

STORMWATER MANAGEMENT REPORT

FOR

**THE ESTATE
BLOCK 151 LOT 17.01
TOWNSHIP OF WEST ORANGE
ESSEX COUNTY, NEW JERSEY**

SUBMITTED TO:

**TOWNSHIP OF WEST ORANGE
PLANNING BOARD**

PREPARED FOR:

**THE ESTATE
111 PROSPECT AVENUE
WEST ORANGE, NEW JERSEY 07052**

PREPARED BY:

**PETRY ENGINEERING, LLC
155 PASSAIC AVENUE
FAIRFIELD, NEW JERSEY 07004
973-227-7004**

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J. Michael Petry

**J. MICHAEL PETRY, PE
NJ PROFESSIONAL ENGINEER # 36662
DATED: DECEMBER 27, 2024
REVISED: DECEMBER 19, 2025**

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INTRODUCTION

The subject property is located at 111 Prospect Avenue, at the corner of Prospect Avenue and Woodland Avenue in the Township of West Orange, NJ. The property consists of 8.29± acres of land. It is located within the B-2 General Business Zone. The adjacent properties to the south and west are residential. To the north of the property is the Residence Inn. Finally, to the east of the property, across Prospect Avenue, is the Eagle Rock Reservation.

Currently, the site contains a catering hall and restaurant consisting of 3 buildings and multiple paved parking lots that service the buildings. The property slopes from elevation 555 to elevation 505, from the southeast to the northwest. The main building has a footprint of approximately 36,100 square feet and contains 2 stories. There are also 2 smaller buildings on the lot, located in the center and rear of the site. Three large parking lots are located throughout the site. An employee parking lot is located at the southwestern corner. A valet parking lot is located to the east of the main building, and a public parking lot is located to the north. The public parking lot is also partially contained by a cross-access easement and connects to the Residence Inn parking lot.

The NRCS Websoil survey mapping indicates that the portion of the site subject to development contains Hydrologic Group “D” soils, Urban land, Boonton Substratum, (URBONB) with Urban Land. The stormwater analysis considers this soil group type D. (See attached Websoil Survey Mapping.)

PROPOSED IMPROVEMENTS

Phase 1 of the project was previously approved in May of 2025. This approval included the renovation of the main building, the front garden area, a new porte cochere, and the reconstruction of the front parking lot. The applicant is submitting this application as an Amended Site Plan to include Phase 2. This scope of work includes an addition to the rear of the main building, the renovation of the existing restaurant, and the reconstruction of the rear parking lot. The new parking lot will contain more landscape islands throughout which will help to guide traffic as well as allow for additional plantings. The proposed development will reduce the overall impervious on the site. The previously approved site plan had 5.02 acres of impervious coverage and 3.39 acres of motor vehicle surface. The proposed impervious coverage for the site is 4.96 acres and the proposed motor vehicle surface is 3.31 acres. The entirety of the proposed disturbance is limited to previously developed areas. In order to accurately assess the impacts of stormwater on the subject property, this stormwater report used the existing conditions prior to the approval of Phase 1 and the proposed improvements include both Phase 1 and Phase 2.

METHODOLOGY

The USDA Natural Resources Conservation Service (NRCS) methodology described in the Technical Release 55 – Urban Hydrology for Small Water Sheds (TR-55) is used for computing stormwater runoff rates, volumes, and hydrographs for both existing and proposed conditions. In computing stormwater runoff from all design storms, the relative stormwater runoff rates and volumes of pervious and impervious surfaces are analyzed separately. The rainfall-duration-frequency data was taken from the NOAA National Weather Service. (See attached.) The NRCS Type D Design Storm Rainfall Distribution was used to analyze both pre- and post-conditions for both current adjusted and future projected rainfall projections. Hydraflow Hydrographs Extension 2024 Modeling Software was used to compute the site's pre- and post-development runoff of the site.

Table 1 – Rainfall Data

Storm Event	Current Rainfall (in)	Current Adjusted Rainfall (in)	Future Rainfall (in)
2-Yr	3.44	3.47	4.09
10-Yr	5.22	5.38	6.37
100-Yr	8.66	9.18	11.52

According to the Township of West Orange Stormwater Management Rules and the NJDEP Stormwater Management regulations, the proposed development is considered a major development since there is more than one acre of disturbance. For major developments, stormwater management measures designed to provide groundwater recharge, stormwater runoff quantity control, and stormwater runoff quality treatment, utilizing green infrastructure. The development does not have to meet the groundwater recharge requirement since it is located within the Metropolitan Planning Area. Also, since the proposed development does not result in a net increase of $\frac{1}{4}$ of an acre or more of impervious surface, the water quality aspect of the Stormwater Management Rules is not required. Therefore, the stormwater management measures have been designed to meet only the stormwater runoff quantity requirements.

According to Section 7:8-5.6(b)1. the design must “*demonstrate through hydrologic and hydraulic analysis that for stormwater leaving the site, post-construction runoff hydrographs for the 2, 10 and 100-year storm events do not exceed, at any point in time, the pre-construction runoff hydrographs for the same storm events.*” The proposed development calls for a decrease in the amount of impervious on the site, the amount of runoff will be reduced. Since the stormwater quantity is satisfied through the use of non-structural strategies, green infrastructure requirements are not required.

EXISTING CONDITIONS

The existing site has been modeled as two drainage areas totaling 4.86 acres. (See Fig.1 Existing Drainage Area Map.) The point of analysis for Drainage Area 1 is the Type Double “B” Inlet at the rear of the site, which connects to the municipal storm sewer system within Deerfield Drive. The point of analysis for Drainage Area 2 is the rear property line that bypasses. The drainage areas include all areas of disturbance, as well as any other areas that drain to the point of analyses.

DRAINAGE AREA 1 (DA-1)

Drainage Area 1 consists of 4.68 acres of both pervious and impervious surfaces. The impervious area, 3.32 acres, consists of the existing parking lot and associated improvements. The pervious area, 0.27 acres, is comprised of landscaped and lawn areas that are in good condition. Two times of concentration have been calculated for this drainage area, one based on the current adjusted rainfall total and one for the future projected rainfall total. The times of concentration are 13.6 and 12.7 minutes, respectively.

DRAINAGE AREA 2 (DA-2)

Drainage Area 2 consists of 0.18 acres of both pervious and impervious surfaces. The impervious area, 0.04 acres, consists of walkways. The pervious area, 0.14 acres, is comprised of landscaped and lawn areas that are in good condition. Two times of concentration have been calculated for this drainage area, one based on the current adjusted rainfall total and one for the future projected rainfall total. The times of concentration are 11.8 and 10.9 minutes, respectively.

CURVE NUMBERS

The CN values used have been taken from the TR-55 Manual “Urban Hydrology for Small Watersheds,” Table 2-2a and Table 2-2c, based on land cover and hydrologic soil groups.

Table 2 – Curve Number (Existing Conditions)

Description	Hydrologic Group	Curve Number
Landscaped Islands (Open Space-Good Conditions)	D	80
Impervious	D	98

PEAK FLOWS

Using the information described above, the peak flows during the 2-, 10-, and 100-year storm events were calculated. Table 2 below summarizes the peak flows during each

storm event. (See attached Hydraflow Output for Existing Conditions Hydrographs, CN Values, and Time of Concentration Calculations.)

Table 3 – Existing Peak Runoff Rates

Storm Event	DA-1			
	Current Adjusted Rainfall		Future Projected Rainfall	
	Existing Site Peak Runoff	Existing Site Runoff Volume	Existing Site Peak Runoff	Existing Site Runoff Volume
2 Year	9.339 cfs	44,031 cf	11.28 cfs	53,349 cf
10 Year	15.35 cfs	73,038 cf	18.49 cfs	88,329 cf
100 Year	27.41 cfs	132,192 cf	34.83 cfs	169,002 cf
Storm Event	DA-2			
	Current Adjusted Rainfall		Future Projected Rainfall	
	Existing Site Peak Runoff	Existing Site Runoff Volume	Existing Site Peak Runoff	Existing Site Runoff Volume
2 Year	0.271 cfs	1,209 cf	0.345 cfs	1,533 cf
10 Year	0.503 cfs	2,237 cf	0.627 cfs	2,796 cf
100 Year	0.978 cfs	4,428 cf	1.271 cfs	5,815 cf

PROPOSED CONDITIONS

The existing site has been modeled as two drainage areas totaling 4.86 acres. (See Fig.1 Existing Drainage Area Map.) The point of analysis for Drainage Area 1 is the Type Double “B” Inlet at the rear of the site, which connects to the municipal storm sewer system within Deerfield Drive. The point of analysis for Drainage Area 2 is the rear property line that bypasses. The drainage areas include all areas of disturbance, as well as any other areas that drain to the point of analyses.

DRAINAGE AREA 1 (DA-1)

Drainage Area 1 consists of 4.68 acres of both pervious and impervious surfaces. The impervious area, 3.32 acres, consists of the existing and proposed parking lot and associated improvements. The pervious area, 0.27 acres, is comprised of landscaped and lawn areas that are in good condition. Two times of concentration have been calculated for this drainage area, one based on the current adjusted rainfall total and one for the future projected rainfall total. The times of concentration are 12.6 and 11.7 minutes, respectively.

DRAINAGE AREA 2 (DA-2)

Drainage Area 2 consists of 0.18 acres of both pervious and impervious surfaces. The impervious area, 0.04 acres, consists of walkways. The pervious area, 0.14 acres, is comprised of landscaped and lawn areas that are in good condition. Two times of

concentration have been calculated for this drainage area, one based on the current adjusted rainfall total and one for the future projected rainfall total. The times of concentration are 11.8 and 10.9 minutes, respectively.

CURVE NUMBERS

The CN values used have been taken from the TR-55 Manual “Urban Hydrology for Small Watersheds,” Table 2-2a and Table 2-2c, based on land cover and hydrologic soil groups.

Table 4 – Curve Number (Proposed Conditions)

Description	Hydrologic Group	Curve Number
Landscaped Islands (Open Space-Good Conditions)	D	80
Impervious	D	98

PEAK FLOWS

Using the information described above, the peak flows during the 2-, 10-, and 100-year storm events were calculated. Table 4 below summarizes the peak flows during each storm event. (See attached Hydraflow Output for Proposed Conditions Hydrographs, CN Values, and Time of Concentration Calculations.) As shown in this table, the proposed runoff rates and volumes are reduced from the existing to proposed conditions. Since this regulation requires that we show reductions at each time interval, we have included Tables 7-10 in the appendix of this report which shows the minute-by-minute flows leaving the site for each storm event and compares existing and proposed conditions.

Table 5 – Overall Peak Runoff Rates – Current Adjusted Rainfall

	DA-1			
Storm Event	Existing Site Peak Runoff	Existing Site Runoff Volume	Proposed Site Peak Runoff	Proposed Site Runoff Volume
2 Year	9.339 cfs	44,031 cf	9.179 cfs	43,147 cf
10 Year	15.35 cfs	73,038 cf	15.19 cfs	71,995 cf
100 Year	27.41 cfs	132,192 cf	27.27 cfs	130,994 cf
	DA-2			
Storm Event	Existing Site Peak Runoff	Existing Site Runoff Volume	Proposed Site Peak Runoff	Proposed Site Runoff Volume
2 Year	0.271 cfs	1,209 cf	0.271 cfs	1,209 cf
10 Year	0.503 cfs	2,237 cf	0.503 cfs	2,237 cf
100 Year	0.978 cfs	4,428 cf	0.978 cfs	4,428 cf

Table 6 – Overall Peak Runoff Rates – Future Projected Rainfall

	DA-1			
Storm Event	Existing Site Peak Runoff	Existing Site Runoff Volume	Proposed Site Peak Runoff	Proposed Site Runoff Volume
2 Year	11.28 cfs	53,349 cf	11.12 cfs	52,402 cf
10 Year	18.49 cfs	88,329 cf	18.33 cfs	87,232 cf
100 Year	34.83 cfs	169,002 cf	34.70 cfs	167,752 cf
	DA-2			
Storm Event	Existing Site Peak Runoff	Existing Site Runoff Volume	Proposed Site Peak Runoff	Proposed Site Runoff Volume
2 Year	0.345 cfs	1,533 cf	0.345 cfs	1,533 cf
10 Year	0.627 cfs	2,796 cf	0.627 cfs	2,796 cf
100 Year	1.271 cfs	5,815 cf	1.271 cfs	5,815 cf

WATER QUALITY

Since the proposed development does not result in a net increase of $\frac{1}{4}$ of an acre or more of impervious surface, the water quality aspect of the Stormwater Management Rules is not required.

GROUNDWATER RECHARGE

The site is located within the Metropolitan Planning Area. No groundwater recharge is required for the site. A map from Geo Web showing the site within this planning area can be found in the appendix of this report.

STORM SEWER COMPUTATIONS

A storm sewer system has been designed to collect the runoff associated with the proposed parking areas, drive aisles, walkways, and lawn areas. The pipes are designed to carry the flows for the 25-year storm.

The rational method was used to calculate runoff rates. Manning's equation was used to determine the capacity of each system. Storm Sewer Computations are included in the appendix of this report. Also, Fig.-3 shows the drainage areas to each inlet.

The entire site is mapped with soils considered Hydrologic Group D (See attached Appendix for Soil Map). For this analysis, all the drainage areas were assumed to have 0.99 as a Runoff Coefficient (C value), which is the most conservative value.

CONCLUSION

The proposed improvements meet all of the stormwater management regulations for both the Township of West Orange as well as the NJDEP. The stormwater quantity is satisfied through the use of non-structural strategies, specifically the reduction in impervious surfaces. The proposed development calls for the reconstruction of the existing parking lot, increasing the amount of landscape area by approximately 0.16 acres. The decrease in impervious also means that water quality measures are not required.

The site is located in the Metropolitan Planning Area, which means that stormwater recharge is not required.

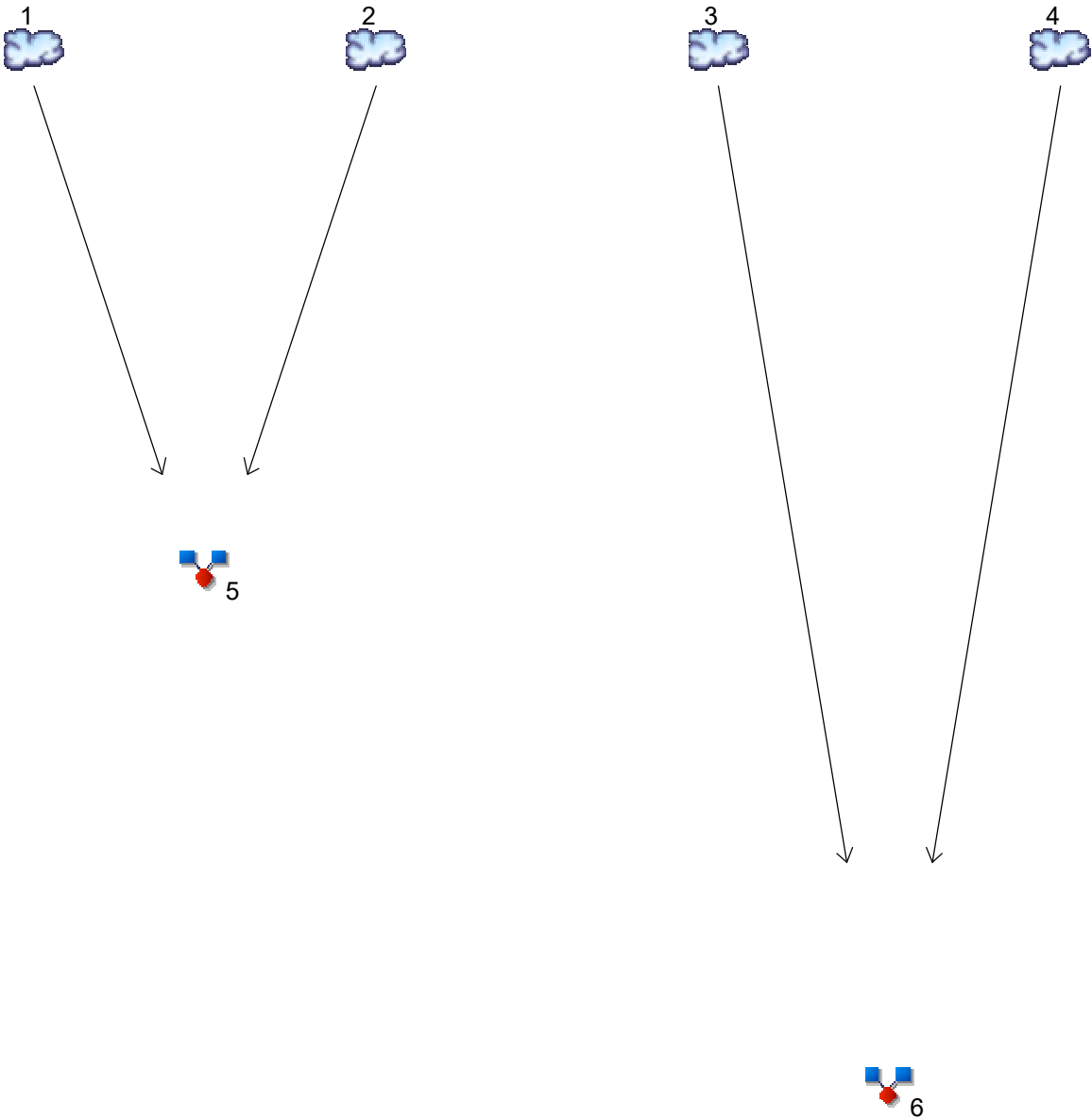
**EXISTING CONDITIONS
CURRENT ADJUSTED
HYDROGRAPHS**



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Watershed Model Schematic

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



Legend

Hyd.	Origin	Description
1	SCS Runoff	DA-1 Pervious
2	SCS Runoff	DA-1 Impervious
3	SCS Runoff	DA-2 Pervious
4	SCS Runoff	DA-2 Impervious
5	Combine	DA-1 Combined
6	Combine	DA-2 Combined

Hydrograph Summary Report

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

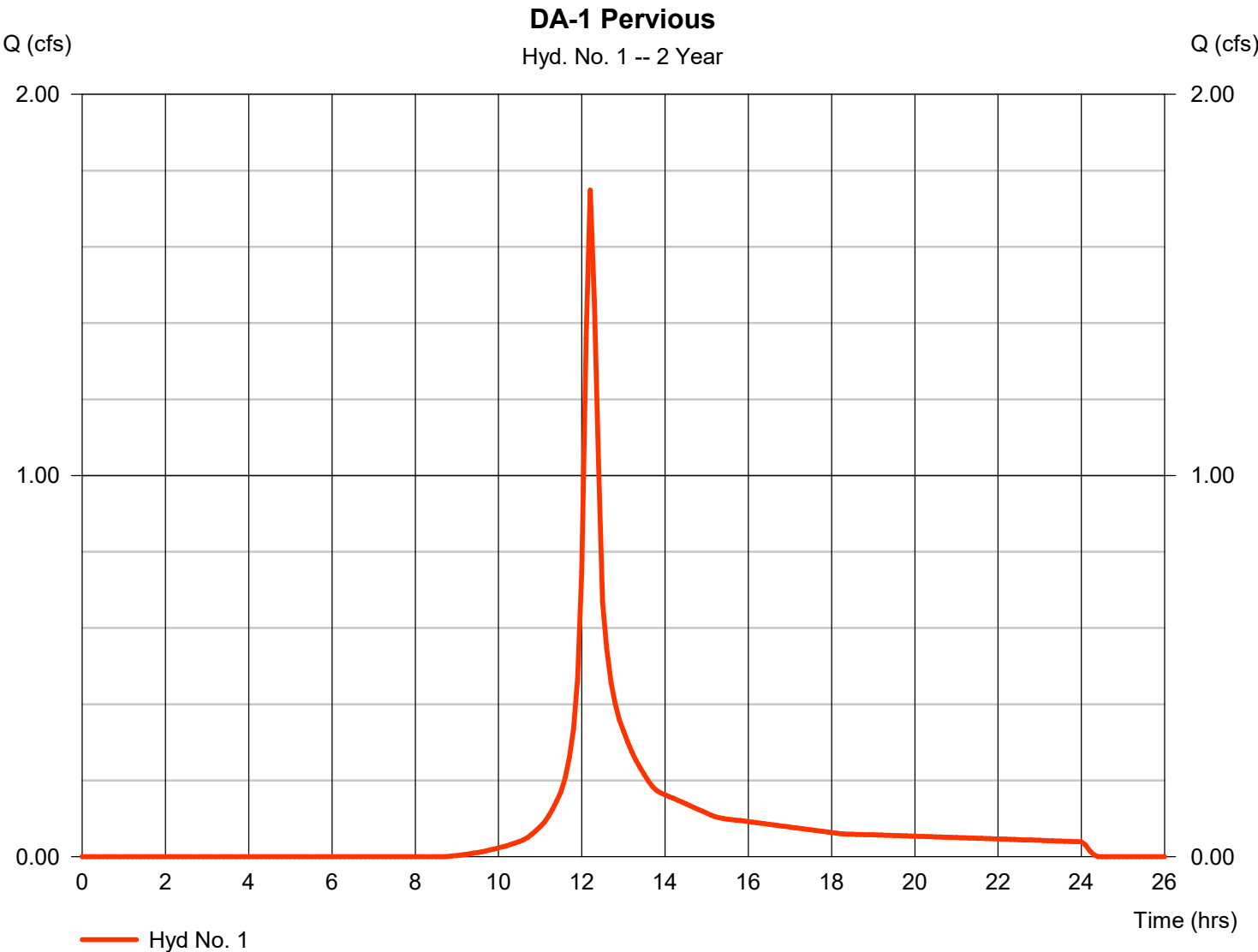
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	1.749	6	732	7,463	-----	-----	-----	DA-1 Pervious
2	SCS Runoff	7.590	6	732	36,568	-----	-----	-----	DA-1 Impervious
3	SCS Runoff	0.180	6	732	768	-----	-----	-----	DA-2 Pervious
4	SCS Runoff	0.091	6	732	441	-----	-----	-----	DA-2 Impervious
5	Combine	9.339	6	732	44,031	1, 2,	-----	-----	DA-1 Combined
6	Combine	0.271	6	732	1,209	3, 4,	-----	-----	DA-2 Combined
Existing - Current Adjusted.gpw					Return Period: 2 Year			Tuesday, 12 / 23 / 2025	

Hydrograph Report

Hyd. No. 1

DA-1 Pervious

Hydrograph type	= SCS Runoff	Peak discharge	= 1.749 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 7,463 cuft
Drainage area	= 1.360 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.60 min
Total precip.	= 3.47 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginask Manor - West Orange		

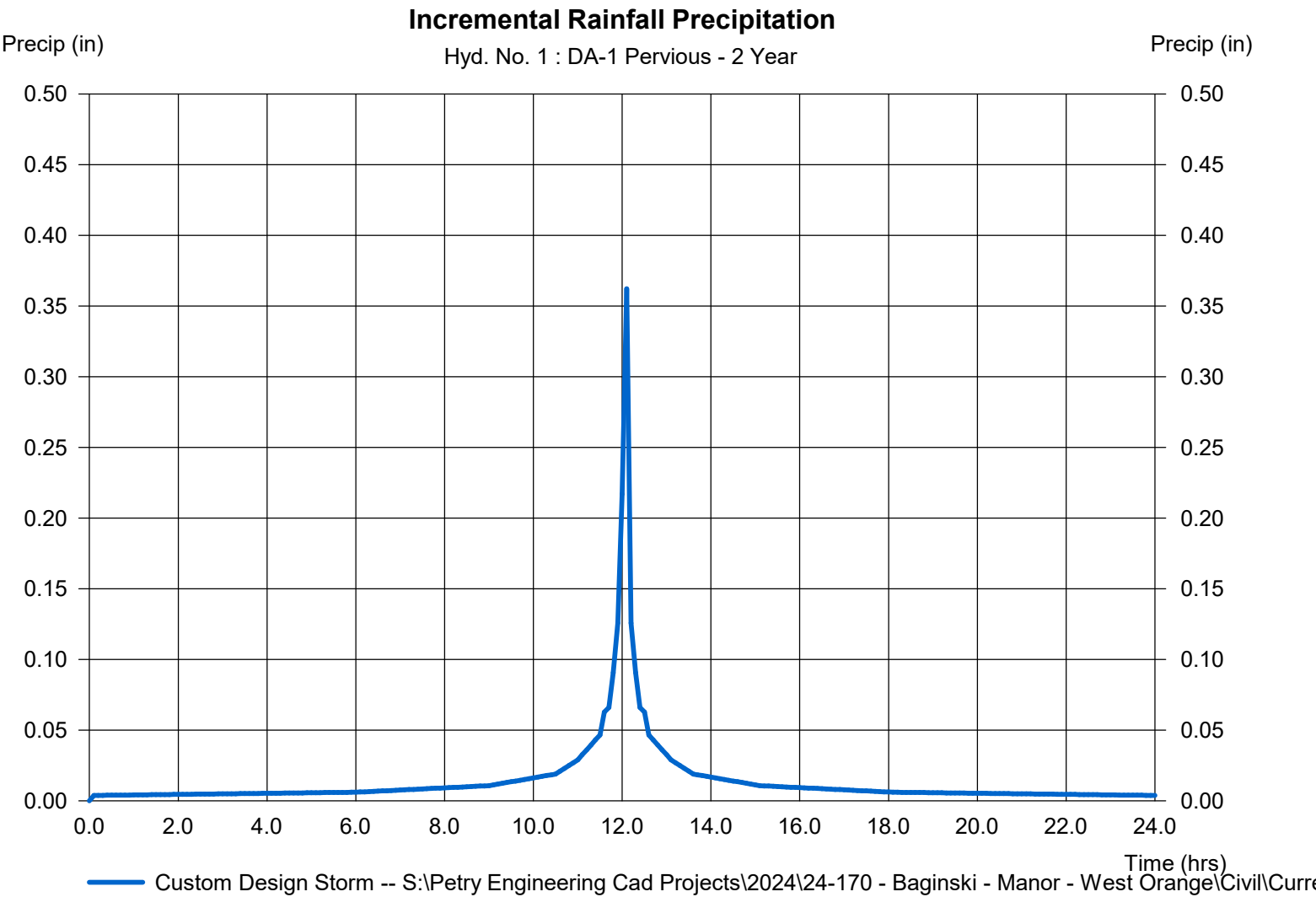


Precipitation Report

Hyd. No. 1

DA-1 Pervious

Storm Frequency	= 2 yrs	Time interval	= 6 min
Total precip.	= 3.4700 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		

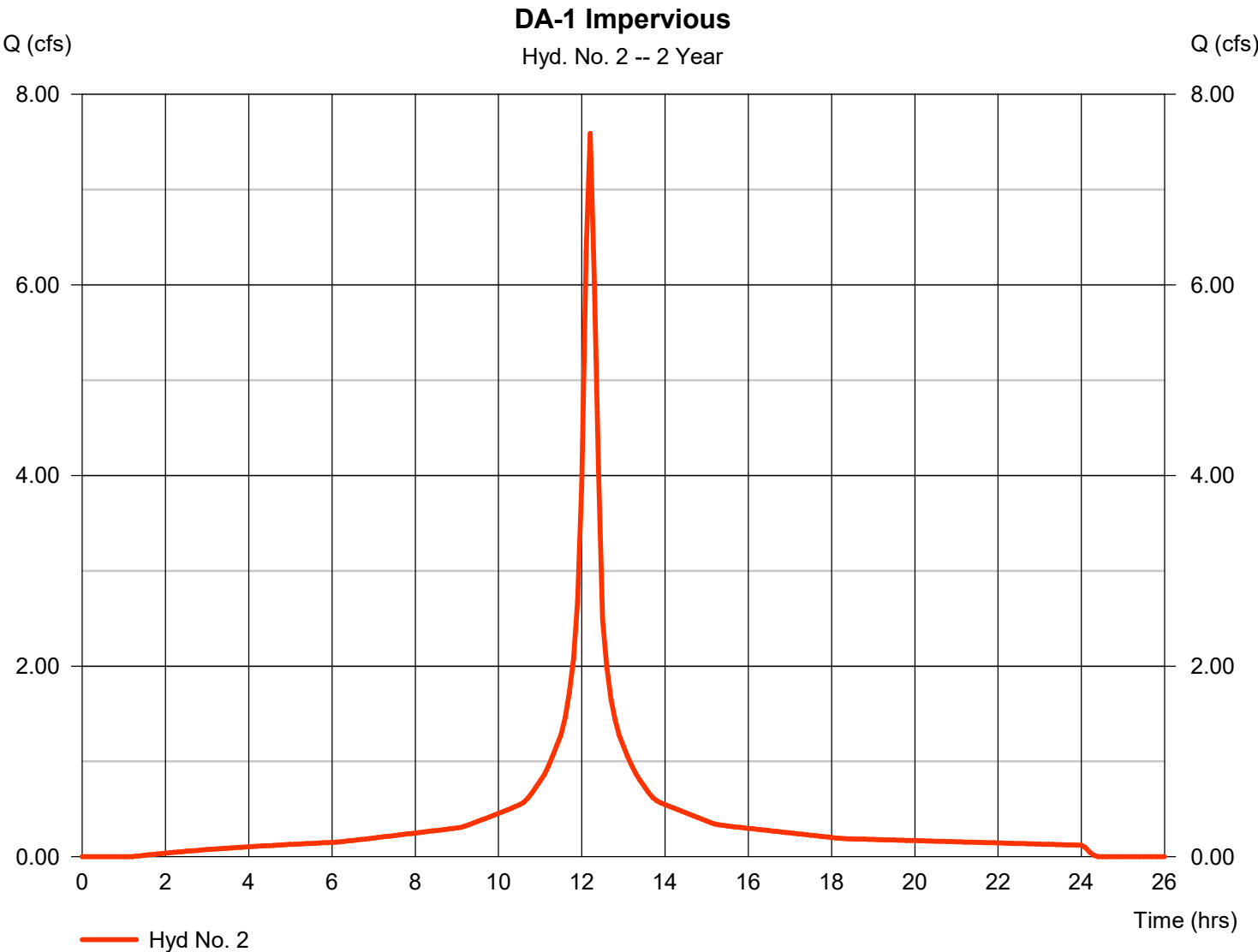


Hydrograph Report

Hyd. No. 2

DA-1 Impervious

Hydrograph type	= SCS Runoff	Peak discharge	= 7.590 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 36,568 cuft
Drainage area	= 3.320 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.60 min
Total precip.	= 3.47 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024-170 - Bagin - 184 Manor - West Orange		

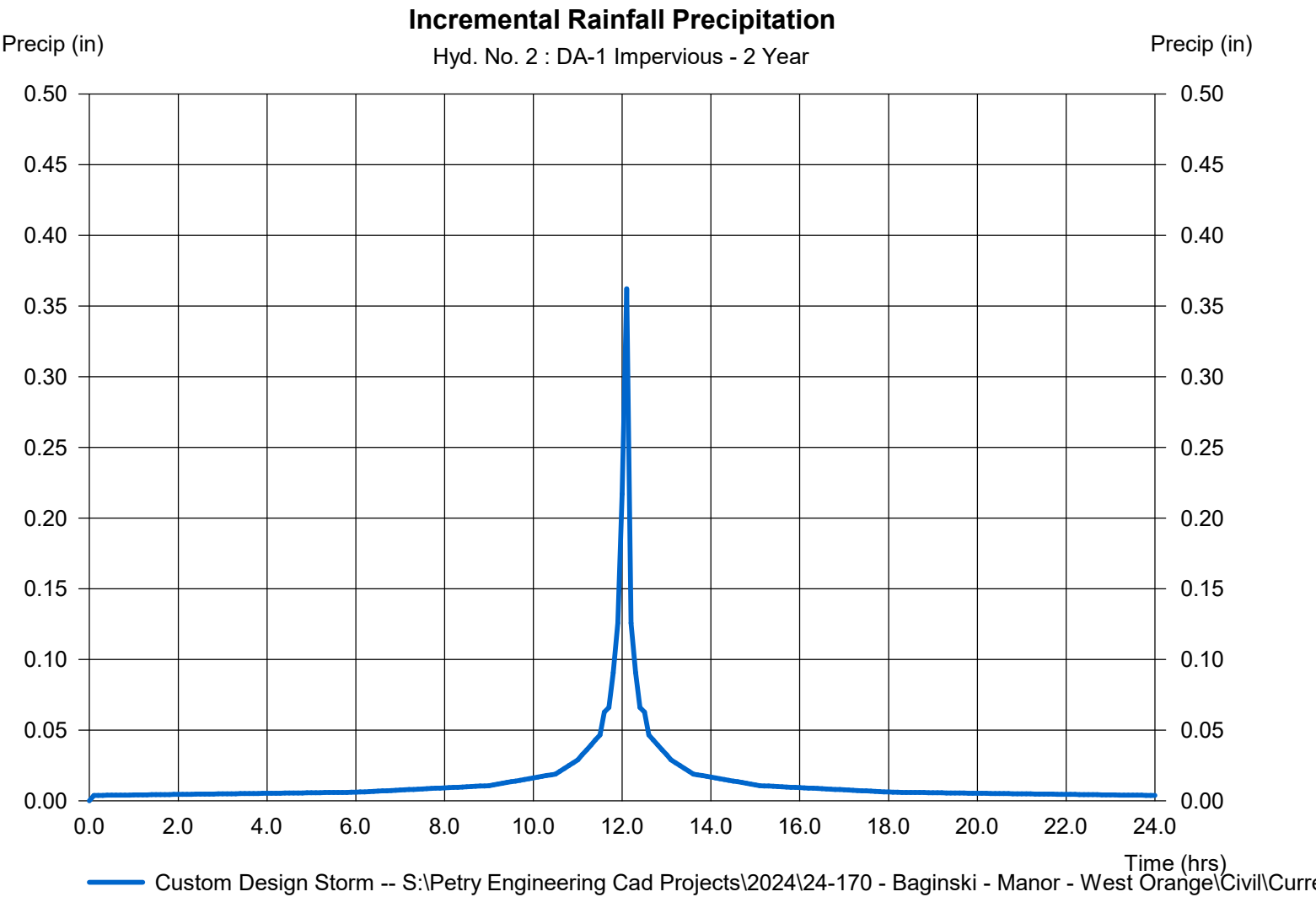


Precipitation Report

Hyd. No. 2

DA-1 Impervious

Storm Frequency	= 2 yrs	Time interval	= 6 min
Total precip.	= 3.4700 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		

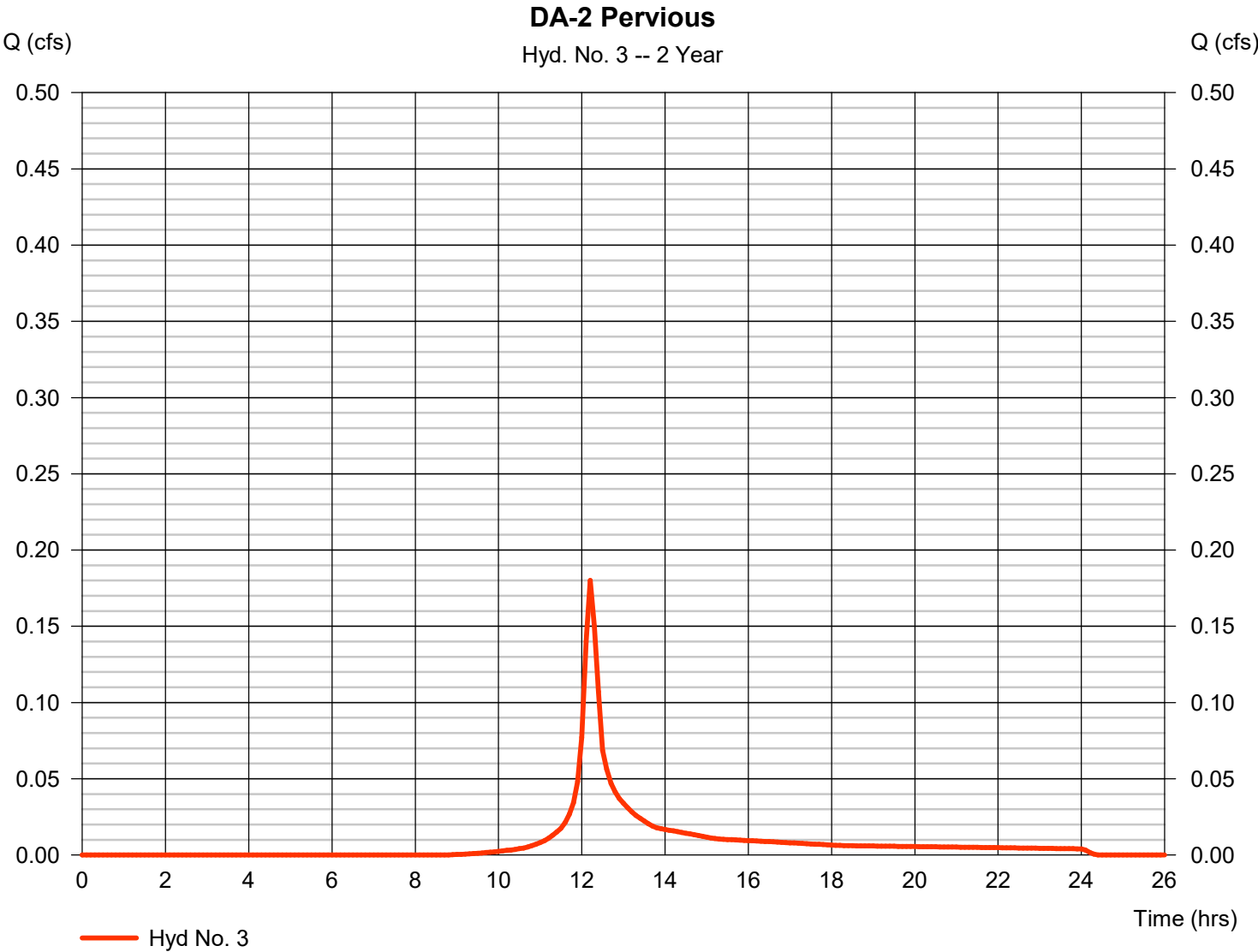


Hydrograph Report

Hyd. No. 3

DA-2 Pervious

Hydrograph type	= SCS Runoff	Peak discharge	= 0.180 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 768 cuft
Drainage area	= 0.140 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.80 min
Total precip.	= 3.47 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginask Manor - West Orange		

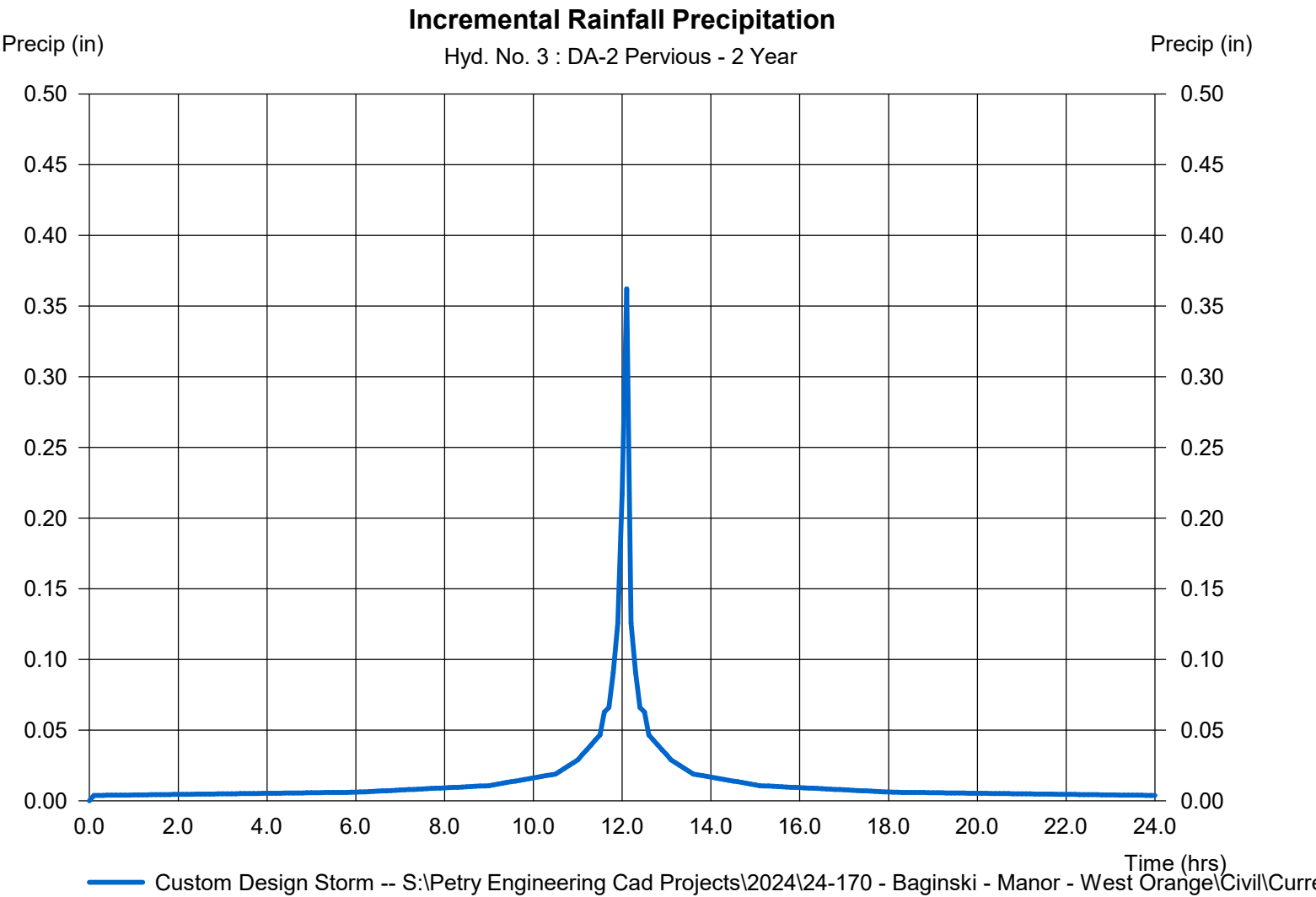


Precipitation Report

Hyd. No. 3

DA-2 Pervious

Storm Frequency	= 2 yrs	Time interval	= 6 min
Total precip.	= 3.4700 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		



Hydrograph Report

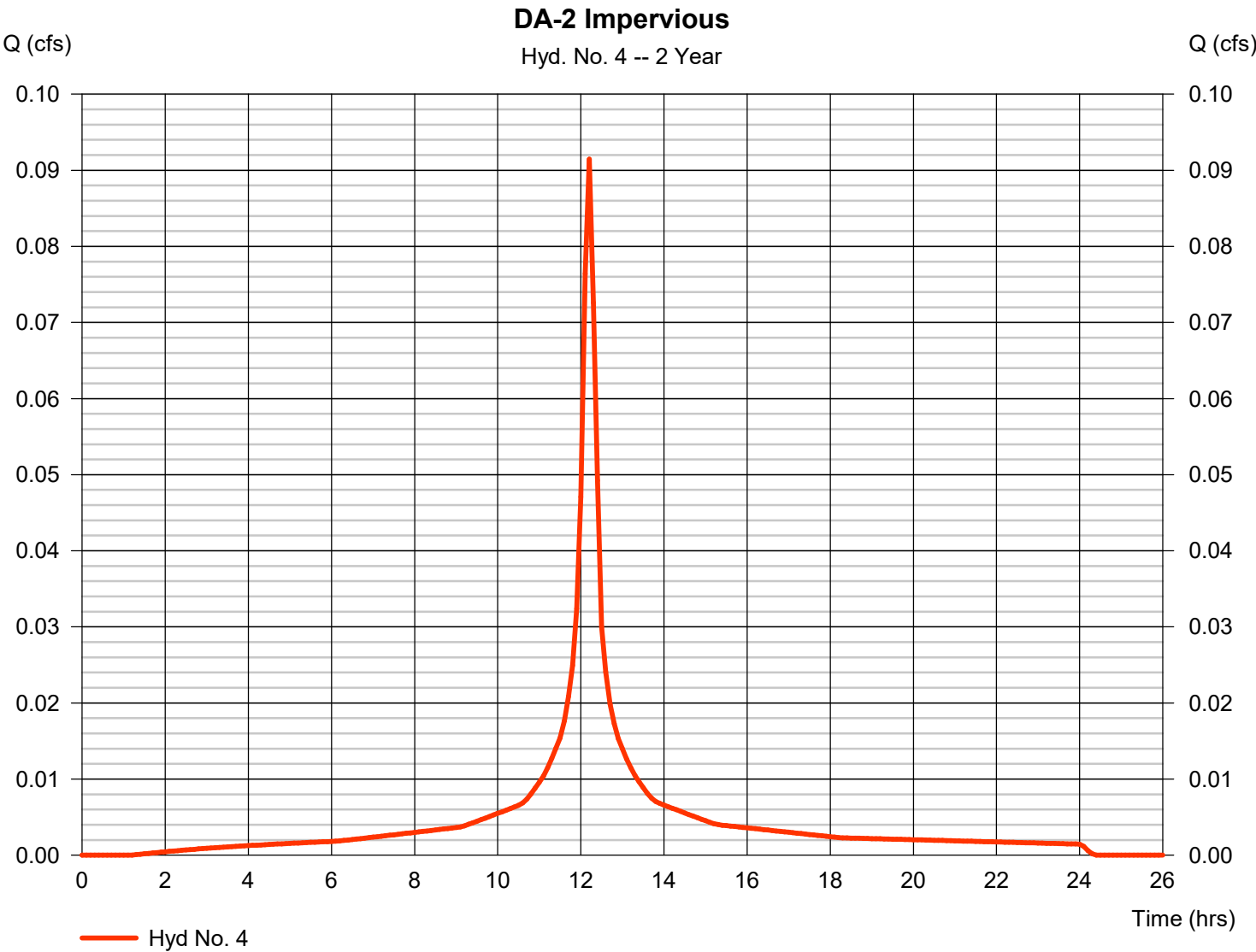
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Tuesday, 12 / 23 / 2025

Hyd. No. 4

DA-2 Impervious

Hydrograph type	= SCS Runoff	Peak discharge	= 0.091 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 441 cuft
Drainage area	= 0.040 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.80 min
Total precip.	= 3.47 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginask Manor - West Orange		

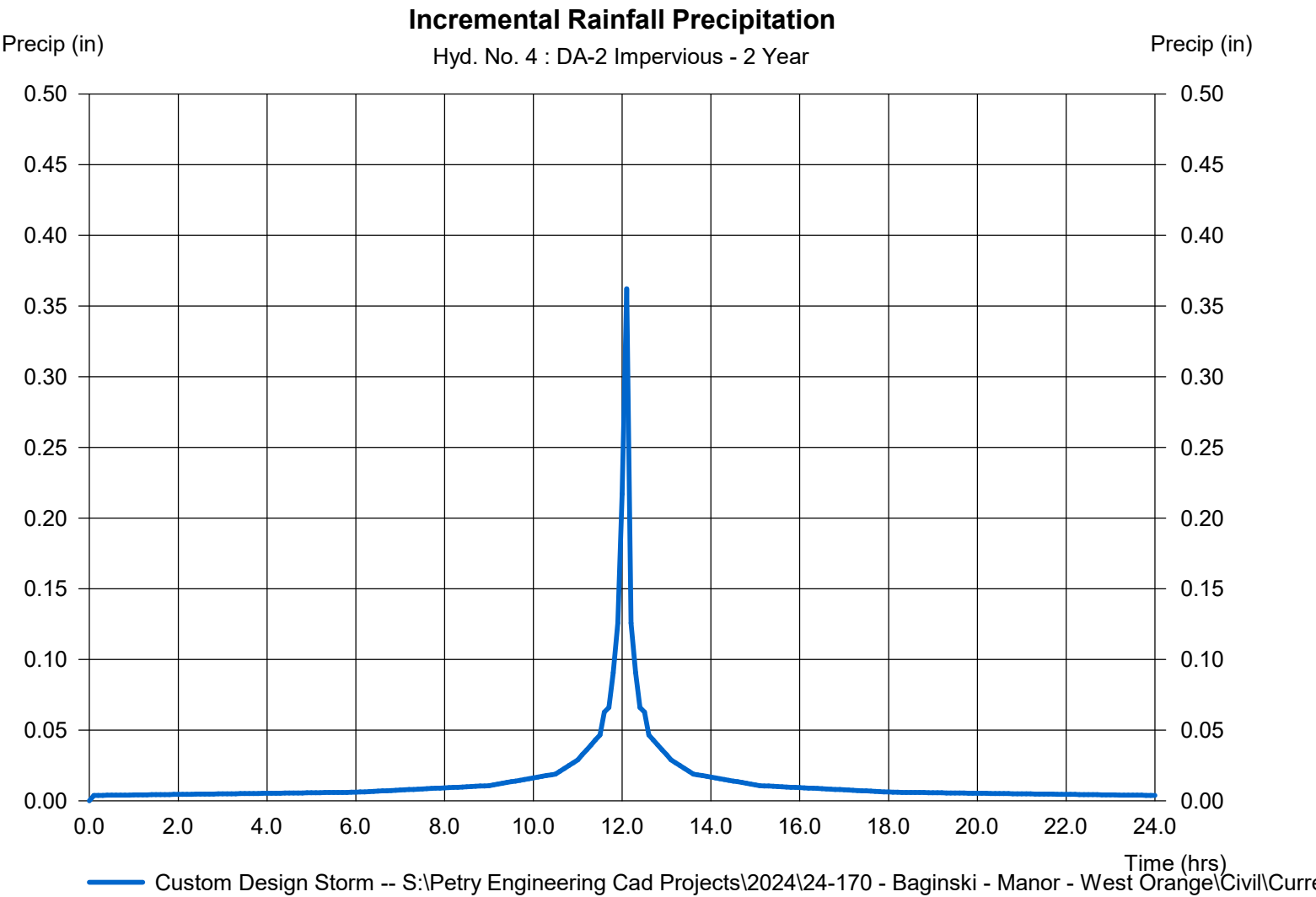


Precipitation Report

Hyd. No. 4

DA-2 Impervious

Storm Frequency	= 2 yrs	Time interval	= 6 min
Total precip.	= 3.4700 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		

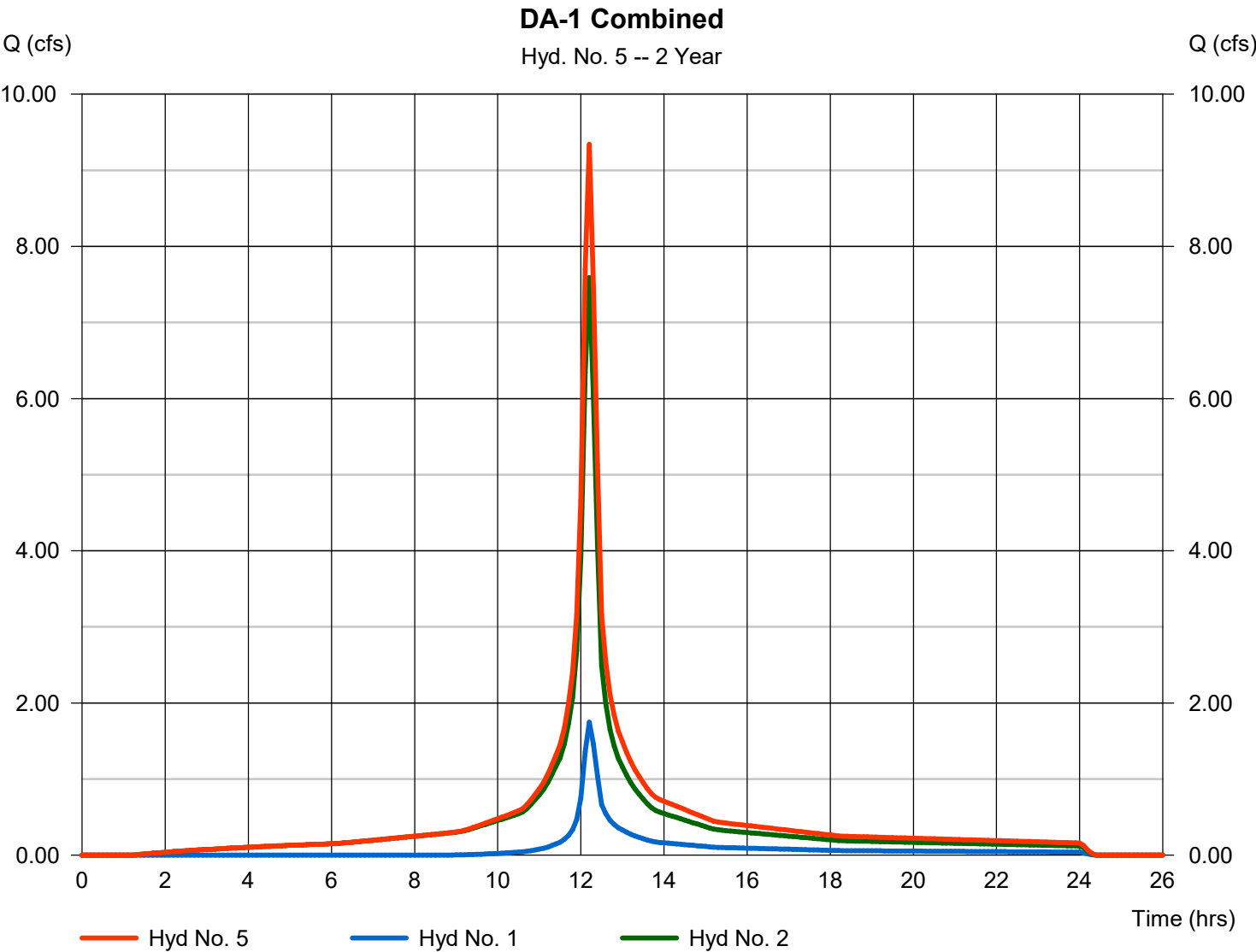


Hydrograph Report

Hyd. No. 5

DA-1 Combined

Hydrograph type	= Combine	Peak discharge	= 9.339 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 44,031 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 4.680 ac



Hydrograph Report

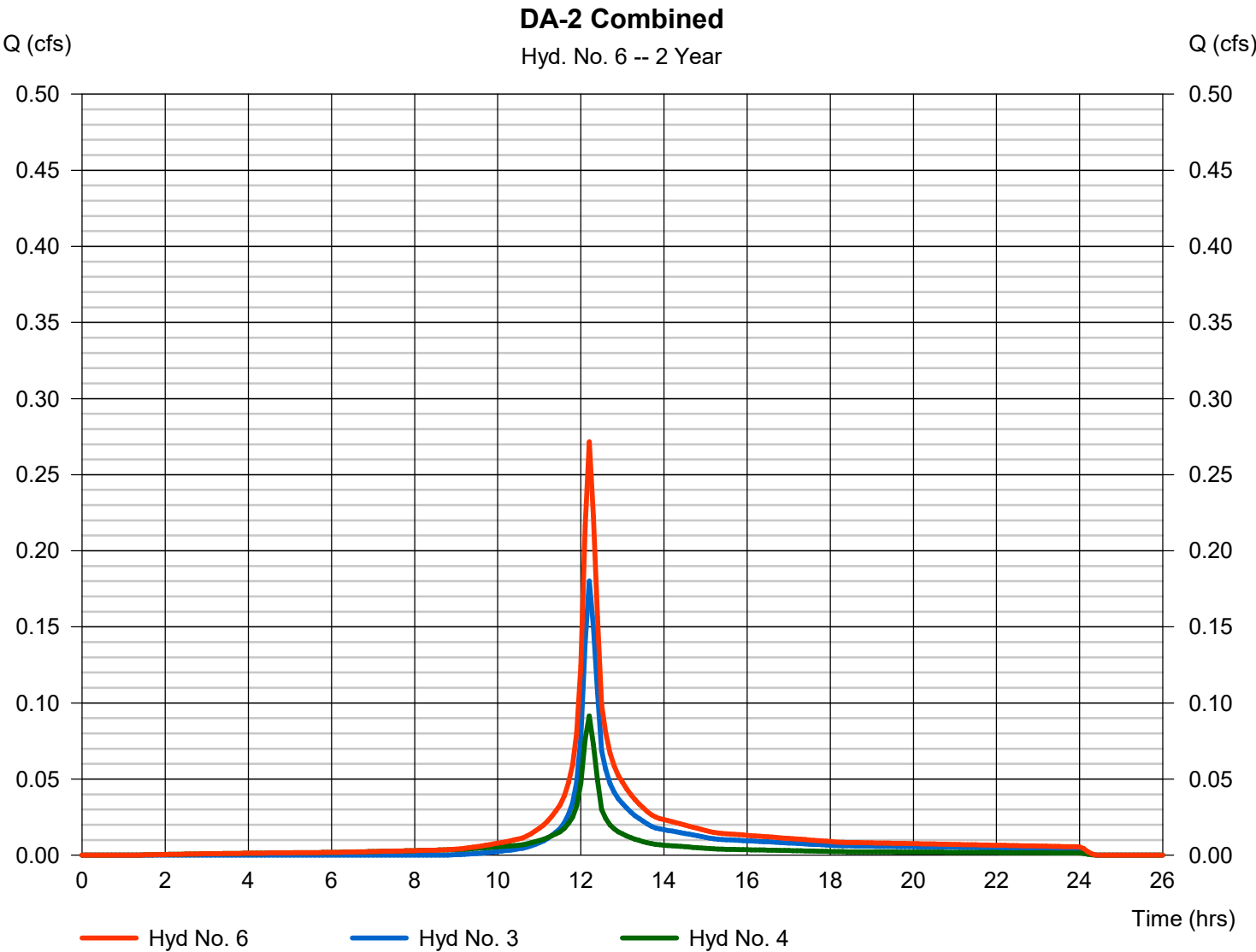
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Tuesday, 12 / 23 / 2025

Hyd. No. 6

DA-2 Combined

Hydrograph type	= Combine	Peak discharge	= 0.271 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 1,209 cuft
Inflow hyds.	= 3, 4	Contrib. drain. area	= 0.180 ac



Hydrograph Summary Report

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

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	3.502	6	732	14,935	-----	-----	-----	DA-1 Pervious
2	SCS Runoff	11.85	6	732	58,103	-----	-----	-----	DA-1 Impervious
3	SCS Runoff	0.361	6	732	1,537	-----	-----	-----	DA-2 Pervious
4	SCS Runoff	0.143	6	732	700	-----	-----	-----	DA-2 Impervious
5	Combine	15.35	6	732	73,038	1, 2,	-----	-----	DA-1 Combined
6	Combine	0.503	6	732	2,237	3, 4,	-----	-----	DA-2 Combined
Existing - Current Adjusted.gpw					Return Period: 10 Year			Tuesday, 12 / 23 / 2025	

Hydrograph Report

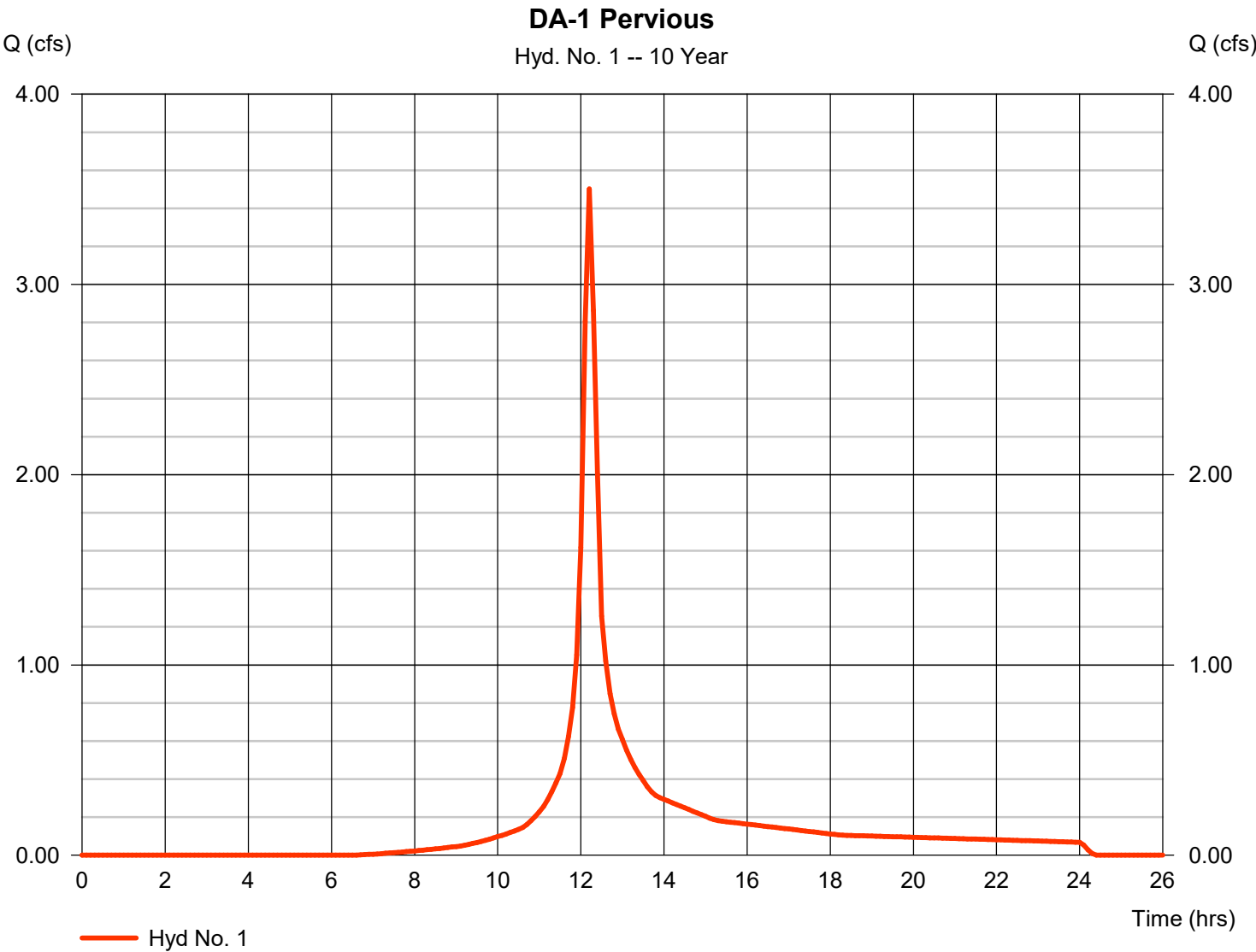
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Tuesday, 12 / 23 / 2025

Hyd. No. 1

DA-1 Pervious

Hydrograph type	= SCS Runoff	Peak discharge	= 3.502 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 14,935 cuft
Drainage area	= 1.360 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.60 min
Total precip.	= 5.38 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024-170 - Bagin's 184 Manor - West Orange		

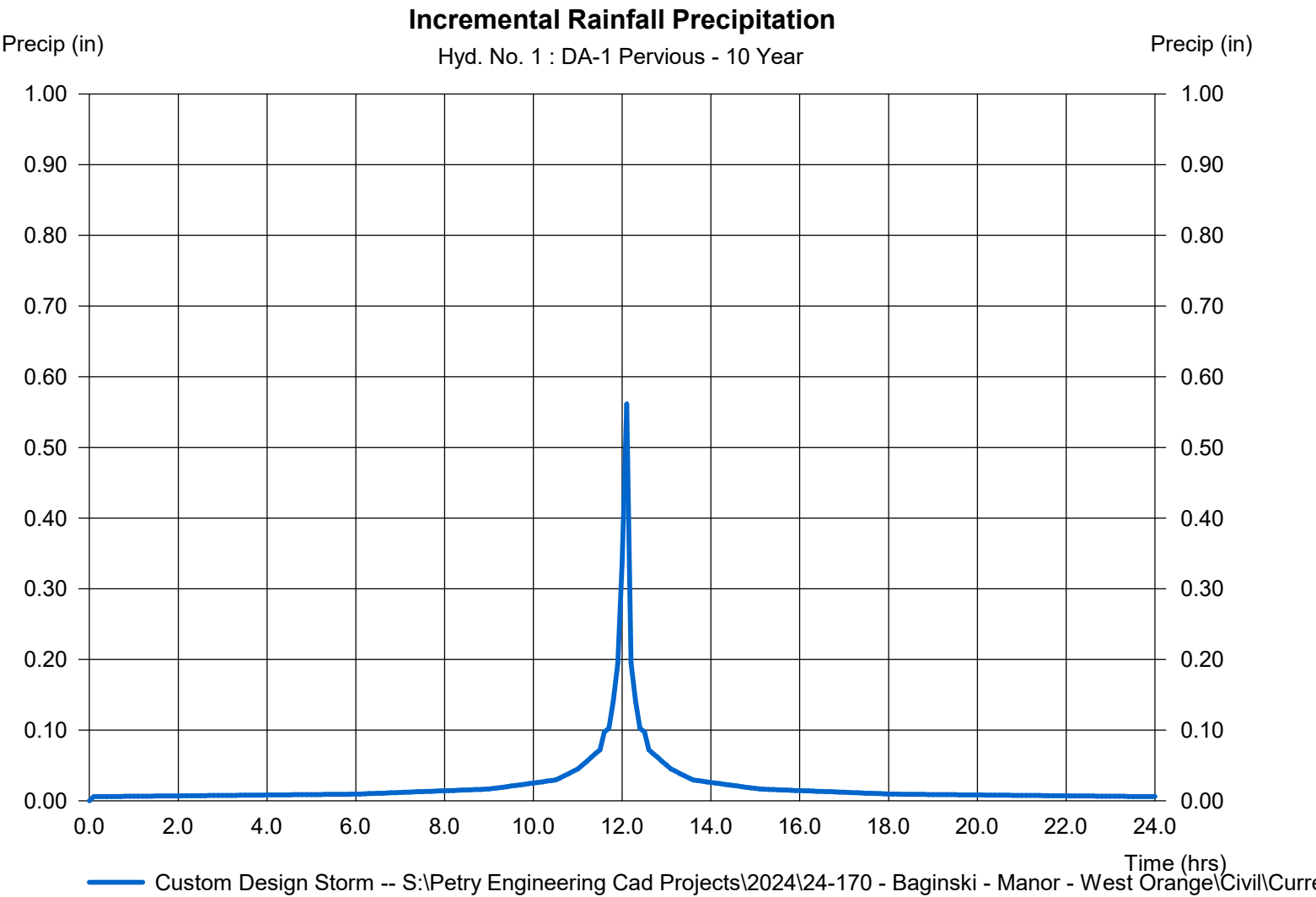


Precipitation Report

Hyd. No. 1

DA-1 Pervious

Storm Frequency	= 10 yrs	Time interval	= 6 min
Total precip.	= 5.3800 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		

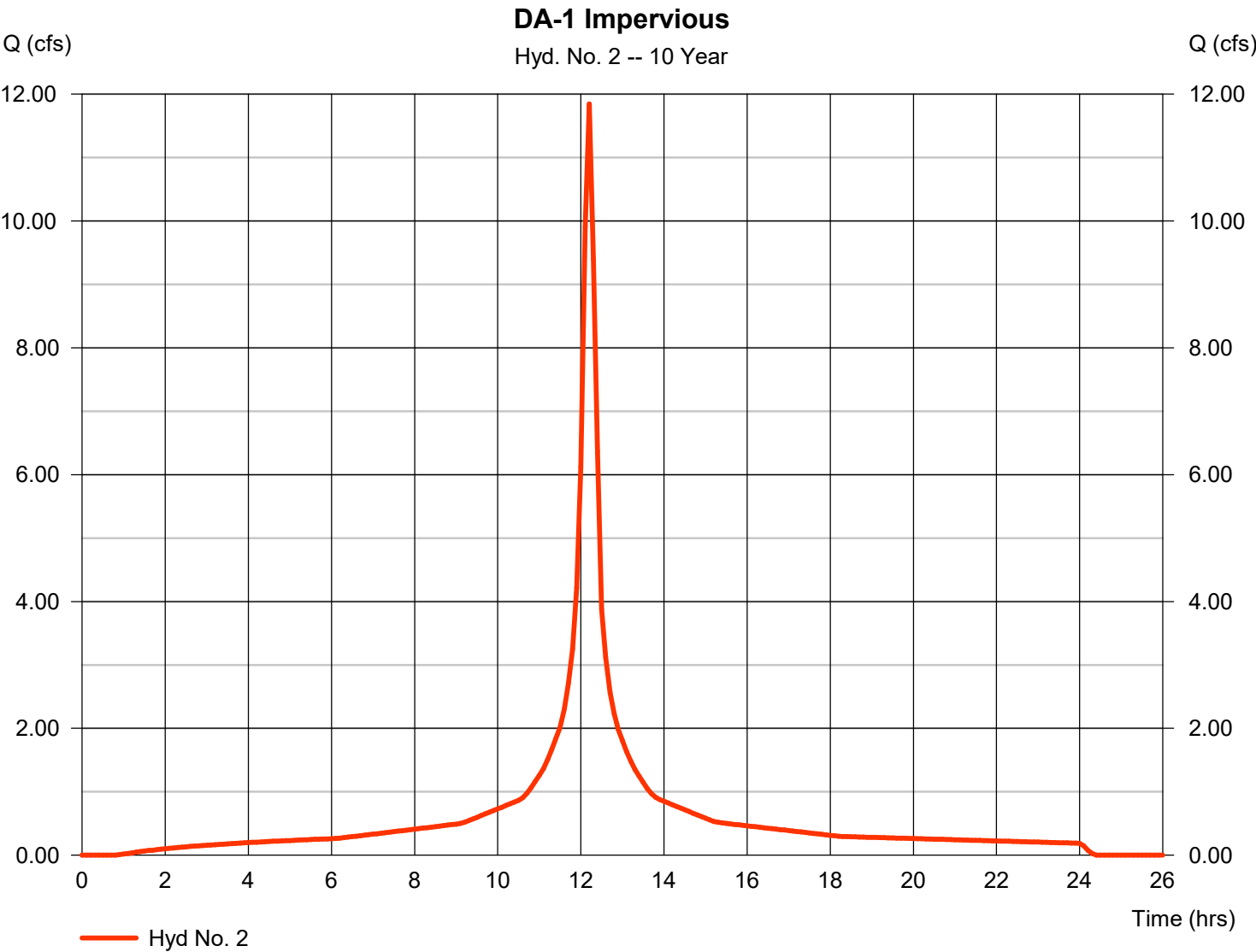


Hydrograph Report

Hyd. No. 2

DA-1 Impervious

Hydrograph type	= SCS Runoff	Peak discharge	= 11.85 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 58,103 cuft
Drainage area	= 3.320 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.60 min
Total precip.	= 5.38 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024-2025\170 - Baginask Manor - West Orange		



Precipitation Report

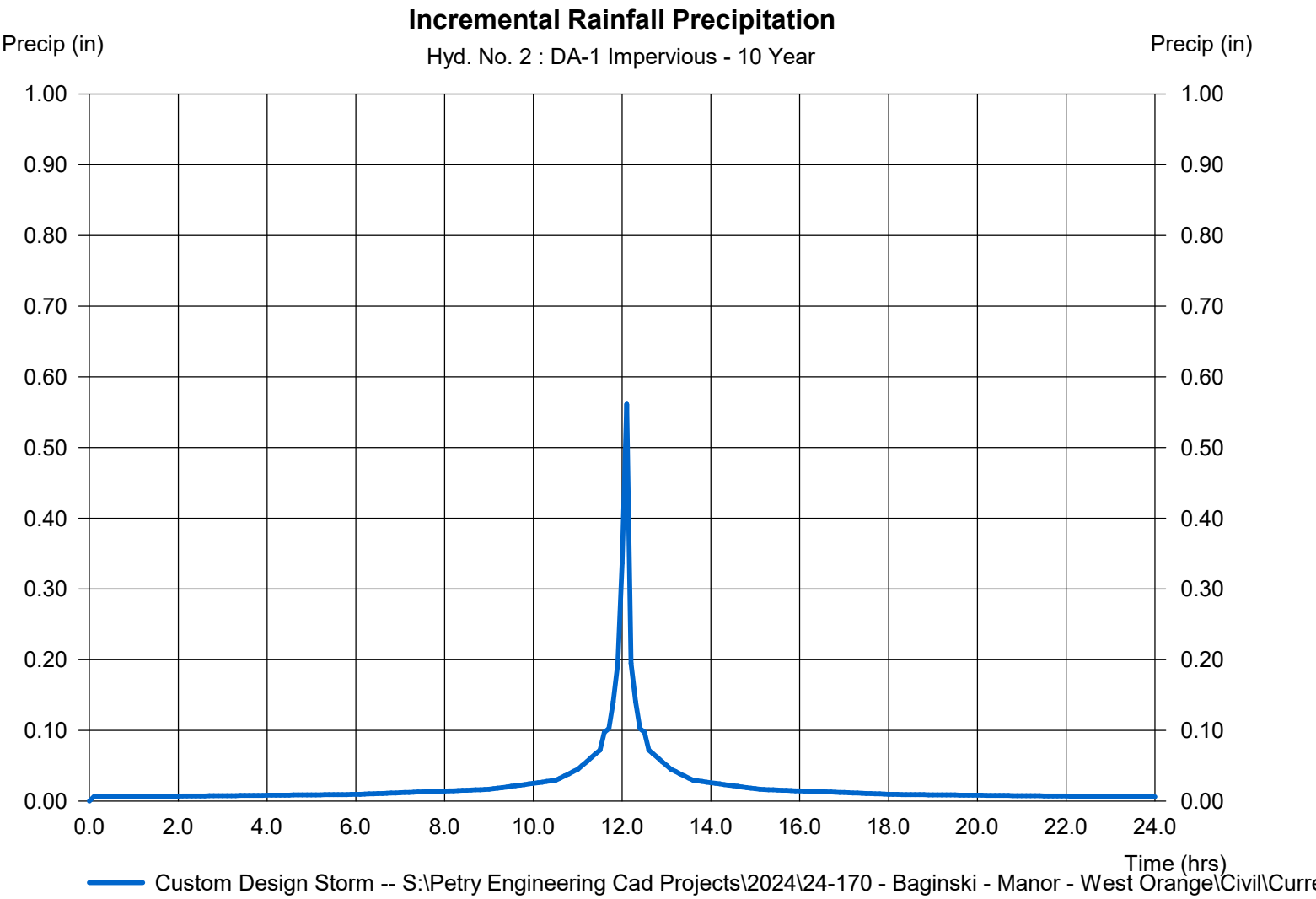
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 2

DA-1 Impervious

Storm Frequency	= 10 yrs	Time interval	= 6 min
Total precip.	= 5.3800 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		



Hydrograph Report

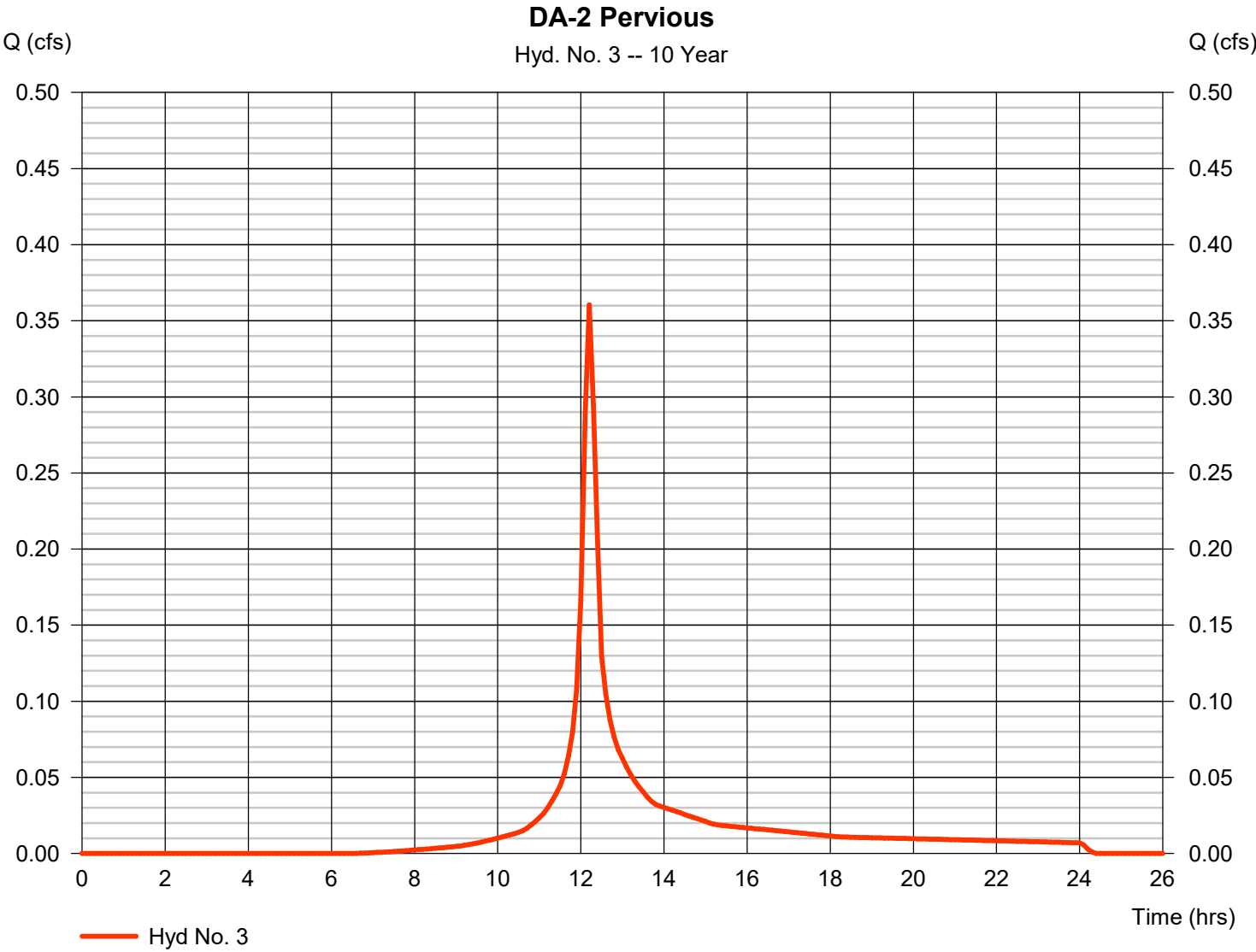
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 3

DA-2 Pervious

Hydrograph type	= SCS Runoff	Peak discharge	= 0.361 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 1,537 cuft
Drainage area	= 0.140 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.80 min
Total precip.	= 5.38 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginask Manor - West Orange		

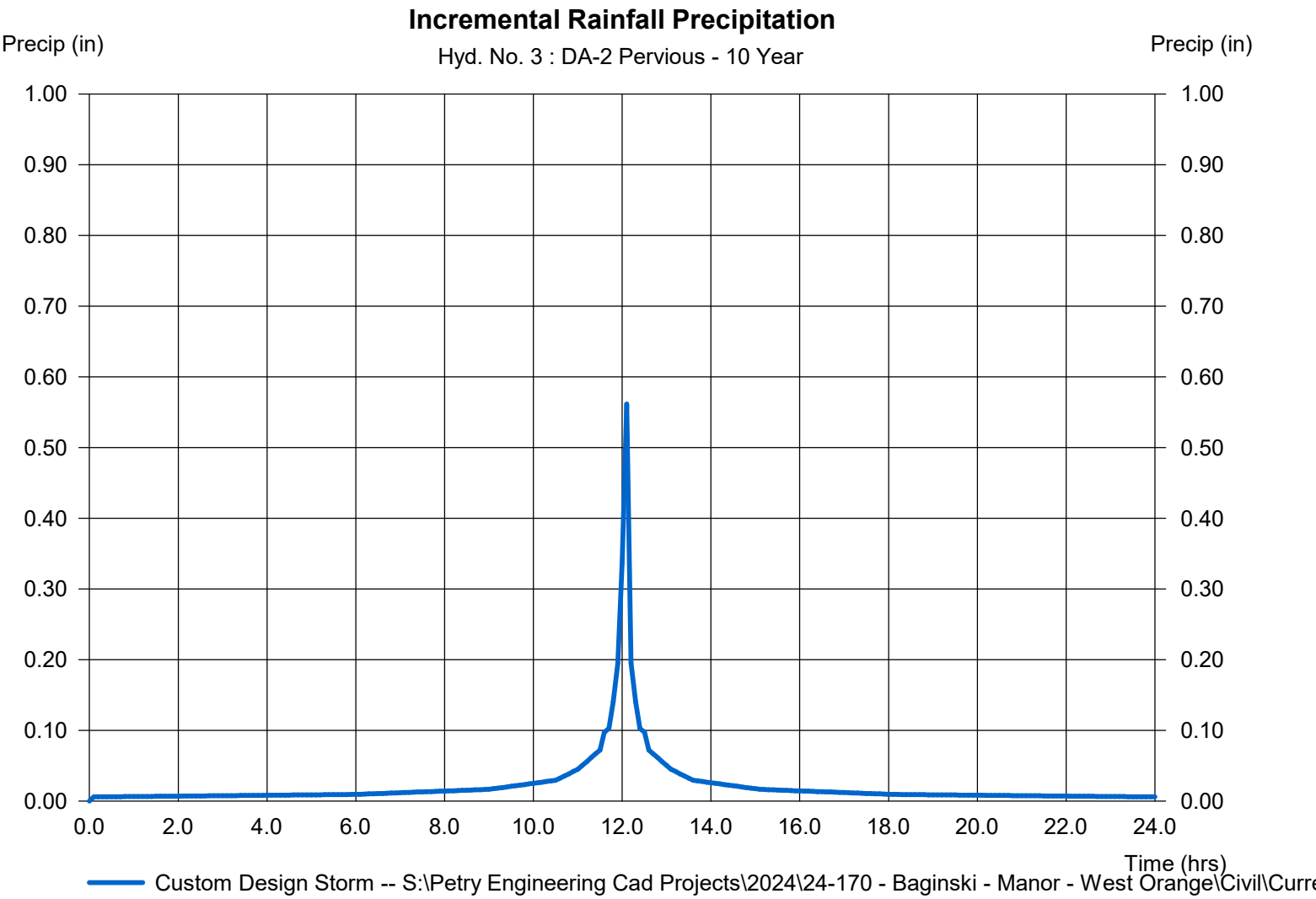


Precipitation Report

Hyd. No. 3

DA-2 Pervious

Storm Frequency	= 10 yrs	Time interval	= 6 min
Total precip.	= 5.3800 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		



