POST CONSTRUCTION STORMWATER MANAGEMENT REPORT

FOR

3 MEADOWCREST ROAD
MINOR SUBDIVISION

3 MEADOWCREST ROAD
RADNOR TOWNSHIP
DELAWARE COUNTY
PENNSYLVANIA

October 7, 2024
Revised December 13, 2024

PREPARED BY

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STORMWATER MANAGEMENT SUMMARY

PROPOSED TWO LOT MINOR RESIDENTIAL SUBDIVISION
3 MEADOWCREST ROAD
RADNOR TOWNSHIP, DELAWARE COUNTY, PA

Introduction

The purpose of this report is to identify the existing and proposed conditions concerning the stormwater management issues for the subject development. Outlined in the body of this document is a stormwater management design that is intended to comply with the Township of Radnor's Stormwater Management Ordinance. The area of total earth disturbance is 33,365 square feet (0.766 acres) and the total new or replacement impervious coverage is 10,969 sf. The proposed subdivision results in an overall increase of 8,151 sf impervious area for both lots.

Existing Conditions

The subject property is located at 3 Meadowcrest Road in Radnor Township, Delaware County, Pennsylvania. The site is bordered by residential properties. It consists of one lot totaling approximately 0.94 acres within the R-3 Residential zoning district. The existing lot contains a single-family house, adjacent asphalt parking area, and an asphalt driveway from Meadowcrest Road.

Currently, there is no stormwater management on site. Runoff from the site flows via sheet flow from the southeast corner of the lot to the to the northwest into Chew Lane. The site is located within the Darby Creek Watershed (District B2).

Proposed Conditions

The existing dwelling and the existing driveway is to be demolished and removed. The two (2) lot subdivision will provide for the development of two (2) new single-family residences and associated improvements. The grading of the property is held consistent from pre- to post- development and proposed stormwater management infiltration facilities is to be constructed on each lot to mitigate the increase in stormwater runoff.

To manage the post development stormwater, an underground infiltration bed is proposed for each lot and the point of discharge will be located on Lot1 in the north west corner of the property. The infiltration beds will collect the roof runoff from each home and runoff from the surrounding property. Detailing of the infiltration bed design is contained within the body of this report. The captured water flows through an inflow pipe to be discharged into storm chambers that are connected by 8" manifolds. The chambers are set at an elevation to capture the required water quality volume and the outflow invert provides the rate control. The discharge pipe then ties into a level spreader. Calculations for the infiltration bed and level spreader are contained within this report also.

Soil Conditions

The site is entirely made up of Made land, gabbro and diabase materials. This is based on the USDA-NRCS Soils Survey of Delaware County, from the USDA web soil survey.

Soil	HSG	Slope	Depth to Seasonal High Water Table	Depth to Bedrock	Hazard of Erosion	Permeability
NhC	C	8-15%	>80 inches	65-80 inches	Medium	Moderate

The following resolutions are proposed for soil limitations that may be encountered: For construction within areas where ground water is encountered, drainage channels or underdrains should be provided. Fill for the area should be obtained from other site areas and an appropriate seed mixture should be planted. For construction within areas where bedrock is encountered, a revised design should be considered first to relocate the construction and if relocation is not possible, ripable rock shall be excavated. The site has been designed to avoid soil limitations when possible.

1. SUMMARY CALCULATIONS

1.1 Township Requirements

The Township's Code has seven requirements for stormwater management compliance. This site is a re-development project and below is a summary of Table 245-6.1, Ordinance Applicability for this site:

- Article IV: Drainage Plan Requirements. The Subdivision / Grading Permit plan set, associated with this document, has been designed to meet the drainage plan requirements.
- Section 245-17: Nonstructural Project Design – YES. See section below.
- Section 245-18: Infiltration Volume Requirements – YES. See section below.
- Section 245-19: Water Quality Requirements – YES. See section below.
- Section 245-20: Stream Bank Erosion Requirements – YES. See section below.
- Section 245-21: Stormwater Peak Rate Control and Management Districts – YES. See section below.
- E&S Control Submission: YES. An E&S plan and detail sheet have been included within the associated Grading Permit plan set.

As demonstrated below, the proposed improvements contemplate the installation of an underground stone infiltration bed for each lot, which has been designed to provide the required groundwater recharge and rate control standards as required by the Township's Stormwater Management Ordinance.

1.2 Non-Structural Project Design; Section 245-17

The layout for the site, including the proposed grading, was designed to keep the limit of disturbance at a minimum. Additional disturbed lawn area will be restored to its existing pervious condition. The ground cover used in determining the existing conditions flow rates is based upon the actual land cover conditions, in "good condition" and the proposed development will increase the total impervious coverage of the development by 8,151 sf.

1.3 Infiltration Volume Requirements; Section 245-18

The required infiltration volume is based on the first one inch of runoff from new or replacement impervious surfaces based on the following calculation:

<u>Lot 1</u>
Rev = 1 (inch) * impervious area (square feet) / 12 (inches) = cubic feet (cf)

Rev = 1 inch * 5,493 sf / 12 inches = 458 cf

Basin Bottom Elevation: 249.20 ft.
Infiltration Storage at Elevation 249.75 ft: 524 cf
Infiltration Storage is greater than Rev.

Lot 2

Rev = 1 (inch) * impervious area (square feet) / 12 (inches) = cubic feet (cf)

Rev = 1 inch * 5,920 sf / 12 inches = 493 cf

Basin Bottom Elevation: 353.75 ft.
Infiltration Storage at Elevation 354.30 ft: 696 cf
Infiltration Storage is greater than Rev.

1.4 Water Quality Requirements Section; 245-19

The Post-construction total runoff volume shall not exceed the Pre-development total runoff volume for all storms equal to or less than the two-year, twenty-four-hour duration precipitation (design storm). For modeling purposes, existing (pre-development) non-forested pervious areas must be considered meadow in good condition or its equivalent, and 20% of existing impervious area, when present, shall be considered meadow in good condition.

Existing Impervious Cover: 2,818 sf (0.065 acres)
20% of existing Impervious cover to Meadow Condition: 564 sf (0.013 acres)
For Modeling Purposes Impervious Cover is 2,254 sf (0.052 acres), Meadow Cover is 18,428 sf (0.423 acres).

Pre-Development two-year Runoff Volume = 2,795 cf
Post-Development two-year Runoff Volume = 783 cf

Pre-Development one-year Runoff Volume = 1,858 cf
Post-Development one-year Runoff Volume = 537 cf

Basin Drawdown Calculation:
Utilizing the infiltration rates as noted in the attached report each basin will drain within 72 hours from the invert of the outlet pipe to the bottom of the chambers. A factor of safety of 2 has also been used in calculating the infiltration rates.

Lot/Basin 1
Adjusted infiltration rate: 0.75 in/hr
Discharge Pipe Elevation: 352.70
Bottom of Bed Elevation: 349.20
Infiltration portion of the basin: 3.5 ft
Drain Down Time: 3.5 ft * (1 hr/0.75 in) * (12 in/1 ft) = 56 hours

Lot/Basin 2
Adjusted infiltration rate: 0.25 in/hr
Discharge Pipe Elevation: 355.25
Bottom of Bed Elevation: 353.75

Infiltration portion of the basin: 1.5 ft
Drain Down Time: 1.5 ft * (1 hr/0.25 in) * (12 in/1 ft) = 72 hours

1.5 Stream Bank Erosion Requirements; 245-20

In addition to controlling the water quality volume (in order to minimize the impact of stormwater runoff on downstream stream bank erosion), the primary requirement to control stream bank erosion is to design a BMP to detain the proposed conditions two-year, twenty-four-hour design storm to the existing conditions one-year flow using the SCS Type II distribution. Additionally, provisions shall be made to release the proposed conditions one-year storm for a minimum of 24 hours from a point in time when the maximum volume of water from the one-year storm is stored in a proposed BMP.

Pre-Development 2 year Runoff Rate = 0.925 cfs
Post-Development 1 year Runoff Rate = 0.262 cfs

1.6 Stormwater Peak Rate Control and Management Districts; Section 245-21 & 22

The site is located within District B-2 of the Darby – Cobbs Creek Watershed. As required in the stormwater management code the ground cover used in determining the existing conditions flow rates for the developed portion o the site was considered to be based on meadow in good condition.

The following is a summary chart of the results from Hydraflow, showing the rate reduction for each design storm.

Post Development Design Storm	Total Runoff per Routing of Post Development conditions (cfs)	Pre-Development Design Storm	Total Runoff per Pre-development conditions (cfs)	Summary (cfs)
2-year	0.388	1-year	0.570	0.388<0.570
5-year	0.599	2-year	0.925	0.599<0.925
25-year	1.058	5-year	1.541	1.058<1.541
50-year	1.741	10-year	2.094	1.741<2.094
100-year	2.948	100-year	4.536	2.948<4.536

1.6 Level Spreader Design

- ADS HDPE perforated pipe is specified for each level spreader. The 8” perforated pipe all uses an AASHTO Class II pattern for perforations. The pattern has holes 60-degrees apart and rotated 45-degrees every other outside valley.

- To calculate the flow out of a level spreader, the orifice equation can be used.

  $Q_p = C_d * A * \sqrt{(2gH)}$

  - Q_p = free flow rate in one perforation (ft^3/sec)
  - C_d = Coefficient of discharge = 0.60
  - A = Cross sectional area in one perforation (ft^2)
    - 8" diameter pipe A = 0.147 in^2 = 0.001 ft^2
    - (per ADS standard perforated pattern for 8" pipe)
  - g = Gravimetric constant = 32.2 ft/sec^2
  - H = Height of water above perforation, head (ft); assuming ground water is a minimum 2' below pipe

  - $Q_p = 0.60 * 0.001 * \sqrt{(2*32.2*2)} = 0.0068$ ft^3 per hole
    - 19 lf has 684 holes. 684 * 0.0068 = 4.65 cfs
    - Combined Basin discharge for the 100 year storm = 2.26 cfs

    4.65 cfs > 2.26 cfs √

Therefore, the level spreader will not control the outflow from the beds.

2.0 HYDROGRAPH SUMMARIES

Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	------	0.623	0.989	-------	1.619	2.184	3.056	3.818	4.651	Water Quality Pre Hydrograph
2	SCS Runoff	------	0.570	0.925	-------	1.541	2.094	2.954	3.709	4.536	Pre Hydrograph
3	SCS Runoff	------	0.753	1.018	-------	1.442	1.799	2.327	2.772	3.249	Lot 1 Post-Construction SCS Hydrogr
4	Reservoir	3	0.000	0.000	-------	0.000	0.000	0.049	0.242	1.015	Lot1 SCS Basin Routing
5	SCS Runoff	------	0.154	0.226	-------	0.344	0.447	0.602	0.734	0.879	Lot 1 Post Construction SCS Bypass
6	Combine	4, 5	0.154	0.226	-------	0.344	0.447	0.602	0.734	1.378	Lot 1 Total SCS Post-Construction
7	SCS Runoff	------	0.734	0.967	-------	1.335	1.642	2.088	2.464	2.865	Lot 2 Post-Construction SCS Hydrogr
8	Reservoir	7	0.000	0.000	-------	0.019	0.080	0.402	0.885	1.244	Lot2 SCS Basin Routing
9	SCS Runoff	------	0.108	0.162	-------	0.254	0.335	0.456	0.562	0.676	Lot 2 Post Construction SCS Bypass
10	Combine	8, 9	0.108	0.162	-------	0.254	0.335	0.543	1.181	1.695	Lot 2 Total SCS Post-Construction
11	Combine	6, 10	0.262	0.388	-------	0.599	0.782	1.058	1.741	2.948	Total Post Construction Lots 1&2

Proj. file: Hydrographs.gpw | Thursday, 12 / 12 / 2024

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.623	1	723	1,858	------	------	------	Water Quality Pre Hydrograph
2	SCS Runoff	0.570	1	723	1,737	------	------	------	Pre Hydrograph
3	SCS Runoff	0.753	1	718	1,513	------	------	------	Lot 1 Post-Construction SCS Hydrogr
4	Reservoir	0.000	1	680	0	3	350.11	863	Lot1 SCS Basin Routing
5	SCS Runoff	0.154	1	718	314	------	------	------	Lot 1 Post Construction SCS Bypass
6	Combine	0.154	1	718	314	4, 5	------	------	Lot 1 Total SCS Post-Construction
7	SCS Runoff	0.734	1	718	1,489	------	------	------	Lot 2 Post-Construction SCS Hydrogr
8	Reservoir	0.000	1	n/a	0	7	354.60	1,072	Lot2 SCS Basin Routing
9	SCS Runoff	0.108	1	718	223	------	------	------	Lot 2 Post Construction SCS Bypass
10	Combine	0.108	1	718	223	8, 9	------	------	Lot 2 Total SCS Post-Construction
11	Combine	0.262	1	718	537	6, 10	------	------	Total Post Construction Lots 1&2

Hydrograph Summary Report

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Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.989	1	723	2,795	------	------	------	Water Quality Pre Hydrograph
2	SCS Runoff	0.925	1	723	2,643	------	------	------	Pre Hydrograph
3	SCS Runoff	1.018	1	718	2,059	------	------	------	Lot 1 Post-Construction SCS Hydrogr
4	Reservoir	0.000	1	648	0	3	350.54	1,261	Lot1 SCS Basin Routing
5	SCS Runoff	0.226	1	718	454	------	------	------	Lot 1 Post Construction SCS Bypass
6	Combine	0.226	1	718	454	4, 5	------	------	Lot 1 Total SCS Post-Construction
7	SCS Runoff	0.967	1	718	1,980	------	------	------	Lot 2 Post-Construction SCS Hydrogr
8	Reservoir	0.000	1	n/a	0	7	354.95	1,501	Lot2 SCS Basin Routing
9	SCS Runoff	0.162	1	718	329	------	------	------	Lot 2 Post Construction SCS Bypass
10	Combine	0.162	1	718	329	8, 9	------	------	Lot 2 Total SCS Post-Construction
11	Combine	0.388	1	718	783	6, 10	------	------	Total Post Construction Lots 1&2

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	1.619	1	723	4,436	------	------	------	Water Quality Pre Hydrograph
2	SCS Runoff	1.541	1	723	4,241	------	------	------	Pre Hydrograph
3	SCS Runoff	1.442	1	718	2,953	------	------	------	Lot 1 Post-Construction SCS Hydrogr
4	Reservoir	0.000	1	645	0	3	351.29	1,934	Lot1 SCS Basin Routing
5	SCS Runoff	0.344	1	718	692	------	------	------	Lot 1 Post Construction SCS Bypass
6	Combine	0.344	1	718	692	4, 5	------	------	Lot 1 Total SCS Post-Construction
7	SCS Runoff	1.335	1	717	2,773	------	------	------	Lot 2 Post-Construction SCS Hydrogr
8	Reservoir	0.019	1	922	345	7	355.32	1,955	Lot2 SCS Basin Routing
9	SCS Runoff	0.254	1	718	511	------	------	------	Lot 2 Post Construction SCS Bypass
10	Combine	0.254	1	718	856	8, 9	------	------	Lot 2 Total SCS Post-Construction
11	Combine	0.599	1	718	1,548	6, 10	------	------	Total Post Construction Lots 1&2

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

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	2.184	1	722	5,915	------	------	------	Water Quality Pre Hydrograph
2	SCS Runoff	2.094	1	722	5,689	------	------	------	Pre Hydrograph
3	SCS Runoff	1.799	1	717	3,720	------	------	------	Lot 1 Post-Construction SCS Hydrogr
4	Reservoir	0.000	1	620	0	3	352.00	2,525	Lot1 SCS Basin Routing
5	SCS Runoff	0.447	1	718	903	------	------	------	Lot 1 Post Construction SCS Bypass
6	Combine	0.447	1	718	903	4, 5	------	------	Lot 1 Total SCS Post-Construction
7	SCS Runoff	1.642	1	717	3,446	------	------	------	Lot 2 Post-Construction SCS Hydrogr
8	Reservoir	0.080	1	771	976	7	355.40	2,058	Lot2 SCS Basin Routing
9	SCS Runoff	0.335	1	718	674	------	------	------	Lot 2 Post Construction SCS Bypass
10	Combine	0.335	1	718	1,649	8, 9	------	------	Lot 2 Total SCS Post-Construction
11	Combine	0.782	1	718	2,552	6, 10	------	------	Total Post Construction Lots 1&2

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	3.056	1	722	8,220	------	------	------	Water Quality Pre Hydrograph
2	SCS Runoff	2.954	1	722	7,955	------	------	------	Pre Hydrograph
3	SCS Runoff	2.327	1	717	4,871	------	------	------	Lot 1 Post-Construction SCS Hydrogr
4	Reservoir	0.049	1	822	409	3	352.82	3,094	Lot1 SCS Basin Routing
5	SCS Runoff	0.602	1	718	1,226	------	------	------	Lot 1 Post Construction SCS Bypass
6	Combine	0.602	1	718	1,635	4, 5	------	------	Lot 1 Total SCS Post-Construction
7	SCS Runoff	2.088	1	717	4,447	------	------	------	Lot 2 Post-Construction SCS Hydrogr
8	Reservoir	0.402	1	726	1,937	7	355.62	2,307	Lot2 SCS Basin Routing
9	SCS Runoff	0.456	1	718	925	------	------	------	Lot 2 Post Construction SCS Bypass
10	Combine	0.543	1	723	2,862	8, 9	------	------	Lot 2 Total SCS Post-Construction
11	Combine	1.058	1	718	4,497	6, 10	------	------	Total Post Construction Lots 1&2

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

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	3.818	1	722	10,264	------	------	------	Water Quality Pre Hydrograph
2	SCS Runoff	3.709	1	722	9,970	------	------	------	Pre Hydrograph
3	SCS Runoff	2.772	1	717	5,862	------	------	------	Lot 1 Post-Construction SCS Hydrogr
4	Reservoir	0.242	1	743	1,277	3	352.97	3,189	Lot1 SCS Basin Routing
5	SCS Runoff	0.734	1	718	1,509	------	------	------	Lot 1 Post Construction SCS Bypass
6	Combine	0.734	1	718	2,786	4, 5	------	------	Lot 1 Total SCS Post-Construction
7	SCS Runoff	2.464	1	717	5,303	------	------	------	Lot 2 Post-Construction SCS Hydrogr
8	Reservoir	0.885	1	724	2,767	7	355.86	2,594	Lot2 SCS Basin Routing
9	SCS Runoff	0.562	1	718	1,147	------	------	------	Lot 2 Post Construction SCS Bypass
10	Combine	1.181	1	722	3,914	8, 9	------	------	Lot 2 Total SCS Post-Construction
11	Combine	1.741	1	720	6,700	6, 10	------	------	Total Post Construction Lots 1&2

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	4.651	1	722	12,527	------	------	------	Water Quality Pre Hydrograph
2	SCS Runoff	4.536	1	722	12,206	------	------	------	Pre Hydrograph
3	SCS Runoff	3.249	1	717	6,937	------	------	------	Lot 1 Post-Construction SCS Hydrogr
4	Reservoir	1.015	1	724	2,253	3	353.41	3,393	Lot1 SCS Basin Routing
5	SCS Runoff	0.879	1	717	1,820	------	------	------	Lot 1 Post Construction SCS Bypass
6	Combine	1.378	1	723	4,073	4, 5	------	------	Lot 1 Total SCS Post-Construction
7	SCS Runoff	2.865	1	717	6,228	------	------	------	Lot 2 Post-Construction SCS Hydrogr
8	Reservoir	1.244	1	723	3,668	7	356.13	2,902	Lot2 SCS Basin Routing
9	SCS Runoff	0.676	1	717	1,391	------	------	------	Lot 2 Post Construction SCS Bypass
10	Combine	1.695	1	720	5,059	8, 9	------	------	Lot 2 Total SCS Post-Construction
11	Combine	2.948	1	722	9,132	6, 10	------	------	Total Post Construction Lots 1&2

3.0 EXISTING CONDITION HYDROGRAPHS

Cornerstone Consulting Engineers & Architectural, Inc.
213 West Main Street, Lansdale, PA 19446
Phone (215) 362-2600 Fax (215) 362-8400

Time of Concentration Worksheet

Pre Development Drainage Area

Project: 3 Meadowcrest Road Minor Subdivision

Location: 3 Meadowcrest Road

Developemnt Type: ☑ Pre-Development ☐ Post-Development

☑ Tc ☐ Tt

Sheet Flow (Applicable to Tc only)

	Segment ID		A-B	B-C		
1. Surface Description (Table 3-1)			Woodland	Grass		
2. Manning's Roughness Coefficient, n (Table 3-1)			0.8	0.24		
3. Flow Length, L (Total L < 300 ft)		ft	25	75		
4. Two year 24 hour rainfall, P2		in	3.27	3.27		
5. Land Slope, s		ft/ft	0.1	0.082		
6. Tt = 0.007 (nL)^0.8 / P2^0.5 s^0.4		hr	0.106819	+ 0.106296	+	= 0.213115

Shallow Concentrated Flow

7. Surface Description : ☐ Paved ☑ Unpaved

	Segment ID		C-D					
8. Flow Length, L		ft	195					
9. Watercourse Slope, s		ft/ft	0.04					
10. Average Velocity, V		ft/s	3.20					
11. Tt = L / 3600 V	Compute Tt	hr	0.016927	+	+	+	=	= 0.016927

Channel Flow

		Segment ID			
12. Cross Sectional Flow Area, a			ft^2		
13. Wetted Perimeter, Pw			ft		
14. Hydraulic Radius, r = a / Pw	Compute r		ft		
15. Channel Slope, s			ft/ft		
16. Manning's Roughness Coefficient, n					
17. V = 1.49 r^2/3 s^0.5 / n	Compute V		ft/s		
18. Flow Length, L			ft		
19. Tt = L / 3600 V	Compute Tt		hr	+	= 0

20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19) 0.230042 hr
13.80252 min

Cornerstone Consulting Engineers & Architectural, Inc.
213 West Main Street, Lansdale, PA 19446
Phone (215)362-2600 Fax (215)362-8400

Runoff Curve Number

Project: 3 Meadowcrest Road Minor Subdivision

Location: 3 Meadowcrest Road

Developemnt Type: ☑ Pre-Development ☐ Post-Development

Drainage Area #1 (Water Quality)

1. Runoff Curve Number (CN)

Soil Name and Hydraulic Group (Appendix A)	Cover Description	CN	Area (Acres)	Product of CN * Area
NhC (Group C)	Impervious (2,254 SF)	98	0.052	5.096
	Woodlands (13,221 SF)	70	0.303	21.210
	Meadow (18,428 SF)	71	0.423	30.033
	20% Imp. to Meadow (564 SF)	71	0.013	0.923
		Totals =	0.791	57.262

CN (Weighted) = Total Product = / Total Area 72.391909

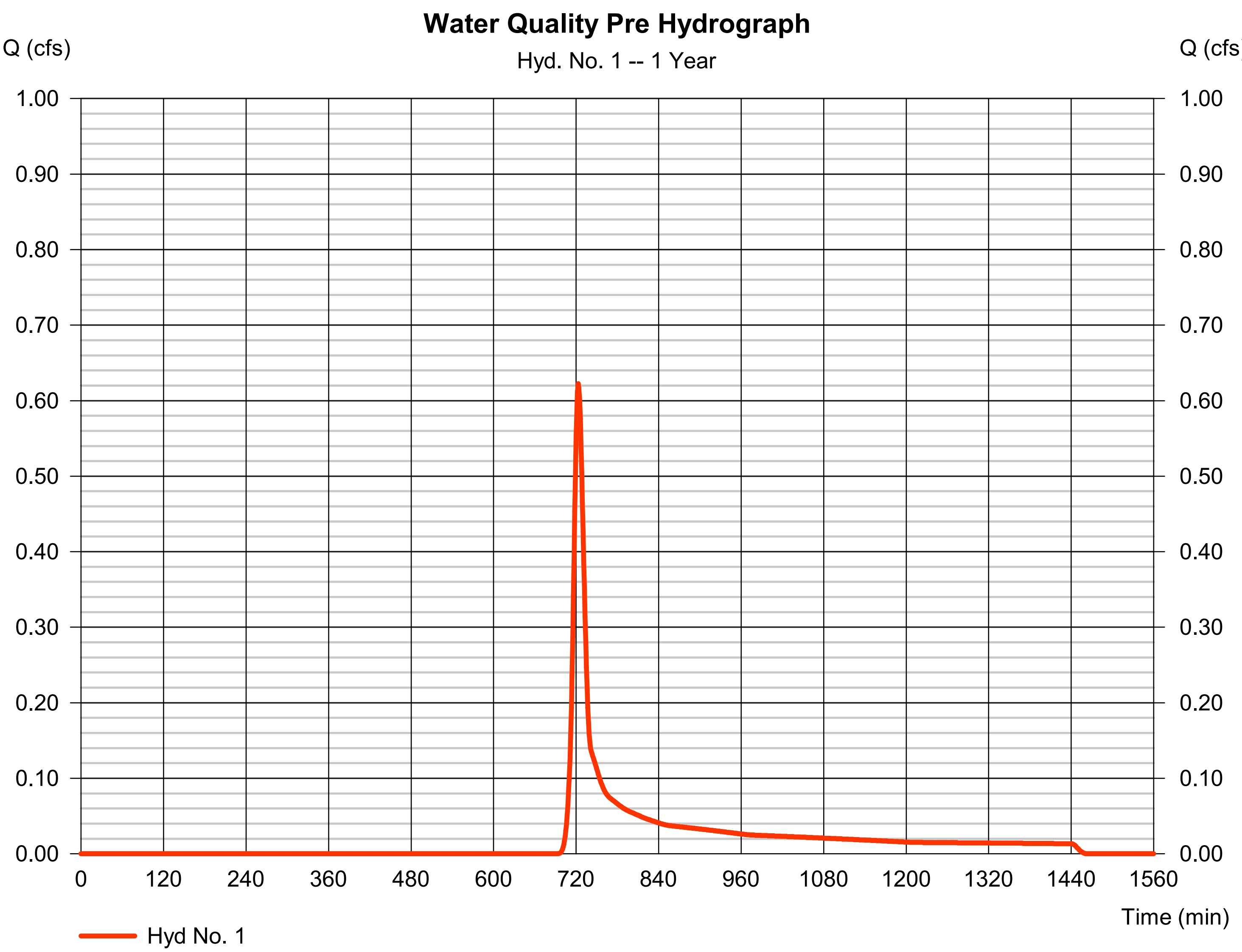
Use CN = 72

Hydrograph Report

Hyd. No. 1

Water Quality Pre Hydrograph

Hydrograph type	= SCS Runoff	Peak discharge	= 0.623 cfs
Storm frequency	= 1 yrs	Time to peak	= 723 min
Time interval	= 1 min	Hyd. volume	= 1,858 cuft
Drainage area	= 0.791 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.80 min
Total precip.	= 2.72 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

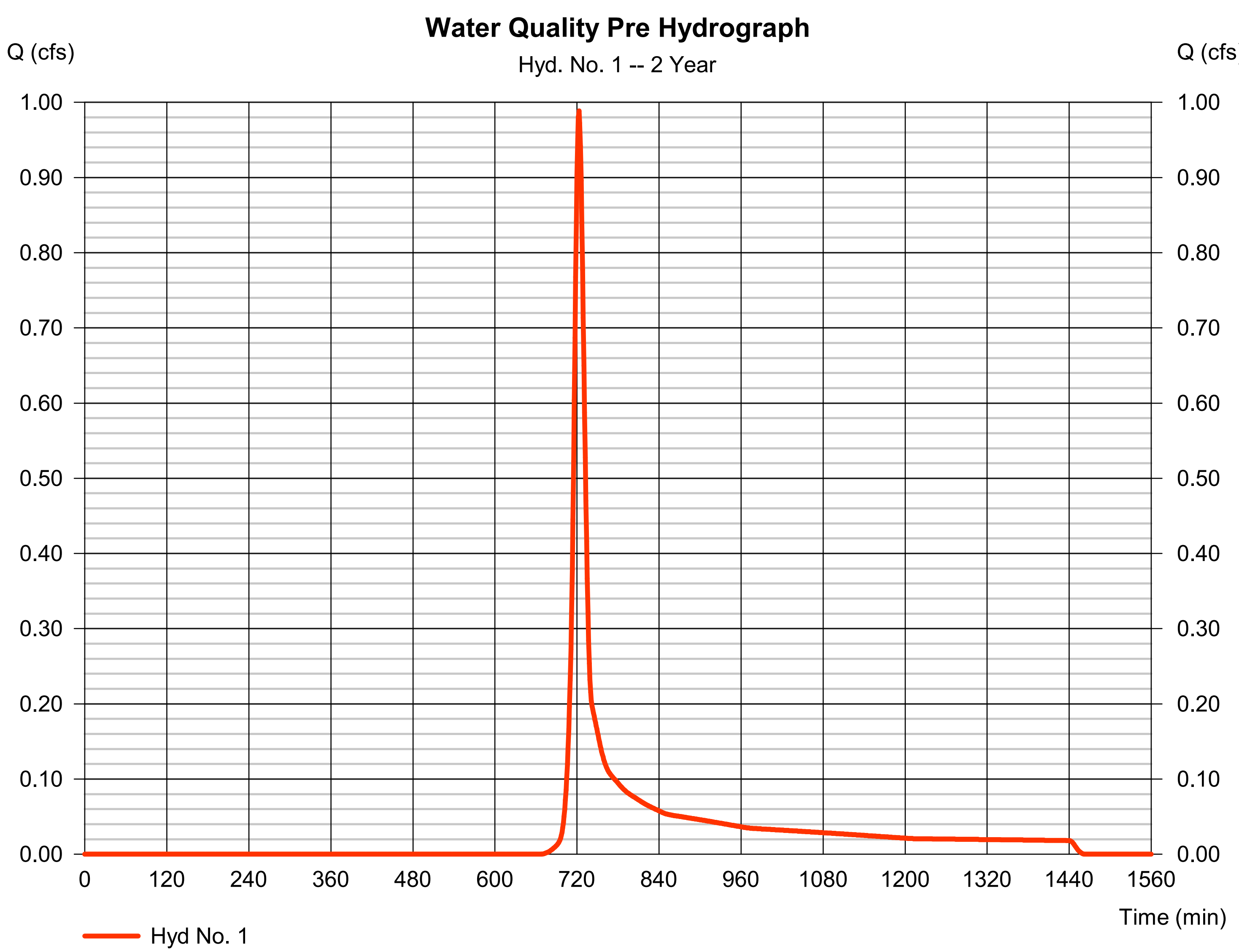


Hydrograph Report

Hyd. No. 1

Water Quality Pre Hydrograph

Hydrograph type	= SCS Runoff	Peak discharge	= 0.989 cfs
Storm frequency	= 2 yrs	Time to peak	= 723 min
Time interval	= 1 min	Hyd. volume	= 2,795 cuft
Drainage area	= 0.791 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.80 min
Total precip.	= 3.27 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

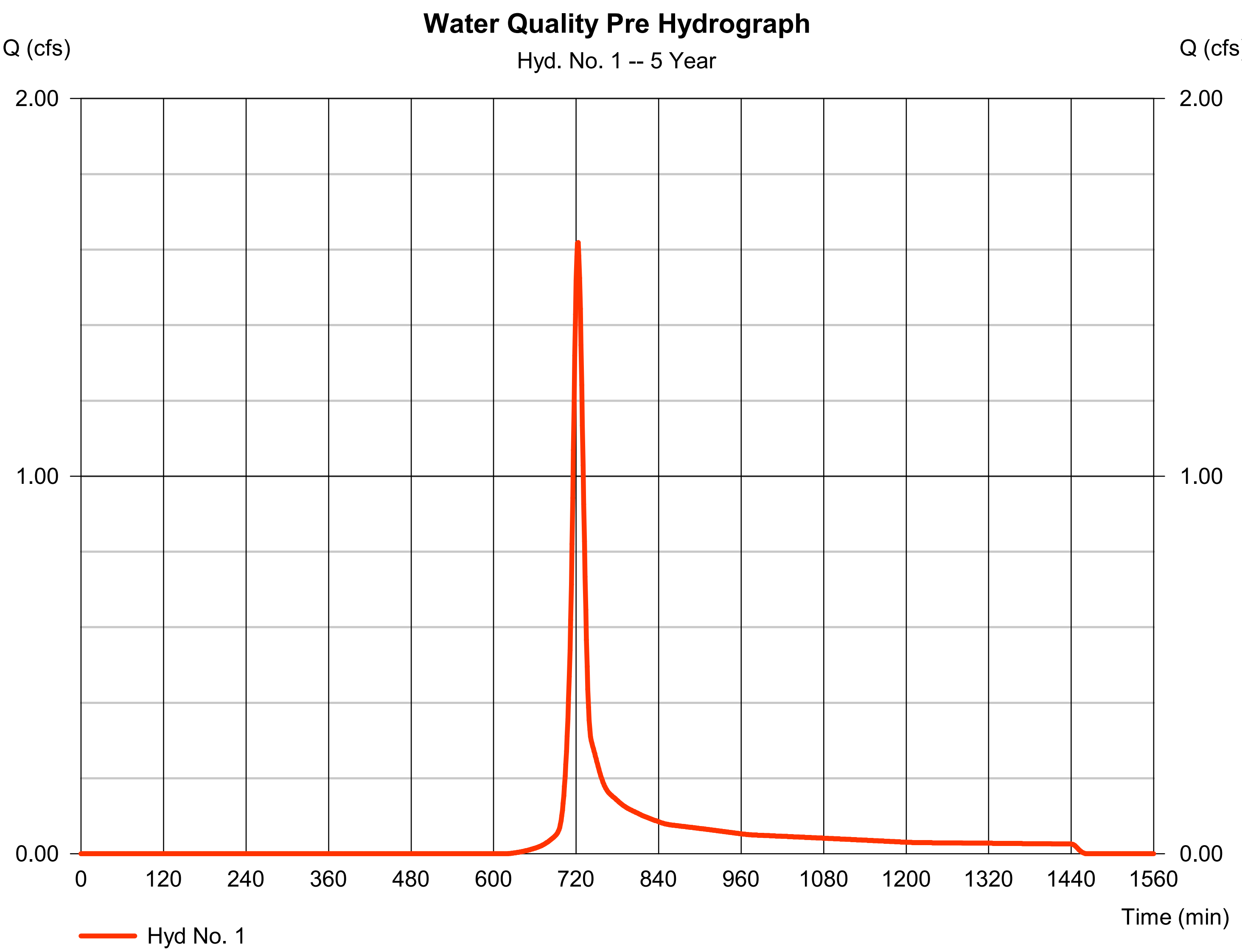


Hydrograph Report

Hyd. No. 1

Water Quality Pre Hydrograph

Hydrograph type	= SCS Runoff	Peak discharge	= 1.619 cfs
Storm frequency	= 5 yrs	Time to peak	= 723 min
Time interval	= 1 min	Hyd. volume	= 4,436 cuft
Drainage area	= 0.791 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.80 min
Total precip.	= 4.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



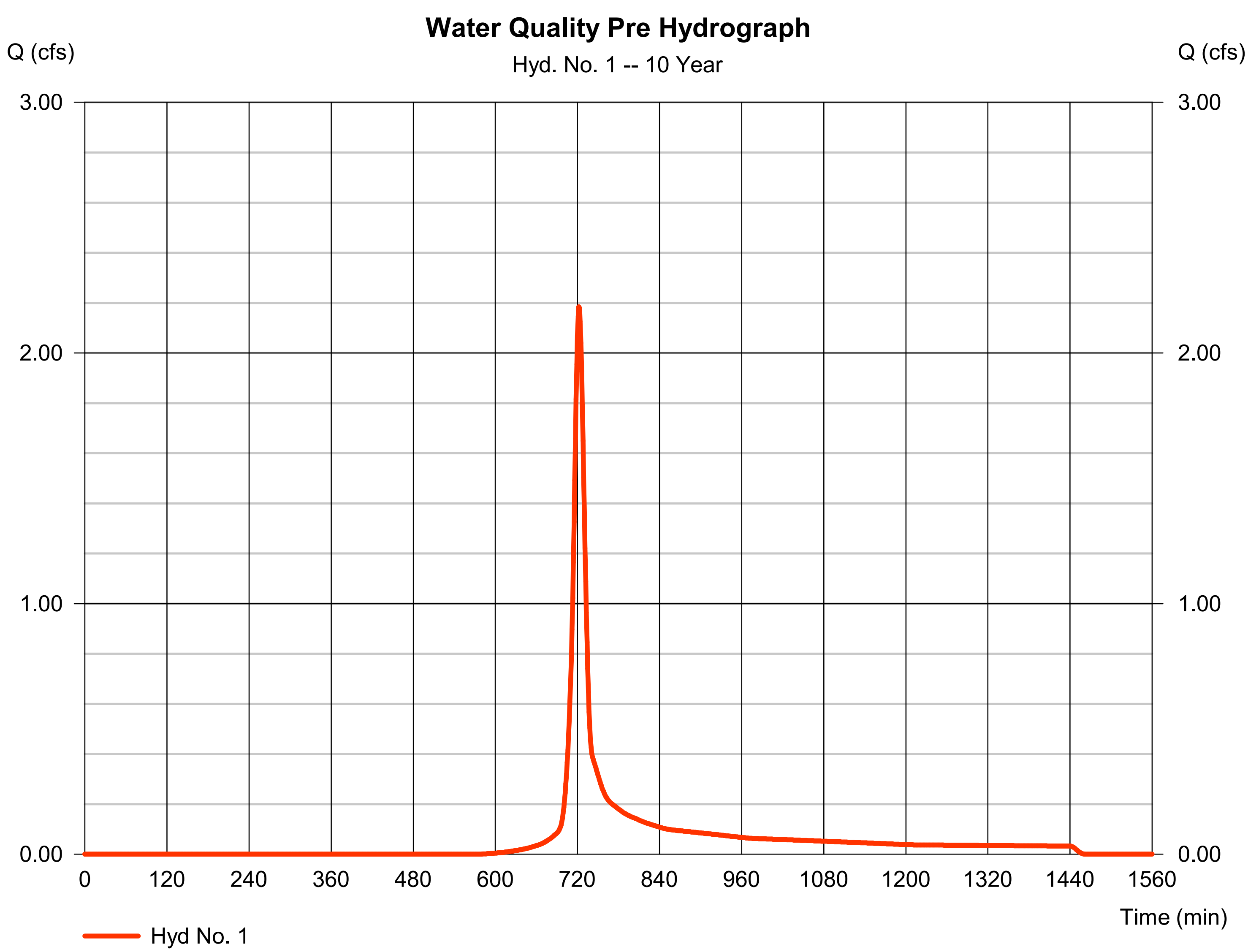
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12 Thursday, 12 / 12 / 2024

Hyd. No. 1

Water Quality Pre Hydrograph

Hydrograph type	= SCS Runoff	Peak discharge	= 2.184 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 5,915 cuft
Drainage area	= 0.791 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.80 min
Total precip.	= 4.82 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



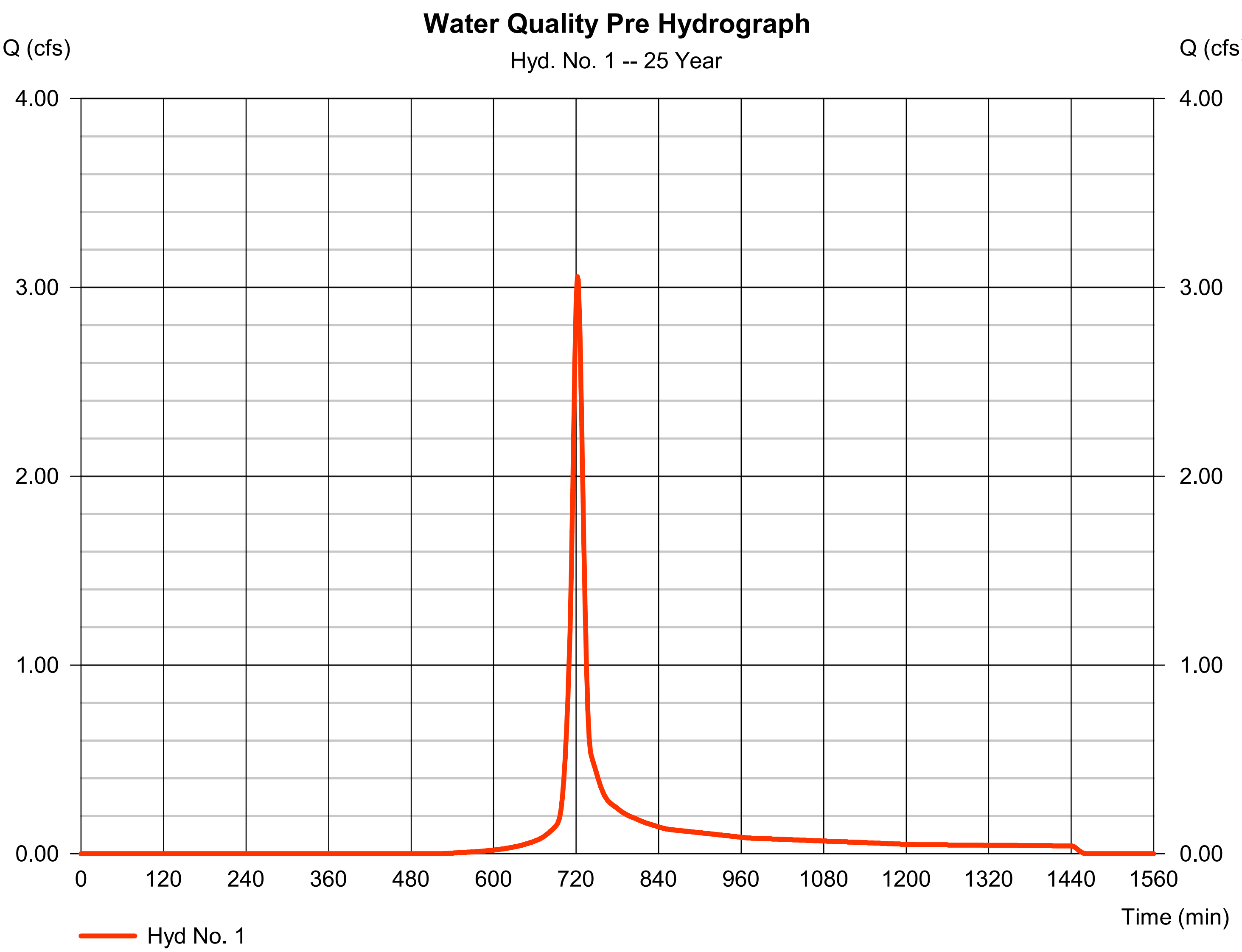
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12 Thursday, 12 / 12 / 2024

Hyd. No. 1

Water Quality Pre Hydrograph

Hydrograph type	= SCS Runoff	Peak discharge	= 3.056 cfs
Storm frequency	= 25 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 8,220 cuft
Drainage area	= 0.791 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.80 min
Total precip.	= 5.84 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

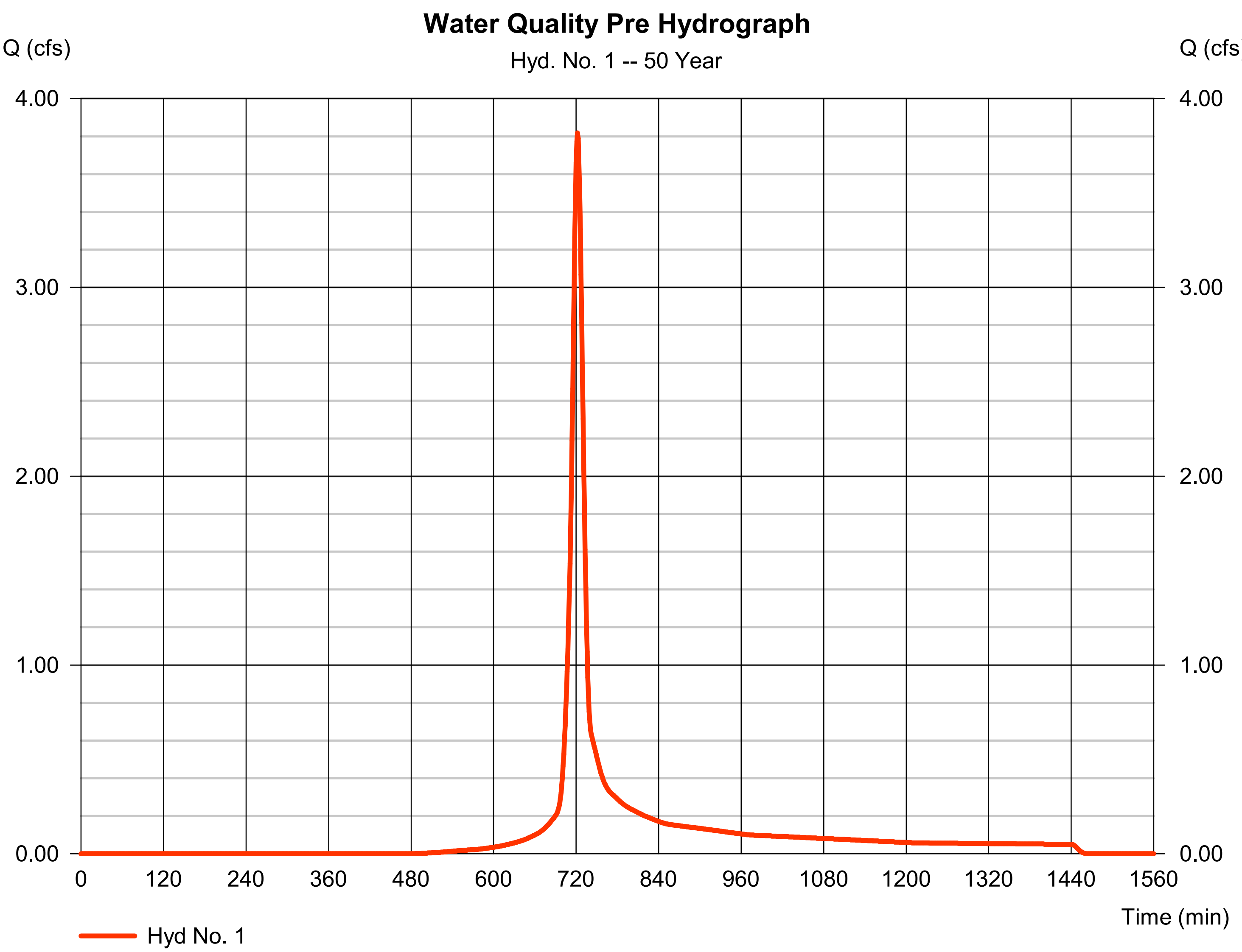


Hydrograph Report

Hyd. No. 1

Water Quality Pre Hydrograph

Hydrograph type	= SCS Runoff	Peak discharge	= 3.818 cfs
Storm frequency	= 50 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 10,264 cuft
Drainage area	= 0.791 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.80 min
Total precip.	= 6.70 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

