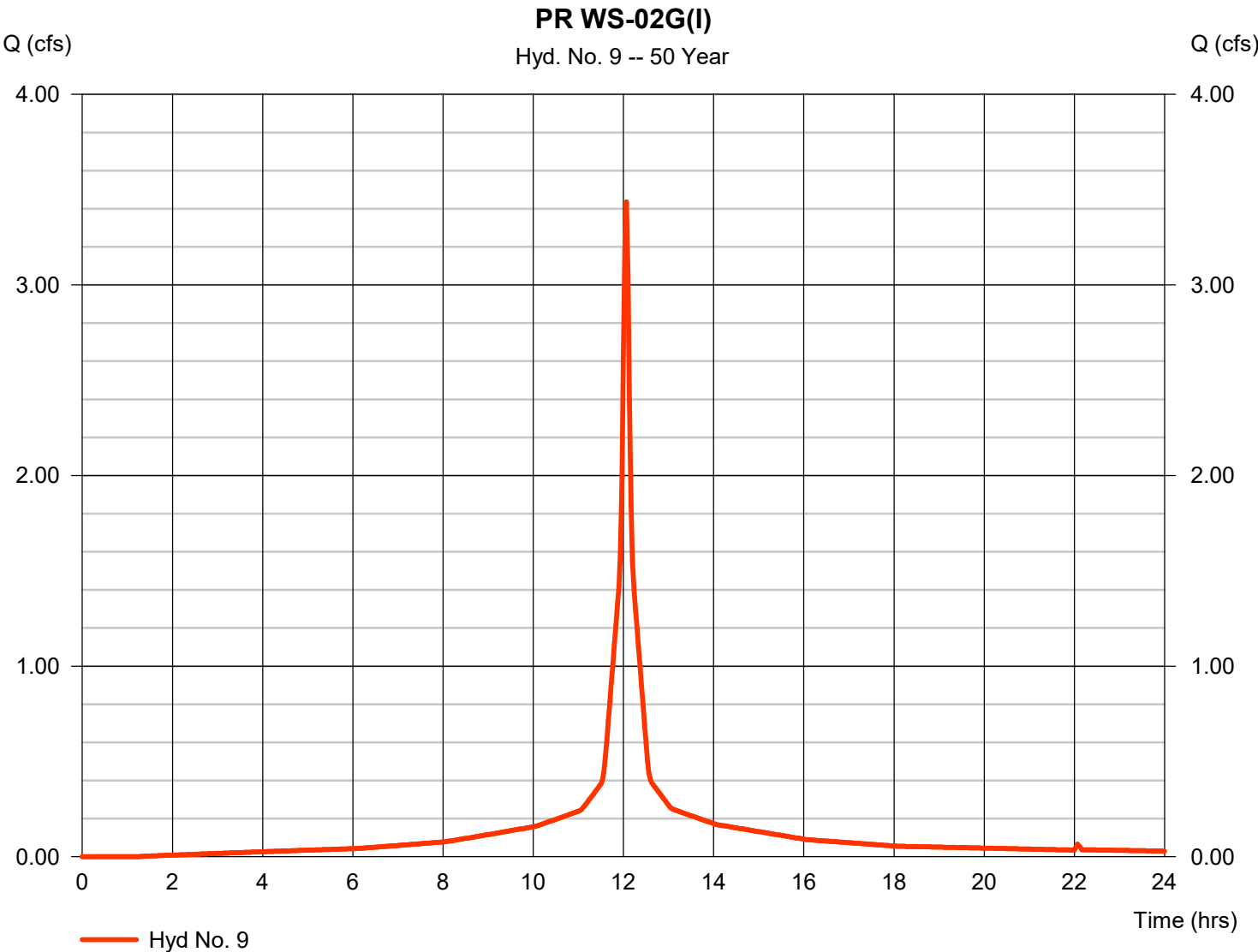
PR WS-02G(I)
Hyd. No. 9 -- 50 Year

Hyd No. 9

Hydrograph Report

Hyd. No. 10

PR WS-02G(II)

Hydrograph type	= SCS Runoff		Peak discharge	= 3.018 cfs
Storm frequency	= 50 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 10,239 cuft
Drainage area	= 0.434 ac		Curve number	= 96
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.41 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

PR WS-02G(II)

Hyd. No. 10 -- 50 Year
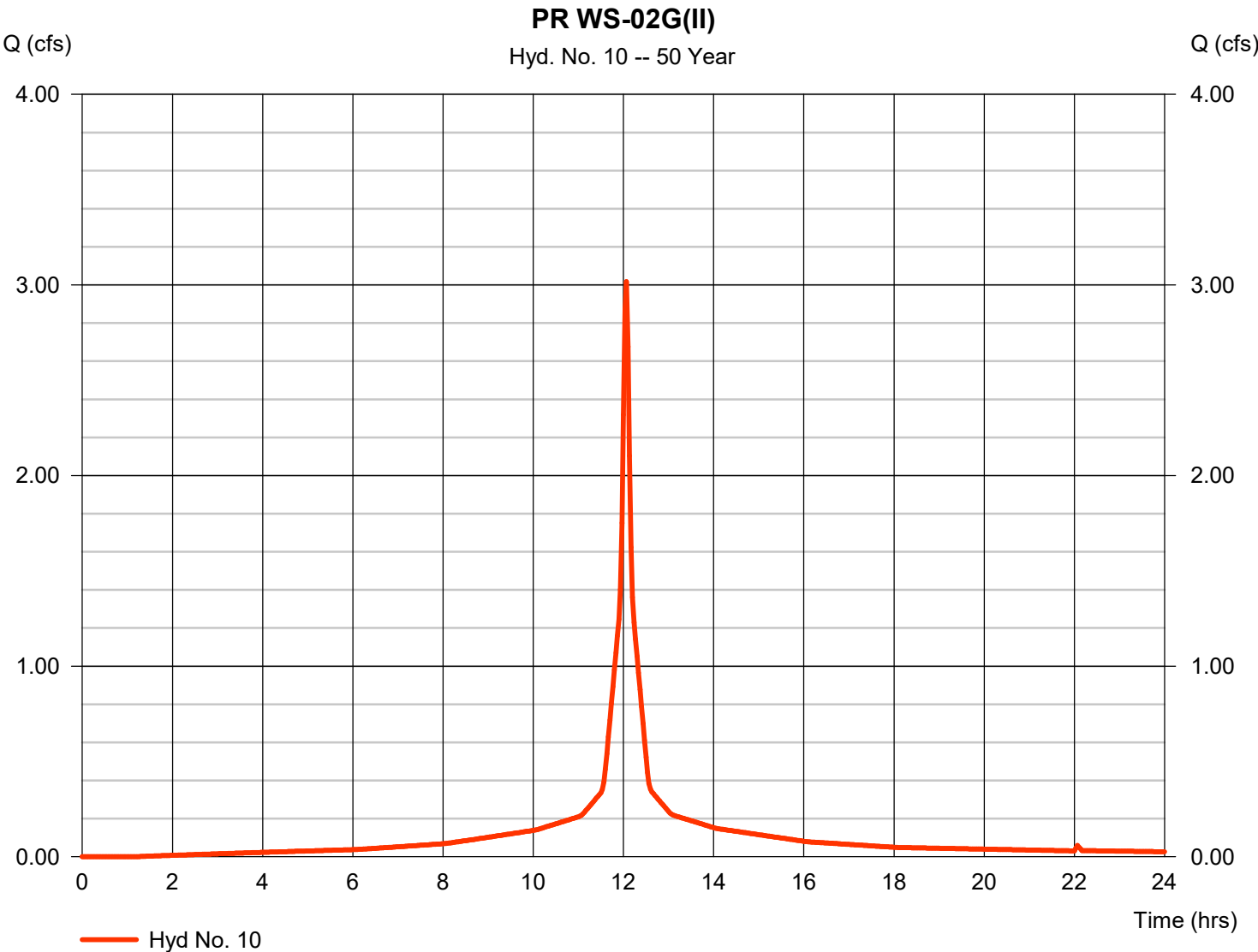
Hyd No. 10

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 11

PR WS-02H

Hydrograph type	= SCS Runoff	Peak discharge	= 1.296 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 5,444 cuft
Drainage area	= 0.267 ac	Curve number	= 86
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.80 min
Total precip.	= 7.41 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02H

Hyd. No. 11 -- 50 Year
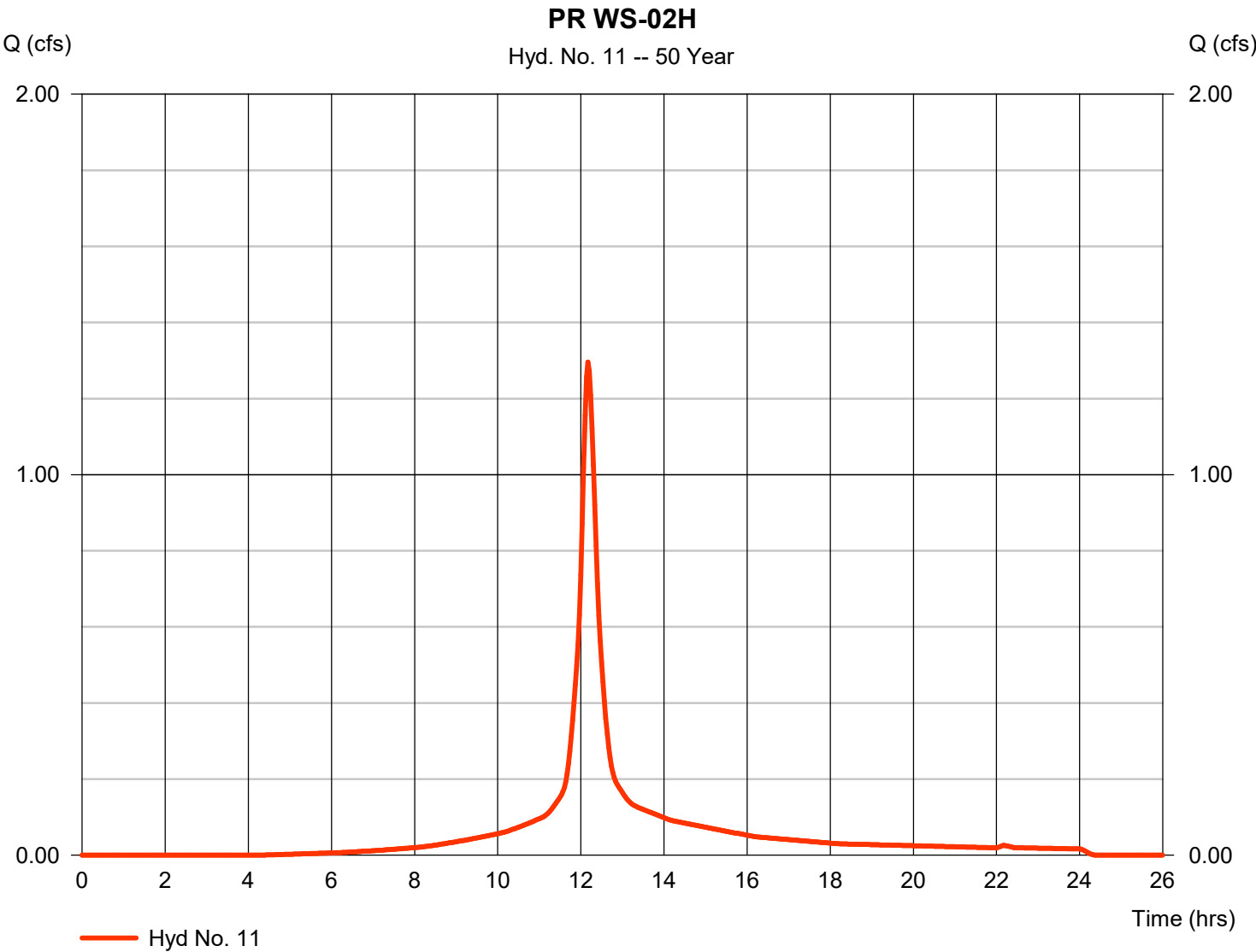
Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 12

PR WS-02I

Hydrograph type	= SCS Runoff	Peak discharge	= 6.358 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 29,838 cuft
Drainage area	= 1.296 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.60 min
Total precip.	= 7.41 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02I

Hyd. No. 12 -- 50 Year
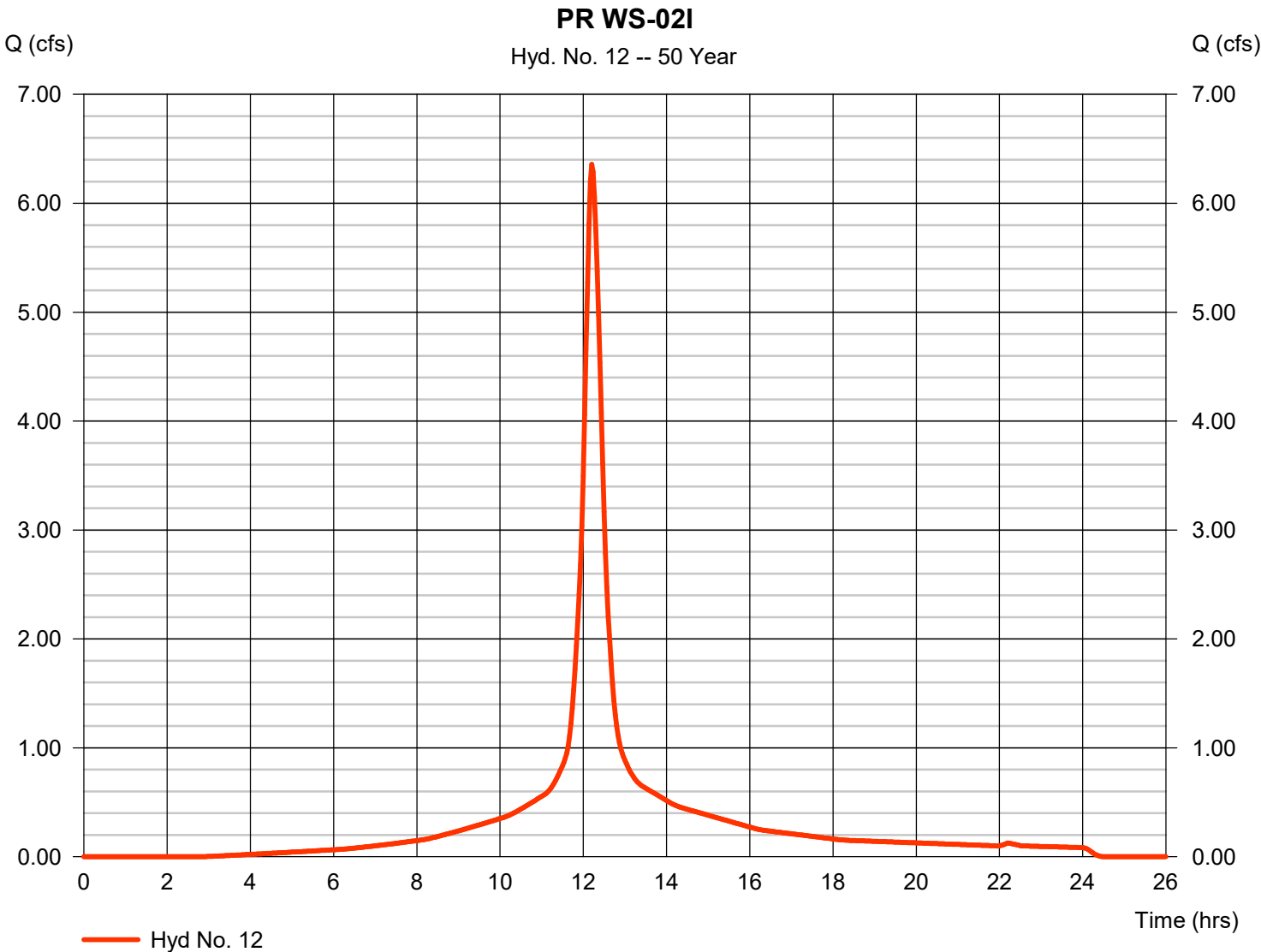
Hyd No. 12

Hydrograph Report

Hyd. No. 13

PR WS-03

Hydrograph type	= SCS Runoff		Peak discharge	= 5.181 cfs
Storm frequency	= 50 yrs		Time to peak	= 13.10 hrs
Time interval	= 2 min		Hyd. volume	= 54,300 cuft
Drainage area	= 4.837 ac		Curve number	= 62
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 95.00 min
Total precip.	= 7.41 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

PR WS-03

Hyd. No. 13 -- 50 Year

Hyd No. 13

Hydrograph Report

Hyd. No. 14

TWIN 36IN PIPES (#2)

Hydrograph type	= Reservoir	Peak discharge	= 10.93 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.27 hrs
Time interval	= 2 min	Hyd. volume	= 49,562 cuft
Inflow hyd. No.	= 5 - PR WS-02D	Max. Elevation	= 139.16 ft
Reservoir name	= Northern Twin 36IN	Max. Storage	= 3,851 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

TWIN 36IN PIPES (#2)

Hyd. No. 14 -- 50 Year

Hyd No. 14   Hyd No. 5   Total storage used = 3,851 cuft

Hydrograph Report

Hyd. No. 15

INFIL-3

Hydrograph type	= Reservoir		Peak discharge	= 0.660 cfs
Storm frequency	= 50 yrs		Time to peak	= 12.17 hrs
Time interval	= 2 min		Hyd. volume	= 1,407 cuft
Inflow hyd. No.	= 6 - PR WS-02E		Max. Elevation	= 137.49 ft
Reservoir name	= INFIL-3		Max. Storage	= 1,259 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
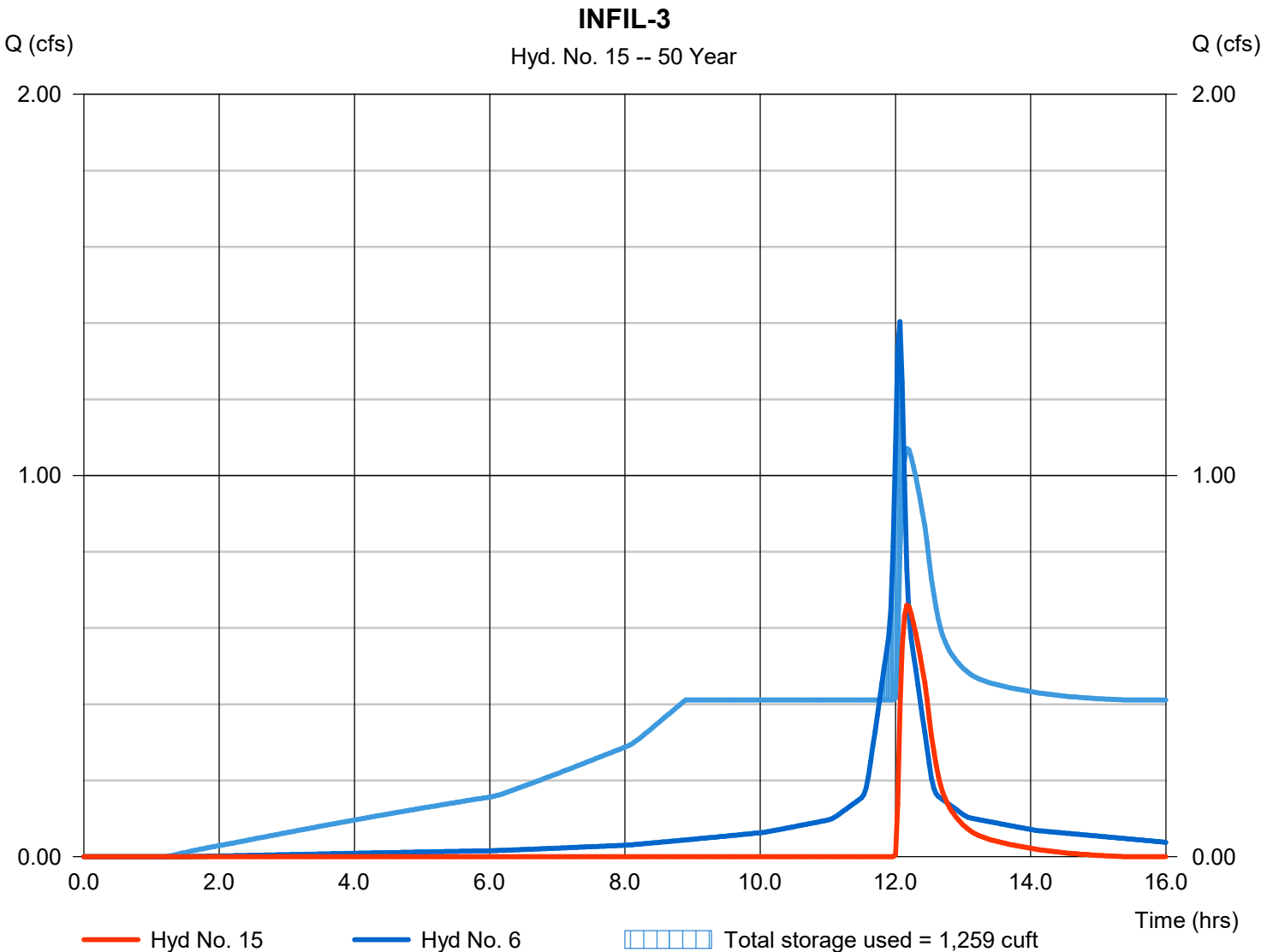
INFIL-3

Hyd. No. 15 -- 50 Year

Hyd No. 15   Hyd No. 6   Total storage used = 1,259 cuft

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 16

INIFL-4

Hydrograph type	= Reservoir	Peak discharge	= 6.410 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 14,402 cuft
Inflow hyd. No.	= 7 - PR WS-02F	Max. Elevation	= 137.80 ft
Reservoir name	= INIFL-4	Max. Storage	= 2,978 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
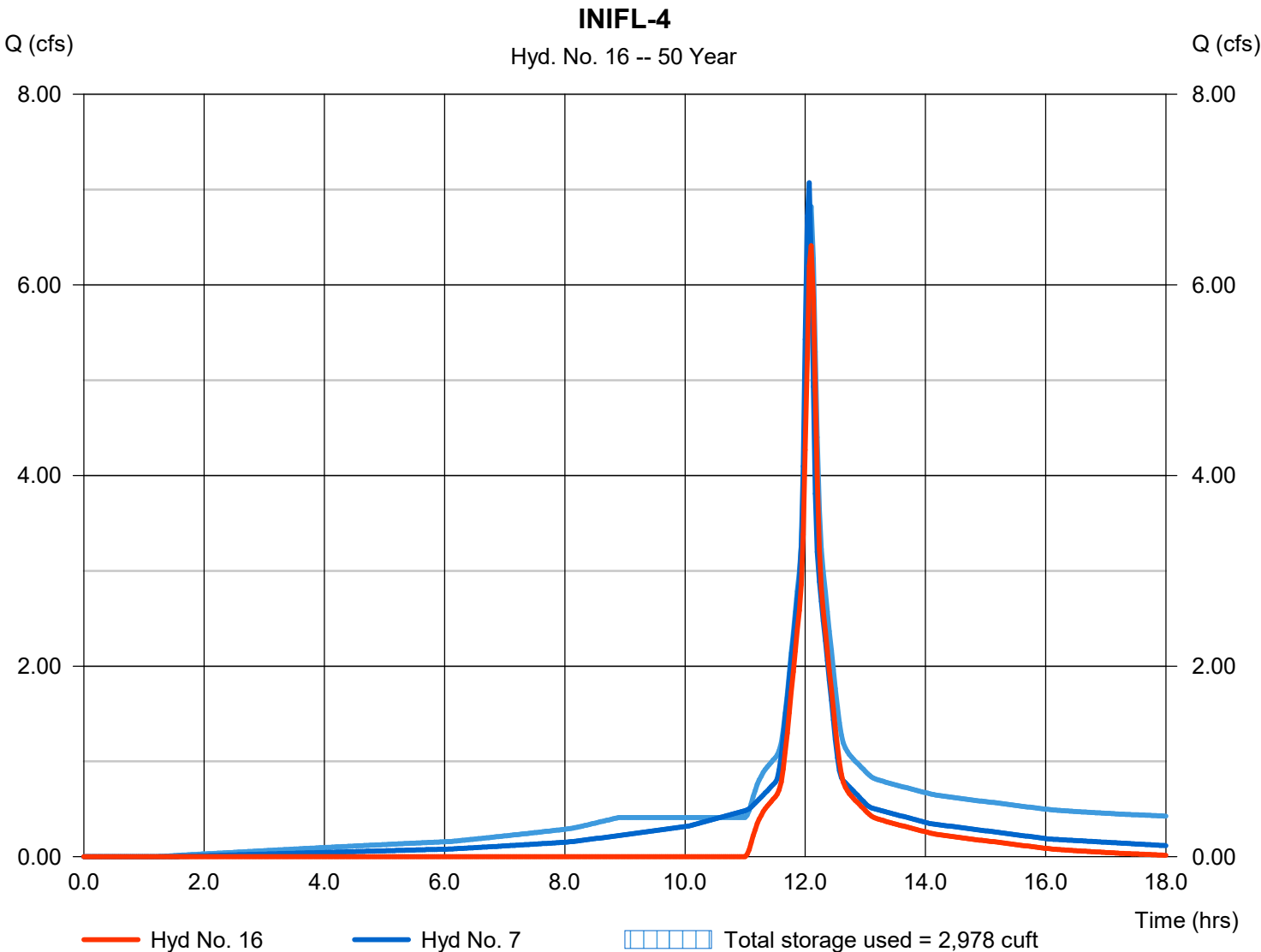
INIFL-4
Hyd. No. 16 -- 50 Year

Hydrograph Report

Hyd. No. 17

36 INCH PIPE (#3)

Hydrograph type	=	Reservoir	Peak discharge	=	0.087 cfs
Storm frequency	=	50 yrs	Time to peak	=	14.03 hrs
Time interval	=	2 min	Hyd. volume	=	702 cuft
Inflow hyd. No.	=	11 - PR WS-02H	Max. Elevation	=	137.46 ft
Reservoir name	=	36IN - 3	Max. Storage	=	3,650 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
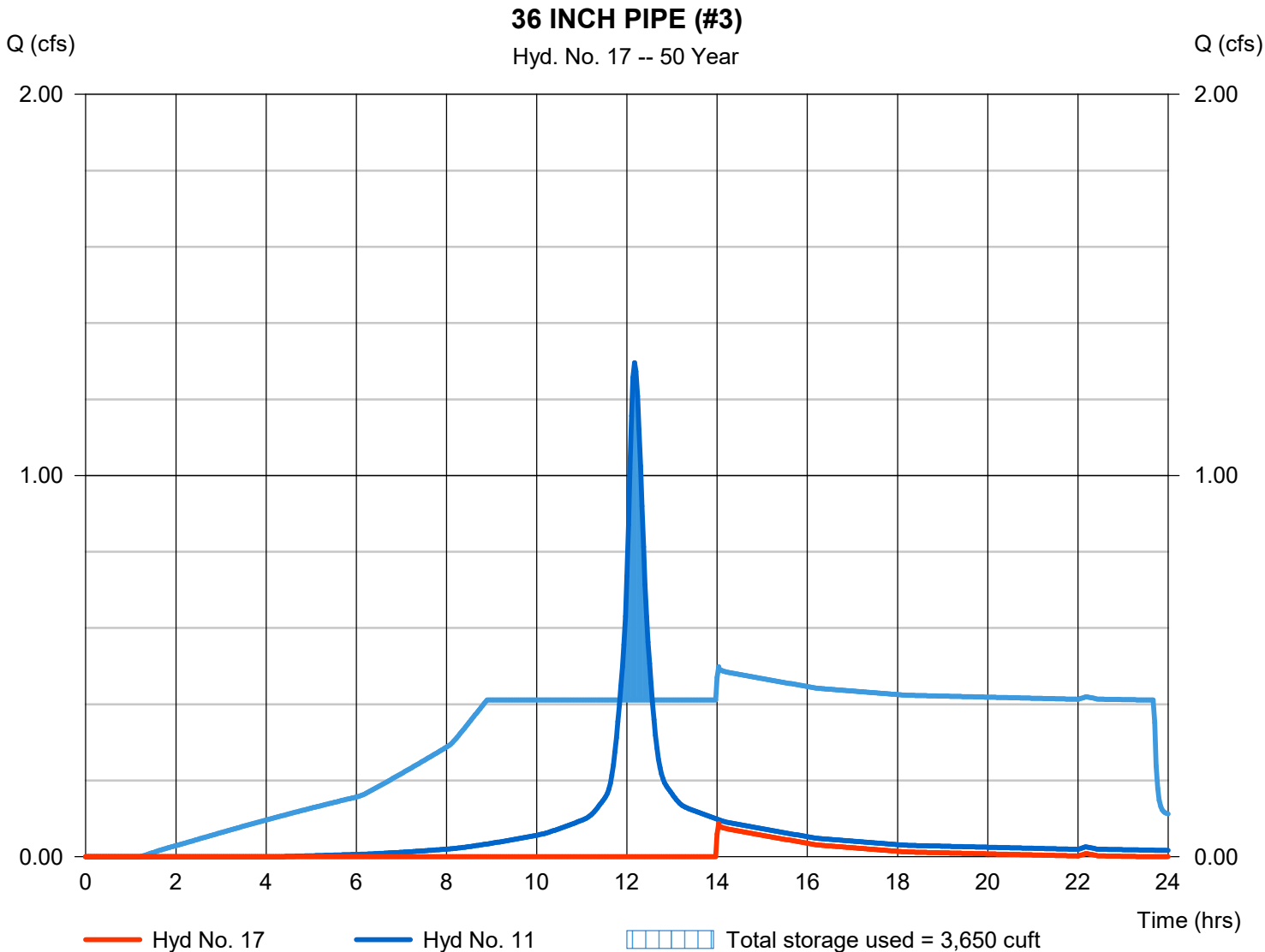
36 INCH PIPE (#3)

Hyd. No. 17 -- 50 Year

Hyd No. 17   Hyd No. 11   Total storage used = 3,650 cuft

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 18

TWO 36 INCH PIPES

Hydrograph type	= Reservoir		Peak discharge	= 6.274 cfs
Storm frequency	= 50 yrs		Time to peak	= 12.20 hrs
Time interval	= 2 min		Hyd. volume	= 22,648 cuft
Inflow hyd. No.	= 12 - PR WS-02I		Max. Elevation	= 135.75 ft
Reservoir name	= TWIN 36IN		Max. Storage	= 2,491 cuft

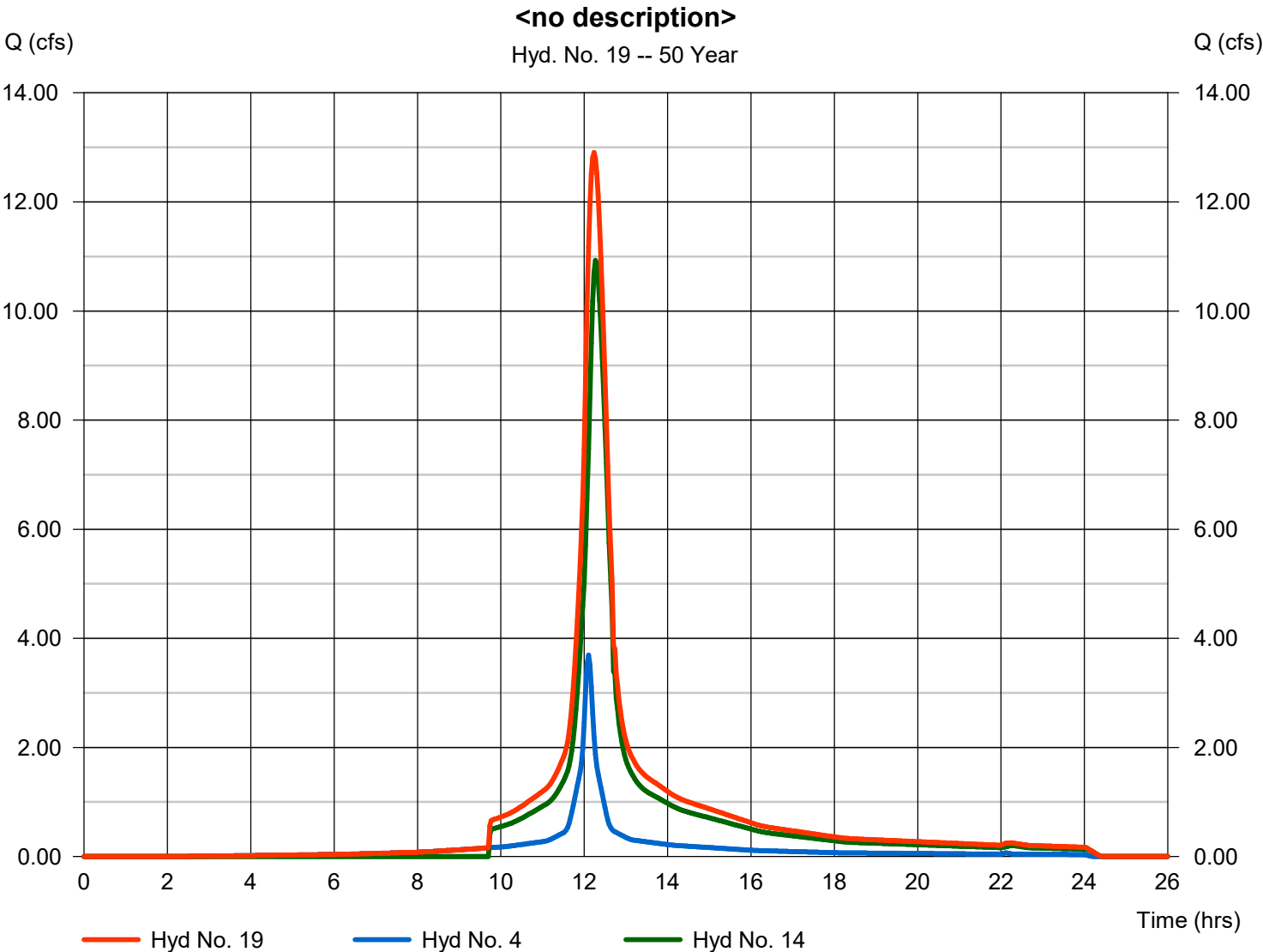Storage Indication method used. Exfiltration extracted from Outflow.
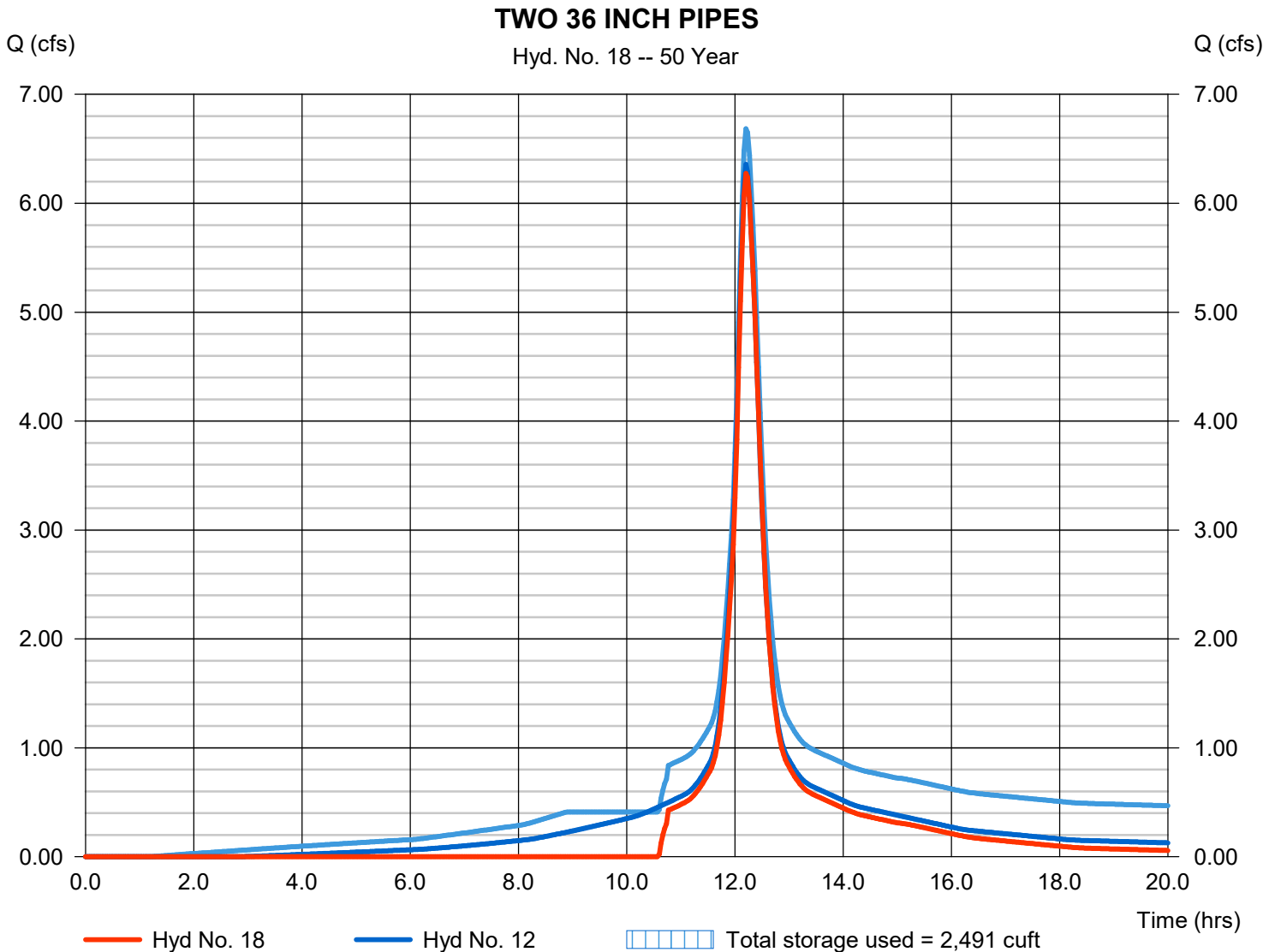
TWO 36 INCH PIPES
Hyd. No. 18 -- 50 Year

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 19

<no description>

Hydrograph type	= Combine	Peak discharge	= 12.90 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.23 hrs
Time interval	= 2 min	Hyd. volume	= 63,315 cuft
Inflow hyds.	= 4, 14	Contrib. drain. area	= 0.576 ac

<no description>

Hyd. No. 19 -- 50 Year

Hyd No. 19   Hyd No. 4   Hyd No. 14

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021   Thursday, 04 / 4 / 2024

Hyd. No. 20

INFIL-2

Hydrograph type	= Reservoir	Peak discharge	= 2.083 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 5,300 cuft
Inflow hyd. No.	= 10 - PR WS-02G(II)	Max. Elevation	= 135.54 ft
Reservoir name	= INFIL-2	Max. Storage	= 1,692 cuft

