STORMWATER MANAGEMENT SUMMARY

Prepared for:

Old 22 Urban Renewal Associates, LLC

Proposed Mixed-Use Development
Block 21, Lots 29, 30.01 & 31-33
49 NJSH Route 173 (Old Highway 22)
Town of Clinton
Hunterdon County, NJ

Prepared by:

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August 2020
DEC# 2362-99-007

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APPENDIX

I. SITE DESCRIPTION

The subject site consists of Block 21, Lots 29, 30.01 & 31-33 within the Town of Clinton, Hunterdon County, New Jersey. The site is further identified on the USGS map within the Appendix. A majority of the subject parcel is presently developed with an abandoned A&P grocery store, a paved parking lot and other associated site improvements. Additionally, Lot 29 is presently developed with a residential dwelling and the remains of a gravel drive. The proposed development consists of demolishing the existing site improvements and constructing one (1) multi-family residential building with retail spaces, along with, parking areas, associated driveways, courtyard and pool areas, landscaping and other related site improvements.

The existing conditions of the tract have been verified by the ALTA/NSPS Survey, as prepared by Dynamic Survey, LLC, dated 09/27/2019, last revised 07/06/2020.

II. DESIGN OVERVIEW

This report has been prepared to define and analyze the stormwater drainage conditions that would occur as a result of the redevelopment of the above referenced site.

The proposed improvements will result in more than one (1) acre of land disturbance; therefore, this project is classified as a "major development" as defined in N.J.A.C. 7:8, and has been designed to meet the stormwater runoff quantity and quality standards set forth by the Town of Clinton Stormwater Control Ordinance and N.J.A.C. 7:8. Accordingly, the following items are addressed within this report:

- Erosion control and runoff quantity standards (7:8-5.4)
- Stormwater runoff quality standards (7:8-5.5)
- Calculation of stormwater runoff and groundwater recharge (7:8-5.6)
- Standards for structural stormwater management measures (7:8-5.7)

The N.J.A.C. 7:8 regulations allow for multiple methods of addressing stormwater quantity for major developments. This project is addressed by reducing the peak flows for the 2-, 10-, and 100-year design storm events to meet the reduction requirements of N.J.A.C. 7:8 as outlined below. Under existing conditions, stormwater runoff generated by the subject site flows to two (2) existing inlets located within the Route 173 right-of-way. Without confirmation that these two inlets ultimately join downstream, they are each treated as separate points of analysis. For the purpose of this study, the western existing inlet is identified as POA-1 and the eastern inlet is identified as POA-2 as shown on the Drainage Area Maps included within the appendix of this report.

The Town of Clinton and NJDEP flow reduction requirements are as follows:

2-year:	50% reduction
10-year:	25% reduction
100-year:	20% reduction

In addition to the Town and NJDEP flow criteria, the project is subject to the flow reduction requirements as outlined within the NJDOT Roadway Design Manual. As such, the proposed 100-year design storm runoff quantity must be equal to or lesser than the existing peak flow for the 25-year storm event. This requirement applies to both aforementioned points of analysis and the proposed project has been designed to meet same.

A hydrological evaluation is provided for the NJDEP Water Quality, 2-, 10-, and 100-year storm events utilizing the USDA Urban Hydrology for Small Watersheds TR-55 Method. In addition, this project has been designed to the most practicable extent to comply with the guidelines of the NJDEP Stormwater Management Best Management Practices (BMP) Manual.

III. EXISTING DRAINAGE CONDITIONS

The subject parcel is presently developed with an abandoned A&P grocery store, a single-family residential dwelling, paved parking area, and associated site improvements.

Based on the Middlesex County soils survey information, the soil types native to the site include:

HUNTERDON COUNTY SOIL SURVEY INFORMATION		
SOIL TYPE (SYMBOL)	**SOIL TYPE (NAME)**	**HYDROLOGIC SOIL GROUP**
DufC2	Duffield silt loam, 6 to 12 percent slopes, eroded	B
UdrB	Udorthents, refuse substratum, 0 to 8 percent slopes	B

The tract has been evaluated with the following drainage areas as depicted on the Existing Drainage Area Map within the Appendix:

EX-DA1: This area includes the existing A&P grocery store and majority of the paved parking area. Stormwater runoff generated by the existing building is collected via roof leaders and conveyed to the existing on-site stormwater conveyance system. Stormwater runoff generated from the paved parking lot flows in a southerly direction overland where it is collected via on-site inlets and conveyed to the existing stormwater conveyance system within the NJSH right-of-way (POA-1). A minimum time of concentration of 10 minutes was utilized for this area.

EX OFFSITE 1: This off-site area includes portions of residential Lots 10 and 11 which are directly to the north of the subject site. Stormwater runoff generated from this area flows in a southerly direction towards the subject site and is collected via existing on-site inlets located within the paved parking area. This runoff is

ultimately conveyed to the existing stormwater conveyance system within the NJSH Route 173 right-of-way (POA-1). A minimum time of concentration of 10 minutes was utilized for this area.

EX-DA2: This area includes wooded areas to the north of the A&P building and portion of the paved parking area. Stormwater runoff generated from this area is collected via on-site inlets and conveyed to the existing above-ground detention basin located along the Route 173 frontage. The runoff is detained and discharged at a reduced rate towards the stormwater conveyance system located within the NJSH Route 173 right-of-way (POA-2). A portion of this area falls outside the limits of disturbance, and is therefore exempt from the reduction criteria set forth by the Town of Clinton and NJAC 7:8. A minimum time of concentration of 10 minutes was utilized for this area.

EX-DA 2 UNDISTURBED: This area includes a northern portion of the wooded area located behind the A&P building. Stormwater runoff generated from this area flows overland in a southwesterly direction towards the NJSH Route 173 right-of-way (POA-2). A minimum time of concentration of 10 minutes was utilized for this area. This area falls outside the limits of disturbance and is therefore exempt from the reduction criteria set forth by the Town of Clinton and NJAC 7:8. A minimum time of concentration of 10 minutes was utilized for this area.

EX OFFSITE 2: This off-site area includes residential Lots 12.01, 12, and 13 which are directly to north of the subject site. Stormwater runoff generated from this area flows in a southerly direction towards the subject site and is collected via on-site inlets, conveyed to the above-ground detention basin, and discharged at a reduced rate towards the stormwater conveyance system located within the NJSH Route 173 right-of-way (POA-2). A time of concentration of 10.8 minutes was calculated for this area.

EX-DA2 UNDETAINED: This area includes a majority of the eastern portion of the site and contains the existing residential dwelling, wooded areas, gravel, and impervious surfaces to the east of the A&P parking area. Stormwater runoff generated from this area flows overland in a southwesterly direction towards the NJSH Route 173 right-of-way (POA-2). A minimum time of concentration of 10 minutes was utilized for this area.

EX-DA2 UNDETAINED UNDISTURBED: This area includes the northeastern corner of the site which consists of wooded areas. Stormwater runoff generated from this area flows overland in a southwesterly direction towards the NJSH Route 173 right-of-way (POA-2). A minimum time of concentration of 10 minutes was utilized for this area. This area falls outside the limits of disturbance and is therefore exempt from the reduction criteria set forth by the Town of Clinton and NJAC 7:8. A minimum time of concentration of 10 minutes was utilized for this area.

EX OFFSITE 2 UNDETAINED: This off-site area includes residential Lots 14, 15, and 16 which are directly to north of the subject site. Stormwater runoff generated from this area flows in a southerly direction towards

the subject site and ultimately to the Route 173 right-of way (POA-2). A time of concentration of 11.2 minutes was calculated for this area.

IV. PROPOSED DRAINAGE CONDITIONS

The tract has been evaluated with the following drainage sub-watershed areas as depicted on the Proposed Drainage Area Map:

PR-DA 1: This area includes the northern paved parking areas, open space areas and the courtyard area. Stormwater runoff generated from this area is collected via proposed inlets and conveyed to the proposed underground detention basin where it is detained and released at a controlled rate into the existing stormwater conveyance system within the NJSH Route 173 right-of-way (POA-1). A time of concentration of 10 minutes was utilized for this area.

ROOF AREA DETAINED: This area includes a portion of the proposed roof area which will be conveyed to the proposed underground detention basin. Runoff will be conveyed to the basin, detained, and released at a controlled rate to the existing stormwater conveyance system within the NJSH Route 173 right-of-way (POA-1). A time of concentration of 10 minutes was utilized for this area.

PR-OFFSITE 1: This off-site area includes the residential Lots 10, 11, 12.01, and 12-16 which are located directly to the north of the subject. Stormwater runoff generated from this area flows in a southerly direction on to the subject property, is collected by proposed on-site inlets and conveyed to the proposed underground detention basin within the western parking area. The runoff is detained and released at a controlled rate into the existing stormwater conveyance system within the NJSH Route 173 right-of-way (POA-1). This area falls outside of the proposed limits of disturbance and is therefore exempt from the runoff quantity reduction requirements. A time of concentration of 10 minutes was utilized for this area.

PR-DA1 UNDISTURBED: This area includes the northern portion of the site consisting of wooded areas and the existing dwelling. Stormwater runoff generated from this area flows in a southerly direction where it is collected by proposed on-site inlets and conveyed to the proposed underground detention basin within the western parking area. The runoff is detained and released at a controlled rate into the existing stormwater conveyance system within the NJSH Route 173 right-of-way (POA-1). This area falls outside of the proposed limits of disturbance and is therefore exempt from the runoff quantity reduction requirements. A time of concentration of 10 minutes was utilized for this area.

PR-DA 1 UNDETAINED: This area includes a portion of the proposed drive aisle, sidewalk, and open space areas located in the southwestern corner of the site. Stormwater runoff generated from this area flows un-detained towards the existing stormwater conveyance system within the NJSH Route 173 right-of-way (POA-1).

PR-DA 2: This area includes the proposed driveway, portions of the sidewalk and parking areas within the southeast corner of the subject site. Stormwater runoff generated from this area is collected via on-site inlets and conveyed directly to the existing stormwater conveyance system within the NJSH Route 173 right-of-way (POA-2). A time of concentration of 10 minutes was utilized for this area.

ROOF AREA UNDETAINED: This area includes a portion of the proposed roof area which will be conveyed to the existing stormwater conveyance system within the NJSH Route 173 right-of-way (POA-2). A time of concentration of 10 minutes was utilized for this area.

PR OFFSITE 2: This off-site area includes a portion of Napa property, Lot 30 located to the east of the subject site. This area falls within the project's limits of disturbance and includes open space and a portion of the proposed grass paver emergency access drive. Stormwater runoff generated by this area flows in a westerly direction, is collected by proposed on-site inlets and conveyed to the existing stormwater conveyance system within the NJSH Route 173 right-of-way (POA-2). A minimum time of concentration of 10 minutes was utilized for this area.

V. DESIGN METHODOLOGY

The intention of the proposed stormwater management facilities for this project is to provide measures as required to address applicable aspects of the Town of Clinton Stormwater Control Ordinance and N.J.A.C. 7:8. To prepare the stormwater calculations for the project, extensive initial investigation of the property and topographic survey was performed. On-site review of the tract was performed by Dynamic Engineering Consultants, PC to verify existing site conditions and land cover characteristics. Dynamic Survey, LLC was contracted to prepare a ALTA/NSPS Survey of the existing site. Based on a review of the existing site conditions and the Survey, the Drainage Area Maps for the existing and proposed site conditions as defined within this report were established. The grading plan within the accompanying engineering drawings was developed for the proposed site improvements with consideration to the existing drainage patterns.

The 2-, 10- and 100-year quantity design storms are based upon the New Jersey 24 Hour Rainfall Frequency Data for Morris County as published by the NOAA Atlas 14 Type D rainfall distribution. Curve number calculations have been included within the Appendix and are based upon HSG B. Pervious and impervious areas were modeled separately as suggested in the NJDEP Stormwater Management Best Management Practices (BMP) Manual.

VI. UNDERGROUND DETENTION BASIN DESIGN

The stormwater management design for this project utilizes an underground detention basin to satisfy the stormwater quantity regulations set forth by the Town of Clinton, NJDOT, and N.J.A.C. 7:8. The basin has

been designed with an outlet control structure to accommodate the 100-year design storm, to release stormwater runoff at a controlled rate and reduced peak runoff rates as required by the NJDOT, N.J.A.C. 7:8 and the Town of Clinton. The on-site discharge pipes downstream of the proposed basin have been designed to accommodate the 100-year design storm.

The proposed underground detention basin is located to the west of the proposed building within the paved parking area. The basin consists of a StormTrap concrete SingleTrap chamber, of approximately five feet in depth, with an outlet control structure to attenuate peak runoff rates. The underground detention basin has been designed to accommodate the 100-year design storm. Design calculations for this basin, including the design of the outlet control structure are located within the Appendix.

VII. RUNOFF RATE REDUCTION PERFORMANCE

The below charts provide a summary of the peak runoff rates under existing and proposed conditions. As noted above, this project has been analyzed with two points of analysis.

NJDEP Flow Reductions - POA 1 (CFS)				
Design Storm	Existing Runoff (Subject to Reductions)	Existing Runoff (Exempt from Reductions)	Allowable	Proposed
2-Year	5.36 x (0.50) = 2.68	0.40	3.08	2.97
10-Year	8.00 x (0.75) = 6.00	0.78	6.78	4.53
100-Year	12.93 x (0.80) = 10.34	1.62	11.96	10.30

NJDEP Flow Reductions - POA 2 (CFS)				
Design Storm	Existing Runoff (Subject to Reductions)	Existing Runoff (Exempt from Reductions)	Allowable	Proposed
2-Year	2.65 x (0.50) = 1.37	1.97	3.34	2.23
10-Year	5.49 x (0.75) = 4.12	4.32	8.44	3.63
100-Year	12.03 x (0.80) = 9.62	9.73	19.35	6.46

NJDOT Flow Reductions		
POA	Existing 25-Year	Proposed 100-Year
POA-1	10.84	10.30
POA-2	12.63	6.46

As illustrated in the above tables, the proposed improvements will result in post-development runoff rates that meet or exceed the required reduction criteria when compared to existing conditions for the 2-, 10-, and 100-

year design storms, thus meeting the stormwater quantity standards set forth by N.J.A.C. 7:8. Additionally, the proposed improvements will result in post-development runoff rates that exceed the reduction criteria specified by the NJDOT. Please refer to the Appendix of this report for associated runoff rate and detention basin design calculations.

VIII. WATER QUALITY

As the proposed development will increase the impervious coverage on-site by more than ¼ acre, the project is required to comply with the stormwater quality requirements of the Town of Clinton and N.J.A.C. 7:8. An ADS Bayfilter Manufactured Treatment Devices (MTD) is proposed to treat the runoff from the on-site conveyance system. The MTD is certified by NJDEP as capable of treating the water quality design storm for an 80% TSS removal rate. Storm events larger than the NJDEP Water Quality design storm will bypass the MTD via an internal bypass weir. In accordance with Chapter 4 of the New Jersey Stormwater Best Management Practices Manual, a weighted average calculation was performed to determine adequate post-development TSS removal which are included within the Appendix.

IX. GROUNDWATER RECHARGE

Based upon preliminary findings determined in the Phase I Carbonate Rock Study conducted by Dynamic Earth, LLC, there is an inherent risk of sinkhole formations in the region due to karst subsurface conditions. As such, infiltration stormwater systems should be avoided and the proposed development will not comply with the groundwater recharge requirements set forth by the Town of Clinton and N.J.A.C. 7:8. The Applicant requests a waiver from groundwater recharge requirements due to the impractical design constraints of the subsurface conditions on-site.

X. CONCLUSION

The proposed development has been designed with provisions for the safe and efficient control of stormwater runoff in a manner that will not adversely impact the existing drainage patterns, adjacent roadways, or adjacent parcels.

The stormwater management design reduces peak flow rates for the proposed development area and meets the minimum peak flow reduction for the 2, 10 and 100-year storm frequencies as required by the Town of Clinton and N.J.A.C. 7:8. Additionally, the post-development runoff rates for the 100-year storm event have been reduced to less than the existing 25-year storm peak flow as required for NJDOT.

The water quality TSS removal requirements set forth by the Town of Clinton and N.J.A.C. 7:8 have been satisfied by use of the ADS Manufactured Treatment Device to achieve the 80% TSS required removal rate for the development.

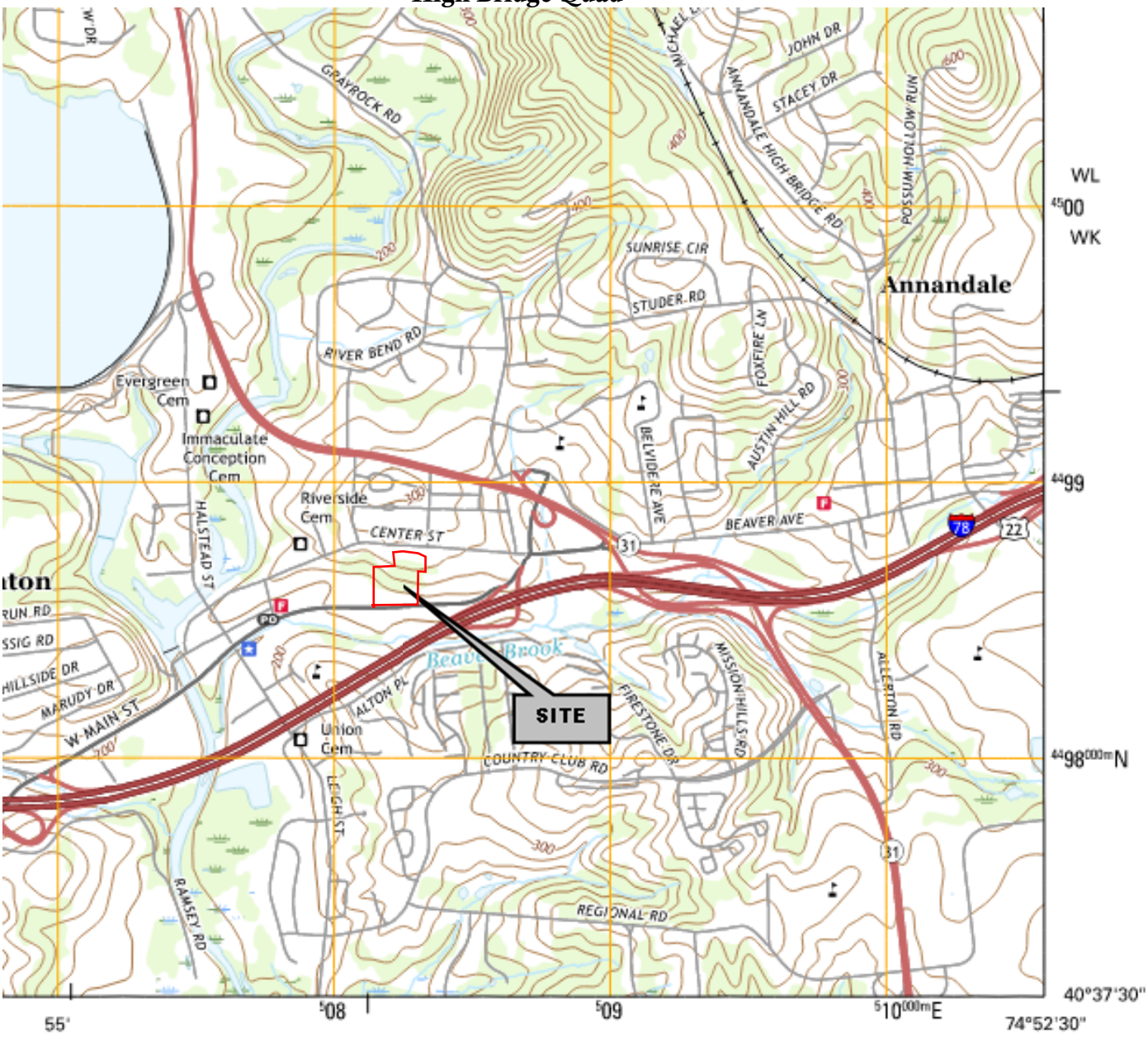
As noted above, due to the karst subsurface conditions, infiltration stormwater systems should be avoided and the proposed development will not comply with the groundwater recharge requirements set forth by the Town of Clinton and N.J.A.C. 7:8. The Applicant requests a waiver from groundwater recharge requirements due to the impractical design constraints of the subsurface conditions on-site. A waiver from providing groundwater recharge BMP's on the developed site is warranted and justified.

APPENDIX

USGS MAP

USGS Map

High Bridge Quad

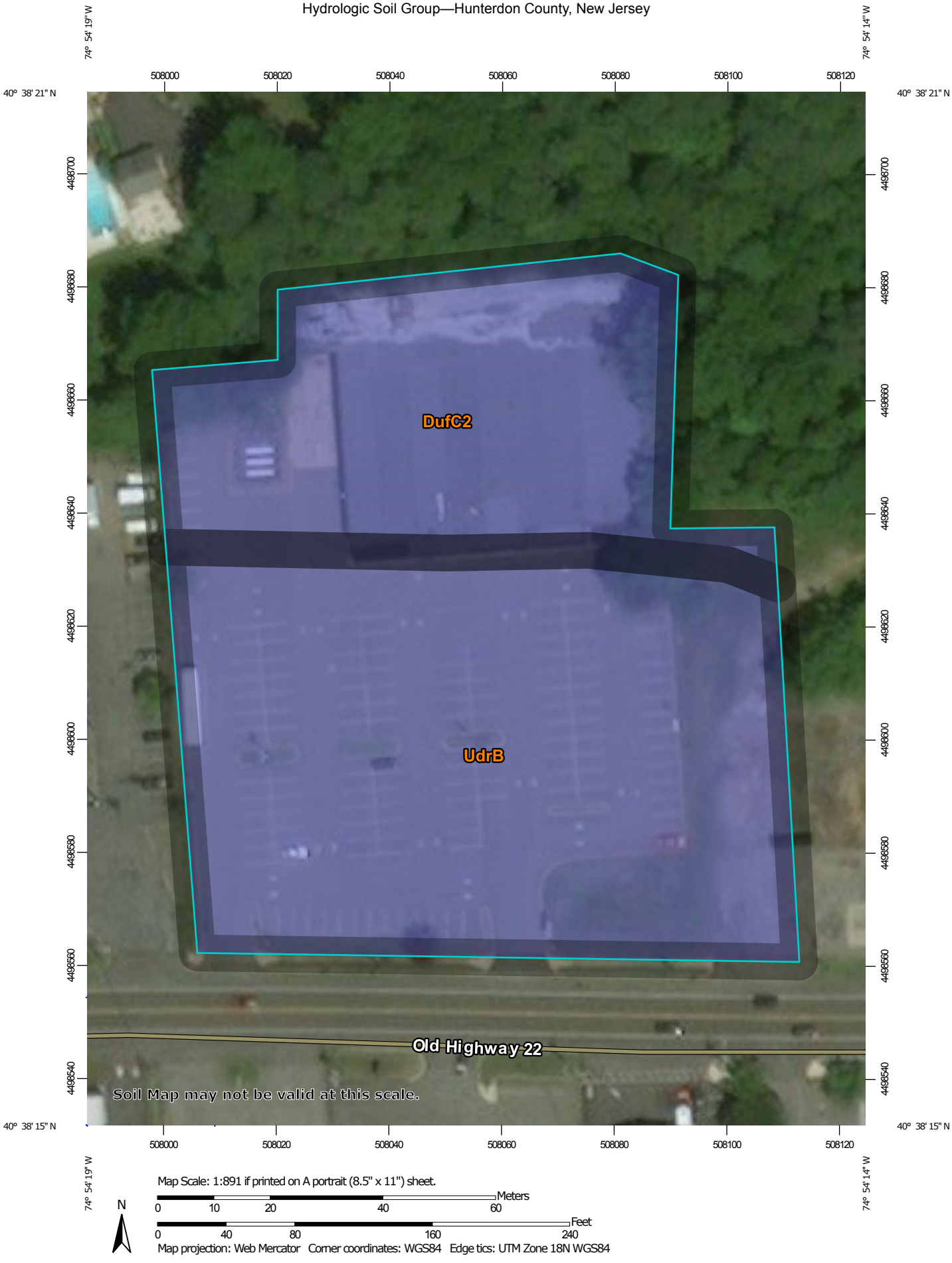


1904 Main Street, Lake Como, NJ 07719 T. 732-974-0198

245 Main Street, Suite 110, Chester, NJ 07930 T. 908-879-9229
8 Robbins Street, Suite 102, Toms River, NJ 08753 T. 732-974-0198
790 Newtown Yardley Rd., Suite 425, Newtown, PA 18940 T. 267-685-0276

100 NE 5th Avenue, Suite B2, Delray Beach, FL 33483 T. 561-291-8570
14521 Old Katy Road, Suite 250, Houston, TX 77079 T. 281-789-6400
1301 Central Expressway S., Suite 210, Allen, TX 75013 T. 972-534-2100

SOIL SURVEY



Map Scale: 1:891 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 10 20 40 60

Feet: 0 40 80 160 240

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Soil Rating Lines

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Soil Rating Points

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Water Features

Streams and Canals

Transportation

Rails
Interstate Highways
US Routes
Major Roads
Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Hunterdon County, New Jersey
Survey Area Data: Version 14, Sep 13, 2018

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

Date(s) aerial images were photographed: Mar 31, 2014—Apr 2, 2017

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
DufC2	Duffield silt loam, 6 to 12 percent slopes, eroded	B	1.1	36.0%
UdrB	Udorthents, refuse substratum, 0 to 8 percent slopes	B	1.9	64.0%
Totals for Area of Interest			**3.0**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

RUNOFF CURVE NUMBER (CN) CALCULATIONS – EXISTING & PROPOSED

DYNAMIC ENGINEERING

EXISTING DRAINAGE AREA SUMMARY AND AVERAGE CURVE NUMBER(CN) CALCULATIONS

Project:	Ingerman	Computed By:	DRL
Job #:	2362-99-007	Checked By:	ZZ
Location:	Town of Clinton	Date:	7/29/2020

Drainage Area	Impervious Area (acre)	Curve Number (CN) Used	HSG B - Open Space Area (acre)	Curve Number (CN) Used	HSG B - Wooded Area (acre)	Curve Number (CN) Used	Avg. Perv. Curve Number	Total Pervious Area (acres)	Total Area (acres)	TC (Min.)
EX-DA-1	2.05	98	0.03	61	0.00	55	61	0.03	2.08	10
EX-DA-2	0.37	98	0.15	61	0.58	55	56	0.73	1.10	10
EX-DA-2 UNDIST.	0.00	98	0.00	61	0.18	55	55	0.18	0.18	10
EX-DA-2 UD	0.46	98	0.37	61	1.09	55	57	1.46	1.91	10
EX-DA-2 UD UNDIST.	0.02	98	0.00	61	0.36	55	55	0.36	0.38	10
Total	**2.89**		**0.55**		**2.21**			**2.75**	**5.65**	

Drainage Area	Impervious Area (acre)	Curve Number (CN) Used	HSG B - Open Space Area (acre)	Curve Number (CN) Used	HSG B - Wooded Area (acre)	Curve Number (CN) Used	Avg. Perv. Curve Number	Total Pervious Area (acres)	Total Area (acres)	TC (Min.)
EX OFF 1	0.12	98	0.27	61	0.00	55	61	0.27	0.39	10
EX OFF 2	0.25	98	0.63	61	0.00	55	61	0.63	0.88	10.8
EX OFF 2 UD	0.28	98	0.90	61	0.00	55	61	0.90	1.18	11.2
EX OFF 2 UD DIS	0.06	98	0.18	61	0.00	55	61	0.18	0.24	11.2
Total	**0.71**		**1.98**		**0.00**			**1.98**	**2.69**	

Per County Soil Survey - Hunterdon	DufC2	HSG	Soil	Duffield Silt Loam
Per County Soil Survey - Hunterdon	UdrB	HSG	Soil	Udorthents, refuse substratum

Description	Runoff Curve Number
Impervious Surface	98
Open Space (lawn) (good)	61
Woods (good)	55

DYNAMIC ENGINEERING

PROPOSED DRAINAGE AREA SUMMARY AND AVERAGE CURVE NUMBER(CN) CALCULATIONS

Project:	Ingerman	Computed By:	DRL
Job #:	2362-99-007	Checked By:	ZZ
Location:	Town of Clinton	Date:	7/29/2020

Drainage Area	Impervious Area (acre)	Curve Number (CN) Used	HSG B - Open Space Area (acre)	Curve Number (CN) Used	HSG B - Wooded Area (acre)	Curve Number (CN) Used	Avg. Perv. Curve Number	Total Pervious Area (acres)	Total Area (acres)	TC (Min.)
PR DA-1	1.46	98	1.16	61	0.00	55	61	1.16	2.62	10
PR DA 1 Undist.	0.02	98	0.00	61	0.58	55	55	0.58	0.60	10
PR DA-2	0.55	98	0.43	61	0.00	55	61	0.43	0.98	10
PR DA 1 UD	0.27	98	0.32	61	0.00	55	61	0.32	0.59	10
Roof Areas D	0.43	98	0.00	61	0.00	55	N/A	0.00	0.43	10
Roof Areas UD	0.43	98	0.00	61	0.00	55	N/A	0.00	0.43	10
Total	**3.15**		**1.92**		**0.58**			**2.49**	**5.65**	

Drainage Area (Offsite)	Impervious Area (acre)	Curve Number (CN) Used	HSG B - Open Space Area (acre)	Curve Number (CN) Used	HSG B - Wooded Area (acre)	Curve Number (CN) Used	Avg. Perv. Curve Number	Total Pervious Area (acres)	Total Area (acres)	TC (Min.)
PR OFF 1	0.68	98	1.85	61	0.00	55	61	1.85	2.53	10
PR OFF 2	0.03	98	0.14	61	0.00	55	61	0.14	0.17	10
Total	**0.68**		**1.85**		**0.00**			**1.98**	**2.69**	

Per County Soil Survey - Hunterdon	DufC2	HSG	Soil	Duffield Silt Loam
Per County Soil Survey - Hunterdon	UdrB	HSG	Soil	Udorthents, refuse substratum

Description	Runoff Curve Number
Impervious Surface	98
Open Space (lawn) (good)	61
Woods (good)	55

TIME OF CONCENTRATION (TC) CALCULATIONS

DYNAMIC ENGINEERING

1904 Main Street, Lake Como, NJ 07719
(732) 974-0198

Date: 3/4/2020
Project: Ingerman - Clinton
Project No: 2362-99-007

Calculated By: DRL
Checked By: ZZ

Worksheet 3: Time of Concentration (T_c) Calculations

Land Condition: Existing
Drainage Area: EX-UD 2 OFF

- ***Sheet Flow*:**

	AB				
1. Surface Description	Short Grass, Prairie				
2. Manning's Roughness Coefficient, n	0.15				
3. Flow Length, L { *total* $L \le 100$ *ft* }	100.0 ft				
4. Two-Year 24-hour Rainfall, p_2 for . . Hunterdon County	3.38 in	3.38 in		3.38 in	
5. Land Slope, s *(ft/ft)*	0.020 ft/ft	0.300 ft/ft			
6. Travel Time, $T_t = \frac{0.007\,(n\,L)^{0.8}}{p_2^{0.5}\,s^{0.4}}$	0.159 hr	+ 0.000 hr	+	0.000 hr	= 0.159 hr

- ***Shallow Concentrated Flow*:**

	BC	CD	DE		
7. Surface Description	Unpaved	Unpaved	Paved		
8. Flow Length, L	130.0 ft	300.0 ft	150.0 ft		
9. Watercourse Slope, s	0.370 ft/ft	0.100 ft/ft	0.080 ft/ft		
10. Average velocity, V { *see Figure 3.1)*	9.81 ft/s	5.10 ft/s	5.75 ft/s		
11. Travel Time, $T_t = \frac{L}{3600\,V}$	0.004 hr	+ 0.016 hr	+	0.007 hr	= 0.027 hr

- ***Channel Flow*:**

12. Pipe Diameter, D					
13. Cross-Sectional Flow Area, A					
14. Wetted Perimeter, p_w					
15. Hydraulic Radius, $r = A / p_w$					
16. Channel Slope, s					
17. Pipe Material					
18. Manning's Roughness Coefficient, n					
19. Velocity, $V = \frac{1.49\,r^{2/3}\,s^{1/2}}{n}$					
20. Flow Length, L					
21. Travel Time, $T_t = \frac{L}{3600\,V}$	0.000 hr	+ 0.000 hr	+	0.000 hr	= 0.000 hr
22. Watershed or subarea Time of Concentration, T_c { *add* T_t *in steps 6, 11 and 21* }					0.186 hr
					11.2 min

DYNAMIC ENGINEERING
1904 Main Street, Lake Como, NJ 07719
(732) 974-0198

Date: 3/4/2020
Project: Ingerman - Clinton
Project No: 2362-99-007

Calculated By: DRL
Checked By: ZZ

Worksheet 3: Time of Concentration (T_c) Calculations

Land Condition: Existing
Drainage Area: EX-OFF-2

• *Sheet Flow:*

1. Surface Description	Short Grass, Prairie							
2. Manning's Roughness Coefficient, n	0.15							
3. Flow Length, L { total $L \le 100$ ft }	100.0 ft							
4. Two-Year 24-hour Rainfall, p_2 for . . . Hunterdon County	3.38 in			3.38 in				
5. Land Slope, s (ft/ft)	0.020 ft/ft							
6. Travel Time, $T_t = \frac{0.007\,(n\,L)^{0.8}}{p_2^{0.5}\,s^{0.4}}$	0.159 hr	+	0.000 hr	+	0.000 hr	=	0.159 hr	

• *Shallow Concentrated Flow:*

7. Surface Description	Unpaved		Unpaved		Unpaved			
8. Flow Length, L	80.0 ft		60.0 ft		40.0 ft			
9. Watercourse Slope, s	0.050 ft/ft		0.330 ft/ft		0.110 ft/ft			
10. Average velocity, V { see Figure 3.1)	3.61 ft/s		9.27 ft/s		5.35 ft/s			
11. Travel Time, $T_t = \frac{L}{3600\,V}$	0.006 hr	+	0.002 hr	+	0.002 hr	=	0.010 hr	

• *Channel Flow:*

	AB		BC					
12. Pipe Diameter, D	15 in		15 in					
13. Cross-Sectional Flow Area, A	1.227 sf		1.227 sf					
14. Wetted Perimeter, p_w	3.9 ft		3.9 ft					
15. Hydraulic Radius, $r = A / p_w$	0.3 ft		0.3 ft					
16. Channel Slope, s	0.040 ft/ft		0.025 ft/ft					
17. Pipe Material	RCP		RCP					
18. Manning's Roughness Coefficient, n	0.013		0.013					
19. Velocity, $V = \frac{1.49\,r^{2/3}\,s^{1/2}}{n}$	10.56 ft/s		8.35 ft/s					
20. Flow Length, L	170.0		175.0					
21. Travel Time, $T_t = \frac{L}{3600\,V}$	0.004 hr	+	0.006 hr	+	0.000 hr	=	0.010 hr	
22. Watershed or subarea Time of Concentration, T_c { add T_t in steps 6, 11 and 21 }							0.179 hr	
							10.8 min	