Hydrograph Report

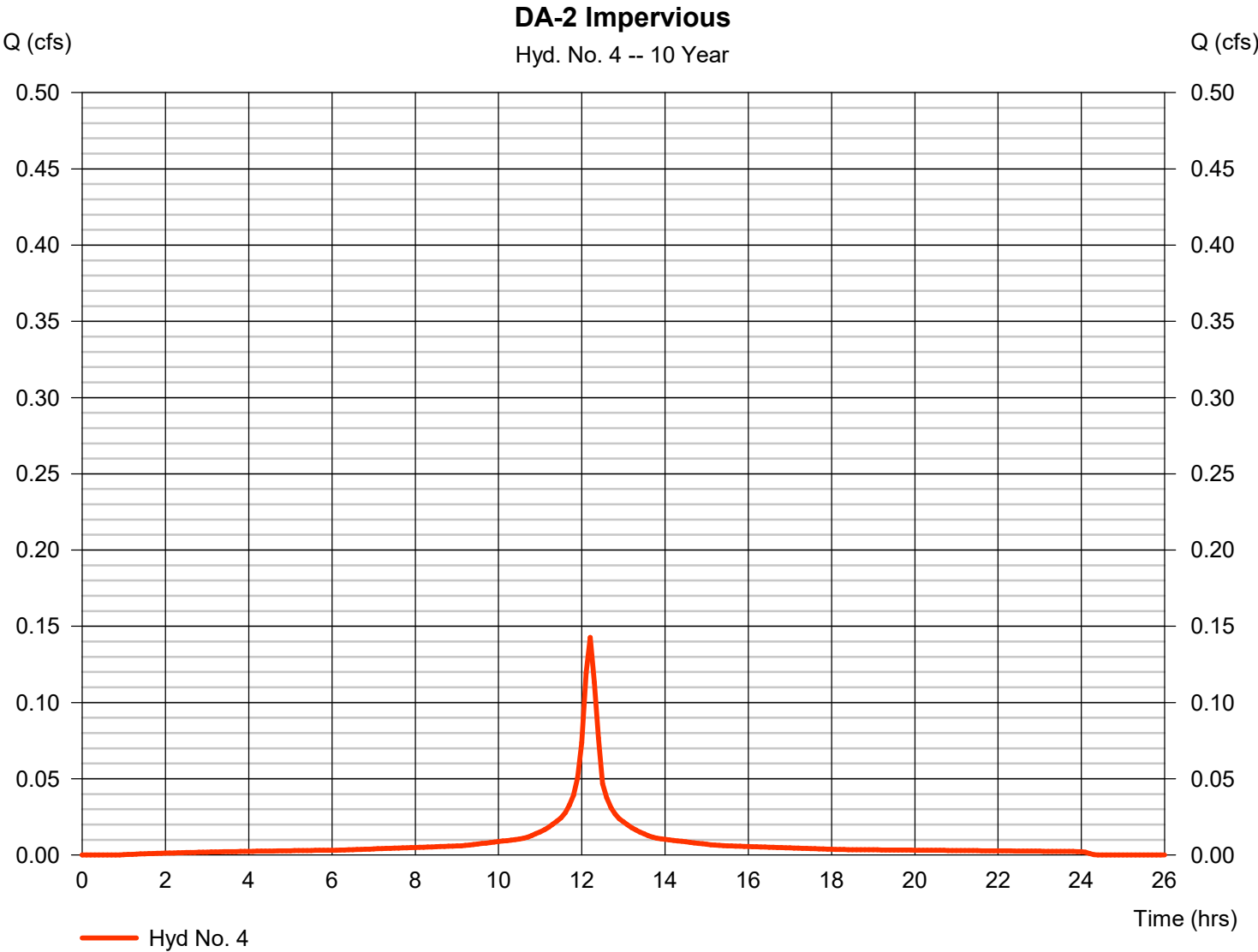
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 4

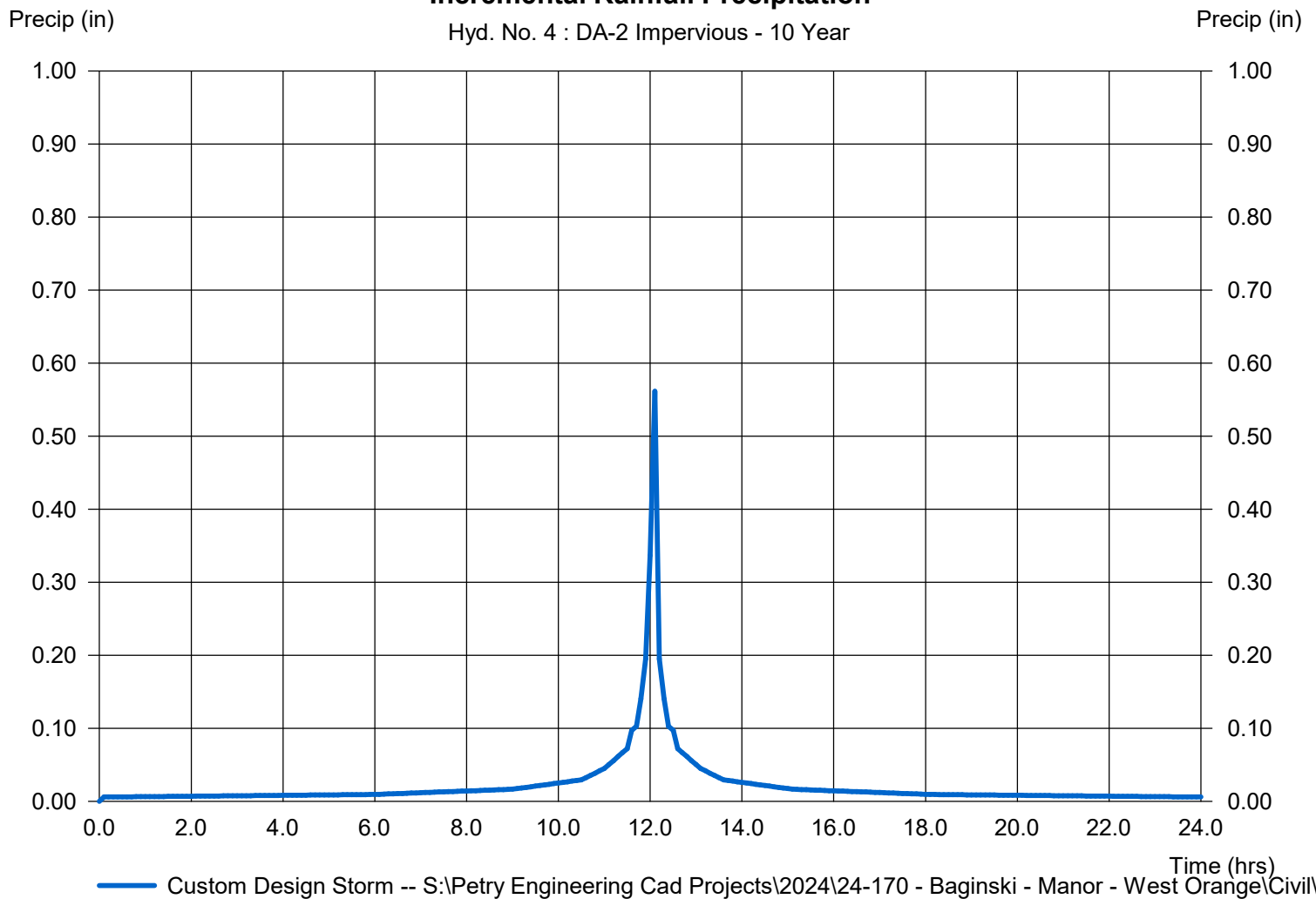
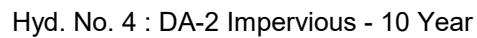
DA-2 Impervious

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.143 cfs
Storm frequency	=	10 yrs	Time to peak	=	12.20 hrs
Time interval	=	6 min	Hyd. volume	=	700 cuft
Drainage area	=	0.040 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	11.80 min
Total precip.	=	5.38 in	Distribution	=	Custom
Storm duration	=	S:\Petty Engineering Cad Projects\2024\24-170 - Baginok - 184 Manor - West Orange\24-170 - Baginok - 184 Manor - West Orange.dwg			



DA-2 Impervious

Storm Frequency = 10 yrs Time interval = 6 min
Total precip. = 5.3800 in Distribution = Custom
Storm duration = S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange



Hydrograph Report

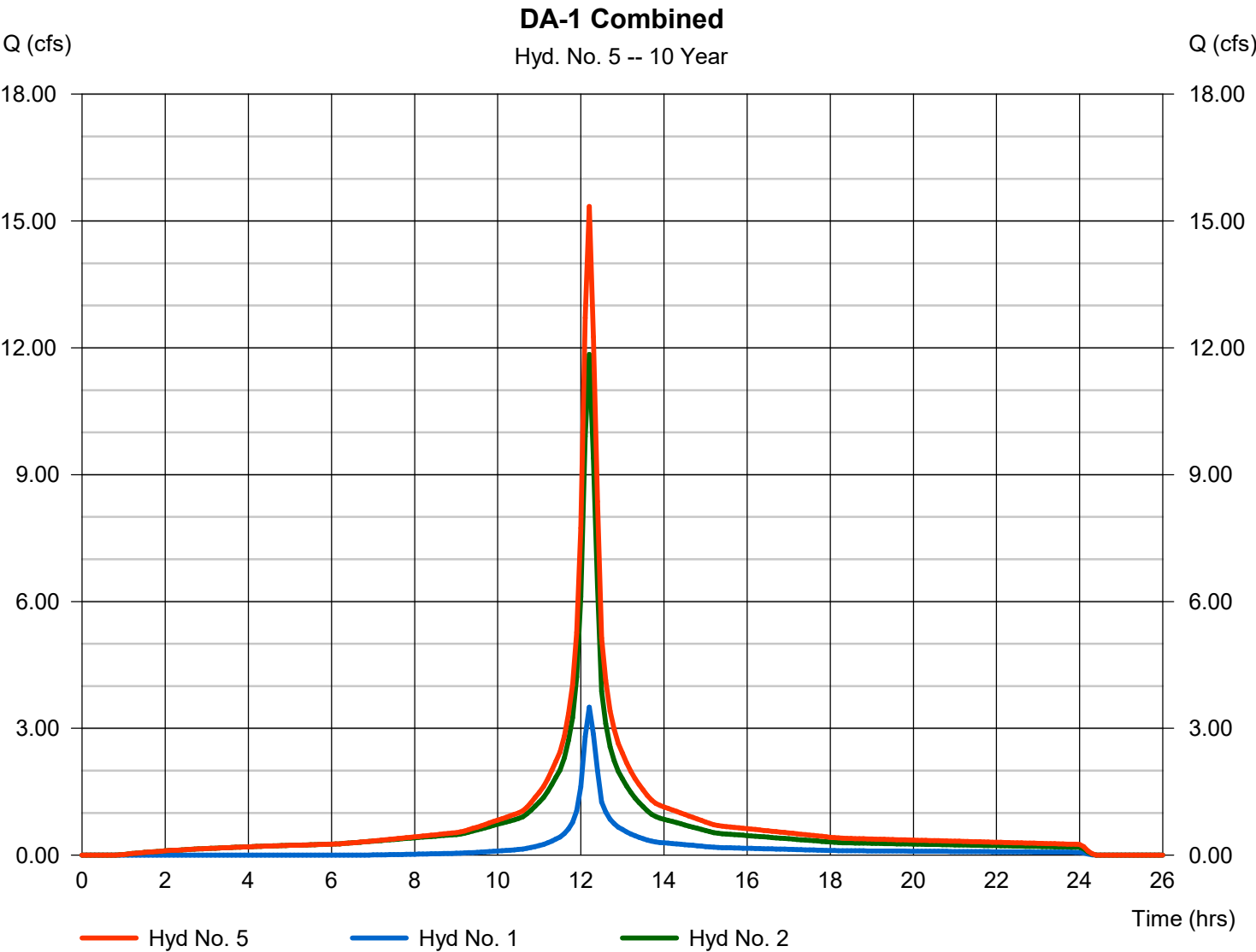
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 5

DA-1 Combined

Hydrograph type	= Combine	Peak discharge	= 15.35 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 73,038 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 4.680 ac

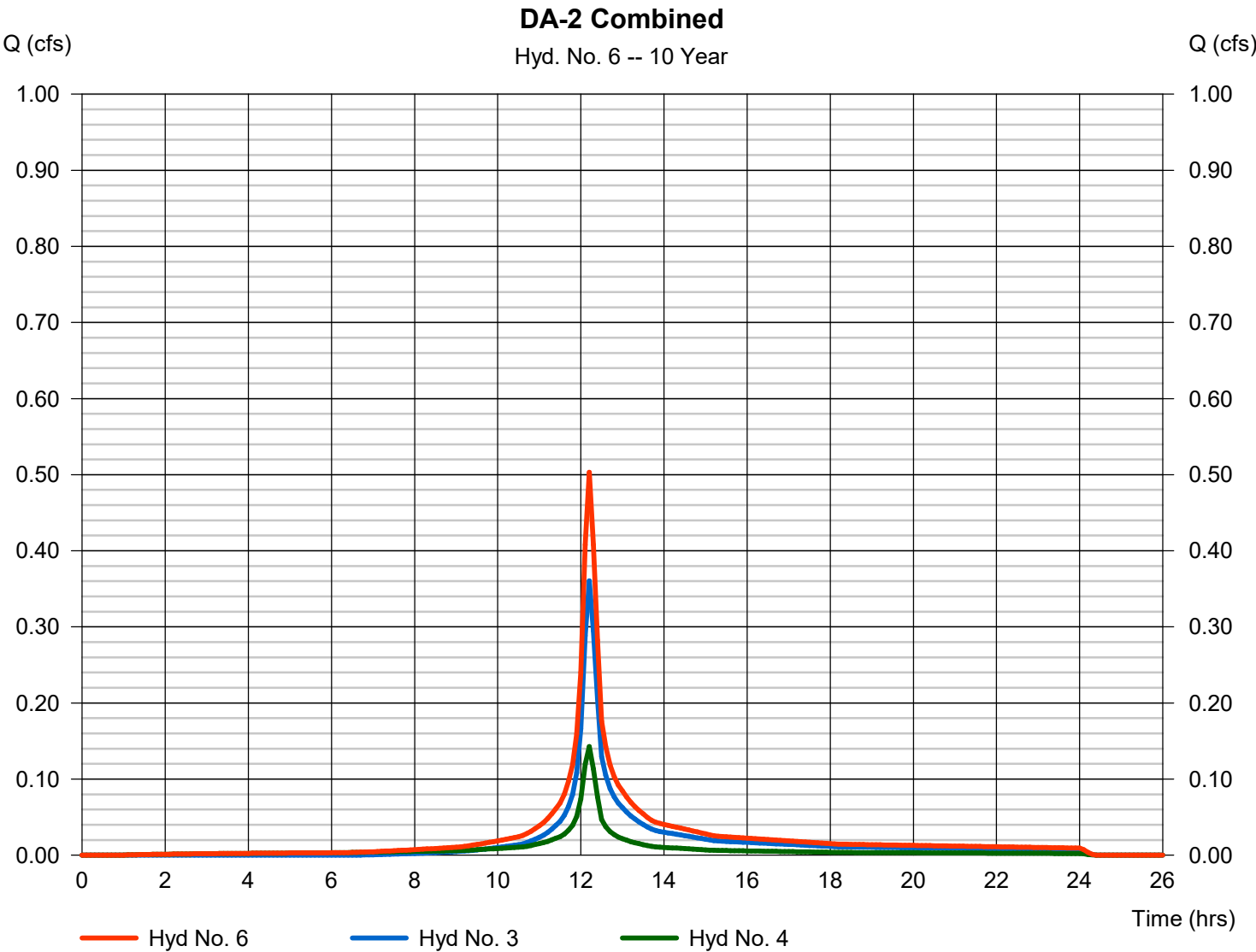


Hydrograph Report

Hyd. No. 6

DA-2 Combined

Hydrograph type	= Combine	Peak discharge	= 0.503 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 2,237 cuft
Inflow hyds.	= 3, 4	Contrib. drain. area	= 0.180 ac



Hydrograph Summary Report

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

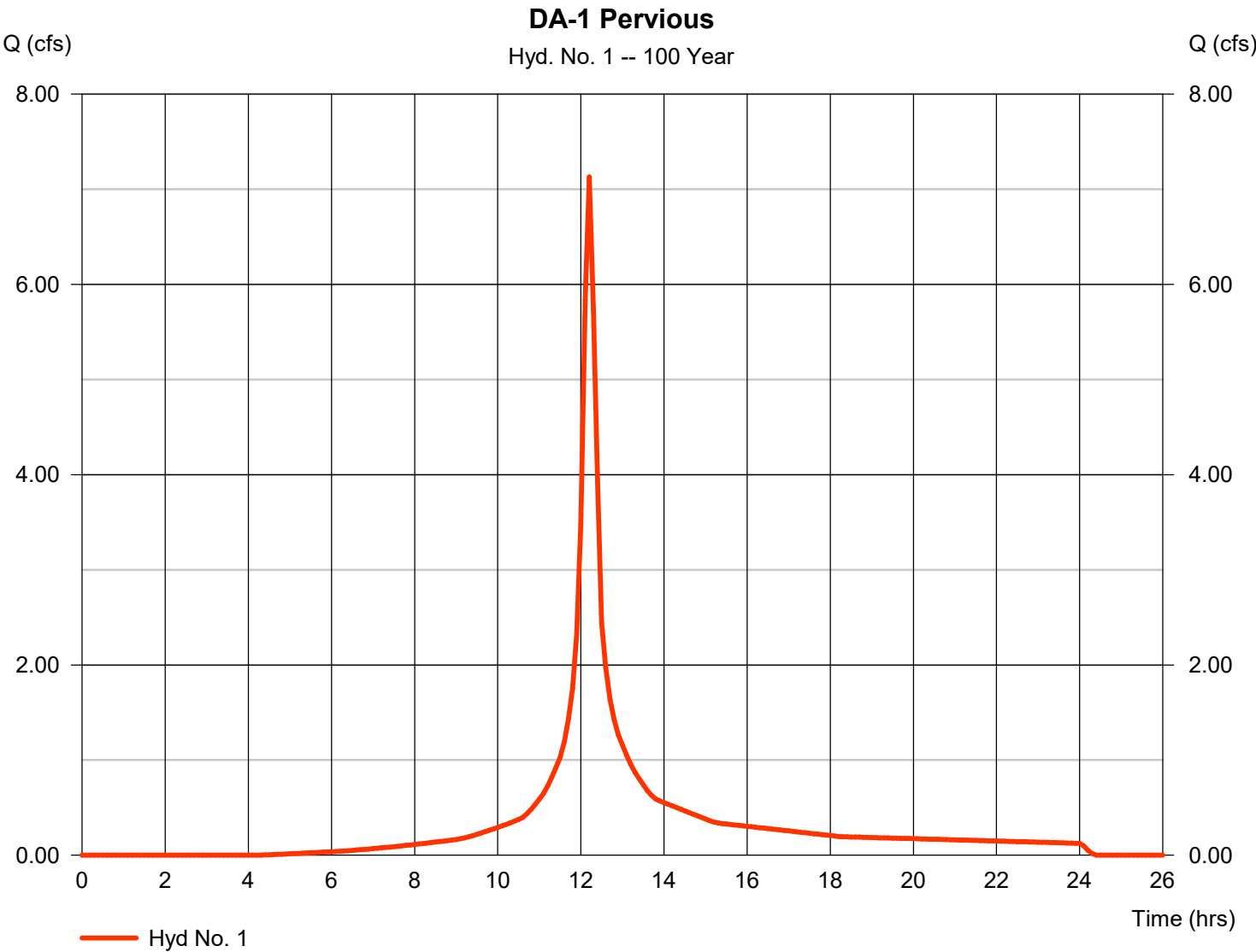
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	7.132	6	732	31,190	-----	-----	-----	DA-1 Pervious
2	SCS Runoff	20.28	6	732	101,003	-----	-----	-----	DA-1 Impervious
3	SCS Runoff	0.734	6	732	3,211	-----	-----	-----	DA-2 Pervious
4	SCS Runoff	0.244	6	732	1,217	-----	-----	-----	DA-2 Impervious
5	Combine	27.41	6	732	132,192	1, 2,	-----	-----	DA-1 Combined
6	Combine	0.978	6	732	4,428	3, 4,	-----	-----	DA-2 Combined
Existing - Current Adjusted.gpw					Return Period: 100 Year			Tuesday, 12 / 23 / 2025	

Hydrograph Report

Hyd. No. 1

DA-1 Pervious

Hydrograph type	= SCS Runoff	Peak discharge	= 7.132 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 31,190 cuft
Drainage area	= 1.360 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.60 min
Total precip.	= 9.18 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024-2025\170 - Baginask Manor - West Orange		

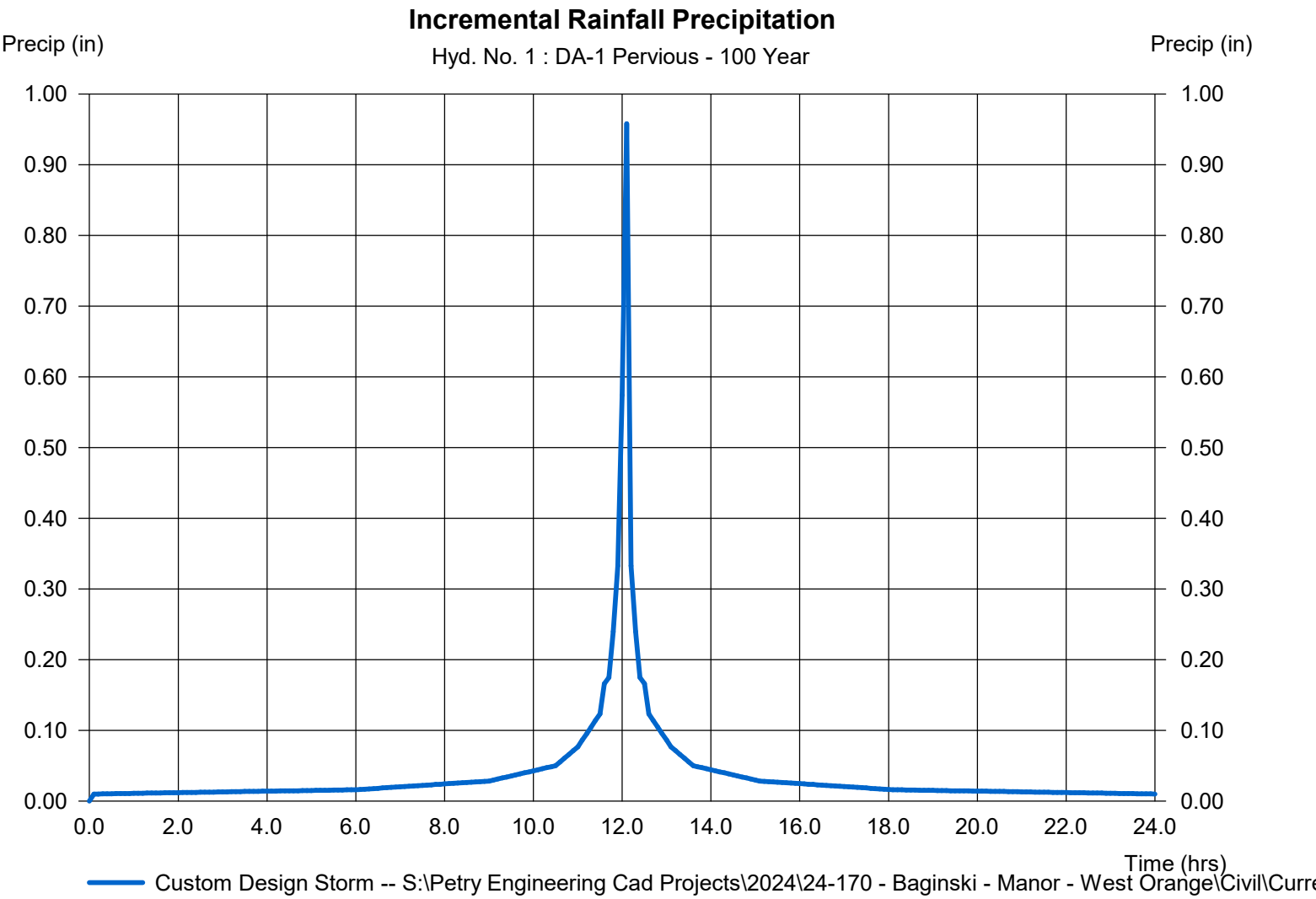


Precipitation Report

Hyd. No. 1

DA-1 Pervious

Storm Frequency	= 100 yrs	Time interval	= 6 min
Total precip.	= 9.1800 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		

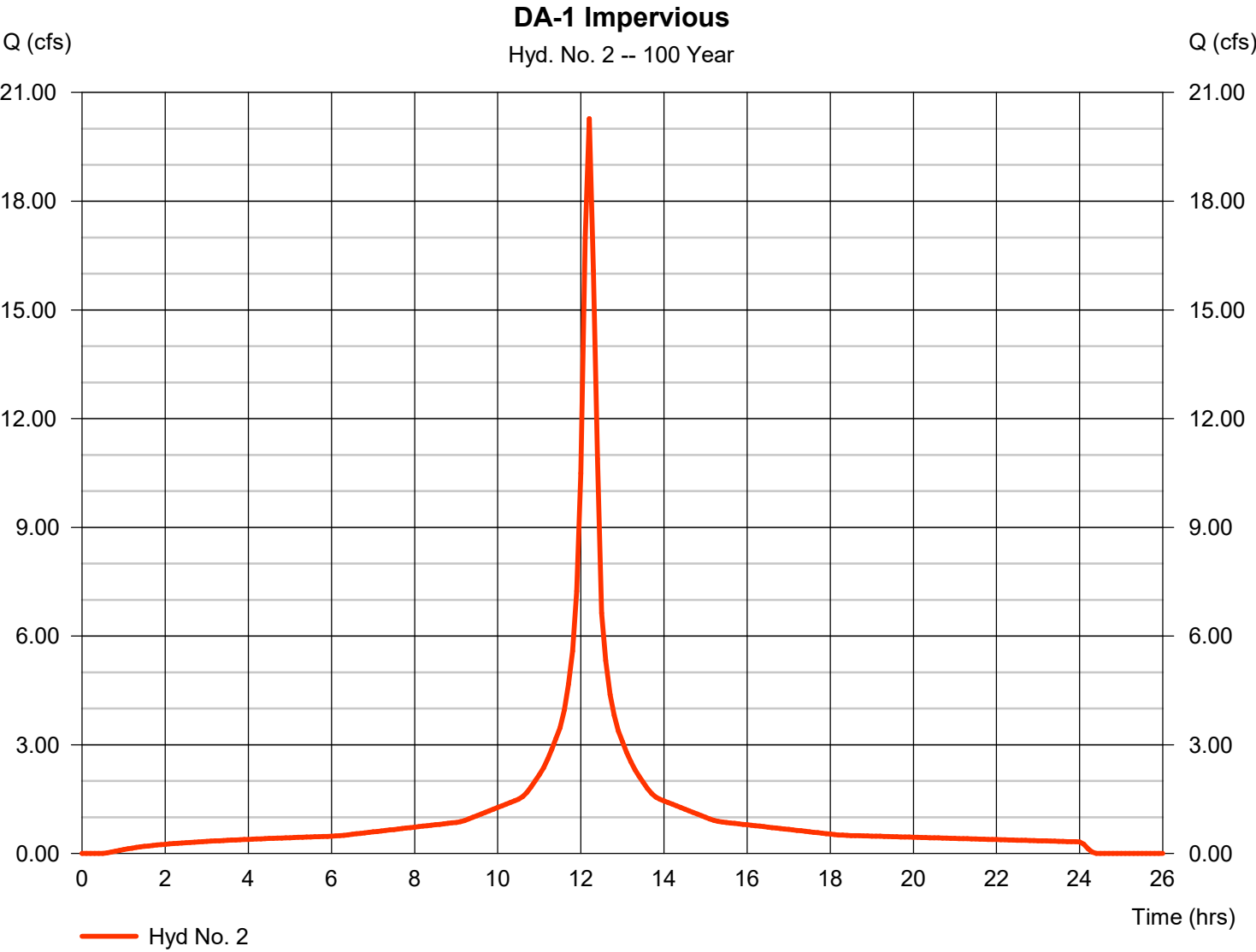


Hydrograph Report

Hyd. No. 2

DA-1 Impervious

Hydrograph type	= SCS Runoff	Peak discharge	= 20.28 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 101,003 cuft
Drainage area	= 3.320 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.60 min
Total precip.	= 9.18 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024-2025\170 - Bagin's Manor - West Orange		

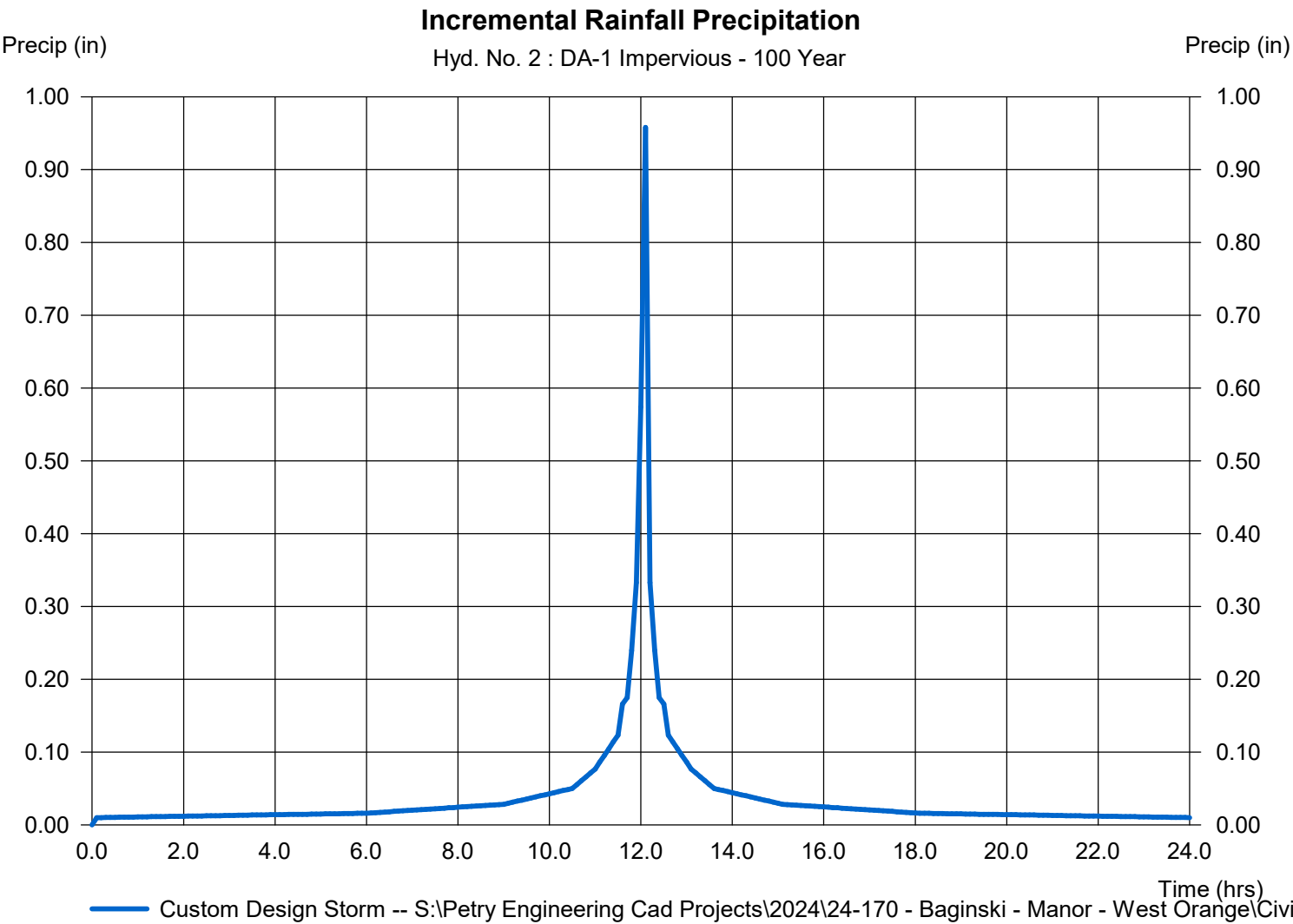


Precipitation Report

Hyd. No. 2

DA-1 Impervious

Storm Frequency	= 100 yrs	Time interval	= 6 min
Total precip.	= 9.1800 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		



Hydrograph Report

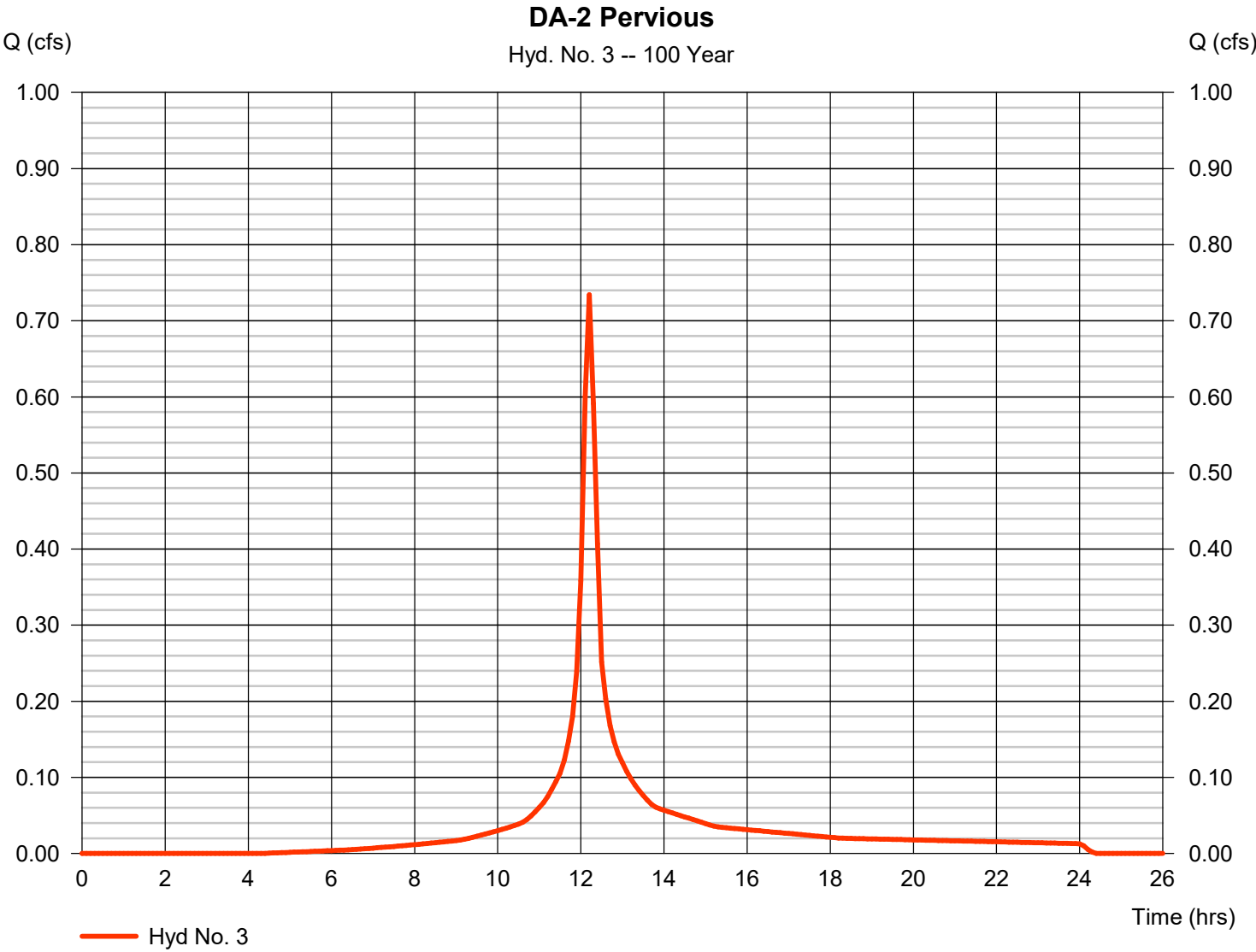
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 3

DA-2 Pervious

Hydrograph type	= SCS Runoff	Peak discharge	= 0.734 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 3,211 cuft
Drainage area	= 0.140 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.80 min
Total precip.	= 9.18 in	Distribution	= Custom
Storm duration	= S:\Petty Engineering Cad Projects\2024\24-170 - Baginck - 184 Manor - West Orange\Storm 24-170 - Baginck - 184 Manor - West Orange		

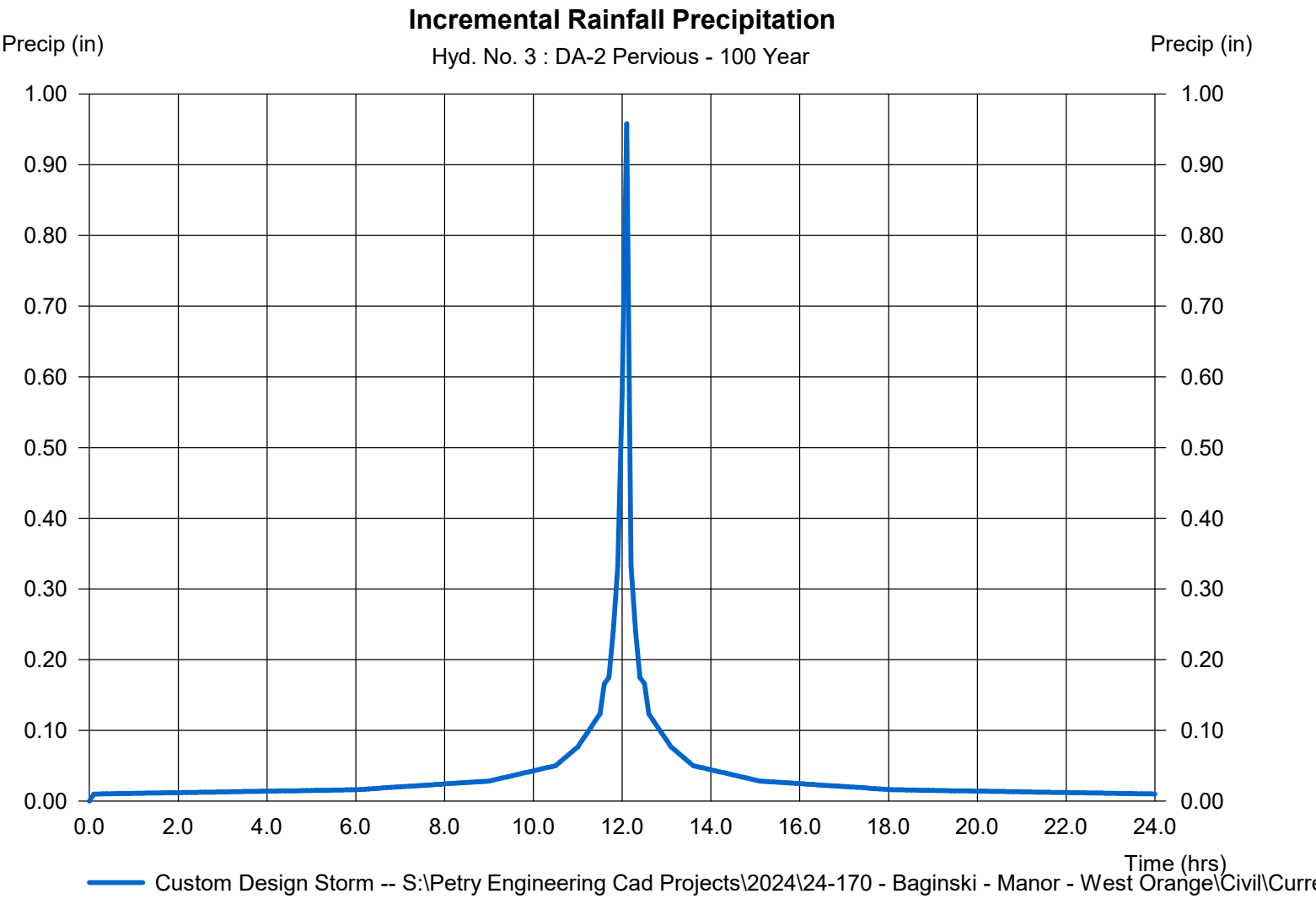


Precipitation Report

Hyd. No. 3

DA-2 Pervious

Storm Frequency	= 100 yrs	Time interval	= 6 min
Total precip.	= 9.1800 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		



Hydrograph Report

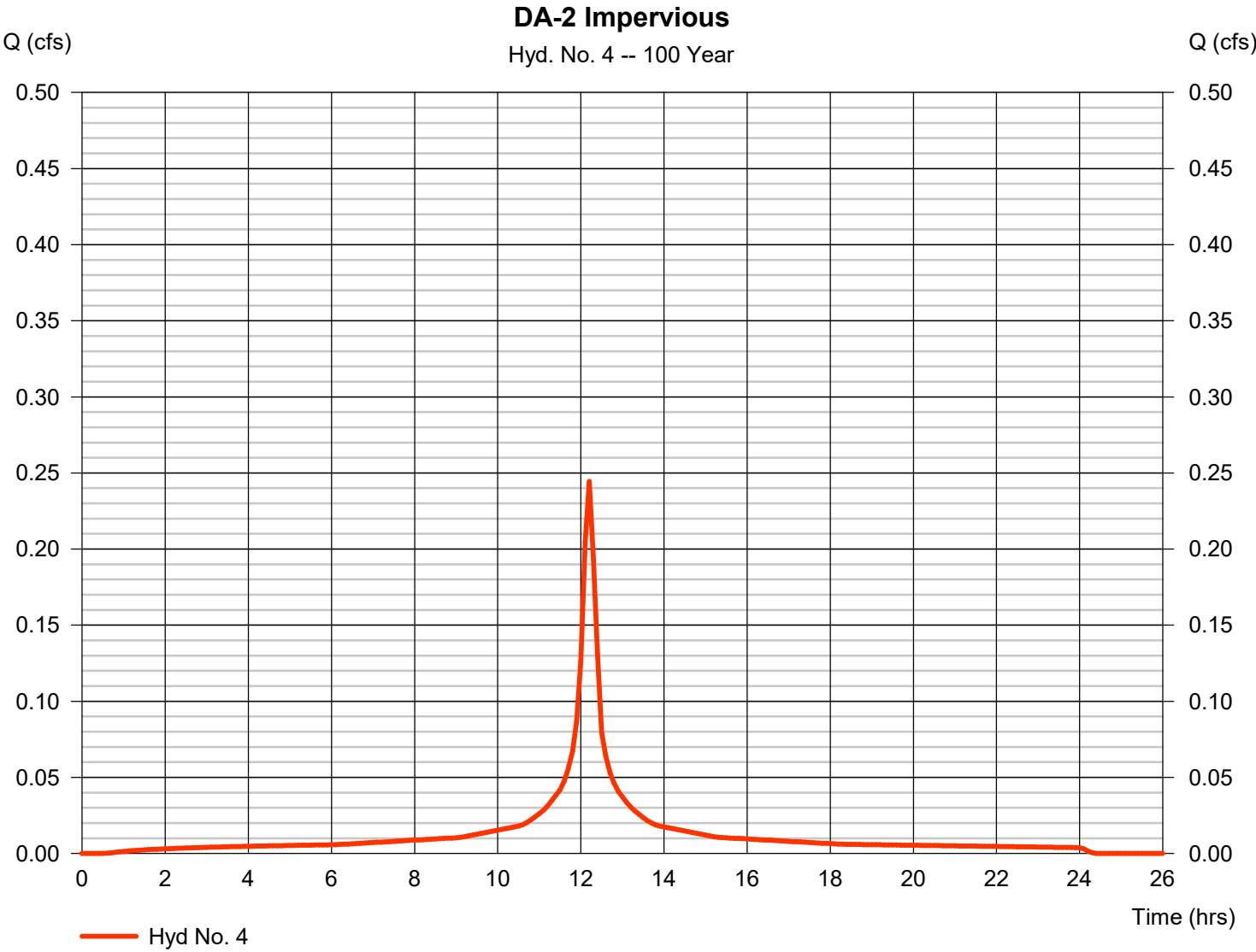
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 4

DA-2 Impervious

Hydrograph type	= SCS Runoff	Peak discharge	= 0.244 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 1,217 cuft
Drainage area	= 0.040 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.80 min
Total precip.	= 9.18 in	Distribution	= Custom
Storm duration	= S:\Petty Engineering Cad Projects\2024\24-170 - Baginck - 184 Manor - West Orange\Shape 24-170 - Baginck - 184 Manor - West Orange.dwg		

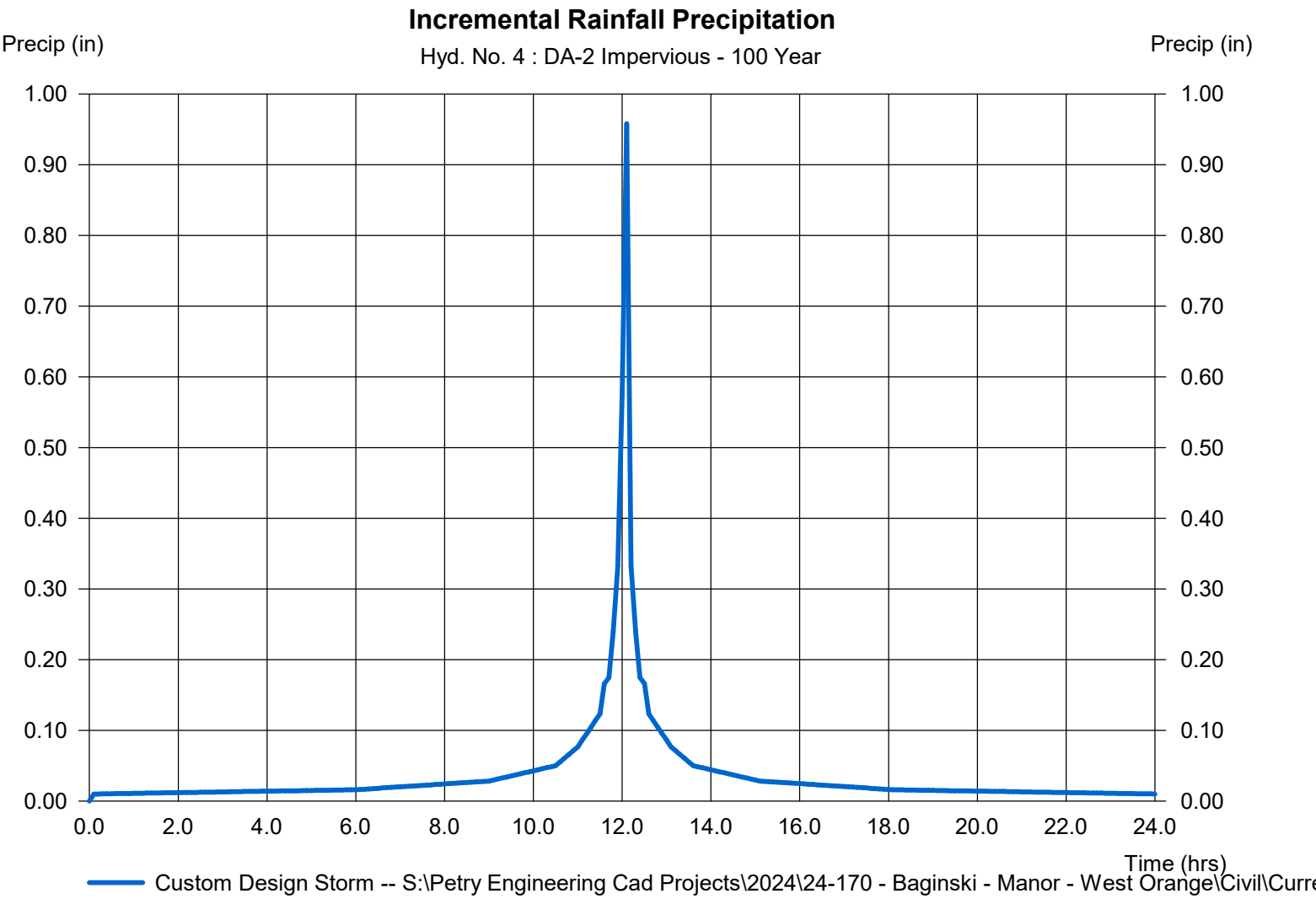


Precipitation Report

Hyd. No. 4

DA-2 Impervious

Storm Frequency	= 100 yrs	Time interval	= 6 min
Total precip.	= 9.1800 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		

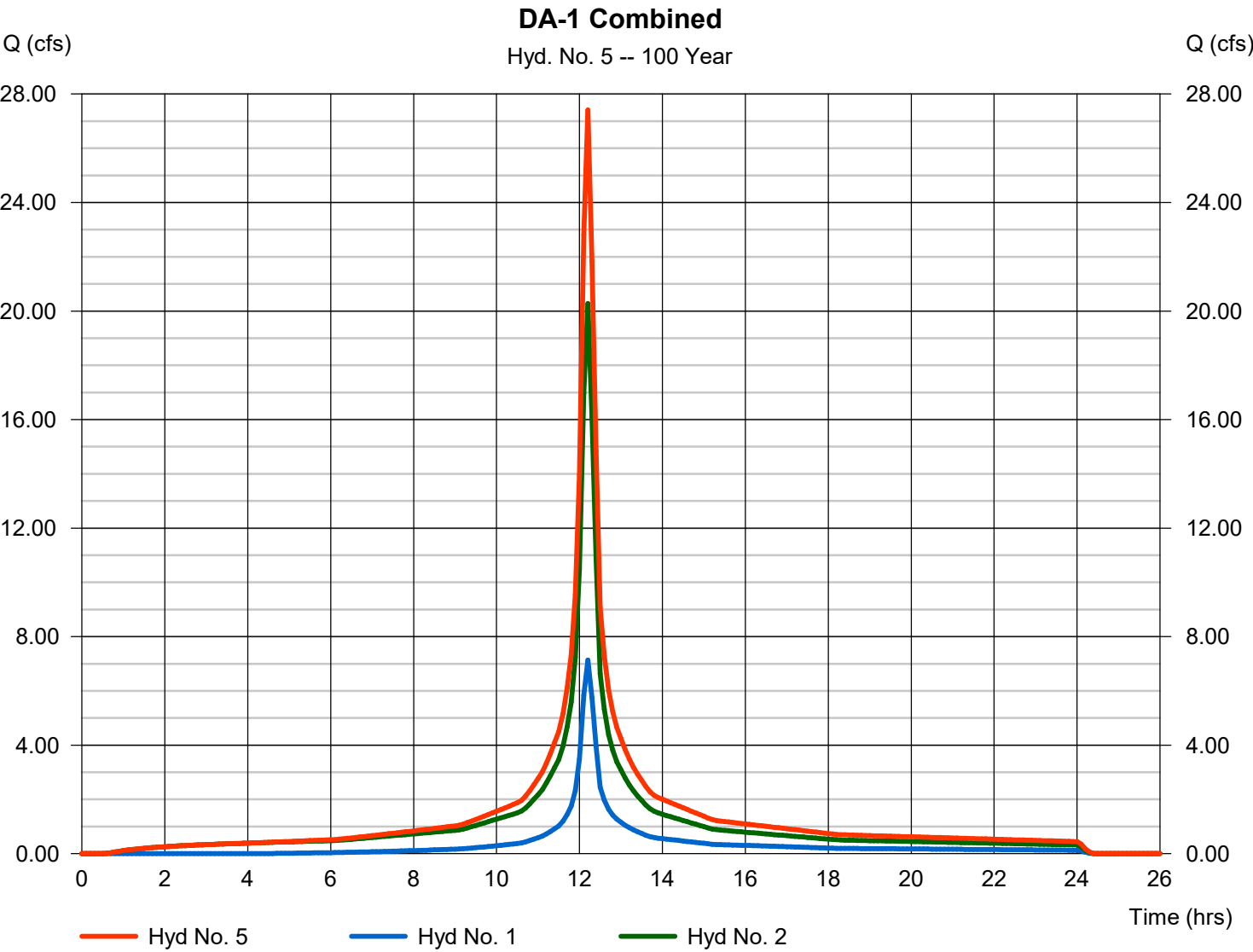


Hydrograph Report

Hyd. No. 5

DA-1 Combined

Hydrograph type	= Combine	Peak discharge	= 27.41 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 132,192 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 4.680 ac



Hydrograph Report

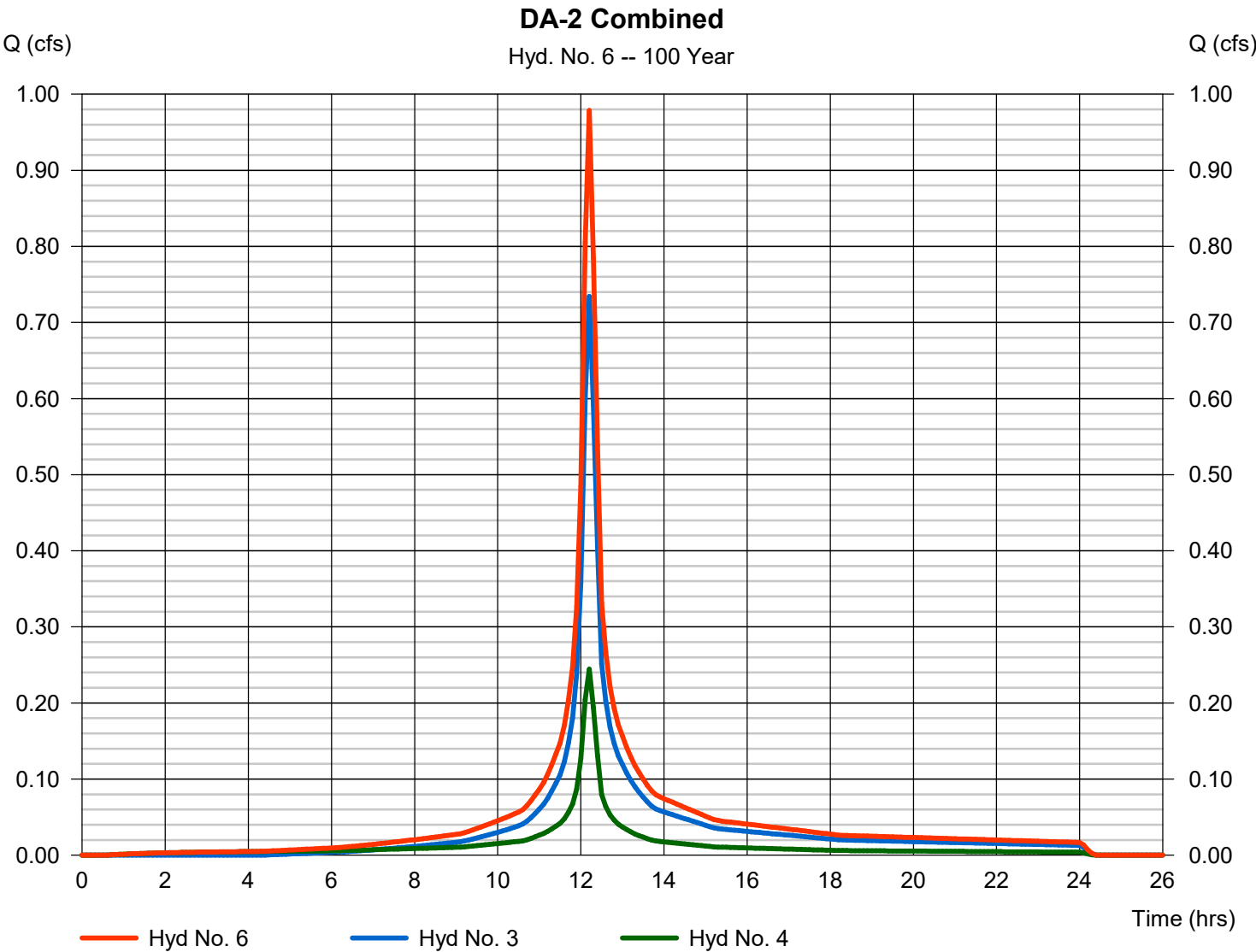
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 6

DA-2 Combined

Hydrograph type	= Combine	Peak discharge	= 0.978 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 4,428 cuft
Inflow hyds.	= 3, 4	Contrib. drain. area	= 0.180 ac



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	-----
2	69.8703	13.1000	0.8658	-----
3	0.0000	0.0000	0.0000	-----
5	79.2597	14.6000	0.8369	-----
10	88.2351	15.5000	0.8279	-----
25	102.6072	16.5000	0.8217	-----
50	114.8193	17.2000	0.8199	-----
100	127.1596	17.8000	0.8186	-----

File name: SampleFHA.idf

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	5.69	4.61	3.89	3.38	2.99	2.69	2.44	2.24	2.07	1.93	1.81	1.70
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.57	5.43	4.65	4.08	3.65	3.30	3.02	2.79	2.59	2.42	2.27	2.15
10	7.24	6.04	5.21	4.59	4.12	3.74	3.43	3.17	2.95	2.77	2.60	2.46
25	8.25	6.95	6.03	5.34	4.80	4.38	4.02	3.73	3.48	3.26	3.07	2.91
50	9.04	7.65	6.66	5.92	5.34	4.87	4.49	4.16	3.88	3.65	3.44	3.25
100	9.83	8.36	7.30	6.50	5.87	5.36	4.94	4.59	4.29	4.03	3.80	3.60

Tc = time in minutes. Values may exceed 60.

Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Current\Stormwater\Essex County - Current Adjusted.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	3.47	0.00	0.00	5.38	0.00	0.00	9.18

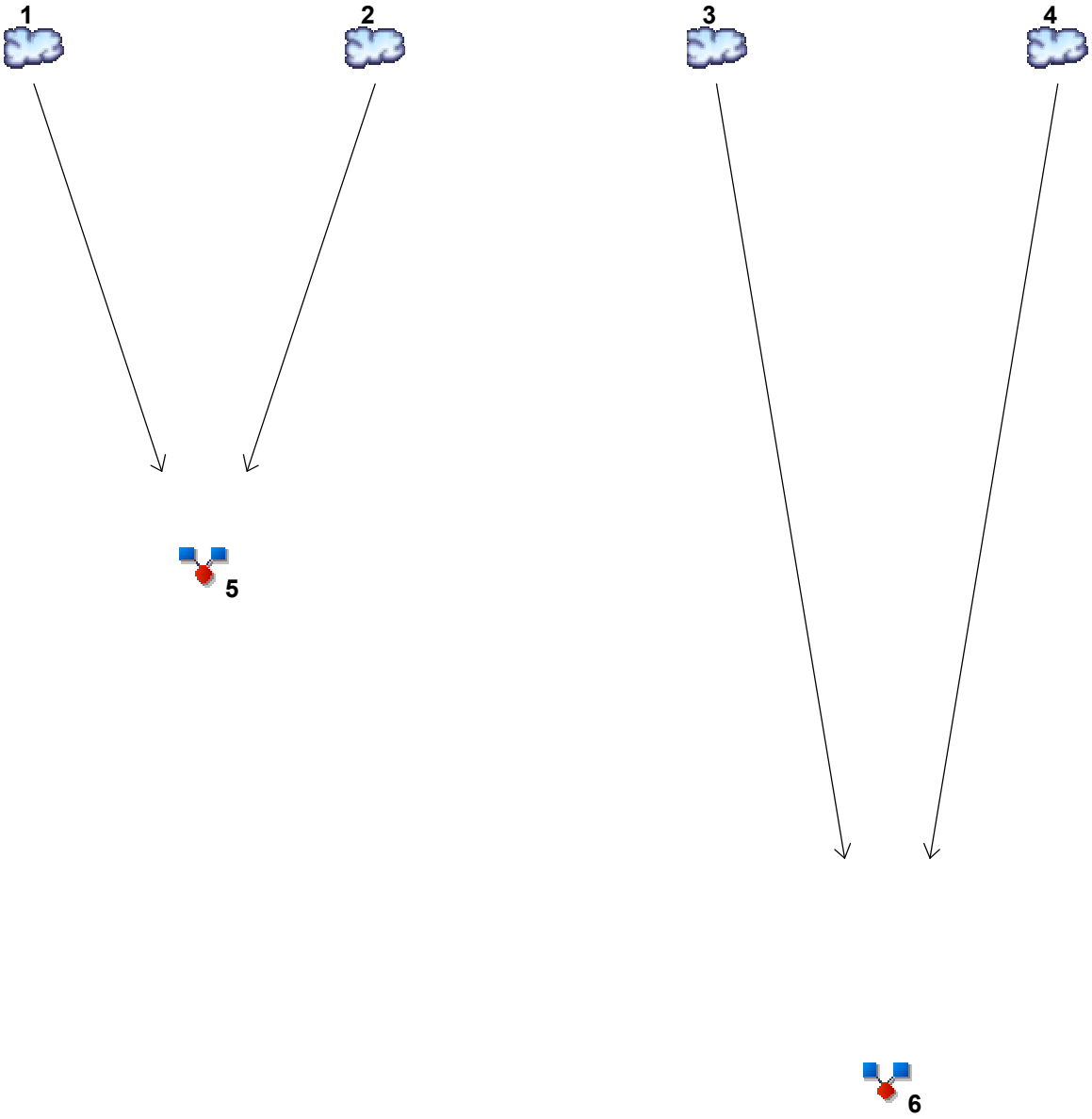
**EXISTING CONDITIONS
FUTURE PROJECTED
HYDROGRAPHS**



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Watershed Model Schematic

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



Legend

Hyd.	Origin	Description
1	SCS Runoff	DA-1 Pervious
2	SCS Runoff	DA-1 Impervious
3	SCS Runoff	DA-2 Pervious
4	SCS Runoff	DA-2 Impervious
5	Combine	DA-1 Combined
6	Combine	DA-2 Combined

Hydrograph Summary Report

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

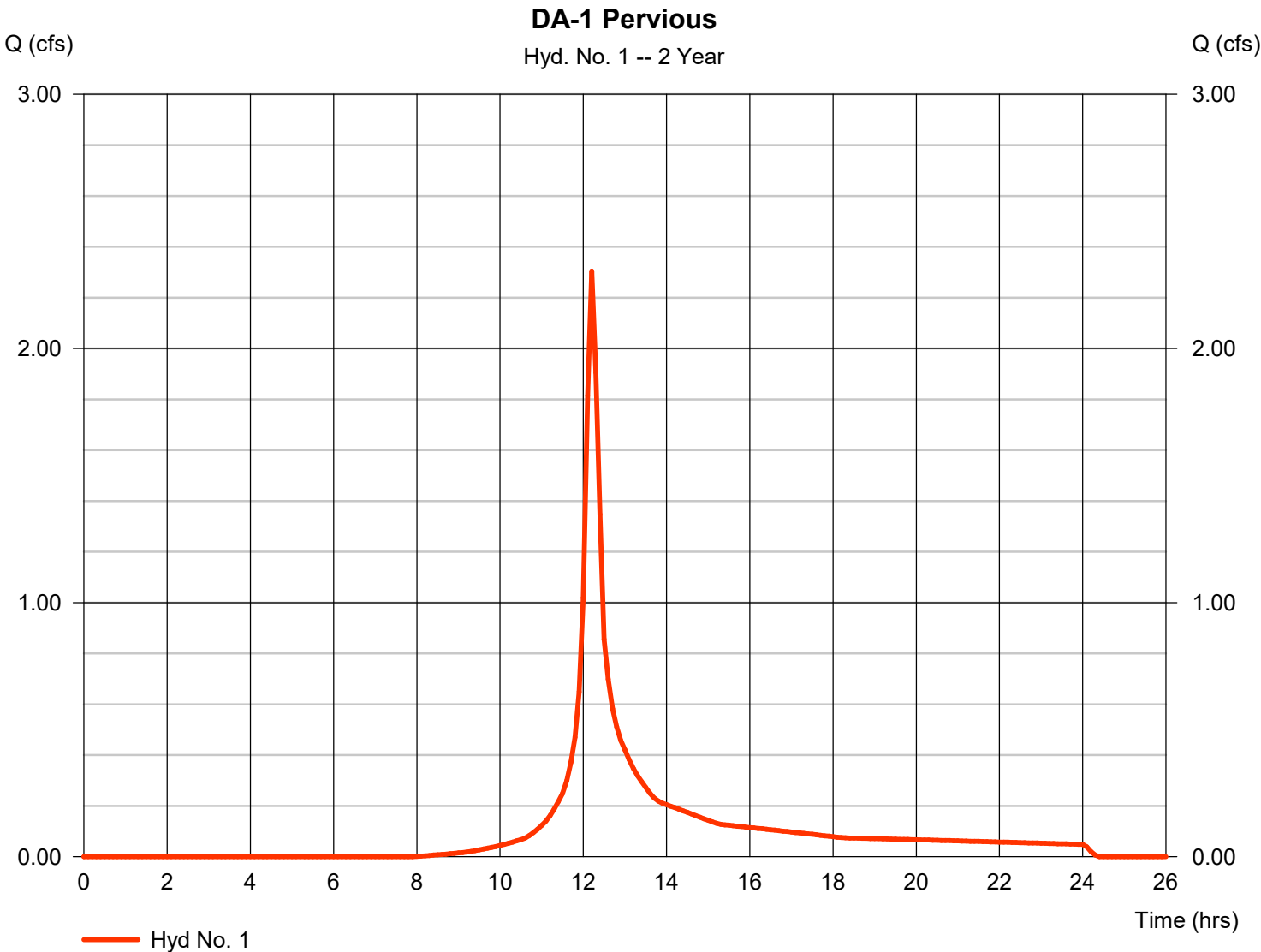
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	2.304	6	732	9,795	-----	-----	-----	DA-1 Pervious
2	SCS Runoff	8.974	6	732	43,554	-----	-----	-----	DA-1 Impervious
3	SCS Runoff	0.237	6	732	1,008	-----	-----	-----	DA-2 Pervious
4	SCS Runoff	0.108	6	732	525	-----	-----	-----	DA-2 Impervious
5	Combine	11.28	6	732	53,349	1, 2,	-----	-----	DA-1 Combined
6	Combine	0.345	6	732	1,533	3, 4,	-----	-----	DA-2 Combined
Existing - Future Projected.gpw					Return Period: 2 Year			Tuesday, 12 / 23 / 2025	

Hydrograph Report

Hyd. No. 1

DA-1 Pervious

Hydrograph type	= SCS Runoff	Peak discharge	= 2.304 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 9,795 cuft
Drainage area	= 1.360 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.60 min
Total precip.	= 4.09 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginns Manor - West Orange		

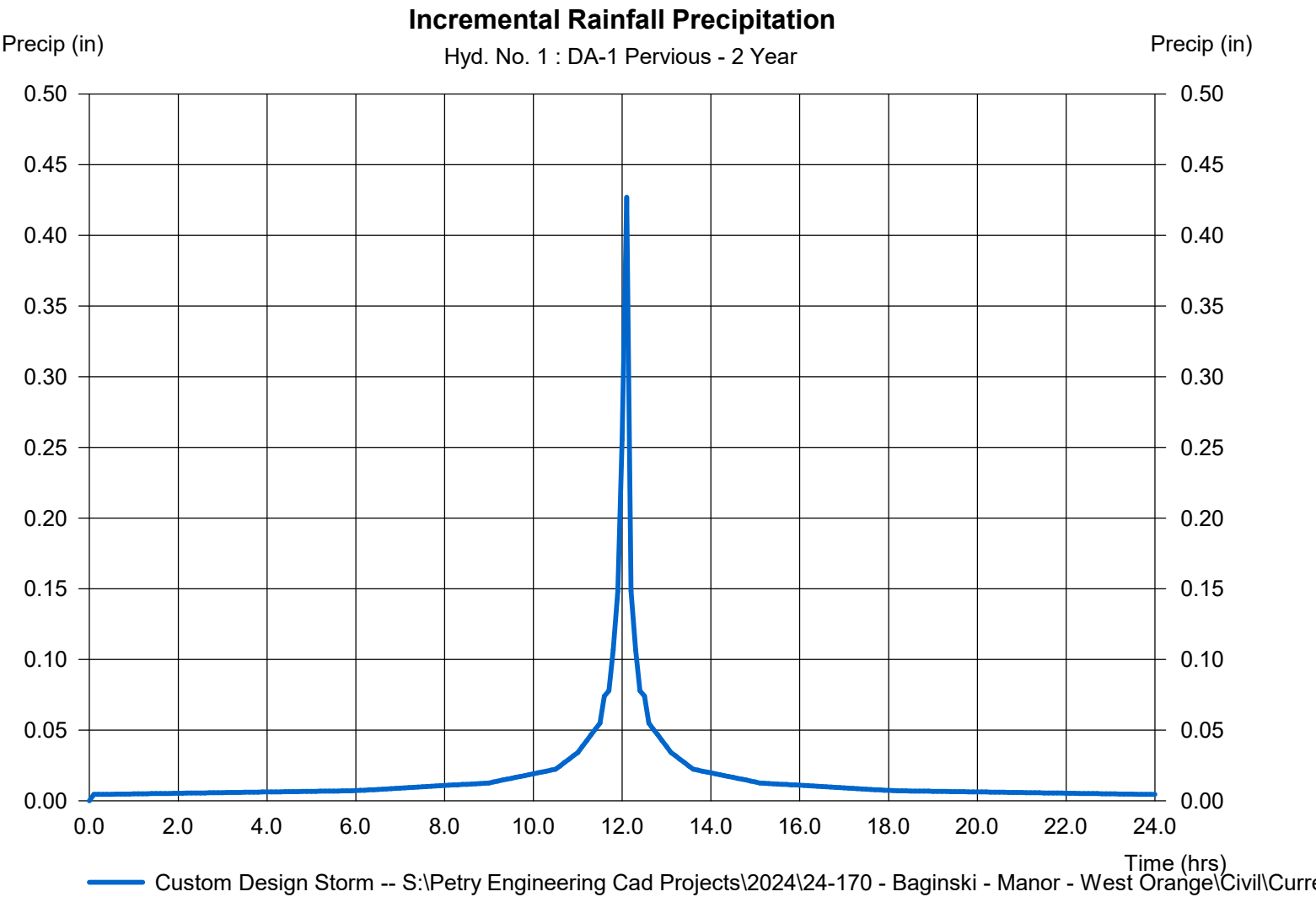


Precipitation Report

Hyd. No. 1

DA-1 Pervious

Storm Frequency	= 2 yrs	Time interval	= 6 min
Total precip.	= 4.0900 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		

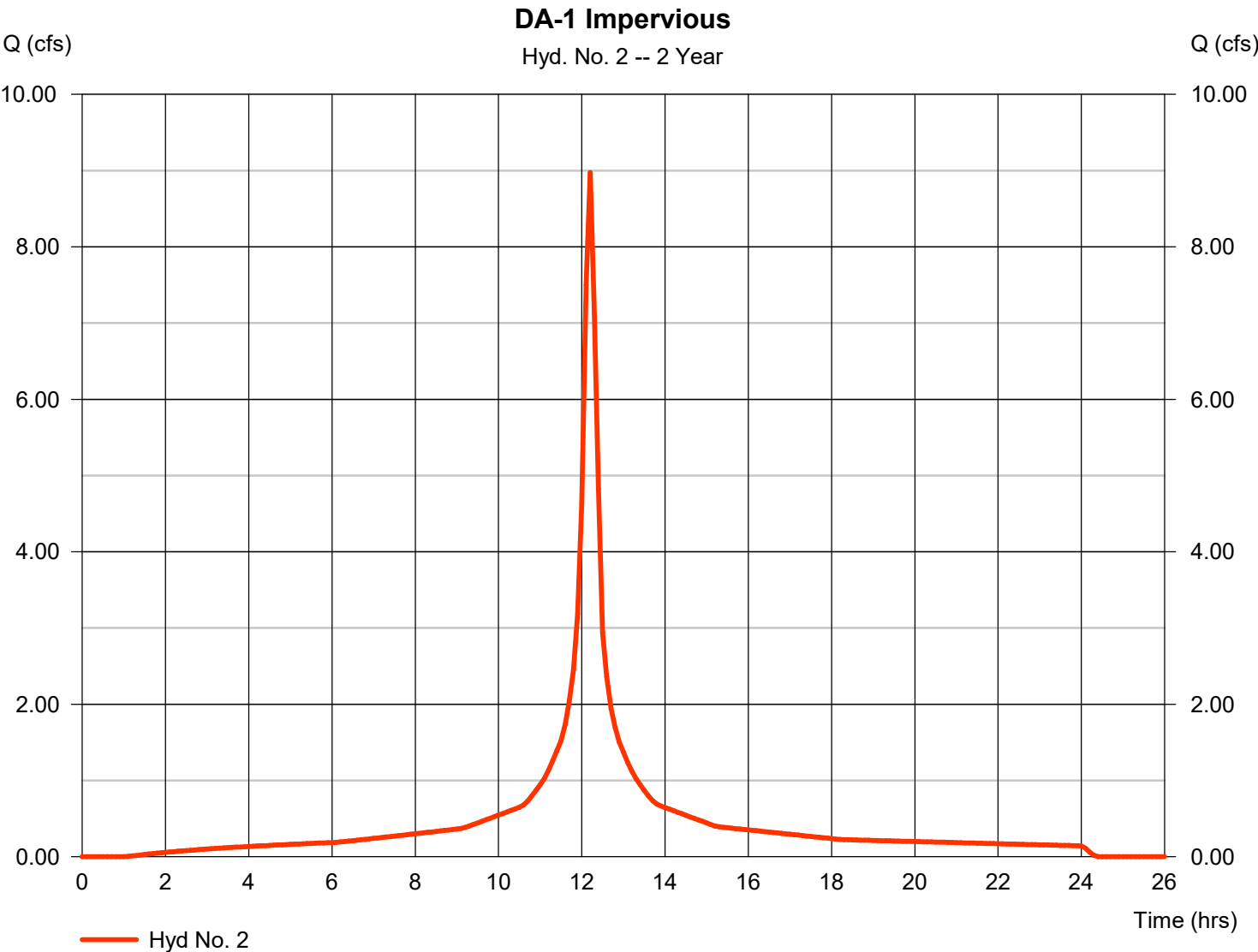


Hydrograph Report

Hyd. No. 2

DA-1 Impervious

Hydrograph type	= SCS Runoff	Peak discharge	= 8.974 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 43,554 cuft
Drainage area	= 3.320 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.60 min
Total precip.	= 4.09 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Bagin's Manor - West Orange		

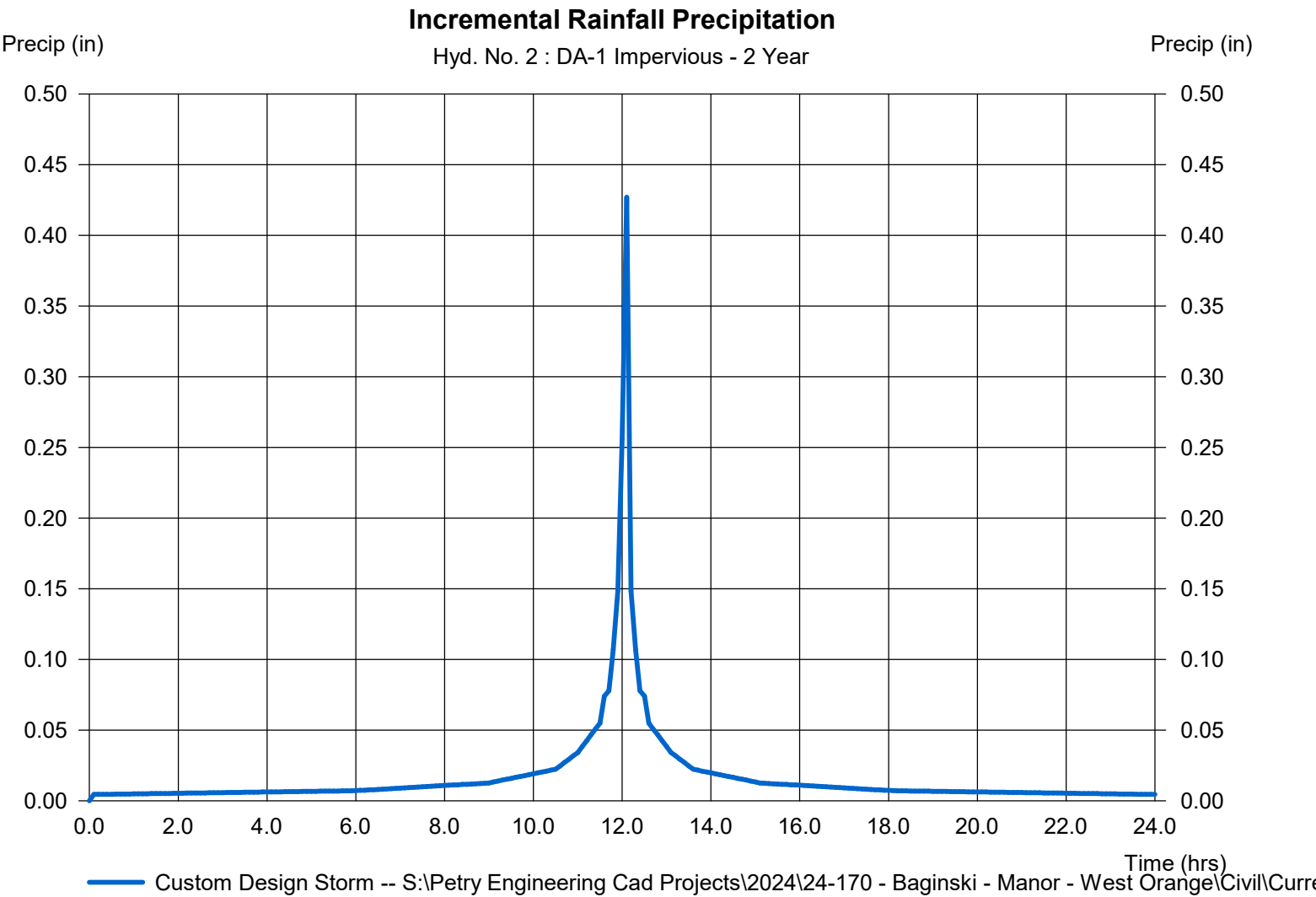


Precipitation Report

Hyd. No. 2

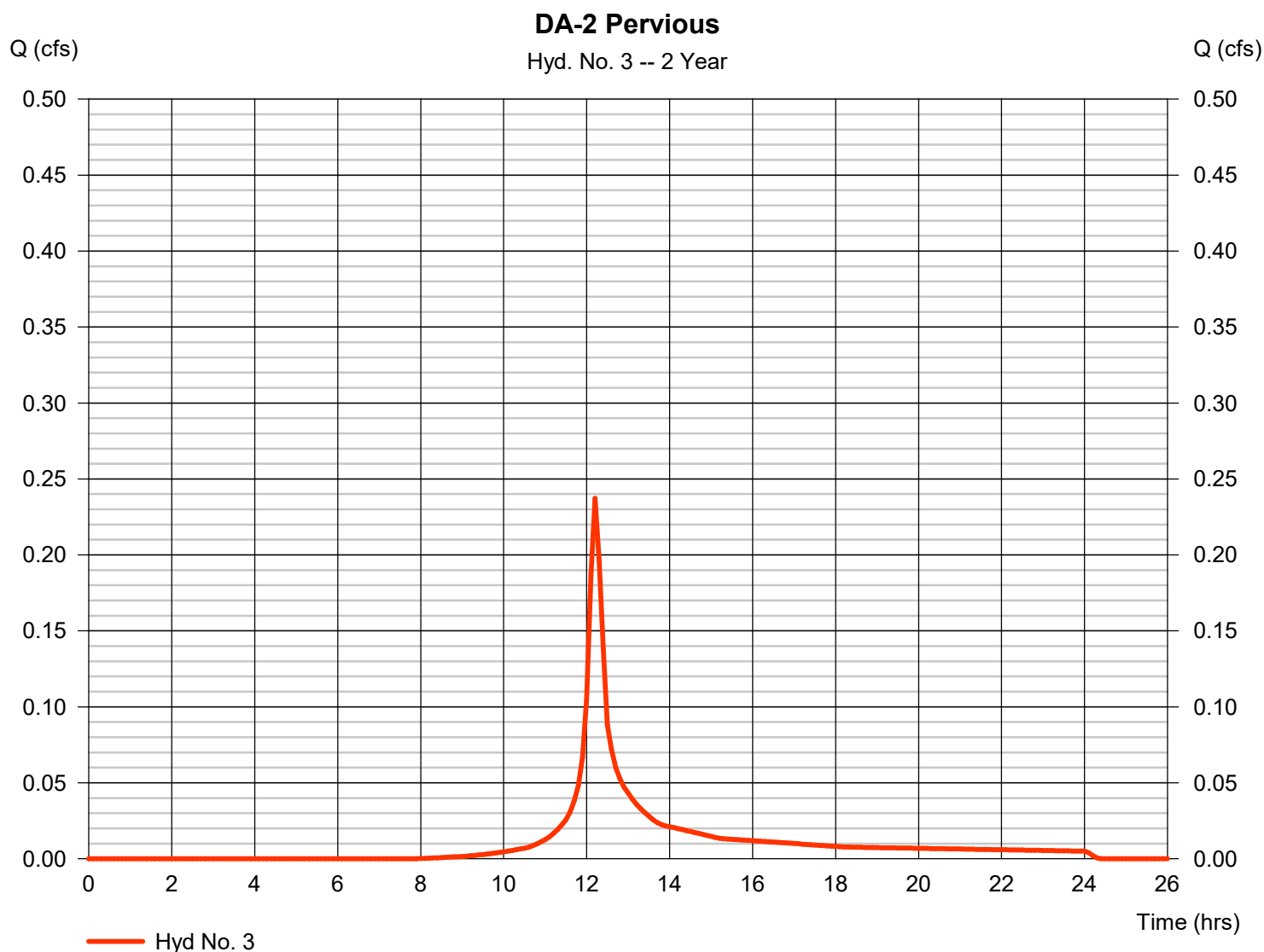
DA-1 Impervious

Storm Frequency	= 2 yrs	Time interval	= 6 min
Total precip.	= 4.0900 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		



