

**NEWCASTLE
PETERS TOWNSHIP
WASHINGTON COUNTY, PENNSYLVANIA**

**POST-CONSTRUCTION
STORMWATER MANAGEMENT
PLAN**

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Prepared By:



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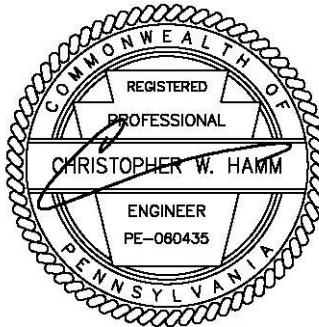


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I. INTRODUCTION

The proposed project is located along the southern side of Justabout Road approximately 1.2 miles south from the intersection of Justabout Road and Bebout Road in Peters Township, Washington County, Pennsylvania. The site is currently a partly wooded vacant parcel.

The proposed project is to build a residential subdivision. A USGS Location Map is located in Appendix A of this report.

The project drains to the Brush Run Watershed having a Chapter 93 water designation of a Warm Water Fishes (WWF). Brush Run Watershed is an impaired watershed, all BMPs are to follow ABACT details and notes.

This report has been developed in accordance with

- The Peters Township's Stormwater Ordinance, Chapter 371.
- The Washington County Act 167 County-Wide Stormwater Management Plan, and
- The Pennsylvania Department of Environmental Protection's (PA DEP) NPDES requirements

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Members of KDH, have extensive experience preparing E&S and PCSM Plans in Pennsylvania and surrounding states.

II. METHODOLOGY

The site was designed to follow Peters Township Stormwater Management Ordinance

Rate of Runoff Control:

The Municipal/County Ordinance requires that post-construction runoff be no greater than the pre-development rate (i.e., 100% Release Rate). The Soil Conservation Service (SCS) Methodology within the Hydrographs computer program was used to model the pre- versus post-development conditions.

Controlling the rate of runoff for the 1, 2, 5, 10, 25, 50 and 100-year storm events was accomplished using PCSM infiltration pond. The facility has been designed to have an outlet structure capable of controlling the rate of discharge to less than the allowable rates, as well as emergency conditions.

Runoff Volume & Runoff Quality Control:

All runoff calculations for the NPDES requirements were computed using the SCS method for the 2-year, 24-hour storm event. The required volume is a function of the pre-development runoff volume as compared to the post-development runoff volume. The difference in the two runoff volumes becomes the "required structural volume" that must be treated. The required structural volume is treated by allowing Pond-1 to have a permanent pool, by raising the lowest orifice above the bottom of the pond.

Project Rainfall:

The rainfall data for the 2, 10, 25, and 100-year storm events were obtained from the stormwater management ordinance. The data obtained used for the design is summarized below:

**TABLE-1
RAINFALL DEPTHS**

Storm Event	Rainfall Depth (inches)
1-year, 24-hr	1.99
2-year, 24-hr	2.38
5-year, 24-hr	2.91
10-year, 24-hr	3.35
25-year, 24-hr	3.96
50-year, 24-hr	4.46
100-year, 24-hr	4.99

Project Soils:

A Custom Soil Resource Map has been generated for this site and is available within Appendix C of this report. Additionally, the soils have been listed below:

Map Unit Symbol	Map Unit Name
CaC	Culleoka channery silt loam, 8 to 15 percent slopes
CaD	Culleoka channery silt loam, 15 to 25 percent slopes
DoC	Dormont silt loam, 8 to 15 percent slopes
DtD	Dormont-Culleoka complex, 15 to 25 percent slopes
DtF	Dormont-Culleoka complex, 25 to 50 percent slopes
Fa	Fluvaquents, loamy
Nw	Newark Silt loam, 0 to 3 percent slopes, frequently flooded

Landcover & CN Values

The site is located within soils having Hydrologic Soil Groups (HSG) of D. Therefore, the CN values for HSG of the soils were used for pre and post development conditions. The land cover type for pre-development conditions was determined based upon site visits, available survey information, and satellite photography.

Time of Concentration:

The time of concentration is the time for runoff to travel from the most hydraulically distant point in the watershed to the point of interest. For the first segment of the travel time path (sheet flow), a maximum length of 100 feet was used for undisturbed areas. This complies with the requirements of the Pennsylvania Department of Environmental Protection's Erosion and Sediment Pollution Control Manual, which states that the maximum length for sheet flow in unpaved areas is 100 feet. The additional flow types included in the calculations are shallow concentrated flow and channel flow. If the time was calculated to be less than 5-minutes, a 5-minute time was used.

Point of Interests:

There is one Point of Interest (POI) for this project. POI 1 is located at the northeastern property line of the property where the existing unnamed tributary leaves the property.

III. RUNOFF VOLUME & QUALITY CONTROL

Stormwater volume requirements were computed using the methodologies outlined in the ordinance and Hydraflow. Please see Appendix-F for the Printouts.

To account for this "required structural volume" the infiltration pond will be utilized to hold the difference of the runoff volume between the pre-developed and post developed 2-year storm event. This volume was determined by using DEP Spreadsheets.

Please see Appendix-F for the DEP Spreadsheets and Hydraflow Printouts. This supplied volume is greater than the required volume. Therefore, there will be no increased discharge from the site for the 2-year storm event.

Pre-DA #1 (Hyd. No. 1) *

ID	Area (Acres)	CN Number
D – Trees (Good)	0.930	77
D – Meadow (Good)	7.348	78
D - Impervious	0.005	98
D – Impervious as Meadow	0.001	78
Total Area	8.284	78

- Note: 20% of the impervious area in the Pre-Developed Condition was converted to Meadow

Post-DA #1 (Hyd. No. 2) Entire Site

ID	Area (Acres)	CN Number
D – Meadow (Good)	2.419	78
D – Open Space, Lawn	4.258	80
D - Impervious	1.896	98
Total Area	8.572	83

Post-DA #1 (SCM-001) – Hyd. No. 4

ID	Area (Acres)	CN Number
D – Meadow (Good)	0.667	78
D – Open Space, Lawn	3.523	80
D - Impervious	1.615	98
Total Area	5.805	85

Post DA #1 (SCM-002) - (Hyd. No. 5)

ID	Area (Acres)	CN Number
D – Meadow (Good)	0.000	78
D – Open Space, Lawn	0.000	80
D - Impervious	0.058	98
Total Area	0.058	98

Post DA #1 (SCM-003) - Hyd. No. 6

ID	Area (Acres)	CN Number
D – Meadow (Good)	0.000	77
D – Open Space, Lawn	0.000	80
D - Impervious	0.058	98
Total Area	0.058	98

Post DA #1 (SCM-004) - Hyd. No. 7

ID	Area (Acres)	CN Number
D – Meadow (Good)	0.000	77
D – Open Space, Lawn	0.000	80
D - Impervious	0.058	98
Total Area	0.058	98

Post DA #1 Undetained - Hyd. No. 8

ID	Area (Acres)	CN Number
D – Meadow (Good)	1.752	77
D – Open Space, Lawn	0.735	80
D - Impervious	0.107	98
Total Area	2.594	79

Pre-DA #2 (Hyd. No. 1) *

ID	Area (Acres)	CN Number
D – Trees (Good)	3.415	77
D – Meadow (Good)	2.335	78
D - Impervious	0.000	98
D – Impervious as Meadow	0.000	78
Total Area	5.749	77

- Note: 20% of the impervious area in the Pre-Developed Condition was converted to Meadow

Post DA #2 (Hyd. No. 2) Entire Site

ID	Area (Acres)	CN Number
D – Meadow (Good)	1.677	78
D – Open Space, Lawn	2.579	80
D - Impervious	1.187	98
Total Area	5.443	83

Post-DA #2 (SCM-005) – Hyd. No. 4

ID	Area (Acres)	CN Number
D – Meadow (Good)	0.914	78
D – Open Space, Lawn	2.410	80
D - Impervious	1.187	98
Total Area	4.511	84

Post DA #2 Undetained - Hyd. No. 5

ID	Area (Acres)	CN Number
D – Meadow (Good)	0.763	77
D – Open Space, Lawn	0.168	80
D - Impervious	0.000	98
Total Area	0.931	78

IV. PERMANENT PCSM SCM

This project will utilize two proposed infiltration ponds to store the increase in the runoff for the two-year storm volume.

DA #1

Pre-Developed DA #1 Conditions

ID	Drainage Area	Peak Flow Rate, Q (cfs)						
		1 Year	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year
Pre-DA-1 POA-1 (Hyd. No. 1)	8.284	5.962	9.211	14.07	18.38	24.65	30.02	35.83

Post -Developed DA #1 Conditions WITHOUT Controls

ID	Drainage Area	Peak Flow Rate, Q (cfs)						
		1 Year	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year
Post DA #1 (Entire Site) – Hyd. No. 2	8.572	10.94	15.44	21.90	27.46	35.35	41.91	49.00
Post DA #1 (SCM-001) – Hyd. No. 4	5.805	8.531	11.72	16.24	20.10	25.54	30.08	34.91
Post DA #1 (SCM-002) – Hyd. No. 5	0.058	0.167	0.201	0.247	0.286	0.339	0.382	0.428
Post DA #1 (SCM-003) – Hyd. No. 6	0.058	0.167	0.201	0.247	0.286	0.339	0.382	0.428
Post DA #1 (SCM-004) – Hyd. No. 7	0.058	0.167	0.201	0.247	0.286	0.339	0.382	0.428
Post DA #1 (Undetained) – Hyd. No. 8	2.594	2.409	3.622	5.419	7.001	9.282	11.20	13.28
POA-1 – Hyd. No. 9	8.572	11.43	15.94	22.39	27.94	35.81	42.38	49.44

As seen above, the post developed conditions require BMPs to release the runoff below the pre-developed runoff rate. Post Developed DA #1 (SCM-001) will be controlled by SCM-001 (Infiltration Pond - 1). And on lot rock sumps for can be installed for Lot 22 (SCM-004), Lot 23, (SCM-003) and Lot 24 (SCM-002).

Post Developed DA #1 Conditions WITH Controls

ID	Drainage Area	Peak Flow Rate, Q (cfs)						
		1 Year	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year
Route DA #1 (SCM-001) – Hyd. No. 11	5.805	0.000	0.000	0.147	0.425	1.013	1.672	2.508
Route DA #1 (SCM-002) – Hyd. No. 12	0.058	0.004	0.005	0.005	0.006	0.011	0.033	0.099
Route DA #1 (BMP-003) – Hyd. No. 13	0.058	0.004	0.005	0.005	0.006	0.011	0.033	0.099
Route DA #1 (SCM-004) – Hyd. No. 14	0.058	0.004	0.005	0.005	0.006	0.011	0.033	0.099
Combine (SCM-002, SCM-003, & SCM-004) – Hyd. No. 15	--	0.013	0.014	0.016	0.017	0.034	0.100	0.297
Reach Post DA #1 (SCM-002, SCM-003, & SCM-004) – Hyd. No. 16	--	0.013	0.014	0.016	0.017	0.033	0.087	0.200
Post DA #1 (Undetained) – Hyd. No. 8	2.594	2.409	3.622	5.419	7.001	9.282	11.20	13.28
Combine DA #1 – Hyd. No. 20	8.572	2.418	3.632	5.430	7.012	9.307	11.51	14.10

DA #2

Pre-Developed DA #2 Conditions

ID	Drainage Area	Peak Flow Rate, Q (cfs)						
		1 Year	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year
Pre-DA-2 POA-5 (Hyd. No. 1)	5.749	3.987	6.263	9.685	12.73	17.17	20.96	25.10

Post -Developed DA #2 Conditions WITHOUT Controls

ID	Drainage Area	Peak Flow Rate, Q (cfs)						
		1 Year	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year
Post DA #2 (Entire Site) – Hyd. No. 2	5.443	7.242	10.18	14.40	18.03	23.17	27.47	32.09
Post DA #2 (SCM-005) – Hyd. No. 4	4.511	6.184	8.605	12.06	15.02	19.21	22.71	26.45
Post DA #2 (Undetained) – Hyd. No. 5	0.931	0.791	1.213	1.843	2.400	3.208	3.891	4.629
POA-5 – Hyd. No. 6	5.443	6.975	9.818	13.91	17.43	22.42	26.57	31.06

As seen above, the post developed conditions require BMPs to release the runoff below the pre-developed runoff rate. Post Developed DA #2 (SCM-005) will be controlled by SCM-005 (Infiltration Pond - 2).

Post Developed DA #2 Conditions WITH Controls

ID	Drainage Area	Peak Flow Rate, Q (cfs)						
		1 Year	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year
Route DA #2 (SCM-005) – Hyd. No. 8	4.511	0.000	0.040	0.328	0.785	1.904	3.185	4.808
Reach DA #2 (SCM-005) – Hyd. No. 9	--	0.000	0.040	0.328	0.785	1.903	3.182	4.799
Post DA #2 (Undetained) – Hyd. No. 5	0.931	0.791	1.213	1.843	2.400	3.208	3.891	4.629
Combine DA #2 – Hyd. No. 10	5.443	0.791	1.213	1.843	2.400	3.243	4.703	6.742

V. POST-DEVELOPMENT ALLOWABLE RELEASE RATES

Per the Municipal/County Stormwater Ordinance this site is located in a 100% release rate area. Therefore, the post development 'allowable release rate to POA-1 and POA-5 must be less than the pre- development rates. After the post drainage areas were routed through their SCMs, they were combined to get the overall post developed discharge at the POA. This was then compared to the predeveloped Allowable Release Rate.

Watershed Release Rates

ID	Drainage Area	Peak Flow Rate, Q (cfs)						
		1 Year	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year
POA-1								
Pre-DA-1 POA-1 (Hyd. No. 1)	8.284	5.962	9.211	14.07	18.38	24.65	30.02	35.83
Combine DA #1 – Hyd. No. 20	8.572	2.418	3.632	5.430	7.012	9.307	11.51	14.10
POA-5								
Pre-DA-2 POA-5 (Hyd. No. 1)	5.749	3.987	6.263	9.685	12.73	17.17	20.96	25.10
Combine DA #2 – Hyd. No. 10	5.443	0.791	1.213	1.843	2.400	3.243	4.703	6.742

By comparison of the peak flows listed above the post-development rates are less than the allowable release rates to POA-1 and POA-5.

VI. LAND USES

Past Use land uses for past 50-years: Vacant Field

Present Use for past 5-years: Vacant Field

Proposed Use: Residential Subdivision

VII. THERMAL IMPACTS

There are no anticipated thermal impacts to any surface waters within the project area. The stormwater runoff from the site will be stored in the infiltration ponds and released slowly or sheet flow over existing well vegetated cover. The system will then discharge directly to an Unnamed Tributary to Brush Run.

VIII. BMP MAINTENANCE AND OWNERSHIP

The proposed stormwater management facilities will eventually be turned over to Peters Township and will be the responsibility of the township. It will be their responsibility for maintenance and operations.

IX. CONSTRUCTION SEQUENCE

Construction Sequence

Project Schedule

The project is expected to begin within 2 weeks of receipt of all necessary approvals and the construction schedule is weather dependent.

Phase 1 – E&S BMP Installation and GP-7 Stream Crossings

All earth disturbance activities shall proceed in accordance with the following sequence. Each stage shall be completed and immediately stabilized before any following stage is initiated. Clearing, grubbing and topsoil stripping shall be limited only to those areas described in each

stage.

Immediately upon discovering unforeseen circumstances posing the potential for accelerated erosion and/or sediment pollution, the operator shall implement appropriate best management practices to eliminate the potential for accelerated erosion and/or sediment pollution and contact the engineer.

A written report must be kept by the contractor documenting inspections and repairs to all BMPs. The contractor shall inspect and log all activities onto DEP Form 3800-FM-BCW0271d (dated 12/2024) and kept on site at all times.

The site is located within the Brush Run Watershed, having a Chapter 93 watershed classification of Warm Water Fishery. Brush Run Watershed is an impaired watershed, all BMPs are to follow ABACT details and notes.

Sediment removed from BMP's shall be spread in an area protected by existing BMP's (prior to final stabilization) or removed to an approved waste site.

1. At least 7 days prior to starting any earth disturbance activities, including clearing, and grubbing, the owner and/or operator shall invite all contractors, the landowner, appropriate municipal officials, the E&S plan preparer, the PCSM plan preparer, the licensed professional responsible for oversight of critical stages of implementation of the PCSM plan, and a representative from the Washington County Conservation District to an on-site preconstruction meeting.
2. At least 3 days prior to starting any earth work disturbance activities, or expanding into an area previously unmarked, the Pennsylvania One Call System, Inc. shall be notified at 1-800-242-1776 or 811 for the location of existing underground utilities.
3. Layout the limits of the construction site and establish benchmarks and reference points.
4. Stake out the limit of disturbance (LOD) as indicated on the construction plans.

5. Install the rock construction entrances in the locations shown on the plan and in accordance with standard detail. Install any culverts and/or storm drain conveyance system under the entrance as shown on the plans.
6. Clear only those areas necessary to reach and install perimeter E&S controls within the northern side of the project earth moving limits. Install compost filter socks as shown on the E&S control plan drawings and in accordance with the standard details. All compost filter socks shall be installed parallel to the contours with the ends of the socks turned upslope at a 45-degree angle. Trees shall not be removed in order to install compost filter socks. Slight deviation from installation parallel to contours is acceptable to avoid trees.
7. Begin the installation of the stream culvert crossing for GP-7.1 at Stream R001. The crossings will be installed one at a time. The contractor shall install the culvert pipes using the pump bypass method. The stream will be dammed on the upstream and downstream side of the crossing using sandbags. Once the stream is dammed, a pump will be used to bypass the stream around the work area and discharge it below the downstream dam. Any water accumulating in the work area shall be pumped to a pumped water filter bag prior to discharging back into the stream. Once the work area is dry, excavation for the culvert installation may take place. Any excavated material from the stream shall be stockpile at least 10 feet back from the top of the stream bank with compost filter sock placed around the stockpile on the low side. The culvert is to be embedded into the stream channel 6" to allow stream channel flow. The culvert will then be back filled with clean stone and compacted. After the culvert pipe is installed and capable of allowing flow, the sandbag dam downstream of the crossing shall be removed and then the sandbag dam upstream of the culvert installation shall be removed.
8. After the culvert is installed and working properly, the access over the pipe shall be stoned at least 10' back from the top of the bank in each direction.
9. Once GP-7.1 is installed, the contractor may start the installation of the perimeter controls in this section of the project. This would be the installation of the compost filter socks located on the eastern side or down slope side of the project.

10. Next the contractor shall start to clear and grub the area necessary to install the stream crossing for GP-7.2 at Stream R003.
11. After the area is cleared and grubbed, the contractor may start the installation of the stream crossing. The contractor shall install the culvert pipes using the pump bypass method. The stream will be dammed on the upstream and downstream side of the crossing using sandbags. Once the stream is dammed, a pump will be used to bypass the stream around the work area and discharge it below the downstream dam. Any water accumulating in the work area shall be pumped to a pumped water filter bag prior to discharging back into the stream. Once the work area is dry, excavation for the culvert installation may take place. Any excavated material from the stream shall be stockpile at least 10 feet back from the top of the stream bank with compost filter sock placed around the stockpile on the low side. The culvert is to be embedded into the stream channel 6" to allow stream channel flow. The culvert will then be back filled with clean stone and compacted. After the culvert pipe is installed and capable of allowing flow, the sandbag dam downstream of the crossing shall be removed and then the sandbag dam upstream of the culvert installation shall be removed.
12. After the culvert is installed and working properly, the access over the pipe shall be stoned at least 10' back from the top of the bank in each direction.
13. Once GP-7.2 is installed, the contractor may start the installation of the perimeter controls in this section of the project. This would be the installation of the compost filter socks located on the northern side or down slope side of the project.
14. Next the contractor shall start to clear and grub the area necessary to install the stream crossing for GP-7.3 at Stream R007.
15. After the area is cleared and grubbed, the contractor may start the installation of the stream crossing. The contractor shall install the culvert pipes using the pump bypass method. The stream will be dammed on the upstream and downstream side of the crossing using sandbags. Once the stream is dammed, a pump will be used to bypass the stream around the work area and discharge it below the downstream dam. Any water accumulating in the work area shall be pumped to a pumped water filter bag prior to discharging back into the stream. Once the work area is dry, excavation for the culvert installation may take place. Any excavated material from the stream shall

- be stockpile at least 10 feet back from the top of the stream bank with compost filter sock placed around the stockpile on the low side. The culvert is to be embedded into the stream channel 6" to allow stream channel flow. The culvert will then be back filled with clean stone and compacted. After the culvert pipe is installed and capable of allowing flow, the sandbag dam downstream of the crossing shall be removed and then the sandbag dam upstream of the culvert installation shall be removed.
16. After the culvert is installed and working properly, the access over the pipe shall be stoned at least 10' back from the top of the bank in each direction.
 17. Now that the contractor has installed all three-stream crossing and the perimeter controls are installed and working properly. The contractor may start to clear and grub the remaining trees along the eastern side of the project near Sienna Trail.
 18. The contractor may also install the second rock construction entrance off of Sienna Trail.

Phase 2 – Sitework and Construction

19. Begin cut/fill grading operations as follows: Begin the cut on the western side of the project (Lots 10, 11, 12, 13, 14, 15, 16, 17, 18, and 19). Continue moving east with the earthwork operations and using the generated cut on the eastern side of the development as fill material. The infiltration basins can be constructed as part of the earthwork. These are considered critical stages since they will be used as PCSM BMPs and should be inspected as they are installed. However, they are not to be used as sediment traps during construction.
20. As the earthwork is progressing and the cut and fill slopes are taking shape and have reached final grade, they shall have topsoil placed and be seeded.
21. Once the slopes have been seeded, they shall have erosion control blankets placed on the slopes. Erosion control blankets shall be placed in accordance with the plans and details.

Note:

Contractor shall grade such that all cut, and fill earthwork continue to promote sheet flow as in the existing conditions. Contractor shall not grade in any way that causes channelization of runoff flow except for at the top-of-slope berms. Any

channelization shall be corrected to ensure sheet flow during site grading.

22. Site utilities including water and sewer, storm sewer, gas, and electric/communications within the limit of disturbance can be installed per the approved GP Plans at the contractor's discretion to avoid re-disturbing areas later as the site reaches grade, provide downstream BMPs are in place as per plans. Utilize trench plugs and compost filter sock as necessary and refer to the standard details provided on the detail sheet. The total length of excavated trench open at any one time should not be greater than the total length of utility line that can be placed in the trench and backfilled in one working day. Utilize a pumped water filter bag, as necessary. Water filter bags must be surrounded by compost filter sock to treat for additional sediment removal prior to being discharged to surface waters or stormwater inlets.

Note:

The construction of any utilities (specifically storm and sanitary sewers) shall be done during expected periods of dry weather and only the amount of trench that can be completed in one day shall be opened at any time. The basin shall be inspected to ensure that it is functioning properly. As the utility is installed, the disturbance shall be seeded and mulched immediately to ensure vegetation growth and limit the possibility of erosion. As the work is completed, the basin should be inspected for any damage caused by the utility installation and any necessary repairs are to be made immediately.

Once installed, all stormwater inlets shall be protected from entering sediment by the use of inlet protection as shown on the plans to prevent sediment from entering the previously constructed sediment basin that will be converted to an infiltration pond. Please note sediment shall be prevented from entering the infiltration basin by the installation of compost silt sock on the uphill side of the bmp. Inlet protection must be inspected on a weekly basis and after each runoff event throughout the duration of construction. Bags can be emptied, and rinsed or replaced when filter bags are half

- full and flow capacity has been reduced so as to cause flooding.
23. As disturbed areas within the project approach the final grade, preparations should be made for the seeding and mulching to begin. In no case should an area exceeding 15,000 square feet which is to be stabilized by vegetation reach the final grade without being seeded or mulched. Fill slopes should be seeded and mulched at regular vertical increments -15 to 25 feet maximum – as fill is being constructed. This will allow the bottom of the fill to progress toward stabilization while work continues on the upper portion, making stabilization easier to achieve and providing some vegetation buffering at the bottom of the slope.
 24. Install the concrete washout facilities in accordance with the standard detail.
 25. Fine grade and stabilize all areas of the site. Stabilize roads with stone base immediately after subgrade is reached. Utilize proper slope and trench shoring methods to alleviate cutbank caving. All unpaved disturbed areas shall be stabilized immediately with seed and mulch once grading is complete within four days once the construction has been completed.
 26. Install all proposed paving and concrete site work.
 27. All areas not paved shall receive a minimum of 6” of topsoil. Install plantings in accordance with the landscape plan.

Phase 3 –PCSM Installation and Site Stabilization

28. As the site work is taking place, the two infiltration basins, SCM-001 and SCM-005, will also be constructed at this time. Both infiltration basins are critical stage activities and advanced notification should be given to the engineer to allow for inspection of the installation.
29. SCM-1 is located along Justabout Road behind Lot 1 and Lot 2. This area should be protected from compaction prior to the installation starts. SCM-001 will have the northwestern portion of the basin in cut, while the southeastern side will be constructed by fill placement.

30. As the cut slopes start to be cut in, the area above the slopes shall have compost filter socks placed on the top of slope to protect the basin from receiving any sediment from upslope areas.
31. After the earthwork for SCM-001 has been completed, Storm HW-2 shall have the riprap apron installed to help eliminate and possible erosion issues. Once the riprap has been installed, the contractor shall start the installation of Outlet-SCM-001.
32. As the outlet barrel is installed through the berm, an antiseep collar shall be installed in accordance to the plans.
33. After Storm HW 1 is installed, the riprap apron shall be installed to ensure that no erosion shall take place from the outlet to the receiving surface waters.
34. After the outlet barrel is installed, CSM-001 shall be stabilized. It should be seeded and mulched in accordance to the seeding specifications provided in the plan set. Also, the emergency spillway shall receive the turf reinforced matting.
35. SCM-5 is located along Drawbridge Land between Lot 9 and Lot 10. This area shall be protected from compaction prior to the installation starts. SCM-5 will be located in an area of cut. Once the hillside is cut down to the top of berm elevation, the contractor shall install the compost filter sock at the toe of cut slope and along the remainder of the CSM in order to prevent silt from entering the proposed infiltration basin.
36. After the compost filter socks are installed, the contractor may start the excavation of the infiltration basin.
37. Once the basin has reached design elevation, the contractor may start the installation of the outlet Structure – Outler CSM-005 along with installing the riprap aprons on Storm HW 4, Storm HW 5, and Storm HW 6.
38. As the outlet barrel is installed through the berm, an antiseep collar shall be installed in accordance to the plans.
39. After the outlet barrel is installed, CSM-005 shall be stabilized. It should be seeded and mulched in accordance to the seeding specifications provided in the plan set. Also, the emergency spillway shall receive the turf reinforced matting.
40. SCM-2, SCM-3, and SCM-4 are located on Lot 24, Lot 23, and Lot 22. These lots are located along Justabout Road. These SCMs shall be installed at the same time the

house on these lots are constructed. The SCMs are a critical stage in the stormwater management system and the engineer needs to be notified beforehand of its installation so the installation can be inspected.

Note: The SCM's are intended to control the increase runoff created by the house roof. These SCMs shall be specifically designed for each lot.

41. The area of the SCMs shall be protected from compaction during construction. And the SCMs shall be installed after the house is completed.
42. The rock sump shall have a bottom that is uniform, level uncompacted subgrade that is free from rocks and debris.
43. Once the CSM is excavated, the sump shall have nonwoven geotextile placed such to wrap the excavation to prevent sediment from accumulating.
44. After the geotextile has been installed, the perforated pipe and observation well and all other dry well structures shall be installed according to plans.
45. Once the piping is in place, the contractor can start to place uniformly graded, clean-washed aggregate in 6" lifts, lightly compacting between lifts.
46. Once the stone has reached the design elevation, fold and secure the nonwoven geotextile over the trench.
47. Once the rock sump has been completely wrapped, place 12 " of approved topsoil over the sump as indicated on the plans. Seed and stabilize the topsoil.
48. Once a uniform 70% perennial vegetative cover is achieved on all disturbed areas. Upon completion of all earth disturbance activities involved with the subdivision infrastructure, removal of all temporary BMPs, and permanent stabilization of all disturbed areas, the owner and/operator shall contract the Washington County Conservation District for a final inspection and a Notice of Termination (NOT) shall be filed for the project.

Phase 4 –BMP Removal

Disposal Directions for Sediment

1. Sediment removed from BMPs shall be spread in an area protected by existing BMPs (Prior to final stabilization) or removed to an approved waste site.

X. EARTH DISTURBANCE ACTIVITIES

Earth disturbance activities shall be implemented to the extent practicable in accordance with the following items:

1. Minimize the extent and duration of the earth disturbance.

The Construction Sequence states that “upon completion or temporary cessation of the earth disturbance activity, or any stage thereof, the project site shall be immediately stabilized.”

XI. GEOLOGIC CONDITIONS THAT MAY HAVE THE POTENTIAL TO CAUSE POLLUTION

Based upon a review of the site and depth of the planned excavation it is not anticipated that there will be any potential pollution from geological formations such as coal or pyrite.

The moderate site slopes cause a geological condition that may have the potential to cause pollution, through the discharge of sediment. Therefore, the most effective perimeter controls, compost filter socks, will be used.

XII. MAINTENANCE PROGRAM

The stormwater pond should have the following maintenance:

- All basin structures expected to receive and/or trap debris and sediment should be inspected for clogging and excessive debris and sediment accumulation at least four times a year, as well as after every storm greater than 1 inch.
- Sediment removal should be conducted when the basin is completely dry. Sediment

should be disposed of properly and once sediment is removed, disturbed areas need to be immediately stabilized and revegetated.

- Mowing and/or trimming of vegetation should be performed as necessary to sustain the system, but all detritus should be removed from the basin.
- Vegetated areas should be inspected annually for erosion.
- Vegetated areas should be inspected annually for unwanted growth of exotic/invasive species.
- Vegetative cover should be maintained at a minimum of 95 percent. If vegetative cover has been reduced by 10%, vegetation should be reestablished.

The infiltration basin should have the following maintenance:

- Catch basins and inlets (upgradient of infiltration basin) should be inspected and cleaned at least four times per year and after runoff events.
- Vehicles should not be parked or driven on an infiltration basin, and care should be taken to avoid excessive compaction by mowers.
- Inspect the basin after runoff events and make sure that runoff drains down within 72 – 96 hours. Mosquitos should not be a problem if the water drains in 72-96 hours. Mosquitoes require a considerably long breeding period with relatively static water levels.
- Also inspect for accumulation of sediment, damage to outlet control structures, erosion control measures, signs of water contamination/spills, and slope stability in the berms.
- Mow on as appropriate for vegetative cover species.
- Remove accumulated from basin as required. Restore original cross section and infiltration rate. Properly dispose of sediment.

The Dry Well / Seepage Pit should have the following maintenance.

- Inspect Dry Wells at least four times a year, as well as after every storm exceeding 1 inch.
- Dispose of sediment, debris / trash, and other waste material removed from a dry well at suitable disposal / recycling sites and in compliance with local, state, and federal waste regulations.
- Evaluate the drain-down time of the drywell to ensure the maximum time of 72 hours is not being exceeded. If drain-down times are exceeding the maximum, drain the dry well via

pumping and clean out the perforated piping, if included. If slow drainage persists, the system may need replacing.

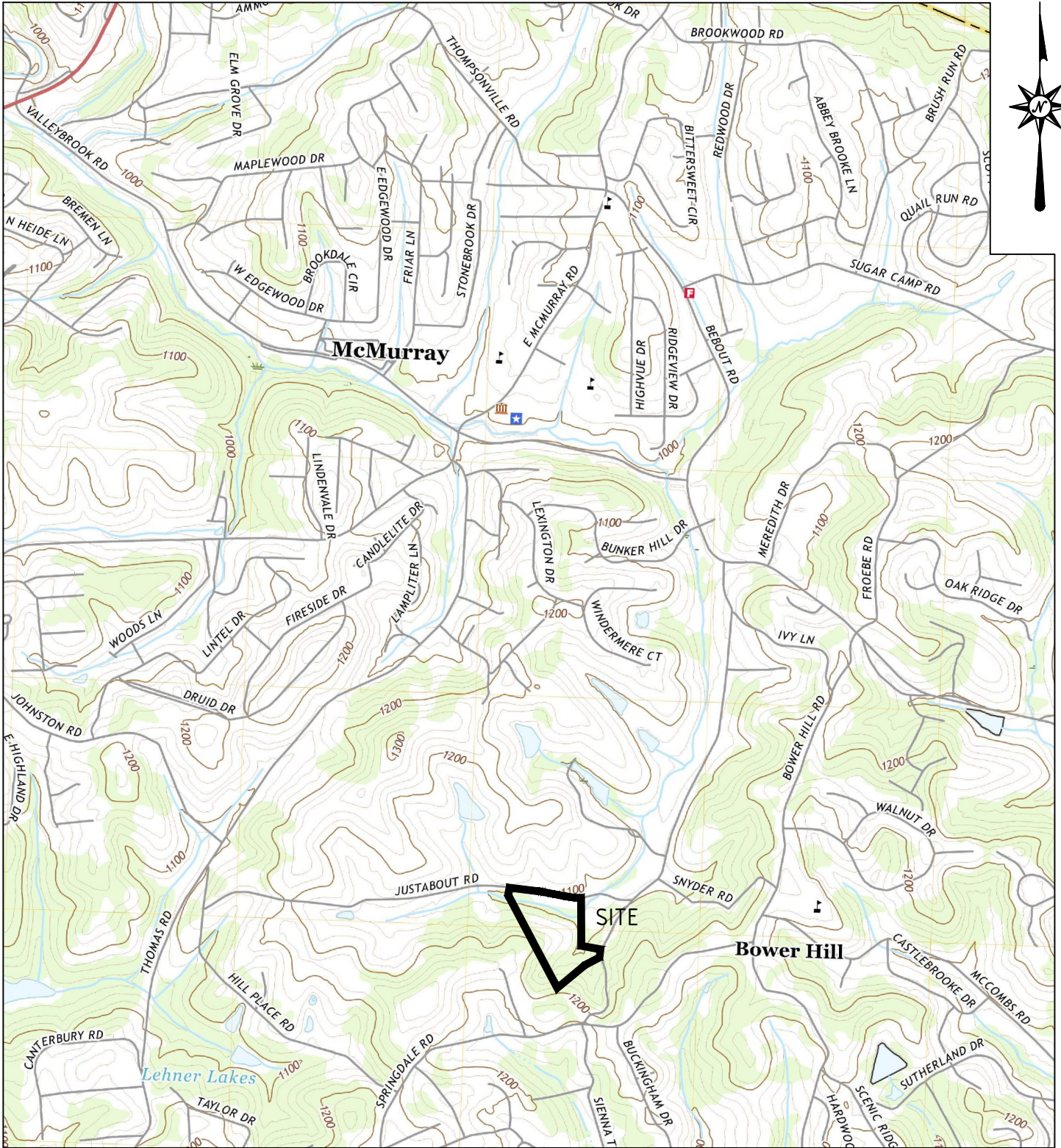
- Regularly clean out gutters and ensure proper connections to facilitate the effectiveness of the dry well.
- Replace filter screen that intercepts roof runoff as necessary.

XIII. REFERENCES

1. Commonwealth of Pennsylvania, Department of Environmental Protection, Office of Water Management, Pennsylvania Stormwater Best Management Practices Manual, Harrisburg, PA, December 30, 2006.
2. U.S. Department of Agriculture, Soil Conservation Service, Soil Survey of Greene and Washington Counties, Pennsylvania, Washington D.C., December 1993

APPENDIX A

USGS Map



BRIDGEVILLE QUAD

KDH
CONSULTING ENGINEERS, INC
 593 RUGH STREET
 GREENSBURG, PA 15601
 P: 878-295-8914 F: 724-514-7047
 www.kdhengineers.com

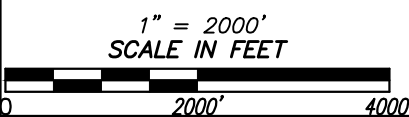
NEWCASTLE

SHEET TITLE:
 USGS
 LOCATION MAP

PROJ NO: 291-002-21
 DATE: 1/10/2025
 DRAWN BY: RAM
 CHECKED BY: CWH

PETERS TOWNSHIP,
 WASHINGTON COUNTY,
 PENNSYLVANIA

SHEET NO.
 1 OF 1



APPENDIX B

Rainfall Data

RAINFALL DATA

Storm Event	Rainfall Depth (inches)
1-year, 24-hr	1.99
2-year, 24-hr	2.38
10-year, 24-hr	3.35
25-year, 24-hr	3.96
50-year, 24-hr	4.46
100-year, 24-hr	4.99

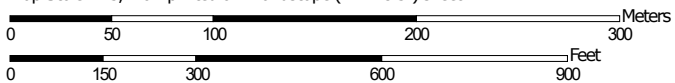
APPENDIX C

Soils Information

Soil Map—Greene and Washington Counties, Pennsylvania
(New Castle)



Map Scale: 1:3,720 if printed on A landscape (11" x 8.5") sheet.




Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84



Soil Map—Greene and Washington Counties, Pennsylvania
(New Castle)

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)




















Soils






 Soil Map Unit Polygons

 Soil Map Unit Lines


 Soil Map Unit Points

Special Point Features






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features


Water Features

 Streams and Canals

Transportation

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

Background

 Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Greene and Washington Counties, Pennsylvania
Survey Area Data: Version 20, Sep 7, 2022

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

Date(s) aerial images were photographed: May 19, 2021—Sep 19, 2021

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CaC	Culleoka channery silt loam, 8 to 15 percent slopes	0.7	2.8%
CaD	Culleoka channery silt loam, 15 to 25 percent slopes	0.0	0.1%
DoC	Dormont silt loam, 8 to 15 percent slopes	15.0	55.6%
DtD	Dormont-Culleoka complex, 15 to 25 percent slopes	0.9	3.2%
DtF	Dormont-Culleoka complex, 25 to 50 percent slopes	4.8	18.0%
Fa	Fluvaquents, loamy	0.2	0.7%
Nw	Newark silt loam, 0 to 3 percent slopes, frequently flooded	5.3	19.6%
Totals for Area of Interest		27.0	100.0%

Greene and Washington Counties, Pennsylvania

CaC—Culleoka channery silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2s5gn

Elevation: 720 to 1,610 feet

Mean annual precipitation: 37 to 48 inches

Mean annual air temperature: 49 to 53 degrees F

Frost-free period: 173 to 206 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Culleoka and similar soils: 80 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Culleoka

Setting

Landform: Hills

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Interfluve

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Fine-loamy residuum weathered from sandstone and shale

Typical profile

Ap - 0 to 10 inches: channery silt loam

Bt - 10 to 19 inches: channery silt loam

BC - 19 to 26 inches: very channery silt loam

C - 26 to 31 inches: very channery silt loam

R - 31 to 41 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent

Depth to restrictive feature: 24 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: B

Ecological site: F126XY001OH - Dry Ridge

Hydric soil rating: No

Minor Components

Dormont

Percent of map unit: 15 percent

Landform: Hills

Landform position (two-dimensional): Backslope, summit, shoulder

Landform position (three-dimensional): Interfluve, side slope

Down-slope shape: Linear

Across-slope shape: Convex, linear

Hydric soil rating: No

Lowell

Percent of map unit: 5 percent

Landform: Hills

Landform position (two-dimensional): Summit, backslope, shoulder

Landform position (three-dimensional): Side slope, interfluve

Down-slope shape: Convex

Across-slope shape: Linear, convex

Hydric soil rating: No

Data Source Information

Soil Survey Area: Greene and Washington Counties, Pennsylvania

Survey Area Data: Version 20, Sep 7, 2022

Greene and Washington Counties, Pennsylvania

CaD—Culleoka channery silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2s5gp
Elevation: 720 to 1,610 feet
Mean annual precipitation: 37 to 48 inches
Mean annual air temperature: 49 to 53 degrees F
Frost-free period: 173 to 206 days
Farmland classification: Not prime farmland

Map Unit Composition

Culleoka and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Culleoka

Setting

Landform: Hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Fine-loamy residuum weathered from sandstone and shale

Typical profile

Ap - 0 to 10 inches: channery silt loam
Bt - 10 to 19 inches: channery silt loam
BC - 19 to 26 inches: very channery silt loam
C - 26 to 31 inches: very channery silt loam
R - 31 to 41 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 24 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F126XY004OH - Side Slope

Hydric soil rating: No

Minor Components

Dormont

Percent of map unit: 15 percent

Landform: Hills

Landform position (two-dimensional): Backslope, summit, shoulder

Landform position (three-dimensional): Side slope, interfluvium

Down-slope shape: Linear

Across-slope shape: Convex, linear

Hydric soil rating: No

Lowell

Percent of map unit: 5 percent

Landform: Hills

Landform position (two-dimensional): Shoulder, backslope, summit

Landform position (three-dimensional): Side slope, interfluvium

Down-slope shape: Convex

Across-slope shape: Linear, convex

Hydric soil rating: No

Data Source Information

Soil Survey Area: Greene and Washington Counties, Pennsylvania

Survey Area Data: Version 20, Sep 7, 2022

Greene and Washington Counties, Pennsylvania

DoC—Dormont silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2s5gh

Elevation: 800 to 1,540 feet

Mean annual precipitation: 37 to 47 inches

Mean annual air temperature: 48 to 52 degrees F

Frost-free period: 173 to 197 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Dormont and similar soils: 70 percent

Minor components: 30 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dormont

Setting

Landform: Hills

Landform position (two-dimensional): Backslope, summit, shoulder

Landform position (three-dimensional): Side slope, interflue

Down-slope shape: Linear

Across-slope shape: Linear, concave

Parent material: Fine-loamy residuum weathered from limestone, sandstone, and shale

Typical profile

Ap - 0 to 11 inches: silt loam

Bt1 - 11 to 21 inches: silt loam

Bt2 - 21 to 31 inches: silty clay loam

Bt3 - 31 to 46 inches: channery silty clay loam

Bt4 - 46 to 62 inches: channery silty clay loam

BC - 62 to 75 inches: channery silty clay loam

Properties and qualities

Slope: 8 to 15 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.66 in/hr)

Depth to water table: About 24 to 44 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: D
Ecological site: F126XY003OH - Moist Ridge
Hydric soil rating: No

Minor Components

Culleoka

Percent of map unit: 15 percent
Landform: Hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Lowell

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Guernsey

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, head slope
Down-slope shape: Concave, linear
Across-slope shape: Linear, concave
Hydric soil rating: No

Data Source Information

Soil Survey Area: Greene and Washington Counties, Pennsylvania
Survey Area Data: Version 20, Sep 7, 2022

Greene and Washington Counties, Pennsylvania

DtD—Dormont-Culleoka complex, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2s5gy

Elevation: 200 to 1,300 feet

Mean annual precipitation: 32 to 48 inches

Mean annual air temperature: 48 to 55 degrees F

Frost-free period: 120 to 200 days

Farmland classification: Not prime farmland

Map Unit Composition

Dormont and similar soils: 45 percent

Culleoka and similar soils: 37 percent

Minor components: 18 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dormont

Setting

Landform: Hills

Landform position (two-dimensional): Shoulder, backslope

Landform position (three-dimensional): Nose slope, side slope, head slope

Down-slope shape: Linear

Across-slope shape: Linear, concave

Parent material: Fine-loamy residuum weathered from limestone, sandstone, and shale

Typical profile

Ap - 0 to 11 inches: silt loam

Bt1 - 11 to 21 inches: silt loam

Bt2 - 21 to 31 inches: silty clay loam

Bt3 - 31 to 46 inches: channery silty clay loam

Bt4 - 46 to 62 inches: channery silty clay loam

BC - 62 to 75 inches: channery silty clay loam

Properties and qualities

Slope: 15 to 25 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.66 in/hr)

Depth to water table: About 24 to 44 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: D

Ecological site: F126XY004OH - Side Slope

Hydric soil rating: No

Description of Culleoka

Setting

Landform: Hills

Landform position (two-dimensional): Shoulder, backslope

Landform position (three-dimensional): Side slope, nose slope, head slope

Down-slope shape: Convex

Across-slope shape: Convex, linear

Parent material: Fine-loamy residuum weathered from sandstone and shale

Typical profile

Ap - 0 to 10 inches: channery silt loam

Bt - 10 to 19 inches: channery silt loam

BC - 19 to 26 inches: very channery silt loam

C - 26 to 31 inches: very channery silt loam

R - 31 to 41 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent

Depth to restrictive feature: 24 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: B

Ecological site: F126XY004OH - Side Slope

Hydric soil rating: No

Minor Components

Lowell

Percent of map unit: 10 percent

Landform: Hills

Landform position (two-dimensional): Backslope, shoulder

Landform position (three-dimensional): Side slope, head slope, nose slope

Down-slope shape: Convex

Across-slope shape: Linear, convex
Hydric soil rating: No

Guernsey

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, head slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Hydric soil rating: No

Thorndale

Percent of map unit: 3 percent
Landform: Drainageways, depressions
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Greene and Washington Counties, Pennsylvania
Survey Area Data: Version 20, Sep 7, 2022

Greene and Washington Counties, Pennsylvania

DtF—Dormont-Culleoka complex, 25 to 50 percent slopes

Map Unit Setting

National map unit symbol: 2s5gz

Elevation: 800 to 1,300 feet

Mean annual precipitation: 36 to 50 inches

Mean annual air temperature: 46 to 57 degrees F

Frost-free period: 120 to 200 days

Farmland classification: Not prime farmland

Map Unit Composition

Dormont and similar soils: 50 percent

Culleoka and similar soils: 35 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dormont

Setting

Landform: Hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope, head slope, nose slope

Down-slope shape: Linear

Across-slope shape: Linear, concave

Parent material: Fine-loamy residuum weathered from limestone, sandstone, and shale

Typical profile

Ap - 0 to 11 inches: silt loam

Bt1 - 11 to 21 inches: silt loam

Bt2 - 21 to 31 inches: silty clay loam

Bt3 - 31 to 46 inches: channery silty clay loam

Bt4 - 46 to 62 inches: channery silty clay loam

BC - 62 to 75 inches: channery silty clay loam

Properties and qualities

Slope: 25 to 50 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.66 in/hr)

Depth to water table: About 24 to 44 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: D

Ecological site: F126XY004OH - Side Slope

Hydric soil rating: No

Description of Culleoka

Setting

Landform: Hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope, nose slope, head slope

Down-slope shape: Convex, linear

Across-slope shape: Convex, linear

Parent material: Fine-loamy residuum weathered from sandstone and shale

Typical profile

Ap - 0 to 10 inches: channery silt loam

Bt - 10 to 19 inches: channery silt loam

BC - 19 to 26 inches: very channery silt loam

C - 26 to 31 inches: very channery silt loam

R - 31 to 41 inches: bedrock

Properties and qualities

Slope: 25 to 50 percent

Depth to restrictive feature: 24 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: B

Ecological site: F126XY004OH - Side Slope

Hydric soil rating: No

Minor Components

Lowell

Percent of map unit: 5 percent

Landform: Hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope, head slope, nose slope

Down-slope shape: Convex, linear

Across-slope shape: Linear, convex
Hydric soil rating: No

Fluvaquents

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Guernsey

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Hydric soil rating: No

Data Source Information

Soil Survey Area: Greene and Washington Counties, Pennsylvania
Survey Area Data: Version 20, Sep 7, 2022

Greene and Washington Counties, Pennsylvania

Fa—Fluvaquents, loamy

Map Unit Setting

National map unit symbol: 164w
Elevation: 700 to 1,340 feet
Mean annual precipitation: 36 to 50 inches
Mean annual air temperature: 41 to 62 degrees F
Frost-free period: 120 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Fluvaquents and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fluvaquents

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 42 inches: silt loam
H3 - 42 to 60 inches: loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Ecological site: F126XY005OH - Poorly Drained Floodplain
Hydric soil rating: Yes

Minor Components

Newark

Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Huntington

Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Melvin

Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Greene and Washington Counties, Pennsylvania
Survey Area Data: Version 20, Sep 7, 2022

Greene and Washington Counties, Pennsylvania

Nw—Newark silt loam, 0 to 3 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2w1w1

Elevation: 500 to 1,440 feet

Mean annual precipitation: 37 to 45 inches

Mean annual air temperature: 49 to 55 degrees F

Frost-free period: 130 to 215 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Newark, frequently flooded, and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Newark, Frequently Flooded

Setting

Landform: Flood plains

Landform position (three-dimensional): Tread

Down-slope shape: Concave, linear

Across-slope shape: Linear

Parent material: Fine-silty alluvium derived from sedimentary rock

Typical profile

Ap - 0 to 9 inches: silt loam

Bw - 9 to 19 inches: silt loam

Bg - 19 to 35 inches: silt loam

Cg - 35 to 80 inches: silty clay loam

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat poorly drained

Runoff class: Low

Capacity of the most limiting layer to transmit water

(Ksat): Moderately high to high (0.57 to 1.98 in/hr)

Depth to water table: About 10 to 18 inches

Frequency of flooding: FrequentNone

Frequency of ponding: None

Available water supply, 0 to 60 inches: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w

Hydrologic Soil Group: B/D

Ecological site: F126XY005OH - Poorly Drained Floodplain

Forage suitability group: Unnamed (G124XYC-3OH)

Other vegetative classification: Unnamed (G124XYC-3OH)
Hydric soil rating: No

Minor Components

Lobdell, frequently flooded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Melvin, frequently flooded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Nolin, frequently flooded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Data Source Information

Soil Survey Area: Greene and Washington Counties, Pennsylvania
Survey Area Data: Version 20, Sep 7, 2022

APPENDIX D

Pre-Developed Conditions

Pre-Construction Conditions
SCS TR-55 Composite CN Calculation

Summary for Drainage Area #1 - Hyd. No. 1 (POA-1)					
Cover Description	Hydrologic Condition	HSG	CN	Area (sf)	Area (ac)
Trees		B	55	0.00	0.000
Trees		C	70	0.00	0.000
Trees		D	77	40502.46	0.930
Meadow		B	58	0.00	0.000
Meadow		C	71	0.00	0.000
Meadow		D	78	320076.55	7.348
Impervious		B	98	0.00	0.000
Impervious		C	98	0.00	0.000
Impervious		D	98	256.36	0.006
Composite CN:			78	360835.37	8.284

Pre-Construction Conditions - 20% Back to Meadow
SCS TR-55 Composite CN Calculation

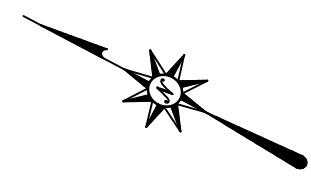
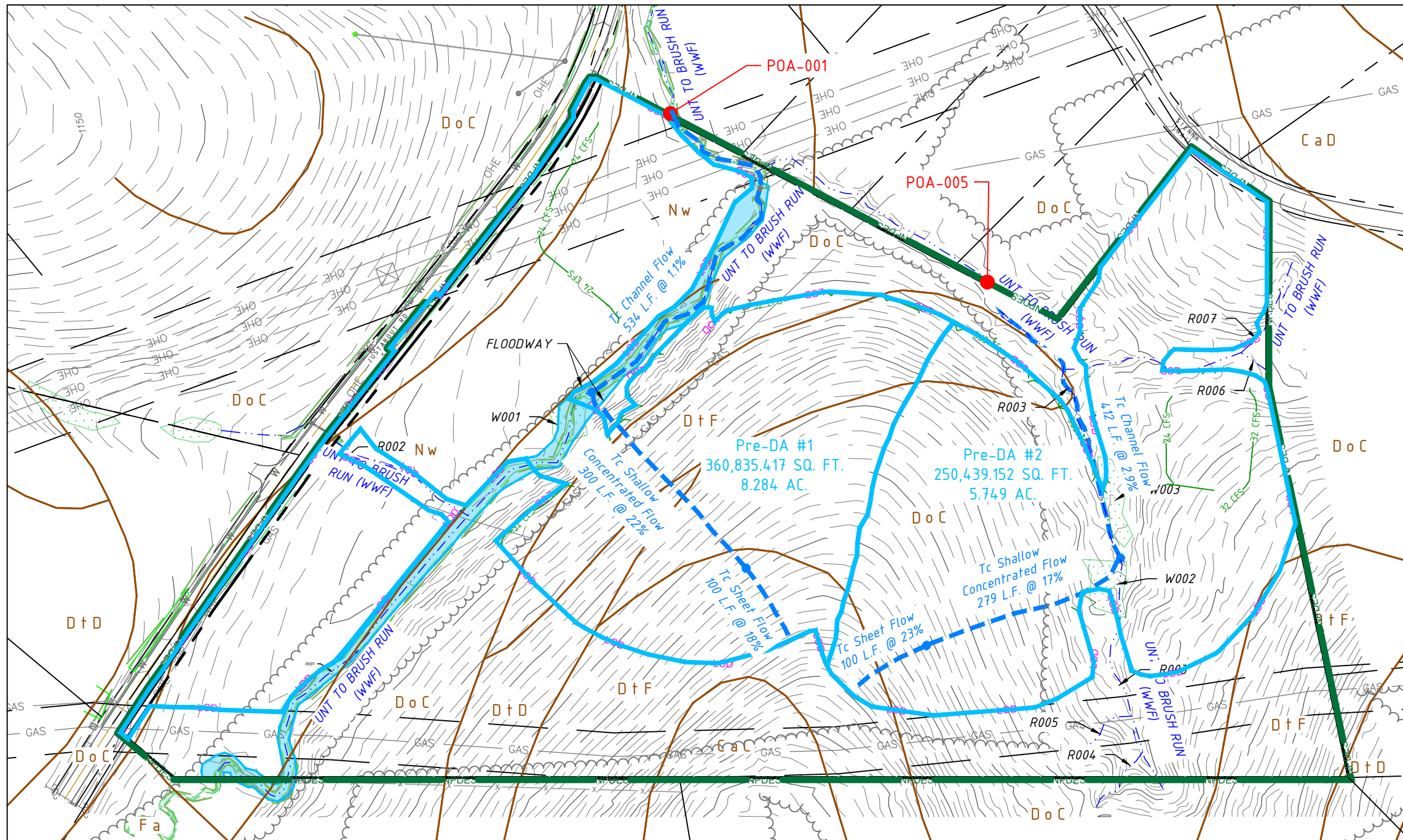
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Cover Description	Hydrologic Condition	HSG	CN	Area (sf)	Area (ac)
Trees		B	55	0.00	0.000
Trees		C	70	0.00	0.000
Trees		D	77	40502.46	0.930
Meadow		B	58	0.00	0.000
Meadow		C	71	0.00	0.000
Meadow		D	78	320076.55	7.348
Impervious		B	98	0.00	0.000
Impervious		C	98	0.00	0.000
Impervious		D	98	205.09	0.005
Impervious as Meadow		B	58	0.00	0.000
Impervious as Meadow		C	71	0.00	0.000
Impervious as Meadow		D	78	51.27	0.001
Composite CN:			78	360835.37	8.284

Pre-Construction Conditions
SCS TR-55 Composite CN Calculation

Summary for Drainage Area #2 - Hyd. No. 1 (POA-5)					
Cover Description	Hydrologic Condition	HSG	CN	Area (sf)	Area (ac)
Trees		B	55	0.00	0.000
Trees		C	70	0.00	0.000
Trees		D	77	148747.99	3.415
Meadow		B	58	0.00	0.000
Meadow		C	71	0.00	0.000
Meadow		D	78	101691.19	2.335
Impervious		B	98	0.00	0.000
Impervious		C	98	0.00	0.000
Impervious		D	98	0.00	0.000
Composite CN:			77	250439.19	5.749

Pre-Construction Conditions - 20% Back to Meadow
SCS TR-55 Composite CN Calculation

Summary for Drainage Area #2 - Hyd. No. 1 (POA-5)					
Cover Description	Hydrologic Condition	HSG	CN	Area (sf)	Area (ac)
Trees		B	55	0.00	0.000
Trees		C	70	0.00	0.000
Trees		D	77	148747.99	3.415
Meadow		B	58	0.00	0.000
Meadow		C	71	0.00	0.000
Meadow		D	78	101691.19	2.335
Impervious		B	98	0.00	0.000
Impervious		C	98	0.00	0.000
Impervious		D	98	0.00	0.000
Impervious as Meadow		B	58	0.00	0.000
Impervious as Meadow		C	71	0.00	0.000
Impervious as Meadow		D	78	0.00	0.000
Composite CN:			77	250439.19	5.749



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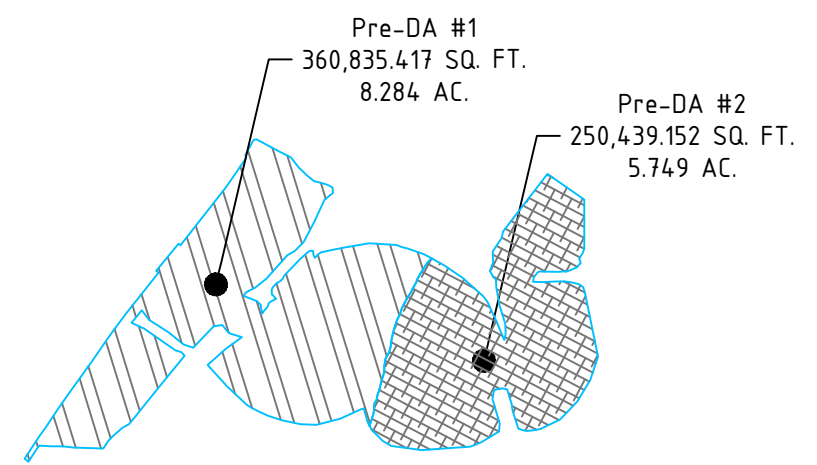
CLIENT:
 339 JUSTABOUT LAND COMPANY, LLC.
 333 TECHNOLOGY DRIVE, SUITE 108
 CANONSBURG, PA 15317

PROJECT:
NEWCASTLE
 PETERS TOWNSHIP,
 WASHINGTON COUNTY, PA

PROJ NO: 291-002-21
 DATE: 1/10/2025
 DRAWN BY: RAM
 CHECKED BY: CWH

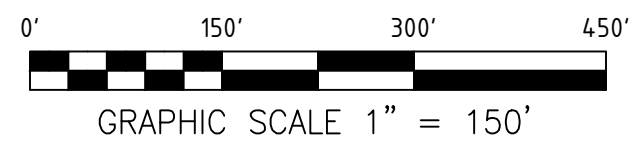
SHEET TITLE:
**PRE DEVELOPED
 DRAINAGE MAP**

SHEET NO.
1 OF 1



DRAINAGE MAP KEY

SCALE: 1" = 500'



APPENDIX E

Post Developed Conditions

New Castle
Peters Township, Washington County, PA

Post-Construction Conditions
SCS TR-55 Composite CN Calculation

Summary for Drainage Post Area #1 - Hyd. No. 2 (POA-1)					
Cover Description	Hydrologic Condition	HSG	CN	Area (sf)	Area (ac)
Trees		B	55	0.00	0.000
Trees		C	70	0.00	0.000
Trees		D	77	0.00	0.000
Meadow		B	58	0.00	0.000
Meadow		C	71	0.00	0.000
Meadow		D	78	105363.62	2.419
Lawn		B	61	0.00	0.000
Lawn		C	74	0.00	0.000
Lawn		D	80	185462.69	4.258
Impervious		B	98	0.00	0.000
Impervious		C	98	0.00	0.000
Impervious		D	98	82591.16	1.896
<u>Composite CN:</u>			83	373417.47	8.572

New Castle
Peters Township, Washington County, PA

**Post-Construction Conditions
SCS TR-55 Composite CN Calculation**

Summary for Drainage Post Area #1 (SCM-1) - Hyd. No. 4					
Cover Description	Hydrologic Condition	HSG	CN	Area (sf)	Area (ac)
Trees		B	55	0.00	0.000
Trees		C	70	0.00	0.000
Trees		D	77	0.00	0.000
Meadow		B	58	0.00	0.000
Meadow		C	71	0.00	0.000
Meadow		D	78	29056.05	0.667
Lawn		B	61	0.00	0.000
Lawn		C	74	0.00	0.000
Lawn		D	80	153453.78	3.523
Impervious		B	98	0.00	0.000
Impervious		C	98	0.00	0.000
Impervious		D	98	70356.47	1.615
Composite CN:			85	252866.30	5.805

**Post-Construction Conditions
SCS TR-55 Composite CN Calculation**

Summary for Drainage Post Area #1 (SCM-2) - Hyd. No. 5					
Cover Description	Hydrologic Condition	HSG	CN	Area (sf)	Area (ac)
Trees		B	55	0.00	0.000
Trees		C	70	0.00	0.000
Trees		D	77	0.00	0.000
Meadow		B	58	0.00	0.000
Meadow		C	71	0.00	0.000
Meadow		D	78	0.00	0.000
Lawn		B	61	0.00	0.000
Lawn		C	74	0.00	0.000
Lawn		D	80	0.00	0.000
Impervious		B	98	0.00	0.000
Impervious		C	98	0.00	0.000
Impervious		D	98	2520.00	0.058
Composite CN:			98	2520.00	0.058

New Castle
Peters Township, Washington County, PA

**Post-Construction Conditions
SCS TR-55 Composite CN Calculation**

Summary for Drainage Post Area #1 (SCM-3) - Hyd. No. 6					
Cover Description	Hydrologic Condition	HSG	CN	Area (sf)	Area (ac)
Trees		B	55	0.00	0.000
Trees		C	70	0.00	0.000
Trees		D	77	0.00	0.000
Meadow		B	58	0.00	0.000
Meadow		C	71	0.00	0.000
Meadow		D	78	0.00	0.000
Lawn		B	61	0.00	0.000
Lawn		C	74	0.00	0.000
Lawn		D	80	0.00	0.000
Impervious		B	98	0.00	0.000
Impervious		C	98	0.00	0.000
Impervious		D	98	2520.00	0.058
Composite CN:			98	2520.00	0.058

**Post-Construction Conditions
SCS TR-55 Composite CN Calculation**

Summary for Drainage Post Area #1 (SCM-4) - Hyd. No. 7					
Cover Description	Hydrologic Condition	HSG	CN	Area (sf)	Area (ac)
Trees		B	55	0.00	0.000
Trees		C	70	0.00	0.000
Trees		D	77	0.00	0.000
Meadow		B	58	0.00	0.000
Meadow		C	71	0.00	0.000
Meadow		D	78	0.00	0.000
Lawn		B	61	0.00	0.000
Lawn		C	74	0.00	0.000
Lawn		D	80	0.00	0.000
Impervious		B	98	0.00	0.000
Impervious		C	98	0.00	0.000
Impervious		D	98	2520.00	0.058
Composite CN:			98	2520.00	0.058

New Castle
Peters Township, Washington County, PA

Post-Construction Conditions
SCS TR-55 Composite CN Calculation

Summary for Drainage Post Area #1 (Undetained) - Hyd. No. 8					
Cover Description	Hydrologic Condition	HSG	CN	Area (sf)	Area (ac)
Trees		B	55	0.00	0.000
Trees		C	70	0.00	0.000
Trees		D	77	0.00	0.000
Meadow		B	58	0.00	0.000
Meadow		C	71	0.00	0.000
Meadow		D	78	76307.57	1.752
Lawn		B	61	0.00	0.000
Lawn		C	74	0.00	0.000
Lawn		D	80	32008.91	0.735
Impervious		B	98	0.00	0.000
Impervious		C	98	0.00	0.000
Impervious		D	98	4674.69	0.107
Composite CN:			79	112991.17	2.594

New Castle
Peters Township, Washington County, PA

Post-Construction Conditions
SCS TR-55 Composite CN Calculation

Summary for Drainage Post Area #2 - Hyd. No. 2 (POA-5)					
Cover Description	Hydrologic Condition	HSG	CN	Area (sf)	Area (ac)
Trees		B	55	0.00	0.000
Trees		C	70	0.00	0.000
Trees		D	77	0.00	0.000
Meadow		B	58	0.00	0.000
Meadow		C	71	0.00	0.000
Meadow		D	78	73047.76	1.677
Lawn		B	61	0.00	0.000
Lawn		C	74	0.00	0.000
Lawn		D	80	112337.78	2.579
Impervious		B	98	0.00	0.000
Impervious		C	98	0.00	0.000
Impervious		D	98	51703.03	1.187
Composite CN:			83	237088.58	5.443

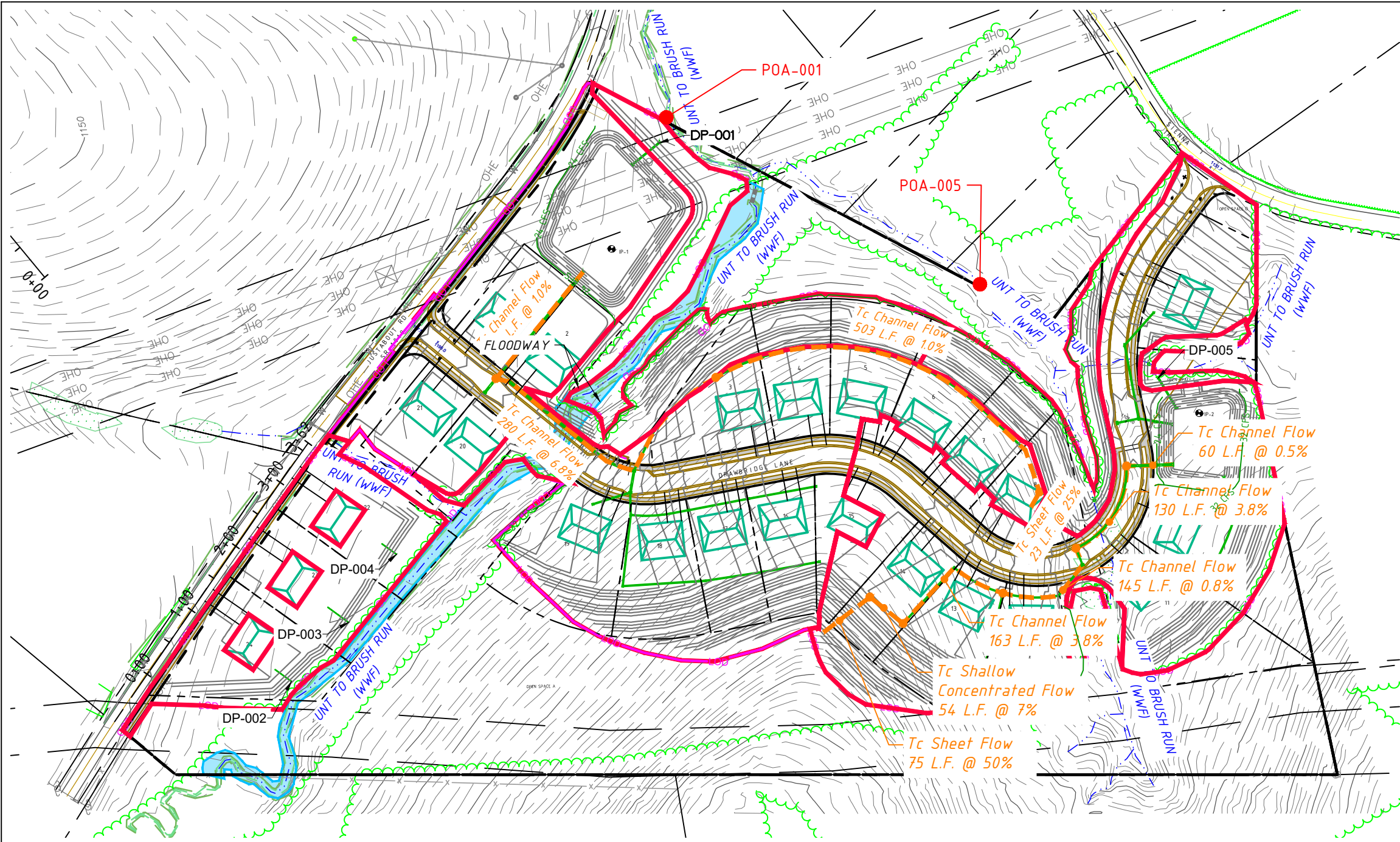
New Castle
Peters Township, Washington County, PA

**Post-Construction Conditions
SCS TR-55 Composite CN Calculation**

Summary for Drainage Post Area #2 (SCM-5) - Hyd. No. 4					
Cover Description	Hydrologic Condition	HSG	CN	Area (sf)	Area (ac)
Trees		B	55	0.00	0.000
Trees		C	70	0.00	0.000
Trees		D	77	0.00	0.000
Meadow		B	58	0.00	0.000
Meadow		C	71	0.00	0.000
Meadow		D	78	39812.69	0.914
Lawn		B	61	0.00	0.000
Lawn		C	74	0.00	0.000
Lawn		D	80	105000.49	2.410
Impervious		B	98	0.00	0.000
Impervious		C	98	0.00	0.000
Impervious		D	98	51703.03	1.187
Composite CN:			84	196516.21	4.511

**Post-Construction Conditions
SCS TR-55 Composite CN Calculation**

Summary for Drainage Post Area #2 (Undetained) - Hyd. No. 5					
Cover Description	Hydrologic	HSG	CN	Area (sf)	Area (ac)
Trees		B	55	0.00	0.000
Trees		C	70	0.00	0.000
Trees		D	77	0.00	0.000
Meadow		B	58	0.00	0.000
Meadow		C	71	0.00	0.000
Meadow		D	78	33235.07	0.763
Lawn		B	61	0.00	0.000
Lawn		C	74	0.00	0.000
Lawn		D	80	7337.30	0.168
Impervious		B	98	0.00	0.000
Impervious		C	98	0.00	0.000
Impervious		D	98	0.00	0.000
Composite CN:			78	40572.37	0.931



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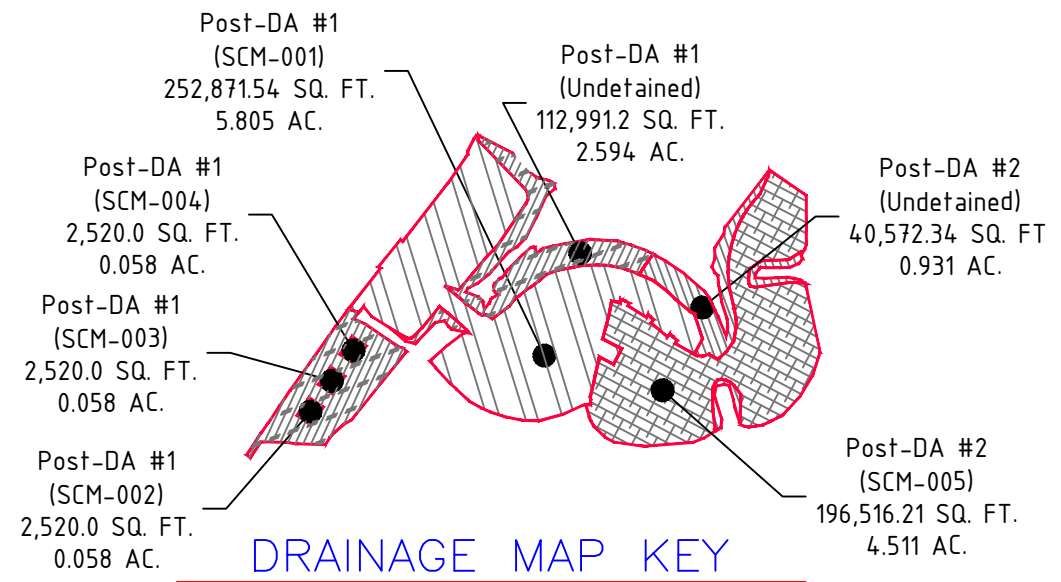
CLIENT:
 339 JUSTABOUT LAND COMPANY, LLC.
 333 TECHNOLOGY DRIVE, SUITE 108
 CANONSBURG, PA 15317

PROJECT:
NEWCASTLE
 PETERS TOWNSHIP,
 WASHINGTON COUNTY, PA

PROJ NO: 291-002-21
 DATE: 1/10/2025
 DRAWN BY: RAM
 CHECKED BY: CWH

SHEET TITLE:
POST DEVELOPED DRAINAGE MAP

SHEET NO.
1 OF 1



SCALE: 1" = 500'

APPENDIX F

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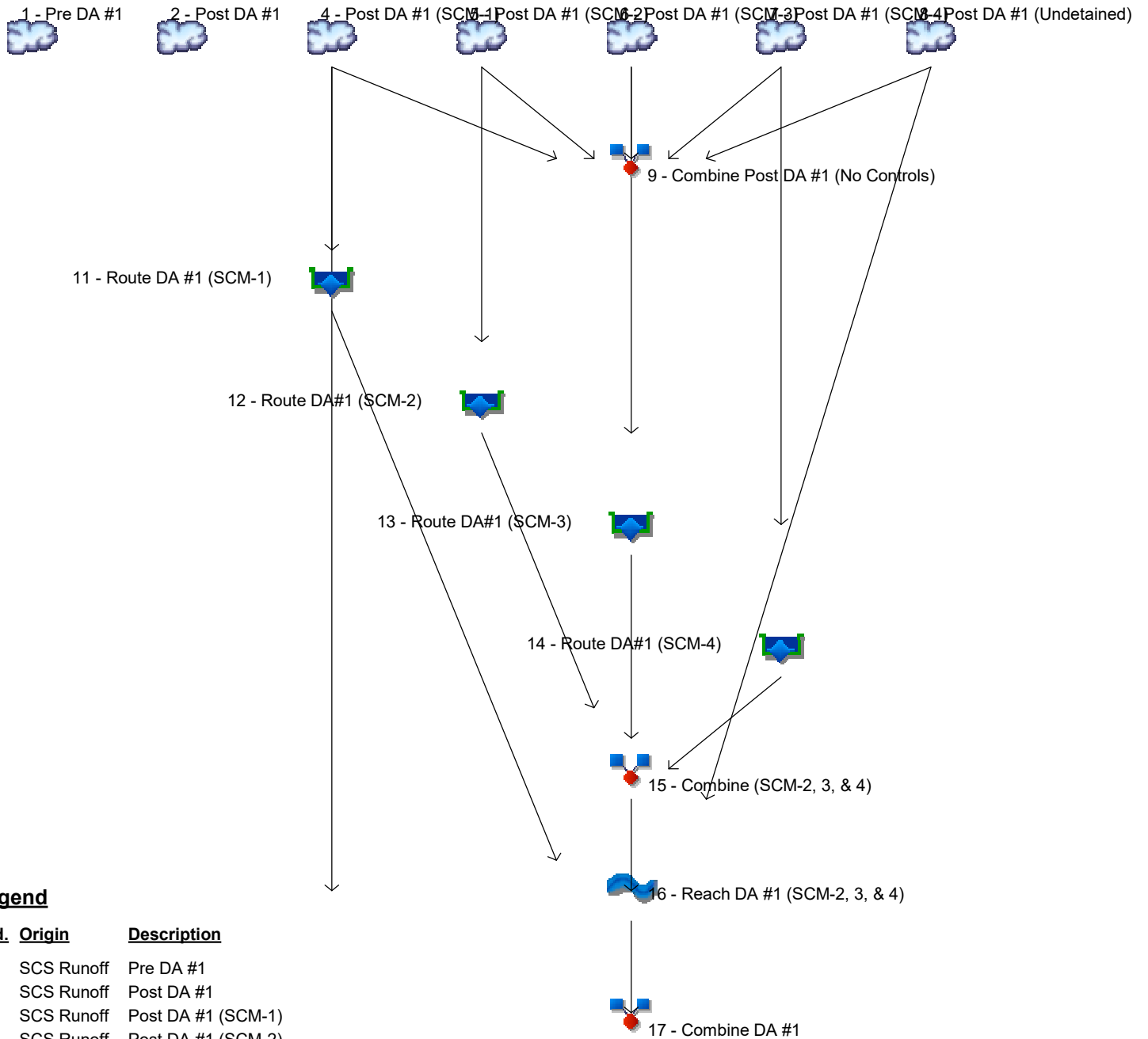
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Watershed Model Schematic

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025



Legend

Hyd.	Origin	Description
1	SCS Runoff	Pre DA #1
2	SCS Runoff	Post DA #1
4	SCS Runoff	Post DA #1 (SCM-1)
5	SCS Runoff	Post DA #1 (SCM-2)
6	SCS Runoff	Post DA #1 (SCM-3)
7	SCS Runoff	Post DA #1 (SCM-4)
8	SCS Runoff	Post DA #1 (Undetained)
9	Combine	Combine Post DA #1 (No Controls)
11	Reservoir	Route DA #1 (SCM-1)
12	Reservoir	Route DA#1 (SCM-2)
13	Reservoir	Route DA#1 (SCM-3)
14	Reservoir	Route DA#1 (SCM-4)
15	Combine	Combine (SCM-2, 3, & 4)
16	Reach	Reach DA #1 (SCM-2, 3, & 4)
17	Combine	Combine DA #1
19	Reservoir	DA #1 (SCM-1) Blocked

Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

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	-----	5.962	9.211	-----	14.07	18.38	24.65	30.02	35.83	Pre DA #1
2	SCS Runoff	-----	10.94	15.44	-----	21.90	27.46	35.35	41.91	49.00	Post DA #1
4	SCS Runoff	-----	8.531	11.72	-----	16.24	20.10	25.54	30.08	34.91	Post DA #1 (SCM-1)
5	SCS Runoff	-----	0.167	0.201	-----	0.247	0.286	0.339	0.382	0.428	Post DA #1 (SCM-2)
6	SCS Runoff	-----	0.167	0.201	-----	0.247	0.286	0.339	0.382	0.428	Post DA #1 (SCM-3)
7	SCS Runoff	-----	0.167	0.201	-----	0.247	0.286	0.339	0.382	0.428	Post DA #1 (SCM-4)
8	SCS Runoff	-----	2.409	3.622	-----	5.419	7.001	9.282	11.20	13.28	Post DA #1 (Undetained)
9	Combine	4, 5, 6, 7, 8	11.43	15.94	-----	22.39	27.94	35.81	42.38	49.44	Combine Post DA #1 (No Controls)
11	Reservoir	4	0.000	0.000	-----	0.147	0.425	1.013	1.672	2.508	Route DA #1 (SCM-1)
12	Reservoir	5	0.004	0.005	-----	0.005	0.006	0.011	0.033	0.099	Route DA#1 (SCM-2)
13	Reservoir	6	0.004	0.005	-----	0.005	0.006	0.011	0.033	0.099	Route DA#1 (SCM-3)
14	Reservoir	7	0.004	0.005	-----	0.005	0.006	0.011	0.033	0.099	Route DA#1 (SCM-4)
15	Combine	12, 13, 14	0.013	0.014	-----	0.016	0.017	0.034	0.100	0.297	Combine (SCM-2, 3, & 4)
16	Reach	15	0.013	0.014	-----	0.016	0.017	0.033	0.087	0.200	Reach DA #1 (SCM-2, 3, & 4)
17	Combine	8, 11, 16	2.418	3.632	-----	5.430	7.012	9.307	11.51	14.10	Combine DA #1
19	Reservoir	4	0.000	0.000	-----	0.000	0.000	0.000	0.000	0.000	DA #1 (SCM-1) Blocked

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

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	5.962	1	720	14,391	-----	-----	-----	Pre DA #1
2	SCS Runoff	10.94	1	718	22,082	-----	-----	-----	Post DA #1
4	SCS Runoff	8.531	1	718	17,134	-----	-----	-----	Post DA #1 (SCM-1)
5	SCS Runoff	0.167	1	717	383	-----	-----	-----	Post DA #1 (SCM-2)
6	SCS Runoff	0.167	1	717	383	-----	-----	-----	Post DA #1 (SCM-3)
7	SCS Runoff	0.167	1	717	383	-----	-----	-----	Post DA #1 (SCM-4)
8	SCS Runoff	2.409	1	718	5,009	-----	-----	-----	Post DA #1 (Undetained)
9	Combine	11.43	1	718	23,293	4, 5, 6, 7, 8	-----	-----	Combine Post DA #1 (No Controls)
11	Reservoir	0.000	1	n/a	0	4	1082.70	12,537	Route DA #1 (SCM-1)
12	Reservoir	0.004	1	850	369	5	1099.76	242	Route DA#1 (SCM-2)
13	Reservoir	0.004	1	850	369	6	1097.76	242	Route DA#1 (SCM-3)
14	Reservoir	0.004	1	850	369	7	1095.76	242	Route DA#1 (SCM-4)
15	Combine	0.013	1	850	1,106	12, 13, 14	-----	-----	Combine (SCM-2, 3, & 4)
16	Reach	0.013	1	872	807	15	-----	-----	Reach DA #1 (SCM-2, 3, & 4)
17	Combine	2.418	1	718	5,816	8, 11, 16	-----	-----	Combine DA #1
19	Reservoir	0.000	1	755	0	4	1082.70	12,537	DA #1 (SCM-1) Blocked
250401-Newcastle DA 1.gpw					Return Period: 1 Year			Friday, 04 / 11 / 2025	

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

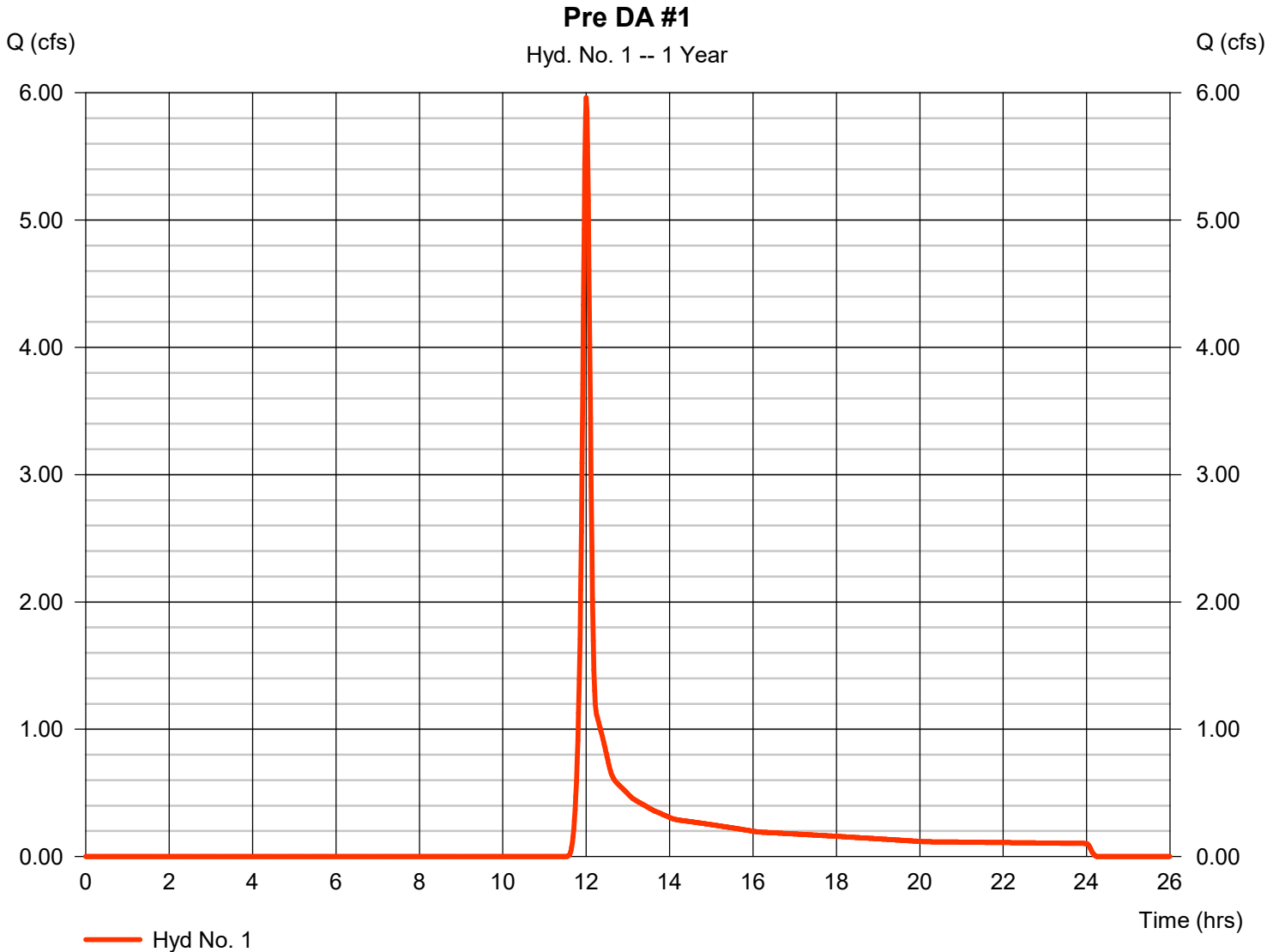
Friday, 04 / 11 / 2025

Hyd. No. 1

Pre DA #1

Hydrograph type	= SCS Runoff	Peak discharge	= 5.962 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.00 hrs
Time interval	= 1 min	Hyd. volume	= 14,391 cuft
Drainage area	= 8.280 ac	Curve number	= 78*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.80 min
Total precip.	= 1.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.930 x 77) + (7.348 x 78) + (0.001 x 98)] / 8.280



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No. 1

Pre DA #1

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
Sheet Flow				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 2.38	0.00	0.00	
Land slope (%)	= 18.00	0.00	0.00	
Travel Time (min)	= 6.87	+ 0.00	+ 0.00	= 6.87
Shallow Concentrated Flow				
Flow length (ft)	= 300.00	0.00	0.00	
Watercourse slope (%)	= 22.00	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=7.57	0.00	0.00	
Travel Time (min)	= 0.66	+ 0.00	+ 0.00	= 0.66
Channel Flow				
X sectional flow area (sqft)	= 16.00	0.00	0.00	
Wetted perimeter (ft)	= 12.90	0.00	0.00	
Channel slope (%)	= 1.10	0.00	0.00	
Manning's n-value	= 0.025	0.015	0.015	
Velocity (ft/s)	=7.22	0.00	0.00	
Flow length (ft)	{{0}}534.0	0.0	0.0	
Travel Time (min)	= 1.23	+ 0.00	+ 0.00	= 1.23
Total Travel Time, Tc				8.80 min

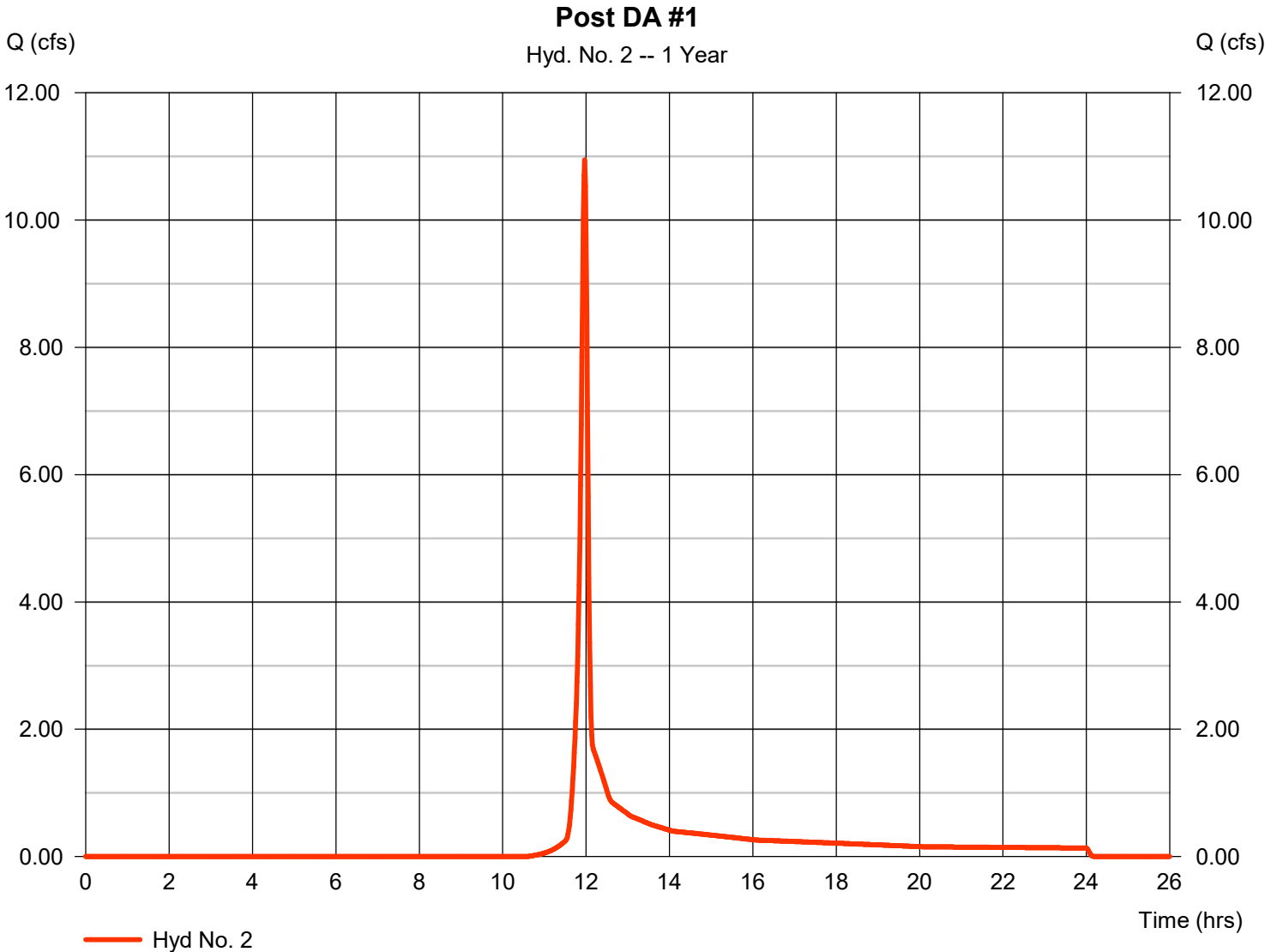
Hydrograph Report

Hyd. No. 2

Post DA #1

Hydrograph type	= SCS Runoff	Peak discharge	= 10.94 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.97 hrs
Time interval	= 1 min	Hyd. volume	= 22,082 cuft
Drainage area	= 8.570 ac	Curve number	= 83*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(2.419 x 78) + (4.258 x 80) + (1.896 x 98)] / 8.570



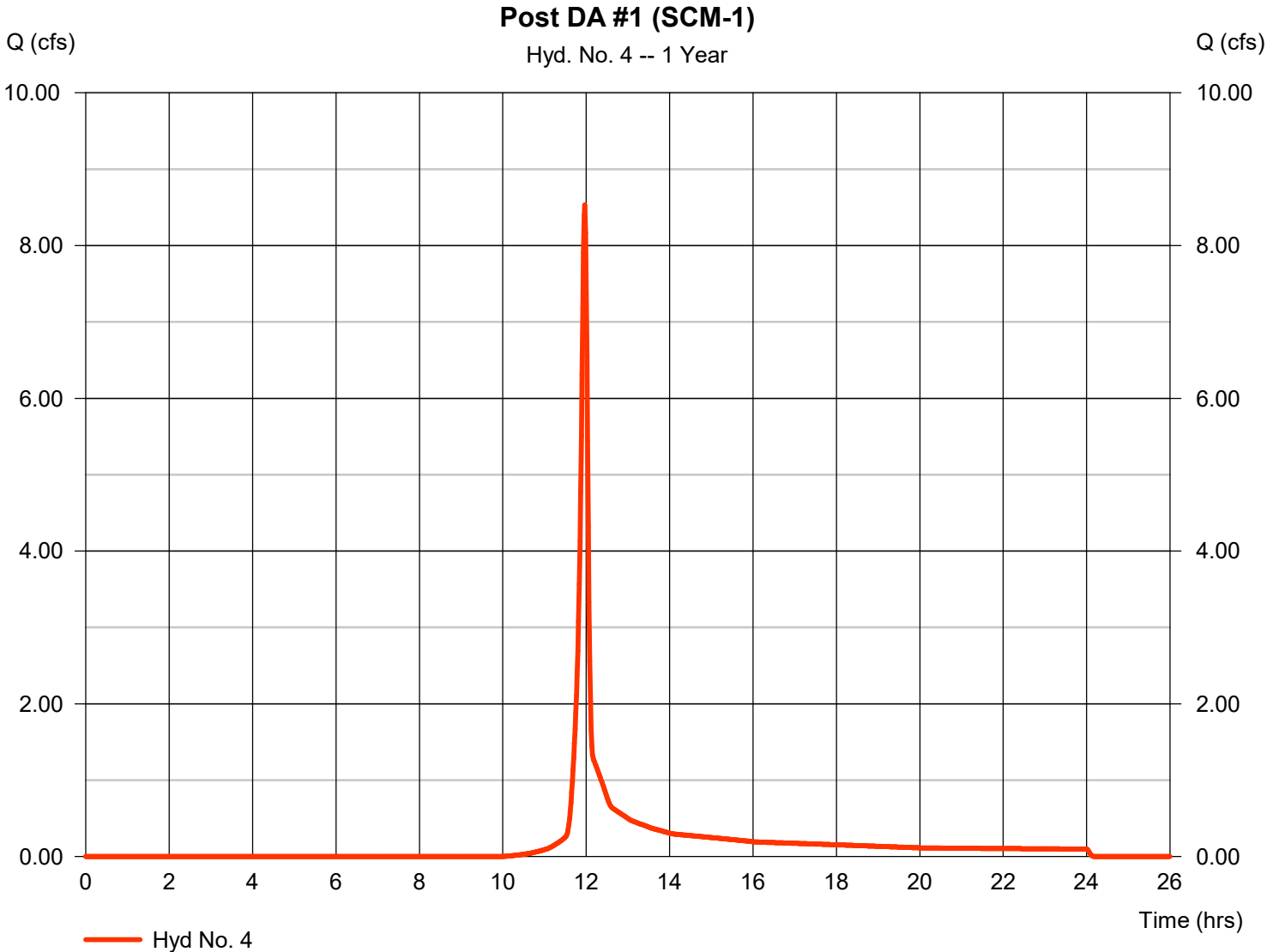
Hydrograph Report

Hyd. No. 4

Post DA #1 (SCM-1)

Hydrograph type	= SCS Runoff	Peak discharge	= 8.531 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.97 hrs
Time interval	= 1 min	Hyd. volume	= 17,134 cuft
Drainage area	= 5.810 ac	Curve number	= 85*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.667 x 78) + (3.523 x 80) + (1.615 x 98)] / 5.810

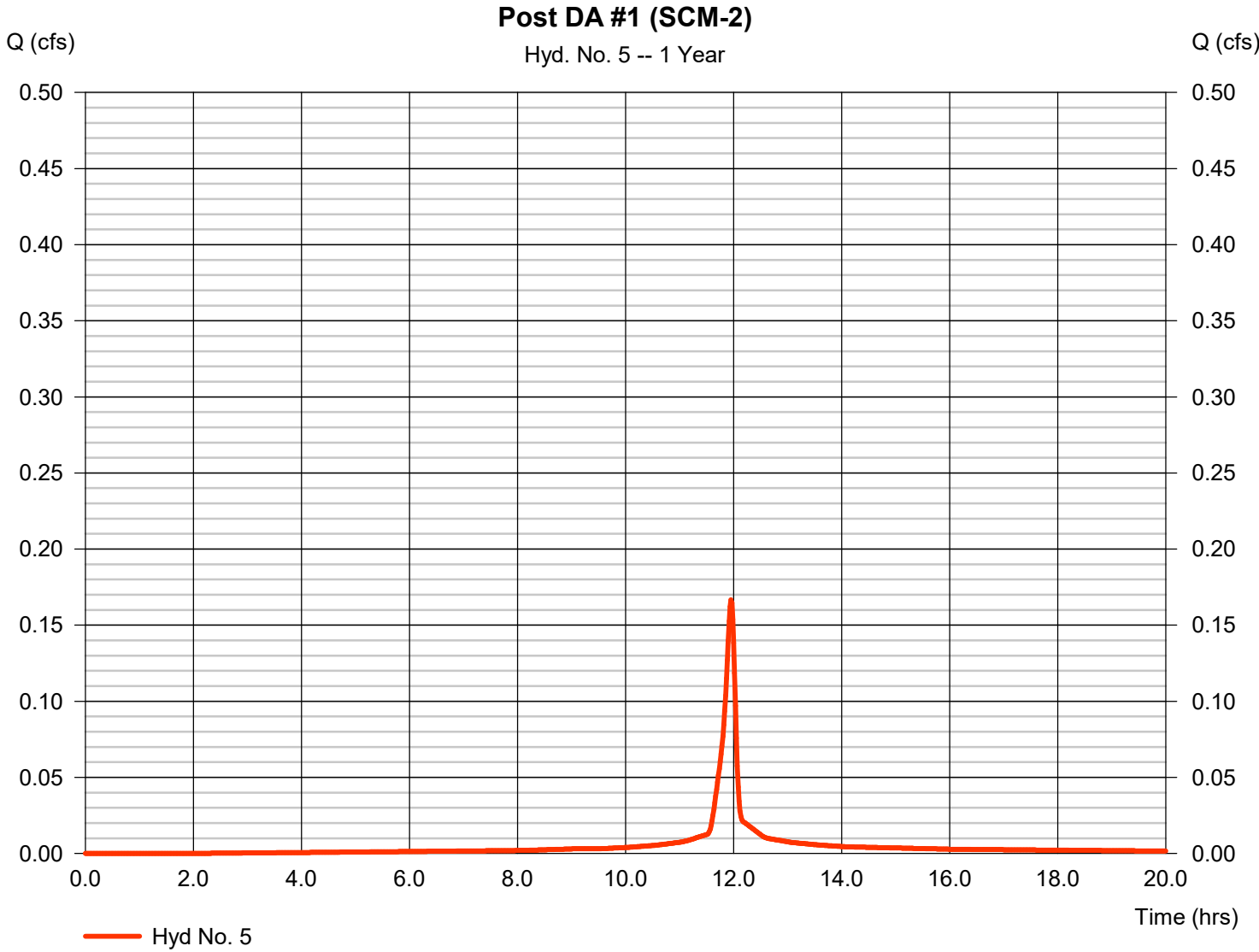


Hydrograph Report

Hyd. No. 5

Post DA #1 (SCM-2)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.167 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 383 cuft
Drainage area	= 0.058 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

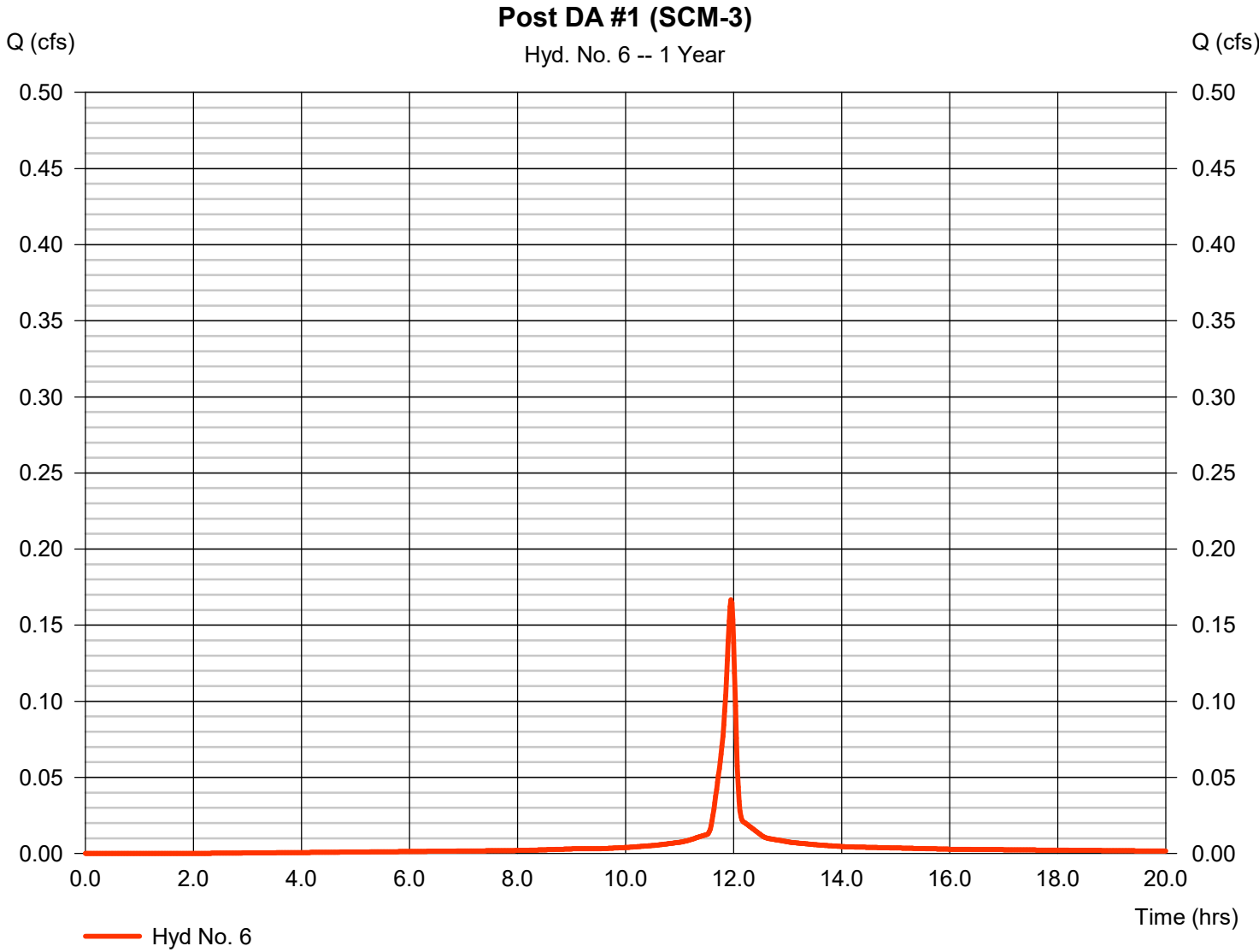


Hydrograph Report

Hyd. No. 6

Post DA #1 (SCM-3)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.167 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 383 cuft
Drainage area	= 0.058 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

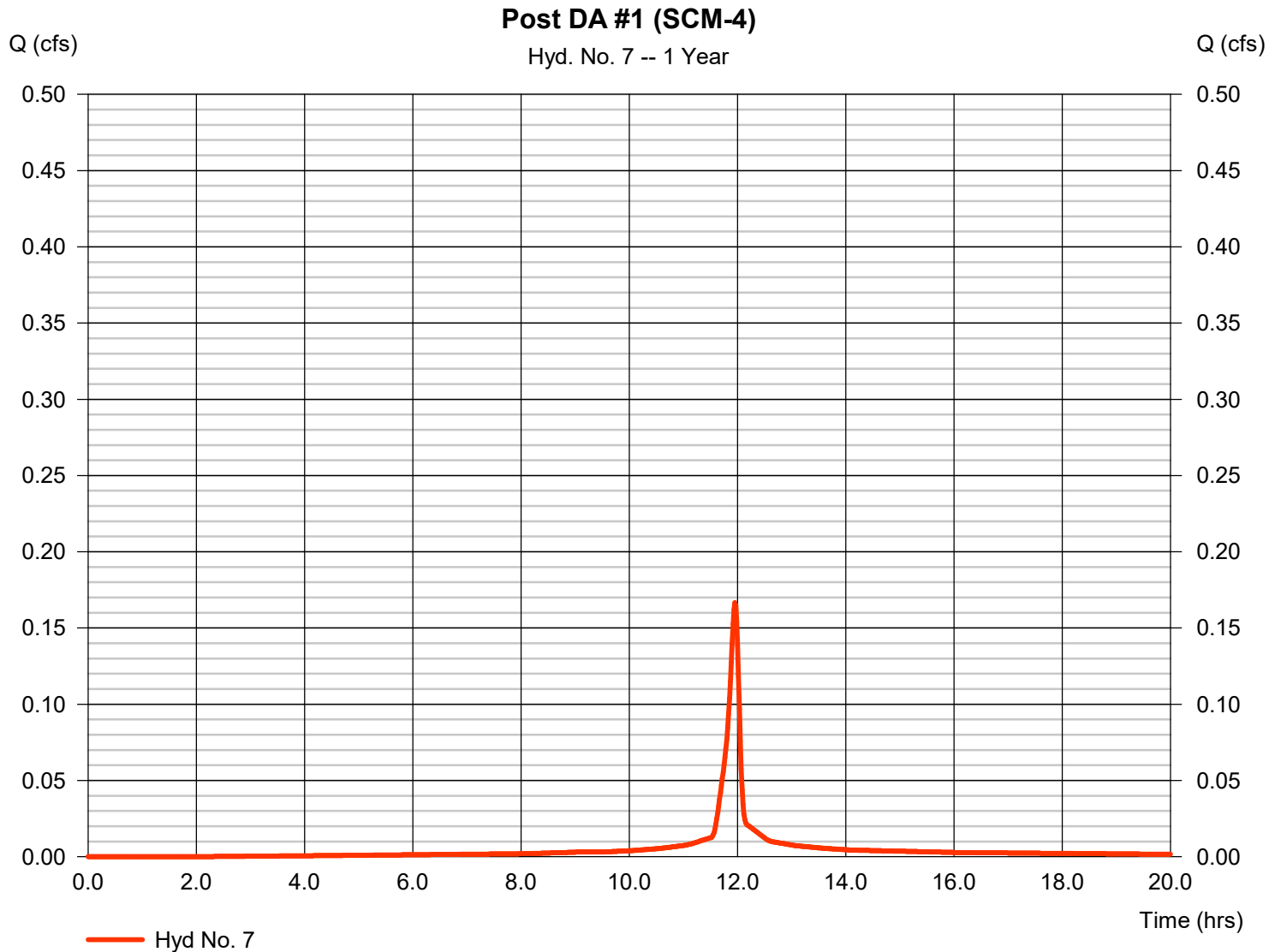
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Friday, 04 / 11 / 2025

Hyd. No. 7

Post DA #1 (SCM-4)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.167 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 383 cuft
Drainage area	= 0.058 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



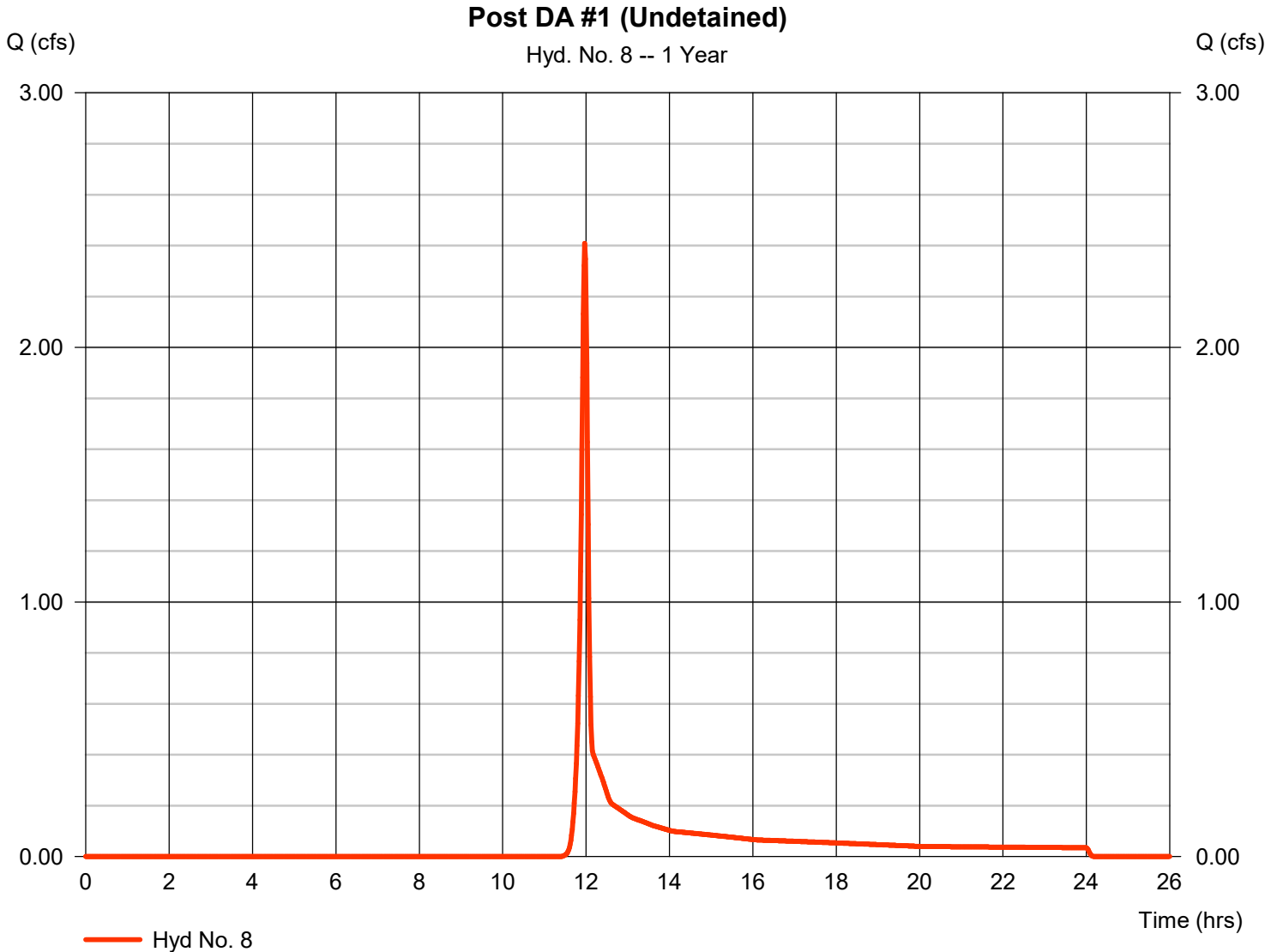
Hydrograph Report

Hyd. No. 8

Post DA #1 (Undetained)

Hydrograph type	= SCS Runoff	Peak discharge	= 2.409 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.97 hrs
Time interval	= 1 min	Hyd. volume	= 5,009 cuft
Drainage area	= 2.590 ac	Curve number	= 79*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.752 x 78) + (0.735 x 80) + (0.107 x 98)] / 2.590



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Friday, 04 / 11 / 2025

Hyd. No. 9

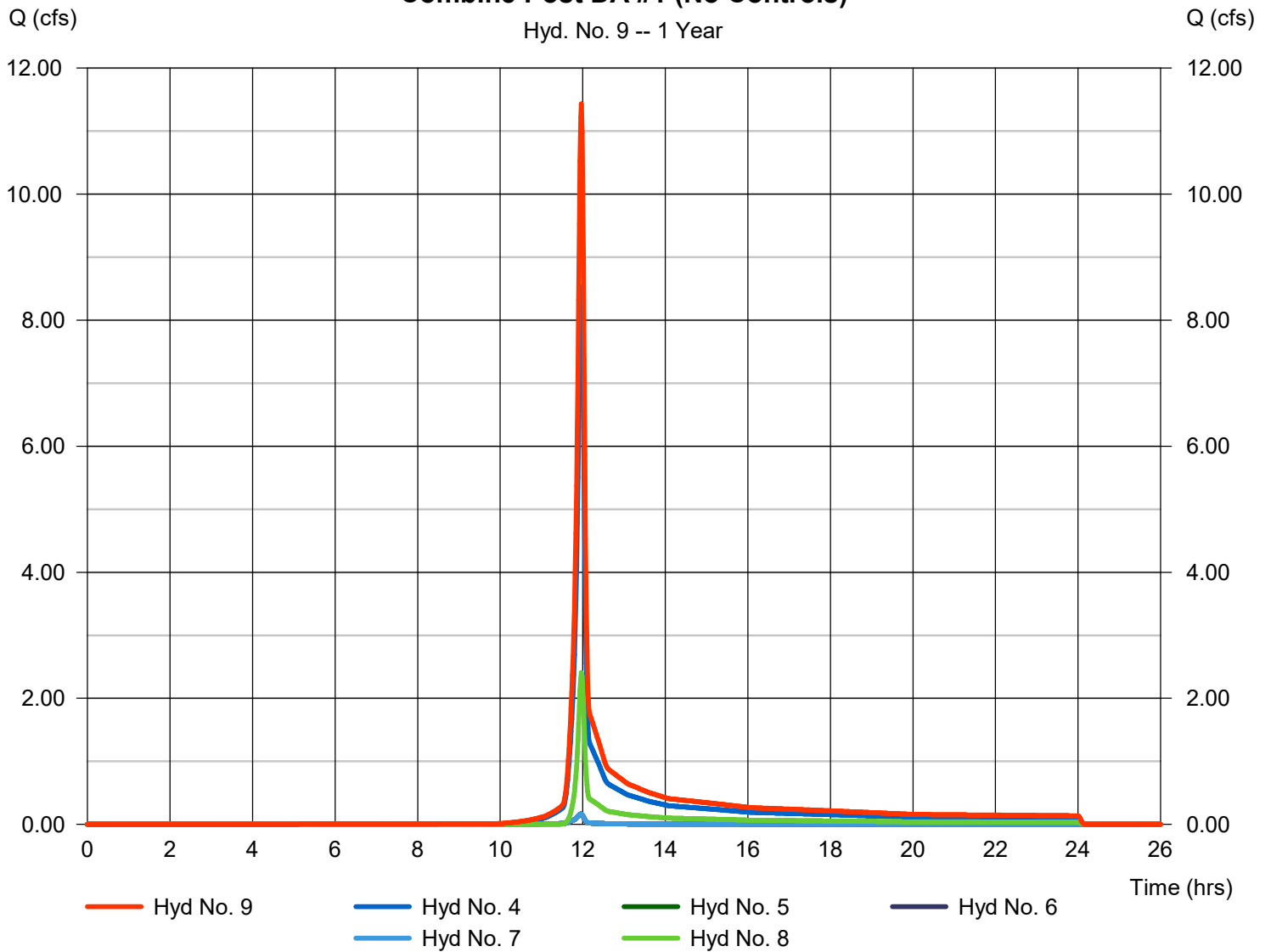
Combine Post DA #1 (No Controls)

Hydrograph type = Combine
Storm frequency = 1 yrs
Time interval = 1 min
Inflow hyds. = 4, 5, 6, 7, 8

Peak discharge = 11.43 cfs
Time to peak = 11.97 hrs
Hyd. volume = 23,293 cuft
Contrib. drain. area = 8.574 ac

Combine Post DA #1 (No Controls)

Hyd. No. 9 -- 1 Year



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

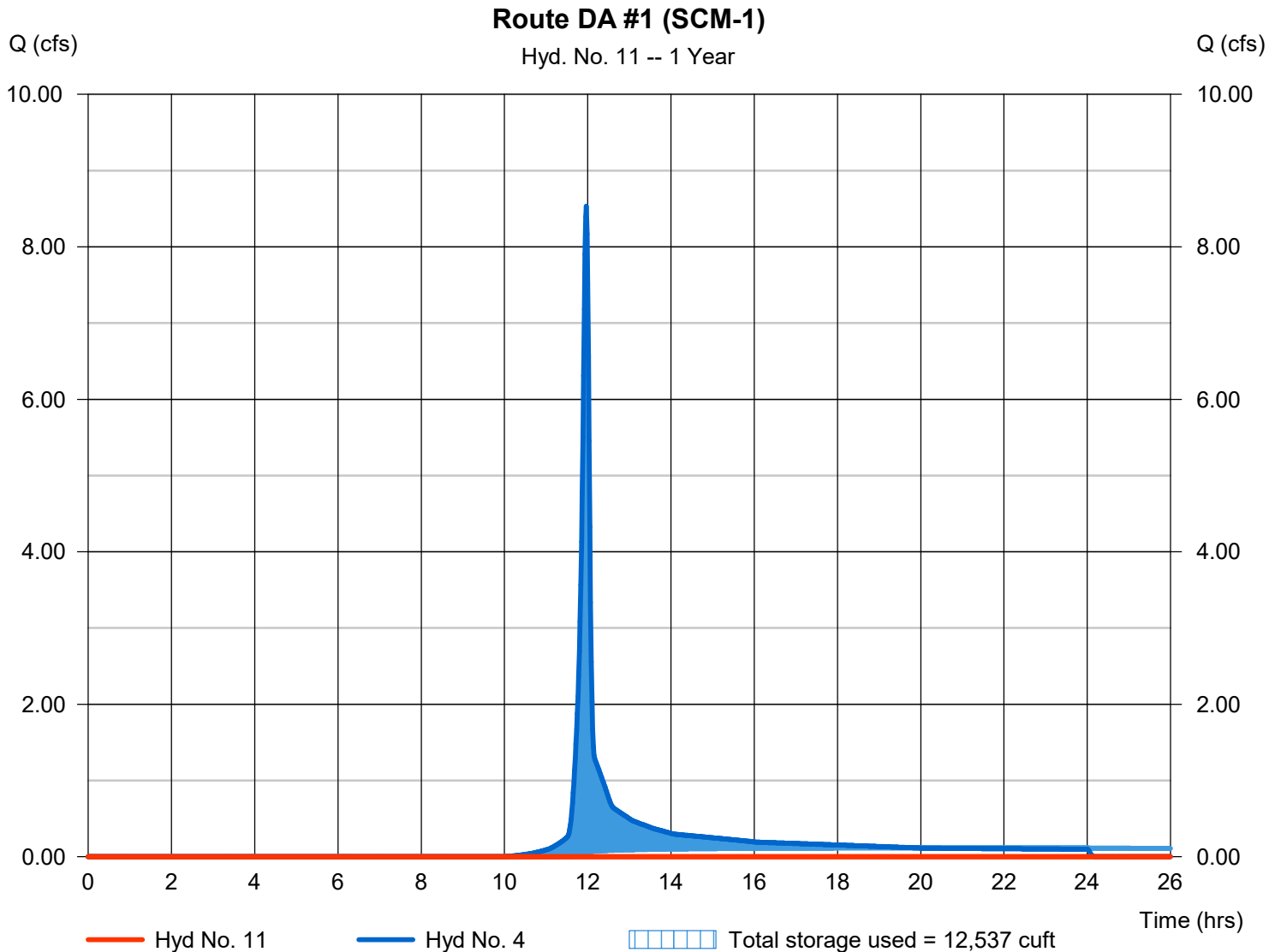
Friday, 04 / 11 / 2025

Hyd. No. 11

Route DA #1 (SCM-1)

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 4 - Post DA #1 (SCM-1)	Max. Elevation	= 1082.70 ft
Reservoir name	= DA #1 (SCM-1)	Max. Storage	= 12,537 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Pond No. 1 - DA #1 (SCM-1)

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 1082.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	1082.00	17,170	0	0
1.00	1083.00	18,765	17,960	17,960
2.00	1084.00	20,417	19,583	37,543
3.00	1085.00	22,125	21,263	58,806
4.00	1086.00	23,890	23,000	81,806
5.00	1087.00	25,712	24,793	106,599
6.00	1088.00	27,590	26,643	133,242

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	30.00	0.00	0.00
Span (in)	= 18.00	8.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 1080.00	1083.10	0.00	0.00
Length (ft)	= 20.00	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)	= 13.00	30.00	0.00	0.00
Crest El. (ft)	= 1086.00	1087.00	0.00	0.00
Weir Coeff.	= 3.33	2.60	3.33	3.33
Weir Type	= 1	Broad	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 0.380 (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 / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	1082.00	0.00	0.00	---	---	0.00	0.00	---	---	0.000	---	0.000
0.10	1,796	1082.10	8.70 oc	0.00	---	---	0.00	0.00	---	---	0.017	---	0.017
0.20	3,592	1082.20	8.70 oc	0.00	---	---	0.00	0.00	---	---	0.033	---	0.033
0.30	5,388	1082.30	8.70 oc	0.00	---	---	0.00	0.00	---	---	0.050	---	0.050
0.40	7,184	1082.40	8.70 oc	0.00	---	---	0.00	0.00	---	---	0.066	---	0.066
0.50	8,980	1082.50	8.70 oc	0.00	---	---	0.00	0.00	---	---	0.083	---	0.083
0.60	10,776	1082.60	8.70 oc	0.00	---	---	0.00	0.00	---	---	0.099	---	0.099
0.70	12,572	1082.70	8.70 oc	0.00	---	---	0.00	0.00	---	---	0.116	---	0.116
0.80	14,368	1082.80	8.70 oc	0.00	---	---	0.00	0.00	---	---	0.132	---	0.132
0.90	16,164	1082.90	8.70 oc	0.00	---	---	0.00	0.00	---	---	0.149	---	0.149
1.00	17,960	1083.00	8.70 oc	0.00	---	---	0.00	0.00	---	---	0.165	---	0.165
1.10	19,918	1083.10	8.70 oc	0.00	---	---	0.00	0.00	---	---	0.167	---	0.167
1.20	21,876	1083.20	8.70 oc	0.07 ic	---	---	0.00	0.00	---	---	0.168	---	0.240
1.30	23,835	1083.30	8.70 oc	0.20 ic	---	---	0.00	0.00	---	---	0.169	---	0.373
1.40	25,793	1083.40	8.70 oc	0.37 ic	---	---	0.00	0.00	---	---	0.171	---	0.544
1.50	27,751	1083.50	8.70 oc	0.57 ic	---	---	0.00	0.00	---	---	0.172	---	0.747
1.60	29,710	1083.60	8.70 oc	0.80 ic	---	---	0.00	0.00	---	---	0.174	---	0.976
1.70	31,668	1083.70	8.70 oc	1.05 ic	---	---	0.00	0.00	---	---	0.175	---	1.230
1.80	33,626	1083.80	8.70 oc	1.33 ic	---	---	0.00	0.00	---	---	0.177	---	1.506
1.90	35,585	1083.90	8.70 oc	1.62 ic	---	---	0.00	0.00	---	---	0.178	---	1.802
2.00	37,543	1084.00	8.70 oc	1.94 ic	---	---	0.00	0.00	---	---	0.180	---	2.118
2.10	39,669	1084.10	8.70 oc	2.27 ic	---	---	0.00	0.00	---	---	0.181	---	2.451
2.20	41,796	1084.20	8.70 oc	2.62 ic	---	---	0.00	0.00	---	---	0.183	---	2.801
2.30	43,922	1084.30	8.70 oc	2.98 ic	---	---	0.00	0.00	---	---	0.184	---	3.168
2.40	46,048	1084.40	8.70 oc	3.36 ic	---	---	0.00	0.00	---	---	0.186	---	3.550
2.50	48,175	1084.50	8.70 oc	3.76 ic	---	---	0.00	0.00	---	---	0.187	---	3.947
2.60	50,301	1084.60	8.70 oc	4.17 ic	---	---	0.00	0.00	---	---	0.189	---	4.359
2.70	52,427	1084.70	8.70 oc	4.59 ic	---	---	0.00	0.00	---	---	0.190	---	4.784
2.80	54,554	1084.80	8.70 oc	5.03 ic	---	---	0.00	0.00	---	---	0.192	---	5.223
2.90	56,680	1084.90	8.70 oc	5.48 ic	---	---	0.00	0.00	---	---	0.193	---	5.675
3.00	58,806	1085.00	8.70 oc	5.94 ic	---	---	0.00	0.00	---	---	0.195	---	6.139
3.10	61,106	1085.10	8.70 oc	6.42 ic	---	---	0.00	0.00	---	---	0.196	---	6.616
3.20	63,406	1085.20	8.70 oc	6.91 ic	---	---	0.00	0.00	---	---	0.198	---	7.105
3.30	65,706	1085.30	8.70 oc	7.41 ic	---	---	0.00	0.00	---	---	0.199	---	7.606
3.40	68,006	1085.40	8.70 oc	7.92 ic	---	---	0.00	0.00	---	---	0.201	---	8.118
3.50	70,306	1085.50	8.70 oc	8.44 ic	---	---	0.00	0.00	---	---	0.202	---	8.642

Continues on next page...

DA #1 (SCM-1)

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
3.60	72,606	1085.60	8.97 oc	8.97 ic	---	---	0.00	0.00	---	---	0.204	---	9.176
3.70	74,906	1085.70	9.32 oc	9.32 ic	---	---	0.00	0.00	---	---	0.205	---	9.530
3.80	77,206	1085.80	9.66 oc	9.66 ic	---	---	0.00	0.00	---	---	0.207	---	9.871
3.90	79,506	1085.90	9.99 oc	9.99 ic	---	---	0.00	0.00	---	---	0.209	---	10.20
4.00	81,806	1086.00	10.31 oc	10.31 ic	---	---	0.00	0.00	---	---	0.210	---	10.52
4.10	84,285	1086.10	11.98 ic	10.62 ic	---	---	1.37	0.00	---	---	0.212	---	12.20
4.20	86,765	1086.20	14.79 ic	10.92 ic	---	---	3.87	0.00	---	---	0.213	---	15.00
4.30	89,244	1086.30	17.05 ic	9.94 ic	---	---	7.12	0.00	---	---	0.215	---	17.27
4.40	91,723	1086.40	18.55 ic	7.60 ic	---	---	10.95	0.00	---	---	0.217	---	18.77
4.50	94,203	1086.50	19.70 ic	5.01 ic	---	---	14.68 s	0.00	---	---	0.218	---	19.91
4.60	96,682	1086.60	20.13 ic	4.03 ic	---	---	16.09 s	0.00	---	---	0.220	---	20.35
4.70	99,161	1086.70	20.44 ic	3.39 ic	---	---	17.05 s	0.00	---	---	0.221	---	20.66
4.80	101,641	1086.80	20.70 ic	2.91 ic	---	---	17.78 s	0.00	---	---	0.223	---	20.92
4.90	104,120	1086.90	20.93 ic	2.54 ic	---	---	18.38 s	0.00	---	---	0.225	---	21.14
5.00	106,599	1087.00	21.13 ic	2.25 ic	---	---	18.87 s	0.00	---	---	0.226	---	21.35
5.10	109,263	1087.10	21.33 ic	2.01 ic	---	---	19.31 s	2.47	---	---	0.228	---	24.02
5.20	111,928	1087.20	21.52 ic	1.82 ic	---	---	19.69 s	6.97	---	---	0.229	---	28.71
5.30	114,592	1087.30	21.70 ic	1.65 ic	---	---	20.03 s	12.82	---	---	0.231	---	34.73
5.40	117,256	1087.40	21.88 ic	1.51 ic	---	---	20.34 s	19.73	---	---	0.233	---	41.82
5.50	119,920	1087.50	22.05 ic	1.40 ic	---	---	20.66 s	27.58	---	---	0.234	---	49.87
5.60	122,585	1087.60	22.22 ic	1.29 ic	---	---	20.90 s	36.25	---	---	0.236	---	58.68
5.70	125,249	1087.70	22.39 ic	1.20 ic	---	---	21.17 s	45.68	---	---	0.238	---	68.29
5.80	127,913	1087.80	22.56 ic	1.12 ic	---	---	21.43 s	55.82	---	---	0.239	---	78.61
5.90	130,578	1087.90	22.72 ic	1.05 ic	---	---	21.63 s	66.60	---	---	0.241	---	89.52
6.00	133,242	1088.00	22.88 ic	0.99 ic	---	---	21.86 s	78.00	---	---	0.243	---	101.09

...End

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

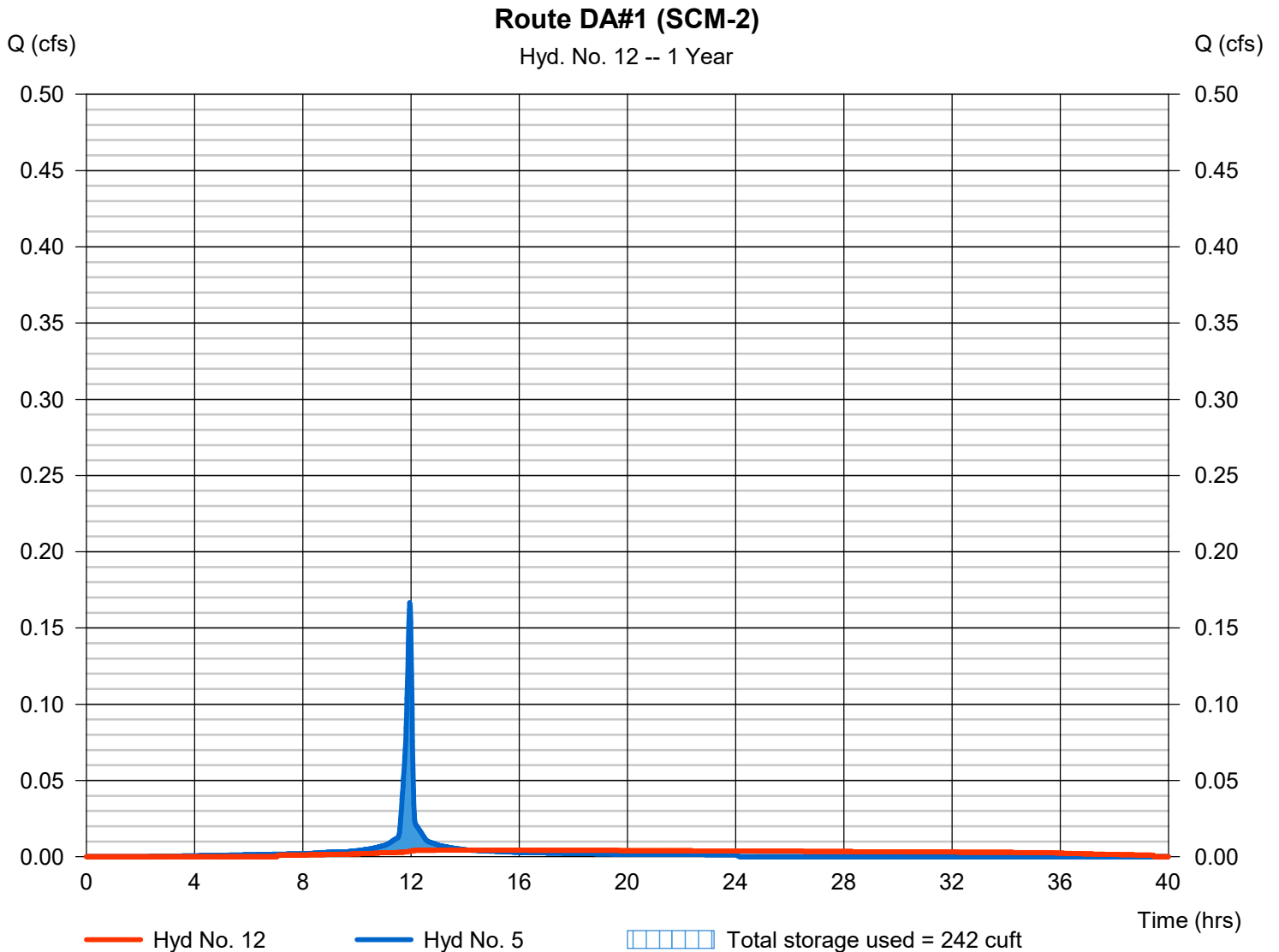
Friday, 04 / 11 / 2025

Hyd. No. 12

Route DA#1 (SCM-2)

Hydrograph type	= Reservoir	Peak discharge	= 0.004 cfs
Storm frequency	= 1 yrs	Time to peak	= 14.17 hrs
Time interval	= 1 min	Hyd. volume	= 369 cuft
Inflow hyd. No.	= 5 - Post DA #1 (SCM-2)	Max. Elevation	= 1099.76 ft
Reservoir name	= DA #1 (SCM-2)	Max. Storage	= 242 cuft

Storage Indication method used. Outflow includes exfiltration.



Pond Report

Pond No. 3 - DA #1 (SCM-2)

Pond Data

Trapezoid -Bottom L x W = 30.0 x 9.0 ft, Side slope = 1.00:1, Bottom elev. = 1098.00 ft, Depth = 3.50 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	1098.00	270	0	0
0.35	1098.35	298	40	40
0.70	1098.70	327	44	83
1.05	1099.05	356	48	131
1.40	1099.40	387	52	183
1.75	1099.75	419	56	240
2.10	1100.10	451	61	301
2.45	1100.45	485	66	366
2.80	1100.80	520	70	436
3.15	1101.15	555	75	512
3.50	1101.50	592	80	592

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 4.00	Inactive	0.00	0.00
Span (in)	= 4.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 1101.17	0.00	0.00	0.00
Length (ft)	= 25.00	0.00	0.00	0.00
Slope (%)	= 12.52	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	Inactive	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 0.380 (by Wet area)			
TW Elev. (ft)	= 0.00			

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

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	1098.00	0.00	---	---	---	---	---	---	---	0.000	---	0.000
0.04	4	1098.04	0.00	---	---	---	---	---	---	---	0.000	---	0.000
0.07	8	1098.07	0.00	---	---	---	---	---	---	---	0.001	---	0.001
0.10	12	1098.10	0.00	---	---	---	---	---	---	---	0.001	---	0.001
0.14	16	1098.14	0.00	---	---	---	---	---	---	---	0.001	---	0.001
0.17	20	1098.18	0.00	---	---	---	---	---	---	---	0.001	---	0.001
0.21	24	1098.21	0.00	---	---	---	---	---	---	---	0.002	---	0.002
0.25	28	1098.24	0.00	---	---	---	---	---	---	---	0.002	---	0.002
0.28	32	1098.28	0.00	---	---	---	---	---	---	---	0.002	---	0.002
0.31	36	1098.31	0.00	---	---	---	---	---	---	---	0.002	---	0.002
0.35	40	1098.35	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.38	44	1098.39	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.42	48	1098.42	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.46	53	1098.45	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.49	57	1098.49	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.52	62	1098.53	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.56	66	1098.56	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.60	70	1098.59	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.63	75	1098.63	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.67	79	1098.67	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.70	83	1098.70	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.74	88	1098.73	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.77	93	1098.77	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.80	98	1098.81	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.84	103	1098.84	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.87	107	1098.88	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.91	112	1098.91	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.94	117	1098.94	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.98	122	1098.98	0.00	---	---	---	---	---	---	---	0.003	---	0.003
1.01	126	1099.02	0.00	---	---	---	---	---	---	---	0.003	---	0.003
1.05	131	1099.05	0.00	---	---	---	---	---	---	---	0.003	---	0.003
1.09	136	1099.08	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.12	142	1099.12	0.00	---	---	---	---	---	---	---	0.004	---	0.004

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DA #1 (SCM-2)

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
1.15	147	1099.16	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.19	152	1099.19	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.23	157	1099.22	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.26	162	1099.26	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.29	168	1099.30	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.33	173	1099.33	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.37	178	1099.36	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.40	183	1099.40	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.43	189	1099.44	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.47	195	1099.47	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.50	200	1099.51	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.54	206	1099.54	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.58	211	1099.57	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.61	217	1099.61	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.64	223	1099.65	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.68	228	1099.68	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.72	234	1099.71	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.75	240	1099.75	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.78	246	1099.79	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.82	252	1099.82	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.86	258	1099.85	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.89	264	1099.89	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.92	270	1099.93	0.00	---	---	---	---	---	---	---	0.005	---	0.005
1.96	276	1099.96	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.00	282	1099.99	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.03	288	1100.03	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.07	294	1100.06	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.10	301	1100.10	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.13	307	1100.14	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.17	314	1100.17	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.20	320	1100.20	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.24	327	1100.24	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.28	333	1100.28	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.31	340	1100.31	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.35	346	1100.34	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.38	353	1100.38	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.42	360	1100.42	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.45	366	1100.45	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.48	373	1100.48	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.52	380	1100.52	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.56	387	1100.56	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.59	394	1100.59	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.63	401	1100.63	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.66	408	1100.66	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.69	415	1100.69	0.00	---	---	---	---	---	---	---	0.006	---	0.006
2.73	422	1100.73	0.00	---	---	---	---	---	---	---	0.006	---	0.006
2.77	429	1100.77	0.00	---	---	---	---	---	---	---	0.006	---	0.006
2.80	436	1100.80	0.00	---	---	---	---	---	---	---	0.006	---	0.006
2.84	444	1100.83	0.00	---	---	---	---	---	---	---	0.006	---	0.006
2.87	451	1100.87	0.00	---	---	---	---	---	---	---	0.006	---	0.006
2.90	459	1100.91	0.00	---	---	---	---	---	---	---	0.006	---	0.006
2.94	467	1100.94	0.00	---	---	---	---	---	---	---	0.006	---	0.006
2.97	474	1100.97	0.00	---	---	---	---	---	---	---	0.006	---	0.006
3.01	482	1101.01	0.00	---	---	---	---	---	---	---	0.006	---	0.006
3.05	489	1101.05	0.00	---	---	---	---	---	---	---	0.006	---	0.006
3.08	497	1101.08	0.00	---	---	---	---	---	---	---	0.006	---	0.006
3.12	504	1101.11	0.00	---	---	---	---	---	---	---	0.006	---	0.006
3.15	512	1101.15	0.00	---	---	---	---	---	---	---	0.006	---	0.006
3.18	520	1101.19	0.00 ic	---	---	---	---	---	---	---	0.006	---	0.007
3.22	528	1101.22	0.01 ic	---	---	---	---	---	---	---	0.006	---	0.013
3.26	536	1101.26	0.02 ic	---	---	---	---	---	---	---	0.006	---	0.024
3.29	544	1101.29	0.03 ic	---	---	---	---	---	---	---	0.006	---	0.040
3.33	552	1101.32	0.05 ic	---	---	---	---	---	---	---	0.006	---	0.060
3.36	560	1101.36	0.08 ic	---	---	---	---	---	---	---	0.006	---	0.083
3.39	568	1101.40	0.10 ic	---	---	---	---	---	---	---	0.006	---	0.108
3.43	576	1101.43	0.13 ic	---	---	---	---	---	---	---	0.007	---	0.134
3.46	584	1101.46	0.15 ic	---	---	---	---	---	---	---	0.007	---	0.158
3.50	592	1101.50	0.17 ic	---	---	---	---	---	---	---	0.007	---	0.177

...End

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

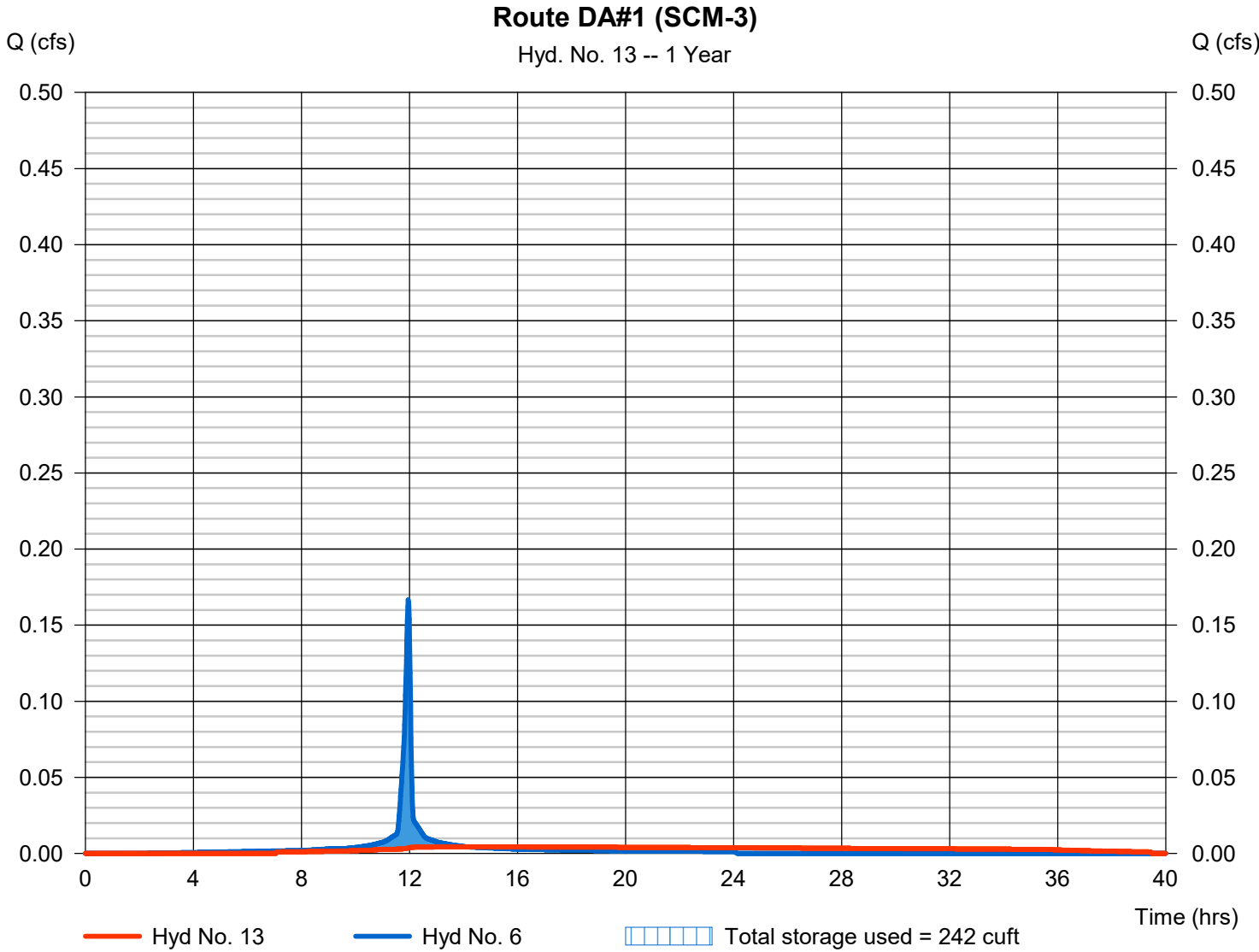
Friday, 04 / 11 / 2025

Hyd. No. 13

Route DA#1 (SCM-3)

Hydrograph type	= Reservoir	Peak discharge	= 0.004 cfs
Storm frequency	= 1 yrs	Time to peak	= 14.17 hrs
Time interval	= 1 min	Hyd. volume	= 369 cuft
Inflow hyd. No.	= 6 - Post DA #1 (SCM-3)	Max. Elevation	= 1097.76 ft
Reservoir name	= DA #1 (SCM-3)	Max. Storage	= 242 cuft

Storage Indication method used. Outflow includes exfiltration.