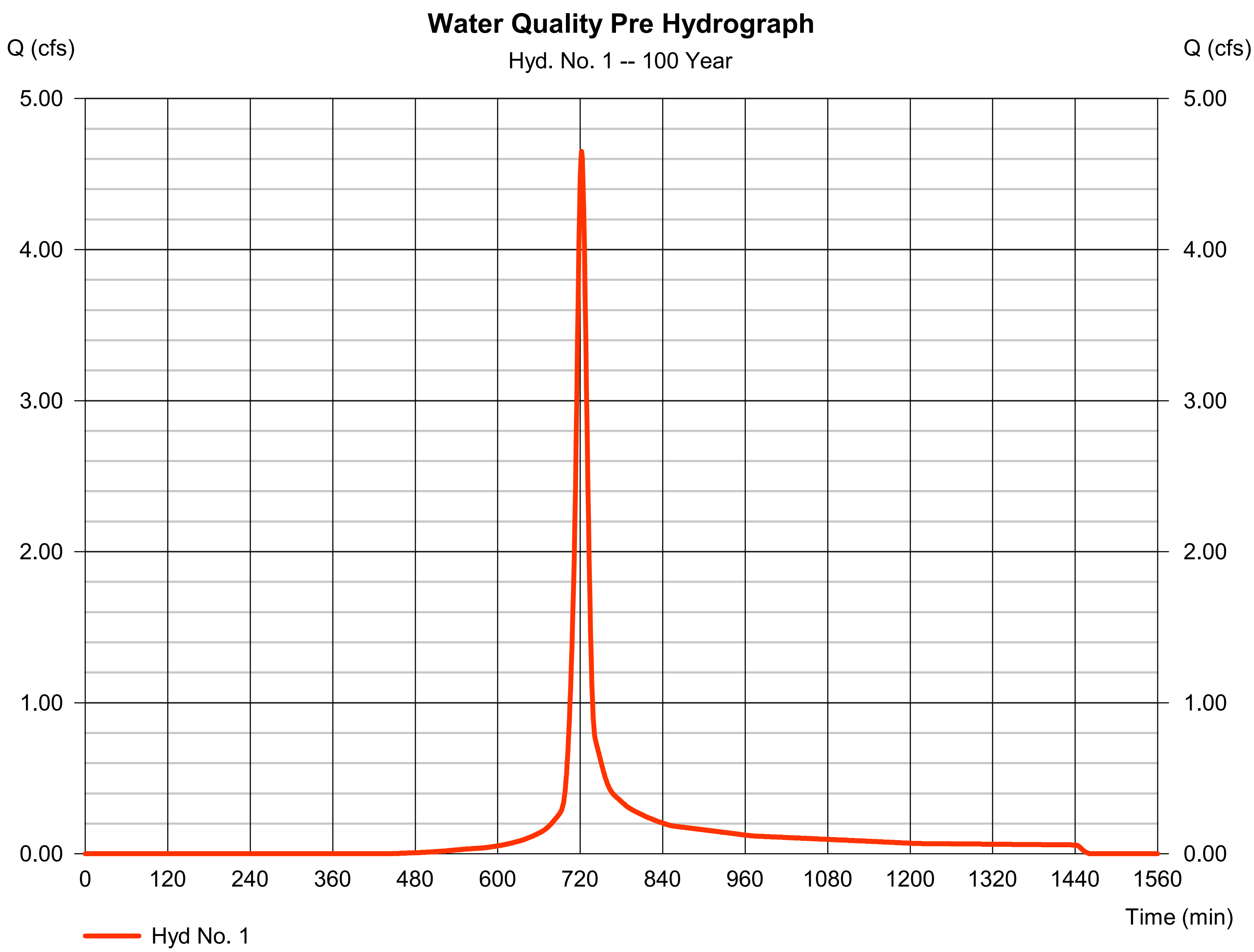


Hydrograph Report

Hyd. No. 1

Water Quality Pre Hydrograph

Hydrograph type	= SCS Runoff	Peak discharge	= 4.651 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 12,527 cuft
Drainage area	= 0.791 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.80 min
Total precip.	= 7.62 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



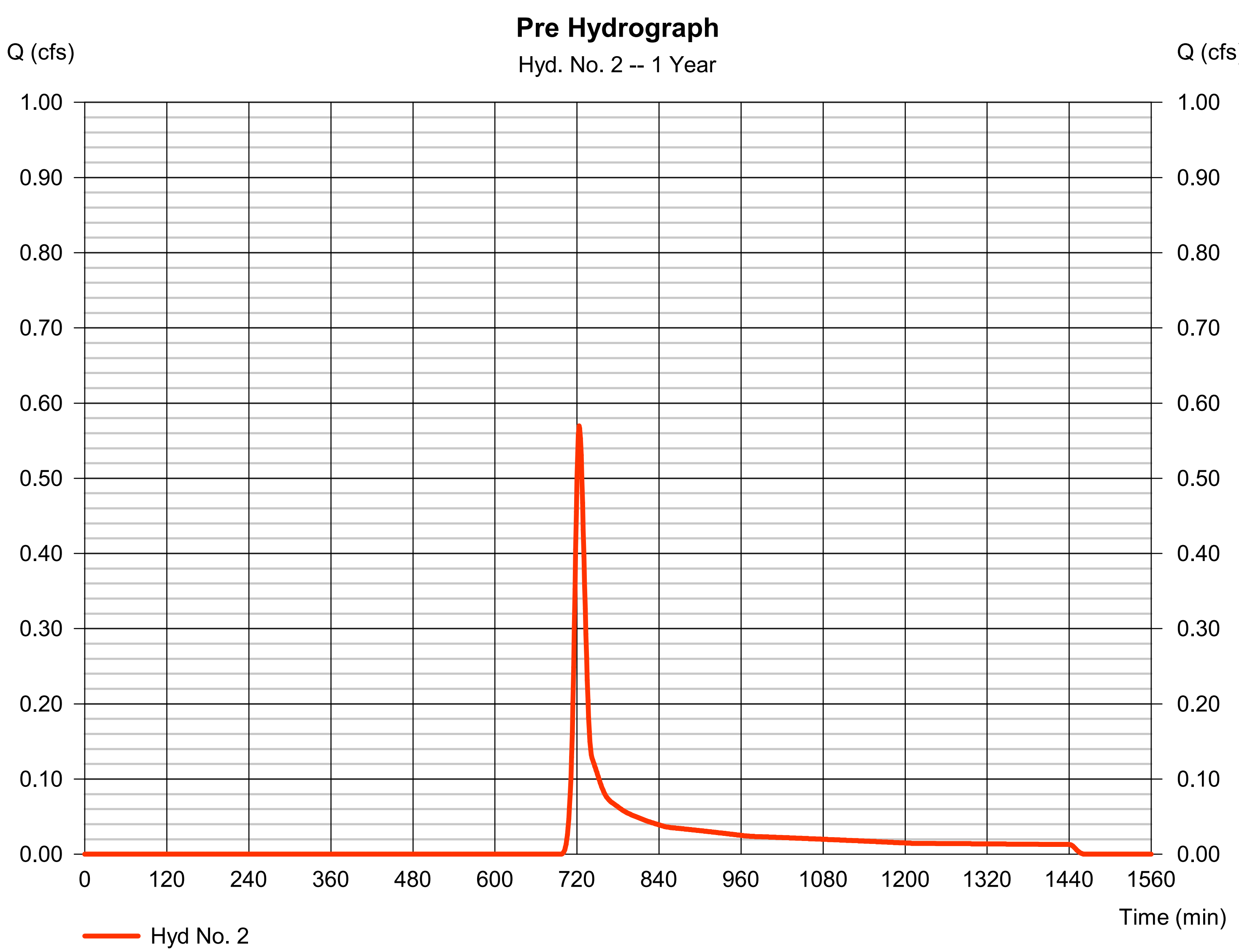
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12 — Thursday, 12 / 12 / 2024

Hyd. No. 2

Pre Hydrograph

Hydrograph type	= SCS Runoff	Peak discharge	= 0.570 cfs
Storm frequency	= 1 yrs	Time to peak	= 723 min
Time interval	= 1 min	Hyd. volume	= 1,737 cuft
Drainage area	= 0.791 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.80 min
Total precip.	= 2.72 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

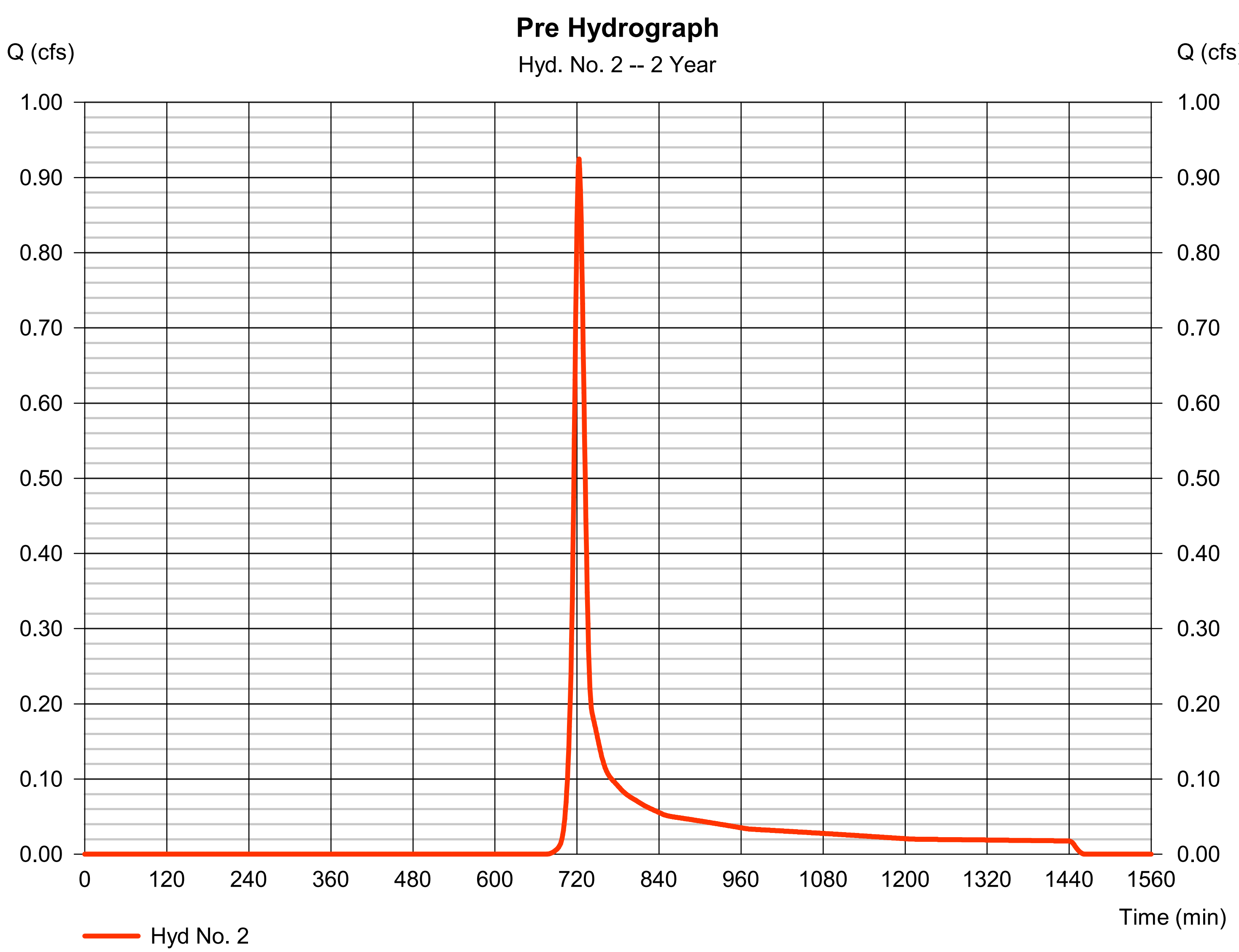


Hydrograph Report

Hyd. No. 2

Pre Hydrograph

Hydrograph type	= SCS Runoff	Peak discharge	= 0.925 cfs
Storm frequency	= 2 yrs	Time to peak	= 723 min
Time interval	= 1 min	Hyd. volume	= 2,643 cuft
Drainage area	= 0.791 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.80 min
Total precip.	= 3.27 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

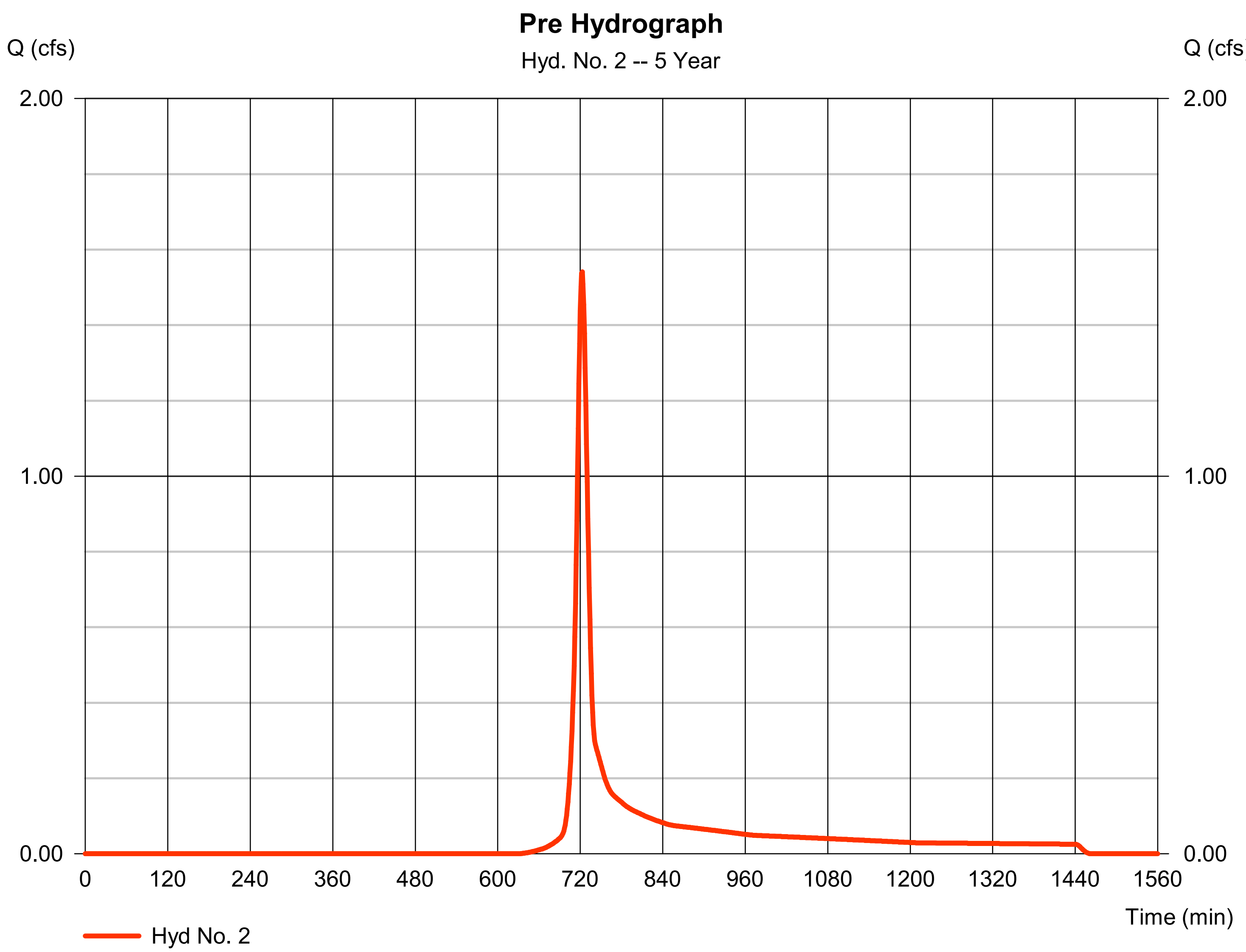


Hydrograph Report

Hyd. No. 2

Pre Hydrograph

Hydrograph type	= SCS Runoff	Peak discharge	= 1.541 cfs
Storm frequency	= 5 yrs	Time to peak	= 723 min
Time interval	= 1 min	Hyd. volume	= 4,241 cuft
Drainage area	= 0.791 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.80 min
Total precip.	= 4.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

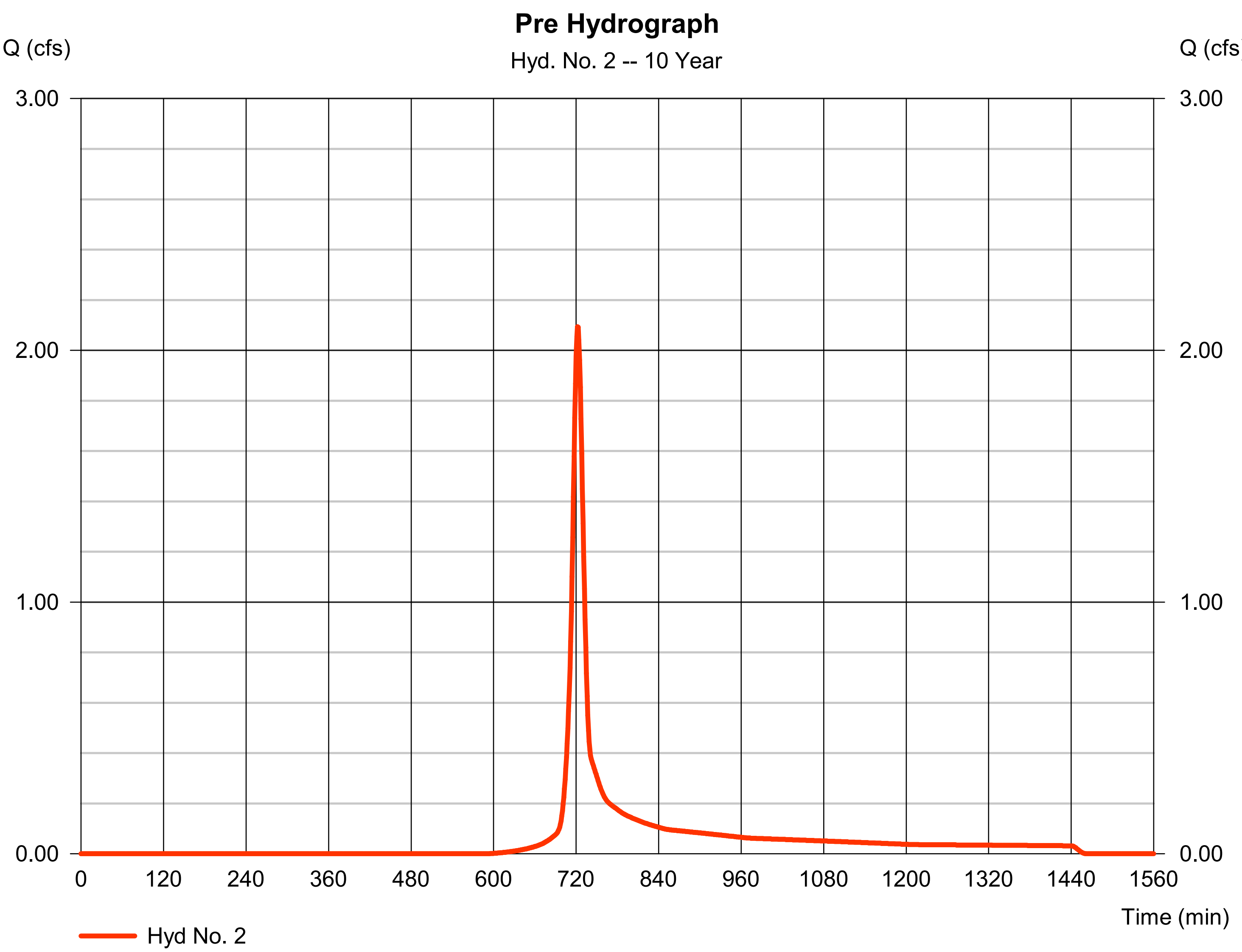


Hydrograph Report

Hyd. No. 2

Pre Hydrograph

Hydrograph type	= SCS Runoff	Peak discharge	= 2.094 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 5,689 cuft
Drainage area	= 0.791 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.80 min
Total precip.	= 4.82 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

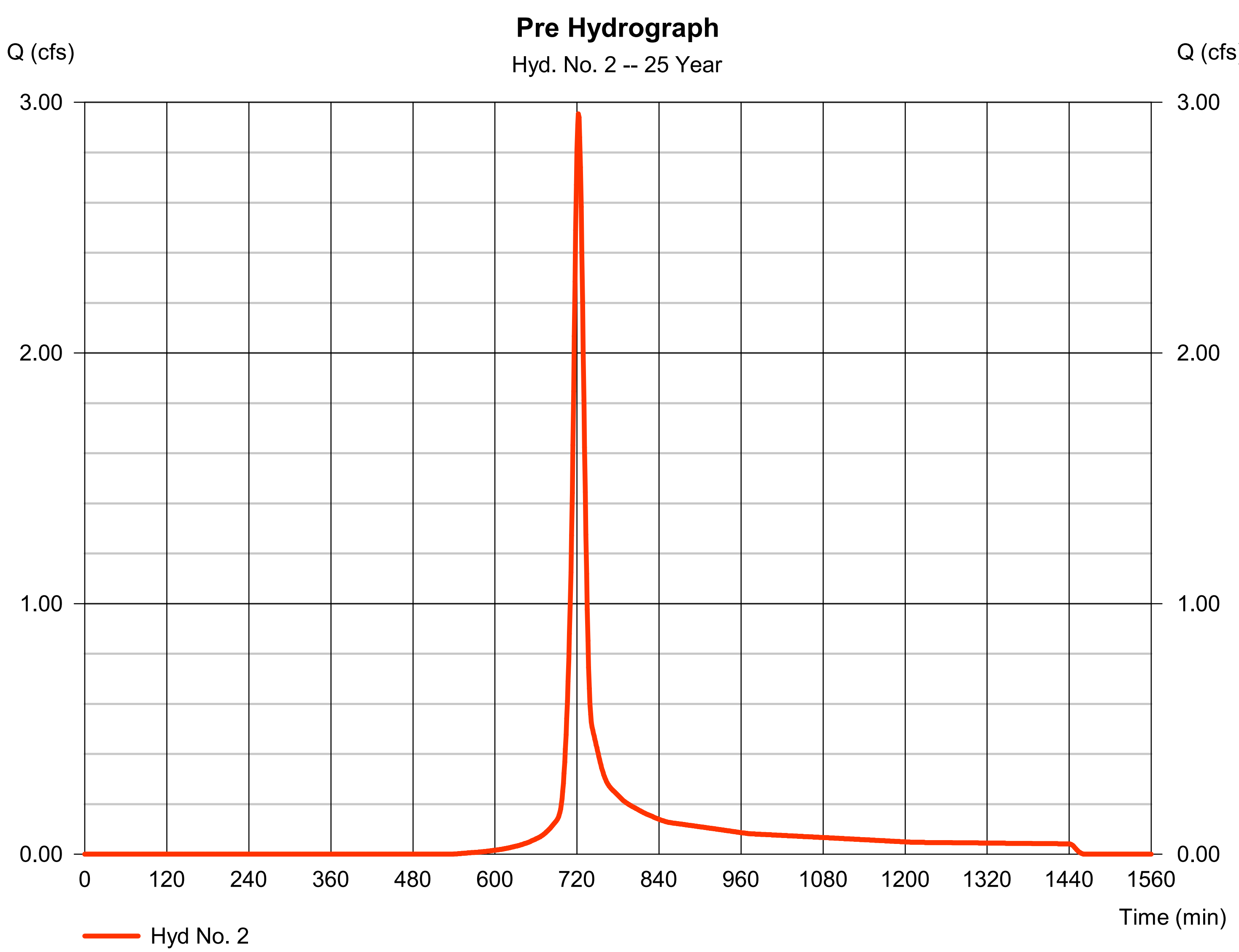


Hydrograph Report

Hyd. No. 2

Pre Hydrograph

Hydrograph type	= SCS Runoff	Peak discharge	= 2.954 cfs
Storm frequency	= 25 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 7,955 cuft
Drainage area	= 0.791 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.80 min
Total precip.	= 5.84 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

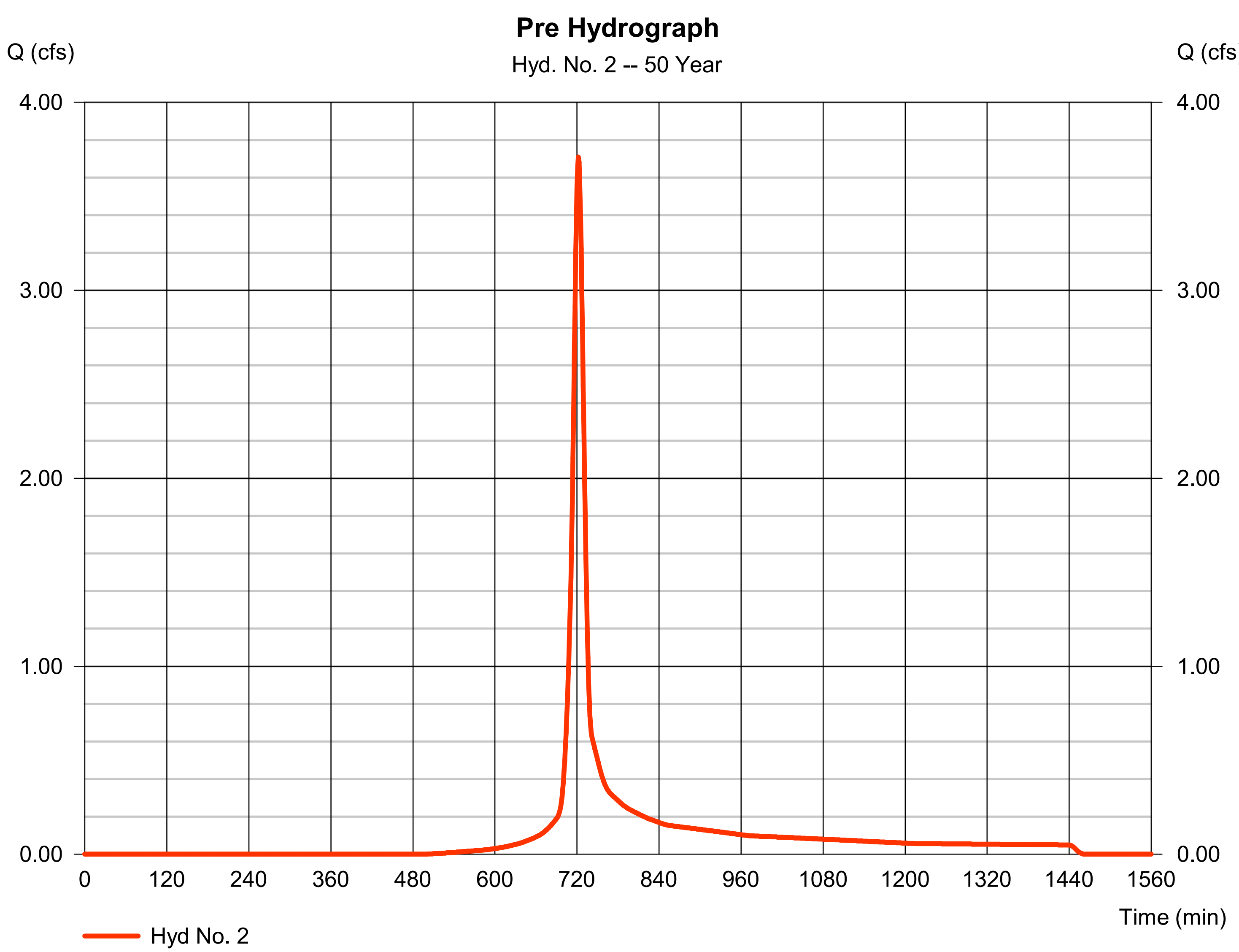


Hydrograph Report

Hyd. No. 2

Pre Hydrograph

Hydrograph type	= SCS Runoff	Peak discharge	= 3.709 cfs
Storm frequency	= 50 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 9,970 cuft
Drainage area	= 0.791 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.80 min
Total precip.	= 6.70 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

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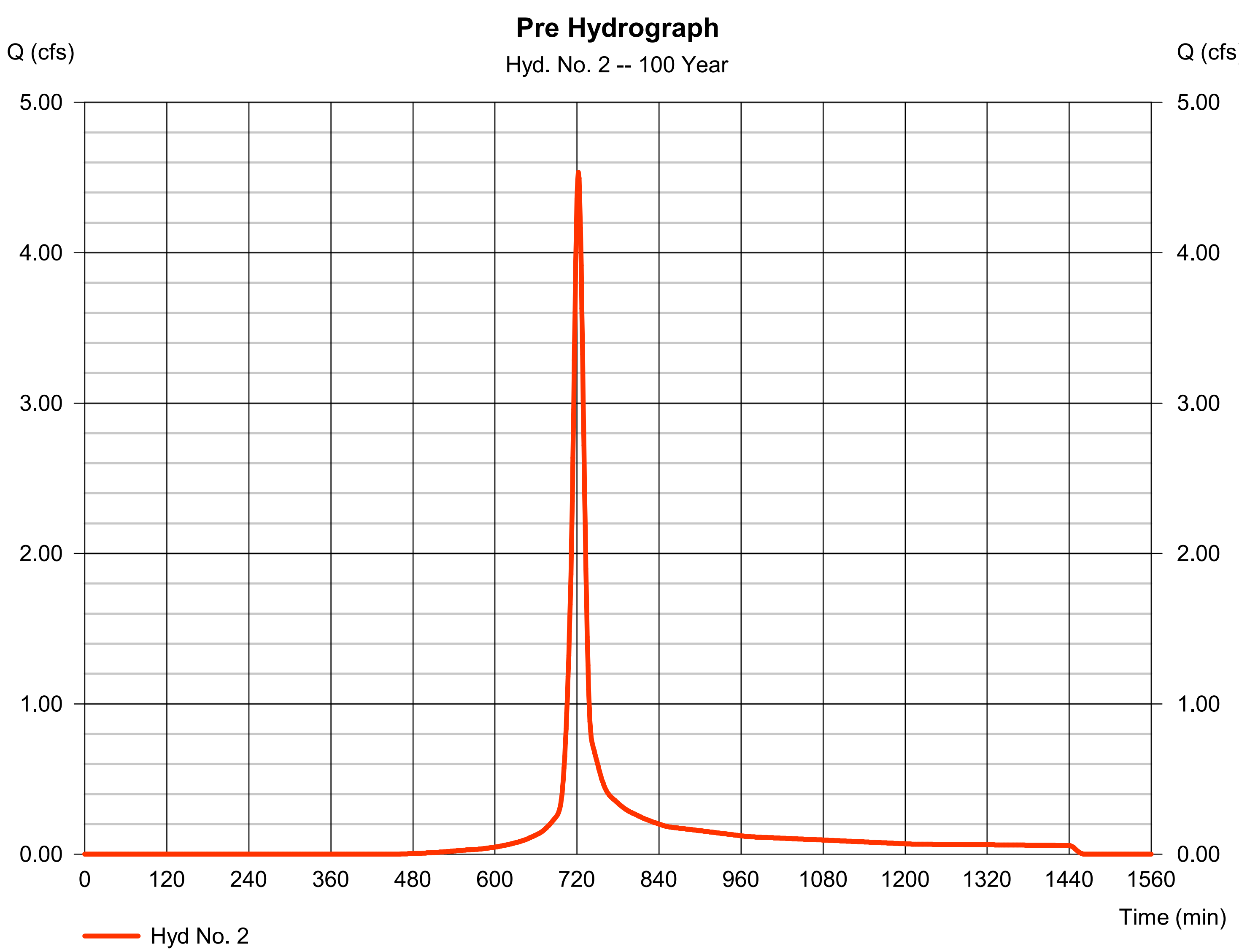
Hyd. No. 2

Pre Hydrograph

Hydrograph type	= SCS Runoff	Peak discharge	= 4.536 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 12,206 cuft
Drainage area	= 0.791 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.80 min
Total precip.	= 7.62 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



4.0 PROPOSED CONDITION HYDROGRAPHS

Cornerstone Consulting Engineers & Architectural, Inc.
213 West Main Street, Lansdale, PA 19446
Phone (215)362-2600 Fax (215)362-8400

Runoff Curve Number

Project: 3 Meadowcrest Road Minor Subdivision

Location: 3 Meadowcrest Road

Developemnt Type: ☐ Pre-Development ☑ Post-Development

Drainage Area Lot #1 to Basin

1. Runoff Curve Number (CN)

Soil Name and Hydraulic Group (Appendix A)	Cover Description	CN	Area (Acres)	Product of CN * Area
NhC (Group C)	Impervious (5,152 SF)	98	0.118	11.564
	Lawn (9228 SF)	74	0.212	15.688
		Totals =	0.330	27.252

CN (Weighted) = Total Product = / Total Area 82.5818182

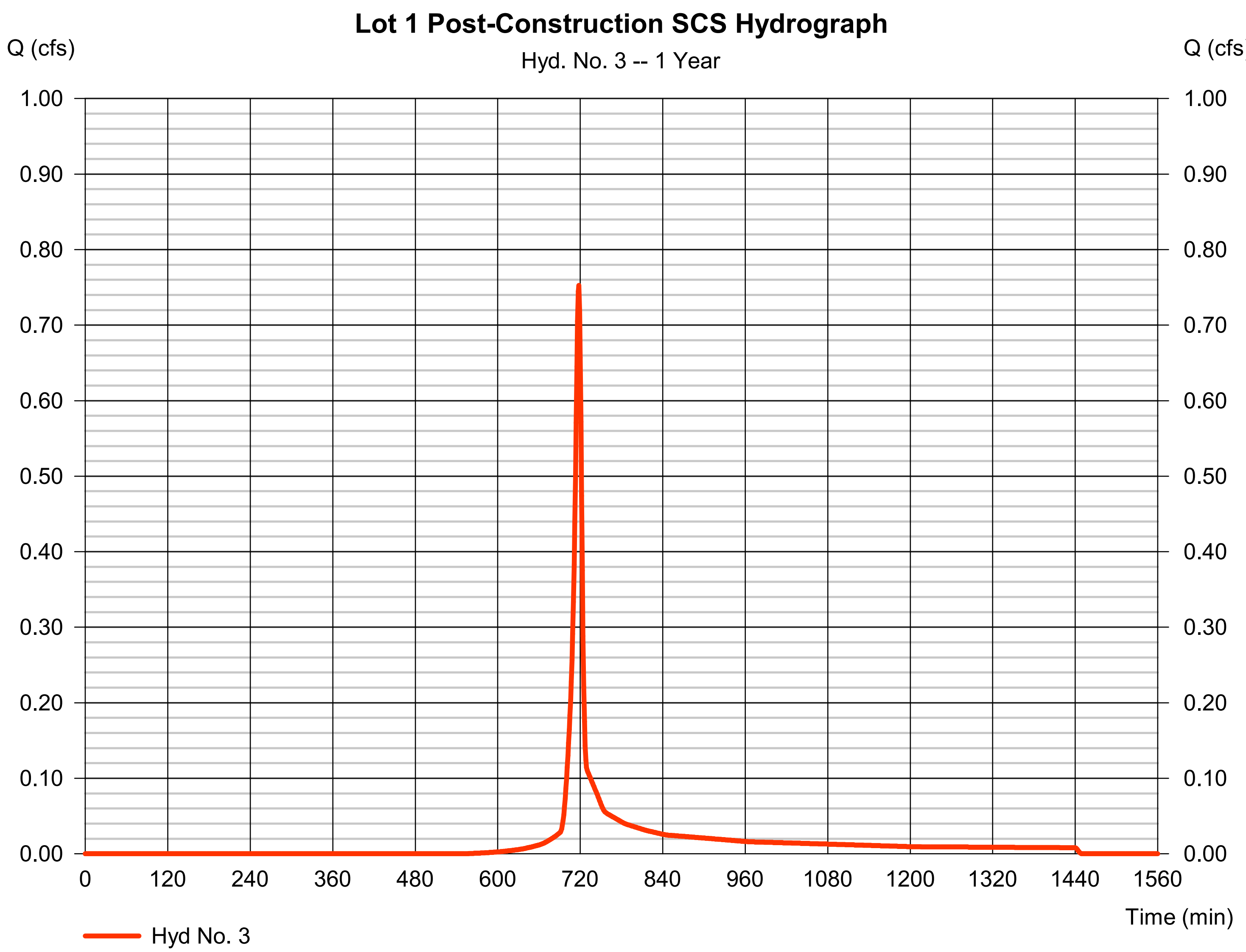
Use CN = 83

Hydrograph Report

Hyd. No. 3

Lot 1 Post-Construction SCS Hydrograph

Hydrograph type	= SCS Runoff	Peak discharge	= 0.753 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 1,513 cuft
Drainage area	= 0.330 ac	Curve number	= 83
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 2.72 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

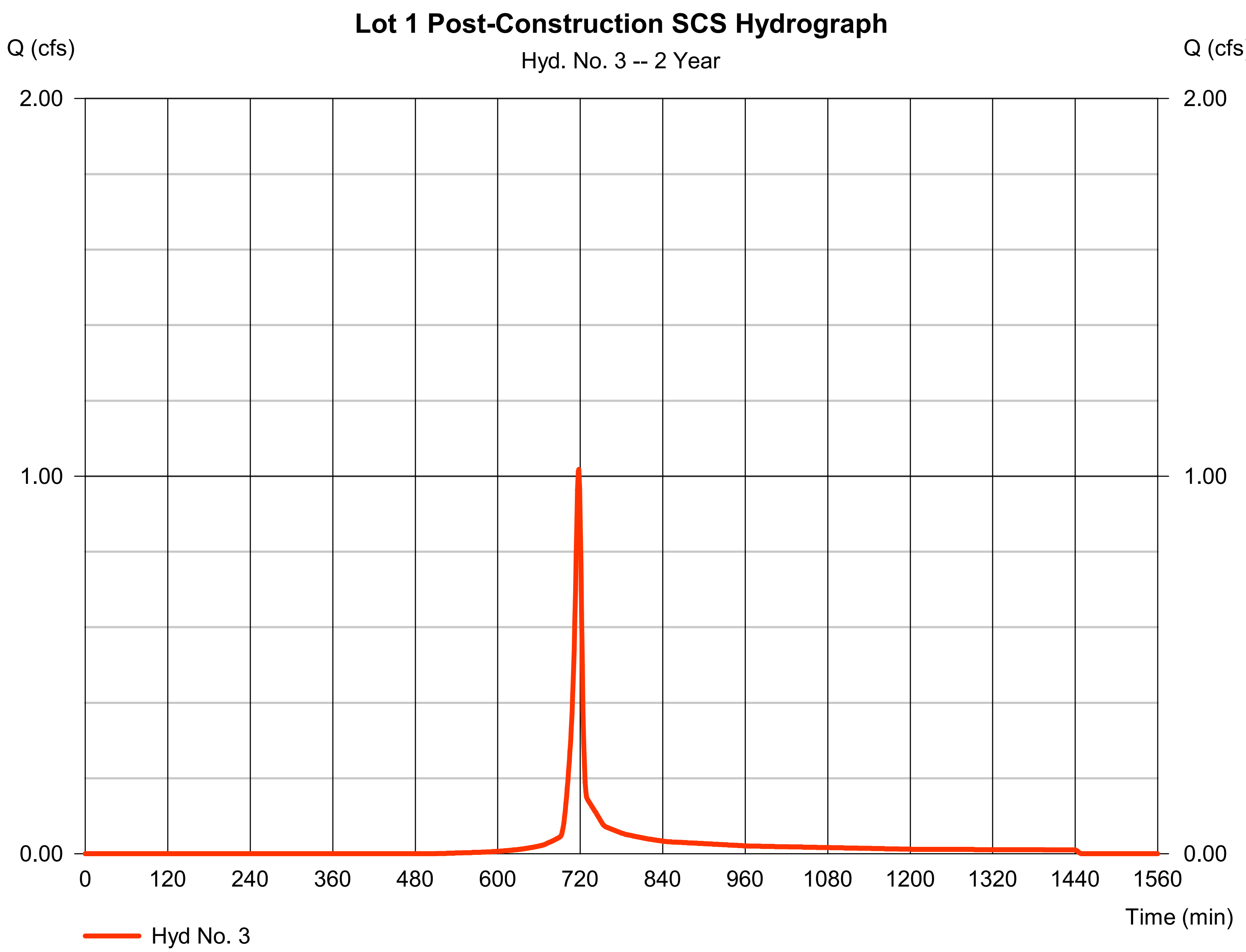


Hydrograph Report

Hyd. No. 3

Lot 1 Post-Construction SCS Hydrograph

Hydrograph type	= SCS Runoff	Peak discharge	= 1.018 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 2,059 cuft
Drainage area	= 0.330 ac	Curve number	= 83
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.27 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

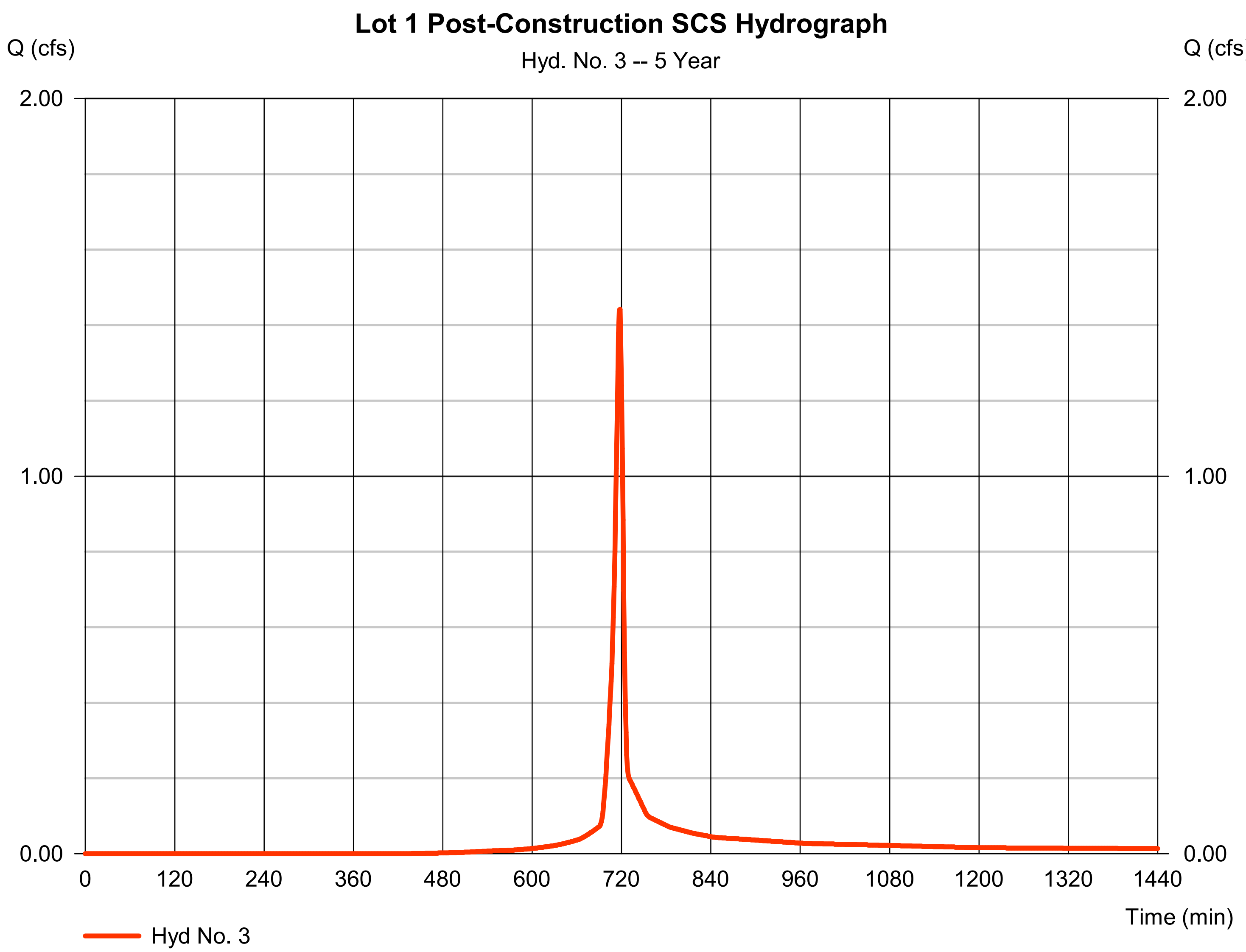


Hydrograph Report

Hyd. No. 3

Lot 1 Post-Construction SCS Hydrograph

Hydrograph type	= SCS Runoff	Peak discharge	= 1.442 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 2,953 cuft
Drainage area	= 0.330 ac	Curve number	= 83
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

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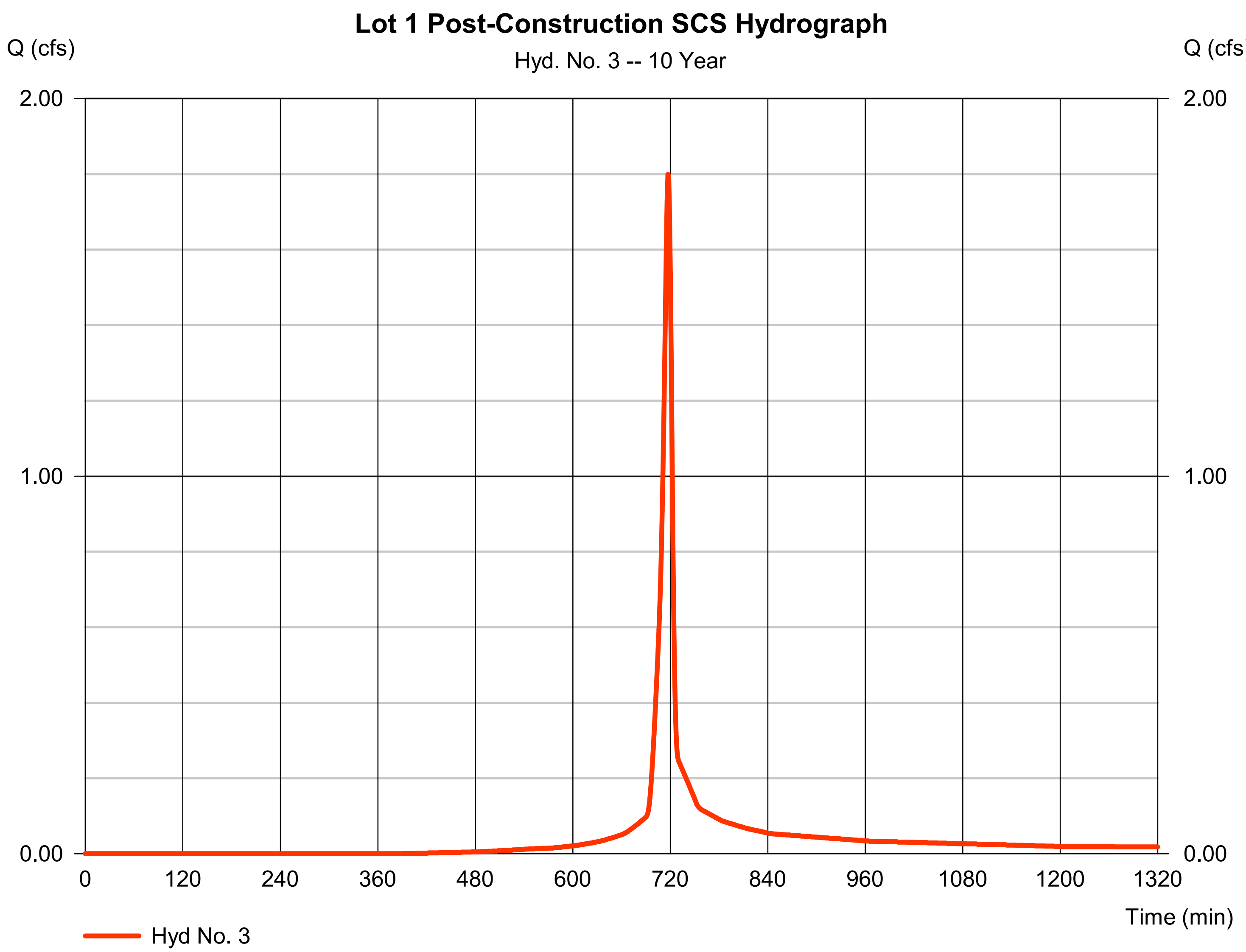
Hyd. No. 3