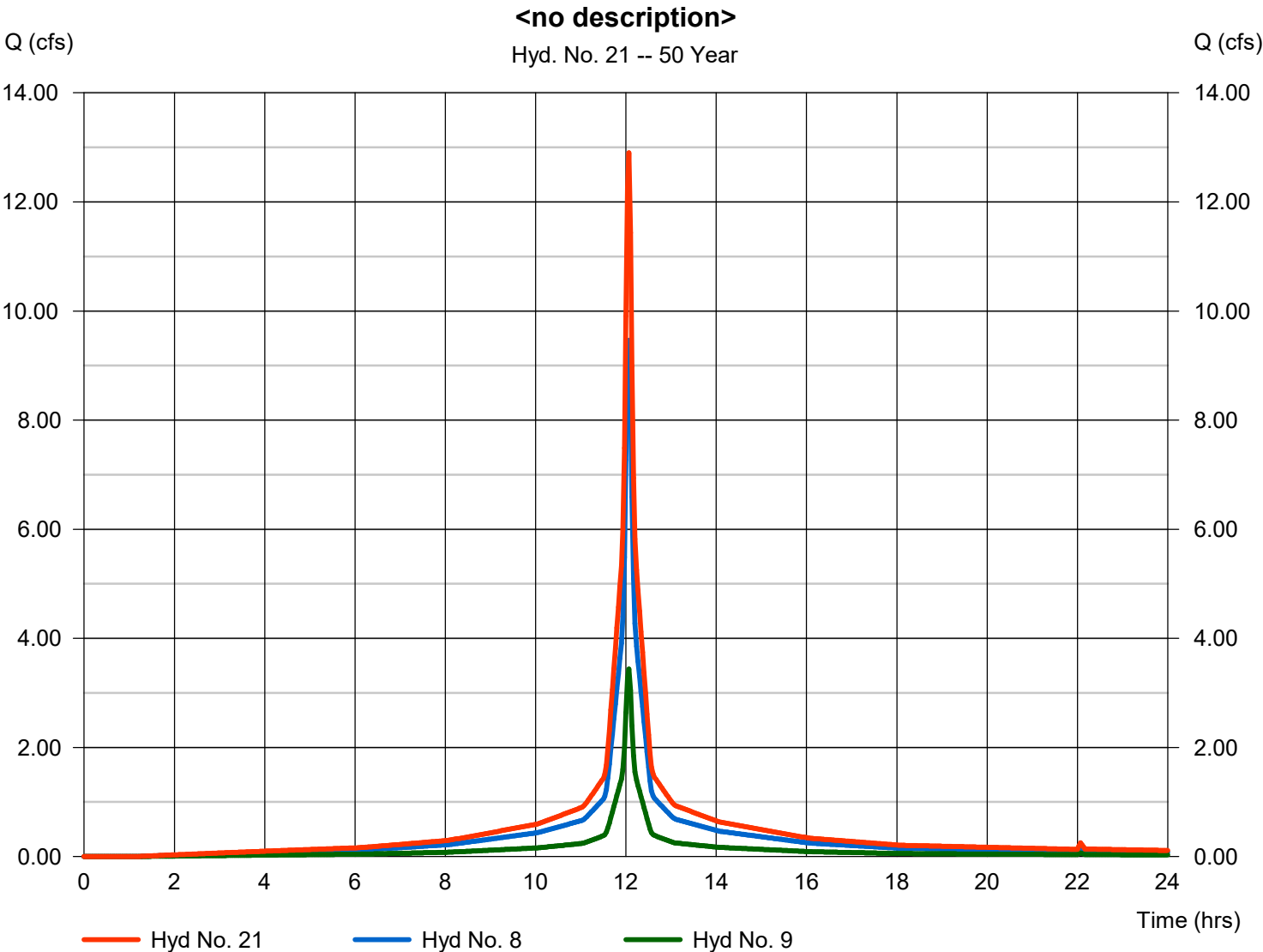Storage Indication method used. Exfiltration extracted from Outflow.
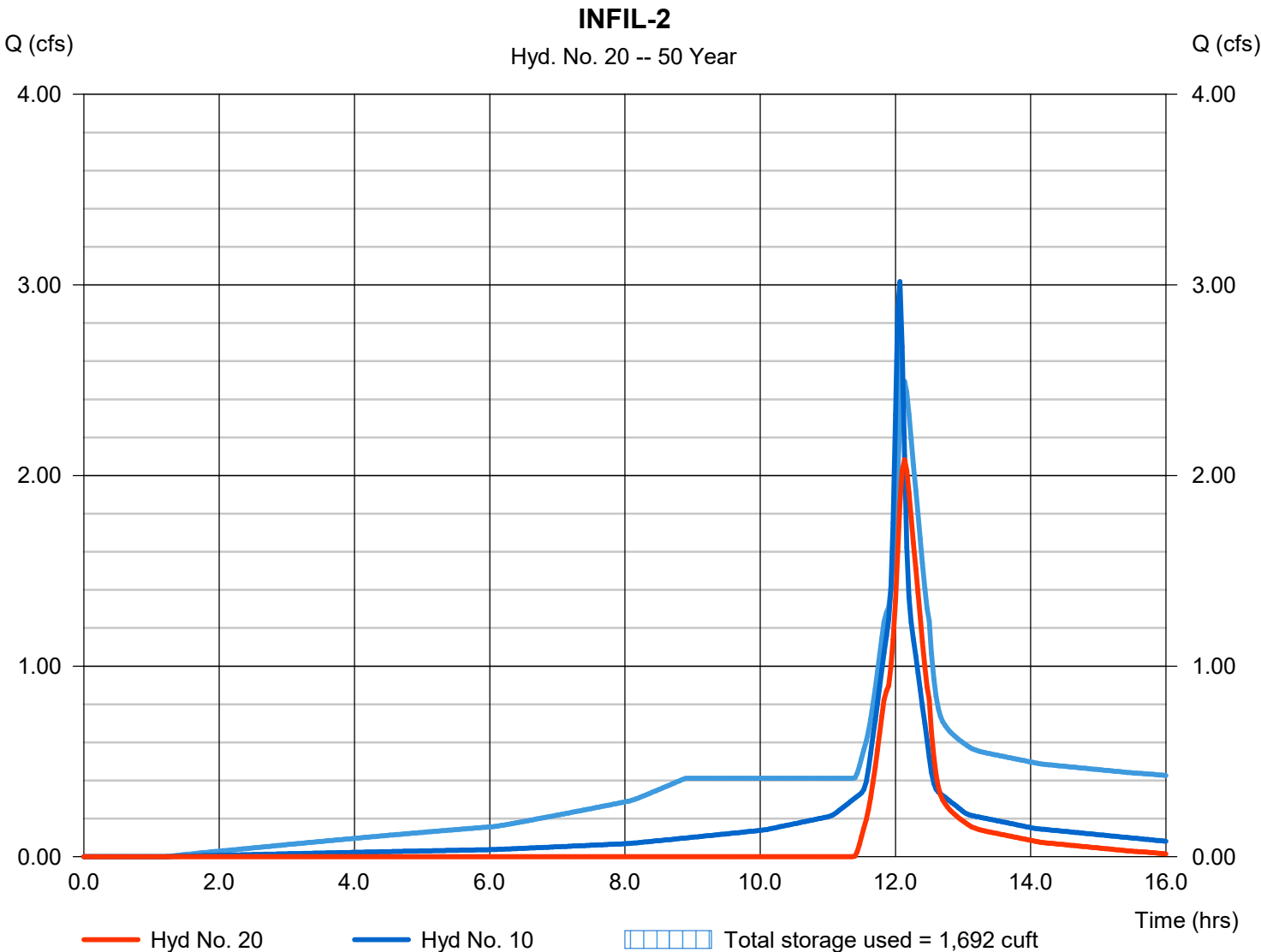
INFIL-2

Hyd. No. 20 -- 50 Year

Hyd No. 20   Hyd No. 10   Total storage used = 1,692 cuft

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 21

<no description>

Hydrograph type	= Combine	Peak discharge	= 12.90 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 43,763 cuft
Inflow hyds.	= 8, 9	Contrib. drain. area	= 1.855 ac

<no description>
Hyd. No. 21 -- 50 Year

Legend: ── Hyd No. 21   ── Hyd No. 8   ── Hyd No. 9

Hydrograph Report

Hyd. No. 22

INFIL-1

Hydrograph type	= Reservoir	Peak discharge	= 7.770 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 17,543 cuft
Inflow hyd. No.	= 21 - <no description>	Max. Elevation	= 136.85 ft
Reservoir name	= INFIL-1	Max. Storage	= 11,254 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
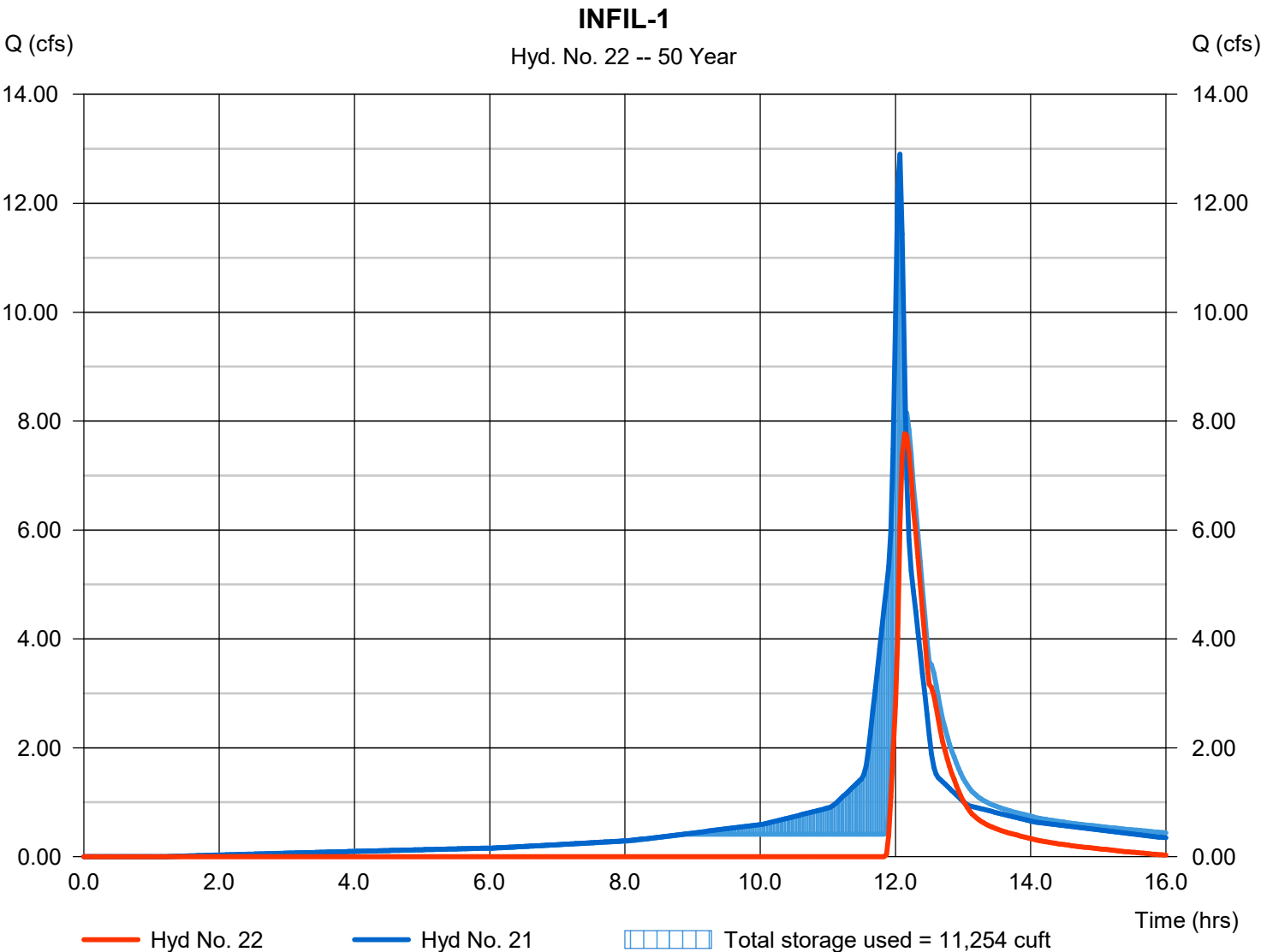
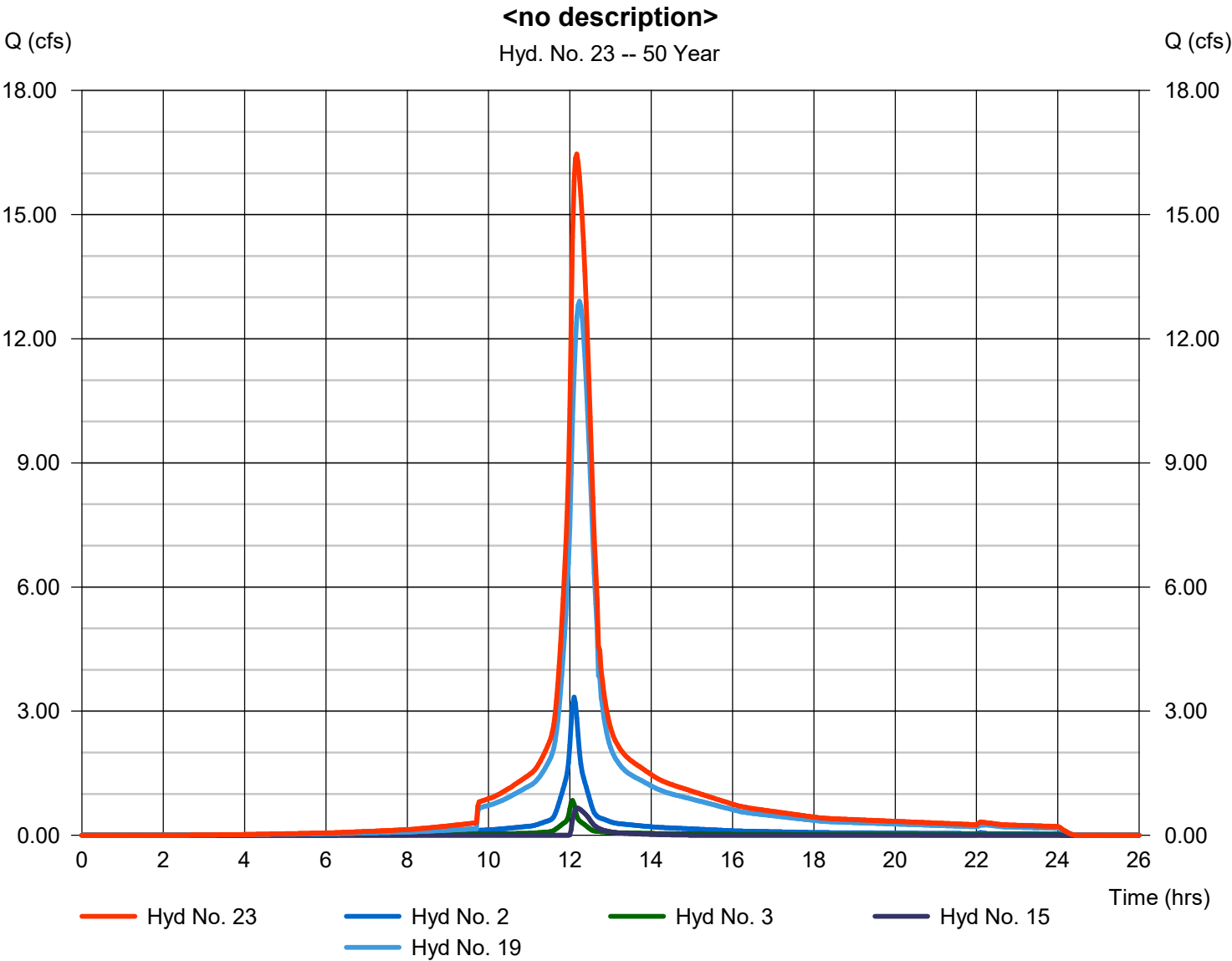**INFIL-1**

Hyd. No. 22 -- 50 Year

Q (cfs)

Time (hrs)

Hyd No. 22   Hyd No. 21   Total storage used = 11,254 cuft

Hydrograph Report

Hyd. No. 23

\<no description\>

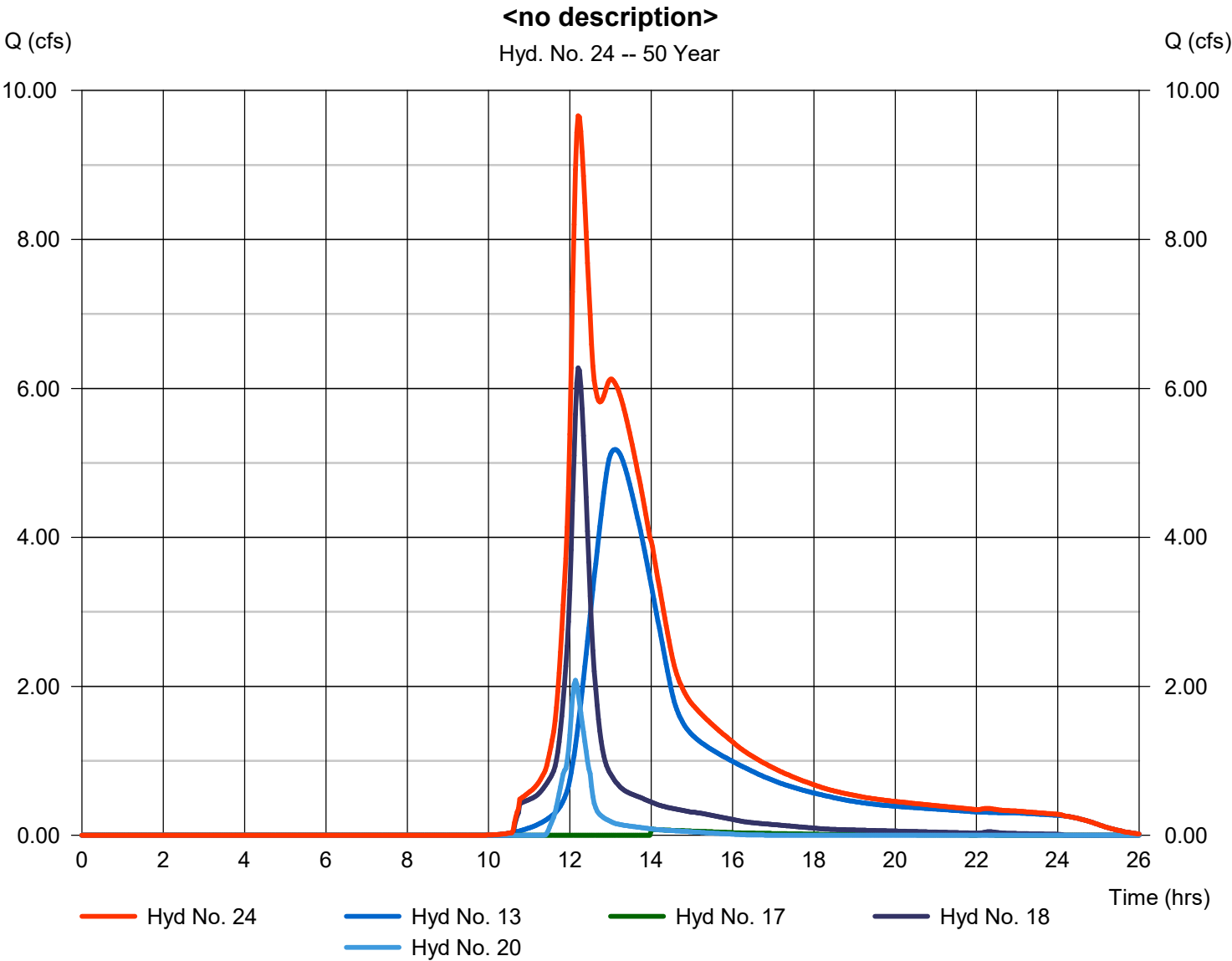|			
Hydrograph type	= Combine	Peak discharge	= 16.46 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 79,243 cuft
Inflow hyds.	= 2, 3, 15, 19	Contrib. drain. area	= 0.689 ac

\<no description\>

Hyd. No. 23 -- 50 Year

Legend: Hyd No. 23 — Hyd No. 2 — Hyd No. 3 — Hyd No. 15 — Hyd No. 19

Hydrograph Report

Hyd. No. 24

<no description>

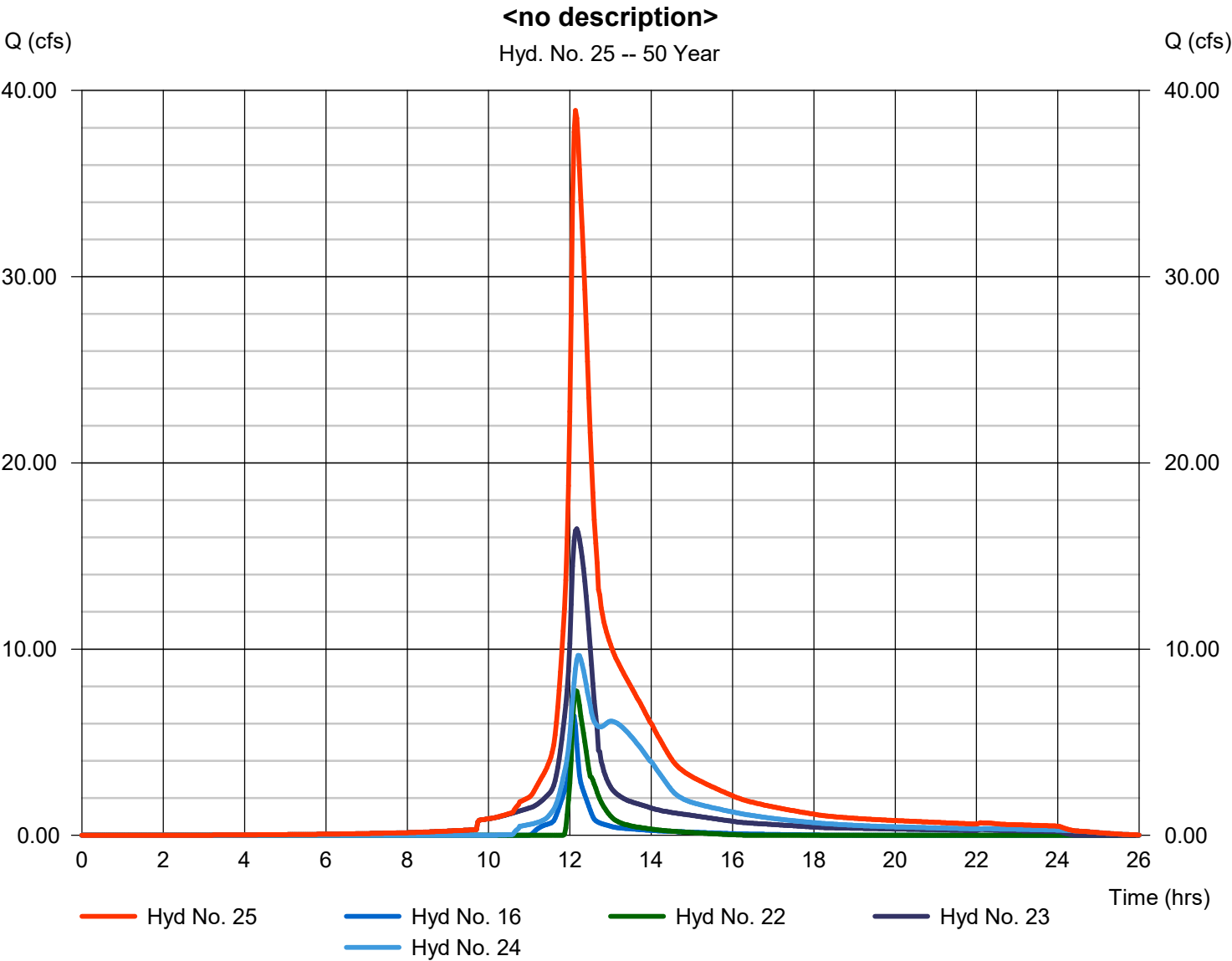|			
Hydrograph type	= Combine	Peak discharge	= 9.661 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 82,950 cuft
Inflow hyds.	= 13, 17, 18, 20	Contrib. drain. area	= 4.837 ac

<no description>

Hyd. No. 24 -- 50 Year

Q (cfs) ... Time (hrs)

Hyd No. 24   Hyd No. 13   Hyd No. 17   Hyd No. 18   Hyd No. 20

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 25

<no description>

Hydrograph type	= Combine		Peak discharge	= 38.93 cfs
Storm frequency	= 50 yrs		Time to peak	= 12.13 hrs
Time interval	= 2 min		Hyd. volume	= 194,138 cuft
Inflow hyds.	= 16, 22, 23, 24		Contrib. drain. area	= 0.000 ac

<no description>

Hyd. No. 25 -- 50 Year

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

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	8.534	2	752	55,399	------	------	------	PR WS-01
2	SCS Runoff	3.823	2	726	13,711	------	------	------	PR WS-02B(I)
3	SCS Runoff	0.964	2	724	3,046	------	------	------	PR WS-02B(III)
4	SCS Runoff	4.184	2	726	15,682	------	------	------	PR WS-02C
5	SCS Runoff	12.64	2	734	62,774	------	------	------	PR WS-02D
6	SCS Runoff	1.585	2	724	5,347	------	------	------	PR WS-02E
7	SCS Runoff	7.986	2	724	26,946	------	------	------	PR WS-02F
8	SCS Runoff	10.67	2	724	36,405	------	------	------	PR WS-02A
9	SCS Runoff	3.874	2	724	13,214	------	------	------	PR WS-02G(I)
10	SCS Runoff	3.404	2	724	11,609	------	------	------	PR WS-02G(II)
11	SCS Runoff	1.488	2	730	6,295	------	------	------	PR WS-02H
12	SCS Runoff	7.225	2	732	34,156	------	------	------	PR WS-02I
13	SCS Runoff	6.444	2	786	66,814	------	------	------	PR WS-03
14	Reservoir	12.50	2	736	57,780	5	139.20	4,007	TWIN 36IN PIPES (#2)
15	Reservoir	0.819	2	730	1,844	6	137.75	1,384	INFIL-3
16	Reservoir	7.203	2	726	17,218	7	138.11	3,101	INIFL-4
17	Reservoir	0.269	2	766	1,519	11	137.46	3,656	36 INCH PIPE (#3)
18	Reservoir	7.140	2	732	26,828	12	135.76	2,508	TWO 36 INCH PIPES
19	Combine	14.74	2	734	73,462	4, 14,	------	------	<no description>
20	Reservoir	2.326	2	728	6,392	10	135.95	1,833	INFIL-2
21	Combine	14.55	2	724	49,619	8, 9,	------	------	<no description>
22	Reservoir	9.071	2	728	21,971	21	137.48	12,150	INFIL-1
23	Combine	18.90	2	730	92,063	2, 3, 15, 19,	------	------	<no description>
24	Combine	11.25	2	732	101,553	13, 17, 18, 20,	------	------	<no description>
25	Combine	45.00	2	728	232,805	16, 22, 23, 24	------	------	<no description>

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 1

PR WS-01

Hydrograph type	= SCS Runoff		Peak discharge	= 8.534 cfs
Storm frequency	= 100 yrs		Time to peak	= 12.53 hrs
Time interval	= 2 min		Hyd. volume	= 55,399 cuft
Drainage area	= 3.405 ac		Curve number	= 68
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 45.70 min
Total precip.	= 8.34 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

PR WS-01

Hyd. No. 1 -- 100 Year
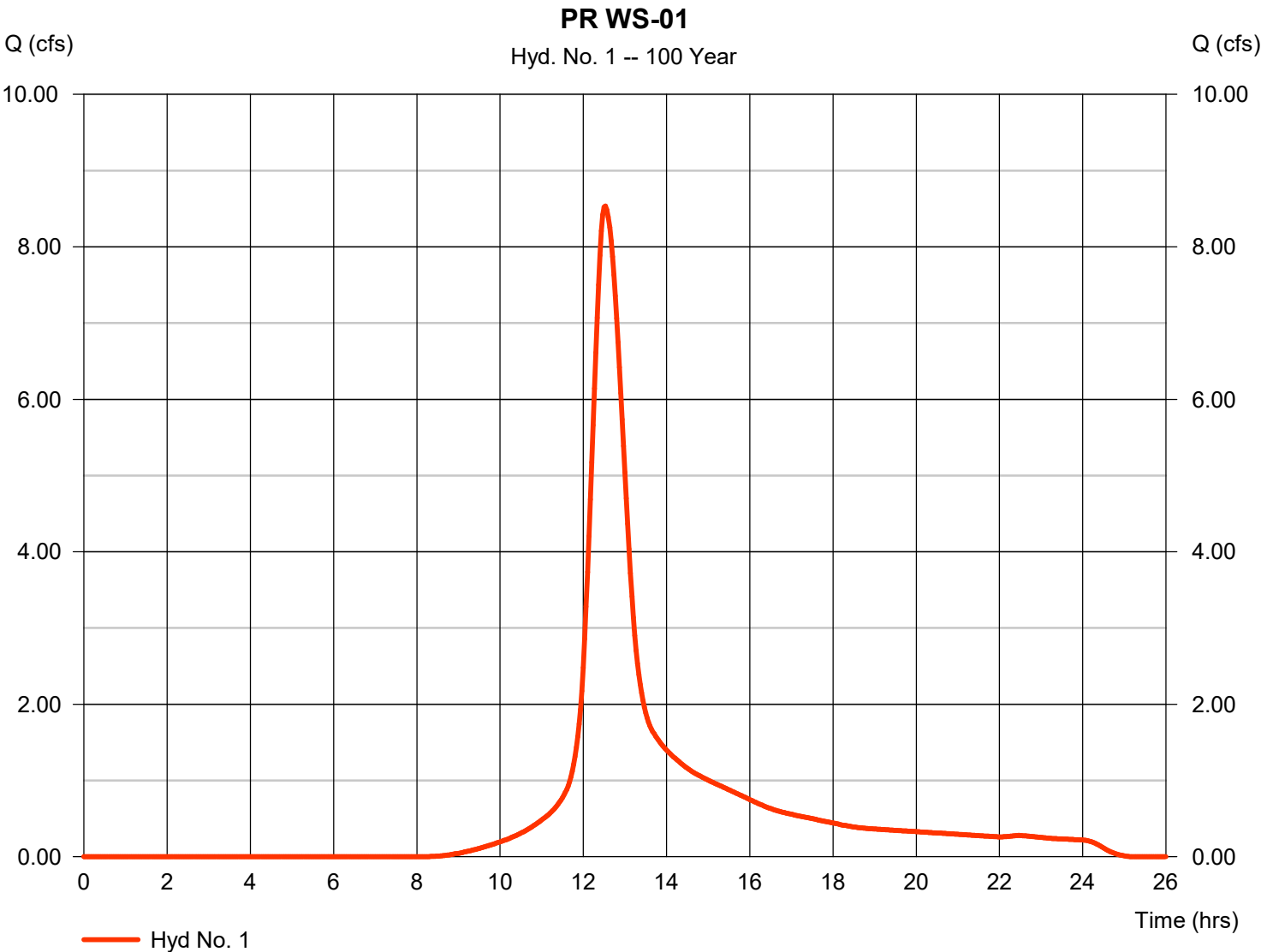
— Hyd No. 1

Hydrograph Report

Hyd. No. 2

PR WS-02B(I)

Hydrograph type	= SCS Runoff	Peak discharge	= 3.823 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 13,711 cuft
Drainage area	= 0.557 ac	Curve number	= 87
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 7.40 min
Total precip.	= 8.34 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02B(I)

Hyd. No. 2 -- 100 Year
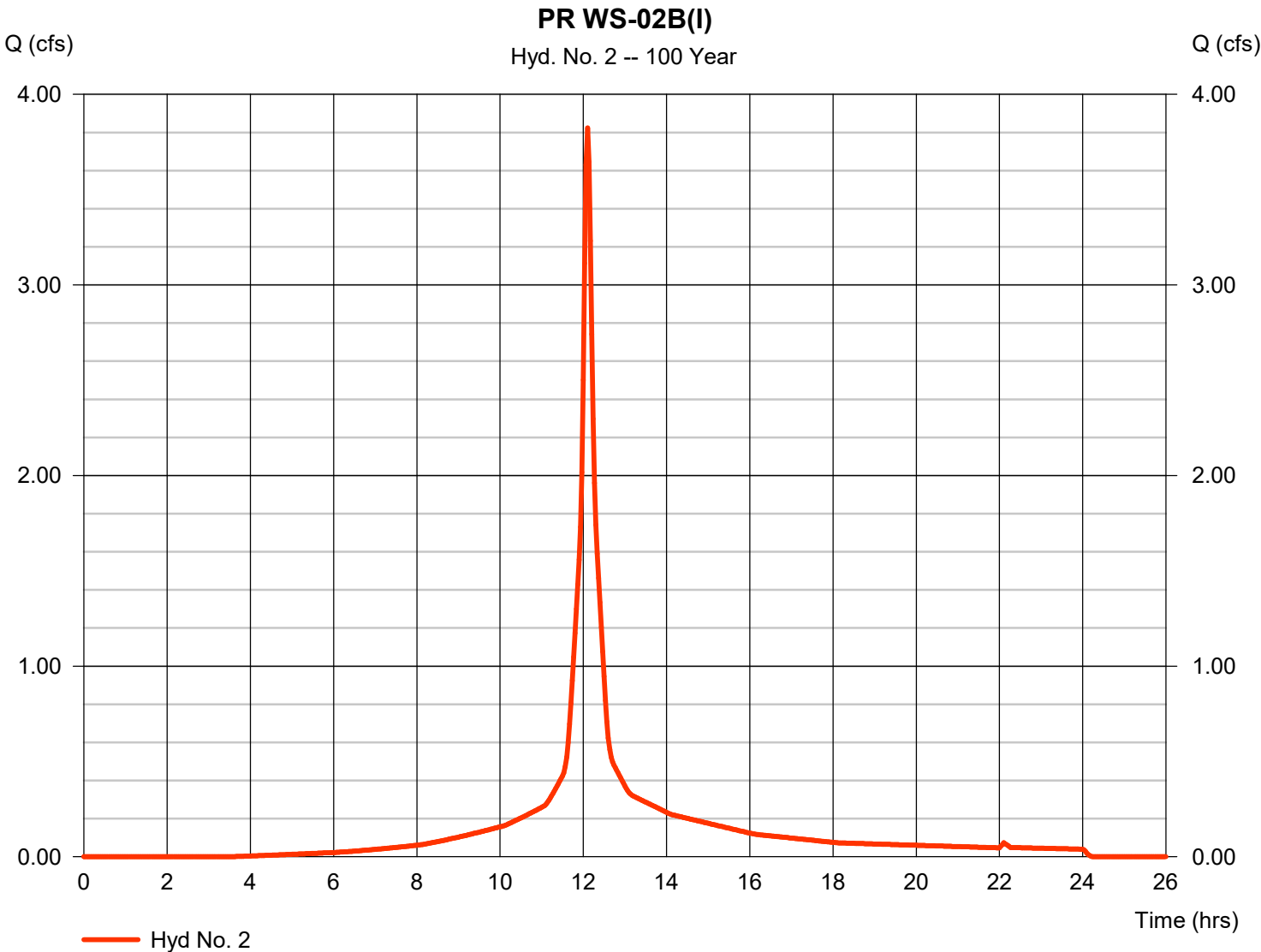
Hyd No. 2

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 3

PR WS-02B(III)

Hydrograph type	= SCS Runoff		Peak discharge	= 0.964 cfs
Storm frequency	= 100 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 3,046 cuft
Drainage area	= 0.132 ac		Curve number	= 87
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 5.00 min
Total precip.	= 8.34 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

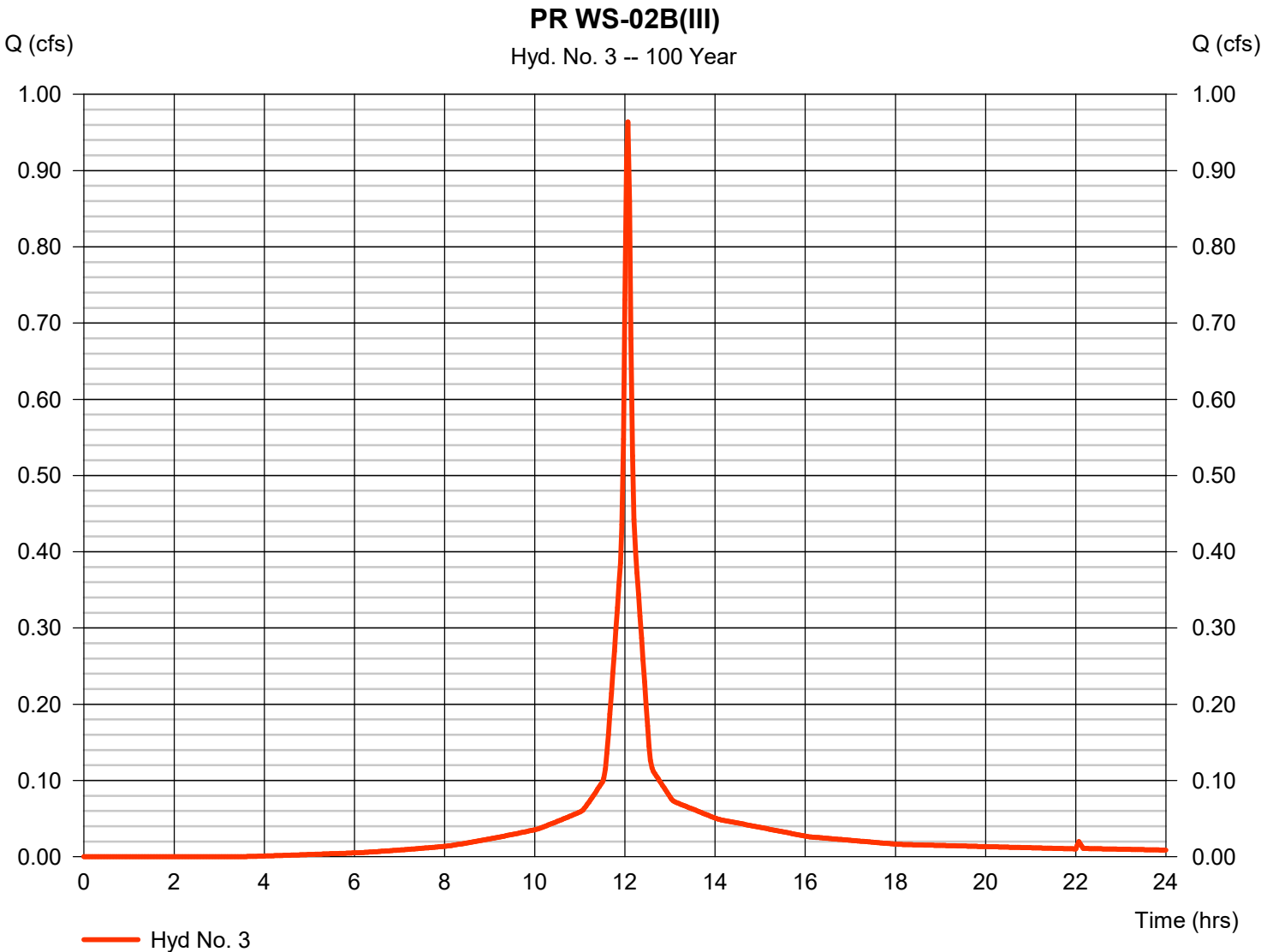**PR WS-02B(III)**

Hyd. No. 3 -- 100 Year

Hyd No. 3

Hydrograph Report

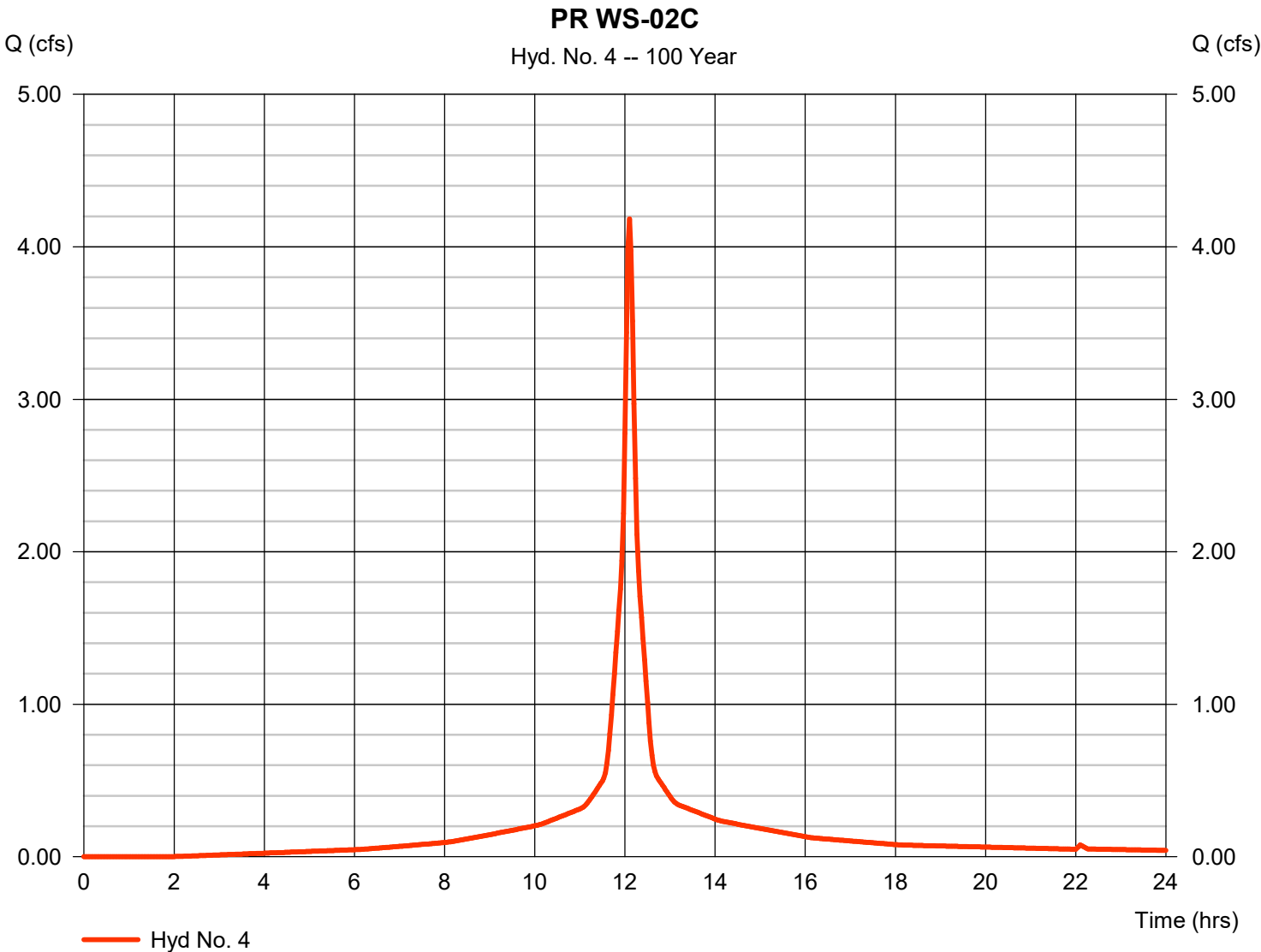Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021   Thursday, 04 / 4 / 2024