Hyd. No. 3

Hydrograph type	= SCS Runoff	Peak discharge	= 0.237 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 1,008 cuft
Drainage area	= 0.140 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.80 min
Total precip.	= 4.09 in	Distribution	= Custom
Storm duration	= 5 hrs		

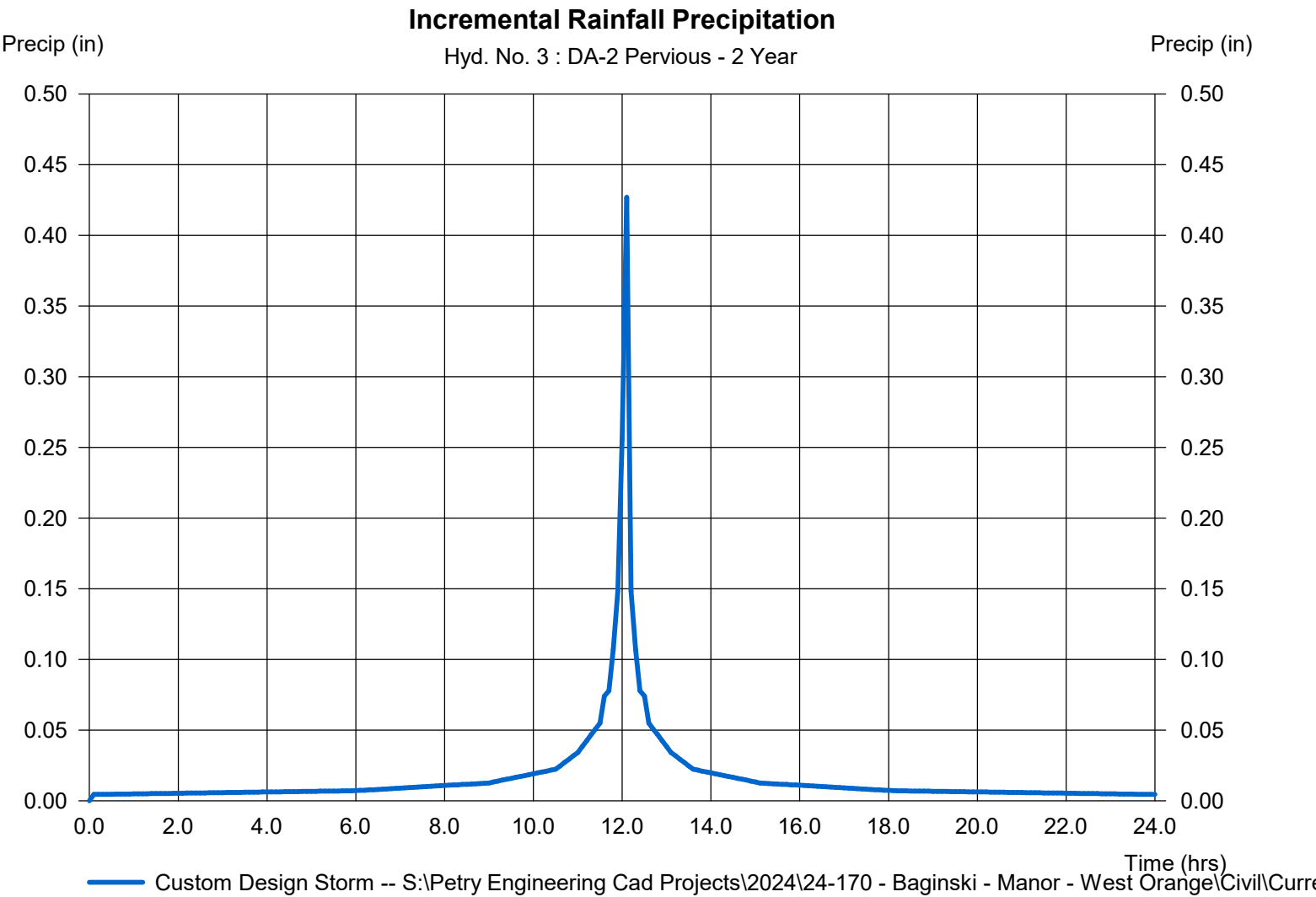


Precipitation Report

Hyd. No. 3

DA-2 Pervious

Storm Frequency	= 2 yrs	Time interval	= 6 min
Total precip.	= 4.0900 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		



Hydrograph Report

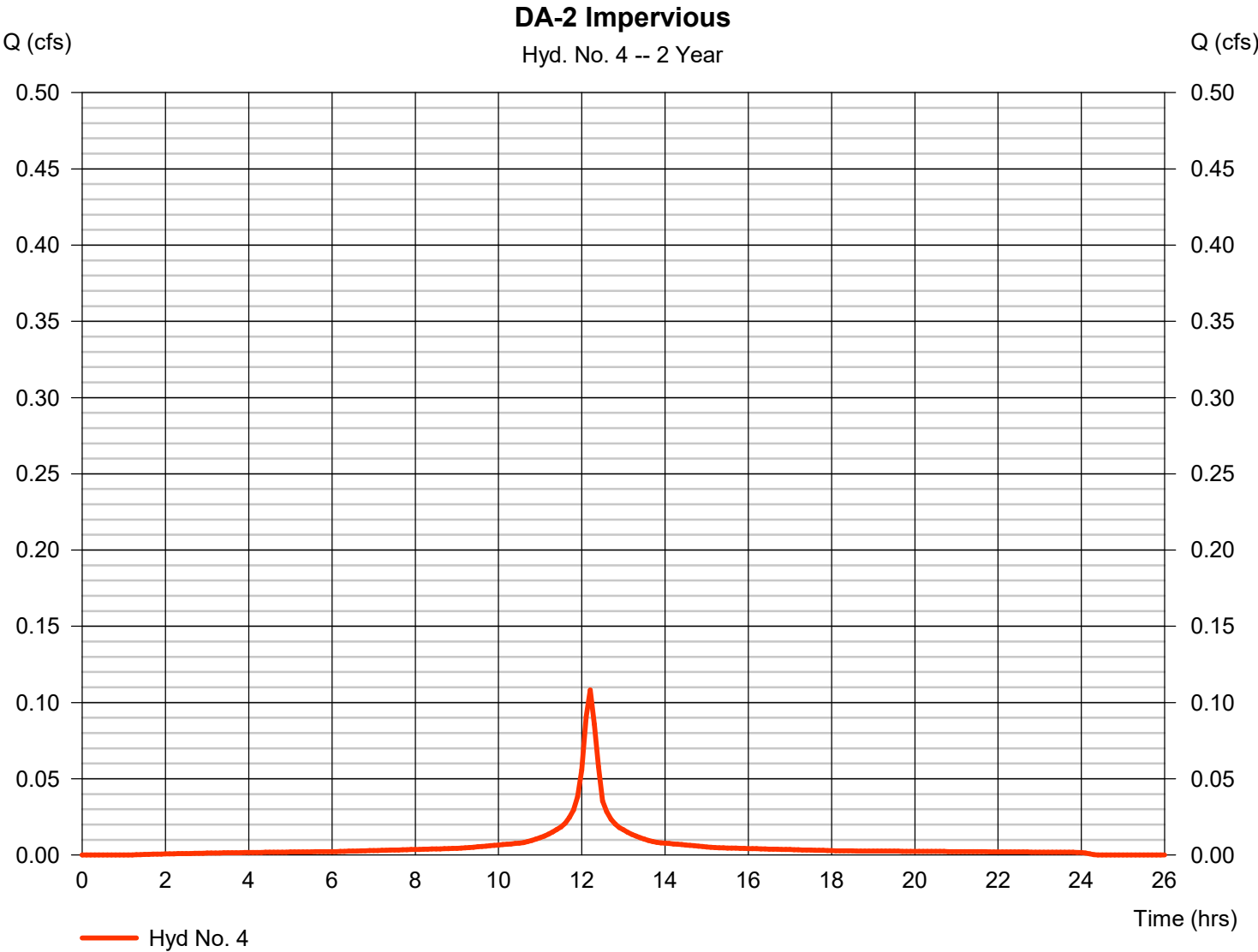
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 4

DA-2 Impervious

Hydrograph type	= SCS Runoff	Peak discharge	= 0.108 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 525 cuft
Drainage area	= 0.040 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.80 min
Total precip.	= 4.09 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024-2025\170 - Baginask Manor - West Orange		

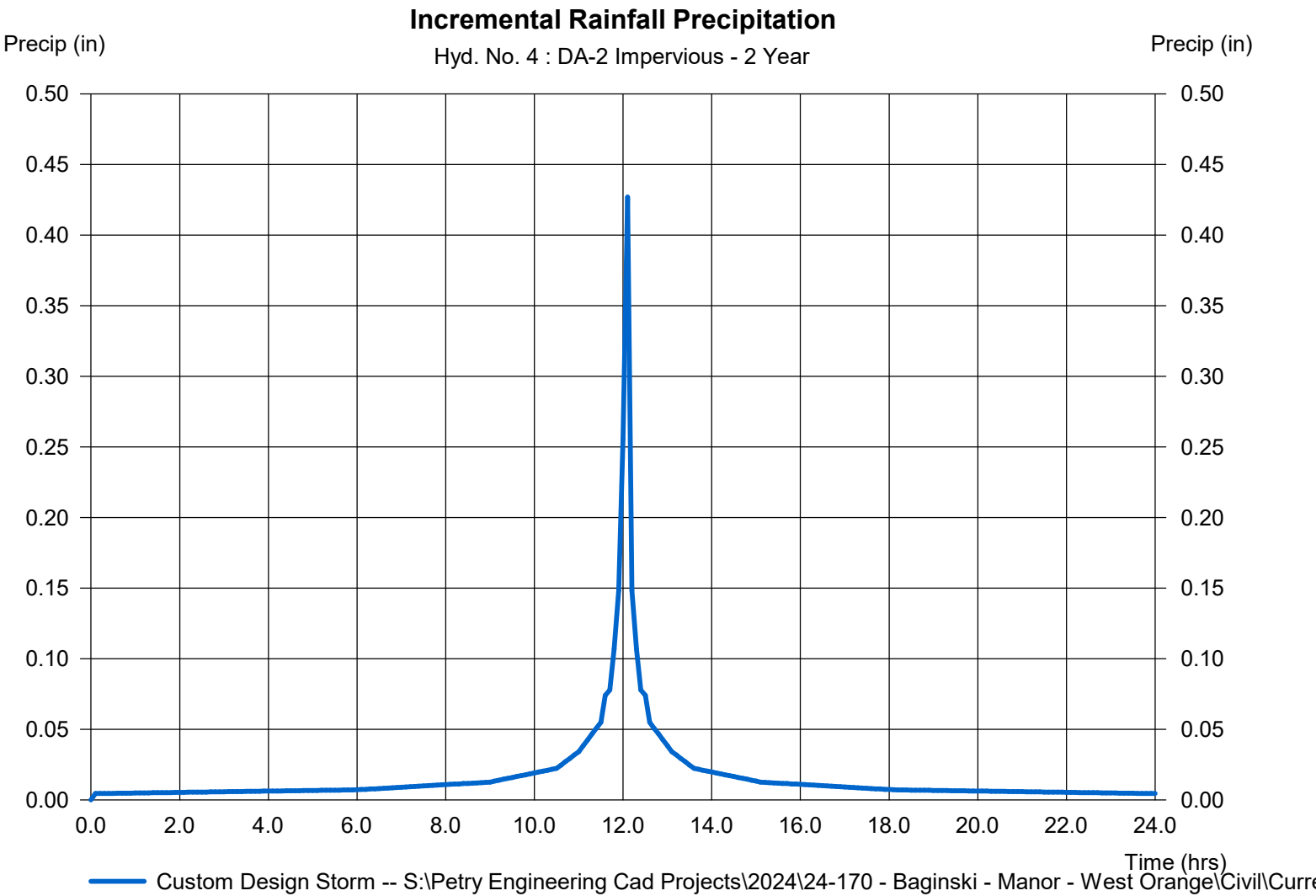


Precipitation Report

Hyd. No. 4

DA-2 Impervious

Storm Frequency	= 2 yrs	Time interval	= 6 min
Total precip.	= 4.0900 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		



Hydrograph Report

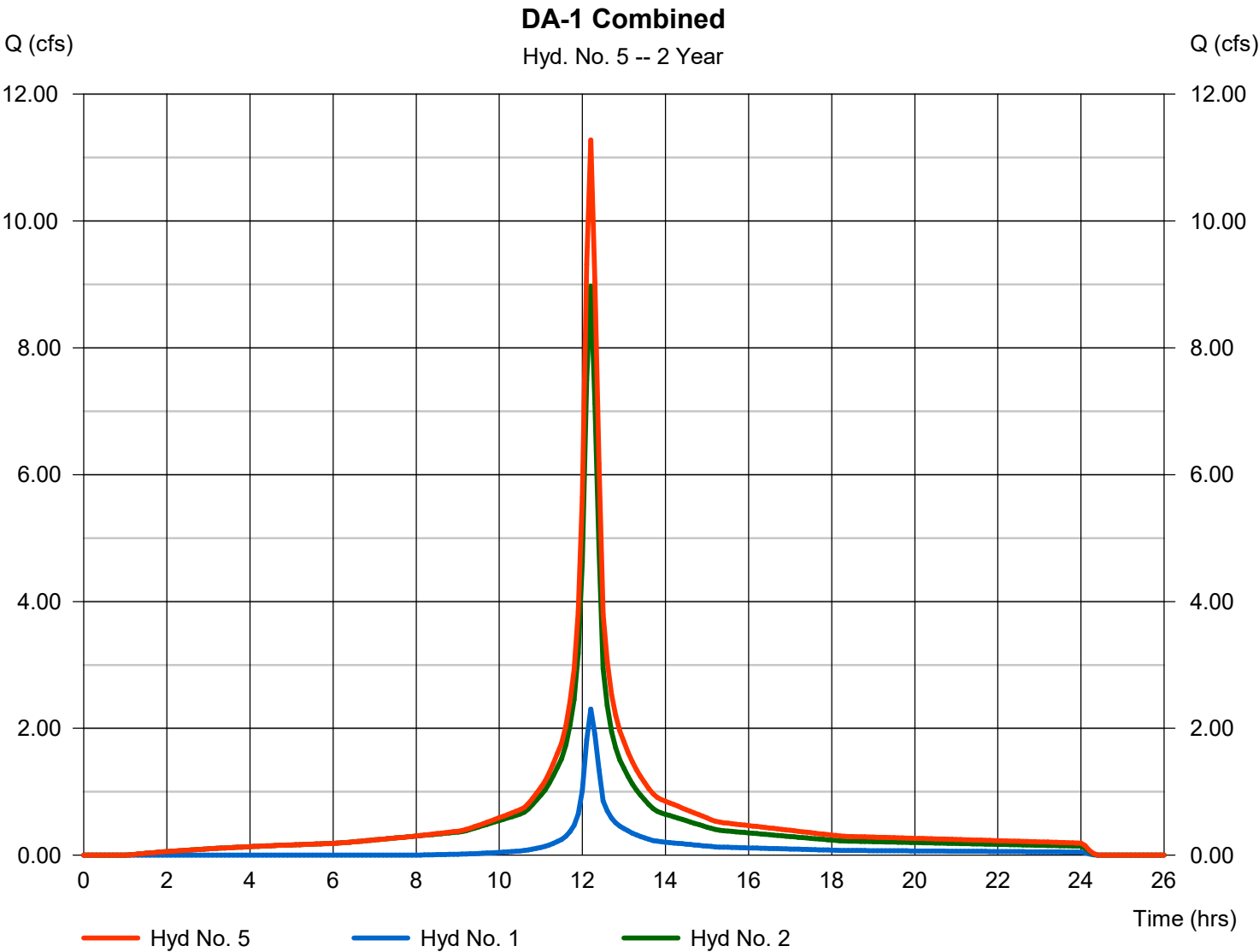
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 5

DA-1 Combined

Hydrograph type	= Combine	Peak discharge	= 11.28 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 53,349 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 4.680 ac

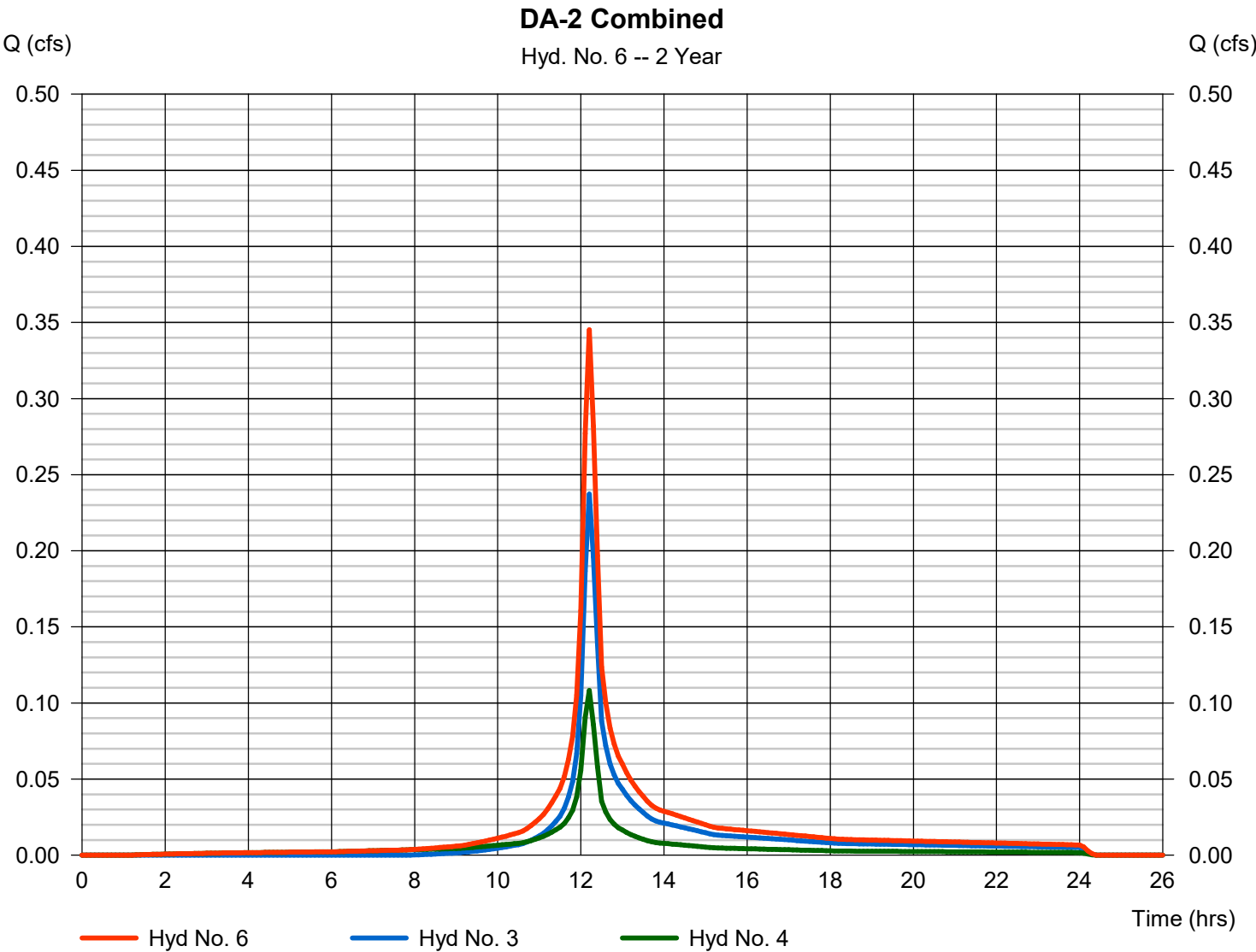


Hydrograph Report

Hyd. No. 6

DA-2 Combined

Hydrograph type	= Combine	Peak discharge	= 0.345 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 1,533 cuft
Inflow hyds.	= 3, 4	Contrib. drain. area	= 0.180 ac



Hydrograph Summary Report

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

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	4.442	6	732	19,053	-----	-----	-----	DA-1 Pervious
2	SCS Runoff	14.04	6	732	69,275	-----	-----	-----	DA-1 Impervious
3	SCS Runoff	0.457	6	732	1,961	-----	-----	-----	DA-2 Pervious
4	SCS Runoff	0.169	6	732	835	-----	-----	-----	DA-2 Impervious
5	Combine	18.49	6	732	88,329	1, 2,	-----	-----	DA-1 Combined
6	Combine	0.627	6	732	2,796	3, 4,	-----	-----	DA-2 Combined
Existing - Future Projected.gpw					Return Period: 10 Year			Tuesday, 12 / 23 / 2025	

Hydrograph Report

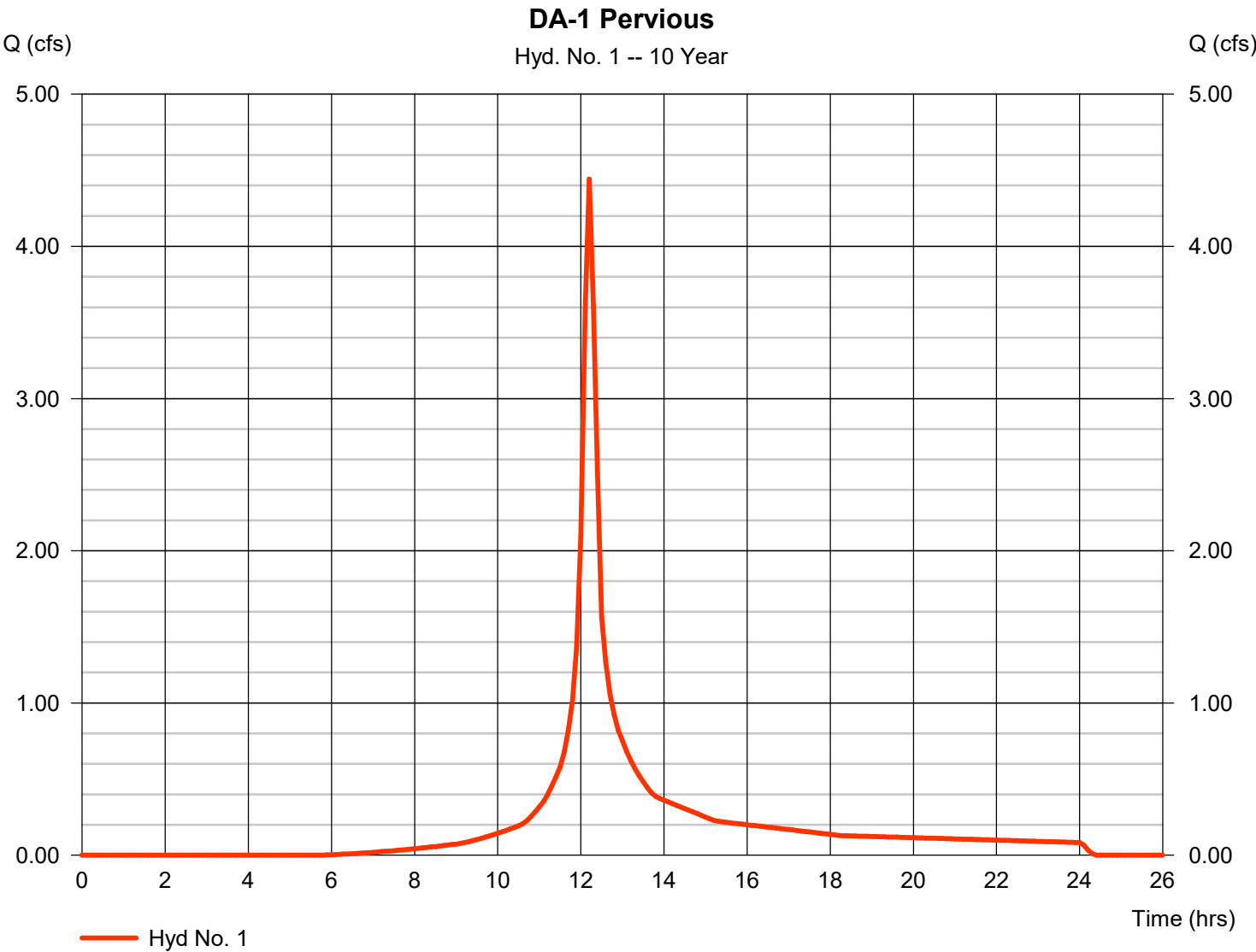
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 1

DA-1 Pervious

Hydrograph type	= SCS Runoff	Peak discharge	= 4.442 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 19,053 cuft
Drainage area	= 1.360 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.60 min
Total precip.	= 6.37 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024-2025\170 - Baginshill Manor - West Orange		



Precipitation Report

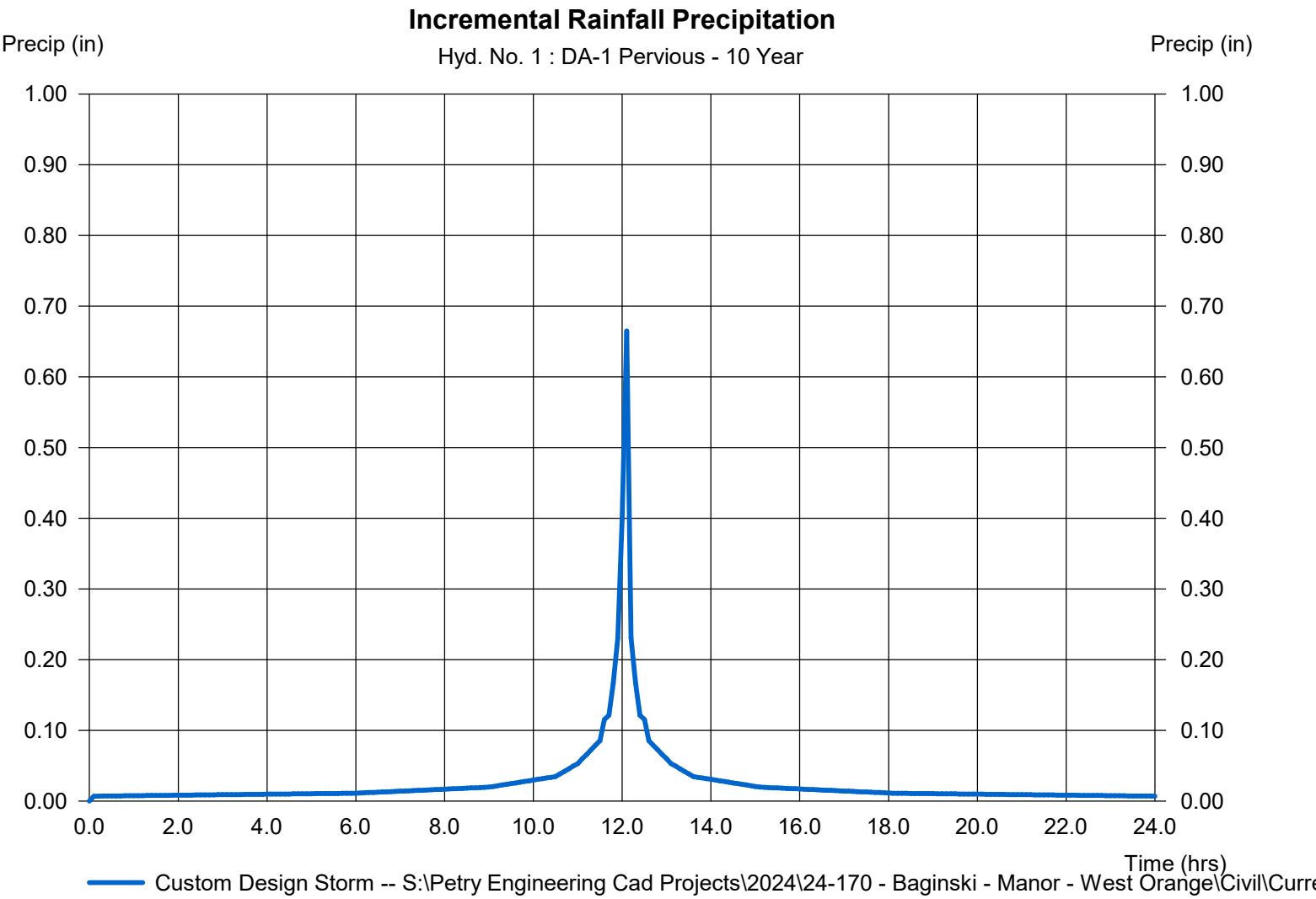
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 1

DA-1 Pervious

Storm Frequency	= 10 yrs	Time interval	= 6 min
Total precip.	= 6.3700 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		

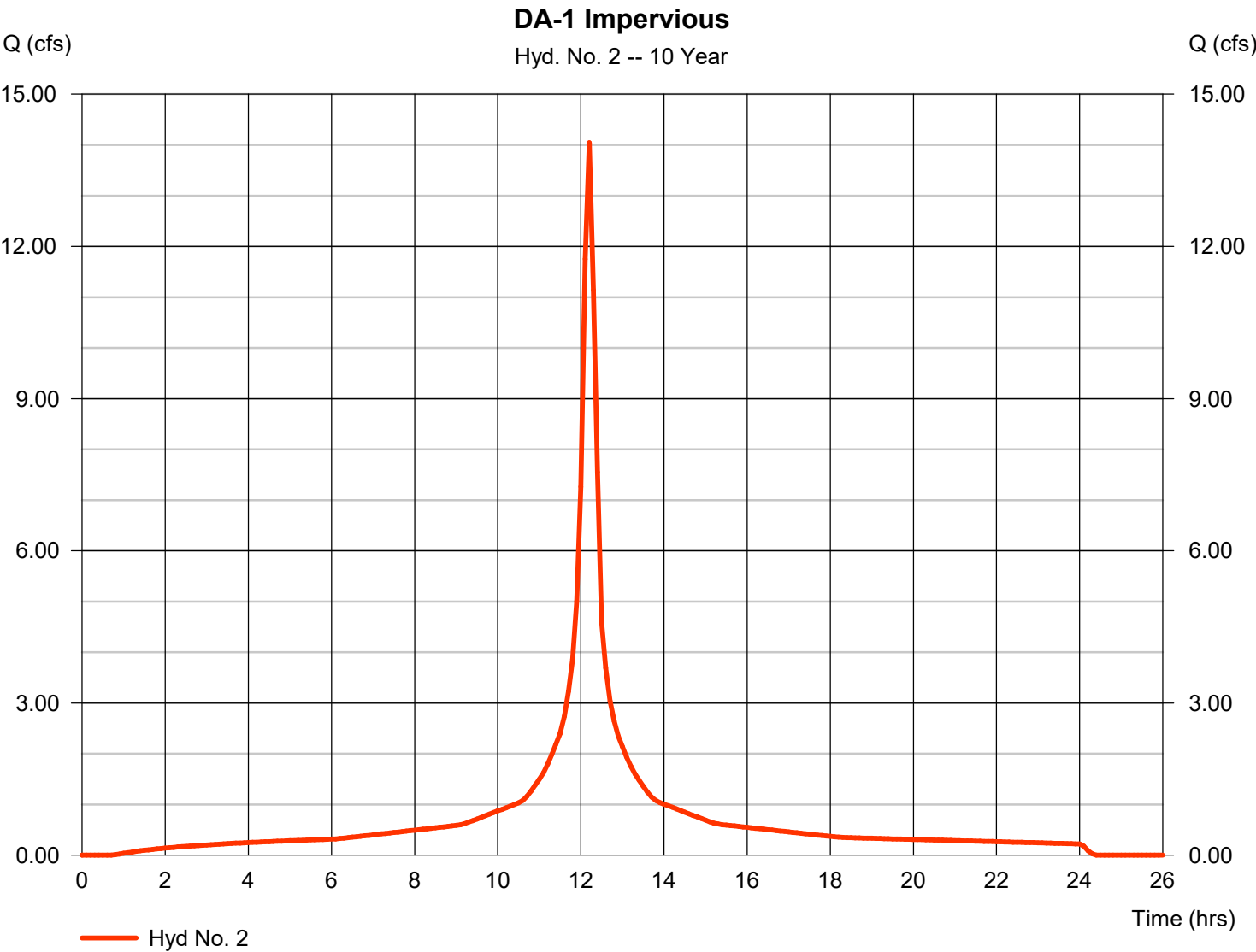


Hydrograph Report

Hyd. No. 2

DA-1 Impervious

Hydrograph type	= SCS Runoff	Peak discharge	= 14.04 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 69,275 cuft
Drainage area	= 3.320 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.60 min
Total precip.	= 6.37 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginok - 184 Manor - West Orange\Storm 24-170 - Baginok - 184 Manor - West Orange		

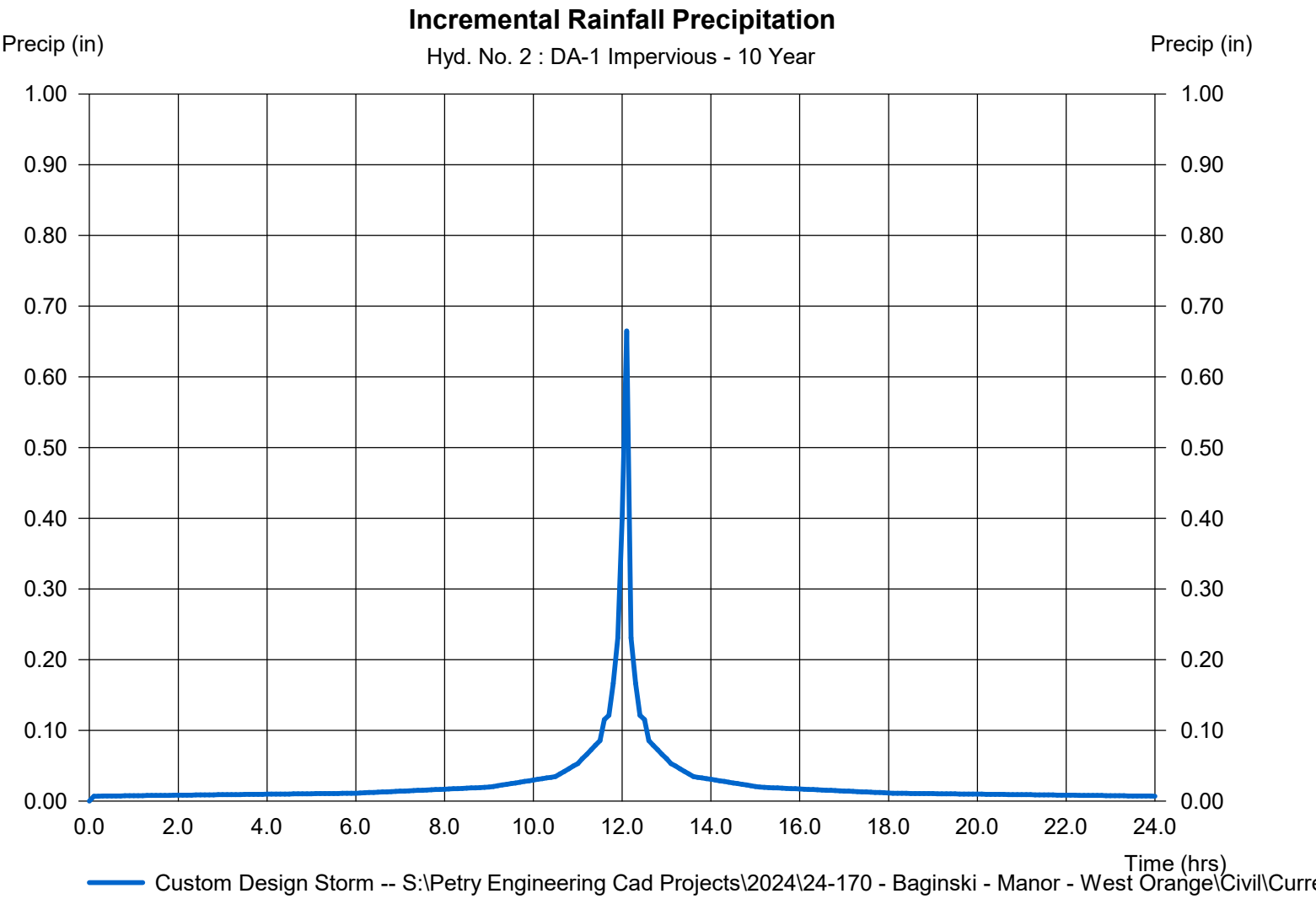


Precipitation Report

Hyd. No. 2

DA-1 Impervious

Storm Frequency	= 10 yrs	Time interval	= 6 min
Total precip.	= 6.3700 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		



Hydrograph Report

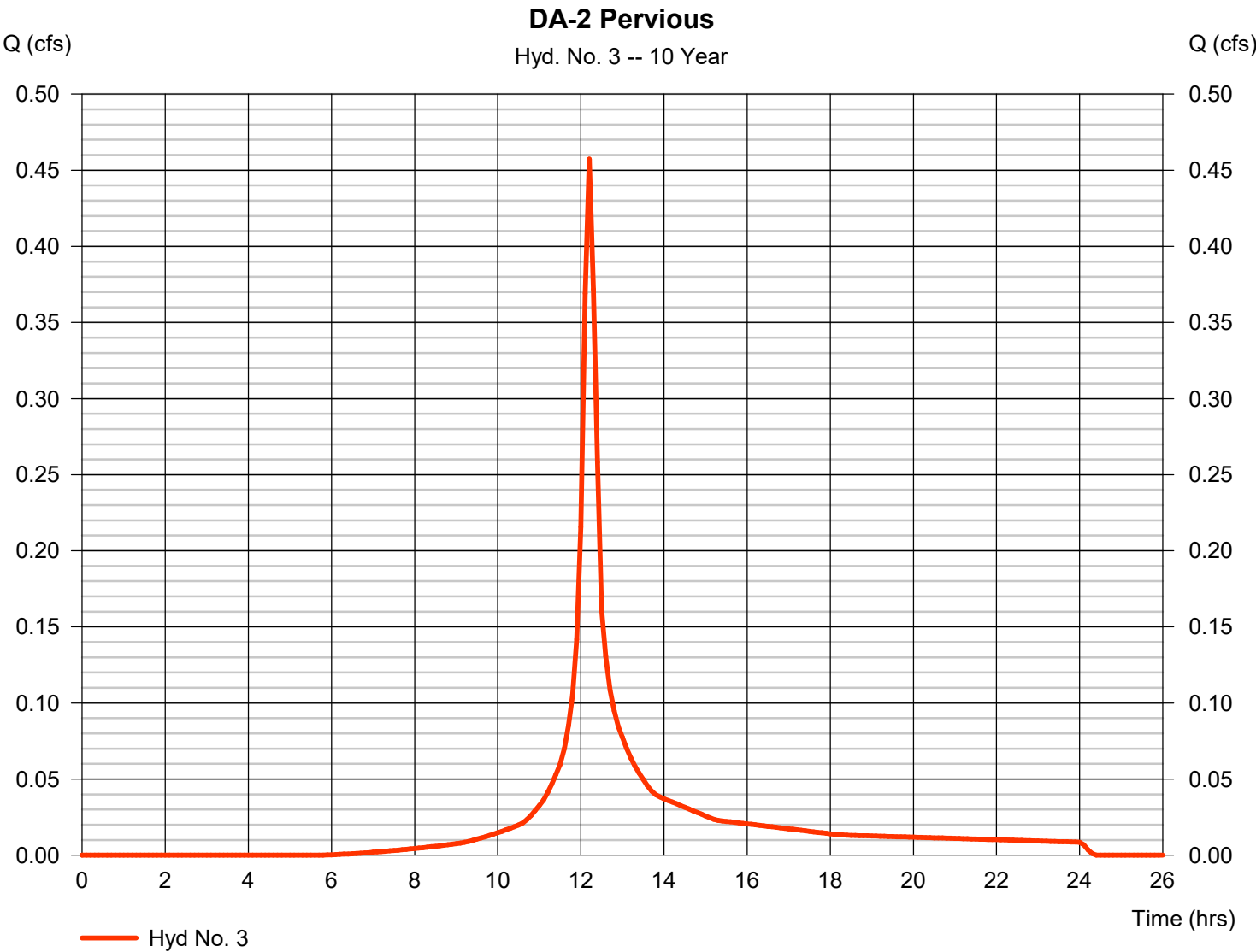
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 3

DA-2 Pervious

Hydrograph type	= SCS Runoff	Peak discharge	= 0.457 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 1,961 cuft
Drainage area	= 0.140 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.80 min
Total precip.	= 6.37 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginask Manor - West Orange		

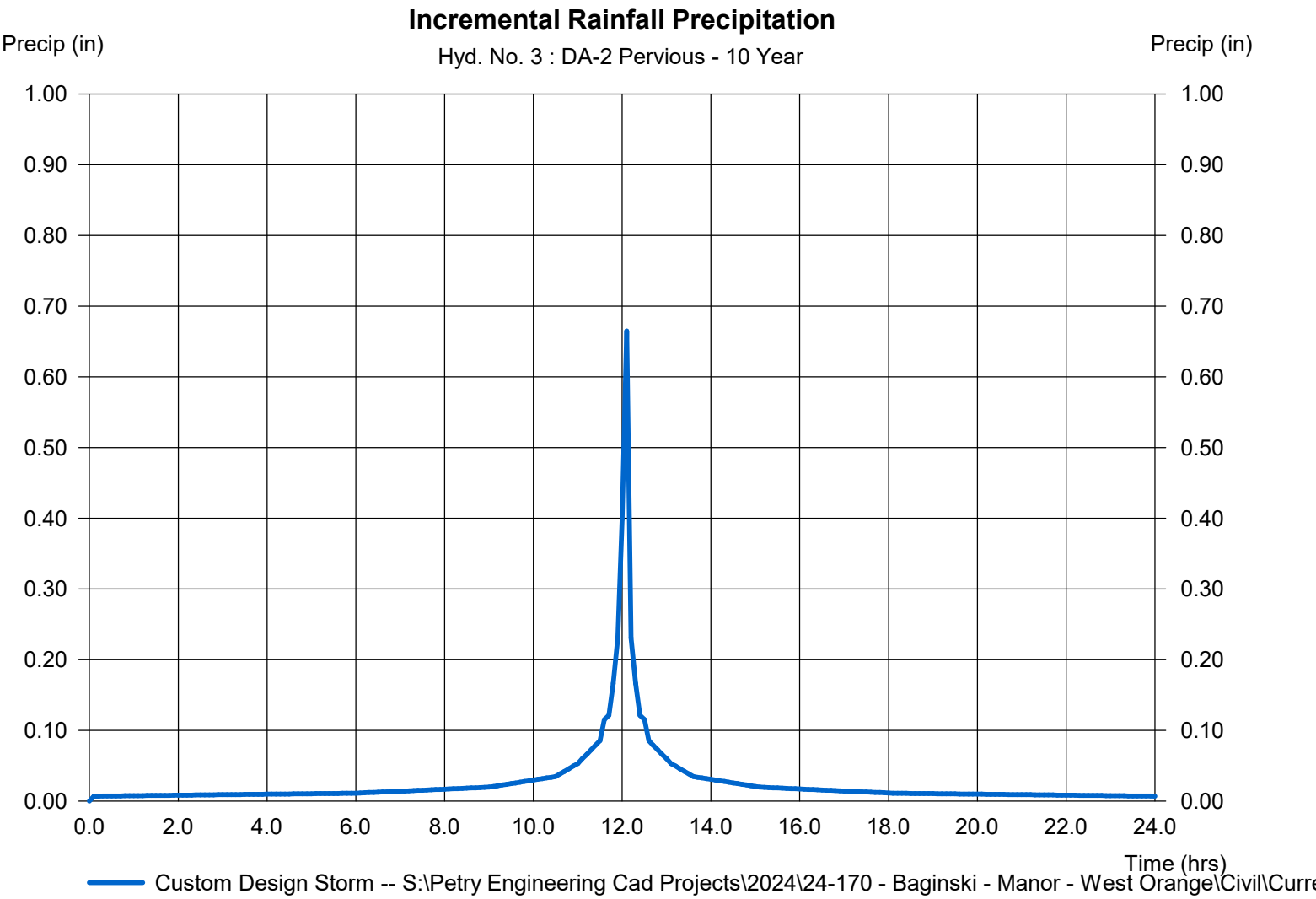


Precipitation Report

Hyd. No. 3

DA-2 Pervious

Storm Frequency	= 10 yrs	Time interval	= 6 min
Total precip.	= 6.3700 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		

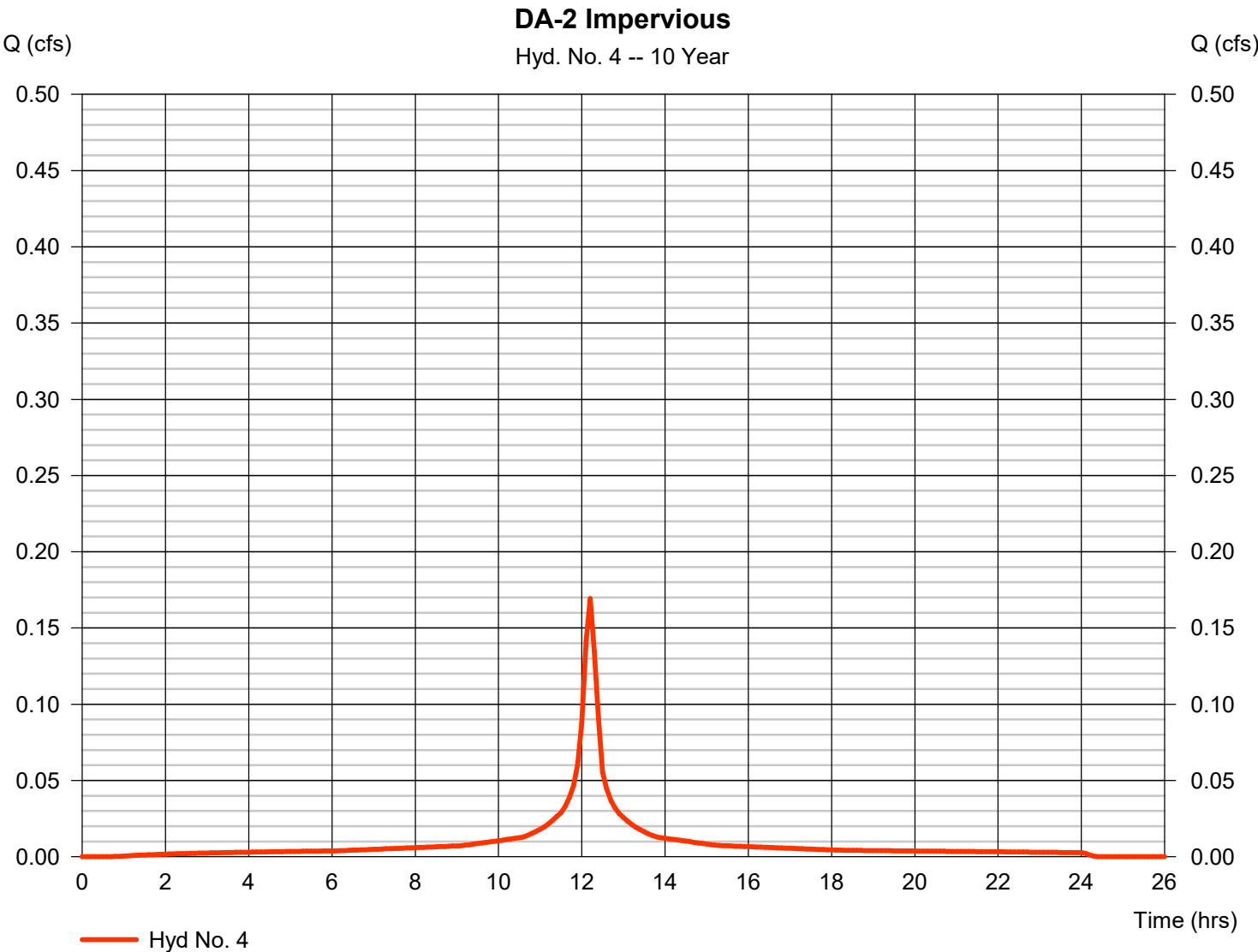


Hydrograph Report

Hyd. No. 4

DA-2 Impervious

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.169 cfs
Storm frequency	=	10 yrs	Time to peak	=	12.20 hrs
Time interval	=	6 min	Hyd. volume	=	835 cuft
Drainage area	=	0.040 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	11.80 min
Total precip.	=	6.37 in	Distribution	=	Custom
Storm duration	=	S:\Petty Engineering Cad Projects\2024\24-170 - Baginok - 184 Manor - West Orange\24-170 - Baginok - 184 Manor - West Orange.dwg			

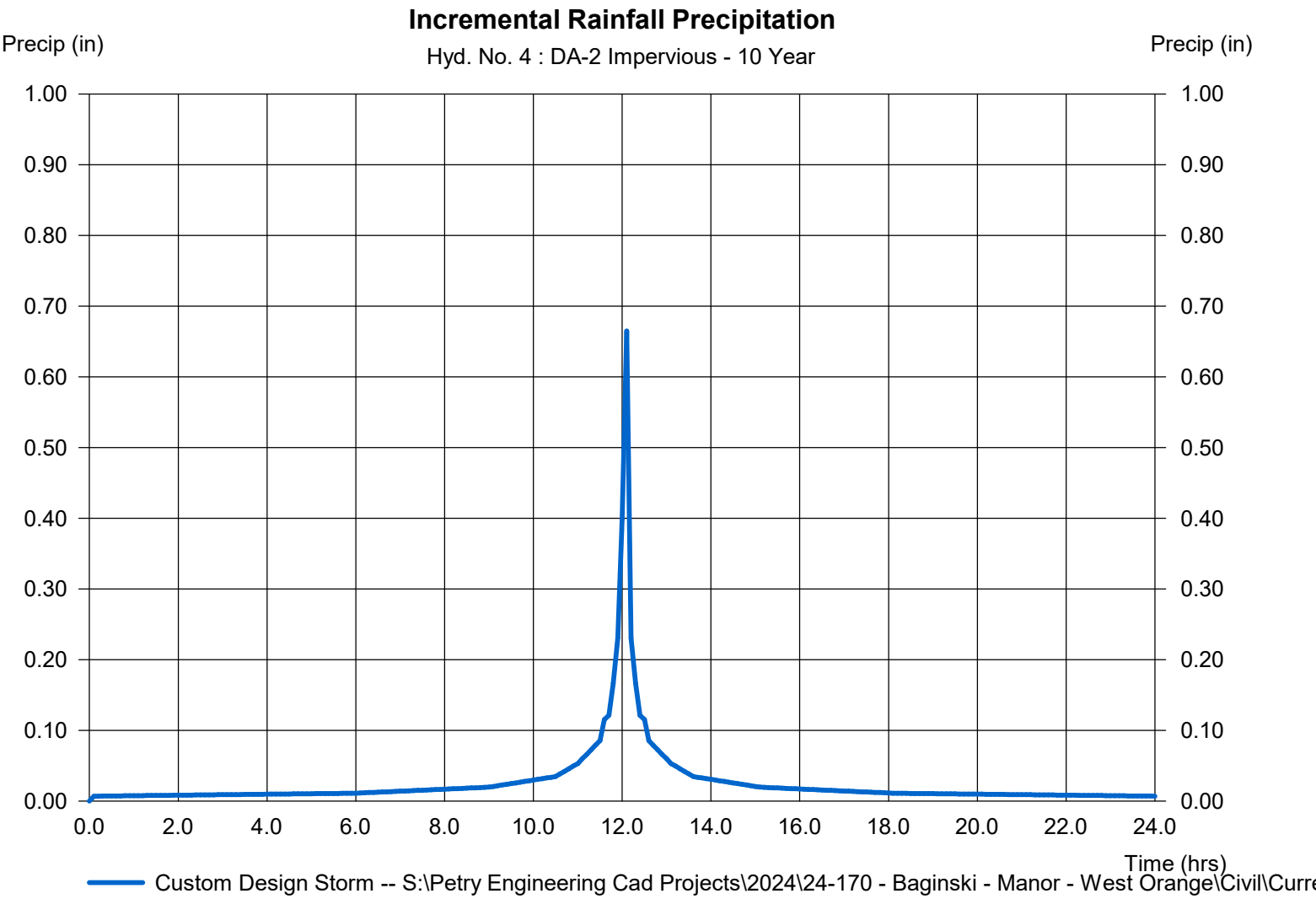


Precipitation Report

Hyd. No. 4

DA-2 Impervious

Storm Frequency	= 10 yrs	Time interval	= 6 min
Total precip.	= 6.3700 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		



Hydrograph Report

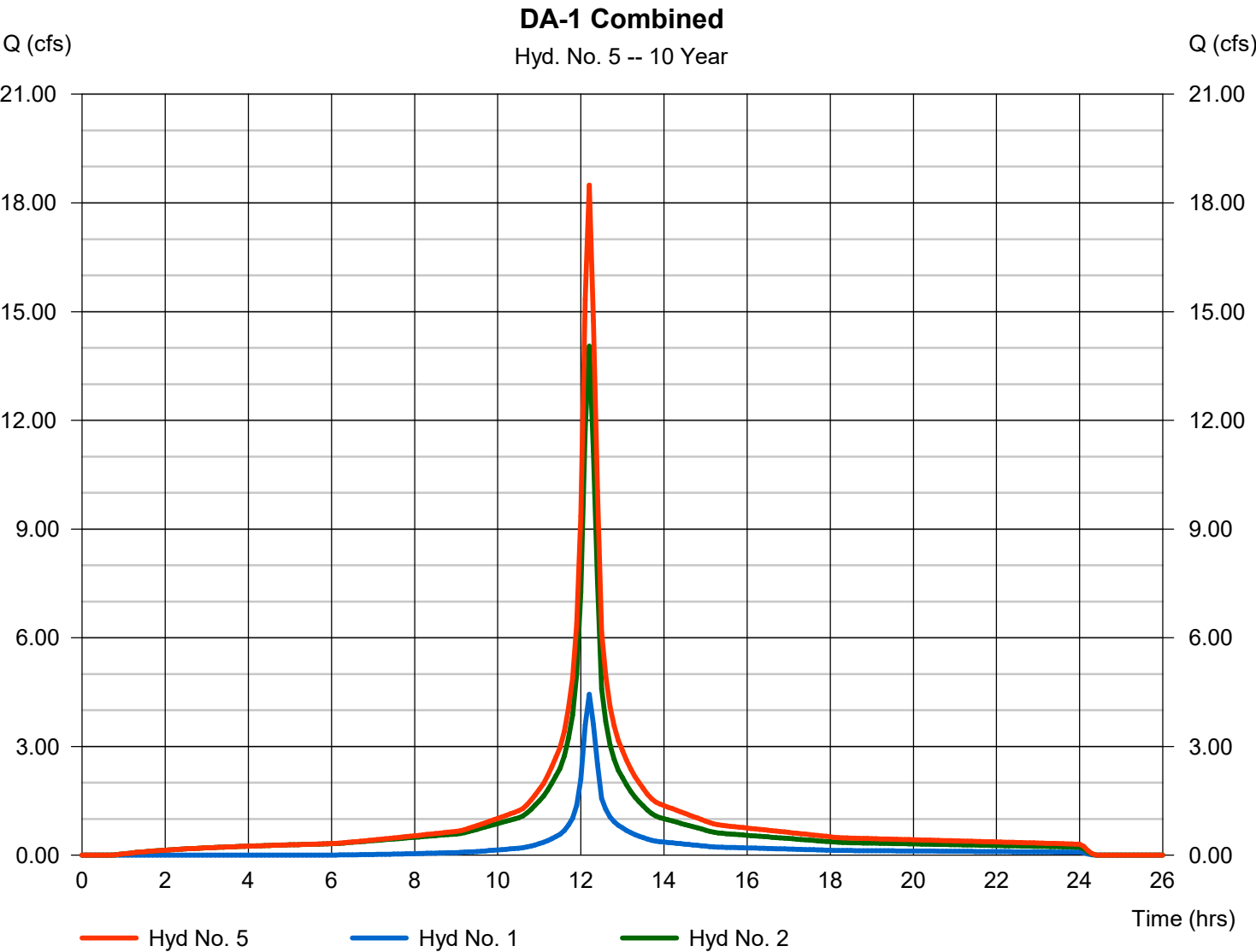
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 5

DA-1 Combined

Hydrograph type	= Combine	Peak discharge	= 18.49 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 88,329 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 4.680 ac



Hydrograph Report

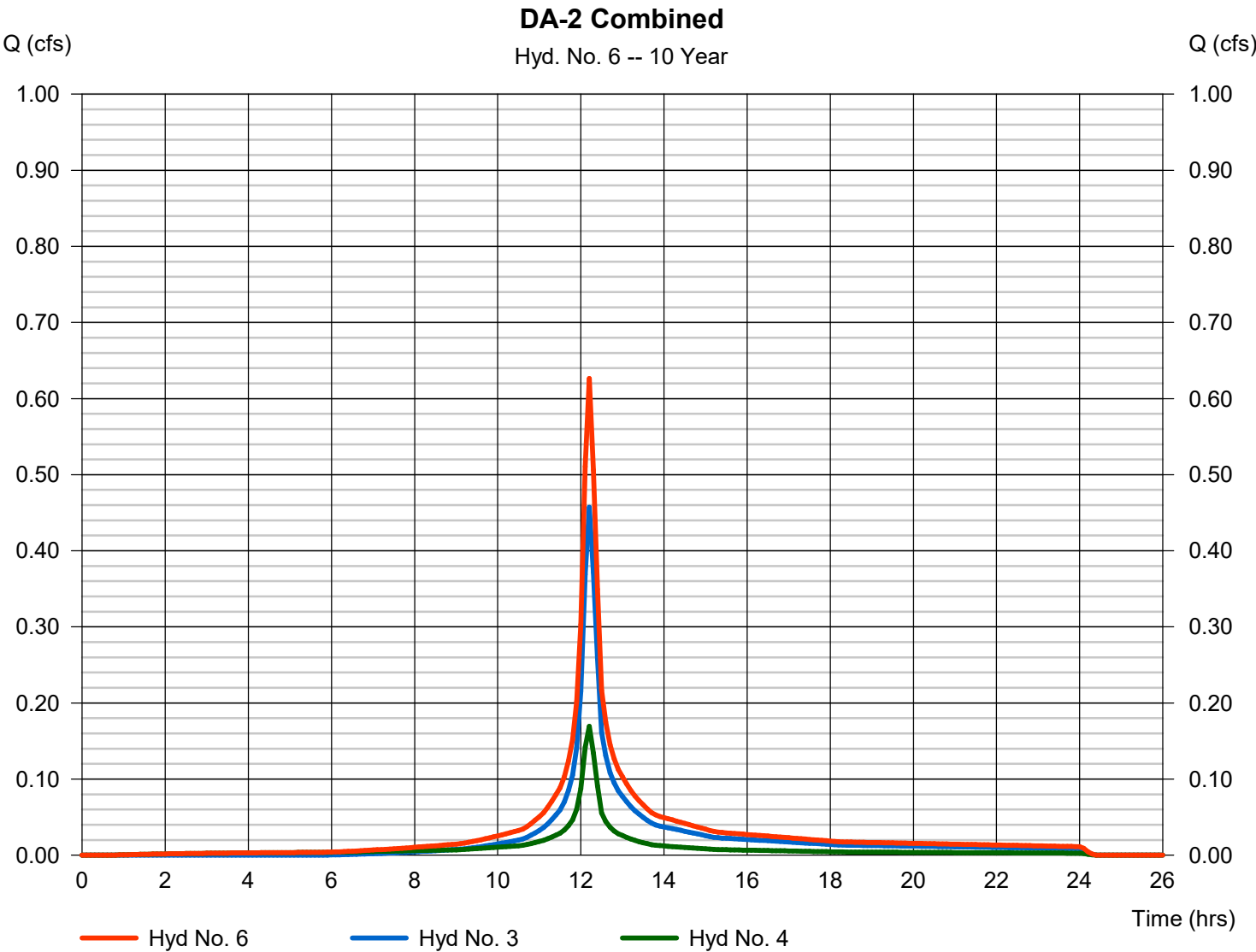
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 6

DA-2 Combined

Hydrograph type	= Combine	Peak discharge	= 0.627 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 2,796 cuft
Inflow hyds.	= 3, 4	Contrib. drain. area	= 0.180 ac



Hydrograph Summary Report

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

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	9.365	6	732	41,572	-----	-----	-----	DA-1 Pervious
2	SCS Runoff	25.46	6	732	127,430	-----	-----	-----	DA-1 Impervious
3	SCS Runoff	0.964	6	732	4,279	-----	-----	-----	DA-2 Pervious
4	SCS Runoff	0.307	6	732	1,535	-----	-----	-----	DA-2 Impervious
5	Combine	34.83	6	732	169,002	1, 2,	-----	-----	DA-1 Combined
6	Combine	1.271	6	732	5,815	3, 4,	-----	-----	DA-2 Combined
Existing - Future Projected.gpw					Return Period: 100 Year			Tuesday, 12 / 23 / 2025	

Hydrograph Report

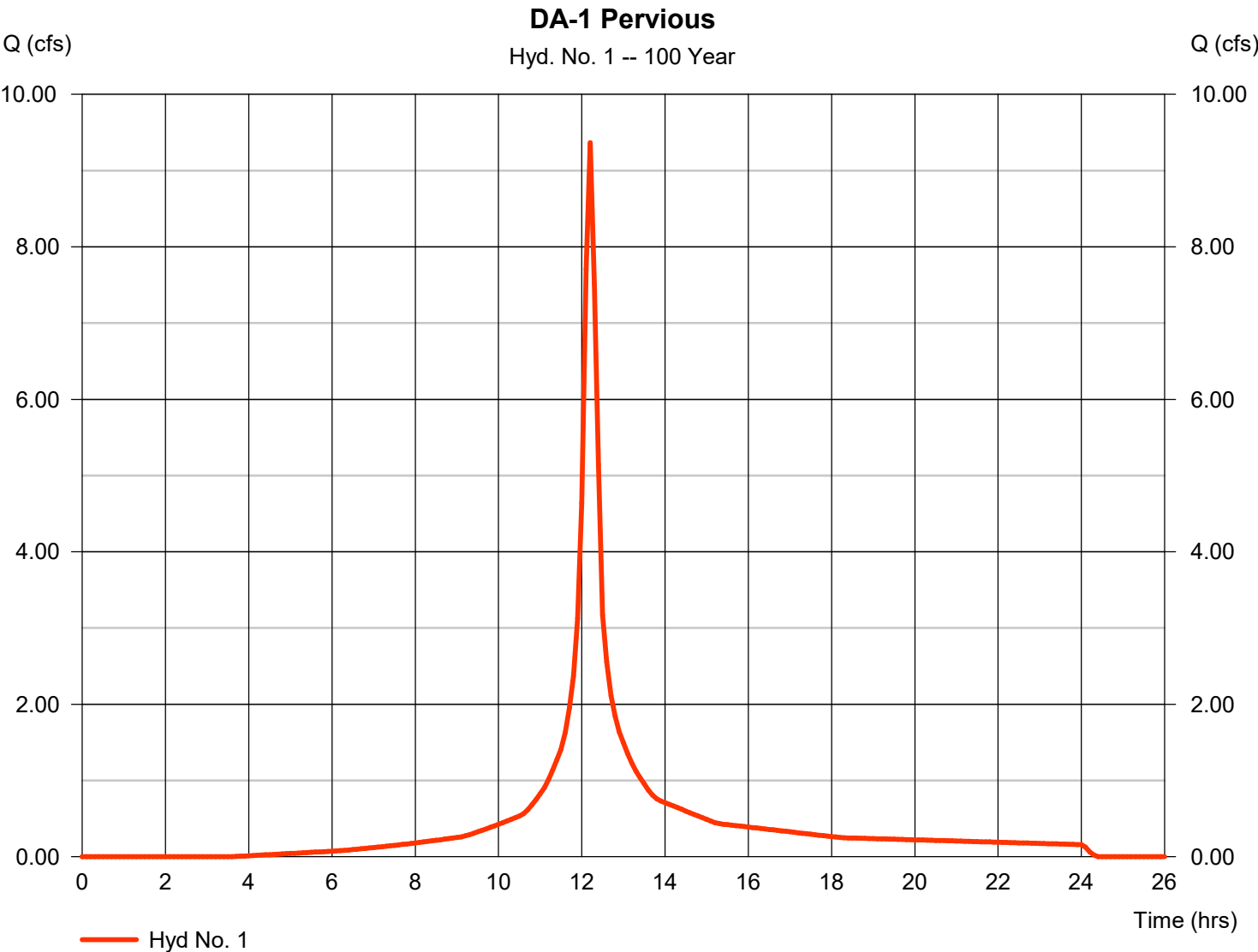
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 1

DA-1 Pervious

Hydrograph type	= SCS Runoff	Peak discharge	= 9.365 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 41,572 cuft
Drainage area	= 1.360 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.60 min
Total precip.	= 11.52 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginask Manor - West Orange		

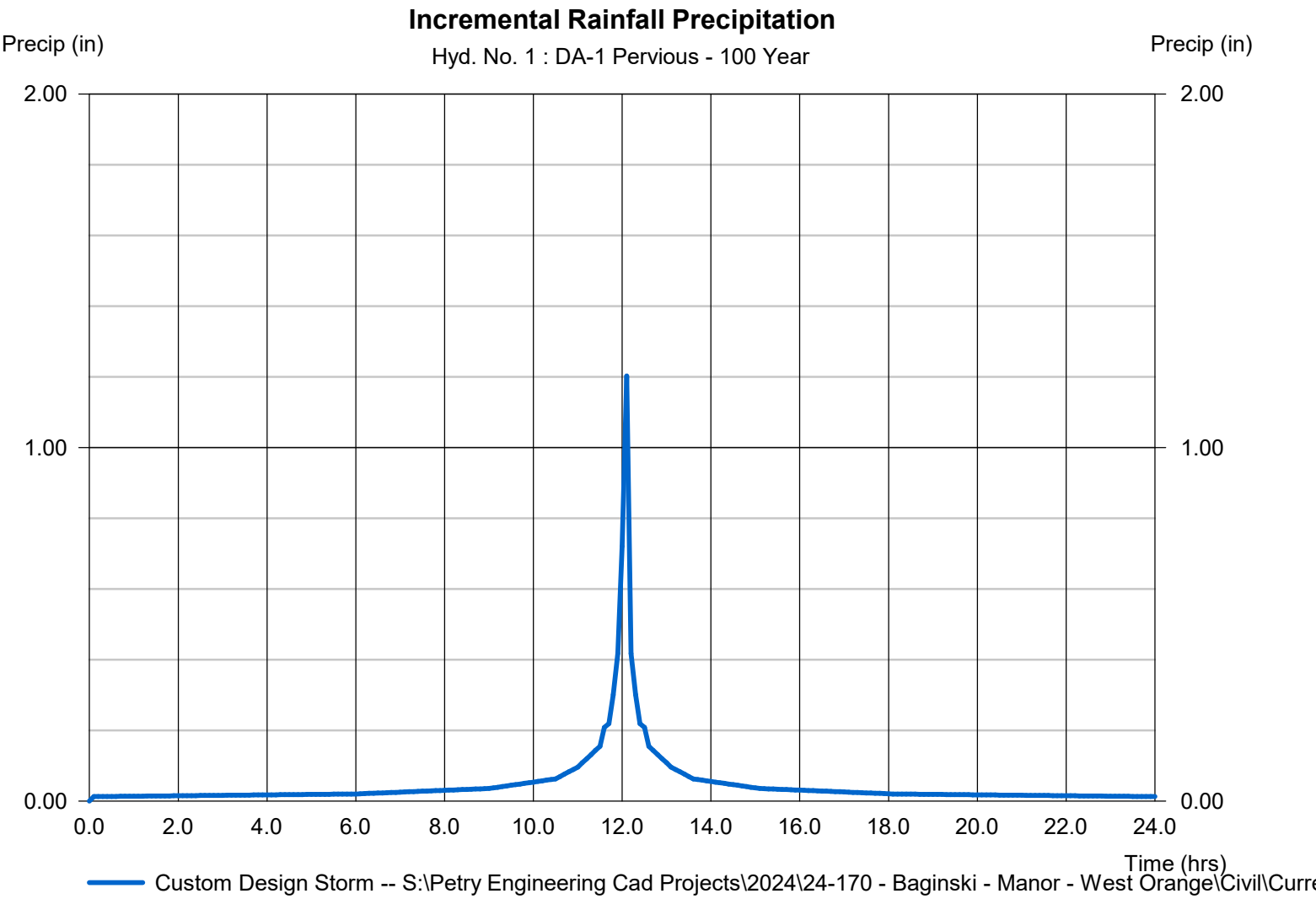


Precipitation Report

Hyd. No. 1

DA-1 Pervious

Storm Frequency	= 100 yrs	Time interval	= 6 min
Total precip.	= 11.5200 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		



Hydrograph Report

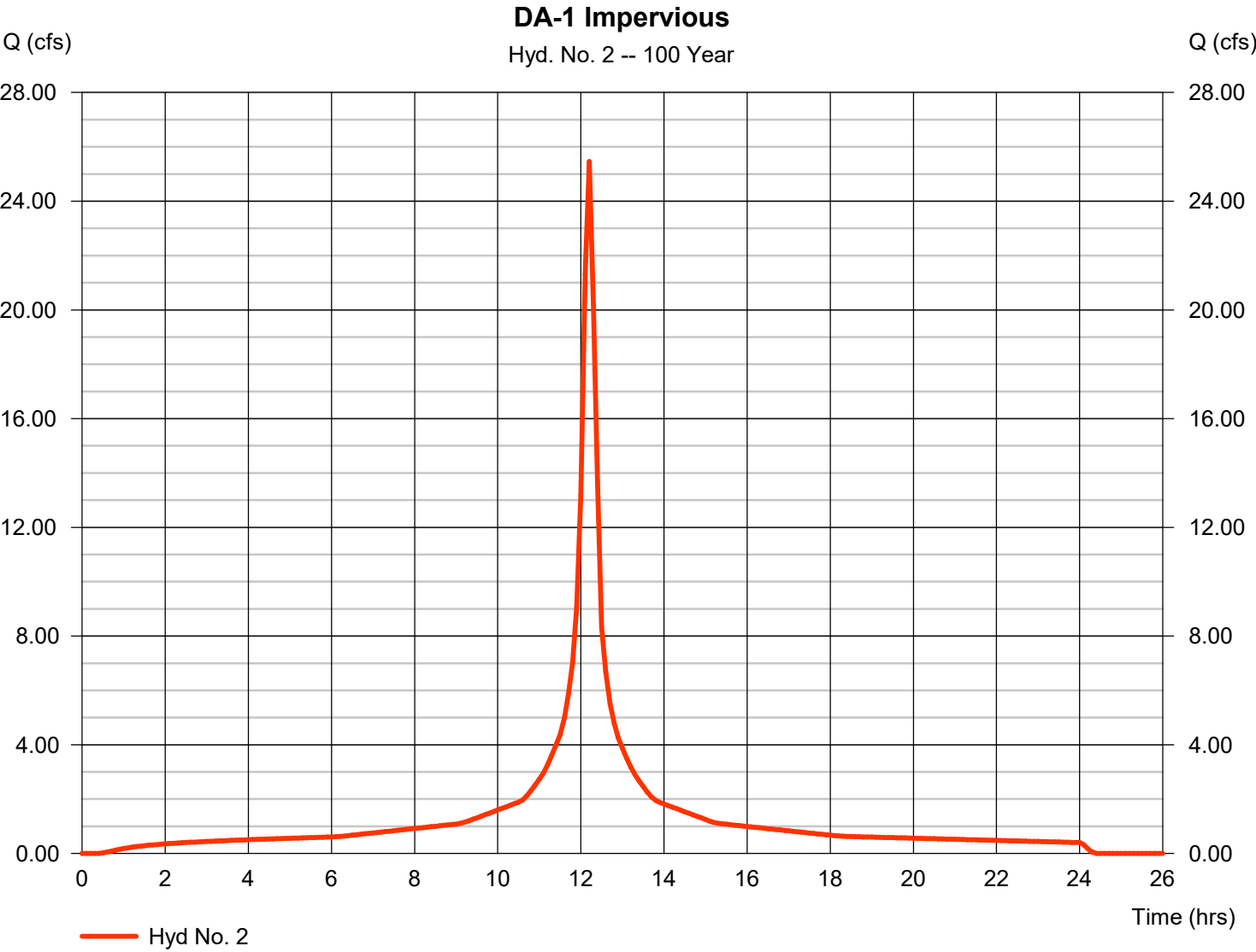
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 2

DA-1 Impervious

Hydrograph type	= SCS Runoff	Peak discharge	= 25.46 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 127,430 cuft
Drainage area	= 3.320 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.60 min
Total precip.	= 11.52 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Bagin's Manor - West Orange		

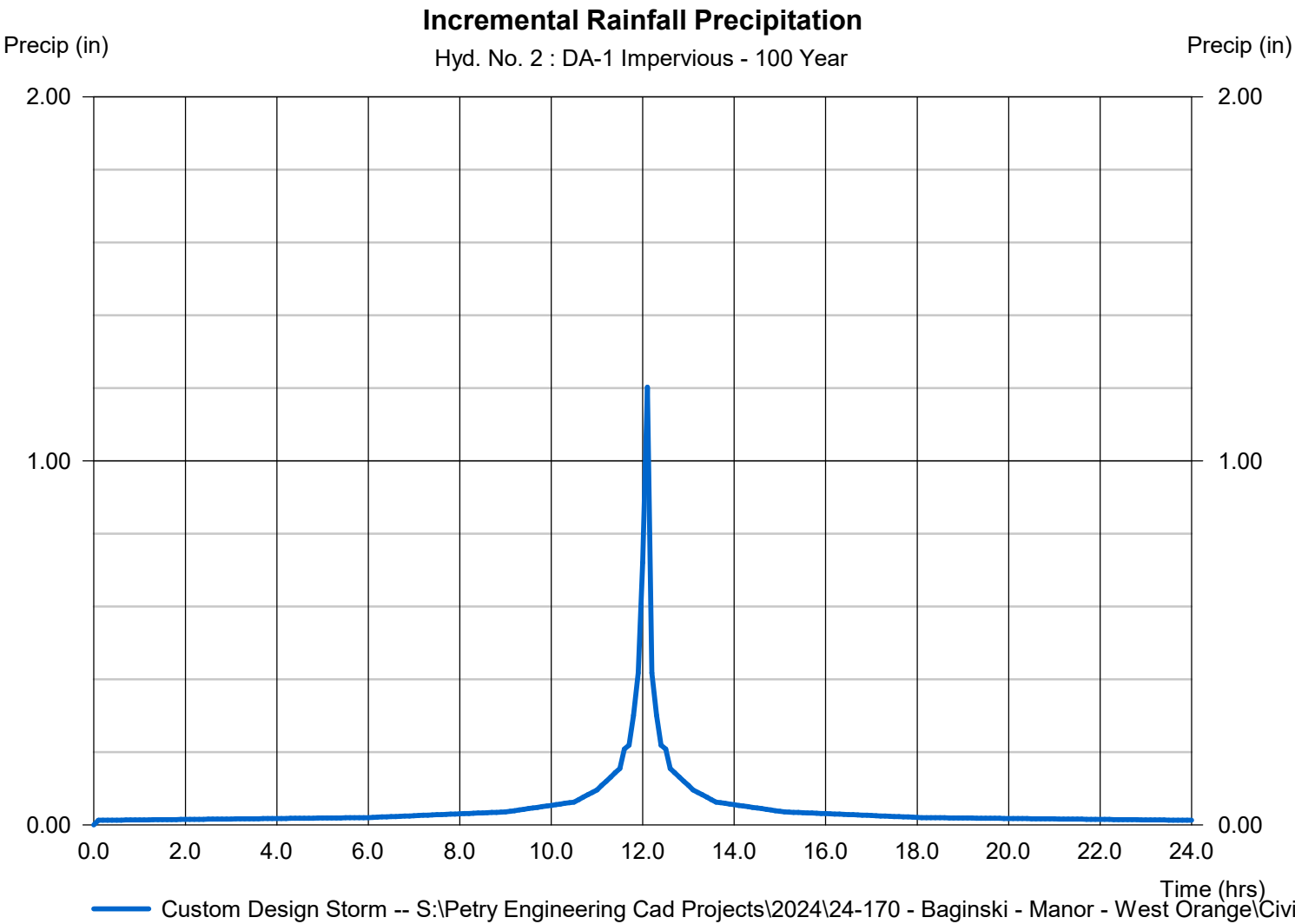


Precipitation Report

Hyd. No. 2

DA-1 Impervious

Storm Frequency	= 100 yrs	Time interval	= 6 min
Total precip.	= 11.5200 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Current		



Hydrograph Report

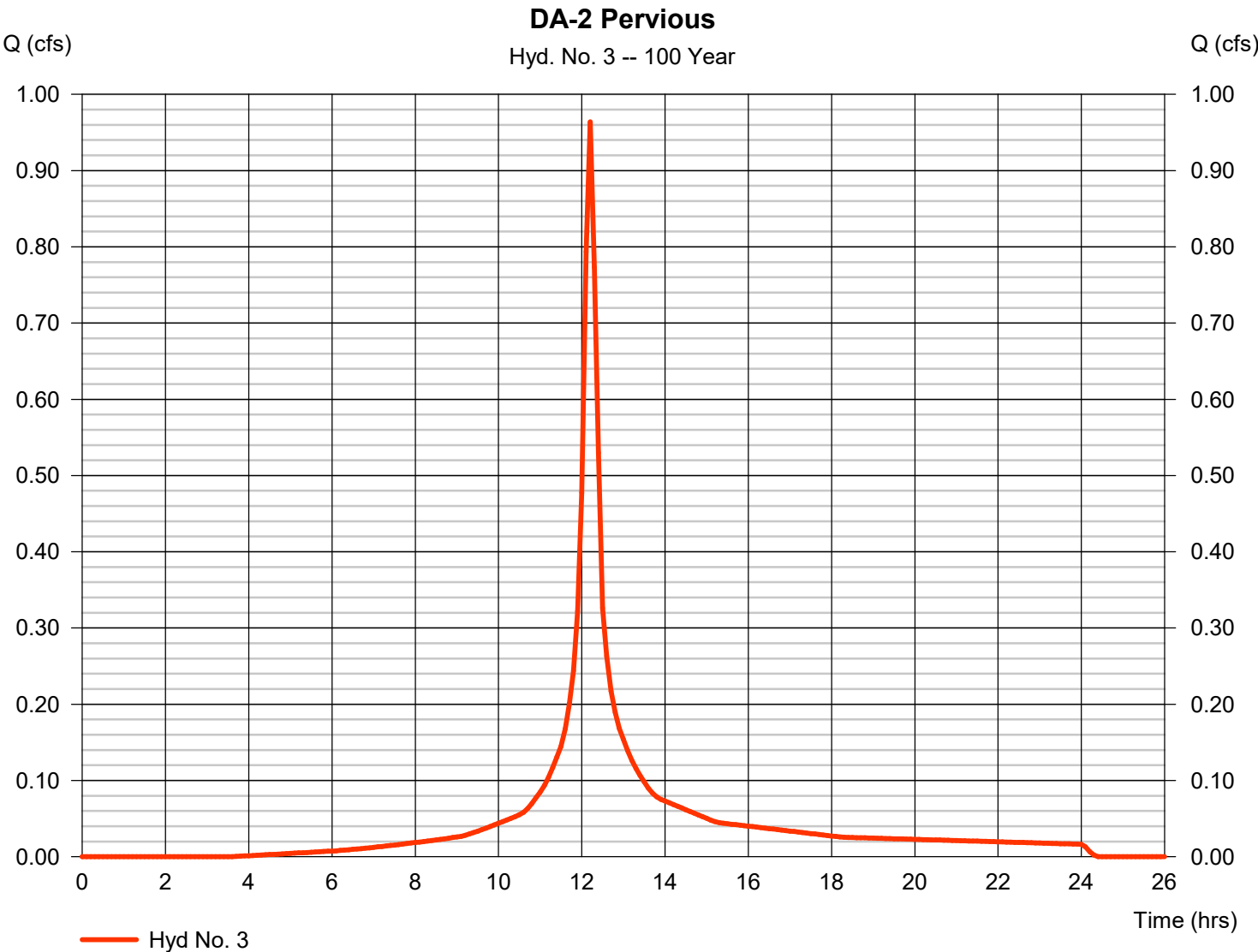
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 3

