Town of Louisa Planning Commission – Regular Meeting
212 Fredericksburg Avenue
Louisa, Virginia 23093
Monday, June 29, 2026

I. Call to Order - 5:00 PM

II. Administrative Items:

a. Invocation
b. Pledge of Allegiance
c. Adoption of the Agenda
d. Consent Agenda Items
    i. Approval of Minutes: April 27, 2026

III. Public Comment:

a. This section of the Planning Commission meeting provides citizens with the opportunity to discuss matters which are not listed on the printed agenda. Any person wishing to bring a matter to the Commissions attention under this section of the agenda should: (1) State their name and address; (2) State the matter that they wish to discuss and what action they would like the Committee to take. When appropriate or if requested, we will respond to direct questions in writing. Please limit comments to 3 minutes or less.

I. New Business:

a. Louisa Station Site Plan

b. Create Planning Commission Bylaws

II. Old Business:

a. Review of the most recent Town Comprehensive Plan and discussion on the following:
b. Create "*County Growth"* Section

IV. Comments/Discussion by Members of Planning Commission

V. Adjournment

Planning Commission Meeting Minutes
Town of Louisa Planning Commission's Regularly Scheduled Meeting
Monday, April 27, 2026, at 5:00pm

Commission Members in Attendance:
Chairman: Maxine Butcher; Veronica Saxton; Cochran Garnett; Janet Matkins; and Roger Henry

Staff:
Stuart Turille, Town Manager; and Shiann Turpin, Deputy Clerk.

All copies, including reports, handouts and documents can be found following the minutes.

5:04 P.M. Convene Meeting

Ms. Butcher led the Pledge of Allegiance and Invocation

Approval of Agenda & Minutes

A motion to approve the consent agenda was made by Ms. Garnett and seconded by Ms. Saxton. The motion carried by a vote (5-0).

After reviewing the minutes for March 30, 2026, a motion to approve the meeting minutes as written was made by Ms. Matkins and was seconded by Ms. Butcher. The motion carried by a vote (5-0).

Old Business

Transportation

The Commission discussed the "Transportation" section of the Comprehensive Plan. The discussion included traffic management, school routes and times, and potential alternate emergency routes.

The discussion continued about additional lighting along streets, radars to enforce speed limits, the possible benefits of incorporating public shuttles, and V-Dot standards.

County Growth

The Commission discussed adding a new section to the Comprehensive Plan titled "County Growth". The discussion included taxes, traffic studies, additional retail, grocer, and medical businesses, and investing in the younger generation.

New Business

The Commission reviewed a resolution appointing Shiann Turpin as Deputy Clerk for the Planning Commission. A motion to approve the resolution was made by Ms. Garnett and seconded by Ms. Saxton. The motion carried by a vote (5-0).

The Commission reviewed a resolution adopting the 2026 Meeting schedule for the Planning Commission. A motion to approve the resolution was made by Ms. Saxton and seconded by Ms. Matkins. The motion carried by a vote (5-0).

The Commission tabled the Creation of Bylaws for the next regular scheduled meeting.

There were no additional comments from the Commission or staff.

A motion to adjourn was made by Ms. Saxton and seconded by Ms. Garnett. All in favor.

The meeting adjourned at 7:00 P.M.

_____ _____

Maxine Butcher, Chair *Shiann Turpin, Deputy Clerk*

PR DEV CO, LLC

MAIL ADDRESS:
POST OFFICE BOX 1787
LOUISA, VA 23093

June 16, 2026

VIA HAND-DELIVERY
Stuart Turille- Town Manager of Louisa County
212 Fredericksburg Ave,
P.O. Box 531
Louisa, VA 23093

Re: Application for Approval of Site Plan by Planning Commission

Dear Mr. Turille,

Accompanying this letter is a site plan for the Louisa Station project located within the Town of Louisa. As we have previously discussed, this project has been reviewed and approved by VDOT, DEQ, the Town of Louisa and Louisa County.

We respectfully request that review of this site plan be set on the next planning commission date. If any fees are required to accompany the application or are owed, please let us know and payment will be remitted as soon as possible.

If you have any questions or concerns, please feel free to contact us at the number below and we will be happy to help.

Sincerely,

Pr Dev Co, LLC

Enclosure – as stated.

LOUISA STATION
TM 41-16-1, -5,10, 11,12,13,14

STORMWATER MANAGEMENT ANALYSIS
Town of Louisa, Virginia

HYDROLOGICAL STUDY

APPROVED
Stormwater Management Plan
Commonwealth of Virginia
DEQ Water Division
Northern Regional Office

Plan Reviewer: _____
Date: 05/07/2026

☒ Standard Approval
☐ Streamlined Approval



Webb and Associates
11903 Bowman Drive, Suite 106
Fredericksburg, VA 22408
February 3, 2026

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SWM Narrative

PROJECT DESCRIPTION

In accordance with the Town of Louisa and the Virginia Stormwater Management Handbook, the following is a narrative description of the stormwater management design plan for the development of the Louisa Station residential subdivision. This project will consist of the construction of 159 single family attached townhomes. The project also includes the installation of roadway, parking areas, water and wastewater facilities, storm sewer and a stormwater management facility.

PROJECT LOCATION

The project site is located on TM 41-16-1, -5,10,11,12,13,14 in the Town of Louisa, Virginia. The parcels have a total area of 19.7962 acres. The site is located on Pine Ridge Road. The site does not contain any waters listed on the 2012 Impaired Waters – 303(d) list.

EXISTING CONDITIONS

The site is undeveloped and wooded. The site is moderately sloped. Drainage from the proposed developed parcel generally flows to the southwest to an unnamed tributary of Beaver Creek which drains to the South Anna River.

ADJACENT PROPERTY

The property is bounded on all other sides by residential property.

SOILS

The USGS Web Soil Survey indicate that this site is expected to contain mostly hydrologic group B soils and C soils which consist of; 1) AnB2, Appling sandy loam, 2 to 7% slopes, HG B; and 2) AnC2, Appling sandy loam 7 to 15% slopes, HG B; 3) C1B, Colfax fine sandy loam, 2 to 7% slopes, HG C; and 4) WH, Wehadkee-Chewacla Complex, HG B/D.

DESCRIPTION OF WATER QUALITY

This proposed project involves the total addition of an estimated 5.79 acres of impervious area. The area used for the VRRM analysis includes the entire 19.80 acre site. The proposed impervious area includes buildings, sidewalk, roadways and the proposed wet pond. Quality control will be provided for all impervious and turf areas created by the proposed site, by use of a Level II Wet Pond and the conservation of forested open space. Calculations have been performed utilizing the runoff reduction method. The new development worksheets have been utilized to calculate a total required reduction of 6.74 lbs/yr of phosphorus for the site. The Level II Pond system will reduce the total phosphorus by 6.24 lbs/yr. This will result in a remaining required phosphorus removal of 0.50 lbs/yr. Areas of conserved open space will be covered by a conservation easement.

DESCRIPTION OF WATER QUANTITY

Concentrated runoff from the site will be collected in a storm sewer system and SWM BMP. The BMP discharges to an unnamed tributary of Beaver Creek. The unnamed creek enters a FEMA Zone A 100 year flood zone at the site property line. The 1% point of analysis is the point at which the unnamed creek enters Beaver Creek which has a total drainage area of 2,029 areas. The stream evaluation POA is at the 100 year flood plain. The off-site drainage areas were calculated using the USGS Stream Stats website software. The software output reports are included in this report.

Stream Protection
In accordance with the stormwater regulations, the site's concentrated runoff discharge from the BMP will be analyzed for stream protection using the 1 year 24 hour storm. The post-development 1 year 24 hour storm discharge rates will be reduced to below pre-development rates in accordance with the energy balance equation.

Flood Control
In accordance with the stormwater regulations, the runoff discharge from the site will be analyzed for flood control using the 10 year 24 hour storm. The 10 year storm will be reduced to below pre-developed rates. The existing stream channel is adequate for the 10 year storm.

Sheet Flow
Areas of overland sheet flow will be analyzed to ensure that the runoff will not cause any down-gradient erosion, sedimentation, or flooding. The 10 year 24 hour storm will be used for analysis of the depth of runoff and velocity. For areas with increased volumes of flow, the depth of flow must be less than or equal to 0.1 ft and the velocity non-erosive for the land cover. All land cover is wooded with underbrush. The maximum allowable velocity is 5.0 fps for average land slopes from 0 to 5%, 4.0 fps for average land slopes from 5 to 10%, and 3.0 fps for average land slopes greater than 10%.

The 11 sheet flow areas have been labeled as A1 thru A4 and B1thru B7. The runoff volumes and flow rates have been reduced as a result of a reduction in drainage areas. The sheet flow runoff volumes, depths and velocities are summarized in the table below.

HYDROLOGY AND HYDRAULICS

Topographic Data used for hydrology and pond hydraulics is from field survey performed by Webb and Associates. All computations for pre-development and post-development hydrology and hydraulics were calculated using the SCS Method and Hydraflow Hydrographs.

Pre-development was defined as the upslope drainage areas prior to the development of the site in a woods good condition. Post-development was defined as the improved conditions of the upslope drainages areas following the development of the site.

Precipitation Data

Precipitation data used for Louisa County was obtained from the NOAA Hydrometeorological Design website. Total precipitation data used for the SCS Method Type II rainfall distribution was as follows:

Design Storm Frequency	Rainfall, P (24 hours) in.
1 Year	2.73
2 Year	3.31
10 Year	5.01
100 Year	8.25

Pre-developed Hydrology

Pre-development conditions were evaluated to determine the maximum release rate at the point of analysis (POA). Runoff Curve Number and time of concentration were calculated and have been included in this report. The CN calculations are shown in the report for each area. The SCS method was utilized to determine the peak flow rates and volumes.

Post Development Hydrology

Post-development conditions were evaluated to determine the peak flow rates under developed conditions at the BMP discharge point in the receiving stream channel. The BMP discharges directly to the stream channel. Post-development hydrology was performed using the same methodology as for the pre-development. The information is summarized below:

Hydrograph Summary

Drainage Area	1 Year Flow	1 Yr.Volume	10 Year
Pre-Developed	(cfs)	(cf)	(cfs)
On-site to BMP	0.45	5,826	
Off-site to BMP	0.60		
Combined to BMP			19.00

Drainage Area	1 Year Flow	1 Yr.Volume	10 Year
Post-Developed	(cfs)	(cf)	(cfs)
On-site To BMP	18.73	38,078	
Combined to BMP	18.83		53.88
BMP Discharge	0.42		6.90

The 1 year peak flow rate has been reduced in accordance with the energy balance equation. The 10 year peak flow rate has been reduced to below pre-development rates.

Sheet Flow Hydrograph Summary

	10 YEAR PEAK STORM- SHEET FLOW CALCULATIONS										
	PRE DEV	POST	POST. VOL.		POST DEV.	SECTION	LAND	GROUND			GROUND
DA NO.	VOL, CF	VOL. CF	- PRE. VOL.	CHANGE	FLOW, CFS	LENGTH, FT	SLOPE	ELEV	DEPTH, FT	VEL. CFS	COVER
A1	17,612	6,362	(11,250)	REDUCTION	2.700	285.000	2.0%	402.00	0.09	0.11	WOODED
A2	2,147	2,003	(144)	REDUCTION	0.697	298.000	4.3%	416.00	0.04	0.06	WOODED
A4	3,110	3,102	(8)	REDUCTION	0.895	305.000	5.4%	418.00	0.04	0.07	WOODED
B1	457	1,566	1,109	**INCREASE**	0.557	55.000	9.1%	394.00	0.06	0.17	WOODED
B1-100*					0.725	66.000	37.0%	372.00	0.05	0.22	WOODED
B2	1,337	983	(354)	REDUCTION	0.485	147.000	18.0%	370.00	0.03	0.11	WOODED
B3	23,058	2,542	(20,516)	REDUCTION	0.934	379.000	18.0%	380.00	0.03	0.08	WOODED
B4	500	492	(8)	REDUCTION	0.244	288.000	18.0%	384.00	0.02	0.04	WOODED
B5	4,683	4,218	(465)	REDUCTION	1.573	260.000	18.0%	387.00	0.04	0.15	WOODED
B6	4,730	374	(4,356)	REDUCTION	0.185	190.000	12.0%	388.00	0.02	0.05	WOODED
B7	3,457	3,421	(36)	REDUCTION	1.220	491.000	6.9%	390.00	0.03	0.08	WOODED
*THE 10 YEAR PEAK POST DEVELOPMENT VELOCITIES FOR SECTION B1 IS NON-EROSIVE TO THE 100 FT SECTION.											

All drainage areas except B1 have a decreased post development 10 year volume. Drainage area B1 has increased runoff volumes and were further analyzed 100 feet downstream. The downstream velocities are non-erosive for any ground cover condition.

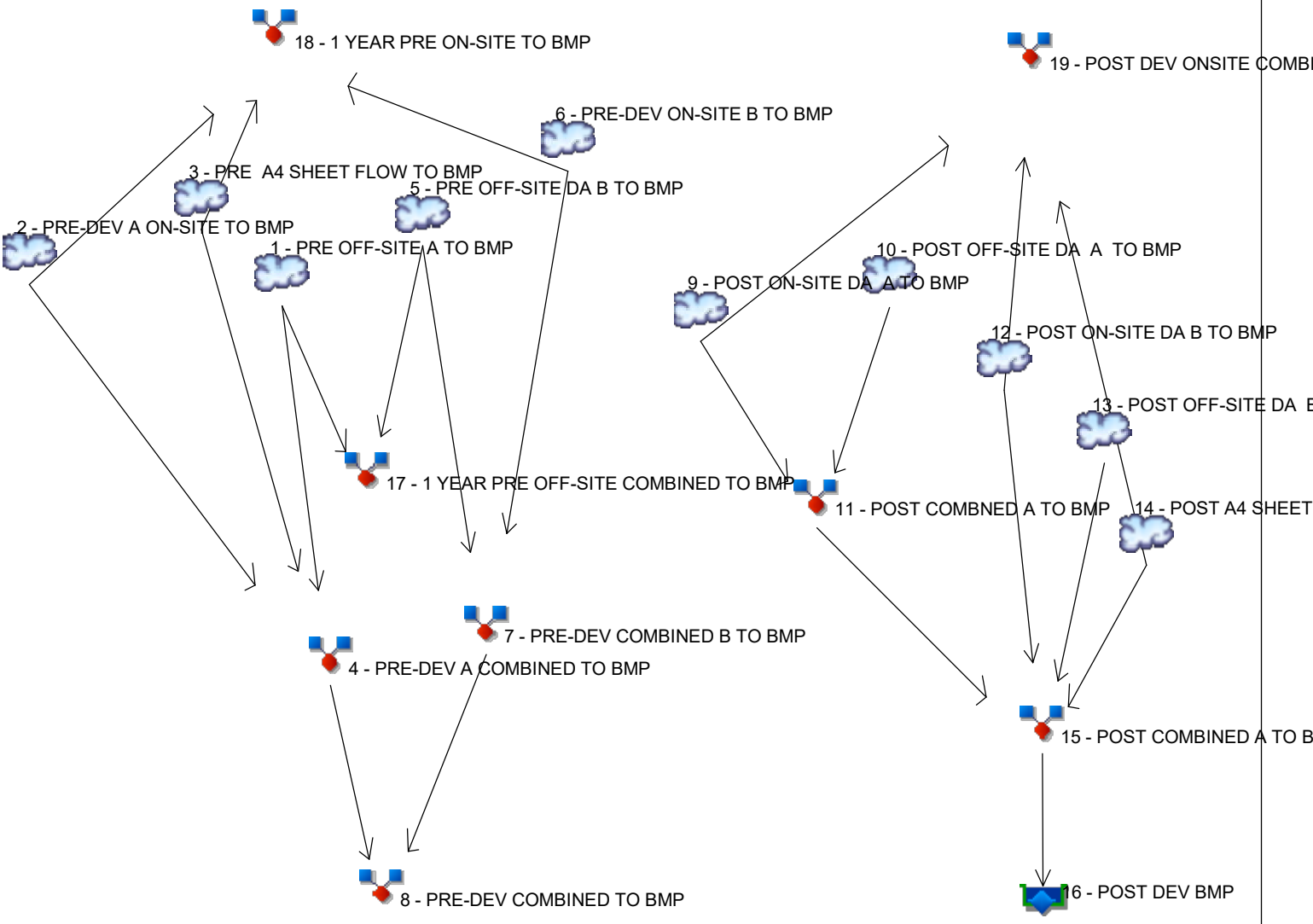
Facility Design Summary

A stormwater management system that provides water quantity reduction is necessary for the development of this site. The system will reduce the required peak storm events to below pre-development rates.

The stormwater management system consists of a wet pond with extended detention basin. The stormwater management system was also modeled using the storm routing software, Hydroflow Hydrographs Extension for AutoCAD Civil 3D 2013. The stormwater management system meets the requirements of MS-19. The routing results are attached.

The post developed areas that discharge from the site by overland sheet flow have been analyzed for depth and velocity during the 10 year 24 hour storm event and will not result in any downstream flooding, erosion or sedimentation.

Watershed Model Schematic



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	------	0.054	0.240	-------	-------	1.413	2.515	3.561	4.799	PRE OFF-SITE A TO BMP
2	SCS Runoff	------	0.236	0.717	-------	-------	3.134	5.265	7.261	9.598	PRE-DEV A ON-SITE TO BMP
3	SCS Runoff	------	0.009	0.041	-------	-------	0.276	0.511	0.736	1.003	PRE A4 SHEET FLOW TO BMP
4	Combine	1, 2, 3	0.294	0.997	-------	-------	4.796	8.202	11.49	15.36	PRE-DEV A COMBINED TO BMP
5	SCS Runoff	------	0.543	1.631	-------	-------	7.124	11.99	16.56	21.91	PRE OFF-SITE DA B TO BMP
6	SCS Runoff	------	0.209	1.193	-------	-------	8.043	14.50	20.65	27.93	PRE-DEV ON-SITE B TO BMP
7	Combine	5, 6	0.751	2.710	-------	-------	14.28	25.00	35.21	47.50	PRE-DEV COMBINED B TO BMP
8	Combine	4, 7	1.044	3.708	-------	-------	19.00	33.20	46.63	62.45	PRE-DEV COMBINED TO BMP
9	SCS Runoff	------	5.425	7.330	-------	-------	13.08	17.03	20.40	24.09	POST ON-SITE DA A TO BMP
10	SCS Runoff	------	0.054	0.240	-------	-------	1.413	2.515	3.561	4.799	POST OFF-SITE DA A TO BMP
11	Combine	9, 10	5.426	7.365	-------	-------	13.66	18.30	22.35	26.86	POST COMBNED A TO BMP
12	SCS Runoff	------	13.07	18.59	-------	-------	36.38	49.14	60.14	72.29	POST ON-SITE DA B TO BMP
13	SCS Runoff	------	0.573	1.720	-------	-------	7.514	12.65	17.47	23.10	POST OFF-SITE DA B TO BMP
14	SCS Runoff	------	0.331	0.498	-------	-------	1.059	1.469	1.826	2.224	POST A4 SHEET FLOW TO BMP
15	Combine	11, 12, 13, 14	18.83	26.75	-------	-------	53.88	74.35	92.36	112.56	POST COMBINED A TO BMP
16	Reservoir	15	0.424	1.139	-------	-------	6.904	18.19	31.37	49.05	POST DEV BMP
17	Combine	1, 5,	0.596	1.862	-------	-------	8.422	14.27	19.86	26.43	1 YEAR PRE OFF-SITE COMBINED
18	Combine	2, 3, 6,	0.448	1.917	-------	-------	11.10	19.85	28.17	38.01	1 YEAR PRE ON-SITE TO BMP
19	Combine	9, 12, 14,	18.73	26.23	-------	-------	50.21	67.24	81.89	98.04	POST DEV ONSITE COMBINED TO

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

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	0.054	2	738	751	------	------	------	PRE OFF-SITE A TO BMP
2	SCS Runoff	0.236	2	732	2,153	------	------	------	PRE-DEV A ON-SITE TO BMP
3	SCS Runoff	0.009	2	748	157	------	------	------	PRE A4 SHEET FLOW TO BMP
4	Combine	0.294	2	734	3,061	1, 2, 3	------	------	PRE-DEV A COMBINED TO BMP
5	SCS Runoff	0.543	2	736	5,233	------	------	------	PRE OFF-SITE DA B TO BMP
6	SCS Runoff	0.209	2	738	3,516	------	------	------	PRE-DEV ON-SITE B TO BMP
7	Combine	0.751	2	738	8,749	5, 6	------	------	PRE-DEV COMBINED B TO BMP
8	Combine	1.044	2	736	11,810	4, 7	------	------	PRE-DEV COMBINED TO BMP
9	SCS Runoff	5.425	2	716	10,957	------	------	------	POST ON-SITE DA A TO BMP
10	SCS Runoff	0.054	2	738	751	------	------	------	POST OFF-SITE DA A TO BMP
11	Combine	5.426	2	716	11,708	9, 10	------	------	POST COMBNED A TO BMP
12	SCS Runoff	13.07	2	718	26,143	------	------	------	POST ON-SITE DA B TO BMP
13	SCS Runoff	0.573	2	736	5,519	------	------	------	POST OFF-SITE DA B TO BMP
14	SCS Runoff	0.331	2	724	978	------	------	------	POST A4 SHEET FLOW TO BMP
15	Combine	18.83	2	718	44,349	11, 12, 13, 14	------	------	POST COMBINED A TO BMP
16	Reservoir	0.424	2	1106	43,960	15	383.08	64,834	POST DEV BMP
17	Combine	0.596	2	736	5,984	1, 5,	------	------	1 YEAR PRE OFF-SITE COMBINED
18	Combine	0.448	2	736	5,826	2, 3, 6,	------	------	1 YEAR PRE ON-SITE TO BMP
19	Combine	18.73	2	718	38,078	9, 12, 14,	------	------	POST DEV ONSITE COMBINED TO

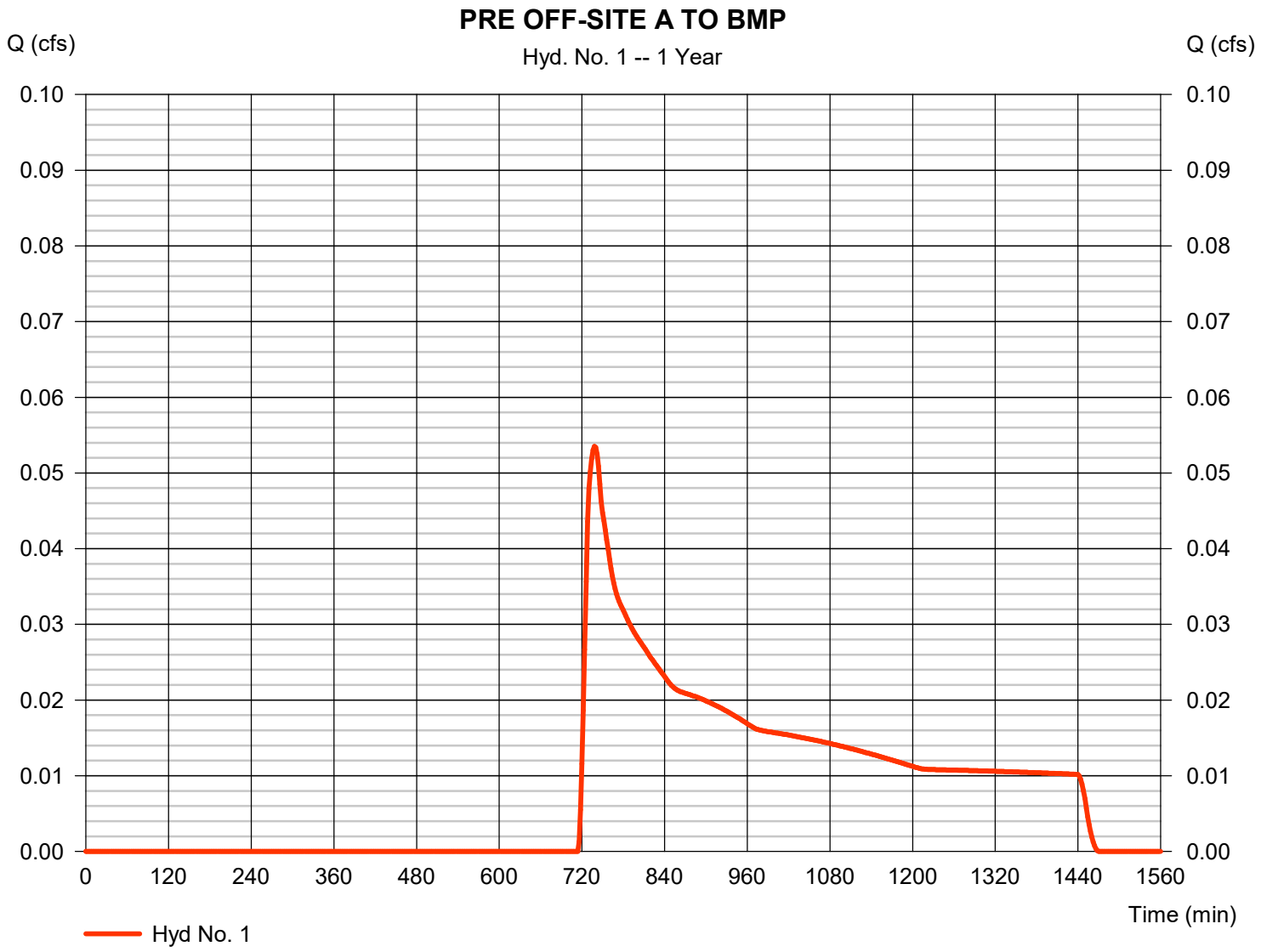
Hydrograph Report

Hyd. No. 1

PRE OFF-SITE A TO BMP

Hydrograph type	= SCS Runoff	Peak discharge	= 0.054 cfs
Storm frequency	= 1 yrs	Time to peak	= 738 min
Time interval	= 2 min	Hyd. volume	= 751 cuft
Drainage area	= 1.390 ac	Curve number	= 56*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 19.70 min
Total precip.	= 2.73 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(3.310 x 55) + (6.750 x 68)] / 1.390



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No. 1

PRE OFF-SITE A TO BMP

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.31		0.00		0.00		
Land slope (%)	= 1.00		0.00		0.00		
Travel Time (min)	**= 18.51**	**+**	**0.00**	**+**	**0.00**	**=**	**18.51**
Shallow Concentrated Flow							
Flow length (ft)	= 119.00		0.00		0.00		
Watercourse slope (%)	= 1.00		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=1.61		0.00		0.00		
Travel Time (min)	**= 1.23**	**+**	**0.00**	**+**	**0.00**	**=**	**1.23**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 19.70 min

Hydrograph Report

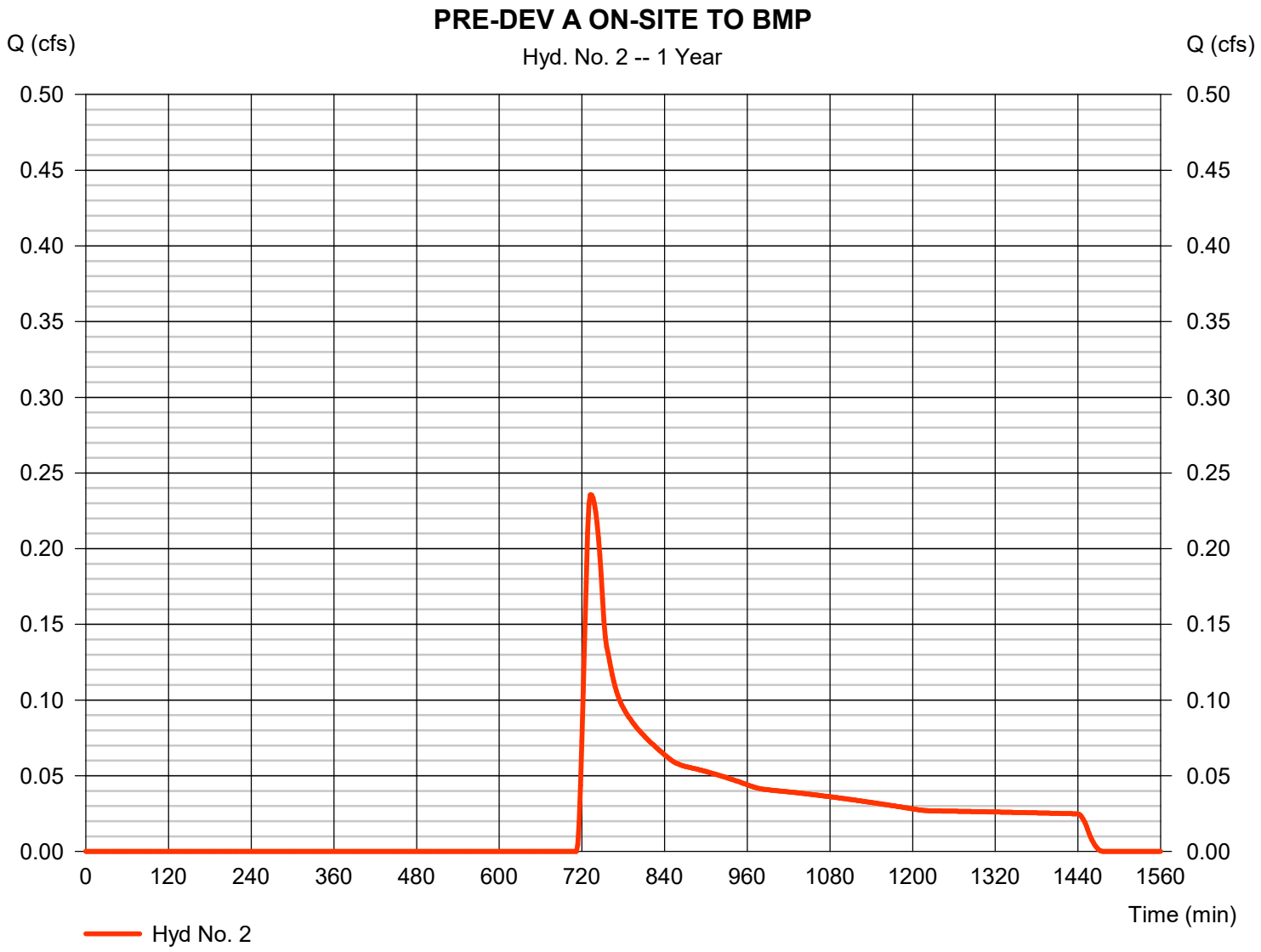
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Wednesday, 02 / 4 / 2026

Hyd. No. 2

PRE-DEV A ON-SITE TO BMP

Hydrograph type	= SCS Runoff	Peak discharge	= 0.236 cfs
Storm frequency	= 1 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 2,153 cuft
Drainage area	= 2.690 ac	Curve number	= 59
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 20.50 min
Total precip.	= 2.73 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



TR55 Tc Worksheet

Hyd. No. 2

PRE-DEV A ON-SITE TO BMP

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.400		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.31		0.00		0.00		
Land slope (%)	= 2.40		0.00		0.00		
Travel Time (min)	**= 19.63**	**+**	**0.00**	**+**	**0.00**	**=**	**19.63**
Shallow Concentrated Flow							
Flow length (ft)	= 133.00		0.00		0.00		
Watercourse slope (%)	= 2.70		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=2.65		0.00		0.00		
Travel Time (min)	**= 0.84**	**+**	**0.00**	**+**	**0.00**	**=**	**0.84**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

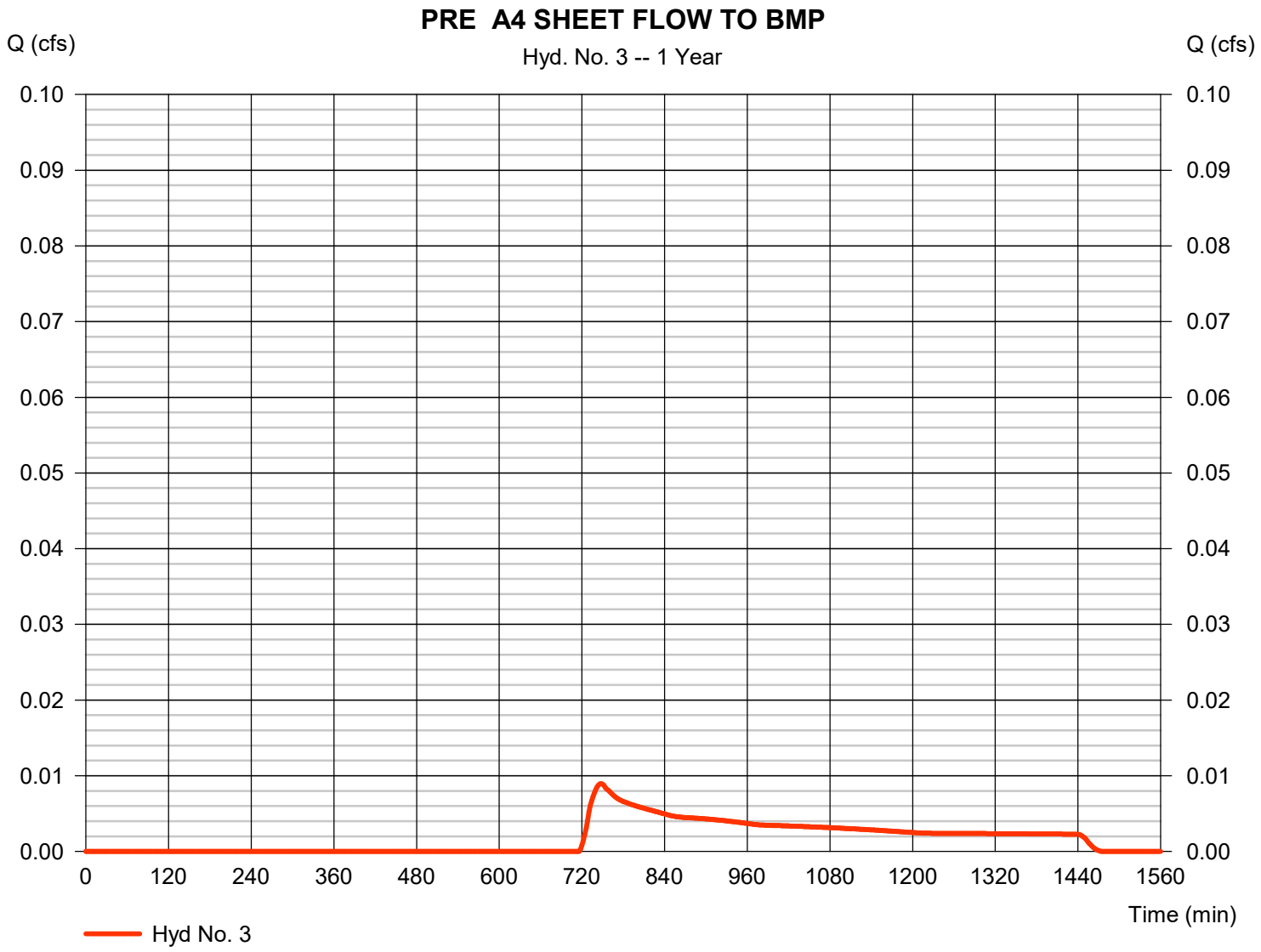
Total Travel Time, Tc ..... 20.50 min

Hydrograph Report

Hyd. No. 3

PRE A4 SHEET FLOW TO BMP

Hydrograph type	= SCS Runoff	Peak discharge	= 0.009 cfs
Storm frequency	= 1 yrs	Time to peak	= 748 min
Time interval	= 2 min	Hyd. volume	= 157 cuft
Drainage area	= 0.330 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 20.40 min
Total precip.	= 2.73 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



TR55 Tc Worksheet

Hyd. No. 3

PRE A4 SHEET FLOW TO BMP

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.400		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.31		0.00		0.00		
Land slope (%)	= 2.40		0.00		0.00		
Travel Time (min)	**= 19.63**	**+**	**0.00**	**+**	**0.00**	**=**	**19.63**
Shallow Concentrated Flow							
Flow length (ft)	= 118.00		0.00		0.00		
Watercourse slope (%)	= 2.40		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=2.50		0.00		0.00		
Travel Time (min)	**= 0.79**	**+**	**0.00**	**+**	**0.00**	**=**	**0.79**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

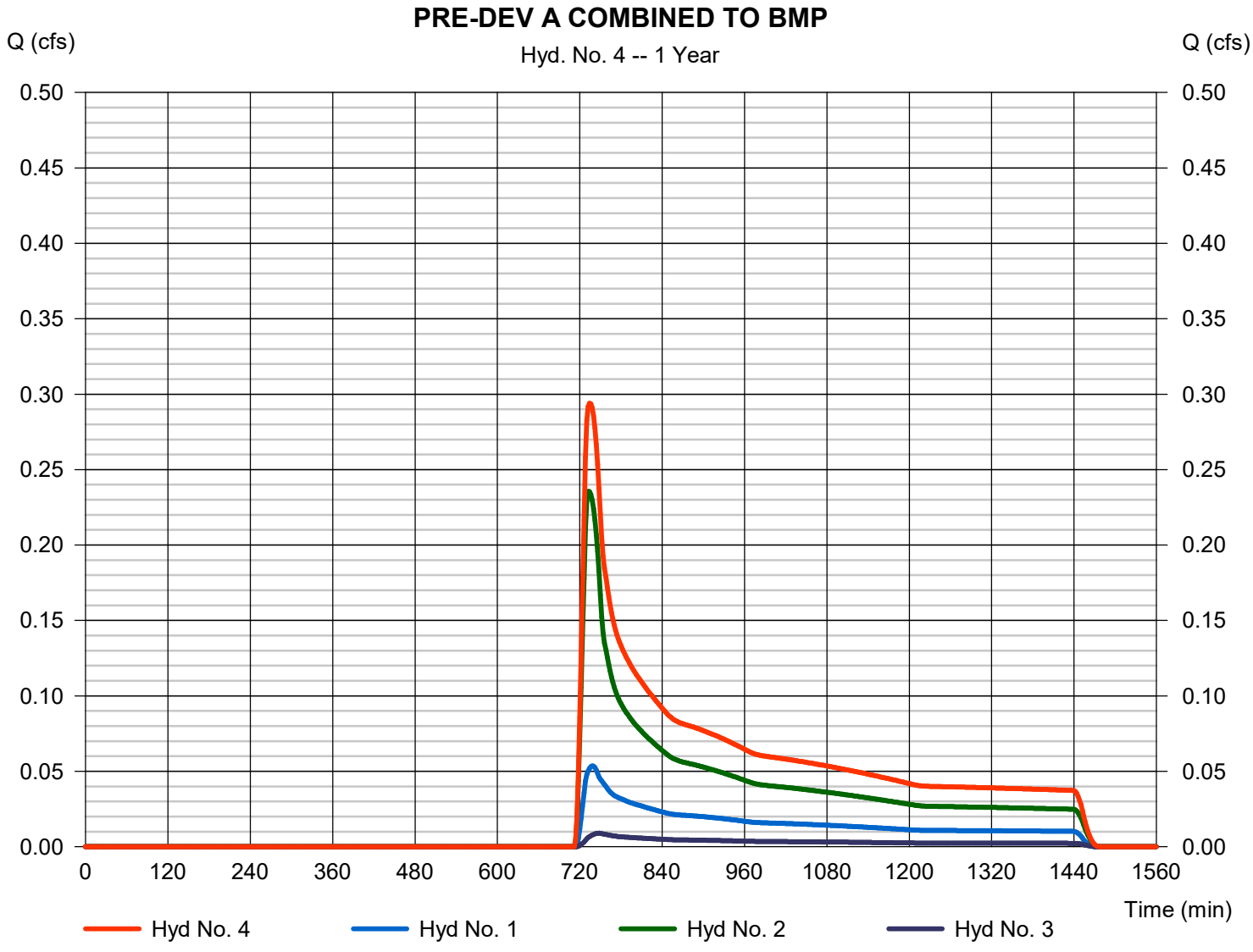
Total Travel Time, Tc ..... 20.40 min

Hydrograph Report

Hyd. No. 4

PRE-DEV A COMBINED TO BMP

Hydrograph type	=	Combine	Peak discharge	=	0.294 cfs
Storm frequency	=	1 yrs	Time to peak	=	734 min
Time interval	=	2 min	Hyd. volume	=	3,061 cuft
Inflow hyds.	=	1, 2, 3	Contrib. drain. area	=	4.410 ac



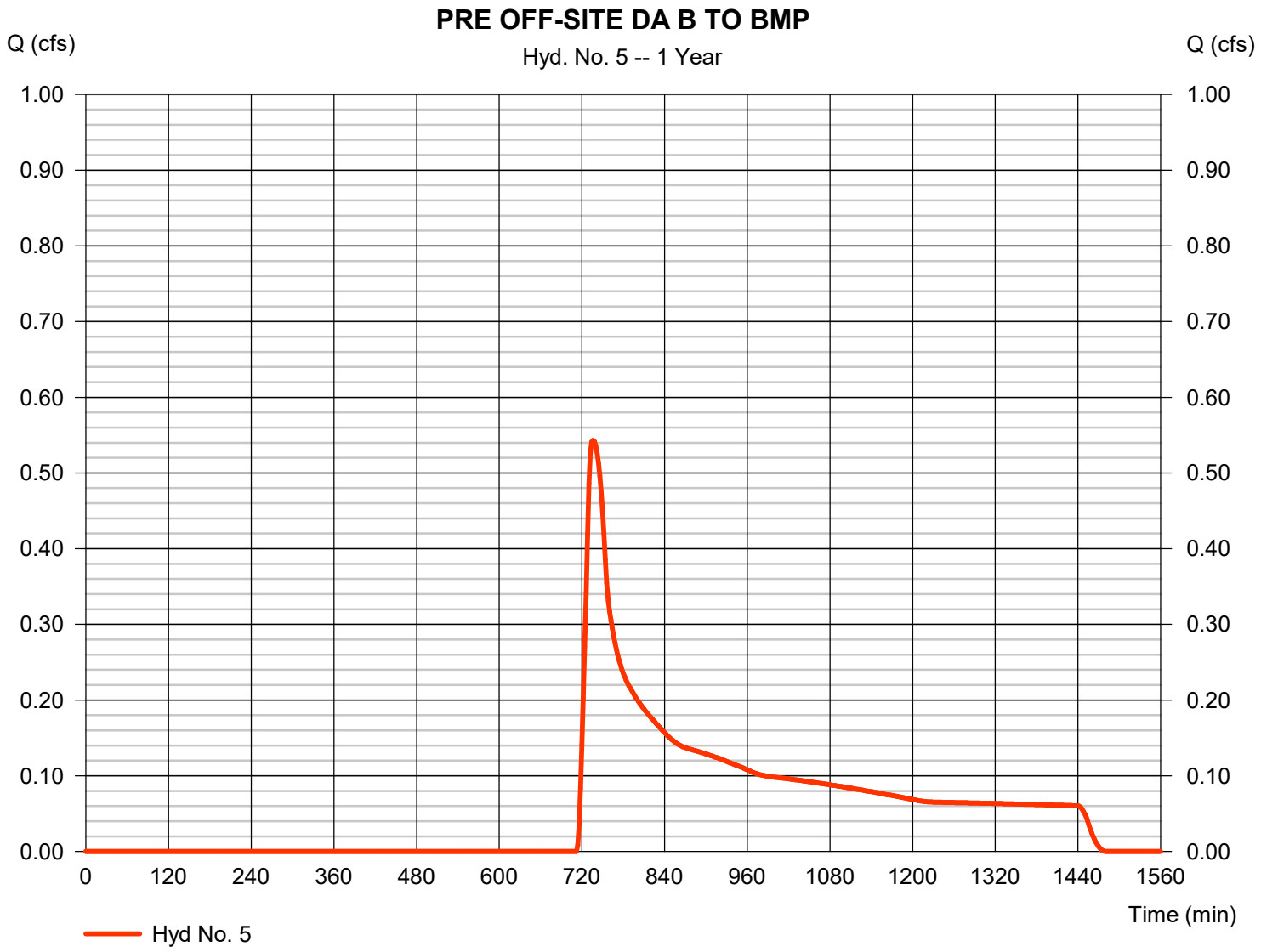
Hydrograph Report

Hyd. No. 5

PRE OFF-SITE DA B TO BMP

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.543 cfs
Storm frequency	=	1 yrs	Time to peak	=	736 min
Time interval	=	2 min	Hyd. volume	=	5,233 cuft
Drainage area	=	6.760 ac	Curve number	=	59*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	24.00 min
Total precip.	=	2.73 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(5.510 x 55) + (1.200 x 61) + (0.420 x 98)] / 6.760



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No. 5

PRE OFF-SITE DA B TO BMP

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.400		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.31		0.00		0.00		
Land slope (%)	= 2.30		0.00		0.00		
Travel Time (min)	**= 19.97**	**+**	**0.00**	**+**	**0.00**	**=**	**19.97**
Shallow Concentrated Flow							
Flow length (ft)	= 700.00		0.00		0.00		
Watercourse slope (%)	= 3.25		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=2.91		0.00		0.00		
Travel Time (min)	**= 4.01**	**+**	**0.00**	**+**	**0.00**	**=**	**4.01**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

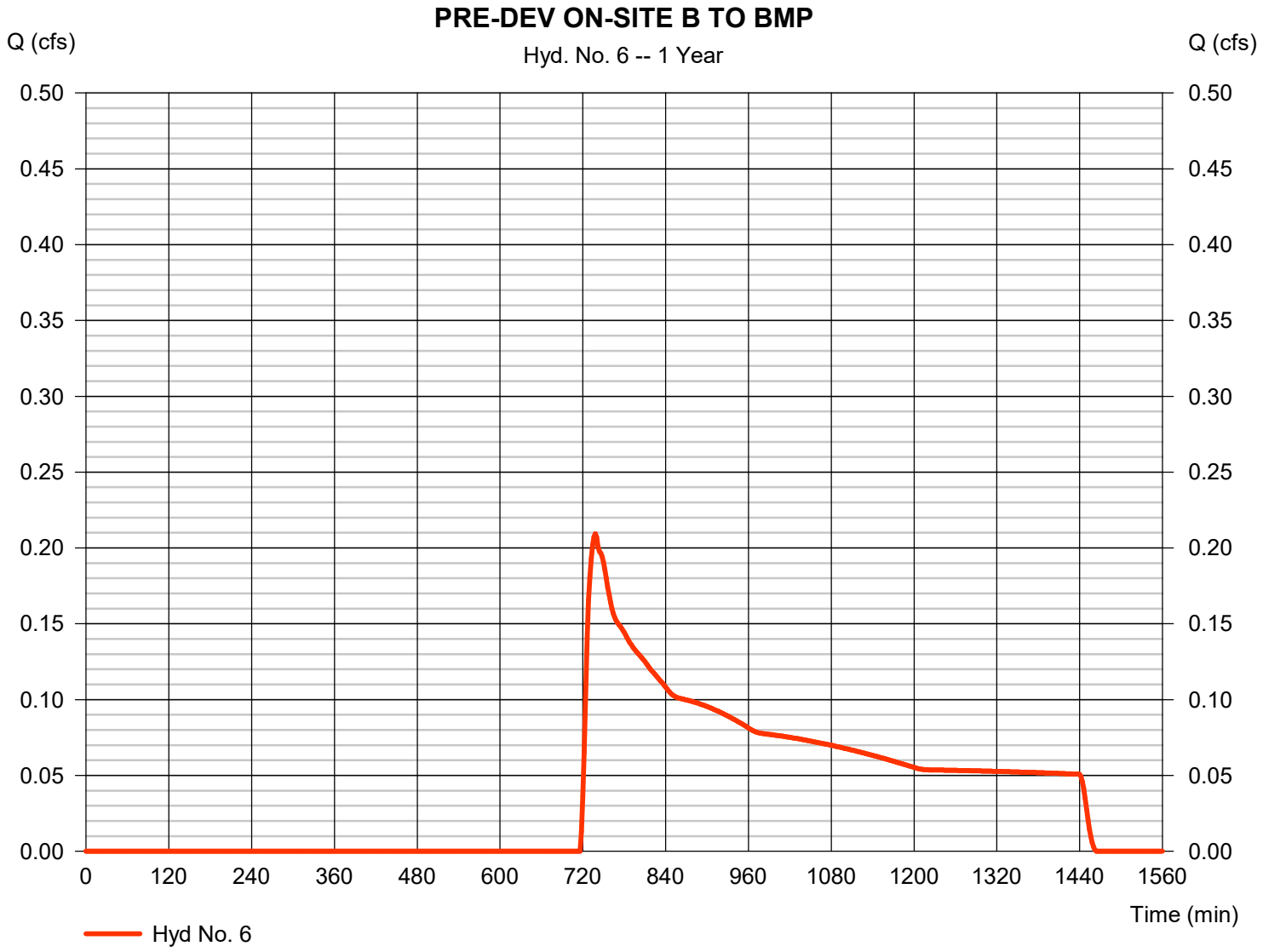
Total Travel Time, Tc ..... 24.00 min

Hydrograph Report

Hyd. No. 6

PRE-DEV ON-SITE B TO BMP

Hydrograph type	= SCS Runoff	Peak discharge	= 0.209 cfs
Storm frequency	= 1 yrs	Time to peak	= 738 min
Time interval	= 2 min	Hyd. volume	= 3,516 cuft
Drainage area	= 7.720 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 16.10 min
Total precip.	= 2.73 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No. 6

PRE-DEV ON-SITE B TO BMP

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.31		0.00		0.00		
Land slope (%)	= 1.70		0.00		0.00		
Travel Time (min)	**= 14.97**	**+**	**0.00**	**+**	**0.00**	**=**	**14.97**
Shallow Concentrated Flow							
Flow length (ft)	= 283.00		0.00		0.00		
Watercourse slope (%)	= 6.80		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=4.21		0.00		0.00		
Travel Time (min)	**= 1.12**	**+**	**0.00**	**+**	**0.00**	**=**	**1.12**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

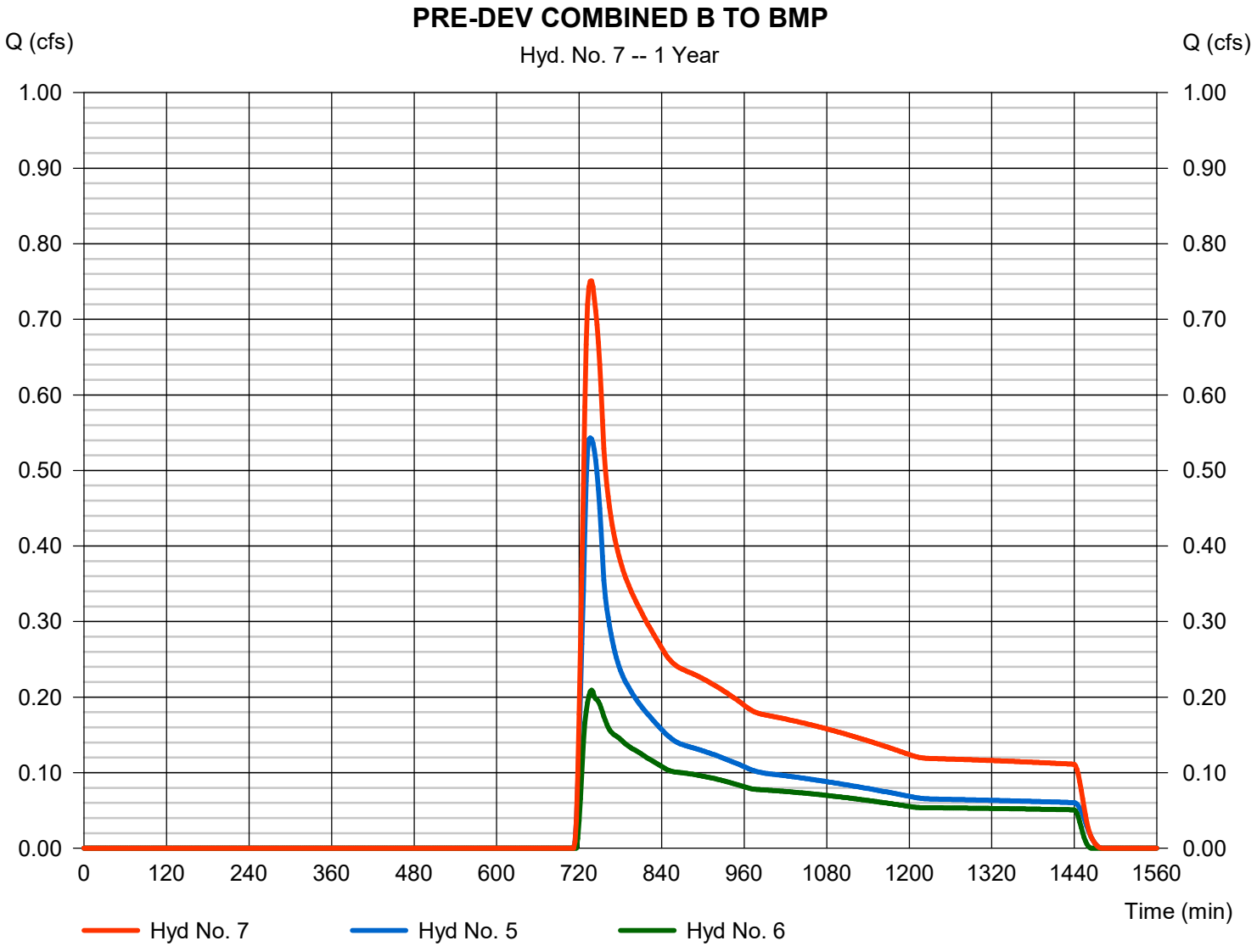
Total Travel Time, Tc ..... 16.10 min

Hydrograph Report

Hyd. No. 7

PRE-DEV COMBINED B TO BMP

Hydrograph type	= Combine	Peak discharge	= 0.751 cfs
Storm frequency	= 1 yrs	Time to peak	= 738 min
Time interval	= 2 min	Hyd. volume	= 8,749 cuft
Inflow hyds.	= 5, 6	Contrib. drain. area	= 14.480 ac

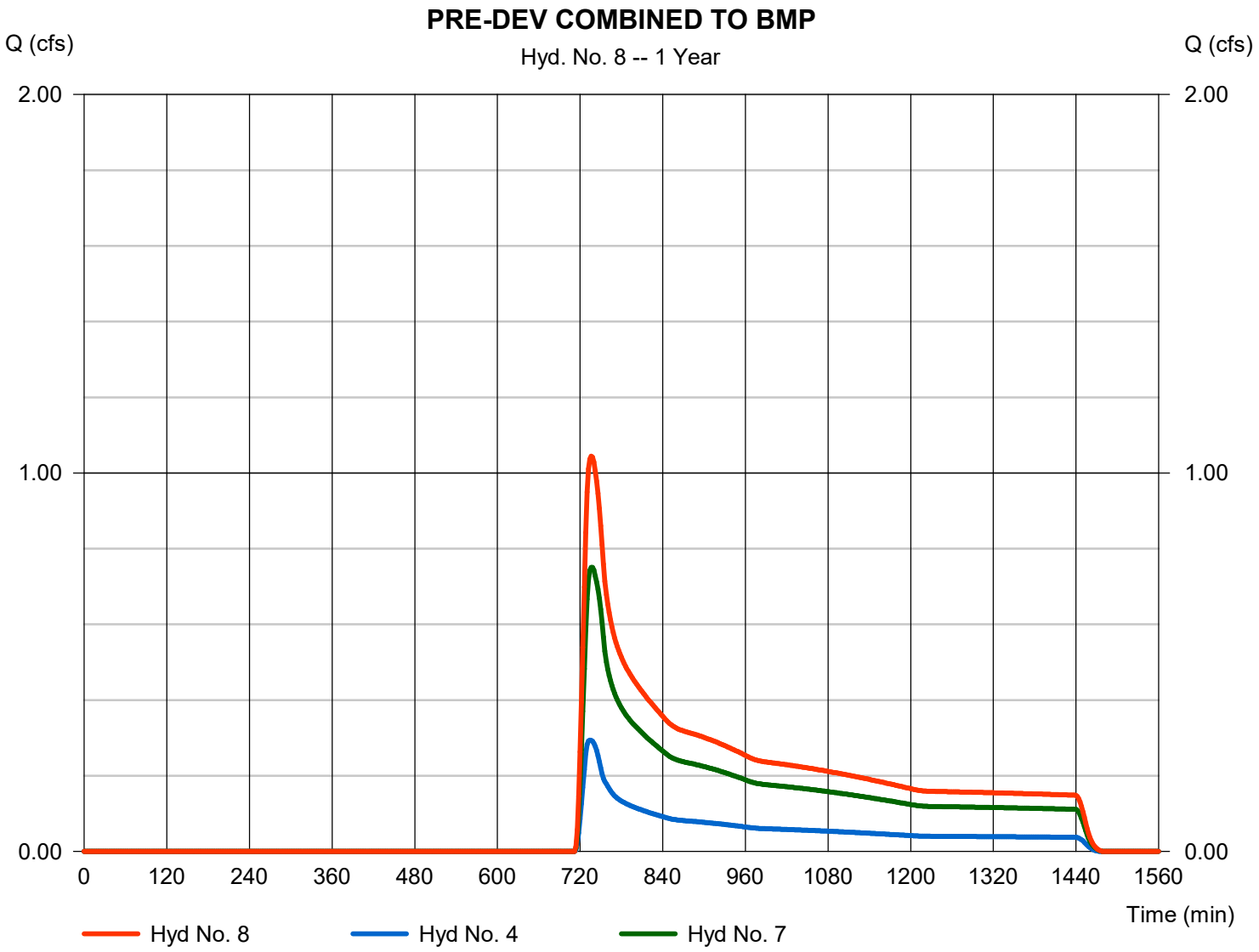


Hydrograph Report

Hyd. No. 8

PRE-DEV COMBINED TO BMP

Hydrograph type	= Combine	Peak discharge	= 1.044 cfs
Storm frequency	= 1 yrs	Time to peak	= 736 min
Time interval	= 2 min	Hyd. volume	= 11,810 cuft
Inflow hyds.	= 4, 7	Contrib. drain. area	= 0.000 ac



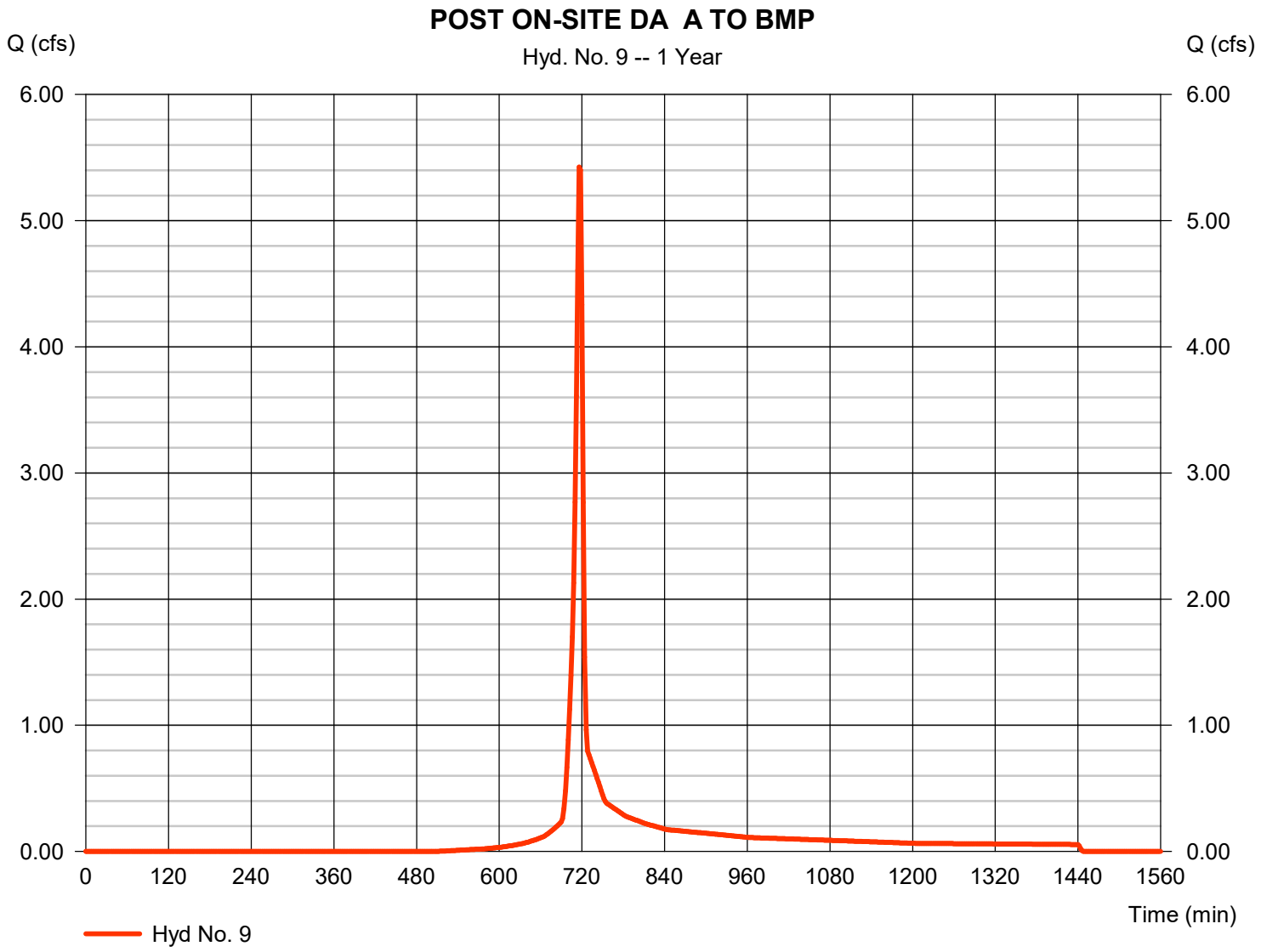
Hydrograph Report

Hyd. No. 9

POST ON-SITE DA A TO BMP

Hydrograph type	= SCS Runoff	Peak discharge	= 5.425 cfs
Storm frequency	= 1 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 10,957 cuft
Drainage area	= 2.360 ac	Curve number	= 85*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.73 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.720 x 61) + (0.940 x 98) + (0.150 x 74) + (0.550 x 98)] / 2.360



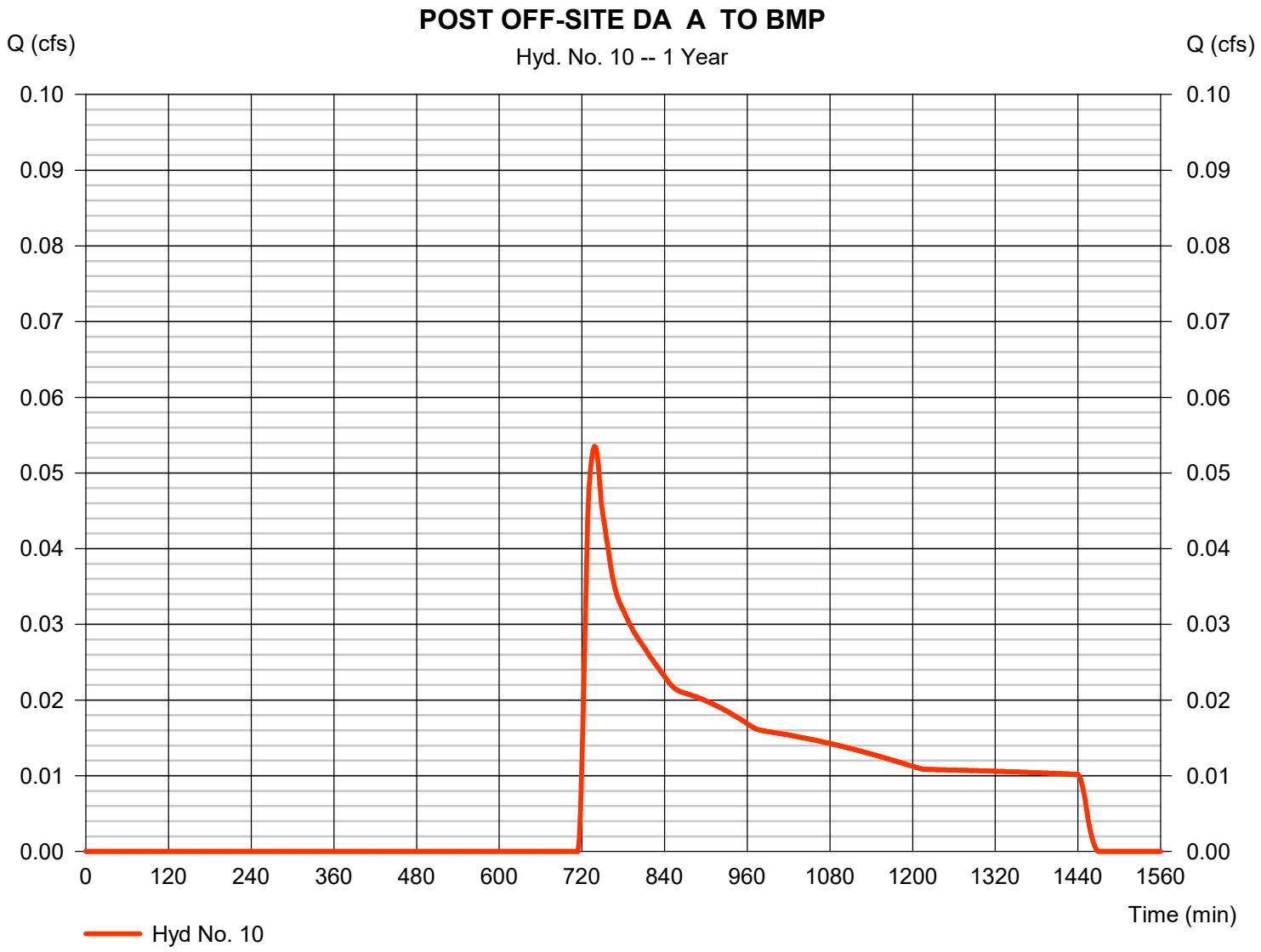
Hydrograph Report

Hyd. No. 10

POST OFF-SITE DA A TO BMP

Hydrograph type	= SCS Runoff	Peak discharge	= 0.054 cfs
Storm frequency	= 1 yrs	Time to peak	= 738 min
Time interval	= 2 min	Hyd. volume	= 751 cuft
Drainage area	= 1.390 ac	Curve number	= 56*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 19.70 min
Total precip.	= 2.73 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.260 x 55) + (0.130 x 70)] / 1.390



TR55 Tc Worksheet

Hyd. No. 10

POST OFF-SITE DA A TO BMP

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.31		0.00		0.00		
Land slope (%)	= 1.00		0.00		0.00		
Travel Time (min)	**= 18.51**	**+**	**0.00**	**+**	**0.00**	**=**	**18.51**
Shallow Concentrated Flow							
Flow length (ft)	= 119.00		0.00		0.00		
Watercourse slope (%)	= 1.00		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=1.61		0.00		0.00		
Travel Time (min)	**= 1.23**	**+**	**0.00**	**+**	**0.00**	**=**	**1.23**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

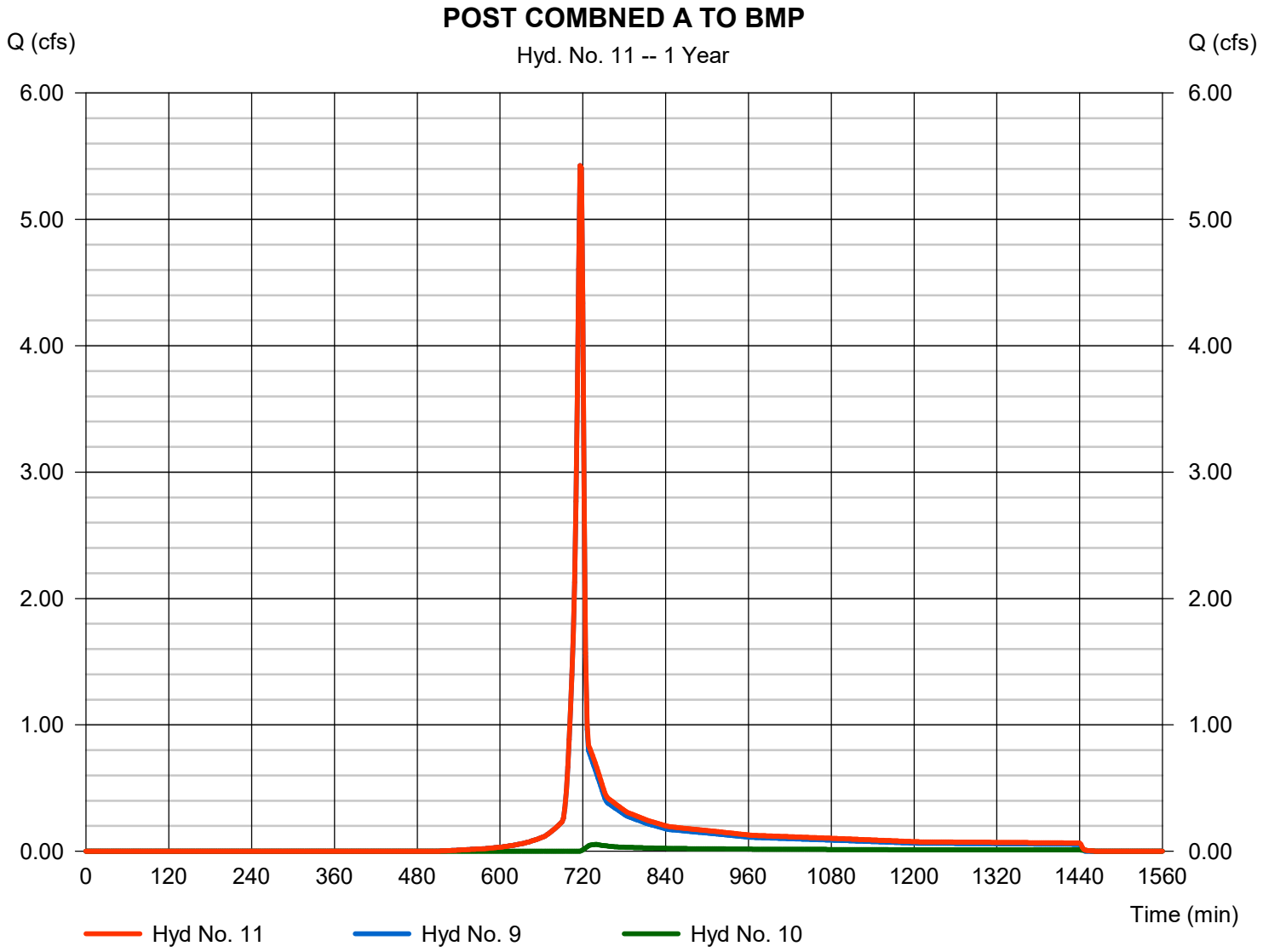
Total Travel Time, Tc ..... 19.70 min

Hydrograph Report

Hyd. No. 11

POST COMBNED A TO BMP

Hydrograph type	= Combine	Peak discharge	= 5.426 cfs
Storm frequency	= 1 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 11,708 cuft
Inflow hyds.	= 9, 10	Contrib. drain. area	= 3.750 ac



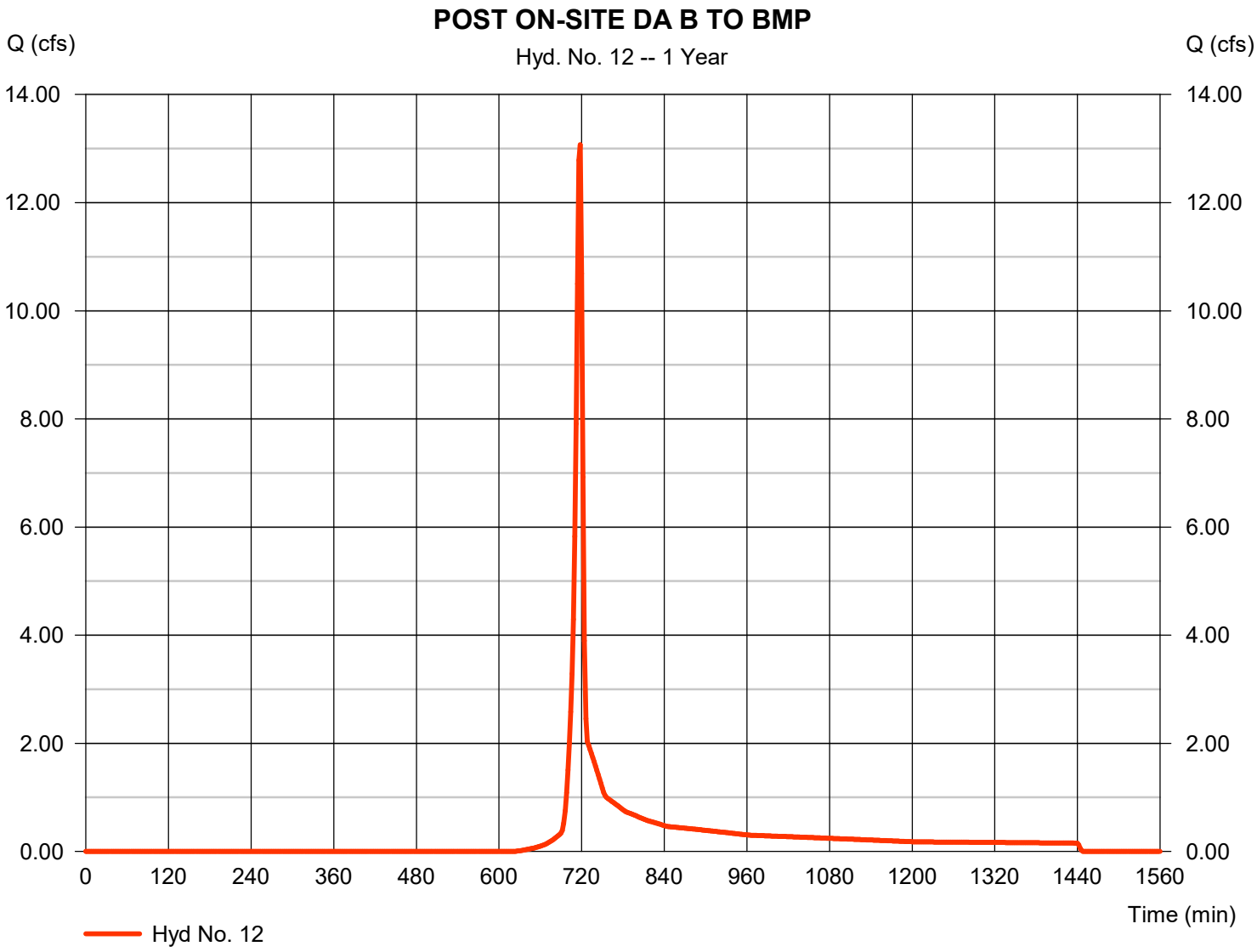
Hydrograph Report

Hyd. No. 12

POST ON-SITE DA B TO BMP

Hydrograph type	=	SCS Runoff	Peak discharge	=	13.07 cfs
Storm frequency	=	1 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	26,143 cuft
Drainage area	=	7.720 ac	Curve number	=	79*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.73 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(3.880 x 61) + (3.840 x 98)] / 7.720



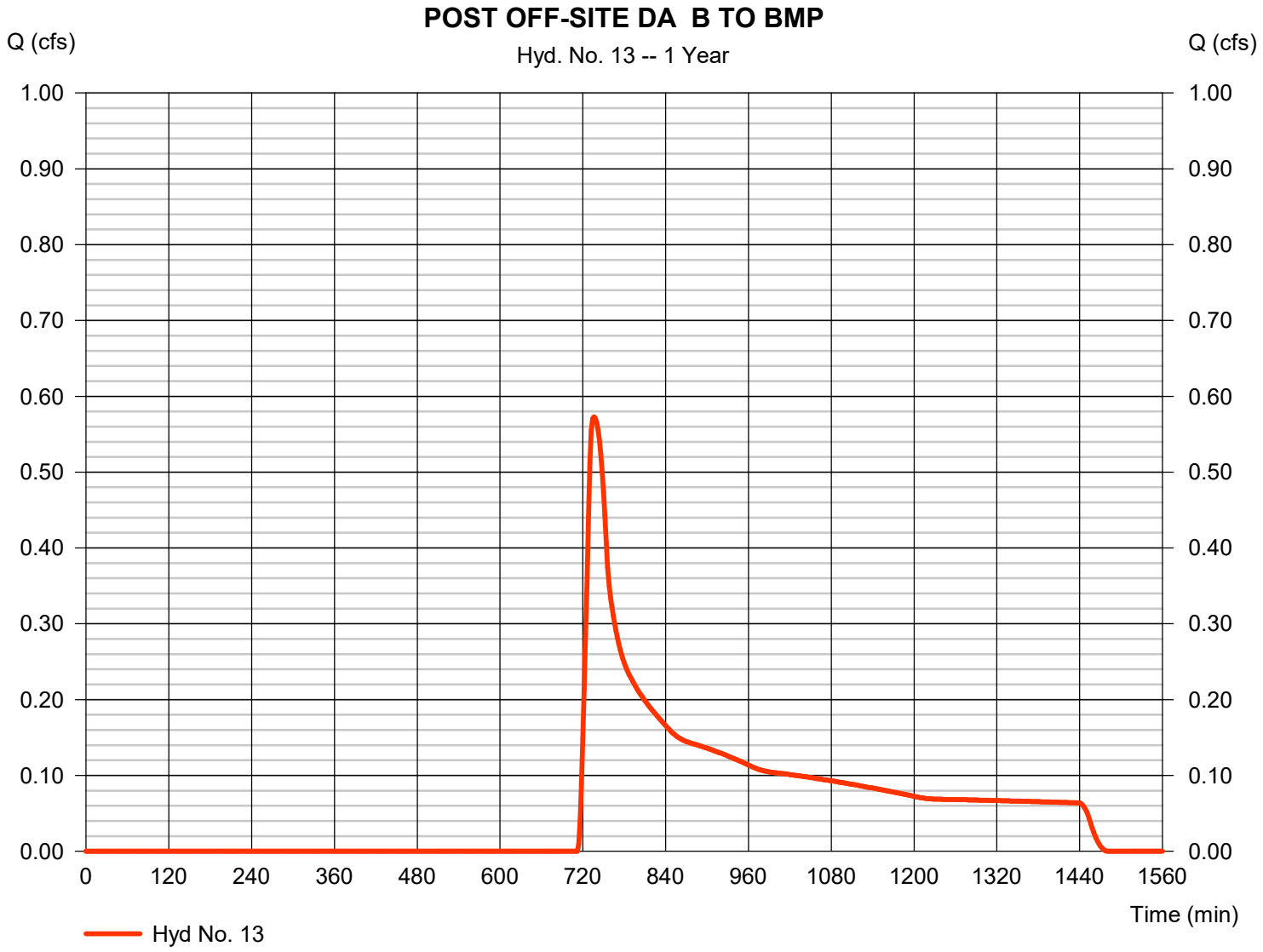
Hydrograph Report

Hyd. No. 13

POST OFF-SITE DA B TO BMP

Hydrograph type	= SCS Runoff	Peak discharge	= 0.573 cfs
Storm frequency	= 1 yrs	Time to peak	= 736 min
Time interval	= 2 min	Hyd. volume	= 5,519 cuft
Drainage area	= 7.130 ac	Curve number	= 59*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 24.00 min
Total precip.	= 2.73 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(5.510 x 55) + (1.200 x 61) + (0.420 x 98)] / 7.130



TR55 Tc Worksheet

Hyd. No. 13

POST OFF-SITE DA B TO BMP

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.400		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.31		0.00		0.00		
Land slope (%)	= 2.30		0.00		0.00		
Travel Time (min)	**= 19.97**	**+**	**0.00**	**+**	**0.00**	**=**	**19.97**
Shallow Concentrated Flow							
Flow length (ft)	= 700.00		0.00		0.00		
Watercourse slope (%)	= 3.25		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=2.91		0.00		0.00		
Travel Time (min)	**= 4.01**	**+**	**0.00**	**+**	**0.00**	**=**	**4.01**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 24.00 min