Hyd. No. 4

PR WS-02C

Hydrograph type	= SCS Runoff	Peak discharge	= 4.184 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 15,682 cuft
Drainage area	= 0.576 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 9.40 min
Total precip.	= 8.34 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02C

Hyd. No. 4 -- 100 Year

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 5

PR WS-02D

Hydrograph type	= SCS Runoff		Peak discharge	= 12.64 cfs
Storm frequency	= 100 yrs		Time to peak	= 12.23 hrs
Time interval	= 2 min		Hyd. volume	= 62,774 cuft
Drainage area	= 2.462 ac		Curve number	= 88
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 22.10 min
Total precip.	= 8.34 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

PR WS-02D

Hyd. No. 5 -- 100 Year

Hydrograph Report

Hyd. No. 6

PR WS-02E

Hydrograph type	= SCS Runoff		Peak discharge	= 1.585 cfs
Storm frequency	= 100 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 5,347 cuft
Drainage area	= 0.203 ac		Curve number	= 95
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 5.00 min
Total precip.	= 8.34 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

PR WS-02E

Hyd. No. 6 -- 100 Year

Q (cfs)

Q (cfs)

—— Hyd No. 6

Time (hrs)
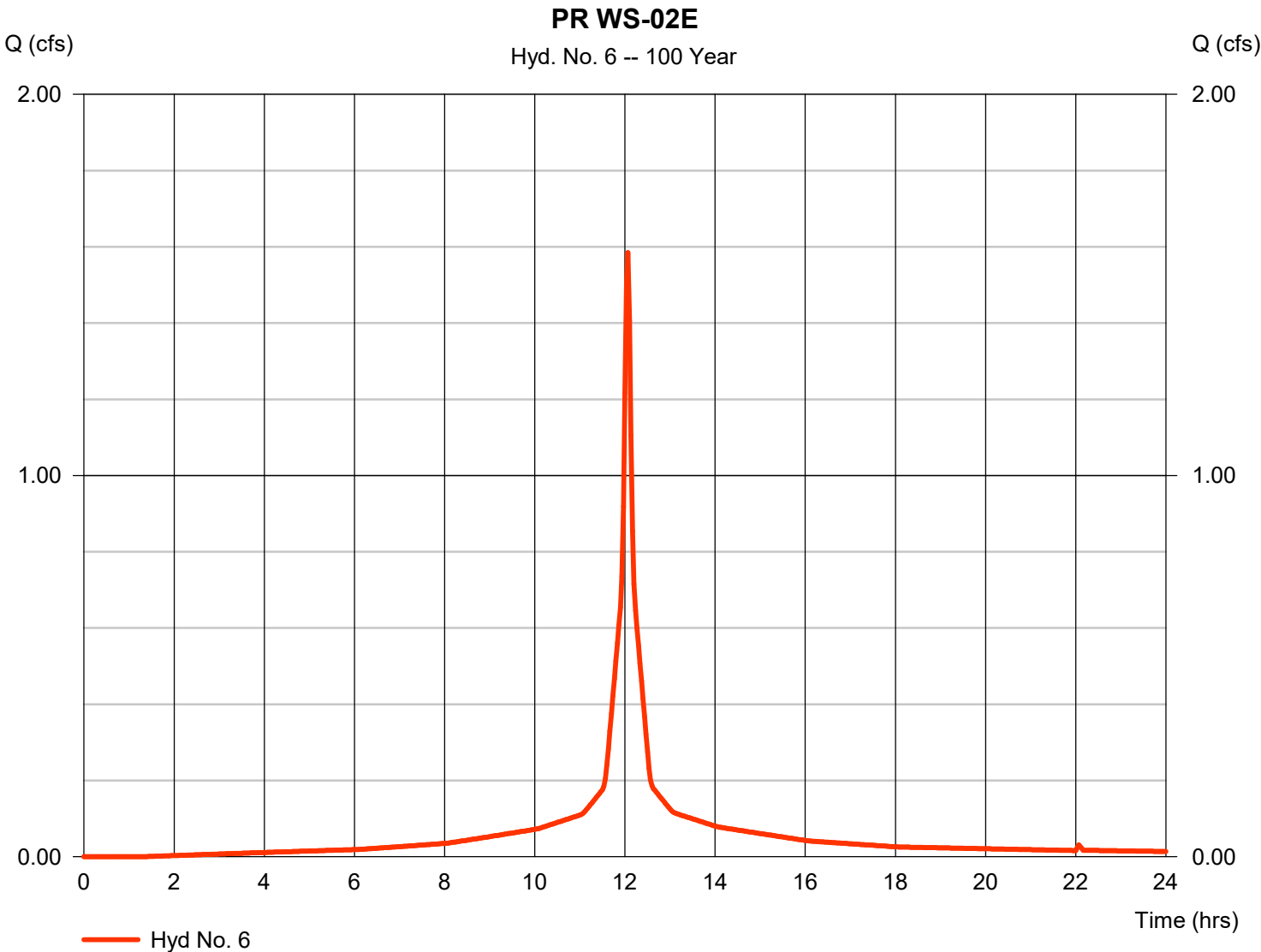
Hydrograph Report

Hyd. No. 7

PR WS-02F

Hydrograph type	= SCS Runoff	Peak discharge	= 7.986 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 26,946 cuft
Drainage area	= 1.023 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 8.34 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02F

Hyd. No. 7 -- 100 Year
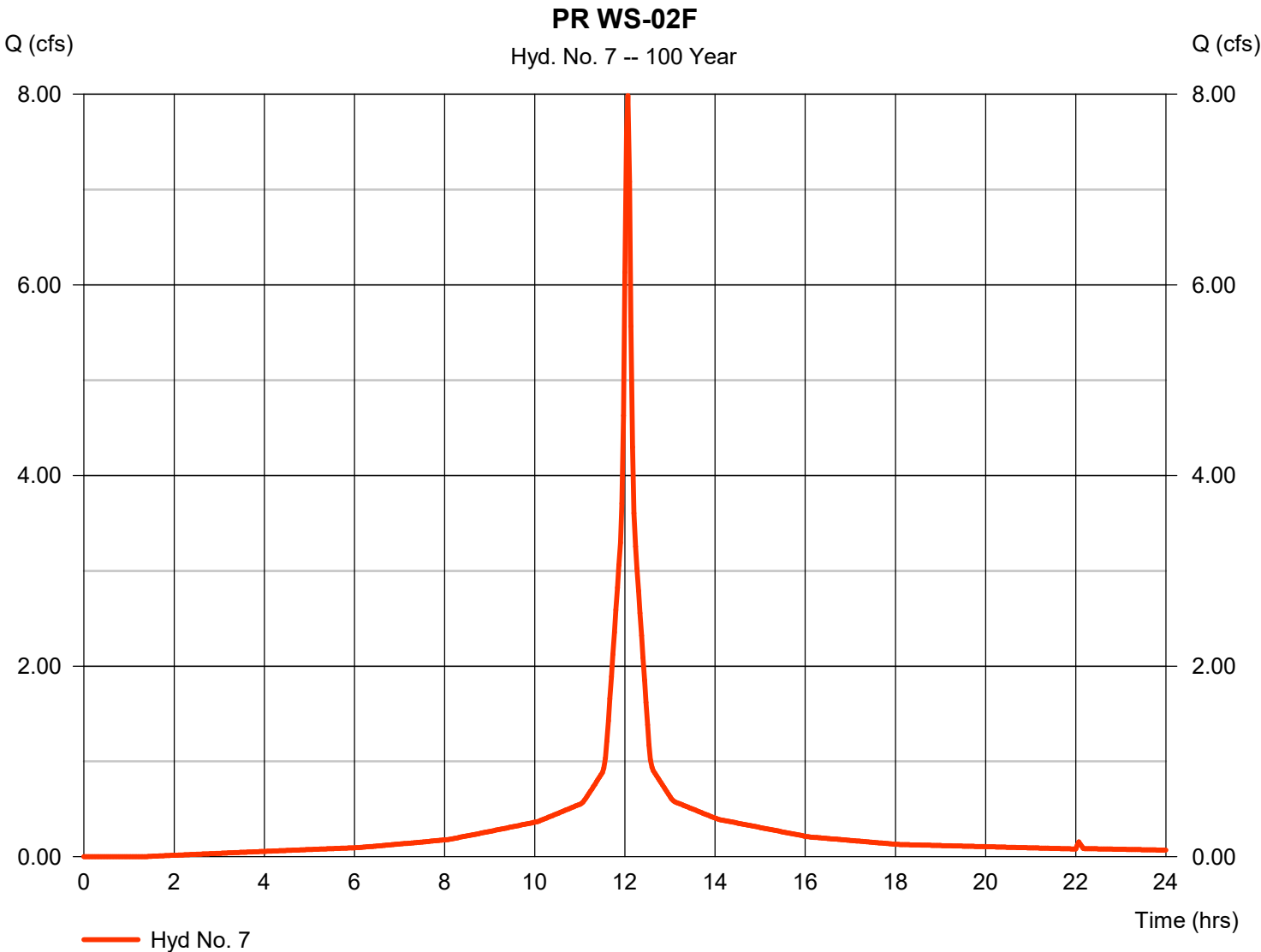
--- Hyd No. 7

Hydrograph Report

Hyd. No. 8

PR WS-02A

Hydrograph type	= SCS Runoff	Peak discharge	= 10.67 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 36,405 cuft
Drainage area	= 1.361 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 8.34 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02A

Hyd. No. 8 -- 100 Year

Legend: Hyd No. 8
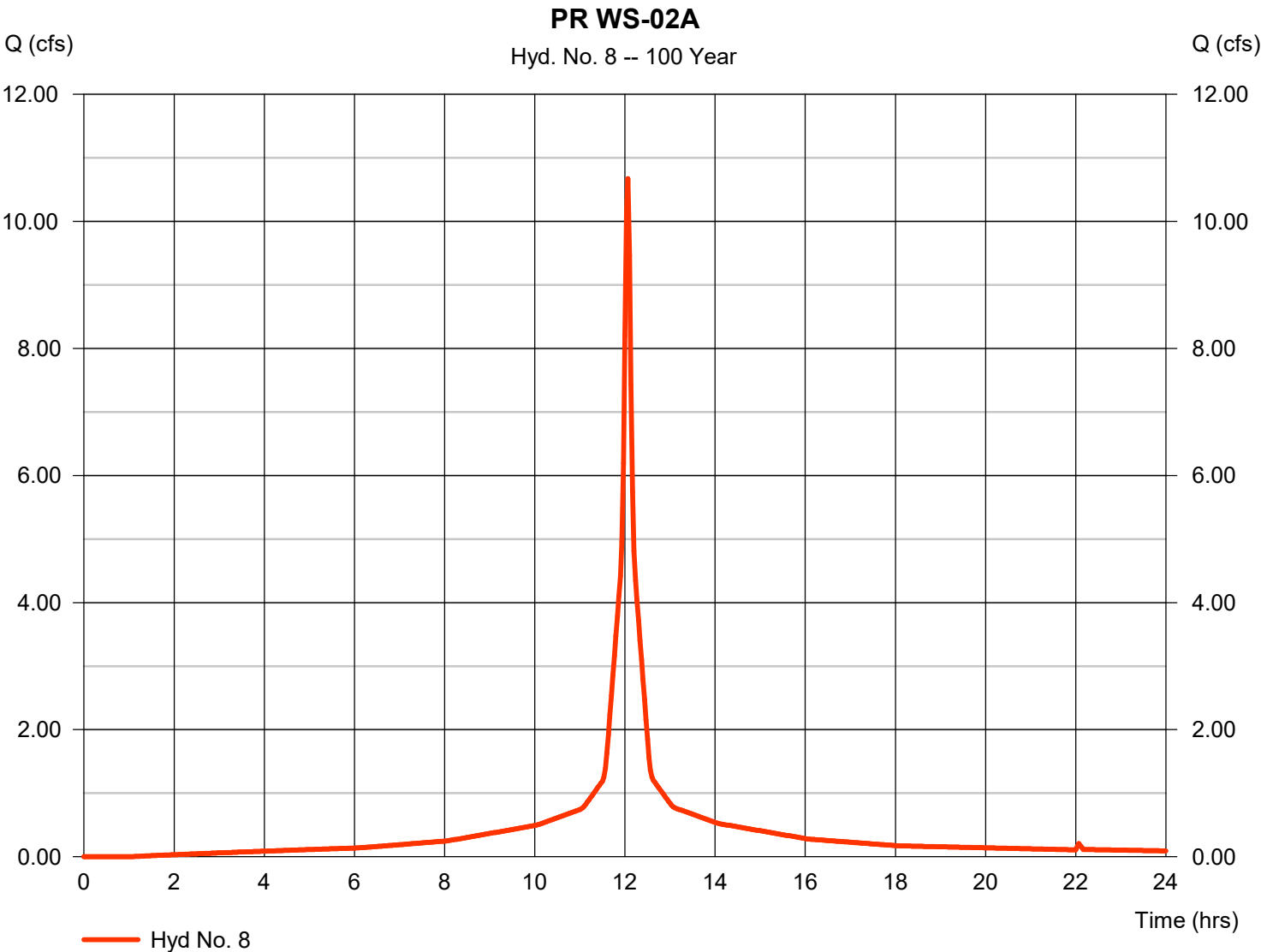
Hydrograph Report

Hyd. No. 9

PR WS-02G(I)

Hydrograph type	= SCS Runoff		Peak discharge	= 3.874 cfs
Storm frequency	= 100 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 13,214 cuft
Drainage area	= 0.494 ac		Curve number	= 96
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 5.00 min
Total precip.	= 8.34 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

PR WS-02G(I)

Hyd. No. 9 -- 100 Year
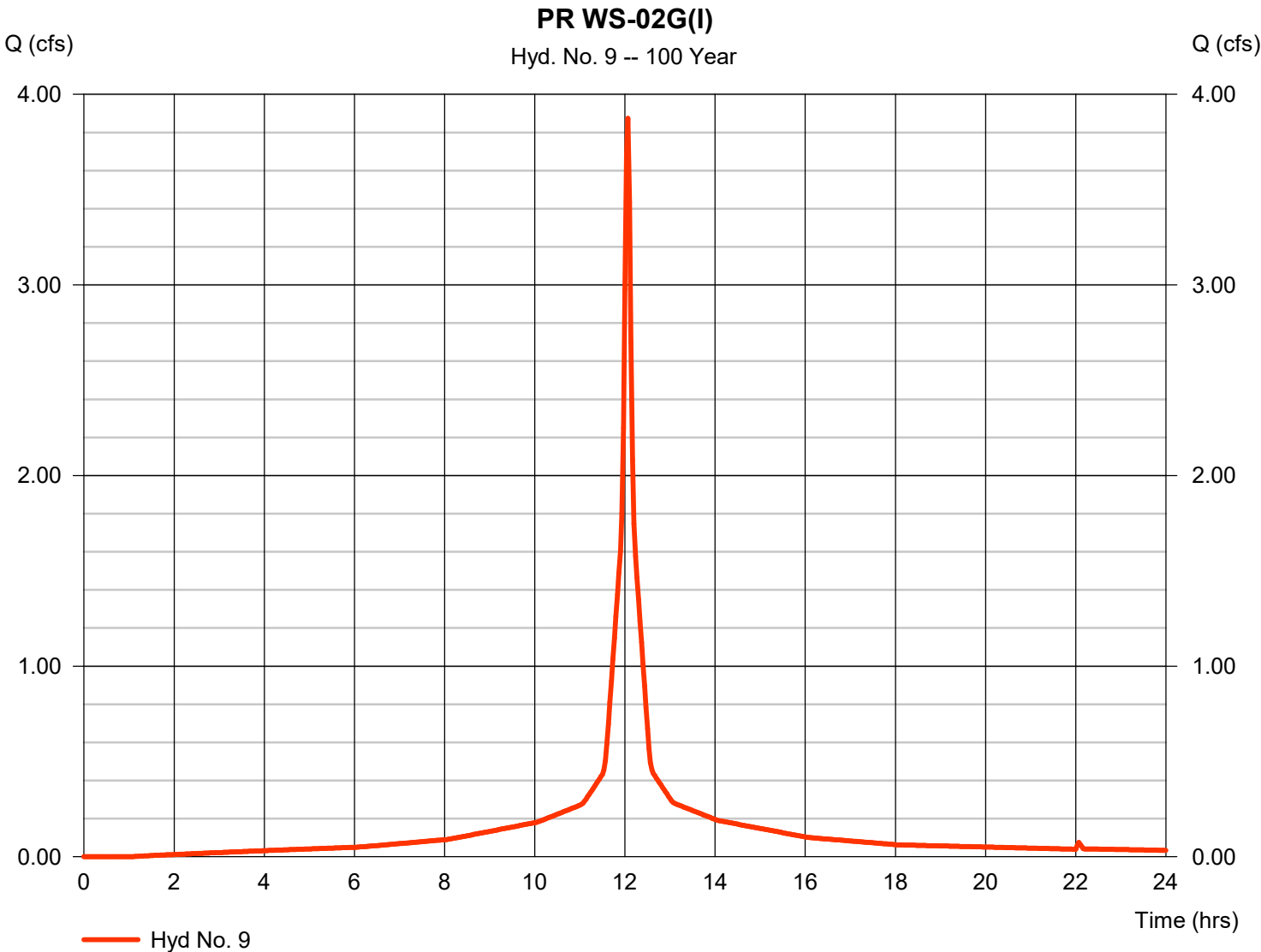
Hyd No. 9

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 10

PR WS-02G(II)

Hydrograph type	= SCS Runoff	Peak discharge	= 3.404 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 11,609 cuft
Drainage area	= 0.434 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 8.34 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-02G(II)

Hyd. No. 10 -- 100 Year
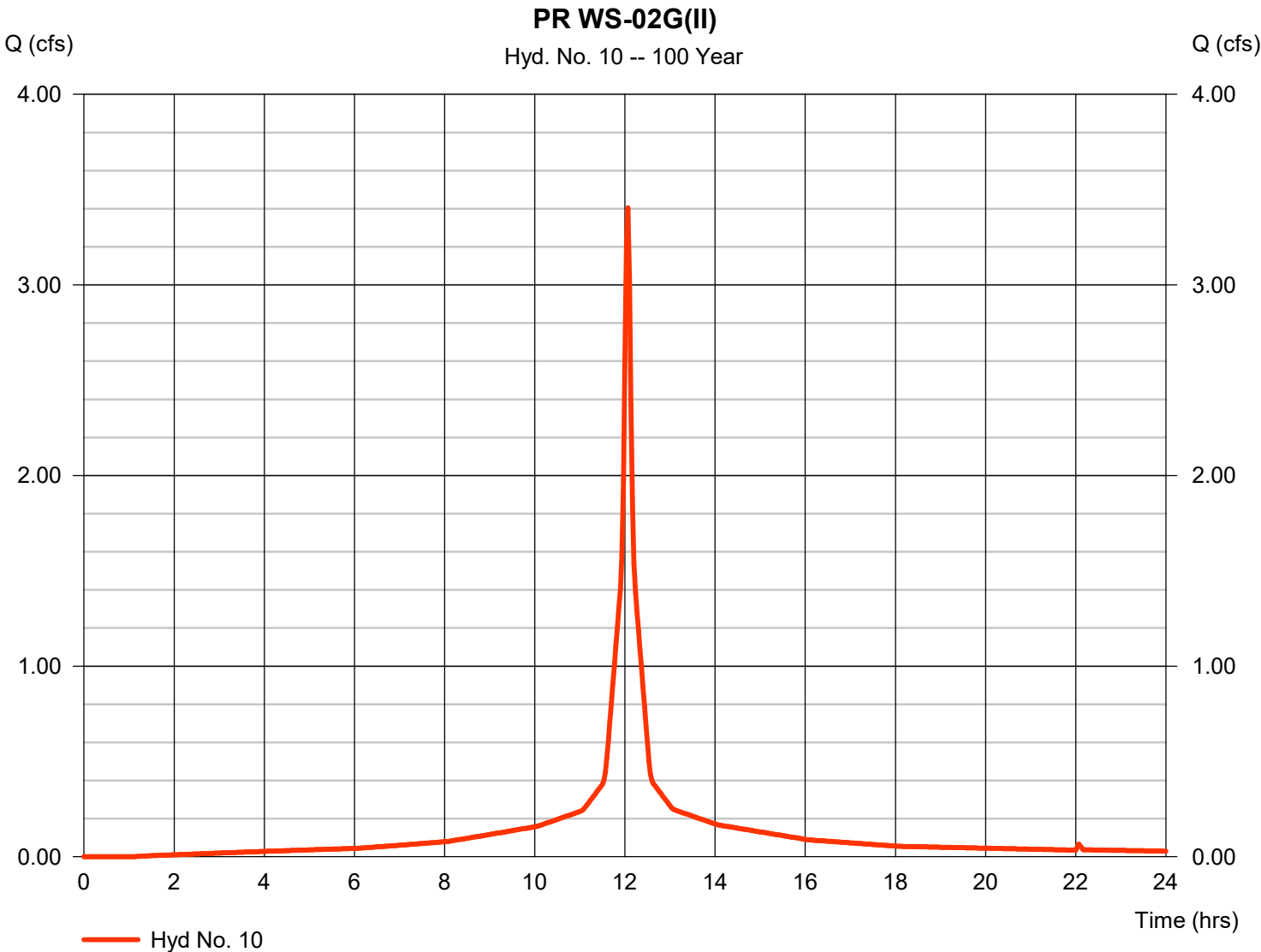
Hyd No. 10

Hydrograph Report

Hyd. No. 11

PR WS-02H

Hydrograph type	= SCS Runoff		Peak discharge	= 1.488 cfs
Storm frequency	= 100 yrs		Time to peak	= 12.17 hrs
Time interval	= 2 min		Hyd. volume	= 6,295 cuft
Drainage area	= 0.267 ac		Curve number	= 86
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 13.80 min
Total precip.	= 8.34 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

PR WS-02H

Hyd. No. 11 -- 100 Year
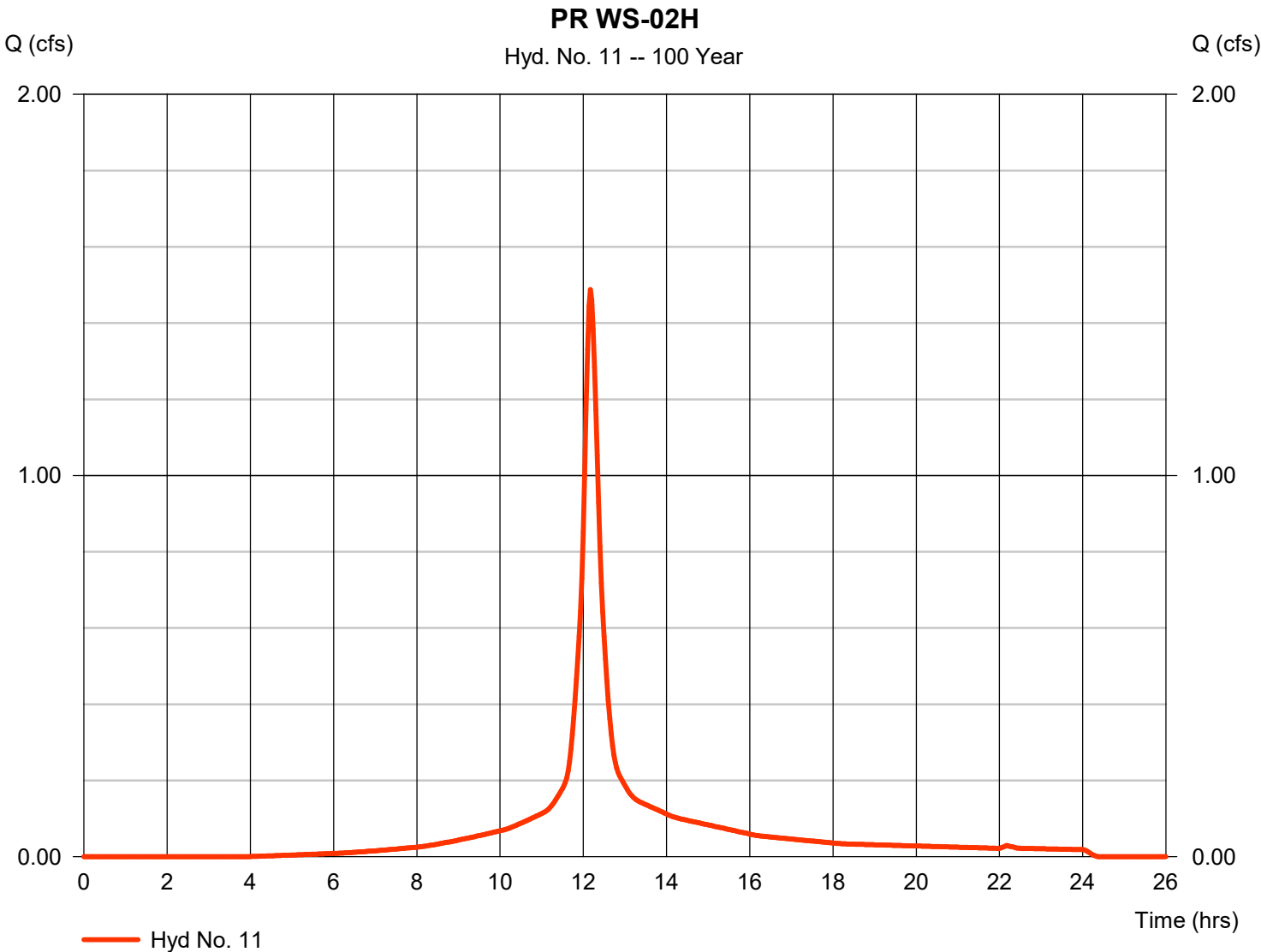
Hydrograph Report

Hyd. No. 12

PR WS-02I

Hydrograph type	= SCS Runoff		Peak discharge	= 7.225 cfs
Storm frequency	= 100 yrs		Time to peak	= 12.20 hrs
Time interval	= 2 min		Hyd. volume	= 34,156 cuft
Drainage area	= 1.296 ac		Curve number	= 91
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 18.60 min
Total precip.	= 8.34 in		Distribution	= Type III
Storm duration	= 24 hrs		Shape factor	= 484

PR WS-02I

Hyd. No. 12 -- 100 Year

Q (cfs)

─── Hyd No. 12

Hydrograph Report

Hyd. No. 13

PR WS-03

Hydrograph type	= SCS Runoff	Peak discharge	= 6.444 cfs
Storm frequency	= 100 yrs	Time to peak	= 13.10 hrs
Time interval	= 2 min	Hyd. volume	= 66,814 cuft
Drainage area	= 4.837 ac	Curve number	= 62
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 95.00 min
Total precip.	= 8.34 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

PR WS-03

Hyd. No. 13 -- 100 Year

Hyd No. 13

Hydrograph Report

Hyd. No. 14

TWIN 36IN PIPES (#2)

Hydrograph type	= Reservoir	Peak discharge	= 12.50 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.27 hrs
Time interval	= 2 min	Hyd. volume	= 57,780 cuft
Inflow hyd. No.	= 5 - PR WS-02D	Max. Elevation	= 139.20 ft
Reservoir name	= Northern Twin 36IN	Max. Storage	= 4,007 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

TWIN 36IN PIPES (#2)

Hyd. No. 14 -- 100 Year

Hyd No. 14   Hyd No. 5   Total storage used = 4,007 cuft

Hydrograph Report

Hyd. No. 15

INFIL-3

Hydrograph type	= Reservoir		Peak discharge	= 0.819 cfs
Storm frequency	= 100 yrs		Time to peak	= 12.17 hrs
Time interval	= 2 min		Hyd. volume	= 1,844 cuft
Inflow hyd. No.	= 6 - PR WS-02E		Max. Elevation	= 137.75 ft
Reservoir name	= INFIL-3		Max. Storage	= 1,384 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
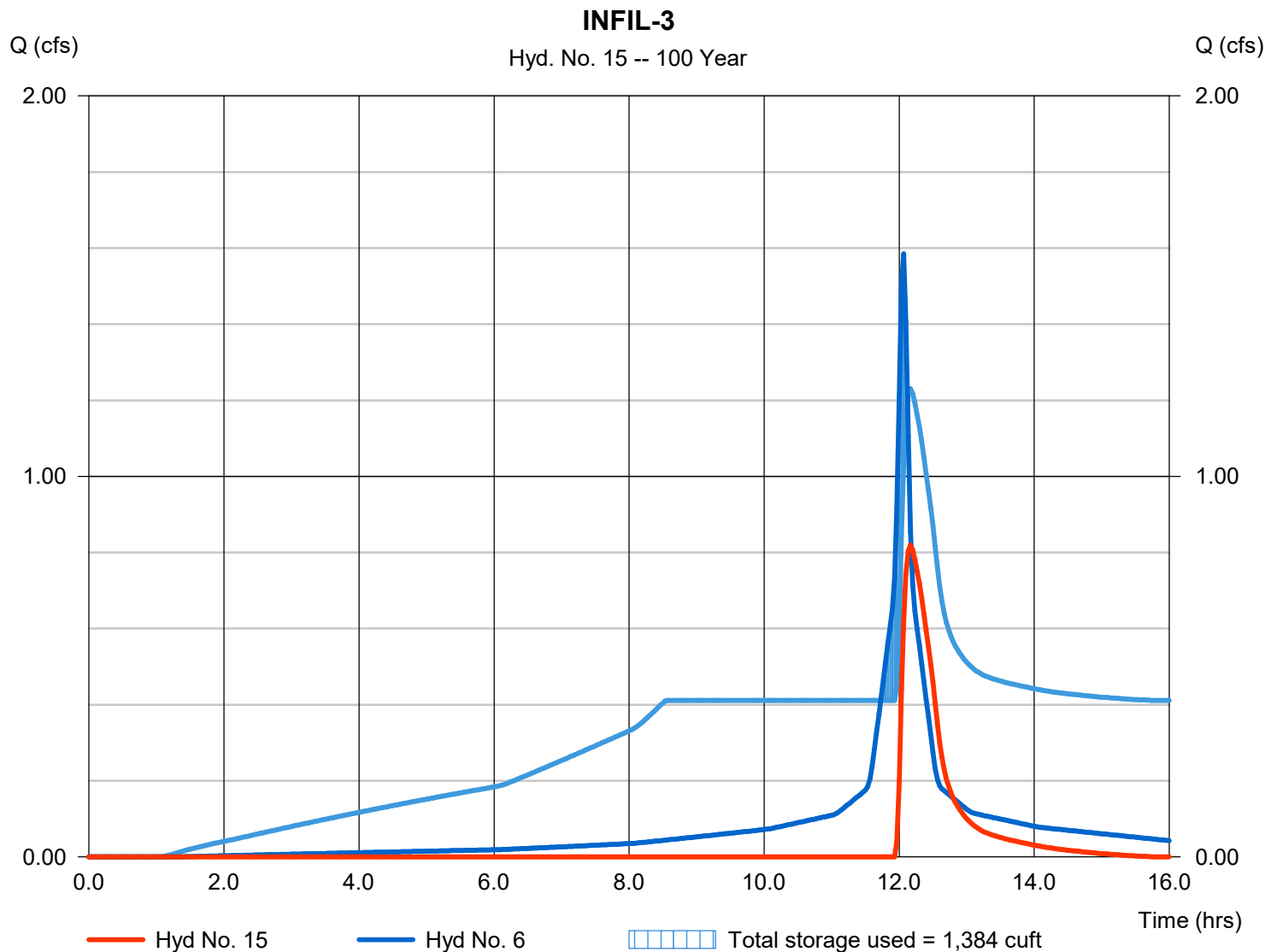
INFIL-3
Hyd. No. 15 -- 100 Year

Legend: Hyd No. 15, Hyd No. 6, Total storage used = 1,384 cuft

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021   Thursday, 04 / 4 / 2024

Hyd. No. 16

INIFL-4

Hydrograph type	= Reservoir	Peak discharge	= 7.203 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 17,218 cuft
Inflow hyd. No.	= 7 - PR WS-02F	Max. Elevation	= 138.11 ft
Reservoir name	= INIFL-4	Max. Storage	= 3,101 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
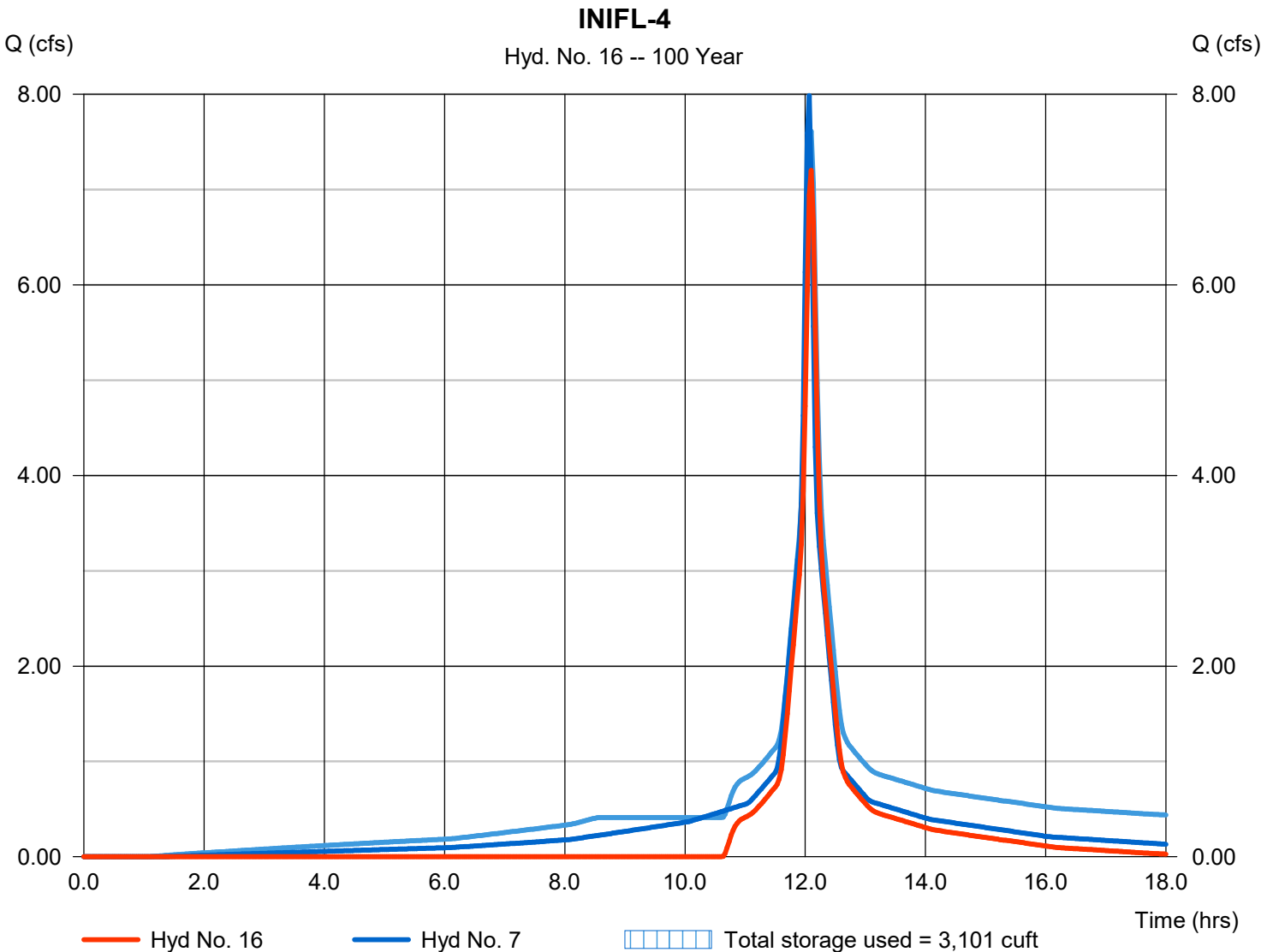
INIFL-4