DA-2 Pervious

Hydrograph type	= SCS Runoff	Peak discharge	= 0.964 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 4,279 cuft
Drainage area	= 0.140 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.80 min
Total precip.	= 11.52 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginask Manor - West Orange		

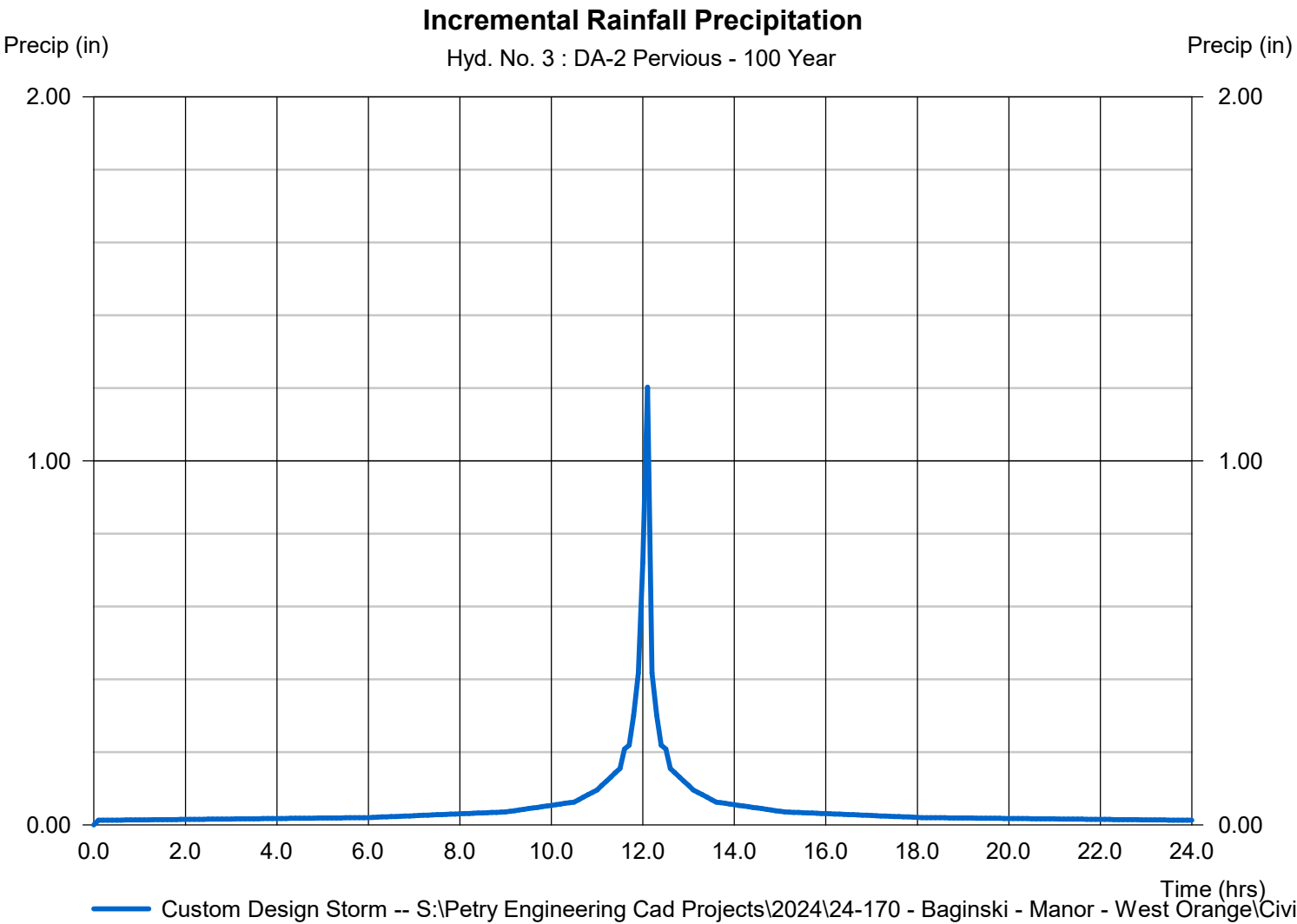


Precipitation Report

Hyd. No. 3

DA-2 Pervious

Storm Frequency	= 100 yrs	Time interval	= 6 min
Total precip.	= 11.5200 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Current		



Hydrograph Report

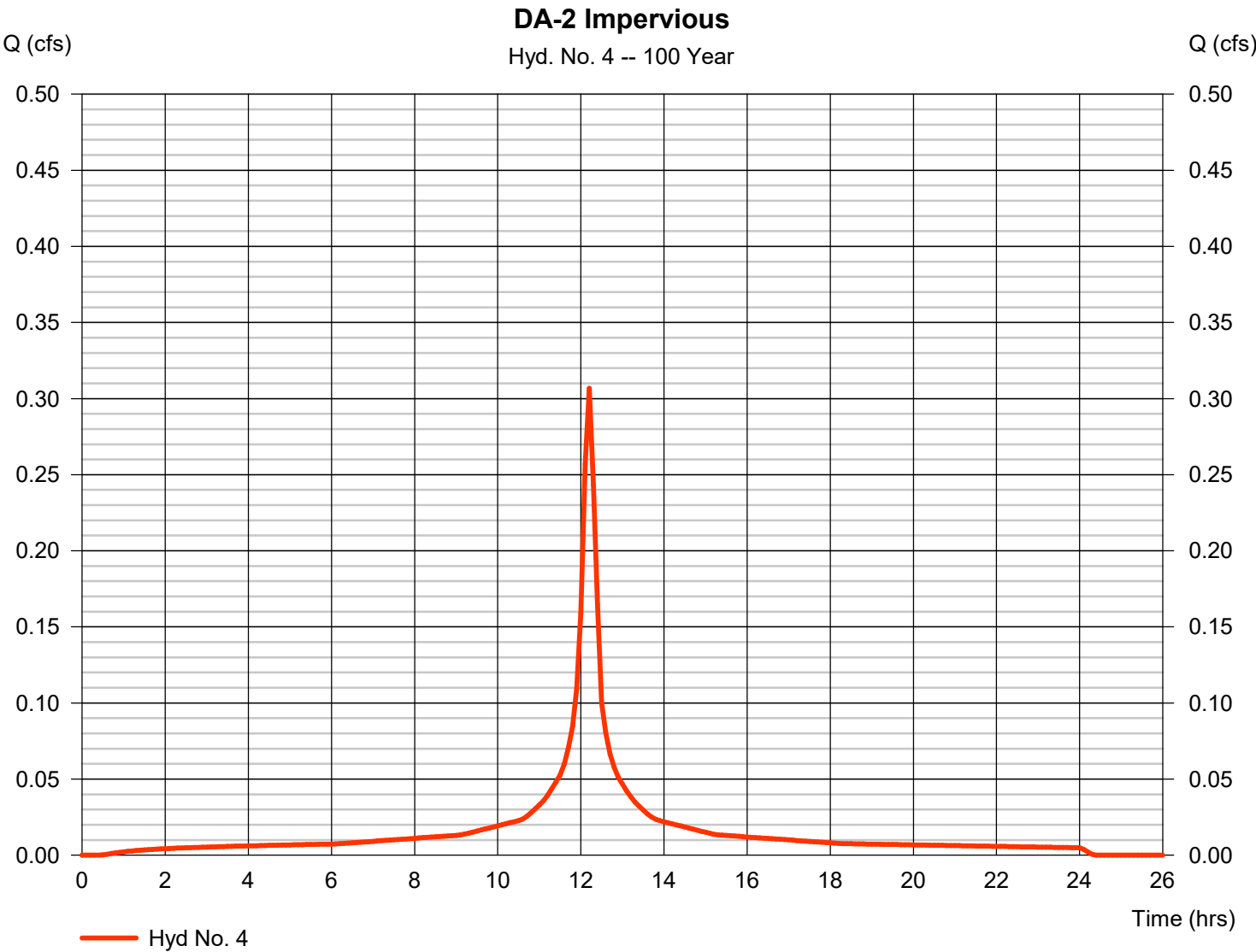
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 4

DA-2 Impervious

Hydrograph type	= SCS Runoff	Peak discharge	= 0.307 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 1,535 cuft
Drainage area	= 0.040 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.80 min
Total precip.	= 11.52 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginask Manor - West Orange		

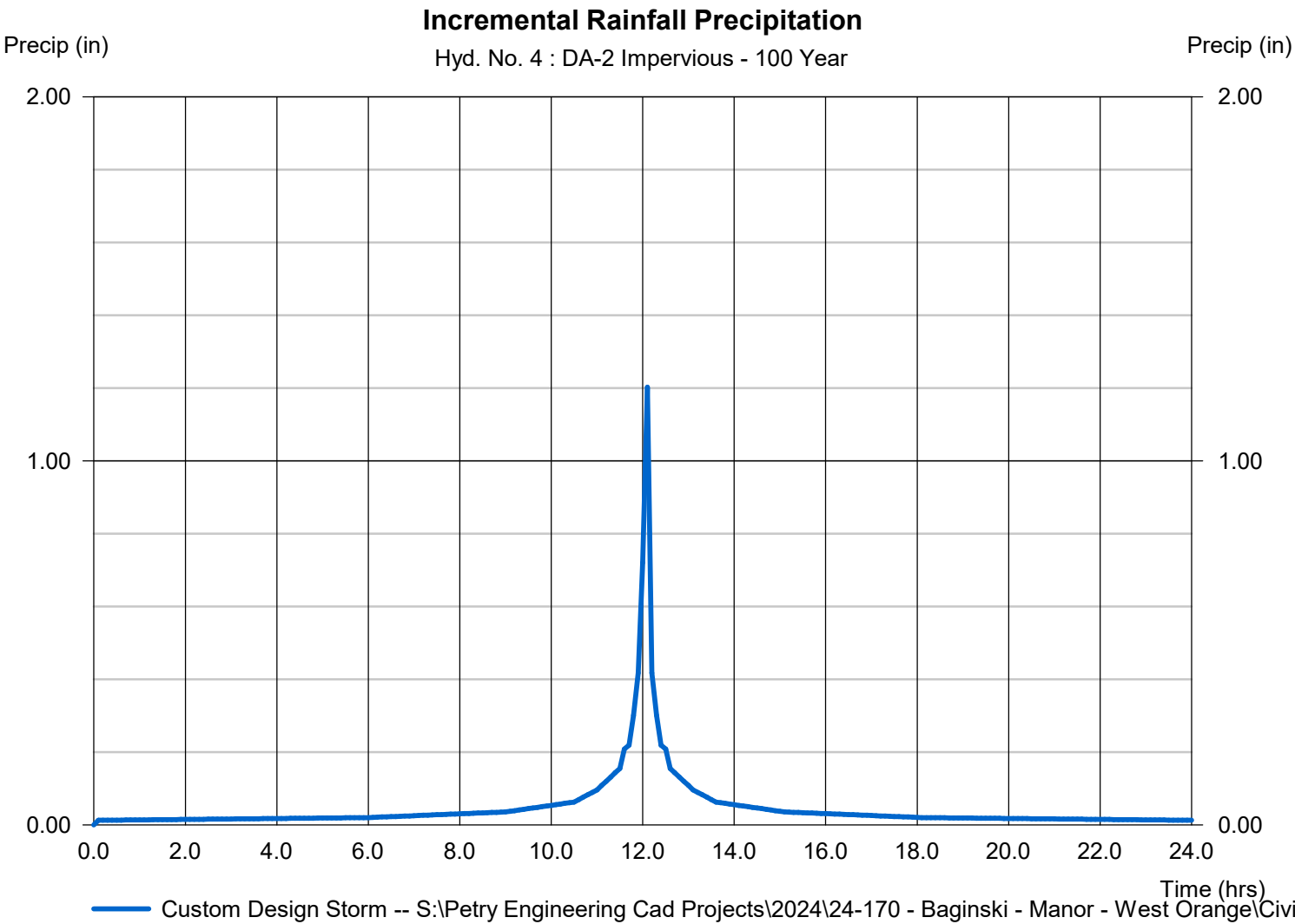


Precipitation Report

Hyd. No. 4

DA-2 Impervious

Storm Frequency	= 100 yrs	Time interval	= 6 min
Total precip.	= 11.5200 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Current		

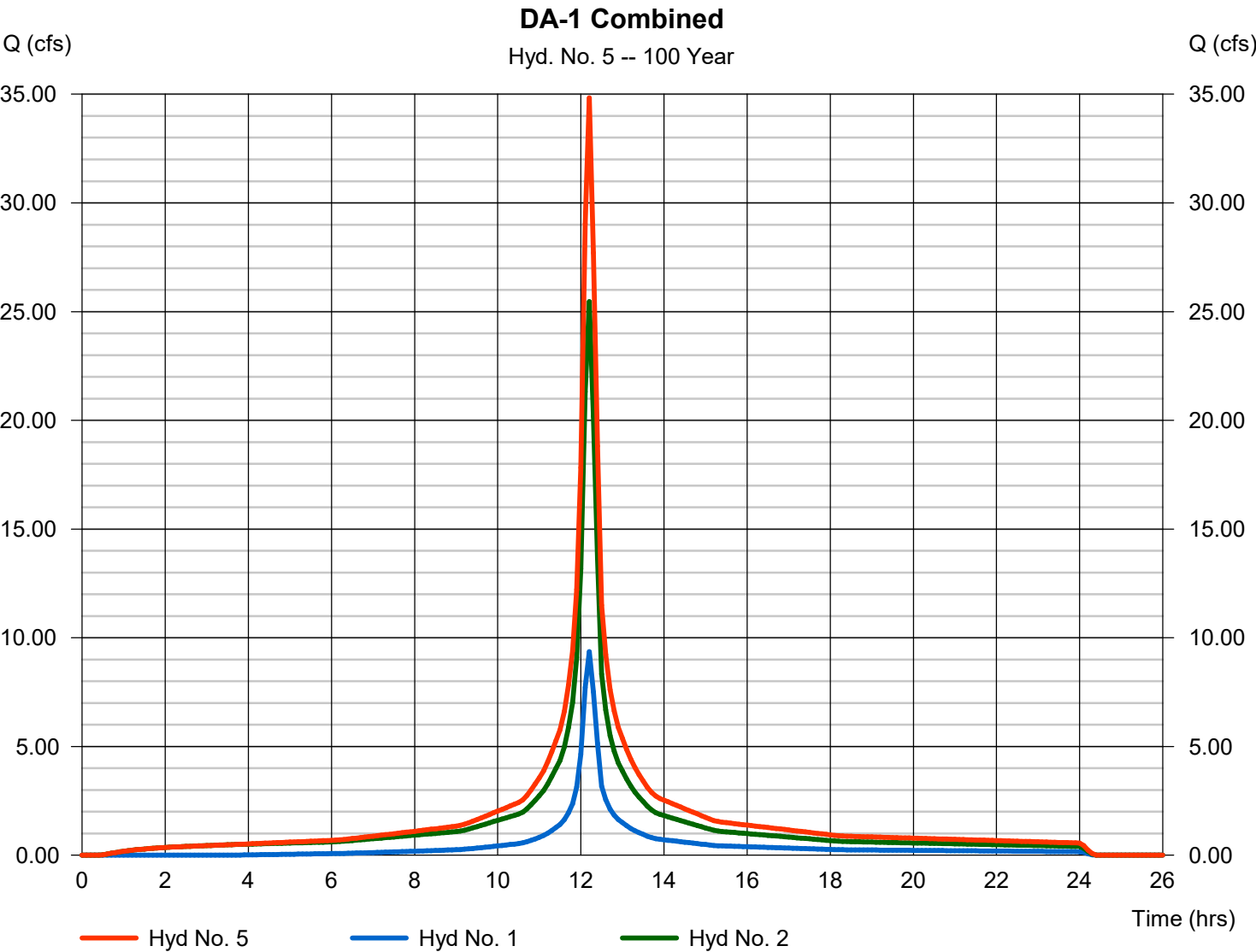


Hydrograph Report

Hyd. No. 5

DA-1 Combined

Hydrograph type	= Combine	Peak discharge	= 34.83 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 169,002 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 4.680 ac



Hydrograph Report

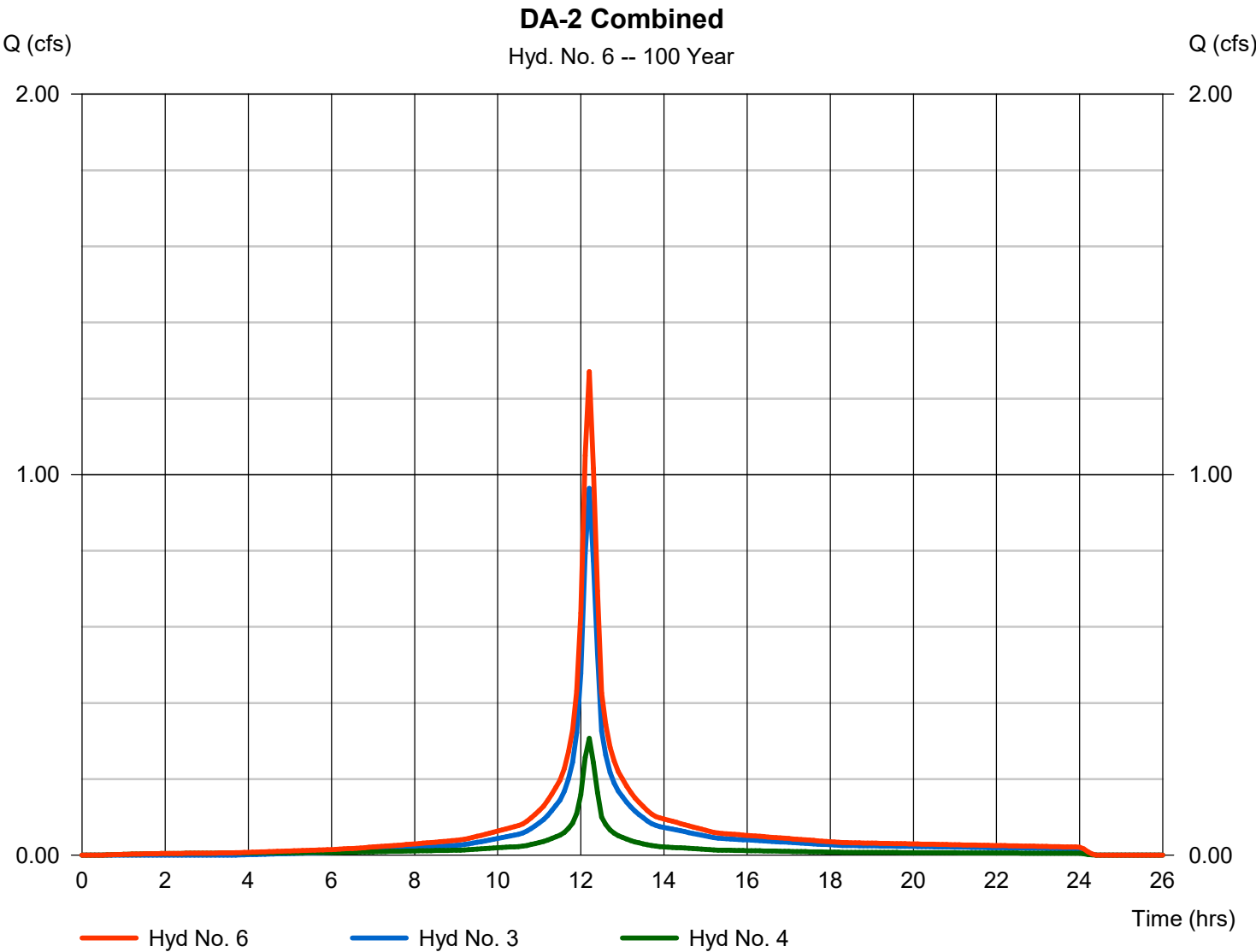
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 6

DA-2 Combined

Hydrograph type	= Combine	Peak discharge	= 1.271 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 5,815 cuft
Inflow hyds.	= 3, 4	Contrib. drain. area	= 0.180 ac



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	-----
2	69.8703	13.1000	0.8658	-----
3	0.0000	0.0000	0.0000	-----
5	79.2597	14.6000	0.8369	-----
10	88.2351	15.5000	0.8279	-----
25	102.6072	16.5000	0.8217	-----
50	114.8193	17.2000	0.8199	-----
100	127.1596	17.8000	0.8186	-----

File name: SampleFHA.idf

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	5.69	4.61	3.89	3.38	2.99	2.69	2.44	2.24	2.07	1.93	1.81	1.70
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.57	5.43	4.65	4.08	3.65	3.30	3.02	2.79	2.59	2.42	2.27	2.15
10	7.24	6.04	5.21	4.59	4.12	3.74	3.43	3.17	2.95	2.77	2.60	2.46
25	8.25	6.95	6.03	5.34	4.80	4.38	4.02	3.73	3.48	3.26	3.07	2.91
50	9.04	7.65	6.66	5.92	5.34	4.87	4.49	4.16	3.88	3.65	3.44	3.25
100	9.83	8.36	7.30	6.50	5.87	5.36	4.94	4.59	4.29	4.03	3.80	3.60

Tc = time in minutes. Values may exceed 60.

Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Current\Stormwater\Essex County - Future Projected.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	4.09	0.00	0.00	6.37	0.00	0.00	11.52

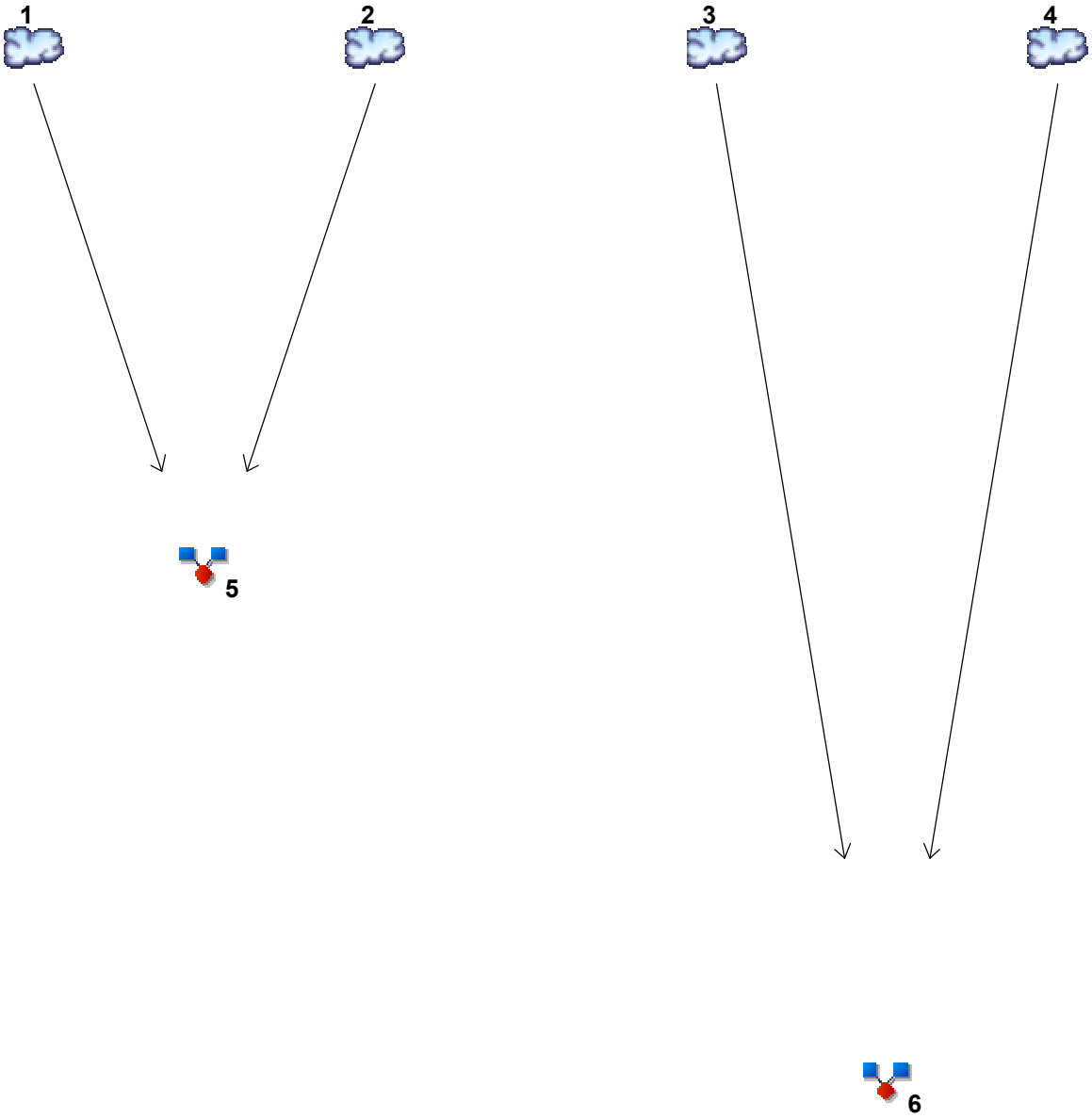
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CURRENT ADJUSTED
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Watershed Model Schematic

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



Legend

Hyd.	Origin	Description
1	SCS Runoff	DA-1 Pervious
2	SCS Runoff	DA-1 Impervious
3	SCS Runoff	DA-2 Pervious
4	SCS Runoff	DA-2 Impervious
5	Combine	DA-1 Combined
6	Combine	DA-2 Combined

Hydrograph Summary Report

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

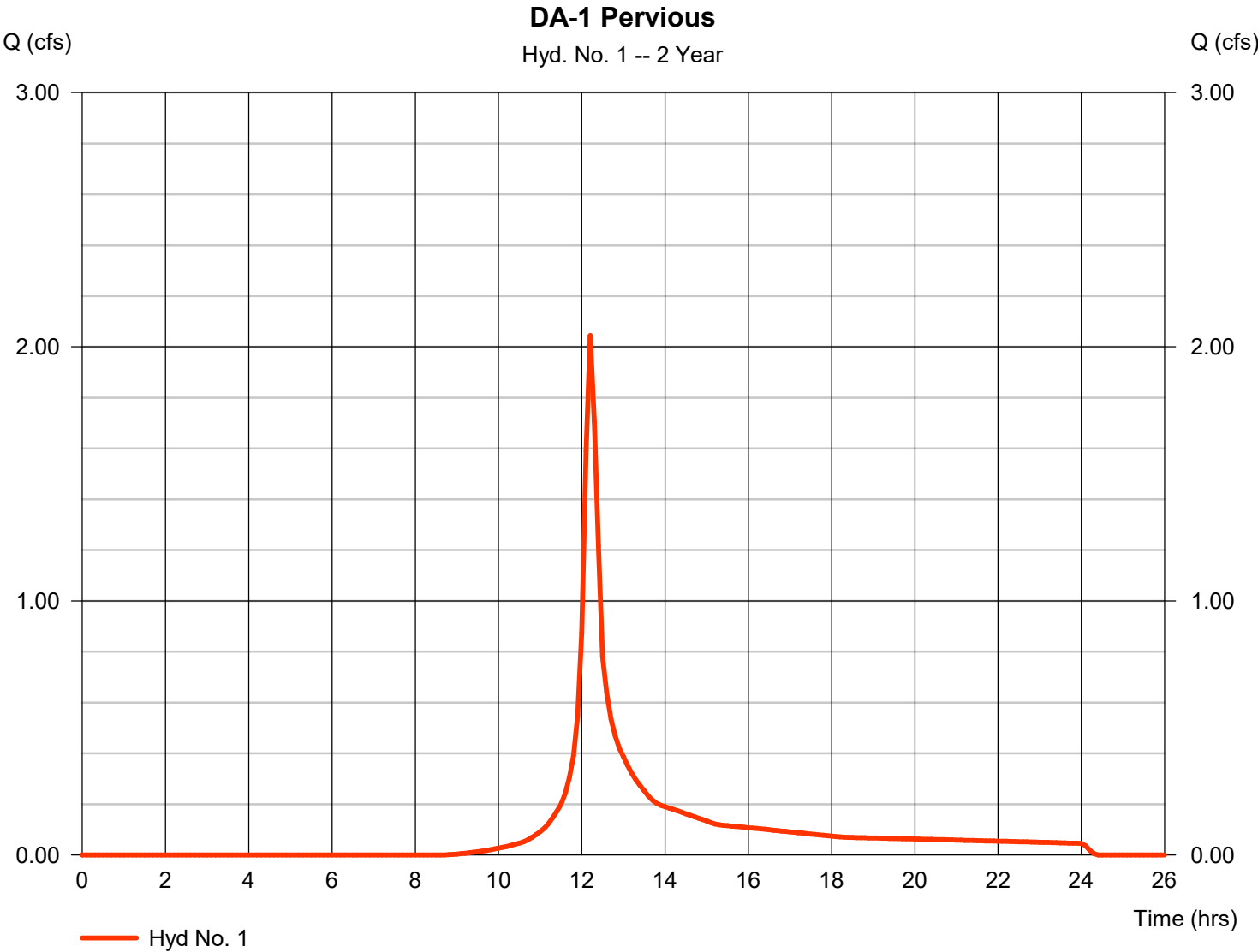
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	2.044	6	732	8,726	-----	-----	-----	DA-1 Pervious
2	SCS Runoff	7.065	6	732	34,035	-----	-----	-----	DA-1 Impervious
3	SCS Runoff	0.180	6	732	768	-----	-----	-----	DA-2 Pervious
4	SCS Runoff	0.091	6	732	441	-----	-----	-----	DA-2 Impervious
5	Combine	9.109	6	732	42,760	1, 2,	-----	-----	DA-1 Combined
6	Combine	0.271	6	732	1,209	3, 4,	-----	-----	DA-2 Combined
Proposed - Current Adjusted.gpw					Return Period: 2 Year			Tuesday, 12 / 23 / 2025	

Hydrograph Report

Hyd. No. 1

DA-1 Pervious

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.044 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.20 hrs
Time interval	=	6 min	Hyd. volume	=	8,726 cuft
Drainage area	=	1.590 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	12.60 min
Total precip.	=	3.47 in	Distribution	=	Custom
Storm duration	=	S:\Petry Engineering Cad Projects\2024\24-170 - Baginask Manor - West Orange			

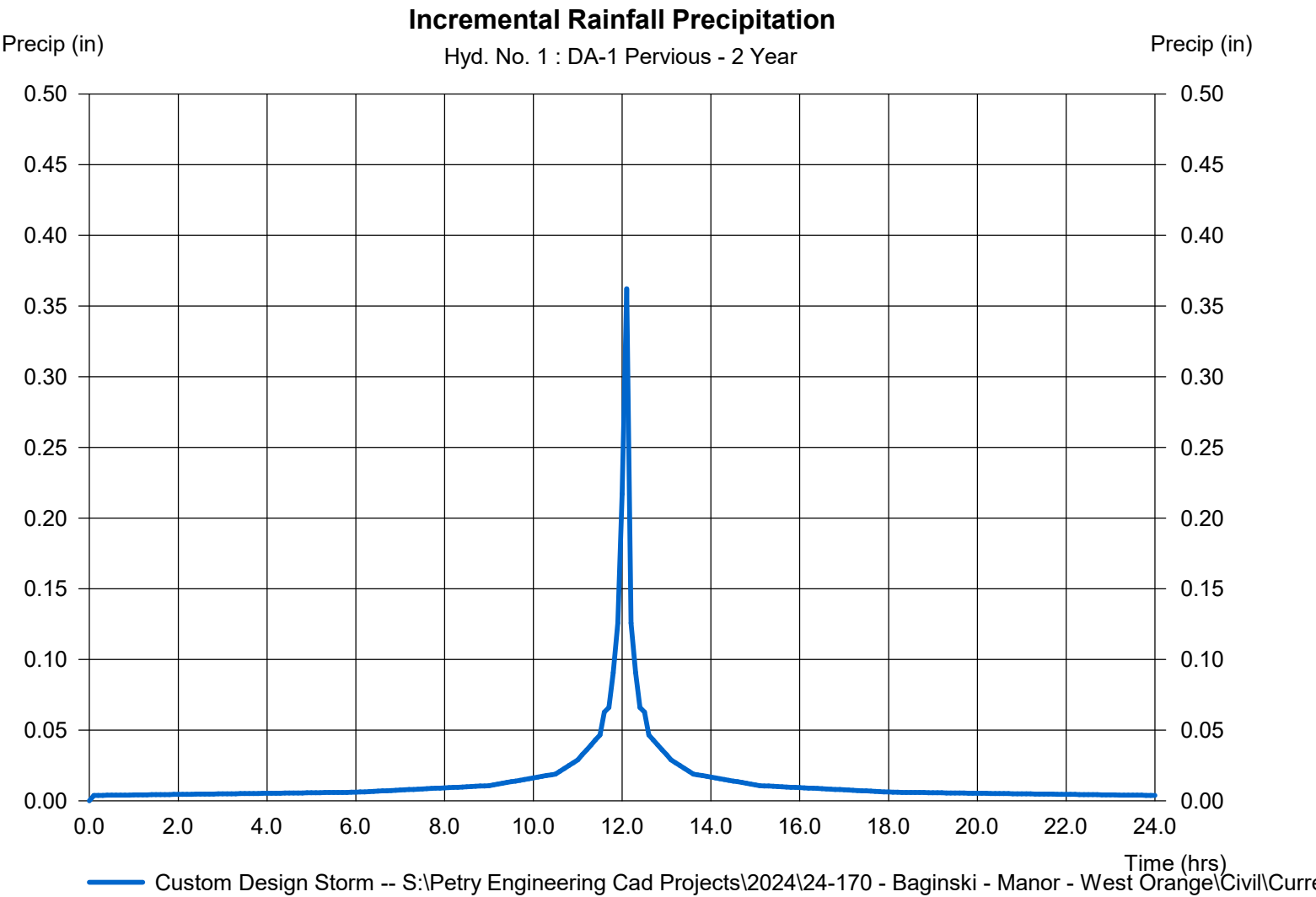


Precipitation Report

Hyd. No. 1

DA-1 Pervious

Storm Frequency	= 2 yrs	Time interval	= 6 min
Total precip.	= 3.4700 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		

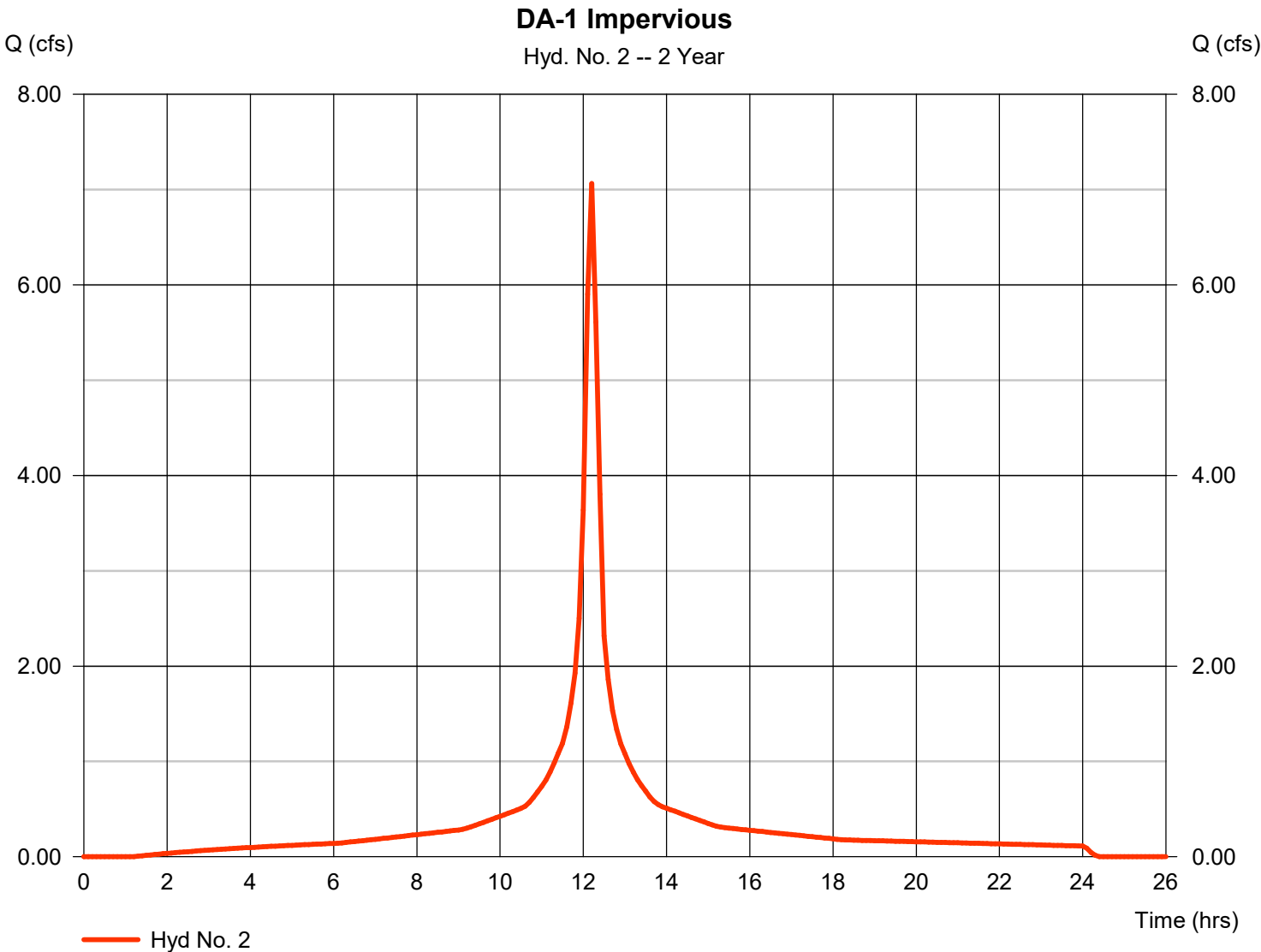


Hydrograph Report

Hyd. No. 2

DA-1 Impervious

Hydrograph type	= SCS Runoff	Peak discharge	= 7.065 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 34,035 cuft
Drainage area	= 3.090 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 12.60 min
Total precip.	= 3.47 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginns Manor - West Orange		

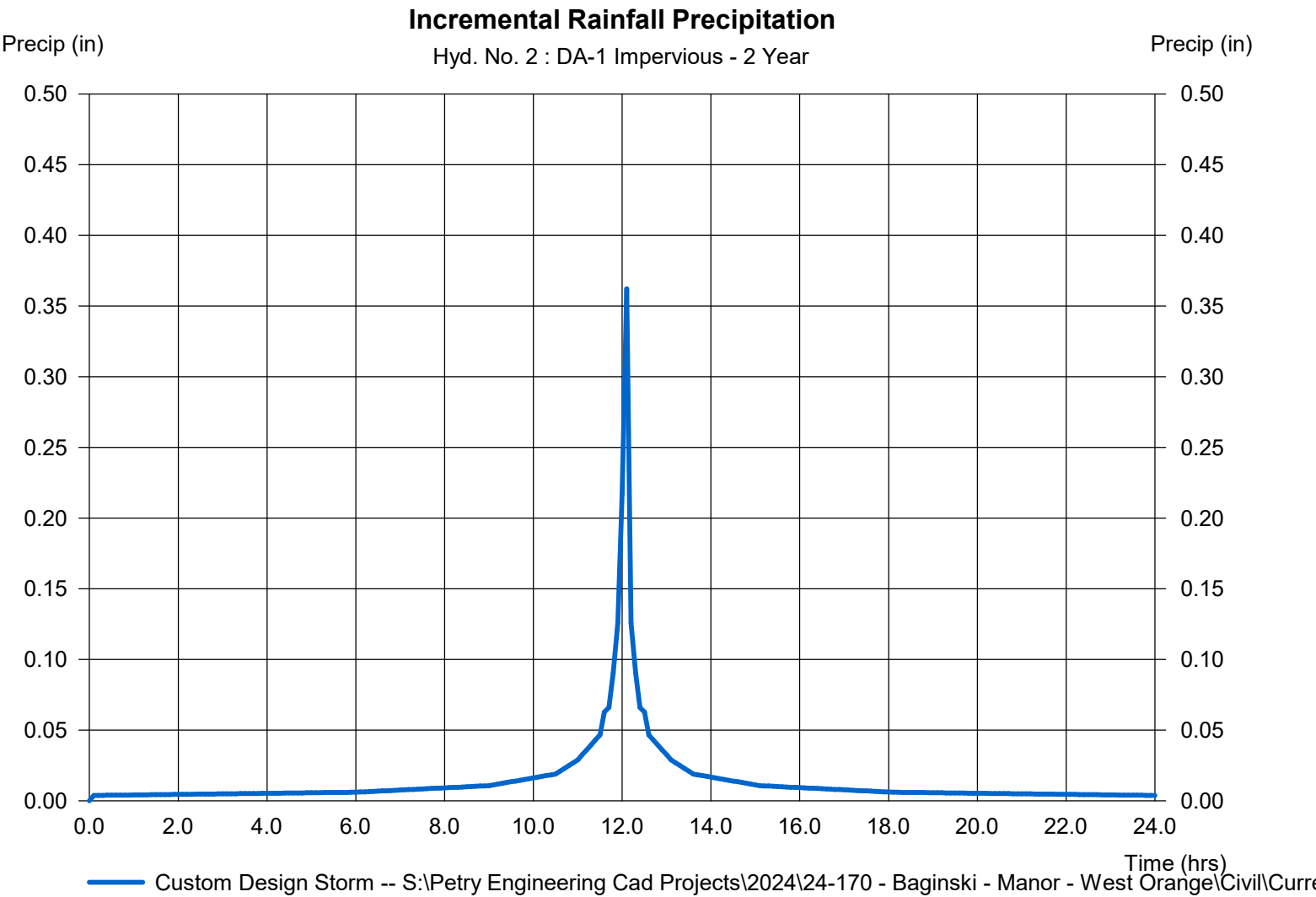


Precipitation Report

Hyd. No. 2

DA-1 Impervious

Storm Frequency	= 2 yrs	Time interval	= 6 min
Total precip.	= 3.4700 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		

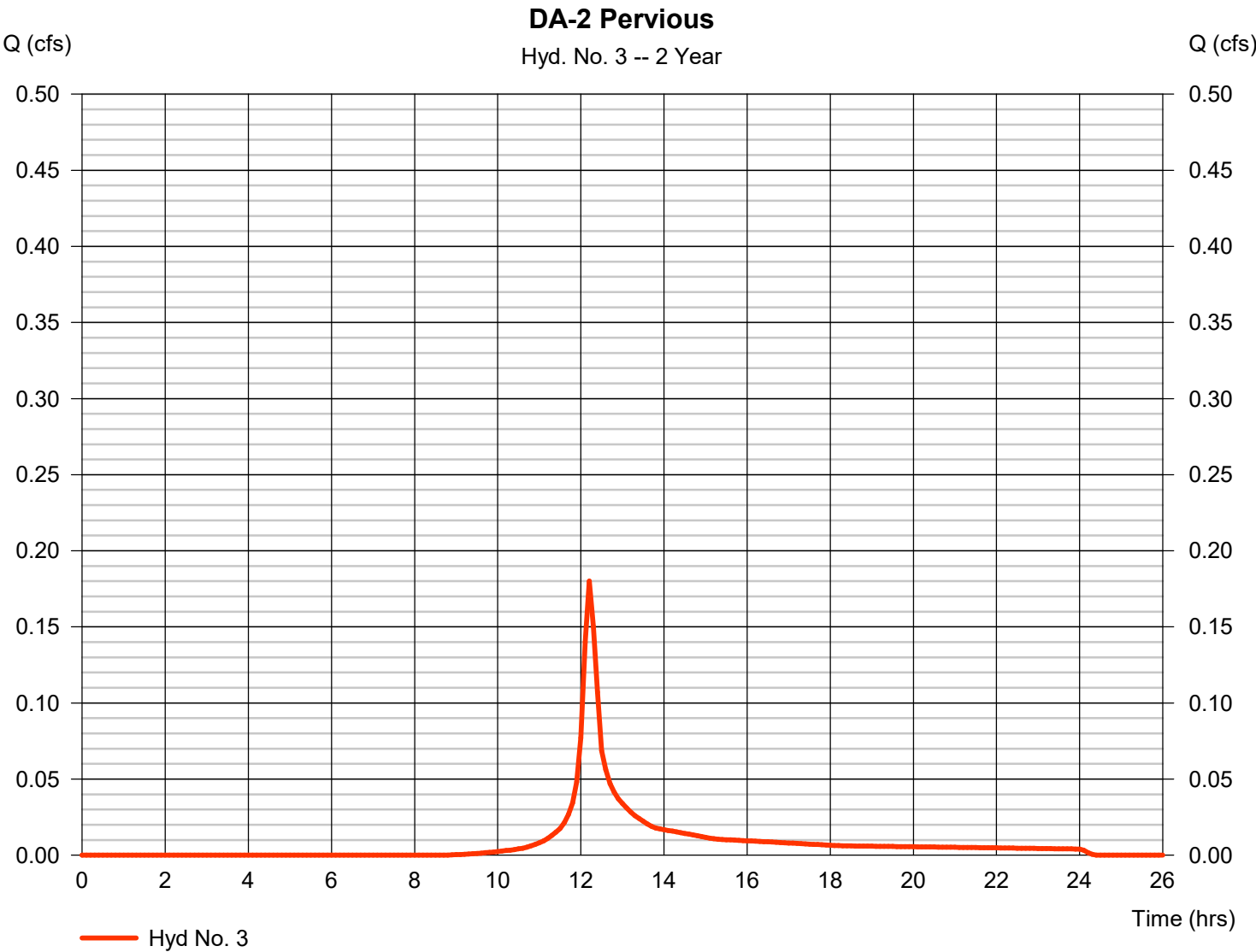


Hydrograph Report

Hyd. No. 3

DA-2 Pervious

Hydrograph type	= SCS Runoff	Peak discharge	= 0.180 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 768 cuft
Drainage area	= 0.140 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.70 min
Total precip.	= 3.47 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024-2025\170 - Baginask Manor - West Orange		

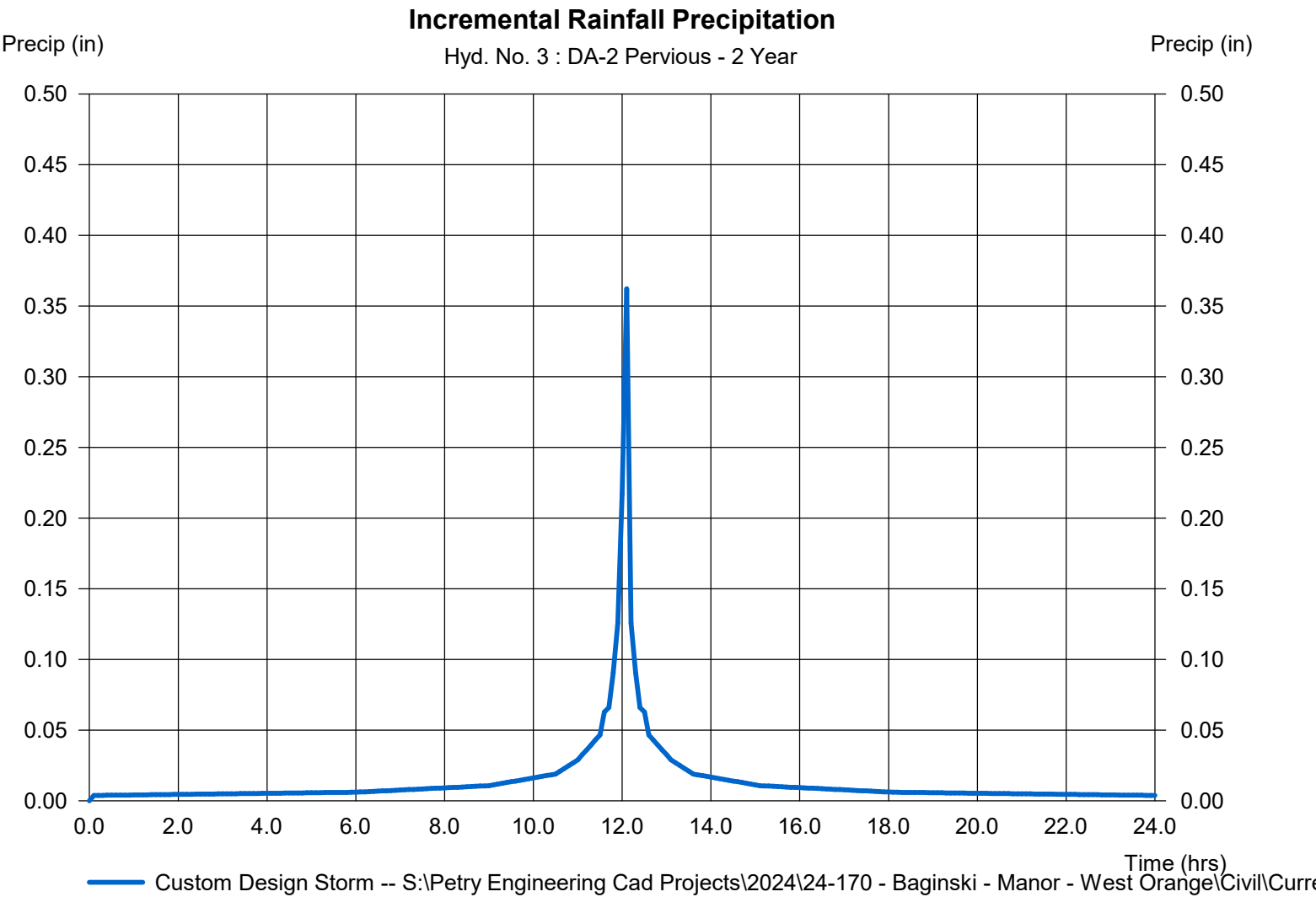


Precipitation Report

Hyd. No. 3

DA-2 Pervious

Storm Frequency	= 2 yrs	Time interval	= 6 min
Total precip.	= 3.4700 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		



Hydrograph Report

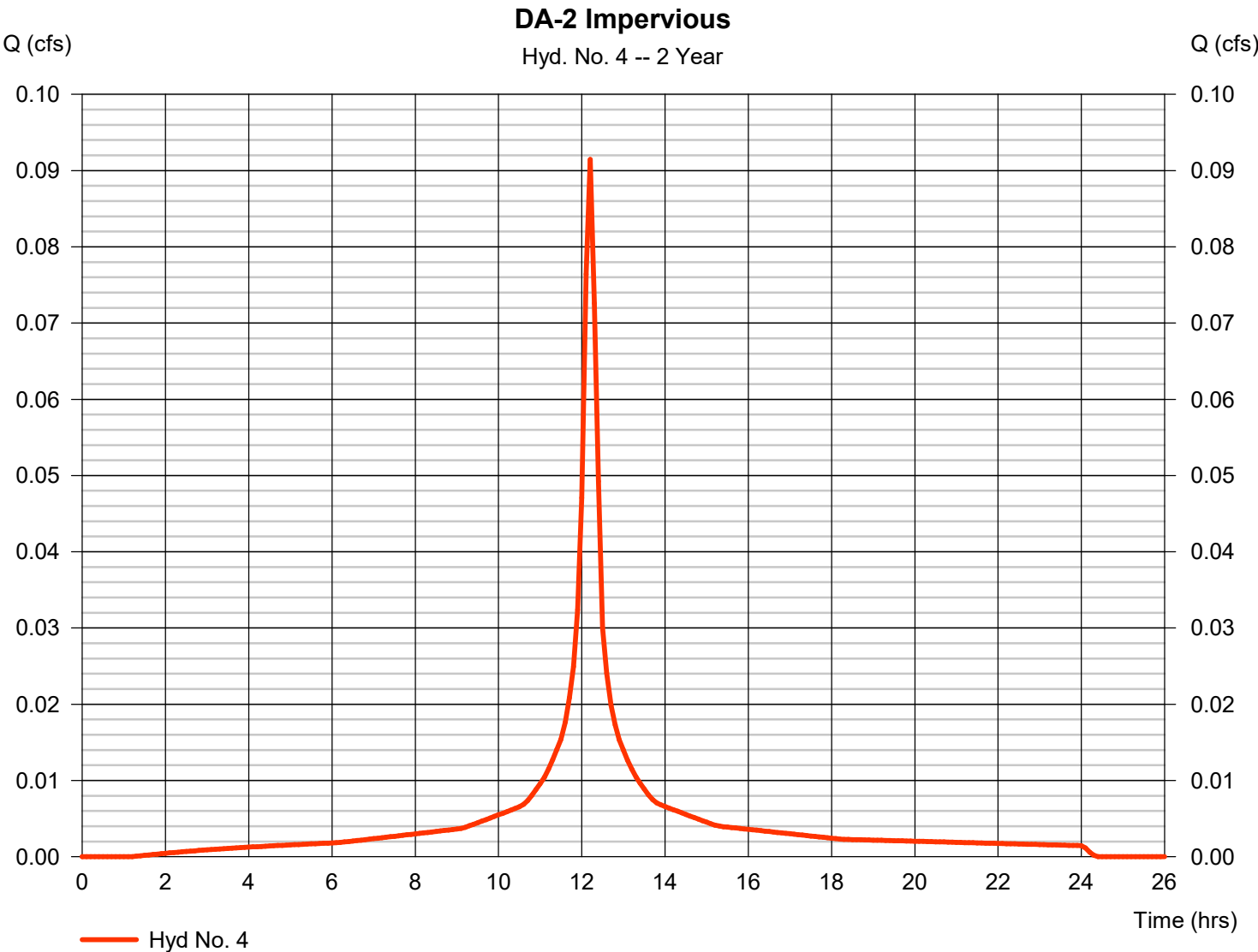
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 4

DA-2 Impervious

Hydrograph type	= SCS Runoff	Peak discharge	= 0.091 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 441 cuft
Drainage area	= 0.040 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.70 min
Total precip.	= 3.47 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Bagin's Manor - West Orange		

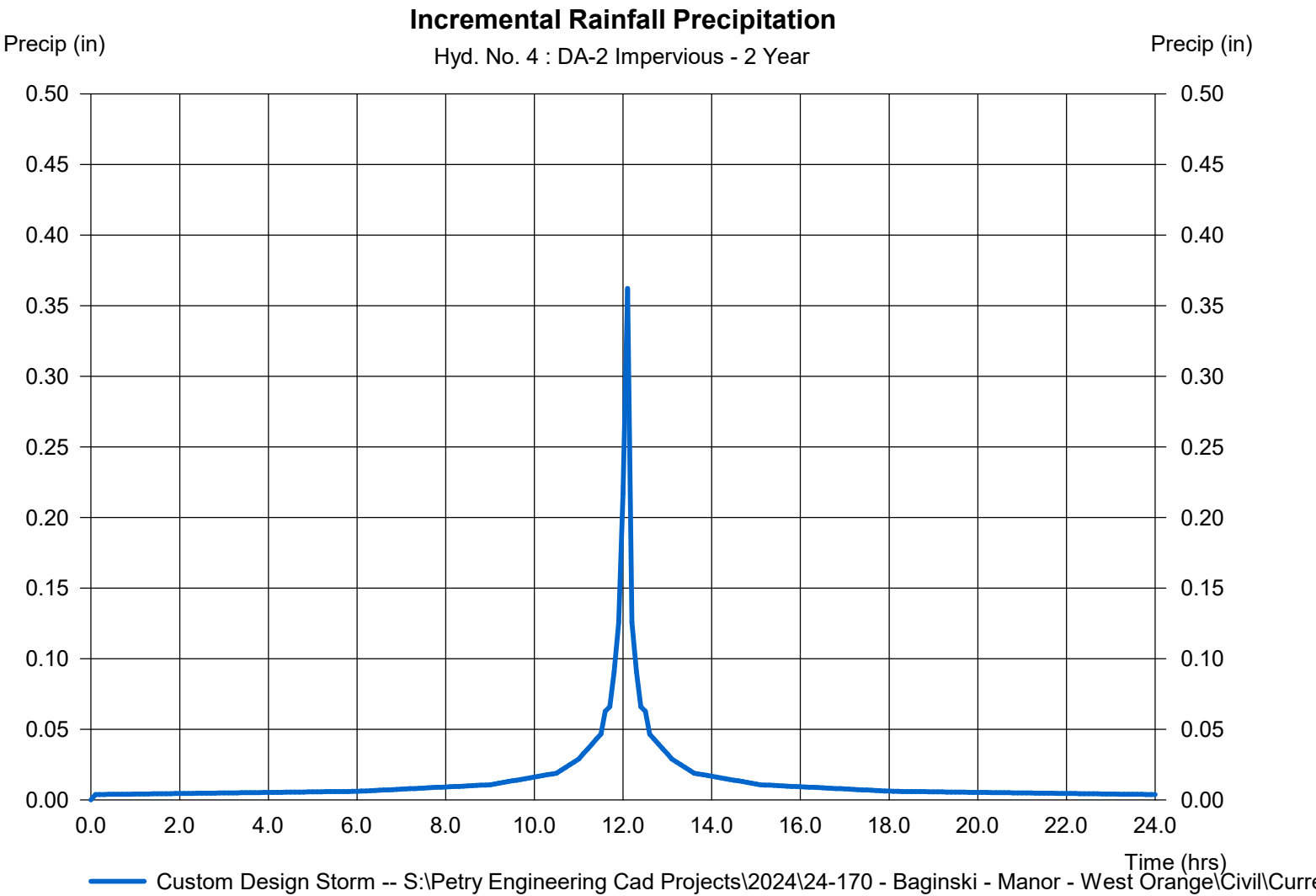


Precipitation Report

Hyd. No. 4

DA-2 Impervious

Storm Frequency	= 2 yrs	Time interval	= 6 min
Total precip.	= 3.4700 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		

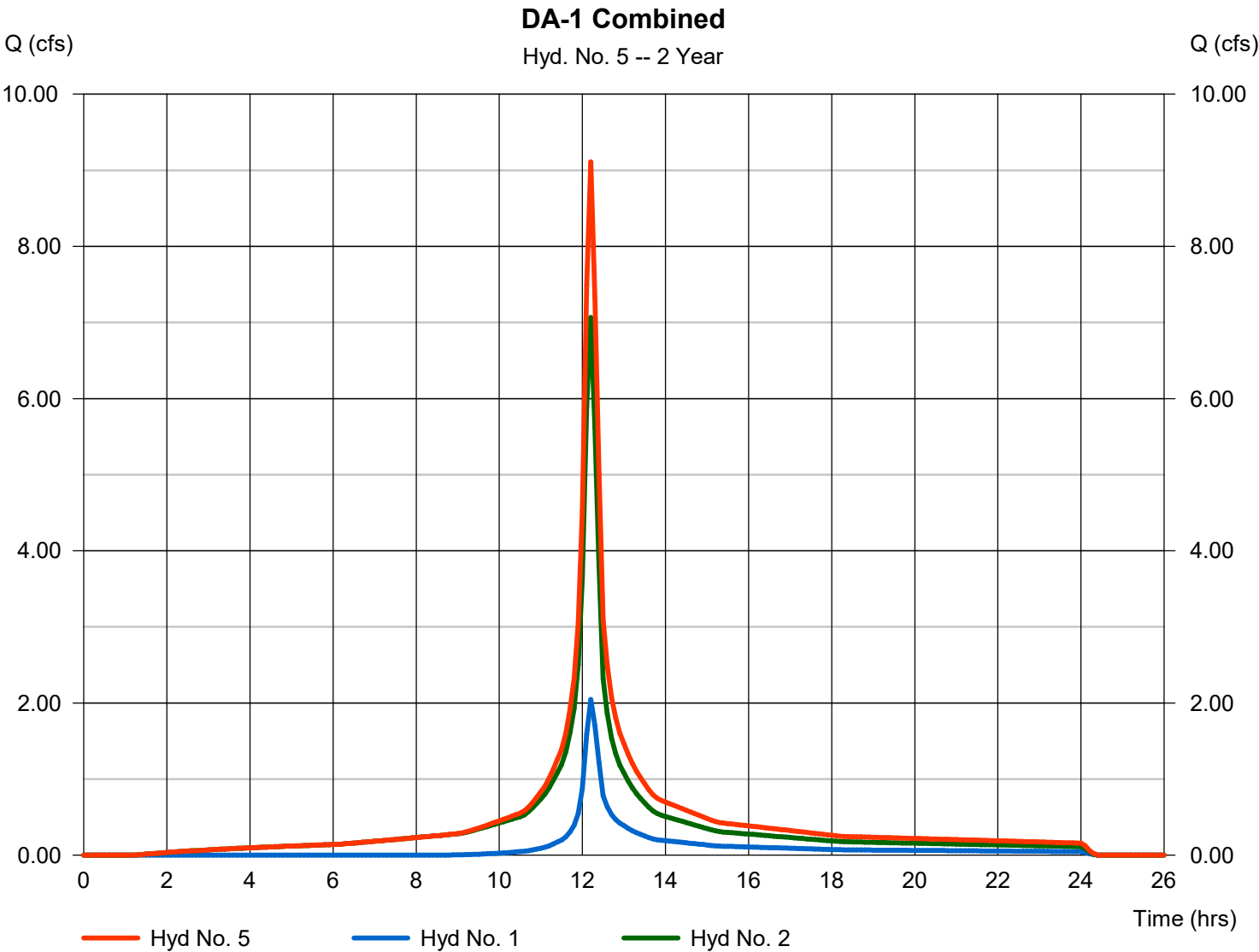


Hydrograph Report

Hyd. No. 5

DA-1 Combined

Hydrograph type	= Combine	Peak discharge	= 9.109 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 42,760 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 4.680 ac



Hydrograph Report

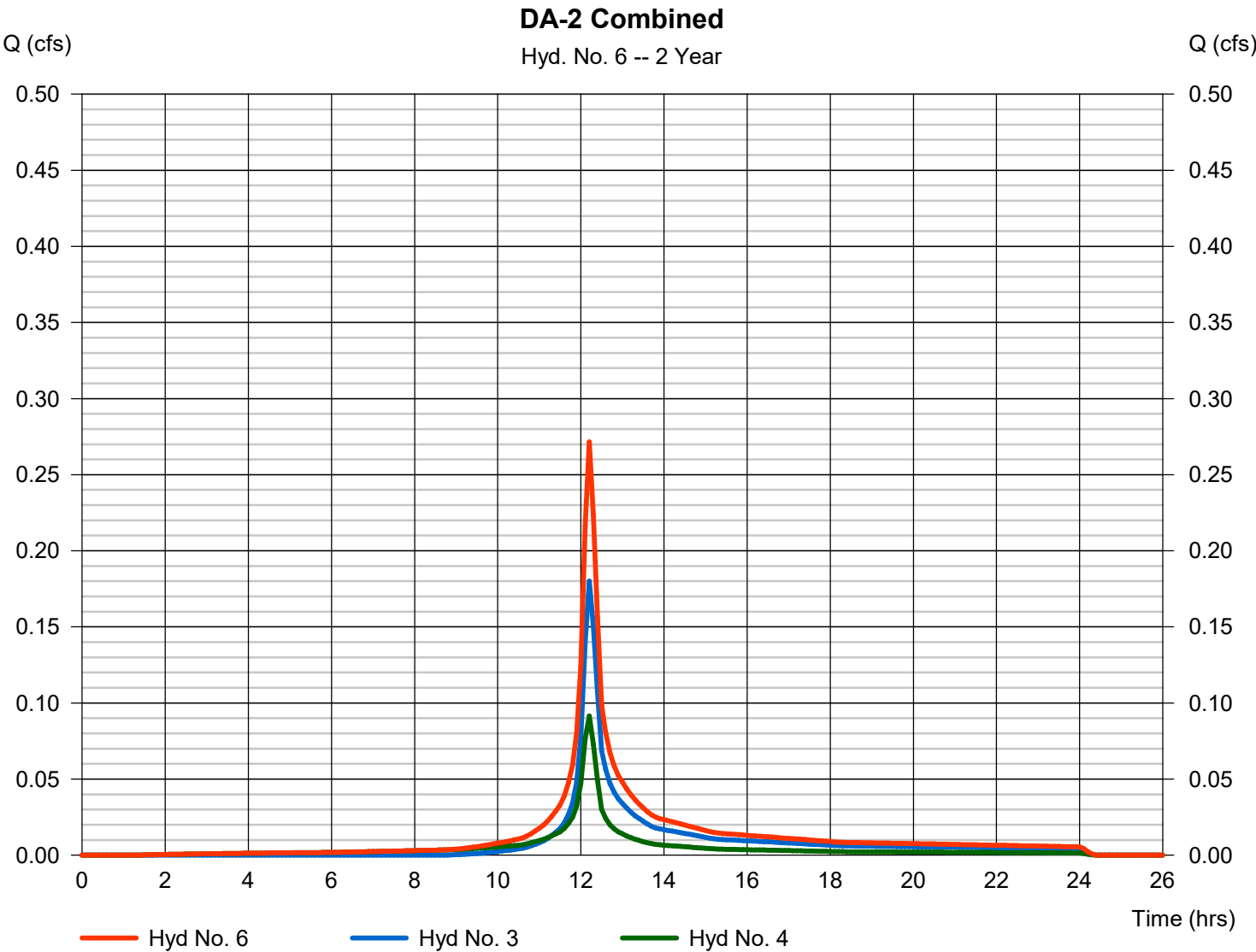
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 6

DA-2 Combined

Hydrograph type	= Combine	Peak discharge	= 0.271 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 1,209 cuft
Inflow hyds.	= 3, 4	Contrib. drain. area	= 0.180 ac



Hydrograph Summary Report

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

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	4.095	6	732	17,461	-----	-----	-----	DA-1 Pervious
2	SCS Runoff	11.02	6	732	54,078	-----	-----	-----	DA-1 Impervious
3	SCS Runoff	0.361	6	732	1,537	-----	-----	-----	DA-2 Pervious
4	SCS Runoff	0.143	6	732	700	-----	-----	-----	DA-2 Impervious
5	Combine	15.12	6	732	71,538	1, 2,	-----	-----	DA-1 Combined
6	Combine	0.503	6	732	2,237	3, 4,	-----	-----	DA-2 Combined
Proposed - Current Adjusted.gpw					Return Period: 10 Year			Tuesday, 12 / 23 / 2025	

Hydrograph Report

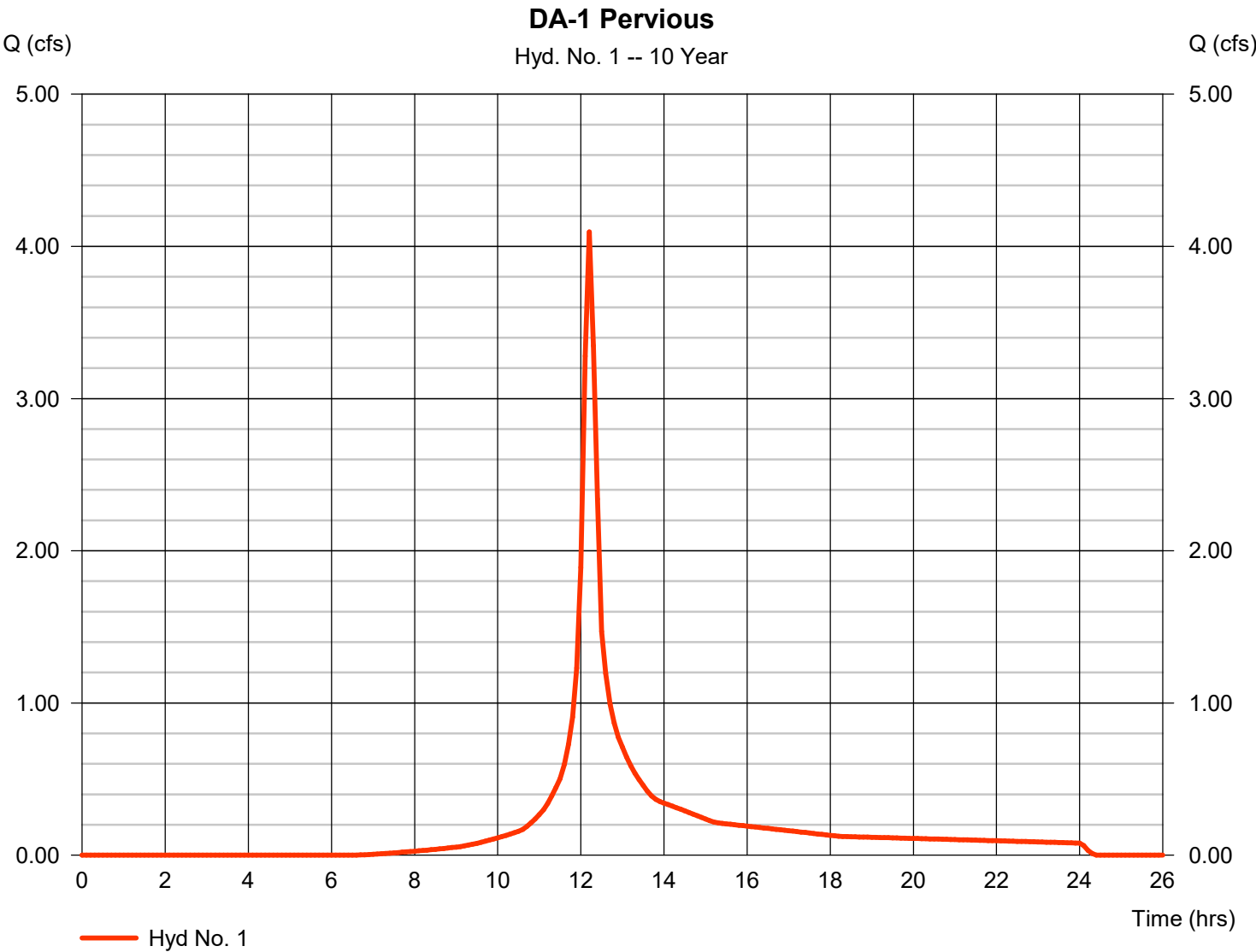
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 1

DA-1 Pervious

Hydrograph type	= SCS Runoff	Peak discharge	= 4.095 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 17,461 cuft
Drainage area	= 1.590 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 12.60 min
Total precip.	= 5.38 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024-170 - Baginask Manor - West Orange		

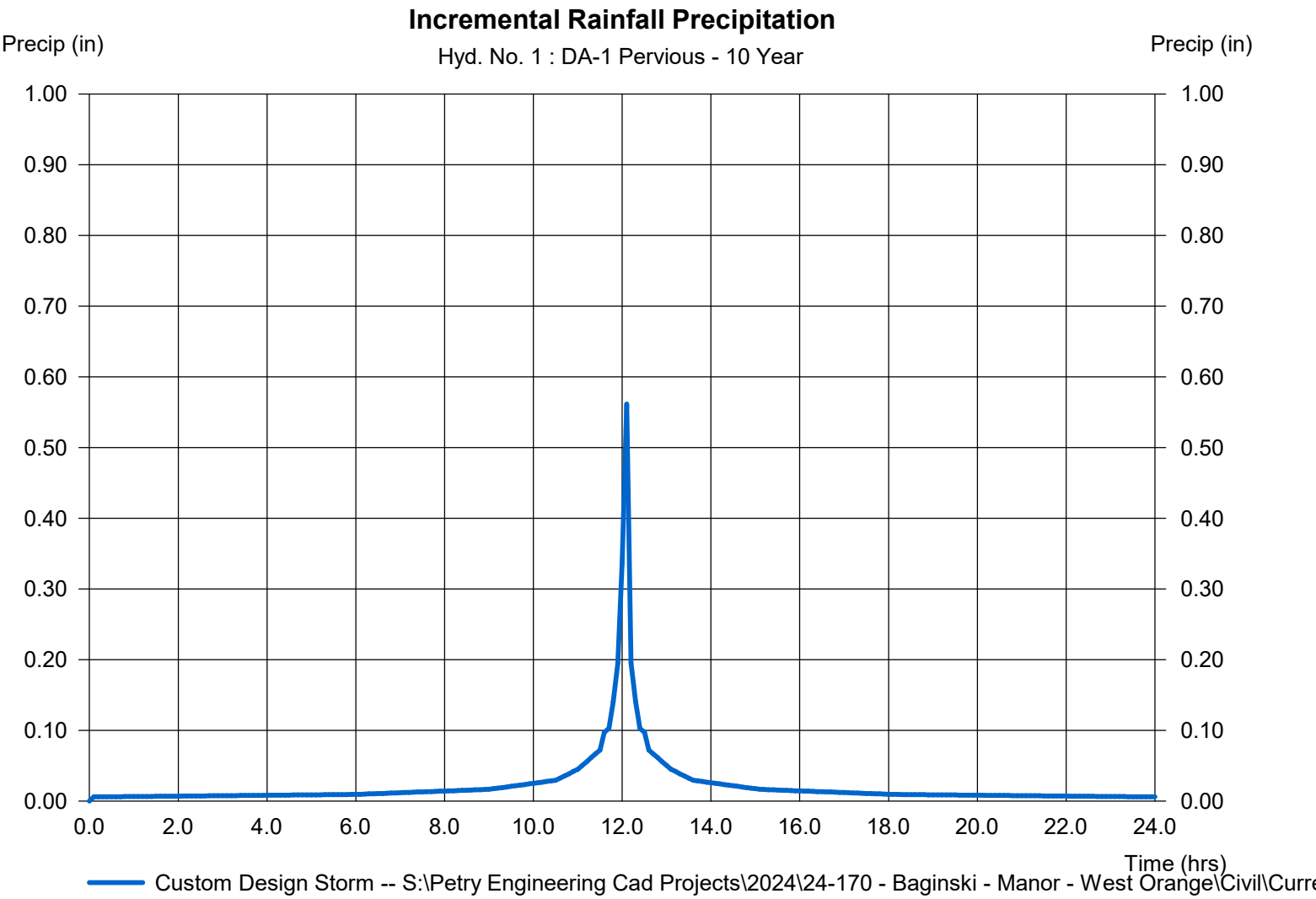


Precipitation Report

Hyd. No. 1

DA-1 Pervious

Storm Frequency	= 10 yrs	Time interval	= 6 min
Total precip.	= 5.3800 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		

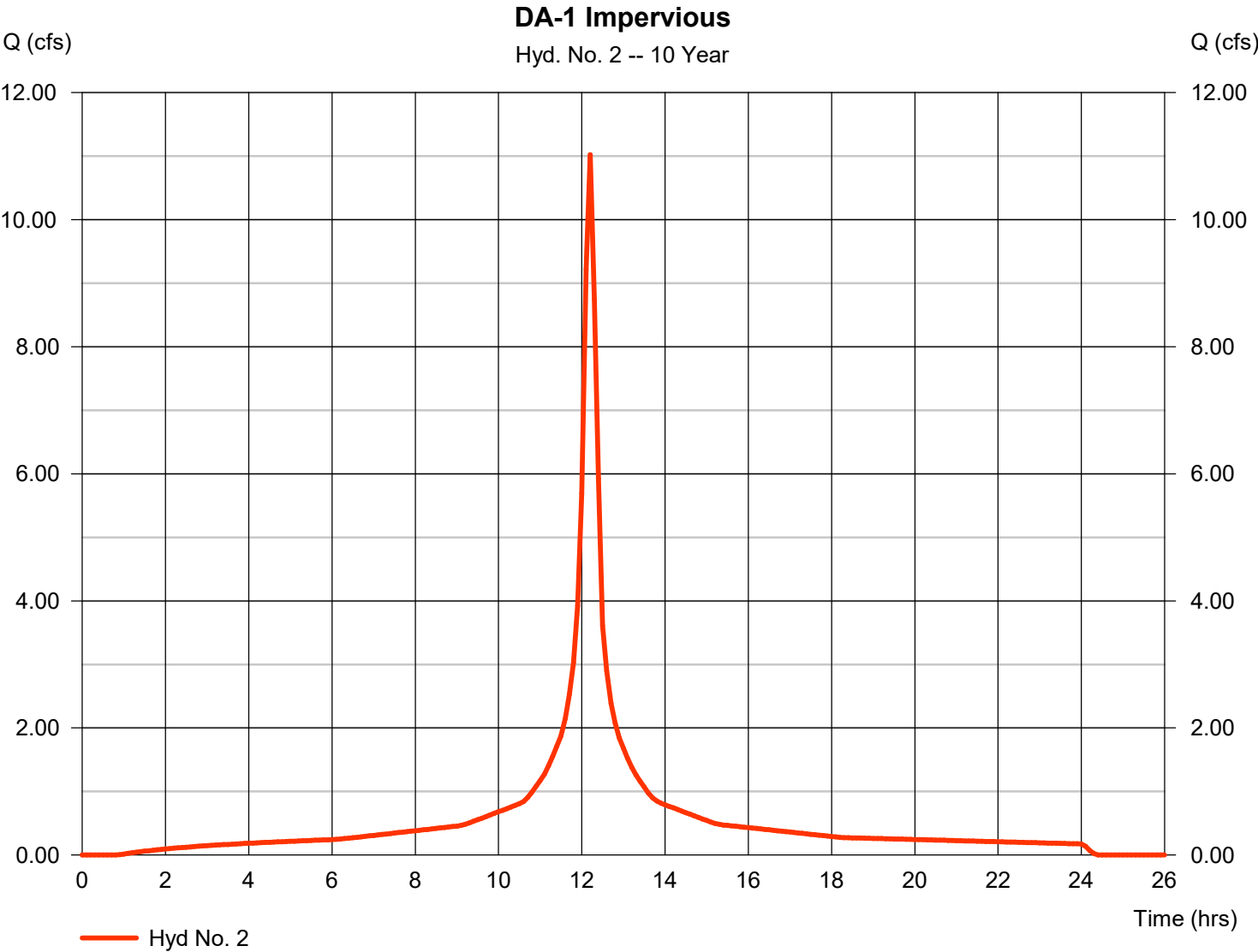


Hydrograph Report

Hyd. No. 2

DA-1 Impervious

Hydrograph type	= SCS Runoff	Peak discharge	= 11.02 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 54,078 cuft
Drainage area	= 3.090 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 12.60 min
Total precip.	= 5.38 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024-170 - Baginask Manor - West Orange		