Pond Report

Pond No. 4 - DA #1 (SCM-3)

Pond Data

Trapezoid -Bottom L x W = 30.0 x 9.0 ft, Side slope = 1.00:1, Bottom elev. = 1096.00 ft, Depth = 3.50 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	1096.00	270	0	0
0.35	1096.35	298	40	40
0.70	1096.70	327	44	83
1.05	1097.05	356	48	131
1.40	1097.40	387	52	183
1.75	1097.75	419	56	240
2.10	1098.10	451	61	301
2.45	1098.45	485	66	366
2.80	1098.80	520	70	436
3.15	1099.15	555	75	512
3.50	1099.50	592	80	592

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 4.00	Inactive	0.00	0.00
Span (in)	= 4.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 1099.17	0.00	0.00	0.00
Length (ft)	= 33.00	0.00	0.00	0.00
Slope (%)	= 21.65	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	Inactive	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 0.380 (by Wet area)			
TW Elev. (ft)	= 0.00			

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

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	1096.00	0.00	---	---	---	---	---	---	---	0.000	---	0.000
0.04	4	1096.04	0.00	---	---	---	---	---	---	---	0.000	---	0.000
0.07	8	1096.07	0.00	---	---	---	---	---	---	---	0.001	---	0.001
0.10	12	1096.10	0.00	---	---	---	---	---	---	---	0.001	---	0.001
0.14	16	1096.14	0.00	---	---	---	---	---	---	---	0.001	---	0.001
0.17	20	1096.18	0.00	---	---	---	---	---	---	---	0.001	---	0.001
0.21	24	1096.21	0.00	---	---	---	---	---	---	---	0.002	---	0.002
0.25	28	1096.24	0.00	---	---	---	---	---	---	---	0.002	---	0.002
0.28	32	1096.28	0.00	---	---	---	---	---	---	---	0.002	---	0.002
0.31	36	1096.31	0.00	---	---	---	---	---	---	---	0.002	---	0.002
0.35	40	1096.35	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.38	44	1096.39	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.42	48	1096.42	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.46	53	1096.45	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.49	57	1096.49	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.52	62	1096.53	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.56	66	1096.56	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.60	70	1096.59	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.63	75	1096.63	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.67	79	1096.67	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.70	83	1096.70	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.74	88	1096.73	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.77	93	1096.77	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.80	98	1096.81	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.84	103	1096.84	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.87	107	1096.88	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.91	112	1096.91	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.94	117	1096.94	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.98	122	1096.98	0.00	---	---	---	---	---	---	---	0.003	---	0.003
1.01	126	1097.02	0.00	---	---	---	---	---	---	---	0.003	---	0.003
1.05	131	1097.05	0.00	---	---	---	---	---	---	---	0.003	---	0.003
1.09	136	1097.08	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.12	142	1097.12	0.00	---	---	---	---	---	---	---	0.004	---	0.004

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DA #1 (SCM-3)

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
1.15	147	1097.16	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.19	152	1097.19	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.23	157	1097.22	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.26	162	1097.26	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.29	168	1097.30	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.33	173	1097.33	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.37	178	1097.36	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.40	183	1097.40	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.43	189	1097.44	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.47	195	1097.47	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.50	200	1097.51	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.54	206	1097.54	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.58	211	1097.57	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.61	217	1097.61	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.64	223	1097.65	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.68	228	1097.68	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.72	234	1097.71	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.75	240	1097.75	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.78	246	1097.79	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.82	252	1097.82	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.86	258	1097.85	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.89	264	1097.89	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.92	270	1097.93	0.00	---	---	---	---	---	---	---	0.005	---	0.005
1.96	276	1097.96	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.00	282	1097.99	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.03	288	1098.03	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.07	294	1098.06	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.10	301	1098.10	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.13	307	1098.14	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.17	314	1098.17	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.20	320	1098.20	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.24	327	1098.24	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.28	333	1098.28	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.31	340	1098.31	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.35	346	1098.34	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.38	353	1098.38	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.42	360	1098.42	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.45	366	1098.45	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.48	373	1098.48	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.52	380	1098.52	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.56	387	1098.56	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.59	394	1098.59	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.63	401	1098.63	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.66	408	1098.66	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.69	415	1098.69	0.00	---	---	---	---	---	---	---	0.006	---	0.006
2.73	422	1098.73	0.00	---	---	---	---	---	---	---	0.006	---	0.006
2.77	429	1098.77	0.00	---	---	---	---	---	---	---	0.006	---	0.006
2.80	436	1098.80	0.00	---	---	---	---	---	---	---	0.006	---	0.006
2.84	444	1098.83	0.00	---	---	---	---	---	---	---	0.006	---	0.006
2.87	451	1098.87	0.00	---	---	---	---	---	---	---	0.006	---	0.006
2.90	459	1098.91	0.00	---	---	---	---	---	---	---	0.006	---	0.006
2.94	467	1098.94	0.00	---	---	---	---	---	---	---	0.006	---	0.006
2.97	474	1098.97	0.00	---	---	---	---	---	---	---	0.006	---	0.006
3.01	482	1099.01	0.00	---	---	---	---	---	---	---	0.006	---	0.006
3.05	489	1099.05	0.00	---	---	---	---	---	---	---	0.006	---	0.006
3.08	497	1099.08	0.00	---	---	---	---	---	---	---	0.006	---	0.006
3.12	504	1099.11	0.00	---	---	---	---	---	---	---	0.006	---	0.006
3.15	512	1099.15	0.00	---	---	---	---	---	---	---	0.006	---	0.006
3.18	520	1099.19	0.00 ic	---	---	---	---	---	---	---	0.006	---	0.007
3.22	528	1099.22	0.01 ic	---	---	---	---	---	---	---	0.006	---	0.013
3.26	536	1099.26	0.02 ic	---	---	---	---	---	---	---	0.006	---	0.024
3.29	544	1099.29	0.03 ic	---	---	---	---	---	---	---	0.006	---	0.040
3.33	552	1099.32	0.05 ic	---	---	---	---	---	---	---	0.006	---	0.060
3.36	560	1099.36	0.08 ic	---	---	---	---	---	---	---	0.006	---	0.083
3.39	568	1099.40	0.10 ic	---	---	---	---	---	---	---	0.006	---	0.108
3.43	576	1099.43	0.13 ic	---	---	---	---	---	---	---	0.007	---	0.134
3.46	584	1099.46	0.15 ic	---	---	---	---	---	---	---	0.007	---	0.158
3.50	592	1099.50	0.17 ic	---	---	---	---	---	---	---	0.007	---	0.177

...End

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

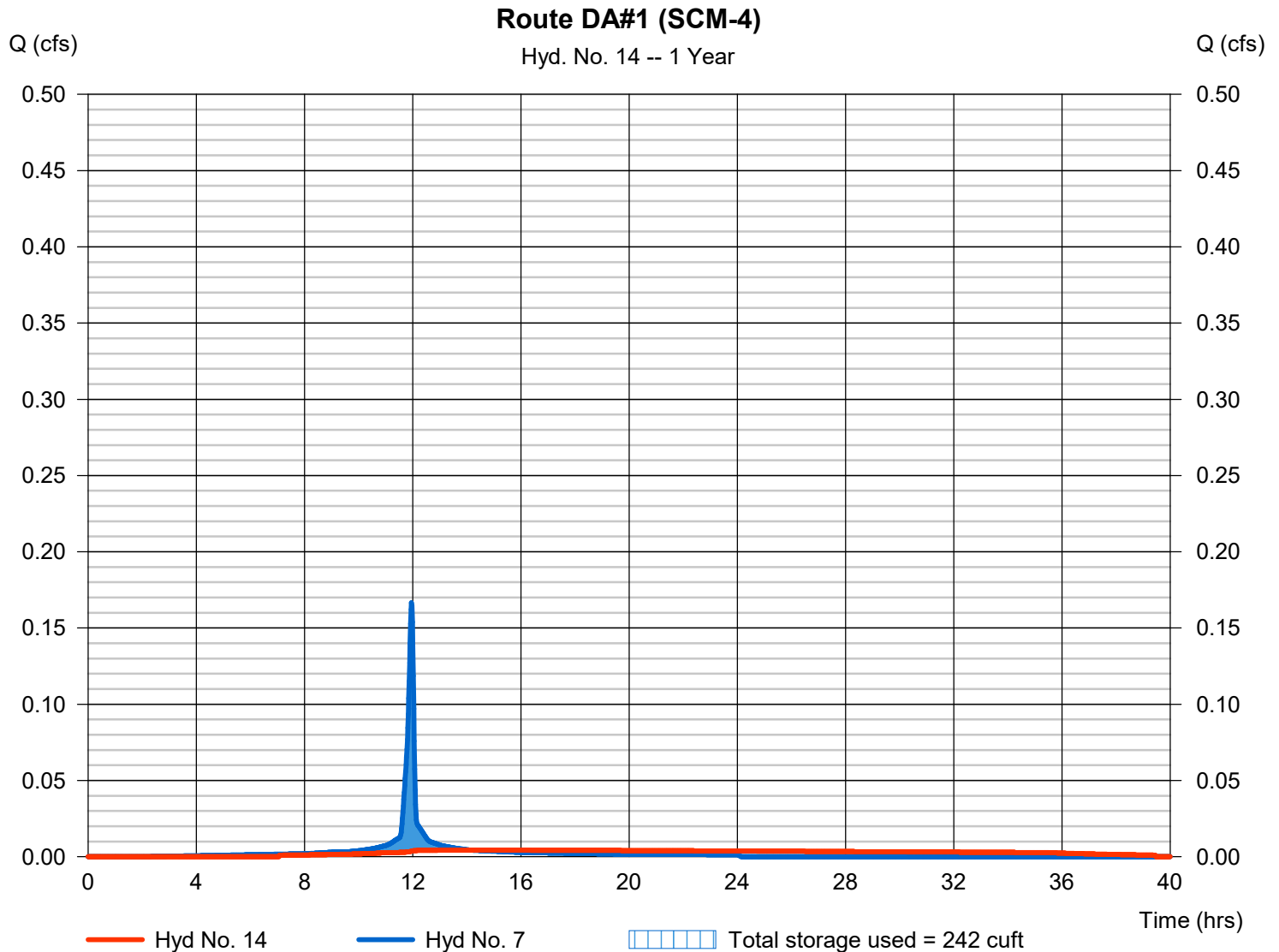
Friday, 04 / 11 / 2025

Hyd. No. 14

Route DA#1 (SCM-4)

Hydrograph type	= Reservoir	Peak discharge	= 0.004 cfs
Storm frequency	= 1 yrs	Time to peak	= 14.17 hrs
Time interval	= 1 min	Hyd. volume	= 369 cuft
Inflow hyd. No.	= 7 - Post DA #1 (SCM-4)	Max. Elevation	= 1095.76 ft
Reservoir name	= DA #1 (SCM-4)	Max. Storage	= 242 cuft

Storage Indication method used. Outflow includes exfiltration.



Pond Report

Pond No. 5 - DA #1 (SCM-4)

Pond Data

Trapezoid -Bottom L x W = 30.0 x 9.0 ft, Side slope = 1.00:1, Bottom elev. = 1094.00 ft, Depth = 3.50 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	1094.00	270	0	0
0.35	1094.35	298	40	40
0.70	1094.70	327	44	83
1.05	1095.05	356	48	131
1.40	1095.40	387	52	183
1.75	1095.75	419	56	240
2.10	1096.10	451	61	301
2.45	1096.45	485	66	366
2.80	1096.80	520	70	436
3.15	1097.15	555	75	512
3.50	1097.50	592	80	592

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 4.00	Inactive	0.00	0.00
Span (in)	= 4.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 1097.17	0.00	0.00	0.00
Length (ft)	= 23.00	0.00	0.00	0.00
Slope (%)	= 30.95	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	Inactive	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 0.380 (by Wet area)			
TW Elev. (ft)	= 0.00			

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

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	1094.00	0.00	---	---	---	---	---	---	---	0.000	---	0.000
0.04	4	1094.04	0.00	---	---	---	---	---	---	---	0.000	---	0.000
0.07	8	1094.07	0.00	---	---	---	---	---	---	---	0.001	---	0.001
0.10	12	1094.10	0.00	---	---	---	---	---	---	---	0.001	---	0.001
0.14	16	1094.14	0.00	---	---	---	---	---	---	---	0.001	---	0.001
0.17	20	1094.18	0.00	---	---	---	---	---	---	---	0.001	---	0.001
0.21	24	1094.21	0.00	---	---	---	---	---	---	---	0.002	---	0.002
0.25	28	1094.24	0.00	---	---	---	---	---	---	---	0.002	---	0.002
0.28	32	1094.28	0.00	---	---	---	---	---	---	---	0.002	---	0.002
0.31	36	1094.31	0.00	---	---	---	---	---	---	---	0.002	---	0.002
0.35	40	1094.35	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.38	44	1094.39	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.42	48	1094.42	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.46	53	1094.45	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.49	57	1094.49	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.52	62	1094.53	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.56	66	1094.56	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.60	70	1094.59	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.63	75	1094.63	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.67	79	1094.67	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.70	83	1094.70	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.74	88	1094.73	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.77	93	1094.77	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.80	98	1094.81	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.84	103	1094.84	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.87	107	1094.88	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.91	112	1094.91	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.94	117	1094.94	0.00	---	---	---	---	---	---	---	0.003	---	0.003
0.98	122	1094.98	0.00	---	---	---	---	---	---	---	0.003	---	0.003
1.01	126	1095.02	0.00	---	---	---	---	---	---	---	0.003	---	0.003
1.05	131	1095.05	0.00	---	---	---	---	---	---	---	0.003	---	0.003
1.09	136	1095.08	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.12	142	1095.12	0.00	---	---	---	---	---	---	---	0.004	---	0.004

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DA #1 (SCM-4)

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
1.15	147	1095.16	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.19	152	1095.19	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.23	157	1095.22	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.26	162	1095.26	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.29	168	1095.30	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.33	173	1095.33	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.37	178	1095.36	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.40	183	1095.40	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.43	189	1095.44	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.47	195	1095.47	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.50	200	1095.51	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.54	206	1095.54	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.58	211	1095.57	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.61	217	1095.61	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.64	223	1095.65	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.68	228	1095.68	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.72	234	1095.71	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.75	240	1095.75	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.78	246	1095.79	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.82	252	1095.82	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.86	258	1095.85	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.89	264	1095.89	0.00	---	---	---	---	---	---	---	0.004	---	0.004
1.92	270	1095.93	0.00	---	---	---	---	---	---	---	0.005	---	0.005
1.96	276	1095.96	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.00	282	1095.99	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.03	288	1096.03	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.07	294	1096.06	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.10	301	1096.10	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.13	307	1096.14	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.17	314	1096.17	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.20	320	1096.20	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.24	327	1096.24	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.28	333	1096.28	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.31	340	1096.31	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.35	346	1096.34	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.38	353	1096.38	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.42	360	1096.42	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.45	366	1096.45	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.48	373	1096.48	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.52	380	1096.52	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.56	387	1096.56	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.59	394	1096.59	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.63	401	1096.63	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.66	408	1096.66	0.00	---	---	---	---	---	---	---	0.005	---	0.005
2.69	415	1096.69	0.00	---	---	---	---	---	---	---	0.006	---	0.006
2.73	422	1096.73	0.00	---	---	---	---	---	---	---	0.006	---	0.006
2.77	429	1096.77	0.00	---	---	---	---	---	---	---	0.006	---	0.006
2.80	436	1096.80	0.00	---	---	---	---	---	---	---	0.006	---	0.006
2.84	444	1096.83	0.00	---	---	---	---	---	---	---	0.006	---	0.006
2.87	451	1096.87	0.00	---	---	---	---	---	---	---	0.006	---	0.006
2.90	459	1096.91	0.00	---	---	---	---	---	---	---	0.006	---	0.006
2.94	467	1096.94	0.00	---	---	---	---	---	---	---	0.006	---	0.006
2.97	474	1096.97	0.00	---	---	---	---	---	---	---	0.006	---	0.006
3.01	482	1097.01	0.00	---	---	---	---	---	---	---	0.006	---	0.006
3.05	489	1097.05	0.00	---	---	---	---	---	---	---	0.006	---	0.006
3.08	497	1097.08	0.00	---	---	---	---	---	---	---	0.006	---	0.006
3.12	504	1097.11	0.00	---	---	---	---	---	---	---	0.006	---	0.006
3.15	512	1097.15	0.00	---	---	---	---	---	---	---	0.006	---	0.006
3.18	520	1097.19	0.00 ic	---	---	---	---	---	---	---	0.006	---	0.007
3.22	528	1097.22	0.01 ic	---	---	---	---	---	---	---	0.006	---	0.013
3.26	536	1097.26	0.02 ic	---	---	---	---	---	---	---	0.006	---	0.024
3.29	544	1097.29	0.03 ic	---	---	---	---	---	---	---	0.006	---	0.040
3.33	552	1097.32	0.05 ic	---	---	---	---	---	---	---	0.006	---	0.060
3.36	560	1097.36	0.08 ic	---	---	---	---	---	---	---	0.006	---	0.083
3.39	568	1097.40	0.10 ic	---	---	---	---	---	---	---	0.006	---	0.108
3.43	576	1097.43	0.13 ic	---	---	---	---	---	---	---	0.007	---	0.134
3.46	584	1097.46	0.15 ic	---	---	---	---	---	---	---	0.007	---	0.158
3.50	592	1097.50	0.17 ic	---	---	---	---	---	---	---	0.007	---	0.177

...End

Hydrograph Report

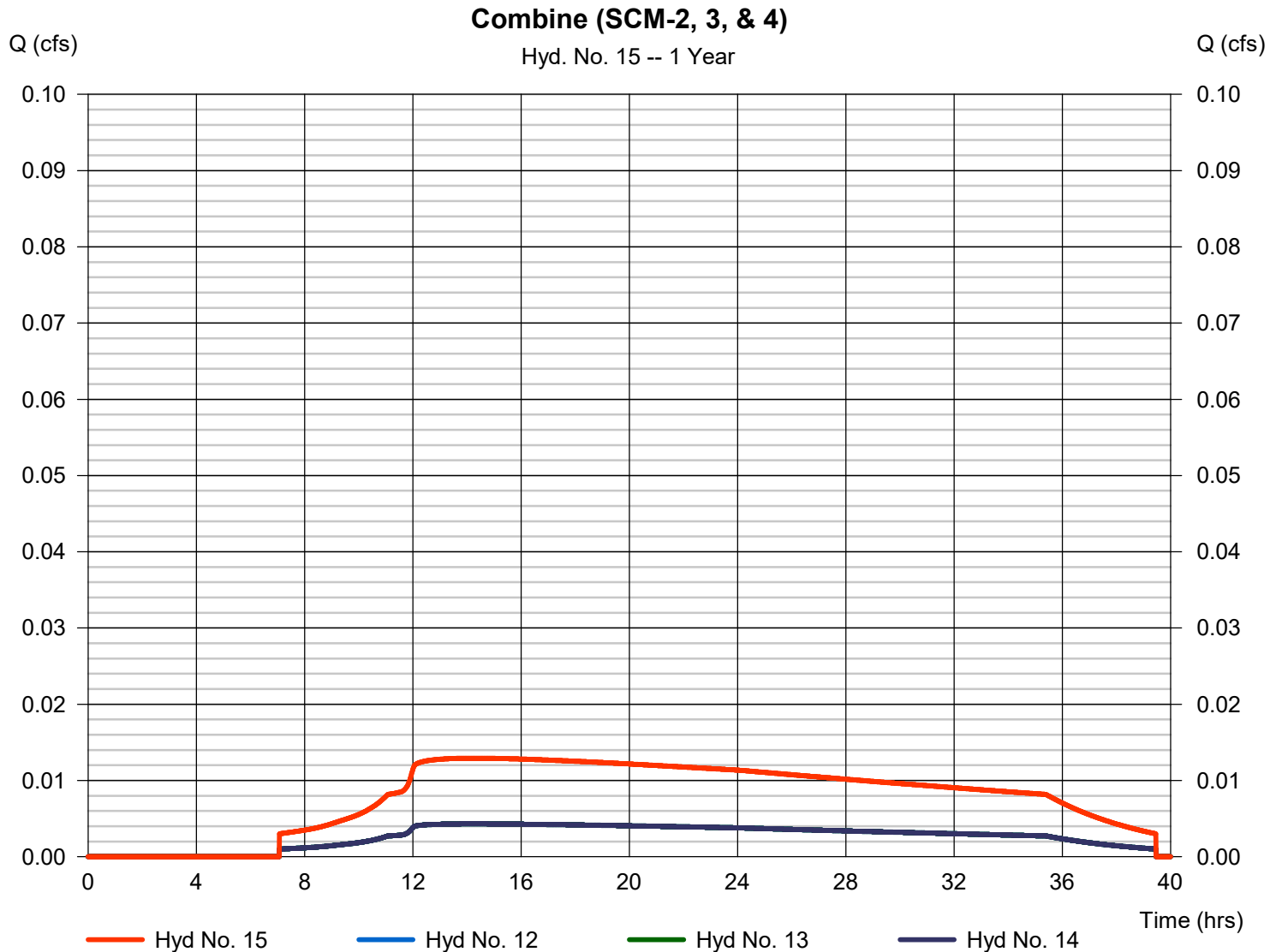
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Friday, 04 / 11 / 2025

Hyd. No. 15

Combine (SCM-2, 3, & 4)

Hydrograph type	= Combine	Peak discharge	= 0.013 cfs
Storm frequency	= 1 yrs	Time to peak	= 14.17 hrs
Time interval	= 1 min	Hyd. volume	= 1,106 cuft
Inflow hyds.	= 12, 13, 14	Contrib. drain. area	= 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

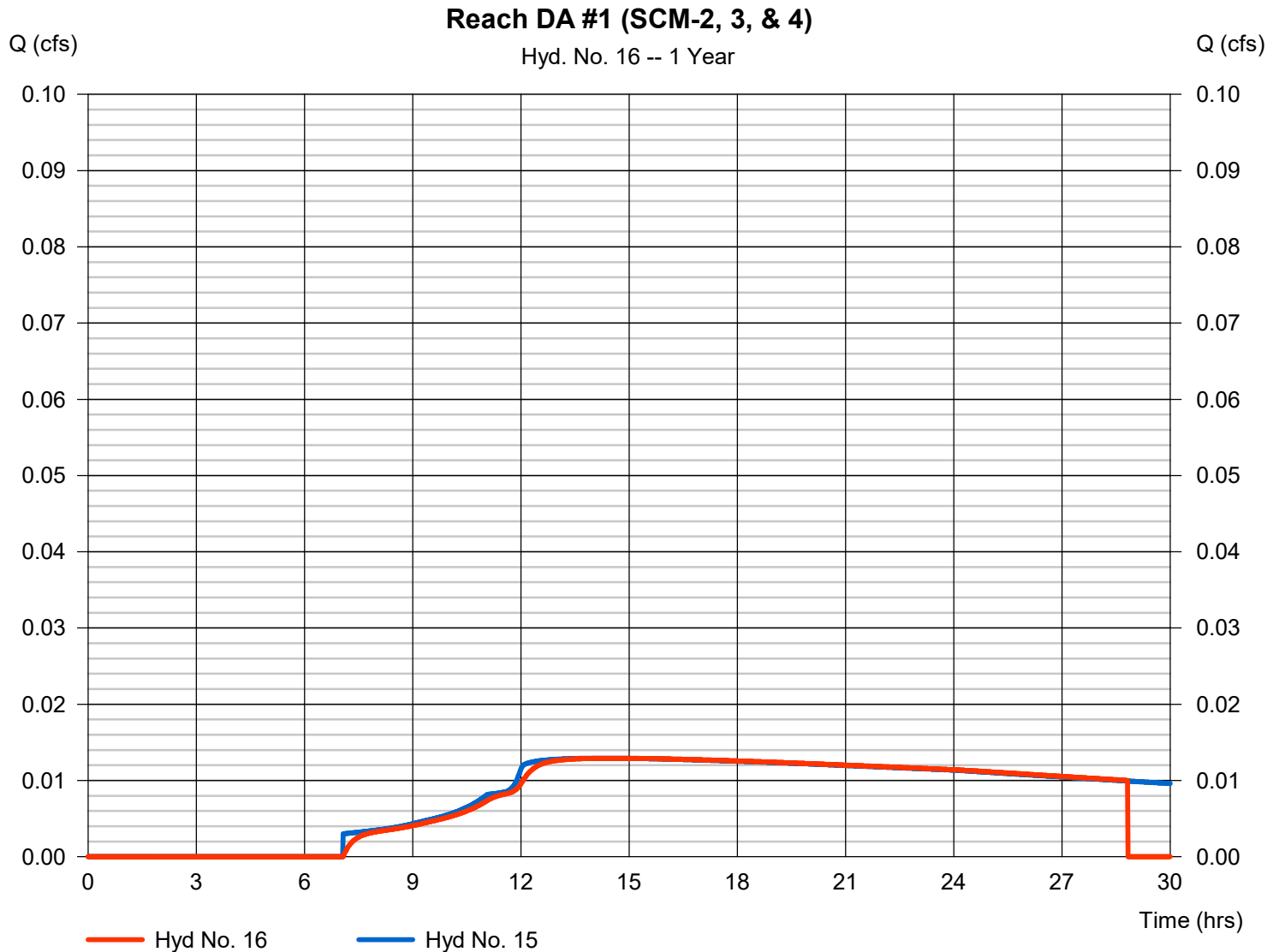
Friday, 04 / 11 / 2025

Hyd. No. 16

Reach DA #1 (SCM-2, 3, & 4)

Hydrograph type	= Reach	Peak discharge	= 0.013 cfs
Storm frequency	= 1 yrs	Time to peak	= 14.53 hrs
Time interval	= 1 min	Hyd. volume	= 807 cuft
Inflow hyd. No.	= 15 - Combine (SCM-2, 3, & 4)	Section type	= Trapezoidal
Reach length	= 900.0 ft	Channel slope	= 1.3 %
Manning's n	= 0.025	Bottom width	= 4.0 ft
Side slope	= 2.0:1	Max. depth	= 2.0 ft
Rating curve x	= 2.643	Rating curve m	= 1.307
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.0639

Modified Att-Kin routing method used.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

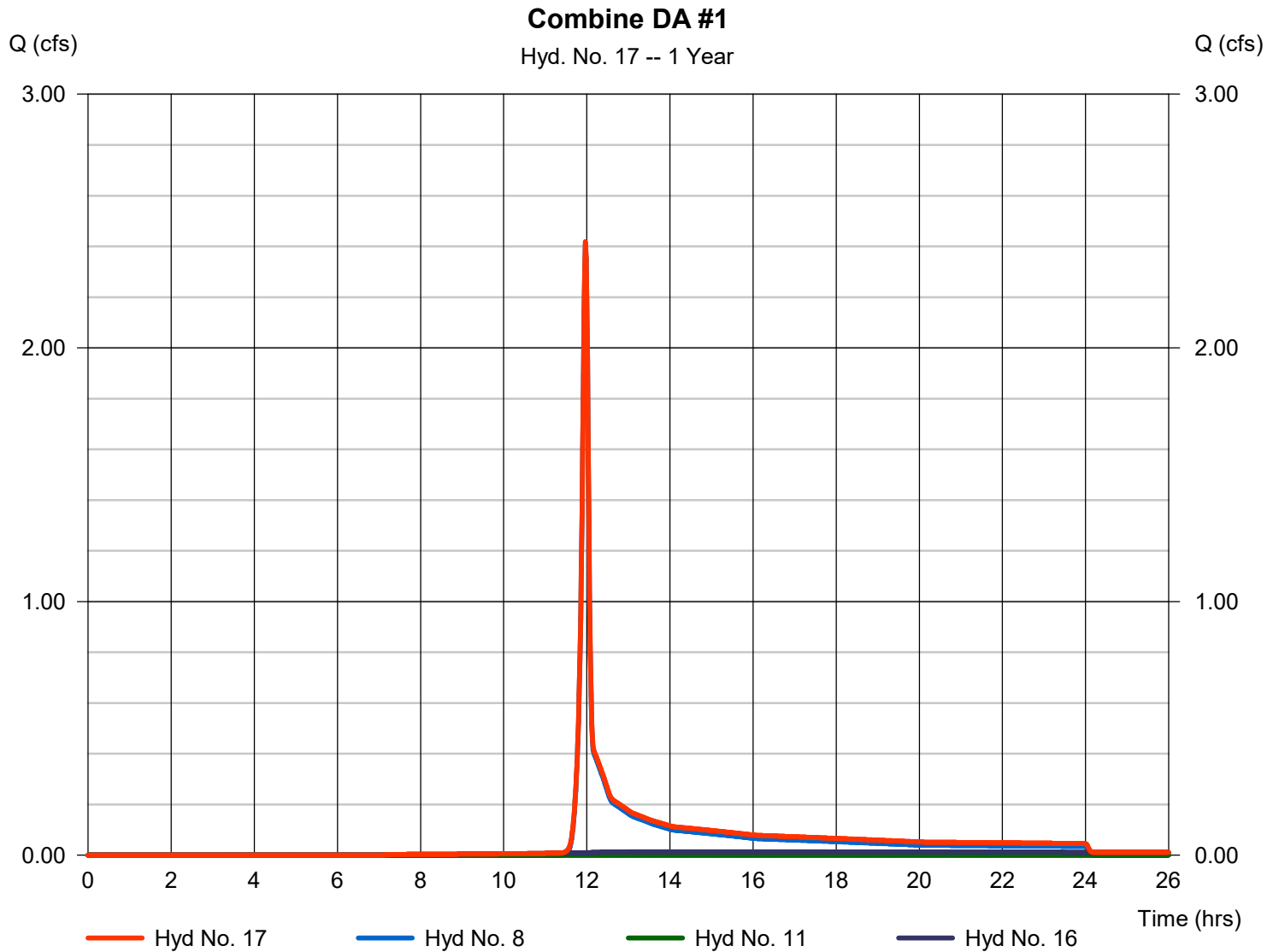
Friday, 04 / 11 / 2025

Hyd. No. 17

Combine DA #1

Hydrograph type = Combine
Storm frequency = 1 yrs
Time interval = 1 min
Inflow hyds. = 8, 11, 16

Peak discharge = 2.418 cfs
Time to peak = 11.97 hrs
Hyd. volume = 5,816 cuft
Contrib. drain. area = 2.590 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

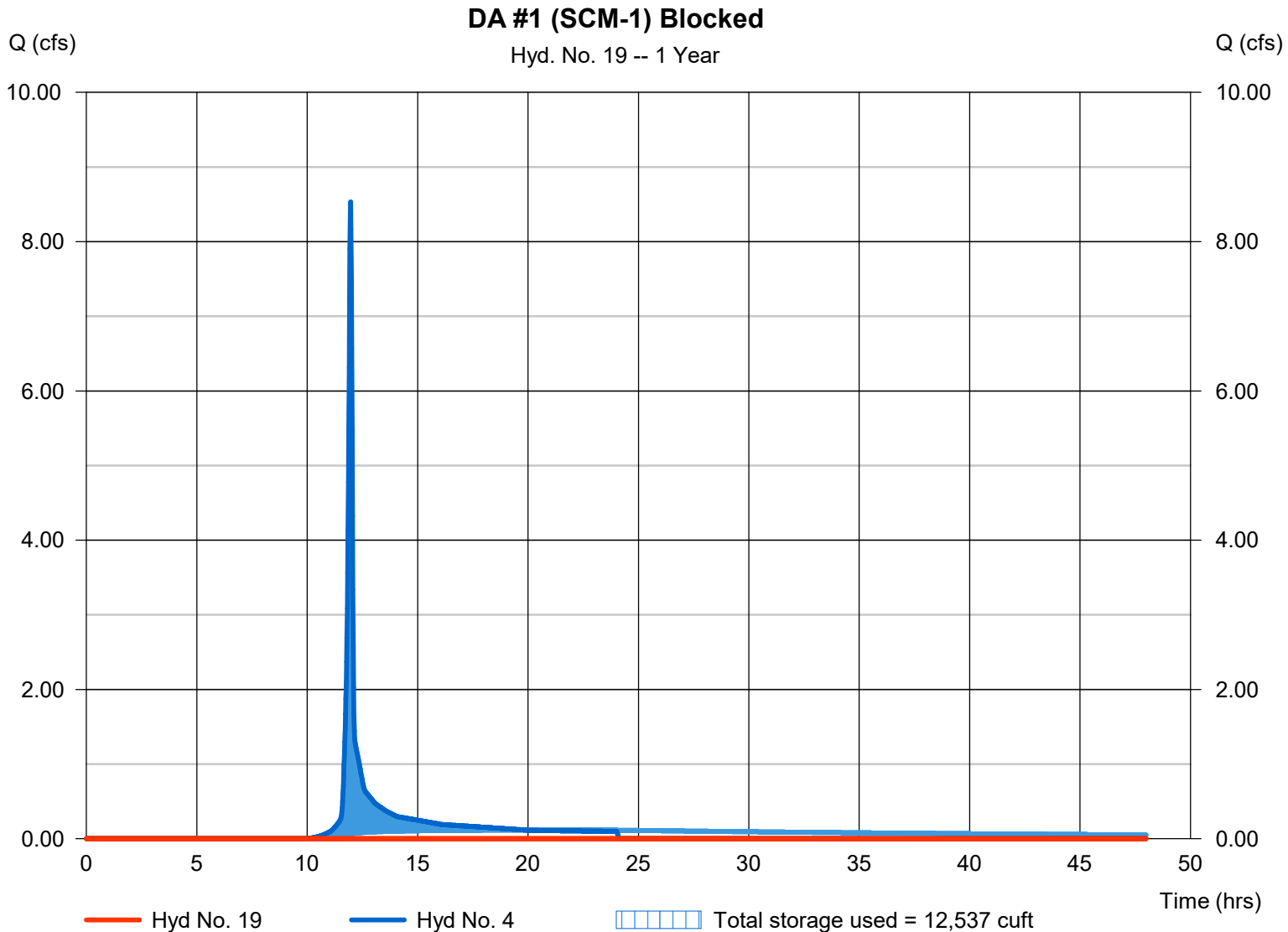
Friday, 04 / 11 / 2025

Hyd. No. 19

DA #1 (SCM-1) Blocked

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.58 hrs
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 4 - Post DA #1 (SCM-1)	Max. Elevation	= 1082.70 ft
Reservoir name	= DA #1 (SCM-1) Blocked	Max. Storage	= 12,537 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Pond No. 9 - DA #1 (SCM-1) Blocked

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 1082.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	1082.00	17,170	0	0
1.00	1083.00	18,765	17,960	17,960
2.00	1084.00	20,417	19,583	37,543
3.00	1085.00	22,125	21,263	58,806
4.00	1086.00	23,890	23,000	81,806
5.00	1087.00	25,712	24,793	106,599
6.00	1088.00	27,590	26,643	133,242

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	Inactive	Inactive	0.00	0.00
Span (in)	= 18.00	6.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 1080.00	1085.50	0.00	0.00
Length (ft)	= 20.00	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	30.00	0.00	0.00
Crest El. (ft)	= 1086.00	1087.00	0.00	0.00
Weir Coeff.	= 3.33	2.60	3.33	3.33
Weir Type	= 1	Broad	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 0.380 (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 / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	1082.00	0.00	0.00	---	---	0.00	0.00	---	---	0.000	---	0.000
0.10	1,796	1082.10	0.00	0.00	---	---	0.00	0.00	---	---	0.017	---	0.017
0.20	3,592	1082.20	0.00	0.00	---	---	0.00	0.00	---	---	0.033	---	0.033
0.30	5,388	1082.30	0.00	0.00	---	---	0.00	0.00	---	---	0.050	---	0.050
0.40	7,184	1082.40	0.00	0.00	---	---	0.00	0.00	---	---	0.066	---	0.066
0.50	8,980	1082.50	0.00	0.00	---	---	0.00	0.00	---	---	0.083	---	0.083
0.60	10,776	1082.60	0.00	0.00	---	---	0.00	0.00	---	---	0.099	---	0.099
0.70	12,572	1082.70	0.00	0.00	---	---	0.00	0.00	---	---	0.116	---	0.116
0.80	14,368	1082.80	0.00	0.00	---	---	0.00	0.00	---	---	0.132	---	0.132
0.90	16,164	1082.90	0.00	0.00	---	---	0.00	0.00	---	---	0.149	---	0.149
1.00	17,960	1083.00	0.00	0.00	---	---	0.00	0.00	---	---	0.165	---	0.165
1.10	19,918	1083.10	0.00	0.00	---	---	0.00	0.00	---	---	0.167	---	0.167
1.20	21,876	1083.20	0.00	0.00	---	---	0.00	0.00	---	---	0.168	---	0.168
1.30	23,835	1083.30	0.00	0.00	---	---	0.00	0.00	---	---	0.169	---	0.169
1.40	25,793	1083.40	0.00	0.00	---	---	0.00	0.00	---	---	0.171	---	0.171
1.50	27,751	1083.50	0.00	0.00	---	---	0.00	0.00	---	---	0.172	---	0.172
1.60	29,710	1083.60	0.00	0.00	---	---	0.00	0.00	---	---	0.174	---	0.174
1.70	31,668	1083.70	0.00	0.00	---	---	0.00	0.00	---	---	0.175	---	0.175
1.80	33,626	1083.80	0.00	0.00	---	---	0.00	0.00	---	---	0.177	---	0.177
1.90	35,585	1083.90	0.00	0.00	---	---	0.00	0.00	---	---	0.178	---	0.178
2.00	37,543	1084.00	0.00	0.00	---	---	0.00	0.00	---	---	0.180	---	0.180
2.10	39,669	1084.10	0.00	0.00	---	---	0.00	0.00	---	---	0.181	---	0.181
2.20	41,796	1084.20	0.00	0.00	---	---	0.00	0.00	---	---	0.183	---	0.183
2.30	43,922	1084.30	0.00	0.00	---	---	0.00	0.00	---	---	0.184	---	0.184
2.40	46,048	1084.40	0.00	0.00	---	---	0.00	0.00	---	---	0.186	---	0.186
2.50	48,175	1084.50	0.00	0.00	---	---	0.00	0.00	---	---	0.187	---	0.187
2.60	50,301	1084.60	0.00	0.00	---	---	0.00	0.00	---	---	0.189	---	0.189
2.70	52,427	1084.70	0.00	0.00	---	---	0.00	0.00	---	---	0.190	---	0.190
2.80	54,554	1084.80	0.00	0.00	---	---	0.00	0.00	---	---	0.192	---	0.192
2.90	56,680	1084.90	0.00	0.00	---	---	0.00	0.00	---	---	0.193	---	0.193
3.00	58,806	1085.00	0.00	0.00	---	---	0.00	0.00	---	---	0.195	---	0.195
3.10	61,106	1085.10	0.00	0.00	---	---	0.00	0.00	---	---	0.196	---	0.196
3.20	63,406	1085.20	0.00	0.00	---	---	0.00	0.00	---	---	0.198	---	0.198
3.30	65,706	1085.30	0.00	0.00	---	---	0.00	0.00	---	---	0.199	---	0.199
3.40	68,006	1085.40	0.00	0.00	---	---	0.00	0.00	---	---	0.201	---	0.201
3.50	70,306	1085.50	0.00	0.00	---	---	0.00	0.00	---	---	0.202	---	0.202

Continues on next page...

DA #1 (SCM-1) Blocked

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
3.60	72,606	1085.60	0.00	0.00	---	---	0.00	0.00	---	---	0.204	---	0.204
3.70	74,906	1085.70	0.00	0.00	---	---	0.00	0.00	---	---	0.205	---	0.205
3.80	77,206	1085.80	0.00	0.00	---	---	0.00	0.00	---	---	0.207	---	0.207
3.90	79,506	1085.90	0.00	0.00	---	---	0.00	0.00	---	---	0.209	---	0.209
4.00	81,806	1086.00	0.00	0.00	---	---	0.00	0.00	---	---	0.210	---	0.210
4.10	84,285	1086.10	0.00	0.00	---	---	0.00	0.00	---	---	0.212	---	0.212
4.20	86,765	1086.20	0.00	0.00	---	---	0.00	0.00	---	---	0.213	---	0.213
4.30	89,244	1086.30	0.00	0.00	---	---	0.00	0.00	---	---	0.215	---	0.215
4.40	91,723	1086.40	0.00	0.00	---	---	0.00	0.00	---	---	0.217	---	0.217
4.50	94,203	1086.50	0.00	0.00	---	---	0.00	0.00	---	---	0.218	---	0.218
4.60	96,682	1086.60	0.00	0.00	---	---	0.00	0.00	---	---	0.220	---	0.220
4.70	99,161	1086.70	0.00	0.00	---	---	0.00	0.00	---	---	0.221	---	0.221
4.80	101,641	1086.80	0.00	0.00	---	---	0.00	0.00	---	---	0.223	---	0.223
4.90	104,120	1086.90	0.00	0.00	---	---	0.00	0.00	---	---	0.225	---	0.225
5.00	106,599	1087.00	0.00	0.00	---	---	0.00	0.00	---	---	0.226	---	0.226
5.10	109,263	1087.10	0.00	0.00	---	---	0.00	2.47	---	---	0.228	---	2.693
5.20	111,928	1087.20	0.00	0.00	---	---	0.00	6.97	---	---	0.229	---	7.203
5.30	114,592	1087.30	0.00	0.00	---	---	0.00	12.82	---	---	0.231	---	13.05
5.40	117,256	1087.40	0.00	0.00	---	---	0.00	19.73	---	---	0.233	---	19.97
5.50	119,920	1087.50	0.00	0.00	---	---	0.00	27.58	---	---	0.234	---	27.81
5.60	122,585	1087.60	0.00	0.00	---	---	0.00	36.25	---	---	0.236	---	36.48
5.70	125,249	1087.70	0.00	0.00	---	---	0.00	45.68	---	---	0.238	---	45.91
5.80	127,913	1087.80	0.00	0.00	---	---	0.00	55.82	---	---	0.239	---	56.06
5.90	130,578	1087.90	0.00	0.00	---	---	0.00	66.60	---	---	0.241	---	66.84
6.00	133,242	1088.00	0.00	0.00	---	---	0.00	78.00	---	---	0.243	---	78.24

...End

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	9.211	1	720	21,377	-----	-----	-----	Pre DA #1
2	SCS Runoff	15.44	1	718	30,994	-----	-----	-----	Post DA #1
4	SCS Runoff	11.72	1	718	23,569	-----	-----	-----	Post DA #1 (SCM-1)
5	SCS Runoff	0.201	1	717	467	-----	-----	-----	Post DA #1 (SCM-2)
6	SCS Runoff	0.201	1	717	467	-----	-----	-----	Post DA #1 (SCM-3)
7	SCS Runoff	0.201	1	717	467	-----	-----	-----	Post DA #1 (SCM-4)
8	SCS Runoff	3.622	1	718	7,350	-----	-----	-----	Post DA #1 (Undetained)
9	Combine	15.94	1	718	32,320	4, 5, 6, 7, 8	-----	-----	Combine Post DA #1 (No Controls)
11	Reservoir	0.000	1	n/a	0	4	1082.96	17,302	Route DA #1 (SCM-1)
12	Reservoir	0.005	1	877	453	5	1100.09	300	Route DA#1 (SCM-2)
13	Reservoir	0.005	1	877	453	6	1098.09	300	Route DA#1 (SCM-3)
14	Reservoir	0.005	1	877	453	7	1096.09	300	Route DA#1 (SCM-4)
15	Combine	0.014	1	877	1,358	12, 13, 14	-----	-----	Combine (SCM-2, 3, & 4)
16	Reach	0.014	1	894	1,059	15	-----	-----	Reach DA #1 (SCM-2, 3, & 4)
17	Combine	3.632	1	718	8,409	8, 11, 16	-----	-----	Combine DA #1
19	Reservoir	0.000	1	733	0	4	1082.96	17,302	DA #1 (SCM-1) Blocked
250401-Newcastle DA 1.gpw					Return Period: 2 Year			Friday, 04 / 11 / 2025	

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

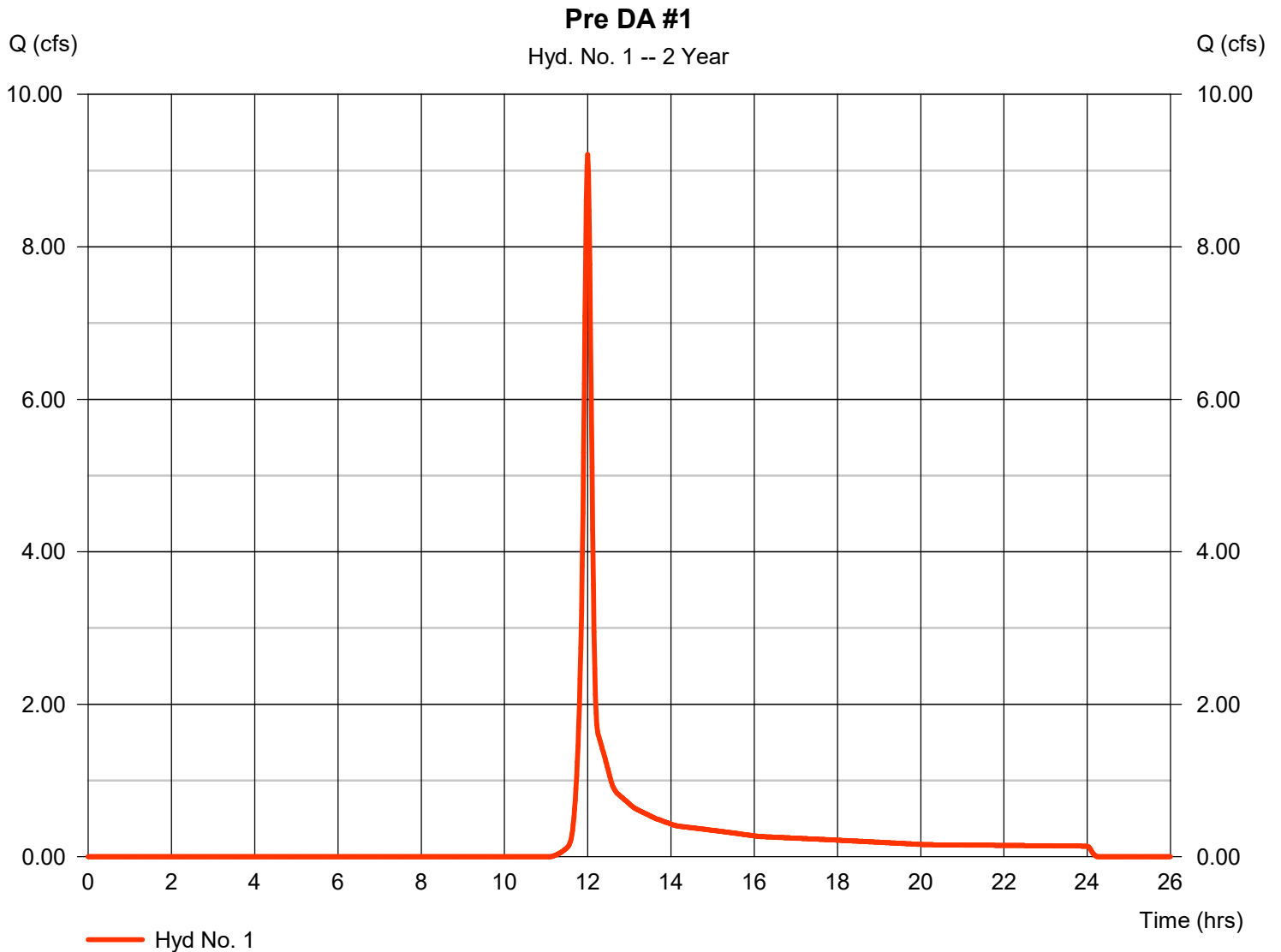
Friday, 04 / 11 / 2025

Hyd. No. 1

Pre DA #1

Hydrograph type	= SCS Runoff	Peak discharge	= 9.211 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.00 hrs
Time interval	= 1 min	Hyd. volume	= 21,377 cuft
Drainage area	= 8.280 ac	Curve number	= 78*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.80 min
Total precip.	= 2.38 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.930 x 77) + (7.348 x 78) + (0.001 x 98)] / 8.280



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

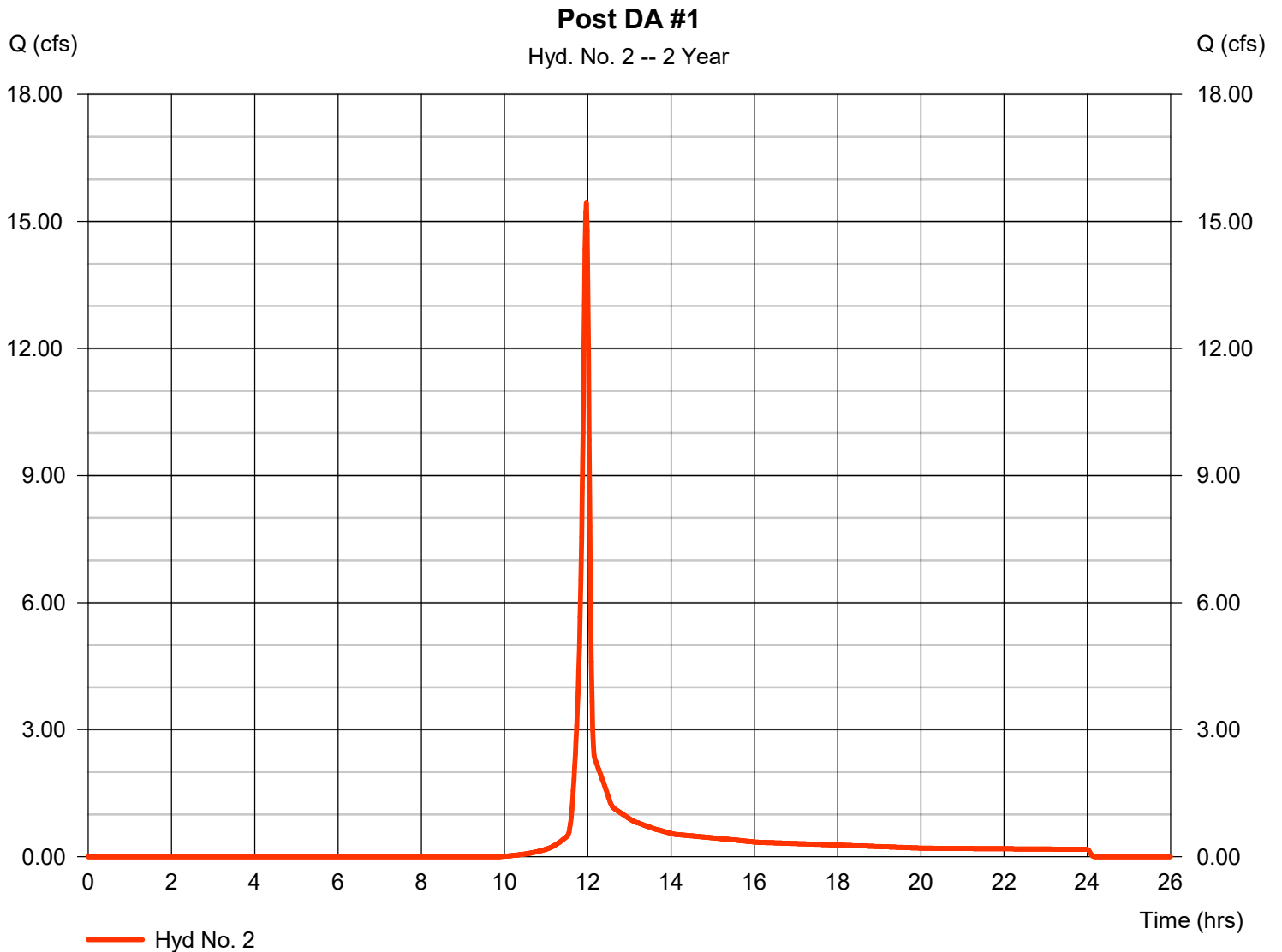
Friday, 04 / 11 / 2025

Hyd. No. 2

Post DA #1

Hydrograph type	= SCS Runoff	Peak discharge	= 15.44 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.97 hrs
Time interval	= 1 min	Hyd. volume	= 30,994 cuft
Drainage area	= 8.570 ac	Curve number	= 83*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.38 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(2.419 x 78) + (4.258 x 80) + (1.896 x 98)] / 8.570



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

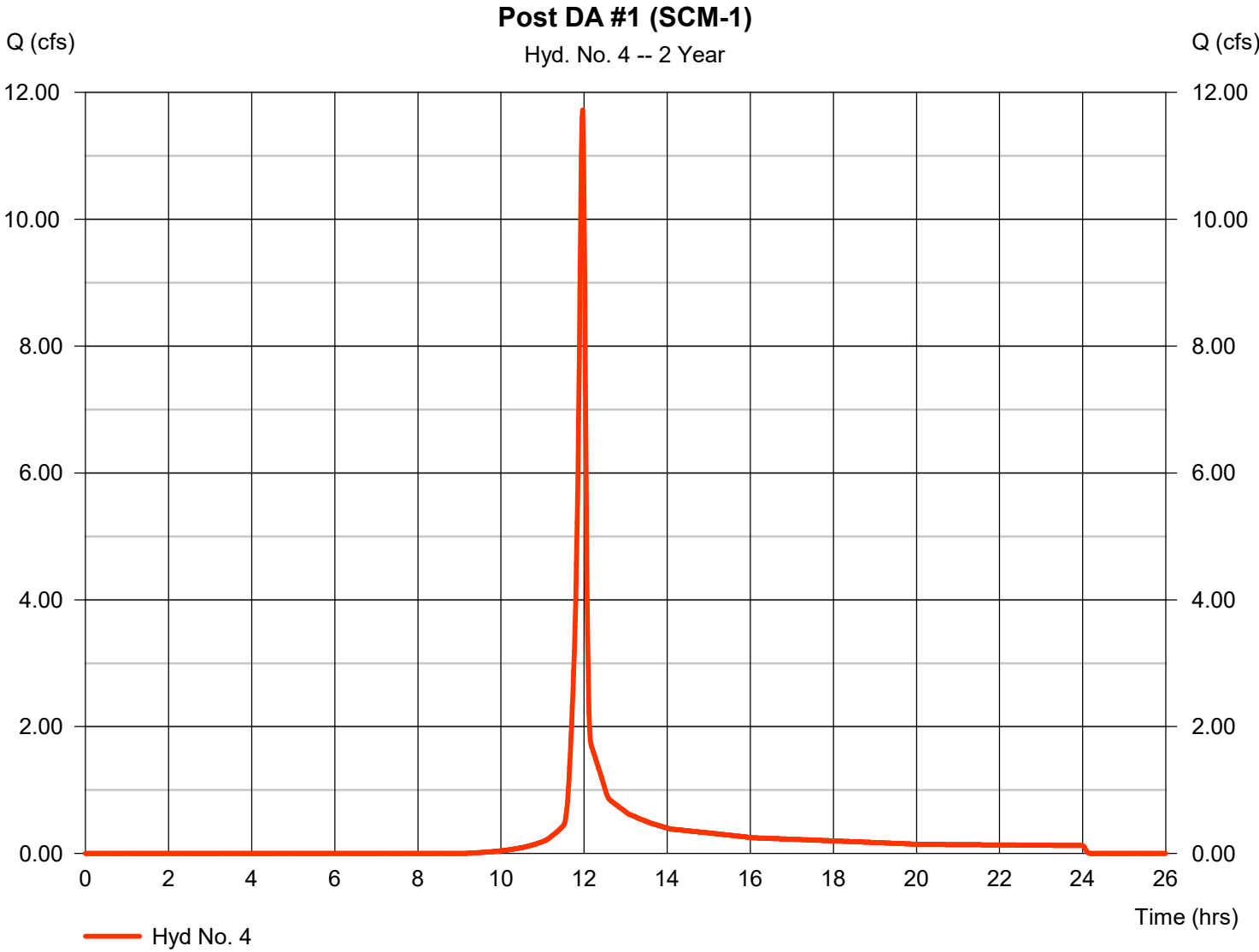
Friday, 04 / 11 / 2025

Hyd. No. 4

Post DA #1 (SCM-1)

Hydrograph type	= SCS Runoff	Peak discharge	= 11.72 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.97 hrs
Time interval	= 1 min	Hyd. volume	= 23,569 cuft
Drainage area	= 5.810 ac	Curve number	= 85*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.38 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.667 x 78) + (3.523 x 80) + (1.615 x 98)] / 5.810



Hydrograph Report

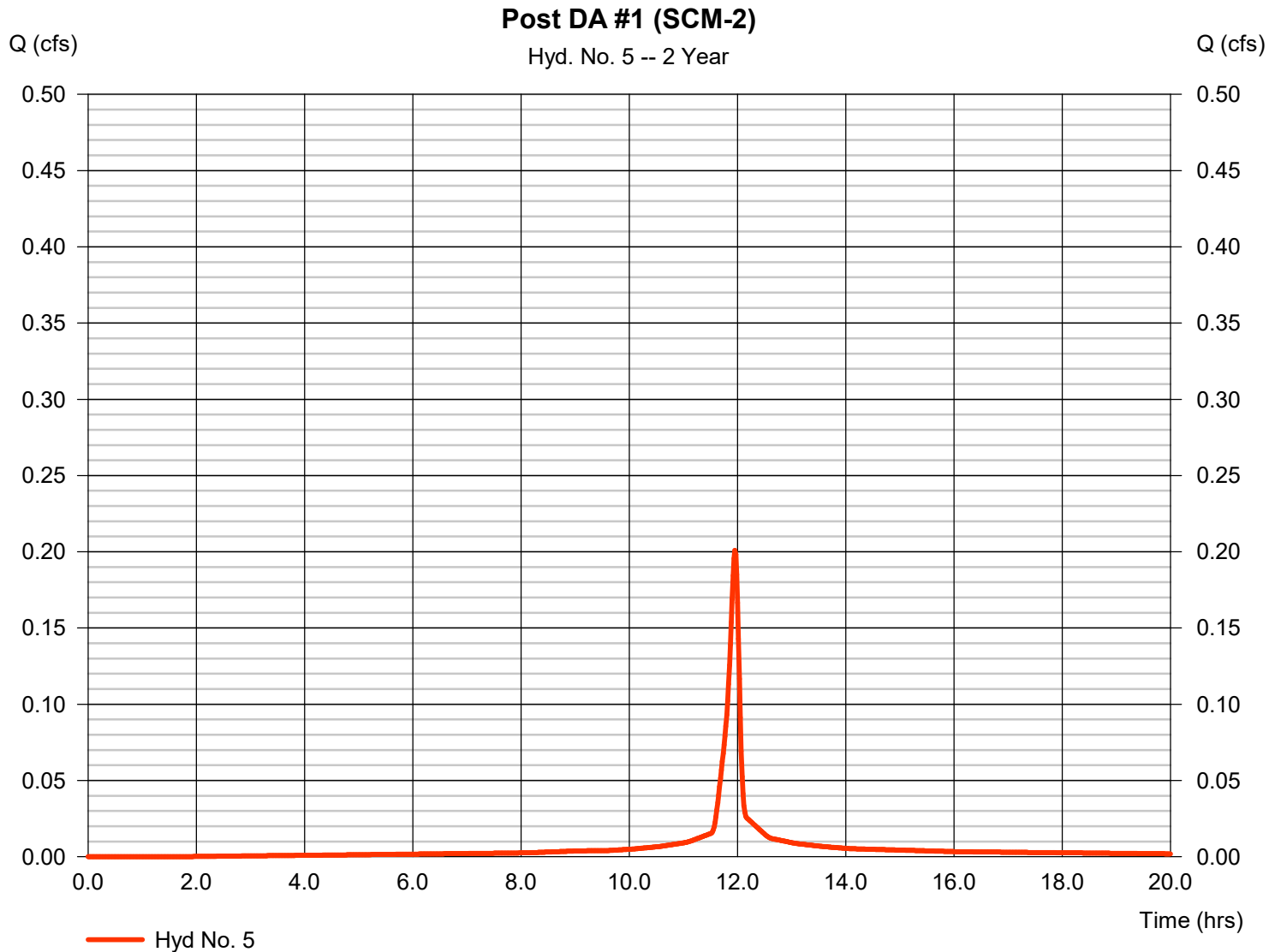
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Friday, 04 / 11 / 2025

Hyd. No. 5

Post DA #1 (SCM-2)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.201 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 467 cuft
Drainage area	= 0.058 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.38 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

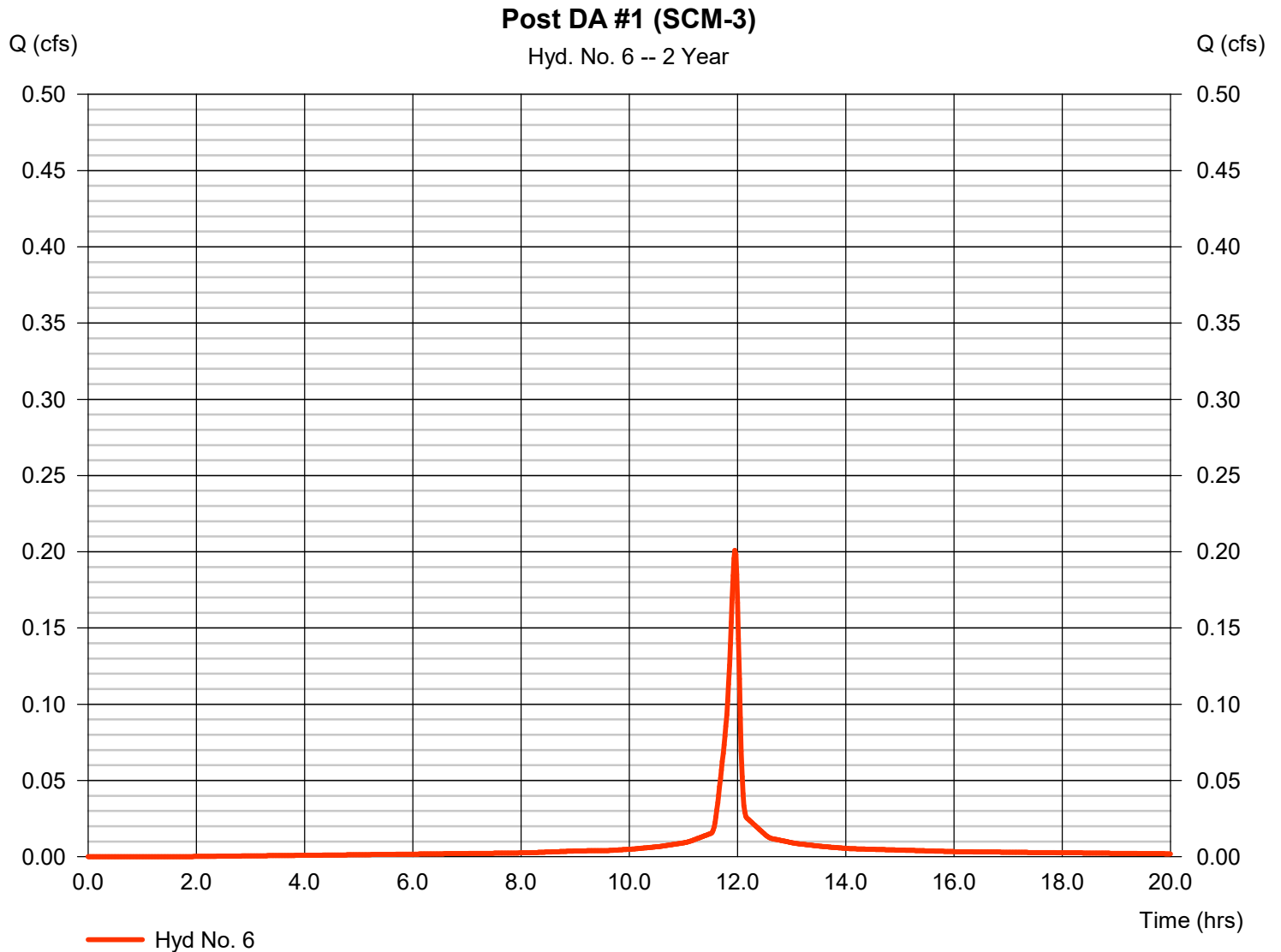
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Friday, 04 / 11 / 2025

Hyd. No. 6

Post DA #1 (SCM-3)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.201 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 467 cuft
Drainage area	= 0.058 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.38 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

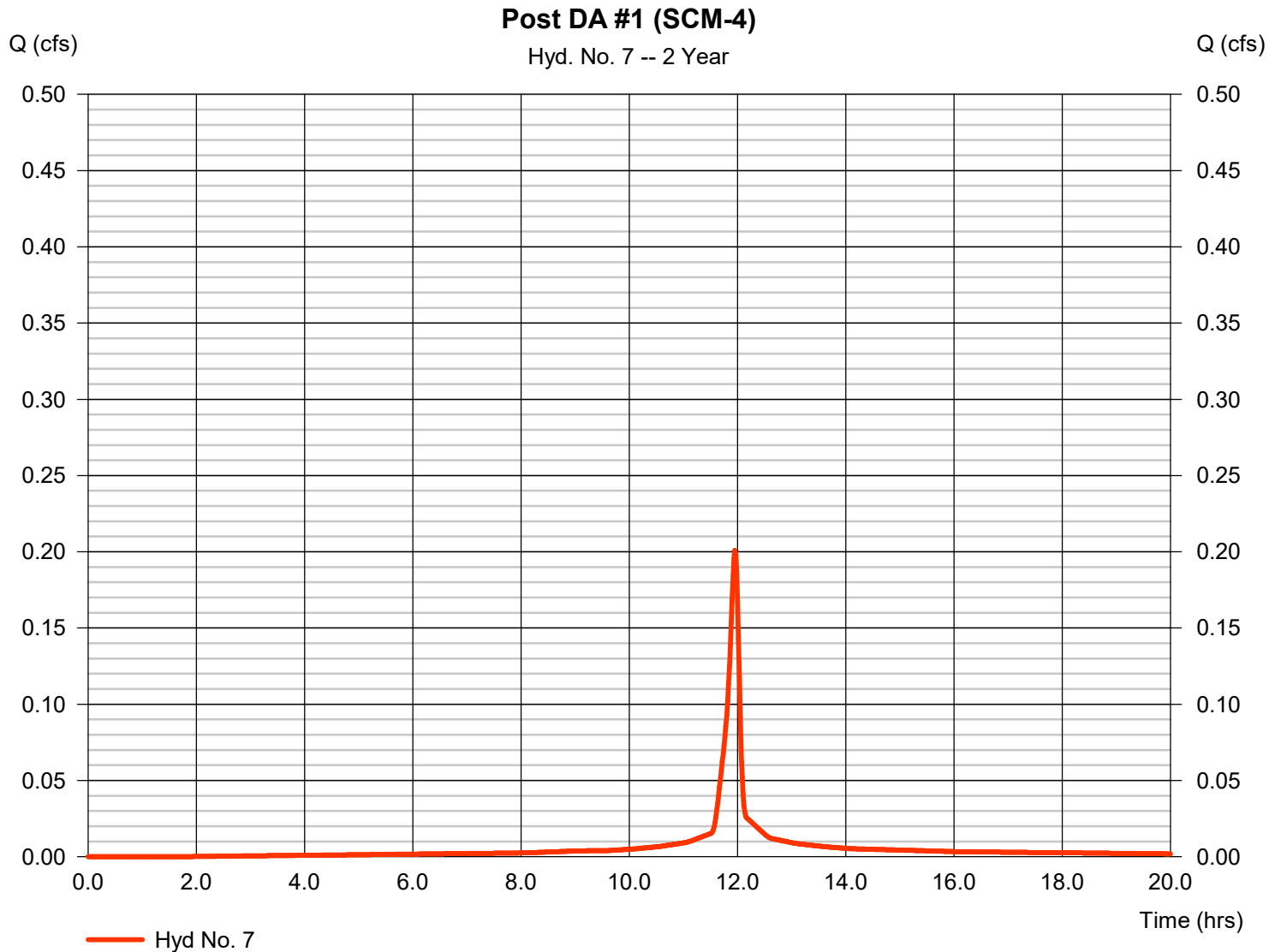
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Friday, 04 / 11 / 2025

Hyd. No. 7

Post DA #1 (SCM-4)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.201 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 467 cuft
Drainage area	= 0.058 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.38 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



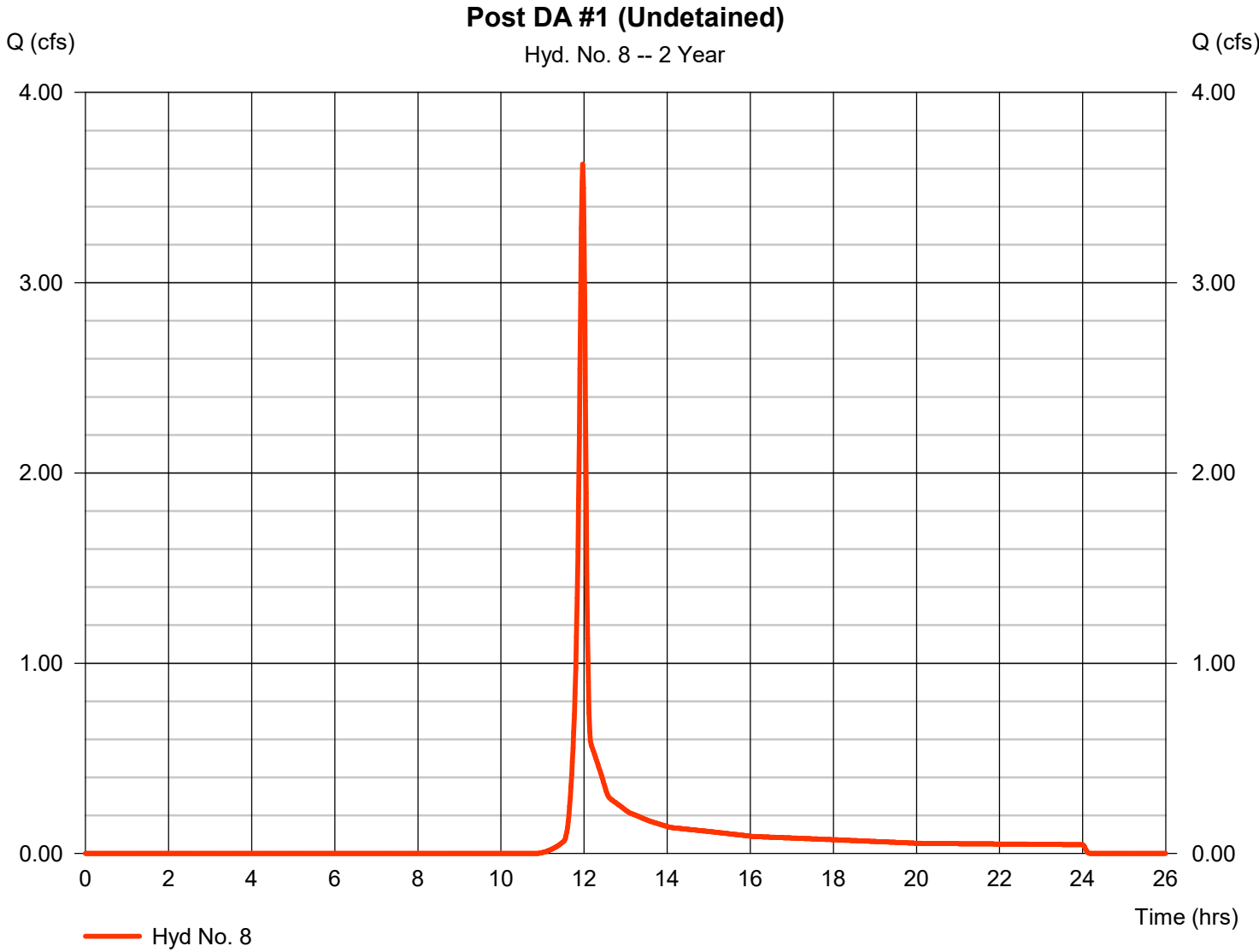
Hydrograph Report

Hyd. No. 8

Post DA #1 (Undetained)

Hydrograph type	= SCS Runoff	Peak discharge	= 3.622 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.97 hrs
Time interval	= 1 min	Hyd. volume	= 7,350 cuft
Drainage area	= 2.590 ac	Curve number	= 79*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.38 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.752 x 78) + (0.735 x 80) + (0.107 x 98)] / 2.590



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Friday, 04 / 11 / 2025

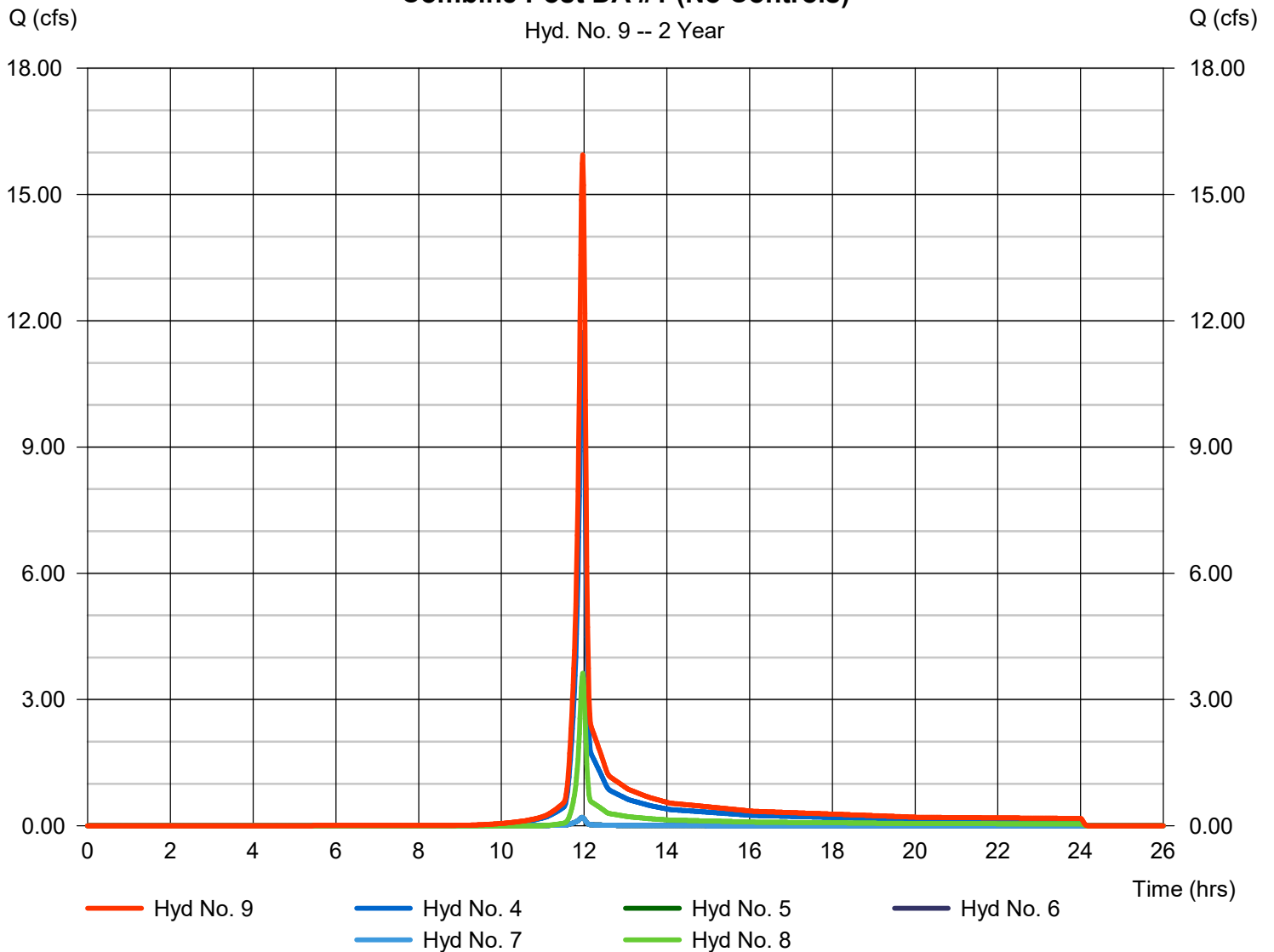
Hyd. No. 9

Combine Post DA #1 (No Controls)

Hydrograph type	= Combine	Peak discharge	= 15.94 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.97 hrs
Time interval	= 1 min	Hyd. volume	= 32,320 cuft
Inflow hyds.	= 4, 5, 6, 7, 8	Contrib. drain. area	= 8.574 ac

Combine Post DA #1 (No Controls)

Hyd. No. 9 -- 2 Year



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

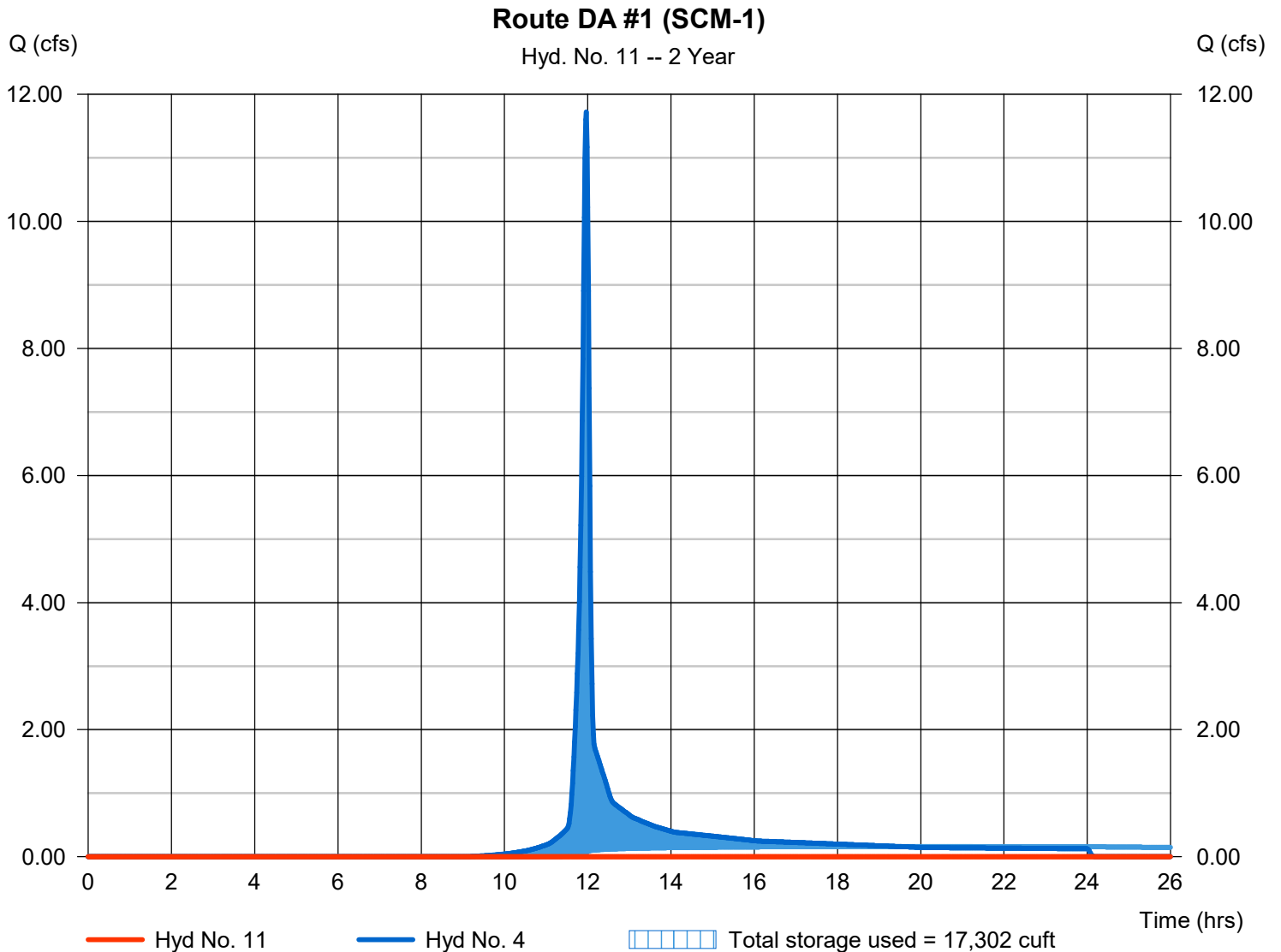
Friday, 04 / 11 / 2025

Hyd. No. 11

Route DA #1 (SCM-1)

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 4 - Post DA #1 (SCM-1)	Max. Elevation	= 1082.96 ft
Reservoir name	= DA #1 (SCM-1)	Max. Storage	= 17,302 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

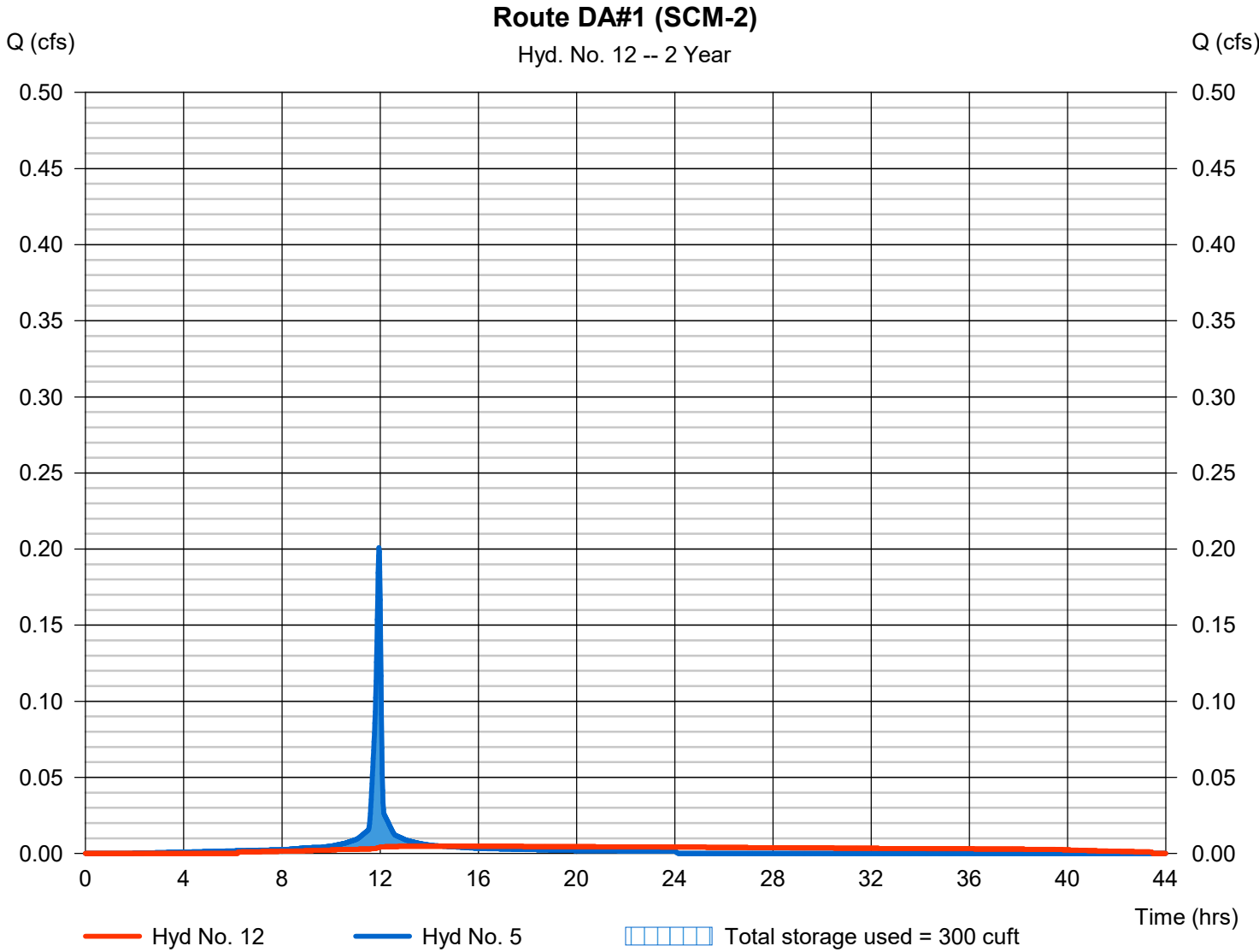
Friday, 04 / 11 / 2025

Hyd. No. 12

Route DA#1 (SCM-2)

Hydrograph type	= Reservoir	Peak discharge	= 0.005 cfs
Storm frequency	= 2 yrs	Time to peak	= 14.62 hrs
Time interval	= 1 min	Hyd. volume	= 453 cuft
Inflow hyd. No.	= 5 - Post DA #1 (SCM-2)	Max. Elevation	= 1100.09 ft
Reservoir name	= DA #1 (SCM-2)	Max. Storage	= 300 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

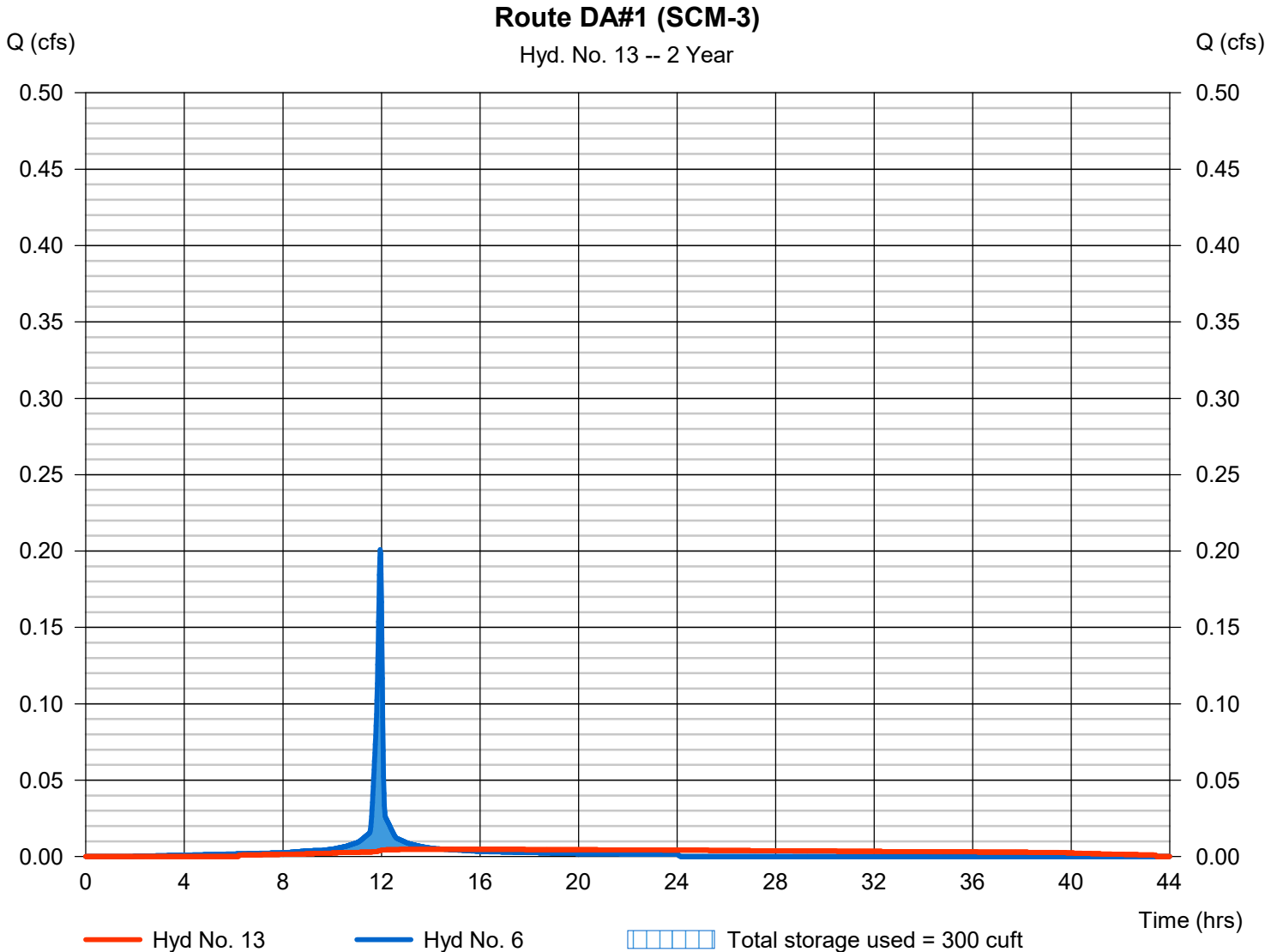
Friday, 04 / 11 / 2025

Hyd. No. 13

Route DA#1 (SCM-3)

Hydrograph type	= Reservoir	Peak discharge	= 0.005 cfs
Storm frequency	= 2 yrs	Time to peak	= 14.62 hrs
Time interval	= 1 min	Hyd. volume	= 453 cuft
Inflow hyd. No.	= 6 - Post DA #1 (SCM-3)	Max. Elevation	= 1098.09 ft
Reservoir name	= DA #1 (SCM-3)	Max. Storage	= 300 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

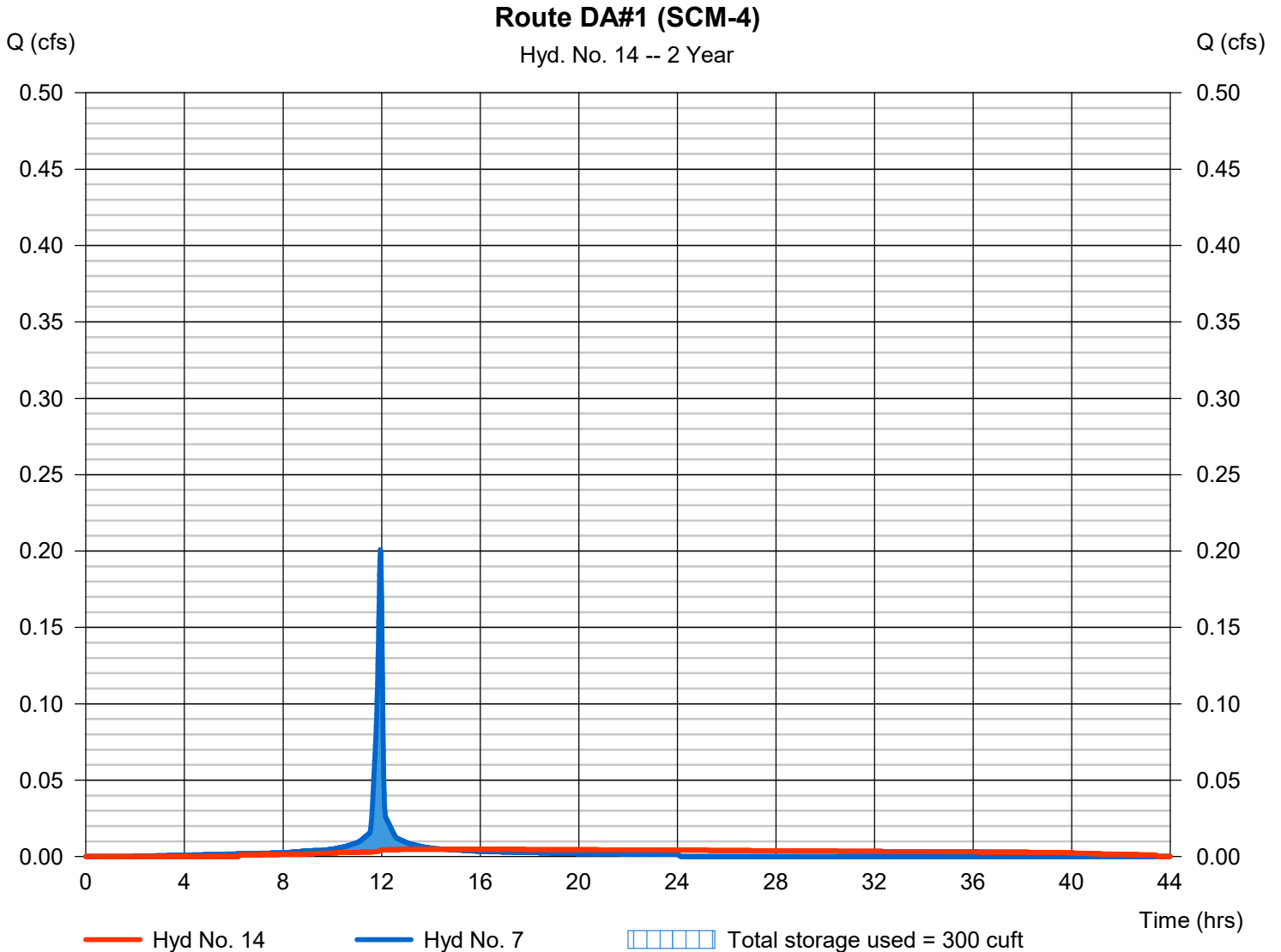
Friday, 04 / 11 / 2025

Hyd. No. 14

Route DA#1 (SCM-4)

Hydrograph type	= Reservoir	Peak discharge	= 0.005 cfs
Storm frequency	= 2 yrs	Time to peak	= 14.62 hrs
Time interval	= 1 min	Hyd. volume	= 453 cuft
Inflow hyd. No.	= 7 - Post DA #1 (SCM-4)	Max. Elevation	= 1096.09 ft
Reservoir name	= DA #1 (SCM-4)	Max. Storage	= 300 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

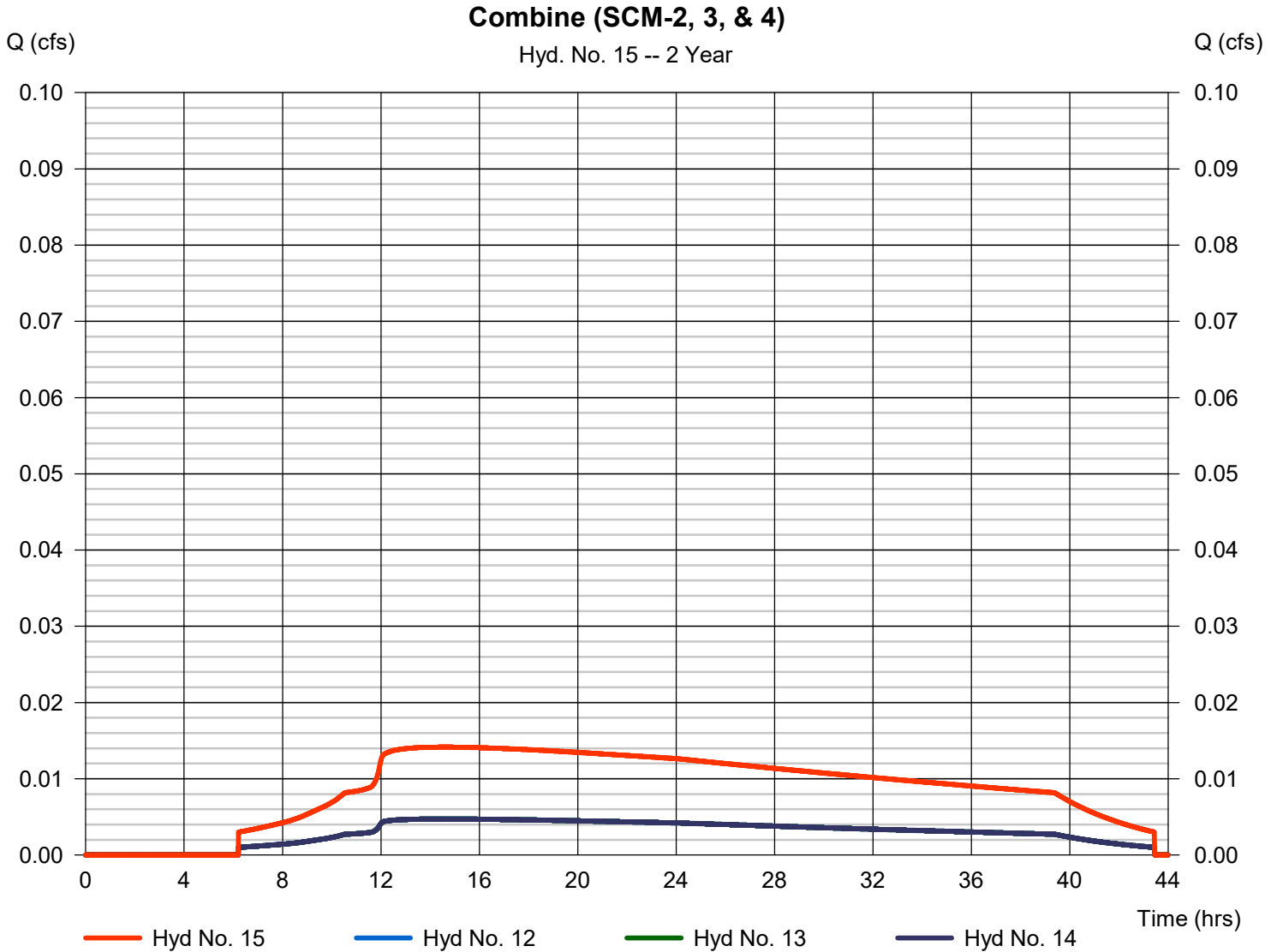
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Friday, 04 / 11 / 2025

Hyd. No. 15

Combine (SCM-2, 3, & 4)

Hydrograph type	= Combine	Peak discharge	= 0.014 cfs
Storm frequency	= 2 yrs	Time to peak	= 14.62 hrs
Time interval	= 1 min	Hyd. volume	= 1,358 cuft
Inflow hyds.	= 12, 13, 14	Contrib. drain. area	= 0.000 ac



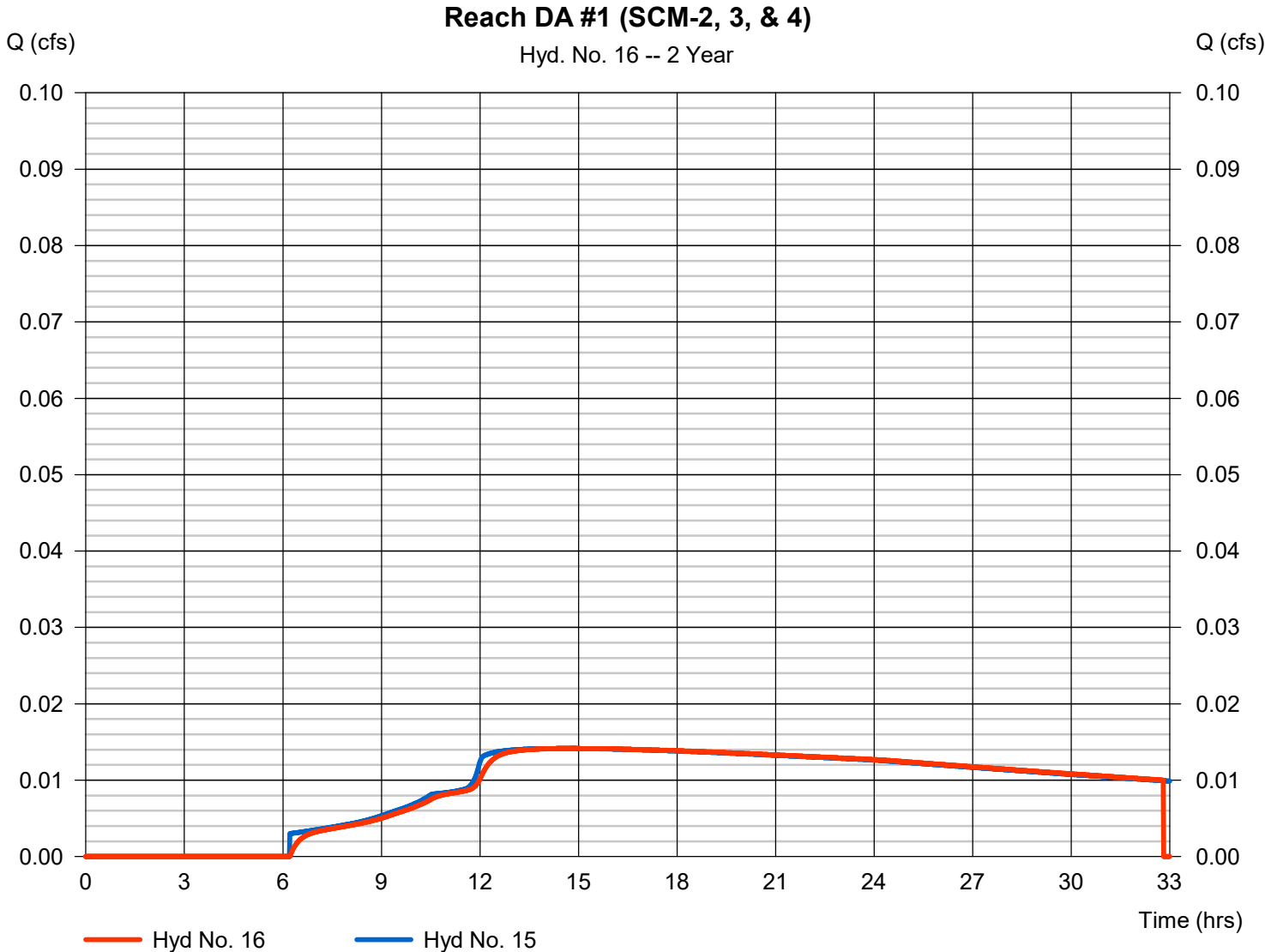
Hydrograph Report

Hyd. No. 16

Reach DA #1 (SCM-2, 3, & 4)

Hydrograph type	= Reach	Peak discharge	= 0.014 cfs
Storm frequency	= 2 yrs	Time to peak	= 14.90 hrs
Time interval	= 1 min	Hyd. volume	= 1,059 cuft
Inflow hyd. No.	= 15 - Combine (SCM-2, 3, & 4)	Section type	= Trapezoidal
Reach length	= 900.0 ft	Channel slope	= 1.3 %
Manning's n	= 0.025	Bottom width	= 4.0 ft
Side slope	= 2.0:1	Max. depth	= 2.0 ft
Rating curve x	= 2.643	Rating curve m	= 1.307
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.0653

Modified Att-Kin routing method used.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

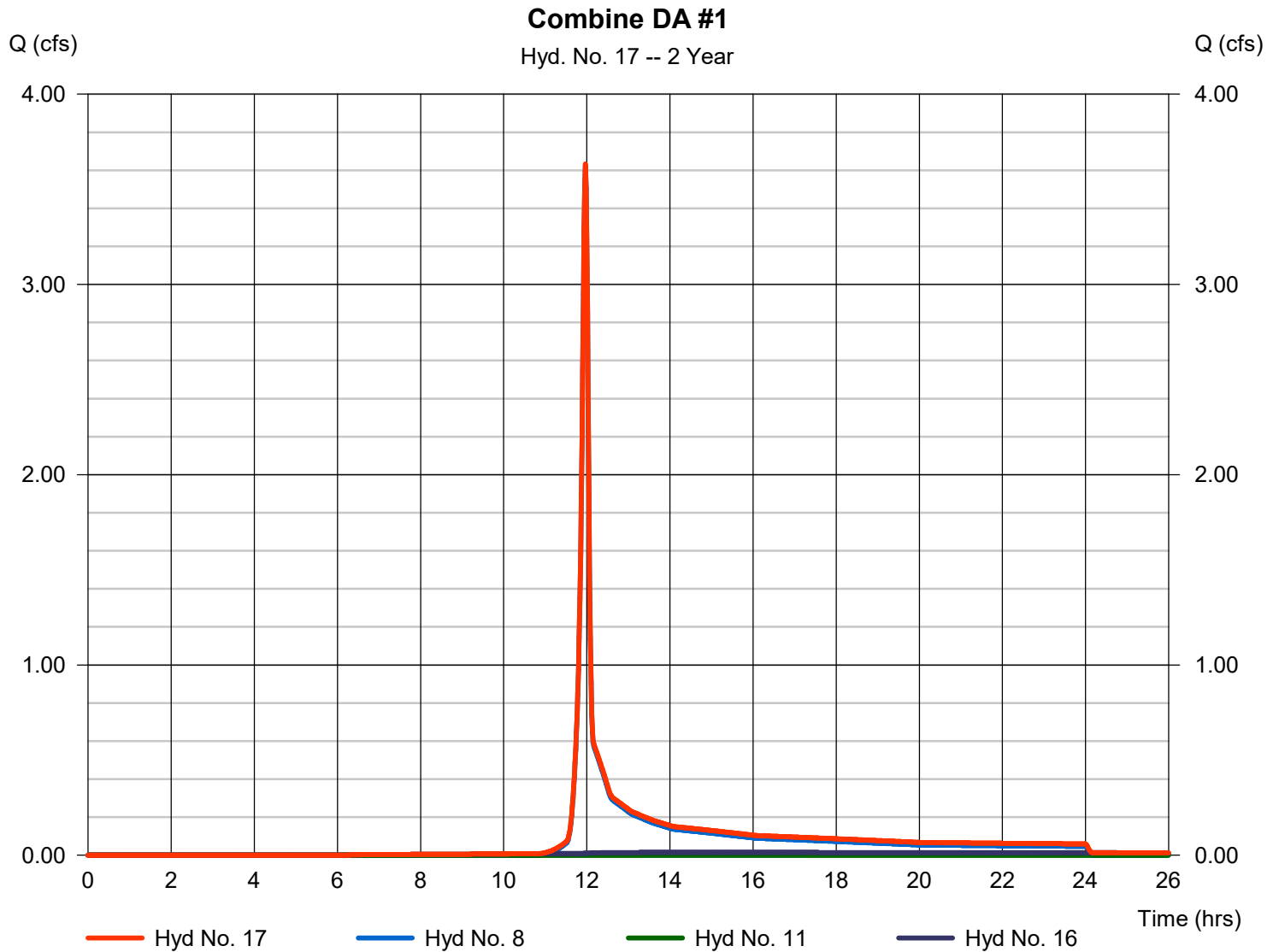
Friday, 04 / 11 / 2025

Hyd. No. 17

Combine DA #1

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 1 min
Inflow hyds. = 8, 11, 16

Peak discharge = 3.632 cfs
Time to peak = 11.97 hrs
Hyd. volume = 8,409 cuft
Contrib. drain. area = 2.590 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

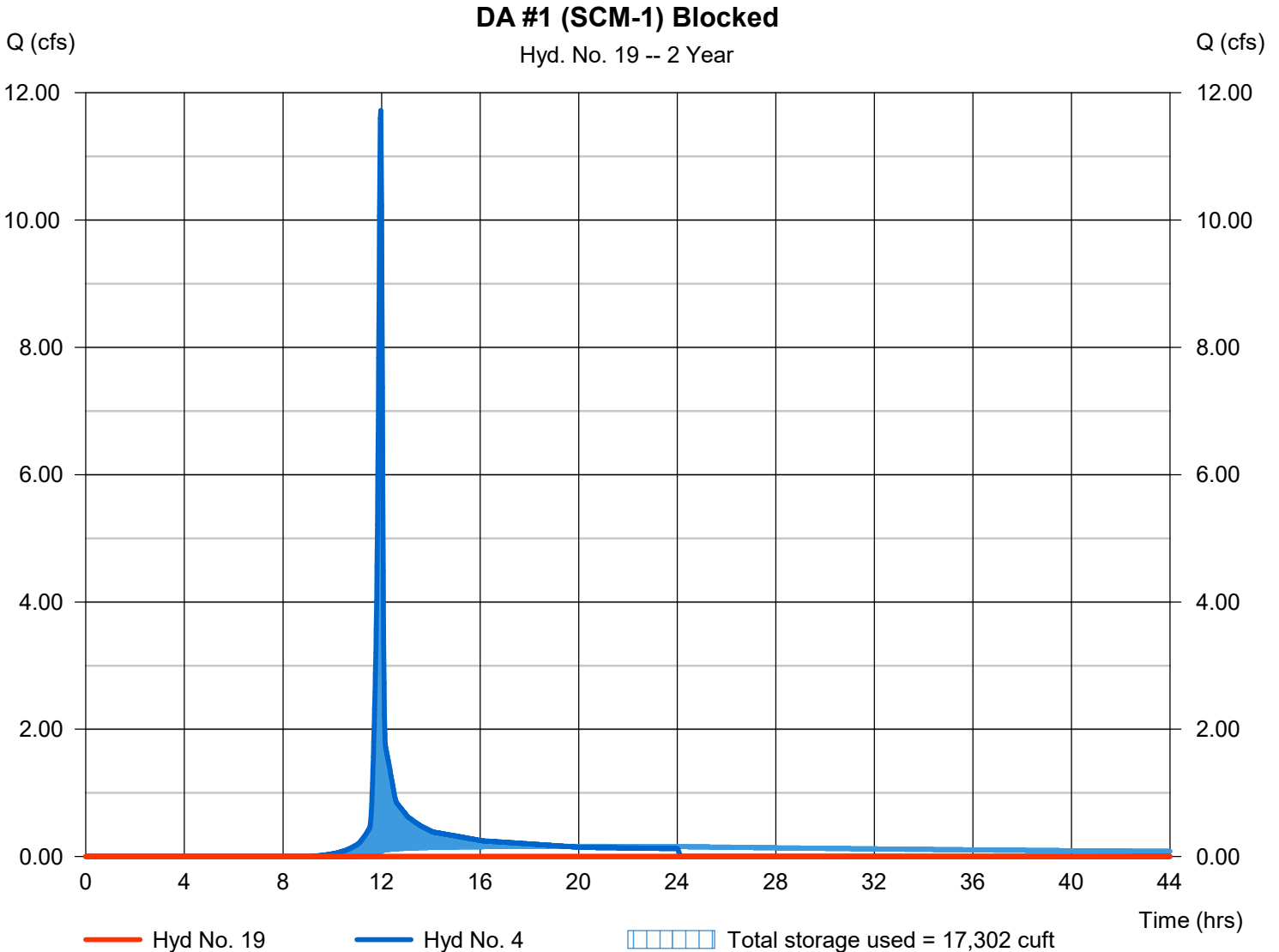
Friday, 04 / 11 / 2025

Hyd. No. 19

DA #1 (SCM-1) Blocked

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.22 hrs
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 4 - Post DA #1 (SCM-1)	Max. Elevation	= 1082.96 ft
Reservoir name	= DA #1 (SCM-1) Blocked	Max. Storage	= 17,302 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

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	14.07	1	720	32,016	-----	-----	-----	Pre DA #1	
2	SCS Runoff	21.90	1	718	44,094	-----	-----	-----	Post DA #1	
4	SCS Runoff	16.24	1	718	32,905	-----	-----	-----	Post DA #1 (SCM-1)	
5	SCS Runoff	0.247	1	717	582	-----	-----	-----	Post DA #1 (SCM-2)	
6	SCS Runoff	0.247	1	717	582	-----	-----	-----	Post DA #1 (SCM-3)	
7	SCS Runoff	0.247	1	717	582	-----	-----	-----	Post DA #1 (SCM-4)	
8	SCS Runoff	5.419	1	718	10,889	-----	-----	-----	Post DA #1 (Undetained)	
9	Combine	22.39	1	718	45,539	4, 5, 6, 7, 8	-----	-----	Combine Post DA #1 (No Controls)	
11	Reservoir	0.147	1	981	4,294	4	1083.26	22,996	Route DA #1 (SCM-1)	
12	Reservoir	0.005	1	903	566	5	1100.52	381	Route DA#1 (SCM-2)	
13	Reservoir	0.005	1	903	566	6	1098.52	381	Route DA#1 (SCM-3)	
14	Reservoir	0.005	1	903	566	7	1096.52	381	Route DA#1 (SCM-4)	
15	Combine	0.016	1	903	1,697	12, 13, 14	-----	-----	Combine (SCM-2, 3, & 4)	
16	Reach	0.016	1	918	1,403	15	-----	-----	Reach DA #1 (SCM-2, 3, & 4)	
17	Combine	5.430	1	718	16,586	8, 11, 16	-----	-----	Combine DA #1	
19	Reservoir	0.000	1	2708	0	4	1083.38	25,446	DA #1 (SCM-1) Blocked	
250401-Newcastle DA 1.gpw					Return Period: 5 Year			Friday, 04 / 11 / 2025		

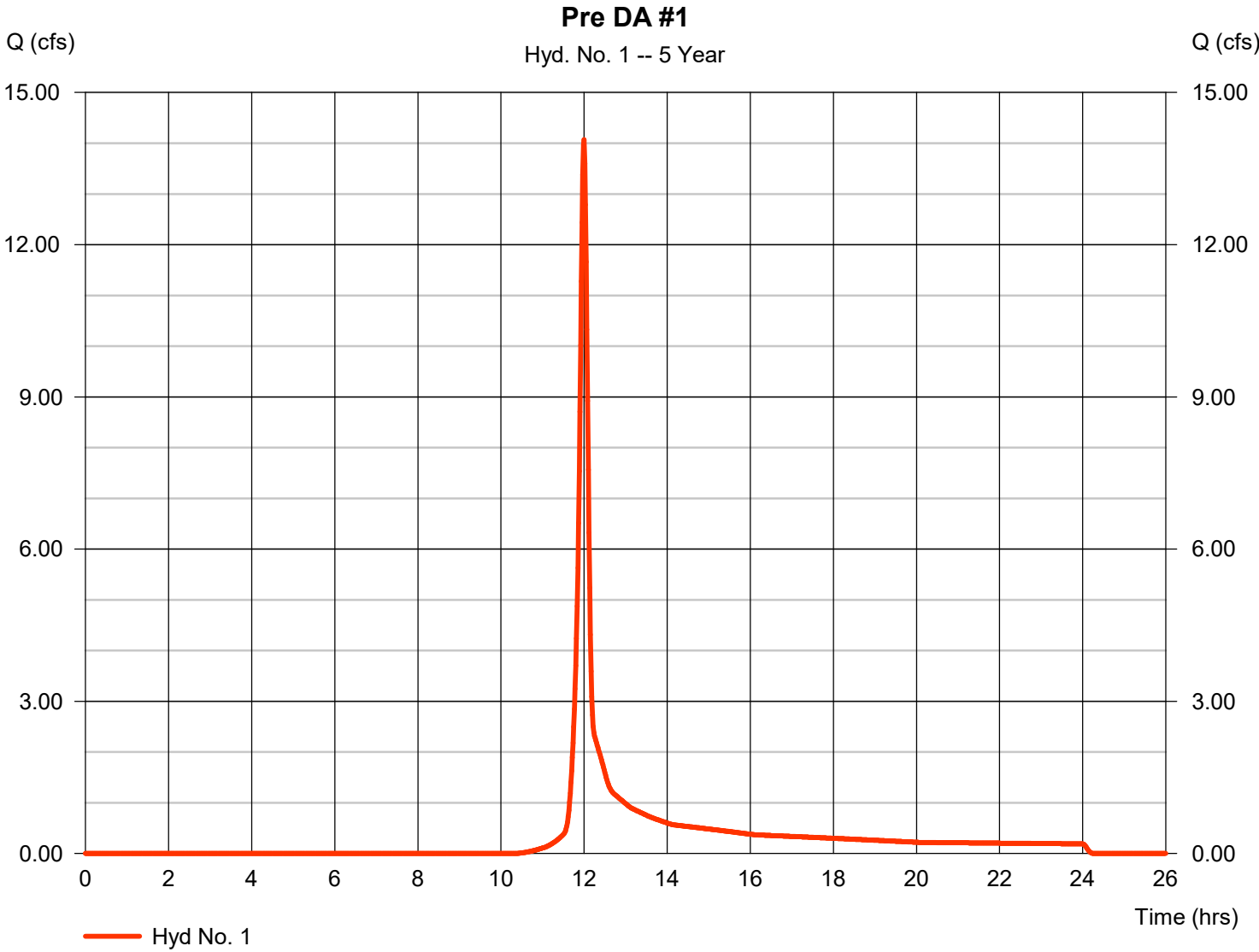
Hydrograph Report

Hyd. No. 1

Pre DA #1

Hydrograph type	= SCS Runoff	Peak discharge	= 14.07 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.00 hrs
Time interval	= 1 min	Hyd. volume	= 32,016 cuft
Drainage area	= 8.280 ac	Curve number	= 78*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.80 min
Total precip.	= 2.91 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.930 x 77) + (7.348 x 78) + (0.001 x 98)] / 8.280



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

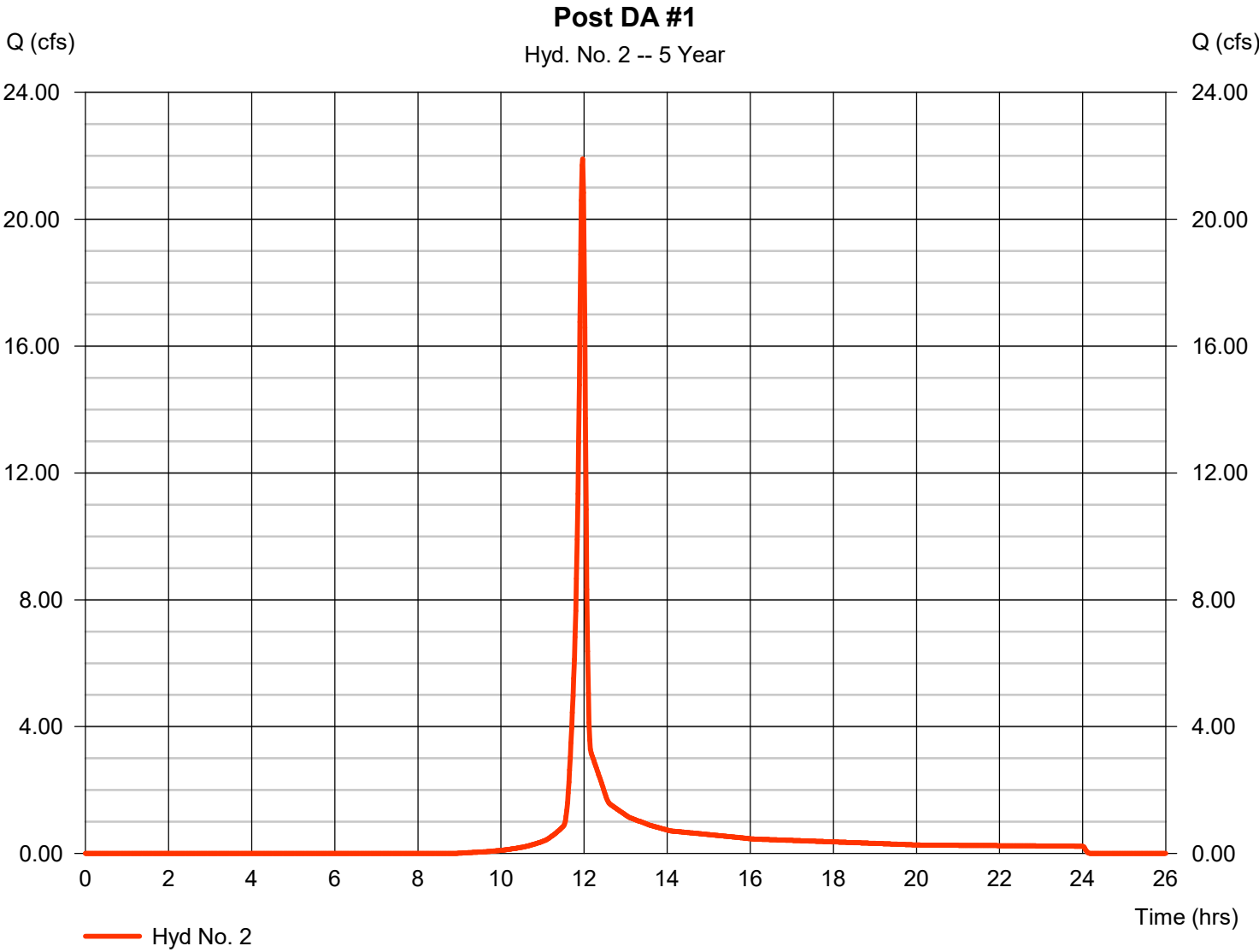
Friday, 04 / 11 / 2025

Hyd. No. 2

Post DA #1

Hydrograph type	= SCS Runoff	Peak discharge	= 21.90 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.97 hrs
Time interval	= 1 min	Hyd. volume	= 44,094 cuft
Drainage area	= 8.570 ac	Curve number	= 83*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.91 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(2.419 x 78) + (4.258 x 80) + (1.896 x 98)] / 8.570



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

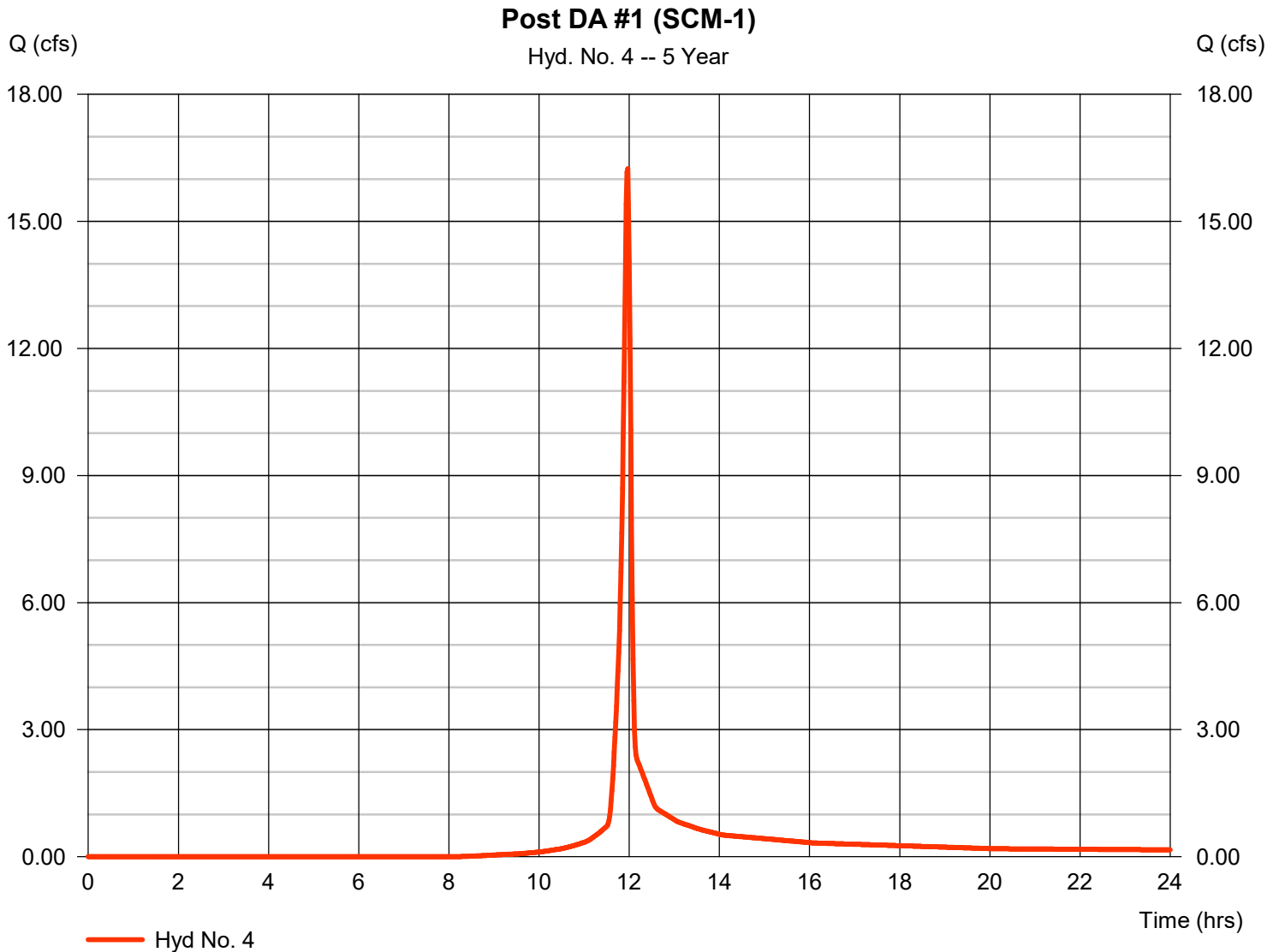
Friday, 04 / 11 / 2025

Hyd. No. 4

Post DA #1 (SCM-1)

Hydrograph type	= SCS Runoff	Peak discharge	= 16.24 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.97 hrs
Time interval	= 1 min	Hyd. volume	= 32,905 cuft
Drainage area	= 5.810 ac	Curve number	= 85*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.91 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.667 x 78) + (3.523 x 80) + (1.615 x 98)] / 5.810



Hydrograph Report

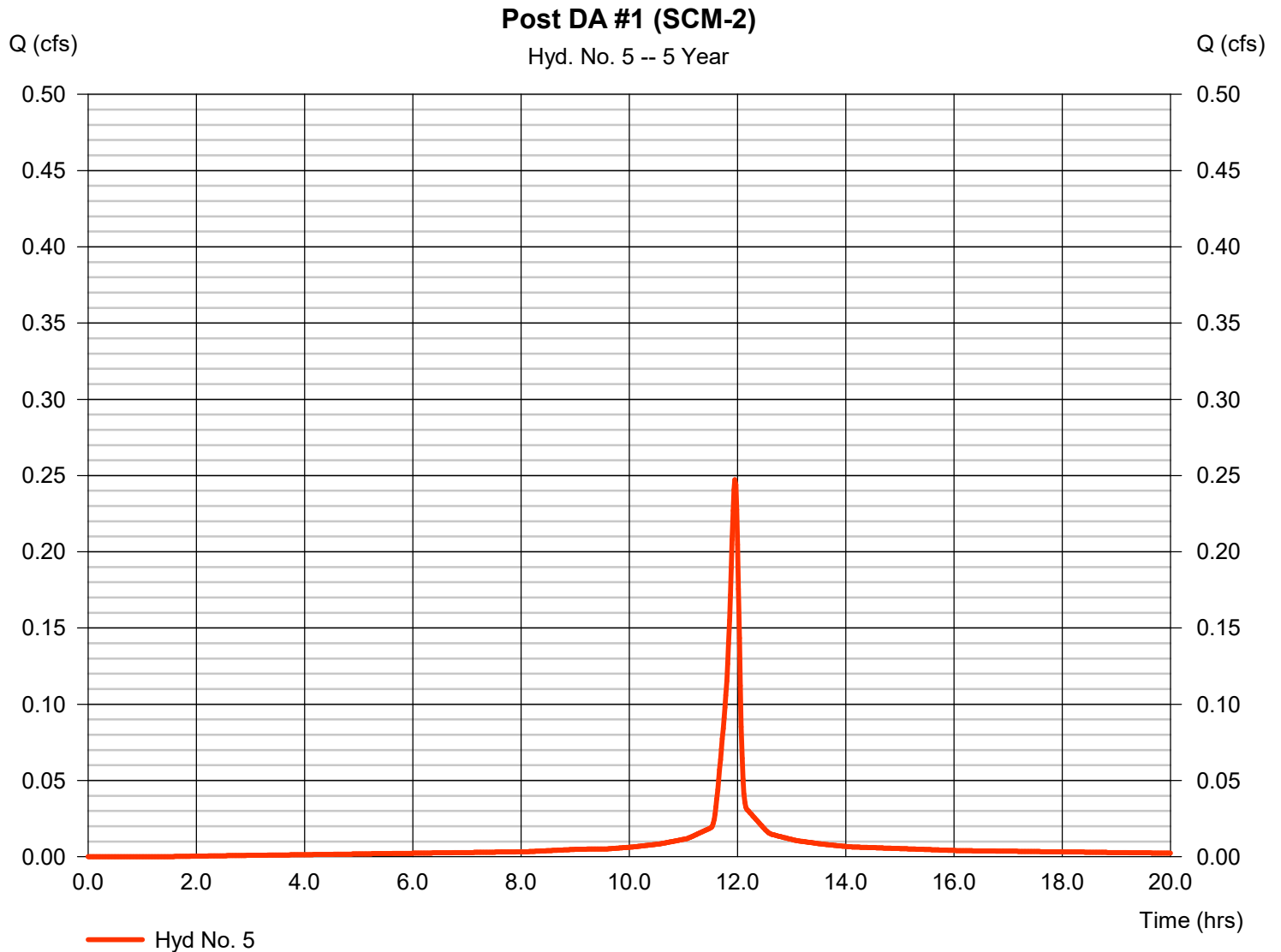
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Friday, 04 / 11 / 2025

Hyd. No. 5

Post DA #1 (SCM-2)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.247 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 582 cuft
Drainage area	= 0.058 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.91 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

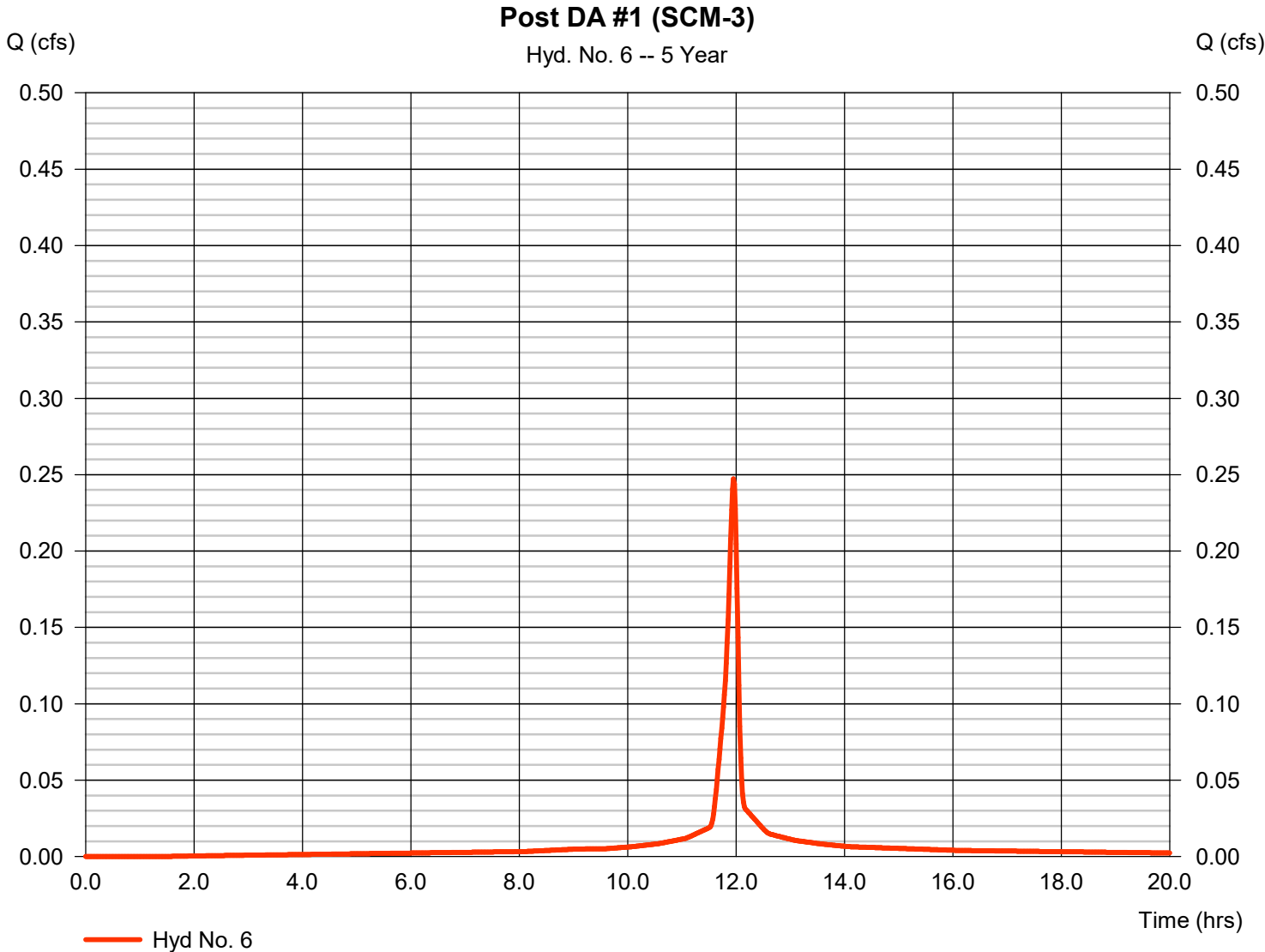


Hydrograph Report

Hyd. No. 6

Post DA #1 (SCM-3)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.247 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 582 cuft
Drainage area	= 0.058 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.91 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

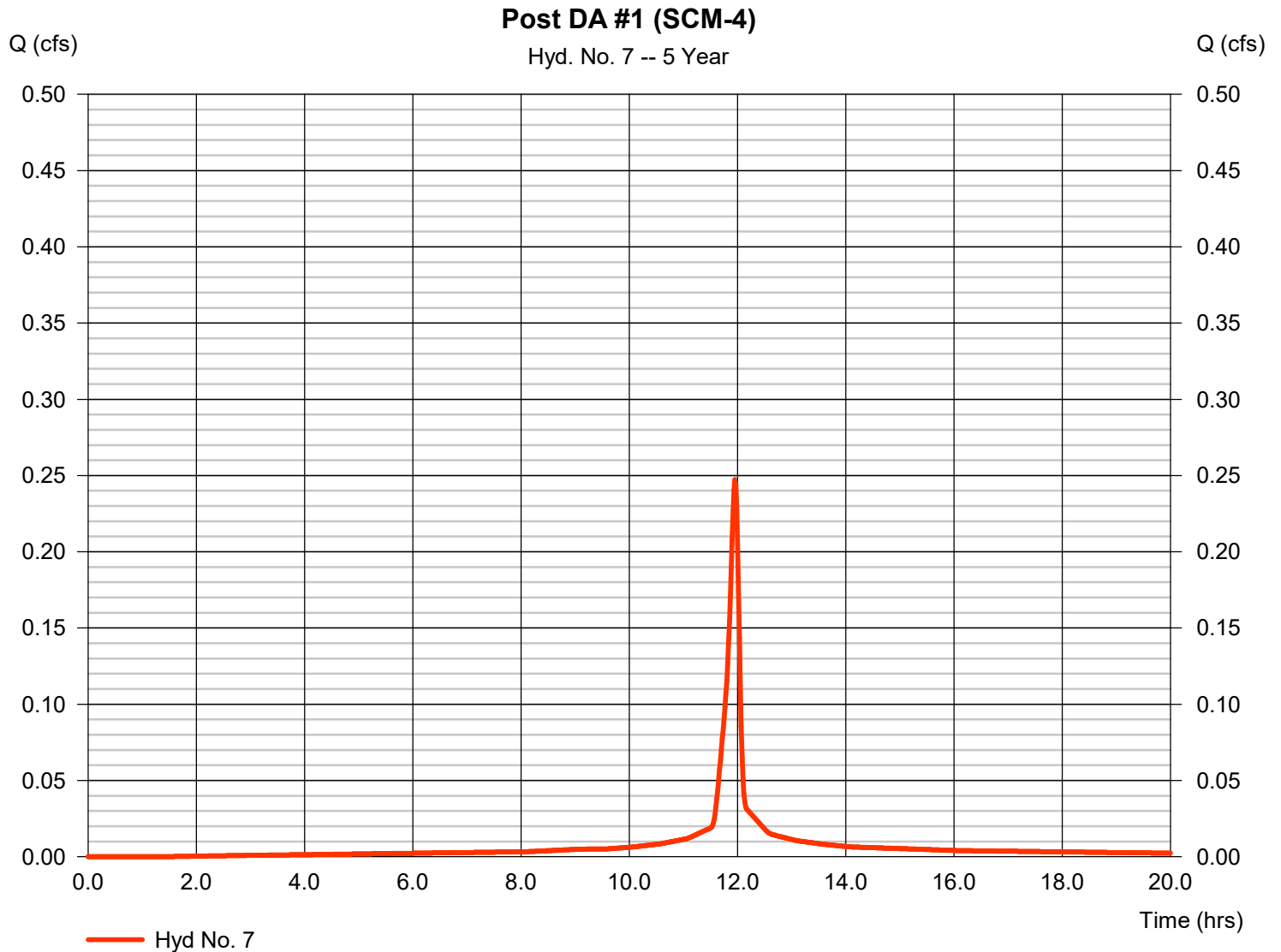
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Friday, 04 / 11 / 2025

Hyd. No. 7

Post DA #1 (SCM-4)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.247 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 582 cuft
Drainage area	= 0.058 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.91 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

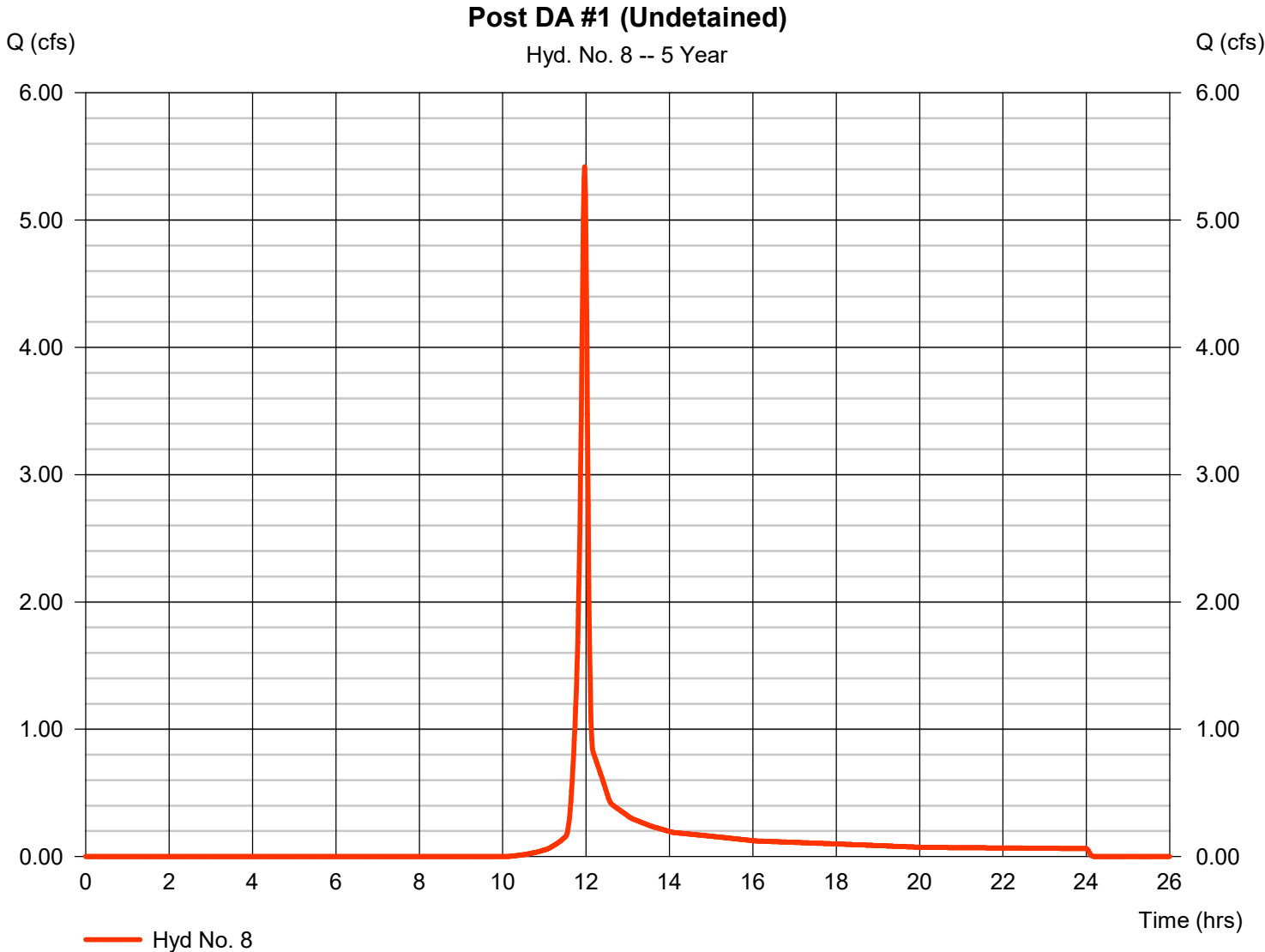
Friday, 04 / 11 / 2025

Hyd. No. 8

Post DA #1 (Undetained)

Hydrograph type	= SCS Runoff	Peak discharge	= 5.419 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.97 hrs
Time interval	= 1 min	Hyd. volume	= 10,889 cuft
Drainage area	= 2.590 ac	Curve number	= 79*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.91 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.752 x 78) + (0.735 x 80) + (0.107 x 98)] / 2.590



Hydrograph Report

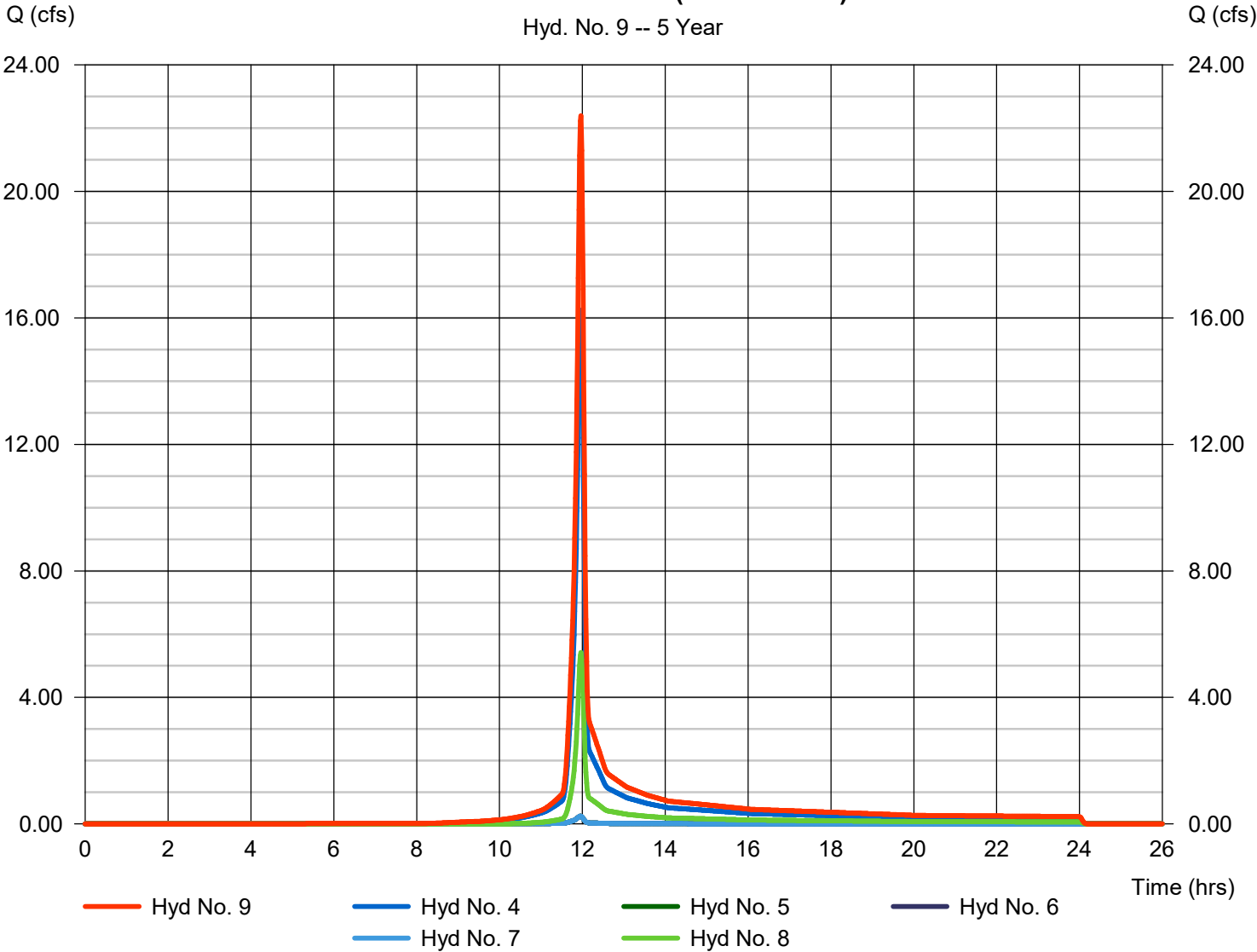
Hyd. No. 9

Combine Post DA #1 (No Controls)

Hydrograph type	= Combine	Peak discharge	= 22.39 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.97 hrs
Time interval	= 1 min	Hyd. volume	= 45,539 cuft
Inflow hyds.	= 4, 5, 6, 7, 8	Contrib. drain. area	= 8.574 ac

Combine Post DA #1 (No Controls)

Hyd. No. 9 -- 5 Year



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

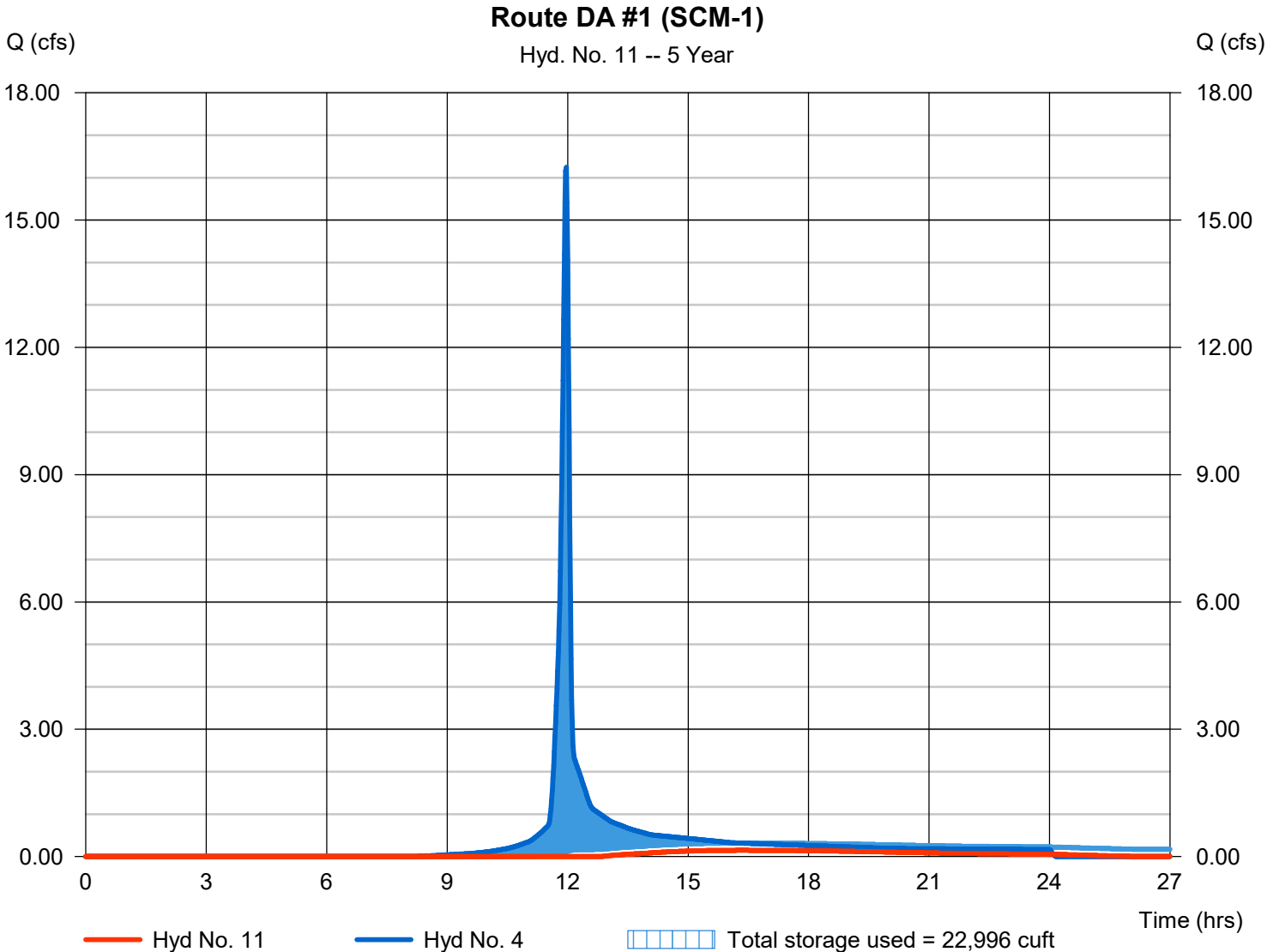
Friday, 04 / 11 / 2025

Hyd. No. 11

Route DA #1 (SCM-1)

Hydrograph type	= Reservoir	Peak discharge	= 0.147 cfs
Storm frequency	= 5 yrs	Time to peak	= 16.35 hrs
Time interval	= 1 min	Hyd. volume	= 4,294 cuft
Inflow hyd. No.	= 4 - Post DA #1 (SCM-1)	Max. Elevation	= 1083.26 ft
Reservoir name	= DA #1 (SCM-1)	Max. Storage	= 22,996 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

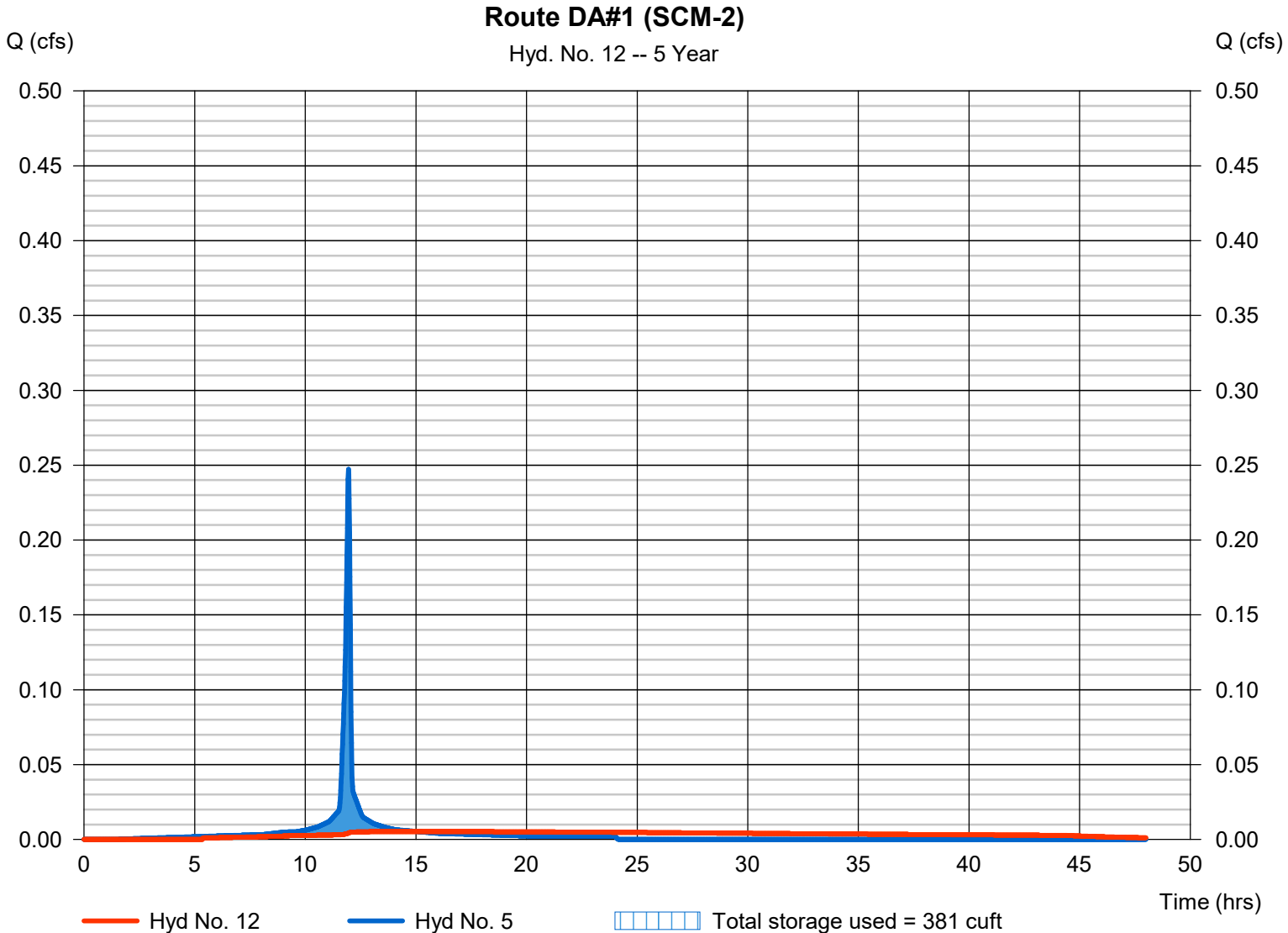
Friday, 04 / 11 / 2025

Hyd. No. 12

Route DA#1 (SCM-2)

Hydrograph type	= Reservoir	Peak discharge	= 0.005 cfs
Storm frequency	= 5 yrs	Time to peak	= 15.05 hrs
Time interval	= 1 min	Hyd. volume	= 566 cuft
Inflow hyd. No.	= 5 - Post DA #1 (SCM-2)	Max. Elevation	= 1100.52 ft
Reservoir name	= DA #1 (SCM-2)	Max. Storage	= 381 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

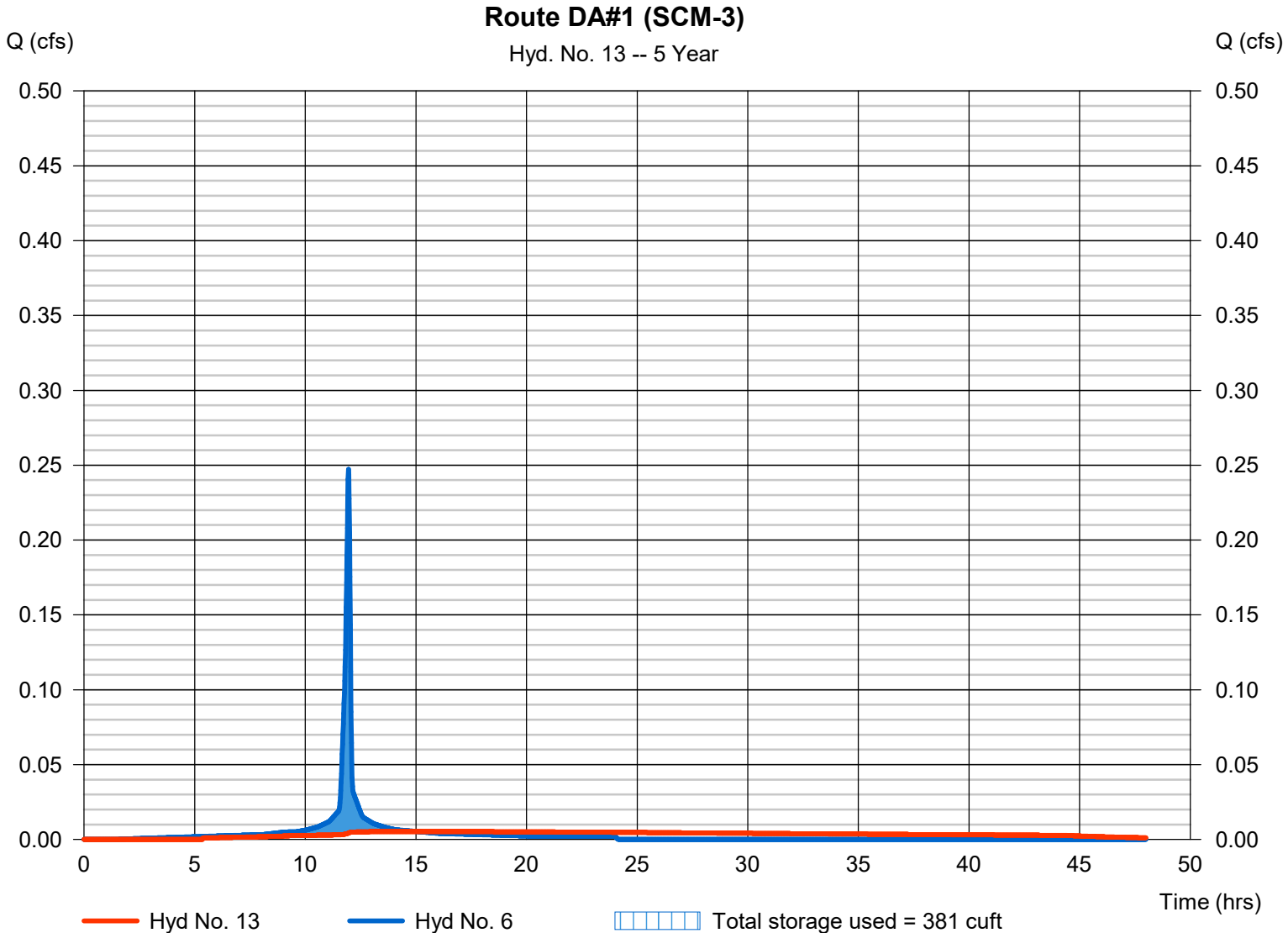
Friday, 04 / 11 / 2025

Hyd. No. 13

Route DA#1 (SCM-3)

Hydrograph type	= Reservoir	Peak discharge	= 0.005 cfs
Storm frequency	= 5 yrs	Time to peak	= 15.05 hrs
Time interval	= 1 min	Hyd. volume	= 566 cuft
Inflow hyd. No.	= 6 - Post DA #1 (SCM-3)	Max. Elevation	= 1098.52 ft
Reservoir name	= DA #1 (SCM-3)	Max. Storage	= 381 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

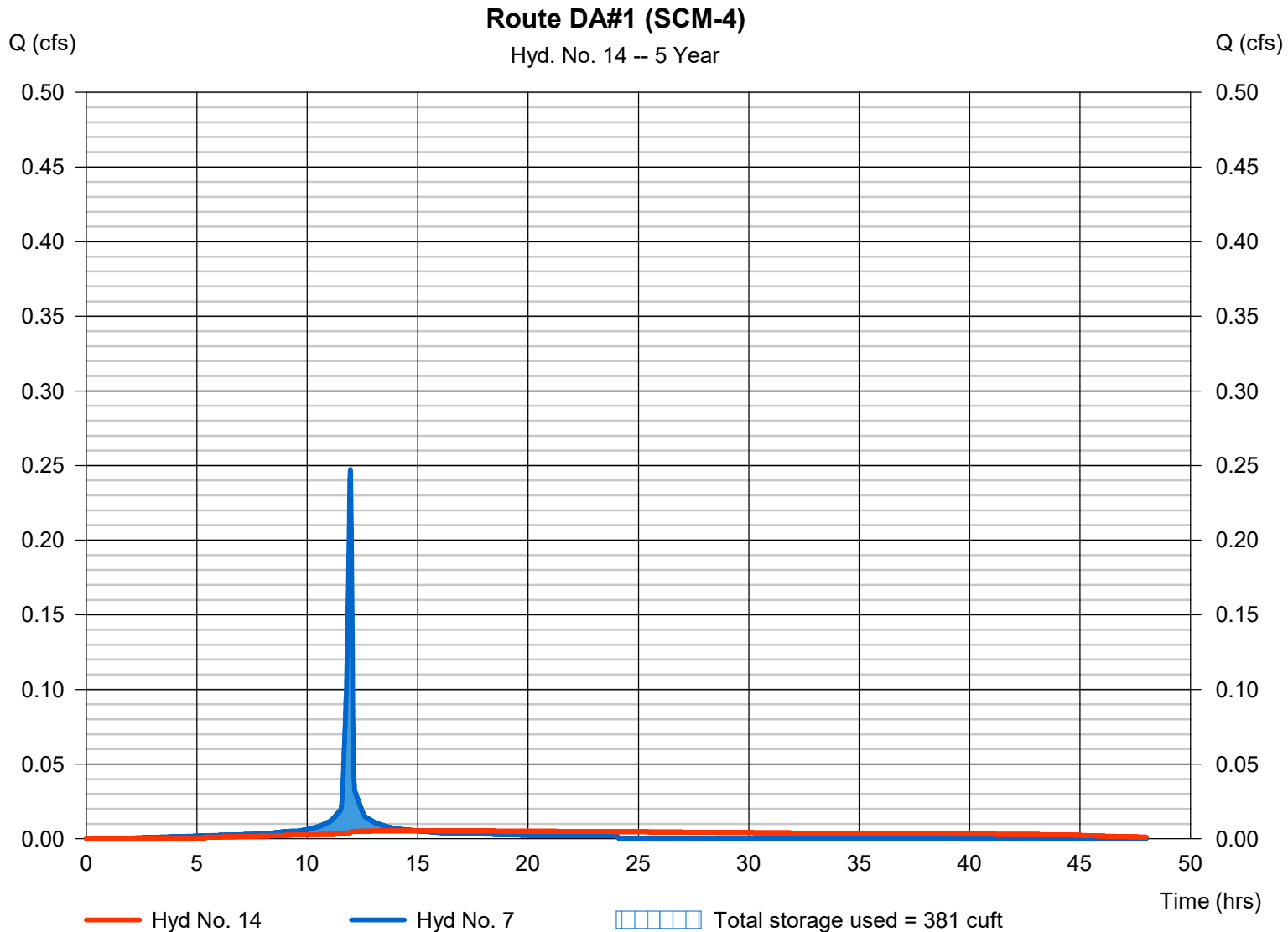
Friday, 04 / 11 / 2025

Hyd. No. 14

Route DA#1 (SCM-4)

Hydrograph type	= Reservoir	Peak discharge	= 0.005 cfs
Storm frequency	= 5 yrs	Time to peak	= 15.05 hrs
Time interval	= 1 min	Hyd. volume	= 566 cuft
Inflow hyd. No.	= 7 - Post DA #1 (SCM-4)	Max. Elevation	= 1096.52 ft
Reservoir name	= DA #1 (SCM-4)	Max. Storage	= 381 cuft

Storage Indication method used. Outflow includes exfiltration.