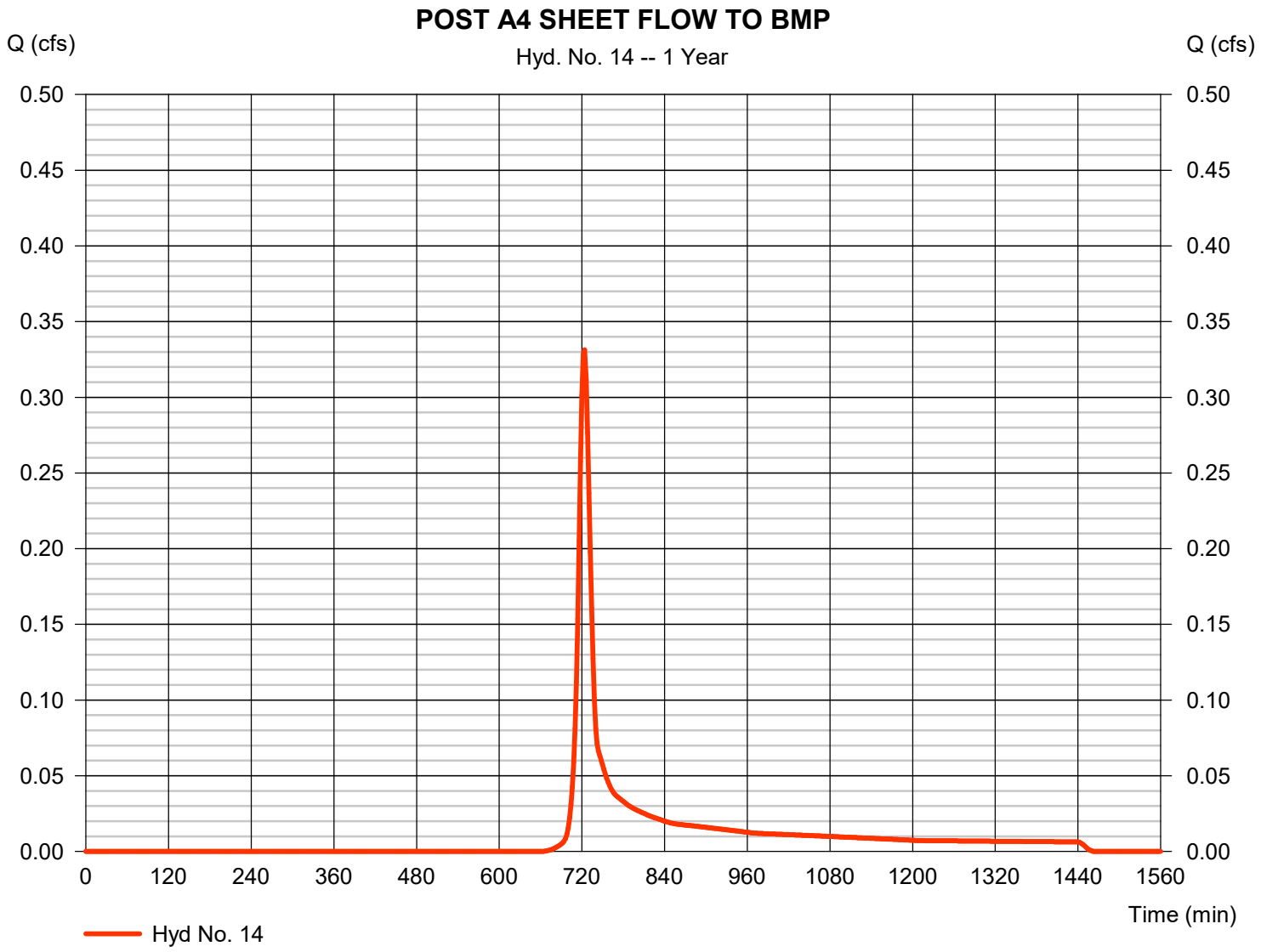
Hydrograph Report

Hyd. No. 14

POST A4 SHEET FLOW TO BMP

Hydrograph type	= SCS Runoff	Peak discharge	= 0.331 cfs
Storm frequency	= 1 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 978 cuft
Drainage area	= 0.330 ac	Curve number	= 76*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 13.80 min
Total precip.	= 2.73 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.200 x 61) + (0.130 x 98)] / 0.330



TR55 Tc Worksheet

Hyd. No. 14

POST A4 SHEET FLOW TO BMP

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.31		0.00		0.00		
Land slope (%)	= 2.40		0.00		0.00		
Travel Time (min)	**= 13.04**	**+**	**0.00**	**+**	**0.00**	**=**	**13.04**
Shallow Concentrated Flow							
Flow length (ft)	= 118.00		0.00		0.00		
Watercourse slope (%)	= 2.40		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=2.50		0.00		0.00		
Travel Time (min)	**= 0.79**	**+**	**0.00**	**+**	**0.00**	**=**	**0.79**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

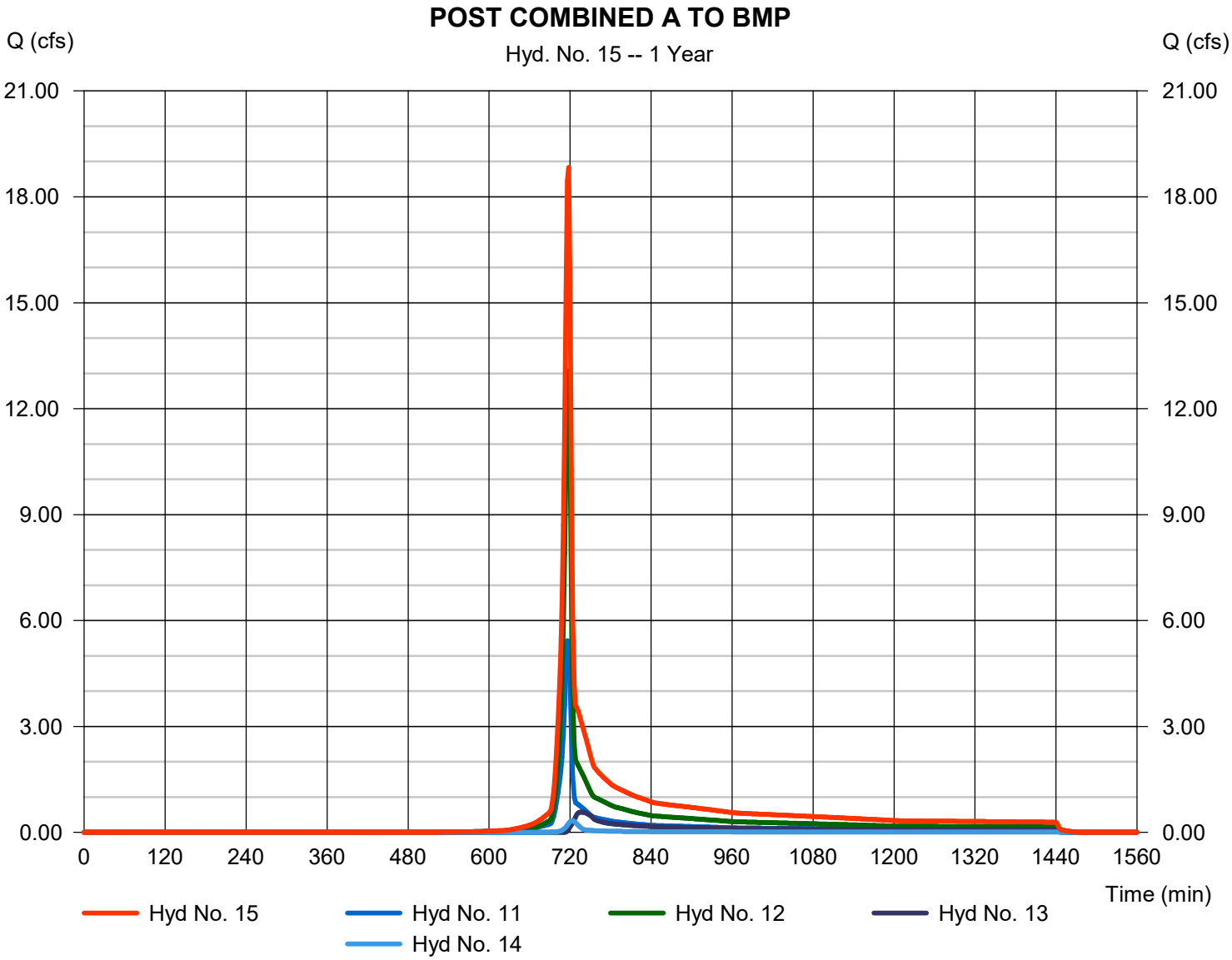
Total Travel Time, Tc ..... 13.80 min

Hydrograph Report

Hyd. No. 15

POST COMBINED A TO BMP

Hydrograph type	= Combine	Peak discharge	= 18.83 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 44,349 cuft
Inflow hyds.	= 11, 12, 13, 14	Contrib. drain. area	= 15.180 ac



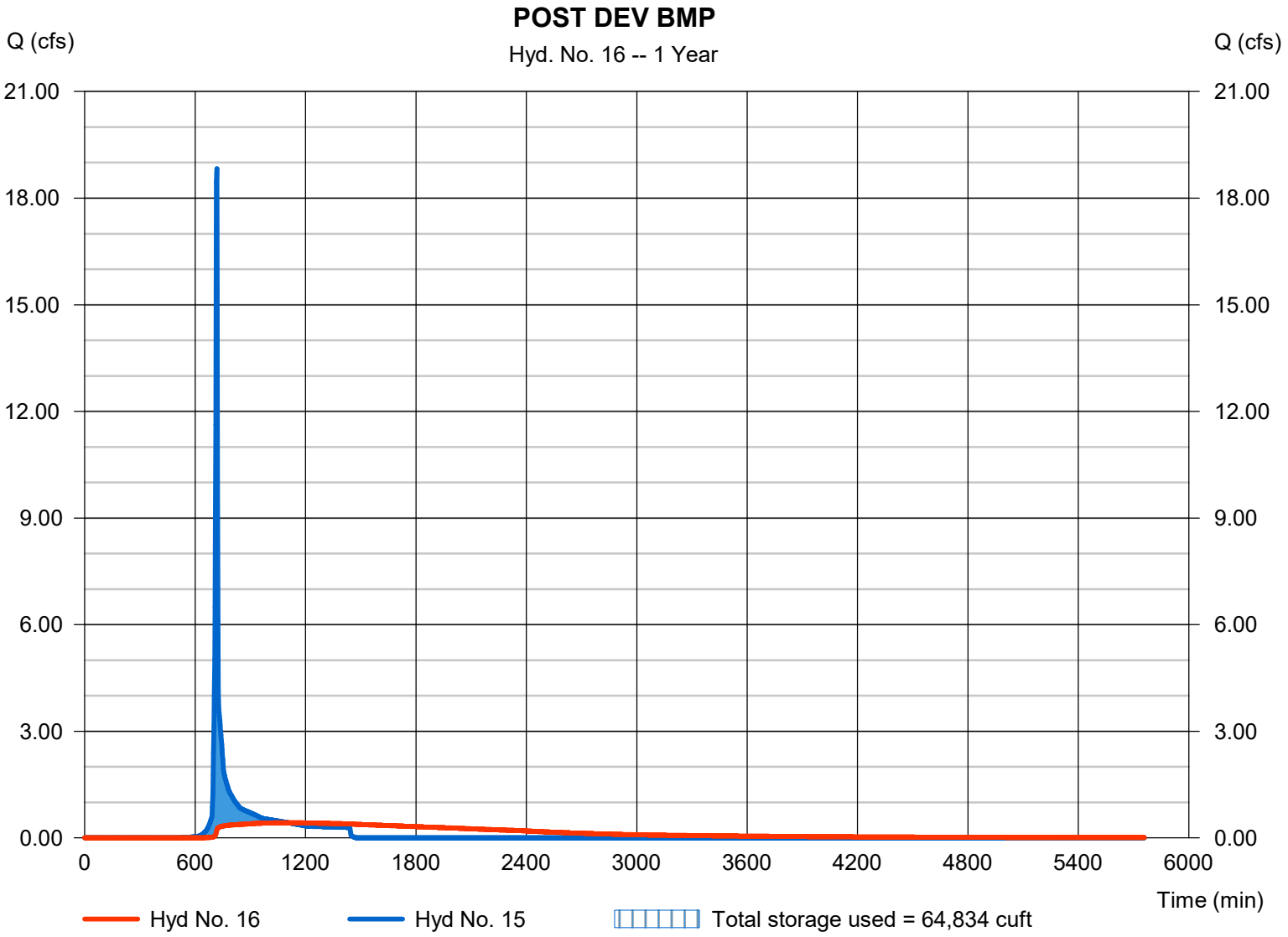
Hydrograph Report

Hyd. No. 16

POST DEV BMP

Hydrograph type	= Reservoir	Peak discharge	= 0.424 cfs
Storm frequency	= 1 yrs	Time to peak	= 1106 min
Time interval	= 2 min	Hyd. volume	= 43,960 cuft
Inflow hyd. No.	= 15 - POST COMBINED A TO BMP	Max. Elevation	= 383.08 ft
Reservoir name	= WET POND	Max. Storage	= 64,834 cuft

Storage Indication method used. Wet pond routing start elevation = 382.00 ft.



Pond No. 1 - WET POND

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 378.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	378.00	2,554	0	0
2.00	380.00	8,708	10,651	10,651
4.00	382.00	17,536	25,732	36,383
6.00	384.00	36,247	52,658	89,040
8.00	386.00	45,603	81,663	170,703
9.00	387.00	50,435	47,994	218,697

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 36.00	4.00	0.00	0.00
Span (in)	= 36.00	4.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 380.50	382.00	0.00	0.00
Length (ft)	= 70.00	0.00	0.00	0.00
Slope (%)	= 2.59	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 10.50	1.50	20.00	0.00
Crest El. (ft)	= 384.40	383.15	385.40	0.00
Weir Coeff.	= 3.33	3.33	2.60	3.33
Weir Type	= 1	Rect	Broad	---
Multi-Stage	= Yes	Yes	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

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

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	378.00	0.00	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
0.20	1,065	378.20	0.00	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
0.40	2,130	378.40	0.00	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
0.60	3,195	378.60	0.00	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
0.80	4,260	378.80	0.00	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
1.00	5,325	379.00	0.00	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
1.20	6,391	379.20	0.00	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
1.40	7,456	379.40	0.00	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
1.60	8,521	379.60	0.00	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
1.80	9,586	379.80	0.00	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
2.00	10,651	380.00	0.00	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
2.20	13,224	380.20	0.00	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
2.40	15,797	380.40	0.00	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
2.60	18,370	380.60	0.00	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
2.80	20,944	380.80	0.00	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
3.00	23,517	381.00	0.00	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
3.20	26,090	381.20	0.00	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
3.40	28,663	381.40	0.00	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
3.60	31,236	381.60	0.00	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
3.80	33,809	381.80	0.00	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
4.00	36,383	382.00	0.00	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
4.20	41,648	382.20	0.08 ic	0.08 ic	---	---	0.00	0.00	0.00	---	---	---	0.083
4.40	46,914	382.40	0.20 ic	0.20 ic	---	---	0.00	0.00	0.00	---	---	---	0.203
4.60	52,180	382.60	0.29 ic	0.28 ic	---	---	0.00	0.00	0.00	---	---	---	0.277
4.80	57,446	382.80	0.33 ic	0.33 ic	---	---	0.00	0.00	0.00	---	---	---	0.334
5.00	62,711	383.00	0.41 ic	0.38 ic	---	---	0.00	0.00	0.00	---	---	---	0.384
5.20	67,977	383.20	0.50 ic	0.43 ic	---	---	0.00	0.06	0.00	---	---	---	0.483
5.40	73,243	383.40	1.13 ic	0.47 ic	---	---	0.00	0.62	0.00	---	---	---	1.091
5.60	78,509	383.60	2.02 ic	0.50 ic	---	---	0.00	1.51	0.00	---	---	---	2.011
5.80	83,775	383.80	3.16 ic	0.54 ic	---	---	0.00	2.62	0.00	---	---	---	3.155
6.00	89,040	384.00	4.53 ic	0.57 ic	---	---	0.00	3.91	0.00	---	---	---	4.483
6.20	97,207	384.20	6.01 ic	0.60 ic	---	---	0.00	5.37	0.00	---	---	---	5.974
6.40	105,373	384.40	7.73 ic	0.63 ic	---	---	0.00	6.98	0.00	---	---	---	7.609
6.60	113,539	384.60	12.63 ic	0.66 ic	---	---	3.13	8.72	0.00	---	---	---	12.50
6.80	121,706	384.80	20.18 ic	0.67 ic	---	---	8.85	10.59	0.00	---	---	---	20.10
7.00	129,872	385.00	29.58 ic	0.63 ic	---	---	16.25	12.57	0.00	---	---	---	29.45
7.20	138,038	385.20	40.07 ic	0.57 ic	---	---	25.02	14.47 s	0.00	---	---	---	40.07

Continues on next page...

WET POND

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
7.40	146,205	385.40	50.10 ic	0.47 ic	---	---	34.97	14.66 s	0.00	---	---	---	50.10
7.60	154,371	385.60	56.89 ic	0.38 ic	---	---	42.42 s	14.09 s	4.65	---	---	---	61.54
7.80	162,537	385.80	60.86 ic	0.33 ic	---	---	46.63 s	13.90 s	13.16	---	---	---	74.02
8.00	170,703	386.00	63.97 ic	0.29 ic	---	---	49.91 s	13.77 s	24.17	---	---	---	88.13
8.10	175,503	386.10	65.32 ic	0.27 ic	---	---	51.34 s	13.71 s	30.46	---	---	---	95.78
8.20	180,302	386.20	66.58 ic	0.26 ic	---	---	52.66 s	13.67 s	37.21	---	---	---	103.79
8.30	185,102	386.30	67.76 ic	0.24 ic	---	---	53.89 s	13.63 s	44.40	---	---	---	112.16
8.40	189,901	386.40	68.88 ic	0.23 ic	---	---	55.05 s	13.60 s	52.00	---	---	---	120.88
8.50	194,700	386.50	69.95 ic	0.22 ic	---	---	56.15 s	13.57 s	59.99	---	---	---	129.93
8.60	199,500	386.60	70.97 ic	0.21 ic	---	---	57.20 s	13.55 s	68.36	---	---	---	139.32
8.70	204,299	386.70	71.95 ic	0.20 ic	---	---	58.21 s	13.54 s	77.08	---	---	---	149.02
8.80	209,099	386.80	72.89 ic	0.19 ic	---	---	59.17 s	13.53 s	86.14	---	---	---	159.03
8.90	213,898	386.90	73.81 ic	0.19 ic	---	---	60.10 s	13.53 s	95.54	---	---	---	169.35
9.00	218,697	387.00	74.71 ic	0.18 ic	---	---	60.99 s	13.53 s	105.24	---	---	---	179.93

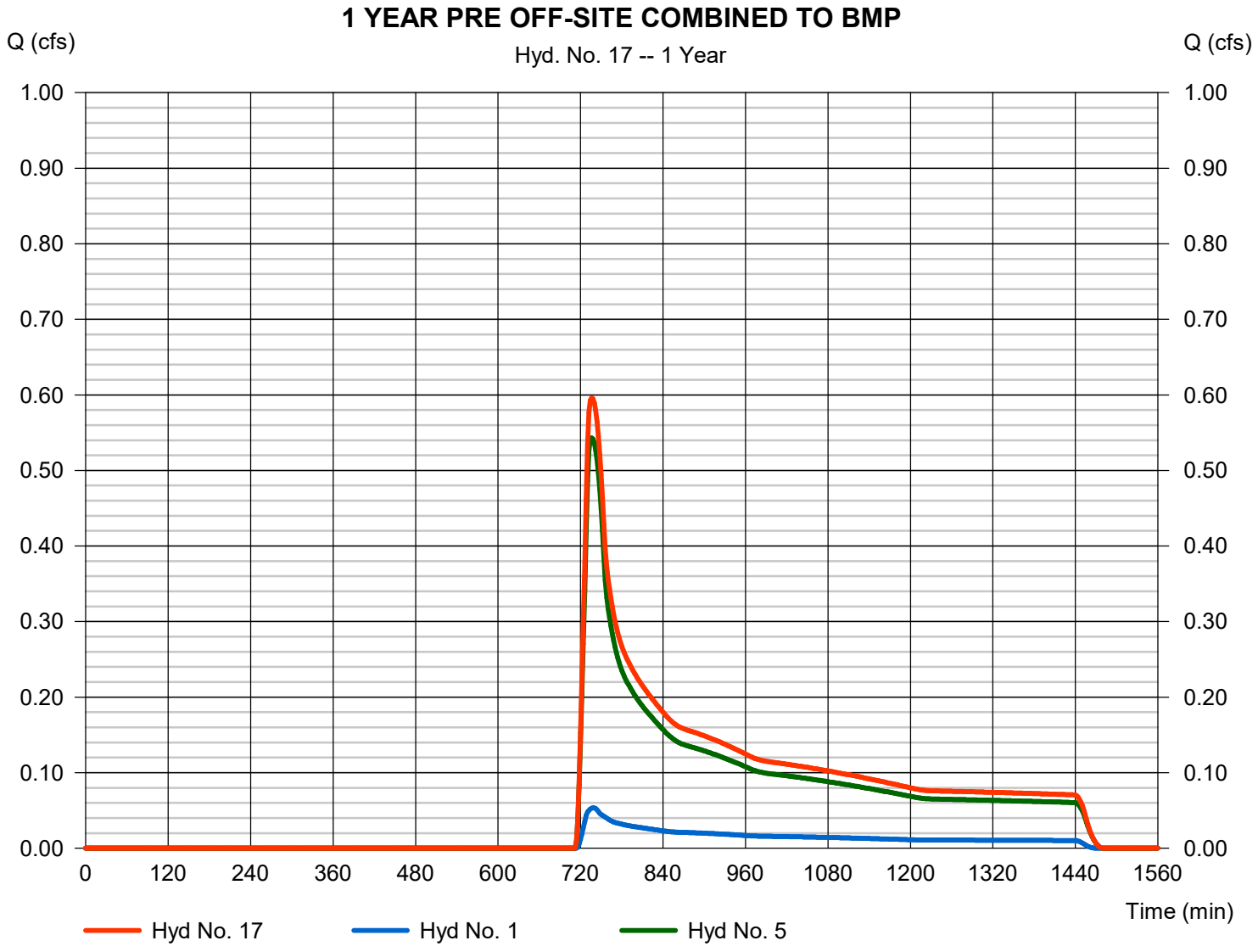
...End

Hydrograph Report

Hyd. No. 17

1 YEAR PRE OFF-SITE COMBINED TO BMP

Hydrograph type	= Combine	Peak discharge	= 0.596 cfs
Storm frequency	= 1 yrs	Time to peak	= 736 min
Time interval	= 2 min	Hyd. volume	= 5,984 cuft
Inflow hyds.	= 1, 5	Contrib. drain. area	= 8.150 ac

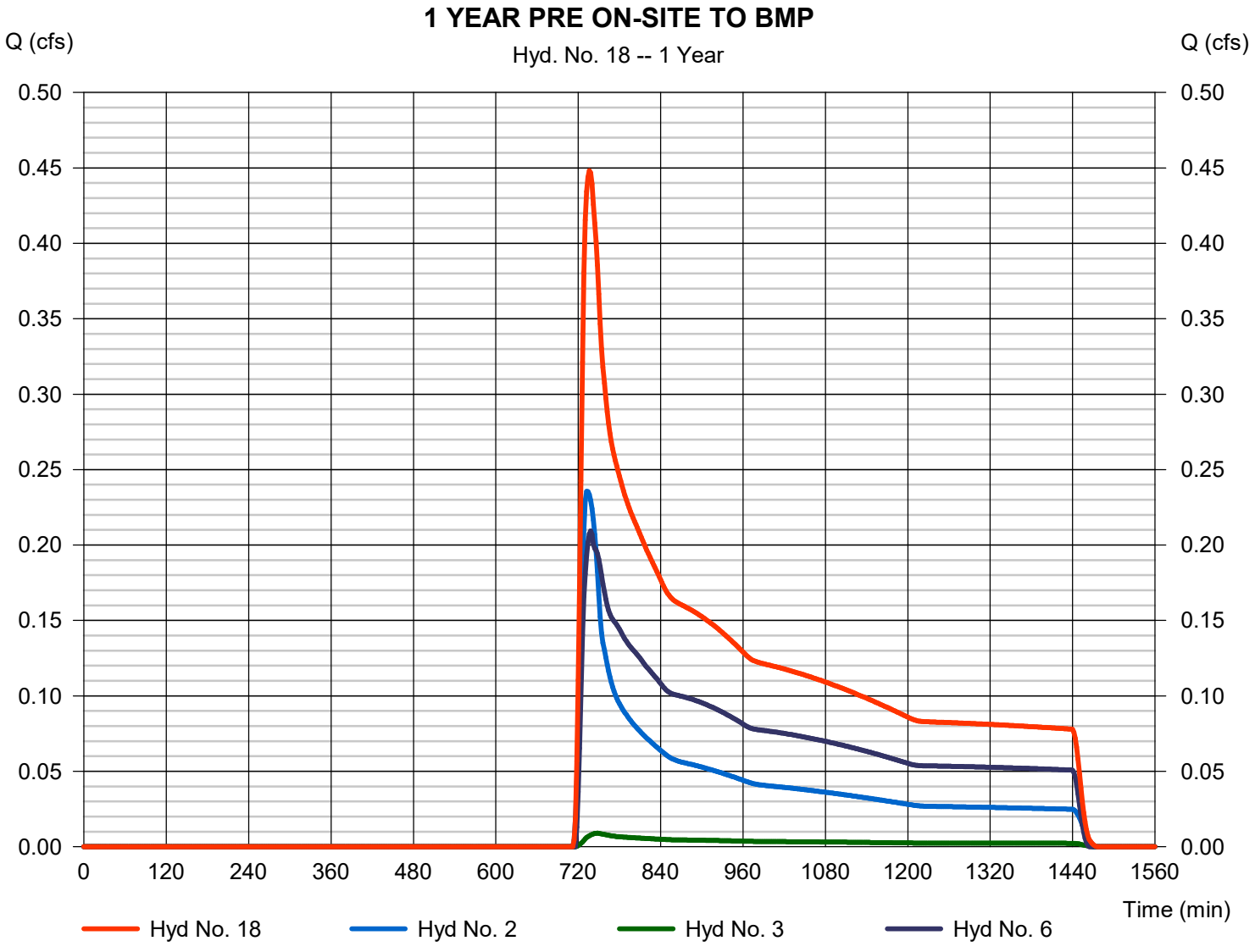


Hydrograph Report

Hyd. No. 18

1 YEAR PRE ON-SITE TO BMP

Hydrograph type	=	Combine	Peak discharge	=	0.448 cfs
Storm frequency	=	1 yrs	Time to peak	=	736 min
Time interval	=	2 min	Hyd. volume	=	5,826 cuft
Inflow hyds.	=	2, 3, 6	Contrib. drain. area	=	10.740 ac

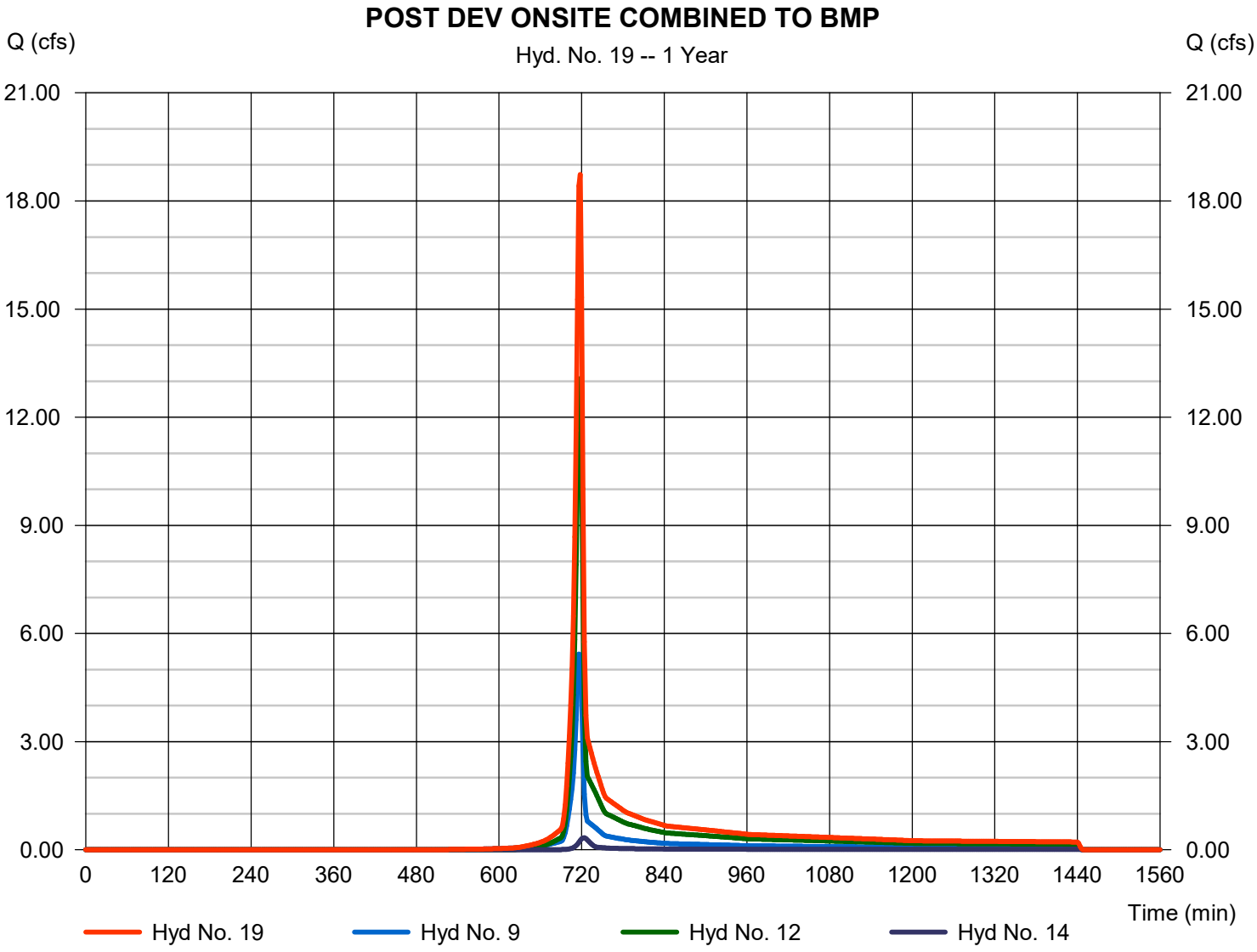


Hydrograph Report

Hyd. No. 19

POST DEV ONSITE COMBINED TO BMP

Hydrograph type	= Combine	Peak discharge	= 18.73 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 38,078 cuft
Inflow hyds.	= 9, 12, 14	Contrib. drain. area	= 10.410 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

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	0.240	2	728	1,589	------	------	------	PRE OFF-SITE A TO BMP
2	SCS Runoff	0.717	2	730	4,130	------	------	------	PRE-DEV A ON-SITE TO BMP
3	SCS Runoff	0.041	2	732	346	------	------	------	PRE A4 SHEET FLOW TO BMP
4	Combine	0.997	2	730	6,065	1, 2, 3	------	------	PRE-DEV A COMBINED TO BMP
5	SCS Runoff	1.631	2	732	10,037	------	------	------	PRE OFF-SITE DA B TO BMP
6	SCS Runoff	1.193	2	726	7,750	------	------	------	PRE-DEV ON-SITE B TO BMP
7	Combine	2.710	2	730	17,788	5, 6	------	------	PRE-DEV COMBINED B TO BMP
8	Combine	3.708	2	730	23,853	4, 7	------	------	PRE-DEV COMBINED TO BMP
9	SCS Runoff	7.330	2	716	14,873	------	------	------	POST ON-SITE DA A TO BMP
10	SCS Runoff	0.240	2	728	1,589	------	------	------	POST OFF-SITE DA A TO BMP
11	Combine	7.365	2	716	16,462	9, 10	------	------	POST COMBNED A TO BMP
12	SCS Runoff	18.59	2	718	37,303	------	------	------	POST ON-SITE DA B TO BMP
13	SCS Runoff	1.720	2	732	10,586	------	------	------	POST OFF-SITE DA B TO BMP
14	SCS Runoff	0.498	2	722	1,436	------	------	------	POST A4 SHEET FLOW TO BMP
15	Combine	26.75	2	718	65,788	11, 12, 13, 14	------	------	POST COMBINED A TO BMP
16	Reservoir	1.139	2	858	65,327	15	383.41	73,515	POST DEV BMP
17	Combine	1.862	2	732	11,626	1, 5,	------	------	1 YEAR PRE OFF-SITE COMBINED
18	Combine	1.917	2	728	12,226	2, 3, 6,	------	------	1 YEAR PRE ON-SITE TO BMP
19	Combine	26.23	2	718	53,612	9, 12, 14,	------	------	POST DEV ONSITE COMBINED TO

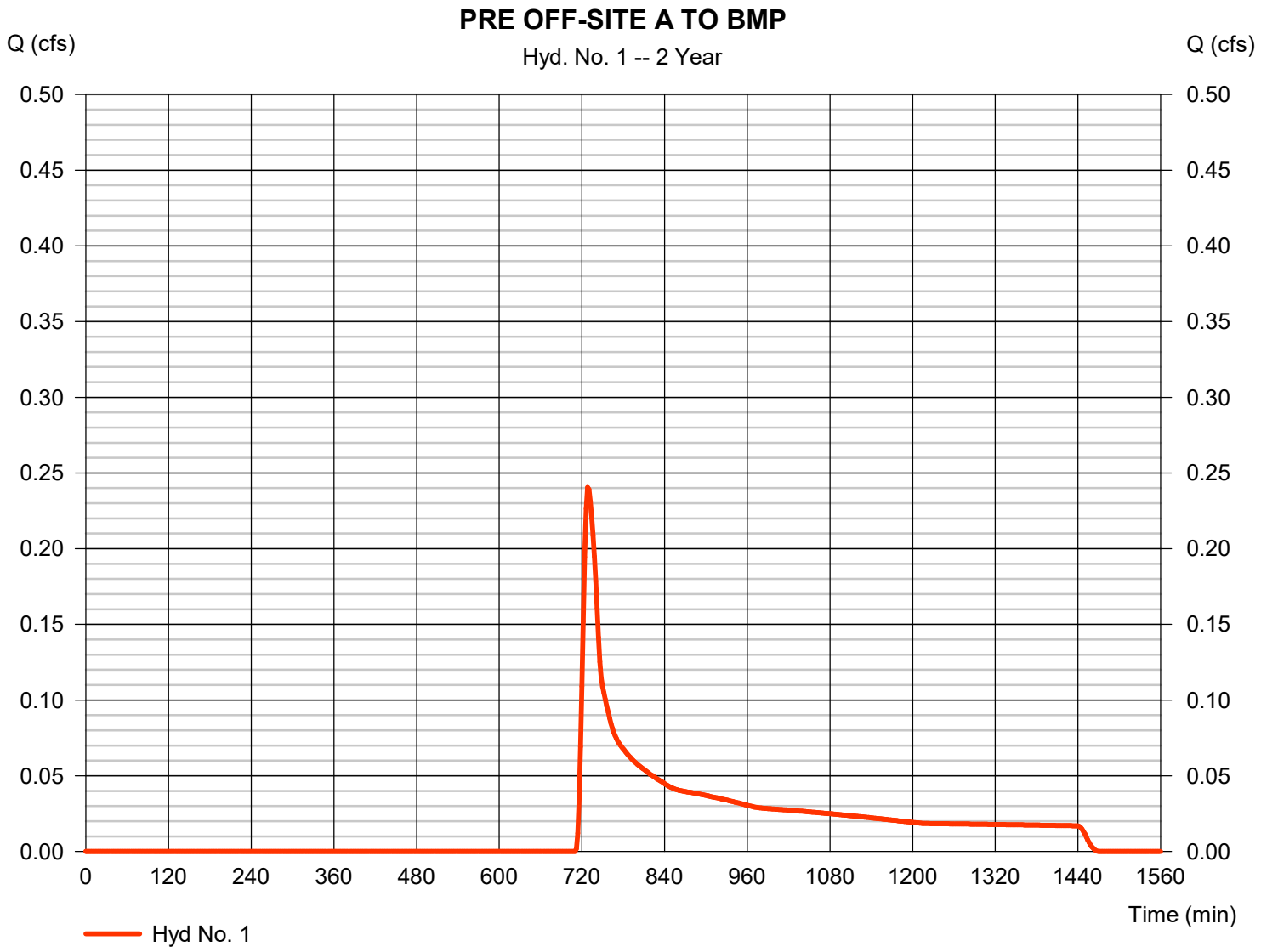
Hydrograph Report

Hyd. No. 1

PRE OFF-SITE A TO BMP

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.240 cfs
Storm frequency	=	2 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	1,589 cuft
Drainage area	=	1.390 ac	Curve number	=	56*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	19.70 min
Total precip.	=	3.31 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(3.310 x 55) + (6.750 x 68)] / 1.390

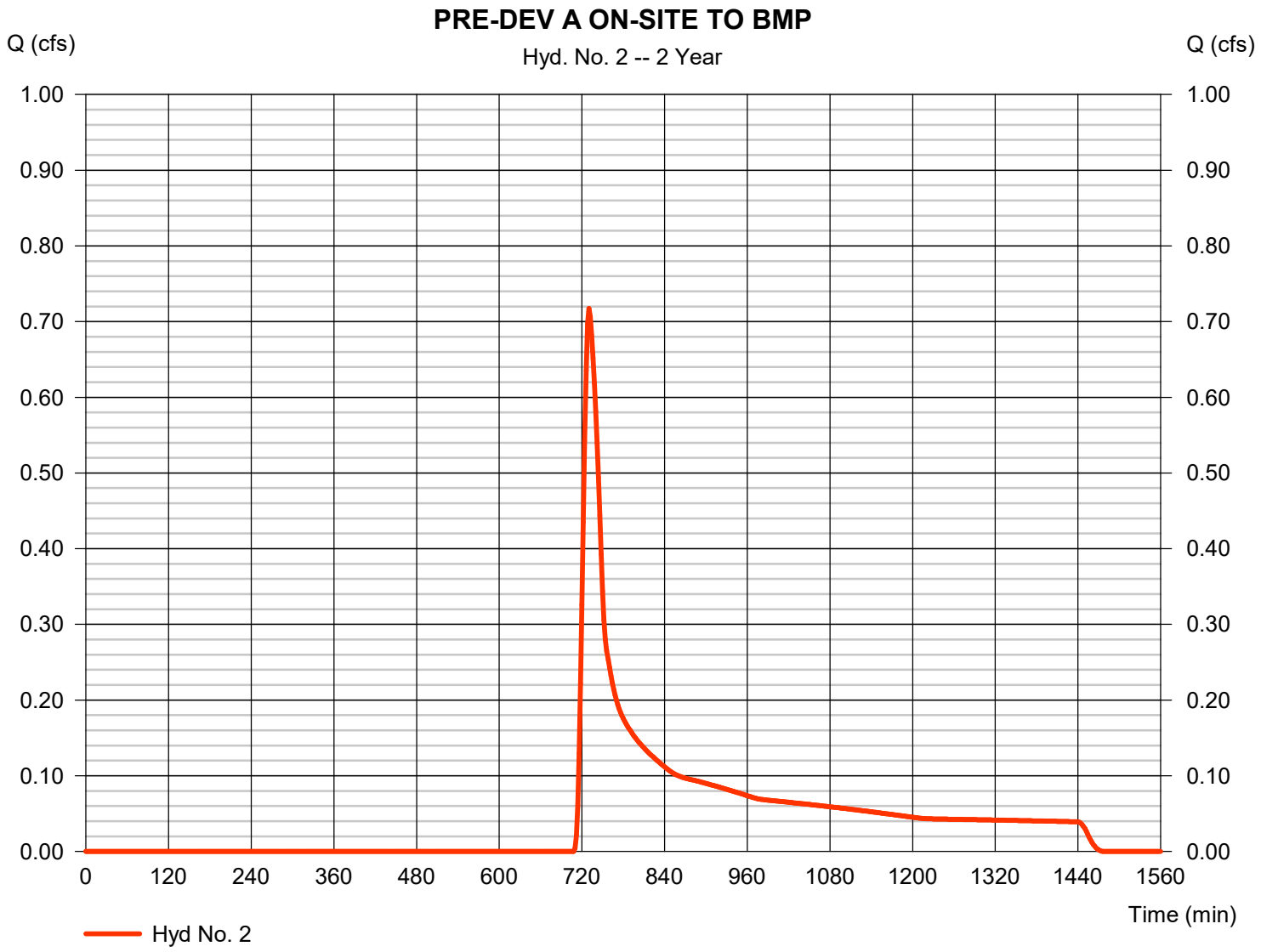


Hydrograph Report

Hyd. No. 2

PRE-DEV A ON-SITE TO BMP

Hydrograph type	= SCS Runoff	Peak discharge	= 0.717 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 4,130 cuft
Drainage area	= 2.690 ac	Curve number	= 59
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 20.50 min
Total precip.	= 3.31 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

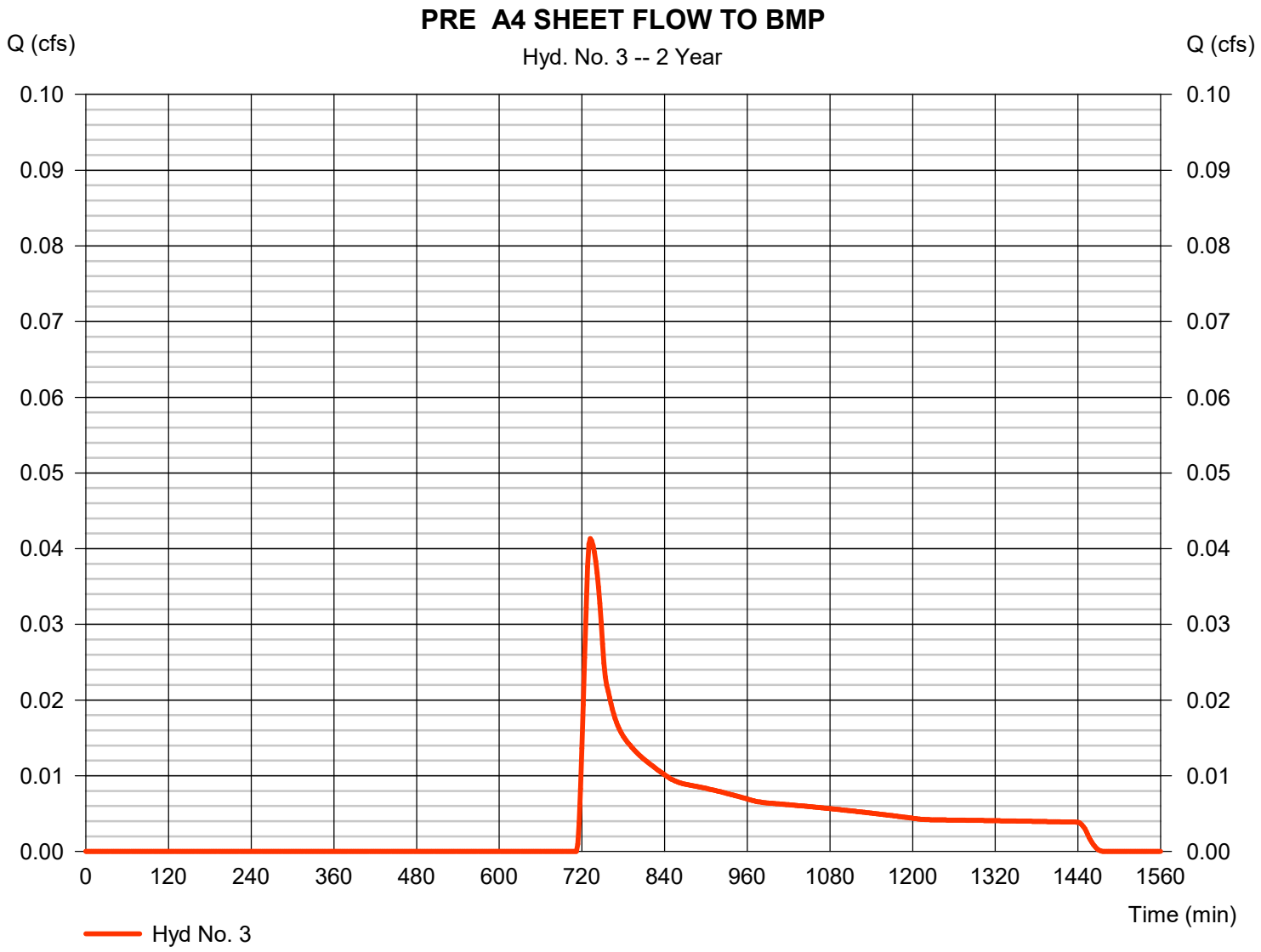


Hydrograph Report

Hyd. No. 3

PRE A4 SHEET FLOW TO BMP

Hydrograph type	= SCS Runoff	Peak discharge	= 0.041 cfs
Storm frequency	= 2 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 346 cuft
Drainage area	= 0.330 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 20.40 min
Total precip.	= 3.31 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

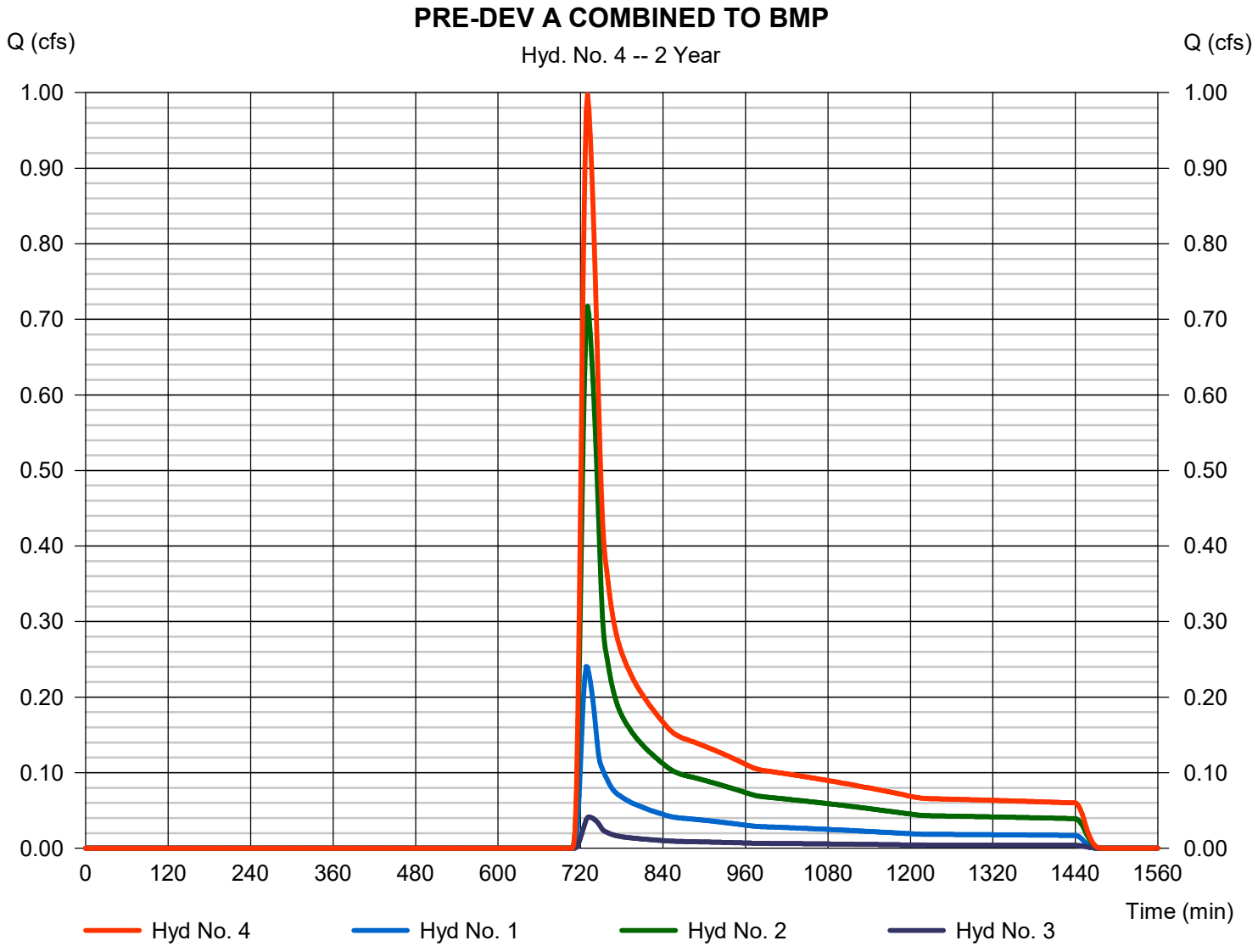


Hydrograph Report

Hyd. No. 4

PRE-DEV A COMBINED TO BMP

Hydrograph type	=	Combine	Peak discharge	=	0.997 cfs
Storm frequency	=	2 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	6,065 cuft
Inflow hyds.	=	1, 2, 3	Contrib. drain. area	=	4.410 ac



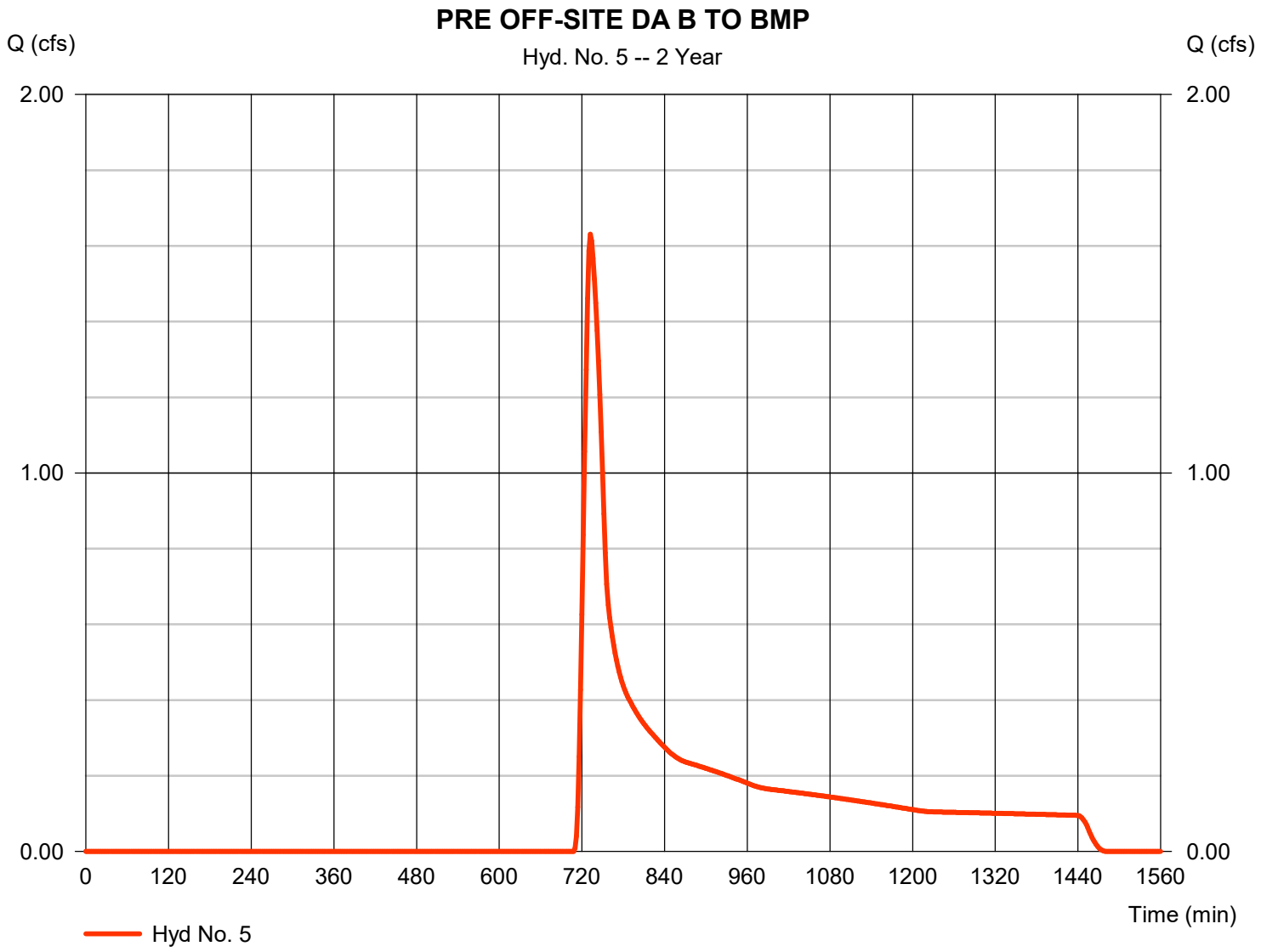
Hydrograph Report

Hyd. No. 5

PRE OFF-SITE DA B TO BMP

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.631 cfs
Storm frequency	=	2 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	10,037 cuft
Drainage area	=	6.760 ac	Curve number	=	59*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	24.00 min
Total precip.	=	3.31 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(5.510 x 55) + (1.200 x 61) + (0.420 x 98)] / 6.760

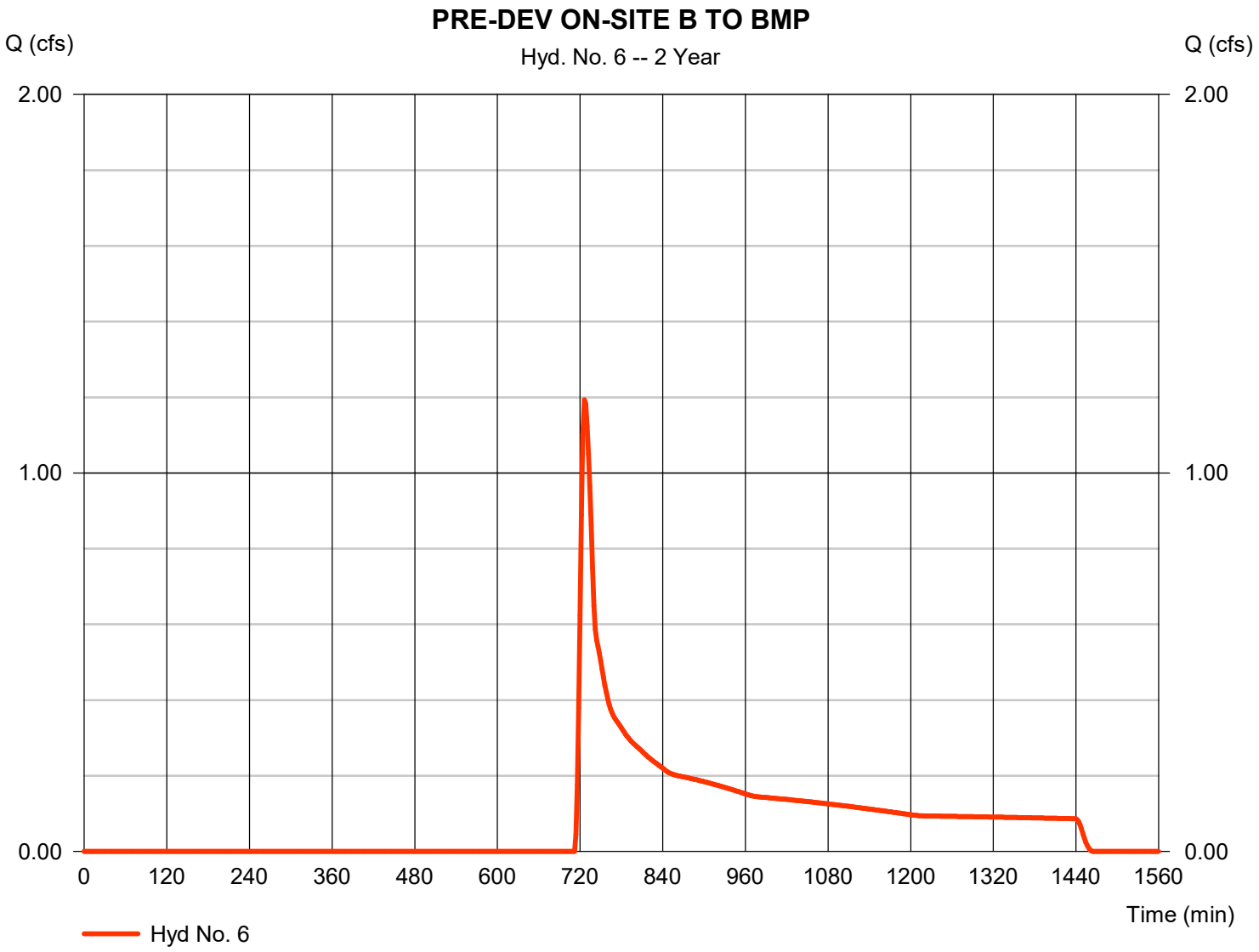


Hydrograph Report

Hyd. No. 6

PRE-DEV ON-SITE B TO BMP

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.193 cfs
Storm frequency	=	2 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	7,750 cuft
Drainage area	=	7.720 ac	Curve number	=	55
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	16.10 min
Total precip.	=	3.31 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

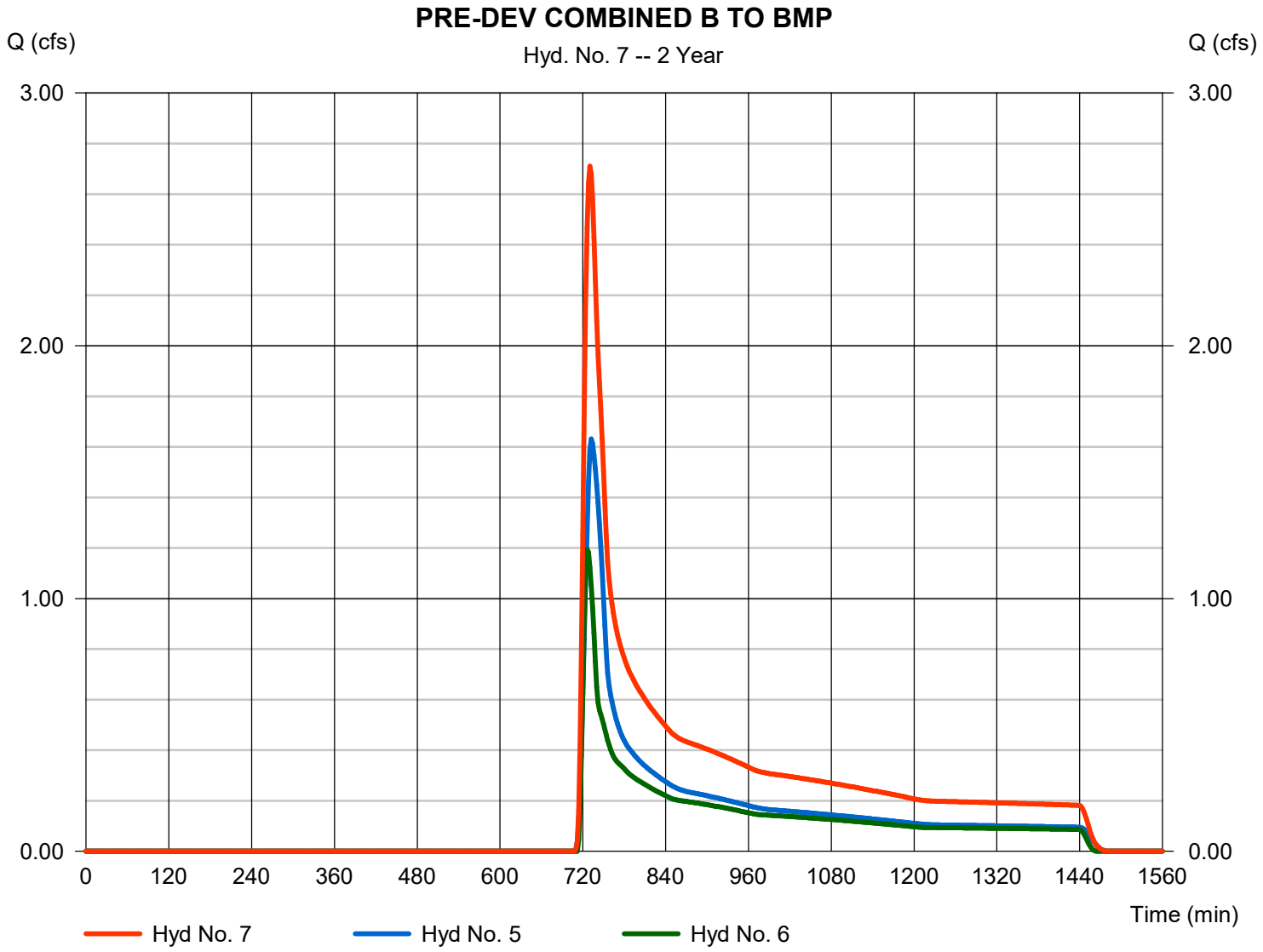


Hydrograph Report

Hyd. No. 7

PRE-DEV COMBINED B TO BMP

Hydrograph type	= Combine	Peak discharge	= 2.710 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 17,788 cuft
Inflow hyds.	= 5, 6	Contrib. drain. area	= 14.480 ac

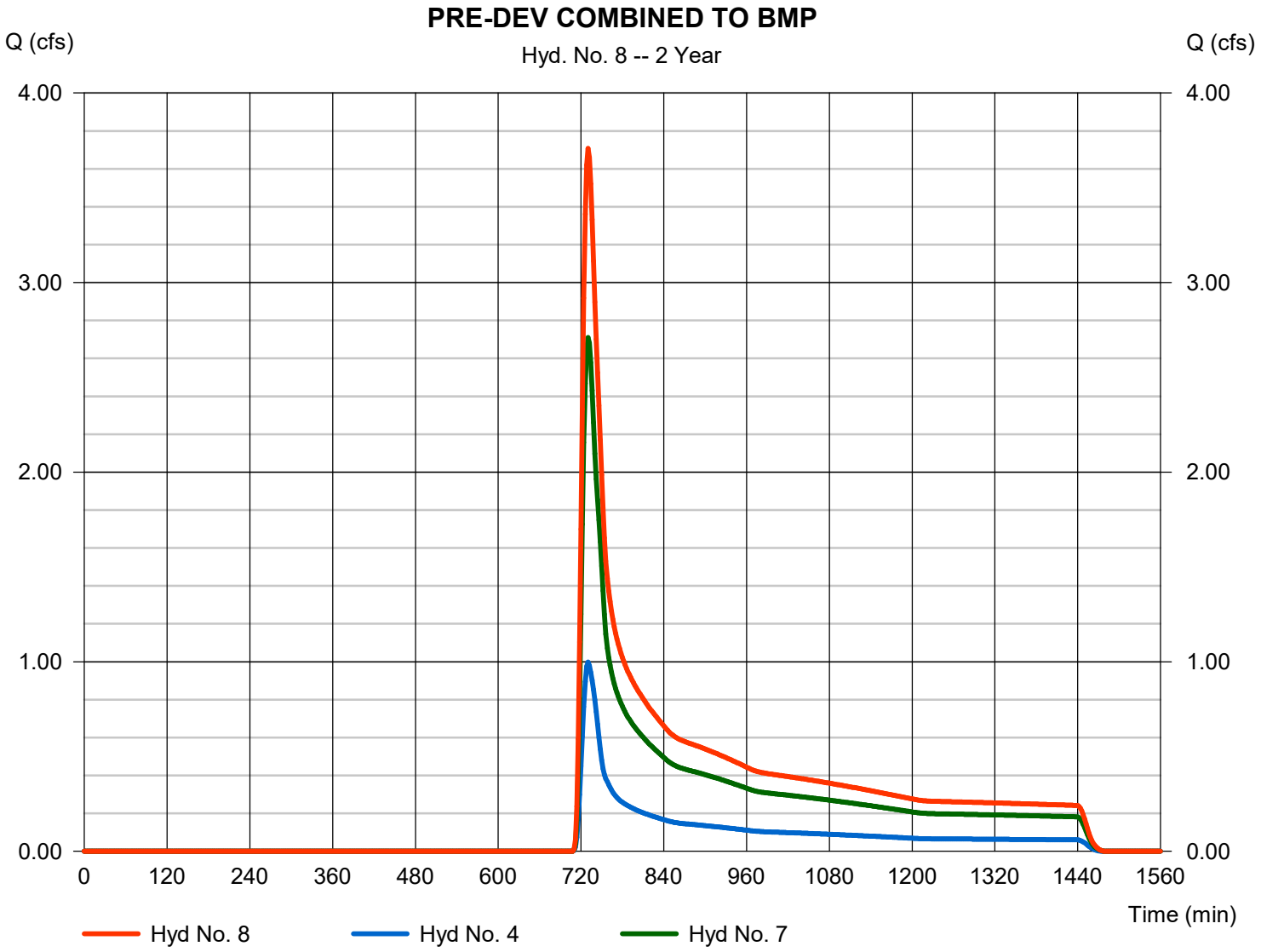


Hydrograph Report

Hyd. No. 8

PRE-DEV COMBINED TO BMP

Hydrograph type	= Combine	Peak discharge	= 3.708 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 23,853 cuft
Inflow hyds.	= 4, 7	Contrib. drain. area	= 0.000 ac



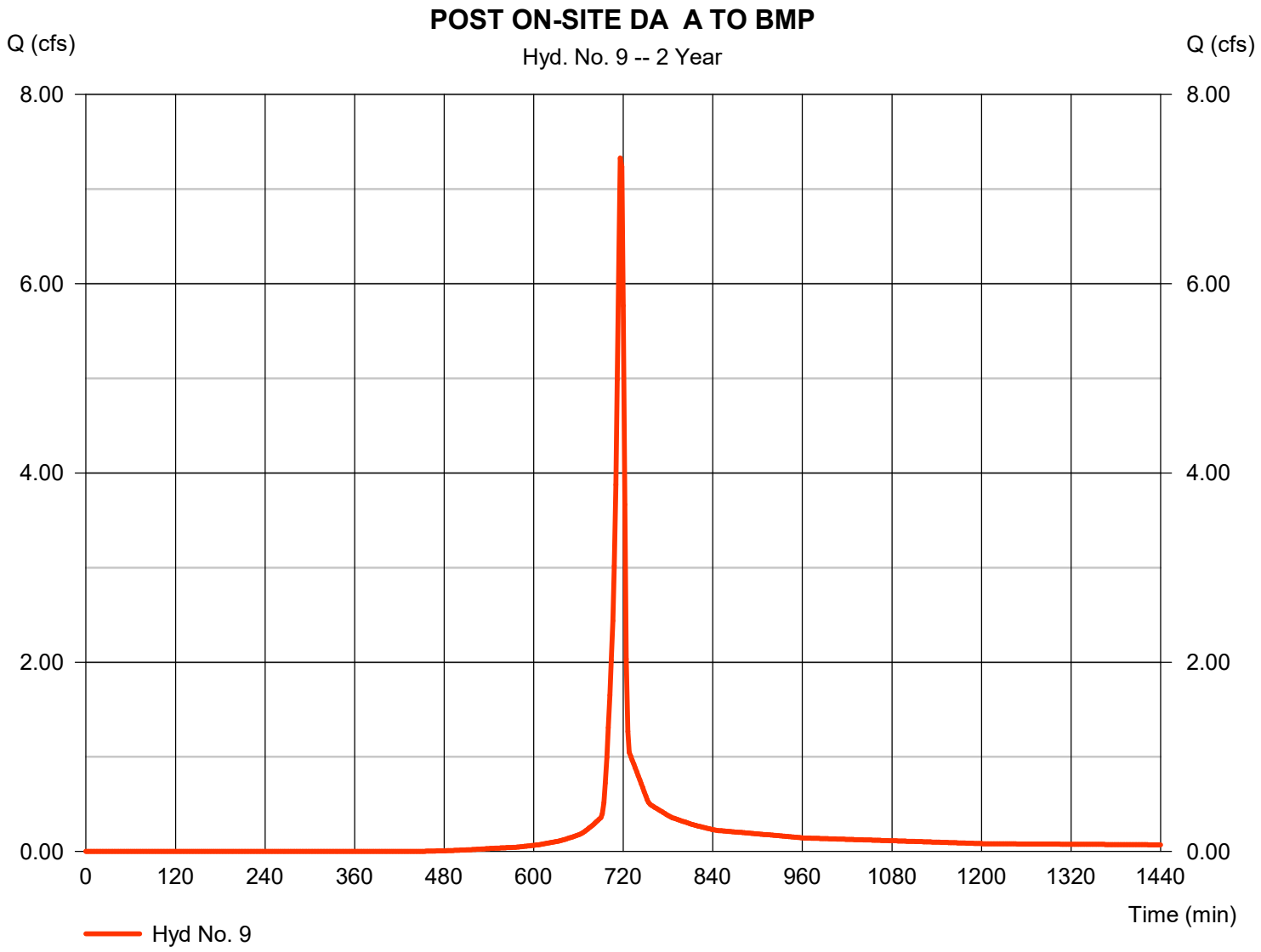
Hydrograph Report

Hyd. No. 9

POST ON-SITE DA A TO BMP

Hydrograph type	=	SCS Runoff	Peak discharge	=	7.330 cfs
Storm frequency	=	2 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	14,873 cuft
Drainage area	=	2.360 ac	Curve number	=	85*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.31 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.720 x 61) + (0.940 x 98) + (0.150 x 74) + (0.550 x 98)] / 2.360



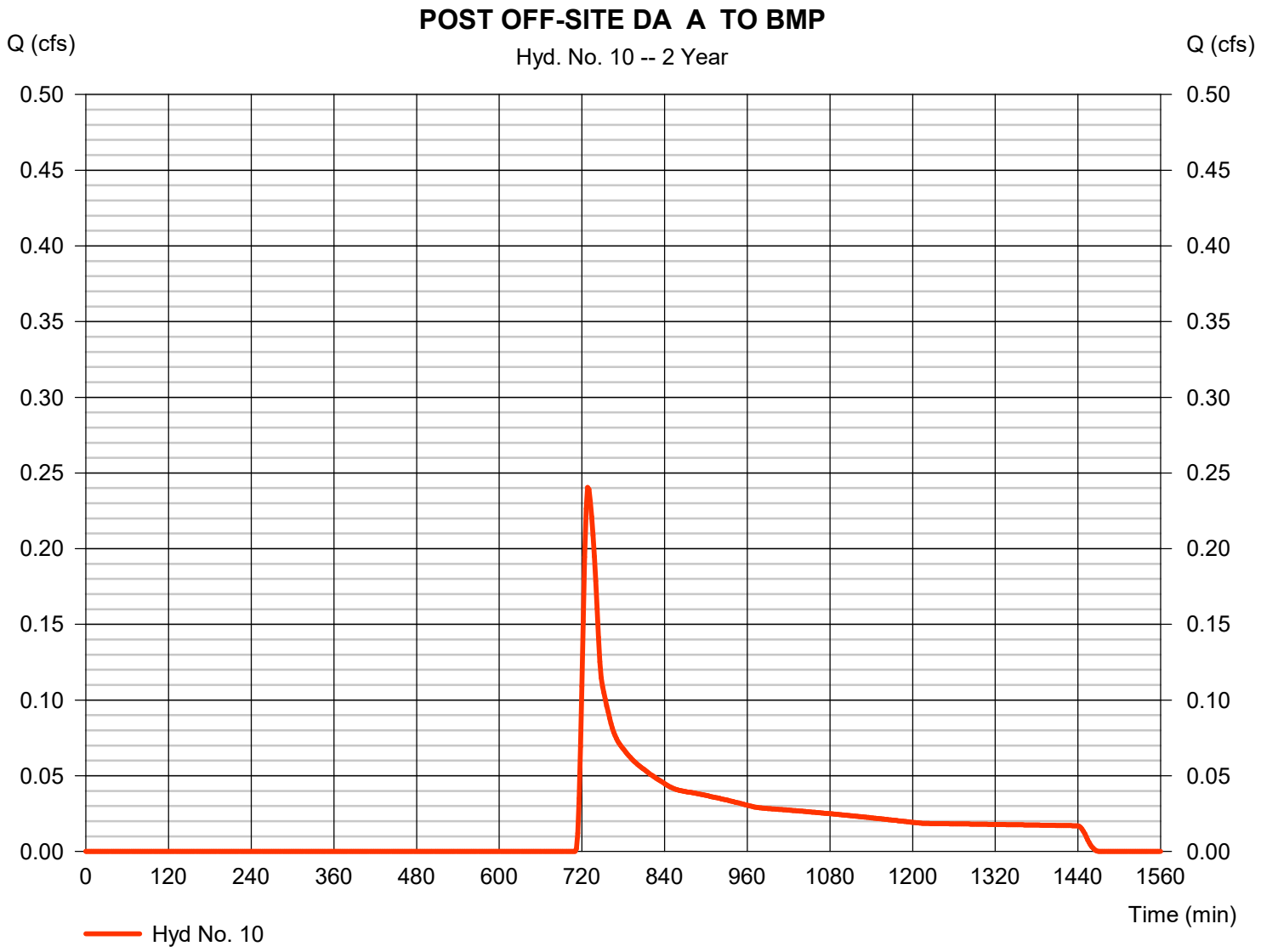
Hydrograph Report

Hyd. No. 10

POST OFF-SITE DA A TO BMP

Hydrograph type	= SCS Runoff	Peak discharge	= 0.240 cfs
Storm frequency	= 2 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 1,589 cuft
Drainage area	= 1.390 ac	Curve number	= 56*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 19.70 min
Total precip.	= 3.31 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.260 x 55) + (0.130 x 70)] / 1.390

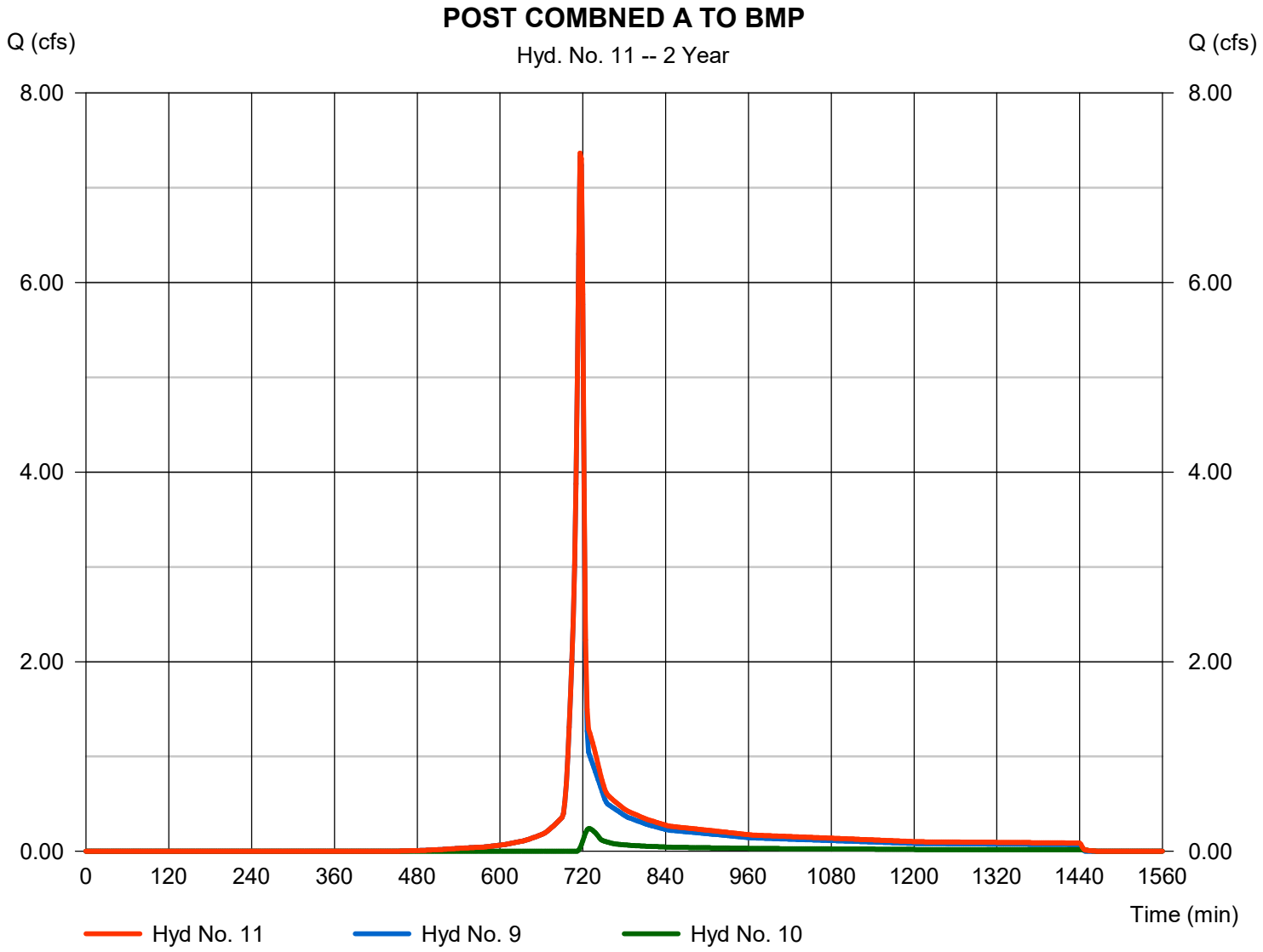


Hydrograph Report

Hyd. No. 11

POST COMBNED A TO BMP

Hydrograph type	=	Combine	Peak discharge	=	7.365 cfs
Storm frequency	=	2 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	16,462 cuft
Inflow hyds.	=	9, 10	Contrib. drain. area	=	3.750 ac



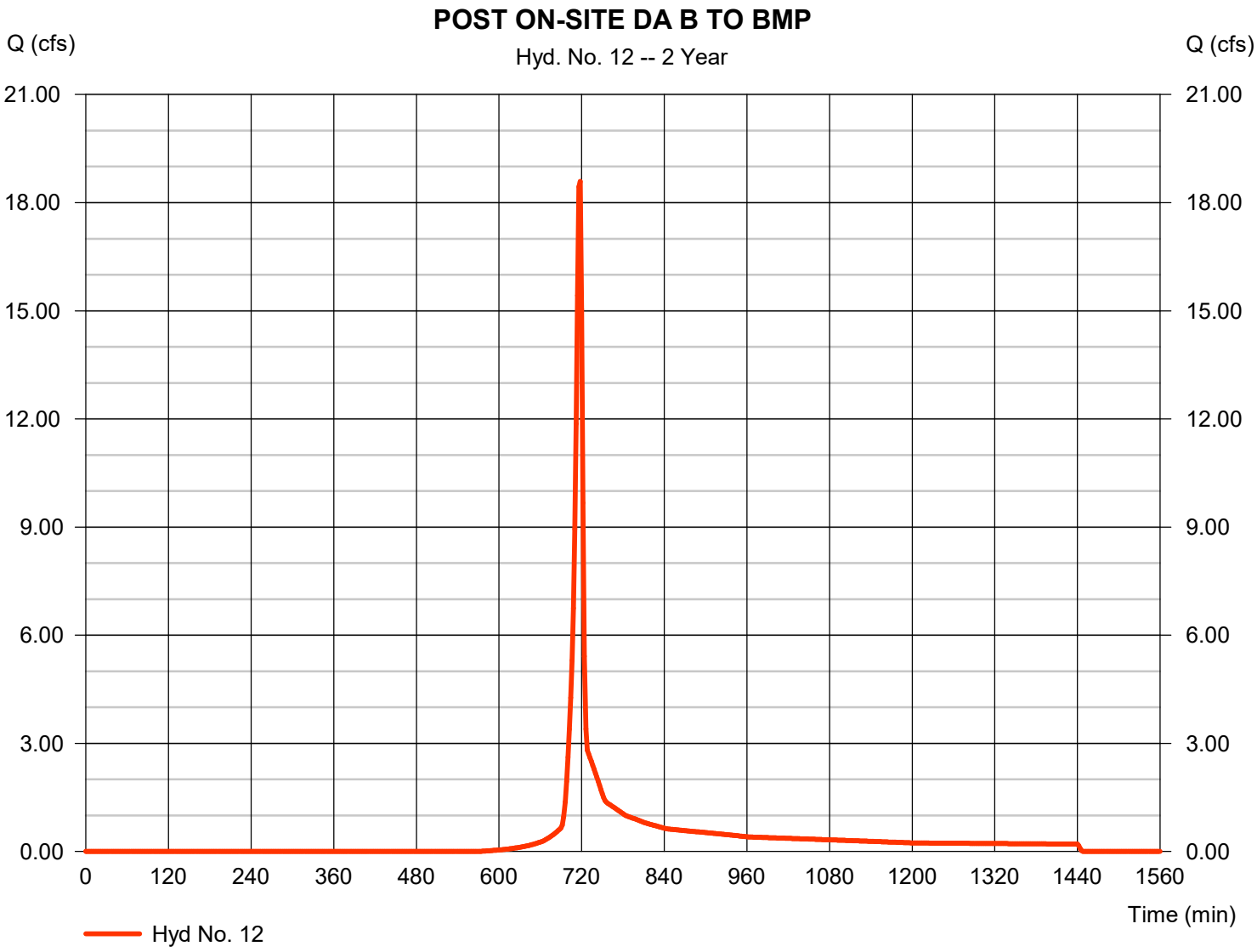
Hydrograph Report

Hyd. No. 12

POST ON-SITE DA B TO BMP

Hydrograph type	=	SCS Runoff	Peak discharge	=	18.59 cfs
Storm frequency	=	2 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	37,303 cuft
Drainage area	=	7.720 ac	Curve number	=	79*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.31 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(3.880 x 61) + (3.840 x 98)] / 7.720