Hyd. No. 16 -- 100 Year

Hyd No. 16   Hyd No. 7   Total storage used = 3,101 cuft

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 17

36 INCH PIPE (#3)

Hydrograph type	= Reservoir	Peak discharge	= 0.269 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.77 hrs
Time interval	= 2 min	Hyd. volume	= 1,519 cuft
Inflow hyd. No.	= 11 - PR WS-02H	Max. Elevation	= 137.46 ft
Reservoir name	= 36IN - 3	Max. Storage	= 3,656 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
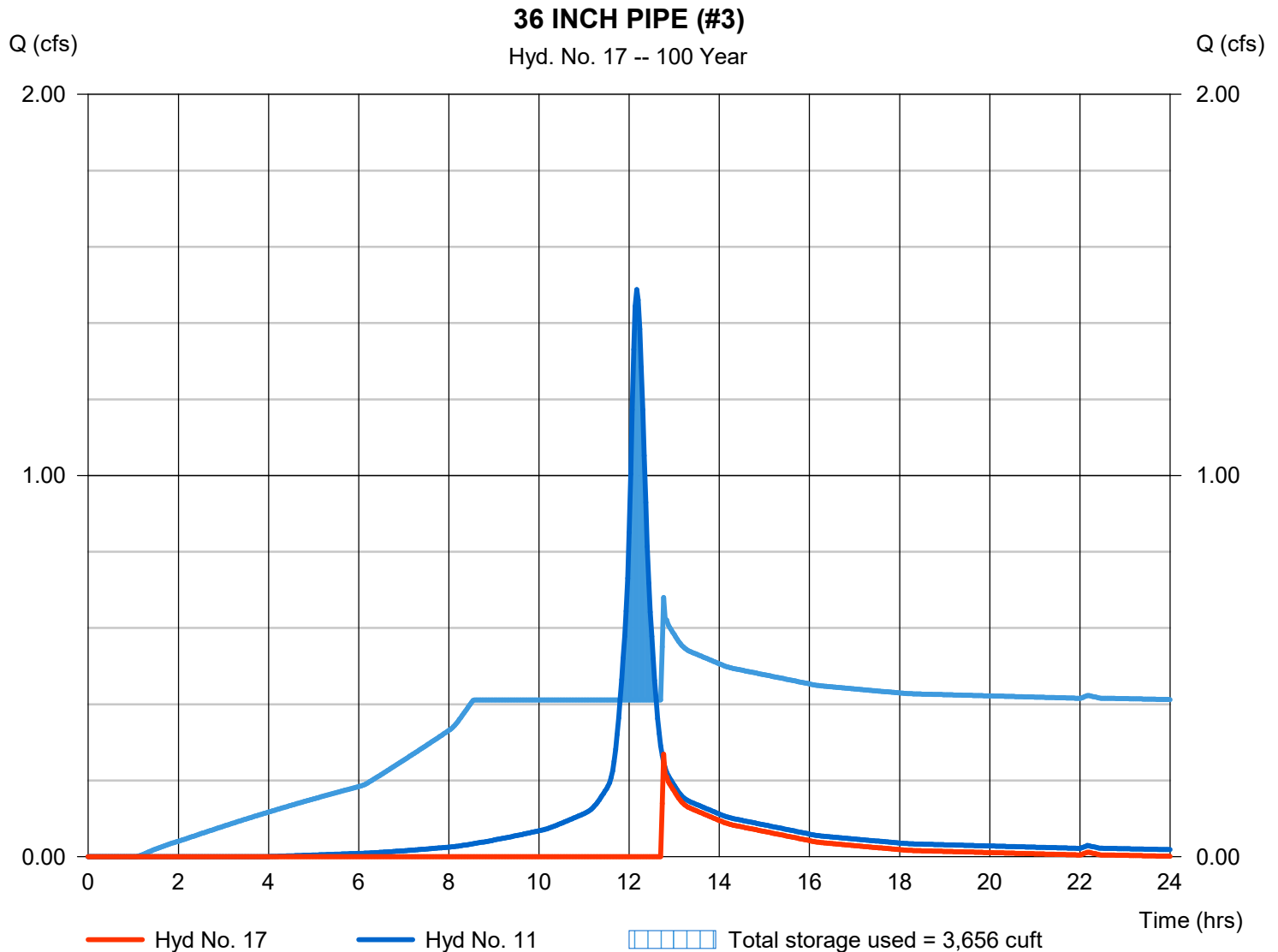
36 INCH PIPE (#3)
Hyd. No. 17 -- 100 Year

Hyd No. 17   Hyd No. 11   Total storage used = 3,656 cuft

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 18

TWO 36 INCH PIPES

Hydrograph type	= Reservoir	Peak discharge	= 7.140 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 26,828 cuft
Inflow hyd. No.	= 12 - PR WS-02I	Max. Elevation	= 135.76 ft
Reservoir name	= TWIN 36IN	Max. Storage	= 2,508 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
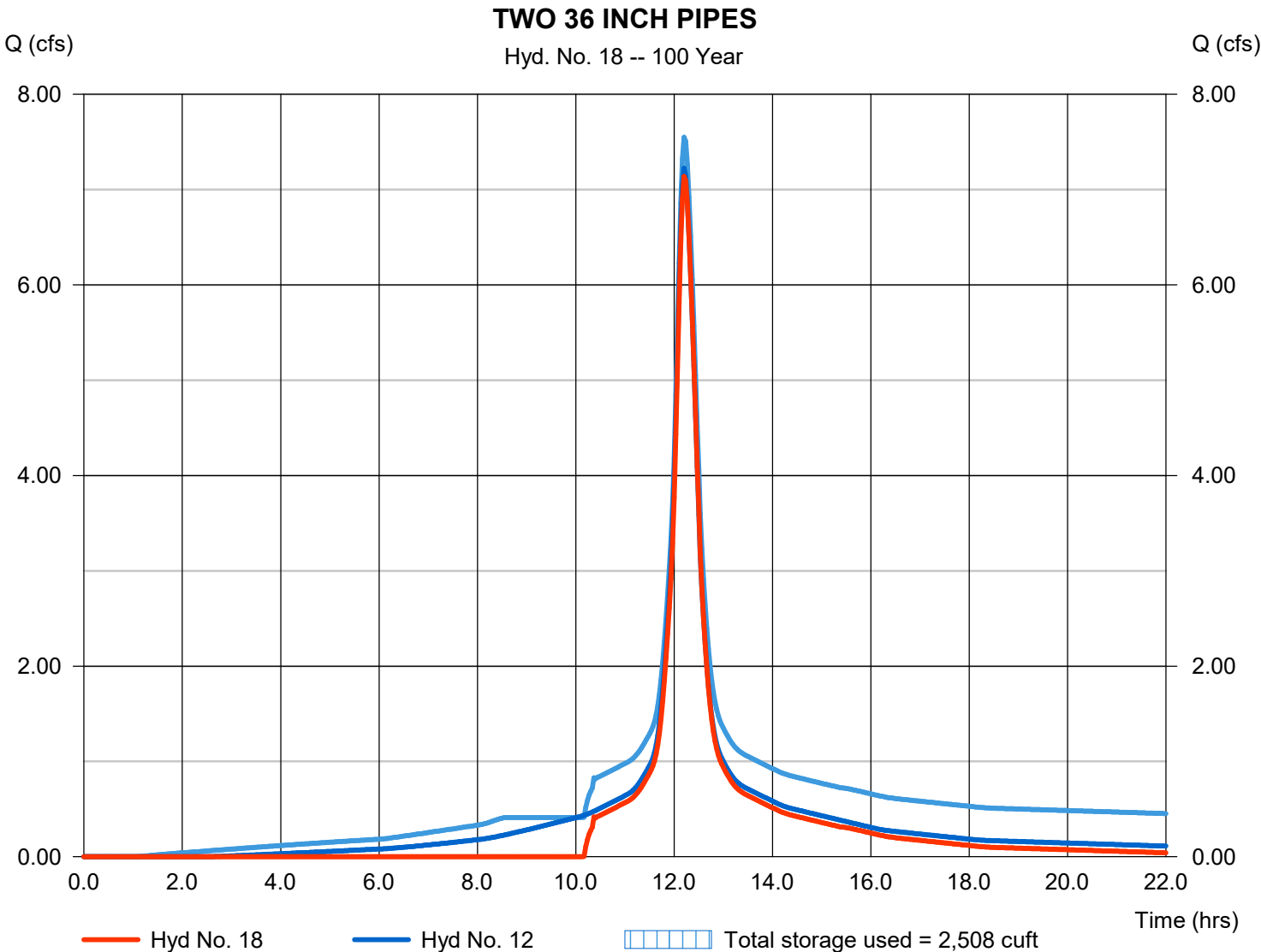
TWO 36 INCH PIPES

Hyd. No. 18 -- 100 Year

Hyd No. 18   Hyd No. 12   Total storage used = 2,508 cuft

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 19

<no description>

Hydrograph type	= Combine	Peak discharge	= 14.74 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.23 hrs
Time interval	= 2 min	Hyd. volume	= 73,462 cuft
Inflow hyds.	= 4, 14	Contrib. drain. area	= 0.576 ac
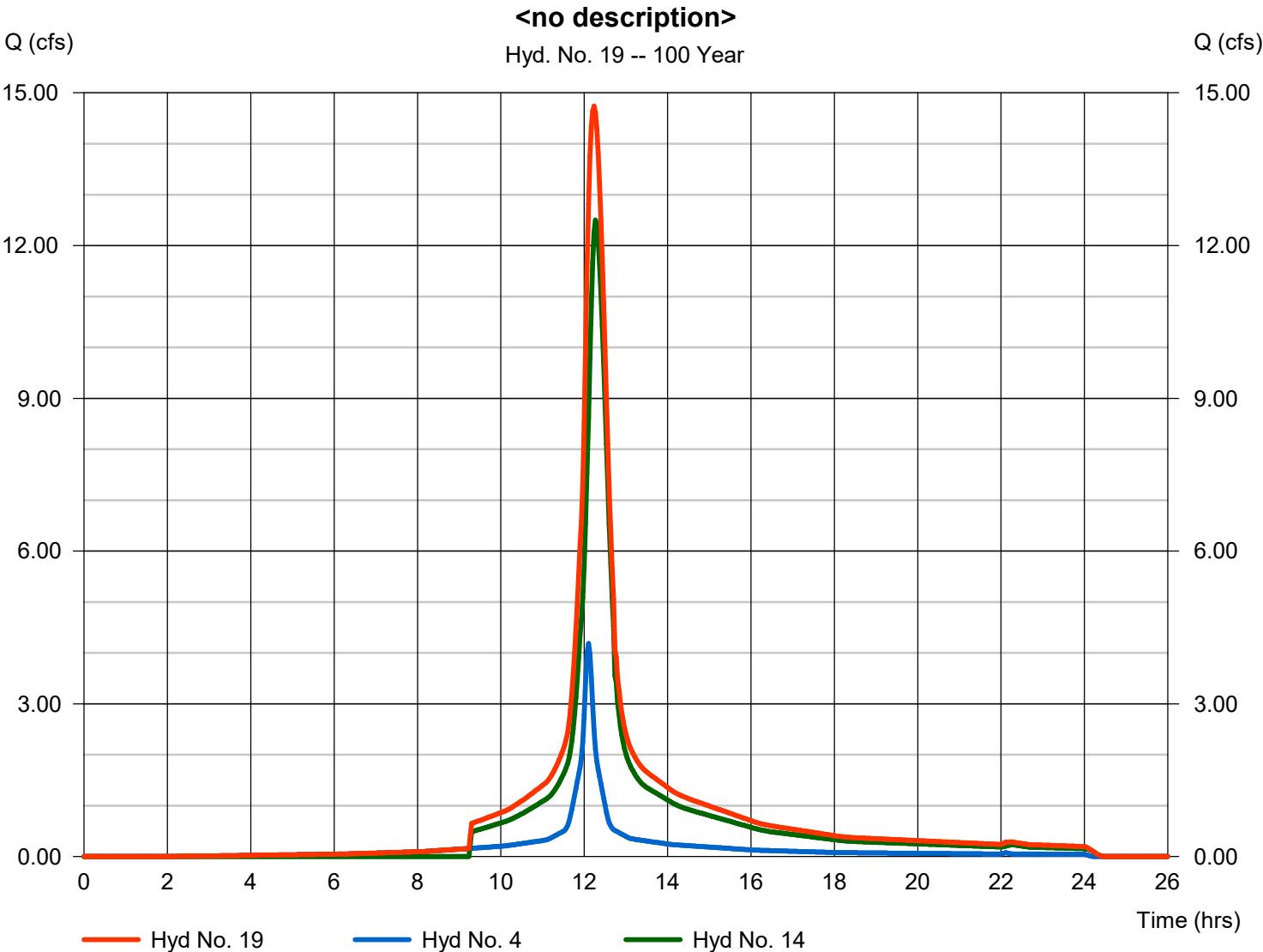
<no description>

Hyd. No. 19 -- 100 Year

Q (cfs)

Time (hrs)

— Hyd No. 19   — Hyd No. 4   — Hyd No. 14

Hydrograph Report

Hyd. No. 20

INFIL-2

Hydrograph type	= Reservoir		Peak discharge	= 2.326 cfs
Storm frequency	= 100 yrs		Time to peak	= 12.13 hrs
Time interval	= 2 min		Hyd. volume	= 6,392 cuft
Inflow hyd. No.	= 10 - PR WS-02G(II)		Max. Elevation	= 135.95 ft
Reservoir name	= INFIL-2		Max. Storage	= 1,833 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
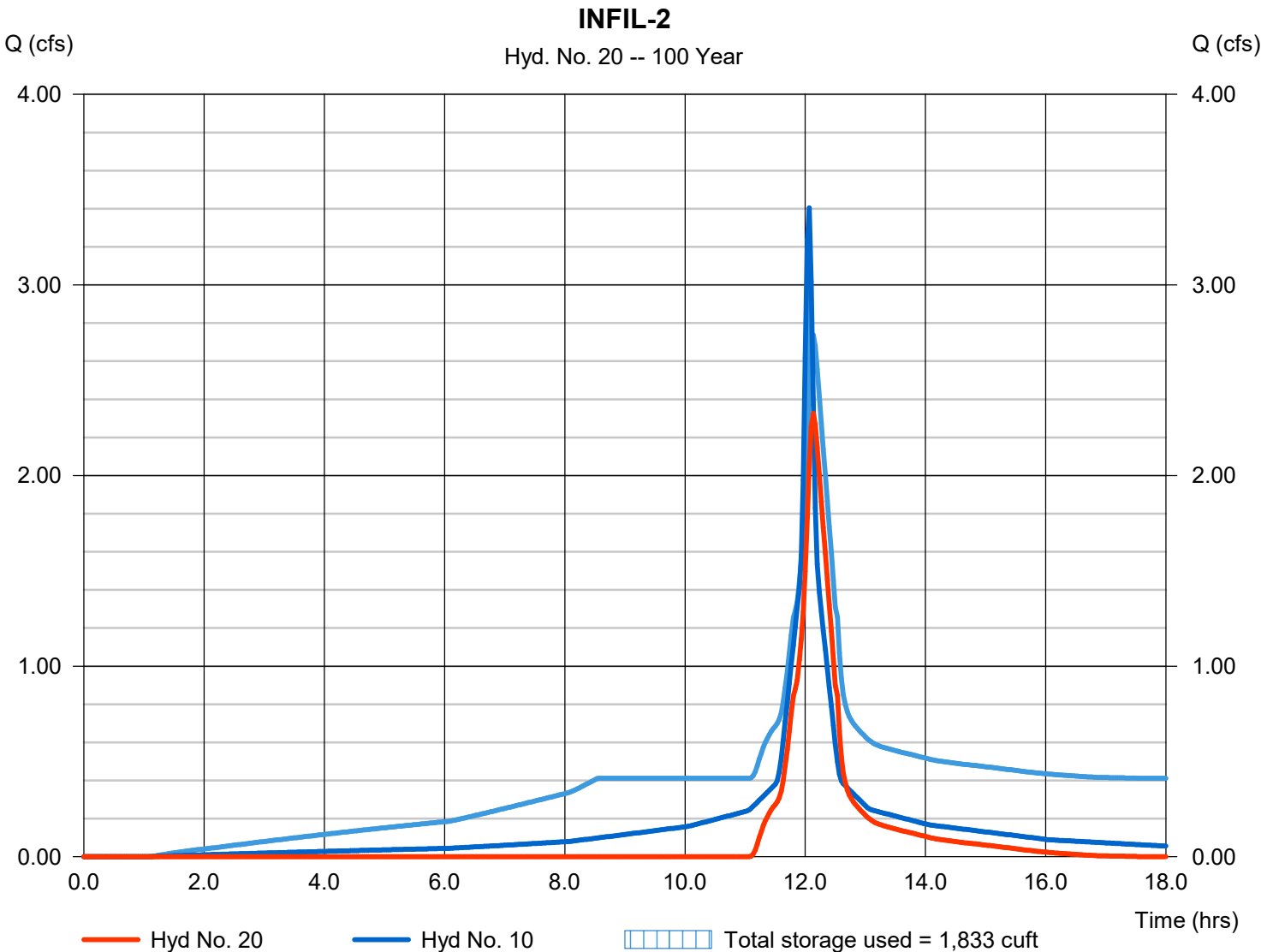
INFIL-2

Hyd. No. 20 -- 100 Year

Legend: Hyd No. 20   Hyd No. 10   Total storage used = 1,833 cuft

Hydrograph Report

Thursday, 04 / 4 / 2024

Hyd. No. 21

<no description>

Hydrograph type	= Combine	Peak discharge	= 14.55 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 49,619 cuft
Inflow hyds.	= 8, 9	Contrib. drain. area	= 1.855 ac
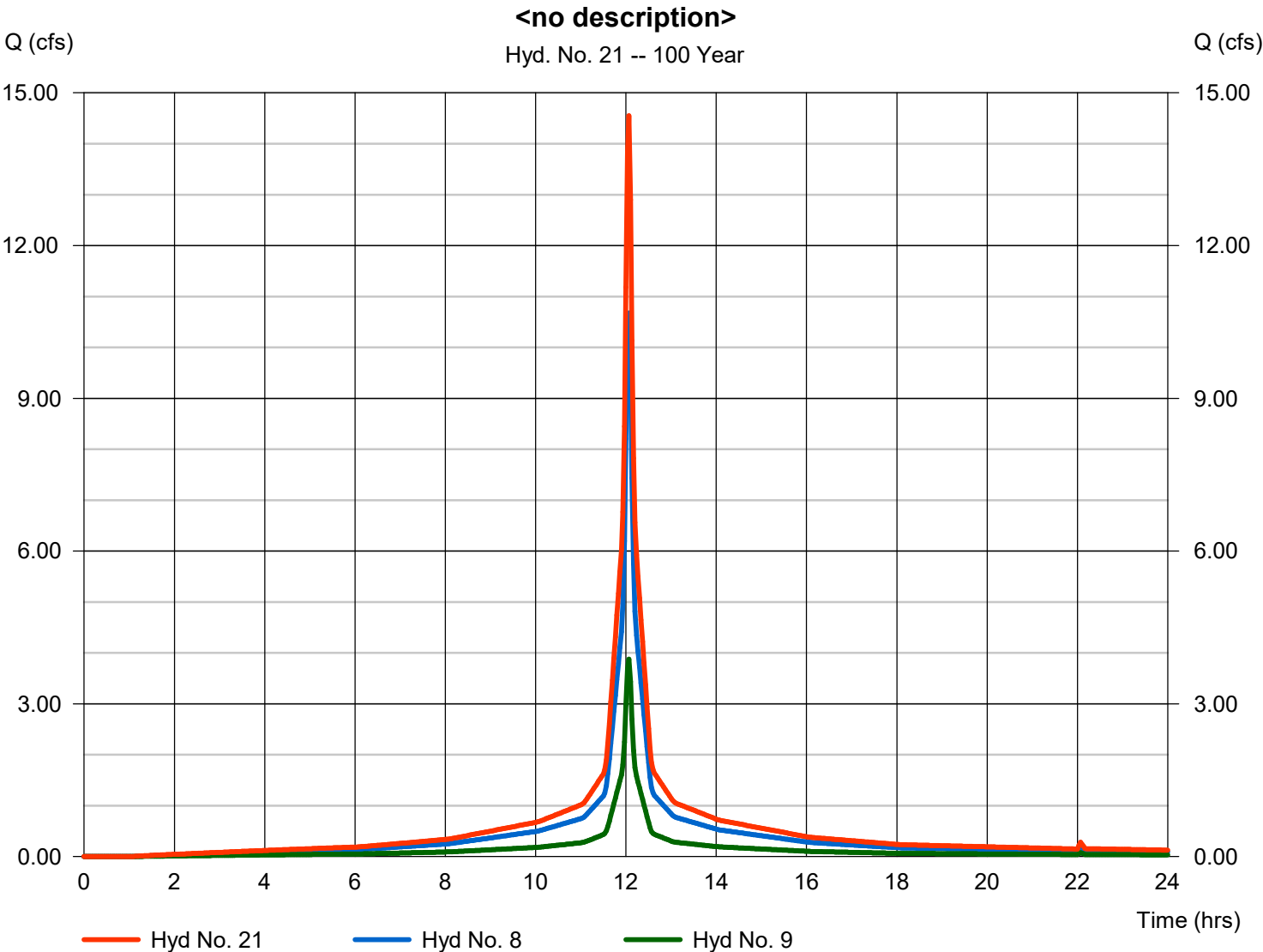
<no description>

Hyd. No. 21 -- 100 Year

Q (cfs)   Q (cfs)

Time (hrs)

—— Hyd No. 21   —— Hyd No. 8   —— Hyd No. 9

Hydrograph Report

Hyd. No. 22

INFIL-1

Hydrograph type	= Reservoir		Peak discharge	= 9.071 cfs
Storm frequency	= 100 yrs		Time to peak	= 12.13 hrs
Time interval	= 2 min		Hyd. volume	= 21,971 cuft
Inflow hyd. No.	= 21 - <no description>		Max. Elevation	= 137.48 ft
Reservoir name	= INFIL-1		Max. Storage	= 12,150 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
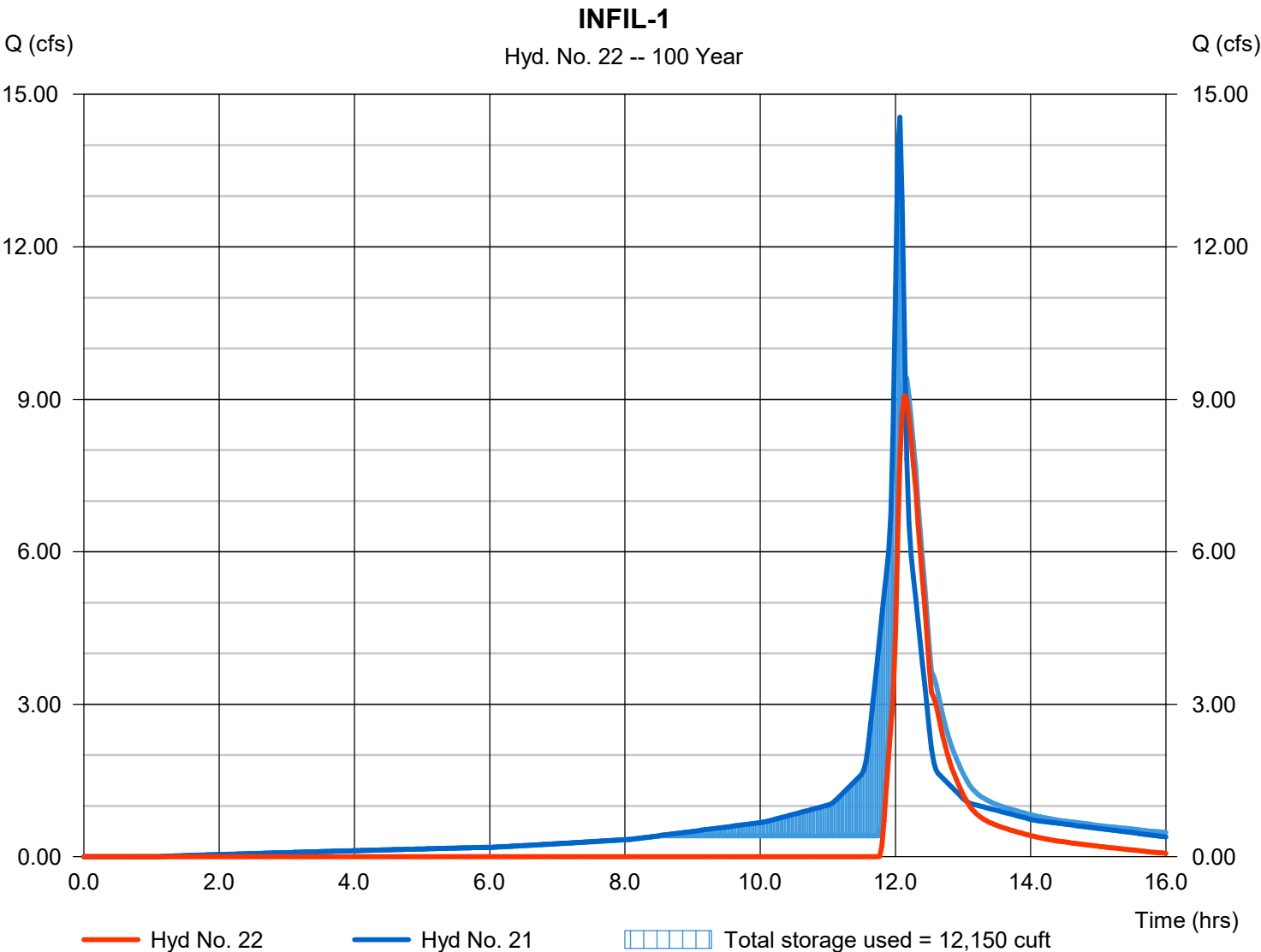
INFIL-1

Hyd. No. 22 -- 100 Year

Legend: Hyd No. 22 — Hyd No. 21 — Total storage used = 12,150 cuft

Hydrograph Report

Hyd. No. 23

<no description>

Hydrograph type	= Combine		Peak discharge	= 18.90 cfs
Storm frequency	= 100 yrs		Time to peak	= 12.17 hrs
Time interval	= 2 min		Hyd. volume	= 92,063 cuft
Inflow hyds.	= 2, 3, 15, 19		Contrib. drain. area	= 0.689 ac
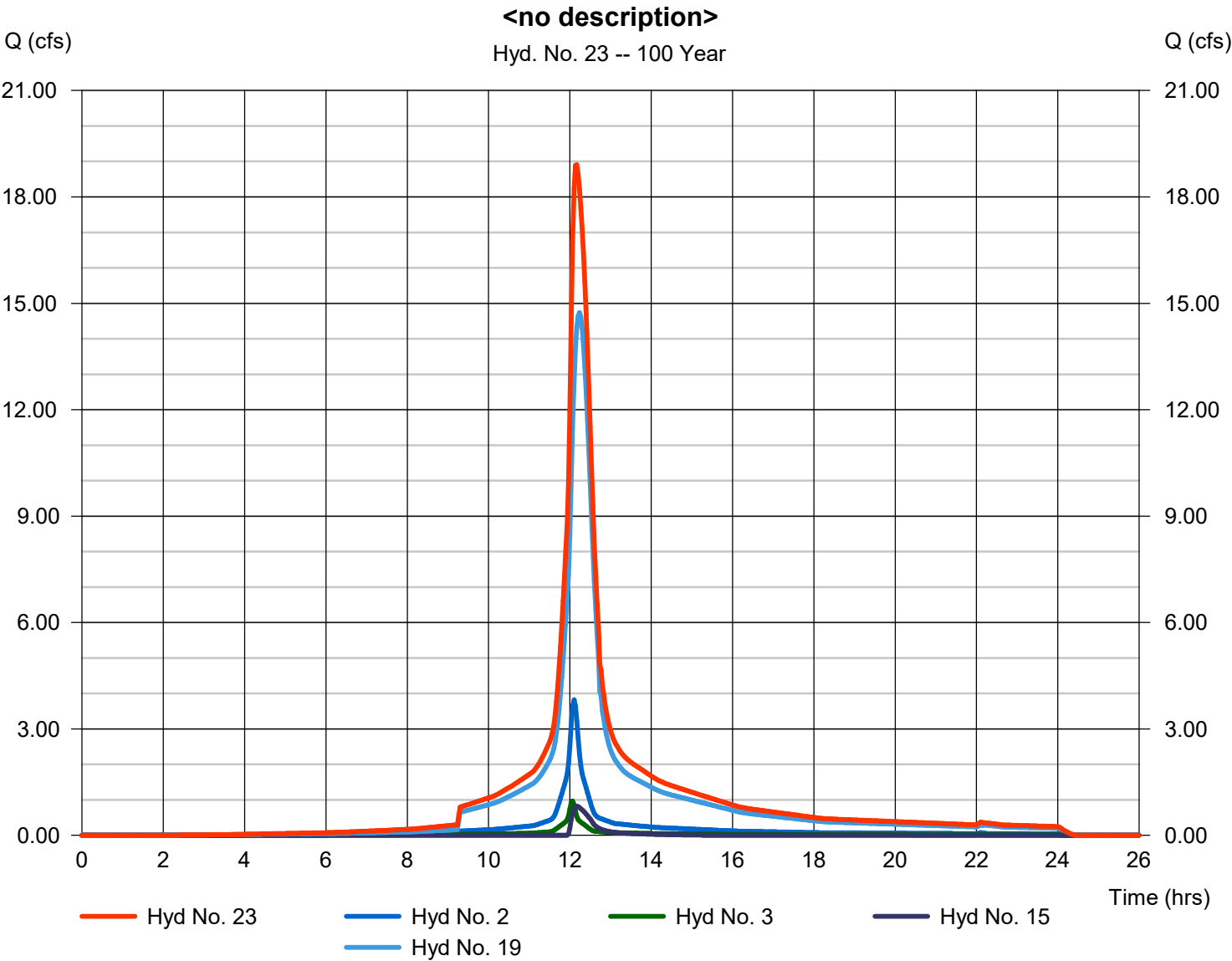
<no description>

Hyd. No. 23 -- 100 Year

Hydrograph Report

　　　　　　　　　Thursday, 04 / 4 / 2024

Hyd. No. 24

<no description>

Hydrograph type	= Combine		Peak discharge	= 11.25 cfs
Storm frequency	= 100 yrs		Time to peak	= 12.20 hrs
Time interval	= 2 min		Hyd. volume	= 101,553 cuft
Inflow hyds.	= 13, 17, 18, 20		Contrib. drain. area	= 4.837 ac
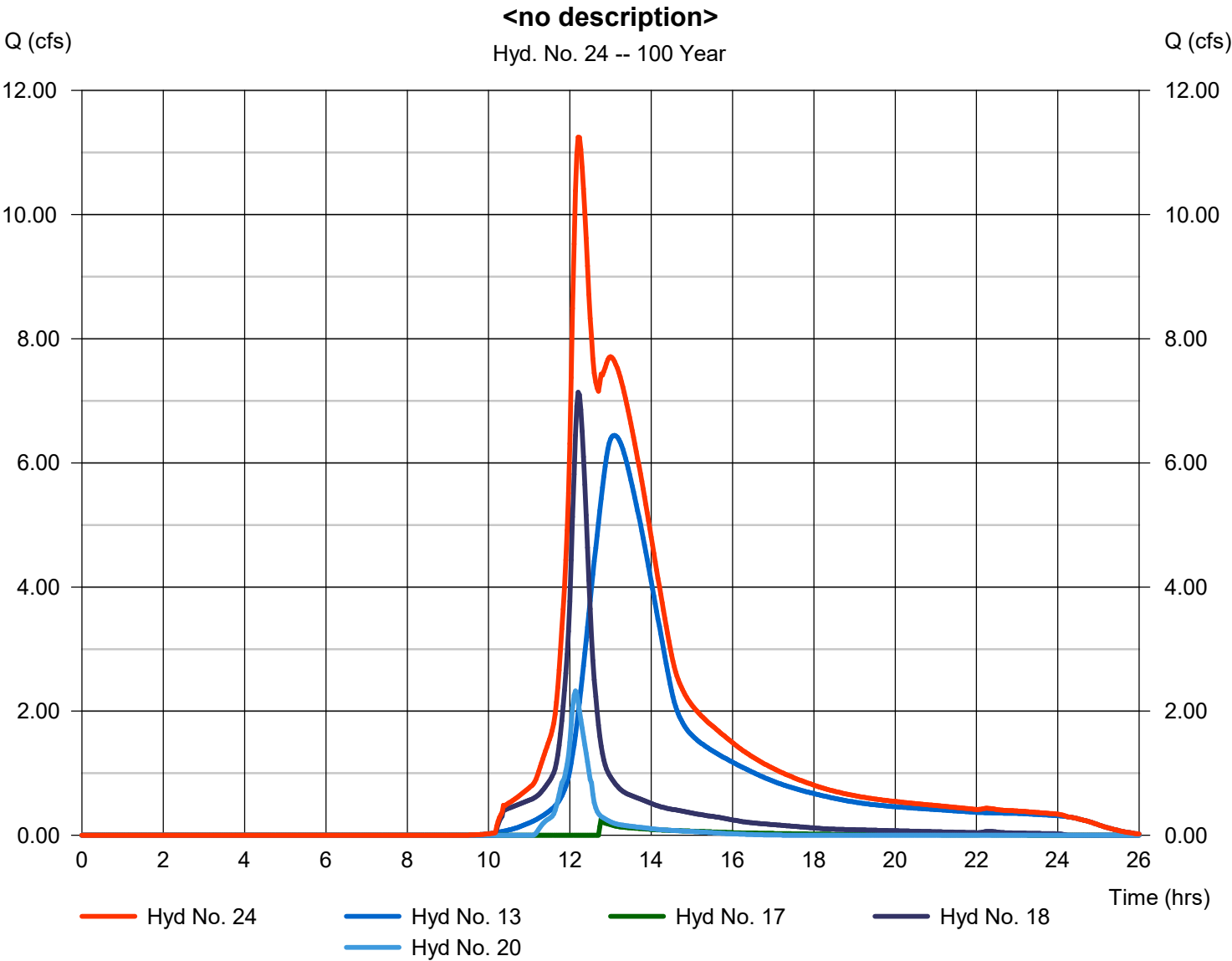
<no description>

Hyd. No. 24 -- 100 Year

Q (cfs)　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　Q (cfs)

Time (hrs)

—— Hyd No. 24　　—— Hyd No. 13　　—— Hyd No. 17　　—— Hyd No. 18
—— Hyd No. 20

Hydrograph Report

Hyd. No. 25

<no description>

Hydrograph type	= Combine		Peak discharge	= 45.00 cfs
Storm frequency	= 100 yrs		Time to peak	= 12.13 hrs
Time interval	= 2 min		Hyd. volume	= 232,805 cuft
Inflow hyds.	= 16, 22, 23, 24		Contrib. drain. area	= 0.000 ac

<no description>
Hyd. No. 25 -- 100 Year

Q (cfs)

Time (hrs)

Hyd No. 25   Hyd No. 16   Hyd No. 22   Hyd No. 23
Hyd No. 24

Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	**D**	**E**	**(N/A)**
1	0.0000	0.0000	0.0000	--------
2	23.2694	3.7000	0.7019	--------
3	0.0000	0.0000	0.0000	--------
5	28.1517	3.6000	0.6982	--------
10	33.4115	3.8000	0.7042	--------
25	38.5092	3.6000	0.6982	--------
50	42.7840	3.6000	0.6957	--------
100	48.0560	3.6000	0.6997	--------

File name: WILTON.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	**10**	**15**	**20**	**25**	**30**	**35**	**40**	**45**	**50**	**55**	**60**
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	5.10	3.71	2.98	2.52	2.21	1.97	1.79	1.64	1.52	1.42	1.33	1.26
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.27	4.55	3.66	3.10	2.71	2.42	2.20	2.02	1.87	1.75	1.64	1.55
10	7.22	5.26	4.23	3.58	3.13	2.80	2.54	2.33	2.16	2.02	1.90	1.79
25	8.57	6.22	5.00	4.24	3.70	3.31	3.00	2.76	2.56	2.39	2.24	2.12
50	9.57	6.96	5.60	4.74	4.15	3.71	3.37	3.09	2.87	2.68	2.52	2.38
100	10.66	7.74	6.22	5.26	4.60	4.11	3.73	3.43	3.17	2.96	2.79	2.63

Tc = time in minutes. Values may exceed 60.