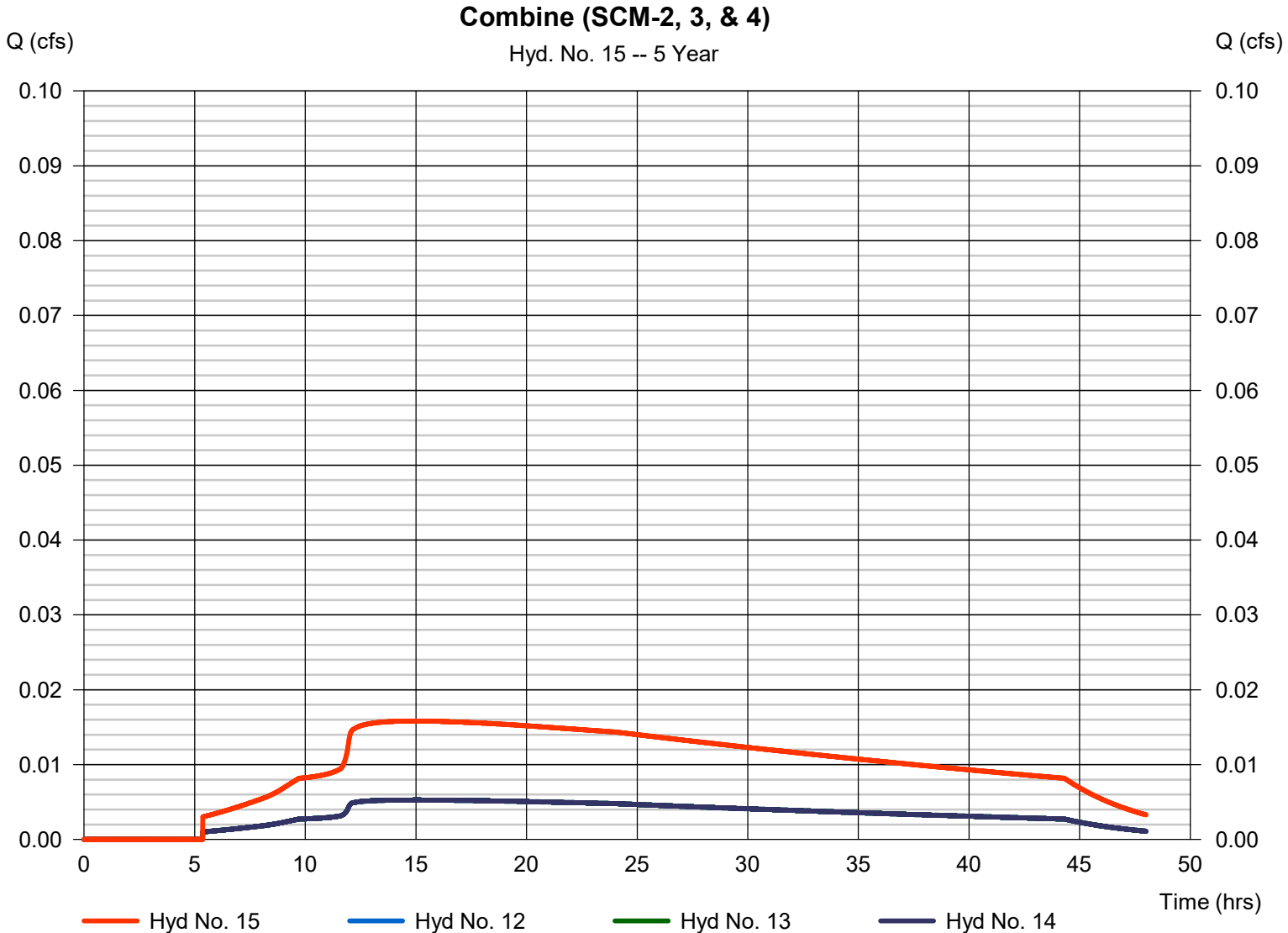


Hydrograph Report

Hyd. No. 15

Combine (SCM-2, 3, & 4)

Hydrograph type	= Combine	Peak discharge	= 0.016 cfs
Storm frequency	= 5 yrs	Time to peak	= 15.05 hrs
Time interval	= 1 min	Hyd. volume	= 1,697 cuft
Inflow hyds.	= 12, 13, 14	Contrib. drain. area	= 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

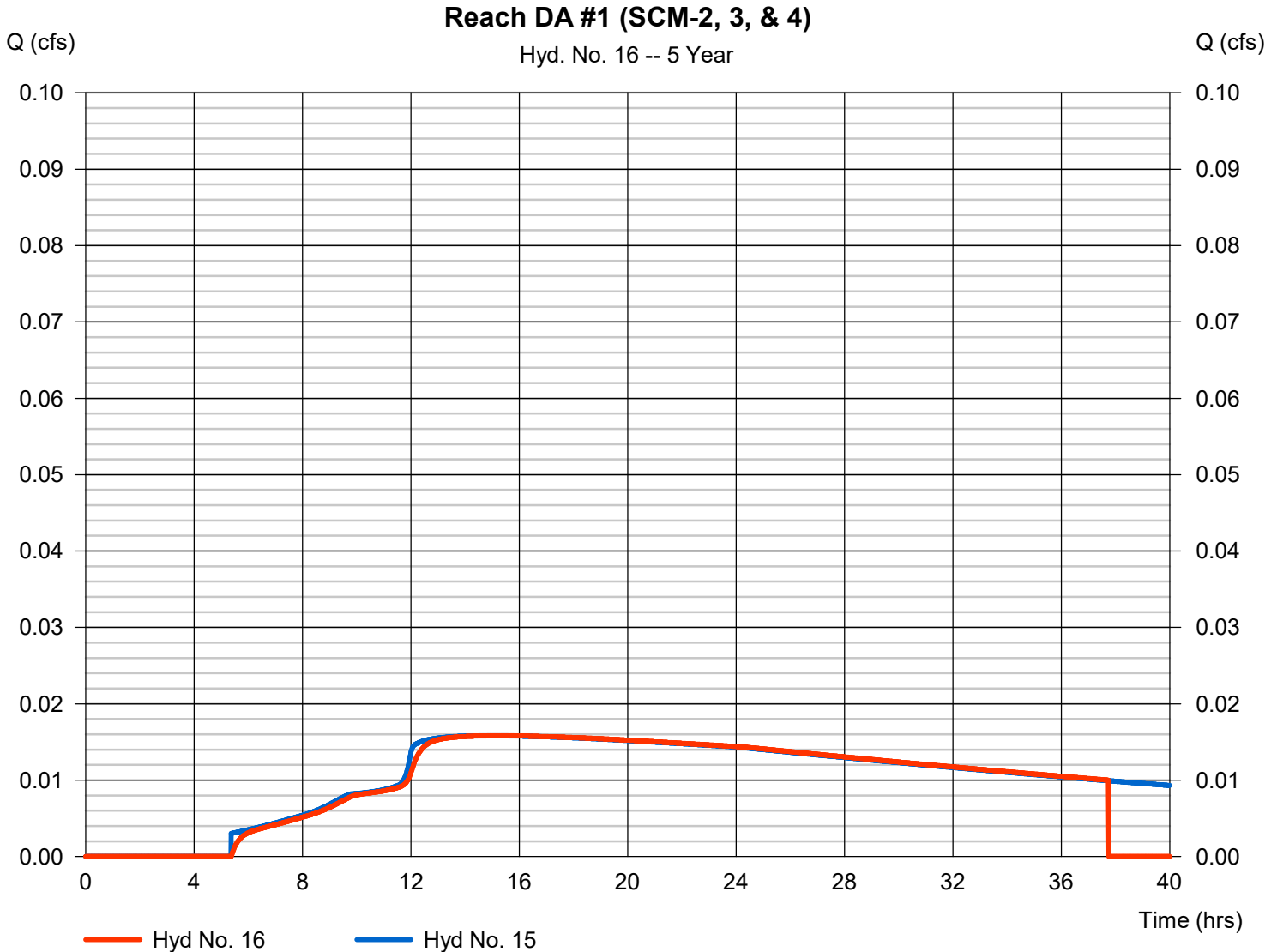
Friday, 04 / 11 / 2025

Hyd. No. 16

Reach DA #1 (SCM-2, 3, & 4)

Hydrograph type	= Reach	Peak discharge	= 0.016 cfs
Storm frequency	= 5 yrs	Time to peak	= 15.30 hrs
Time interval	= 1 min	Hyd. volume	= 1,403 cuft
Inflow hyd. No.	= 15 - Combine (SCM-2, 3, & 4)	Section type	= Trapezoidal
Reach length	= 900.0 ft	Channel slope	= 1.3 %
Manning's n	= 0.025	Bottom width	= 4.0 ft
Side slope	= 2.0:1	Max. depth	= 2.0 ft
Rating curve x	= 2.643	Rating curve m	= 1.307
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.0669

Modified Att-Kin routing method used.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

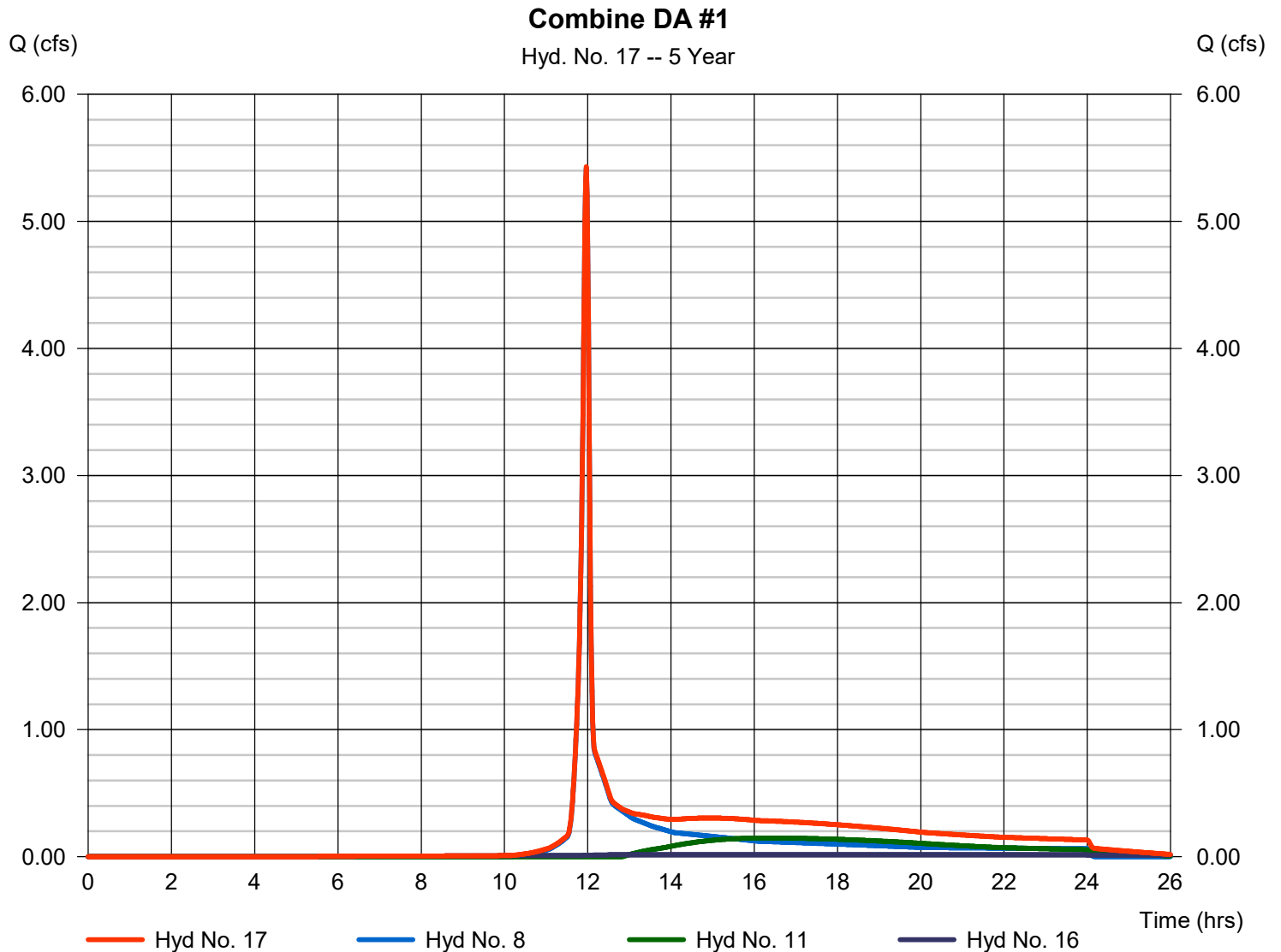
Friday, 04 / 11 / 2025

Hyd. No. 17

Combine DA #1

Hydrograph type = Combine
Storm frequency = 5 yrs
Time interval = 1 min
Inflow hyds. = 8, 11, 16

Peak discharge = 5.430 cfs
Time to peak = 11.97 hrs
Hyd. volume = 16,586 cuft
Contrib. drain. area = 2.590 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

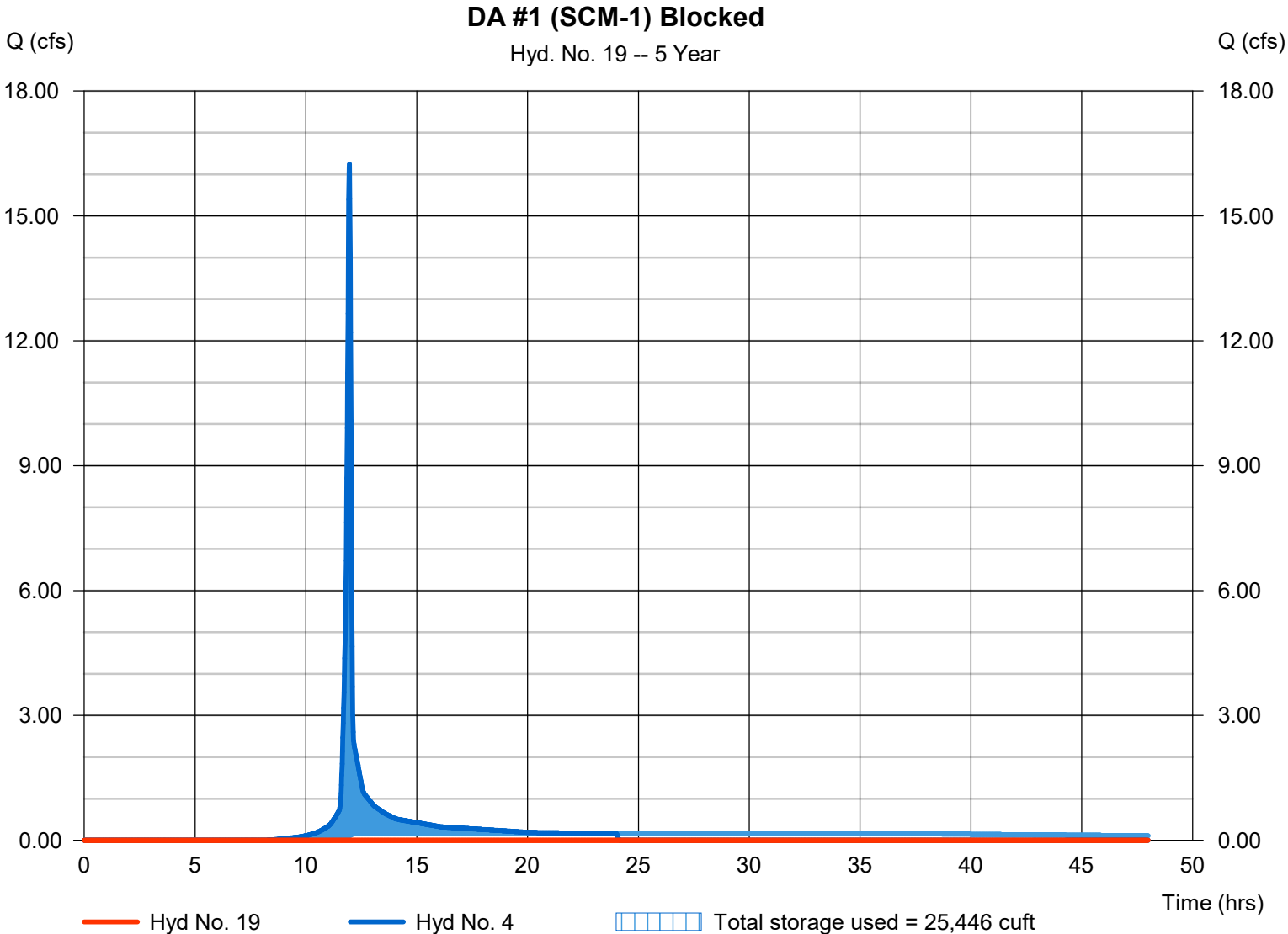
Friday, 04 / 11 / 2025

Hyd. No. 19

DA #1 (SCM-1) Blocked

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 5 yrs	Time to peak	= 45.13 hrs
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 4 - Post DA #1 (SCM-1)	Max. Elevation	= 1083.38 ft
Reservoir name	= DA #1 (SCM-1) Blocked	Max. Storage	= 25,446 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

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	18.38	1	720	41,609	-----	-----	-----	Pre DA #1
2	SCS Runoff	27.46	1	718	55,600	-----	-----	-----	Post DA #1
4	SCS Runoff	20.10	1	718	41,027	-----	-----	-----	Post DA #1 (SCM-1)
5	SCS Runoff	0.286	1	717	677	-----	-----	-----	Post DA #1 (SCM-2)
6	SCS Runoff	0.286	1	717	677	-----	-----	-----	Post DA #1 (SCM-3)
7	SCS Runoff	0.286	1	717	677	-----	-----	-----	Post DA #1 (SCM-4)
8	SCS Runoff	7.001	1	718	14,062	-----	-----	-----	Post DA #1 (Undetained)
9	Combine	27.94	1	718	57,119	4, 5, 6, 7, 8	-----	-----	Combine Post DA #1 (No Controls)
11	Reservoir	0.425	1	854	11,647	4	1083.43	26,301	Route DA #1 (SCM-1)
12	Reservoir	0.006	1	918	636	5	1100.86	449	Route DA#1 (SCM-2)
13	Reservoir	0.006	1	918	636	6	1098.86	449	Route DA#1 (SCM-3)
14	Reservoir	0.006	1	918	636	7	1096.86	449	Route DA#1 (SCM-4)
15	Combine	0.017	1	918	1,909	12, 13, 14	-----	-----	Combine (SCM-2, 3, & 4)
16	Reach	0.017	1	932	1,689	15	-----	-----	Reach DA #1 (SCM-2, 3, & 4)
17	Combine	7.012	1	718	27,397	8, 11, 16	-----	-----	Combine DA #1
19	Reservoir	0.000	1	715	0	4	1083.78	33,232	DA #1 (SCM-1) Blocked
250401-Newcastle DA 1.gpw					Return Period: 10 Year			Friday, 04 / 11 / 2025	

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

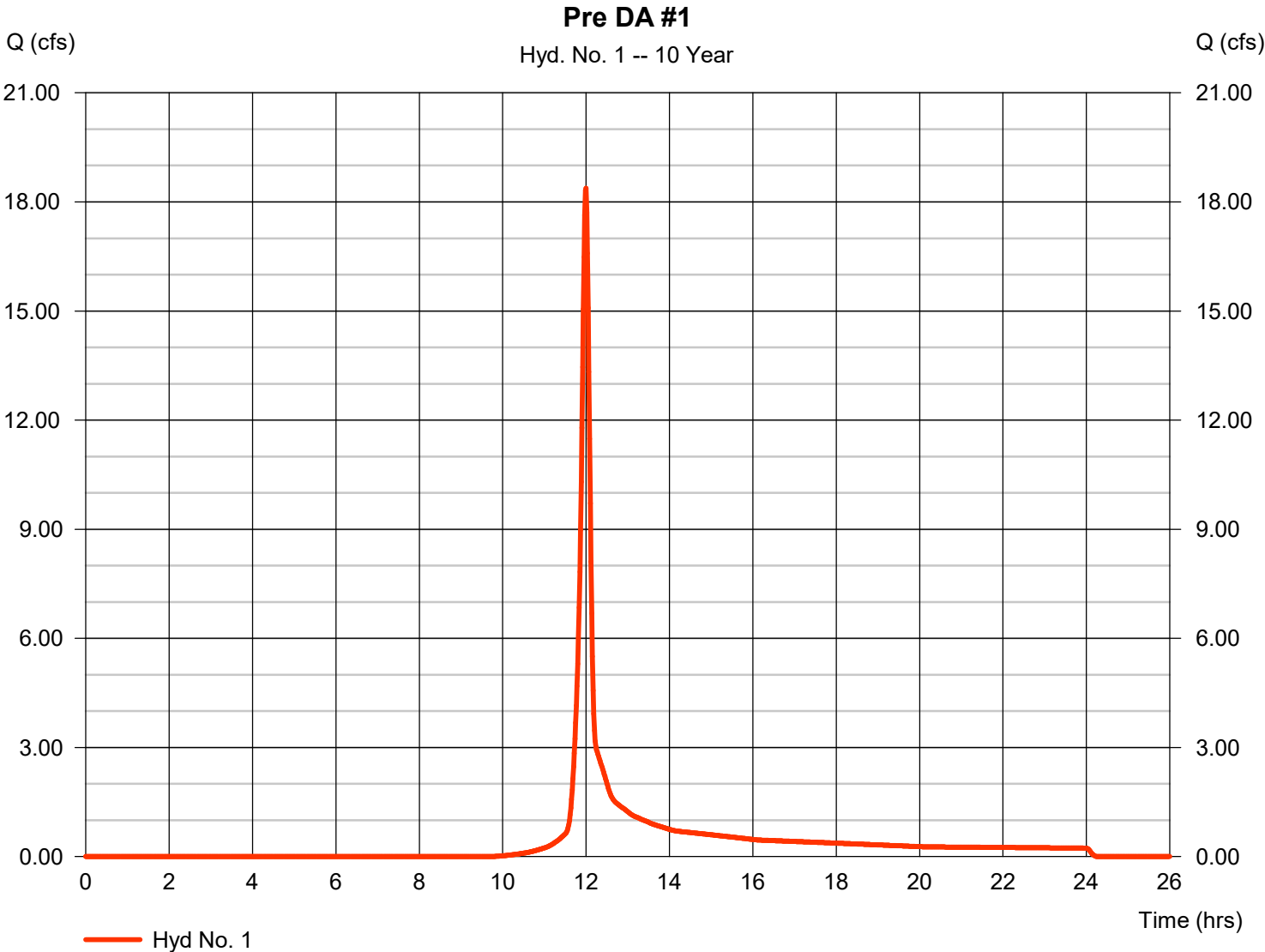
Friday, 04 / 11 / 2025

Hyd. No. 1

Pre DA #1

Hydrograph type	= SCS Runoff	Peak discharge	= 18.38 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.00 hrs
Time interval	= 1 min	Hyd. volume	= 41,609 cuft
Drainage area	= 8.280 ac	Curve number	= 78*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.80 min
Total precip.	= 3.35 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.930 x 77) + (7.348 x 78) + (0.001 x 98)] / 8.280



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

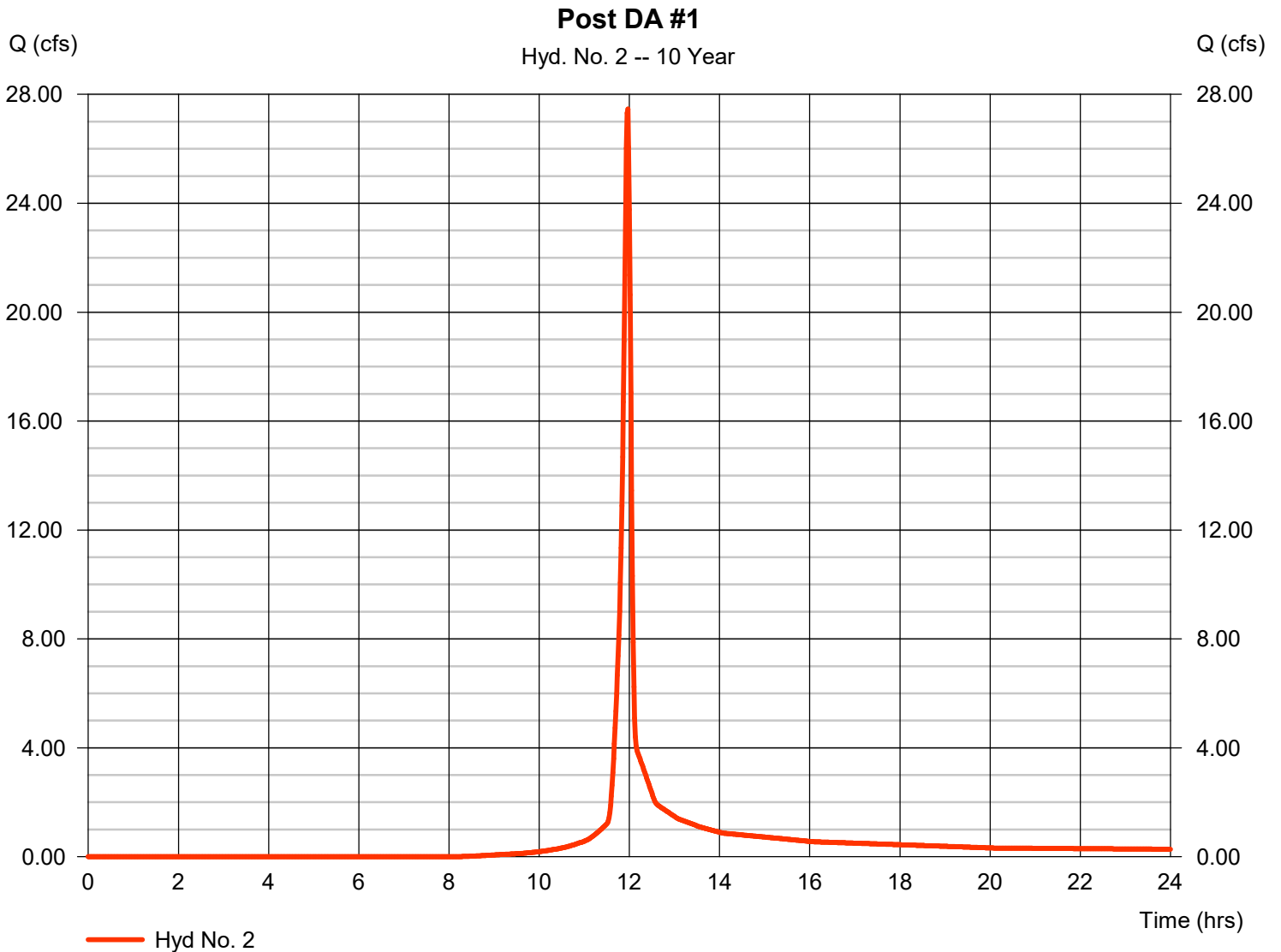
Friday, 04 / 11 / 2025

Hyd. No. 2

Post DA #1

Hydrograph type	= SCS Runoff	Peak discharge	= 27.46 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.97 hrs
Time interval	= 1 min	Hyd. volume	= 55,600 cuft
Drainage area	= 8.570 ac	Curve number	= 83*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.35 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(2.419 x 78) + (4.258 x 80) + (1.896 x 98)] / 8.570



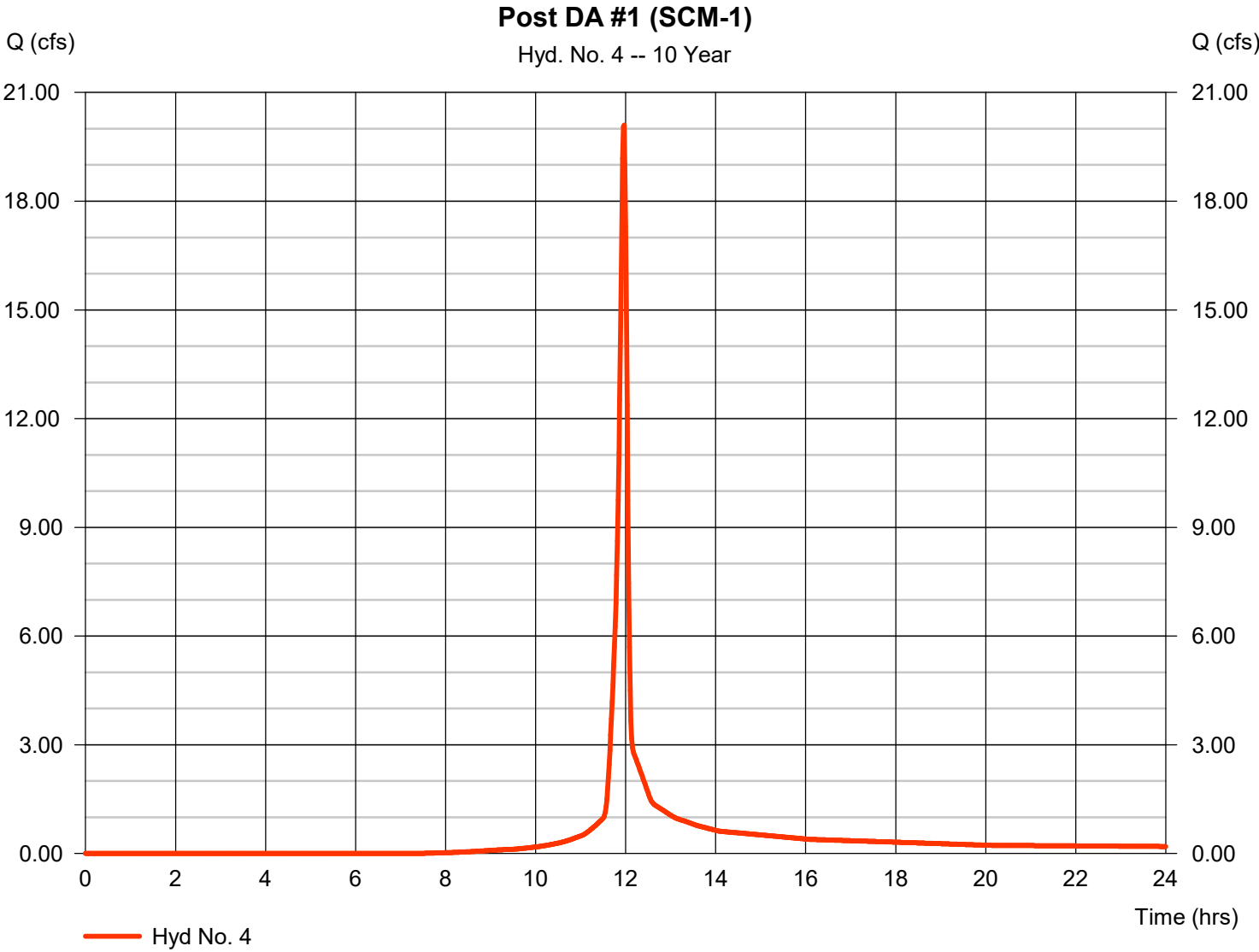
Hydrograph Report

Hyd. No. 4

Post DA #1 (SCM-1)

Hydrograph type	= SCS Runoff	Peak discharge	= 20.10 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.97 hrs
Time interval	= 1 min	Hyd. volume	= 41,027 cuft
Drainage area	= 5.810 ac	Curve number	= 85*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.35 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.667 x 78) + (3.523 x 80) + (1.615 x 98)] / 5.810

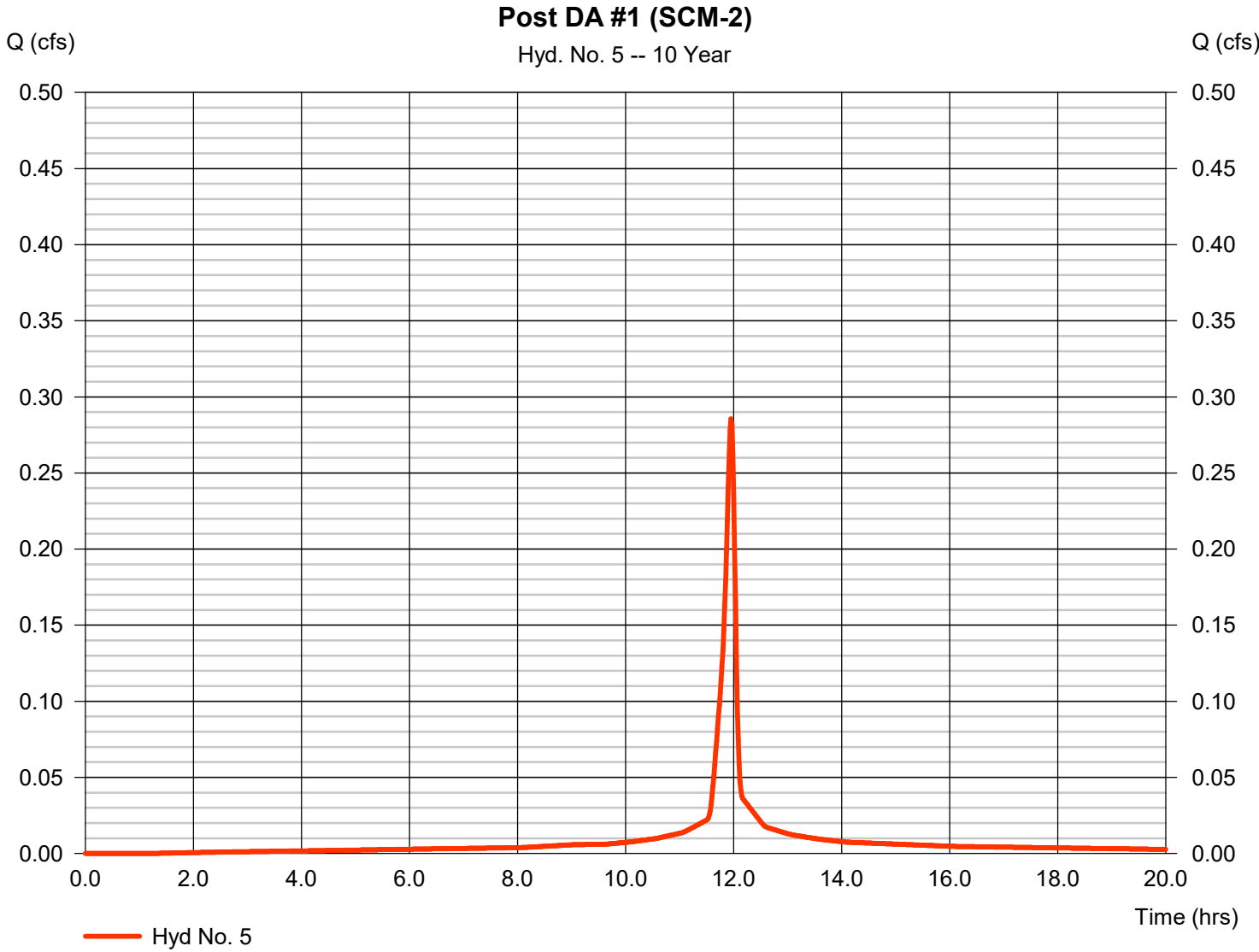


Hydrograph Report

Hyd. No. 5

Post DA #1 (SCM-2)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.286 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 677 cuft
Drainage area	= 0.058 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.35 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

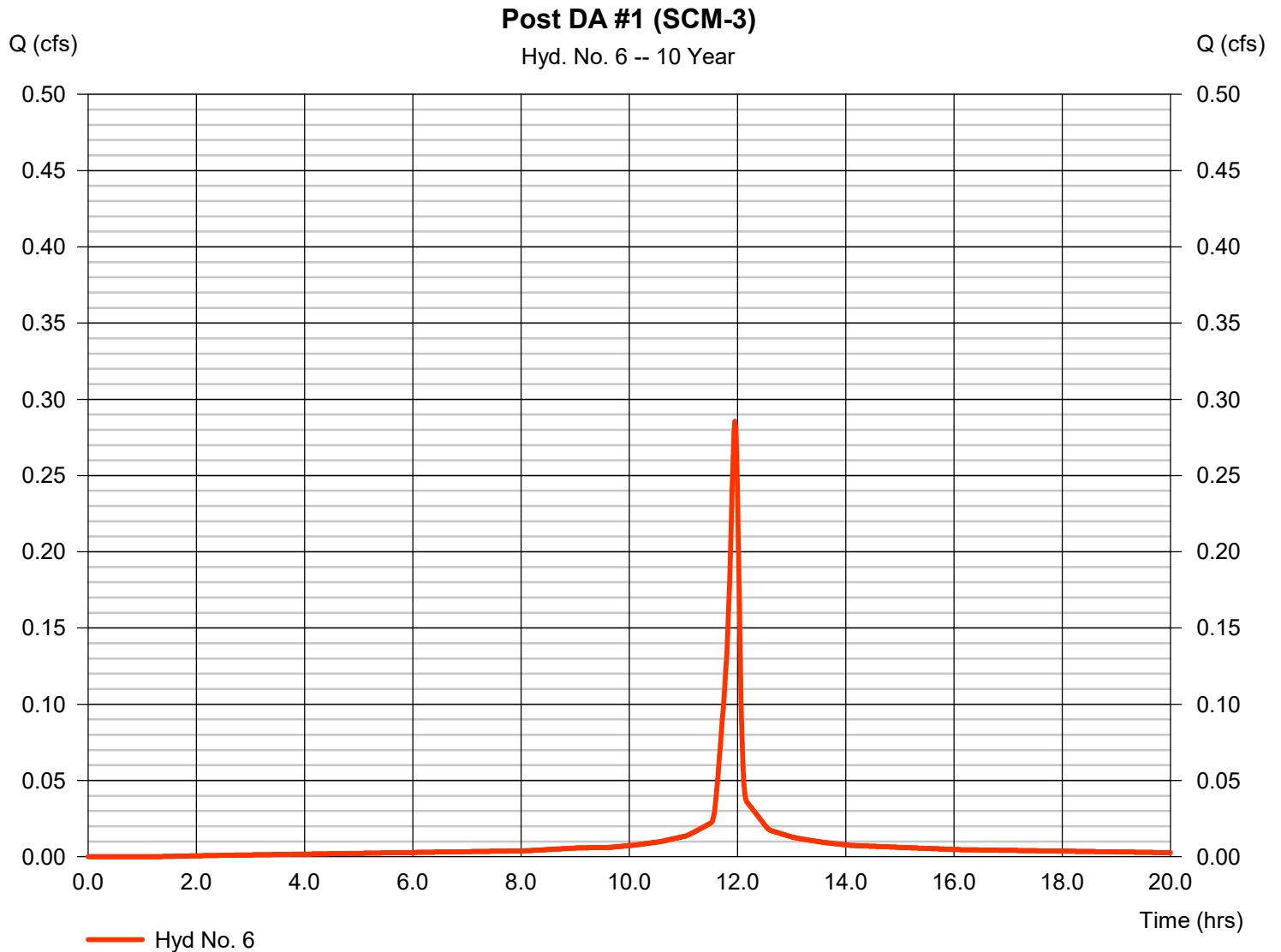
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Friday, 04 / 11 / 2025

Hyd. No. 6

Post DA #1 (SCM-3)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.286 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 677 cuft
Drainage area	= 0.058 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.35 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

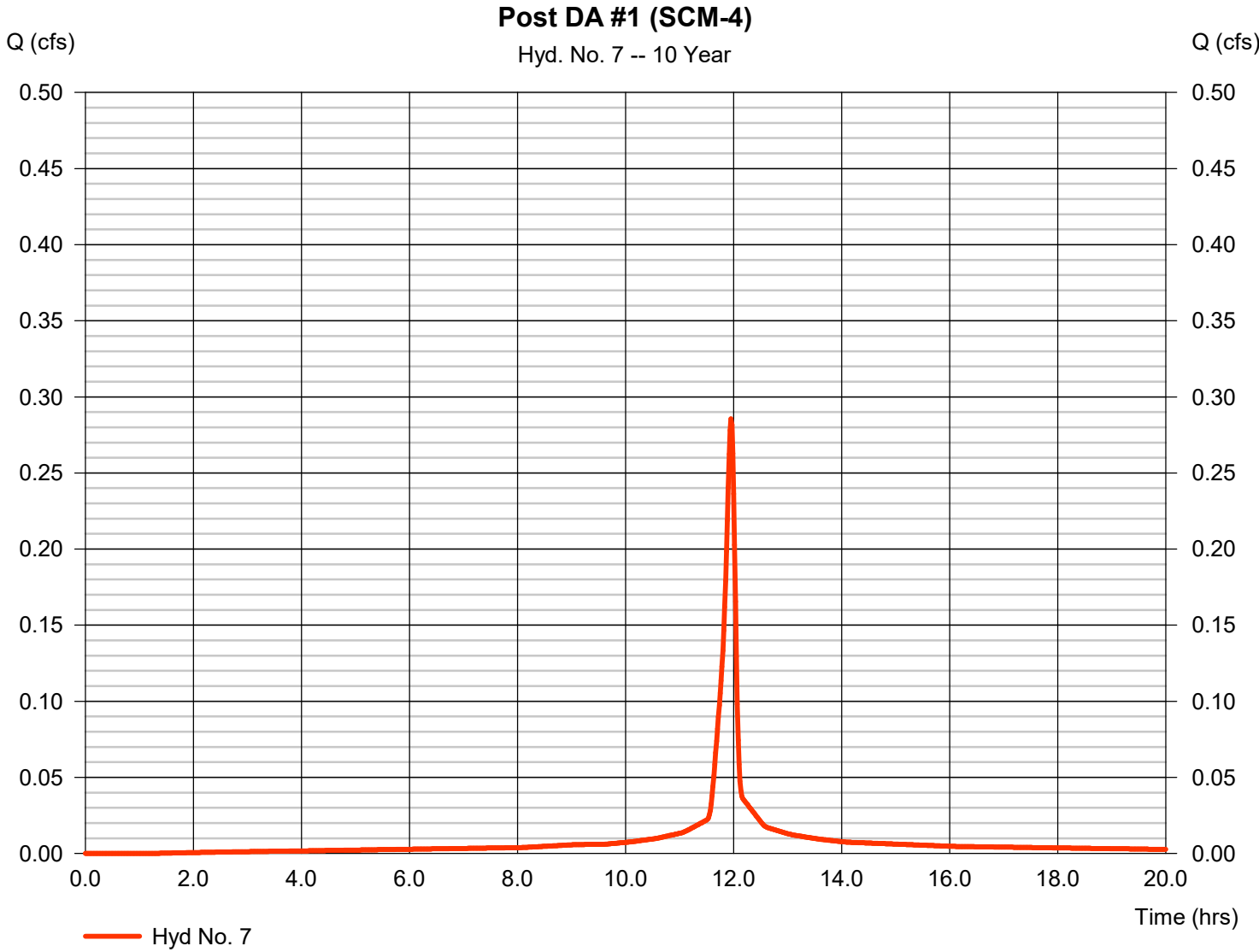


Hydrograph Report

Hyd. No. 7

Post DA #1 (SCM-4)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.286 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 677 cuft
Drainage area	= 0.058 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.35 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

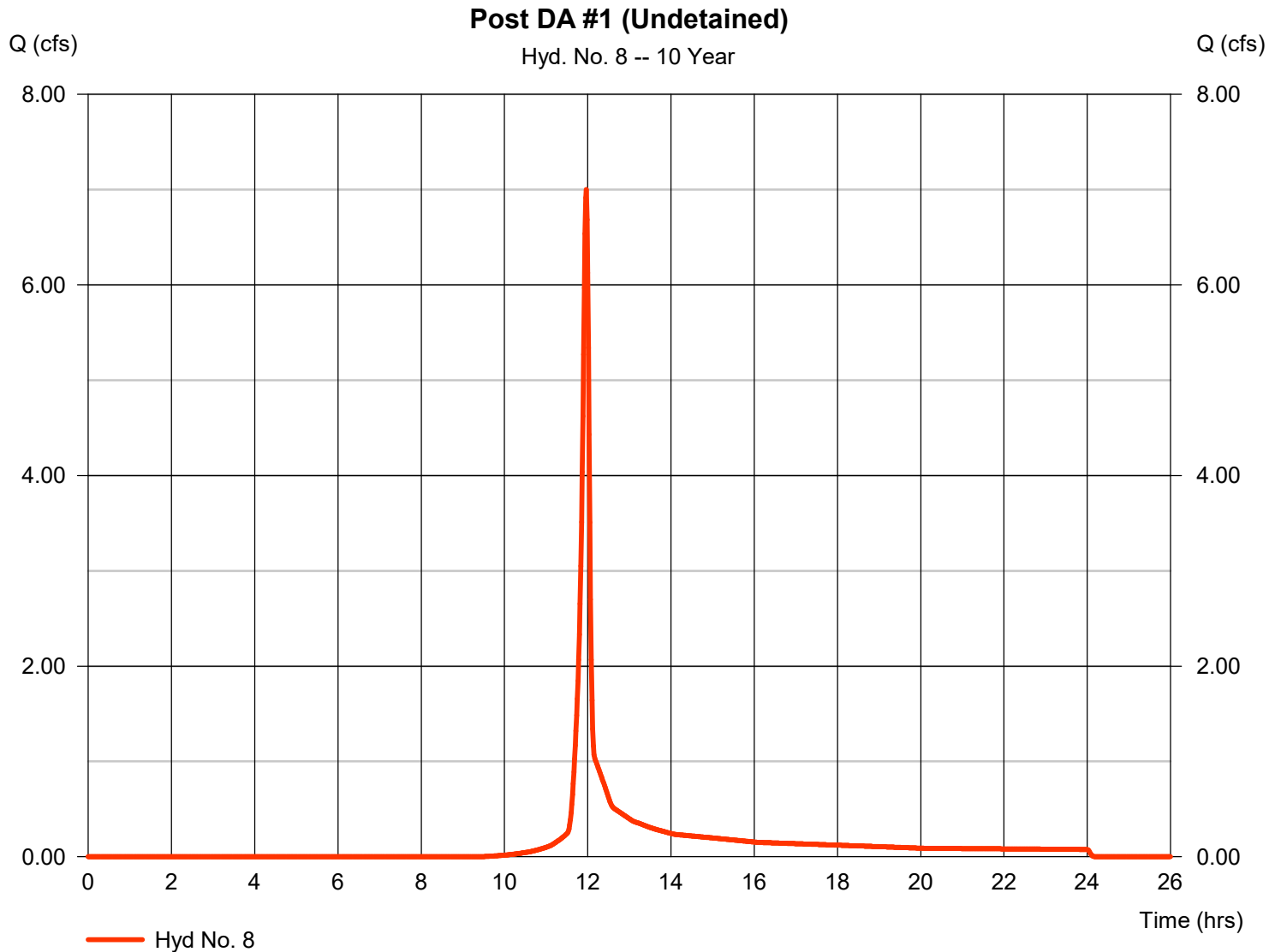
Friday, 04 / 11 / 2025

Hyd. No. 8

Post DA #1 (Undetained)

Hydrograph type	= SCS Runoff	Peak discharge	= 7.001 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.97 hrs
Time interval	= 1 min	Hyd. volume	= 14,062 cuft
Drainage area	= 2.590 ac	Curve number	= 79*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.35 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.752 x 78) + (0.735 x 80) + (0.107 x 98)] / 2.590



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Friday, 04 / 11 / 2025

Hyd. No. 9

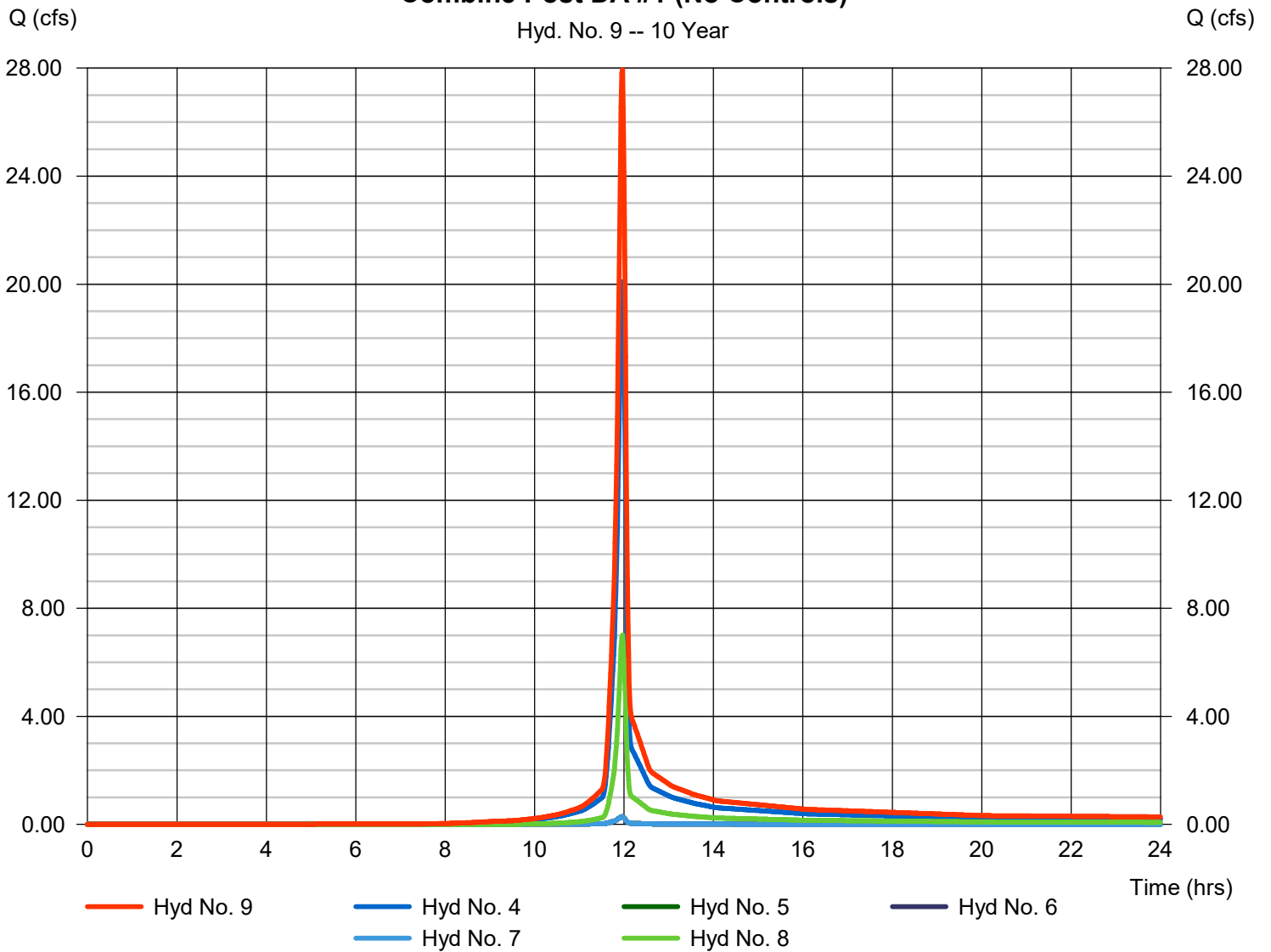
Combine Post DA #1 (No Controls)

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 1 min
Inflow hyds. = 4, 5, 6, 7, 8

Peak discharge = 27.94 cfs
Time to peak = 11.97 hrs
Hyd. volume = 57,119 cuft
Contrib. drain. area = 8.574 ac

Combine Post DA #1 (No Controls)

Hyd. No. 9 -- 10 Year



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

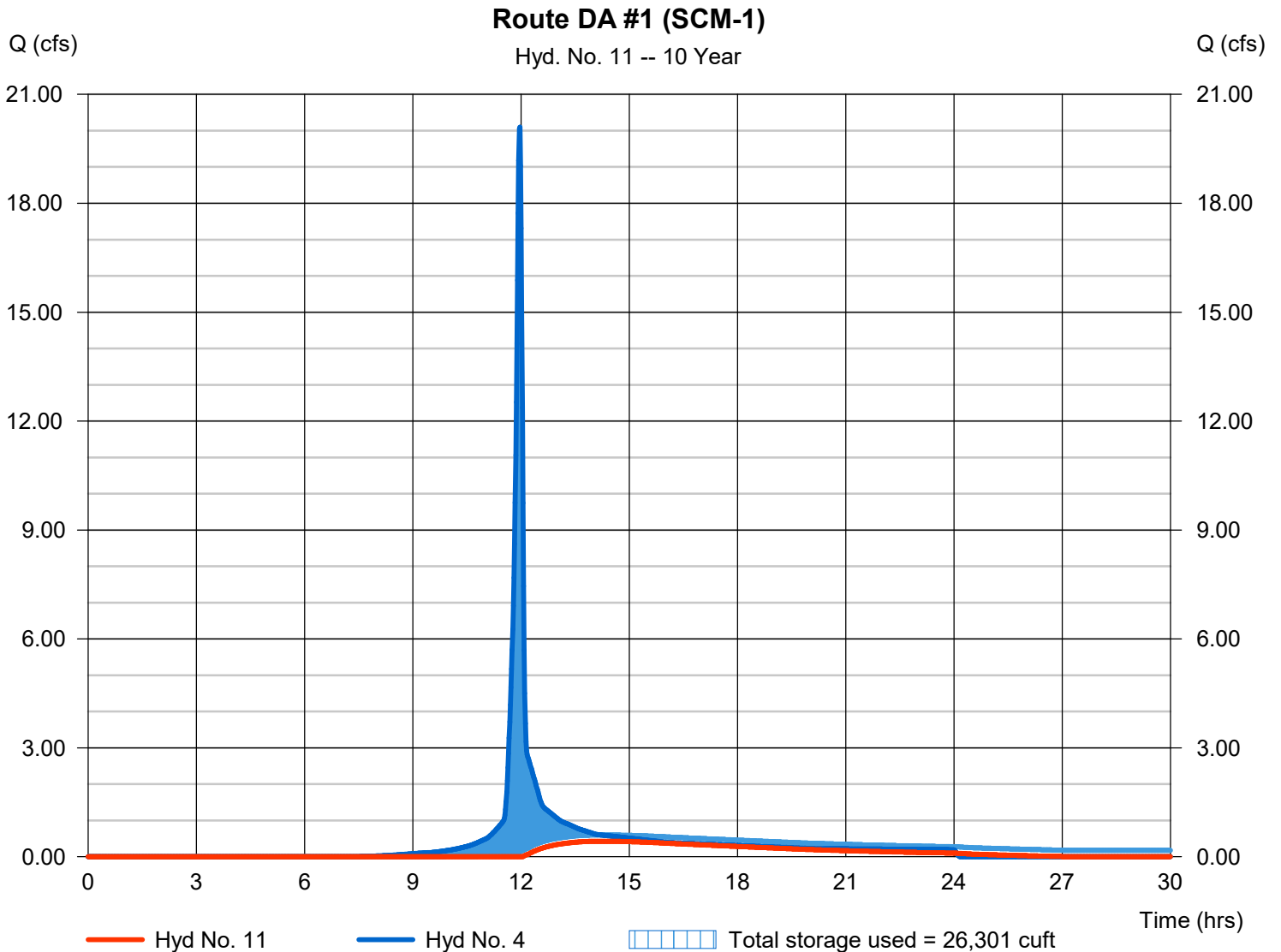
Friday, 04 / 11 / 2025

Hyd. No. 11

Route DA #1 (SCM-1)

Hydrograph type	= Reservoir	Peak discharge	= 0.425 cfs
Storm frequency	= 10 yrs	Time to peak	= 14.23 hrs
Time interval	= 1 min	Hyd. volume	= 11,647 cuft
Inflow hyd. No.	= 4 - Post DA #1 (SCM-1)	Max. Elevation	= 1083.43 ft
Reservoir name	= DA #1 (SCM-1)	Max. Storage	= 26,301 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

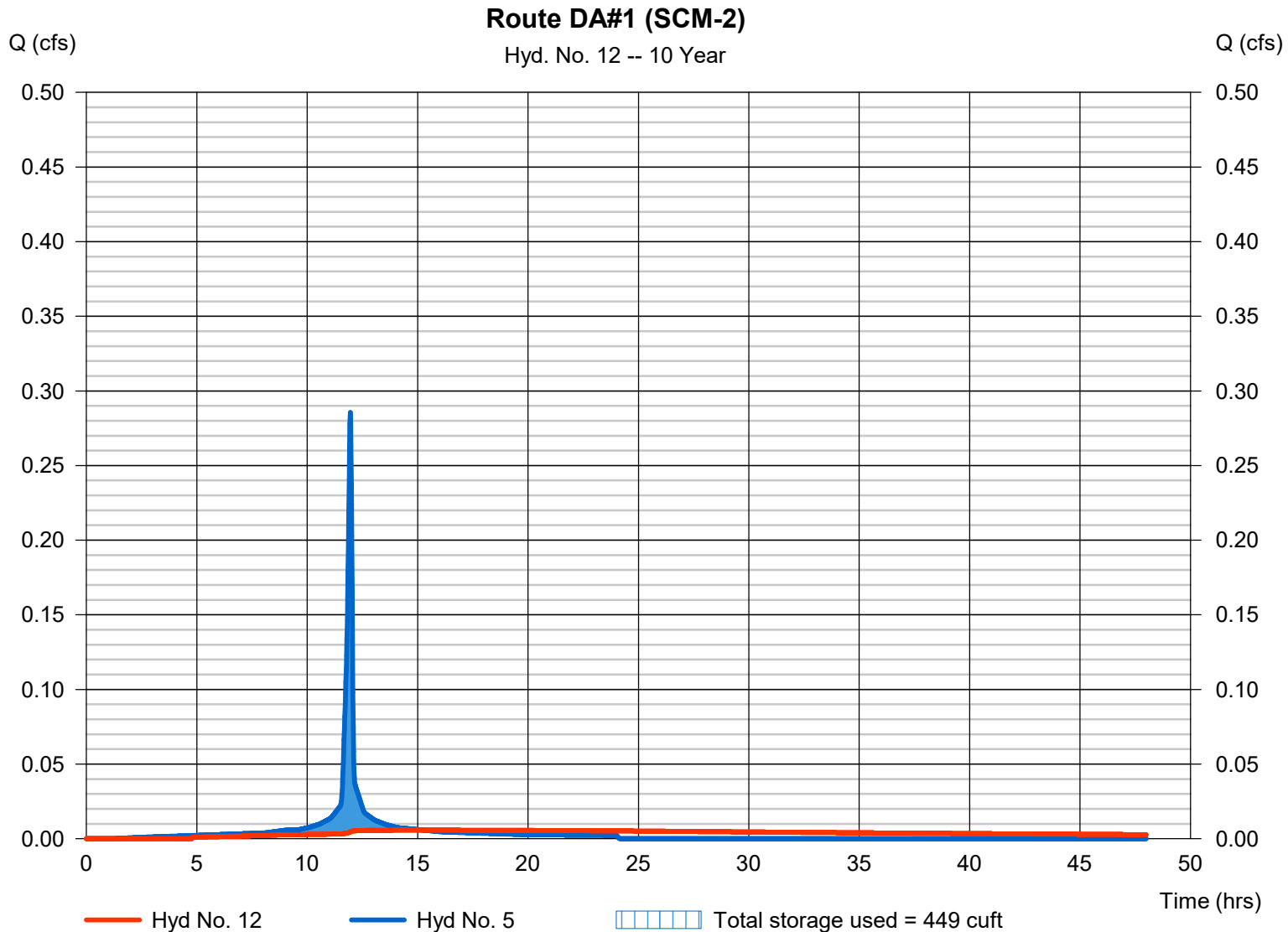
Friday, 04 / 11 / 2025

Hyd. No. 12

Route DA#1 (SCM-2)

Hydrograph type	= Reservoir	Peak discharge	= 0.006 cfs
Storm frequency	= 10 yrs	Time to peak	= 15.30 hrs
Time interval	= 1 min	Hyd. volume	= 636 cuft
Inflow hyd. No.	= 5 - Post DA #1 (SCM-2)	Max. Elevation	= 1100.86 ft
Reservoir name	= DA #1 (SCM-2)	Max. Storage	= 449 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

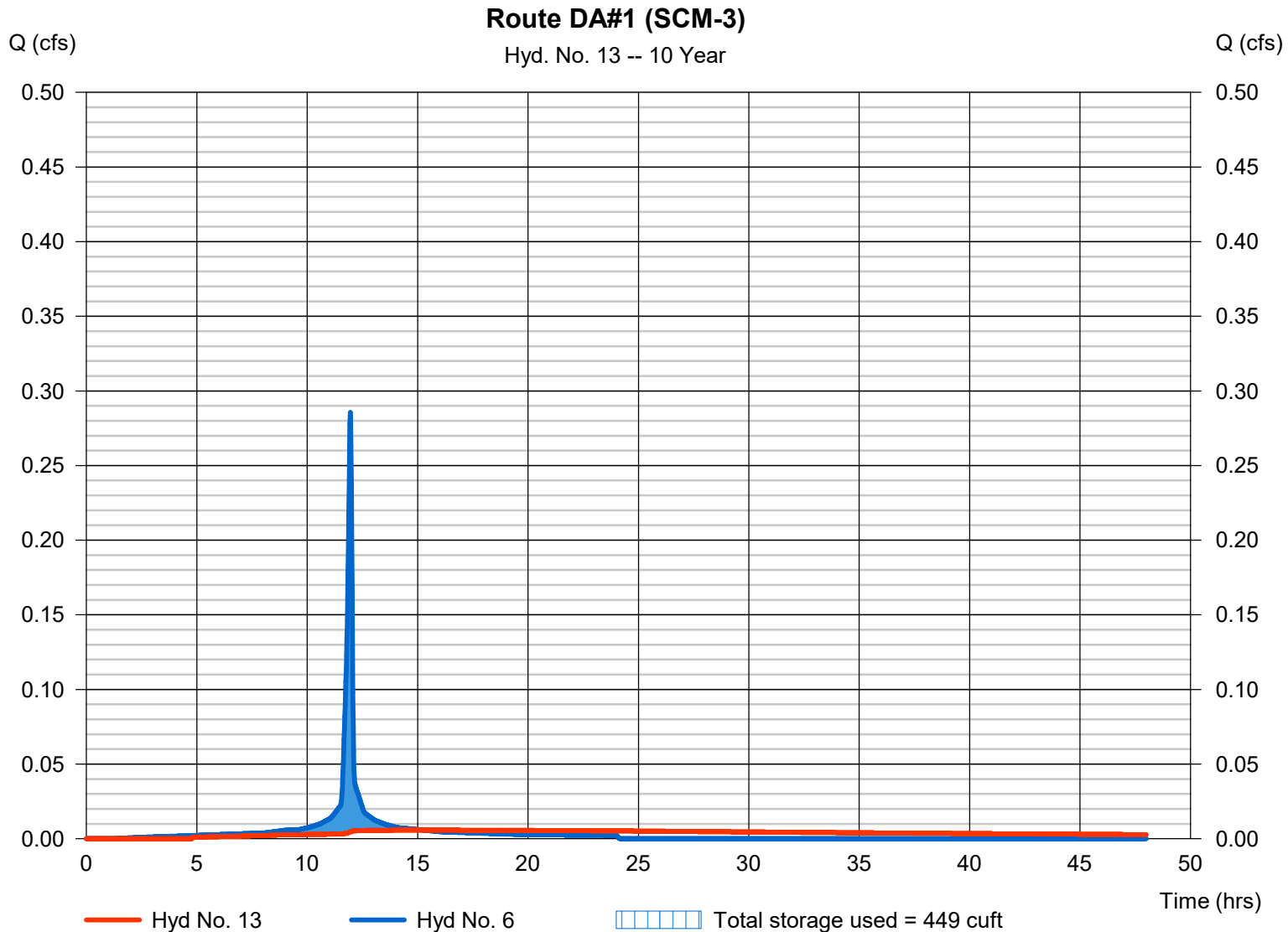
Friday, 04 / 11 / 2025

Hyd. No. 13

Route DA#1 (SCM-3)

Hydrograph type	= Reservoir	Peak discharge	= 0.006 cfs
Storm frequency	= 10 yrs	Time to peak	= 15.30 hrs
Time interval	= 1 min	Hyd. volume	= 636 cuft
Inflow hyd. No.	= 6 - Post DA #1 (SCM-3)	Max. Elevation	= 1098.86 ft
Reservoir name	= DA #1 (SCM-3)	Max. Storage	= 449 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

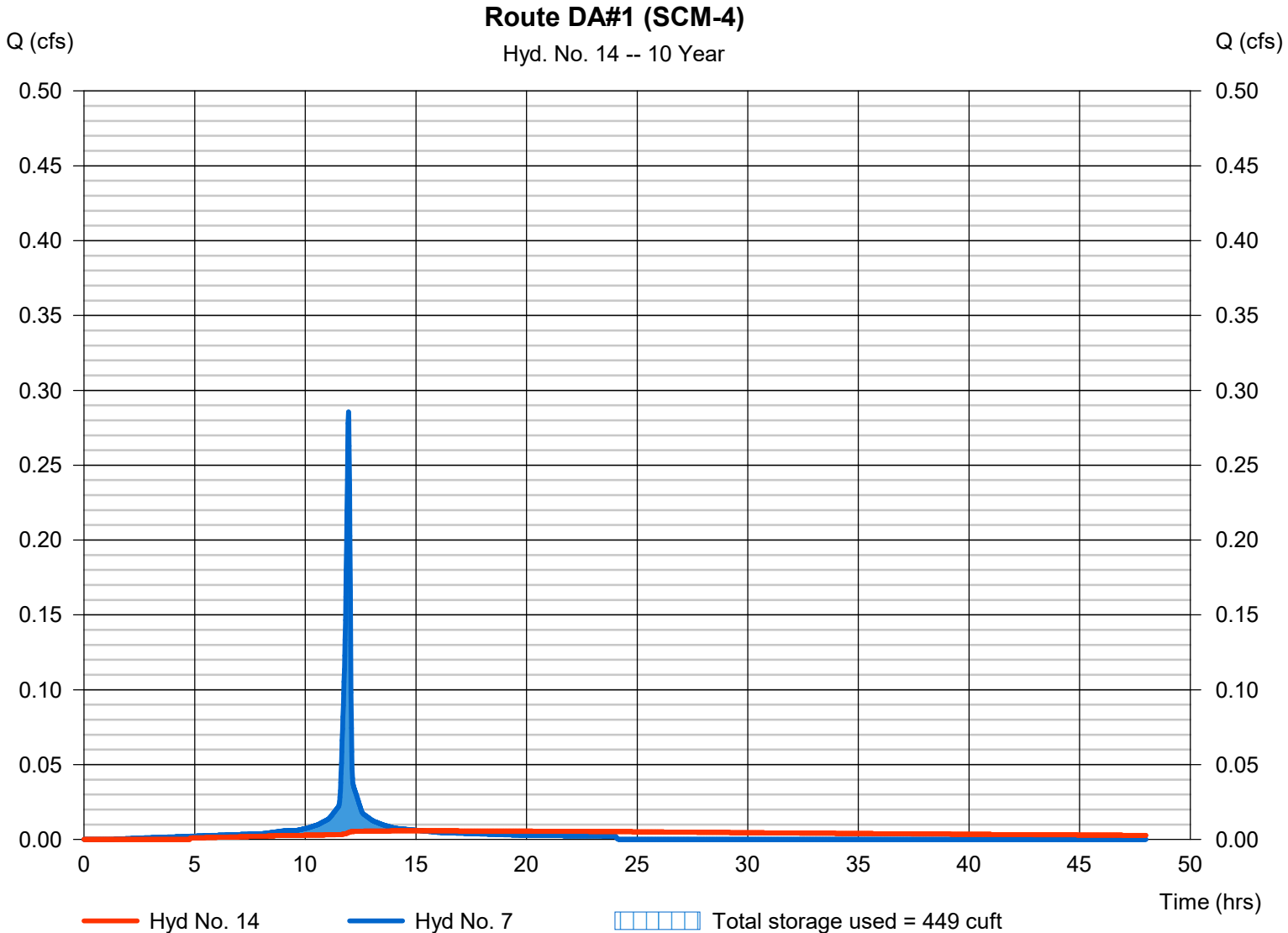
Friday, 04 / 11 / 2025

Hyd. No. 14

Route DA#1 (SCM-4)

Hydrograph type	= Reservoir	Peak discharge	= 0.006 cfs
Storm frequency	= 10 yrs	Time to peak	= 15.30 hrs
Time interval	= 1 min	Hyd. volume	= 636 cuft
Inflow hyd. No.	= 7 - Post DA #1 (SCM-4)	Max. Elevation	= 1096.86 ft
Reservoir name	= DA #1 (SCM-4)	Max. Storage	= 449 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

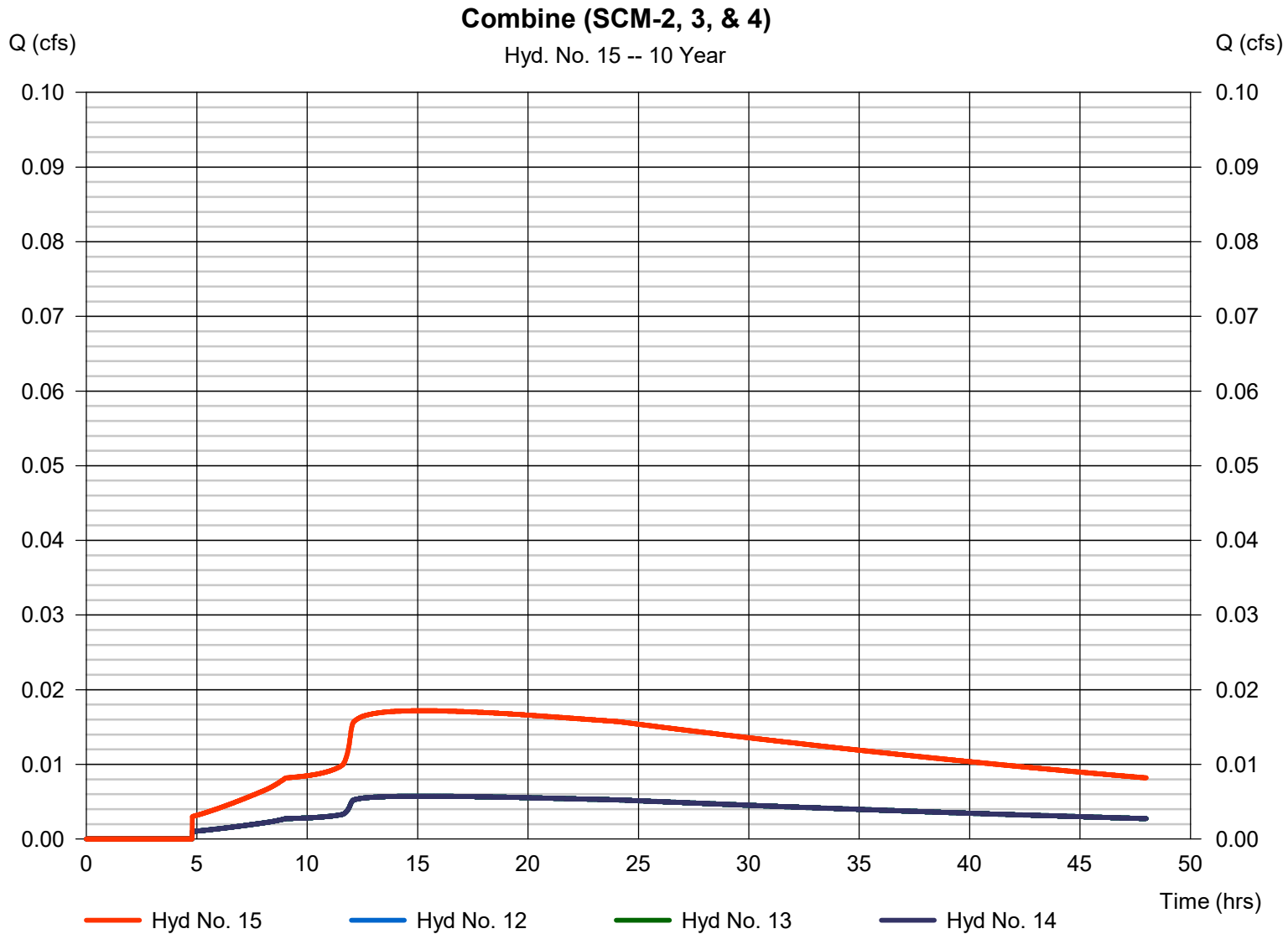
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Friday, 04 / 11 / 2025

Hyd. No. 15

Combine (SCM-2, 3, & 4)

Hydrograph type	= Combine	Peak discharge	= 0.017 cfs
Storm frequency	= 10 yrs	Time to peak	= 15.30 hrs
Time interval	= 1 min	Hyd. volume	= 1,909 cuft
Inflow hyds.	= 12, 13, 14	Contrib. drain. area	= 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

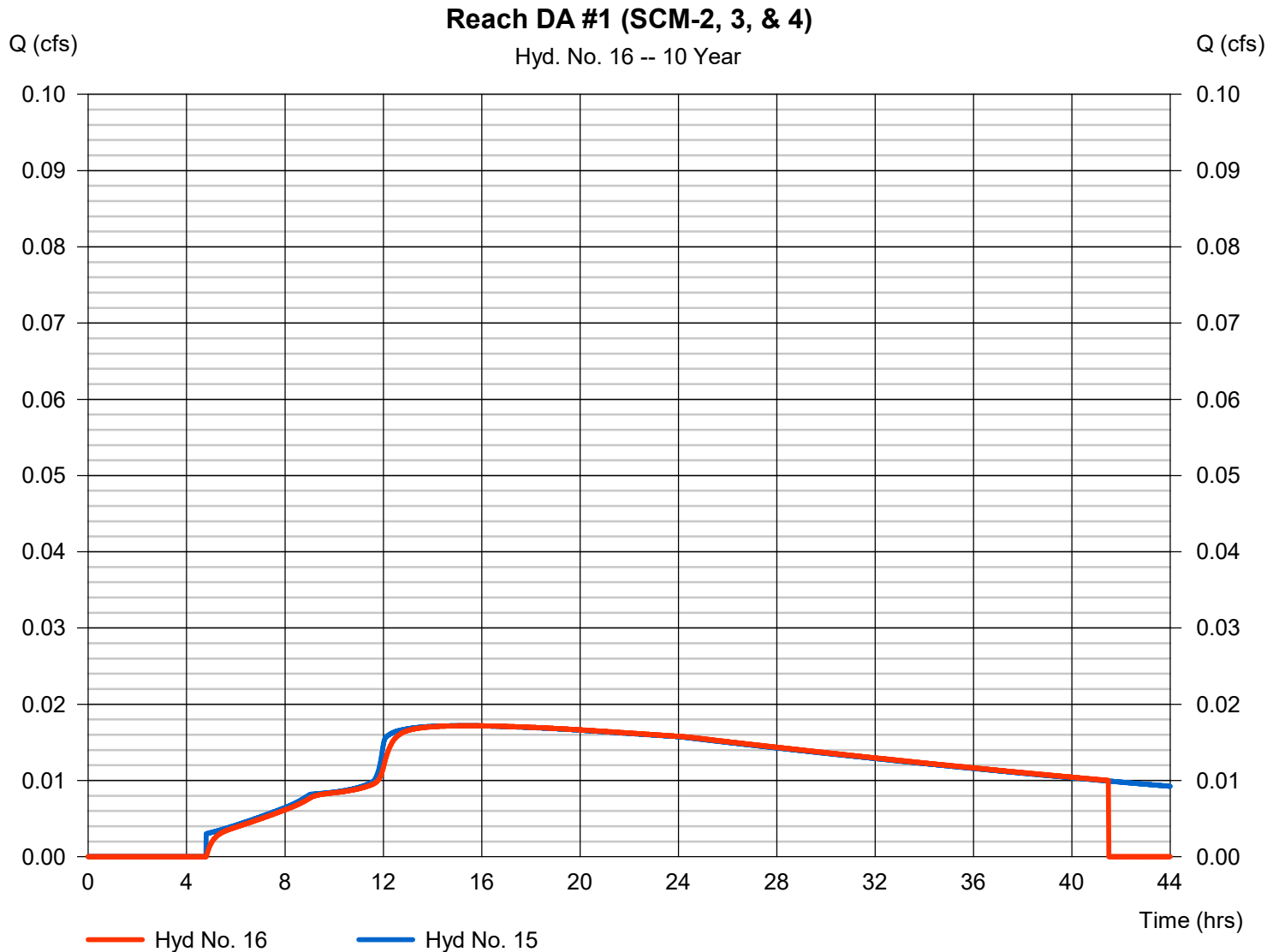
Friday, 04 / 11 / 2025

Hyd. No. 16

Reach DA #1 (SCM-2, 3, & 4)

Hydrograph type	= Reach	Peak discharge	= 0.017 cfs
Storm frequency	= 10 yrs	Time to peak	= 15.53 hrs
Time interval	= 1 min	Hyd. volume	= 1,689 cuft
Inflow hyd. No.	= 15 - Combine (SCM-2, 3, & 4)	Section type	= Trapezoidal
Reach length	= 900.0 ft	Channel slope	= 1.3 %
Manning's n	= 0.025	Bottom width	= 4.0 ft
Side slope	= 2.0:1	Max. depth	= 2.0 ft
Rating curve x	= 2.643	Rating curve m	= 1.307
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.0682

Modified Att-Kin routing method used.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

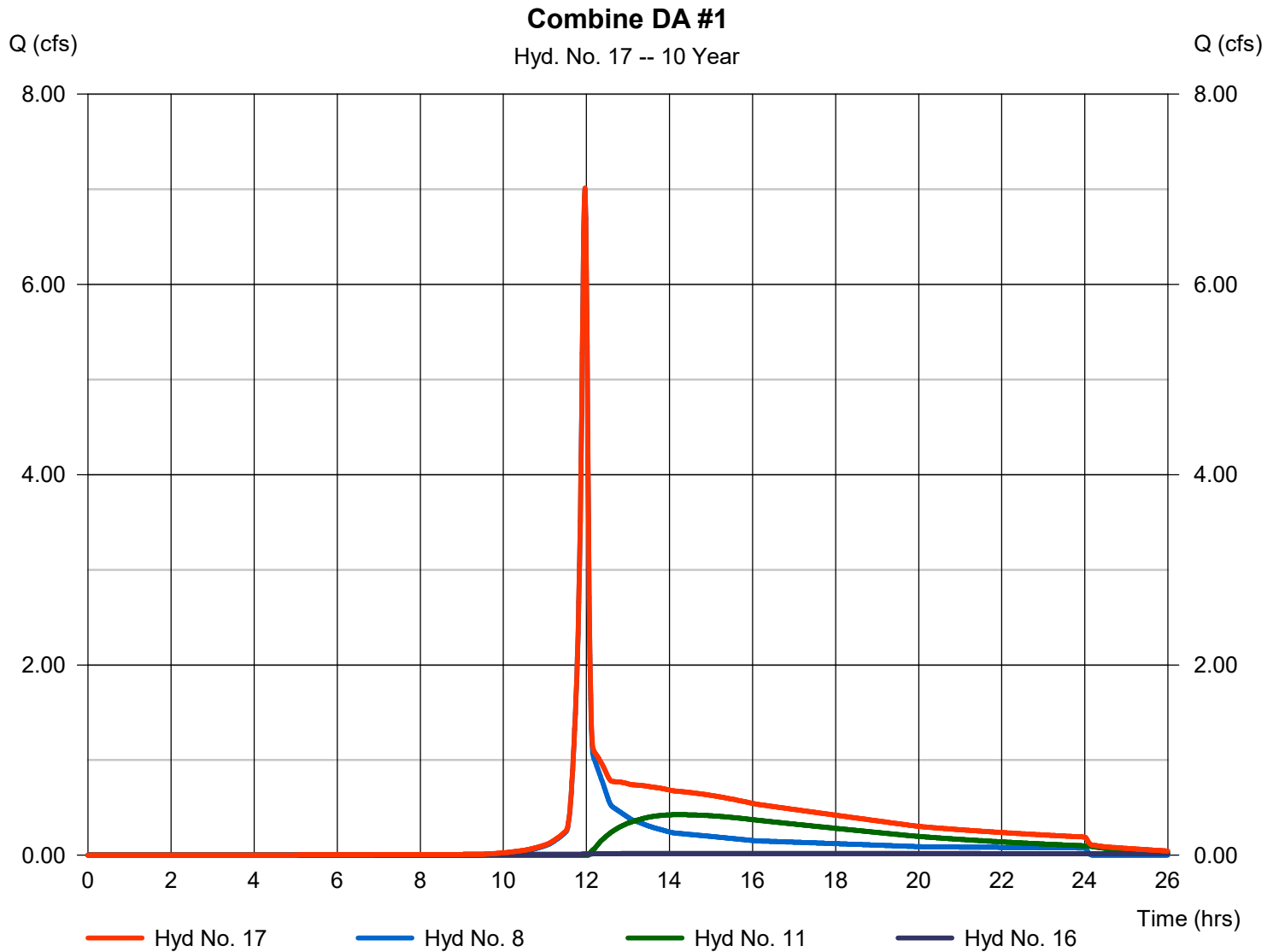
Friday, 04 / 11 / 2025

Hyd. No. 17

Combine DA #1

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 1 min
Inflow hyds. = 8, 11, 16

Peak discharge = 7.012 cfs
Time to peak = 11.97 hrs
Hyd. volume = 27,397 cuft
Contrib. drain. area = 2.590 ac



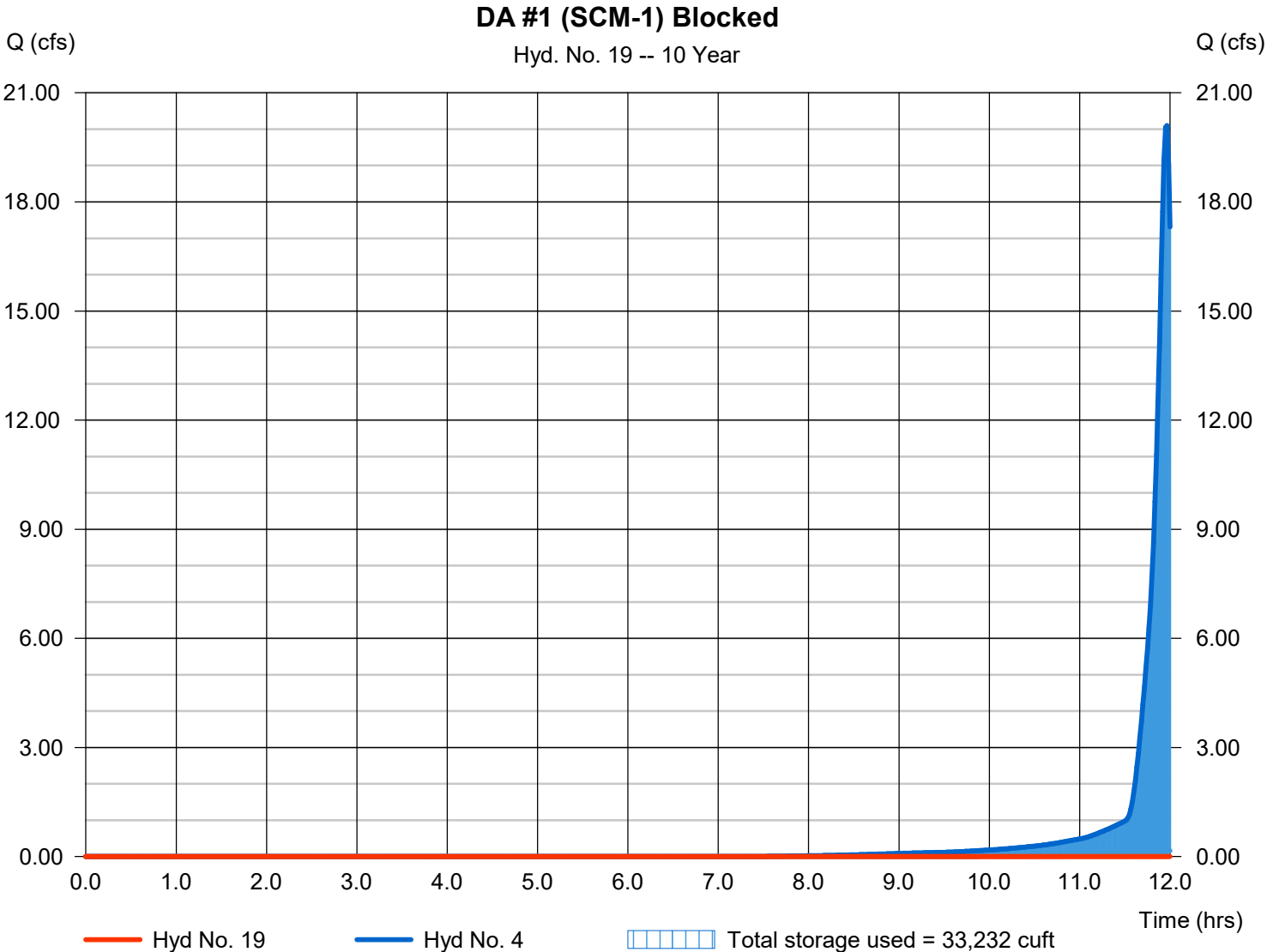
Hydrograph Report

Hyd. No. 19

DA #1 (SCM-1) Blocked

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.92 hrs
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 4 - Post DA #1 (SCM-1)	Max. Elevation	= 1083.78 ft
Reservoir name	= DA #1 (SCM-1) Blocked	Max. Storage	= 33,232 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

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	24.65	1	719	55,758	-----	-----	-----	Pre DA #1
2	SCS Runoff	35.35	1	718	72,230	-----	-----	-----	Post DA #1
4	SCS Runoff	25.54	1	717	52,679	-----	-----	-----	Post DA #1 (SCM-1)
5	SCS Runoff	0.339	1	717	809	-----	-----	-----	Post DA #1 (SCM-2)
6	SCS Runoff	0.339	1	717	809	-----	-----	-----	Post DA #1 (SCM-3)
7	SCS Runoff	0.339	1	717	809	-----	-----	-----	Post DA #1 (SCM-4)
8	SCS Runoff	9.282	1	718	18,723	-----	-----	-----	Post DA #1 (Undetained)
9	Combine	35.81	1	718	73,828	4, 5, 6, 7, 8	-----	-----	Combine Post DA #1 (No Controls)
11	Reservoir	1.013	1	789	22,618	4	1083.68	31,341	Route DA #1 (SCM-1)
12	Reservoir	0.011	1	815	731	5	1101.21	526	Route DA#1 (SCM-2)
13	Reservoir	0.011	1	815	731	6	1099.21	526	Route DA#1 (SCM-3)
14	Reservoir	0.011	1	815	731	7	1097.21	526	Route DA#1 (SCM-4)
15	Combine	0.034	1	815	2,192	12, 13, 14	-----	-----	Combine (SCM-2, 3, & 4)
16	Reach	0.033	1	831	2,085	15	-----	-----	Reach DA #1 (SCM-2, 3, & 4)
17	Combine	9.307	1	718	43,425	8, 11, 16	-----	-----	Combine DA #1
19	Reservoir	0.000	1	691	0	4	1084.32	44,445	DA #1 (SCM-1) Blocked
250401-Newcastle DA 1.gpw					Return Period: 25 Year			Friday, 04 / 11 / 2025	

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

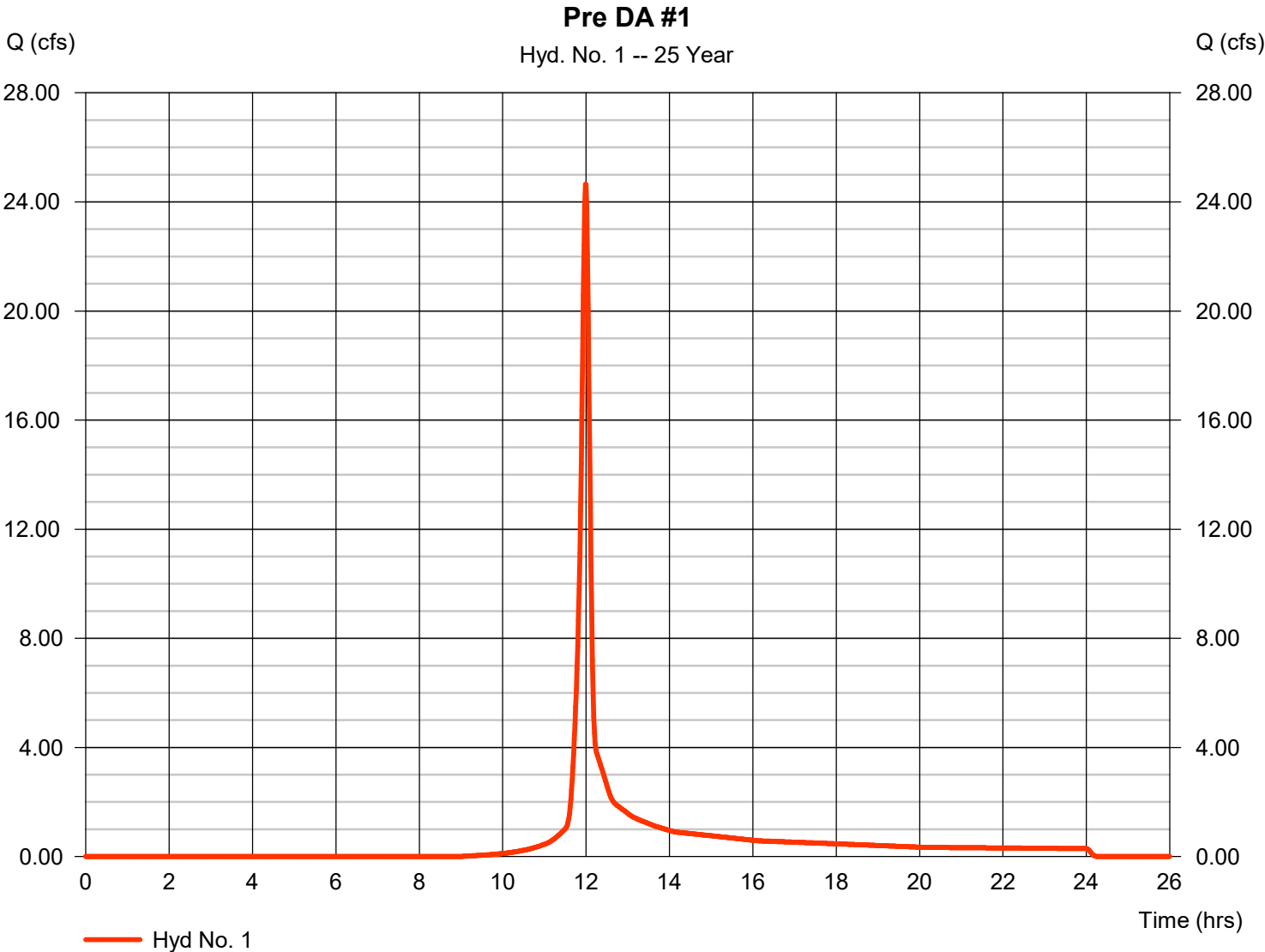
Friday, 04 / 11 / 2025

Hyd. No. 1

Pre DA #1

Hydrograph type	= SCS Runoff	Peak discharge	= 24.65 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.98 hrs
Time interval	= 1 min	Hyd. volume	= 55,758 cuft
Drainage area	= 8.280 ac	Curve number	= 78*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.80 min
Total precip.	= 3.96 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.930 x 77) + (7.348 x 78) + (0.001 x 98)] / 8.280



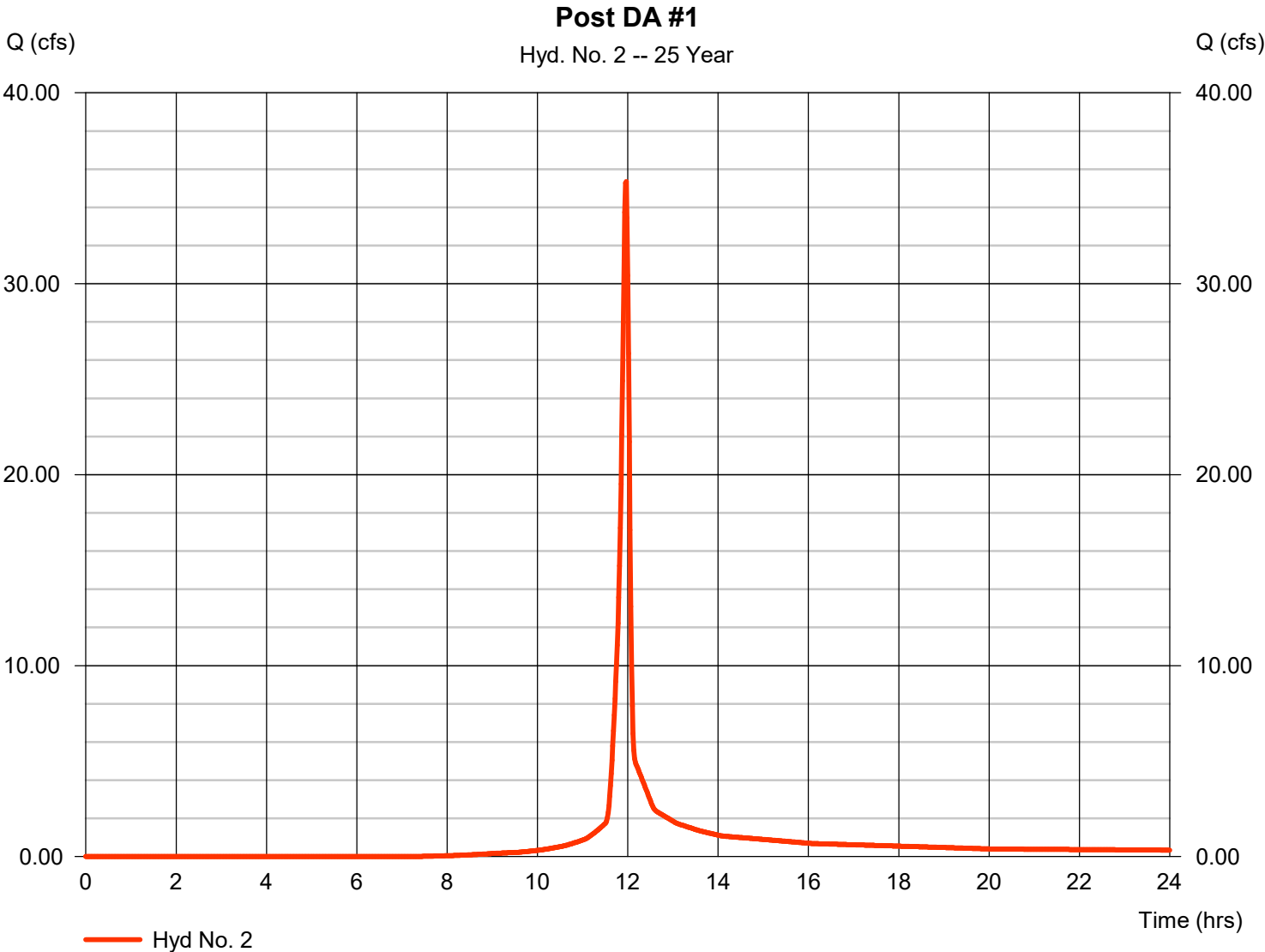
Hydrograph Report

Hyd. No. 2

Post DA #1

Hydrograph type	= SCS Runoff	Peak discharge	= 35.35 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.97 hrs
Time interval	= 1 min	Hyd. volume	= 72,230 cuft
Drainage area	= 8.570 ac	Curve number	= 83*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.96 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(2.419 x 78) + (4.258 x 80) + (1.896 x 98)] / 8.570



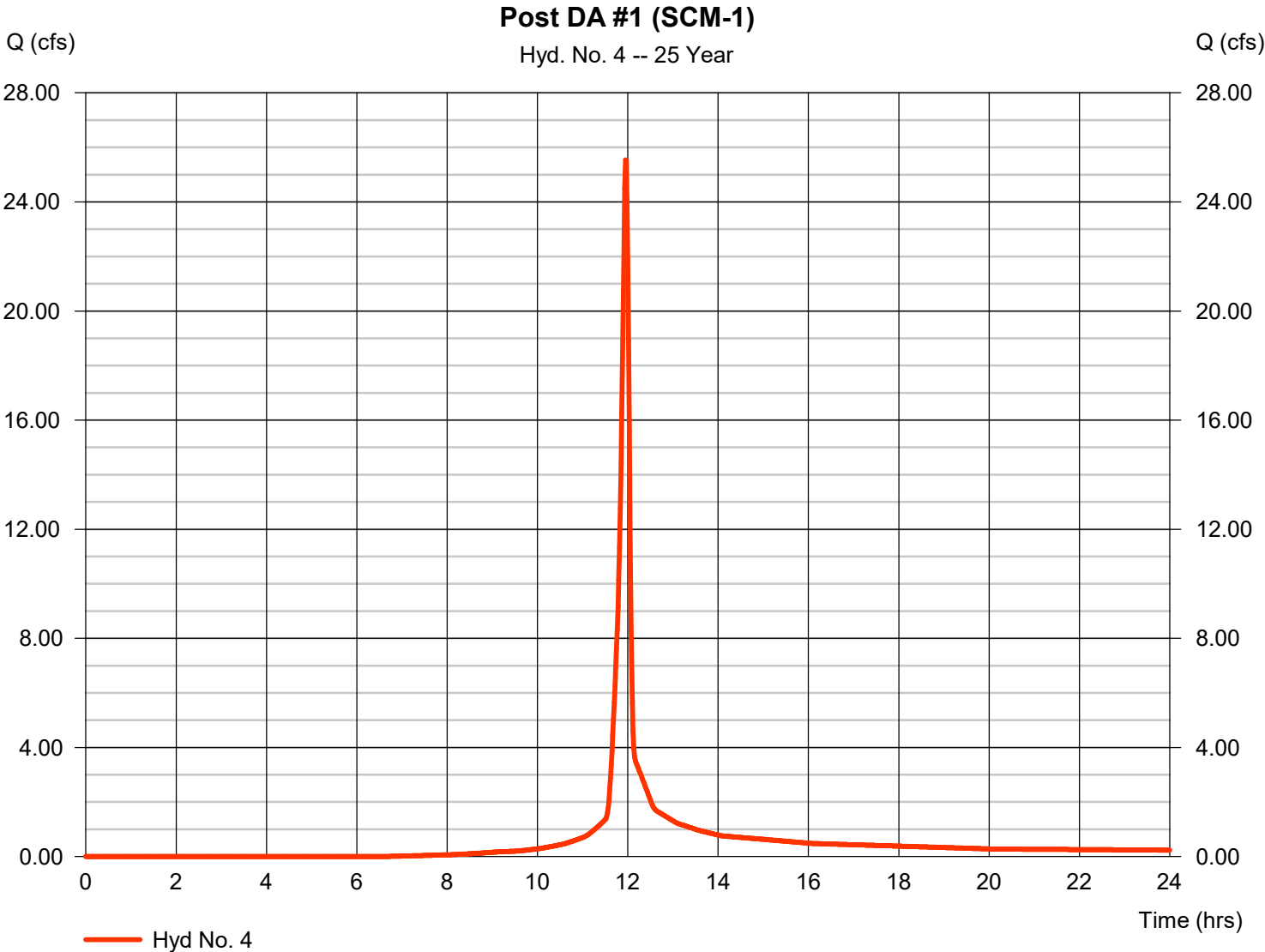
Hydrograph Report

Hyd. No. 4

Post DA #1 (SCM-1)

Hydrograph type	= SCS Runoff	Peak discharge	= 25.54 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 52,679 cuft
Drainage area	= 5.810 ac	Curve number	= 85*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.96 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.667 x 78) + (3.523 x 80) + (1.615 x 98)] / 5.810

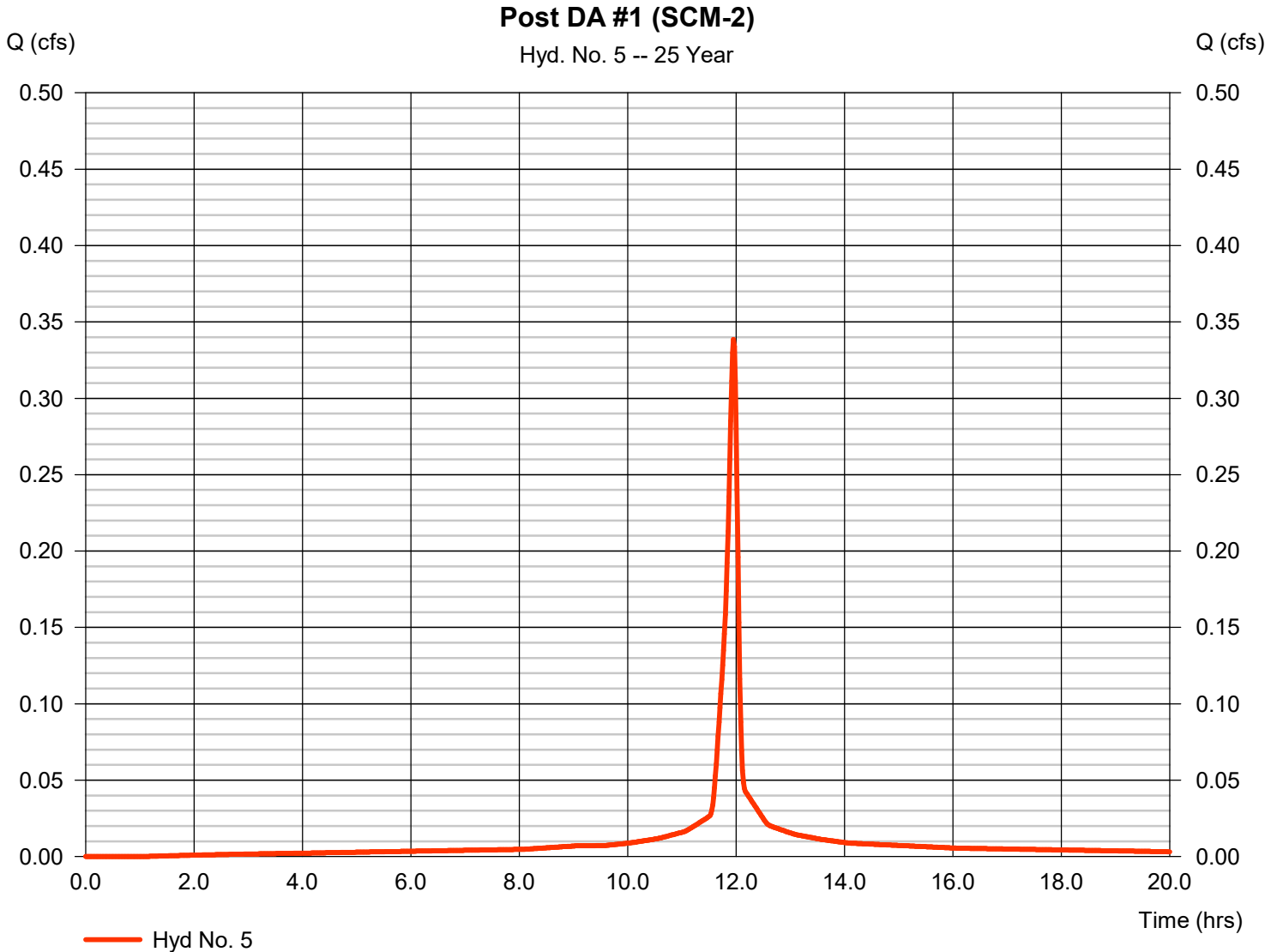


Hydrograph Report

Hyd. No. 5

Post DA #1 (SCM-2)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.339 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 809 cuft
Drainage area	= 0.058 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.96 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

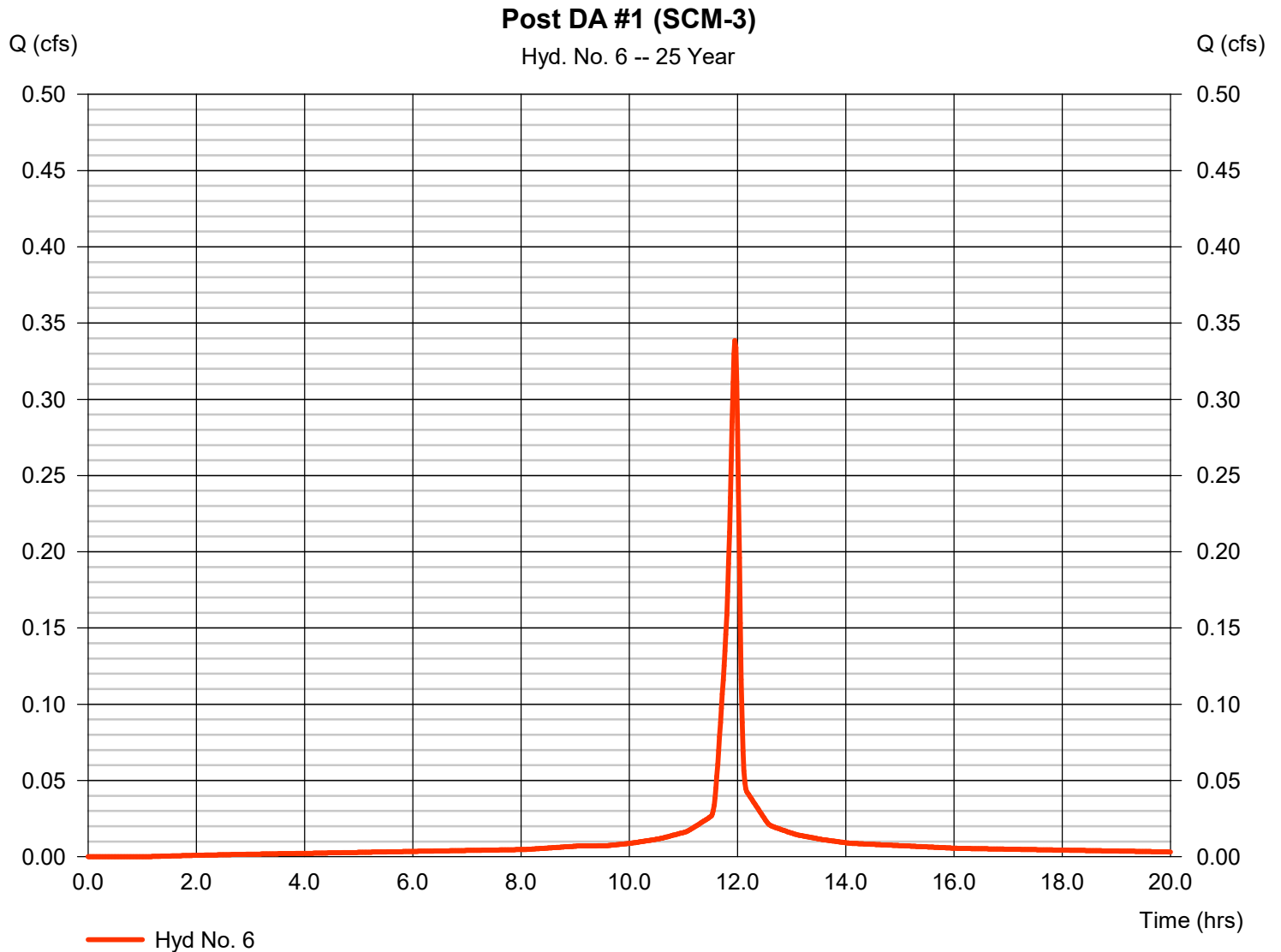
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Friday, 04 / 11 / 2025

Hyd. No. 6

Post DA #1 (SCM-3)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.339 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 809 cuft
Drainage area	= 0.058 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.96 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

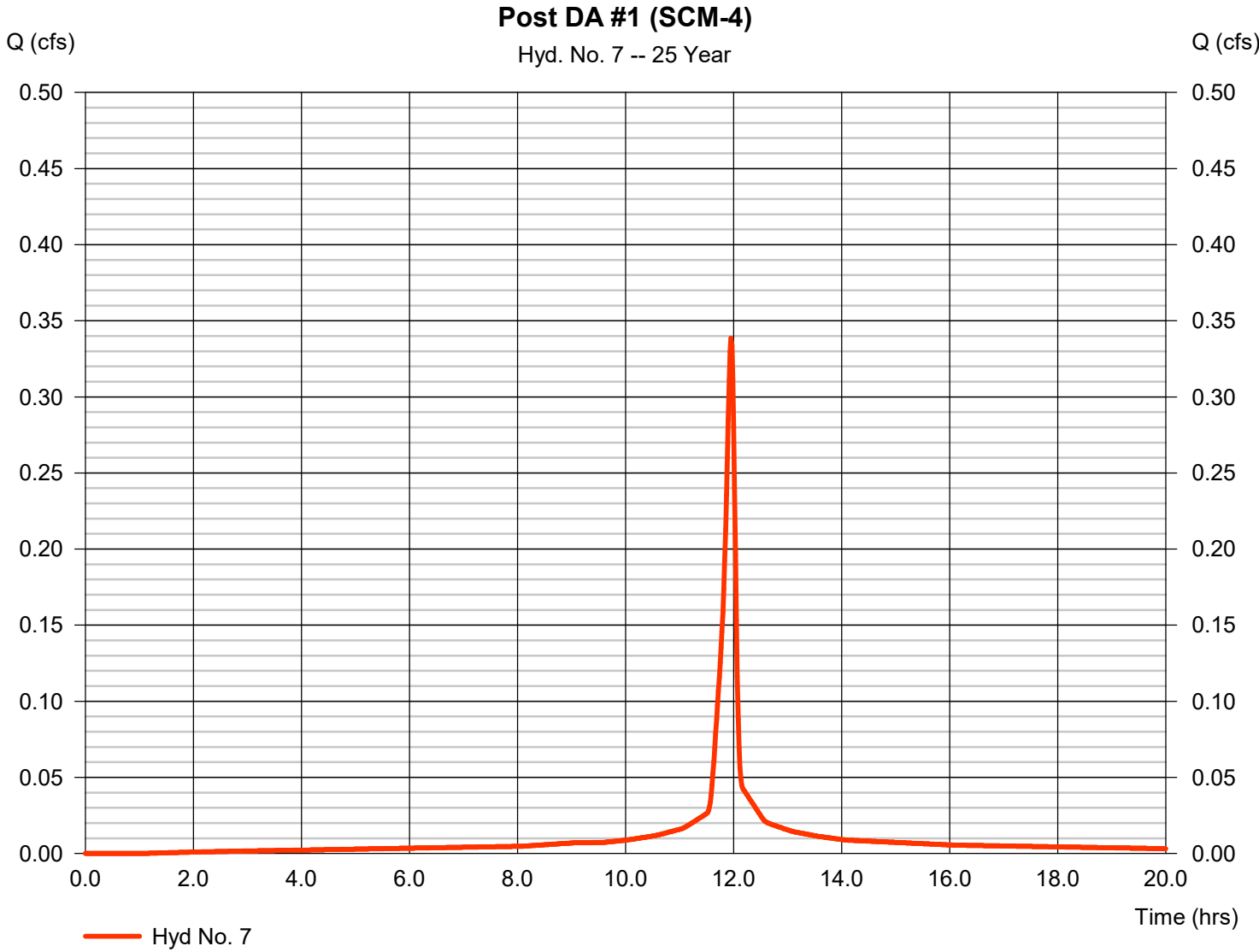


Hydrograph Report

Hyd. No. 7

Post DA #1 (SCM-4)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.339 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 809 cuft
Drainage area	= 0.058 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.96 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

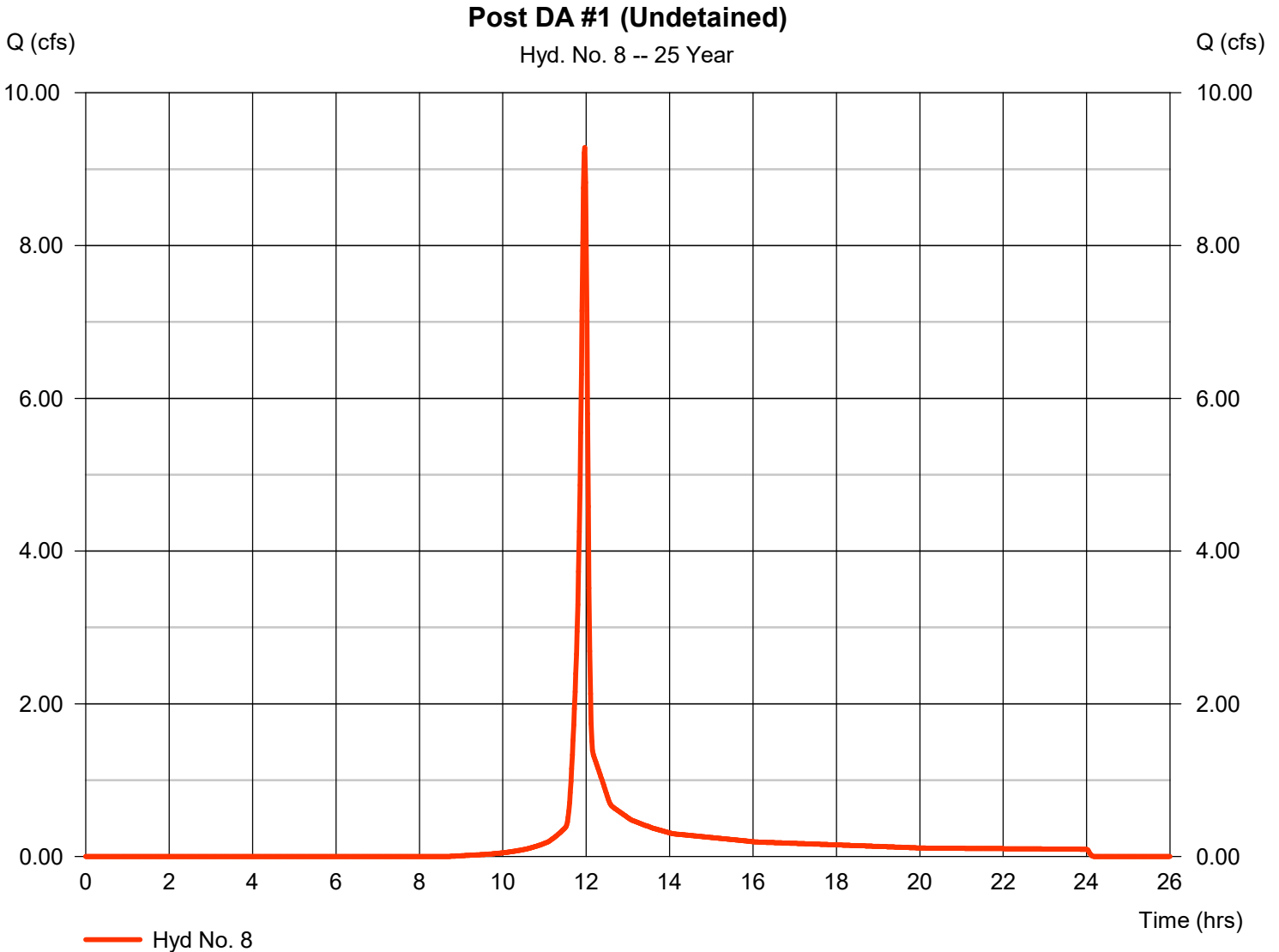
Friday, 04 / 11 / 2025

Hyd. No. 8

Post DA #1 (Undetained)

Hydrograph type	= SCS Runoff	Peak discharge	= 9.282 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.97 hrs
Time interval	= 1 min	Hyd. volume	= 18,723 cuft
Drainage area	= 2.590 ac	Curve number	= 79*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.96 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.752 x 78) + (0.735 x 80) + (0.107 x 98)] / 2.590



Hydrograph Report

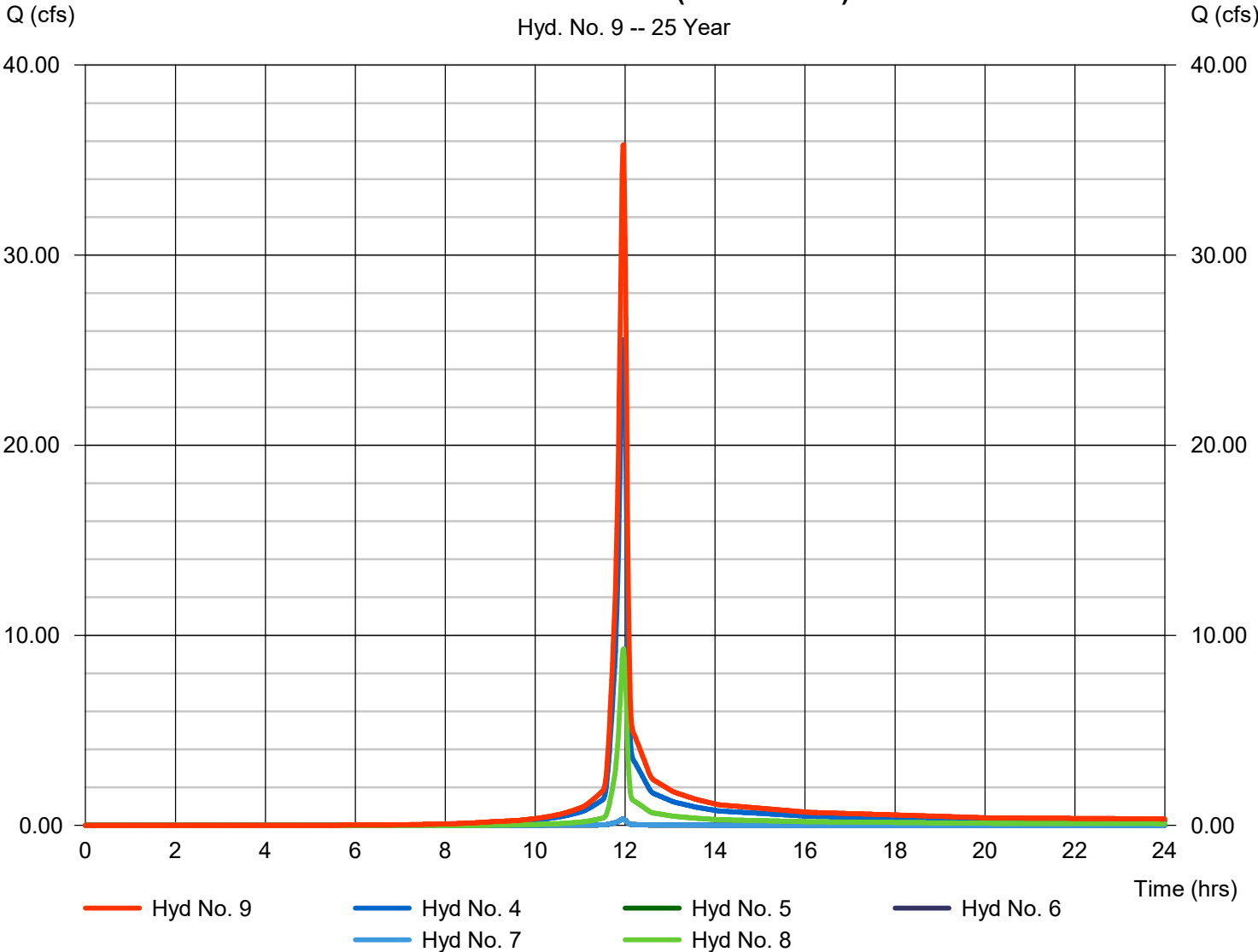
Hyd. No. 9

Combine Post DA #1 (No Controls)

Hydrograph type	= Combine	Peak discharge	= 35.81 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.97 hrs
Time interval	= 1 min	Hyd. volume	= 73,828 cuft
Inflow hyds.	= 4, 5, 6, 7, 8	Contrib. drain. area	= 8.574 ac

Combine Post DA #1 (No Controls)

Hyd. No. 9 -- 25 Year



Hydrograph Report

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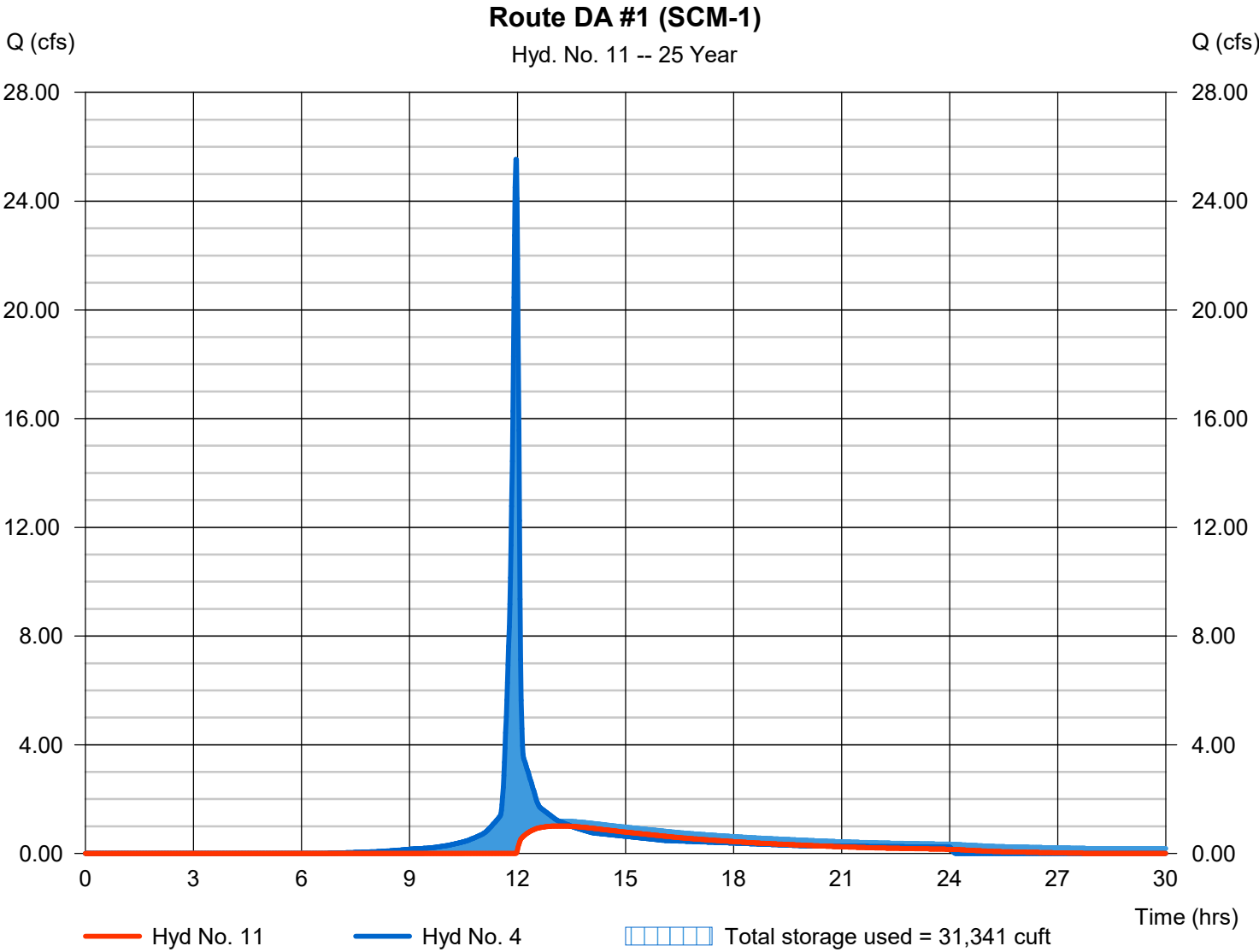
Friday, 04 / 11 / 2025

Hyd. No. 11

Route DA #1 (SCM-1)

Hydrograph type	= Reservoir	Peak discharge	= 1.013 cfs
Storm frequency	= 25 yrs	Time to peak	= 13.15 hrs
Time interval	= 1 min	Hyd. volume	= 22,618 cuft
Inflow hyd. No.	= 4 - Post DA #1 (SCM-1)	Max. Elevation	= 1083.68 ft
Reservoir name	= DA #1 (SCM-1)	Max. Storage	= 31,341 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

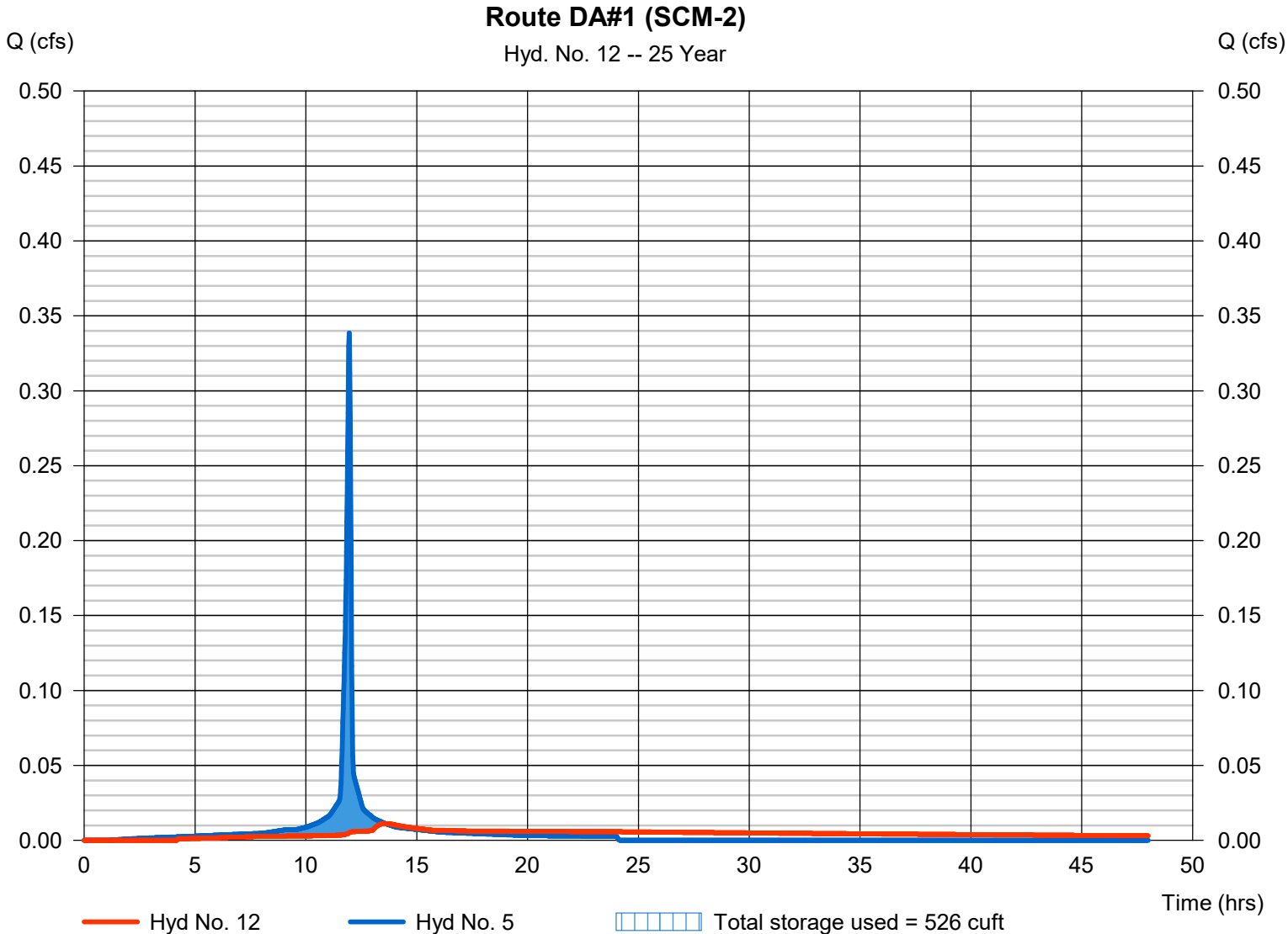
Friday, 04 / 11 / 2025

Hyd. No. 12

Route DA#1 (SCM-2)

Hydrograph type	= Reservoir	Peak discharge	= 0.011 cfs
Storm frequency	= 25 yrs	Time to peak	= 13.58 hrs
Time interval	= 1 min	Hyd. volume	= 731 cuft
Inflow hyd. No.	= 5 - Post DA #1 (SCM-2)	Max. Elevation	= 1101.21 ft
Reservoir name	= DA #1 (SCM-2)	Max. Storage	= 526 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

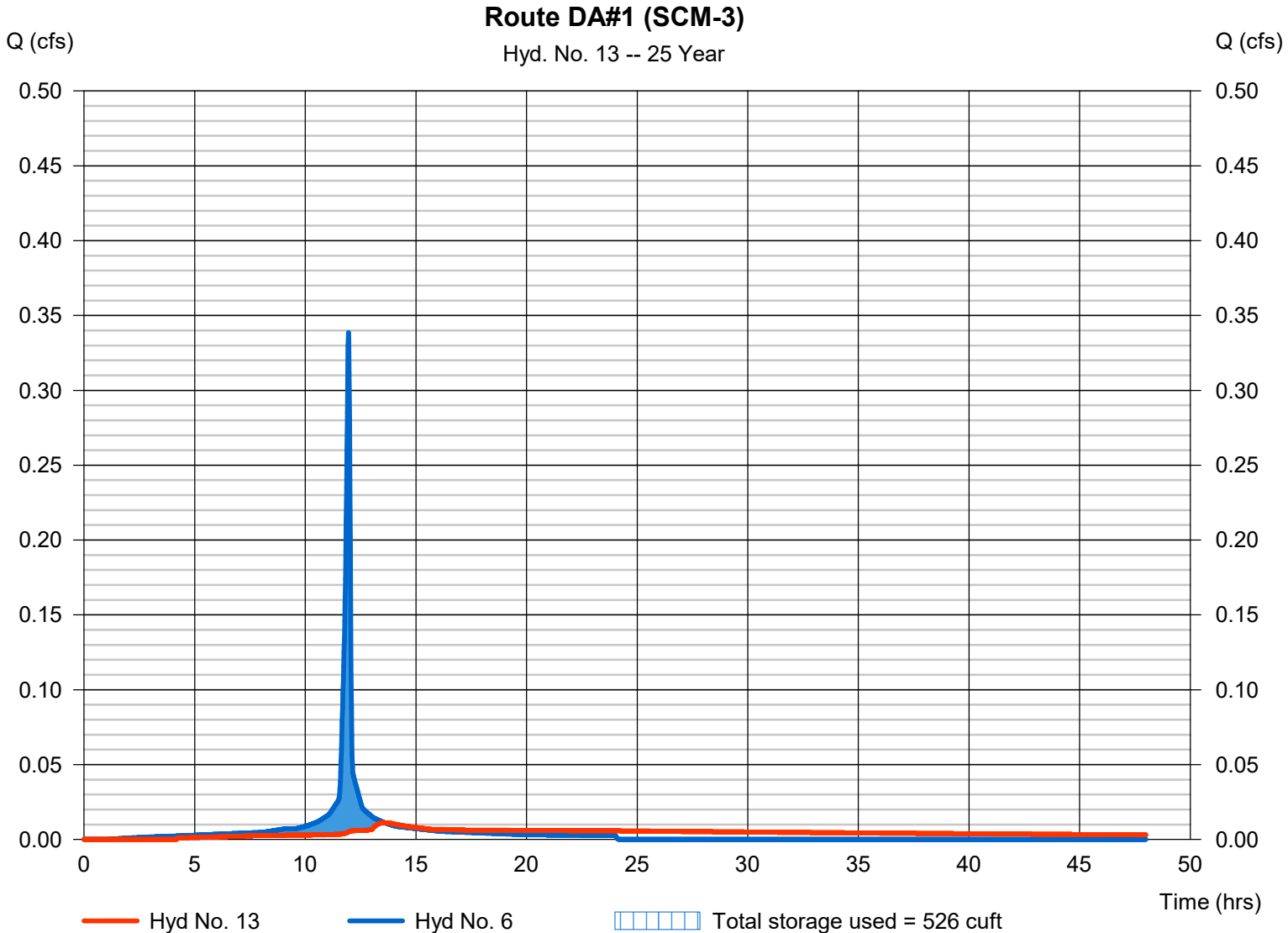
Friday, 04 / 11 / 2025

Hyd. No. 13

Route DA#1 (SCM-3)