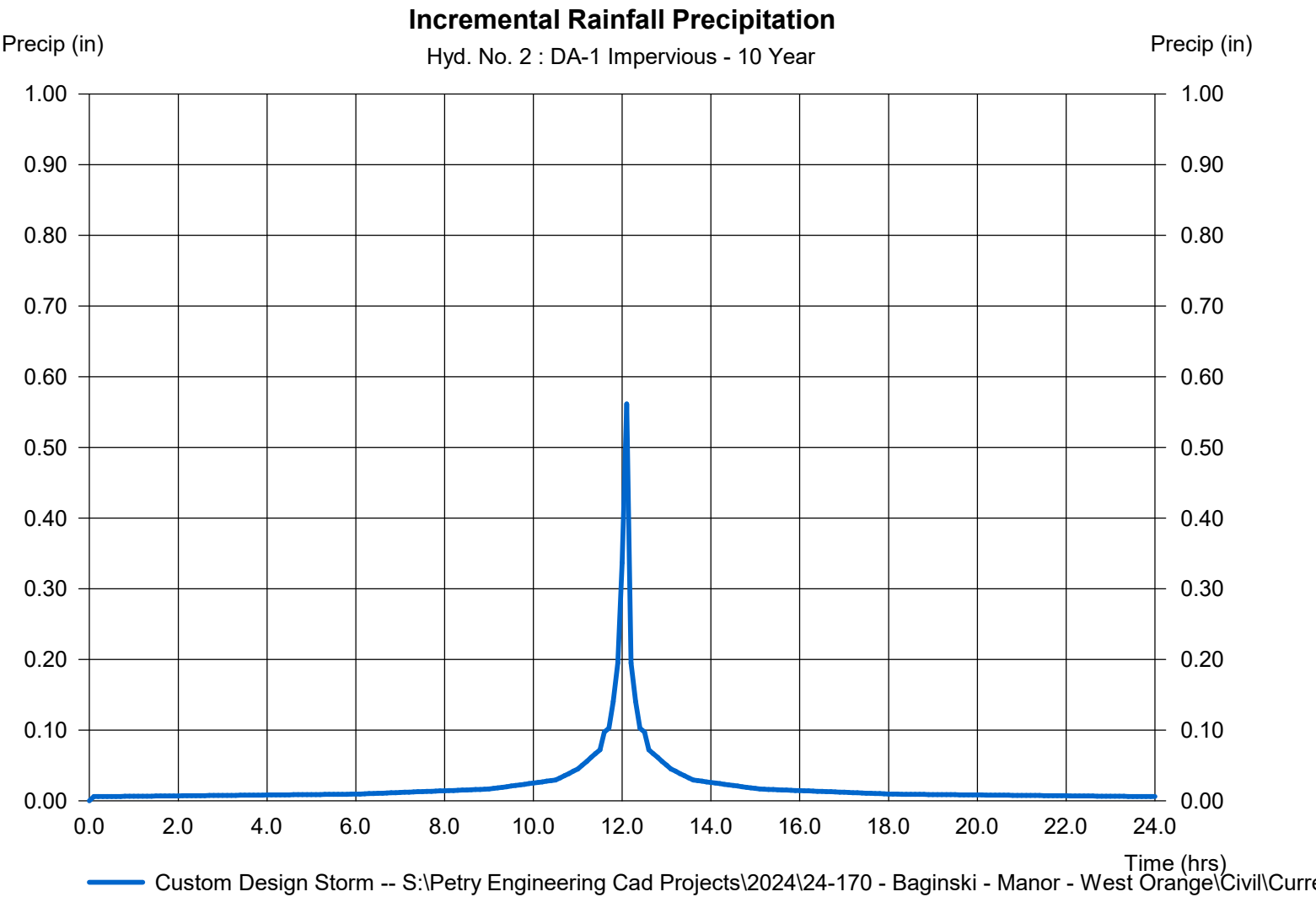


Precipitation Report

Hyd. No. 2

DA-1 Impervious

Storm Frequency	= 10 yrs	Time interval	= 6 min
Total precip.	= 5.3800 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		

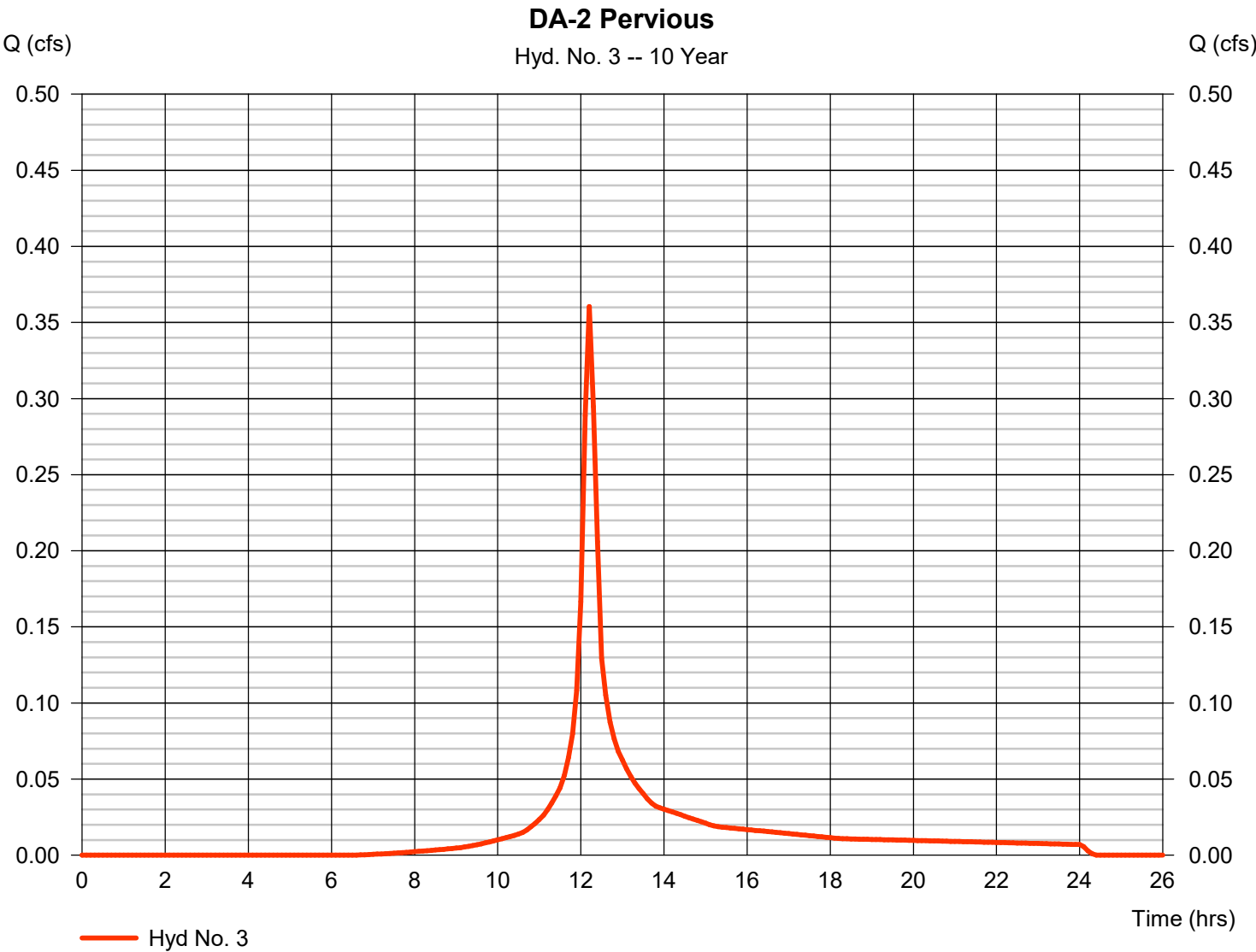


Hydrograph Report

Hyd. No. 3

DA-2 Pervious

Hydrograph type	= SCS Runoff	Peak discharge	= 0.361 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 1,537 cuft
Drainage area	= 0.140 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.70 min
Total precip.	= 5.38 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginask Manor - West Orange		

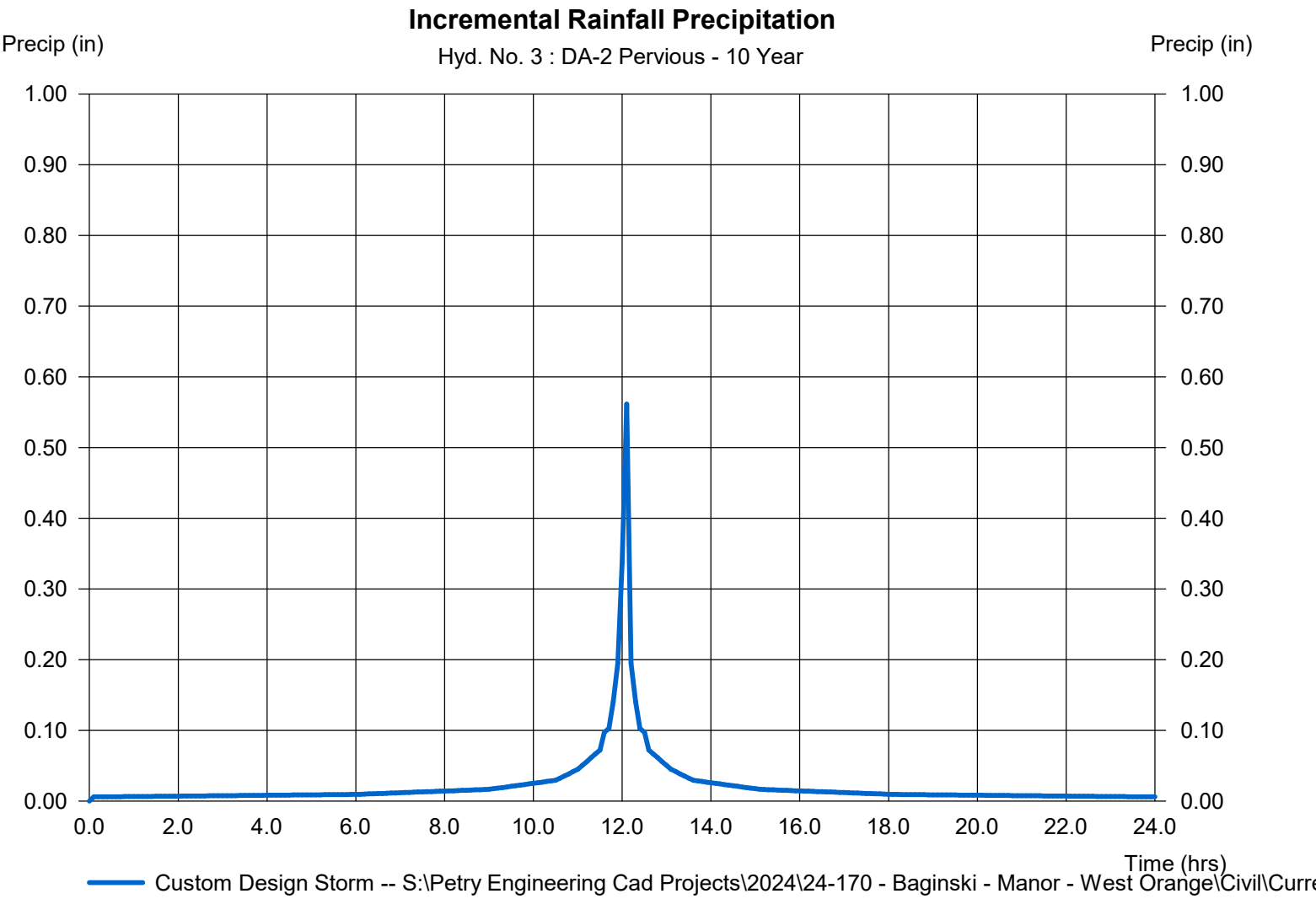


Precipitation Report

Hyd. No. 3

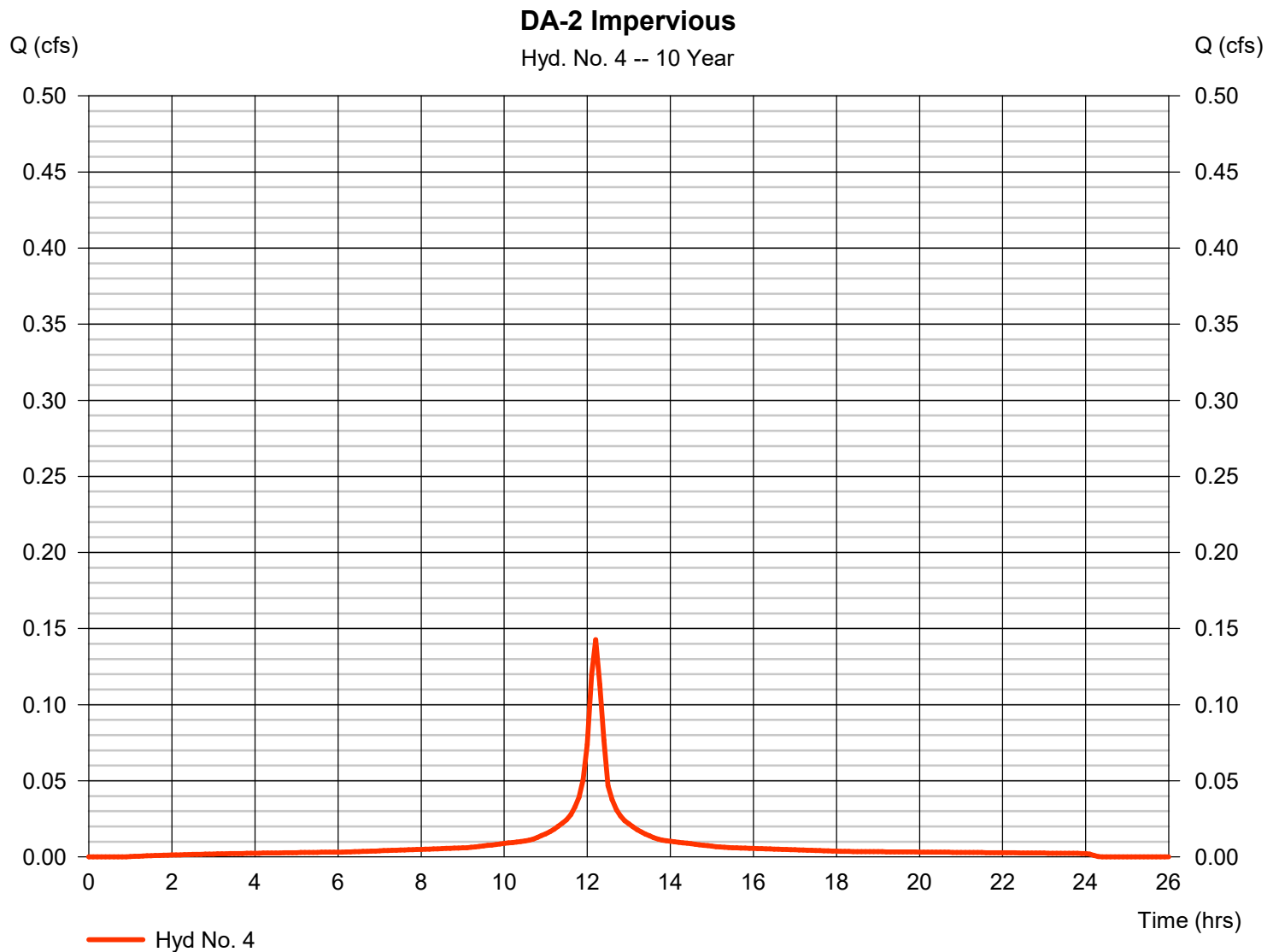
DA-2 Pervious

Storm Frequency	= 10 yrs	Time interval	= 6 min
Total precip.	= 5.3800 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		



DA-2 Impervious

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.143 cfs
Storm frequency	=	10 yrs	Time to peak	=	12.20 hrs
Time interval	=	6 min	Hyd. volume	=	700 cuft
Drainage area	=	0.040 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	13.70 min
Total precip.	=	5.38 in	Distribution	=	Custom
Storm duration	=	5.00 hrs			

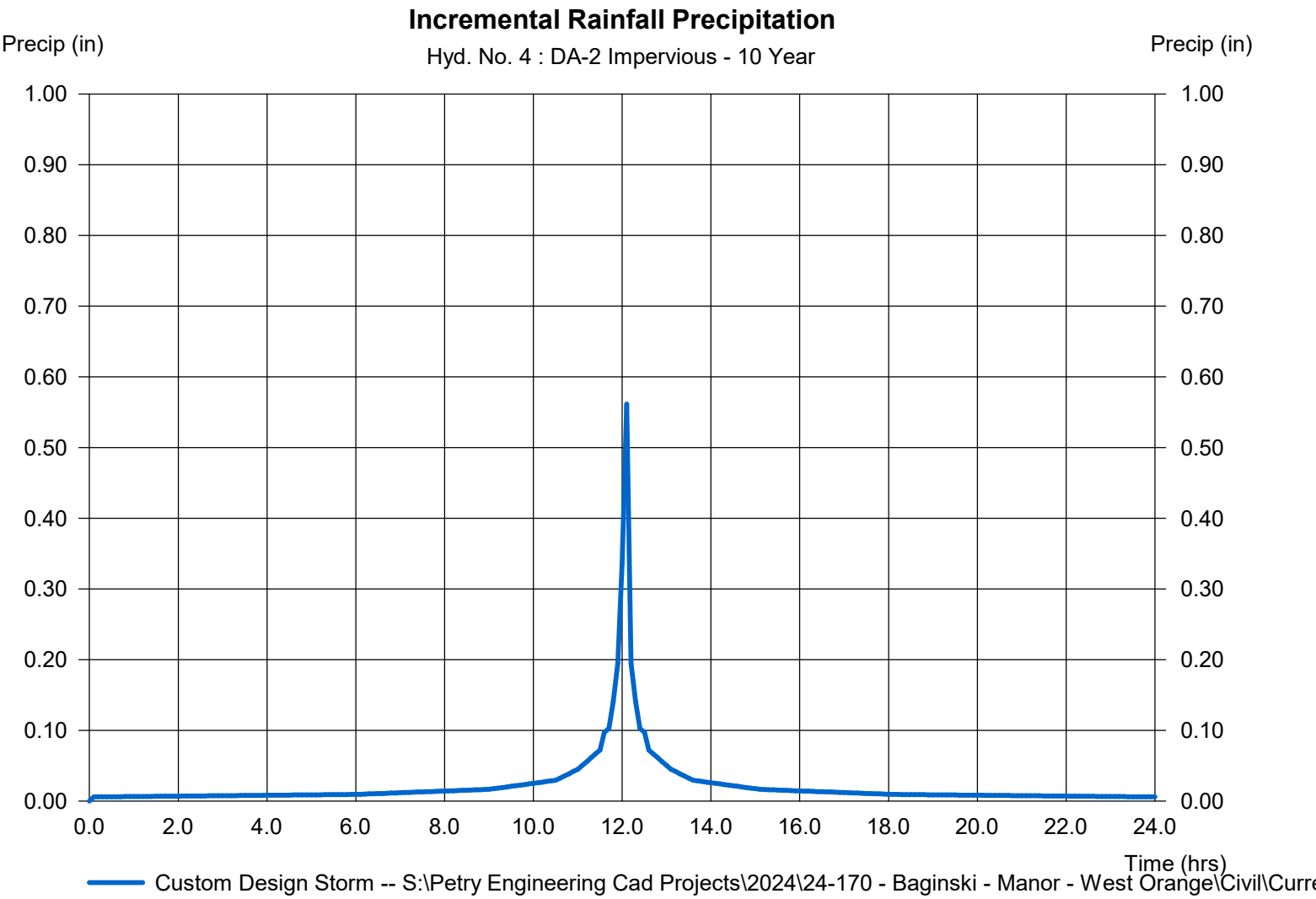


Precipitation Report

Hyd. No. 4

DA-2 Impervious

Storm Frequency	= 10 yrs	Time interval	= 6 min
Total precip.	= 5.3800 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Current		

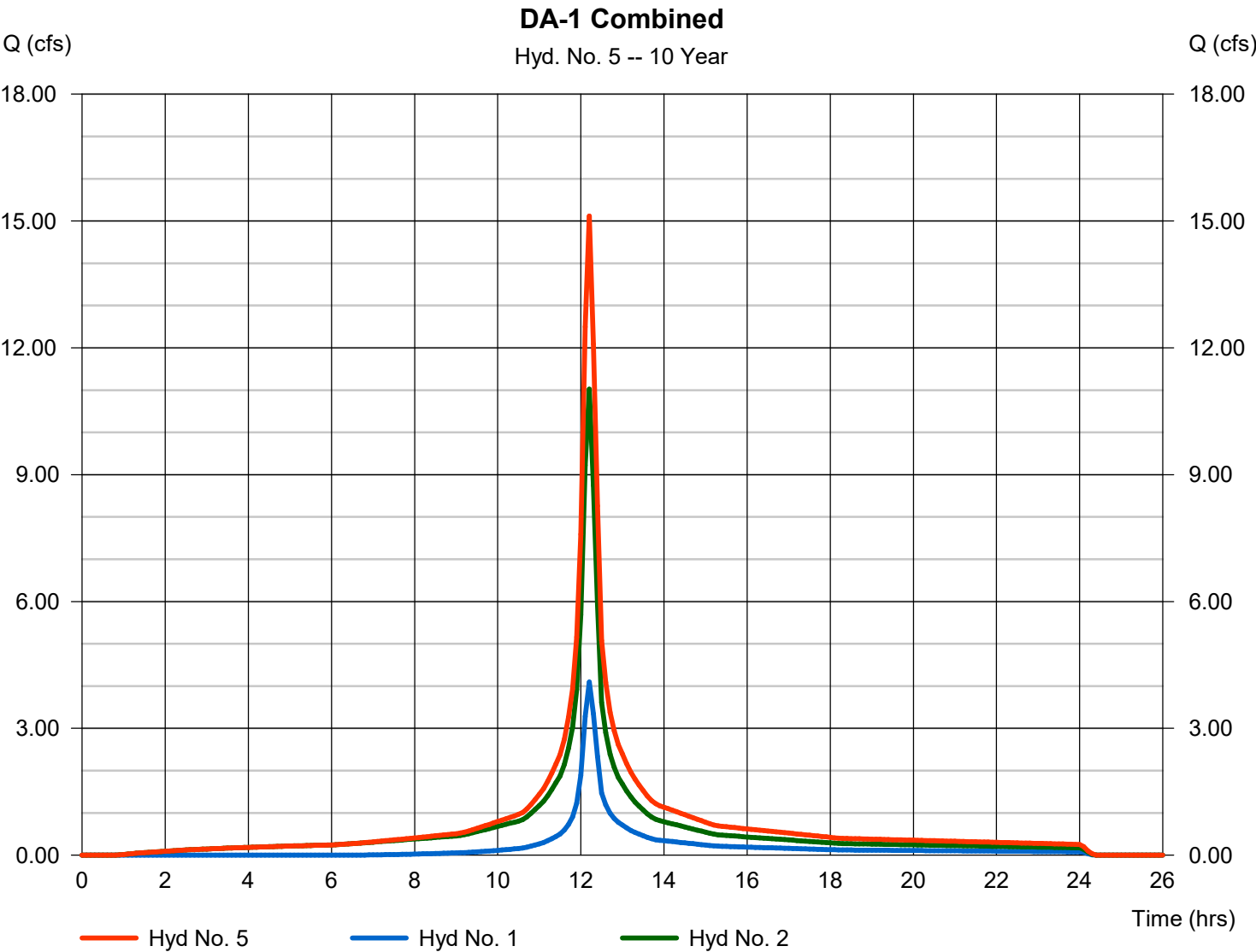


Hydrograph Report

Hyd. No. 5

DA-1 Combined

Hydrograph type	= Combine	Peak discharge	= 15.12 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 71,538 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 4.680 ac

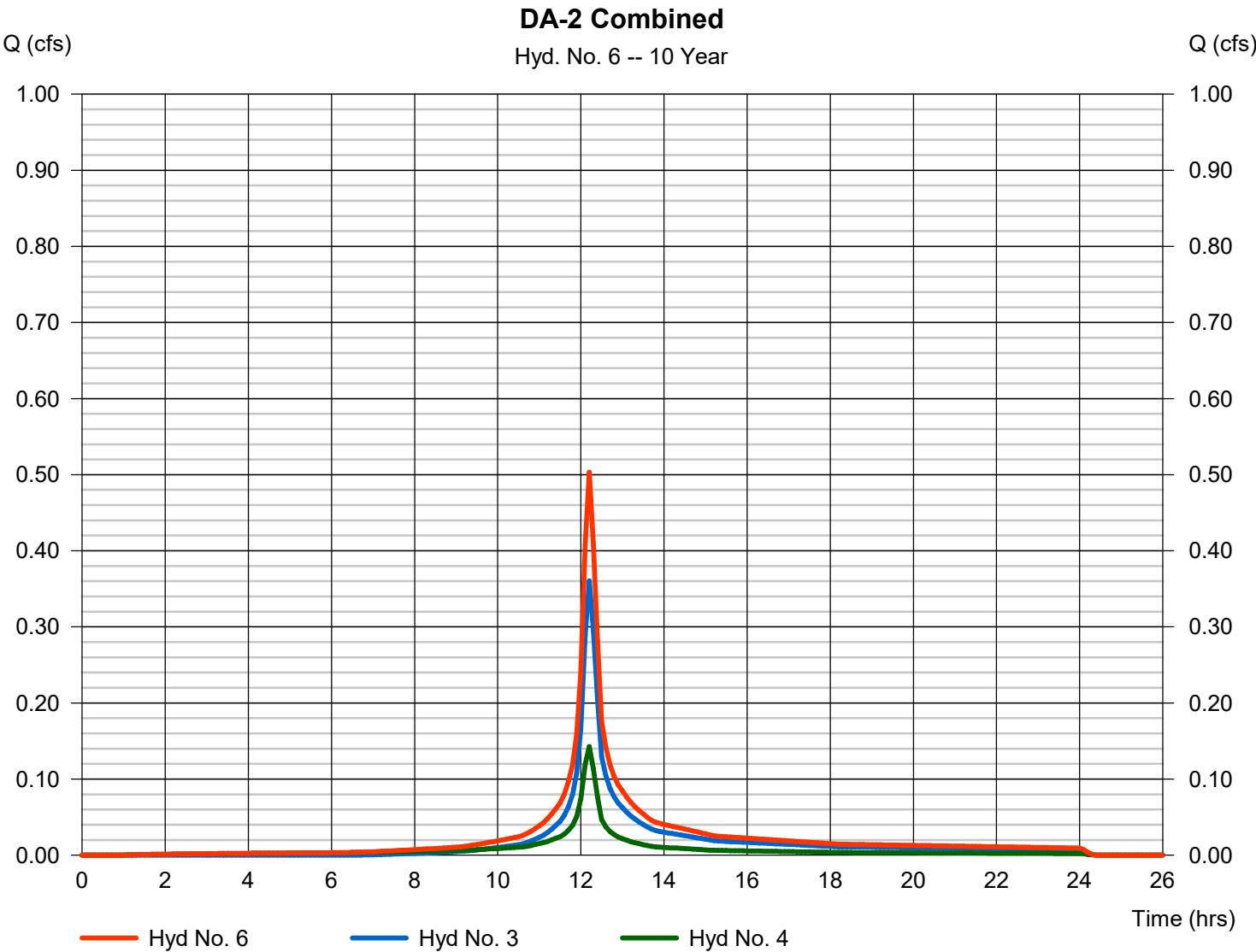


Hydrograph Report

Hyd. No. 6

DA-2 Combined

Hydrograph type	= Combine	Peak discharge	= 0.503 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 2,237 cuft
Inflow hyds.	= 3, 4	Contrib. drain. area	= 0.180 ac



Hydrograph Summary Report

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

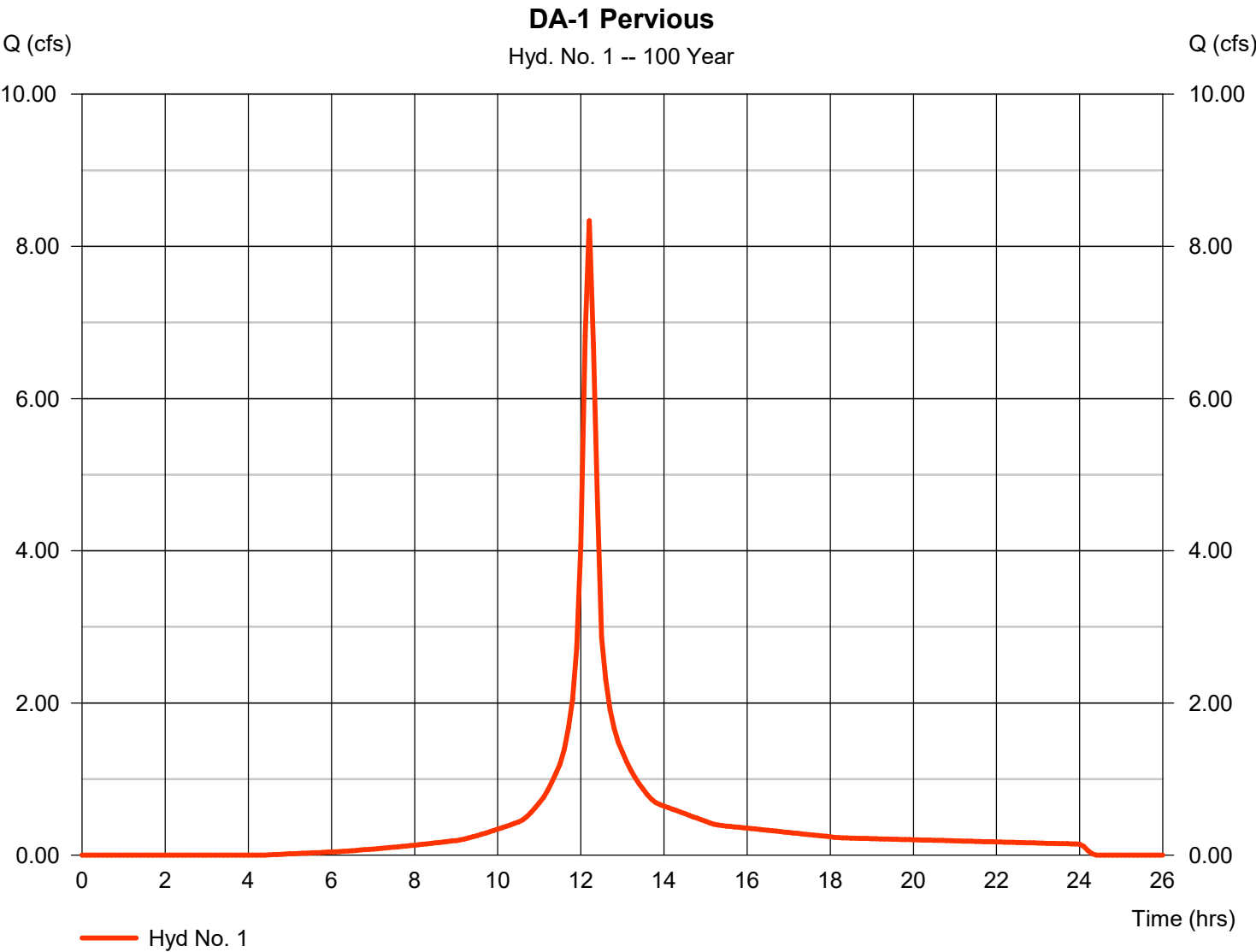
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	8.338	6	732	36,465	-----	-----	-----	DA-1 Pervious
2	SCS Runoff	18.87	6	732	94,005	-----	-----	-----	DA-1 Impervious
3	SCS Runoff	0.734	6	732	3,211	-----	-----	-----	DA-2 Pervious
4	SCS Runoff	0.244	6	732	1,217	-----	-----	-----	DA-2 Impervious
5	Combine	27.21	6	732	130,470	1, 2,	-----	-----	DA-1 Combined
6	Combine	0.978	6	732	4,428	3, 4,	-----	-----	DA-2 Combined
Proposed - Current Adjusted.gpw					Return Period: 100 Year			Tuesday, 12 / 23 / 2025	

Hydrograph Report

Hyd. No. 1

DA-1 Pervious

Hydrograph type	= SCS Runoff	Peak discharge	= 8.338 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 36,465 cuft
Drainage area	= 1.590 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 12.60 min
Total precip.	= 9.18 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024-2025\170 - Bagin's 184 Manor - West Orange		

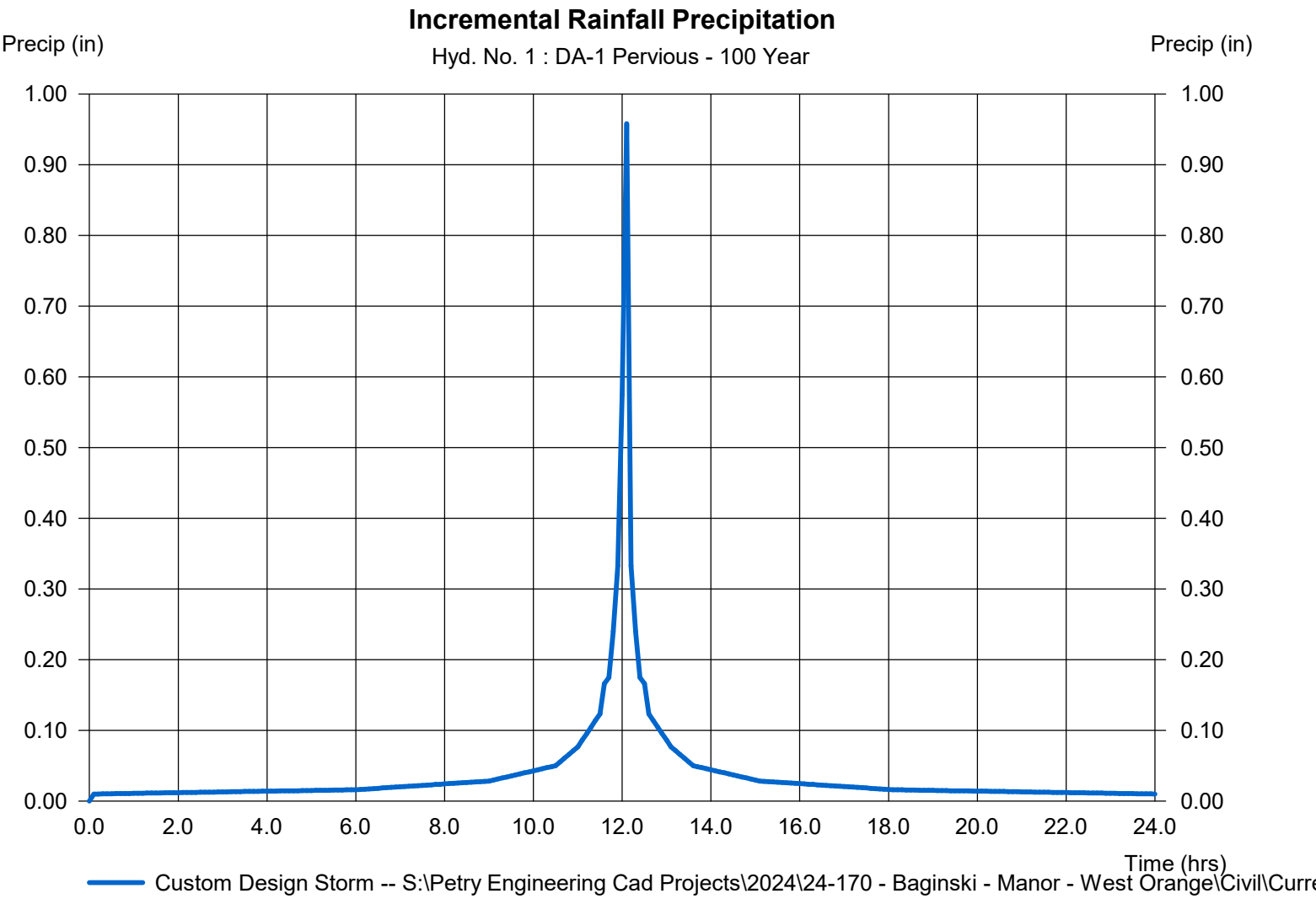


Precipitation Report

Hyd. No. 1

DA-1 Pervious

Storm Frequency	= 100 yrs	Time interval	= 6 min
Total precip.	= 9.1800 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		

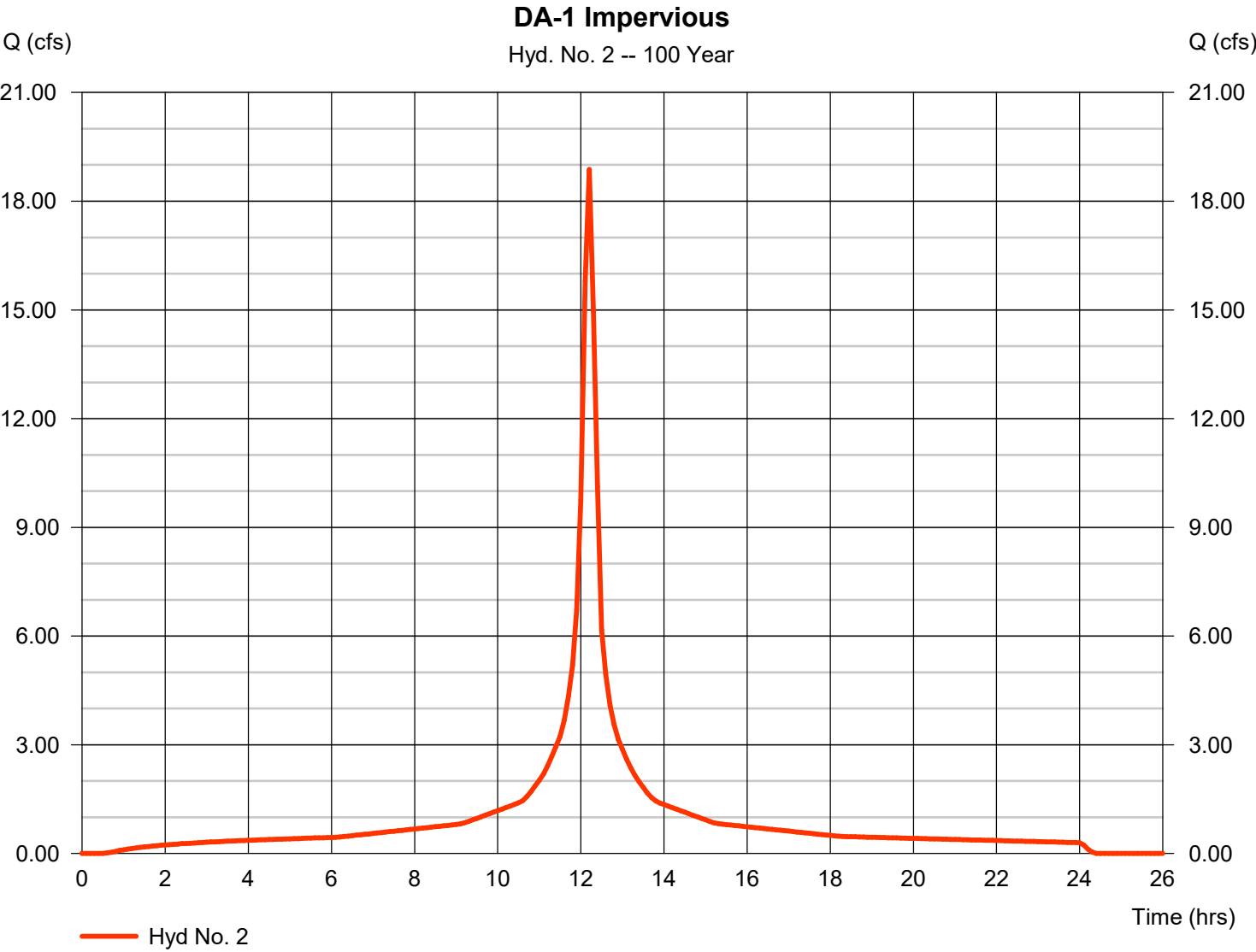


Hydrograph Report

Hyd. No. 2

DA-1 Impervious

Hydrograph type	= SCS Runoff	Peak discharge	= 18.87 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 94,005 cuft
Drainage area	= 3.090 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 12.60 min
Total precip.	= 9.18 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024-2025\170 - Baginns Manor - West Orange		

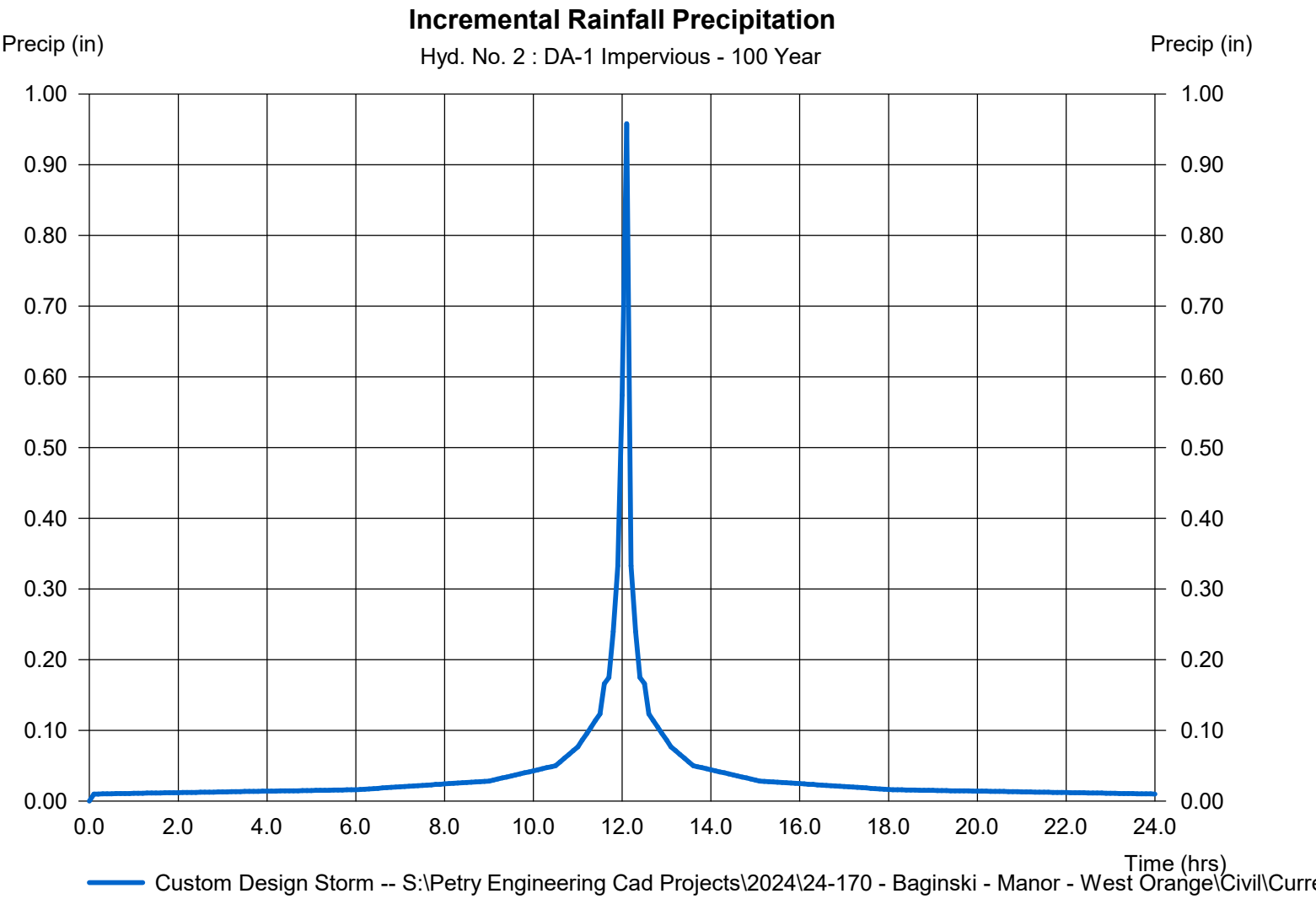


Precipitation Report

Hyd. No. 2

DA-1 Impervious

Storm Frequency	= 100 yrs	Time interval	= 6 min
Total precip.	= 9.1800 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		



Hydrograph Report

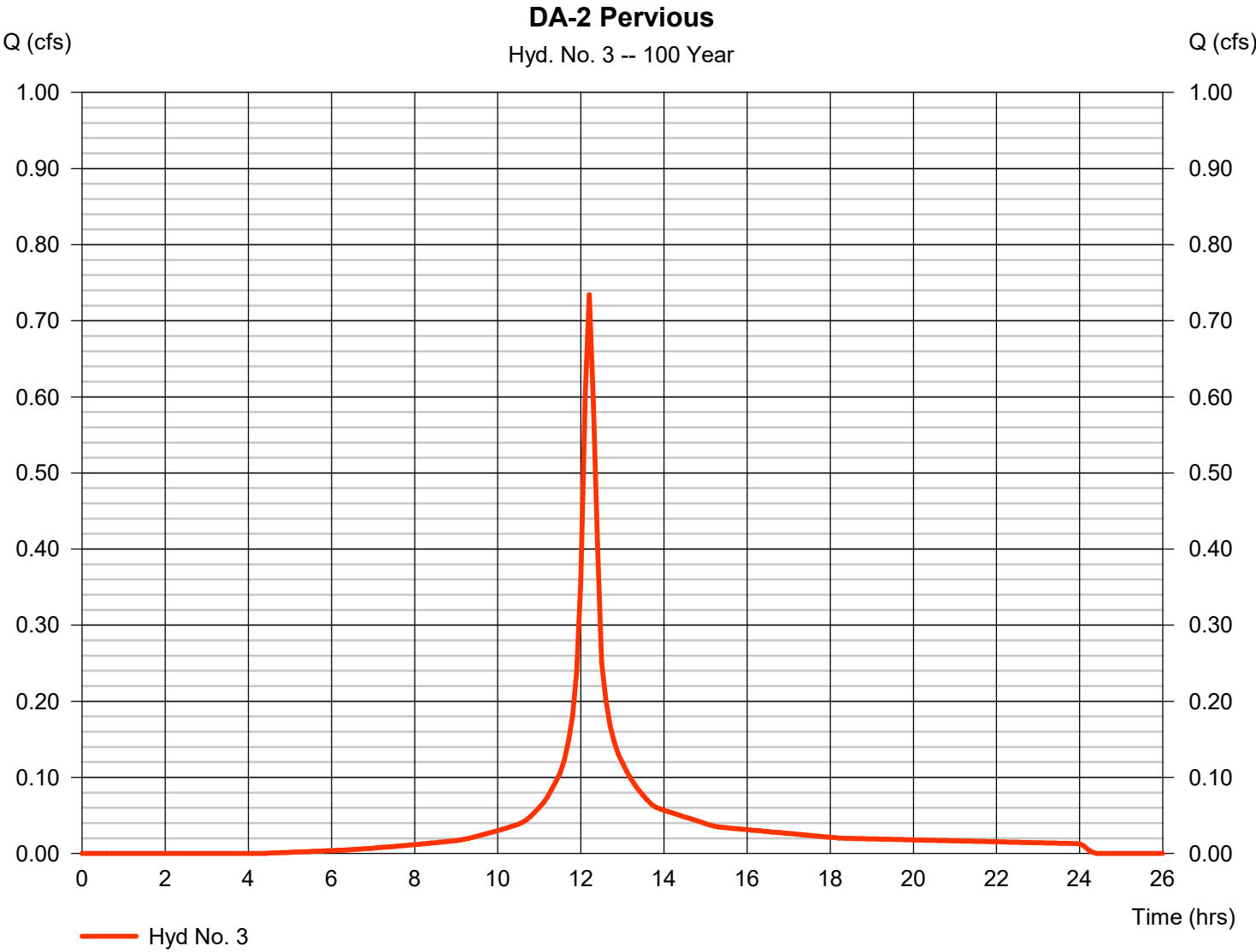
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 3

DA-2 Pervious

Hydrograph type	= SCS Runoff	Peak discharge	= 0.734 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 3,211 cuft
Drainage area	= 0.140 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.70 min
Total precip.	= 9.18 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginck - 184 Manor - West Orange		

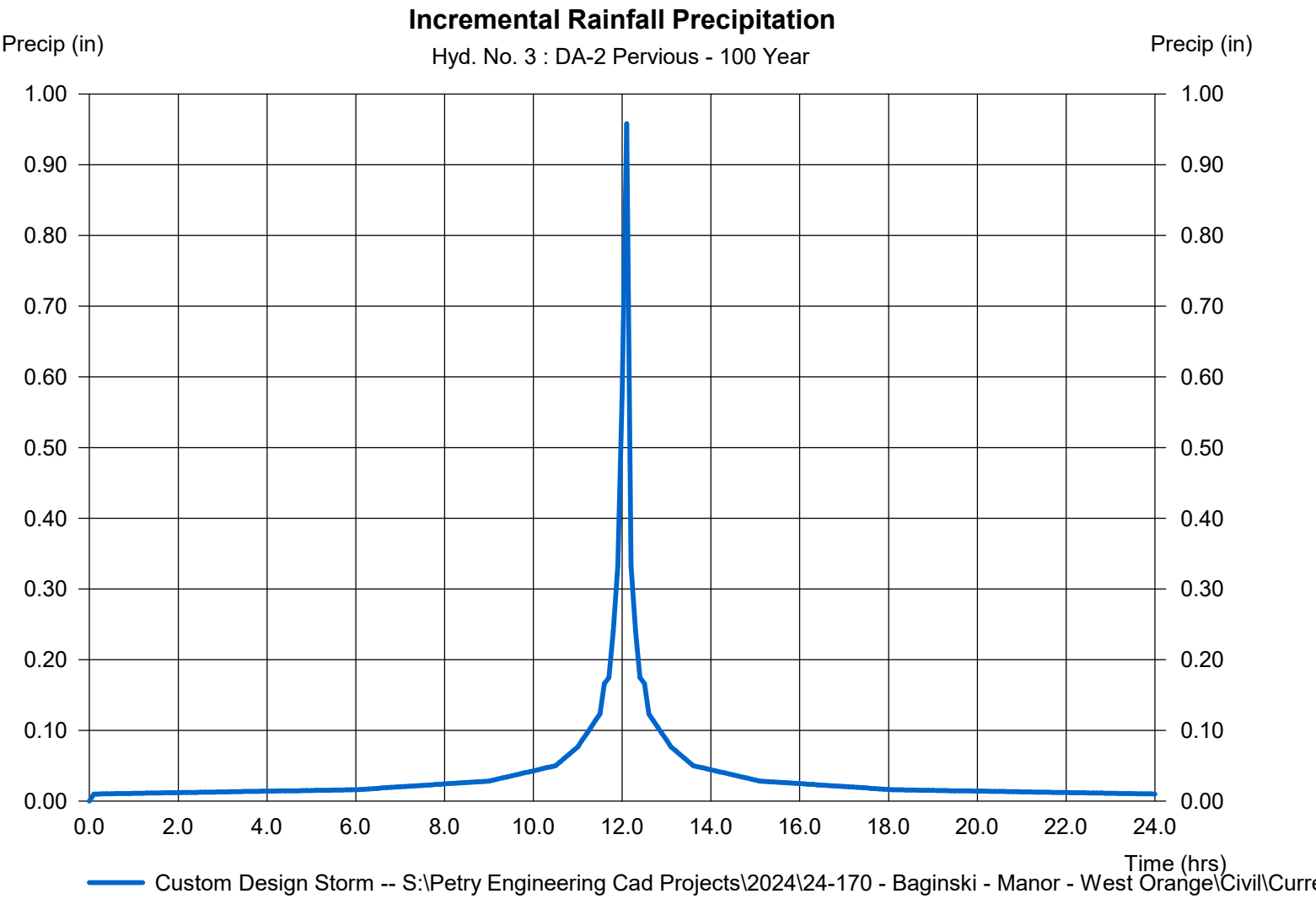


Precipitation Report

Hyd. No. 3

DA-2 Pervious

Storm Frequency	= 100 yrs	Time interval	= 6 min
Total precip.	= 9.1800 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		



Hydrograph Report

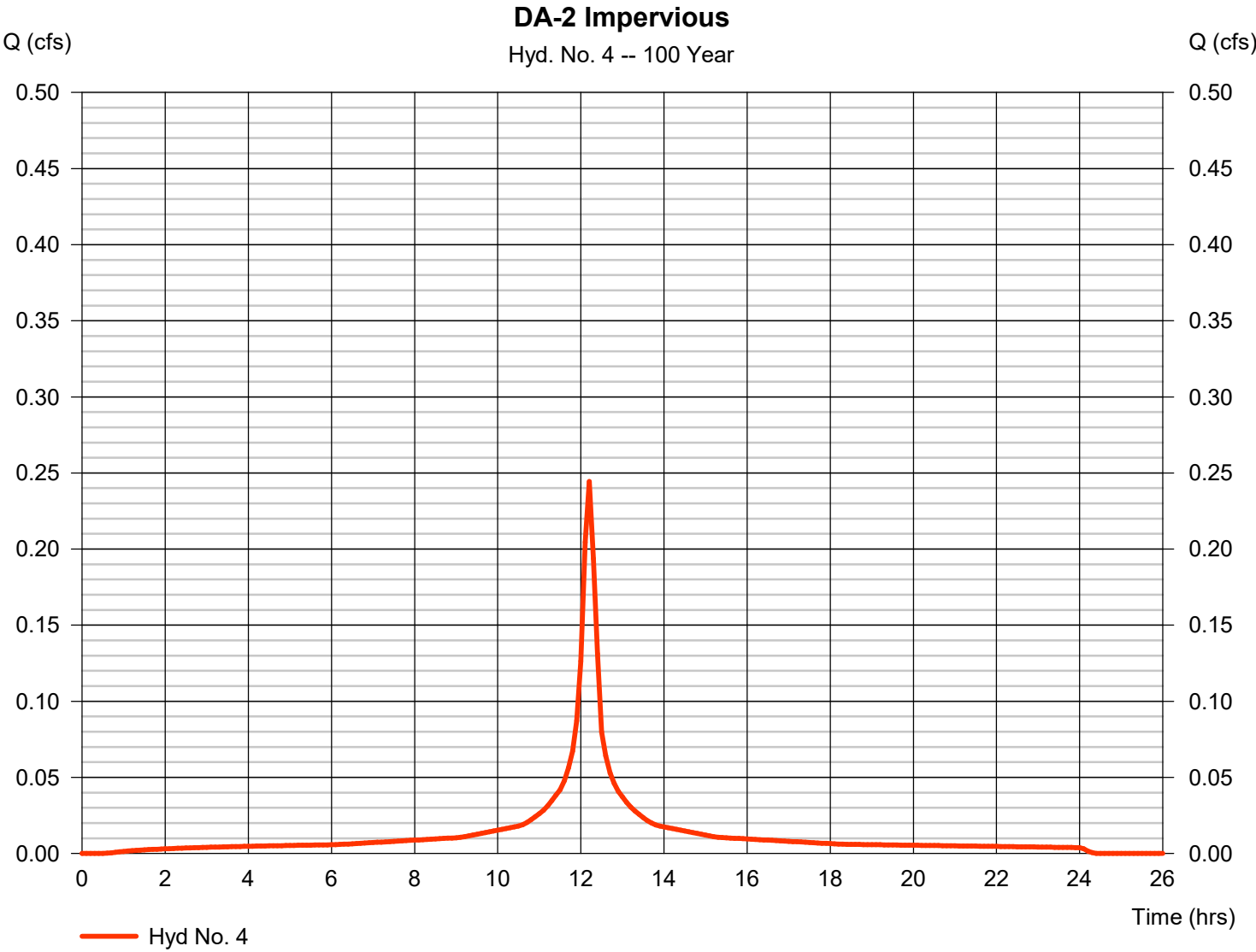
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 4

DA-2 Impervious

Hydrograph type	= SCS Runoff	Peak discharge	= 0.244 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 1,217 cuft
Drainage area	= 0.040 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.70 min
Total precip.	= 9.18 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024-2025\170 - Bagin's 184 Manor - West Orange\170 - Bagin's 184 Manor - West Orange - 100 Year Storm - 9.18 in - 12.20 hrs - 1,217 cuft - 0.244 cfs - 0.0 % - 0 ft - 13.70 min - Custom - 0.040 ac - 100 yrs - 6 min - SCS Runoff - DA-2 Impervious		

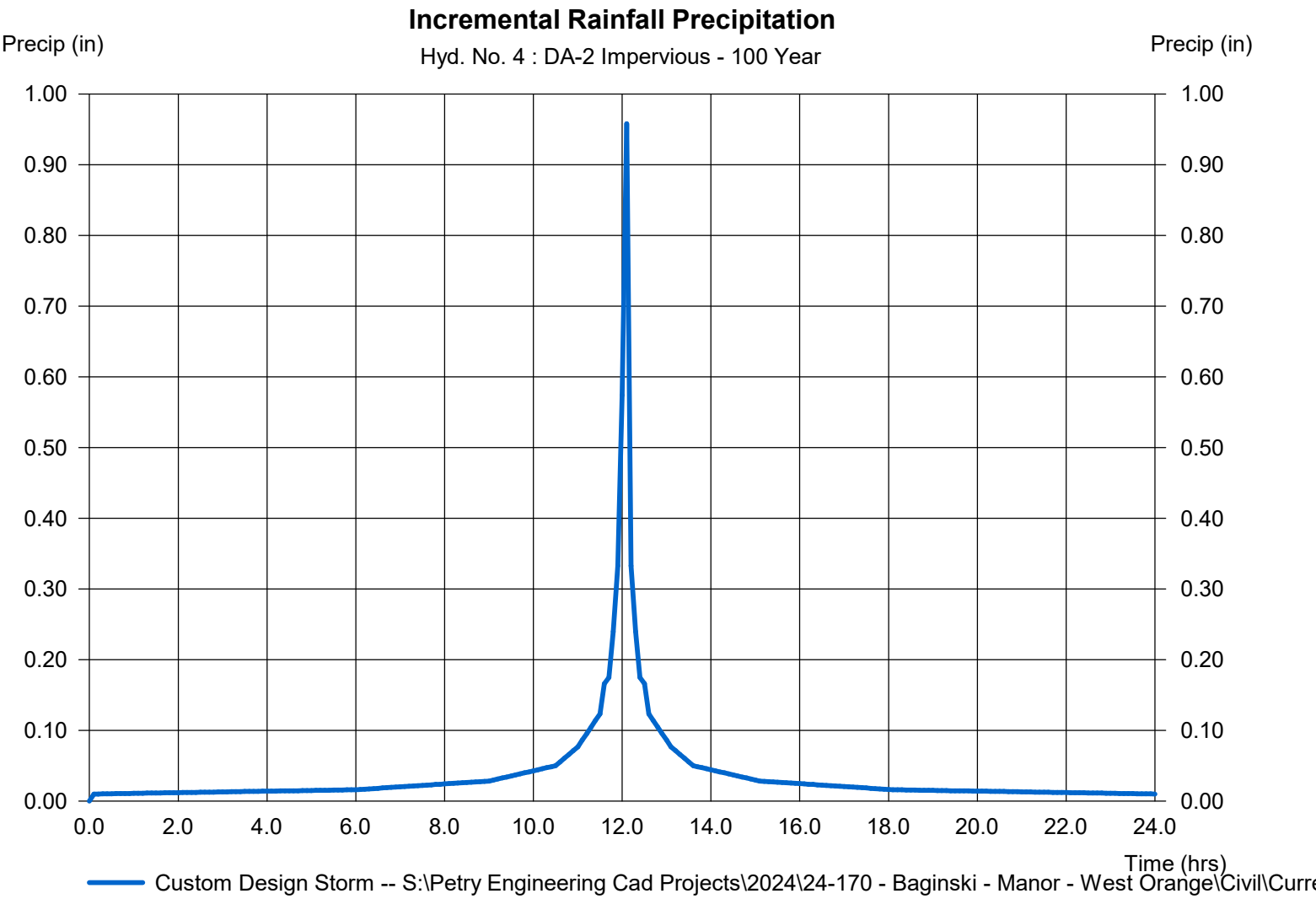


Precipitation Report

Hyd. No. 4

DA-2 Impervious

Storm Frequency	= 100 yrs	Time interval	= 6 min
Total precip.	= 9.1800 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		

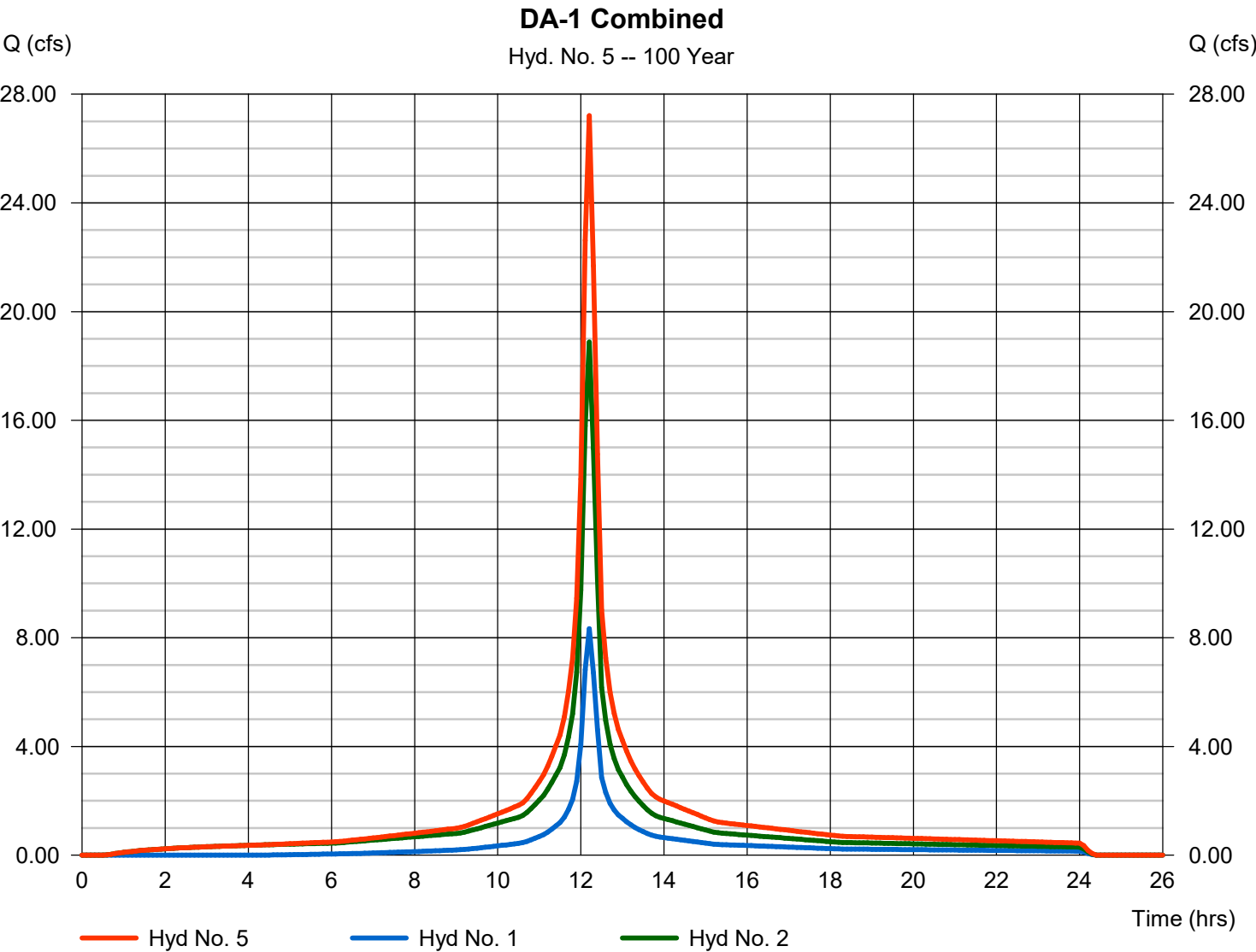


Hydrograph Report

Hyd. No. 5

DA-1 Combined

Hydrograph type	= Combine	Peak discharge	= 27.21 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 130,470 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 4.680 ac

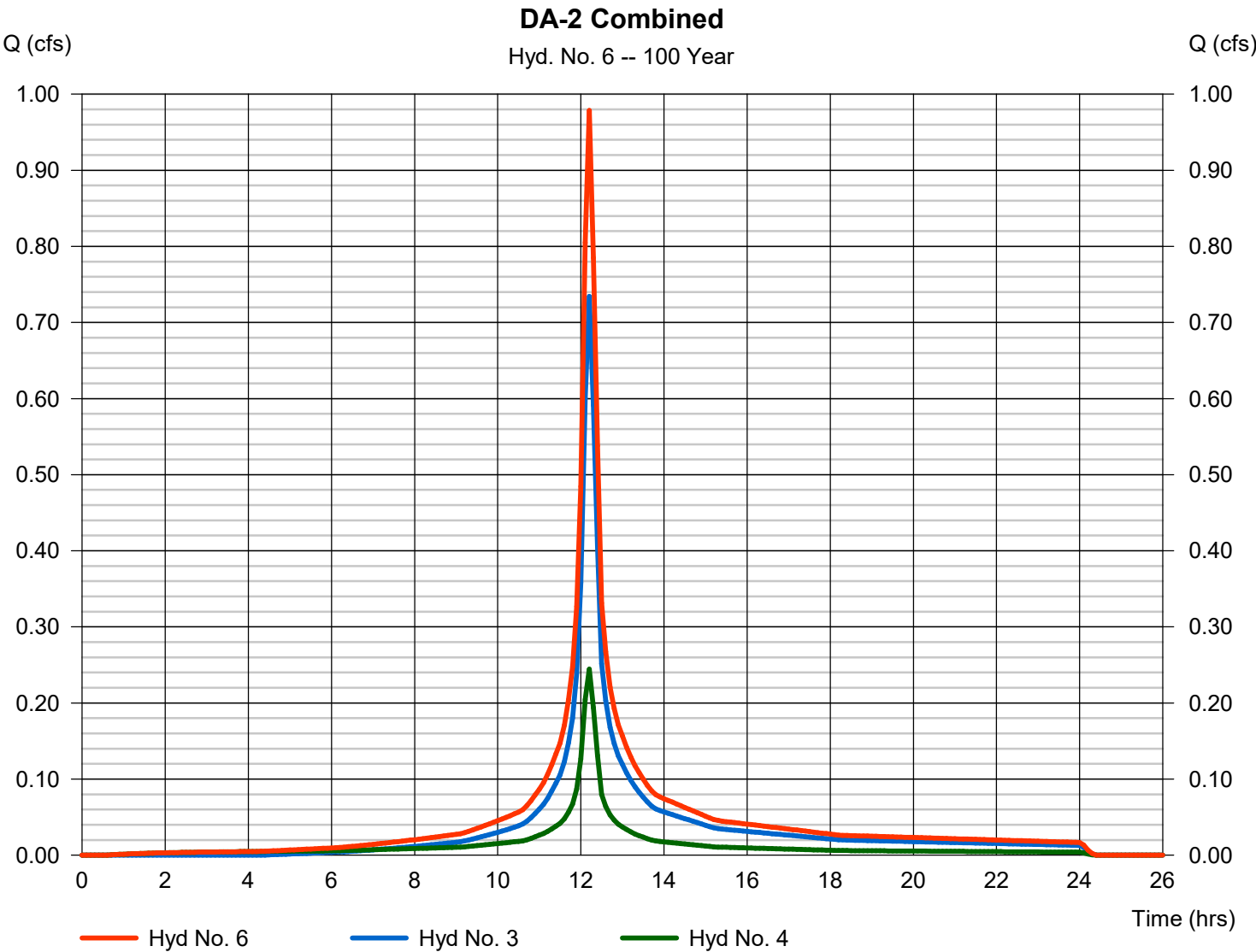


Hydrograph Report

Hyd. No. 6

DA-2 Combined

Hydrograph type	= Combine	Peak discharge	= 0.978 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 4,428 cuft
Inflow hyds.	= 3, 4	Contrib. drain. area	= 0.180 ac



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	-----
2	69.8703	13.1000	0.8658	-----
3	0.0000	0.0000	0.0000	-----
5	79.2597	14.6000	0.8369	-----
10	88.2351	15.5000	0.8279	-----
25	102.6072	16.5000	0.8217	-----
50	114.8193	17.2000	0.8199	-----
100	127.1596	17.8000	0.8186	-----

File name: SampleFHA.idf

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	5.69	4.61	3.89	3.38	2.99	2.69	2.44	2.24	2.07	1.93	1.81	1.70
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.57	5.43	4.65	4.08	3.65	3.30	3.02	2.79	2.59	2.42	2.27	2.15
10	7.24	6.04	5.21	4.59	4.12	3.74	3.43	3.17	2.95	2.77	2.60	2.46
25	8.25	6.95	6.03	5.34	4.80	4.38	4.02	3.73	3.48	3.26	3.07	2.91
50	9.04	7.65	6.66	5.92	5.34	4.87	4.49	4.16	3.88	3.65	3.44	3.25
100	9.83	8.36	7.30	6.50	5.87	5.36	4.94	4.59	4.29	4.03	3.80	3.60

Tc = time in minutes. Values may exceed 60.

Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Current\Stormwater\Essex County - Current Adjusted.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	3.47	0.00	0.00	5.38	0.00	0.00	9.18

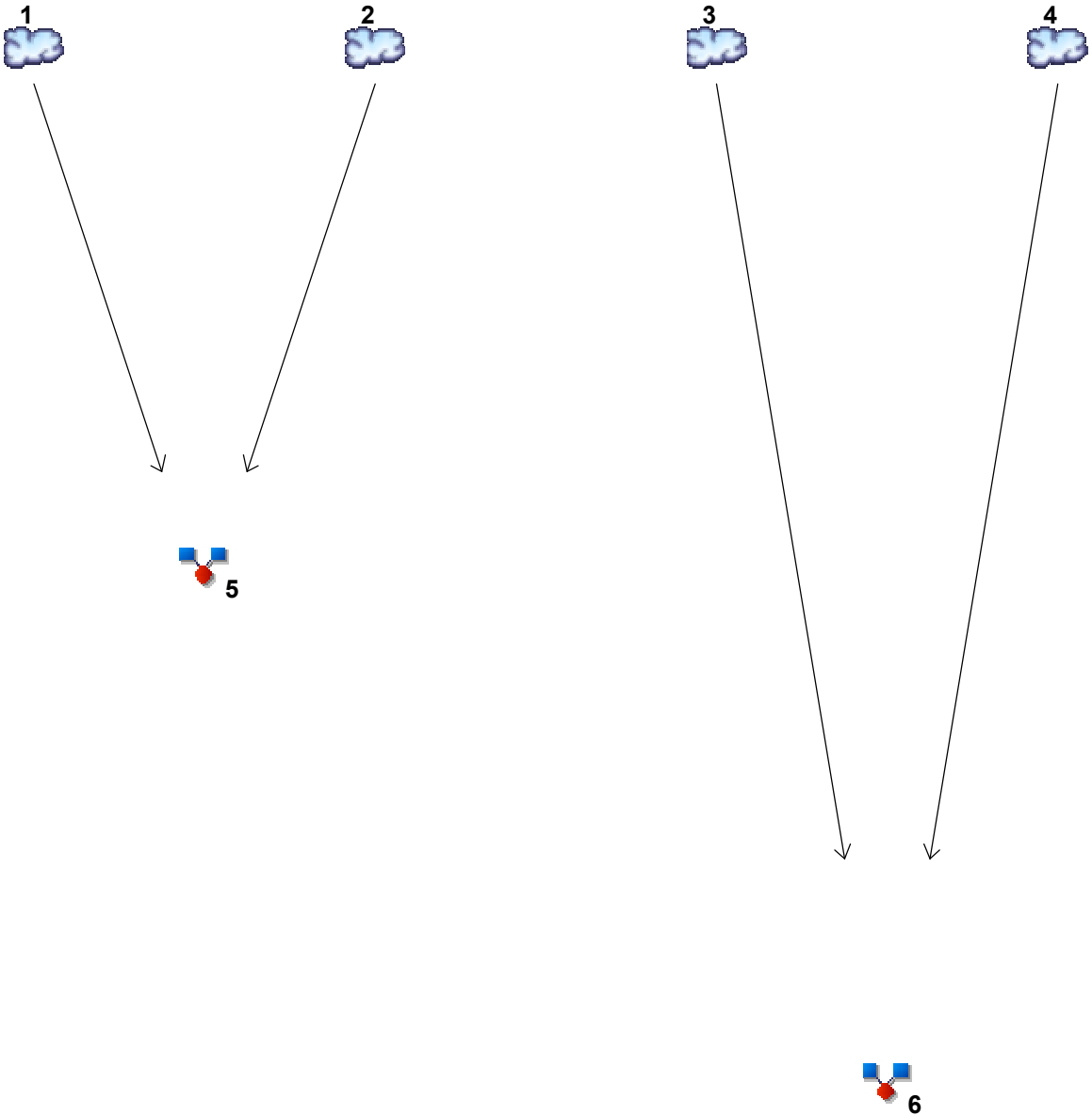
**PROPOSED CONDITIONS
FUTURE PROJECTED
HYDROGRAPHS**



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Watershed Model Schematic

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



Legend

Hyd.	Origin	Description
1	SCS Runoff	DA-1 Pervious
2	SCS Runoff	DA-1 Impervious
3	SCS Runoff	DA-1 Pervious
4	SCS Runoff	DA-2 Impervious
5	Combine	<no description>
6	Combine	<no description>

Hydrograph Summary Report

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

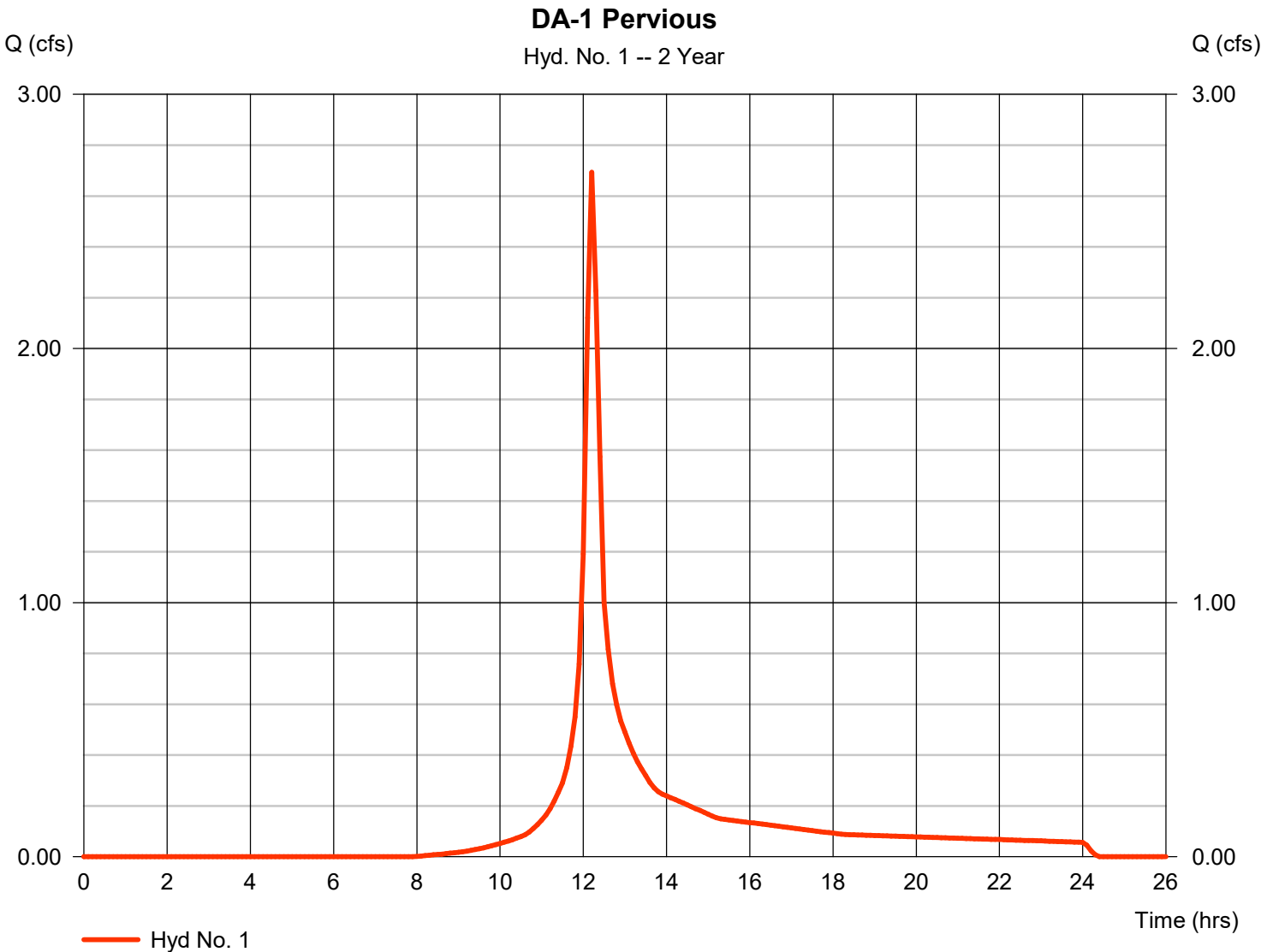
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	2.693	6	732	11,451	-----	-----	-----	DA-1 Pervious
2	SCS Runoff	8.352	6	732	40,537	-----	-----	-----	DA-1 Impervious
3	SCS Runoff	0.237	6	732	1,008	-----	-----	-----	DA-1 Pervious
4	SCS Runoff	0.108	6	732	525	-----	-----	-----	DA-2 Impervious
5	Combine	11.05	6	732	51,988	1, 2,	-----	-----	<no description>
6	Combine	0.345	6	732	1,533	3, 4,	-----	-----	<no description>
Proposed - Future Projected.gpw					Return Period: 2 Year			Tuesday, 12 / 23 / 2025	

Hydrograph Report

Hyd. No. 1

DA-1 Pervious

Hydrograph type	= SCS Runoff	Peak discharge	= 2.693 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 11,451 cuft
Drainage area	= 1.590 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.70 min
Total precip.	= 4.09 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginns Manor - West Orange		

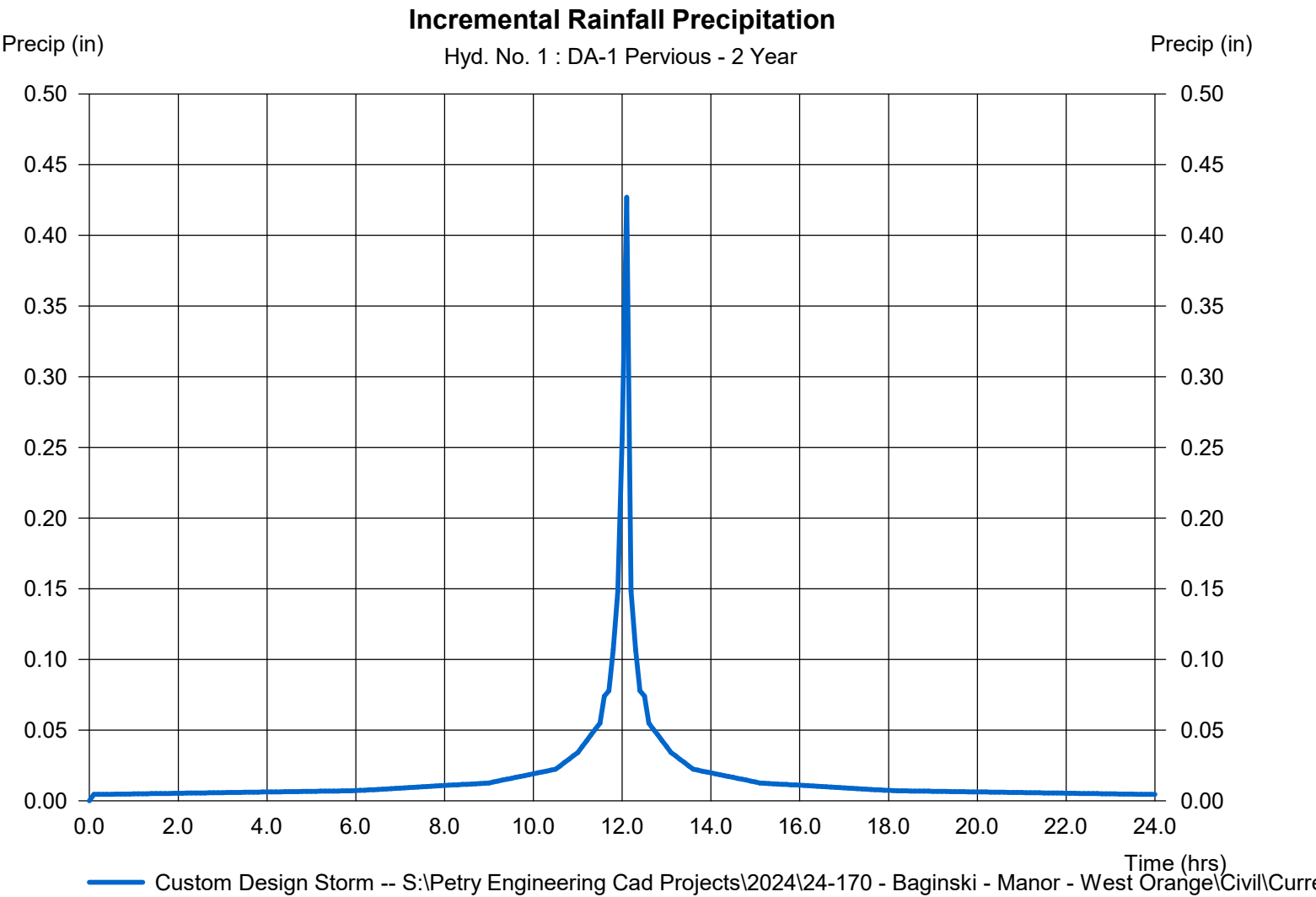


Precipitation Report

Hyd. No. 1

DA-1 Pervious

Storm Frequency	= 2 yrs	Time interval	= 6 min
Total precip.	= 4.0900 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		