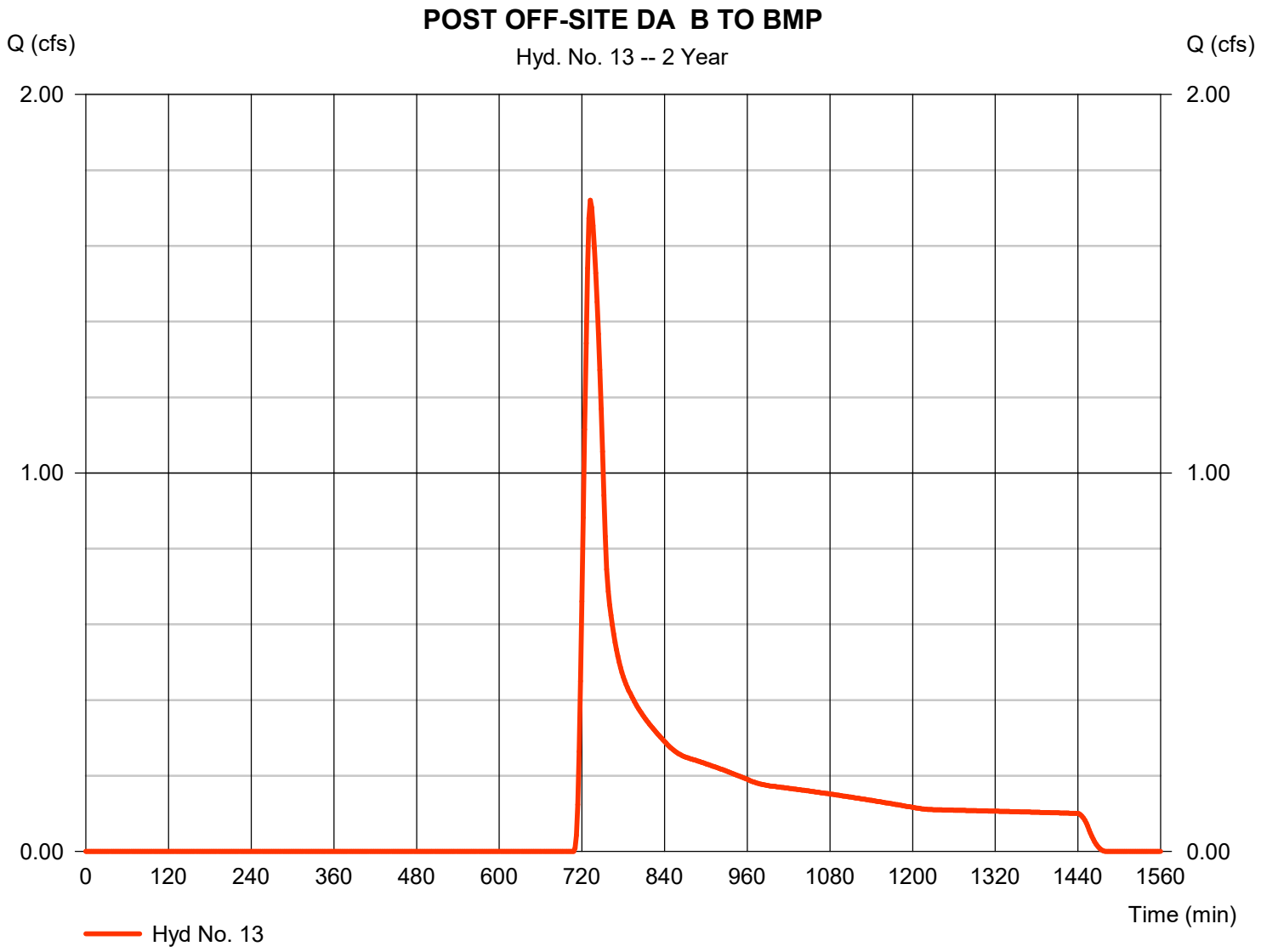
Hydrograph Report

Hyd. No. 13

POST OFF-SITE DA B TO BMP

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.720 cfs
Storm frequency	=	2 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	10,586 cuft
Drainage area	=	7.130 ac	Curve number	=	59*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	24.00 min
Total precip.	=	3.31 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(5.510 x 55) + (1.200 x 61) + (0.420 x 98)] / 7.130



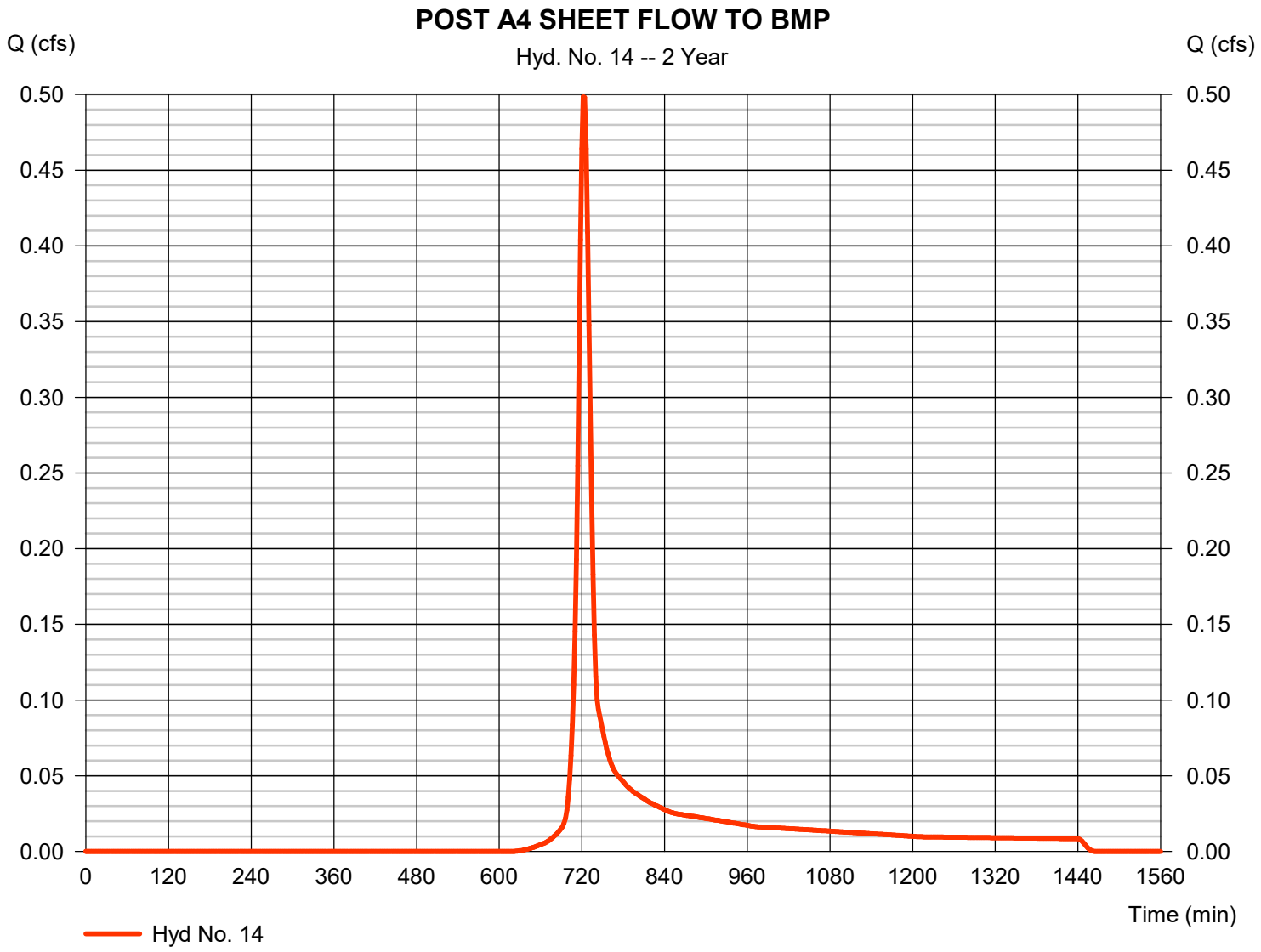
Hydrograph Report

Hyd. No. 14

POST A4 SHEET FLOW TO BMP

Hydrograph type	= SCS Runoff	Peak discharge	= 0.498 cfs
Storm frequency	= 2 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 1,436 cuft
Drainage area	= 0.330 ac	Curve number	= 76*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 13.80 min
Total precip.	= 3.31 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.200 x 61) + (0.130 x 98)] / 0.330

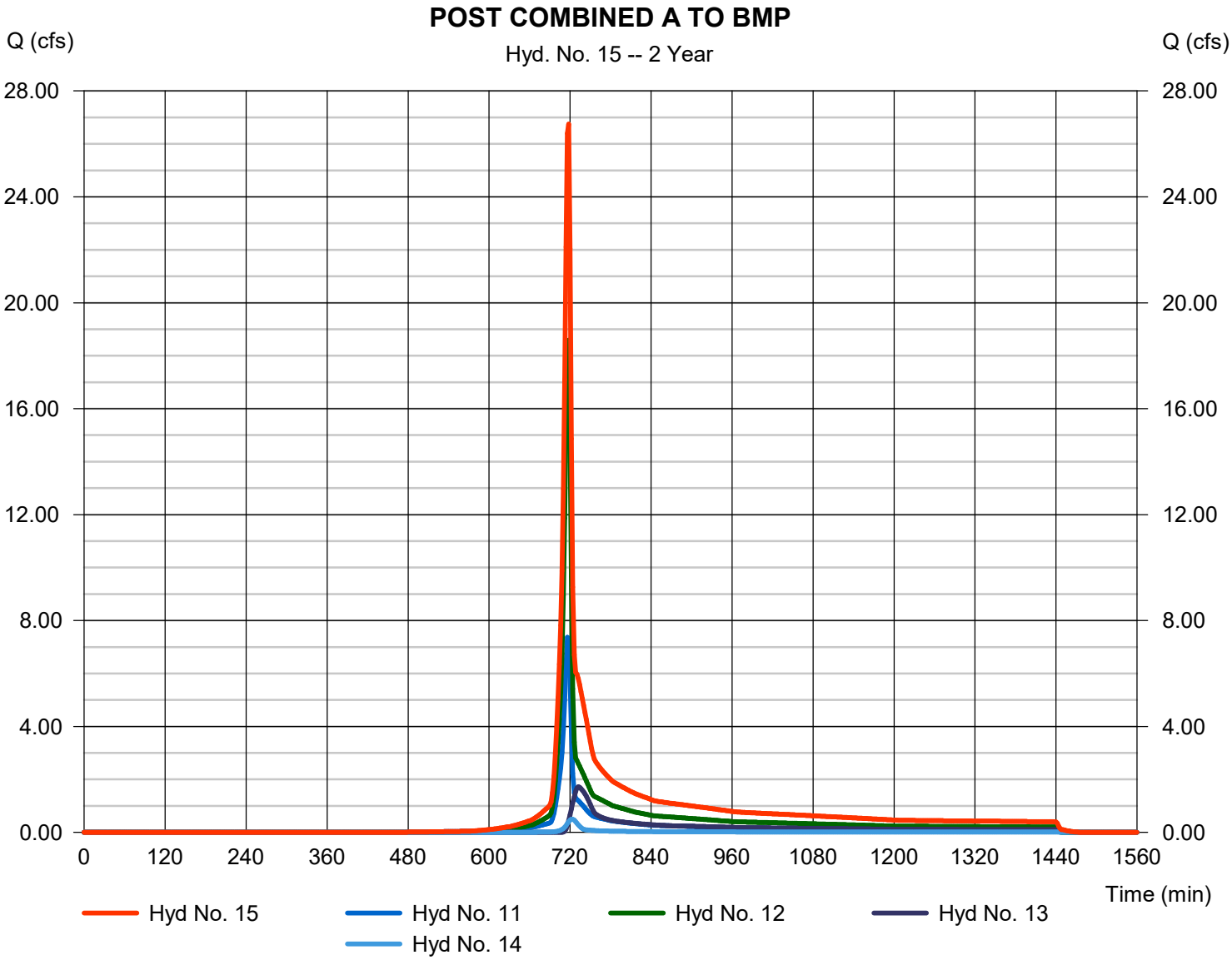


Hydrograph Report

Hyd. No. 15

POST COMBINED A TO BMP

Hydrograph type	=	Combine	Peak discharge	=	26.75 cfs
Storm frequency	=	2 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	65,788 cuft
Inflow hyds.	=	11, 12, 13, 14	Contrib. drain. area	=	15.180 ac



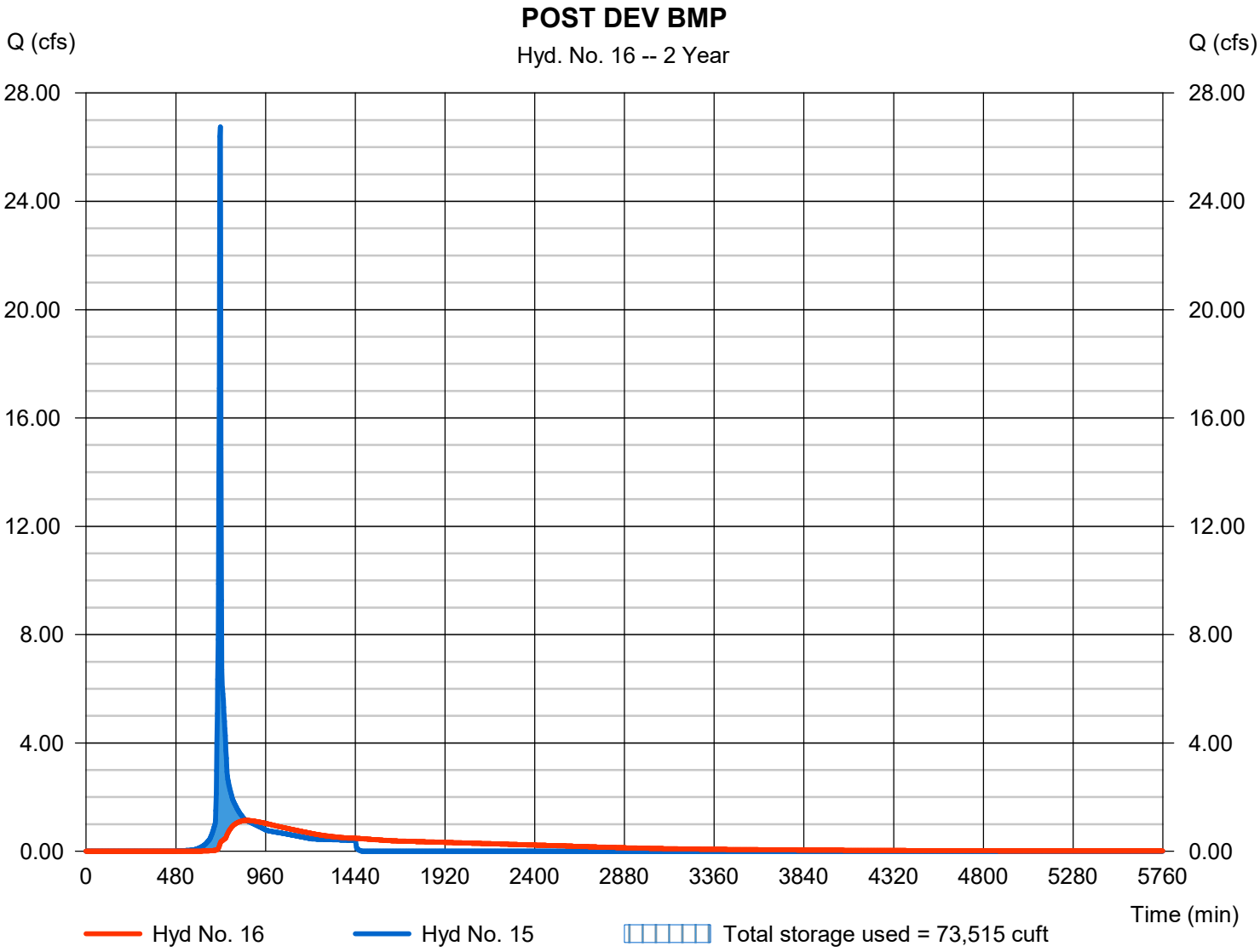
Hydrograph Report

Hyd. No. 16

POST DEV BMP

Hydrograph type	=	Reservoir	Peak discharge	=	1.139 cfs
Storm frequency	=	2 yrs	Time to peak	=	858 min
Time interval	=	2 min	Hyd. volume	=	65,327 cuft
Inflow hyd. No.	=	15 - POST COMBINED A TO BMP	Max. Elevation	=	383.41 ft
Reservoir name	=	WET POND	Max. Storage	=	73,515 cuft

Storage Indication method used. Wet pond routing start elevation = 382.00 ft.

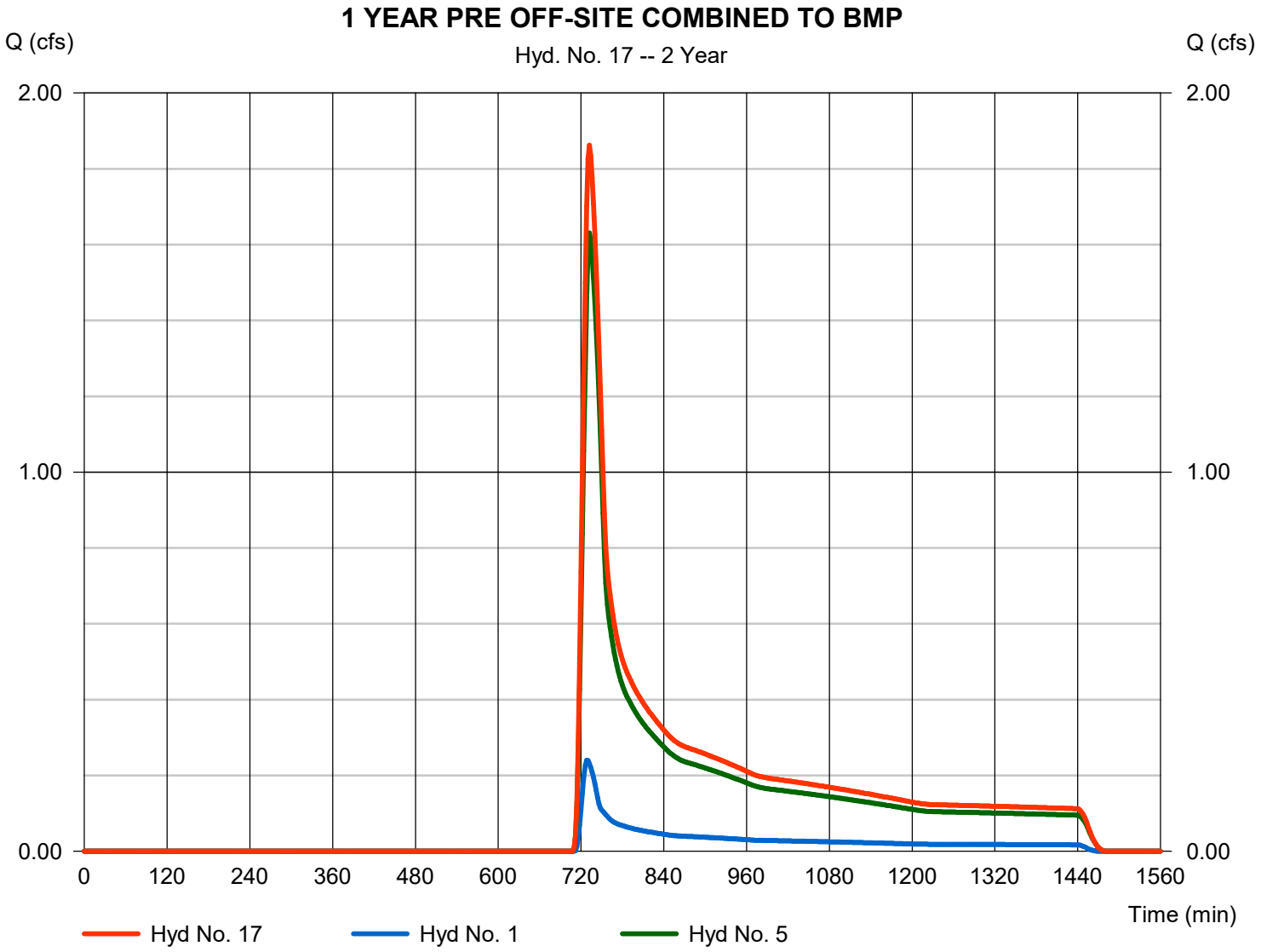


Hydrograph Report

Hyd. No. 17

1 YEAR PRE OFF-SITE COMBINED TO BMP

Hydrograph type	= Combine	Peak discharge	= 1.862 cfs
Storm frequency	= 2 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 11,626 cuft
Inflow hyds.	= 1, 5	Contrib. drain. area	= 8.150 ac

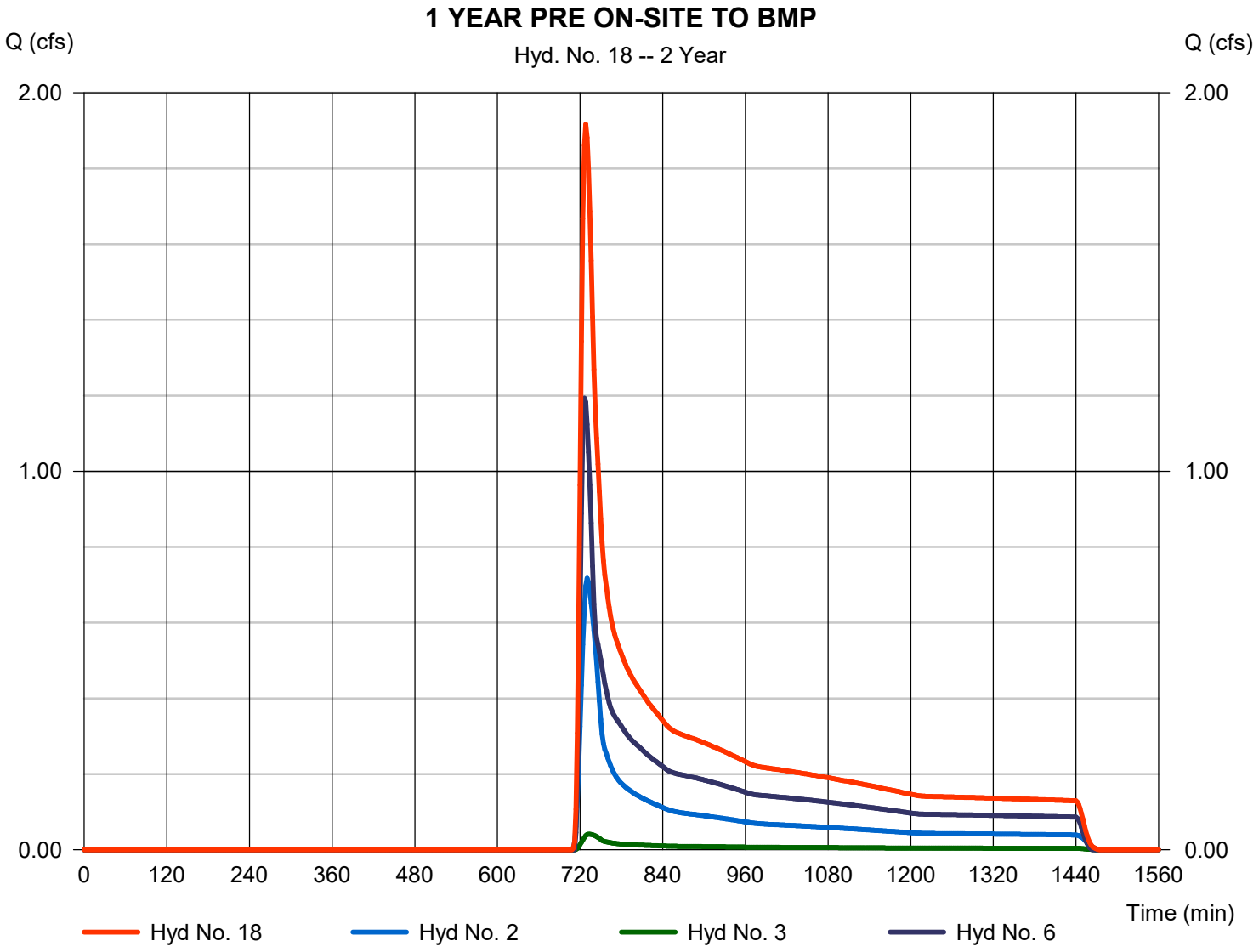


Hydrograph Report

Hyd. No. 18

1 YEAR PRE ON-SITE TO BMP

Hydrograph type	= Combine	Peak discharge	= 1.917 cfs
Storm frequency	= 2 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 12,226 cuft
Inflow hyds.	= 2, 3, 6	Contrib. drain. area	= 10.740 ac

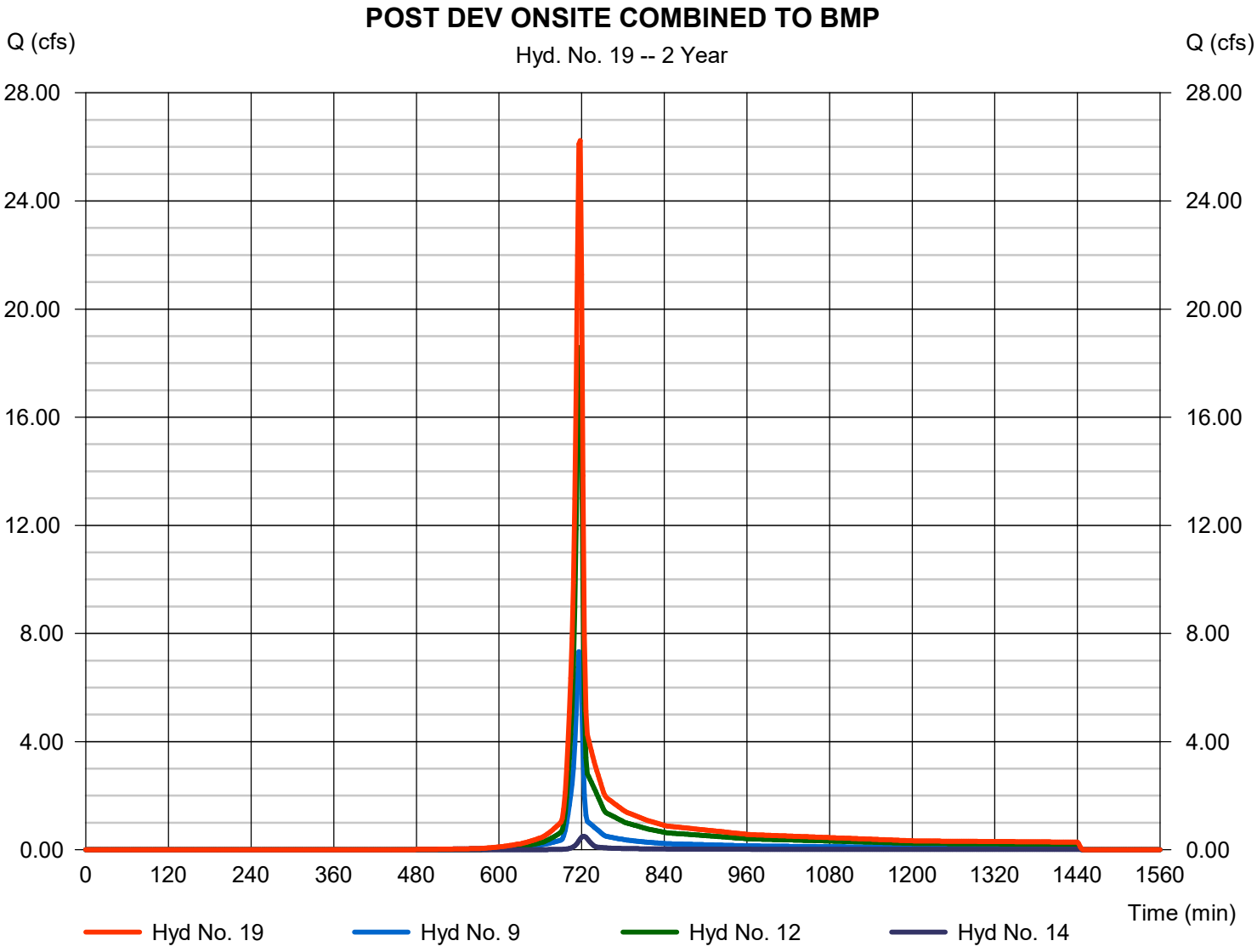


Hydrograph Report

Hyd. No. 19

POST DEV ONSITE COMBINED TO BMP

Hydrograph type	= Combine	Peak discharge	= 26.23 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 53,612 cuft
Inflow hyds.	= 9, 12, 14	Contrib. drain. area	= 10.410 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

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	1.413	2	726	5,281	------	------	------	PRE OFF-SITE A TO BMP
2	SCS Runoff	3.134	2	728	12,324	------	------	------	PRE-DEV A ON-SITE TO BMP
3	SCS Runoff	0.276	2	728	1,201	------	------	------	PRE A4 SHEET FLOW TO BMP
4	Combine	4.796	2	728	18,806	1, 2, 3	------	------	PRE-DEV A COMBINED TO BMP
5	SCS Runoff	7.124	2	730	29,952	------	------	------	PRE OFF-SITE DA B TO BMP
6	SCS Runoff	8.043	2	724	26,908	------	------	------	PRE-DEV ON-SITE B TO BMP
7	Combine	14.28	2	726	56,860	5, 6	------	------	PRE-DEV COMBINED B TO BMP
8	Combine	19.00	2	726	75,665	4, 7	------	------	PRE-DEV COMBINED TO BMP
9	SCS Runoff	13.08	2	716	27,124	------	------	------	POST ON-SITE DA A TO BMP
10	SCS Runoff	1.413	2	726	5,281	------	------	------	POST OFF-SITE DA A TO BMP
11	Combine	13.66	2	716	32,405	9, 10	------	------	POST COMBNED A TO BMP
12	SCS Runoff	36.38	2	716	73,832	------	------	------	POST ON-SITE DA B TO BMP
13	SCS Runoff	7.514	2	730	31,591	------	------	------	POST OFF-SITE DA B TO BMP
14	SCS Runoff	1.059	2	722	2,971	------	------	------	POST A4 SHEET FLOW TO BMP
15	Combine	53.88	2	718	140,799	11, 12, 13, 14	------	------	POST COMBINED A TO BMP
16	Reservoir	6.904	2	752	140,298	15	384.31	101,854	POST DEV BMP
17	Combine	8.422	2	730	35,233	1, 5,	------	------	1 YEAR PRE OFF-SITE COMBINED
18	Combine	11.10	2	724	40,433	2, 3, 6,	------	------	1 YEAR PRE ON-SITE TO BMP
19	Combine	50.21	2	716	103,927	9, 12, 14,	------	------	POST DEV ONSITE COMBINED TO

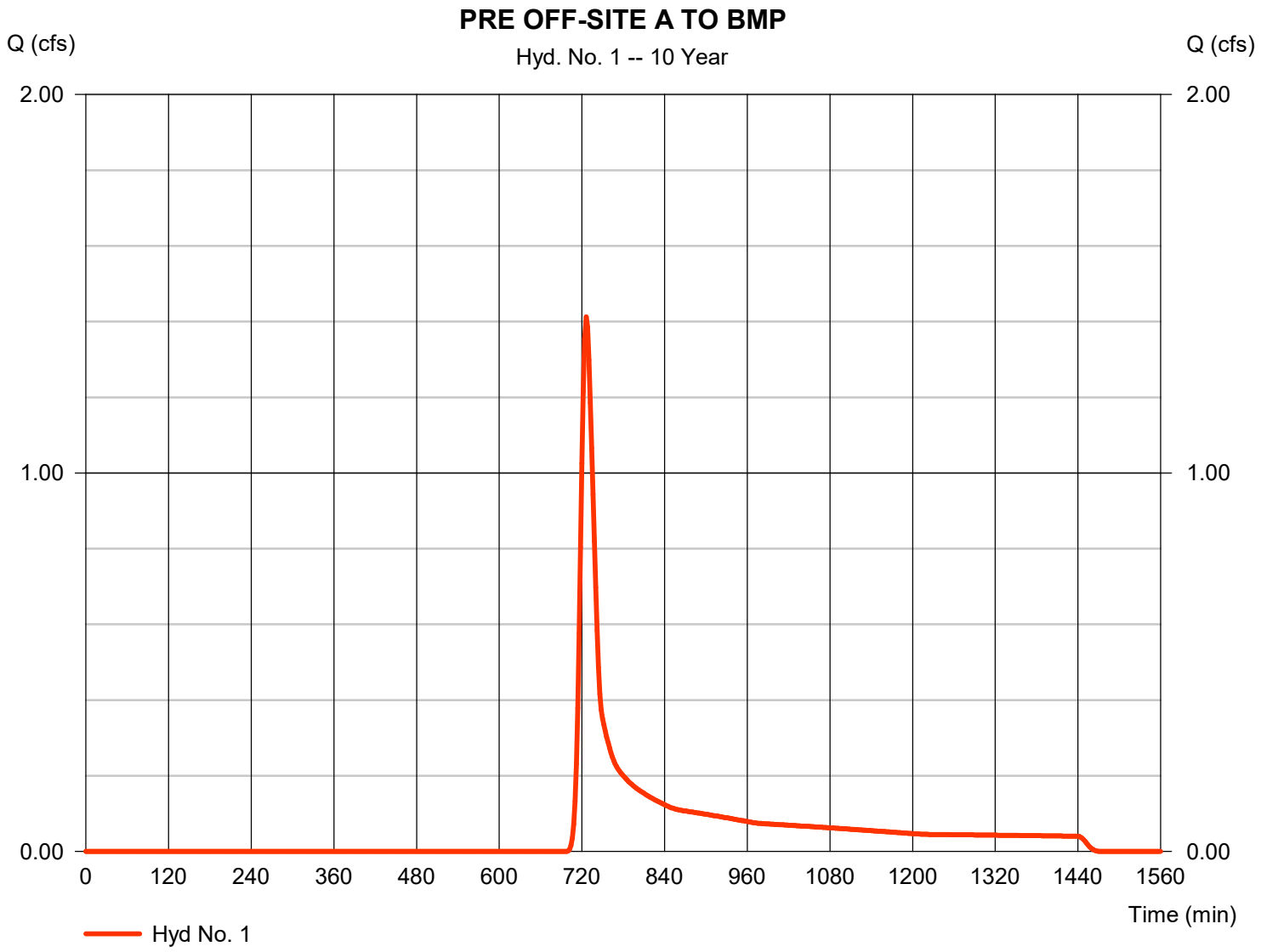
Hydrograph Report

Hyd. No. 1

PRE OFF-SITE A TO BMP

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.413 cfs
Storm frequency	=	10 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	5,281 cuft
Drainage area	=	1.390 ac	Curve number	=	56*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	19.70 min
Total precip.	=	5.01 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(3.310 x 55) + (6.750 x 68)] / 1.390

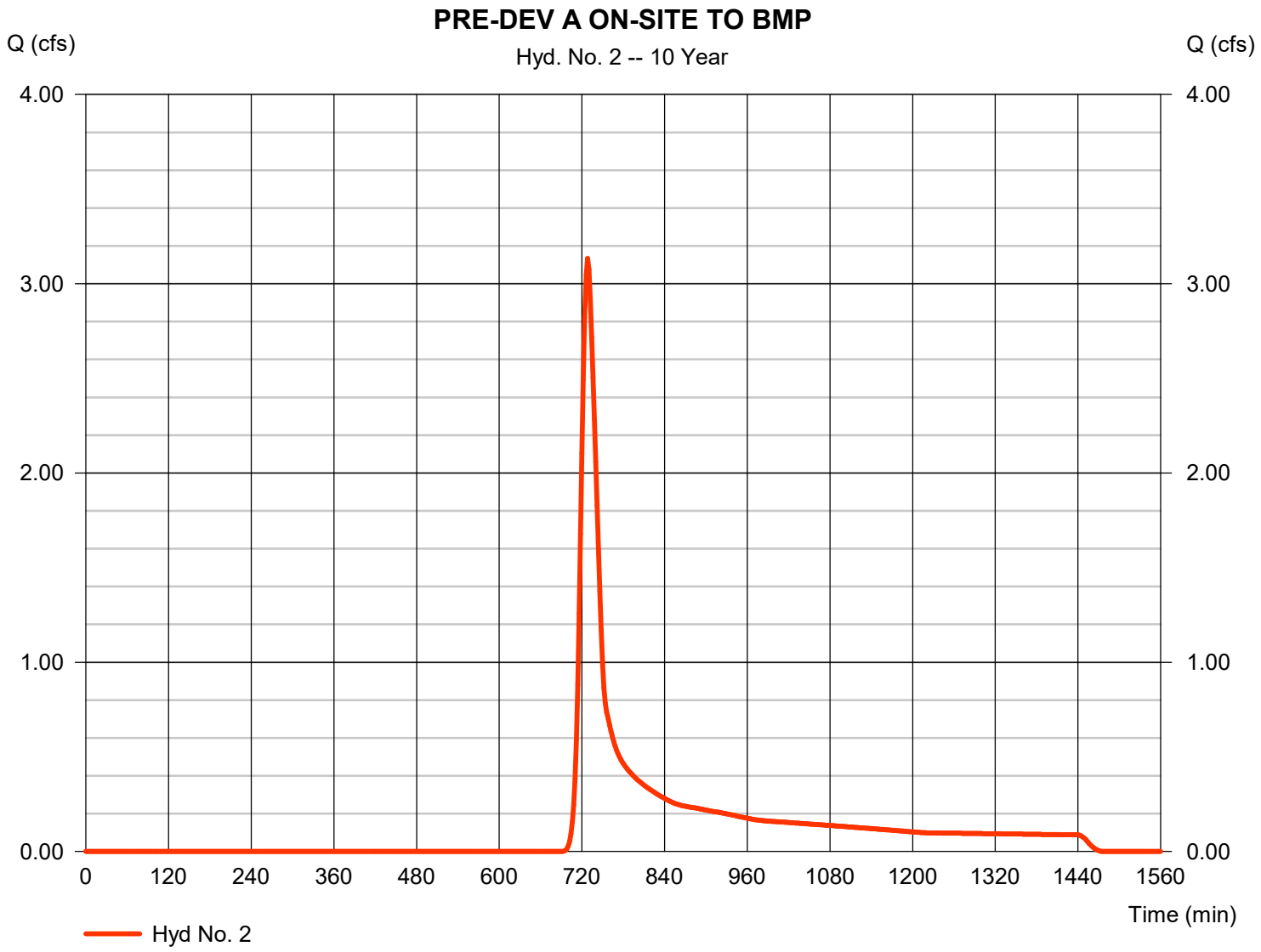


Hydrograph Report

Hyd. No. 2

PRE-DEV A ON-SITE TO BMP

Hydrograph type	= SCS Runoff	Peak discharge	= 3.134 cfs
Storm frequency	= 10 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 12,324 cuft
Drainage area	= 2.690 ac	Curve number	= 59
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 20.50 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

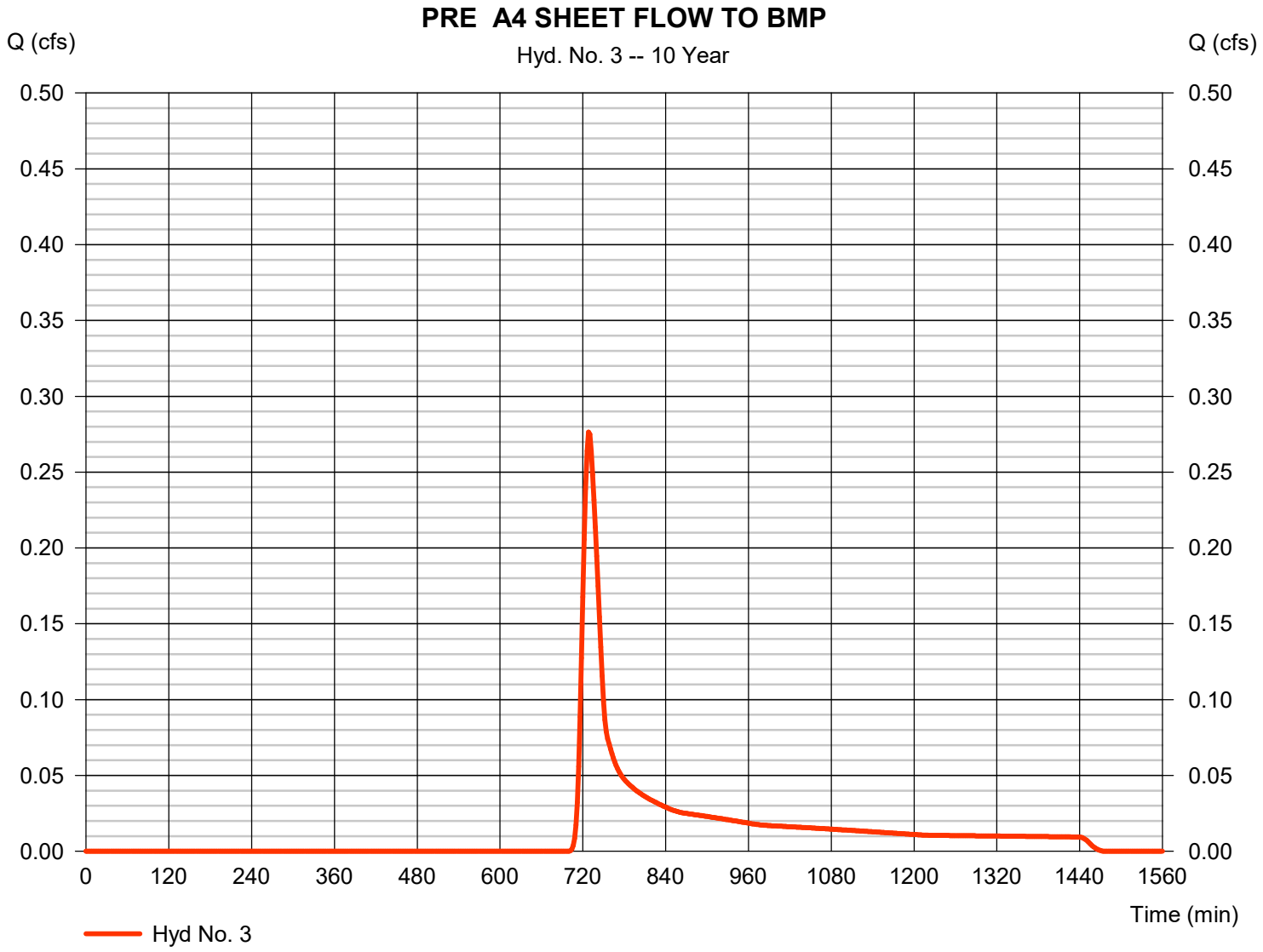


Hydrograph Report

Hyd. No. 3

PRE A4 SHEET FLOW TO BMP

Hydrograph type	= SCS Runoff	Peak discharge	= 0.276 cfs
Storm frequency	= 10 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 1,201 cuft
Drainage area	= 0.330 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 20.40 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

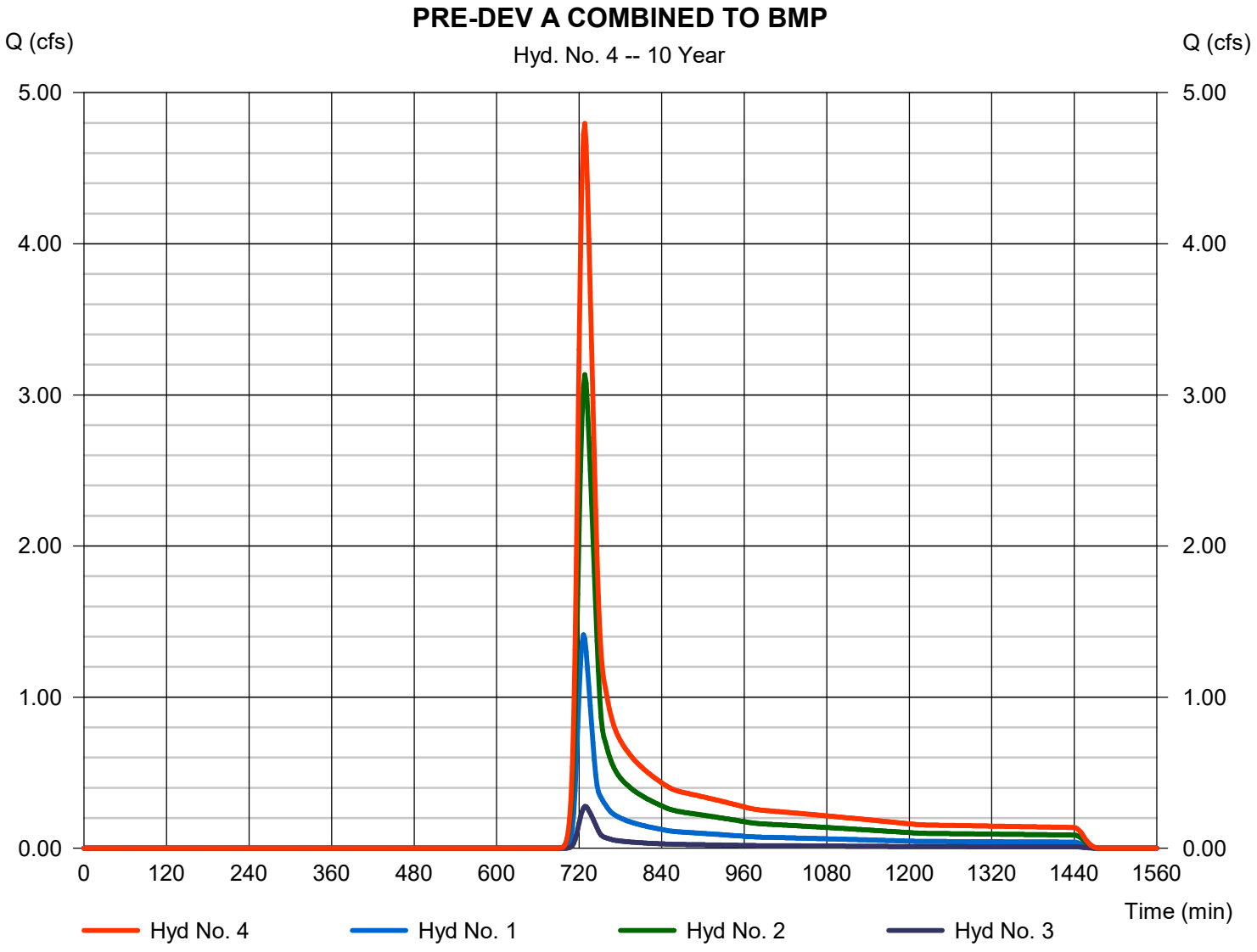


Hydrograph Report

Hyd. No. 4

PRE-DEV A COMBINED TO BMP

Hydrograph type	=	Combine	Peak discharge	=	4.796 cfs
Storm frequency	=	10 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	18,806 cuft
Inflow hyds.	=	1, 2, 3	Contrib. drain. area	=	4.410 ac



Hydrograph Report

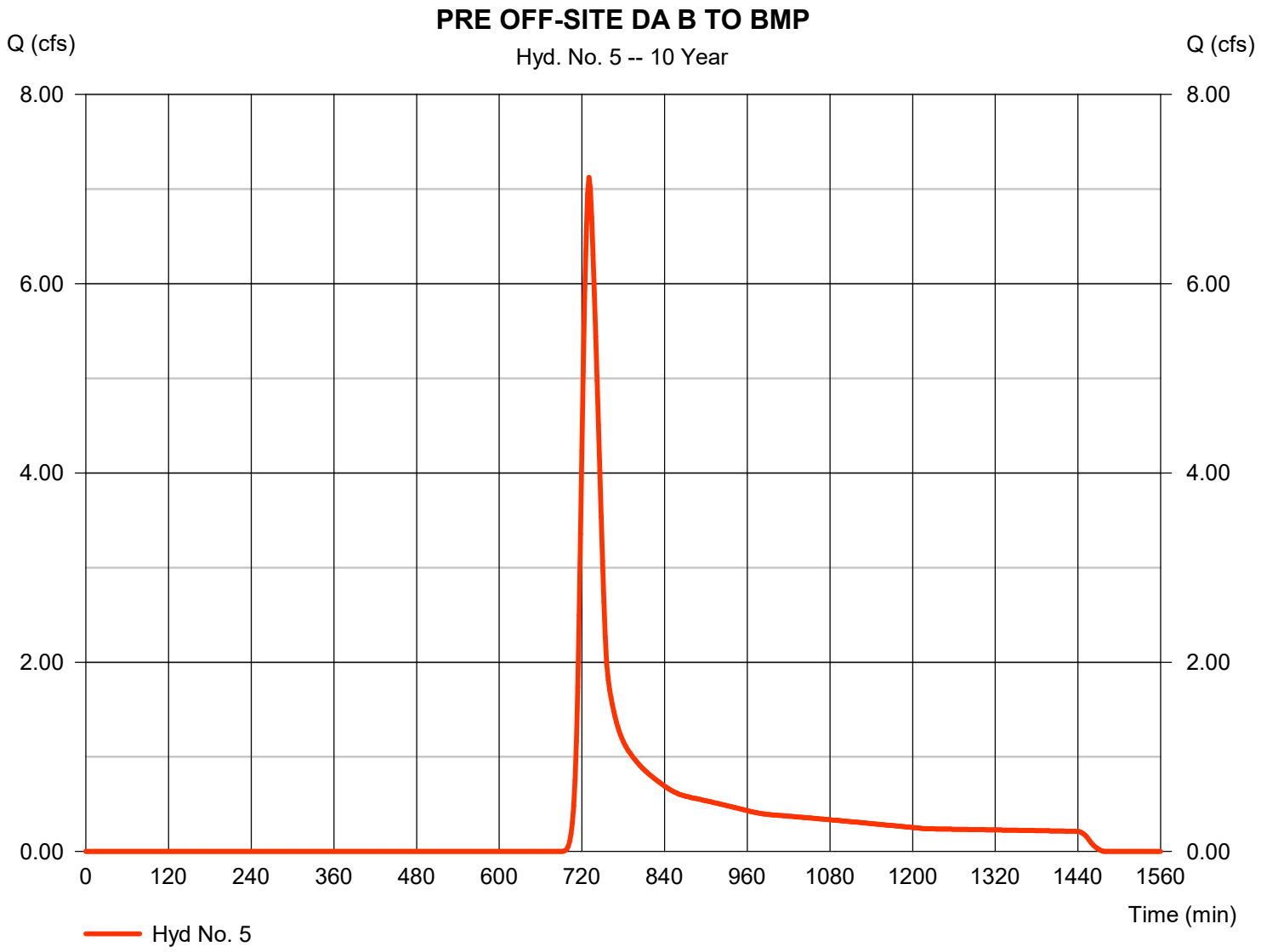
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Wednesday, 02 / 4 / 2026

Hyd. No. 5

PRE OFF-SITE DA B TO BMP

Hydrograph type	= SCS Runoff	Peak discharge	= 7.124 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 29,952 cuft
Drainage area	= 6.760 ac	Curve number	= 59*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 24.00 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(5.510 x 55) + (1.200 x 61) + (0.420 x 98)] / 6.760

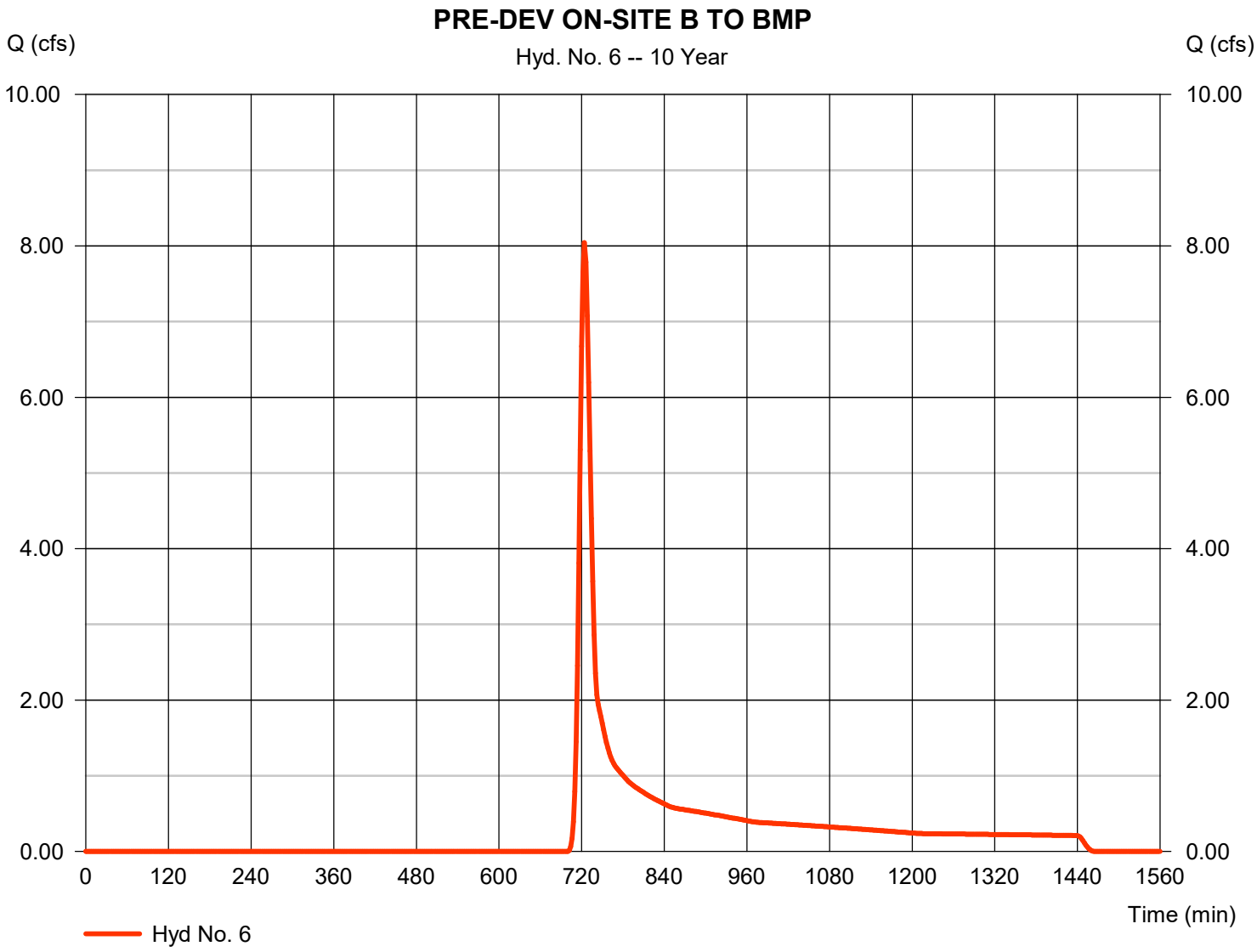


Hydrograph Report

Hyd. No. 6

PRE-DEV ON-SITE B TO BMP

Hydrograph type	=	SCS Runoff	Peak discharge	=	8.043 cfs
Storm frequency	=	10 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	26,908 cuft
Drainage area	=	7.720 ac	Curve number	=	55
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	16.10 min
Total precip.	=	5.01 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

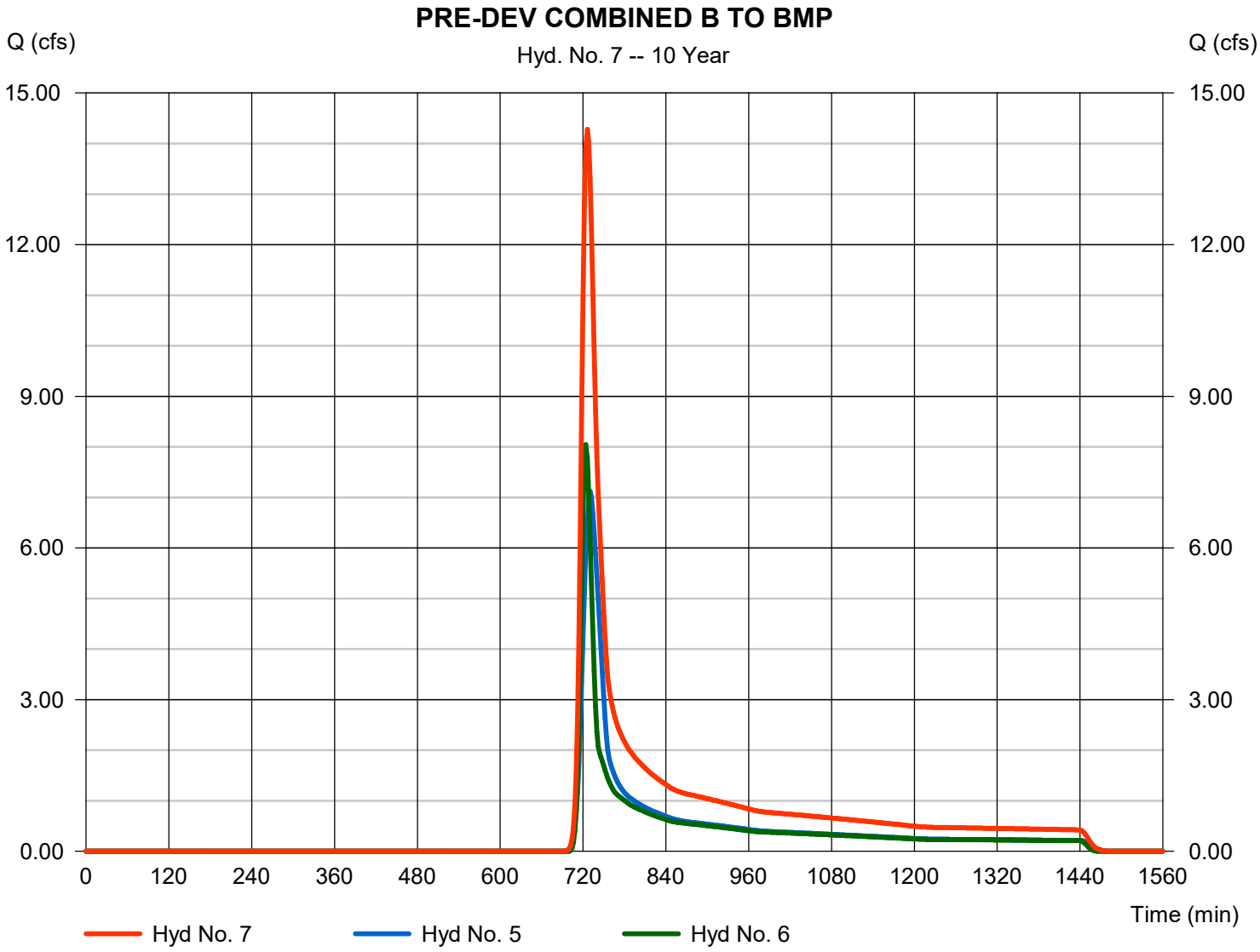


Hydrograph Report

Hyd. No. 7

PRE-DEV COMBINED B TO BMP

Hydrograph type	= Combine	Peak discharge	= 14.28 cfs
Storm frequency	= 10 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 56,860 cuft
Inflow hyds.	= 5, 6	Contrib. drain. area	= 14.480 ac

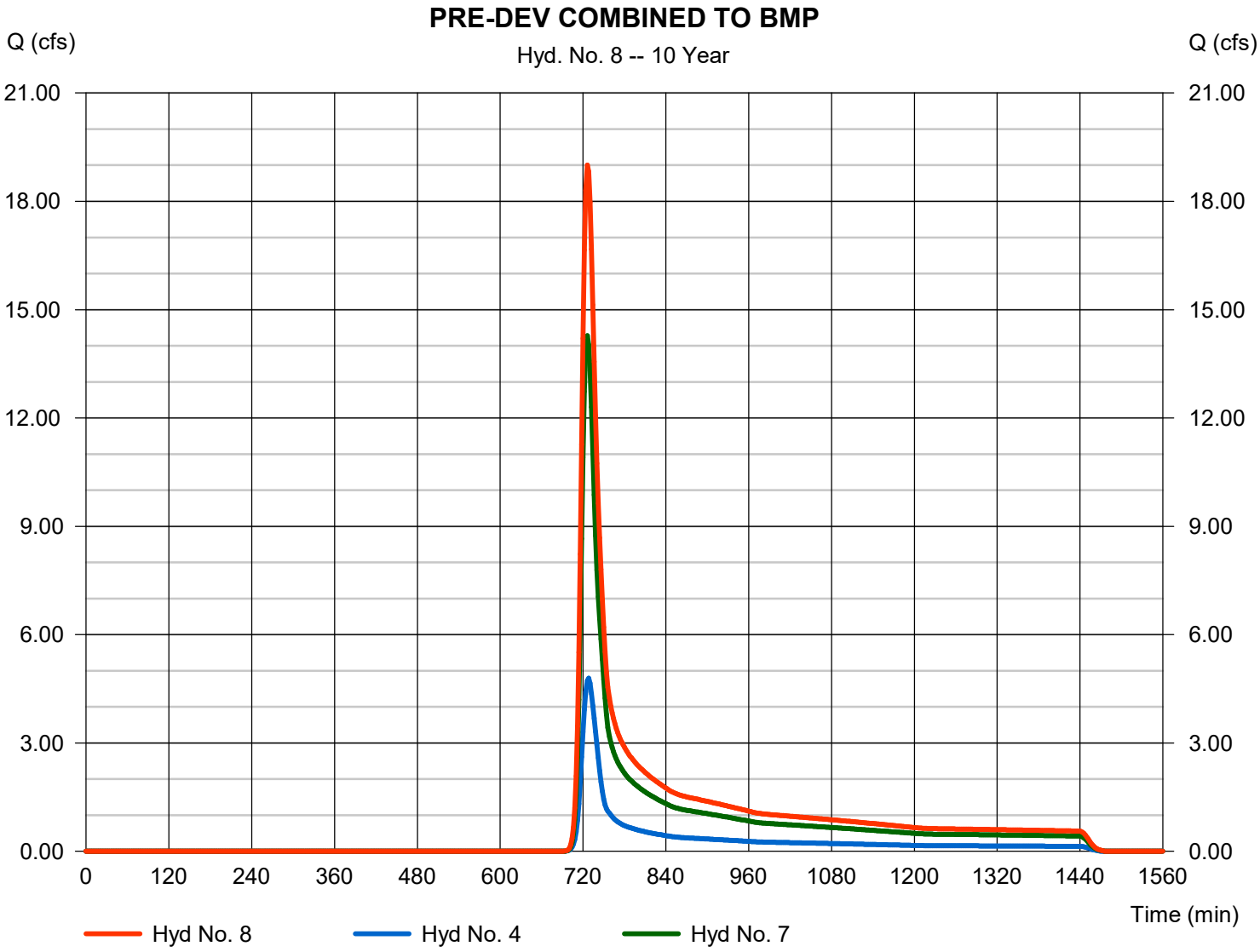


Hydrograph Report

Hyd. No. 8

PRE-DEV COMBINED TO BMP

Hydrograph type	= Combine	Peak discharge	= 19.00 cfs
Storm frequency	= 10 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 75,665 cuft
Inflow hyds.	= 4, 7	Contrib. drain. area	= 0.000 ac



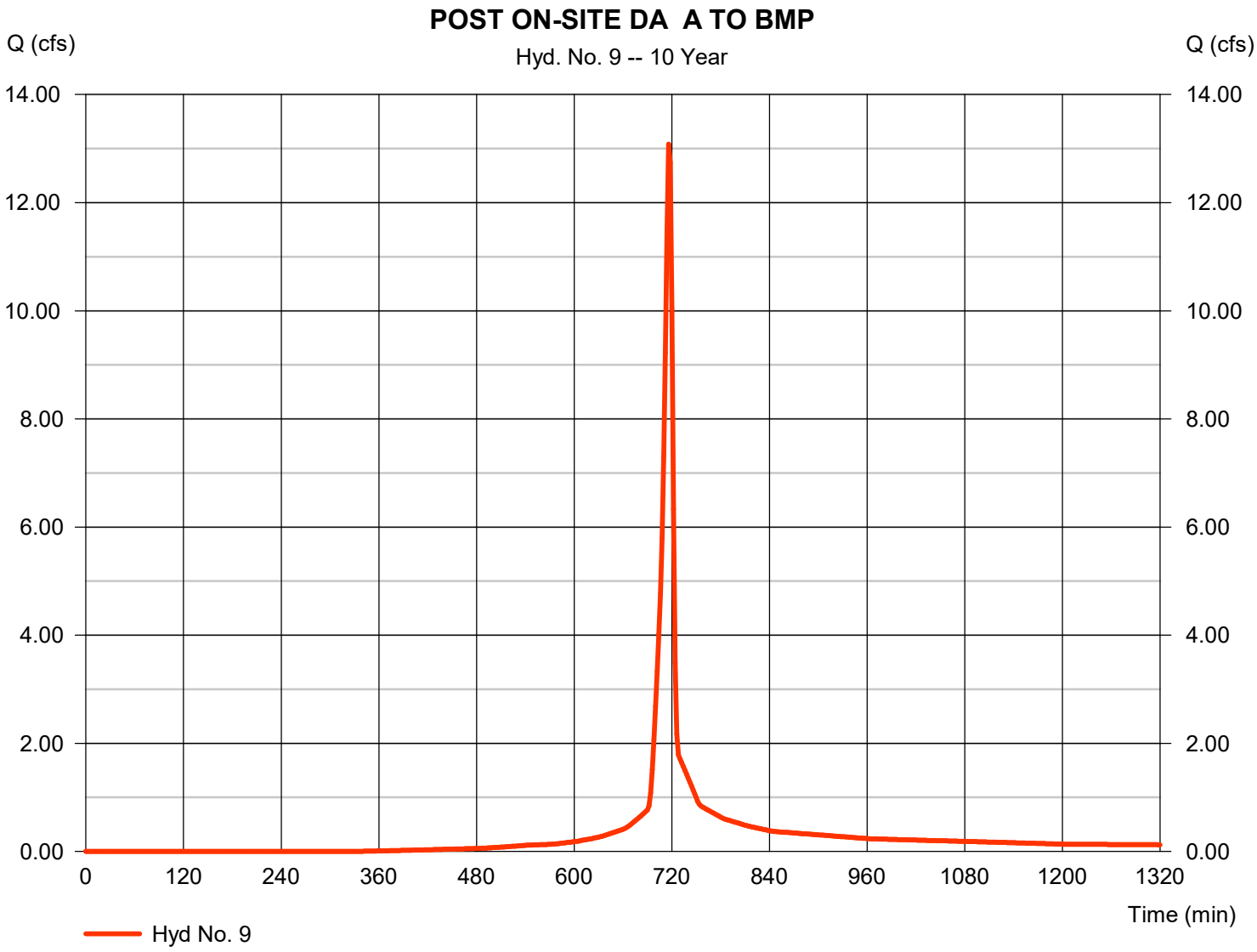
Hydrograph Report

Hyd. No. 9

POST ON-SITE DA A TO BMP

Hydrograph type	=	SCS Runoff	Peak discharge	=	13.08 cfs
Storm frequency	=	10 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	27,124 cuft
Drainage area	=	2.360 ac	Curve number	=	85*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.01 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.720 x 61) + (0.940 x 98) + (0.150 x 74) + (0.550 x 98)] / 2.360



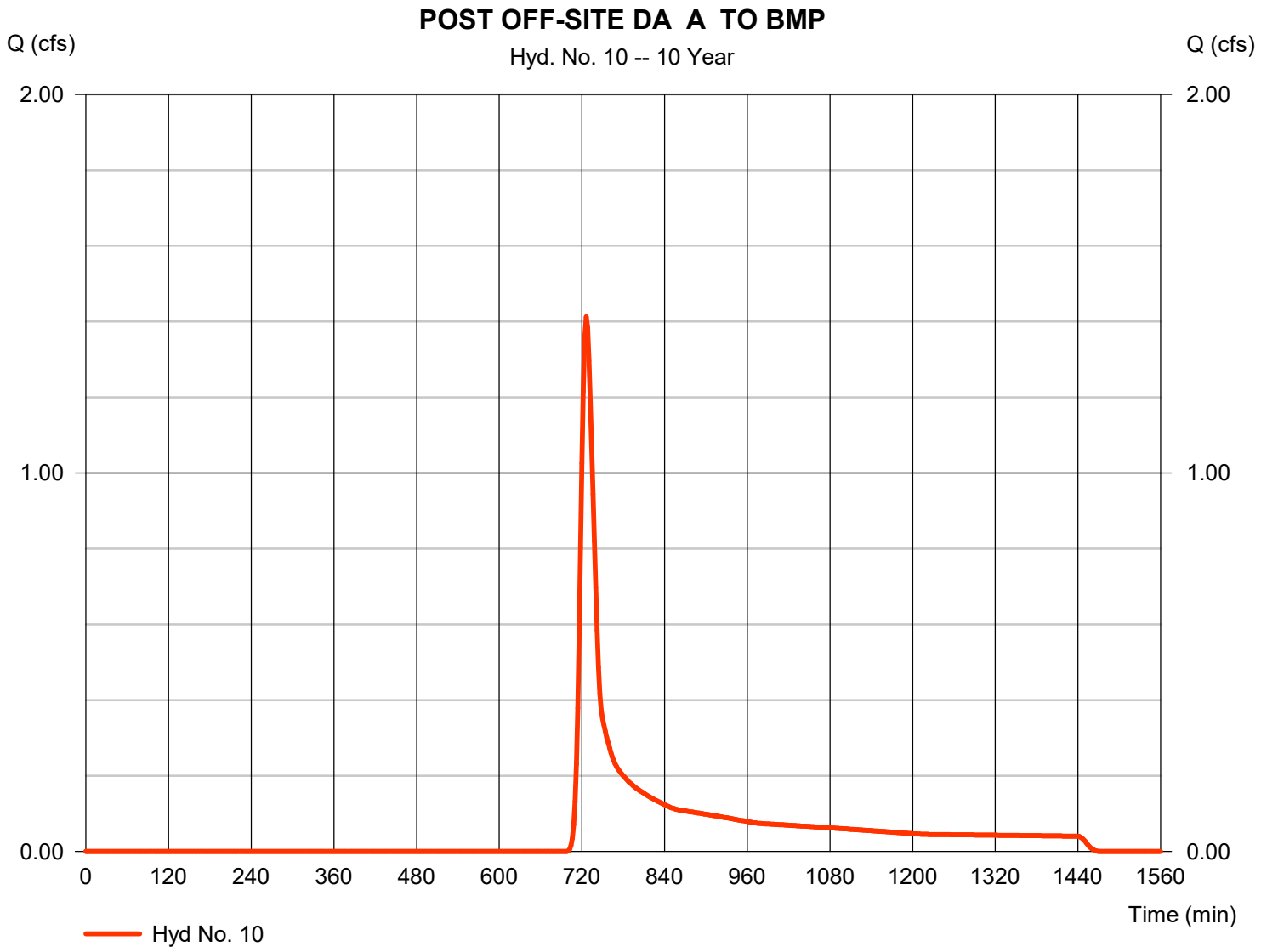
Hydrograph Report

Hyd. No. 10

POST OFF-SITE DA A TO BMP

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.413 cfs
Storm frequency	=	10 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	5,281 cuft
Drainage area	=	1.390 ac	Curve number	=	56*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	19.70 min
Total precip.	=	5.01 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(1.260 x 55) + (0.130 x 70)] / 1.390

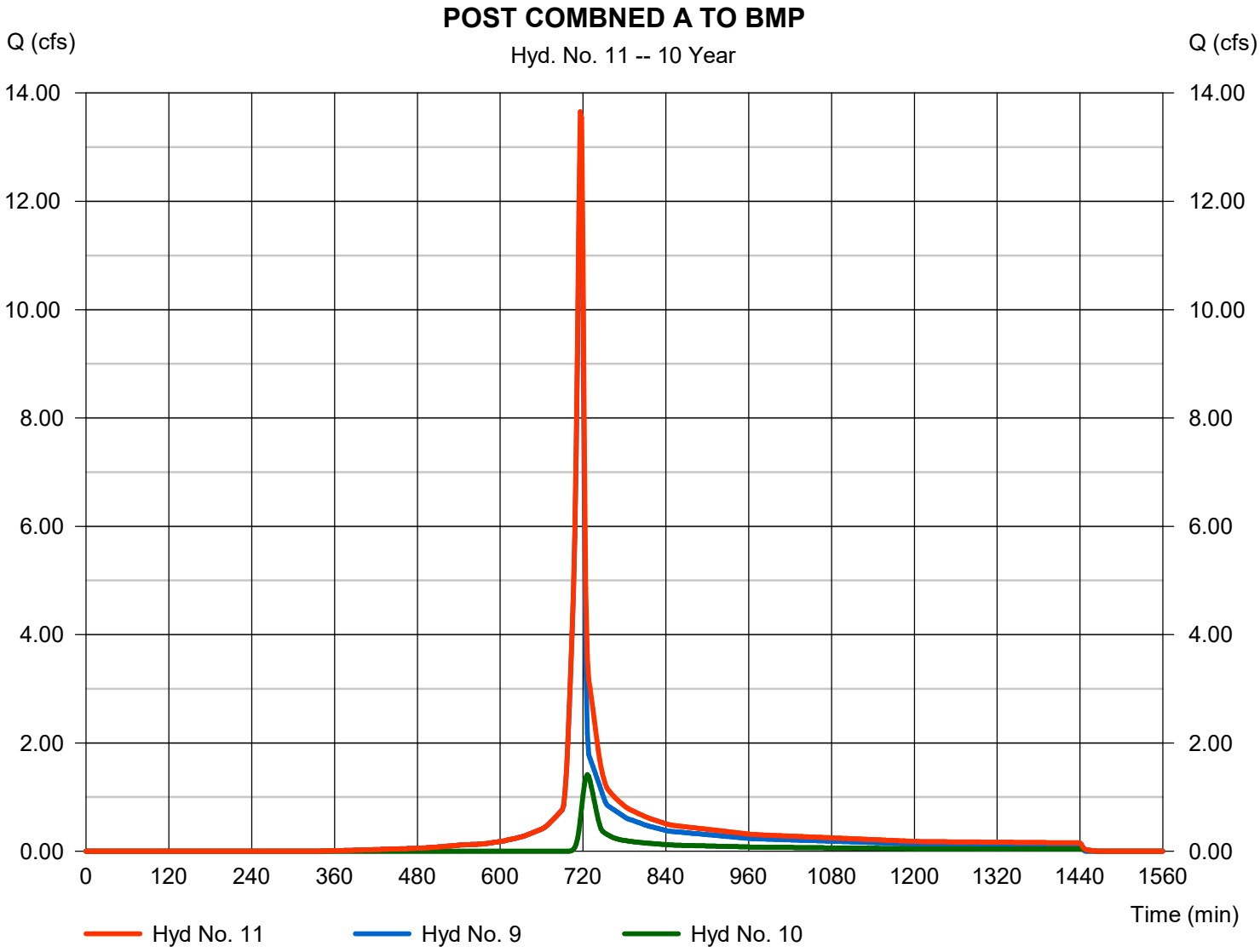


Hydrograph Report

Hyd. No. 11

POST COMBNED A TO BMP

Hydrograph type	=	Combine	Peak discharge	=	13.66 cfs
Storm frequency	=	10 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	32,405 cuft
Inflow hyds.	=	9, 10	Contrib. drain. area	=	3.750 ac



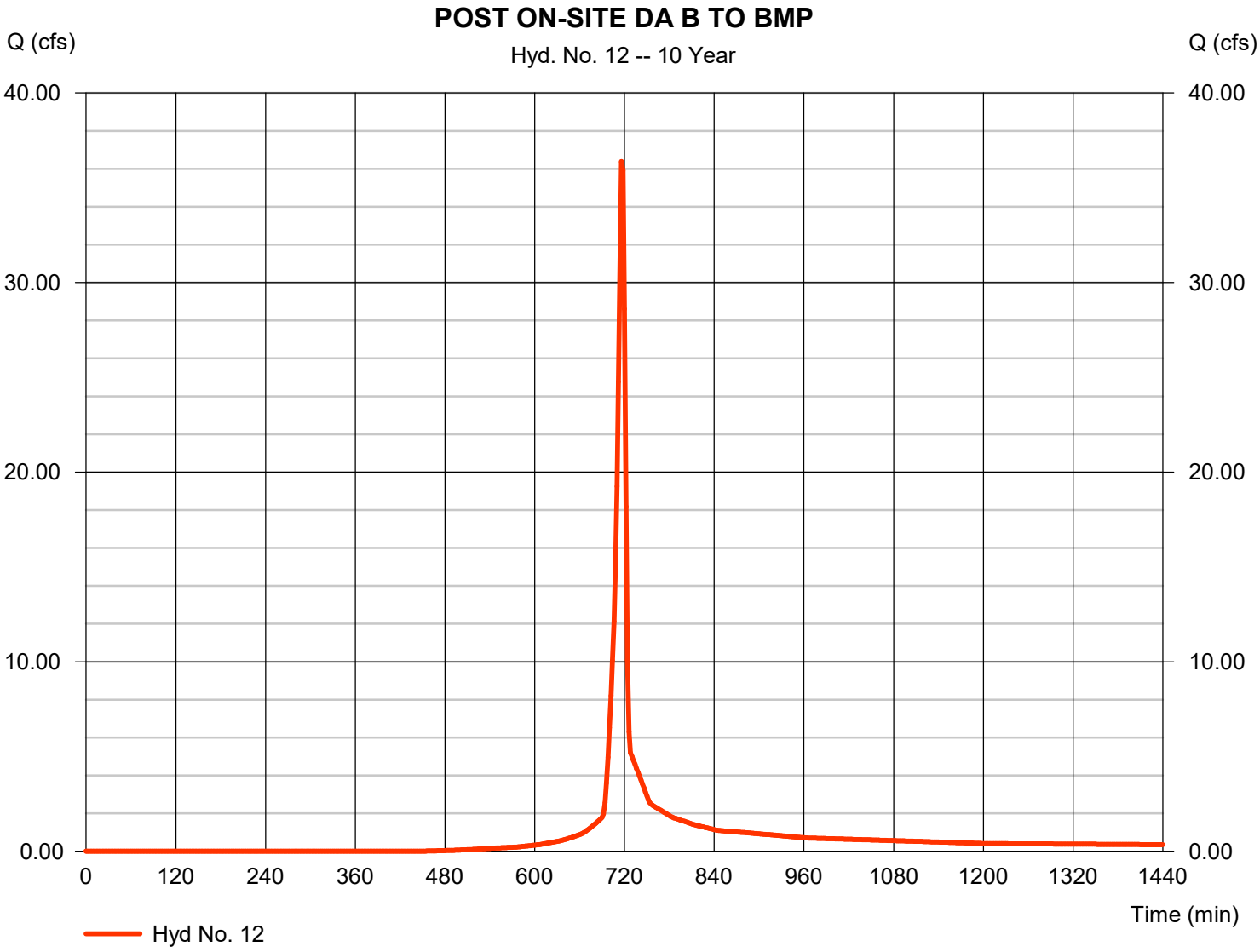
Hydrograph Report

Hyd. No. 12

POST ON-SITE DA B TO BMP

Hydrograph type	=	SCS Runoff	Peak discharge	=	36.38 cfs
Storm frequency	=	10 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	73,832 cuft
Drainage area	=	7.720 ac	Curve number	=	79*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.01 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(3.880 x 61) + (3.840 x 98)] / 7.720