Hydrograph type	= Reservoir	Peak discharge	= 0.011 cfs
Storm frequency	= 25 yrs	Time to peak	= 13.58 hrs
Time interval	= 1 min	Hyd. volume	= 731 cuft
Inflow hyd. No.	= 6 - Post DA #1 (SCM-3)	Max. Elevation	= 1099.21 ft
Reservoir name	= DA #1 (SCM-3)	Max. Storage	= 526 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

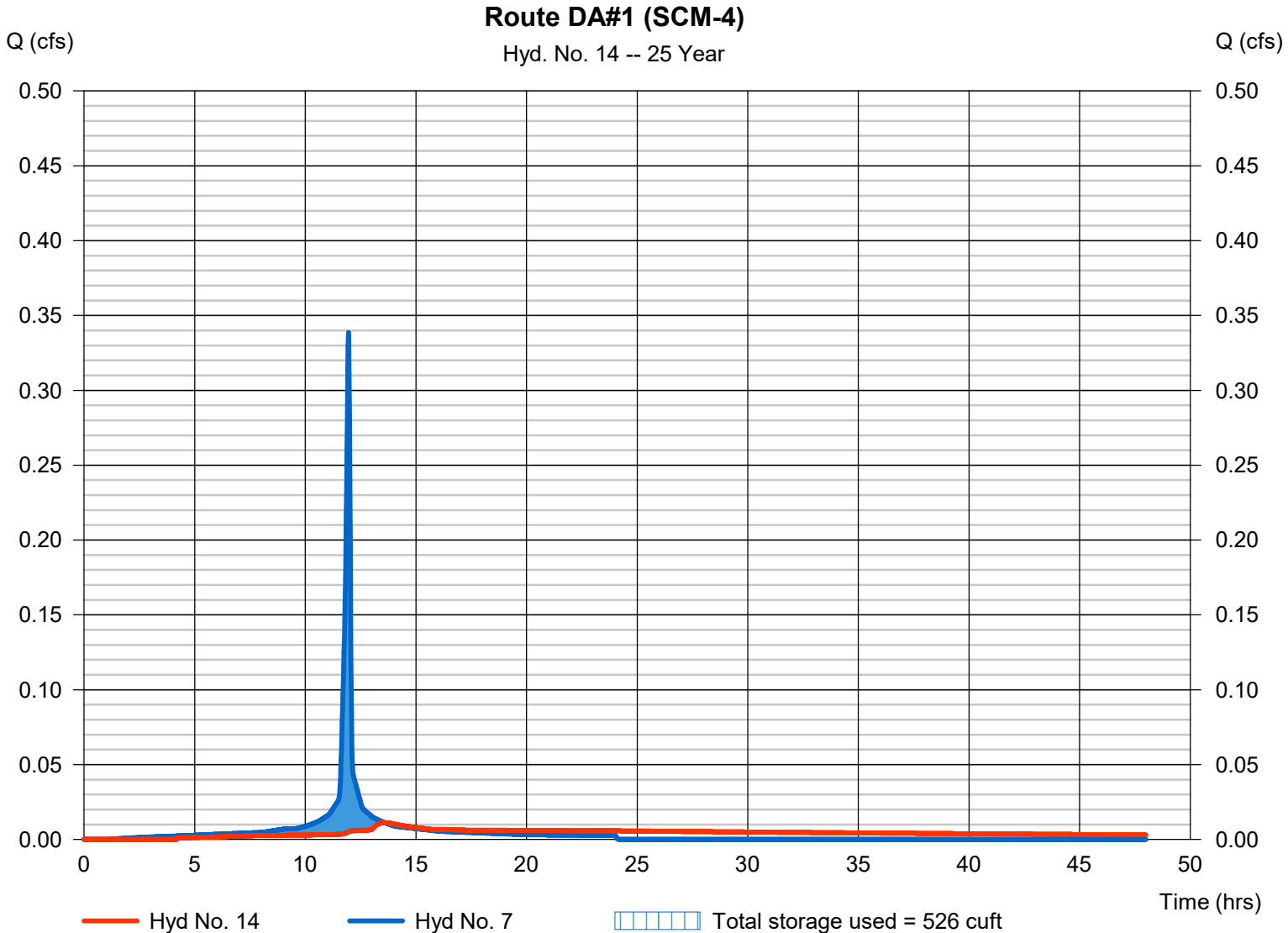
Friday, 04 / 11 / 2025

Hyd. No. 14

Route DA#1 (SCM-4)

Hydrograph type	= Reservoir	Peak discharge	= 0.011 cfs
Storm frequency	= 25 yrs	Time to peak	= 13.58 hrs
Time interval	= 1 min	Hyd. volume	= 731 cuft
Inflow hyd. No.	= 7 - Post DA #1 (SCM-4)	Max. Elevation	= 1097.21 ft
Reservoir name	= DA #1 (SCM-4)	Max. Storage	= 526 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

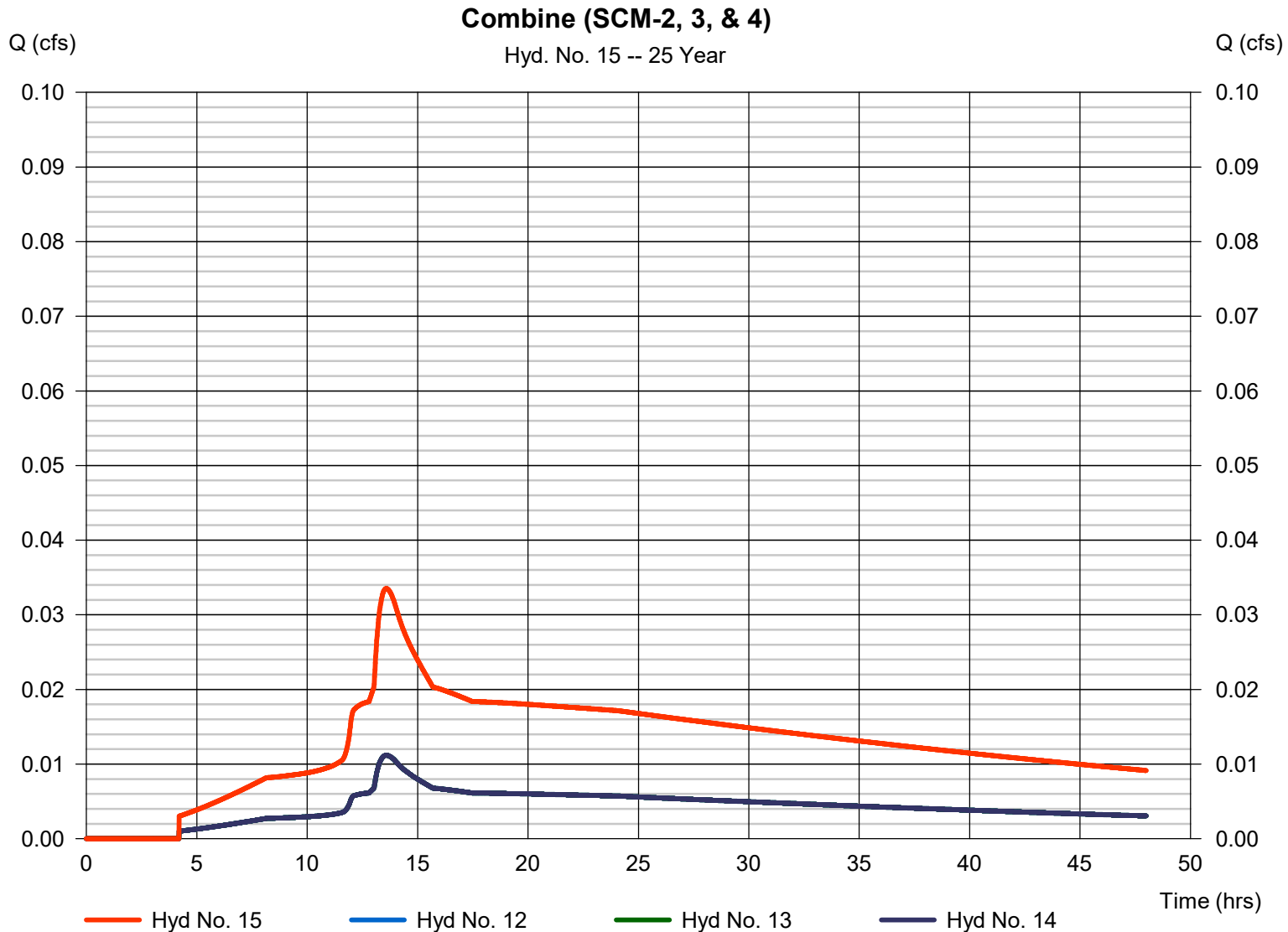
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Friday, 04 / 11 / 2025

Hyd. No. 15

Combine (SCM-2, 3, & 4)

Hydrograph type	= Combine	Peak discharge	= 0.034 cfs
Storm frequency	= 25 yrs	Time to peak	= 13.58 hrs
Time interval	= 1 min	Hyd. volume	= 2,192 cuft
Inflow hyds.	= 12, 13, 14	Contrib. drain. area	= 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

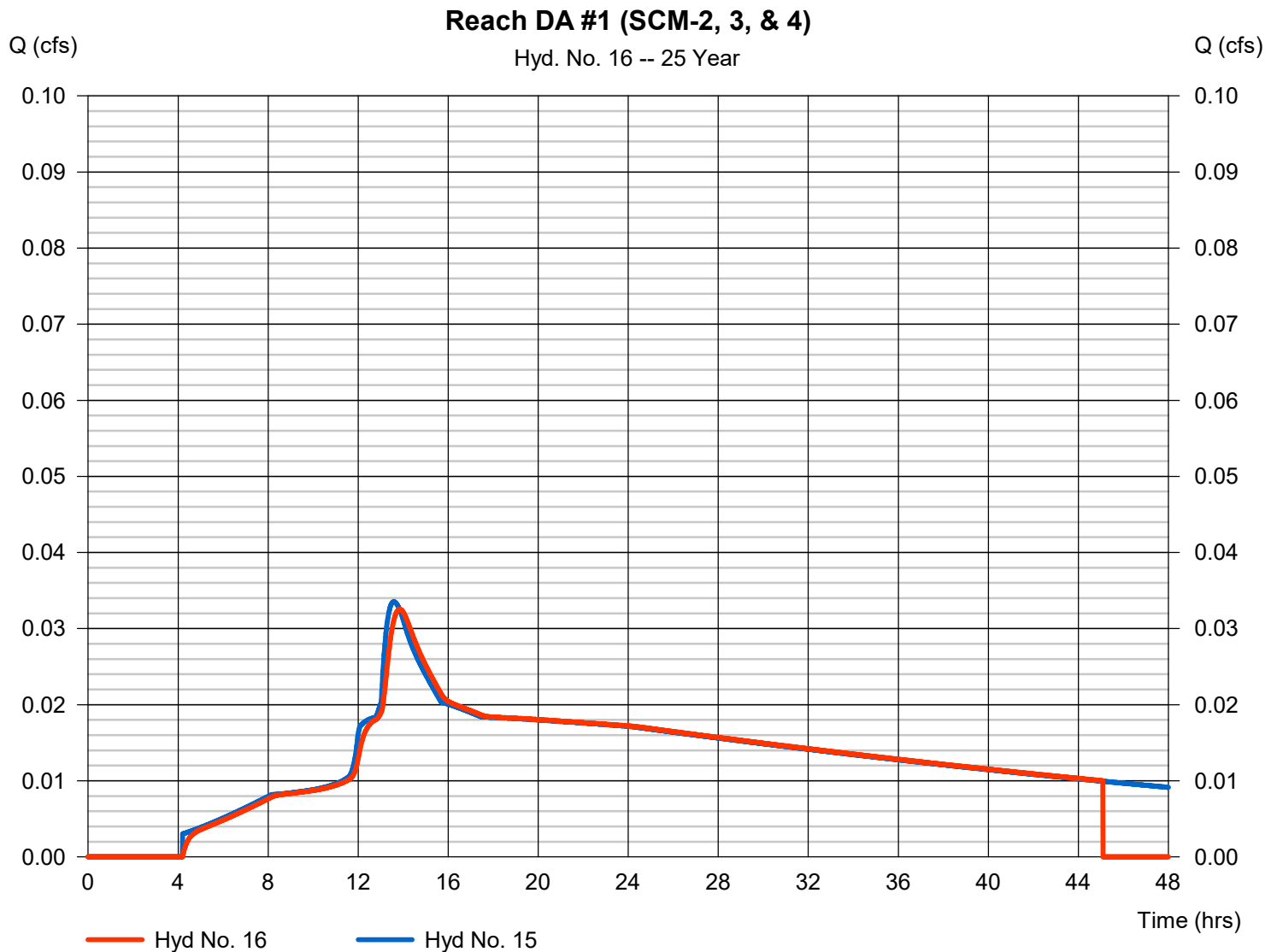
Friday, 04 / 11 / 2025

Hyd. No. 16

Reach DA #1 (SCM-2, 3, & 4)

Hydrograph type	= Reach	Peak discharge	= 0.033 cfs
Storm frequency	= 25 yrs	Time to peak	= 13.85 hrs
Time interval	= 1 min	Hyd. volume	= 2,085 cuft
Inflow hyd. No.	= 15 - Combine (SCM-2, 3, & 4)	Section type	= Trapezoidal
Reach length	= 900.0 ft	Channel slope	= 1.3 %
Manning's n	= 0.025	Bottom width	= 4.0 ft
Side slope	= 2.0:1	Max. depth	= 2.0 ft
Rating curve x	= 2.643	Rating curve m	= 1.307
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.0793

Modified Att-Kin routing method used.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

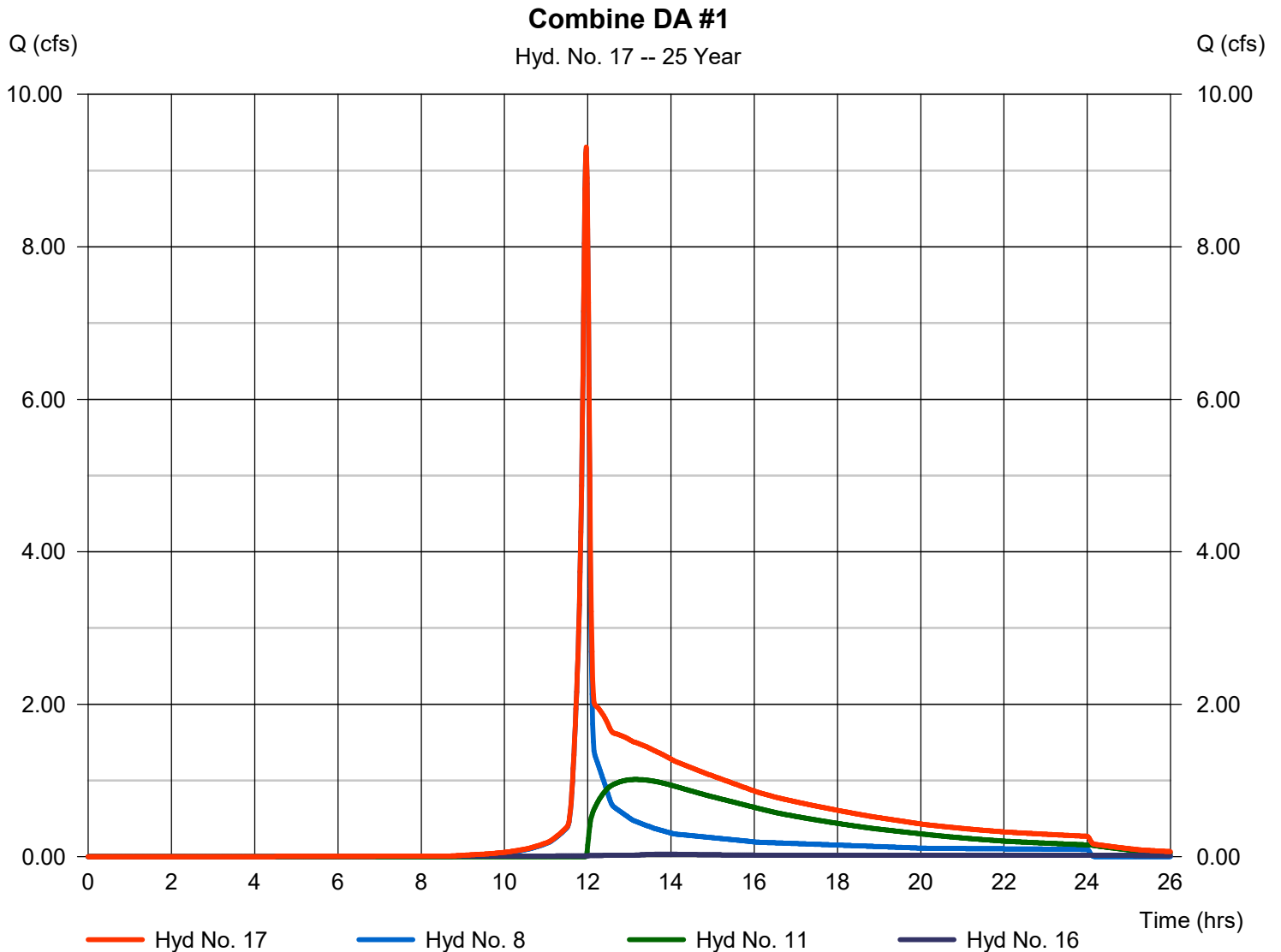
Friday, 04 / 11 / 2025

Hyd. No. 17

Combine DA #1

Hydrograph type = Combine
Storm frequency = 25 yrs
Time interval = 1 min
Inflow hyds. = 8, 11, 16

Peak discharge = 9.307 cfs
Time to peak = 11.97 hrs
Hyd. volume = 43,425 cuft
Contrib. drain. area = 2.590 ac



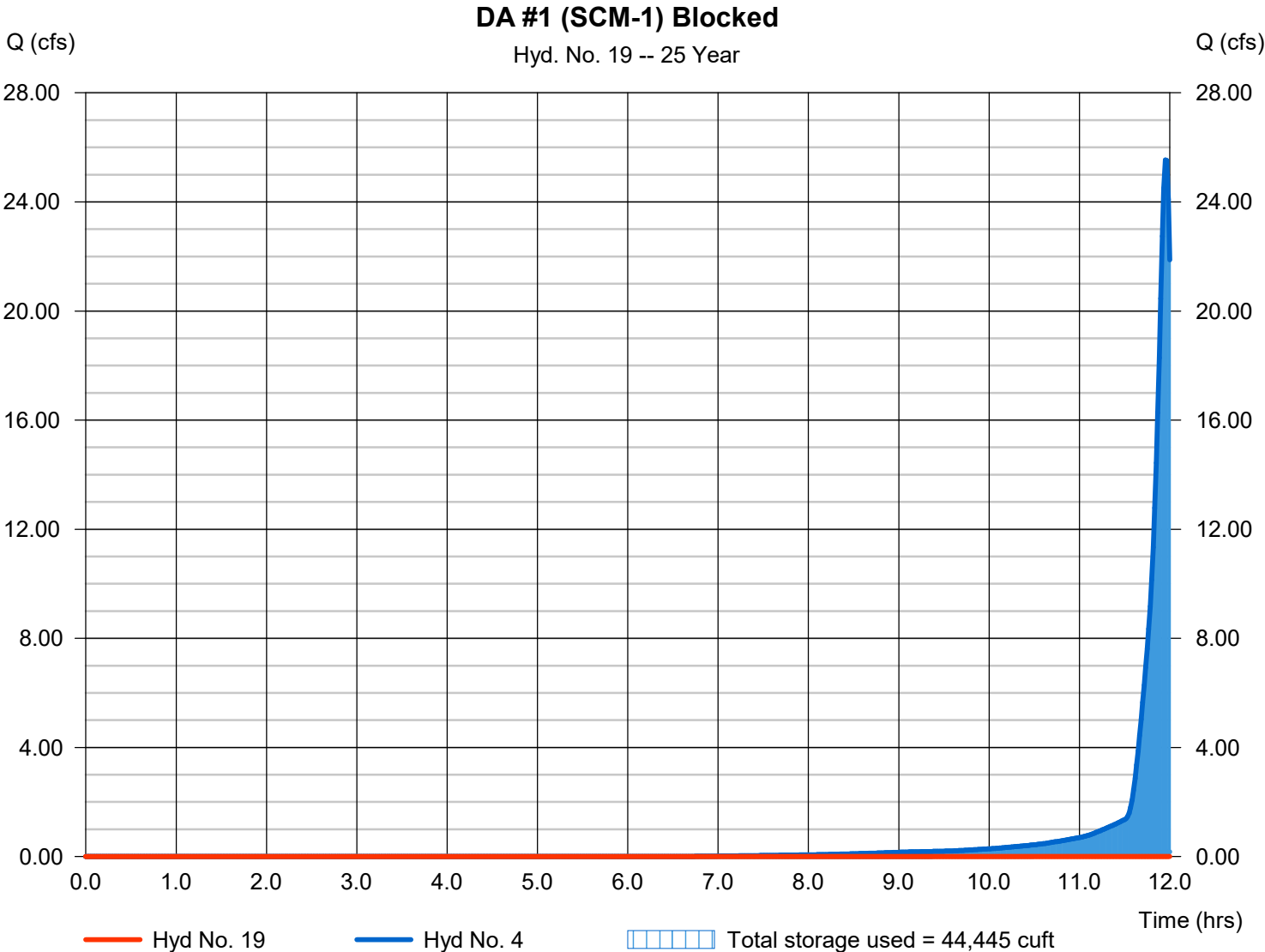
Hydrograph Report

Hyd. No. 19

DA #1 (SCM-1) Blocked

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.52 hrs
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 4 - Post DA #1 (SCM-1)	Max. Elevation	= 1084.32 ft
Reservoir name	= DA #1 (SCM-1) Blocked	Max. Storage	= 44,445 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

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	30.02	1	719	67,923	-----	-----	-----	Pre DA #1
2	SCS Runoff	41.91	1	717	86,300	-----	-----	-----	Post DA #1
4	SCS Runoff	30.08	1	717	62,480	-----	-----	-----	Post DA #1 (SCM-1)
5	SCS Runoff	0.382	1	717	917	-----	-----	-----	Post DA #1 (SCM-2)
6	SCS Runoff	0.382	1	717	917	-----	-----	-----	Post DA #1 (SCM-3)
7	SCS Runoff	0.382	1	717	917	-----	-----	-----	Post DA #1 (SCM-4)
8	SCS Runoff	11.20	1	718	22,716	-----	-----	-----	Post DA #1 (Undetained)
9	Combine	42.38	1	717	87,947	4, 5, 6, 7, 8	-----	-----	Combine Post DA #1 (No Controls)
11	Reservoir	1.672	1	763	31,975	4	1083.92	35,885	Route DA #1 (SCM-1)
12	Reservoir	0.033	1	745	833	5	1101.28	541	Route DA#1 (SCM-2)
13	Reservoir	0.033	1	745	833	6	1099.28	541	Route DA#1 (SCM-3)
14	Reservoir	0.033	1	745	833	7	1097.28	541	Route DA#1 (SCM-4)
15	Combine	0.100	1	745	2,498	12, 13, 14	-----	-----	Combine (SCM-2, 3, & 4)
16	Reach	0.087	1	755	2,409	15	-----	-----	Reach DA #1 (SCM-2, 3, & 4)
17	Combine	11.51	1	718	57,100	8, 11, 16	-----	-----	Combine DA #1
19	Reservoir	0.000	1	705	0	4	1084.77	53,874	DA #1 (SCM-1) Blocked

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

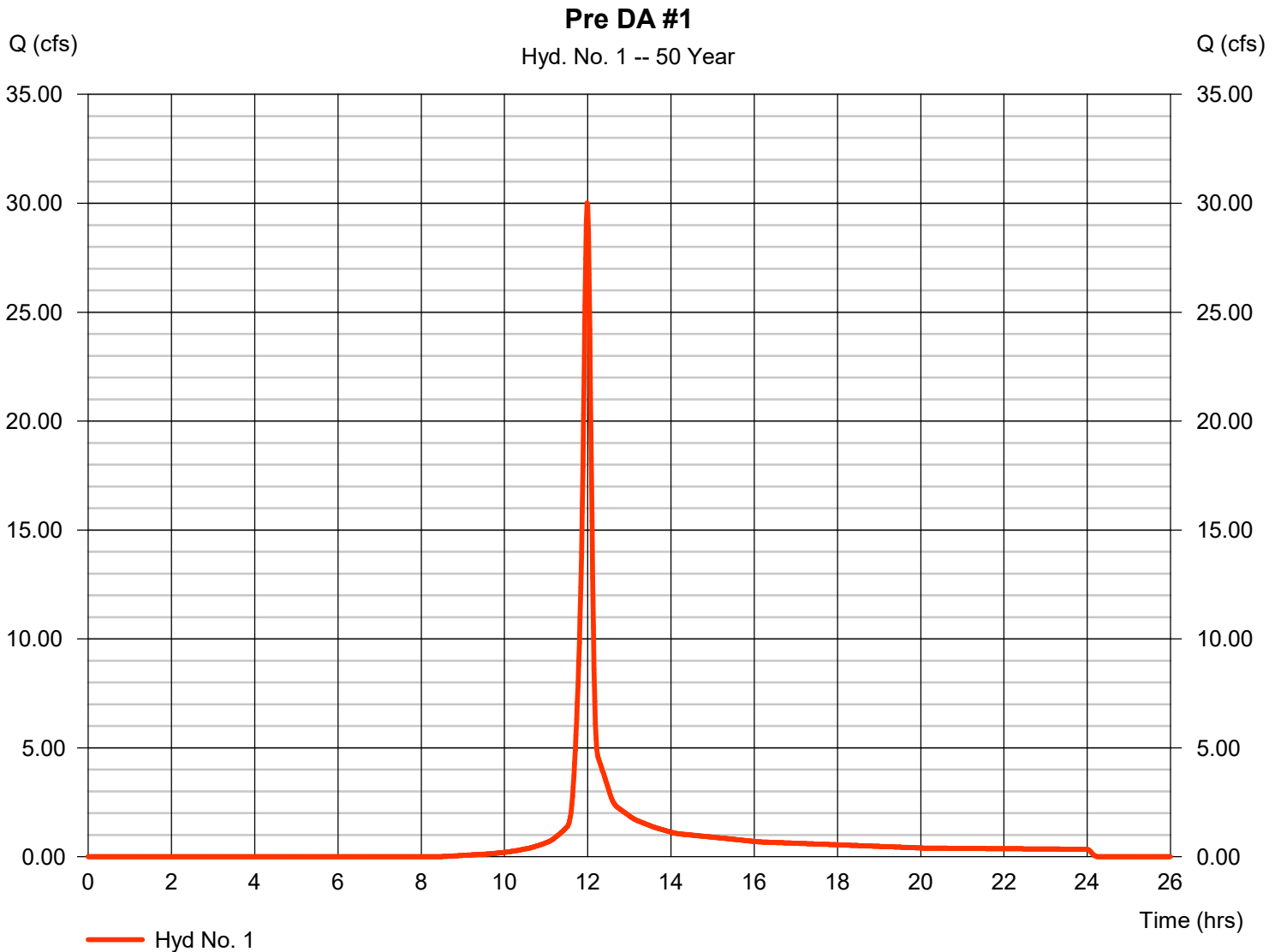
Friday, 04 / 11 / 2025

Hyd. No. 1

Pre DA #1

Hydrograph type	= SCS Runoff	Peak discharge	= 30.02 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.98 hrs
Time interval	= 1 min	Hyd. volume	= 67,923 cuft
Drainage area	= 8.280 ac	Curve number	= 78*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.80 min
Total precip.	= 4.46 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.930 x 77) + (7.348 x 78) + (0.001 x 98)] / 8.280



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

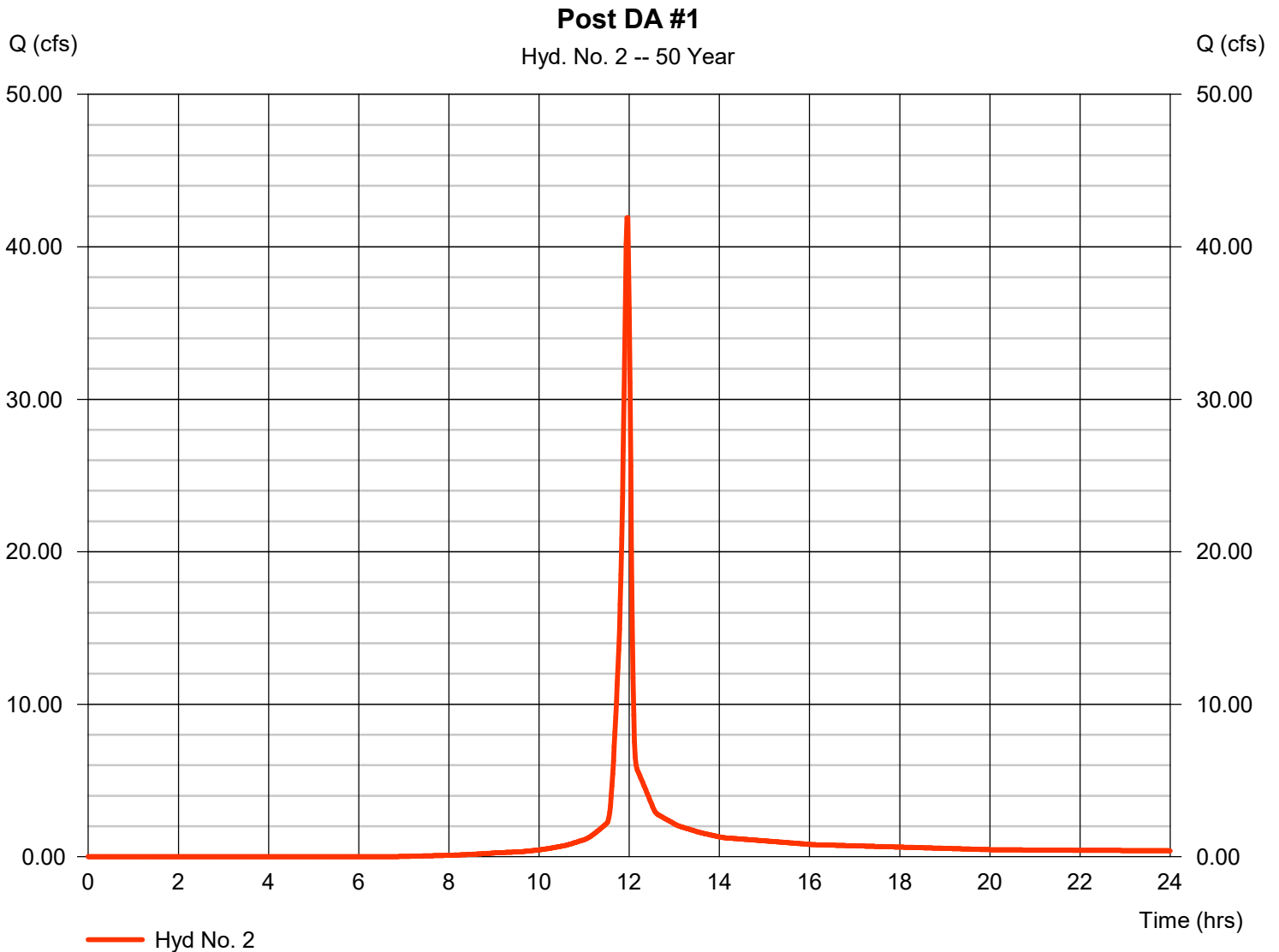
Friday, 04 / 11 / 2025

Hyd. No. 2

Post DA #1

Hydrograph type	= SCS Runoff	Peak discharge	= 41.91 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 86,300 cuft
Drainage area	= 8.570 ac	Curve number	= 83*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.46 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(2.419 x 78) + (4.258 x 80) + (1.896 x 98)] / 8.570



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

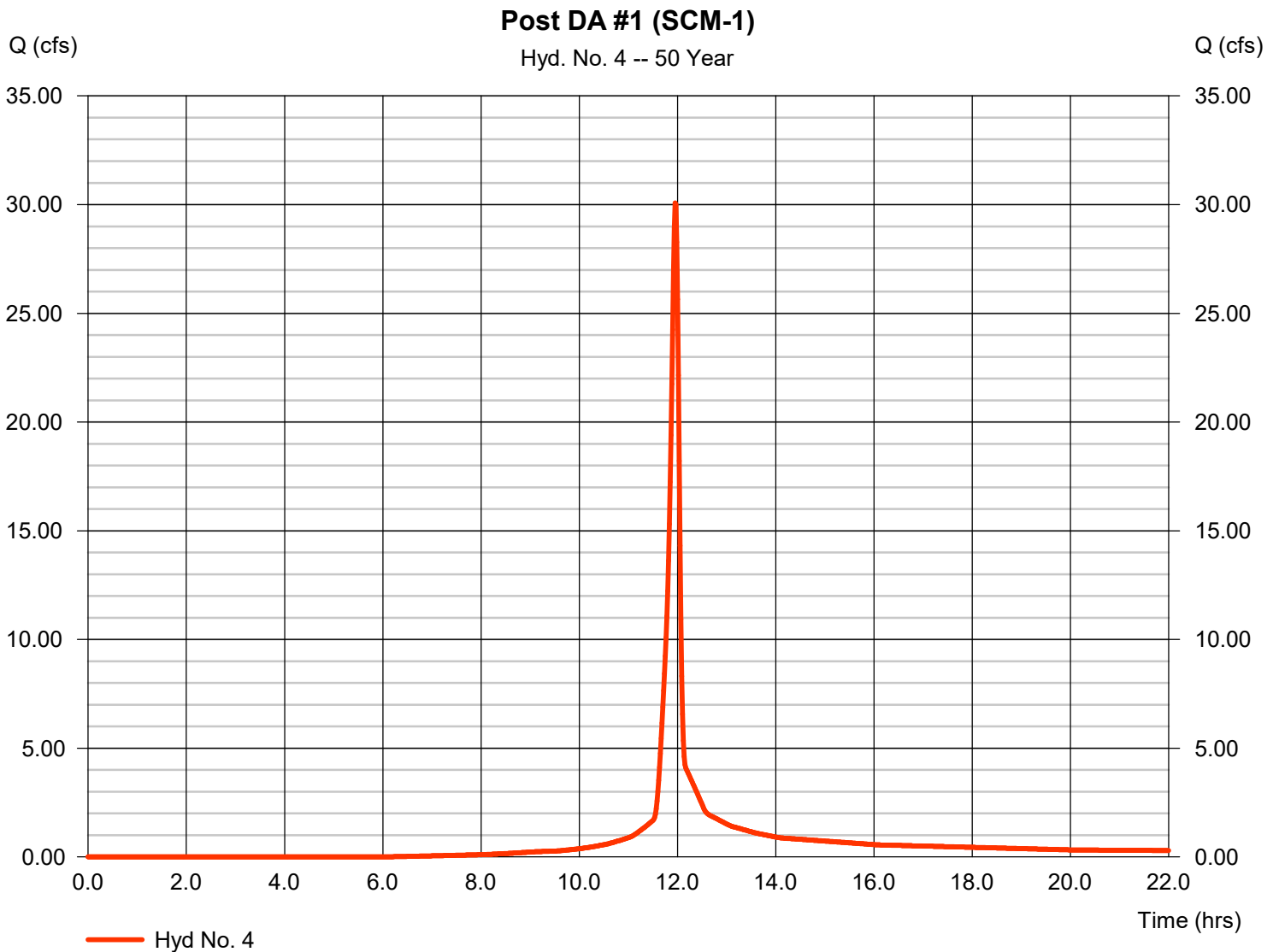
Friday, 04 / 11 / 2025

Hyd. No. 4

Post DA #1 (SCM-1)

Hydrograph type	= SCS Runoff	Peak discharge	= 30.08 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 62,480 cuft
Drainage area	= 5.810 ac	Curve number	= 85*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.46 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.667 x 78) + (3.523 x 80) + (1.615 x 98)] / 5.810



Hydrograph Report

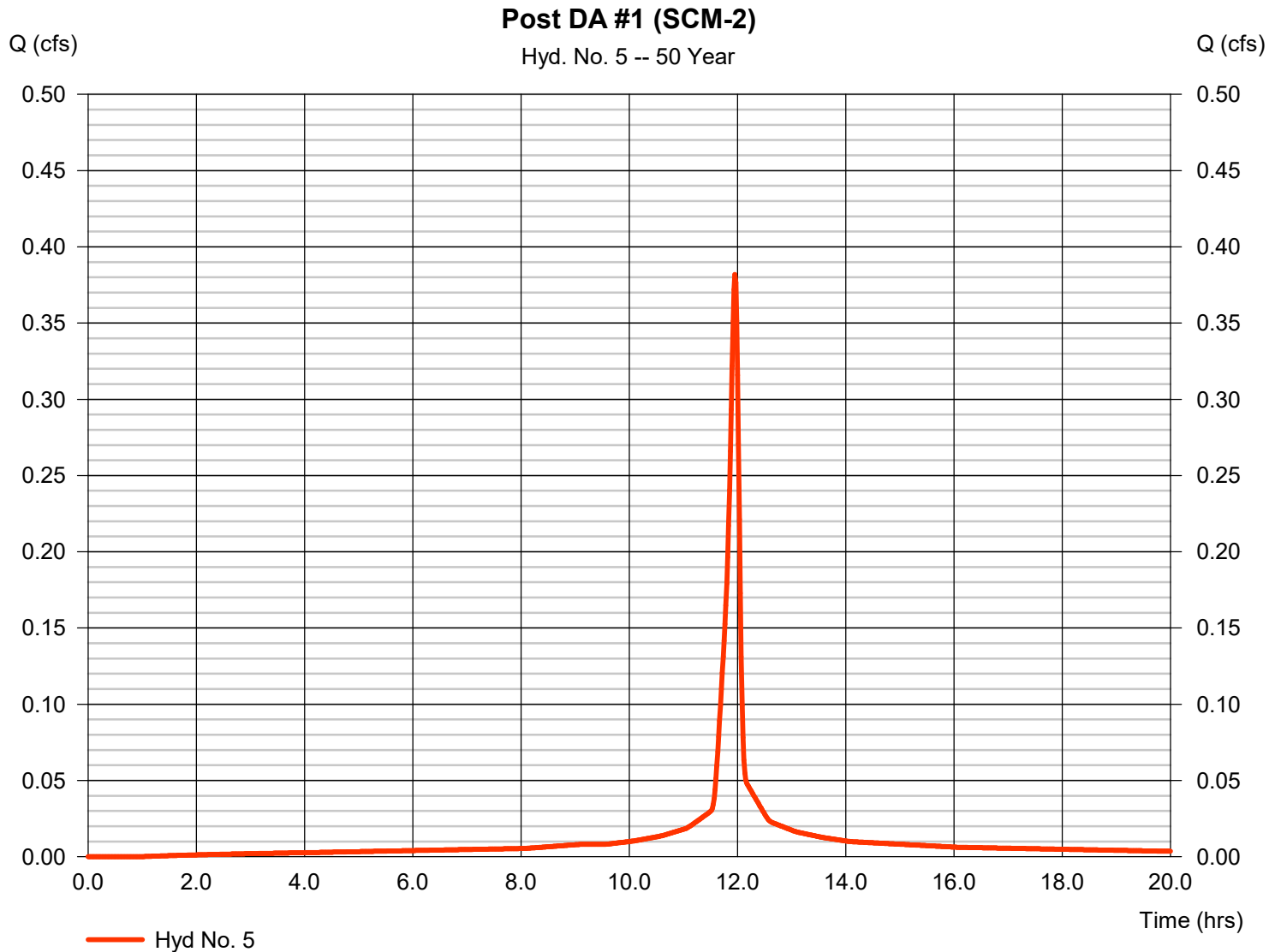
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Friday, 04 / 11 / 2025

Hyd. No. 5

Post DA #1 (SCM-2)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.382 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 917 cuft
Drainage area	= 0.058 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.46 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

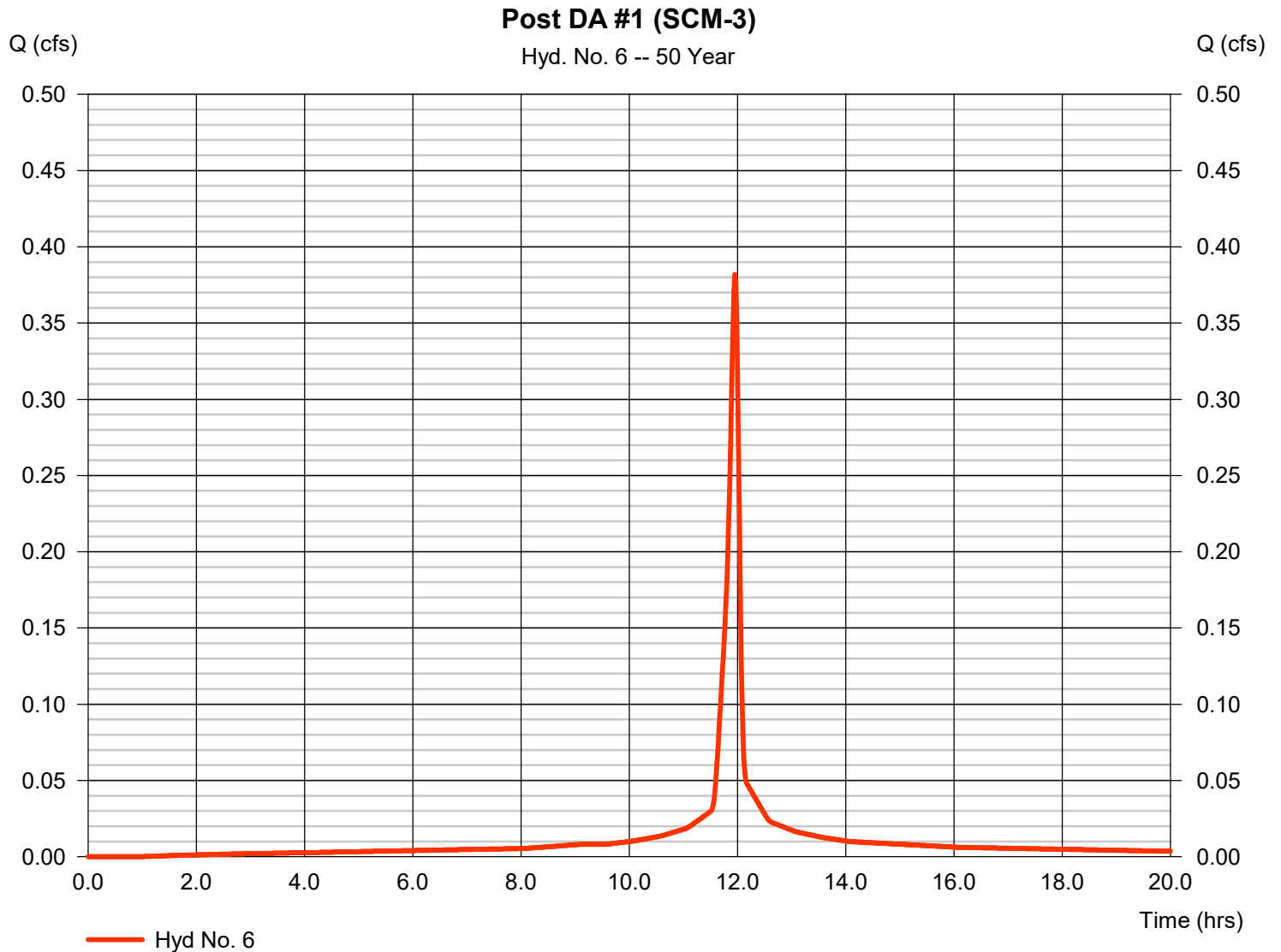
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Friday, 04 / 11 / 2025

Hyd. No. 6

Post DA #1 (SCM-3)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.382 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 917 cuft
Drainage area	= 0.058 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.46 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

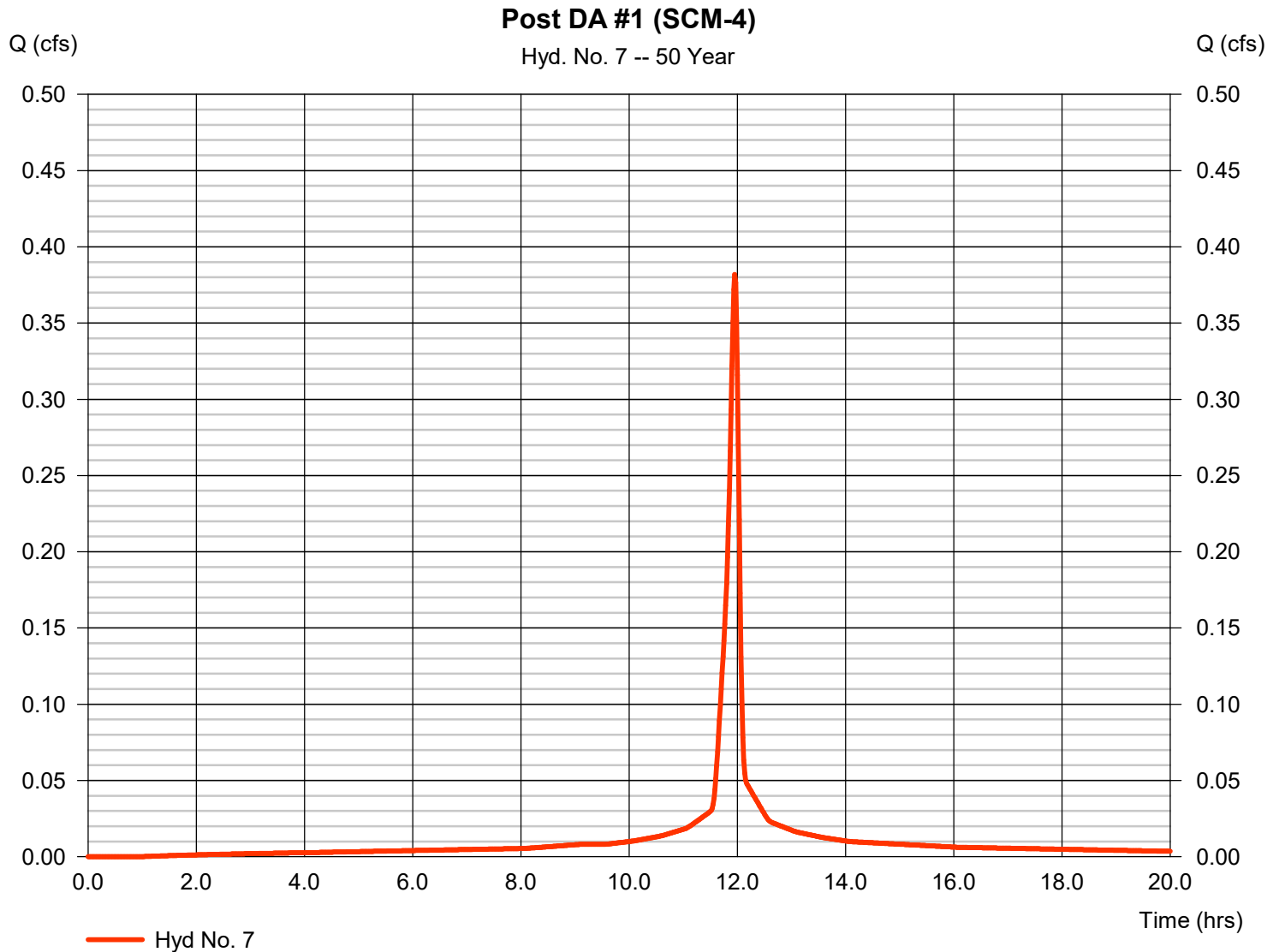
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Friday, 04 / 11 / 2025

Hyd. No. 7

Post DA #1 (SCM-4)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.382 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 917 cuft
Drainage area	= 0.058 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.46 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

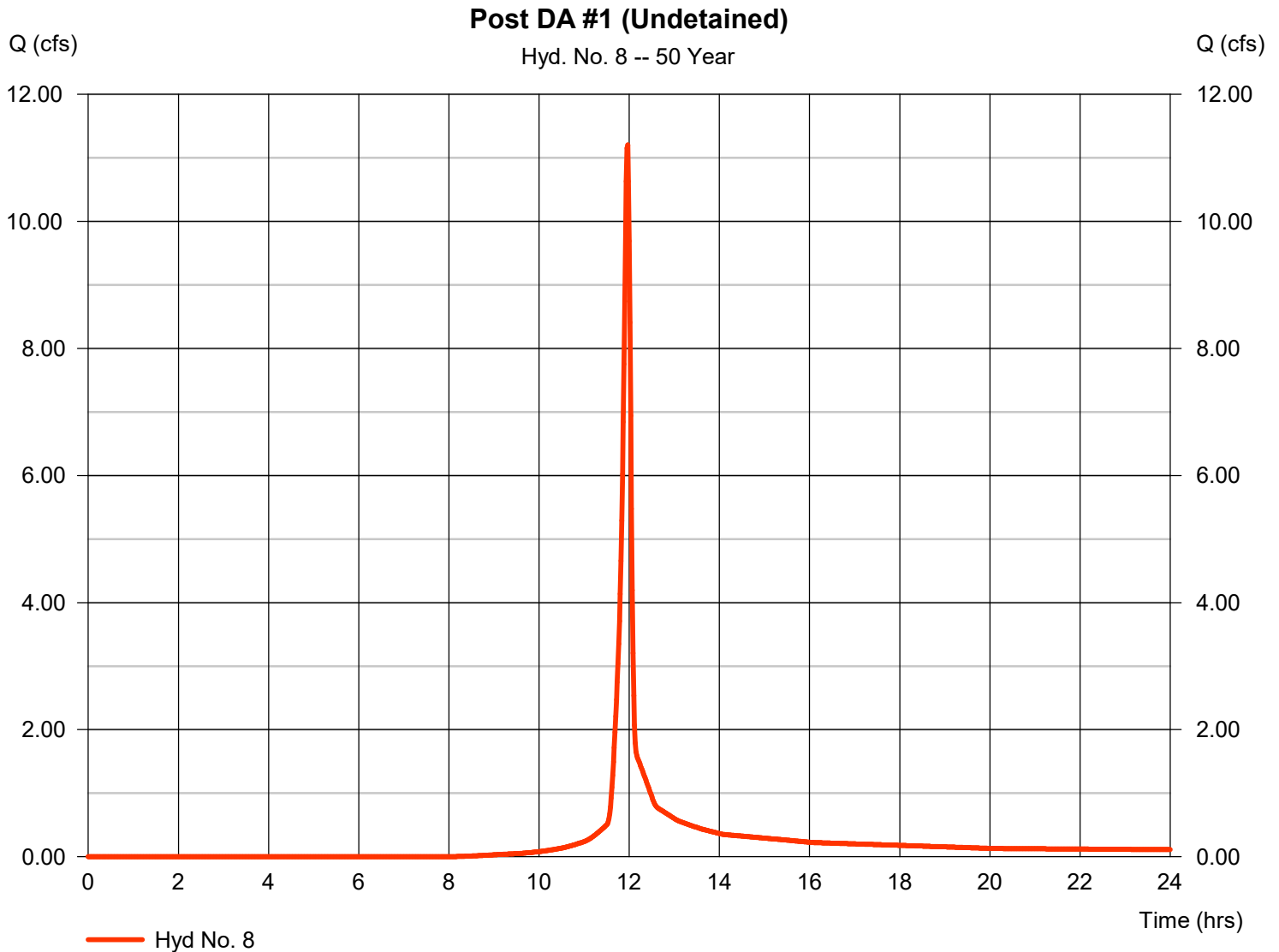
Friday, 04 / 11 / 2025

Hyd. No. 8

Post DA #1 (Undetained)

Hydrograph type	= SCS Runoff	Peak discharge	= 11.20 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.97 hrs
Time interval	= 1 min	Hyd. volume	= 22,716 cuft
Drainage area	= 2.590 ac	Curve number	= 79*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.46 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.752 x 78) + (0.735 x 80) + (0.107 x 98)] / 2.590



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Friday, 04 / 11 / 2025

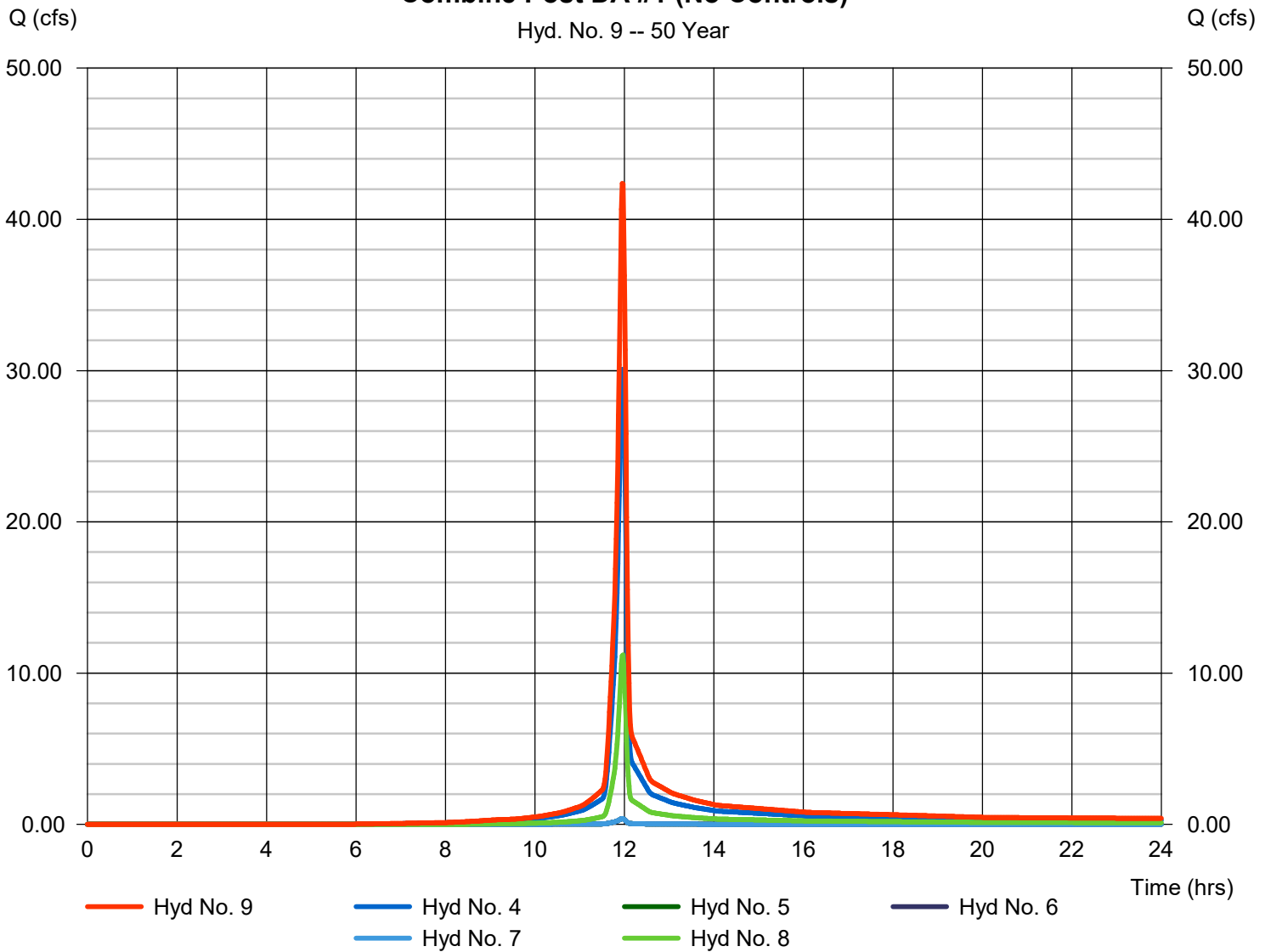
Hyd. No. 9

Combine Post DA #1 (No Controls)

Hydrograph type	= Combine	Peak discharge	= 42.38 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 87,947 cuft
Inflow hyds.	= 4, 5, 6, 7, 8	Contrib. drain. area	= 8.574 ac

Combine Post DA #1 (No Controls)

Hyd. No. 9 -- 50 Year



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

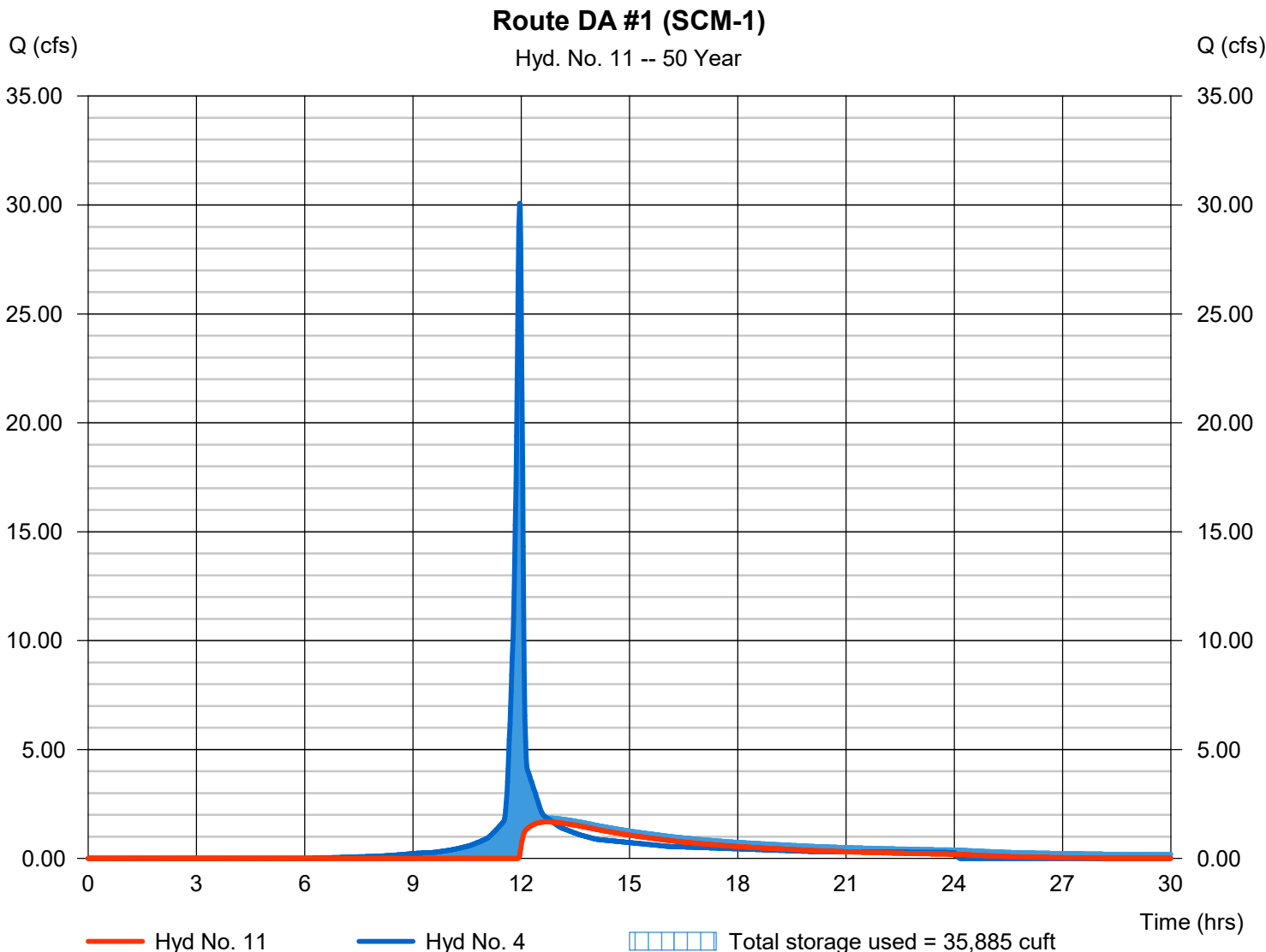
Friday, 04 / 11 / 2025

Hyd. No. 11

Route DA #1 (SCM-1)

Hydrograph type	= Reservoir	Peak discharge	= 1.672 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.72 hrs
Time interval	= 1 min	Hyd. volume	= 31,975 cuft
Inflow hyd. No.	= 4 - Post DA #1 (SCM-1)	Max. Elevation	= 1083.92 ft
Reservoir name	= DA #1 (SCM-1)	Max. Storage	= 35,885 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

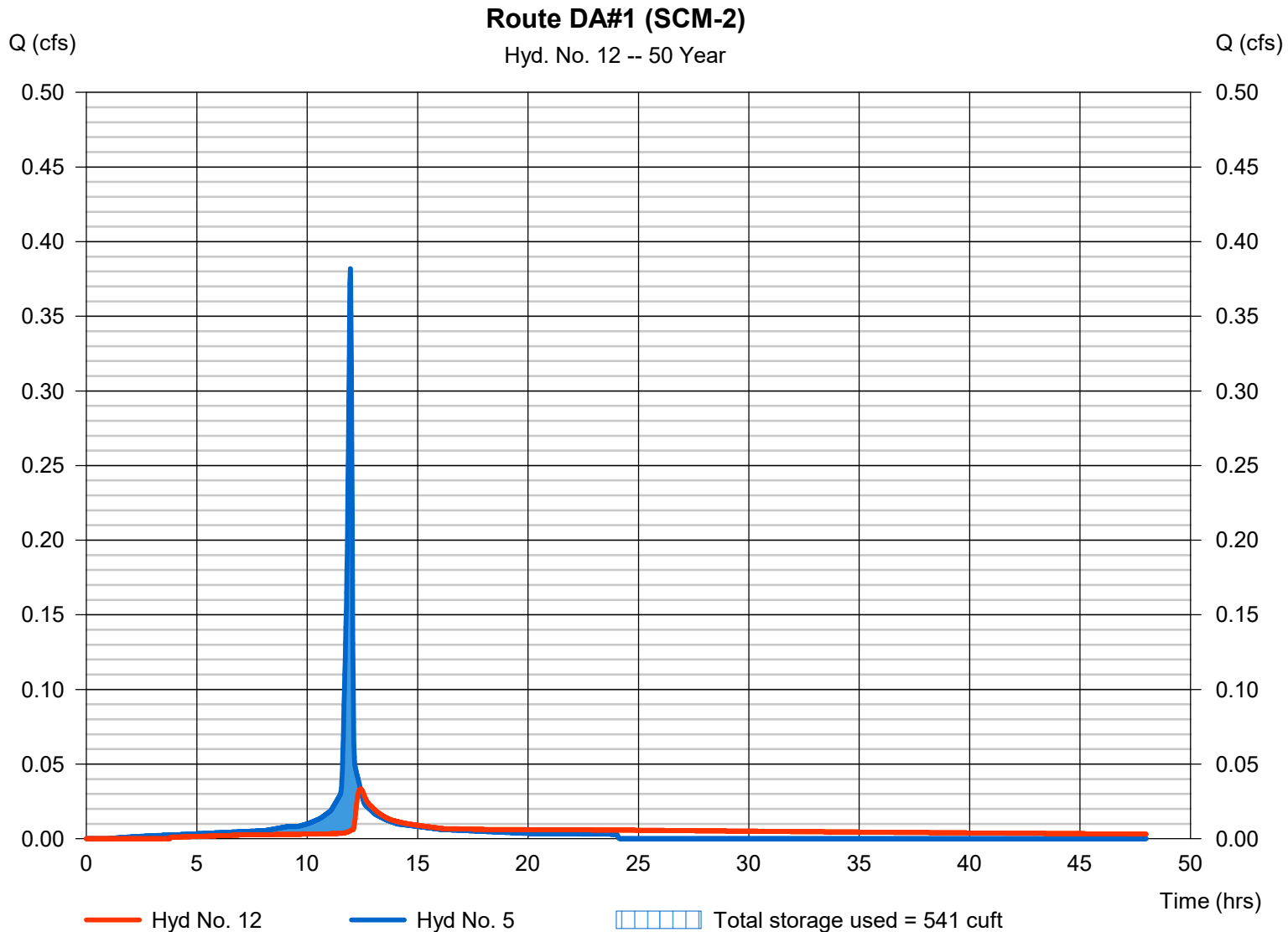
Friday, 04 / 11 / 2025

Hyd. No. 12

Route DA#1 (SCM-2)

Hydrograph type	= Reservoir	Peak discharge	= 0.033 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.42 hrs
Time interval	= 1 min	Hyd. volume	= 833 cuft
Inflow hyd. No.	= 5 - Post DA #1 (SCM-2)	Max. Elevation	= 1101.28 ft
Reservoir name	= DA #1 (SCM-2)	Max. Storage	= 541 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

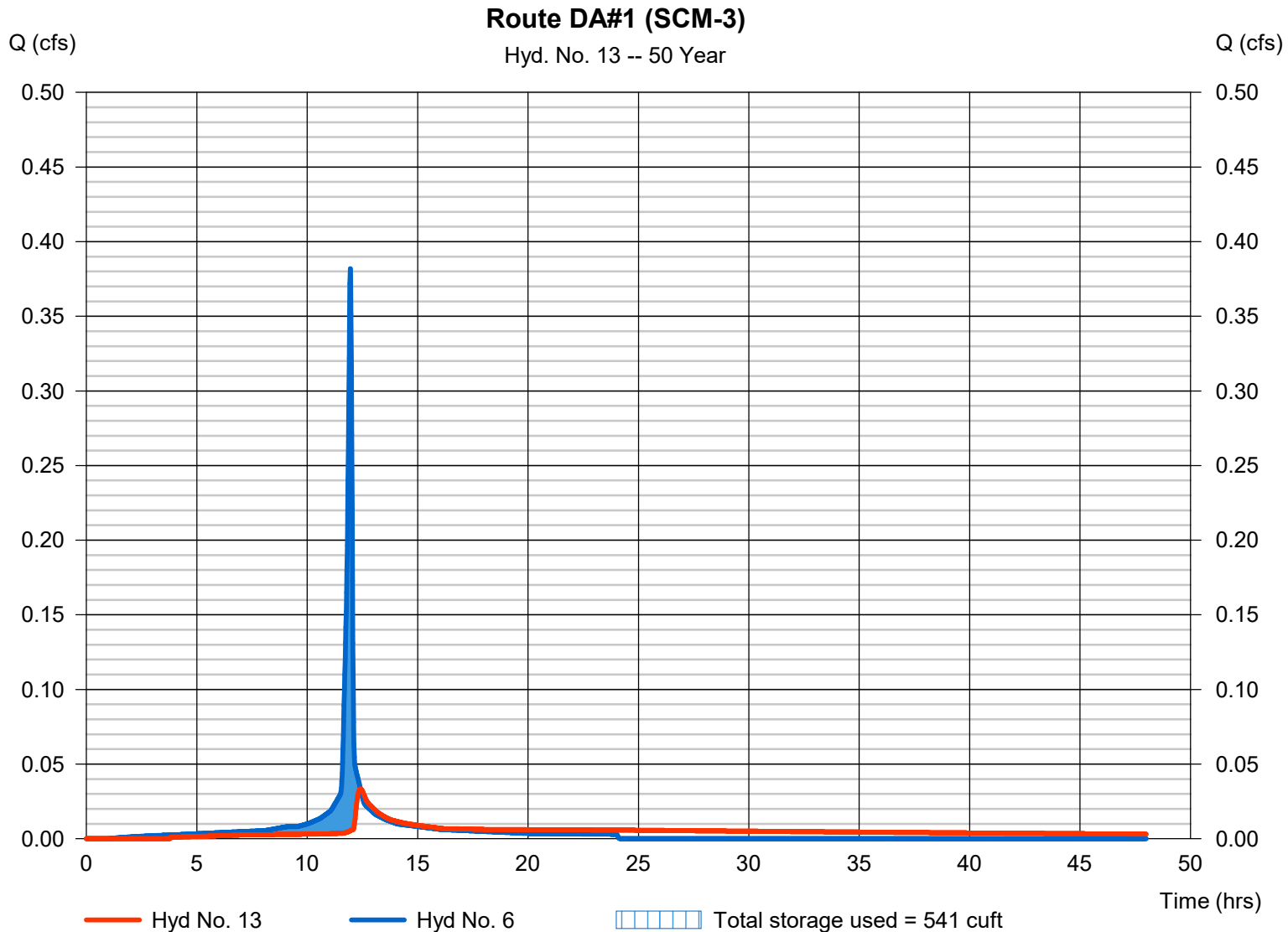
Friday, 04 / 11 / 2025

Hyd. No. 13

Route DA#1 (SCM-3)

Hydrograph type	= Reservoir	Peak discharge	= 0.033 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.42 hrs
Time interval	= 1 min	Hyd. volume	= 833 cuft
Inflow hyd. No.	= 6 - Post DA #1 (SCM-3)	Max. Elevation	= 1099.28 ft
Reservoir name	= DA #1 (SCM-3)	Max. Storage	= 541 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

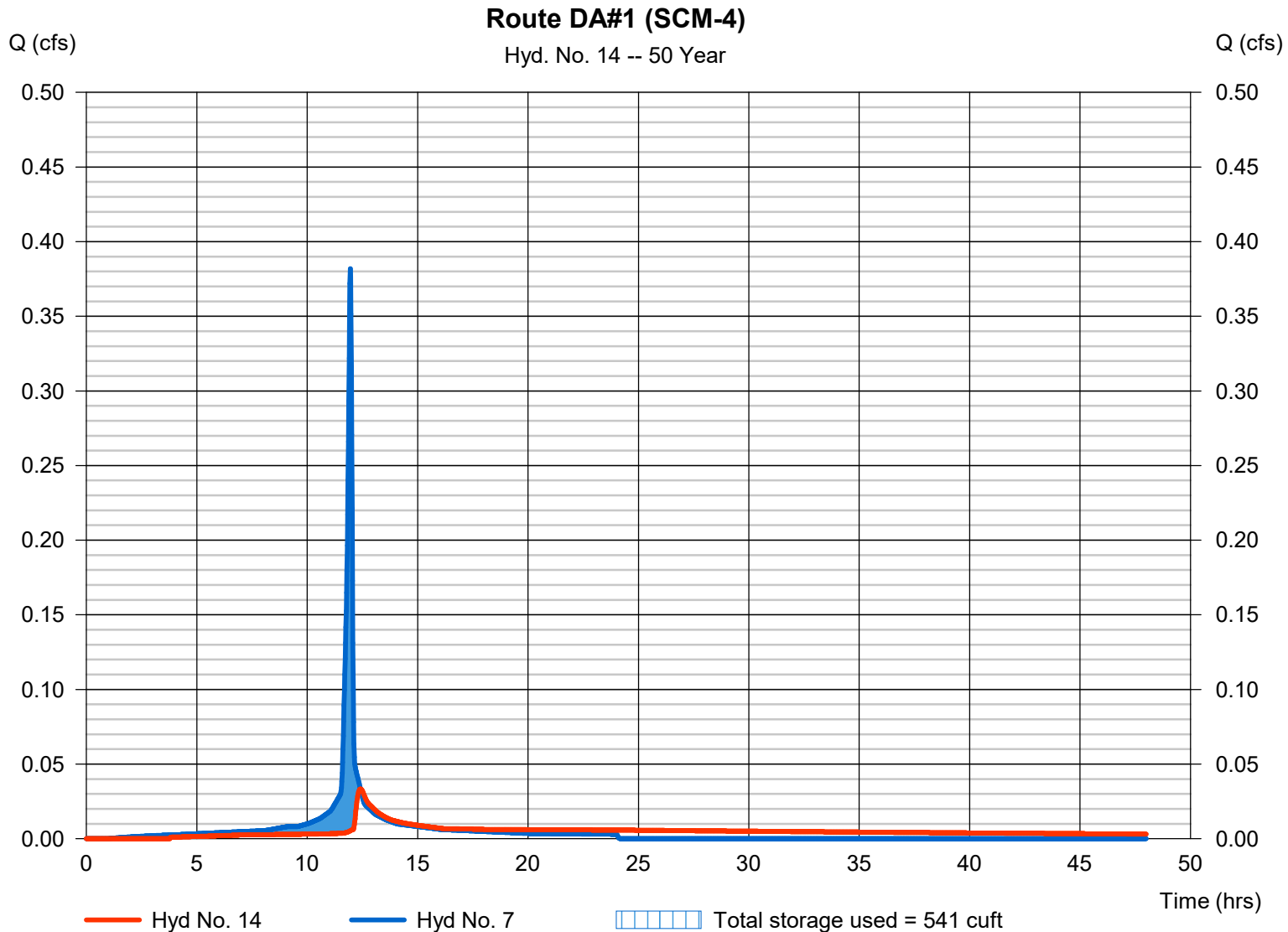
Friday, 04 / 11 / 2025

Hyd. No. 14

Route DA#1 (SCM-4)

Hydrograph type	= Reservoir	Peak discharge	= 0.033 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.42 hrs
Time interval	= 1 min	Hyd. volume	= 833 cuft
Inflow hyd. No.	= 7 - Post DA #1 (SCM-4)	Max. Elevation	= 1097.28 ft
Reservoir name	= DA #1 (SCM-4)	Max. Storage	= 541 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

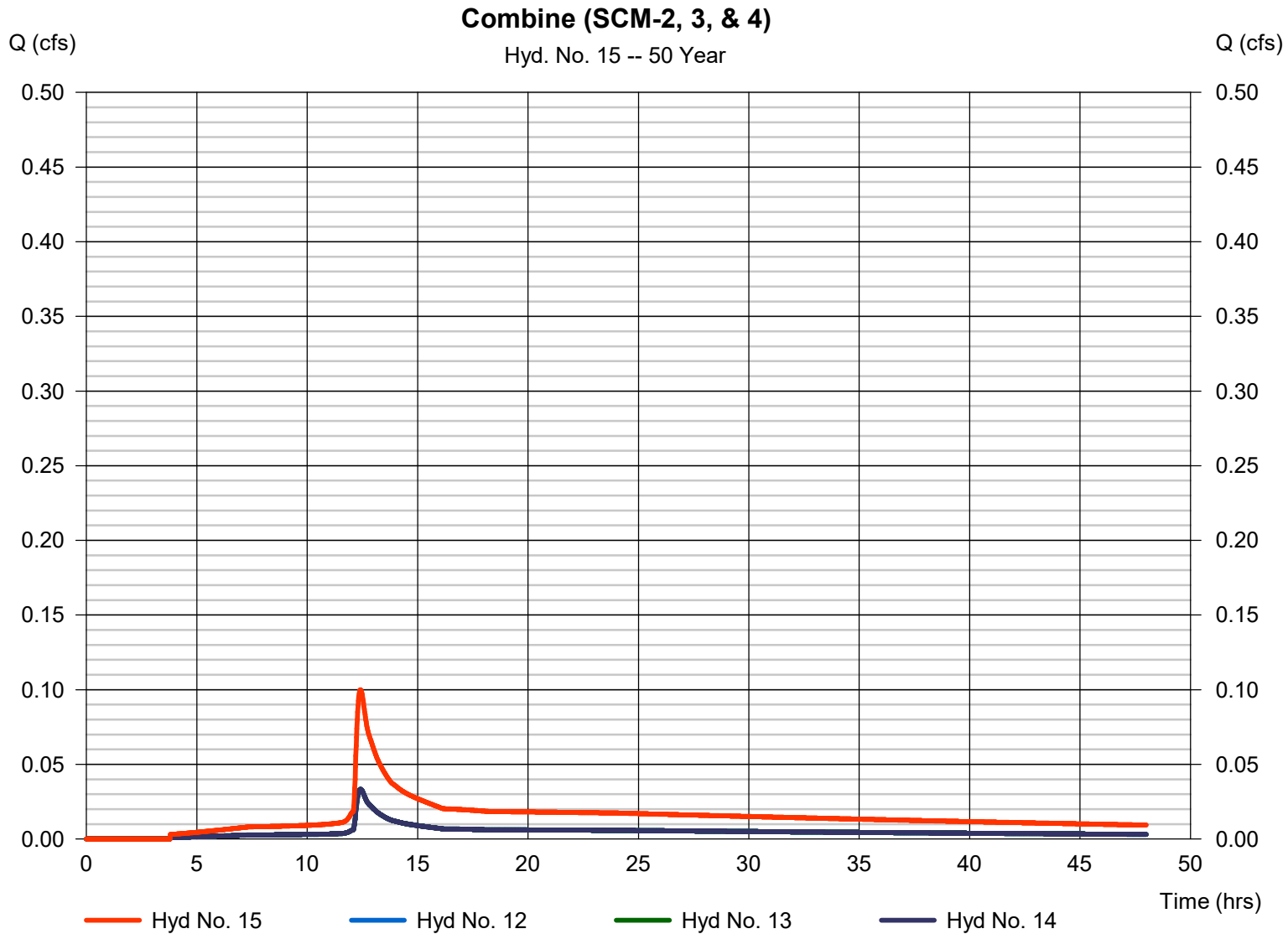
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Friday, 04 / 11 / 2025

Hyd. No. 15

Combine (SCM-2, 3, & 4)

Hydrograph type	= Combine	Peak discharge	= 0.100 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.42 hrs
Time interval	= 1 min	Hyd. volume	= 2,498 cuft
Inflow hyds.	= 12, 13, 14	Contrib. drain. area	= 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

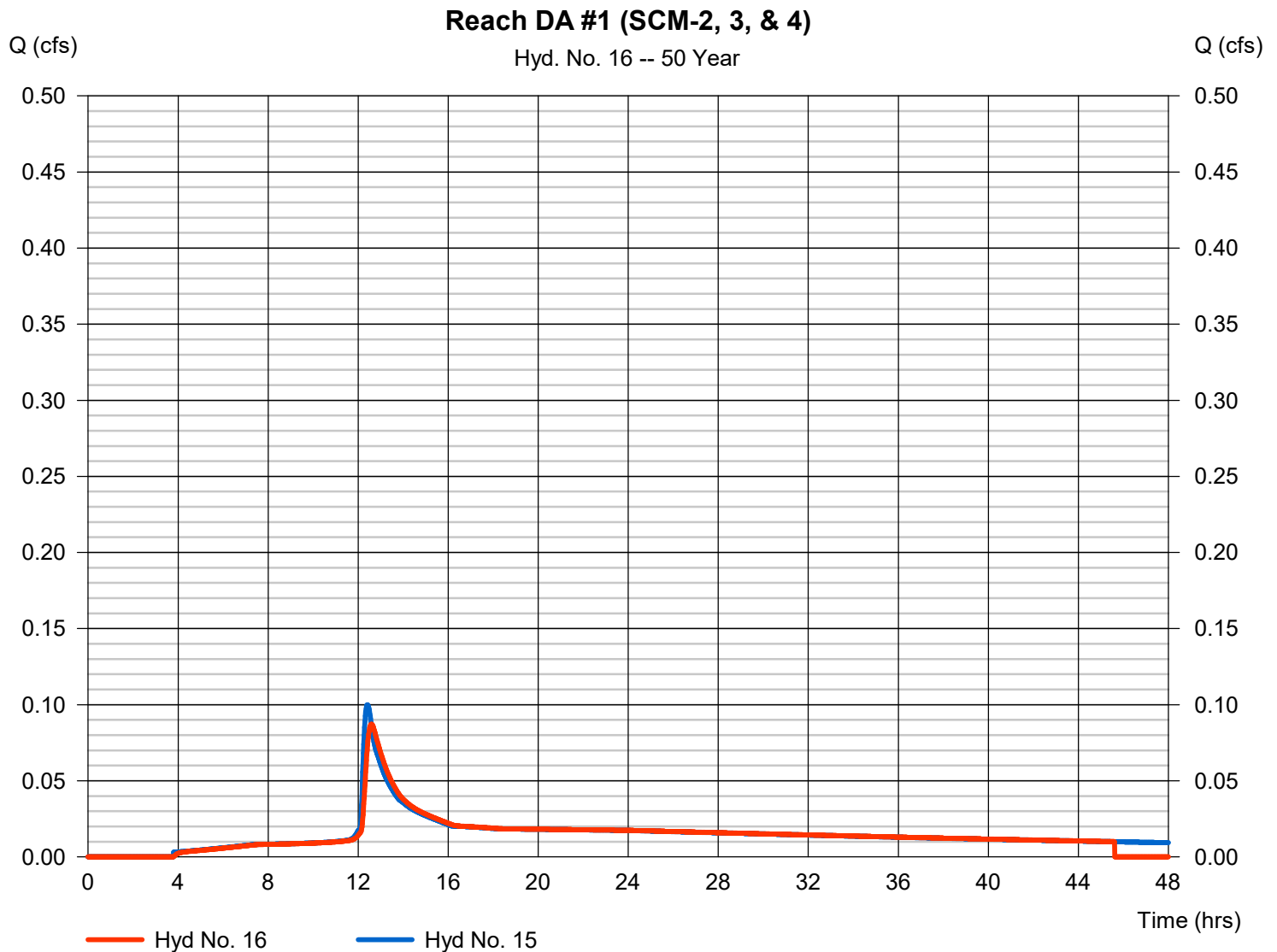
Friday, 04 / 11 / 2025

Hyd. No. 16

Reach DA #1 (SCM-2, 3, & 4)

Hydrograph type	= Reach	Peak discharge	= 0.087 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.58 hrs
Time interval	= 1 min	Hyd. volume	= 2,409 cuft
Inflow hyd. No.	= 15 - Combine (SCM-2, 3, & 4)	Section type	= Trapezoidal
Reach length	= 900.0 ft	Channel slope	= 1.3 %
Manning's n	= 0.025	Bottom width	= 4.0 ft
Side slope	= 2.0:1	Max. depth	= 2.0 ft
Rating curve x	= 2.643	Rating curve m	= 1.307
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.1014

Modified Att-Kin routing method used.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

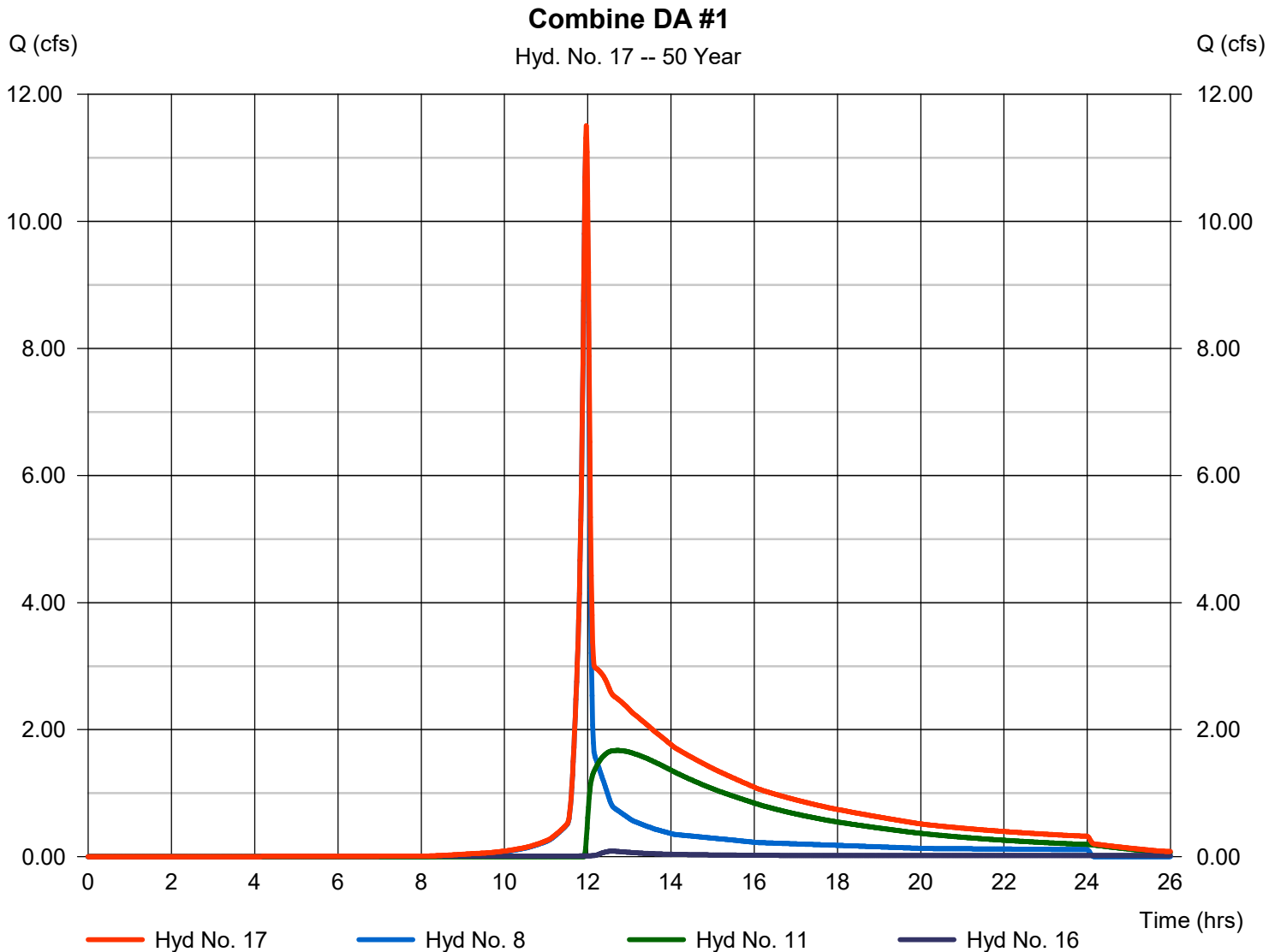
Friday, 04 / 11 / 2025

Hyd. No. 17

Combine DA #1

Hydrograph type = Combine
 Storm frequency = 50 yrs
 Time interval = 1 min
 Inflow hyds. = 8, 11, 16

Peak discharge = 11.51 cfs
 Time to peak = 11.97 hrs
 Hyd. volume = 57,100 cuft
 Contrib. drain. area = 2.590 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

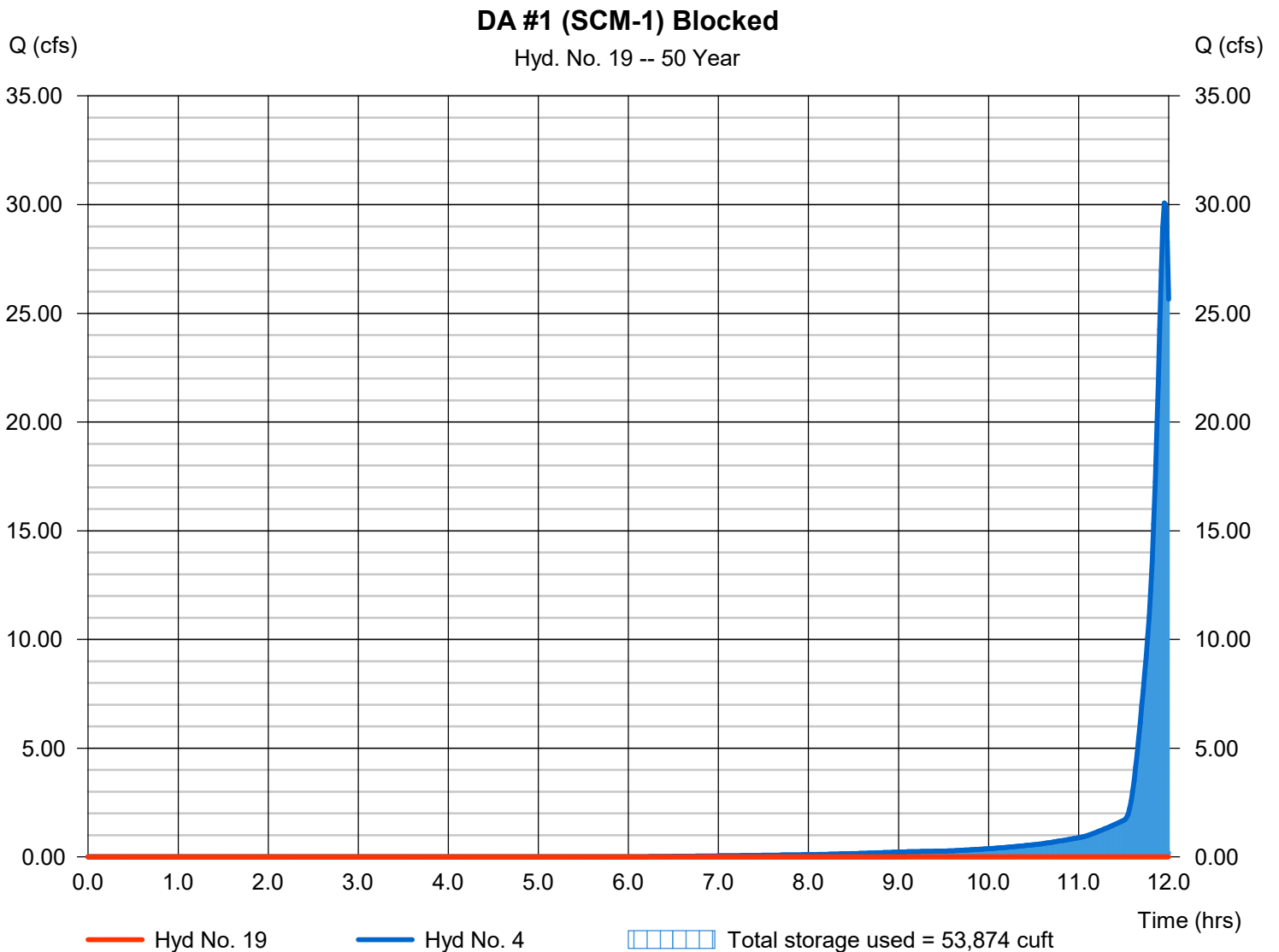
Friday, 04 / 11 / 2025

Hyd. No. 19

DA #1 (SCM-1) Blocked

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.75 hrs
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 4 - Post DA #1 (SCM-1)	Max. Elevation	= 1084.77 ft
Reservoir name	= DA #1 (SCM-1) Blocked	Max. Storage	= 53,874 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

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	35.83	1	719	81,249	-----	-----	-----	Pre DA #1	
2	SCS Runoff	49.00	1	717	101,539	-----	-----	-----	Post DA #1	
4	SCS Runoff	34.91	1	717	73,052	-----	-----	-----	Post DA #1 (SCM-1)	
5	SCS Runoff	0.428	1	717	1,032	-----	-----	-----	Post DA #1 (SCM-2)	
6	SCS Runoff	0.428	1	717	1,032	-----	-----	-----	Post DA #1 (SCM-3)	
7	SCS Runoff	0.428	1	717	1,032	-----	-----	-----	Post DA #1 (SCM-4)	
8	SCS Runoff	13.28	1	718	27,080	-----	-----	-----	Post DA #1 (Undetained)	
9	Combine	49.44	1	717	103,228	4, 5, 6, 7, 8	-----	-----	Combine Post DA #1 (No Controls)	
11	Reservoir	2.508	1	751	42,134	4	1084.17	41,122	Route DA #1 (SCM-1)	
12	Reservoir	0.099	1	726	942	5	1101.38	565	Route DA#1 (SCM-2)	
13	Reservoir	0.099	1	726	942	6	1099.38	565	Route DA#1 (SCM-3)	
14	Reservoir	0.099	1	726	942	7	1097.38	565	Route DA#1 (SCM-4)	
15	Combine	0.297	1	726	2,825	12, 13, 14	-----	-----	Combine (SCM-2, 3, & 4)	
16	Reach	0.200	1	734	2,754	15	-----	-----	Reach DA #1 (SCM-2, 3, & 4)	
17	Combine	14.10	1	718	71,968	8, 11, 16	-----	-----	Combine DA #1	
19	Reservoir	0.000	1	702	0	4	1085.23	64,039	DA #1 (SCM-1) Blocked	
250401-Newcastle DA 1.gpw					Return Period: 100 Year			Friday, 04 / 11 / 2025		

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

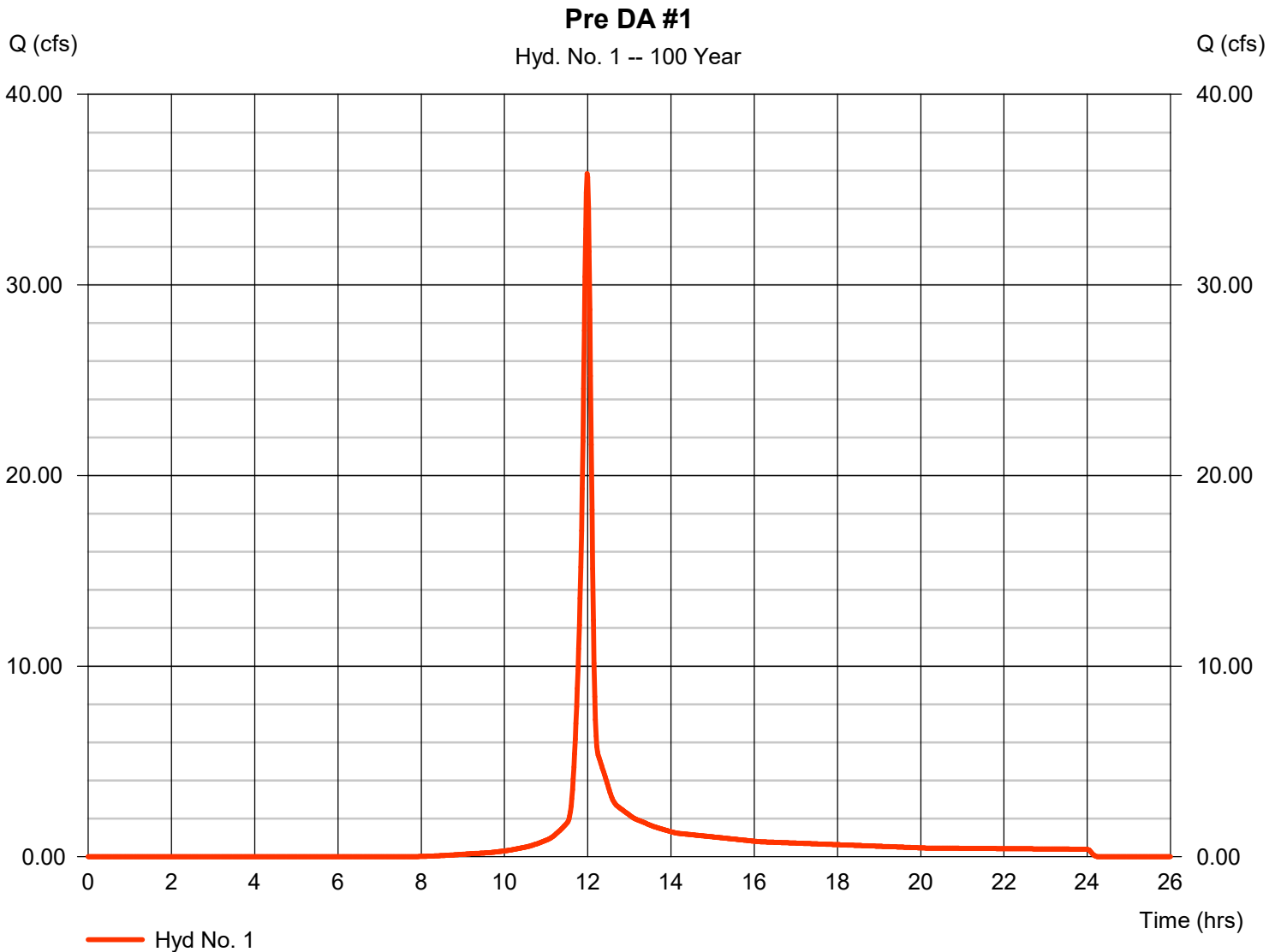
Friday, 04 / 11 / 2025

Hyd. No. 1

Pre DA #1

Hydrograph type	= SCS Runoff	Peak discharge	= 35.83 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.98 hrs
Time interval	= 1 min	Hyd. volume	= 81,249 cuft
Drainage area	= 8.280 ac	Curve number	= 78*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.80 min
Total precip.	= 4.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.930 x 77) + (7.348 x 78) + (0.001 x 98)] / 8.280



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

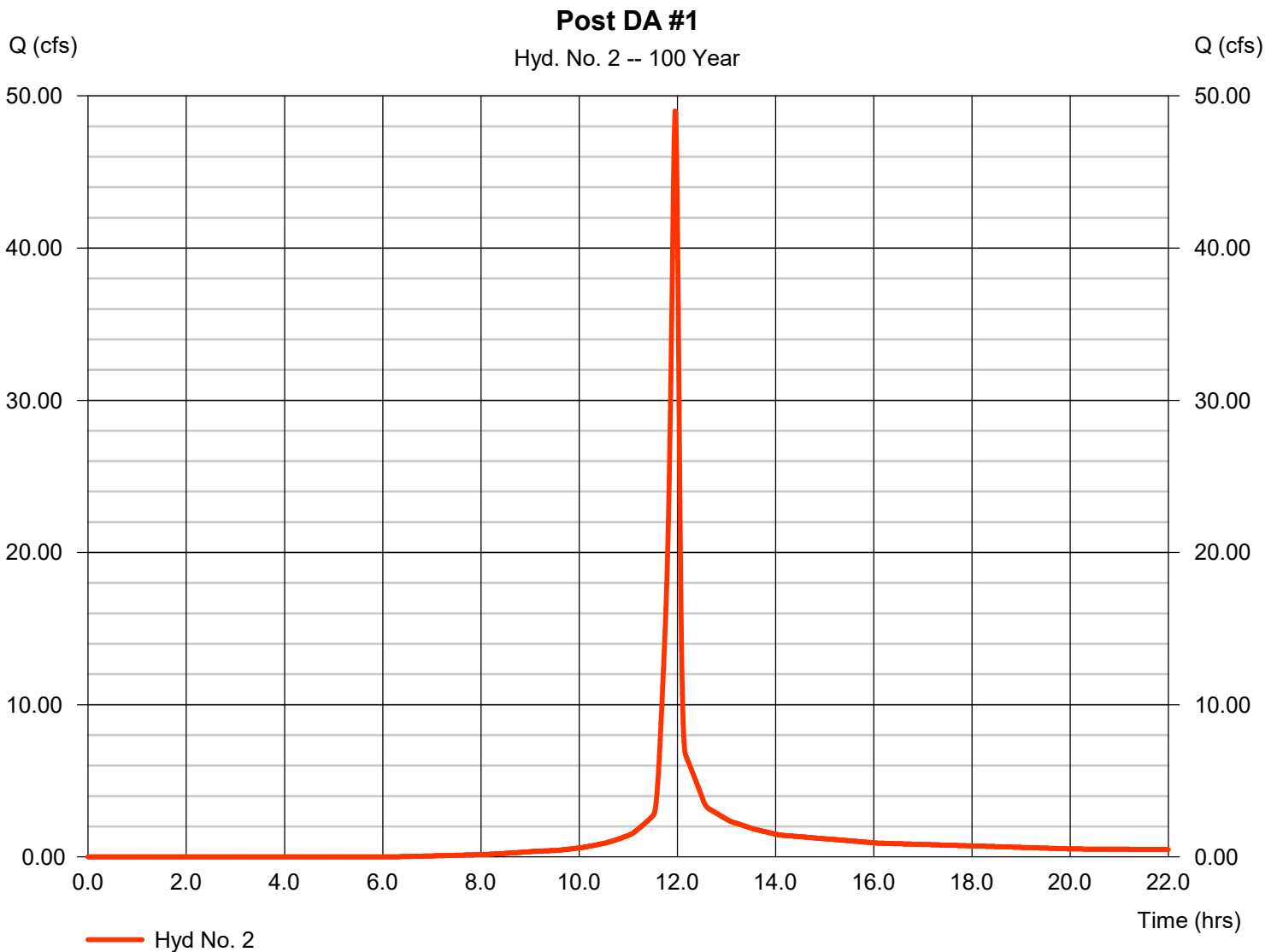
Friday, 04 / 11 / 2025

Hyd. No. 2

Post DA #1

Hydrograph type	= SCS Runoff	Peak discharge	= 49.00 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 101,539 cuft
Drainage area	= 8.570 ac	Curve number	= 83*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(2.419 x 78) + (4.258 x 80) + (1.896 x 98)] / 8.570



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

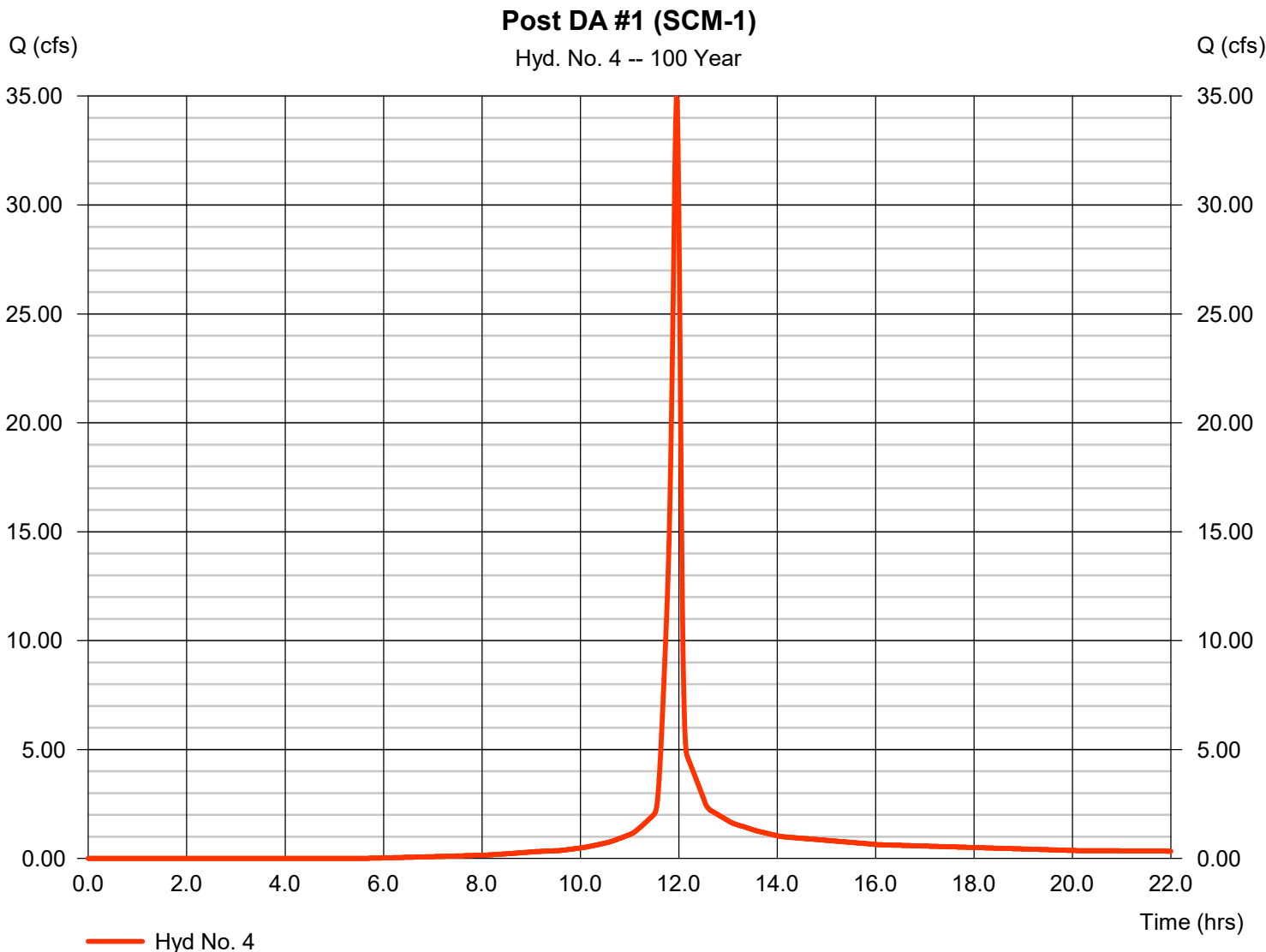
Friday, 04 / 11 / 2025

Hyd. No. 4

Post DA #1 (SCM-1)

Hydrograph type	= SCS Runoff	Peak discharge	= 34.91 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 73,052 cuft
Drainage area	= 5.810 ac	Curve number	= 85*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.667 x 78) + (3.523 x 80) + (1.615 x 98)] / 5.810



Hydrograph Report

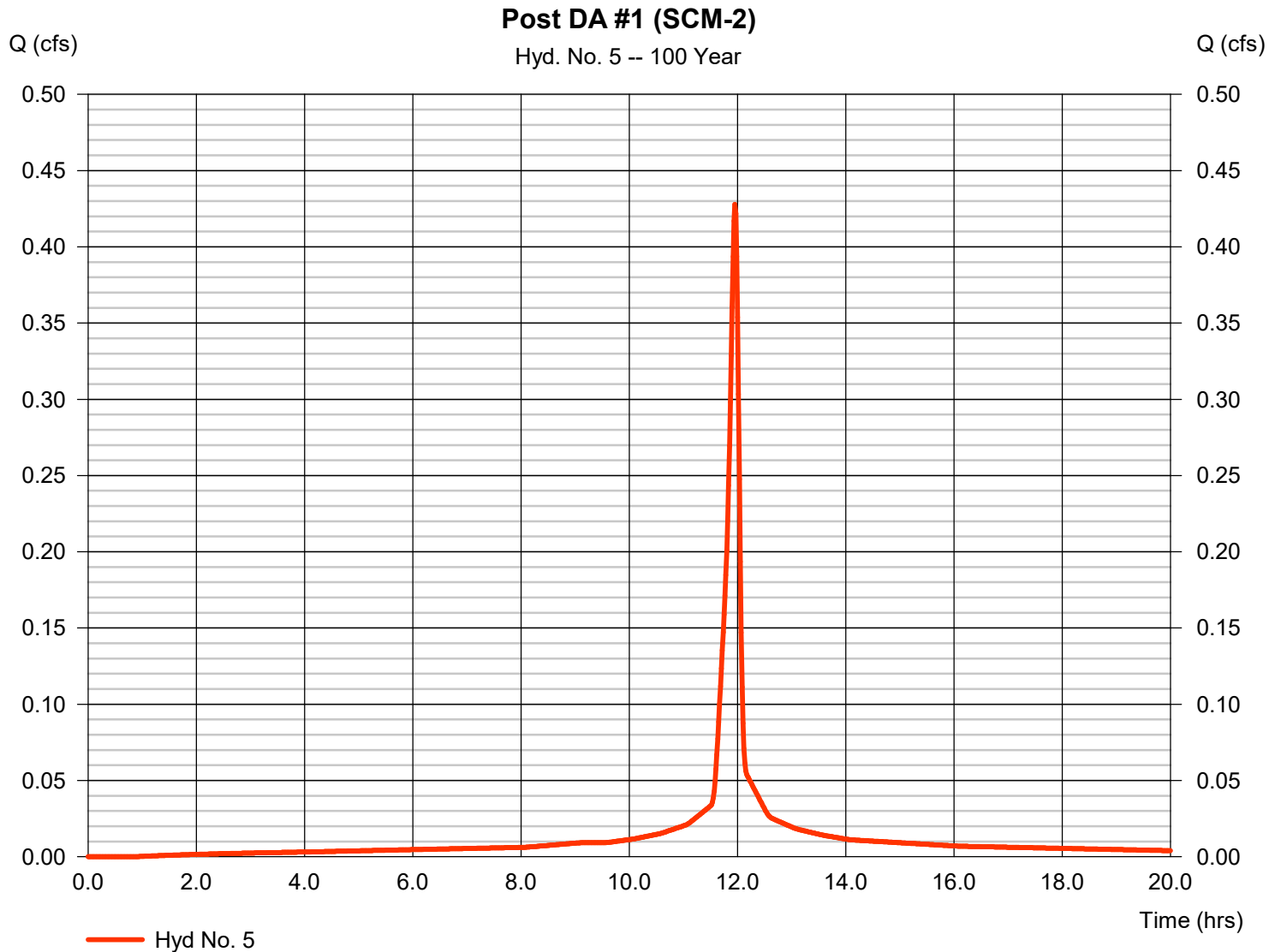
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Friday, 04 / 11 / 2025

Hyd. No. 5

Post DA #1 (SCM-2)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.428 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 1,032 cuft
Drainage area	= 0.058 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

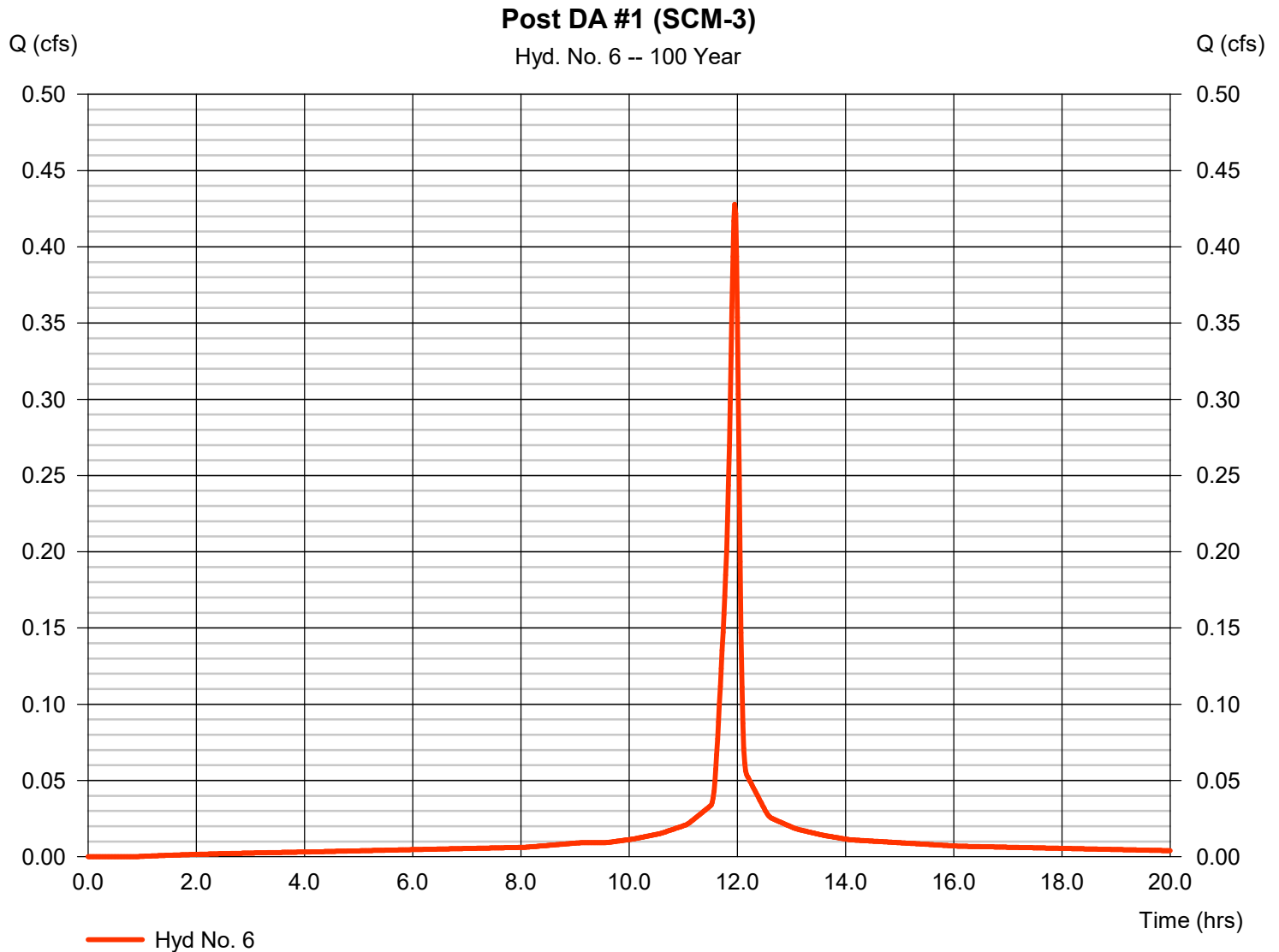
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Friday, 04 / 11 / 2025

Hyd. No. 6

Post DA #1 (SCM-3)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.428 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 1,032 cuft
Drainage area	= 0.058 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

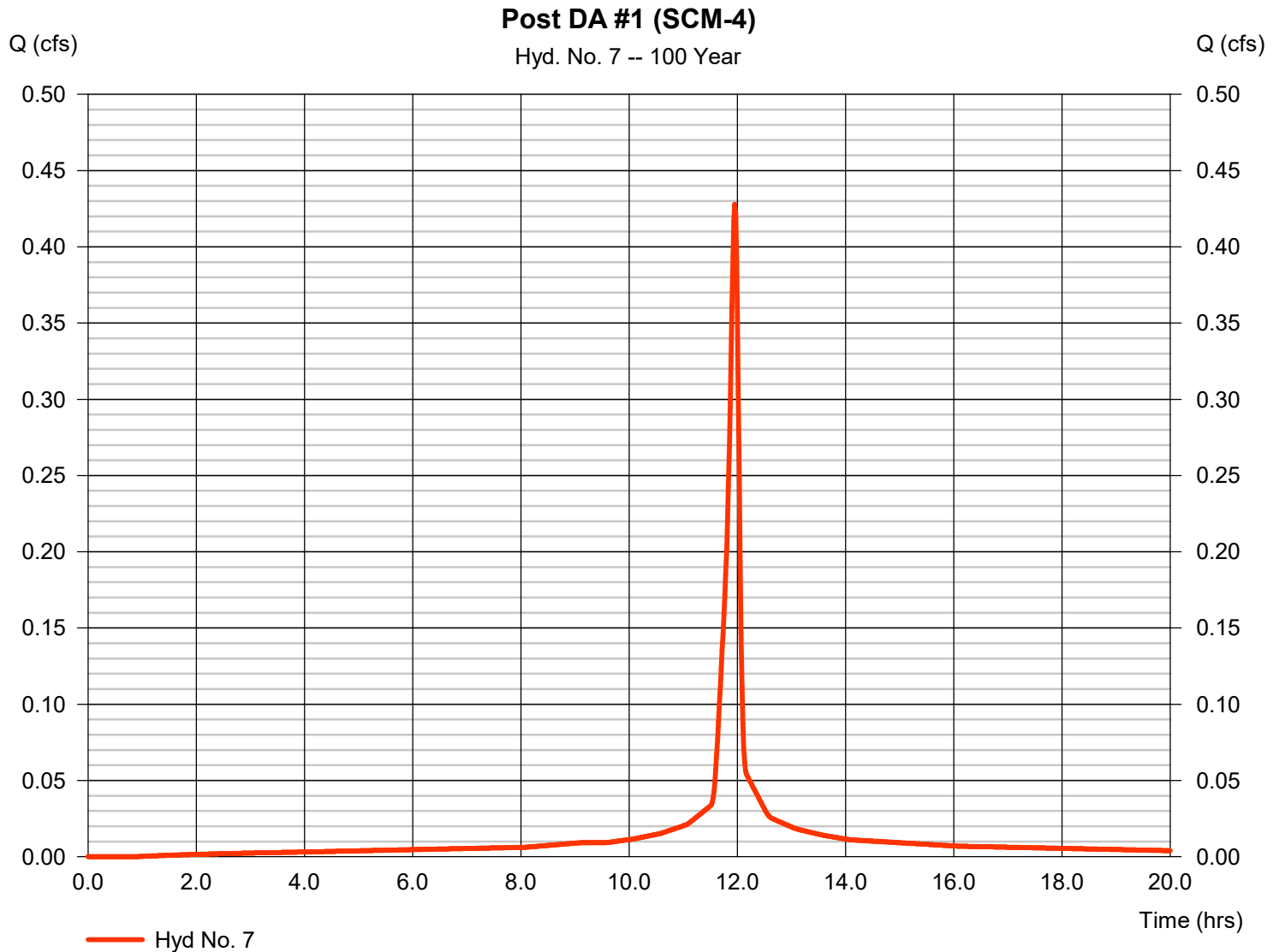
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Friday, 04 / 11 / 2025

Hyd. No. 7

Post DA #1 (SCM-4)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.428 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.95 hrs
Time interval	= 1 min	Hyd. volume	= 1,032 cuft
Drainage area	= 0.058 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

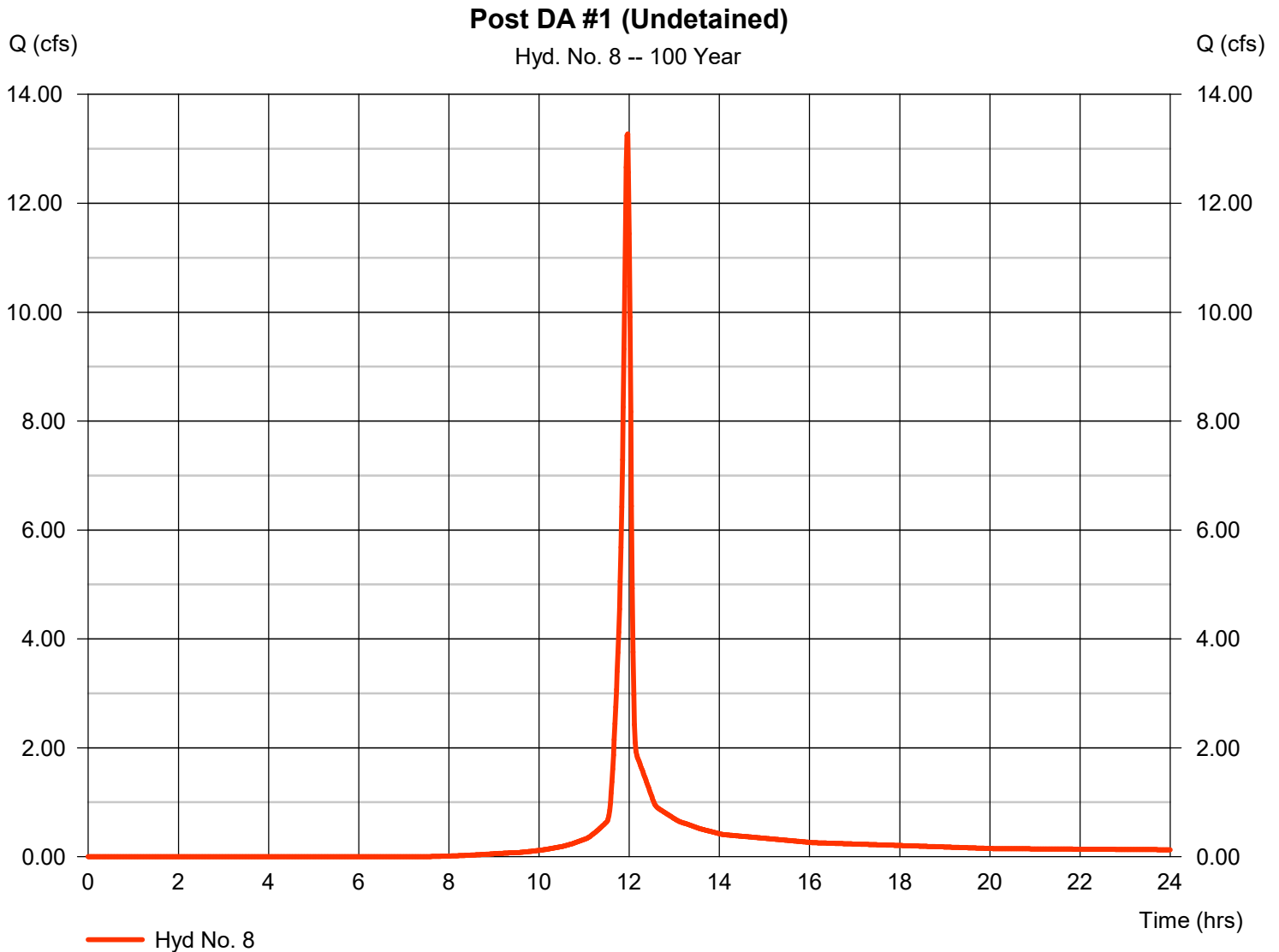
Friday, 04 / 11 / 2025

Hyd. No. 8

Post DA #1 (Undetained)

Hydrograph type	= SCS Runoff	Peak discharge	= 13.28 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.97 hrs
Time interval	= 1 min	Hyd. volume	= 27,080 cuft
Drainage area	= 2.590 ac	Curve number	= 79*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.752 x 78) + (0.735 x 80) + (0.107 x 98)] / 2.590



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

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Hyd. No. 9

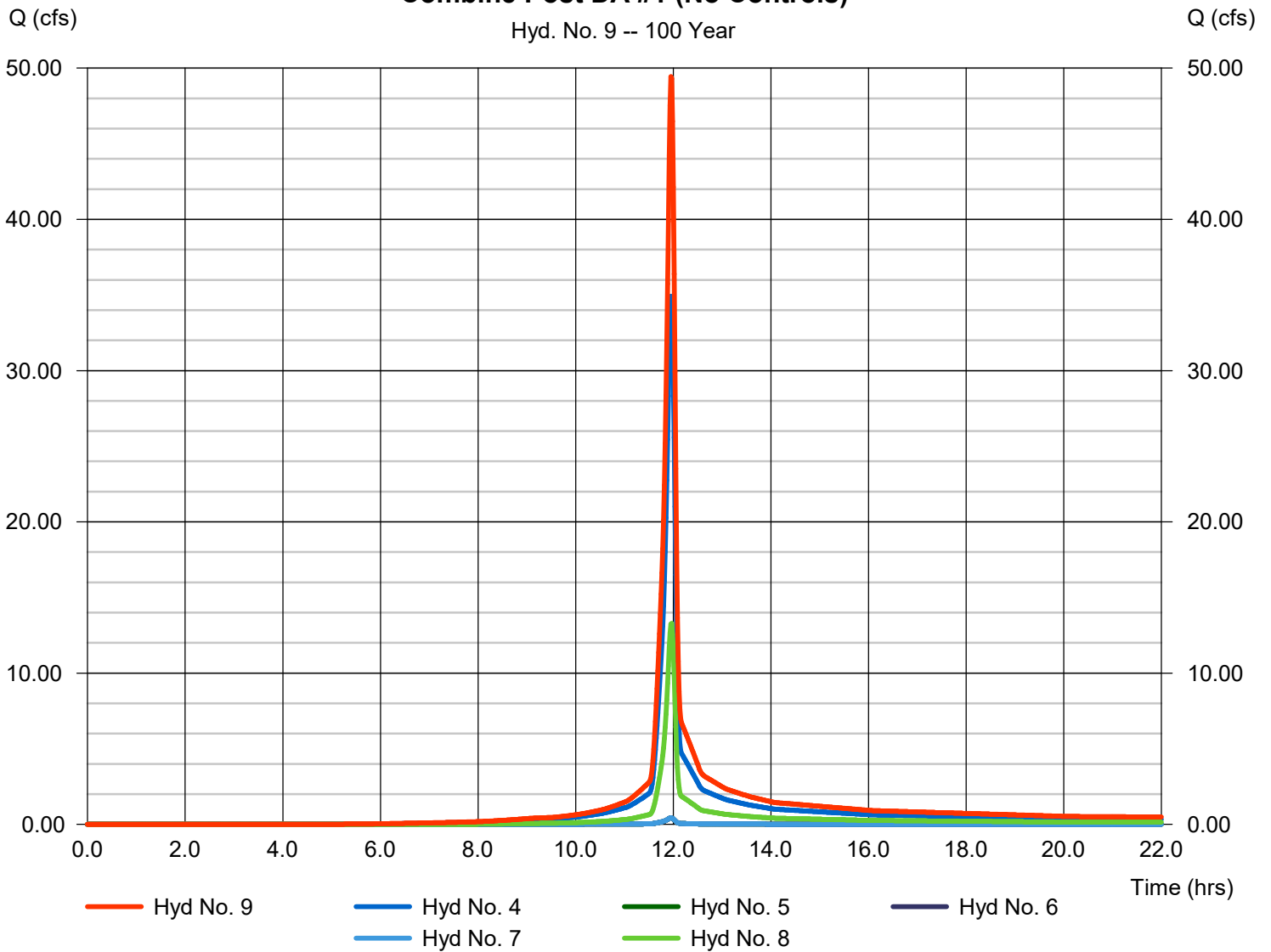
Combine Post DA #1 (No Controls)

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyds. = 4, 5, 6, 7, 8

Peak discharge = 49.44 cfs
 Time to peak = 11.95 hrs
 Hyd. volume = 103,228 cuft
 Contrib. drain. area = 8.574 ac

Combine Post DA #1 (No Controls)

Hyd. No. 9 -- 100 Year



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

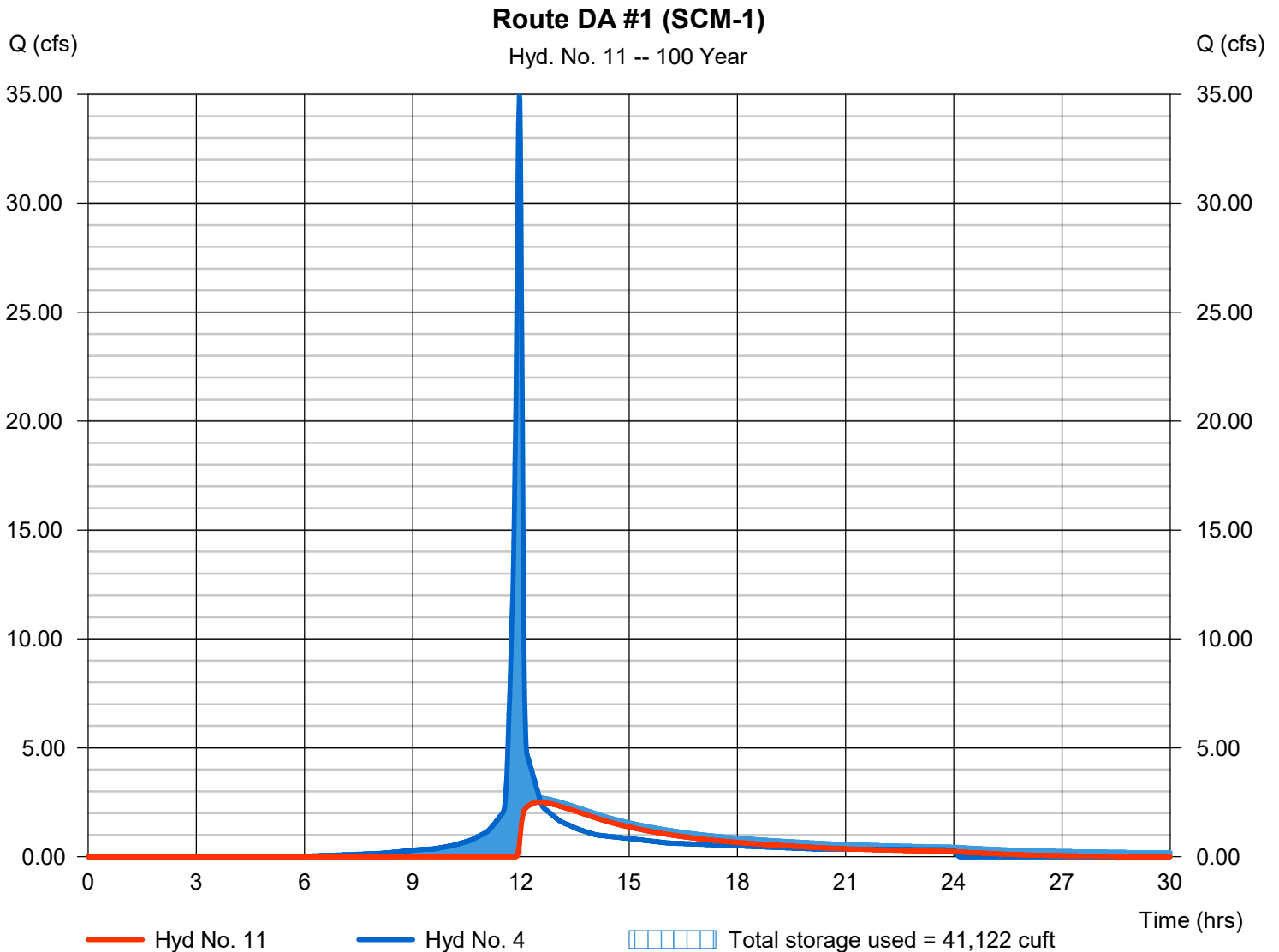
Friday, 04 / 11 / 2025

Hyd. No. 11

Route DA #1 (SCM-1)

Hydrograph type	= Reservoir	Peak discharge	= 2.508 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.52 hrs
Time interval	= 1 min	Hyd. volume	= 42,134 cuft
Inflow hyd. No.	= 4 - Post DA #1 (SCM-1)	Max. Elevation	= 1084.17 ft
Reservoir name	= DA #1 (SCM-1)	Max. Storage	= 41,122 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

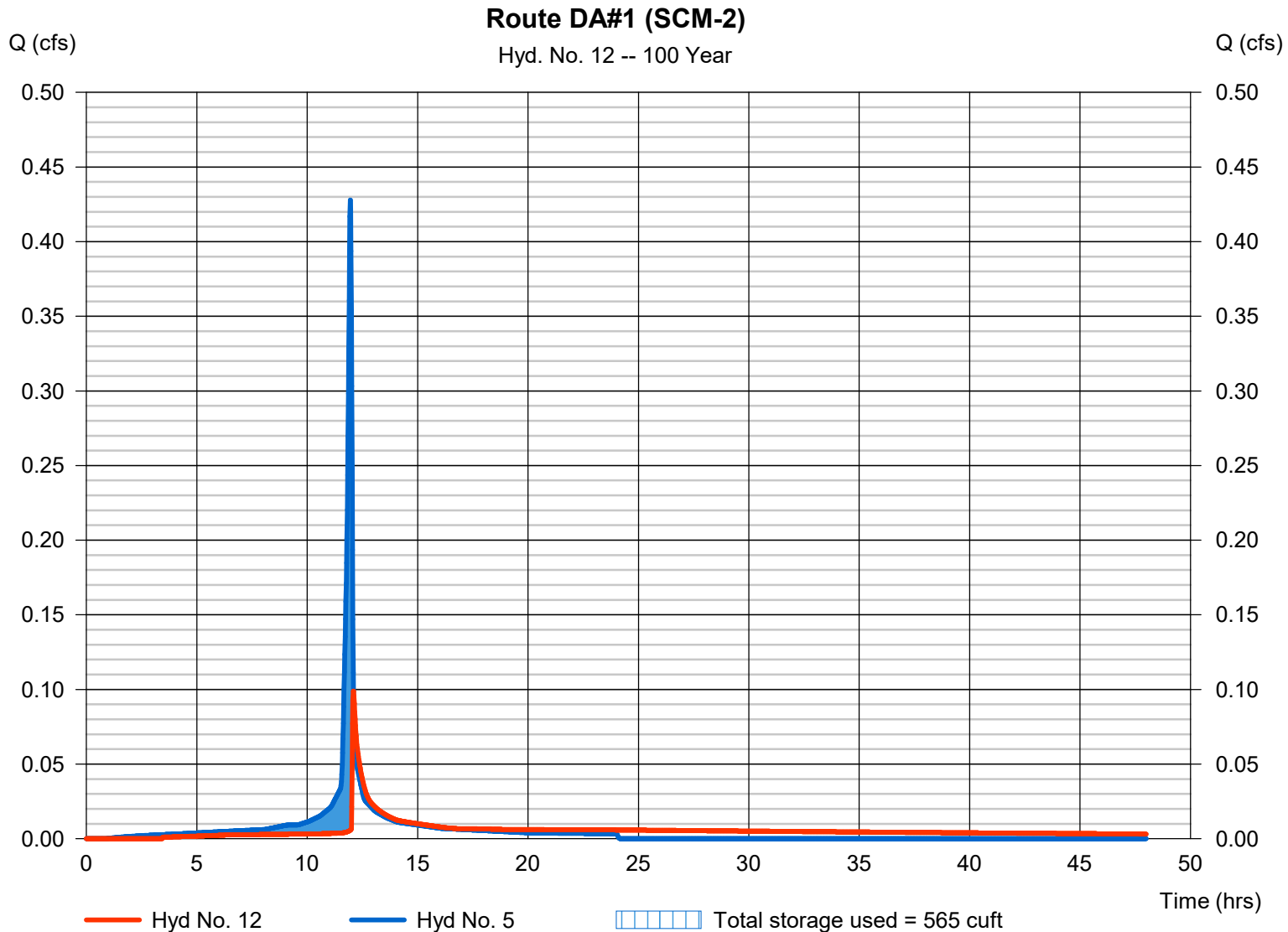
Friday, 04 / 11 / 2025

Hyd. No. 12

Route DA#1 (SCM-2)

Hydrograph type	= Reservoir	Peak discharge	= 0.099 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 1 min	Hyd. volume	= 942 cuft
Inflow hyd. No.	= 5 - Post DA #1 (SCM-2)	Max. Elevation	= 1101.38 ft
Reservoir name	= DA #1 (SCM-2)	Max. Storage	= 565 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

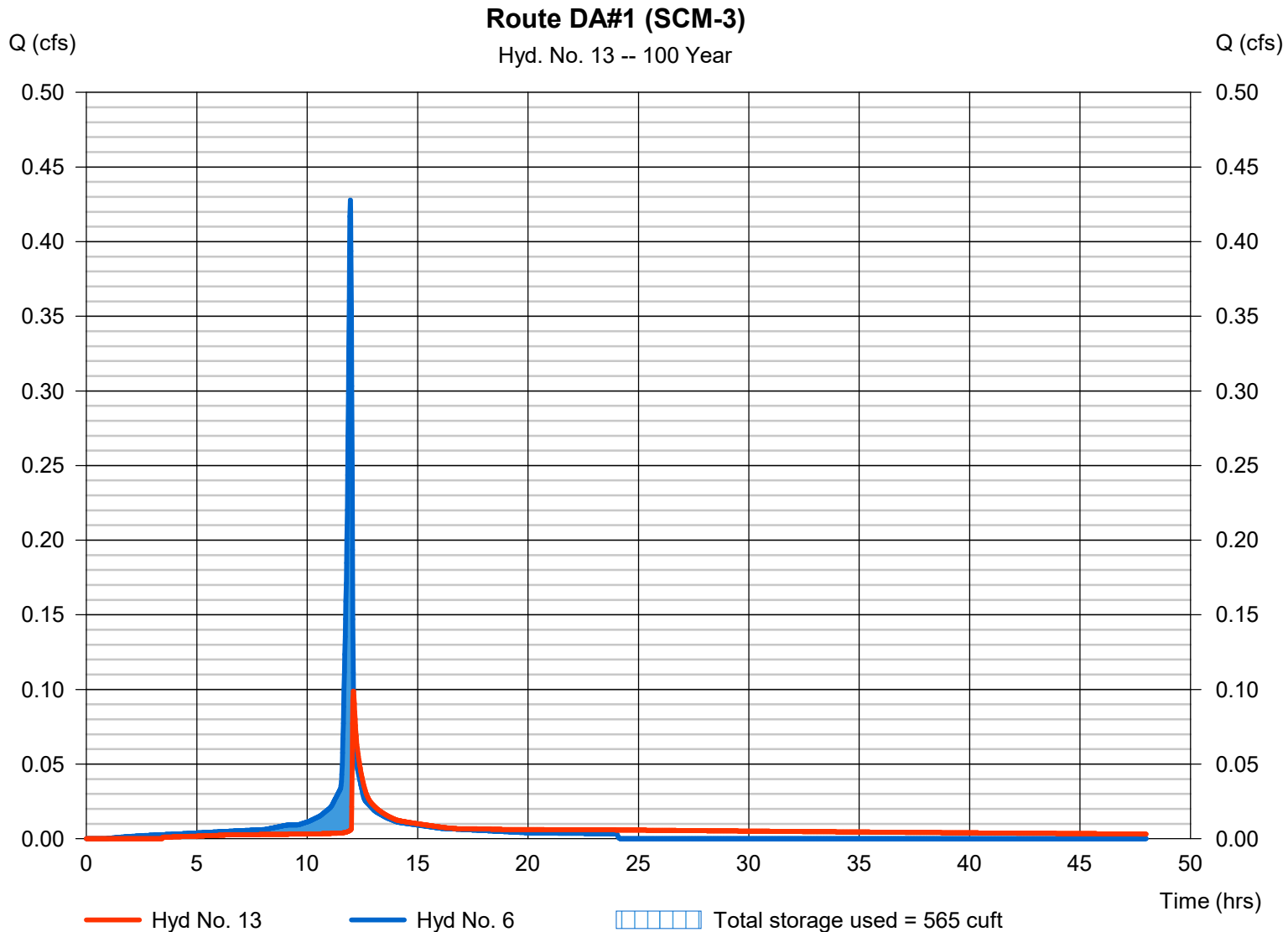
Friday, 04 / 11 / 2025

Hyd. No. 13

Route DA#1 (SCM-3)

Hydrograph type	= Reservoir	Peak discharge	= 0.099 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 1 min	Hyd. volume	= 942 cuft
Inflow hyd. No.	= 6 - Post DA #1 (SCM-3)	Max. Elevation	= 1099.38 ft
Reservoir name	= DA #1 (SCM-3)	Max. Storage	= 565 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

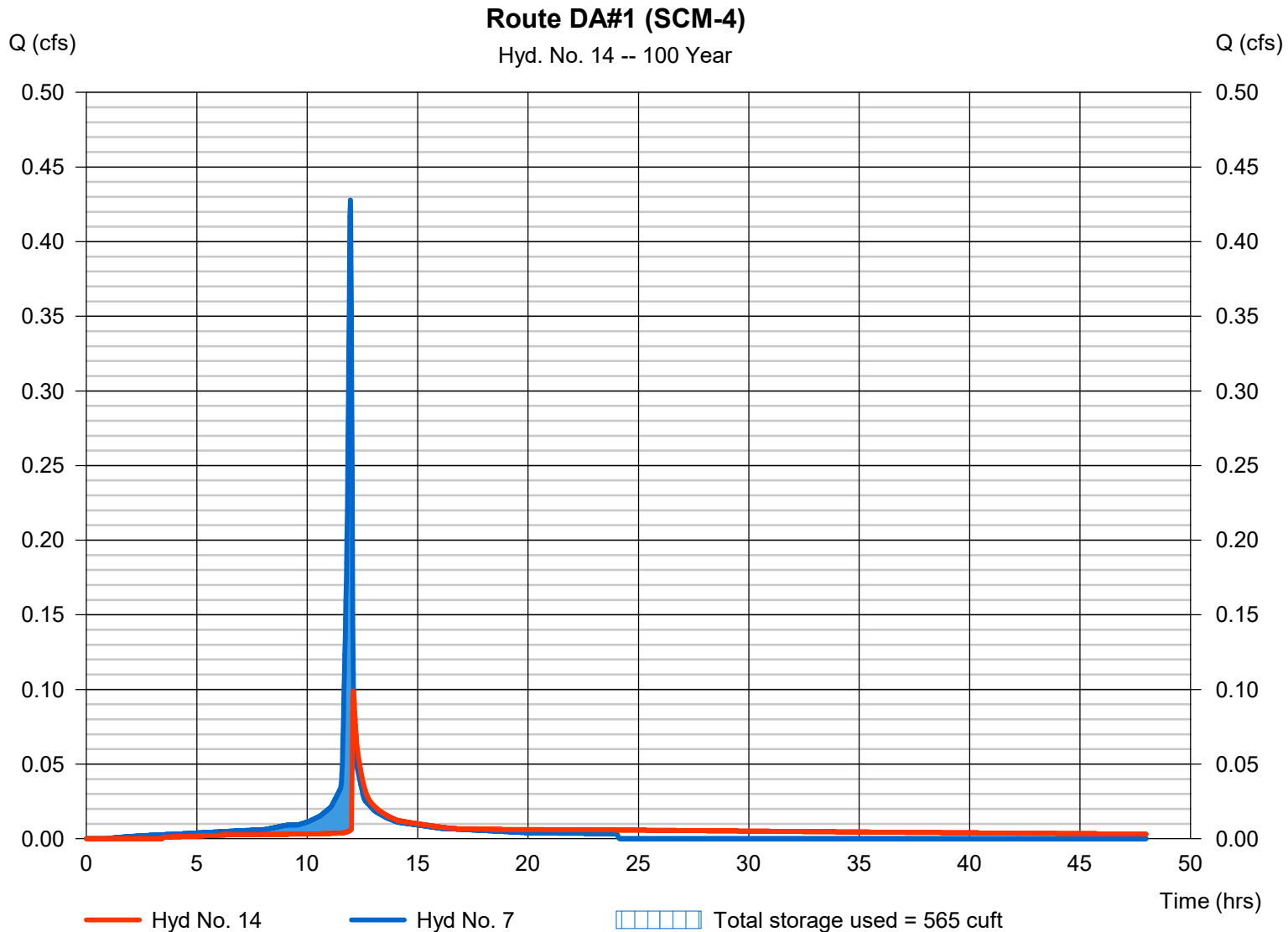
Friday, 04 / 11 / 2025

Hyd. No. 14

Route DA#1 (SCM-4)

Hydrograph type	= Reservoir	Peak discharge	= 0.099 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 1 min	Hyd. volume	= 942 cuft
Inflow hyd. No.	= 7 - Post DA #1 (SCM-4)	Max. Elevation	= 1097.38 ft
Reservoir name	= DA #1 (SCM-4)	Max. Storage	= 565 cuft

Storage Indication method used. Outflow includes exfiltration.