HYDROGRAPH SUMMARY REPORTS – EXISTING AND PROPOSED CONDITIONS 2-YR, 10-YR, & 100-YR

Hydrograph Return Period Recap

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

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	-----	-----	5.348	-----	-----	7.962	9.715	-----	12.83	EX-DA-1 Imp.
2	SCS Runoff	-----	-----	0.010	-----	-----	0.035	0.056	-----	0.096	EX-DA-1 Per
3	Combine	1, 2	-----	5.358	-----	-----	7.997	9.771	-----	12.93	Ex-DA-1
5	SCS Runoff	-----	-----	0.313	-----	-----	0.466	0.569	-----	0.751	OFF-1 Imp.
6	SCS Runoff	-----	-----	0.094	-----	-----	0.316	0.501	-----	0.868	OFF-1 Per.
7	Combine	5, 6	-----	0.400	-----	-----	0.782	1.069	-----	1.619	OFF-1
9	Combine	3, 7,	-----	5.758	-----	-----	8.778	10.84	-----	14.55	EX-POA-1
12	SCS Runoff	-----	-----	0.965	-----	-----	1.437	1.753	-----	2.316	EX-DA-2 Imp.
13	SCS Runoff	-----	-----	0.114	-----	-----	0.584	1.025	-----	1.931	EX-DA-2 Per.
14	Combine	12, 13	-----	1.046	-----	-----	2.021	2.778	-----	4.247	EX-DA-2
16	SCS Runoff	-----	-----	0.023	-----	-----	0.131	0.237	-----	0.456	EX-DA-2 Undist.
18	SCS Runoff	-----	-----	1.200	-----	-----	1.786	2.180	-----	2.879	EX-DA-2 UD Imp.
19	SCS Runoff	-----	-----	0.271	-----	-----	1.273	2.180	-----	4.030	EX-DA-2 UD Per
20	Combine	18, 19	-----	1.410	-----	-----	3.060	4.360	-----	6.909	EX-DA-2 UD
22	SCS Runoff	-----	-----	0.143	-----	-----	0.213	0.259	-----	0.343	EX-OFF 2 UD DIS IMP
23	SCS Runoff	-----	-----	0.056	-----	-----	0.193	0.306	-----	0.530	EX-OFF 2 UD DIS PER
24	Combine	22, 23	-----	0.196	-----	-----	0.406	0.566	-----	0.873	EX-OFF DA 2 UD DIS
26	SCS Runoff	-----	-----	0.052	-----	-----	0.078	0.095	-----	0.125	EX-DA-2 UD Undist. Imp.
27	SCS Runoff	-----	-----	0.046	-----	-----	0.262	0.474	-----	0.911	EX-DA-2 UD Undist. Per.
28	Combine	26, 27	-----	0.087	-----	-----	0.340	0.568	-----	1.036	EX-DA-2 UD Undist.
30	SCS Runoff	-----	-----	0.652	-----	-----	0.971	1.185	-----	1.565	OFF-2 Imp.
31	SCS Runoff	-----	-----	0.218	-----	-----	0.736	1.168	-----	2.026	OFF-2 Per.
32	Combine	30, 31	-----	0.855	-----	-----	1.707	2.353	-----	3.590	OFF-2
34	SCS Runoff	-----	-----	0.730	-----	-----	1.087	1.327	-----	1.753	EX-OFF-UD-2 Imp.
35	SCS Runoff	-----	-----	0.312	-----	-----	1.052	1.669	-----	2.894	EX-OFF-UD-2 Per.
36	Combine	34, 35	-----	1.020	-----	-----	2.139	2.996	-----	4.646	EX-OFF-UD-2
38	Combine	14, 16, 32,	-----	1.916	-----	-----	3.859	5.368	-----	8.293	Basin
39	Reservoir	38	-----	1.823	-----	-----	3.653	4.905	-----	7.147	Exist. Basin

Hydrograph Return Period Recap

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

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
41	Combine	14, 20, 24,	-----	2.653	-----	-----	5.486	7.704	-----	12.03	Within LOD
42	Combine	16, 28, 32, 36,	-----	1.971	-----	-----	4.318	6.154	-----	9.728	Outside of LOD
44	Combine	20, 28, 36, 39,	-----	4.240	-----	-----	9.128	12.63	-----	18.96	EX-POA-2
46	SCS Runoff	-----	-----	3.809	-----	-----	5.670	6.919	-----	9.138	DA-1 Imp.
47	SCS Runoff	-----	-----	0.402	-----	-----	1.356	2.151	-----	3.730	DA-1 Per.
48	Combine	46, 47	-----	4.182	-----	-----	7.026	9.070	-----	12.87	DA-1A
50	SCS Runoff	-----	-----	0.052	-----	-----	0.078	0.095	-----	0.125	UNDIST. Imp.
51	SCS Runoff	-----	-----	0.074	-----	-----	0.422	0.763	-----	1.468	UNDIST. Per.
52	Combine	50, 51	-----	0.113	-----	-----	0.500	0.858	-----	1.593	UNDIST.
54	SCS Runoff	-----	-----	1.774	-----	-----	2.641	3.223	-----	4.256	OFF 1 Imp.
55	SCS Runoff	-----	-----	0.641	-----	-----	2.162	3.431	-----	5.948	OFF 1 Per.
56	Combine	54, 55	-----	2.370	-----	-----	4.803	6.654	-----	10.20	OFF 1
58	SCS Runoff	-----	-----	1.696	-----	-----	2.524	3.080	-----	4.068	Roof Area D
60	Combine	48, 52, 56, 58,	-----	8.346	-----	-----	14.85	19.66	-----	28.73	TOTAL TO BASIN
61	Reservoir	60	-----	2.581	-----	-----	3.818	4.640	-----	9.366	BASIN
63	SCS Runoff	-----	-----	0.704	-----	-----	1.049	1.280	-----	1.690	DA-UD 1 Imp.
64	SCS Runoff	-----	-----	0.111	-----	-----	0.374	0.593	-----	1.029	DA-1 UD Per.
65	Combine	63, 64	-----	0.807	-----	-----	1.423	1.873	-----	2.719	DA-1 UD
67	Combine	61, 65,	-----	2.967	-----	-----	4.532	5.567	-----	10.30	POA-1
69	SCS Runoff	-----	-----	0.574	-----	-----	0.854	1.043	-----	1.377	Roof Area UD
71	SCS Runoff	-----	-----	1.435	-----	-----	2.136	2.606	-----	3.443	DA-2 Imp.
72	SCS Runoff	-----	-----	0.114	-----	-----	0.386	0.612	-----	1.061	DA-2 Per.
73	Combine	71, 72	-----	1.541	-----	-----	2.522	3.218	-----	4.504	DA-2
75	SCS Runoff	-----	-----	0.071	-----	-----	0.106	0.130	-----	0.171	OFF 2 IMP
76	SCS Runoff	-----	-----	0.044	-----	-----	0.150	0.238	-----	0.412	OFF 2 PER
77	Combine	75, 76	-----	0.113	-----	-----	0.257	0.368	-----	0.584	OFF 2
79	Combine	69, 73, 77,	-----	2.228	-----	-----	3.633	4.629	-----	6.464	POA-2

Proj. file: 2020-08- Exist vs Prop.gpw | Wednesday, 08 / 12 / 2020

Hydrograph Summary Report

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

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	5.348	5	730	21,954	-----	-----	-----	EX-DA-1 Imp.
2	SCS Runoff	0.010	5	735	53	-----	-----	-----	EX-DA-1 Per
3	Combine	5.358	5	730	22,007	1, 2	-----	-----	Ex-DA-1
5	SCS Runoff	0.313	5	730	1,285	-----	-----	-----	OFF-1 Imp.
6	SCS Runoff	0.094	5	735	478	-----	-----	-----	OFF-1 Per.
7	Combine	0.400	5	730	1,763	5, 6	-----	-----	OFF-1
9	Combine	5.758	5	730	23,770	3, 7,	-----	-----	EX-POA-1
12	SCS Runoff	0.965	5	730	3,962	-----	-----	-----	EX-DA-2 Imp.
13	SCS Runoff	0.114	5	740	840	-----	-----	-----	EX-DA-2 Per.
14	Combine	1.046	5	730	4,803	12, 13	-----	-----	EX-DA-2
16	SCS Runoff	0.023	5	740	188	-----	-----	-----	EX-DA-2 Undist.
18	SCS Runoff	1.200	5	730	4,926	-----	-----	-----	EX-DA-2 UD Imp.
19	SCS Runoff	0.271	5	735	1,842	-----	-----	-----	EX-DA-2 UD Per
20	Combine	1.410	5	730	6,768	18, 19	-----	-----	EX-DA-2 UD
22	SCS Runoff	0.143	5	730	643	-----	-----	-----	EX-OFF 2 UD DIS IMP
23	SCS Runoff	0.056	5	735	318	-----	-----	-----	EX-OFF 2 UD DIS PER
24	Combine	0.196	5	730	961	22, 23	-----	-----	EX-OFF DA 2 UD DIS
26	SCS Runoff	0.052	5	730	214	-----	-----	-----	EX-DA-2 UD Undist. Imp.
27	SCS Runoff	0.046	5	740	375	-----	-----	-----	EX-DA-2 UD Undist. Per.
28	Combine	0.087	5	735	589	26, 27	-----	-----	EX-DA-2 UD Undist.
30	SCS Runoff	0.652	5	730	2,677	-----	-----	-----	OFF-2 Imp.
31	SCS Runoff	0.218	5	735	1,114	-----	-----	-----	OFF-2 Per.
32	Combine	0.855	5	730	3,792	30, 31	-----	-----	OFF-2
34	SCS Runoff	0.730	5	730	2,999	-----	-----	-----	EX-OFF-UD-2 Imp.
35	SCS Runoff	0.312	5	735	1,592	-----	-----	-----	EX-OFF-UD-2 Per.
36	Combine	1.020	5	730	4,591	34, 35	-----	-----	EX-OFF-UD-2
38	Combine	1.916	5	730	8,782	14, 16, 32,	-----	-----	Basin
39	Reservoir	1.823	5	735	8,700	38	196.67	537	Exist. Basin

Hydrograph Summary Report

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

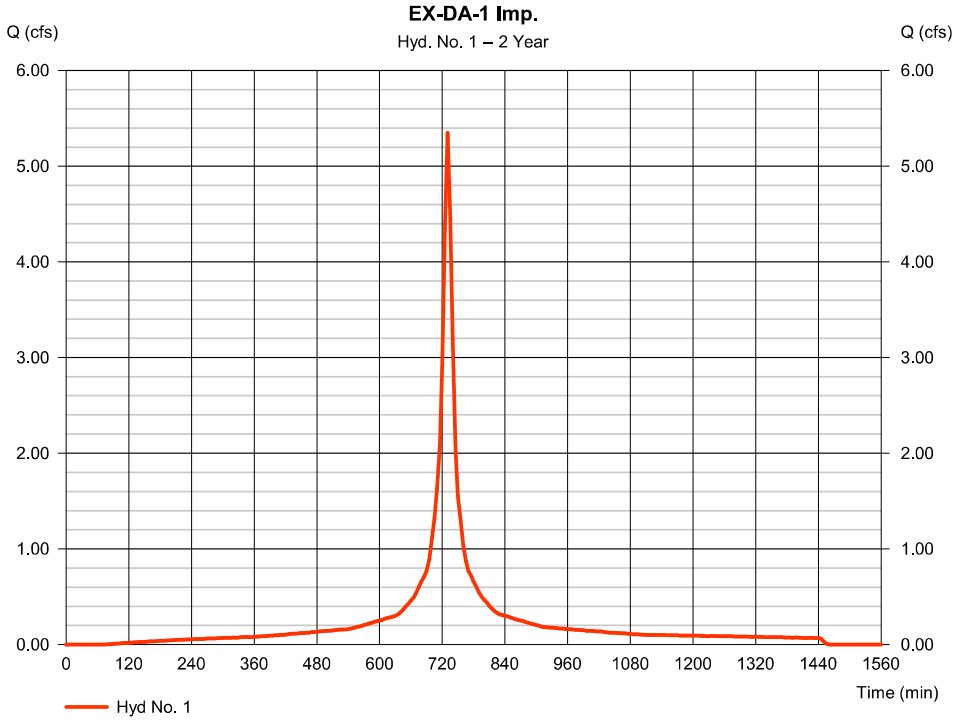
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
41	Combine	2.653	5	730	12,532	14, 20, 24,	-----	-----	Within LOD
42	Combine	1.971	5	730	9,159	16, 28, 32, 36,	-----	-----	Outside of LOD
44	Combine	4.240	5	730	20,648	20, 28, 36, 39,	-----	-----	EX-POA-2
46	SCS Runoff	3.809	5	730	15,635	-----	-----	-----	DA-1 Imp.
47	SCS Runoff	0.402	5	735	2,052	-----	-----	-----	DA-1 Per.
48	Combine	4.182	5	730	17,687	46, 47	-----	-----	DA-1A
50	SCS Runoff	0.052	5	730	214	-----	-----	-----	UNDIST. Imp.
51	SCS Runoff	0.074	5	740	604	-----	-----	-----	UNDIST. Per.
52	Combine	0.113	5	735	819	50, 51	-----	-----	UNDIST.
54	SCS Runoff	1.774	5	730	7,282	-----	-----	-----	OFF 1 Imp.
55	SCS Runoff	0.641	5	735	3,272	-----	-----	-----	OFF 1 Per.
56	Combine	2.370	5	730	10,555	54, 55	-----	-----	OFF 1
58	SCS Runoff	1.696	5	730	6,961	-----	-----	-----	Roof Area D
60	Combine	8.346	5	730	36,022	48, 52, 56, 58,	-----	-----	TOTAL TO BASIN
61	Reservoir	2.581	5	750	36,008	60	196.21	11,605	BASIN
63	SCS Runoff	0.704	5	730	2,891	-----	-----	-----	DA-UD 1 Imp.
64	SCS Runoff	0.111	5	735	566	-----	-----	-----	DA-1 UD Per.
65	Combine	0.807	5	730	3,458	63, 64	-----	-----	DA-1 UD
67	Combine	2.967	5	740	39,465	61, 65,	-----	-----	POA-1
69	SCS Runoff	0.574	5	730	2,356	-----	-----	-----	Roof Area UD
71	SCS Runoff	1.435	5	730	5,890	-----	-----	-----	DA-2 Imp.
72	SCS Runoff	0.114	5	735	584	-----	-----	-----	DA-2 Per.
73	Combine	1.541	5	730	6,474	71, 72	-----	-----	DA-2
75	SCS Runoff	0.071	5	730	321	-----	-----	-----	OFF 2 IMP
76	SCS Runoff	0.044	5	735	248	-----	-----	-----	OFF 2 PER
77	Combine	0.113	5	730	569	75, 76	-----	-----	OFF 2
79	Combine	2.228	5	730	9,399	69, 73, 77,	-----	-----	POA-2

Hydrograph Report

Hyd. No. 1

EX-DA-1 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 5.348 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 21,954 cuft
Drainage area	= 2.050 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

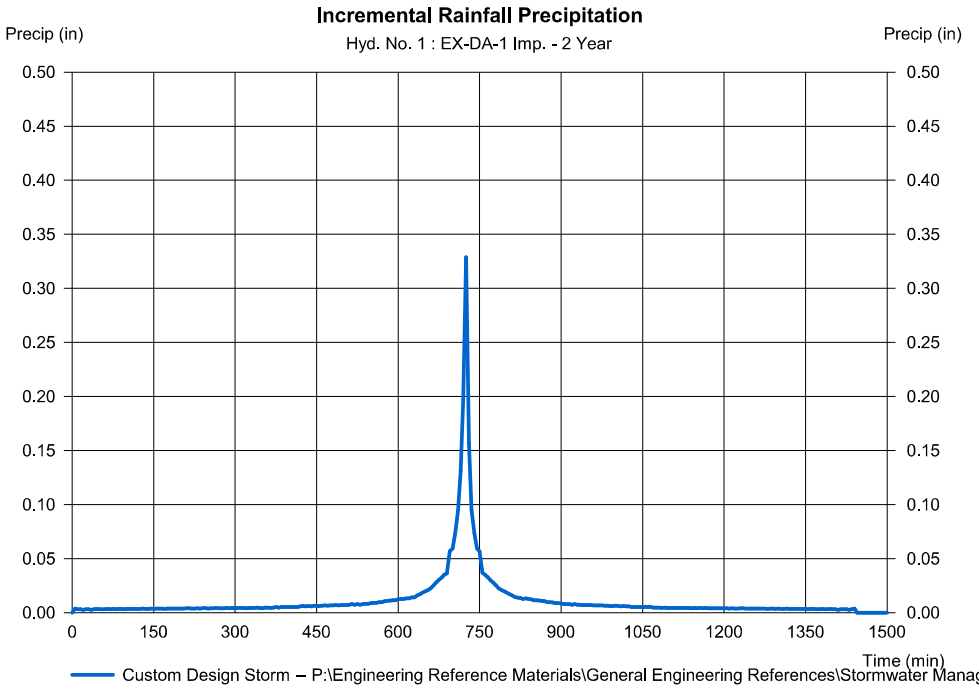


Precipitation Report

Hyd. No. 1

EX-DA-1 Imp.

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

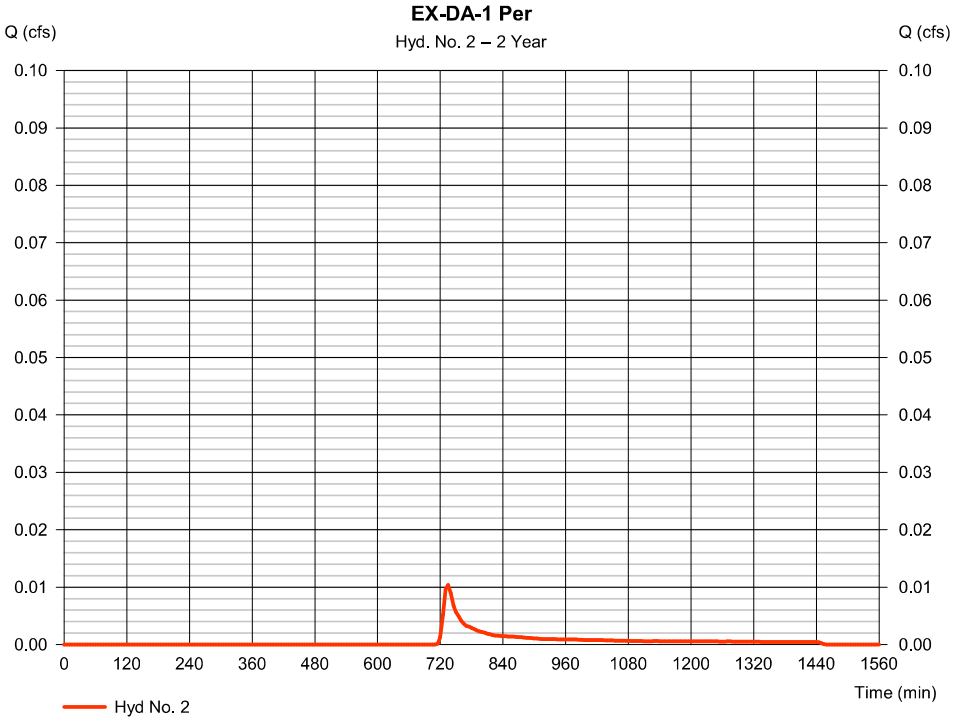


Hydrograph Report

Hyd. No. 2

EX-DA-1 Per

Hydrograph type	= SCS Runoff	Peak discharge	= 0.010 cfs
Storm frequency	= 2 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 53 cuft
Drainage area	= 0.030 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

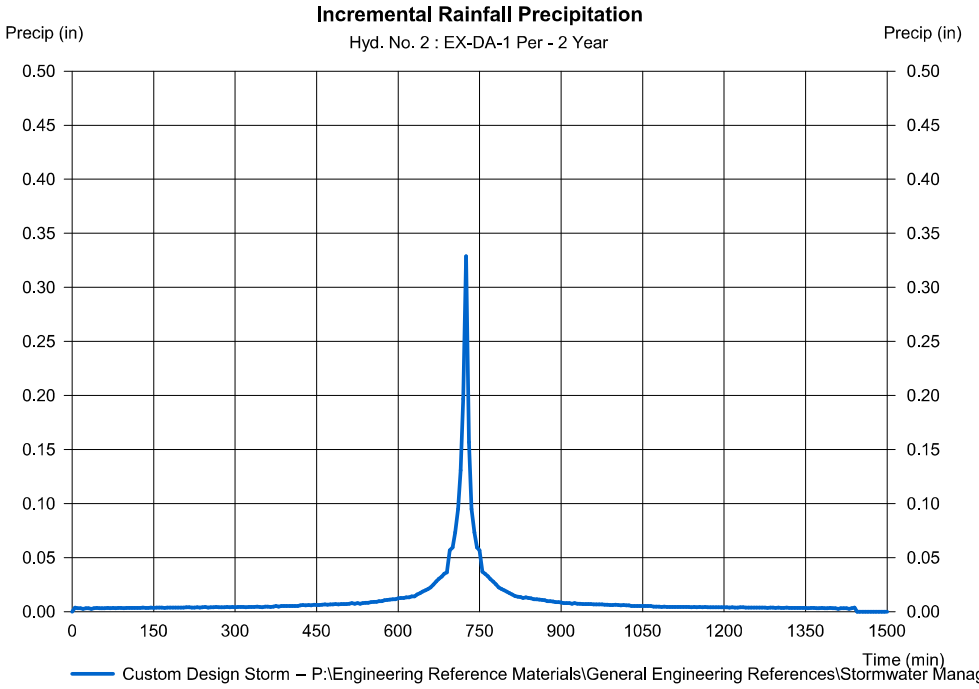


Precipitation Report

Hyd. No. 2

EX-DA-1 Per

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

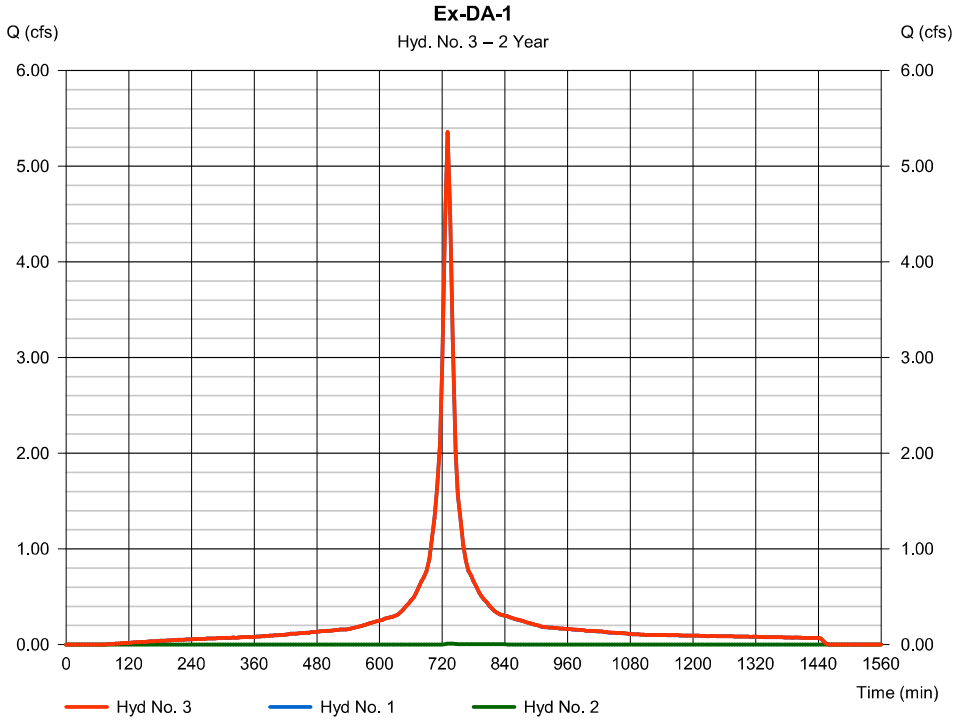


Hydrograph Report

Hyd. No. 3

Ex-DA-1

Hydrograph type	= Combine	Peak discharge	= 5.358 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 22,007 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 2.080 ac

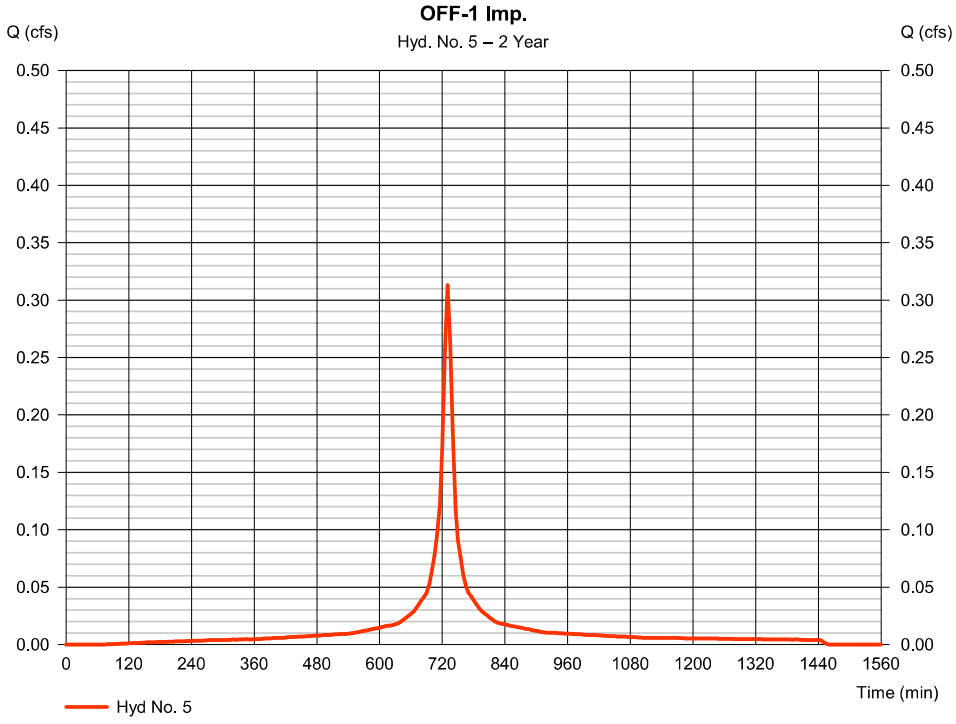


Hydrograph Report

Hyd. No. 5

OFF-1 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.313 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,285 cuft
Drainage area	= 0.120 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

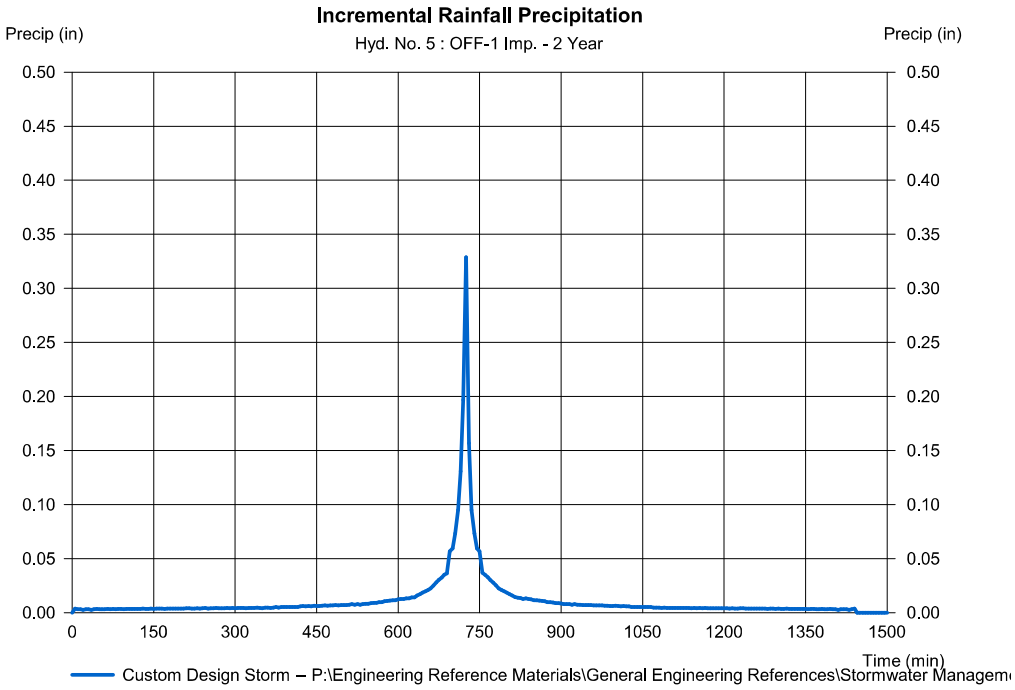


Precipitation Report

Hyd. No. 5

OFF-1 Imp.

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

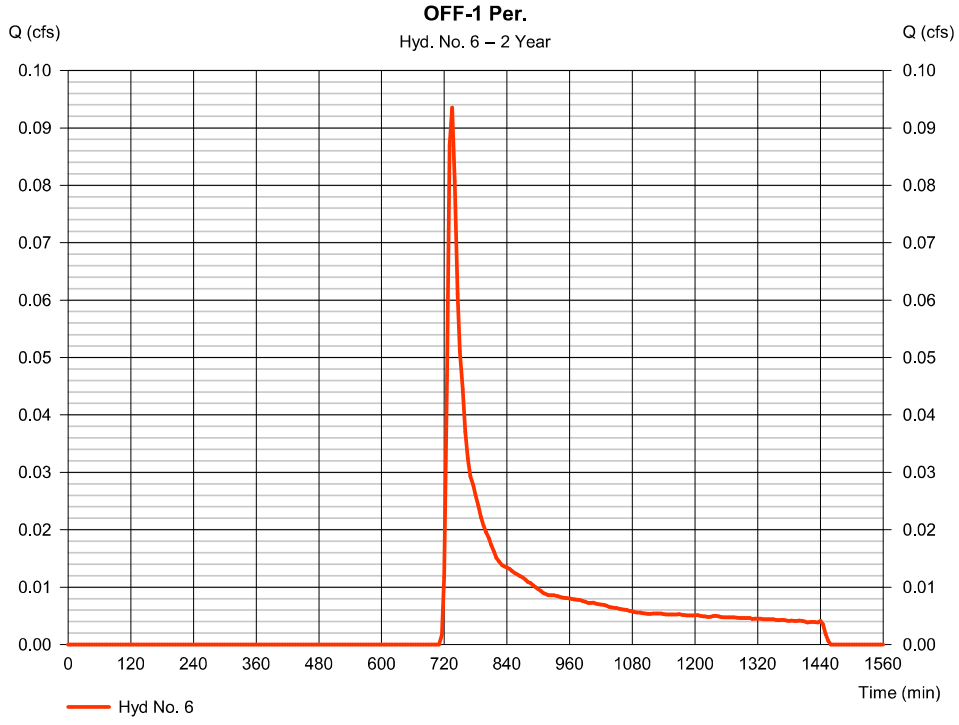


Hydrograph Report

Hyd. No. 6

OFF-1 Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.094 cfs
Storm frequency	= 2 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 478 cuft
Drainage area	= 0.270 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

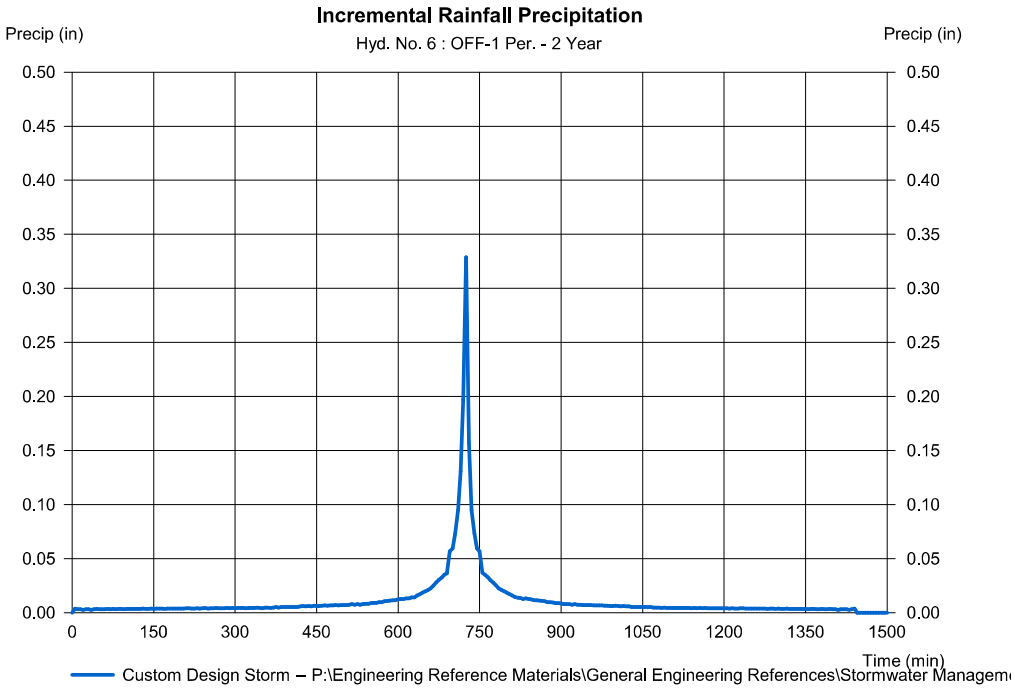


Precipitation Report

Hyd. No. 6

OFF-1 Per.