Lot 1 Post-Construction SCS Hydrograph

Hydrograph type	= SCS Runoff	Peak discharge	= 1.799 cfs
Storm frequency	= 10 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 3,720 cuft
Drainage area	= 0.330 ac	Curve number	= 83
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.82 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

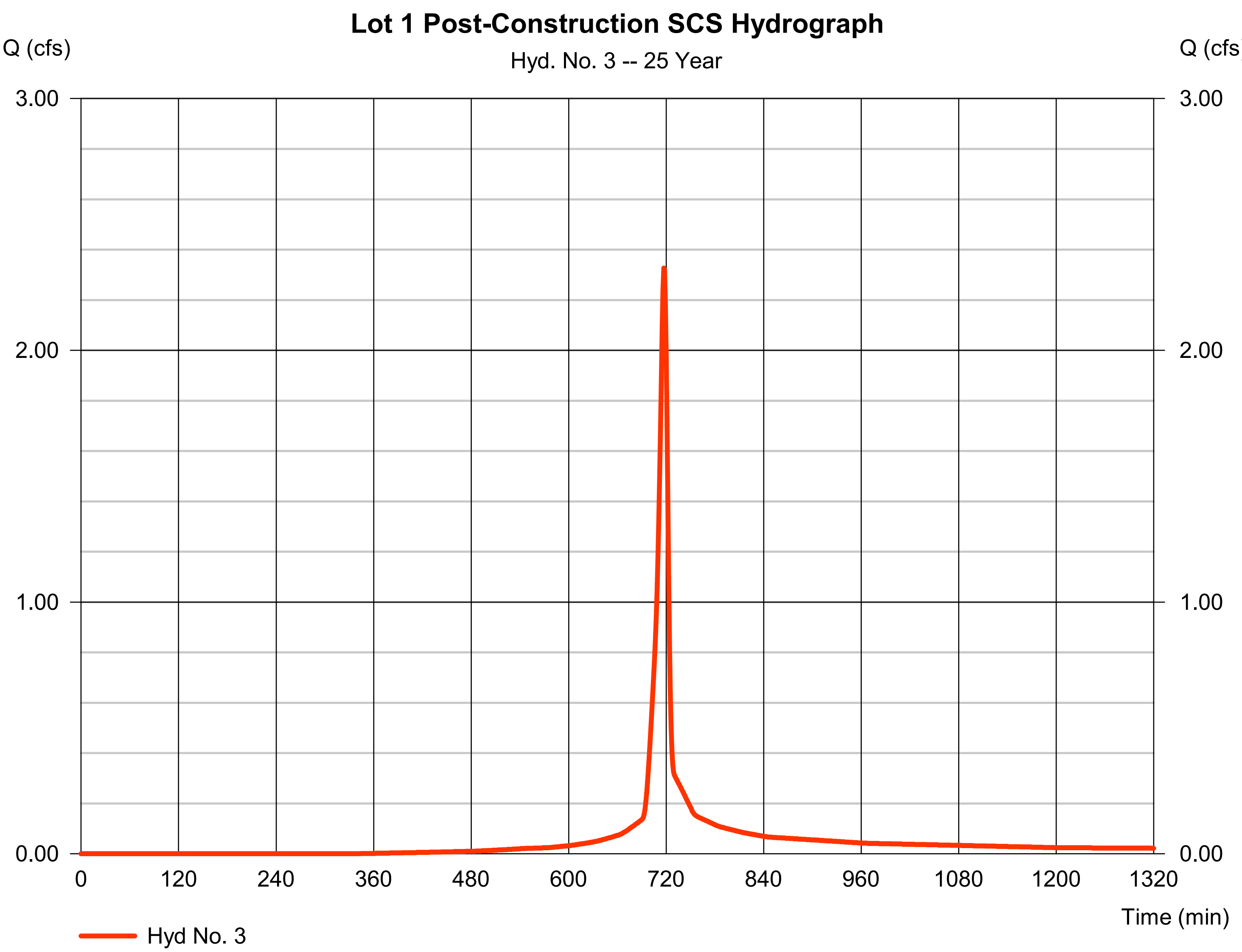


Hydrograph Report

Hyd. No. 3

Lot 1 Post-Construction SCS Hydrograph

Hydrograph type	= SCS Runoff	Peak discharge	= 2.327 cfs
Storm frequency	= 25 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 4,871 cuft
Drainage area	= 0.330 ac	Curve number	= 83
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 5.84 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

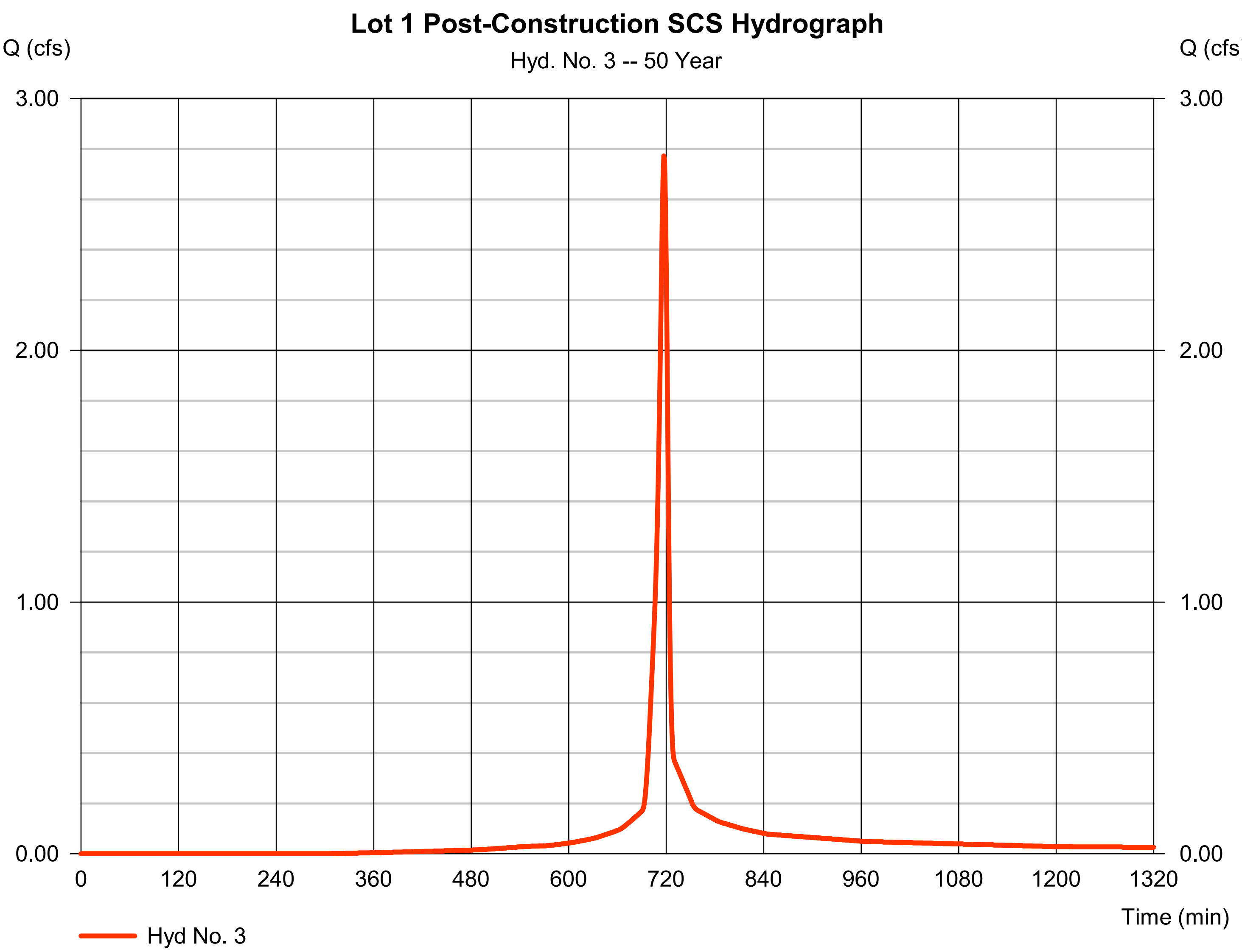


Hydrograph Report

Hyd. No. 3

Lot 1 Post-Construction SCS Hydrograph

Hydrograph type	= SCS Runoff	Peak discharge	= 2.772 cfs
Storm frequency	= 50 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 5,862 cuft
Drainage area	= 0.330 ac	Curve number	= 83
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 6.70 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

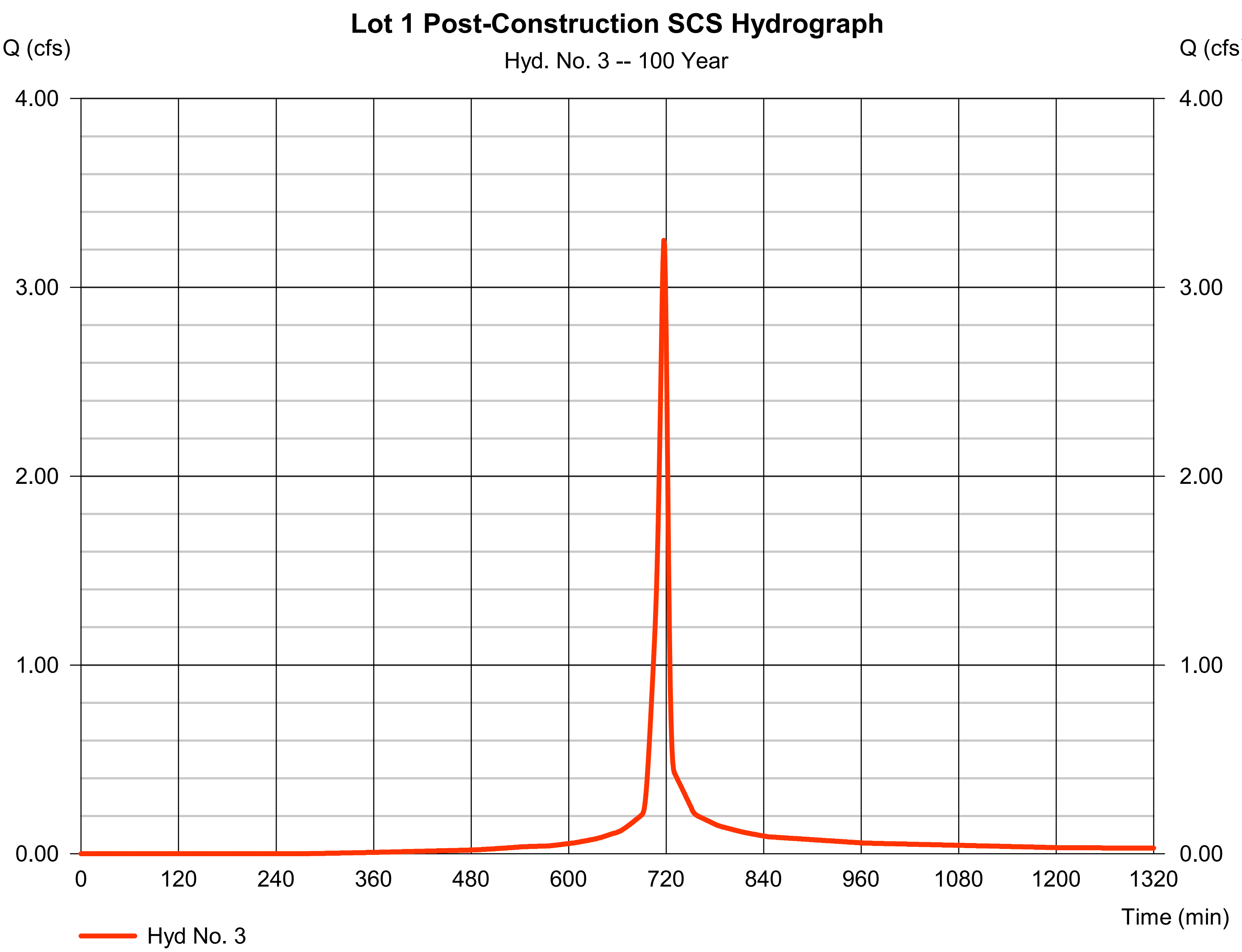


Hydrograph Report

Hyd. No. 3

Lot 1 Post-Construction SCS Hydrograph

Hydrograph type	= SCS Runoff	Peak discharge	= 3.249 cfs
Storm frequency	= 100 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 6,937 cuft
Drainage area	= 0.330 ac	Curve number	= 83
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.62 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Cornerstone Consulting Engineers & Architectural, Inc.
213 West Main Street, Lansdale, PA 19446
Phone (215)362-2600 Fax (215)362-8400

Runoff Curve Number

Project: 3 Meadowcrest Road Minor Subdivision

Location: 3 Meadowcrest Road

Developemnt Type: ☐ Pre-Development ☑ Post-Development

Drainage Area Lot #1 to Bypass

1. Runoff Curve Number (CN)

Soil Name and Hydraulic Group (Appendix A)	Cover Description	CN	Area (Acres)	Product of CN * Area
NhC (Group C)	Impervious (341 SF)	98	0.008	0.784
	Lawn (4,056 SF)	74	0.093	6.882
		Totals =	0.101	7.666

CN (Weighted) = Total Product = 75.9009901
Total Area

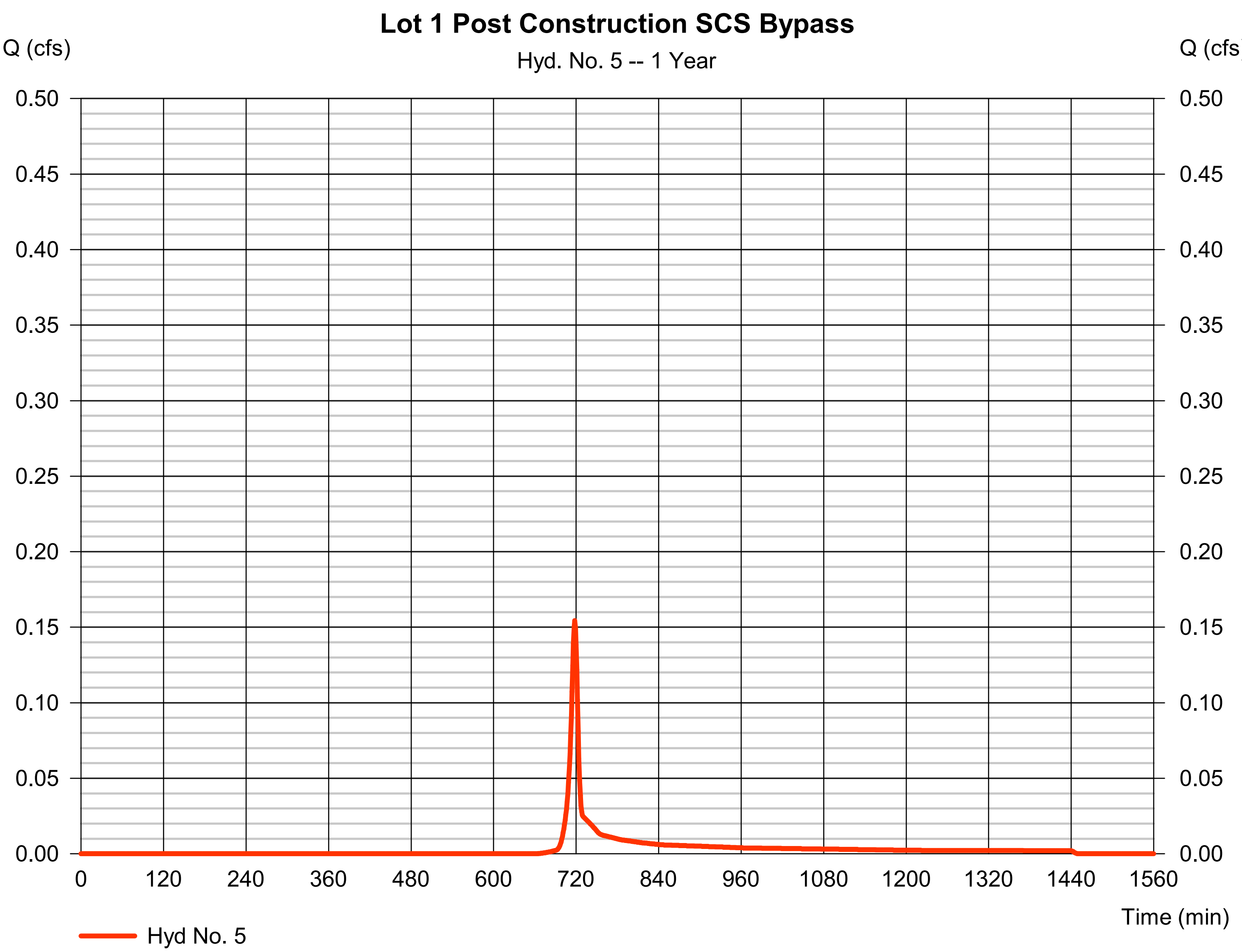
Use CN = 76

Hydrograph Report

Hyd. No. 5

Lot 1 Post Construction SCS Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 0.154 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 314 cuft
Drainage area	= 0.101 ac	Curve number	= 76
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 2.72 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

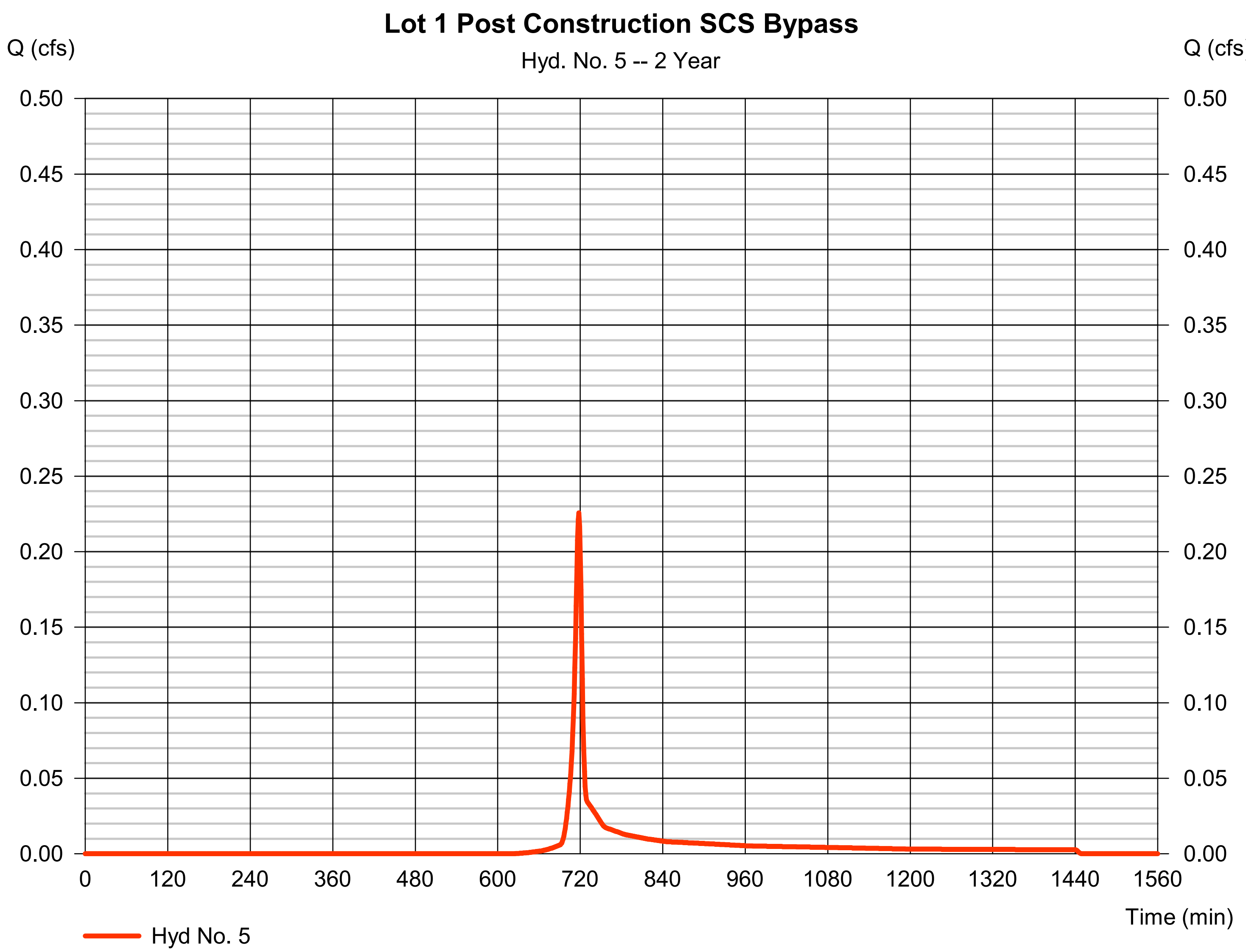


Hydrograph Report

Hyd. No. 5

Lot 1 Post Construction SCS Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 0.226 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 454 cuft
Drainage area	= 0.101 ac	Curve number	= 76
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.27 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

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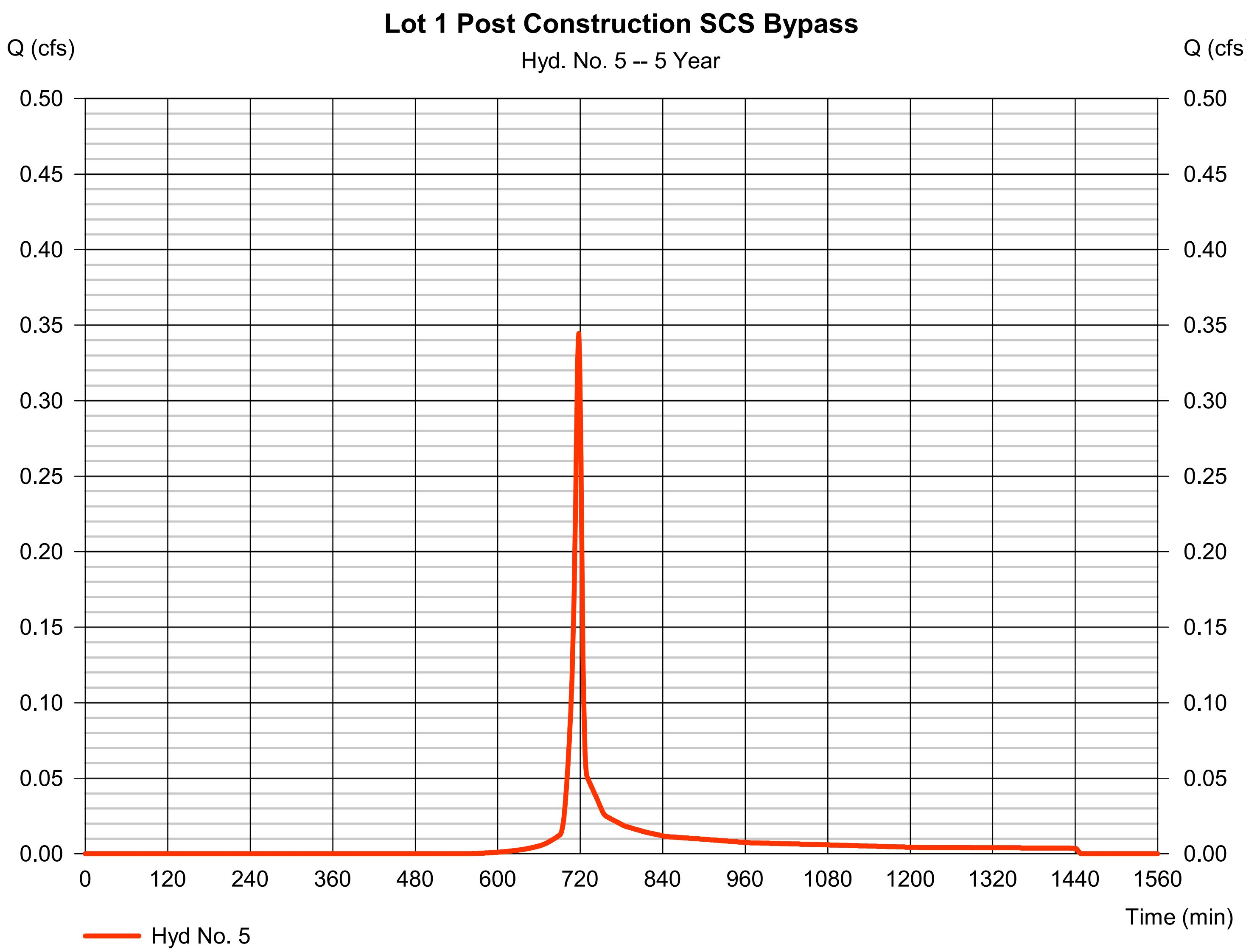
Hyd. No. 5

Lot 1 Post Construction SCS Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 0.344 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 692 cuft
Drainage area	= 0.101 ac	Curve number	= 76
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

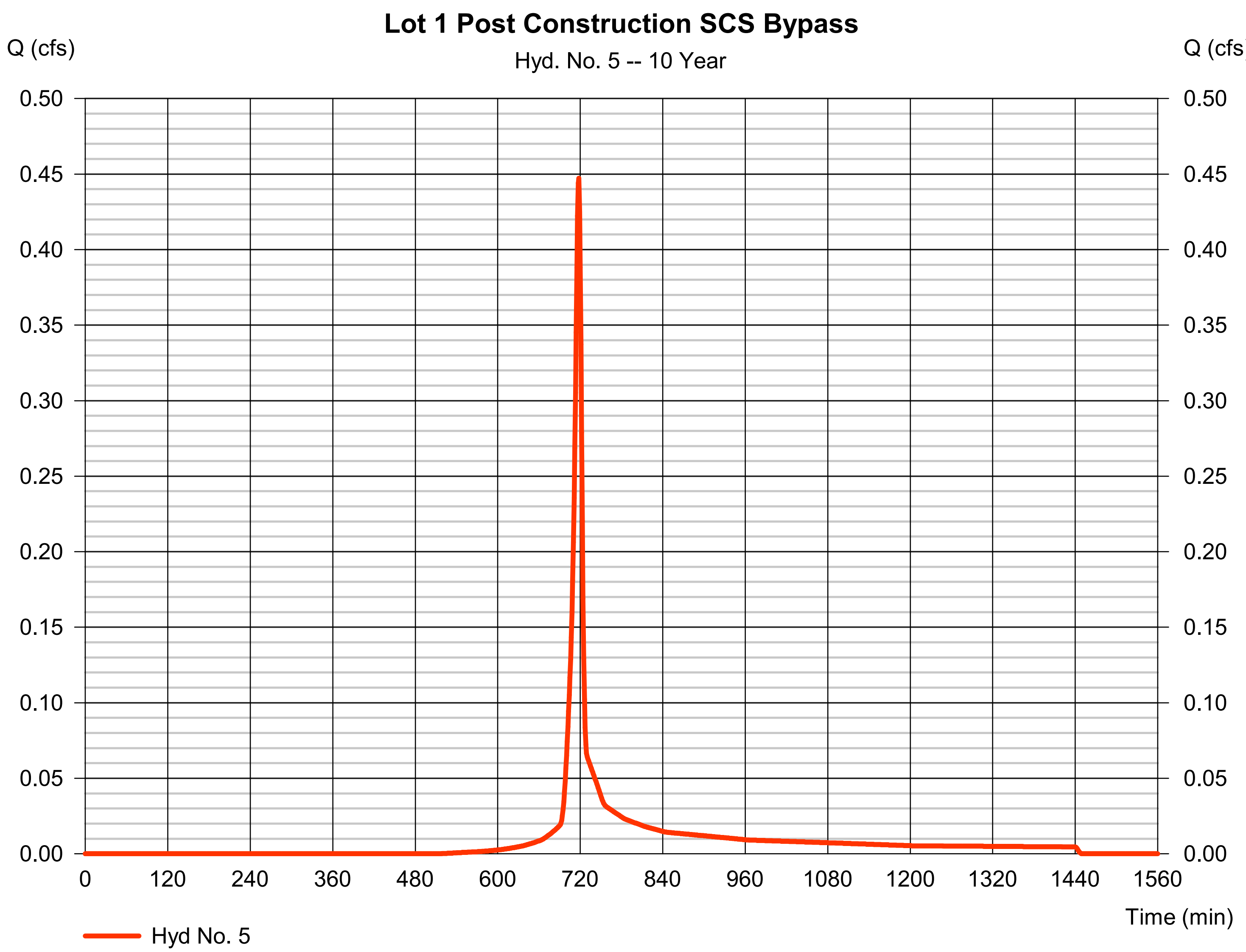


Hydrograph Report

Hyd. No. 5

Lot 1 Post Construction SCS Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 0.447 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 903 cuft
Drainage area	= 0.101 ac	Curve number	= 76
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.82 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

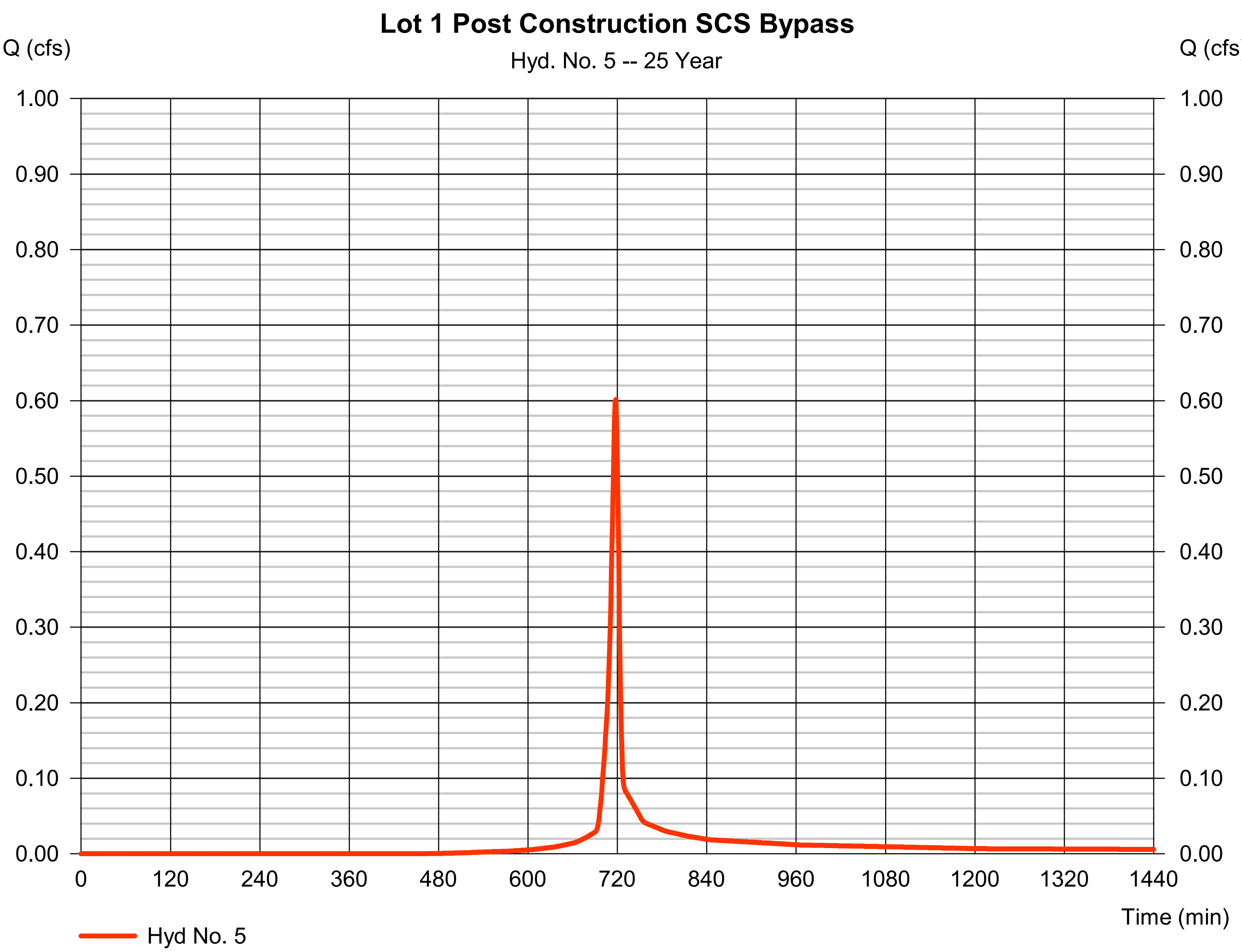


Hydrograph Report

Hyd. No. 5

Lot 1 Post Construction SCS Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 0.602 cfs
Storm frequency	= 25 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 1,226 cuft
Drainage area	= 0.101 ac	Curve number	= 76
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 5.84 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

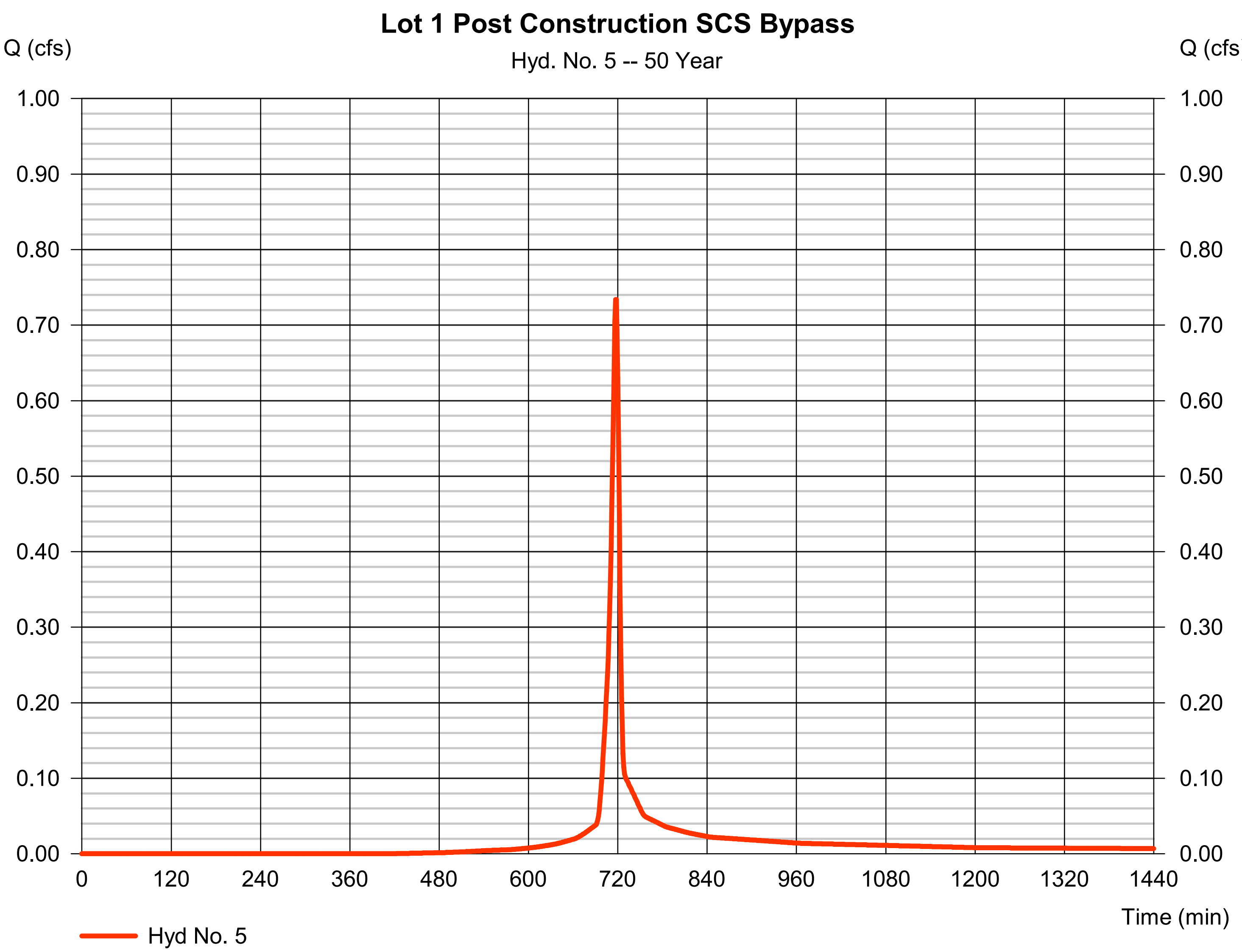


Hydrograph Report

Hyd. No. 5

Lot 1 Post Construction SCS Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 0.734 cfs
Storm frequency	= 50 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 1,509 cuft
Drainage area	= 0.101 ac	Curve number	= 76
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 6.70 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

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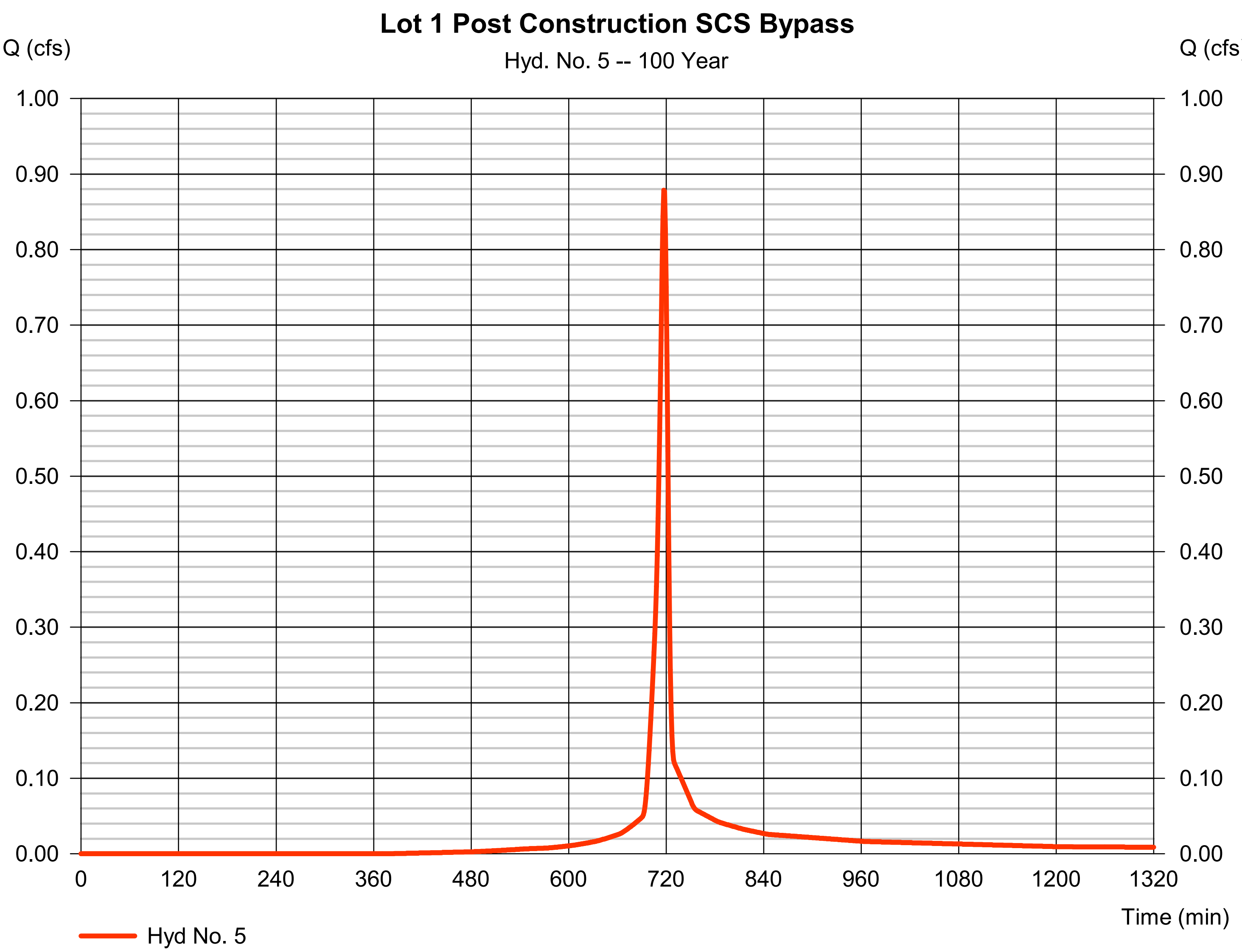
Hyd. No. 5

Lot 1 Post Construction SCS Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 0.879 cfs
Storm frequency	= 100 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 1,820 cuft
Drainage area	= 0.101 ac	Curve number	= 76
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.62 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Cornerstone Consulting Engineers & Architectural, Inc.
213 West Main Street, Lansdale, PA 19446
Phone (215)362-2600 Fax (215)362-8400

Runoff Curve Number

Project: 3 Meadowcrest Road Minor Subdivision

Location: 3 Meadowcrest Road

Developemnt Type: ☐ Pre-Development ☑ Post-Development

Drainage Area Lot #2 to Basin

1. Runoff Curve Number (CN)

Soil Name and Hydraulic Group (Appendix A)	Cover Description	CN	Area (Acres)	Product of CN * Area
NhC (Group C)	Impervious (5,920 SF)	98	0.136	13.328
	Lawn (6,248 SF)	74	0.143	10.582
		Totals =	0.279	23.91

CN (Weighted) = Total Product / Total Area = 85.6989247

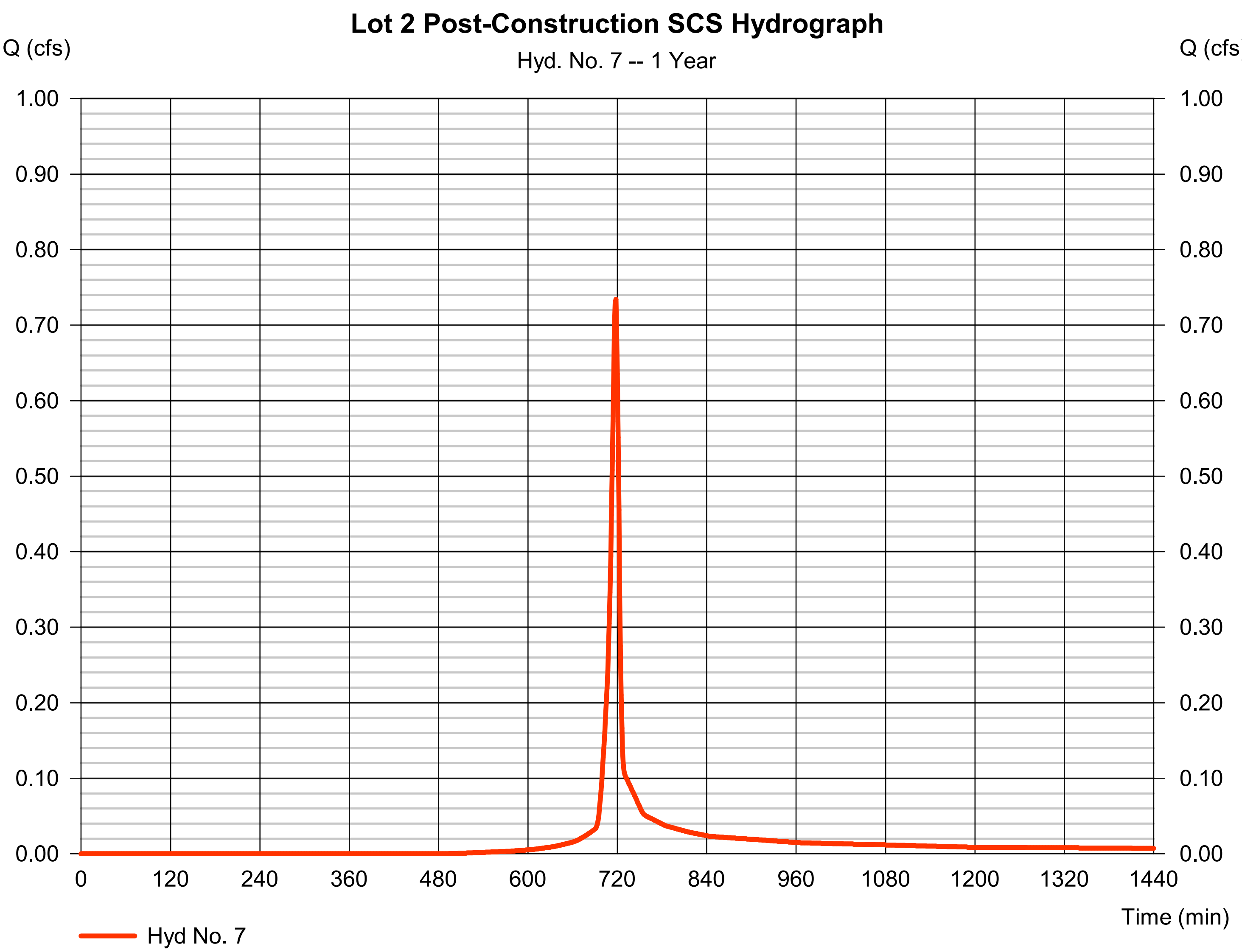
Use CN = 86

Hydrograph Report

Hyd. No. 7

Lot 2 Post-Construction SCS Hydrograph

Hydrograph type	= SCS Runoff	Peak discharge	= 0.734 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 1,489 cuft
Drainage area	= 0.279 ac	Curve number	= 86
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 2.72 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