Precip. file name: J:\T\T5000 Toll Brothers\012 Woodbridge Village\Calculations\Stormwater\WOODBRIDGE.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	**2-yr**	**3-yr**	**5-yr**	**10-yr**	**25-yr**	**50-yr**	**100-yr**
SCS 24-hour	2.95	3.52	0.00	4.65	5.38	6.54	7.41	8.34
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hydraflow Table of Contents

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021   Thursday, 04 / 4 / 2024

25 - Year

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Contents continued… J:\F\F0173 Fuller\001 64 Danbury Rd\Calculations\Stormwater___Town Comments-2024\Proposed-Hydraflow.gpw

Contents continued… J:\F\F0173 Fuller\001 64 Danbury Rd\Calculations\Stormwater___Town Comments-2024\Proposed-Hydraflow.gpw

Tighe&Bond

APPENDIX E

64 DANBURY ROAD
WILTON, CT

INLET WATERSHED FIGURE

DATE: 04/04/2024

SCALE: 1"=150'

FIGURE INLET-WS

Tighe&Bond

LEGEND

WATERSHED BOUNDARY

TIME OF CONCENTRATION

PAVEMENT/ROOF

LANDSCAPED AND LAWNS

WOODED

SCALE: 1" = 150'

0   150'   300'

EX-WETLANDS

Labels:
CB-02, YD-09, YD-02, YD-10, YD-11, YD-12, CB-08, YD-13, YD-01, CB-01, CB-10, YD-05, WQS-03, CB-09, AD-02, WQS-02A, AD-04, WQS-02B

CB-04, CB-03, YD-03, YD-04, EX-CB-04, EX-CB-03, CB-11, CB-05, YD-07, YD-06, EX-AD, EX-CB-01, EX-CB-02, CB-07, CB-06, YD-08, AD-01, AD-03, WQS-01B

GRUMMAN HILL ROAD

HOLLYHOCK ROAD

DANBURY ROAD (ROUTE 7)

Tighe & Bond: J:\F\F0173 Fuller\001 64 Danbury Rd\Calculations\Stormwater\Figures\F0173-001-INLET-WS-FIGURE.dwg

Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Proposed C & Tc Calculations**
Prepared By: **AVC**   Date: **April 4, 2023**

Designation: **CB-01**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.070	0.90	0.063
Landscaped / Lawns	0.003	0.30	0.001
	0.073		0.064

Weighted C: **0.87**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.015	75	0.020	1.2

Total Tc =   1.2
Minimum Tc =   **5.0**

Designation: **CB-02**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.274	0.90	0.247
Landscaped / Lawns	0.076	0.30	0.023
	0.350		0.270

Weighted C: **0.77**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	5	0.020	1.28
Segment B - C	0.015	143	0.040	1.54

Total Tc =   2.8
Minimum Tc =   **5.0**

Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Proposed C & Tc Calculations**
Prepared By: **AVC** Date: **April 4, 2023**

Designation: **CB-03**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.133	0.90	0.120
Landscaped / Lawns	0.004	0.30	0.001
	0.137		0.121

Weighted C: **0.88**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	10	0.02	2.23
Segment B - C	0.015	135	0.03	1.65

Total Tc = 3.9
Minimum Tc = **5.0**

Note: Overland time of concentration computed using "Kinematic Wave" equation
Gutter and pipe time of concentration computed using Manning's equation

Designation: **CB-04**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.113	0.90	0.102
Landscaped / Lawns	0.082	0.30	0.025
	0.195		0.126

Weighted C: **0.65**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.4	52	0.11	6.34
Segment B - C	0.24	3	0.11	0.43
Segment C - D	0.015	43	0.04	0.59

Total Tc = 7.4

Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Proposed C & Tc Calculations**
Prepared By: **AVC**   Date: **April 4, 2023**

Designation: **CB-05**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.132	0.90	0.119
Landscaped / Lawns	0.001	0.30	0.000
	0.133		0.119

Weighted C: **0.90**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.015	35	0.045	0.5

Total Tc =   0.5
Minimum Tc =   5.0

Designation: **CB-06**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.346	0.90	0.312
Landscaped / Lawns	0.045	0.30	0.013
	0.391		0.325

Weighted C: **0.83**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.015	95	0.065	0.9
Segment B - C	0.015	35	0.020	0.7

Total Tc =   1.6
Minimum Tc =   5.0

Note: Overland time of concentration computed using "Kinematic Wave" equation
         Gutter and pipe time of concentration computed using Manning's equation

Designation: **CB-07**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.270	0.90	0.243
Landscaped / Lawns	0.001	0.30	0.000
	0.270		0.243

Weighted C: **0.90**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.015	35	0.020	0.7

Total Tc =   **0.7**
Minimum Tc =   **5.0**

Designation: **CB-08**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.088	0.90	0.079
Landscaped / Lawns	0.003	0.30	0.001
	0.092		0.080

Weighted C: **0.88**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.015	105	0.025	1.5

Total Tc =   **1.5**
Minimum Tc =   **5.0**

Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Proposed C & Tc Calculations**
Prepared By: **AVC**   Date: **April 4, 2023**

Designation: **CB-09**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.101	0.90	0.091
Landscaped / Lawns	0.056	0.30	0.017
	0.158		0.108

Weighted C: 0.69

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	20	0.05	2.69
Segment B - C	0.015	32	0.04	0.47

Total Tc =   3.2
Minimum Tc =   5.0

Note: Overland time of concentration computed using "Kinematic Wave" equation
Gutter and pipe time of concentration computed using Manning's equation

Designation: **CB-10**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.120	0.90	0.108
Landscaped / Lawns	0.035	0.30	0.010
	0.155		0.118

Weighted C: 0.77

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.015	185	0.065	1.6

Total Tc =   1.6
Minimum Tc =   5.0

Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Proposed C & Tc Calculations**
Prepared By: **AVC**   Date: **April 4, 2023**

Designation: **CB-11**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.271	0.90	0.244
Landscaped / Lawns	0.000	0.30	0.000
	0.271		0.244

Weighted C: 0.90

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	**Surface "n"**	**Flow Length (ft.)**	**Slope (ft/ft)**	**Time (min.)**
Segment A - B	0.015	35	0.045	0.5

Total Tc =   0.5
Minimum Tc =   5.0

Designation: **WQS-01B**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.342	0.90	0.308
Landscaped / Lawns	0.004	0.30	0.001
	0.346		0.309

Weighted C: 0.89

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	**Surface "n"**	**Flow Length (ft.)**	**Slope (ft/ft)**	**Time (min.)**
Segment A - B	0.015	60	0.020	1.0

Total Tc =   1.0
Minimum Tc =   5.0

Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Proposed C & Tc Calculations**
Prepared By: **AVC** Date: **April 4, 2023**

Designation: **WQS-02A**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.132	0.90	0.119
Landscaped / Lawns	0.034	0.30	0.010
	0.165		0.129

Weighted C: **0.78**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	13	0.020	2.7
Segment B - C	0.015	55	0.020	0.9

Total Tc = **3.7**
Minimum Tc = **5.0**

Note: Overland time of concentration computed using "Kinematic Wave" equation
Gutter and pipe time of concentration computed using Manning's equation

Designation: **WQS-02B**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.107	0.90	0.096
Landscaped / Lawns	0.042	0.30	0.012
	0.148		0.109

Weighted C: **0.73**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	7	0.020	1.7
Segment B - C	0.015	49	0.020	0.9

Total Tc = 2.5
Minimum Tc = **5.0**

Note: Overland time of concentration computed using "Kinematic Wave" equation
Gutter and pipe time of concentration computed using Manning's equation

Tighe&Bond
Engineers | Environmental Specialists

Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Proposed C & Tc Calculations**
Prepared By: **AVC**   Date: **April 4, 2023**

Designation: **WQS-04**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.178	0.90	0.160
Landscaped / Lawns	0.024	0.30	0.007
	0.203		0.168

Weighted C: **0.83**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	**Surface "n"**	**Flow Length (ft.)**	**Slope (ft/ft)**	**Time (min.)**
Segment A - B	0.24	22	0.02	4.18
Segment B - C	0.015	44	0.02	0.79

Total Tc =   5.0
Minimum Tc =   **5.0**

Designation: **YD-01**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.084	0.90	0.075
Landscaped / Lawns	0.005	0.30	0.002
	0.089		0.077

Weighted C: **0.87**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	**Surface "n"**	**Flow Length (ft.)**	**Slope (ft/ft)**	**Time (min.)**
Segment A - B	0.24	13	7.600	0.3

Total Tc =   0.3
Minimum Tc =   **5.0**

Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Proposed C & Tc Calculations**
Prepared By: **AVC**   Date: **April 4, 2023**

Designation: **YD-02**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.195	0.90	0.175
Landscaped / Lawns	0.008	0.30	0.002
	0.203		0.178

Weighted C: 0.88

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	10	0.020	2.1
Segment B - C	0.015	15	0.020	0.3
Segment C - D	0.24	6	0.020	1.5

Total Tc =   4.0
Minimum Tc =   5.0

Note: Overland time of concentration computed using "Kinematic Wave" equation

Gutter and pipe time of concentration computed using Manning's equation

Designation: **YD-03**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.005	0.90	0.004
Landscaped / Lawns	0.012	0.30	0.003
	0.016		0.008

Weighted C: 0.47

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	25	0.020	4.6

Total Tc =   4.6
Minimum Tc =   5.0

Designation: **YD-04**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.005	0.90	0.004
Landscaped / Lawns	0.012	0.30	0.004
	0.017		0.008

Weighted C: **0.47**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	25	0.020	4.6

Total Tc =   4.6
Minimum Tc =   5.0

Designation: **YD-05**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.000	0.90	0.000
Landscaped / Lawns	0.006	0.30	0.002
	0.006		0.002

Weighted C: **0.30**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	20	0.050	2.7

Total Tc =   2.7
Minimum Tc =   5.0

Note: Overland time of concentration computed using "Kinematic Wave" equation
Gutter and pipe time of concentration computed using Manning's equation

Tighe&Bond
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Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Proposed C & Tc Calculations**
Prepared By: **AVC** Date: **April 4, 2023**

Designation: **YD-06**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.015	0.90	0.013
Landscaped / Lawns	0.042	0.30	0.013
	0.057		0.026

Weighted C: **0.46**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	25	0.075	2.7

Total Tc = **2.7**
Minimum Tc = **5.0**

Designation: **YD-07**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.015	0.90	0.014
Landscaped / Lawns	0.053	0.30	0.016
	0.068		0.029

Weighted C: **0.43**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	25	0.075	2.7

Total Tc = 2.7
Minimum Tc = **5.0**

Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Proposed C & Tc Calculations**
Prepared By: **AVC**   Date: **April 4, 2023**

Designation: **YD-08**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.003	0.90	0.002
Landscaped / Lawns	0.011	0.30	0.003
	0.013		0.006

Weighted C: **0.42**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	18	0.020	3.6

Total Tc =   3.6
Minimum Tc =   5.0

Note: Overland time of concentration computed using "Kinematic Wave" equation
          Gutter and pipe time of concentration computed using Manning's equation

Designation: **YD-09**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.006	0.90	0.006
Landscaped / Lawns	0.024	0.30	0.007
	0.030		0.013

Weighted C: **0.43**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	34	0.020	5.9

Total Tc =   5.9

Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Proposed C & Tc Calculations**
Prepared By: **AVC**   Date: **April 4, 2023**

Designation: **YD-10**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.008	0.90	0.007
Landscaped / Lawns	0.076	0.30	0.023
	0.084		0.030

Weighted C: 0.36

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	61	0.020	9.5

Total Tc =   9.5

Note: Overland time of concentration computed using "Kinematic Wave" equation
Gutter and pipe time of concentration computed using Manning's equation

Designation: **YD-11**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.004	0.90	0.004
Landscaped / Lawns	0.033	0.30	0.010
	0.037		0.013

Weighted C: 0.37

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	21	0.020	4.0

Total Tc =   4.0
Minimum Tc =   5.0

Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Proposed C & Tc Calculations**
Prepared By: **AVC**   Date: **April 4, 2023**

Designation: **YD-12**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.007	0.90	0.006
Landscaped / Lawns	0.048	0.30	0.014
	0.055		0.021

Weighted C: 0.38

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	47	0.040	5.8

Total Tc =   5.8

Designation: **YD-13**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.010	0.90	0.009
Landscaped / Lawns	0.035	0.30	0.010
	0.045		0.019

Weighted C: 0.43

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	50	0.020	8.1

Total Tc =   8.1

Note: Overland time of concentration computed using "Kinematic Wave" equation
          Gutter and pipe time of concentration computed using Manning's equation

Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Proposed C & Tc Calculations**
Prepared By: **AVC**   Date: **April 4, 2023**

Designation: **AD-01**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.019	0.90	0.017
Landscaped / Lawns	0.006	0.30	0.002
	0.025		0.019

Weighted C: **0.76**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	10	0.020	2.2
Segment B - C	0.015	13	0.020	0.3

Total Tc = 2.5
Minimum Tc = **5.0**

Designation: **AD-02**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.011	0.90	0.010
Landscaped / Lawns	0.008	0.30	0.002
	0.019		0.012

Weighted C: **0.65**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	13	0.020	2.7
Segment B - C	0.015	6	0.020	0.2

Total Tc = 2.9
Minimum Tc = **5.0**

Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Proposed C & Tc Calculations**
Prepared By: **AVC**   Date: **April 4, 2023**

Designation: **AD-03**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.025	0.90	0.022
Landscaped / Lawns	0.002	0.30	0.000
	0.026		0.023

Weighted C: 0.86

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.015	35	0.020	0.7

Total Tc =   0.7
Minimum Tc =   5.0

Note: Overland time of concentration computed using "Kinematic Wave" equation
Gutter and pipe time of concentration computed using Manning's equation

Designation: **AD-04**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.014	0.90	0.013
Landscaped / Lawns	0.006	0.30	0.002
	0.020		0.014

Weighted C: 0.72

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.015	14	0.020	0.3

Total Tc =   0.3
Minimum Tc =   5.0

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Engineers | Environmental Specialists

Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Proposed C & Tc Calculations**
Prepared By: **AVC**   Date: **April 4, 2023**

Designation: **EX-CB-01**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.052	0.90	0.047
Landscaped / Lawns	0.013	0.30	0.004
	0.064		0.050

Weighted C: **0.78**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	13	0.020	2.7
Segment B - C	0.015	35	0.020	0.7

Total Tc =   3.4
Minimum Tc =   5.0

Designation: **EX-CB-02**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.149	0.90	0.134
Landscaped / Lawns	0.087	0.30	0.026
	0.236		0.160

Weighted C: **0.68**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	31	0.025	5.04

Total Tc =   5.0

Tighe&Bond
Engineers | Environmental Specialists

Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Proposed C & Tc Calculations**
Prepared By: **AVC**   Date: **April 4, 2023**

Designation: **EX-CB-03**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.010	0.90	0.009
Landscaped / Lawns	0.048	0.30	0.014
	0.058		0.023

Weighted C: **0.40**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	45	0.133	3.48

Total Tc =   3.5
Minimum Tc =   5.0

Designation: **EX-CB-04**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.013	0.90	0.012
Landscaped / Lawns	0.070	0.30	0.021
	0.084		0.033

Weighted C: **0.40**

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	15	0.1	1.62

Shallow Concentrated Flow				
Segment		Slope (ft/ft)	V (ft/s)	Length (ft)	Time (min.)
Segment B - C	unpaved	0.045	3.42	125	0.6
Segment C - D	unpaved	0.150	6.25	125	0.3

Total Tc =   2.6
Minimum Tc =   5.0

Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Proposed C & Tc Calculations**
Prepared By: **AVC**   Date: **April 4, 2023**

Designation: **EX-AD**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.009	0.90	0.009
Landscaped / Lawns	0.047	0.30	0.014
	0.057		0.023

Weighted C: 0.40

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.24	40	0.020	6.8

Total Tc =   6.8

Designation: **EX-WETLANDS**

Cover Type	Area, ac	Coef.	A x C
Hardscape / Roof	0.358	0.90	0.320
Landscaped / Lawns	4.479	0.30	1.321
	4.837		1.642

Weighted C: 0.34

Time of Concentration
(computed in accordance with ConnDOT Drainage Manual, Sec. 6C)

Overland				
Segment	Surface "n"	Flow Length (ft.)	Slope (ft/ft)	Time (min.)
Segment A - B	0.4	182	0.09	18.71
Segment B - C	0.24	63	0.03	8.26
Segment C - D	0.015	11	0.015	0.29
Segment D - E	0.24	27	0.015	5.53
Segment E - F	0.015	28	0.015	0.62
Segment F - G	0.24	62	0.1	5.04
Segment G - H	0.4	198	0.15	16.31

Total Tc   =   54.8   Min.
0.91   Hrs.
Total Lag =   0.68   Hrs.

Note: Overland time of concentration computed using "Kinematic Wave" equation
Gutter and pipe time of concentration computed using Manning's equation

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	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	29.111	0.05	0.26	0.43	0.02	0.10	8.1	10.6	6.0	0.61	4.02	3.38	8	9.45	146.00	148.75	146.32	149.12	147.00	152.50	Pipe - (58)
2	1	56.500	0.06	0.21	0.38	0.02	0.08	5.8	10.3	6.1	0.49	1.33	2.67	8	1.03	148.75	149.33	149.12	149.66	152.50	152.50	Pipe - (57)
3	2	71.800	0.04	0.15	0.37	0.01	0.06	5.0	9.8	6.3	0.36	2.15	2.35	8	2.69	149.33	151.26	149.66	151.54	152.50	154.50	Pipe - (56)
4	3	34.280	0.08	0.11	0.36	0.03	0.04	9.5	9.5	6.4	0.27	1.30	2.16	8	0.99	151.26	151.60	151.54	151.84	154.50	155.00	Pipe - (55)
5	4	20.718	0.00	0.03	0.00	0.00	0.01	0.0	6.4	7.7	0.10	1.32	1.34	8	1.01	151.60	151.81	151.84	151.95	155.00	156.00	Pipe - (115)
6	5	19.047	0.00	0.03	0.00	0.00	0.01	0.0	6.3	7.8	0.10	1.31	1.82	8	1.00	151.81	152.00	151.95	152.14	156.00	156.00	Pipe - (114)
7	6	40.198	0.03	0.03	0.43	0.01	0.01	5.9	5.9	8.0	0.10	1.31	1.84	8	1.00	152.00	152.40	152.14	152.55	156.00	155.60	Pipe - (113)
8	End	87.828	0.00	5.47	0.00	0.00	2.02	0.0	100.1	1.5	150.6	150.8	10.33	54	0.50	127.96	128.40	131.90	132.22	135.80	138.10	Pipe - (121)
9	8	243.249	0.00	5.47	0.00	0.00	2.02	0.0	99.7	1.5	140.6	149.6	8.84	54	0.49	128.80	130.00	133.68	134.74	138.10	139.90	Pipe - (120)
10	9	109.653	0.00	5.47	0.00	0.00	2.02	0.0	99.5	1.5	134.5	128.7	8.46	54	0.36	130.20	130.60	135.84	136.28	139.90	142.00	Pipe - (119)
11	10	120.483	0.00	5.47	0.00	0.00	2.02	0.0	98.1	1.5	14.25	108.8	1.48	42	1.00	131.80	133.00	137.39	137.41	142.00	140.19	Pipe - (118)
12	11	43.869	0.00	5.33	0.00	0.00	1.96	0.0	97.6	1.5	14.17	83.91	1.47	42	0.59	133.00	133.26	137.44	137.45	140.19	142.33	Pipe - (117)
13	12	46.296	0.00	5.33	0.00	0.00	1.96	0.0	96.8	1.5	3.01	52.06	0.96	24	4.51	133.41	135.50	137.48	137.49	142.33	145.00	Pipe - (26)
14	13	38.468	0.00	5.19	0.00	0.00	1.90	0.0	96.5	1.5	2.93	51.96	2.33	24	4.50	135.50	137.23	137.50	137.83	145.00	147.80	Pipe - (25)
15	14	115.000	0.00	5.19	0.00	0.00	1.90	0.0	96.0	1.5	2.94	51.90	3.73	24	4.49	137.23	142.39	137.83	142.99	147.80	152.20	Pipe - (24)
16	15	13.578	0.19	0.36	0.65	0.12	0.26	7.4	7.4	7.2	1.85	51.93	2.81	24	4.49	142.39	143.00	142.99	143.47	152.20	152.00	Pipe - (23)
17	16	93.648	0.13	0.13	0.88	0.11	0.11	5.0	5.0	8.6	0.98	3.87	3.64	12	1.00	147.56	148.50	147.90	148.92	152.00	152.00	Pipe - (22)
18	16	19.814	0.02	0.04	0.47	0.01	0.02	5.0	5.6	8.2	0.15	3.88	2.14	12	1.01	144.80	145.00	144.94	145.16	152.00	149.00	Pipe - (28)
19	18	49.936	0.02	0.02	0.47	0.01	0.01	5.0	5.0	8.6	0.08	3.86	1.29	12	1.00	145.00	145.50	145.16	145.62	149.00	149.00	Pipe - (27)
20	11	11.297	0.07	0.14	0.43	0.03	0.06	5.0	6.9	7.4	0.45	3.98	0.58	12	1.06	136.25	136.37	137.44	137.44	140.19	139.90	Pipe - (106)
21	20	58.106	0.06	0.07	0.46	0.03	0.03	5.0	6.1	7.9	0.24	4.96	1.20	12	1.65	136.37	137.33	137.45	137.53	139.90	140.90	Pipe - (59)
22	21	26.816	0.00	0.01	0.00	0.00	0.00	0.0	5.5	8.3	0.02	5.11	0.68	12	1.75	137.33	137.80	137.57	137.86	140.90	142.00	Pipe - (72)

Project File: F0173-001-Stormsewers.stm   Number of lines: 62   Run Date: 4/4/2024

NOTES:Intensity = 38.51 / (Inlet time + 3.60) ^ 0.70; Return period =Yrs. 25 ; c = cir e = ellip b = box

Storm Sewers v2021.00

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	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)	
23	22	2.804	0.00	0.01	0.00	0.00	0.00	0.0	5.4	8.3	0.02	3.99	1.18	12	1.07	137.80	137.83	137.86	137.89	142.00	142.00	Pipe - (73)
24	23	27.512	0.01	0.01	0.30	0.00	0.00	5.0	5.0	8.6	0.03	3.89	1.09	12	1.02	137.82	138.10	137.89	138.17	142.00	141.60	Pipe - (62)
25	9	27.900	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.49	1.00	4.16	6	2.69	136.00	136.75	136.25	137.11	139.90	140.39	Pipe - (46)
26	9	29.650	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	5.63	11.64	7.25	12	9.11	133.30	136.00	135.84	136.94	139.90	140.15	Pipe - (98)
27	8	18.166	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	6.15	6.96	6.12	15	0.99	134.32	134.50	135.23	135.50	138.10	138.50	Pipe - (86)
28	12	27.974	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	11.17	77.10	1.16	42	0.50	133.26	133.40	137.48	137.48	142.33	141.20	Pipe - (116)
29	10	18.394	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	120.3	149.0	7.56	54	0.49	131.80	131.89	137.39	137.45	142.00	142.20	Pipe - (122)
30	13	32.000	0.06	0.14	0.40	0.02	0.06	5.0	15.1	5.0	0.28	14.22	0.16	18	1.56	134.50	135.00	137.50	137.50	145.00	141.00	
31	30	44.000	0.08	0.08	0.40	0.03	0.03	12.1	12.1	5.6	0.19	4.11	0.24	12	1.14	135.10	135.60	137.50	137.50	141.00	141.30	
32	8	28.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	1.85	1.31	5.30	8	1.00	133.22	133.50	133.89	134.45	138.10	137.70	Pipe - (82)
33	15	49.500	0.00	4.83	0.00	0.00	1.64	0.0	95.8	1.6	2.55	54.07	3.41	24	4.87	142.39	144.80	142.99	145.36	152.20	154.00	
34	33	168.000	4.83	4.83	0.34	1.64	1.64	95.0	95.0	1.6	2.56	47.07	3.59	24	3.69	144.80	151.00	145.36	151.56	154.00	155.50	
35	End	125.000	0.00	1.38	0.00	0.00	1.16	0.0	6.2	7.8	9.07	9.07	8.02	15	1.68	135.35	137.45	136.38	138.61	139.10	141.10	Pipe - (107)
36	35	68.500	0.16	1.38	0.77	0.12	1.16	5.0	6.1	7.9	9.17	11.02	7.73	15	2.48	137.45	139.15	138.61	140.31	141.10	142.90	Pipe - (107)(2)
37	36	80.000	0.00	1.22	0.00	0.00	1.04	0.0	5.9	8.0	8.27	8.41	10.79	12	4.75	139.40	143.20	140.31	144.19	142.90	146.80	Pipe - (12)
38	37	27.200	0.35	0.82	0.77	0.27	0.68	5.0	5.9	8.0	5.43	6.10	7.94	12	2.50	143.72	144.40	144.45	145.34	146.80	147.90	Pipe - (12)(2)
39	38	74.000	0.09	0.47	0.88	0.08	0.41	5.0	5.6	8.2	3.34	5.11	4.72	12	1.76	144.40	145.70	145.34	146.48	147.90	152.40	
40	39	61.000	0.07	0.16	0.87	0.06	0.14	5.0	5.4	8.3	1.16	3.86	3.82	12	1.00	146.89	147.50	147.27	147.95	152.40	151.00	
41	40	52.300	0.09	0.09	0.87	0.08	0.08	5.0	5.0	8.6	0.67	7.71	2.39	12	4.00	147.50	149.59	147.95	149.93	151.00	153.00	
42	39	62.000	0.02	0.22	0.72	0.01	0.19	5.0	5.1	8.5	1.62	6.68	5.38	12	3.00	148.78	150.64	149.12	151.18	152.40	154.00	
43	42	16.300	0.20	0.20	0.88	0.18	0.18	5.0	5.0	8.6	1.51	3.82	3.57	12	0.98	150.64	150.80	151.18	151.32	154.00	154.30	
44	37	38.400	0.27	0.40	0.90	0.24	0.36	5.0	5.4	8.3	3.00	3.89	4.32	12	1.02	143.20	143.59	144.19	144.33	146.80	147.60	Pipe - (93)
45	44	51.421	0.13	0.13	0.90	0.12	0.12	5.0	5.0	8.6	1.00	3.84	2.40	12	0.99	143.59	144.10	144.33	144.52	147.60	147.60	Pipe - (17)
46	End	5.195	0.20	0.20	0.83	0.17	0.17	5.0	5.0	8.6	1.42	3.78	4.03	12	0.96	136.45	136.50	136.87	137.00	140.50	140.00	Pipe - (76)
47	End	8.312	0.00	1.02	0.00	0.00	0.80	0.0	8.8	6.6	5.31	6.28	6.97	12	2.65	134.20	134.42	135.13	135.35	140.00	140.00	Pipe - (128)
48	47	13.266	0.00	1.02	0.00	0.00	0.80	0.0	8.8	6.6	5.32	6.18	7.09	12	2.56	134.46	134.80	135.35	135.73	140.00	140.20	Pipe - (127)
49	48	17.753	0.00	1.02	0.00	0.00	0.80	0.0	8.7	6.7	5.34	7.64	4.64	18	0.45	134.80	134.88	135.73	135.81	140.20	140.00	Pipe - (126)

Project File: F0173-001-Stormsewers.stm	Number of lines: 62	Run Date: 4/4/2024

NOTES: Intensity = 38.51 / (Inlet time + 3.60) ^ 0.70; Return period =Yrs. 25 ; c = cir e = ellip b = box

Storm Sewers v2021.00

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	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)	
50	49	21.322	0.27	0.66	0.90	0.24	0.57	5.0	5.2	8.4	4.79	6.89	6.25	12	3.19	134.90	135.58	136.14	136.48	140.00	139.60	Pipe - (32)
51	50	51.579	0.39	0.39	0.83	0.32	0.32	5.0	5.0	8.6	2.78	3.87	4.18	12	1.01	135.58	136.10	136.48	136.81	139.60	139.60	Pipe - (31)
52	49	49.833	0.24	0.36	0.68	0.16	0.23	5.0	8.3	6.8	1.59	2.56	2.03	12	0.44	134.88	135.10	136.14	136.23	140.00	138.60	Pipe - (125)
53	52	80.288	0.06	0.06	0.78	0.05	0.05	5.0	5.0	8.6	0.43	3.60	0.77	12	0.87	135.10	135.80	136.32	136.33	138.60	138.60	Pipe - (123)
54	52	52.042	0.06	0.06	0.40	0.02	0.02	6.8	6.8	7.5	0.17	5.07	0.49	12	1.73	135.10	136.00	136.32	136.33	138.60	139.10	Pipe - (124)
55	End	5.000	0.35	0.46	0.89	0.31	0.39	5.0	6.3	7.8	3.05	14.64	4.36	12	14.40	133.20	133.92	134.50	134.67	139.40	138.00	Pipe - (38)
56	55	22.641	0.03	0.11	0.86	0.03	0.08	5.0	6.1	7.9	0.63	3.89	1.89	12	1.02	133.91	134.14	134.67	134.47	138.00	138.74	Pipe - (37)
57	56	66.235	0.03	0.06	0.76	0.02	0.04	5.0	5.5	8.2	0.33	3.85	1.89	12	1.00	134.14	134.80	134.47	135.04	138.74	138.79	Pipe - (36)
58	57	6.823	0.00	0.01	0.00	0.00	0.00	0.0	5.4	8.3	0.03	3.91	0.82	12	1.03	134.85	134.92	135.04	135.00	138.79	138.80	Pipe - (92)
59	58	7.053	0.00	0.01	0.00	0.00	0.00	0.0	5.3	8.4	0.04	3.84	1.29	12	0.99	134.92	134.99	135.00	135.07	138.80	138.80	Pipe - (91)
60	59	21.252	0.01	0.01	0.42	0.00	0.00	5.0	5.0	8.6	0.04	3.83	1.31	12	0.99	134.99	135.20	135.07	135.28	138.80	138.70	Pipe - (90)
61	57	19.655	0.02	0.02	0.65	0.01	0.01	5.0	5.0	8.6	0.11	3.89	1.26	12	1.02	134.80	135.00	135.04	135.14	138.79	138.50	Pipe - (39)
62	56	19.655	0.02	0.02	0.72	0.01	0.01	5.0	5.0	8.6	0.12	3.89	2.02	12	1.02	134.80	135.00	134.92	135.14	138.74	138.50	Pipe - (40)

Project File: F0173-001-Stormsewers.stm — Number of lines: 62 — Run Date: 4/4/2024

NOTES:Intensity = 38.51 / (Inlet time + 3.60) ^ 0.70; Return period =Yrs. 25 ; c = cir e = ellip b = box

Tighe&Bond
Engineers | Environmental Specialists

Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Riprap Apron Calculation**
Prepared By: **AVC**   Date: **April 4, 2024**

Riprap Apron

Invert Elevation =	146.00	ft	
Tailwater Elevation =	146.33	ft	
Tailwater Depth (TW) =	0.33	ft	
Inside Pipe Diameter (S_p) =	1.00	ft	
Pipe Discharge (Q) =	0.61	cfs	(From Hydraflow Model)
Outlet Velocity (V) =	0.34	ft/s	(From Hydraflow Model)

Apron Type

Type A Riprap Apron (Minimum Tailwater Condition) TW < $0.5R_p$

Type B Riprap Apron (Maximum Tailwater Condition) TW ≥ $0.5R_p$

TW = 146.33 < $0.5R_p$

$\boxed{\textbf{Use Type A Apron}}$
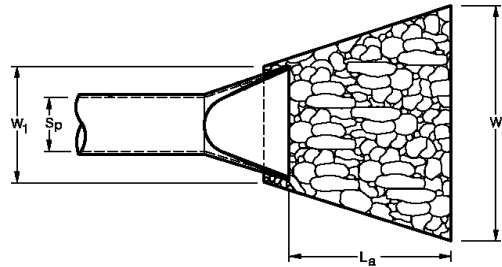
Apron Length

Type A Riprap Apron (Minimum Tailwater Condition) TW < $0.5R_p$

$L_a = (1.8(Q-5.0)/S_p^{1.5})+10.0$

$L_a=$	2.08	ft

Apron Width

Type A Riprap Apron (Minimum Tailwater Condition) TW < $0.5R_p$

$W_1 = 3*S_p$

$W_2 = 3*S_p+0.7L_a$

$W_1 =$	3.00	ft
$W_2 =$	4.46	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)=	0.338	ft/s	Use Modified Riprap

Outlet protection has been designed in accordance with the Section 11.13 of the ConnDOT Drainage Manual

Tighe&Bond
Consulting Engineers
Environmental Specialists

Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Level Spreader Calculation**
Prepared By: **AVC**   Date: **April 4, 2024**

Level Spreader

Flow for 10 Yr Storm=	0.61	CFS
Depth=	0.33	FT
Max Allowable Velocity	**0.5**	FPS
Length=	**3.69697**	FT
Proposed Length	**10**	FT

Calculated in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control Section 5-11

Temporary Sediment Trap 01

Sediment Storage Volume

Drainage Area	=	0.6	acres
Initial Storage Volume	=	134	cy/ac
Required Storage	=	**80**	**cy**
	=	2,171	cf
Min Wet Storage (1/2 Required Storage)	=	**1,085**	**cf**

Wet Storage Volume

$$V_w = 0.85 * A_w * D_w$$

V_w, Wet Storage Volume	=	**1314**	**cf**
D_w, Maximum Depth (Low Point in Trap to Base of Outlet)	=	2	ft
A_w, Surface Area of the Flooded Area at the Base of the Outlet	=	773	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	=	773	sf
A_d, Surface Area of the Flooded Area at the Top of the Outlet	=	1019	sf
D_d, Depth (Base to the top of the Outlet)	=	1	ft
V_d, Dry Storage Volume	=	**896**	**cf**

Provided Storage Volume

Wet Storage	=	1314	cf
	=	49	cy
Dry Storage	=	896	cf
	=	33	cy
Total Provided Storage	=	**2210**	**cf**
	=	**82**	**cy**

Calculated in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control Section 5-11

APPENDIX F

WQA-A

WQA-D

WQA-C

WQA-A

WQA-B

GRUMMAN HILL ROAD

HOLLYHOCK ROAD

DANBURY ROAD
(ROUTE 7)

LEGEND

WATERSHED BOUNDARY — — —

0   100'   200'
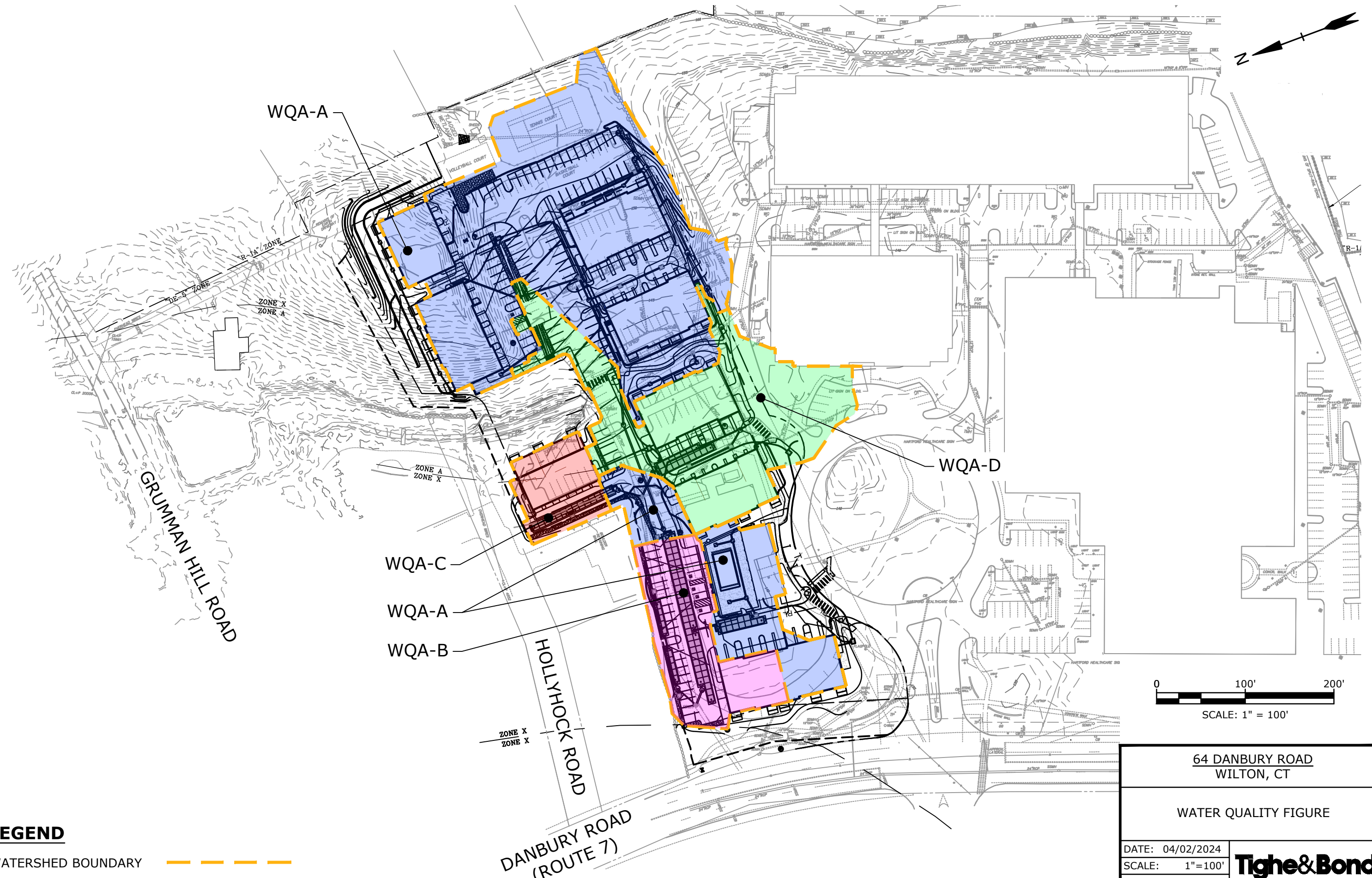
SCALE: 1" = 100'

<u>64 DANBURY ROAD</u>
WILTON, CT

WATER QUALITY FIGURE

DATE: 04/02/2024
SCALE: 1"=100'
FIGURE   WQF

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Environmental Specialists

WQA-A

Required Water Quality Volume (WQv)

Total Area in acres (A)	=	2.978
Impervious Area in acres	=	2.312
Pecent of Impervious Area (I)	=	78
Volumetric Runoff Coefficient (R)		

$$R = 0.05+0.009(I) \quad = \quad 0.749$$

$$WQv = \frac{(0.65")(R)(A)}{12} \quad = \quad 0.1208 \text{ ac*ft}$$
$$= \quad \boxed{5261 \text{ cf}}$$

6,035 CF PROVIDED

Required Water Quality Flow (WQf)

WQv (Ac*ft)	=	0.1208
Drainage Area (Ac)	=	2.978

$$Q = WQv*12 / DA \quad = \quad 0.487 \text{ in}$$

Runoff Depth in inches (Q)	=	0.487 in
Design Precipitation in inches (P)	=	1 in

$$CN=1000/[10+5*P+10Q-10*(Q^2+1.25QP)^{1/2}] \quad = \quad 94 \text{ CN}$$

From table 4-1 in chapter 4, TR-55

I_a	=	0.128 in
I_a / P	=	0.128

From Exhibit 4-11 in chapter 4, TR-55

q_u	=	620 csm/in

Unit peak discharge in csm/in (q_u)	=	620
Area in square miles (A)	=	0.00
Runoff Depth in inches (Q)	=	0.49

$$WQF=q_u*A*Q \quad = \quad 1.40 \text{ cfs}$$

CDS 2015-4-C Treatment Capacity = 1.40 cfs Provided

Calculated in accordance with the 2004 Connecticut Stormwater Quality Manual Sections 7.4.1 and 7.4.2

WQA-B

Required Water Quality Volume (WQv)

Total Area in acres (A)	=	0.434
Impervious Area in acres	=	0.357
Pecent of Impervious Area (I)	=	82
Volumetric Runoff Coefficient (R)		

$$R = 0.05+0.009(I) \quad = \quad 0.790$$

$$WQv = \frac{(0.65")(R)(A)}{12} \quad = \quad 0.0186 \text{ ac*ft}$$
$$= \boxed{809 \text{ cf}}$$

810 CF PROVIDED

Required Water Quality Flow (WQf)

WQv (Ac*ft)	=	0.0186
Drainage Area (Ac)	=	0.434

$$Q = WQv*12 / DA \quad = \quad 0.514 \text{ in}$$

Runoff Depth in inches (Q)	=	0.514 in
Design Precipitation in inches (P)	=	1 in

$$CN=1000/[10+5*P+10Q-10*(Q^2+1.25QP)^{1/2}] \quad = \quad 94 \text{ CN}$$

From table 4-1 in chapter 4, TR-55

I_a	=	0.128 in
I_a / P	=	0.128

From Exhibit 4-11 in chapter 4, TR-55

q_u	=	620 csm/in

Unit peak discharge in csm/in (q_u)	=	620
Area in square miles (A)	=	0.00
Runoff Depth in inches (Q)	=	0.51

$$WQF=q_u*A*Q \quad = \quad 0.22 \text{ cfs}$$

CDS 2015-4-C Treatment Capacity   =   1.40 cfs Provided

Calculated in accordance with the 2004 Connecticut Stormwater Quality Manual Sections 7.4.1 and 7.4.2

Tighe&Bond
Consulting Engineers
Environmental Specialists

Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Water Quality Calculations**
Prepared By: **AVC**   Date: **April 2, 2024**

WQA-C

Required Water Quality Volume (WQv)

Total Area in acres (A)	=	0.203
Impervious Area in acres	=	0.177
Pecenct of Impervious Area (I)	=	87
Volumetric Runoff Coefficient (R)		

$$R = 0.05 + 0.009(I) \quad = \quad 0.835$$

$$WQv = \frac{(0.65")(R)(A)}{12} \quad = \quad 0.0092 \text{ ac*ft}$$

$$= \boxed{400 \text{ cf}}$$

800 CF PROVIDED

Required Water Quality Flow (WQf)

WQv (Ac*ft)	=	0.0092
Drainage Area (Ac)	=	0.203

$$Q = WQv*12 / DA \quad = \quad 0.543 \text{ in}$$

Runoff Depth in inches (Q)	=	0.543 in
Design Precipitation in inches (P)	=	1 in

$$CN = 1000/[10+5*P+10Q-10*(Q^2+1.25QP)^{1/2} \quad = \quad 95 \text{ CN}$$

From table 4-1 in chapter 4, TR-55

I_a	=	0.105 in
I_a / P	=	0.105

From Exhibit 4-11 in chapter 4, TR-55

q_u	=	650 csm/in

Unit peak discharge in csm/in (q_u)	=	650
Area in square miles (A)	=	0.00
Runoff Depth in inches (Q)	=	0.54

$$WQF = q_u*A*Q \quad = \quad 0.11 \text{ cfs}$$

CDS 2015-4-C Treatment Capacity   =   1.40 cfs Provided

Calculated in accordance with the 2004 Connecticut Stormwater Quality Manual Sections 7.4.1 and 7.4.2

Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Water Quality Calculations**
Prepared By: **AVC**   Date: **April 2, 2024**

Tighe&Bond
Consulting Engineers
Environmental Specialists

WQA-D

Required Water Quality Volume (WQv)

Total Area in acres (A)	=	1.023	
Impervious Area in acres	=	0.826	
Pecent of Impervious Area (I)	=	81	
Volumetric Runoff Coefficient (R)			

$$R = 0.05 + 0.009(I) \qquad = \qquad 0.777$$

$$WQv = \frac{(0.65")(R)(A)}{12} \qquad = \qquad 0.0430 \text{ ac*ft}$$

$$= \boxed{1875 \text{ cf}}$$

1,960 CF PROVIDED

Required Water Quality Flow (WQf)