Hydrograph Report

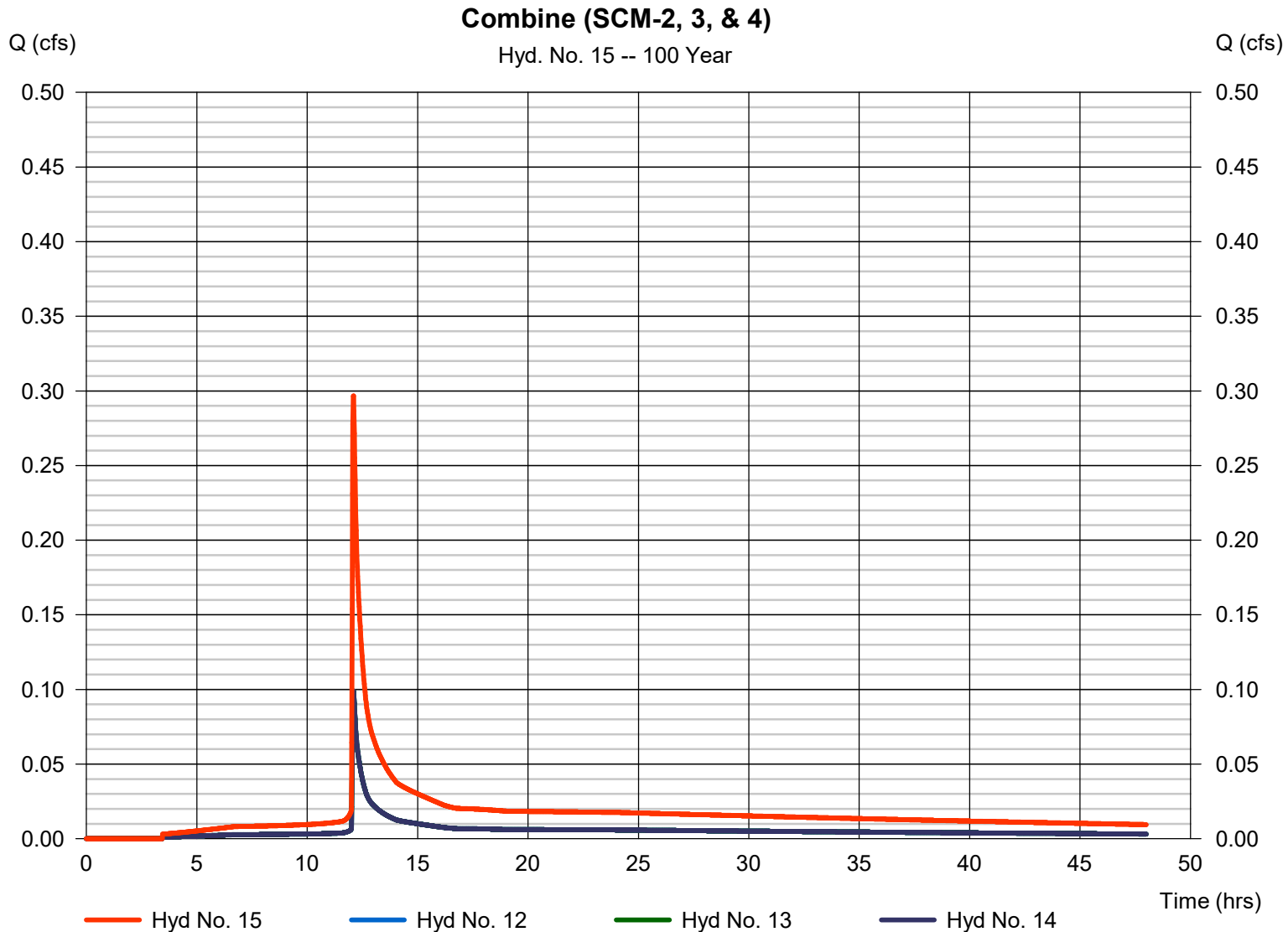
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

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Hyd. No. 15

Combine (SCM-2, 3, & 4)

Hydrograph type	= Combine	Peak discharge	= 0.297 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 1 min	Hyd. volume	= 2,825 cuft
Inflow hyds.	= 12, 13, 14	Contrib. drain. area	= 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

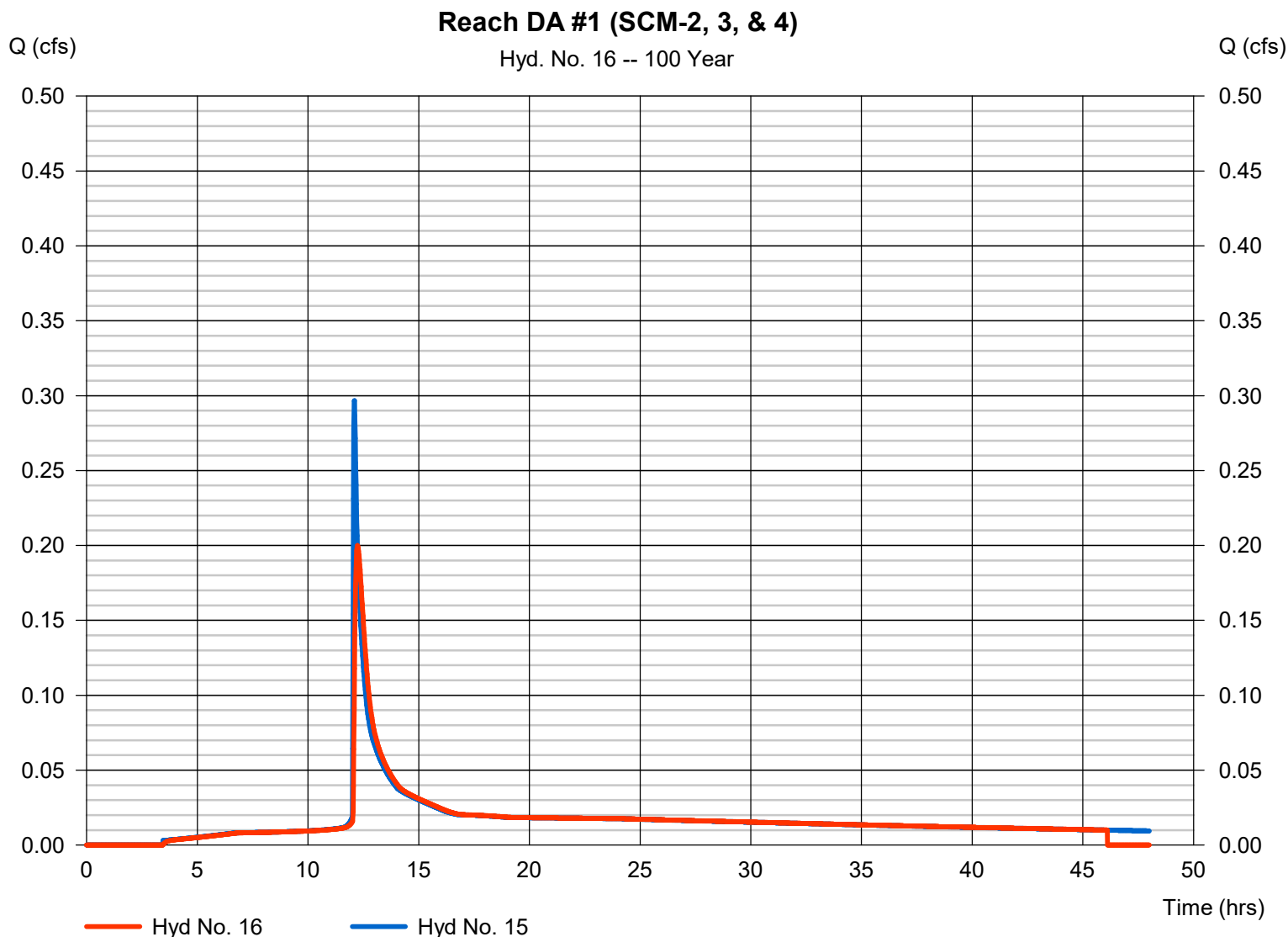
Friday, 04 / 11 / 2025

Hyd. No. 16

Reach DA #1 (SCM-2, 3, & 4)

Hydrograph type	= Reach	Peak discharge	= 0.200 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.23 hrs
Time interval	= 1 min	Hyd. volume	= 2,754 cuft
Inflow hyd. No.	= 15 - Combine (SCM-2, 3, & 4)	Section type	= Trapezoidal
Reach length	= 900.0 ft	Channel slope	= 1.3 %
Manning's n	= 0.025	Bottom width	= 4.0 ft
Side slope	= 2.0:1	Max. depth	= 2.0 ft
Rating curve x	= 2.643	Rating curve m	= 1.307
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.1289

Modified Att-Kin routing method used.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

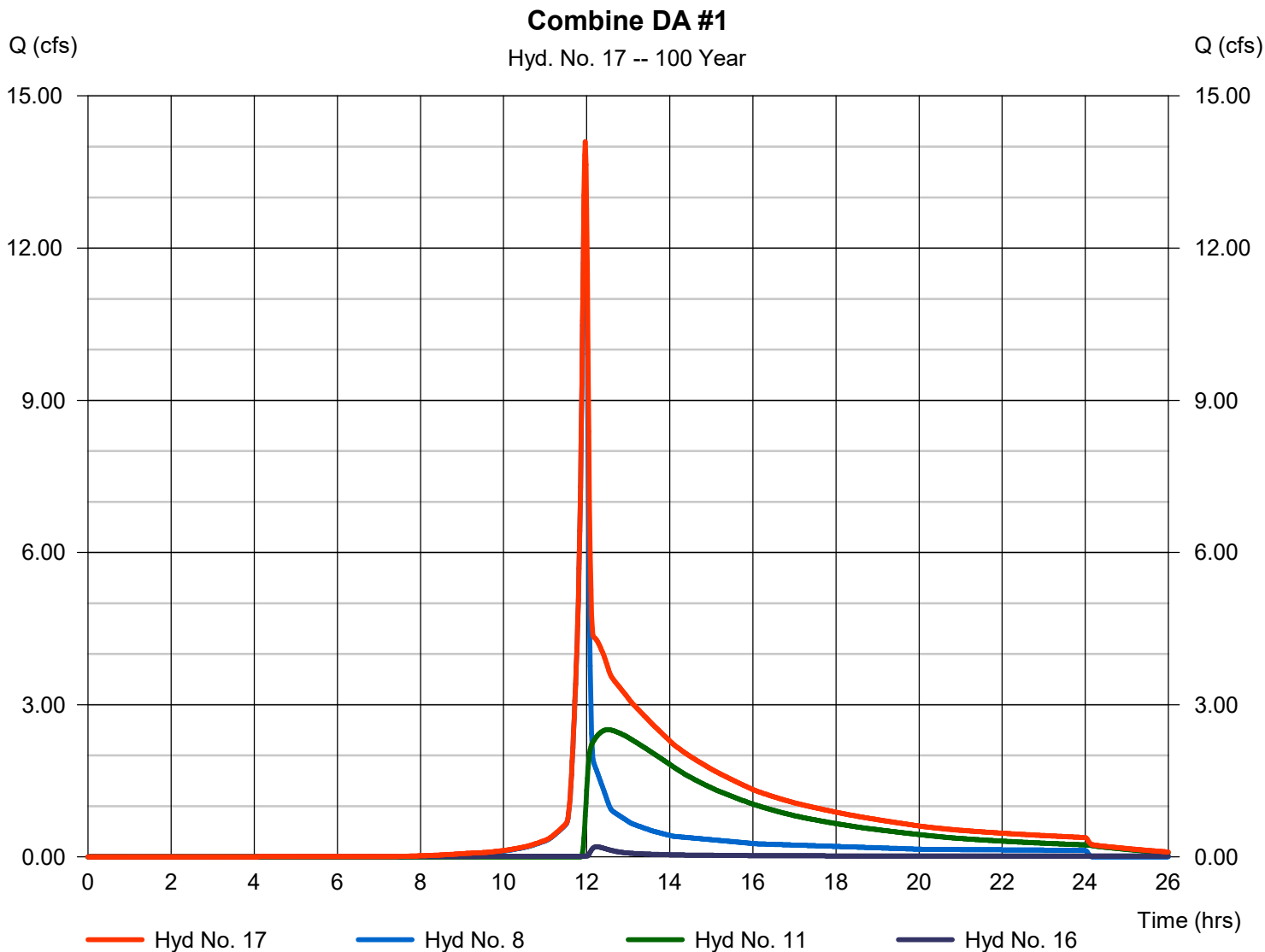
Friday, 04 / 11 / 2025

Hyd. No. 17

Combine DA #1

Hydrograph type = Combine
Storm frequency = 100 yrs
Time interval = 1 min
Inflow hyds. = 8, 11, 16

Peak discharge = 14.10 cfs
Time to peak = 11.97 hrs
Hyd. volume = 71,968 cuft
Contrib. drain. area = 2.590 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

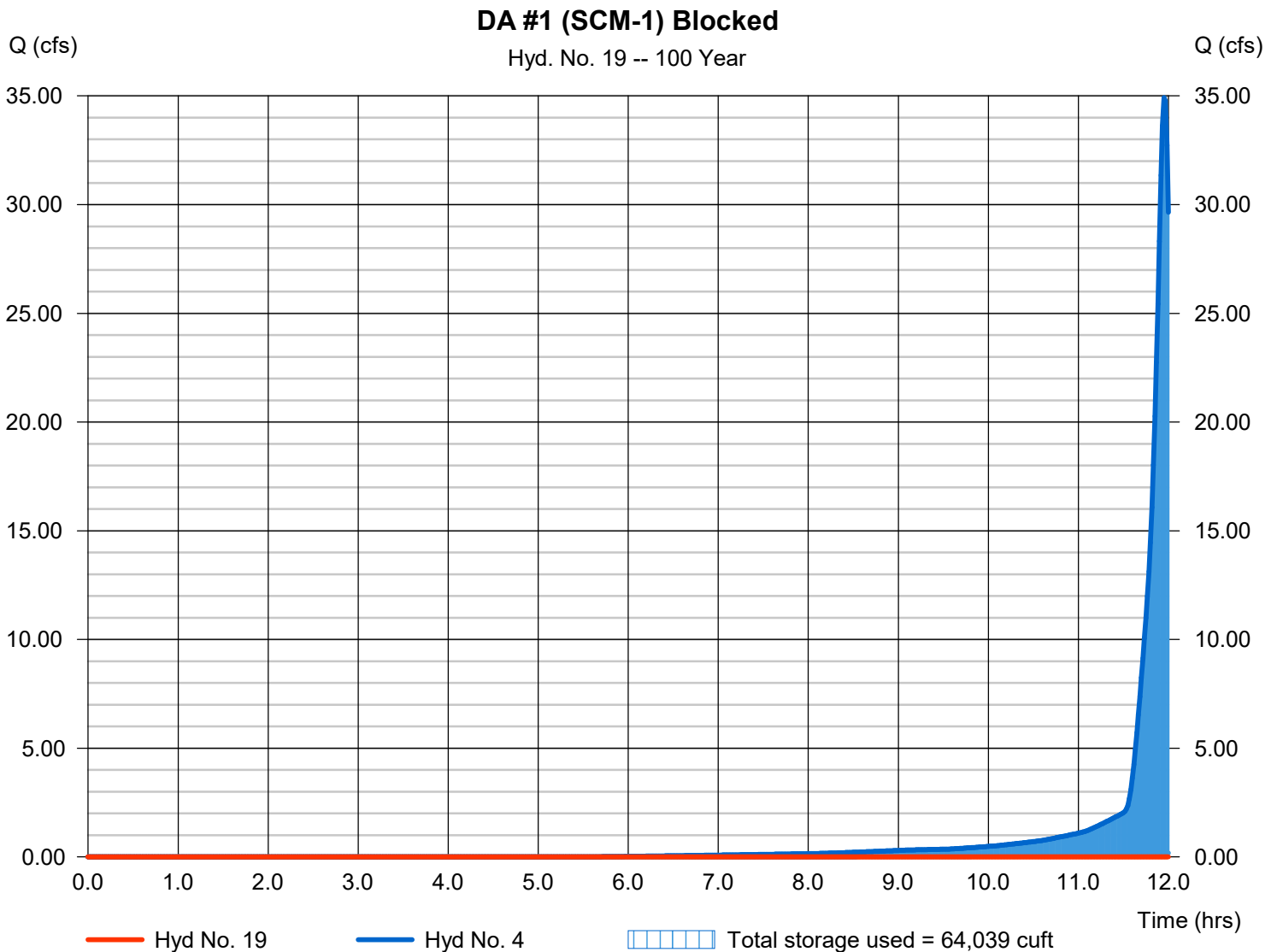
Friday, 04 / 11 / 2025

Hyd. No. 19

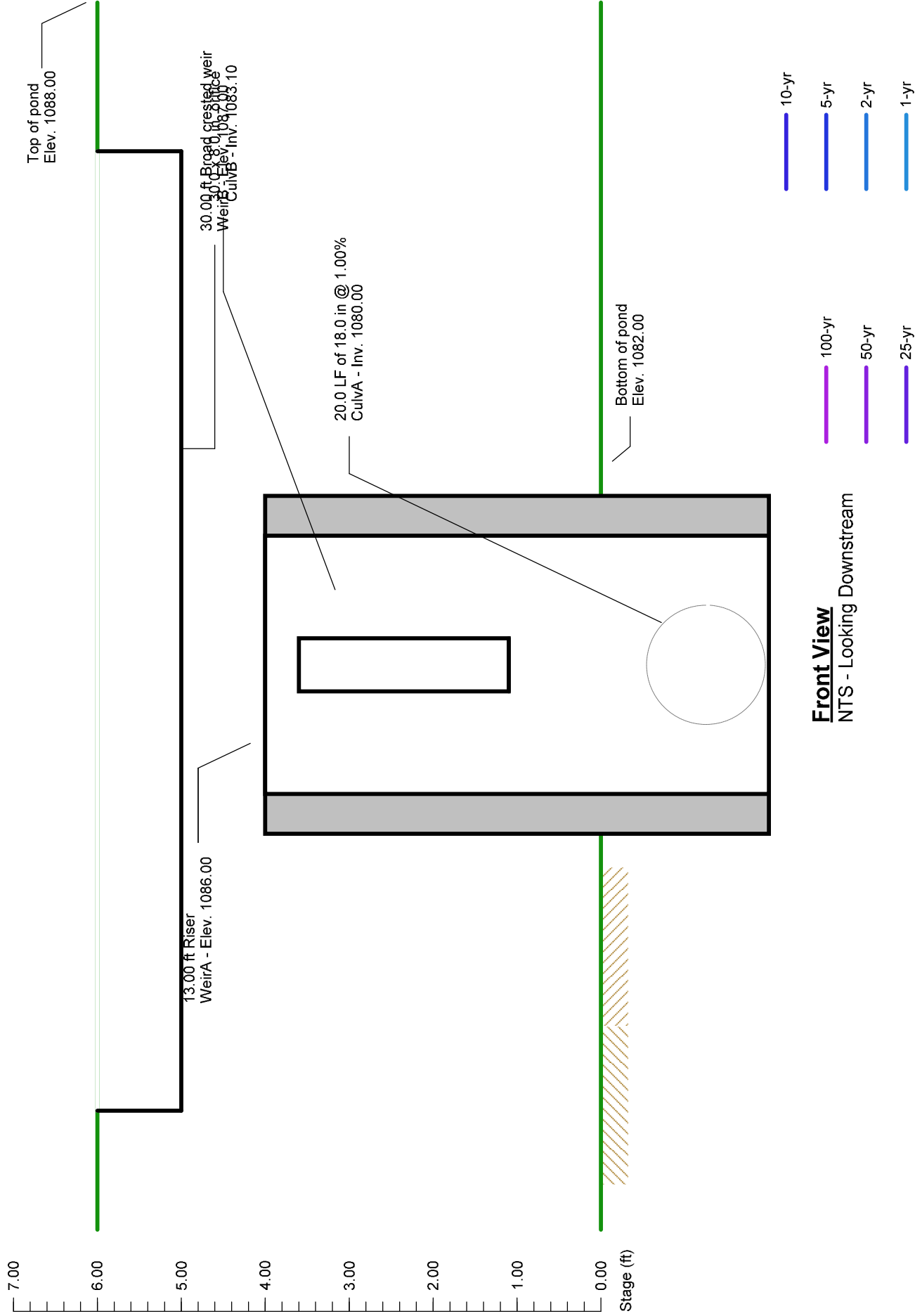
DA #1 (SCM-1) Blocked

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.70 hrs
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 4 - Post DA #1 (SCM-1)	Max. Elevation	= 1085.23 ft
Reservoir name	= DA #1 (SCM-1) Blocked	Max. Storage	= 64,039 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

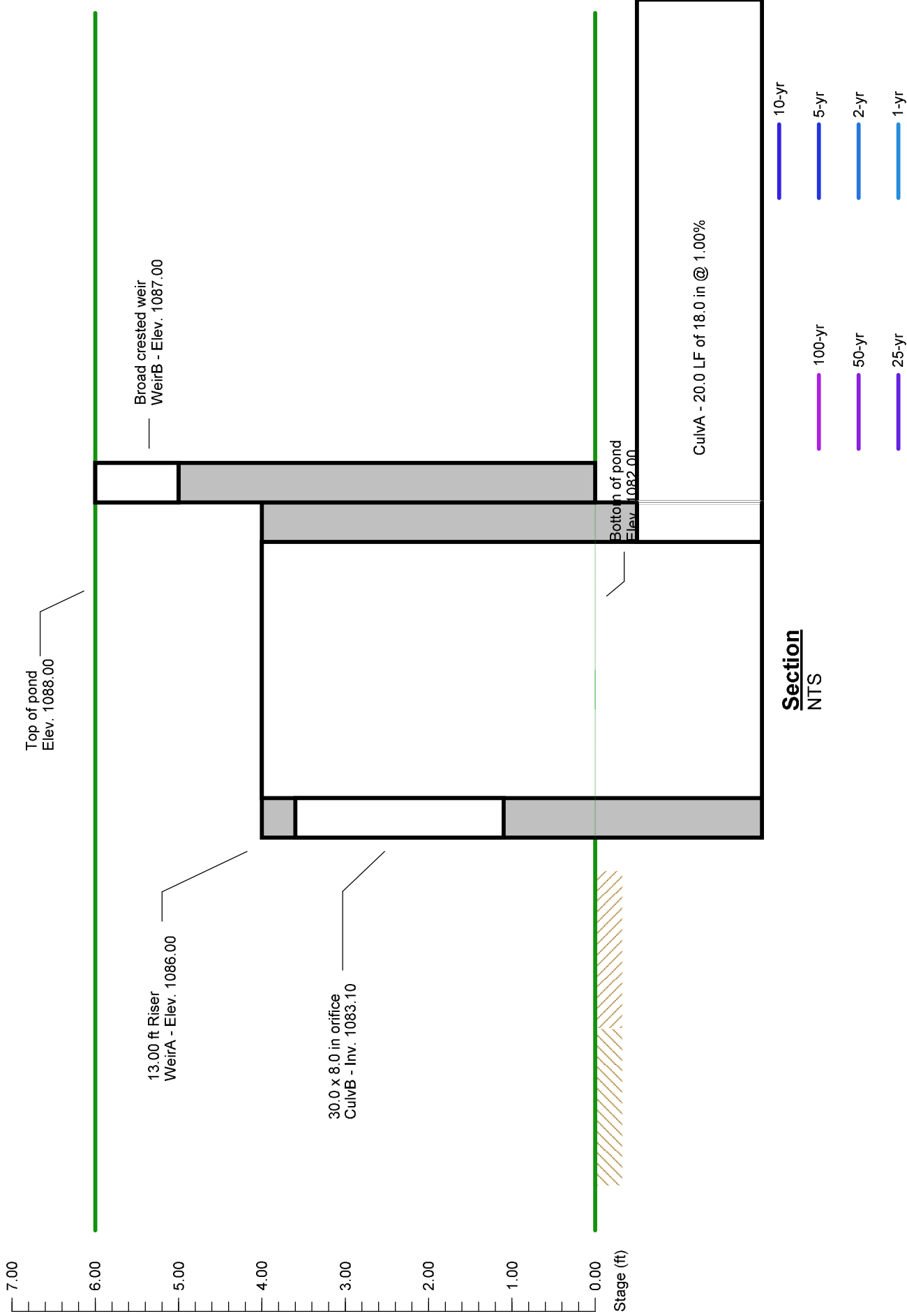


Pond No. 1 - DA #1 (SCM-1)



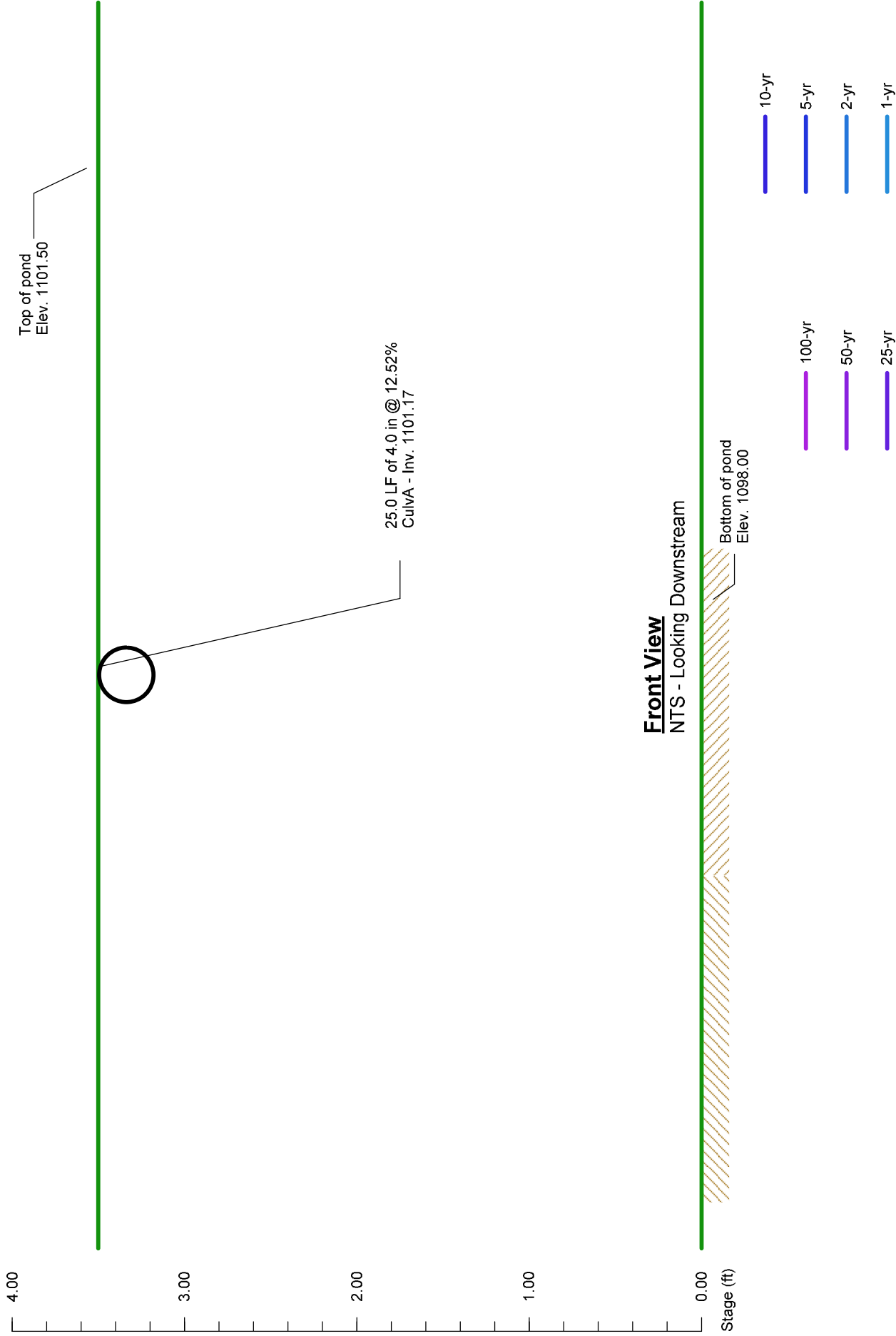
Inflow hydrograph = 1. SCS Runoff - Pre DA #1

Pond No. 1 - DA #1 (SCM-1)



Inflow hydrograph = 1. SCS Runoff - Pre DA #1

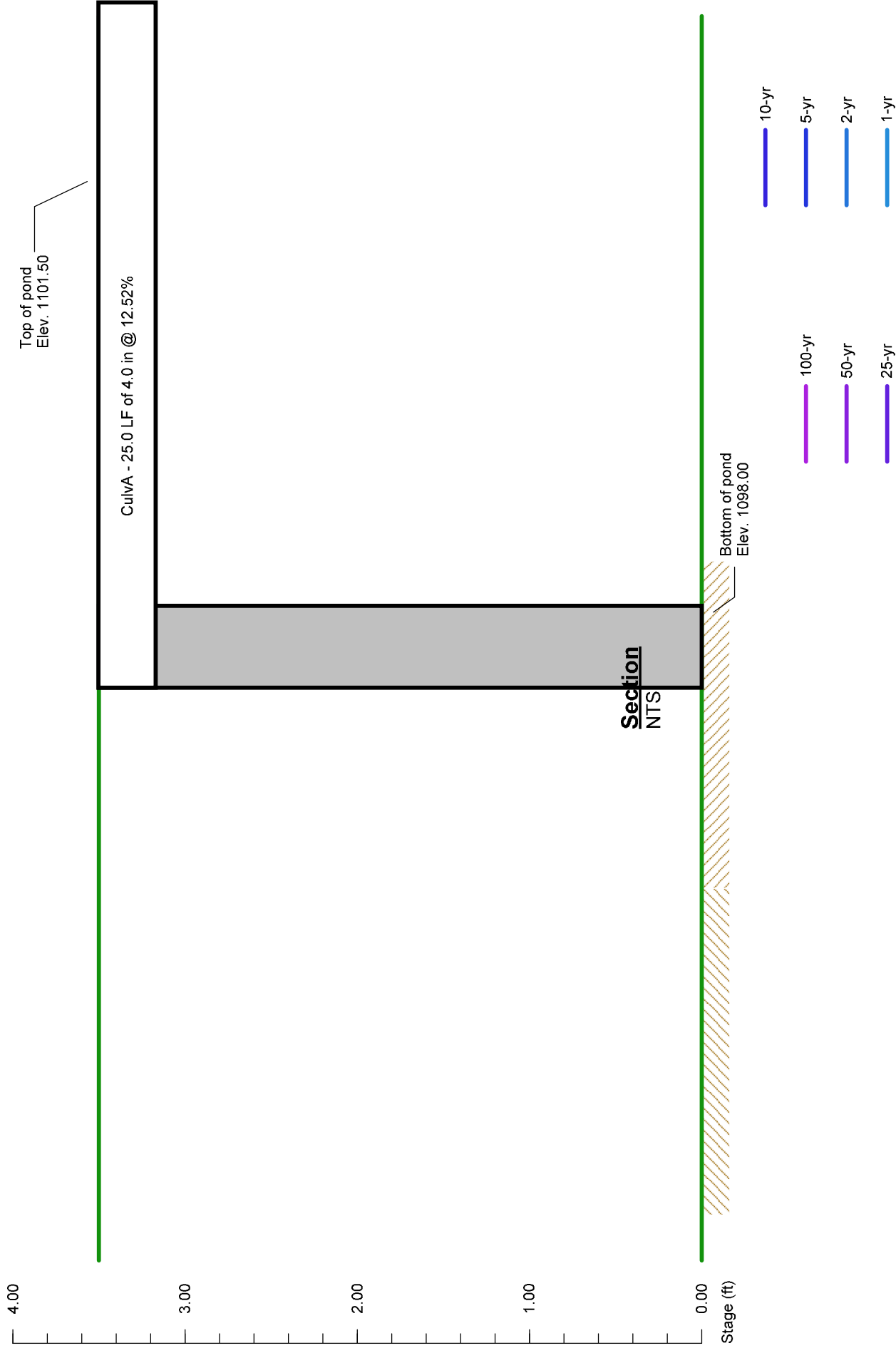
Pond No. 3 - DA #1 (SCM-2)



Inflow hydrograph = 1. SCS Runoff - Pre DA #1

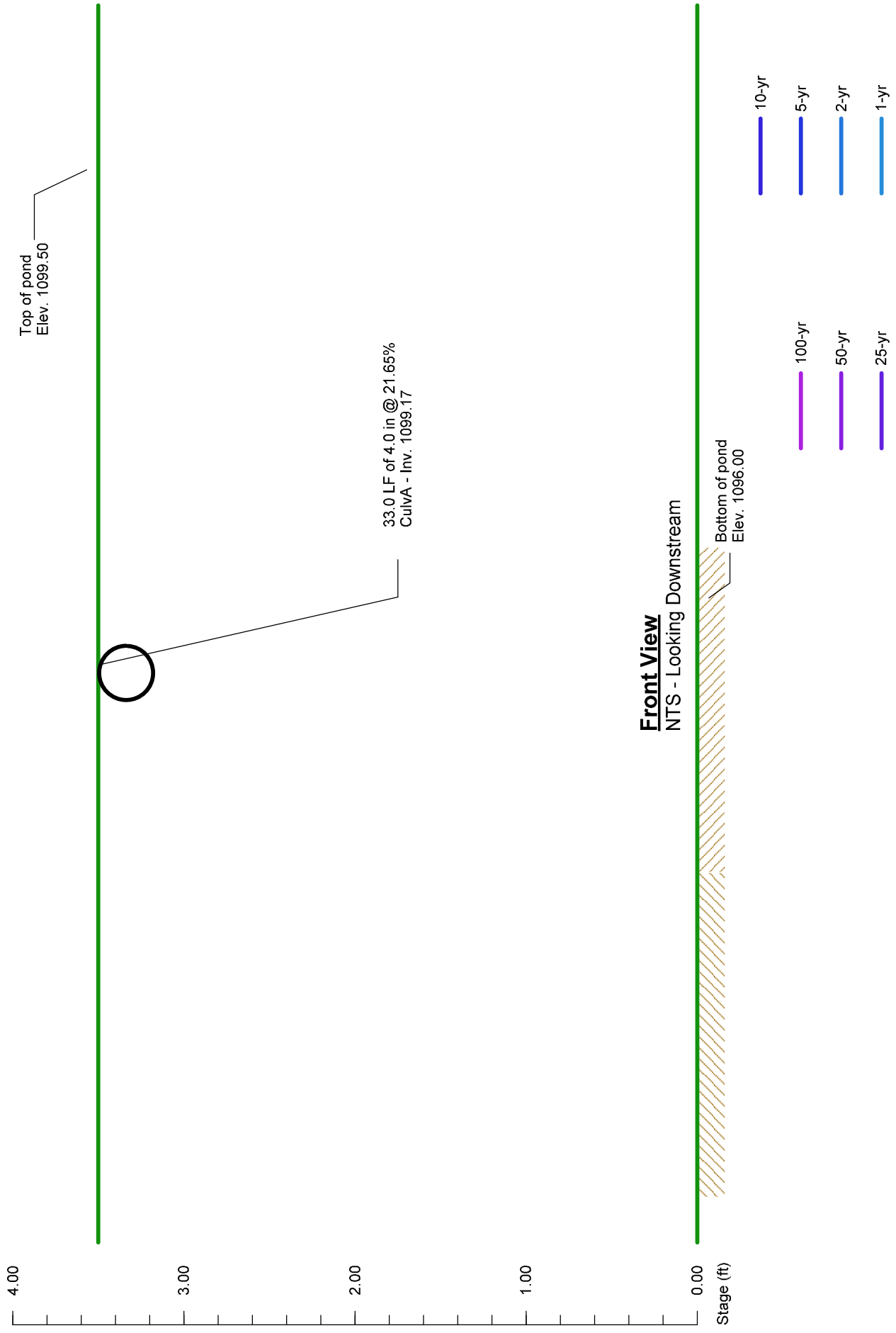
Pond No. 3 - DA #1 (SCM-2)

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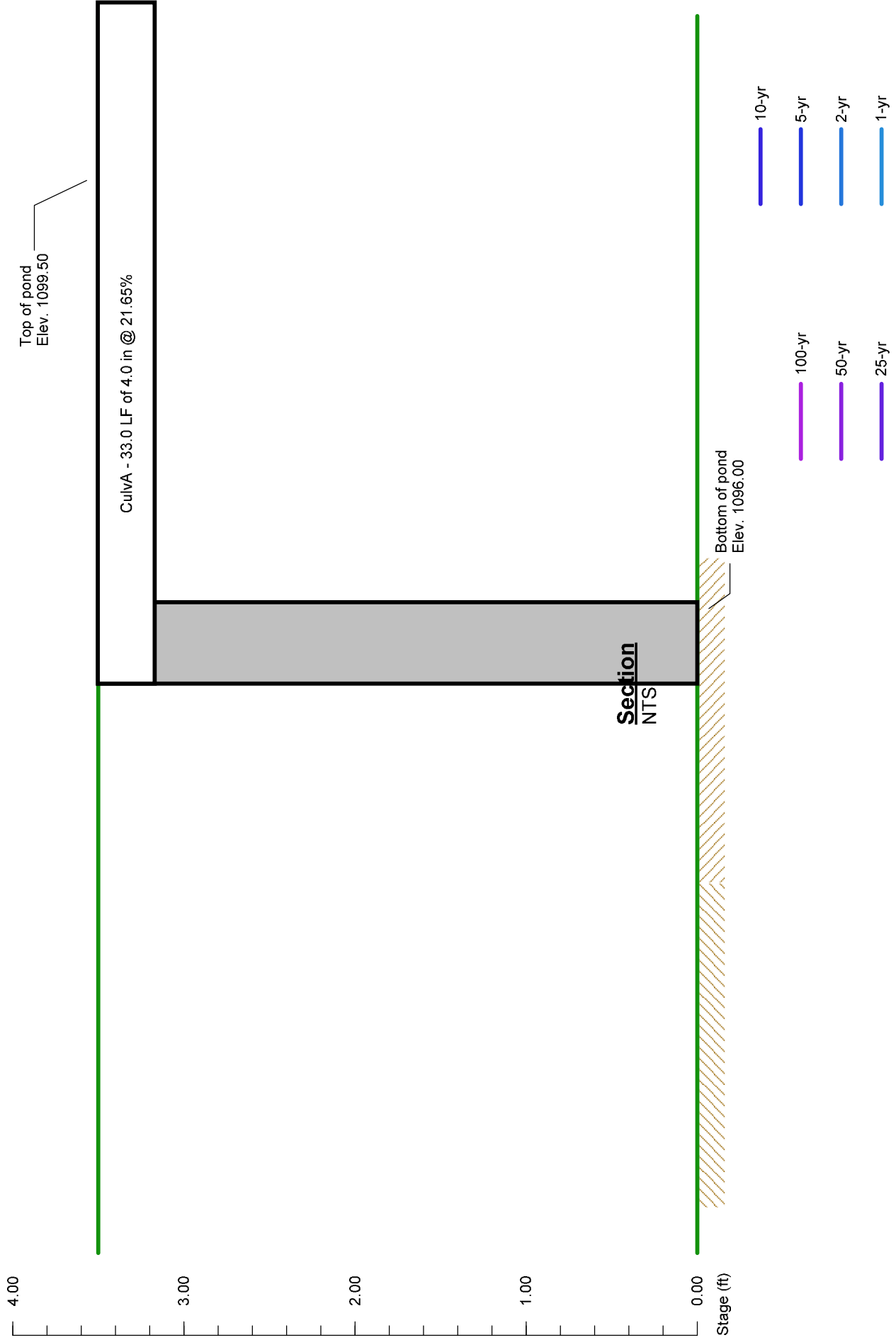
Inflow hydrograph = 1. SCS Runoff - Pre DA #1

Pond No. 4 - DA #1 (SCM-3)



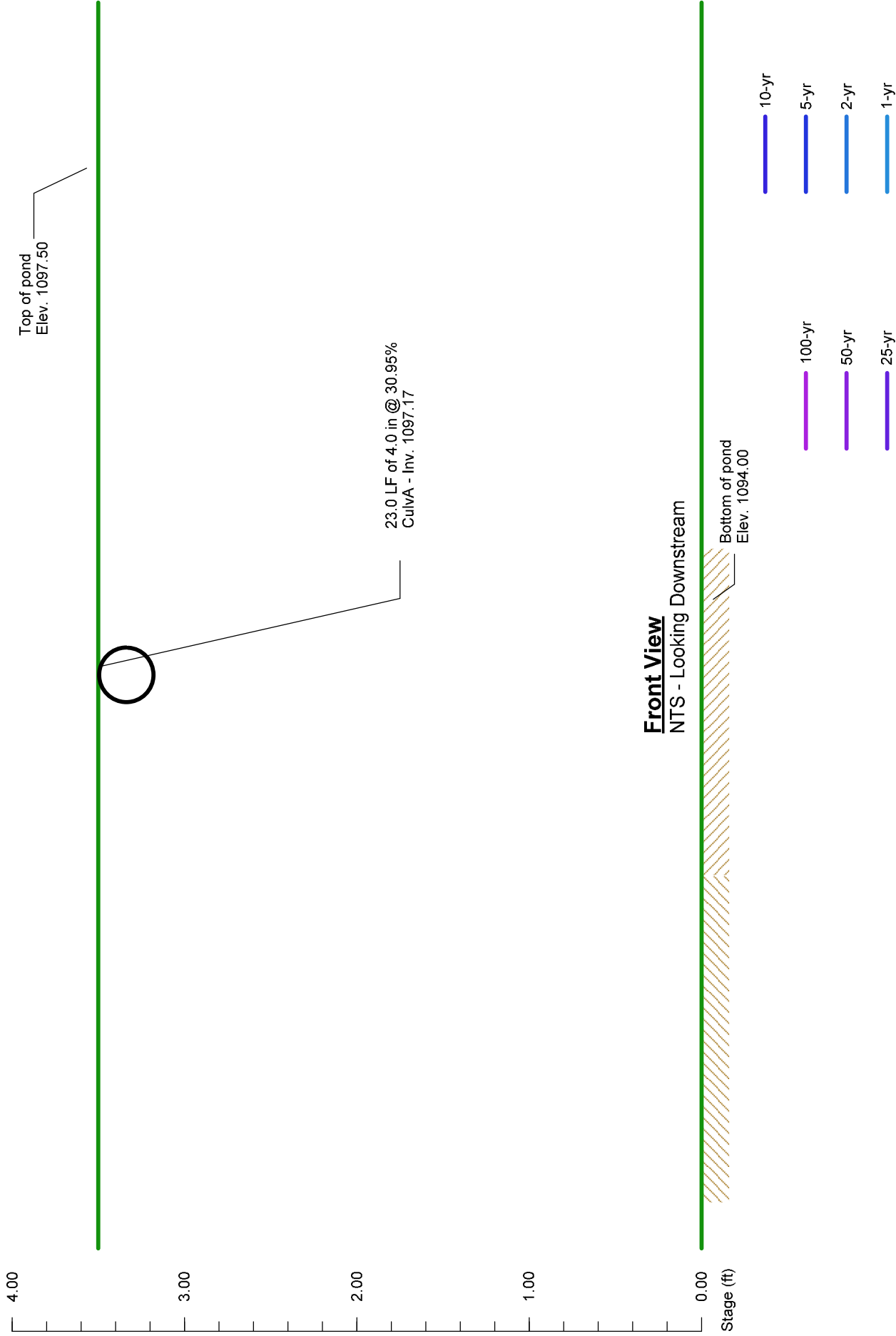
Inflow hydrograph = 1. SCS Runoff - Pre DA #1

Pond No. 4 - DA #1 (SCM-3)



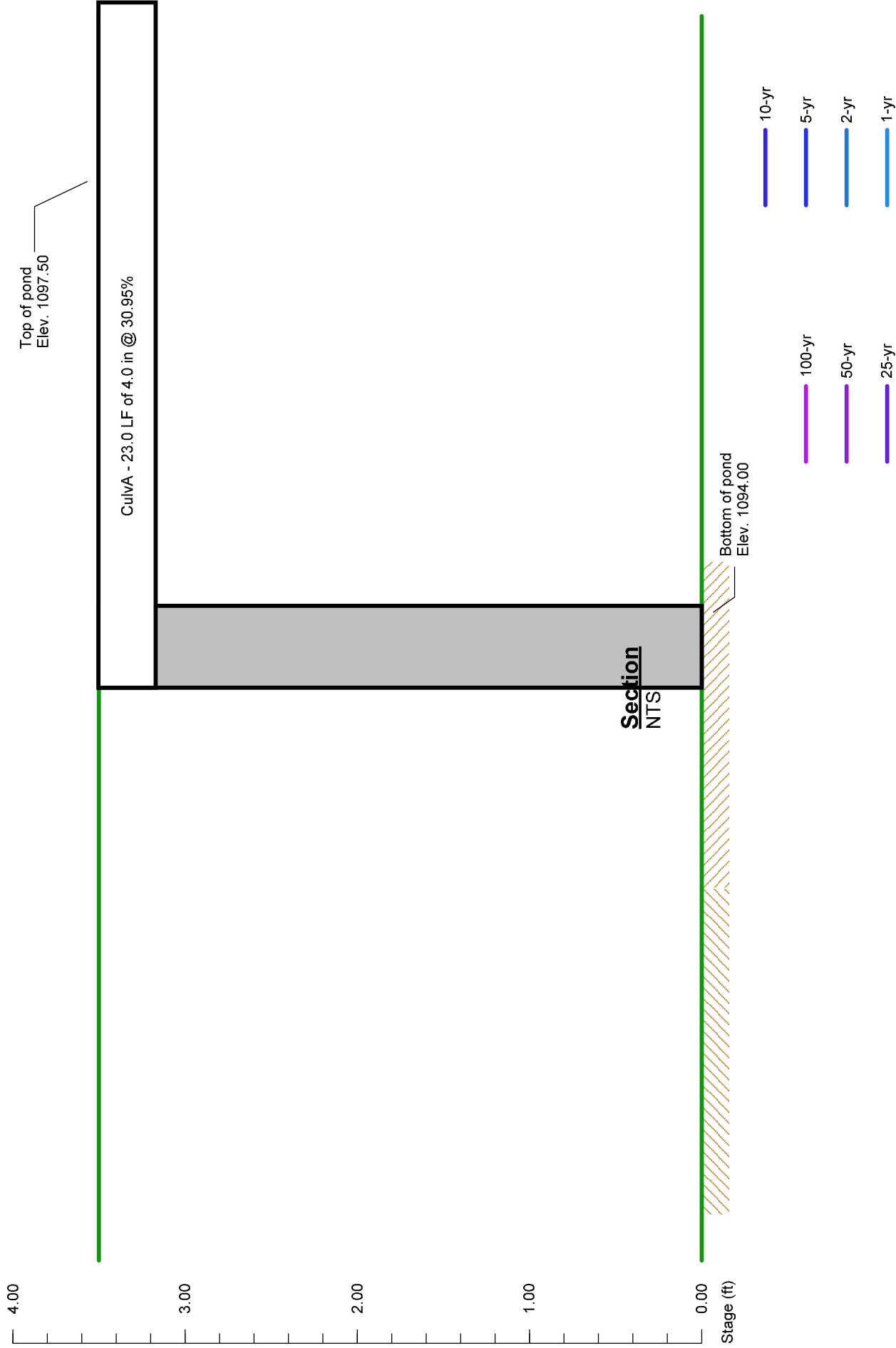
Inflow hydrograph = 1. SCS Runoff - Pre DA #1

Pond No. 5 - DA #1 (SCM-4)



Inflow hydrograph = 1. SCS Runoff - Pre DA #1

Pond No. 5 - DA #1 (SCM-4)



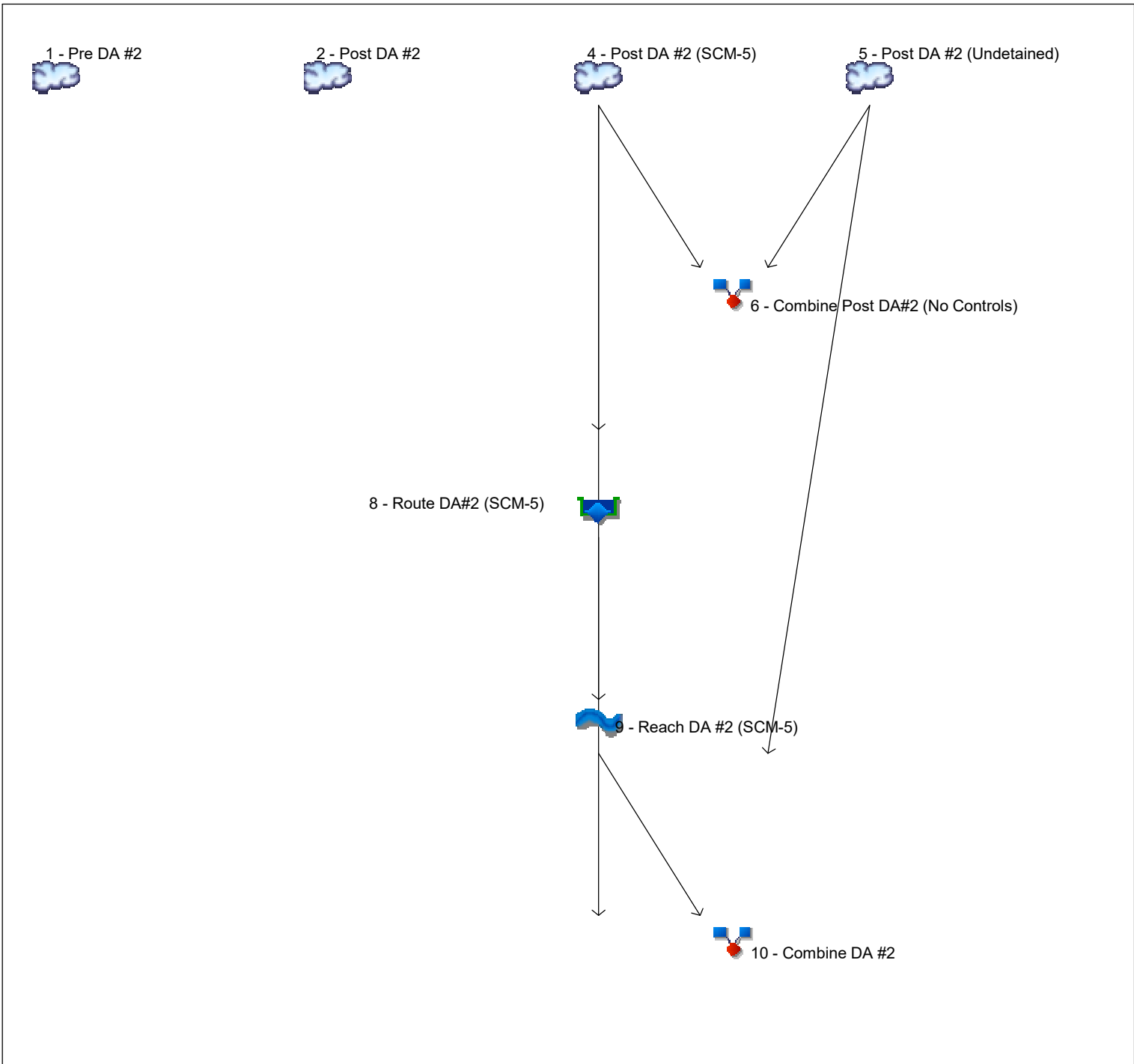
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Watershed Model Schematic

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025



Legend

Hyd.	Origin	Description	
1	SCS Runoff	Pre DA #2	
2	SCS Runoff	Post DA #2	
4	SCS Runoff	Post DA #2 (SCM-5)	
5	SCS Runoff	Post DA #2 (Undetained)	
6	Combine	Combine Post DA#2 (No Controls)	
8	Reservoir	Route DA#2 (SCM-5)	
9	Reach	Reach DA #2 (SCM-5)	
10	Combine	Combine DA #2	
12	Reservoir	DA #2 SCM-5 Blocked	

Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

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	-----	3.987	6.263	-----	9.685	12.73	17.17	20.96	25.10	Pre DA #2
2	SCS Runoff	-----	7.242	10.18	-----	14.40	18.03	23.17	27.47	32.09	Post DA #2
4	SCS Runoff	-----	6.184	8.605	-----	12.06	15.02	19.21	22.71	26.45	Post DA #2 (SCM-5)
5	SCS Runoff	-----	0.791	1.213	-----	1.843	2.400	3.208	3.891	4.629	Post DA #2 (Undetained)
6	Combine	4, 5	6.975	9.818	-----	13.91	17.43	22.42	26.57	31.06	Combine Post DA#2 (No Controls)
8	Reservoir	4	0.000	0.040	-----	0.328	0.785	1.904	3.185	4.808	Route DA#2 (SCM-5)
9	Reach	8	0.000	0.040	-----	0.328	0.785	1.903	3.182	4.799	Reach DA #2 (SCM-5)
10	Combine	5, 9	0.791	1.213	-----	1.843	2.400	3.243	4.703	6.742	Combine DA #2
12	Reservoir	4	0.000	0.000	-----	0.000	0.000	0.000	0.063	0.444	DA #2 SCM-5 Blocked

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

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	3.987	1	719	9,011	-----	-----	-----	Pre DA #2	
2	SCS Runoff	7.242	1	717	13,592	-----	-----	-----	Post DA #2	
4	SCS Runoff	6.184	1	718	12,440	-----	-----	-----	Post DA #2 (SCM-5)	
5	SCS Runoff	0.791	1	718	1,667	-----	-----	-----	Post DA #2 (Undetained)	
6	Combine	6.975	1	718	14,107	4, 5	-----	-----	Combine Post DA#2 (No Controls)	
8	Reservoir	0.000	1	753	0	4	1103.44	9,663	Route DA#2 (SCM-5)	
9	Reach	0.000	1	753	0	8	-----	-----	Reach DA #2 (SCM-5)	
10	Combine	0.791	1	718	1,667	5, 9	-----	-----	Combine DA #2	
12	Reservoir	0.000	1	2499	0	4	1103.44	9,663	DA #2 SCM-5 Blocked	
250401-Newcastle DA 2.gpw					Return Period: 1 Year			Friday, 04 / 11 / 2025		

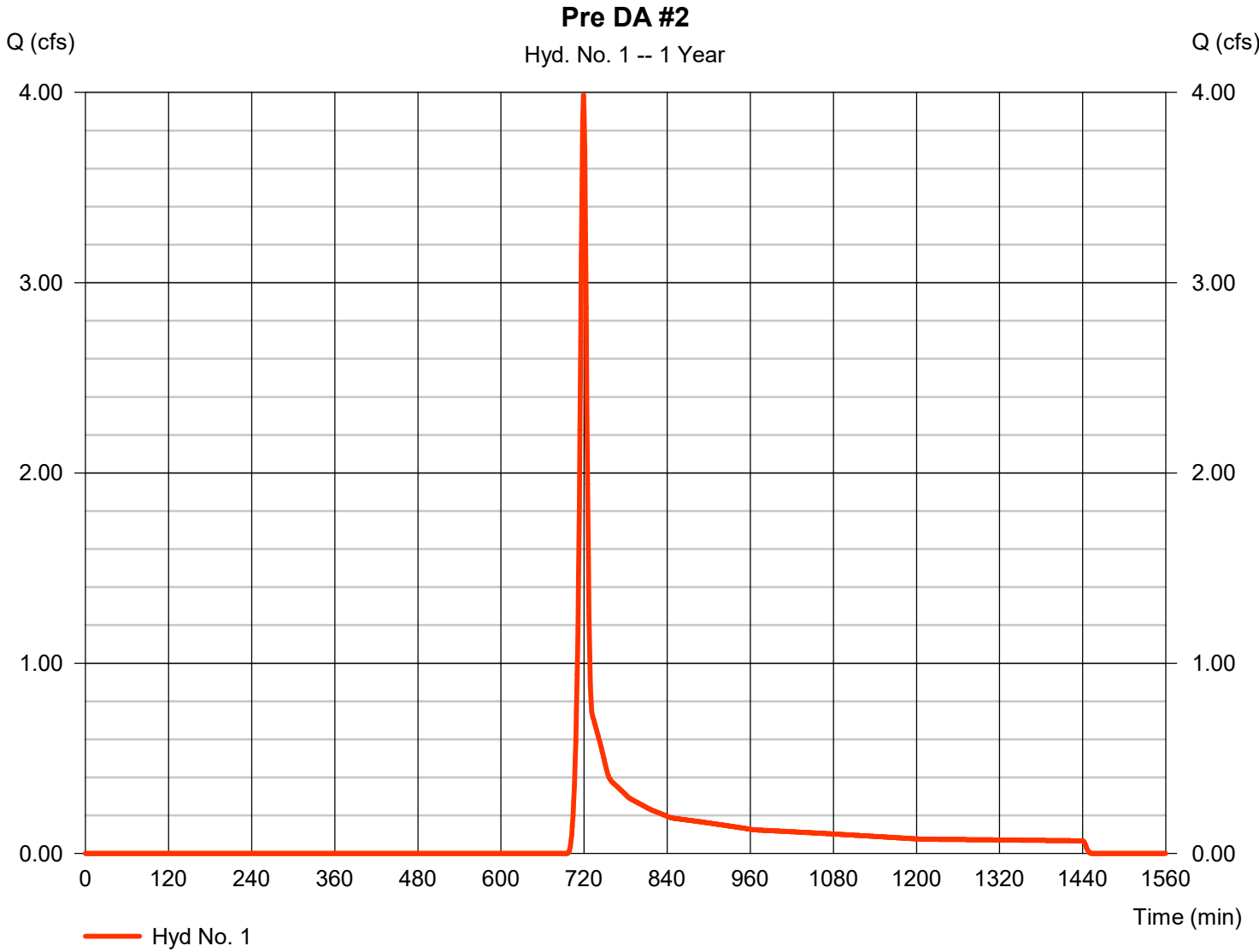
Hydrograph Report

Hyd. No. 1

Pre DA #2

Hydrograph type	= SCS Runoff	Peak discharge	= 3.987 cfs
Storm frequency	= 1 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 9,011 cuft
Drainage area	= 5.750 ac	Curve number	= 77*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 7.50 min
Total precip.	= 1.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(3.415 x 77) + (2.335 x 78)] / 5.750



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No. 1

Pre DA #2

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
Sheet Flow				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 2.38	0.00	0.00	
Land slope (%)	= 23.00	0.00	0.00	
Travel Time (min)	= 6.23	+ 0.00	+ 0.00	= 6.23
Shallow Concentrated Flow				
Flow length (ft)	= 279.00	0.00	0.00	
Watercourse slope (%)	= 17.00	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=6.65	0.00	0.00	
Travel Time (min)	= 0.70	+ 0.00	+ 0.00	= 0.70
Channel Flow				
X sectional flow area (sqft)	= 16.00	0.00	0.00	
Wetted perimeter (ft)	= 12.90	0.00	0.00	
Channel slope (%)	= 2.90	0.00	0.00	
Manning's n-value	= 0.025	0.015	0.015	
Velocity (ft/s)	=11.72	0.00	0.00	
Flow length (ft)	{{0}}412.0	0.0	0.0	
Travel Time (min)	= 0.59	+ 0.00	+ 0.00	= 0.59
Total Travel Time, Tc				7.50 min

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

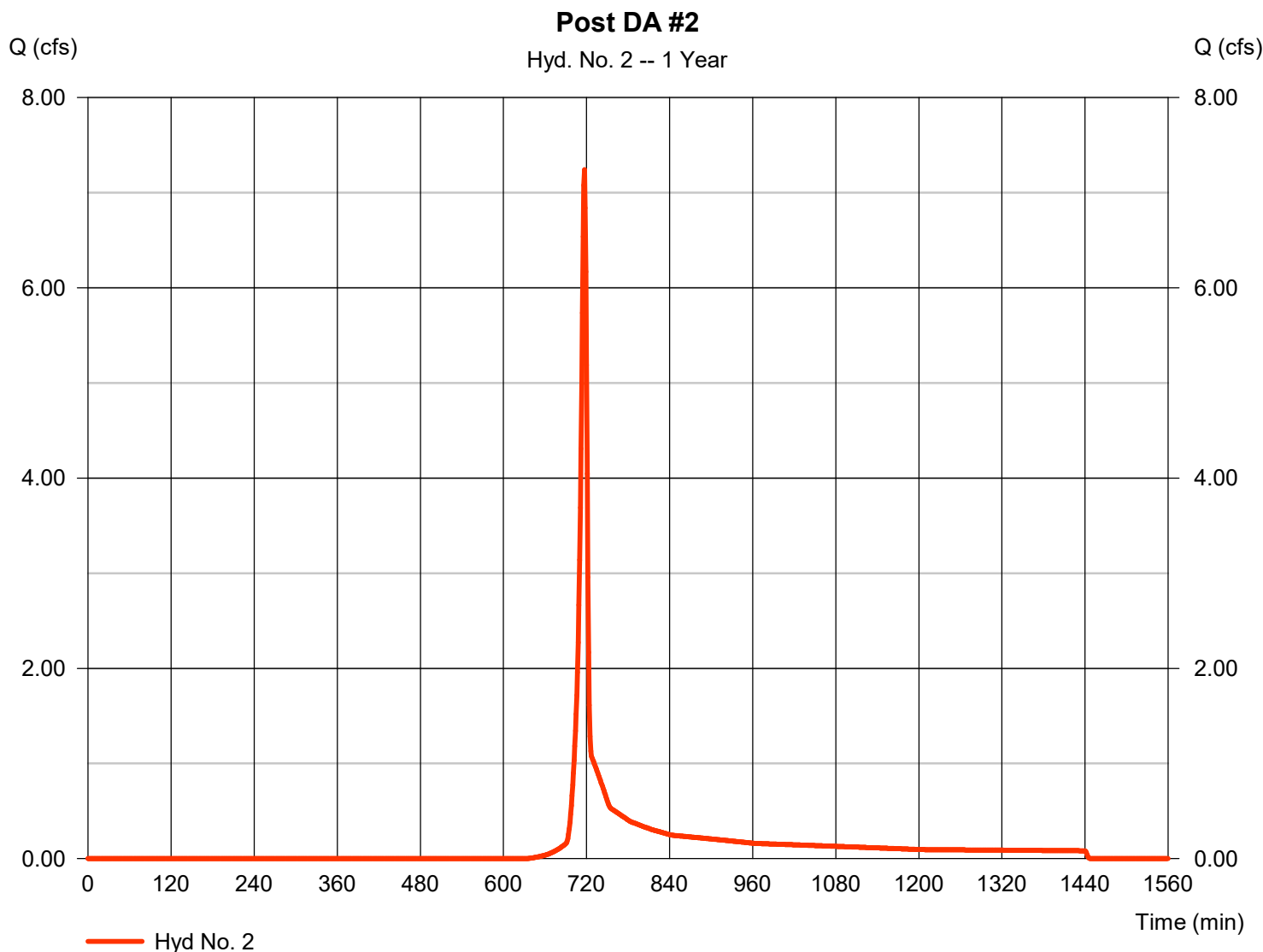
Friday, 04 / 11 / 2025

Hyd. No. 2

Post DA #2

Hydrograph type	= SCS Runoff	Peak discharge	= 7.242 cfs
Storm frequency	= 1 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 13,592 cuft
Drainage area	= 5.440 ac	Curve number	= 83*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 4.60 min
Total precip.	= 1.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.677 x 78) + (2.579 x 80) + (1.187 x 98)] / 5.440



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No. 2

Post DA #2

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
Sheet Flow				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 75.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 2.38	2.38	0.00	
Land slope (%)	= 50.00	0.00	0.00	
Travel Time (min)	= 3.63	+ 0.00	+ 0.00	= 3.63
Shallow Concentrated Flow				
Flow length (ft)	= 54.00	0.00	0.00	
Watercourse slope (%)	= 7.00	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	=4.27	0.00	0.00	
Travel Time (min)	= 0.21	+ 0.00	+ 0.00	= 0.21
Channel Flow				
X sectional flow area (sqft)	= 3.14	3.14	3.14	
Wetted perimeter (ft)	= 6.28	6.28	6.28	
Channel slope (%)	= 3.80	0.80	0.50	
Manning's n-value	= 0.011	0.011	0.011	
Velocity (ft/s)	=16.60	7.61	6.02	
Flow length (ft)	293.0	145.0	60.0	
Travel Time (min)	= 0.29	+ 0.32	+ 0.17	= 0.78
Total Travel Time, Tc				4.60 min

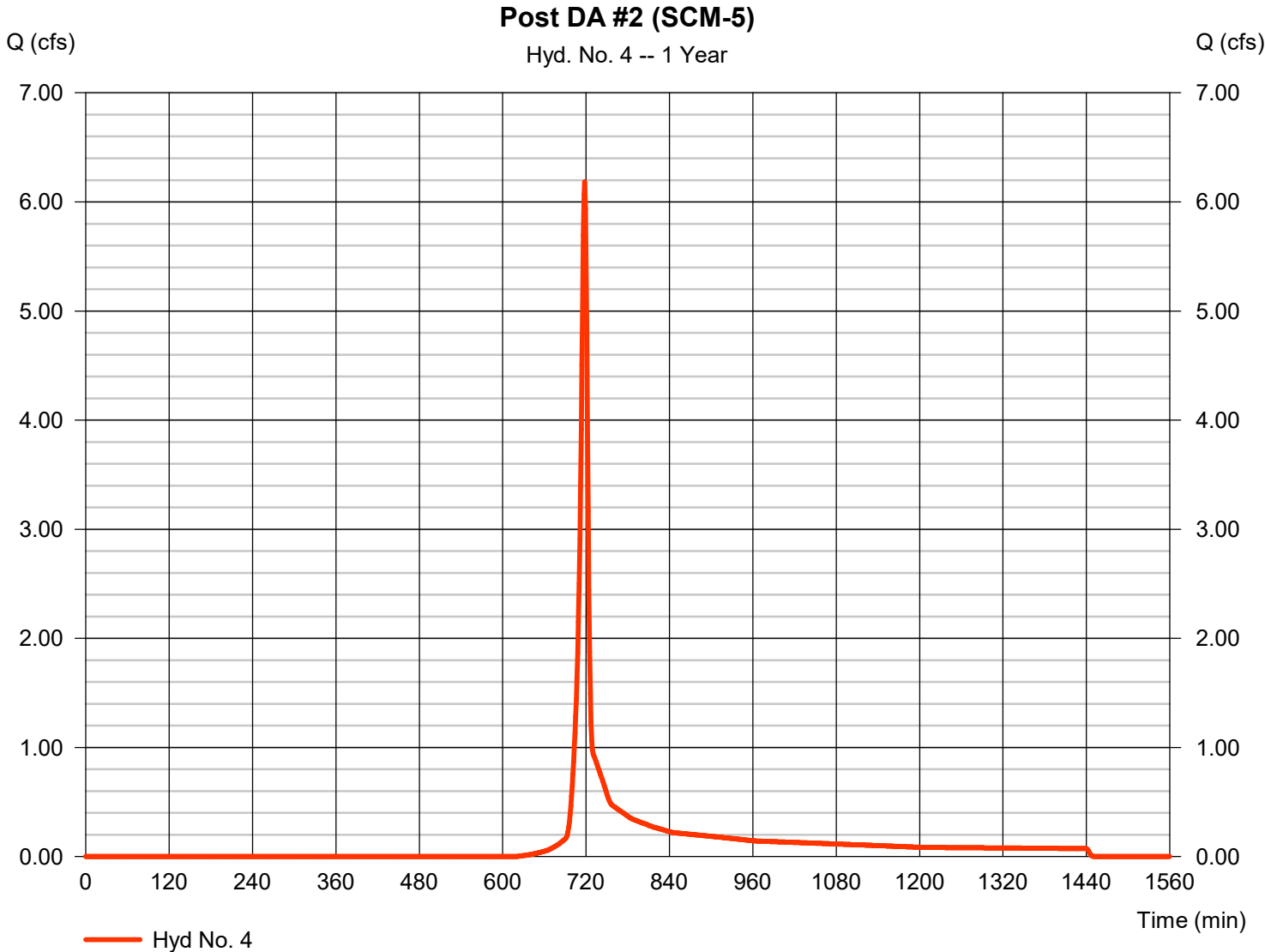
Hydrograph Report

Hyd. No. 4

Post DA #2 (SCM-5)

Hydrograph type	= SCS Runoff	Peak discharge	= 6.184 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 12,440 cuft
Drainage area	= 4.510 ac	Curve number	= 84*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.914 x 78) + (2.410 x 80) + (1.187 x 98)] / 4.510



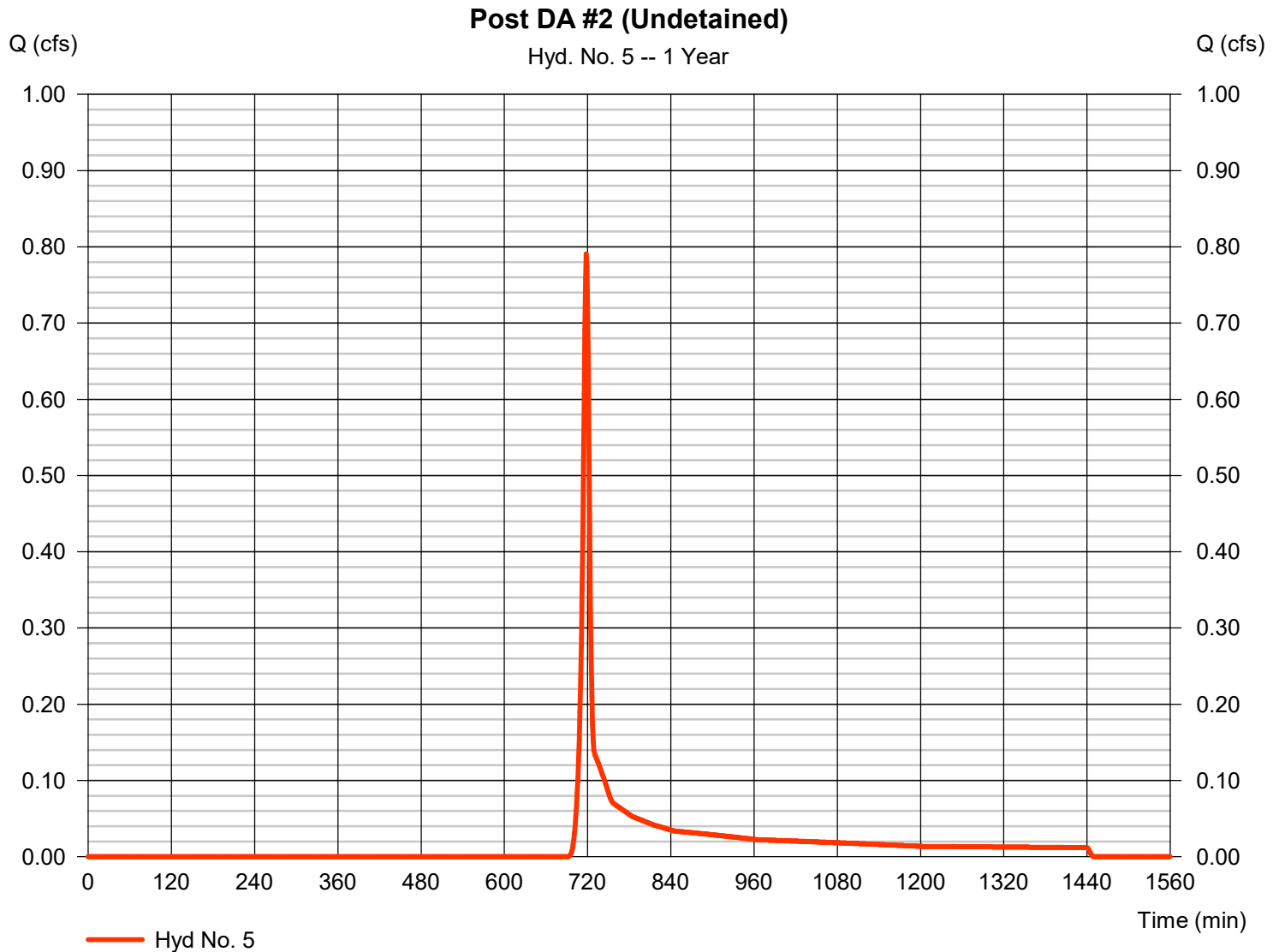
Hydrograph Report

Hyd. No. 5

Post DA #2 (Undetained)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.791 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 1,667 cuft
Drainage area	= 0.930 ac	Curve number	= 78*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.763 x 78) + (0.168 x 80)] / 0.930



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

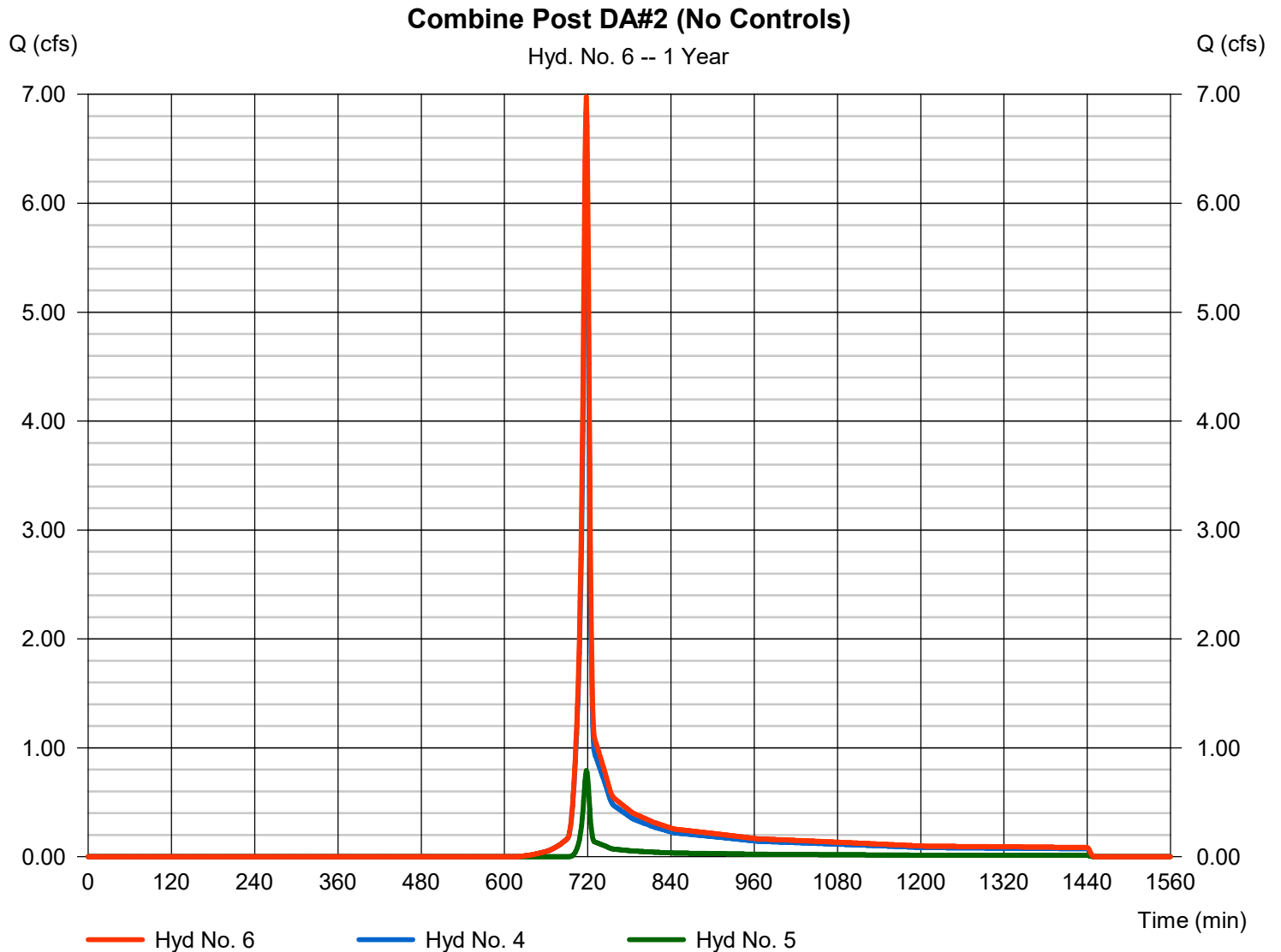
Friday, 04 / 11 / 2025

Hyd. No. 6

Combine Post DA#2 (No Controls)

Hydrograph type = Combine
Storm frequency = 1 yrs
Time interval = 1 min
Inflow hyds. = 4, 5

Peak discharge = 6.975 cfs
Time to peak = 718 min
Hyd. volume = 14,107 cuft
Contrib. drain. area = 5.440 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

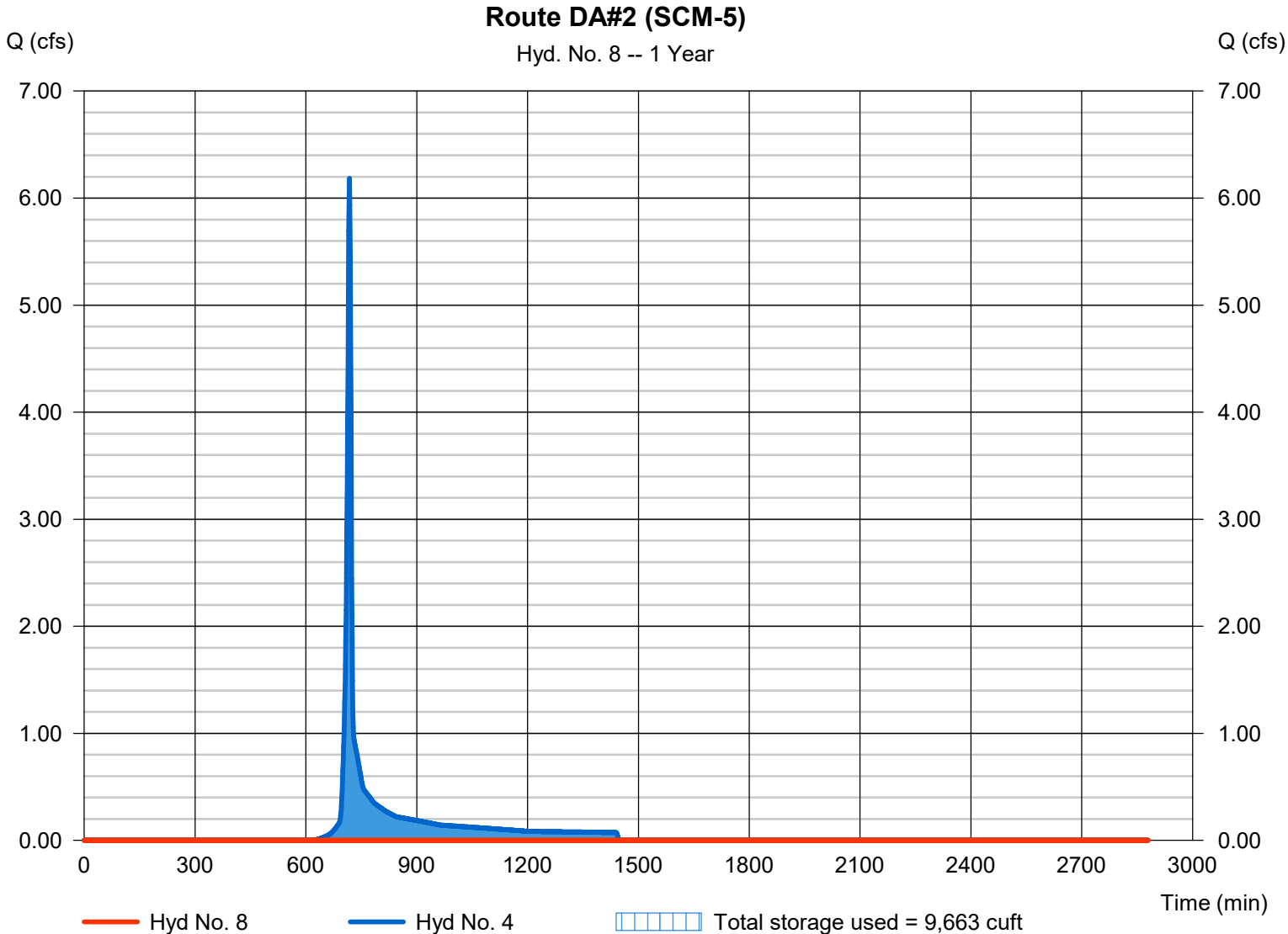
Friday, 04 / 11 / 2025

Hyd. No. 8

Route DA#2 (SCM-5)

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= 753 min
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 4 - Post DA #2 (SCM-5)	Max. Elevation	= 1103.44 ft
Reservoir name	= DA #2 (SCM-5)	Max. Storage	= 9,663 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Pond No. 1 - DA #2 (SCM-5)

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Beging Elevation = 1102.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	1102.00	5,969	0	0
1.00	1103.00	6,914	6,435	6,435
2.00	1104.00	7,916	7,409	13,844
3.00	1105.00	8,974	8,439	22,283
4.00	1106.00	10,089	9,525	31,808
5.00	1107.00	11,261	10,669	42,477
6.00	1108.00	12,489	11,868	54,345
6.25	1108.25	12,805	3,161	57,507

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	25.20	0.00	0.00
Span (in)	= 18.00	8.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 1101.75	1103.90	0.00	0.00
Length (ft)	= 42.40	0.00	0.00	0.00
Slope (%)	= 0.56	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)	= 13.00	20.00	0.00	0.00
Crest El. (ft)	= 1106.00	1107.00	0.00	0.00
Weir Coeff.	= 3.33	2.60	3.33	3.33
Weir Type	= 1	Broad	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 0.380 (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 / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	1102.00	0.00	0.00	---	---	0.00	0.00	---	---	0.000	---	0.000
0.10	644	1102.10	0.34 ic	0.00	---	---	0.00	0.00	---	---	0.006	---	0.006
0.20	1,287	1102.20	0.34 ic	0.00	---	---	0.00	0.00	---	---	0.012	---	0.012
0.30	1,931	1102.30	0.34 ic	0.00	---	---	0.00	0.00	---	---	0.018	---	0.018
0.40	2,574	1102.40	0.34 ic	0.00	---	---	0.00	0.00	---	---	0.024	---	0.024
0.50	3,218	1102.50	0.34 ic	0.00	---	---	0.00	0.00	---	---	0.030	---	0.030
0.60	3,861	1102.60	0.34 ic	0.00	---	---	0.00	0.00	---	---	0.036	---	0.036
0.70	4,505	1102.70	0.34 ic	0.00	---	---	0.00	0.00	---	---	0.043	---	0.043
0.80	5,148	1102.80	0.34 ic	0.00	---	---	0.00	0.00	---	---	0.049	---	0.049
0.90	5,792	1102.90	0.34 ic	0.00	---	---	0.00	0.00	---	---	0.055	---	0.055
1.00	6,435	1103.00	0.34 ic	0.00	---	---	0.00	0.00	---	---	0.061	---	0.061
1.10	7,176	1103.10	0.34 ic	0.00	---	---	0.00	0.00	---	---	0.062	---	0.062
1.20	7,917	1103.20	0.34 ic	0.00	---	---	0.00	0.00	---	---	0.063	---	0.063
1.30	8,658	1103.30	0.34 ic	0.00	---	---	0.00	0.00	---	---	0.063	---	0.063
1.40	9,399	1103.40	0.34 ic	0.00	---	---	0.00	0.00	---	---	0.064	---	0.064
1.50	10,140	1103.50	0.34 ic	0.00	---	---	0.00	0.00	---	---	0.065	---	0.065
1.60	10,880	1103.60	0.34 ic	0.00	---	---	0.00	0.00	---	---	0.066	---	0.066
1.70	11,621	1103.70	0.34 ic	0.00	---	---	0.00	0.00	---	---	0.067	---	0.067
1.80	12,362	1103.80	0.34 ic	0.00	---	---	0.00	0.00	---	---	0.068	---	0.068
1.90	13,103	1103.90	0.34 ic	0.00	---	---	0.00	0.00	---	---	0.069	---	0.069
2.00	13,844	1104.00	0.34 ic	0.07 ic	---	---	0.00	0.00	---	---	0.070	---	0.141
2.10	14,688	1104.10	0.34 ic	0.20 ic	---	---	0.00	0.00	---	---	0.071	---	0.274
2.20	15,532	1104.20	0.38 ic	0.37 ic	---	---	0.00	0.00	---	---	0.071	---	0.444
2.30	16,376	1104.30	0.58 ic	0.57 ic	---	---	0.00	0.00	---	---	0.072	---	0.646
2.40	17,219	1104.40	0.80 ic	0.80 ic	---	---	0.00	0.00	---	---	0.073	---	0.876
2.50	18,063	1104.50	1.06 ic	1.05 ic	---	---	0.00	0.00	---	---	0.074	---	1.129
2.60	18,907	1104.60	1.36 oc	1.33 ic	---	---	0.00	0.00	---	---	0.075	---	1.404
2.70	19,751	1104.70	1.64 oc	1.62 ic	---	---	0.00	0.00	---	---	0.076	---	1.700
2.80	20,595	1104.80	1.94 oc	1.94 ic	---	---	0.00	0.00	---	---	0.077	---	2.014
2.90	21,439	1104.90	2.30 oc	2.27 ic	---	---	0.00	0.00	---	---	0.078	---	2.347
3.00	22,283	1105.00	2.65 oc	2.62 ic	---	---	0.00	0.00	---	---	0.079	---	2.698
3.10	23,235	1105.10	3.00 oc	2.98 ic	---	---	0.00	0.00	---	---	0.080	---	3.063
3.20	24,188	1105.20	3.37 oc	3.36 ic	---	---	0.00	0.00	---	---	0.081	---	3.445
3.30	25,140	1105.30	3.79 oc	3.76 ic	---	---	0.00	0.00	---	---	0.082	---	3.841
3.40	26,093	1105.40	4.19 oc	4.17 ic	---	---	0.00	0.00	---	---	0.083	---	4.252

Continues on next page...

DA #2 (SCM-5)

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
3.50	27,045	1105.50	4.60 oc	4.59 ic	---	---	0.00	0.00	---	---	0.084	---	4.677
3.60	27,998	1105.60	5.03 oc	5.03 ic	---	---	0.00	0.00	---	---	0.085	---	5.115
3.70	28,951	1105.70	5.48 oc	5.48 ic	---	---	0.00	0.00	---	---	0.086	---	5.566
3.80	29,903	1105.80	5.94 oc	5.94 ic	---	---	0.00	0.00	---	---	0.087	---	6.030
3.90	30,856	1105.90	6.42 oc	6.42 ic	---	---	0.00	0.00	---	---	0.088	---	6.507
4.00	31,808	1106.00	6.91 oc	6.91 ic	---	---	0.00	0.00	---	---	0.089	---	6.996
4.10	32,875	1106.10	8.60 oc	7.23 ic	---	---	1.37	0.00	---	---	0.090	---	8.687
4.20	33,942	1106.20	11.41 oc	7.54 ic	---	---	3.87	0.00	---	---	0.091	---	11.50
4.30	35,009	1106.30	14.05 oc	6.94 ic	---	---	7.11	0.00	---	---	0.092	---	14.15
4.40	36,076	1106.40	15.70 ic	4.75 ic	---	---	10.95	0.00	---	---	0.093	---	15.79
4.50	37,143	1106.50	16.46 ic	3.42 ic	---	---	13.04 s	0.00	---	---	0.094	---	16.55
4.60	38,209	1106.60	16.86 ic	2.79 ic	---	---	14.07 s	0.00	---	---	0.095	---	16.96
4.70	39,276	1106.70	17.18 ic	2.35 ic	---	---	14.83 s	0.00	---	---	0.096	---	17.27
4.80	40,343	1106.80	17.46 ic	2.02 ic	---	---	15.43 s	0.00	---	---	0.097	---	17.55
4.90	41,410	1106.90	17.71 ic	1.77 ic	---	---	15.93 s	0.00	---	---	0.098	---	17.80
5.00	42,477	1107.00	17.94 ic	1.57 ic	---	---	16.37 s	0.00	---	---	0.099	---	18.03
5.10	43,664	1107.10	18.16 ic	1.40 ic	---	---	16.75 s	1.64	---	---	0.100	---	19.89
5.20	44,851	1107.20	18.37 ic	1.27 ic	---	---	17.10 s	4.65	---	---	0.101	---	23.12
5.30	46,037	1107.30	18.58 ic	1.16 ic	---	---	17.40 s	8.54	---	---	0.102	---	27.20
5.40	47,224	1107.40	18.78 ic	1.06 ic	---	---	17.71 s	13.15	---	---	0.103	---	32.03
5.50	48,411	1107.50	18.98 ic	0.98 ic	---	---	17.97 s	18.38	---	---	0.104	---	37.43
5.60	49,598	1107.60	19.18 ic	0.91 ic	---	---	18.27 s	24.16	---	---	0.106	---	43.44
5.70	50,785	1107.70	19.37 ic	0.85 ic	---	---	18.49 s	30.44	---	---	0.107	---	49.89
5.80	51,972	1107.80	19.56 ic	0.79 ic	---	---	18.73 s	37.19	---	---	0.108	---	56.83
5.90	53,158	1107.90	19.75 ic	0.74 ic	---	---	18.95 s	44.38	---	---	0.109	---	64.18
6.00	54,345	1108.00	19.93 ic	0.70 ic	---	---	19.19 s	52.00	---	---	0.110	---	72.00
6.03	54,661	1108.03	19.98 ic	0.69 ic	---	---	19.27 s	53.96	---	---	0.110	---	74.03
6.05	54,977	1108.05	20.02 ic	0.68 ic	---	---	19.32 s	55.95	---	---	0.110	---	76.06
6.07	55,294	1108.07	20.07 ic	0.67 ic	---	---	19.36 s	57.96	---	---	0.111	---	78.11
6.10	55,610	1108.10	20.12 ic	0.66 ic	---	---	19.41 s	60.00	---	---	0.111	---	80.18
6.13	55,926	1108.13	20.16 ic	0.65 ic	---	---	19.43 s	62.06	---	---	0.111	---	82.25
6.15	56,242	1108.15	20.21 ic	0.65 ic	---	---	19.52 s	64.14	---	---	0.112	---	84.42
6.18	56,558	1108.18	20.25 ic	0.64 ic	---	---	19.61 s	66.25	---	---	0.112	---	86.61
6.20	56,874	1108.20	20.30 ic	0.63 ic	---	---	19.62 s	68.37	---	---	0.112	---	88.74
6.23	57,190	1108.22	20.34 ic	0.62 ic	---	---	19.70 s	70.52	---	---	0.112	---	90.95
6.25	57,507	1108.25	20.39 ic	0.61 ic	---	---	19.72 s	72.67	---	---	0.113	---	93.12

...End

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

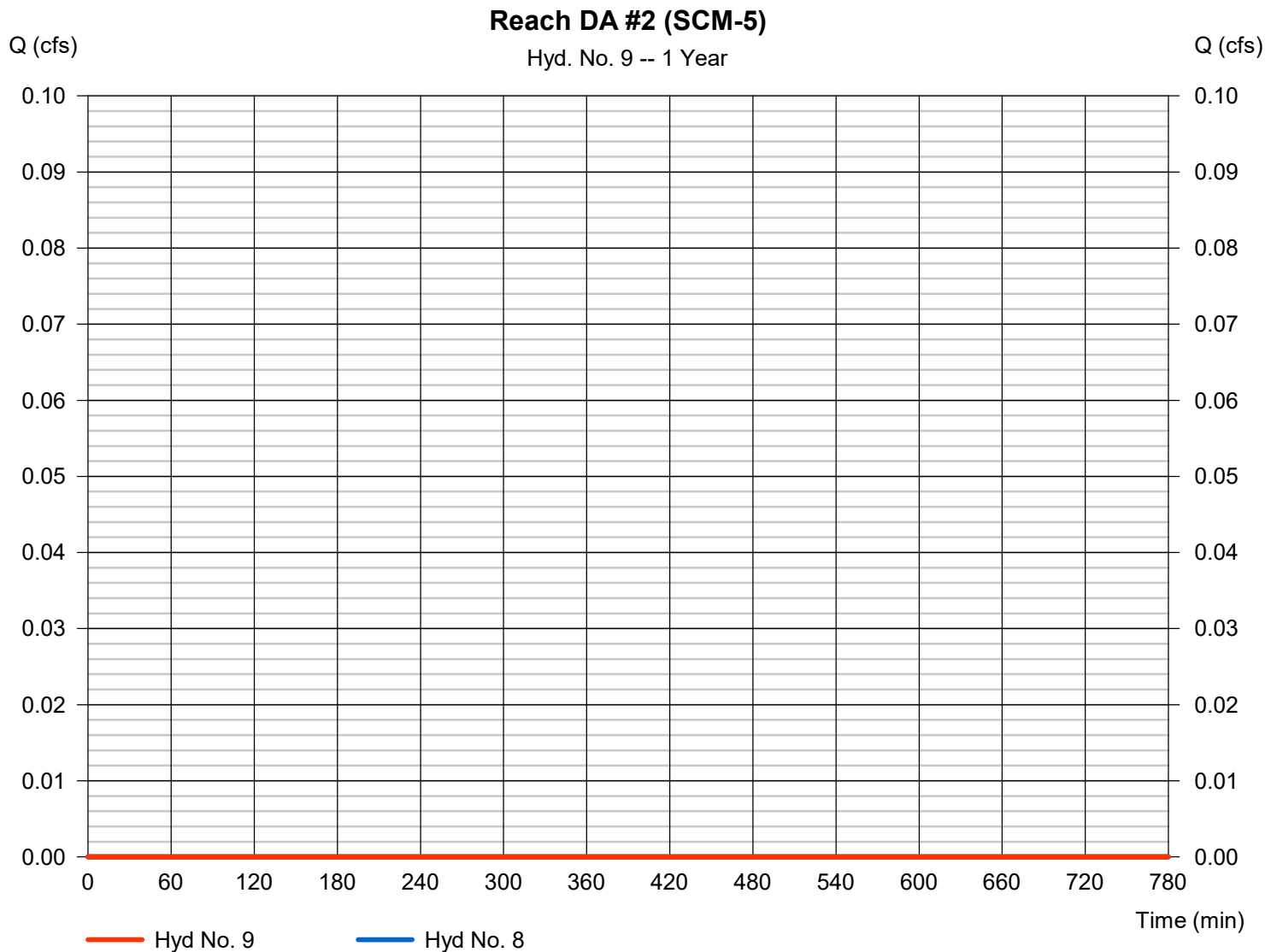
Friday, 04 / 11 / 2025

Hyd. No. 9

Reach DA #2 (SCM-5)

Hydrograph type	= Reach	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= 753 min
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 8 - Route DA#2 (SCM-5)	Section type	= Trapezoidal
Reach length	= 283.0 ft	Channel slope	= 2.9 %
Manning's n	= 0.025	Bottom width	= 4.0 ft
Side slope	= 2.0:1	Max. depth	= 2.0 ft
Rating curve x	= 4.026	Rating curve m	= 1.307
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.0211

Modified Att-Kin routing method used.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

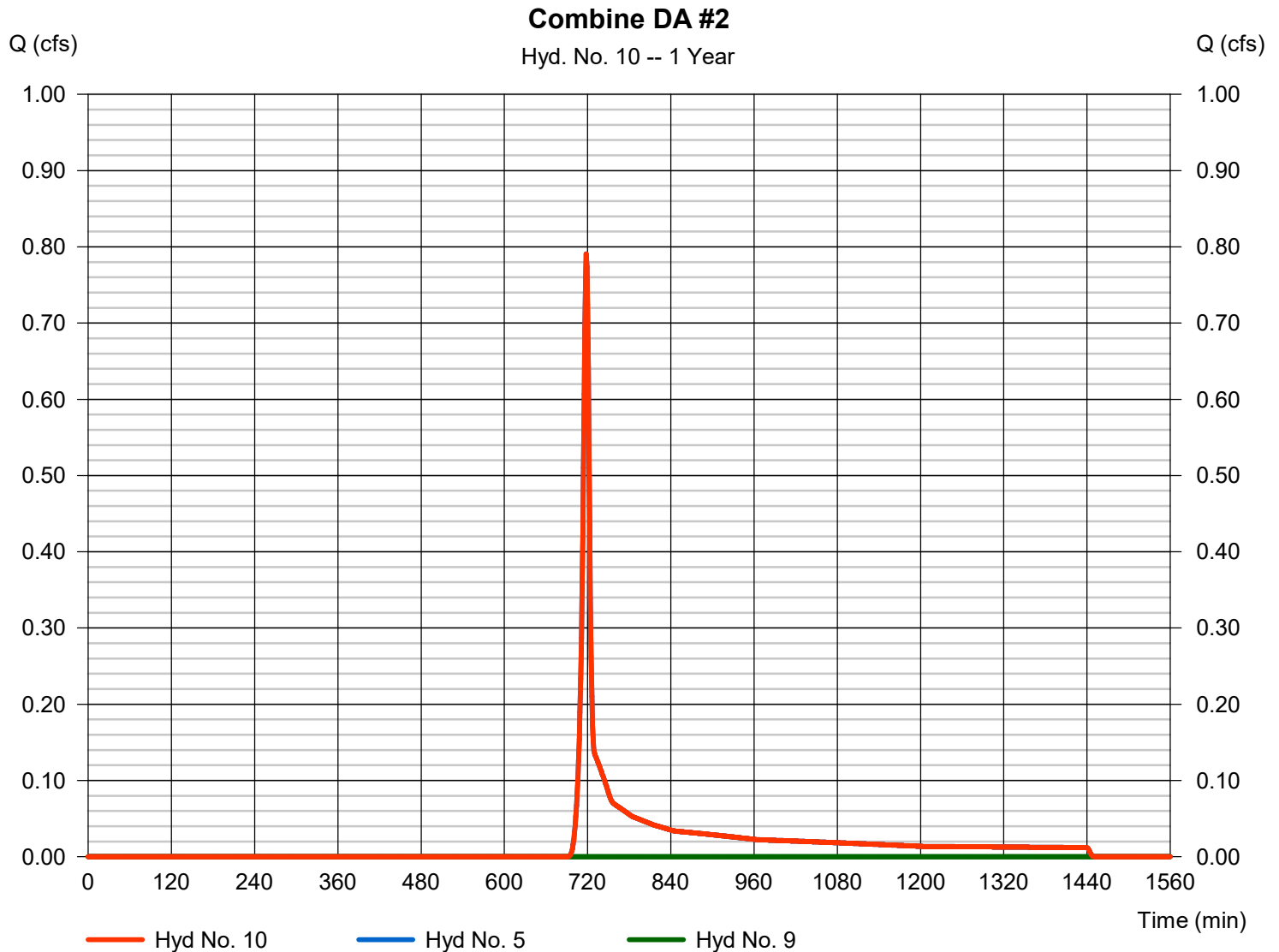
Friday, 04 / 11 / 2025

Hyd. No. 10

Combine DA #2

Hydrograph type = Combine
Storm frequency = 1 yrs
Time interval = 1 min
Inflow hyds. = 5, 9

Peak discharge = 0.791 cfs
Time to peak = 718 min
Hyd. volume = 1,667 cuft
Contrib. drain. area = 0.930 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

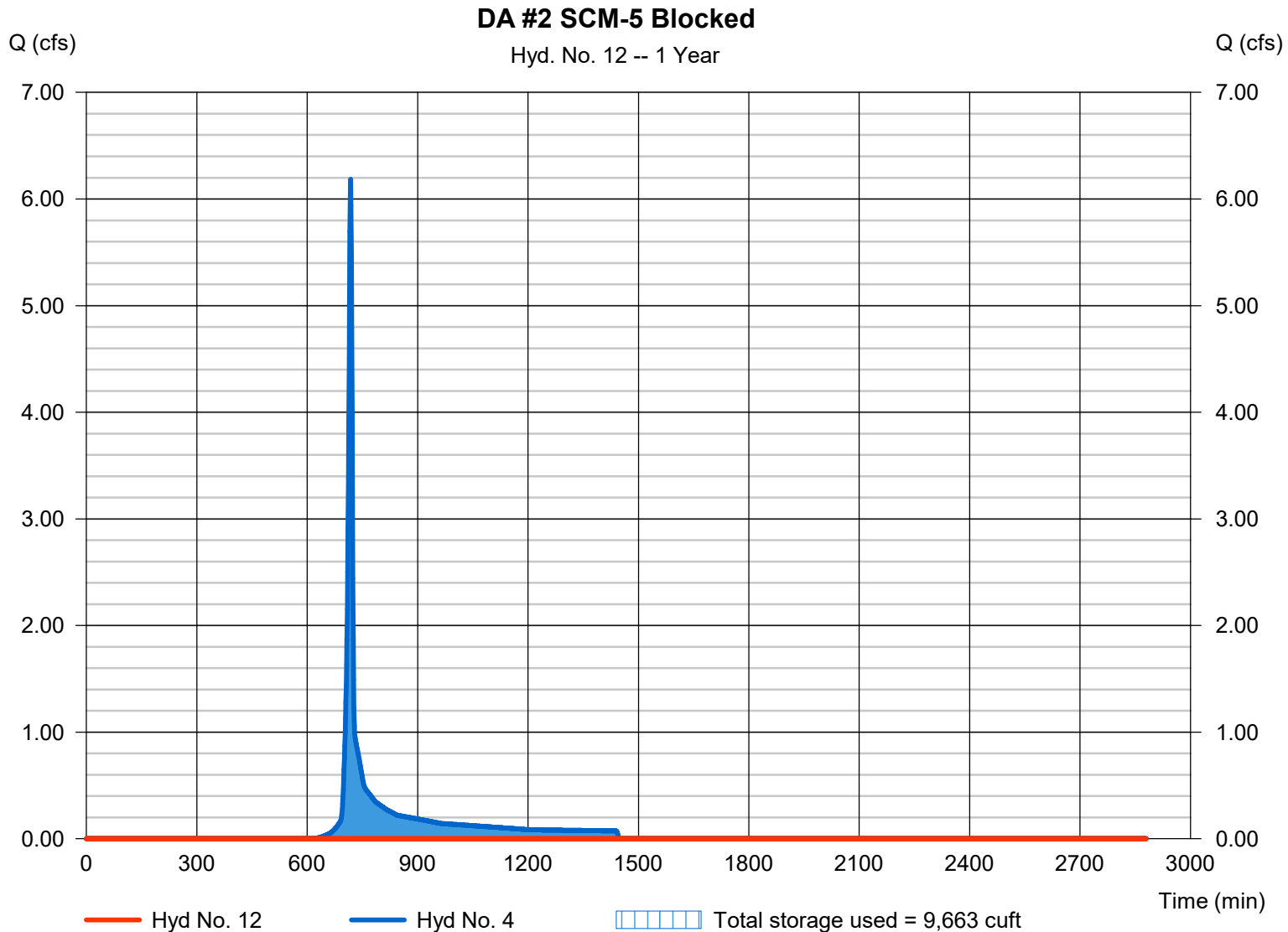
Friday, 04 / 11 / 2025

Hyd. No. 12

DA #2 SCM-5 Blocked

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= 2499 min
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 4 - Post DA #2 (SCM-5)	Max. Elevation	= 1103.44 ft
Reservoir name	= DA #2 (SCM-5) Blocked	Max. Storage	= 9,663 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Pond No. 3 - DA #2 (SCM-5) Blocked

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 1102.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	1102.00	5,969	0	0
1.00	1103.00	6,914	6,435	6,435
2.00	1104.00	7,916	7,409	13,844
3.00	1105.00	8,974	8,439	22,283
4.00	1106.00	10,089	9,525	31,808
5.00	1107.00	11,261	10,669	42,477
6.00	1108.00	12,489	11,868	54,345
6.25	1108.25	12,805	3,161	57,507

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	Inactive	Inactive	0.00	0.00
Span (in)	= 18.00	8.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 1101.00	1103.90	0.00	0.00
Length (ft)	= 10.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	Inactive	20.00	0.00	0.00
Crest El. (ft)	= 1106.00	1107.00	0.00	0.00
Weir Coeff.	= 3.33	2.60	3.33	3.33
Weir Type	= 1	Broad	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 0.380 (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 / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	1102.00	0.00	0.00	---	---	0.00	0.00	---	---	0.000	---	0.000
0.10	644	1102.10	0.00	0.00	---	---	0.00	0.00	---	---	0.006	---	0.006
0.20	1,287	1102.20	0.00	0.00	---	---	0.00	0.00	---	---	0.012	---	0.012
0.30	1,931	1102.30	0.00	0.00	---	---	0.00	0.00	---	---	0.018	---	0.018
0.40	2,574	1102.40	0.00	0.00	---	---	0.00	0.00	---	---	0.024	---	0.024
0.50	3,218	1102.50	0.00	0.00	---	---	0.00	0.00	---	---	0.030	---	0.030
0.60	3,861	1102.60	0.00	0.00	---	---	0.00	0.00	---	---	0.036	---	0.036
0.70	4,505	1102.70	0.00	0.00	---	---	0.00	0.00	---	---	0.043	---	0.043
0.80	5,148	1102.80	0.00	0.00	---	---	0.00	0.00	---	---	0.049	---	0.049
0.90	5,792	1102.90	0.00	0.00	---	---	0.00	0.00	---	---	0.055	---	0.055
1.00	6,435	1103.00	0.00	0.00	---	---	0.00	0.00	---	---	0.061	---	0.061
1.10	7,176	1103.10	0.00	0.00	---	---	0.00	0.00	---	---	0.062	---	0.062
1.20	7,917	1103.20	0.00	0.00	---	---	0.00	0.00	---	---	0.063	---	0.063
1.30	8,658	1103.30	0.00	0.00	---	---	0.00	0.00	---	---	0.063	---	0.063
1.40	9,399	1103.40	0.00	0.00	---	---	0.00	0.00	---	---	0.064	---	0.064
1.50	10,140	1103.50	0.00	0.00	---	---	0.00	0.00	---	---	0.065	---	0.065
1.60	10,880	1103.60	0.00	0.00	---	---	0.00	0.00	---	---	0.066	---	0.066
1.70	11,621	1103.70	0.00	0.00	---	---	0.00	0.00	---	---	0.067	---	0.067
1.80	12,362	1103.80	0.00	0.00	---	---	0.00	0.00	---	---	0.068	---	0.068
1.90	13,103	1103.90	0.00	0.00	---	---	0.00	0.00	---	---	0.069	---	0.069
2.00	13,844	1104.00	0.00	0.00	---	---	0.00	0.00	---	---	0.070	---	0.070
2.10	14,688	1104.10	0.00	0.00	---	---	0.00	0.00	---	---	0.071	---	0.071
2.20	15,532	1104.20	0.00	0.00	---	---	0.00	0.00	---	---	0.071	---	0.071
2.30	16,376	1104.30	0.00	0.00	---	---	0.00	0.00	---	---	0.072	---	0.072
2.40	17,219	1104.40	0.00	0.00	---	---	0.00	0.00	---	---	0.073	---	0.073
2.50	18,063	1104.50	0.00	0.00	---	---	0.00	0.00	---	---	0.074	---	0.074
2.60	18,907	1104.60	0.00	0.00	---	---	0.00	0.00	---	---	0.075	---	0.075
2.70	19,751	1104.70	0.00	0.00	---	---	0.00	0.00	---	---	0.076	---	0.076
2.80	20,595	1104.80	0.00	0.00	---	---	0.00	0.00	---	---	0.077	---	0.077
2.90	21,439	1104.90	0.00	0.00	---	---	0.00	0.00	---	---	0.078	---	0.078
3.00	22,283	1105.00	0.00	0.00	---	---	0.00	0.00	---	---	0.079	---	0.079
3.10	23,235	1105.10	0.00	0.00	---	---	0.00	0.00	---	---	0.080	---	0.080
3.20	24,188	1105.20	0.00	0.00	---	---	0.00	0.00	---	---	0.081	---	0.081
3.30	25,140	1105.30	0.00	0.00	---	---	0.00	0.00	---	---	0.082	---	0.082
3.40	26,093	1105.40	0.00	0.00	---	---	0.00	0.00	---	---	0.083	---	0.083

Continues on next page...

DA #2 (SCM-5) Blocked

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
3.50	27,045	1105.50	0.00	0.00	---	---	0.00	0.00	---	---	0.084	---	0.084
3.60	27,998	1105.60	0.00	0.00	---	---	0.00	0.00	---	---	0.085	---	0.085
3.70	28,951	1105.70	0.00	0.00	---	---	0.00	0.00	---	---	0.086	---	0.086
3.80	29,903	1105.80	0.00	0.00	---	---	0.00	0.00	---	---	0.087	---	0.087
3.90	30,856	1105.90	0.00	0.00	---	---	0.00	0.00	---	---	0.088	---	0.088
4.00	31,808	1106.00	0.00	0.00	---	---	0.00	0.00	---	---	0.089	---	0.089
4.10	32,875	1106.10	0.00	0.00	---	---	0.00	0.00	---	---	0.090	---	0.090
4.20	33,942	1106.20	0.00	0.00	---	---	0.00	0.00	---	---	0.091	---	0.091
4.30	35,009	1106.30	0.00	0.00	---	---	0.00	0.00	---	---	0.092	---	0.092
4.40	36,076	1106.40	0.00	0.00	---	---	0.00	0.00	---	---	0.093	---	0.093
4.50	37,143	1106.50	0.00	0.00	---	---	0.00	0.00	---	---	0.094	---	0.094
4.60	38,209	1106.60	0.00	0.00	---	---	0.00	0.00	---	---	0.095	---	0.095
4.70	39,276	1106.70	0.00	0.00	---	---	0.00	0.00	---	---	0.096	---	0.096
4.80	40,343	1106.80	0.00	0.00	---	---	0.00	0.00	---	---	0.097	---	0.097
4.90	41,410	1106.90	0.00	0.00	---	---	0.00	0.00	---	---	0.098	---	0.098
5.00	42,477	1107.00	0.00	0.00	---	---	0.00	0.00	---	---	0.099	---	0.099
5.10	43,664	1107.10	0.00	0.00	---	---	0.00	1.64	---	---	0.100	---	1.744
5.20	44,851	1107.20	0.00	0.00	---	---	0.00	4.65	---	---	0.101	---	4.751
5.30	46,037	1107.30	0.00	0.00	---	---	0.00	8.54	---	---	0.102	---	8.644
5.40	47,224	1107.40	0.00	0.00	---	---	0.00	13.15	---	---	0.103	---	13.25
5.50	48,411	1107.50	0.00	0.00	---	---	0.00	18.38	---	---	0.104	---	18.48
5.60	49,598	1107.60	0.00	0.00	---	---	0.00	24.16	---	---	0.106	---	24.26
5.70	50,785	1107.70	0.00	0.00	---	---	0.00	30.44	---	---	0.107	---	30.55
5.80	51,972	1107.80	0.00	0.00	---	---	0.00	37.19	---	---	0.108	---	37.30
5.90	53,158	1107.90	0.00	0.00	---	---	0.00	44.38	---	---	0.109	---	44.49
6.00	54,345	1108.00	0.00	0.00	---	---	0.00	52.00	---	---	0.110	---	52.11
6.03	54,661	1108.03	0.00	0.00	---	---	0.00	53.96	---	---	0.110	---	54.07
6.05	54,977	1108.05	0.00	0.00	---	---	0.00	55.95	---	---	0.110	---	56.06
6.07	55,294	1108.07	0.00	0.00	---	---	0.00	57.96	---	---	0.111	---	58.07
6.10	55,610	1108.10	0.00	0.00	---	---	0.00	60.00	---	---	0.111	---	60.11
6.13	55,926	1108.13	0.00	0.00	---	---	0.00	62.06	---	---	0.111	---	62.17
6.15	56,242	1108.15	0.00	0.00	---	---	0.00	64.14	---	---	0.112	---	64.25
6.18	56,558	1108.18	0.00	0.00	---	---	0.00	66.25	---	---	0.112	---	66.36
6.20	56,874	1108.20	0.00	0.00	---	---	0.00	68.37	---	---	0.112	---	68.48
6.23	57,190	1108.22	0.00	0.00	---	---	0.00	70.52	---	---	0.112	---	70.63
6.25	57,507	1108.25	0.00	0.00	---	---	0.00	72.67	---	---	0.113	---	72.78

...End

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

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	6.263	1	719	13,558	-----	-----	-----	Pre DA #2	
2	SCS Runoff	10.18	1	717	19,078	-----	-----	-----	Post DA #2	
4	SCS Runoff	8.605	1	718	17,282	-----	-----	-----	Post DA #2 (SCM-5)	
5	SCS Runoff	1.213	1	718	2,476	-----	-----	-----	Post DA #2 (Undetained)	
6	Combine	9.818	1	718	19,758	4, 5	-----	-----	Combine Post DA#2 (No Controls)	
8	Reservoir	0.040	1	1201	898	4	1103.96	13,521	Route DA#2 (SCM-5)	
9	Reach	0.040	1	1204	891	8	-----	-----	Reach DA #2 (SCM-5)	
10	Combine	1.213	1	718	3,367	5, 9	-----	-----	Combine DA #2	
12	Reservoir	0.000	1	718	0	4	1104.05	14,263	DA #2 SCM-5 Blocked	
250401-Newcastle DA 2.gpw					Return Period: 2 Year			Friday, 04 / 11 / 2025		

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

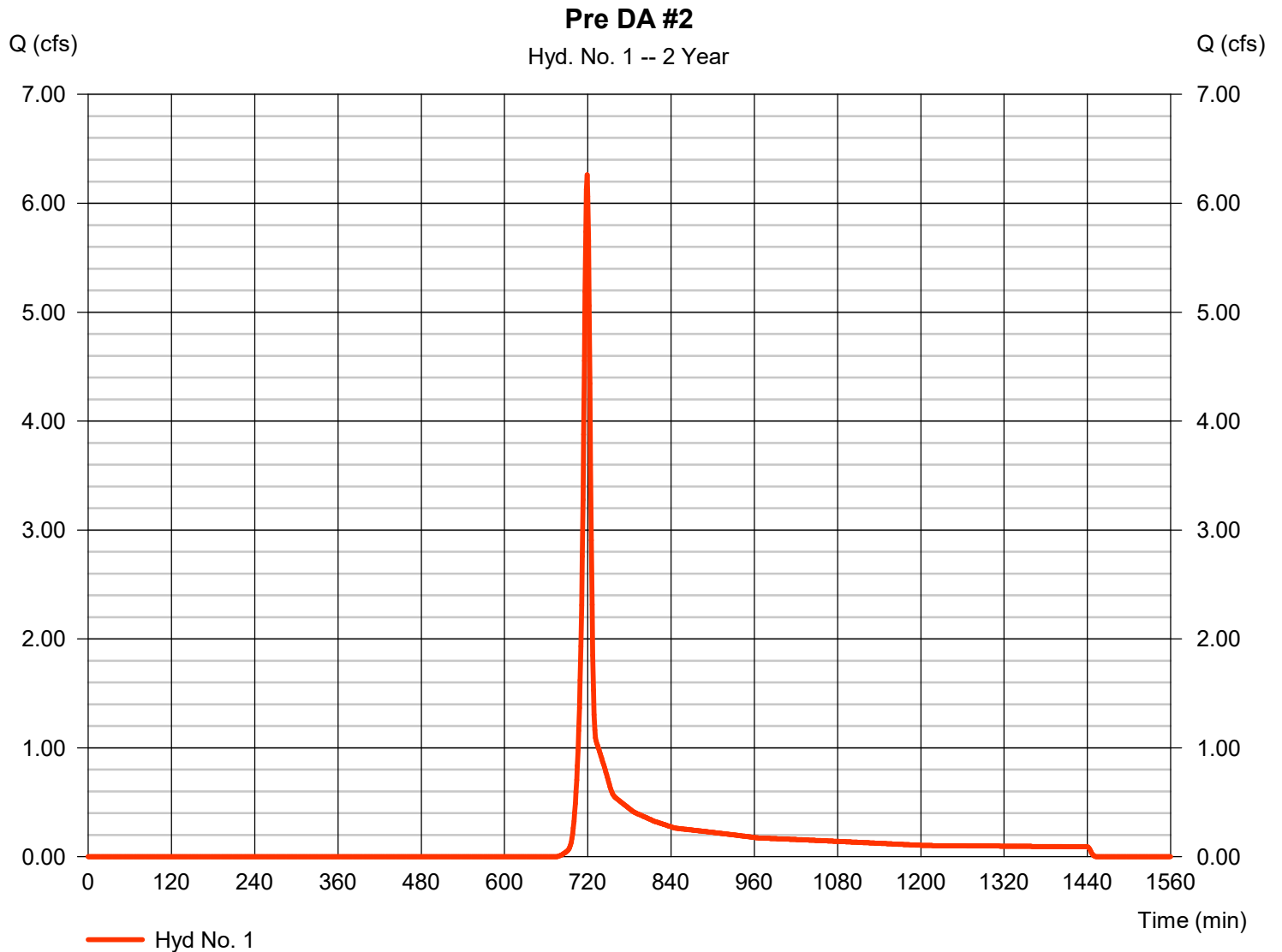
Friday, 04 / 11 / 2025

Hyd. No. 1

Pre DA #2

Hydrograph type	= SCS Runoff	Peak discharge	= 6.263 cfs
Storm frequency	= 2 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 13,558 cuft
Drainage area	= 5.750 ac	Curve number	= 77*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 7.50 min
Total precip.	= 2.38 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(3.415 x 77) + (2.335 x 78)] / 5.750



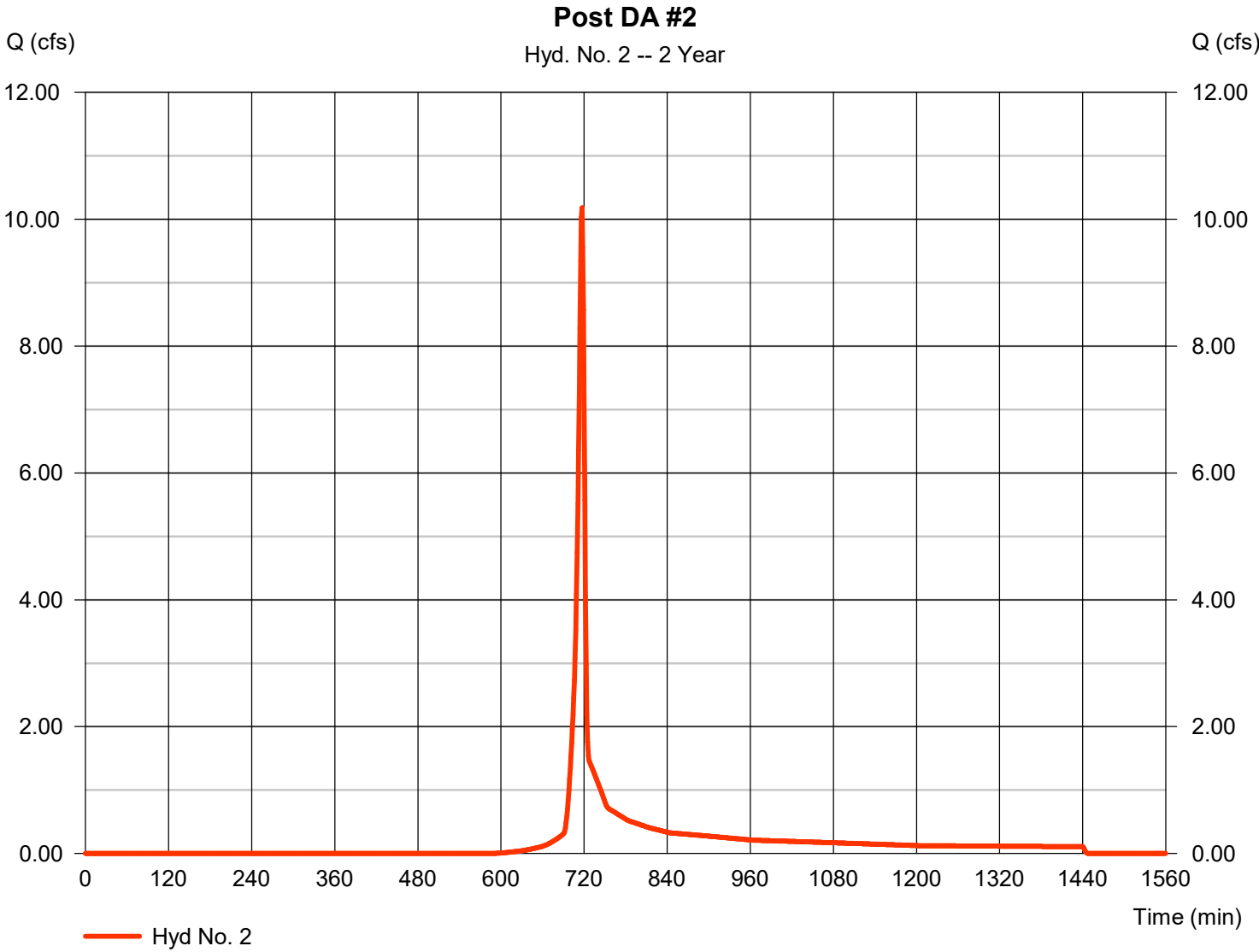
Hydrograph Report

Hyd. No. 2

Post DA #2

Hydrograph type	= SCS Runoff	Peak discharge	= 10.18 cfs
Storm frequency	= 2 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 19,078 cuft
Drainage area	= 5.440 ac	Curve number	= 83*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 4.60 min
Total precip.	= 2.38 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.677 x 78) + (2.579 x 80) + (1.187 x 98)] / 5.440



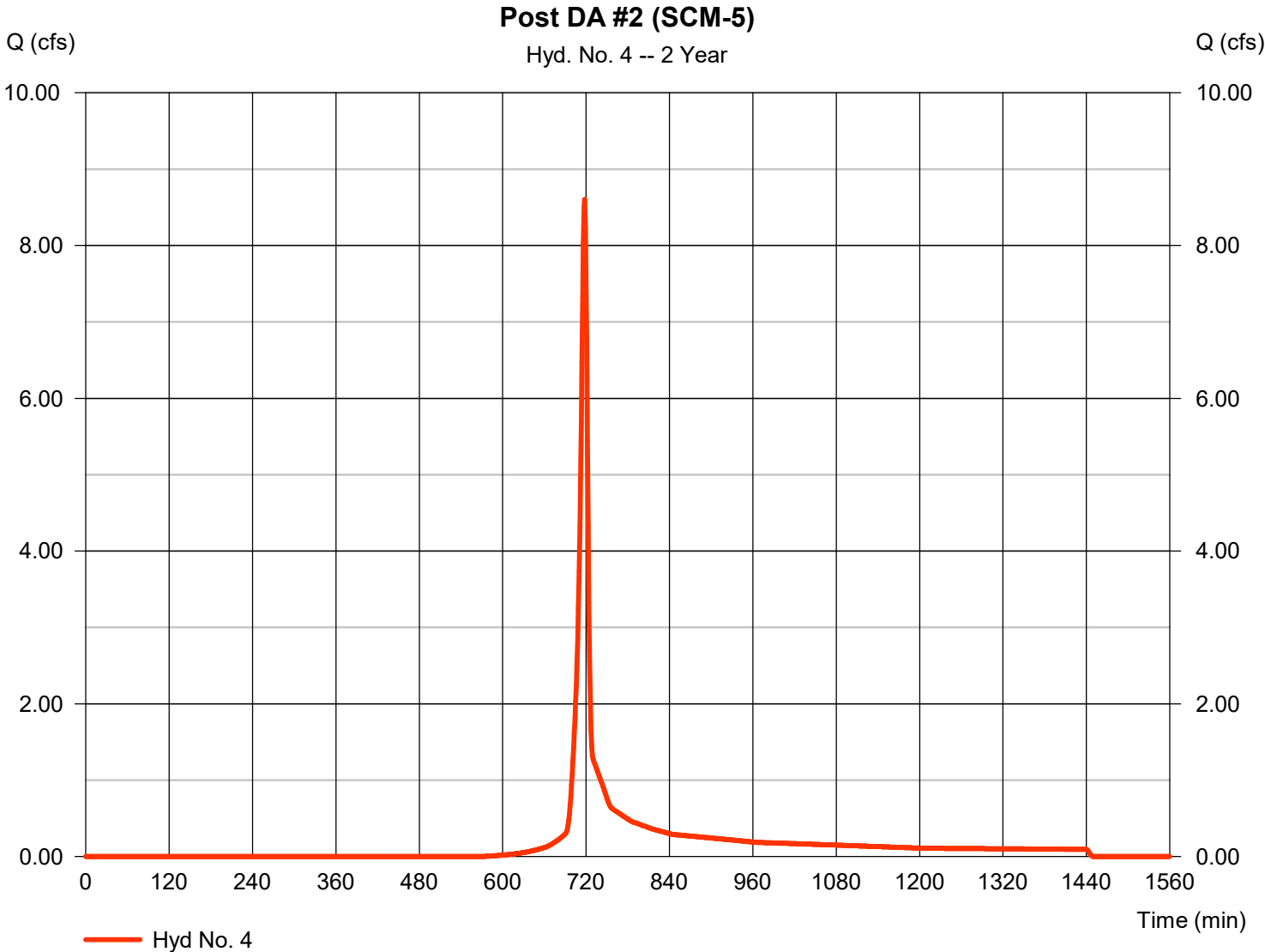
Hydrograph Report

Hyd. No. 4

Post DA #2 (SCM-5)

Hydrograph type	= SCS Runoff	Peak discharge	= 8.605 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 17,282 cuft
Drainage area	= 4.510 ac	Curve number	= 84*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.38 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.914 x 78) + (2.410 x 80) + (1.187 x 98)] / 4.510



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

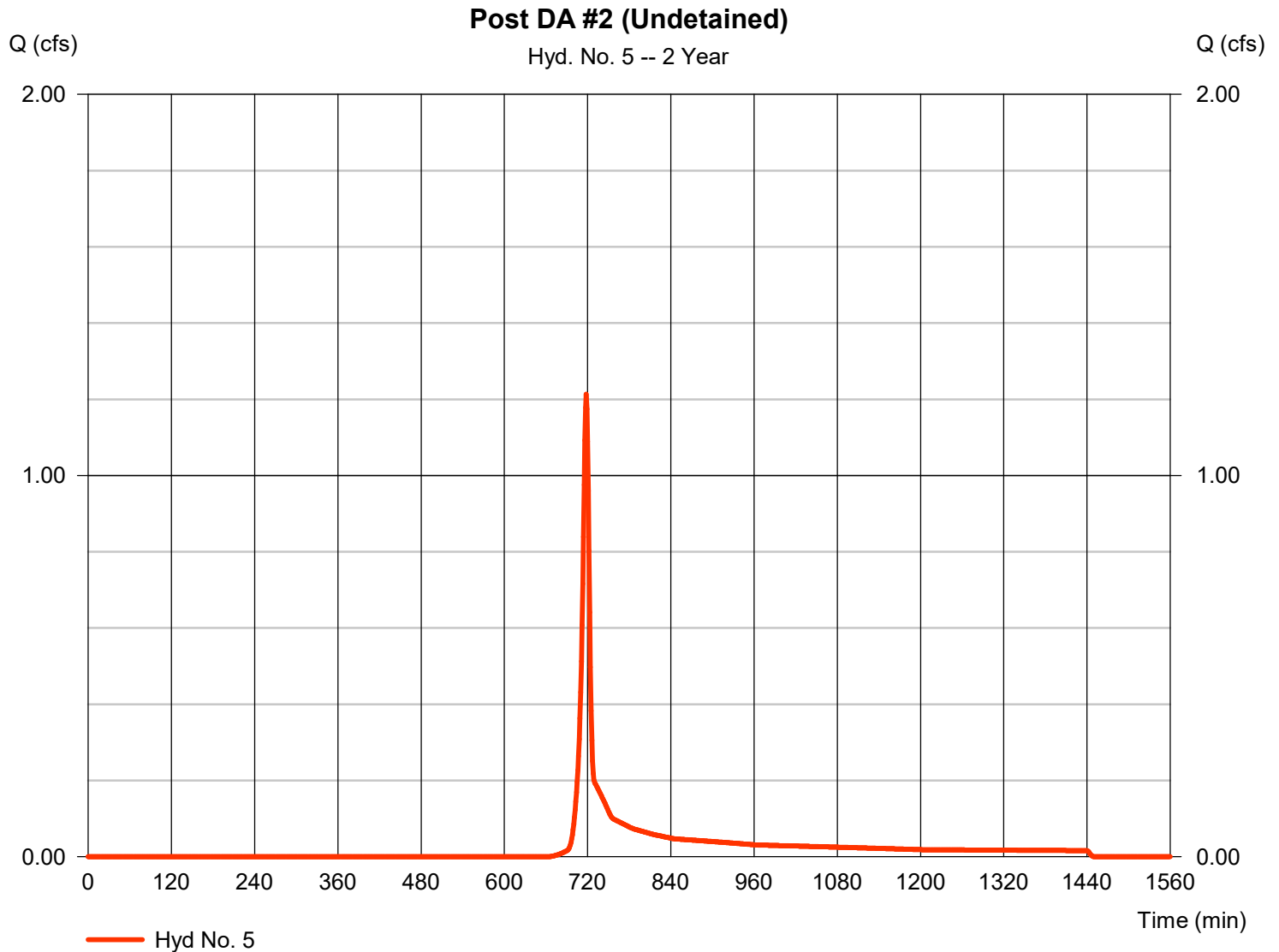
Friday, 04 / 11 / 2025

Hyd. No. 5

Post DA #2 (Undetained)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.213 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 2,476 cuft
Drainage area	= 0.930 ac	Curve number	= 78*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.38 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.763 x 78) + (0.168 x 80)] / 0.930



Hydrograph Report

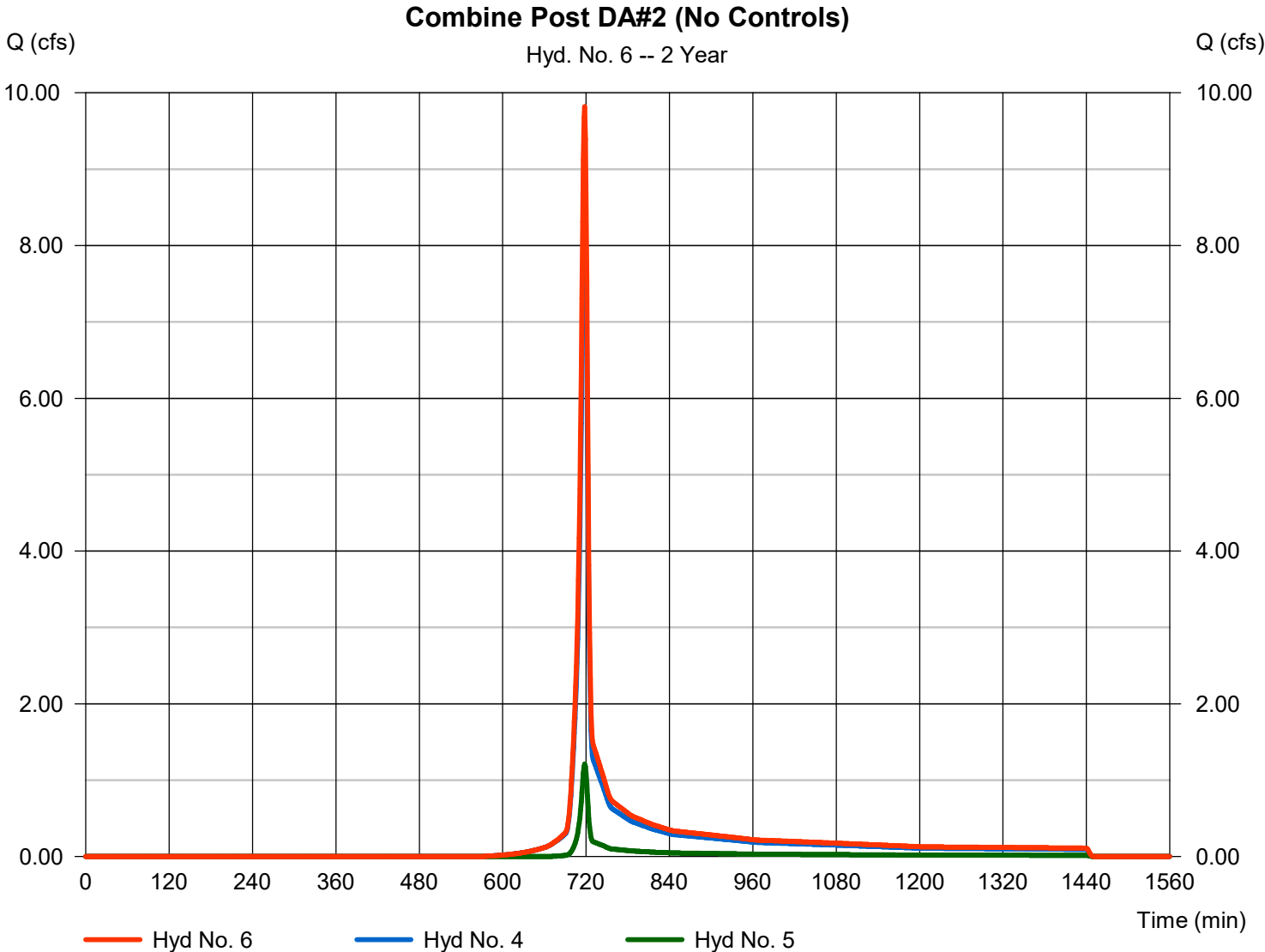
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Friday, 04 / 11 / 2025

Hyd. No. 6

Combine Post DA#2 (No Controls)

Hydrograph type	= Combine	Peak discharge	= 9.818 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 19,758 cuft
Inflow hyds.	= 4, 5	Contrib. drain. area	= 5.440 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

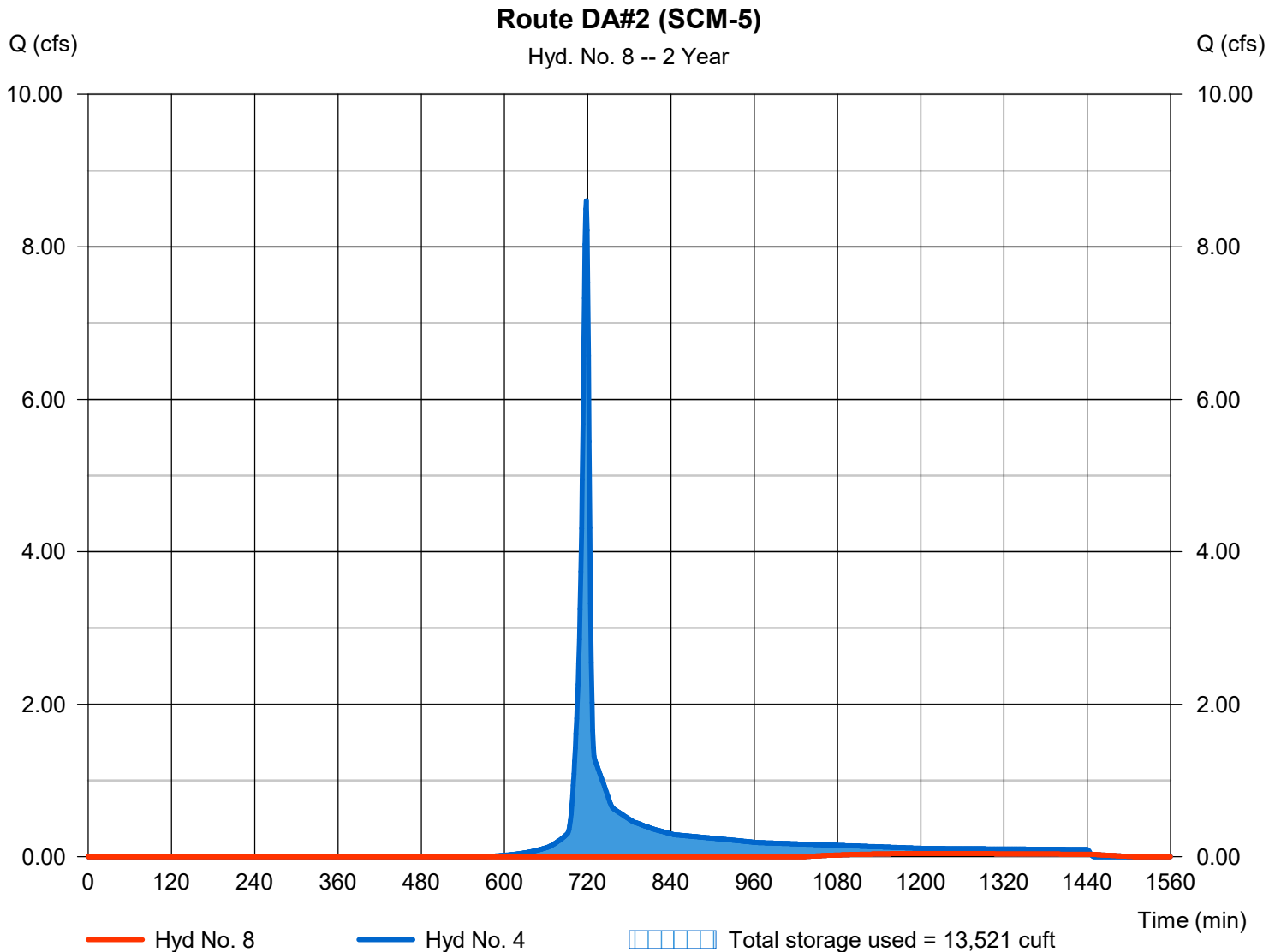
Friday, 04 / 11 / 2025

Hyd. No. 8

Route DA#2 (SCM-5)

Hydrograph type	= Reservoir	Peak discharge	= 0.040 cfs
Storm frequency	= 2 yrs	Time to peak	= 1201 min
Time interval	= 1 min	Hyd. volume	= 898 cuft
Inflow hyd. No.	= 4 - Post DA #2 (SCM-5)	Max. Elevation	= 1103.96 ft
Reservoir name	= DA #2 (SCM-5)	Max. Storage	= 13,521 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

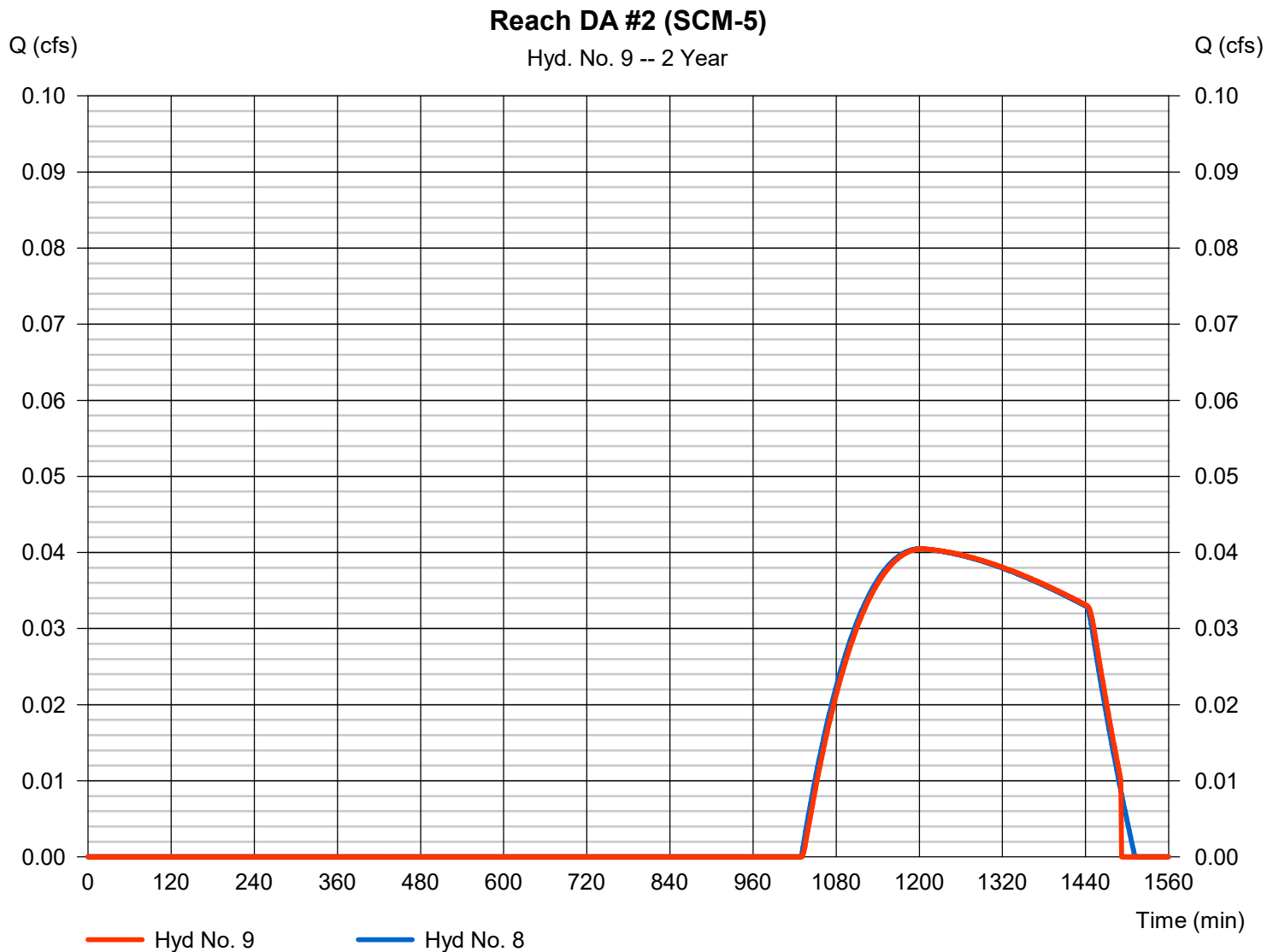
Friday, 04 / 11 / 2025

Hyd. No. 9

Reach DA #2 (SCM-5)

Hydrograph type	= Reach	Peak discharge	= 0.040 cfs
Storm frequency	= 2 yrs	Time to peak	= 1204 min
Time interval	= 1 min	Hyd. volume	= 891 cuft
Inflow hyd. No.	= 8 - Route DA#2 (SCM-5)	Section type	= Trapezoidal
Reach length	= 283.0 ft	Channel slope	= 2.9 %
Manning's n	= 0.025	Bottom width	= 4.0 ft
Side slope	= 2.0:1	Max. depth	= 2.0 ft
Rating curve x	= 4.026	Rating curve m	= 1.307
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.3186

Modified Att-Kin routing method used.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

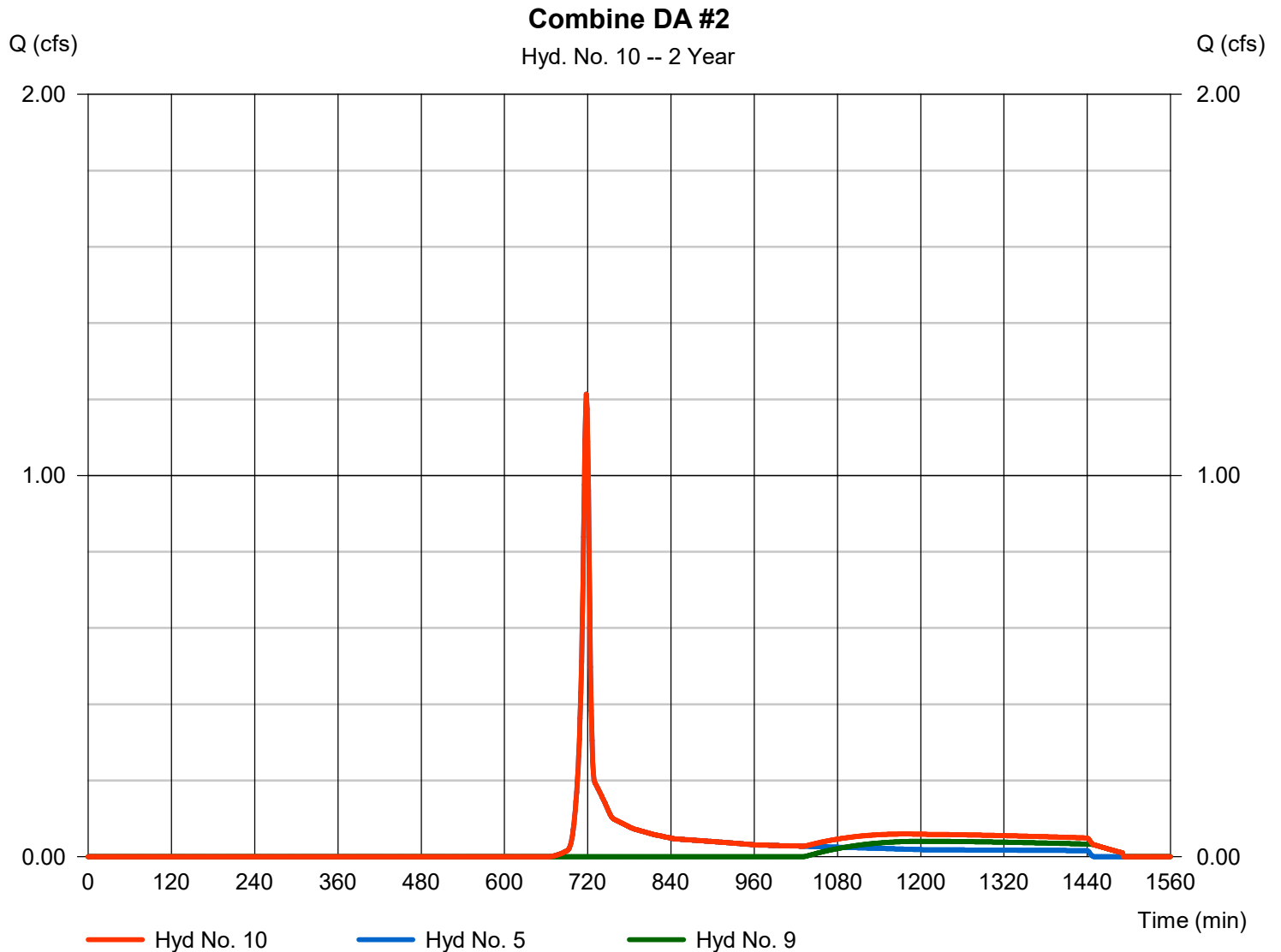
Friday, 04 / 11 / 2025

Hyd. No. 10

Combine DA #2

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 1 min
Inflow hyds. = 5, 9

Peak discharge = 1.213 cfs
Time to peak = 718 min
Hyd. volume = 3,367 cuft
Contrib. drain. area = 0.930 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