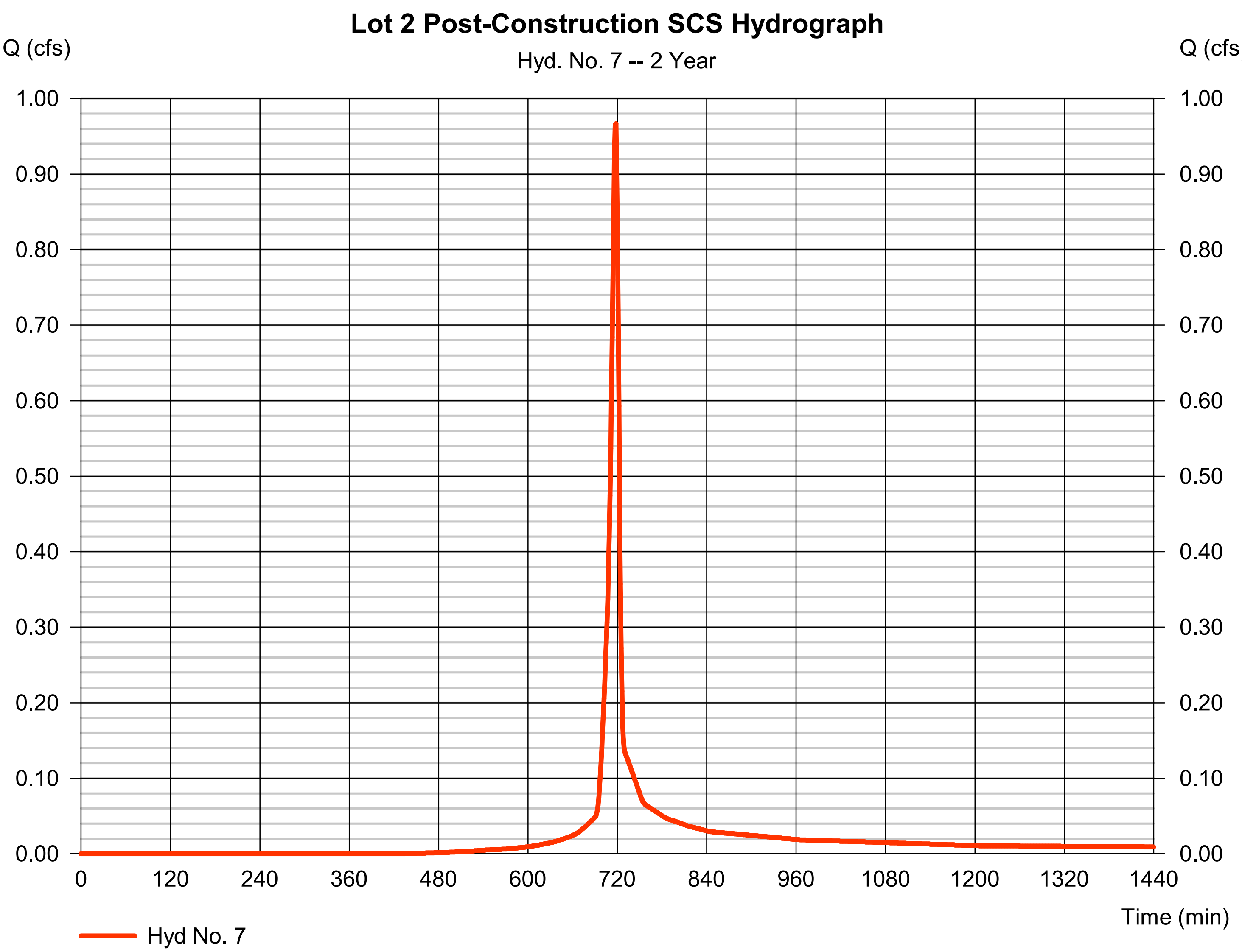


Hydrograph Report

Hyd. No. 7

Lot 2 Post-Construction SCS Hydrograph

Hydrograph type	= SCS Runoff	Peak discharge	= 0.967 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 1,980 cuft
Drainage area	= 0.279 ac	Curve number	= 86
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.27 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

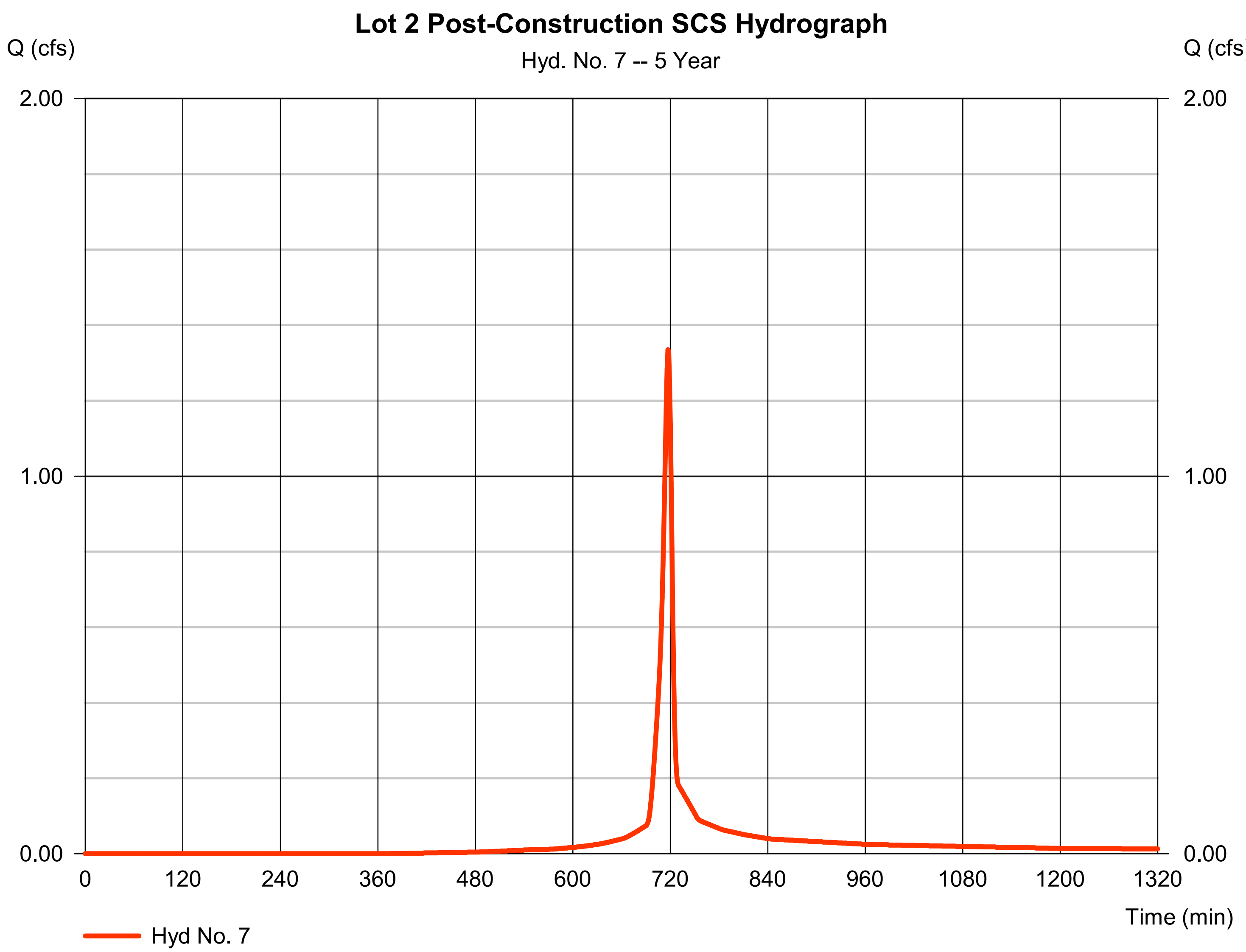


Hydrograph Report

Hyd. No. 7

Lot 2 Post-Construction SCS Hydrograph

Hydrograph type	= SCS Runoff	Peak discharge	= 1.335 cfs
Storm frequency	= 5 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 2,773 cuft
Drainage area	= 0.279 ac	Curve number	= 86
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

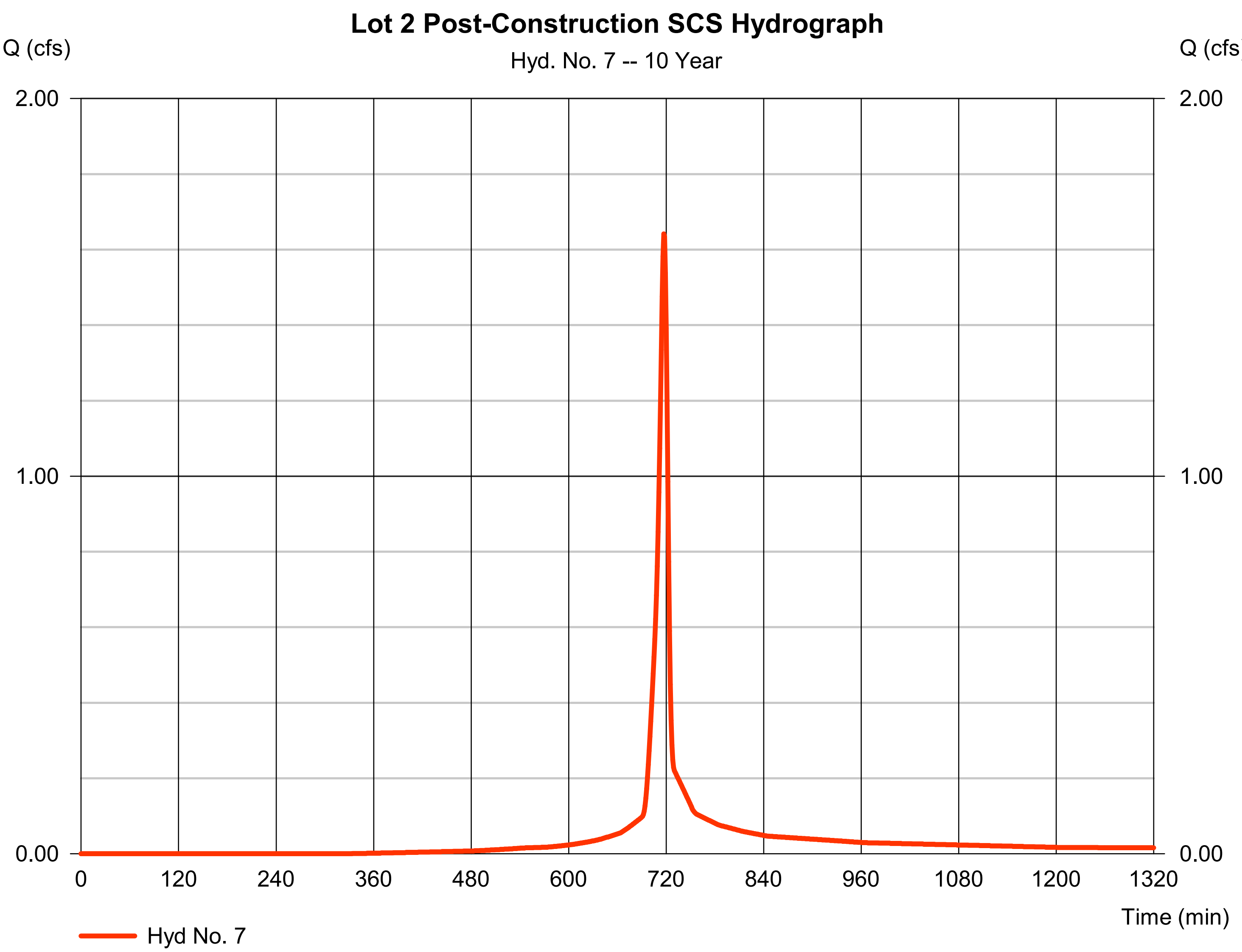


Hydrograph Report

Hyd. No. 7

Lot 2 Post-Construction SCS Hydrograph

Hydrograph type	= SCS Runoff	Peak discharge	= 1.642 cfs
Storm frequency	= 10 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 3,446 cuft
Drainage area	= 0.279 ac	Curve number	= 86
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.82 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

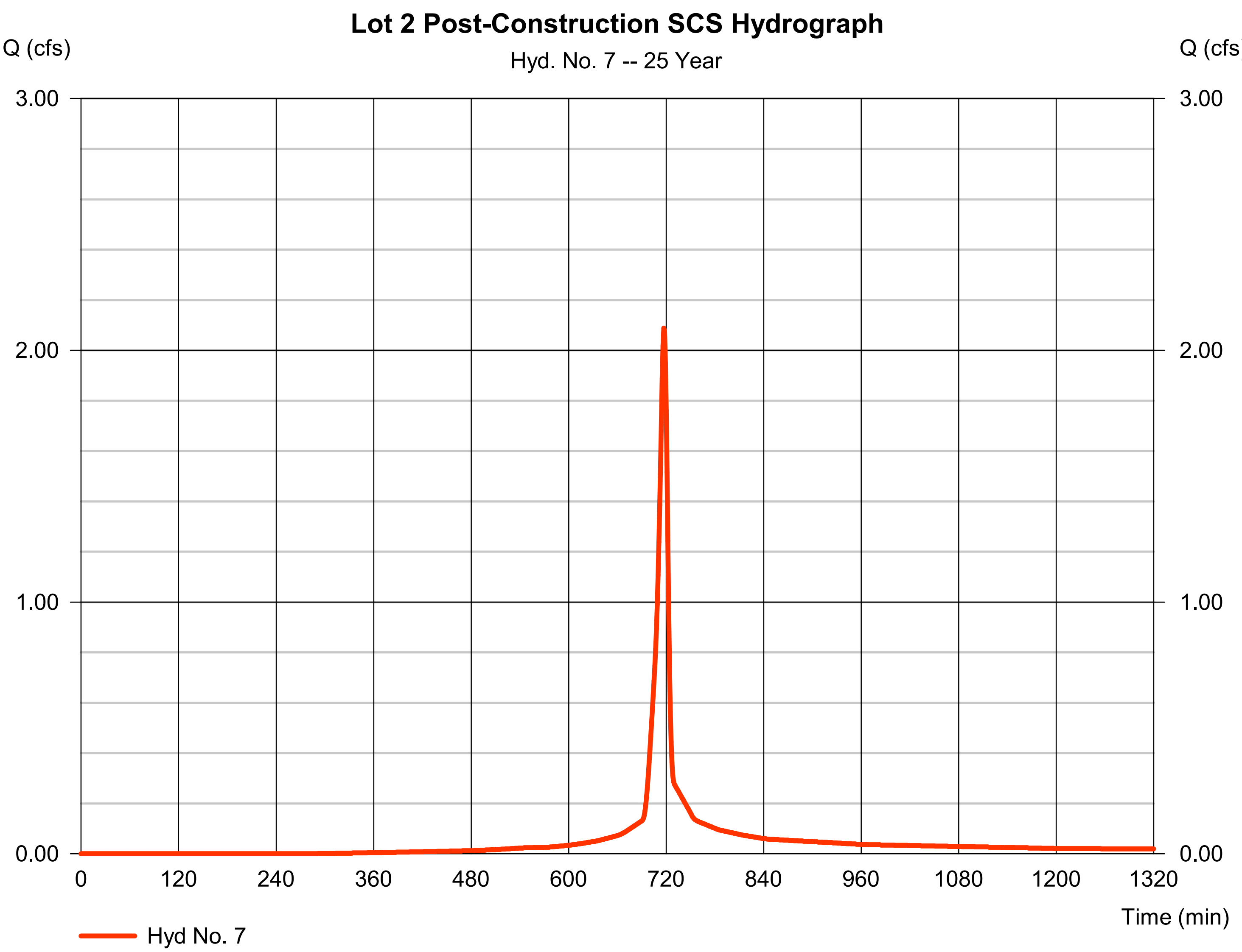


Hydrograph Report

Hyd. No. 7

Lot 2 Post-Construction SCS Hydrograph

Hydrograph type	= SCS Runoff	Peak discharge	= 2.088 cfs
Storm frequency	= 25 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 4,447 cuft
Drainage area	= 0.279 ac	Curve number	= 86
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 5.84 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

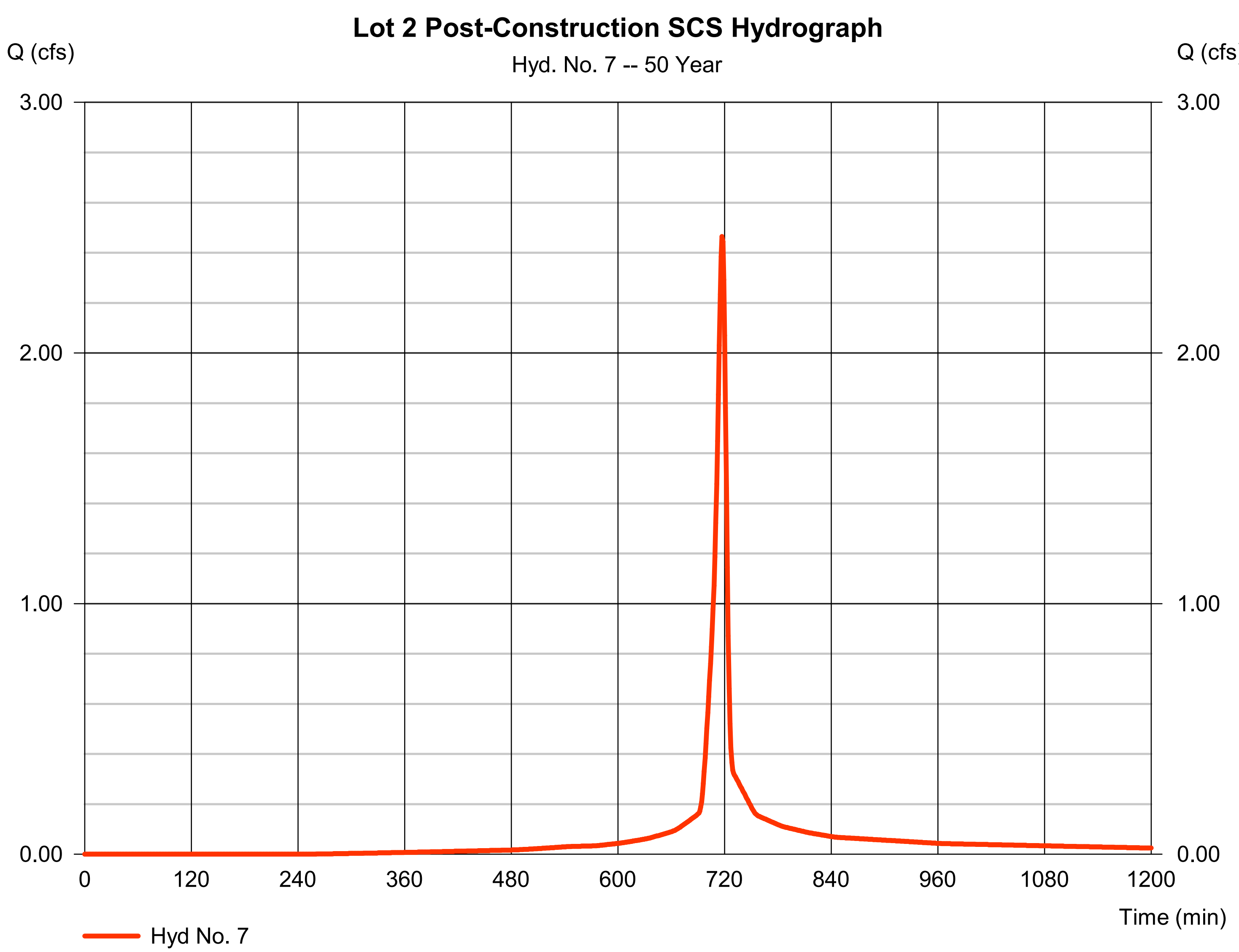


Hydrograph Report

Hyd. No. 7

Lot 2 Post-Construction SCS Hydrograph

Hydrograph type	= SCS Runoff	Peak discharge	= 2.464 cfs
Storm frequency	= 50 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 5,303 cuft
Drainage area	= 0.279 ac	Curve number	= 86
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 6.70 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

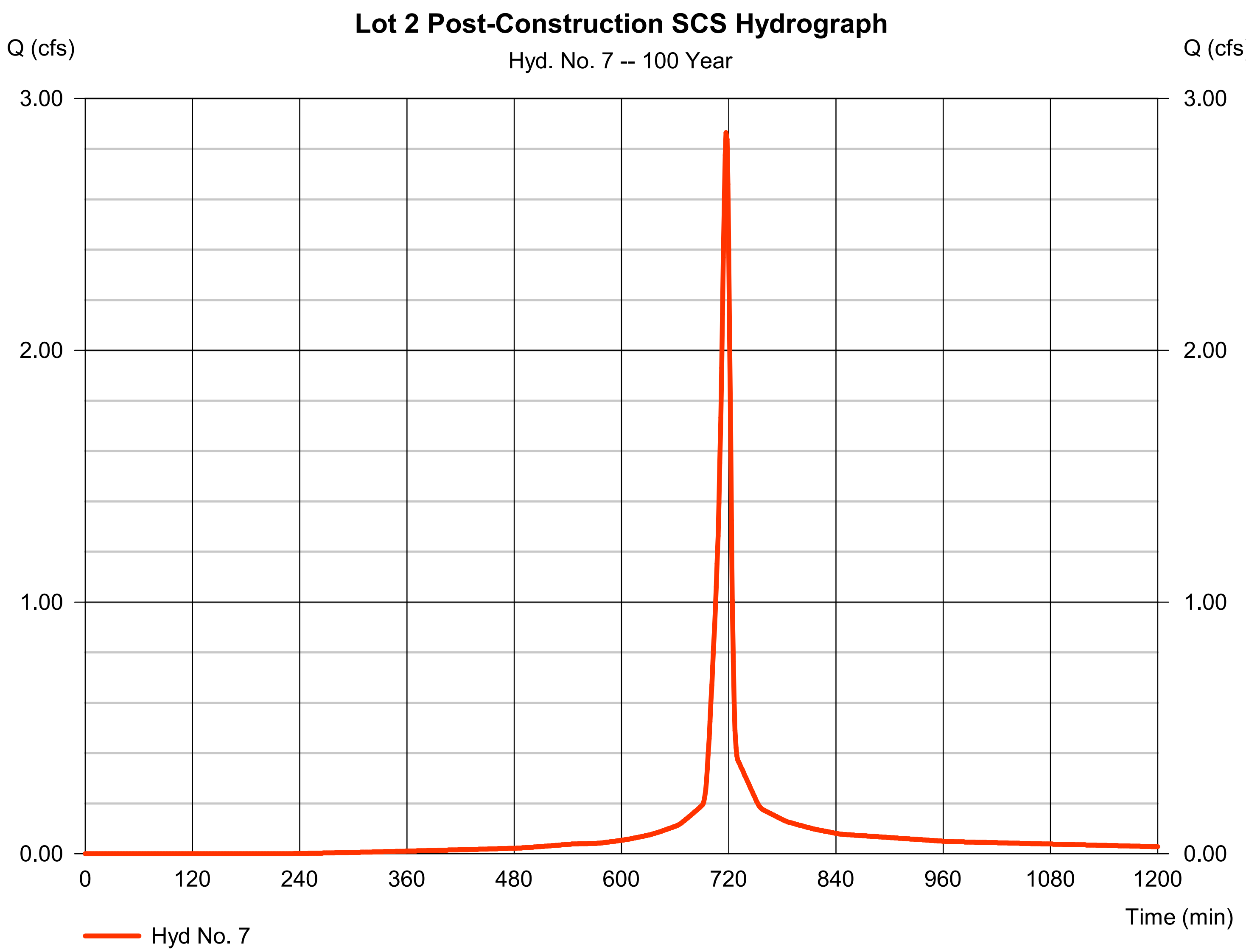


Hydrograph Report

Hyd. No. 7

Lot 2 Post-Construction SCS Hydrograph

Hydrograph type	= SCS Runoff	Peak discharge	= 2.865 cfs
Storm frequency	= 100 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 6,228 cuft
Drainage area	= 0.279 ac	Curve number	= 86
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.62 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



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213 West Main Street, Lansdale, PA 19446
Phone (215)362-2600 Fax (215)362-8400

Runoff Curve Number

Project: 3 Meadowcrest Road Minor Subdivision

Location: 3 Meadowcrest Road

Developemnt Type: ☐ Pre-Development ☑ Post-Development

Drainage Area Lot #2 to Bypass

1. Runoff Curve Number (CN)

Soil Name and Hydraulic Group (Appendix A)	Cover Description	CN	Area (Acres)	Product of CN * Area
NhC (Group C)	Impervious (0 SF)	98	0.000	0.000
	Lawn (3,522 SF)	74	0.081	5.994
		Totals =	0.081	5.994

CN (Weighted) = Total Product = / Total Area = 74

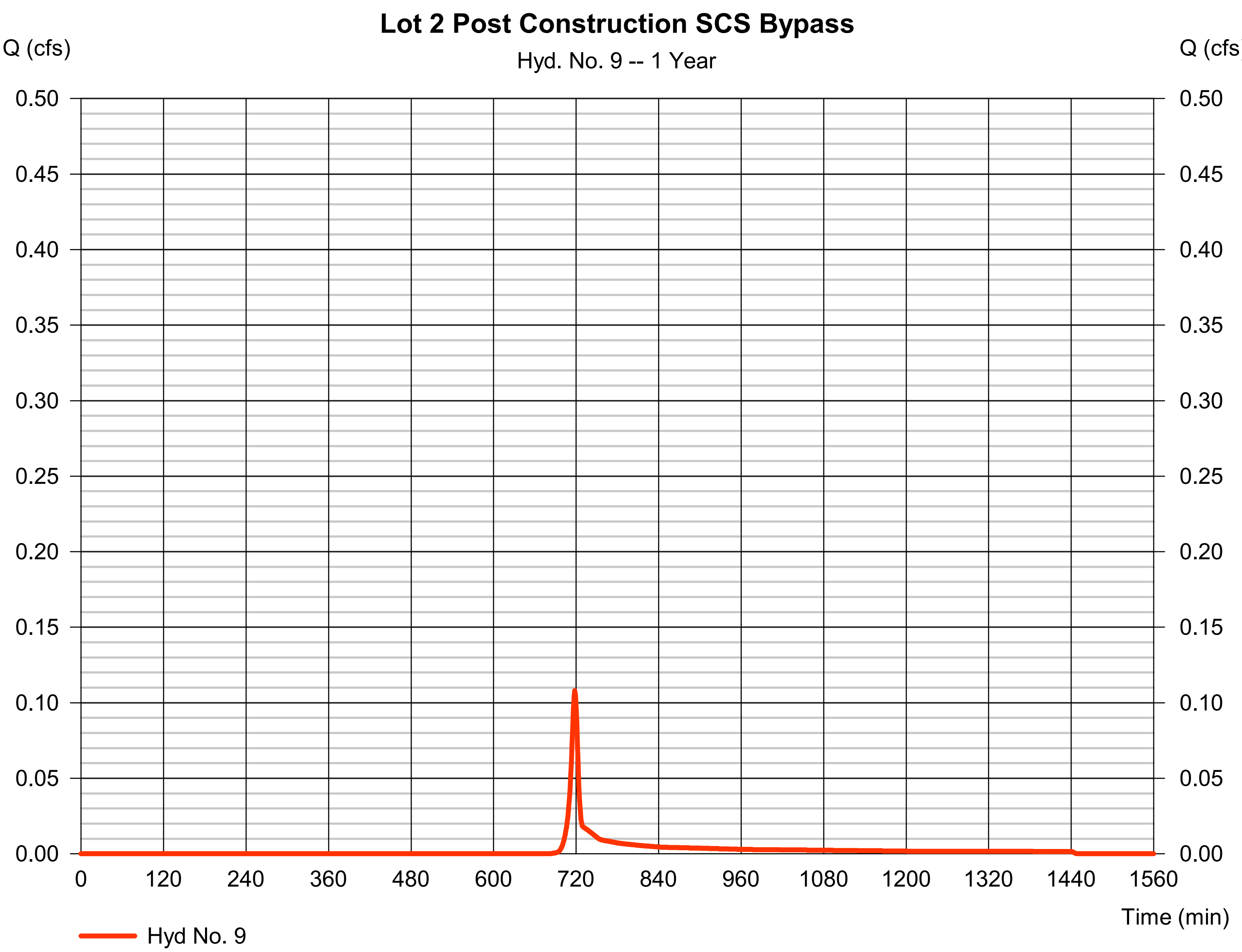
Use CN = 74

Hydrograph Report

Hyd. No. 9

Lot 2 Post Construction SCS Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 0.108 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 223 cuft
Drainage area	= 0.081 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 2.72 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

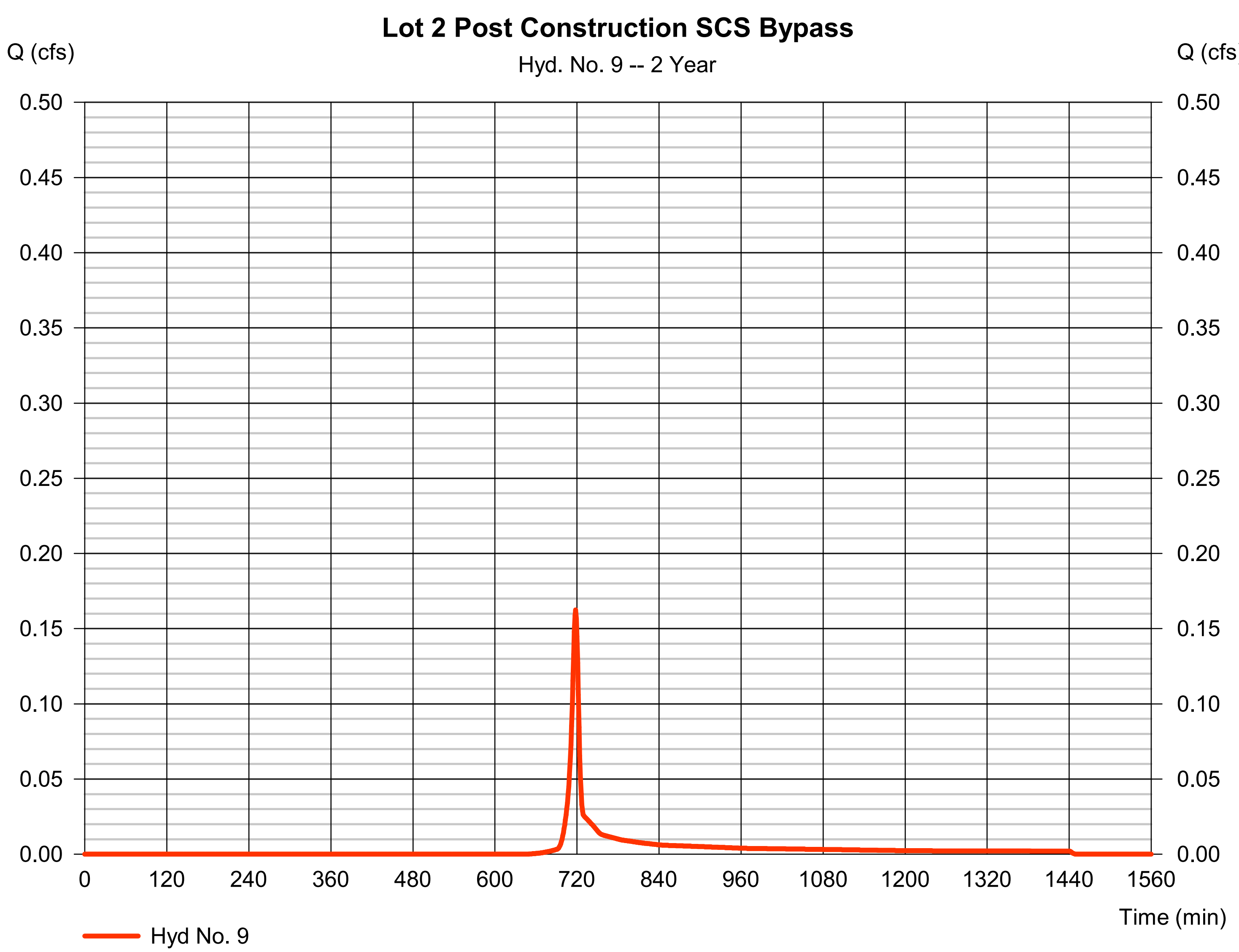


Hydrograph Report

Hyd. No. 9

Lot 2 Post Construction SCS Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 0.162 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 329 cuft
Drainage area	= 0.081 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.27 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

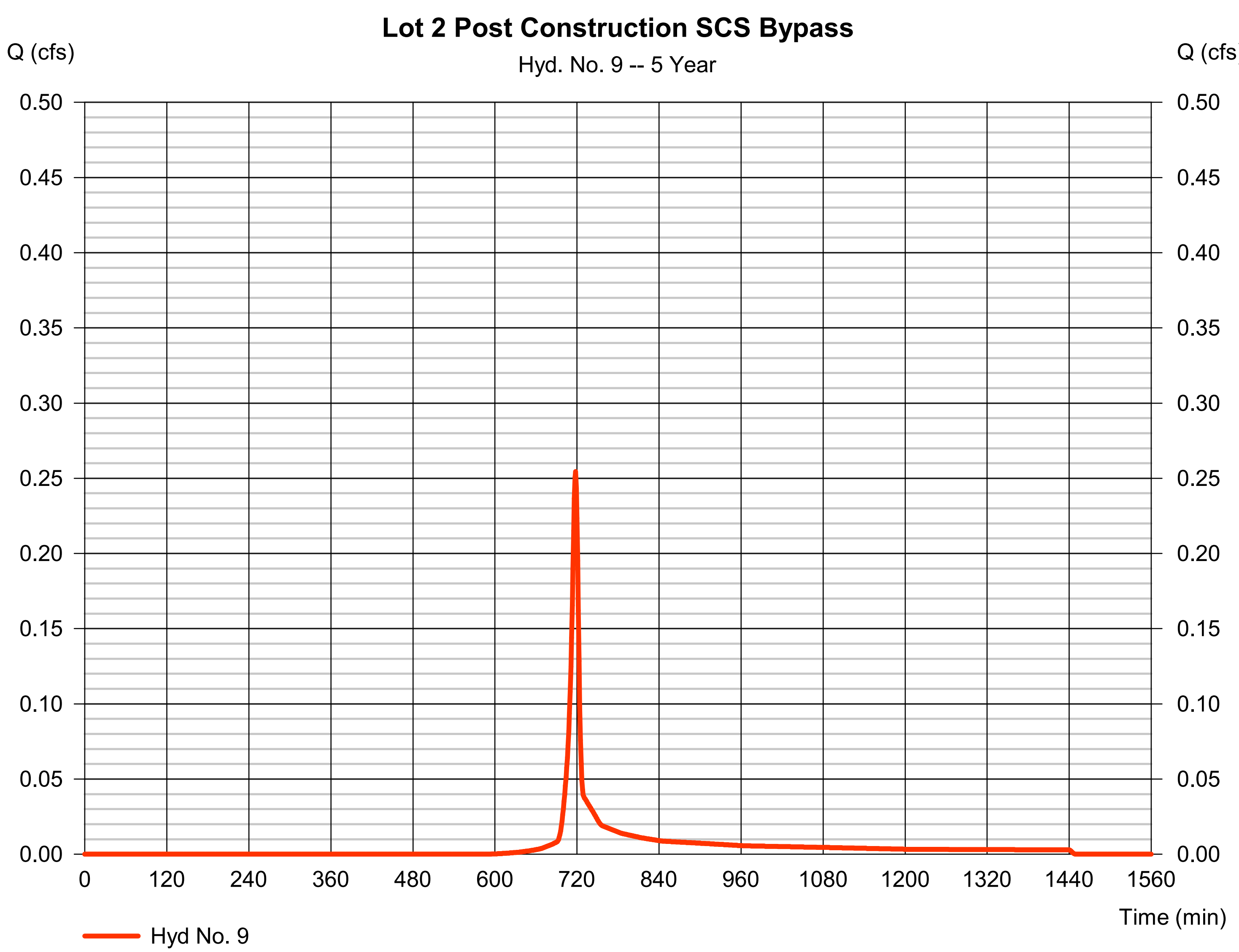


Hydrograph Report

Hyd. No. 9

Lot 2 Post Construction SCS Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 0.254 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 511 cuft
Drainage area	= 0.081 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

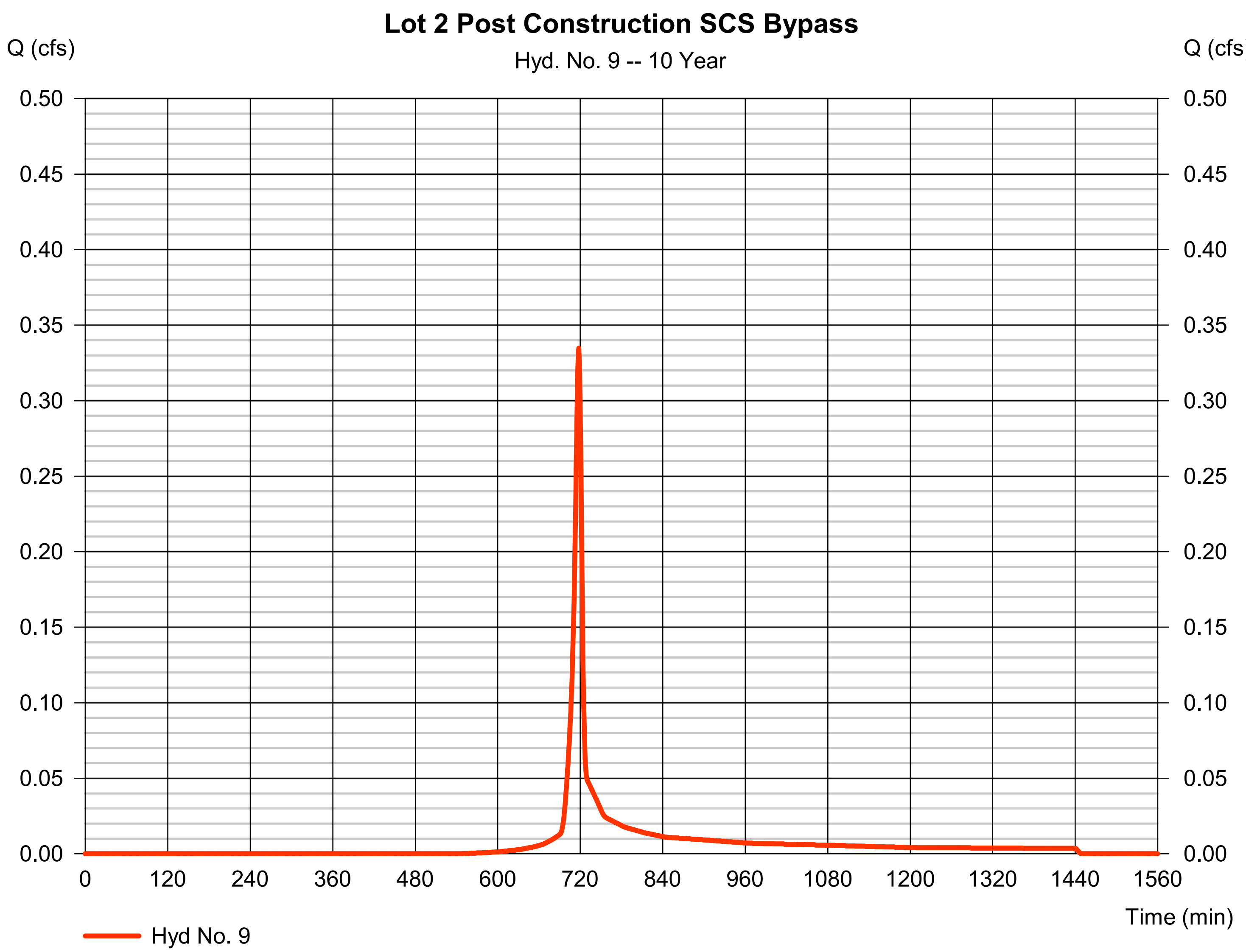


Hydrograph Report

Hyd. No. 9

Lot 2 Post Construction SCS Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 0.335 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 674 cuft
Drainage area	= 0.081 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.82 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



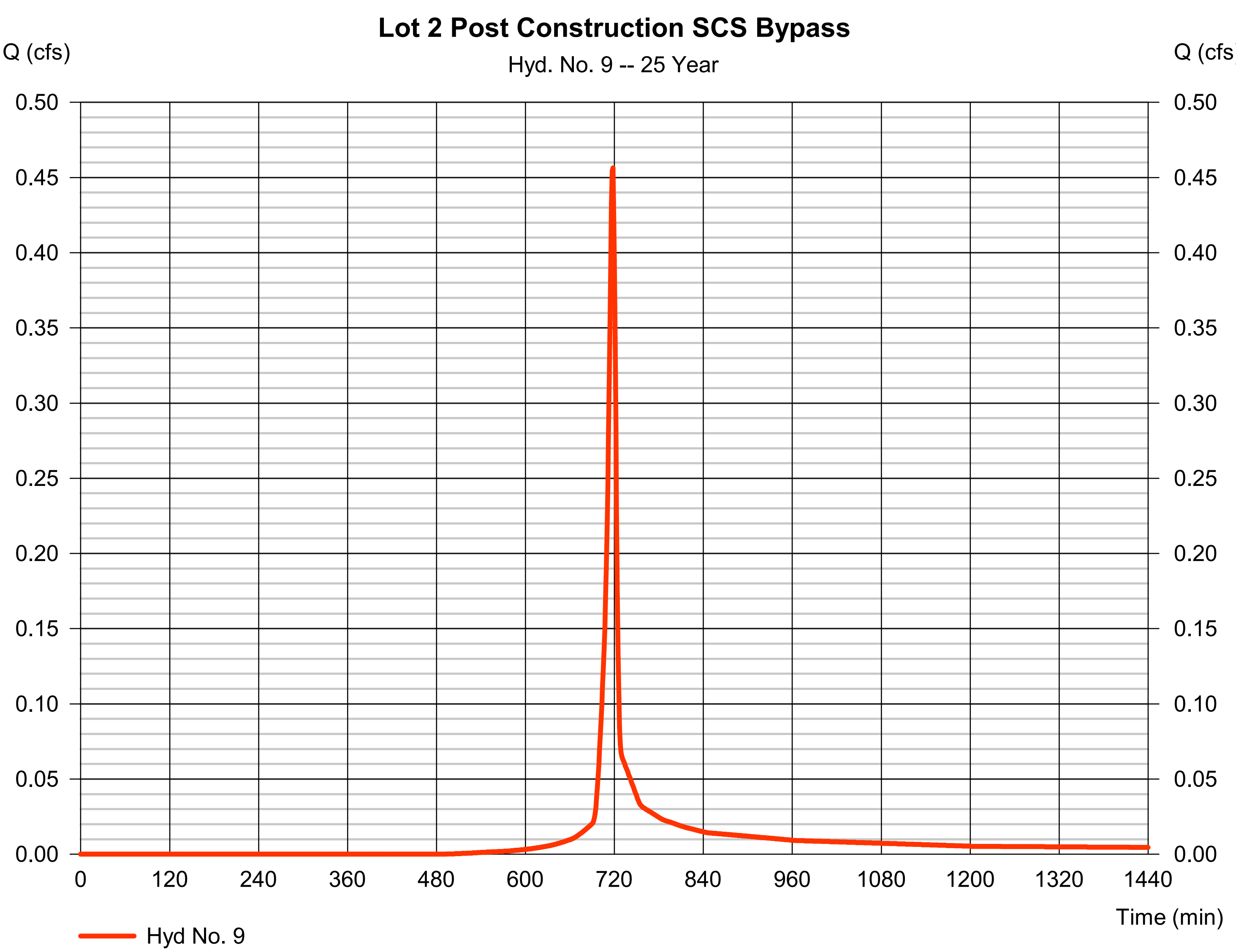
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12 — Thursday, 12 / 12 / 2024

Hyd. No. 9

Lot 2 Post Construction SCS Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 0.456 cfs
Storm frequency	= 25 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 925 cuft
Drainage area	= 0.081 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 5.84 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

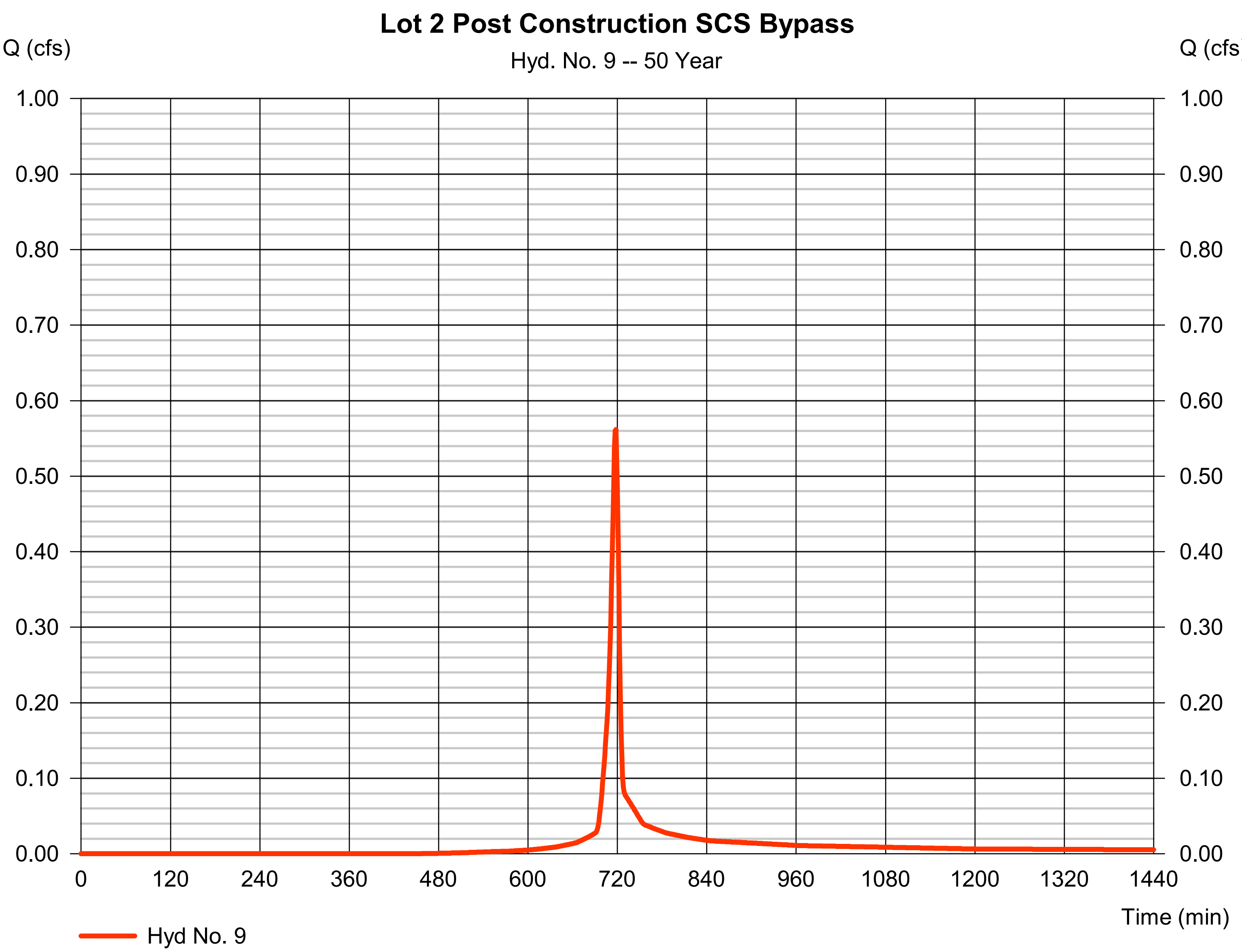


Hydrograph Report

Hyd. No. 9

Lot 2 Post Construction SCS Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 0.562 cfs
Storm frequency	= 50 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 1,147 cuft
Drainage area	= 0.081 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 6.70 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