WQv (Ac*ft)	=	0.0430
Drainage Area (Ac)	=	1.023

$$Q = WQv*12 / DA \qquad = \qquad 0.505 \text{ in}$$

Runoff Depth in inches (Q)	=	0.505 in
Design Precipitation in inches (P)	=	1 in

$$CN = 1000/[10 + 5*P + 10Q - 10*(Q^2 + 1.25QP)^{1/2}] \qquad = \qquad 94 \text{ CN}$$

From table 4-1 in chapter 4, TR-55

$$I_a \qquad = \qquad 0.128 \text{ in}$$
$$I_a / P \qquad = \qquad 0.128$$

From Exhibit 4-11 in chapter 4, TR-55

$$q_u \qquad = \qquad 620 \text{ csm/in}$$

Unit peak discharge in csm/in (q_u)	=	620
Area in square miles (A)	=	0.00
Runoff Depth in inches (Q)	=	0.50

$$WQF = q_u*A*Q \qquad = \qquad 0.50 \text{ cfs}$$

CDS 2015-4-C Treatment Capacity = **1.40 cfs Provided**

Calculated in accordance with the 2004 Connecticut Stormwater Quality Manual Sections 7.4.1 and 7.4.2

Tighe&Bond
Engineers | Environmental Specialists

Project Name: **64 Danbury Road**
Project Number: **F0173-001**
Project Location: **Wilton, CT**
Description: **Stormwater BMP Pollutant Removal Estimate**
Prepared By: **AVC**   Date: **April 4, 2024**

Water Quality Area A

Item	Units	Pollutant					
		TKN	**P**	**TSS**	**Pb**	**Cu**	**Zn**
Proposed, Pre Treatment	lb/yr/1-in	0.942	0.190	50.095	0.071	0.016	0.067
Proposed, Post Treatment	lb/yr/1-in	0.562	0.042	2.380	0.026	0.005	0.007
Reduction, Pre to Post Treat	---	40%	78%	95%	64%	70%	90%

Water Quality Area B

Item	Units	Pollutant					
		TKN	**P**	**TSS**	**Pb**	**Cu**	**Zn**
Proposed, Pre Treatment	lb/yr/1-in	0.143	0.029	7.599	0.011	0.002	0.010
Proposed, Post Treatment	lb/yr/1-in	0.085	0.006	0.361	0.004	0.001	0.001
Reduction, Pre to Post Treat	---	40%	78%	95%	64%	70%	90%

Water Quality Area C

Item	Units	Pollutant					
		TKN	**P**	**TSS**	**Pb**	**Cu**	**Zn**
Proposed, Pre Treatment	lb/yr/1-in	0.070	0.014	3.728	0.005	0.001	0.005
Proposed, Post Treatment	lb/yr/1-in	0.042	0.003	0.177	0.002	0.000	0.000
Reduction, Pre to Post Treat	---	40%	78%	95%	64%	70%	90%

Water Quality Area D

Item	Units	Pollutant					
		TKN	**P**	**TSS**	**Pb**	**Cu**	**Zn**
Proposed, Pre Treatment	lb/yr/1-in	0.334	0.067	17.735	0.025	0.006	0.024
Proposed, Post Treatment	lb/yr/1-in	0.199	0.015	0.842	0.009	0.002	0.002
Reduction, Pre to Post Treat	---	40%	78%	95%	64%	70%	90%

Northeast Portion to Area Drains

Item	Units	Pollutant					
		TKN	P	TSS	Pb	Cu	Zn
Proposed, Pre Treatment	lb/yr/1-in	0.035	0.007	1.853	0.003	0.001	0.002
Proposed, Post Treatment	lb/yr/1-in	0.035	0.007	1.853	0.003	0.001	0.002

Reduction, Pre to Post Treat	---	0%	0%	0%	0%	0%	0%

Areas to Existing Infiltration Systems

Item	Units	Pollutant					
		TKN	P	TSS	Pb	Cu	Zn
Proposed, Pre Treatment	lb/yr/1-in	1.161	0.234	61.720	0.088	0.020	0.082
Proposed, Post Treatment	lb/yr/1-in	0.848	0.157	6.172	0.060	0.014	0.056

Reduction, Pre to Post Treat	---	27%	33%	90%	32%	32%	32%

Total Site

Item	Units	Pollutant					
		TKN	P	TSS	Pb	Cu	Zn
Proposed, Pre Treatment	lb/yr/1-in	2.685	0.541	142.730	0.203	0.047	0.191
Proposed, Post Treatment	lb/yr/1-in	1.771	0.230	11.785	0.104	0.022	0.069

Reduction, Pre to Post Treat	---	34%	57%	92%	49%	53%	64%

Loading Calculation

Location: **Area A**   Condition: **Proposed**
Rainfall: 1   inches
Impervious Fraction: 0.78   Total Area =   2.978   acres

Pollutant	Residential			Weighted	
	A (acres)	EMC (mg/L)		EMC (mg/L)	L (lbs/yr)
Total Nitrogen (N)	2.978	1.900		1.900	0.942
Total Phosphorus (P)	2.978	0.383		0.383	0.190
Total Suspended Solids	2.978	101.0		101.0	50.1
Lead	2.978	0.144		0.144	0.071
Copper	2.978	0.033		0.033	0.016
Zinc	2.978	0.135		0.135	0.067

$$L = 0.2266 * EMC * [0.15 + 0.75*I] * P * A$$

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:
1. Pollution loading calculated using *Municipal Stormwater Management* by Debo & Reese

Location: **Area A**   Condition: **Proposed**

Rainfall: 1   inches

Impervious Fraction: 0.78   Total Area =   2.978   acres

BMP: **Deep Sump Catch Basins**

Pollutant	Lin 1 (lbs)	Sum L (lbs)	RR (%)	Lremoved (lbs)	Lout (lbs)
Total Nitrogen (N)	0.942	0.942	0	0.00	0.942
Total Phosphorus (P)	0.190	0.190	0	0.00	0.190
Total Suspended Solids	50.095	50.1	5	2.50	47.6
Lead	0.071	0.071	0	0.00	0.071
Copper	0.016	0.016	0	0.00	0.016
Zinc	0.067	0.067	0	0.00	0.067

Lin 1	Pollutant Load In
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* by Debo & Reese

2. Pollutant removal rates for Infiltration Practices taken from *Municipal Stormwater Management* by Debo & Reese, Table 13-13

3. Pollutant removal rates for Contechs CDS Unit water quality structure taken from NJCAT TSS Approval letter, January 9, 2015

4. Pollutant removal rates for Deep Sump Catch Basins taken from MassDEP Stormwater Handbook Volume 2 - Structural BMP Specifications

Location: **Area A**   Condition: **Proposed**
Rainfall: 1   inches
Impervious Fraction: 0.78   Total Area =   2.978   acres
BMP: **Water Quality Structure**

Pollutant	Lin 1 (lbs)	Sum L (lbs)	RR (%)	Lremoved (lbs)	Lout (lbs)
Total Nitrogen (N)	0.942	0.942	18.3	0.17	0.770
Total Phosphorus (P)	0.190	0.190	66.9	0.13	0.063
Total Suspended Solids	47.590	47.6	50	23.80	23.8
Lead	0.071	0.071	46.5	0.03	0.038
Copper	0.016	0.016	56.2	0.01	0.007
Zinc	0.067	0.067	85.3	0.06	0.010

Lin 1	Pollutant Load In
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* by Debo & Reese

2. Pollutant removal rates for Infiltration Practices taken from *Municipal Stormwater Management* by Debo & Reese, Table 13-13

3. Pollutant removal rates for Contechs CDS Unit water quality structure taken from NJCAT TSS Approval letter, January 9, 2015

4. Pollutant removal rates for Deep Sump Catch Basins taken from MassDEP Stormwater Handbook Volume 2 - Structural BMP Specifications

Location: **Area A**   Condition: **Proposed**

Rainfall: 1   inches

Impervious Fraction: 0.78   Total Area =   2.978   acres

BMP: **Infiltration System**

Pollutant	Lin 1 (lbs)	Sum L (lbs)	RR (-)	Lremoved (lbs)	Lout (lbs)
Total Nitrogen (N)	0.770	0.770	27	0.21	0.562
Total Phosphorus (P)	0.063	0.063	33	0.02	0.042
Total Suspended Solids	23.795	23.8	90	21.42	2.380
Lead	0.038	0.038	32	0.01	0.026
Copper	0.007	0.007	32	0.00	0.005
Zinc	0.010	0.010	32	0.00	0.007

Lin 1	Pollutant Load In
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* by Debo & Reese

2. Pollutant removal rates for Infiltration Practices taken from *Municipal Stormwater Management* by Debo & Reese, Table 13-13

3. Pollutant removal rates for Contechs CDS Unit water quality structure taken from NJCAT TSS Approval letter, January 9, 2015

4. Pollutant removal rates for Deep Sump Catch Basins taken from MassDEP Stormwater Handbook Volume 2 - Structural BMP Specifications

Loading Calculation

Location: **Area B**   Condition: **Proposed**
Rainfall: 1   inches
Impervious Fraction: 0.82   Total Area =   0.434   acres

Pollutant	Residential			Weighted	
	A (acres)	EMC (mg/L)		EMC (mg/L)	L (lbs/yr)
Total Nitrogen (N)	0.434	1.900		1.900	0.143
Total Phosphorus (P)	0.434	0.383		0.383	0.029
Total Suspended Solids	0.434	101.0		101.0	7.6
Lead	0.434	0.144		0.144	0.011
Copper	0.434	0.033		0.033	0.002
Zinc	0.434	0.135		0.135	0.010

$$L = 0.2266 * EMC * [0.15 + 0.75*I] * P * A$$

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:
1. Pollution loading calculated using *Municipal Stormwater Management* by Debo & Reese

Location: **Area B** Condition: **Proposed**

Rainfall: 1 inches

Impervious Fraction: 0.82 Total Area = 0.434 acres

BMP: **Deep Sump Catch Basins**

Pollutant	Lin 1 (lbs)	Sum L (lbs)	RR (%)	Lremoved (lbs)	Lout (lbs)
Total Nitrogen (N)	0.143	0.143	0	0.00	0.143
Total Phosphorus (P)	0.029	0.029	0	0.00	0.029
Total Suspended Solids	7.599	7.6	5	0.38	7.2
Lead	0.011	0.011	0	0.00	0.011
Copper	0.002	0.002	0	0.00	0.002
Zinc	0.010	0.010	0	0.00	0.010

Lin 1	Pollutant Load In
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* by Debo & Reese

2. Pollutant removal rates for Infiltration Practices taken from *Municipal Stormwater Management* by Debo & Reese, Table 13-13

3. Pollutant removal rates for Contechs CDS Unit water quality structure taken from NJCAT TSS Approval letter, January 9, 2015

4. Pollutant removal rates for Deep Sump Catch Basins taken from MassDEP Stormwater Handbook Volume 2 - Structural BMP Specifications

Location: **Area B**   Condition: **Proposed**

Rainfall: 1   inches

Impervious Fraction: 0.82   Total Area =   0.434   acres

BMP: **Water Quality Structure**

Pollutant	Lin 1 (lbs)	Sum L (lbs)	RR (%)	Lremoved (lbs)	Lout (lbs)
Total Nitrogen (N)	0.143	0.143	18.3	0.03	0.117
Total Phosphorus (P)	0.029	0.029	66.9	0.02	0.010
Total Suspended Solids	7.219	7.2	50	3.61	3.6
Lead	0.011	0.011	46.5	0.01	0.006
Copper	0.002	0.002	56.2	0.00	0.001
Zinc	0.010	0.010	85.3	0.01	0.001
Lin 1	Pollutant Load In				
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* by Debo & Reese

2. Pollutant removal rates for Infiltration Practices taken from *Municipal Stormwater Management*
   by Debo & Reese, Table 13-13

3. Pollutant removal rates for Contechs CDS Unit water quality structure taken from
   NJCAT TSS Approval letter, January 9, 2015

4. Pollutant removal rates for Deep Sump Catch Basins taken from
   MassDEP Stormwater Handbook Volume 2 - Structural BMP Specifications

Location: **Area B**   Condition: **Proposed**

Rainfall: 1   inches

Impervious Fraction: 0.82   Total Area =   0.434   acres

BMP: **Infiltration System**

Pollutant	Lin 1 (lbs)	Sum L (lbs)	RR (-)	Lremoved (lbs)	Lout (lbs)
Total Nitrogen (N)	0.117	0.117	27	0.03	0.085
Total Phosphorus (P)	0.010	0.010	33	0.00	0.006
Total Suspended Solids	3.609	3.6	90	3.25	0.4
Lead	0.006	0.006	32	0.00	0.004
Copper	0.001	0.001	32	0.00	0.001
Zinc	0.001	0.001	32	0.00	0.001

Lin 1	Pollutant Load In
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* by Debo & Reese

2. Pollutant removal rates for Infiltration Practices taken from *Municipal Stormwater Management*
   by Debo & Reese, Table 13-13

3. Pollutant removal rates for Contechs CDS Unit water quality structure taken from
   NJCAT TSS Approval letter, January 9, 2015

4. Pollutant removal rates for Deep Sump Catch Basins taken from
   MassDEP Stormwater Handbook Volume 2 - Structural BMP Specifications

Loading Calculation

Location: **Area C**   Condition: **Proposed**
Rainfall: 1   inches
Impervious Fraction: 0.87   Total Area =   0.203   acres

Pollutant	Residential			Weighted	
	A (acres)	EMC (mg/L)		EMC (mg/L)	L (lbs/yr)
Total Nitrogen (N)	0.203	1.900		1.900	0.070
Total Phosphorus (P)	0.203	0.383		0.383	0.014
Total Suspended Solids	0.203	101.0		101.0	3.7
Lead	0.203	0.144		0.144	0.005
Copper	0.203	0.033		0.033	0.001
Zinc	0.203	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:
1. Pollution loading calculated using *Municipal Stormwater Management* by Debo & Reese

Location: **Area C**   Condition: **Proposed**

Rainfall: 1   inches

Impervious Fraction: 0.87   Total Area = 0.203 acres

BMP: **Deep Sump Catch Basins**

Pollutant	Lin 1 (lbs)	Sum L (lbs)	RR (%)	Lremoved (lbs)	Lout (lbs)
Total Nitrogen (N)	0.070	0.070	0	0.00	0.070
Total Phosphorus (P)	0.014	0.014	0	0.00	0.014
Total Suspended Solids	3.728	3.7	5	0.19	3.5
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 In				
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* by Debo & Reese

2. Pollutant removal rates for Infiltration Practices taken from *Municipal Stormwater Management*
   by Debo & Reese, Table 13-13

3. Pollutant removal rates for Contechs CDS Unit water quality structure taken from
   NJCAT TSS Approval letter, January 9, 2015

4. Pollutant removal rates for Deep Sump Catch Basins taken from
   MassDEP Stormwater Handbook Volume 2 - Structural BMP Specifications

Location: **Area C**   Condition: **Proposed**

Rainfall: 1   inches

Impervious Fraction: 0.87   Total Area =   0.203   acres

BMP: **Water Quality Structure**

Pollutant	Lin 1 (lbs)	Sum L (lbs)	RR (%)	Lremoved (lbs)	Lout (lbs)
Total Nitrogen (N)	0.070	0.070	18.3	0.01	0.057
Total Phosphorus (P)	0.014	0.014	66.9	0.01	0.005
Total Suspended Solids	3.542	3.5	50	1.77	1.8
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 In
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* by Debo & Reese

2. Pollutant removal rates for Infiltration Practices taken from *Municipal Stormwater Management* by Debo & Reese, Table 13-13

3. Pollutant removal rates for Contechs CDS Unit water quality structure taken from NJCAT TSS Approval letter, January 9, 2015

4. Pollutant removal rates for Deep Sump Catch Basins taken from MassDEP Stormwater Handbook Volume 2 - Structural BMP Specifications

Location: **Area C**   Condition: **Proposed**

Rainfall: 1   inches

Impervious Fraction: 0.87   Total Area =   0.203   acres

BMP: **Infiltration System**

Pollutant	Lin 1 (lbs)	Sum L (lbs)	RR (-)	Lremoved (lbs)	Lout (lbs)
Total Nitrogen (N)	0.057	0.057	27	0.02	0.042
Total Phosphorus (P)	0.005	0.005	33	0.00	0.003
Total Suspended Solids	1.771	1.8	90	1.59	0.2
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 In
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* by Debo & Reese

2. Pollutant removal rates for Infiltration Practices taken from *Municipal Stormwater Management* by Debo & Reese, Table 13-13

3. Pollutant removal rates for Contechs CDS Unit water quality structure taken from NJCAT TSS Approval letter, January 9, 2015

4. Pollutant removal rates for Deep Sump Catch Basins taken from MassDEP Stormwater Handbook Volume 2 - Structural BMP Specifications

Loading Calculation

Location: **Area D**   Condition: **Proposed**
Rainfall: 1   inches
Impervious Fraction: 0.81   Total Area =   1.023   acres

Pollutant	Residential			Weighted	
	A (acres)	EMC (mg/L)		EMC (mg/L)	L (lbs/yr)
Total Nitrogen (N)	1.023	1.900		1.900	0.334
Total Phosphorus (P)	1.023	0.383		0.383	0.067
Total Suspended Solids	1.023	101.0		101.0	17.7
Lead	1.023	0.144		0.144	0.025
Copper	1.023	0.033		0.033	0.006
Zinc	1.023	0.135		0.135	0.024

$$L = 0.2266 * EMC * [0.15 + 0.75*I] * P *A$$

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:
1. Pollution loading calculated using *Municipal Stormwater Management* by Debo & Reese

Location: **Area D**   Condition: **Proposed**

Rainfall: 1   inches

Impervious Fraction: 0.81   Total Area =   1.023   acres

BMP: **Deep Sump Catch Basins**

Pollutant	Lin 1 (lbs)	Sum L (lbs)	RR (%)	Lremoved (lbs)	Lout (lbs)
Total Nitrogen (N)	0.334	0.334	0	0.00	0.334
Total Phosphorus (P)	0.067	0.067	0	0.00	0.067
Total Suspended Solids	17.735	17.7	5	0.89	16.8
Lead	0.025	0.025	0	0.00	0.025
Copper	0.006	0.006	0	0.00	0.006
Zinc	0.024	0.024	0	0.00	0.024

Lin 1	Pollutant Load In
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* by Debo & Reese

2. Pollutant removal rates for Infiltration Practices taken from *Municipal Stormwater Management* by Debo & Reese, Table 13-13

3. Pollutant removal rates for Contechs CDS Unit water quality structure taken from NJCAT TSS Approval letter, January 9, 2015

4. Pollutant removal rates for Deep Sump Catch Basins taken from MassDEP Stormwater Handbook Volume 2 - Structural BMP Specifications

Location: **Area D**   Condition: **Proposed**

Rainfall: 1   inches

Impervious Fraction: 0.81   Total Area =   1.023   acres

BMP: **Water Quality Structure**

Pollutant	Lin 1 (lbs)	Sum L (lbs)	RR (%)	Lremoved (lbs)	Lout (lbs)
Total Nitrogen (N)	0.334	0.334	18.3	0.06	0.273
Total Phosphorus (P)	0.067	0.067	66.9	0.04	0.022
Total Suspended Solids	16.849	16.8	50	8.42	8.4
Lead	0.025	0.025	46.5	0.01	0.014
Copper	0.006	0.006	56.2	0.00	0.003
Zinc	0.024	0.024	85.3	0.02	0.003

Lin 1	Pollutant Load In
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* by Debo & Reese

2. Pollutant removal rates for Infiltration Practices taken from *Municipal Stormwater Management*
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   MassDEP Stormwater Handbook Volume 2 - Structural BMP Specifications

Location:	**Area D**			Condition:	**Proposed**
Rainfall:	1 inches				
Impervious Fraction:	0.81			Total Area =	1.023 acres
BMP:	**Infiltration System**				

Pollutant	Lin 1 (lbs)	Sum L (lbs)	RR (-)	Lremoved (lbs)	Lout (lbs)
Total Nitrogen (N)	0.273	0.273	27	0.07	0.199
Total Phosphorus (P)	0.022	0.022	33	0.01	0.015
Total Suspended Solids	8.424	8.4	90	7.58	0.8
Lead	0.014	0.014	32	0.00	0.009
Copper	0.003	0.003	32	0.00	0.002
Zinc	0.003	0.003	32	0.00	0.002

Lin 1	Pollutant Load In
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* by Debo & Reese

2. Pollutant removal rates for Infiltration Practices taken from *Municipal Stormwater Management* by Debo & Reese, Table 13-13

3. Pollutant removal rates for Contechs CDS Unit water quality structure taken from NJCAT TSS Approval letter, January 9, 2015

4. Pollutant removal rates for Deep Sump Catch Basins taken from MassDEP Stormwater Handbook Volume 2 - Structural BMP Specifications

Loading Calculation

Location: **Northwest Portion to Area Drains**   Condition: **Proposed**
Rainfall: 1 inches
Impervious Fraction: 0.23   Total Area = 0.251 acres

Pollutant	Residential				Weighted	
	A (acres)	EMC (mg/L)			EMC (mg/L)	L (lbs/yr)
Total Nitrogen (N)	0.251	1.900			1.900	0.035
Total Phosphorus (P)	0.251	0.383			0.383	0.007
Total Suspended Solids	0.251	101.0			101.0	1.9
Lead	0.251	0.144			0.144	0.003
Copper	0.251	0.033			0.033	0.001
Zinc	0.251	0.135			0.135	0.002

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:
1. Pollution loading calculated using *Municipal Stormwater Management* by Debo & Reese

Loading Calculation

Location: **Areas to Existing Infiltration Systems**   Condition: **Proposed**
Rainfall: 1   inches
Impervious Fraction: 0.62   Total Area =   4.385   acres

Pollutant	Residential			Weighted	
	A (acres)	EMC (mg/L)		EMC (mg/L)	L (lbs/yr)
Total Nitrogen (N)	4.385	1.900		1.900	1.161
Total Phosphorus (P)	4.385	0.383		0.383	0.234
Total Suspended Solids	4.385	101.0		101.0	61.7
Lead	4.385	0.144		0.144	0.088
Copper	4.385	0.033		0.033	0.020
Zinc	4.385	0.135		0.135	0.082

$$L = 0.2266 * EMC * [0.15 + 0.75*I] * P * A$$

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:
1. Pollution loading calculated using *Municipal Stormwater Management* by Debo & Reese

Location: **Areas to Existing Infiltration Systems** Condition: **Proposed**

Rainfall: 1 inches

Impervious Fraction: 0.62 Total Area = 4.385 acres

BMP: **Infiltration System**

Pollutant	Lin 1 (lbs)	Sum L (lbs)	RR (-)	Lremoved (lbs)	Lout (lbs)
Total Nitrogen (N)	1.161	1.161	27	0.31	0.848
Total Phosphorus (P)	0.234	0.234	33	0.08	0.157
Total Suspended Solids	61.720	61.7	90	55.55	6.2
Lead	0.088	0.088	32	0.03	0.060
Copper	0.020	0.020	32	0.01	0.014
Zinc	0.082	0.082	32	0.03	0.056
Lin 1	Pollutant Load In				
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* by Debo & Reese

2. Pollutant removal rates for Infiltration Practices taken from *Municipal Stormwater Management* by Debo & Reese, Table 13-13

3. Pollutant removal rates for Contechs CDS Unit water quality structure taken from NJCAT TSS Approval letter, January 9, 2015

4. Pollutant removal rates for Deep Sump Catch Basins taken from MassDEP Stormwater Handbook Volume 2 - Structural BMP Specifications

Available Models

CDS Model	Treatment Capacity[3] (cfs)	Maximum Sediment Storage Capacity (CF)
1515	1.0	26
w/ 1' added sump	1.0	33
w/ 2' added sump	1.0	40
w/ 3' added sump	1.0	47
2015_4	1.4	50
w/ 1' added sump	1.4	63
w/ 2' added sump	1.4	75
w/ 3' added sump	1.4	88
2015	1.4	79
w/ 1' added sump	1.4	98
w/ 2' added sump	1.4	118
2020	2.2	90
w/ 1' added sump	2.2	110
w/ 2' added sump	2.2	129
2025	3.2	97
w/ 1' added sump	3.2	117
w/ 2' added sump	3.2	136
3020	3.9	134
w/ 1' added sump	3.9	163
w/ 2' added sump	3.9	191
3030	6.1	157
w/ 1' added sump	6.1	185
w/ 2' added sump	6.1	213
4030	7.9	329
w/ 1' added sump	7.9	379
w/ 2' added sump	7.9	429
4040	12.4	381
w/ 1' added sump	12.4	431
w/ 2' added sump	12.4	482

1. Structure diameter represents the typical inside dimension of the concrete structure. Offline systems will require additional concrete diversion components
2. Depth below pipe can vary to accommodate site specific design. Depth below pipe invert represents the depth from the pipe invert to the inside bottom of concrete structure.
3. Treatment Capacity is based on laboratory testing using OK-110 (average d50 particle size of approximately 100 microns) and a 2400 micron screen.

Sediment Depths Indicating Required Servicing*			
CDS Model	Standard Sediment Depth (in.)	w/ 1' added Sump Sediment Depth (in.)	w/ 2' added Sump Sediment Depth (in.)
1515	18	27	36
2015_4	18	30	42
2015	18	30	42
2020	18	30	42
2025	18	30	42
3020	18	30	42
3030	18	39	42
4030	27	39	51
4040	27	39	51

* Based on 75% capacity of isolated sump.

APPENDIX G

64 Danbury Road

Wilton, Connecticut

Maintenance and Inspection Plan

December 2023

The initial inspection will be made during an intense rainfall to check the adequacy of the yard drains, catch basins, roof leaders, piping, hydrodynamic separator, 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 systems 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.

Stormwater System Outfalls: The stormwater system outfalls shall be inspected two times annually as well as after every major storm, for slope integrity, soil moisture, vegetated health, soil stability, soil compaction, soil erosion, ponding and sediment accumulation. If the rip rap has been displaced, undermined or damaged, it should be replaced immediately. The channel immediately below the outlet should be checked to see that erosion is not occurring. The downstream channel will be kept clear of obstructions, such as fallen trees, debris, leaves and sediment that could change flow patterns and/or tail water depths in pipes. Repairs must be carried out immediately to avoid additional damage to the outlet protection apron.

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

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.

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

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.

Date (MM/DD/YY)	Company/Person	Supervising Team Member	Comments

Stormwater System Outfalls

The stormwater system outfalls shall be inspected two times annually as well as after every major storm, for slope integrity, soil moisture, vegetated health, soil stability, soil compaction, soil erosion, ponding and sediment accumulation. If the rip rap has been displaced, undermined or damaged, it should be replaced immediately. The channel immediately below the outlet should be checked to see that erosion is not occurring. The downstream channel will be kept clear of obstructions, such as fallen trees, debris, leaves and sediment that could change flow patterns and/or tail water depths in pipes. Repairs must be carried out immediately to avoid additional damage to the outlet protection apron.

Date (MM/DD/YY)	Company/Person	Supervising Team Member	Comments

APPENDIX H

Project: 64_Danbury_Road

Simulation Run: 100-Year

Simulation Start: 3 April 2024, 24:00

Simulation End: 4 April 2024, 24:00

HMS Version: 4.9

Executed: 08 April 2024, 15:58

Global Parameter Summary - Subbasin

Area (MIē)

Element Name	Area (MIē)
EX - 04	0.34
EX - 03	0.2
EX - 02	0.08
EX - 01	0.05
EX - 00	0.07

Downstream

Element Name	Downstream
EX - 04	SA - 3
EX - 03	JCT - 03
EX - 02	JCT - 02
EX - 01	JCT - 01
EX - 00	JCT - 00

Loss Rate: Scs

Element Name	Percent Impervious Area	Curve Number	Initial Abstraction
EX - 04	9.77	74.63	0.68
EX - 03	9.77	77.44	0.58
EX - 02	9.77	73.1	Not Specified
EX - 01	9.77	75.53	Not Specified
EX - 00	9.77	69.92	Not Specified

Transform: Scs

Element Name	Lag	Unitgraph Type
EX - 04	181.04	Standard
EX - 03	152.72	Standard
EX - 02	132.63	Standard
EX - 01	83.18	Standard
EX - 00	47.43	Standard

Global Results Summary

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
EX - 04	0.34	199.56	04Apr2024, 15:18	5.25
SA - 3	0.34	42.5	04Apr2024, 21:18	1.9
EX - 03	0.2	141.8	04Apr2024, 14:44	5.63
JCT - 03	0.55	177.35	04Apr2024, 14:54	3.29
SA - 2	0.55	49.49	04Apr2024, 24:00	1.37
EX - 02	0.08	56.24	04Apr2024, 14:24	5.22
JCT - 02	0.63	85	04Apr2024, 14:52	1.86
EX - 01	0.05	51.87	04Apr2024, 13:30	5.57
JCT - 01	0.68	120.94	04Apr2024, 13:58	2.13
EX - 00	0.07	93.82	04Apr2024, 12:52	5.04
JCT - 00	0.75	178.54	04Apr2024, 13:08	2.41
SA - 1	0.75	170.04	04Apr2024, 13:30	2.41

Subbasin: EX-04

Area (MIē) : 0.34
Downstream : SA - 3

Loss Rate: Scs

Percent Impervious Area	9.77
Curve Number	74.63
Initial Abstraction	0.68

Transform: Scs

Lag	181.04
Unitgraph Type	Standard

Results: EX-04

Peak Discharge (CFS)	199.56
Time of Peak Discharge	04Apr2024, 15:18
Volume (IN)	5.25
Precipitation Volume (AC - FT)	153.15
Loss Volume (AC - FT)	50.24
Excess Volume (AC - FT)	102.92
Direct Runoff Volume (AC - FT)	96.26
Baseflow Volume (AC - FT)	0

Precipitation and Outflow
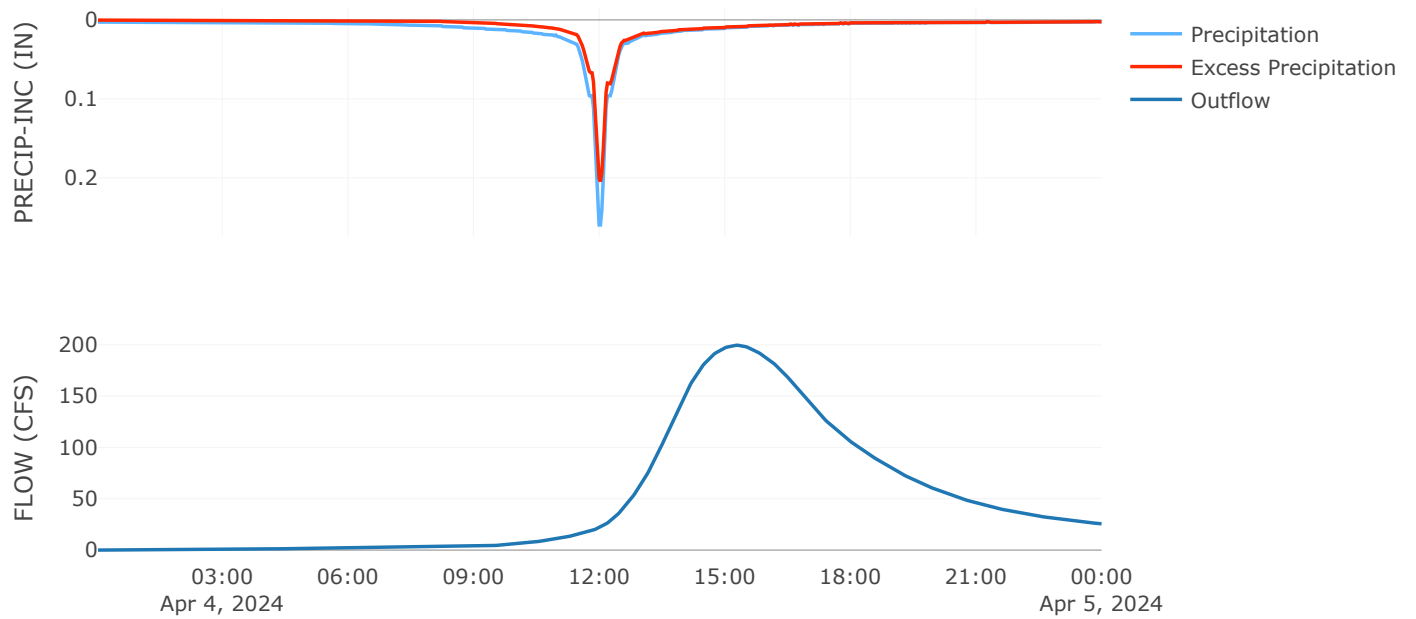
Cumulative Outflow
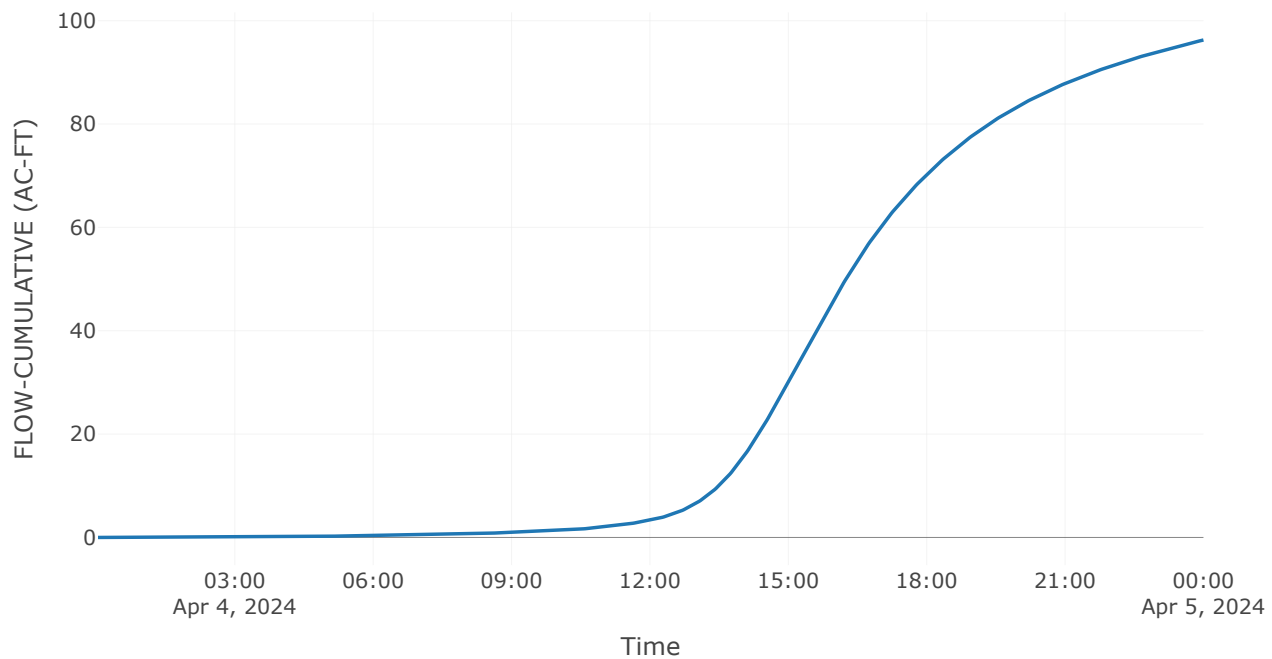
Reservoir: SA-3   Storage north of Route 33

Downstream : JCT - 03

Results: SA-3

Peak Discharge (CFS)	42.5
Time of Peak Discharge	04Apr2024, 21:18
Volume (IN)	1.9
Peak Inflow (CFS)	199.56
Time of Peak Inflow	04Apr2024, 15:18
Inflow Volume (AC - FT)	96.26
Maximum Storage (AC - FT)	63.62
Peak Elevation (FT)	183.11
Discharge Volume (AC - FT)	34.81