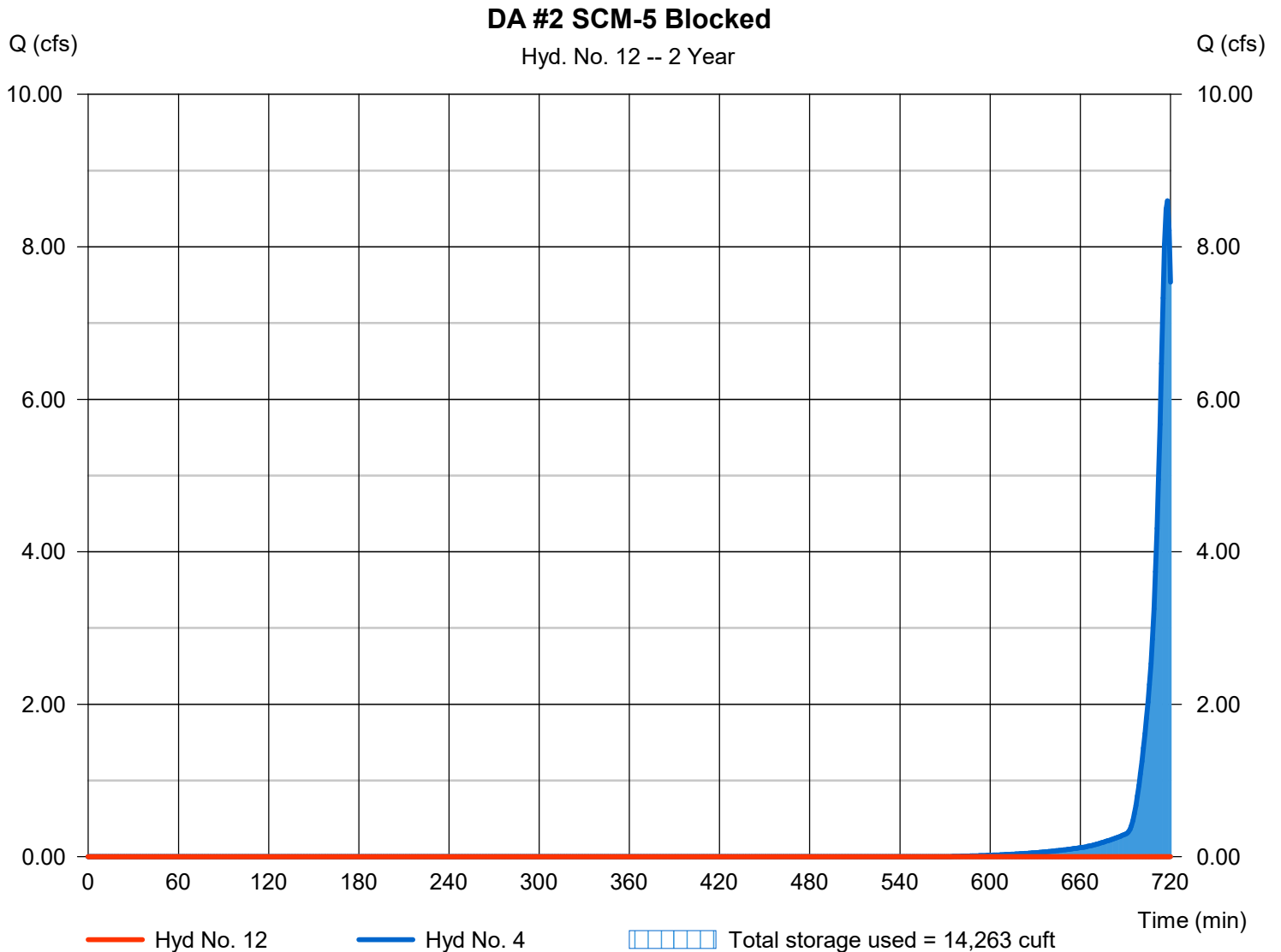
Friday, 04 / 11 / 2025

Hyd. No. 12

DA #2 SCM-5 Blocked

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 4 - Post DA #2 (SCM-5)	Max. Elevation	= 1104.05 ft
Reservoir name	= DA #2 (SCM-5) Blocked	Max. Storage	= 14,263 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description	
1	SCS Runoff	9.685	1	719	20,537	-----	-----	-----	Pre DA #2	
2	SCS Runoff	14.40	1	717	27,142	-----	-----	-----	Post DA #2	
4	SCS Runoff	12.06	1	718	24,355	-----	-----	-----	Post DA #2 (SCM-5)	
5	SCS Runoff	1.843	1	718	3,708	-----	-----	-----	Post DA #2 (Undetained)	
6	Combine	13.91	1	718	28,063	4, 5	-----	-----	Combine Post DA#2 (No Controls)	
8	Reservoir	0.328	1	840	7,627	4	1104.17	15,310	Route DA#2 (SCM-5)	
9	Reach	0.328	1	842	7,620	8	-----	-----	Reach DA #2 (SCM-5)	
10	Combine	1.843	1	718	11,329	5, 9	-----	-----	Combine DA #2	
12	Reservoir	0.000	1	700	0	4	1104.85	21,003	DA #2 SCM-5 Blocked	
250401-Newcastle DA 2.gpw					Return Period: 5 Year			Friday, 04 / 11 / 2025		

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

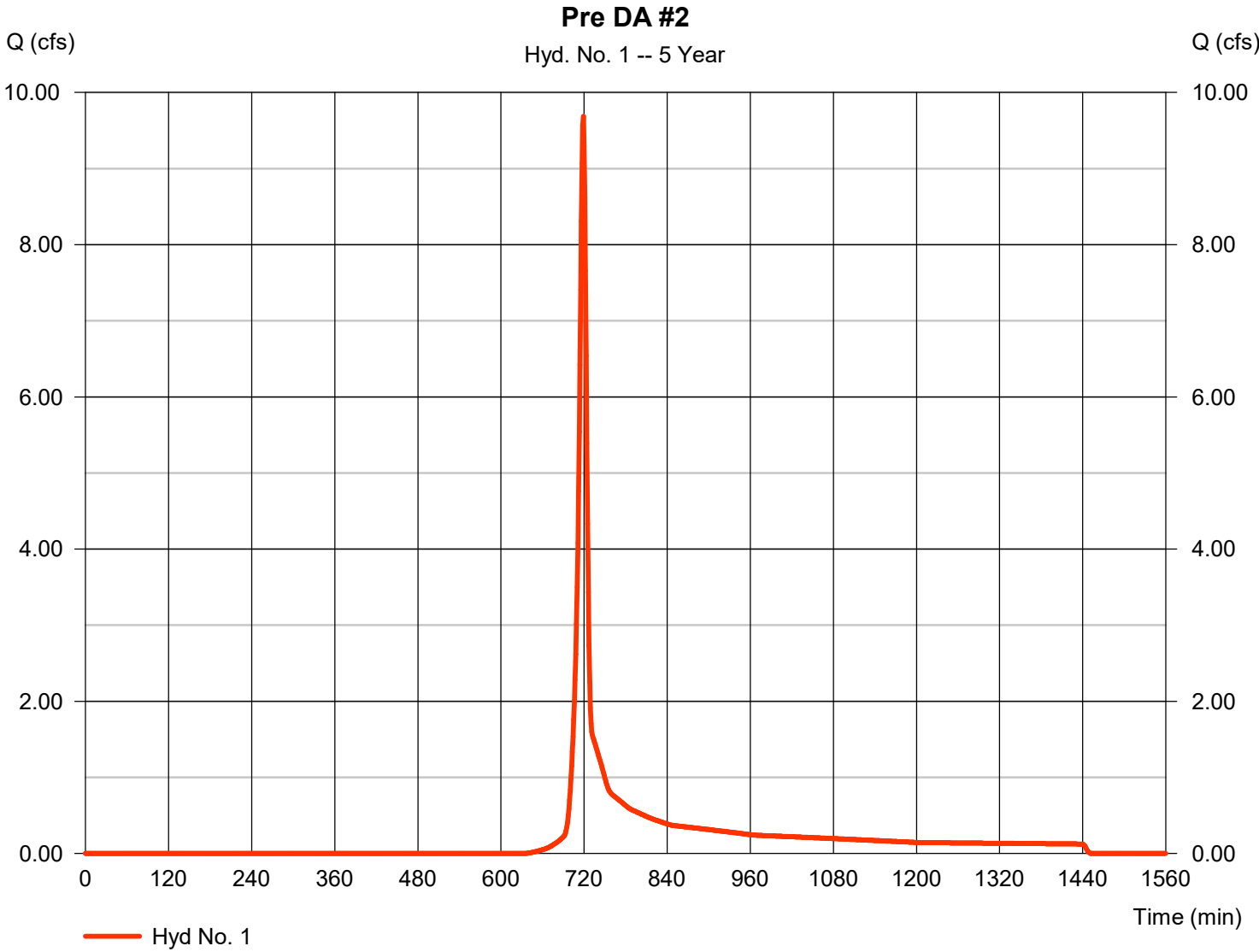
Friday, 04 / 11 / 2025

Hyd. No. 1

Pre DA #2

Hydrograph type	= SCS Runoff	Peak discharge	= 9.685 cfs
Storm frequency	= 5 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 20,537 cuft
Drainage area	= 5.750 ac	Curve number	= 77*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 7.50 min
Total precip.	= 2.91 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(3.415 x 77) + (2.335 x 78)] / 5.750



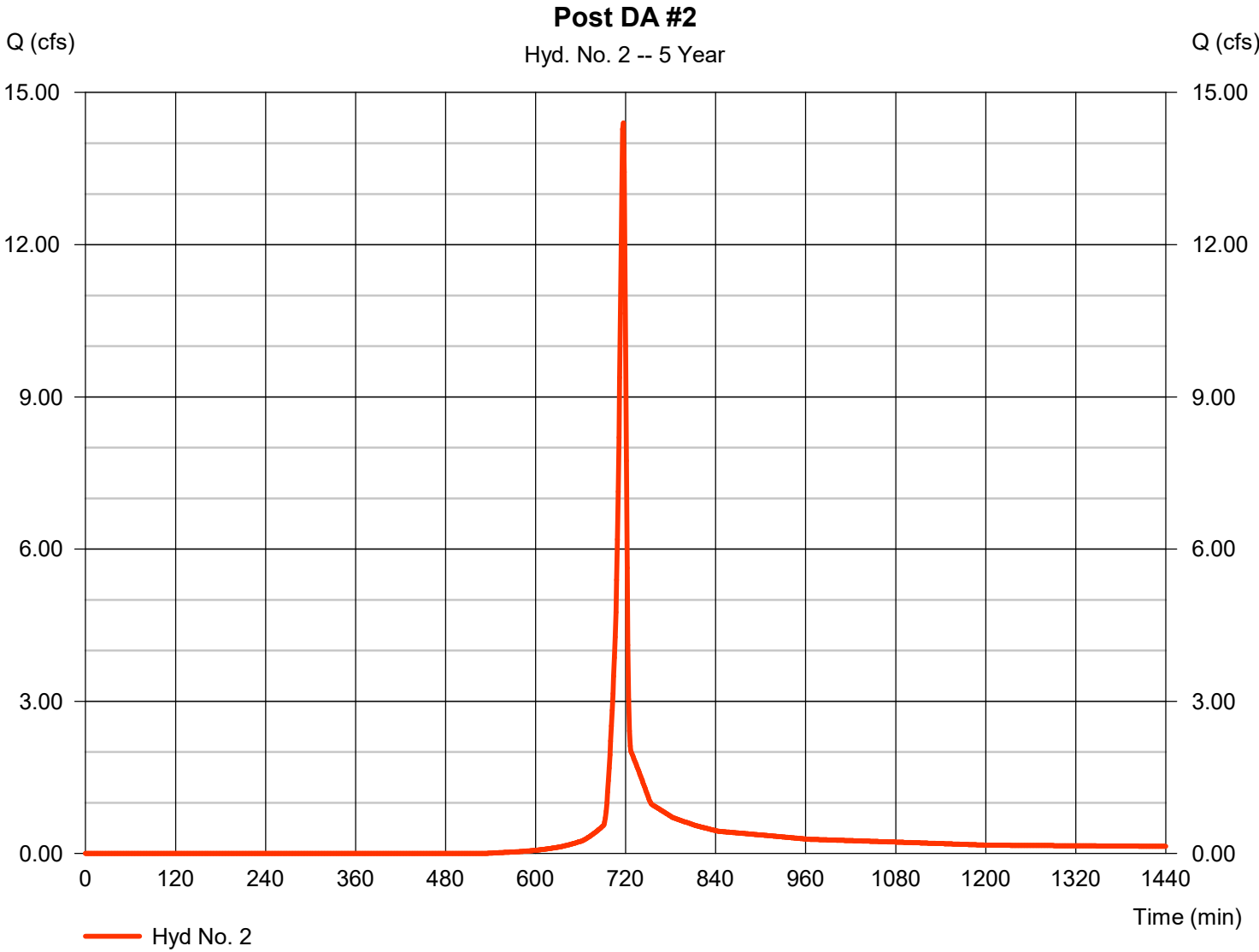
Hydrograph Report

Hyd. No. 2

Post DA #2

Hydrograph type	= SCS Runoff	Peak discharge	= 14.40 cfs
Storm frequency	= 5 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 27,142 cuft
Drainage area	= 5.440 ac	Curve number	= 83*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 4.60 min
Total precip.	= 2.91 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.677 x 78) + (2.579 x 80) + (1.187 x 98)] / 5.440



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

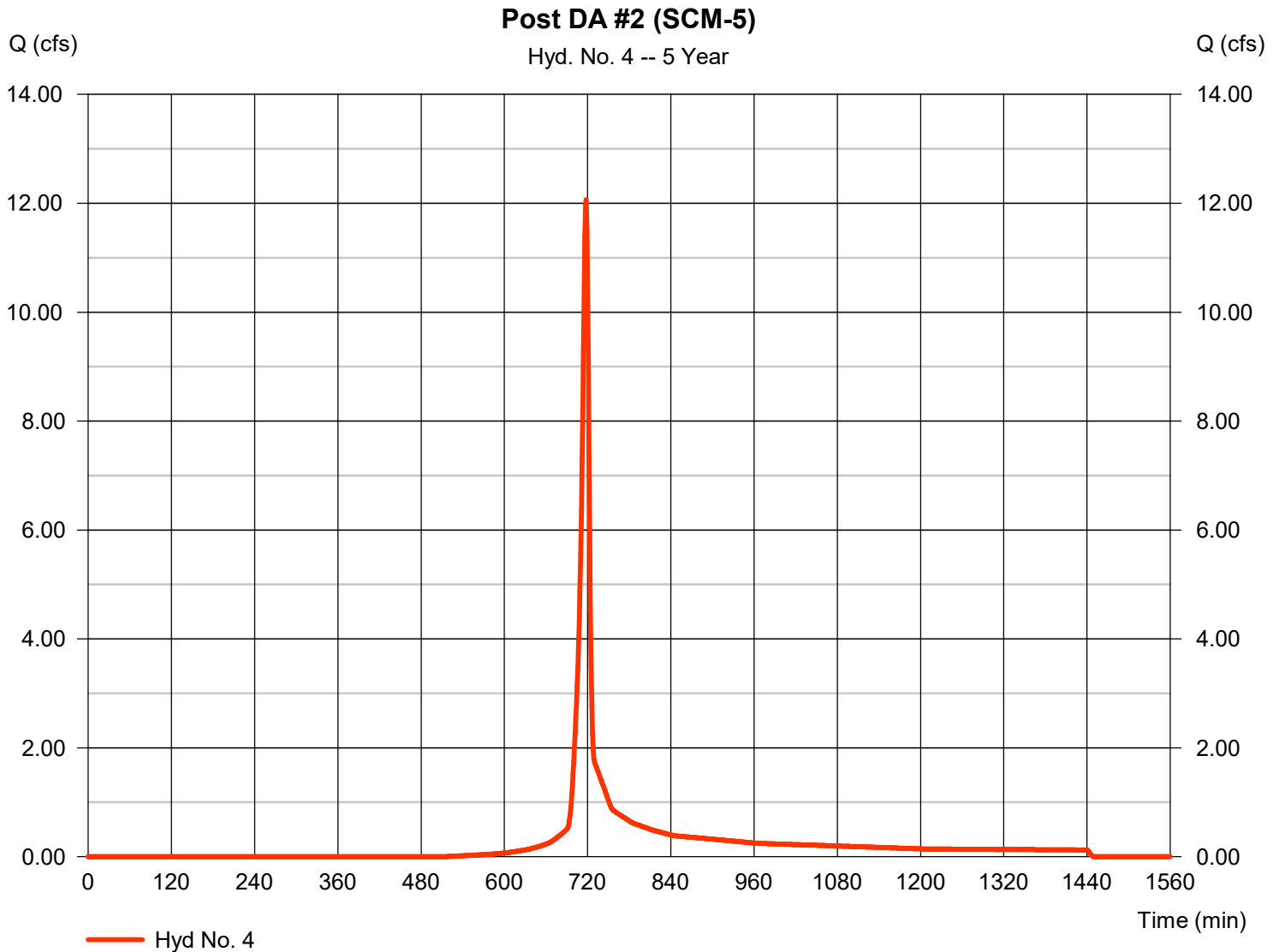
Friday, 04 / 11 / 2025

Hyd. No. 4

Post DA #2 (SCM-5)

Hydrograph type	= SCS Runoff	Peak discharge	= 12.06 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 24,355 cuft
Drainage area	= 4.510 ac	Curve number	= 84*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.91 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.914 x 78) + (2.410 x 80) + (1.187 x 98)] / 4.510



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

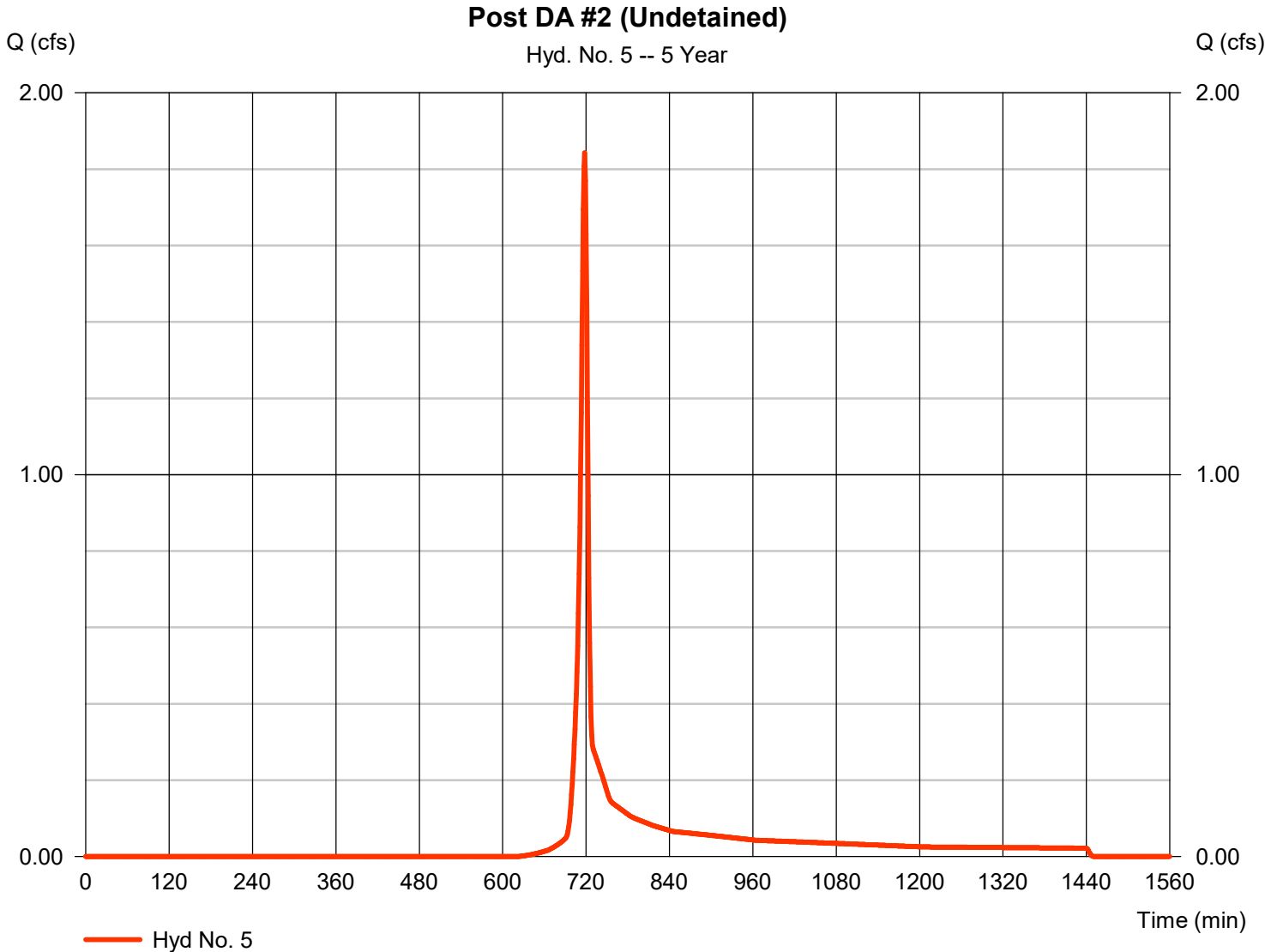
Friday, 04 / 11 / 2025

Hyd. No. 5

Post DA #2 (Undetained)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.843 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 3,708 cuft
Drainage area	= 0.930 ac	Curve number	= 78*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.91 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.763 x 78) + (0.168 x 80)] / 0.930



Hydrograph Report

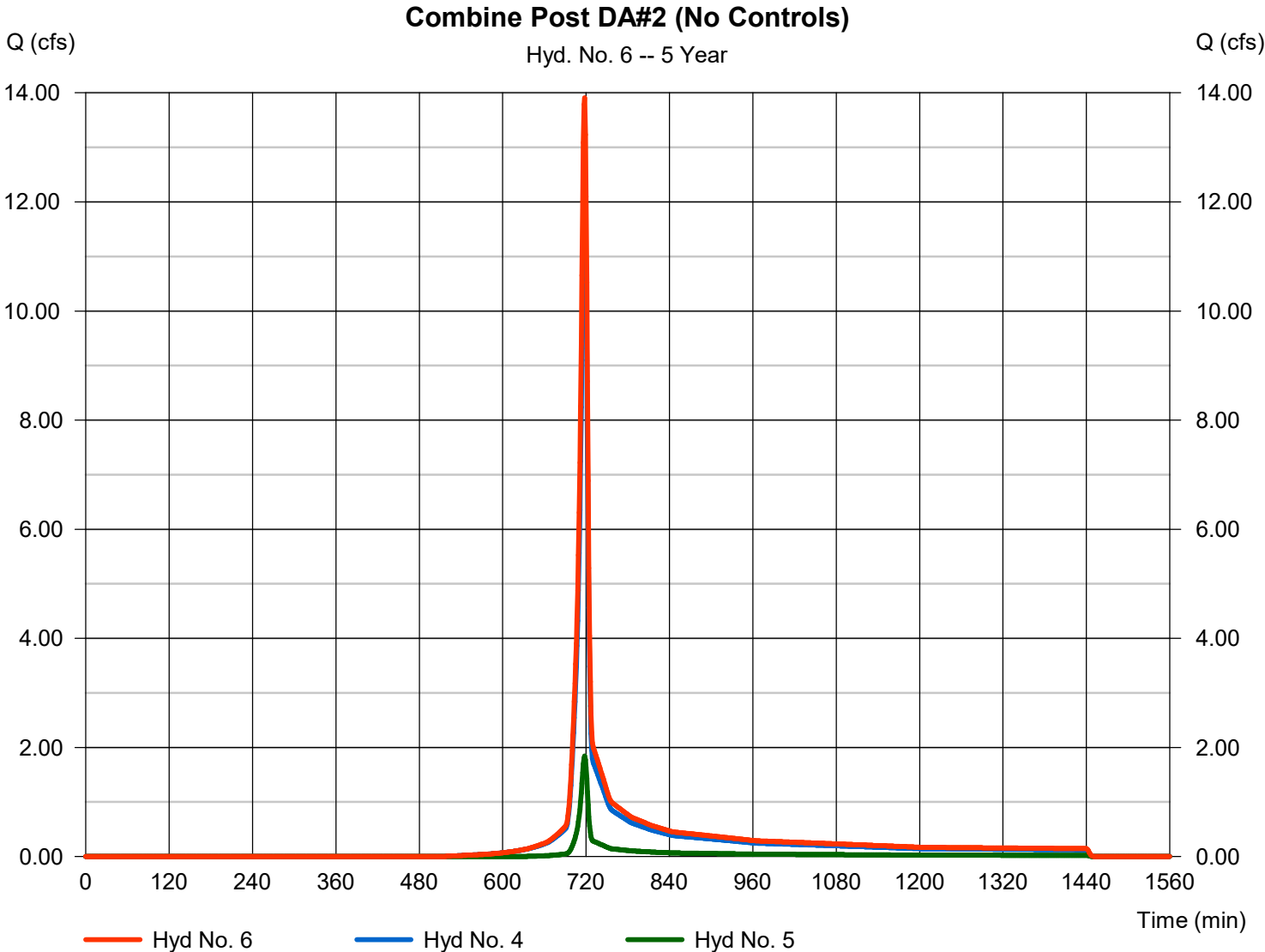
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Friday, 04 / 11 / 2025

Hyd. No. 6

Combine Post DA#2 (No Controls)

Hydrograph type	= Combine	Peak discharge	= 13.91 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 28,063 cuft
Inflow hyds.	= 4, 5	Contrib. drain. area	= 5.440 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

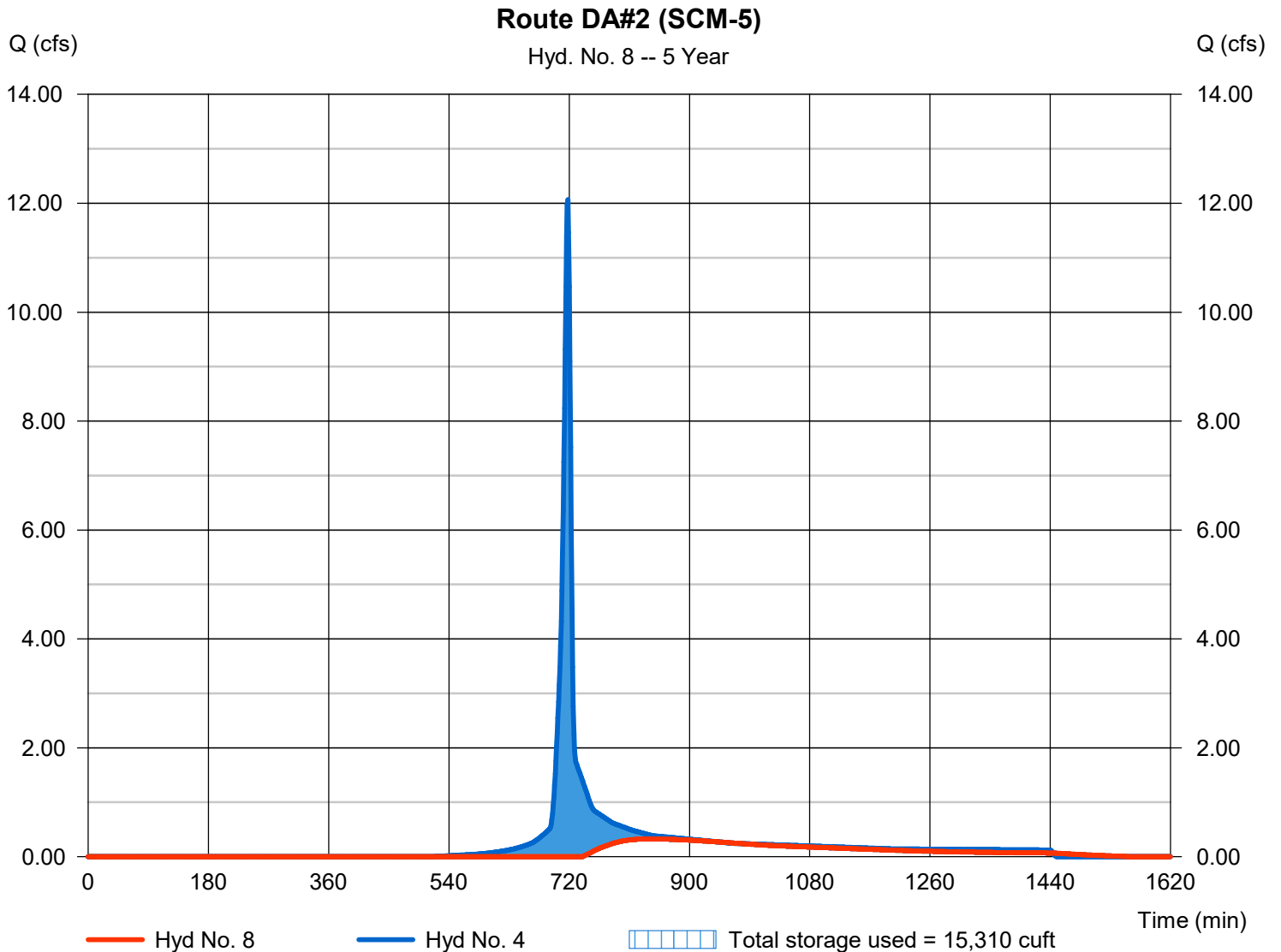
Friday, 04 / 11 / 2025

Hyd. No. 8

Route DA#2 (SCM-5)

Hydrograph type	= Reservoir	Peak discharge	= 0.328 cfs
Storm frequency	= 5 yrs	Time to peak	= 840 min
Time interval	= 1 min	Hyd. volume	= 7,627 cuft
Inflow hyd. No.	= 4 - Post DA #2 (SCM-5)	Max. Elevation	= 1104.17 ft
Reservoir name	= DA #2 (SCM-5)	Max. Storage	= 15,310 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

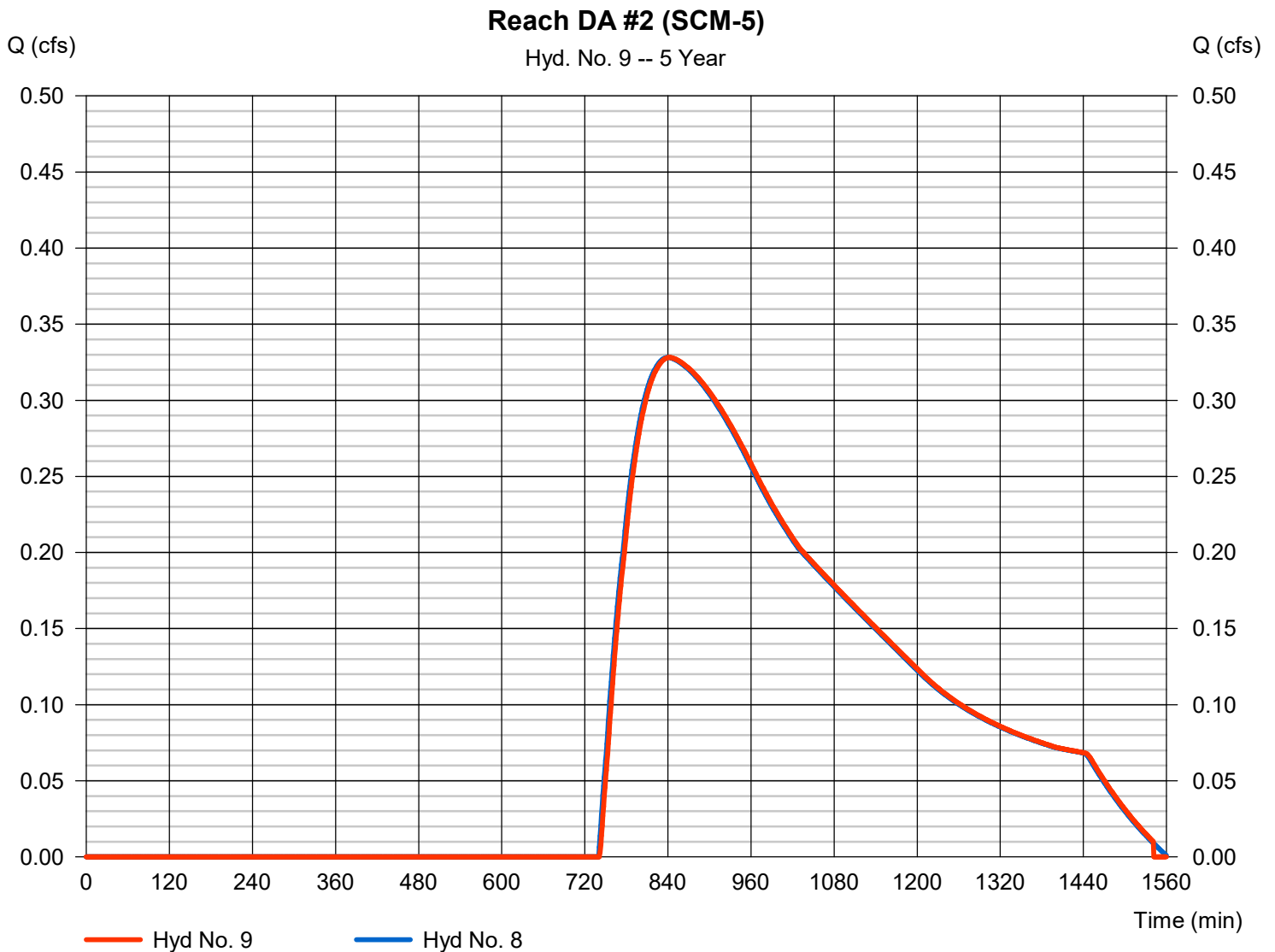
Friday, 04 / 11 / 2025

Hyd. No. 9

Reach DA #2 (SCM-5)

Hydrograph type	= Reach	Peak discharge	= 0.328 cfs
Storm frequency	= 5 yrs	Time to peak	= 842 min
Time interval	= 1 min	Hyd. volume	= 7,620 cuft
Inflow hyd. No.	= 8 - Route DA#2 (SCM-5)	Section type	= Trapezoidal
Reach length	= 283.0 ft	Channel slope	= 2.9 %
Manning's n	= 0.025	Bottom width	= 4.0 ft
Side slope	= 2.0:1	Max. depth	= 2.0 ft
Rating curve x	= 4.026	Rating curve m	= 1.307
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.4729

Modified Att-Kin routing method used.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

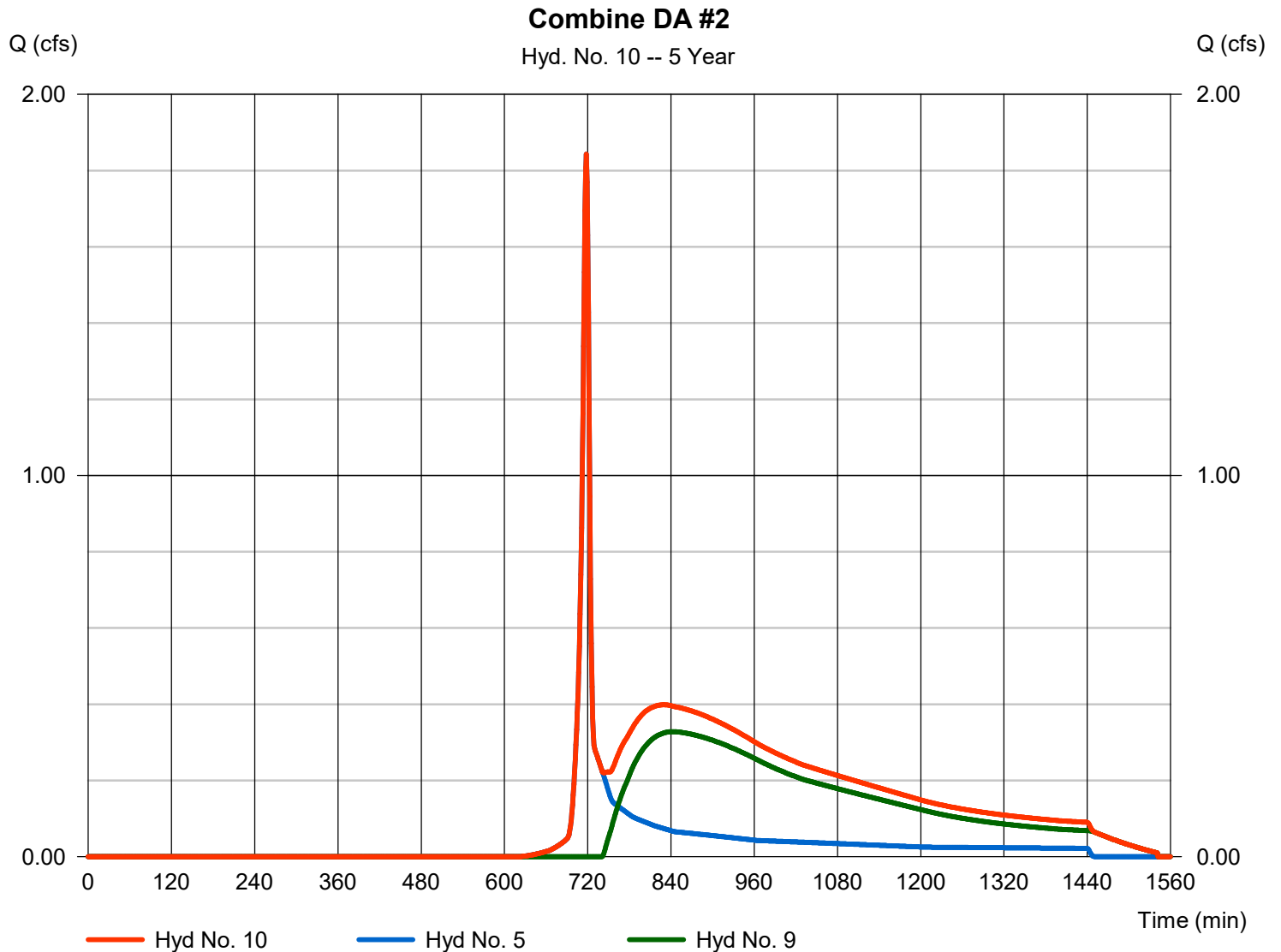
Friday, 04 / 11 / 2025

Hyd. No. 10

Combine DA #2

Hydrograph type = Combine
Storm frequency = 5 yrs
Time interval = 1 min
Inflow hyds. = 5, 9

Peak discharge = 1.843 cfs
Time to peak = 718 min
Hyd. volume = 11,329 cuft
Contrib. drain. area = 0.930 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

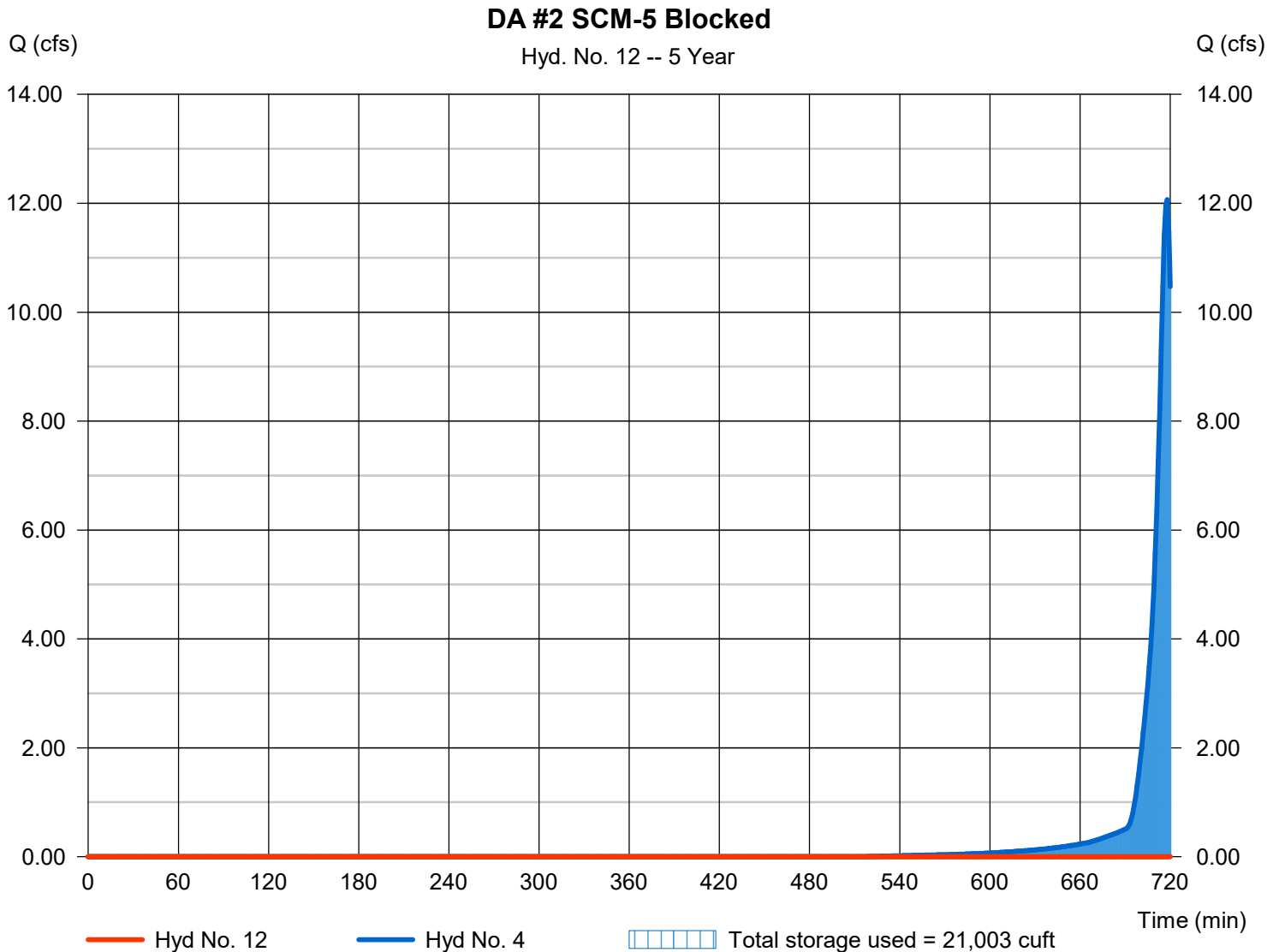
Friday, 04 / 11 / 2025

Hyd. No. 12

DA #2 SCM-5 Blocked

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 5 yrs	Time to peak	= 700 min
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 4 - Post DA #2 (SCM-5)	Max. Elevation	= 1104.85 ft
Reservoir name	= DA #2 (SCM-5) Blocked	Max. Storage	= 21,003 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

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	12.73	1	719	26,865	-----	-----	-----	Pre DA #2	
2	SCS Runoff	18.03	1	717	34,224	-----	-----	-----	Post DA #2	
4	SCS Runoff	15.02	1	718	30,536	-----	-----	-----	Post DA #2 (SCM-5)	
5	SCS Runoff	2.400	1	718	4,819	-----	-----	-----	Post DA #2 (Undetained)	
6	Combine	17.43	1	718	35,356	4, 5	-----	-----	Combine Post DA#2 (No Controls)	
8	Reservoir	0.785	1	774	13,651	4	1104.39	17,156	Route DA#2 (SCM-5)	
9	Reach	0.785	1	776	13,645	8	-----	-----	Reach DA #2 (SCM-5)	
10	Combine	2.400	1	718	18,464	5, 9	-----	-----	Combine DA #2	
12	Reservoir	0.000	1	710	0	4	1105.48	26,896	DA #2 SCM-5 Blocked	
250401-Newcastle DA 2.gpw					Return Period: 10 Year			Friday, 04 / 11 / 2025		

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

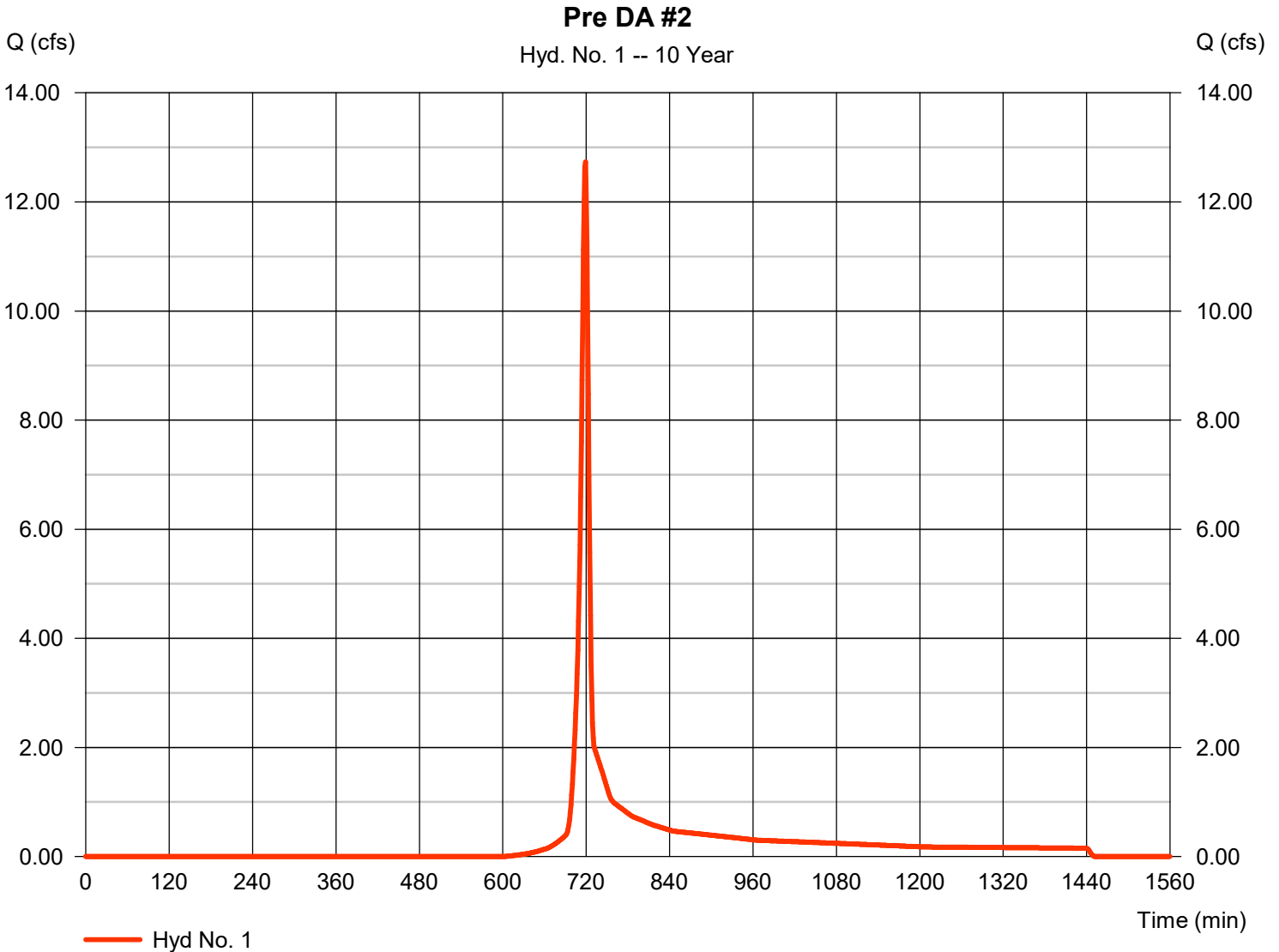
Friday, 04 / 11 / 2025

Hyd. No. 1

Pre DA #2

Hydrograph type	= SCS Runoff	Peak discharge	= 12.73 cfs
Storm frequency	= 10 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 26,865 cuft
Drainage area	= 5.750 ac	Curve number	= 77*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 7.50 min
Total precip.	= 3.35 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(3.415 x 77) + (2.335 x 78)] / 5.750



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

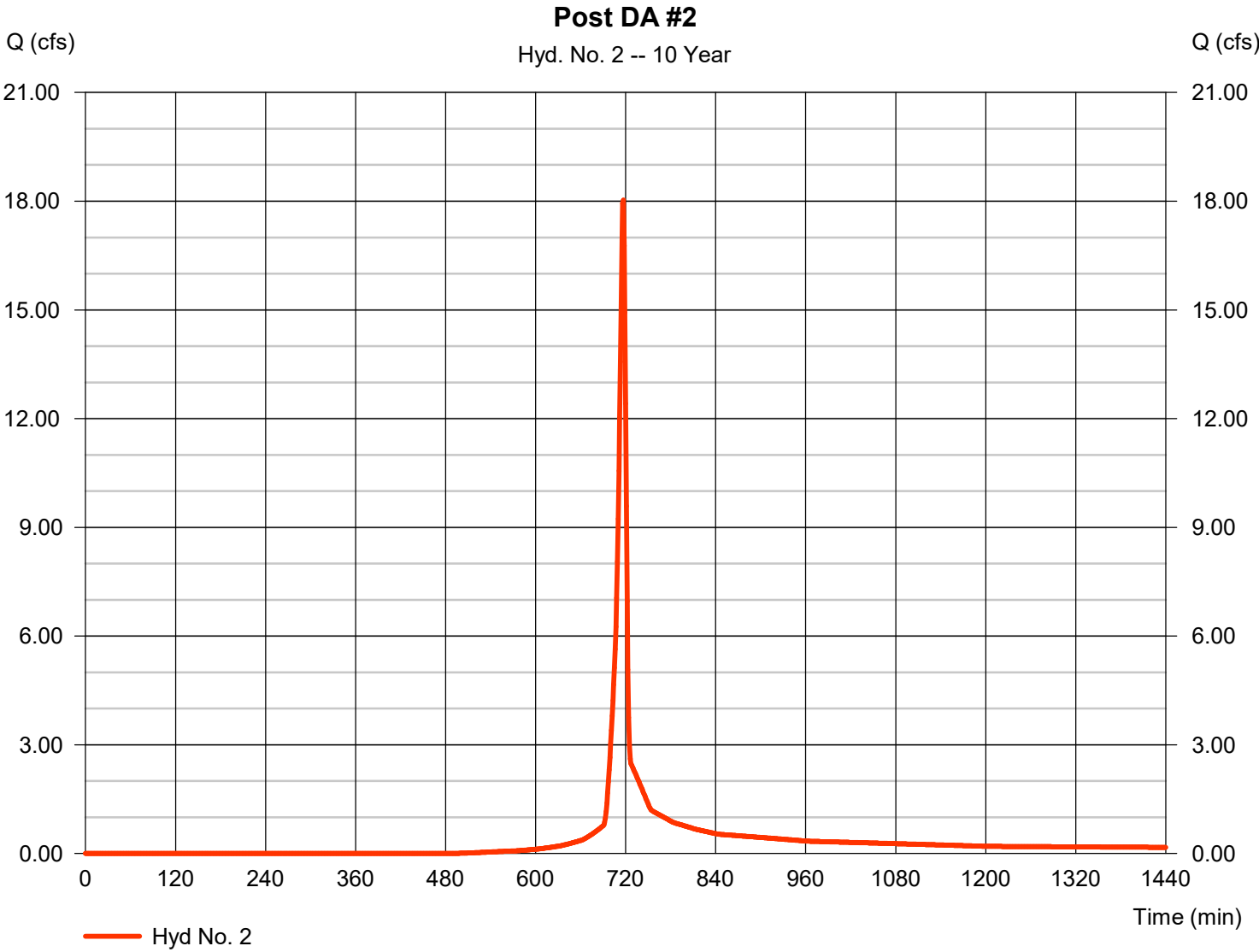
Friday, 04 / 11 / 2025

Hyd. No. 2

Post DA #2

Hydrograph type	= SCS Runoff	Peak discharge	= 18.03 cfs
Storm frequency	= 10 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 34,224 cuft
Drainage area	= 5.440 ac	Curve number	= 83*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 4.60 min
Total precip.	= 3.35 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.677 x 78) + (2.579 x 80) + (1.187 x 98)] / 5.440



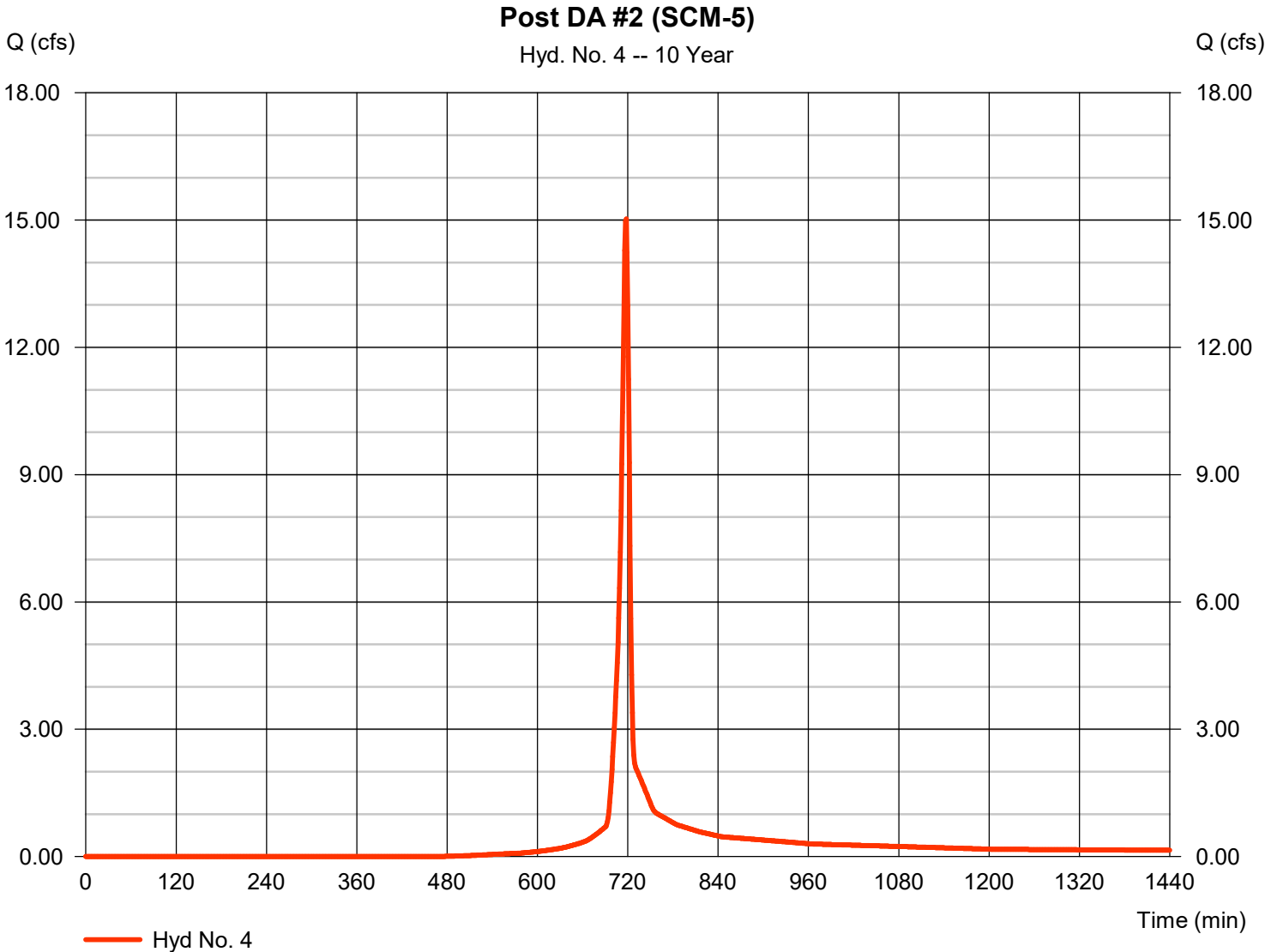
Hydrograph Report

Hyd. No. 4

Post DA #2 (SCM-5)

Hydrograph type	= SCS Runoff	Peak discharge	= 15.02 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 30,536 cuft
Drainage area	= 4.510 ac	Curve number	= 84*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.35 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.914 x 78) + (2.410 x 80) + (1.187 x 98)] / 4.510



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

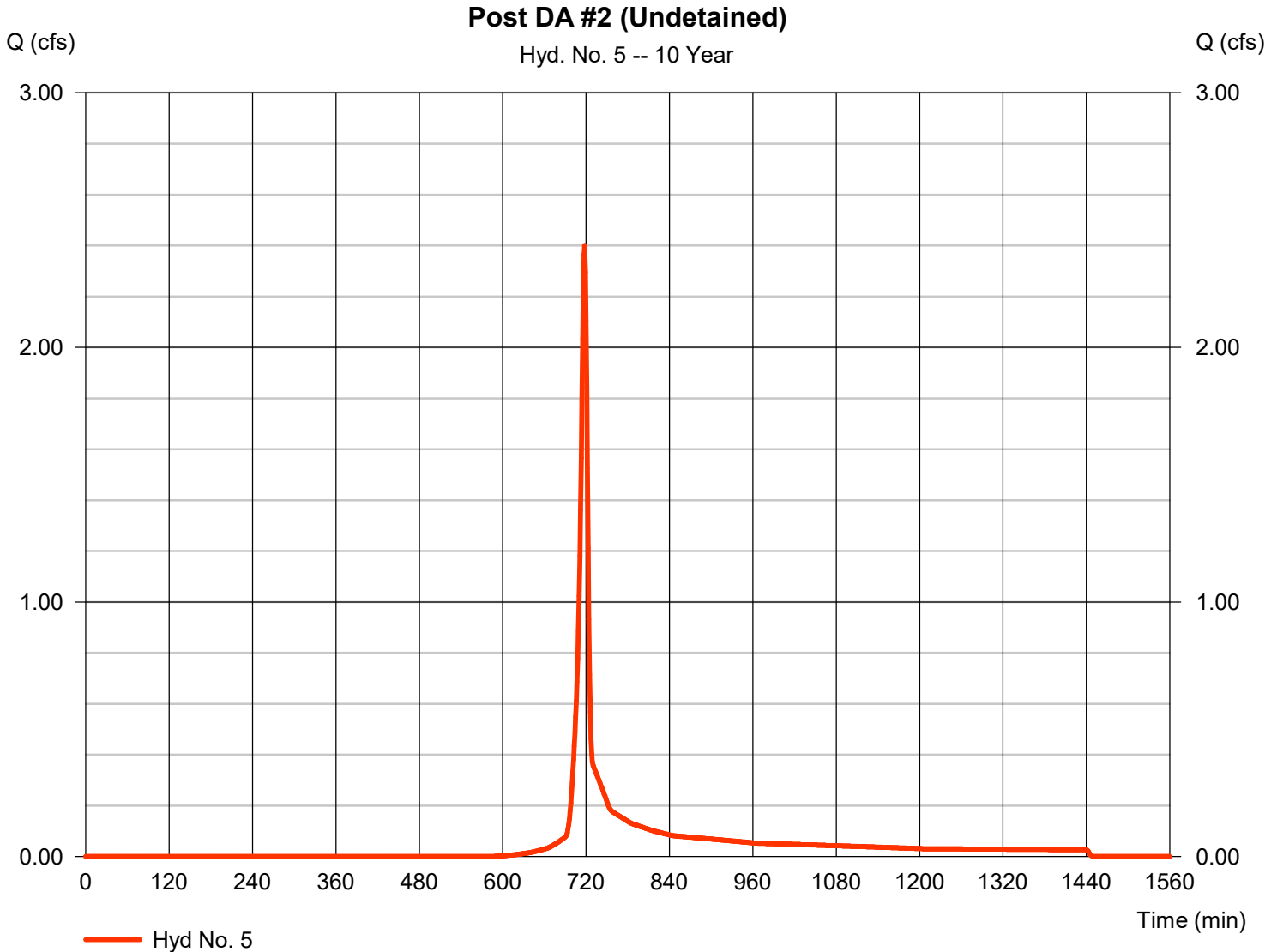
Friday, 04 / 11 / 2025

Hyd. No. 5

Post DA #2 (Undetained)

Hydrograph type	= SCS Runoff	Peak discharge	= 2.400 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 4,819 cuft
Drainage area	= 0.930 ac	Curve number	= 78*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.35 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.763 x 78) + (0.168 x 80)] / 0.930



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

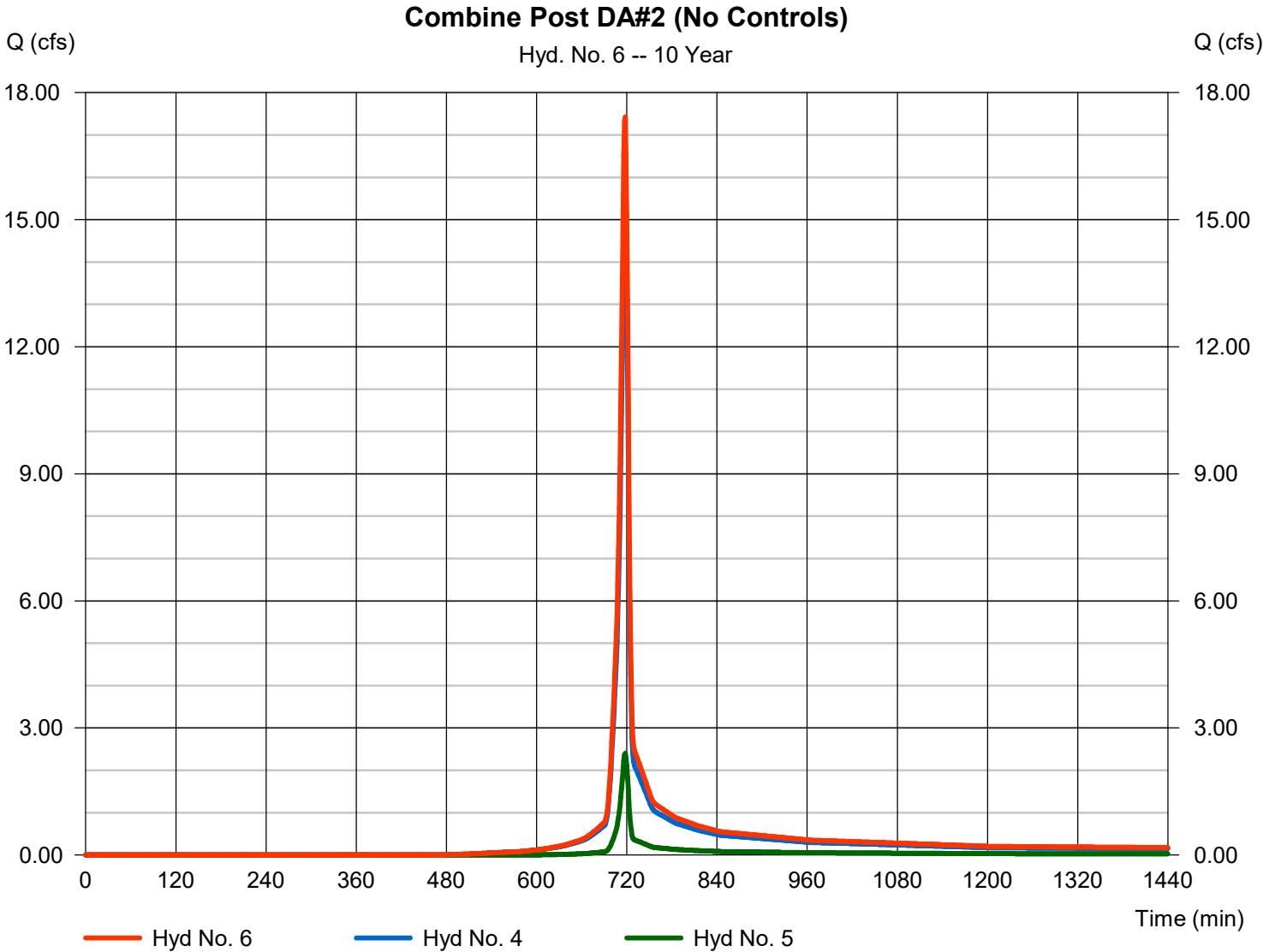
Friday, 04 / 11 / 2025

Hyd. No. 6

Combine Post DA#2 (No Controls)

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 1 min
Inflow hyds. = 4, 5

Peak discharge = 17.43 cfs
Time to peak = 718 min
Hyd. volume = 35,356 cuft
Contrib. drain. area = 5.440 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

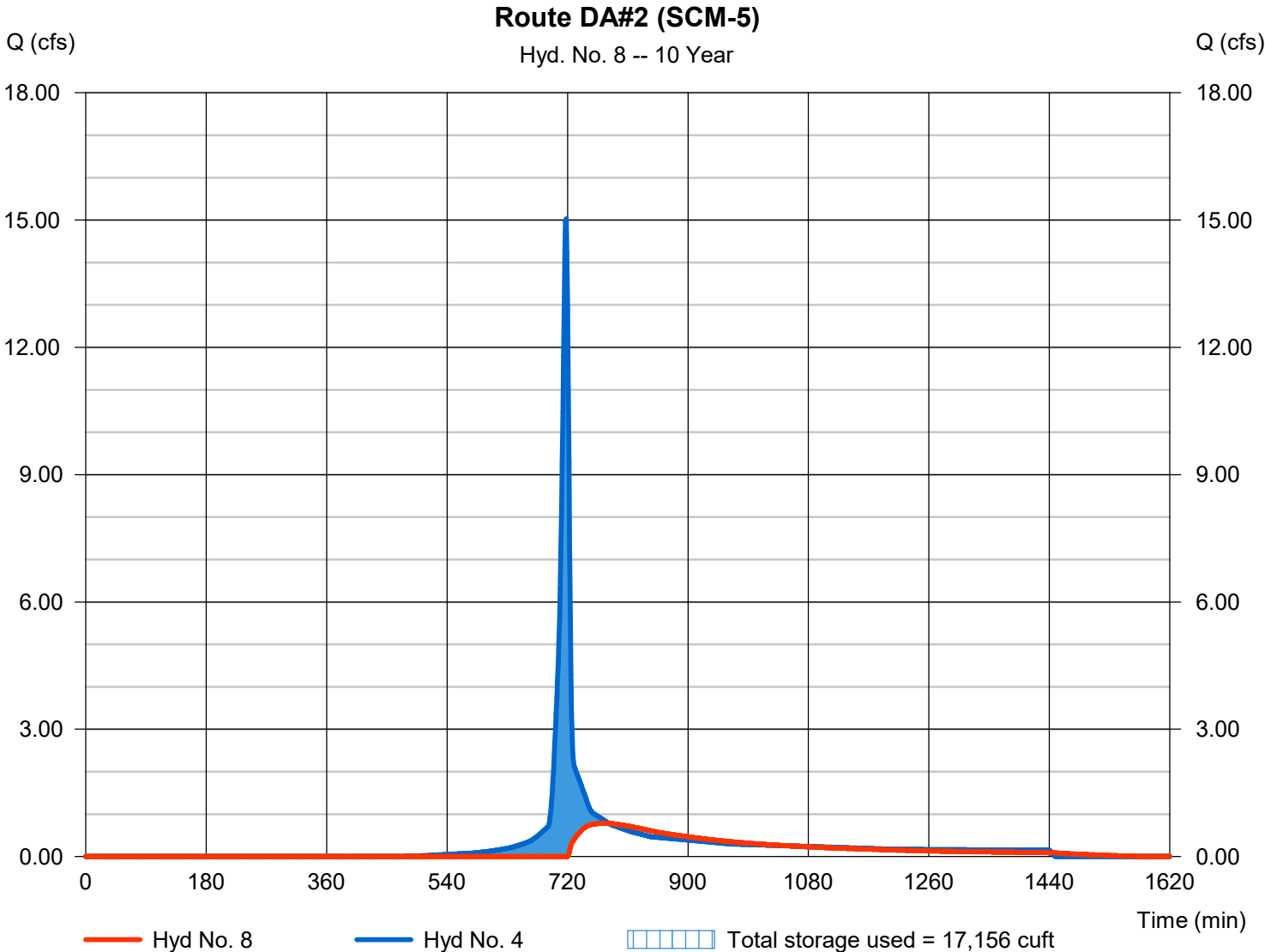
Friday, 04 / 11 / 2025

Hyd. No. 8

Route DA#2 (SCM-5)

Hydrograph type	= Reservoir	Peak discharge	= 0.785 cfs
Storm frequency	= 10 yrs	Time to peak	= 774 min
Time interval	= 1 min	Hyd. volume	= 13,651 cuft
Inflow hyd. No.	= 4 - Post DA #2 (SCM-5)	Max. Elevation	= 1104.39 ft
Reservoir name	= DA #2 (SCM-5)	Max. Storage	= 17,156 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

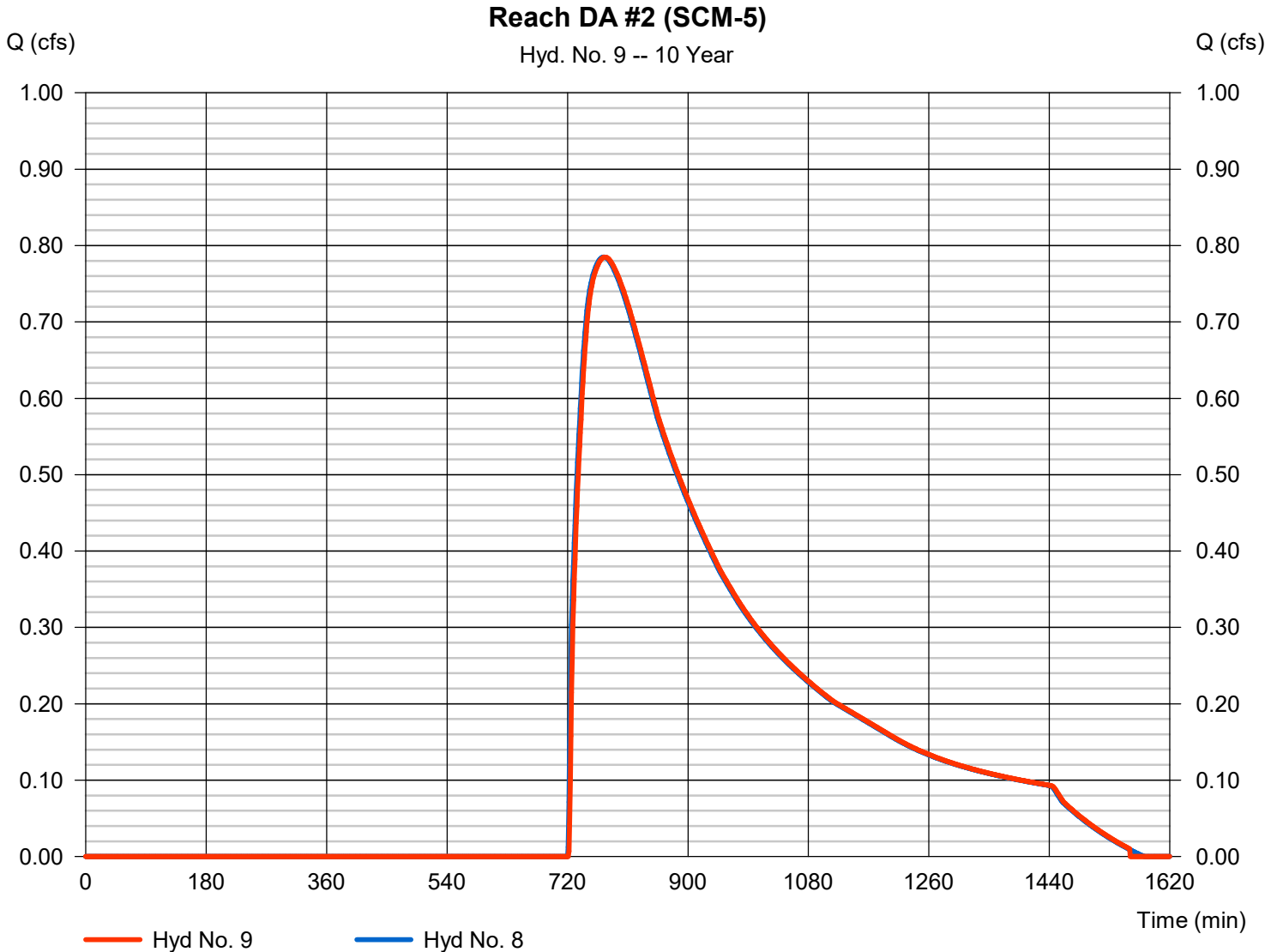
Friday, 04 / 11 / 2025

Hyd. No. 9

Reach DA #2 (SCM-5)

Hydrograph type	= Reach	Peak discharge	= 0.785 cfs
Storm frequency	= 10 yrs	Time to peak	= 776 min
Time interval	= 1 min	Hyd. volume	= 13,645 cuft
Inflow hyd. No.	= 8 - Route DA#2 (SCM-5)	Section type	= Trapezoidal
Reach length	= 283.0 ft	Channel slope	= 2.9 %
Manning's n	= 0.025	Bottom width	= 4.0 ft
Side slope	= 2.0:1	Max. depth	= 2.0 ft
Rating curve x	= 4.026	Rating curve m	= 1.307
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.5507

Modified Att-Kin routing method used.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

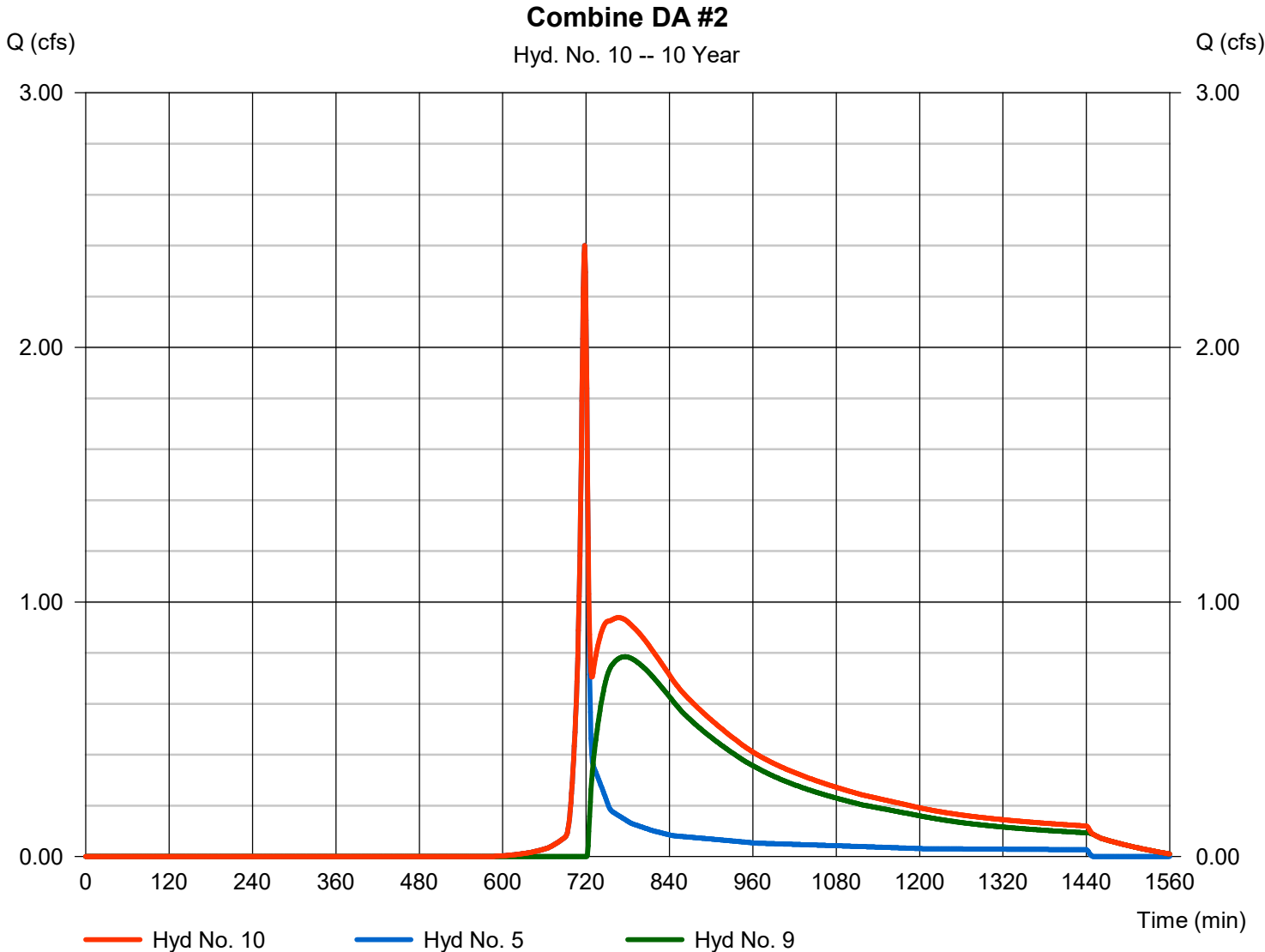
Friday, 04 / 11 / 2025

Hyd. No. 10

Combine DA #2

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 1 min
Inflow hyds. = 5, 9

Peak discharge = 2.400 cfs
Time to peak = 718 min
Hyd. volume = 18,464 cuft
Contrib. drain. area = 0.930 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

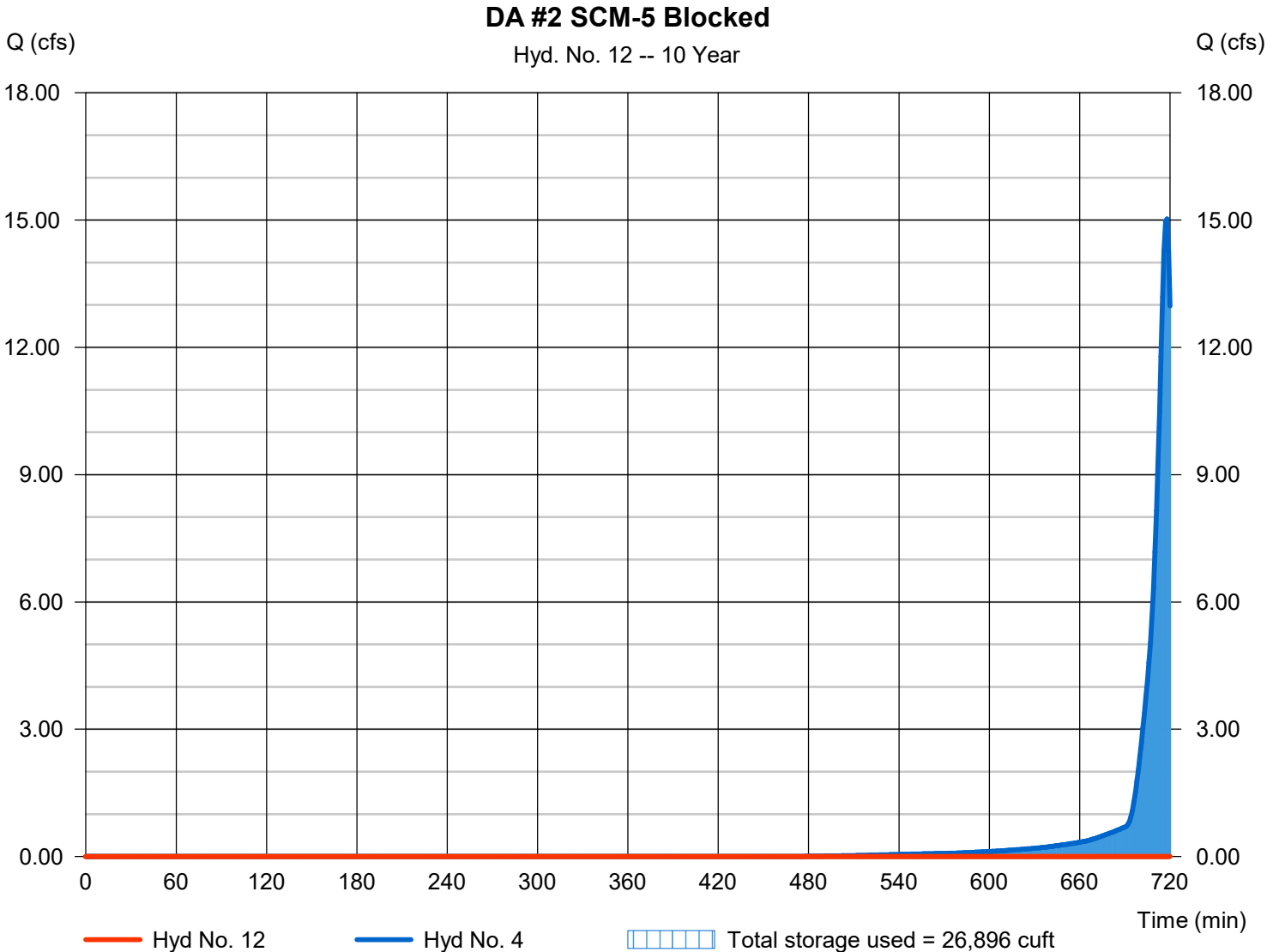
Friday, 04 / 11 / 2025

Hyd. No. 12

DA #2 SCM-5 Blocked

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= 710 min
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 4 - Post DA #2 (SCM-5)	Max. Elevation	= 1105.48 ft
Reservoir name	= DA #2 (SCM-5) Blocked	Max. Storage	= 26,896 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

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	17.17	1	719	36,240	-----	-----	-----	Pre DA #2	
2	SCS Runoff	23.17	1	717	44,461	-----	-----	-----	Post DA #2	
4	SCS Runoff	19.21	1	718	39,437	-----	-----	-----	Post DA #2 (SCM-5)	
5	SCS Runoff	3.208	1	718	6,458	-----	-----	-----	Post DA #2 (Undetained)	
6	Combine	22.42	1	718	45,895	4, 5	-----	-----	Combine Post DA#2 (No Controls)	
8	Reservoir	1.904	1	743	22,356	4	1104.79	20,505	Route DA#2 (SCM-5)	
9	Reach	1.903	1	744	22,349	8	-----	-----	Reach DA #2 (SCM-5)	
10	Combine	3.243	1	718	28,808	5, 9	-----	-----	Combine DA #2	
12	Reservoir	0.000	1	706	0	4	1106.33	35,386	DA #2 SCM-5 Blocked	
250401-Newcastle DA 2.gpw					Return Period: 25 Year			Friday, 04 / 11 / 2025		

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

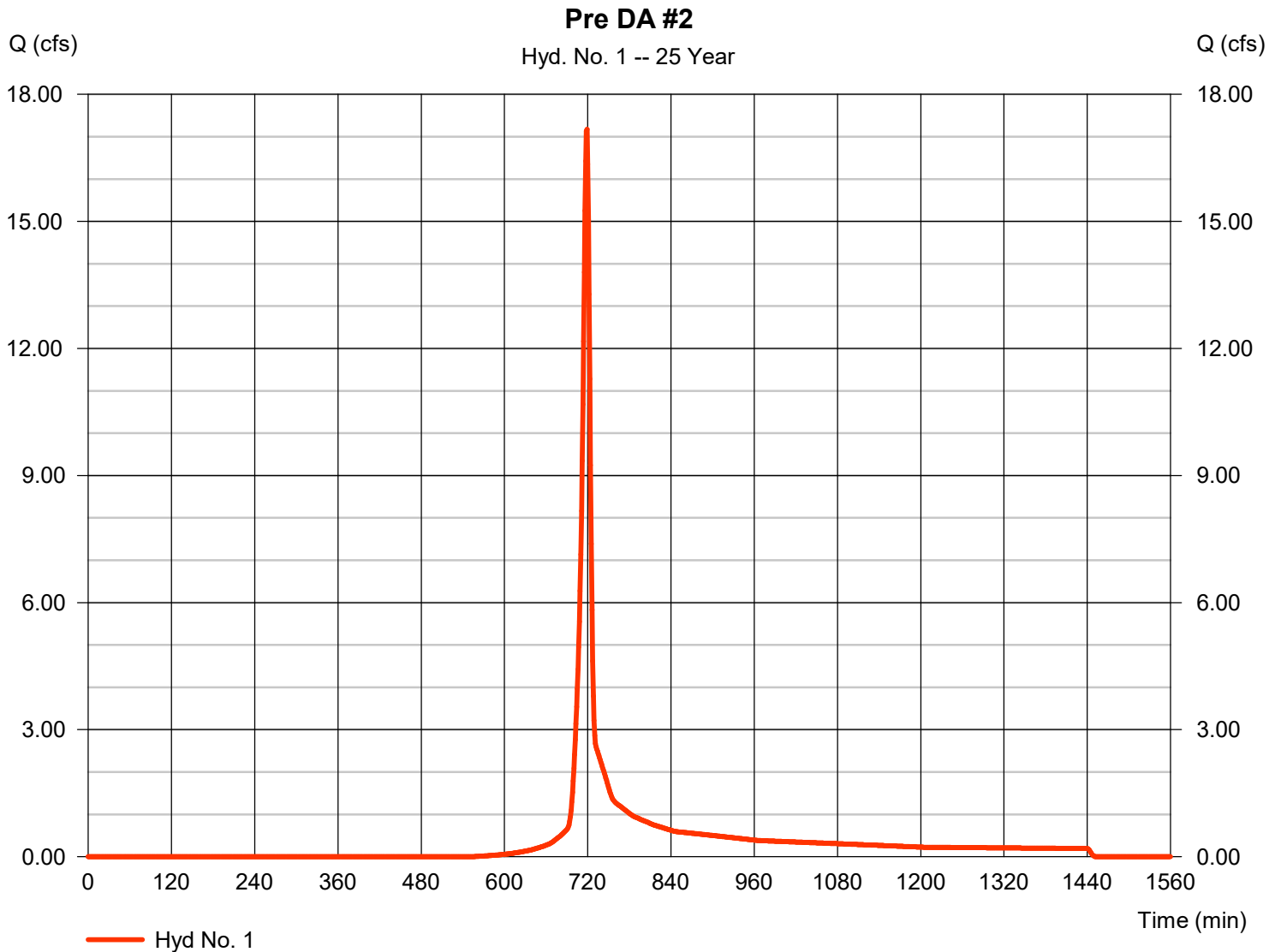
Friday, 04 / 11 / 2025

Hyd. No. 1

Pre DA #2

Hydrograph type	= SCS Runoff	Peak discharge	= 17.17 cfs
Storm frequency	= 25 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 36,240 cuft
Drainage area	= 5.750 ac	Curve number	= 77*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 7.50 min
Total precip.	= 3.96 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(3.415 x 77) + (2.335 x 78)] / 5.750



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

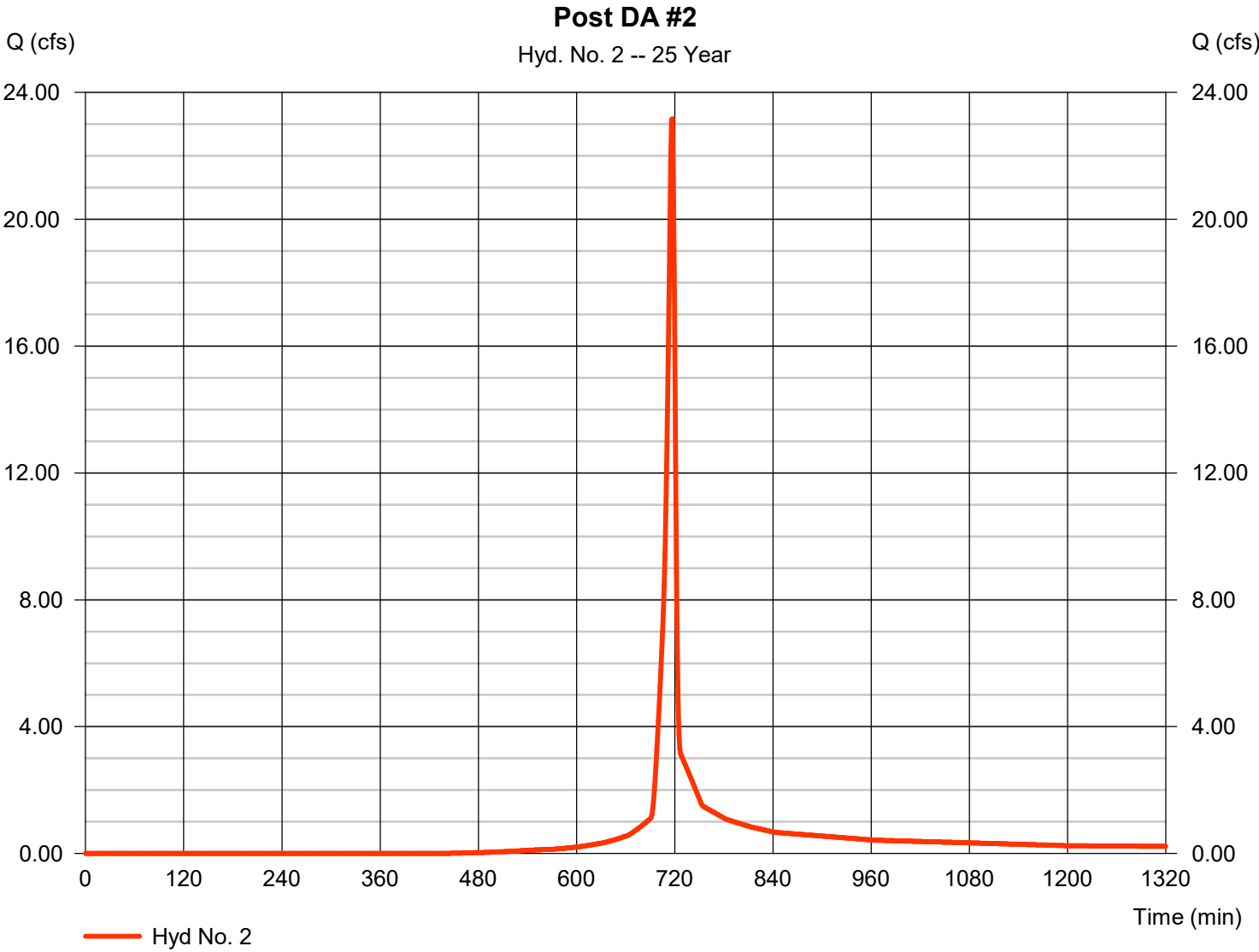
Friday, 04 / 11 / 2025

Hyd. No. 2

Post DA #2

Hydrograph type	= SCS Runoff	Peak discharge	= 23.17 cfs
Storm frequency	= 25 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 44,461 cuft
Drainage area	= 5.440 ac	Curve number	= 83*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 4.60 min
Total precip.	= 3.96 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.677 x 78) + (2.579 x 80) + (1.187 x 98)] / 5.440



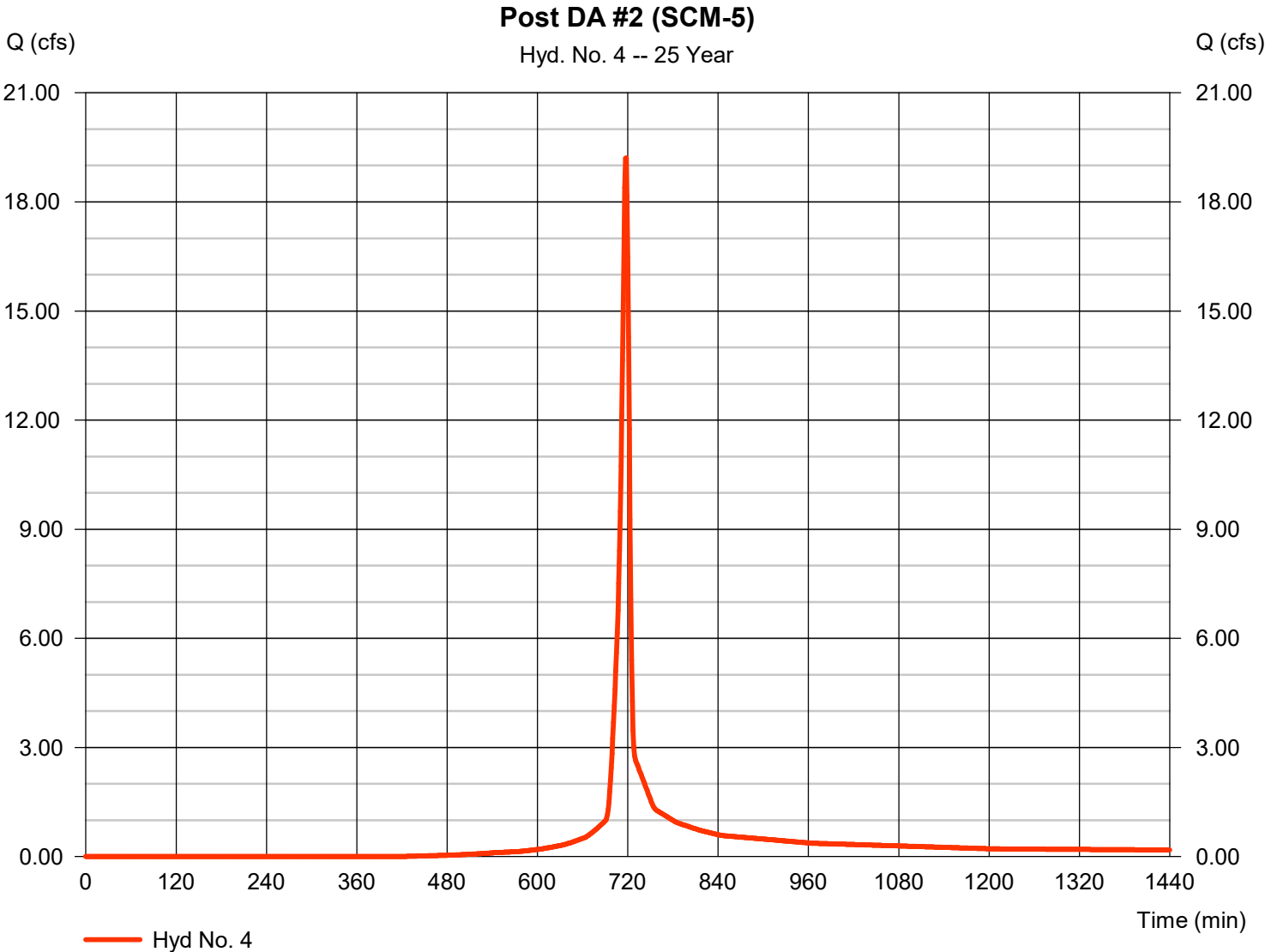
Hydrograph Report

Hyd. No. 4

Post DA #2 (SCM-5)

Hydrograph type	= SCS Runoff	Peak discharge	= 19.21 cfs
Storm frequency	= 25 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 39,437 cuft
Drainage area	= 4.510 ac	Curve number	= 84*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.96 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.914 x 78) + (2.410 x 80) + (1.187 x 98)] / 4.510



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

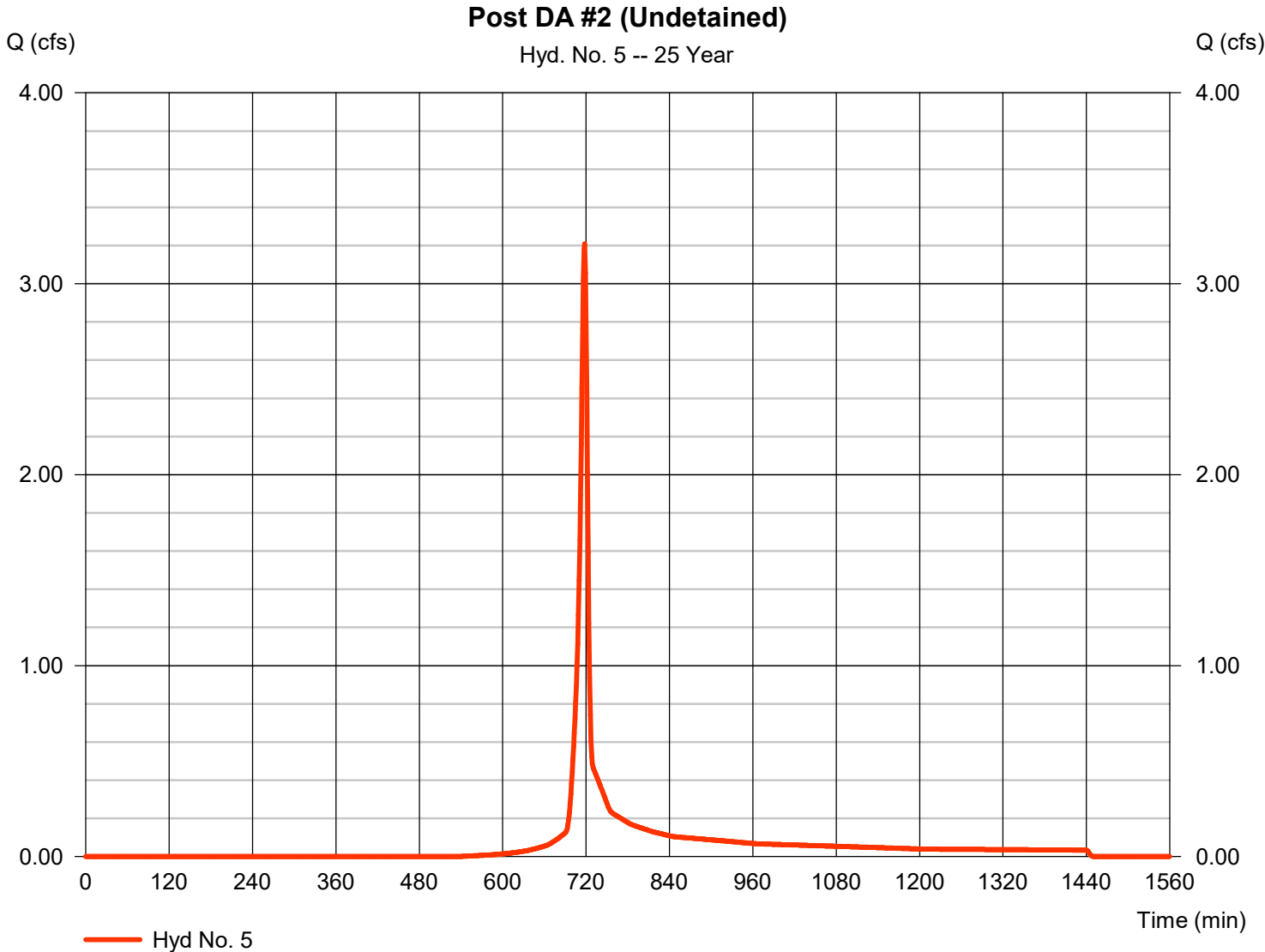
Friday, 04 / 11 / 2025

Hyd. No. 5

Post DA #2 (Undetained)

Hydrograph type	= SCS Runoff	Peak discharge	= 3.208 cfs
Storm frequency	= 25 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 6,458 cuft
Drainage area	= 0.930 ac	Curve number	= 78*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.96 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.763 x 78) + (0.168 x 80)] / 0.930



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Friday, 04 / 11 / 2025

Hyd. No. 6

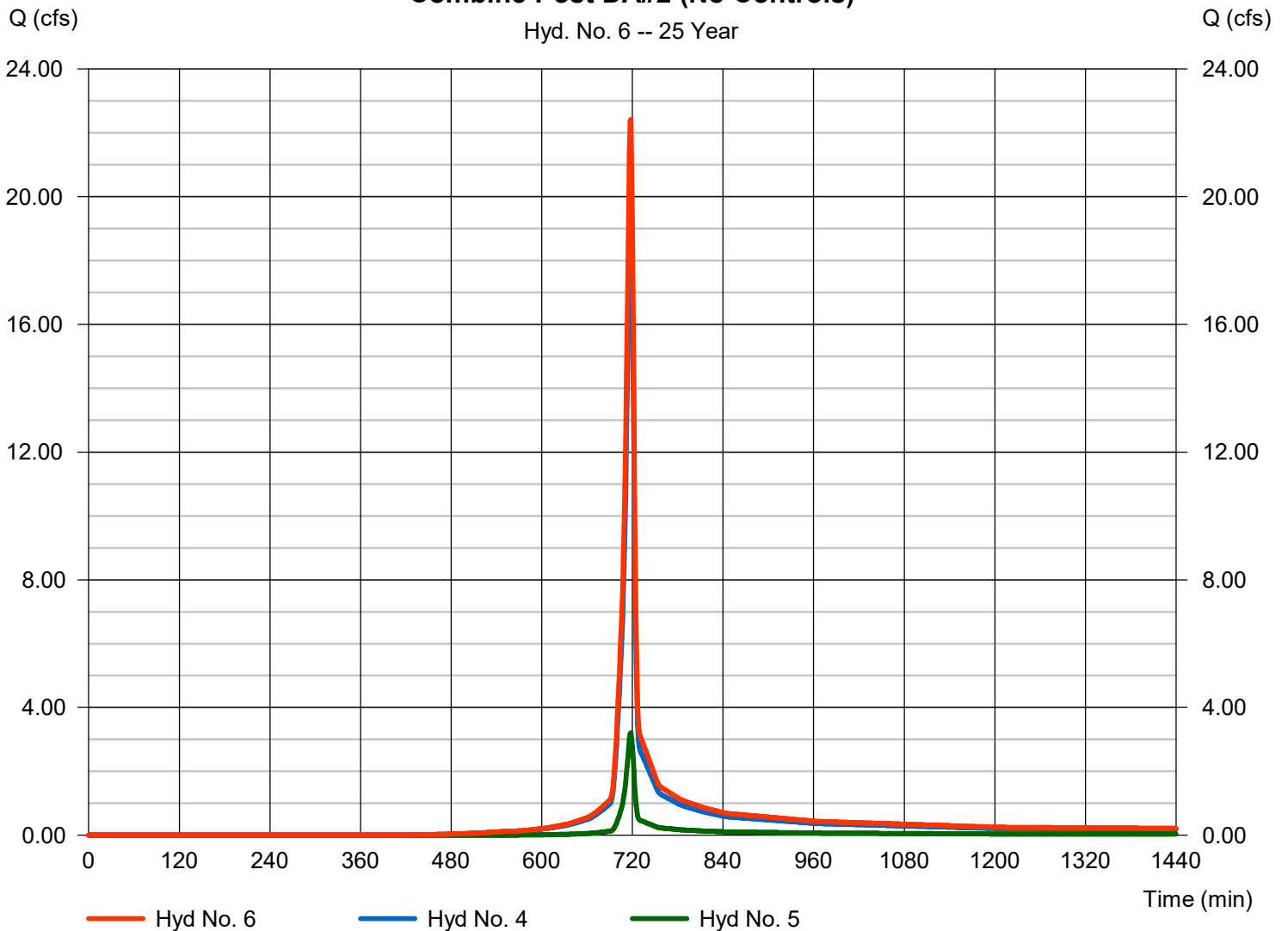
Combine Post DA#2 (No Controls)

Hydrograph type = Combine
 Storm frequency = 25 yrs
 Time interval = 1 min
 Inflow hyds. = 4, 5

Peak discharge = 22.42 cfs
 Time to peak = 718 min
 Hyd. volume = 45,895 cuft
 Contrib. drain. area = 5.440 ac

Combine Post DA#2 (No Controls)

Hyd. No. 6 -- 25 Year



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

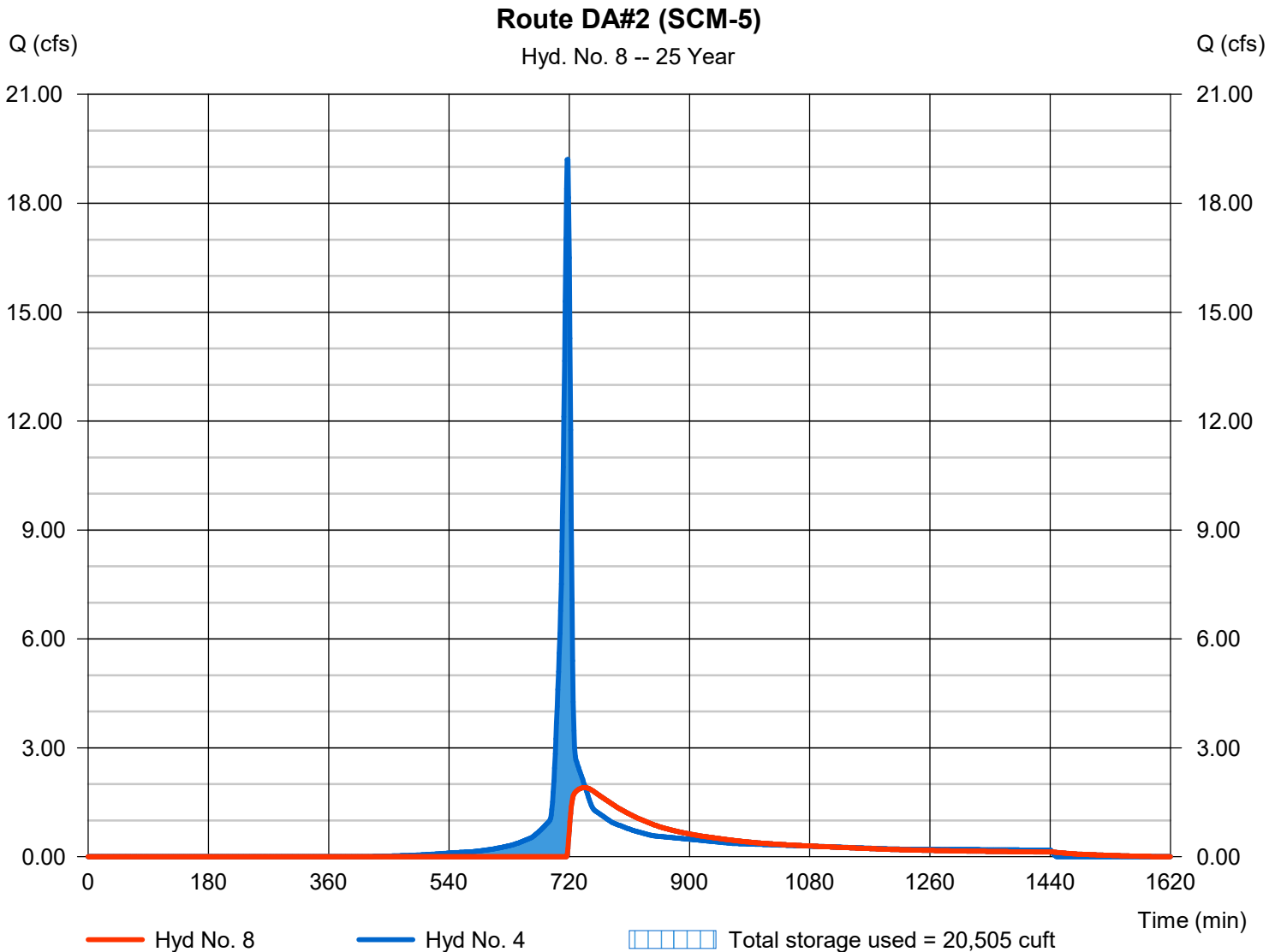
Friday, 04 / 11 / 2025

Hyd. No. 8

Route DA#2 (SCM-5)

Hydrograph type	= Reservoir	Peak discharge	= 1.904 cfs
Storm frequency	= 25 yrs	Time to peak	= 743 min
Time interval	= 1 min	Hyd. volume	= 22,356 cuft
Inflow hyd. No.	= 4 - Post DA #2 (SCM-5)	Max. Elevation	= 1104.79 ft
Reservoir name	= DA #2 (SCM-5)	Max. Storage	= 20,505 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

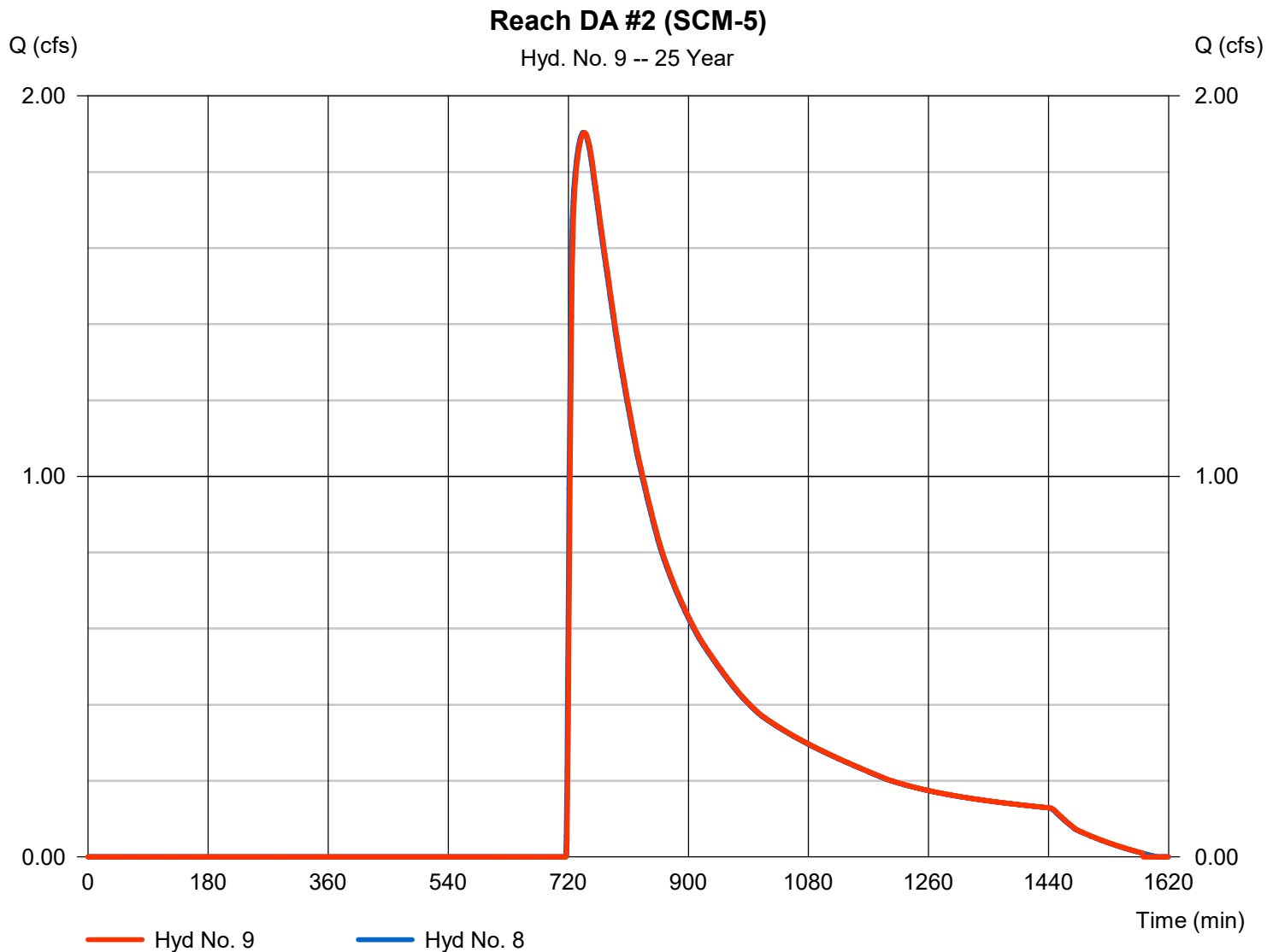
Friday, 04 / 11 / 2025

Hyd. No. 9

Reach DA #2 (SCM-5)

Hydrograph type	= Reach	Peak discharge	= 1.903 cfs
Storm frequency	= 25 yrs	Time to peak	= 744 min
Time interval	= 1 min	Hyd. volume	= 22,349 cuft
Inflow hyd. No.	= 8 - Route DA#2 (SCM-5)	Section type	= Trapezoidal
Reach length	= 283.0 ft	Channel slope	= 2.9 %
Manning's n	= 0.025	Bottom width	= 4.0 ft
Side slope	= 2.0:1	Max. depth	= 2.0 ft
Rating curve x	= 4.026	Rating curve m	= 1.307
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.6374

Modified Att-Kin routing method used.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

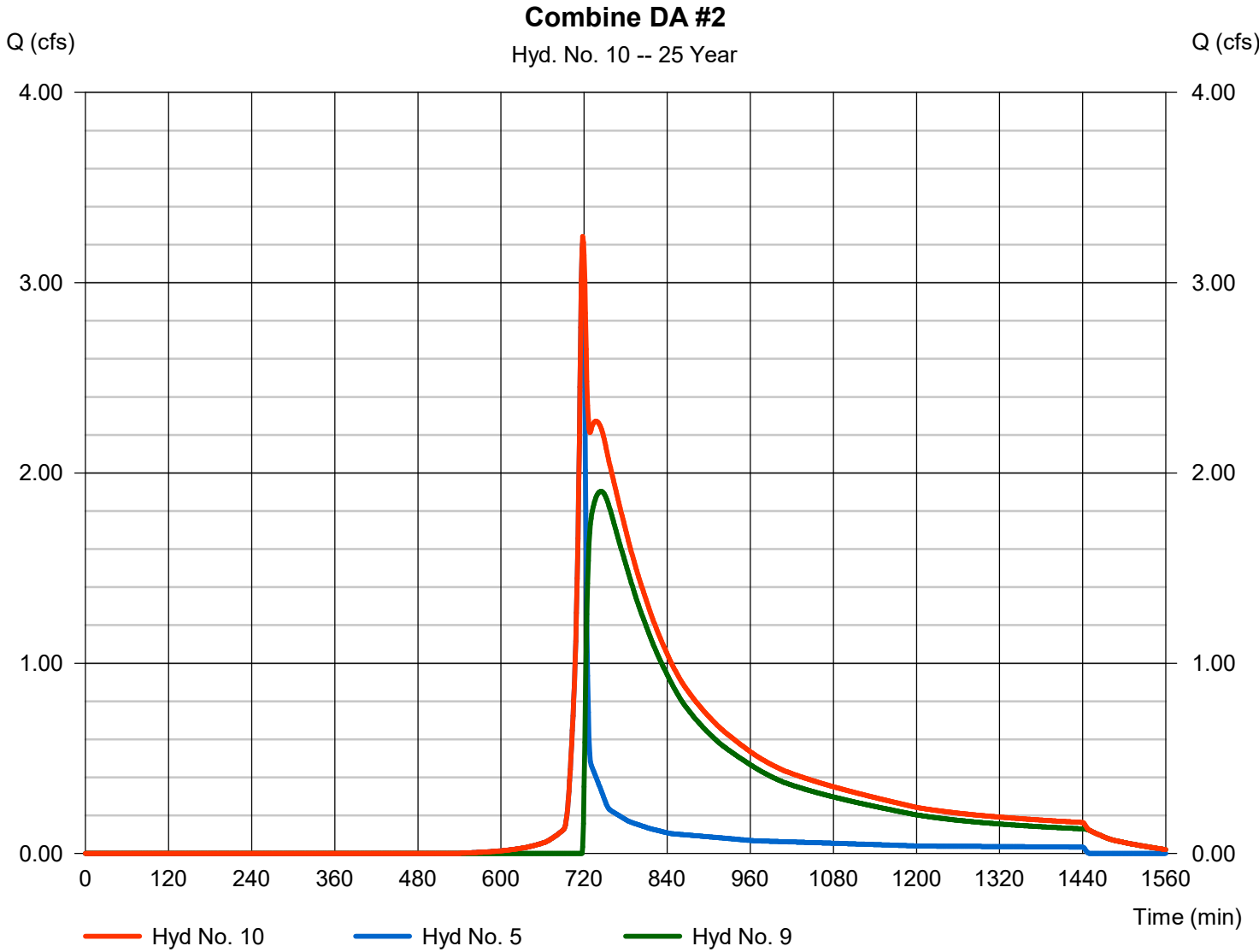
Friday, 04 / 11 / 2025

Hyd. No. 10

Combine DA #2

Hydrograph type = Combine
Storm frequency = 25 yrs
Time interval = 1 min
Inflow hyds. = 5, 9

Peak discharge = 3.243 cfs
Time to peak = 718 min
Hyd. volume = 28,808 cuft
Contrib. drain. area = 0.930 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

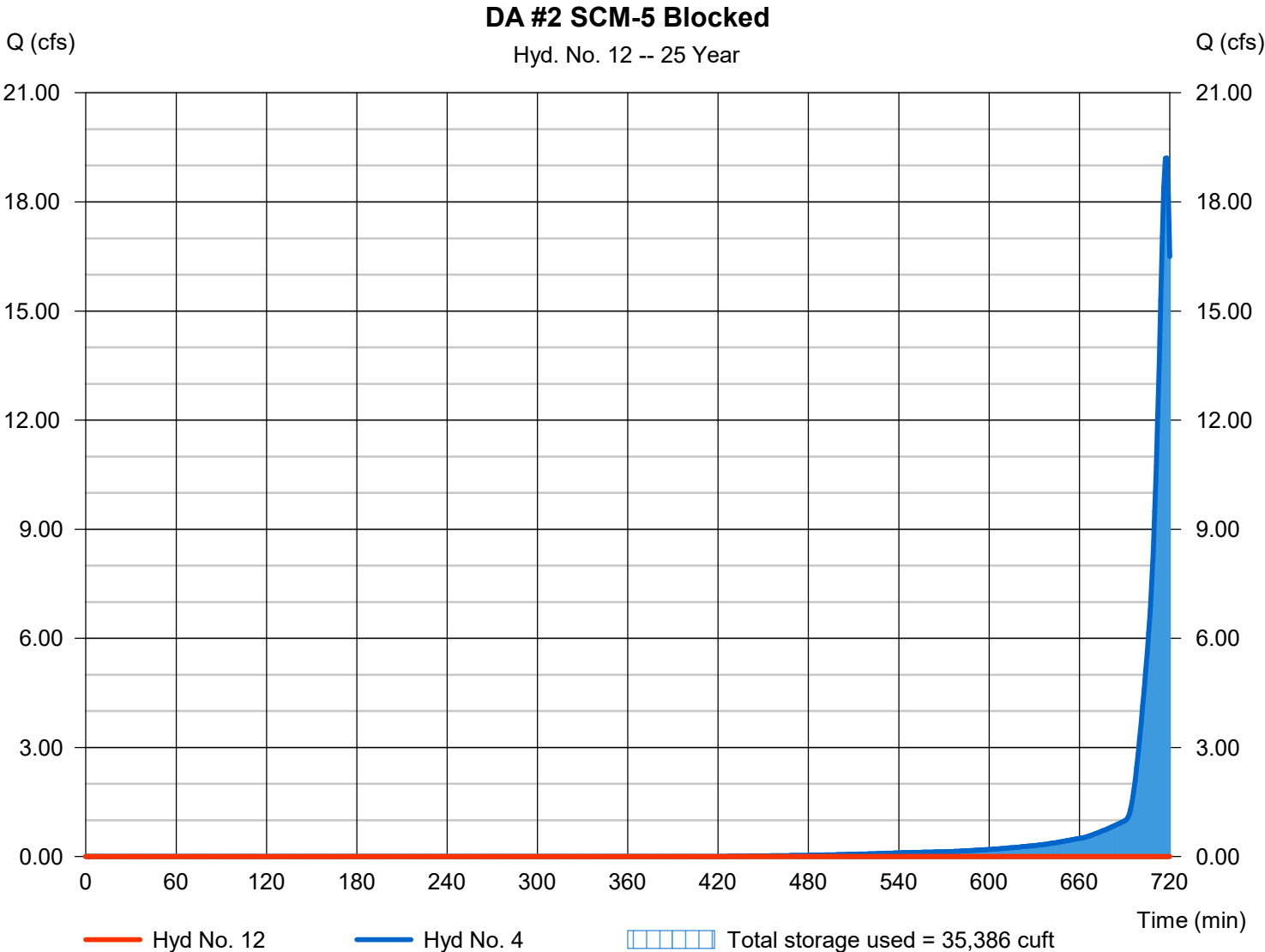
Friday, 04 / 11 / 2025

Hyd. No. 12

DA #2 SCM-5 Blocked

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 25 yrs	Time to peak	= 706 min
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 4 - Post DA #2 (SCM-5)	Max. Elevation	= 1106.33 ft
Reservoir name	= DA #2 (SCM-5) Blocked	Max. Storage	= 35,386 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

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	20.96	1	718	44,327	-----	-----	-----	Pre DA #2	
2	SCS Runoff	27.47	1	716	53,121	-----	-----	-----	Post DA #2	
4	SCS Runoff	22.71	1	717	46,945	-----	-----	-----	Post DA #2 (SCM-5)	
5	SCS Runoff	3.891	1	718	7,867	-----	-----	-----	Post DA #2 (Undetained)	
6	Combine	26.57	1	717	54,812	4, 5	-----	-----	Combine Post DA#2 (No Controls)	
8	Reservoir	3.185	1	729	29,710	4	1105.15	23,739	Route DA#2 (SCM-5)	
9	Reach	3.182	1	731	29,703	8	-----	-----	Reach DA #2 (SCM-5)	
10	Combine	4.703	1	720	37,571	5, 9	-----	-----	Combine DA #2	
12	Reservoir	0.063	1	1443	46	4	1107.00	42,522	DA #2 SCM-5 Blocked	
250401-Newcastle DA 2.gpw					Return Period: 50 Year			Friday, 04 / 11 / 2025		

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

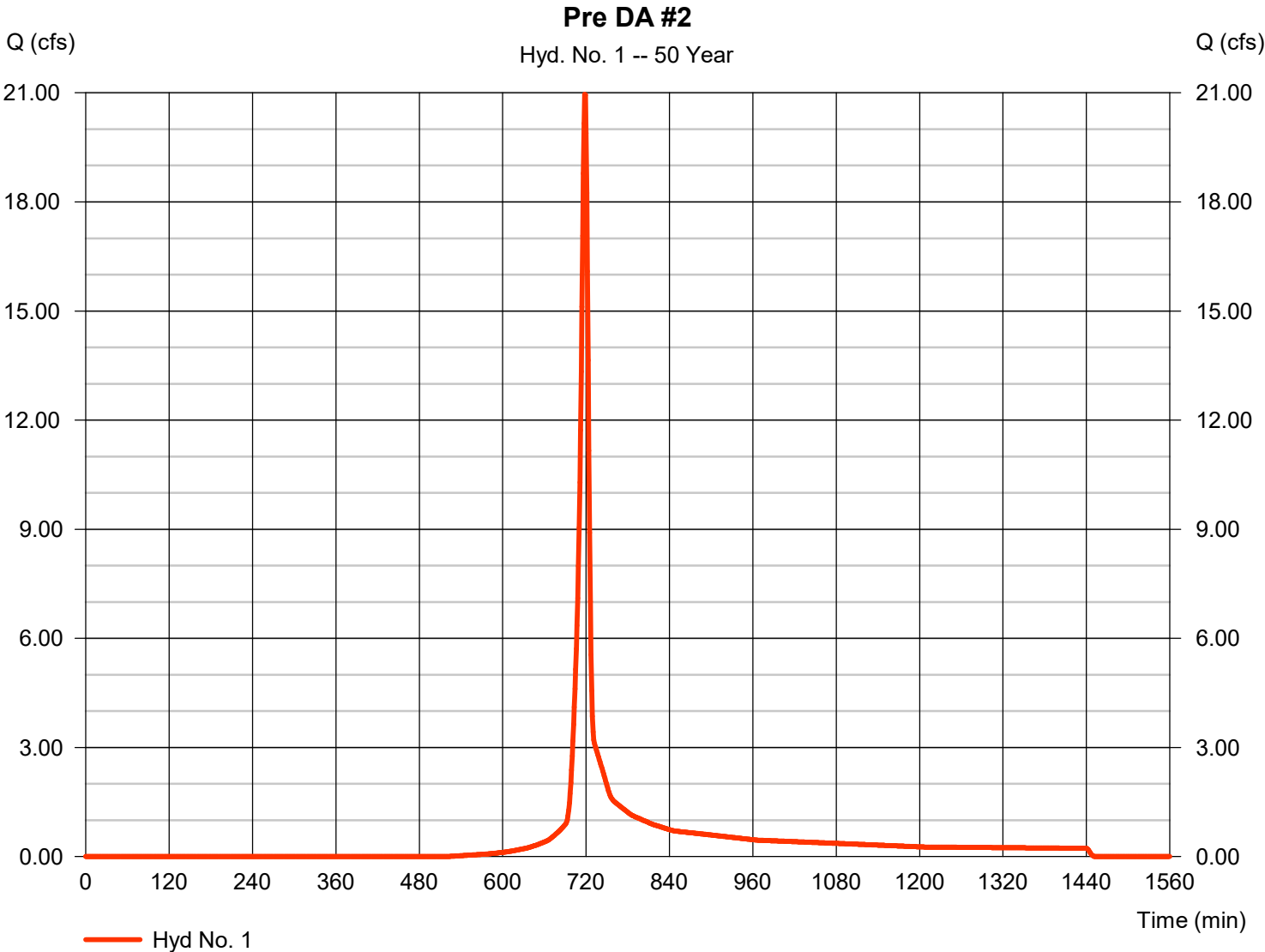
Friday, 04 / 11 / 2025

Hyd. No. 1

Pre DA #2

Hydrograph type	= SCS Runoff	Peak discharge	= 20.96 cfs
Storm frequency	= 50 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 44,327 cuft
Drainage area	= 5.750 ac	Curve number	= 77*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 7.50 min
Total precip.	= 4.46 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(3.415 x 77) + (2.335 x 78)] / 5.750



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

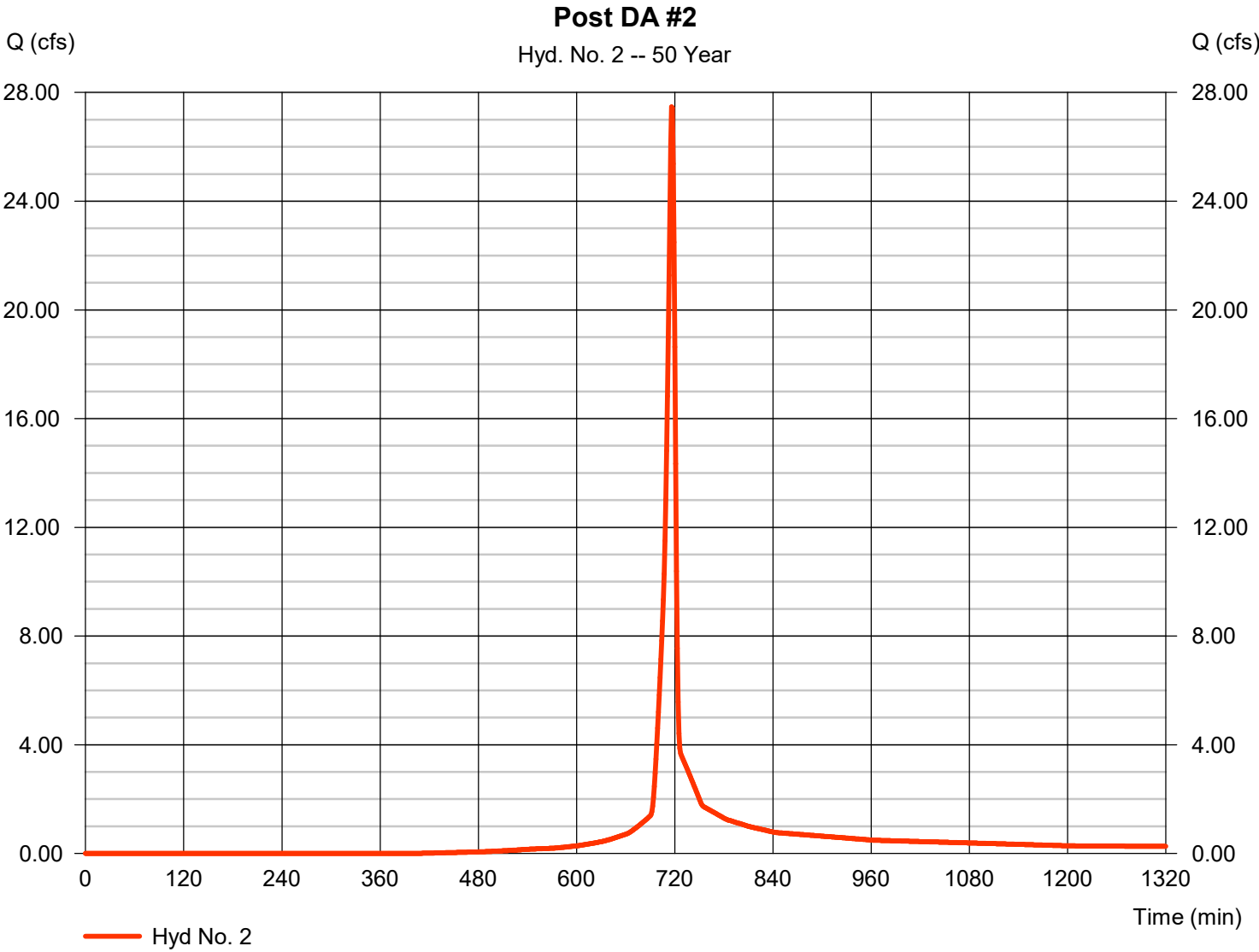
Friday, 04 / 11 / 2025

Hyd. No. 2

Post DA #2

Hydrograph type	= SCS Runoff	Peak discharge	= 27.47 cfs
Storm frequency	= 50 yrs	Time to peak	= 716 min
Time interval	= 1 min	Hyd. volume	= 53,121 cuft
Drainage area	= 5.440 ac	Curve number	= 83*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 4.60 min
Total precip.	= 4.46 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.677 x 78) + (2.579 x 80) + (1.187 x 98)] / 5.440



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

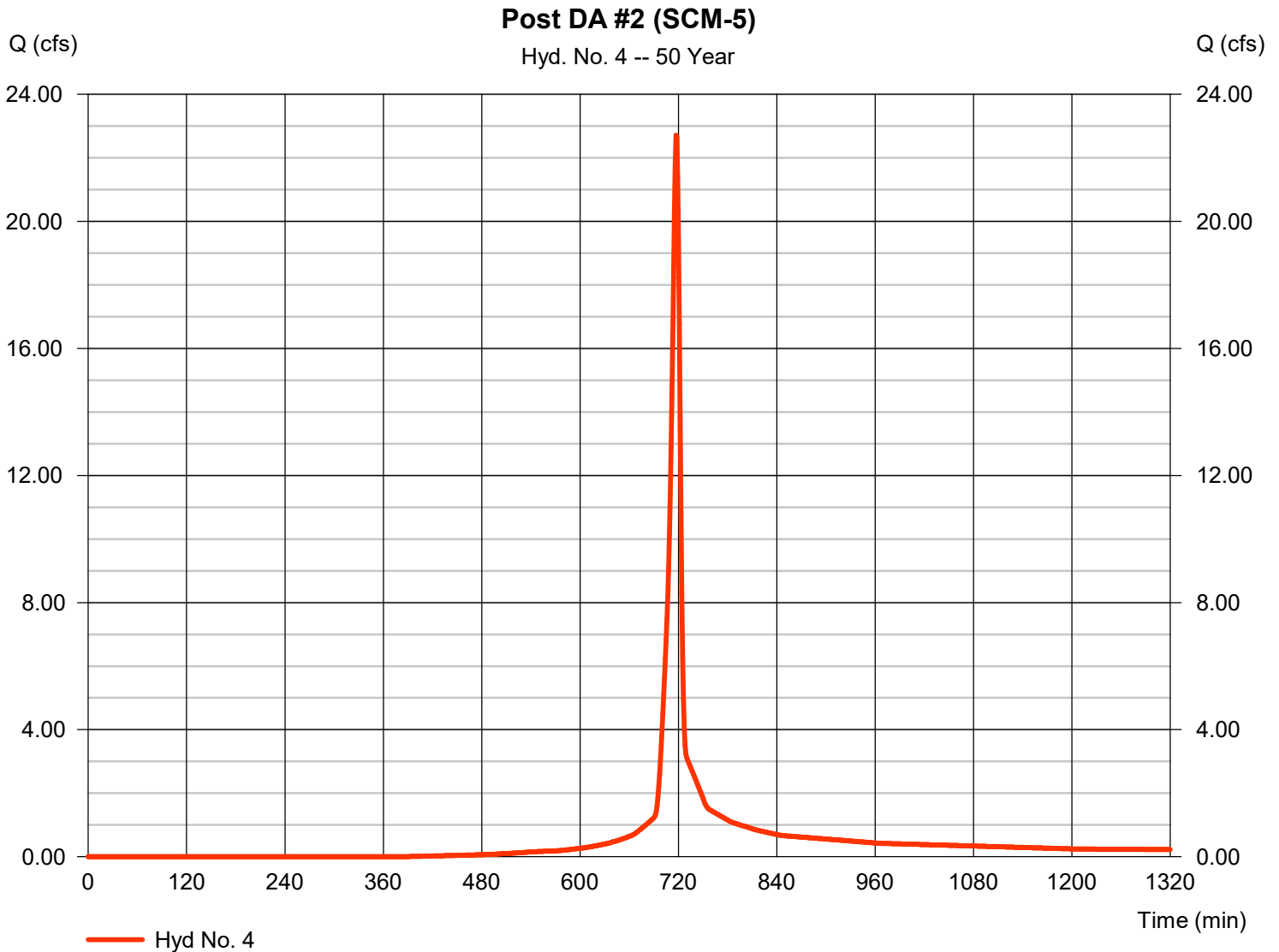
Friday, 04 / 11 / 2025

Hyd. No. 4

Post DA #2 (SCM-5)

Hydrograph type	= SCS Runoff	Peak discharge	= 22.71 cfs
Storm frequency	= 50 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 46,945 cuft
Drainage area	= 4.510 ac	Curve number	= 84*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.46 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.914 x 78) + (2.410 x 80) + (1.187 x 98)] / 4.510



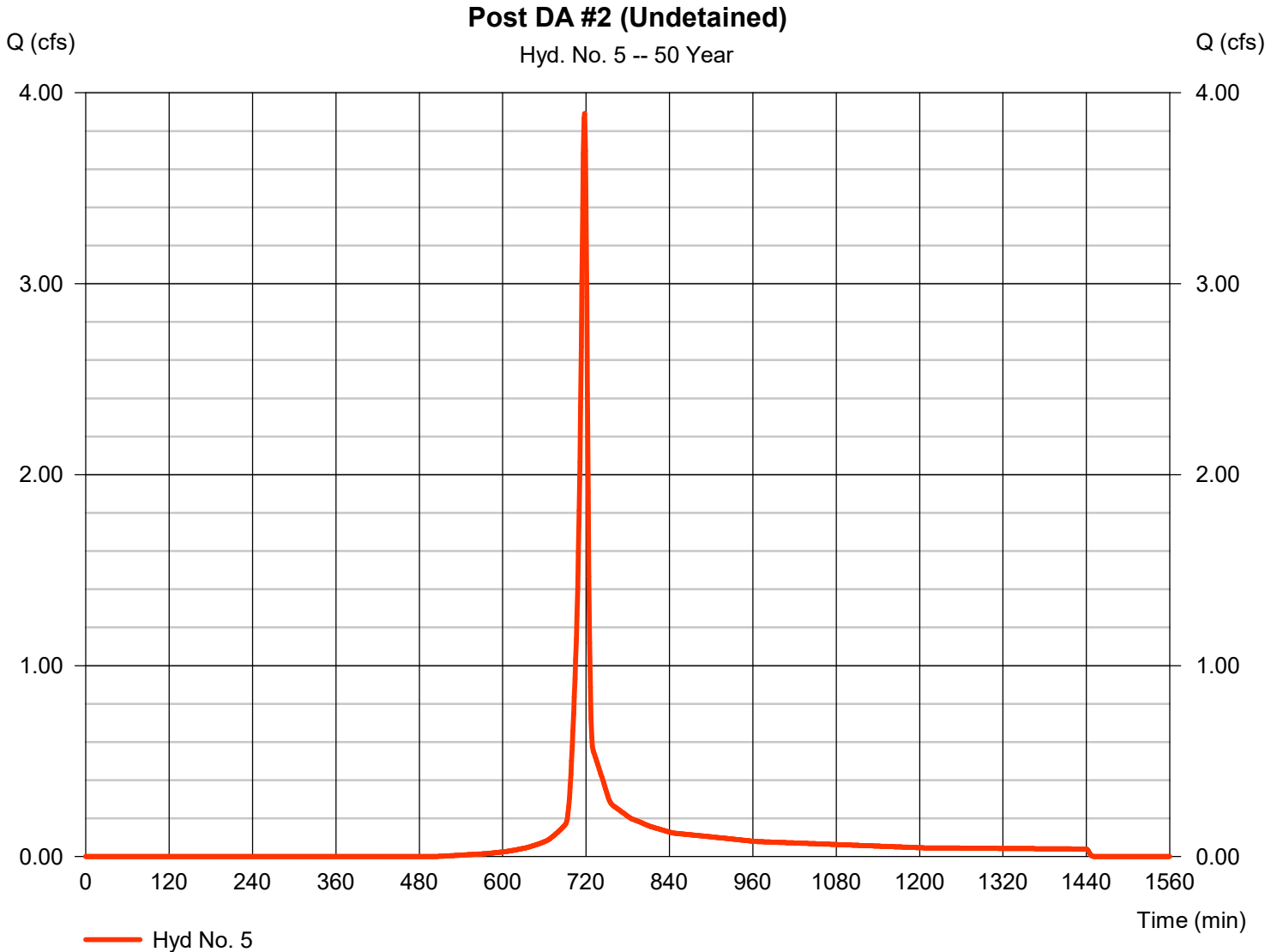
Hydrograph Report

Hyd. No. 5

Post DA #2 (Undetained)

Hydrograph type	= SCS Runoff	Peak discharge	= 3.891 cfs
Storm frequency	= 50 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 7,867 cuft
Drainage area	= 0.930 ac	Curve number	= 78*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.46 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.763 x 78) + (0.168 x 80)] / 0.930



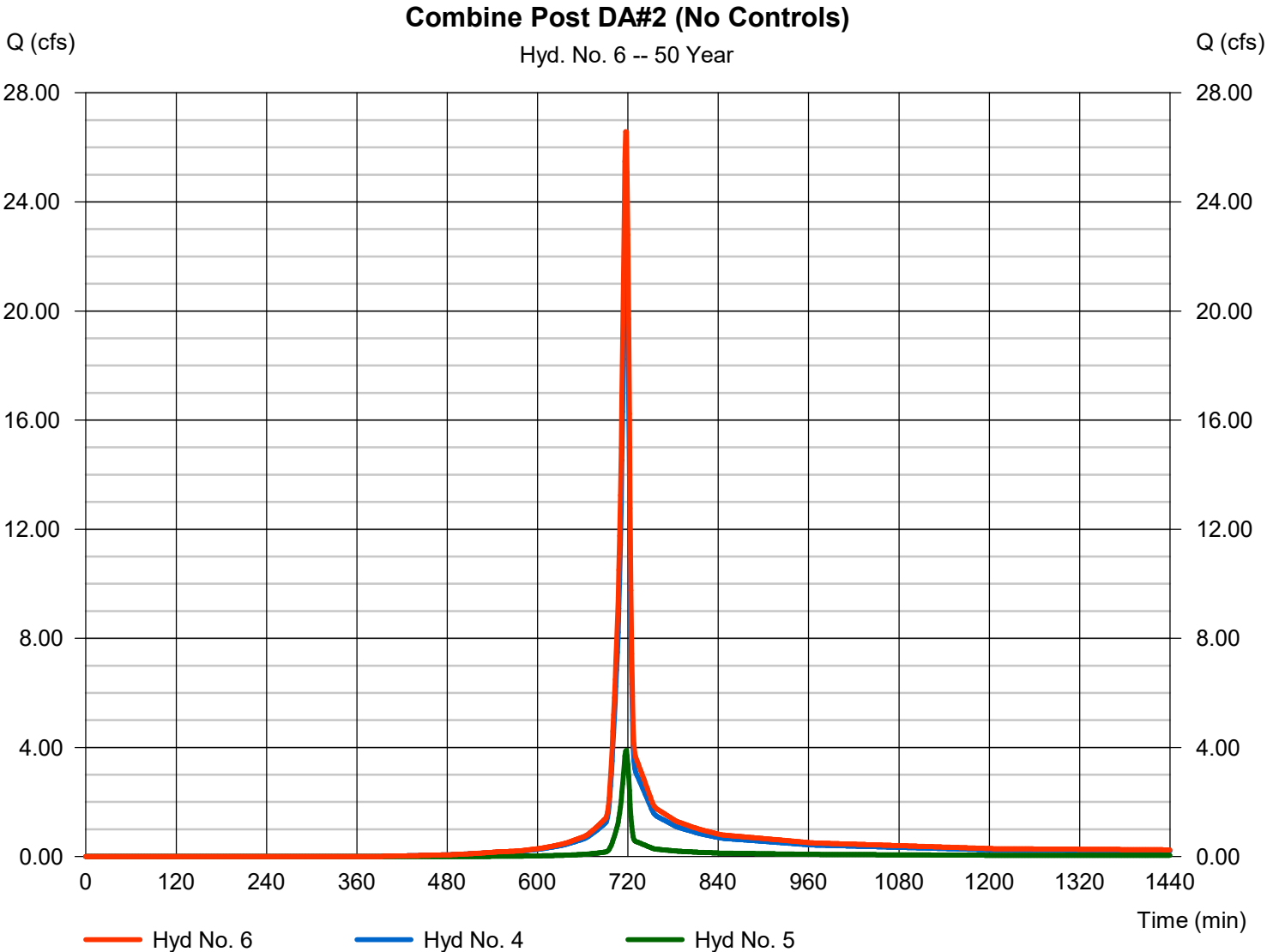
Hydrograph Report

Hyd. No. 6

Combine Post DA#2 (No Controls)

Hydrograph type = Combine
Storm frequency = 50 yrs
Time interval = 1 min
Inflow hyds. = 4, 5

Peak discharge = 26.57 cfs
Time to peak = 717 min
Hyd. volume = 54,812 cuft
Contrib. drain. area = 5.440 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

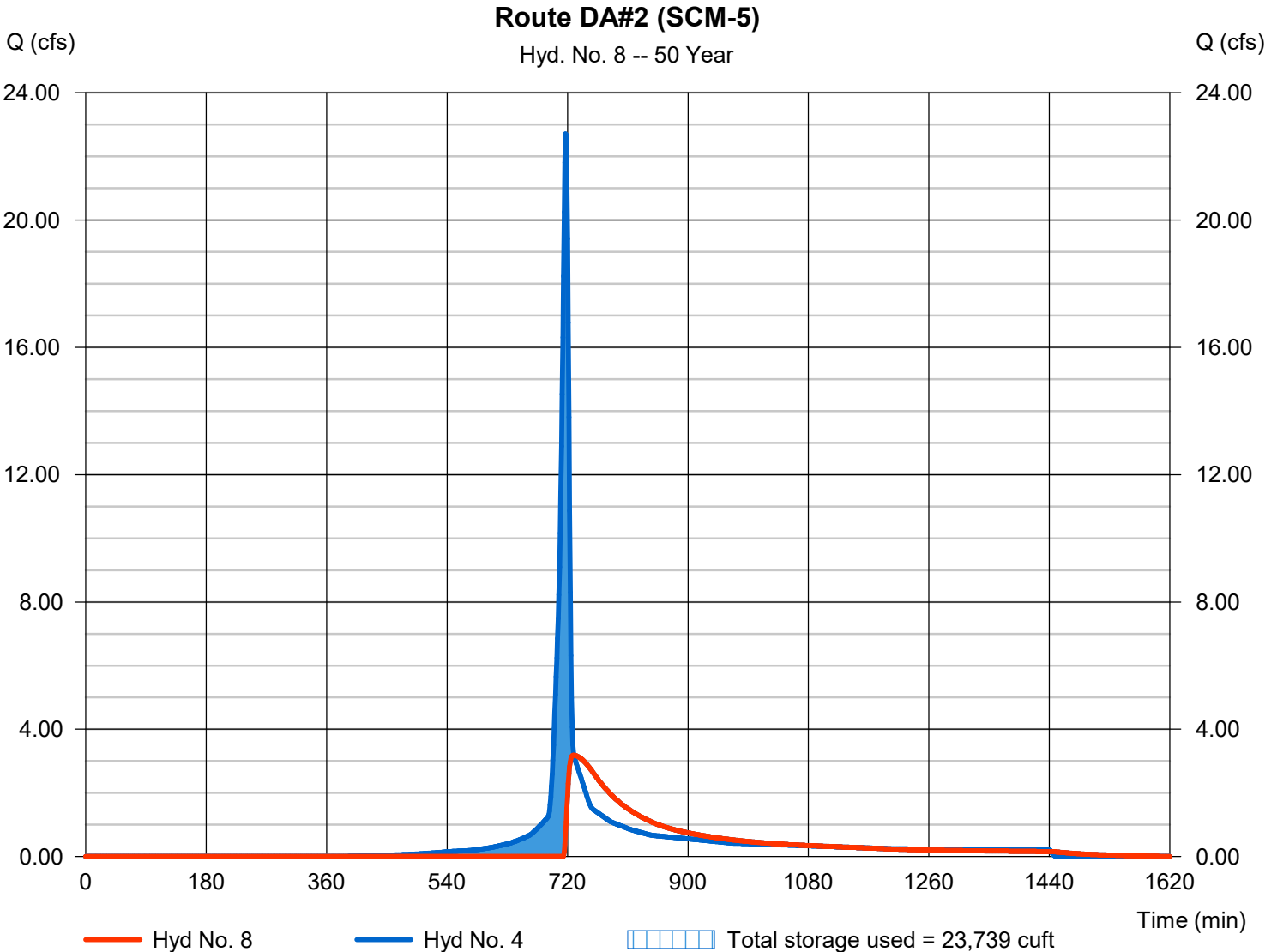
Friday, 04 / 11 / 2025

Hyd. No. 8

Route DA#2 (SCM-5)

Hydrograph type	= Reservoir	Peak discharge	= 3.185 cfs
Storm frequency	= 50 yrs	Time to peak	= 729 min
Time interval	= 1 min	Hyd. volume	= 29,710 cuft
Inflow hyd. No.	= 4 - Post DA #2 (SCM-5)	Max. Elevation	= 1105.15 ft
Reservoir name	= DA #2 (SCM-5)	Max. Storage	= 23,739 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