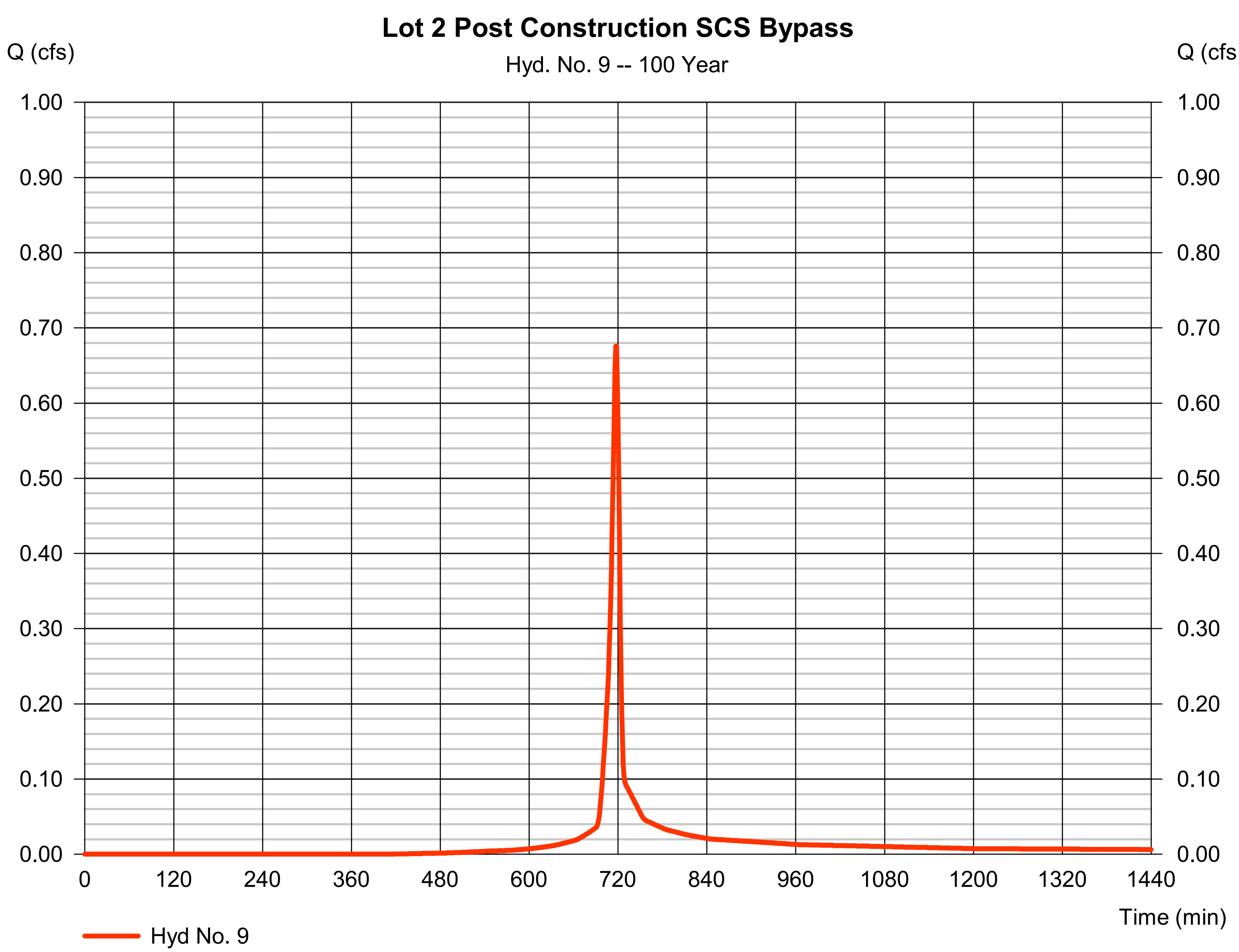


Hydrograph Report

Hyd. No. 9

Lot 2 Post Construction SCS Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 0.676 cfs
Storm frequency	= 100 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 1,391 cuft
Drainage area	= 0.081 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.62 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



5.0 BED ROUTING ANALYSIS

Pond Report

Pond No. 1 - Lot 1 Underground Basin

Pond Data

UG Chambers -Invert elev. = 349.20 ft, Rise x Span = 3.79 x 6.50 ft, Barrel Len = 46.50 ft, No. Barrels = 2, Slope = 0.00%, Headers = Yes
Encasement -Invert elev. = 349.20 ft, Width = 8.83 ft, Height = 5.50 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	349.20	n/a	0	0
0.55	349.75	n/a	524	524
1.10	350.30	n/a	518	1,041
1.65	350.85	n/a	506	1,547
2.20	351.40	n/a	486	2,033
2.75	351.95	n/a	457	2,490
3.30	352.50	n/a	414	2,904
3.85	353.05	n/a	331	3,235
4.40	353.60	n/a	249	3,484
4.95	354.15	n/a	249	3,734
5.50	354.70	n/a	249	3,983

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 8.00	0.00	0.00	0.00
Span (in)	= 8.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 352.70	0.00	0.00	0.00
Length (ft)	= 40.00	0.00	0.00	0.00
Slope (%)	= 3.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.750 (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	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	349.20	0.00	---	---	---	---	---	---	---	0.000	---	0.000
0.05	52	349.26	0.00	---	---	---	---	---	---	---	0.017	---	0.017
0.11	105	349.31	0.00	---	---	---	---	---	---	---	0.017	---	0.017
0.17	157	349.36	0.00	---	---	---	---	---	---	---	0.018	---	0.018
0.22	209	349.42	0.00	---	---	---	---	---	---	---	0.018	---	0.018
0.28	262	349.48	0.00	---	---	---	---	---	---	---	0.018	---	0.018
0.33	314	349.53	0.00	---	---	---	---	---	---	---	0.018	---	0.018
0.38	367	349.58	0.00	---	---	---	---	---	---	---	0.018	---	0.018
0.44	419	349.64	0.00	---	---	---	---	---	---	---	0.019	---	0.019
0.50	471	349.69	0.00	---	---	---	---	---	---	---	0.019	---	0.019
0.55	524	349.75	0.00	---	---	---	---	---	---	---	0.019	---	0.019
0.61	575	349.80	0.00	---	---	---	---	---	---	---	0.019	---	0.019
0.66	627	349.86	0.00	---	---	---	---	---	---	---	0.019	---	0.019
0.71	679	349.92	0.00	---	---	---	---	---	---	---	0.020	---	0.020
0.77	731	349.97	0.00	---	---	---	---	---	---	---	0.020	---	0.020
0.82	782	350.02	0.00	---	---	---	---	---	---	---	0.020	---	0.020
0.88	834	350.08	0.00	---	---	---	---	---	---	---	0.020	---	0.020
0.94	886	350.13	0.00	---	---	---	---	---	---	---	0.021	---	0.021
0.99	938	350.19	0.00	---	---	---	---	---	---	---	0.021	---	0.021
1.04	990	350.24	0.00	---	---	---	---	---	---	---	0.021	---	0.021
1.10	1,041	350.30	0.00	---	---	---	---	---	---	---	0.021	---	0.021
1.15	1,092	350.36	0.00	---	---	---	---	---	---	---	0.021	---	0.021
1.21	1,142	350.41	0.00	---	---	---	---	---	---	---	0.022	---	0.022
1.26	1,193	350.46	0.00	---	---	---	---	---	---	---	0.022	---	0.022
1.32	1,244	350.52	0.00	---	---	---	---	---	---	---	0.022	---	0.022
1.38	1,294	350.58	0.00	---	---	---	---	---	---	---	0.022	---	0.022
1.43	1,345	350.63	0.00	---	---	---	---	---	---	---	0.022	---	0.022
1.49	1,395	350.68	0.00	---	---	---	---	---	---	---	0.023	---	0.023
1.54	1,446	350.74	0.00	---	---	---	---	---	---	---	0.023	---	0.023
1.60	1,496	350.80	0.00	---	---	---	---	---	---	---	0.023	---	0.023
1.65	1,547	350.85	0.00	---	---	---	---	---	---	---	0.023	---	0.023
1.71	1,596	350.90	0.00	---	---	---	---	---	---	---	0.024	---	0.024

Continues on next page...

Lot 1 Underground Basin

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
1.76	1,644	350.96	0.00	---	---	---	---	---	---	---	0.024	---	0.024
1.82	1,693	351.02	0.00	---	---	---	---	---	---	---	0.024	---	0.024
1.87	1,741	351.07	0.00	---	---	---	---	---	---	---	0.024	---	0.024
1.92	1,790	351.13	0.00	---	---	---	---	---	---	---	0.024	---	0.024
1.98	1,839	351.18	0.00	---	---	---	---	---	---	---	0.025	---	0.025
2.04	1,887	351.23	0.00	---	---	---	---	---	---	---	0.025	---	0.025
2.09	1,936	351.29	0.00	---	---	---	---	---	---	---	0.025	---	0.025
2.14	1,984	351.34	0.00	---	---	---	---	---	---	---	0.025	---	0.025
2.20	2,033	351.40	0.00	---	---	---	---	---	---	---	0.025	---	0.025
2.26	2,079	351.45	0.00	---	---	---	---	---	---	---	0.026	---	0.026
2.31	2,124	351.51	0.00	---	---	---	---	---	---	---	0.026	---	0.026
2.37	2,170	351.57	0.00	---	---	---	---	---	---	---	0.026	---	0.026
2.42	2,216	351.62	0.00	---	---	---	---	---	---	---	0.026	---	0.026
2.47	2,262	351.67	0.00	---	---	---	---	---	---	---	0.026	---	0.026
2.53	2,307	351.73	0.00	---	---	---	---	---	---	---	0.027	---	0.027
2.59	2,353	351.79	0.00	---	---	---	---	---	---	---	0.027	---	0.027
2.64	2,399	351.84	0.00	---	---	---	---	---	---	---	0.027	---	0.027
2.70	2,444	351.89	0.00	---	---	---	---	---	---	---	0.027	---	0.027
2.75	2,490	351.95	0.00	---	---	---	---	---	---	---	0.028	---	0.028
2.81	2,532	352.01	0.00	---	---	---	---	---	---	---	0.028	---	0.028
2.86	2,573	352.06	0.00	---	---	---	---	---	---	---	0.028	---	0.028
2.91	2,614	352.11	0.00	---	---	---	---	---	---	---	0.028	---	0.028
2.97	2,656	352.17	0.00	---	---	---	---	---	---	---	0.028	---	0.028
3.03	2,697	352.23	0.00	---	---	---	---	---	---	---	0.029	---	0.029
3.08	2,739	352.28	0.00	---	---	---	---	---	---	---	0.029	---	0.029
3.13	2,780	352.33	0.00	---	---	---	---	---	---	---	0.029	---	0.029
3.19	2,821	352.39	0.00	---	---	---	---	---	---	---	0.029	---	0.029
3.25	2,863	352.44	0.00	---	---	---	---	---	---	---	0.029	---	0.029
3.30	2,904	352.50	0.00	---	---	---	---	---	---	---	0.030	---	0.030
3.36	2,937	352.55	0.00	---	---	---	---	---	---	---	0.030	---	0.030
3.41	2,970	352.61	0.00	---	---	---	---	---	---	---	0.030	---	0.030
3.46	3,003	352.67	0.00	---	---	---	---	---	---	---	0.030	---	0.030
3.52	3,037	352.72	0.00 ic	---	---	---	---	---	---	---	0.030	---	0.032
3.58	3,070	352.77	0.02 ic	---	---	---	---	---	---	---	0.031	---	0.051
3.63	3,103	352.83	0.06 ic	---	---	---	---	---	---	---	0.031	---	0.090
3.68	3,136	352.88	0.12 ic	---	---	---	---	---	---	---	0.031	---	0.147
3.74	3,169	352.94	0.19 ic	---	---	---	---	---	---	---	0.031	---	0.220
3.80	3,202	352.99	0.28 ic	---	---	---	---	---	---	---	0.032	---	0.307
3.85	3,235	353.05	0.37 ic	---	---	---	---	---	---	---	0.032	---	0.406
3.90	3,260	353.11	0.48 ic	---	---	---	---	---	---	---	0.032	---	0.513
3.96	3,285	353.16	0.59 ic	---	---	---	---	---	---	---	0.032	---	0.626
4.01	3,310	353.21	0.71 ic	---	---	---	---	---	---	---	0.032	---	0.739
4.07	3,335	353.27	0.82 ic	---	---	---	---	---	---	---	0.033	---	0.850
4.13	3,360	353.33	0.92 ic	---	---	---	---	---	---	---	0.033	---	0.948
4.18	3,385	353.38	0.99 ic	---	---	---	---	---	---	---	0.033	---	1.022
4.23	3,410	353.43	1.07 ic	---	---	---	---	---	---	---	0.033	---	1.098
4.29	3,435	353.49	1.14 ic	---	---	---	---	---	---	---	0.033	---	1.169
4.34	3,459	353.55	1.20 ic	---	---	---	---	---	---	---	0.034	---	1.236
4.40	3,484	353.60	1.27 ic	---	---	---	---	---	---	---	0.034	---	1.299
4.45	3,509	353.65	1.33 ic	---	---	---	---	---	---	---	0.034	---	1.359
4.51	3,534	353.71	1.38 ic	---	---	---	---	---	---	---	0.034	---	1.417
4.57	3,559	353.77	1.44 ic	---	---	---	---	---	---	---	0.035	---	1.472
4.62	3,584	353.82	1.49 ic	---	---	---	---	---	---	---	0.035	---	1.525
4.67	3,609	353.88	1.54 ic	---	---	---	---	---	---	---	0.035	---	1.577
4.73	3,634	353.93	1.59 ic	---	---	---	---	---	---	---	0.035	---	1.626
4.78	3,659	353.98	1.64 ic	---	---	---	---	---	---	---	0.035	---	1.675
4.84	3,684	354.04	1.69 ic	---	---	---	---	---	---	---	0.036	---	1.722
4.89	3,709	354.09	1.73 ic	---	---	---	---	---	---	---	0.036	---	1.767
4.95	3,734	354.15	1.78 ic	---	---	---	---	---	---	---	0.036	---	1.812
5.01	3,759	354.20	1.82 ic	---	---	---	---	---	---	---	0.036	---	1.855
5.06	3,784	354.26	1.86 ic	---	---	---	---	---	---	---	0.036	---	1.898
5.11	3,808	354.32	1.90 ic	---	---	---	---	---	---	---	0.037	---	1.939
5.17	3,833	354.37	1.94 ic	---	---	---	---	---	---	---	0.037	---	1.980
5.22	3,858	354.42	1.98 ic	---	---	---	---	---	---	---	0.037	---	2.020
5.28	3,883	354.48	2.02 ic	---	---	---	---	---	---	---	0.037	---	2.059
5.33	3,908	354.54	2.06 ic	---	---	---	---	---	---	---	0.037	---	2.097
5.39	3,933	354.59	2.10 ic	---	---	---	---	---	---	---	0.038	---	2.134
5.44	3,958	354.64	2.13 ic	---	---	---	---	---	---	---	0.038	---	2.171
5.50	3,983	354.70	2.17 ic	---	---	---	---	---	---	---	0.038	---	2.208

...End

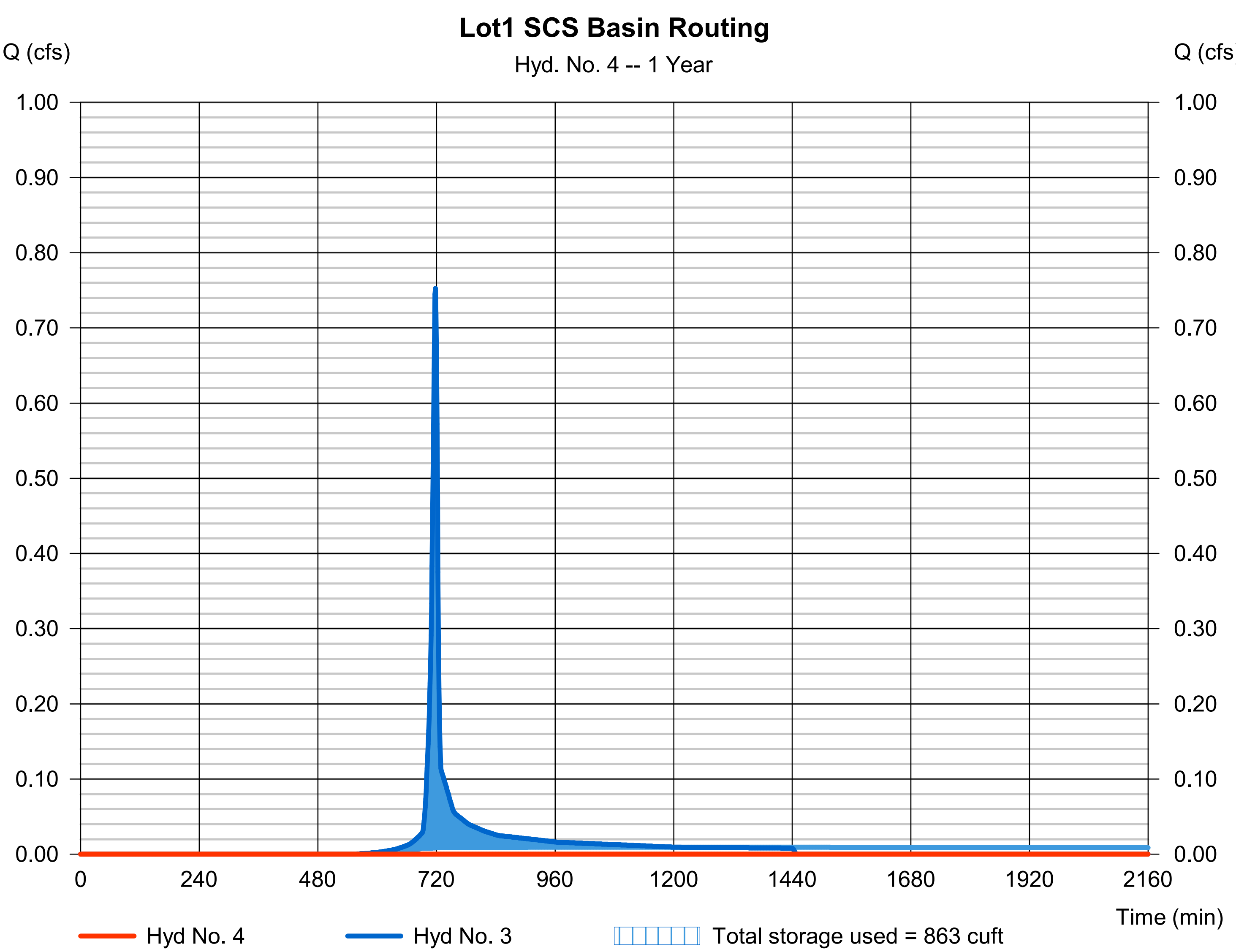
Hydrograph Report

Hyd. No. 4

Lot1 SCS Basin Routing

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= 680 min
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 3 - Lot 1 Post-Construction SCS Hydrograph	Max. Elevation	= 350.11 ft
Reservoir name	= Lot 1 Underground Basin	Max. Storage	= 863 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



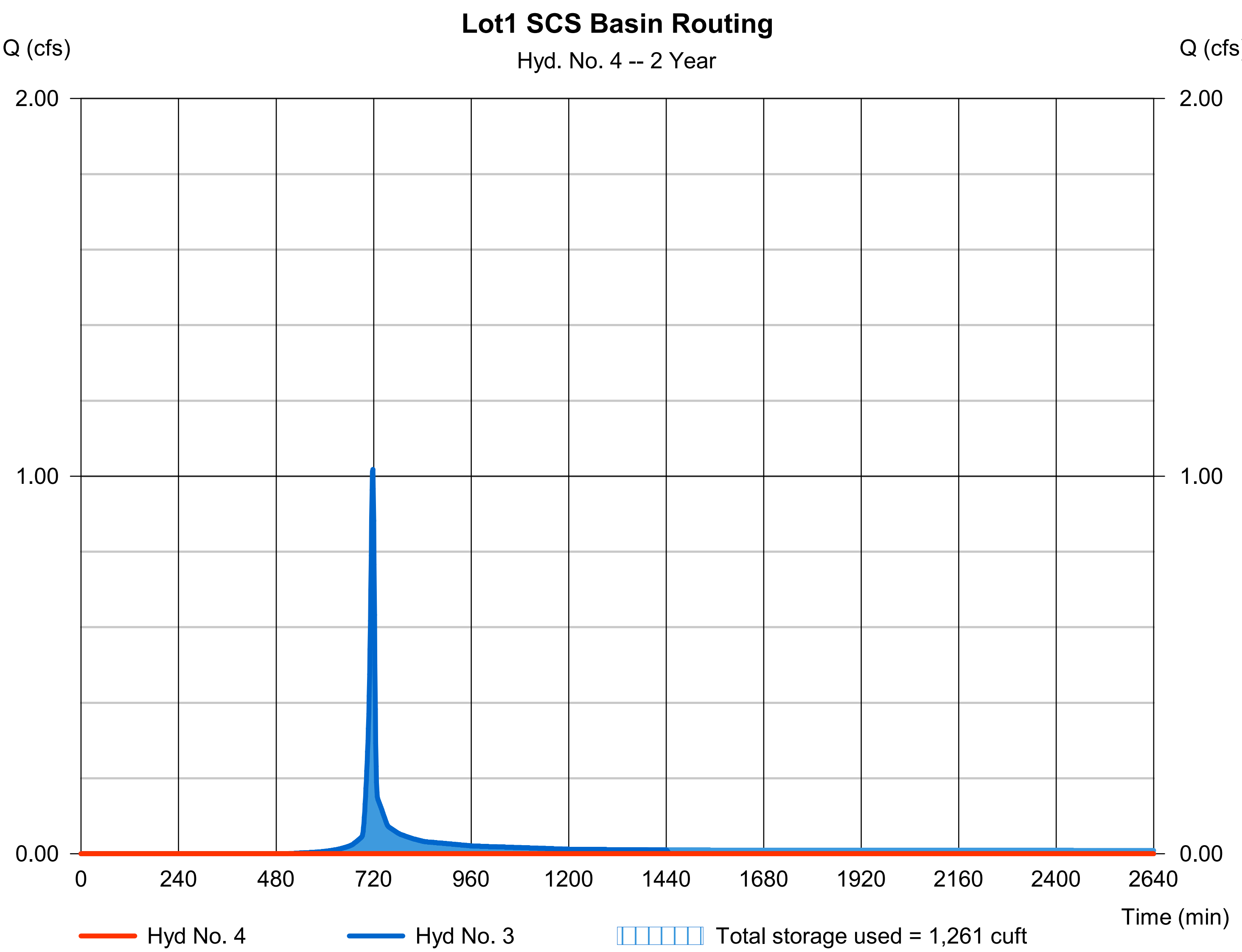
Hydrograph Report

Hyd. No. 4

Lot1 SCS Basin Routing

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 648 min
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 3 - Lot 1 Post-Construction SCS Hydrograph	Max. Elevation	= 350.54 ft
Reservoir name	= Lot 1 Underground Basin	Max. Storage	= 1,261 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

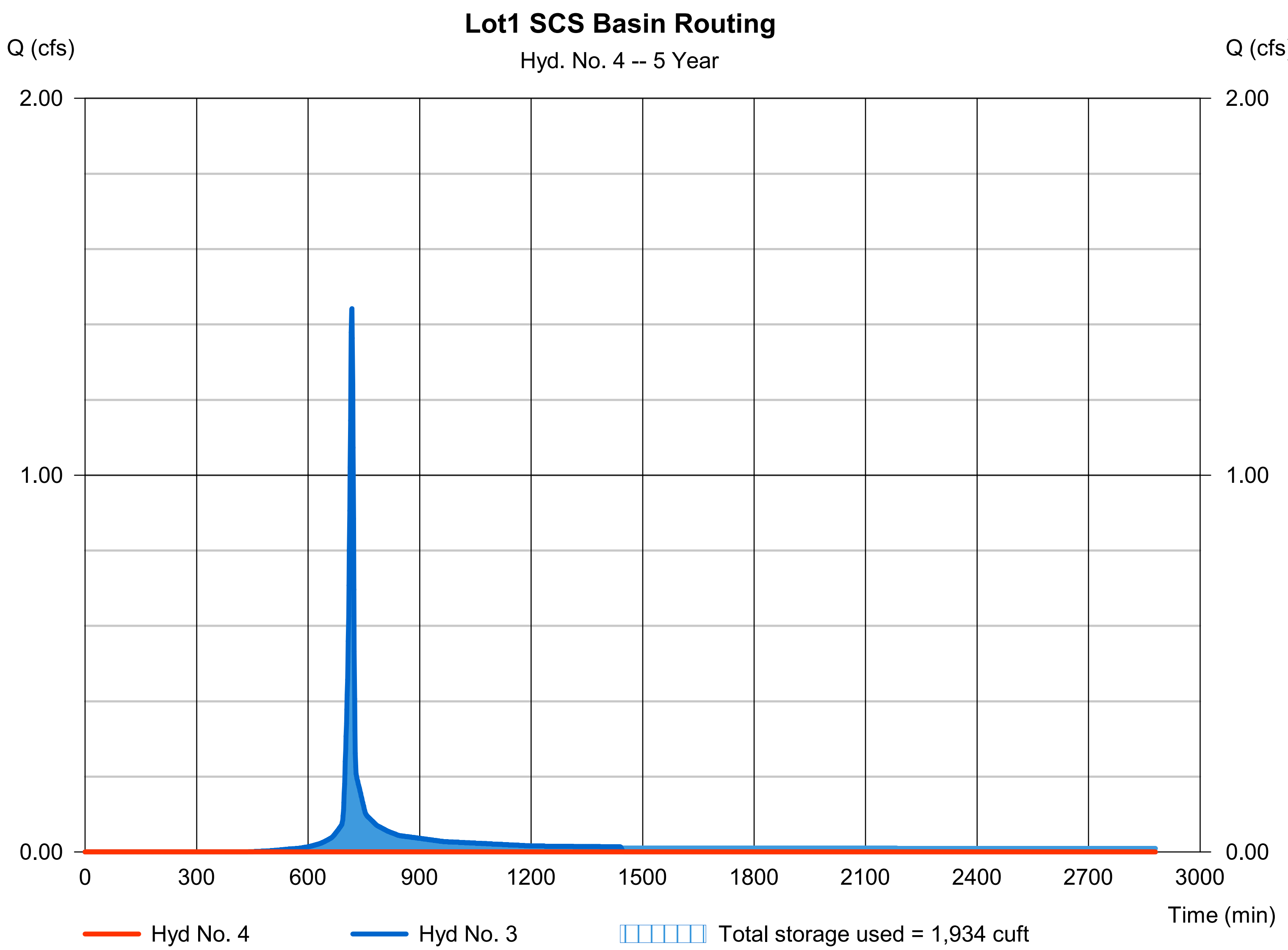
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12 — Thursday, 12 / 12 / 2024

Hyd. No. 4

Lot1 SCS Basin Routing

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 5 yrs	Time to peak	= 645 min
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 3 - Lot 1 Post-Construction SCS Hydrograph	Max. Elevation	= 351.29 ft
Reservoir name	= Lot 1 Underground Basin	Max. Storage	= 1,934 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



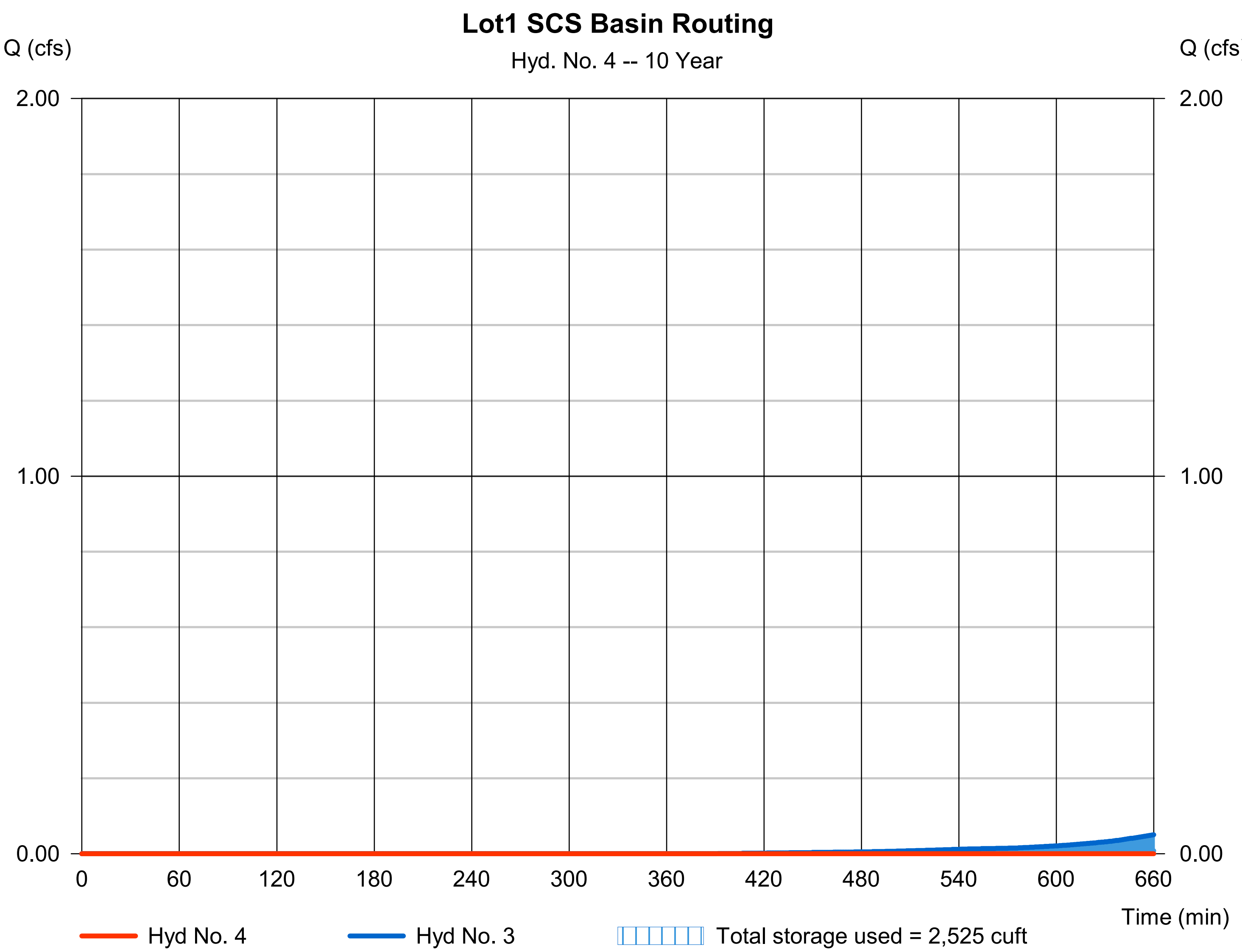
Hydrograph Report

Hyd. No. 4

Lot1 SCS Basin Routing

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= 620 min
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 3 - Lot 1 Post-Construction SCS Hydrograph	Max. Elevation	= 352.00 ft
Reservoir name	= Lot 1 Underground Basin	Max. Storage	= 2,525 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



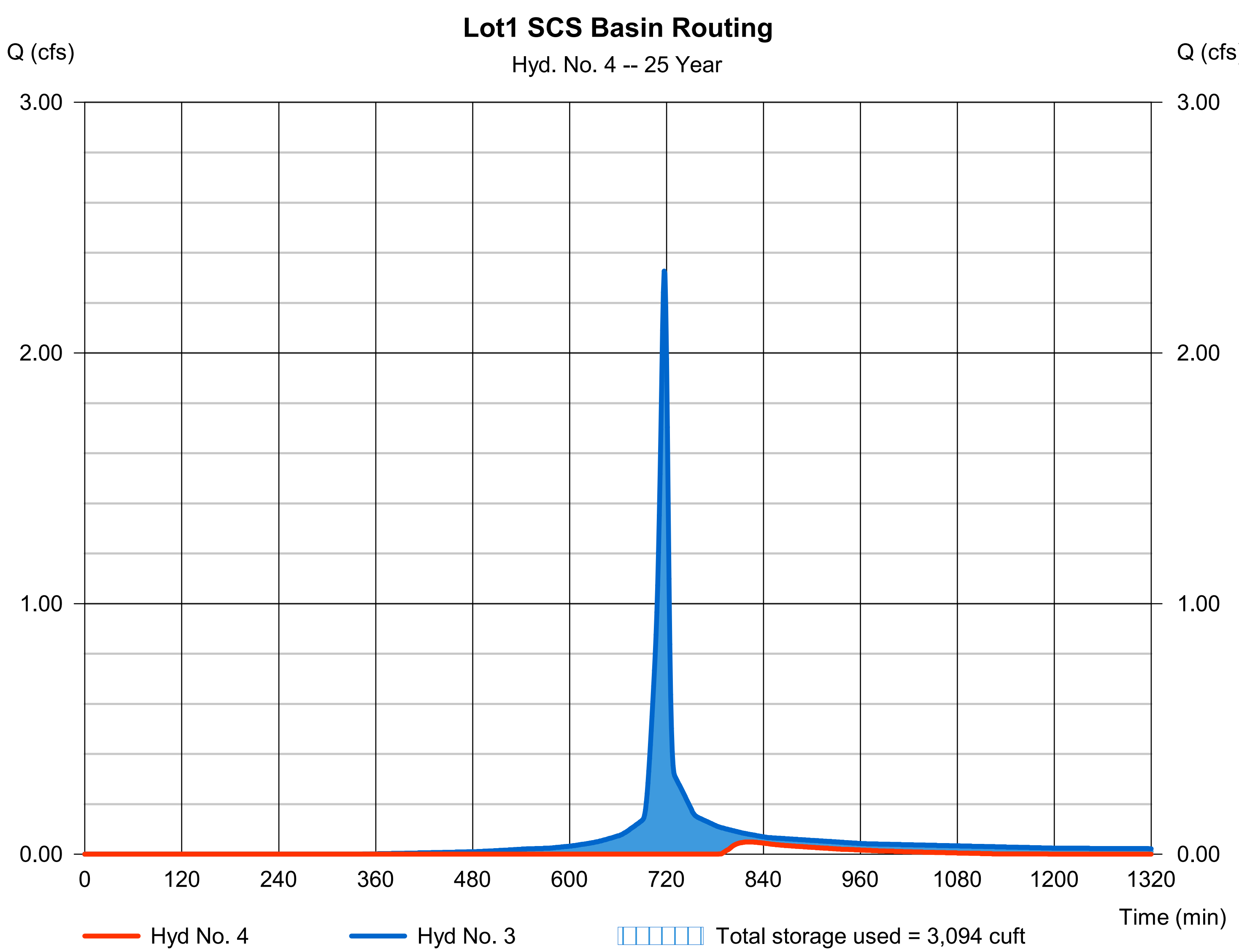
Hydrograph Report

Hyd. No. 4

Lot1 SCS Basin Routing

Hydrograph type	= Reservoir	Peak discharge	= 0.049 cfs
Storm frequency	= 25 yrs	Time to peak	= 822 min
Time interval	= 1 min	Hyd. volume	= 409 cuft
Inflow hyd. No.	= 3 - Lot 1 Post-Construction SCS Hydrograph	Max. Elevation	= 352.82 ft
Reservoir name	= Lot 1 Underground Basin	Max. Storage	= 3,094 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



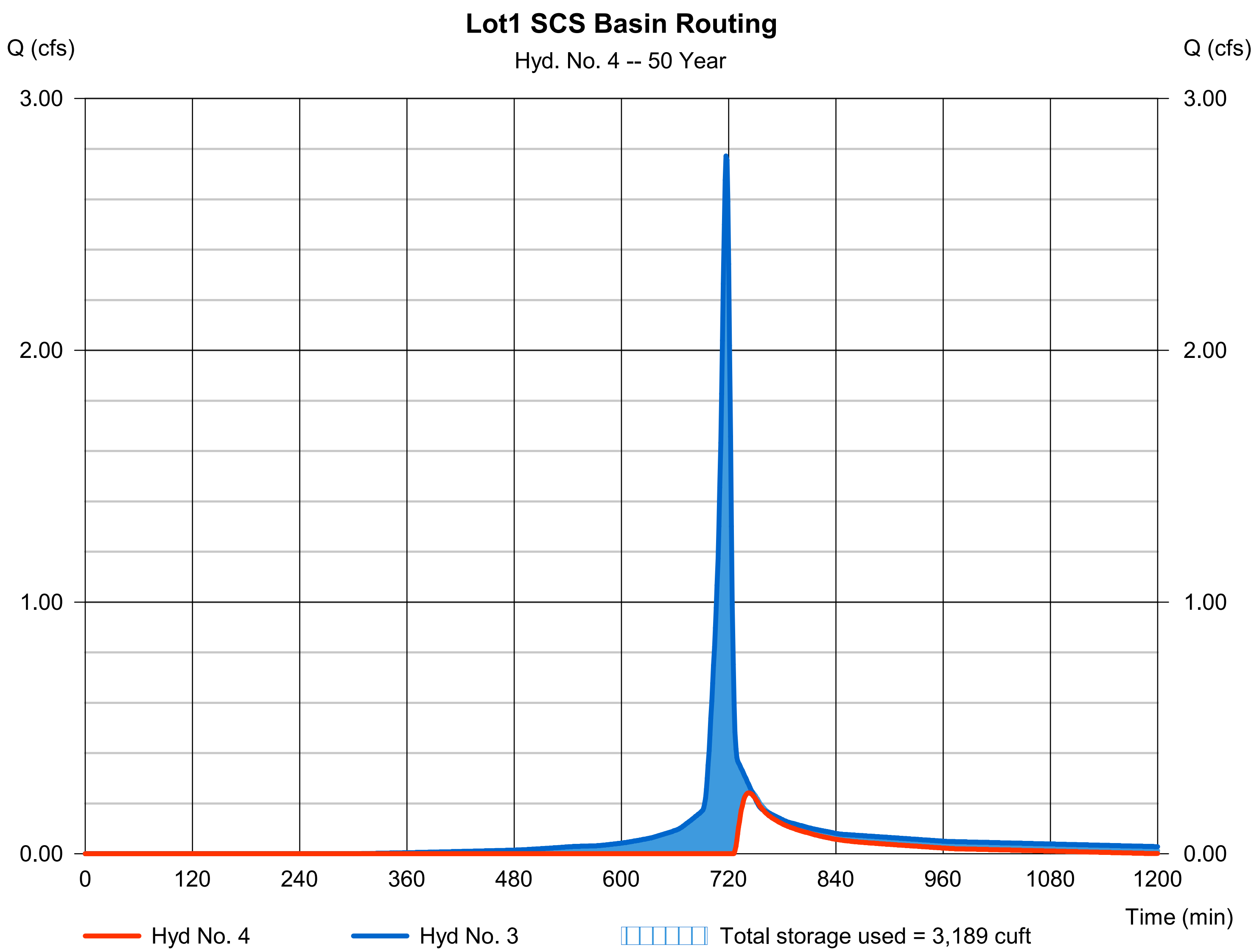
Hydrograph Report

Hyd. No. 4

Lot1 SCS Basin Routing

Hydrograph type	= Reservoir	Peak discharge	= 0.242 cfs
Storm frequency	= 50 yrs	Time to peak	= 743 min
Time interval	= 1 min	Hyd. volume	= 1,277 cuft
Inflow hyd. No.	= 3 - Lot 1 Post-Construction SCS Hydrograph	Max. Elevation	= 352.97 ft
Reservoir name	= Lot 1 Underground Basin	Max. Storage	= 3,189 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



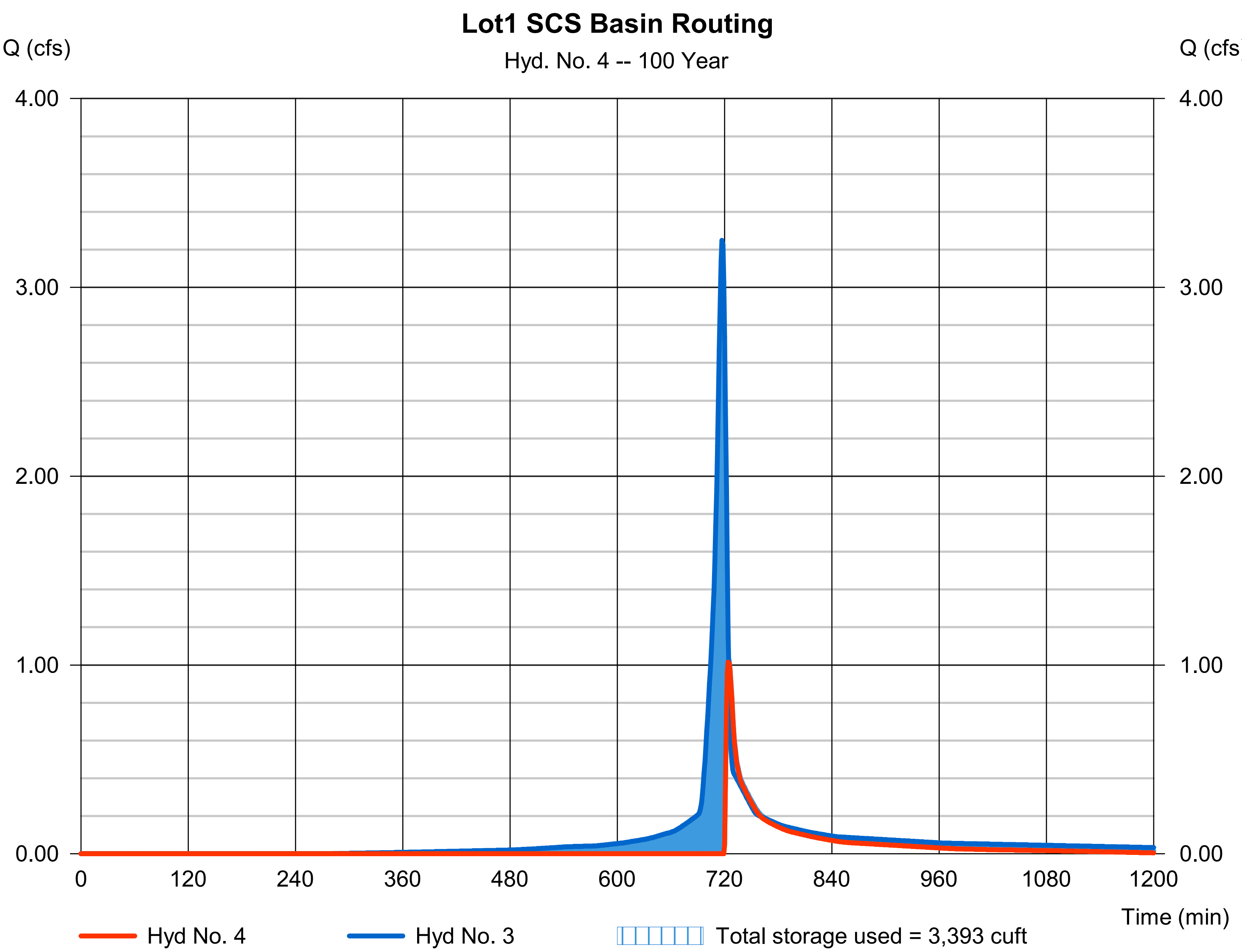
Hydrograph Report

Hyd. No. 4

Lot1 SCS Basin Routing

Hydrograph type	= Reservoir	Peak discharge	= 1.015 cfs
Storm frequency	= 100 yrs	Time to peak	= 724 min
Time interval	= 1 min	Hyd. volume	= 2,253 cuft
Inflow hyd. No.	= 3 - Lot 1 Post-Construction SCS Hydrograph	Max. Elevation	= 353.41 ft
Reservoir name	= Lot 1 Underground Basin	Max. Storage	= 3,393 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

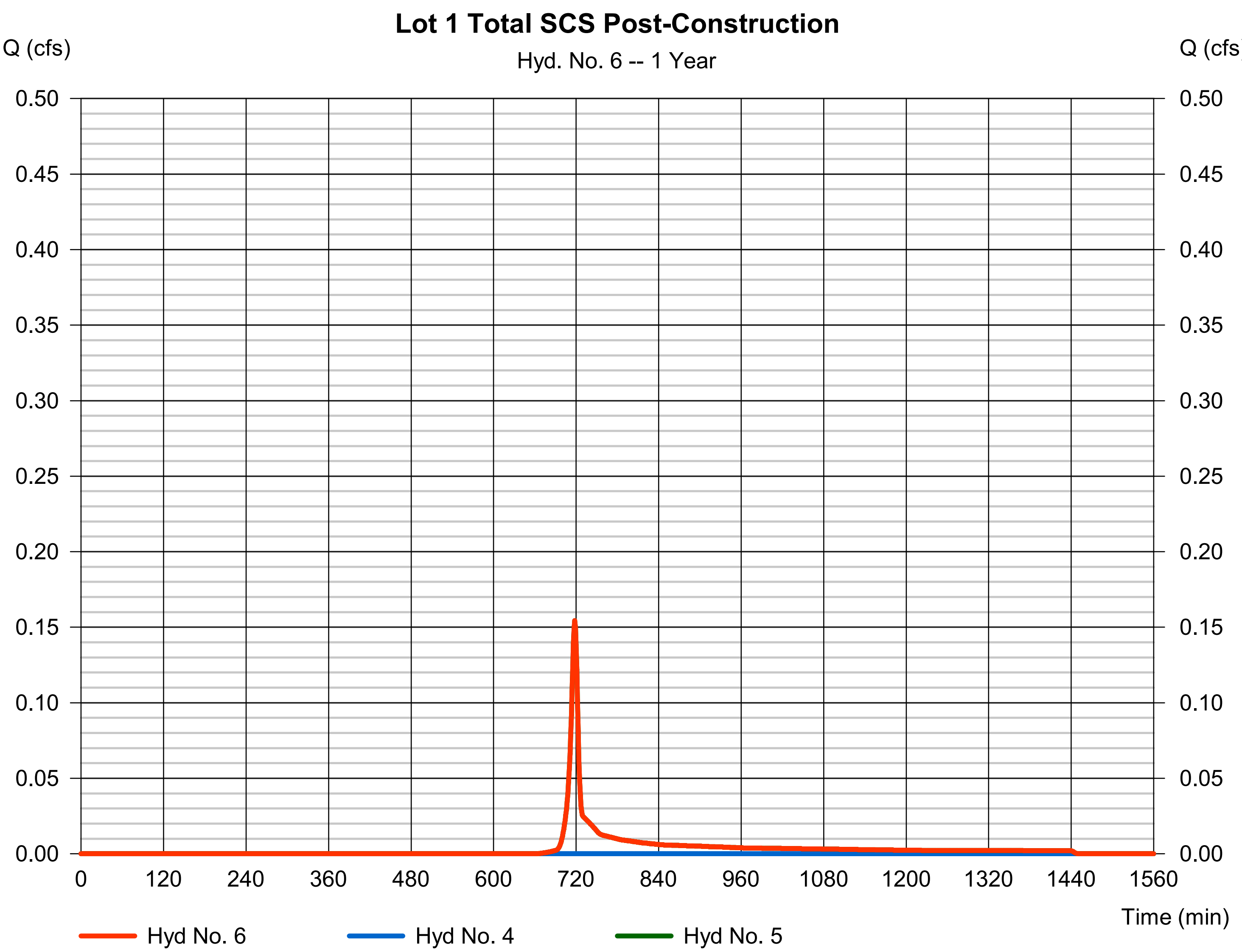


Hydrograph Report

Hyd. No. 6

Lot 1 Total SCS Post-Construction

Hydrograph type	= Combine	Peak discharge	= 0.154 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 314 cuft
Inflow hyds.	= 4, 5	Contrib. drain. area	= 0.101 ac