Combined Inflow
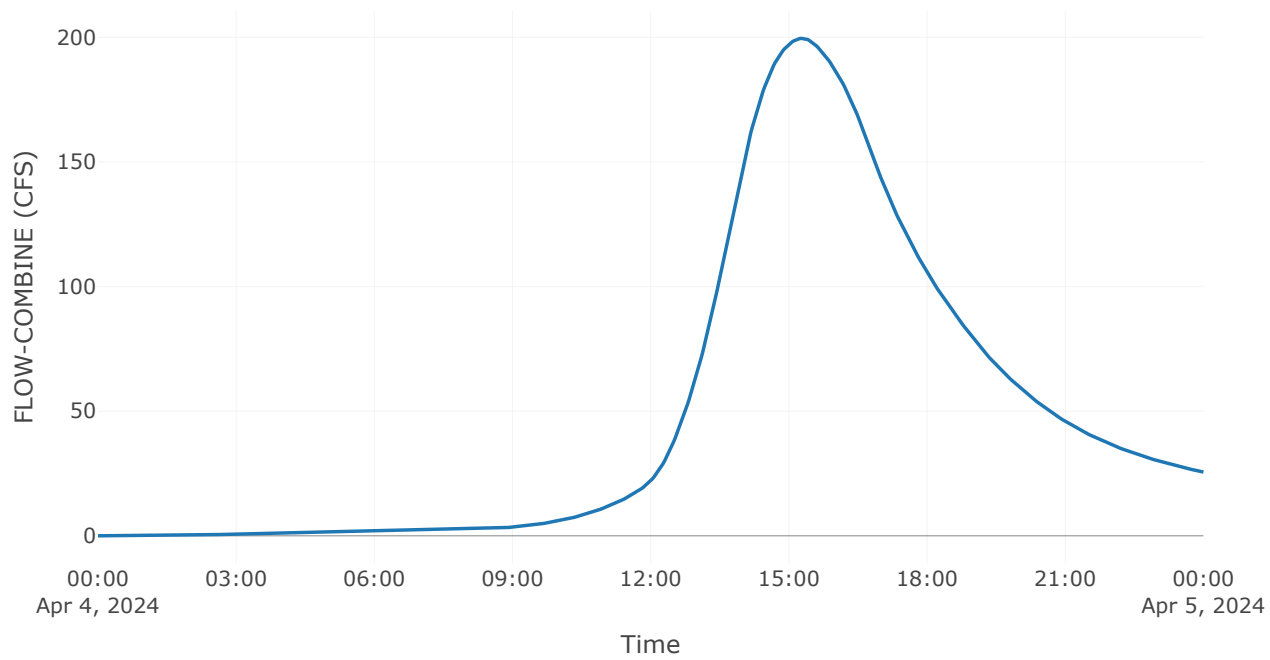
Cumulative Outflow
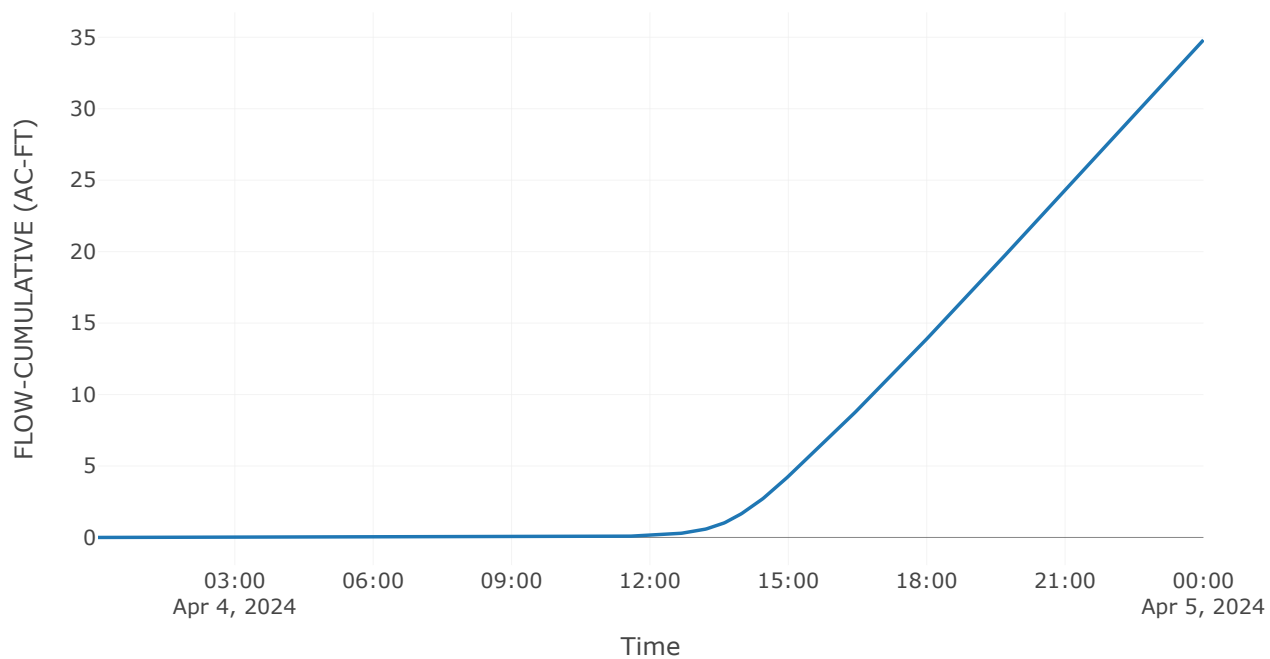
Pool Elevation
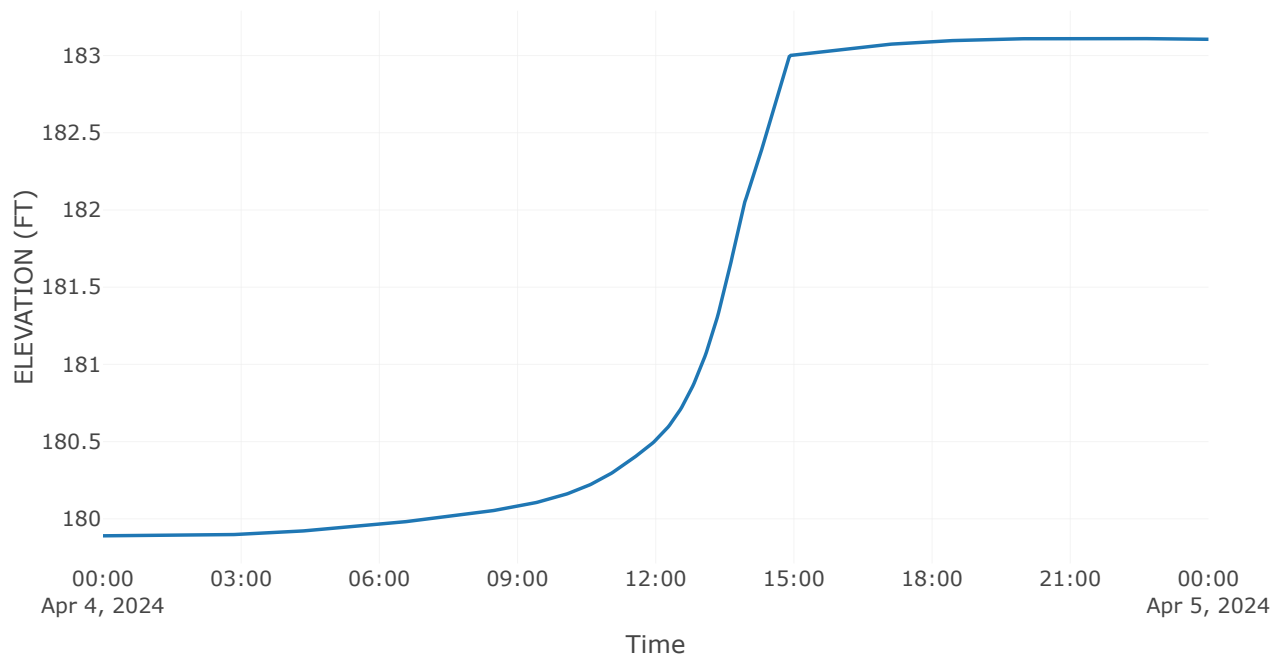
Outflow
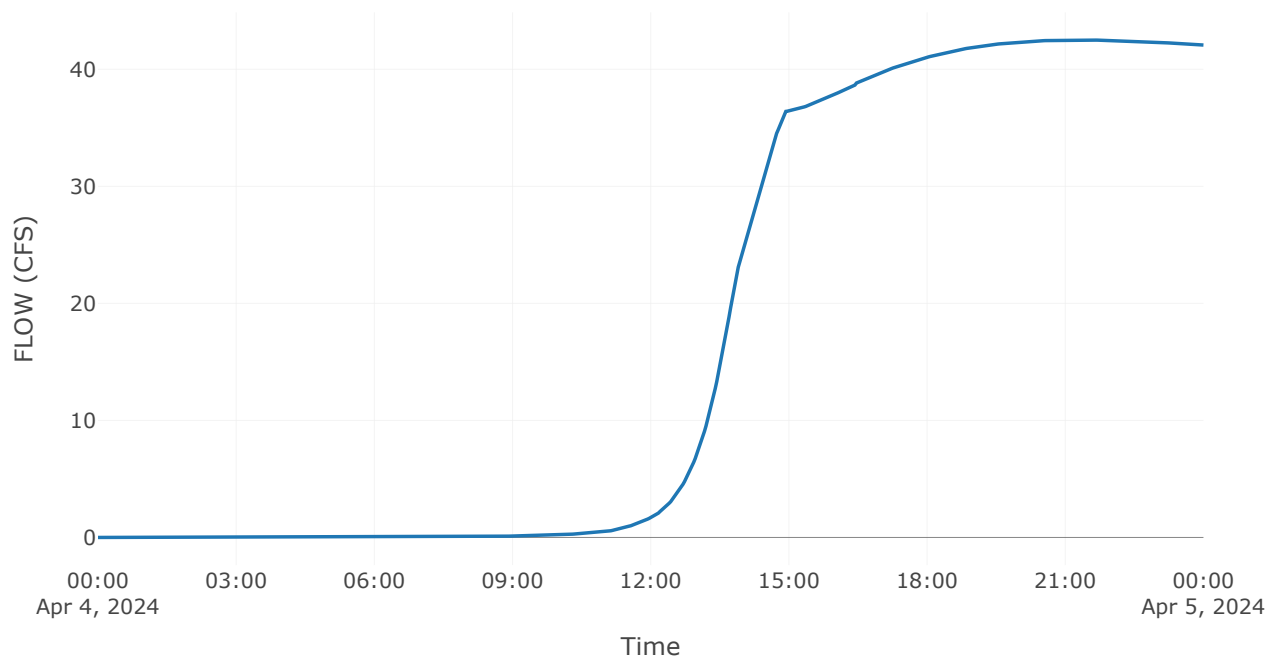
Subbasin: EX-03

Area (MIē) : 0.2
Downstream : JCT - 03

Loss Rate: Scs

Percent Impervious Area	9.77
Curve Number	77.44
Initial Abstraction	0.58

Transform: Scs

Lag	152.72
Unitgraph Type	Standard

Results: EX-03

Peak Discharge (CFS)	141.8
Time of Peak Discharge	04Apr2024, 14:44
Volume (IN)	5.63
Precipitation Volume (AC - FT)	91.29
Loss Volume (AC - FT)	26.62
Excess Volume (AC - FT)	64.67
Direct Runoff Volume (AC - FT)	61.55
Baseflow Volume (AC - FT)	0

Precipitation and Outflow
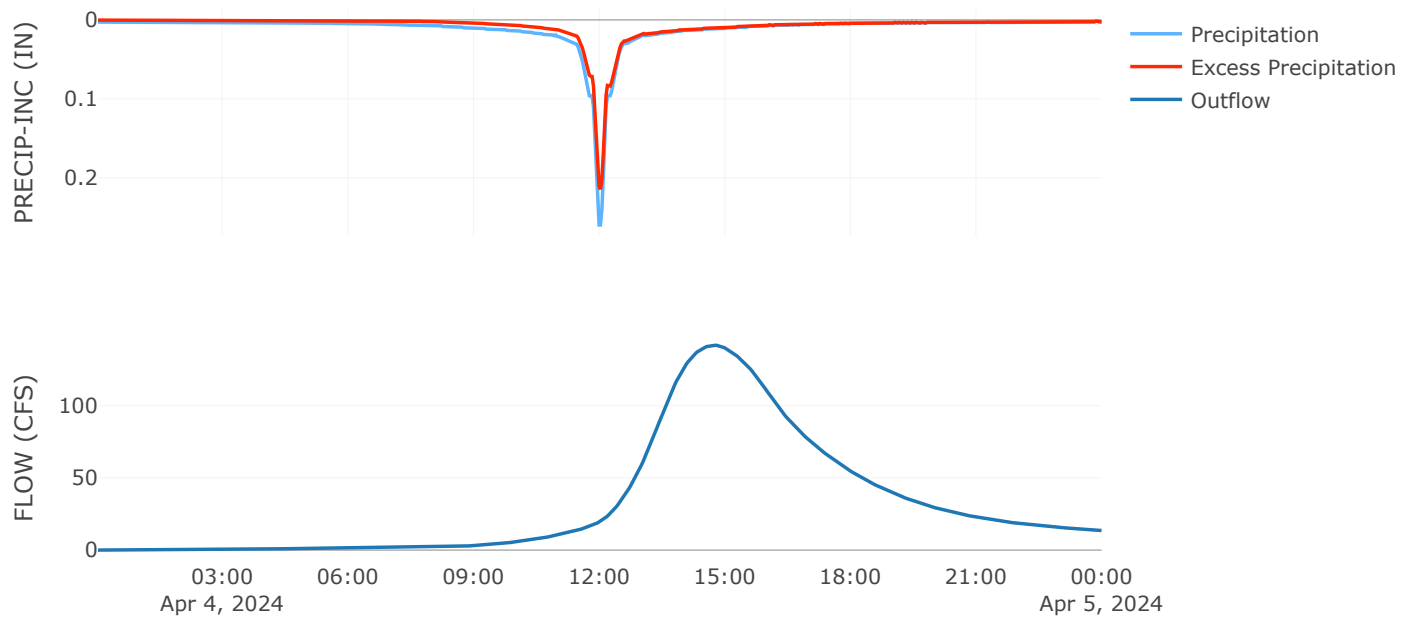
Cumulative Outflow
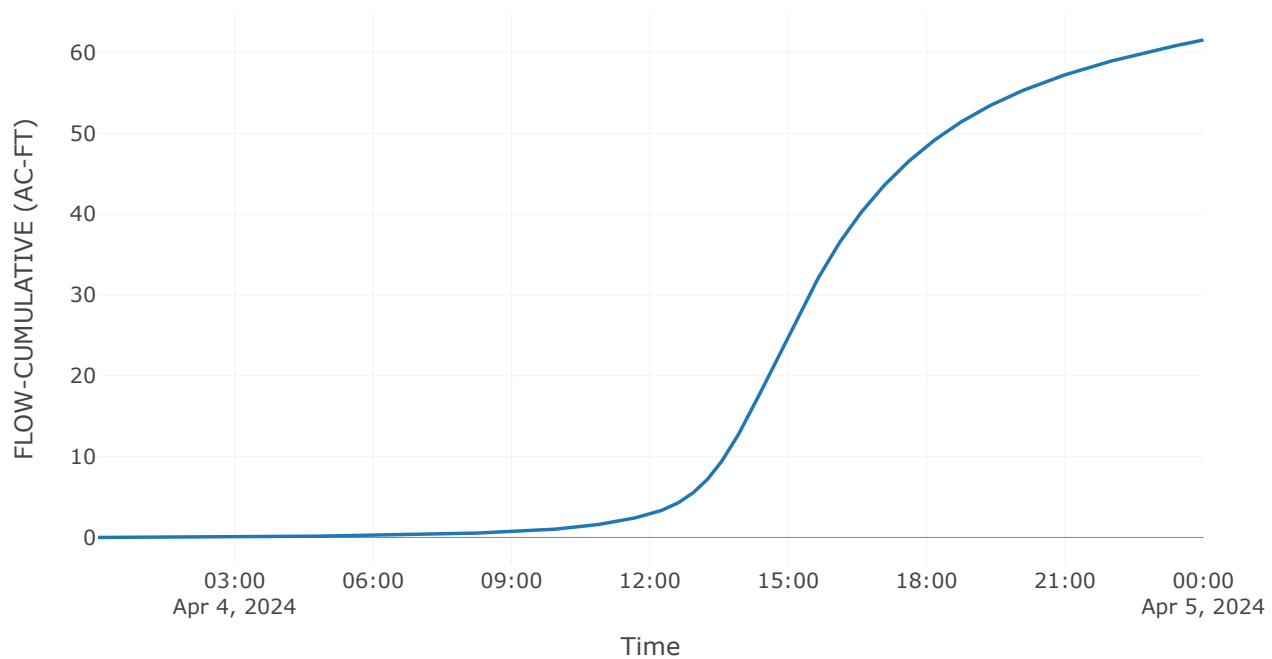
Junction: JCT-03

Downstream : SA - 2

Results: JCT-03

Peak Discharge (CFS)	177.35
Time of Peak Discharge	04Apr2024, 14:54
Volume (IN)	3.29

Combined Inflow
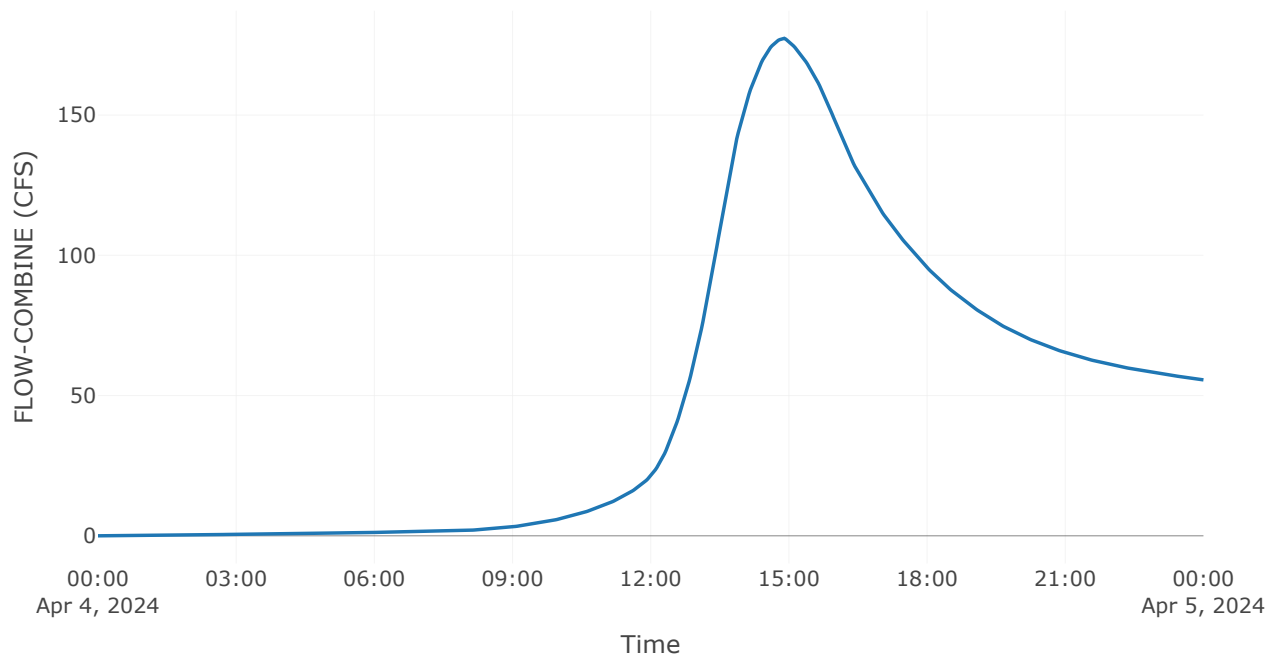
Cumulative Outflow
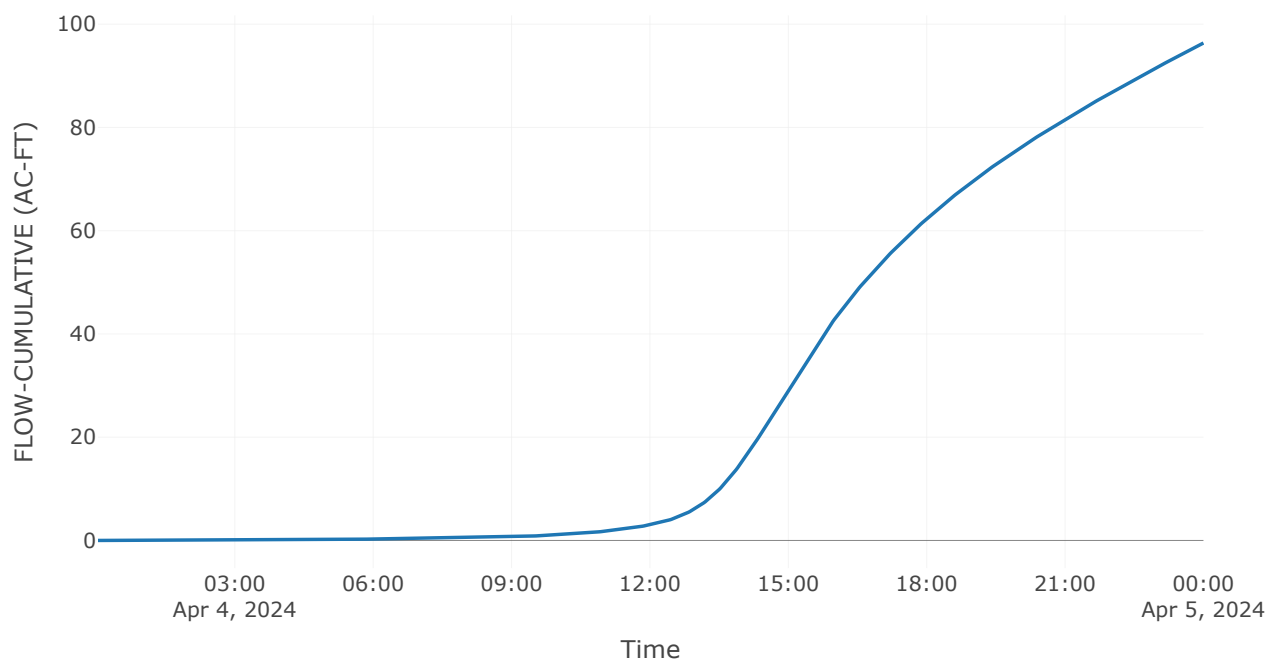
Outflow
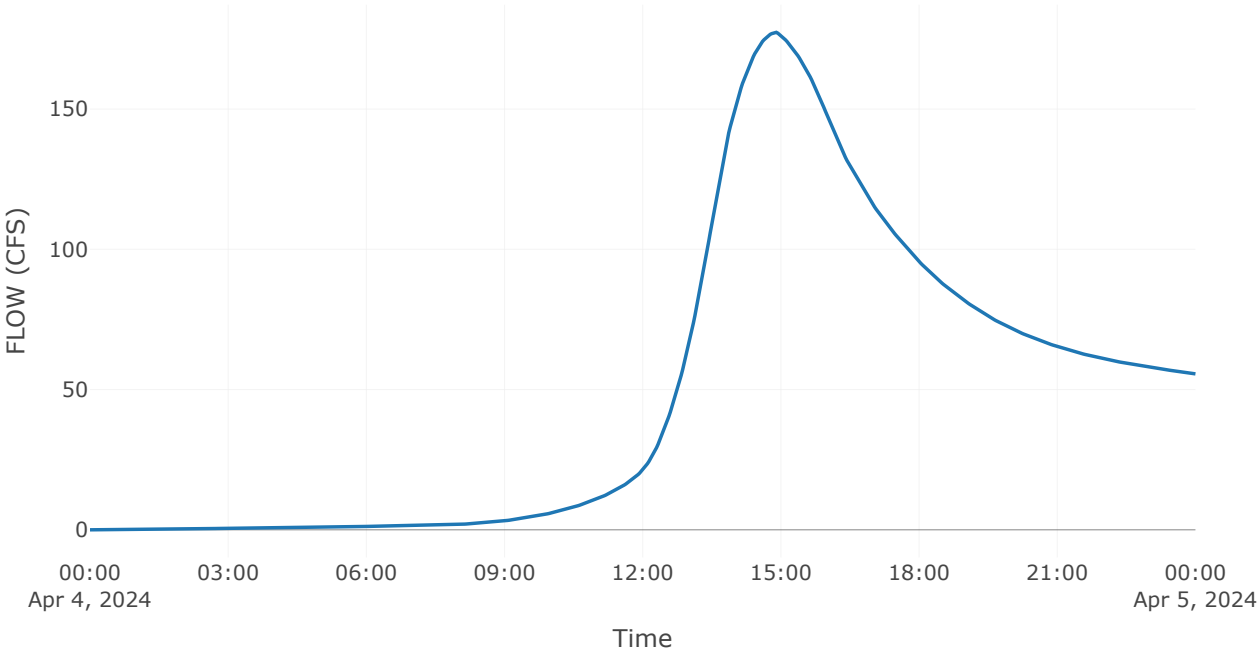
Reservoir: SA-2   **Storage at Clover Lane**

Downstream : JCT - 02

Results: SA-2

Peak Discharge (CFS)	49.49
Time of Peak Discharge	04Apr2024, 24:00
Volume (IN)	1.37
Peak Inflow (CFS)	177.35
Time of Peak Inflow	04Apr2024, 14:54
Inflow Volume (AC - FT)	96.36
Maximum Storage (AC - FT)	56.33
Peak Elevation (FT)	182.18
Discharge Volume (AC - FT)	40.04

Combined Inflow
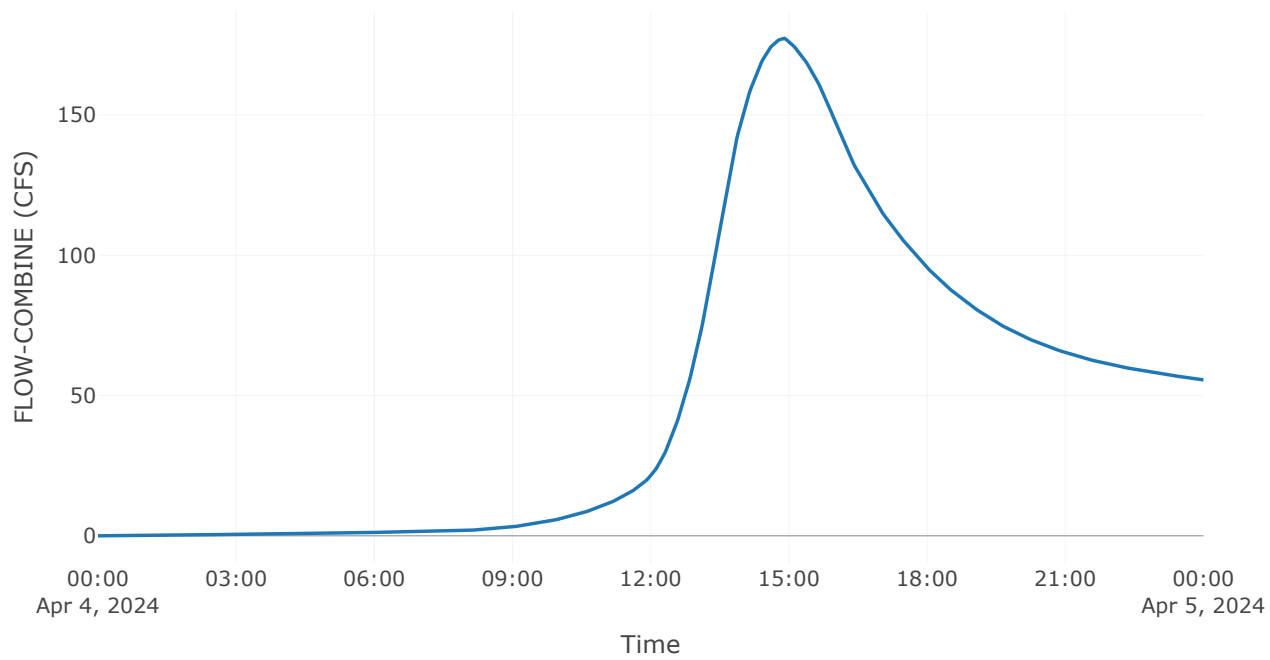
Cumulative Outflow
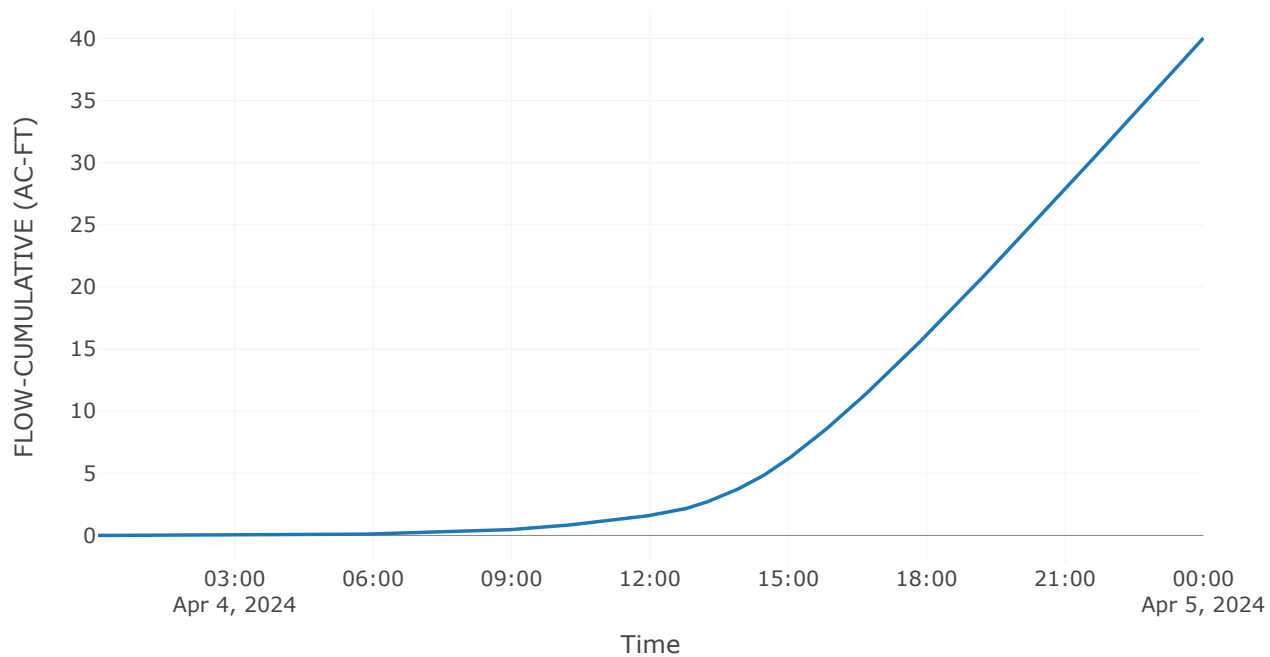
Pool Elevation
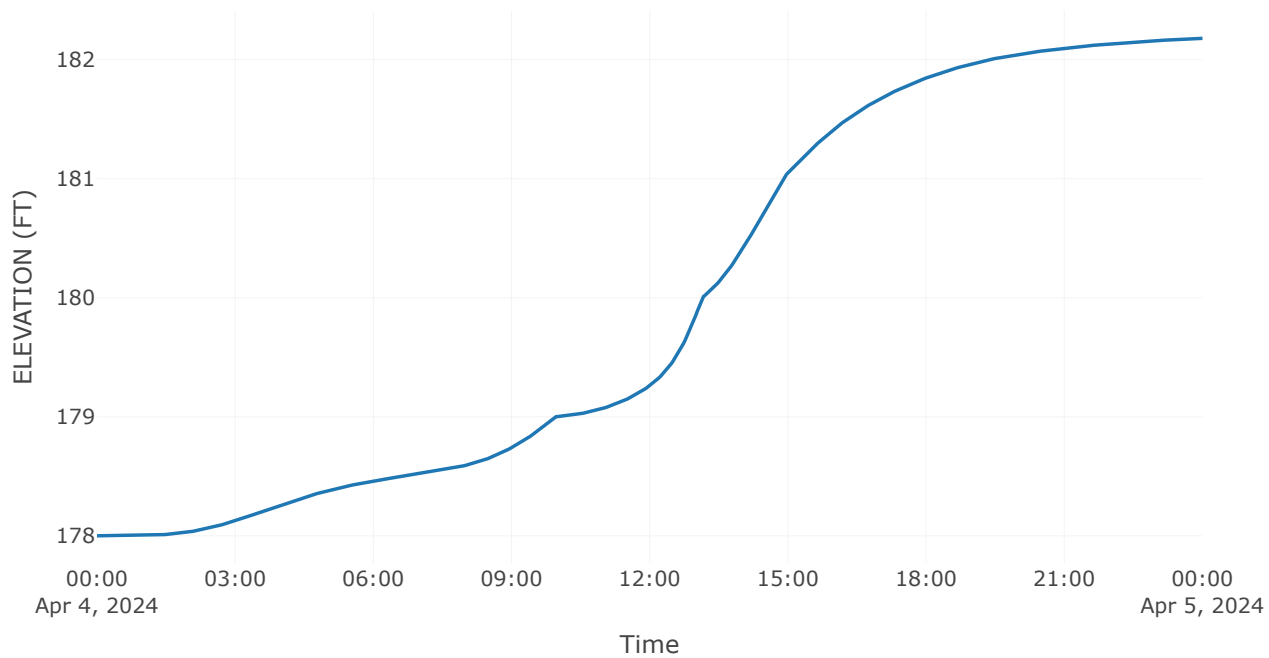
Outflow
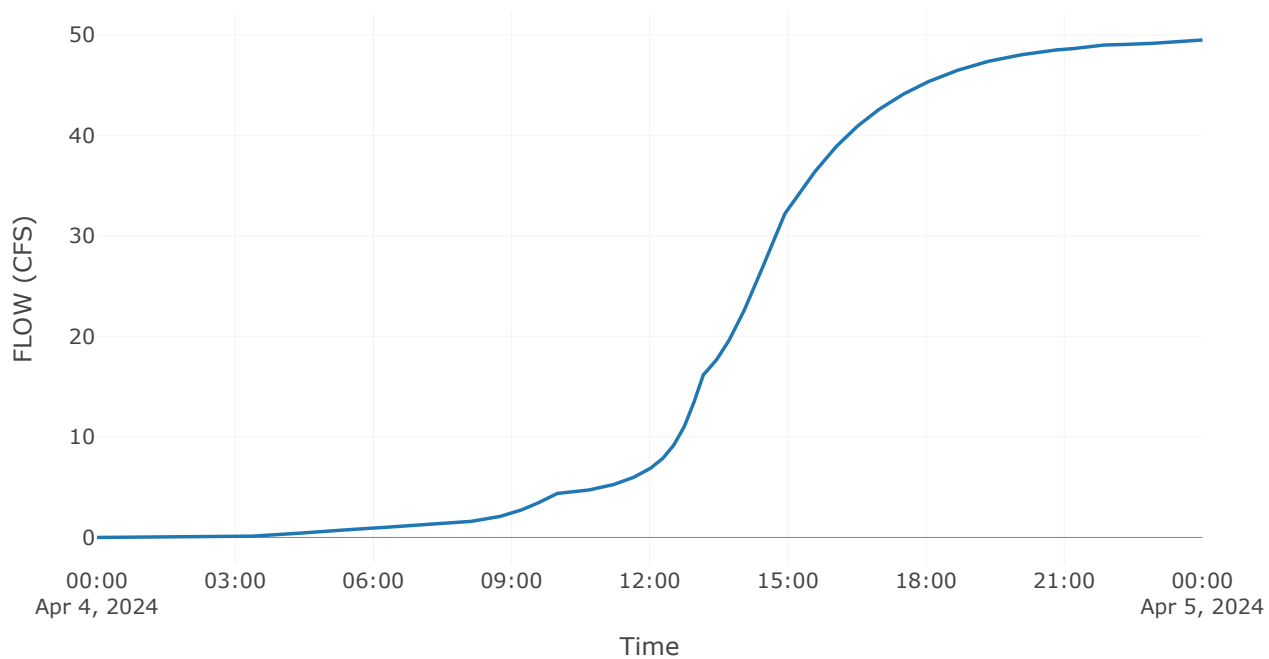
Subbasin: EX-02

Area (MIē) : 0.08
Downstream : JCT - 02

Loss Rate: Scs

Percent Impervious Area	9.77
Curve Number	73.1

Transform: Scs

Lag	132.63
Unitgraph Type	Standard

Results: EX-02

Peak Discharge (CFS)	56.24
Time of Peak Discharge	04Apr2024, 14:24
Volume (IN)	5.22
Precipitation Volume (AC - FT)	35.63
Loss Volume (AC - FT)	12.38
Excess Volume (AC - FT)	23.24
Direct Runoff Volume (AC - FT)	22.27
Baseflow Volume (AC - FT)	0

Precipitation and Outflow
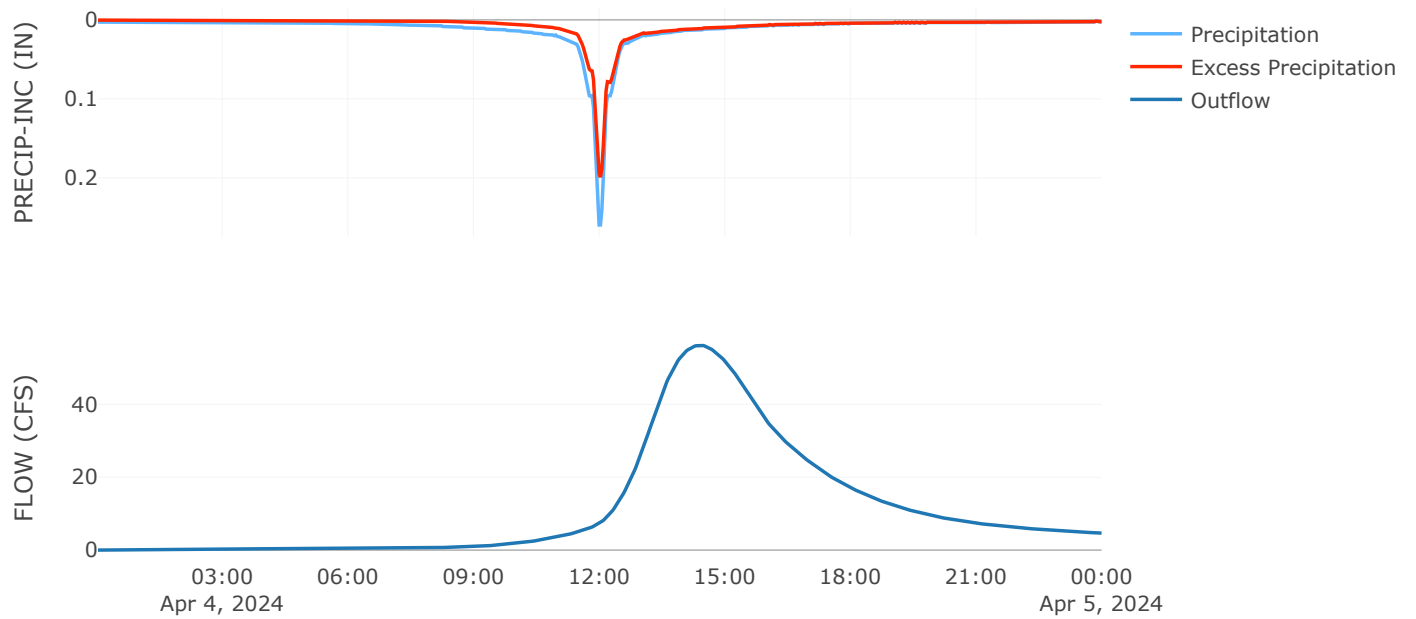
Cumulative Outflow
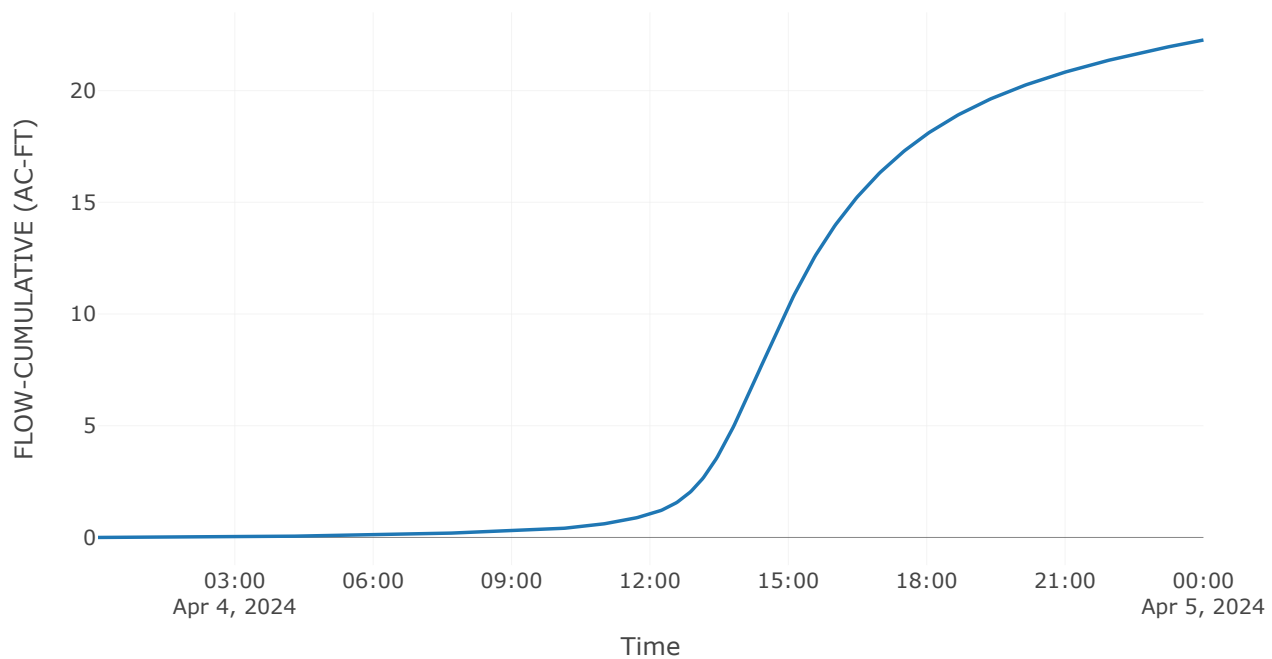
Junction: JCT-02