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

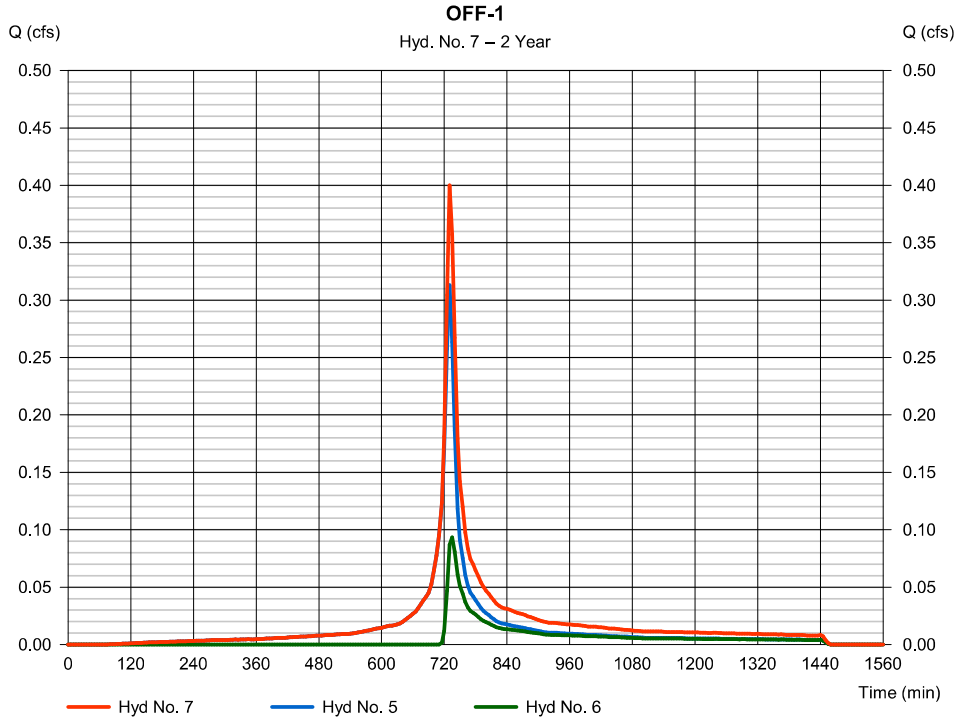


Hydrograph Report

Hyd. No. 7

OFF-1

Hydrograph type	= Combine	Peak discharge	= 0.400 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,763 cuft
Inflow hyds.	= 5, 6	Contrib. drain. area	= 0.390 ac

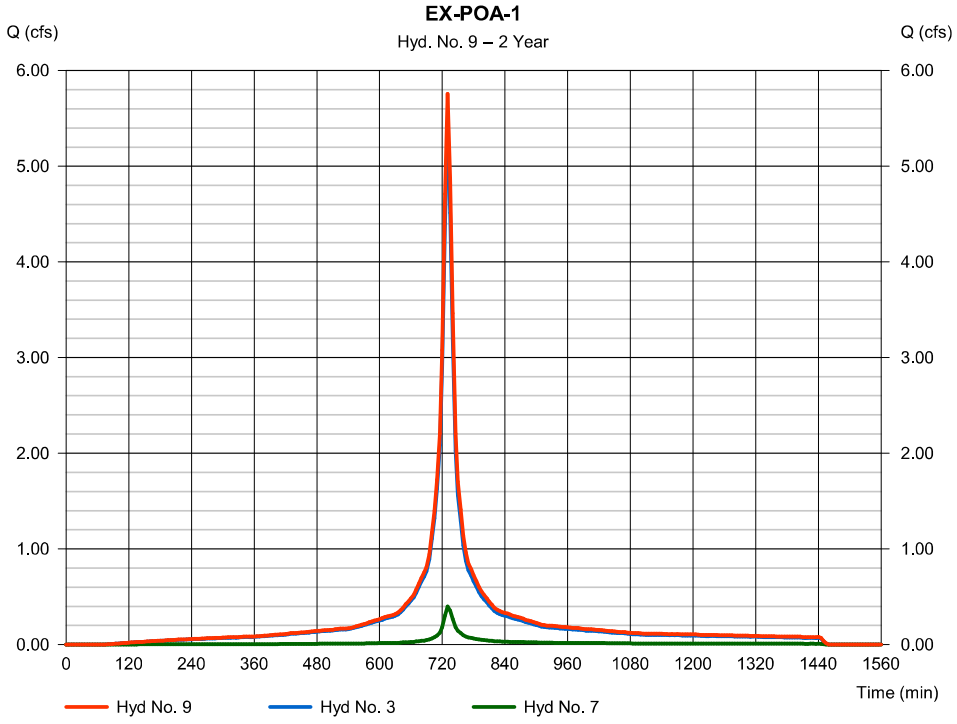


Hydrograph Report

Hyd. No. 9

EX-POA-1

Hydrograph type	= Combine	Peak discharge	= 5.758 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 23,770 cuft
Inflow hyds.	= 3, 7	Contrib. drain. area	= 0.000 ac

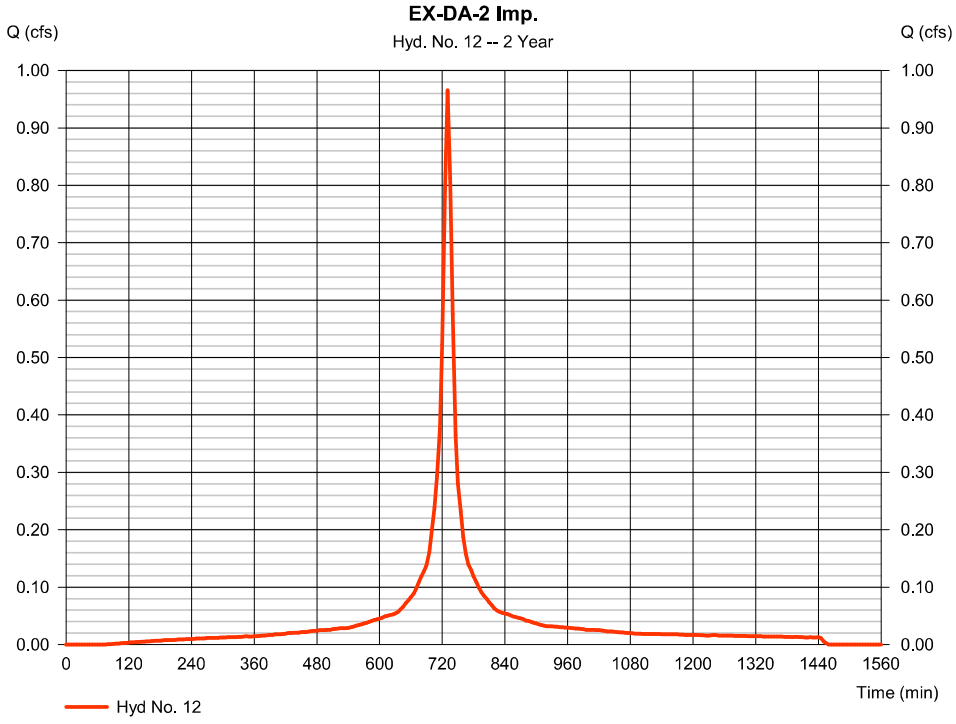


Hydrograph Report

Hyd. No. 12

EX-DA-2 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.965 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 3,962 cuft
Drainage area	= 0.370 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

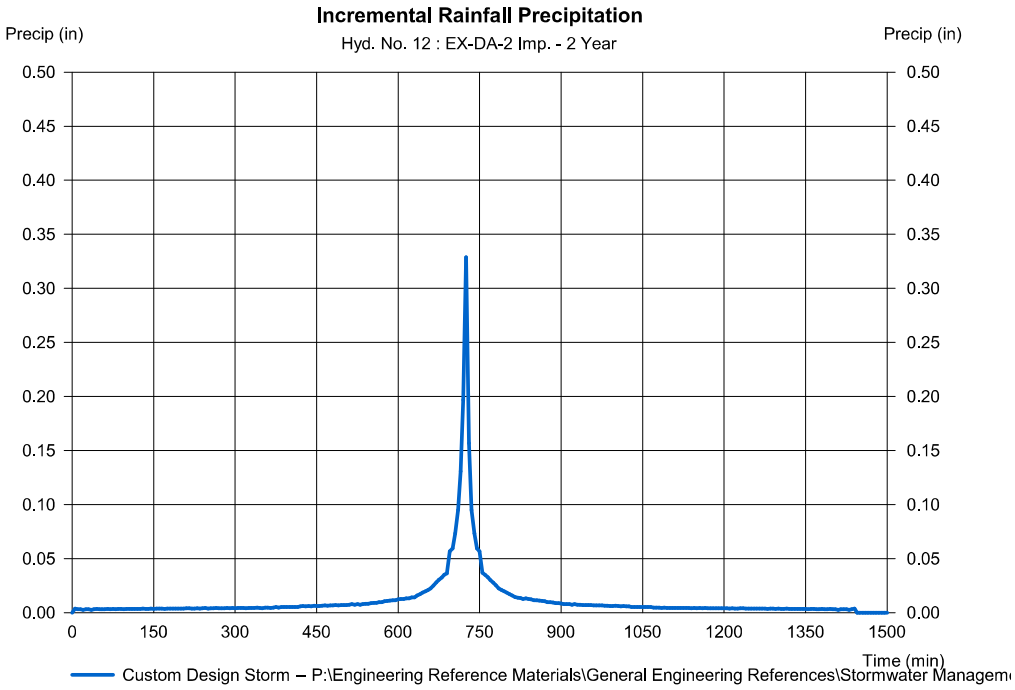


Precipitation Report

Hyd. No. 12

EX-DA-2 Imp.

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

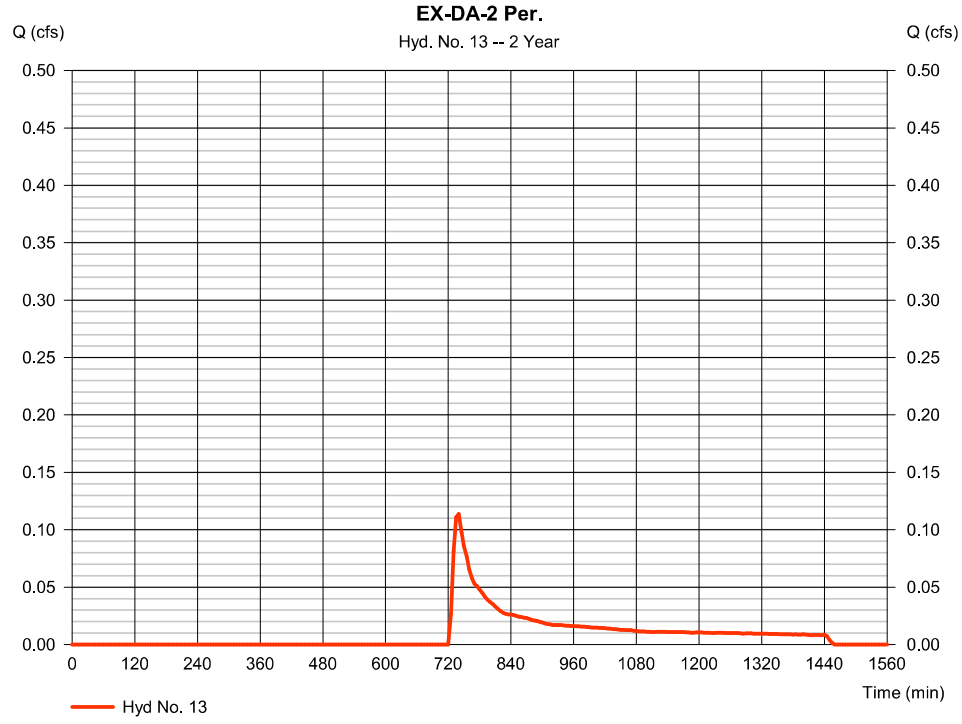


Hydrograph Report

Hyd. No. 13

EX-DA-2 Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.114 cfs
Storm frequency	= 2 yrs	Time to peak	= 740 min
Time interval	= 5 min	Hyd. volume	= 840 cuft
Drainage area	= 0.730 ac	Curve number	= 56
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

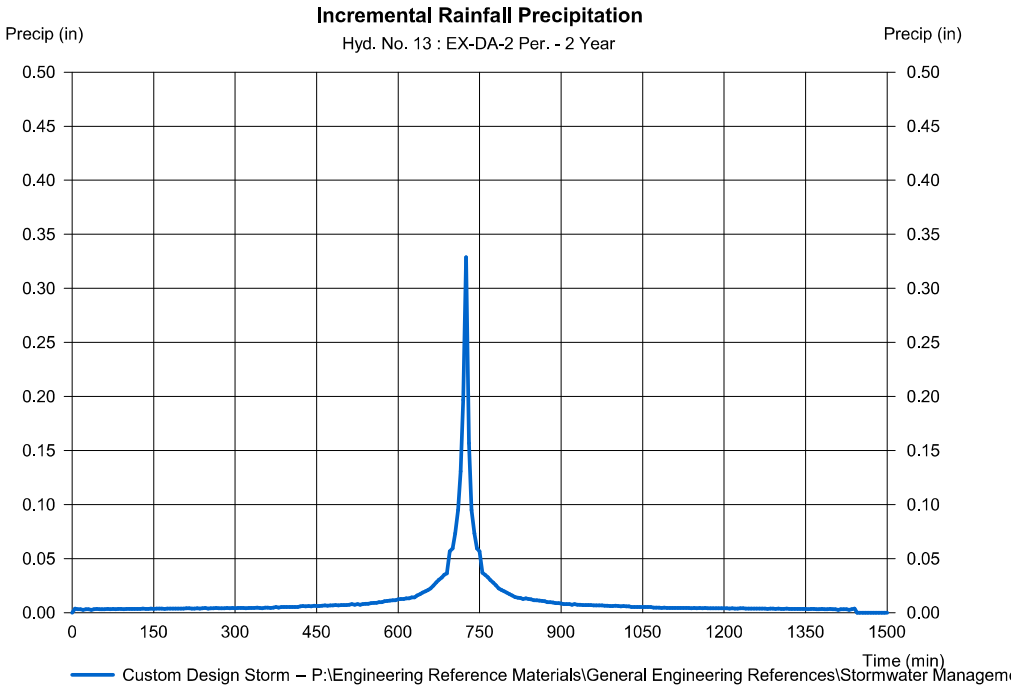


Precipitation Report

Hyd. No. 13

EX-DA-2 Per.

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

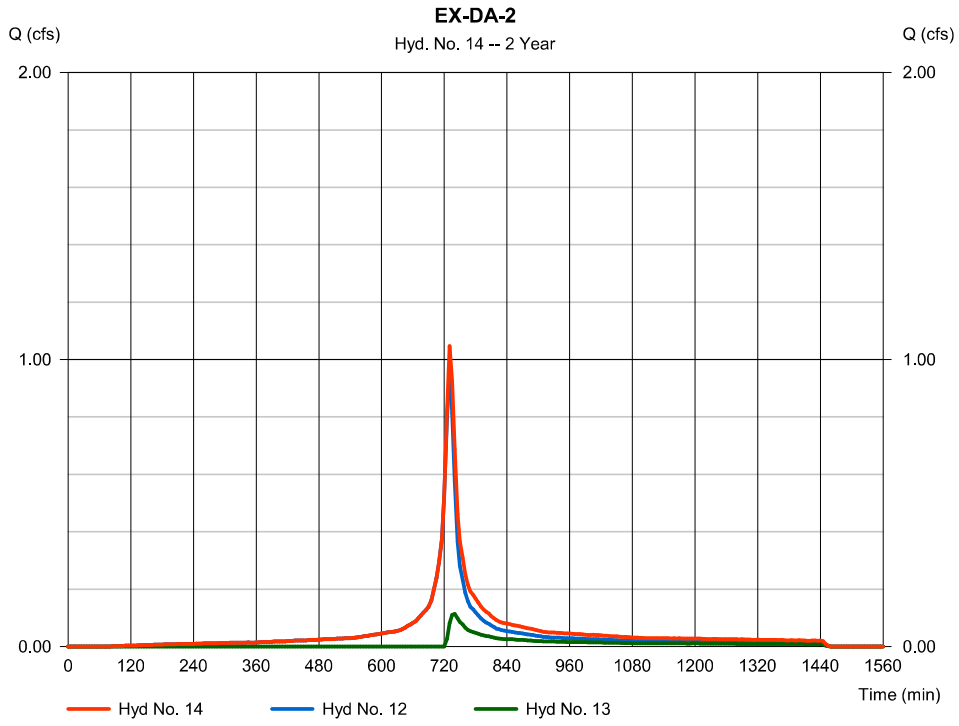


Hydrograph Report

Hyd. No. 14

EX-DA-2

Hydrograph type	= Combine	Peak discharge	= 1.046 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 4,803 cuft
Inflow hyds.	= 12, 13	Contrib. drain. area	= 1.100 ac

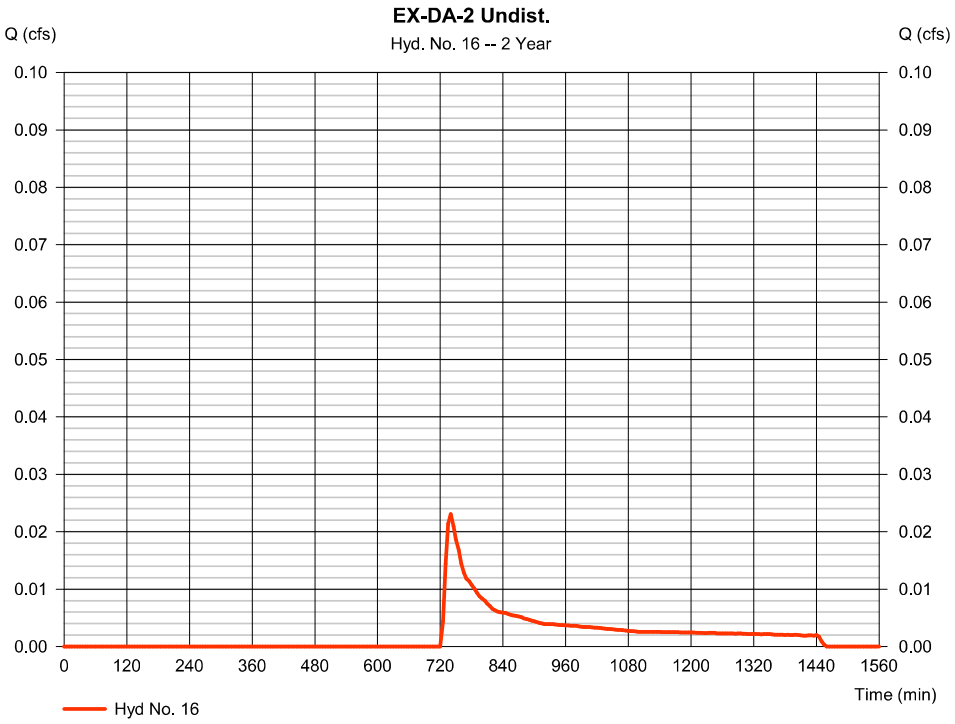


Hydrograph Report

Hyd. No. 16

EX-DA-2 Undist.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.023 cfs
Storm frequency	= 2 yrs	Time to peak	= 740 min
Time interval	= 5 min	Hyd. volume	= 188 cuft
Drainage area	= 0.180 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

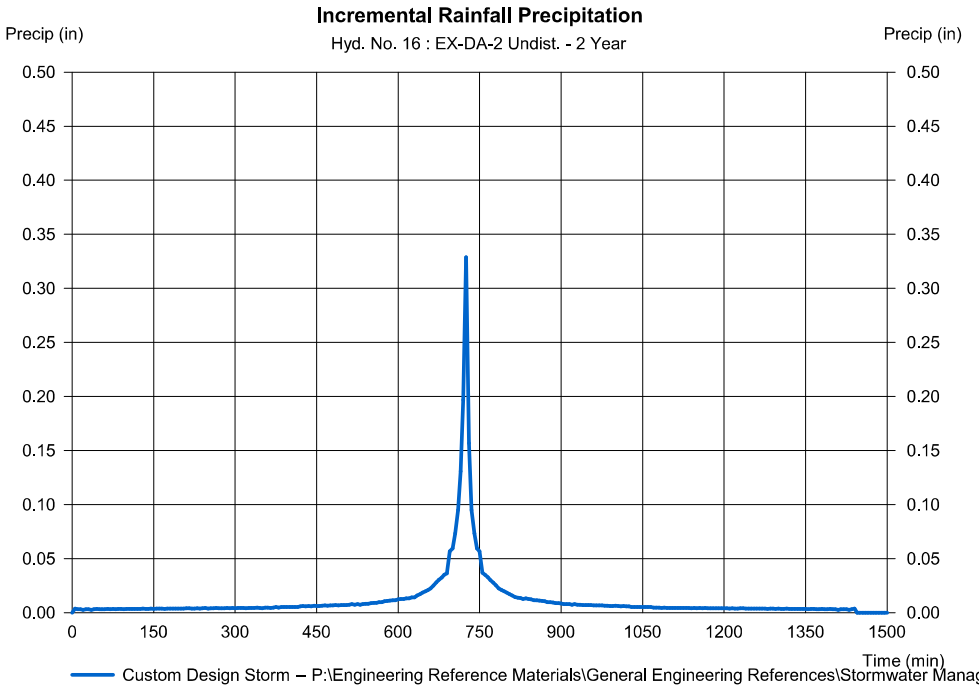


Precipitation Report

Hyd. No. 16

EX-DA-2 Undist.

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

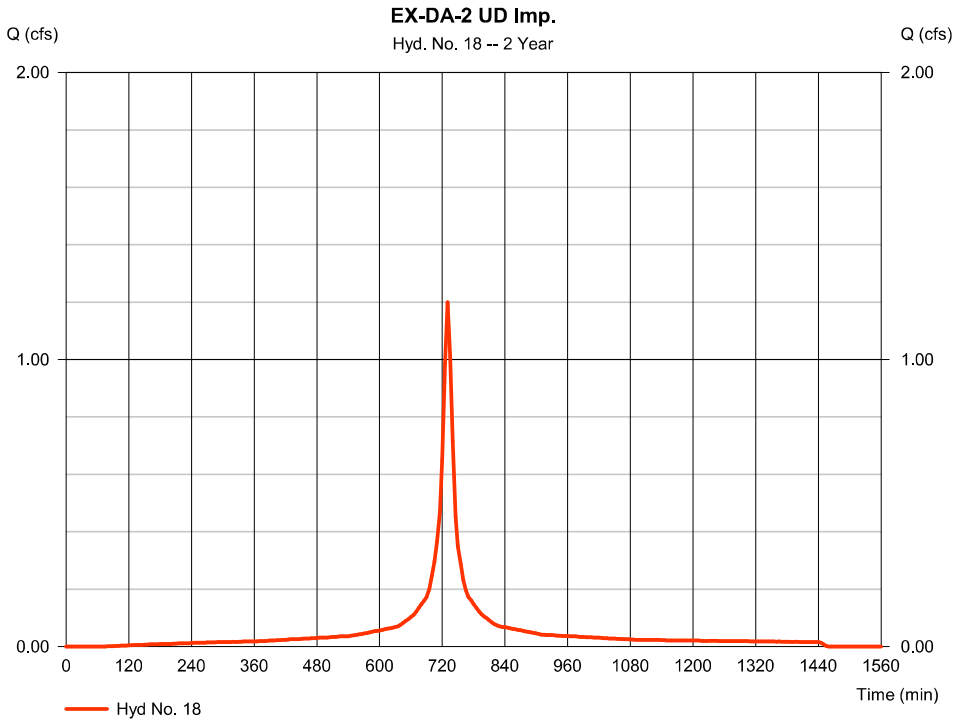


Hydrograph Report

Hyd. No. 18

EX-DA-2 UD Imp.

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.200 cfs
Storm frequency	=	2 yrs	Time to peak	=	730 min
Time interval	=	5 min	Hyd. volume	=	4,926 cuft
Drainage area	=	0.460 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	3.38 in	Distribution	=	Custom
Storm duration	=	P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	=	484

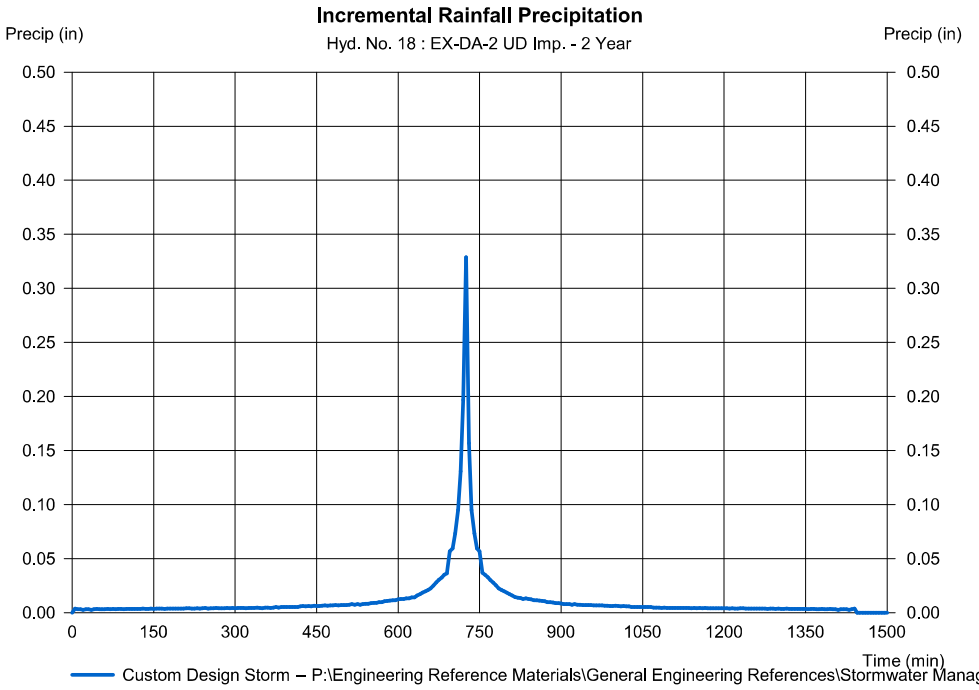


Precipitation Report

Hyd. No. 18

EX-DA-2 UD Imp.

Storm Frequency	=	2 yrs	Time interval	=	5 min
Total precip.	=	3.3800 in	Distribution	=	Custom
Storm duration	=	P:\Engineering Reference Materials\General Engineering References\Stormwat			

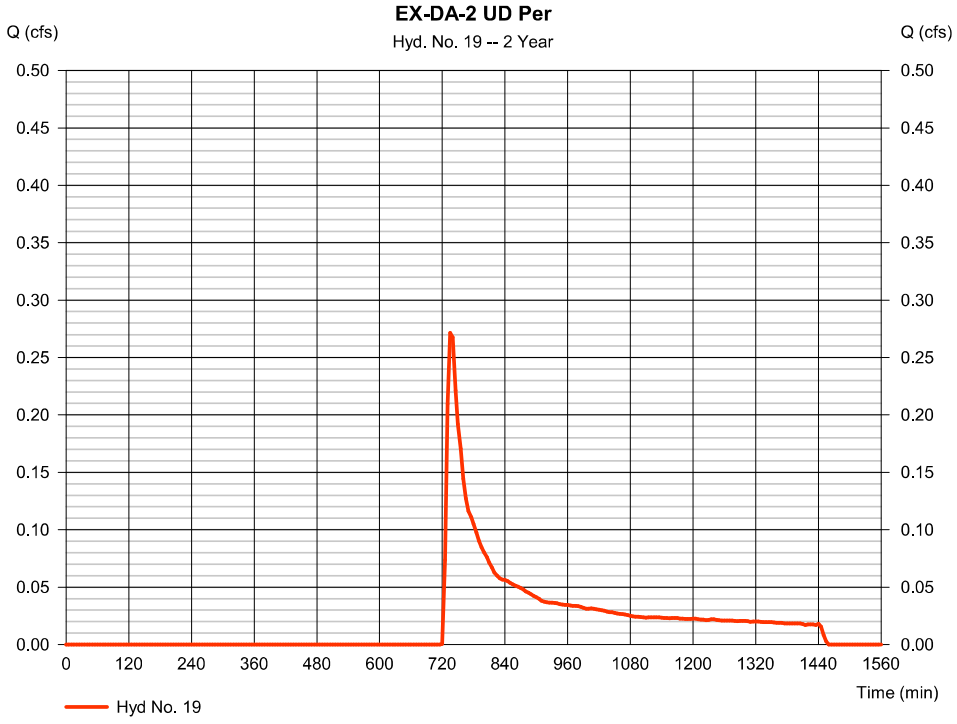


Hydrograph Report

Hyd. No. 19

EX-DA-2 UD Per

Hydrograph type	= SCS Runoff	Peak discharge	= 0.271 cfs
Storm frequency	= 2 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 1,842 cuft
Drainage area	= 1.460 ac	Curve number	= 57
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

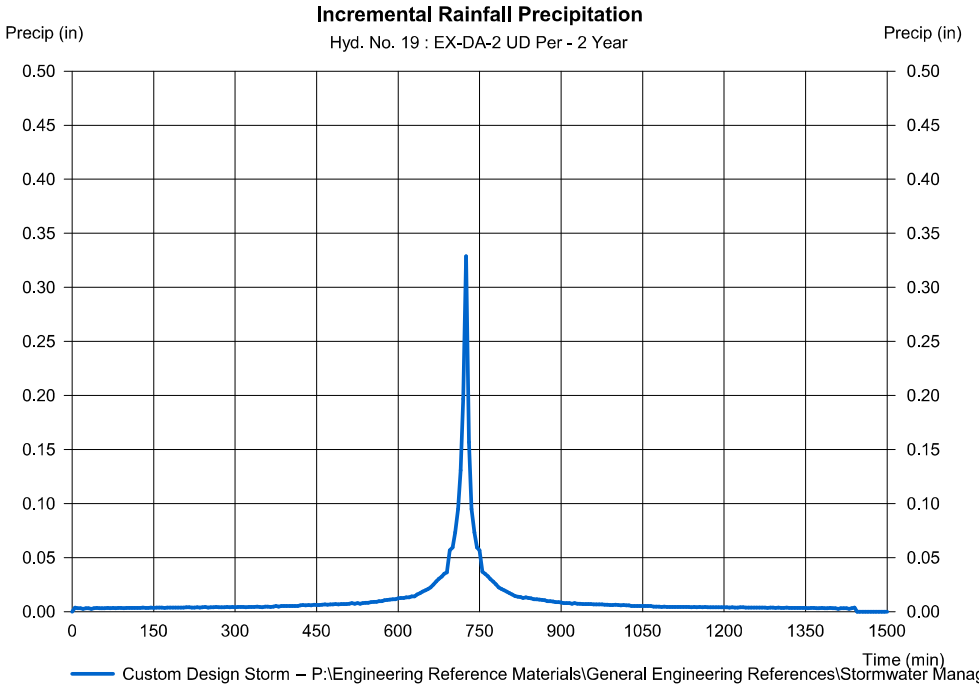


Precipitation Report

Hyd. No. 19

EX-DA-2 UD Per

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

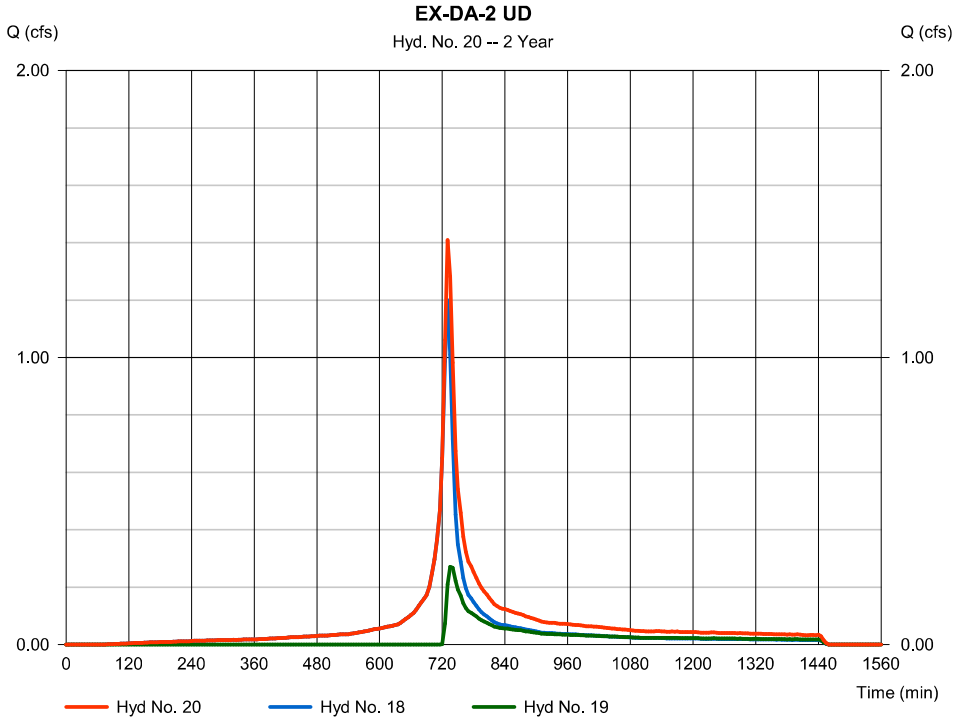


Hydrograph Report

Hyd. No. 20

EX-DA-2 UD

Hydrograph type	= Combine	Peak discharge	= 1.410 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 6,768 cuft
Inflow hyds.	= 18, 19	Contrib. drain. area	= 1.920 ac

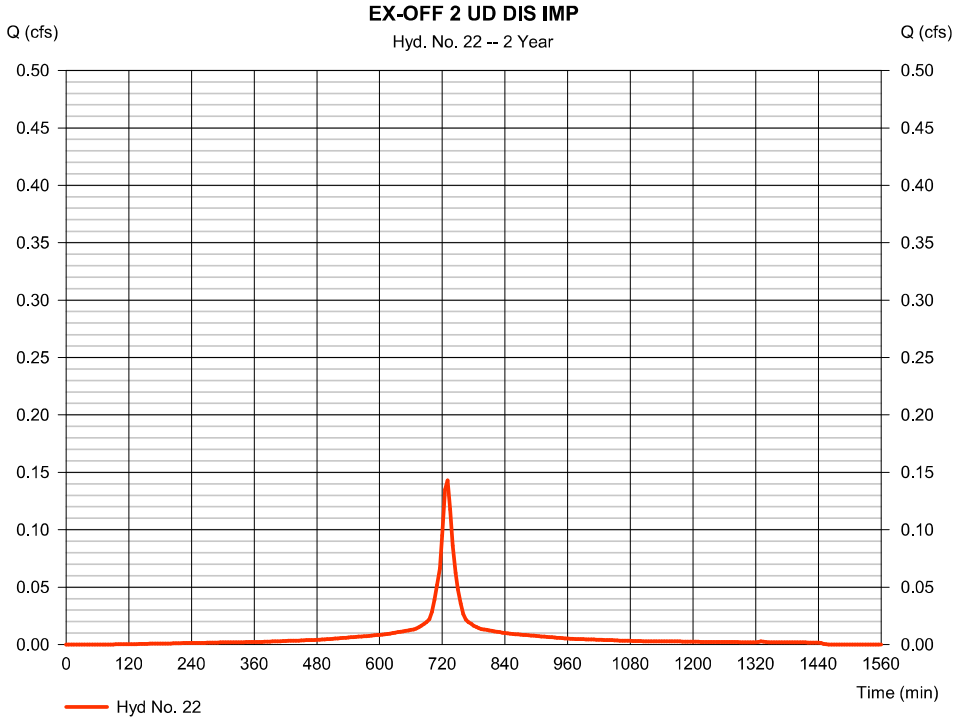


Hydrograph Report

Hyd. No. 22

EX-OFF 2 UD DIS IMP

Hydrograph type	= SCS Runoff	Peak discharge	= 0.143 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 643 cuft
Drainage area	= 0.060 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

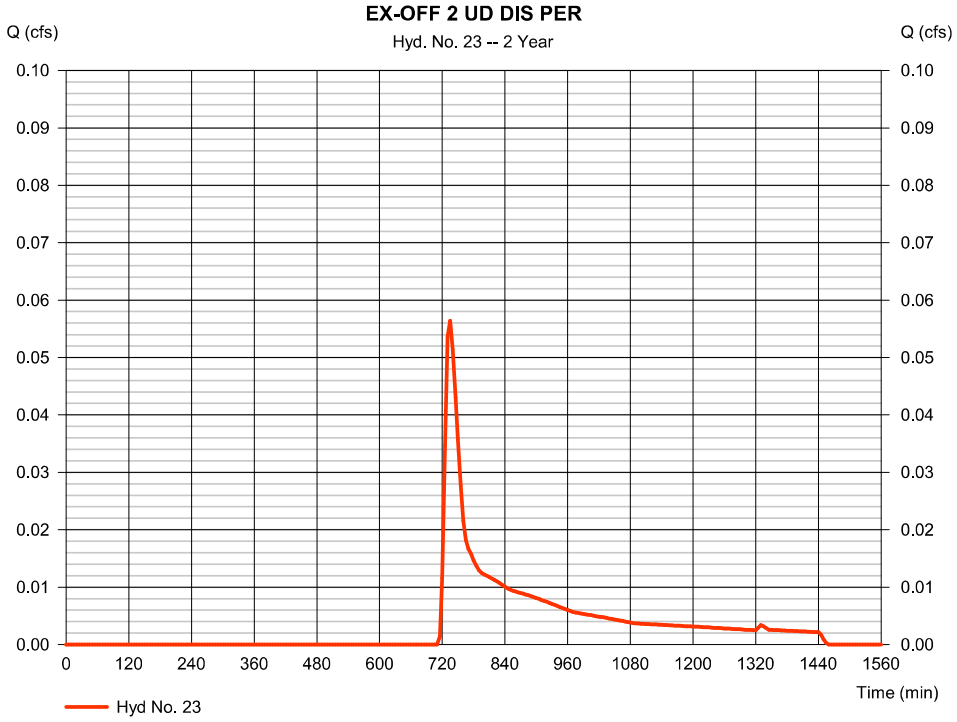


Hydrograph Report

Hyd. No. 23

EX-OFF 2 UD DIS PER

Hydrograph type	= SCS Runoff	Peak discharge	= 0.056 cfs
Storm frequency	= 2 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 318 cuft
Drainage area	= 0.180 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

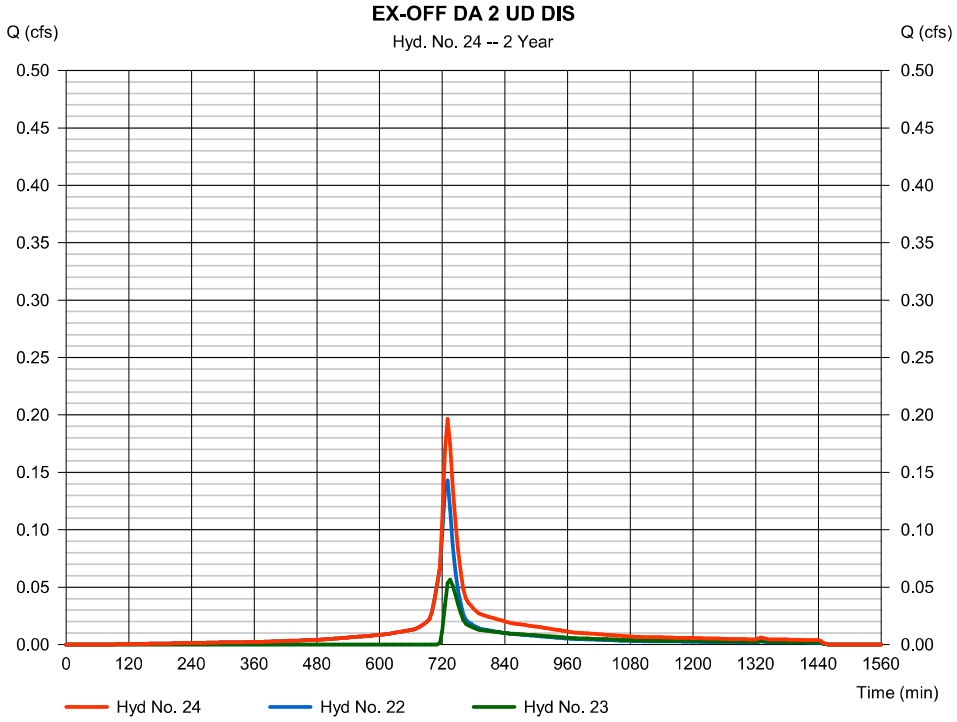


Hydrograph Report

Hyd. No. 24

EX-OFF DA 2 UD DIS

Hydrograph type	= Combine	Peak discharge	= 0.196 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 961 cuft
Inflow hyds.	= 22, 23	Contrib. drain. area	= 0.240 ac

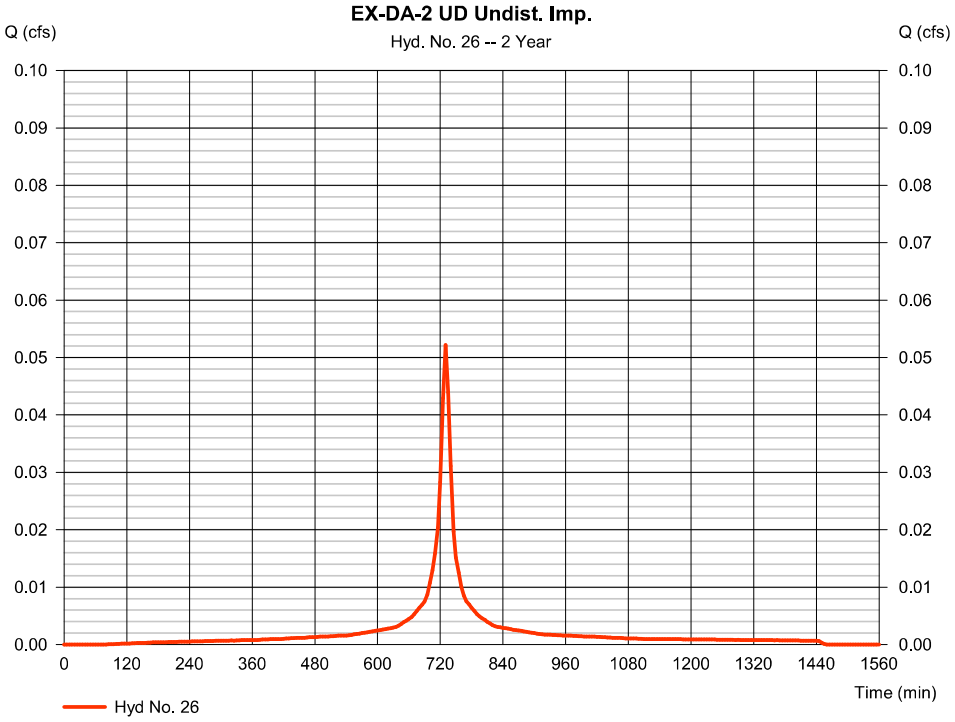


Hydrograph Report

Hyd. No. 26

EX-DA-2 UD Undist. Imp.