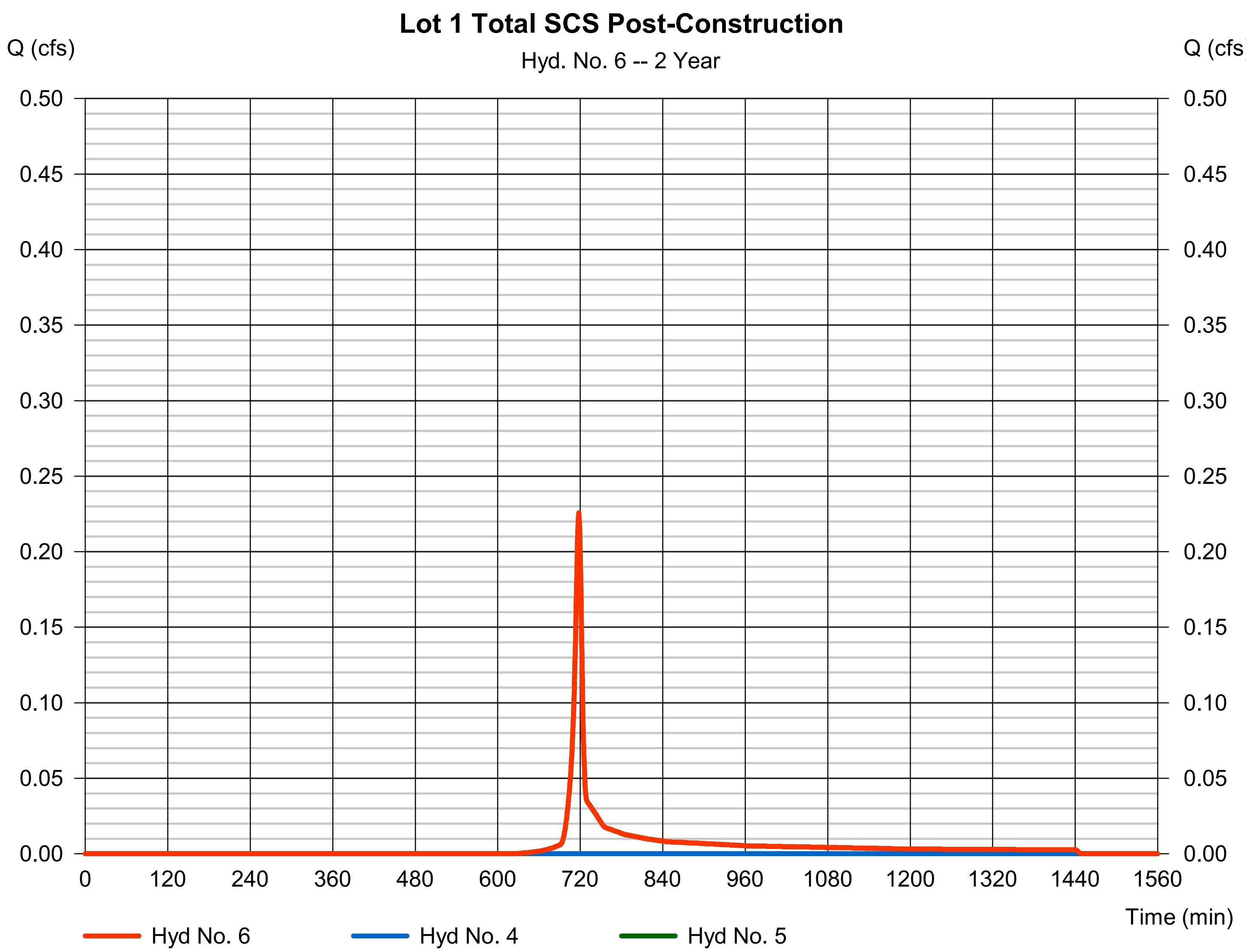


Hydrograph Report

Hyd. No. 6

Lot 1 Total SCS Post-Construction

Hydrograph type	= Combine	Peak discharge	= 0.226 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 454 cuft
Inflow hyds.	= 4, 5	Contrib. drain. area	= 0.101 ac

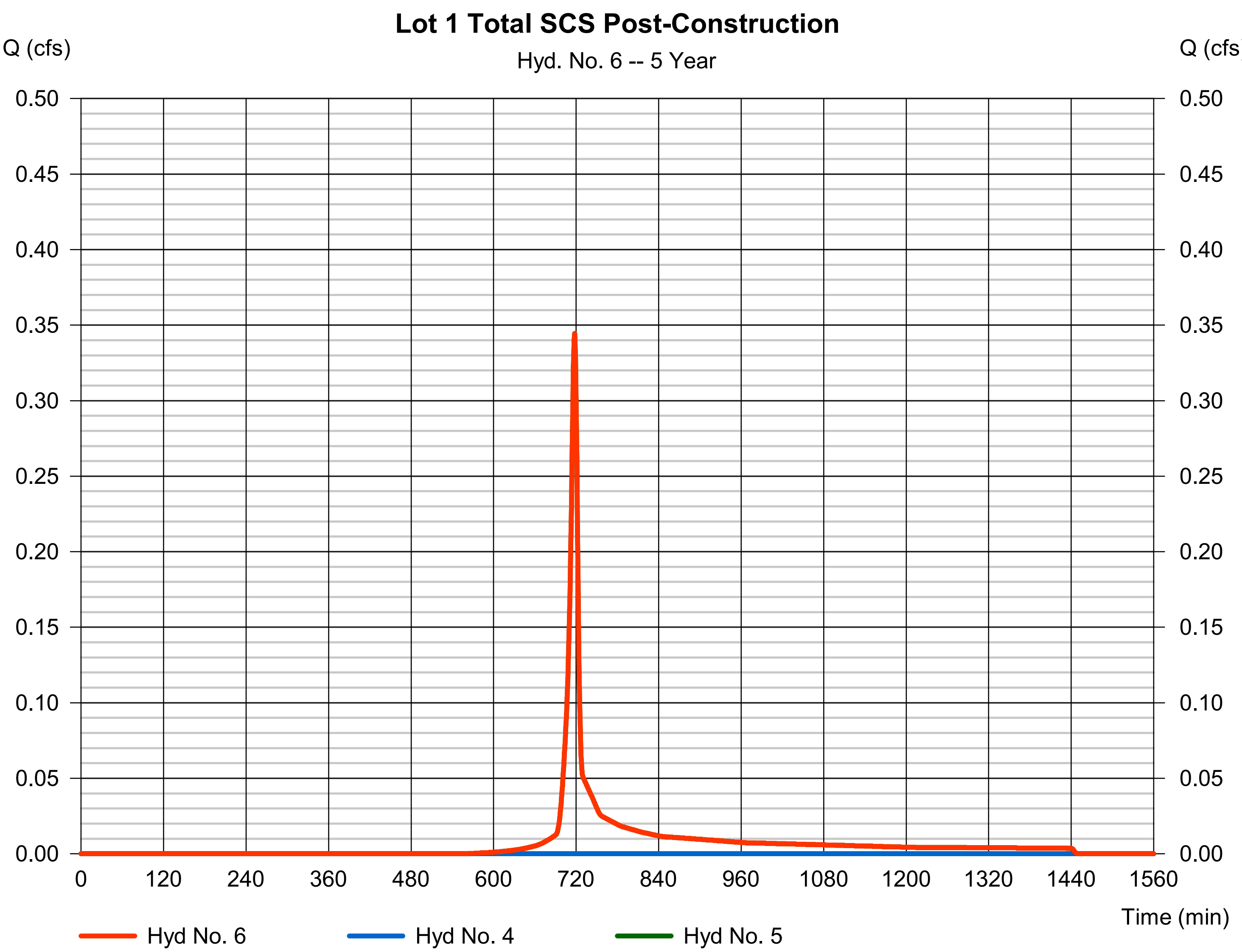


Hydrograph Report

Hyd. No. 6

Lot 1 Total SCS Post-Construction

Hydrograph type	= Combine	Peak discharge	= 0.344 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 692 cuft
Inflow hyds.	= 4, 5	Contrib. drain. area	= 0.101 ac



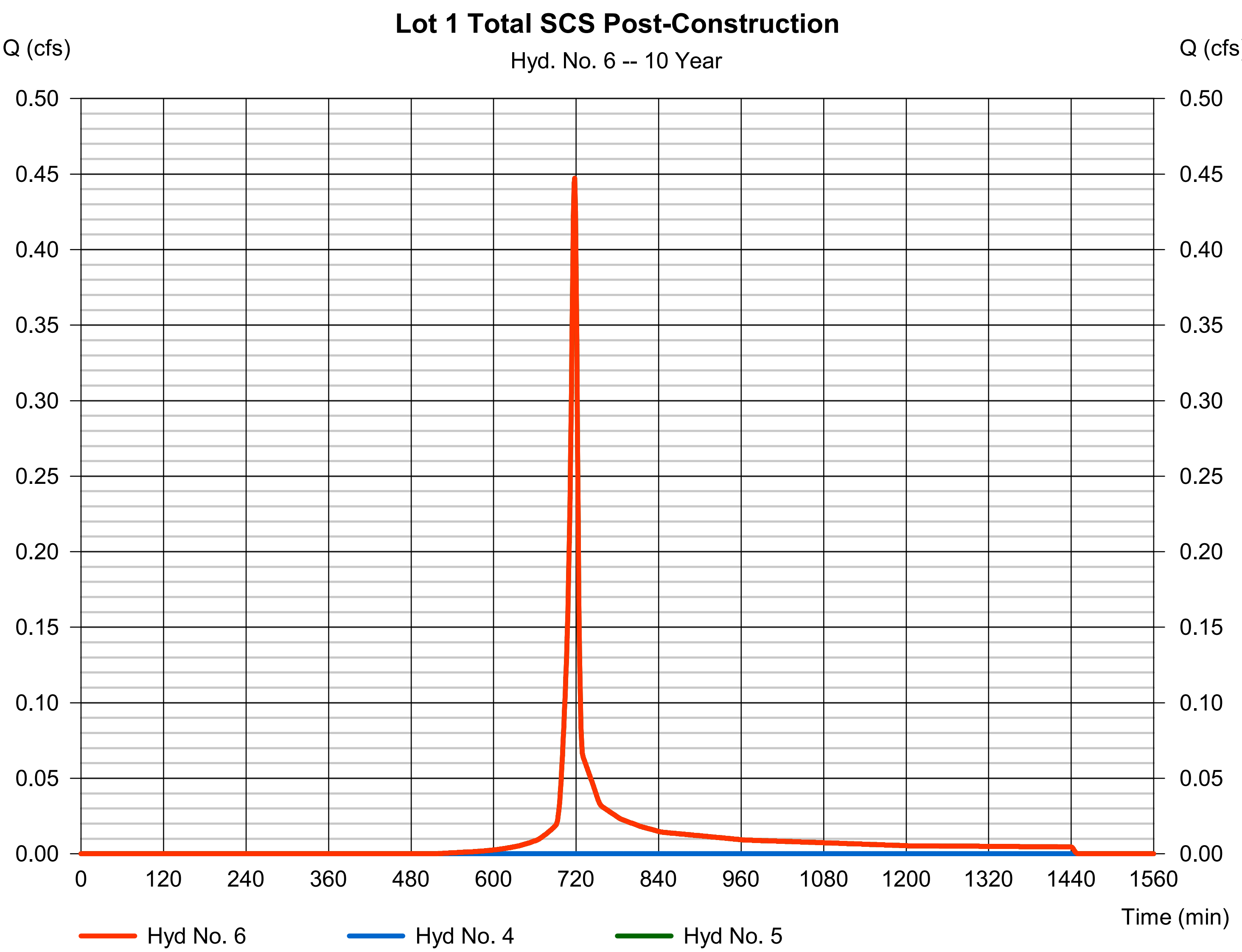
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12 Thursday, 12 / 12 / 2024

Hyd. No. 6

Lot 1 Total SCS Post-Construction

Hydrograph type	= Combine	Peak discharge	= 0.447 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 903 cuft
Inflow hyds.	= 4, 5	Contrib. drain. area	= 0.101 ac



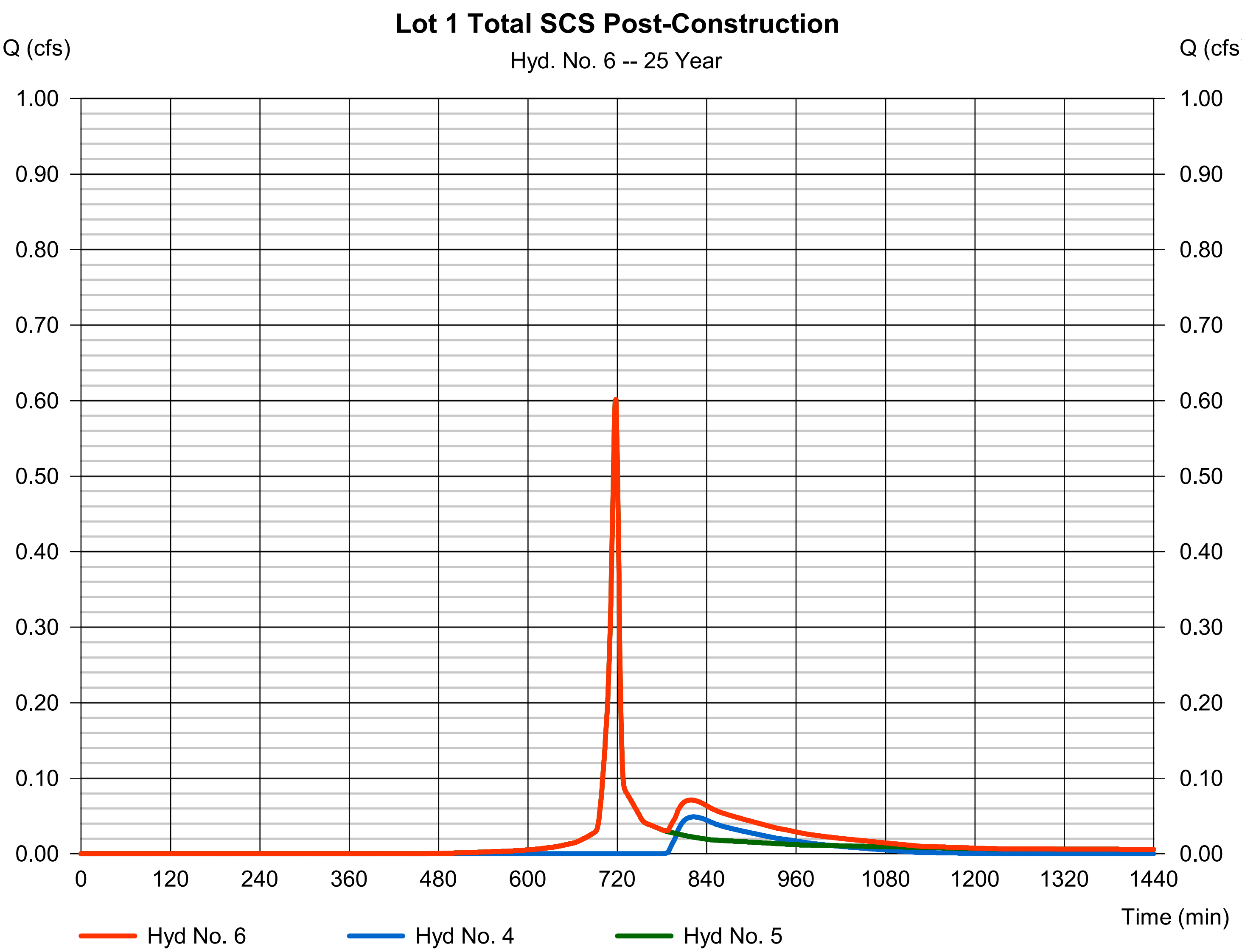
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12 — Thursday, 12 / 12 / 2024

Hyd. No. 6

Lot 1 Total SCS Post-Construction

Hydrograph type	= Combine	Peak discharge	= 0.602 cfs
Storm frequency	= 25 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 1,635 cuft
Inflow hyds.	= 4, 5	Contrib. drain. area	= 0.101 ac

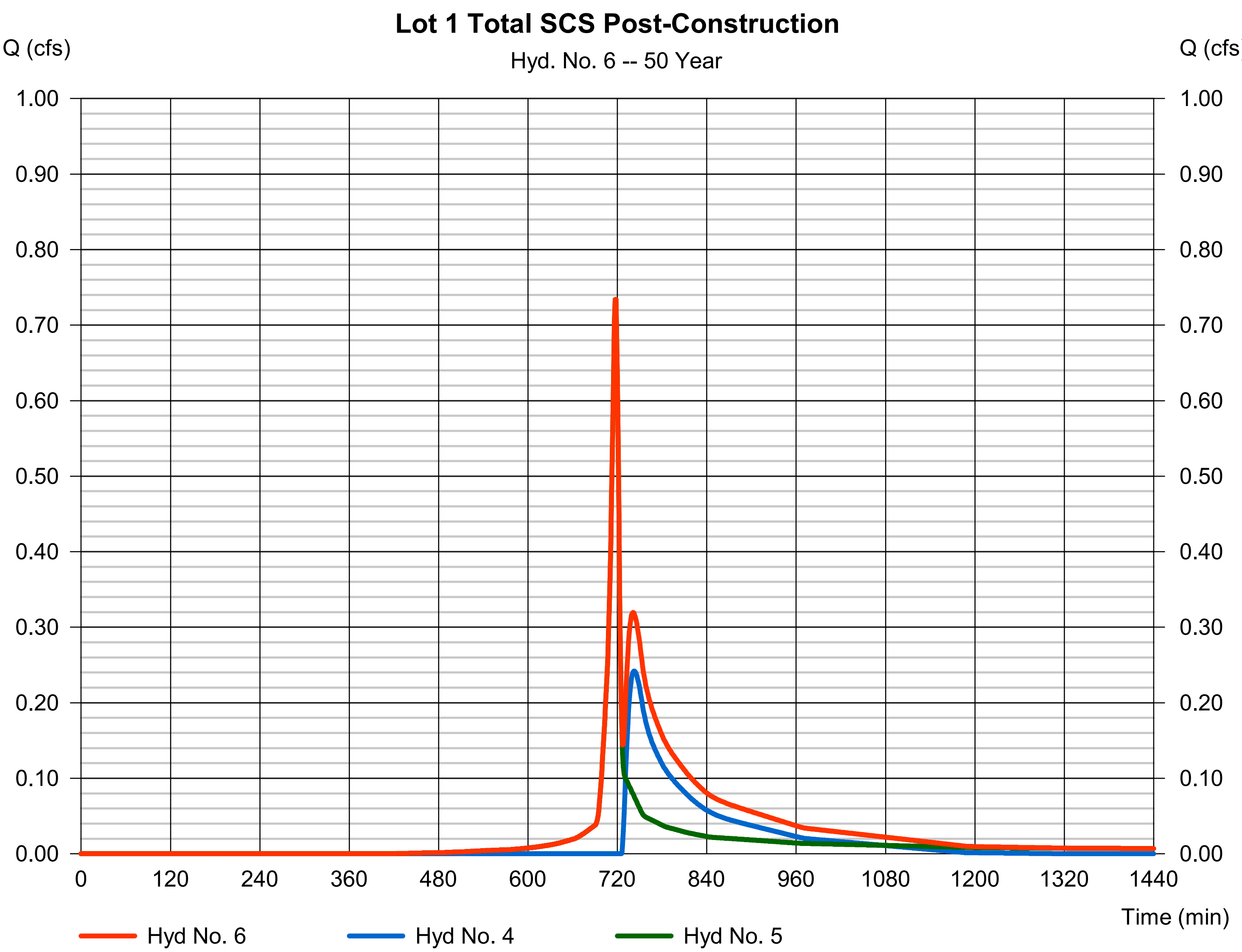


Hydrograph Report

Hyd. No. 6

Lot 1 Total SCS Post-Construction

Hydrograph type	= Combine	Peak discharge	= 0.734 cfs
Storm frequency	= 50 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 2,786 cuft
Inflow hyds.	= 4, 5	Contrib. drain. area	= 0.101 ac

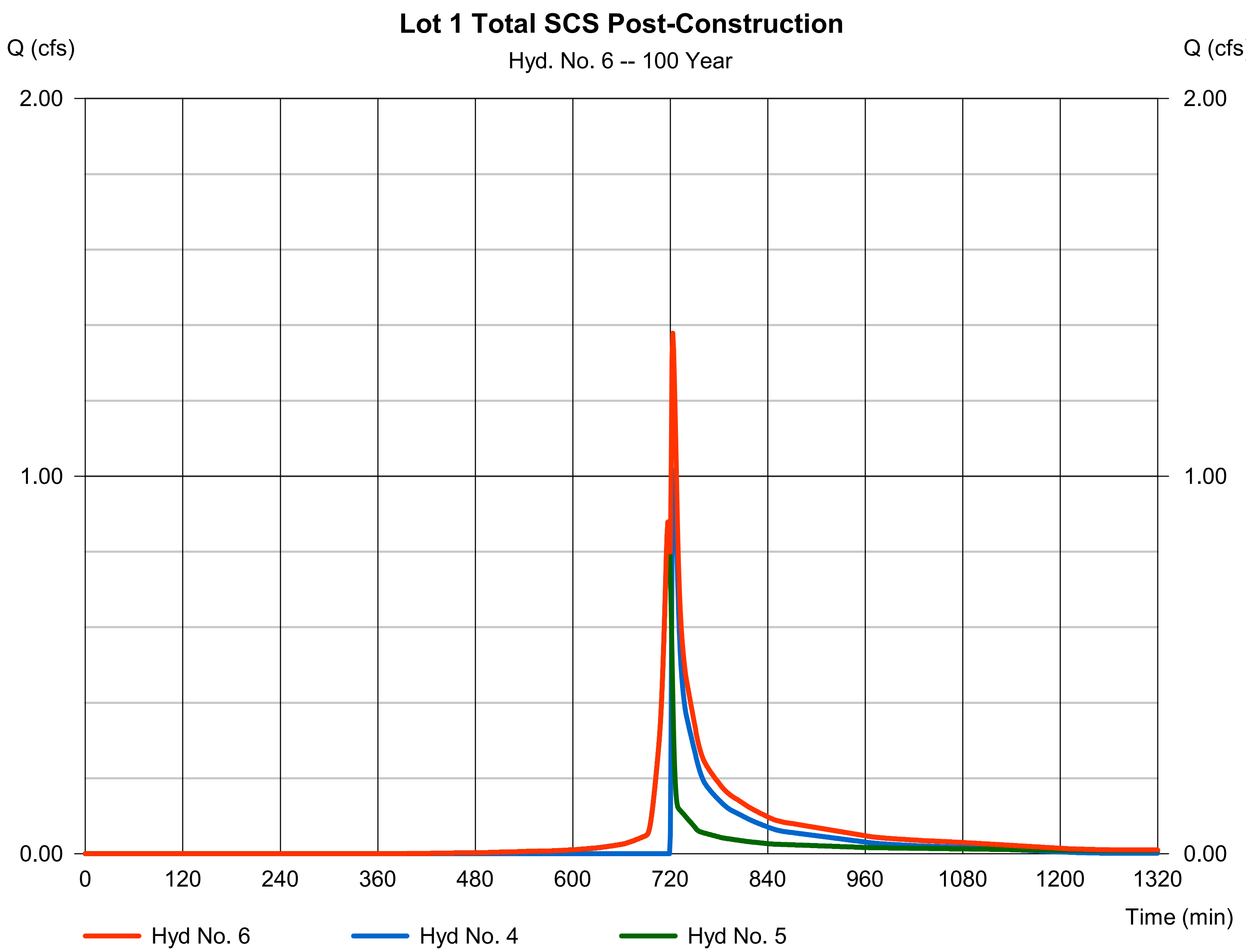


Hydrograph Report

Hyd. No. 6

Lot 1 Total SCS Post-Construction

Hydrograph type	= Combine	Peak discharge	= 1.378 cfs
Storm frequency	= 100 yrs	Time to peak	= 723 min
Time interval	= 1 min	Hyd. volume	= 4,073 cuft
Inflow hyds.	= 4, 5	Contrib. drain. area	= 0.101 ac



Pond Report

Pond No. 2 - Lot 2 Underground Basin

Pond Data

UG Chambers -Invert elev. = 353.75 ft, Rise x Span = 3.79 x 6.50 ft, Barrel Len = 67.60 ft, No. Barrels = 2, Slope = 0.00%, Headers = Yes
Encasement -Invert elev. = 353.75 ft, Width = 8.83 ft, Height = 5.50 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	353.75	n/a	0	0
0.55	354.30	n/a	696	696
1.10	354.85	n/a	688	1,384
1.65	355.40	n/a	672	2,056
2.20	355.95	n/a	646	2,702
2.75	356.50	n/a	608	3,309
3.30	357.05	n/a	550	3,859
3.85	357.60	n/a	440	4,299
4.40	358.15	n/a	331	4,630
4.95	358.70	n/a	331	4,962
5.50	359.25	n/a	331	5,293

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 8.00	0.00	0.00	0.00
Span (in)	= 8.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 355.25	0.00	0.00	0.00
Length (ft)	= 40.00	0.00	0.00	0.00
Slope (%)	= 3.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.250 (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	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	353.75	0.00	---	---	---	---	---	---	---	0.000	---	0.000
0.05	70	353.80	0.00	---	---	---	---	---	---	---	0.008	---	0.008
0.11	139	353.86	0.00	---	---	---	---	---	---	---	0.008	---	0.008
0.17	209	353.92	0.00	---	---	---	---	---	---	---	0.008	---	0.008
0.22	278	353.97	0.00	---	---	---	---	---	---	---	0.008	---	0.008
0.28	348	354.02	0.00	---	---	---	---	---	---	---	0.008	---	0.008
0.33	417	354.08	0.00	---	---	---	---	---	---	---	0.008	---	0.008
0.38	487	354.13	0.00	---	---	---	---	---	---	---	0.008	---	0.008
0.44	557	354.19	0.00	---	---	---	---	---	---	---	0.009	---	0.009
0.50	626	354.24	0.00	---	---	---	---	---	---	---	0.009	---	0.009
0.55	696	354.30	0.00	---	---	---	---	---	---	---	0.009	---	0.009
0.61	765	354.36	0.00	---	---	---	---	---	---	---	0.009	---	0.009
0.66	833	354.41	0.00	---	---	---	---	---	---	---	0.009	---	0.009
0.71	902	354.46	0.00	---	---	---	---	---	---	---	0.009	---	0.009
0.77	971	354.52	0.00	---	---	---	---	---	---	---	0.009	---	0.009
0.82	1,040	354.58	0.00	---	---	---	---	---	---	---	0.009	---	0.009
0.88	1,109	354.63	0.00	---	---	---	---	---	---	---	0.009	---	0.009
0.94	1,177	354.68	0.00	---	---	---	---	---	---	---	0.009	---	0.009
0.99	1,246	354.74	0.00	---	---	---	---	---	---	---	0.010	---	0.010
1.04	1,315	354.79	0.00	---	---	---	---	---	---	---	0.010	---	0.010
1.10	1,384	354.85	0.00	---	---	---	---	---	---	---	0.010	---	0.010
1.15	1,451	354.90	0.00	---	---	---	---	---	---	---	0.010	---	0.010
1.21	1,518	354.96	0.00	---	---	---	---	---	---	---	0.010	---	0.010
1.26	1,585	355.02	0.00	---	---	---	---	---	---	---	0.010	---	0.010
1.32	1,653	355.07	0.00	---	---	---	---	---	---	---	0.010	---	0.010
1.38	1,720	355.13	0.00	---	---	---	---	---	---	---	0.010	---	0.010
1.43	1,787	355.18	0.00	---	---	---	---	---	---	---	0.010	---	0.010
1.49	1,854	355.23	0.00	---	---	---	---	---	---	---	0.010	---	0.010
1.54	1,921	355.29	0.01 ic	---	---	---	---	---	---	---	0.011	---	0.016
1.60	1,988	355.34	0.03 ic	---	---	---	---	---	---	---	0.011	---	0.043
1.65	2,056	355.40	0.08 ic	---	---	---	---	---	---	---	0.011	---	0.088
1.71	2,120	355.45	0.14 ic	---	---	---	---	---	---	---	0.011	---	0.152

Continues on next page...

Lot 2 Underground Basin

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
1.76	2,185	355.51	0.22 ic	---	---	---	---	---	---	---	0.011	---	0.230
1.82	2,249	355.57	0.31 ic	---	---	---	---	---	---	---	0.011	---	0.321
1.87	2,314	355.62	0.41 ic	---	---	---	---	---	---	---	0.011	---	0.424
1.92	2,379	355.67	0.52 ic	---	---	---	---	---	---	---	0.011	---	0.533
1.98	2,443	355.73	0.63 ic	---	---	---	---	---	---	---	0.011	---	0.646
2.04	2,508	355.78	0.75 ic	---	---	---	---	---	---	---	0.011	---	0.759
2.09	2,572	355.84	0.85 ic	---	---	---	---	---	---	---	0.012	---	0.866
2.14	2,637	355.89	0.94 ic	---	---	---	---	---	---	---	0.012	---	0.957
2.20	2,702	355.95	1.02 ic	---	---	---	---	---	---	---	0.012	---	1.029
2.26	2,762	356.01	1.09 ic	---	---	---	---	---	---	---	0.012	---	1.103
2.31	2,823	356.06	1.16 ic	---	---	---	---	---	---	---	0.012	---	1.172
2.37	2,884	356.11	1.23 ic	---	---	---	---	---	---	---	0.012	---	1.237
2.42	2,945	356.17	1.29 ic	---	---	---	---	---	---	---	0.012	---	1.299
2.47	3,005	356.23	1.35 ic	---	---	---	---	---	---	---	0.012	---	1.358
2.53	3,066	356.28	1.40 ic	---	---	---	---	---	---	---	0.012	---	1.415
2.59	3,127	356.33	1.46 ic	---	---	---	---	---	---	---	0.012	---	1.469
2.64	3,188	356.39	1.51 ic	---	---	---	---	---	---	---	0.012	---	1.522
2.70	3,248	356.44	1.56 ic	---	---	---	---	---	---	---	0.013	---	1.572
2.75	3,309	356.50	1.61 ic	---	---	---	---	---	---	---	0.013	---	1.622
2.81	3,364	356.55	1.66 ic	---	---	---	---	---	---	---	0.013	---	1.669
2.86	3,419	356.61	1.70 ic	---	---	---	---	---	---	---	0.013	---	1.716
2.91	3,474	356.67	1.75 ic	---	---	---	---	---	---	---	0.013	---	1.761
2.97	3,529	356.72	1.79 ic	---	---	---	---	---	---	---	0.013	---	1.805
3.03	3,584	356.77	1.83 ic	---	---	---	---	---	---	---	0.013	---	1.848
3.08	3,639	356.83	1.88 ic	---	---	---	---	---	---	---	0.013	---	1.890
3.13	3,694	356.88	1.92 ic	---	---	---	---	---	---	---	0.013	---	1.931
3.19	3,749	356.94	1.96 ic	---	---	---	---	---	---	---	0.013	---	1.971
3.25	3,804	356.99	2.00 ic	---	---	---	---	---	---	---	0.014	---	2.010
3.30	3,859	357.05	2.04 ic	---	---	---	---	---	---	---	0.014	---	2.049
3.36	3,903	357.11	2.07 ic	---	---	---	---	---	---	---	0.014	---	2.087
3.41	3,947	357.16	2.11 ic	---	---	---	---	---	---	---	0.014	---	2.124
3.46	3,991	357.21	2.15 ic	---	---	---	---	---	---	---	0.014	---	2.161
3.52	4,035	357.27	2.18 ic	---	---	---	---	---	---	---	0.014	---	2.197
3.58	4,079	357.33	2.22 ic	---	---	---	---	---	---	---	0.014	---	2.232
3.63	4,123	357.38	2.25 ic	---	---	---	---	---	---	---	0.014	---	2.267
3.68	4,167	357.43	2.29 ic	---	---	---	---	---	---	---	0.014	---	2.301
3.74	4,211	357.49	2.32 ic	---	---	---	---	---	---	---	0.014	---	2.335
3.80	4,255	357.54	2.35 ic	---	---	---	---	---	---	---	0.015	---	2.368
3.85	4,299	357.60	2.39 ic	---	---	---	---	---	---	---	0.015	---	2.401
3.90	4,332	357.65	2.42 ic	---	---	---	---	---	---	---	0.015	---	2.434
3.96	4,365	357.71	2.45 ic	---	---	---	---	---	---	---	0.015	---	2.466
4.01	4,398	357.77	2.48 ic	---	---	---	---	---	---	---	0.015	---	2.497
4.07	4,432	357.82	2.51 ic	---	---	---	---	---	---	---	0.015	---	2.528
4.13	4,465	357.88	2.54 ic	---	---	---	---	---	---	---	0.015	---	2.559
4.18	4,498	357.93	2.57 ic	---	---	---	---	---	---	---	0.015	---	2.590
4.23	4,531	357.98	2.60 ic	---	---	---	---	---	---	---	0.015	---	2.620
4.29	4,564	358.04	2.63 ic	---	---	---	---	---	---	---	0.015	---	2.649
4.34	4,597	358.09	2.66 ic	---	---	---	---	---	---	---	0.015	---	2.679
4.40	4,630	358.15	2.69 ic	---	---	---	---	---	---	---	0.016	---	2.708
4.45	4,663	358.20	2.72 ic	---	---	---	---	---	---	---	0.016	---	2.737
4.51	4,697	358.26	2.75 ic	---	---	---	---	---	---	---	0.016	---	2.765
4.57	4,730	358.32	2.78 ic	---	---	---	---	---	---	---	0.016	---	2.793
4.62	4,763	358.37	2.81 ic	---	---	---	---	---	---	---	0.016	---	2.821
4.67	4,796	358.42	2.83 oc	---	---	---	---	---	---	---	0.016	---	2.849
4.73	4,829	358.48	2.85 oc	---	---	---	---	---	---	---	0.016	---	2.870
4.78	4,862	358.53	2.87 oc	---	---	---	---	---	---	---	0.016	---	2.891
4.84	4,895	358.59	2.90 oc	---	---	---	---	---	---	---	0.016	---	2.912
4.89	4,928	358.64	2.92 oc	---	---	---	---	---	---	---	0.016	---	2.932
4.95	4,962	358.70	2.94 oc	---	---	---	---	---	---	---	0.017	---	2.953
5.01	4,995	358.76	2.96 oc	---	---	---	---	---	---	---	0.017	---	2.973
5.06	5,028	358.81	2.98 oc	---	---	---	---	---	---	---	0.017	---	2.993
5.11	5,061	358.86	3.00 oc	---	---	---	---	---	---	---	0.017	---	3.013
5.17	5,094	358.92	3.02 oc	---	---	---	---	---	---	---	0.017	---	3.033
5.22	5,127	358.98	3.04 oc	---	---	---	---	---	---	---	0.017	---	3.053
5.28	5,160	359.03	3.06 oc	---	---	---	---	---	---	---	0.017	---	3.072
5.33	5,194	359.08	3.07 oc	---	---	---	---	---	---	---	0.017	---	3.092
5.39	5,227	359.14	3.09 oc	---	---	---	---	---	---	---	0.017	---	3.111
5.44	5,260	359.19	3.11 oc	---	---	---	---	---	---	---	0.017	---	3.131
5.50	5,293	359.25	3.13 oc	---	---	---	---	---	---	---	0.018	---	3.150

...End

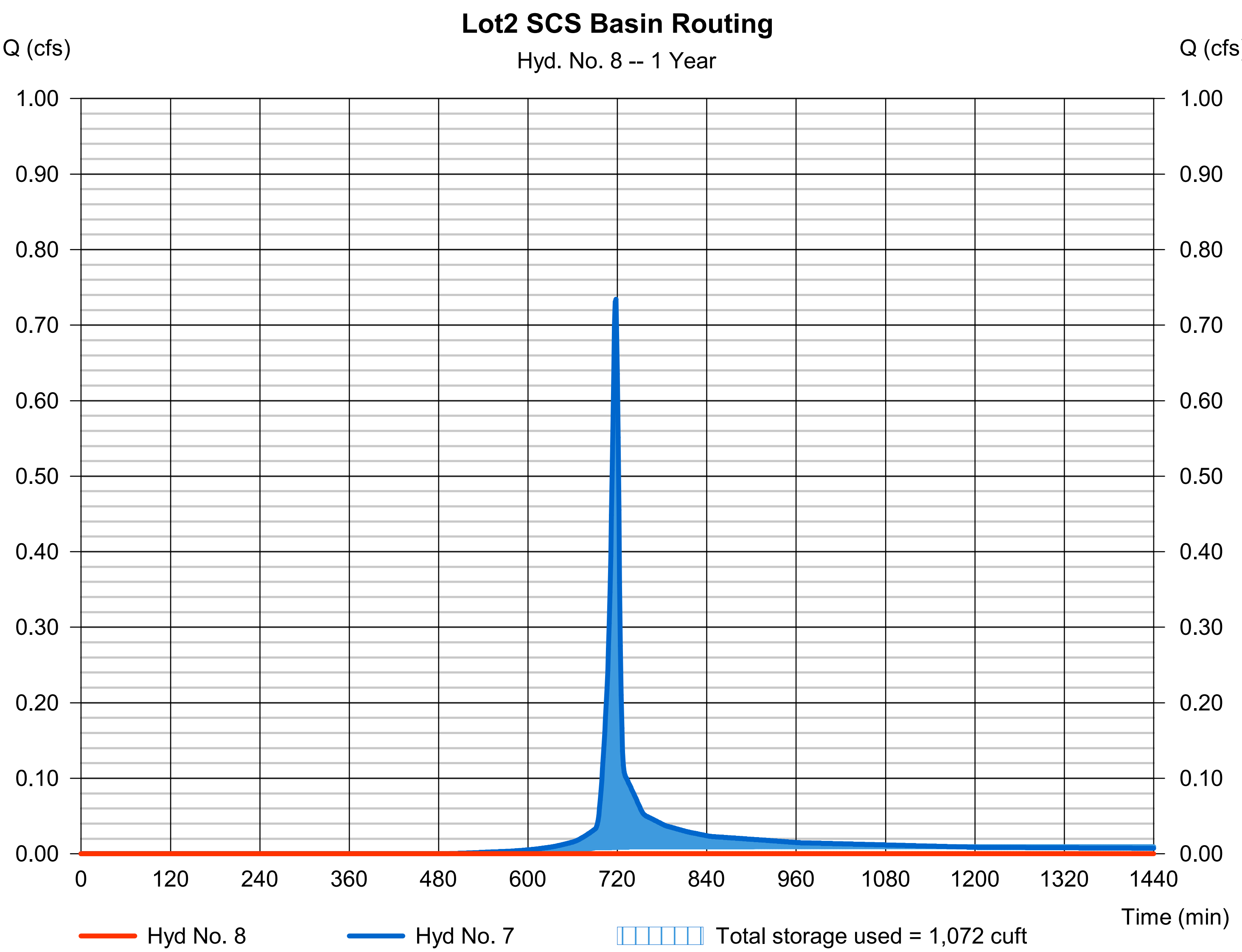
Hydrograph Report

Hyd. No. 8

Lot2 SCS Basin Routing

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.	= 7 - Lot 2 Post-Construction SCS Hydrograph	Max. Elevation	= 354.60 ft
Reservoir name	= Lot 2 Underground Basin	Max. Storage	= 1,072 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

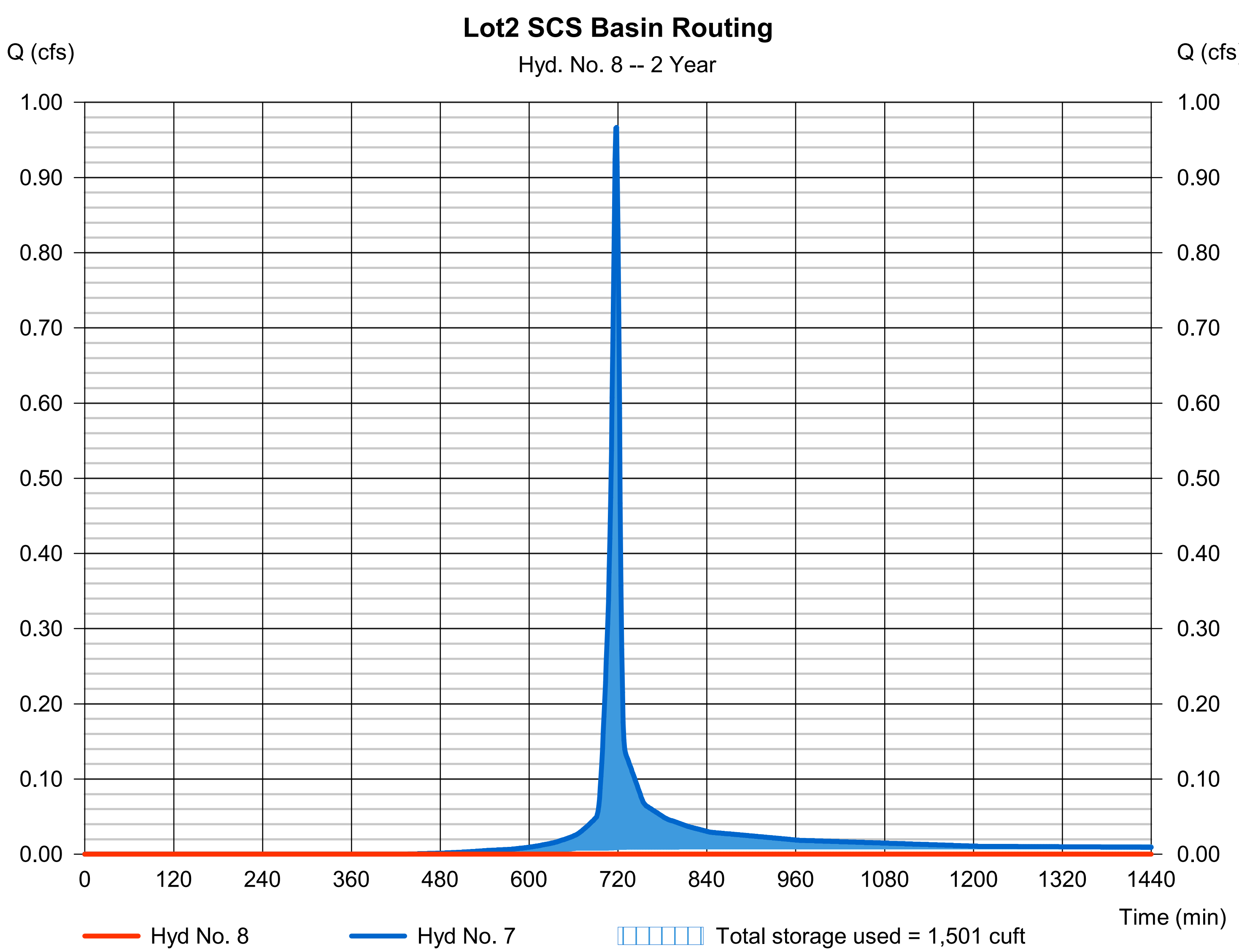
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12 Thursday, 12 / 12 / 2024

Hyd. No. 8

Lot2 SCS Basin Routing

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.	= 7 - Lot 2 Post-Construction SCS Hydrograph	Max. Elevation	= 354.95 ft
Reservoir name	= Lot 2 Underground Basin	Max. Storage	= 1,501 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



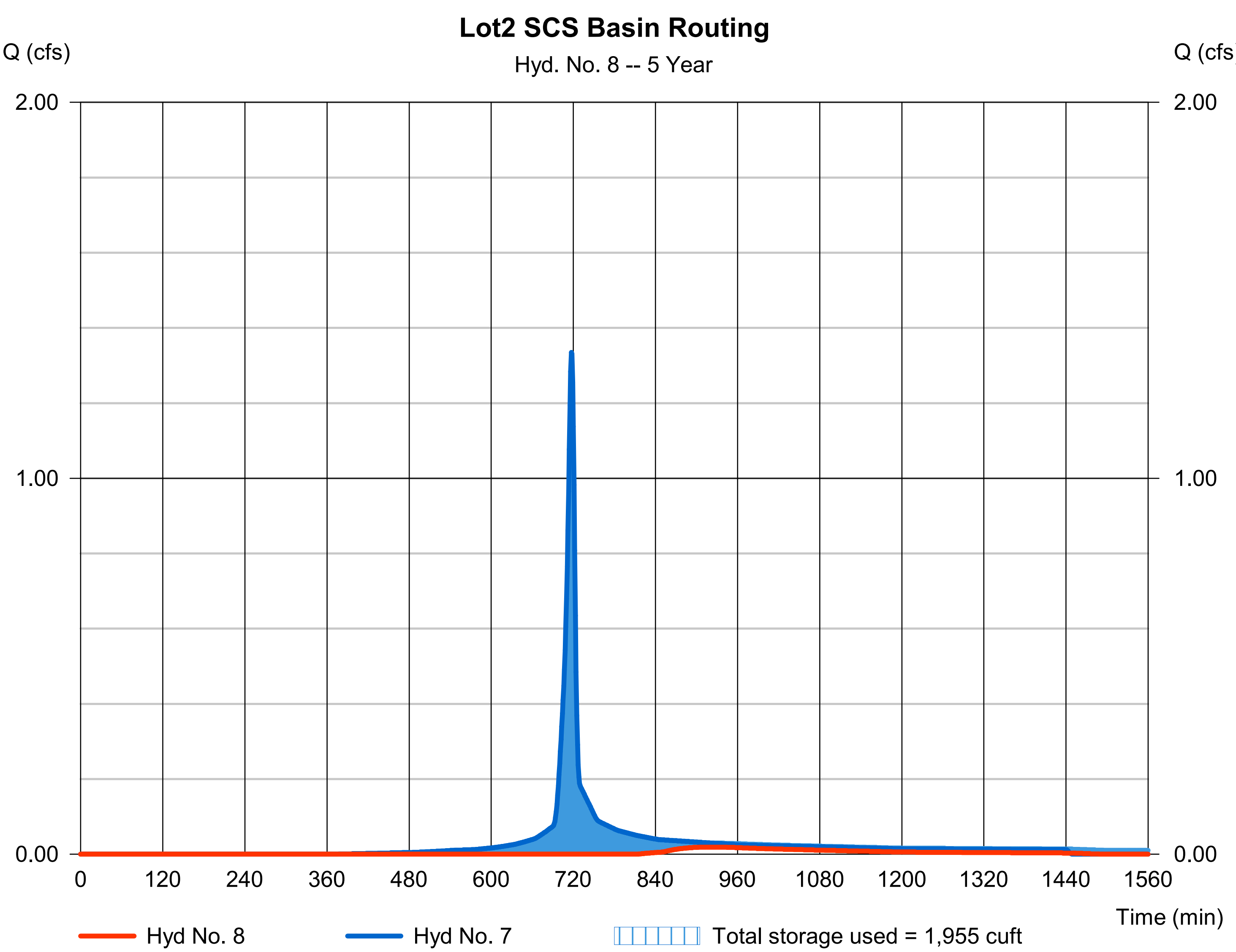
Hydrograph Report

Hyd. No. 8

Lot2 SCS Basin Routing

Hydrograph type	= Reservoir	Peak discharge	= 0.019 cfs
Storm frequency	= 5 yrs	Time to peak	= 922 min
Time interval	= 1 min	Hyd. volume	= 345 cuft
Inflow hyd. No.	= 7 - Lot 2 Post-Construction SCS Hydrograph	Max. Elevation	= 355.32 ft
Reservoir name	= Lot 2 Underground Basin	Max. Storage	= 1,955 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