Downstream : JCT - 01

Results: JCT-02

Peak Discharge (CFS)	85
Time of Peak Discharge	04Apr2024, 14:52
Volume (IN)	1.86

Combined Inflow
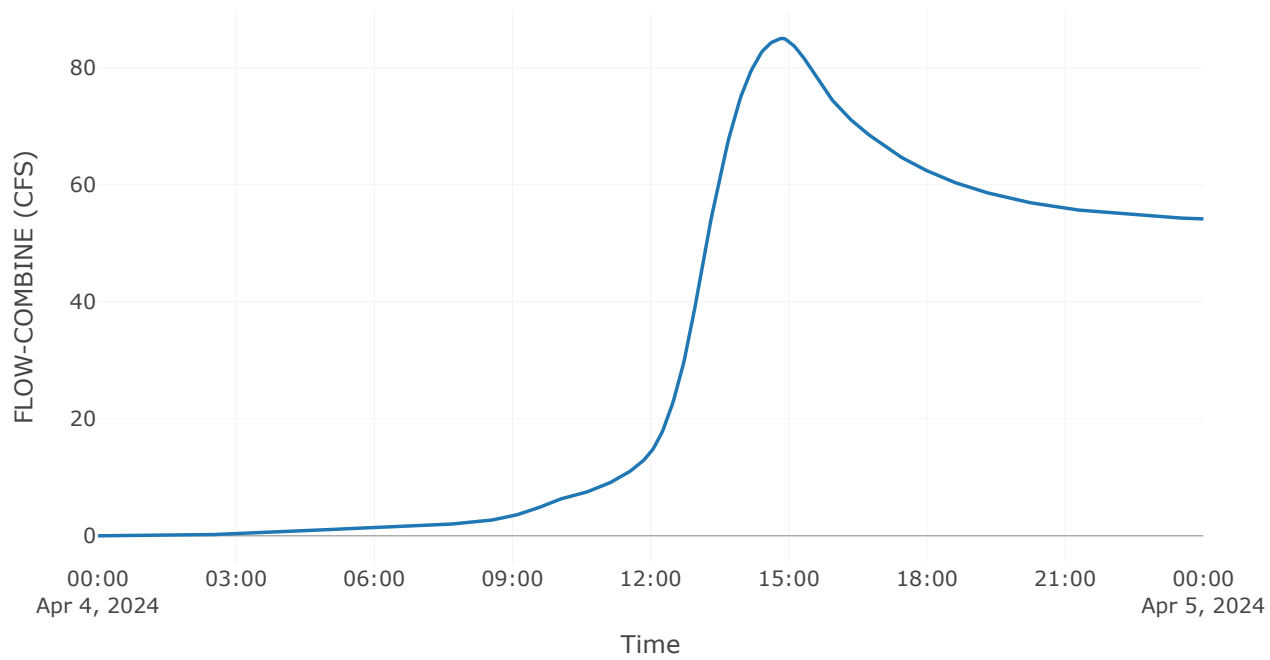
Cumulative Outflow
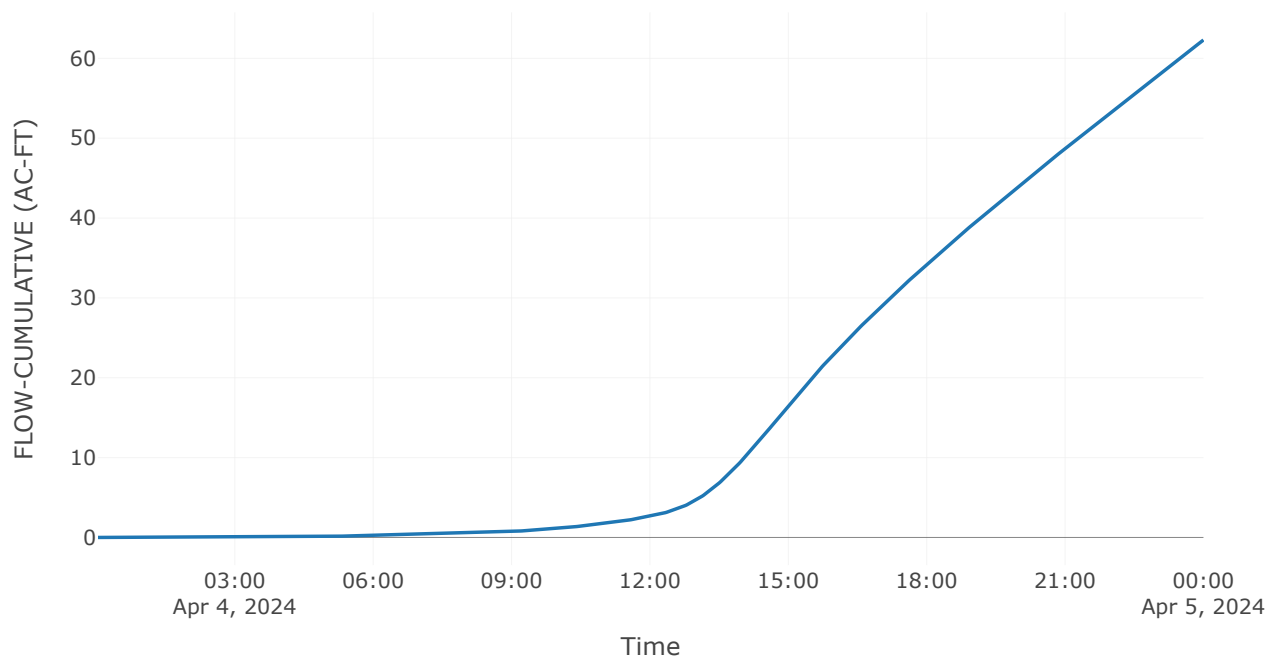
Outflow
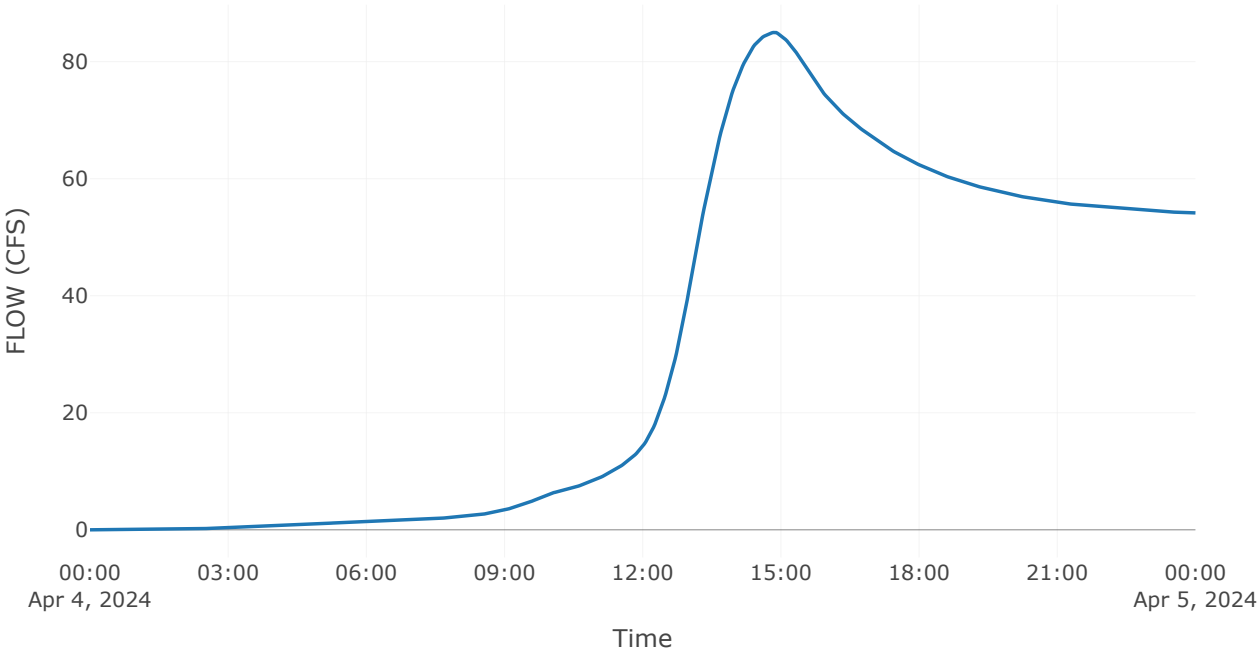
Subbasin: EX-01

Area (MIē) : 0.05
Downstream : JCT - 01

Loss Rate: Scs

Percent Impervious Area	9.77
Curve Number	75.53

Transform: Scs

Lag	83.18
Unitgraph Type	Standard

Results: EX-01

Peak Discharge (CFS)	51.87
Time of Peak Discharge	04Apr2024, 13:30
Volume (IN)	5.57
Precipitation Volume (AC - FT)	22.61
Loss Volume (AC - FT)	7.15
Excess Volume (AC - FT)	15.45
Direct Runoff Volume (AC - FT)	15.09
Baseflow Volume (AC - FT)	0

Precipitation and Outflow
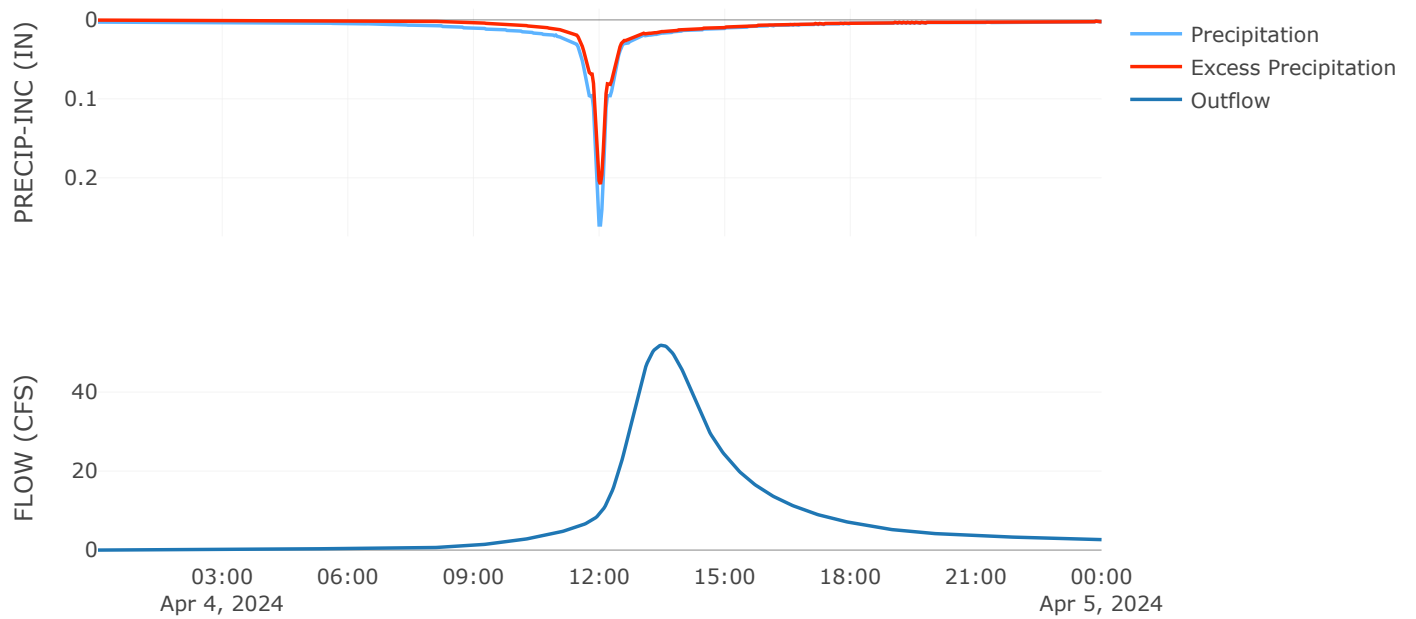
Cumulative Outflow
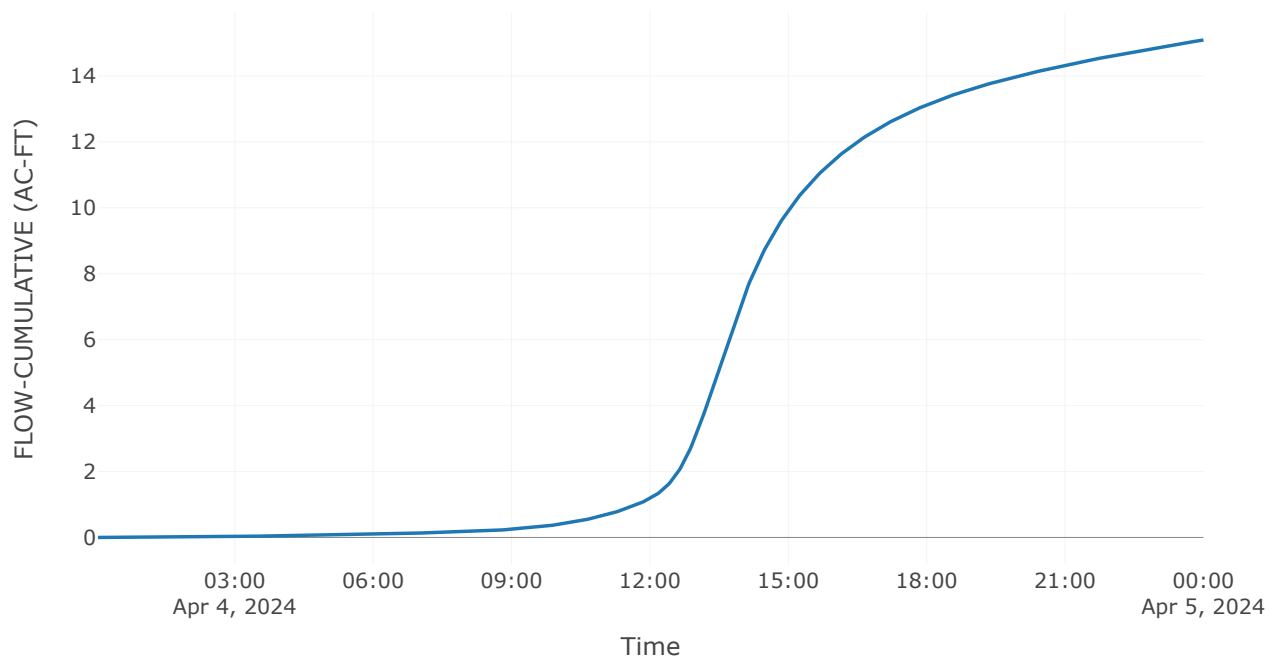
Junction: JCT-01

Downstream : JCT - 00

Results: JCT-01

Peak Discharge (CFS)	120.94
Time of Peak Discharge	04Apr2024, 13:58
Volume (IN)	2.13

Combined Inflow
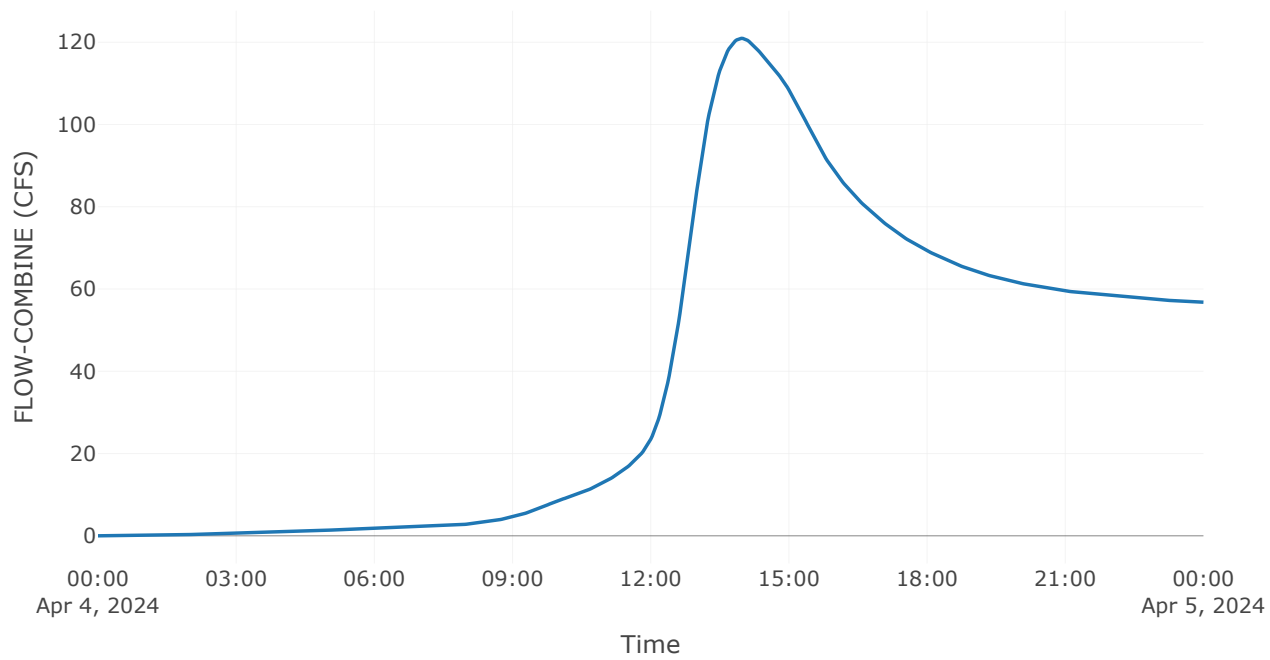
Cumulative Outflow
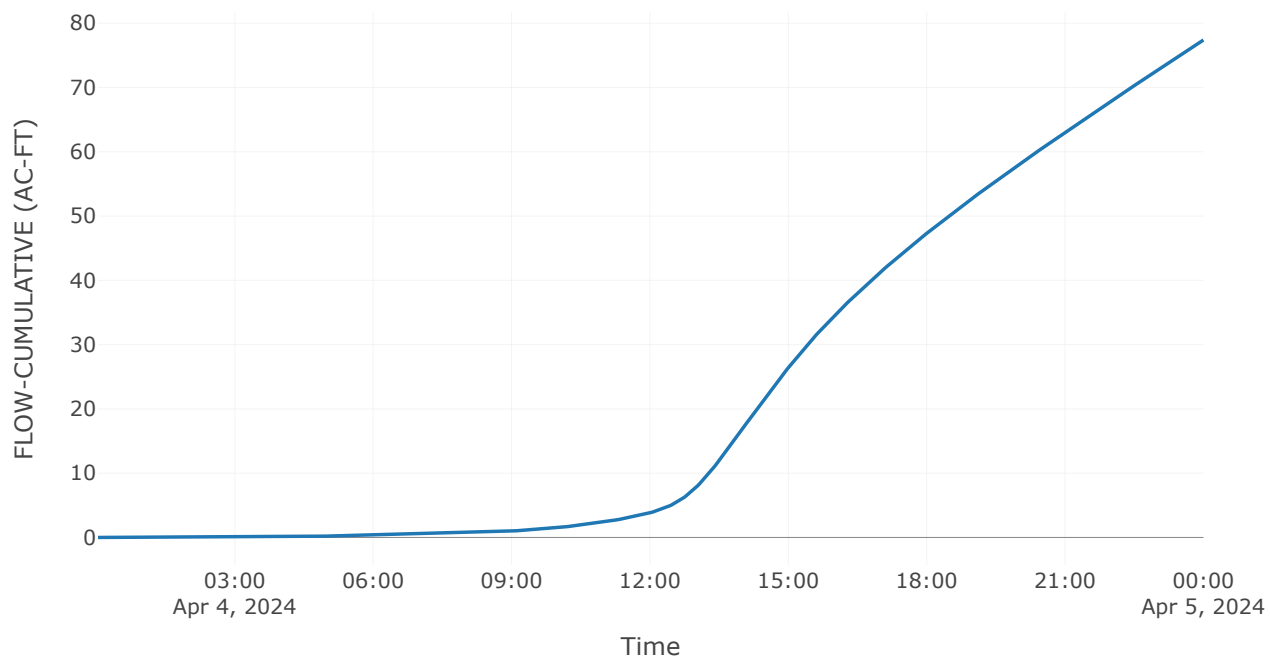
Outflow
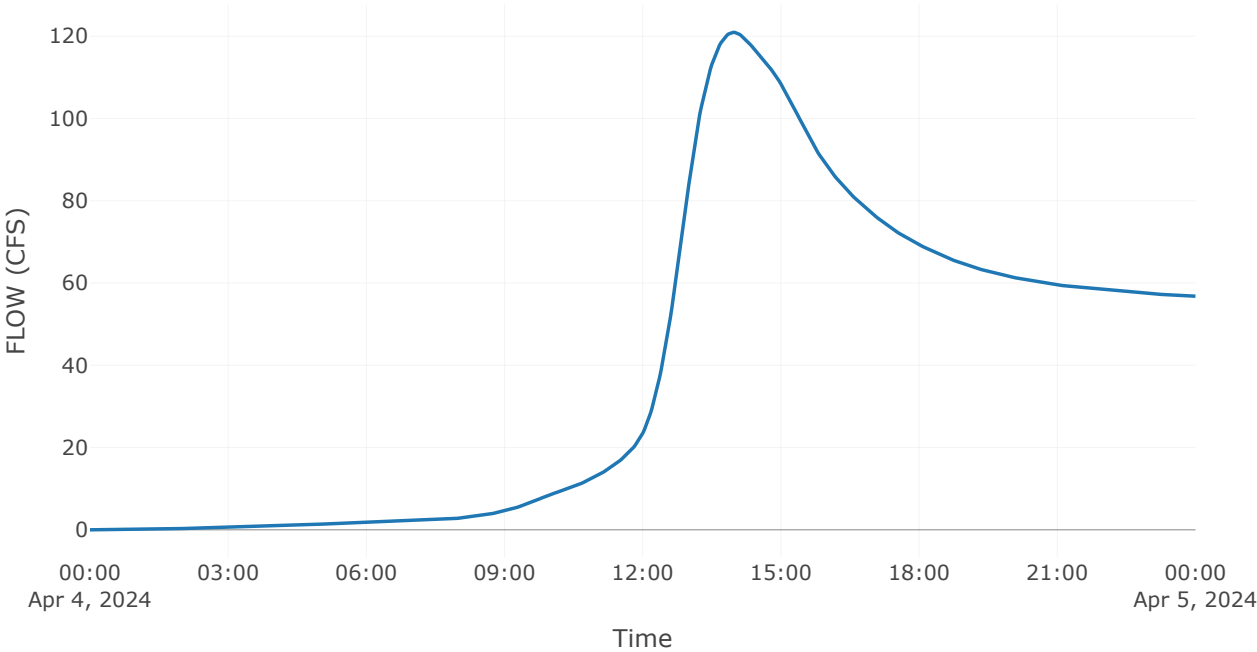
Subbasin: EX-00   Added subbasin between Grumman Hill road and 64 DBR

Area (MIē) : 0.07
Downstream : JCT - 00

Loss Rate: Scs

Percent Impervious Area	9.77
Curve Number	69.92

Transform: Scs

Lag	47.43
Unitgraph Type	Standard

Results: EX-00

Peak Discharge (CFS)	93.82
Time of Peak Discharge	04Apr2024, 12:52
Volume (IN)	5.04
Precipitation Volume (AC - FT)	31.69
Loss Volume (AC - FT)	12.31
Excess Volume (AC - FT)	19.39
Direct Runoff Volume (AC - FT)	19.13
Baseflow Volume (AC - FT)	0

Precipitation and Outflow
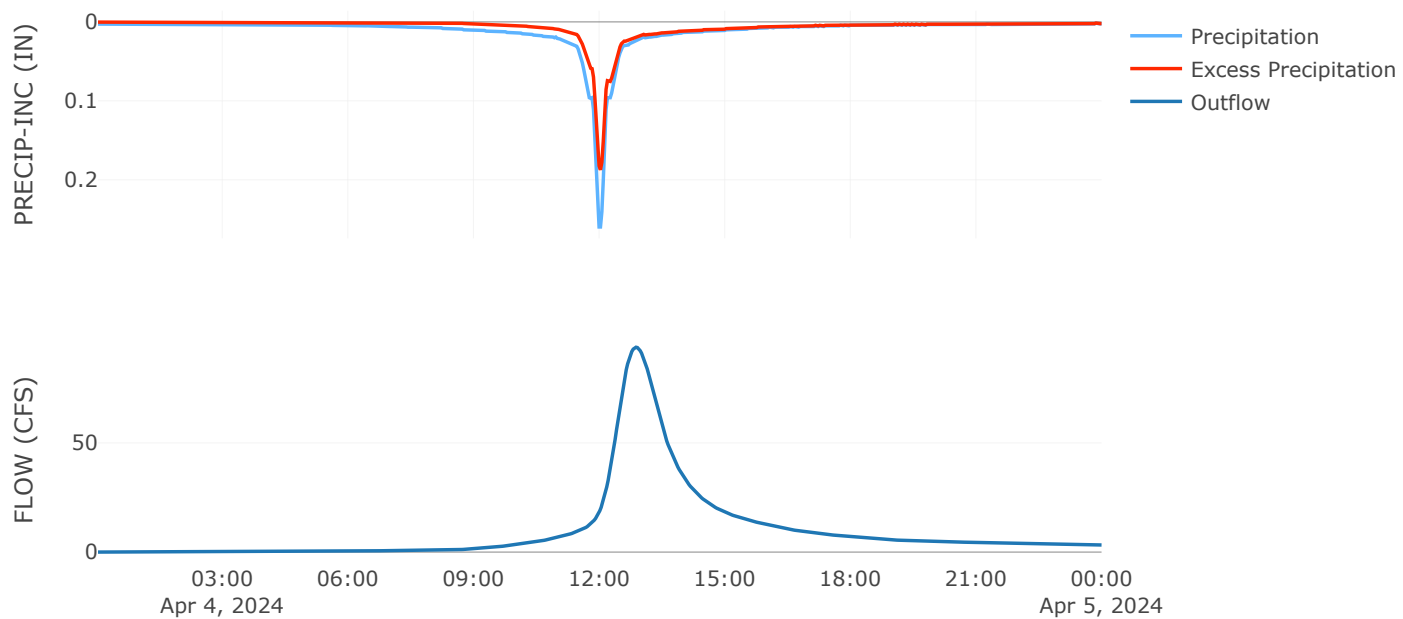
Cumulative Outflow
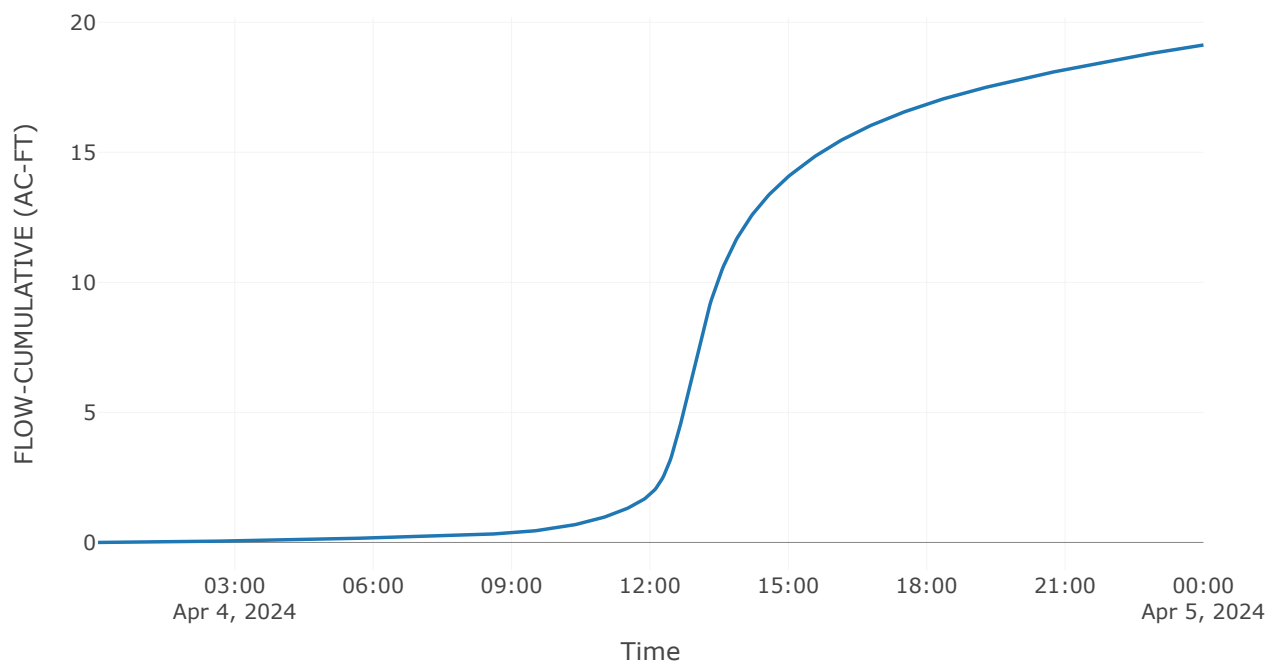
Junction: JCT-00

Downstream : SA - 1

Results: JCT-00	
Peak Discharge (CFS)	178.54
Time of Peak Discharge	04Apr2024, 13:08
Volume (IN)	2.41

Combined Inflow
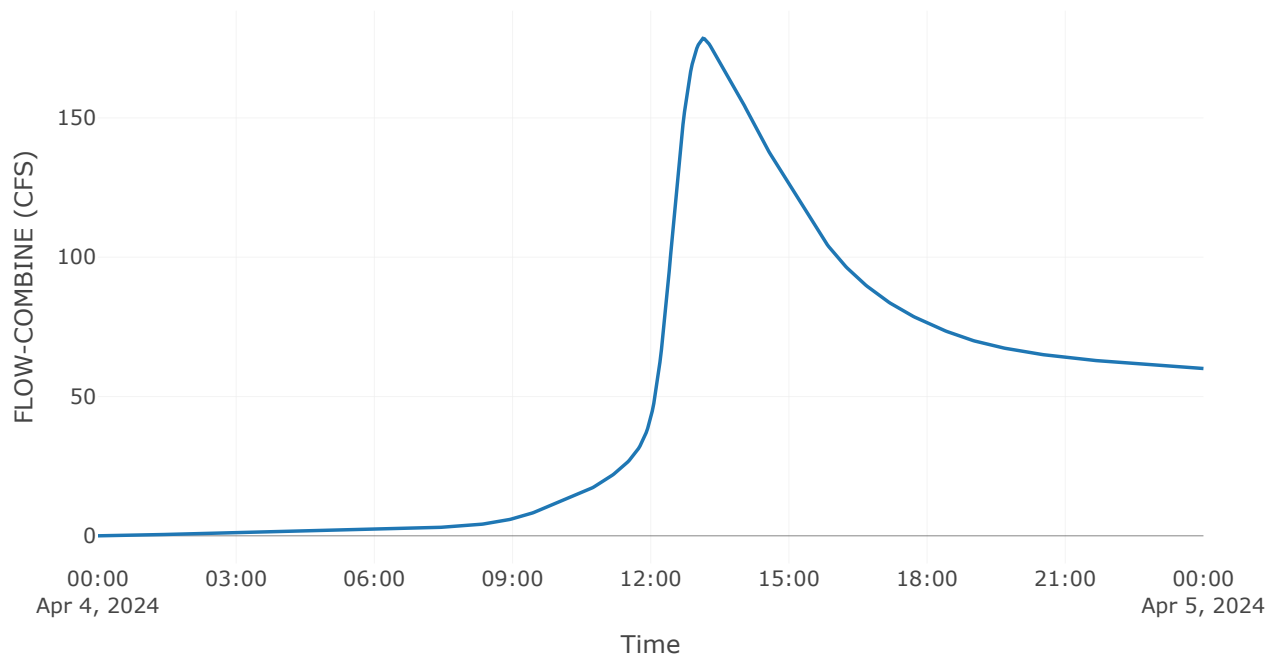
Cumulative Outflow
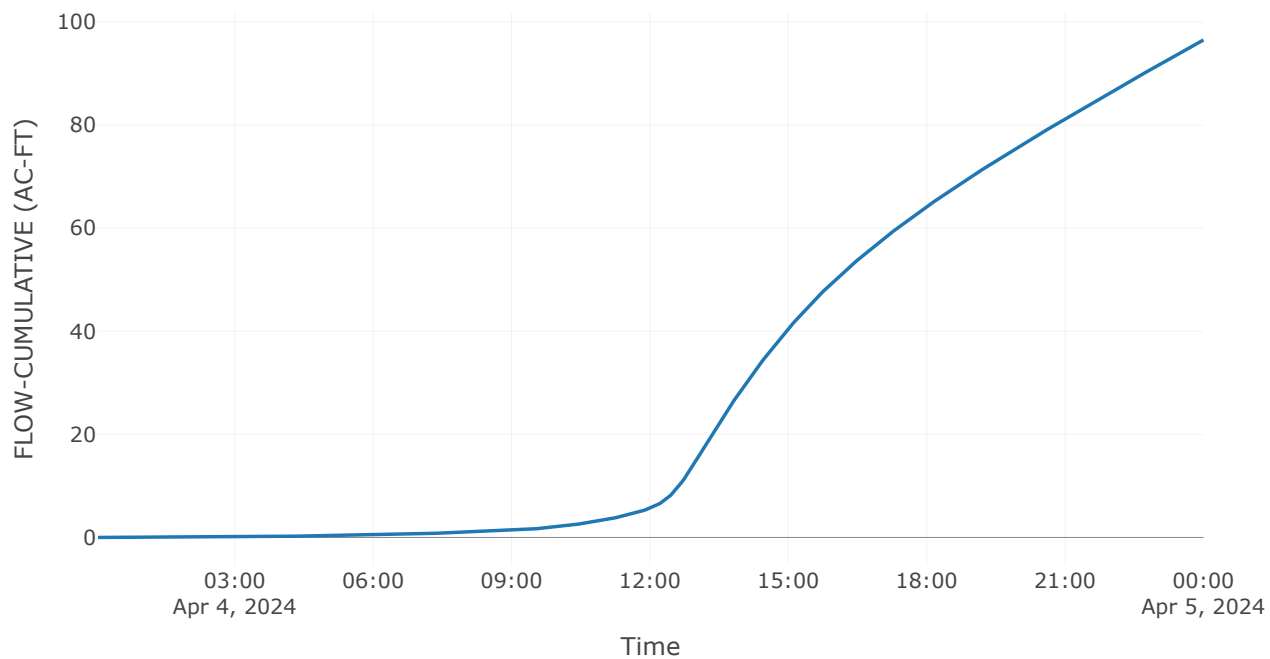
Outflow
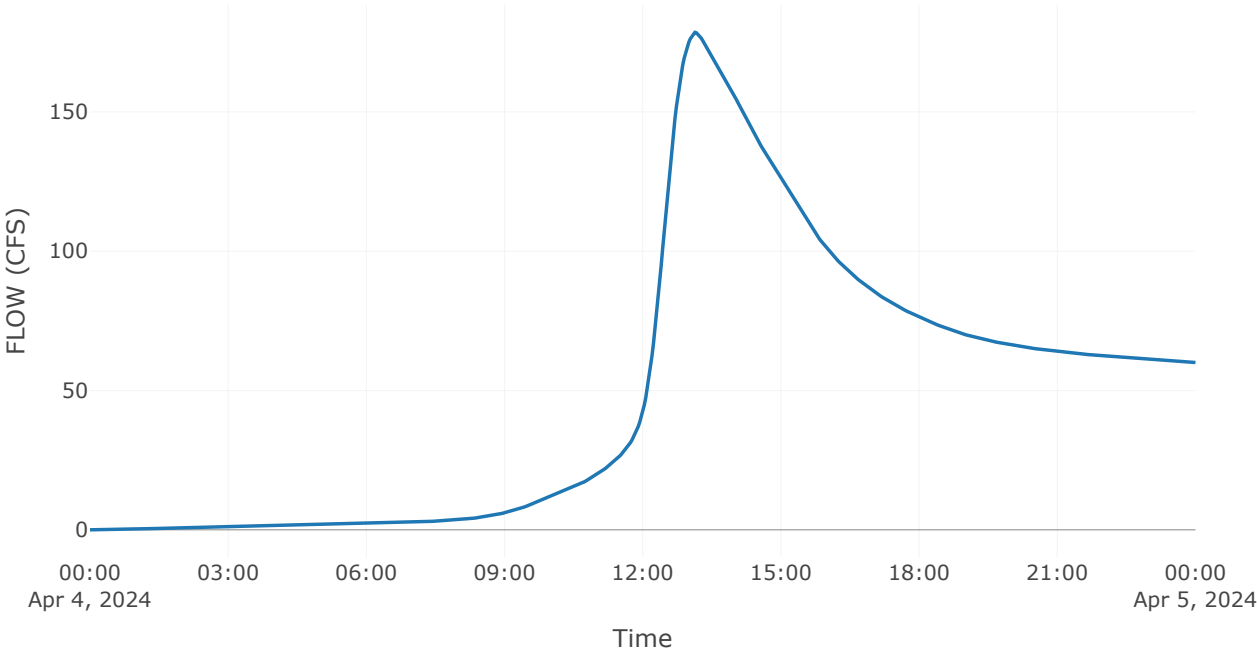
Reservoir: SA-1 | Storage at 64 DBR Headwall |

Results: SA-1

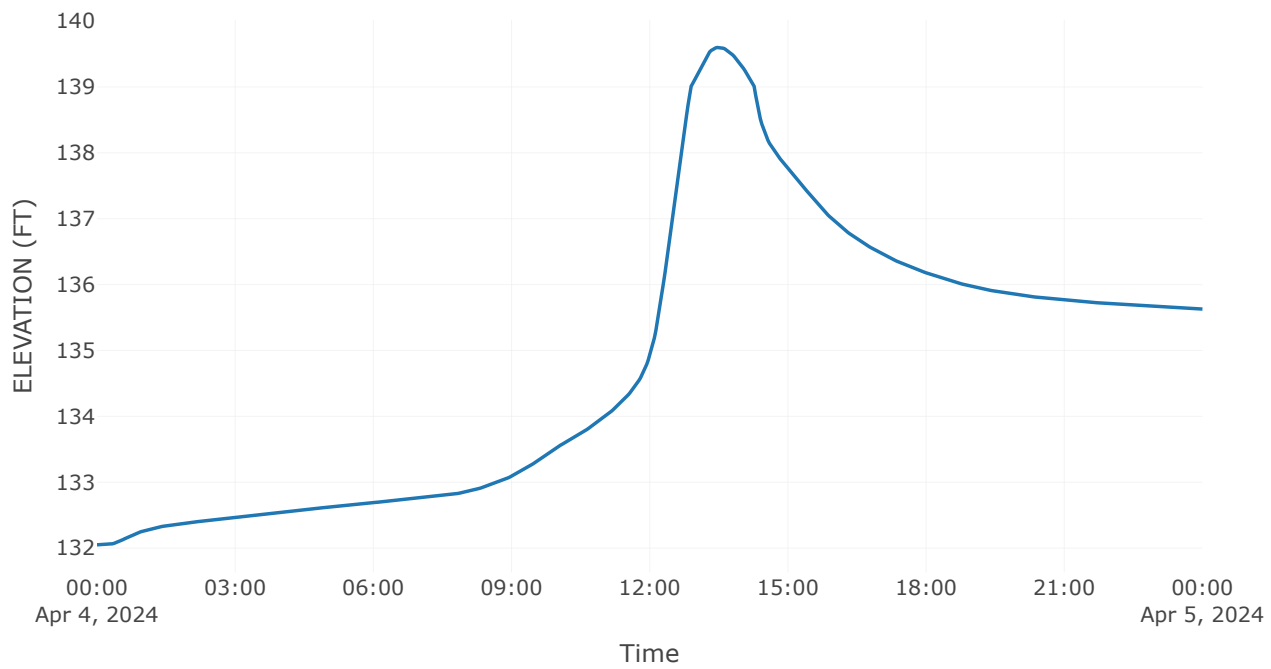|	
Peak Discharge (CFS)	170.04
Time of Peak Discharge	04Apr2024, 13:30
Volume (IN)	2.41
Peak Inflow (CFS)	178.54
Time of Peak Inflow	04Apr2024, 13:08
Inflow Volume (AC - FT)	96.52
Maximum Storage (AC - FT)	1
Peak Elevation (FT)	139.6
Discharge Volume (AC - FT)	96.36

peak elevation at 64 DBR headwall

Combined Inflow

Cumulative Outflow

Pool Elevation

Outflow