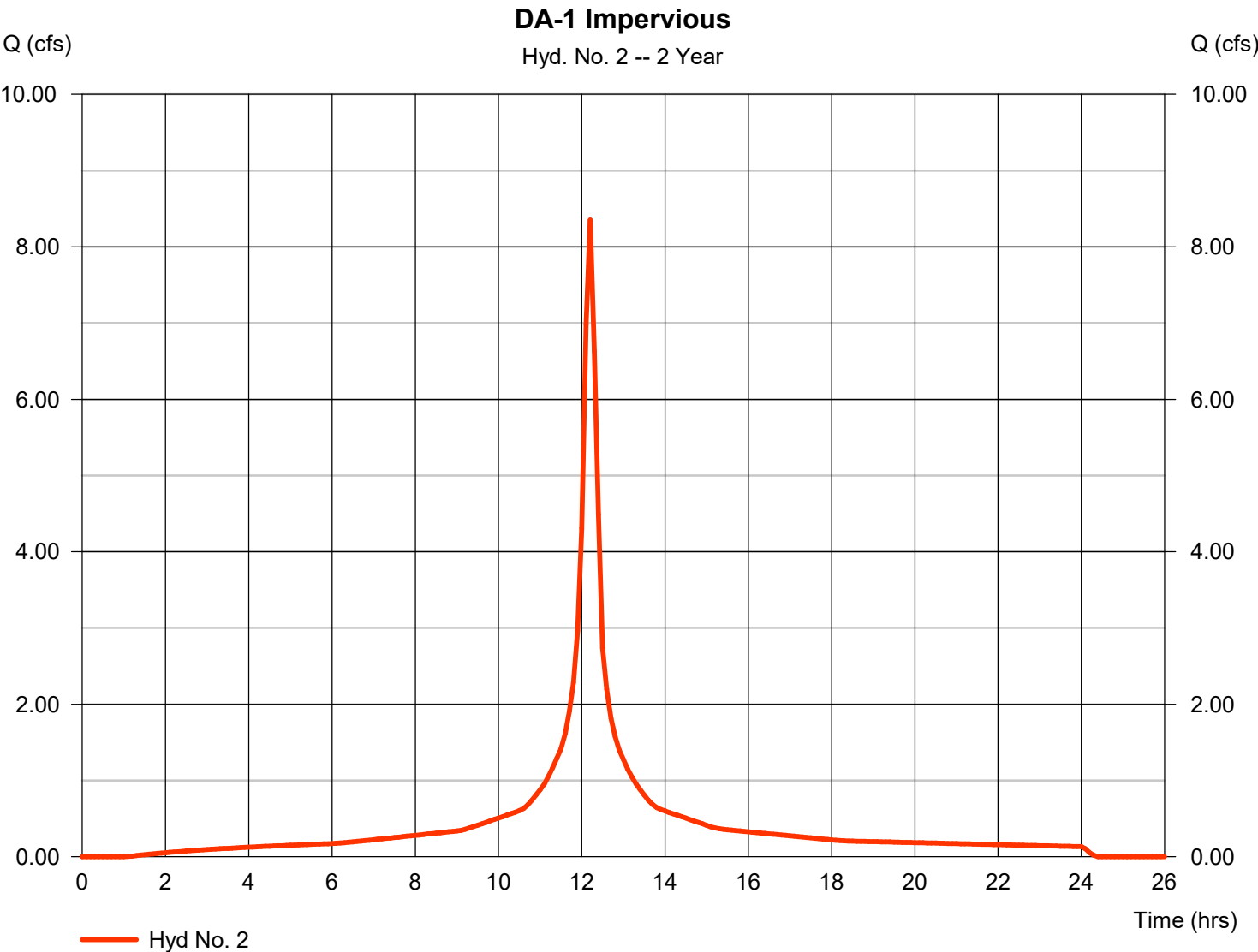


Hydrograph Report

Hyd. No. 2

DA-1 Impervious

Hydrograph type	= SCS Runoff	Peak discharge	= 8.352 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 40,537 cuft
Drainage area	= 3.090 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.70 min
Total precip.	= 4.09 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024-2025\170 - Baginask Manor - West Orange		

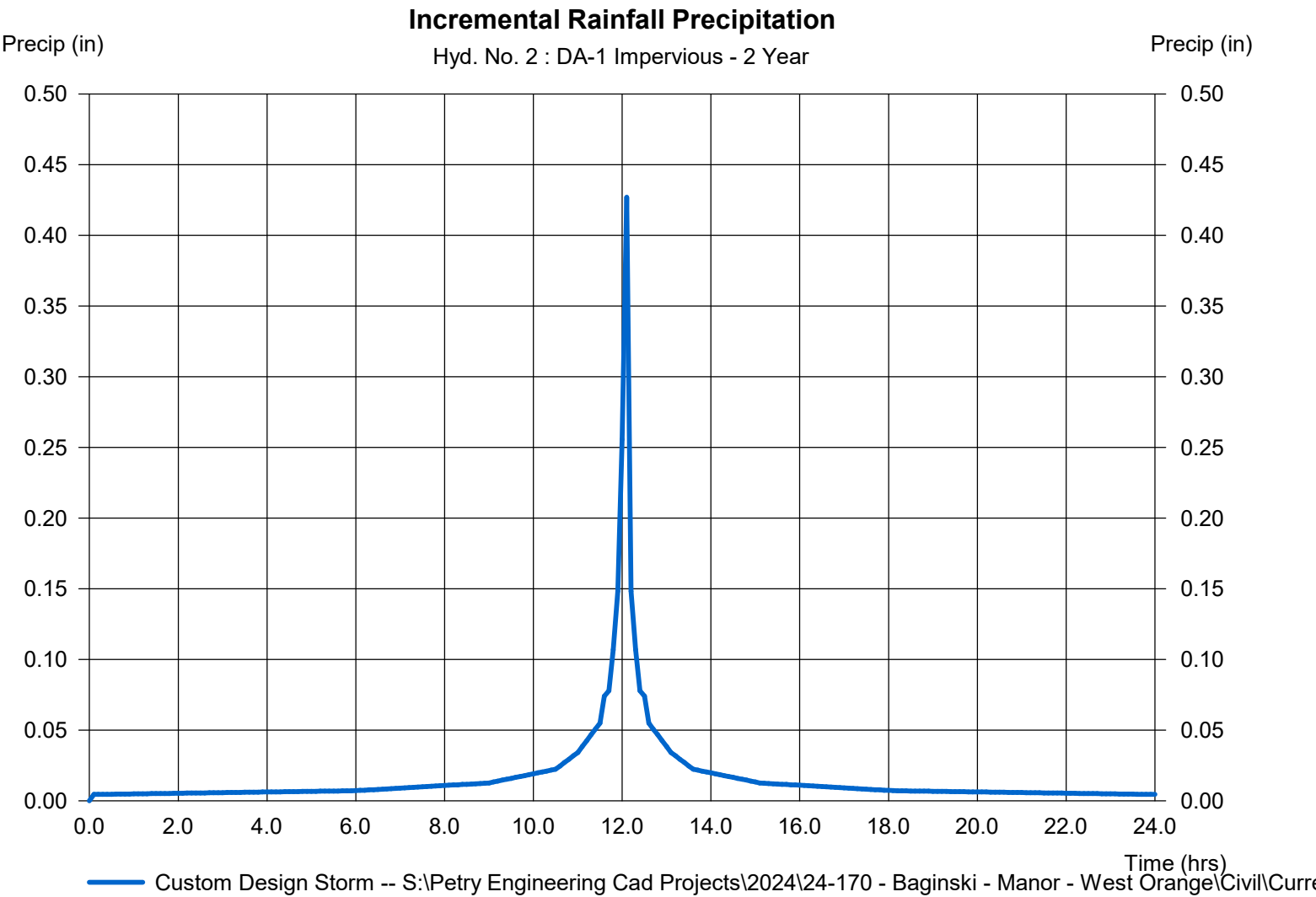


Precipitation Report

Hyd. No. 2

DA-1 Impervious

Storm Frequency	= 2 yrs	Time interval	= 6 min
Total precip.	= 4.0900 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		

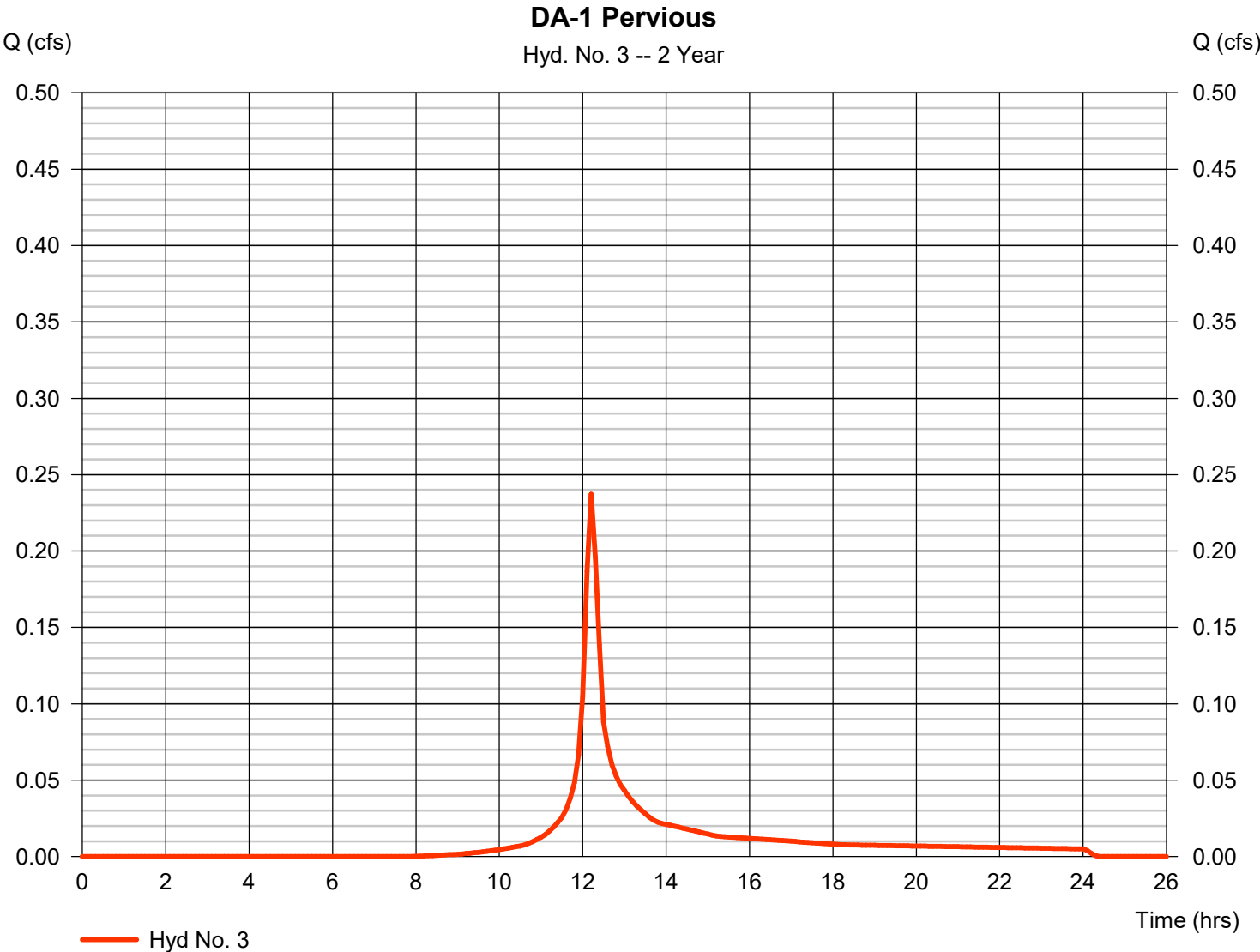


Hydrograph Report

Hyd. No. 3

DA-1 Pervious

Hydrograph type	= SCS Runoff	Peak discharge	= 0.237 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 1,008 cuft
Drainage area	= 0.140 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 12.60 min
Total precip.	= 4.09 in	Distribution	= Custom
Storm duration	= S:\Petty Engineering Cad Projects\2024\24-170 - Baginck - 184 Manor - West Orange		

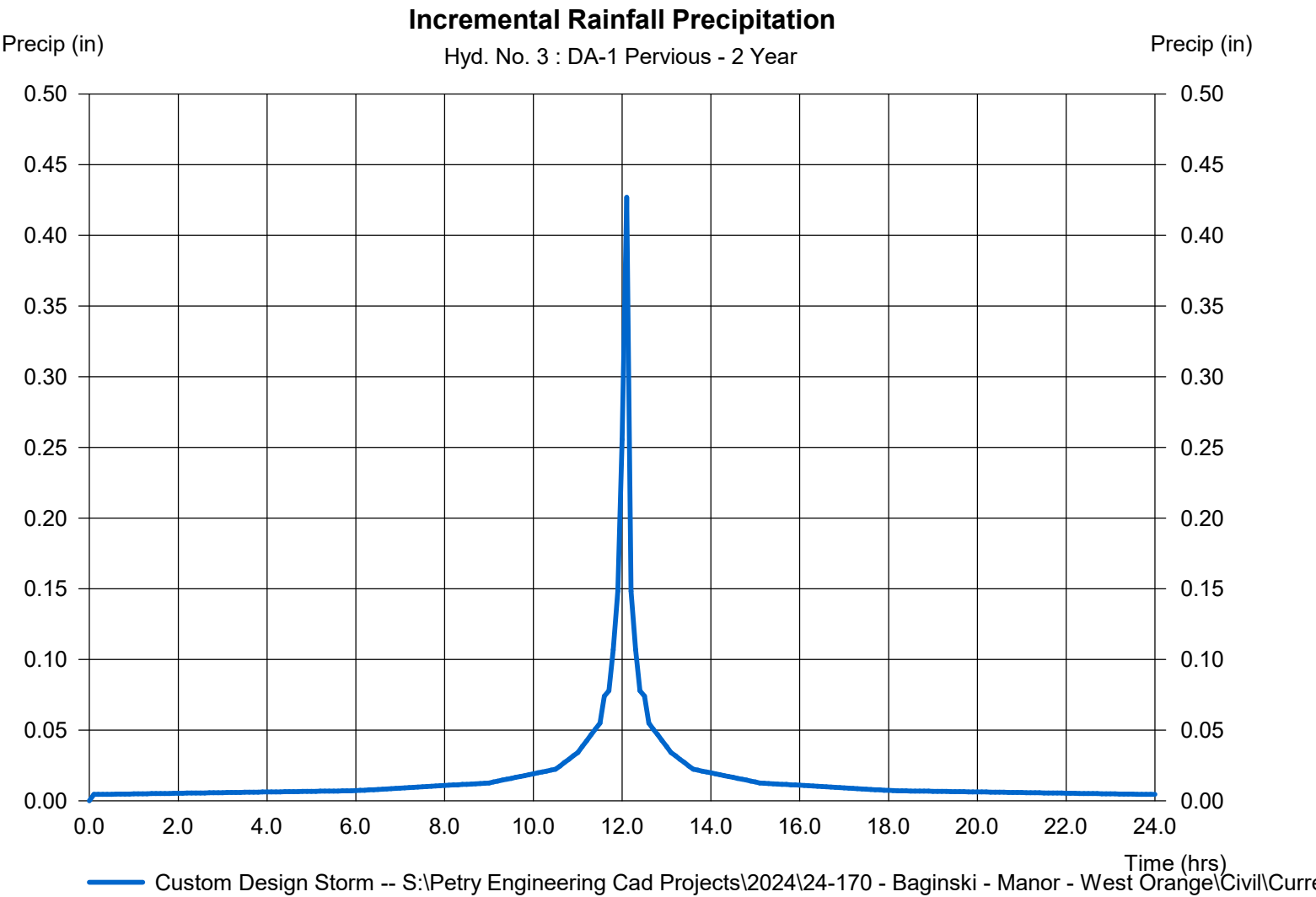


Precipitation Report

Hyd. No. 3

DA-1 Pervious

Storm Frequency	= 2 yrs	Time interval	= 6 min
Total precip.	= 4.0900 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		



Hydrograph Report

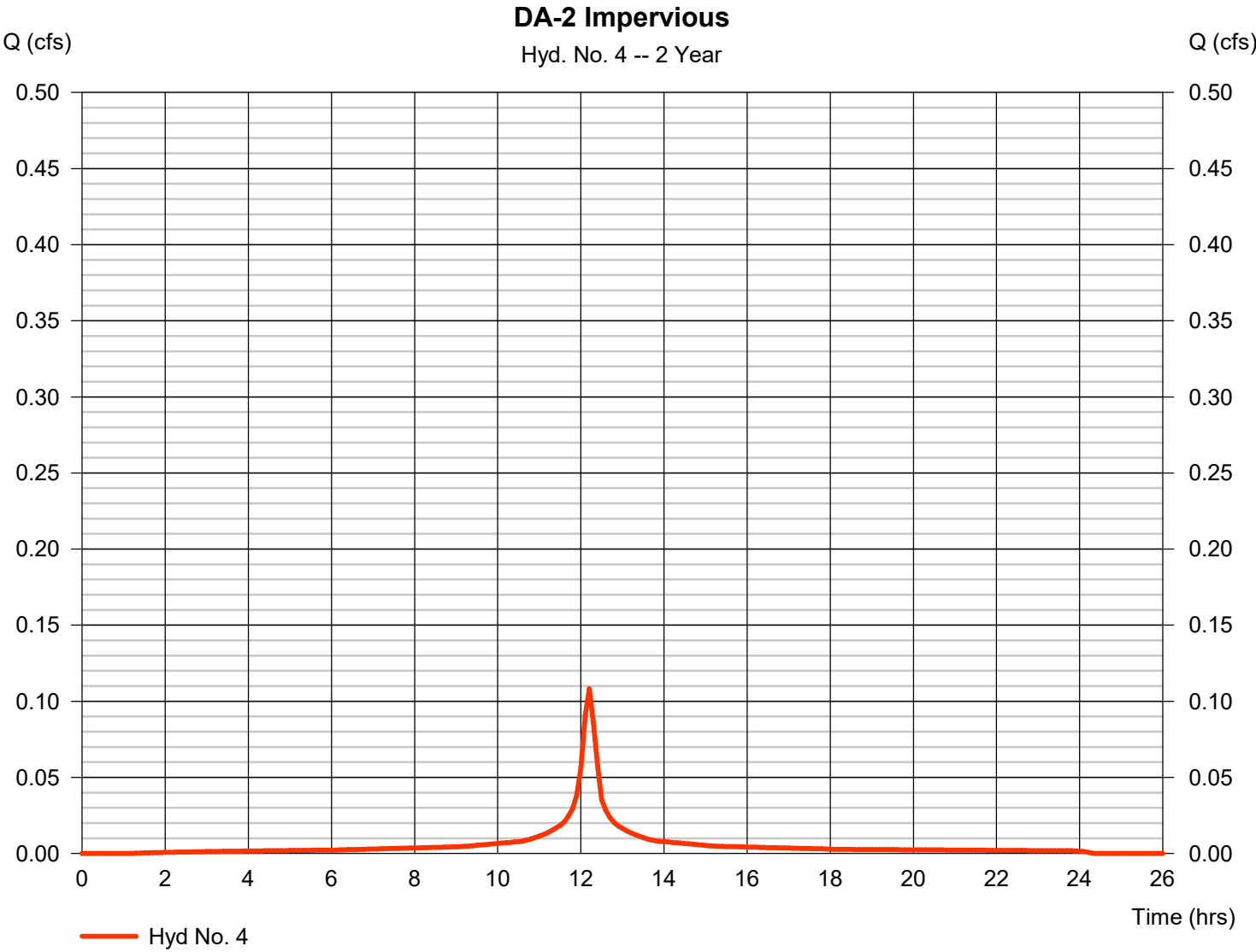
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 4

DA-2 Impervious

Hydrograph type	= SCS Runoff	Peak discharge	= 0.108 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 525 cuft
Drainage area	= 0.040 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 12.60 min
Total precip.	= 4.09 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginck - 184 Manor - West Orange		

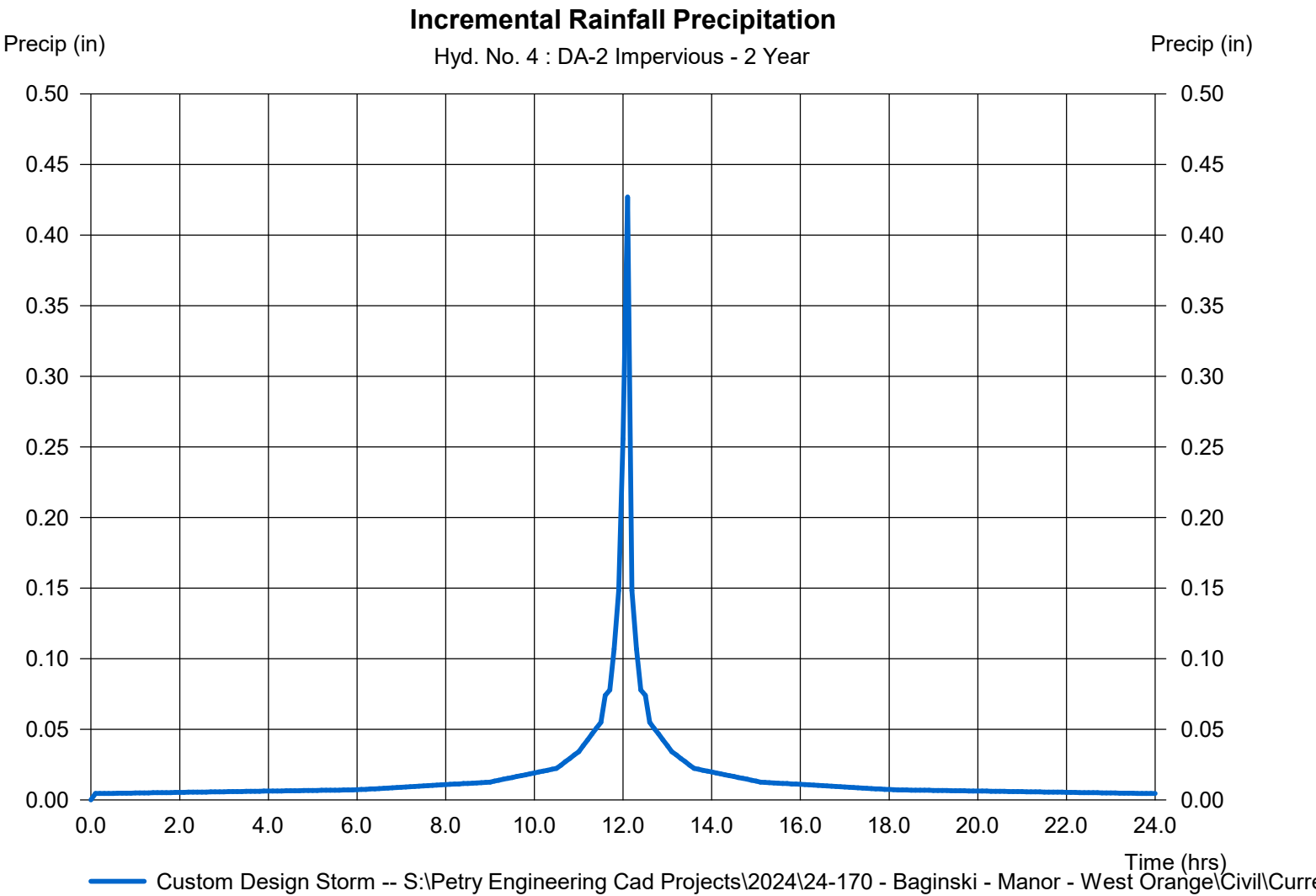


Precipitation Report

Hyd. No. 4

DA-2 Impervious

Storm Frequency	= 2 yrs	Time interval	= 6 min
Total precip.	= 4.0900 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		



Hydrograph Report

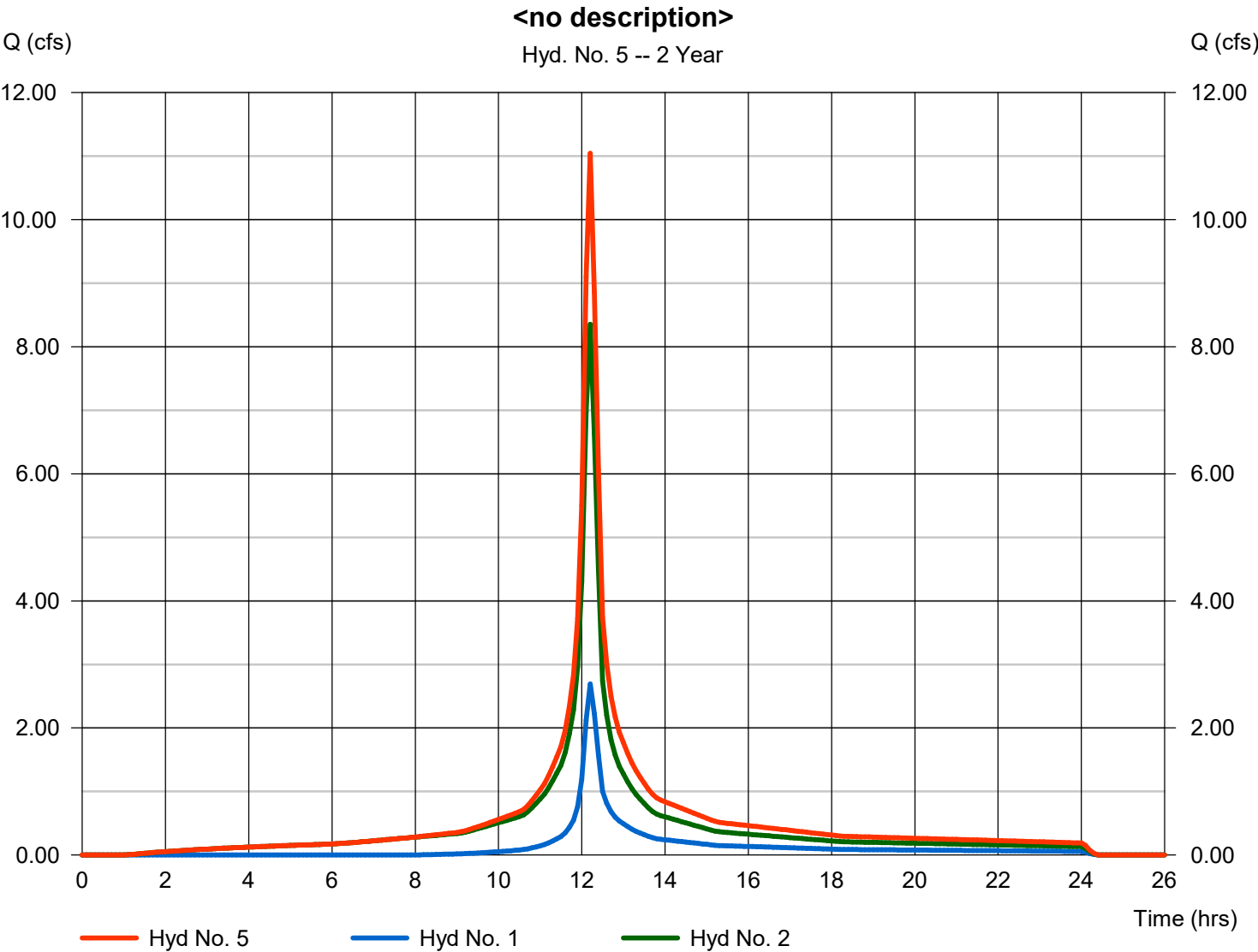
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 5

<no description>

Hydrograph type	= Combine	Peak discharge	= 11.05 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 51,988 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 4.680 ac

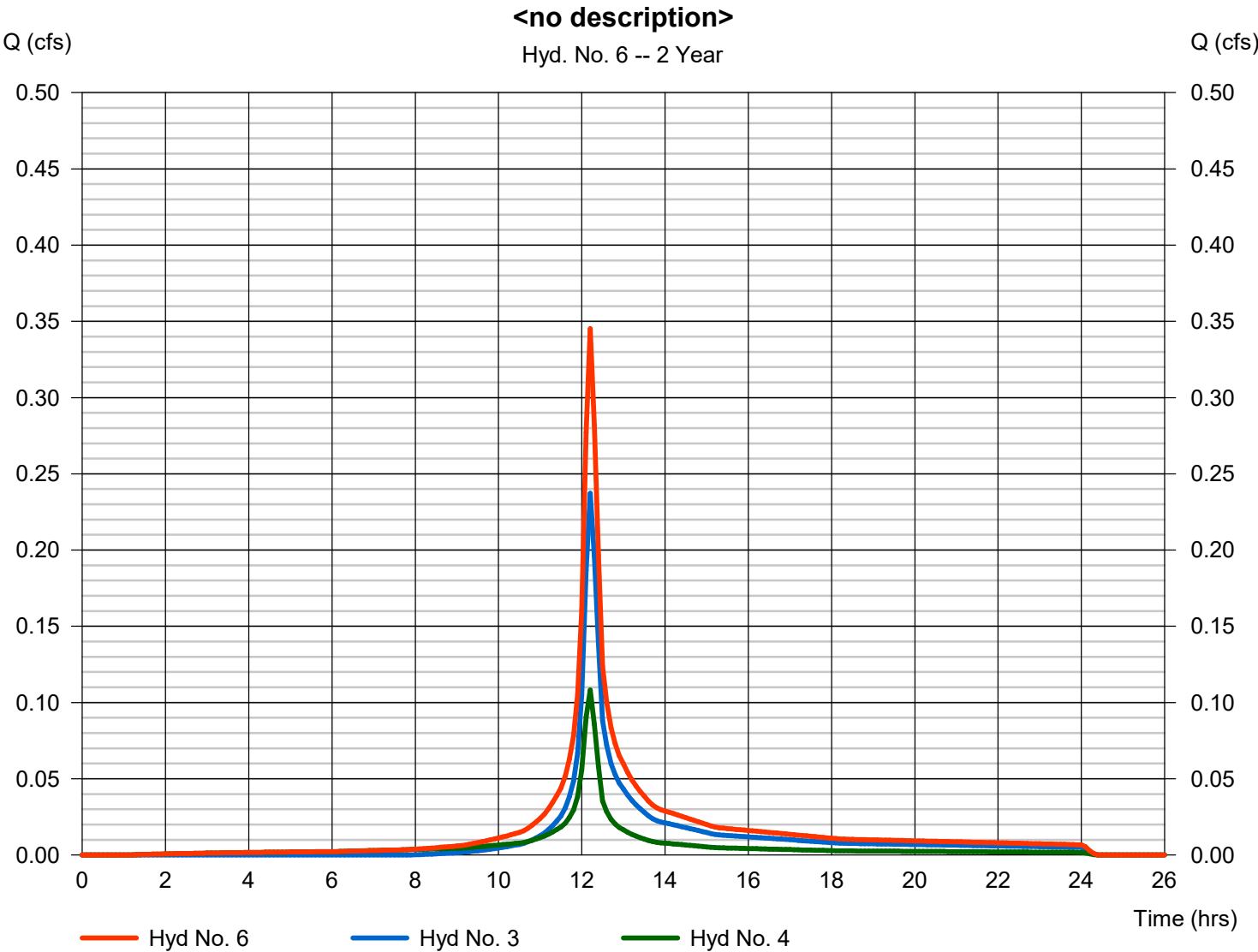


Hydrograph Report

Hyd. No. 6

<no description>

Hydrograph type	= Combine	Peak discharge	= 0.345 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 1,533 cuft
Inflow hyds.	= 3, 4	Contrib. drain. area	= 0.180 ac



Hydrograph Summary Report

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

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	5.194	6	732	22,275	-----	-----	-----	DA-1 Pervious
2	SCS Runoff	13.07	6	732	64,476	-----	-----	-----	DA-1 Impervious
3	SCS Runoff	0.457	6	732	1,961	-----	-----	-----	DA-1 Pervious
4	SCS Runoff	0.169	6	732	835	-----	-----	-----	DA-2 Impervious
5	Combine	18.27	6	732	86,752	1, 2,	-----	-----	<no description>
6	Combine	0.627	6	732	2,796	3, 4,	-----	-----	<no description>
Proposed - Future Projected.gpw					Return Period: 10 Year			Tuesday, 12 / 23 / 2025	

Hydrograph Report

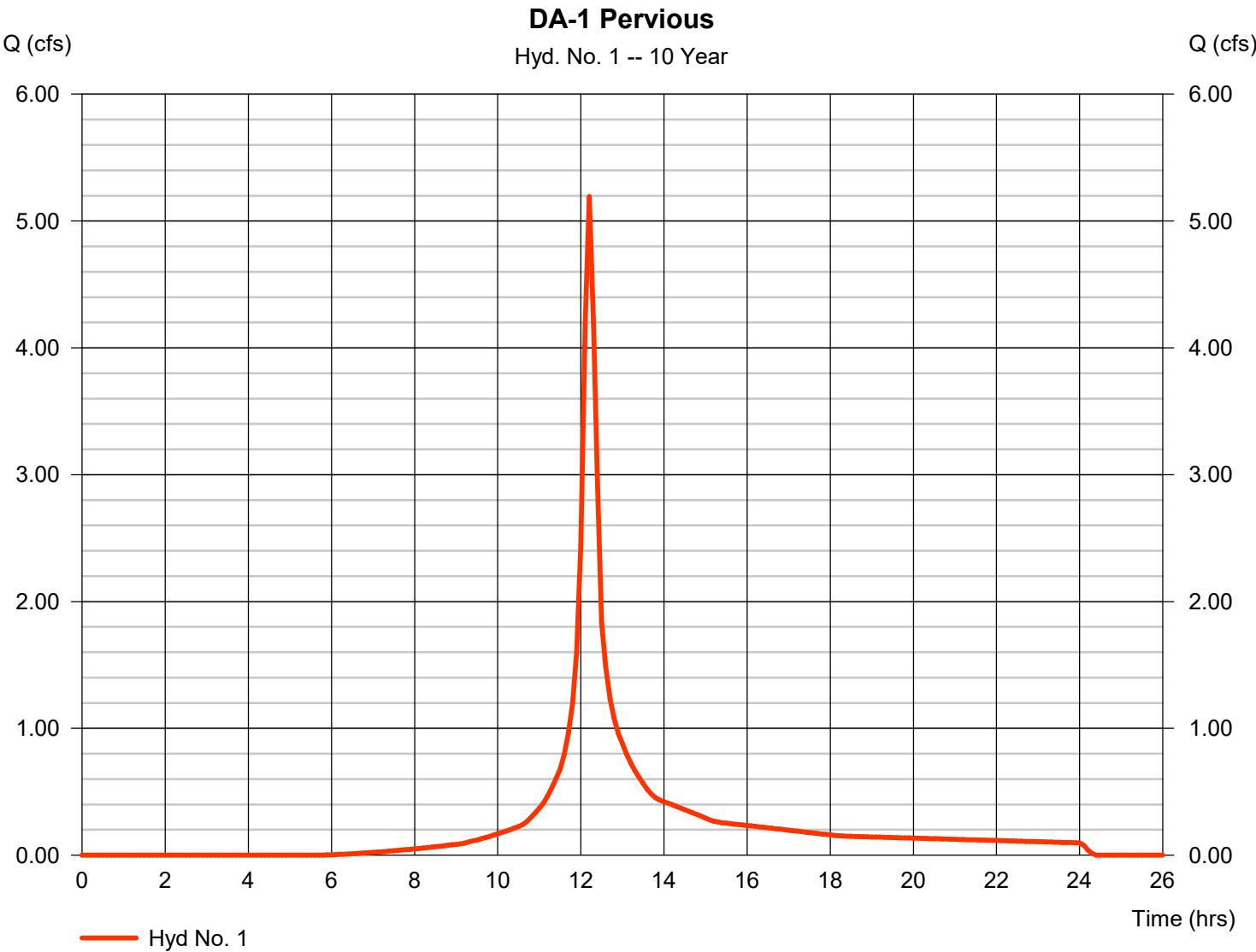
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 1

DA-1 Pervious

Hydrograph type	= SCS Runoff	Peak discharge	= 5.194 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 22,275 cuft
Drainage area	= 1.590 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.70 min
Total precip.	= 6.37 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginask Manor - West Orange		

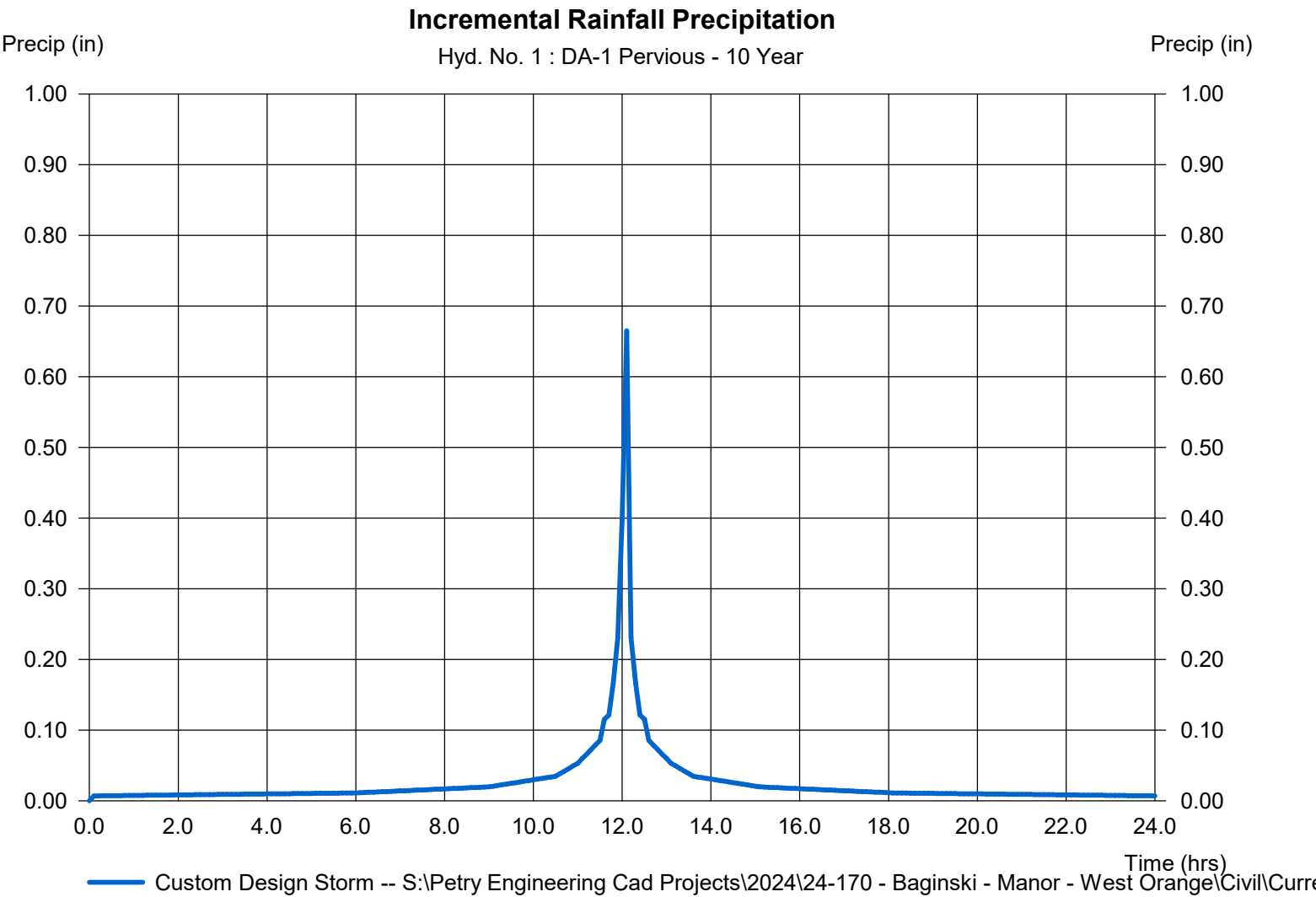


Precipitation Report

Hyd. No. 1

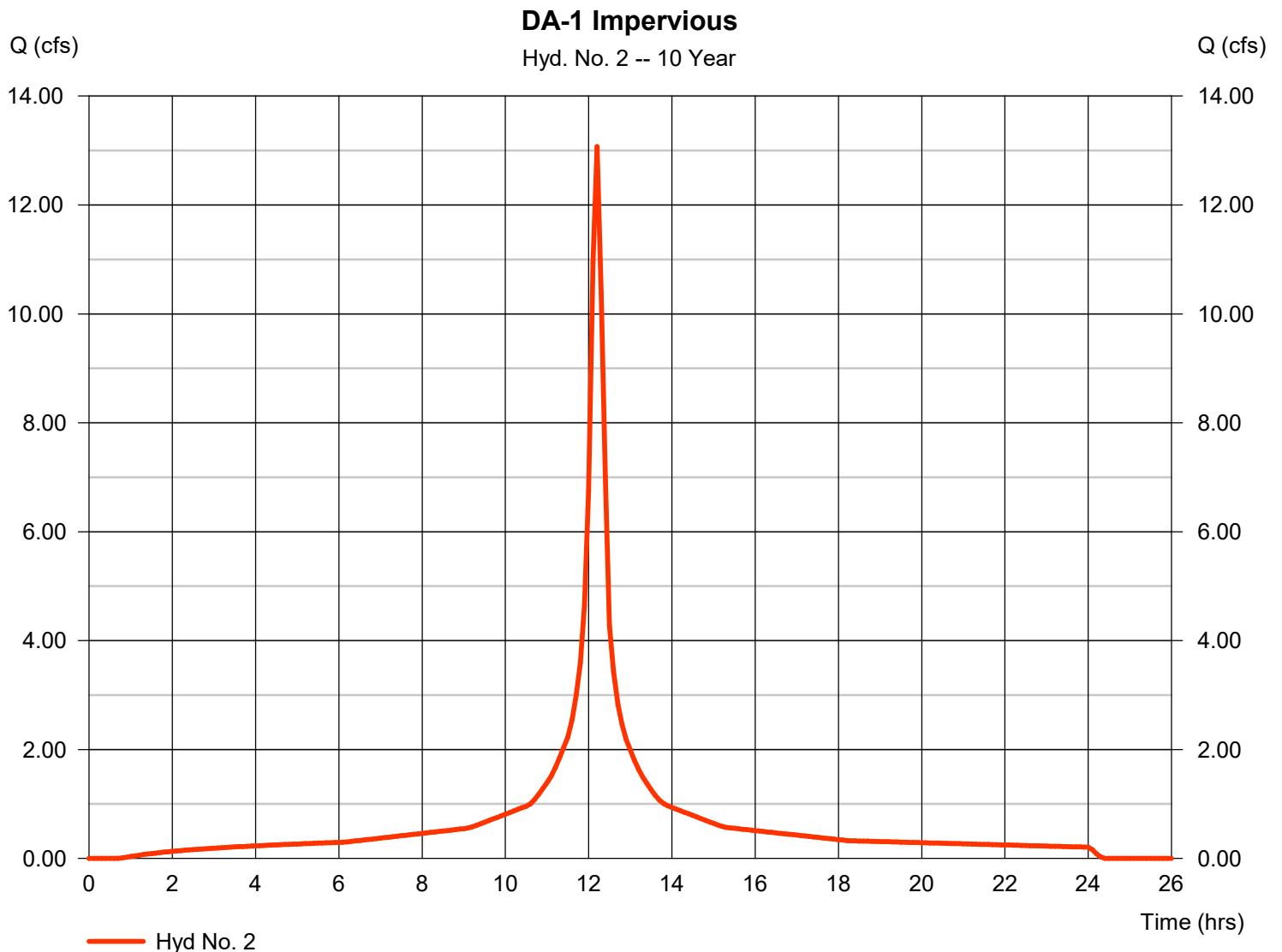
DA-1 Pervious

Storm Frequency	= 10 yrs	Time interval	= 6 min
Total precip.	= 6.3700 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		



Hyd. No. 2

Hydrograph type	= SCS Runoff	Peak discharge	= 13.07 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 64,476 cuft
Drainage area	= 3.090 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.70 min
Total precip.	= 6.37 in	Distribution	= Custom
Storm duration	= 5:00		

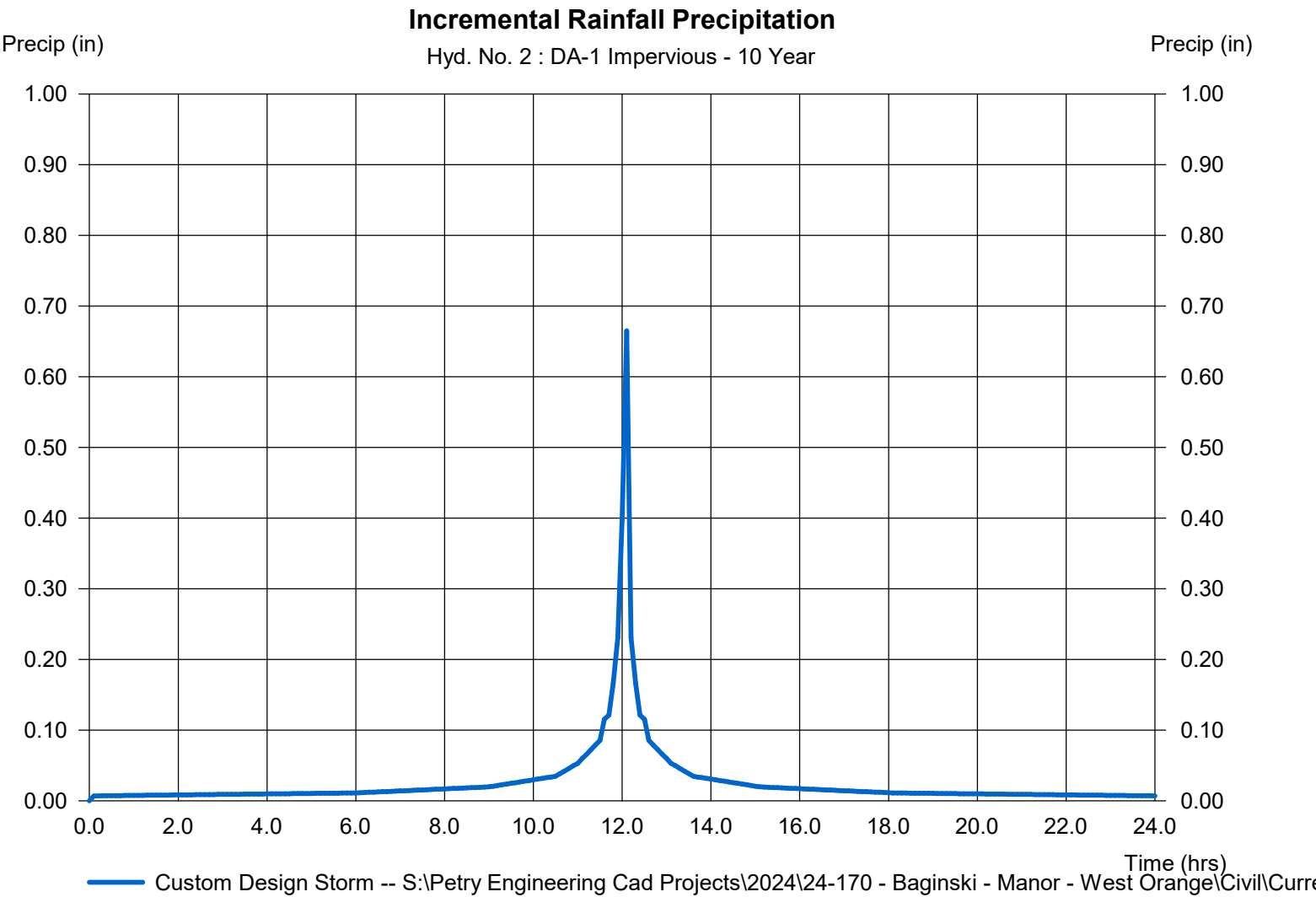


Precipitation Report

Hyd. No. 2

DA-1 Impervious

Storm Frequency	= 10 yrs	Time interval	= 6 min
Total precip.	= 6.3700 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		



Hydrograph Report

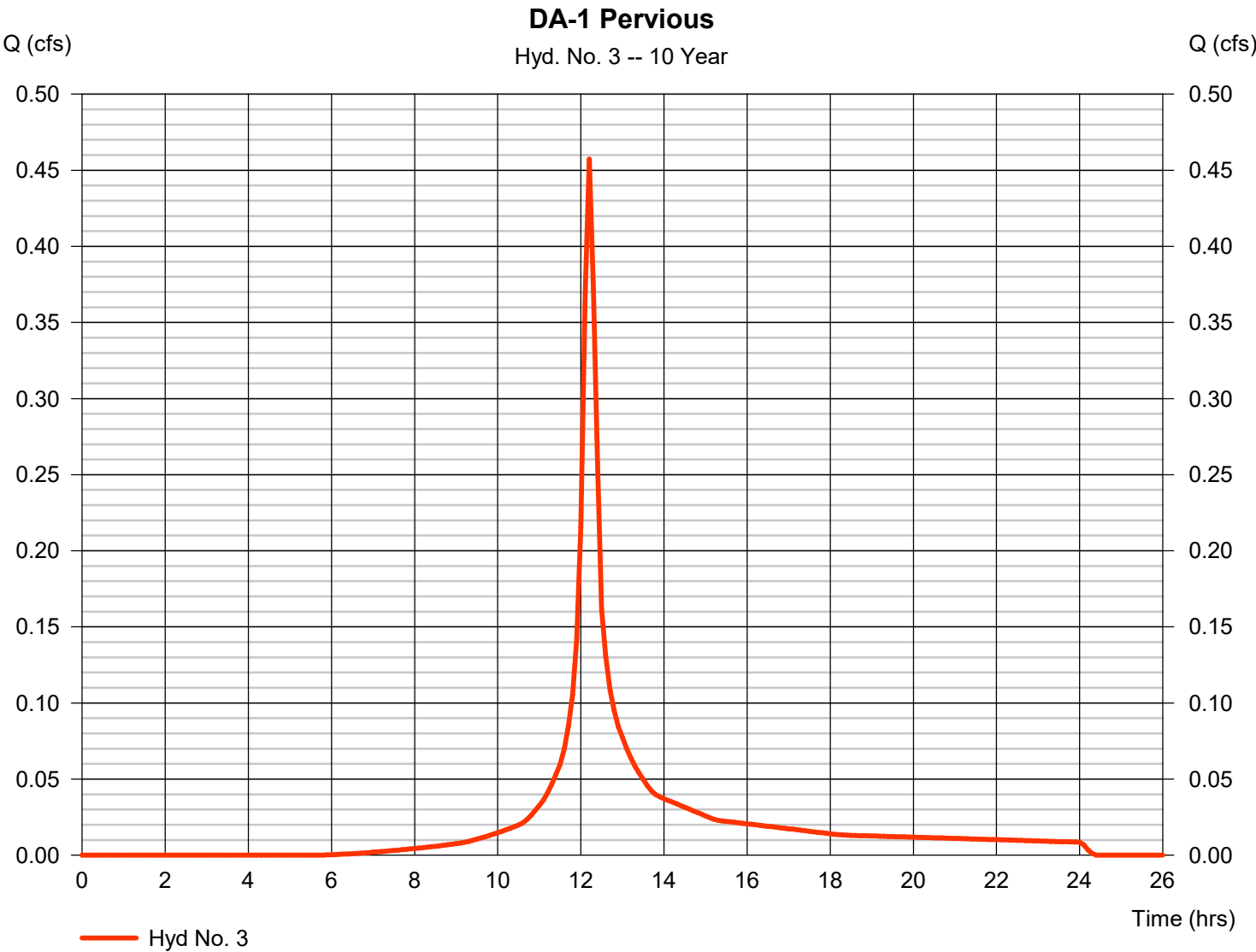
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Tuesday, 12 / 23 / 2025

Hyd. No. 3

DA-1 Pervious

Hydrograph type	= SCS Runoff	Peak discharge	= 0.457 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 1,961 cuft
Drainage area	= 0.140 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 12.60 min
Total precip.	= 6.37 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginask Manor - West Orange		

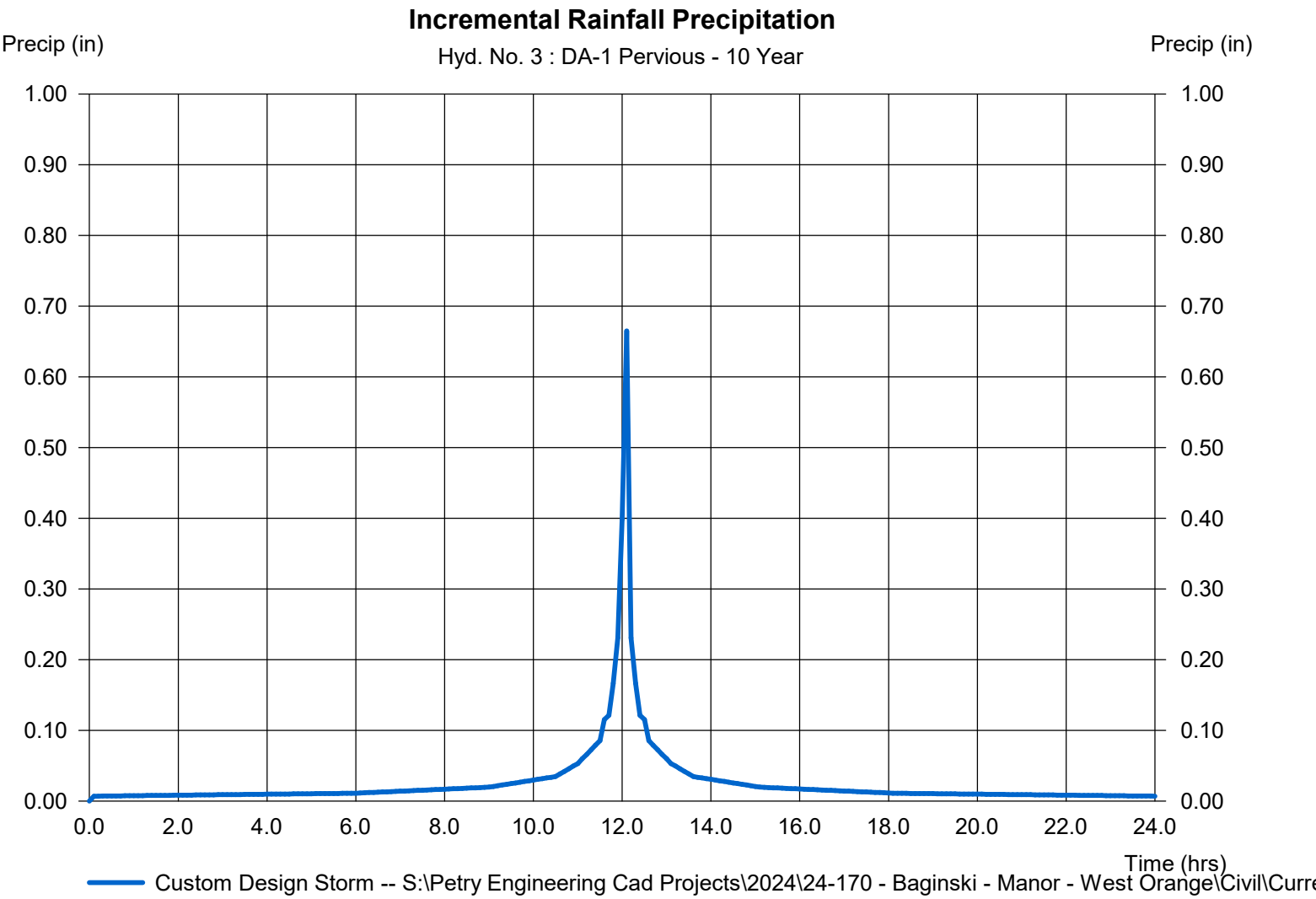


Precipitation Report

Hyd. No. 3

DA-1 Pervious

Storm Frequency	= 10 yrs	Time interval	= 6 min
Total precip.	= 6.3700 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		

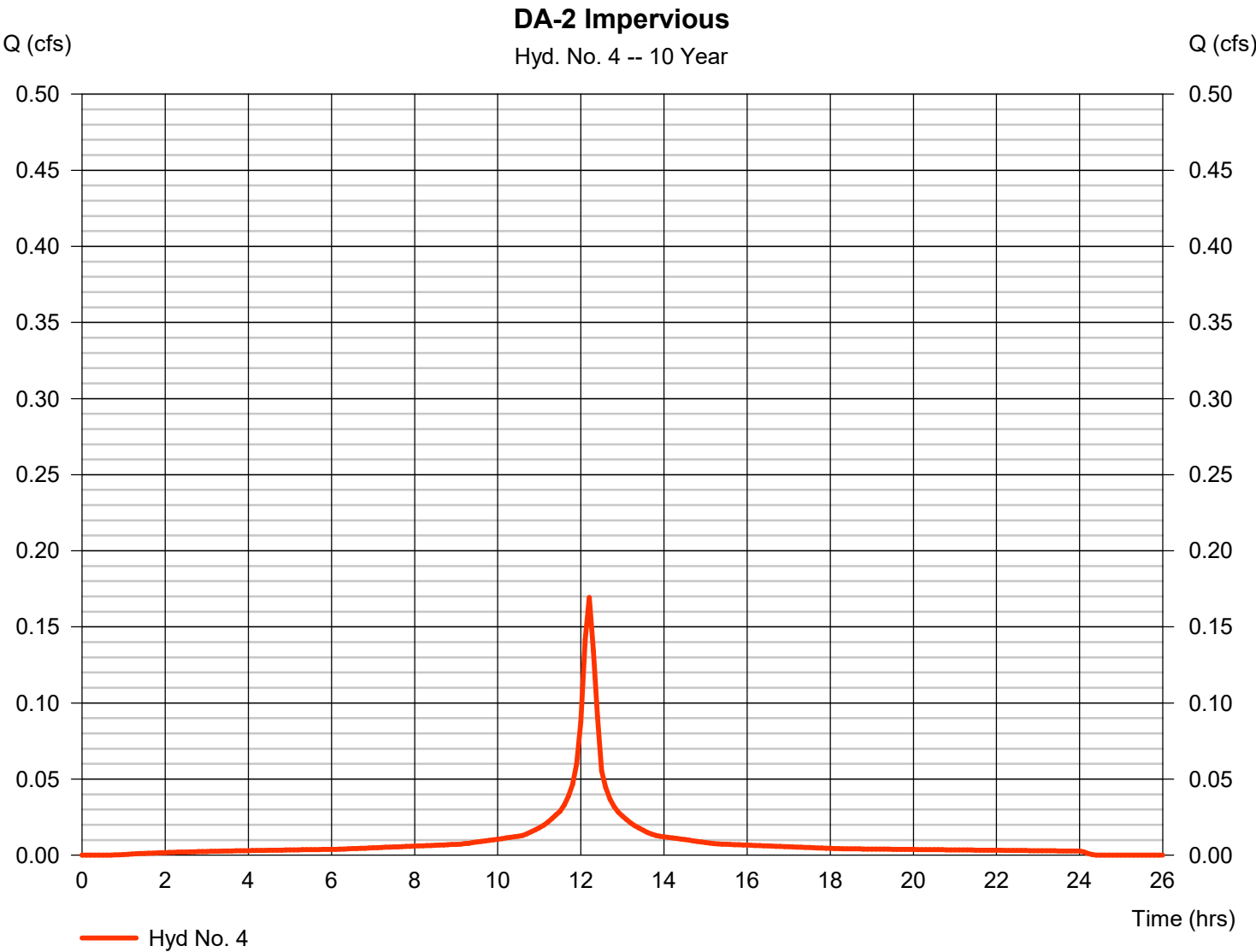


Hydrograph Report

Hyd. No. 4

DA-2 Impervious

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.169 cfs
Storm frequency	=	10 yrs	Time to peak	=	12.20 hrs
Time interval	=	6 min	Hyd. volume	=	835 cuft
Drainage area	=	0.040 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	12.60 min
Total precip.	=	6.37 in	Distribution	=	Custom
Storm duration	=	S:\Petty Engineering Cad Projects\2024\24-170 - Baginask Manor - West Orange\Storm 24-170 - Baginask Manor - West Orange - 10 Year - 6.37 in - 12.20 hrs - 0.169 cfs - 835 cuft - 98 - 0 ft - 12.60 min - Custom - 0.040 ac - 0.0 % - User - 10 yrs - SCS Runoff - DA-2 Impervious - Hyd. No. 4			

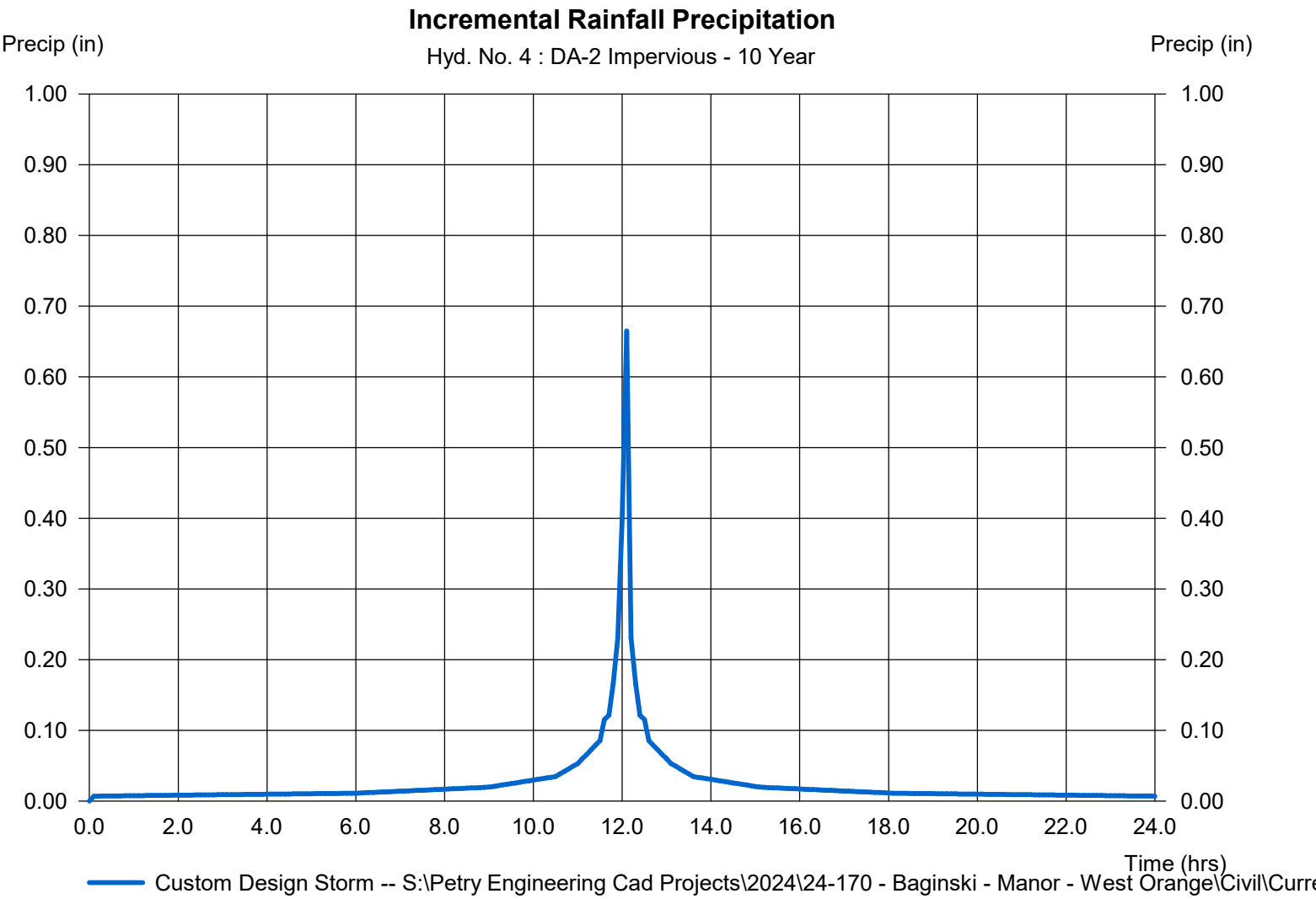


Precipitation Report

Hyd. No. 4

DA-2 Impervious

Storm Frequency	= 10 yrs	Time interval	= 6 min
Total precip.	= 6.3700 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		



Hydrograph Report

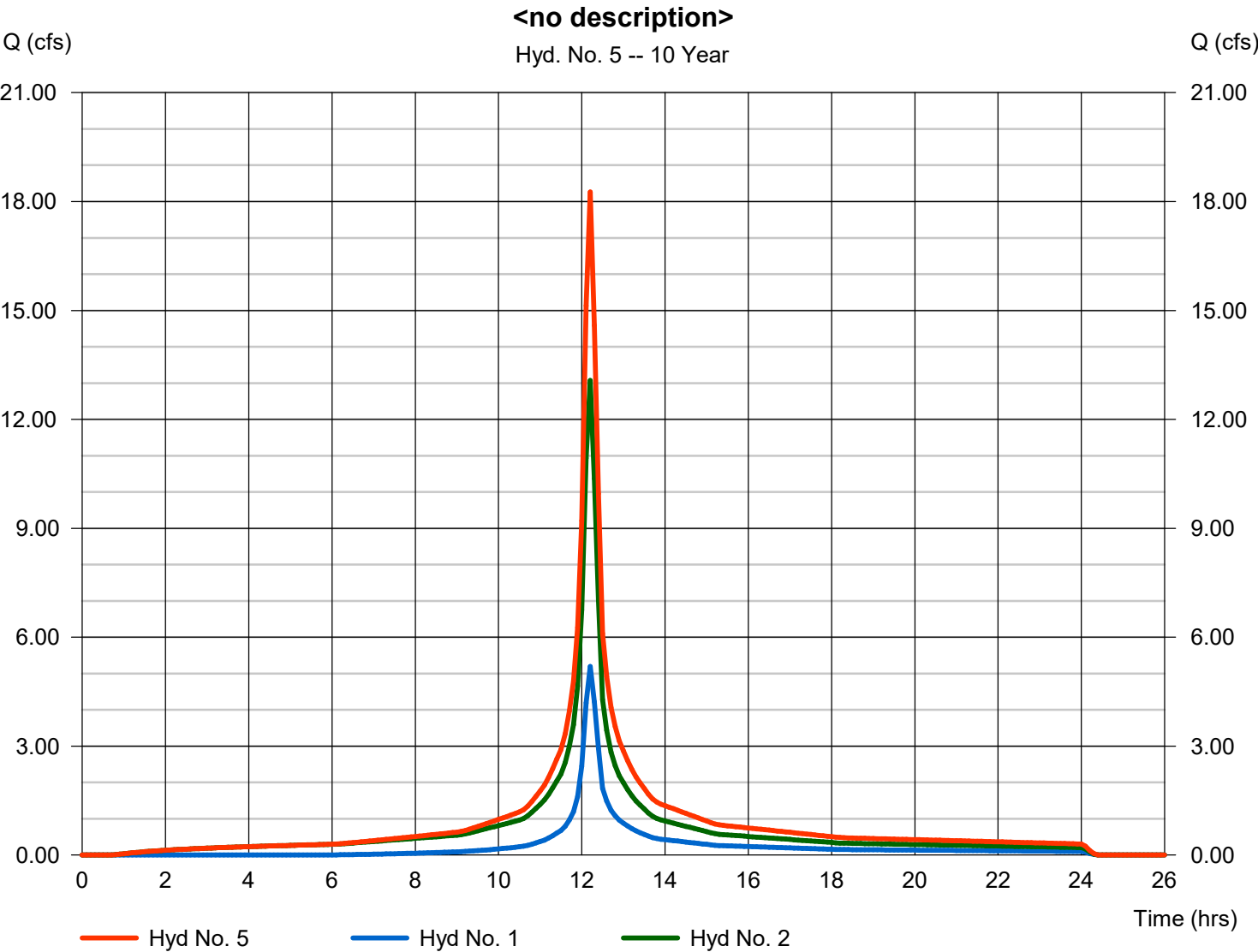
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 5

<no description>

Hydrograph type	= Combine	Peak discharge	= 18.27 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 86,752 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 4.680 ac

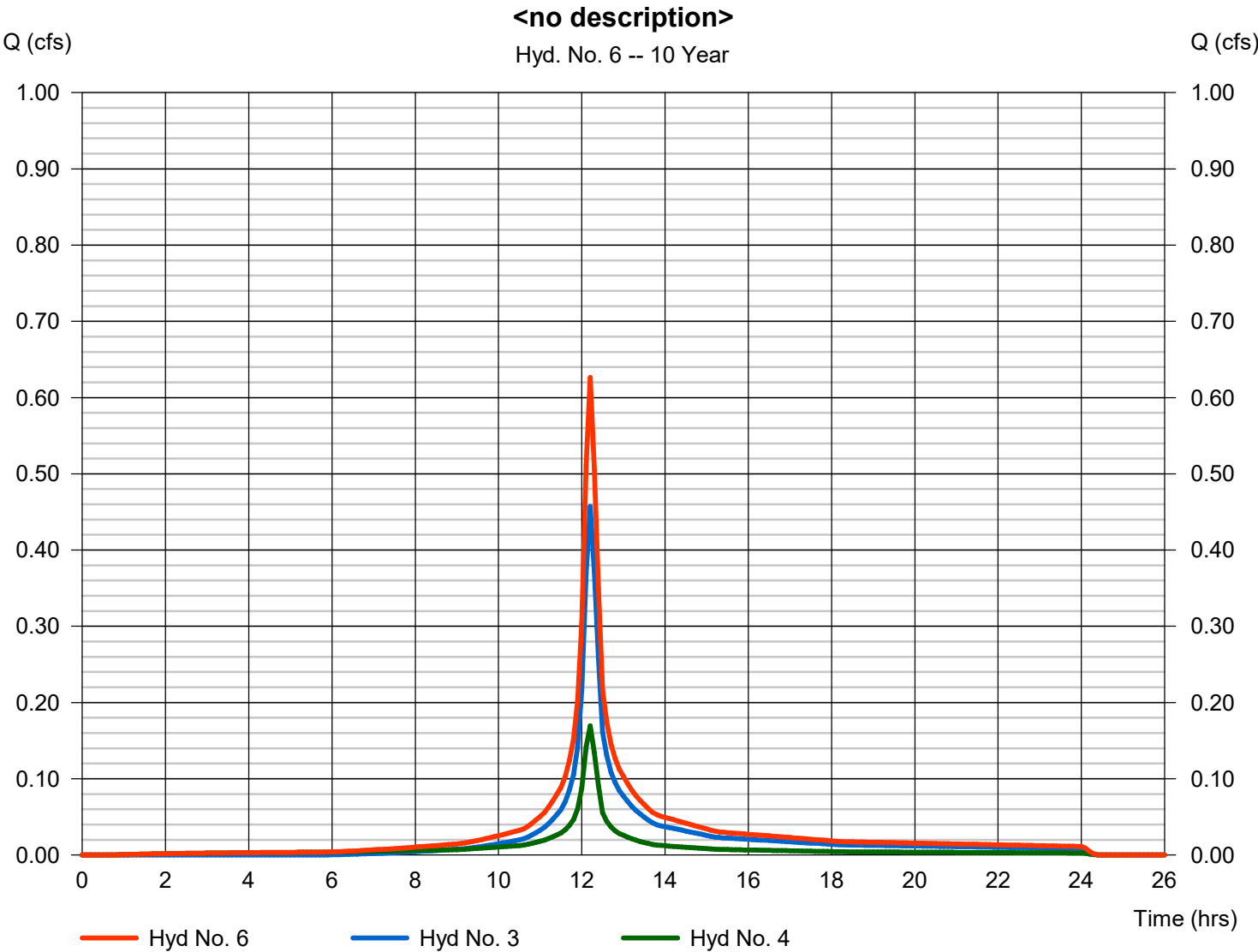


Hydrograph Report

Hyd. No. 6

<no description>

Hydrograph type	= Combine	Peak discharge	= 0.627 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 2,796 cuft
Inflow hyds.	= 3, 4	Contrib. drain. area	= 0.180 ac



Hydrograph Summary Report

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

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	10.95	6	732	48,603	-----	-----	-----	DA-1 Pervious
2	SCS Runoff	23.70	6	732	118,602	-----	-----	-----	DA-1 Impervious
3	SCS Runoff	0.964	6	732	4,279	-----	-----	-----	DA-1 Pervious
4	SCS Runoff	0.307	6	732	1,535	-----	-----	-----	DA-2 Impervious
5	Combine	34.65	6	732	167,205	1, 2,	-----	-----	<no description>
6	Combine	1.271	6	732	5,815	3, 4,	-----	-----	<no description>
Proposed - Future Projected.gpw					Return Period: 100 Year			Tuesday, 12 / 23 / 2025	

Hydrograph Report

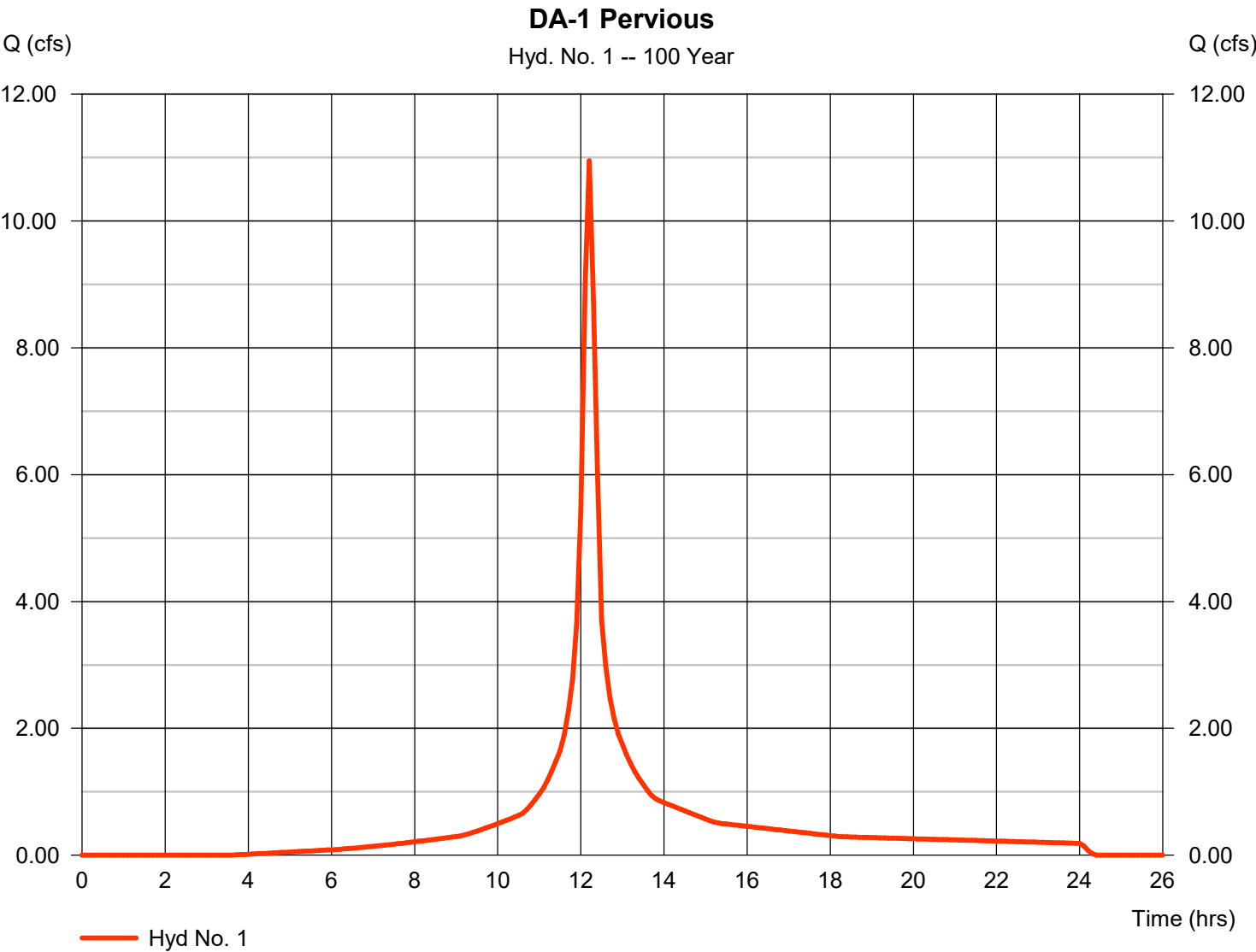
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 1

DA-1 Pervious

Hydrograph type	= SCS Runoff	Peak discharge	= 10.95 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 48,603 cuft
Drainage area	= 1.590 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.70 min
Total precip.	= 11.52 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginask Manor - West Orange		

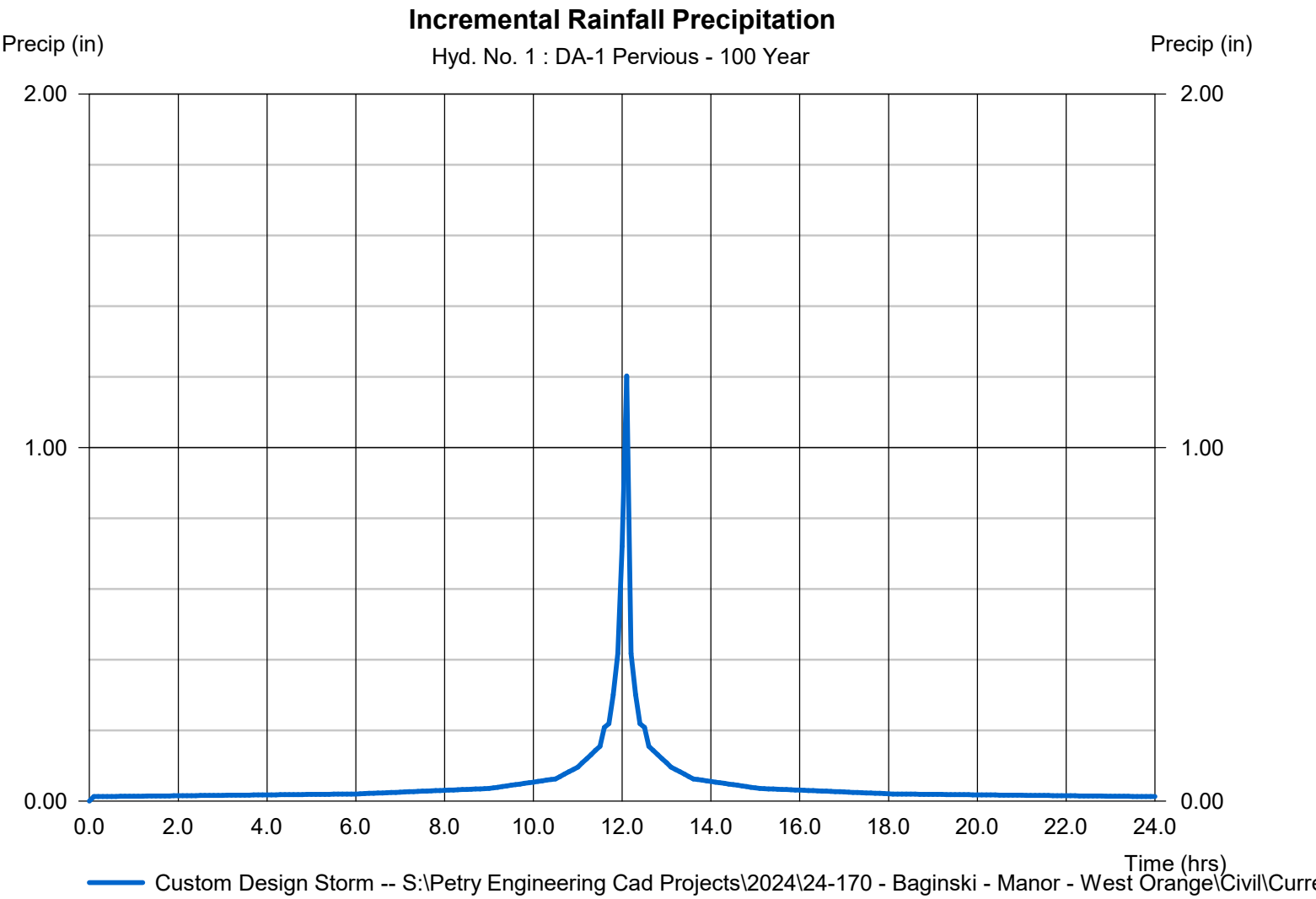


Precipitation Report

Hyd. No. 1

DA-1 Pervious

Storm Frequency	= 100 yrs	Time interval	= 6 min
Total precip.	= 11.5200 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Cur		