Hydrograph Report

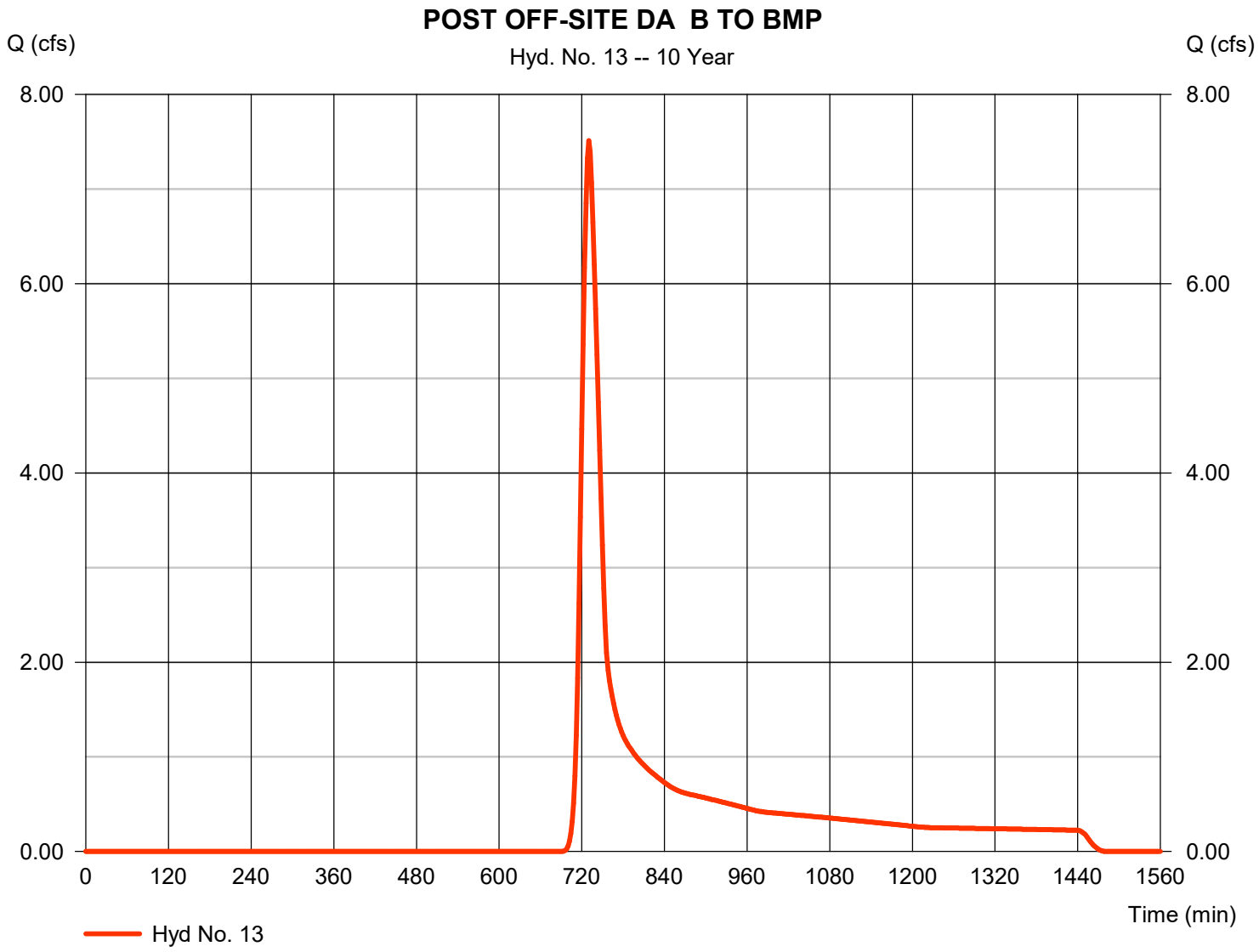
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Wednesday, 02 / 4 / 2026

Hyd. No. 13

POST OFF-SITE DA B TO BMP

Hydrograph type	= SCS Runoff	Peak discharge	= 7.514 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 31,591 cuft
Drainage area	= 7.130 ac	Curve number	= 59*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 24.00 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(5.510 x 55) + (1.200 x 61) + (0.420 x 98)] / 7.130



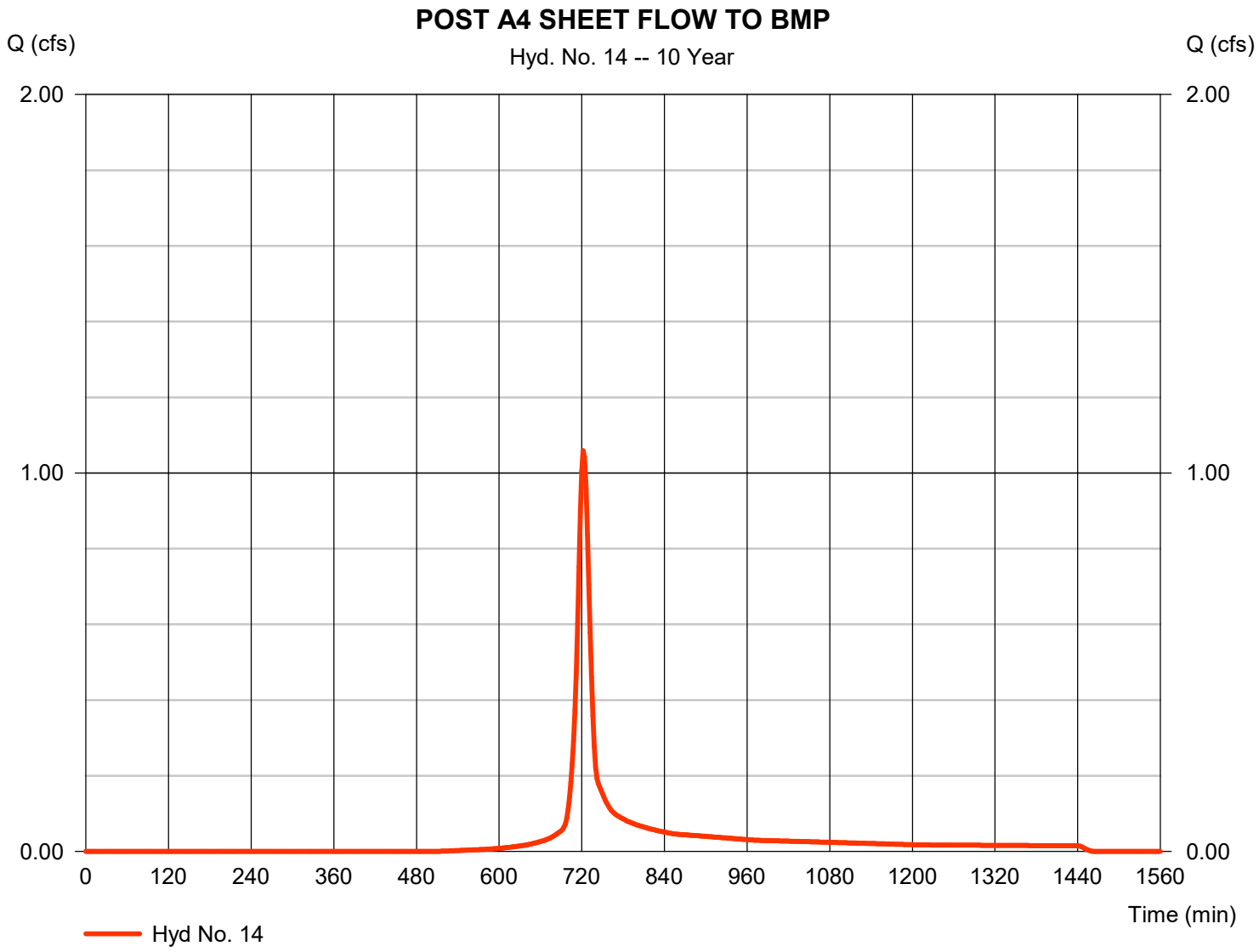
Hydrograph Report

Hyd. No. 14

POST A4 SHEET FLOW TO BMP

Hydrograph type	= SCS Runoff	Peak discharge	= 1.059 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 2,971 cuft
Drainage area	= 0.330 ac	Curve number	= 76*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 13.80 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.200 x 61) + (0.130 x 98)] / 0.330

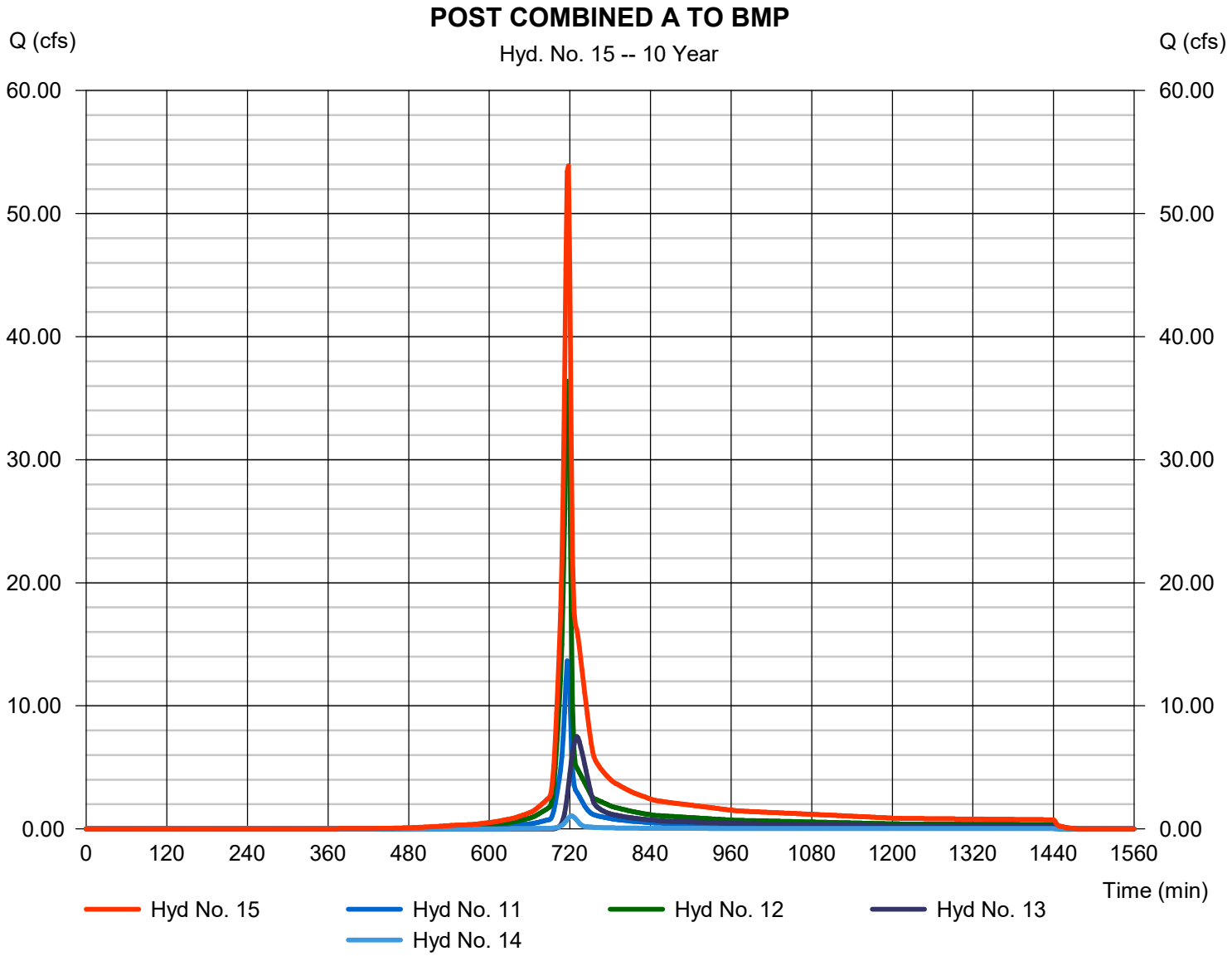


Hydrograph Report

Hyd. No. 15

POST COMBINED A TO BMP

Hydrograph type	=	Combine	Peak discharge	=	53.88 cfs
Storm frequency	=	10 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	140,799 cuft
Inflow hyds.	=	11, 12, 13, 14	Contrib. drain. area	=	15.180 ac



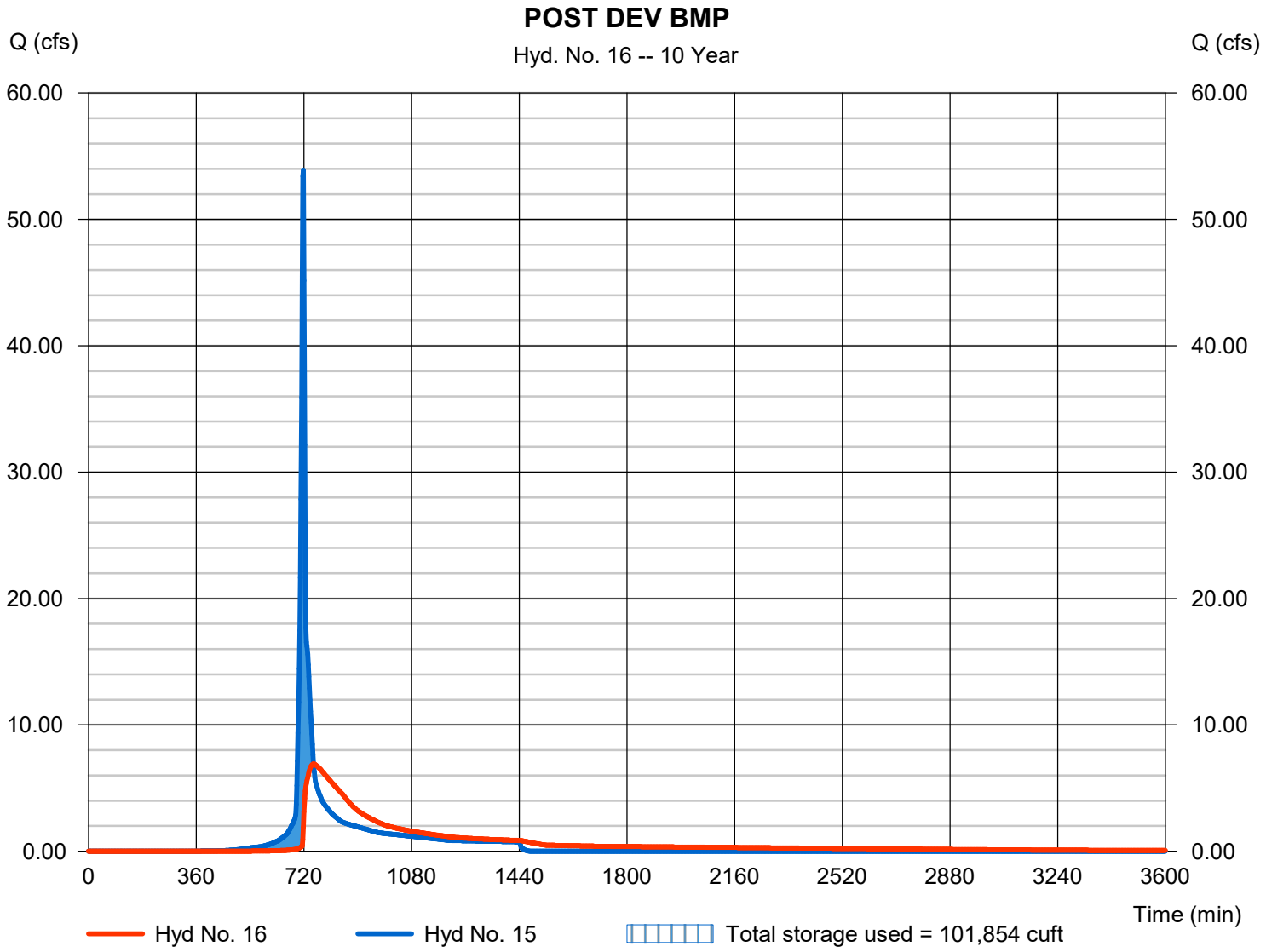
Hydrograph Report

Hyd. No. 16

POST DEV BMP

Hydrograph type	= Reservoir	Peak discharge	= 6.904 cfs
Storm frequency	= 10 yrs	Time to peak	= 752 min
Time interval	= 2 min	Hyd. volume	= 140,298 cuft
Inflow hyd. No.	= 15 - POST COMBINED A TO BMP	Max. Elevation	= 384.31 ft
Reservoir name	= WET POND	Max. Storage	= 101,854 cuft

Storage Indication method used. Wet pond routing start elevation = 382.00 ft.

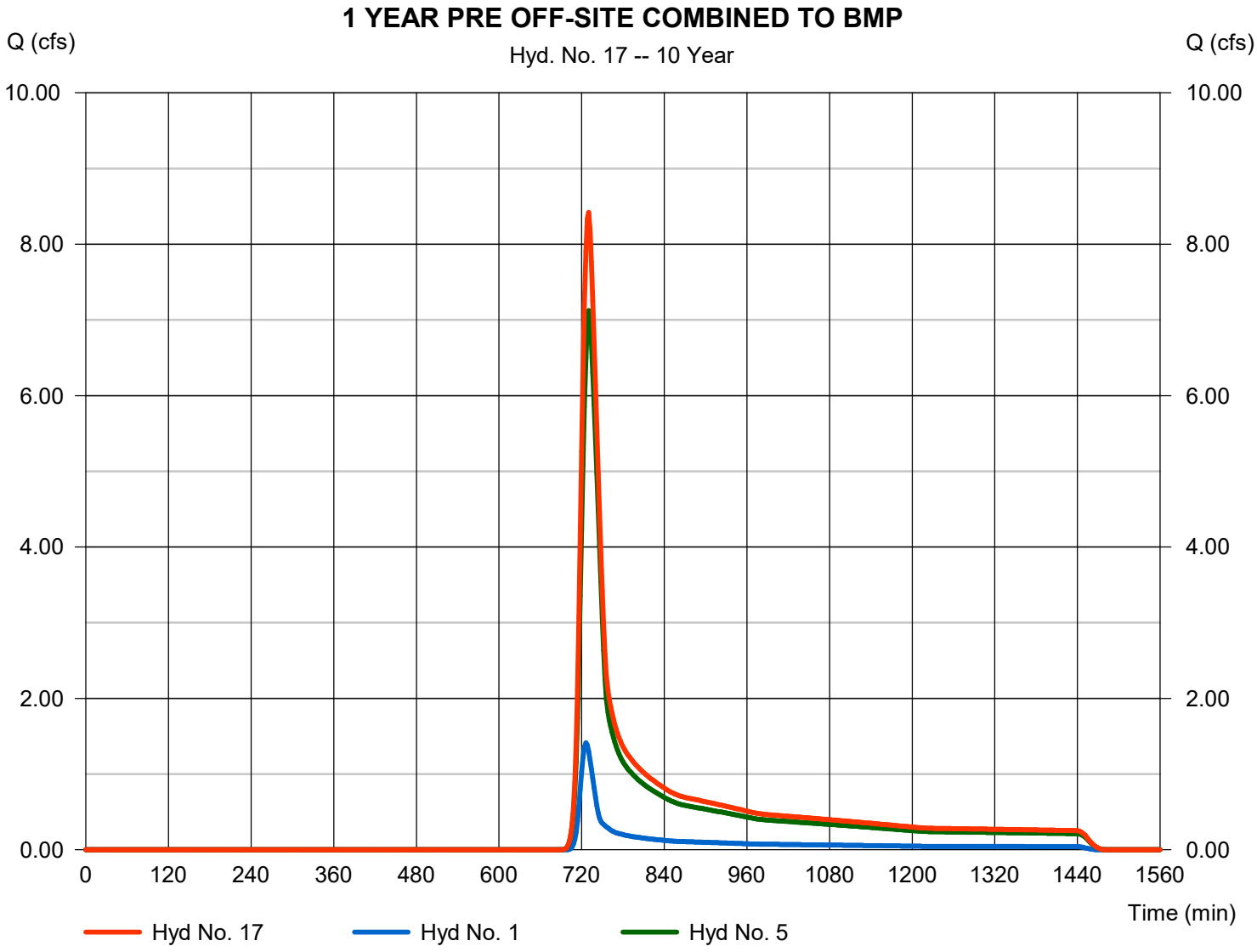


Hydrograph Report

Hyd. No. 17

1 YEAR PRE OFF-SITE COMBINED TO BMP

Hydrograph type	=	Combine	Peak discharge	=	8.422 cfs
Storm frequency	=	10 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	35,233 cuft
Inflow hyds.	=	1, 5	Contrib. drain. area	=	8.150 ac

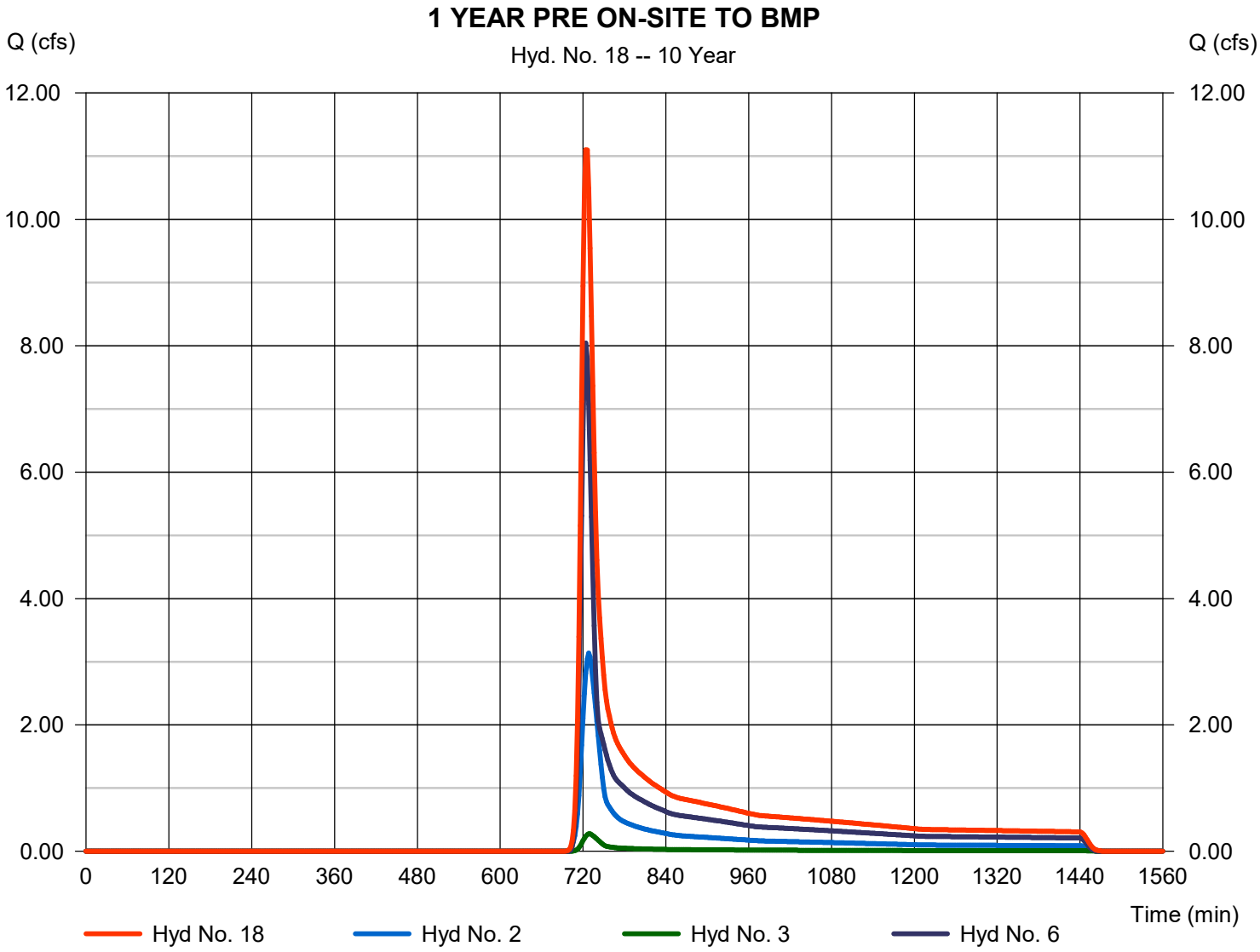


Hydrograph Report

Hyd. No. 18

1 YEAR PRE ON-SITE TO BMP

Hydrograph type	= Combine	Peak discharge	= 11.10 cfs
Storm frequency	= 10 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 40,433 cuft
Inflow hyds.	= 2, 3, 6	Contrib. drain. area	= 10.740 ac

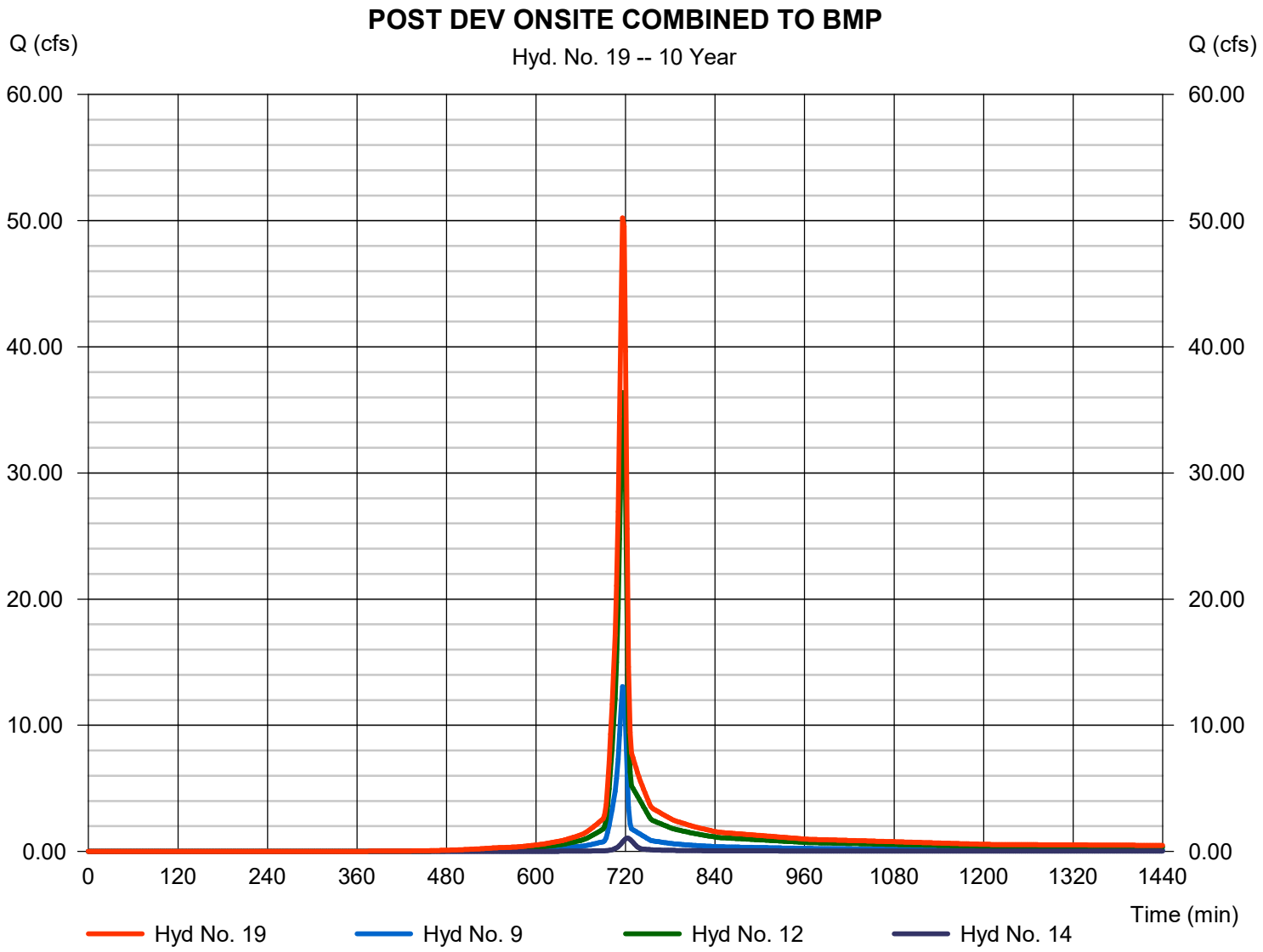


Hydrograph Report

Hyd. No. 19

POST DEV ONSITE COMBINED TO BMP

Hydrograph type	=	Combine	Peak discharge	=	50.21 cfs
Storm frequency	=	10 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	103,927 cuft
Inflow hyds.	=	9, 12, 14	Contrib. drain. area	=	10.410 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

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	4.799	2	726	15,483	------	------	------	PRE OFF-SITE A TO BMP
2	SCS Runoff	9.598	2	728	33,872	------	------	------	PRE-DEV A ON-SITE TO BMP
3	SCS Runoff	1.003	2	728	3,605	------	------	------	PRE A4 SHEET FLOW TO BMP
4	Combine	15.36	2	726	52,960	1, 2, 3	------	------	PRE-DEV A COMBINED TO BMP
5	SCS Runoff	21.91	2	730	82,321	------	------	------	PRE OFF-SITE DA B TO BMP
6	SCS Runoff	27.93	2	724	80,776	------	------	------	PRE-DEV ON-SITE B TO BMP
7	Combine	47.50	2	724	163,097	5, 6	------	------	PRE-DEV COMBINED B TO BMP
8	Combine	62.45	2	726	216,056	4, 7	------	------	PRE-DEV COMBINED TO BMP
9	SCS Runoff	24.09	2	716	51,840	------	------	------	POST ON-SITE DA A TO BMP
10	SCS Runoff	4.799	2	726	15,483	------	------	------	POST OFF-SITE DA A TO BMP
11	Combine	26.86	2	716	67,323	9, 10	------	------	POST COMBNED A TO BMP
12	SCS Runoff	72.29	2	716	150,831	------	------	------	POST ON-SITE DA B TO BMP
13	SCS Runoff	23.10	2	730	86,827	------	------	------	POST OFF-SITE DA B TO BMP
14	SCS Runoff	2.224	2	722	6,290	------	------	------	POST A4 SHEET FLOW TO BMP
15	Combine	112.56	2	718	311,271	11, 12, 13, 14	------	------	POST COMBINED A TO BMP
16	Reservoir	49.05	2	724	310,735	15	385.39	145,354	POST DEV BMP
17	Combine	26.43	2	728	97,804	1, 5,	------	------	1 YEAR PRE OFF-SITE COMBINED
18	Combine	38.01	2	724	118,252	2, 3, 6,	------	------	1 YEAR PRE ON-SITE TO BMP
19	Combine	98.04	2	716	208,961	9, 12, 14,	------	------	POST DEV ONSITE COMBINED TO

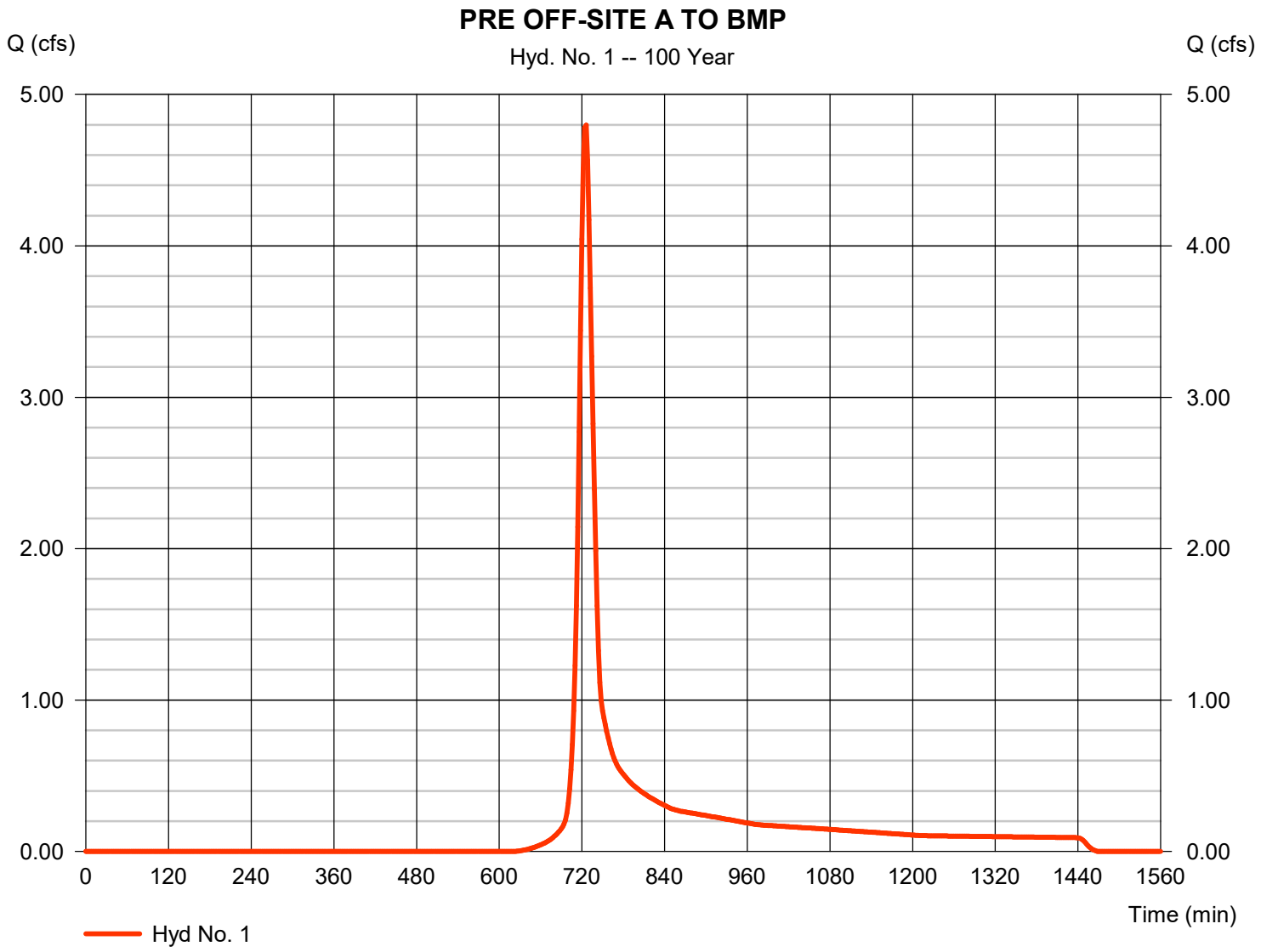
Hydrograph Report

Hyd. No. 1

PRE OFF-SITE A TO BMP

Hydrograph type	=	SCS Runoff	Peak discharge	=	4.799 cfs
Storm frequency	=	100 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	15,483 cuft
Drainage area	=	1.390 ac	Curve number	=	56*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	19.70 min
Total precip.	=	8.25 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(3.310 x 55) + (6.750 x 68)] / 1.390

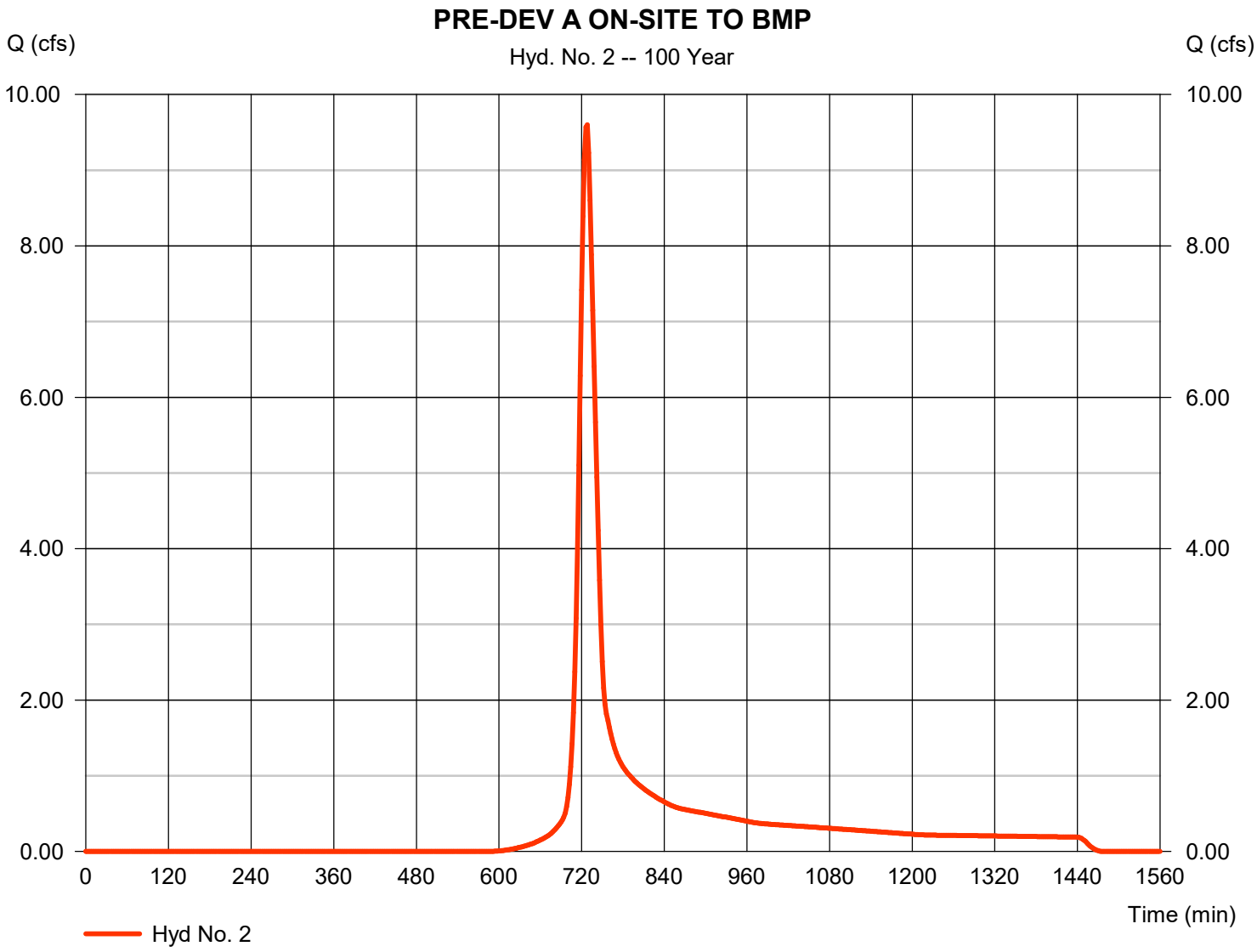


Hydrograph Report

Hyd. No. 2

PRE-DEV A ON-SITE TO BMP

Hydrograph type	=	SCS Runoff	Peak discharge	=	9.598 cfs
Storm frequency	=	100 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	33,872 cuft
Drainage area	=	2.690 ac	Curve number	=	59
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	20.50 min
Total precip.	=	8.25 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

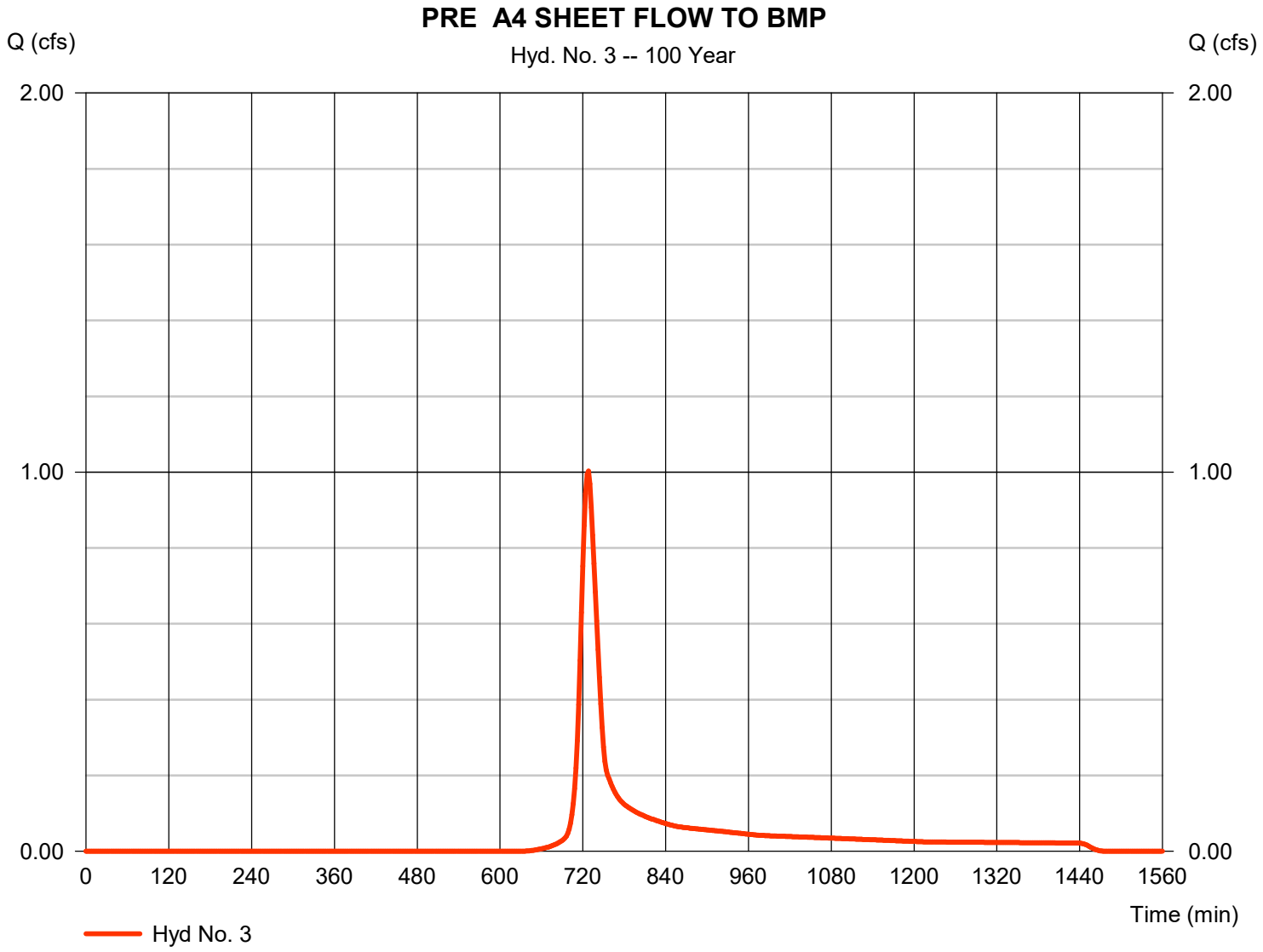


Hydrograph Report

Hyd. No. 3

PRE A4 SHEET FLOW TO BMP

Hydrograph type	= SCS Runoff	Peak discharge	= 1.003 cfs
Storm frequency	= 100 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 3,605 cuft
Drainage area	= 0.330 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 20.40 min
Total precip.	= 8.25 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

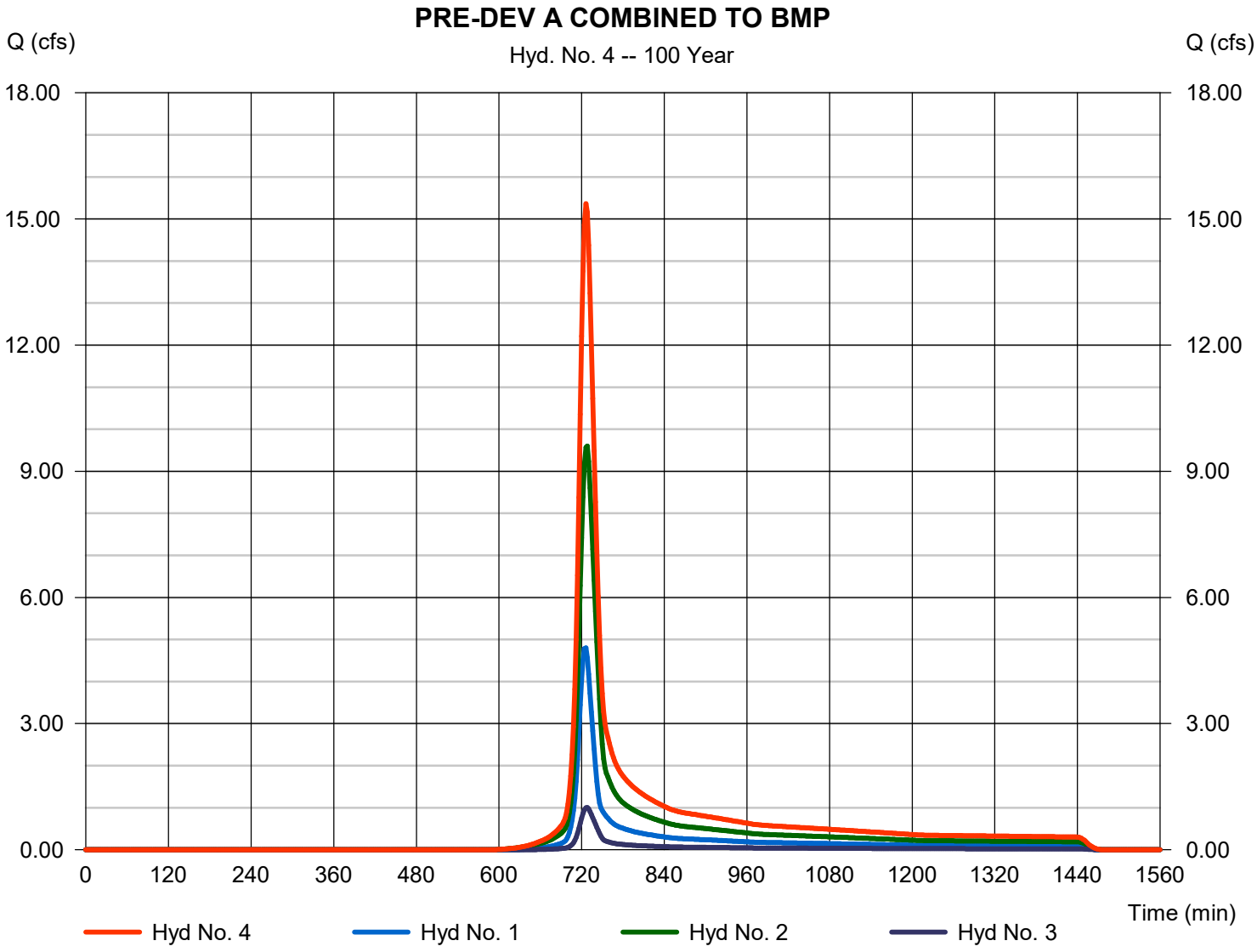


Hydrograph Report

Hyd. No. 4

PRE-DEV A COMBINED TO BMP

Hydrograph type	=	Combine	Peak discharge	=	15.36 cfs
Storm frequency	=	100 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	52,960 cuft
Inflow hyds.	=	1, 2, 3	Contrib. drain. area	=	4.410 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

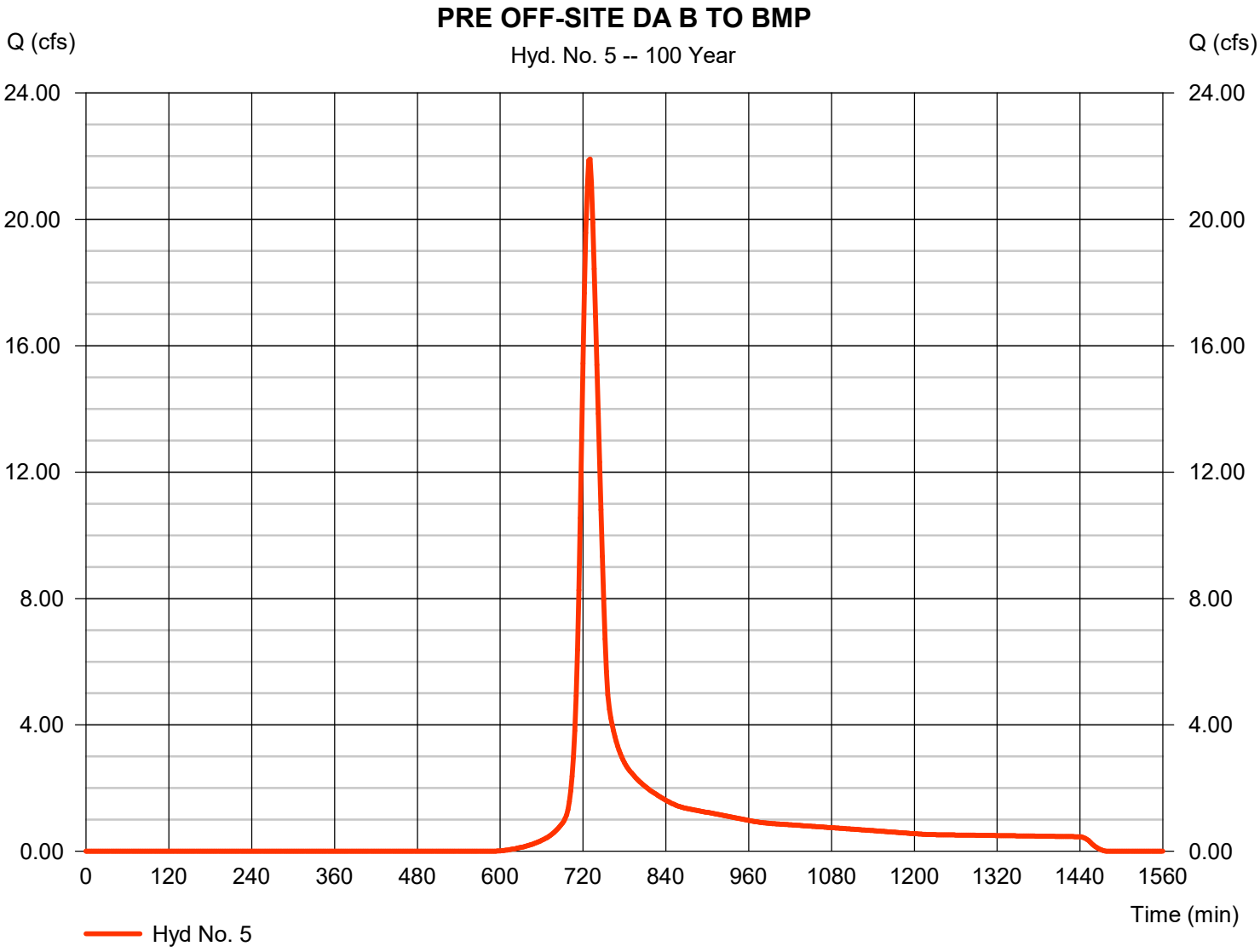
Wednesday, 02 / 4 / 2026

Hyd. No. 5

PRE OFF-SITE DA B TO BMP

Hydrograph type	= SCS Runoff	Peak discharge	= 21.91 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 82,321 cuft
Drainage area	= 6.760 ac	Curve number	= 59*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 24.00 min
Total precip.	= 8.25 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(5.510 x 55) + (1.200 x 61) + (0.420 x 98)] / 6.760



Hydrograph Report

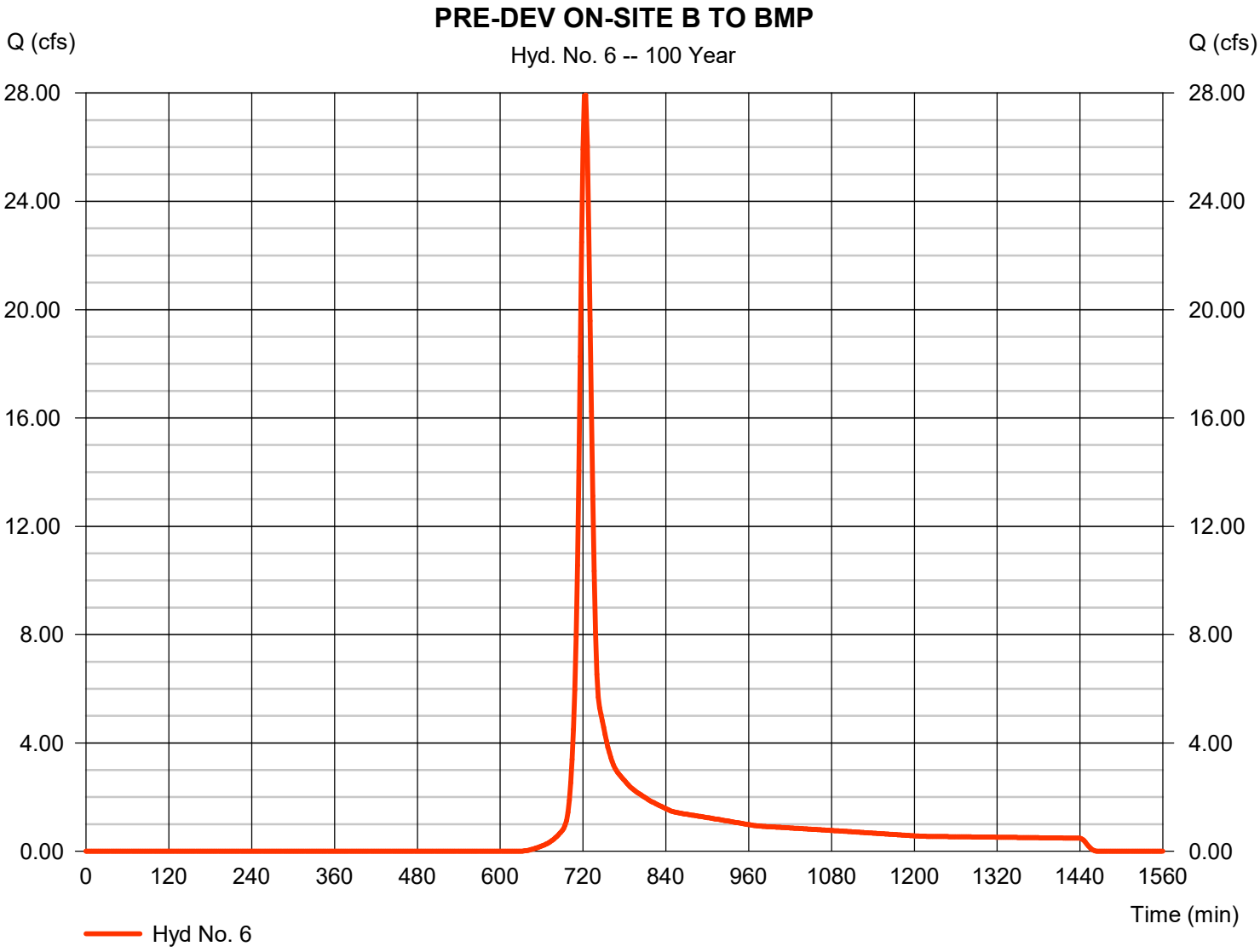
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Wednesday, 02 / 4 / 2026

Hyd. No. 6

PRE-DEV ON-SITE B TO BMP

Hydrograph type	=	SCS Runoff	Peak discharge	=	27.93 cfs
Storm frequency	=	100 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	80,776 cuft
Drainage area	=	7.720 ac	Curve number	=	55
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	16.10 min
Total precip.	=	8.25 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

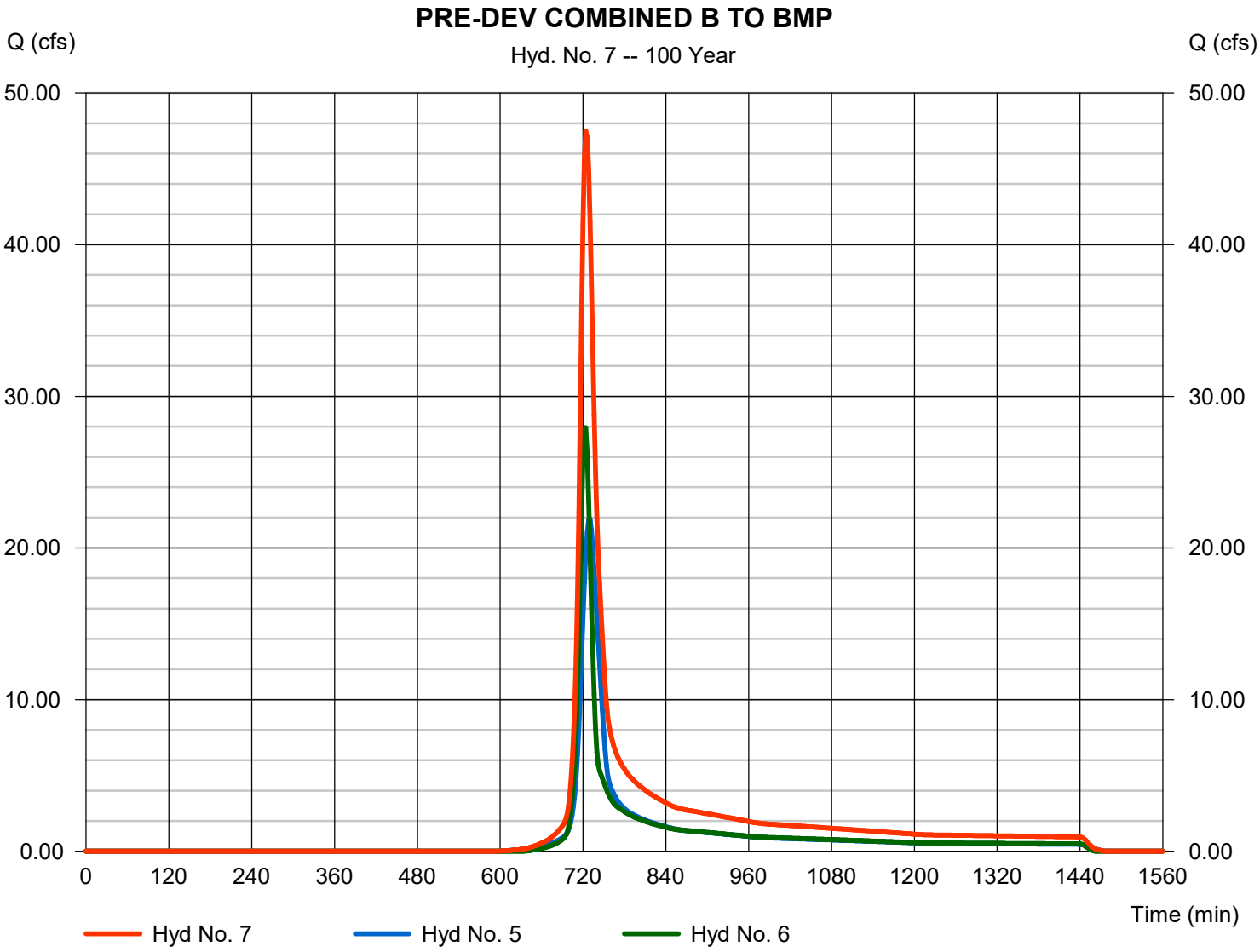


Hydrograph Report

Hyd. No. 7

PRE-DEV COMBINED B TO BMP

Hydrograph type	= Combine	Peak discharge	= 47.50 cfs
Storm frequency	= 100 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 163,097 cuft
Inflow hyds.	= 5, 6	Contrib. drain. area	= 14.480 ac

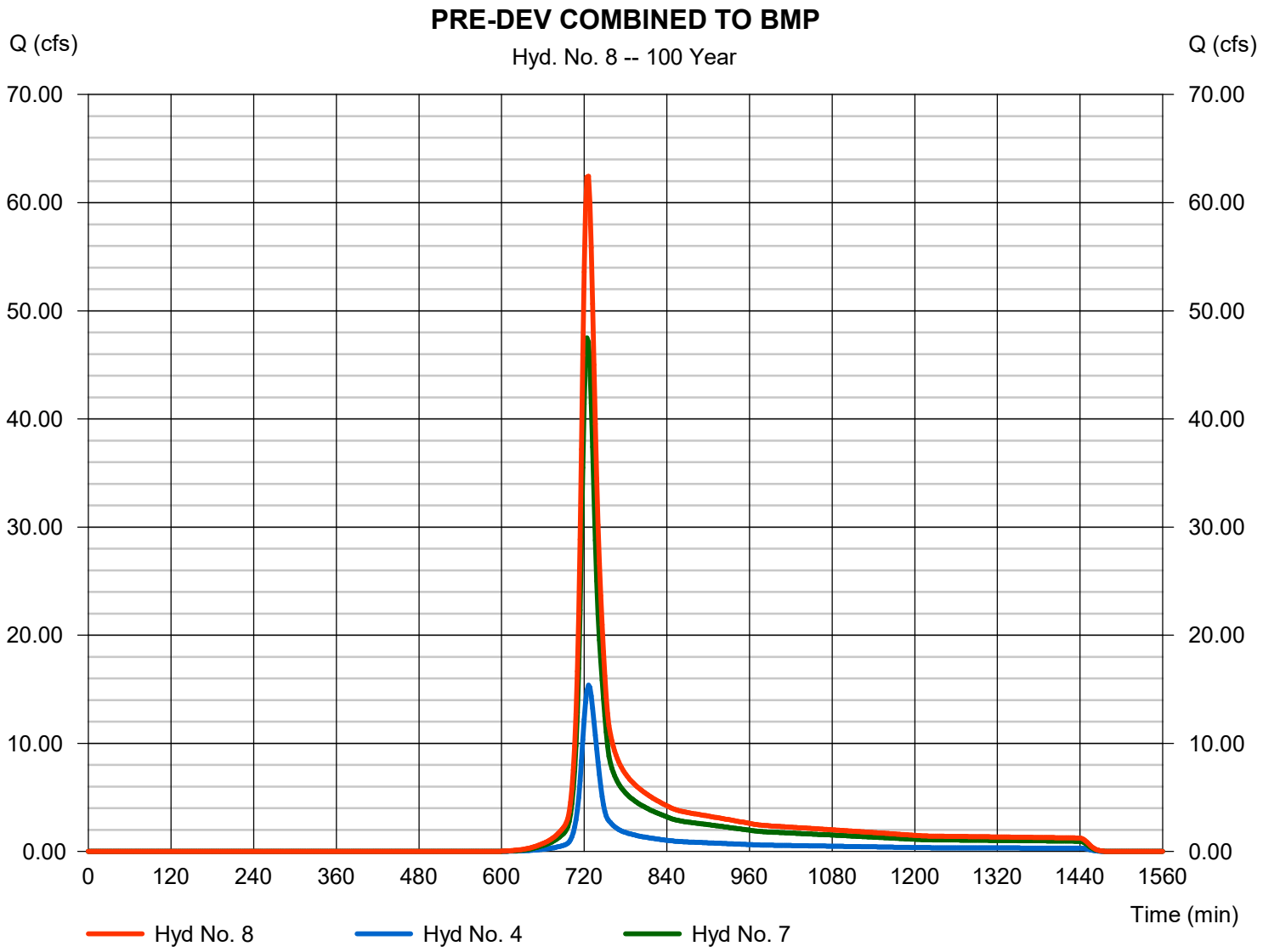


Hydrograph Report

Hyd. No. 8

PRE-DEV COMBINED TO BMP

Hydrograph type	= Combine	Peak discharge	= 62.45 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 216,056 cuft
Inflow hyds.	= 4, 7	Contrib. drain. area	= 0.000 ac



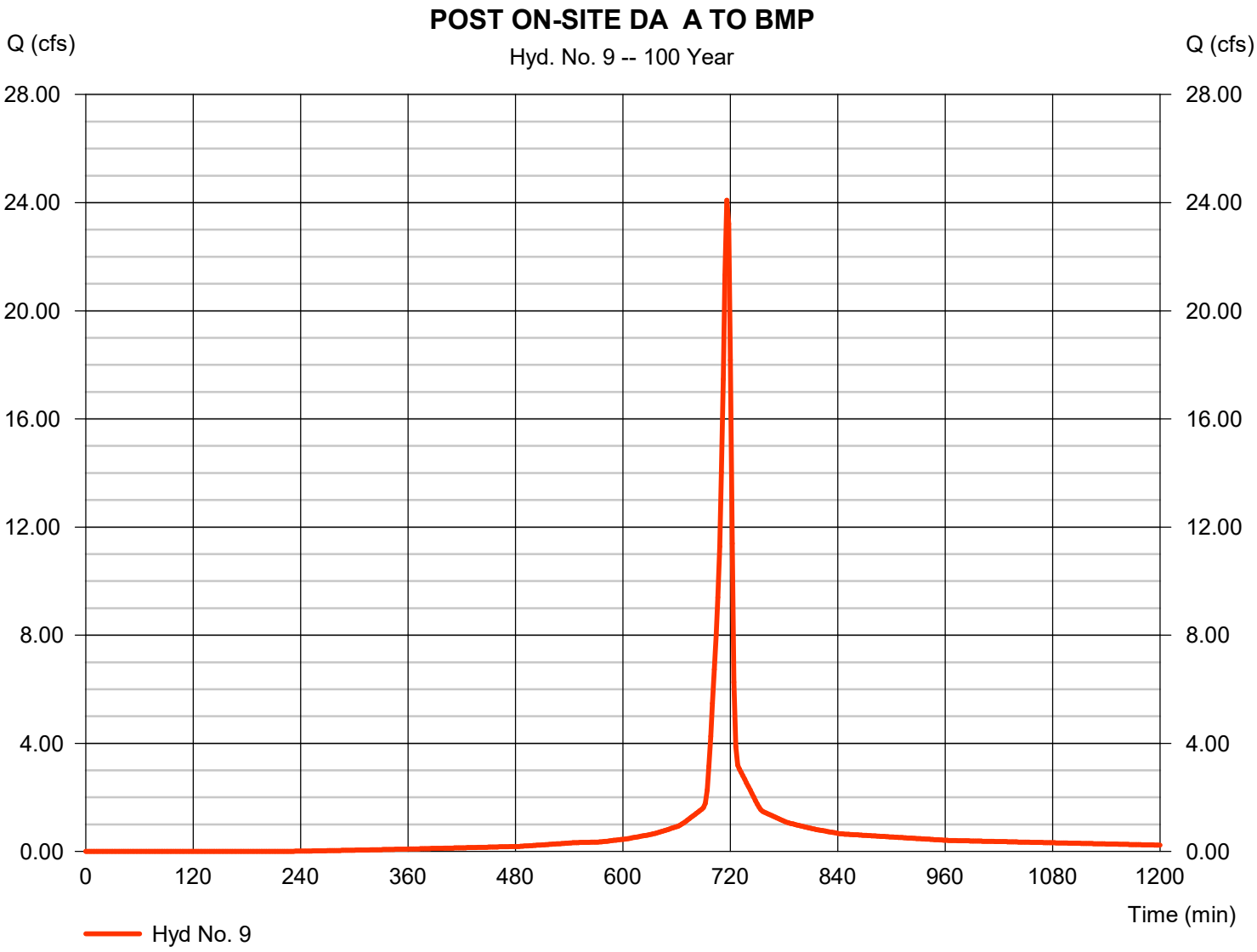
Hydrograph Report

Hyd. No. 9

POST ON-SITE DA A TO BMP

Hydrograph type	= SCS Runoff	Peak discharge	= 24.09 cfs
Storm frequency	= 100 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 51,840 cuft
Drainage area	= 2.360 ac	Curve number	= 85*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 8.25 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.720 x 61) + (0.940 x 98) + (0.150 x 74) + (0.550 x 98)] / 2.360



Hydrograph Report

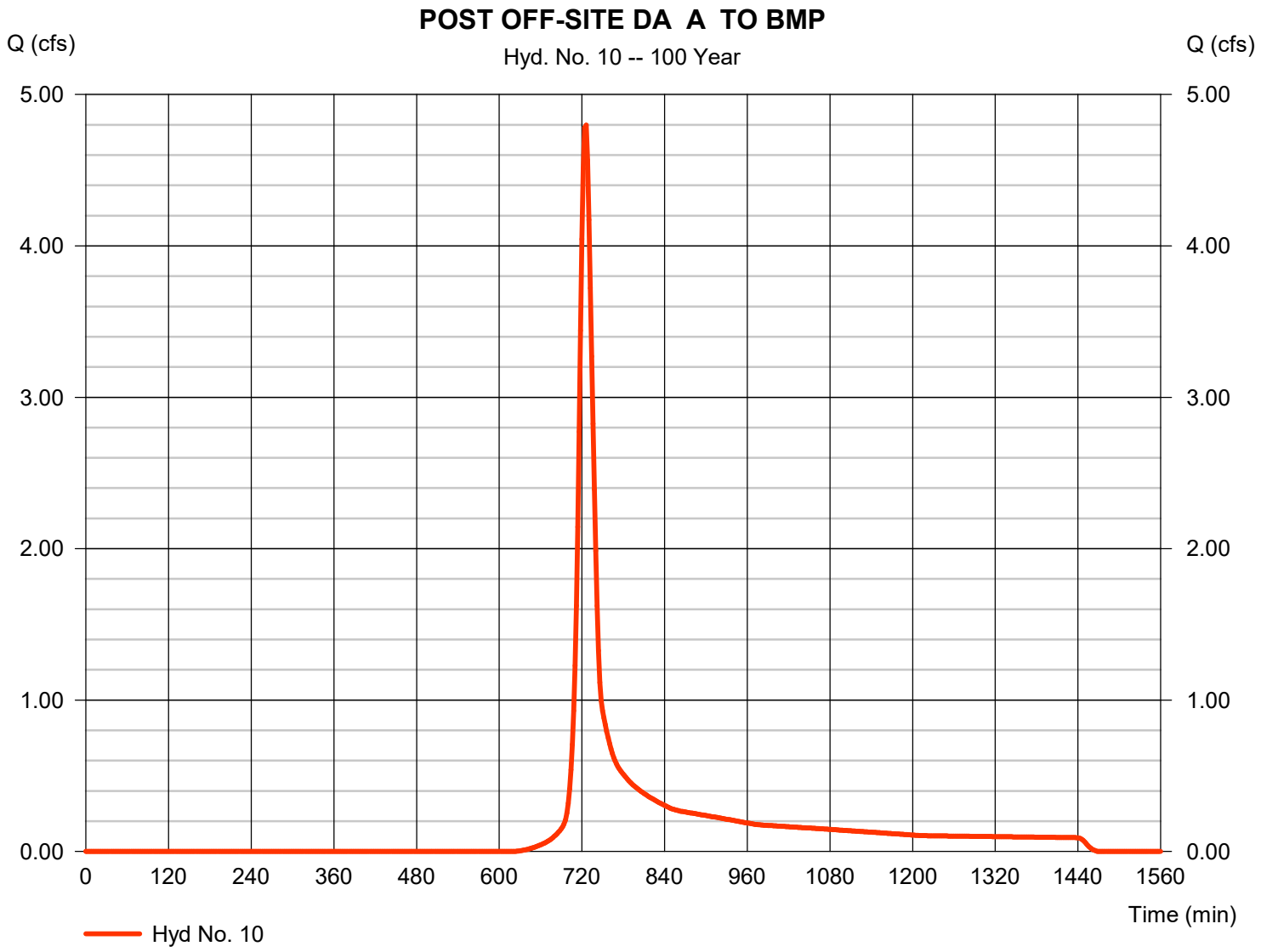
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Wednesday, 02 / 4 / 2026

Hyd. No. 10

POST OFF-SITE DA A TO BMP

Hydrograph type	= SCS Runoff	Peak discharge	= 4.799 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 15,483 cuft
Drainage area	= 1.390 ac	Curve number	= 56*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 19.70 min
Total precip.	= 8.25 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.260 x 55) + (0.130 x 70)] / 1.390

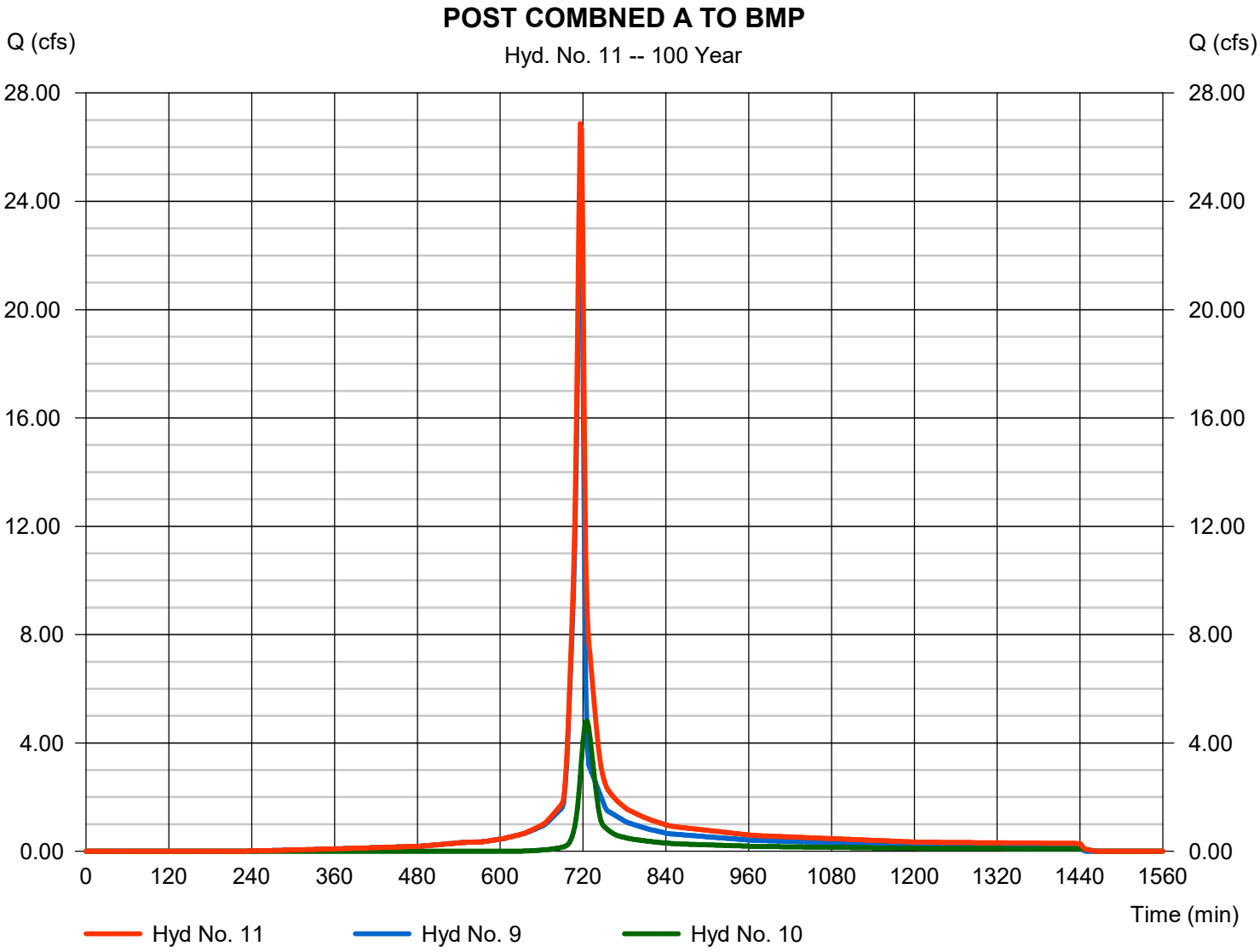


Hydrograph Report

Hyd. No. 11

POST COMBNED A TO BMP

Hydrograph type	=	Combine	Peak discharge	=	26.86 cfs
Storm frequency	=	100 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	67,323 cuft
Inflow hyds.	=	9, 10	Contrib. drain. area	=	3.750 ac



Hydrograph Report

95 90

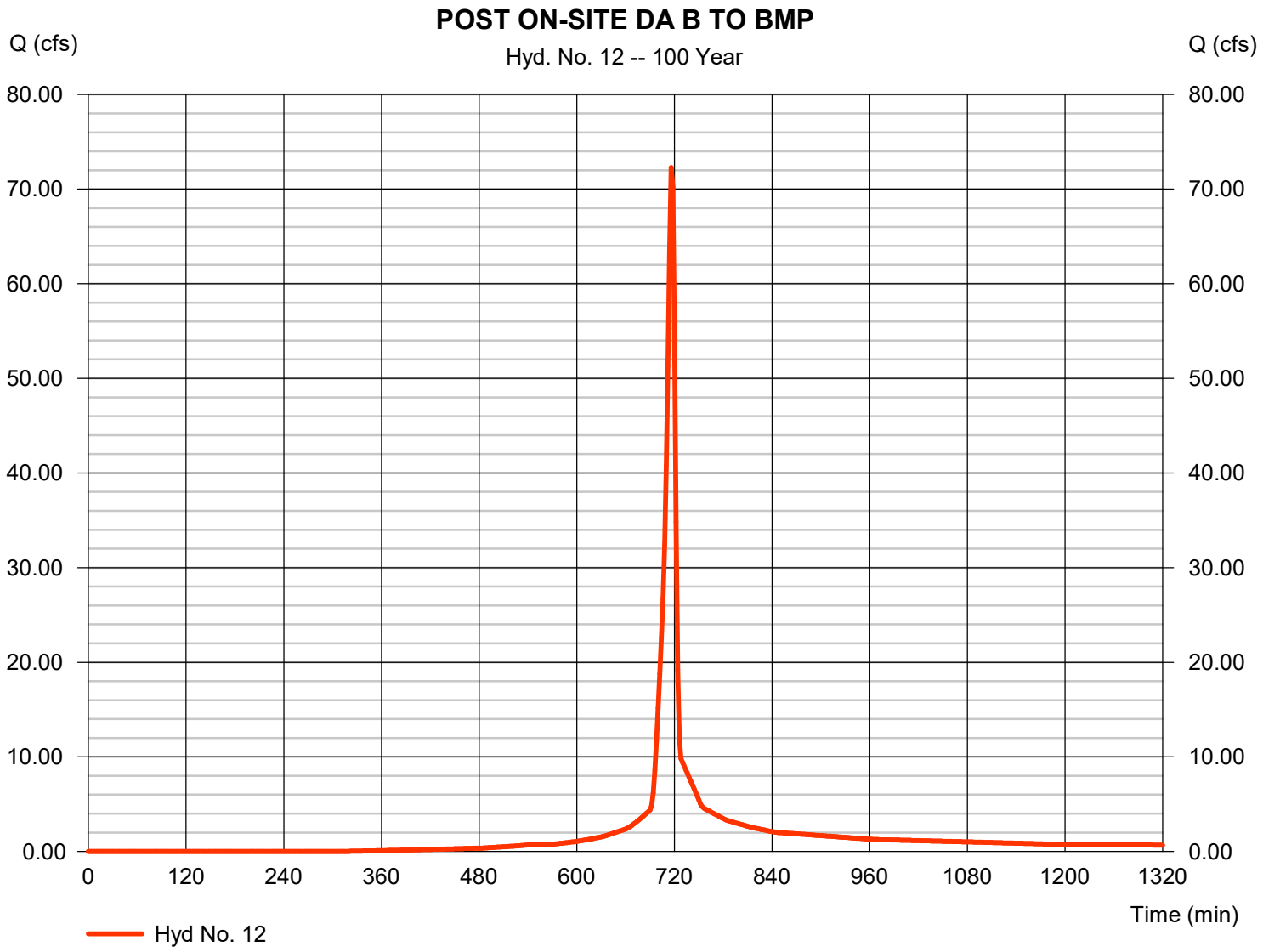
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Wednesday, 02 / 4 / 2026

Hyd. No. 12

POST ON-SITE DA B TO BMP

Hydrograph type	= SCS Runoff	Peak discharge	= 72.29 cfs
Storm frequency	= 100 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 150,831 cuft
Drainage area	= 7.720 ac	Curve number	= 79*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 8.25 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(3.880 x 61) + (3.840 x 98)] / 7.720



Hydrograph Report

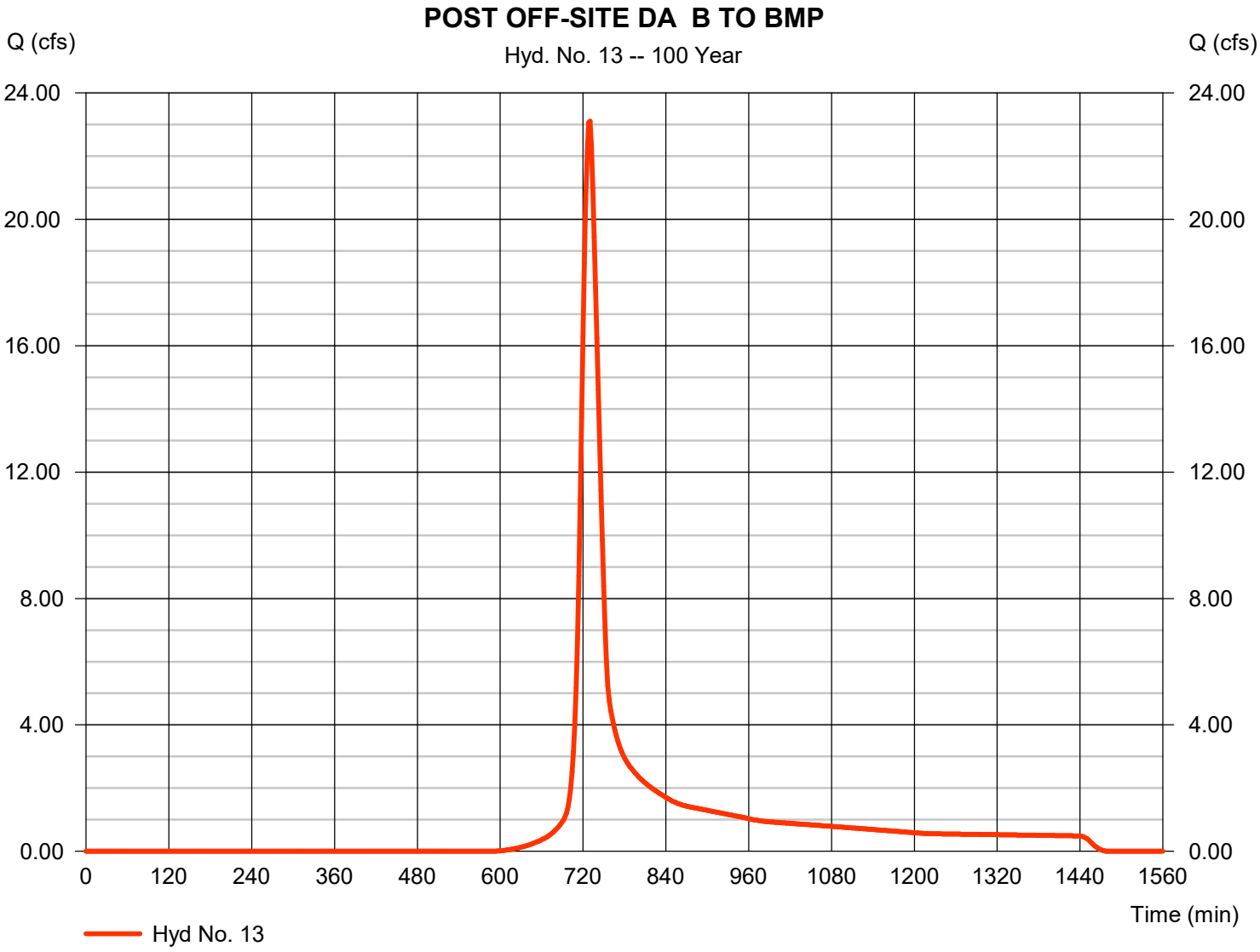
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Wednesday, 02 / 4 / 2026