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.052 cfs
Storm frequency	=	2 yrs	Time to peak	=	730 min
Time interval	=	5 min	Hyd. volume	=	214 cuft
Drainage area	=	0.020 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	3.38 in	Distribution	=	Custom
Storm duration	=	P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	=	484

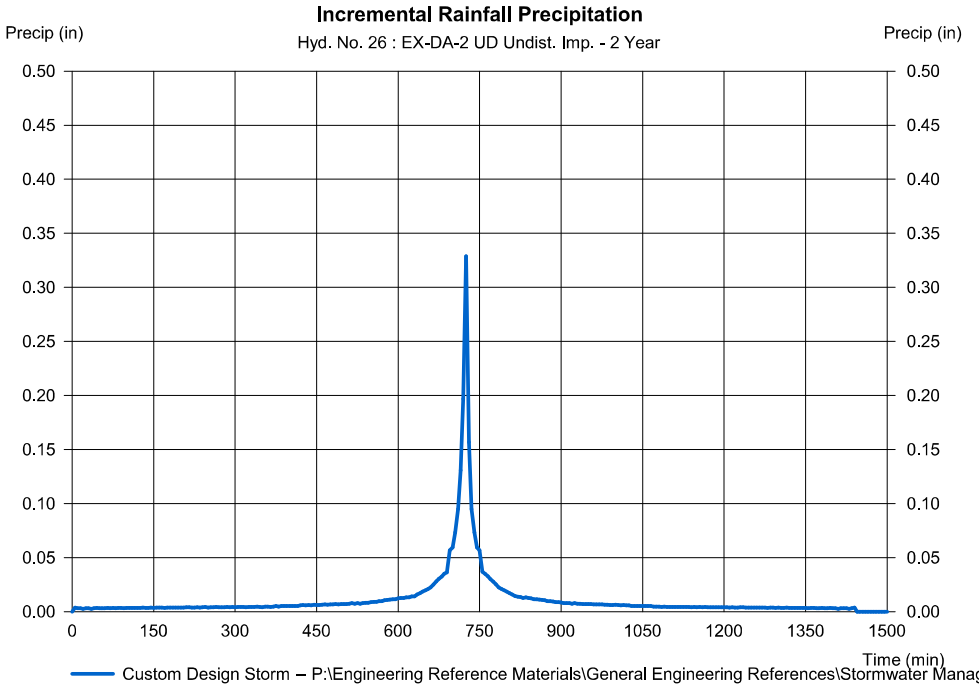


Precipitation Report

Hyd. No. 26

EX-DA-2 UD Undist. Imp.

Storm Frequency	=	2 yrs	Time interval	=	5 min
Total precip.	=	3.3800 in	Distribution	=	Custom
Storm duration	=	P:\Engineering Reference Materials\General Engineering References\Stormwat			

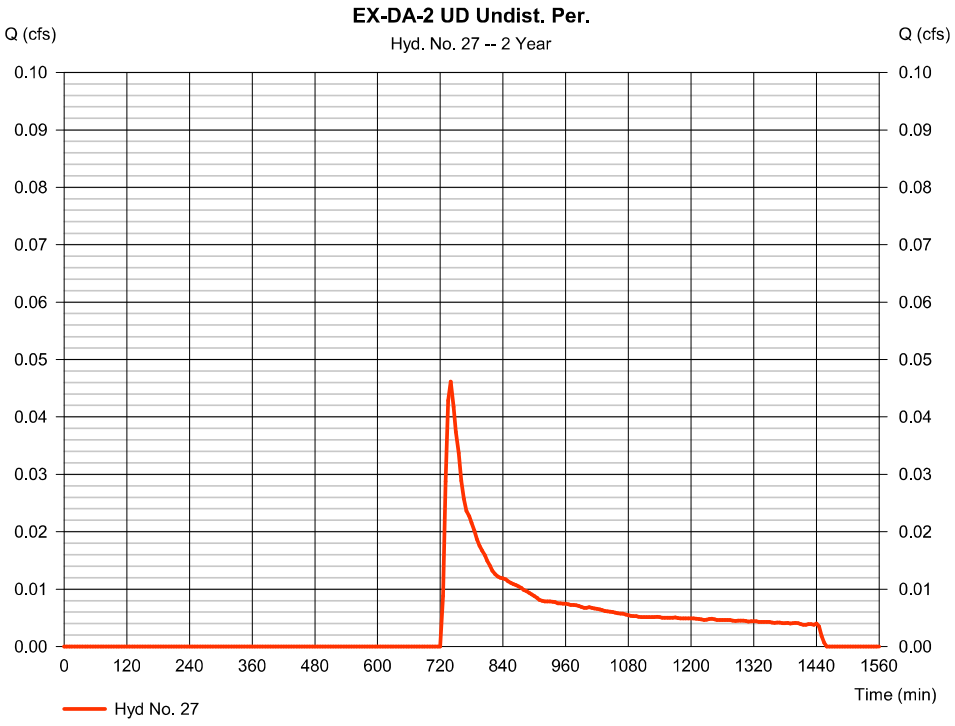


Hydrograph Report

Hyd. No. 27

EX-DA-2 UD Undist. Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.046 cfs
Storm frequency	= 2 yrs	Time to peak	= 740 min
Time interval	= 5 min	Hyd. volume	= 375 cuft
Drainage area	= 0.360 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

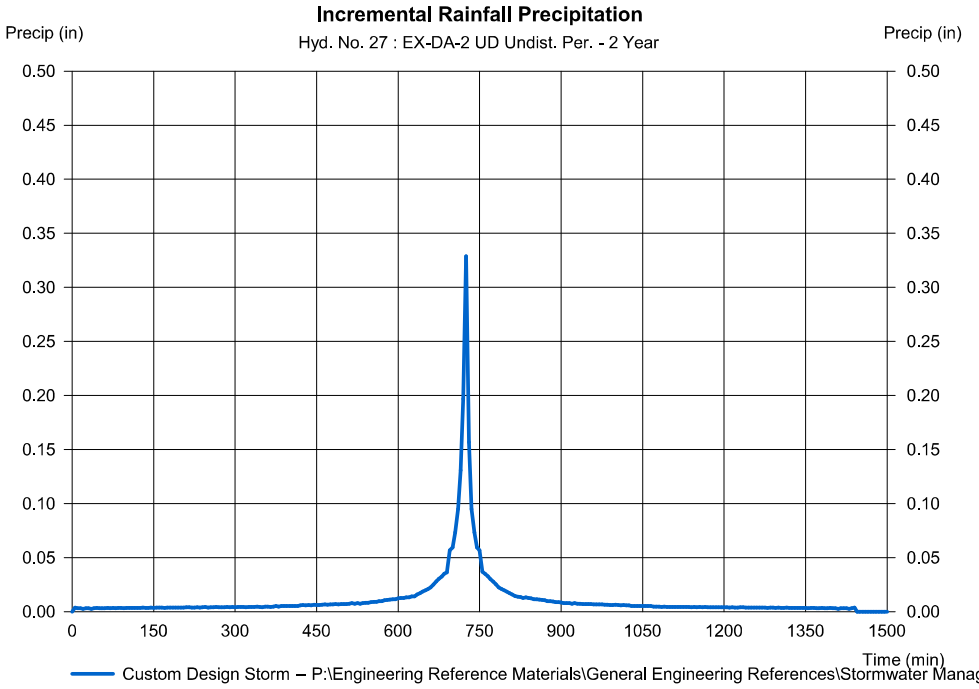


Precipitation Report

Hyd. No. 27

EX-DA-2 UD Undist. Per.

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

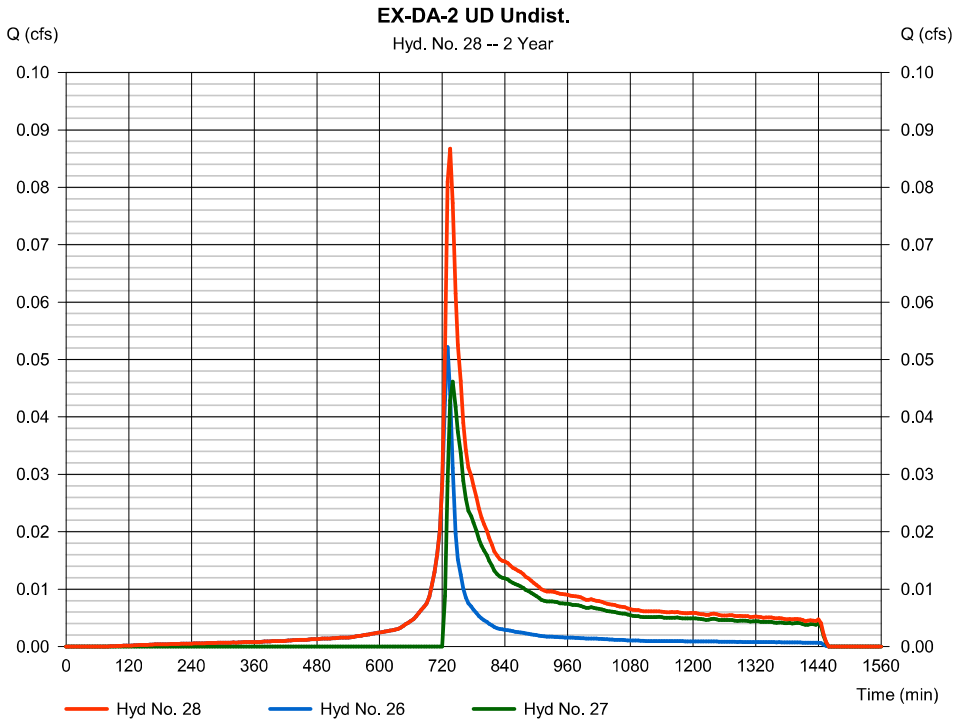


Hydrograph Report

Hyd. No. 28

EX-DA-2 UD Undist.

Hydrograph type	= Combine	Peak discharge	= 0.087 cfs
Storm frequency	= 2 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 589 cuft
Inflow hyds.	= 26, 27	Contrib. drain. area	= 0.380 ac

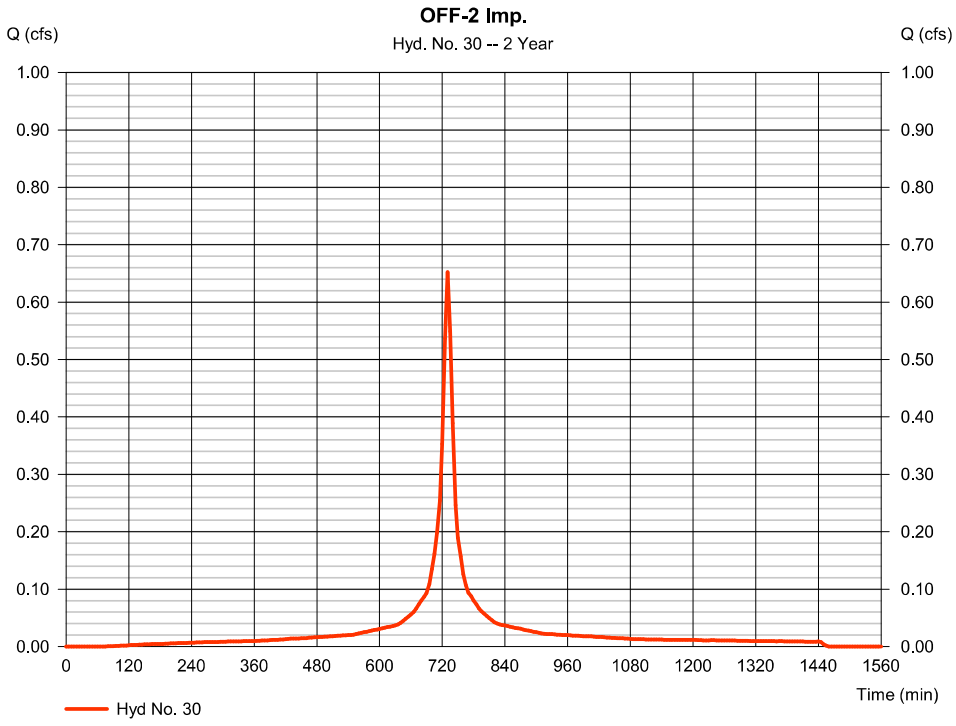


Hydrograph Report

Hyd. No. 30

OFF-2 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.652 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,677 cuft
Drainage area	= 0.250 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.80 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

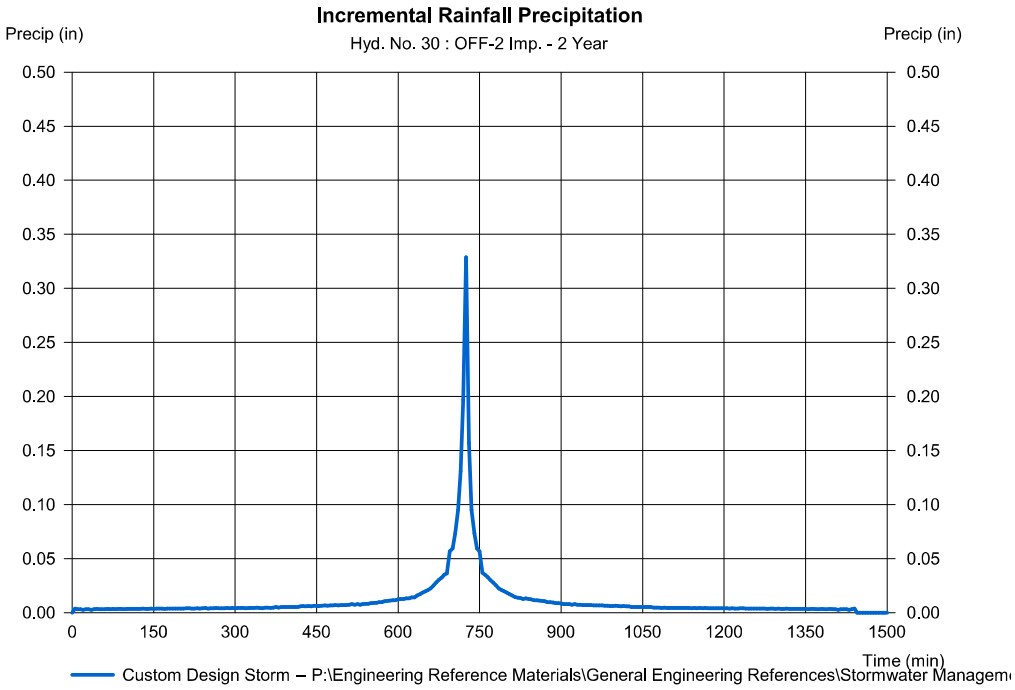


Precipitation Report

Hyd. No. 30

OFF-2 Imp.

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

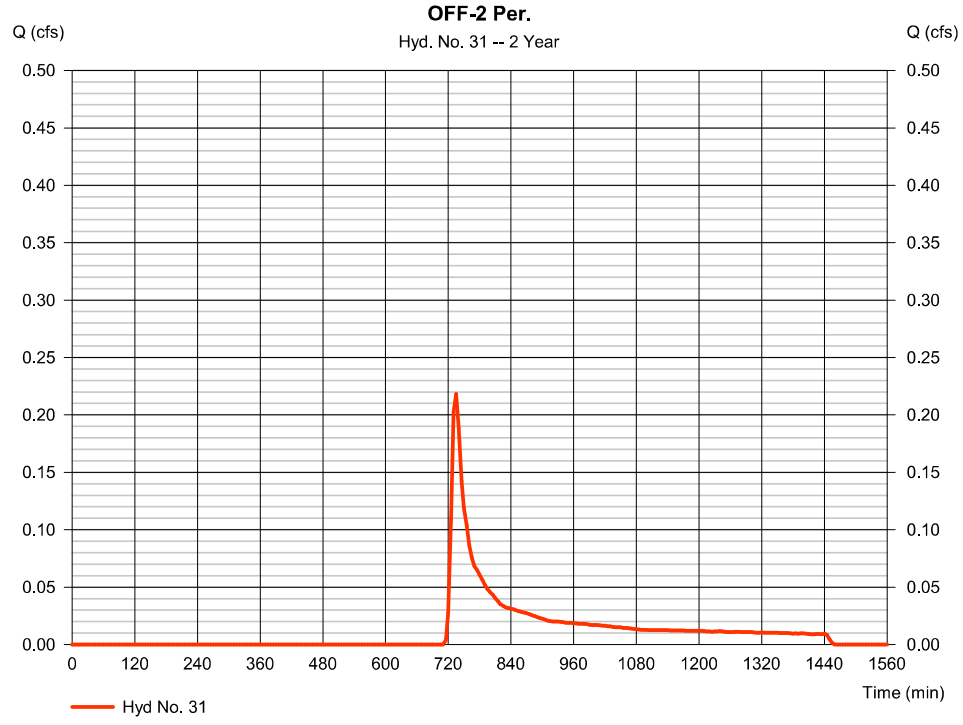


Hydrograph Report

Hyd. No. 31

OFF-2 Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.218 cfs
Storm frequency	= 2 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 1,114 cuft
Drainage area	= 0.630 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.80 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

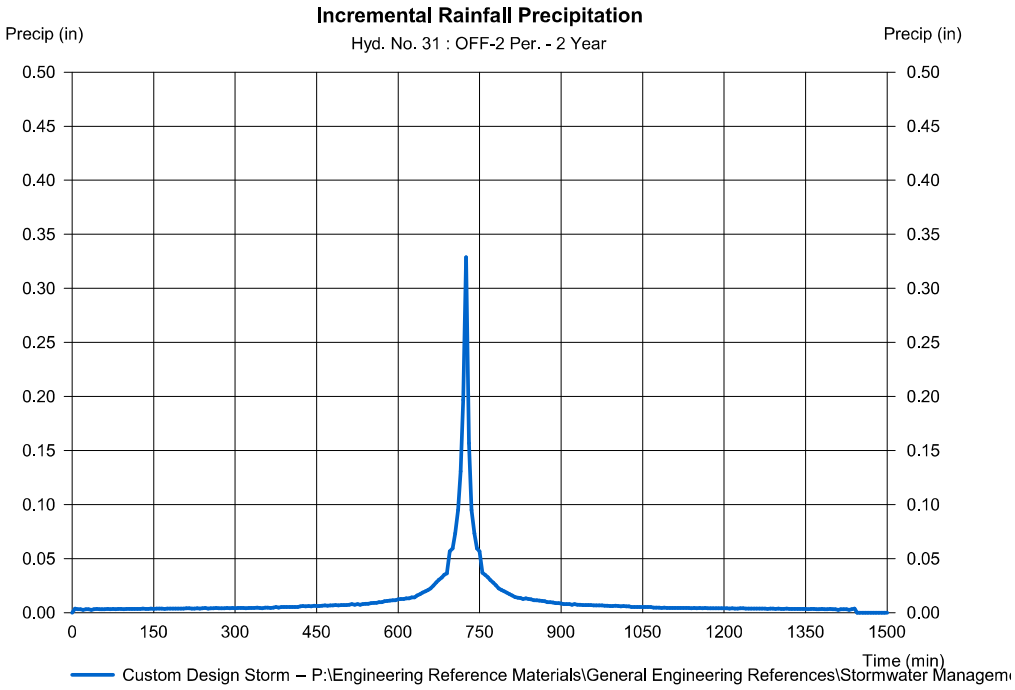


Precipitation Report

Hyd. No. 31

OFF-2 Per.

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

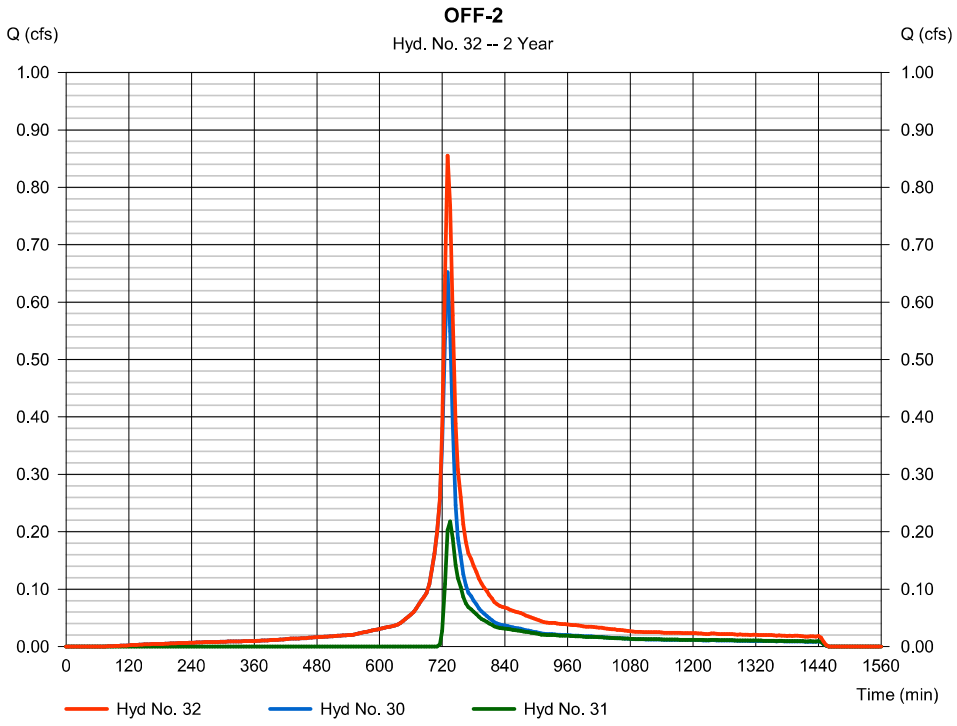


Hydrograph Report

Hyd. No. 32

OFF-2

Hydrograph type	= Combine	Peak discharge	= 0.855 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 3,792 cuft
Inflow hyds.	= 30, 31	Contrib. drain. area	= 0.880 ac

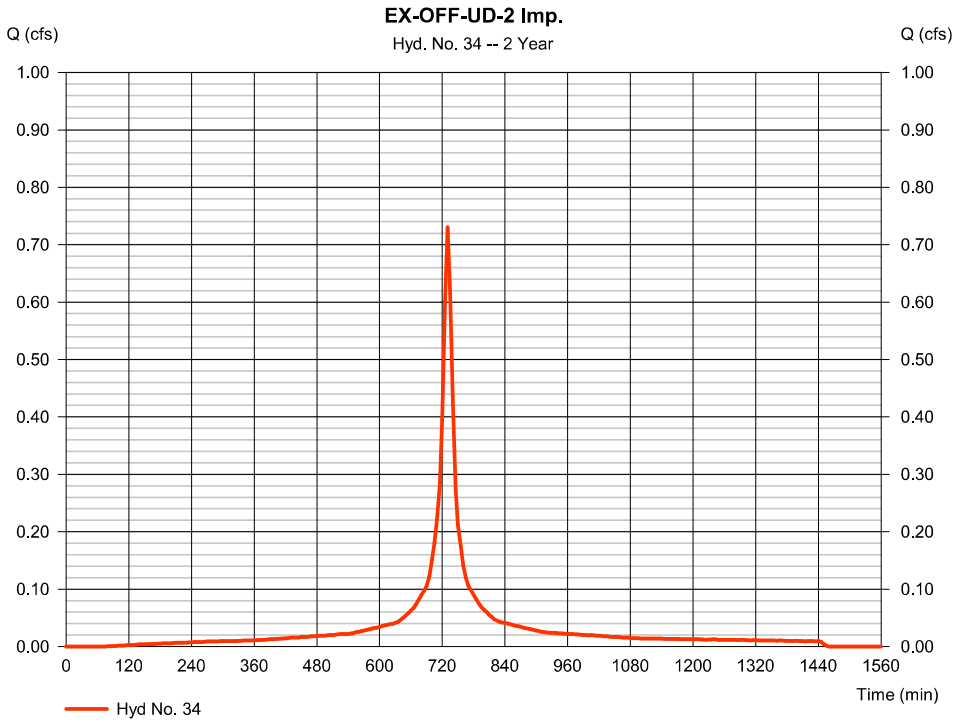


Hydrograph Report

Hyd. No. 34

EX-OFF-UD-2 Imp.

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.730 cfs
Storm frequency	=	2 yrs	Time to peak	=	730 min
Time interval	=	5 min	Hyd. volume	=	2,999 cuft
Drainage area	=	0.280 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	11.20 min
Total precip.	=	3.38 in	Distribution	=	Custom
Storm duration	=	P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	=	484

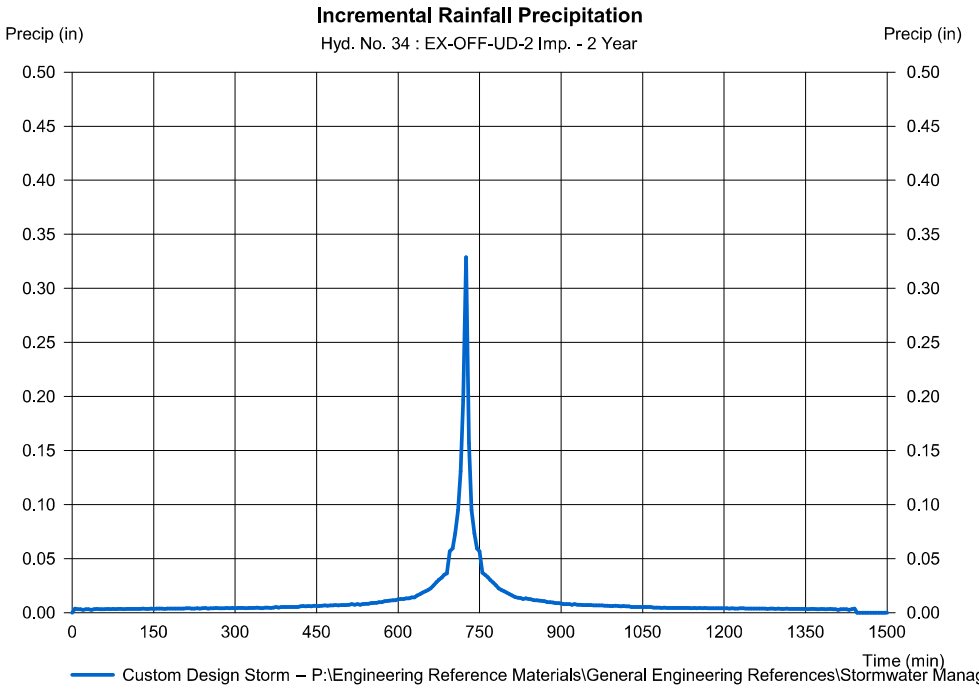


Precipitation Report

Hyd. No. 34

EX-OFF-UD-2 Imp.

Storm Frequency	=	2 yrs	Time interval	=	5 min
Total precip.	=	3.3800 in	Distribution	=	Custom
Storm duration	=	P:\Engineering Reference Materials\General Engineering References\Stormwat			

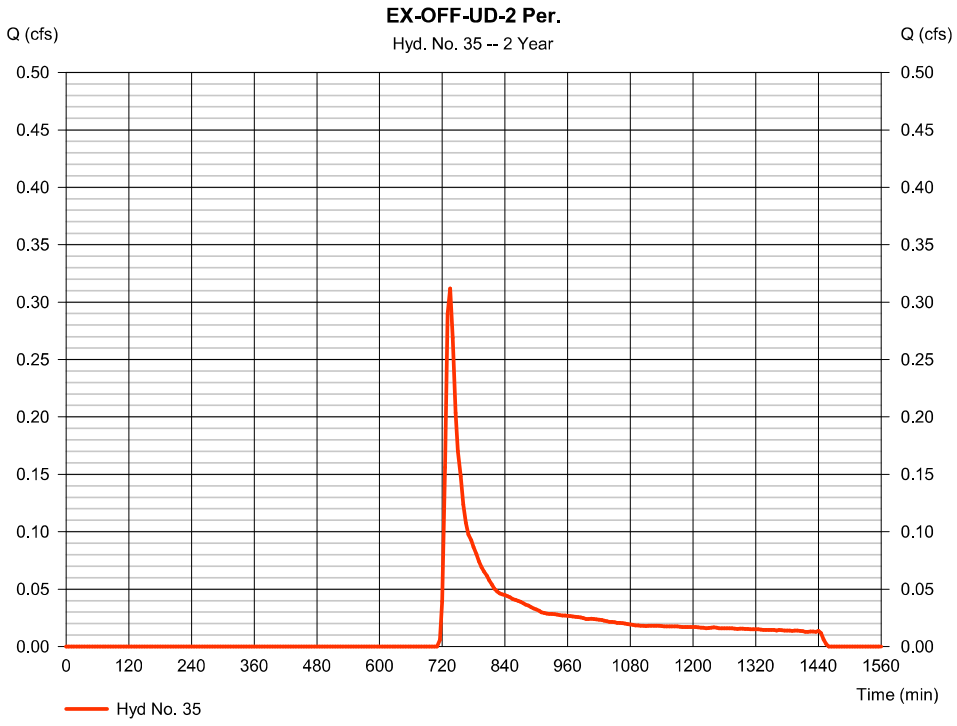


Hydrograph Report

Hyd. No. 35

EX-OFF-UD-2 Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.312 cfs
Storm frequency	= 2 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 1,592 cuft
Drainage area	= 0.900 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.20 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

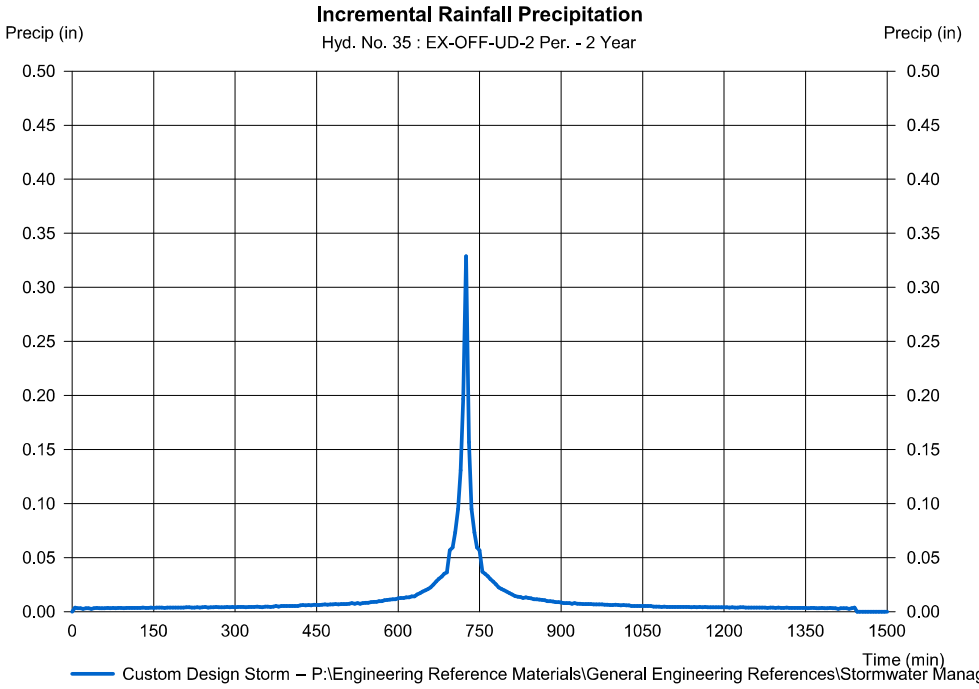


Precipitation Report

Hyd. No. 35

EX-OFF-UD-2 Per.