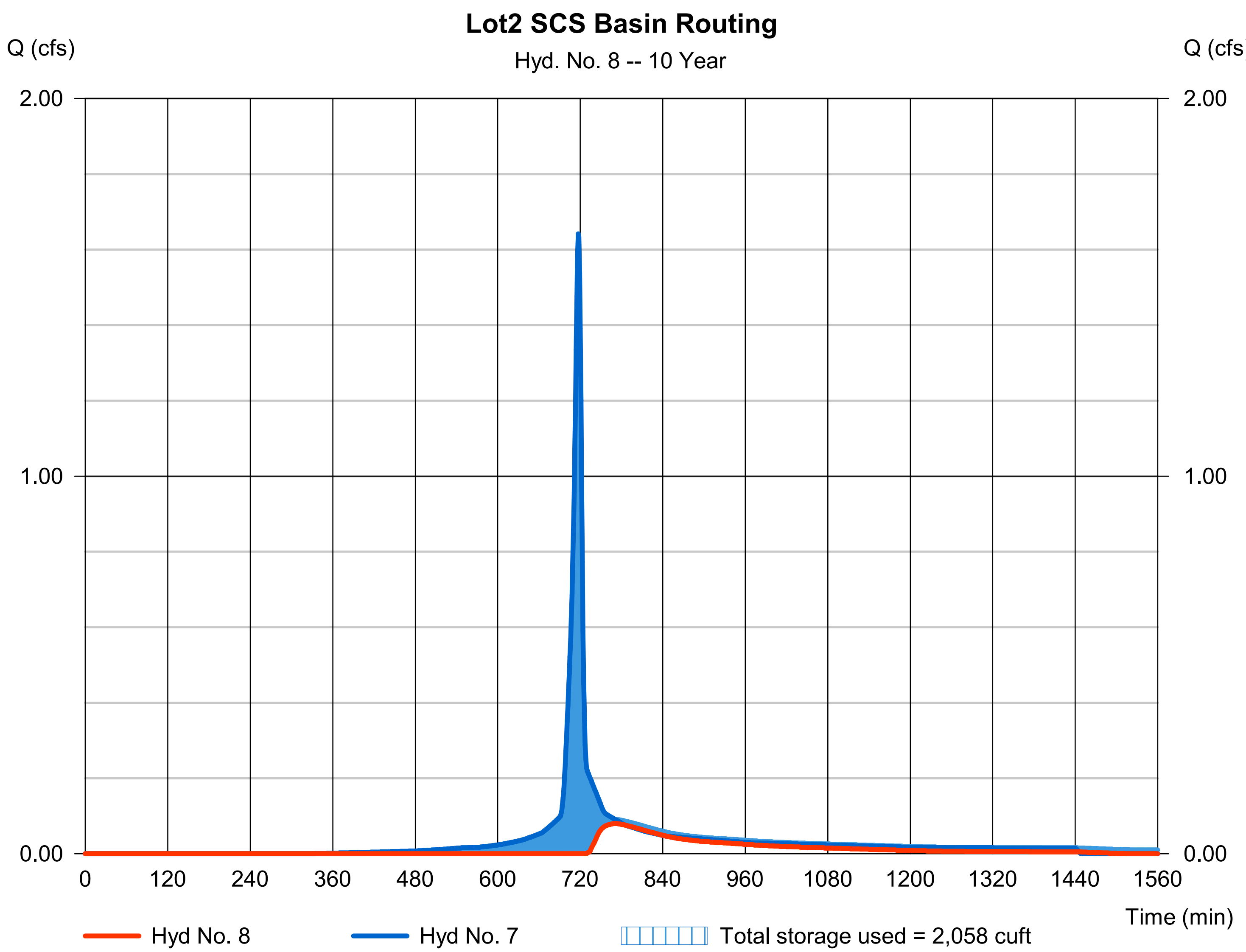
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12 Thursday, 12 / 12 / 2024

Hyd. No. 8

Lot2 SCS Basin Routing

Hydrograph type	= Reservoir	Peak discharge	= 0.080 cfs
Storm frequency	= 10 yrs	Time to peak	= 771 min
Time interval	= 1 min	Hyd. volume	= 976 cuft
Inflow hyd. No.	= 7 - Lot 2 Post-Construction SCS Hydrograph	Max. Elevation	= 355.40 ft
Reservoir name	= Lot 2 Underground Basin	Max. Storage	= 2,058 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



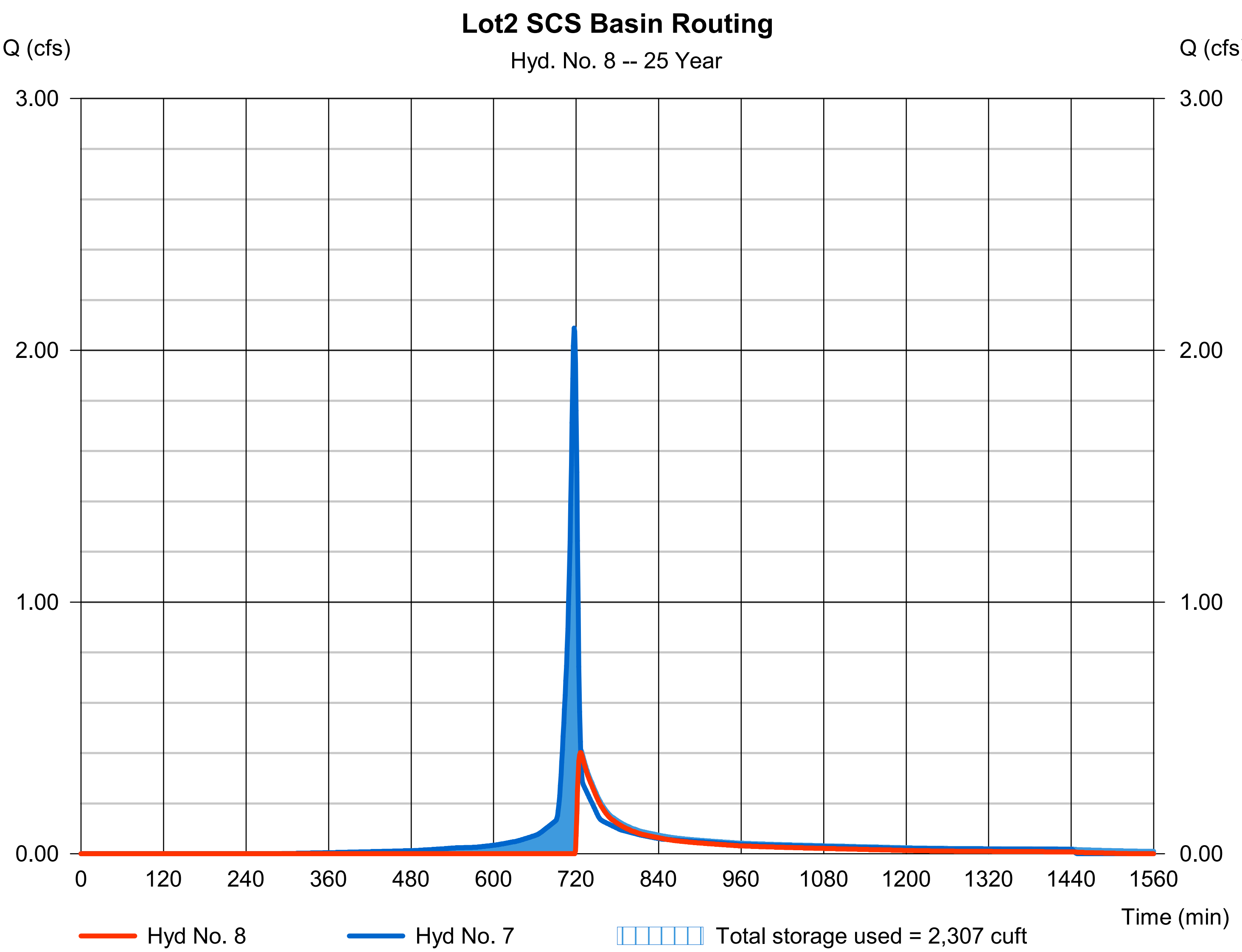
Hydrograph Report

Hyd. No. 8

Lot2 SCS Basin Routing

Hydrograph type	= Reservoir	Peak discharge	= 0.402 cfs
Storm frequency	= 25 yrs	Time to peak	= 726 min
Time interval	= 1 min	Hyd. volume	= 1,937 cuft
Inflow hyd. No.	= 7 - Lot 2 Post-Construction SCS Hydrograph	Max. Elevation	= 355.62 ft
Reservoir name	= Lot 2 Underground Basin	Max. Storage	= 2,307 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



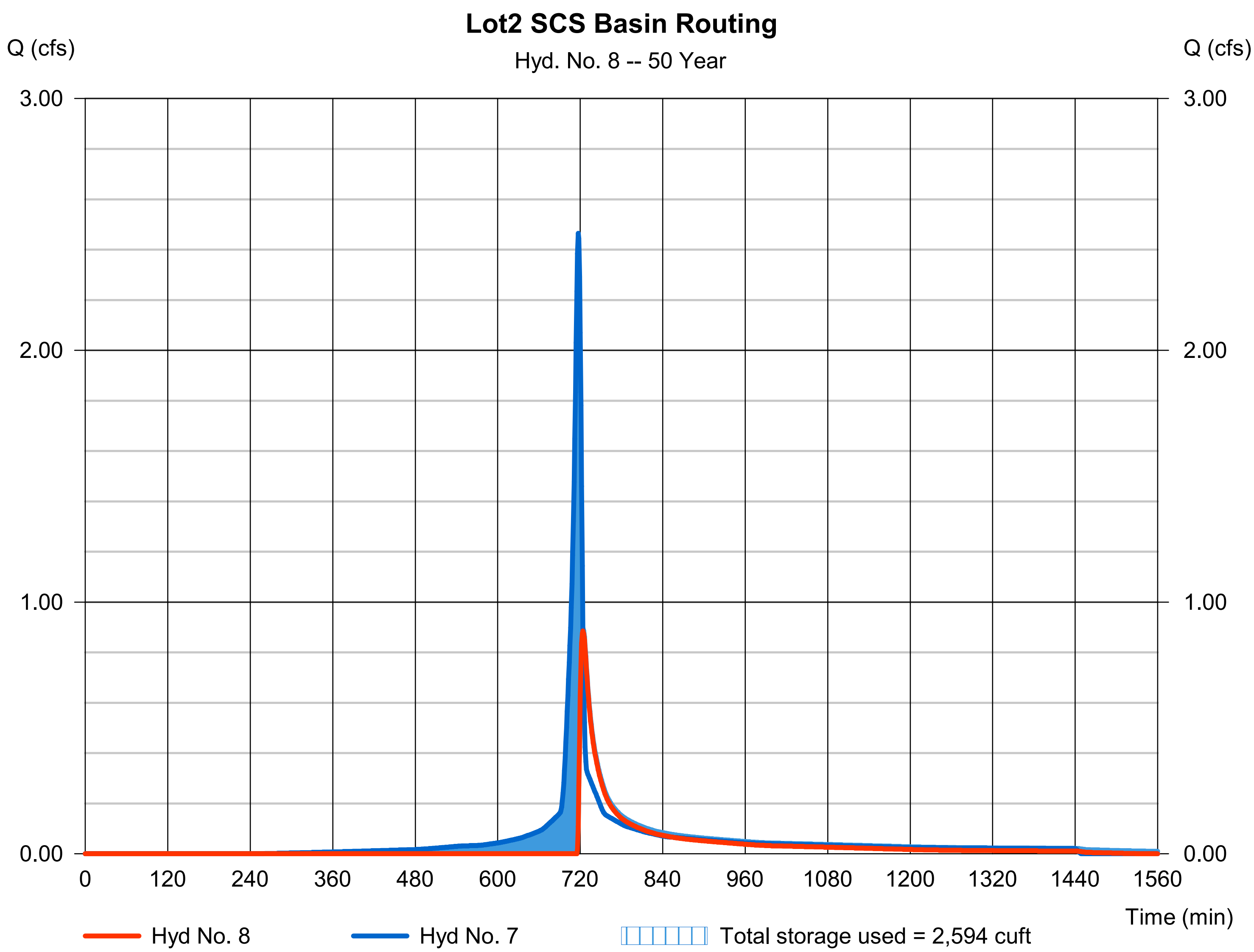
Hydrograph Report

Hyd. No. 8

Lot2 SCS Basin Routing

Hydrograph type	= Reservoir	Peak discharge	= 0.885 cfs
Storm frequency	= 50 yrs	Time to peak	= 724 min
Time interval	= 1 min	Hyd. volume	= 2,767 cuft
Inflow hyd. No.	= 7 - Lot 2 Post-Construction SCS Hydrograph	Max. Elevation	= 355.86 ft
Reservoir name	= Lot 2 Underground Basin	Max. Storage	= 2,594 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



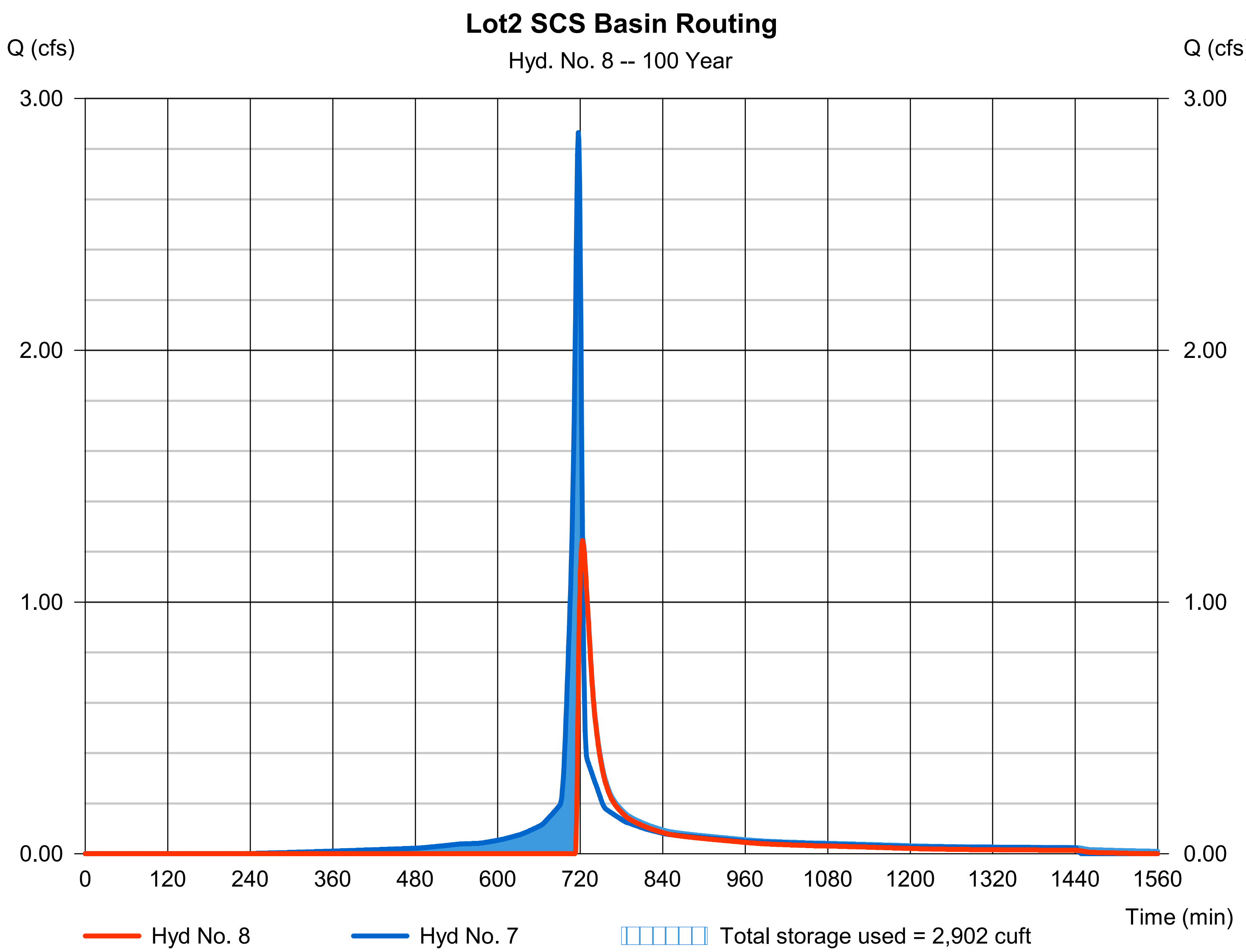
Hydrograph Report

Hyd. No. 8

Lot2 SCS Basin Routing

Hydrograph type	= Reservoir	Peak discharge	= 1.244 cfs
Storm frequency	= 100 yrs	Time to peak	= 723 min
Time interval	= 1 min	Hyd. volume	= 3,668 cuft
Inflow hyd. No.	= 7 - Lot 2 Post-Construction SCS Hydrograph	Max. Elevation	= 356.13 ft
Reservoir name	= Lot 2 Underground Basin	Max. Storage	= 2,902 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

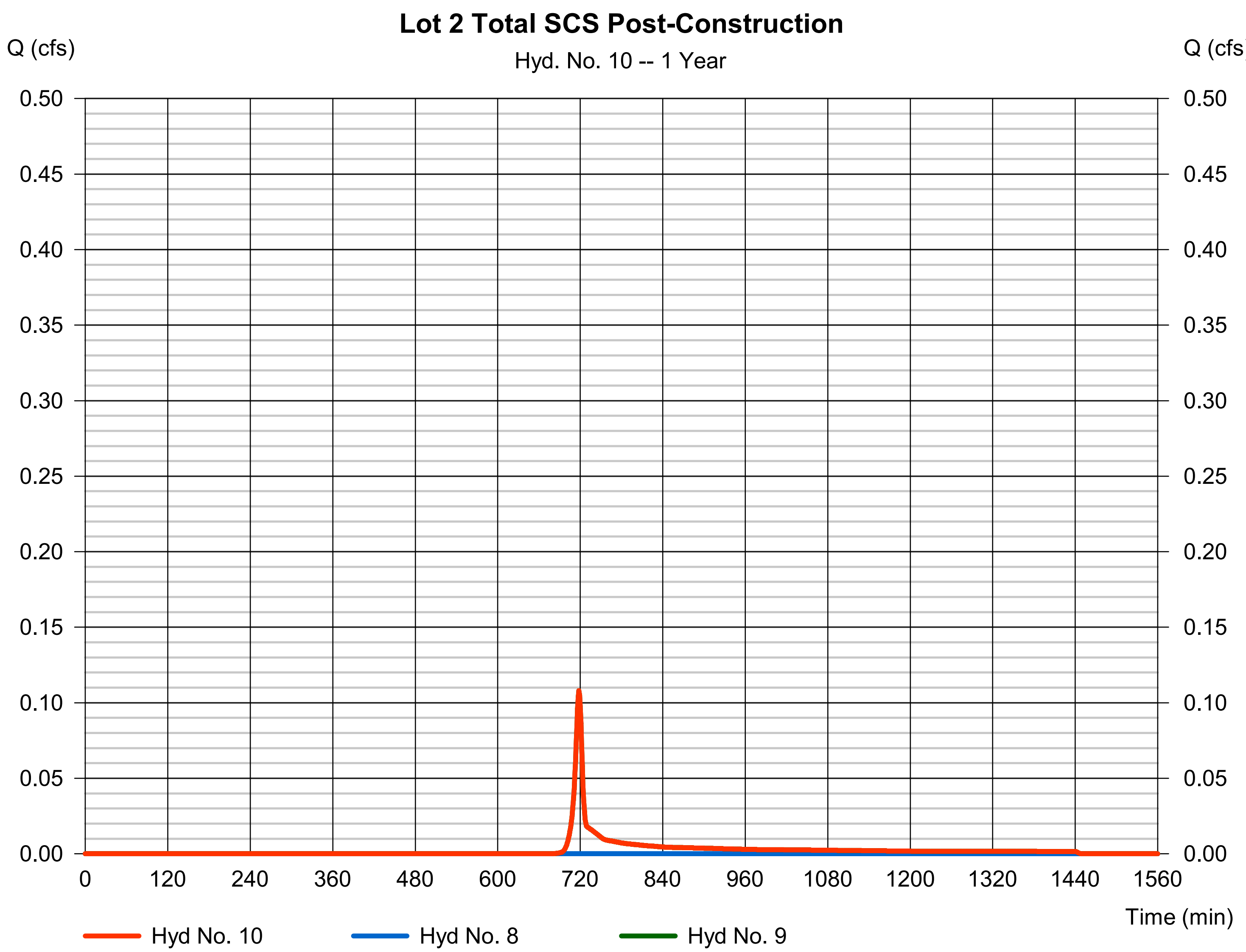


Hydrograph Report

Hyd. No. 10

Lot 2 Total SCS Post-Construction

Hydrograph type	= Combine	Peak discharge	= 0.108 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 223 cuft
Inflow hyds.	= 8, 9	Contrib. drain. area	= 0.081 ac

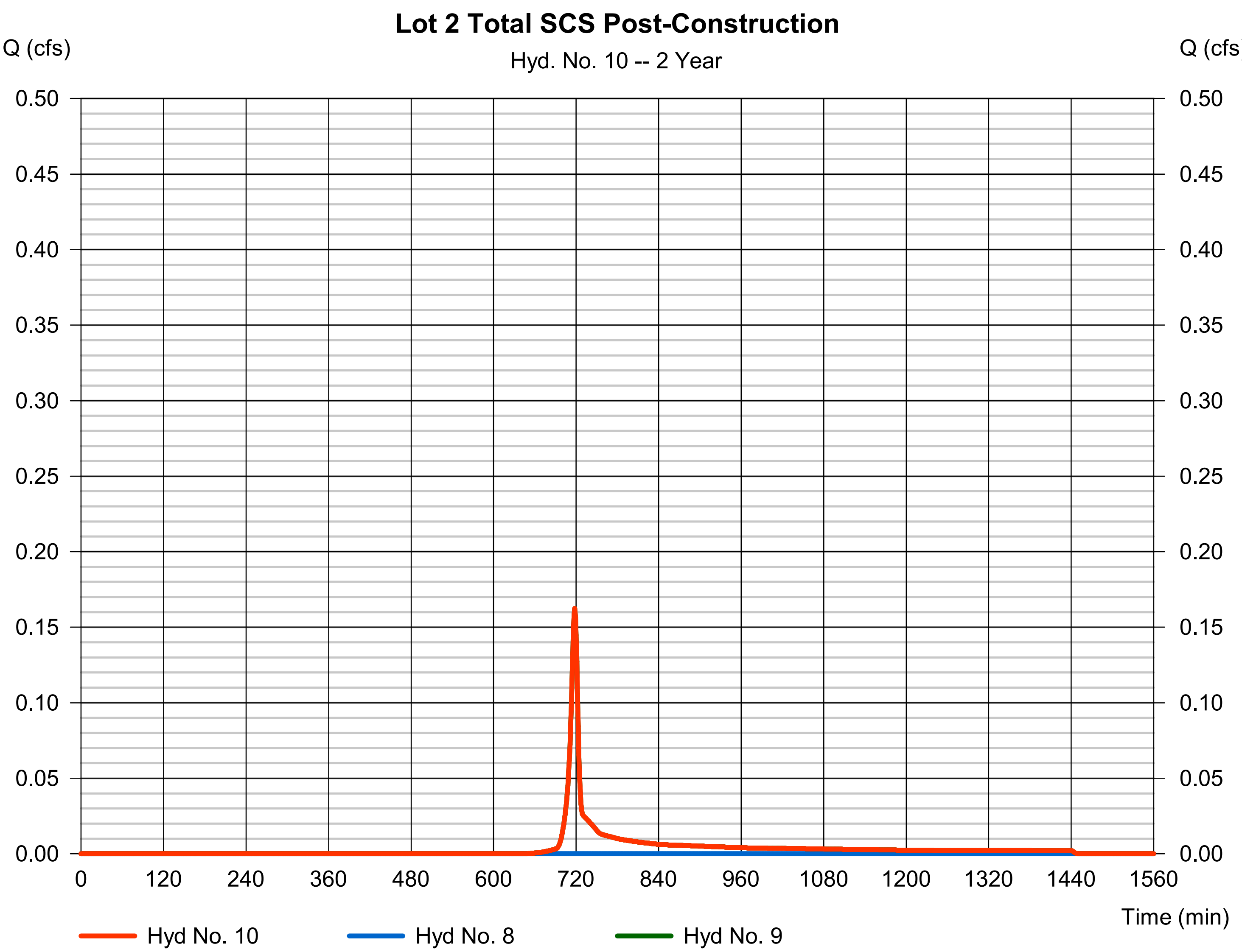


Hydrograph Report

Hyd. No. 10

Lot 2 Total SCS Post-Construction

Hydrograph type	= Combine	Peak discharge	= 0.162 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 329 cuft
Inflow hyds.	= 8, 9	Contrib. drain. area	= 0.081 ac



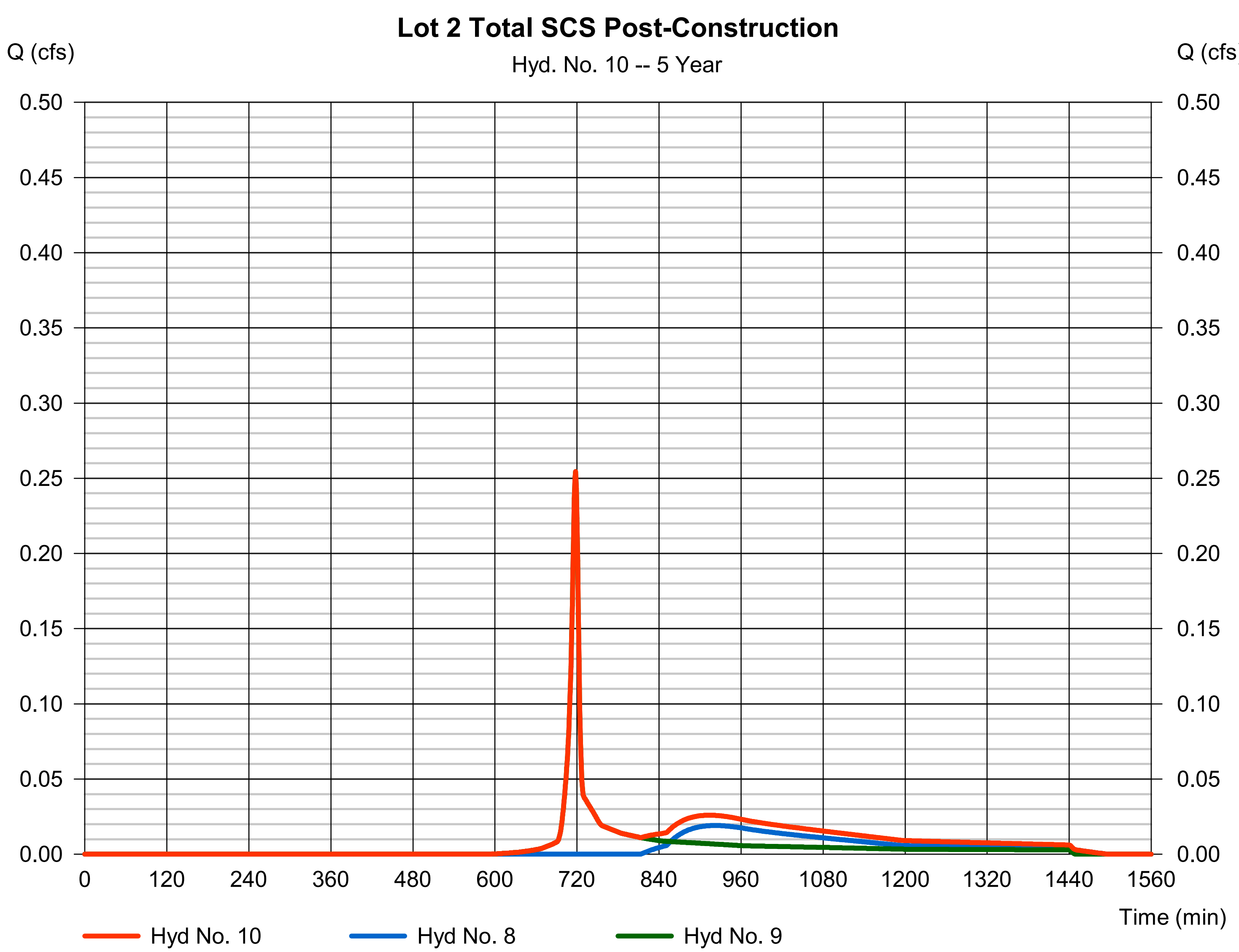
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12 Thursday, 12 / 12 / 2024

Hyd. No. 10

Lot 2 Total SCS Post-Construction

Hydrograph type	= Combine	Peak discharge	= 0.254 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 856 cuft
Inflow hyds.	= 8, 9	Contrib. drain. area	= 0.081 ac



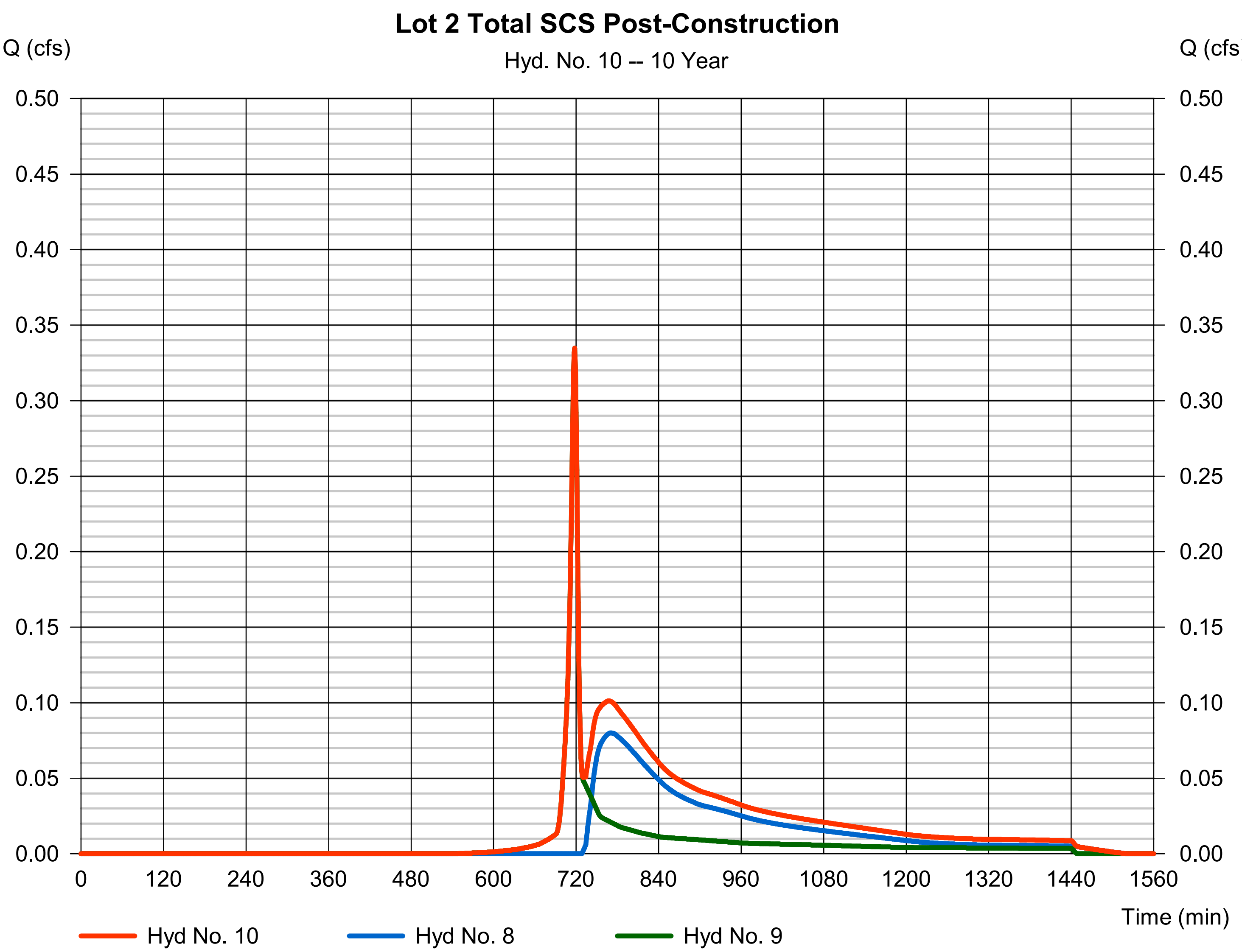
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12 Thursday, 12 / 12 / 2024

Hyd. No. 10

Lot 2 Total SCS Post-Construction

Hydrograph type	= Combine	Peak discharge	= 0.335 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 1,649 cuft
Inflow hyds.	= 8, 9	Contrib. drain. area	= 0.081 ac



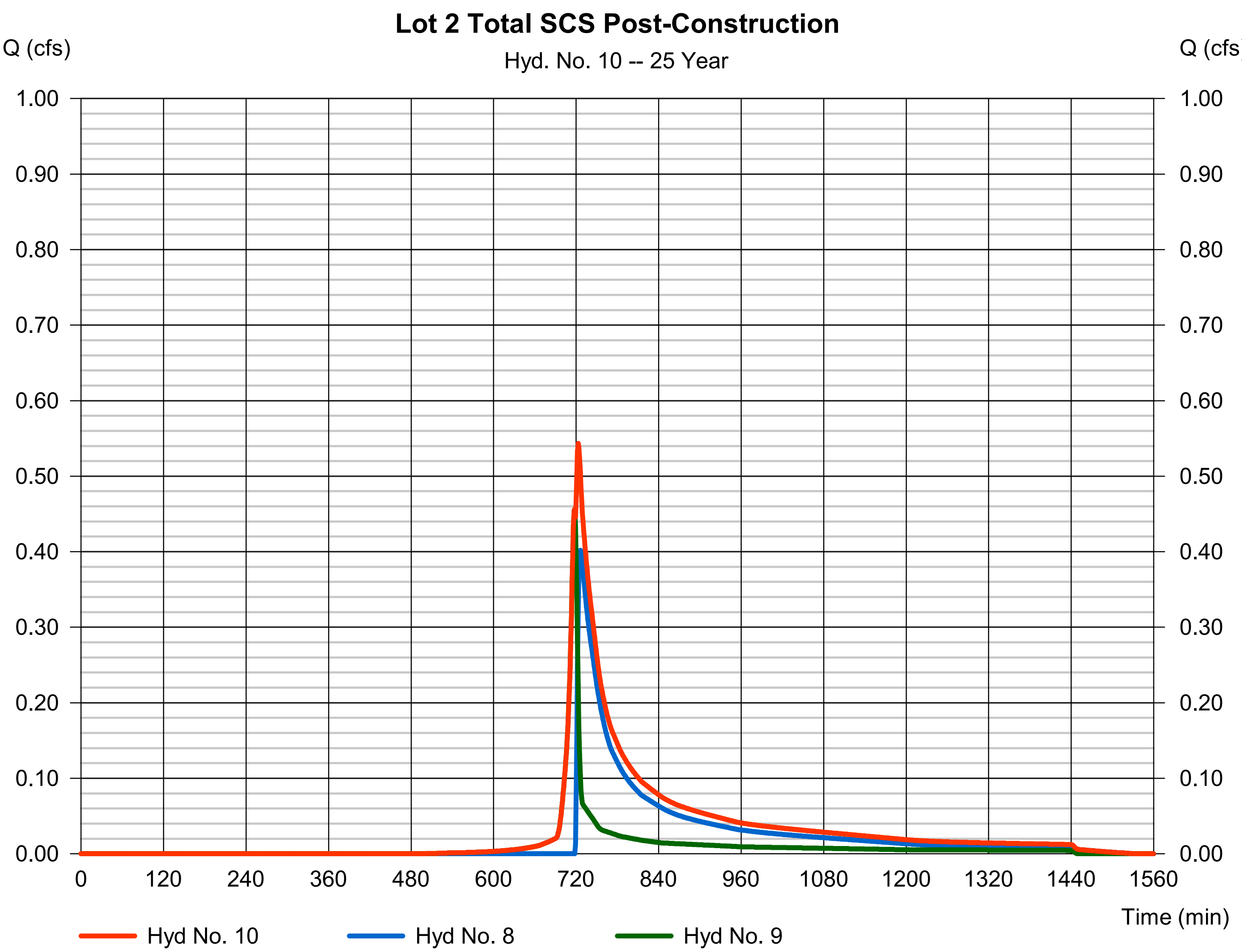
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12 Thursday, 12 / 12 / 2024

Hyd. No. 10

Lot 2 Total SCS Post-Construction

Hydrograph type	= Combine	Peak discharge	= 0.543 cfs
Storm frequency	= 25 yrs	Time to peak	= 723 min
Time interval	= 1 min	Hyd. volume	= 2,862 cuft
Inflow hyds.	= 8, 9	Contrib. drain. area	= 0.081 ac

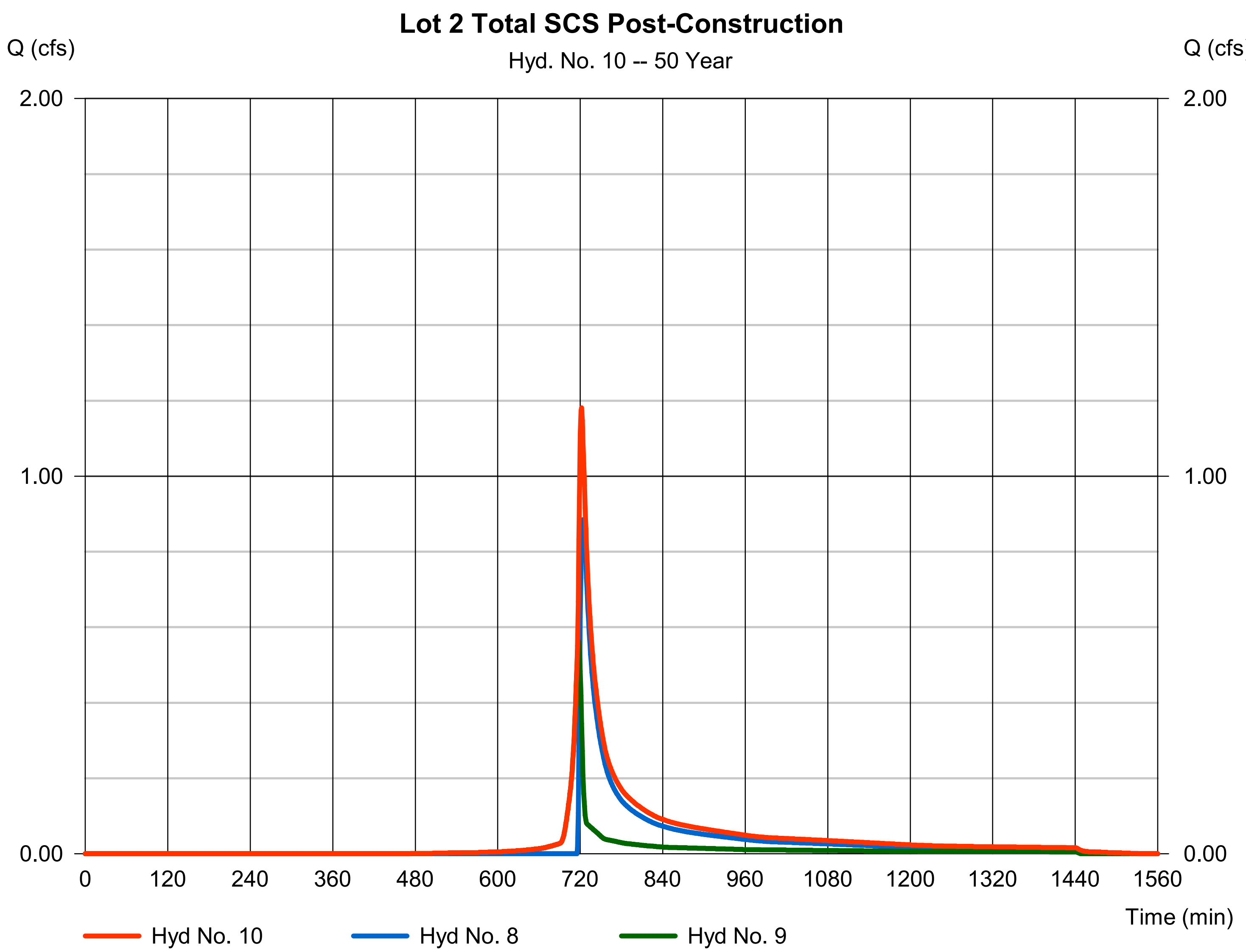


Hydrograph Report

Hyd. No. 10

Lot 2 Total SCS Post-Construction

Hydrograph type	= Combine	Peak discharge	= 1.181 cfs
Storm frequency	= 50 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 3,914 cuft
Inflow hyds.	= 8, 9	Contrib. drain. area	= 0.081 ac

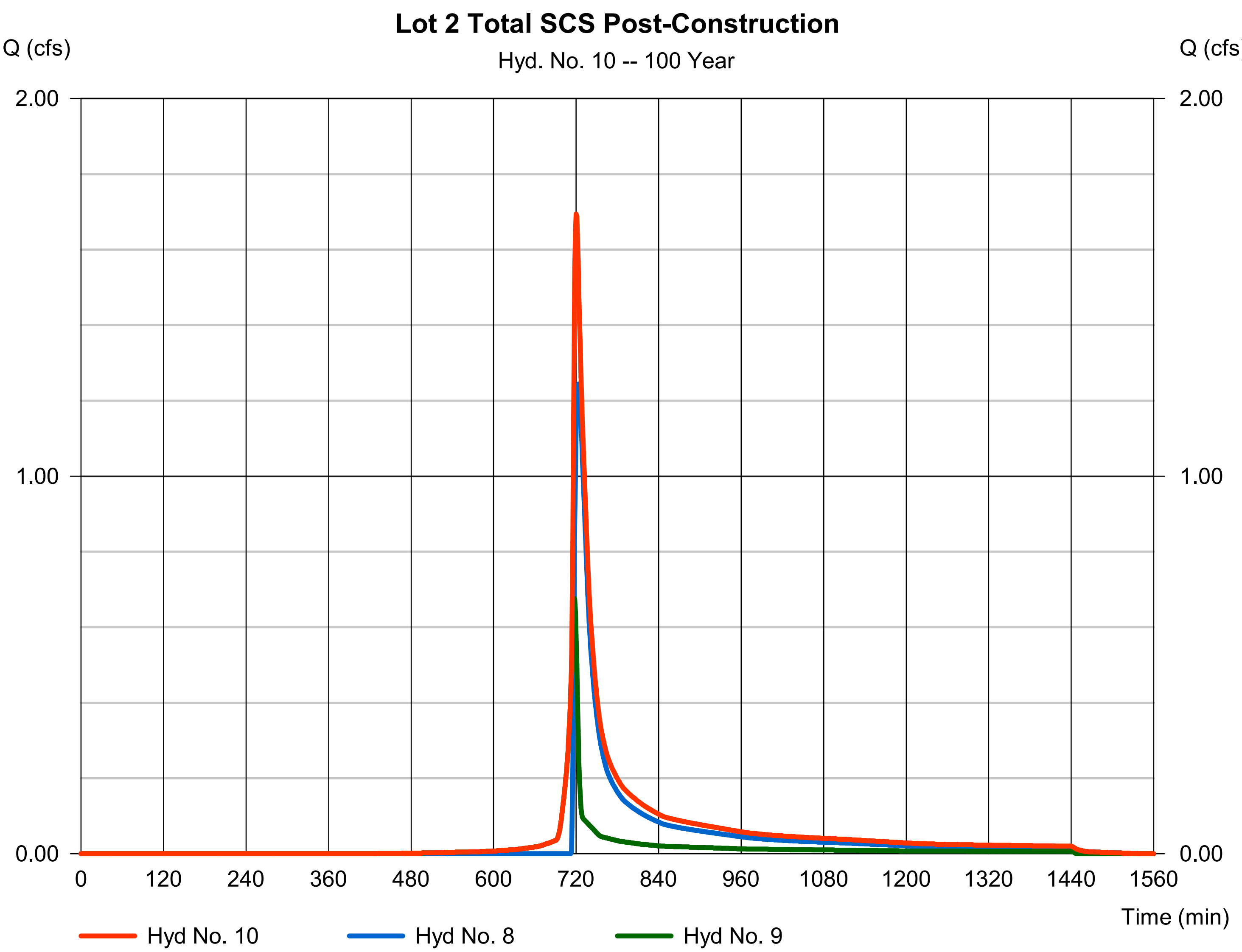


Hydrograph Report

Hyd. No. 10

Lot 2 Total SCS Post-Construction

Hydrograph type	= Combine	Peak discharge	= 1.695 cfs
Storm frequency	= 100 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 5,059 cuft
Inflow hyds.	= 8, 9	Contrib. drain. area	= 0.081 ac