Hyd. No. 13

POST OFF-SITE DA B TO BMP

Hydrograph type	=	SCS Runoff	Peak discharge	=	23.10 cfs
Storm frequency	=	100 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	86,827 cuft
Drainage area	=	7.130 ac	Curve number	=	59*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	24.00 min
Total precip.	=	8.25 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(5.510 x 55) + (1.200 x 61) + (0.420 x 98)] / 7.130



Hydrograph Report

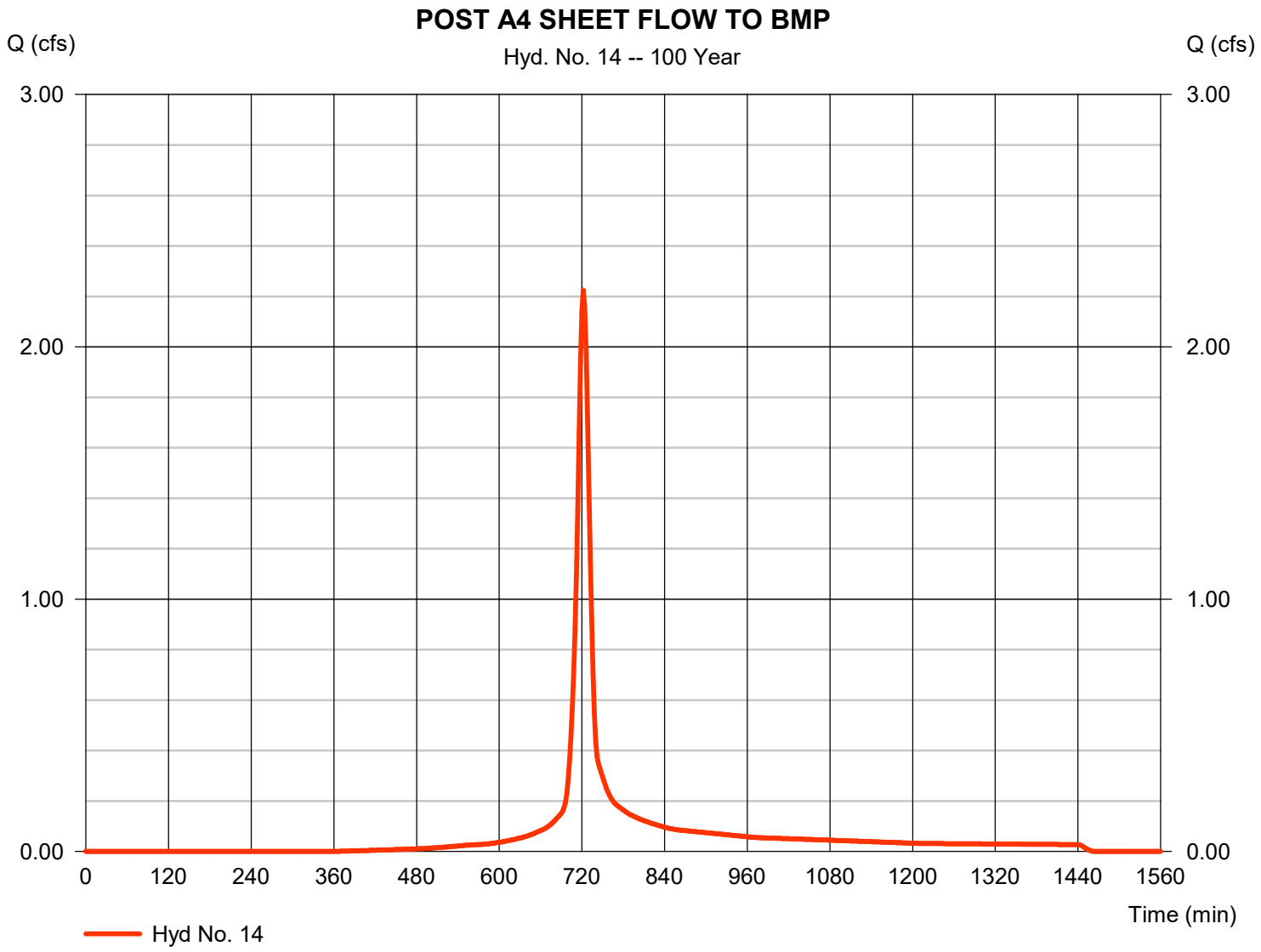
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Wednesday, 02 / 4 / 2026

Hyd. No. 14

POST A4 SHEET FLOW TO BMP

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.224 cfs
Storm frequency	=	100 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	6,290 cuft
Drainage area	=	0.330 ac	Curve number	=	76*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	13.80 min
Total precip.	=	8.25 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.200 x 61) + (0.130 x 98)] / 0.330

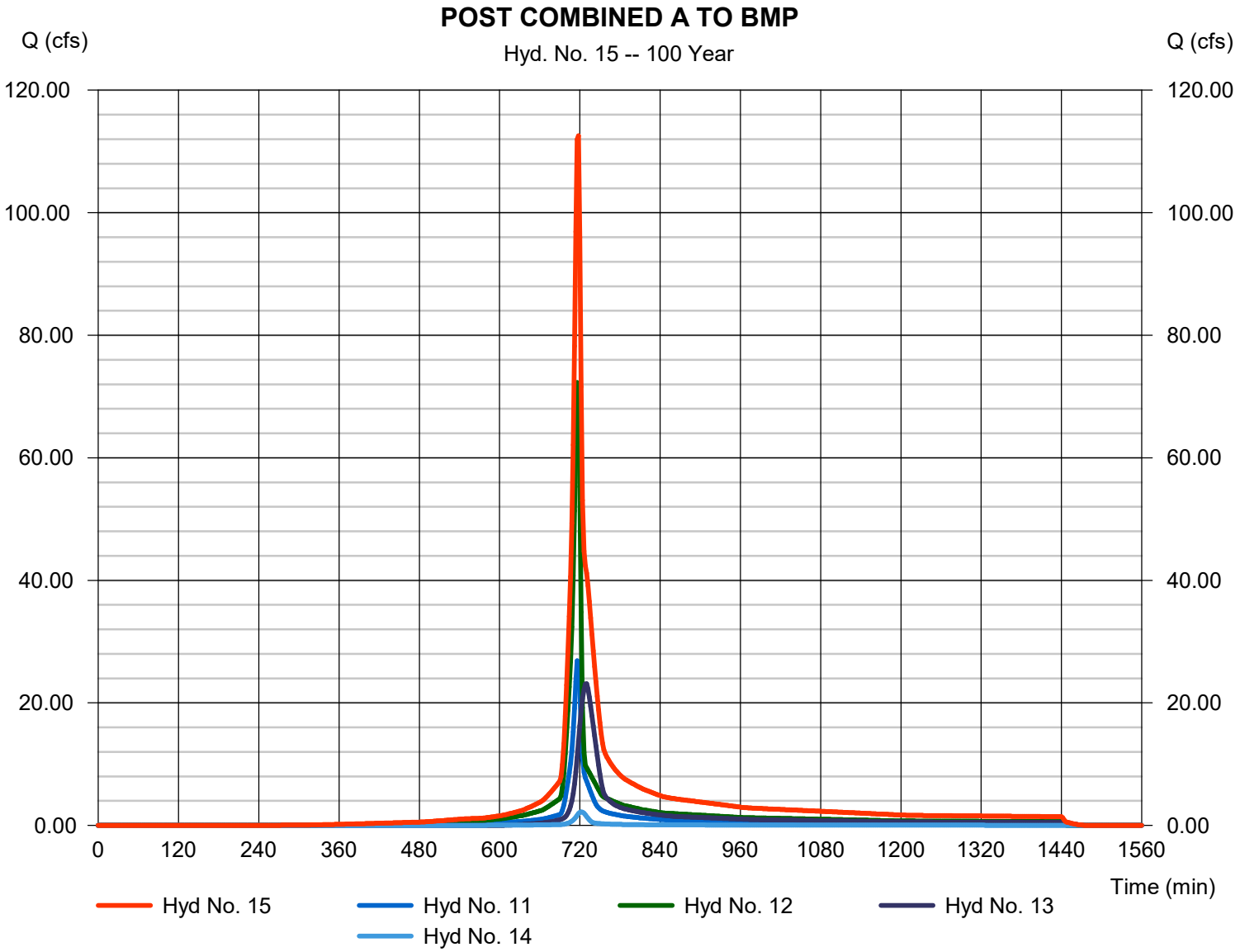


Hydrograph Report

Hyd. No. 15

POST COMBINED A TO BMP

Hydrograph type	=	Combine	Peak discharge	=	112.56 cfs
Storm frequency	=	100 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	311,271 cuft
Inflow hyds.	=	11, 12, 13, 14	Contrib. drain. area	=	15.180 ac



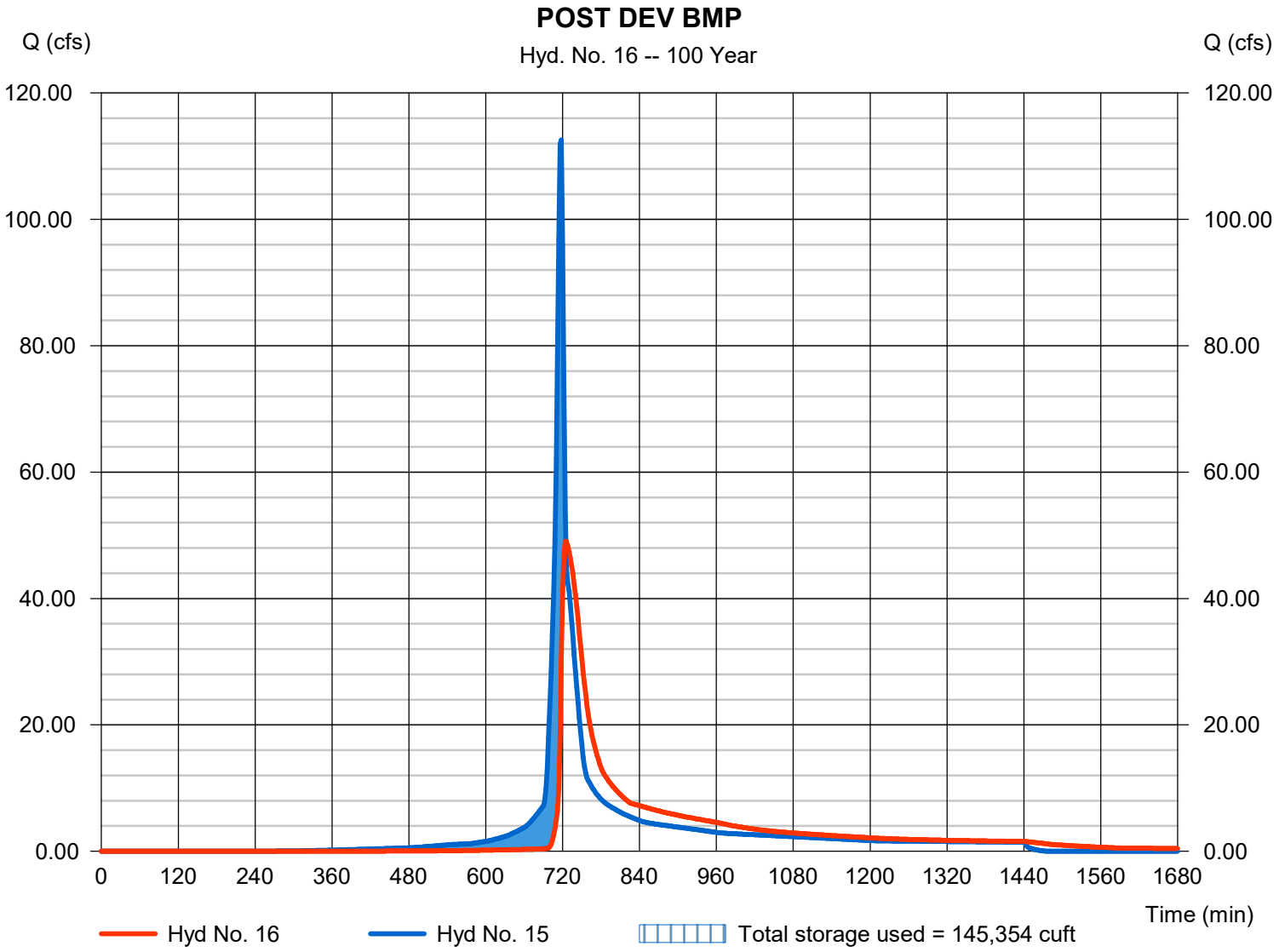
Hydrograph Report

Hyd. No. 16

POST DEV BMP

Hydrograph type	=	Reservoir	Peak discharge	=	49.05 cfs
Storm frequency	=	100 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	310,735 cuft
Inflow hyd. No.	=	15 - POST COMBINED A TO BMP	Max. Elevation	=	385.39 ft
Reservoir name	=	WET POND	Max. Storage	=	145,354 cuft

Storage Indication method used. Wet pond routing start elevation = 382.00 ft.

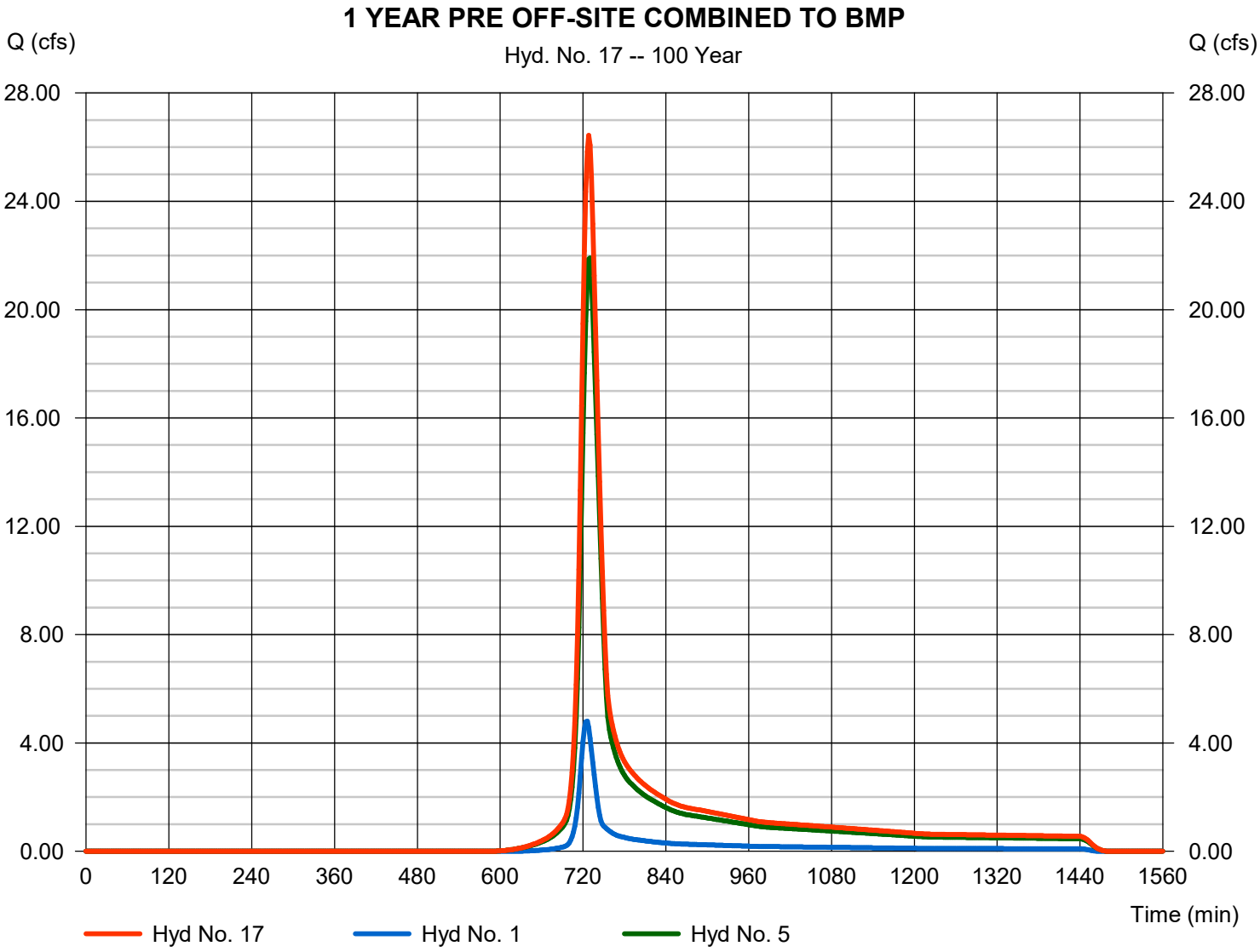


Hydrograph Report

Hyd. No. 17

1 YEAR PRE OFF-SITE COMBINED TO BMP

Hydrograph type	= Combine	Peak discharge	= 26.43 cfs
Storm frequency	= 100 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 97,804 cuft
Inflow hyds.	= 1, 5	Contrib. drain. area	= 8.150 ac

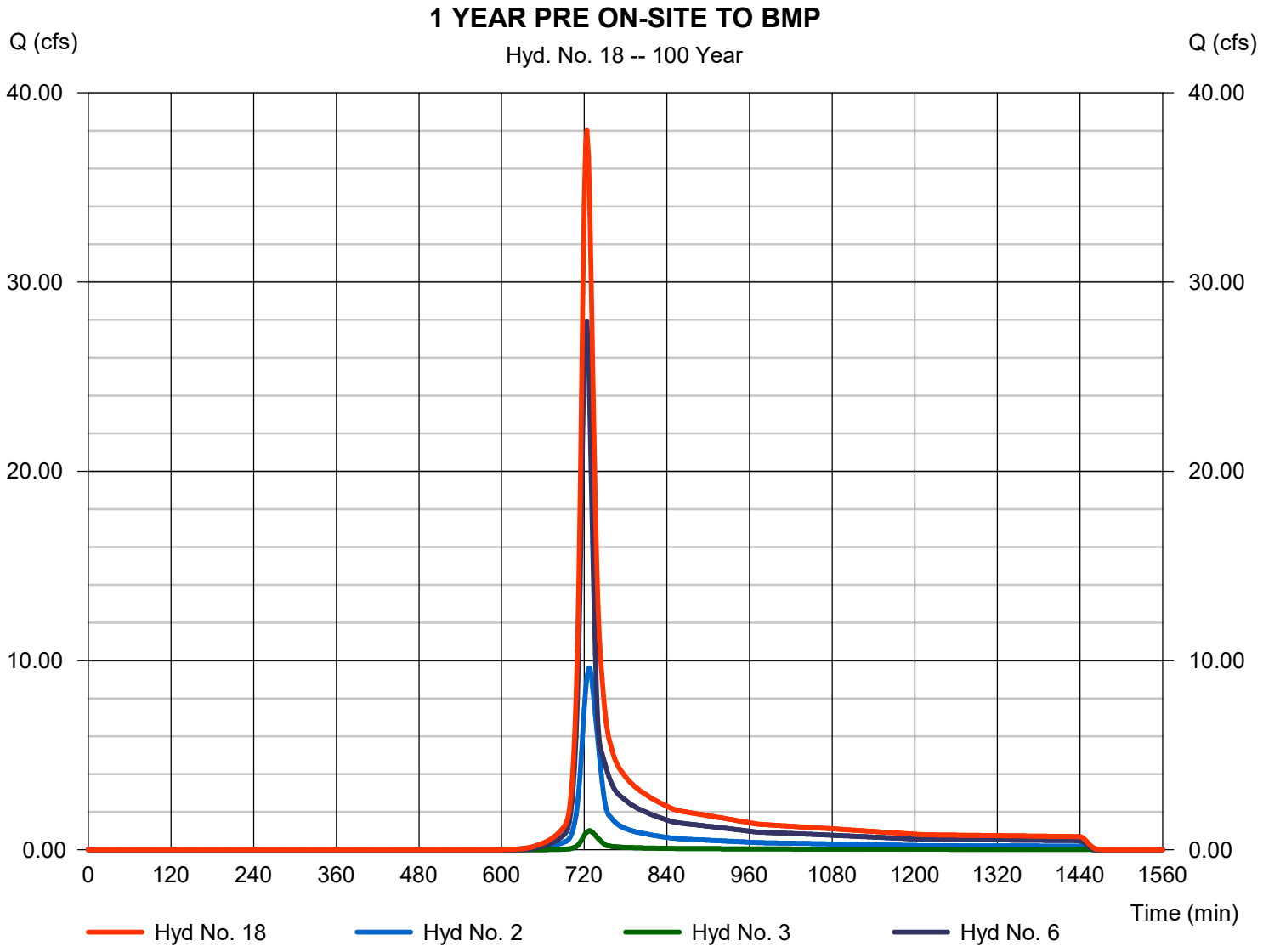


Hydrograph Report

Hyd. No. 18

1 YEAR PRE ON-SITE TO BMP

Hydrograph type	=	Combine	Peak discharge	=	38.01 cfs
Storm frequency	=	100 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	118,252 cuft
Inflow hyds.	=	2, 3, 6	Contrib. drain. area	=	10.740 ac

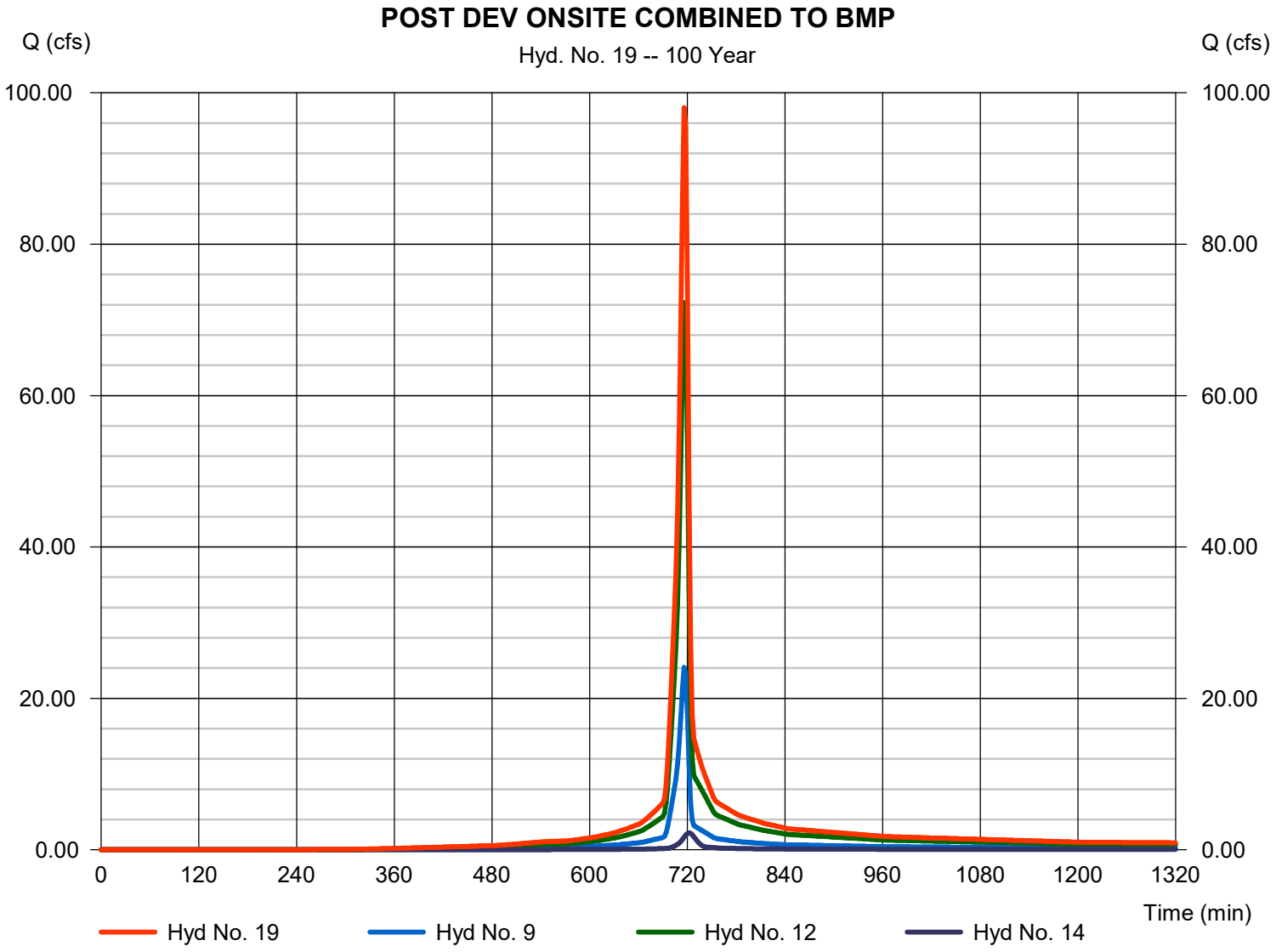


Hydrograph Report

Hyd. No. 19

POST DEV ONSITE COMBINED TO BMP

Hydrograph type	= Combine	Peak discharge	= 98.04 cfs
Storm frequency	= 100 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 208,961 cuft
Inflow hyds.	= 9, 12, 14	Contrib. drain. area	= 10.410 ac



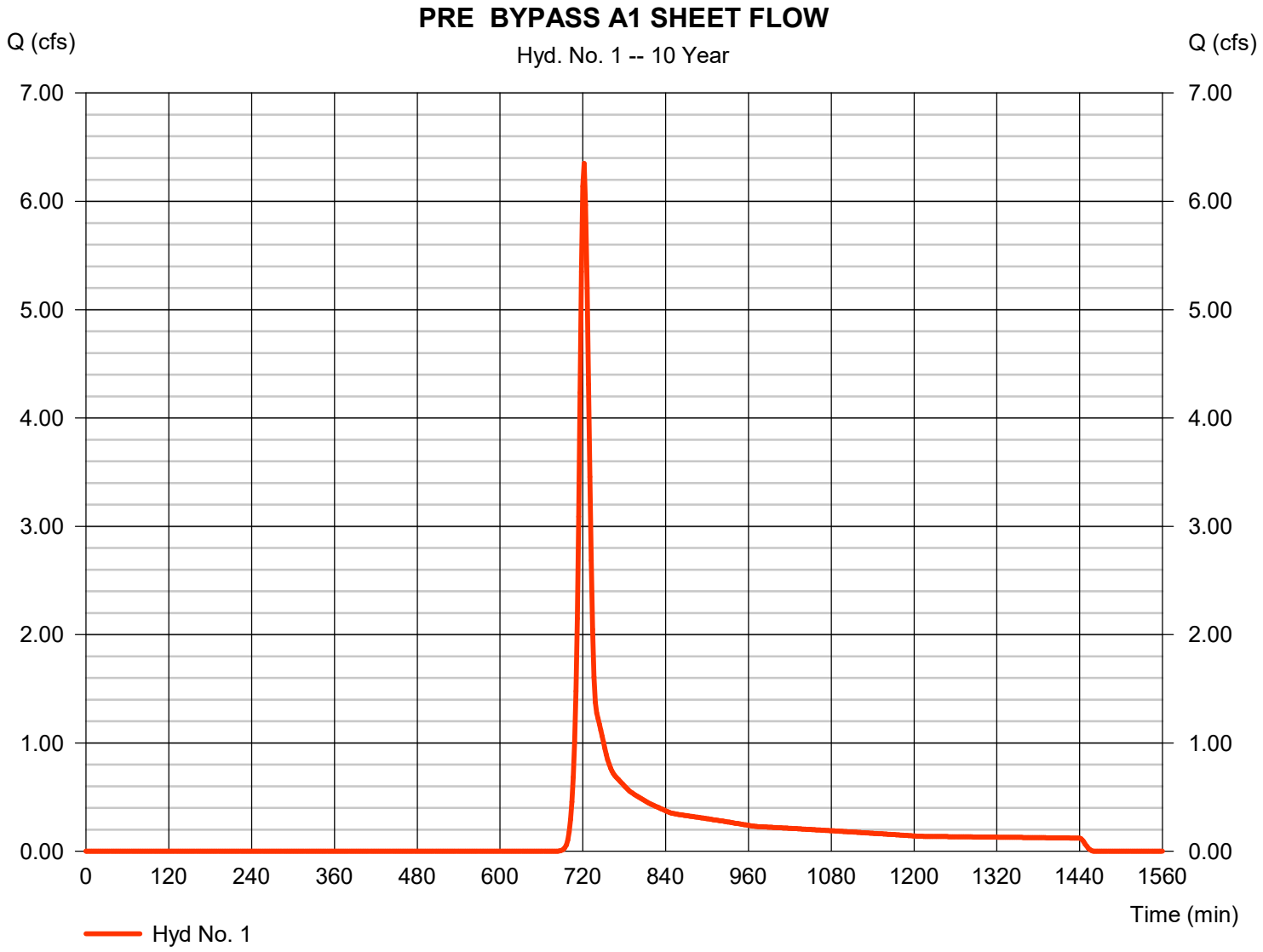
Hydrograph Report

Hyd. No. 1

PRE BYPASS A1 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 6.349 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 17,612 cuft
Drainage area	= 3.600 ac	Curve number	= 60*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.70 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(2.290 x 55) + (1.310 x 70)] / 3.600



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No. 1

PRE BYPASS A1 SHEET FLOW

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.400		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.31		0.00		0.00		
Land slope (%)	= 10.00		0.00		0.00		
Travel Time (min)	**= 11.09**	**+**	**0.00**	**+**	**0.00**	**=**	**11.09**
Shallow Concentrated Flow							
Flow length (ft)	= 410.00		0.00		0.00		
Watercourse slope (%)	= 6.80		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=4.21		0.00		0.00		
Travel Time (min)	**= 1.62**	**+**	**0.00**	**+**	**0.00**	**=**	**1.62**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 12.70 min

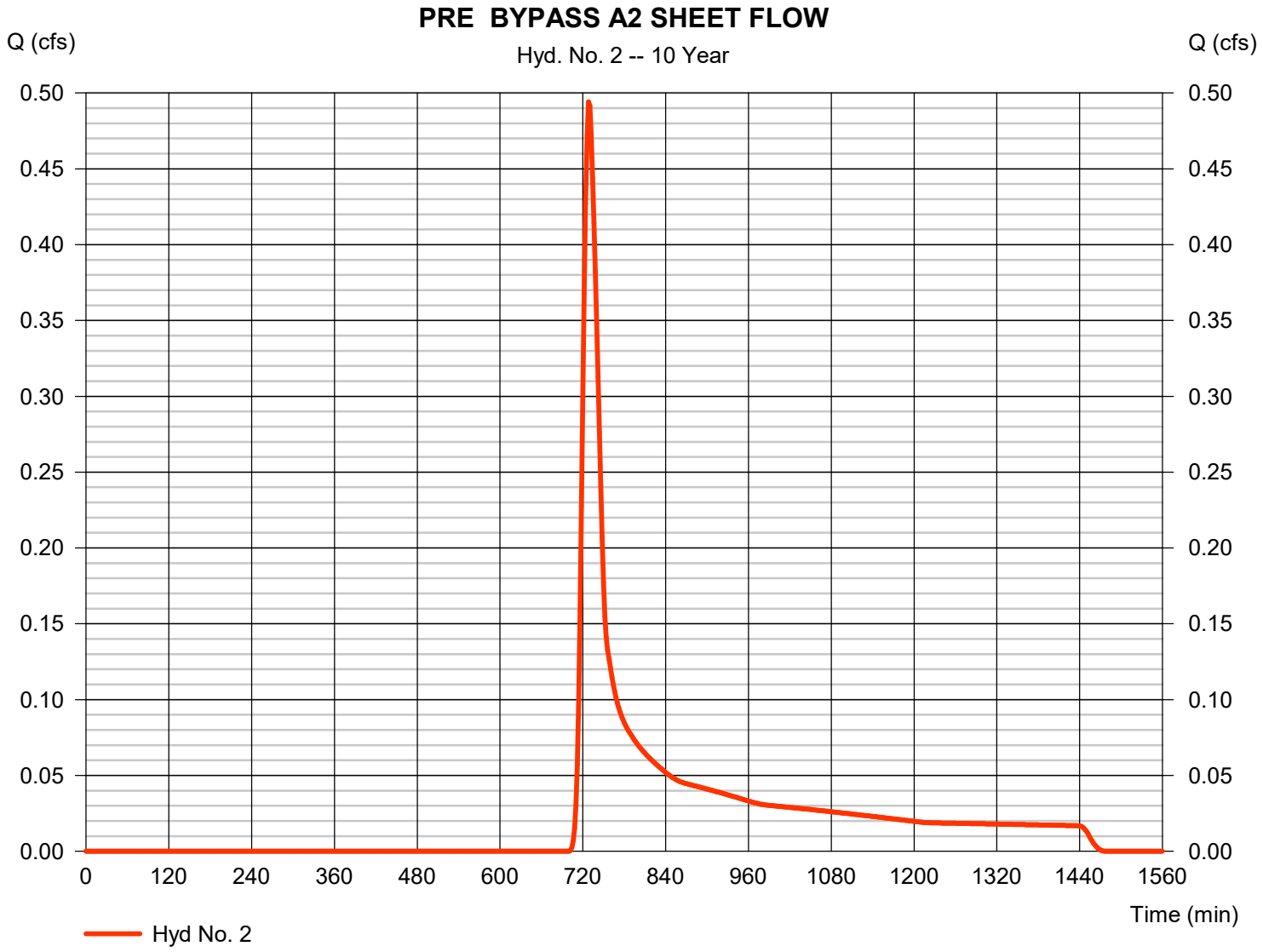
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Saturday, 01 / 31 / 2026

Hyd. No. 2

PRE BYPASS A2 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 0.494 cfs
Storm frequency	= 10 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 2,147 cuft
Drainage area	= 0.590 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 20.30 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No. 2

PRE BYPASS A2 SHEET FLOW

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.400		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.31		0.00		0.00		
Land slope (%)	= 2.30		0.00		0.00		
Travel Time (min)	**= 19.97**	**+**	**0.00**	**+**	**0.00**	**=**	**19.97**
Shallow Concentrated Flow							
Flow length (ft)	= 70.00		0.00		0.00		
Watercourse slope (%)	= 4.10		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=3.27		0.00		0.00		
Travel Time (min)	**= 0.36**	**+**	**0.00**	**+**	**0.00**	**=**	**0.36**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 20.30 min

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Hydrograph Report

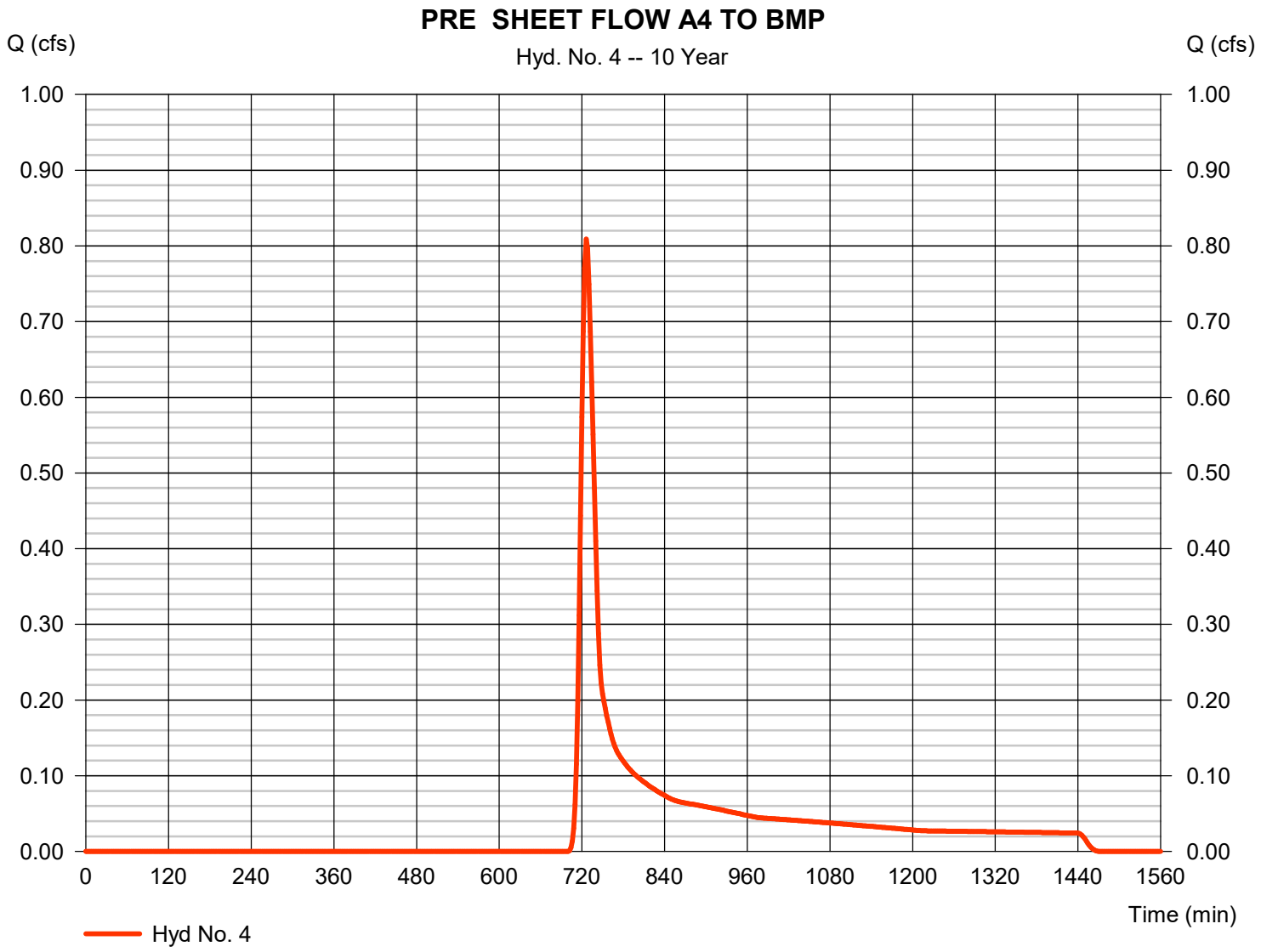
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Saturday, 01 / 31 / 2026

Hyd. No. 4

PRE SHEET FLOW A4 TO BMP

Hydrograph type	= SCS Runoff	Peak discharge	= 0.809 cfs
Storm frequency	= 10 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 3,110 cuft
Drainage area	= 0.870 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 19.70 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No. 4

PRE SHEET FLOW A4 TO BMP

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.400		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.31		0.00		0.00		
Land slope (%)	= 2.80		0.00		0.00		
Travel Time (min)	**= 18.46**	**+**	**0.00**	**+**	**0.00**	**=**	**18.46**
Shallow Concentrated Flow							
Flow length (ft)	= 205.00		0.00		0.00		
Watercourse slope (%)	= 2.80		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=2.70		0.00		0.00		
Travel Time (min)	**= 1.27**	**+**	**0.00**	**+**	**0.00**	**=**	**1.27**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 19.70 min

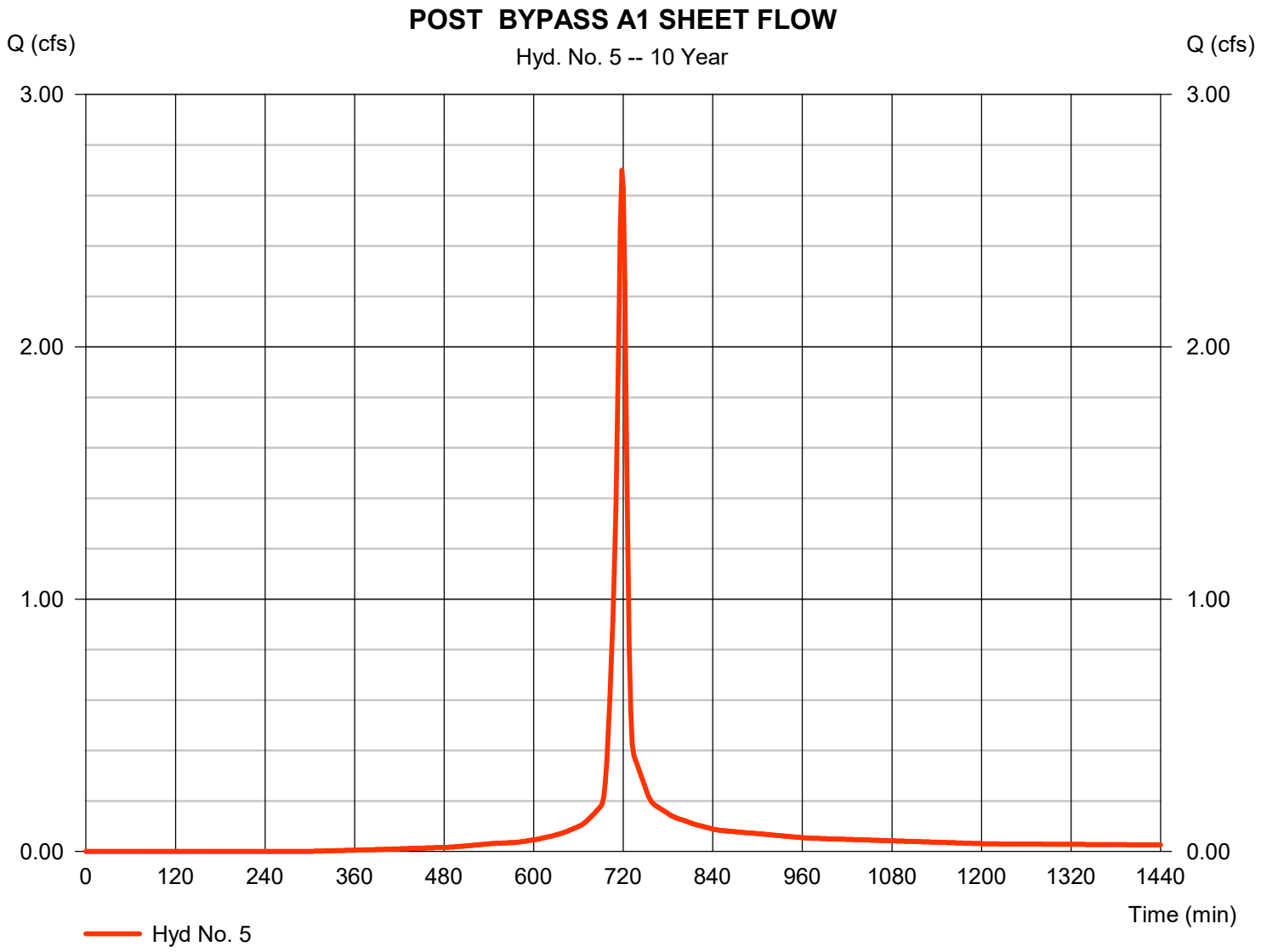
Hydrograph Report

Hyd. No. 5

POST BYPASS A1 SHEET FLOW

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.700 cfs
Storm frequency	=	10 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	6,362 cuft
Drainage area	=	0.490 ac	Curve number	=	87*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	9.50 min
Total precip.	=	5.01 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.380 x 74) + (0.110 x 98)] / 0.490



TR55 Tc Worksheet

Hyd. No. 5

POST BYPASS A1 SHEET FLOW

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.31		0.00		0.00		
Land slope (%)	= 5.80		0.00		0.00		
Travel Time (min)	**= 9.17**	**+**	**0.00**	**+**	**0.00**	**=**	**9.17**
Shallow Concentrated Flow							
Flow length (ft)	= 78.00		0.00		0.00		
Watercourse slope (%)	= 6.30		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=4.05		0.00		0.00		
Travel Time (min)	**= 0.32**	**+**	**0.00**	**+**	**0.00**	**=**	**0.32**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 9.50 min

Hydrograph Report

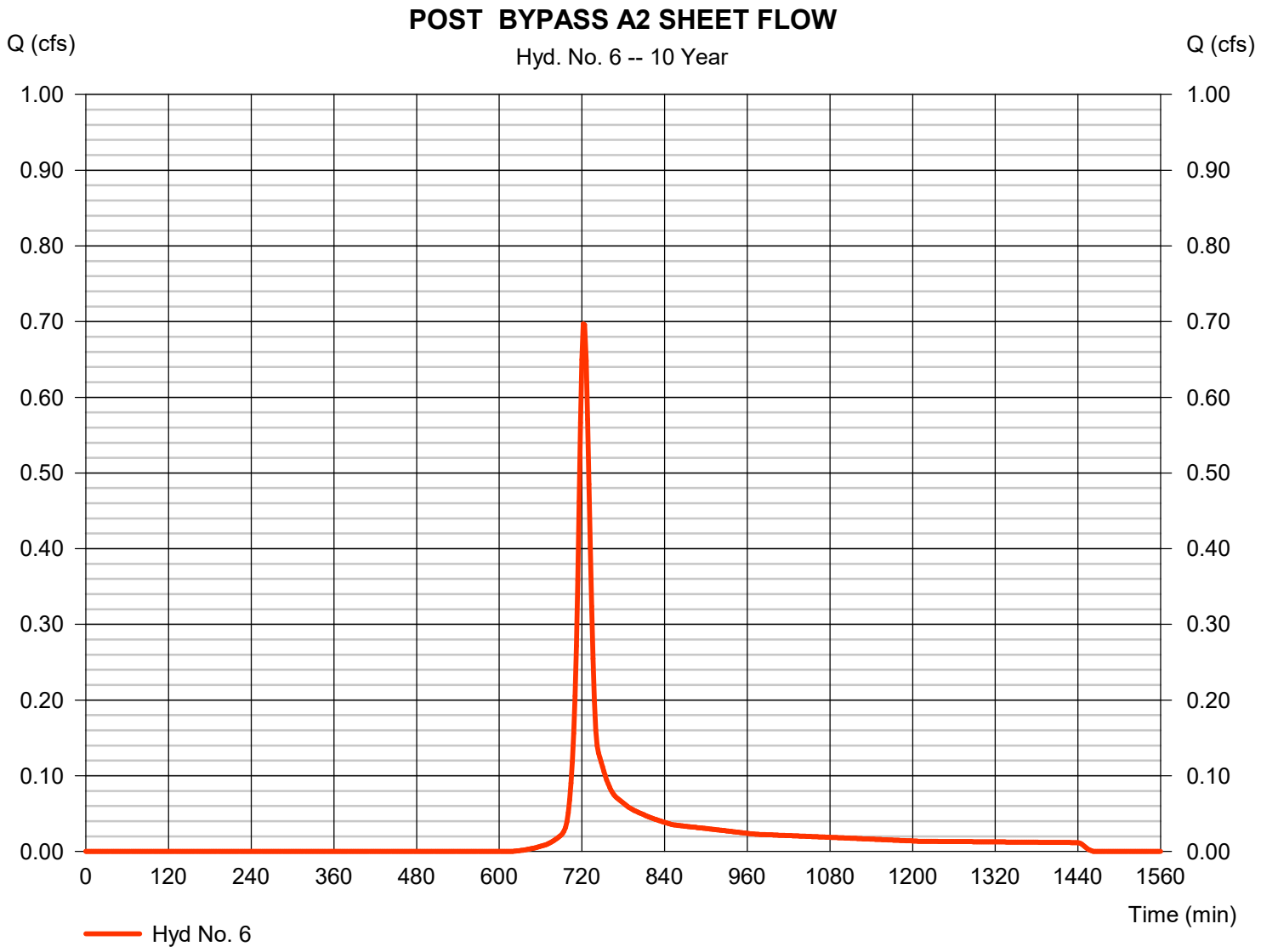
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Saturday, 01 / 31 / 2026

Hyd. No. 6

POST BYPASS A2 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 0.697 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 2,003 cuft
Drainage area	= 0.300 ac	Curve number	= 68*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 15.60 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.240 x 61) + (0.060 x 98)] / 0.300



TR55 Tc Worksheet

Hyd. No. 6

POST BYPASS A2 SHEET FLOW

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.400		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.31		0.00		0.00		
Land slope (%)	= 4.30		0.00		0.00		
Travel Time (min)	**= 15.55**	**+**	**0.00**	**+**	**0.00**	**=**	**15.55**
Shallow Concentrated Flow							
Flow length (ft)	= 5.00		0.00		0.00		
Watercourse slope (%)	= 4.30		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=3.35		0.00		0.00		
Travel Time (min)	**= 0.02**	**+**	**0.00**	**+**	**0.00**	**=**	**0.02**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 15.60 min

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Hydrograph Report

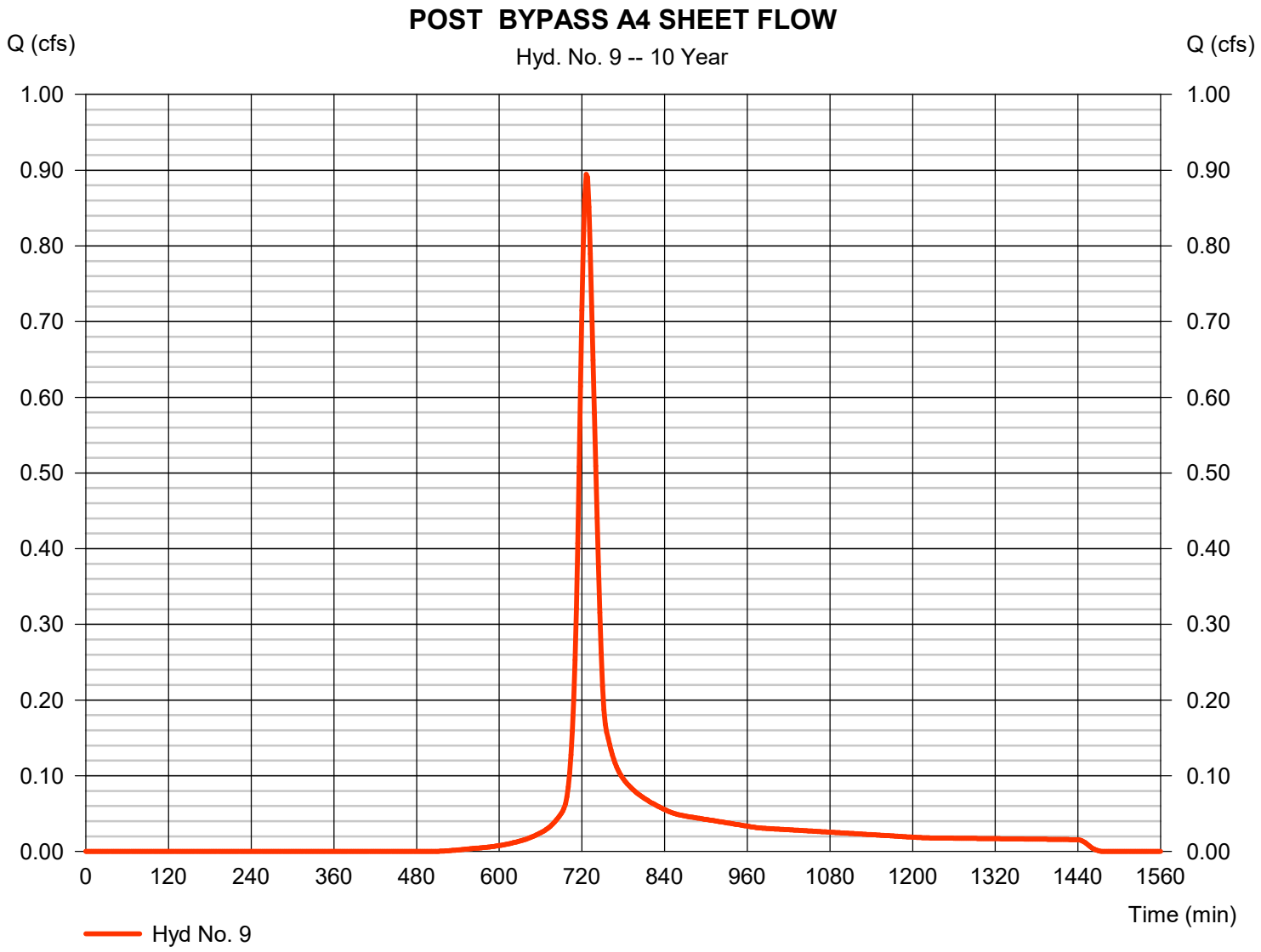
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Saturday, 01 / 31 / 2026

Hyd. No. 9

POST BYPASS A4 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 0.895 cfs
Storm frequency	= 10 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 3,102 cuft
Drainage area	= 0.330 ac	Curve number	= 76*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 20.42 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.200 x 61) + (0.130 x 98)] / 0.330



TR55 Tc Worksheet

Hyd. No. 9

POST BYPASS A4 SHEET FLOW

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.400		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.31		0.00		0.00		
Land slope (%)	= 2.40		0.00		0.00		
Travel Time (min)	**= 19.63**	**+**	**0.00**	**+**	**0.00**	**=**	**19.63**
Shallow Concentrated Flow							
Flow length (ft)	= 118.00		0.00		0.00		
Watercourse slope (%)	= 2.40		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=2.50		0.00		0.00		
Travel Time (min)	**= 0.79**	**+**	**0.00**	**+**	**0.00**	**=**	**0.79**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

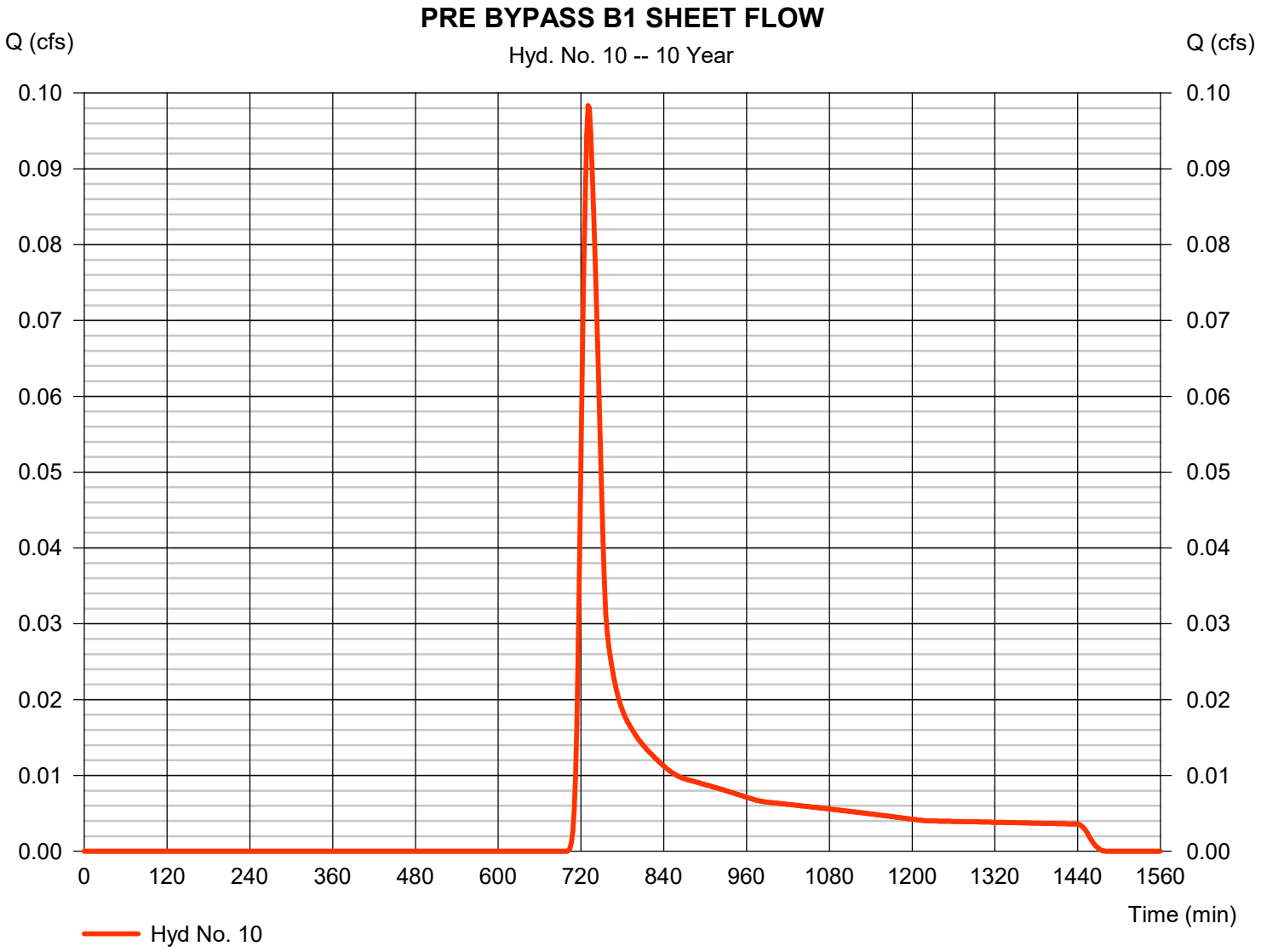
Total Travel Time, Tc ..... 20.42 min

Hydrograph Report

Hyd. No. 10

PRE BYPASS B1 SHEET FLOW

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.098 cfs
Storm frequency	=	10 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	457 cuft
Drainage area	=	0.130 ac	Curve number	=	55
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	24.70 min
Total precip.	=	5.01 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No. 10

PRE BYPASS B1 SHEET FLOW

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.400		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.31		0.00		0.00		
Land slope (%)	= 1.40		0.00		0.00		
Travel Time (min)	**= 24.35**	**+**	**0.00**	**+**	**0.00**	**=**	**24.35**
Shallow Concentrated Flow							
Flow length (ft)	= 87.00		0.00		0.00		
Watercourse slope (%)	= 8.40		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=4.68		0.00		0.00		
Travel Time (min)	**= 0.31**	**+**	**0.00**	**+**	**0.00**	**=**	**0.31**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

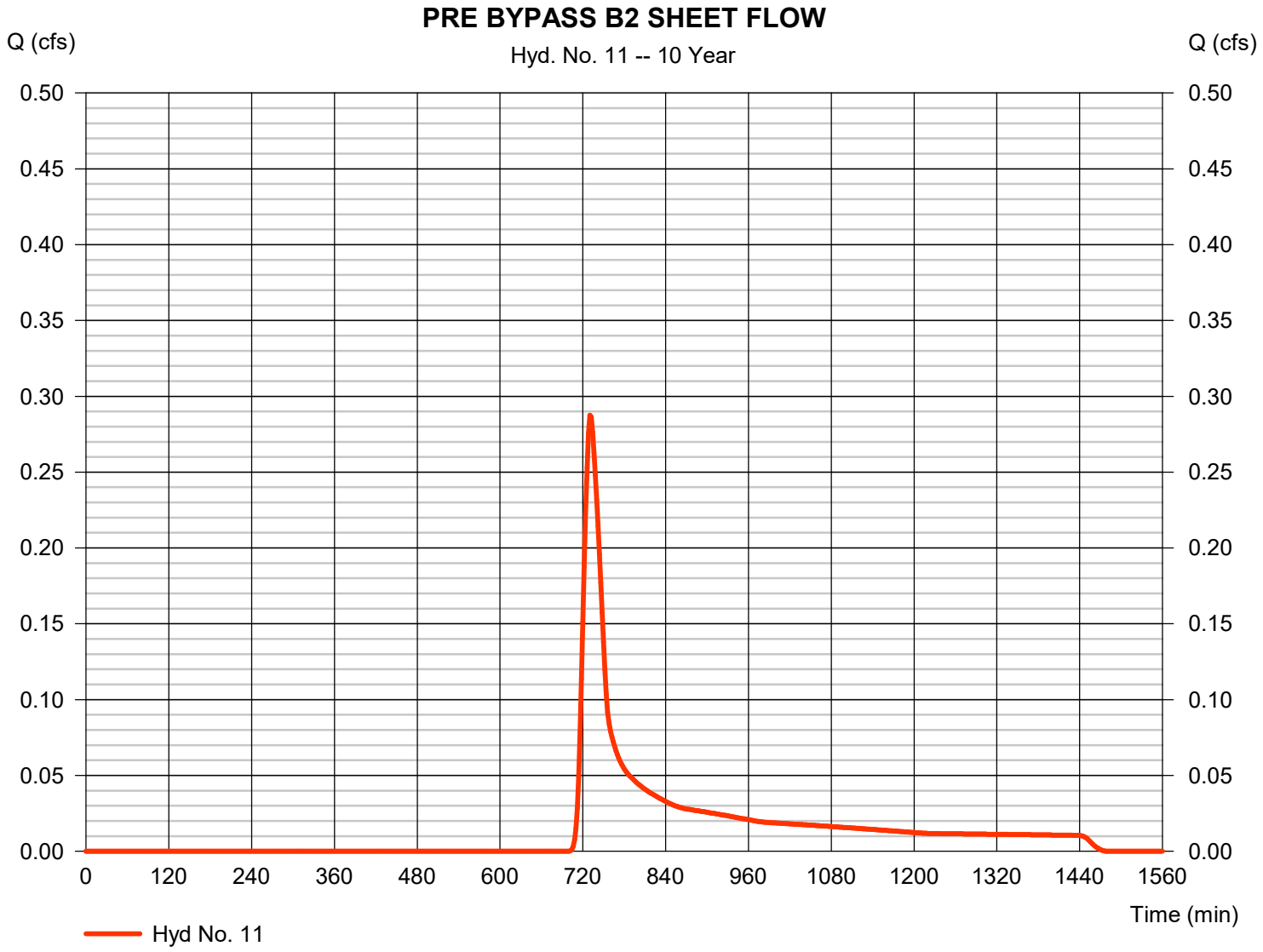
Total Travel Time, Tc ..... 24.70 min

Hydrograph Report

Hyd. No. 11

PRE BYPASS B2 SHEET FLOW

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.287 cfs
Storm frequency	=	10 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	1,337 cuft
Drainage area	=	0.380 ac	Curve number	=	55
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	24.90 min
Total precip.	=	5.01 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



TR55 Tc Worksheet

Hyd. No. 11

PRE BYPASS B2 SHEET FLOW

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.400		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.31		0.00		0.00		
Land slope (%)	= 1.40		0.00		0.00		
Travel Time (min)	**= 24.35**	**+**	**0.00**	**+**	**0.00**	**=**	**24.35**
Shallow Concentrated Flow							
Flow length (ft)	= 147.00		0.00		0.00		
Watercourse slope (%)	= 8.40		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=4.68		0.00		0.00		
Travel Time (min)	**= 0.52**	**+**	**0.00**	**+**	**0.00**	**=**	**0.52**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 24.90 min

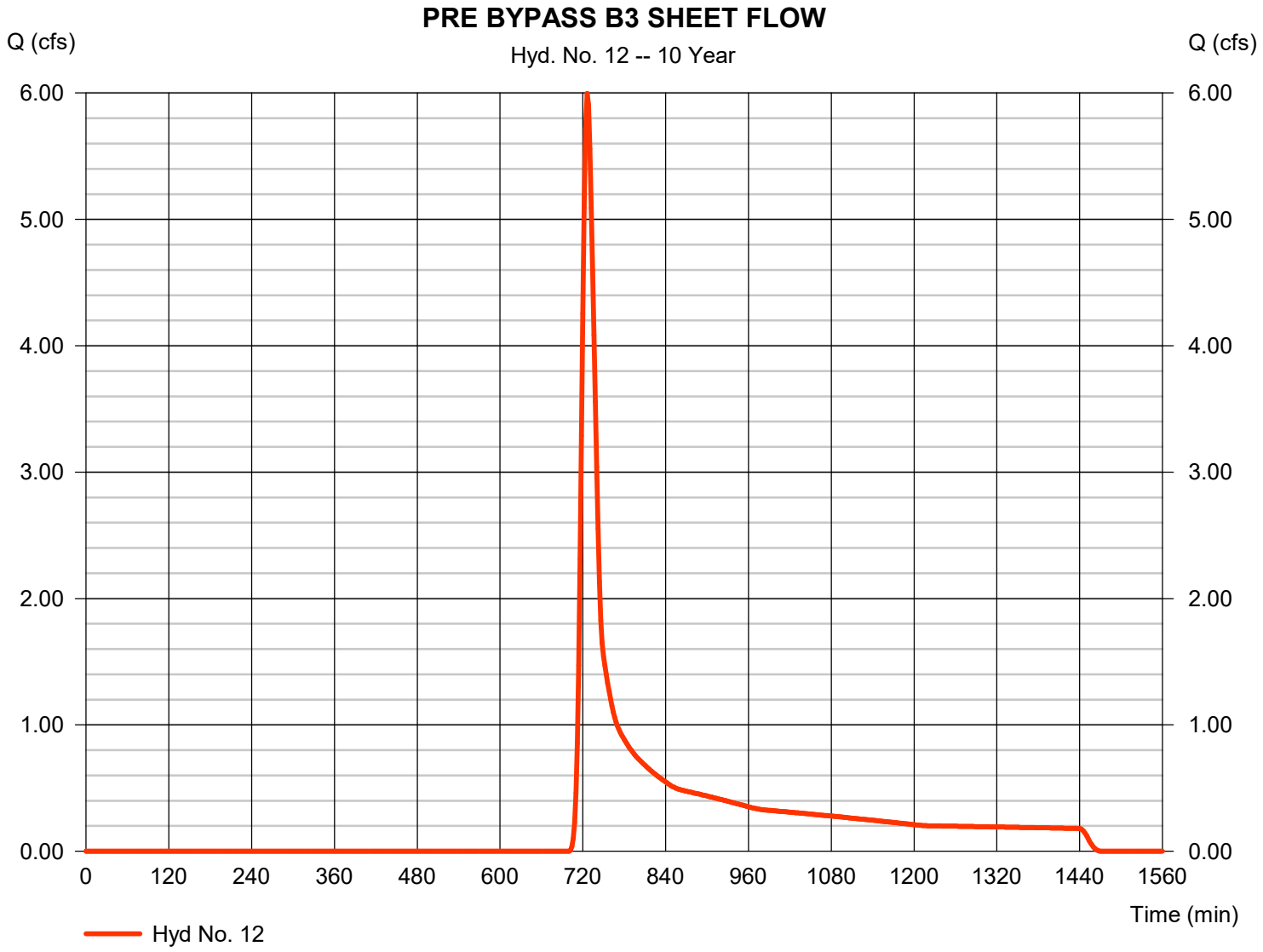
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Saturday, 01 / 31 / 2026

Hyd. No. 12

PRE BYPASS B3 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 5.997 cfs
Storm frequency	= 10 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 23,058 cuft
Drainage area	= 6.450 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 16.80 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



TR55 Tc Worksheet

Hyd. No. 12

PRE BYPASS B3 SHEET FLOW

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.400		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.31		0.00		0.00		
Land slope (%)	= 6.10		0.00		0.00		
Travel Time (min)	**= 13.52**	**+**	**0.00**	**+**	**0.00**	**=**	**13.52**
Shallow Concentrated Flow							
Flow length (ft)	= 729.00		0.00		0.00		
Watercourse slope (%)	= 5.40		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=3.75		0.00		0.00		
Travel Time (min)	**= 3.24**	**+**	**0.00**	**+**	**0.00**	**=**	**3.24**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

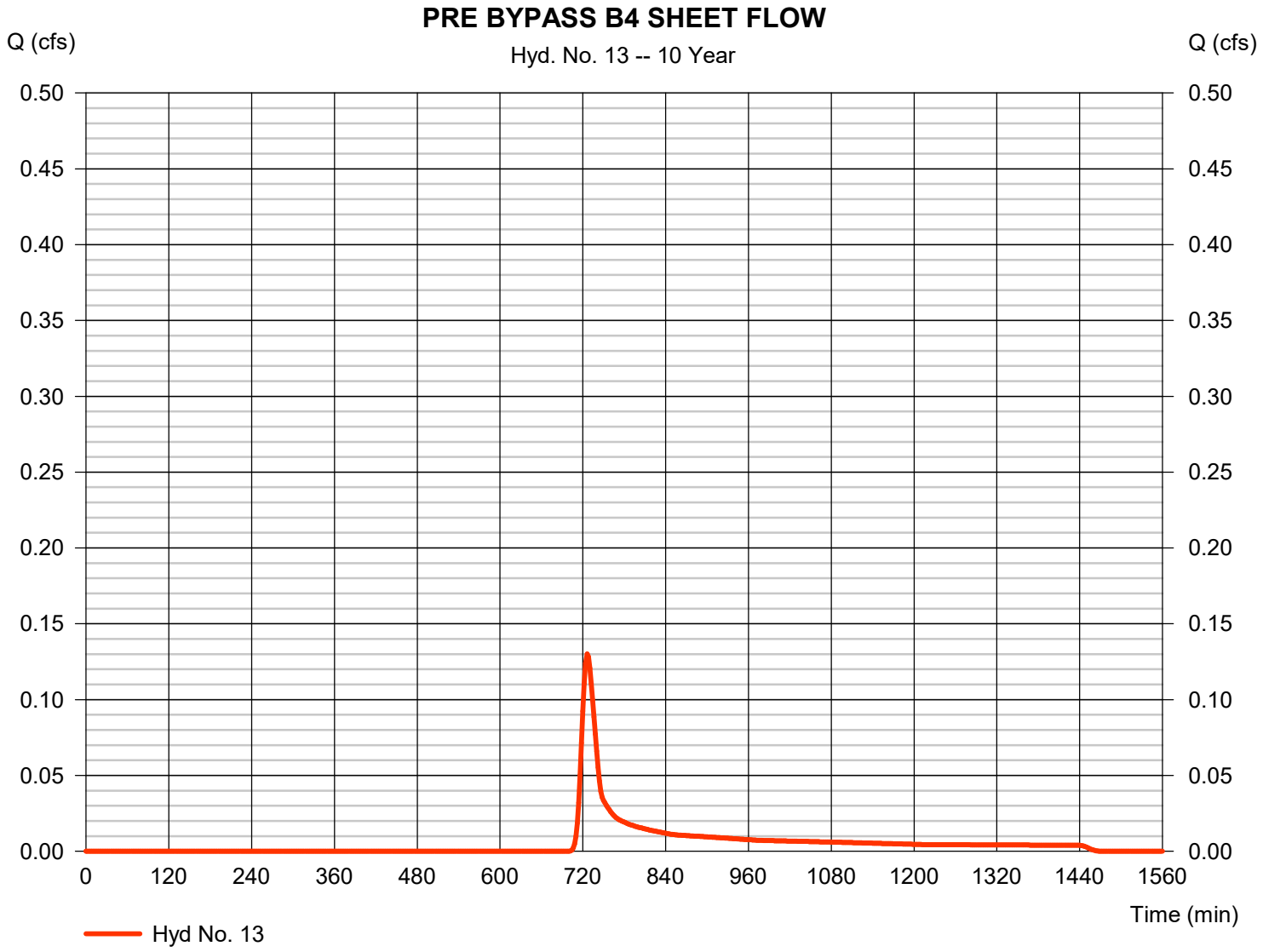
Total Travel Time, Tc ..... 16.80 min

Hydrograph Report

Hyd. No. 13

PRE BYPASS B4 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 0.130 cfs
Storm frequency	= 10 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 500 cuft
Drainage area	= 0.140 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 17.30 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



TR55 Tc Worksheet

Hyd. No. 13

PRE BYPASS B4 SHEET FLOW

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.400		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.31		0.00		0.00		
Land slope (%)	= 3.40		0.00		0.00		
Travel Time (min)	**= 17.08**	**+**	**0.00**	**+**	**0.00**	**=**	**17.08**
Shallow Concentrated Flow							
Flow length (ft)	= 98.00		0.00		0.00		
Watercourse slope (%)	= 14.90		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=6.23		0.00		0.00		
Travel Time (min)	**= 0.26**	**+**	**0.00**	**+**	**0.00**	**=**	**0.26**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

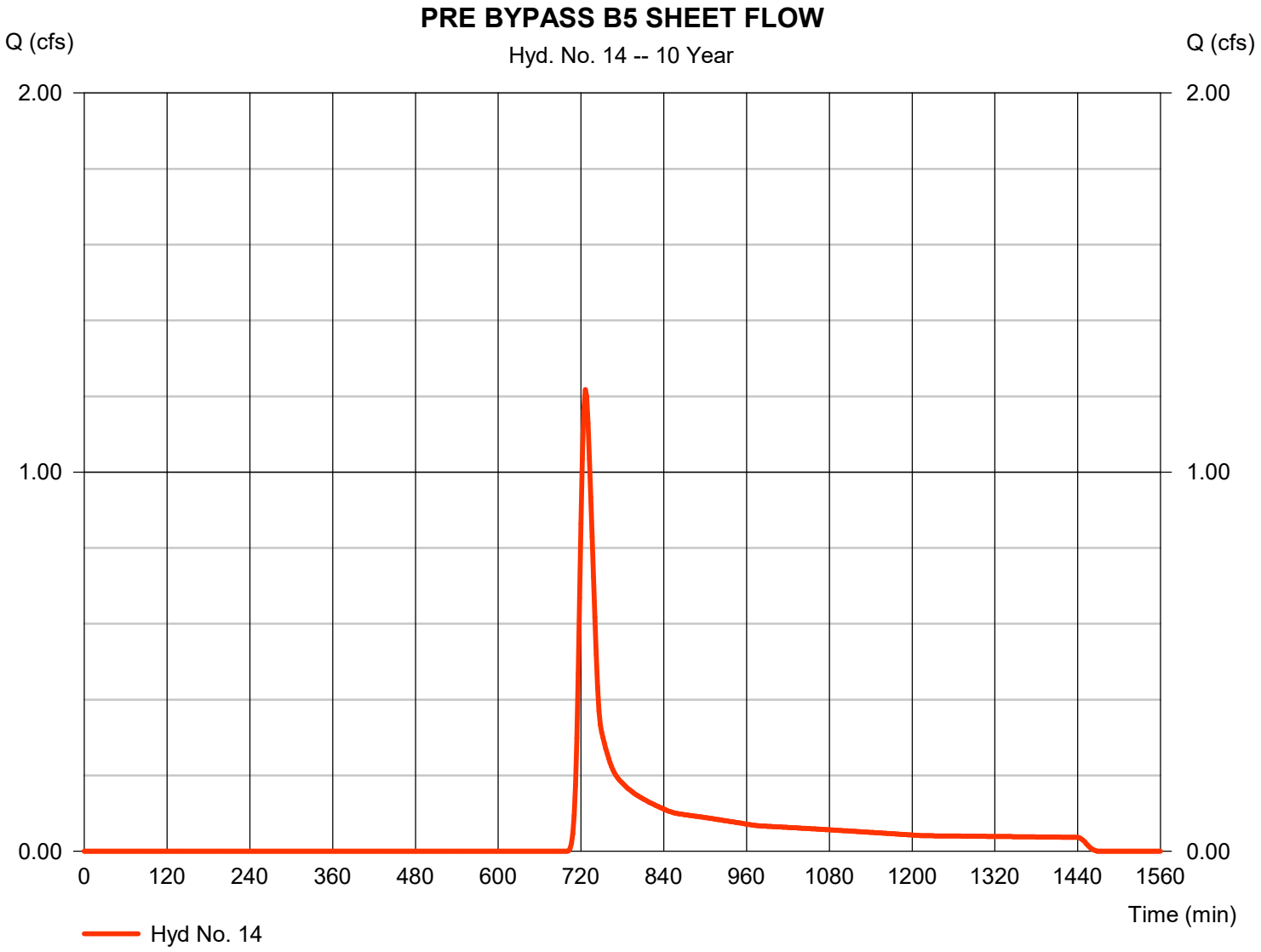
Total Travel Time, Tc ..... 17.30 min

Hydrograph Report

Hyd. No. 14

PRE BYPASS B5 SHEET FLOW

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.218 cfs
Storm frequency	=	10 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	4,683 cuft
Drainage area	=	1.310 ac	Curve number	=	55
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	20.10 min
Total precip.	=	5.01 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No. 14

PRE BYPASS B5 SHEET FLOW

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.400		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.31		0.00		0.00		
Land slope (%)	= 2.50		0.00		0.00		
Travel Time (min)	**= 19.31**	**+**	**0.00**	**+**	**0.00**	**=**	**19.31**
Shallow Concentrated Flow							
Flow length (ft)	= 249.00		0.00		0.00		
Watercourse slope (%)	= 10.80		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=5.30		0.00		0.00		
Travel Time (min)	**= 0.78**	**+**	**0.00**	**+**	**0.00**	**=**	**0.78**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

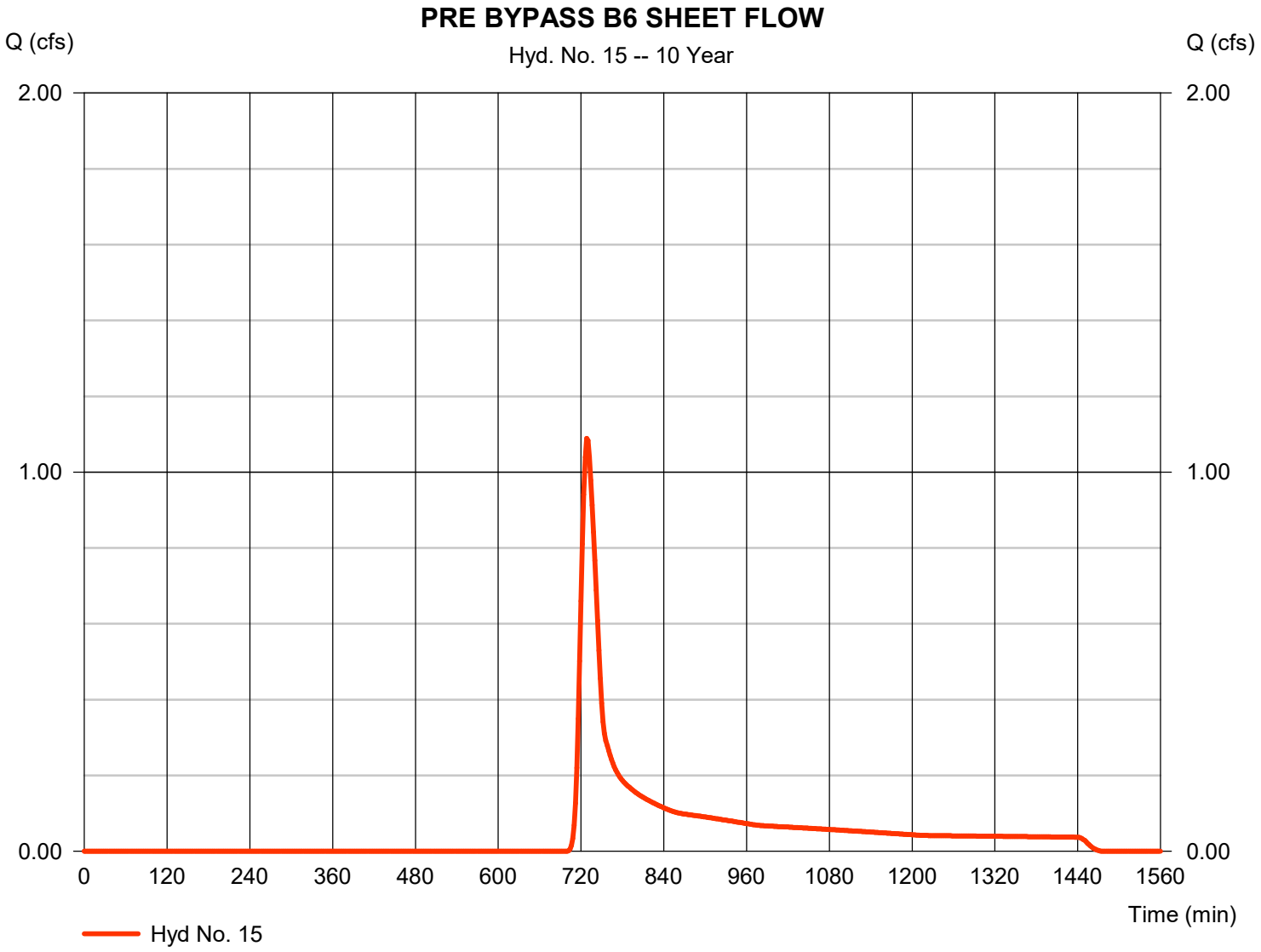
Total Travel Time, Tc ..... 20.10 min

Hydrograph Report

Hyd. No. 15

PRE BYPASS B6 SHEET FLOW

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.089 cfs
Storm frequency	=	10 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	4,730 cuft
Drainage area	=	1.300 ac	Curve number	=	55
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	20.70 min
Total precip.	=	5.01 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No. 15