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

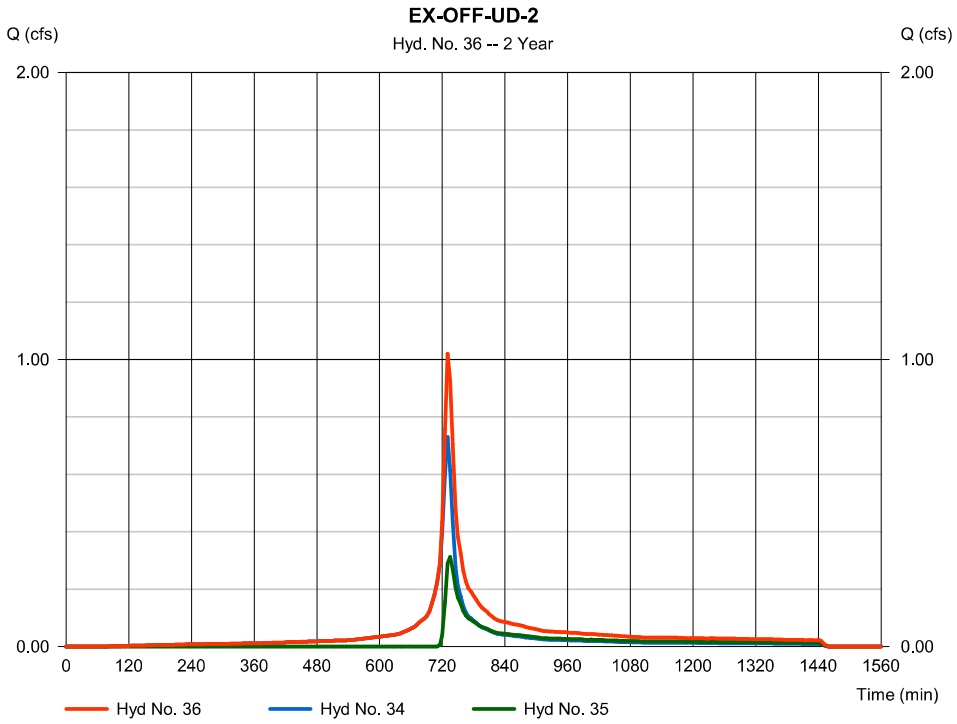


Hydrograph Report

Hyd. No. 36

EX-OFF-UD-2

Hydrograph type	= Combine	Peak discharge	= 1.020 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 4,591 cuft
Inflow hyds.	= 34, 35	Contrib. drain. area	= 1.180 ac

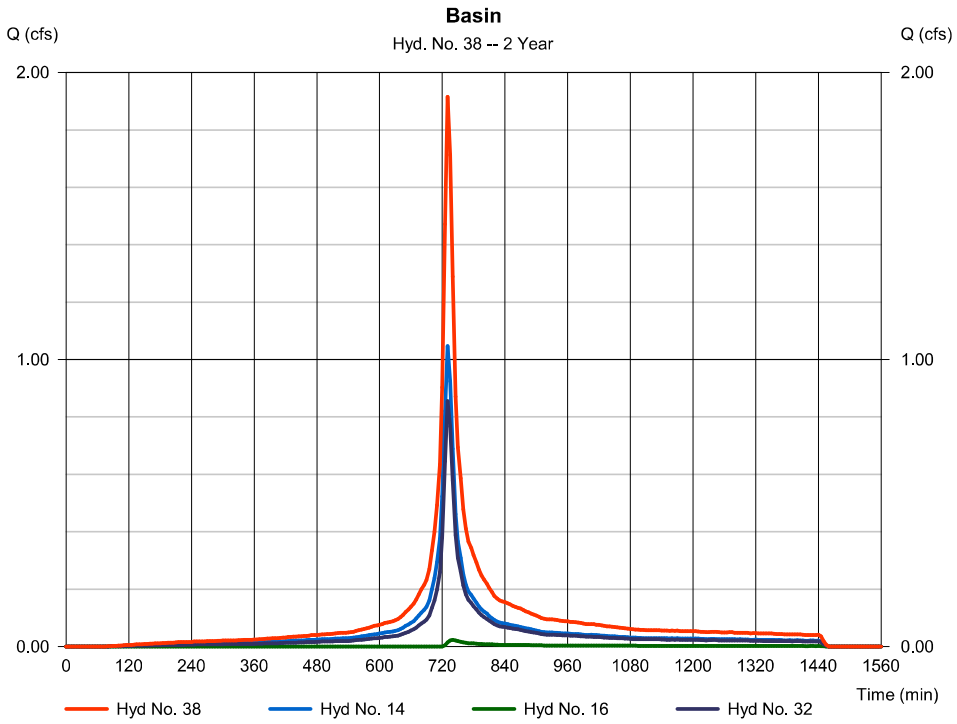


Hydrograph Report

Hyd. No. 38

Basin

Hydrograph type	= Combine	Peak discharge	= 1.916 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 8,782 cuft
Inflow hyds.	= 14, 16, 32	Contrib. drain. area	= 0.180 ac



Hydrograph Report

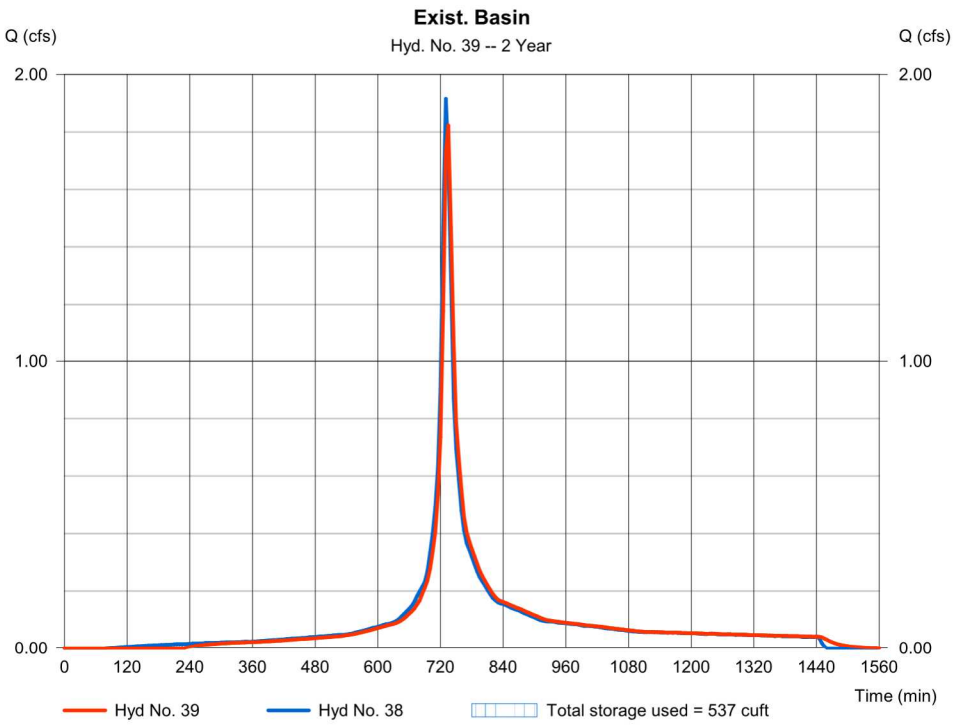
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 — Wednesday, 08 / 12 / 2020

Hyd. No. 39

Exist. Basin

Hydrograph type	= Reservoir	Peak discharge	= 1.823 cfs
Storm frequency	= 2 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 8,700 cuft
Inflow hyd. No.	= 38 - Basin	Max. Elevation	= 196.67 ft
Reservoir name	= Exist. Basin	Max. Storage	= 537 cuft

Storage Indication method used.



Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 — Wednesday, 08 / 12 / 2020

Pond No. 1 - Exist. Basin

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 196.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	196.00	00	0	0
1.00	197.00	2,408	803	803
2.00	198.00	3,384	2,882	3,684
3.00	199.00	5,450	4,376	8,060

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 15.00	12.00	0.00	0.00
Span (in)	= 15.00	12.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 196.30	196.10	0.00	0.00
Length (ft)	= 0.10	28.00	0.00	0.00
Slope (%)	= 0.00	2.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

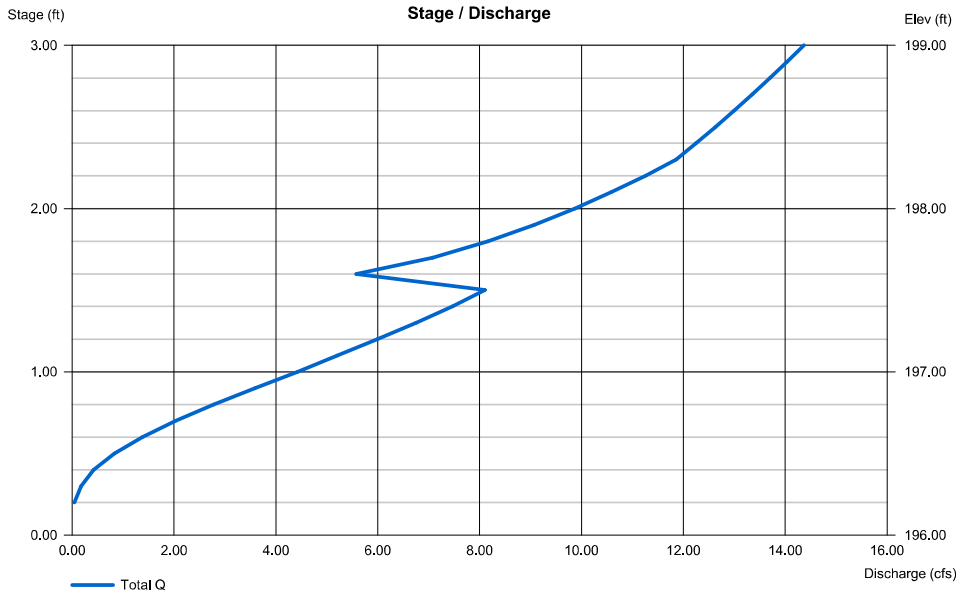
Weir Structures

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

Exfil.(in/hr) = 0.000 (by Contour)

TW Elev. (ft) = 0.00

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

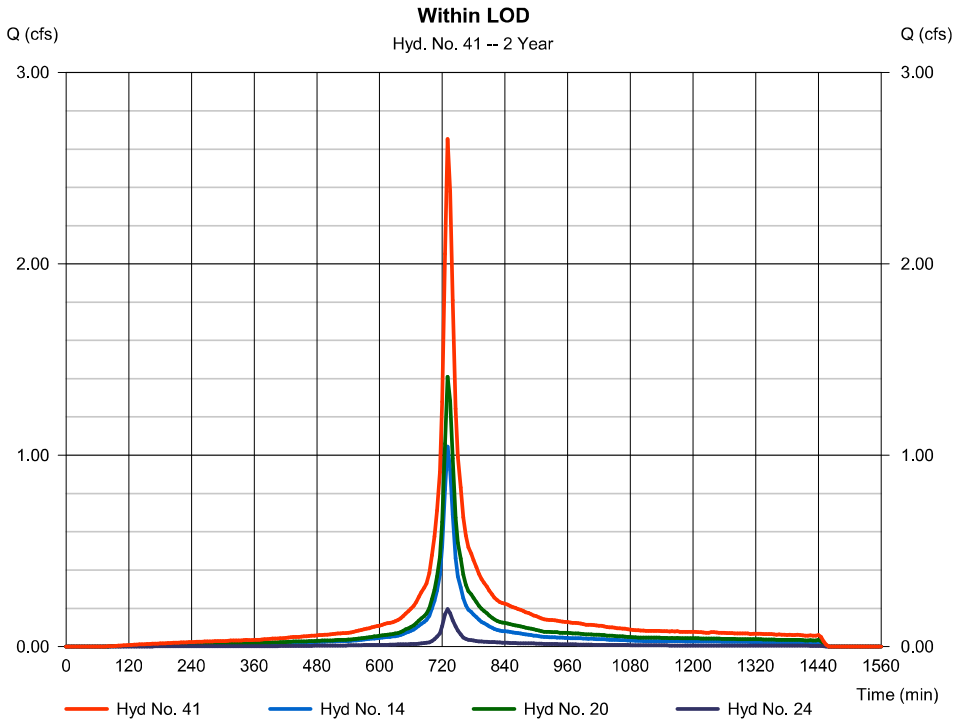


Hydrograph Report

Hyd. No. 41

Within LOD

Hydrograph type	= Combine	Peak discharge	= 2.653 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 12,532 cuft
Inflow hyds.	= 14, 20, 24	Contrib. drain. area	= 0.000 ac

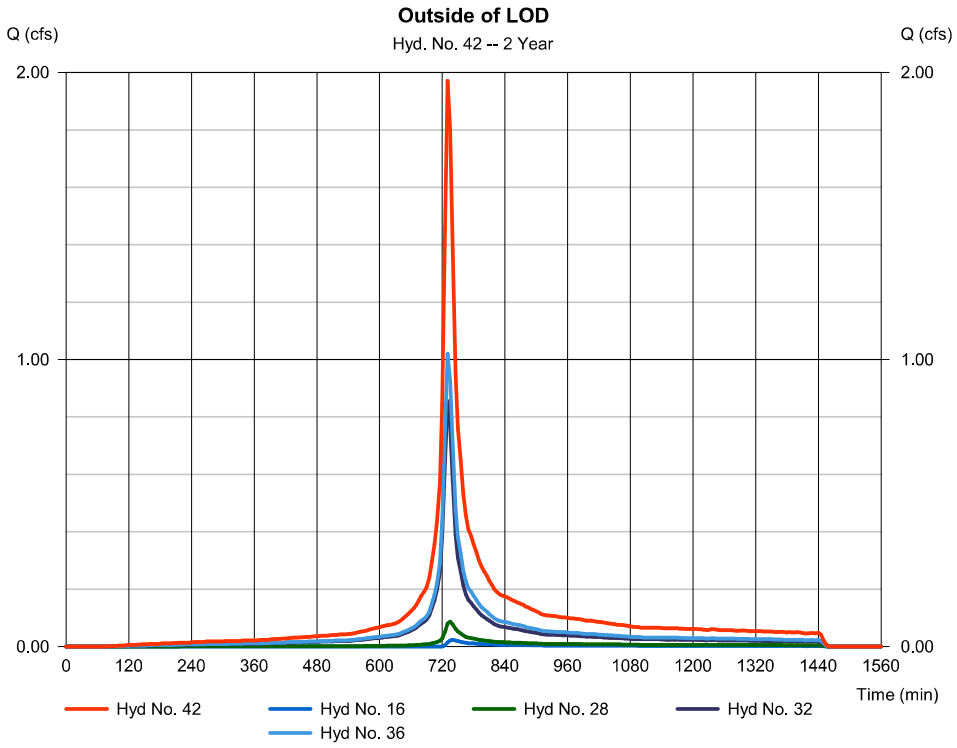


Hydrograph Report

Hyd. No. 42

Outside of LOD

Hydrograph type	= Combine	Peak discharge	= 1.971 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 9,159 cuft
Inflow hyds.	= 16, 28, 32, 36	Contrib. drain. area	= 0.180 ac

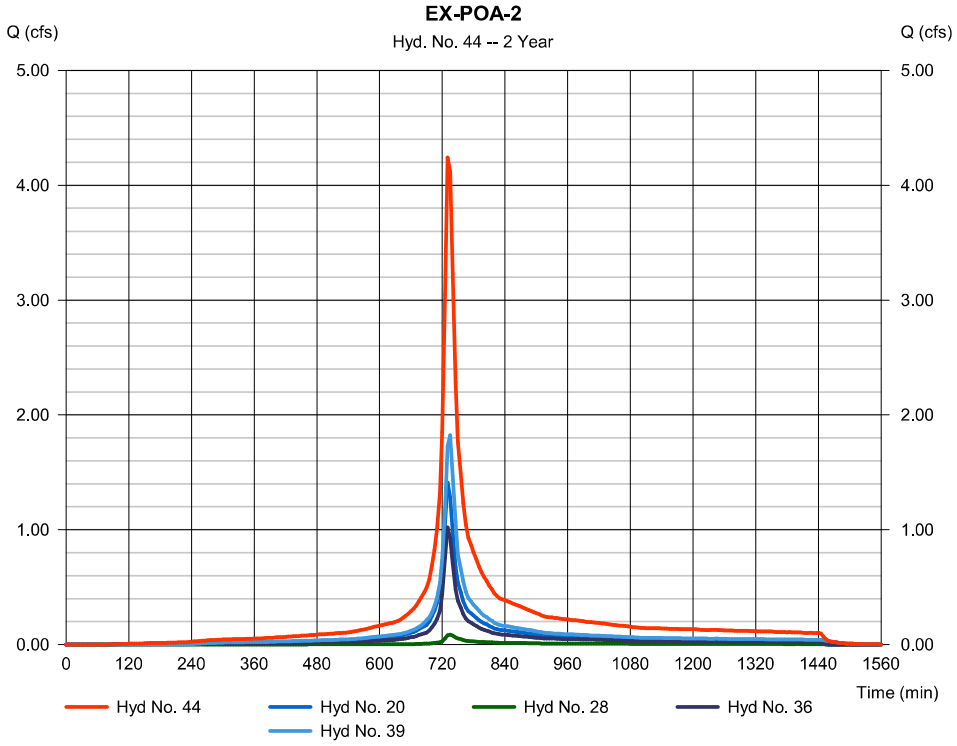


Hydrograph Report

Hyd. No. 44

EX-POA-2

Hydrograph type	= Combine	Peak discharge	= 4.240 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 20,648 cuft
Inflow hyds.	= 20, 28, 36, 39	Contrib. drain. area	= 0.000 ac

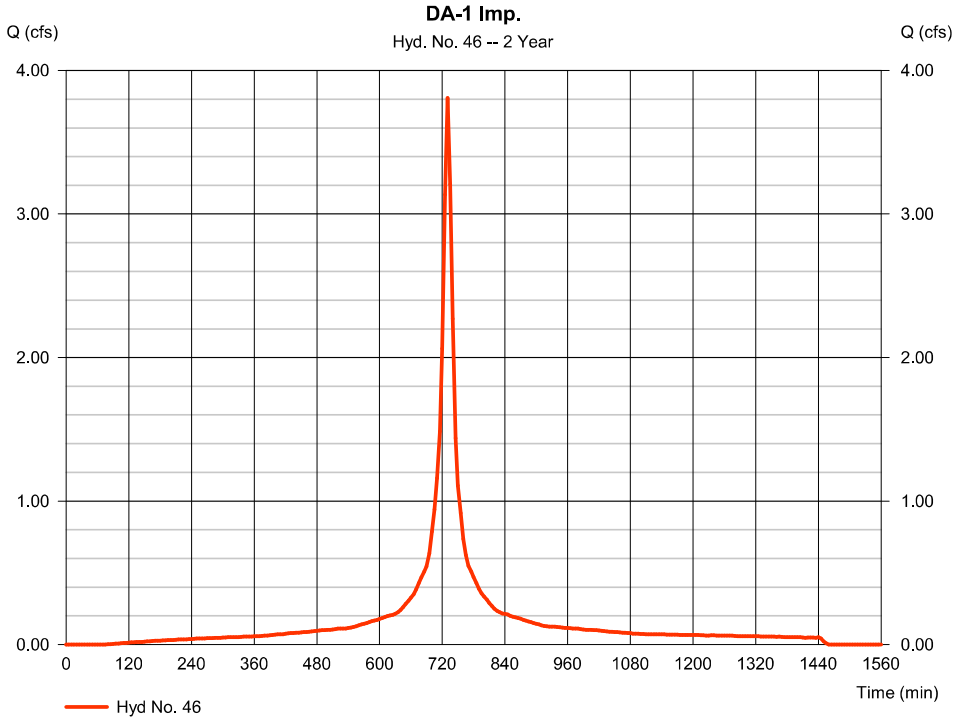


Hydrograph Report

Hyd. No. 46

DA-1 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 3.809 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 15,635 cuft
Drainage area	= 1.460 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

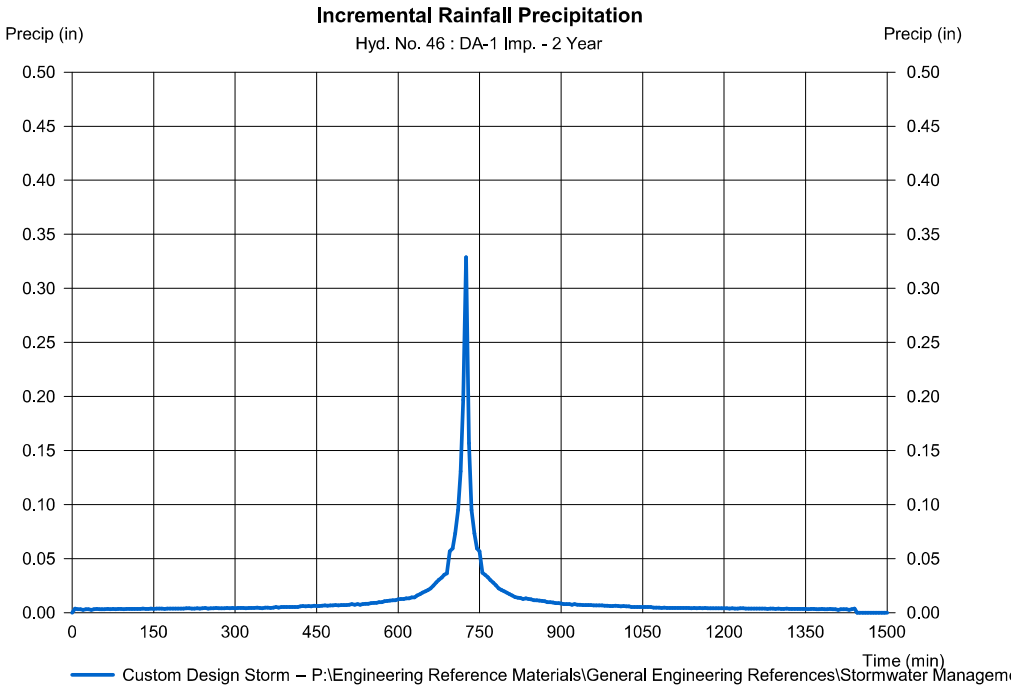


Precipitation Report

Hyd. No. 46

DA-1 Imp.

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

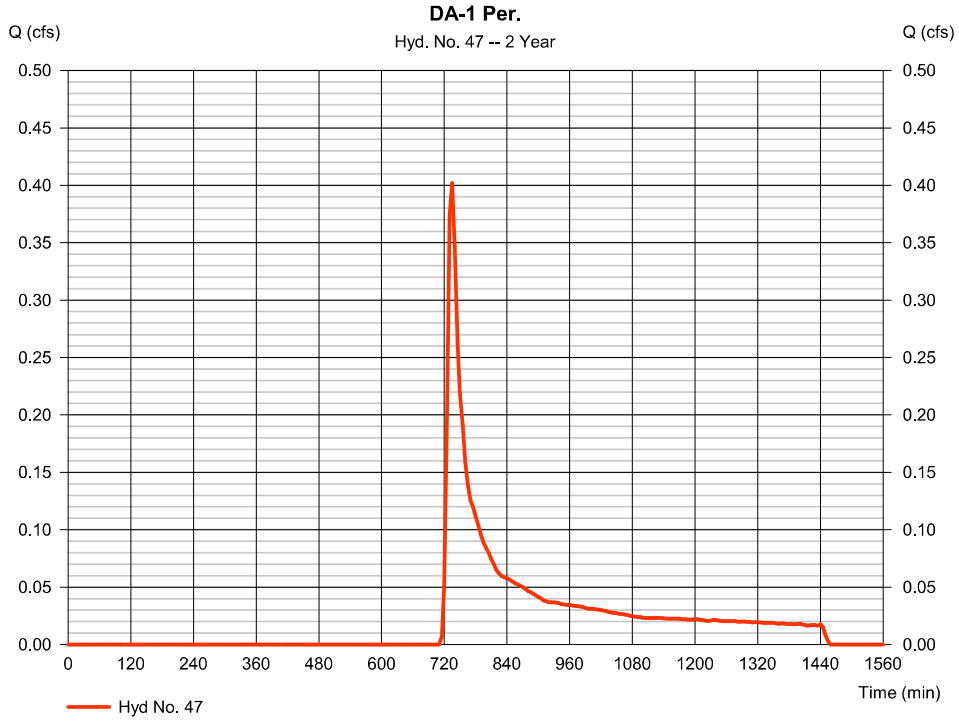


Hydrograph Report

Hyd. No. 47

DA-1 Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.402 cfs
Storm frequency	= 2 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 2,052 cuft
Drainage area	= 1.160 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Storm frequency	= 48 hrs

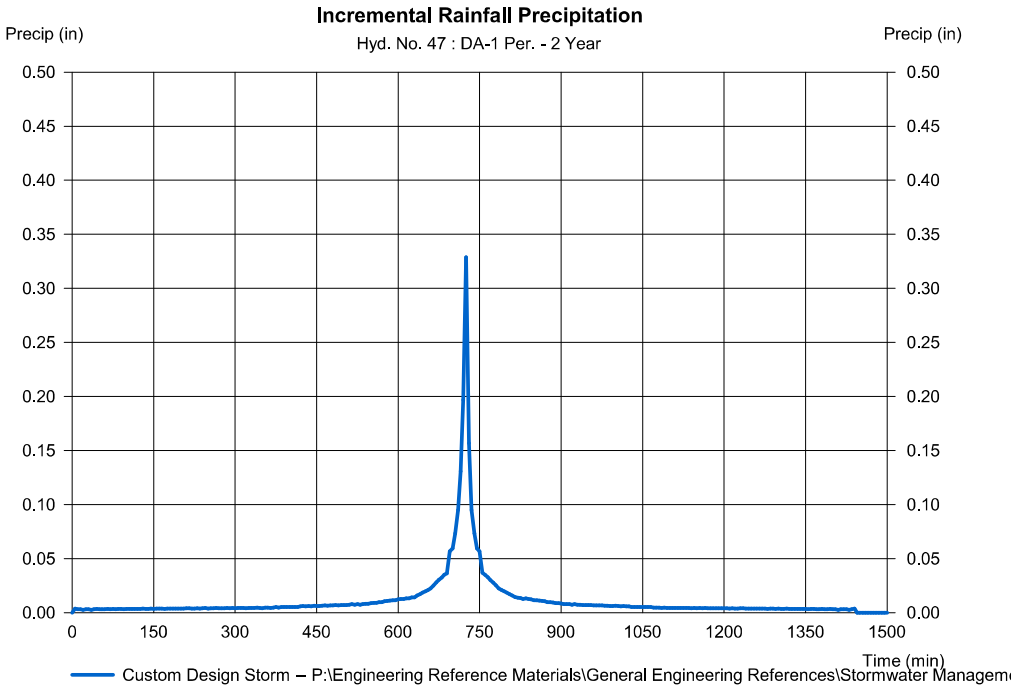


Precipitation Report

Hyd. No. 47

DA-1 Per.

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

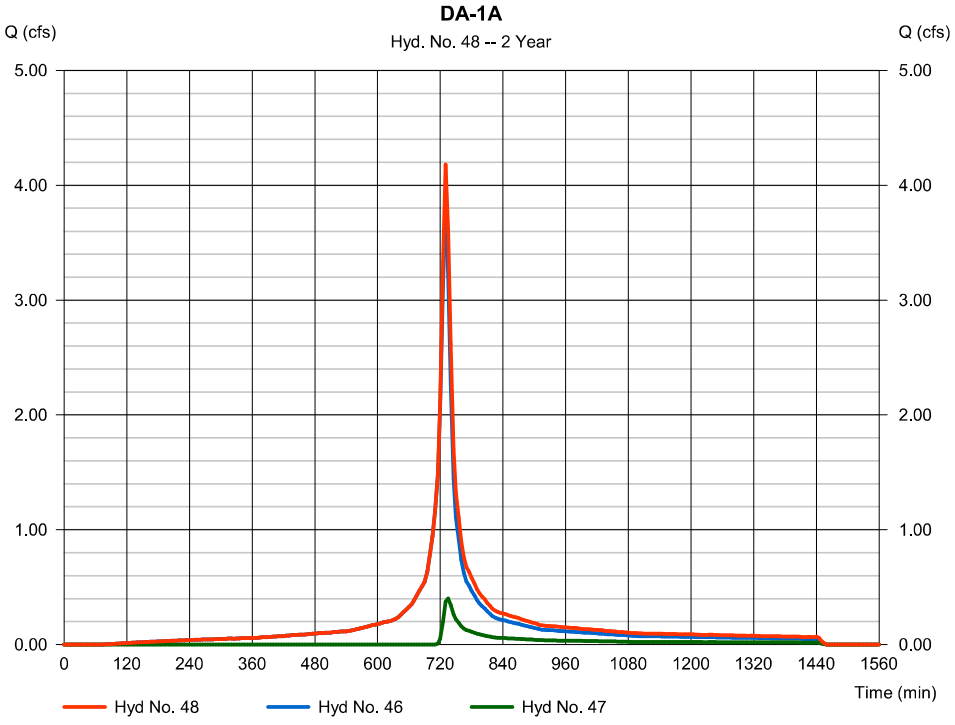


Hydrograph Report

Hyd. No. 48

DA-1A

Hydrograph type	= Combine	Peak discharge	= 4.182 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 17,687 cuft
Inflow hyds.	= 46, 47	Contrib. drain. area	= 2.620 ac

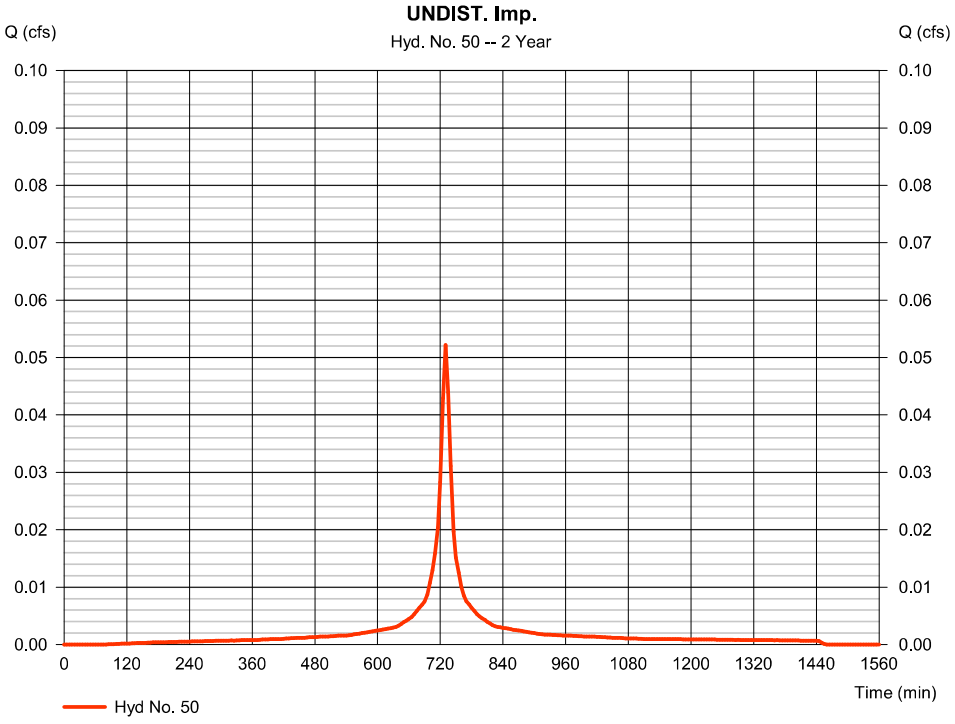


Hydrograph Report

Hyd. No. 50

UNDIST. Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.052 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 214 cuft
Drainage area	= 0.020 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

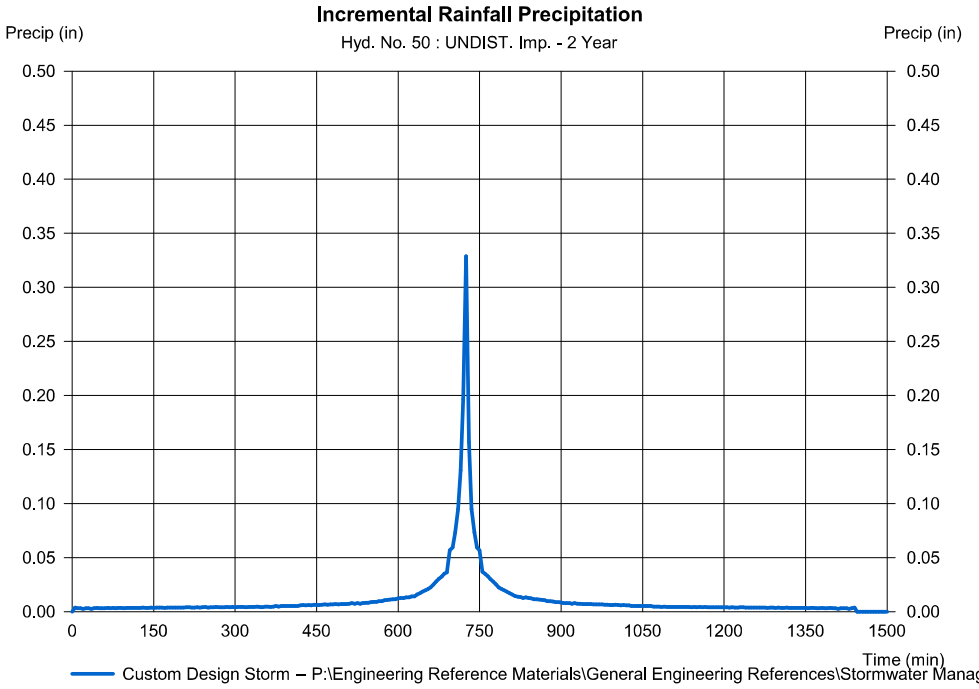


Precipitation Report

Hyd. No. 50

UNDIST. Imp.

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

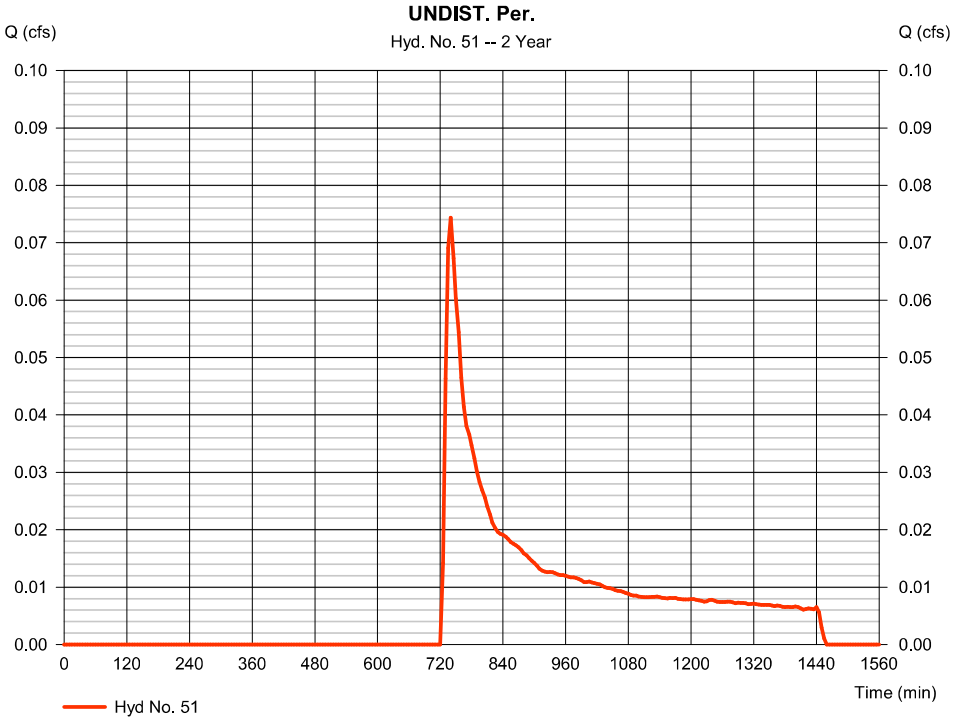


Hydrograph Report

Hyd. No. 51

UNDIST. Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.074 cfs
Storm frequency	= 2 yrs	Time to peak	= 740 min
Time interval	= 5 min	Hyd. volume	= 604 cuft
Drainage area	= 0.580 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

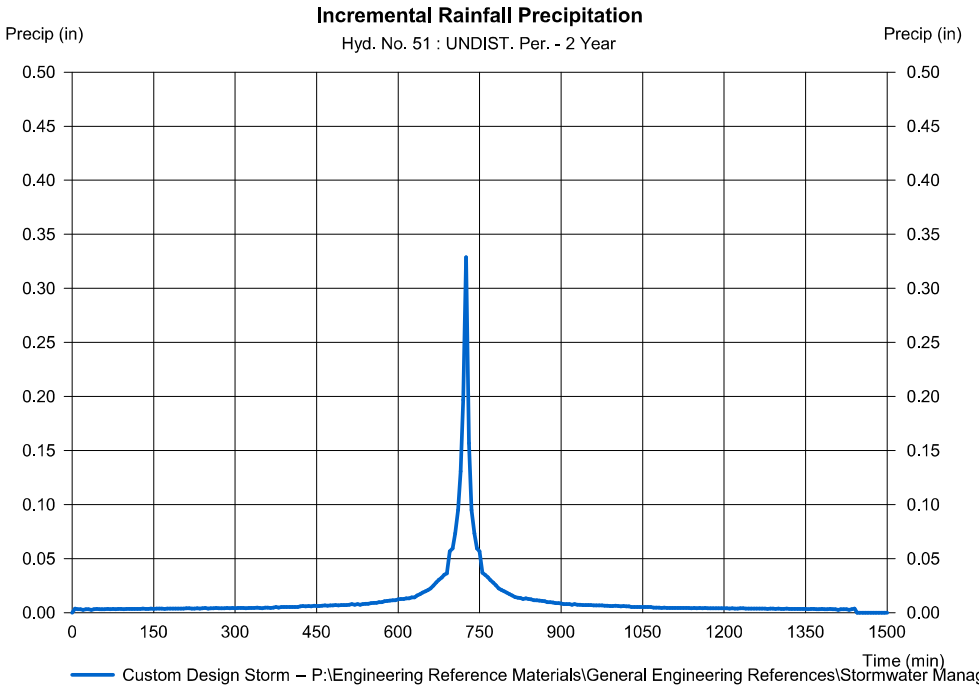


Precipitation Report

Hyd. No. 51

UNDIST. Per.