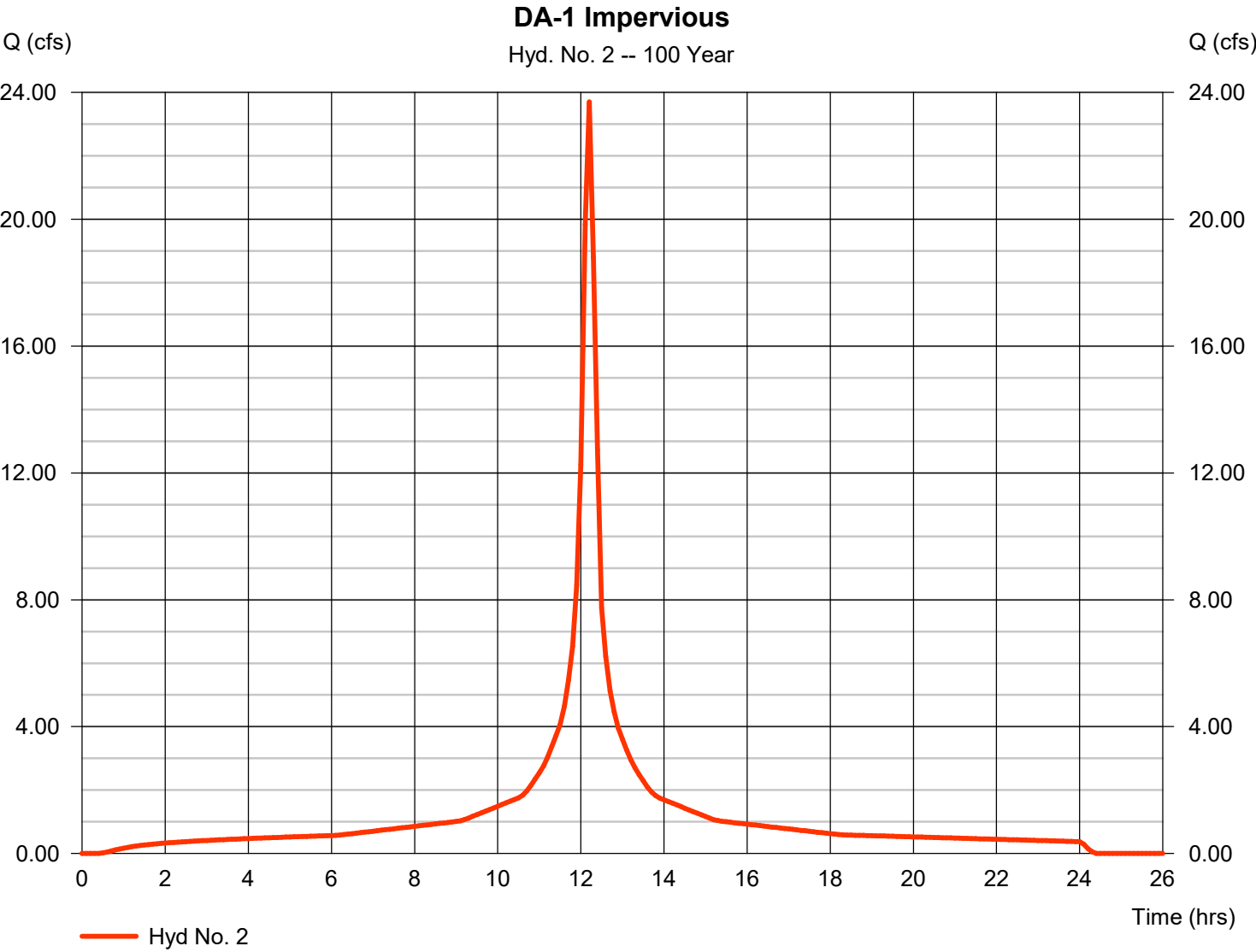


Hydrograph Report

Hyd. No. 2

DA-1 Impervious

Hydrograph type	= SCS Runoff	Peak discharge	= 23.70 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 118,602 cuft
Drainage area	= 3.090 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.70 min
Total precip.	= 11.52 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024-170 - Bagin's Manor - West Orange		



Precipitation Report

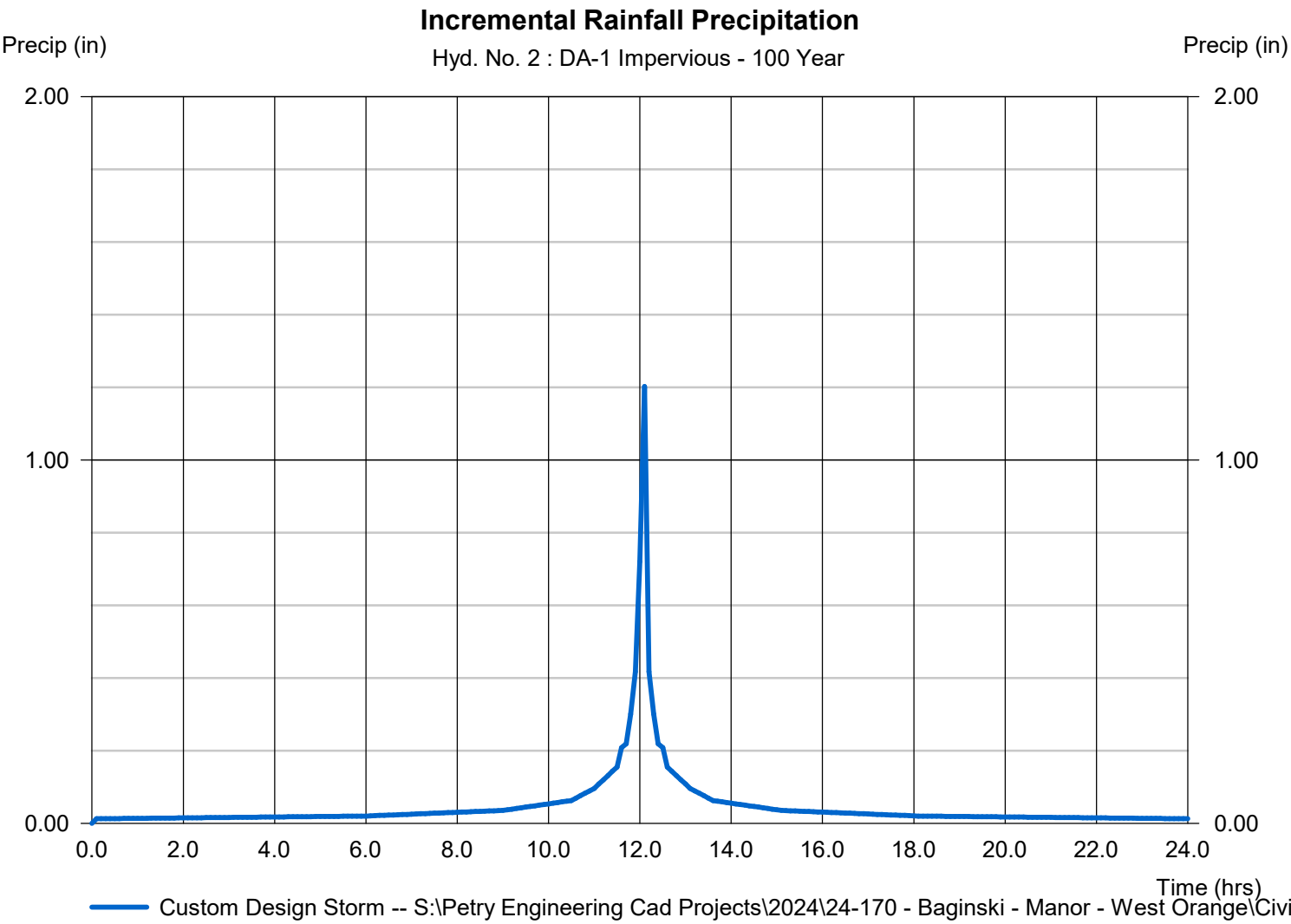
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 2

DA-1 Impervious

Storm Frequency	= 100 yrs	Time interval	= 6 min
Total precip.	= 11.5200 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Current		



Hydrograph Report

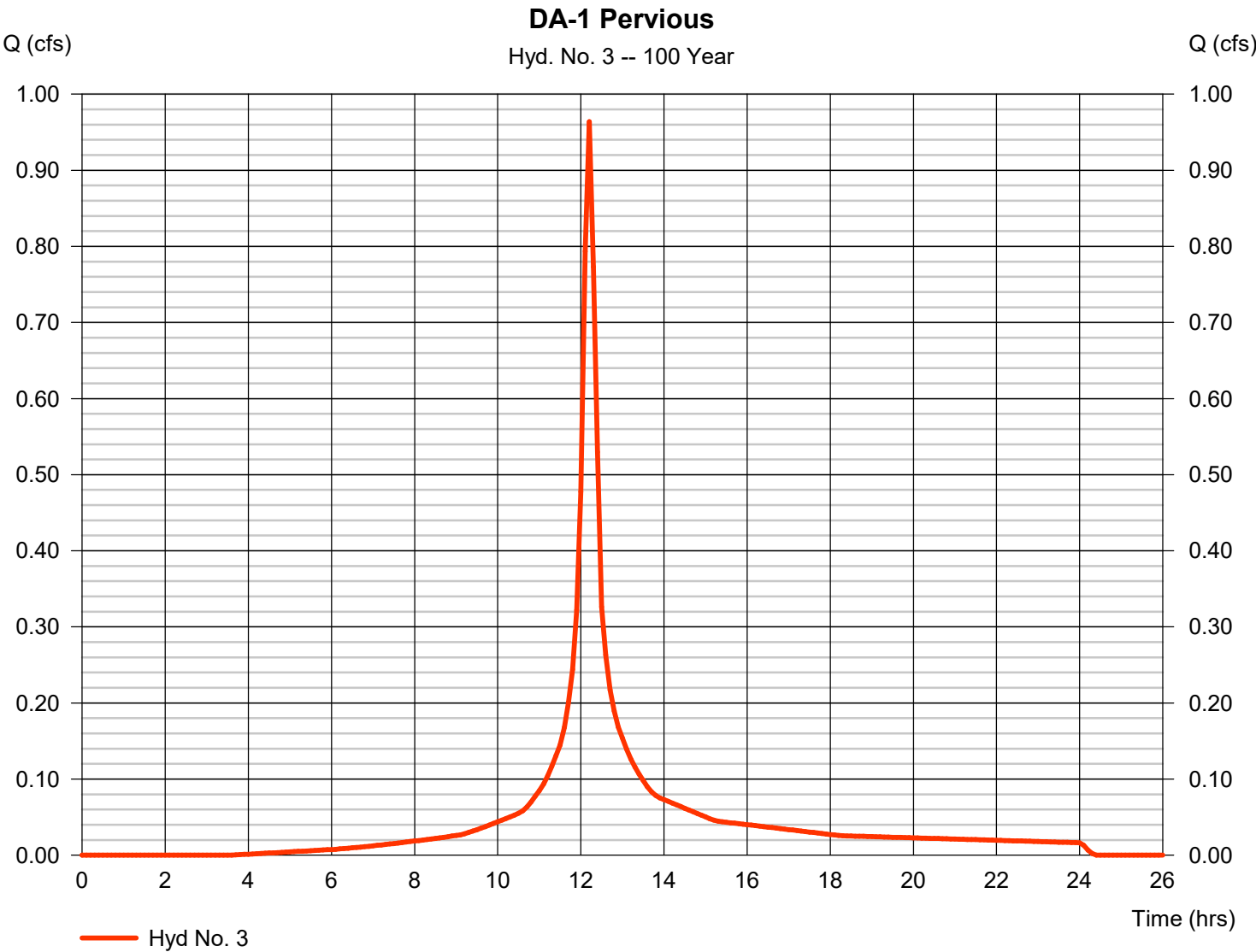
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 3

DA-1 Pervious

Hydrograph type	= SCS Runoff	Peak discharge	= 0.964 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 4,279 cuft
Drainage area	= 0.140 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 12.60 min
Total precip.	= 11.52 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginask Manor - West Orange		

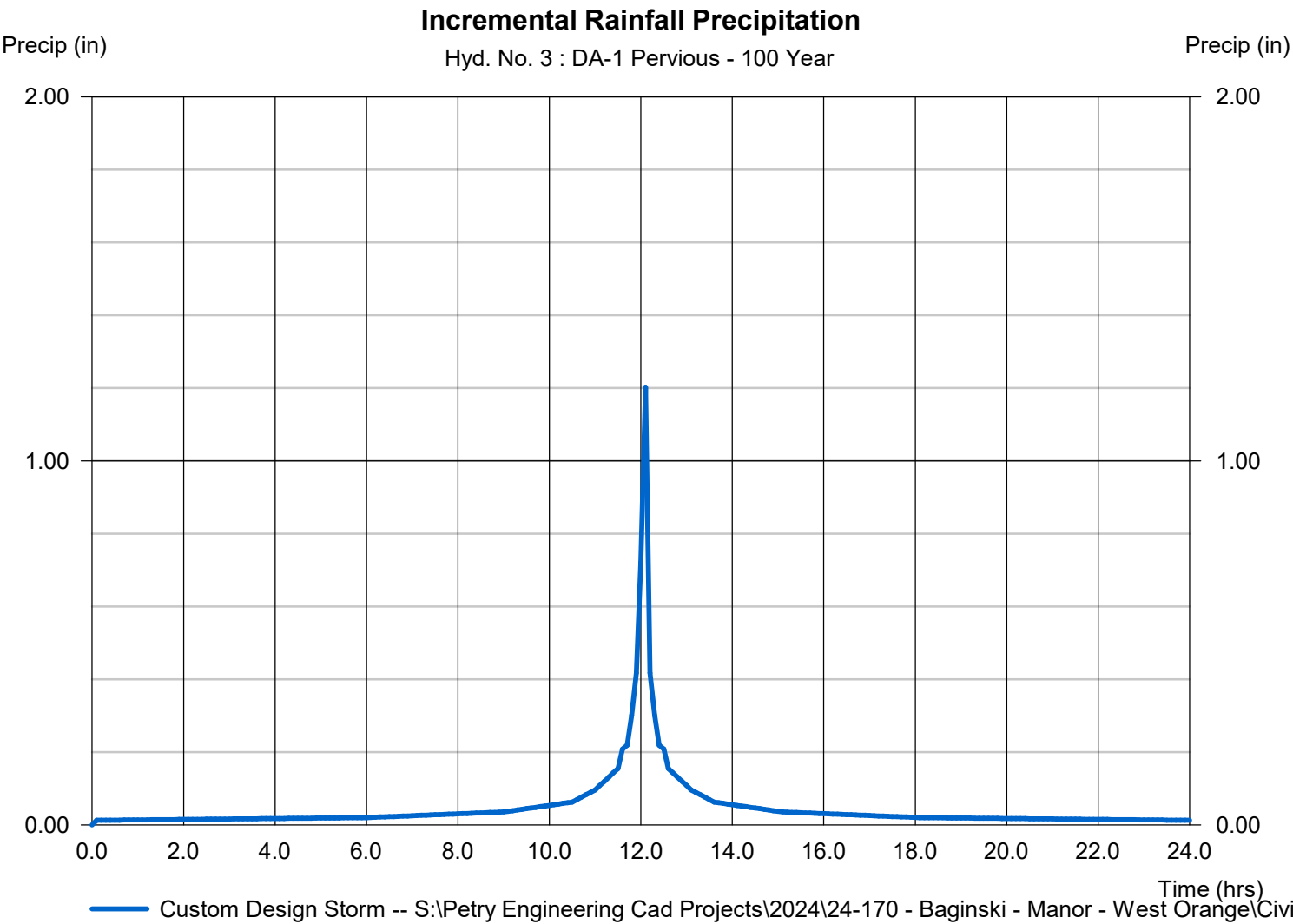


Precipitation Report

Hyd. No. 3

DA-1 Pervious

Storm Frequency	= 100 yrs	Time interval	= 6 min
Total precip.	= 11.5200 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Current		



Hydrograph Report

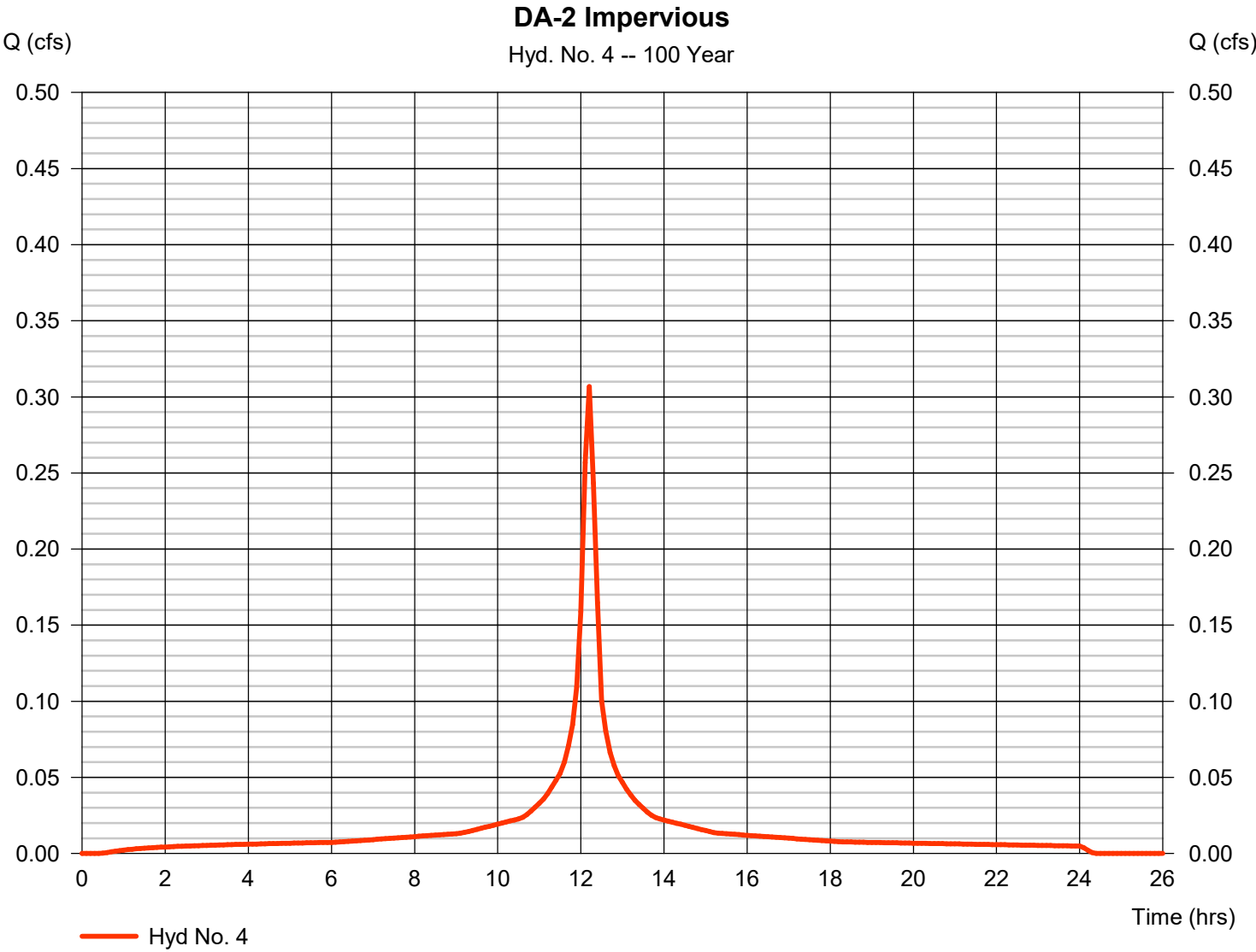
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 4

DA-2 Impervious

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.307 cfs
Storm frequency	=	100 yrs	Time to peak	=	12.20 hrs
Time interval	=	6 min	Hyd. volume	=	1,535 cuft
Drainage area	=	0.040 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	12.60 min
Total precip.	=	11.52 in	Distribution	=	Custom
Storm duration	=	S:\Petry Engineering Cad Projects\2024\24-170 - Baginaski Manor - West Orange\Shape 24-170 - Baginaski Manor - West Orange.dwg			

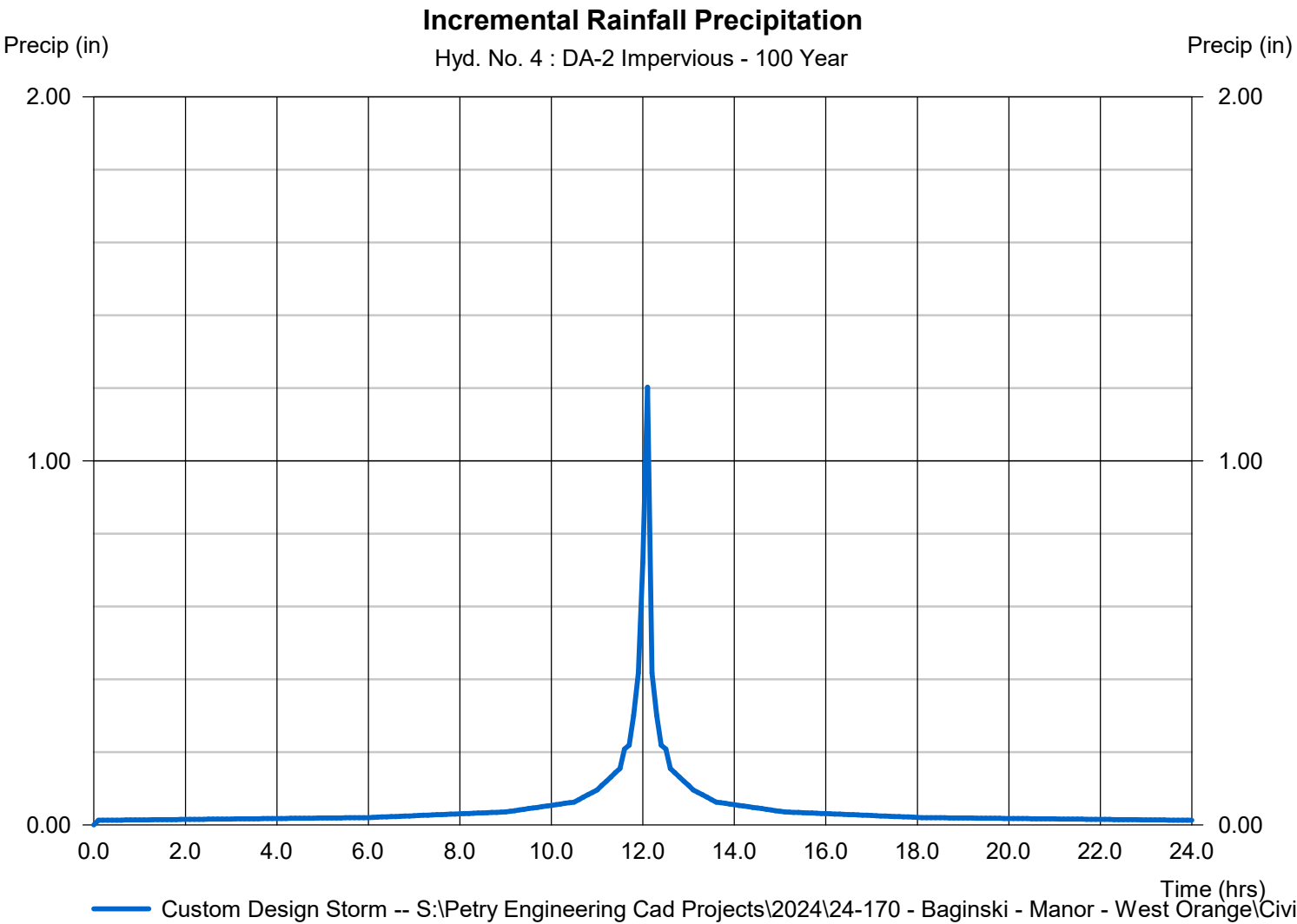


Precipitation Report

Hyd. No. 4

DA-2 Impervious

Storm Frequency	= 100 yrs	Time interval	= 6 min
Total precip.	= 11.5200 in	Distribution	= Custom
Storm duration	= S:\Petry Engineering Cad Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Current		



Hydrograph Report

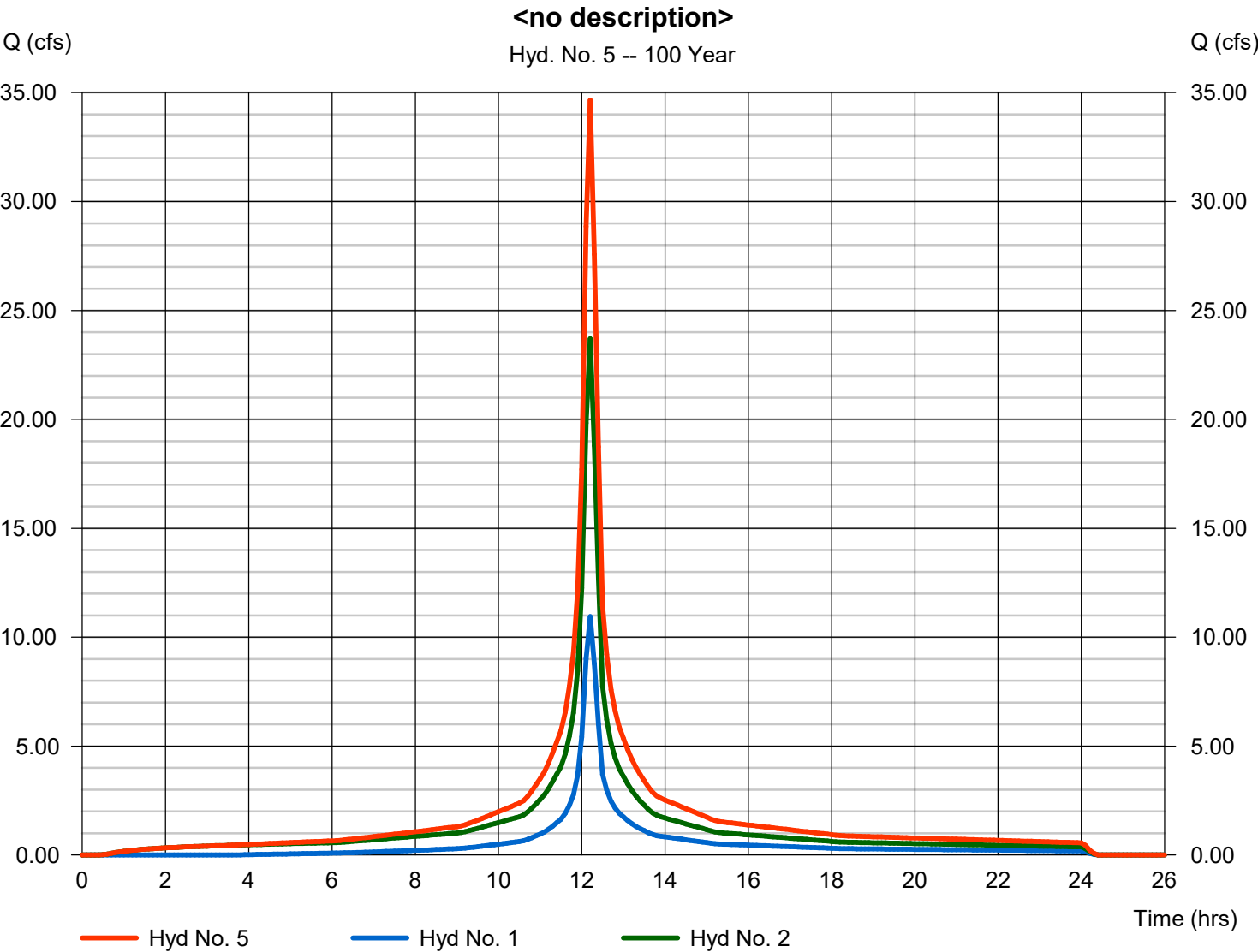
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2025

Tuesday, 12 / 23 / 2025

Hyd. No. 5

<no description>

Hydrograph type	= Combine	Peak discharge	= 34.65 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 167,205 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 4.680 ac

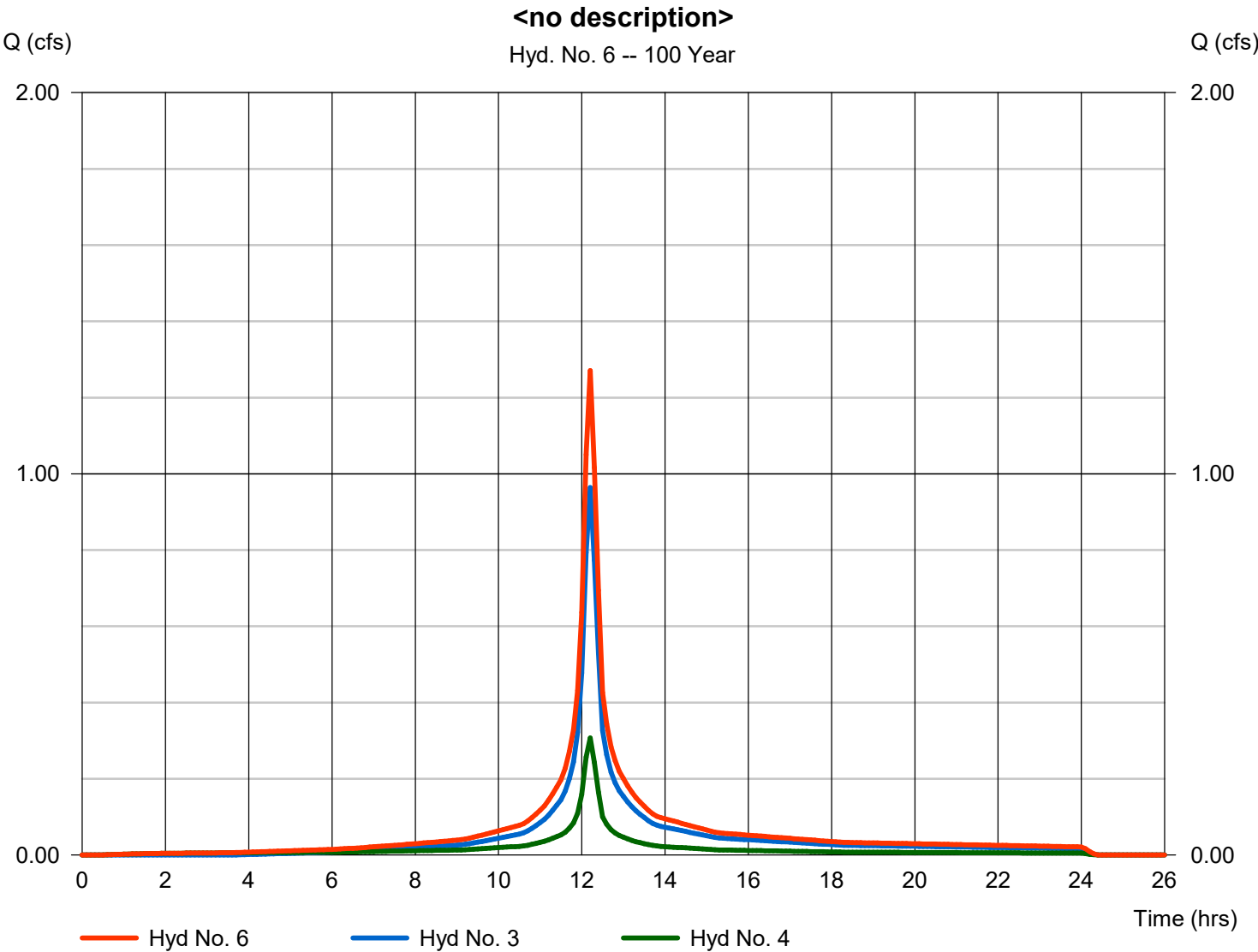


Hydrograph Report

Hyd. No. 6

<no description>

Hydrograph type	= Combine	Peak discharge	= 1.271 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 6 min	Hyd. volume	= 5,815 cuft
Inflow hyds.	= 3, 4	Contrib. drain. area	= 0.180 ac



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	-----
2	69.8703	13.1000	0.8658	-----
3	0.0000	0.0000	0.0000	-----
5	79.2597	14.6000	0.8369	-----
10	88.2351	15.5000	0.8279	-----
25	102.6072	16.5000	0.8217	-----
50	114.8193	17.2000	0.8199	-----
100	127.1596	17.8000	0.8186	-----

File name: SampleFHA.idf

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	5.69	4.61	3.89	3.38	2.99	2.69	2.44	2.24	2.07	1.93	1.81	1.70
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.57	5.43	4.65	4.08	3.65	3.30	3.02	2.79	2.59	2.42	2.27	2.15
10	7.24	6.04	5.21	4.59	4.12	3.74	3.43	3.17	2.95	2.77	2.60	2.46
25	8.25	6.95	6.03	5.34	4.80	4.38	4.02	3.73	3.48	3.26	3.07	2.91
50	9.04	7.65	6.66	5.92	5.34	4.87	4.49	4.16	3.88	3.65	3.44	3.25
100	9.83	8.36	7.30	6.50	5.87	5.36	4.94	4.59	4.29	4.03	3.80	3.60

Tc = time in minutes. Values may exceed 60.

Projects\2024\24-170 - Baginski - Manor - West Orange\Civil\Current\Stormwater\Essex County - Future Projected.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	4.09	0.00	0.00	6.37	0.00	0.00	11.52

EXISTING VS. PROPOSED RUNOFF RATES



TABLE 7									
DA-1 EXISTING VS. PROPOSED RUNOFF RATES - CURRENT ADJUSTED RAINFALL									
Time (Min)	Existing Conditions			Proposed Conditions			Difference		
	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
12	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
18	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
24	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.000	0.003	0.000	0.000	0.003	0.000	0.000	0.000
36	0.000	0.000	0.016	0.000	0.000	0.015	0.000	0.000	-0.001
42	0.000	0.000	0.037	0.000	0.000	0.034	0.000	0.000	-0.003
48	0.000	0.002	0.062	0.000	0.002	0.058	0.000	0.000	-0.004
54	0.000	0.008	0.087	0.000	0.007	0.081	0.000	-0.001	-0.006
60	0.000	0.017	0.109	0.000	0.015	0.102	0.000	-0.001	-0.008
66	0.000	0.027	0.130	0.000	0.025	0.121	0.000	-0.002	-0.009
72	0.002	0.037	0.148	0.002	0.034	0.138	0.000	-0.003	-0.010
78	0.005	0.047	0.165	0.005	0.043	0.154	0.000	-0.003	-0.011
84	0.010	0.056	0.181	0.009	0.052	0.168	-0.001	-0.004	-0.013
90	0.015	0.064	0.195	0.014	0.060	0.181	-0.001	-0.004	-0.014
96	0.020	0.073	0.208	0.018	0.068	0.194	-0.001	-0.005	-0.014
102	0.024	0.080	0.220	0.023	0.075	0.205	-0.002	-0.006	-0.015
108	0.029	0.088	0.232	0.027	0.082	0.216	-0.002	-0.006	-0.016
114	0.033	0.095	0.243	0.031	0.088	0.226	-0.002	-0.007	-0.017
120	0.037	0.102	0.253	0.035	0.095	0.236	-0.003	-0.007	-0.018
126	0.042	0.108	0.263	0.039	0.101	0.245	-0.003	-0.007	-0.018
132	0.046	0.115	0.272	0.042	0.107	0.253	-0.003	-0.008	-0.019
138	0.050	0.121	0.281	0.046	0.112	0.262	-0.003	-0.008	-0.019
144	0.053	0.126	0.289	0.050	0.118	0.269	-0.004	-0.009	-0.020
150	0.057	0.132	0.297	0.053	0.123	0.277	-0.004	-0.009	-0.021
156	0.061	0.137	0.305	0.056	0.128	0.283	-0.004	-0.010	-0.021
162	0.064	0.142	0.312	0.060	0.133	0.290	-0.004	-0.010	-0.022
168	0.068	0.148	0.319	0.063	0.137	0.297	-0.005	-0.010	-0.022
174	0.071	0.152	0.326	0.066	0.142	0.303	-0.005	-0.011	-0.023
180	0.074	0.157	0.332	0.069	0.146	0.309	-0.005	-0.011	-0.023
186	0.077	0.161	0.338	0.072	0.150	0.315	-0.005	-0.011	-0.023
192	0.081	0.166	0.345	0.075	0.155	0.321	-0.006	-0.012	-0.024
198	0.084	0.170	0.351	0.078	0.159	0.327	-0.006	-0.012	-0.024
204	0.087	0.175	0.357	0.081	0.163	0.332	-0.006	-0.012	-0.025
210	0.090	0.179	0.363	0.084	0.167	0.337	-0.006	-0.012	-0.025
216	0.093	0.183	0.368	0.086	0.170	0.343	-0.006	-0.013	-0.026
222	0.096	0.187	0.374	0.089	0.174	0.348	-0.007	-0.013	-0.026
228	0.098	0.191	0.379	0.092	0.178	0.352	-0.007	-0.013	-0.026
234	0.101	0.194	0.383	0.094	0.181	0.357	-0.007	-0.013	-0.027
240	0.104	0.198	0.389	0.097	0.184	0.362	-0.007	-0.014	-0.027

Time (Min)	Existing Conditions			Proposed Conditions			Difference		
	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)
246	0.107	0.202	0.394	0.099	0.188	0.366	-0.007	-0.014	-0.027
252	0.109	0.205	0.399	0.102	0.191	0.371	-0.008	-0.014	-0.028
258	0.112	0.209	0.404	0.104	0.194	0.376	-0.008	-0.014	-0.028
264	0.114	0.212	0.410	0.106	0.197	0.382	-0.008	-0.015	-0.028
270	0.117	0.216	0.417	0.109	0.201	0.389	-0.008	-0.015	-0.028
276	0.119	0.219	0.423	0.111	0.204	0.395	-0.008	-0.015	-0.028
282	0.122	0.222	0.430	0.113	0.207	0.402	-0.008	-0.015	-0.028
288	0.124	0.225	0.436	0.115	0.209	0.408	-0.009	-0.016	-0.028
294	0.126	0.228	0.443	0.117	0.212	0.415	-0.009	-0.016	-0.028
300	0.129	0.231	0.449	0.120	0.215	0.422	-0.009	-0.016	-0.028
306	0.131	0.234	0.456	0.122	0.218	0.428	-0.009	-0.016	-0.028
312	0.133	0.237	0.462	0.124	0.221	0.434	-0.009	-0.016	-0.028
318	0.135	0.240	0.468	0.126	0.224	0.441	-0.009	-0.017	-0.027
324	0.137	0.243	0.475	0.128	0.226	0.447	-0.010	-0.017	-0.027
330	0.140	0.246	0.481	0.130	0.229	0.454	-0.010	-0.017	-0.027
336	0.142	0.249	0.487	0.132	0.232	0.460	-0.010	-0.017	-0.027
342	0.144	0.251	0.493	0.134	0.234	0.466	-0.010	-0.017	-0.027
348	0.146	0.254	0.499	0.136	0.237	0.472	-0.010	-0.018	-0.027
354	0.148	0.257	0.506	0.138	0.239	0.479	-0.010	-0.018	-0.027
360	0.150	0.260	0.512	0.140	0.242	0.485	-0.010	-0.018	-0.027
366	0.153	0.264	0.520	0.142	0.245	0.493	-0.011	-0.018	-0.027
372	0.156	0.269	0.532	0.146	0.251	0.505	-0.011	-0.019	-0.027
378	0.161	0.277	0.547	0.150	0.257	0.520	-0.011	-0.019	-0.027
384	0.166	0.284	0.564	0.155	0.265	0.536	-0.012	-0.020	-0.028
390	0.171	0.292	0.579	0.159	0.272	0.551	-0.012	-0.020	-0.028
396	0.176	0.300	0.596	0.164	0.279	0.567	-0.012	-0.021	-0.028
402	0.181	0.309	0.612	0.168	0.288	0.583	-0.013	-0.021	-0.029
408	0.186	0.318	0.629	0.173	0.296	0.600	-0.013	-0.021	-0.029
414	0.191	0.327	0.646	0.178	0.305	0.617	-0.013	-0.022	-0.029
420	0.196	0.336	0.663	0.183	0.314	0.633	-0.014	-0.022	-0.030
426	0.201	0.346	0.680	0.187	0.323	0.651	-0.014	-0.022	-0.030
432	0.207	0.355	0.698	0.192	0.332	0.668	-0.014	-0.023	-0.030
438	0.212	0.365	0.715	0.197	0.342	0.685	-0.015	-0.023	-0.030
444	0.217	0.374	0.733	0.202	0.351	0.702	-0.015	-0.023	-0.030
450	0.222	0.384	0.750	0.207	0.360	0.720	-0.015	-0.023	-0.031
456	0.227	0.393	0.767	0.212	0.369	0.737	-0.016	-0.024	-0.031
462	0.233	0.403	0.785	0.216	0.379	0.754	-0.016	-0.024	-0.031
468	0.238	0.413	0.803	0.221	0.389	0.772	-0.016	-0.024	-0.031
474	0.243	0.423	0.821	0.226	0.398	0.790	-0.017	-0.024	-0.031
480	0.248	0.432	0.839	0.231	0.408	0.807	-0.017	-0.025	-0.031
486	0.254	0.443	0.858	0.236	0.418	0.826	-0.018	-0.025	-0.031
492	0.259	0.453	0.875	0.241	0.428	0.844	-0.018	-0.025	-0.031
498	0.264	0.463	0.893	0.246	0.437	0.862	-0.018	-0.025	-0.031

Time (Min)	Existing Conditions			Proposed Conditions			Difference		
	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)
504	0.269	0.473	0.911	0.251	0.447	0.880	-0.019	-0.025	-0.032
510	0.275	0.483	0.930	0.256	0.457	0.898	-0.019	-0.026	-0.032
516	0.280	0.493	0.948	0.261	0.467	0.916	-0.019	-0.026	-0.032
522	0.286	0.504	0.967	0.266	0.478	0.935	-0.020	-0.026	-0.032
528	0.292	0.514	0.986	0.272	0.488	0.954	-0.020	-0.026	-0.032
534	0.298	0.524	1.004	0.278	0.498	0.973	-0.020	-0.026	-0.032
540	0.305	0.535	1.023	0.284	0.508	0.991	-0.020	-0.026	-0.032
546	0.313	0.549	1.049	0.293	0.523	1.018	-0.021	-0.027	-0.032
552	0.327	0.572	1.091	0.306	0.545	1.059	-0.021	-0.027	-0.032
558	0.344	0.601	1.144	0.322	0.573	1.111	-0.022	-0.028	-0.033
564	0.362	0.632	1.203	0.340	0.603	1.169	-0.023	-0.029	-0.034
570	0.381	0.664	1.261	0.357	0.634	1.226	-0.024	-0.030	-0.035
576	0.400	0.696	1.321	0.376	0.665	1.285	-0.025	-0.031	-0.036
582	0.419	0.729	1.380	0.394	0.697	1.343	-0.025	-0.032	-0.037
588	0.439	0.761	1.440	0.413	0.729	1.403	-0.026	-0.033	-0.037
594	0.459	0.795	1.501	0.432	0.761	1.463	-0.027	-0.033	-0.038
600	0.479	0.828	1.562	0.451	0.794	1.523	-0.028	-0.034	-0.039
606	0.499	0.862	1.623	0.471	0.827	1.584	-0.028	-0.035	-0.039
612	0.520	0.896	1.684	0.490	0.860	1.645	-0.029	-0.035	-0.040
618	0.540	0.930	1.746	0.511	0.894	1.706	-0.030	-0.036	-0.040
624	0.561	0.965	1.809	0.531	0.928	1.769	-0.030	-0.037	-0.040
630	0.582	1.000	1.872	0.552	0.963	1.831	-0.031	-0.037	-0.041
636	0.613	1.051	1.965	0.581	1.013	1.924	-0.032	-0.038	-0.042
642	0.664	1.136	2.120	0.630	1.096	2.077	-0.034	-0.040	-0.043
648	0.728	1.243	2.317	0.691	1.200	2.271	-0.036	-0.043	-0.046
654	0.799	1.363	2.536	0.760	1.317	2.487	-0.039	-0.046	-0.049
660	0.871	1.484	2.756	0.830	1.435	2.705	-0.042	-0.049	-0.051
666	0.955	1.624	3.010	0.911	1.572	2.956	-0.044	-0.052	-0.054
672	1.061	1.801	3.332	1.013	1.746	3.275	-0.048	-0.055	-0.057
678	1.183	2.004	3.699	1.131	1.945	3.638	-0.052	-0.059	-0.061
684	1.314	2.222	4.092	1.258	2.158	4.028	-0.056	-0.063	-0.064
690	1.447	2.442	4.488	1.388	2.375	4.421	-0.060	-0.067	-0.067
696	1.673	2.816	5.161	1.606	2.742	5.088	-0.066	-0.074	-0.073
702	1.990	3.342	6.110	1.915	3.260	6.029	-0.076	-0.083	-0.081
708	2.406	4.028	7.340	2.319	3.934	7.250	-0.087	-0.094	-0.090
714	3.156	5.268	9.562	3.049	5.154	9.455	-0.107	-0.114	-0.108
720	4.658	7.737	13.972	4.513	7.586	13.834	-0.144	-0.150	-0.138
726	7.702	12.713	22.808	7.493	12.501	22.619	-0.209	-0.212	-0.189
732	9.339	15.348	27.410	9.109	15.119	27.211	-0.230	-0.228	-0.199
738	7.484	12.260	21.824	7.314	12.093	21.681	-0.171	-0.167	-0.143
744	5.126	8.367	14.842	5.019	8.264	14.756	-0.107	-0.103	-0.086
750	3.158	5.135	9.076	3.098	5.079	9.030	-0.060	-0.056	-0.046
756	2.546	4.134	7.296	2.500	4.091	7.261	-0.046	-0.043	-0.035

Time (Min)	Existing Conditions			Proposed Conditions			Difference		
	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)
762	2.104	3.412	6.015	2.067	3.378	5.988	-0.037	-0.034	-0.028
768	1.836	2.974	5.239	1.804	2.945	5.216	-0.031	-0.029	-0.023
774	1.631	2.641	4.649	1.604	2.616	4.629	-0.027	-0.025	-0.020
780	1.493	2.415	4.249	1.468	2.393	4.231	-0.025	-0.022	-0.018
786	1.354	2.189	3.848	1.332	2.169	3.832	-0.022	-0.020	-0.016
792	1.226	1.981	3.481	1.206	1.963	3.467	-0.019	-0.018	-0.014
798	1.122	1.812	3.184	1.104	1.796	3.171	-0.018	-0.016	-0.013
804	1.034	1.670	2.932	1.018	1.655	2.921	-0.016	-0.014	-0.011
810	0.954	1.540	2.704	0.940	1.527	2.693	-0.015	-0.013	-0.010
816	0.874	1.410	2.474	0.861	1.398	2.465	-0.013	-0.012	-0.009
822	0.805	1.298	2.278	0.793	1.288	2.269	-0.012	-0.011	-0.009
828	0.760	1.225	2.149	0.749	1.215	2.141	-0.011	-0.010	-0.008
834	0.730	1.177	2.065	0.720	1.168	2.057	-0.011	-0.010	-0.008
840	0.708	1.142	2.002	0.698	1.133	1.995	-0.010	-0.009	-0.007
846	0.687	1.107	1.940	0.677	1.098	1.933	-0.010	-0.009	-0.007
852	0.665	1.071	1.877	0.655	1.063	1.870	-0.010	-0.009	-0.007
858	0.643	1.036	1.815	0.634	1.028	1.809	-0.009	-0.008	-0.006
864	0.621	1.000	1.753	0.613	0.993	1.747	-0.009	-0.008	-0.006
870	0.599	0.965	1.690	0.591	0.957	1.684	-0.008	-0.008	-0.006
876	0.577	0.929	1.627	0.569	0.922	1.622	-0.008	-0.007	-0.006
882	0.555	0.893	1.564	0.548	0.887	1.559	-0.008	-0.007	-0.005
888	0.533	0.858	1.502	0.526	0.852	1.497	-0.007	-0.007	-0.005
894	0.511	0.822	1.440	0.504	0.816	1.435	-0.007	-0.006	-0.005
900	0.489	0.786	1.376	0.482	0.781	1.372	-0.007	-0.006	-0.005
906	0.467	0.751	1.314	0.461	0.745	1.310	-0.006	-0.006	-0.004
912	0.448	0.720	1.260	0.442	0.715	1.256	-0.006	-0.005	-0.004
918	0.435	0.700	1.224	0.429	0.694	1.220	-0.006	-0.005	-0.004
924	0.427	0.686	1.201	0.421	0.681	1.197	-0.006	-0.005	-0.004
930	0.421	0.677	1.183	0.415	0.672	1.180	-0.006	-0.005	-0.004
936	0.415	0.666	1.165	0.409	0.661	1.161	-0.006	-0.005	-0.004
942	0.408	0.656	1.148	0.403	0.651	1.144	-0.005	-0.005	-0.004
948	0.402	0.646	1.130	0.397	0.642	1.127	-0.005	-0.005	-0.004
954	0.396	0.636	1.112	0.391	0.631	1.108	-0.005	-0.005	-0.004
960	0.390	0.626	1.094	0.385	0.621	1.091	-0.005	-0.004	-0.003
966	0.384	0.616	1.077	0.379	0.612	1.074	-0.005	-0.004	-0.003
972	0.378	0.606	1.060	0.373	0.602	1.057	-0.005	-0.004	-0.003
978	0.371	0.596	1.042	0.366	0.592	1.038	-0.005	-0.004	-0.003
984	0.365	0.586	1.024	0.360	0.582	1.021	-0.005	-0.004	-0.003
990	0.359	0.576	1.006	0.354	0.572	1.003	-0.005	-0.004	-0.003
996	0.352	0.566	0.988	0.348	0.562	0.985	-0.004	-0.004	-0.003
1002	0.346	0.556	0.971	0.342	0.552	0.968	-0.004	-0.004	-0.003
1008	0.340	0.546	0.954	0.336	0.542	0.951	-0.004	-0.004	-0.003
1014	0.334	0.536	0.936	0.330	0.532	0.933	-0.004	-0.004	-0.003

Time (Min)	Existing Conditions			Proposed Conditions			Difference		
	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)
1020	0.328	0.526	0.918	0.324	0.522	0.916	-0.004	-0.004	-0.003
1026	0.321	0.516	0.900	0.317	0.512	0.898	-0.004	-0.004	-0.003
1032	0.315	0.505	0.883	0.311	0.502	0.880	-0.004	-0.003	-0.003
1038	0.309	0.495	0.865	0.305	0.492	0.862	-0.004	-0.003	-0.003
1044	0.302	0.485	0.847	0.299	0.482	0.844	-0.004	-0.003	-0.002
1050	0.296	0.475	0.829	0.292	0.472	0.826	-0.004	-0.003	-0.002
1056	0.290	0.465	0.811	0.286	0.461	0.809	-0.004	-0.003	-0.002
1062	0.283	0.454	0.793	0.280	0.451	0.791	-0.003	-0.003	-0.002
1068	0.277	0.445	0.776	0.274	0.442	0.774	-0.003	-0.003	-0.002
1074	0.271	0.435	0.759	0.268	0.432	0.757	-0.003	-0.003	-0.002
1080	0.265	0.425	0.741	0.262	0.422	0.739	-0.003	-0.003	-0.002
1086	0.259	0.415	0.723	0.255	0.412	0.721	-0.003	-0.003	-0.002
1092	0.253	0.406	0.708	0.250	0.403	0.706	-0.003	-0.003	-0.002
1098	0.250	0.400	0.698	0.247	0.397	0.696	-0.003	-0.003	-0.002
1104	0.247	0.397	0.692	0.244	0.394	0.690	-0.003	-0.003	-0.002
1110	0.246	0.394	0.687	0.243	0.391	0.685	-0.003	-0.003	-0.002
1116	0.244	0.391	0.682	0.241	0.389	0.680	-0.003	-0.003	-0.002
1122	0.243	0.389	0.678	0.240	0.386	0.676	-0.003	-0.003	-0.002
1128	0.241	0.386	0.674	0.238	0.384	0.672	-0.003	-0.003	-0.002
1134	0.240	0.384	0.670	0.237	0.382	0.668	-0.003	-0.002	-0.002
1140	0.238	0.381	0.665	0.235	0.379	0.663	-0.003	-0.002	-0.002
1146	0.236	0.379	0.661	0.234	0.376	0.659	-0.003	-0.002	-0.002
1152	0.235	0.376	0.656	0.232	0.374	0.654	-0.003	-0.002	-0.002
1158	0.234	0.374	0.652	0.231	0.372	0.650	-0.003	-0.002	-0.002
1164	0.232	0.371	0.648	0.229	0.369	0.646	-0.003	-0.002	-0.002
1170	0.230	0.369	0.643	0.227	0.366	0.641	-0.003	-0.002	-0.002
1176	0.229	0.366	0.639	0.226	0.364	0.637	-0.003	-0.002	-0.002
1182	0.227	0.364	0.634	0.225	0.361	0.633	-0.003	-0.002	-0.002
1188	0.226	0.362	0.631	0.223	0.359	0.629	-0.003	-0.002	-0.002
1194	0.224	0.359	0.626	0.221	0.357	0.624	-0.003	-0.002	-0.002
1200	0.223	0.356	0.621	0.220	0.354	0.619	-0.003	-0.002	-0.002
1206	0.221	0.354	0.617	0.218	0.351	0.615	-0.003	-0.002	-0.002
1212	0.220	0.351	0.613	0.217	0.349	0.611	-0.003	-0.002	-0.002
1218	0.218	0.349	0.608	0.215	0.347	0.606	-0.003	-0.002	-0.002
1224	0.216	0.346	0.603	0.214	0.344	0.601	-0.002	-0.002	-0.002
1230	0.215	0.344	0.599	0.212	0.341	0.597	-0.002	-0.002	-0.002
1236	0.213	0.341	0.595	0.211	0.339	0.593	-0.002	-0.002	-0.002
1242	0.212	0.339	0.591	0.209	0.337	0.589	-0.002	-0.002	-0.002
1248	0.210	0.336	0.586	0.208	0.334	0.584	-0.002	-0.002	-0.002
1254	0.208	0.334	0.581	0.206	0.332	0.580	-0.002	-0.002	-0.002
1260	0.207	0.331	0.577	0.205	0.329	0.575	-0.002	-0.002	-0.002
1266	0.205	0.328	0.572	0.203	0.326	0.571	-0.002	-0.002	-0.002
1272	0.203	0.326	0.567	0.201	0.324	0.566	-0.002	-0.002	-0.001

Time (Min)	Existing Conditions			Proposed Conditions			Difference		
	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)
1278	0.202	0.323	0.563	0.200	0.321	0.562	-0.002	-0.002	-0.001
1284	0.200	0.321	0.559	0.198	0.319	0.557	-0.002	-0.002	-0.001
1290	0.199	0.319	0.555	0.197	0.317	0.554	-0.002	-0.002	-0.001
1296	0.197	0.316	0.550	0.195	0.314	0.549	-0.002	-0.002	-0.001
1302	0.196	0.313	0.546	0.194	0.311	0.544	-0.002	-0.002	-0.001
1308	0.194	0.311	0.541	0.192	0.309	0.540	-0.002	-0.002	-0.001
1314	0.193	0.308	0.537	0.191	0.306	0.536	-0.002	-0.002	-0.001
1320	0.191	0.306	0.533	0.189	0.304	0.532	-0.002	-0.002	-0.001
1326	0.190	0.303	0.528	0.188	0.301	0.527	-0.002	-0.002	-0.001
1332	0.188	0.301	0.524	0.186	0.299	0.522	-0.002	-0.002	-0.001
1338	0.186	0.298	0.519	0.184	0.296	0.518	-0.002	-0.002	-0.001
1344	0.185	0.295	0.514	0.183	0.293	0.513	-0.002	-0.002	-0.001
1350	0.183	0.293	0.510	0.181	0.291	0.508	-0.002	-0.002	-0.001
1356	0.181	0.290	0.505	0.179	0.288	0.504	-0.002	-0.002	-0.001
1362	0.180	0.288	0.501	0.178	0.286	0.500	-0.002	-0.002	-0.001
1368	0.179	0.286	0.497	0.177	0.284	0.496	-0.002	-0.002	-0.001
1374	0.177	0.283	0.493	0.175	0.282	0.492	-0.002	-0.002	-0.001
1380	0.175	0.281	0.488	0.174	0.279	0.487	-0.002	-0.002	-0.001
1386	0.174	0.278	0.484	0.172	0.276	0.482	-0.002	-0.002	-0.001
1392	0.172	0.275	0.479	0.170	0.274	0.478	-0.002	-0.002	-0.001
1398	0.170	0.272	0.474	0.169	0.271	0.473	-0.002	-0.002	-0.001
1404	0.169	0.270	0.470	0.167	0.268	0.469	-0.002	-0.002	-0.001
1410	0.167	0.267	0.465	0.165	0.266	0.464	-0.002	-0.002	-0.001
1416	0.166	0.265	0.461	0.164	0.263	0.460	-0.002	-0.002	-0.001
1422	0.164	0.263	0.457	0.163	0.261	0.456	-0.002	-0.002	-0.001
1428	0.163	0.260	0.453	0.161	0.258	0.451	-0.002	-0.002	-0.001
1434	0.161	0.257	0.448	0.159	0.256	0.447	-0.002	-0.001	-0.001
1440	0.160	0.255	0.444	0.158	0.254	0.443	-0.002	-0.001	-0.001
1446	0.127	0.203	0.354	0.126	0.202	0.353	-0.001	-0.001	-0.001
1452	0.063	0.101	0.177	0.063	0.101	0.176	-0.001	-0.001	0.000
1458	0.021	0.034	0.059	0.021	0.034	0.059	0.000	0.000	0.000

TABLE 8									
DA-1 EXISTING VS. PROPOSED RUNOFF RATES - CURRENT ADJUSTED RAINFALL									
Time (Min)	Existing Conditions			Proposed Conditions			Difference		
	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
12	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
18	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
24	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
36	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
42	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
48	0.000	0.000	0.001	0.000	0.000	0.001	0.000	0.000	0.000
54	0.000	0.000	0.001	0.000	0.000	0.001	0.000	0.000	0.000
60	0.000	0.000	0.001	0.000	0.000	0.001	0.000	0.000	0.000
66	0.000	0.000	0.002	0.000	0.000	0.002	0.000	0.000	0.000
72	0.000	0.000	0.002	0.000	0.000	0.002	0.000	0.000	0.000
78	0.000	0.001	0.002	0.000	0.001	0.002	0.000	0.000	0.000
84	0.000	0.001	0.002	0.000	0.001	0.002	0.000	0.000	0.000
90	0.000	0.001	0.002	0.000	0.001	0.002	0.000	0.000	0.000
96	0.000	0.001	0.003	0.000	0.001	0.003	0.000	0.000	0.000
102	0.000	0.001	0.003	0.000	0.001	0.003	0.000	0.000	0.000
108	0.000	0.001	0.003	0.000	0.001	0.003	0.000	0.000	0.000
114	0.000	0.001	0.003	0.000	0.001	0.003	0.000	0.000	0.000
120	0.000	0.001	0.003	0.000	0.001	0.003	0.000	0.000	0.000
126	0.001	0.001	0.003	0.001	0.001	0.003	0.000	0.000	0.000
132	0.001	0.001	0.003	0.001	0.001	0.003	0.000	0.000	0.000
138	0.001	0.001	0.003	0.001	0.001	0.003	0.000	0.000	0.000
144	0.001	0.002	0.003	0.001	0.002	0.003	0.000	0.000	0.000
150	0.001	0.002	0.004	0.001	0.002	0.004	0.000	0.000	0.000
156	0.001	0.002	0.004	0.001	0.002	0.004	0.000	0.000	0.000
162	0.001	0.002	0.004	0.001	0.002	0.004	0.000	0.000	0.000
168	0.001	0.002	0.004	0.001	0.002	0.004	0.000	0.000	0.000
174	0.001	0.002	0.004	0.001	0.002	0.004	0.000	0.000	0.000
180	0.001	0.002	0.004	0.001	0.002	0.004	0.000	0.000	0.000
186	0.001	0.002	0.004	0.001	0.002	0.004	0.000	0.000	0.000
192	0.001	0.002	0.004	0.001	0.002	0.004	0.000	0.000	0.000
198	0.001	0.002	0.004	0.001	0.002	0.004	0.000	0.000	0.000
204	0.001	0.002	0.004	0.001	0.002	0.004	0.000	0.000	0.000
210	0.001	0.002	0.004	0.001	0.002	0.004	0.000	0.000	0.000
216	0.001	0.002	0.004	0.001	0.002	0.004	0.000	0.000	0.000
222	0.001	0.002	0.005	0.001	0.002	0.005	0.000	0.000	0.000
228	0.001	0.002	0.005	0.001	0.002	0.005	0.000	0.000	0.000
234	0.001	0.002	0.005	0.001	0.002	0.005	0.000	0.000	0.000
240	0.001	0.002	0.005	0.001	0.002	0.005	0.000	0.000	0.000

Time (Min)	Existing Conditions			Proposed Conditions			Difference		
	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)
246	0.001	0.002	0.005	0.001	0.002	0.005	0.000	0.000	0.000
252	0.001	0.002	0.005	0.001	0.002	0.005	0.000	0.000	0.000
258	0.001	0.003	0.005	0.001	0.003	0.005	0.000	0.000	0.000
264	0.001	0.003	0.005	0.001	0.003	0.005	0.000	0.000	0.000
270	0.001	0.003	0.005	0.001	0.003	0.005	0.000	0.000	0.000
276	0.001	0.003	0.006	0.001	0.003	0.006	0.000	0.000	0.000
282	0.001	0.003	0.006	0.001	0.003	0.006	0.000	0.000	0.000
288	0.001	0.003	0.006	0.001	0.003	0.006	0.000	0.000	0.000
294	0.002	0.003	0.006	0.002	0.003	0.006	0.000	0.000	0.000
300	0.002	0.003	0.007	0.002	0.003	0.007	0.000	0.000	0.000
306	0.002	0.003	0.007	0.002	0.003	0.007	0.000	0.000	0.000
312	0.002	0.003	0.007	0.002	0.003	0.007	0.000	0.000	0.000
318	0.002	0.003	0.008	0.002	0.003	0.008	0.000	0.000	0.000
324	0.002	0.003	0.008	0.002	0.003	0.008	0.000	0.000	0.000
330	0.002	0.003	0.008	0.002	0.003	0.008	0.000	0.000	0.000
336	0.002	0.003	0.008	0.002	0.003	0.008	0.000	0.000	0.000
342	0.002	0.003	0.009	0.002	0.003	0.009	0.000	0.000	0.000
348	0.002	0.003	0.009	0.002	0.003	0.009	0.000	0.000	0.000
354	0.002	0.003	0.009	0.002	0.003	0.009	0.000	0.000	0.000
360	0.002	0.003	0.009	0.002	0.003	0.009	0.000	0.000	0.000
366	0.002	0.003	0.010	0.002	0.003	0.010	0.000	0.000	0.000
372	0.002	0.003	0.010	0.002	0.003	0.010	0.000	0.000	0.000
378	0.002	0.003	0.011	0.002	0.003	0.011	0.000	0.000	0.000
384	0.002	0.003	0.011	0.002	0.003	0.011	0.000	0.000	0.000
390	0.002	0.004	0.012	0.002	0.004	0.012	0.000	0.000	0.000
396	0.002	0.004	0.012	0.002	0.004	0.012	0.000	0.000	0.000
402	0.002	0.004	0.013	0.002	0.004	0.013	0.000	0.000	0.000
408	0.002	0.004	0.013	0.002	0.004	0.013	0.000	0.000	0.000
414	0.002	0.004	0.014	0.002	0.004	0.014	0.000	0.000	0.000
420	0.002	0.005	0.014	0.002	0.005	0.014	0.000	0.000	0.000
426	0.002	0.005	0.015	0.002	0.005	0.015	0.000	0.000	0.000
432	0.002	0.005	0.015	0.002	0.005	0.015	0.000	0.000	0.000
438	0.003	0.005	0.016	0.003	0.005	0.016	0.000	0.000	0.000
444	0.003	0.006	0.017	0.003	0.006	0.017	0.000	0.000	0.000
450	0.003	0.006	0.017	0.003	0.006	0.017	0.000	0.000	0.000
456	0.003	0.006	0.018	0.003	0.006	0.018	0.000	0.000	0.000
462	0.003	0.006	0.018	0.003	0.006	0.018	0.000	0.000	0.000
468	0.003	0.007	0.019	0.003	0.007	0.019	0.000	0.000	0.000
474	0.003	0.007	0.020	0.003	0.007	0.020	0.000	0.000	0.000
480	0.003	0.007	0.020	0.003	0.007	0.020	0.000	0.000	0.000
486	0.003	0.008	0.021	0.003	0.008	0.021	0.000	0.000	0.000
492	0.003	0.008	0.022	0.003	0.008	0.022	0.000	0.000	0.000
498	0.003	0.008	0.022	0.003	0.008	0.022	0.000	0.000	0.000

Time (Min)	Existing Conditions			Proposed Conditions			Difference		
	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)
504	0.003	0.008	0.023	0.003	0.008	0.023	0.000	0.000	0.000
510	0.003	0.009	0.024	0.003	0.009	0.024	0.000	0.000	0.000
516	0.003	0.009	0.024	0.003	0.009	0.024	0.000	0.000	0.000
522	0.003	0.010	0.025	0.003	0.010	0.025	0.000	0.000	0.000
528	0.004	0.010	0.026	0.004	0.010	0.026	0.000	0.000	0.000
534	0.004	0.010	0.027	0.004	0.010	0.027	0.000	0.000	0.000
540	0.004	0.011	0.027	0.004	0.011	0.027	0.000	0.000	0.000
546	0.004	0.011	0.028	0.004	0.011	0.028	0.000	0.000	0.000
552	0.004	0.012	0.030	0.004	0.012	0.030	0.000	0.000	0.000
558	0.005	0.012	0.031	0.005	0.012	0.031	0.000	0.000	0.000
564	0.005	0.013	0.033	0.005	0.013	0.033	0.000	0.000	0.000
570	0.006	0.014	0.035	0.006	0.014	0.035	0.000	0.000	0.000
576	0.006	0.015	0.037	0.006	0.015	0.037	0.000	0.000	0.000
582	0.006	0.016	0.039	0.006	0.016	0.039	0.000	0.000	0.000
588	0.007	0.017	0.041	0.007	0.017	0.041	0.000	0.000	0.000
594	0.007	0.018	0.043	0.007	0.018	0.043	0.000	0.000	0.000
600	0.008	0.019	0.045	0.008	0.019	0.045	0.000	0.000	0.000
606	0.008	0.020	0.047	0.008	0.020	0.047	0.000	0.000	0.000
612	0.009	0.021	0.050	0.009	0.021	0.050	0.000	0.000	0.000
618	0.009	0.022	0.052	0.009	0.022	0.052	0.000	0.000	0.000
624	0.010	0.023	0.054	0.010	0.023	0.054	0.000	0.000	0.000
630	0.011	0.024	0.056	0.011	0.024	0.056	0.000	0.000	0.000
636	0.011	0.026	0.060	0.011	0.026	0.060	0.000	0.000	0.000
642	0.013	0.028	0.065	0.013	0.028	0.065	0.000	0.000	0.000
648	0.014	0.031	0.072	0.014	0.031	0.072	0.000	0.000	0.000
654	0.016	0.035	0.079	0.016	0.035	0.079	0.000	0.000	0.000
660	0.018	0.039	0.086	0.018	0.039	0.086	0.000	0.000	0.000
666	0.020	0.043	0.095	0.020	0.043	0.095	0.000	0.000	0.000
672	0.022	0.048	0.106	0.022	0.048	0.106	0.000	0.000	0.000
678	0.026	0.054	0.119	0.026	0.054	0.119	0.000	0.000	0.000
684	0.029	0.061	0.133	0.029	0.061	0.133	0.000	0.000	0.000
690	0.033	0.068	0.147	0.033	0.068	0.147	0.000	0.000	0.000
696	0.039	0.080	0.171	0.039	0.080	0.171	0.000	0.000	0.000
702	0.048	0.097	0.204	0.048	0.097	0.204	0.000	0.000	0.000
708	0.059	0.119	0.248	0.059	0.119	0.248	0.000	0.000	0.000
714	0.081	0.159	0.327	0.081	0.159	0.327	0.000	0.000	0.000
720	0.124	0.240	0.485	0.124	0.240	0.485	0.000	0.000	0.000
726	0.216	0.408	0.805	0.216	0.408	0.805	0.000	0.000	0.000
732	0.271	0.503	0.978	0.271	0.503	0.978	0.000	0.000	0.000
738	0.223	0.408	0.785	0.223	0.408	0.785	0.000	0.000	0.000
744	0.156	0.283	0.538	0.156	0.283	0.538	0.000	0.000	0.000
750	0.099	0.176	0.332	0.099	0.176	0.332	0.000	0.000	0.000
756	0.080	0.143	0.267	0.080	0.143	0.267	0.000	0.000	0.000

Time (Min)	Existing Conditions			Proposed Conditions			Difference		
	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)
762	0.067	0.118	0.221	0.067	0.118	0.221	0.000	0.000	0.000
768	0.059	0.103	0.193	0.059	0.103	0.193	0.000	0.000	0.000
774	0.052	0.092	0.171	0.052	0.092	0.171	0.000	0.000	0.000
780	0.048	0.084	0.157	0.048	0.084	0.157	0.000	0.000	0.000
786	0.044	0.077	0.142	0.044	0.077	0.142	0.000	0.000	0.000
792	0.040	0.069	0.129	0.040	0.069	0.129	0.000	0.000	0.000
798	0.036	0.064	0.118	0.036	0.064	0.118	0.000	0.000	0.000
804	0.034	0.059	0.108	0.034	0.059	0.108	0.000	0.000	0.000
810	0.031	0.054	0.100	0.031	0.054	0.100	0.000	0.000	0.000
816	0.029	0.050	0.092	0.029	0.050	0.092	0.000	0.000	0.000
822	0.026	0.046	0.084	0.026	0.046	0.084	0.000	0.000	0.000
828	0.025	0.043	0.080	0.025	0.043	0.080	0.000	0.000	0.000
834	0.024	0.042	0.077	0.024	0.042	0.077	0.000	0.000	0.000
840	0.023	0.040	0.074	0.023	0.040	0.074	0.000	0.000	0.000
846	0.023	0.039	0.072	0.023	0.039	0.072	0.000	0.000	0.000
852	0.022	0.038	0.070	0.022	0.038	0.070	0.000	0.000	0.000
858	0.021	0.037	0.067	0.021	0.037	0.067	0.000	0.000	0.000
864	0.021	0.035	0.065	0.021	0.035	0.065	0.000	0.000	0.000
870	0.020	0.034	0.063	0.020	0.034	0.063	0.000	0.000	0.000
876	0.019	0.033	0.060	0.019	0.033	0.060	0.000	0.000	0.000
882	0.018	0.032	0.058	0.018	0.032	0.058	0.000	0.000	0.000
888	0.018	0.031	0.056	0.018	0.031	0.056	0.000	0.000	0.000
894	0.017	0.029	0.054	0.017	0.029	0.054	0.000	0.000	0.000
900	0.016	0.028	0.051	0.016	0.028	0.051	0.000	0.000	0.000
906	0.016	0.027	0.049	0.016	0.027	0.049	0.000	0.000	0.000
912	0.015	0.026	0.047	0.015	0.026	0.047	0.000	0.000	0.000
918	0.015	0.025	0.046	0.015	0.025	0.046	0.000	0.000	0.000
924	0.014	0.024	0.045	0.014	0.024	0.045	0.000	0.000	0.000
930	0.014	0.024	0.044	0.014	0.024	0.044	0.000	0.000	0.000
936	0.014	0.024	0.043	0.014	0.024	0.043	0.000	0.000	0.000
942	0.014	0.023	0.043	0.014	0.023	0.043	0.000	0.000	0.000
948	0.013	0.023	0.042	0.013	0.023	0.042	0.000	0.000	0.000
954	0.013	0.023	0.041	0.013	0.023	0.041	0.000	0.000	0.000
960	0.013	0.022	0.041	0.013	0.022	0.041	0.000	0.000	0.000
966	0.013	0.022	0.040	0.013	0.022	0.040	0.000	0.000	0.000
972	0.013	0.022	0.040	0.013	0.022	0.040	0.000	0.000	0.000
978	0.012	0.021	0.039	0.012	0.021	0.039	0.000	0.000	0.000
984	0.012	0.021	0.038	0.012	0.021	0.038	0.000	0.000	0.000
990	0.012	0.021	0.038	0.012	0.021	0.038	0.000	0.000	0.000
996	0.012	0.020	0.037	0.012	0.020	0.037	0.000	0.000	0.000
1002	0.012	0.020	0.036	0.012	0.020	0.036	0.000	0.000	0.000
1008	0.011	0.020	0.036	0.011	0.020	0.036	0.000	0.000	0.000
1014	0.011	0.019	0.035	0.011	0.019	0.035	0.000	0.000	0.000

Time (Min)	Existing Conditions			Proposed Conditions			Difference		
	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)
1020	0.011	0.019	0.034	0.011	0.019	0.034	0.000	0.000	0.000
1026	0.011	0.018	0.034	0.011	0.018	0.034	0.000	0.000	0.000
1032	0.011	0.018	0.033	0.011	0.018	0.033	0.000	0.000	0.000
1038	0.010	0.018	0.032	0.010	0.018	0.032	0.000	0.000	0.000
1044	0.010	0.017	0.032	0.010	0.017	0.032	0.000	0.000	0.000
1050	0.010	0.017	0.031	0.010	0.017	0.031	0.000	0.000	0.000
1056	0.010	0.017	0.030	0.010	0.017	0.030	0.000	0.000	0.000
1062	0.010	0.016	0.030	0.010	0.016	0.030	0.000	0.000	0.000
1068	0.009	0.016	0.029	0.009	0.016	0.029	0.000	0.000	0.000
1074	0.009	0.016	0.028	0.009	0.016	0.028	0.000	0.000	0.000
1080	0.009	0.015	0.028	0.009	0.015	0.028	0.000	0.000	0.000
1086	0.009	0.015	0.027	0.009	0.015	0.027	0.000	0.000	0.000
1092	0.009	0.015	0.026	0.009	0.015	0.026	0.000	0.000	0.000
1098	0.008	0.014	0.026	0.008	0.014	0.026	0.000	0.000	0.000
1104	0.008	0.014	0.026	0.008	0.014	0.026	0.000	0.000	0.000
1110	0.008	0.014	0.026	0.008	0.014	0.026	0.000	0.000	0.000
1116	0.008	0.014	0.026	0.008	0.014	0.026	0.000	0.000	0.000
1122	0.008	0.014	0.025	0.008	0.014	0.025	0.000	0.000	0.000
1128	0.008	0.014	0.025	0.008	0.014	0.025	0.000	0.000	0.000
1134	0.008	0.014	0.025	0.008	0.014	0.025	0.000	0.000	0.000
1140	0.008	0.014	0.025	0.008	0.014	0.025	0.000	0.000	0.000
1146	0.008	0.014	0.025	0.008	0.014	0.025	0.000	0.000	0.000
1152	0.008	0.014	0.025	0.008	0.014	0.025	0.000	0.000	0.000
1158	0.008	0.013	0.024	0.008	0.013	0.024	0.000	0.000	0.000
1164	0.008	0.013	0.024	0.008	0.013	0.024	0.000	0.000	0.000
1170	0.008	0.013	0.024	0.008	0.013	0.024	0.000	0.000	0.000
1176	0.008	0.013	0.024	0.008	0.013	0.024	0.000	0.000	0.000
1182	0.008	0.013	0.024	0.008	0.013	0.024	0.000	0.000	0.000
1188	0.008	0.013	0.024	0.008	0.013	0.024	0.000	0.000	0.000
1194	0.008	0.013	0.023	0.008	0.013	0.023	0.000	0.000	0.000
1200	0.008	0.013	0.023	0.008	0.013	0.023	0.000	0.000	0.000
1206	0.008	0.013	0.023	0.008	0.013	0.023	0.000	0.000	0.000
1212	0.007	0.013	0.023	0.007	0.013	0.023	0.000	0.000	0.000
1218	0.007	0.013	0.023	0.007	0.013	0.023	0.000	0.000	0.000
1224	0.007	0.012	0.023	0.007	0.012	0.023	0.000	0.000	0.000
1230	0.007	0.012	0.022	0.007	0.012	0.022	0.000	0.000	0.000
1236	0.007	0.012	0.022	0.007	0.012	0.022	0.000	0.000	0.000
1242	0.007	0.012	0.022	0.007	0.012	0.022	0.000	0.000	0.000
1248	0.007	0.012	0.022	0.007	0.012	0.022	0.000	0.000	0.000
1254	0.007	0.012	0.022	0.007	0.012	0.022	0.000	0.000	0.000
1260	0.007	0.012	0.022	0.007	0.012	0.022	0.000	0.000	0.000
1266	0.007	0.012	0.021	0.007	0.012	0.021	0.000	0.000	0.000
1272	0.007	0.012	0.021	0.007	0.012	0.021	0.000	0.000	0.000

Time (Min)	Existing Conditions			Proposed Conditions			Difference		
	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)
1278	0.007	0.012	0.021	0.007	0.012	0.021	0.000	0.000	0.000
1284	0.007	0.012	0.021	0.007	0.012	0.021	0.000	0.000	0.000
1290	0.007	0.012	0.021	0.007	0.012	0.021	0.000	0.000	0.000
1296	0.007	0.011	0.021	0.007	0.011	0.021	0.000	0.000	0.000
1302	0.007	0.011	0.020	0.007	0.011	0.020	0.000	0.000	0.000
1308	0.007	0.011	0.020	0.007	0.011	0.020	0.000	0.000	0.000
1314	0.007	0.011	0.020	0.007	0.011	0.020	0.000	0.000	0.000
1320	0.007	0.011	0.020	0.007	0.011	0.020	0.000	0.000	0.000
1326	0.006	0.011	0.020	0.006	0.011	0.020	0.000	0.000	0.000
1332	0.006	0.011	0.020	0.006	0.011	0.020	0.000	0.000	0.000
1338	0.006	0.011	0.019	0.006	0.011	0.019	0.000	0.000	0.000
1344	0.006	0.011	0.019	0.006	0.011	0.019	0.000	0.000	0.000
1350	0.006	0.011	0.019	0.006	0.011	0.019	0.000	0.000	0.000
1356	0.006	0.011	0.019	0.006	0.011	0.019	0.000	0.000	0.000
1362	0.006	0.010	0.019	0.006	0.010	0.019	0.000	0.000	0.000
1368	0.006	0.010	0.019	0.006	0.010	0.019	0.000	0.000	0.000
1374	0.006	0.010	0.018	0.006	0.010	0.018	0.000	0.000	0.000
1380	0.006	0.010	0.018	0.006	0.010	0.018	0.000	0.000	0.000
1386	0.006	0.010	0.018	0.006	0.010	0.018	0.000	0.000	0.000
1392	0.006	0.010	0.018	0.006	0.010	0.018	0.000	0.000	0.000
1398	0.006	0.010	0.018	0.006	0.010	0.018	0.000	0.000	0.000
1404	0.006	0.010	0.018	0.006	0.010	0.018	0.000	0.000	0.000
1410	0.006	0.010	0.017	0.006	0.010	0.017	0.000	0.000	0.000
1416	0.006	0.010	0.017	0.006	0.010	0.017	0.000	0.000	0.000
1422	0.006	0.010	0.017	0.006	0.010	0.017	0.000	0.000	0.000
1428	0.006	0.009	0.017	0.006	0.009	0.017	0.000	0.000	0.000
1434	0.006	0.009	0.017	0.006	0.009	0.017	0.000	0.000	0.000
1440	0.005	0.009	0.017	0.005	0.009	0.017	0.000	0.000	0.000
1446	0.004	0.007	0.013	0.004	0.007	0.013	0.000	0.000	0.000
1452	0.002	0.004	0.007	0.002	0.004	0.007	0.000	0.000	0.000