PRE BYPASS B6 SHEET FLOW

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.400		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.31		0.00		0.00		
Land slope (%)	= 2.50		0.00		0.00		
Travel Time (min)	**= 19.31**	**+**	**0.00**	**+**	**0.00**	**=**	**19.31**
Shallow Concentrated Flow							
Flow length (ft)	= 335.00		0.00		0.00		
Watercourse slope (%)	= 6.50		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=4.11		0.00		0.00		
Travel Time (min)	**= 1.36**	**+**	**0.00**	**+**	**0.00**	**=**	**1.36**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 20.70 min

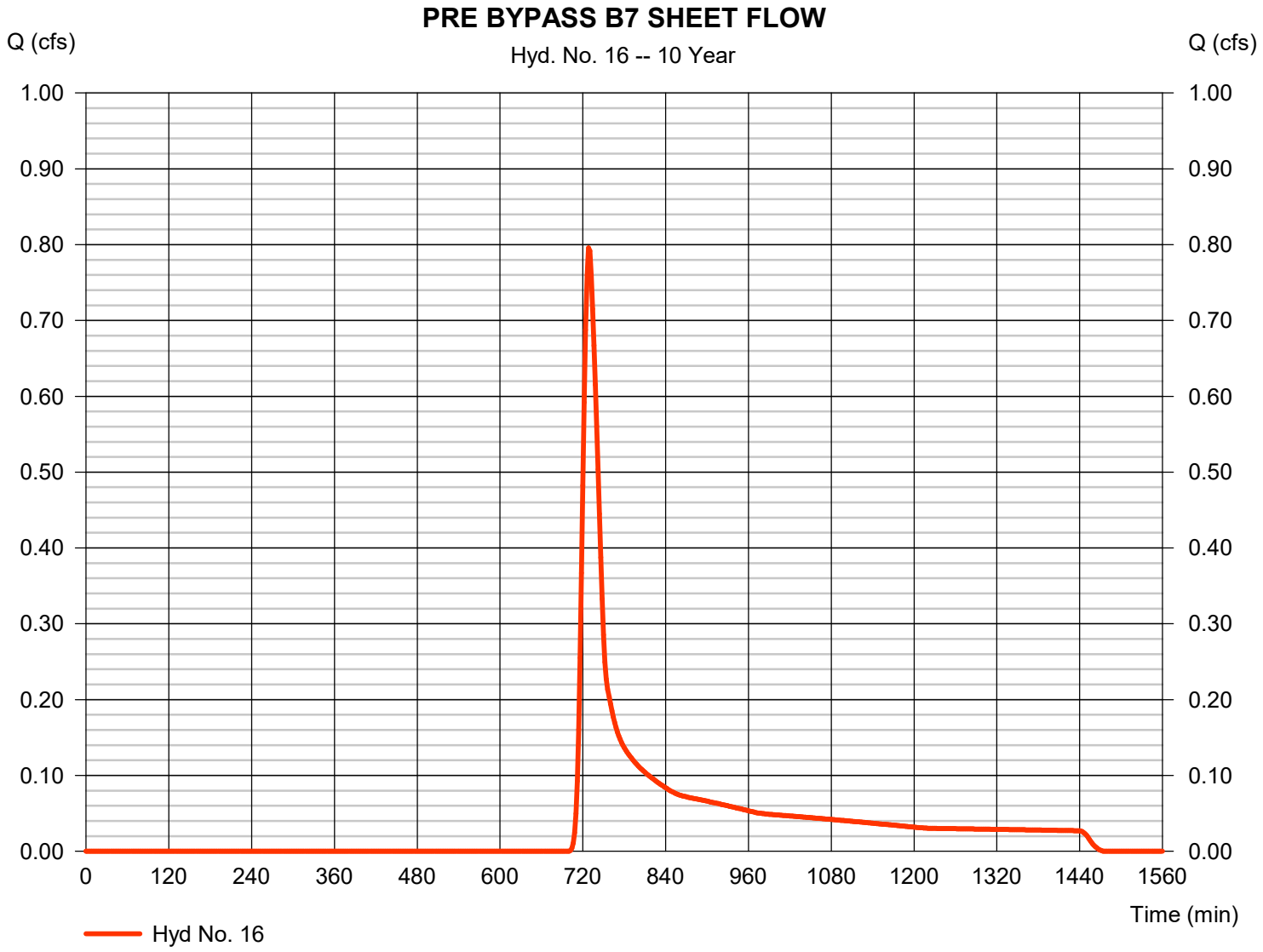
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Saturday, 01 / 31 / 2026

Hyd. No. 16

PRE BYPASS B7 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 0.796 cfs
Storm frequency	= 10 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 3,457 cuft
Drainage area	= 0.950 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 20.40 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



TR55 Tc Worksheet

Hyd. No. 16

PRE BYPASS B7 SHEET FLOW

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.400		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.31		0.00		0.00		
Land slope (%)	= 2.50		0.00		0.00		
Travel Time (min)	**= 19.31**	**+**	**0.00**	**+**	**0.00**	**=**	**19.31**
Shallow Concentrated Flow							
Flow length (ft)	= 209.00		0.00		0.00		
Watercourse slope (%)	= 4.20		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=3.31		0.00		0.00		
Travel Time (min)	**= 1.05**	**+**	**0.00**	**+**	**0.00**	**=**	**1.05**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 20.40 min

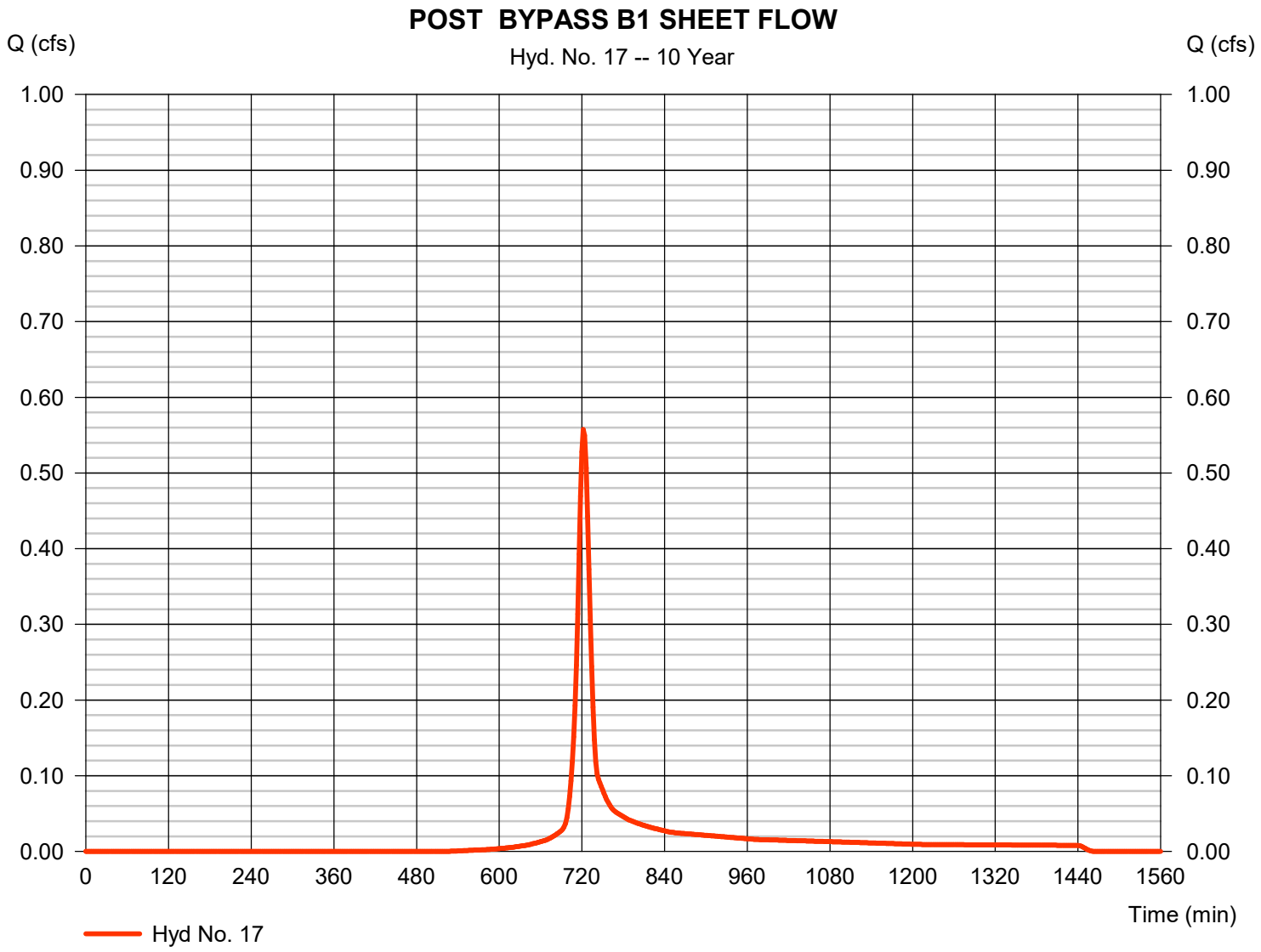
Hydrograph Report

Hyd. No. 17

POST BYPASS B1 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 0.557 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 1,566 cuft
Drainage area	= 0.180 ac	Curve number	= 75*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 16.49 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.110 x 61) + (0.070 x 98)] / 0.180



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No. 17

POST BYPASS B1 SHEET FLOW

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.31		0.00		0.00		
Land slope (%)	= 1.40		0.00		0.00		
Travel Time (min)	**= 16.18**	**+**	**0.00**	**+**	**0.00**	**=**	**16.18**
Shallow Concentrated Flow							
Flow length (ft)	= 85.00		0.00		0.00		
Watercourse slope (%)	= 8.40		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=4.68		0.00		0.00		
Travel Time (min)	**= 0.30**	**+**	**0.00**	**+**	**0.00**	**=**	**0.30**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 16.49 min

Hydrograph Report

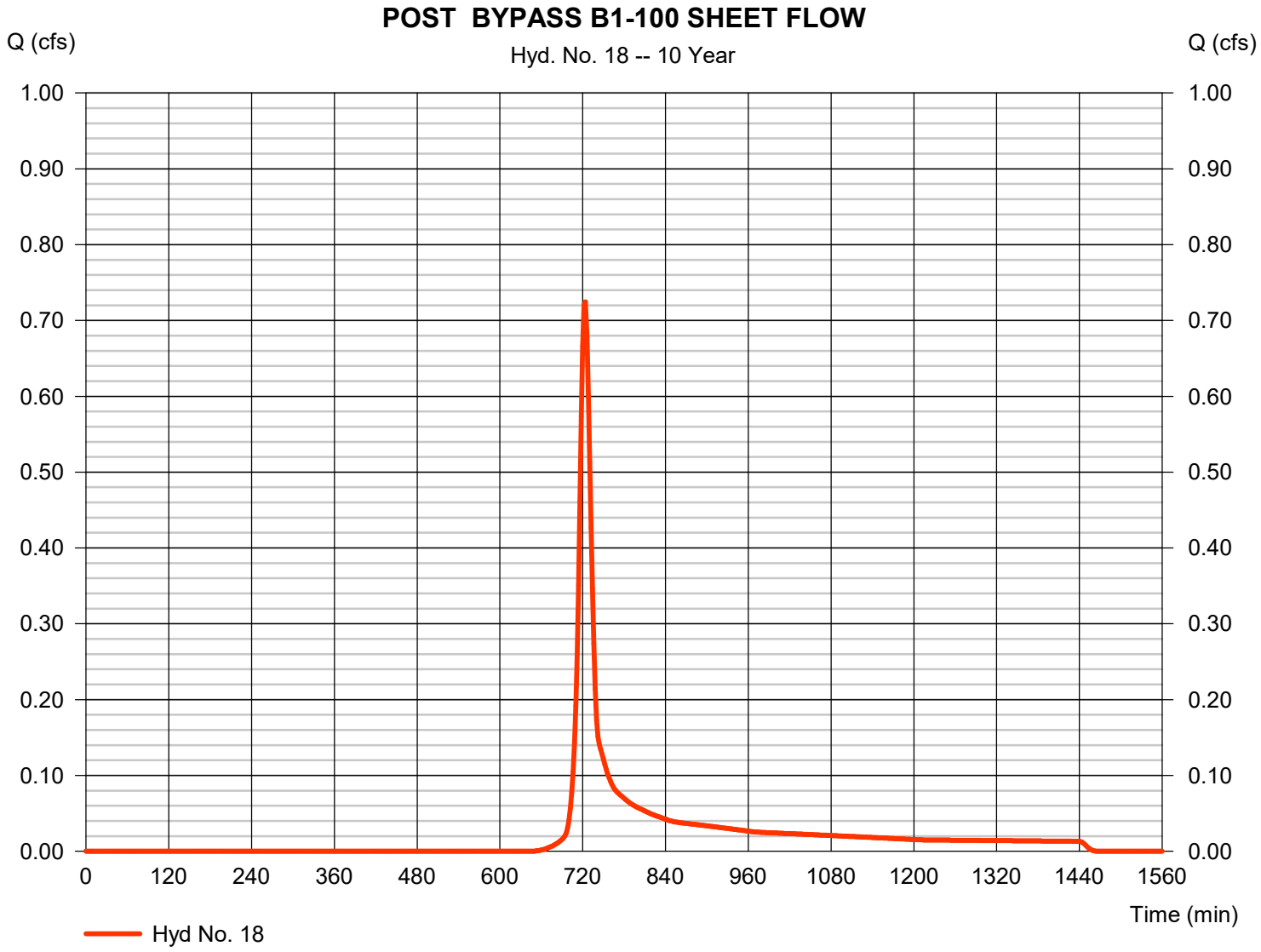
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Saturday, 01 / 31 / 2026

Hyd. No. 18

POST BYPASS B1-100 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 0.725 cfs
Storm frequency	= 10 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 2,115 cuft
Drainage area	= 0.360 ac	Curve number	= 65*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 16.50 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.110 x 61) + (0.070 x 98) + (0.180 x 55)] / 0.360



TR55 Tc Worksheet

Hyd. No. 18

POST BYPASS B1-100 SHEET FLOW

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.31		0.00		0.00		
Land slope (%)	= 1.40		0.00		0.00		
Travel Time (min)	**= 16.18**	**+**	**0.00**	**+**	**0.00**	**=**	**16.18**
Shallow Concentrated Flow							
Flow length (ft)	= 170.00		0.00		0.00		
Watercourse slope (%)	= 37.00		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=9.81		0.00		0.00		
Travel Time (min)	**= 0.29**	**+**	**0.00**	**+**	**0.00**	**=**	**0.29**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

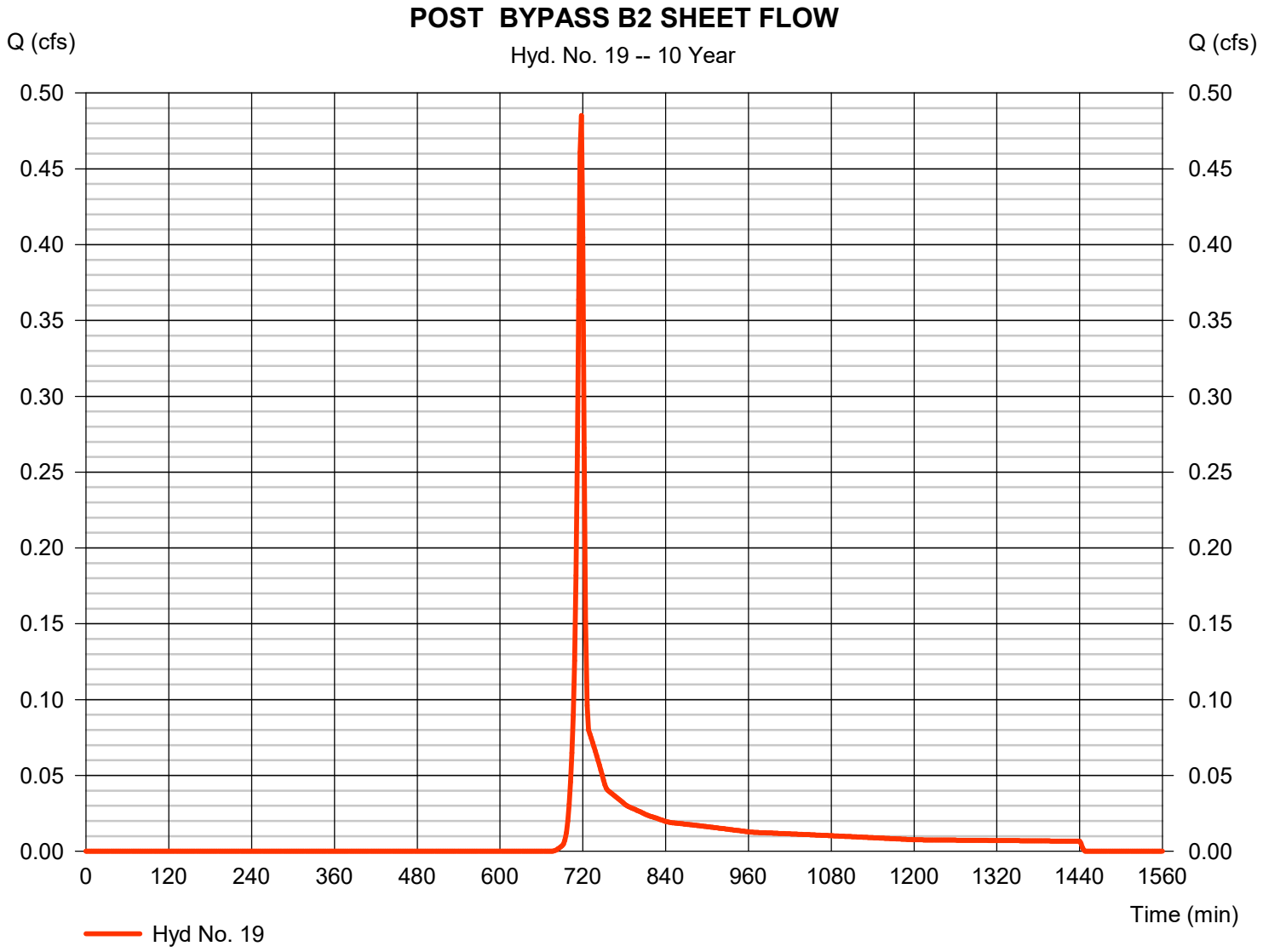
Total Travel Time, Tc ..... 16.50 min

Hydrograph Report

Hyd. No. 19

POST BYPASS B2 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 0.485 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 983 cuft
Drainage area	= 0.210 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 3.60 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



TR55 Tc Worksheet

Hyd. No. 19

POST BYPASS B2 SHEET FLOW

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 75.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.31		0.00		0.00		
Land slope (%)	= 33.00		0.00		0.00		
Travel Time (min)	**= 3.63**	**+**	**0.00**	**+**	**0.00**	**=**	**3.63**
Shallow Concentrated Flow							
Flow length (ft)	= 0.00		0.00		0.00		
Watercourse slope (%)	= 0.00		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=0.00		0.00		0.00		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 3.60 min

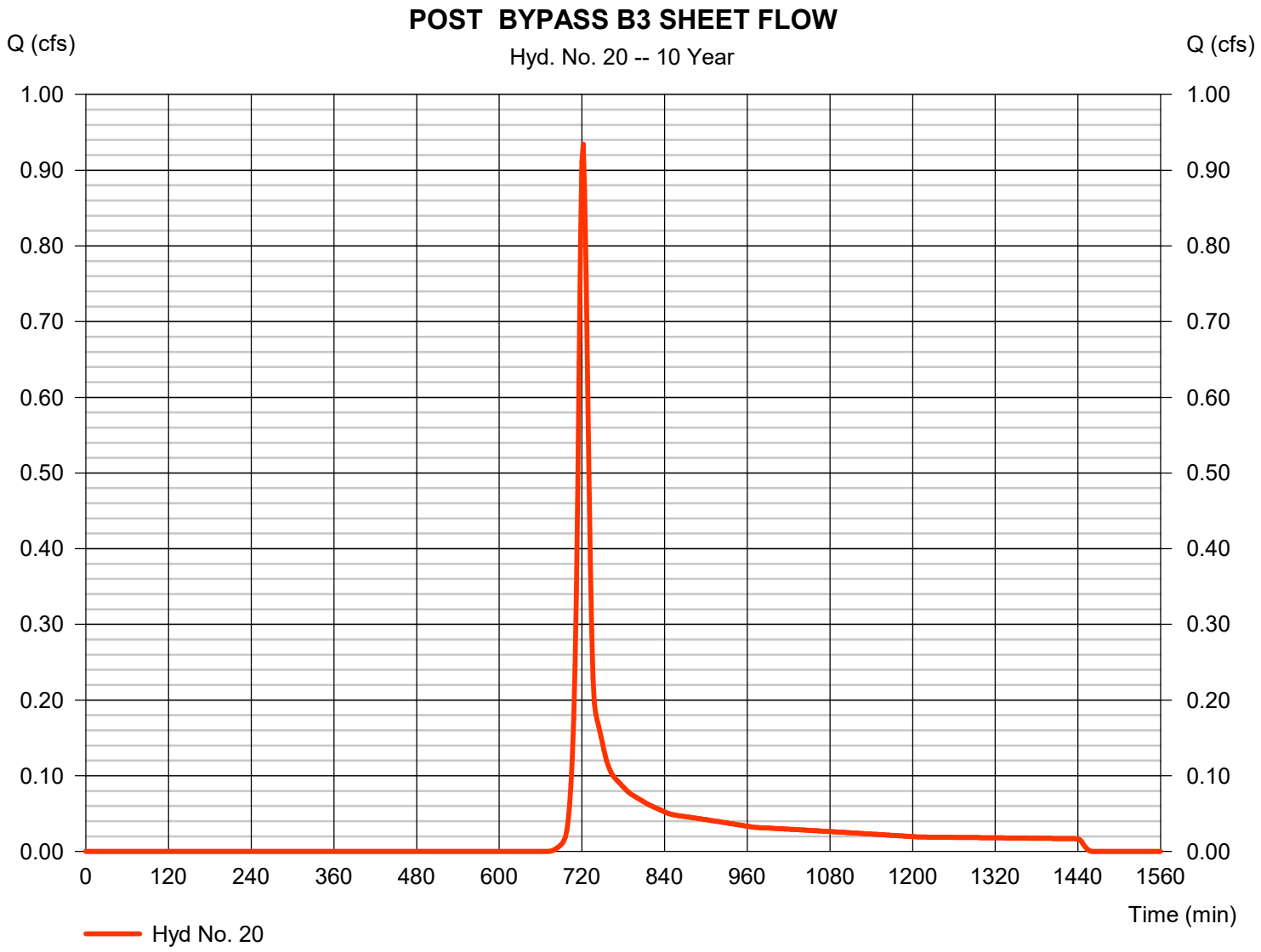
Hydrograph Report

Hyd. No. 20

POST BYPASS B3 SHEET FLOW

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.934 cfs
Storm frequency	=	10 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	2,542 cuft
Drainage area	=	0.470 ac	Curve number	=	62*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	12.00 min
Total precip.	=	5.01 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.460 x 61) + (0.010 x 98)] / 0.470



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No. 20

POST BYPASS B3 SHEET FLOW

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.31		0.00		0.00		
Land slope (%)	= 3.00		0.00		0.00		
Travel Time (min)	**= 11.93**	**+**	**0.00**	**+**	**0.00**	**=**	**11.93**
Shallow Concentrated Flow							
Flow length (ft)	= 30.00		0.00		0.00		
Watercourse slope (%)	= 33.00		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=9.27		0.00		0.00		
Travel Time (min)	**= 0.05**	**+**	**0.00**	**+**	**0.00**	**=**	**0.05**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 12.00 min

Hydrograph Report

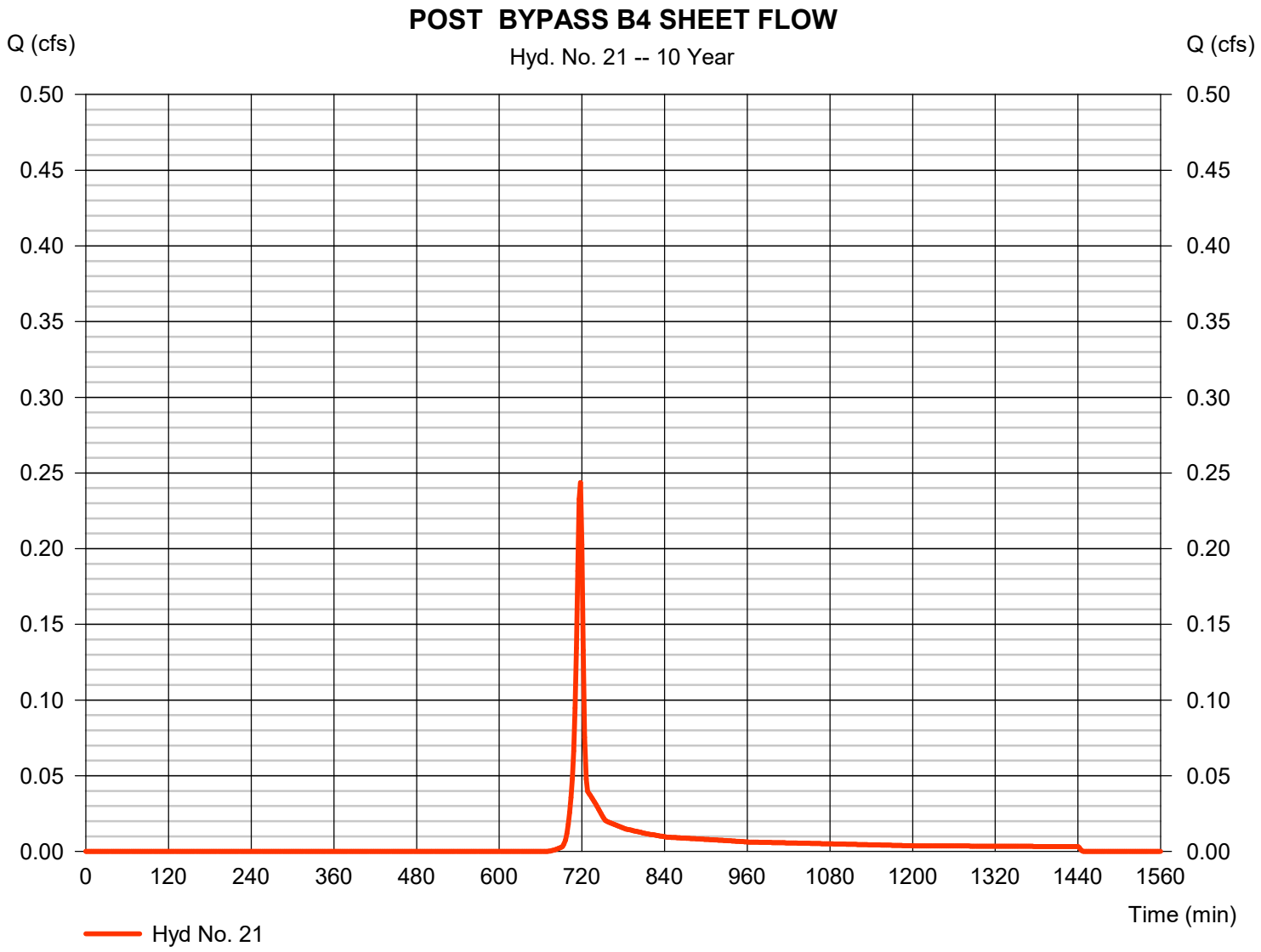
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Saturday, 01 / 31 / 2026

Hyd. No. 21

POST BYPASS B4 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 0.244 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 492 cuft
Drainage area	= 0.100 ac	Curve number	= 62*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.460 x 61) + (0.010 x 98)] / 0.100



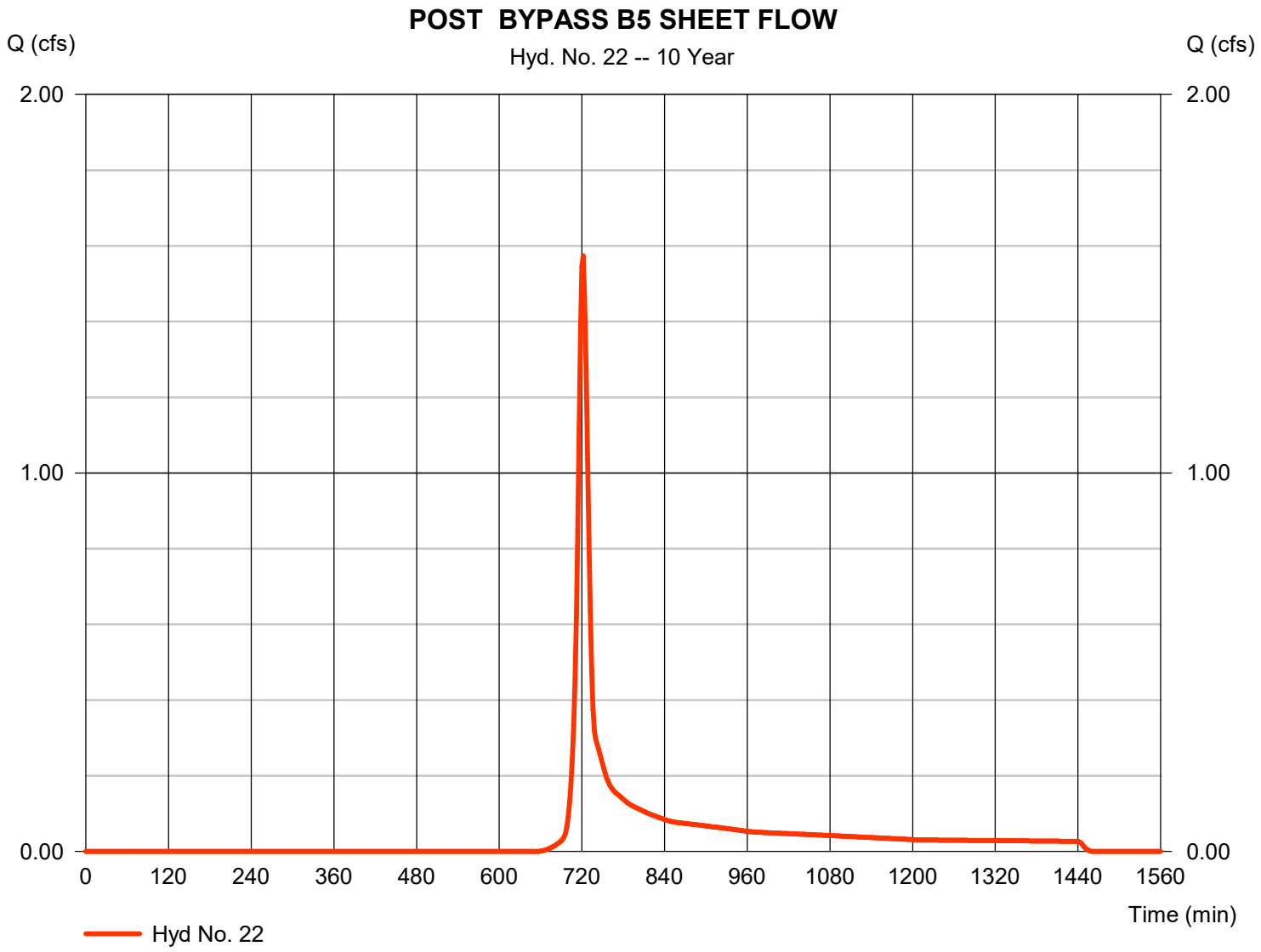
Hydrograph Report

Hyd. No. 22

POST BYPASS B5 SHEET FLOW

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.573 cfs
Storm frequency	=	10 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	4,218 cuft
Drainage area	=	0.710 ac	Curve number	=	64*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	13.30 min
Total precip.	=	5.01 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.650 x 61) + (0.060 x 98)] / 0.710



TR55 Tc Worksheet

Hyd. No. 22

POST BYPASS B5 SHEET FLOW

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.31		0.00		0.00		
Land slope (%)	= 2.40		0.00		0.00		
Travel Time (min)	**= 13.04**	**+**	**0.00**	**+**	**0.00**	**=**	**13.04**
Shallow Concentrated Flow							
Flow length (ft)	= 86.00		0.00		0.00		
Watercourse slope (%)	= 16.00		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=6.45		0.00		0.00		
Travel Time (min)	**= 0.22**	**+**	**0.00**	**+**	**0.00**	**=**	**0.22**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 13.30 min

Hydrograph Report

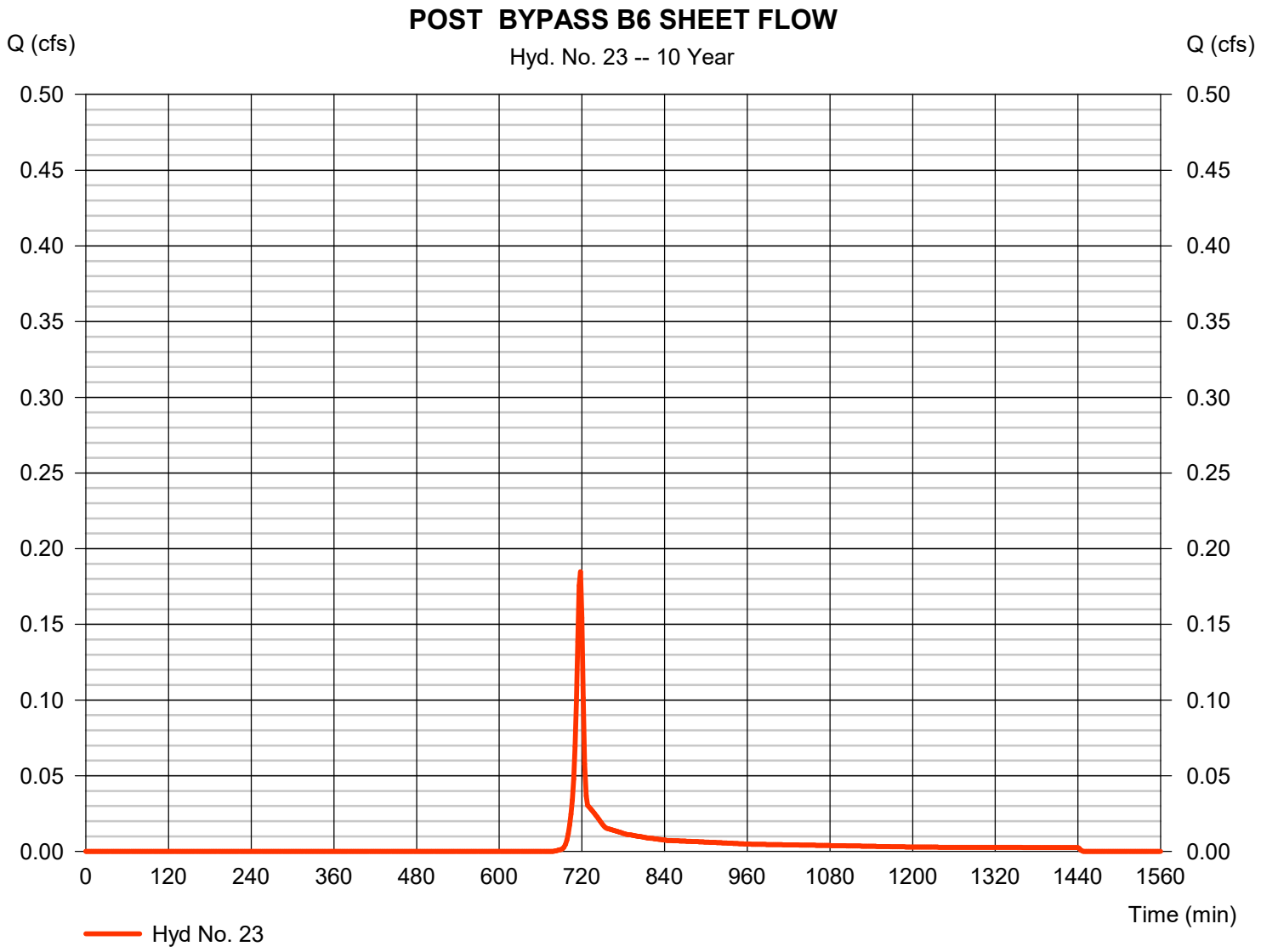
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Saturday, 01 / 31 / 2026

Hyd. No. 23

POST BYPASS B6 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 0.185 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 374 cuft
Drainage area	= 0.080 ac	Curve number	= 61*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.080 x 61)] / 0.080



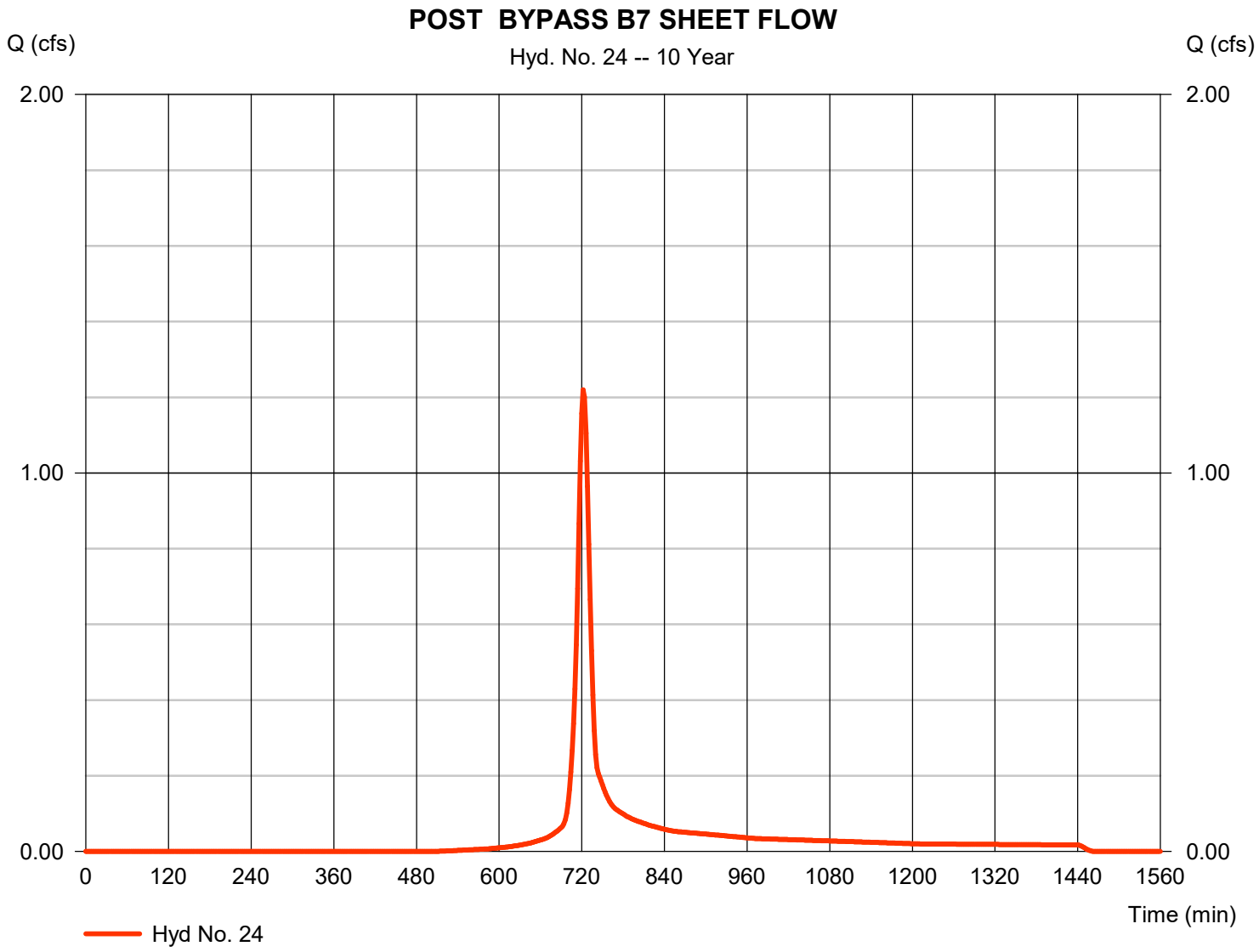
Hydrograph Report

Hyd. No. 24

POST BYPASS B7 SHEET FLOW

Hydrograph type	= SCS Runoff	Peak discharge	= 1.220 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 3,421 cuft
Drainage area	= 0.380 ac	Curve number	= 76*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 15.80 min
Total precip.	= 5.01 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.230 x 61) + (0.150 x 98)] / 0.380



TR55 Tc Worksheet

Hyd. No. 24

POST BYPASS B7 SHEET FLOW

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.31		0.00		0.00		
Land slope (%)	= 2.00		0.00		0.00		
Travel Time (min)	**= 14.03**	**+**	**0.00**	**+**	**0.00**	**=**	**14.03**
Shallow Concentrated Flow							
Flow length (ft)	= 383.00		0.00		0.00		
Watercourse slope (%)	= 5.00		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=3.61		0.00		0.00		
Travel Time (min)	**= 1.77**	**+**	**0.00**	**+**	**0.00**	**=**	**1.77**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 15.80 min

Channel Report

SHEET FLOW A1

Rectangular

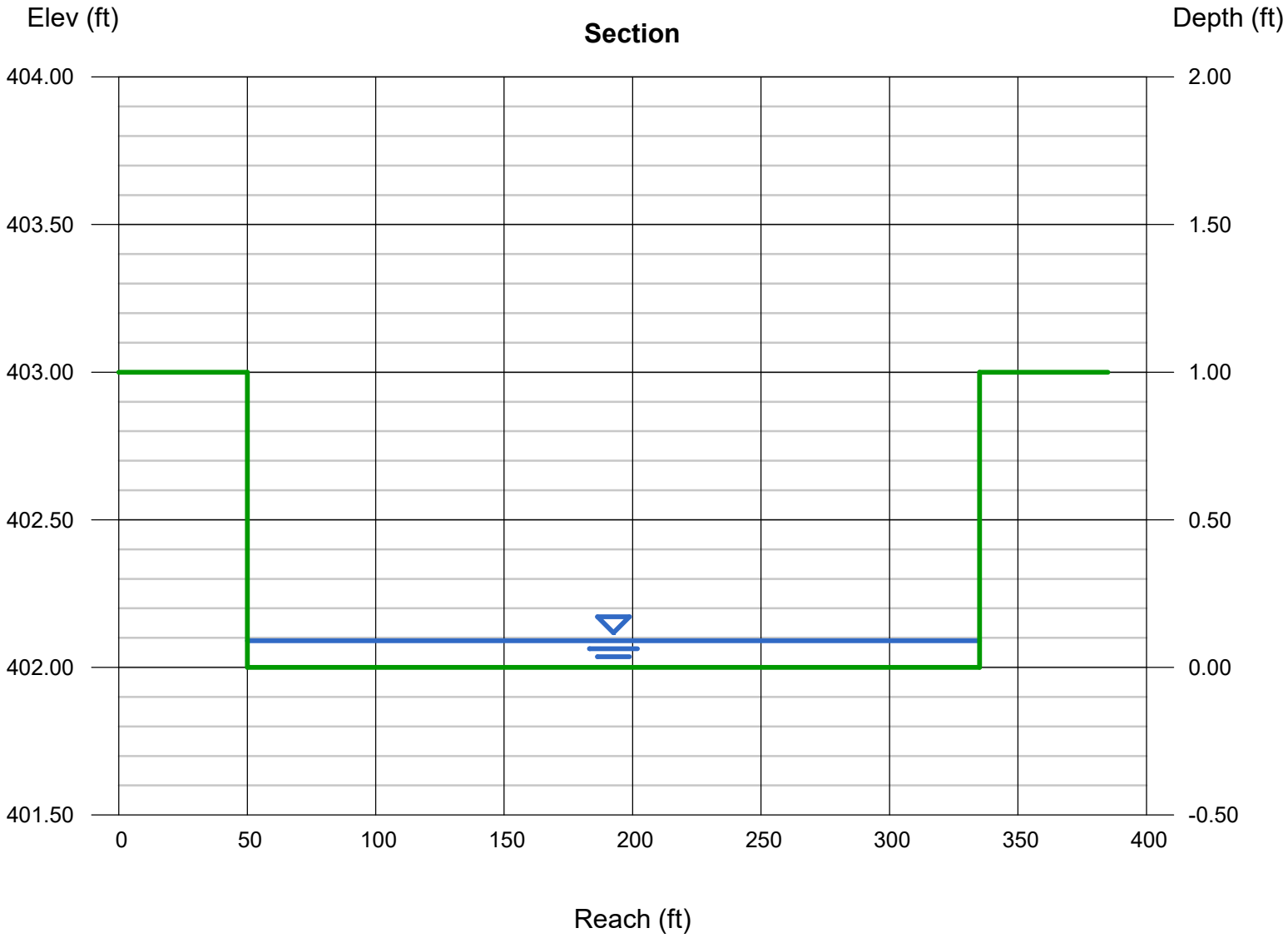
Bottom Width (ft)	= 285.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 402.00
Slope (%)	= 2.00
N-Value	= 0.400

Calculations

Compute by:	Known Q
Known Q (cfs)	= 2.70

Highlighted

Depth (ft)	= 0.09
Q (cfs)	= 2.700
Area (sqft)	= 25.65
Velocity (ft/s)	= 0.11
Wetted Perim (ft)	= 285.18
Crit Depth, Yc (ft)	= 0.02
Top Width (ft)	= 285.00
EGL (ft)	= 0.09



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Thursday, Jan 29 2026

SHEET FLOW A2

Rectangular

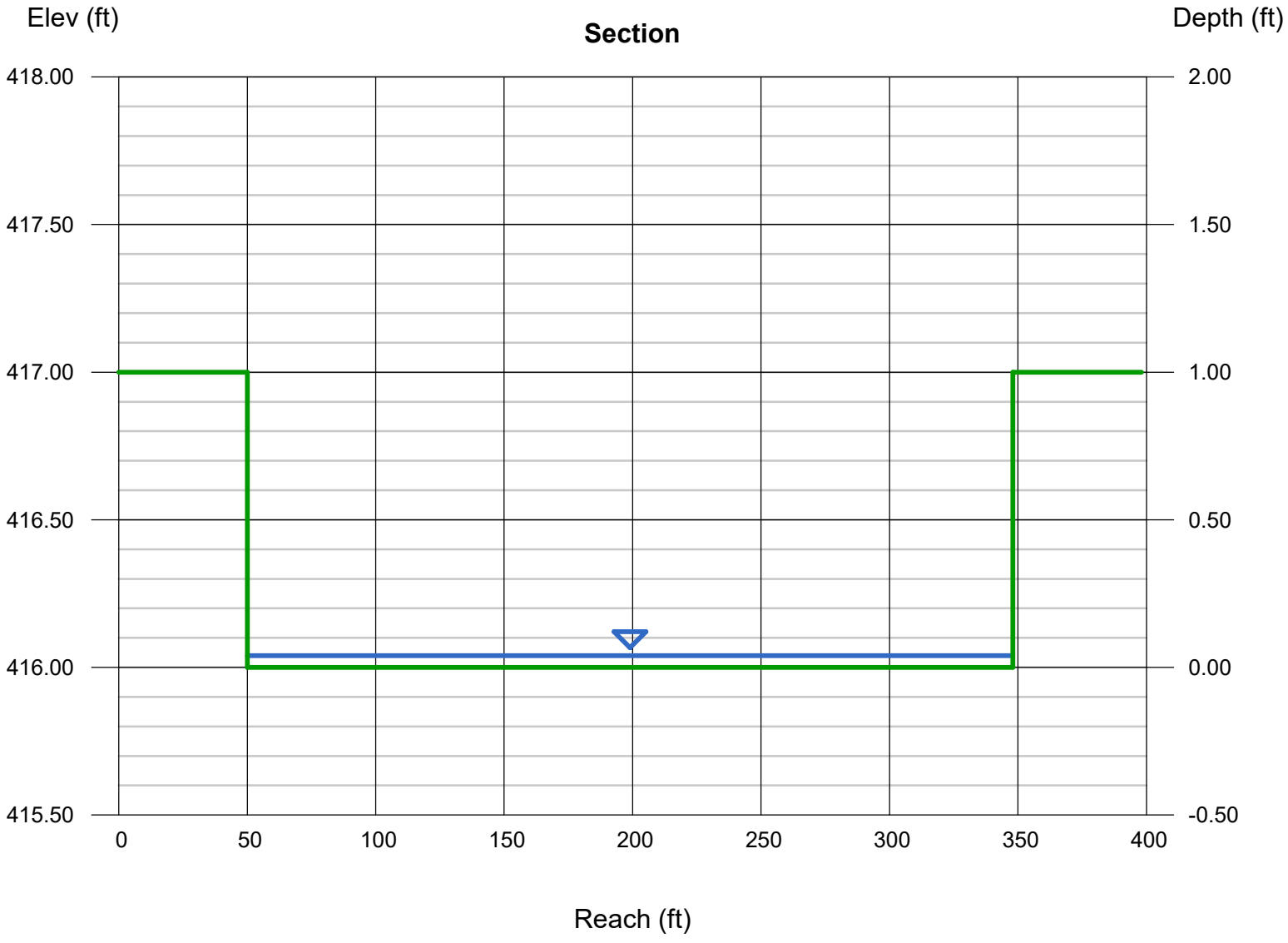
Bottom Width (ft)	= 298.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 416.00
Slope (%)	= 4.30
N-Value	= 0.400

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.70

Highlighted

Depth (ft)	= 0.04
Q (cfs)	= 0.697
Area (sqft)	= 11.92
Velocity (ft/s)	= 0.06
Wetted Perim (ft)	= 298.08
Crit Depth, Yc (ft)	= 0.01
Top Width (ft)	= 298.00
EGL (ft)	= 0.04



Channel Report

SHEET FLOW A3

Rectangular

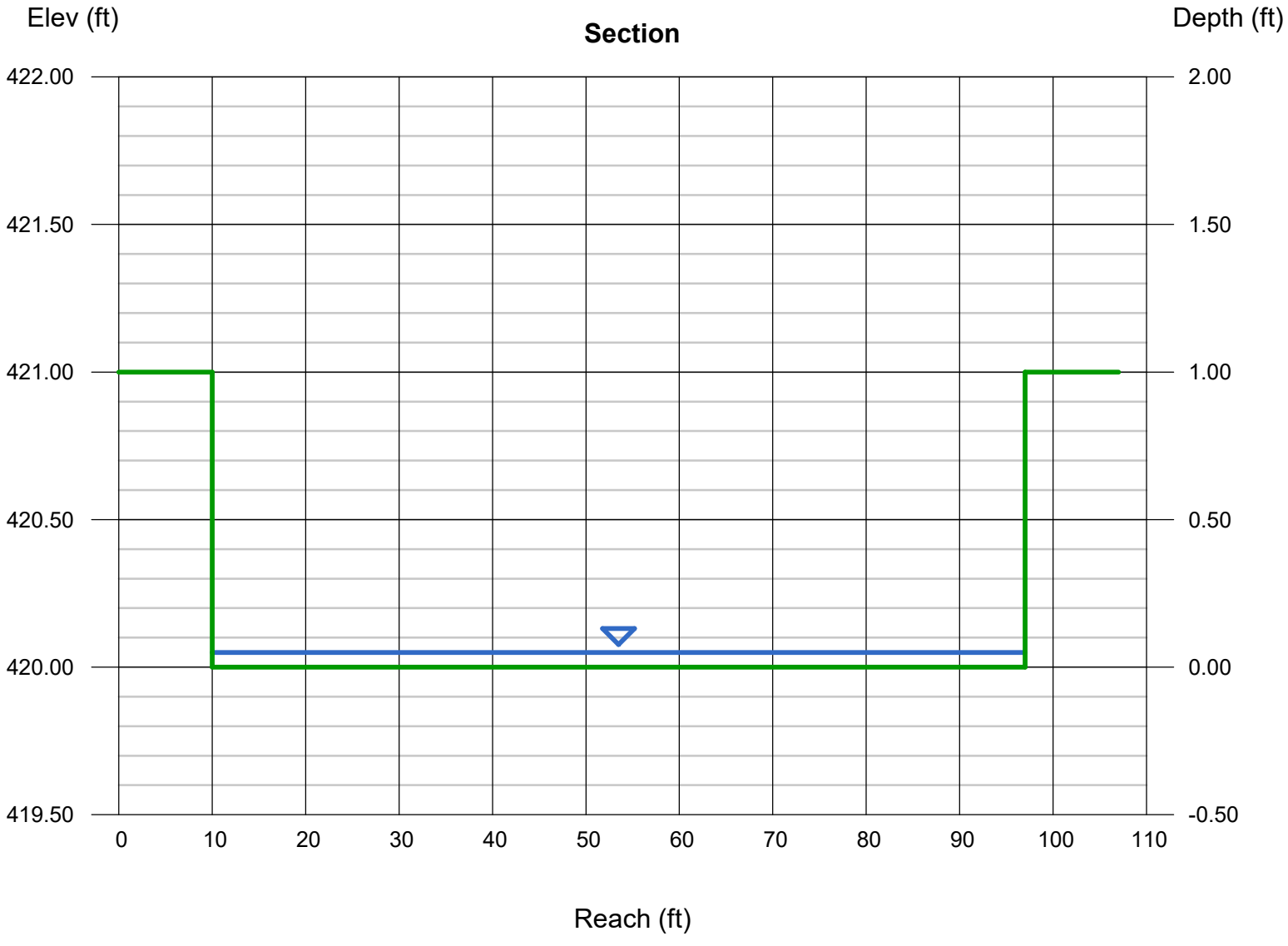
Bottom Width (ft)	= 87.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 420.00
Slope (%)	= 2.50
N-Value	= 0.400

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.32

Highlighted

Depth (ft)	= 0.05
Q (cfs)	= 0.320
Area (sqft)	= 4.35
Velocity (ft/s)	= 0.07
Wetted Perim (ft)	= 87.10
Crit Depth, Yc (ft)	= 0.01
Top Width (ft)	= 87.00
EGL (ft)	= 0.05



Channel Report

SHEET FLOW A3-100

Rectangular

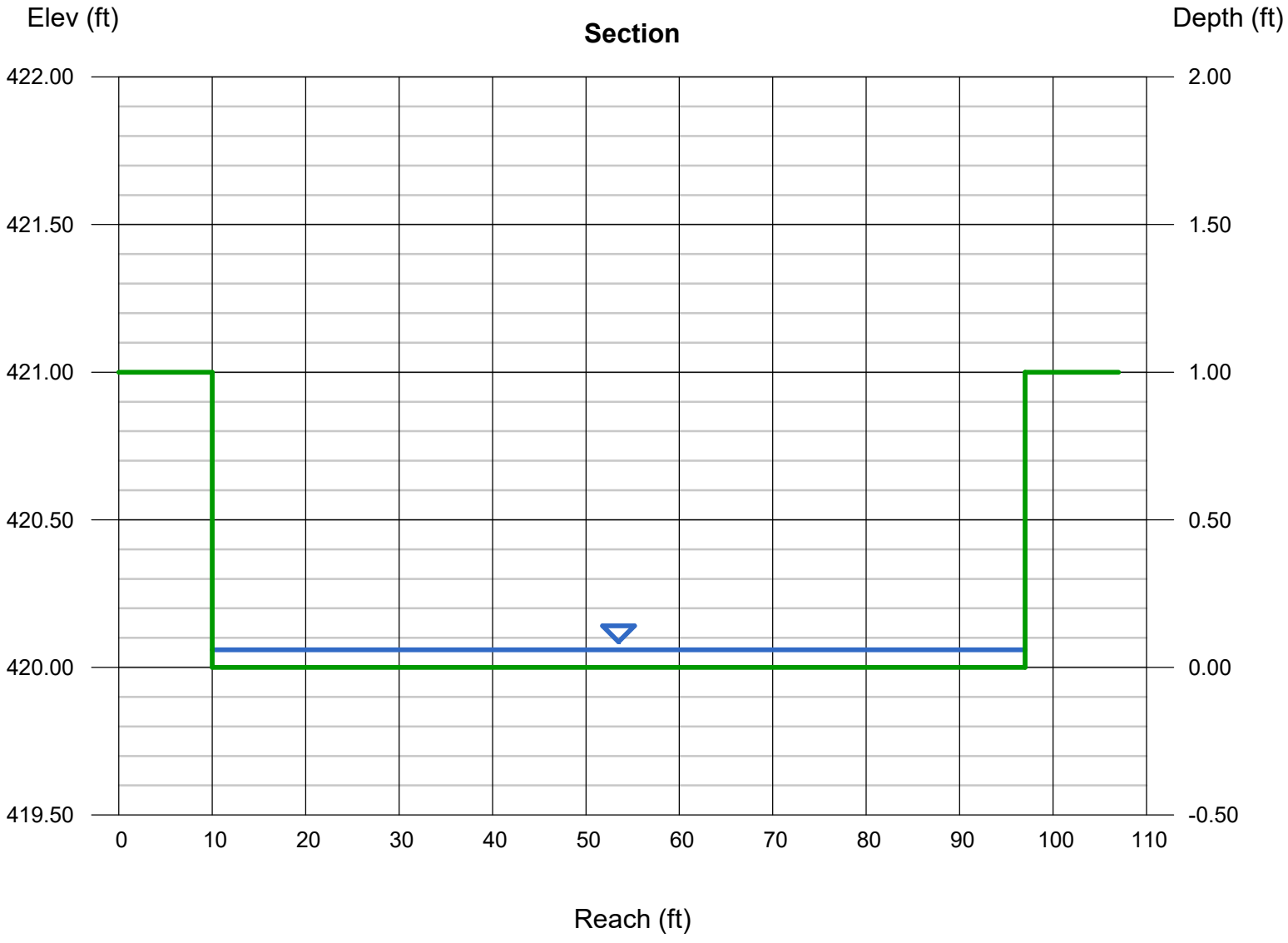
Bottom Width (ft)	= 87.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 420.00
Slope (%)	= 2.50
N-Value	= 0.400

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.44

Highlighted

Depth (ft)	= 0.06
Q (cfs)	= 0.440
Area (sqft)	= 5.22
Velocity (ft/s)	= 0.08
Wetted Perim (ft)	= 87.12
Crit Depth, Yc (ft)	= 0.01
Top Width (ft)	= 87.00
EGL (ft)	= 0.06



Channel Report

SHEET FLOW A4

Rectangular

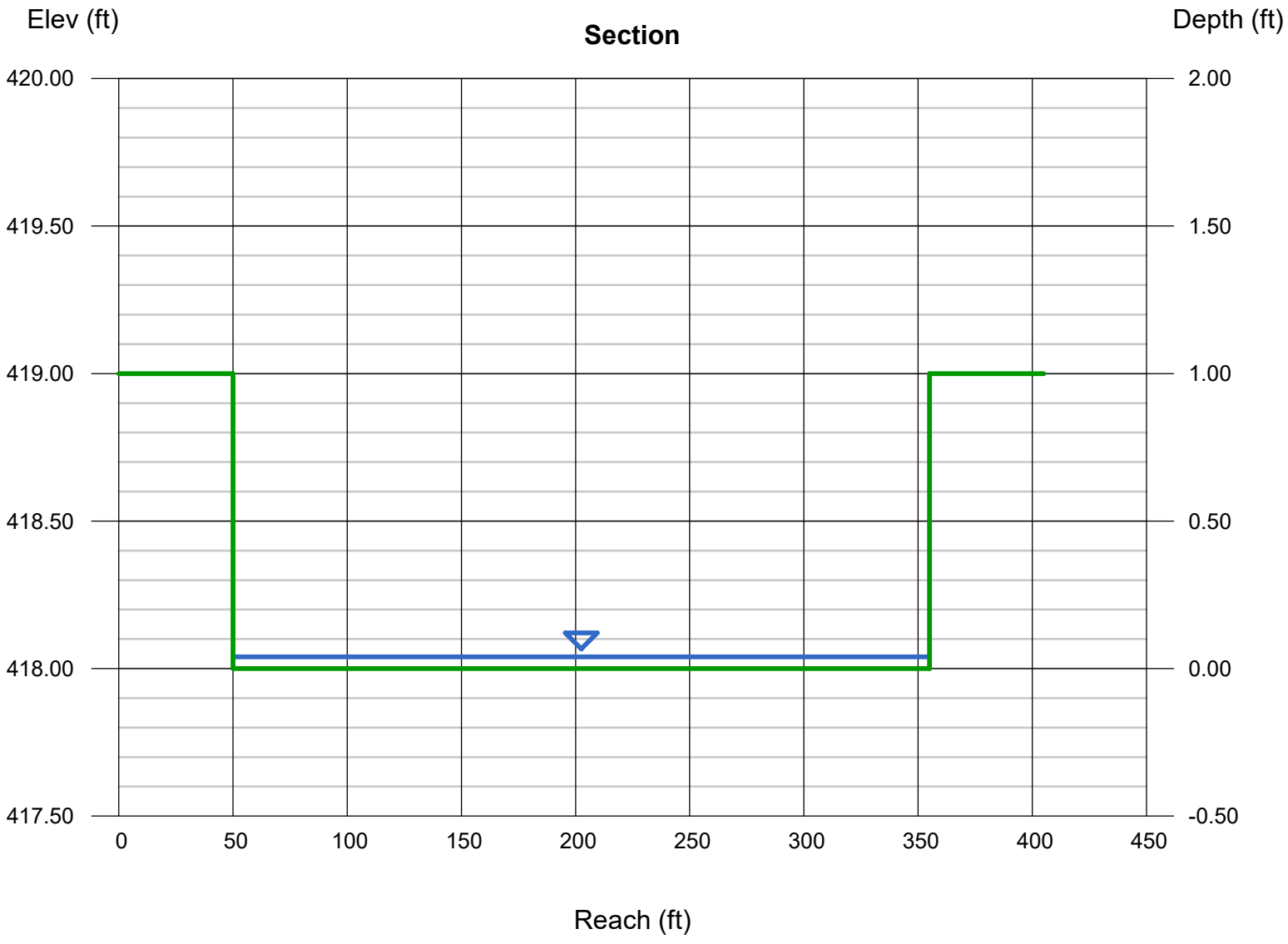
Bottom Width (ft)	= 305.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 418.00
Slope (%)	= 5.40
N-Value	= 0.400

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.90

Highlighted

Depth (ft)	= 0.04
Q (cfs)	= 0.895
Area (sqft)	= 12.20
Velocity (ft/s)	= 0.07
Wetted Perim (ft)	= 305.08
Crit Depth, Yc (ft)	= 0.01
Top Width (ft)	= 305.00
EGL (ft)	= 0.04



Channel Report

SHEET FLOW B1

Rectangular

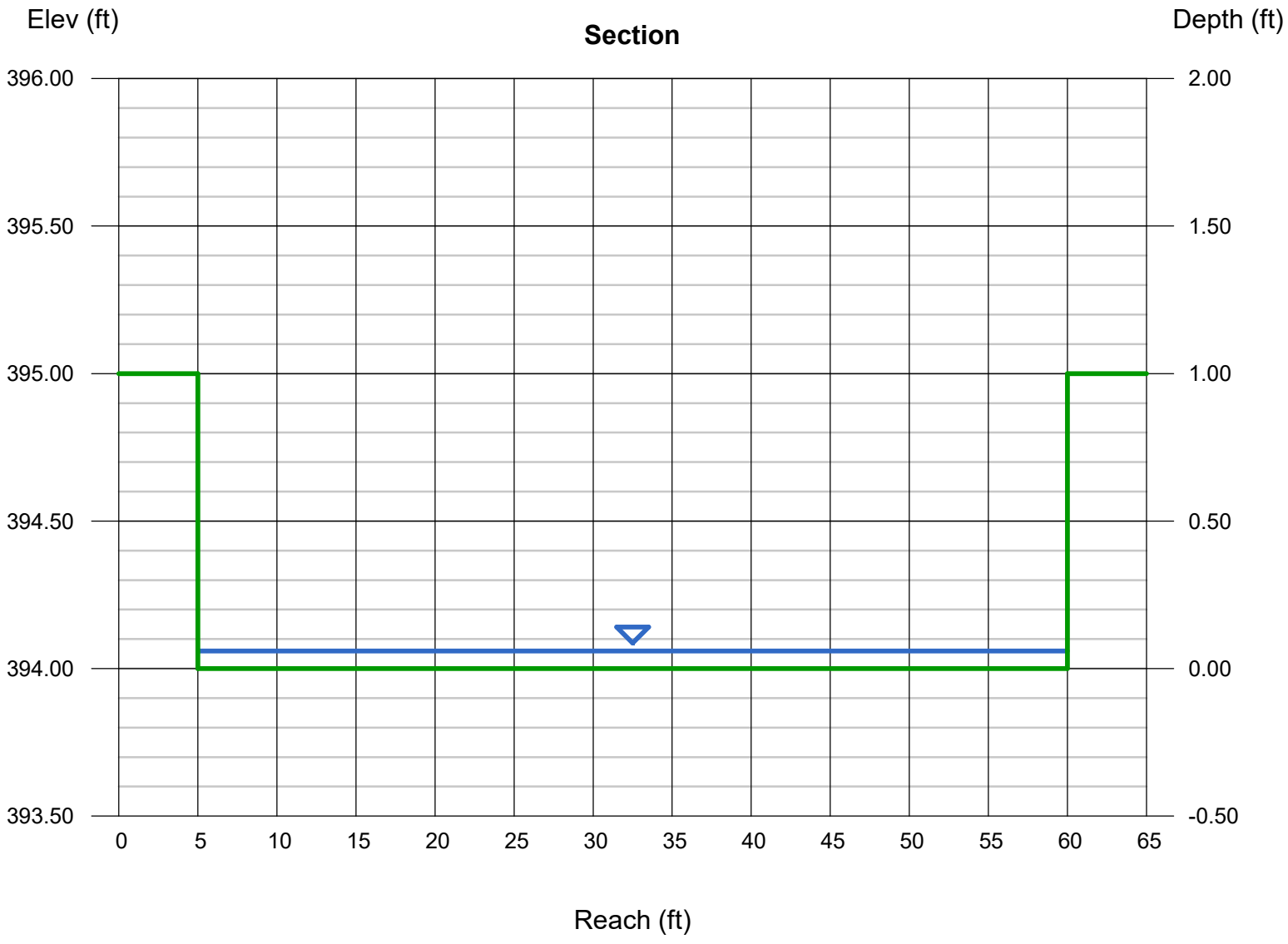
Bottom Width (ft)	= 55.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 394.00
Slope (%)	= 9.10
N-Value	= 0.400

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.56

Highlighted

Depth (ft)	= 0.06
Q (cfs)	= 0.557
Area (sqft)	= 3.30
Velocity (ft/s)	= 0.17
Wetted Perim (ft)	= 55.12
Crit Depth, Yc (ft)	= 0.02
Top Width (ft)	= 55.00
EGL (ft)	= 0.06



Channel Report

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SHEET FLOW B1-100

Rectangular

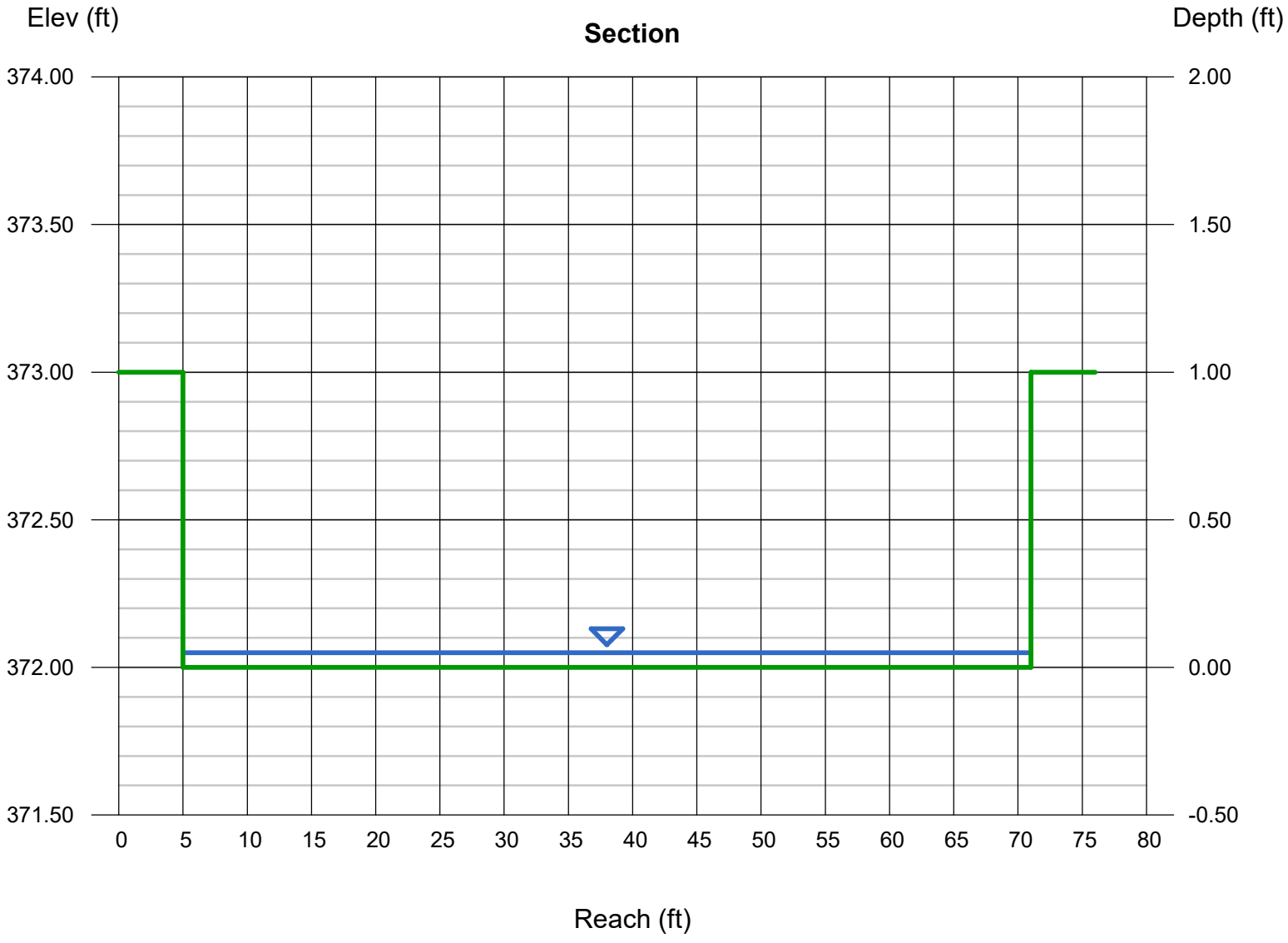
Bottom Width (ft)	= 66.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 372.00
Slope (%)	= 37.00
N-Value	= 0.400

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.73

Highlighted

Depth (ft)	= 0.05
Q (cfs)	= 0.725
Area (sqft)	= 3.30
Velocity (ft/s)	= 0.22
Wetted Perim (ft)	= 66.10
Crit Depth, Yc (ft)	= 0.02
Top Width (ft)	= 66.00
EGL (ft)	= 0.05



Channel Report

SHEET FLOW B2

Rectangular

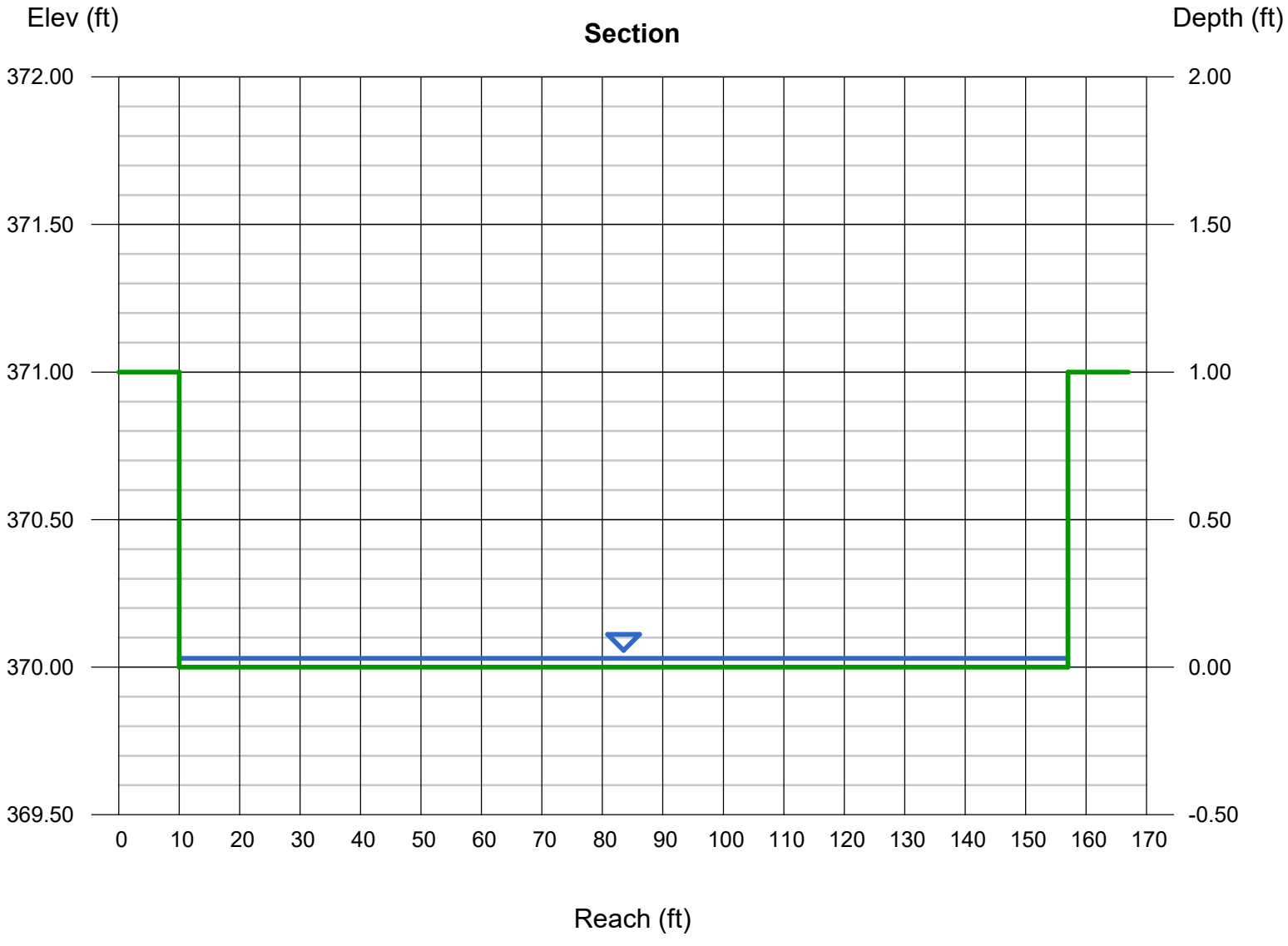
Bottom Width (ft)	= 147.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 370.00
Slope (%)	= 18.00
N-Value	= 0.400

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.49

Highlighted

Depth (ft)	= 0.03
Q (cfs)	= 0.490
Area (sqft)	= 4.41
Velocity (ft/s)	= 0.11
Wetted Perim (ft)	= 147.06
Crit Depth, Yc (ft)	= 0.01
Top Width (ft)	= 147.00
EGL (ft)	= 0.03



Channel Report

SHEET FLOW B3

Rectangular

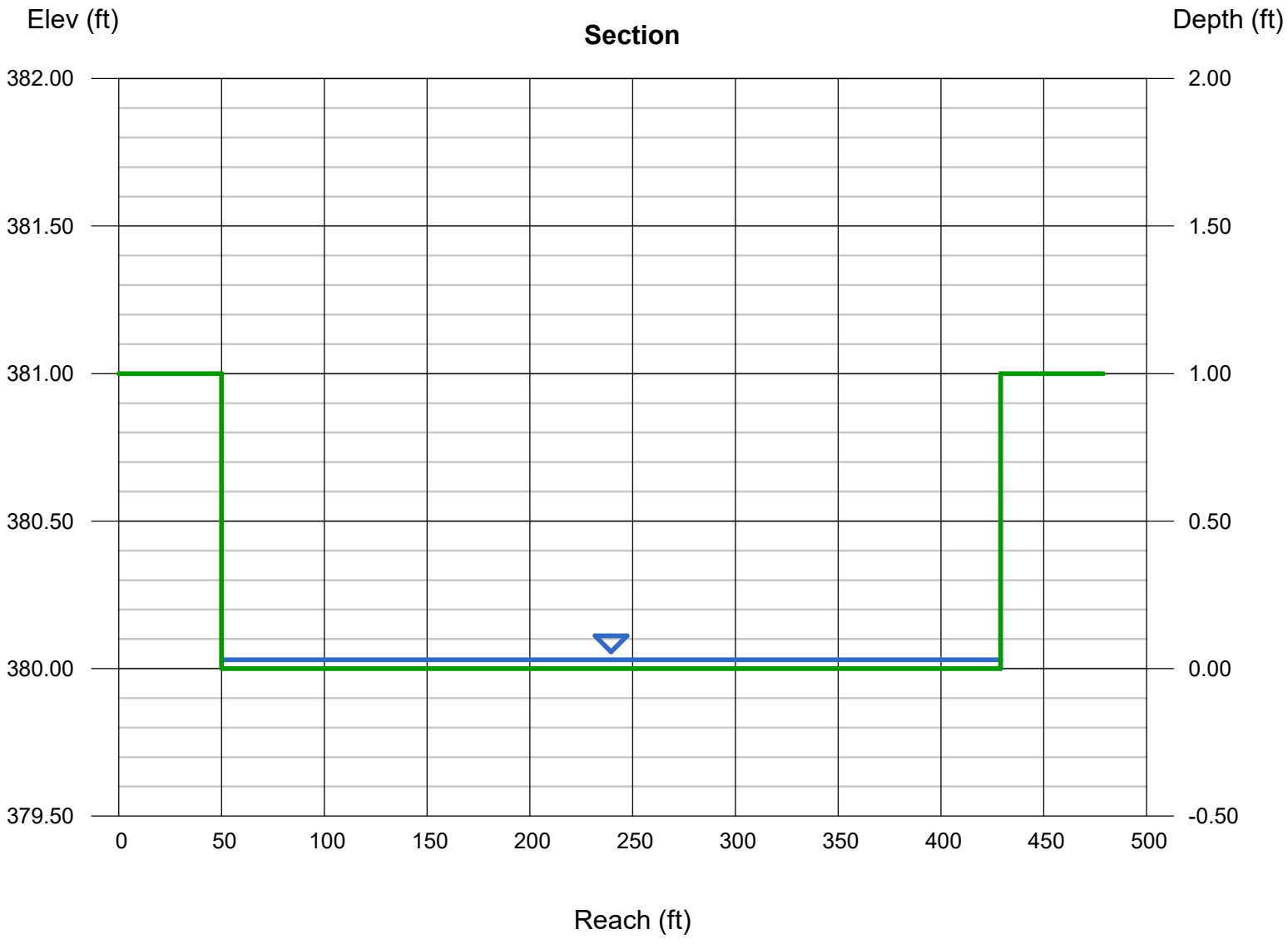
Bottom Width (ft)	= 379.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 380.00
Slope (%)	= 18.00
N-Value	= 0.400

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.93

Highlighted

Depth (ft)	= 0.03
Q (cfs)	= 0.934
Area (sqft)	= 11.37
Velocity (ft/s)	= 0.08
Wetted Perim (ft)	= 379.06
Crit Depth, Yc (ft)	= 0.01
Top Width (ft)	= 379.00
EGL (ft)	= 0.03