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

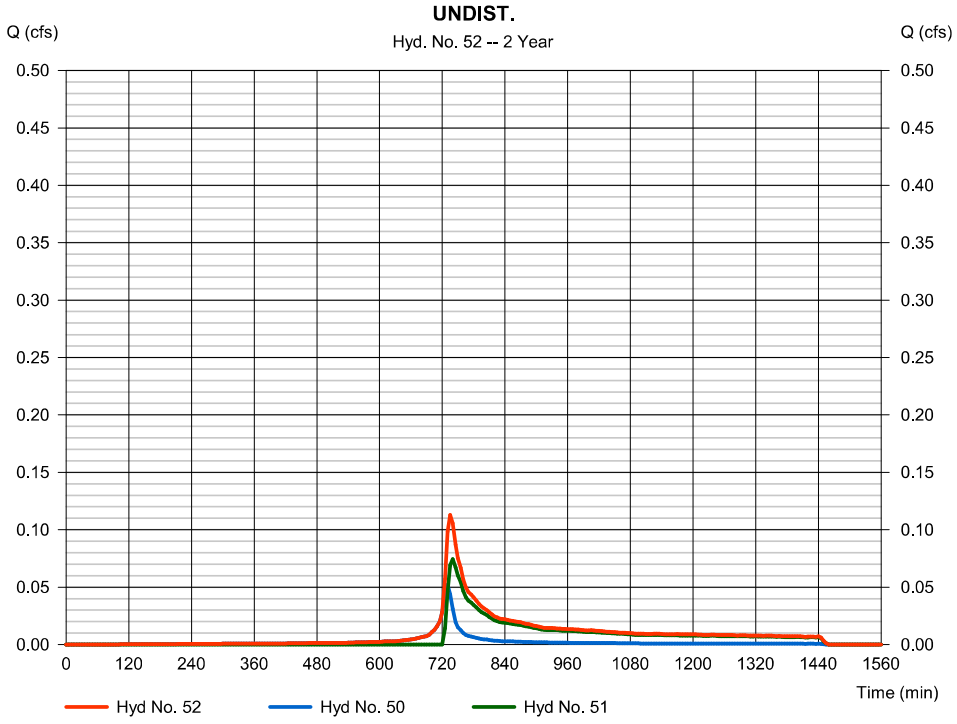


Hydrograph Report

Hyd. No. 52

UNDIST.

Hydrograph type	= Combine	Peak discharge	= 0.113 cfs
Storm frequency	= 2 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 819 cuft
Inflow hyds.	= 50, 51	Contrib. drain. area	= 0.600 ac

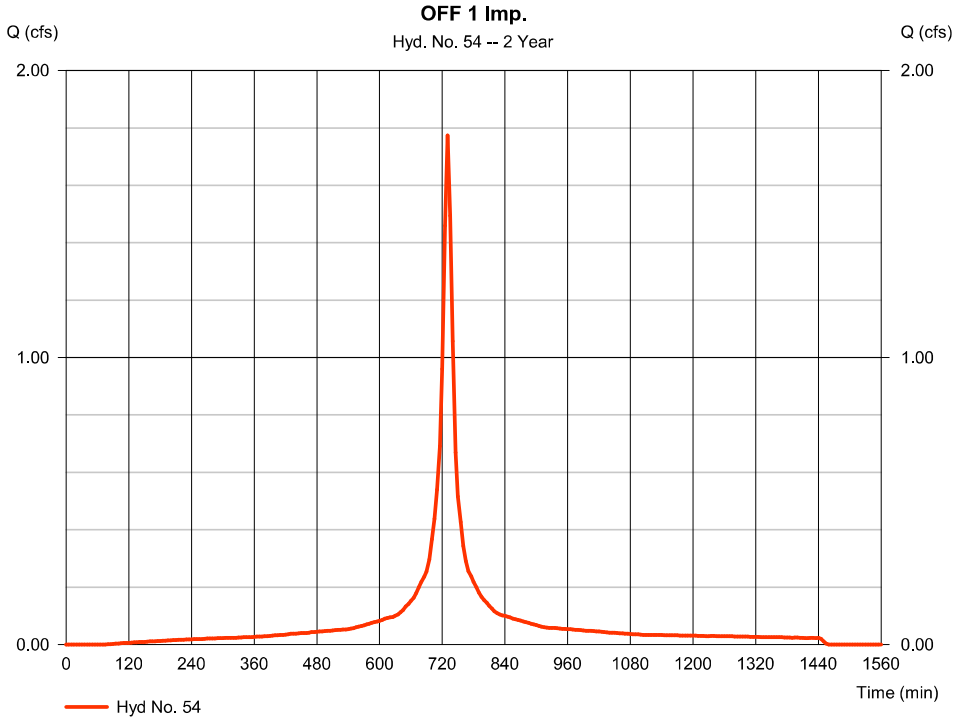


Hydrograph Report

Hyd. No. 54

OFF 1 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 1.774 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 7,282 cuft
Drainage area	= 0.680 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

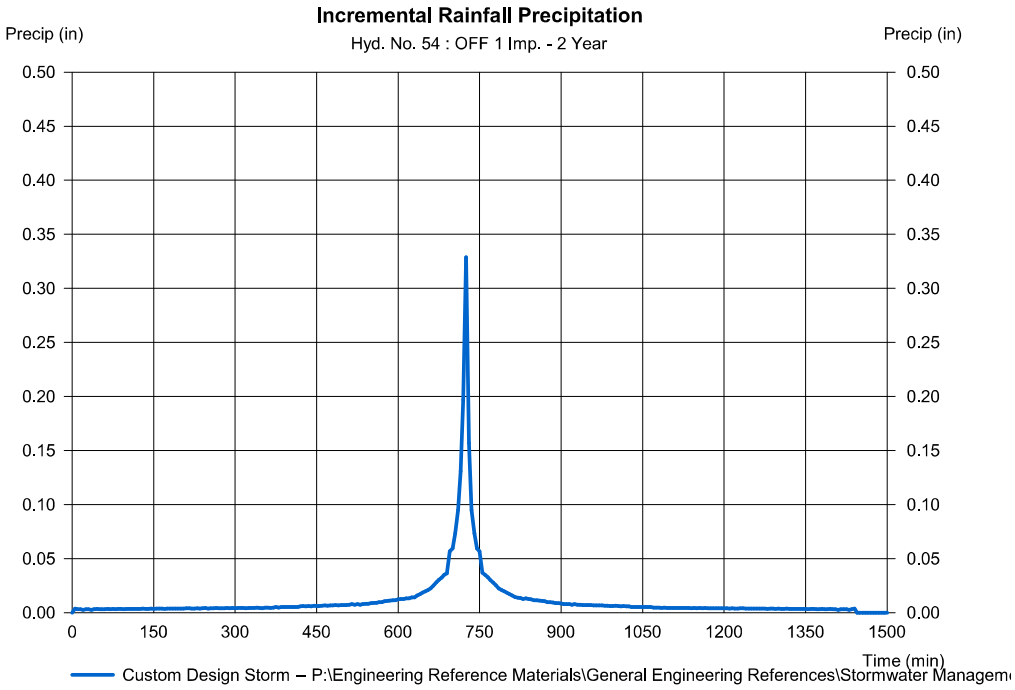


Precipitation Report

Hyd. No. 54

OFF 1 Imp.

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

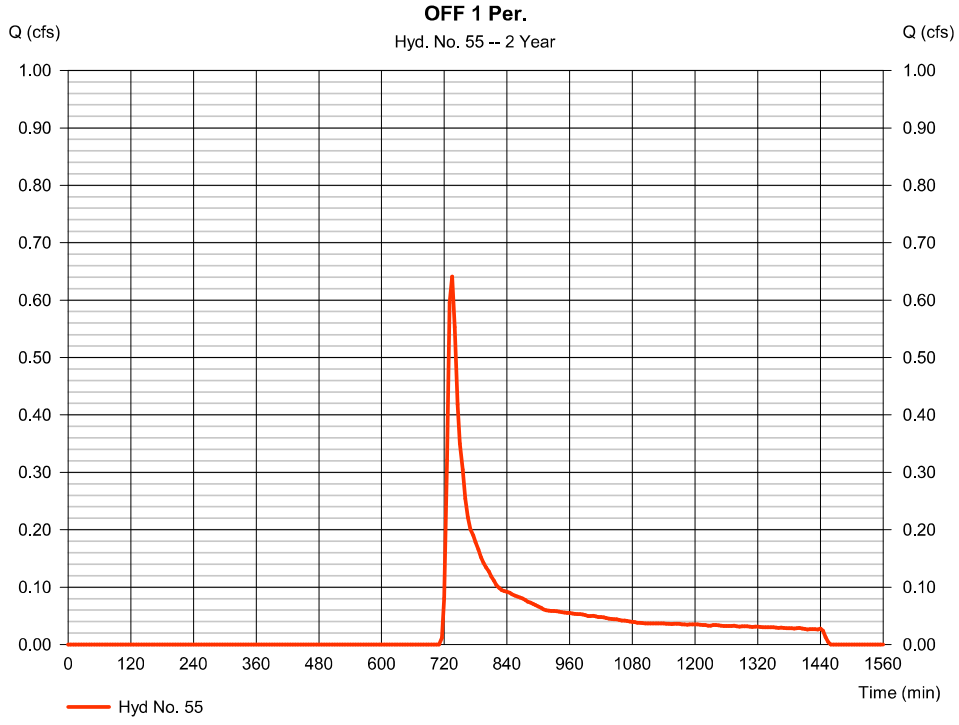


Hydrograph Report

Hyd. No. 55

OFF 1 Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.641 cfs
Storm frequency	= 2 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 3,272 cuft
Drainage area	= 1.850 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

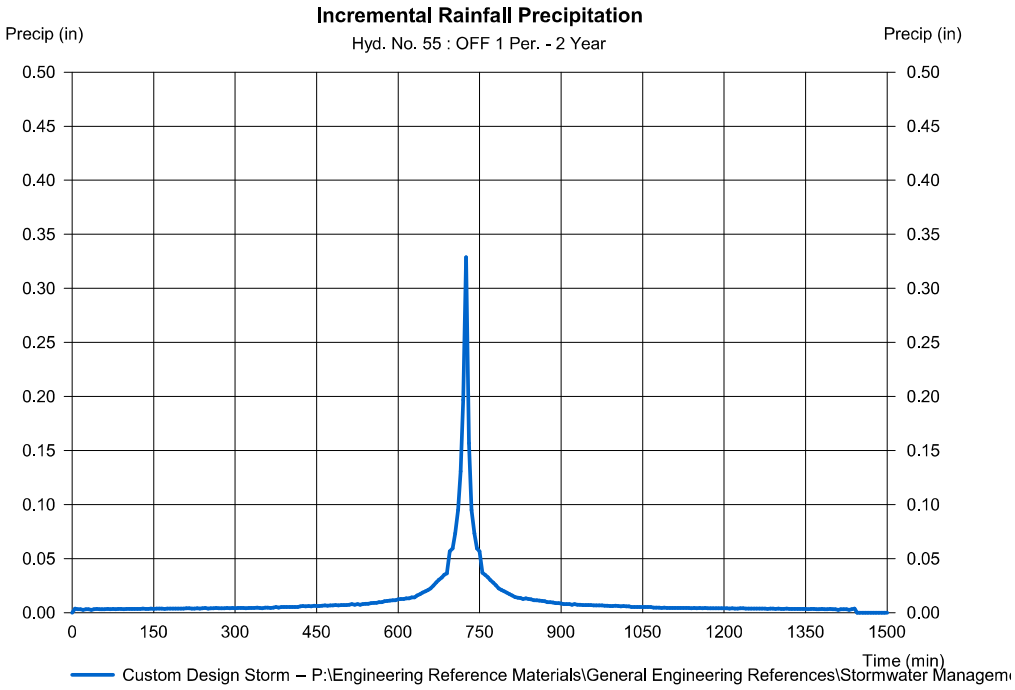


Precipitation Report

Hyd. No. 55

OFF 1 Per.

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

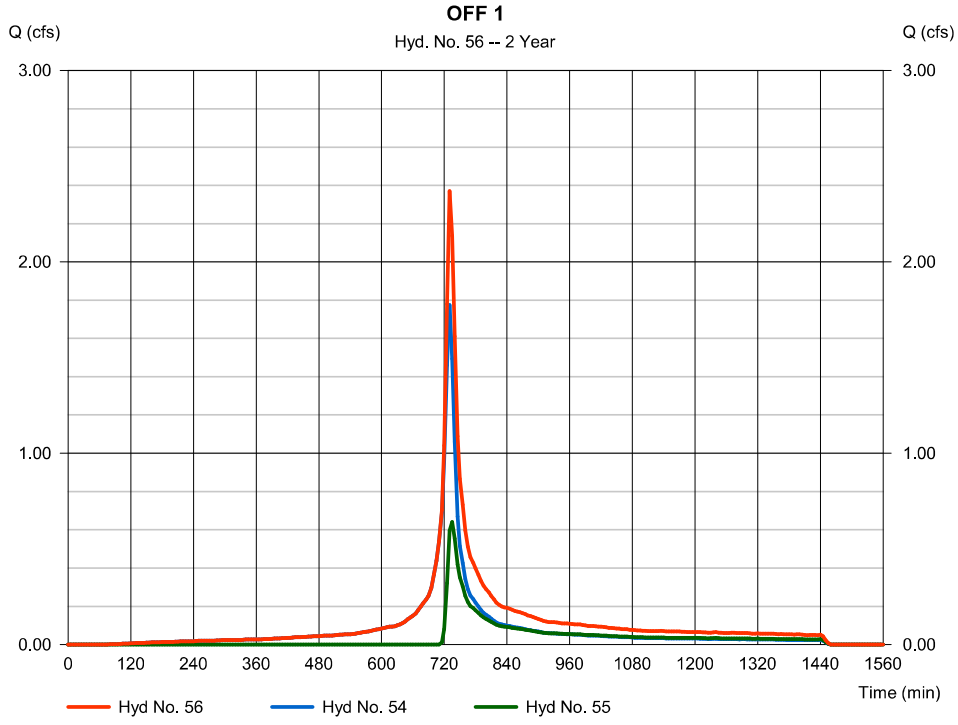


Hydrograph Report

Hyd. No. 56

OFF 1

Hydrograph type	= Combine	Peak discharge	= 2.370 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 10,555 cuft
Inflow hyds.	= 54, 55	Contrib. drain. area	= 2.530 ac

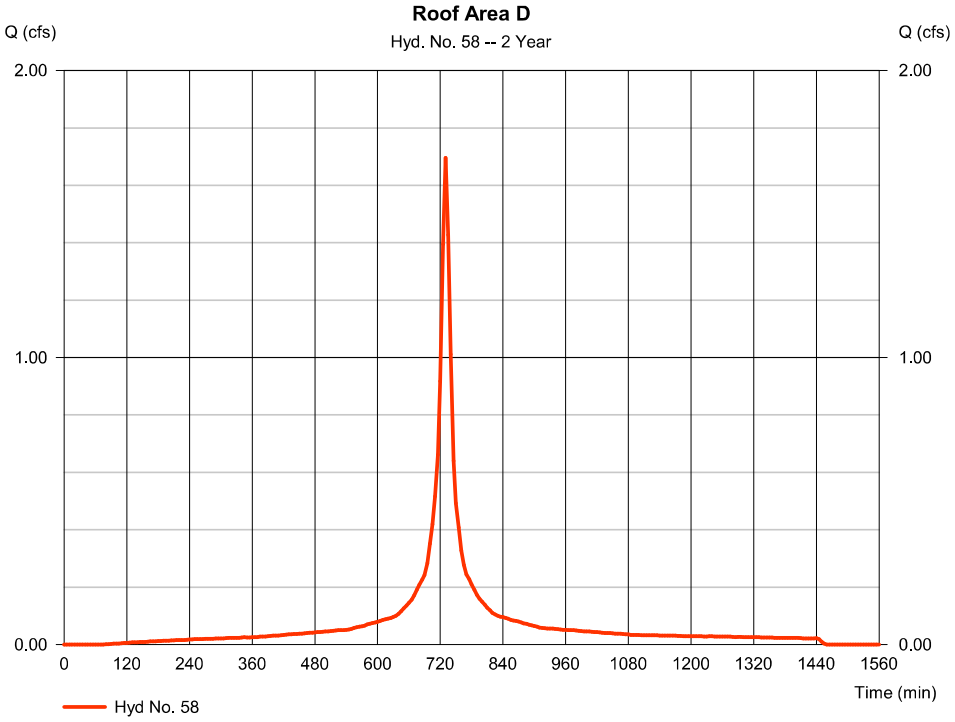


Hydrograph Report

Hyd. No. 58

Roof Area D

Hydrograph type	= SCS Runoff	Peak discharge	= 1.696 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 6,961 cuft
Drainage area	= 0.650 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

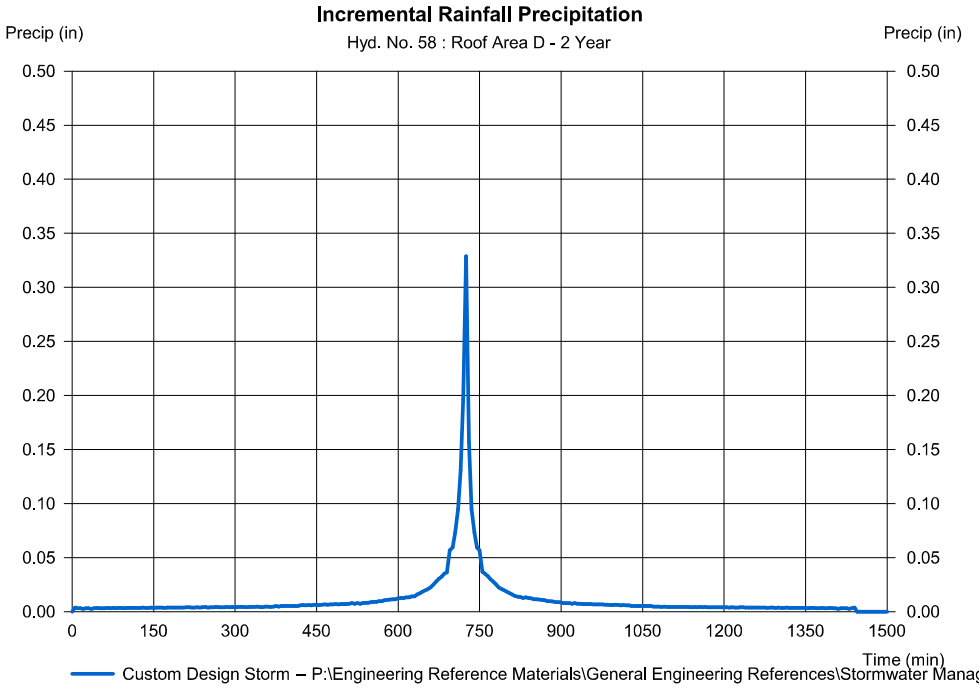


Precipitation Report

Hyd. No. 58

Roof Area D

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

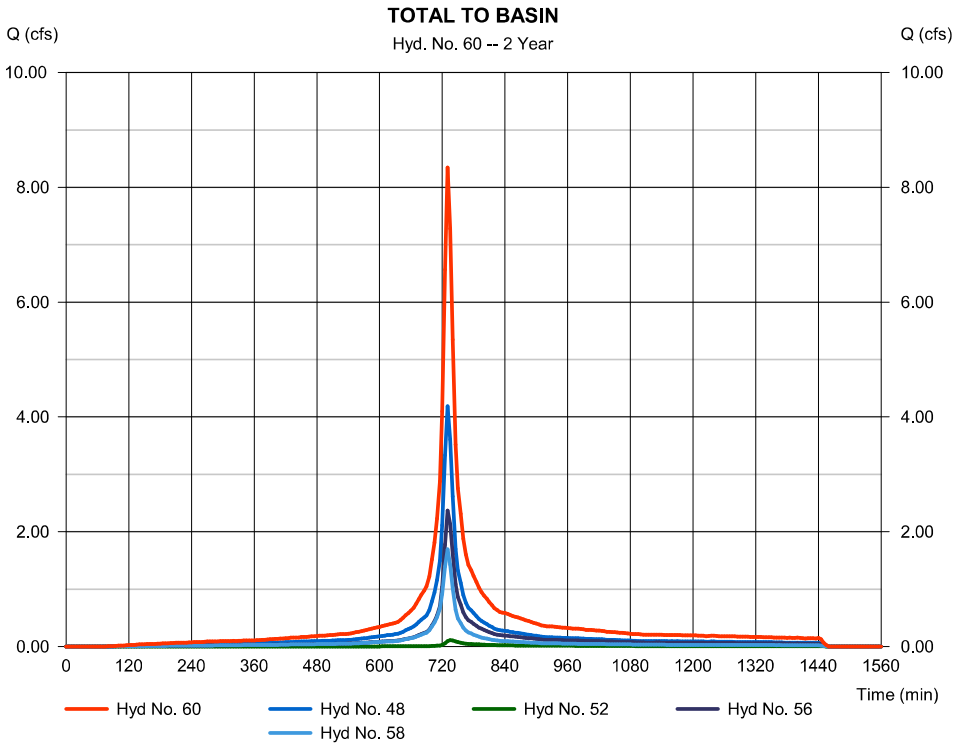


Hydrograph Report

Hyd. No. 60

TOTAL TO BASIN

Hydrograph type	= Combine	Peak discharge	= 8.346 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 36,022 cuft
Inflow hyds.	= 48, 52, 56, 58	Contrib. drain. area	= 0.650 ac



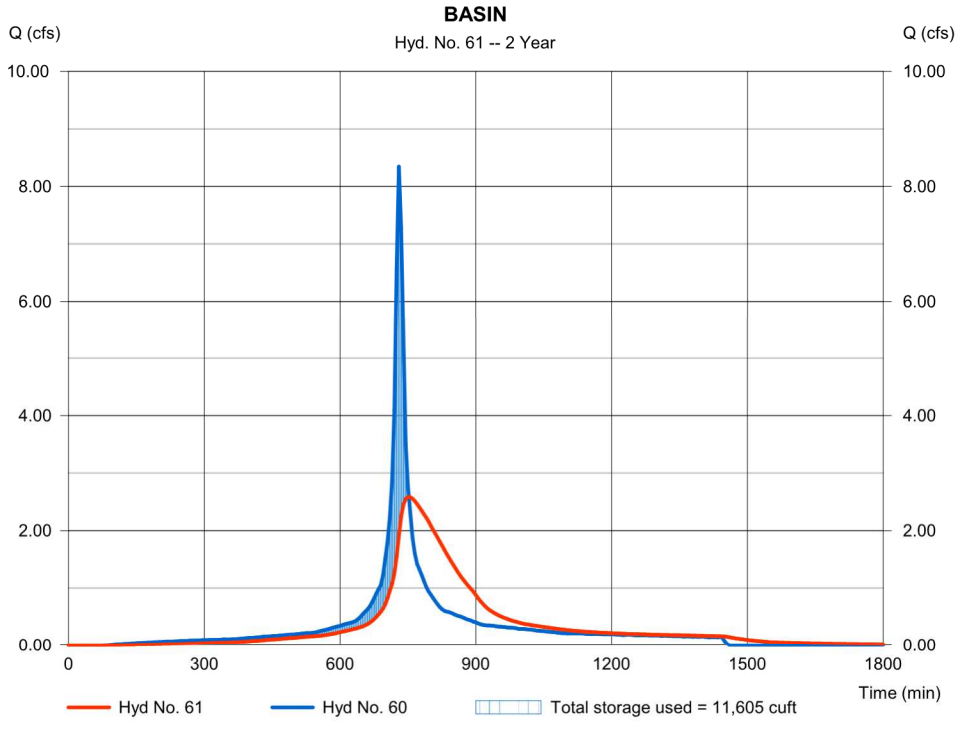
Hydrograph Report

Hyd. No. 61

BASIN

Hydrograph type	= Reservoir	Peak discharge	= 2.581 cfs
Storm frequency	= 2 yrs	Time to peak	= 750 min
Time interval	= 5 min	Hyd. volume	= 36,008 cuft
Inflow hyd. No.	= 60 - TOTAL TO BASIN	Max. Elevation	= 196.21 ft
Reservoir name	= UG STORMTRAP	Max. Storage	= 11,605 cuft

Storage Indication method used.



Pond Report

Pond No. 7 - UG STORMTRAP

Pond Data

Pond storage is based on user-defined values.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	194.70	n/a	0	0
1.00	195.70	n/a	7,700	7,700
2.00	196.70	n/a	7,700	15,400
3.00	197.70	n/a	7,700	23,100
4.00	198.70	n/a	7,700	30,800
5.00	199.70	n/a	7,700	38,500
5.17	200.37	n/a	1,309	39,809

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 24.00	6.00	8.00	0.00
Span (in)	= 24.00	14.00	14.00	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 194.70	194.70	198.30	0.00
Length (ft)	= 64.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	n/a
N-Value	= .012	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

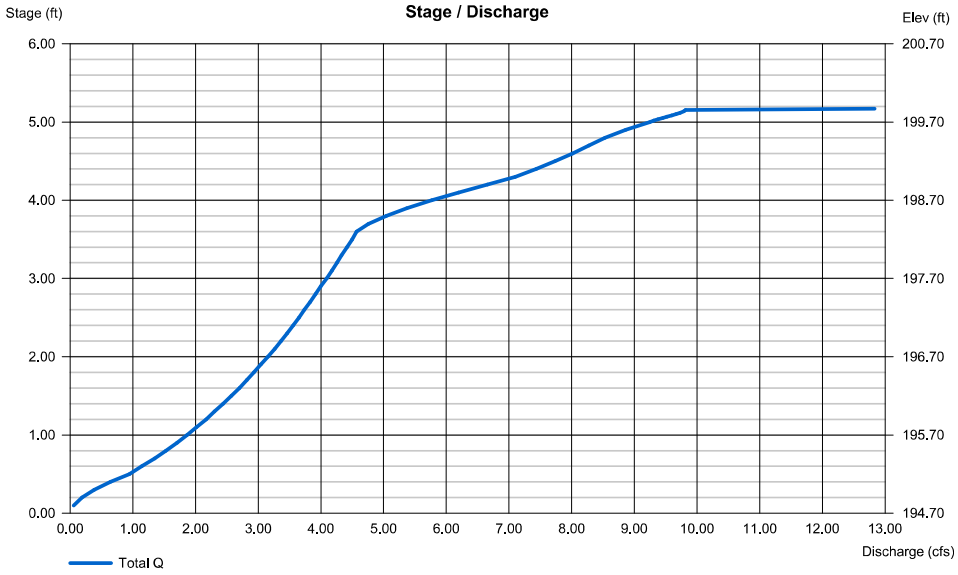
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 1.00	0.00	0.00	0.00
Crest El. (ft)	= 199.50	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= Yes	No	No	No

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

TW Elev. (ft) = 0.00

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

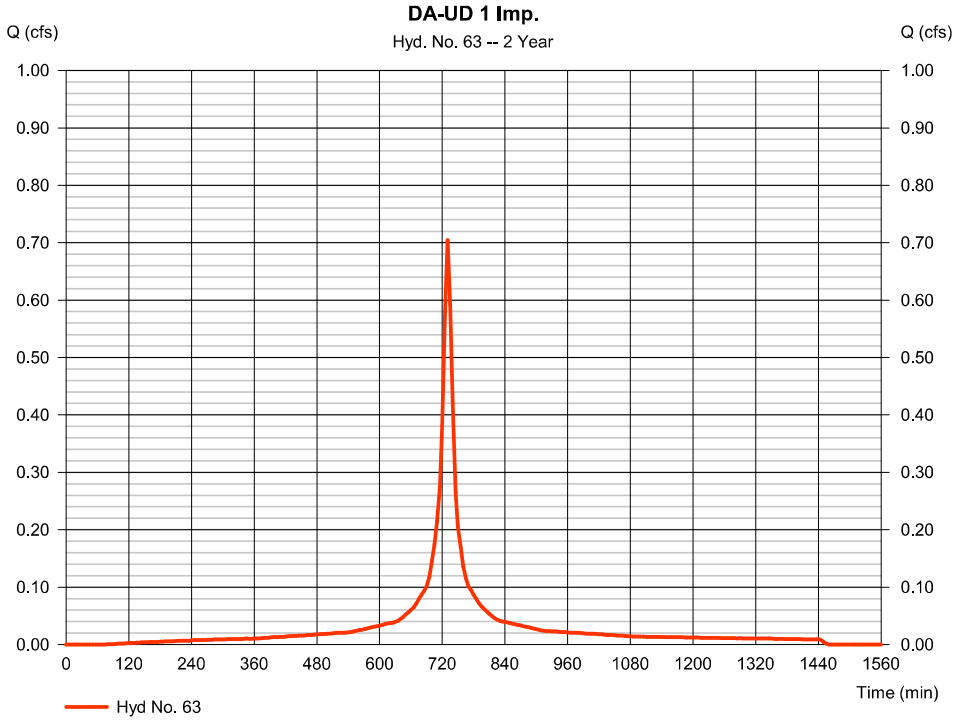


Hydrograph Report

Hyd. No. 63

DA-UD 1 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.704 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,891 cuft
Drainage area	= 0.270 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater Shape Factor		= 484

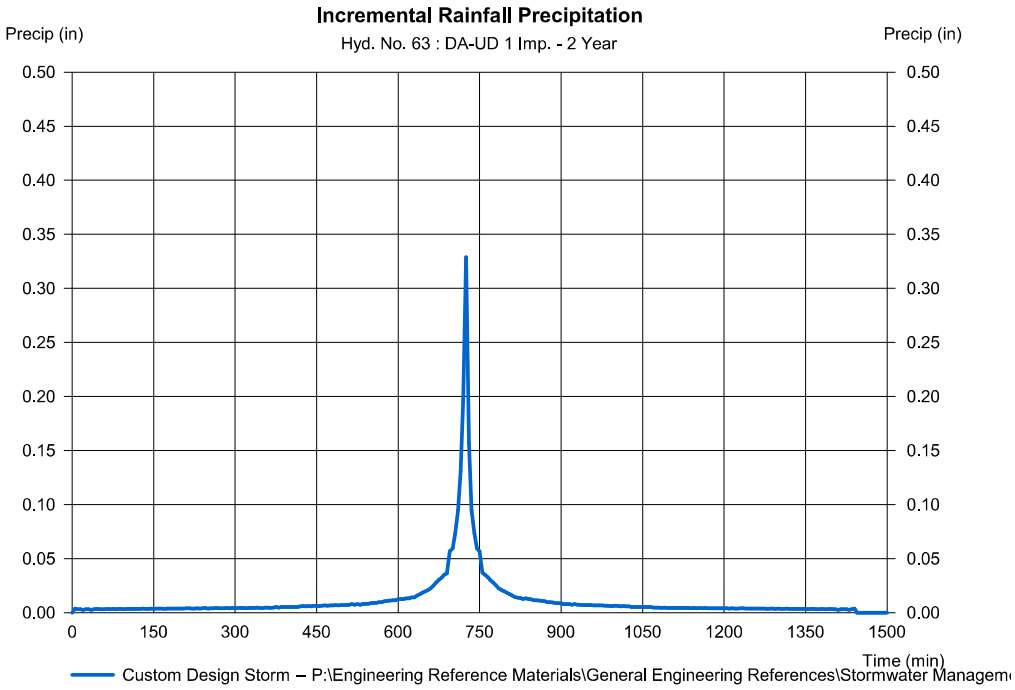


Precipitation Report

Hyd. No. 63

DA-UD 1 Imp.

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

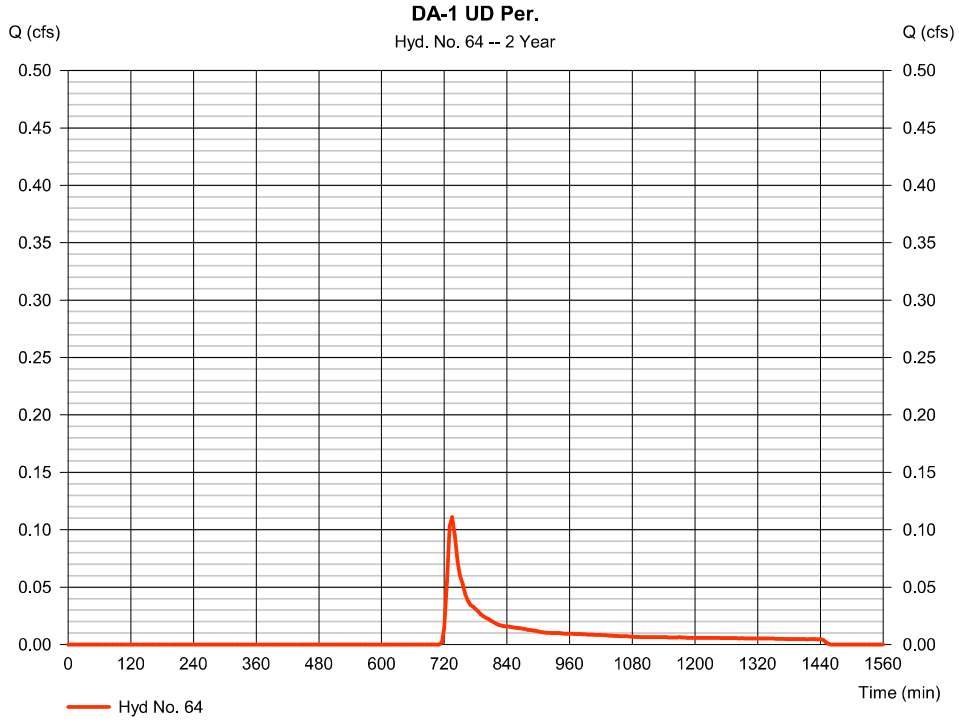


Hydrograph Report

Hyd. No. 64

DA-1 UD Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.111 cfs
Storm frequency	= 2 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 566 cuft
Drainage area	= 0.320 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

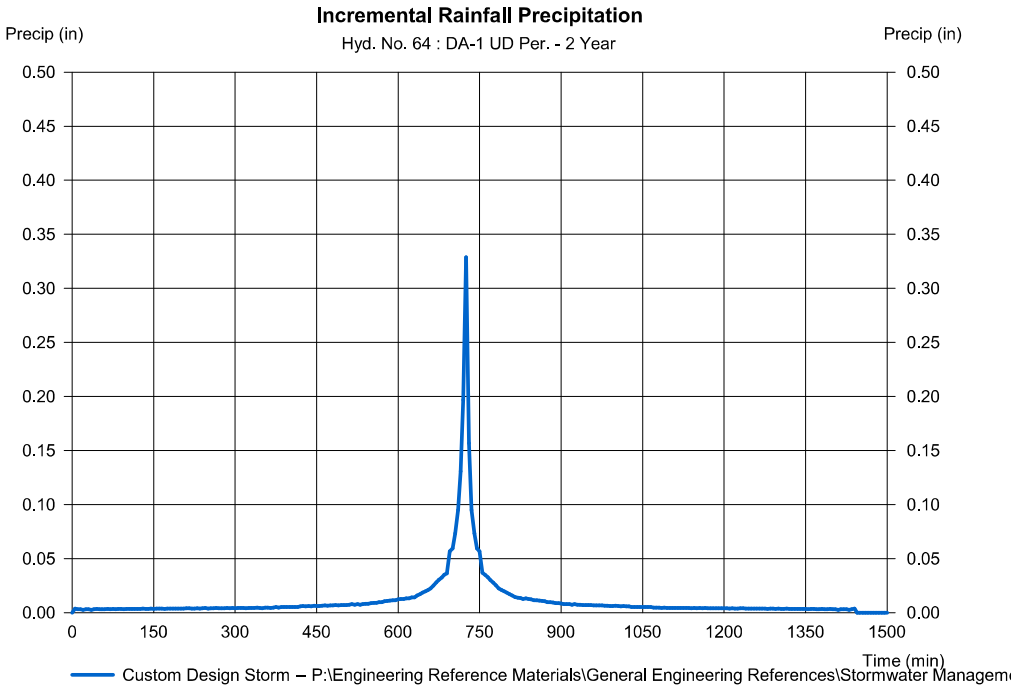


Precipitation Report

Hyd. No. 64

DA-1 UD Per.