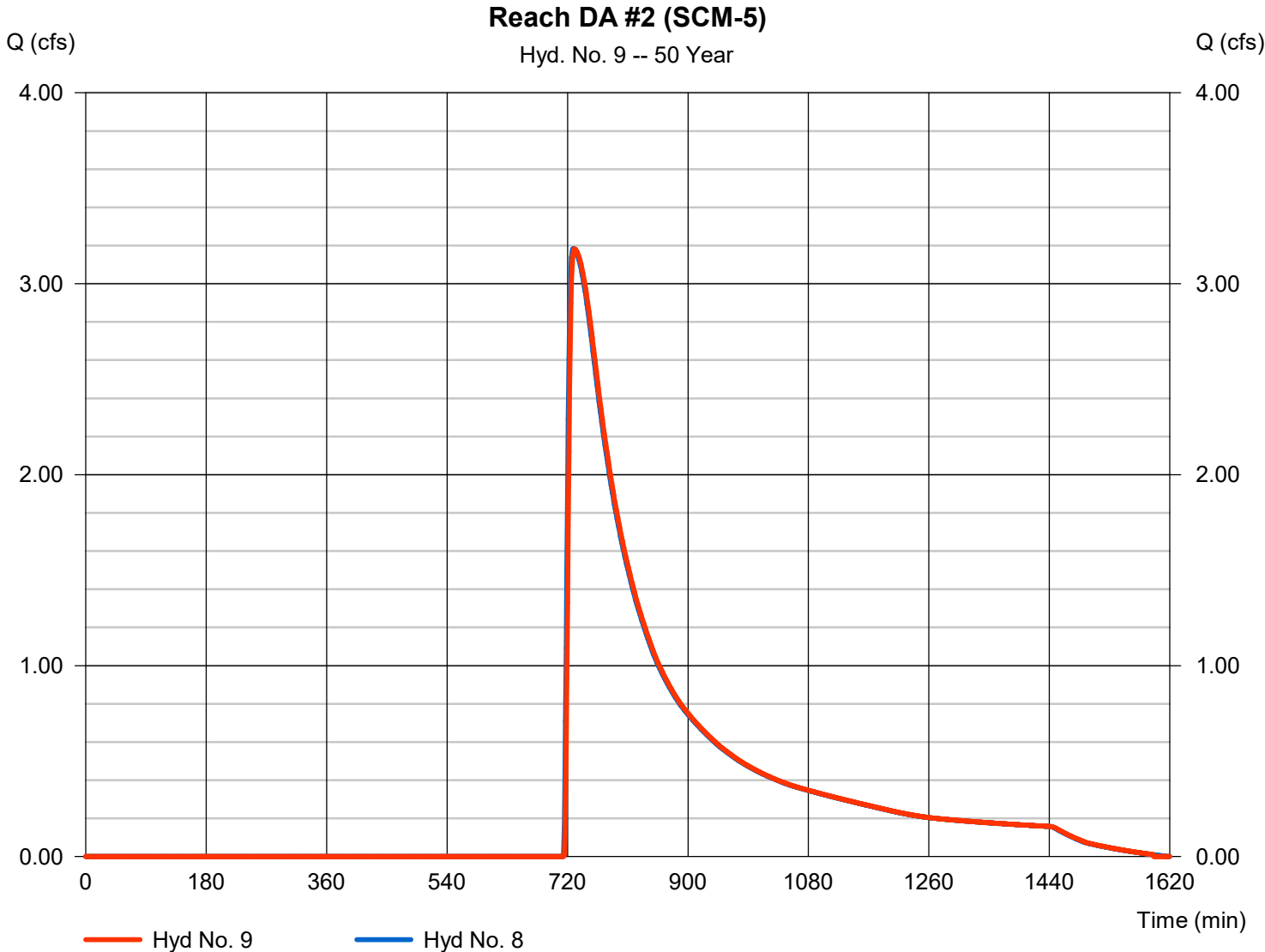
Friday, 04 / 11 / 2025

Hyd. No. 9

Reach DA #2 (SCM-5)

Hydrograph type	= Reach	Peak discharge	= 3.182 cfs
Storm frequency	= 50 yrs	Time to peak	= 731 min
Time interval	= 1 min	Hyd. volume	= 29,703 cuft
Inflow hyd. No.	= 8 - Route DA#2 (SCM-5)	Section type	= Trapezoidal
Reach length	= 283.0 ft	Channel slope	= 2.9 %
Manning's n	= 0.025	Bottom width	= 4.0 ft
Side slope	= 2.0:1	Max. depth	= 2.0 ft
Rating curve x	= 4.026	Rating curve m	= 1.307
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.6909

Modified Att-Kin routing method used.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

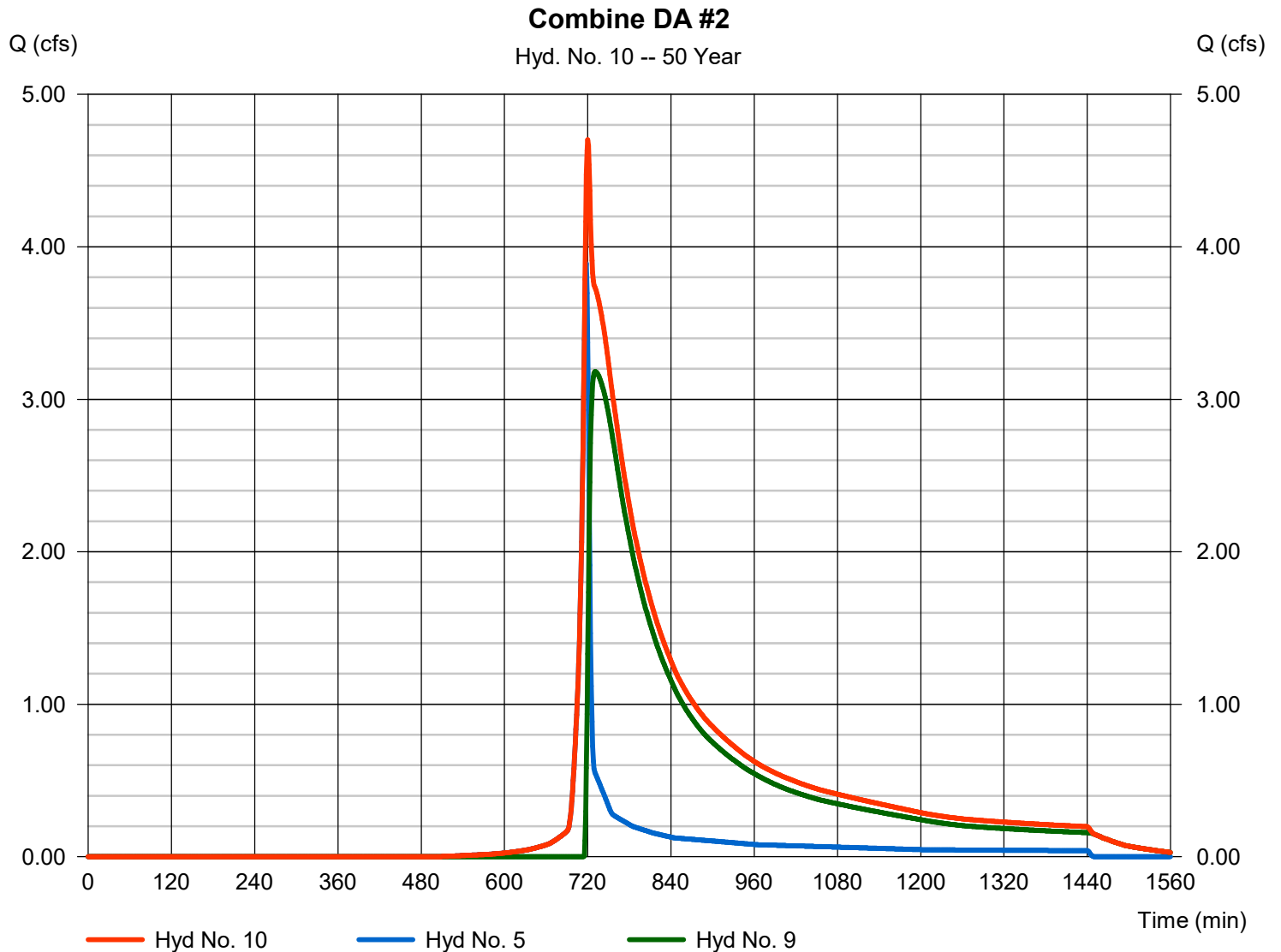
Friday, 04 / 11 / 2025

Hyd. No. 10

Combine DA #2

Hydrograph type = Combine
Storm frequency = 50 yrs
Time interval = 1 min
Inflow hyds. = 5, 9

Peak discharge = 4.703 cfs
Time to peak = 720 min
Hyd. volume = 37,571 cuft
Contrib. drain. area = 0.930 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

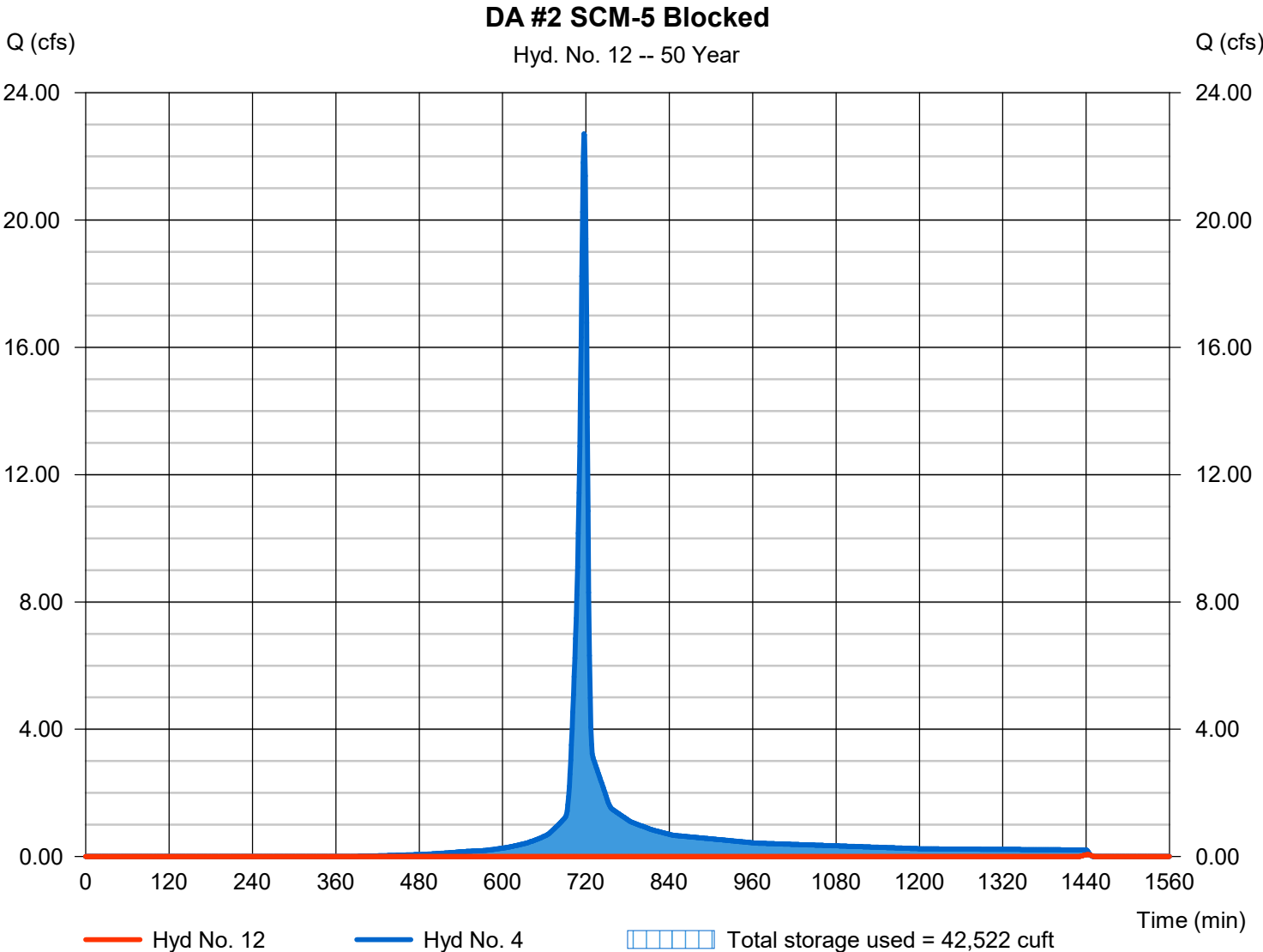
Friday, 04 / 11 / 2025

Hyd. No. 12

DA #2 SCM-5 Blocked

Hydrograph type	= Reservoir	Peak discharge	= 0.063 cfs
Storm frequency	= 50 yrs	Time to peak	= 1443 min
Time interval	= 1 min	Hyd. volume	= 46 cuft
Inflow hyd. No.	= 4 - Post DA #2 (SCM-5)	Max. Elevation	= 1107.00 ft
Reservoir name	= DA #2 (SCM-5) Blocked	Max. Storage	= 42,522 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

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	25.10	1	718	53,209	-----	-----	-----	Pre DA #2	
2	SCS Runoff	32.09	1	716	62,501	-----	-----	-----	Post DA #2	
4	SCS Runoff	26.45	1	717	55,060	-----	-----	-----	Post DA #2 (SCM-5)	
5	SCS Runoff	4.629	1	718	9,411	-----	-----	-----	Post DA #2 (Undetained)	
6	Combine	31.06	1	717	64,471	4, 5	-----	-----	Combine Post DA#2 (No Controls)	
8	Reservoir	4.808	1	727	37,666	4	1105.55	27,514	Route DA#2 (SCM-5)	
9	Reach	4.799	1	728	37,659	8	-----	-----	Reach DA #2 (SCM-5)	
10	Combine	6.742	1	720	47,070	5, 9	-----	-----	Combine DA #2	
12	Reservoir	0.444	1	939	7,911	4	1107.03	42,798	DA #2 SCM-5 Blocked	
250401-Newcastle DA 2.gpw					Return Period: 100 Year			Friday, 04 / 11 / 2025		

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

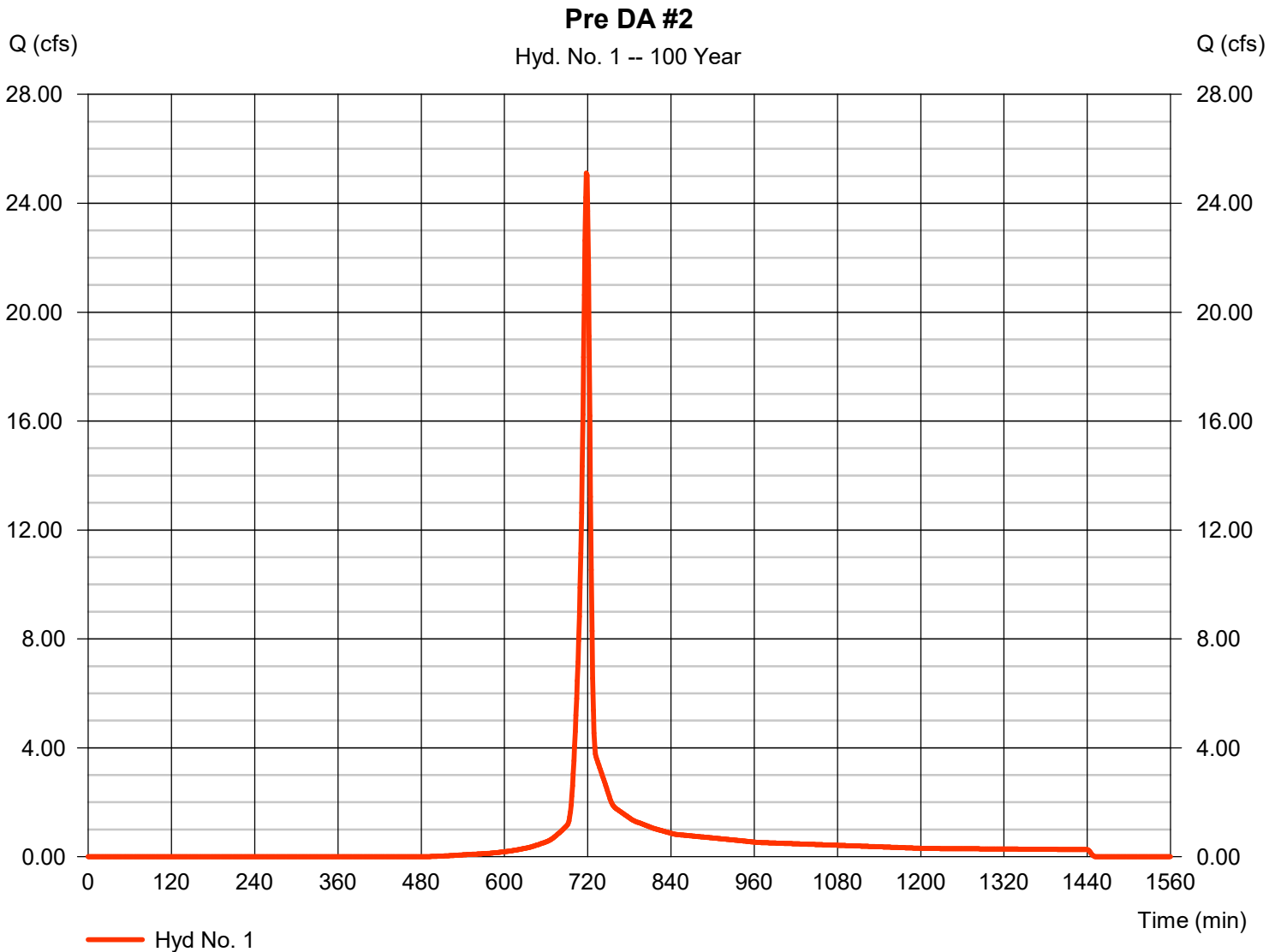
Friday, 04 / 11 / 2025

Hyd. No. 1

Pre DA #2

Hydrograph type	= SCS Runoff	Peak discharge	= 25.10 cfs
Storm frequency	= 100 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 53,209 cuft
Drainage area	= 5.750 ac	Curve number	= 77*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 7.50 min
Total precip.	= 4.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(3.415 x 77) + (2.335 x 78)] / 5.750



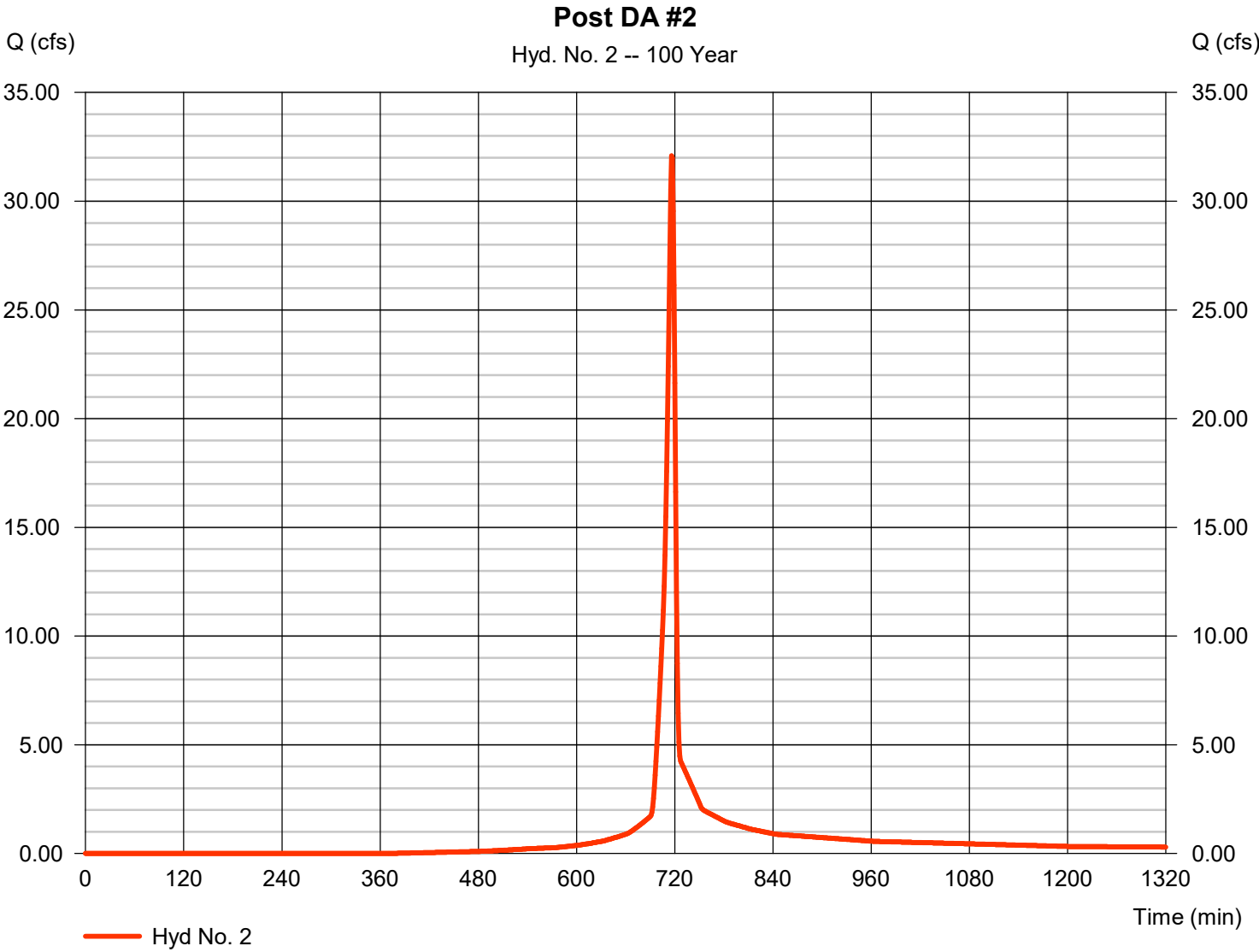
Hydrograph Report

Hyd. No. 2

Post DA #2

Hydrograph type	= SCS Runoff	Peak discharge	= 32.09 cfs
Storm frequency	= 100 yrs	Time to peak	= 716 min
Time interval	= 1 min	Hyd. volume	= 62,501 cuft
Drainage area	= 5.440 ac	Curve number	= 83*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 4.60 min
Total precip.	= 4.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.677 x 78) + (2.579 x 80) + (1.187 x 98)] / 5.440



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

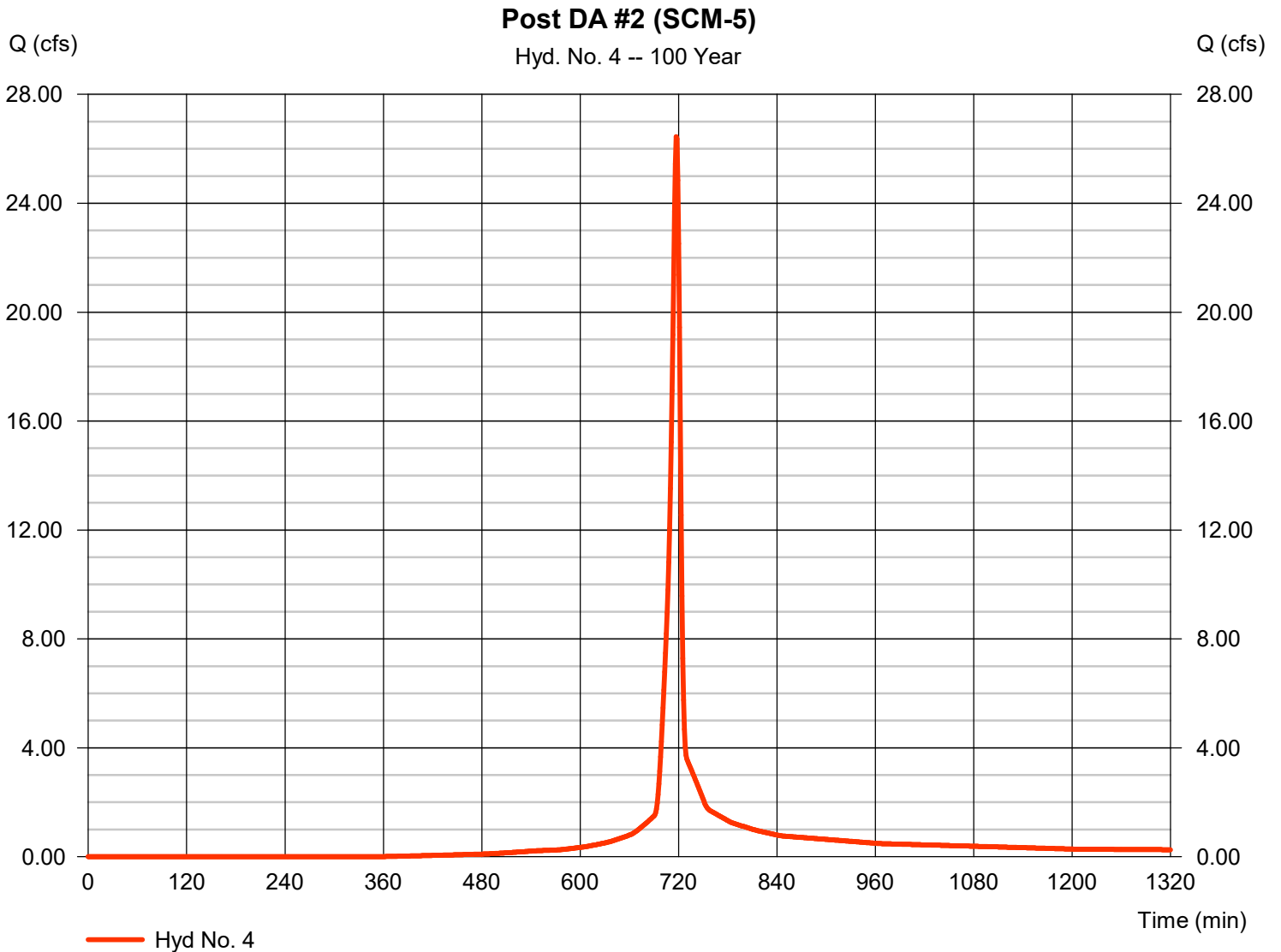
Friday, 04 / 11 / 2025

Hyd. No. 4

Post DA #2 (SCM-5)

Hydrograph type	= SCS Runoff	Peak discharge	= 26.45 cfs
Storm frequency	= 100 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 55,060 cuft
Drainage area	= 4.510 ac	Curve number	= 84*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.914 x 78) + (2.410 x 80) + (1.187 x 98)] / 4.510



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

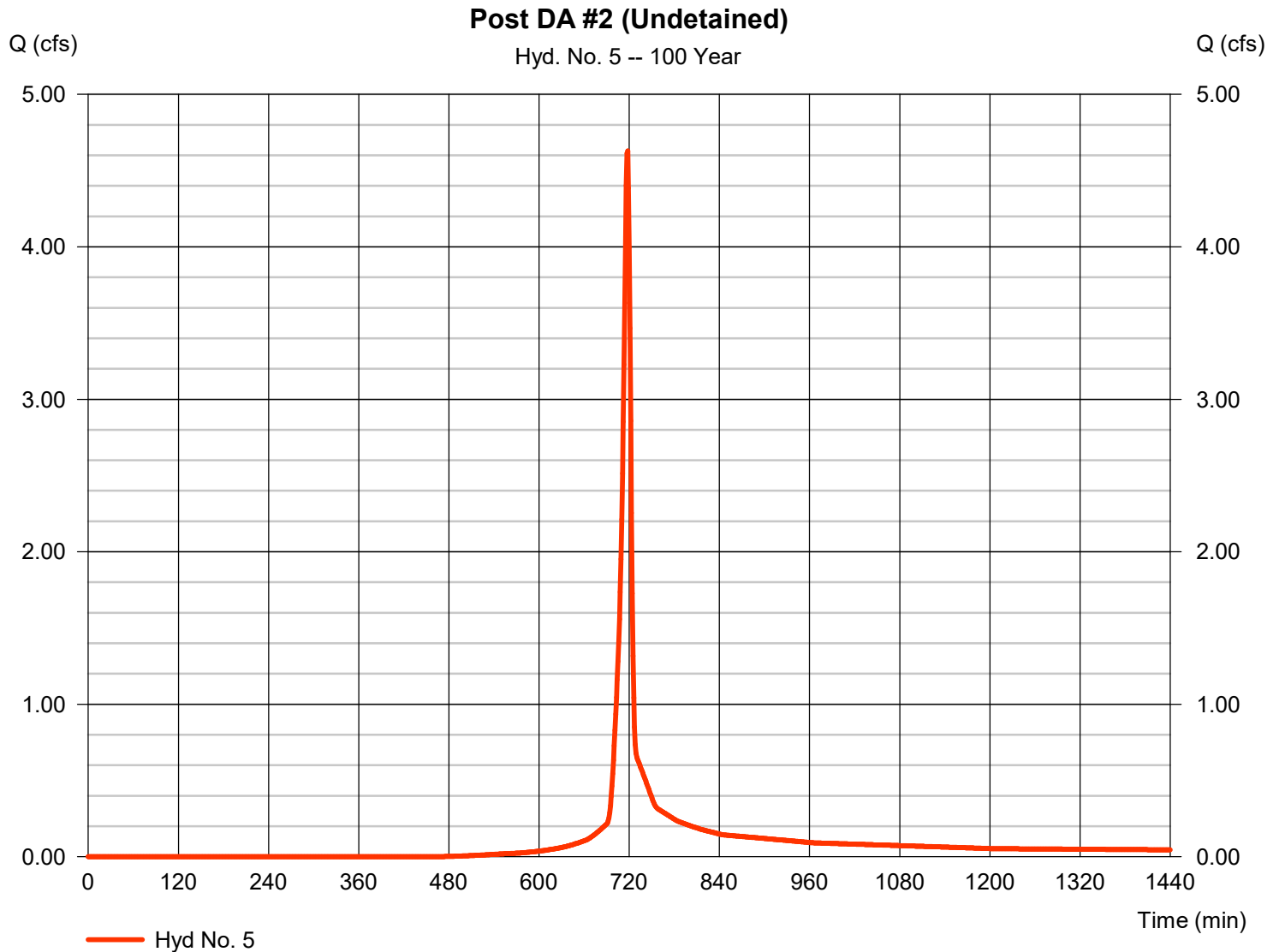
Friday, 04 / 11 / 2025

Hyd. No. 5

Post DA #2 (Undetained)

Hydrograph type	= SCS Runoff	Peak discharge	= 4.629 cfs
Storm frequency	= 100 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 9,411 cuft
Drainage area	= 0.930 ac	Curve number	= 78*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.763 x 78) + (0.168 x 80)] / 0.930



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Friday, 04 / 11 / 2025

Hyd. No. 6

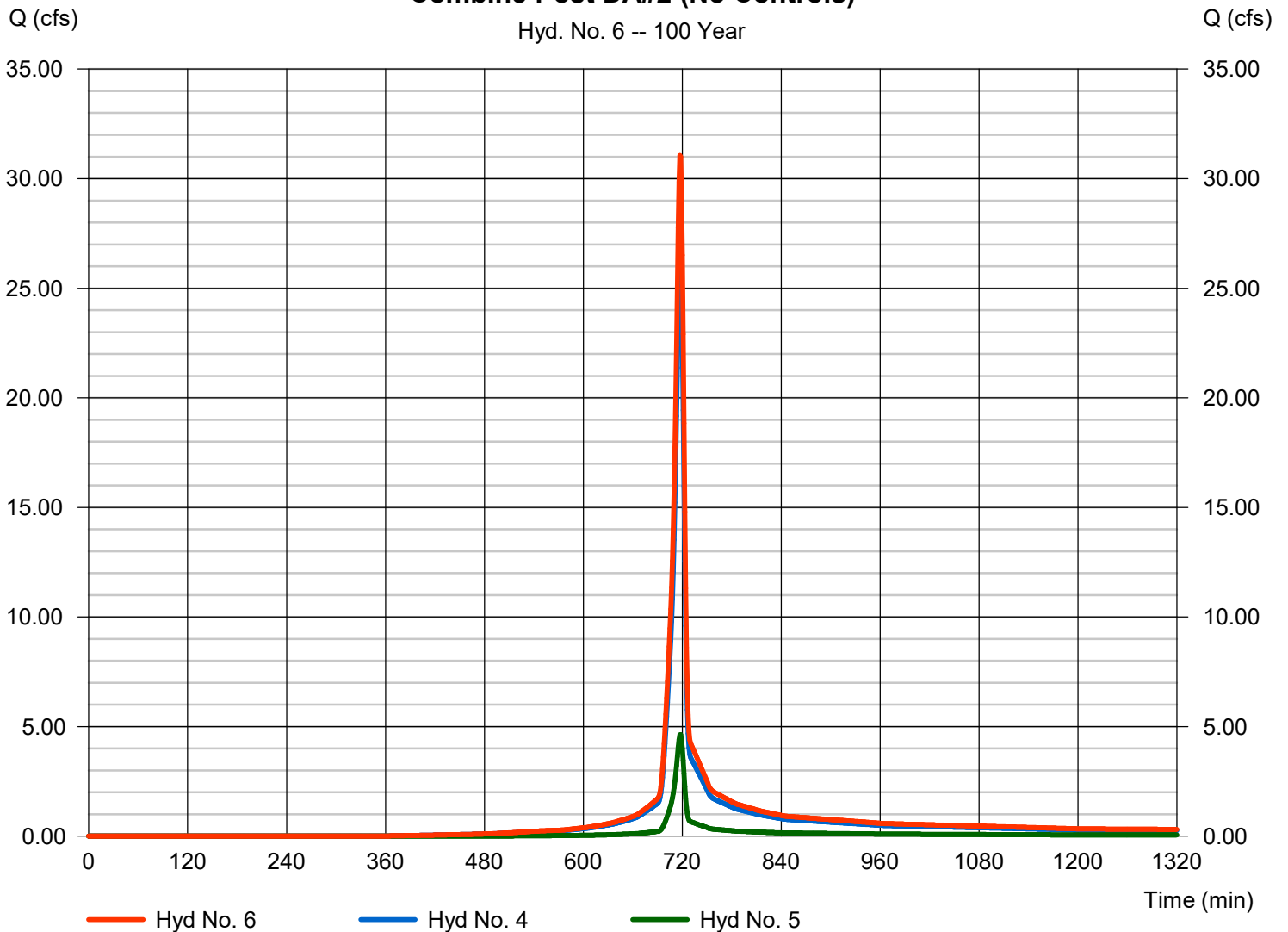
Combine Post DA#2 (No Controls)

Hydrograph type = Combine
Storm frequency = 100 yrs
Time interval = 1 min
Inflow hyds. = 4, 5

Peak discharge = 31.06 cfs
Time to peak = 717 min
Hyd. volume = 64,471 cuft
Contrib. drain. area = 5.440 ac

Combine Post DA#2 (No Controls)

Hyd. No. 6 -- 100 Year



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

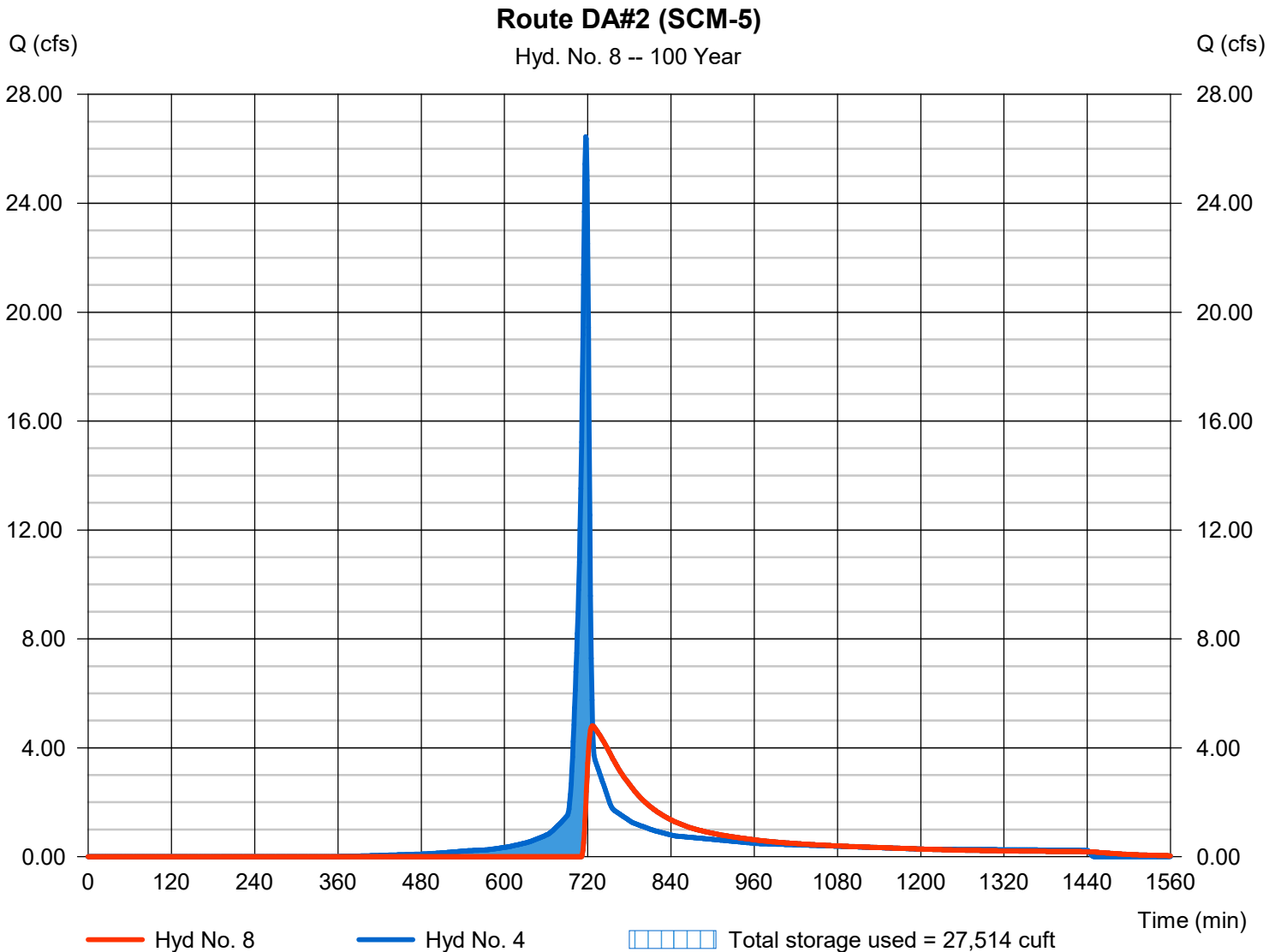
Friday, 04 / 11 / 2025

Hyd. No. 8

Route DA#2 (SCM-5)

Hydrograph type	= Reservoir	Peak discharge	= 4.808 cfs
Storm frequency	= 100 yrs	Time to peak	= 727 min
Time interval	= 1 min	Hyd. volume	= 37,666 cuft
Inflow hyd. No.	= 4 - Post DA #2 (SCM-5)	Max. Elevation	= 1105.55 ft
Reservoir name	= DA #2 (SCM-5)	Max. Storage	= 27,514 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

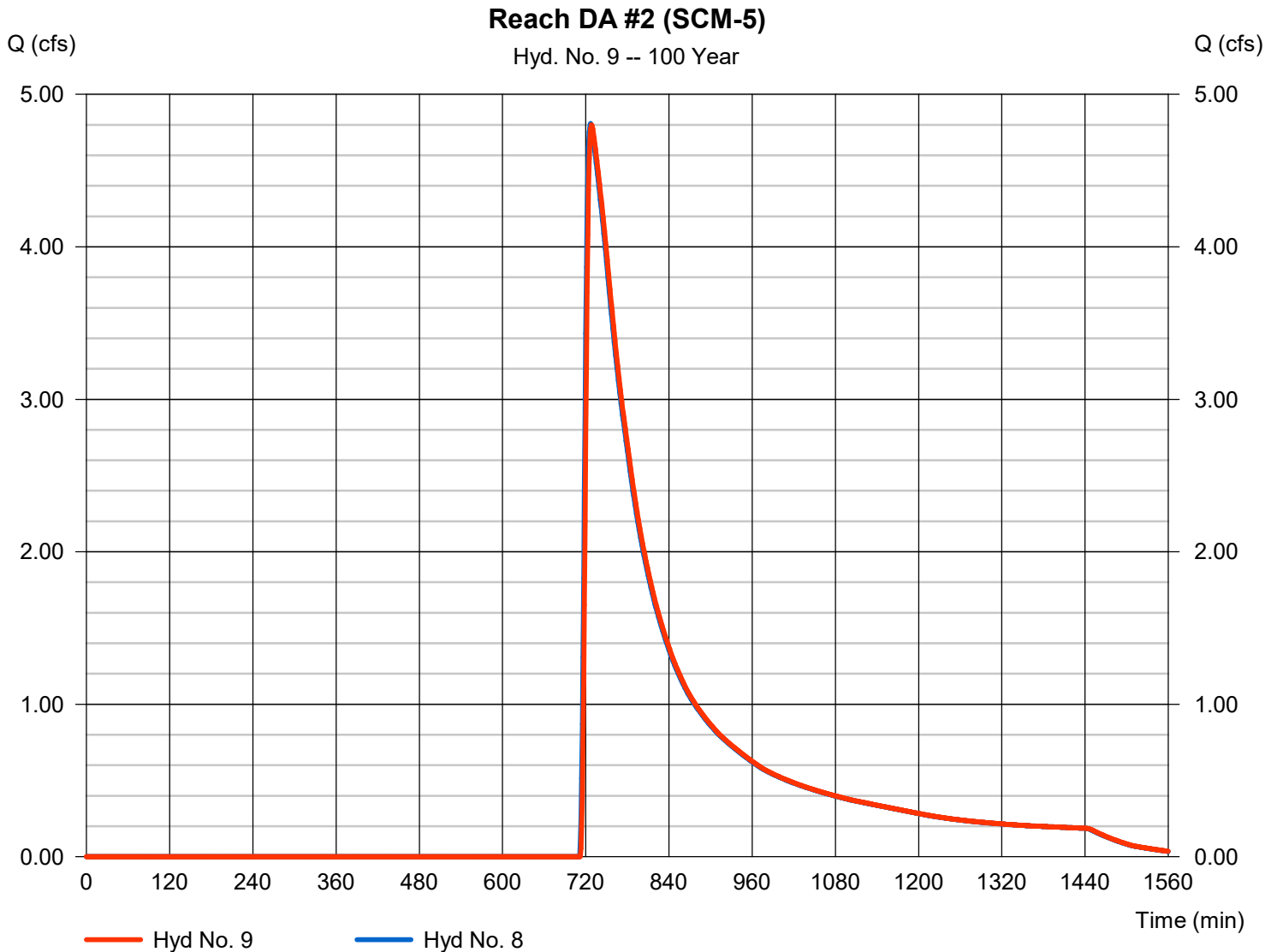
Friday, 04 / 11 / 2025

Hyd. No. 9

Reach DA #2 (SCM-5)

Hydrograph type	= Reach	Peak discharge	= 4.799 cfs
Storm frequency	= 100 yrs	Time to peak	= 728 min
Time interval	= 1 min	Hyd. volume	= 37,659 cuft
Inflow hyd. No.	= 8 - Route DA#2 (SCM-5)	Section type	= Trapezoidal
Reach length	= 283.0 ft	Channel slope	= 2.9 %
Manning's n	= 0.025	Bottom width	= 4.0 ft
Side slope	= 2.0:1	Max. depth	= 2.0 ft
Rating curve x	= 4.026	Rating curve m	= 1.307
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.7353

Modified Att-Kin routing method used.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

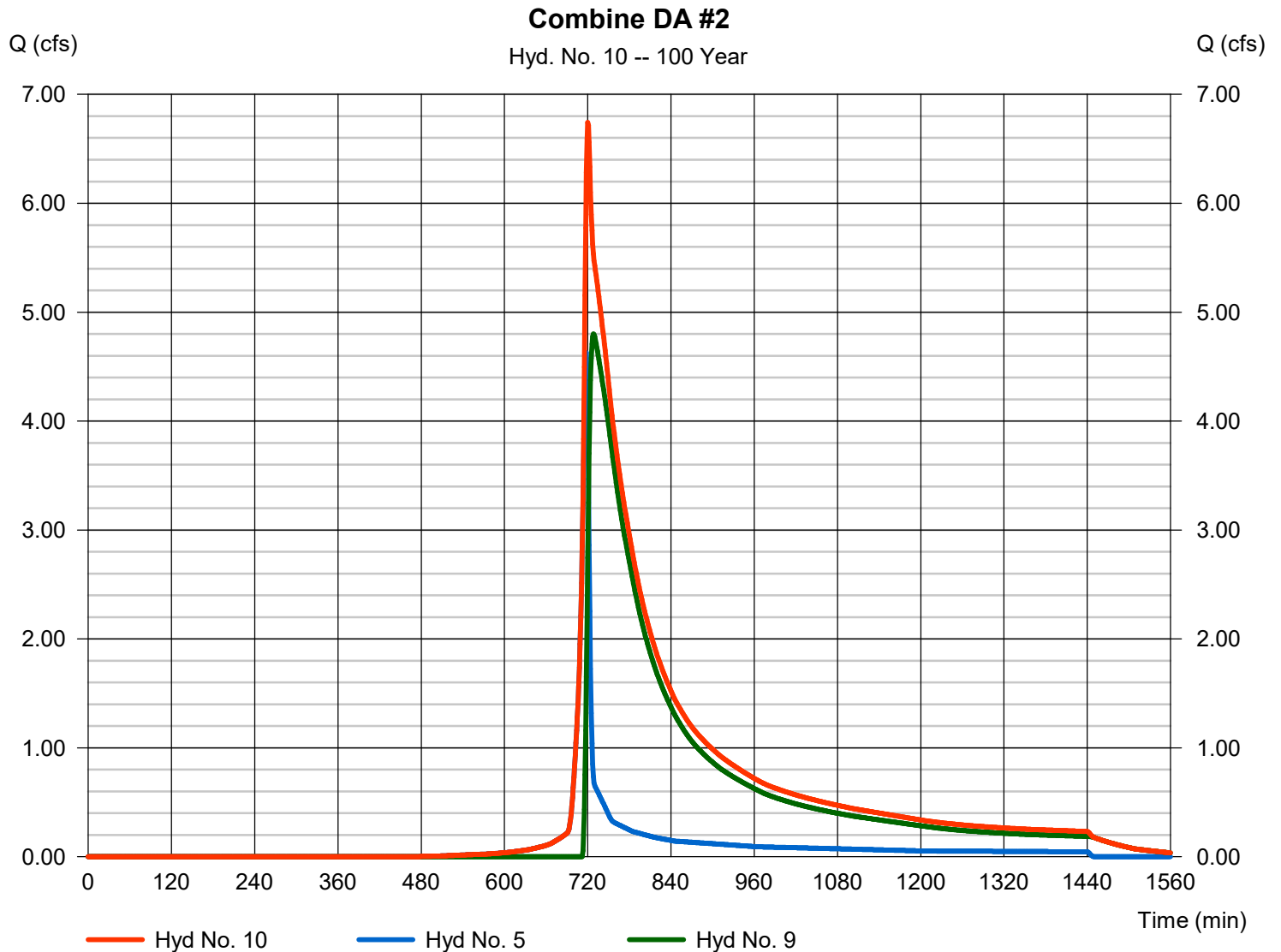
Friday, 04 / 11 / 2025

Hyd. No. 10

Combine DA #2

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyds. = 5, 9

Peak discharge = 6.742 cfs
 Time to peak = 720 min
 Hyd. volume = 47,070 cuft
 Contrib. drain. area = 0.930 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

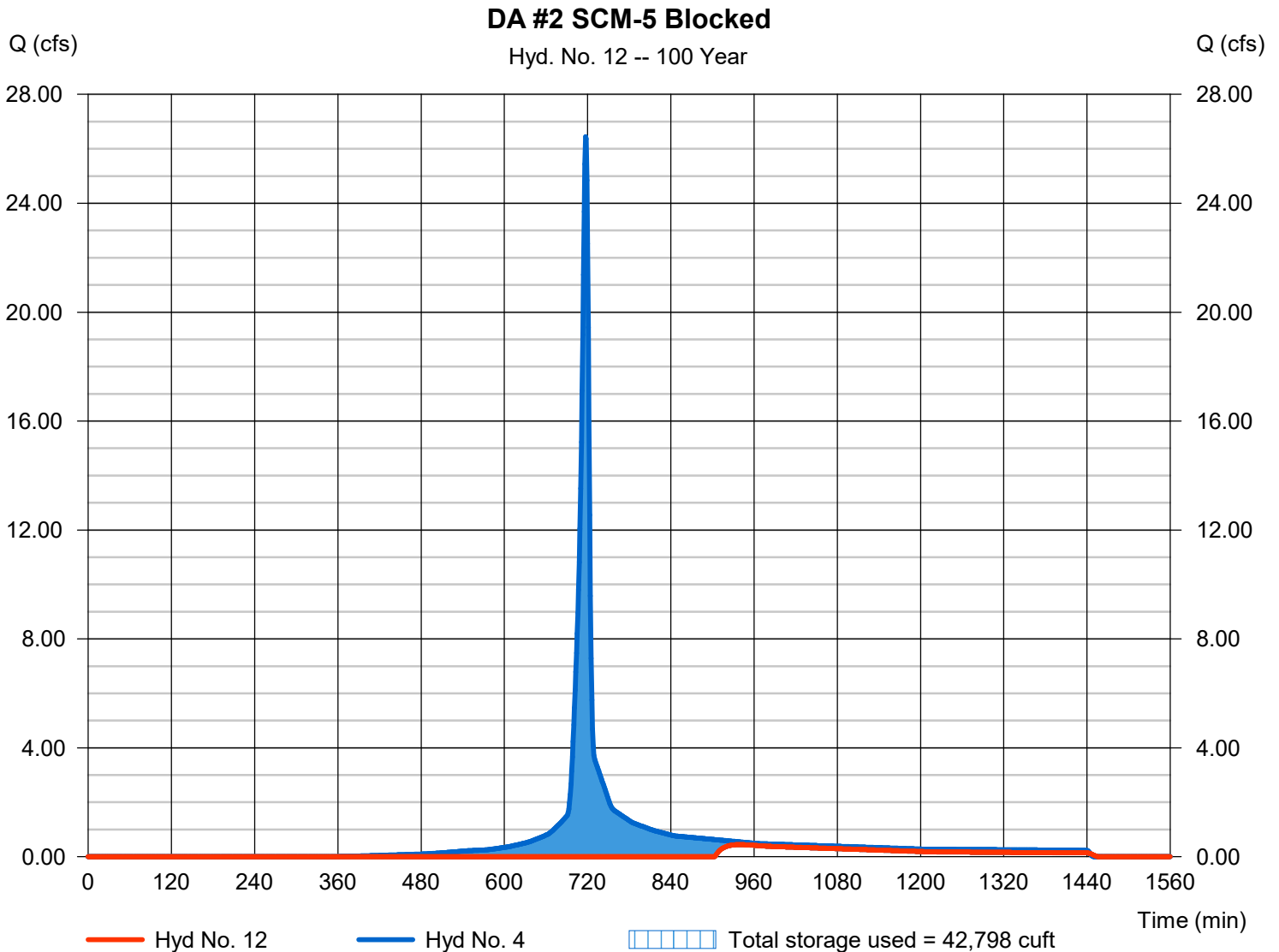
Friday, 04 / 11 / 2025

Hyd. No. 12

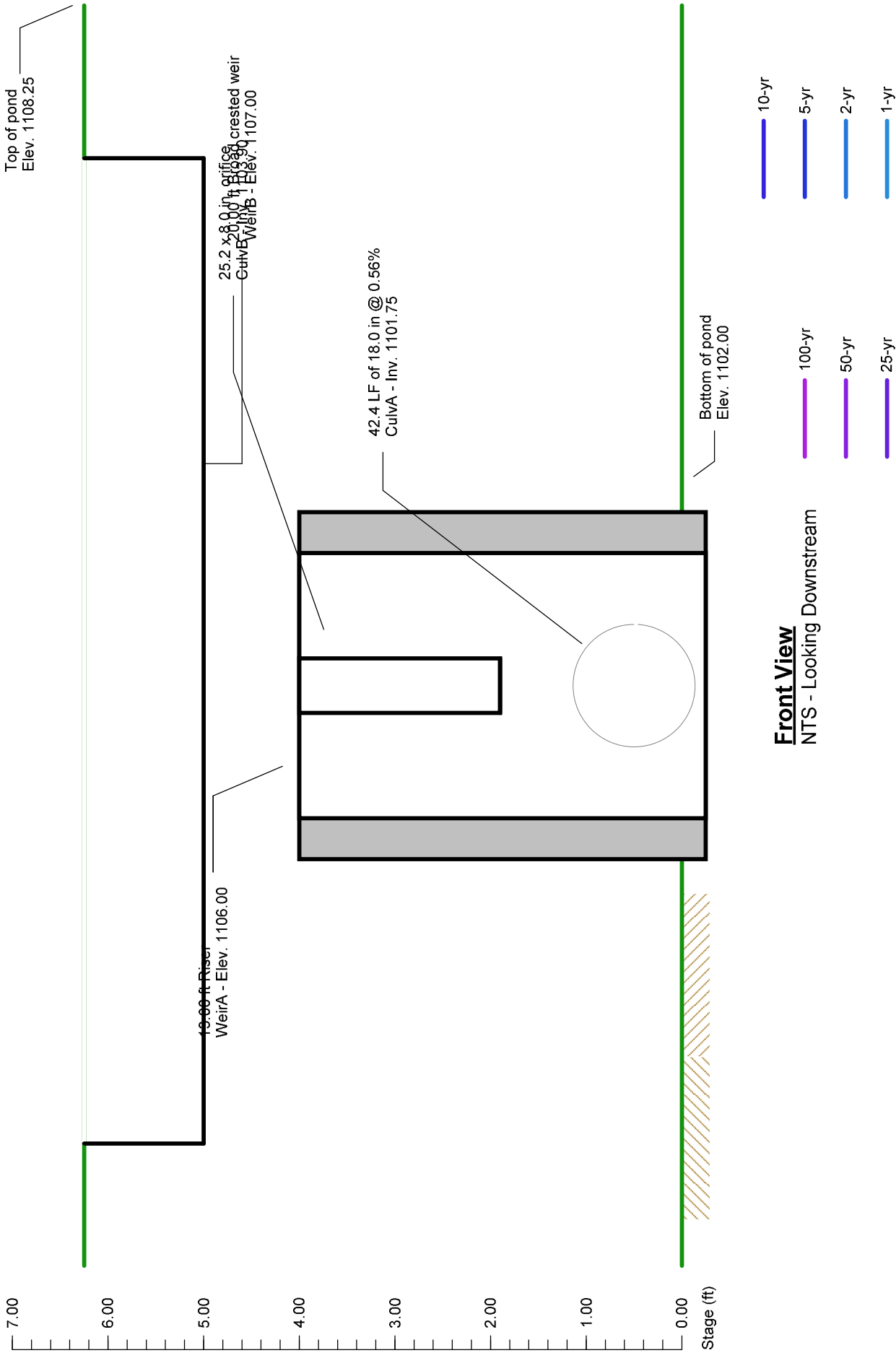
DA #2 SCM-5 Blocked

Hydrograph type	= Reservoir	Peak discharge	= 0.444 cfs
Storm frequency	= 100 yrs	Time to peak	= 939 min
Time interval	= 1 min	Hyd. volume	= 7,911 cuft
Inflow hyd. No.	= 4 - Post DA #2 (SCM-5)	Max. Elevation	= 1107.03 ft
Reservoir name	= DA #2 (SCM-5) Blocked	Max. Storage	= 42,798 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

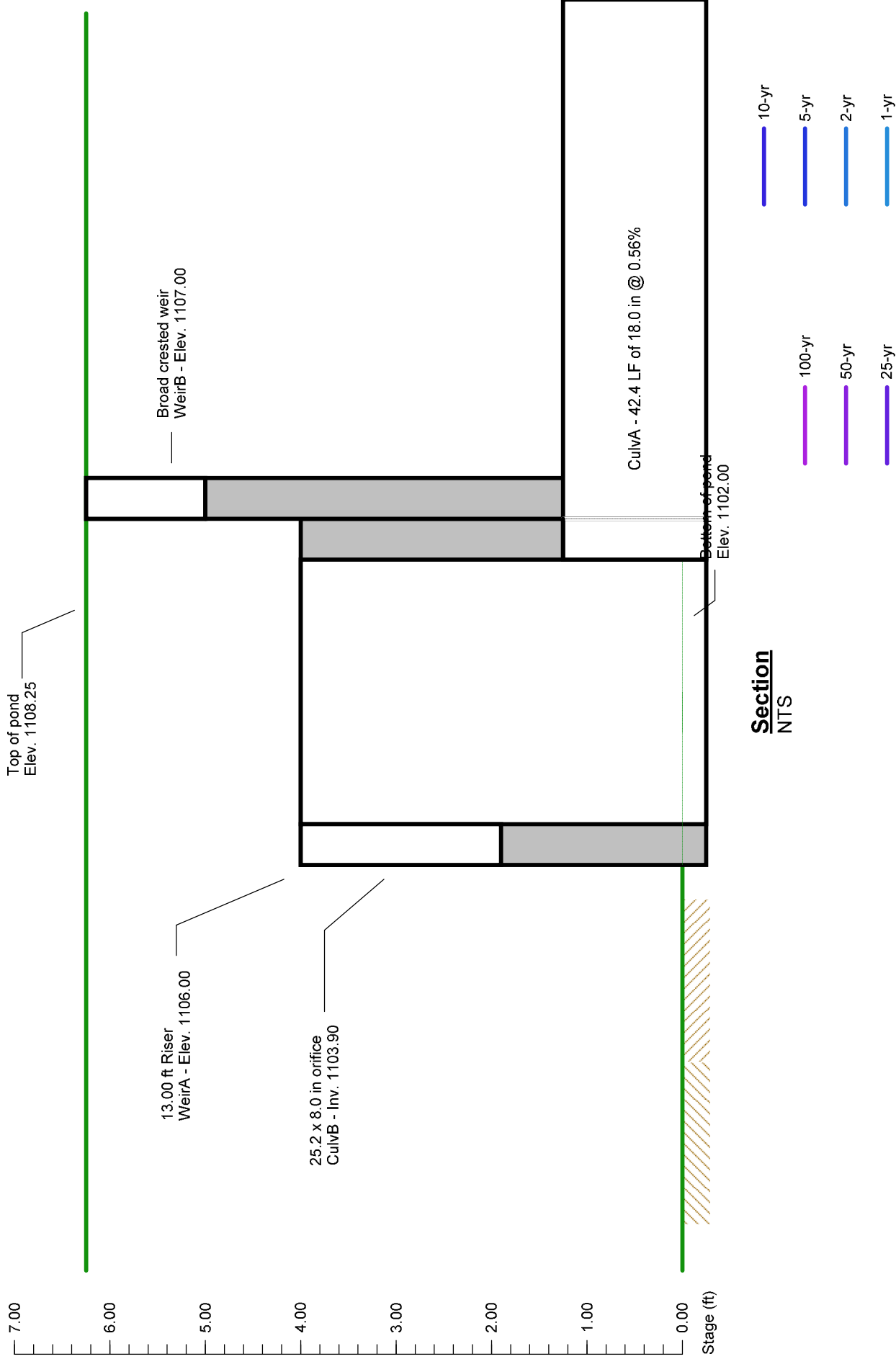


Pond No. 1 - DA #2 (SCM-5)



Inflow hydrograph = 1. SCS Runoff - Pre DA #2

Pond No. 1 - DA #2 (SCM-5)



Inflow hydrograph = 1. SCS Runoff - Pre DA #2


APPENDIX G

PaDEP Standard Worksheets

Instructions



If prompted by Excel after opening the DEP Post-Construction Stormwater Management (PCSM) Spreadsheet, enable editing and macros. This spreadsheet consists of five hyperlink tabs: Instructions, General, Volume, Rate and Quality. Each tab has a corresponding worksheet. To begin, click on the General tab. **NOTE - The spreadsheet is intended for the evaluation of volume, rate, and water quality for discharges to a single receiving water.** If for example there are 3 post-construction points of analysis (POAs) for Mud Run and 3 post-construction POAs for Clear Creek, two spreadsheets should be completed (one each for Mud Run and Clear Creek).

Only those cells that are highlighted are available for data entry by the user: 

Click on the button below to open detailed instructions on the use of the DEP PCSM Spreadsheet:

OPEN INSTRUCTIONS

If you have questions concerning use of this spreadsheet, contact the Bureau of Clean Water at RA-EPChapter102@pa.gov.

General Information

Instructions
General
Volume
Rate
Quality

Project Name:	<input type="text" value="Newcastle -POA-001"/>	Application Type:	<input type="text" value="PAG-02 NOI"/>
County:	<input type="text" value="Washington"/>	Municipality:	<input type="text" value="Peters Township"/>
Project Type:	<input type="text" value="Single-Family Housing"/>	<input checked="" type="radio"/> New Project <input type="radio"/> Minor / Major Amendment	
Area: <i>(In Watershed)</i>	<input type="text" value="8.57"/> acres	Total Earth Disturbance: <i>(In Watershed)</i>	<input type="text" value="8.57"/> acres
No. of Post-Construction Points of Analysis:	<input type="text" value="4"/>	at:	<input type="text" value="001"/>

Point of Analysis (POA) No.	Drainage Area (DA) (acres)	Earth Disturbance in DA (acres)	Existing Impervious in DA (acres)	Proposed Impervious in DA (acres)	Receiving Waters	Ch. 93 Class	Structural SCM(s)
001	5.81	5.81	0.01	1.62	Unt to Brush Run	WWF	Yes
002	0.06	0.06	0.00	0.06	Unt to Brush Run	WWF	Yes
003	0.06	0.06	0.00	0.06	Unt to Brush Run	WWF	Yes
004	0.06	0.06	0.00	0.06	Unt to Brush Run	WWF	Yes
Undetained Areas	2.59	2.59	0.00	0.11	Unt to Brush Run	WWF	
Totals:	8.57	8.57	0.01	1.90			

Volume Management

Project: Newcastle -POA-001

- Instructions
- General
- Volume
- Rate
- Quality

2-Year / 24-Hour Storm Event (NOAA Atlas 14): inches Alternative 2-Year / 24-Hour Storm Event inches

Alternative Source:

Pre-Construction Conditions: No. Rows: Exempt from Meadow in Good Condition Automatically Calculate CN, Ia, Runoff and Volume

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Forested (Good Condition)	0.93	D	77	0.597	0.67	2,249
Pervious as Meadow	7.35	D	78	0.564	0.71	18,970
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	0.01	D	98	0.041	2.15	39
Impervious as Meadow	0.00	D	78	0.564	0.71	3
TOTAL (ACRES):	8.28				TOTAL (CF):	21,261

Post-Construction Conditions:

No. Rows: **3**

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	2.42	D	78	0.564	0.71	6,245
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	4.26	D	80	0.500	0.81	12,473
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	1.89	D	98	0.041	2.15	14,761

TOTAL (ACRES): 8.57

TOTAL (CF): 33,478

NET CHANGE IN VOLUME TO MANAGE (CF): 12,217

Non-Structural SCM Volume Credits:

Tree Planting Credit

Other (attach calculations):

Description:

CREDIT (CF):

Structural SCM Volume Credits:

No. Structural SCMs: 4

Start SCM Numbering at: 1

POA No.	SCM No.	SCM Name	MRC?	Discharge	Incremental SCM DA (acres)	Volume Routed to SCM (CF)	Infiltration / Vegetated Area (SF)	Infiltration Rate (in/hr)	Infiltration Period (hrs)	Vegetated?	Media Depth (ft)	Storage Volume (CF)	Infiltration Credit (CF)	ET Credit (CF)
001	1	Infiltration Basin	-	Off-Site	5.81	23,569	17,170	0.38	37	No	1.0	19,918	18,106	
002	2	Dry Well / Seepage Pit	-	Off-Site	0.06	467	270	0.38	55	No	3.0	467	423	
003	3	Dry Well / Seepage Pit	-	Off-Site	0.06	467	270	0.38	55	No	3.0	467	423	
004	4	Dry Well / Seepage Pit	-	Off-Site	0.06	467	270	0.38	55	No	3.0	467	423	

Totals: 19,375

INFILTRATION & ET CREDITS (CF): 19,375

NET CHANGE IN VOLUME TO MANAGE (CF): 12,217

TOTAL CREDITS (CF): 19,375

VOLUME REQUIREMENT SATISFIED

Rate Control

Project: Newcastle -POA-001

Instructions

General

Volume

Rate

Quality

Precipitation Amounts:

NOAA 2-Year 24-Hour Storm Event (in):

2.38

Alternative 2-Year 24-Hour Storm Event (in):

NOAA 10-Year 24-Hour Storm Event (in):

3.35

Alternative 10-Year 24-Hour Storm Event (in):

NOAA 50-Year 24-Hour Storm Event (in):

4.46

Alternative 50-Year 24-Hour Storm Event (in):

NOAA 100-Year 24-Hour Storm Event (in):

4.99

Alternative 100-Year 24-Hour Storm Event (in):

Report Summary of Peak Rates Only

Attach model input and output data or other calculations to support the rates reported below.

<i>Peak Discharge Rates (cfs)</i>				
	Pre-Construction	Post-Construction	Net Change	
2-Year Storm:	9.21	3.63	-5.58	<i>Rate Control Satisfied</i>
10-Year Storm:	18.38	7.01	-11.37	<i>Rate Control Satisfied</i>
50-Year Storm:	30.02	11.51	-18.51	<i>Rate Control Satisfied</i>
100-Year Storm:	35.83	14.10	-21.73	<i>Rate Control Satisfied</i>

Water Quality

Project: Newcastle -POA-001

[PRINT](#)

- Instructions
- General
- Volume
- Rate
- Quality

Pre-Construction Pollutant Loads:

Land Cover (from Volume Worksheet)	Land Cover for Water Quality	Area (acres)	Soil Group	Runoff Volume (cf)	Pollutant Conc. (mg/L)			Pollutant Loads (lbs)		
					TSS	TP	TN	TSS	TP	TN
Forested (Good Condition)	Deciduous Forest/Evergreen Forest/Mixed Forest	0.93	D	2,249	45.0	0.13	1.05	6.32	0.02	0.15
Pervious as Meadow	Grassland/Herbaceous	7.35	D	18,970	48.8	0.22	2.30	57.81	0.26	2.72
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	Residential	0.01	D	39	65.0	0.29	2.05	0.16	0.00	0.00
Impervious as Meadow	Grassland/Herbaceous	0.00	D	3	48.8	0.22	2.30	0.01	0.00	0.00
TOTAL (ACRES):		8.28			TOTALS:			64.29	0.28	2.88

Post-Construction Pollutant Loads (without BMPs):

Land Cover (from Volume Worksheet)	Land Cover for Water Quality	Area (acres)	Soil Group	Runoff Volume (cf)	Pollutant Conc. (mg/L)			Pollutant Loads (lbs)		
					TSS	TP	TN	TSS	TP	TN
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	Grassland/Herbaceous	2.42	D	6,245	48.8	0.22	2.30	19.03	0.09	0.90
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	Open Space	4.26	D	12,473	78.0	0.25	1.25	60.75	0.19	0.97
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	Residential	1.89	D	14,761	65.0	0.29	2.05	59.91	0.27	1.89

TOTAL (ACRES): 8.57

TOTALS: 139.69 0.55 3.76

POLLUTANT LOAD REDUCTION REQUIREMENTS (LBS): **75.40** **0.27** **0.88**

Characterize Undetained Areas (for Untreated Stormwater)

No. Rows: **3**

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	1.752	D	78	0.564	0.71	4,523
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	0.735	D	80	0.500	0.81	2,153
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	0.1	D	98	0.041	2.15	781

Non-Structural SCM Water Quality Credits:

Pervious Undetained Area Credit

Other (attach calculations)

Description:

TSS	TP	TN

Structural SCM Water Quality Credits:

Use default SCM Outflows and Median SCM Outflow Concentrations

POA No.	SCM No.	SCM Name	MRC?	SCM DA (acres)	Vol. Routed to SCM (CF)	Inf. & ET Credits (CF)	Capture & Buffer Credits (CF)	Outflow (CF)	Outflow Conc. (mg/L)			Pollutant Loads (lbs)		
									TSS	TP	TN	TSS	TP	TN
001	1	Infiltration Basin	-	5.81	23,569	18,106		5,463	10.00	0.24	0.96	3.41	0.08	0.33
002	2	Dry Well / Seepage Pit	-	0.06	467	423		44	22.00	0.10	2.38	0.06	0.00	0.01
003	3	Dry Well / Seepage Pit	-	0.06	467	423		44	22.00	0.10	2.38	0.06	0.00	0.01
004	4	Dry Well / Seepage Pit	-	0.06	467	423		44	22.00	0.10	2.38	0.06	0.00	0.01

POLLUTANT LOADS FROM STRUCTURAL SCM (TREATED) OUTFLOWS (LBS):

POLLUTANT LOADS FROM UNTREATED STORMWATER (LBS):

NON-STRUCTURAL SCM WATER QUALITY CREDITS (LBS):

NET POLLUTANT LOADS FROM SITE, POST-CONSTRUCTION (LBS):

POLLUTANT LOADS FROM SITE, PRE-CONSTRUCTION (LBS):

TSS	TP	TN
3.59	0.08	0.35
27.44	0.11	0.92
31.03	0.19	1.27
64.29	0.28	2.88

WATER QUALITY REQUIREMENT SATISFIED

CERTIFICATION

I certify under penalty of law and subject to the penalties of 18 Pa.C.S. § 4904 (relating to unsworn falsification to authorities) that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I further certify that the structure, function, and calculations contained in this spreadsheet have not been modified in comparison to the spreadsheet DEP has posted to its website or, if modifications were made, an explanation of the modifications made is attached to this spreadsheet.

R. Mongell

Spreadsheet User Name


4/3/2025

Date

Instructions



If prompted by Excel after opening the DEP Post-Construction Stormwater Management (PCSM) Spreadsheet, enable editing and macros. This spreadsheet consists of five hyperlink tabs: Instructions, General, Volume, Rate and Quality. Each tab has a corresponding worksheet. To begin, click on the General tab. **NOTE - The spreadsheet is intended for the evaluation of volume, rate, and water quality for discharges to a single receiving water.** If for example there are 3 post-construction points of analysis (POAs) for Mud Run and 3 post-construction POAs for Clear Creek, two spreadsheets should be completed (one each for Mud Run and Clear Creek).

Only those cells that are highlighted are available for data entry by the user: 

Click on the button below to open detailed instructions on the use of the DEP PCSM Spreadsheet:

OPEN INSTRUCTIONS

If you have questions concerning use of this spreadsheet, contact the Bureau of Clean Water at RA-EPChapter102@pa.gov.

General Information

Instructions
General
Volume
Rate
Quality

<p>Project Name: <input style="width: 90%;" type="text" value="Newcastle - POA-005"/></p> <p>County: <input style="width: 90%;" type="text" value="Washington"/></p> <p>Project Type: <input style="width: 90%;" type="text" value="Single-Family Housing"/></p> <p>Area: <input style="width: 100px;" type="text" value="5.75"/> acres <i>(In Watershed)</i></p> <p>No. of Post-Construction Points of Analysis: <input style="width: 80px;" type="text" value="1"/></p>	<p>Application Type: <input style="width: 90%;" type="text" value="PAG-02 NOI"/></p> <p>Municipality: <input style="width: 90%;" type="text" value="Peters Township"/></p> <p> <input checked="" type="radio"/> New Project <input type="radio"/> Minor / Major Amendment </p> <p>Total Earth Disturbance: <input style="width: 100px;" type="text" value="5.75"/> acres <i>(In Watershed)</i></p> <p>at: <input style="width: 80px;" type="text" value="005"/></p>
---	--

Point of Analysis (POA) No.	Drainage Area (DA) (acres)	Earth Disturbance in DA (acres)	Existing Impervious in DA (acres)	Proposed Impervious in DA (acres)	Receiving Waters	Ch. 93 Class	Structural SCM(s)
005	4.51	4.51	0.00	1.19	Unt to Brush Run	WWF	Yes
Undetained Areas	0.93	0.93	0.00	0.00	Unt to Brush Run	WWF	
Totals:	5.44	5.44		1.19			

Volume Management

Project: Newcastle - POA-005

- Instructions
- General
- Volume
- Rate
- Quality

2-Year / 24-Hour Storm Event (NOAA Atlas 14): inches Alternative 2-Year / 24-Hour Storm Event inches

Alternative Source:

Pre-Construction Conditions: No. Rows: Exempt from Meadow in Good Condition Automatically Calculate CN, Ia, Runoff and Volume

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Forested (Good Condition)	3.42	D	77	0.597	0.67	8,259
Pervious as Meadow	2.33	D	78	0.564	0.71	6,015
TOTAL (ACRES):	5.75				TOTAL (CF):	14,274

Post-Construction Conditions: No. Rows:

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	1.68	D	78	0.564	0.71	4,330
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	2.58	D	80	0.500	0.81	7,554
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	1.19	D	98	0.041	2.15	9,270
TOTAL (ACRES):	5.44				TOTAL (CF):	21,154

NET CHANGE IN VOLUME TO MANAGE (CF):

Non-Structural SCM Volume Credits:

Tree Planting Credit

Other (attach calculations):

Description:

CREDIT (CF):

Structural SCM Volume Credits:

No. Structural SCMs:

Start SCM Numbering at:

POA No.	SCM No.	SCM Name	MRC?	Discharge	Incremental SCM DA (acres)	Volume Routed to SCM (CF)	Infiltration / Vegetated Area (SF)	Infiltration Rate (in/hr)	Infiltration Period (hrs)	Vegetated?	Media Depth (ft)	Storage Volume (CF)	Infiltration Credit (CF)	ET Credit (CF)
005	5	Infiltration Basin	-	Off-Site	4.51	17,282	5,969	0.38	69	No	1.0	13,103	11,738	

Totals: 11,738

INFILTRATION & ET CREDITS (CF):

NET CHANGE IN VOLUME TO MANAGE (CF):

TOTAL CREDITS (CF):

VOLUME REQUIREMENT SATISFIED

Rate Control

Project: Newcastle - POA-005

Instructions

General

Volume

Rate

Quality

Precipitation Amounts:

NOAA 2-Year 24-Hour Storm Event (in):

2.38

Alternative 2-Year 24-Hour Storm Event (in):

NOAA 10-Year 24-Hour Storm Event (in):

3.35

Alternative 10-Year 24-Hour Storm Event (in):

NOAA 50-Year 24-Hour Storm Event (in):

4.46

Alternative 50-Year 24-Hour Storm Event (in):

NOAA 100-Year 24-Hour Storm Event (in):

4.99

Alternative 100-Year 24-Hour Storm Event (in):

Report Summary of Peak Rates Only

Attach model input and output data or other calculations to support the rates reported below.

	<i>Peak Discharge Rates (cfs)</i>			
	Pre-Construction	Post-Construction	Net Change	
2-Year Storm:	6.26	1.21	-5.05	<i>Rate Control Satisfied</i>
10-Year Storm:	12.73	2.40	-10.33	<i>Rate Control Satisfied</i>
50-Year Storm:	20.96	4.70	-16.26	<i>Rate Control Satisfied</i>
100-Year Storm:	25.10	6.74	-18.36	<i>Rate Control Satisfied</i>

Water Quality

Project: Newcastle - POA-005

[PRINT](#)

- Instructions
- General
- Volume
- Rate
- Quality

Pre-Construction Pollutant Loads:

Land Cover (from Volume Worksheet)	Land Cover for Water Quality	Area (acres)	Soil Group	Runoff Volume (cf)	Pollutant Conc. (mg/L)			Pollutant Loads (lbs)		
					TSS	TP	TN	TSS	TP	TN
Forested (Good Condition)	Deciduous Forest/Evergreen Forest/Mixed Forest	3.42	D	8,259	45.0	0.13	1.05	23.21	0.07	0.54
Pervious as Meadow	Grassland/Herbaceous	2.33	D	6,015	48.8	0.22	2.30	18.33	0.08	0.86
TOTAL (ACRES):		5.75			TOTALS:			41.54	0.15	1.41

Post-Construction Pollutant Loads (without BMPs):

Land Cover (from Volume Worksheet)	Land Cover for Water Quality	Area (acres)	Soil Group	Runoff Volume (cf)	Pollutant Conc. (mg/L)			Pollutant Loads (lbs)		
					TSS	TP	TN	TSS	TP	TN
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	Grassland/Herbaceous	1.68	D	4,330	48.8	0.22	2.30	13.19	0.06	0.62
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	Open Space	2.58	D	7,554	78.0	0.25	1.25	36.79	0.12	0.59
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	Residential	1.19	D	9,270	65.0	0.29	2.05	37.63	0.17	1.19

TOTAL (ACRES): 5.44 **TOTALS: 87.61 0.35 2.40**

POLLUTANT LOAD REDUCTION REQUIREMENTS (LBS): **46.08** **0.20** **0.99**

Characterize Undetained Areas (for Untreated Stormwater) No. Rows: 2

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Meadow-Continuous Grass, Protected from Grazing and Generally Mowed for Hay	0.763	D	78	0.564	0.71	1,970
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	0.168	D	80	0.500	0.81	492

Non-Structural SCM Water Quality Credits:

Pervious Undetained Area Credit

Other (attach calculations)

Description:

TSS	TP	TN

Structural SCM Water Quality Credits:

Use default SCM Outflows and Median SCM Outflow Concentrations

POA No.	SCM No.	SCM Name	MRC?	SCM DA (acres)	Vol. Routed to SCM (CF)	Inf. & ET Credits (CF)	Capture & Buffer Credits (CF)	Outflow (CF)	Outflow Conc. (mg/L)			Pollutant Loads (lbs)		
									TSS	TP	TN	TSS	TP	TN
005	5	Infiltration Basin	-	4.51	17,282	11,738		5,544	10.00	0.24	0.96	3.46	0.08	0.33

TSS	TP	TN
3.46	0.08	0.33
8.40	0.03	0.32
11.86	0.11	0.65
41.54	0.15	1.41

POLLUTANT LOADS FROM STRUCTURAL SCM (TREATED) OUTFLOWS (LBS):

POLLUTANT LOADS FROM UNTREATED STORMWATER (LBS):

NON-STRUCTURAL SCM WATER QUALITY CREDITS (LBS):

NET POLLUTANT LOADS FROM SITE, POST-CONSTRUCTION (LBS):

POLLUTANT LOADS FROM SITE, PRE-CONSTRUCTION (LBS):

WATER QUALITY REQUIREMENT SATISFIED

CERTIFICATION

I certify under penalty of law and subject to the penalties of 18 Pa.C.S. § 4904 (relating to unsworn falsification to authorities) that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I further certify that the structure, function, and calculations contained in this spreadsheet have not been modified in comparison to the spreadsheet DEP has posted to its website or, if modifications were made, an explanation of the modifications made is attached to this spreadsheet.

R. Mongell

Spreadsheet User Name

4/3/2025

Date

APPENDIX H

Pipe Sizing Calculations

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data							Line ID	
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert EI Dn (ft)	Line Slope (%)	Invert EI Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)		Inlet/ Rim EI (ft)
38	1	23.001	-0.369	Genr	0.00	0.27	0.30	6.0	1084.86	1.00	1085.09	24	Cir	0.012	1.00	1093.79	Pipe - (414)
37	5	50.433	62.757	Genr	0.00	0.09	0.30	6.0	1100.65	1.01	1101.16	15	Cir	0.012	1.00	1106.98	Pipe - (452)
36	30	28.000	-21.361	Genr	0.00	0.20	0.30	6.0	1103.03	1.00	1103.31	15	Cir	0.012	1.00	1106.87	Pipe - (404)
35	34	92.184	10.088	Genr	0.00	0.77	0.16	8.5	1103.44	1.69	1105.00	15	Cir	0.012	1.00	1110.00	Pipe - (469)
34	33	26.138	45.326	None	0.00	0.77	0.16	8.6	1103.00	1.68	1103.44	15	Cir	0.012	0.21	1104.78	Pipe - (468)
33	End	40.400	124.708	Genr	0.00	1.25	0.16	8.4	1102.50	1.01	1102.91	15	Cir	0.012	1.13	1109.70	Pipe - (467)
32	31	55.832	52.539	Genr	0.00	0.32	0.30	6.0	1105.60	4.69	1108.22	15	Cir	0.012	1.00	1113.22	Pipe - (471)
31	30	95.994	69.717	Genr	0.00	0.02	0.30	6.0	1103.03	2.47	1105.40	15	Cir	0.012	1.24	1110.00	Pipe - (451)
30	End	42.627	-108.312	Genr	0.00	0.06	0.30	6.0	1102.50	1.01	1102.93	18	Cir	0.012	1.42	1106.77	Pipe - (405)
29	26	94.217	-78.689	Genr	0.00	0.74	0.16	8.5	1110.91	4.13	1114.80	15	Cir	0.012	1.00	1120.80	Pipe - (447)
28	27	93.882	-75.132	Genr	0.00	0.45	0.16	8.4	1114.93	3.87	1118.56	15	Cir	0.012	1.00	1124.56	Pipe - (442)
27	26	70.790	24.794	Genr	0.00	0.16	0.30	6.0	1110.91	5.40	1114.73	15	Cir	0.012	1.46	1125.73	Pipe - (466)
26	25	71.255	54.632	Genr	0.00	0.09	0.30	6.0	1109.72	1.39	1110.71	15	Cir	0.012	1.48	1121.71	Pipe - (465)
25	24	50.257	60.145	Genr	0.00	0.09	0.30	6.0	1109.02	0.99	1109.52	15	Cir	0.012	1.27	1115.90	Pipe - (443)
24	23	23.056	-53.626	Genr	0.00	0.61	0.30	6.0	1108.70	0.52	1108.82	15	Cir	0.012	1.33	1115.01	Pipe - (470)
23	22	124.059	-56.413	Genr	0.00	0.40	0.30	6.0	1103.55	3.99	1108.50	15	Cir	0.012	1.25	1114.88	Pipe - (464)
22	End	57.800	-119.825	Genr	0.00	0.09	0.30	6.0	1102.50	0.52	1102.80	24	Cir	0.012	1.29	1107.96	Pipe - (462)
21	20	75.337	9.526	Genr	0.00	0.15	0.30	6.0	1114.64	1.00	1115.39	15	Cir	0.012	1.00	1120.39	Pipe - (460)
20	19	103.369	21.298	Genr	0.00	0.10	0.30	6.0	1113.50	1.01	1114.54	15	Cir	0.012	0.50	1124.06	Pipe - (459)
19	18	107.249	20.193	Genr	0.00	0.15	0.30	6.0	1112.32	1.01	1113.40	15	Cir	0.012	0.63	1125.86	Pipe - (458)
18	17	92.536	15.962	Genr	0.00	0.16	0.30	6.0	1111.29	1.00	1112.22	15	Cir	0.012	0.60	1128.03	Pipe - (457)
17	16	65.665	17.466	Genr	0.00	0.17	0.30	6.0	1110.53	1.00	1111.19	15	Cir	0.012	0.50	1126.14	Pipe - (453)
16	15	107.267	22.541	Genr	0.00	0.14	0.30	6.0	1103.42	6.54	1110.43	15	Cir	0.012	0.53	1122.02	Pipe - (450)

Project File: 241001-Newcastle Storm Sewer.stm

Number of lines: 38

Date: 9/26/2024

Storm Sewer Inventory Report

Line No.	Alignment			Flow Data			Physical Data							Line ID			
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert EI Dn (ft)	Line Slope (%)	Invert EI Up (ft)	Line Size (in)	Line Shape		N Value (n)	J-Loss Coeff (K)	Inlet/ Rim EI (ft)
15	4	55.107	-83.420	Genr	0.00	0.03	0.30	6.0	1100.24	5.95	1103.52	15	Cir	0.012	0.66	1109.42	Pipe - (449)
14	13	87.653	0.597	Genr	0.00	0.06	0.30	6.0	1116.10	4.45	1120.00	15	Cir	0.012	1.00	1130.18	Pipe - (432)
13	12	78.327	-0.211	Genr	0.00	0.10	0.30	6.0	1109.00	8.94	1116.00	15	Cir	0.012	0.50	1126.21	Pipe - (433)
12	11	24.458	-8.805	Genr	0.00	0.13	0.30	6.0	1106.84	8.42	1108.90	15	Cir	0.012	0.50	1117.91	Pipe - (439)
11	6	50.724	-90.873	None	0.00	0.13	0.30	6.0	1102.56	8.44	1106.84	15	Cir	0.012	0.19	1108.19	Pipe - (463)
10	9	72.592	-1.565	Genr	0.00	0.02	0.30	6.0	1119.43	5.94	1123.74	15	Cir	0.012	1.00	1129.74	Pipe - (426)
9	8	76.015	-5.025	Genr	0.00	0.16	0.16	6.0	1111.34	10.51	1119.33	15	Cir	0.012	0.50	1125.33	Pipe - (427)
8	7	106.285	-100.098	Genr	0.00	0.36	0.16	8.5	1103.90	6.91	1111.24	15	Cir	0.012	0.50	1117.24	Pipe - (428)
7	6	91.958	7.411	Genr	0.00	0.67	0.18	8.5	1102.56	1.35	1103.80	15	Cir	0.012	1.50	1109.81	Pipe - (429)
6	5	28.873	-10.910	Genr	0.00	0.13	0.30	6.0	1100.65	6.27	1102.46	15	Cir	0.012	1.50	1112.16	Pipe - (430)
5	4	28.088	80.214	Genr	0.00	0.33	0.30	6.0	1099.59	1.10	1099.90	24	Cir	0.012	1.36	1110.61	Pipe - (409)
4	3	37.223	-19.598	Genr	0.00	0.46	0.30	6.0	1096.96	6.80	1099.49	24	Cir	0.012	1.49	1111.08	Pipe - (410)
3	2	160.057	24.875	None	0.00	0.46	0.30	6.0	1086.15	6.75	1096.96	24	Cir	0.012	0.39	1099.13	Pipe - (411)
2	1	19.019	-114.833	None	0.00	0.46	0.30	6.0	1084.86	6.78	1086.15	24	Cir	0.012	0.48	1088.31	Pipe - (412)
1	End	176.479	-168.630	Genr	0.00	0.13	0.30	6.0	1083.00	1.00	1084.76	24	Cir	0.012	1.50	1093.79	Pipe - (413)

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
38	Storm CB 2	Generic	1093.79	Rect	4.00	2.00	24	Cir	1085.09	15	Cir	1085.09
37	Storm YD 1	Generic	1106.98	Rect	4.00	2.00	15	Cir	1101.16	15	Cir	1101.16
36	Storm CB 9	Generic	1106.87	Rect	4.00	2.00	15	Cir	1103.31	15	Cir	1103.31
35	Storm YD 23	Generic	1110.00	Rect	2.00	2.00	15	Cir	1105.00	15	Cir	1105.00
34	Structure - (361)	None	1104.78	n/a	n/a	n/a	15	Cir	1103.44	15	Cir	1103.44
33	Storm YD 22	Generic	1109.70	Rect	2.00	2.00	15	Cir	1102.91	15	Cir	1102.91
32	Storm YD 24	Generic	1113.22	Rect	2.00	2.00	15	Cir	1108.22	15	Cir	1108.22
31	Storm CB 10	Generic	1110.00	Rect	4.00	2.00	15	Cir	1105.40	15	Cir	1105.40
30	Storm CB 8	Generic	1106.77	Rect	4.00	2.00	18	Cir	1102.93	15	Cir	1102.93
29	Storm YD 21	Generic	1120.80	Rect	2.00	2.00	15	Cir	1114.80	15	Cir	1114.80
28	Storm YD 20	Generic	1124.56	Rect	2.00	2.00	15	Cir	1118.56	15	Cir	1118.56
27	Storm YD 19	Generic	1125.73	Rect	2.00	2.00	15	Cir	1114.73	15	Cir	1114.73
26	Storm YD 18	Generic	1121.71	Rect	2.00	2.00	15	Cir	1110.71	15	Cir	1110.71
25	Storm YD 17	Generic	1115.90	Rect	2.00	2.00	15	Cir	1109.52	15	Cir	1109.52
24	Storm CB 7	Generic	1115.01	Rect	4.00	2.00	15	Cir	1108.82	15	Cir	1108.82
23	Storm CB 6	Generic	1114.88	Rect	4.00	2.00	15	Cir	1108.50	15	Cir	1108.50
22	Storm CB 5	Generic	1107.96	Rect	4.00	2.00	24	Cir	1102.80	15	Cir	1102.80
21	Storm YD 16	Generic	1120.39	Rect	2.00	2.00	15	Cir	1115.39	15	Cir	1115.39
20	Storm YD 15	Generic	1124.06	Rect	2.00	2.00	15	Cir	1114.54	15	Cir	1114.54
19	Storm YD 14	Generic	1125.86	Rect	2.00	2.00	15	Cir	1113.40	15	Cir	1113.40
18	Storm YD 13	Generic	1128.03	Rect	2.00	2.00	15	Cir	1112.22	15	Cir	1112.22
17	Storm YD 12	Generic	1126.14	Rect	2.00	2.00	15	Cir	1111.19	15	Cir	1111.19

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Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
16	Storm YD 11	Generic	1122.02	Rect	2.00	2.00	15	Cir	1110.43	15	Cir	1110.53
15	Storm YD 10	Generic	1109.42	Rect	2.00	2.00	15	Cir	1103.52	15	Cir	1103.42
14	Storm YD 5	Generic	1130.18	Rect	2.00	2.00	15	Cir	1120.00			
13	Storm YD 4	Generic	1126.21	Rect	2.00	2.00	15	Cir	1116.00	15	Cir	1116.10
12	Storm YD 3	Generic	1117.91	Rect	2.00	2.00	15	Cir	1108.90	15	Cir	1109.00
11	Structure - (433)	None	1108.19	n/a	n/a	n/a	15	Cir	1106.84	15	Cir	1106.84
10	Storm YD 9	Generic	1129.74	Rect	2.00	2.00	15	Cir	1123.74			
9	Storm YD 8	Generic	1125.33	Rect	2.00	2.00	15	Cir	1119.33	15	Cir	1119.43
8	Storm YD 7	Generic	1117.24	Rect	2.00	2.00	15	Cir	1111.24	15	Cir	1111.34
7	Storm YD 6	Generic	1109.81	Rect	2.00	2.00	15	Cir	1103.80	15	Cir	1103.90
6	Storm YD 2	Generic	1112.16	Rect	2.00	2.00	15	Cir	1102.46	15	Cir	1102.56
5	Storm CB 4	Generic	1110.61	Rect	4.00	2.00	24	Cir	1099.90	15	Cir	1100.65
4	Storm CB 3	Generic	1111.08	Rect	4.00	2.00	24	Cir	1099.49	24	Cir	1099.59
3	Structure - (377)	None	1099.13	n/a	n/a	n/a	24	Cir	1096.96	24	Cir	1096.96
2	Structure - (378)	None	1088.31	n/a	n/a	n/a	24	Cir	1086.15	24	Cir	1086.15
1	Storm CB 1	Generic	1093.79	Rect	4.00	2.00	24	Cir	1084.76	24	Cir	1084.86

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
38	Pipe - (414)	0.64	24	Cir	23.001	1084.86	1085.09	1.000	1085.48	1085.37	n/a	1085.37	1	Generic
37	Pipe - (452)	0.21	15	Cir	50.433	1100.65	1101.16	1.011	1100.80	1101.34	n/a	1101.34	5	Generic
36	Pipe - (404)	0.48	15	Cir	28.000	1103.03	1103.31	1.000	1103.35	1103.58	n/a	1103.58	30	Generic
35	Pipe - (469)	0.90	15	Cir	92.184	1103.44	1105.00	1.692	1103.95	1105.37	n/a	1105.37	34	Generic
34	Pipe - (468)	1.68	15	Cir	26.138	1103.00	1103.44	1.683	1103.61	1103.95	n/a	1103.95	33	None
33	Pipe - (467)	3.01	15	Cir	40.400	1102.50	1102.91	1.015	1103.20	1103.61	n/a	1103.61	End	Generic
32	Pipe - (471)	0.76	15	Cir	55.832	1105.60	1108.22	4.693	1105.79	1108.56	n/a	1108.56	31	Generic
31	Pipe - (451)	0.77	15	Cir	95.994	1103.03	1105.40	2.469	1103.35	1105.74	n/a	1105.74	30	Generic
30	Pipe - (405)	1.26	18	Cir	42.627	1102.50	1102.93	1.009	1102.92	1103.35	n/a	1103.35	End	Generic
29	Pipe - (447)	0.86	15	Cir	94.217	1110.91	1114.80	4.129	1111.22	1115.16	n/a	1115.16	26	Generic
28	Pipe - (442)	0.53	15	Cir	93.882	1114.93	1118.56	3.867	1115.10	1118.84	n/a	1118.84	27	Generic
27	Pipe - (466)	0.78	15	Cir	70.790	1110.91	1114.73	5.396	1111.22	1115.08	n/a	1115.08	26	Generic
26	Pipe - (465)	1.65	15	Cir	71.255	1109.72	1110.71	1.389	1110.10	1111.22	n/a	1111.22	25	Generic
25	Pipe - (443)	1.78	15	Cir	50.257	1109.02	1109.52	0.995	1109.50	1110.05	n/a	1110.05	24	Generic
24	Pipe - (470)	2.86	15	Cir	23.056	1108.70	1108.82	0.520	1109.37	1109.50	n/a	1109.50	23	Generic
23	Pipe - (464)	3.57	15	Cir	124.059	1103.55	1108.50	3.990	1103.98	1109.26	n/a	1109.26	22	Generic
22	Pipe - (462)	3.68	24	Cir	57.800	1102.50	1102.80	0.519	1103.17	1103.47	n/a	1103.47	End	Generic
21	Pipe - (460)	0.36	15	Cir	75.337	1114.64	1115.39	0.996	1114.83	1115.62	n/a	1115.62	20	Generic
20	Pipe - (459)	0.52	15	Cir	103.369	1113.50	1114.54	1.006	1113.74	1114.82	n/a	1114.82	19	Generic
19	Pipe - (458)	0.74	15	Cir	107.249	1112.32	1113.40	1.007	1112.61	1113.74	n/a	1113.74	18	Generic
18	Pipe - (457)	0.98	15	Cir	92.536	1111.29	1112.22	1.005	1111.63	1112.61	n/a	1112.61	17	Generic
17	Pipe - (453)	1.23	15	Cir	65.665	1110.53	1111.19	1.005	1110.90	1111.63	n/a	1111.63	16	Generic
16	Pipe - (450)	1.44	15	Cir	107.267	1103.42	1110.43	6.535	1104.00	1110.90	n/a	1110.90	15	Generic
15	Pipe - (449)	1.45	15	Cir	55.107	1100.24	1103.52	5.952	1100.49	1104.00	n/a	1104.00	4	Generic

Project File: 241001-Newcastle Storm Sewer.stm
 Number of lines: 38
 Run Date: 9/26/2024

NOTES: Return period = 25 Yrs.

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
14	Pipe - (432)	0.14	15	Cir	87.653	1116.10	1120.00	4.449	1116.20	1120.15	n/a	1120.15	13	Generic
13	Pipe - (433)	0.26	15	Cir	78.327	1109.00	1116.00	8.937	1109.16	1116.20	n/a	1116.20	12	Generic
12	Pipe - (439)	0.44	15	Cir	24.458	1106.84	1108.90	8.423	1107.15	1109.16	n/a	1109.16	11	Generic
11	Pipe - (463)	0.62	15	Cir	50.724	1102.56	1106.84	8.438	1102.90	1107.15	n/a	1107.15	6	None
10	Pipe - (426)	0.05	15	Cir	72.592	1119.43	1123.74	5.937	1119.48	1123.82	n/a	1123.82	9	Generic
9	Pipe - (427)	0.12	15	Cir	76.015	1111.34	1119.33	10.511	1111.46	1119.47	n/a	1119.47	8	Generic
8	Pipe - (428)	0.32	15	Cir	106.285	1103.90	1111.24	6.906	1104.13	1111.46	n/a	1111.46	7	Generic
7	Pipe - (429)	0.71	15	Cir	91.958	1102.56	1103.80	1.348	1102.90	1104.13	n/a	1104.13	6	Generic
6	Pipe - (430)	1.25	15	Cir	28.873	1100.65	1102.46	6.269	1100.88	1102.90	n/a	1102.90	5	Generic
5	Pipe - (409)	1.67	24	Cir	28.088	1099.59	1099.90	1.104	1100.10	1100.35	n/a	1100.35	4	Generic
4	Pipe - (410)	3.01	24	Cir	37.223	1096.96	1099.49	6.797	1097.61	1100.10	n/a	1100.10	3	Generic
3	Pipe - (411)	3.45	24	Cir	160.057	1086.15	1096.96	6.754	1086.84	1097.61	n/a	1097.61	2	None
2	Pipe - (412)	3.85	24	Cir	19.019	1084.86	1086.15	6.783	1085.48	1086.84	n/a	1086.84	1	None
1	Pipe - (413)	4.23	24	Cir	176.479	1083.00	1084.76	0.997	1083.58	1085.48	0.40	1085.48	End	Generic

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Number of lines: 38

Run Date: 9/26/2024

NOTES: Return period = 25 Yrs.

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter						Inlet			Bye Line No					
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)		Depth (ft)	Spread (ft)	Depr (in)		
38	Storm CB 2	0.64	0.00	0.64	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.00	12.00	0.30	12.00	0.0	Off
37	Storm YD 1	0.21	0.00	0.20	0.01	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.00	12.00	0.30	12.00	0.0	Off
36	Storm CB 9	0.48	0.00	0.48	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.00	12.00	0.30	12.00	0.0	Off
35	Storm YD 23	0.90	0.00	0.90	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.00	12.00	0.30	12.00	0.0	Off
34	Structure - (361)	0.89	0.00	0.00	0.89	None	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	Off
33	Storm YD 22	1.46	0.00	1.45	0.01	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.00	12.00	0.30	12.00	0.0	Off
32	Storm YD 24	0.76	0.00	0.76	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.00	12.00	0.30	12.00	0.0	Off
31	Storm CB 10	0.05	0.00	0.05	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.00	12.00	0.30	12.00	0.0	Off
30	Storm CB 8	0.14	0.00	0.14	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.00	12.00	0.30	12.00	0.0	Off
29	Storm YD 21	0.86	0.00	0.86	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.00	12.00	0.30	12.00	0.0	Off
28	Storm YD 20	0.53	0.00	0.52	0.01	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.00	12.00	0.30	12.00	0.0	Off
27	Storm YD 19	0.38	0.00	0.38	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.00	12.00	0.30	12.00	0.0	Off
26	Storm YD 18	0.21	0.00	0.21	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.00	12.00	0.30	12.00	0.0	Off
25	Storm YD 17	0.21	0.00	0.21	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.00	12.00	0.30	12.00	0.0	Off
24	Storm CB 7	1.45	0.00	0.72	0.73	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.00	12.00	0.30	12.00	0.0	Off
23	Storm CB 6	0.96	0.00	0.96	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.00	12.00	0.30	12.00	0.0	Off
22	Storm CB 5	0.21	0.00	0.21	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.00	12.00	0.30	12.00	0.0	Off
21	Storm YD 16	0.36	0.00	0.36	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.00	12.00	0.30	12.00	0.0	Off
20	Storm YD 15	0.24	0.00	0.24	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.00	12.00	0.30	12.00	0.0	Off
19	Storm YD 14	0.36	0.00	0.36	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.00	12.00	0.30	12.00	0.0	Off
18	Storm YD 13	0.38	0.00	0.38	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.00	12.00	0.30	12.00	0.0	Off
17	Storm YD 12	0.40	0.00	0.40	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.00	12.00	0.30	12.00	0.0	Off
16	Storm YD 11	0.33	0.00	0.33	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.00	12.00	0.30	12.00	0.0	Off

Project File: 241001-Newcastle Storm Sewer.stm

Number of lines: 38

Run Date: 9/26/2024

NOTES: Inlet N-Values = 0.016; Intensity = 102.61 / (Inlet time + 16.50) ^ 0.82; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter						Inlet		Byp Line No			
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)		Spread (ft)	Depth (ft)	Spread (ft)
15	Storm YD 10	0.07	0.00	0.07	0.00	Genr	0.0	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.30	12.00	0.0	Off
14	Storm YD 5	0.14	0.00	0.13	0.01	Genr	0.0	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.30	12.00	0.0	Off
13	Storm YD 4	0.24	0.00	0.24	0.00	Genr	0.0	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.30	12.00	0.0	Off
12	Storm YD 3	0.31	0.00	0.30	0.01	Genr	0.0	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.30	12.00	0.0	Off
11	Structure - (433)	0.31	0.00	0.00	0.31	None	0.0	0.00	0.00	0.00	0.000	0.00	0.000	0.000	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.0	Off
10	Storm YD 9	0.05	0.00	0.05	0.00	Genr	0.0	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.30	12.00	0.0	Off
9	Storm YD 8	0.20	0.00	0.20	0.00	Genr	0.0	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.30	12.00	0.0	Off
8	Storm YD 7	0.42	0.00	0.42	0.00	Genr	0.0	0.00	0.00	0.00	0.00	2.00	0.050	0.200	0.013	0.30	3.00	0.30	3.00	0.30	3.00	0.0	Off
7	Storm YD 6	0.88	0.00	0.78	0.10	Genr	0.0	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.30	12.00	0.0	Off
6	Storm YD 2	0.31	0.00	0.31	0.00	Genr	0.0	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.30	12.00	0.0	Off
5	Storm CB 4	0.79	0.00	0.79	0.00	Genr	0.0	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.30	12.00	0.0	Off
4	Storm CB 3	1.10	0.00	1.10	0.00	Genr	0.0	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.30	12.00	0.0	Off
3	Structure - (377)	1.10	0.00	0.00	1.10	None	0.0	0.00	0.00	0.00	0.000	0.00	0.000	0.000	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.0	Off
2	Structure - (378)	1.10	0.00	0.00	1.10	None	0.0	0.00	0.00	0.00	0.000	0.00	0.000	0.000	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.0	Off
1	Storm CB 1	0.31	0.00	0.31	0.00	Genr	0.0	0.00	0.00	0.00	0.00	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.30	12.00	0.0	Off

Project File: 241001-Newcastle Storm Sewer.stm

Number of lines: 38

Run Date: 9/26/2024

NOTES: Inlet N-Values = 0.016; Intensity = 102.61 / (Inlet time + 16.50) ^ 0.82; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

Storm Sewer Inlet Time Tabulation

Line No.	Line ID	Tc Method	Sheet Flow				Shallow Concentrated Flow				Channel Flow						Total Travel Time (min)		
			n-Value	flow Length (ft)	2-yr 24h P (in)	Land Slope (%)	Travel Time (min)	flow Length (ft)	Water Slope (%)	Surf Descr	Ave Vel (ft/s)	Travel Time (min)	X-sec Area (sqft)	Wetted Perim (ft)	Chan Slope (%)	n-Value		Vel	flow Length (ft)
38	Pipe - (414)	User																	6.00
37	Pipe - (452)	User																	6.00
36	Pipe - (404)	User																	6.00
35	Pipe - (469)	TR55	0.400	100.00	3.07	26.00	7.86				284.00	25.00	UnPaved	8.07	0.59				8.53
34	Pipe - (468)	User									71.00	50.00	Paved	14.37	0.08				8.60
33	Pipe - (467)	TR55	0.400	100.00	3.07	26.00	7.86				284.00	25.00	Paved	10.16	0.47				8.41
32	Pipe - (471)	User									71.00	50.00	Paved	14.37	0.08				6.00
31	Pipe - (451)	User																	6.00
30	Pipe - (405)	User																	6.00
29	Pipe - (447)	TR55	0.400	100.00	3.07	26.00	7.86				284.00	25.00	UnPaved	8.07	0.59				8.53
28	Pipe - (442)	TR55	0.400	100.00	3.07	26.00	7.86				71.00	50.00	Paved	14.37	0.08				8.41
27	Pipe - (466)	User																	6.00
26	Pipe - (465)	User																	6.00
25	Pipe - (443)	User																	6.00
24	Pipe - (470)	User																	6.00
23	Pipe - (464)	User																	6.00
22	Pipe - (462)	User																	6.00
21	Pipe - (460)	User																	6.00
20	Pipe - (459)	User																	6.00
19	Pipe - (458)	User																	6.00
18	Pipe - (457)	User																	6.00
17	Pipe - (453)	User																	6.00
Project File: 241001-Newcastle Storm Sewer.stm			Min. Tc used for intensity calculations = 5 min							Number of lines: 38							Date: 9/26/2024		

Storm Sewer Inlet Time Tabulation

Line No.	Line ID	Tc Method	Sheet Flow				Shallow Concentrated Flow				Channel Flow						Total Travel Time (min)		
			in-Value	flow Length (ft)	2-yr 24h P (in)	Land Slope (%)	Travel Time (min)	flow Length (ft)	Water Slope (%)	Surf Descr	Ave Vel (ft/s)	Travel Time (min)	X-sec Area (sqft)	Wetted Perim (ft)	Chan Slope (%)	in-Value		Vel	flow Length (ft)
16	Pipe - (450)	User																	6.00
15	Pipe - (449)	User																	6.00
14	Pipe - (432)	User																	6.00
13	Pipe - (433)	User																	6.00
12	Pipe - (439)	User																	6.00
11	Pipe - (463)	User																	6.00
10	Pipe - (426)	User																	6.00
9	Pipe - (427)	User																	6.00
8	Pipe - (428)	TR55	0.400	100.00	3.07	26.00	7.86				284.00	25.00	UnPaved	8.07	0.59				8.53
7	Pipe - (429)	TR55	0.400	100.00	3.07	26.00	7.86				71.00	50.00	Paved	14.37	0.08				8.55
6	Pipe - (430)	User																	6.00
5	Pipe - (409)	User																	6.00
4	Pipe - (410)	User																	6.00
3	Pipe - (411)	User																	6.00
2	Pipe - (412)	User																	6.00
1	Pipe - (413)	User																	6.00
Project File: 241001-Newcastle Storm Sewer.stm			Min. Tc used for intensity calculations = 5 min										Number of lines: 38				Date: 9/26/2024		

Hydraulic Grade Line Computations

Line Size (in)	Q (cfs)	Downstream						Len (ft)	Upstream						Check		JL coeff (K)	Minor loss (ft)				
		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)		EGL elev (ft)	Sf (%)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)			EGL elev (ft)	Sf (%)	Ave Sf (%)	Engy loss (ft)
38	0.64	1084.86	1085.48	0.00	0.00	0.77	0.00	1085.48	0.000	23.001	1085.09	1085.37	0.00**	0.00	2.47	0.00	1085.37	0.000	0.000	0.000	1.00	n/a
37	0.21	1100.65	1100.80	0.00	0.00	2.57	0.00	1100.80	0.000	50.433	1101.16	1101.34	0.00**	0.00	1.99	0.00	1101.34	0.000	0.000	0.000	1.00	n/a
36	0.48	1103.03	1103.35	0.00	0.00	1.96	0.00	1103.35	0.000	28.000	1103.31	1103.58	0.00**	0.00	2.47	0.00	1103.58	0.000	0.000	0.000	1.00	n/a
35	0.90	1103.44	1103.95	0.00	0.00	1.89	0.00	1103.95	0.000	92.184	1105.00	1105.37	0.00**	0.00	2.94	0.00	1105.37	0.000	0.000	0.000	1.00	n/a
34	1.68	1103.00	1103.61	0.00	0.00	2.84	0.00	1103.61	0.000	26.138	1103.44	1103.95	0.00**	0.00	3.53	0.00	1103.95	0.000	0.000	0.000	0.21	n/a
33	3.01	1102.50	1103.20	0.00	0.00	4.26	0.00	1103.20	0.000	40.400	1102.91	1103.61	0.00**	0.00	4.28	0.00	1103.61	0.000	0.000	0.000	1.13	n/a
32	0.76	1105.60	1105.79	0.00	0.00	6.44	0.00	1105.79	0.000	55.832	1108.22	1108.56	0.00**	0.00	2.80	0.00	1108.56	0.000	0.000	0.000	1.00	n/a
31	0.77	1103.03	1103.35	0.00	0.00	3.11	0.00	1103.35	0.000	95.994	1105.40	1105.74	0.00**	0.00	2.81	0.00	1105.74	0.000	0.000	0.000	1.24	n/a
30	1.26	1102.50	1102.92	0.00	0.00	3.10	0.00	1102.92	0.000	42.627	1102.93	1103.35	0.00**	0.00	3.11	0.00	1103.35	0.000	0.000	0.000	1.42	n/a
29	0.86	1110.91	1111.22	0.00	0.00	3.64	0.00	1111.22	0.000	94.217	1114.80	1115.16	0.00**	0.00	2.90	0.00	1115.16	0.000	0.000	0.000	1.00	n/a
28	0.53	1114.93	1115.10	0.00	0.00	5.38	0.00	1115.10	0.000	93.882	1118.56	1118.84	0.00**	0.00	2.53	0.00	1118.84	0.000	0.000	0.000	1.00	n/a
27	0.78	1110.91	1111.22	0.00	0.00	3.31	0.00	1111.22	0.000	70.790	1114.73	1115.08	0.00**	0.00	2.83	0.00	1115.08	0.000	0.000	0.000	1.46	n/a
26	1.65	1109.72	1110.10	0.00	0.00	5.24	0.00	1110.10	0.000	71.255	1110.71	1111.22	0.00**	0.00	3.51	0.00	1111.22	0.000	0.000	0.000	1.48	n/a
25	1.78	1109.02	1109.50	0.00	0.00	4.12	0.00	1109.50	0.000	50.257	1109.52	1110.05	0.00**	0.00	3.60	0.00	1110.05	0.000	0.000	0.000	1.27	n/a
24	2.86	1108.70	1109.37	0.00	0.00	4.24	0.00	1109.37	0.000	23.056	1108.82	1109.50	0.00**	0.00	4.20	0.00	1109.50	0.000	0.000	0.000	1.33	n/a
23	3.57	1103.55	1103.98	0.00	0.00	9.52	0.00	1103.98	0.000	124.059	1108.50	1109.26	0.00**	0.00	4.56	0.00	1109.26	0.000	0.000	0.000	1.25	n/a
22	3.68	1102.50	1103.17	0.00	0.00	3.98	0.00	1103.17	0.000	57.800	1102.80	1103.47	0.00**	0.00	3.98	0.00	1103.47	0.000	0.000	0.000	1.29	n/a
21	0.36	1114.64	1114.83	0.00	0.00	2.98	0.00	1114.83	0.000	75.337	1115.39	1115.62	0.00**	0.00	2.28	0.00	1115.62	0.000	0.000	0.000	1.00	n/a
20	0.52	1113.50	1113.74	0.00	0.00	3.18	0.00	1113.74	0.000	103.369	1114.54	1114.82	0.00**	0.00	2.52	0.00	1114.82	0.000	0.000	0.000	0.50	n/a
19	0.74	1112.32	1112.61	0.00	0.00	3.47	0.00	1112.61	0.000	107.249	1113.40	1113.74	0.00**	0.00	2.79	0.00	1113.74	0.000	0.000	0.000	0.63	n/a
18	0.98	1111.29	1111.63	0.00	0.00	3.67	0.00	1111.63	0.000	92.536	1112.22	1112.61	0.00**	0.00	3.01	0.00	1112.61	0.000	0.000	0.000	0.60	n/a
17	1.23	1110.53	1110.90	0.00	0.00	3.99	0.00	1110.90	0.000	65.665	1111.19	1111.63	0.00**	0.00	3.22	0.00	1111.63	0.000	0.000	0.000	0.50	n/a

Project File: 241001-Newcastle Storm Sewer.stm Number of lines: 38 Run Date: 9/26/2024

Notes: ; ** Critical depth. ; c = cir e = ellip b = box

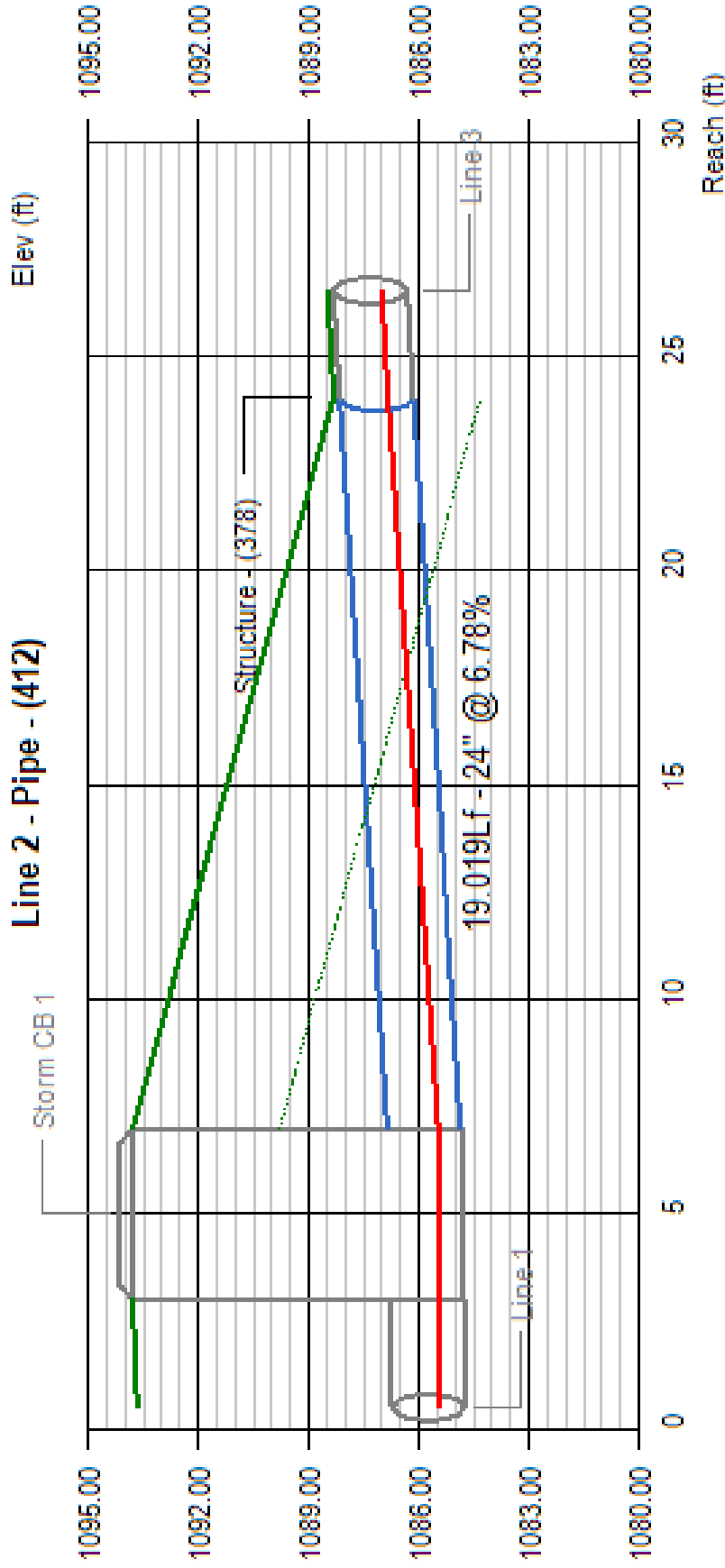
Hydraulic Grade Line Computations

Line Size (in)	Q (cfs)	Downstream						Len (ft)	Upstream						Check		JL coeff (K)	Minor loss (ft)				
		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)		EGL elev (ft)	Sf (%)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)			EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)
16	1.44	1103.42	1104.00	0.00	0.00	2.60	0.00	1104.00	0.000	107.267	1110.43	1110.90	0.00**	0.00	3.37	0.00	1110.90	0.000	0.000	0.000	0.53	n/a
15	1.45	1100.24	1100.49	0.00	0.00	8.47	0.00	1100.49	0.000	55.107	1103.52	1104.00	0.00**	0.00	3.38	0.00	1104.00	0.000	0.000	0.000	0.66	n/a
14	0.14	1116.10	1116.20	0.00	0.00	3.16	0.00	1116.20	0.000	87.653	1120.00	1120.15	0.00**	0.00	1.79	0.00	1120.15	0.000	0.000	0.000	1.00	n/a
13	0.26	1109.00	1109.16	0.00	0.00	2.98	0.00	1109.16	0.000	78.327	1116.00	1116.20	0.00**	0.00	2.11	0.00	1116.20	0.000	0.000	0.000	0.50	n/a
12	0.44	1106.84	1107.15	0.00	0.00	1.86	0.00	1107.15	0.000	24.458	1108.90	1109.16	0.00**	0.00	2.41	0.00	1109.16	0.000	0.000	0.000	0.50	n/a
11	0.62	1102.56	1102.90	0.00	0.00	2.29	0.00	1102.90	0.000	50.724	1106.84	1107.15	0.00**	0.00	2.65	0.00	1107.15	0.000	0.000	0.000	0.19	n/a
10	0.05	1119.43	1119.48	0.00	0.00	3.02	0.00	1119.48	0.000	72.592	1123.74	1123.82	0.00**	0.00	1.35	0.00	1123.82	0.000	0.000	0.000	1.00	n/a
9	0.12	1111.34	1111.46	0.00	0.00	2.10	0.00	1111.46	0.000	76.015	1119.33	1119.47	0.00**	0.00	1.72	0.00	1119.47	0.000	0.000	0.000	0.50	n/a
8	0.32	1103.90	1104.13	0.00	0.00	2.05	0.00	1104.13	0.000	106.285	1111.24	1111.46	0.00**	0.00	2.21	0.00	1111.46	0.000	0.000	0.000	0.50	n/a
7	0.71	1102.56	1102.90	0.00	0.00	2.62	0.00	1102.90	0.000	91.958	1103.80	1104.13	0.00**	0.00	2.75	0.00	1104.13	0.000	0.000	0.000	1.50	n/a
6	1.25	1100.65	1100.88	0.00	0.00	8.26	0.00	1100.88	0.000	28.873	1102.46	1102.90	0.00**	0.00	3.23	0.00	1102.90	0.000	0.000	0.000	1.50	n/a
5	1.67	1099.59	1100.10	0.00	0.00	2.68	0.00	1100.10	0.000	28.088	1099.90	1100.35	0.00**	0.00	3.18	0.00	1100.35	0.000	0.000	0.000	1.36	n/a
4	3.01	1096.96	1097.61	0.00	0.00	3.40	0.00	1097.61	0.000	37.223	1099.49	1100.10	0.00**	0.00	3.75	0.00	1100.10	0.000	0.000	0.000	1.49	n/a
3	3.45	1086.15	1086.84	0.00	0.00	3.61	0.00	1086.84	0.000	160.057	1096.96	1097.61	0.00**	0.00	3.90	0.00	1097.61	0.000	0.000	0.000	0.39	n/a
2	3.85	1084.86	1085.48	0.62	0.83	4.62	0.25	1085.73	0.000	19.019	1086.15	1086.84	0.69**	0.96	4.03	0.25	1087.09	0.000	0.000	n/a	0.48	n/a
1	4.23	1083.00	1083.58	0.58	0.76	5.60	0.27	1083.85	0.000	176.479	1084.76	1085.48	0.72**	1.02	4.14	0.27	1085.75	0.000	0.000	n/a	1.50	0.40

Project File: 241001-Newcastle Storm Sewer.stm Number of lines: 38 Run Date: 9/26/2024

Notes: ; ** Critical depth. ; c = cir e = ellip b = box

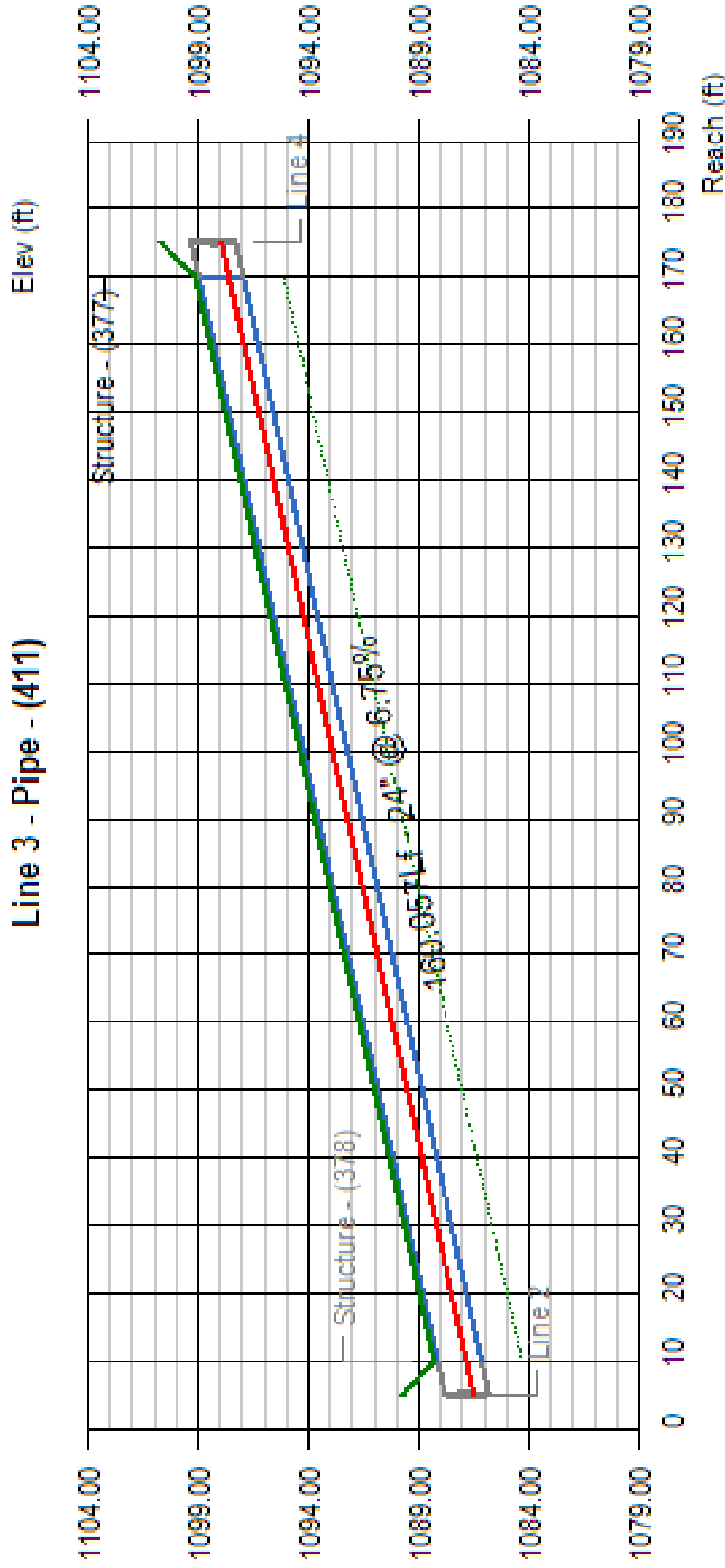
Line Profile (Line 2) - Pipe - (412)



Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover		
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)	
2	3.85	1084.86	1086.15	0.62	0.69	0.69	1085.48	1086.84	1086.84	1086.84	4.62	4.03	6.93	0.16
Project File:										No. Lines: 38		Run Date: 9/26/2024		

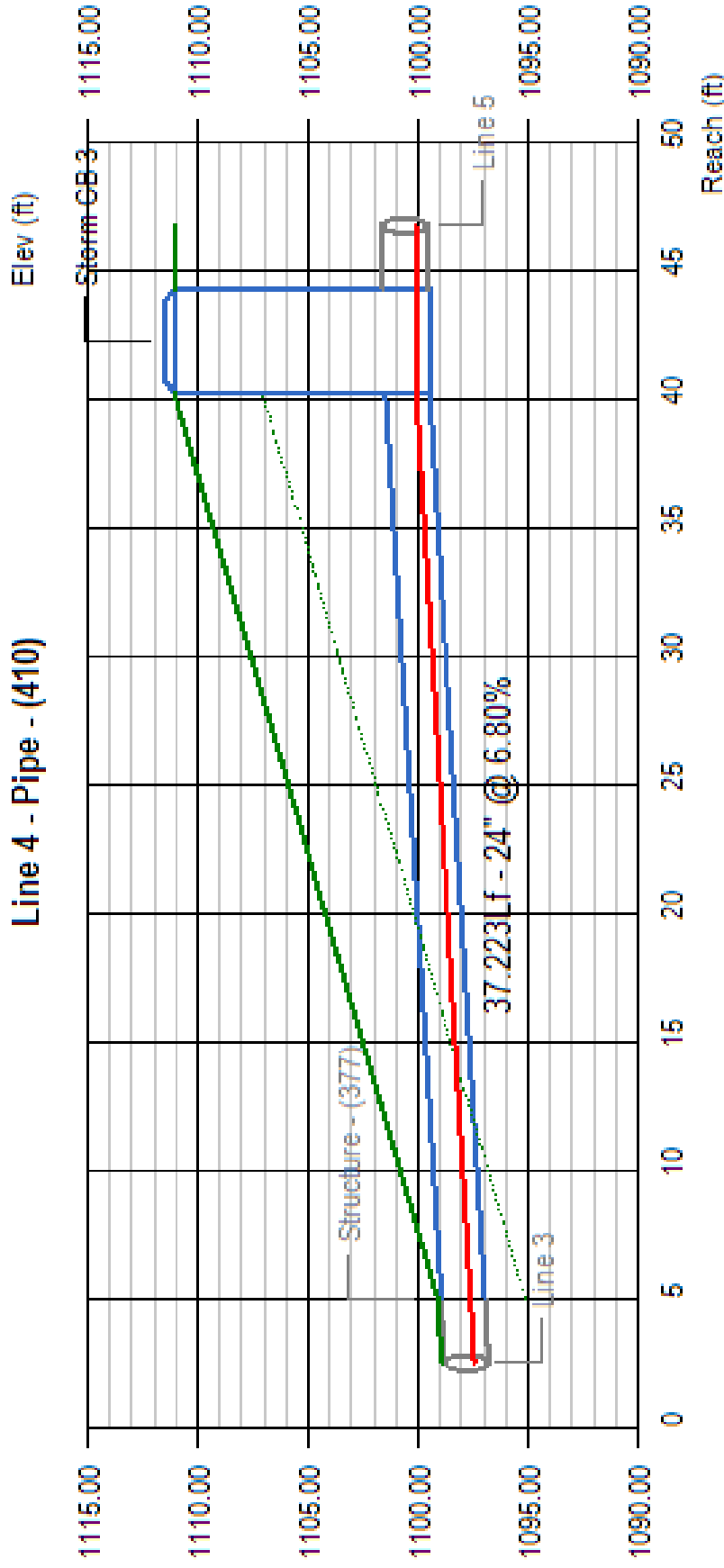
Line Profile (Line 3) - Pipe - (411)

Line 3 - Pipe - (411)



Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover		
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)	
3	3.45	1086.15	1096.96	0.00	0.00	0.65	1086.84	1097.61	1097.61	1097.61	3.61	3.90	0.16	0.17
Project File:										No. Lines: 38		Run Date: 9/26/2024		

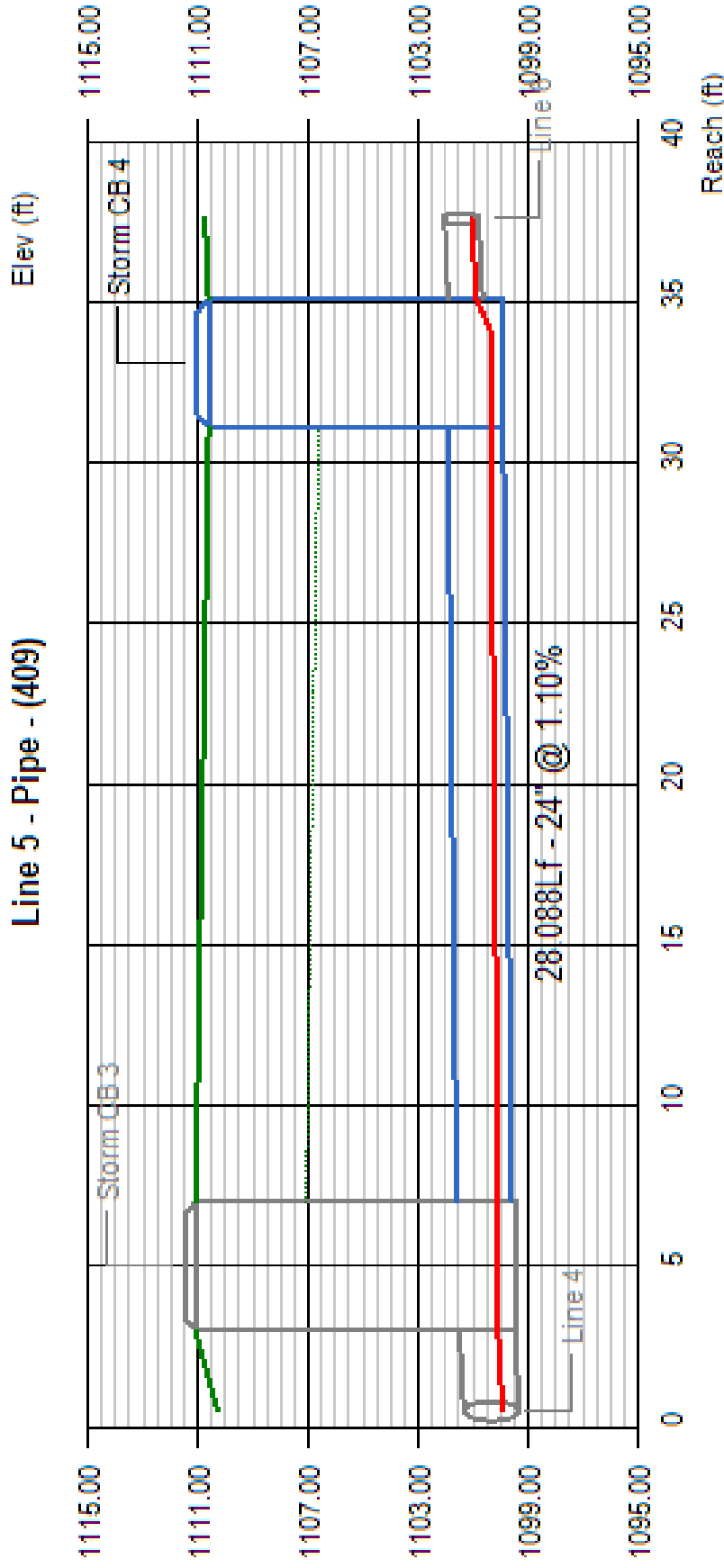
Line Profile (Line 4) - Pipe - (410)



Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
4	3.01	1096.96	1099.49	0.00	0.00	0.60	1097.61	1100.10	1100.10	3.40	3.75	0.17	9.59
Project File:										No. Lines: 38		Run Date: 9/26/2024	

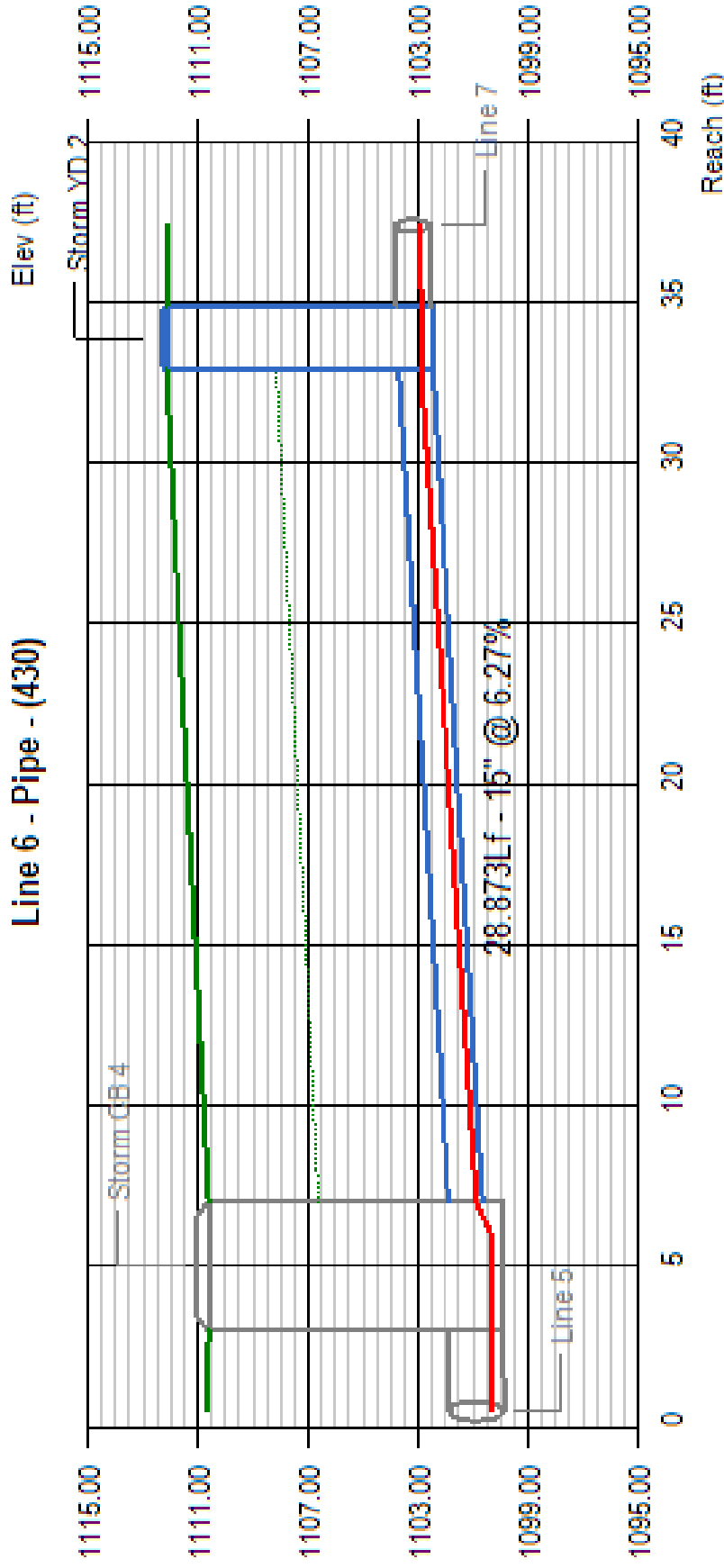
Line Profile (Line 5) - Pipe - (409)

Line 5 - Pipe - (409)



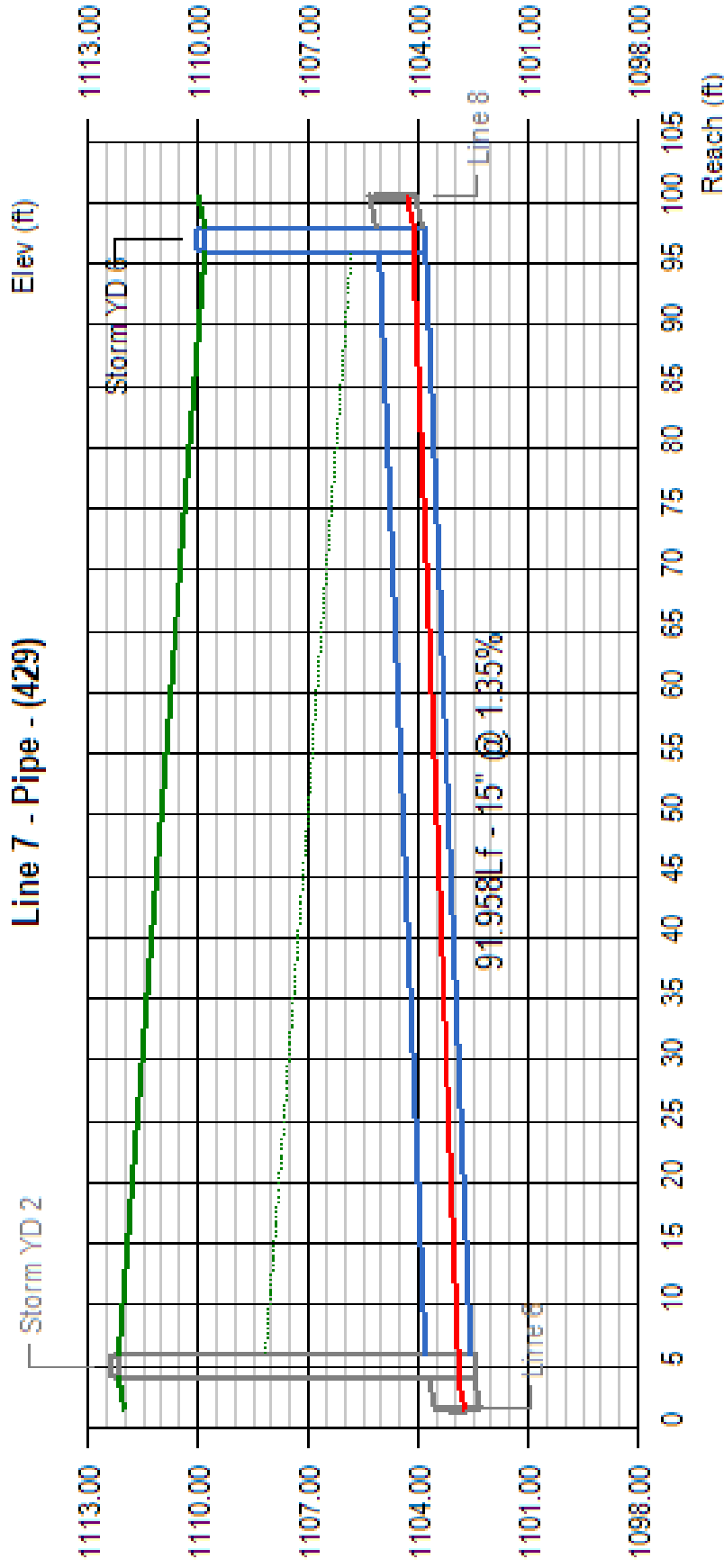
Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
5	1.67	1099.59	1099.90	0.00	0.00	0.45	1100.10	1100.35	1100.35	2.68	3.18	9.49	8.71
Project File:										No. Lines: 38		Run Date: 9/26/2024	

Line Profile (Line 6) - Pipe - (430)



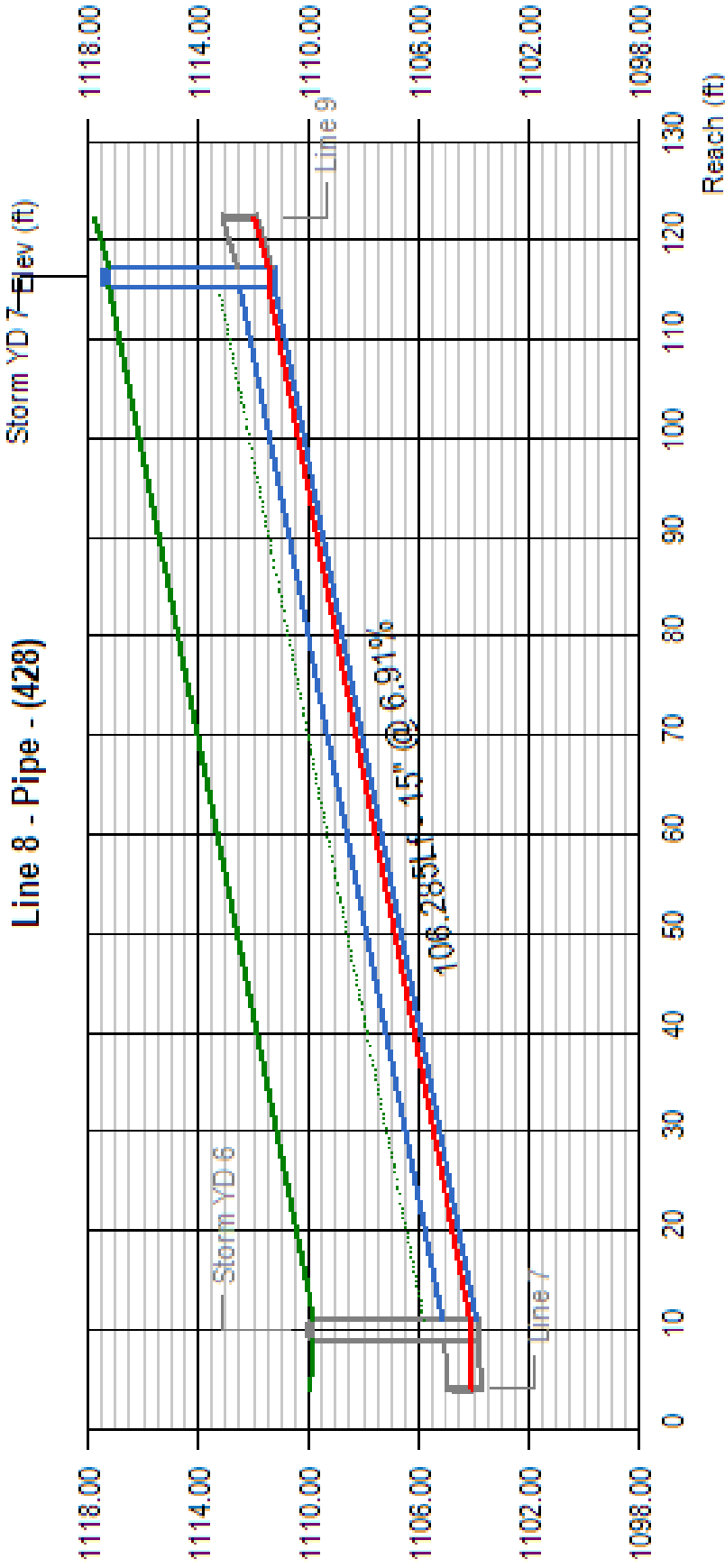
Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover		
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)	
6	1.25	1100.65	1102.46	0.00	0.00	0.44	1100.88	1102.90	1102.90	1102.90	8.26	3.23	8.71	8.45
Project File:										No. Lines: 38		Run Date: 9/26/2024		

Line Profile (Line 7) - Pipe - (429)



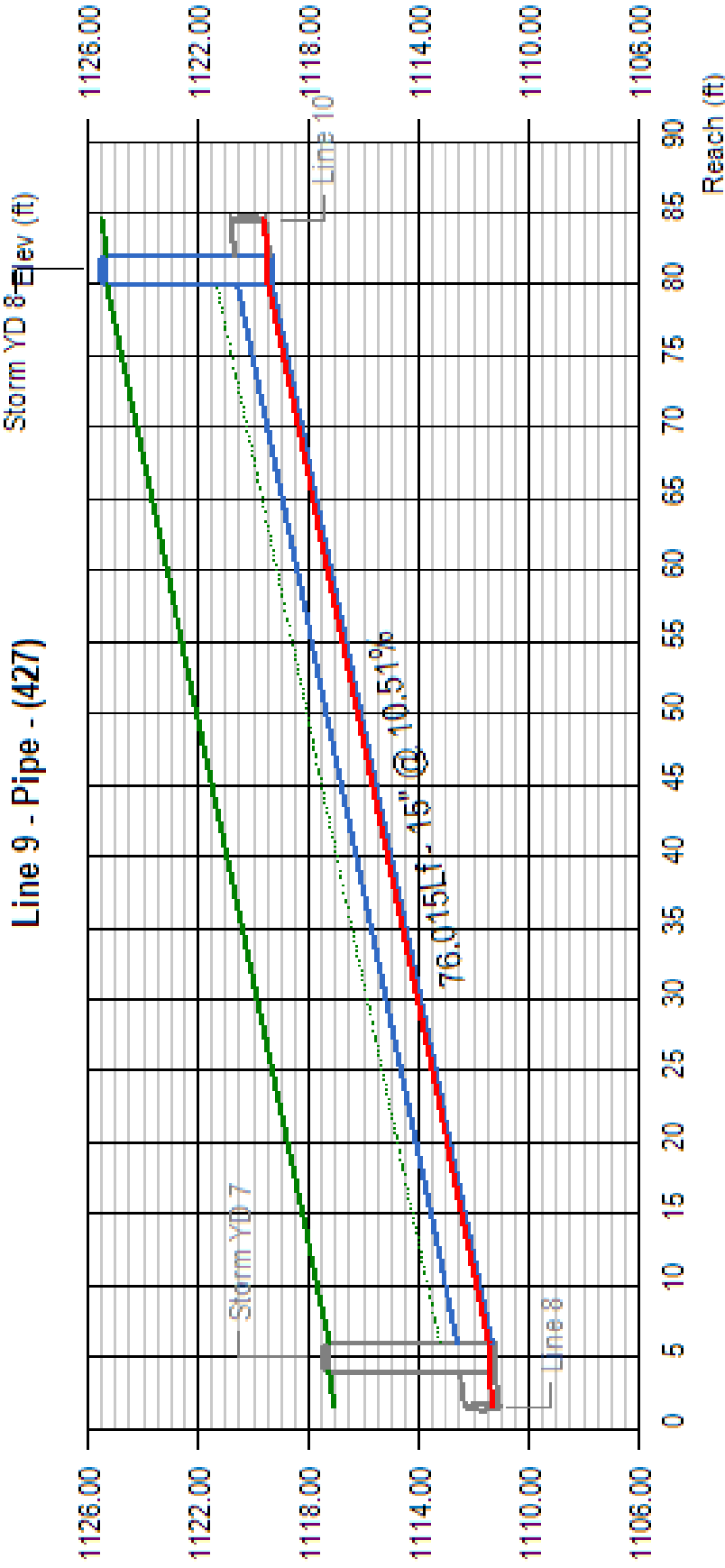
Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover		
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)	
7	0.71	1102.56	1103.80	0.00	0.00	0.33	1102.90	1104.13	1104.13	1104.13	2.62	2.75	8.35	4.76
Project File:										No. Lines: 38		Run Date: 9/26/2024		

Line Profile (Line 8) - Pipe - (428)