Channel Report

SHEET FLOW B4

Rectangular

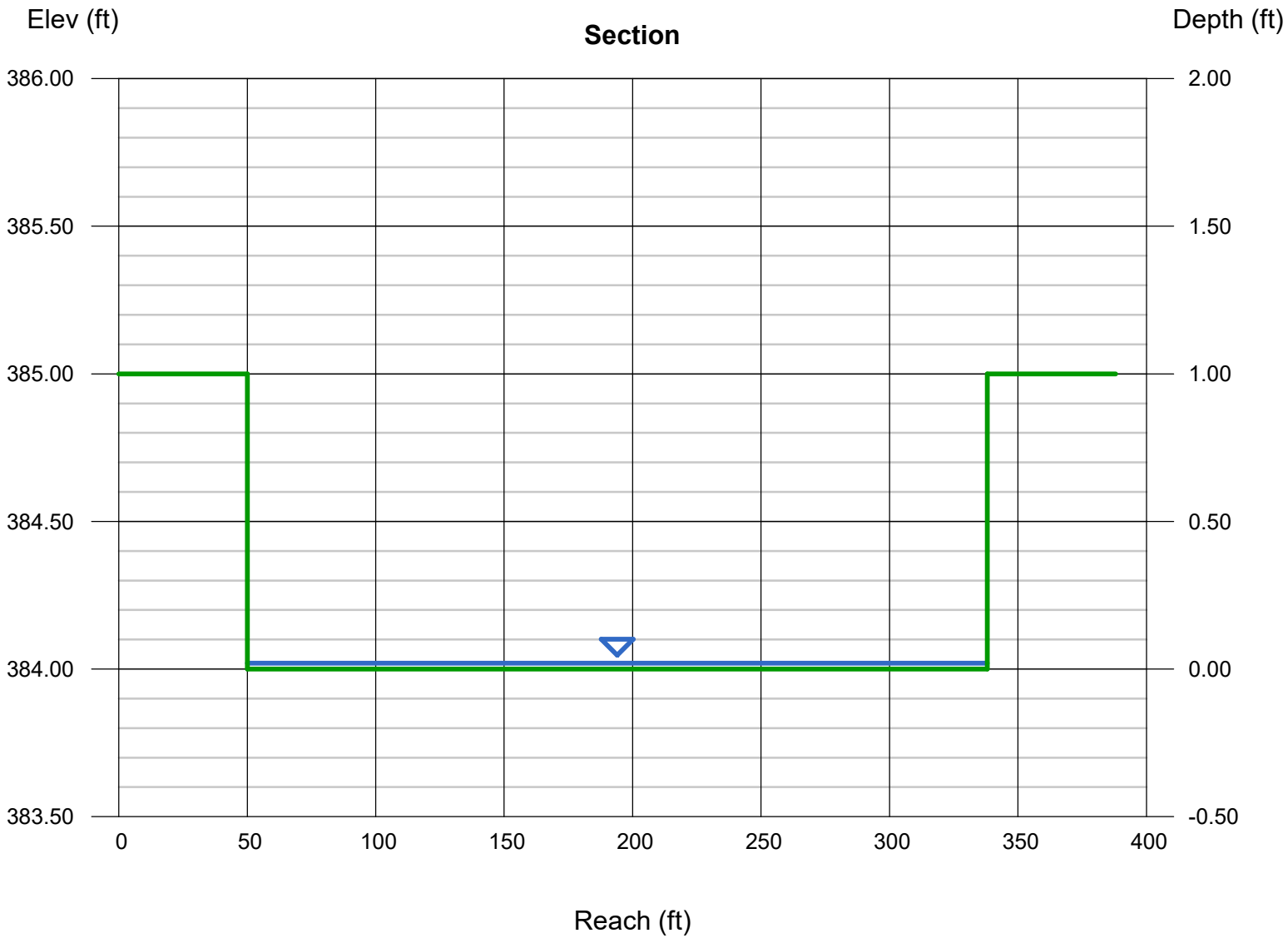
Bottom Width (ft)	= 288.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 384.00
Slope (%)	= 18.00
N-Value	= 0.400

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.24

Highlighted

Depth (ft)	= 0.02
Q (cfs)	= 0.244
Area (sqft)	= 5.76
Velocity (ft/s)	= 0.04
Wetted Perim (ft)	= 288.04
Crit Depth, Yc (ft)	= 0.01
Top Width (ft)	= 288.00
EGL (ft)	= 0.02



Channel Report

SHEET FLOW B5

Rectangular

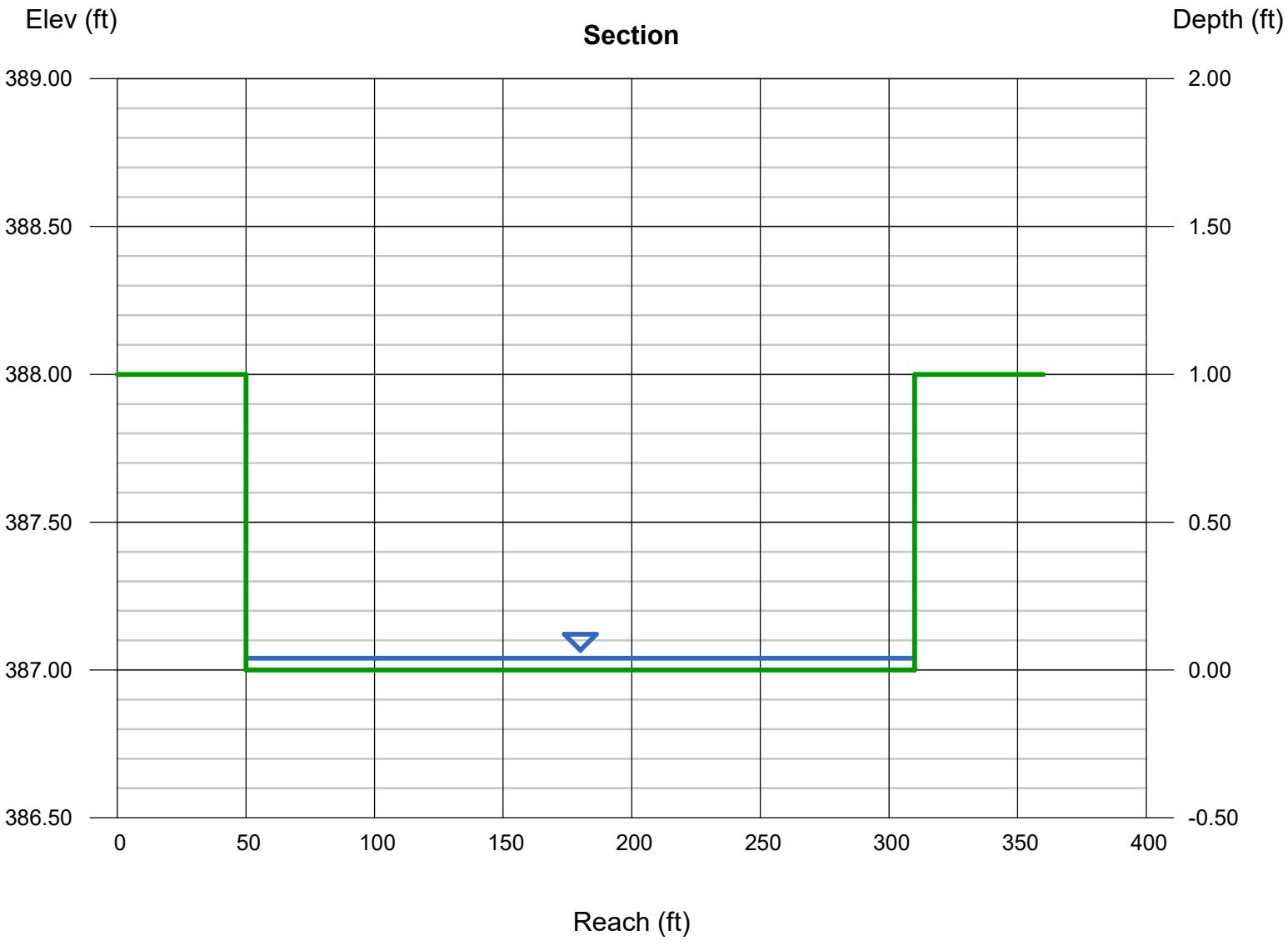
Bottom Width (ft)	= 260.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 387.00
Slope (%)	= 18.00
N-Value	= 0.400

Calculations

Compute by:	Known Q
Known Q (cfs)	= 1.57

Highlighted

Depth (ft)	= 0.04
Q (cfs)	= 1.573
Area (sqft)	= 10.40
Velocity (ft/s)	= 0.15
Wetted Perim (ft)	= 260.08
Crit Depth, Yc (ft)	= 0.02
Top Width (ft)	= 260.00
EGL (ft)	= 0.04



Channel Report

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SHEET FLOW B6

Rectangular

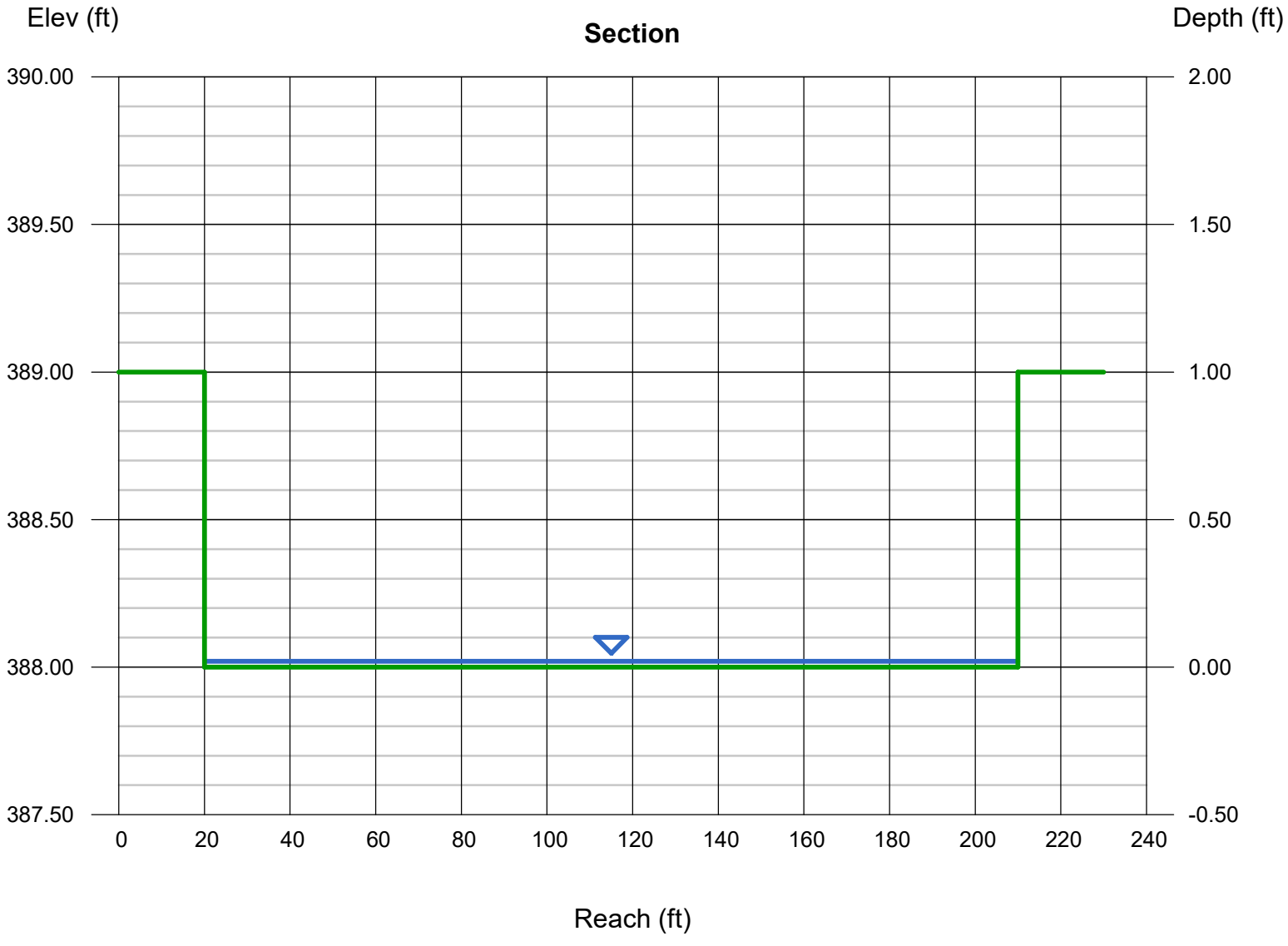
Bottom Width (ft)	= 190.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 388.00
Slope (%)	= 12.00
N-Value	= 0.400

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.19

Highlighted

Depth (ft)	= 0.02
Q (cfs)	= 0.190
Area (sqft)	= 3.80
Velocity (ft/s)	= 0.05
Wetted Perim (ft)	= 190.04
Crit Depth, Yc (ft)	= 0.01
Top Width (ft)	= 190.00
EGL (ft)	= 0.02



Channel Report

SHEET FLOW B7

Rectangular

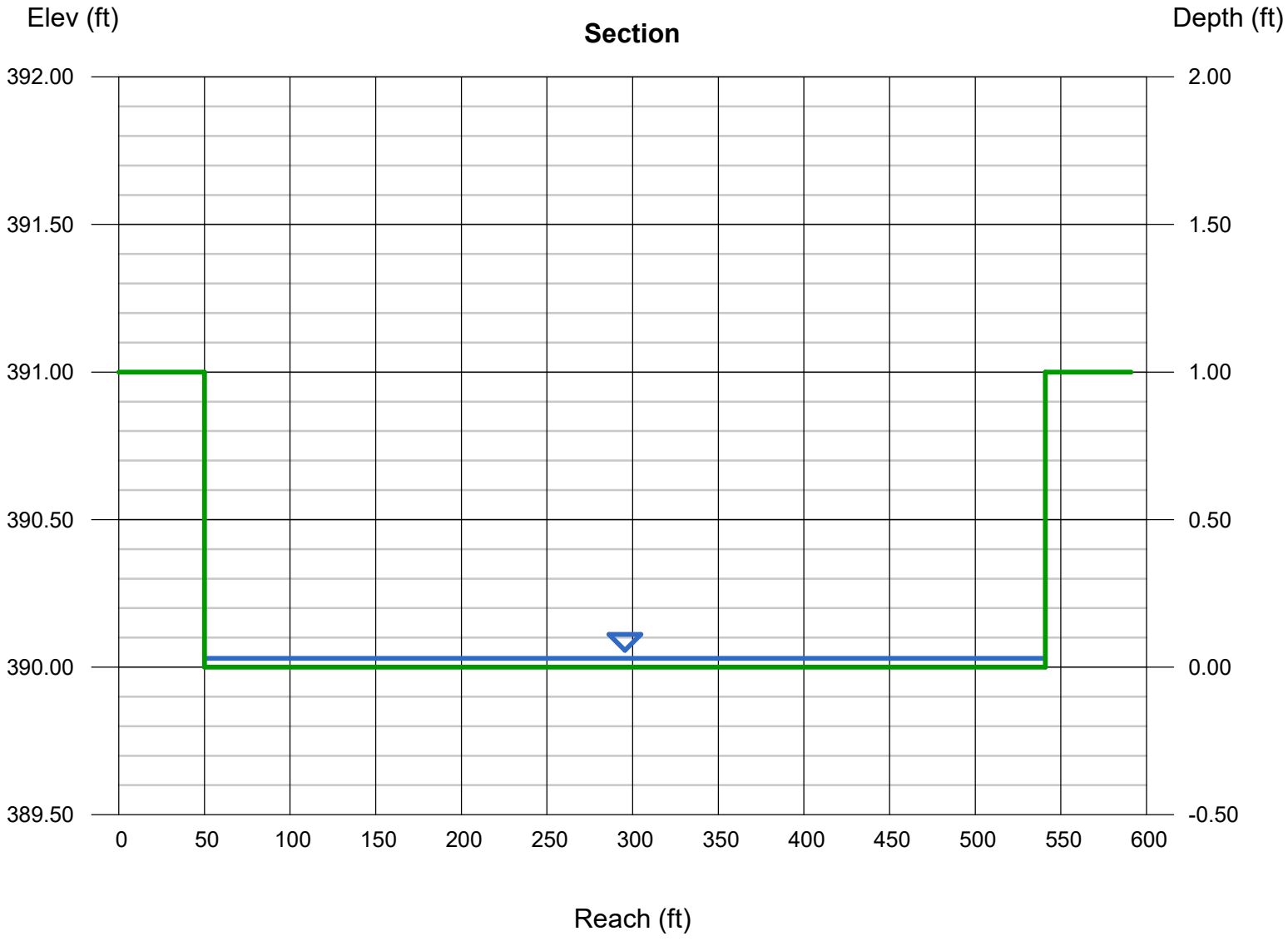
Bottom Width (ft)	= 491.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 390.00
Slope (%)	= 6.90
N-Value	= 0.400

Calculations

Compute by:	Known Q
Known Q (cfs)	= 1.22

Highlighted

Depth (ft)	= 0.03
Q (cfs)	= 1.220
Area (sqft)	= 14.73
Velocity (ft/s)	= 0.08
Wetted Perim (ft)	= 491.06
Crit Depth, Yc (ft)	= 0.01
Top Width (ft)	= 491.00
EGL (ft)	= 0.03



PRE DEV ON-SITE TO BMP

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55	1.990	109
B	Managed Turf	61		0
B	Impervious Cover	98		0
C	Forest/Open Space	70	0.700	49
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	**2.69**	
		WEIGHTED CN	**59**	

POST DEV ON-SITE A TO BMP

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55		0
B	Managed Turf	61	0.720	44
B	Impervious Cover	98	0.940	92
C	Forest/Open Space	70		0
C	Managed Turf	74	0.150	11
C	Impervious Cover	98	0.550	54
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	**2.36**	
		WEIGHTED CN	**85**	

PRE/POST OFF-SITE A TO BMP

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55	1.260	69
B	Managed Turf	61		0
B	Impervious Cover	98		0
C	Forest/Open Space	70	0.130	9
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	**1.39**	
		WEIGHTED CN	**56**	

POST DEV A4 TO BMP

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55		0
B	Managed Turf	61	0.200	12
B	Impervious Cover	98	0.130	13
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	**0.33**	
		WEIGHTED CN	**76**	

PRE DEV A4 TO BMP

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0

B	Forest/Open Space	55	0.330	18
B	Managed Turf	61		0
B	Impervious Cover	98		0
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	**0.33**	
		WEIGHTED CN	**55**	

PRE DEV ON-SITE B TO BMP 1

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55	7.720	425
B	Managed Turf	61		0
B	Impervious Cover	98		0
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	**7.72**	
		WEIGHTED CN	**55**	

POST DEV ON-SITE B TO BMP

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55		0
B	Managed Turf	61	3.88	237
B	Impervious Cover	98	3.84	376
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	**7.72**	
		WEIGHTED CN	**79**	

PRE/POST DEV OFF-SITE B TO BMP

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55	5.510	303
B	Managed Turf	61	1.200	73
B	Impervious Cover	98	0.420	41
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	**7.13**	
		WEIGHTED CN	**59**	

PRE DEV BYPASS A1 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55	2.290	126
B	Managed Turf	61		0
B	Impervious Cover	98		0
C	Forest/Open Space	70	1.310	92
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	**3.60**	
		WEIGHTED CN	**60**	

PRE DEV BYPASS A2 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55	0.590	32
B	Managed Turf	61		0
B	Impervious Cover	98		0
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	**0.59**	
		WEIGHTED CN	**55**	

PRE DEV BYPASS A4 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55	0.870	48
B	Managed Turf	61		0
B	Impervious Cover	98		0
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	**0.87**	
		WEIGHTED CN	**55**	

PRE DEV BYPASS B1 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55	0.130	7
B	Managed Turf	61		0
B	Impervious Cover	98		0
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	**0.13**	
		WEIGHTED CN	**55**	

PRE DEV BYPASS B2 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55	0.380	21
B	Managed Turf	61		0
B	Impervious Cover	98		0
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	**0.38**	
		WEIGHTED CN	**55**	

PRE DEV BYPASS B3 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA	AREA X CN
			(ACRE)	
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55	6.450	355
B	Managed Turf	61		0
B	Impervious Cover	98		0
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	**6.45**	
		WEIGHTED CN	**55**	

PRE DEV BYPASS B4 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA	AREA X CN
			(ACRE)	
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55	0.140	8
B	Managed Turf	61		0
B	Impervious Cover	98		0
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	**0.14**	
		WEIGHTED CN	**55**	

PRE DEV BYPASS B5 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55	1.310	72
B	Managed Turf	61		0
B	Impervious Cover	98		0
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	**1.31**	
		WEIGHTED CN	**55**	

PRE DEV BYPASS B6 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55	1.300	72
B	Managed Turf	61		0
B	Impervious Cover	98		0
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	**1.30**	
		WEIGHTED CN	**55**	

PRE DEV BYPASS B7 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55	0.950	52
B	Managed Turf	61		0
B	Impervious Cover	98		0
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	**0.95**	
		WEIGHTED CN	**55**	

POST DEV BYPASS A1 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55		0
B	Managed Turf	61		0
B	Impervious Cover	98		0
C	Forest/Open Space	70	0.110	8
C	Managed Turf	74	0.380	28
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	**0.49**	
		WEIGHTED CN	**73**	

POST DEV BYPASS A2 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55		0
B	Managed Turf	61	0.240	15
B	Impervious Cover	98	0.060	6
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	**0.30**	
		WEIGHTED CN	**68**	

POST DEV BYPASS A4 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55		0
B	Managed Turf	61	0.070	4
B	Impervious Cover	98	0.030	3
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	**0.10**	
		WEIGHTED CN	**72**	

POST DEV BYPASS B1 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55		0
B	Managed Turf	61	0.110	7
B	Impervious Cover	98	0.070	7
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	**0.18**	
		WEIGHTED CN	**75**	

POST DEV BYPASS B2 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55		0
B	Managed Turf	61	0.210	13
B	Impervious Cover	98		0
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	**0.21**	
		WEIGHTED CN	**61**	

POST DEV BYPASS B3 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55		0
B	Managed Turf	61	0.470	29
B	Impervious Cover	98		0
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	**0.47**	
		WEIGHTED CN	**61**	

POST DEV BYPASS B4 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55		0
B	Managed Turf	61	0.100	6
B	Impervious Cover	98		0
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	**0.10**	
		WEIGHTED CN	**61**	

POST DEV BYPASS B5 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55		0
B	Managed Turf	61	0.650	40
B	Impervious Cover	98	0.060	6
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	**0.71**	
		WEIGHTED CN	**64**	

POST DEV BYPASS B6 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55		0
B	Managed Turf	61	0.080	5
B	Impervious Cover	98		0
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	**0.08**	
		WEIGHTED CN	**61**	

POST DEV BYPASS B7 SHEET FLOW

SOILS GROUP	DESCRIPTION	CN	AREA (ACRE)	AREA X CN
A	Forest/Open Space	30		0
A	Managed Turf	39		0
A	Impervious Cover	98		0
B	Forest/Open Space	55		0
B	Managed Turf	61	0.230	14
B	Impervious Cover	98	0.150	15
C	Forest/Open Space	70		0
C	Managed Turf	74		0
C	Impervious Cover	98		0
D	Forest/Open Space	77		0
D	Managed Turf	80		0
D	Impervious Cover	98		0
		TOTAL AREA	**0.38**	
		WEIGHTED CN	**76**	

WEBB AND ASSOCIATES

A SURVEYING AND DESIGN COMPANY

11903 BOWMAN DRIVE, SUITE 106 FREDERICKSBURG VA 22408

(540) 371-1209 (804) 633-9907 FAX (540) 371-4650

TM 41-16-10,11,12,13,14 2/3/2026

ENERGY BALANCE EQUATION

$$Q_{1post} \leq Q_{1pre}\left(\frac{Vol_{1pre}}{Vol_{1post}}\right)(IF) + Q_{off\text{-}site}$$

Where:

Q_{1pre} = 0.45 cfs

$Q_{off\text{-}site}$ = 0.60 cfs

Vol_{1pre} = 5826 cf

Vol_{1post} = 38078 cf

IF = 0.8 (for disturbed area > 1 acre)

Q_{1post} 0.42 ≤ (0.45(5826/38078)(0.8) +0.60

0.42 ≤ 0.45 cfs

ENERGY BALANCE EQUATION IS SATISFIED

DEQ Virginia Runoff Reduction Method New Development Compliance Spreadsheet - Version 4.1

BMP Design Specifications List: **2024 Stds & Specs**

Site Summary

Project Title: LOUISA STATION

Date: 02/03/2026

Site Land Cover Summary

	A soils	B Soils	C Soils	D Soils	Totals	% of Total
Forest (acres)	0.00	2.92	0.00	1.36	4.28	22
Mixed Open (acres)	0.00	0.00	0.00	0.00	0.00	0
Managed Turf (acres)	0.00	9.58	0.15	0.00	9.73	49
Impervious Cover (acres)	0.00	5.24	0.55	0.00	5.79	29
					19.80	100

Site Tv and Land Cover Nutrient Loads

Site Rv	0.38
Treatment Volume (ft^3)	1
TP Load (lb/yr)	11.89
TN Load (lb/yr)	147.11

Total TP Load Reduction Required (lb/yr)	0.00

Site Compliance Summary

Total Runoff Volume Reduction (ft^3)	0
Total TP Load Reduction Achieved (lb/yr)	6.24
Total TN Load Reduction Achieved (lb/yr)	42.86
Remaining Post Development TP Load (lb/yr)	5.64
Remaining TP Load Reduction (lb/yr) Required	**0.50**

Drainage Area Summary

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	Total
Forest (acres)	4.28	0.00	0.00	0.00	0.00	4.28
Mixed Open (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres)	9.73	0.00	0.00	0.00	0.00	9.73
Impervious Cover (acres)	5.79	0.00	0.00	0.00	0.00	5.79
Total Area (acres)	**19.80**	**0.00**	**0.00**	**0.00**	**0.00**	**19.80**

Drainage Area Compliance Summary

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	Total
TP Load Reduced (lb/yr)	6.24	0.00	0.00	0.00	0.00	6.24
TN Load Reduced (lb/yr)	42.86	0.00	0.00	0.00	0.00	42.86

Drainage Area A Summary

Land Cover Summary

	A Soils	B Soils	C Soils	D Soils	Total	% of Total
Forest (acres)	0.00	2.92	0.00	1.36	4.28	22
Mixed Open (acres)	0.00	0.00	0.00	0.00	0.00	0
Managed Turf (acres)	0.00	9.58	0.15	0.00	9.73	49
Impervious Cover (acres)	0.00	5.24	0.55	0.00	5.79	29
					19.80	

BMP Selections

Practice	Mixed Open Credit Area (acres)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	BMP Treatment Volume (ft^3)	TP Load from Upstream Practices (lbs)	Untreated TP Load to Practice (lbs)	TP Removed (lb/yr)	TP Remaining (lb/yr)	Downstream Treatment to be Employed
15.c. Wet Pond #2 (P-BAS-02)		4.95	5.79	23,566.06	0.00	8.32	6.24	2.08	

Total Impervious Cover Treated (acres)	5.79
Total Mixed Open Treated (acres)	0.00
Total Turf Area Treated (acres)	4.95
Total TP Load Reduction Achieved in D.A. (lb/yr)	6.24
Total TN Load Reduction Achieved in D.A. (lb/yr)	42.86

Runoff Volume and CN Calculations

	1-year storm	2-year storm	10-year storm
Target Rainfall Event (in)	2.73	3.31	5.01

Drainage Areas	RV & CN	Drainage Area A	Drainage Area B	Drainage Area C	Drainage Area D	Drainage Area E
CN		72	0	0	0	0
RR (ft^3)		0	0	0	0	0
1-year return period	RV wo RR (ws-in)	0.65	0.00	0.00	0.00	0.00
	RV w RR (ws-in)	0.65	0.00	0.00	0.00	0.00
	CN adjusted	72	0	0	0	0
2-year return period	RV wo RR (ws-in)	1.00	0.00	0.00	0.00	0.00
	RV w RR (ws-in)	1.00	0.00	0.00	0.00	0.00
	CN adjusted	72	0	0	0	0
10-year return period	RV wo RR (ws-in)	2.21	0.00	0.00	0.00	0.00
	RV w RR (ws-in)	2.21	0.00	0.00	0.00	0.00
	CN adjusted	72	0	0	0	0

Channel Report

CHANNEL SECT A-10 yr

User-defined

Invert Elev (ft)	= 374.27
Slope (%)	= 1.05
N-Value	= 0.030

Calculations

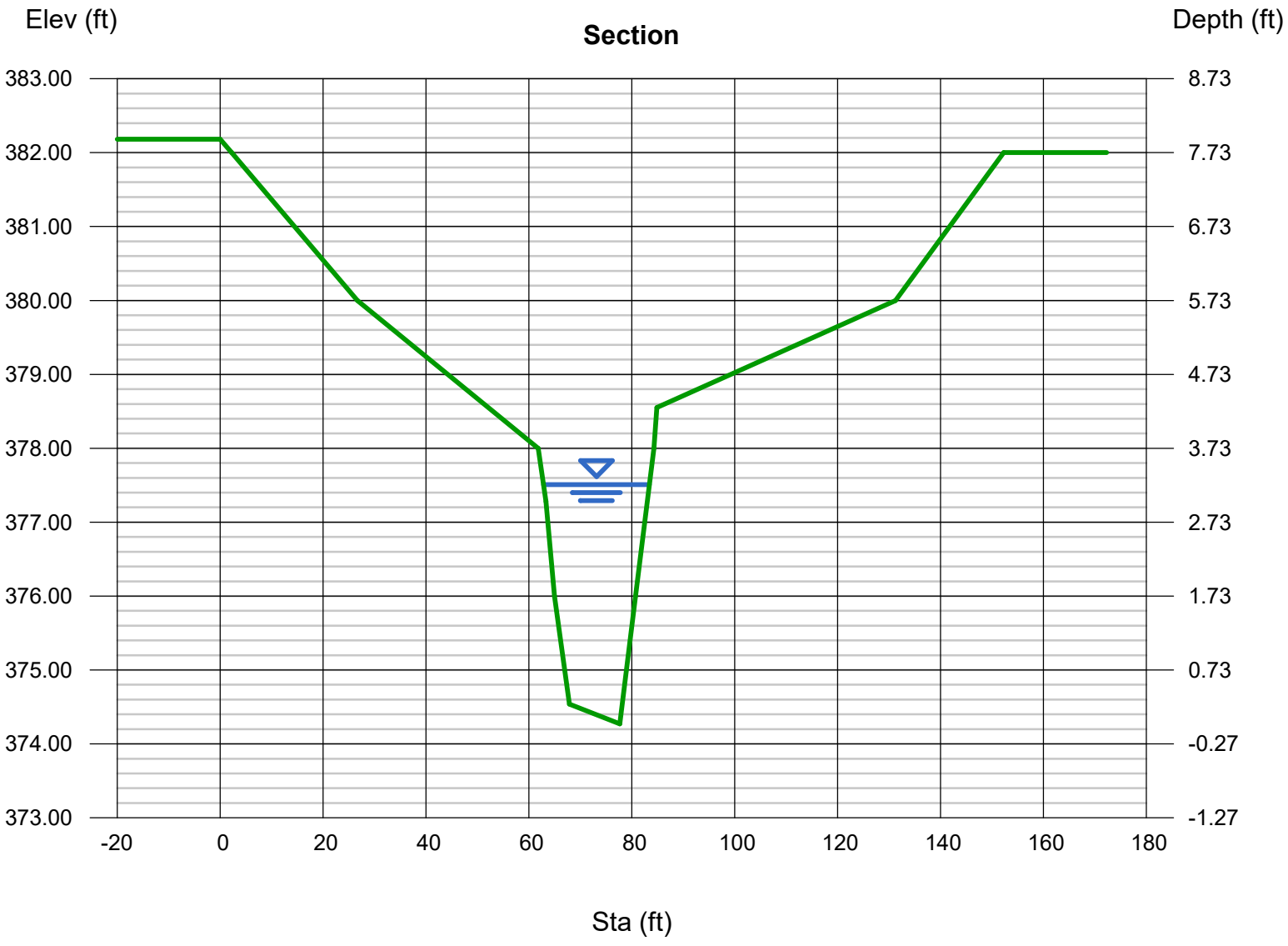
Compute by:	Known Q
Known Q (cfs)	= 402.00

Highlighted

Depth (ft)	= 3.24
Q (cfs)	= 402.00
Area (sqft)	= 47.72
Velocity (ft/s)	= 8.42
Wetted Perim (ft)	= 22.30
Crit Depth, Yc (ft)	= 3.20
Top Width (ft)	= 20.61
EGL (ft)	= 4.34

(Sta, El, n)-(Sta, El, n)...

(0.00, 382.18)-(2.21, 382.00, 0.400)-(26.66, 380.00, 0.400)-(61.79, 378.00, 0.030)-(63.32, 377.28, 0.030)-(64.98, 376.00, 0.030)-(67.88, 374.54, 0.030)-(77.66, 374.27, 0.030)-(80.74, 376.00, 0.030)-(84.32, 378.00, 0.030)-(84.87, 378.55, 0.400)-(131.27, 380.00, 0.400)-(152.29, 382.00, 0.400)



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Tuesday, Feb 3 2026

CHANNEL SECT B-10 yr

User-defined

Invert Elev (ft)	= 365.20
Slope (%)	= 0.85
N-Value	= 0.030

Calculations

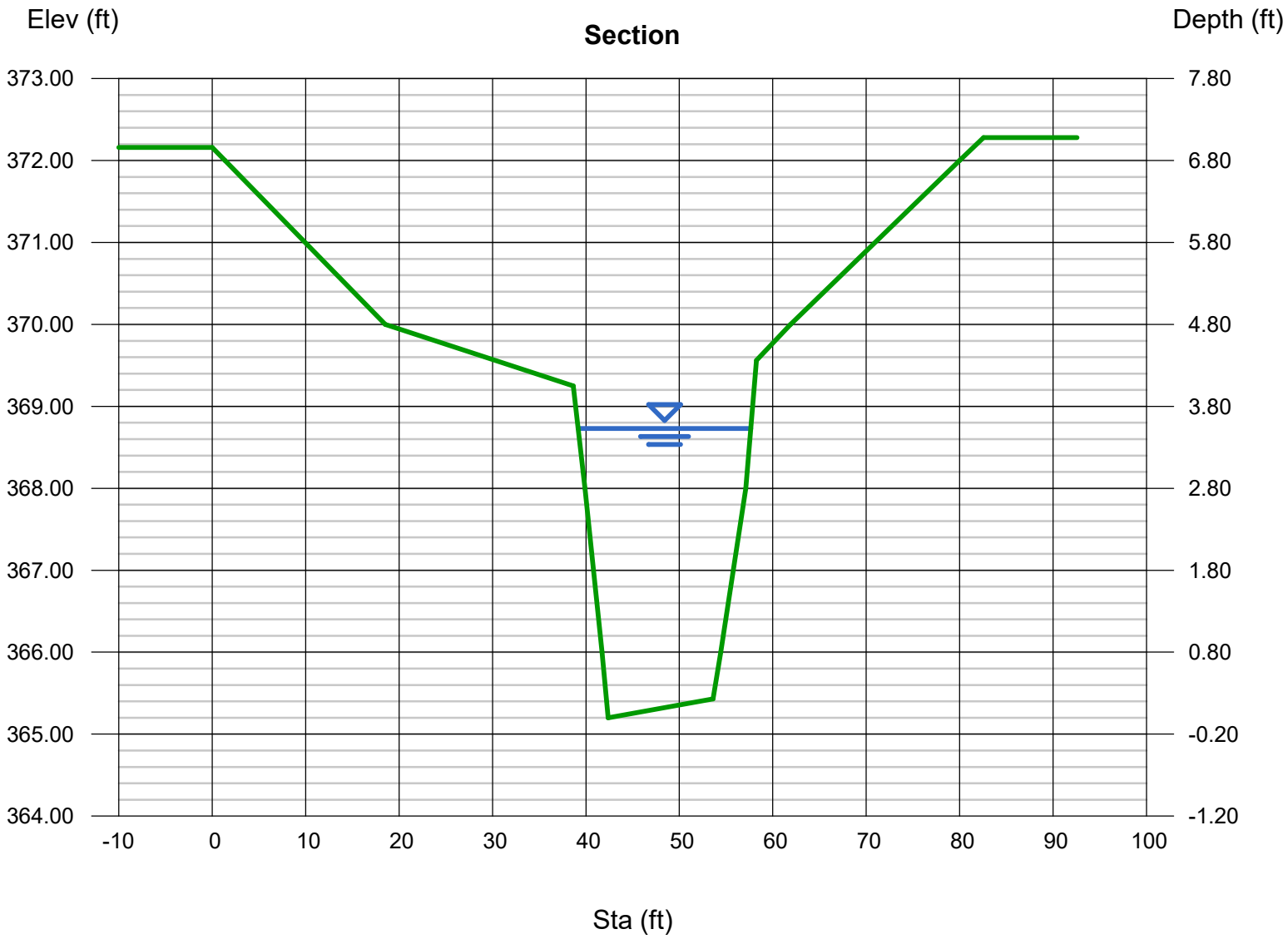
Compute by:	Known Q
Known Q (cfs)	= 419.00

Highlighted

Depth (ft)	= 3.53
Q (cfs)	= 419.00
Area (sqft)	= 51.12
Velocity (ft/s)	= 8.20
Wetted Perim (ft)	= 21.27
Crit Depth, Yc (ft)	= 3.26
Top Width (ft)	= 18.49
EGL (ft)	= 4.57

(Sta, El, n)-(Sta, El, n)...

(0.00, 372.16)-(1.37, 372.00, 0.400)-(18.53, 370.00, 0.400)-(38.64, 369.25, 0.030)-(39.91, 368.00, 0.030)-(41.73, 366.00, 0.030)-(42.37, 365.20, 0.030)
-(53.61, 365.43, 0.030)-(54.42, 366.00, 0.030)-(57.12, 368.00, 0.030)-(58.26, 369.56, 0.030)-(61.90, 370.00, 0.400)-(79.99, 372.00, 0.400)-(82.57, 372.28, 0.400)



TIME OF CONCENTRATION CALCULATION

DRAINAGE AREA		CROSS SECTION A	CROSS SECTION B
Total L	(ft) =	8570	9470
Elevations			
Start	(ft) =	500	500
Elev. at 100 ft.	(ft) =	499	499
End	(ft) =	375	365
100 ft Fall	(ft) =	1.00	1.00
Channel Flow Fall	(ft) =	124.00	134.00
Avg Slope	ft/ft =	0.015	0.014
L - 100	(ft) =	8470	9370
Overland flow			
L	(ft) =	100	100
S	(ft/100 ft) =	1.000	1.000
C	=	0.29	0.38
Tc	(min) =	12.9	9.8
Channel flow			
H	(ft) =	124.0	134.0
L	(ft) =	8470.0	9370.0
Tc	(min) =	41.67	45.35
Total	(min) =	**54.5**	**55.2**

Time of Conc (Overland flow) = 0.225 x (L ^ 0.42) x(S ^ -0.19) x (C ^ -1.0)

Time of Conc (Channel flow) = 0.00948 x (H^ -0.38) x (L^1.13)

C FACTOR	C	POA 1 %	SECT. 1
IMPERVIOUS AREA	0.9	39	84
GRASSED	0.3	78	169
WOODED	0.2	273	169
TOTAL AREA, ACRES		390	422
Total C X A		113	160
Avg C		0.29	0.38
	area	390	422

ASSUME: 20% IMPERVIOS, 40% GRASS, 40% WOODED

A, ACRES =	390.00	422.00
I 2 YR, IN/HR =	1.60	1.59
I 10 YR, IN/HR =	2.38	2.37
I 100 YR, IN/HR =	3.37	3.35
Q 2 YR, CFS =	181.3	255.0
Q 10 YR , CFS=	269.5	379.4

Outlook-fqmpw01g
22 KB

Good Morning

I have completed the review of the response letter and plans, and all of my concerns at this time have been addressed. I apologize for the delay in response, but as we know, when it rains, it pours. Please let me know if I can be of any further assistance.

Respectfully,
Anthony Larry
General Superintendent of Public Works
Town of Louisa
540-748-3916

Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

www.deq.virginia.gov

David L. Bulova
Secretary of Natural and Historic Resources

Michael S. Rolband, PE, PWD, PWS Emeritus
Director

May 18, 2026

PR DevCO LLC
P.O Box 1887
Louisa
Louisa, VA 23093
torrey@callnow.law

RE: Coverage under the VPDES Construction General Permit (VAR10)
General Permit Number **VAR10X135**
Louisa Station
Residential
Louisa (in Louisa County)

Dear Permittee:

The Virginia Department of Environmental Quality (DEQ) has reviewed your Registration Statement received complete on May 14, 2026 and determined that the proposed 13.18 acre land-disturbing activity is covered under the General VPDES Permit for Discharges of Stormwater from Construction Activities (VAR10). The effective date of your coverage under this general permit is July 1, 2024 or the date of this letter, whichever is later. A copy of the general permit may be obtained at the following link: https://law.lis.virginia.gov/admincode/title9/agency25/chapter880/section70/.

The general permit contains the conditions of coverage and Stormwater Pollution Prevention Plan (SWPPP) requirements. Please print the general permit and read it carefully as you will be responsible for compliance with all permit conditions. Coverage under this construction general permit does not relieve the operator of complying with all other federal, state, or local laws and regulations.

Our records indicate that your site may discharge to waters identified as impaired or exceptional. Please see below for additional requirements:

1. Does this proposed land-disturbing activity discharge to a surface water identified as impaired in the 2022 § 305(b)/303(d) Water Quality Assessment Integrated Report for Benthic Macroinvertebrates Bioassessments or for which a TMDL wasteload allocation has been established and approved prior to the term of the general permit for (i) sediment or a sediment-related parameter or (ii) nutrients, including all surface waters within the Chesapeake Bay

Watershed? **Yes**. If YES, then the following general permit (Part I B 4 a) and SWPPP requirements (Part II B 5 and Part II B 8) must be implemented for the land-disturbing activity:

- Permanent or temporary soil stabilization shall be applied to denuded areas within seven (7) days after final grade is reached on any portion of the site;
- Nutrients (e.g., fertilizers) shall be applied in accordance with manufacturer's recommendations or an approved nutrient management plan and shall not be applied during rainfall events;
- Inspections shall be conducted at a frequency of (i) at least once every four (4) business days or (ii) at least once every (5) business days and no later than 24 hours following a measurable storm event. In the event that a measurable storm event occurs when there are more than 24 hours between business days, the inspection shall be conducted on the next business day; and
- Representative inspections used by utility line installation, pipeline construction, or other similar linear construction activities shall inspect all outfalls; and
- Implement the requirements for construction dewatering discharges as outlined in Part II B 8.

2. Does this proposed land-disturbing activity discharge to a surface water identified as impaired in the 2022 § 305(b)/303(d) Water Quality Assessment Integrated Report or for which a TMDL wasteload allocation has been established and approved prior to the term of the general permit for polychlorinated biphenyl (PCB)? **Yes**. If YES, then the following general permit (Part I B 4 b) and SWPPP requirements (Part II B 6) must be implemented for the land-disturbing activity **if** the construction activity involves the demolition of structures (i) equal to or greater than 10,000 square feet and (ii) built or renovated on or before January 1, 1980:
   - Implement an approved erosion and sediment control plan;
   - Dispose of PCB-contaminated materials in compliance with applicable state, federal, and local requirements to minimize the exposure of PCB-containing building materials;
   - Inspections shall be conducted at a frequency of (i) at least once every four (4) business days or (ii) at least once every (5) business days and no later than 24 hours following a measurable storm event. In the event that a measurable storm event occurs when there are more than 24 hours between business days, the inspection shall be conducted on the next business day; and
   - Representative inspections used by utility line installation, pipeline construction, or other similar linear construction activities shall inspect all outfalls.

3. Does this proposed land-disturbing activity discharge to an exceptional water identified in 9VAC25-260-30 A 3 c? **No.** If YES, then the following general permit (Part I B 5) and SWPPP requirements (Part II B 7 and Part II B 8) must be implemented for the land-disturbing activity:
   - Permanent or temporary soil stabilization shall be applied to denuded areas within seven (7) days after final grade is reached on any portion of the site;
   - Nutrients (e.g., fertilizers) shall be applied in accordance with manufacturer's recommendations or an approved nutrient management plan and shall not be applied during rainfall events;
   - Inspections shall be conducted at a frequency of (i) at least once every four (4) business days or (ii) at least once every (5) business days and no later than 24 hours following a measurable storm event. In the event that a measurable storm event occurs when there are

more than 24 hours between business days, the inspection shall be conducted on the next business day; and
- Representative inspections used by utility line installation, pipeline construction, or other similar linear construction activities shall inspect all outfalls; and
- Implement the requirements for construction dewatering discharges as outlined in Part II B 8.

The general permit requires that you submit a complete Notice of Termination packet no later than 30 days after meeting one or more of the termination conditions set forth in the general permit (Part I F). In accordance with the Virginia Erosion and Stormwater Management Regulation (9VAC25-875-1420), an annual permit maintenance fee may be required until coverage under this general permit has been terminated. If you are required to pay an annual permit maintenance fee, you will receive an invoice from the appropriate Virginia Erosion and Stormwater Management authority or DEQ when acting in the capacity of the Virginia Stormwater Management Program authority.

The general permit will expire on June 30, 2029. The conditions of the general permit require that you submit a new registration statement at least 90 days prior to that date if you wish to continue coverage under the general permit unless permission for a later date has been granted by the Board. Permission cannot be granted to submit the registration statement after the expiration date of the general permit.

If you have any questions about this permit, please contact the DEQ Office of Stormwater Management at ConstructionGP@deq.virginia.gov.

Sincerely,

April Rhodes

April Rhodes
Program Manager
Office of Stormwater Management

COUNTY OF LOUISA
Community Development Department

May 8, 2026

Daniel Webb
Webb Engineering
11903 Bowman Drive
Fredericksburg, VA 22408

Re: Plan Review Approval, Louisa Station
Erosion & Sediment Control (ESC) Plan ESCP 2025-23.

Dear Mr. Webb:

Louisa County has approved the Erosion and Sediment Control plan for the above-referenced project prepared August 14, 2025 last revised April 17, 2026 and received by Louisa County on April 28, 2026. A bond estimate sheet has been provided and will be processed once submitted back to our office.

Regards,

Kris Nelson

Kris Nelson
Erosion and Sediment Control Administrator
County of Louisa, Virginia
Cell: 540-894-1912

Cc. (via email) Tom Egeland, Senior Planner

VDOT Virginia Department of Transportation

Louisa Residency Land Use

TO: Stuart Turille - Town Manager, Town of Louisa

FROM: Greg Zeckman – Engineer in Land Use

DATE: June 15, 2026

RE: Louisa Station
Rte. 1046/Pine Ridge Drive
Functional Class: Local
Speed Limit: 25 mph

Stuart Turille,

Upon review of the submittal of the "***Louisa Station*****,"** site plan prepared by W. W. Webb and Associates dated May 28, 2026, VDOT recommends Conditional Approval subject to the following:

1. A VDOT Land Use Permit will be required for any work being proposed within VDOT Right of Way.

2. A certified copy of the CBR report is to be submitted and approved prior to placement of the aggregate base course. CBR tests shall be submitted with the soil support value equal to or greater than 10. If these values are less than 10, the developer will be required to provide VDOT with revised pavement designs in accordance with the Pavement Design Guide for Subdivision and Secondary Roads in Virginia.

3. While VDOT has recommended conditional approval of these plans, the issuance of a VDOT Land Use Permit is required for any work performed within state-maintained rights of way in conjunction with this project. It should be noted that the Department reserves the right to require field changes as deemed necessary. All construction activities within VDOT maintained right-of-way shall be in accordance with the current Virginia Work Area Protection Manual. Failure to provide safe working conditions for the workers and the traveling public may cause revocation of the Land Use Permit.

4. The construction of the streets within this development requires the implementation of a comprehensive inspection program to ensure compliance with VDOT standards and specifications. The plans being recommended for conditional approval indicate that the applicant will retain the services of a licensed geotechnical engineer to perform the required inspection and testing in accordance with current Residency policy.

5. The developer, or his authorized representative(s), will be responsible to ensure that any, and all, power poles and other above ground fixed objects within the clear zone of any street accepted for VDOT maintenance (whether shown on this plan set, or not) are relocated as

necessary. This recommended conditional approval does not include VDOT approval of relocation of underground or overhead utilities.

6. Prior to the issuance of the land use permit, the name, telephone numbers, and a copy of the VDOT erosions and sediment control certification card shall be submitted or a certification statement from the engineer stating that the requirement for certification does not apply. This statement should include the amount of land being disturbed within VDOT right of way in accordance with the Virginia Department of Transportation (VDOT) Road and Bridge Specification § 107.14 (a) and § 10.1-2101 of the Code of Virginia. This office is to be supplied with the actual square footage of the land to be disturbed within VDOT Right of Way.

7. This recommendation for conditional approval does not include proposed lighting plans or landscape embellishments (i.e., landscaping, hardscaping, signage, lighting, irrigation, fencing, etc.), nor does it include the use of special pavers across the roadway. To be installed within state-maintained rights of way, the design of these considerations must be submitted to VDOT for review as separate submittal under Permit Process. VDOT approval of said plan shall be granted prior to installation. Failure to comply with these requirements may result in the removal of said embellishments prior to state acceptance.

NOTES:

Please note that per the VDOT Road and Bridge Specification 107.14(a): Special Provision 107D, which has been reinstated effective February 2, 2007. A Certified Erosion and Sediment Control Contractor must be in responsible charge of all regulated land disturbing activities within VDOT rights-of-way.

This review does not include any proposed landscaping or similar embellishments or work. Landscaping, irrigation, lighting, fencing, hardscaping, etc. proposed within State maintained right-of-way requires a separate review, permit, fees, and surety.

VDOT reserves the right to comment if impacts to VDOT right-of-way, drainage structures or other resources are shown on subsequent plans.

This plan will expire 5 years from the date of the initial approval date of June 15, 2026.

Please contact Greg Zeckman at (540) 594-1680 or greg.zeckman@vdot.virginia.gov or Geraldine Jones at (540) 750-6281 or geraldine.jones@vdot.virginia.gov should you have any questions or concerns.

LOUISA TOWN COUNCIL BY-LAWS

Adopted February 17, 2026

ARTICLE 1 - PURPOSE AND BASIC PRINCIPLES

SEC.1-1. PURPOSE OF BY-LAWS AND RULES OF PROCEDURE

These By-laws and Rules of Procedure are adopted pursuant to Section 3.11 of the Town Charter to serve the following purposes:

A. To enable Town government to transact business expeditiously, transparently and efficiently affording every opportunity for the citizens to witness and participate in the operation of government;
B. To protect the rights of each individual Council Member;
C. To preserve the spirit of cooperation among Council members; and
D. To determine the will of the Council on all matters.
E. To clarify that Council the role of Committees as advisory in nature to the council, with no supervisory function.

SEC. 1-2 FIVE BASIC PRINCIPLES UNDERLYING BY-LAWS AND RULES OF PROCEDURE

A. Only one subject may claim the attention of the Council at one time;
B. Each item presented for consideration is entitled to full and free discussion;
C. Every member has rights equal to every other member;
D. The will of the majority must be carried out, and the rights and opinions of the minority must be preserved and respected; and
E. Each member shall remain respectful of fellow Council members, staff, and members of the public, even in times of disagreement, in speech and in behavior.

ARTICLE 2 – MEETINGS

SEC. 2-1. WHEN AND WHERE REGULAR AND WORK SESSION MEETINGS HELD

A. The time and place of regular meetings and the Town Manager's Annual Goal Setting Work Session of the Town Council of Louisa (hereinafter referred to as "the Council") shall be established at each annual organizational meeting. Such regular meetings shall be held in Council Chambers in the Louisa Town Hall on the third (3rd) Tuesday of the month unless otherwise set by the Council. Such meetings shall begin at 6:00 p.m. If Council subsequently prescribes any public place other than the initial public meeting place, or any day or time other than

that initially established, as a meeting day, place or time, the Council shall pass a resolution as to such future meeting day, place or time, and shall cause a copy of such resolution to be posted at Town Hall and inserted in a newspaper having general circulation in the town at least seven days prior to the first such meeting at such other day, place or time. Should the day established by the governing body as the regular meeting day fall on any legal holiday, the meeting shall be held on the next following regular business day, without action of any kind by the governing body. The Town Manager's Annual Goal Setting Work Session shall be scheduled at a time and date that allows the majority of elected members and required staff to attend. For those unable to attend, they shall be provided with the information requested by the Town Manager in sufficient time to allow submittal of requested items for inclusion on the Planning Worksheet prior to the scheduled Work Session. This process ensures all elected officials have a voice in annual planning. No voting can occur during a work session.

B. If needed, Council may schedule council work sessions, which are subject to FOIA open meeting requirements, at a time and place as set by the Council. The purpose of such work sessions shall be to allow the Council an opportunity to further review items either held over by the Council from a regular meeting or such other items as may come before the Council at a regular meeting in the future. Sufficient time and additional information shall be provided to elected officials unable to attend the work session to allow submittal of their input for consideration during the work session. The Council shall not take any action to approve or deny any item before it during a work session.

C. If needed, Council may hold emergency or special meetings, which may be called by the Mayor or by two members of the Town Council. The call or request shall be made to the clerk, and shall specify the matters to be considered at the meeting. Upon receipt of such call or request, the clerk, after consultation with the mayor, shall immediately notify each member of Council and the town attorney in writing delivered in person or to his place of residence or business or, if so requested or by electronic mail to attend such meeting at the time and place stated in the notice. Such notice shall specify the matters to be considered at the meeting. No matter not specified in the notice shall be considered at such meeting, unless all Council members are present. The notice may be waived if all Council members of the governing body attend the special meeting or sign a waiver. Notice, reasonable under the circumstance, of special, emergency, or continued meetings shall be given contemporaneously with the notice provided to the members of the public body conducting the meeting.

D. Sufficient notice shall be given to elected officials and required staff to ensure attendance of a quorum can be satisfied. For those unable to attend, the Town Manager should attempt to obtain their input regarding the purpose of the Special Call meeting for consideration prior to the meeting.

SEC. 2-2. POSTPONED MEETINGS IN CERTAIN CIRCUMSTANCES

A regular meeting shall be continued to the immediately following business day at the same place and time as the regular meeting being continued if the Mayor, or Vice Mayor if the Mayor is unable to act, finds and declares that weather or other conditions are such that it is hazardous for members and staff to attend the published scheduled meeting. Such findings shall be communicated to the members and the press as promptly as possible. All hearings and other matters previously advertised shall be conducted at the postponed meeting, and no further advertisement is required. In the event the immediately following business day is still unsuitable for a continued meeting as set out in this paragraph, then the continued meeting shall be held a the day the Mayor, or Vice Mayor if the Mayor is unable to act, determines that the conditions that caused the original schedule meeting too hazardous to attend are no longer present.

SEC. 2-3. MEETING ADJOURNMENT

Meetings of the Council shall adjourn when all business, or the agenda, before the body is complete, however it is not the Council's intent to begin a new agenda item after 10:00 p.m. unless and until a motion to extend the time has been offered and passed by a majority vote of the members present and voting. Any agenda item not conducted may be carried over to the next scheduled meeting date or the continued meeting if Sec. 2.2 applies, or at such other time as determined by Council. Any public hearing advertised for a regular meeting but not conducted may be rescheduled to the next scheduled or continued meeting, without further advertising when the date and time of the reconvened meeting is publicly announced at the preceding meeting and is otherwise in compliance with state law.

SEC. 2-4. RESERVED

SEC. 2-5. RESERVED

SEC. 2-6. ANNUAL ORGANIZATIONAL MEETING

A. The Council shall meet on the third (3rd) Tuesday of January of each year, which shall be known as the annual organizational meeting.

B. The Vice Mayor shall be elected at the annual meeting for a term of two years or until Council wishes to select another Vice Mayor. However, the Vice Mayor serves at the will of council and can be replaced by council motion and corresponding vote at any time.

C. The Council shall:

1. Establish dates, times and places for its regular meetings and Annual Work Session while ensuring legal holidays are addressed;

2. Adopt its By-Laws and Rules of Procedure (a copy shall be provided to each elected member no later than the preceding December regular council meeting);
3. Adopt a Financial Policy if sufficient information to adopt a policy is provided, and
4. Conduct any other necessary business as determined by a majority vote of the Council.

SEC. 2-7. PROCEDURE FOR ELECTION OF VICE MAYOR

The following procedures shall be followed to elect the Vice Mayor when such election is conducted:

1. A member of council must move that Council elect a new Vice-Mayor.

2. Any member, after being recognized by the Mayor, may place one or more names in nomination and discuss his or her opinions on the qualifications of the nominee(s).

3. When all nominations have been made, the Mayor shall close the nominating process and call for the vote on the nominee. In the event of multiple nominees, Council members may cast a vote only for one such nominee. The nominee receiving a majority of Council votes is elected Vice Mayor.

SEC. 2-8. RESERVED.

SEC. 2-9. QUORUM AND METHOD OF VOTING

A. At any meeting, a majority of the Council shall constitute a quorum.
B. All actions authorized by the Council shall be pursuant to a roll call vote which shall be taken by the Clerk or Deputy Clerk of the Council. The Clerk or Deputy Clerk shall call the name of each member and receive in reply the vote of such member as either "Yes" or "No" on the measure being considered. At the beginning of any meeting, the Clerk shall conduct a silent roll call of members present and absent.
C. The order of voting shall be as called by the Clerk of the Council, with the Mayor voting last in the event of a tie.
D. If there is an abstention, it shall be the responsibility of the Mayor to note the abstention for the record and to request that the member abstaining state his or her reason for abstaining for the record.

SEC. 2-10. CLOSED MEETINGS or SESSIONS

A. Closed meetings/sessions shall only be used when the matter to be discussed is exempt from open meeting requirements pursuant to the Virginia Freedom of Information Act.
B. No meeting shall become a closed meeting, and Council shall not otherwise convene in closed session, until the Council takes an affirmative recorded vote in open session. Any member dissenting in such vote shall state the reason for the dissent.

   The motion to move to closed session shall state specifically the purpose or purposes which are the subject of the closed meeting and reasonably identify the substance of the matters to be discussed. The motion shall make specific reference to the applicable exemption(s) under the Freedom of Information Act, which authorizes the closed meeting.
   The Town Attorney may assist the members in formulating the proper motion to move to closed session in accordance with the requirements of the Freedom of Information Act.

C. No resolution(s), ordinance(s), rule(s), contract(s), regulation(s) or motion(s) considered in a closed meeting shall become effective until the Council reconvenes in an open meeting and takes a vote of the membership on such resolution(s), ordinance(s), rule(s), contract(s), regulation(s) or motion(s) which shall have its substance reasonably identified in the open portion of the meeting.

D. At the conclusion of a closed meeting or session, the Council shall reconvene in open session immediately thereafter and shall cast a vote certifying that to the best of each member's knowledge:

1. Only public business matters lawfully exempted from open meeting requirements were discussed; and
2. Only public business matters identified in the motion convening the closed meeting were heard, discussed or considered.

Any member who believes that there was a departure from the above requirements shall so state prior to the Mayor's call for the vote, indicating the substance of the departure that, in his or her judgment, has taken place.

E. The failure of the certification to receive the affirmative vote of the majority of the members present during the closed meeting shall not affect the validity or confidentiality of the closed meeting with respect to matters considered therein in compliance with the Freedom of Information Act.

F. The Council may permit non-members to attend a closed meeting if their presence will reasonably aid the Council in its consideration of an issue. A motion to include a non-member (public) must be approved by the majority of council members.

G. Council members shall keep in mind that closed meeting discussions are to remain confidential, and that such matters as discussed in closed meeting or session should not be discussed in public by any participant unless and until a formal action is taken by the Council in accordance with Section 2-10(C) above, and in some cases, such discussions are to remain confidential as permitted or required by applicable law. Failure of a Councilmember to maintain such confidentiality may result in such member being censured by Council.

SEC. 2-11. ELECTRONIC MEETINGS and REMOTE MEETING PARTICIPATION

Council shall not conduct any meeting wherein the public business is discussed or transacted through telephonic, video, electronic or other communication means where the members are not physically assembled, except as authorized by the Virginia Freedom of Information Act and pursuant to the Council's annually adopted **Policy Governing Remote (Electronic) Meeting Participation and Meetings Held Solely Through Electronic Means**, which shall be attached

hereto and incorporated herein. As required by state law, Council shall review, update as necessary with the guidance of the Town Attorney, and (re)adopt such policy every year at its organizational meeting.

ARTICLE 3 - OFFICERS

SEC. 3-1. MAYOR AND VICE MAYOR

As provided by the Town Charter and Town Code, the Mayor shall preside over all meetings of the Council. The Vice Mayor serves in the absence of the Mayor. In the absence from any meeting of both the Mayor and Vice Mayor, the members present shall choose one of their members to preside over the meeting.

SEC. 3-2. CLERK

As provided by the Town Charter and Town Code, the Clerk of the Council is appointed by the Council and does not have to be re-appointed each year at the annual organizational meeting. The duties and responsibilities of the Clerk shall be as set out in the Town Charter and Town Code and Sections 15.2-1538 and 15.2-1539 of the Code of Virginia (1950, as amended). The Council may also designate a Deputy Clerk, and at the discretion of the Council, any Town employee can be designated as Temporary Clerk.

SEC. 3-4 RESERVED.

SEC. 3-4 PARLIAMENTARIAN

The Town Attorney, or his or her designee, shall serve as the Parliamentarian for the purpose of interpreting these By-Laws and Rules of Procedure, *Robert's Rules of Order* and the Code of Virginia, as may be directed by the Mayor, or as required as a result of a point of order raised by any one or more Council members. If the Town Attorney, or his or her designee, is unavailable, the Town Manager shall serve as the Parliamentarian.

SEC. 3-5. PRESERVATION OF ORDER

A. At meetings of the Council, the Mayor shall preserve order and decorum.

B. Council members should refrain from speaking on matters until recognized by the Mayor. Council members shall address the Mayor or address other members through the Mayor. After being recognized by the Mayor, a Council member shall not be interrupted, except when a point of order is called or when requested to yield the floor by another member.

ARTICLE 4 - CONDUCT OF BUSINESS

SEC. 4-1. ORDER OF BUSINESS

1. At regular meetings the order of business shall generally be as follows:
   a. Call to Order- Silent Roll Call of Members (commencing at 6 p.m.)
      i. Invocation
      ii. Pledge of Allegiance
      iii. Adoption of the Agenda
      iv. Consent Agenda
      v. Public Comment
      vi. Presentations
      vii. Council Discussion/Comments
      viii. New Business
      ix. Old Business
      x. Appointments
      xi. Standing Committees Report
      xii. Staff Reports
      xiii. Closed Meeting
      xiv. Adjournment

2. The above order of business may be modified by the Town Manager when preparing the meeting agenda, after the Mayor has been notified, to facilitate the business of the Council. Further, Council may amend the organization of the agenda items at the meeting.

3. Citizens' Comments shall be subject to the following rules:

4. Citizens' Comments shall be for the limited purpose of allowing members of the public to present any matter, which, in their opinion, deserves the attention of the Council. They shall not serve as a forum for debate with the Council or individual members of the Council.

5. The Mayor and Council members shall refrain from discussing issues raised or questions raised by the public, within the same meeting, except by motion and consent of a majority of the Council members present.

6. Citizens wishing to speak during the Citizens' Comments portion of the agenda shall sign the registration form, identifying, with reasonable certainty, the subject matter of his or her comments prior to the commencement of the Citizens' Comments portion of the agenda. Citizens who do not sign the registration form prior to the commencement of Citizens' Comments may address the Council after all others who have signed the registration form have had an opportunity to speak.
7. Remarks shall be addressed directly to the Council and not to staff, the audience or the media.
8. The Mayor shall open Citizens' Comments.
9. The Mayor will explain the Citizens' Comments policy prior to the commencement of the first citizen's comment(s) being received by the Council.
10. The Mayor will call on each speaker who has signed the registration form in the order upon which their name shall appear on the registration form.
11. Each speaker shall clearly state their name and place of residence (locality), but are not required to provide their home address, and shall be subject to a three (3) minute time limitation. If the speaker represents a public group there shall be a time limit of five (5) minutes. Members of a group in attendance shall forfeit their right to speak on the same topic. Residents of the same neighborhood or subdivision are not considered a group for the purposes of public comments at zoning hearings. For purposes of this section, a "group" shall constitute ten (10) or more individuals. No speaker shall address the Council more than once during Citizens' Comments at any single Council meeting and citizens cannot donate their unused speaking time to another speaker. Notwithstanding the time limitations stated herein, the Mayor may, at his or her discretion, allow any citizen to speak beyond the designated time limitation for a reasonable period of time in order to conclude his or her remarks.

12. There shall be no comment during Citizens' Comments on a matter for which a public hearing is scheduled during the same meeting.

13. Any issue raised by the public which the Council wishes to consider may be put on the agenda for a future Council meeting by a majority vote.

14. The above rules notwithstanding, members of the public may present written comments to the Council or to individual Council members at any time during the meeting. Such written comments shall be submitted through the Clerk and shall become a part of the record.

SEC. 4-2. CONSENT AGENDA

The Consent Agenda shall be introduced by a motion "to approve" and shall be considered by the Council as a single item.

A. Upon the request of any Council member, an item may be removed from the Consent Agenda for consideration after approval of the remaining items on the consent agenda.

B. The Town Manager shall provide a brief summary of the individual items on the Consent Agenda, if the Manager or Council deems it necessary.

SEC. 4-3. SPECIAL PRESENTATIONS

Special presentations shall be for the purpose of informing the Council of matters of public interest, as well as to provide the Council an opportunity to properly recognize individuals and organizations, either public or private, for the outstanding service or work they perform for or in the Town. Any governmental agencies or entity, organization or individual wishing to present an item to the Council shall contact the Town Manager fourteen (14) days prior to the Council's regularly scheduled meeting to seek inclusion in the Council's agenda.

SEC. 4-4. CONDUCT OF MEETINGS

When two or more members of the Council wish to speak at the same time, the Mayor shall name the one to speak first. The Mayor may call a brief recess at any time. The Mayor may order the expulsion of a disorderly member of the public, subject to appeal to the full Council. Other Council members may request the Mayor for consideration of the expulsion of a disorderly member of the public. If necessary to preserve proper decorum, the Mayor may automatically adjourn, without benefit of any motion or debate, any meeting of the Council. All Council members shall maintain proper decorum when addressing any citizens and applicants that appear before the Council.

SEC. 4-5. RESERVED.

SEC. 4-6. MOTIONS

A. Members are required to obtain the floor before offering motions or speaking, which they can do while seated.

B. Motions need to be seconded in order to be voted on by council, unless otherwise provided by Roberts Rules of Order.
C. Informal discussion of a subject is permitted while no motion is pending.
D. An amended or substitute motion shall be allowed to any motion properly on the floor; it shall have precedence over an existing motion and may be discussed prior to being voted on. If the amended or substitute motion fails, the former motion can then be voted upon. If the amended or substitute motion passes, the amended or substitute motion shall be deemed the main motion and shall stand as having been passed by such vote. If an amended or substitute motion fails, a second amended or substitute motion may be made. No more than two (2) amended or substitute motions may be made for the same issue. To ensure understanding prior to a vote, the motion to be considered must be repeated upon request by the Mayor or any Council member to ensure members understand what is before them.
E. When a motion is under debate, no motion shall be received unless it be one to amend, substitute, commit or refer for study, postpone, call for the previous question, lay on the table, or to adjourn.

F. The Mayor may speak in all discussions, and shall have the the same right to vote as other councilmembers on a matter if Council is equally divided.

G. A motion to call for the question is in order and the right of every Council member to call when they feel discussion has been exhausted and or repeated, thus belaboring the business before the governing body A motion to call for the question requires a two-thirds majority vote of those present. The Mayor shall not recognize a motion to call for the question until every Council member desiring to speak on the main motion has had such an opportunity.

H. When a vote upon any motion has been announced, it may be reconsidered on the motion of any member who voted with the prevailing side provided that such motion shall be made at the session of the Council at which it was decided. Such motion for reconsideration shall be decided by a majority of the votes of the members present. A member present at the meeting but temporarily absent during a vote may move for reconsideration.

I. Subject to applicable law, the Council may consider a motion to rescind at any time to address a matter or issue upon which a vote has been taken, following such notice as may be required.

J. Should a decision be made to reconsider or rescind a land use decision, subject to notice and public hearings, as may be required by law, the Council may choose to act on such request without referring the matter to the Planning Commission for its consideration.

K. A motion to adjourn shall always be in order and supersedes all business before the Council.

SEC. 4-7. DECISIONS ON POINTS OF ORDER

The Mayor, or Vice Mayor when presiding at a meeting of the Council, shall refer any point of order to the Parliamentarian. A point of order is a formal demand made by a member to address a violation of rules. The Parliamentarian shall advise the Mayor who shall then make a ruling on the point of order. A Council member may appeal the ruling of the Mayor to the full Council which shall decide the matter by majority decision.

SEC. 4-8. SUSPENDING RULES

One or more of these By-Laws and Rules of Procedure may be temporarily suspended by a majority vote of the members present, or by unanimous consent.

SEC. 4-9. ROBERT'S RULES OF ORDER

The proceedings of the Council, except as otherwise provided in these By-Laws and Rules of Procedure and by applicable state law, shall be governed by *Robert's Rules of Order.*

ARTICLE V - PUBLIC HEARINGS

SEC. 5-1. PUBLIC HEARING AUTHORIZATION

The Town Manager, or his/her designee, shall be authorized to set public hearings for such regular meetings as are appropriate in order to effectuate the timely consideration of matters requiring Council consideration.

SEC. 5-2. FORMAT FOR PUBLIC HEARINGS

1. The following format shall be followed for all Public Hearings.
2. The Mayor will make a brief statement identifying the matter to be heard and verify that all legal notification requirements have been met.
3. The Mayor will call upon the appropriate Town staff member to present the item to be heard. Staff presentations should be concise.

4. If the purpose of the public hearing is to consider a land use application (or other application requiring a public hearing) the applicant may appear on his own behalf, or be represented by counsel or an agent. The applicant, or his counsel or agents, shall have a combined total of ten (10) minutes to speak to the application.

5. The Mayor will open the floor to public comment, if any, after the applicant, or his counsel or agent, has spoken. Any private citizen may speak on the matter being considered. The Clerk shall prepare a registration form for citizens to sign their name and provide their address. The Mayor shall call each speaker in the order that their name appears on the registration form. Each speaker shall clearly state his or her name and address for the record. Citizen comments are limited to three (3) minutes per citizen speaker. If the speaker represents a group of individuals in attendance at a particular meeting, there shall be a time limit of five (5) minutes. Members of a group shall forfeit their right to speak on the same topic. For purposes of this section, a "group" shall constitute ten (10) or more individuals. . Residents of the same neighborhood or subdivision are not considered a group. The applicant, or his counsel or agent, shall be given the opportunity for closing remarks, which shall last for no more than five (5) minutes. Notwithstanding the time limitations stated herein, the Mayor may, at his or her discretion, allow any citizen to speak beyond the designated time limitation for a reasonable period of time in order to conclude his or her remarks.

6. The Parliamentarian or Clerk shall be responsible for noting the expiration of time limits, and the Mayor shall be responsible for enforcing it.
7. Upon the conclusion of public comments or the applicant's closing remarks (if any), the Mayor shall close the public hearing.
    a. When a public hearing has been closed by order of the Mayor, no further public comments shall be received by the Council. However, any Council member may ask a question of any person who spoke during the public hearing after being recognized by the Mayor to do so.

    b. Following the close of the public hearing, the Mayor may entertain a motion to vote on the matter and the Council may discuss the merits of the issue prior to voting.

ARTICLE 6 -AGENDA PREPARATION

SEC. 6-1. PREPARATION

A. The Town Manager shall develop the meeting agenda in consultation with the Mayor, for the regularly scheduled meetings conforming to the order of business specified in Section 4-1 entitled "Order of Business".

B. All items which are requested to be placed on the agenda which have not been submitted within the prescribed deadline, as set by the Town Manager, may be placed on the next regular agenda for consideration as determined by the Manager in consultation with the Mayor.

C. Nothing herein shall prohibit the Council from adding or removing items to the agenda, provided that such a request is in the form of a motion, voted upon by a majority of the Council. Members must use discretion in requesting the addition of items to the agenda since to promote public awareness and transparency; Council considers it desirable to have items listed on the published agenda.

SEC. 6-2. DELIVERY OF AGENDA

The Council agenda and related materials shall be received by each member of the Council and the Town Attorney on the Tuesday before the scheduled regular meeting. The Clerk of the Council may request an adjustment to the delivery schedule due to special circumstances.

SEC. 6-3. COPIES

The Clerk shall prepare or cause to be prepared extra copies of the agenda and shall make the same available to the public and the press in the Office of the Town Manager and on the Town website. The Clerk shall also have at least one hard copy available at each regular meeting.

SEC. 6-4. COMMENTS, QUERIES OF COUNCIL MEMBERS

Council members are to observe the following rules during the discussion of agenda items:

1. The Mayor and Council members shall at all times refrain from personal attacks of staff, members of the public or other Council members.

2. Council members shall limit their remarks and the Mayor shall limit the discussion to topics germane to the subject on the agenda being considered. Points of clarification shall be limited to questions only. The Mayor may rule other, nongermane comments out of order.

3. Council members may address questions to the Town Manager or staff member presenting at the meeting.

ARTICLE 7 - COUNCIL, AUTHORITIES, COMMISSIONS, WORKGROUPS AND COMMITTEES

SEC. 7-1. APPOINTMENTS

Members of all boards, authorities and commissions shall be appointed by a majority of the Council. Proposed appointments shall be voted upon under the Appointments section of the Agenda. Members of all workgroups, standing and special committees of Council shall be appointed by the Mayor. Appointees' terms shall run in accordance with the applicable by-laws of such boards, authorities, commission or committees to which the appointee is appointed, unless a shorter term is specified by the Council, or except as provided by applicable state law or Town Code provision. Except as otherwise provided by state law, (i) all appointees to boards, authorities and commissions may be removed, with or without cause, at the pleasure of the Council, and (ii) members of workgroups, standing and special committees may be removed, with or without cause, at the pleasure of the Mayor.

SEC. 7-2. ATTENDANCE

Members of any standing or ad hoc board, authority, committee or commission of the Council, or of any committee to which the Council or the Mayor appoints a member, shall be expected to attend every scheduled meeting of the body to which they have been appointed. Any member of an appointed body who fails to attend a minimum of seventy-five percent (75%) of the scheduled meetings of that particular body in any given calendar year may, at the discretion of the Council, be deemed to have forfeited his or her membership on that body, subject to any state laws to the contrary. In the event that the Council, or the Mayor as applicable, determines that an appointee has forfeited his or her appointment pursuant to this section, the Clerk of the Council shall notify, in writing, the appointee of his or her removal from that body based upon his or her failure to attend there required percentage of scheduled meetings and shall thank the appointee for his or her service to the community. Upon the appointment of any appointee, the Clerk of the Council shall forward to the member a copy of this section.

SEC. 7-3. PLANNING COMMISSION MEMBERS ATTENDANCE

Notwithstanding the foregoing provisions, a member of the Planning Commission may be removed from office by the Council without limitation in the event that the commission member is absent from any three (3) consecutive meetings of the commission, or is absent from any four (4) meetings of the commission within any twelve (12) month period. In either such event, a successor shall be appointed by the Council for the unexpired portion of the term of the member who has been removed.

SEC. 7-4. RESERVED.

SEC. 7-5. ROLE OF STANDING OR AD Hoc COUNCIL COMMITTEES; DESIGNATED STANDING COMMITTEES; MEETING REQUIREMENTS

A. Committees of the Council, whether standing or ad hoc, are established as advisory bodies whose purpose is to support the Council's policymaking responsibilities through structured review and informed analysis. The role of any such committee, as it may be created from time to time, shall be to review and consider all matters properly placed before it by vote of the Council, including matters relating to the development, evaluation, or refinement of public policy. Upon completing its review, each committee shall provide the Council with its recommendations through such report as the Town Manager deems appropriate for inclusion in the Council's regular meeting agenda. The Mayor and Committees have no spending authority and cannot move money from other accounts without Council discussion and approval. In a declared State of Emergency, the acting Director of Emergency Management (Town Manager) has the authority to obtain emergency supplies without Council permission.

B. The following standing committees are hereby created by the Council for the general subject matters stated herein and shall meet, in accordance with applicable open meeting laws, to consider only such specific matters as may directed by the Council:

   a. **Public Works and Facilities Committee (Refuse Collection, Recycling and Litter Control/Streets and Sidewalks)** - responsible for the review and recommendation of matters related to public infrastructure, public utilities, trash/refuse, public buildings, fleet issues, and the maintenance and development of Town facilities;

   b. **Public Safety Committee (Police Matters)** - responsible for the review and recommendation of matters related to law enforcement, fire and rescue, emergency management, and all support services related thereto;

c. **Personnel Committee** - responsible for the review and recommendation of matters related to personnel policies and procedures, wages and benefits for public employees, oversight of the timely coordination of the Town Manager's performance reviews, participation in periodic review of recommendations related to the organizational structure of Town departments, and participation in the review of recommendations regarding contracted services for the Town;

d. **Finance Committee** - responsible for the review and recommendation of matters related to the Town's budget, financial policies, audits, revenue streams, expenditures, and financial planning to ensure fiscal responsibility and transparency;

e. **Community Development and Events Committee** - responsible for the review and recommendation of matters related to economic development, planning and zoning, inspections, and the development and coordination of community events to promote engagement and cultural enrichment;

f. **Cemeteries Committee** - responsible for the review and recommendation of matters related to the maintenance, preservation, and development of Town cemeteries, including policies regarding burial plots and cemetery operations;

g. **Intergovernmental Relations Committee (Legal Matters)** - responsible for the review and recommendation of matters related to intergovernmental operations and partnerships between Louisa County and the Town, including collaboration on shared services, joint initiatives, and regional planning efforts.

ARTICLE 8- GENERAL OPERATING POLICY

SEC. 8-1. ACTIONS BY INDIVIDUAL MEMBERS OF THE COUNCIL

It shall be the policy of the Council that no elected official(s) shall exert individual action or direct any Town employee or initiate any action or assert their individual preference(s) in a manner that would require a Town employee to perform any action contrary to the laws, ordinances or policies of the Town or which would require the expenditure of public funds in any amount without the approval of the Council. Further, no member of the Council shall seek nor accept more favorable treatment from Town officers or employees than would be given to other members of the Council, nor attempt to influence the decisions or recommendations of Town appointees, officers or employees. Notwithstanding the foregoing, each Council member may, and is encouraged, to share information with Town appointees, officers and employees and to

promote a positive working environment for all employees. Additionally, no elected officer shall assert or speak on behalf of the Council or the Town without direct approval from the Town Council. Communications made on behalf of the Town shall be limited to the Town Manager and Mayor, ensuring that all official statements or representations are consistent with the policies and direction established by the Council. Individual council members may speak on behalf of the town on matters as specifically authorized by Council.

SEC. 8-2. NUMBERING AND INDEXING OF RESOLUTIONS, ORDINANCES AND PROCLAMATIONS

It shall be the responsibility of the Clerk to number and index all resolutions, ordinances and proclamations of the Council. Resolutions and proclamations shall be numbered consecutively and use the last two digits of the calendar year. For example, for the first resolution in January, 2026, the resolution number would be shown as: Resolution No. 26-01.

SEC. 8-3. MINUTES OF THE COUNCIL

The minutes of the Council meeting shall reflect the official acts of the Council and names of the public commenting during public hearings and citizen comments, as well as a summary of Council's proceedings at each meeting, in addition to the date, time and location of the meeting. They shall reflect the issues discussed and Council comments in summary form.

SEC. 8-4. AMENDING BY-LAWS

These by-laws may be amended by vote of Council at any meeting subsequent to the introduction of a suggested by-laws amendment.

SEC. 8-6. ENACTMENT OF BY-LAWS AND RULES OF PROCEDURE

No later than December 1st of each year, the Town Manager or Clerk shall deliver a copy of the current By-Laws and Rules of Procedure to each member and member-elect of the Council, soliciting any proposed changes to the same. Any proposed changes shall be referred to the Town Attorney to prepare proposed amendments for Council's consideration at the annual Organizational Meeting.

Adopted by the Louisa Town Council on this 17th day of February, 2026.