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

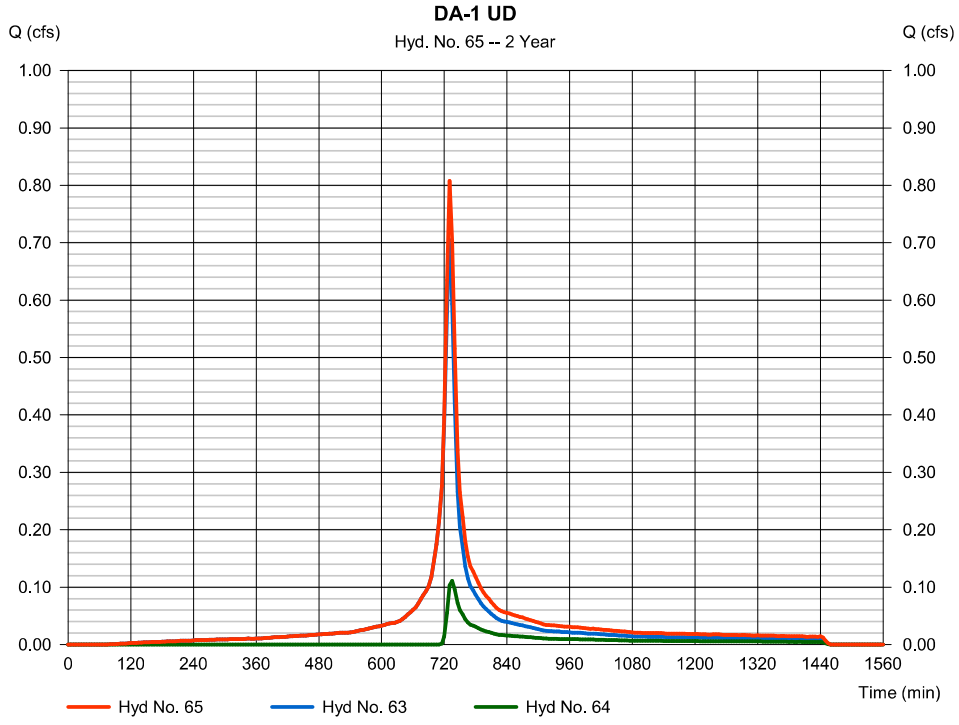


Hydrograph Report

Hyd. No. 65

DA-1 UD

Hydrograph type	= Combine	Peak discharge	= 0.807 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 3,458 cuft
Inflow hyds.	= 63, 64	Contrib. drain. area	= 0.590 ac

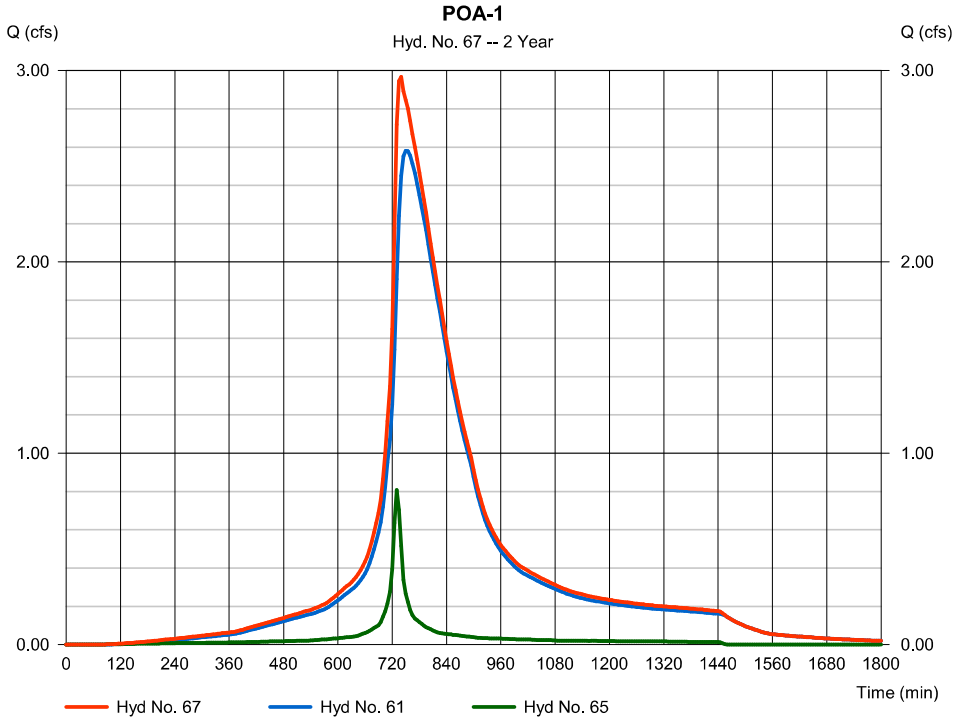


Hydrograph Report

Hyd. No. 67

POA-1

Hydrograph type	= Combine	Peak discharge	= 2.967 cfs
Storm frequency	= 2 yrs	Time to peak	= 740 min
Time interval	= 5 min	Hyd. volume	= 39,465 cuft
Inflow hyds.	= 61, 65	Contrib. drain. area	= 0.000 ac

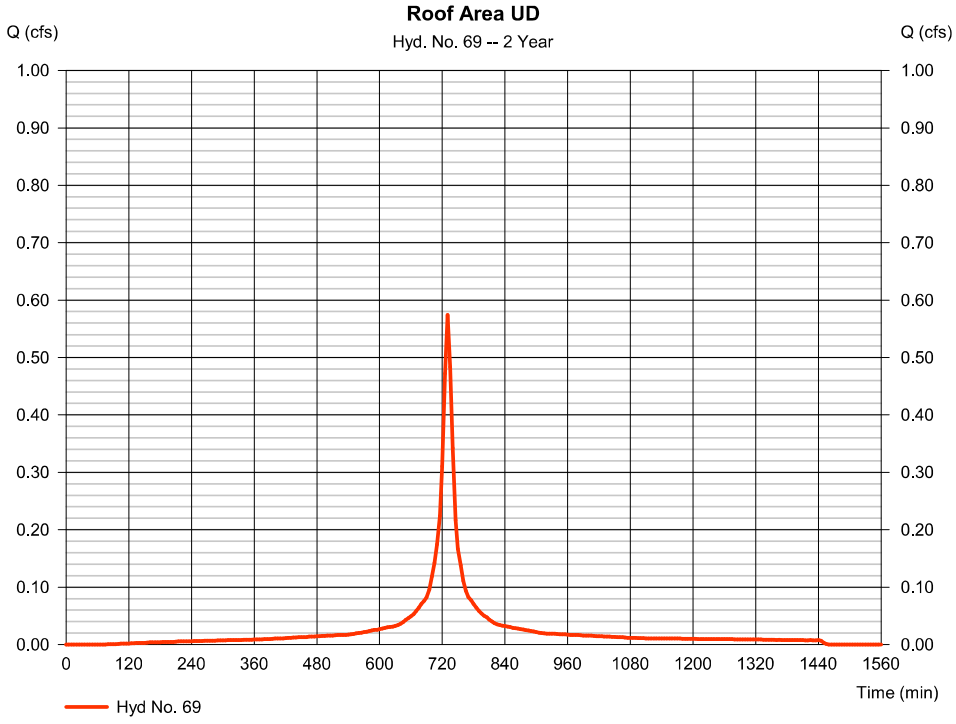


Hydrograph Report

Hyd. No. 69

Roof Area UD

Hydrograph type	= SCS Runoff	Peak discharge	= 0.574 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,356 cuft
Drainage area	= 0.220 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

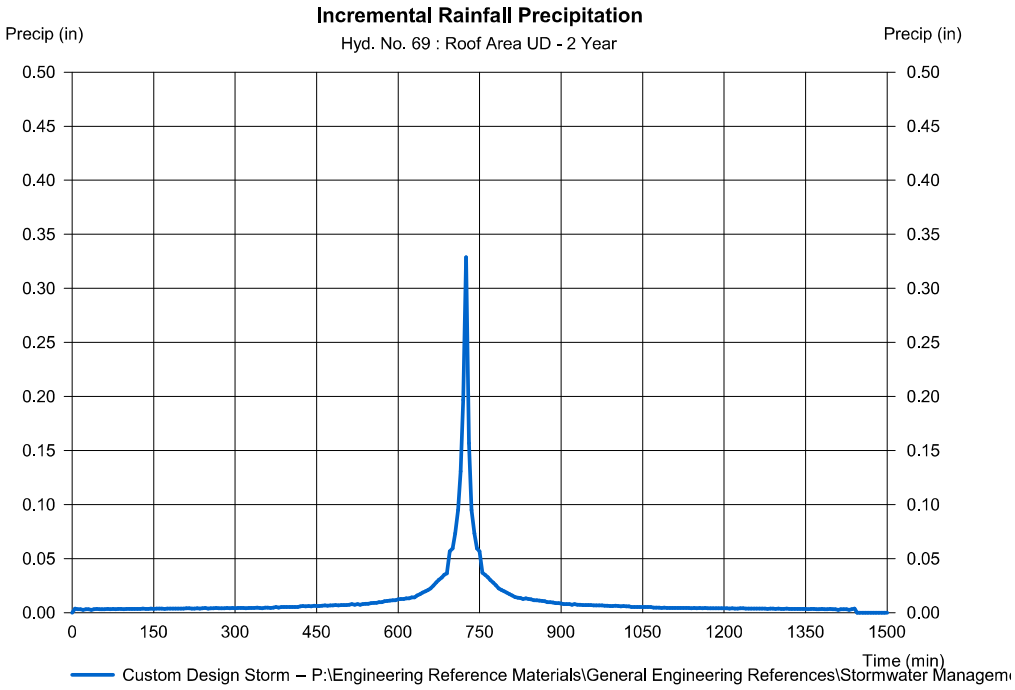


Precipitation Report

Hyd. No. 69

Roof Area UD

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

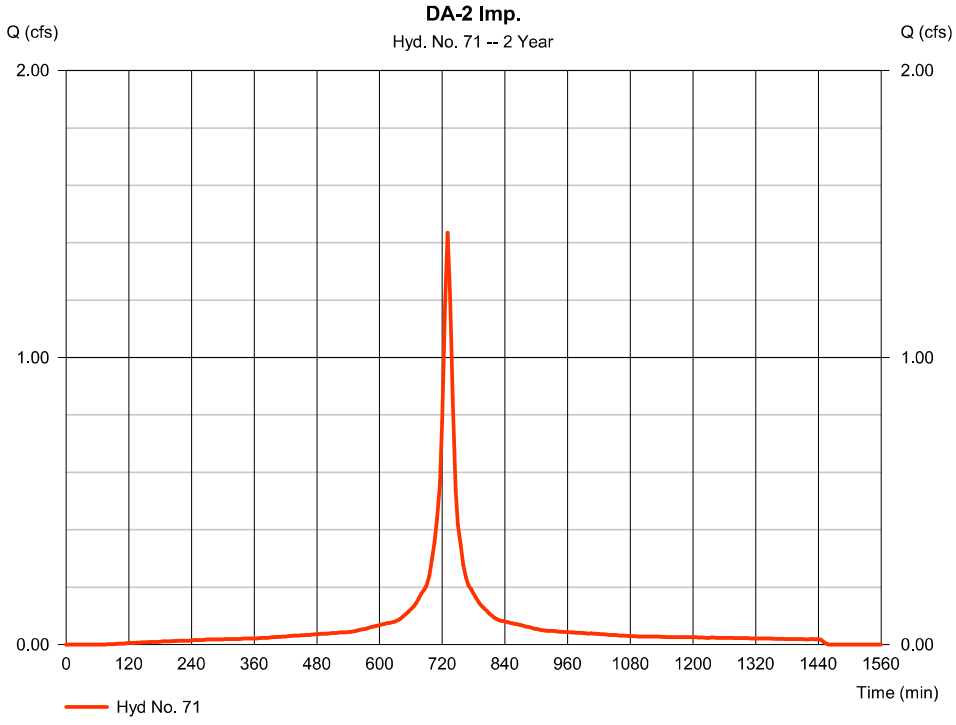


Hydrograph Report

Hyd. No. 71

DA-2 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 1.435 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 5,890 cuft
Drainage area	= 0.550 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Storage Coeff.	= 48

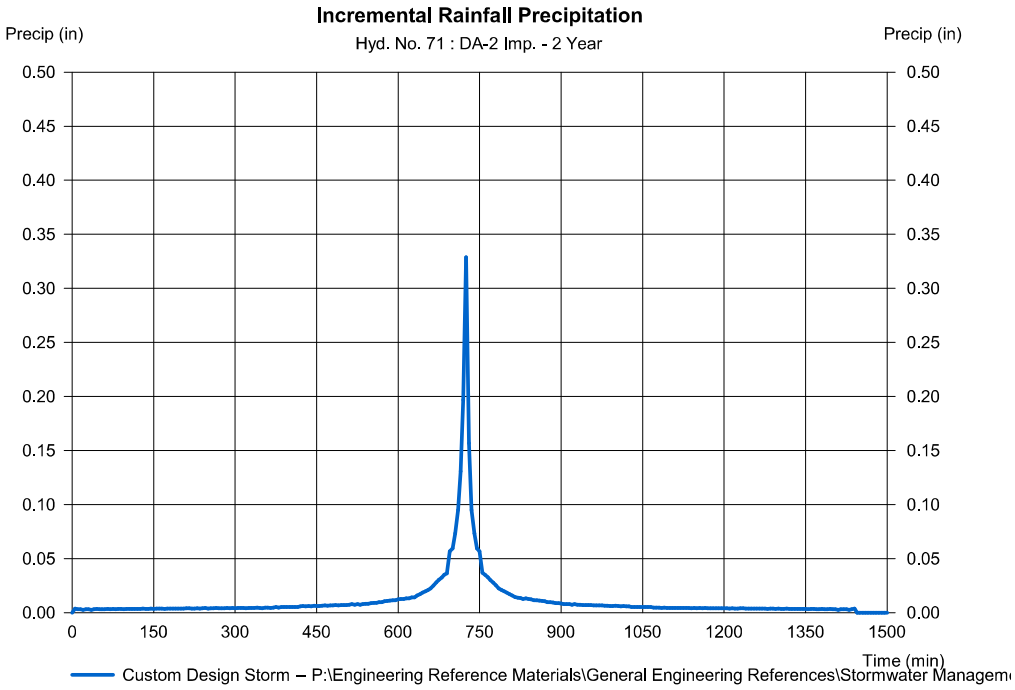


Precipitation Report

Hyd. No. 71

DA-2 Imp.

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

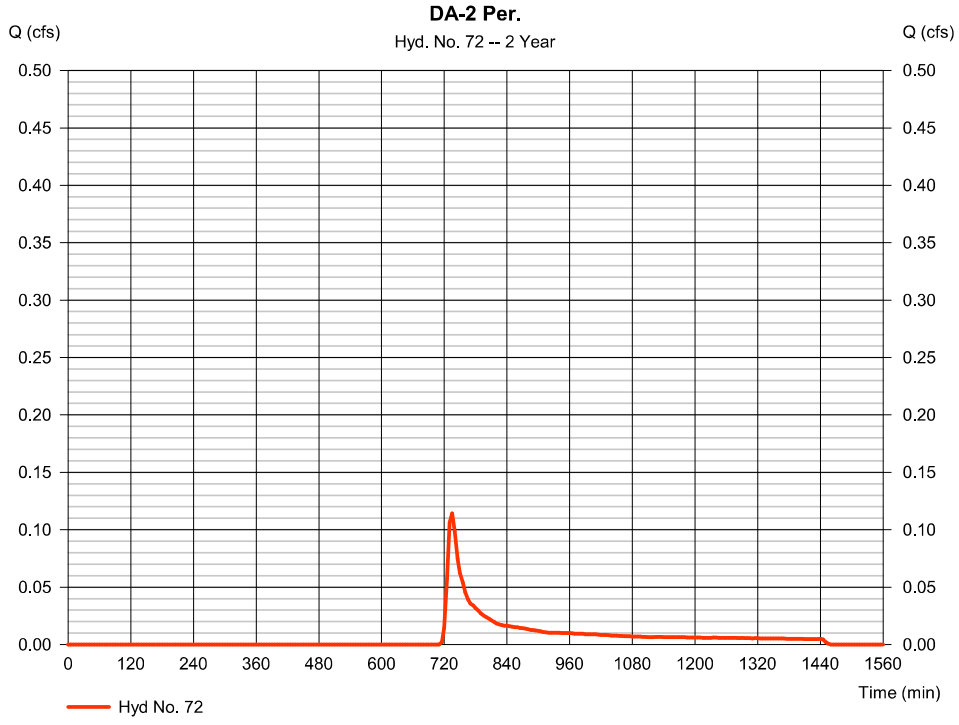


Hydrograph Report

Hyd. No. 72

DA-2 Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.114 cfs
Storm frequency	= 2 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 584 cuft
Drainage area	= 0.330 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

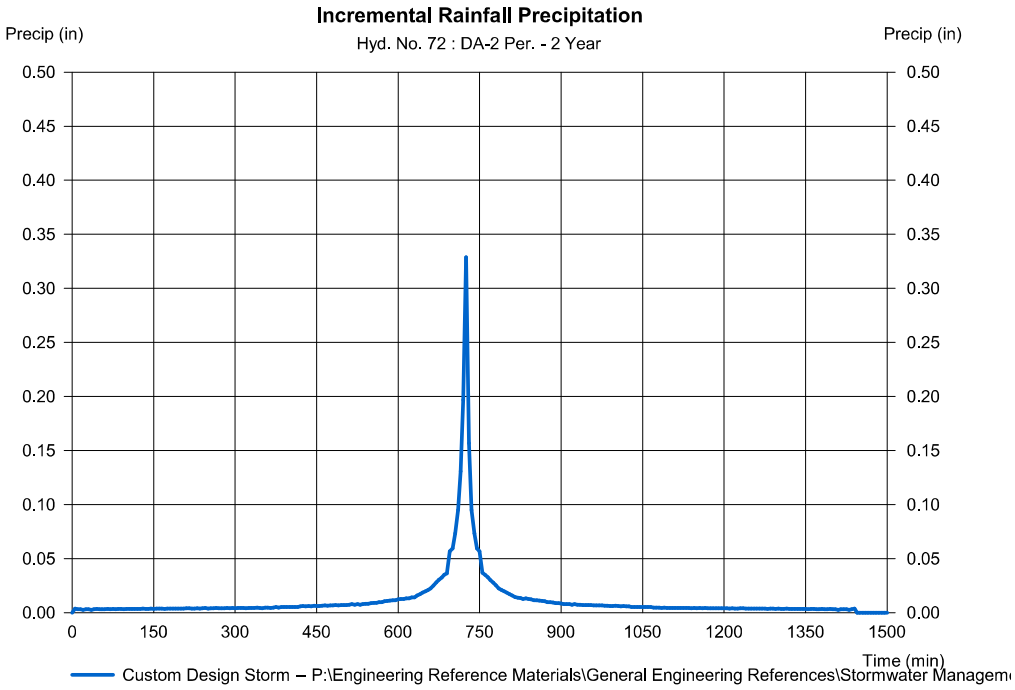


Precipitation Report

Hyd. No. 72

DA-2 Per.

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

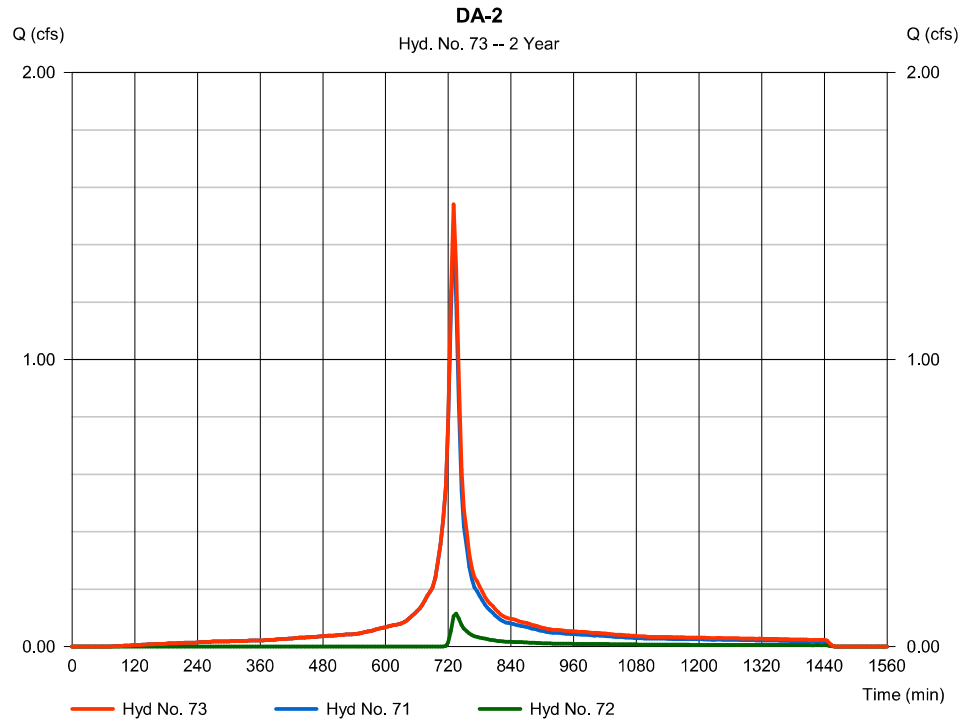


Hydrograph Report

Hyd. No. 73

DA-2

Hydrograph type	= Combine	Peak discharge	= 1.541 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 6,474 cuft
Inflow hyds.	= 71, 72	Contrib. drain. area	= 0.880 ac

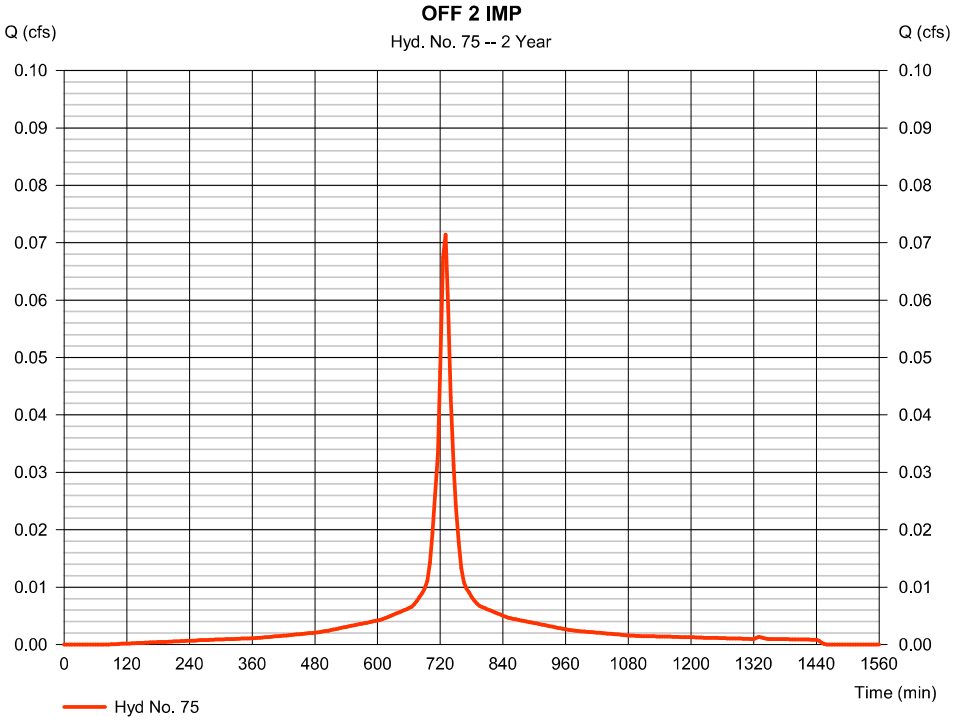


Hydrograph Report

Hyd. No. 75

OFF 2 IMP

Hydrograph type	= SCS Runoff	Peak discharge	= 0.071 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 321 cuft
Drainage area	= 0.030 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

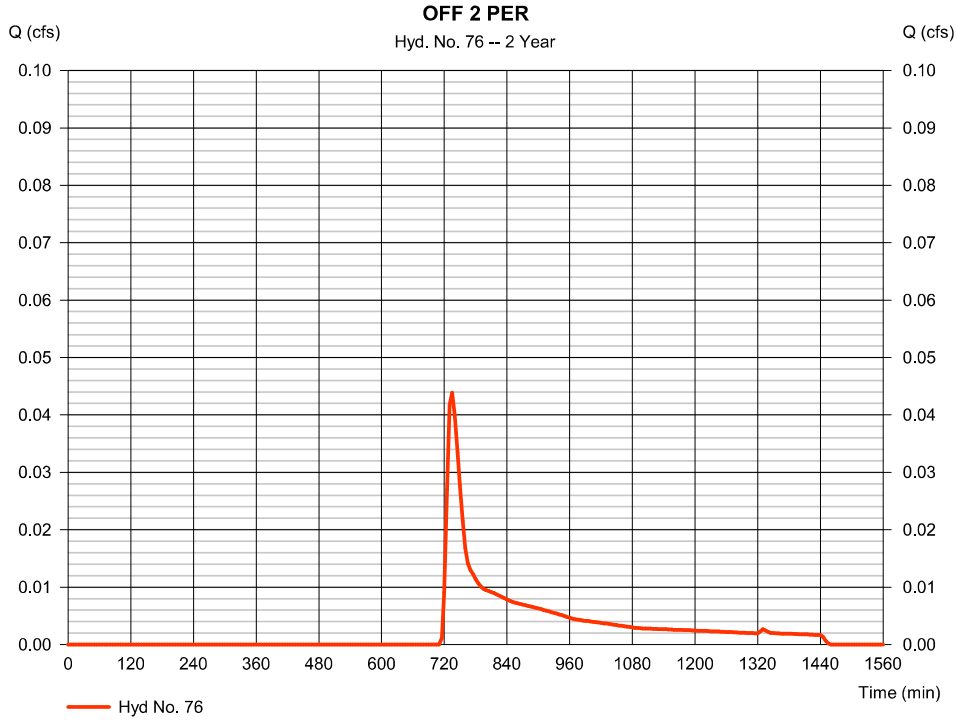


Hydrograph Report

Hyd. No. 76

OFF 2 PER

Hydrograph type	= SCS Runoff	Peak discharge	= 0.044 cfs
Storm frequency	= 2 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 248 cuft
Drainage area	= 0.140 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

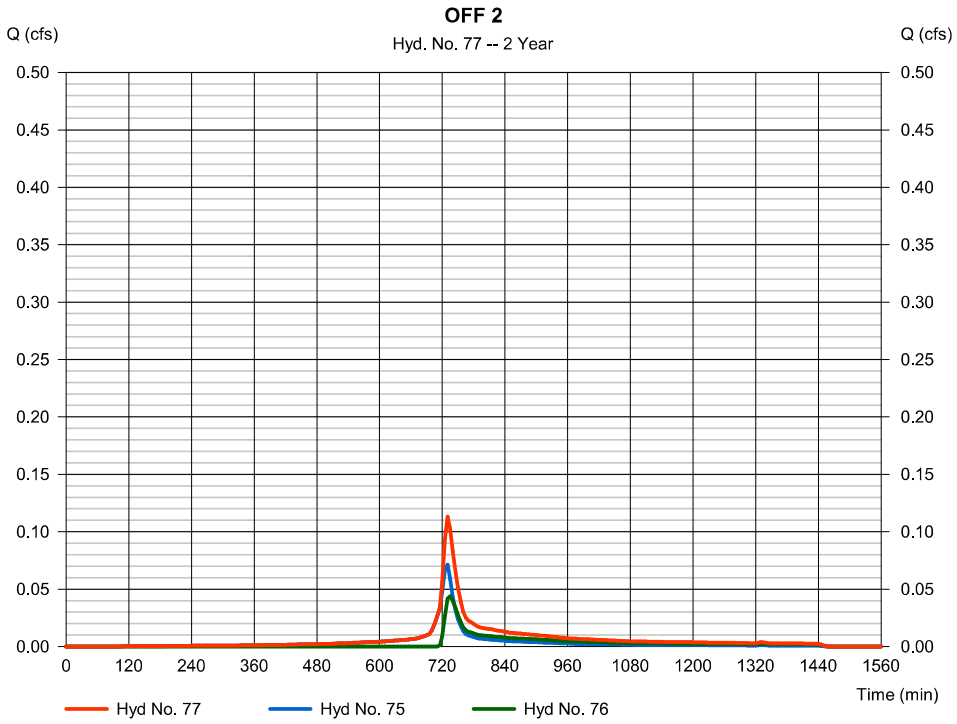


Hydrograph Report

Hyd. No. 77

OFF 2

Hydrograph type	= Combine	Peak discharge	= 0.113 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 569 cuft
Inflow hyds.	= 75, 76	Contrib. drain. area	= 0.170 ac

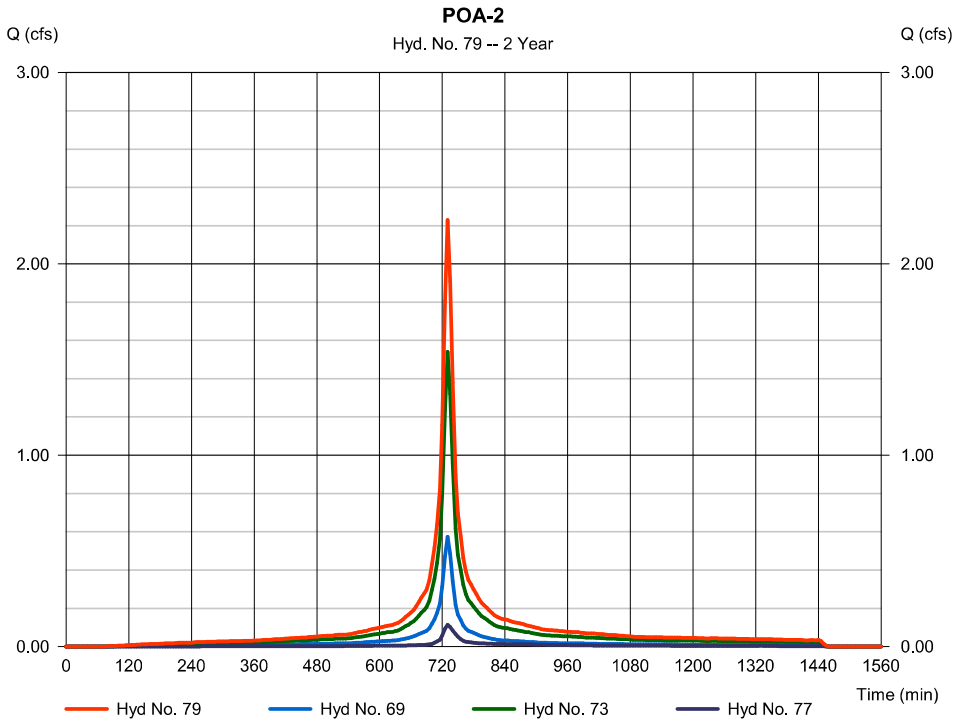


Hydrograph Report

Hyd. No. 79

POA-2

Hydrograph type	= Combine	Peak discharge	= 2.228 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 9,399 cuft
Inflow hyds.	= 69, 73, 77	Contrib. drain. area	= 0.220 ac



Hydrograph Summary Report

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

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	7.962	5	730	33,230	-----	----	-----	EX-DA-1 Imp.
2	SCS Runoff	0.035	5	730	140	-----	----	-----	EX-DA-1 Per
3	Combine	7.997	5	730	33,370	1, 2	----	-----	Ex-DA-1
5	SCS Runoff	0.466	5	730	1,945	-----	----	-----	OFF-1 Imp.
6	SCS Runoff	0.316	5	730	1,258	-----	----	-----	OFF-1 Per.
7	Combine	0.782	5	730	3,203	5, 6	----	-----	OFF-1
9	Combine	8.778	5	730	36,573	3, 7,	----	-----	EX-POA-1
12	SCS Runoff	1.437	5	730	5,998	-----	----	-----	EX-DA-2 Imp.
13	SCS Runoff	0.584	5	730	2,588	-----	----	-----	EX-DA-2 Per.
14	Combine	2.021	5	730	8,585	12, 13	----	-----	EX-DA-2
16	SCS Runoff	0.131	5	730	600	-----	----	-----	EX-DA-2 Undist.
18	SCS Runoff	1.786	5	730	7,456	-----	----	-----	EX-DA-2 UD Imp.
19	SCS Runoff	1.273	5	730	5,487	-----	----	-----	EX-DA-2 UD Per
20	Combine	3.060	5	730	12,944	18, 19	----	-----	EX-DA-2 UD
22	SCS Runoff	0.213	5	730	973	-----	----	-----	EX-OFF 2 UD DIS IMP
23	SCS Runoff	0.193	5	730	839	-----	----	-----	EX-OFF 2 UD DIS PER
24	Combine	0.406	5	730	1,811	22, 23	----	-----	EX-OFF DA 2 UD DIS
26	SCS Runoff	0.078	5	730	324	-----	----	-----	EX-DA-2 UD Undist. Imp.
27	SCS Runoff	0.262	5	730	1,201	-----	----	-----	EX-DA-2 UD Undist. Per.
28	Combine	0.340	5	730	1,525	26, 27	----	-----	EX-DA-2 UD Undist.
30	SCS Runoff	0.971	5	730	4,052	-----	----	-----	OFF-2 Imp.
31	SCS Runoff	0.736	5	730	2,935	-----	----	-----	OFF-2 Per.
32	Combine	1.707	5	730	6,988	30, 31	----	-----	OFF-2
34	SCS Runoff	1.087	5	730	4,539	-----	----	-----	EX-OFF-UD-2 Imp.
35	SCS Runoff	1.052	5	730	4,193	-----	----	-----	EX-OFF-UD-2 Per.
36	Combine	2.139	5	730	8,732	34, 35	----	-----	EX-OFF-UD-2
38	Combine	3.859	5	730	16,173	14, 16, 32,	----	-----	Basin
39	Reservoir	3.653	5	735	16,091	38	196.91	729	Exist. Basin