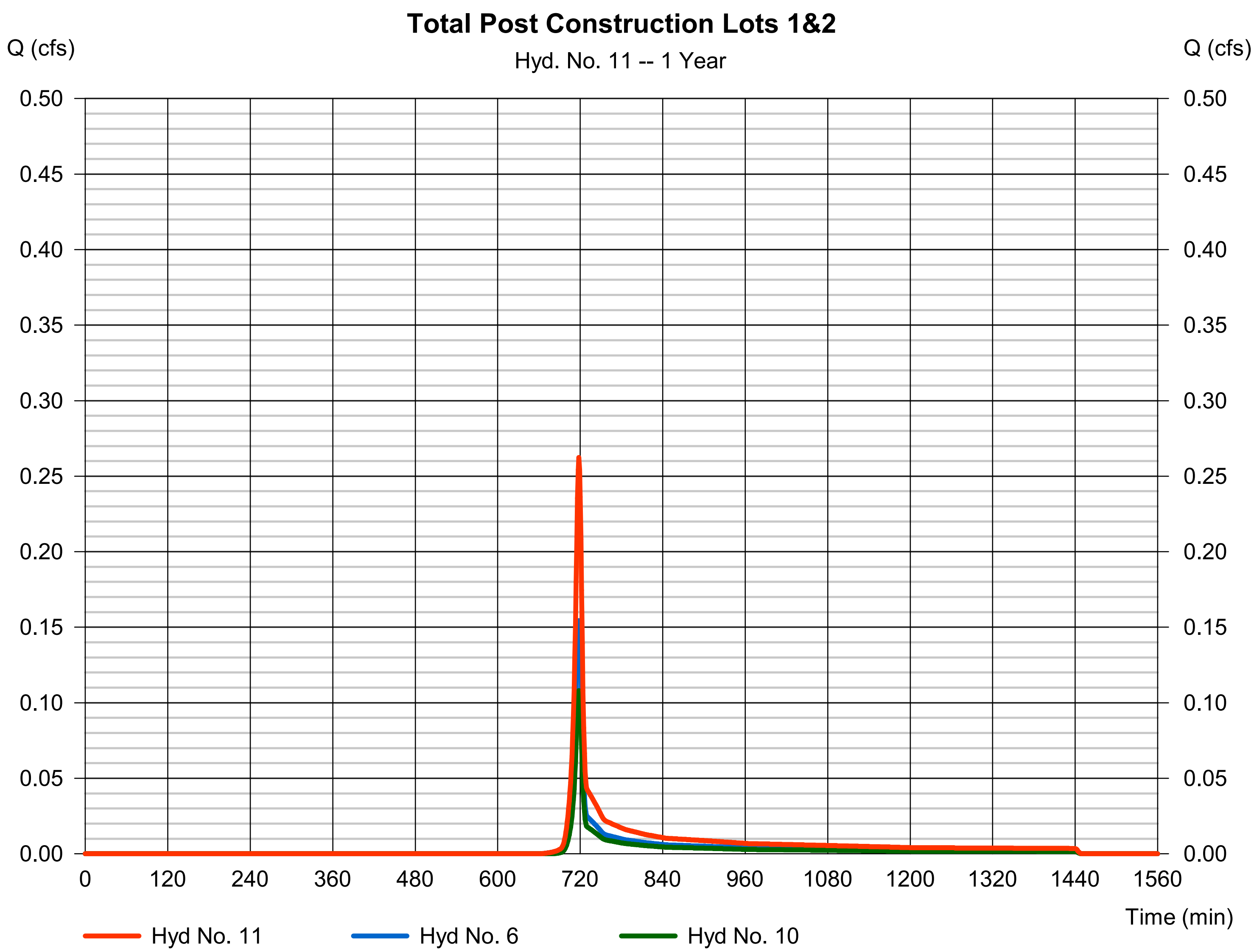
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12 Thursday, 12 / 12 / 2024

Hyd. No. 11

Total Post Construction Lots 1&2

Hydrograph type	= Combine	Peak discharge	= 0.262 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 537 cuft
Inflow hyds.	= 6, 10	Contrib. drain. area	= 0.000 ac

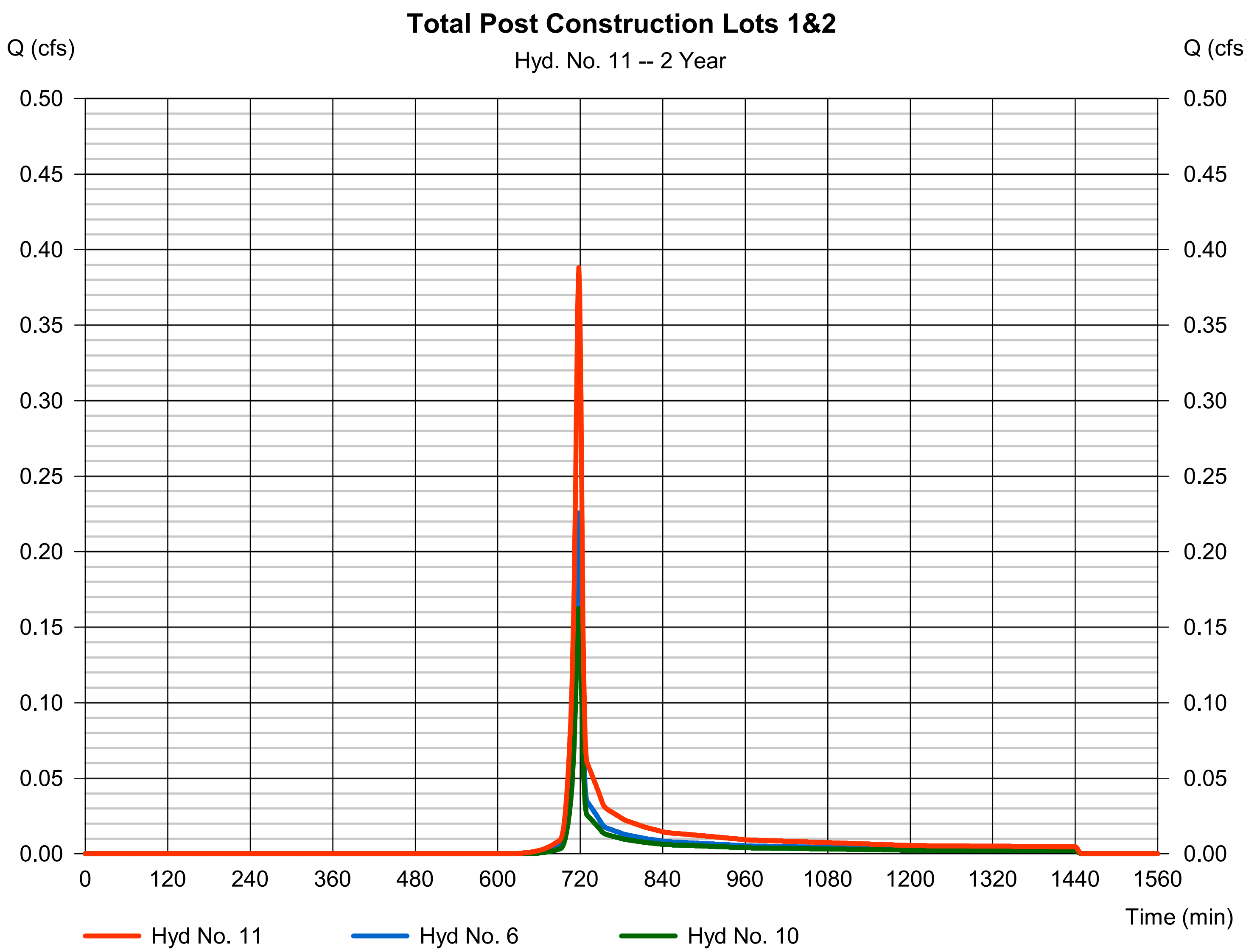


Hydrograph Report

Hyd. No. 11

Total Post Construction Lots 1&2

Hydrograph type	= Combine	Peak discharge	= 0.388 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 783 cuft
Inflow hyds.	= 6, 10	Contrib. drain. area	= 0.000 ac



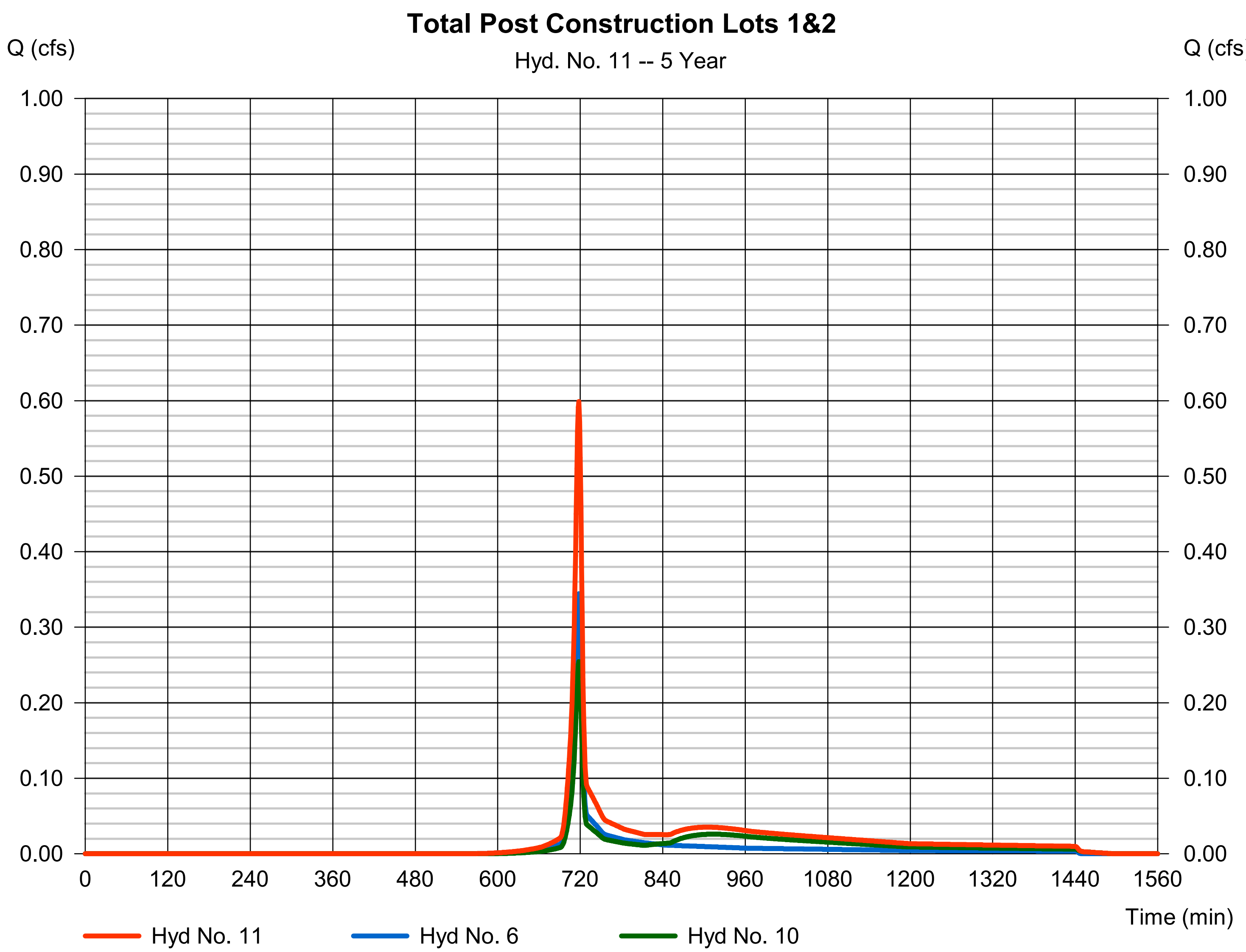
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12 Thursday, 12 / 12 / 2024

Hyd. No. 11

Total Post Construction Lots 1&2

Hydrograph type	= Combine	Peak discharge	= 0.599 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 1,548 cuft
Inflow hyds.	= 6, 10	Contrib. drain. area	= 0.000 ac

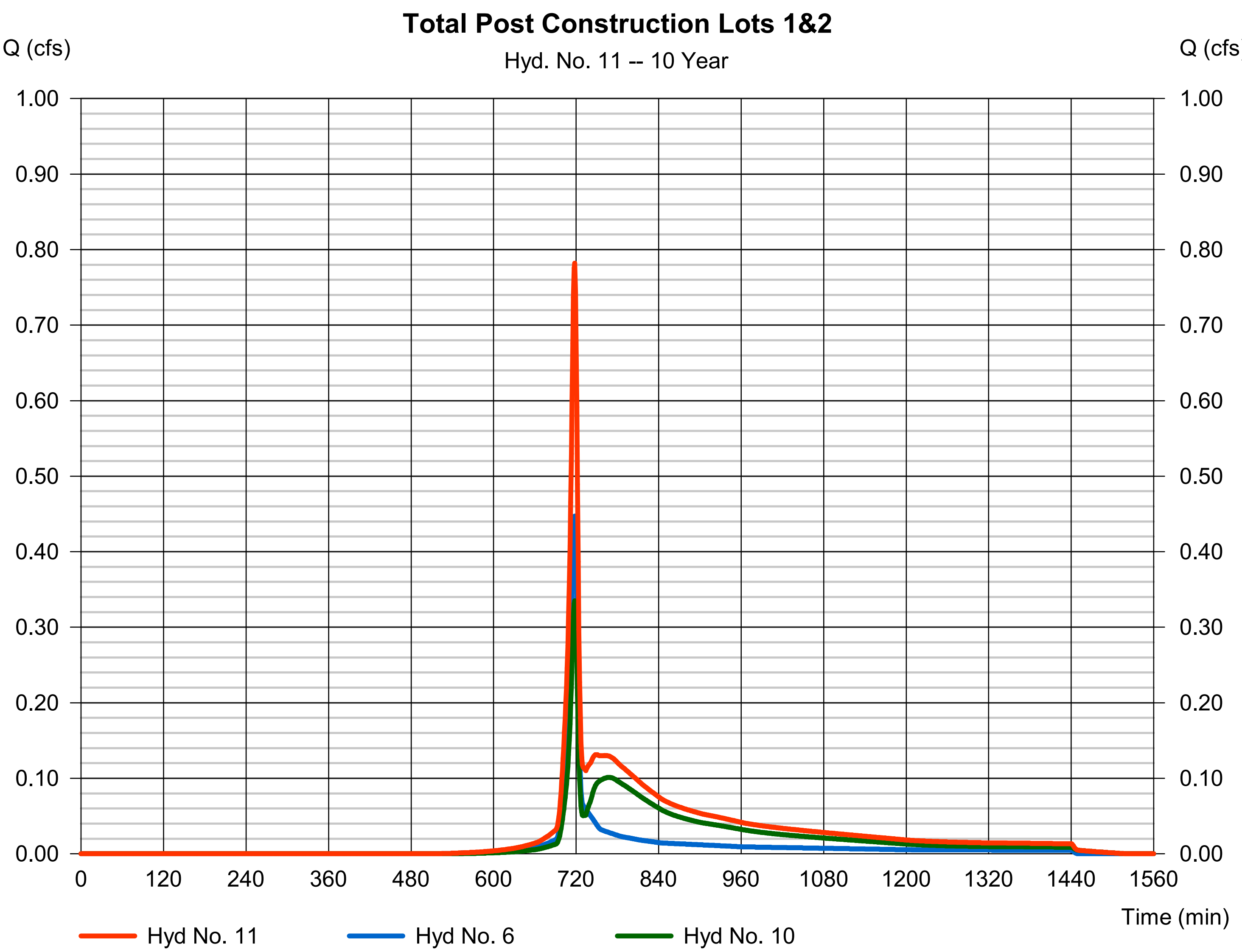


Hydrograph Report

Hyd. No. 11

Total Post Construction Lots 1&2

Hydrograph type	= Combine	Peak discharge	= 0.782 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 2,552 cuft
Inflow hyds.	= 6, 10	Contrib. drain. area	= 0.000 ac

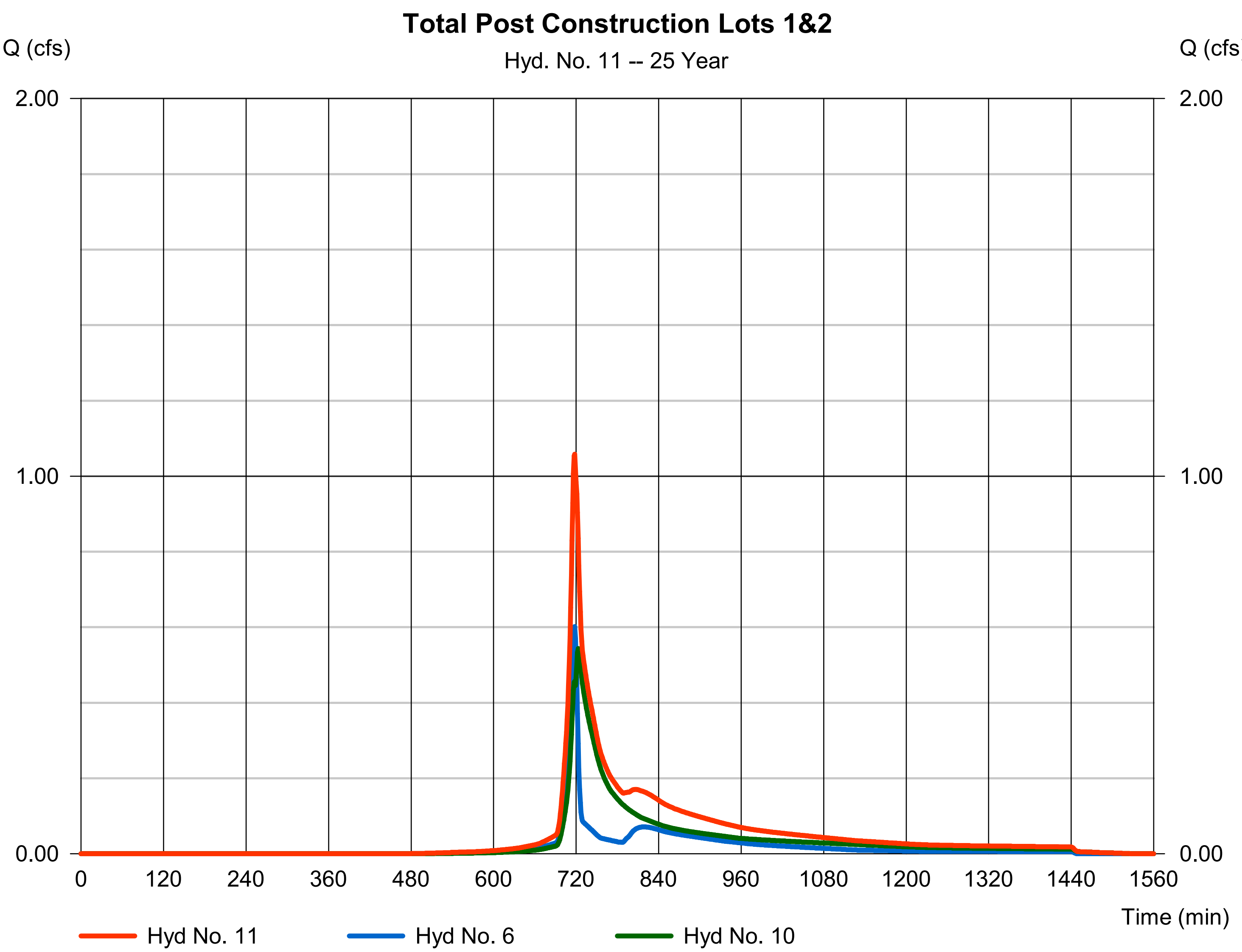


Hydrograph Report

Hyd. No. 11

Total Post Construction Lots 1&2

Hydrograph type	= Combine	Peak discharge	= 1.058 cfs
Storm frequency	= 25 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 4,497 cuft
Inflow hyds.	= 6, 10	Contrib. drain. area	= 0.000 ac



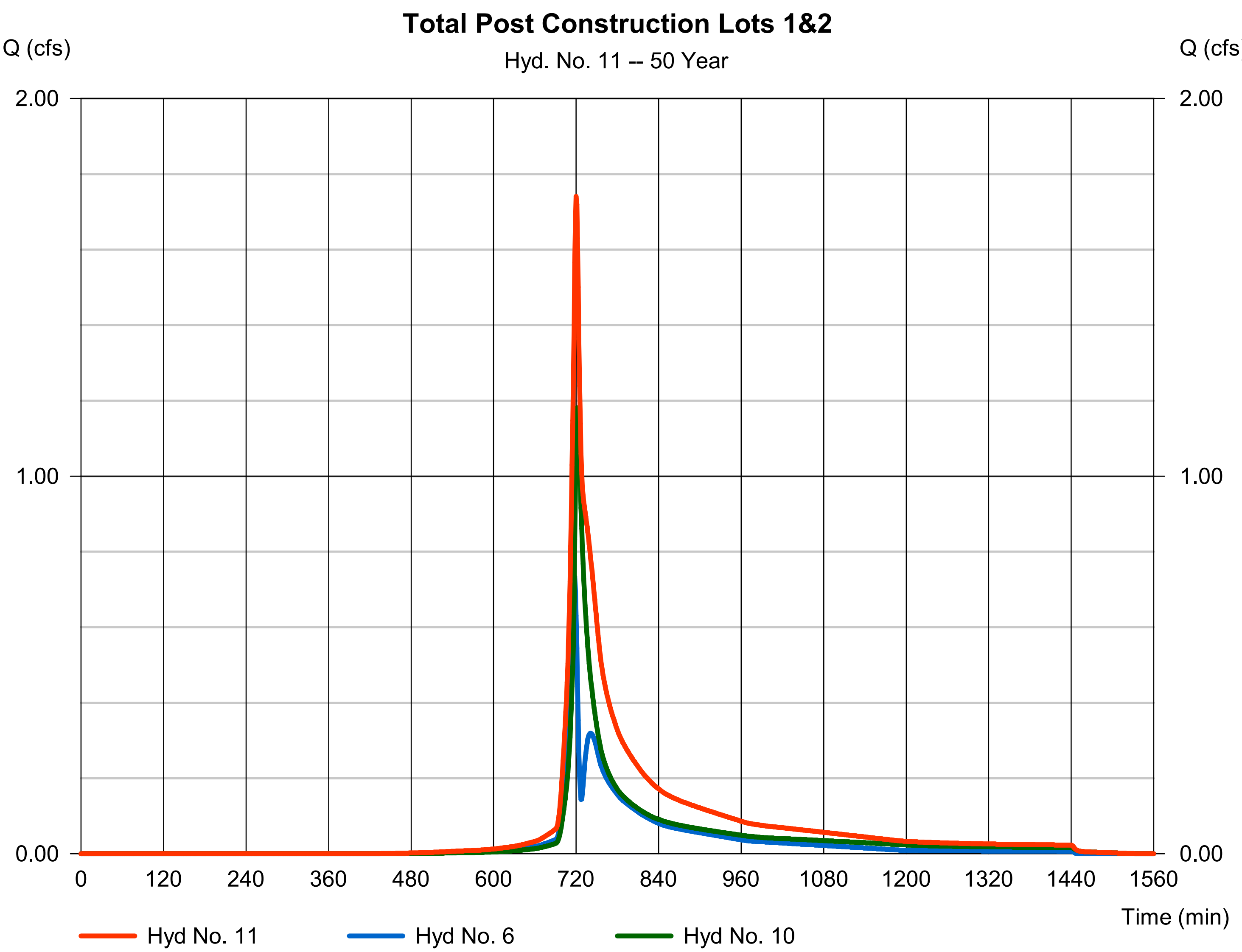
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12 Thursday, 12 / 12 / 2024

Hyd. No. 11

Total Post Construction Lots 1&2

Hydrograph type	= Combine	Peak discharge	= 1.741 cfs
Storm frequency	= 50 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 6,700 cuft
Inflow hyds.	= 6, 10	Contrib. drain. area	= 0.000 ac

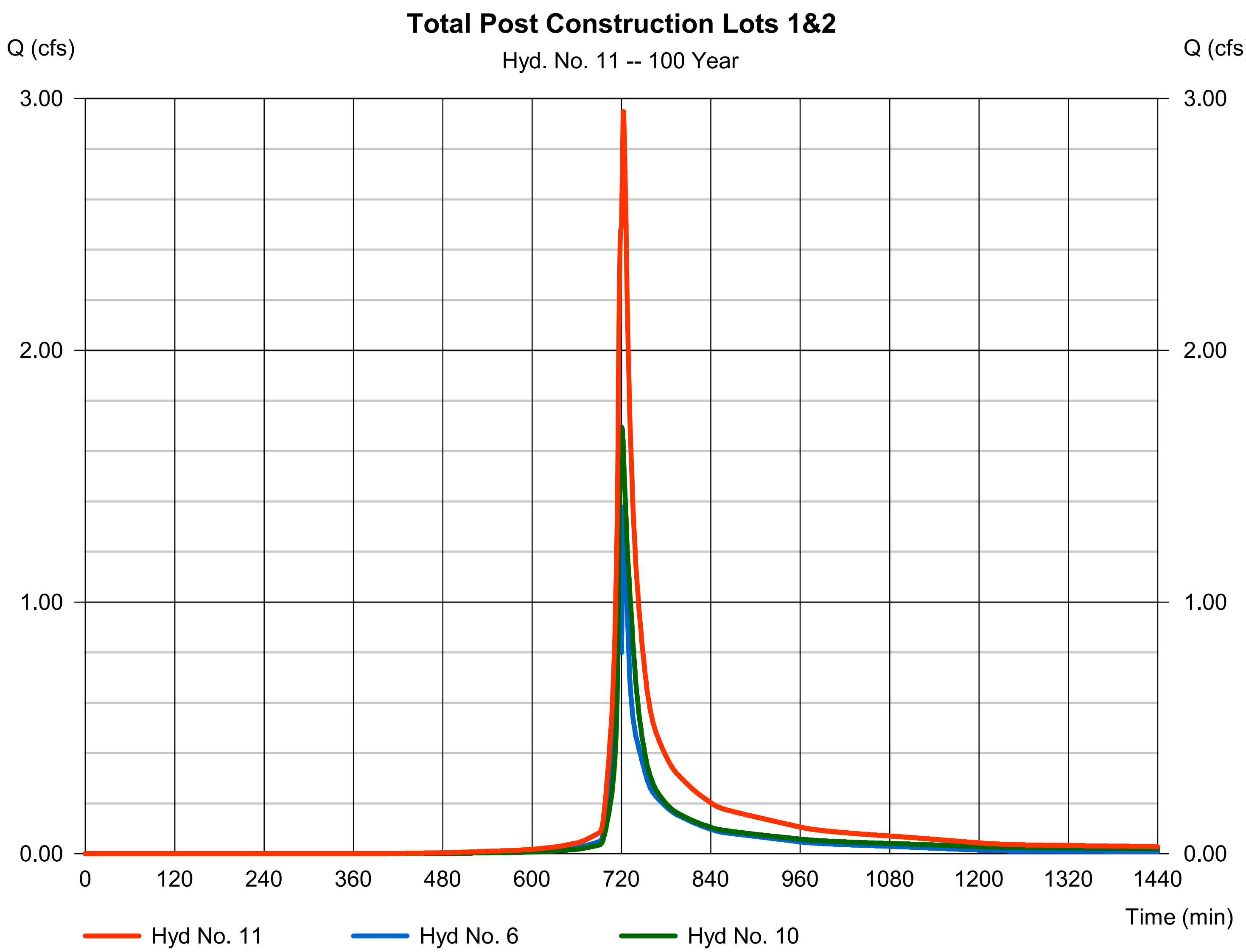


Hydrograph Report

Hyd. No. 11

Total Post Construction Lots 1&2

Hydrograph type	= Combine	Peak discharge	= 2.948 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 9,132 cuft
Inflow hyds.	= 6, 10	Contrib. drain. area	= 0.000 ac



6.0 APPENDICES

NOAA Atlas 14, Volume 2, Version 3
Location name: Bryn Mawr, Pennsylvania, USA*
Latitude: 40.0105°, Longitude: -75.3423°
Elevation: m/ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.348** (0.321-0.379)	**0.415** (0.382-0.451)	**0.486** (0.446-0.529)	**0.537** (0.492-0.584)	**0.597** (0.544-0.649)	**0.638** (0.578-0.694)	**0.678** (0.611-0.740)	**0.713** (0.639-0.780)	**0.753** (0.668-0.827)	**0.782** (0.689-0.864)
10-min	**0.556** (0.512-0.606)	**0.663** (0.610-0.722)	**0.779** (0.715-0.847)	**0.859** (0.786-0.934)	**0.951** (0.866-1.04)	**1.02** (0.920-1.11)	**1.08** (0.972-1.18)	**1.13** (1.01-1.24)	**1.19** (1.06-1.31)	**1.23** (1.08-1.36)
15-min	**0.696** (0.641-0.757)	**0.834** (0.767-0.908)	**0.985** (0.904-1.07)	**1.09** (0.995-1.18)	**1.21** (1.10-1.31)	**1.29** (1.16-1.40)	**1.36** (1.23-1.49)	**1.42** (1.28-1.56)	**1.50** (1.33-1.65)	**1.55** (1.36-1.71)
30-min	**0.954** (0.878-1.04)	**1.15** (1.06-1.25)	**1.40** (1.28-1.52)	**1.57** (1.44-1.71)	**1.79** (1.63-1.94)	**1.94** (1.75-2.11)	**2.08** (1.88-2.28)	**2.22** (1.99-2.43)	**2.38** (2.12-2.62)	**2.50** (2.21-2.77)
60-min	**1.19** (1.10-1.29)	**1.44** (1.33-1.57)	**1.80** (1.65-1.95)	**2.05** (1.88-2.23)	**2.38** (2.17-2.59)	**2.62** (2.38-2.86)	**2.87** (2.59-3.13)	**3.11** (2.79-3.41)	**3.42** (3.04-3.76)	**3.66** (3.22-4.04)
2-hr	**1.43** (1.30-1.56)	**1.73** (1.58-1.90)	**2.16** (1.97-2.36)	**2.49** (2.26-2.72)	**2.92** (2.64-3.19)	**3.26** (2.92-3.56)	**3.59** (3.21-3.94)	**3.93** (3.48-4.32)	**4.39** (3.84-4.84)	**4.74** (4.10-5.24)
3-hr	**1.56** (1.43-1.71)	**1.89** (1.73-2.07)	**2.36** (2.16-2.59)	**2.73** (2.48-2.99)	**3.21** (2.90-3.51)	**3.59** (3.23-3.93)	**3.98** (3.55-4.36)	**4.38** (3.86-4.81)	**4.90** (4.27-5.41)	**5.32** (4.58-5.89)
6-hr	**1.94** (1.78-2.13)	**2.35** (2.15-2.58)	**2.92** (2.67-3.21)	**3.39** (3.08-3.72)	**4.04** (3.64-4.43)	**4.57** (4.09-5.00)	**5.12** (4.54-5.62)	**5.70** (5.00-6.27)	**6.51** (5.61-7.21)	**7.17** (6.08-7.97)
12-hr	**2.36** (2.16-2.61)	**2.85** (2.61-3.15)	**3.57** (3.26-3.94)	**4.17** (3.79-4.60)	**5.05** (4.53-5.55)	**5.78** (5.14-6.36)	**6.58** (5.78-7.25)	**7.44** (6.44-8.23)	**8.69** (7.36-9.66)	**9.74** (8.10-10.9)
24-hr	**2.72** (2.50-2.96)	**3.27** (3.01-3.58)	**4.12** (3.78-4.49)	**4.82** (4.41-5.25)	**5.84** (5.32-6.35)	**6.70** (6.07-7.27)	**7.62** (6.87-8.27)	**8.63** (7.72-9.35)	**10.1** (8.94-10.9)	**11.3** (9.92-12.3)
2-day	**3.14** (2.87-3.42)	**3.78** (3.47-4.13)	**4.76** (4.36-5.20)	**5.56** (5.09-6.06)	**6.70** (6.10-7.29)	**7.65** (6.94-8.32)	**8.66** (7.80-9.41)	**9.74** (8.73-10.6)	**11.3** (10.0-12.3)	**12.6** (11.1-13.7)
3-day	**3.30** (3.04-3.61)	**3.99** (3.66-4.35)	**5.00** (4.59-5.46)	**5.83** (5.34-6.36)	**7.01** (6.39-7.63)	**7.99** (7.26-8.69)	**9.03** (8.16-9.82)	**10.1** (9.10-11.0)	**11.7** (10.4-12.8)	**13.0** (11.5-14.2)
4-day	**3.48** (3.20-3.80)	**4.19** (3.86-4.58)	**5.24** (4.82-5.72)	**6.10** (5.60-6.65)	**7.32** (6.68-7.97)	**8.33** (7.58-9.06)	**9.40** (8.51-10.2)	**10.5** (9.48-11.5)	**12.2** (10.8-13.3)	**13.5** (11.9-14.7)
7-day	**4.05** (3.76-4.40)	**4.86** (4.50-5.28)	**6.02** (5.57-6.54)	**6.96** (6.44-7.56)	**8.33** (7.66-9.04)	**9.46** (8.65-10.2)	**10.6** (9.69-11.5)	**11.9** (10.8-12.9)	**13.7** (12.3-14.9)	**15.2** (13.5-16.5)
10-day	**4.60** (4.29-4.97)	**5.50** (5.12-5.94)	**6.72** (6.24-7.25)	**7.70** (7.14-8.30)	**9.06** (8.37-9.76)	**10.2** (9.36-10.9)	**11.3** (10.4-12.2)	**12.5** (11.4-13.5)	**14.2** (12.8-15.3)	**15.6** (14.0-16.8)
20-day	**6.23** (5.84-6.65)	**7.39** (6.94-7.89)	**8.82** (8.28-9.42)	**9.95** (9.32-10.6)	**11.5** (10.7-12.2)	**12.7** (11.8-13.5)	**13.9** (12.9-14.8)	**15.1** (14.0-16.1)	**16.7** (15.4-17.9)	**18.0** (16.5-19.3)
30-day	**7.76** (7.33-8.20)	**9.14** (8.64-9.67)	**10.7** (10.1-11.3)	**11.9** (11.2-12.5)	**13.4** (12.6-14.2)	**14.6** (13.7-15.4)	**15.8** (14.8-16.7)	**16.9** (15.8-17.9)	**18.4** (17.1-19.5)	**19.5** (18.1-20.8)
45-day	**9.86** (9.35-10.4)	**11.6** (11.0-12.2)	**13.3** (12.6-14.0)	**14.6** (13.9-15.4)	**16.3** (15.4-17.2)	**17.5** (16.6-18.5)	**18.7** (17.7-19.7)	**19.8** (18.7-20.9)	**21.2** (19.9-22.4)	**22.2** (20.8-23.5)
60-day	**11.8** (11.2-12.4)	**13.8** (13.2-14.5)	**15.8** (15.0-16.6)	**17.2** (16.4-18.1)	**19.1** (18.1-20.0)	**20.4** (19.4-21.5)	**21.6** (20.5-22.8)	**22.8** (21.6-24.0)	**24.2** (22.9-25.5)	**25.2** (23.8-26.6)

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

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

Please refer to NOAA Atlas 14 document for more information.

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PF graphical

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dvs@delvalseptics.com
www.delvalseptics.com

PA # 108248

PERCOLATION REPORT

Client: Jim Slattery
Location: 3 Meadowcrest Road (TP1)
Municipality: Radnor County: Delaware
Date: 7-30-24 Degrees: 90 Rain: No
On-Site Septic System: Storm Water Testing: X
Falling Head Testing: Double Ring Testing: X

Hole #	Depth	Water	Time	PS1	PS2	1	2	3	4	5	6	7	8
#1	4		30			2	1.75	1.75	1.75				
#2	5		10			1	1	.75	.75				
#3	6		30			1	.75	.75	.75				
#4													
#5													
#6													

Final Reading	
#1	1.75
#2	.75
#3	.75
#4	
#5	
#6	

Inches / Hour	
#1	3.5
#2	4.5
#3	1.5
#4	
#5	
#6	

NOTES
No Limiting Zone Clear to 8’.
0-7 Top Soil
7-39 Silty Clay Loam 7.5YR 5/6
39-64 Silt Loam 10YR 7/3
64-96 Silt Loam 7.5YR 5/8

RUN RATE=	3.16

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PA # 108248

PERCOLATION REPORT

Client: Jim Slattery

Location: 3 Meadowcrest Road (TP2)

Municipality: Radnor County: Delaware

Date: 7-30-24 Degrees: 90 Rain: No

On-Site Septic System: Storm Water Testing: X

Falling Head Testing: Double Ring Testing: X

Hole #	Depth	Water	Time	PS1	PS2	1	2	3	4	5	6	7	8
#1	5		30			.50	.25	.25	.25				
#2	6		30			.50	.25	.25	.25				
#3													
#4													
#5													
#6													

Final Reading	
#1	.25
#2	.25
#3	
#4	
#5	
#6	

Inches / Hour	
#1	.50
#2	.50
#3	
#4	
#5	
#6	

NOTES
No Limiting Zone Clear to 8’.
0-7 Top Soil
7-40 Silty Clay Loam 7.5YR 4/6
40-65 Silt Loam 7.5YR 4/4
65-96 Silt Loam 7.5YR 6/1

RUN RATE=	.50

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PA # 108248

PERCOLATION REPORT

Client: Jim Slattery

Location: 3 Meadowcrest Road (TP3)

Municipality: Radnor | County: Delaware

Date: 7-30-24 | Degrees: 90 | Rain: No

On-Site Septic System: | Storm Water Testing: X

Falling Head Testing: | Double Ring Testing: X

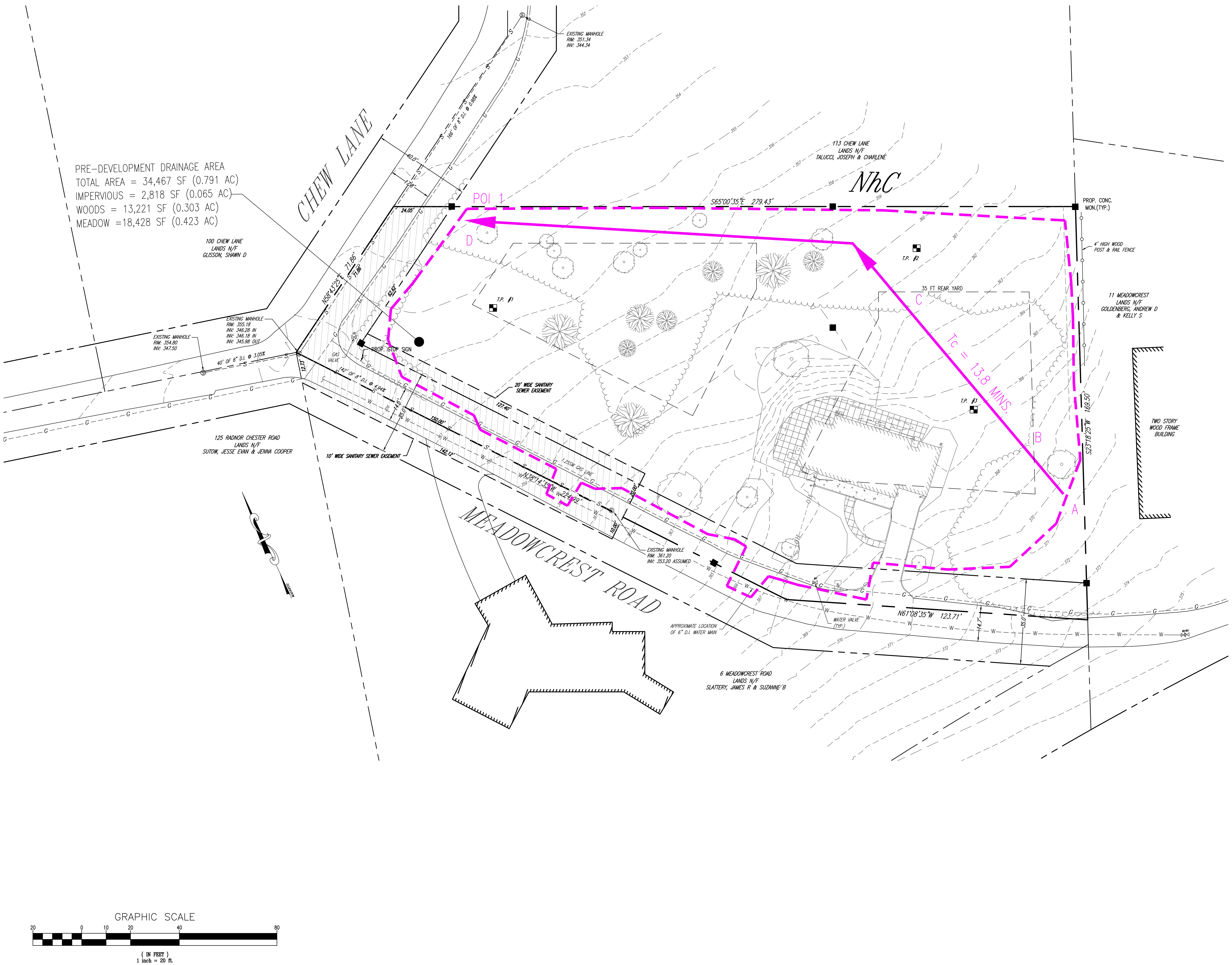
Hole #	Depth	Water	Time	PS1	PS2	1	2	3	4	5	6	7	8
#1	5.5		30			1.25	1	1	1				
#2	6.5		30			1	1	1	1				
#3													
#4													
#5													
#6													

Final Reading	
#1	1
#2	1
#3	
#4	
#5	
#6	

Inches / Hour	
#1	2
#2	2
#3	
#4	
#5	
#6	

RUN RATE=	2

NOTES
No Limiting Zone Clear to 8.5’.
0-6 Top Soil
6-30 Sandy Clay Loam 7.5YR 4/3
30-50 Silty Clay Loam 7.5YR 4/6
50-102 Silt Loam 7.5YR 5/6



LEGEND

- PROPOSED BOUNDARY LINE
- Ex. Fenceline
- Ex. Gasline
- Ex. Waterline
- Ex. Cable line
- Ex. Electric line
- Ex. Sanitary Sewer Line
- Ex. Storm Sewer Line
- Right-of-Way Line
- Existing Contour
- Overhead Wires
- Existing Manhole
- Existing Inlet
- Hydrant
- Trees
- Utility Pole
- Utility Valve
- Sign
- PROP. STORM SEWER LINE
- PROP. CONTOUR
- 14–20% STEEP SLOPES 6,272 SF
- 20%+ STEEP SLOPES 3,652 SF

CLIENT DATA

Cornerstone Consulting Engineers & Design Services, Inc.
213 West Main Street . Lansdale . PA 19446
Phone: 215-362-2600 . Fax: 215-362-8400
WWW.CORNERSTONENET.COM
Philadelphia Region 215-362-2600
Lehigh Valley Region 610-820-8200
Pocono Region 570-839-1770

REVISIONS

NO	BY	DESCRIPTION	DATE
1	EMR	REVISED PER TOWNSHIP COMMENTS	12-13-24

PENNSYLVANIA ONE CALL SYSTEM, INC.
925 Irwin Run Road
West Mifflin, Pennsylvania
15122 - 1076

811

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J.B. ANDERSON
PROFESSIONAL ENGINEER

PROJECT LOCATION

FINAL PLAN FOR
MINOR SUBDIVISION
3 MEADOWCREST ROAD
RADNOR TOWNSHIP
DELAWARE COUNTY
PENNSYLVANIA
PREPARED FOR:
JAMES SLATTERY

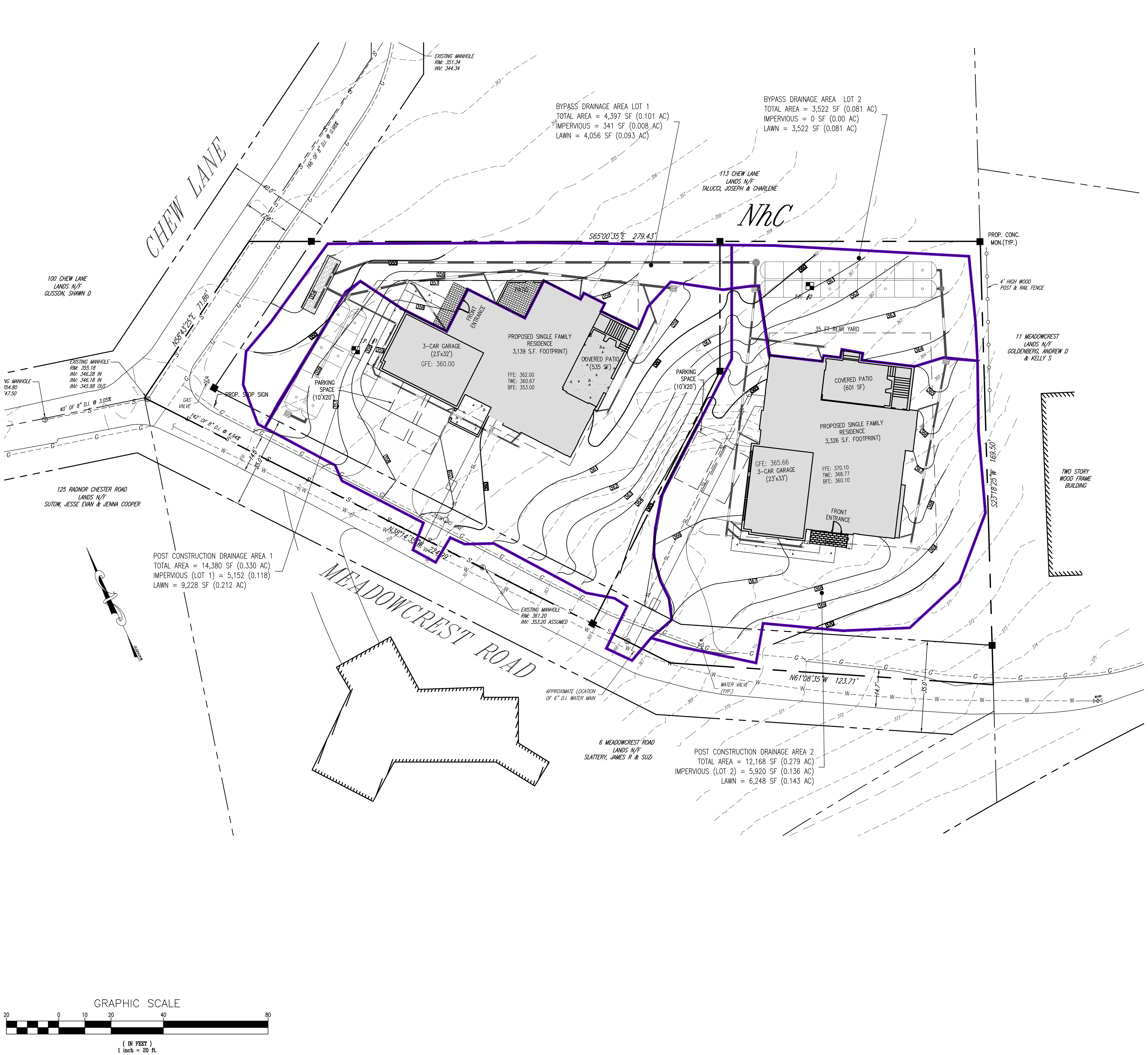
TITLE

PRE DRAINAGE PLAN

PROJ. #	23-0399	DATE	10/9/2024
CAD ID.	23-0399	DRN BY	DB
SCALE	AS NOTED	CHK BY	JBA

SHEET 1 OF 2

REVISION 1



LEGEND

- PROPOSED BOUNDARY LINE
- Ex. Fenceline
- Ex. Gasline
- Ex. Waterline
- Ex. Cable line
- Ex. Electric line
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- Ex. Storm Sewer Line
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PROJECT LOCATION

FINAL PLAN FOR
MINOR SUBDIVISION
3 MEADOWCREST ROAD
RADNOR TOWNSHIP
DELAWARE COUNTY
PENNSYLVANIA
PREPARED FOR:
JAMES SLATTERY

TITLE

POST DRAINAGE PLAN

PROJ. #	23-0399	DATE	10/9/2024
CAD ID.	23-0399	DRN BY	DB
SCALE	AS NOTED	CHK BY	JBA

SHEET 2 OF 2

REVISION 1