TABLE 9									
DA-1 EXISTING VS. PROPOSED RUNOFF RATES - FUTURE PROJECTED RAINFALL									
Time (Min)	Existing Conditions			Proposed Conditions			Difference		
	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
12	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
18	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
24	0.000	0.000	0.003	0.000	0.000	0.003	0.000	0.000	0.000
30	0.000	0.000	0.018	0.000	0.000	0.017	0.000	0.000	-0.001
36	0.000	0.000	0.048	0.000	0.000	0.045	0.000	0.000	-0.003
42	0.000	0.003	0.085	0.000	0.002	0.079	0.000	0.000	-0.006
48	0.000	0.011	0.121	0.000	0.010	0.113	0.000	-0.001	-0.008
54	0.000	0.023	0.153	0.000	0.021	0.142	0.000	-0.002	-0.011
60	0.001	0.037	0.181	0.001	0.034	0.169	0.000	-0.003	-0.013
66	0.004	0.050	0.206	0.004	0.046	0.192	0.000	-0.003	-0.014
72	0.010	0.062	0.229	0.009	0.058	0.213	-0.001	-0.004	-0.016
78	0.016	0.074	0.249	0.015	0.069	0.232	-0.001	-0.005	-0.017
84	0.023	0.085	0.268	0.021	0.079	0.249	-0.002	-0.006	-0.019
90	0.029	0.096	0.285	0.027	0.089	0.265	-0.002	-0.007	-0.020
96	0.035	0.105	0.300	0.033	0.098	0.279	-0.002	-0.007	-0.021
102	0.041	0.114	0.314	0.038	0.106	0.293	-0.003	-0.008	-0.022
108	0.046	0.123	0.327	0.043	0.114	0.305	-0.003	-0.009	-0.023
114	0.051	0.131	0.340	0.048	0.122	0.317	-0.004	-0.009	-0.024
120	0.057	0.139	0.352	0.053	0.130	0.328	-0.004	-0.010	-0.024
126	0.062	0.147	0.363	0.057	0.137	0.338	-0.004	-0.010	-0.025
132	0.067	0.154	0.374	0.062	0.143	0.348	-0.005	-0.011	-0.026
138	0.071	0.161	0.384	0.066	0.150	0.357	-0.005	-0.011	-0.027
144	0.076	0.168	0.393	0.070	0.156	0.366	-0.005	-0.012	-0.027
150	0.080	0.174	0.402	0.075	0.162	0.374	-0.006	-0.012	-0.028
156	0.084	0.180	0.410	0.078	0.167	0.381	-0.006	-0.012	-0.028
162	0.088	0.186	0.418	0.082	0.173	0.389	-0.006	-0.013	-0.029
168	0.093	0.192	0.427	0.086	0.178	0.397	-0.006	-0.013	-0.030
174	0.096	0.197	0.434	0.090	0.183	0.404	-0.007	-0.014	-0.030
180	0.100	0.202	0.441	0.093	0.188	0.411	-0.007	-0.014	-0.031
186	0.104	0.207	0.448	0.097	0.193	0.417	-0.007	-0.014	-0.031
192	0.108	0.212	0.455	0.100	0.198	0.424	-0.007	-0.015	-0.032
198	0.111	0.217	0.462	0.103	0.202	0.430	-0.008	-0.015	-0.032
204	0.115	0.222	0.469	0.107	0.206	0.436	-0.008	-0.015	-0.032
210	0.118	0.227	0.476	0.110	0.211	0.443	-0.008	-0.016	-0.033
216	0.122	0.231	0.483	0.113	0.215	0.450	-0.008	-0.016	-0.033
222	0.125	0.235	0.492	0.116	0.219	0.458	-0.009	-0.016	-0.033
228	0.128	0.240	0.500	0.119	0.223	0.467	-0.009	-0.017	-0.033
234	0.131	0.244	0.508	0.122	0.227	0.475	-0.009	-0.017	-0.033
240	0.134	0.248	0.518	0.125	0.231	0.485	-0.009	-0.017	-0.033

Time (Min)	Existing Conditions			Proposed Conditions			Difference		
	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)
246	0.137	0.252	0.526	0.128	0.234	0.493	-0.009	-0.017	-0.033
252	0.140	0.256	0.535	0.130	0.238	0.502	-0.010	-0.018	-0.033
258	0.143	0.259	0.543	0.133	0.241	0.510	-0.010	-0.018	-0.033
264	0.146	0.263	0.552	0.136	0.245	0.519	-0.010	-0.018	-0.032
270	0.149	0.267	0.560	0.138	0.249	0.528	-0.010	-0.019	-0.032
276	0.151	0.271	0.568	0.141	0.252	0.536	-0.010	-0.019	-0.032
282	0.154	0.274	0.576	0.143	0.255	0.544	-0.011	-0.019	-0.032
288	0.156	0.277	0.584	0.146	0.258	0.552	-0.011	-0.019	-0.032
294	0.159	0.281	0.593	0.148	0.262	0.561	-0.011	-0.019	-0.032
300	0.162	0.285	0.601	0.151	0.265	0.569	-0.011	-0.020	-0.032
306	0.164	0.288	0.609	0.153	0.268	0.577	-0.011	-0.020	-0.031
312	0.167	0.291	0.616	0.155	0.271	0.585	-0.012	-0.020	-0.031
318	0.169	0.295	0.624	0.158	0.274	0.593	-0.012	-0.020	-0.031
324	0.172	0.298	0.633	0.160	0.277	0.602	-0.012	-0.021	-0.031
330	0.174	0.301	0.640	0.162	0.280	0.610	-0.012	-0.021	-0.031
336	0.176	0.304	0.648	0.164	0.283	0.617	-0.012	-0.021	-0.031
342	0.179	0.307	0.655	0.166	0.286	0.625	-0.012	-0.021	-0.030
348	0.181	0.311	0.663	0.169	0.290	0.633	-0.013	-0.021	-0.030
354	0.183	0.315	0.671	0.171	0.293	0.641	-0.013	-0.021	-0.030
360	0.186	0.319	0.679	0.173	0.298	0.649	-0.013	-0.021	-0.030
366	0.189	0.325	0.689	0.176	0.303	0.659	-0.013	-0.022	-0.030
372	0.193	0.333	0.705	0.180	0.311	0.675	-0.013	-0.022	-0.030
378	0.199	0.343	0.724	0.185	0.321	0.694	-0.014	-0.022	-0.030
384	0.205	0.353	0.746	0.190	0.331	0.715	-0.014	-0.023	-0.031
390	0.210	0.364	0.766	0.196	0.341	0.735	-0.015	-0.023	-0.031
396	0.216	0.374	0.787	0.201	0.351	0.756	-0.015	-0.023	-0.031
402	0.222	0.385	0.808	0.207	0.362	0.777	-0.015	-0.024	-0.031
408	0.228	0.396	0.830	0.212	0.372	0.798	-0.016	-0.024	-0.032
414	0.234	0.408	0.852	0.218	0.383	0.820	-0.016	-0.024	-0.032
420	0.240	0.419	0.874	0.223	0.394	0.842	-0.017	-0.025	-0.032
426	0.246	0.430	0.896	0.229	0.405	0.864	-0.017	-0.025	-0.032
432	0.252	0.442	0.919	0.235	0.417	0.886	-0.017	-0.025	-0.032
438	0.259	0.453	0.941	0.241	0.428	0.908	-0.018	-0.025	-0.033
444	0.265	0.465	0.964	0.246	0.439	0.931	-0.018	-0.026	-0.033
450	0.271	0.477	0.986	0.252	0.451	0.953	-0.019	-0.026	-0.033
456	0.277	0.488	1.008	0.258	0.462	0.975	-0.019	-0.026	-0.033
462	0.283	0.500	1.030	0.263	0.473	0.997	-0.020	-0.026	-0.033
468	0.289	0.512	1.054	0.269	0.485	1.021	-0.020	-0.027	-0.033
474	0.296	0.524	1.077	0.275	0.497	1.044	-0.020	-0.027	-0.033
480	0.303	0.536	1.099	0.282	0.509	1.066	-0.021	-0.027	-0.033
486	0.310	0.548	1.123	0.289	0.521	1.090	-0.021	-0.027	-0.033
492	0.317	0.560	1.146	0.296	0.533	1.113	-0.021	-0.027	-0.033
498	0.325	0.572	1.169	0.303	0.544	1.136	-0.021	-0.027	-0.033

Time (Min)	Existing Conditions			Proposed Conditions			Difference		
	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)
504	0.332	0.584	1.192	0.310	0.556	1.159	-0.022	-0.028	-0.033
510	0.340	0.597	1.216	0.318	0.569	1.183	-0.022	-0.028	-0.033
516	0.347	0.609	1.239	0.325	0.581	1.206	-0.022	-0.028	-0.033
522	0.355	0.621	1.263	0.333	0.593	1.230	-0.022	-0.028	-0.033
528	0.363	0.634	1.287	0.340	0.606	1.254	-0.022	-0.028	-0.033
534	0.370	0.647	1.310	0.348	0.618	1.277	-0.022	-0.028	-0.033
540	0.378	0.659	1.333	0.355	0.631	1.301	-0.023	-0.028	-0.033
546	0.388	0.677	1.367	0.365	0.648	1.335	-0.023	-0.029	-0.033
552	0.405	0.704	1.422	0.381	0.675	1.388	-0.024	-0.029	-0.033
558	0.425	0.739	1.490	0.401	0.709	1.456	-0.024	-0.030	-0.034
564	0.448	0.778	1.565	0.423	0.747	1.530	-0.025	-0.031	-0.035
570	0.471	0.816	1.641	0.445	0.784	1.605	-0.026	-0.032	-0.036
576	0.494	0.856	1.717	0.467	0.823	1.680	-0.027	-0.033	-0.037
582	0.518	0.895	1.793	0.490	0.861	1.755	-0.028	-0.034	-0.037
588	0.541	0.935	1.870	0.513	0.900	1.832	-0.029	-0.035	-0.038
594	0.566	0.975	1.948	0.536	0.940	1.909	-0.030	-0.035	-0.038
600	0.590	1.016	2.025	0.560	0.979	1.986	-0.030	-0.036	-0.039
606	0.615	1.057	2.104	0.584	1.020	2.064	-0.031	-0.037	-0.039
612	0.639	1.097	2.182	0.608	1.060	2.142	-0.032	-0.037	-0.040
618	0.664	1.139	2.261	0.632	1.101	2.221	-0.032	-0.038	-0.040
624	0.690	1.181	2.341	0.657	1.143	2.301	-0.033	-0.038	-0.040
630	0.715	1.223	2.420	0.682	1.184	2.380	-0.033	-0.039	-0.040
636	0.753	1.286	2.540	0.718	1.246	2.499	-0.035	-0.040	-0.041
642	0.814	1.388	2.738	0.778	1.347	2.695	-0.037	-0.042	-0.043
648	0.892	1.519	2.991	0.853	1.474	2.945	-0.039	-0.045	-0.045
654	0.979	1.664	3.271	0.937	1.617	3.223	-0.042	-0.048	-0.048
660	1.067	1.811	3.552	1.022	1.761	3.502	-0.045	-0.050	-0.050
666	1.169	1.981	3.877	1.121	1.927	3.824	-0.048	-0.053	-0.052
672	1.297	2.195	4.288	1.246	2.138	4.232	-0.051	-0.057	-0.055
678	1.445	2.441	4.757	1.390	2.380	4.698	-0.055	-0.061	-0.059
684	1.604	2.704	5.257	1.545	2.639	5.196	-0.059	-0.065	-0.062
690	1.766	2.970	5.761	1.703	2.902	5.697	-0.063	-0.068	-0.064
696	2.039	3.422	6.618	1.969	3.347	6.549	-0.070	-0.074	-0.069
702	2.424	4.058	7.826	2.344	3.974	7.750	-0.079	-0.084	-0.077
708	2.926	4.885	9.392	2.835	4.791	9.307	-0.091	-0.094	-0.085
714	3.834	6.380	12.218	3.723	6.267	12.118	-0.111	-0.114	-0.101
720	5.648	9.355	17.821	5.499	9.206	17.693	-0.148	-0.149	-0.128
726	9.317	15.338	29.026	9.104	15.130	28.853	-0.213	-0.208	-0.173
732	11.278	18.487	34.829	11.045	18.265	34.649	-0.232	-0.222	-0.180
738	9.027	14.751	27.701	8.855	14.590	27.573	-0.171	-0.161	-0.129
744	6.174	10.054	18.817	6.067	9.956	18.741	-0.107	-0.098	-0.077
750	3.798	6.163	11.494	3.739	6.110	11.453	-0.059	-0.053	-0.041
756	3.060	4.959	9.236	3.015	4.918	9.205	-0.045	-0.041	-0.031

Time (Min)	Existing Conditions			Proposed Conditions			Difference		
	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)
762	2.528	4.091	7.612	2.491	4.059	7.588	-0.036	-0.032	-0.024
768	2.204	3.565	6.628	2.174	3.538	6.608	-0.031	-0.027	-0.020
774	1.958	3.165	5.880	1.932	3.141	5.862	-0.027	-0.024	-0.018
780	1.792	2.894	5.374	1.768	2.873	5.358	-0.024	-0.021	-0.016
786	1.624	2.622	4.866	1.603	2.603	4.852	-0.021	-0.019	-0.014
792	1.470	2.372	4.401	1.451	2.356	4.389	-0.019	-0.017	-0.012
798	1.346	2.170	4.025	1.329	2.155	4.014	-0.017	-0.015	-0.011
804	1.240	1.999	3.706	1.225	1.986	3.696	-0.016	-0.014	-0.010
810	1.144	1.844	3.417	1.130	1.831	3.408	-0.014	-0.012	-0.009
816	1.048	1.688	3.127	1.035	1.677	3.119	-0.013	-0.011	-0.008
822	0.965	1.554	2.879	0.953	1.544	2.871	-0.012	-0.010	-0.007
828	0.911	1.466	2.716	0.900	1.457	2.709	-0.011	-0.009	-0.007
834	0.875	1.409	2.609	0.865	1.400	2.602	-0.010	-0.009	-0.007
840	0.849	1.366	2.529	0.839	1.358	2.523	-0.010	-0.009	-0.006
846	0.823	1.324	2.450	0.813	1.316	2.444	-0.010	-0.008	-0.006
852	0.797	1.282	2.371	0.787	1.274	2.365	-0.009	-0.008	-0.006
858	0.771	1.239	2.293	0.762	1.232	2.287	-0.009	-0.008	-0.006
864	0.744	1.197	2.214	0.736	1.190	2.208	-0.009	-0.007	-0.005
870	0.718	1.154	2.134	0.710	1.147	2.129	-0.008	-0.007	-0.005
876	0.692	1.111	2.055	0.684	1.105	2.050	-0.008	-0.007	-0.005
882	0.665	1.069	1.976	0.658	1.062	1.971	-0.007	-0.006	-0.005
888	0.639	1.026	1.897	0.632	1.020	1.893	-0.007	-0.006	-0.004
894	0.612	0.984	1.818	0.605	0.978	1.814	-0.007	-0.006	-0.004
900	0.586	0.941	1.738	0.579	0.935	1.734	-0.006	-0.006	-0.004
906	0.559	0.898	1.659	0.553	0.893	1.655	-0.006	-0.005	-0.004
912	0.536	0.861	1.591	0.530	0.856	1.587	-0.006	-0.005	-0.004
918	0.521	0.836	1.545	0.515	0.832	1.542	-0.006	-0.005	-0.003
924	0.511	0.821	1.516	0.506	0.816	1.512	-0.006	-0.005	-0.003
930	0.504	0.809	1.494	0.499	0.804	1.491	-0.005	-0.005	-0.003
936	0.496	0.797	1.471	0.491	0.792	1.468	-0.005	-0.005	-0.003
942	0.489	0.785	1.449	0.484	0.780	1.446	-0.005	-0.004	-0.003
948	0.482	0.773	1.427	0.476	0.768	1.424	-0.005	-0.004	-0.003
954	0.474	0.760	1.403	0.469	0.756	1.400	-0.005	-0.004	-0.003
960	0.466	0.748	1.381	0.461	0.744	1.378	-0.005	-0.004	-0.003
966	0.459	0.737	1.360	0.454	0.733	1.357	-0.005	-0.004	-0.003
972	0.452	0.725	1.338	0.447	0.721	1.335	-0.005	-0.004	-0.003
978	0.444	0.712	1.315	0.440	0.709	1.312	-0.005	-0.004	-0.003
984	0.437	0.701	1.293	0.432	0.697	1.290	-0.005	-0.004	-0.003
990	0.429	0.688	1.270	0.425	0.685	1.267	-0.004	-0.004	-0.003
996	0.422	0.676	1.247	0.417	0.672	1.245	-0.004	-0.004	-0.003
1002	0.414	0.664	1.225	0.410	0.661	1.223	-0.004	-0.004	-0.003
1008	0.407	0.652	1.204	0.403	0.649	1.201	-0.004	-0.004	-0.002
1014	0.400	0.640	1.181	0.395	0.637	1.179	-0.004	-0.003	-0.002

Time (Min)	Existing Conditions			Proposed Conditions			Difference		
	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)
1020	0.392	0.628	1.159	0.388	0.625	1.157	-0.004	-0.003	-0.002
1026	0.384	0.616	1.136	0.381	0.613	1.134	-0.004	-0.003	-0.002
1032	0.377	0.604	1.114	0.373	0.601	1.112	-0.004	-0.003	-0.002
1038	0.369	0.592	1.091	0.366	0.589	1.089	-0.004	-0.003	-0.002
1044	0.362	0.579	1.069	0.358	0.576	1.067	-0.004	-0.003	-0.002
1050	0.354	0.567	1.046	0.351	0.564	1.044	-0.004	-0.003	-0.002
1056	0.346	0.555	1.023	0.343	0.552	1.021	-0.003	-0.003	-0.002
1062	0.339	0.543	1.001	0.335	0.540	0.999	-0.003	-0.003	-0.002
1068	0.332	0.531	0.979	0.328	0.528	0.977	-0.003	-0.003	-0.002
1074	0.324	0.519	0.957	0.321	0.517	0.956	-0.003	-0.003	-0.002
1080	0.317	0.507	0.935	0.314	0.505	0.934	-0.003	-0.003	-0.002
1086	0.309	0.495	0.913	0.306	0.493	0.911	-0.003	-0.003	-0.002
1092	0.303	0.485	0.893	0.300	0.482	0.891	-0.003	-0.002	-0.002
1098	0.298	0.478	0.881	0.296	0.475	0.879	-0.003	-0.002	-0.002
1104	0.296	0.474	0.873	0.293	0.471	0.871	-0.003	-0.002	-0.002
1110	0.294	0.470	0.867	0.291	0.468	0.865	-0.003	-0.002	-0.002
1116	0.292	0.467	0.861	0.289	0.465	0.859	-0.003	-0.002	-0.002
1122	0.290	0.464	0.856	0.287	0.462	0.854	-0.003	-0.002	-0.002
1128	0.288	0.461	0.850	0.286	0.459	0.849	-0.003	-0.002	-0.002
1134	0.287	0.459	0.846	0.284	0.457	0.844	-0.003	-0.002	-0.002
1140	0.285	0.456	0.839	0.282	0.453	0.838	-0.003	-0.002	-0.002
1146	0.283	0.452	0.834	0.280	0.450	0.832	-0.003	-0.002	-0.002
1152	0.281	0.449	0.828	0.278	0.447	0.826	-0.003	-0.002	-0.002
1158	0.279	0.447	0.823	0.276	0.444	0.821	-0.003	-0.002	-0.002
1164	0.277	0.443	0.817	0.275	0.441	0.815	-0.003	-0.002	-0.002
1170	0.275	0.440	0.811	0.273	0.438	0.809	-0.003	-0.002	-0.002
1176	0.273	0.437	0.806	0.271	0.435	0.804	-0.003	-0.002	-0.002
1182	0.272	0.434	0.800	0.269	0.432	0.799	-0.003	-0.002	-0.001
1188	0.270	0.432	0.796	0.267	0.430	0.794	-0.003	-0.002	-0.001
1194	0.268	0.428	0.789	0.265	0.426	0.788	-0.003	-0.002	-0.001
1200	0.266	0.425	0.783	0.263	0.423	0.782	-0.002	-0.002	-0.001
1206	0.264	0.422	0.778	0.262	0.420	0.776	-0.002	-0.002	-0.001
1212	0.262	0.420	0.773	0.260	0.418	0.771	-0.002	-0.002	-0.001
1218	0.260	0.416	0.767	0.258	0.414	0.765	-0.002	-0.002	-0.001
1224	0.258	0.413	0.761	0.256	0.411	0.759	-0.002	-0.002	-0.001
1230	0.257	0.410	0.755	0.254	0.408	0.754	-0.002	-0.002	-0.001
1236	0.255	0.407	0.750	0.252	0.405	0.749	-0.002	-0.002	-0.001
1242	0.253	0.405	0.745	0.251	0.403	0.744	-0.002	-0.002	-0.001
1248	0.251	0.401	0.739	0.249	0.399	0.738	-0.002	-0.002	-0.001
1254	0.249	0.398	0.733	0.247	0.396	0.732	-0.002	-0.002	-0.001
1260	0.247	0.395	0.728	0.245	0.393	0.726	-0.002	-0.002	-0.001
1266	0.245	0.392	0.722	0.243	0.390	0.720	-0.002	-0.002	-0.001
1272	0.243	0.389	0.716	0.241	0.387	0.714	-0.002	-0.002	-0.001

Time (Min)	Existing Conditions			Proposed Conditions			Difference		
	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)
1278	0.241	0.386	0.710	0.239	0.384	0.709	-0.002	-0.002	-0.001
1284	0.240	0.383	0.705	0.237	0.381	0.704	-0.002	-0.002	-0.001
1290	0.238	0.380	0.700	0.236	0.379	0.699	-0.002	-0.002	-0.001
1296	0.236	0.377	0.694	0.234	0.375	0.693	-0.002	-0.002	-0.001
1302	0.234	0.374	0.688	0.232	0.372	0.687	-0.002	-0.002	-0.001
1308	0.232	0.371	0.682	0.230	0.369	0.681	-0.002	-0.002	-0.001
1314	0.230	0.368	0.677	0.228	0.366	0.676	-0.002	-0.002	-0.001
1320	0.229	0.365	0.672	0.227	0.364	0.671	-0.002	-0.002	-0.001
1326	0.227	0.362	0.666	0.225	0.360	0.665	-0.002	-0.002	-0.001
1332	0.225	0.359	0.660	0.223	0.357	0.659	-0.002	-0.002	-0.001
1338	0.223	0.356	0.655	0.221	0.354	0.654	-0.002	-0.002	-0.001
1344	0.221	0.352	0.648	0.219	0.351	0.647	-0.002	-0.002	-0.001
1350	0.219	0.349	0.643	0.217	0.348	0.642	-0.002	-0.002	-0.001
1356	0.217	0.346	0.637	0.215	0.345	0.636	-0.002	-0.002	-0.001
1362	0.215	0.344	0.632	0.213	0.342	0.631	-0.002	-0.002	-0.001
1368	0.213	0.341	0.627	0.211	0.339	0.626	-0.002	-0.002	-0.001
1374	0.212	0.338	0.622	0.210	0.337	0.621	-0.002	-0.002	-0.001
1380	0.210	0.335	0.616	0.208	0.333	0.615	-0.002	-0.002	-0.001
1386	0.208	0.332	0.610	0.206	0.330	0.609	-0.002	-0.002	-0.001
1392	0.206	0.329	0.605	0.204	0.327	0.604	-0.002	-0.001	-0.001
1398	0.204	0.325	0.598	0.202	0.324	0.597	-0.002	-0.001	-0.001
1404	0.202	0.322	0.593	0.200	0.321	0.591	-0.002	-0.001	-0.001
1410	0.200	0.319	0.587	0.198	0.318	0.586	-0.002	-0.001	-0.001
1416	0.198	0.316	0.582	0.196	0.315	0.581	-0.002	-0.001	-0.001
1422	0.196	0.314	0.577	0.195	0.312	0.576	-0.002	-0.001	-0.001
1428	0.194	0.310	0.571	0.193	0.309	0.570	-0.002	-0.001	-0.001
1434	0.192	0.307	0.565	0.191	0.306	0.564	-0.002	-0.001	-0.001
1440	0.191	0.305	0.560	0.189	0.303	0.559	-0.002	-0.001	-0.001
1446	0.152	0.242	0.446	0.151	0.241	0.445	-0.001	-0.001	-0.001
1452	0.076	0.121	0.223	0.075	0.121	0.222	-0.001	-0.001	0.000
1458	0.025	0.040	0.074	0.025	0.040	0.074	0.000	0.000	0.000

TABLE 10									
DA-1 EXISTING VS. PROPOSED RUNOFF RATES - FUTURE PROJECTED RAINFALL									
Time (Min)	Existing Conditions			Proposed Conditions			Difference		
	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
12	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
18	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
24	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
36	0.000	0.000	0.001	0.000	0.000	0.001	0.000	0.000	0.000
42	0.000	0.000	0.001	0.000	0.000	0.001	0.000	0.000	0.000
48	0.000	0.000	0.001	0.000	0.000	0.001	0.000	0.000	0.000
54	0.000	0.000	0.002	0.000	0.000	0.002	0.000	0.000	0.000
60	0.000	0.000	0.002	0.000	0.000	0.002	0.000	0.000	0.000
66	0.000	0.001	0.002	0.000	0.001	0.002	0.000	0.000	0.000
72	0.000	0.001	0.003	0.000	0.001	0.003	0.000	0.000	0.000
78	0.000	0.001	0.003	0.000	0.001	0.003	0.000	0.000	0.000
84	0.000	0.001	0.003	0.000	0.001	0.003	0.000	0.000	0.000
90	0.000	0.001	0.003	0.000	0.001	0.003	0.000	0.000	0.000
96	0.000	0.001	0.004	0.000	0.001	0.004	0.000	0.000	0.000
102	0.000	0.001	0.004	0.000	0.001	0.004	0.000	0.000	0.000
108	0.001	0.001	0.004	0.001	0.001	0.004	0.000	0.000	0.000
114	0.001	0.002	0.004	0.001	0.002	0.004	0.000	0.000	0.000
120	0.001	0.002	0.004	0.001	0.002	0.004	0.000	0.000	0.000
126	0.001	0.002	0.004	0.001	0.002	0.004	0.000	0.000	0.000
132	0.001	0.002	0.005	0.001	0.002	0.005	0.000	0.000	0.000
138	0.001	0.002	0.005	0.001	0.002	0.005	0.000	0.000	0.000
144	0.001	0.002	0.005	0.001	0.002	0.005	0.000	0.000	0.000
150	0.001	0.002	0.005	0.001	0.002	0.005	0.000	0.000	0.000
156	0.001	0.002	0.005	0.001	0.002	0.005	0.000	0.000	0.000
162	0.001	0.002	0.005	0.001	0.002	0.005	0.000	0.000	0.000
168	0.001	0.002	0.005	0.001	0.002	0.005	0.000	0.000	0.000
174	0.001	0.002	0.005	0.001	0.002	0.005	0.000	0.000	0.000
180	0.001	0.002	0.005	0.001	0.002	0.005	0.000	0.000	0.000
186	0.001	0.002	0.005	0.001	0.002	0.005	0.000	0.000	0.000
192	0.001	0.003	0.005	0.001	0.003	0.005	0.000	0.000	0.000
198	0.001	0.003	0.006	0.001	0.003	0.006	0.000	0.000	0.000
204	0.001	0.003	0.006	0.001	0.003	0.006	0.000	0.000	0.000
210	0.001	0.003	0.006	0.001	0.003	0.006	0.000	0.000	0.000
216	0.001	0.003	0.006	0.001	0.003	0.006	0.000	0.000	0.000
222	0.002	0.003	0.006	0.002	0.003	0.006	0.000	0.000	0.000
228	0.002	0.003	0.007	0.002	0.003	0.007	0.000	0.000	0.000
234	0.002	0.003	0.007	0.002	0.003	0.007	0.000	0.000	0.000
240	0.002	0.003	0.007	0.002	0.003	0.007	0.000	0.000	0.000

Time (Min)	Existing Conditions			Proposed Conditions			Difference		
	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)
246	0.002	0.003	0.008	0.002	0.003	0.008	0.000	0.000	0.000
252	0.002	0.003	0.008	0.002	0.003	0.008	0.000	0.000	0.000
258	0.002	0.003	0.008	0.002	0.003	0.008	0.000	0.000	0.000
264	0.002	0.003	0.009	0.002	0.003	0.009	0.000	0.000	0.000
270	0.002	0.003	0.009	0.002	0.003	0.009	0.000	0.000	0.000
276	0.002	0.003	0.010	0.002	0.003	0.010	0.000	0.000	0.000
282	0.002	0.003	0.010	0.002	0.003	0.010	0.000	0.000	0.000
288	0.002	0.003	0.010	0.002	0.003	0.010	0.000	0.000	0.000
294	0.002	0.003	0.011	0.002	0.003	0.011	0.000	0.000	0.000
300	0.002	0.003	0.011	0.002	0.003	0.011	0.000	0.000	0.000
306	0.002	0.003	0.011	0.002	0.003	0.011	0.000	0.000	0.000
312	0.002	0.004	0.012	0.002	0.004	0.012	0.000	0.000	0.000
318	0.002	0.004	0.012	0.002	0.004	0.012	0.000	0.000	0.000
324	0.002	0.004	0.013	0.002	0.004	0.013	0.000	0.000	0.000
330	0.002	0.004	0.013	0.002	0.004	0.013	0.000	0.000	0.000
336	0.002	0.004	0.013	0.002	0.004	0.013	0.000	0.000	0.000
342	0.002	0.004	0.014	0.002	0.004	0.014	0.000	0.000	0.000
348	0.002	0.004	0.014	0.002	0.004	0.014	0.000	0.000	0.000
354	0.002	0.004	0.014	0.002	0.004	0.014	0.000	0.000	0.000
360	0.002	0.004	0.015	0.002	0.004	0.015	0.000	0.000	0.000
366	0.002	0.004	0.015	0.002	0.004	0.015	0.000	0.000	0.000
372	0.002	0.004	0.016	0.002	0.004	0.016	0.000	0.000	0.000
378	0.002	0.005	0.016	0.002	0.005	0.016	0.000	0.000	0.000
384	0.002	0.005	0.017	0.002	0.005	0.017	0.000	0.000	0.000
390	0.003	0.005	0.018	0.003	0.005	0.018	0.000	0.000	0.000
396	0.003	0.006	0.018	0.003	0.006	0.018	0.000	0.000	0.000
402	0.003	0.006	0.019	0.003	0.006	0.019	0.000	0.000	0.000
408	0.003	0.006	0.020	0.003	0.006	0.020	0.000	0.000	0.000
414	0.003	0.006	0.021	0.003	0.006	0.021	0.000	0.000	0.000
420	0.003	0.007	0.021	0.003	0.007	0.021	0.000	0.000	0.000
426	0.003	0.007	0.022	0.003	0.007	0.022	0.000	0.000	0.000
432	0.003	0.007	0.023	0.003	0.007	0.023	0.000	0.000	0.000
438	0.003	0.008	0.024	0.003	0.008	0.024	0.000	0.000	0.000
444	0.003	0.008	0.025	0.003	0.008	0.025	0.000	0.000	0.000
450	0.003	0.008	0.025	0.003	0.008	0.025	0.000	0.000	0.000
456	0.003	0.009	0.026	0.003	0.009	0.026	0.000	0.000	0.000
462	0.003	0.009	0.027	0.003	0.009	0.027	0.000	0.000	0.000
468	0.003	0.010	0.028	0.003	0.010	0.028	0.000	0.000	0.000
474	0.004	0.010	0.029	0.004	0.010	0.029	0.000	0.000	0.000
480	0.004	0.010	0.030	0.004	0.010	0.030	0.000	0.000	0.000
486	0.004	0.011	0.031	0.004	0.011	0.031	0.000	0.000	0.000
492	0.004	0.011	0.031	0.004	0.011	0.031	0.000	0.000	0.000
498	0.004	0.012	0.032	0.004	0.012	0.032	0.000	0.000	0.000

Time (Min)	Existing Conditions			Proposed Conditions			Difference		
	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)
504	0.005	0.012	0.033	0.005	0.012	0.033	0.000	0.000	0.000
510	0.005	0.012	0.034	0.005	0.012	0.034	0.000	0.000	0.000
516	0.005	0.013	0.035	0.005	0.013	0.035	0.000	0.000	0.000
522	0.005	0.013	0.036	0.005	0.013	0.036	0.000	0.000	0.000
528	0.005	0.014	0.037	0.005	0.014	0.037	0.000	0.000	0.000
534	0.006	0.014	0.038	0.006	0.014	0.038	0.000	0.000	0.000
540	0.006	0.015	0.039	0.006	0.015	0.039	0.000	0.000	0.000
546	0.006	0.015	0.040	0.006	0.015	0.040	0.000	0.000	0.000
552	0.007	0.016	0.042	0.007	0.016	0.042	0.000	0.000	0.000
558	0.007	0.017	0.044	0.007	0.017	0.044	0.000	0.000	0.000
564	0.008	0.018	0.047	0.008	0.018	0.047	0.000	0.000	0.000
570	0.008	0.019	0.049	0.008	0.019	0.049	0.000	0.000	0.000
576	0.009	0.020	0.052	0.009	0.020	0.052	0.000	0.000	0.000
582	0.009	0.022	0.055	0.009	0.022	0.055	0.000	0.000	0.000
588	0.010	0.023	0.057	0.010	0.023	0.057	0.000	0.000	0.000
594	0.010	0.024	0.060	0.010	0.024	0.060	0.000	0.000	0.000
600	0.011	0.025	0.063	0.011	0.025	0.063	0.000	0.000	0.000
606	0.012	0.027	0.066	0.012	0.027	0.066	0.000	0.000	0.000
612	0.013	0.028	0.069	0.013	0.028	0.069	0.000	0.000	0.000
618	0.013	0.029	0.072	0.013	0.029	0.072	0.000	0.000	0.000
624	0.014	0.031	0.075	0.014	0.031	0.075	0.000	0.000	0.000
630	0.015	0.032	0.078	0.015	0.032	0.078	0.000	0.000	0.000
636	0.016	0.034	0.082	0.016	0.034	0.082	0.000	0.000	0.000
642	0.017	0.037	0.089	0.017	0.037	0.089	0.000	0.000	0.000
648	0.019	0.041	0.098	0.019	0.041	0.098	0.000	0.000	0.000
654	0.022	0.046	0.108	0.022	0.046	0.108	0.000	0.000	0.000
660	0.024	0.051	0.118	0.024	0.051	0.118	0.000	0.000	0.000
666	0.027	0.056	0.129	0.027	0.056	0.129	0.000	0.000	0.000
672	0.030	0.063	0.144	0.030	0.063	0.144	0.000	0.000	0.000
678	0.034	0.071	0.161	0.034	0.071	0.161	0.000	0.000	0.000
684	0.039	0.079	0.179	0.039	0.079	0.179	0.000	0.000	0.000
690	0.044	0.088	0.197	0.044	0.088	0.197	0.000	0.000	0.000
696	0.052	0.103	0.228	0.052	0.103	0.228	0.000	0.000	0.000
702	0.063	0.124	0.272	0.063	0.124	0.272	0.000	0.000	0.000
708	0.078	0.152	0.329	0.078	0.152	0.329	0.000	0.000	0.000
714	0.105	0.202	0.432	0.105	0.202	0.432	0.000	0.000	0.000
720	0.161	0.303	0.637	0.161	0.303	0.637	0.000	0.000	0.000
726	0.277	0.511	1.050	0.277	0.511	1.050	0.000	0.000	0.000
732	0.345	0.627	1.271	0.345	0.627	1.271	0.000	0.000	0.000
738	0.282	0.506	1.016	0.282	0.506	1.016	0.000	0.000	0.000
744	0.197	0.349	0.694	0.197	0.349	0.694	0.000	0.000	0.000
750	0.124	0.217	0.427	0.124	0.217	0.427	0.000	0.000	0.000
756	0.100	0.175	0.343	0.100	0.175	0.343	0.000	0.000	0.000

Time (Min)	Existing Conditions			Proposed Conditions			Difference		
	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)
762	0.083	0.145	0.283	0.083	0.145	0.283	0.000	0.000	0.000
768	0.073	0.127	0.247	0.073	0.127	0.247	0.000	0.000	0.000
774	0.065	0.113	0.219	0.065	0.113	0.219	0.000	0.000	0.000
780	0.060	0.103	0.201	0.060	0.103	0.201	0.000	0.000	0.000
786	0.054	0.094	0.182	0.054	0.094	0.182	0.000	0.000	0.000
792	0.049	0.085	0.165	0.049	0.085	0.165	0.000	0.000	0.000
798	0.045	0.078	0.151	0.045	0.078	0.151	0.000	0.000	0.000
804	0.042	0.072	0.139	0.042	0.072	0.139	0.000	0.000	0.000
810	0.039	0.066	0.128	0.039	0.066	0.128	0.000	0.000	0.000
816	0.035	0.061	0.117	0.035	0.061	0.117	0.000	0.000	0.000
822	0.033	0.056	0.108	0.033	0.056	0.108	0.000	0.000	0.000
828	0.031	0.053	0.102	0.031	0.053	0.102	0.000	0.000	0.000
834	0.030	0.051	0.098	0.030	0.051	0.098	0.000	0.000	0.000
840	0.029	0.049	0.095	0.029	0.049	0.095	0.000	0.000	0.000
846	0.028	0.048	0.092	0.028	0.048	0.092	0.000	0.000	0.000
852	0.027	0.046	0.089	0.027	0.046	0.089	0.000	0.000	0.000
858	0.026	0.045	0.086	0.026	0.045	0.086	0.000	0.000	0.000
864	0.025	0.043	0.083	0.025	0.043	0.083	0.000	0.000	0.000
870	0.024	0.042	0.080	0.024	0.042	0.080	0.000	0.000	0.000
876	0.024	0.040	0.077	0.024	0.040	0.077	0.000	0.000	0.000
882	0.023	0.039	0.074	0.023	0.039	0.074	0.000	0.000	0.000
888	0.022	0.037	0.071	0.022	0.037	0.071	0.000	0.000	0.000
894	0.021	0.036	0.068	0.021	0.036	0.068	0.000	0.000	0.000
900	0.020	0.034	0.065	0.020	0.034	0.065	0.000	0.000	0.000
906	0.019	0.033	0.062	0.019	0.033	0.062	0.000	0.000	0.000
912	0.018	0.031	0.060	0.018	0.031	0.060	0.000	0.000	0.000
918	0.018	0.030	0.058	0.018	0.030	0.058	0.000	0.000	0.000
924	0.018	0.030	0.057	0.018	0.030	0.057	0.000	0.000	0.000
930	0.017	0.029	0.056	0.017	0.029	0.056	0.000	0.000	0.000
936	0.017	0.029	0.055	0.017	0.029	0.055	0.000	0.000	0.000
942	0.017	0.028	0.055	0.017	0.028	0.055	0.000	0.000	0.000
948	0.017	0.028	0.054	0.017	0.028	0.054	0.000	0.000	0.000
954	0.016	0.028	0.053	0.016	0.028	0.053	0.000	0.000	0.000
960	0.016	0.027	0.052	0.016	0.027	0.052	0.000	0.000	0.000
966	0.016	0.027	0.051	0.016	0.027	0.051	0.000	0.000	0.000
972	0.016	0.026	0.050	0.016	0.026	0.050	0.000	0.000	0.000
978	0.015	0.026	0.050	0.015	0.026	0.050	0.000	0.000	0.000
984	0.015	0.025	0.049	0.015	0.025	0.049	0.000	0.000	0.000
990	0.015	0.025	0.048	0.015	0.025	0.048	0.000	0.000	0.000
996	0.015	0.025	0.047	0.015	0.025	0.047	0.000	0.000	0.000
1002	0.014	0.024	0.046	0.014	0.024	0.046	0.000	0.000	0.000
1008	0.014	0.024	0.045	0.014	0.024	0.045	0.000	0.000	0.000
1014	0.014	0.023	0.045	0.014	0.023	0.045	0.000	0.000	0.000

Time (Min)	Existing Conditions			Proposed Conditions			Difference		
	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)
1020	0.014	0.023	0.044	0.014	0.023	0.044	0.000	0.000	0.000
1026	0.013	0.022	0.043	0.013	0.022	0.043	0.000	0.000	0.000
1032	0.013	0.022	0.042	0.013	0.022	0.042	0.000	0.000	0.000
1038	0.013	0.022	0.041	0.013	0.022	0.041	0.000	0.000	0.000
1044	0.013	0.021	0.040	0.013	0.021	0.040	0.000	0.000	0.000
1050	0.012	0.021	0.039	0.012	0.021	0.039	0.000	0.000	0.000
1056	0.012	0.020	0.039	0.012	0.020	0.039	0.000	0.000	0.000
1062	0.012	0.020	0.038	0.012	0.020	0.038	0.000	0.000	0.000
1068	0.012	0.019	0.037	0.012	0.019	0.037	0.000	0.000	0.000
1074	0.011	0.019	0.036	0.011	0.019	0.036	0.000	0.000	0.000
1080	0.011	0.019	0.035	0.011	0.019	0.035	0.000	0.000	0.000
1086	0.011	0.018	0.034	0.011	0.018	0.034	0.000	0.000	0.000
1092	0.011	0.018	0.034	0.011	0.018	0.034	0.000	0.000	0.000
1098	0.010	0.017	0.033	0.010	0.017	0.033	0.000	0.000	0.000
1104	0.010	0.017	0.033	0.010	0.017	0.033	0.000	0.000	0.000
1110	0.010	0.017	0.033	0.010	0.017	0.033	0.000	0.000	0.000
1116	0.010	0.017	0.032	0.010	0.017	0.032	0.000	0.000	0.000
1122	0.010	0.017	0.032	0.010	0.017	0.032	0.000	0.000	0.000
1128	0.010	0.017	0.032	0.010	0.017	0.032	0.000	0.000	0.000
1134	0.010	0.017	0.032	0.010	0.017	0.032	0.000	0.000	0.000
1140	0.010	0.017	0.032	0.010	0.017	0.032	0.000	0.000	0.000
1146	0.010	0.017	0.031	0.010	0.017	0.031	0.000	0.000	0.000
1152	0.010	0.016	0.031	0.010	0.016	0.031	0.000	0.000	0.000
1158	0.010	0.016	0.031	0.010	0.016	0.031	0.000	0.000	0.000
1164	0.010	0.016	0.031	0.010	0.016	0.031	0.000	0.000	0.000
1170	0.010	0.016	0.031	0.010	0.016	0.031	0.000	0.000	0.000
1176	0.010	0.016	0.030	0.010	0.016	0.030	0.000	0.000	0.000
1182	0.009	0.016	0.030	0.009	0.016	0.030	0.000	0.000	0.000
1188	0.009	0.016	0.030	0.009	0.016	0.030	0.000	0.000	0.000
1194	0.009	0.016	0.030	0.009	0.016	0.030	0.000	0.000	0.000
1200	0.009	0.016	0.030	0.009	0.016	0.030	0.000	0.000	0.000
1206	0.009	0.015	0.029	0.009	0.015	0.029	0.000	0.000	0.000
1212	0.009	0.015	0.029	0.009	0.015	0.029	0.000	0.000	0.000
1218	0.009	0.015	0.029	0.009	0.015	0.029	0.000	0.000	0.000
1224	0.009	0.015	0.029	0.009	0.015	0.029	0.000	0.000	0.000
1230	0.009	0.015	0.029	0.009	0.015	0.029	0.000	0.000	0.000
1236	0.009	0.015	0.028	0.009	0.015	0.028	0.000	0.000	0.000
1242	0.009	0.015	0.028	0.009	0.015	0.028	0.000	0.000	0.000
1248	0.009	0.015	0.028	0.009	0.015	0.028	0.000	0.000	0.000
1254	0.009	0.015	0.028	0.009	0.015	0.028	0.000	0.000	0.000
1260	0.009	0.014	0.027	0.009	0.014	0.027	0.000	0.000	0.000
1266	0.009	0.014	0.027	0.009	0.014	0.027	0.000	0.000	0.000
1272	0.009	0.014	0.027	0.009	0.014	0.027	0.000	0.000	0.000

Time (Min)	Existing Conditions			Proposed Conditions			Difference		
	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)	2-Year (CFS)	10-Year (CFS)	100-Year (CFS)
1278	0.008	0.014	0.027	0.008	0.014	0.027	0.000	0.000	0.000
1284	0.008	0.014	0.027	0.008	0.014	0.027	0.000	0.000	0.000
1290	0.008	0.014	0.026	0.008	0.014	0.026	0.000	0.000	0.000
1296	0.008	0.014	0.026	0.008	0.014	0.026	0.000	0.000	0.000
1302	0.008	0.014	0.026	0.008	0.014	0.026	0.000	0.000	0.000
1308	0.008	0.014	0.026	0.008	0.014	0.026	0.000	0.000	0.000
1314	0.008	0.014	0.026	0.008	0.014	0.026	0.000	0.000	0.000
1320	0.008	0.013	0.025	0.008	0.013	0.025	0.000	0.000	0.000
1326	0.008	0.013	0.025	0.008	0.013	0.025	0.000	0.000	0.000
1332	0.008	0.013	0.025	0.008	0.013	0.025	0.000	0.000	0.000
1338	0.008	0.013	0.025	0.008	0.013	0.025	0.000	0.000	0.000
1344	0.008	0.013	0.025	0.008	0.013	0.025	0.000	0.000	0.000
1350	0.008	0.013	0.024	0.008	0.013	0.024	0.000	0.000	0.000
1356	0.008	0.013	0.024	0.008	0.013	0.024	0.000	0.000	0.000
1362	0.008	0.013	0.024	0.008	0.013	0.024	0.000	0.000	0.000
1368	0.007	0.013	0.024	0.007	0.013	0.024	0.000	0.000	0.000
1374	0.007	0.012	0.024	0.007	0.012	0.024	0.000	0.000	0.000
1380	0.007	0.012	0.023	0.007	0.012	0.023	0.000	0.000	0.000
1386	0.007	0.012	0.023	0.007	0.012	0.023	0.000	0.000	0.000
1392	0.007	0.012	0.023	0.007	0.012	0.023	0.000	0.000	0.000
1398	0.007	0.012	0.023	0.007	0.012	0.023	0.000	0.000	0.000
1404	0.007	0.012	0.022	0.007	0.012	0.022	0.000	0.000	0.000
1410	0.007	0.012	0.022	0.007	0.012	0.022	0.000	0.000	0.000
1416	0.007	0.012	0.022	0.007	0.012	0.022	0.000	0.000	0.000
1422	0.007	0.012	0.022	0.007	0.012	0.022	0.000	0.000	0.000
1428	0.007	0.011	0.022	0.007	0.011	0.022	0.000	0.000	0.000
1434	0.007	0.011	0.021	0.007	0.011	0.021	0.000	0.000	0.000
1440	0.007	0.011	0.021	0.007	0.011	0.021	0.000	0.000	0.000
1446	0.005	0.009	0.017	0.005	0.009	0.017	0.000	0.000	0.000
1452	0.003	0.004	0.008	0.003	0.004	0.008	0.000	0.000	0.000

APPENDIX



NEW JERSEY 24 HOUR RAINFALL FREQUENCY DATA

Rainfall amounts in Inches

County	1 year	2 year	5 year	10 year	25 year	50 year	100 year
Atlantic	2.72	3.31	4.30	5.16	6.46	7.61	8.90
Bergen	2.75	3.34	4.27	5.07	6.28	7.32	8.47
Burlington	2.77	3.36	4.34	5.18	6.45	7.56	8.81
Camden	2.73	3.31	4.25	5.06	6.28	7.34	8.52
Cape May	2.67	3.25	4.22	5.07	6.34	7.47	8.73
Cumberland	2.69	3.27	4.25	5.09	6.37	7.49	8.76
Essex	2.85	3.44	4.40	5.22	6.44	7.49	8.66
Gloucester	2.71	3.29	4.24	5.05	6.29	7.36	8.55
Hudson	2.73	3.31	4.23	5.02	6.19	7.20	8.31
Hunterdon	2.80	3.38	4.26	5.00	6.09	7.02	8.03
Mercer	2.74	3.31	4.23	5.01	6.19	7.20	8.33
Middlesex	2.76	3.35	4.30	5.12	6.36	7.43	8.63
Monmouth	2.79	3.38	4.38	5.23	6.53	7.66	8.94
Morris	2.94	3.54	4.47	5.24	6.37	7.32	8.35
Ocean	2.81	3.42	4.45	5.33	6.68	7.87	9.20
Passaic	2.87	3.47	4.42	5.23	6.43	7.47	8.62
Salem	2.69	3.26	4.20	5.00	6.22	7.28	8.45
Somerset	2.76	3.34	4.25	5.01	6.15	7.13	8.21
Sussex	2.68	3.22	4.02	4.70	5.72	6.60	7.58
Union	2.80	3.39	4.35	5.17	6.42	7.49	8.69
Warren	2.78	3.34	4.18	4.89	5.93	6.83	7.82

Notes: The average point rainfall amounts listed above were developed from data contained in NOAA Atlas 14 Volume 2.

Point rainfall estimates for specific locations may be obtained from the Precipitation Frequency Data Server located at <http://www.nws.noaa.gov/ohd/hdsc/>

For most hydrologic design procedures, the rainfall amounts listed above may be rounded to the nearest tenth of an inch.

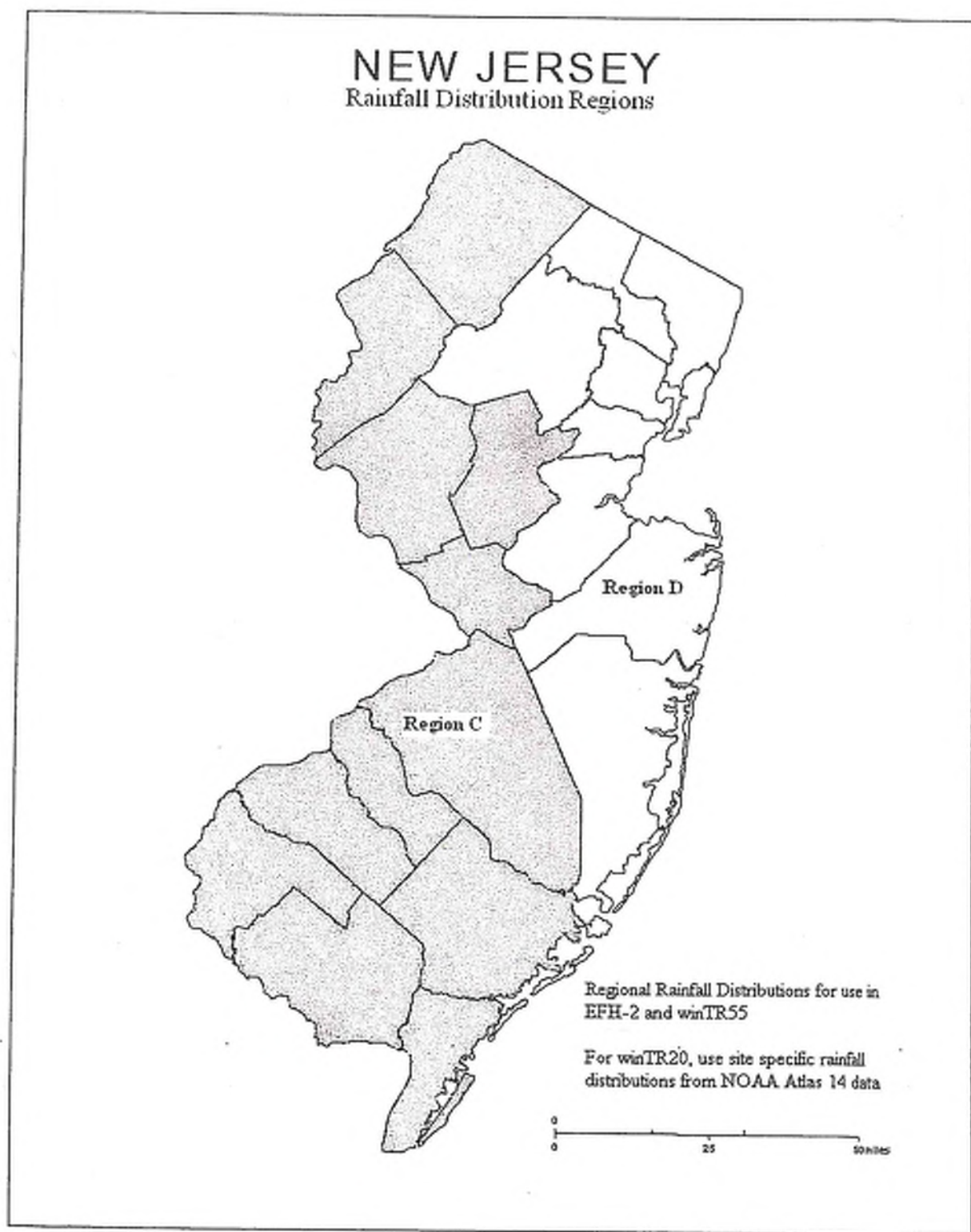


Table 2-2a Runoff curve numbers for urban areas ^{1/}

Cover description		Curve numbers for hydrologic soil group			
Cover type and hydrologic condition	Average percent impervious area ^{2/}	A	B	C	D
<i>Fully developed urban areas (vegetation established)</i>					
Open space (lawns, parks, golf courses, cemeteries, etc.) ^{3/} :					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) ^{4/}		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
<i>Developing urban areas</i>					
Newly graded areas					
(pervious areas only, no vegetation) ^{5/}		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

^{1/} Average runoff condition, and $I_a = 0.2S$.^{2/} The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.^{3/} CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.^{4/} Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.^{5/} Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

Table 2-2c Runoff curve numbers for other agricultural lands ^{1/}

Cover type	Cover description	Hydrologic condition	Curve numbers for hydrologic soil group			
			A	B	C	D
Pasture, grassland, or range—continuous forage for grazing. ^{2/}		Poor	68	79	86	89
		Fair	49	69	79	84
		Good	39	61	74	80
Meadow—continuous grass, protected from grazing and generally mowed for hay.		—	30	58	71	78
Brush—brush-weed-grass mixture with brush the major element. ^{3/}		Poor	48	67	77	83
		Fair	35	56	70	77
		Good	30 ^{4/}	48	65	73
Woods—grass combination (orchard or tree farm). ^{5/}		Poor	57	73	82	86
		Fair	43	65	76	82
		Good	32	58	72	79
Woods. ^{6/}		Poor	45	66	77	83
		Fair	36	60	73	79
		Good	30 ^{4/}	55	70	77
Farmsteads—buildings, lanes, driveways, and surrounding lots.		—	59	74	82	86

^{1/} Average runoff condition, and $I_a = 0.2S$.^{2/} Poor: <50% ground cover or heavily grazed with no mulch.

Fair: 50 to 75% ground cover and not heavily grazed.

Good: > 75% ground cover and lightly or only occasionally grazed.

^{3/} Poor: <50% ground cover.

Fair: 50 to 75% ground cover.

Good: >75% ground cover.

^{4/} Actual curve number is less than 30; use CN = 30 for runoff computations.^{5/} CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.^{6/} Poor: Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.

Fair: Woods are grazed but not burned, and some forest litter covers the soil.

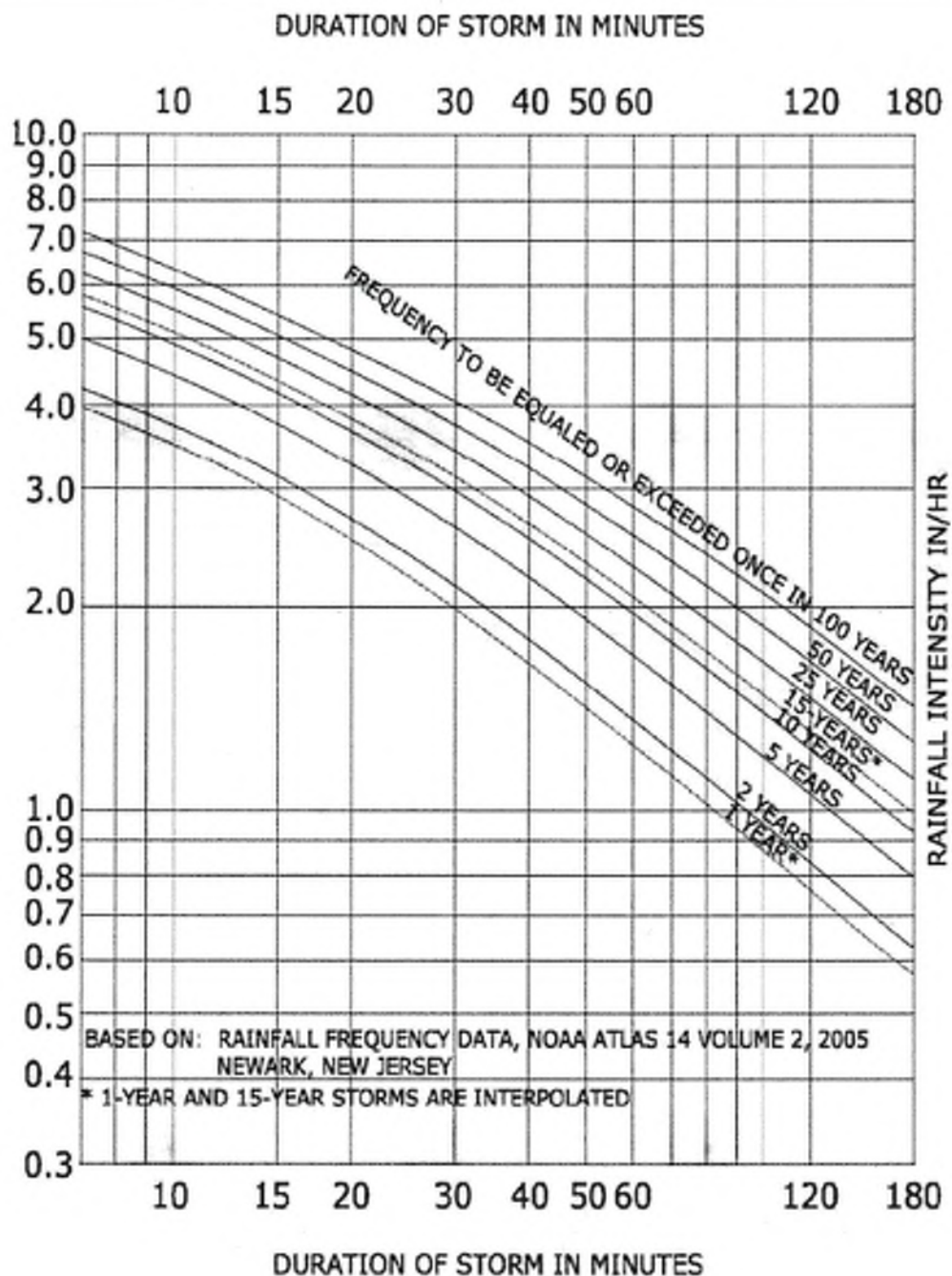
Good: Woods are protected from grazing, and litter and brush adequately cover the soil.

Table 10-4
Recommended Coefficient of Runoff Values
for Various Selected Land Uses

Land Use	Description	Hydrologic Soils Group			
		A	B	C	D
Cultivated Land	without conservation treatment	0.49	0.67	0.81	0.88
	with conservation treatment	0.27	0.43	0.67	0.67
Pasture or Range Land Meadow	poor condition	0.38	0.63	0.78	0.84
	good condition	---	0.25	0.51	0.65
	good condition	---	---	0.41	0.61
Wood or Forest Land	thin stand, poor cover, no mulch	---	0.34	0.59	0.70
	good cover	---	---	0.45	0.59
Open Spaces, Lawns, Parks, Golf Courses, Cemeteries					
	Good Condition	---	0.25	0.51	0.65
	Fair Condition	---	0.45	0.63	0.74
Commercial and Business Area	85% impervious	0.84	0.90	0.93	0.96
Industrial Districts	72% impervious	0.67	0.81	0.88	0.92
Residential	average % impervious				
Average Lot Size (acres)					
1/8	65	0.59	0.76	0.86	0.90
1/4	38	0.29	0.55	0.70	0.80
1/3	30	---	0.49	0.67	0.78
1/2	25	---	0.45	0.65	0.76
1	20	---	0.41	0.63	0.74
Paved Areas	parking lots, roofs, driveways, etc.	0.99	0.99	0.99	0.99
Streets and Roads	paved with curbs & storm	0.99	0.99	0.99	0.99
	sewers	0.57	0.76	0.84	0.88
	gravel	0.49	0.69	0.80	0.84
	dirt				

NOTE: Values are based on NRCS (formerly SCS) definitions and are average values.
Source: Technical Manual for Land Use Regulation Program, Bureau of Inland and Coastal
Regulations, NJDEP Flood Hazard Area Permits, New Jersey Department of
Environmental Protection

**FIGURE 10-B:
RAINFALL INTENSITY-DURATION FREQUENCY CURVE -
NORTHERN REGION**



Time of Concentration Calculations

Project #: 24-170

Pre-Development ☒

Project: The Estate

Post-Development ☐

County: Essex

Drainage Area: DA-1

Sheet Flow

	Segment 1	Segment 2	Segment 3	
Surface Description (Table 3-1)	Grass, Dense Grasses			
Manning's Roughness Coeff., n (Table 3-1)	0.24	0.24	-	
Flow Length, L (total ≤ 100 ft)	20	80		
Two-Year 24-Hour Rainfall, P_2 (CA)	3.47	3.47	3.47	
Two-Year 24-Hour Rainfall, P_2 (FP)	4.09	4.09	4.09	
Land Slope, s (ft/ft)	0.025	0.05		
T_t (CA)	3.5	7.9	-	11.4
T_t (FP)	3.2	7.3	-	10.5

Shallow Concentrated Flow

	Segment 1	Segment 2	Segment 3	
Surface Description	Unpaved	paved	paved	
Flow Length, L	70	340	120	
Watercourse Slope, s (ft/ft)	0.05	0.05	0.025	
Average Velocity	3.6	4.6	3.2	
T_t	0.3	1.2	0.6	2.2

Channel Flow

	Segment 1	Segment 2	Segment 3	
Cross Sectional Flow Area, a				
Wetted Perimeter, P_w				
Hydraulic Radius, r	-	-	-	
Channel Slope, s (ft/ft)				
Manning's Roughness Description				
Manning's Roughness	-	-	-	
Velocity	-	-	-	
Flow Length				
T_t	-	-	-	0.0
			Current Adjusted (CA)	13.6
			Future Projected (FP)	12.7

Time of Concentration Calculations

Project #: 24-170

Project: The Estate

County: Essex

Pre-Development ☒

Post-Development ☐

Drainage Area: DA-2

Sheet Flow

	Segment 1	Segment 2	Segment 3	
Surface Description (Table 3-1)	Grass, Dense Grasses			
Manning's Roughness Coeff., n (Table 3-1)	0.24	-	-	
Flow Length, L (total ≤ 100 ft)	83			
Two-Year 24-Hour Rainfall, P_2 (CA)	3.47	3.47	3.47	
Two-Year 24-Hour Rainfall, P_2 (FP)	4.09	4.09	4.09	
Land Slope, s (ft/ft)	0.02			
T_t (CA)	11.8	-	-	11.8
T_t (FP)	10.9	-	-	10.9

Shallow Concentrated Flow

	Segment 1	Segment 2	Segment 3	
Surface Description				
Flow Length, L				
Watercourse Slope, s (ft/ft)				
Average Velocity	-	-	-	
T_t	-	-	-	0.0

Channel Flow

	Segment 1	Segment 2	Segment 3	
Cross Sectional Flow Area, a				
Wetted Perimeter, P_w				
Hydraulic Radius, r	-	-	-	
Channel Slope, s (ft/ft)				
Manning's Roughness Description				
Manning's Roughness	-	-	-	
Velocity	-	-	-	
Flow Length				
T_t	-	-	-	0.0
			Current Adjusted (CA)	11.8
			Future Projected (FP)	10.9

Time of Concentration Calculations

Project #: 24-170

Pre-Development ☐

Project: The Estate

Post-Development ☒

County: Essex

Drainage Area: DA-1

Sheet Flow

	Segment 1	Segment 2	Segment 3	
Surface Description (Table 3-1)	Grass, Dense Grasses			
Manning's Roughness Coeff., n (Table 3-1)	0.24	0.24	-	
Flow Length, L (total ≤ 100 ft)	20	80		
Two-Year 24-Hour Rainfall, P_2 (CA)	3.47	3.47	3.47	
Two-Year 24-Hour Rainfall, P_2 (FP)	4.09	4.09	4.09	
Land Slope, s (ft/ft)	0.025	0.05		
T_t (CA)	3.5	7.9	-	11.4
T_t (FP)	3.2	7.3	-	10.5

Shallow Concentrated Flow

	Segment 1	Segment 2	Segment 3	
Surface Description	Unpaved	paved		
Flow Length, L	70	159		
Watercourse Slope, s (ft/ft)	0.05	0.05		
Average Velocity	3.6	4.6	-	
T_t	0.3	0.6	-	0.9

Channel Flow

	Segment 1	Segment 2	Segment 3	
Cross Sectional Flow Area, a	4.909	4.909	7.069	
Wetted Perimeter, P_w	7.854	7.854	9.425	
Hydraulic Radius, r	0.63	0.63	0.75	
Channel Slope, s (ft/ft)	0.04	0.04	0.02	
Manning's Roughness Description	HDPE Pipe	HDPE Pipe	HDPE Pipe	
Manning's Roughness	0.01	0.01	0.012	
Velocity	21.78	21.78	14.50	
Flow Length	24	158	155	
T_t	0.02	0.12	0.2	0.3
			Current Adjusted (CA)	12.6
			Future Projected (FP)	11.7

Time of Concentration Calculations

Project #: 24-170

Pre-Development ☐

Project: The Estate

Post-Development ☒

County: Essex

Drainage Area: DA-2

Sheet Flow

	Segment 1	Segment 2	Segment 3	
Surface Description (Table 3-1)	Grass, Dense Grasses			
Manning's Roughness Coeff., n (Table 3-1)	0.24	-	-	
Flow Length, L (total ≤ 100 ft)	100			
Two-Year 24-Hour Rainfall, P_2 (CA)	3.47	3.47	3.47	
Two-Year 24-Hour Rainfall, P_2 (FP)	4.09	4.09	4.09	
Land Slope, s (ft/ft)	0.02			
T_t (CA)	13.7	-	-	13.7
T_t (FP)	12.6	-	-	12.6

Shallow Concentrated Flow

	Segment 1	Segment 2	Segment 3	
Surface Description				
Flow Length, L				
Watercourse Slope, s (ft/ft)				
Average Velocity	-	-	-	
T_t	-	-	-	0.0

Channel Flow

	Segment 1	Segment 2	Segment 3	
Cross Sectional Flow Area, a				
Wetted Perimeter, P_w				
Hydraulic Radius, r	-	-	-	
Channel Slope, s (ft/ft)				
Manning's Roughness Description				
Manning's Roughness	-	-	-	
Velocity	-	-	-	
Flow Length				
T_t	-	-	-	0.0
			Current Adjusted (CA)	13.7
			Future Projected (FP)	12.6

STORM SEWER COMPUTATIONS
RATIONAL METHOD - (Q=CIA)
25 YR. STORM

PIPE SEGMENT														
FROM	TO	A-Incremental	C-Runoff Coef.	AxC-Incremental	Tc (MIN.)	I-Rainfall Int. (in./hr)	Qp-Peak Runoff (cfs)	Qp-Peak Runoff (cfs) (Cumulative)	Pipe/Box Length (FT.)	Slope (%)	Pipe/Box Size (IN.)	Capacity (FULL) (cfs)	Velocity (Design) (fps)	Pipe Travel Time(min)
Type "B" #5-2	Type "B" #5-1	0.08	0.99	0.08	6.0	5.80	0.46	0.46	72	1.0%	15" HDPE	8.42	6.86	0.17
Type "B" #5-1	Type "B" #4-1	0.05	0.99	0.05	6.0	5.80	0.29	0.75	118	1.0%	15" HDPE	8.42	6.86	0.29
Type "B" #4-3	Type "B" #4-2	0.22	0.99	0.22	6.0	5.80	1.26	1.26	62	1.0%	15" HDPE	8.42	6.86	0.15
Type "B" #4-2	Type "B" #4-1	0.34	0.99	0.34	6.0	5.80	1.95	3.22	36	1.0%	15" HDPE	8.42	6.86	0.09
Type "B" #4-1	MH #1-3	0.15	0.99	0.15	6.0	5.80	0.86	4.82	24	1.0%	15" HDPE	8.42	6.86	0.06
Type "B" #3-2	Type "B" #3-1	0.03	0.99	0.03	6.0	5.80	0.17	0.17	24	1.0%	15" HDPE	8.42	6.86	0.06
Type "B" #3-1	Type "B" #2-2	0.03	0.99	0.03	6.0	5.80	0.17	0.34	62	1.0%	15" HDPE	8.42	6.86	0.15
Courtyard	Type "B" #2-3	0.42	0.99	0.42	6.0	5.80	2.41	2.41	67	1.0%	15" HDPE	8.42	6.86	0.16
Type "B" #2-3	Type "B" #2-2	0.02	0.99	0.02	6.0	5.80	0.11	2.53	24	1.0%	15" HDPE	8.42	6.86	0.06
Type "B" #2-2	Type "B" #2-1	0.02	0.99	0.02	6.0	5.80	0.11	2.99	18	1.0%	15" HDPE	8.42	6.86	0.04
Type "B" #2-1	Type "B" #1-4	0.18	0.99	0.18	6.0	5.80	1.03	4.02	82	1.0%	15" HDPE	8.42	6.86	0.20
Type "B" #1-6	Type "B" #1-5	0.32	0.99	0.32	6.0	5.80	1.84	1.84	63	1.0%	15" HDPE	8.42	6.86	0.15
Walkways	Type "B" #1-5	0.02	0.99	0.02	6.0	5.80	0.11	1.95	82	1.0%	15" HDPE	8.42	6.86	0.20
Type "B" #1-5	Type "B" #1-4	0.13	0.99	0.13	6.0	5.80	0.75	2.70	57	1.0%	15" HDPE	8.42	6.86	0.14
Type "B" #1-4	MH #1-3	0.34	0.99	0.34	6.0	5.80	1.95	8.67	77	1.5%	15" HDPE	10.31	8.40	0.15
MH #1-3	Type "B" #1-2A				6.0	5.80	0.00	13.49	155	4.0%	15" HDPE	16.84	13.72	0.19
Type "B" #1-2A	Type "B" #1-2	0.13	0.99	0.13	6.0	5.80	0.75	14.24	155	4.0%	15" HDPE	16.84	13.72	0.19
Type "B" #1-2	Type "B" #1-1	0.06	0.99	0.06	6.0	5.80	0.34	13.84	96	2.0%	18" HDPE	17.60	9.96	0.16

Type "B" #1-1	Ex. Type Double "B" Inlet	0.13	0.99	0.13	6.0	5.80	0.75	14.58	59	2.0%	18" HDPE	17.60	9.96	0.10
Ex. Type Double "B" Inlet	Ex. MH	1.98	0.99	1.96	6.0	5.80	11.37	25.95	72	1.2%	24" HDPE	26.92	8.57	0.14
Residence Inn Offsite DA	Ex. MH	5.60	0.99	5.54	6.0	5.80	32.16	58.11	-	-	-	-	-	-
Ex. MH	Ex. Type "E"				6.0	5.80	0.00	84.06	70	6.0%	30" RCP	109.14	22.23	0.05
Ex. Type "E"	Deerfield Drive System	1.00	0.99	0.99	6.0	5.80	5.74	89.80	140	6.0%	30" RCP	109.14	22.23	0.10

The Residence Inn Offsite Drainage Area drains to an existing underground chamber detention basin. The calculated flow shown here does not account for any reductions in flow due to the storage within the detention basin.

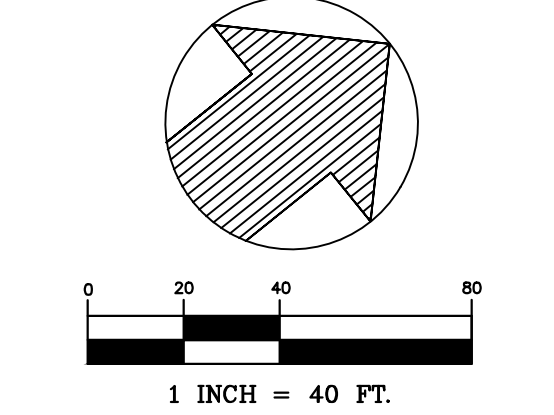


EXISTING MOTOR VEHICLE SURFACE = 3.48 AC

- REFERENCES:
- BOUNDARY INFORMATION TAKEN FROM A CERTAIN MAP ENTITLED "BOUNDARY SURVEY PREPARED FOR BOW AND ARROW MANOR, INCORPORATED, NO. 111 PROSPECT AVENUE, LOTS 17.01 BLOCK 151, LOTS 5 & 6 BLOCK 151.03, TOWNSHIP OF WEST ORANGE, ESSEX COUNTY, NEW JERSEY" PREPARED BY ZDRAVKO LUCIN, L.S. DATED 2/29/2012.
 - TOPOGRAPHIC INFORMATION TAKEN FROM A CERTAIN MAP ENTITLED "TOPOGRAPHIC MAPPING 111 PROSPECT AVE, WEST ORANGE, NJ, FLIGHT DATE & SCALE: 04/13/2023 & 9.0CM GSD, DATUM: NAD83 NJ - NAVD88" PREPARED BY ROBINSON, ONE EDGEVIEW DRIVE, HACKETTSTOWN, NJ, 07840, CERTIFICATE OF AUTHORIZATION NO.240A2800600 AND DATED 06/06/2023.



REV	DESCRIPTION	DATE
4	AMENDED SITE PLAN	12/19/25
3	FINAL RESOLUTION COMPLIANCE	09/29/25
2	REVISED PER HEPCD COMMENTS	07/07/25
1	FINAL RESOLUTION COMPLIANCE	05/30/25



CHECKED BY: JMP
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PREPARED FOR
THE ESTATE
111 PROSPECT AVENUE
LOT 17.01 BLOCK 151
TOWNSHIP OF WEST ORANGE
ESSEX COUNTY, NEW JERSEY

TITLE:
EXISTING CONDITIONS
DRAINAGE AREA MAP

PROJECT #:
24-170

SHEET:
FIG.-1



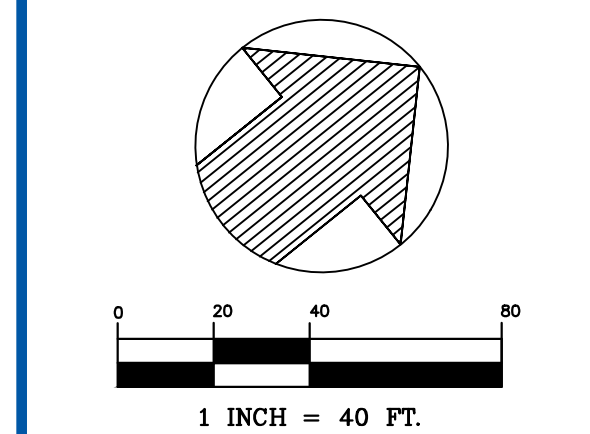
PROPOSED MOTOR VEHICLE SURFACE = 3.31 AC

REFERENCES:

- BOUNDARY INFORMATION TAKEN FROM A CERTAIN MAP ENTITLED "BOUNDARY SURVEY PREPARED FOR BOW AND ARROW MANOR, INCORPORATED, NO. 111 PROSPECT AVENUE, LOTS 17.01 BLOCK 151, LOTS 5 & 6 BLOCK 151.03, TOWNSHIP OF WEST ORANGE, ESSEX COUNTY, NEW JERSEY" PREPARED BY ZDRAVKO LUCIN, L.S. DATED 2/29/2012.
- TOPOGRAPHIC INFORMATION TAKEN FROM A CERTAIN MAP ENTITLED "TOPOGRAPHIC MAPPING 111 PROSPECT AVE., WEST ORANGE, NJ, FLIGHT DATE & SCALE: 04/13/2023 & 9.0CM GSD, DATUM:NAD83 NJ - NAVD88" PREPARED BY ROBINSON, ONE EDGEVIEW DRIVE, HACKENSACK, NJ, 07640, CERTIFICATE OF AUTHORIZATION NO.24GA2800600 AND DATED 06/06/2023.



REV	DESCRIPTION	DATE
4	AMENDED SITE PLAN	12/19/25
3	FINAL RESOLUTION COMPLIANCE	09/29/25
2	REVISED PER HEPCD COMMENTS	07/07/25
1	FINAL RESOLUTION COMPLIANCE	05/30/25



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111 PROSPECT AVENUE
LOT 17.01 BLOCK 151
TOWNSHIP OF WEST ORANGE
ESSEX COUNTY, NEW JERSEY

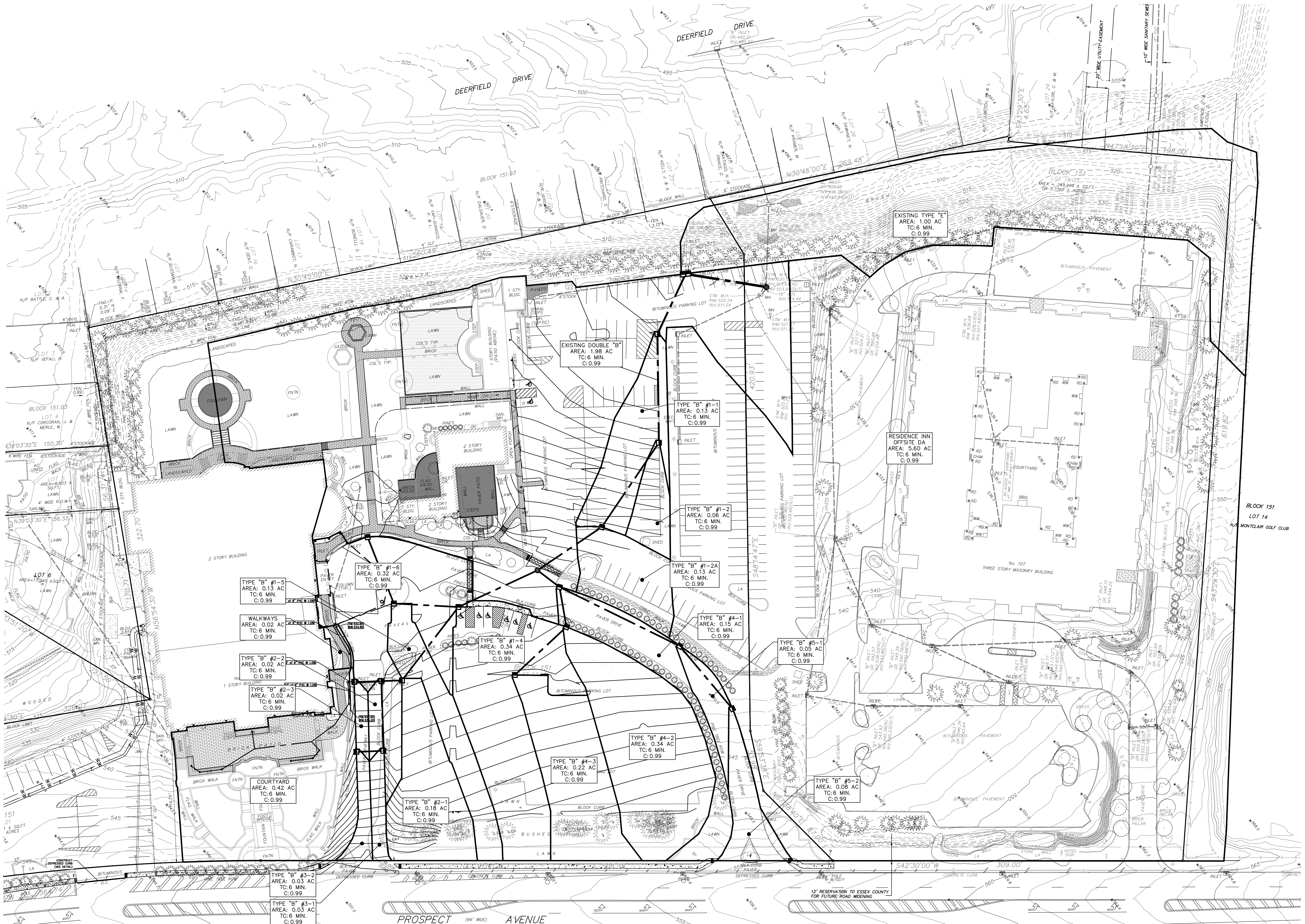
TITLE:
**PROPOSED
CONDITIONS
DRAINAGE AREA MAP**

PROJECT #:

24-170

SHEET:

FIG.-2



REV	DESCRIPTION	DATE
4	AMENDED SITE PLAN	12/19/25
3	FINAL RESOLUTION COMPLIANCE	09/29/25
2	REVISED PER HEPSCD COMMENTS	07/07/25
1	FINAL RESOLUTION COMPLIANCE	05/30/25

1 INCH = 40 FT.

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THE ESTATE
111 PROSPECT AVENUE
LOT 17.01 BLOCK 151
TOWNSHIP OF WEST ORANGE
ESSEX COUNTY, NEW JERSEY

TITLE:
**INLET DRAINAGE
AREA MAP**

PROJECT #:
24-170

SHEET:
FIG.3

REFERENCES:

- BOUNDARY INFORMATION TAKEN FROM A CERTAIN MAP ENTITLED "BOUNDARY SURVEY PREPARED FOR BOW AND ARROW MANOR, INCORPORATED, NO. 111 PROSPECT AVENUE, LOTS 17.01 BLOCK 151, LOTS 5 & 6 BLOCK 151.03, TOWNSHIP OF WEST ORANGE, ESSEX COUNTY, NEW JERSEY" PREPARED BY ZDRAVKO LUCIN, L.S. DATED 2/29/2012.
- TOPOGRAPHIC INFORMATION TAKEN FROM A CERTAIN MAP ENTITLED "TOPOGRAPHIC MAPPING 111 PROSPECT AVE, WEST ORANGE, NJ, FLIGHT DATE & SCALE: 04/13/2023 & 0.00M GSD, DATUM=NAD83 NJ - NAVD88" PREPARED BY ROBINSON, ONE EDGEVIEW DRIVE, HACKETTSTOWN, NJ, 07840, CERTIFICATE OF AUTHORIZATION NO.246A2800600 AND DATED 06/06/2023.