Ashley Michael, Mayor

Stephanie Dorman, Clerk

Town of Louisa Comprehensive Plan 2023

Adopted by Town Council
December 19, 2023



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Appendix I Town of Louisa Zoning Map

Louisa Town Council Vision Statement

"The Town of Louisa is the center of government, commerce, culture, and arts for the County. As the heart of the County, we take responsibility for our destiny and commit to leadership that will ensure our economic and collective success. We are a community that preserves and builds on our history while retaining our social fabric and small-town appeal. Our Main Street defines us, providing a sense of place and identity, and drawing citizens together to create a progressive, vibrant, and caring community."

Louisa Town Council

Mayor R. Garland Nuckols
Vice Mayor Jessie J. Lassiter

A. Daniel Carter
John J. Purcell, IV
Sylvia L. Rigsby
Vicky A. Harte

Town of Louisa Planning Commission

Chairman A. Carter Cooke
Vice Chair Maxine Butcher

John J. Purcell, IV ***Cochran Garnett*** ***Veronica Saxton***

INTRODUCTION

The Planning Commission initiates a five-year review of the Comprehensive Plan. The plan is examined for content, updated census data, and the commissions review of the overall goals of the town's growth, economic development, zoning and land use ordinances,

WHAT IS A COMPREHENSIVE PLAN?

A comprehensive plan, in general, is an outline of the kind of community the residents of an area wish to have in the future. The Town of Louisa's Comprehensive Plan includes information about the past and present. It references the people who live here and describes the town's physical characteristics. The planning process includes an examination of the town's strengths, weaknesses, and development goals. The plan suggests ways to achieve these goals, however they are intended to be examples of the possibilities, and not limits to the imagination. The plan also recognizes that resources, both human and physical, are finite and by planning ahead, the town staff and council can often achieve more than one purpose with a single action.

WHY DO WE NEED A COMPREHENSIVE PLAN?

This plan is needed for the efficient use of resources, and there are two additional reasons for adopting a Comprehensive Plan. The most compelling is that Virginia State law requires it: "Every governing body in this State shall adopt a comprehensive plan for the territory under its jurisdiction … with the purpose of guiding and accomplishing a coordinated… and harmonious development of the territory which will…best promote the…general welfare of the inhabitants." The second reason is that a comprehensive plan provides a reasoned justification for the local zoning ordinance. A zoning ordinance, not based on a comprehensive plan, can often be successfully overturned in court, simply because the local government cannot provide reasons which justify the zoning decisions. Many changes have taken place within the town since the 2018 revision. The following is the 2023 five-year review. This Plan is intended as a guide for the future, will be re-examined regularly, and will be changed as conditions, views and the needs of town's residents change.

- Achieve a balanced and sustainable land use pattern that will retain Louisa's historic, small town character in a rural setting.
- Uphold a high standard of environmental stewardship.
- Provide safe and orderly flow of traffic in Louisa.
- Encourage a range of quality residential development, and redevelopment, sensitive to the town's interest in maintaining its character, being pedestrian friendly and providing parks and open spaces.
- Create and sustain commercial development within the commercially zoned core area in the center of town.
- Preserve and protect the town's historic and cultural resources to maintain a unique sense of place and provide for increased social interaction.
- Control type and rate of growth of residential and commercial development to ensure infrastructure can support it without overwhelming the system.

The Comprehensive Plan provides a series of strategies to ensure that the town and surrounding area continue to be positioned prominently among jurisdictions as an exceptional place to live, work and visit.

The Town of Louisa's Comprehensive Plan is a policy and strategic guide for public decision-making. The Plan describes: the community's historic, physical and social character; examines and responds to local and regional issues; and provides a blueprint for the future. The Plan also describes a desired future and provides recommended paths for attaining that future state.

Key Action Items

1. Monitor the number of sewer and water taps granted for new development in the town and surrounding area to protect the groundwater resources for the town. Connections should be approved only when capacity is available and the existing infrastructure can support the new customers without decreasing the quality of service for others.
2. Evaluate existing town and county zoning district regulations, as well as the Zoning Map, for their compatibility with the goals and policies of this Plan, and identify necessary or desirable amendments.
3. Review town ordinances and regulations accordingly to ensure that growth is managed to avoid overtaxing public services.
4. Expand and refine the town's capital improvements plan and establish a funding plan for long term capital needs for all public facilities and utilities.
5. Assist local landowners/developers in maintaining open space by identifying and designating specific natural features and locations in and around the town for public use. Suggested means include: bike paths; community gardens; wildlife refuges; old railroad right-of-ways; and historically significant places.

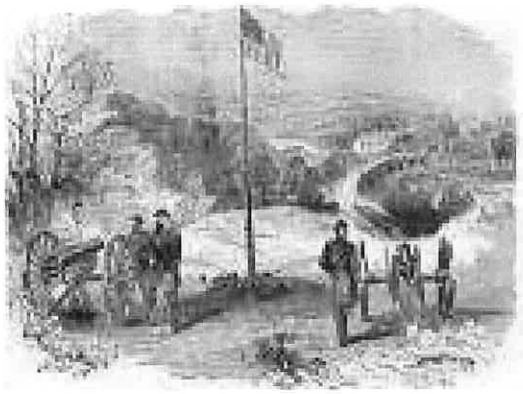
Town of Louisa Yesterday…

The ordinary or tavern, located at the site of the courthouse, served as a place of refreshment and lodging for the justices and visitors to the monthly courts and also to such travelers who might go through the county on the roads from Richmond to Charlottesville. This, however, was not the only function of the establishment. It served as a gathering place for persons on scores of duties or pleasure bent. Legal notices and newspapers were on file, mail was distributed and the taproom was a clearinghouse for news and gossip. The tavern carried a small stock of necessities, which could be purchased by the surrounding populace. No record exists as to the growth of this plantation settlement, which on Court Days became a scene of commercial activity.

An Act of Congress, approved April 23, 1800, established a "post road from Fredericksburg, by Spotsylvania Courthouse and Louisa Courthouse to Columbia." This road was to connect the Rappahannock River and the James River and is roughly Route 208 of today, which reaches from Interstate 95 to Interstate 64 at Ferncliff.

A post office was established at Louisa Courthouse on September 19, 1800, and the first postmaster was Ludlow Branham. The mail at this time, was carried by post riders and stagecoaches. Apparently, this assumed some degree of regularity in delivery.

No actual records of the village exist as to its content in the manner of occupants or business until the publication of a "Gazetteer of Virginia" by John Martin in 1835. In this work, Louisa Court House is described as a Post Village, located 110 miles southwest of Washington; 54 miles northwest of Richmond and 30 miles from Charlottesville. In addition to the Courthouse and jail, it contained a large house of worship, and the following merchandise stores: a silversmith, blacksmith, 2 carriage makers, a shoe maker, cabinet maker, saddler, 2 taverns, a milliner, 2 lawyers' offices and a physician's office. There were a total of nineteen places of business, but there was no mention of the population of the Village as there were, at that time, no boundary lines.



On December 1, 1838, the Louisa Railroad, which had been started in 1836, reached Louisa Courthouse. Thus began a contact with the outside world for what had been a landlocked settlement, served only by post roads and wagon trails and which had grown to the status of a village with streets, stores, and professional men. The coming of the railroad proved to be a boon to the village in later years and was a contributing factor to its growth.

Louisa played a part in the Civil War, not only furnishing a Company of men, the Louisa Blues, as a part of the 23rd Virginia Infantry of the Confederate forces, but also because of the Battle of Trevilian Station, which occurred on the 11th and 12th of June, 1864. This battle occurred when Sheridan attempted a raid on the Virginia Central Railroad in an attempt to break General Lee's vital supply line from the Shenandoah Valley. Some 13,000 cavalrymen were involved in the battle of which 1,619 from both sides were either killed or injured. Field hospitals were set up at the Trevilians Depot, the Tavern, the Louisa Methodist Church, the Courthouse, and many private homes. Oakland

Cemetery on West Street in Louisa provided the last resting place for 94 marked, but unknown soldiers, of this fierce battle.

At the time of Louisa Courthouse's incorporation as a town, Chataigne and Ellis, in their Virginia Business Directory and Gazetteer, show that the town contained about 250 inhabitants. Included were: four churches; a hotel; seven lawyers; one druggist; one saddler; one milliner; one confectioner; a lumber firm; a music store; seven general stores; one general merchandise merchant; and one liquor dealer (exclusively); one grocer; one flour mill; one distiller; and a tinner, in all there were twenty-seven places of business.

The Town of Louisa was incorporated under Chapter 125 of the Acts of the General Assembly 1872-1873 and approved on March 8, 1873.

The boundaries of the Town were stated in the Act, but the designation of the various corners and markers were so vague that it is almost impossible to determine from the descriptions exactly where they lay, as it called for lines to trees, fence corners, posts, etc. A plat of the boundaries does exist and from it can be determined the approximate boundaries.

The officers were to consist of seven trustees, who would compose the town council, and the following persons were named in the Act: George J. Sumner; Hyman Levy; F.W. Jones; Jesse W. Melton; Henry W. Murray; Dr. Gulielmus Smith; and Samuel H. Parsons. They were given the power to pass all by-laws and ordinances for the governing of the town, provide for keeping the streets, grading, paving, and making such other necessary improvements. To accomplish these ends, they were empowered to levy such tax as they might deem proper on all property in town not exceeding fifty cents on one hundred dollars and on all avocations, professions, and business as were subject to taxation by the revenue laws of the state.

The Board of Trustees were to elect a president from its own body who would preside at all meetings, and when the trustees were equally divided should, in addition to his own vote, give the deciding vote.

Annual elections were to be held on the first Monday in November; seven trustees and one town sergeant were to be elected by the qualified voters. The Trustees were empowered to elect a secretary to the council who would be ex-officio treasurer of the town and who was to give bond for all funds that would come into his hands. The collection of taxes, however, was one of the duties of the town sergeant.

It might be well to recall here that 1873 was the beginning of the financial panic under President Grant which was to last for six years, but this apparently did not have a tremendous effect upon Louisa, inasmuch as the area had never recovered from the Reconstruction after the Civil War.

The first meeting of the Town Council was held on March 8, 1873, with the gentlemen named in the Charter in attendance. From this group, George J. Sumner, a merchant of the town, was elected President or Mayor of the Council and served for two terms. At this meeting, a set of bylaws or ordinances by which the town would be governed were adopted. These were mostly police regulations and penalties, which would be assessed for failure to observe them.

According to the records, the next few years were concerned with such mundane matters as the repairs of streets and sidewalks and the general administration of the town government. In 1878, the first streetlights, twelve in number, were installed and were large oil lamps on posts placed at strategic locations in the Town. These were attended to by Mr.

W.H. Vaden, who came around each morning with a small ladder, a pair of scissors for trimming the wicks, a can of oil, and tissue paper for cleaning the globes. He would then return about dusk and light the lamps for the night. It was not until 1925 that adequate electric lights for both municipal and private homes were secured from the Louisa Light & Power Company in Mineral, an operation conducted by the Fisher brothers. Prior to this, there had been several attempts to operate a small light plant using direct current furnished by a gasoline engine and a generator, but this was never successful. Several of the stores had their own private Delco plants and some even used gas for lighting.

The sidewalks in 1873 were mostly plank walks laid in the Main Street business area with walks made of tanbark for the outlying sections. By the early 1900's these had gradually been replaced by cement sidewalks in the business area, with the merchants paying a proportionate part of the cost. It was not until 1906 that, by the aid of a $6,000 bond issue, cement walks were completed to the corporate limits of the town.

A disastrous fire in January 1888 almost completely wiped out the entire eastside of Main Street and paralyzed the business district. This was the block directly across the street from the courthouse. It was several years before the town recovered from this loss and the slow task of rebuilding is shown on insurance maps owned by the Louisa County Historical Society.

The water supply for the town in 1873 consisted of individual wells and a public well located at the corner of the courthouse property, which was jointly owned by the county and the town. The county relinquished its entire interest in the well in 1916 and the town began furnishing water in limited quantities to the outlying properties throughout the year. The next water system was installed in 1926 at a cost of $35,000, which was obtained by a bond issue. This system consisted primarily of a well-house, spring, and pumps to provide water. Fireplugs were installed and a volunteer fire department was organized. Their first building was constructed in 1929. The company has rendered invaluable service to the town and surrounding community over the years.

In 1935, the town purchased ten acres of land about one and one-half miles west of the town to be used as a municipally owned cemetery with perpetual care. This has been enlarged by the purchase of adjacent land and has proven to be a beautifully kept project.

The streets of the town from 1873 until around 1921 were dirt roads supplemented by an occasional fifty-ton car of gravel, which was placed in the most strategic and well-needed places. In 1921, the State Highway Department ran its first hard surfaced road through the town of what was then State Route 39. This road was an eighteen-foot wide cement ribbon, which left a considerable amount of unpaved street on each side. This condition was remedied in 1928 by an extension of a cement roadway from the highway to the curbs on both sides by the town through the business section, thus eliminating the existing expanse of dirt and muddy problems of the portions of the street.

A small sewer disposal system had been installed back in the 1920's, which only took care of portions of the landowners. A majority of them had septic tanks and in 1958, the town secured a bond issue in the amount of $240,000 and constructed the present system. All of these improvements meant the passing of the outhouse which had been a feature of the town at its beginning and which was a subject of some of the first ordinances.

Of the eleven churches now in the town, four of them were in existence when the town was incorporated. The Louisa High School (current site of the Town Hall and Arts

Center) on Fredericksburg Avenue succeeded the old Haley High School on Elm Street in 1907. This was completely gutted by fire in February 1924 and was rebuilt and continued as a high school until around 1940 after which it became an elementary school until 1987. In the late 1890's and on through until the 1920's, Louisa was known as a summer resort. This was before the arrival of good roads and the automobile. There were several ladies, two of which were Mrs. Douglas Chaney and Mrs. Charles Donnally, who had large homes and took in what we called "summer boarders" along with the Louisa Hotel (now the Cooke Building) which was always filled. The people would come from Richmond and the peninsula to get away from the hot, humid city air and to enjoy good country food.

Mr. S.S. Griffith operated the hotel and he had a large hardwood platform built just outside the dining room windows, with Japanese lanterns, little tables and chairs placed about the lawn. A Victrola played music from the dining room window for dancing.

One of the features of the town was the attendance of large crowds from all over the county on Court Days held in March and December of each year until the arrival of the automobile, good roads and the telephone. People would come to Louisa in March to see who had lived through the winter, and in December to get their Christmas spirits. They also brought every conceivable object which they thought they could sell or swap.

It's been estimated that thousands of people would gather here on those days, some traveling all night to arrive for the big day. John Bibb attended a Presidential Inauguration in Washington and made comment on the size of the crowd saying, "… you have never seen a crowd until you have been to Louisa Courthouse on a March Court Day". The only comparable occasion was August 17, 1905, when the present courthouse and the Confederate Monument were dedicated. A Confederate reunion was held in connection with this event and a number of outstanding speakers were present. It was estimated that an attendance of around ten thousand persons participated, which, if correct, would be the largest public gathering of any kind to assemble here.

The Town of Louisa owes its origins to the location of the county courthouse within the limits of the present town. The first session of the court was held on December 13, 1742. The original courthouse was demolished when the new courthouse was built in 1905.

Further development of Louisa was encouraged by the construction of a rail link with Richmond in 1838, and an extension of this line to Gordonsville in 1850. The Town's location as the administrative center and its transportation links increased settlement around the courthouse. The first census, after incorporation, showed the town had a population of 315.

Louisa residents have been served by a newspaper since 1879. Name and ownership of the paper changed several times until November 7, 1912 when it appeared under its present name as "The Central Virginian".

Since 1873, the incorporated area of Louisa has grown several times through annexation of land from the County. The most recent expansion, effective January 1, 1977, more than tripled the town's acreage and increased the population by 50 percent. It also captured new commercial development along routes 22 and 33 and improved the tax base of the town.

Town of Louisa Today…

The town is the county seat of Louisa, and serves as the governmental center, hub of commerce, and a residential area. The Downtown area has retained its rural nature and rustic feel. The primary transportation route to the Downtown area is Main Street, which incorporates small retail shops, restaurants, the historic courthouse and jail, several churches, the post office, and legal/financial services.

The town operates a water distribution system, a wastewater collection system, and a sewage treatment plant in conjunction with Louisa County. Other public services provided by the town are independent police department, solid waste removal, recycling, brush removal, the operation of two cemeteries (Hillcrest and Oakland Cemeteries), and other general services.

The Town of Louisa is in an ideal geographical position for growth and development. Situated in the Virginia Piedmont region on a ridgeline separating the North and South Anna river drainage basins, the town is a crossroads for Central Virginia. State Routes 208, 22, 33, 628, 669 and the railroad tracks all converge within the downtown vicinity. The transportation corridors, coupled with the recreational tourism of Lake Anna and the commercial development at Zion Crossroads, support a vibrant and popular residential community.

Growth in the residential sector is being spurred by the skyrocketing land and construction prices in the Charlottesville/Albemarle region as well as the west and northwest expansion of the Richmond metropolitan area. The development of the North Anna Nuclear Power Plant provided a stable residential population when the plant opened in the early 1970's.

Government

Offices

In 2006, the Town Office relocated to 212 Fredericksburg Avenue. In an adaptive reuse project, the former Louisa Elementary School was renovated to house the Town Council chambers as well as the mayor, town manager, treasurer, clerk and administrative staff offices. The police department gained use of the vacated building at 219 East Main Street. The public works building on Main Street houses the town's maintenance crew and equipment.

Elected Officials

The governing body of the Town of Louisa consists of a mayor and five council members who meet on the third Tuesday of each month at Town Hall. The mayor and five council members are directly elected at large every four years with staggered terms for council members. Once elected, the council chooses a vice-mayor.

Appointed Officials

The mayor appoints council members to standing committees, each being responsible for the general supervision of all matters related to that committee. The mayor and town manager are ex-officio members of these committees. At present, there are eight standing committees: Cemetery, Personnel, Police Matters, Water & Sewer, Finance, Streets & Sidewalks, Refuse & Recycling, and Legal Matters.

The Town Council appoints a five-member Planning Commission, which makes recommendations to council on zoning requests and final site plan review. The Commission is responsible for revising and recommending to council the town's Comprehensive Plan.

A Board of Zoning Appeals is appointed by the Circuit Court based on recommendations from the Town Council. One member of this board is always an active member of the Planning Commission. The Board of Zoning Appeals makes decisions on requests for variances and hears appeals of decisions made by the zoning administrator.

A five to seven-member Economic Development Authority is appointed by the Town Council. The EDA is tasked with attracting business enterprises toward the town and is authorized to provide incentives to encourage business development. One incentive that the EDA has, is the ability to issue bonds on a tax-exempt basis allowing a business to relocate within the town at minimal costs. While originally designed to entice industrial operations to locate within the town, the EDA serves more as an economic development agency, contributing to tourism and community development projects such as a Farmers Market.

Council also appoints a Town Manager, Treasurer, Clerk, Chief of Police, and Zoning Administrator. The Town Attorney is retained on a contractual basis.

Services

General

The administrative department of the Town handles utility billing, taxes, audit and finance, payroll, zoning, planning and other general governmental duties. The public works department maintains public grounds and cemeteries, operates the public utilities, and responds to general emergencies.

Fire and Emergency Medical Services Protection

The Louisa Fire & Emergency Medical Services consists of a combination of career and volunteer providers from Louisa Volunteer and career staff serving the citizens and visitors of Louisa. Services provide basic life support, advanced life support , and fire response to all types of emergencies that impact our County. The Town of Louisa has ample hydrant capacity and the fire departments completes an annual analysis and testing to insure quality and service.

Police Protection

An important service that the Town provides is police protection. The police department provides services in cooperation with the Louisa County Sherriff's Office, operating under a mutual aid agreement, for public safety. The Town has upgraded all vehicles and equipment to enable our officers to serve the community.

Municipal Solid Waste Removal

Curbside garbage collection is a free service provided to residential sites within the corporate limits and a nominal tipping fee is charged for commercial sites. Commercial refuse pick-up and residential pick-up occur once a week. The commercial fee includes canister rental, as well as collection and disposal. The trash is carried to the Louisa County Sanitary Landfill located just east of the Town of Mineral.

This service is outsourced on a contractual basis that is reviewed regularly to ensure adequate service.

Brush Removal

The Town operates a free residential brush removal service for all non-commercial properties. The service is offered twice monthly and simply requires the brush be cut into manageable lengths and left curbside. The town instituted this service to help recycle waste and prolong the life of the Louisa County Landfill. All brush collected is ground into mulch.

Recycling

The town offers a recycling program, servicing residential and commercial properties twice monthly. This service is outsourced on a contractual basis that is reviewed regularly to ensure adequate service.

Recreation

In June 2007 a park facility was opened as part of the twelve-acre Town Hall campus on Fredericksburg Avenue. In August 2008, the Louisa Arts Center was opened which began providing entertainment, education, and community services in the Arts. The Cooke-Haley Theater is a 200 seat Performing Arts Center and the Purcell Gallery is an 800 square feet gallery for the exhibition of two- and three-dimensional works of art. The campus hosts the Louisa Historical Society with a museum, demonstrations, restored buildings, artifacts and special events to preserve Louisa's rich history. The Town is a proud supporter of Louisa Little League Athletics as it leases and assist with the maintenance Alberts Field also located on the campus.

In cooperation with the county, an additional park is located in the residential neighborhoods bordered Meadow Avenue, South Street, and McDonald Street. The County of Louisa has a Parks Recreation and Tourism Department, multiple historic trails/tours and a newly developed beer and wine trail.

Town residents and merchants participate in various activities which contribute to Louisa's community life. Organizations such as the Louisa County Chamber of Commerce promote the town as a commercial center and encourage cooperation among local businesses. Service clubs such as: the KS Club, Rotary Club, and Lions Club work to expand services available to residents and to improve the appearance of the town. Special events are often held within the Town as these organizations collaborate.

Other Services

Louisa County and several public service agencies, which operate throughout the county, have offices in the Town. These organizations provide many public services and include the Department of Human Services, the Louisa Volunteer Fire Department, and the county's circuit and general district courts. Although the rescue squad is located outside the town limits in the county's Industrial Air Park it provides services to the town. Town residents benefit from these agencies in a variety of ways, such as increased retail trade and sales tax receipts, low-cost accessibility to services, and a greater number of jobs available close to the town. The public library moved from the town in 2003 and is now located on the high school/middle school campus, approximately five miles east

of the Town of Louisa. The Health Department relocated to the Betty Queen Intergenerational Center grounds during the fall of 2012, approximately three miles east of the Town.

Population

Trends

Louisa County's population has shown significant growth in the last fifty years, which has a direct impact on the Town's population. The 2020 census showed a population increase to 1987 residents in the Town of Louisa. This increase is the result of the town's role as the administrative center for the county and the commercial center for the surrounding areas, especially Zion Crossroads and Lake Anna. Future growth of the population will depend on growth of the county, at large, by attracting industry to the area with jobs, and the associated service industry growth that naturally follows. The population demographics reported from the 2020 United States Census are outlined in the following chart.

United States Census Bureau Data	Town of Louisa 2015	Town of Louisa 2020
Total Population	1555	1987
Population by Age		
Under 18	323	445
18-64	895	1062
65 and Older	337	480
Population by Race and Ethnicity		
White	1009	1216
Black or African American	425	492
Hispanic or Latino	74	137
Asian	23	24
American Indian or Alaska Native	2	6
Native Hawaiian and Pacific Islander	0	0
Other	22	112

Table 1, Population Data
Source: United States Census Bureau 2020 Data

There are a number of difficulties in attempting to project the future population of the Town. Most importantly, jobs created in an area directly correlates with population growth, and this availability of new jobs is unknown. Even with an expectation of new employment opportunities it's hard to predict whether people will choose to live within the corporate limits of Louisa or in the agricultural areas surrounding the town.

That being considered, a number of parcels within the corporate limits have the potential and some have the approval to accommodate new housing. It is reasonable to expect that some of the additional population will choose the amenities of living in town verses living outside corporate limits as the Town offers: police and fire protection, public water and sewer, garbage and recycling collection, and closer proximity to commercial and retail business.

Finances

Audit

The town operates on an accrual basis with four separate operating funds; General; Water; Sewer; and Cemetery. The Town holds adequate funds that are liquid in the event of an emergency but use the services of the Local Government Investment Pool (LGIP) to get a higher rate of return. The Town contracts with a third-party audit firm to hold an annually audit to ensure compliance with set standards. The Town has received no material comments on audits dating from 2016-2023.

Tax Base

Typically, in a town, residents are taxed twice, by both the town and county in which they reside. The Town of Louisa operates on this model. Town taxes cover expenses for essential government service provided to those within Town limits. These services are not offered to County residents.

Real estate taxes are, according to the Weldon Cooper Center for Public Service, by far the most important source of tax revenue for localities. Real estate taxes are a large portion of the Town's total revenue. The Code of Virginia authorizes localities to levy taxes on real property. There are no restrictions on the tax rate that may be imposed, although politically, the lower the rate the better. In fiscal year 2024, it's budgeted for 16% of the tax revenues for the Town.

The personal property tax is the second most important source of tax revenue for localities. In fiscal year 2024, it's budgeted for 4.5% (with a 50% PPTRA discount) of the tax revenues for the Town.

Virginia code allows that "cities, counties, and towns may levy a tax on the tangible personal property of businesses and individuals pursuant to the *Code of Virginia*, §§ 58.1-3500 through 58.1-3521". Included in this category are such items as motor vehicles, business furniture and fixtures, farming equipment, and a variety of motorized vehicles, including boats, recreational vehicles, campers, and trailers.

The meals tax is a trust tax, collected by those selling prepared meal within town limits. The authority to levy this tax varies greatly among jurisdictions, therefore the tax varies significantly between individual cities, counties, and towns. In fiscal year 2024, it's budgeted for 41% of the tax revenues for the Town.

The transient occupancy tax (lodging tax) is also a trust tax charged for the occupancy of any room or space in hotels, motels, boarding houses, travel campgrounds, and other facilities providing lodging for less than thirty days.

Capital Improvements

Wastewater Treatment Plant

The Town of Louisa's Sewage Treatment Plant was replaced in the summer of 2001 by a pumping station located within the corporate limits in the northeast section of town near Ellisville Drive. The pump station was designed to pump wastewater from the northern collection basin to the Regional Sewage Treatment Plant located in the Southeast quadrant of the town, at the end of Pine Ridge Drive.



The Regional Sewage Treatment Plant is jointly owned by the Town of Louisa and Louisa County, and is operated by the Louisa County Water Authority. The plant was expanded in 2012 to a permitted capacity of 800,000 gallons per day. The expansion also added processes and components to treat the waste water to a higher degree, and provides safeguards to prevent overflows. The cost of the expansion was paid for by the Town of Louisa, Louisa County and the Virginia Department of Water Quality - Water Quality Improvement Fund. The capacity is split 50/50 between the town and county. The waste water treatment plant was further expanded in 2016 to include a septage receiving station and a bulk chemical storage facility. The septage receiving allows the plant to accept pumped septic tank deliveries and provide some treatment prior to it entering the plant in slug batches. The bulk chemical storage facility provides a programed feed rate for chemicals instead of staff manually adding chemicals. It provides a constant and steady treatment rate. These improvements help the sustainability and increases efficiency of the plant. The existing sewerage collection and treatment system serves the majority of town, with only a small area in the eastern section of town not presently on the sewer system. These areas may be considered for sewer service in the future. These areas are located on Hollyhurst Lane and along the northern side of Highway 33 heading east from the Sage Building and the Quiet Lane/Acorn Acres mobile development. The town has minimal sewer connections outside the town corporate limits.

Water Distribution System



The town has continued to be proactive in the repairs and maintenance of the water distribution system. Utilizing grants from the Virginia Department of Health (VDH), the town commissioned a study to ensure compliance with the 2014 Environmental Protection Agency (EPA) disinfection by products (DBP) regulations. That study noted significant deficiencies in the water flow patterns within the town. The information prompted VDH to fund a 3,000-foot-long water line loop to help with water flow and lower water age within the system and provide better fire flows to the western side of town.



The town also has begun replacing aged water meters with new technology that not only allows more accurate reading, but also reduces the manpower requirements to read water meters monthly. Commercial water meters are also slated to be replaced over the next few years.

Additionally, the Town of Louisa implemented tank mixing systems, tank telemetry, northern and southern loop water extensions, two flushing hydrants, and obtained multiple engineering designs for potential upgrades as needed. One hundred percent of the town water is provided by the Louisa County Water Authority (LCWA). The LCWA has installed a nano-filtration system which will remove organic carbons (OC) from the water. When organic carbons are removed they cannot combine with chlorine to produce DBP. The Town of Louisa entered a Consent Order with VDH to resolve DBP and complied by late 2018. This created a cost savings to town citizens of $1.5 million dollars in additional project costs. Water conditions are monitored regularly, and improvements included as needed. The Town plans to complete a water infrastructure project in 2023/2024 that will replace four aging and problematic lines (West Street, Ellisville Drive, Cammack Street and Fredericksburg Avenue) to reduce the number of water main breaks and disruption in service.

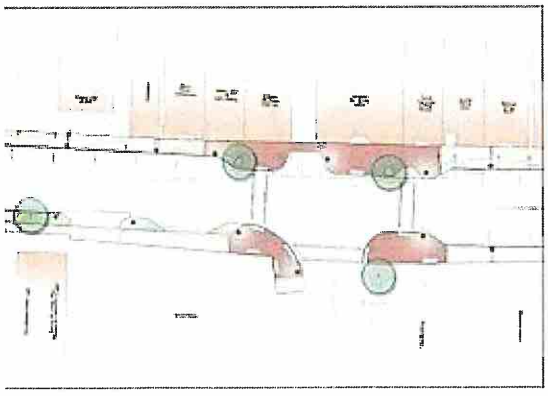
Louisa Town Hall and Arts Center



In the late fall of 2002, the town purchased the abandoned school, originally serving as the Louisa County High School, along with twelve acres of land to develop a community arts center and town hall complex that would spur downtown revitalization and façade improvements. The purchase of the property, along with the renovations of the 100 year old building, cost over $4.5 million. Of the expenditures, $2 million was financed through the United States Department of Agriculture – Rural Development (USDA-RD), $1,400,000 was donated through the fund-raising efforts of the Louisa Downtown Development Corporation (LDDC), and the LDDC borrowed $1.5 million from the USDA RD to finish the project. This loan was later assumed by the Town and is budgeted annually.

Downtown Revitalization

A major redevelopment project was proposed for the downtown commercial area to be funded by several TEA 21 grants with typical 80/20 match requirements. Construction started in the winter of 2013 and was completed during the summer of 2015. The revitalization was performed and designed primarily to increase pedestrian safety by enhancing cross walks, providing better street lighting and traffic calming measures.



The downtown improvement project included new sidewalks, light fixtures, benches, trash receptacles, crosswalk improvements, and beautification plantings.

Private landowners also participated in the renovation of the downtown corridor. Noteworthy efforts were made by: the W.A. Cooke Real Estate Company who rehabilitated the former Patrick Henry Hotel; John J. Purcell et al for the façade renewal on two Main Street properties; Breese Boxley's renovation of the Boxley Building; and Graven Craig's rehabilitation of the Dobbins Building.

Cemeteries



The town owns and operates two cemeteries. Oakland Cemetery is a historic, Civil War era burial ground which was donated to the town, along with a small endowment in the 1980's. The cemetery is located on West Street in a historic section of the town. Oakland has no burial sites for sale, and income is limited to the returns on investment of the endowment. The costs of maintaining Oakland far exceed the income generated. Historically, the cemetery is subsidized by the town's general fund annually.



Hillcrest Cemetery, located one mile west of town on Route 22/33, is an active cemetery that provides over 15 acres of land in a pastural setting with burial lots and a Columbarium constructed in 2015 (with the opportunity for expansion) for interment of cremains interments. Hillcrest generates revenue through the sale of burial spaces, columbarium sales, and burial/stone permits, but the cemetery is not financially self-sustaining. The town's general fund subsidizes Hillcrest annually.

Housing and Growth Management

General

Louisa, like most small towns, is a place in which single-family, owner-occupied housing is the most common form of housing. Majority of the housing units are single family homes, although there are rental units available in approximately 10 multifamily complexes. Of the total housing units, 26.6% were built in the 1980's and 20.5% were constructed prior to 1940; the newest homes are in the Countryside Subdivision in which approximately 165 new homes have been built since 2005. Over 95% of the homes within the town are on public water and sewer systems.

Due to the large portion of the county's population in the over 50 age bracket, and the attraction of Lake Anna as a popular retirement community, the need for condominiums, apartments, town-homes and assisted living establishments will likely increase.

The Town of Louisa must be equipped to accommodate a growing number of citizens with diverse incomes and backgrounds by making available a variety of affordable, healthy and safe dwellings. The generally accepted definition of affordability is for a household to pay no more than 30 percent of its annual income on housing. Housing is the dominant land use in the town, and the overall housing stock can be described as being in good to fair condition. Substantial growth may create the need for water and sewer system upgrades.

Directing Growth

It is difficult to predict where growth is likely to occur. Advance construction of public water/sewer facilities in potential development areas increases the probability that new development will locate in those areas, but does not absolutely guarantee it. In addition, if development does not follow immediately, the return on the public investment is delayed, and money is tied up that may have been needed elsewhere. A flexible method of achieving the public facilities objective for attracting new residential growth to Louisa is to establish a Capital Improvements Program (CIP) and a Capital Reserve Fund. The CIP could include a commitment to build a certain number of feet of water and sewer lines without specifying where or when they would be constructed. Money could then be placed in the capital reserve fund based on up-to-date estimates of construction costs. This type of system would enable the town to build new facilities on an "as-needed" basis and allow developers more choices in production location.

Strategies for Smart Growth

In previous Comprehensive Plans a strategy was developed to increase the attractiveness of Louisa for residential development. It suggested revising the zoning ordinance to include more "residential limited" land. People who live in single-family homes often prefer not to have apartment buildings next door and are reluctant to build houses on land zoned for multiple/mixed uses. The current zoning allocates most of the residential land to the "residential general" category. Any multifamily development in this zoning district will be allowed only by Special Use Permit approval.

Tables 2 identifies multi-family units (established and approved/pending construction) in the Town of Louisa.

Name	Street	Date	Units	Rental	SUP/ PUD
Club Hill Apartments	Jefferson Highway	1969	29	Yes	No
Locust Street Development	Locust Street	1970s	11	Yes	No
Loch Lane Apartments	Loch Lane Drive	1975	8	Yes	No
Pine Ridge Apartments	Pine Ridge Drive	1980s	28	Yes	No
McDonald Street Apartments	McDonald Street	1980s	24	Yes	No
Canterbury Apartments	Patrick Henry Drive	1980s	4	Yes	No
Epworth Manor I	Cammack Street	1989	56	Yes	No
Elm Avenue Apartments	Elm Avenue	1990s	6	Yes	No
Thomasson's Apartments	West Street	1990s	7	Yes	No
Jouett Square Apartments	Lyde Avenue	1994	108	Yes	Yes - SUP
Duke/Barnstormer Project	Barnstormer Circle	2002	8	Mixed	Yes - SUP
Spring Oak Senior Living	West Main Street	2006	30	Yes	Yes - SUP
Spring Fields	Off of Lyde Avenue (Denton)	2006	16	Yes	Yes - SUP
Epworth Manor II	Cammack Street	2009	24	Yes	Yes - SUP
Waverly Place	East Main Street	2014	78	Yes	Yes - PUD
GW1 Properties, LLC/ Mil Investments, LLC	Loch Lane Drive	2022	5	Yes	Yes - SUP
GW1 Properties, LLC/ Mil Investments, LLC	Carter Street	2022	6	Yes	Yes - SUP
GW1 Properties, LLC/ Mil Investments, LLC	Pine Ridge Drive	2022	135	Mixed	Yes - SUP
Timber Oaks Phase 2	Pine Ridge Drive/Jefferson Highway	2022	44	Mixed	Yes - PUD
Laurel Ridge	Jefferson Highway	2023	156	Mixed	Yes - PUD

Table 2. Multifamily development

The town continues to encourage the construction of attractive single-family housing developments to meet the growing needs, but also realizes the success of multifamily units as shown in table 2. There are a few duplexes throughout Town, not as part of a development, where the owner typically occupies one unit. Three commercial locations on Main Street offer apartment style living over the Main Street storefronts.

Multi-family developments should be located in areas of the town that have existing roads and utility infrastructure, are compatible with increased compacity, and where potential light commercial growth is suitable.

The overall inventory of homes is low as well as land available for residential development. The need for starter homes, apartments and townhomes that are affordable to middle-income brackets have been consistently cited by realtors, residents and those involved in economic development.

Economy

General

The commercial activity in the town continues to be healthy overall. The extensive commercial development in Zion Crossroads and Lake Anna has hindered development in areas of incorporated towns within the county and the Industrial Air Park. Zion Crossroads and Lake Anna are thriving as a result of significant county investment in

infrastructure, attraction to retirement communities and their proximity larger cities and interstates.

The Louisa Arts Center has a positive impact on the Town's economy. Performing and visual arts have proven to generate more tourism, day visits and general economic growth as patrons shop the local stores before and after events. This theory is illustrated in the growth of meals tax income as more people frequent the town and eat in restaurants. A significant obstacle to developing a tourism-based economy is the lack of overnight accommodations. Currently, within the town limits, there is limited availability for tourist lodging. Development of other lodging facilities and boarding houses will invite more tourism.

A minor contributor to economic development in Louisa has been the efforts of the Trevilians Station Battlefield and Civil War Trails Association which promote tourism. Signage on Interstate 64 leads tourism to Louisa to start on a Civil War Trail and visit downtown Louisa and the Oakland Cemetery. Once a successful tourism attraction, the Louisa Walking Trail has failed to maintain the interest of the community or visitors. Capitalizing on the history of the Town will attract visitors with emphasis on Courthouse Square, historic churches, historic homes, and the Oakland Cemetery.

Employment

An analysis of the area's economy includes a look at the kinds of employment, the numbers of people employed locally, the dollar amounts of trade, and anything else which may be significant to that particular area. In order to analyze the existing economy more easily, jobs are classified into two major categories, non-service and service employment. Non-service jobs are those, which create other jobs, such as manufacturing, logging or agriculture. Service employment provides goods and services for the consumer, and examples are retail stores, restaurants and government.

Non-service

The largest source of non-service employment is the Piedmont Metal Fabricators plant. The second, Kingsley Bates, a furniture distributor relocated to Louisa in the building across from Town Hall. The trading area served by the Town of Louisa is not well defined, however the town draws business from Fluvanna and Spotsylvania Counties and especially from Zion Crossroads and Lake Anna area. In understanding the trading area of the town, it is important to acknowledge the close proximity of the county's Industrial Air Park and the library tract of the park that lies within the town's corporate limits.

Service Employment

Local government employees are the main contributor as most offices are located within the town.

Retail Opportunities

The Louisa Marketplace is home to Food Lion, currently the Town's only grocer, and is the anchor store with service and restaurant businesses adjoining. In 2023, the grocery store operating in Triangle Plaza closed and while there are potential occupants, there's no estimate of how long the space will remain vacant.

Walgreens, a national retail chain has a 14,000 square foot retail store and pharmacy. The site includes three acres of prime real estate at the intersection of Rt. 33 and 208/22, located across the street from the CVS store, also retail and pharmacy. The competition will help reduce prices for town shoppers.

The national fast food industry remains a major factor in the retail life of the town with Pizza Hut, Hardees, McDonald's and Subway franchises located in the eastern business district. Along with the national brands, several independent restaurants have been established over the years and support the Town by offering a variety of food service options. The Town currently has a good restaurant base to attract patrons.

Fresenius, a kidney dialysis center, has brought multiple patients and care givers to the area. Tractor Supply and Sheetz came to the Town in 2015 and provides additional services. This growth in combination with established businesses has attracted more consumers to the town.

Income levels

The Town continues to be below the median household income for the Commonwealth of Virginia, which is $85,873 per the United States Census Bureau data. The Town also shows a higher poverty rate, as the Commonwealth is at 10.6% while the Town is at 18%, a high disabled population at 17.7% (Commonwealth 12.7%) and 14.8% of the population does not have health care coverage (Commonwealth 6.5%). The Town has an older population base at 24.2% compared to the Commonwealth's average of 16.8% of individuals over 65.

Transportation

General

All of the streets in Louisa are maintained by the Virginia Department of Transportation, with the exception of a few that are too narrow to meet state specifications and Phase II of Countryside Subdivision. It is expected that the streets in Phase II of Countryside will be adopted once construction is complete.

There are three ways to fund construction of new streets in Louisa. One is to have the Virginia Department of Transportation build them, which requires inclusion in the six-year plan for Louisa County. Another is for the town to pay for new streets out of its budget. A third possibility is construction by a private developer who wishes to develop the adjacent land. This last option has been used successfully in the Tanyard and Countryside subdivisions.

In 2016, the Town completed the Downtown Street and Pedestrian Safety Project with focus on traffic calming measures to address traffic speed and pedestrian safety. This project consisted of: the widening and replacement of sidewalks and extension of the existing sidewalk system; pedestrian crosswalks and refuge platforms; landscaping; and improved street lighting. This was funded with the assistance of the Virginia Department of Transportation as an enhancement project, further Transportation Enhancement projects for consideration are sidewalks on side streets in Town and a large project to extend the sidewalk from the Ton to Countryside by was of West Main Street.

Any new road must be built to state standards before it will be accepted into the system for maintenance. In addition, the state is only required to accept a maximum of one-quarter of a mile per year of new street located within town limits for maintenance.

Due to the tremendous expense of road construction, and the ongoing cost of maintenance, careful planning for new streets will be necessary to provide the greatest possible benefit to residents.

Presently, several traffic problem areas exist in the Town of Louisa. Heavy traffic congestion occurs on Main Street during weekday afternoons and Saturday mornings. The need for improved traffic flow on Highways 33/22 and Route 208 through the Town of Louisa was recognized as early as 1984 in the State Highway Plan, again in the 1989 plan and also in the Critical Needs of the Governor's Commission on Transportation in 1986, and in numerous plans since. This congestion will only worsen as further industrial, commercial and residential growth occurs in the town and county. Currently, this is only an inconvenience, however, should an emergency occur, requiring fire and rescue vehicles to get through this backup, there is no alternative route. Additionally, an emergency, that would require closing Main Street, could also prevent fire and/or rescue vehicles from reaching their destination, for these reasons, alternates need to be considered for travel through town.

The lack of an alternate route continues to be the transportation issue that has not proceeded forward for a number of years. The 208 Connector has diverted some of the congestion since it's installation. The town council has consistently favored an alternative route through the town via a bypass or alternate parallel street. Clearly the need for an alternate route exists for several reasons: public safety, economic development and convenience.

Bicycle and Pedestrian Traffic Plan

The town continues to work with VDOT and the six-year plan process to build new sidewalks and rebuild deteriorated and non-compliant sidewalks. A pending Transportation Alternative project will connect West Main Street to the existing sidewalk infrastructure in Town.

In the fall of 2021, the Town of Louisa formally joined the Virginia Main Street (VMS) network and became an Exploring Main Street community. Administered by the Virginia Department of Housing and Community Development, the VMS Program is a preservation-based economic and community development program that follows the Main Street approach of the National Main Street Center. VMS is a Main Street America State Coordinating Program that offers a range of services and assistance to communities interested in revitalizing their historic commercial districts. Immediate action items include bicycle paths, way finding signage, façade improvements and other improvements that will attract tourism to the area.

The Louisa Forward Foundation, a 501(c)(3) nonprofit initiated by the Louisa County Chamber of Commerce, serves as the lead organization of the initiative. With support by resolution of the Town, and working with a volunteer steering committee, efforts will focus on creating improved economic opportunity downtown and enhancing quality of life through community-driven revitalization efforts.

The Town, in partnership with the Louisa Forward Foundation, Louisa County Chamber of Commerce, Rappahannock Electric Cooperative, Dominion Energy Virginia and Louisa County Public Schools, has been working to install electric vehicle charging stations. Two location sites, one at the Town Hall Campus and the second at the Town leased public parking lot on Main Street, will host charging stations. These efforts will promote tourism,

economic development and a new curriculum for students through the High School's CTE program, while enhancing transportation efforts for electric vehicles.

Public Transportation Systems

The town is currently served by JAUNT, a government funded regional public transportation system that relies on passenger vans dispatched on an as needed basis. This service offers residents in all areas of the county traveling to destinations in and around Louisa. Residents can schedule trips to places such as the Betty Queen Intergenerational Center, Charlottesville Shopping Centers, Medical Facilities and other destinations to take care of errands.



No other commercial or governmental transportation suppliers serve Louisa. Additionally, there are no bus, train stations, taxi cabs or any mass transit available to the local populace.

Private Vehicle Transportation

With the lack of transportation options for the citizens of the Town, and the surrounding county area, private vehicle transportation is the only viable option.

Infrastructure

Water Systems

There are currently over 800 connections to the Town's public water system. Countryside development has accounted for most of the new connections. Almost all connections are within the town limits. Approximately 165 commercial or industrial connections are included in this total.

Daily usage averages 160,000 gallons per day. In the late 1980's, the town became a customer of the Louisa County Water Authority and secured its well systems. The Town purchases between 4 and 5 million gallons of water per month depending on demand which fluctuates seasonally. To meet Virginia Department of Health requirements, a licensed operator needs to be on staff or contracted by the Town, with a minimum of a Class V license. Water needs are currently met and seem to be sufficient for many years to come. The costs of water delivered is mandated by a contract so that rate increases are more predictable and reasonable. Future needs lie primarily in upgrading and maintaining existing water lines, replacing old valves and meters, and maintaining the two water tanks (100,000 and 75,000 gallons). Major growth could be accommodated at this time.

During Construction of the Route 208 Connector the Town recognized the commercial potential for growth and ensured that adequate water and sewer mains were designed and installed. This 10-inch water main now serves as a vital artery for water services and subsequently growth. In addition to providing services, the 10-inch line also provides a "loop" function, which increases water quality and provides better firefighting flows.

The Southern Loop Project in 2012 provided improved water flows and pressures throughout the southern end of the town's water lines. The project connected the west side of town with the south side, allowing a better flow and circulation of water. In

2015, a second similar water loop, known as the Northern Loop Project, was constructed.

Wastewater Systems

As a co-owner of a Regional Wastewater Treatment Plant (RWTP), the town has the opportunity to thrive if growth doesn't exceed infrastructure capabilities. The RWTP was expanded to treat 800,000 gallons a day of waste water. The town owns half of the plant and is allocated 400,000 gallons per day of capacity. Unless there is a boundary line adjustment or properties are redeveloped at higher densities, the expanded WWTP should be able to meet the town's needs well into the future.

The town has completed a number of water distribution and sewer maintenance projects as part of the annual Capital Improvement Plan process associated with the Town budget.

Town of Louisa Tomorrow...

Existing Land Use

General

The most diverse collection of land uses in Louisa is found along Main Street, which runs east and west through town. Main Street is Louisa's major commercial area, and along it one can find retail stores, government offices, vehicle maintenance/repair shops, residences, and shopping centers. An analysis of Main Street reveals several distinct areas, each with a different type of commercial use predominating.

The westernmost section of Main Street includes an assisted living facility, vehicle maintenance/repair shops, a lumber company, a car wash and an automatic laundry. Only a few residences are located in this section, which is separated from the downtown business district by a curve in Main Street at the intersection of Ellisville Drive. Countryside subdivision has two entrances off West Main Street.

The next major area of Main Street is the downtown business district. This area starts with a bed and breakfast and the Louisa County General District Court. Eastward along Main Street is the Historic Louisa Courthouse and Courthouse Square. This area is the governmental and professional center of both the town and county, but one can also find the post office, banks, retail stores, professional offices, churches, as well as privately owned and operated restaurants. Located at the junction of Main Street and Fredericksburg Avenue is an automobile maintenance shop, which delineates the eastern edge of this area.

North on Fredericksburg Avenue, are business offices, a funeral home, the firemen's fairgrounds, and a large wholesale furniture distributor. The Louisa Town Hall campus is also located on Fredericksburg Avenue heading northeast toward the town limits. The campus host Town Hall, the Louisa Arts Center, the Louisa Community Park and the Louisa County Historical Society Museum.

Going south on Elm Avenue there is a nearby town park (maintained by the County of Louisa), a church, professional buildings and a large nursing home.

Continuing eastward on Main Street, land use changes to a mixture of single-family homes and small businesses. In addition, the Louisa Police Department and the Town Maintenance Shop are located on East Main Street, as well as churches, gas stations/convenience stores and the Louisa Volunteer Fire Department.

Three shopping centers make up the core of the eastern area of the town, they include grocers, variety stores, restaurants, and drug stores. In this area are also fast food restaurants, banks, professional services and retail stores. Growth has continued down Highway 33 east into the Sage Building, which has become a business incubator for small start-up businesses. One industrial building is in this area, Piedmont Metal Fabricators located in a large industrial zoning district east on Highway 33.

Almost all of the developed land to the north and south of Main Street is used for housing, with the exception of the county office building and Tanyard Golf Club. There are four apartment complexes, several duplexes, and a large number of single- family homes. Some of the undeveloped land within the corporate limits is still farmed, and the balance is wooded with 62.33 acres in AG-Forestal District. The industrial park area totals approximately forty acres, at least twenty-five of which are available for

development outside of the town limits.

It is anticipated that the 208 Connector will attract low impact retail and service business as a town gateway. While the current zoning is Residential General along most of the 208 Connector, one five acre parcel, home to Tractor Supply retail, has been rezoned commercial and it is anticipated that the remaining properties along the connector will follow suit and rezone to commercial use or a mixed use Planned Use Development (PUD). The town believes a mixed use, medium density residential and commercial district would be the best use of the land, and with the existing sign and site plan review ordinances in place, attractive and successful business enterprises will flourish.

Future Land Use

Infill

Carefully designed and buffered residential and commercial "infill" development or appropriately designed redevelopments will be permitted in accordance with current zoning designations. Such new development will be designed to protect the traditional visual character of the town, preserve the small scale and peaceful atmosphere of the neighborhoods and enhance the viability of small businesses that are compatible with the town's character. The incorporated town will remain the focal point of the community in terms of business, institutional, and residential activity and identity. The planning strategy for the Town is to maintain predominately residential development at a low to medium density.

Any new development will be primarily residential and will be compatible with the visual character and scale of the town, featuring traditional, compact, human-scale spaces along public streets. The focus of new commercial development will be in the center of town in order to strengthen the function of the town center as Louisa's traditional downtown area. Vacant commercially-zoned land outside of the town center will be encouraged to be developed in residential or other non-commercial use.
The town will encourage the establishment of small-scale home-based businesses that are compatible with the residential character of the neighborhoods.

The annexation, which took place in 1977, more than tripled the land area of the town. Most of the annexed area was wooded or being farmed and very little had any kind of structural development. Since 1977, large portions of that land have been developed primarily for the Tanyard Golf Club and the Tanyard subdivision, but several large tracts of open and wooded land still remain. These potential growth areas, and the way in which they are developed and managed, as well as the viability of Main Street and the downtown district, will have a major effect on the community life of Louisa.

Consideration should be given to the recommendations made in the original Comprehensive Plan that several areas zoned residential general should be rezoned residential limited to help preserve the single-family atmosphere and neighborhoods that have already been developed, and would be changed by multi-family development. These areas border the Tanyard Golf Club, the Donnally Dale subdivision and Ellisville Drive areas.

Acknowledging that some recreation will only come to the town when the surrounding population is large enough and the income level is high enough; there are other small efforts the town can make. Favorable recommendations from the Planning Commission for any private recreation (bowling, skating or miniature golf) will help make the development of other facilities more attractive.

Parking

In the Town, parking is an issue of great complexity and concern. Although many in Louisa walk and ride bikes, the automobile is still the primary transportation source. While promoting the use of transit alternatives are important, this plan recognizes that people are dependent on a vehicle and the need for parking is not likely to diminish in the future.

Mitigating parking conflicts, specifically the conflict between shop owners and customer use on the Main Street corridor, is a long-term, on-going process. Shop owners complain that there is inadequate parking for themselves and employees. When the shop owner uses the public parking, parking becomes difficult for customers which can cause a ripple effect economically. To alleviate the parking problem, a process that develops a set of strategic actions to efficiently accommodate various parking needs must be developed. Most policy alternatives will necessitate trade-offs. Some, such as constructing new off-street parking lots or structures, are expensive and involve the acquisition and conversion of already developed land. Others, such as restricted on-street parking zones, require a commitment of enforcement in order to be effective.
The town has proactively adopted parking development requirements in the subdivision and Site Plan ordinances but the core Main Street area, the heart of the town, unfortunately has the most inadequate parking.

For all of these stated reasons, it is strongly recommended that various alternatives be weighed carefully and the context of a comprehensive parking strategy focused on the downtown corridor. The system could be comprised of public and private parking facilities, an effective parking fee structure with consistent enforcement, and the strategic use of restricted parking zones. Ultimately, the effective implementation of such a system will benefit Louisa's quality of life and its economic success.

Louisa grew organically during an era when the automobile wasn't a dominant factor in daily life. Although the community benefits from the charm of a mature town, 150 years old, it loses convenience because parking options are limited. Older commercial buildings do not provide sufficient off-street parking for today's needs. Older single-family homes may not have driveways or garages, forcing on-street parking. Past practices of vacating alleyways have also severely impacted residential parking and circulation. Many businesses do not sit adjacent to expansive surface parking lots commonly found in newer suburban shopping centers or office parks. All of these factors lead to dilemmas and policy contentions that are not easily resolved. It is difficult to generalize about the total demand for parking in Louisa, but it is apparent that parking in the downtown corridor must be developed.

Areas where demand chronically exceeds supply are discussed further below. The parking supply is made up of a combination of on-street parking and public or private off-street facilities. One component of the public parking system includes approximately 44 parking spaces curbside in the town's downtown corridor and central business districts, with the ability to include metered parking. The town maintains two

off-street parking facilities with a total of 60 parking spaces. One of the off-street parking facilities that is owned by the town are along Church Street between Main Street and the Buckingham Branch Railroad track. The other facility, located at the corner of Cutler Avenue and Main Street was acquired through a long term (20 year) lease. This new parking lot provides free unlimited parking for passenger vehicles. The town actively discourages the lot from being used as a commuter lot.

These problems require multiple short-term actions. Opportunities to implement relatively minor physical improvements to streets and existing facilities may increase the number of parking spaces in some areas. For example, proposed street improvements undertaken in Downtown Louisa reorganize parking spaces and allow motorists to utilize parking areas to their maximum capacity. Although not possible on every street, similar improvements should be considered, particularly in areas close to congested business districts in order to augment the supply of short-term parking. Of course, Louisa's parking system includes not only the "hard" infrastructure mentioned above (i.e. surface lots) but also the policies regarding parking time limits, possible permits, and possibly a commercial zone restriction program. In order to be truly effective, a strong commitment to the enforcement of these policies should be maintained. As for commercial parking zone policies, various types of time restrictions, employee-only and employee-exempt districts could be put in place to give preference to targeted groups over other users.

Along with parking policies and their enforcement, it is important to guide non-residents to appropriate parking locations. The effectiveness of short-term, off-street parking is a function of the adequacy of supply, location, cost, time limits, ease of access, and security. While it is true that many drivers will seek free, on-street parking to avoid paying for off-street spaces, some drivers simply may not know where else to go. In these instances, improved way finding measures and signage programs that help drivers find parking locations are essential.

The perception of safety also has an important impact on a driver's willingness to use off-street parking. Users should not only be able to find off-street parking conveniently, but they should also be greeted by safe and attractive facilities once they get there. Therefore, steps to improve both safety and aesthetics of public and private parking facilities should be a priority.

Landscaping around parking lots should be done so as to improve appearance but not interfere with visibility and surveillance. Creating dark areas and blind spots diminishes security and therefore undermines the effectiveness of the facility.

This is a more ambitious, long-term objective. It involves acquiring land publicly or considering an increase in parking requirements of private developments through zoning. The town should evaluate opportunities for land acquisition in the border areas of the downtown corridor areas to establish new or expanded facilities. New facilities should be planned in consideration of the concept of "shared parking." Shared parking can be an effective tool in the commercial and fringe neighborhood districts where certain businesses (e.g., banks and offices) operate during daytime hours, while other establishments reach peak demand during evenings and weekends.



Agreements should be pursued whereby off-street facilities built to accommodate one user group such as office workers should be made available to those other groups whose demand peaks at different times.

Finally, one of the land use issues addressed earlier in this document regarding future development patterns is the potential for increased residential/mixed-use density in certain areas in Louisa which includes the downtown area. The benefit of such development in this area is that new households will be able to take advantage of commercial conveniences within walking distance of their residences. Nonetheless, adequate parking requirements for this type of development are critical.

Historic District Designation

Historic preservation has become a focus of the Town of Louisa both in the private and public sector. With a vital preservation community and a rich architectural heritage, Louisa could become a leader in the movement to preserve individual buildings and historic districts that show outstanding architectural, historical and cultural merit. Some historic designations: "Why seek emphasis upon preservation?"; "Of what value is it except to those who enjoy the study of architectural history?" Louisa should seek to preserve the structures and environments which have given the community much of its physical appeal and special visual character. An intangible, but equally important value is the sense of history given to those who live here. The shared history of landmark homes gives continuity to the entire community. The loss of such buildings would affect everyone, not just a few areas or individuals.

The architectural character of Louisa is as diverse as the community itself. Several Louisa buildings are listed or are eligible for listing on the National Register of Historic Places. Included are the Louisa County Courthouse as well as all of the service buildings in Courthouse Square, the Louisa Town Hall and Arts Center (Formerly the Louisa Elementary School), the Boxley House, the Louisa United Methodist Church, Louisa Baptist Church, Louisa Christian Church, the Cooke Building (formerly the Patrick Henry Hotel) and several residential units along Church Street, Elm Avenue, and West Street plus the Oakland Cemetery.

A draft historic district was developed by the Planning Commission in 2008 but was not adopted due to citizen reactions and perceptions of the impact and property controls an Architectural Review Committee can have. This is the second time in 12 years that a historic district was organized and both have failed. The boundaries of the proposed district would have included the core downtown areas of Main Street and Courthouse Square and extend down Elm Street to the McDonald Street intersection. This small area could capture and protect the majority of historic resources within the town. Eventual expansion of the district is envisioned to the north, east and west as the district and its administrative processes mature.

A very important part of the potential development of a Louisa Historic District and an Architectural Review Board would be the formal nomination of landmarks at the local and national levels. The wide range of potential preservation activity in Louisa may be further underscored by taking note of the potential inclusion of the downtown corridor as a National Register Historic District.

As with many communities that comprise a large number of buildings dating from the late nineteenth and early twentieth centuries, Louisa is rich with everything from Colonial Revival to Victorian-style homes. Unique to the community's architecture is the

very diversity of the styles within neighborhoods and districts. The town council could develop local preservation policy and a process to review plans for demolition of properties that would provide options for historic property owners.

No preservation program can succeed without strong community support. High maintenance costs, high energy costs and high property taxes are among the problems that will continue to make owning a landmark a labor of love, sometimes a severely tested love. Tours, slide programs, newsletters, booklets and educational programs in the schools have all contributed to a widespread community preservation ethic. Louisa should take care of its museum-quality landmarks through the efforts of its citizens and local organizations.

Non-Traditional Zoning Opportunities

A Planned Unit Development (PUD) is a means of land regulation, which promotes large scale, unified land development by means of mid-range, realistic programs free of the classic zoning restrictions. In most PUD ordinances, the design favors:

- A mixture of both land uses and dwelling types with at least one of the non-residential land uses being recreational in nature.
- The clustering of residential land uses providing public and common open space creating large expanses of open space. Clustered dwellings allow for reduced road and infrastructure costs to the developer while making the project "pedestrian friendly".
- Freedom of design allows non-traditional platting of land and strict setback and side yard restrictions. Typically, the design team of a PUD will consist of civil engineers as well as landscape and building architects. This blend of professionals allows the local government to trust the development meets professional and logical standards of development.
- The enhancement of the bargaining process between the developer and government municipalities strengthens the municipality's site plan review and control over development for potentially increased profits due to land efficiency, multiple land uses, and increased residential densities.

Frequently, PUDs take on a variety of forms ranging from small cluster of houses combined with open spaces to new and developing towns with thousands of residents and various land uses. Traditionally, the definition does not take into consideration these types of developments unless they fit into a category of size ranging from 100 acres to 2,500 acres. More recently, small towns and rural communities have adopted PUD regulations that allow development on tracts of land as small as three acres.

In these developments, the zoning district becomes very different from the Standard Zoning Enabling Act. Zoning becomes much more integrated with multiple land uses and districts being placed on adjacent land parcels. Traditional zoning can be superseded with a PUD, allowing an overlay in any part of the town.

Residential properties in PUDs are by far the most numerous and occupy the largest land areas. PUDs tend to incorporate single-family residential uses within close proximity to two-family units and multiple-family dwellings to form a larger diversified neighborhood concept. Schools, churches, retirement homes, hospitals, and recreation facilities begin to find their way into residential districts. Residential districts also tend to use the best land in the community and the most favorable sites are protected from commercial and industrial uses.

Grouping shopping districts by service area is a first step in returning to the neighborhood concept. Land is reserved for regional, community, and local shopping clusters with some specific restrictions based on market experience and on what types of business intend to locate at each development. Local shopping districts with sufficient provisions for off-street parking, height restrictions, and traffic control are not frequently found surrounded by residential areas.

Houses in PUDs often include access to a large shared open space surrounding the house as well as a smaller private yard. These large protected open spaces are created by the layout of the buildings and are intended for use by all residents of the developments. Different housing types (single-family, two-family, multiple-family) are often mixed rather than separated as is done in conventional development.

Street patterns are one of the most important elements in establishing the neighborhood character of a residential community. Most non-planned urban development's focus on obtaining maximum frontage for lot sizes and maximum flow of traffic on all streets. However, in order to dispel the monotony of the typical grid plan street pattern, PUDs often employ a hierarchy of street types based on usage. Local streets serve only residences and have a low traffic volume, while collector streets connect local streets to arterials, which are the major routes of travel throughout a PUD.

Sidewalks and pedestrian right of ways of PUDs supplement and complement street systems in establishing the character of the neighborhood. Sidewalks are located on at least one side of every street to enable the walkability of the developments. Circulation systems are provided to link residential groupings, open space areas, schools, and local shopping areas.

It is in the ability to design each of these components simultaneously that makes PUDs unique and effective: each of the elements work together to enhance the whole. This major advantage over traditional zoning practices forces lots to be planned in accordance with broad rules that may allow for some incompatibility.

Growth Policy Statement

The Town of Louisa intends to continue promoting economic growth in the area, which includes commercial and light industrial activity. In order to succeed in those areas, the town will provide adequate infrastructure, including water and sewer treatment capacity, adequate water distribution systems, adequate sewer conveyance systems, and well- maintained streets. Additionally, the town will strive to attract a diverse and qualified labor pool.

The Town also needs to enforce zoning, subdivision, site plan, and other controls on developers and builders in order to ensure that the safety and welfare of the general public is protected as the community develops.

Intergovernmental cooperation remains a key part of the Town's s growth policy, as the region comes together to do more infrastructure and economic development projects.

The efforts at redevelopment of the downtown area are recognized as a component of Louisa's growth policy. Economic and cultural activity in the downtown area is a central desire of the community. The prevention deterioration in the downtown and throughout the community is an urgent focus of the town. The town continues efforts towards beautification and appearance improvements.

The Town's growth policy also includes the need to maintain and improve the quality of family life. This includes support for education, housing, recreation, medical facilities, and all other facets of community life. The town also supports the development of affordable and medium-cost housing. The lack of affordable housing is a significant hardship for low-income households preventing them from meeting their other basic needs, such as nutrition and healthcare, or saving for their future and that of their families. The town recognizes that the quality of life of the citizens is a key factor in ensuring the future growth of the community.

Long Term Goals, Objectives, Policies and Action Items by Specific Classification

FINANCES

Goals and Objectives

1. Continue to leverage state and federal funds.
2. Endeavor to provide quality community facilities and services that are conveniently located.
3. Work with the Louisa County Industrial Development Authority and County Economic Development Office to locate desirable new industry in or near the town.
4. Attract new commercial development through promotion of the town's assets and provision of public facilities.
5. Utilize the Town of Louisa's Economic Development Authority to assist in recruiting commercial prospects for the town.
6. Promote tourism and encourage development of tourist related businesses.
7. Continue the aggressive recruitment of major retail department stores.
8. Improve the tax base of the town to enable maintenance and expansion of services provided to Louisa residents.
9. Commission a study on rates and operational needs for the cemeteries.

Policies

1. Continue to leverage state and federal funds to finance town infrastructure improvements through an aggressive grant applications program.
2. Develop and maintain a Capital Improvements Program for infrastructure development and equipment.
3. Save and maintain a six-month operational expense reserve account.
4. Ensure pricing of cemetery services are competitive with area cemeteries.

Action Items

1. Conduct water and sewer studies that reflect the policies in this Comprehensive Plan.

HOUSING, POPULATION AND GROWTH MANAGEMENT

Goals and Objectives

1. Encourage quality in residential development and sensitivity to maintain the character of the town.
2. Allow for growth at a level that can be sustained by the public services and infrastructure.
3. Provide a range of housing types for differing age groups and economic levels in a pleasing environment while also maintaining and protecting the historic and small-town charm of Louisa.

Policies

1. Evaluate residential development proposals with consideration for the housing goals of the town and the finite water resources and wastewater disposal locations for the town.
2. Ensure density of residential development is compatible with infrastructure and environmental conditions to maintain the overall high quality of life in the town.

Action Items

1. Amend the zoning ordinances and subdivision regulations to incorporate design and development standards that promote the traditional development pattern of Louisa.
2. Monitor the number of sewer and water taps granted for new development in the town.
3. Monitor connection fees to ensure development infrastructure costs are reasonable for payment by the developer.
4. Identify measures that the town might implement to promote and ensure the maintenance of residential homes and properties in order to protect existing property values and protect public health, safety and welfare.

ECONOMY

Goals and Objectives

1. Gain retail presence in the community to service the needs of the residents.
2. Promote Louisa and gain more visitors for both business and recreational activities.
3. Capitalize on the town's proximity to Lake Anna and the diverse needs of lake visitors.
4. Capitalize on the town's proximity to major traffic arteries of Interstate 64, Route 250, Route 15, and the diverse needs of Zion Crossroads residents.
5. Renew the Farmers Market concept in a single location sponsored by the town. Provide signage and market space.

Policies

1. Continue to provide infrastructure to promote responsible commercial growth.
2. Focus industrial development toward the Industrial Air Park.
3. Continue the Downtown Enhancement projects and pedestrian safety projects.
4. Pursue retail businesses and restaurants to locate in the Town.
5. Continue to maintain tax rates and manage increases as best as possible.

Action Items

1. Ensure zoning is in place to allow the development of overnight accommodations for tourism.
2. Continue to focus on the efforts of the Exploring Main Street community to improve economic opportunity downtown and enhance quality of life through community-driven revitalization efforts.

TRANSPORTATION

Goals and Objectives

1. Develop alternative emergency routes throughout the Town.

Policies

1. Continue policy of requiring new major developments (over six acres), both commercial and residential to conduct traffic studies prior to approval of sub-divisions and site plans.
2. Retain records of "paper streets," alleys and other thoroughfares for future reference.

Action Items

1. Develop Elm Avenue and West Main Street sidewalk projects and pedestrian safety enhancements.
2. Continue to review bike trails as part of the Comprehensive Plan. Develop and encourage bicycle parking stations along Courthouse Square and other pedestrian heavy sections within the Town.
3. Continue to support the installation of electric vehicle charging stations throughout the Town.

PUBLIC UTILITIES

Goals and Objectives

1. Provide adequate public water and sewer services to encourage commercial and residential development.
2. Maintain competitive water sewer hookup rates and fees.

Policies

1. Maintain ownership and leadership through an equal partnership in the Louisa County Wastewater Treatment Plant.
2. Develop and follow a Capital Improvements Plan.
3. Set connection fees to place the burden of development on the developer/end user.

Action Items

LAND USE

Goals and Objectives

1. Achieve a balanced and sustainable land use pattern that will retain Louisa's historic and small-town character in a rural setting.
2. Protect the natural resources of the town and surrounding areas.
3. Consider higher density development in selected areas of the town utilizing a Planned Unit Development process of zoning.

Policies

1. Ensure future development will be consistent within the existing zoning maps for the town and will also consider the adopted future land use maps.
2. Ensure that the pattern, scale, location, character, setback, and overall density of land use in and around the town are compatible and consistent with the existing character of the town and enhances the overall quality of life, character, well-being and sense of community of the town and surrounding areas.
3. Promote a safe pedestrian environment in and around the town.
4. Ensure that the pattern, form, and design of new development encourage the conservation of energy, water, and other natural resources.
5. Preserve the integrity of the historic buildings and streetscapes in the town.
6. Promote high-quality design and efficient land use patterns.
7. Focus low impact commercial activity toward the existing commercial area in the center of town in order to strengthen its function as the traditional downtown area. Allow and endorse larger retail centers on the perimeter of town, using the Site Plan Review process to ensure compatibility with existing design standards.
8. Non-residential public uses such as schools, public safety, recreational, parks or public offices are proximate to Louisa area populations.
9. Ensure the town's ability to provide required public services by managing growth at a sustainable rate.
10. Enhance the character of the entrances to the town to reflect the character of the town's history.
11. Encourage moderately scaled commercial development on commercially zoned tracts in the center of town in a traditional downtown design that complements the existing historic character of the town. The downtown area should include a mix of small, non-franchise commercial uses such as a coffee shop, antique stores, and live/work studio spaces for artisans.
12. Discourage new re-zonings to commercial classifications within the town except for the central core of the town.

13. Preclude further heavy industrial development; excluding the Industrial Air Park.
14. Encourage residential design that provides open space preservation and recreational amenities, as well as supports pedestrian and bicycle travel.
15. Ensure that sidewalks are included in new development or revitalization plans for all areas of the town.

Action Items

1. Evaluate existing town zoning district regulations and the zoning map for compatibility with the goals and policies of this Plan, and identify necessary or desirable amendments as shown of the future land use map.
2. Review the town ordinances and regulations to ensure that new development will blend with the existing fabric of the town in terms of setbacks, side and rear yards, and street design.
3. Review the town ordinances and regulations to ensure that adequate landscaping and sidewalks are included in new development, in conjunction with the preservation and enhancement of trees and other vegetation.
4. Amend the town subdivision ordinance as needed and work with Louisa County to ensure that new development in the surrounding area blends with the existing fabric of the town in terms of setbacks, street design, and adequate landscape buffers to protect existing dwellings.
5. Provide appropriate and positive visual images at points of entry to the town.
6. Review town ordinances and regulations accordingly to ensure that growth is managed to avoid overtaxing public services.
7. Review and revise, if necessary, town zoning and special exemption criteria to ensure the adequacy of the water supply and sewage treatment facilities for new development or new land uses.
8. Work with Louisa County to promote and support policies that preserve the agricultural, rural, and scenic areas surrounding Louisa.
9. Recognize that the town's historic and cultural resources are fragile and irreplaceable and must be protected and preserved. Encourage the preservation, rehabilitation and enhancement of historic structures by ensuring that the town's land development ordinances permit compatible home-based businesses, provide for reasonable expansions and improvements to historic structures, and permit new development to be compatible in character with historic structures.
10. Use the town's historic and cultural resources as part of the framework for the town's strategic land use planning policies. Preservation of the identified framework, which includes historic features and public facilities, will help preserve the town's property values, aesthetic appeal and quality of life.
11. Develop and implement holistic and integrated growth management strategies to ensure that land use planning and development decisions respect and preserve the historic character of the town.

FUTURE LAND USE

Goals and Objectives

1. Protect the essential functions and integrity of local environmental systems including: surface and groundwater; wetlands; air quality; wildlife habitats; and vegetation in an integrated approach as a "green infrastructure" establishing the boundaries of development. This green infrastructure must include protection of:
   - Stream corridors as ecosystems that encompass multiple environmental features.
   - Wetlands as important natural filters, recharge areas, and wildlife habitat.
   - Significant trees, tree stands and public open space areas that support the high quality of life in Louisa.
   - The promotion and continuance planting of street trees on public and private land.

Policies

1. Promote the preservation of the natural landscape and features and integrate these elements into the overall design of a development project.
2. Promote awareness and voluntary involvement of local citizens regarding environmental and natural resource issues, problems, needs and opportunities.
3. Control environmental impacts of proposed public and private development within the town, by reviewing all re-zonings, special exceptions, subdivision, and site plan applications to ensure protection of sensitive natural areas.
4. Promote preservation and increase open space within the town by providing guidance to landowners/developers.
5. Identify, designate, and document specific natural features and locations in and around the town for public open space.
6. Encourage the preservation of the existing fabric and character of the town, through landscaping, buffering, sidewalks and other improvements to existing and new development.
7. Maintain the level of quiet within the town.
8. Promote and encourage participation in community cleanup efforts.
9. Promote water conservation through innovative reuse systems and informed household use.
10. Encourage recycling by all local residents and businesses.
11. Encourage the protection of local wildlife.
12. Protect vistas through enhanced siting controls and reducing the height of buildings, structures and signs.

Action Items

1. Adapt zoning ordinance amendments to establish the design and performance standards necessary to support the conservation design requirements for implementation of the green infrastructure policy.
2. Draft zoning ordinance amendments to allow for flexibility in setbacks, lot sizes, and parking requirements to reduce impervious area.
3. Draft zoning ordinance amendments to allow clustering within a site to protect environmentally sensitive areas and consider alternative design options to promote passive drainage, environmentally sound storm-water management practices, and water quality treatment.
4. Promote better awareness and voluntary involvement by identifying activities that could be undertaken by local civic organizations and individual citizens to protect and improve the environmental quality within and around the town, such as:
   a. Adoption of open spaces by civic and neighborhood organizations; and
   b. Adoption of road segment by local businesses and civic groups, including litter pickup, landscaping, and fundraising for sidewalk repair.
5. Develop and implement community design guidelines for residential and commercial structures to address visual quality and to further preserve the historic character of the town.

Our Town in 2030
Town Council's Vision Statement

The Town of Louisa is the center of government, commerce, culture, arts, and recreation for the County. As the heart of the County, we take responsibility for our destiny and commit to leadership that will ensure our economic and collective success. We are a community that preserves and builds on our history while retaining our social fabric and small-town appeal. Our Main Street defines us, providing a sense of place and identity, and drawing citizens together to create a progressive, vibrant, and caring community. In particular, we take pride in our:

First Rate Public Services
The Town of Louisa delivers professional public services to its residents, business community, and visitors. These services include governance, law enforcement, and utilities. Our state-of-the-art Town Hall campus, which is also a national historic landmark, meets community needs in a variety of ways including a Louisa Arts Center, Louisa Historical Society, and surrounding park. The Town is a steward of the environment and strongly supports recycling and alternate modes of transportation that are pedestrian, bicycle, and environmentally friendly. Town services are delivered by caring professionals who are well trained and empowered to take ownership of programs, respond promptly to problems, and develop solutions to meet public needs.

Constructive Communications and Partnerships
The Town of Louisa enjoys positive, progressive partnerships with its constituents, local and state governmental agencies, and peers within the private and public sectors. The business of Town government is handled in an open and democratic manner that invites public participation.

Vibrant Economic Development
Louisa's vibrant economic development includes the downtown area with various shops and boutiques, the Route 208 commercial corridor, and a uniquely planned Town village with housing, shopping, restaurants, and medical facilities that are within walking distance of the financial district. The Town Economic Development Authority works hand-in-hand with the Chamber of Commerce and in partnership with businesses and Town government to provide a sound commercial base.

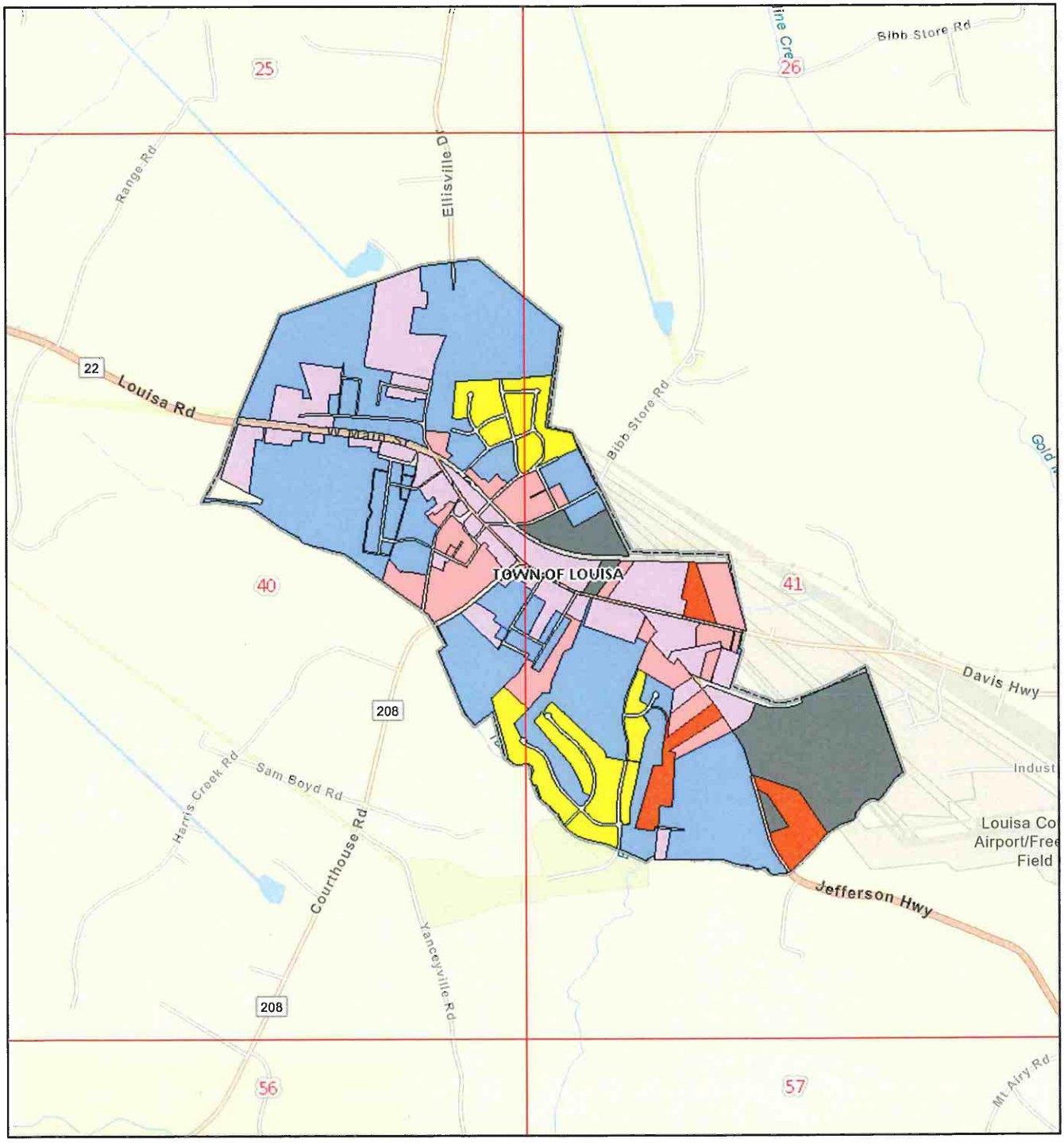
Cultural Enhancements
Quality of life in Louisa is enhanced by many diverse cultural activities. Visitors can avail themselves of comfortable lodging alternatives and interesting things to do and see. Live performances and art displays by local artists are held at the Louisa Arts Center. The Louisa Historical Society provides a walking tour of the Town including a portion of the Civil War Trail with a stop at the historic Oakland Cemetery. Other offerings from the LCHS include the Sargent Museum and 18th century village, the Old Courthouse, historic churches, and many quaint, historic homes. Recreational facilities include municipal parks, little league ball fields hosting state tournaments, and a golf course that is open to the public. Restaurants and retail shops abound in the downtown area.

Well Planned Development and Community Life
The Town is a pleasant mix of residential choices where home ownership and active community involvement are valued. We have high standards for development and insure that future growth in the Town adds to our aesthetic appeal, sense of identity, and neighborliness. The Town is continually focused on long and short-term issues related to connectivity. Within the Town, we are a connected community in which residents walk on safe sidewalks and use bikes to enjoy our appealing views and to experience recreation, dining, shopping, and cultural activities. The Town is an active voice in the discussion of long-range transportation plans with state and County stakeholders to ensure that we sustain our small-town charm and accessibility.

Appendix 1

Town of Louisa Zoning Map

Town of Louisa Zoning Map



(RG) - Residential General

(RL) - Residential Limited

(GC) - General Commercial

(LC) - Light Commercial

(IND) – Industrial

(PUD) - Planned Unit Development

1:36,112

0 0.23 0.45 0.9 mi

0 0.38 0.75 1.5 km

Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community