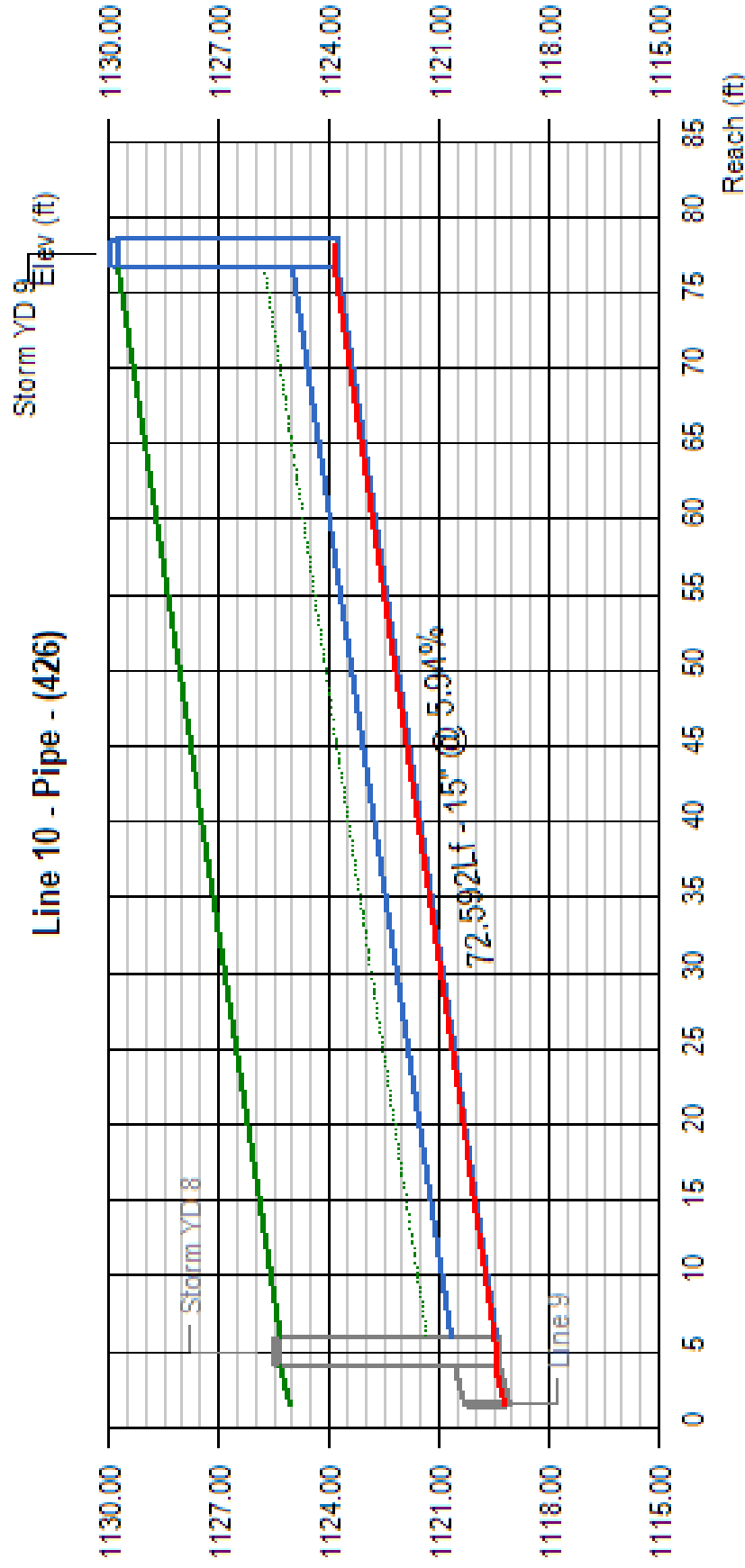
Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
8	0.32	1103.90	1111.24	0.00	0.00	0.22	1104.13	1111.46	1111.46	2.05	2.21	4.66	4.75
Project File:										No. Lines: 38		Run Date: 9/26/2024	

Line Profile (Line 9) - Pipe - (427)



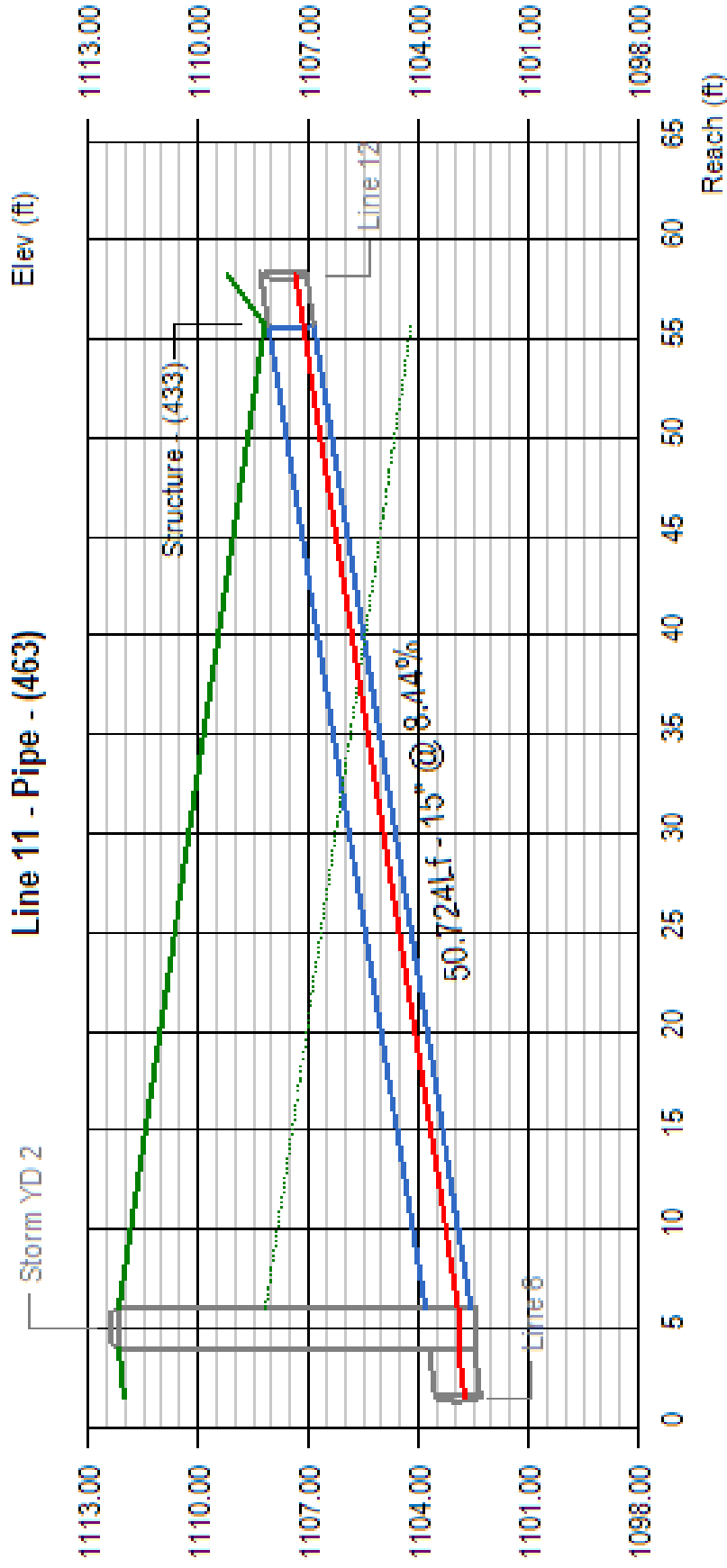
Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
9	0.12	1111.34	1119.33	0.00	0.00	0.14	1111.46	1119.47	1119.47	2.10	1.72	4.65	4.75
Project File:										No. Lines: 38		Run Date: 9/26/2024	

Line Profile (Line 10) - Pipe - (426)



Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
10	0.05	1119.43	1123.74	0.00	0.00	0.08	1119.48	1123.82	1123.82	3.02	1.35	4.65	4.75
Project File:										No. Lines: 38		Run Date: 9/26/2024	

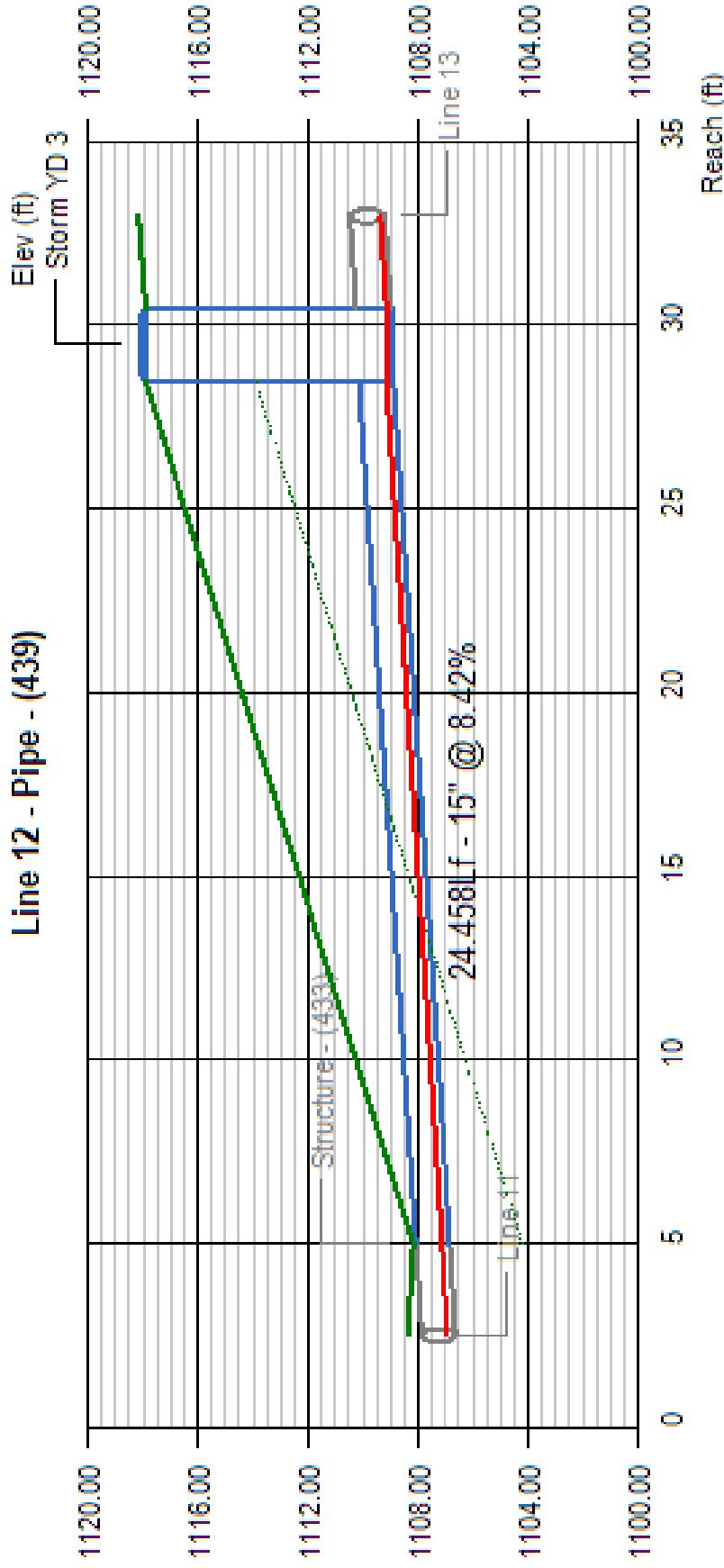
Line Profile (Line 11) - Pipe - (463)



Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover		
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Junct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)	
11	0.62	1102.56	1106.84	0.00	0.00	0.31	1102.90	1107.15	1107.15	1107.15	2.29	2.65	8.35	0.10
Project File:										No. Lines: 38		Run Date: 9/26/2024		

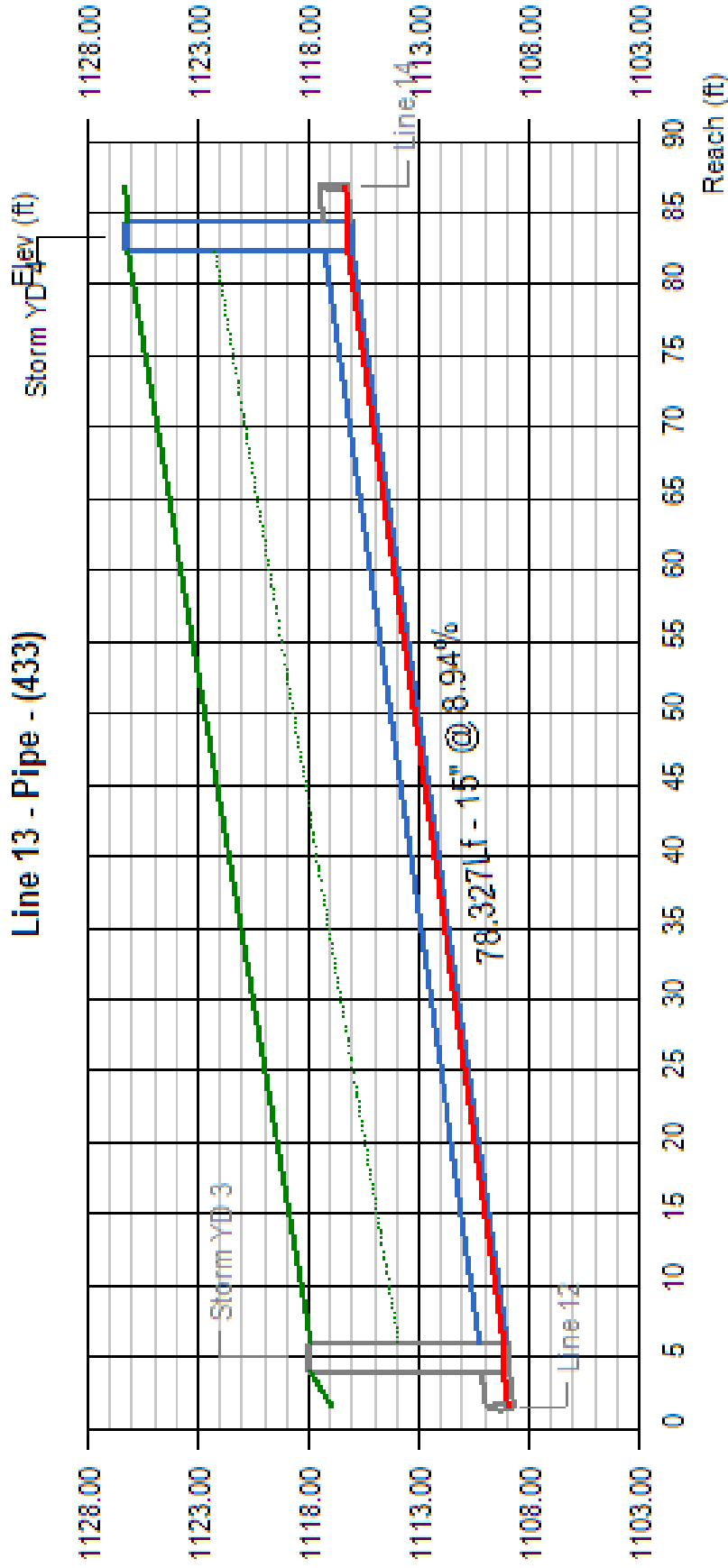
Line Profile (Line 12) - Pipe - (439)

Line 12 - Pipe - (439)



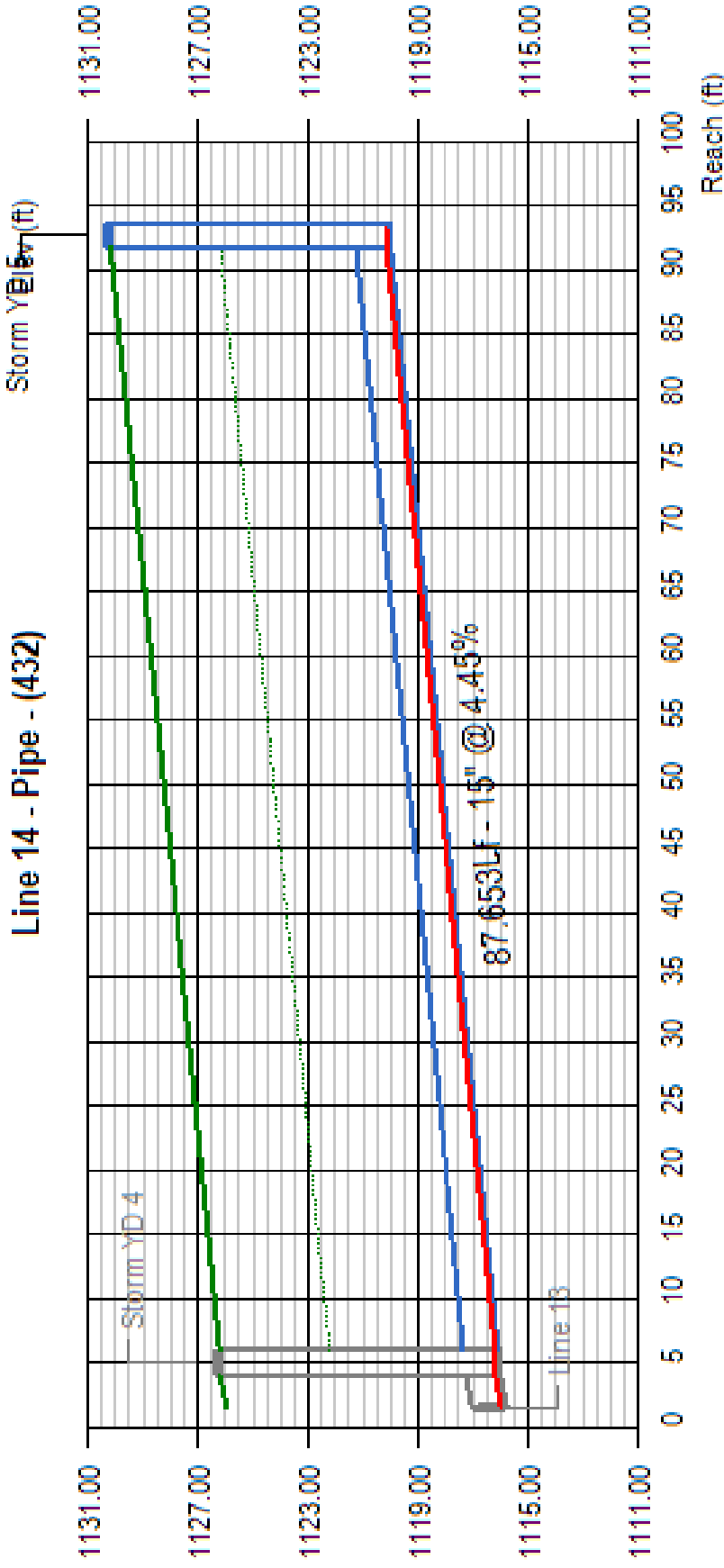
Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
12	0.44	1106.84	1108.90	0.00	0.00	0.26	1107.15	1109.16	1109.16	1.86	2.41	0.10	7.76
Project File:										No. Lines: 38		Run Date: 9/26/2024	

Line Profile (Line 13) - Pipe - (433)



Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
13	0.26	1109.00	1116.00	0.00	0.00	0.20	1109.16	1116.20	1116.20	2.98	2.11	7.66	8.96
Project File:		No. Lines: 38			Run Date: 9/26/2024								

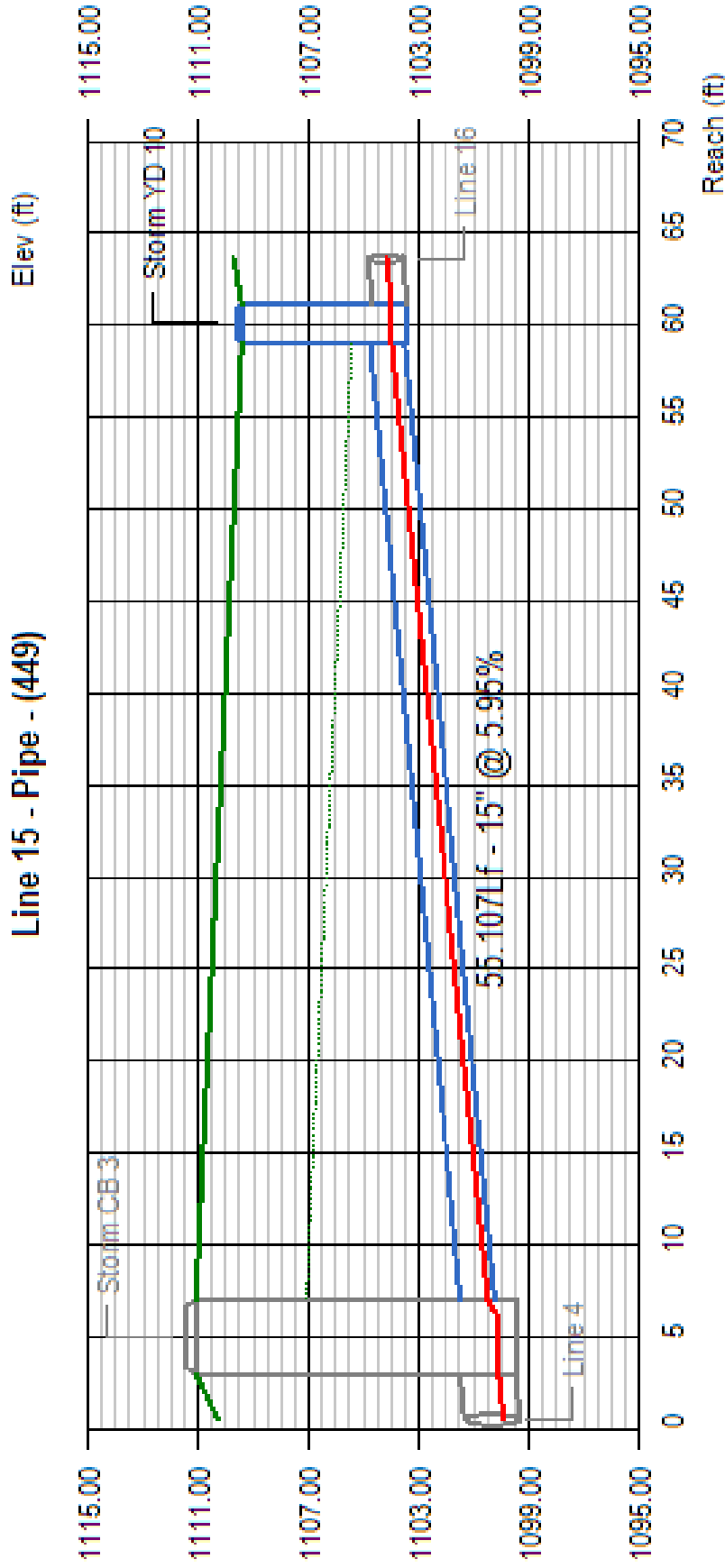
Line Profile (Line 14) - Pipe - (432)



Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
14	0.14	1116.10	1120.00	0.00	0.00	0.15	1116.20	1120.15	1120.15	3.16	1.79	8.86	8.93
Project File:										No. Lines: 38		Run Date: 9/26/2024	

Line Profile (Line 15) - Pipe - (449)

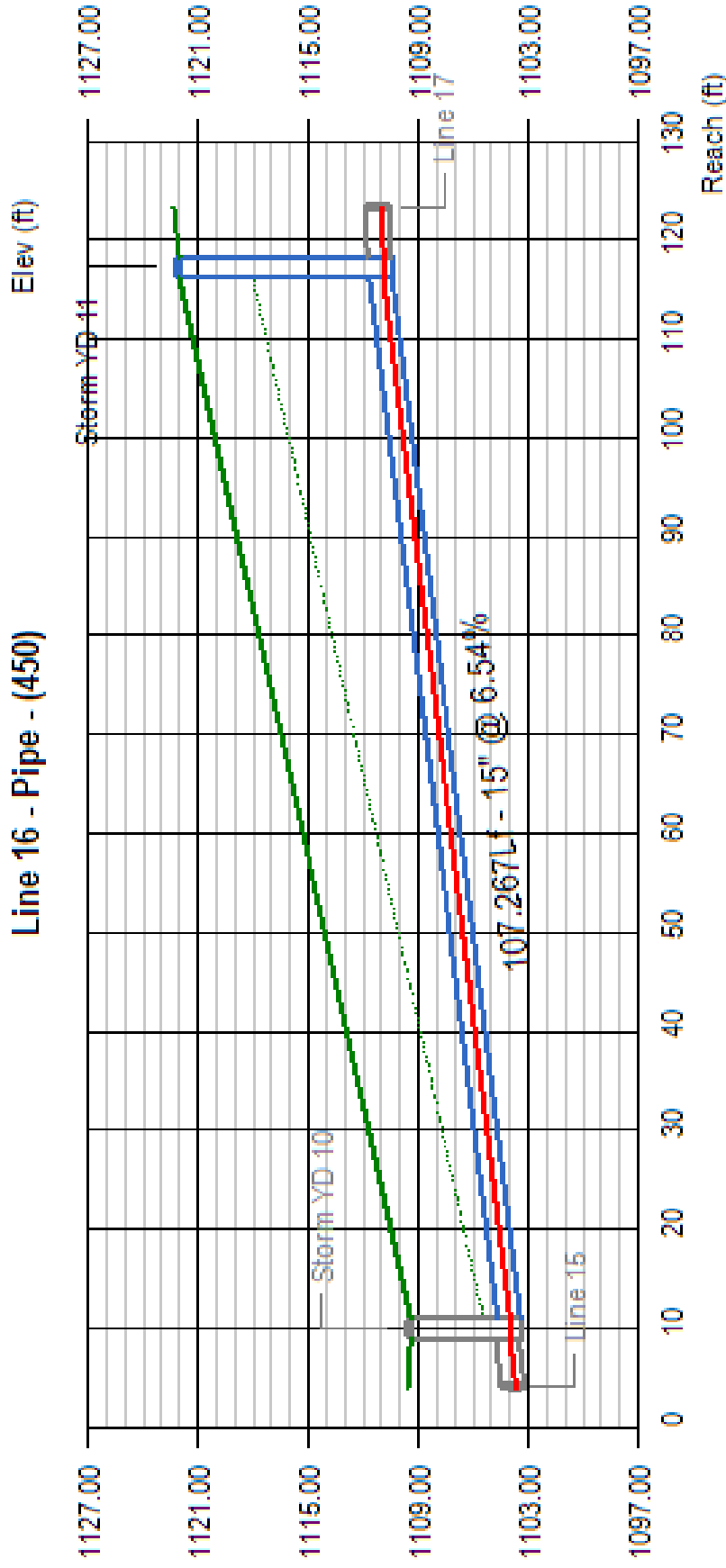
Line 15 - Pipe - (449)



Line #	Q (cfs)	Invert Elevation		Depth of Flow		Hydraulic Grade Line			Velocity		Cover		
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)	
15	1.45	1100.24	1103.52	0.00	0.00	1100.49	1104.00	1104.00	8.47	3.38	9.59	4.65	
Project File:		No. Lines: 38						Run Date: 9/26/2024					

Line Profile (Line 16) - Pipe - (450)

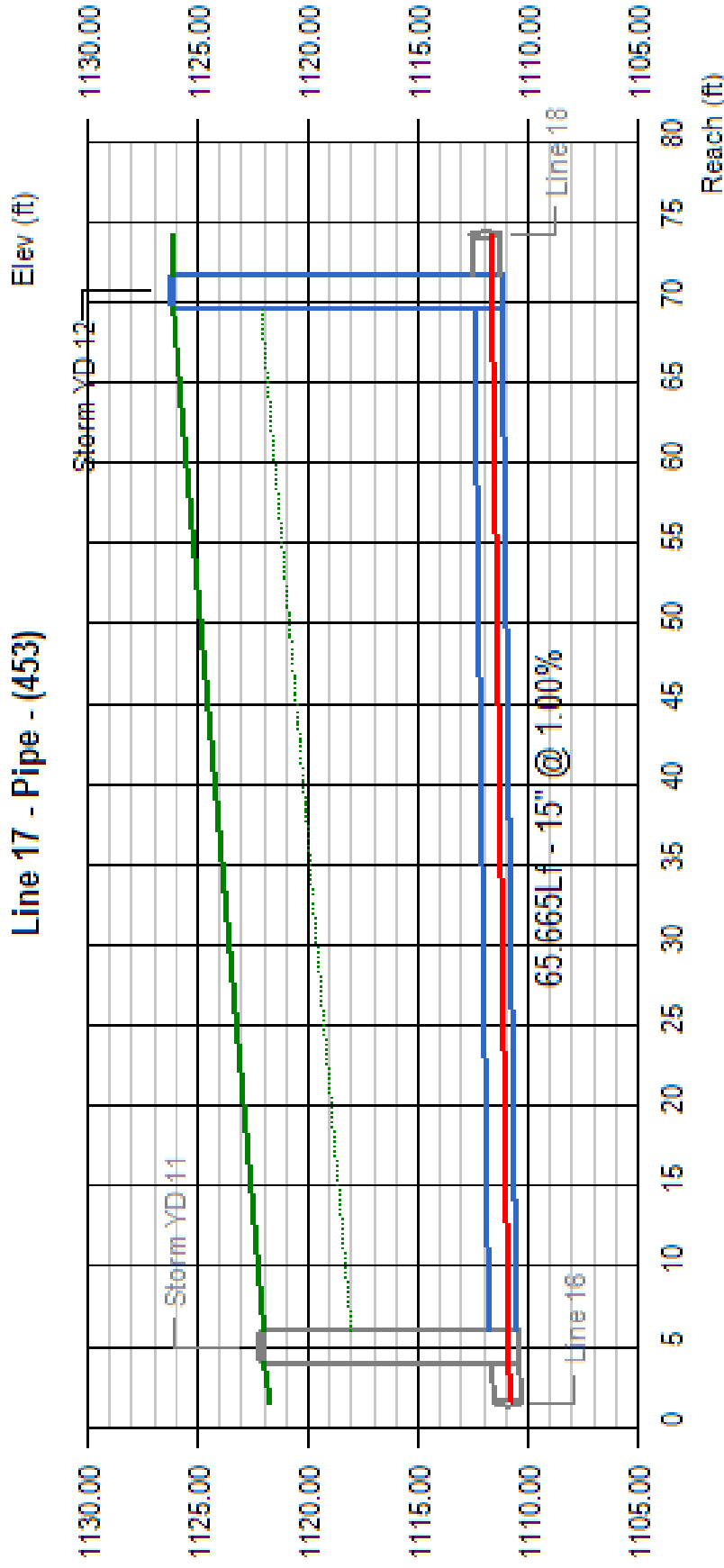
Line 16 - Pipe - (450)



Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Junct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
16	1.44	1103.42	1110.43	0.00	0.00	0.47	1104.00	1110.90	1110.90	2.60	3.37	4.75	10.34
Project File:										No. Lines: 38		Run Date: 9/26/2024	

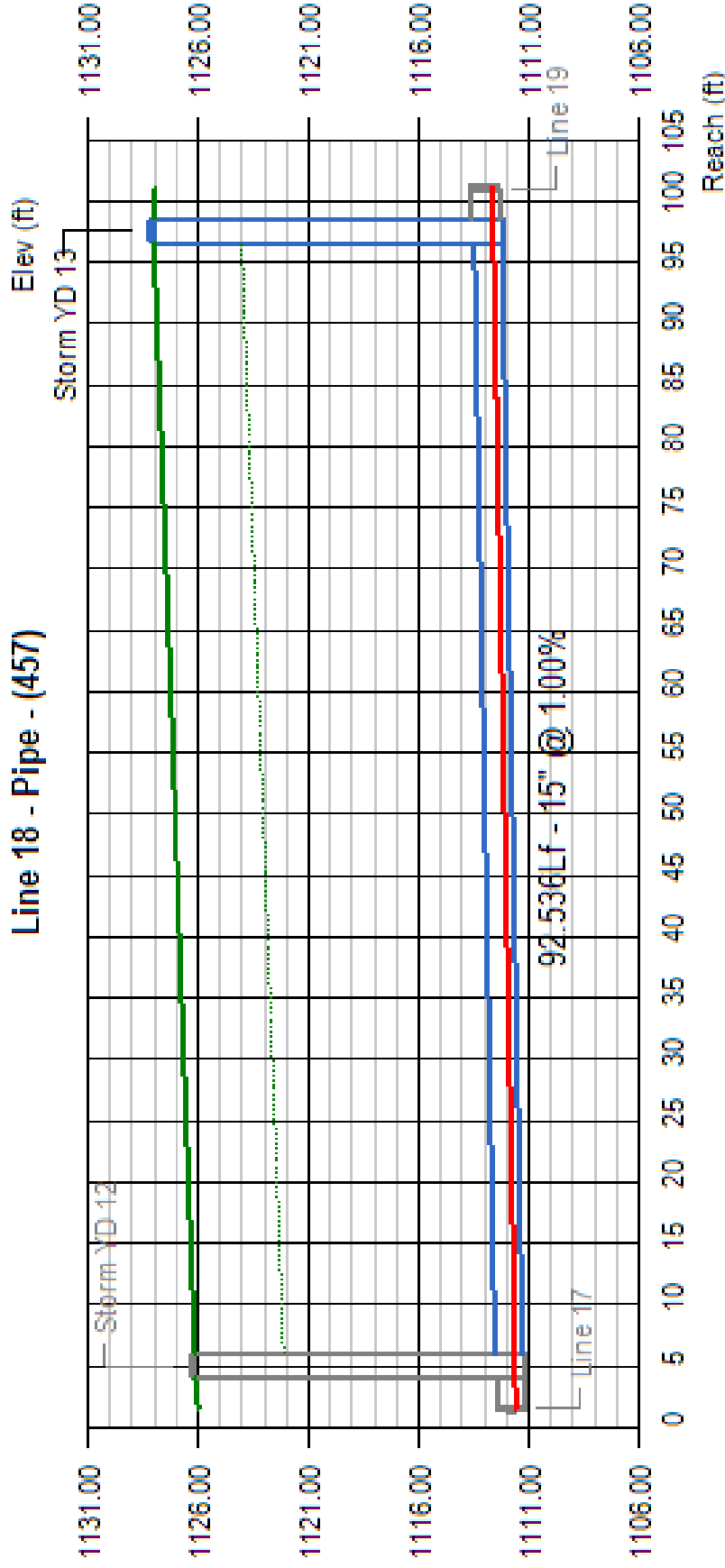
Line Profile (Line 17) - Pipe - (453)

Line 17 - Pipe - (453)



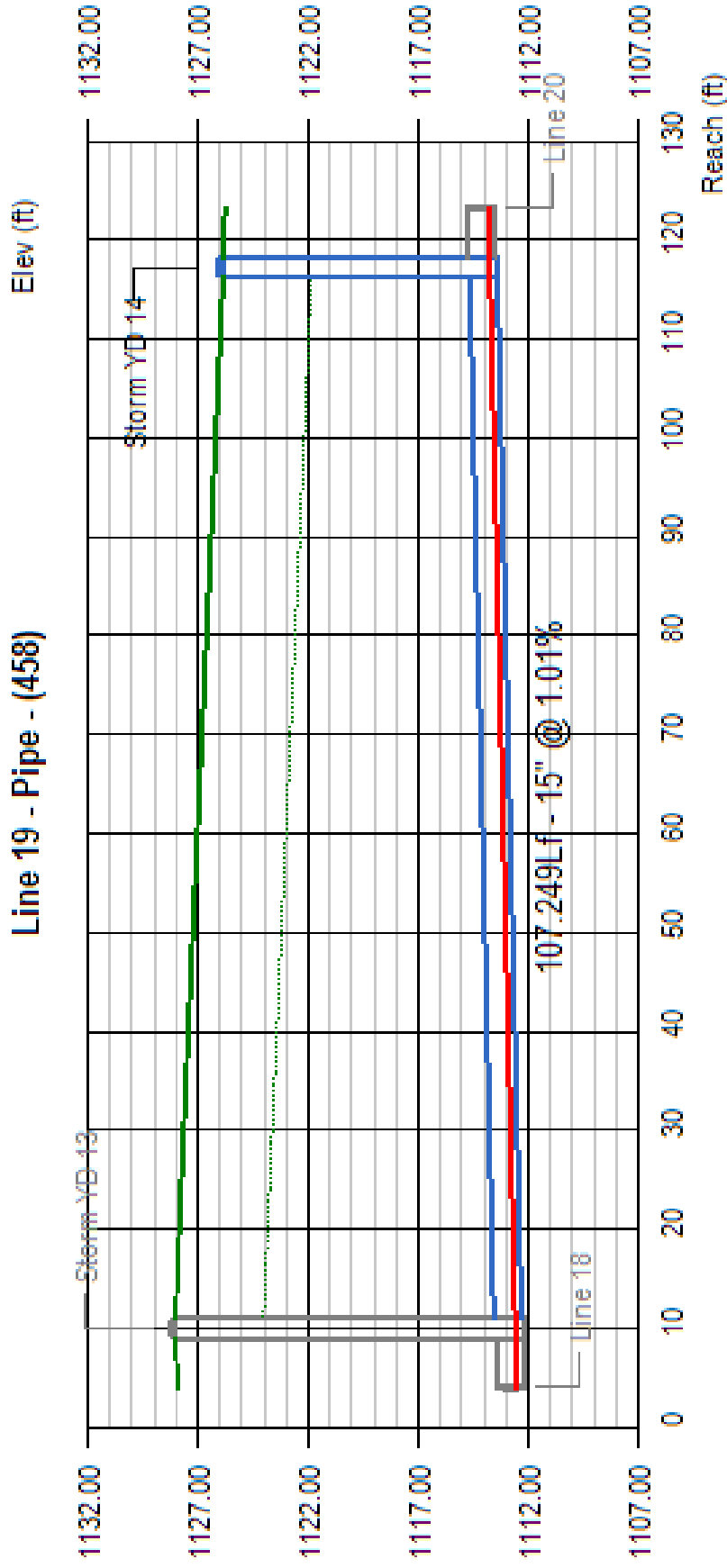
Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
17	1.23	1110.53	1111.19	0.00	0.00	0.44	1110.90	1111.63	1111.63	3.99	3.22	10.24	13.70
Project File:		No. Lines: 38		Run Date: 9/26/2024									

Line Profile (Line 18) - Pipe - (457)



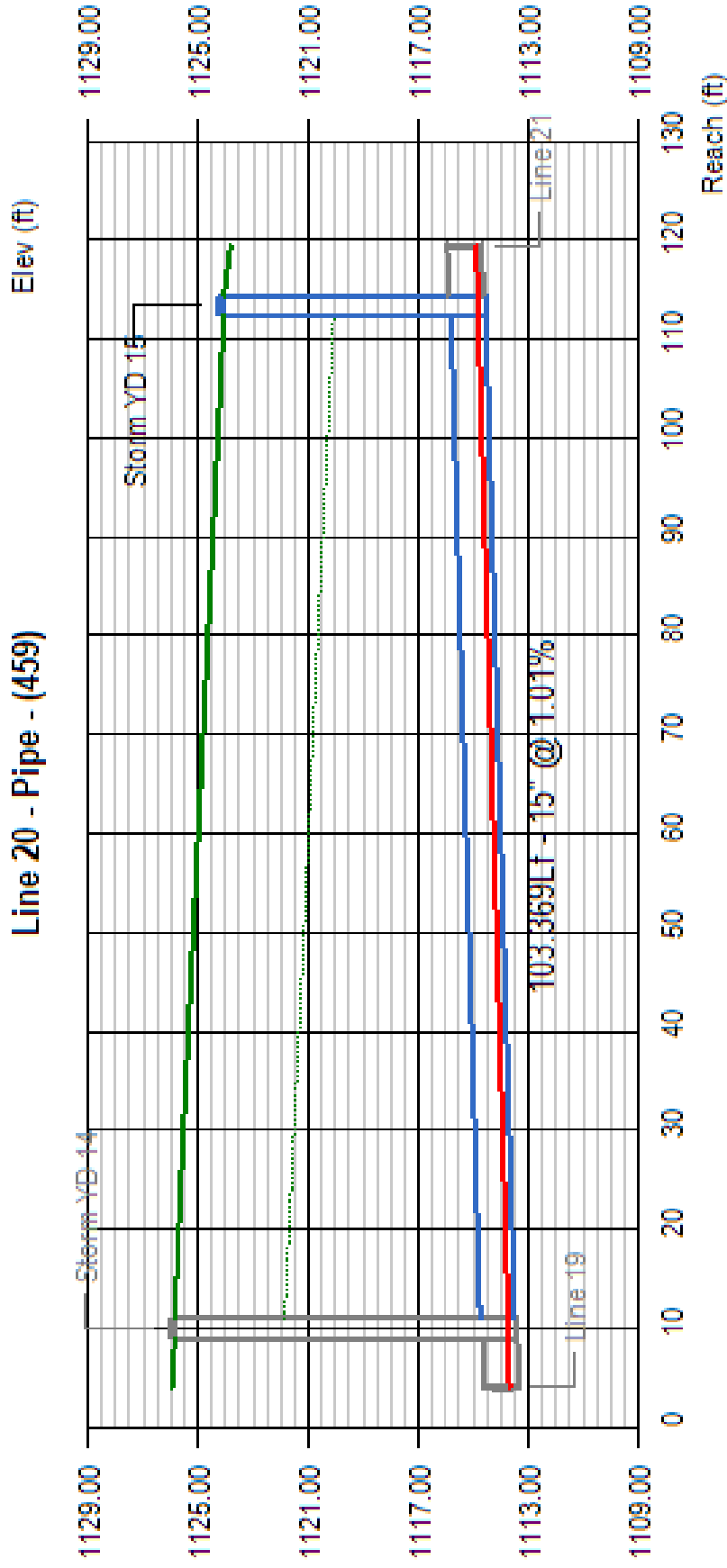
Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
18	0.98	1111.29	1112.22	0.00	0.00	0.39	1111.63	1112.61	1112.61	3.67	3.01	13.60	14.56
Project File:										No. Lines: 38		Run Date: 9/26/2024	

Line Profile (Line 19) - Pipe - (458)



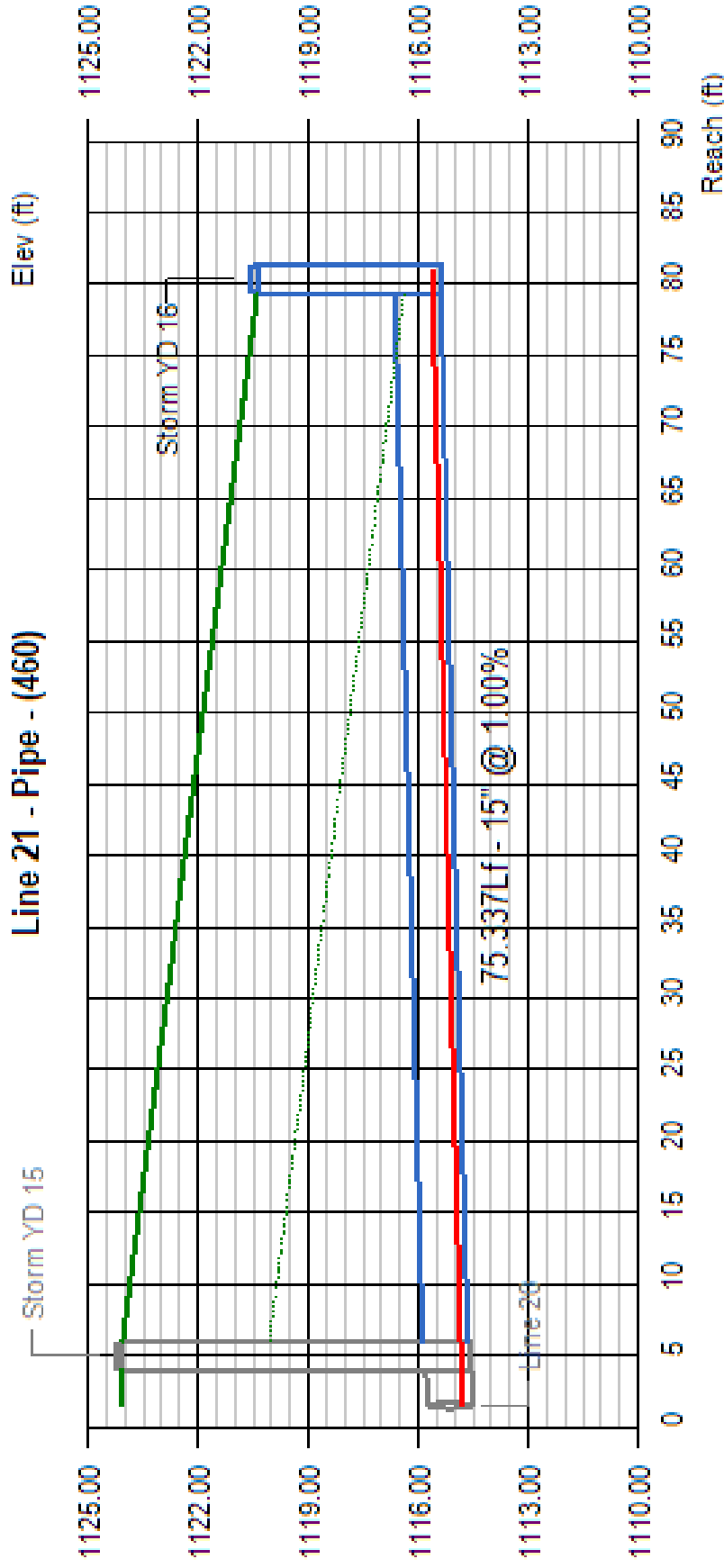
Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover		
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)	
19	0.74	1112.32	1113.40	0.00	0.00	0.34	1112.61	1113.74	1113.74	1113.74	3.47	2.79	14.46	11.21
Project File:								No. Lines: 38		Run Date: 9/26/2024				

Line Profile (Line 20) - Pipe - (459)



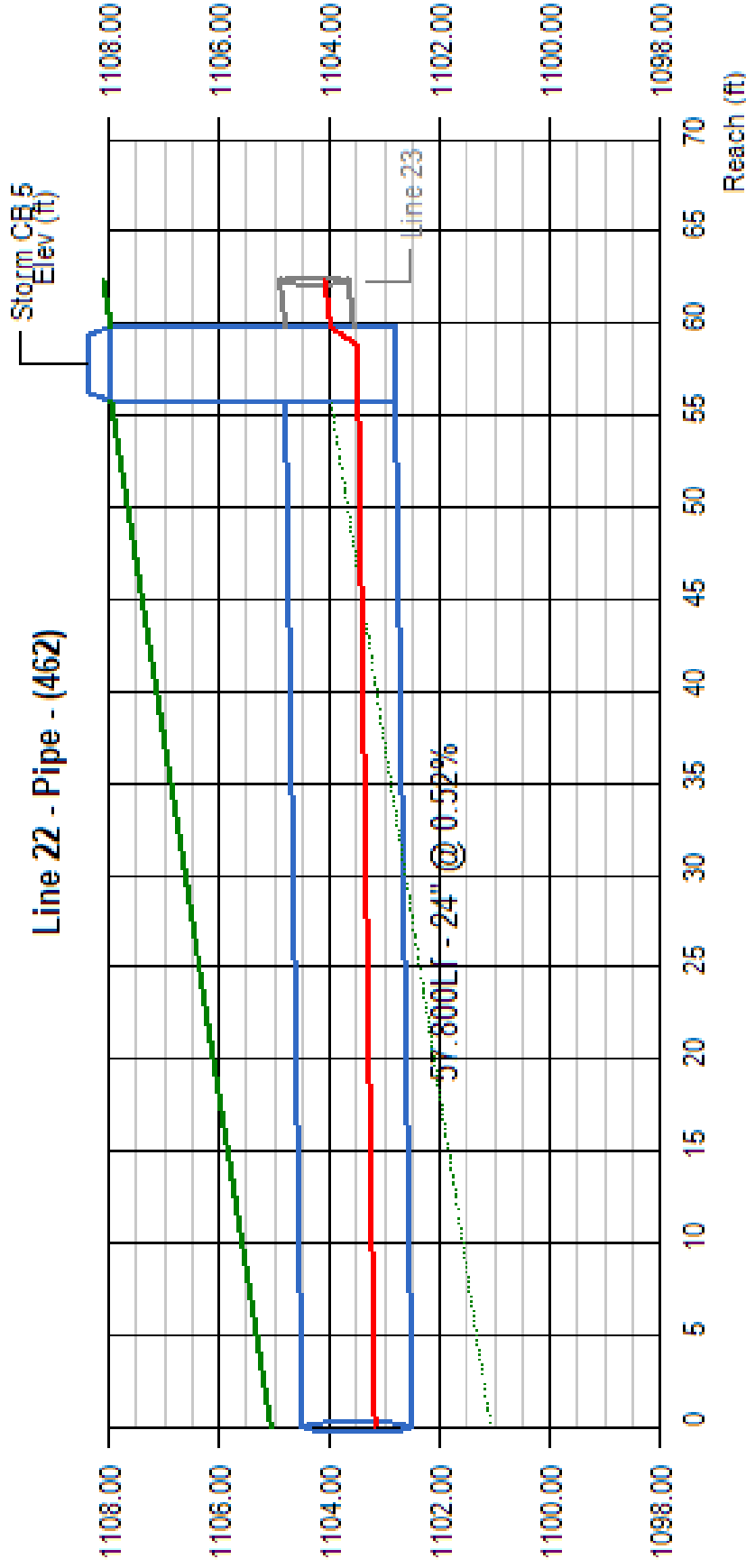
Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover			
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)		
20	0.52	1113.50	1114.54	0.00	0.00	0.28	1113.74	1114.82	1114.82	3.18	2.52	11.11	8.27		
Project File:												No. Lines: 38		Run Date: 9/26/2024	

Line Profile (Line 21) - Pipe - (460)



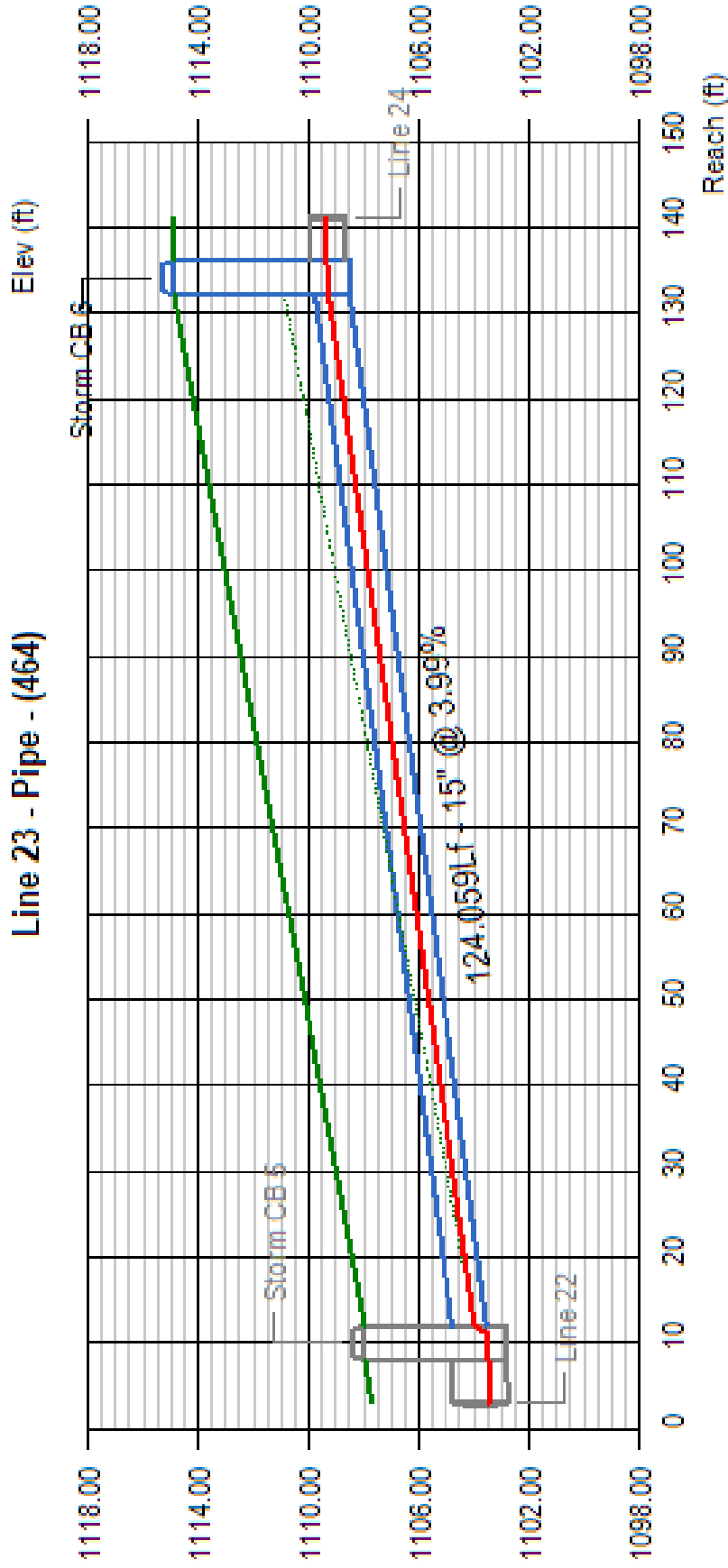
Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
21	0.36	1114.64	1115.39	0.00	0.00	0.23	1114.83	1115.62	1115.62	2.98	2.28	8.17	3.75
Project File:										No. Lines: 38		Run Date: 9/26/2024	

Line Profile (Line 22) - Pipe - (462)



Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
22	3.68	1102.50	1102.80	0.00	0.00	0.67	1103.17	1103.47	1103.47	3.98	3.98	0.56	3.16
Project File:										No. Lines: 38		Run Date: 9/26/2024	

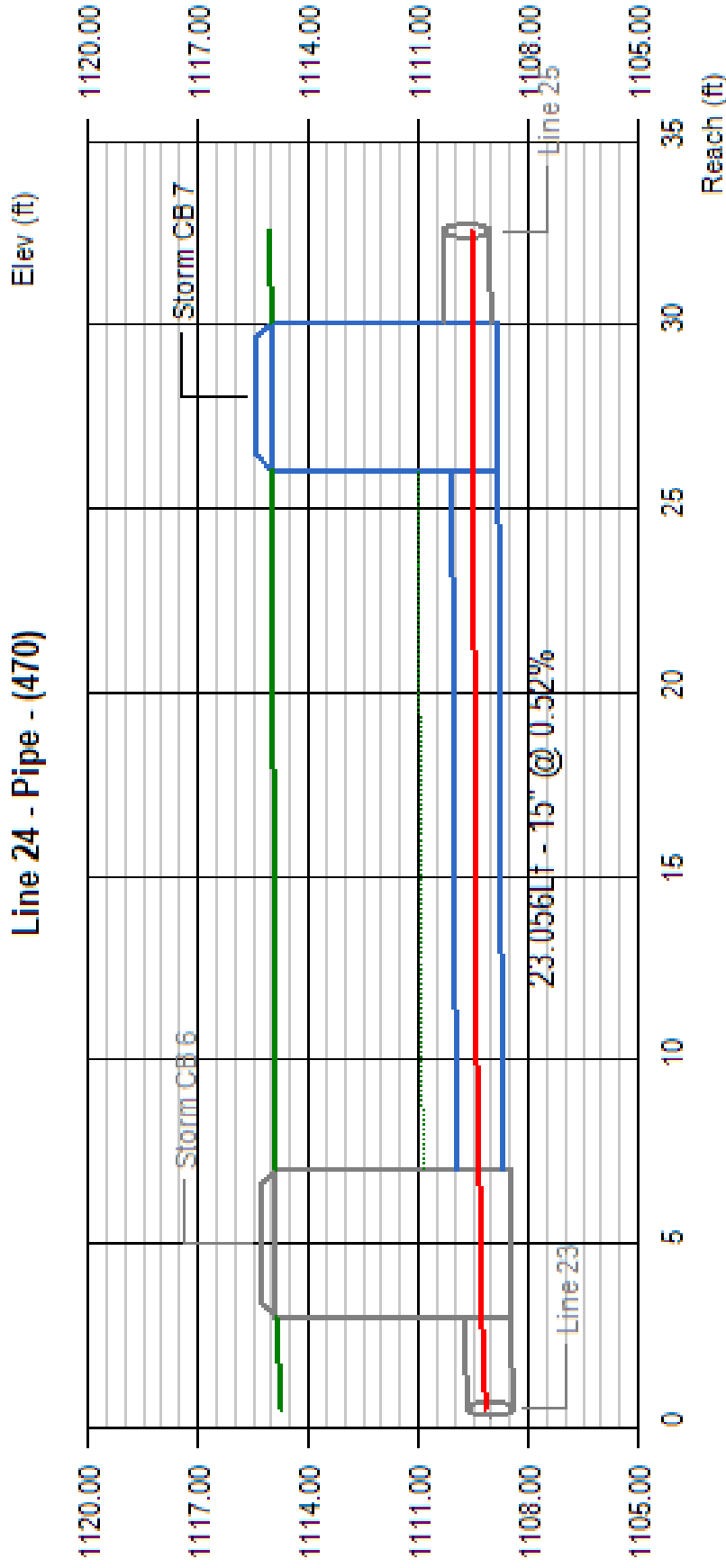
Line Profile (Line 23) - Pipe - (464)



Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover		
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)	
23	3.57	1103.55	1108.50	0.00	0.00	0.76	1103.98	1109.26	1109.26	1109.26	9.52	4.56	3.16	5.13
Project File:										No. Lines: 38		Run Date: 9/26/2024		

Line Profile (Line 24) - Pipe - (470)

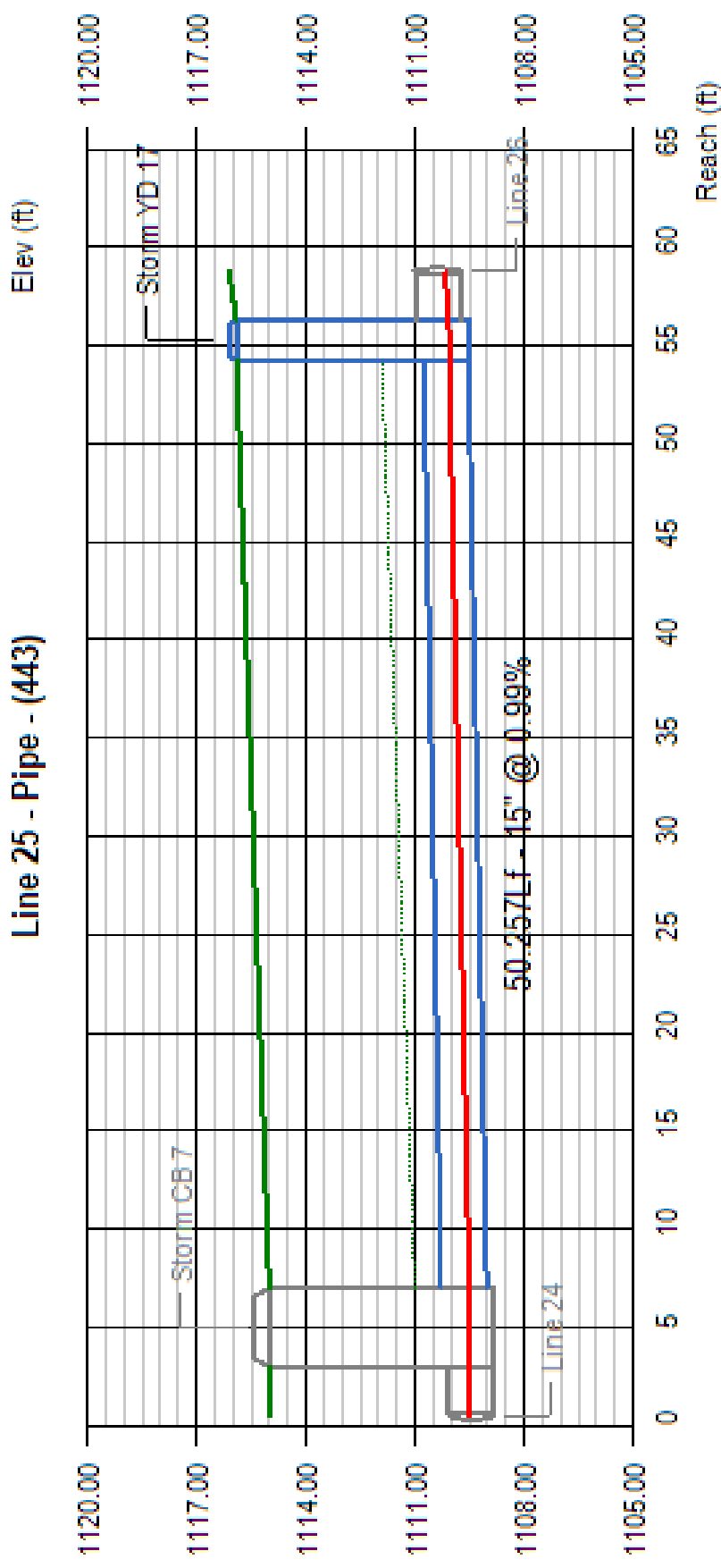
Line 24 - Pipe - (470)



Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
24	2.86	1108.70	1108.82	0.00	0.00	0.68	1109.37	1109.50	1109.50	4.24	4.20	4.93	4.94
Project File:										No. Lines: 38		Run Date: 9/26/2024	

Line Profile (Line 25) - Pipe - (443)

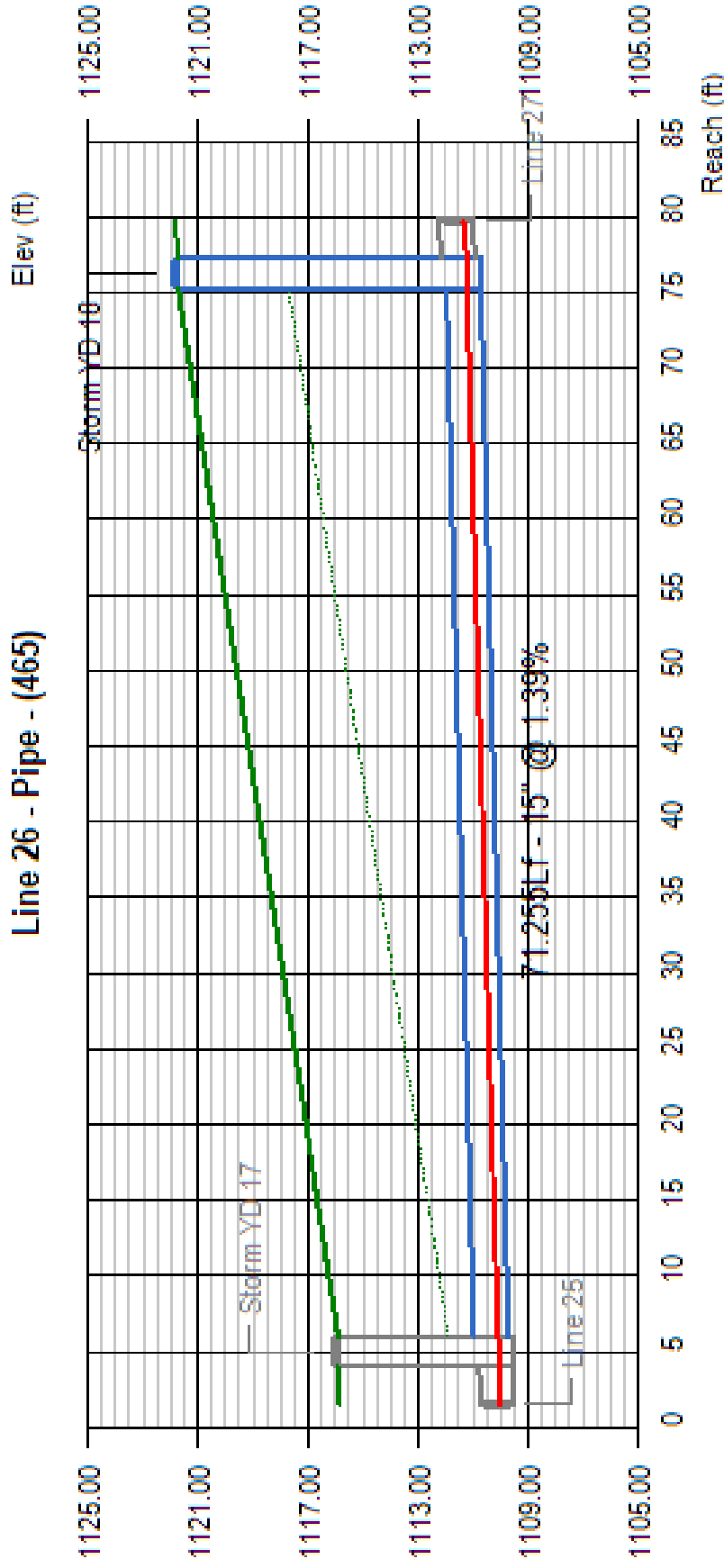
Line 25 - Pipe - (443)



Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
25	1.78	1109.02	1109.52	0.00	0.00	0.53	1109.50	1110.05	1110.05	4.12	3.60	4.74	5.13
Project File:										No. Lines: 38		Run Date: 9/26/2024	

Line Profile (Line 26) - Pipe - (465)

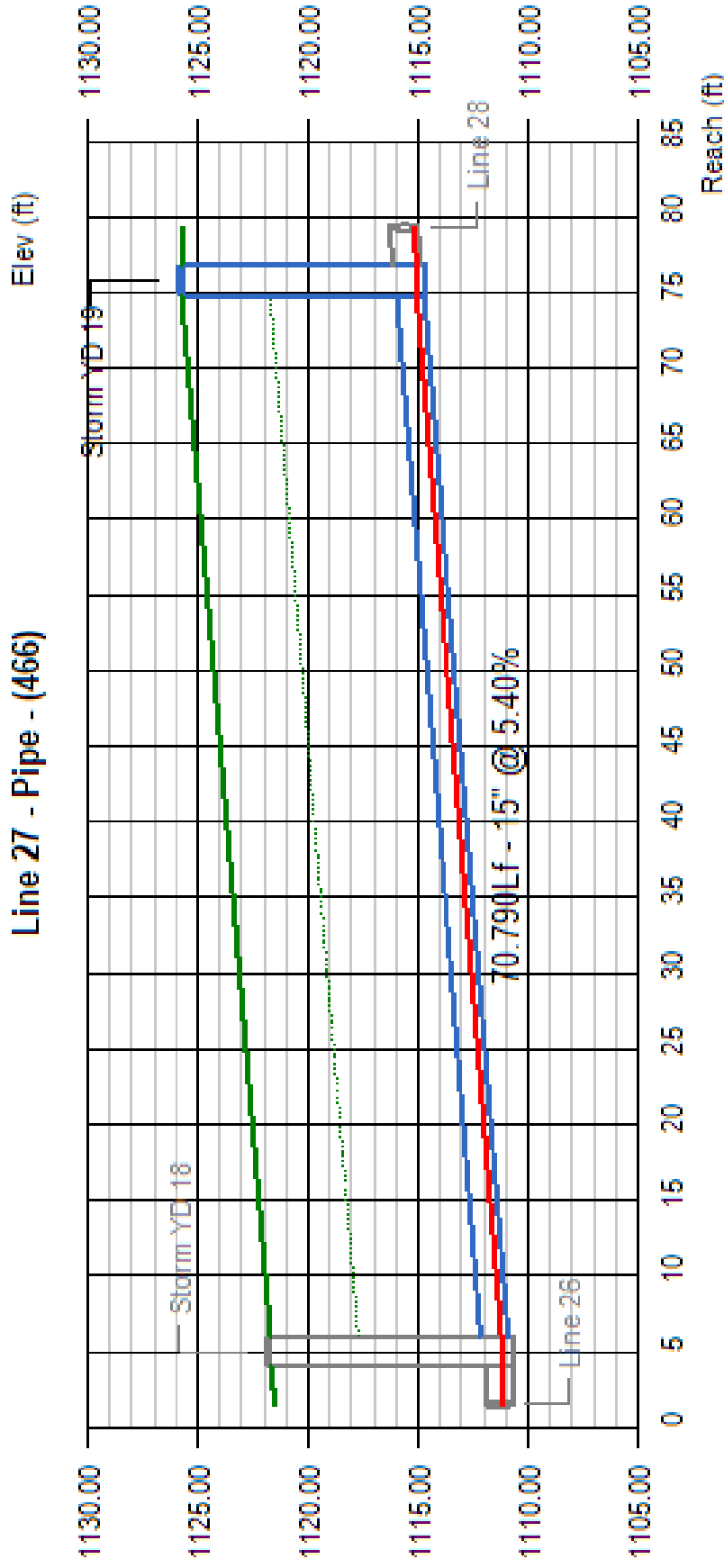
Line 26 - Pipe - (465)



Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover		
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)	
26	1.65	1109.72	1110.71	0.00	0.00	0.51	1110.10	1111.22	1111.22	1111.22	5.24	3.51	4.93	9.75
Project File:		No. Lines: 38			Run Date:		9/26/2024							

Line Profile (Line 27) - Pipe - (466)

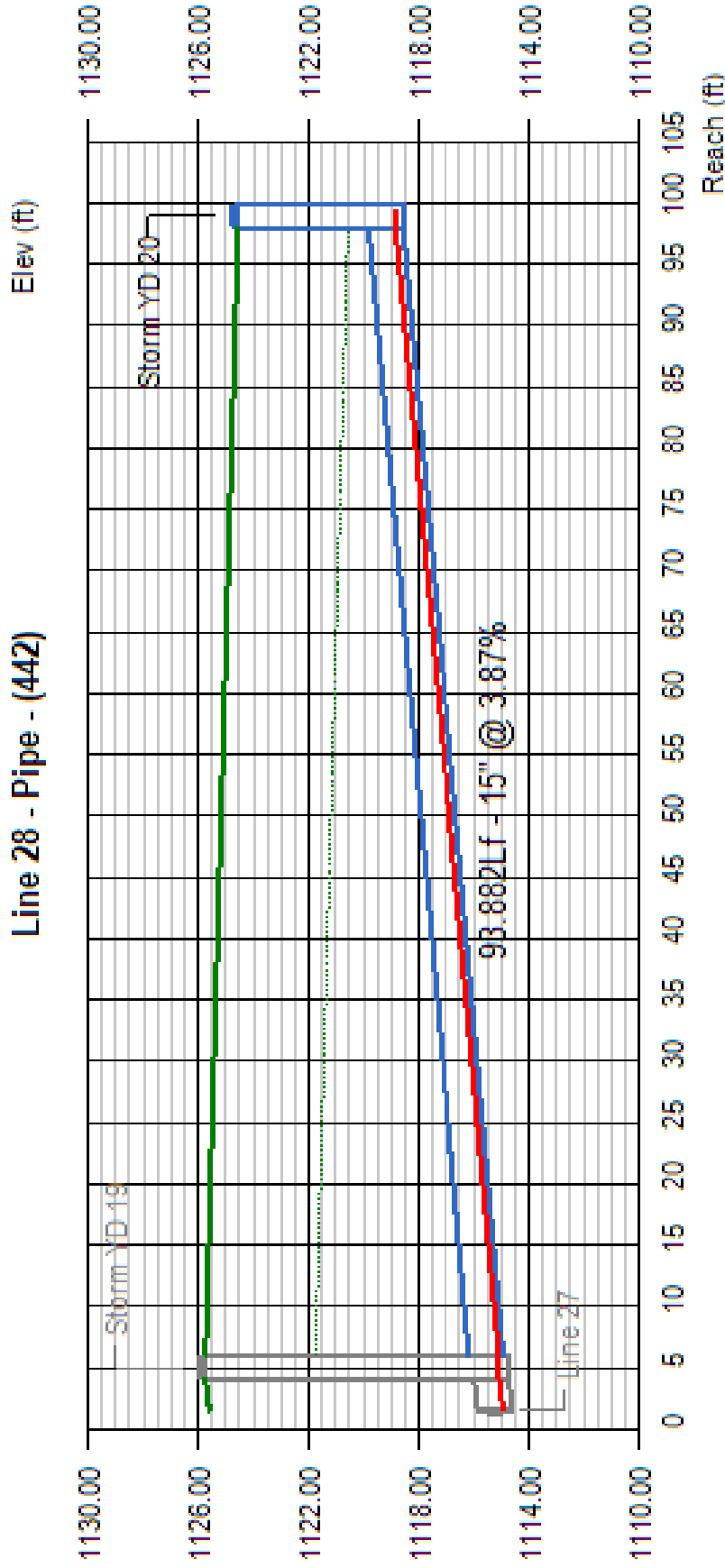
Line 27 - Pipe - (466)



Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover		
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)	
27	0.78	1110.91	1114.73	0.00	0.00	0.35	1111.22	1115.08	1115.08	1115.08	3.31	2.83	9.55	9.75
Project File:		No. Lines: 38			Run Date: 9/26/2024									

Line Profile (Line 28) - Pipe - (442)

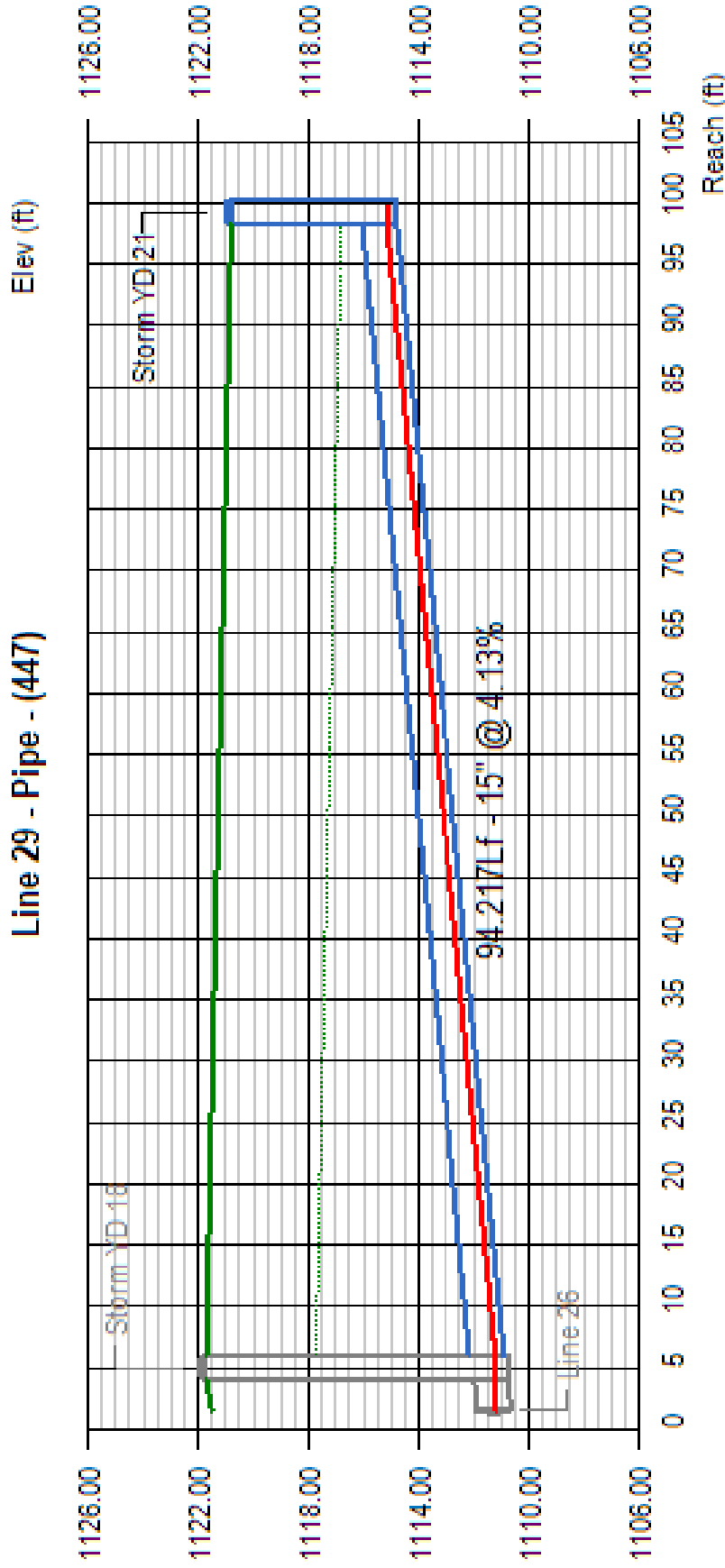
Line 28 - Pipe - (442)



Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
28	0.53	1114.93	1118.56	0.00	0.00	0.28	1115.10	1118.84	1118.84	5.38	2.53	9.55	4.75
Project File:		No. Lines: 38			Run Date: 9/26/2024								

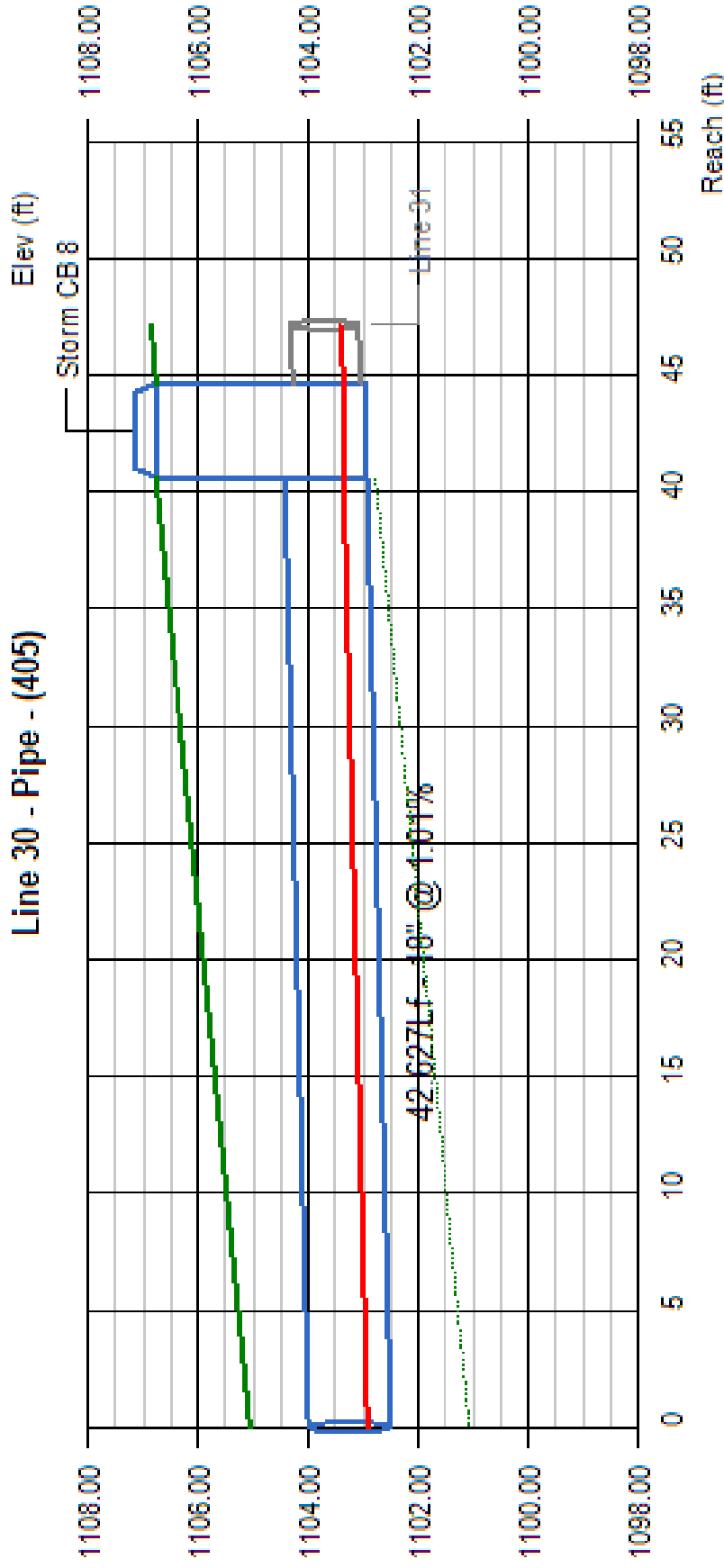
Line Profile (Line 29) - Pipe - (447)

Line 29 - Pipe - (447)



Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Jct (ft)	Up (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
29	0.86	1110.91	1114.80	0.00	0.00	0.36	1111.22	1115.16	1115.16	3.64	2.90	9.55	4.75
Project File:										No. Lines: 38		Run Date: 9/26/2024	

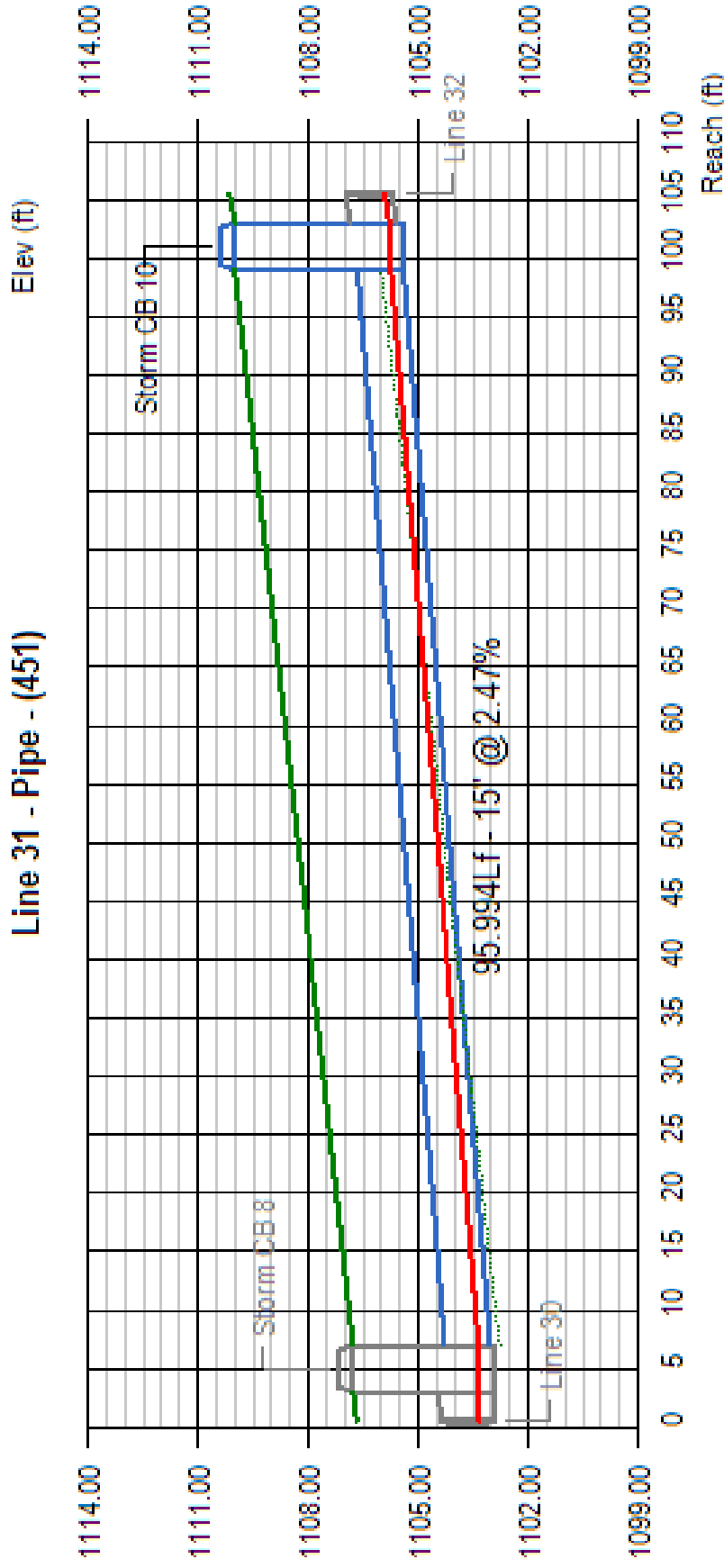
Line Profile (Line 30) - Pipe - (405)



Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
30	1.26	1102.50	1102.93	0.00	0.00	0.42	1102.92	1103.35	1103.35	3.10	3.11	1.06	2.34
Project File:										No. Lines: 38		Run Date: 9/26/2024	

Line Profile (Line 31) - Pipe - (451)

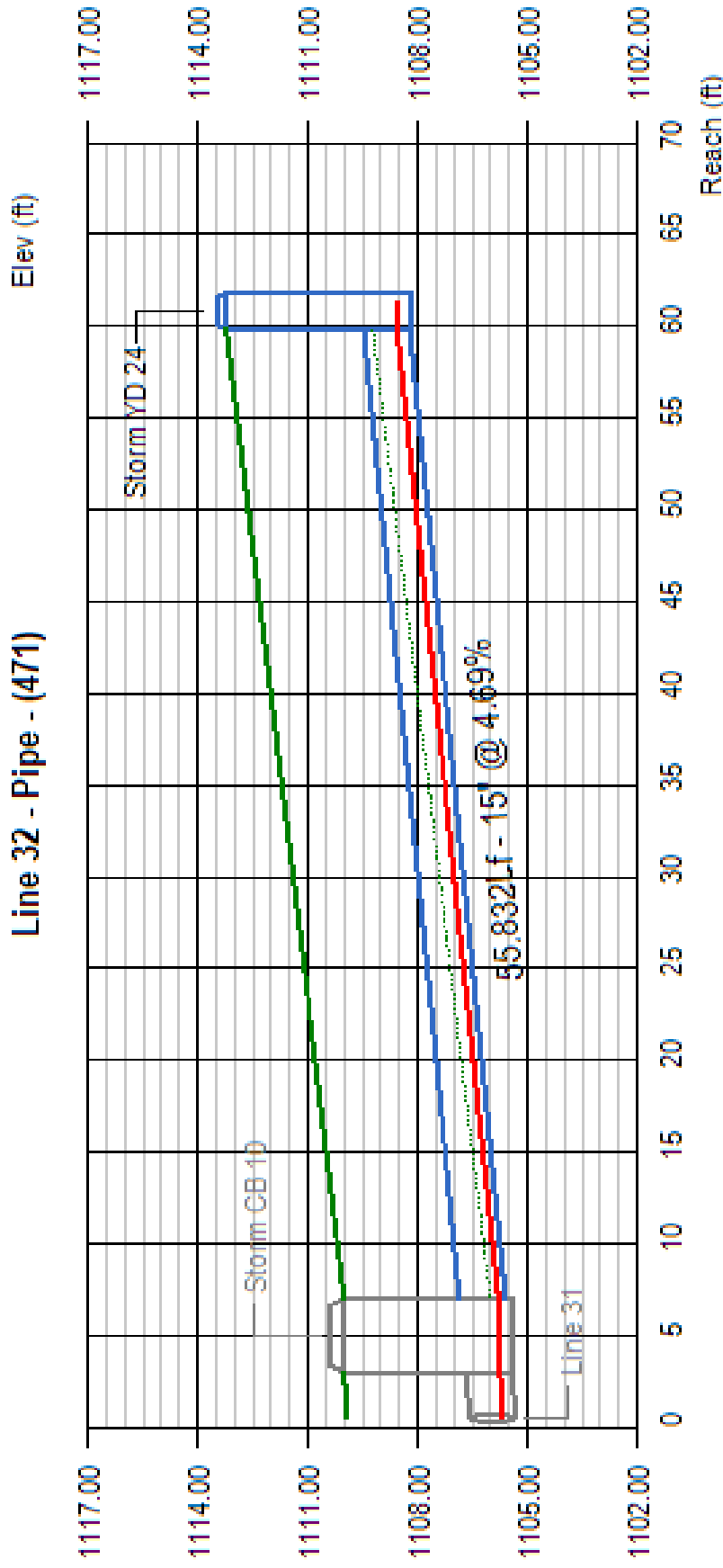
Line 31 - Pipe - (451)



Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover		
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)	
31	0.77	1103.03	1105.40	0.00	0.00	0.34	1103.35	1105.74	1105.74	1105.74	3.11	2.81	2.49	3.35
Project File:										No. Lines: 38		Run Date: 9/26/2024		

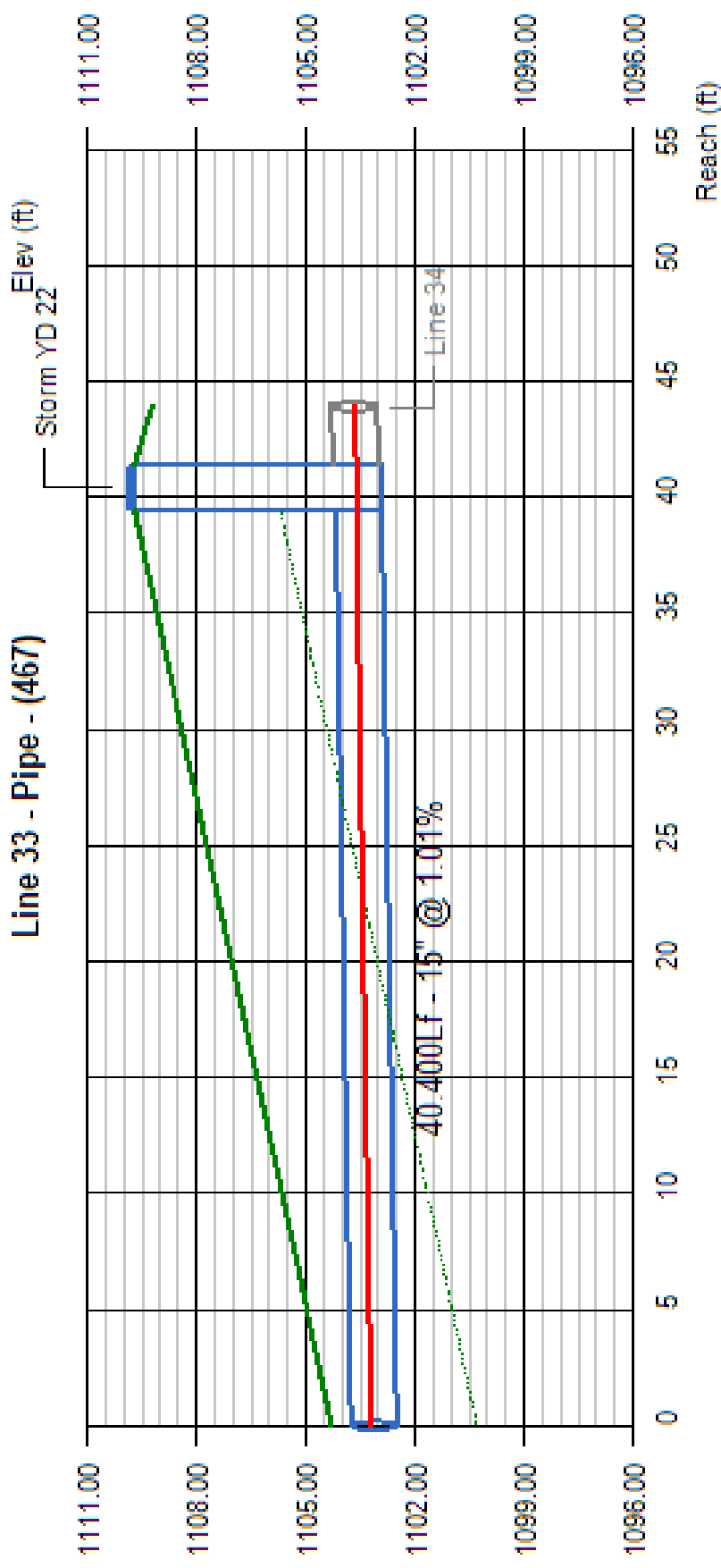
Line Profile (Line 32) - Pipe - (471)

Line 32 - Pipe - (471)



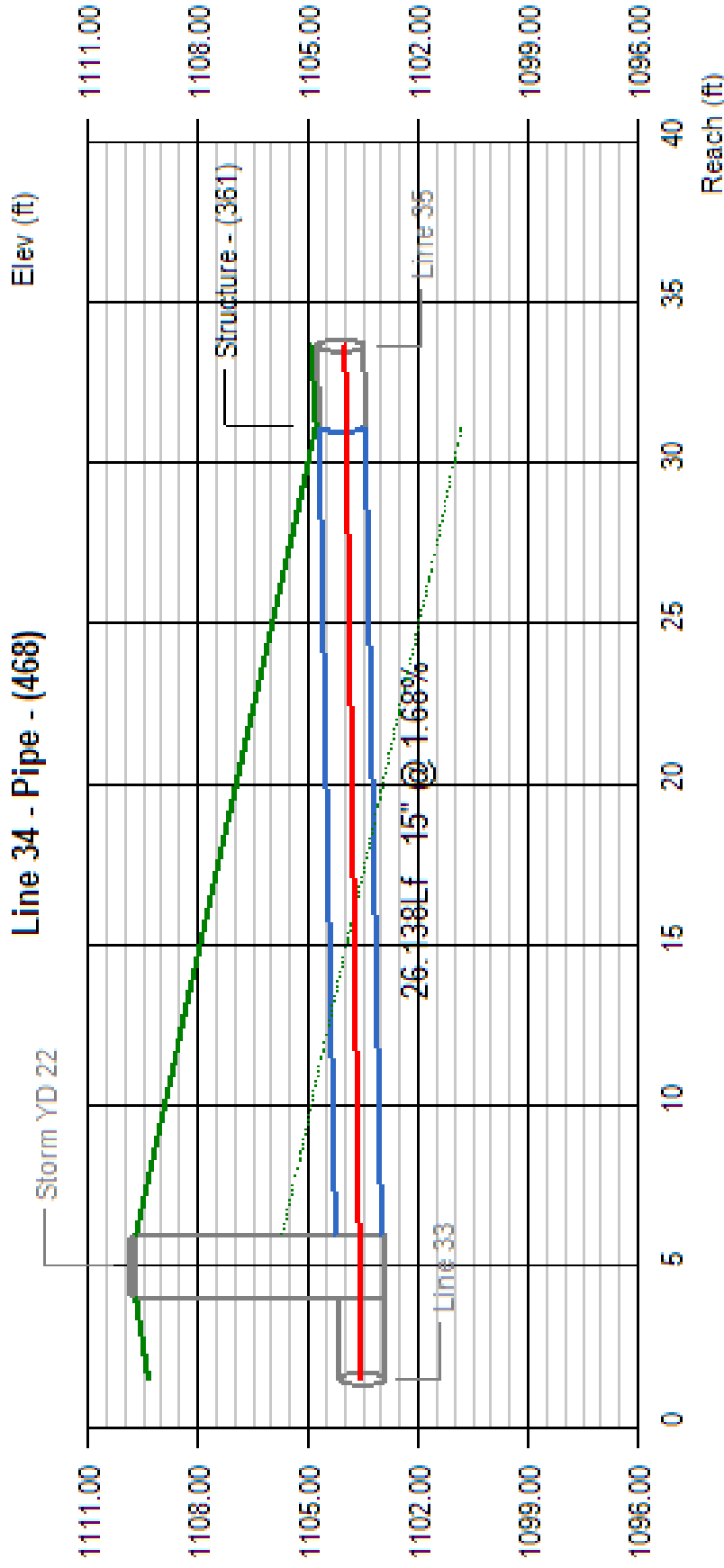
Line #	Q (cfs)	Invert Elevation		Depth of Flow		Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
32	0.76	1105.60	1108.22	0.00	0.34	1105.79	1108.56	1108.56	6.44	2.80	3.15	3.75
Project File:		No. Lines: 38		Run Date:		9/26/2024						

Line Profile (Line 33) - Pipe - (467)



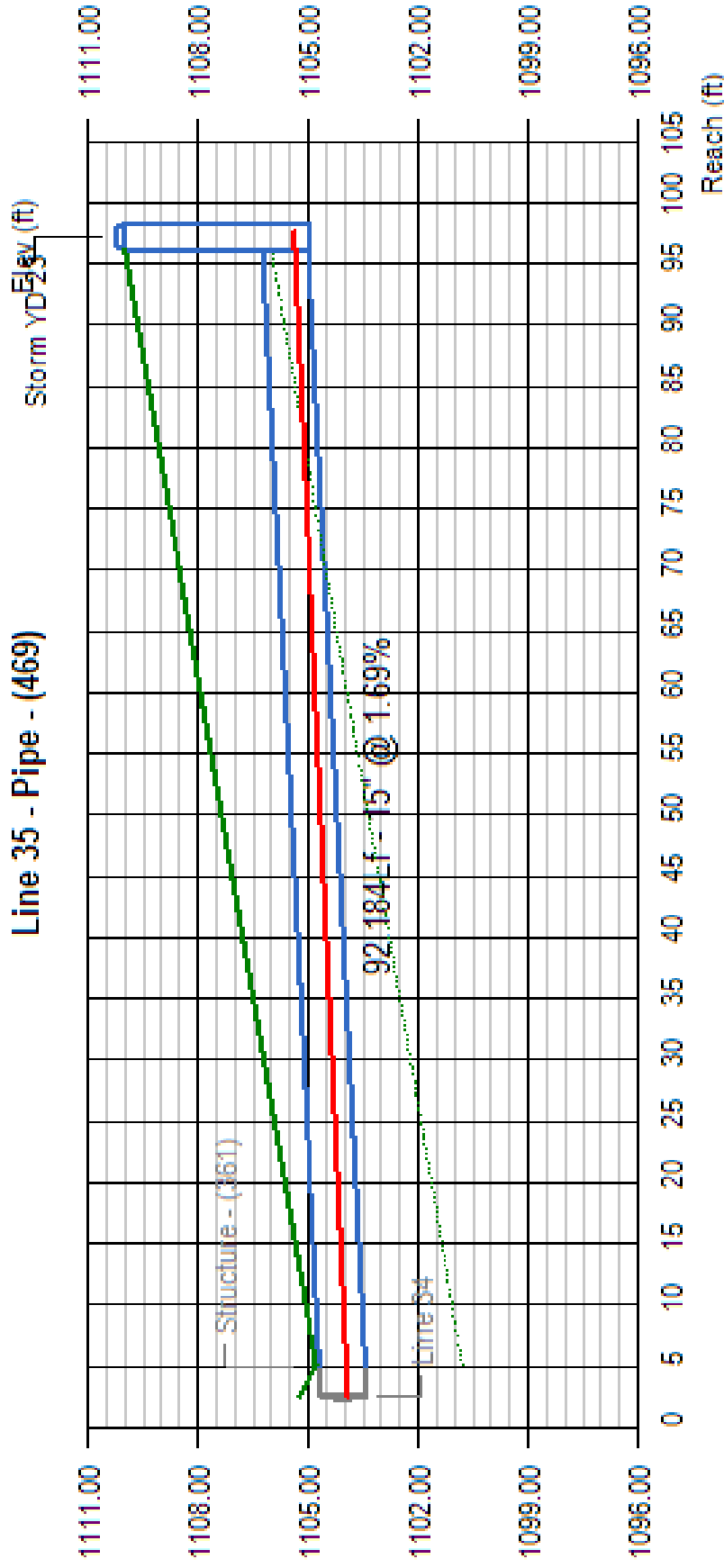
Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Junct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
33	3.01	1102.50	1102.91	0.00	0.00	0.70	1103.20	1103.61	1103.61	4.26	4.28	0.53	5.54
Project File:		No. Lines: 38							Run Date: 9/26/2024				

Line Profile (Line 34) - Pipe - (468)



Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
34	1.68	1103.00	1103.44	0.00	0.00	0.51	1103.61	1103.95	1103.95	2.84	3.53	5.45	0.09
Project File:										No. Lines: 38		Run Date: 9/26/2024	

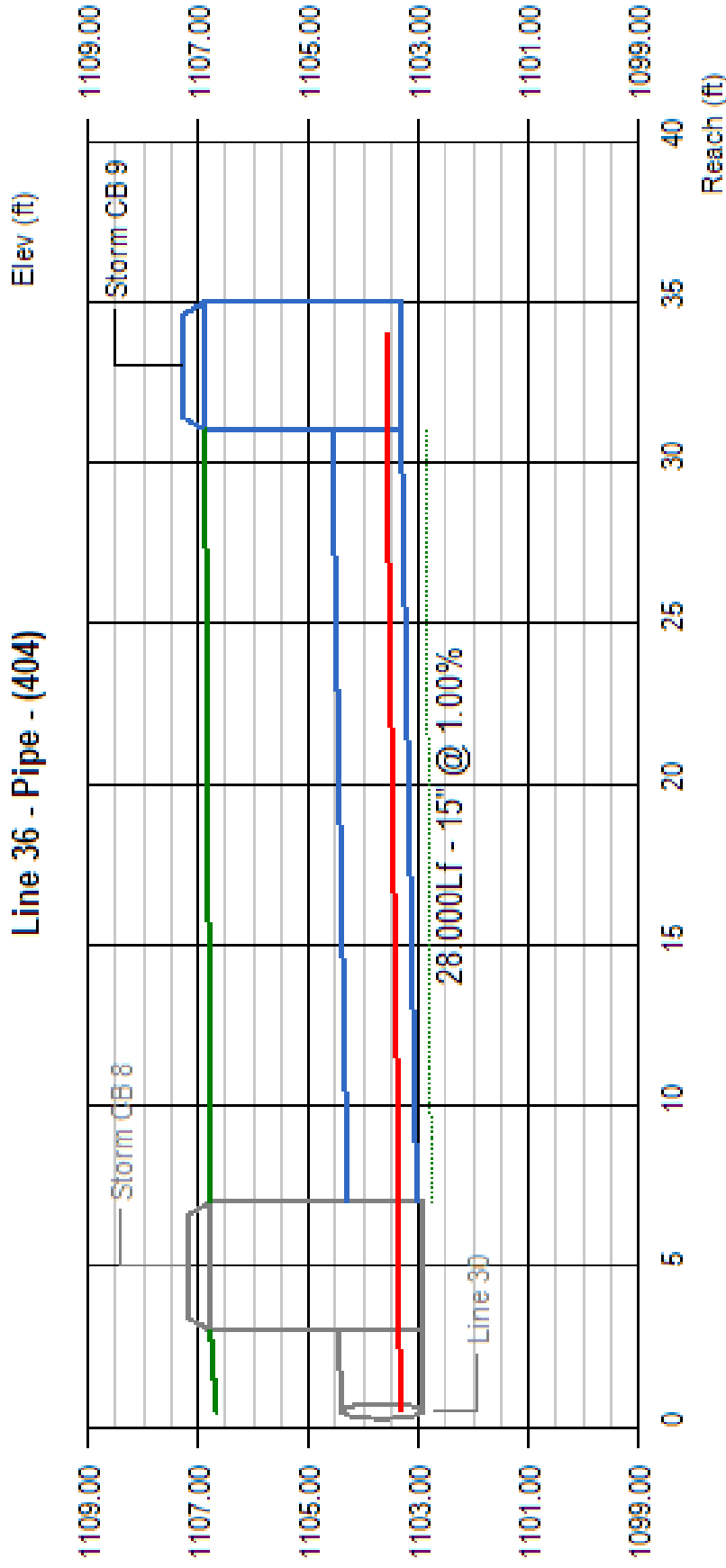
Line Profile (Line 35) - Pipe - (469)



Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Junct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
35	0.90	1103.44	1105.00	0.00	0.00	0.37	1103.95	1105.37	1105.37	1.89	2.94	0.09	3.75
Project File:										No. Lines: 38		Run Date: 9/26/2024	

Line Profile (Line 36) - Pipe - (404)

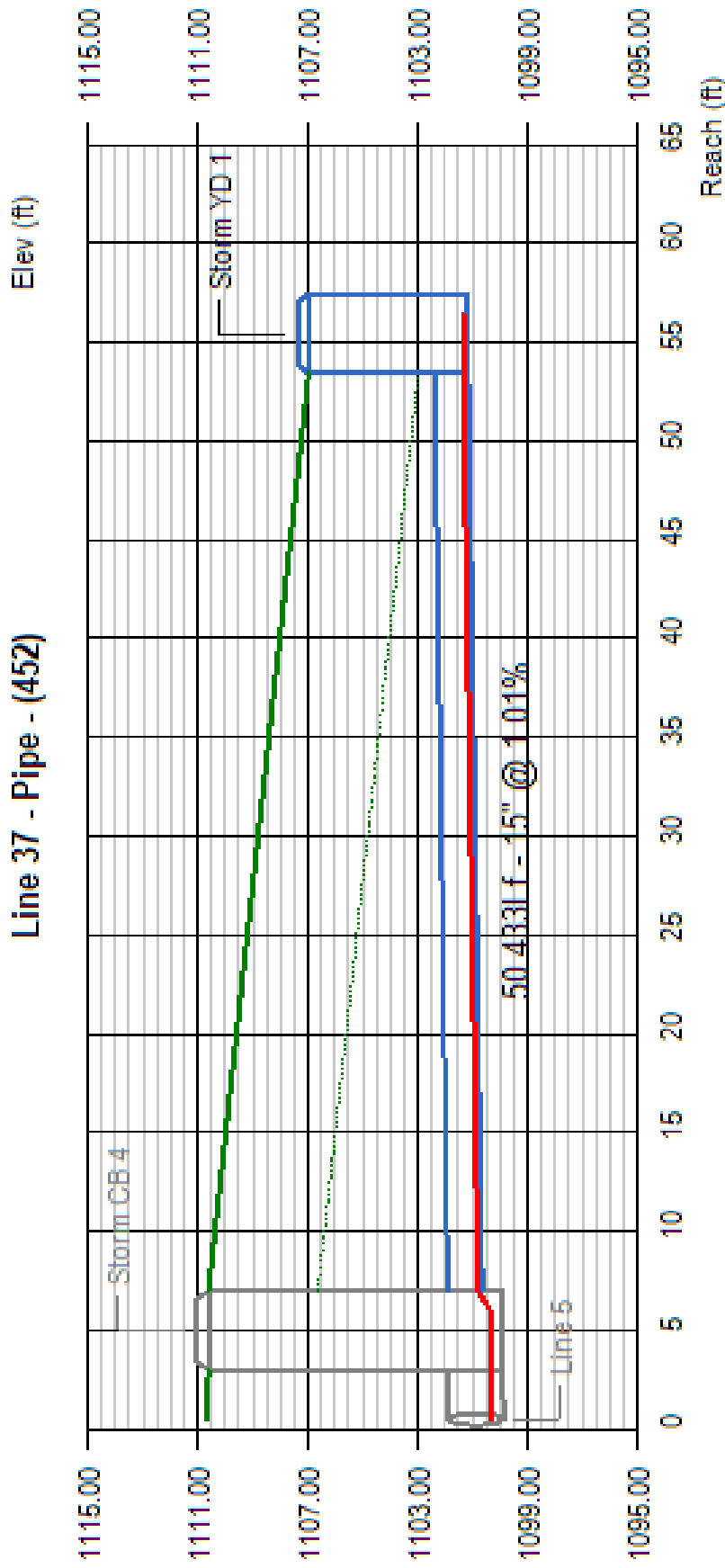
Line 36 - Pipe - (404)



Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
36	0.48	1103.03	1103.31	0.00	0.00	0.27	1103.35	1103.58	1103.58	1.96	2.47	2.49	2.31
Project File:										No. Lines: 38		Run Date: 9/26/2024	

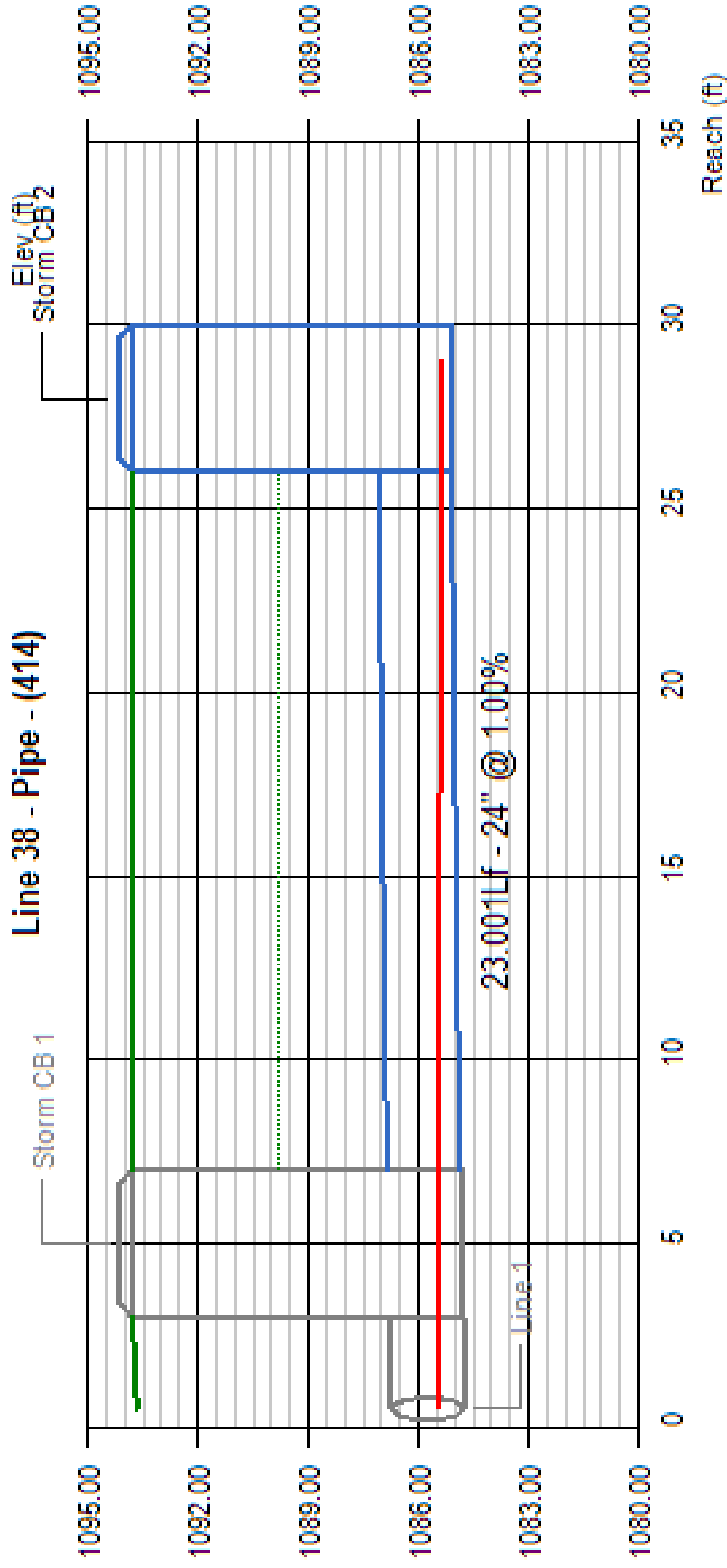
Line Profile (Line 37) - Pipe - (452)

Line 37 - Pipe - (452)



Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover		
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)	
37	0.21	1100.65	1101.16	0.00	0.00	0.18	1100.80	1101.34	1101.34	1101.34	2.57	1.99	8.71	4.57
Project File:										No. Lines: 38		Run Date: 9/26/2024		

Line Profile (Line 38) - Pipe - (414)



Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
38	0.64	1084.86	1085.09	0.00	0.00	0.28	1085.48	1085.37	1085.37	0.77	2.47	6.93	6.70
Project File:		No. Lines: 38			Run Date: 9/26/2024								

**Stream Crossing #1 Drianage Area
Rational Equation Runoff Coefficients**

Cover Description	HSG	C	Area (sf)	Area (ac)
Impervious		0.87	93,033	2.1
Residential 1 ac Lot		0.35	2,957,841	67.9
Pature		0.50	0	0.0
Woods		0.20	1,126,568	25.9
Open		0.28	0	0.0
Cultivated Land		0.31	5,979,112	137.3
Composite CN:		0.31	10,156,553	233.2

**Stream Crossing #2 Drianage Area
Rational Equation Runoff Coefficients**

Cover Description	Hydrologic Condition	HSG	C	Area (sf)	Area (ac)
Impervious			0.87	0	0.0
Residential 1 ac Lot			0.35	193,893	4.5
Pature			0.50	0	0.0
Woods			0.20	423,396	9.7
Open			0.28	46,315	1.1
Cultivated Land			0.31	0	0.0
Composite CN:		0.25	663,604	15.2	

**Stream Crossing #3 Drianage Area
Rational Equation Runoff Coefficients**

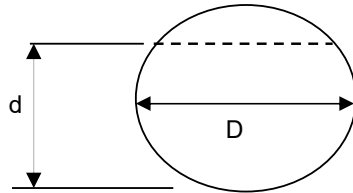
Cover Description	Hydrologic Condition	HSG	C	Area (sf)	Area (ac)
Impervious			0.87	21,641	0.5
Residential 1 ac Lot			0.35	153,786	3.5
Pature			0.50	0	0.0
Woods			0.20	659,911	15.1
Open			0.28	86,983	2.0
Cultivated Land			0.31	0	0.0
Composite CN:		0.25	922,321	21.2	

MANNING'S EQUATION FOR PIPE FLOW

Project: Newcastle - Crossing #1 Location: Peters Township, Washington County
 By: RAM Date: 10/25/2024
 Chk. By: Date:

INPUT

D= 72 inches
 d= 72 inches
 n= 0.012 mannings coeff
 S= 0.0203 slope in/in



Mannings Formula

$$Q = (1.486/n) A R_h^{2/3} S^{1/2}$$

$$R = A/P$$

A=cross sectional area

P=wetted perimeter

S=slope of channel

n=Manning's roughness coefficient

$$V = (1.49/n) R_h^{2/3} S^{1/2}$$

$$Q = V \times A$$

			Solution to Mannings Equation		
Area,ft ²	Wetted Perimeter, ft	Hydraulic Radius, ft	velocity ft/s	flow, cfs	flow, gpm
28.27	18.85	1.50	23.12	653.70	293,401.5

$$Q = ciA$$

c 0.31 Single Family Residential Areas

i 5.90 in/hr

A 233.2 acres

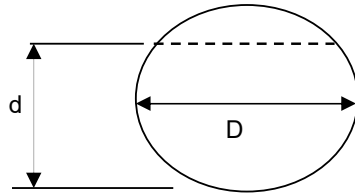
Q 426.5 cfs ok, is less than 653.7 cfs

MANNING'S EQUATION FOR PIPE FLOW

Project: Newcastle - Crossing #2 Location: Peters Township, Washington County
 By: RAM Date: 10/25/2024
 Chk. By: Date:

INPUT

D= 36 inches
 d= 36 inches
 n= 0.012 mannings coeff
 S= 0.0651 slope in/in



Mannings Formula

$$Q = (1.486/n)AR_h^{2/3}S^{1/2}$$

$$R = A/P$$

A=cross sectional area

P=wetted perimeter

S=slope of channel

n=Manning's roughness coefficient

$$V = (1.49/n)R_h^{2/3}S^{1/2}$$

$$Q = V \times A$$

			Solution to Mannings Equation		
Area,ft ²	Wetted Perimeter, ft	Hydraulic Radius, ft	velocity ft/s	flow, cfs	flow, gpm
7.07	9.42	0.75	26.08	184.36	82,746.2

$$Q = ciA$$

c 0.25 Single Family Residential Areas

i 5.90 in/hr

A 15.2 acres

Q 22.4 cfs ok, is less than 184.4 cfs

MANNING'S EQUATION FOR PIPE FLOW

Project: Newcastle - Crossing #3 Location: Peters Township, Washington County
 By: RAM Date: 10/25/2024
 Chk. By: Date:

INPUT

D= 36 inches
 d= 36 inches
 n= 0.012 mannings coeff
 S= 0.0671 slope in/in

Mannings Formula

$$Q = (1.486/n) A R_h^{2/3} S^{1/2}$$

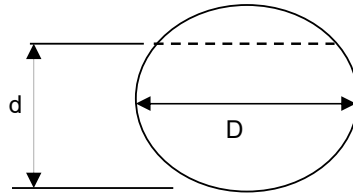
$$R = A/P$$

A=cross sectional area

P=wetted perimeter

S=slope of channel

n=Manning's roughness coefficient



$$V = (1.49/n) R_h^{2/3} S^{1/2}$$

$$Q = V \times A$$

			Solution to Mannings Equation		
Area, ft ²	Wetted Perimeter, ft	Hydraulic Radius, ft	velocity ft/s	flow, cfs	flow, gpm
7.07	9.42	0.75	26.48	187.17	84,007.7

$$Q = ciA$$

c 0.25 Single Family Residential Areas

i 5.90 in/hr

A 21.2 acres

Q 31.3 cfs ok, is less than 187.17 cfs

MAXIMUM COVER HEIGHTS

Maximum burial depths corresponding to the soil classification system of ASTM D2321 are shown in the table below, with the best results obtained using manufactured or processed aggregates (i.e. crushed rock).

Lane HD100/HD100EC Pipe – Allowable Burial Depths (ft)						
Diameter (in)	Class I		Class II		Class III	
	Compacted	Dumped	95%	90%	95%	90%
12	38	20	26	18	19	11
15	45	22	30	21	21	12
18	30	17	20	14	14	9
24	28	17	19	13	14	9
30	27	17	19	13	13	9
36	38	19	25	17	17	10
42	37	19	24	16	17	10
48	30	17	20	13	14	9
60	28	16	19	12	13	8

1. Installation in accordance with ASTM D2321.
2. Class I indicates a soil that generally provides the highest soil stiffness at any given percent compaction, and provides a given soil stiffness with the least compactive effort. Each higher-number soil class provides successively less soil stiffness at a given compaction and requires greater compactive effort to provide a given level of soil stiffness.
3. All acceptable backfill materials are not presented here. See ASTM D2321 for a complete listing of classifications.
4. Results based on the AASHTO LRFD design method using zero hydrostatic pressure and a soil density of 120 pcf. Greater cover heights are attainable with appropriate modifications to the design method - Contact Lane for further details.
5. Dumped Class I material is estimated at 90% maximum standard Proctor density.

MINIMUM COVER HEIGHTS FOR LIVE LOADS
Truck Loadings (H20, H25 or HL93) ¹ , 6 thru 48 inch dia..... 12 inches
Truck Loadings (H20, H25 or HL93) ¹ , 60 inch dia..... 24 inches
Minimum Cover for E-80 (Rail Road) Loads..... 24 inches
Temporary Cover for Construction Loads ² 2 to 4 feet
¹ May be subject to local or state agency minimum cover requirements.
² Cover for construction loads depends on pipe diameter and construction equipment (see table to right).

Nominal Pipe Diameter (ft)	MINIMUM COVER FOR CONSTRUCTION LOADS (in)			
	Axle Loads (kips)			
	18-50	50-75	75-110	110-150
2.0 - 3.0	24.0	30.0	36.0	36.0
3.5 - 5.0	36.0	36.0	42.0	48.0

Minimum cover shall be measured from the top of the pipe to the top of the maintained construction roadway surface.

NOTE: Information contained herein is meant as a discretionary guide and is not intended to supersede any governing specifications or requirements of record.

About Lane

As a full-line manufacturer of metal and plastic drainage products, Lane Enterprises, Inc., operates multiple plants in the Mid-Atlantic and Northeastern regions of the United States, producing corrugated metal and plastic drainage pipe for the construction industry.

For more than 75 years, Lane has partnered with contractors, engineers and municipalities to supply reliable products that provide the highest service life, strength, versatility and economy. Our focus on quality products, responsive customer service and technical expertise has established a long, proven history of successful partnerships within the industries we serve.



APPENDIX I

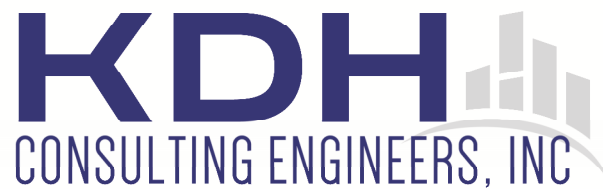
Infiltration Facility Assessment Report

NEWCASTLE
PETERS TOWNSHIP
WASHINGTON COUNTY, PENNSYLVANIA

INFILTRATION FACILITY
ASSESSMENT REPORT

Date: May 24, 2023
Revised: April 14, 2025

Prepared By:



593 Rugh Street, Lower Level
Greensburg, PA 15601

INFILTRATION FACILITY ASSESSMENT REPORT

INTRODUCTION

The proposed project is located along the southern side of Justabout Road west of the original Tuscany Plan in Peters Township, Washington County, Pennsylvania. The site is currently being used as farm fields.

The proposed project is to divide the property into single-family lots.

KDH Consulting Engineers, Inc. conducted an infiltration test/soil analysis of the proposed Post Construction Stormwater Management (PCSM) detention system. The purpose of the testing was to determine the infiltration rates and suitability of the soils at the sites of the proposed infiltration BMP.

SITE LOCATION AND DESCRIPTION

Project Area

For the purpose of this report, the project area is limited to the area within the limits of construction encompassing the proposed site.

General Site Description

In the past the site served as farm fields.

Topography

The project area is sloping.

Soils

A Custom Soil Resource Report has been generated for this site and is available within Appendix B of this report. Additionally, the soils have been delineated on the E&S Plan. The following soils are located within the project boundaries.

**TABLE-1
ON-SITE SOILS**

Map Unit Symbol	Map Unit Name
CaC	Culleoka channery silt loam, 8 to 15 percent slopes
CaD	Culleoka channery silt loam, 15 to 25 percent slopes
DoC	Dormont silt loam, 8 to 15 percent slopes
DtD	Dormont-Culleoka complex, 15 to 25 percent slopes
DtF	Dormont-Culleoka complex, 25 to 50 percent slopes
Fa	Fluvaquents, loamy
Nw	Newark silt loam, 0 to 3 percent slopes, frequently flooded

METHODOLOGY

Testing was conducted on May 24, 2023. Rainfall was reported in the direct vicinity for the 48-hour period preceding the testing.

Additional testing was conducted on April 9, 2025. Rainfall was not reported in the direct vicinity for the 48 hours preceding the testing.

Infiltration testing was conducted according to the protocols outlined in the Pennsylvania Stormwater Best Management Practices Manual, Appendix C – Site Evaluation and Soil Testing. The test was conducted using a double-ring infiltrometer (6” and 12” rings). The soil is pre-soaked prior to starting the test. Based on the drop observed during the 30-minute pre-soak, readings are taken at consistent 30-minute intervals until a stabilized rate of drop is obtained. If the drop was greater than two (2) inches, readings are to be taken at 10-minute intervals. Where the drop was less than two (2) inches, readings are to be taken at 30-minute intervals. A stabilized rate of drop is defined as a difference of ¼ inch or less of drop between the highest and lowest readings of four consecutive readings. The geometric mean of these four (4) readings is calculated; this value, in inches per hour, represents the infiltration rate of area. If a stabilized rate is not reached after 8 readings, the drop that occurs in the center ring during the final period, expressed as inches per hour, represents the infiltration rate for the test location.

RESULTS

Infiltration Test

Two (2) infiltration tests were completed in the area of the proposed stormwater BMP. The infiltration test was conducted near the bottom area of the proposed BMPs. A site plan showing the location of the infiltration test is provided in Appendix C.

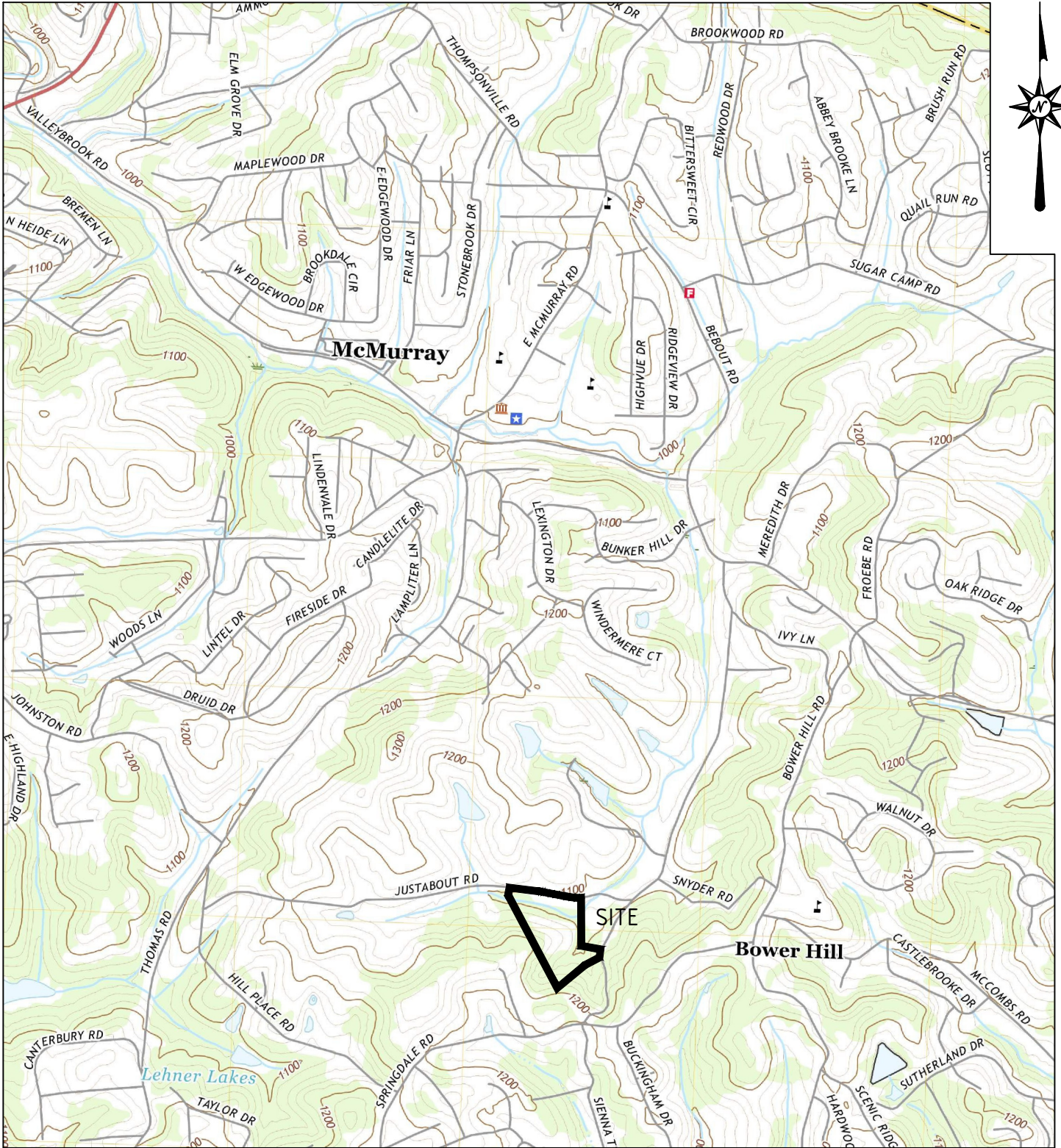
Table 2 – Infiltration Test Results (May 24, 2023)

Test #	Existing Surface Elevation	Test Elevation	Location	Infiltration Rate (inches/hour)	Design Infiltration Rate * (inches/hour)
IP-1	1084±	1082±	SCM 001	0.75	0.375
IP-2	1114±	1102±	SCM-005	0.75	0.375
* Design Infiltration Rate includes a safety factor of 2					

Table 3 – Infiltration Test Results (April 9, 2025)

Test #	Existing Surface Elevation	Test Elevation	Location	Infiltration Rate (inches/hour)	Design Infiltration Rate * (inches/hour)
IP-3	1092±	1091.5±	SCM-002	0.75	0.375
IP-4	1090±	1089.5±	SCM-003	0.75	0.375
IP-5	1089±	1088.5±	SCM-004	0.75	0.375
* Design Infiltration Rate includes a safety factor of 2					

Appendix A
USGS Location Map



BRIDGEVILLE QUAD

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 GREENSBURG, PA 15601
 P: 878-295-8914 F: 724-514-7047
 www.kdhengineers.com

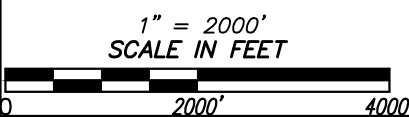
NEWCASTLE

SHEET TITLE:
 USGS
 LOCATION MAP

PROJ NO: 291-002-21
 DATE: 1/10/2025
 DRAWN BY: RAM
 CHECKED BY: CWH

PETERS TOWNSHIP,
 WASHINGTON COUNTY,
 PENNSYLVANIA

SHEET NO.
 1 OF 1



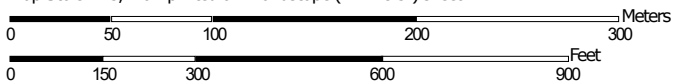
Appendix B

Soils Report

Soil Map—Greene and Washington Counties, Pennsylvania
(New Castle)



Map Scale: 1:3,720 if printed on A landscape (11" x 8.5") sheet.




Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Greene and Washington Counties, Pennsylvania
Survey Area Data: Version 20, Sep 7, 2022

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

Date(s) aerial images were photographed: May 19, 2021—Sep 19, 2021

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CaC	Culleoka channery silt loam, 8 to 15 percent slopes	0.7	2.8%
CaD	Culleoka channery silt loam, 15 to 25 percent slopes	0.0	0.1%
DoC	Dormont silt loam, 8 to 15 percent slopes	15.0	55.6%
DtD	Dormont-Culleoka complex, 15 to 25 percent slopes	0.9	3.2%
DtF	Dormont-Culleoka complex, 25 to 50 percent slopes	4.8	18.0%
Fa	Fluvaquents, loamy	0.2	0.7%
Nw	Newark silt loam, 0 to 3 percent slopes, frequently flooded	5.3	19.6%
Totals for Area of Interest		27.0	100.0%

Greene and Washington Counties, Pennsylvania

CaC—Culleoka channery silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2s5gn

Elevation: 720 to 1,610 feet

Mean annual precipitation: 37 to 48 inches

Mean annual air temperature: 49 to 53 degrees F

Frost-free period: 173 to 206 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Culleoka and similar soils: 80 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Culleoka

Setting

Landform: Hills

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Interfluve

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Fine-loamy residuum weathered from sandstone and shale

Typical profile

Ap - 0 to 10 inches: channery silt loam

Bt - 10 to 19 inches: channery silt loam

BC - 19 to 26 inches: very channery silt loam

C - 26 to 31 inches: very channery silt loam

R - 31 to 41 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent

Depth to restrictive feature: 24 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: B

Ecological site: F126XY001OH - Dry Ridge

Hydric soil rating: No

Minor Components

Dormont

Percent of map unit: 15 percent

Landform: Hills

Landform position (two-dimensional): Backslope, summit, shoulder

Landform position (three-dimensional): Interfluve, side slope

Down-slope shape: Linear

Across-slope shape: Convex, linear

Hydric soil rating: No

Lowell

Percent of map unit: 5 percent

Landform: Hills

Landform position (two-dimensional): Summit, backslope, shoulder

Landform position (three-dimensional): Side slope, interfluve

Down-slope shape: Convex

Across-slope shape: Linear, convex

Hydric soil rating: No

Data Source Information

Soil Survey Area: Greene and Washington Counties, Pennsylvania

Survey Area Data: Version 20, Sep 7, 2022

Greene and Washington Counties, Pennsylvania

CaD—Culleoka channery silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2s5gp
Elevation: 720 to 1,610 feet
Mean annual precipitation: 37 to 48 inches
Mean annual air temperature: 49 to 53 degrees F
Frost-free period: 173 to 206 days
Farmland classification: Not prime farmland

Map Unit Composition

Culleoka and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Culleoka

Setting

Landform: Hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Fine-loamy residuum weathered from sandstone and shale

Typical profile

Ap - 0 to 10 inches: channery silt loam
Bt - 10 to 19 inches: channery silt loam
BC - 19 to 26 inches: very channery silt loam
C - 26 to 31 inches: very channery silt loam
R - 31 to 41 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 24 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F126XY004OH - Side Slope

Hydric soil rating: No

Minor Components

Dormont

Percent of map unit: 15 percent

Landform: Hills

Landform position (two-dimensional): Backslope, summit, shoulder

Landform position (three-dimensional): Side slope, interfluvium

Down-slope shape: Linear

Across-slope shape: Convex, linear

Hydric soil rating: No

Lowell

Percent of map unit: 5 percent

Landform: Hills

Landform position (two-dimensional): Shoulder, backslope, summit

Landform position (three-dimensional): Side slope, interfluvium

Down-slope shape: Convex

Across-slope shape: Linear, convex

Hydric soil rating: No

Data Source Information

Soil Survey Area: Greene and Washington Counties, Pennsylvania

Survey Area Data: Version 20, Sep 7, 2022

Greene and Washington Counties, Pennsylvania

DoC—Dormont silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2s5gh

Elevation: 800 to 1,540 feet

Mean annual precipitation: 37 to 47 inches

Mean annual air temperature: 48 to 52 degrees F

Frost-free period: 173 to 197 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Dormont and similar soils: 70 percent

Minor components: 30 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dormont

Setting

Landform: Hills

Landform position (two-dimensional): Backslope, summit, shoulder

Landform position (three-dimensional): Side slope, interflue

Down-slope shape: Linear

Across-slope shape: Linear, concave

Parent material: Fine-loamy residuum weathered from limestone, sandstone, and shale

Typical profile

Ap - 0 to 11 inches: silt loam

Bt1 - 11 to 21 inches: silt loam

Bt2 - 21 to 31 inches: silty clay loam

Bt3 - 31 to 46 inches: channery silty clay loam

Bt4 - 46 to 62 inches: channery silty clay loam

BC - 62 to 75 inches: channery silty clay loam

Properties and qualities

Slope: 8 to 15 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.66 in/hr)

Depth to water table: About 24 to 44 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: D
Ecological site: F126XY003OH - Moist Ridge
Hydric soil rating: No

Minor Components

Culleoka

Percent of map unit: 15 percent
Landform: Hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Lowell

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Guernsey

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, head slope
Down-slope shape: Concave, linear
Across-slope shape: Linear, concave
Hydric soil rating: No

Data Source Information

Soil Survey Area: Greene and Washington Counties, Pennsylvania
Survey Area Data: Version 20, Sep 7, 2022

Greene and Washington Counties, Pennsylvania

DtD—Dormont-Culleoka complex, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2s5gy

Elevation: 200 to 1,300 feet

Mean annual precipitation: 32 to 48 inches

Mean annual air temperature: 48 to 55 degrees F

Frost-free period: 120 to 200 days

Farmland classification: Not prime farmland

Map Unit Composition

Dormont and similar soils: 45 percent

Culleoka and similar soils: 37 percent

Minor components: 18 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dormont

Setting

Landform: Hills

Landform position (two-dimensional): Shoulder, backslope

Landform position (three-dimensional): Nose slope, side slope, head slope

Down-slope shape: Linear

Across-slope shape: Linear, concave

Parent material: Fine-loamy residuum weathered from limestone, sandstone, and shale

Typical profile

Ap - 0 to 11 inches: silt loam

Bt1 - 11 to 21 inches: silt loam

Bt2 - 21 to 31 inches: silty clay loam

Bt3 - 31 to 46 inches: channery silty clay loam

Bt4 - 46 to 62 inches: channery silty clay loam

BC - 62 to 75 inches: channery silty clay loam

Properties and qualities

Slope: 15 to 25 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.66 in/hr)

Depth to water table: About 24 to 44 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: D

Ecological site: F126XY004OH - Side Slope

Hydric soil rating: No

Description of Culleoka

Setting

Landform: Hills

Landform position (two-dimensional): Shoulder, backslope

Landform position (three-dimensional): Side slope, nose slope, head slope

Down-slope shape: Convex

Across-slope shape: Convex, linear

Parent material: Fine-loamy residuum weathered from sandstone and shale

Typical profile

Ap - 0 to 10 inches: channery silt loam

Bt - 10 to 19 inches: channery silt loam

BC - 19 to 26 inches: very channery silt loam

C - 26 to 31 inches: very channery silt loam

R - 31 to 41 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent

Depth to restrictive feature: 24 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: B

Ecological site: F126XY004OH - Side Slope

Hydric soil rating: No

Minor Components

Lowell

Percent of map unit: 10 percent

Landform: Hills

Landform position (two-dimensional): Backslope, shoulder

Landform position (three-dimensional): Side slope, head slope, nose slope

Down-slope shape: Convex

Across-slope shape: Linear, convex
Hydric soil rating: No

Guernsey

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, head slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Hydric soil rating: No

Thorndale

Percent of map unit: 3 percent
Landform: Drainageways, depressions
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Greene and Washington Counties, Pennsylvania
Survey Area Data: Version 20, Sep 7, 2022

Greene and Washington Counties, Pennsylvania

DtF—Dormont-Culleoka complex, 25 to 50 percent slopes

Map Unit Setting

National map unit symbol: 2s5gz

Elevation: 800 to 1,300 feet

Mean annual precipitation: 36 to 50 inches

Mean annual air temperature: 46 to 57 degrees F

Frost-free period: 120 to 200 days

Farmland classification: Not prime farmland

Map Unit Composition

Dormont and similar soils: 50 percent

Culleoka and similar soils: 35 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dormont

Setting

Landform: Hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope, head slope, nose slope

Down-slope shape: Linear

Across-slope shape: Linear, concave

Parent material: Fine-loamy residuum weathered from limestone, sandstone, and shale

Typical profile

Ap - 0 to 11 inches: silt loam

Bt1 - 11 to 21 inches: silt loam

Bt2 - 21 to 31 inches: silty clay loam

Bt3 - 31 to 46 inches: channery silty clay loam

Bt4 - 46 to 62 inches: channery silty clay loam

BC - 62 to 75 inches: channery silty clay loam

Properties and qualities

Slope: 25 to 50 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.66 in/hr)

Depth to water table: About 24 to 44 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: D

Ecological site: F126XY004OH - Side Slope

Hydric soil rating: No

Description of Culleoka

Setting

Landform: Hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope, nose slope, head slope

Down-slope shape: Convex, linear

Across-slope shape: Convex, linear

Parent material: Fine-loamy residuum weathered from sandstone and shale

Typical profile

Ap - 0 to 10 inches: channery silt loam

Bt - 10 to 19 inches: channery silt loam

BC - 19 to 26 inches: very channery silt loam

C - 26 to 31 inches: very channery silt loam

R - 31 to 41 inches: bedrock

Properties and qualities

Slope: 25 to 50 percent

Depth to restrictive feature: 24 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: B

Ecological site: F126XY004OH - Side Slope

Hydric soil rating: No

Minor Components

Lowell

Percent of map unit: 5 percent

Landform: Hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope, head slope, nose slope

Down-slope shape: Convex, linear

Across-slope shape: Linear, convex
Hydric soil rating: No

Fluvaquents

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Guernsey

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Hydric soil rating: No

Data Source Information

Soil Survey Area: Greene and Washington Counties, Pennsylvania
Survey Area Data: Version 20, Sep 7, 2022

Greene and Washington Counties, Pennsylvania

Fa—Fluvaquents, loamy

Map Unit Setting

National map unit symbol: 164w
Elevation: 700 to 1,340 feet
Mean annual precipitation: 36 to 50 inches
Mean annual air temperature: 41 to 62 degrees F
Frost-free period: 120 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Fluvaquents and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fluvaquents

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 42 inches: silt loam
H3 - 42 to 60 inches: loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Ecological site: F126XY005OH - Poorly Drained Floodplain
Hydric soil rating: Yes

Minor Components

Newark

Percent of map unit: 5 percent

Landform: Flood plains

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Huntington

Percent of map unit: 5 percent

Landform: Flood plains

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Melvin

Percent of map unit: 5 percent

Landform: Flood plains

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Greene and Washington Counties, Pennsylvania

Survey Area Data: Version 20, Sep 7, 2022

Greene and Washington Counties, Pennsylvania

Nw—Newark silt loam, 0 to 3 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2w1w1

Elevation: 500 to 1,440 feet

Mean annual precipitation: 37 to 45 inches

Mean annual air temperature: 49 to 55 degrees F

Frost-free period: 130 to 215 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Newark, frequently flooded, and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Newark, Frequently Flooded

Setting

Landform: Flood plains

Landform position (three-dimensional): Tread

Down-slope shape: Concave, linear

Across-slope shape: Linear

Parent material: Fine-silty alluvium derived from sedimentary rock

Typical profile

Ap - 0 to 9 inches: silt loam

Bw - 9 to 19 inches: silt loam

Bg - 19 to 35 inches: silt loam

Cg - 35 to 80 inches: silty clay loam

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat poorly drained

Runoff class: Low

Capacity of the most limiting layer to transmit water

(Ksat): Moderately high to high (0.57 to 1.98 in/hr)

Depth to water table: About 10 to 18 inches

Frequency of flooding: FrequentNone

Frequency of ponding: None

Available water supply, 0 to 60 inches: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w

Hydrologic Soil Group: B/D

Ecological site: F126XY005OH - Poorly Drained Floodplain

Forage suitability group: Unnamed (G124XYC-3OH)

Other vegetative classification: Unnamed (G124XYC-3OH)
Hydric soil rating: No

Minor Components

Lobdell, frequently flooded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Melvin, frequently flooded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Nolin, frequently flooded

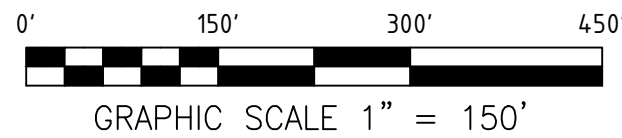
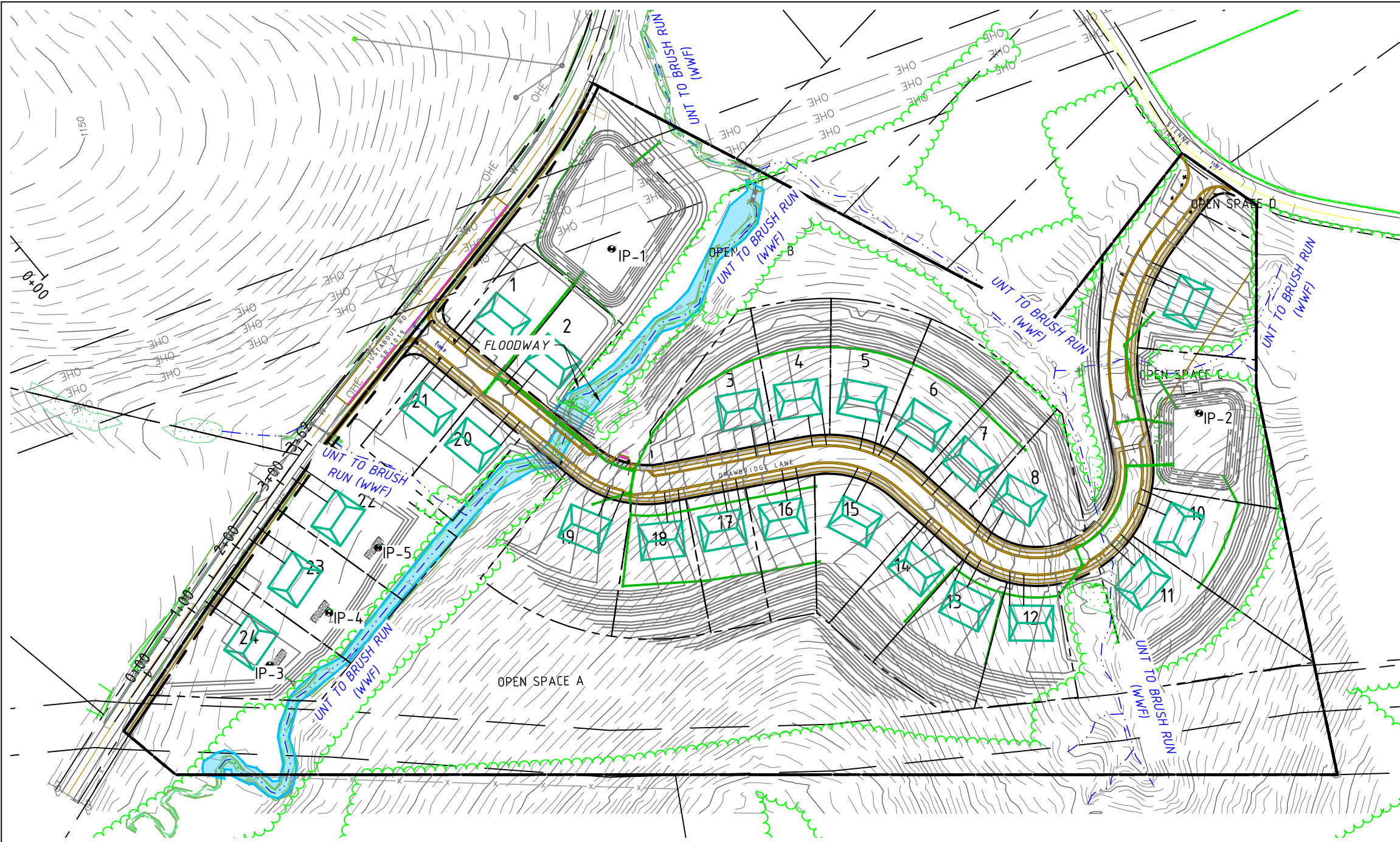
Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Data Source Information

Soil Survey Area: Greene and Washington Counties, Pennsylvania
Survey Area Data: Version 20, Sep 7, 2022

Appendix C

Test Locations & Results



KPDH
 CONSULTING ENGINEERS, INC.
 593 RUGH STREET
 GREENSBURG, PA 15601
 P: 878-295-8914 F: 724-514-7047
 www.kdengineers.com

CLIENT:
 339 JUSTABOUT LAND COMPANY, LLC.
 333 TECHNOLOGY DRIVE, SUITE 108
 CANONSBURG, PA 15317

PROJECT:
NEWCASTLE
 PETERS TOWNSHIP,
 WASHINGTON COUNTY, PA

PROJ NO: 291-002-21
 DATE: 1/10/2025
 DRAWN BY: RAM
 CHECKED BY: CWH

SHEET TITLE:
**INFILTRATION
 TESTING
 LOCATION MAP**

SHEET NO.
1 OF 1