Hydrograph Summary Report

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

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
41	Combine	5.486	5	730	23,340	14, 20, 24,	----	-----	Within LOD
42	Combine	4.318	5	730	17,845	16, 28, 32, 36,	----	-----	Outside of LOD
44	Combine	9.128	5	730	39,292	20, 28, 36, 39,	----	-----	EX-POA-2
46	SCS Runoff	5.670	5	730	23,666	-----	----	-----	DA-1 Imp.
47	SCS Runoff	1.356	5	730	5,405	-----	----	-----	DA-1 Per.
48	Combine	7.026	5	730	29,071	46, 47	----	-----	DA-1A
50	SCS Runoff	0.078	5	730	324	-----	----	-----	UNDIST. Imp.
51	SCS Runoff	0.422	5	730	1,934	-----	----	-----	UNDIST. Per.
52	Combine	0.500	5	730	2,258	50, 51	----	-----	UNDIST.
54	SCS Runoff	2.641	5	730	11,023	-----	----	-----	OFF 1 Imp.
55	SCS Runoff	2.162	5	730	8,620	-----	----	-----	OFF 1 Per.
56	Combine	4.803	5	730	19,642	54, 55	----	-----	OFF 1
58	SCS Runoff	2.524	5	730	10,536	-----	----	-----	Roof Area D
60	Combine	14.85	5	730	61,508	48, 52, 56, 58,	----	-----	TOTAL TO BASIN
61	Reservoir	3.818	5	755	61,494	60	197.39	20,709	BASIN
63	SCS Runoff	1.049	5	730	4,377	-----	----	-----	DA-UD 1 Imp.
64	SCS Runoff	0.374	5	730	1,491	-----	----	-----	DA-1 UD Per.
65	Combine	1.423	5	730	5,868	63, 64	----	-----	DA-1 UD
67	Combine	4.532	5	735	67,361	61, 65,	----	-----	POA-1
69	SCS Runoff	0.854	5	730	3,566	-----	----	-----	Roof Area UD
71	SCS Runoff	2.136	5	730	8,915	-----	----	-----	DA-2 Imp.
72	SCS Runoff	0.386	5	730	1,538	-----	----	-----	DA-2 Per.
73	Combine	2.522	5	730	10,453	71, 72	----	-----	DA-2
75	SCS Runoff	0.106	5	730	486	-----	----	-----	OFF 2 IMP
76	SCS Runoff	0.150	5	730	652	-----	----	-----	OFF 2 PER
77	Combine	0.257	5	730	1,139	75, 76	----	-----	OFF 2
79	Combine	3.633	5	730	15,158	69, 73, 77,	----	-----	POA-2

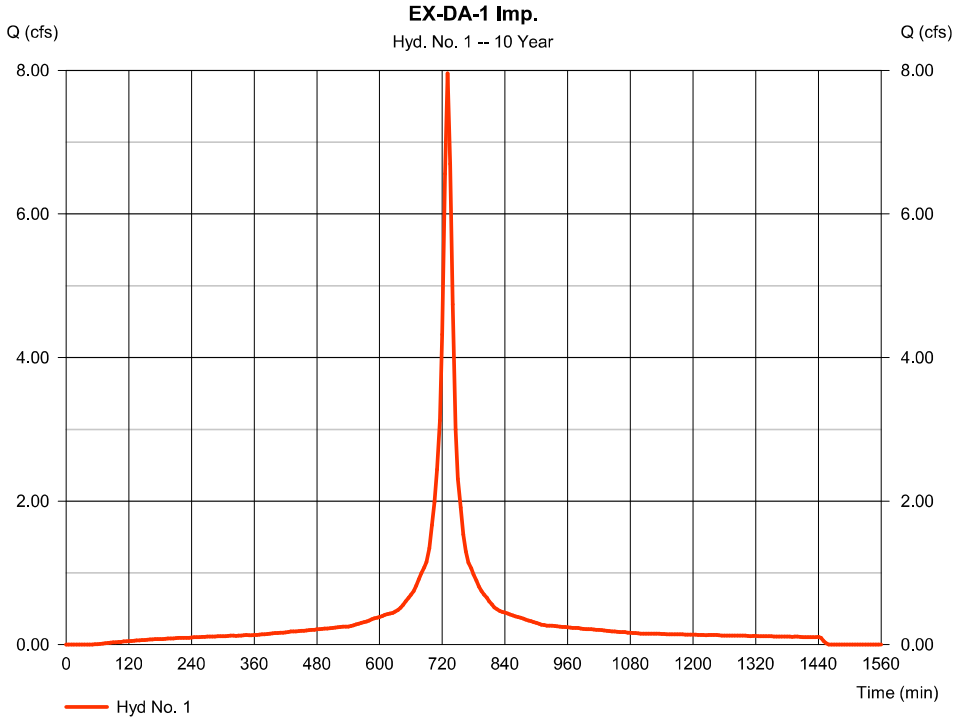
2020-08- Exist vs Prop.gpw | Return Period: 10 Year | Wednesday, 08 / 12 / 2020

Hydrograph Report

Hyd. No. 1

EX-DA-1 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 7.962 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 33,230 cuft
Drainage area	= 2.050 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

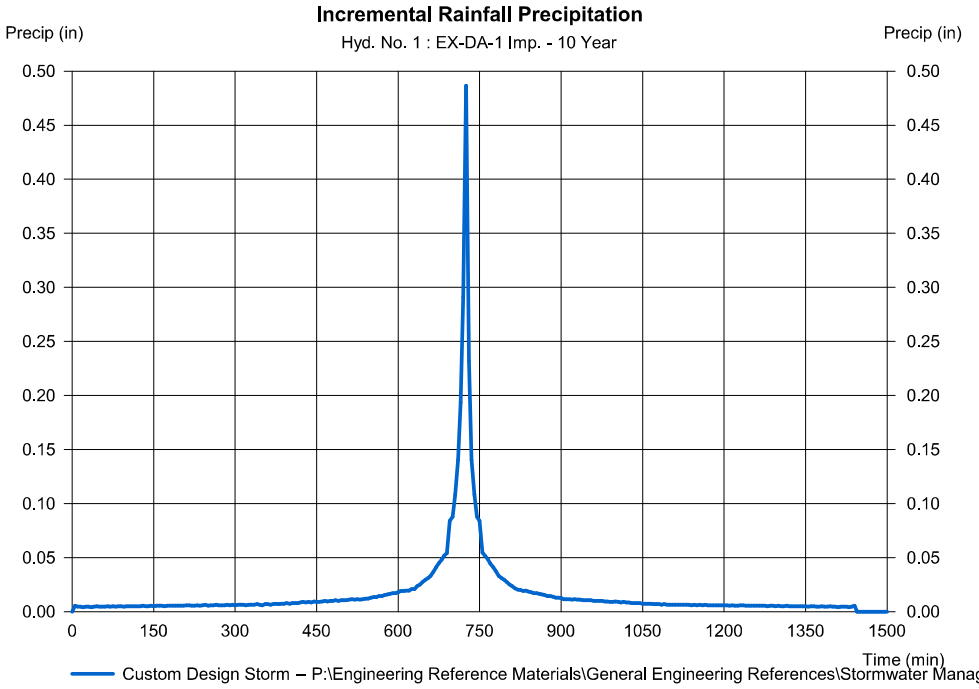


Precipitation Report

Hyd. No. 1

EX-DA-1 Imp.

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

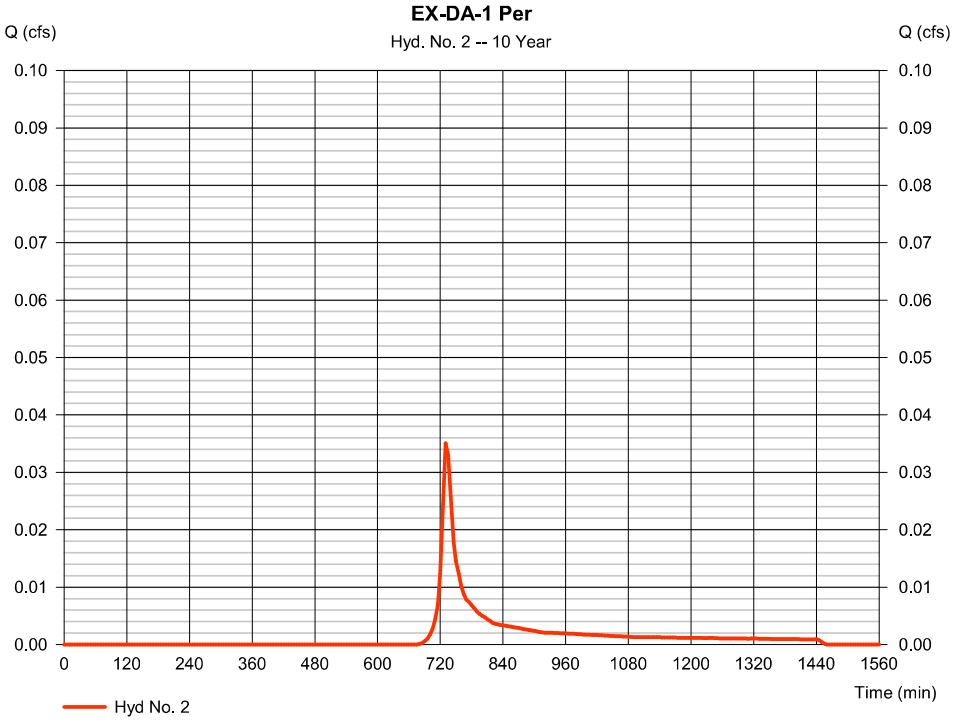


Hydrograph Report

Hyd. No. 2

EX-DA-1 Per

Hydrograph type	= SCS Runoff	Peak discharge	= 0.035 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 140 cuft
Drainage area	= 0.030 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

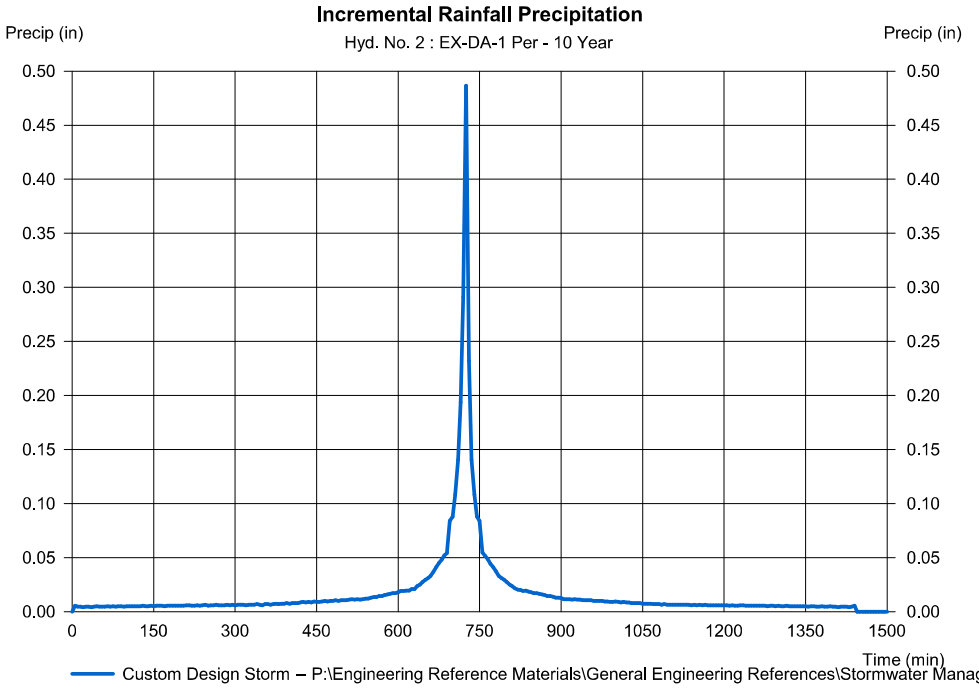


Precipitation Report

Hyd. No. 2

EX-DA-1 Per

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

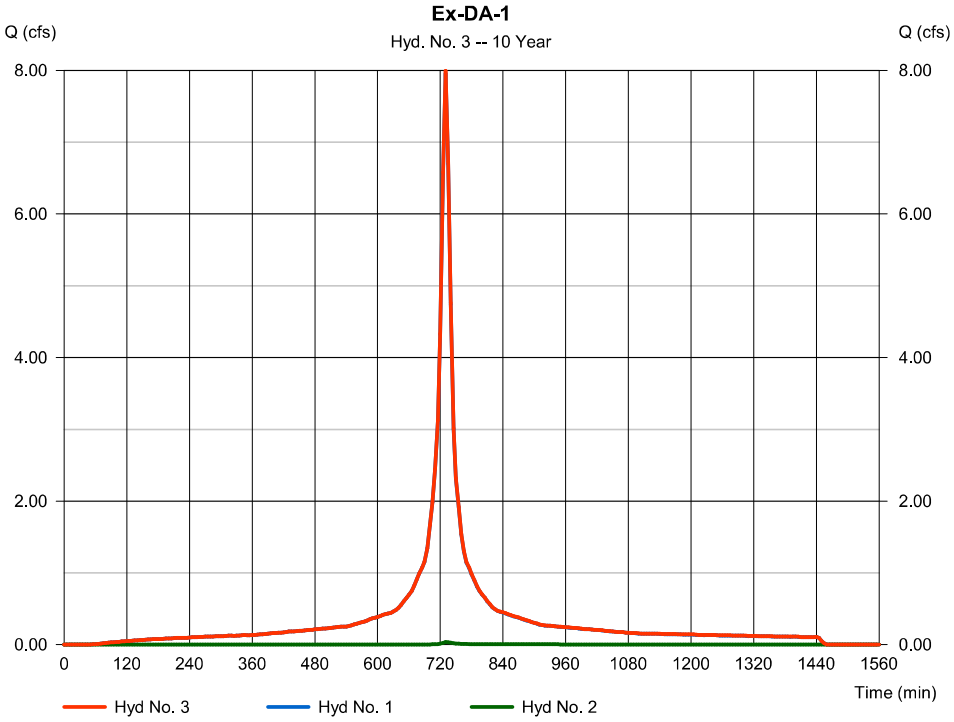


Hydrograph Report

Hyd. No. 3

Ex-DA-1

Hydrograph type	= Combine	Peak discharge	= 7.997 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 33,370 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 2.080 ac

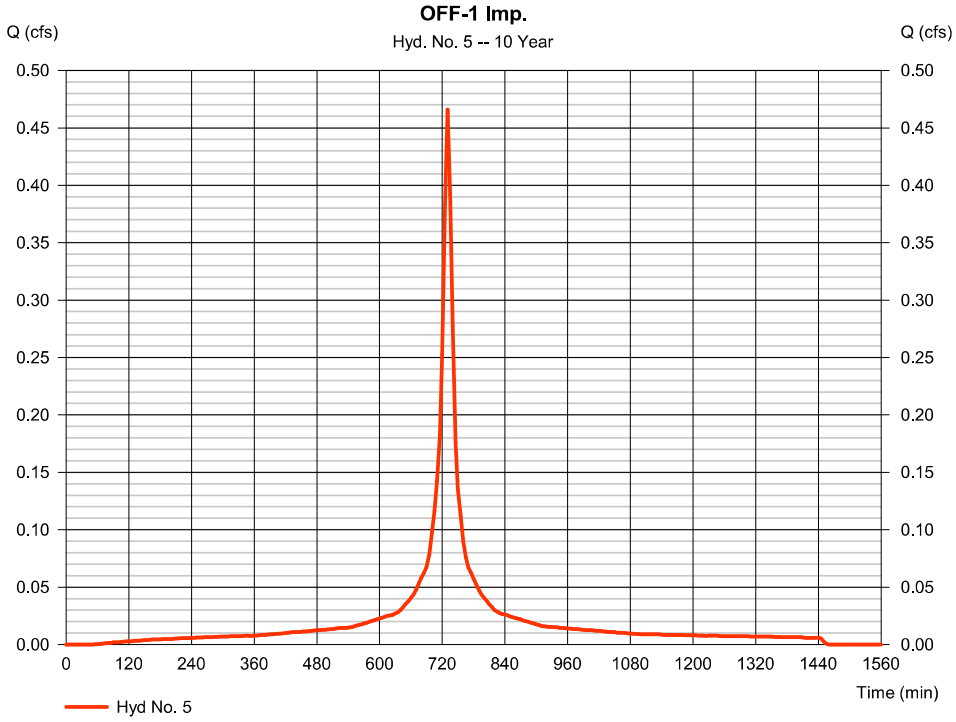


Hydrograph Report

Hyd. No. 5

OFF-1 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.466 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,945 cuft
Drainage area	= 0.120 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

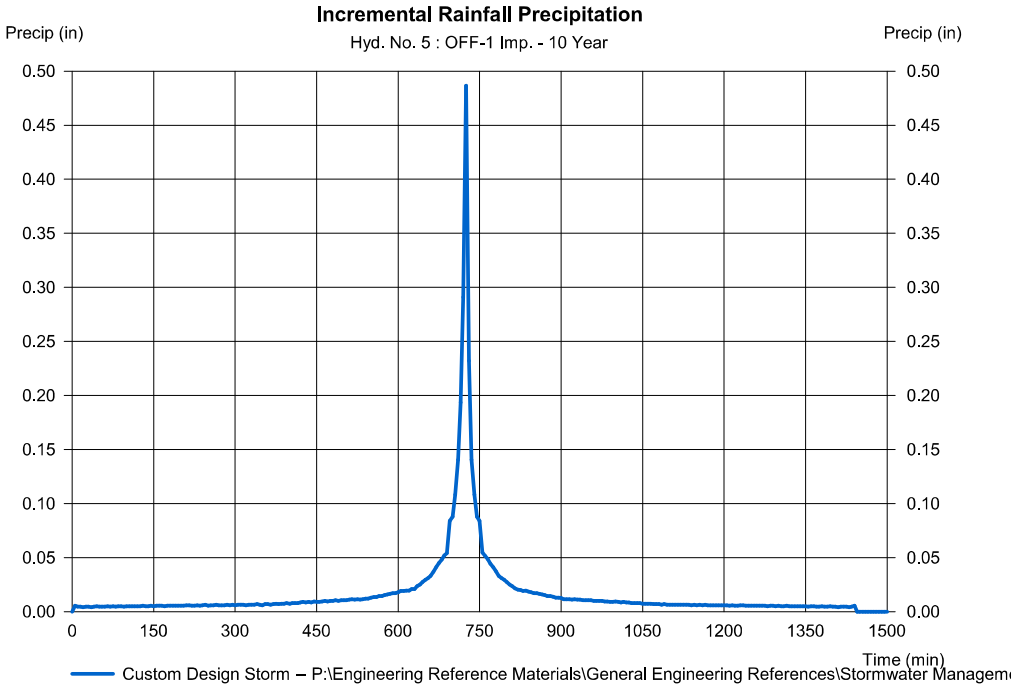


Precipitation Report

Hyd. No. 5

OFF-1 Imp.

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

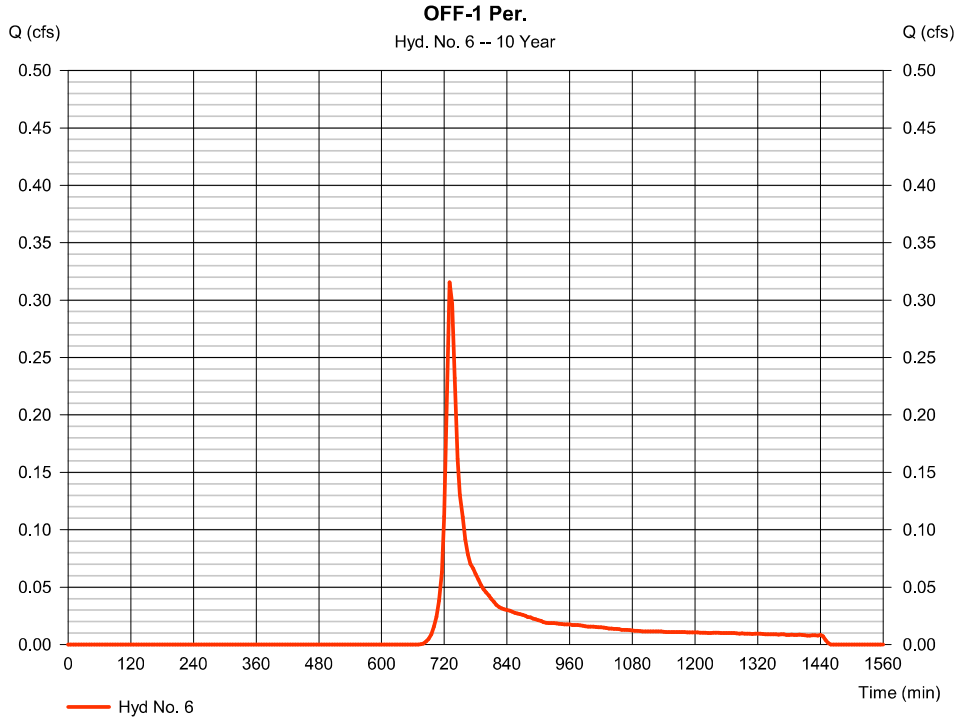


Hydrograph Report

Hyd. No. 6

OFF-1 Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.316 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,258 cuft
Drainage area	= 0.270 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

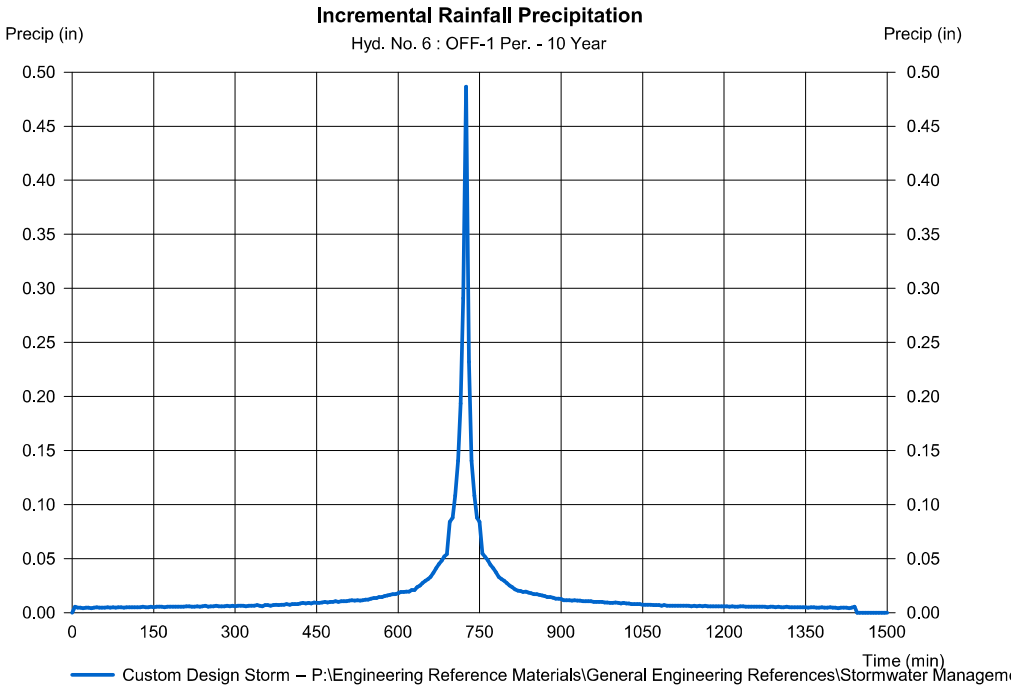


Precipitation Report

Hyd. No. 6

OFF-1 Per.

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

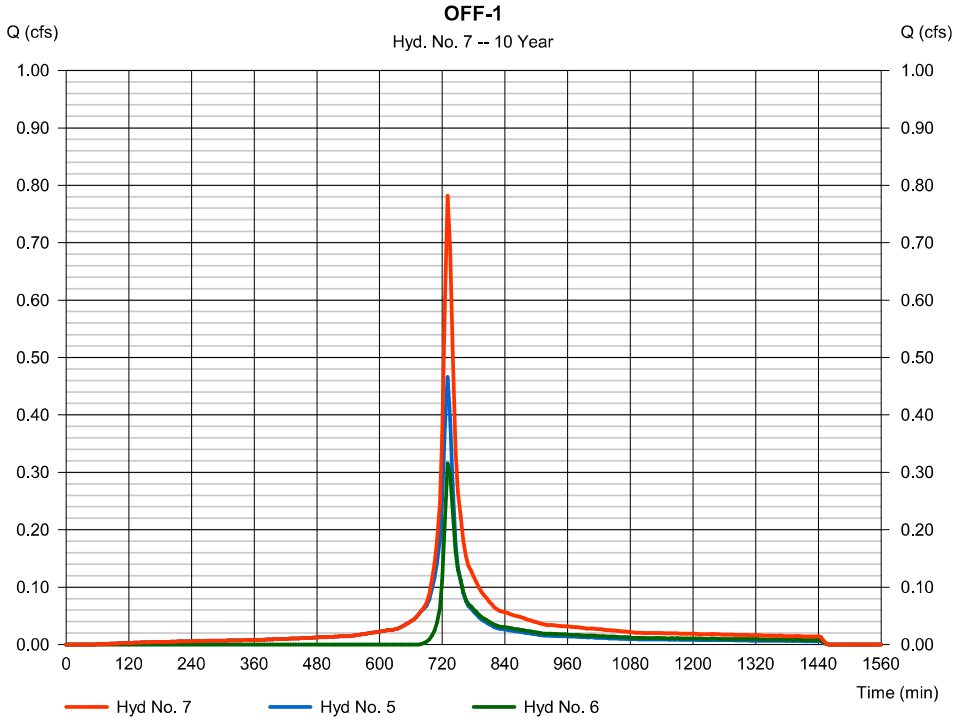


Hydrograph Report

Hyd. No. 7

OFF-1

Hydrograph type	= Combine	Peak discharge	= 0.782 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 3,203 cuft
Inflow hyds.	= 5, 6	Contrib. drain. area	= 0.390 ac

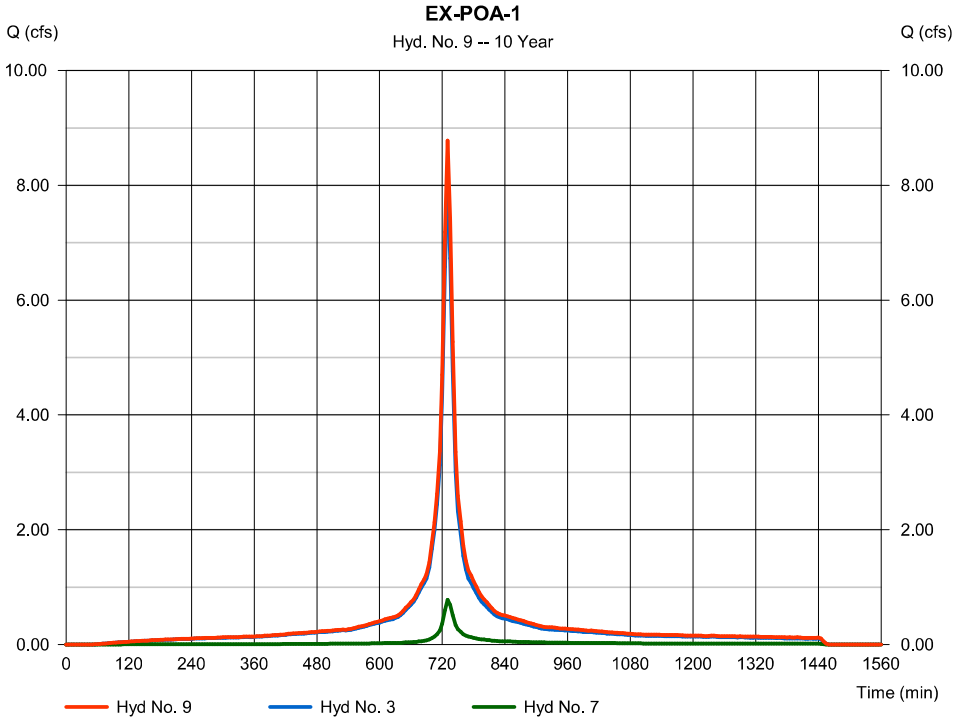


Hydrograph Report

Hyd. No. 9

EX-POA-1

Hydrograph type	= Combine	Peak discharge	= 8.778 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 36,573 cuft
Inflow hyds.	= 3, 7	Contrib. drain. area	= 0.000 ac

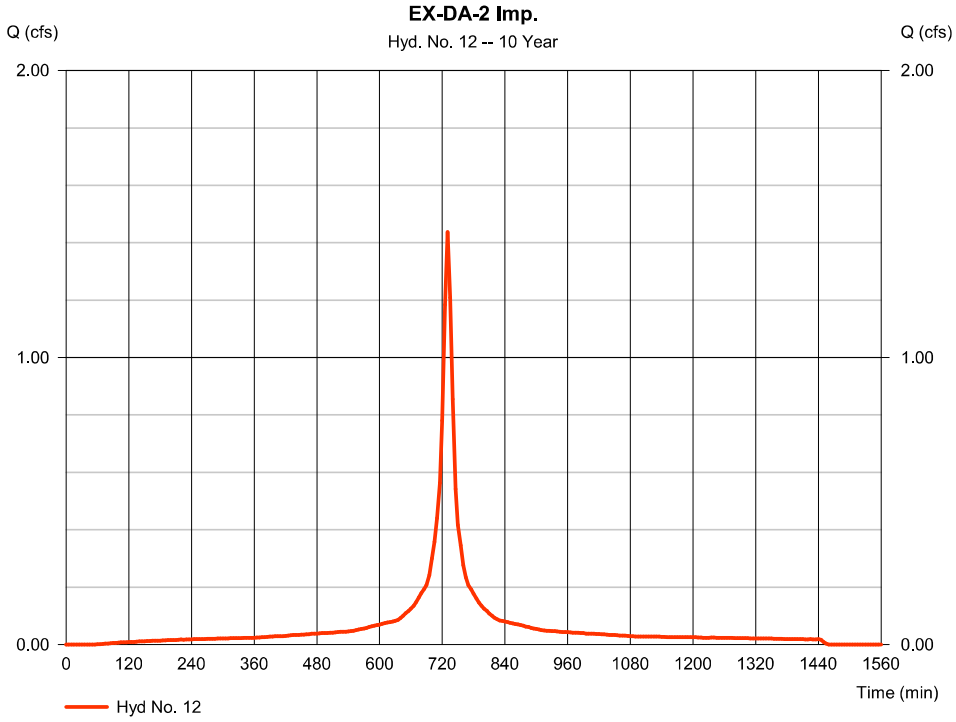


Hydrograph Report

Hyd. No. 12

EX-DA-2 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 1.437 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 5,998 cuft
Drainage area	= 0.370 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

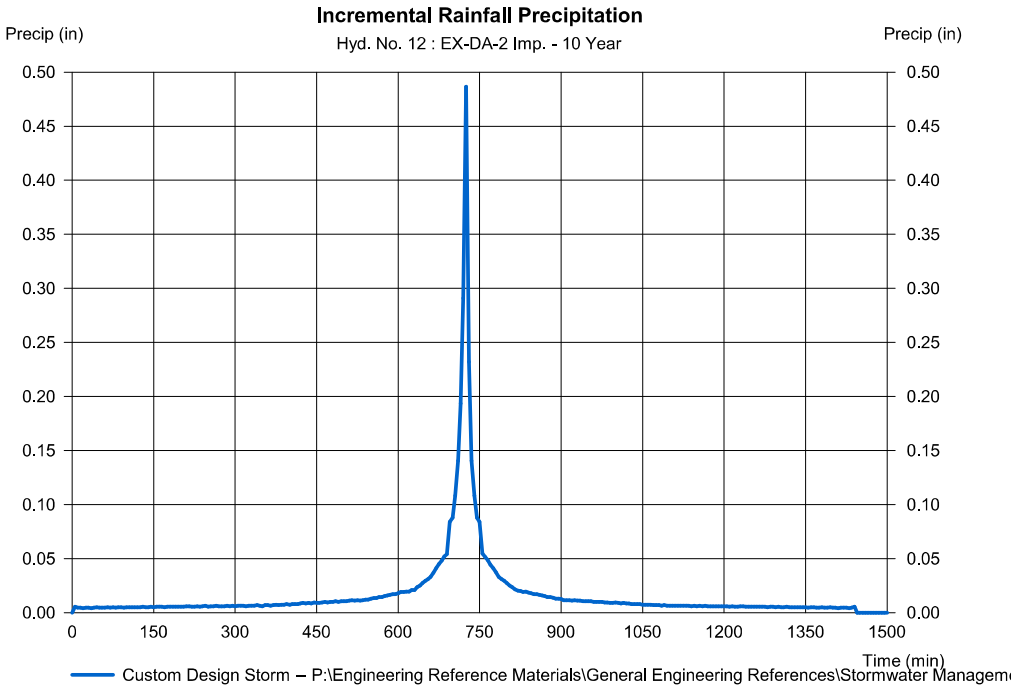


Precipitation Report

Hyd. No. 12

EX-DA-2 Imp.

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

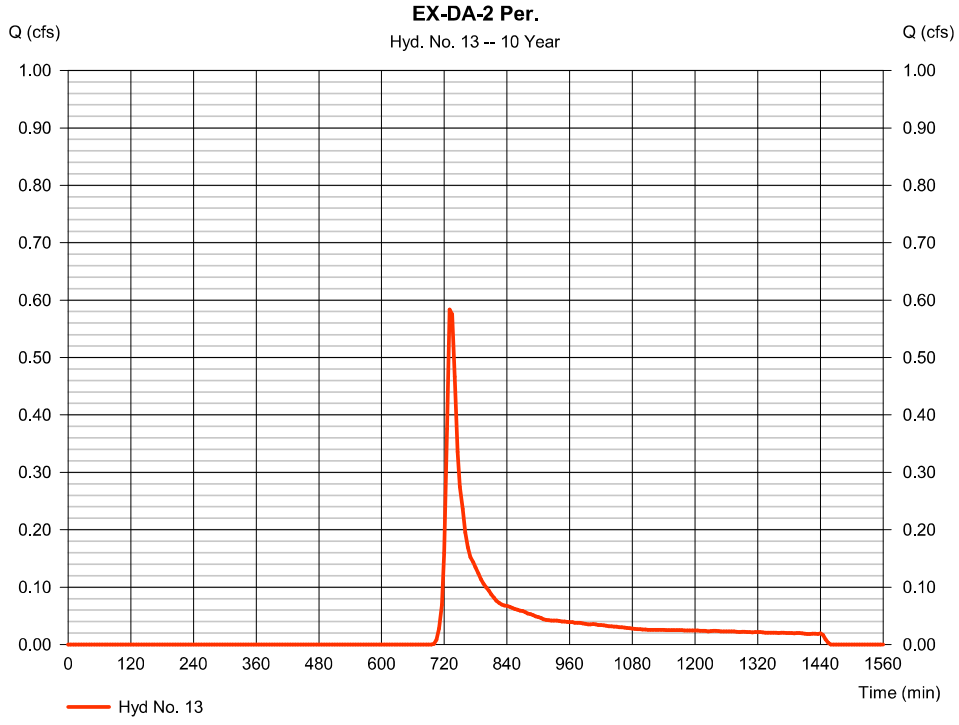


Hydrograph Report

Hyd. No. 13

EX-DA-2 Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.584 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,588 cuft
Drainage area	= 0.730 ac	Curve number	= 56
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

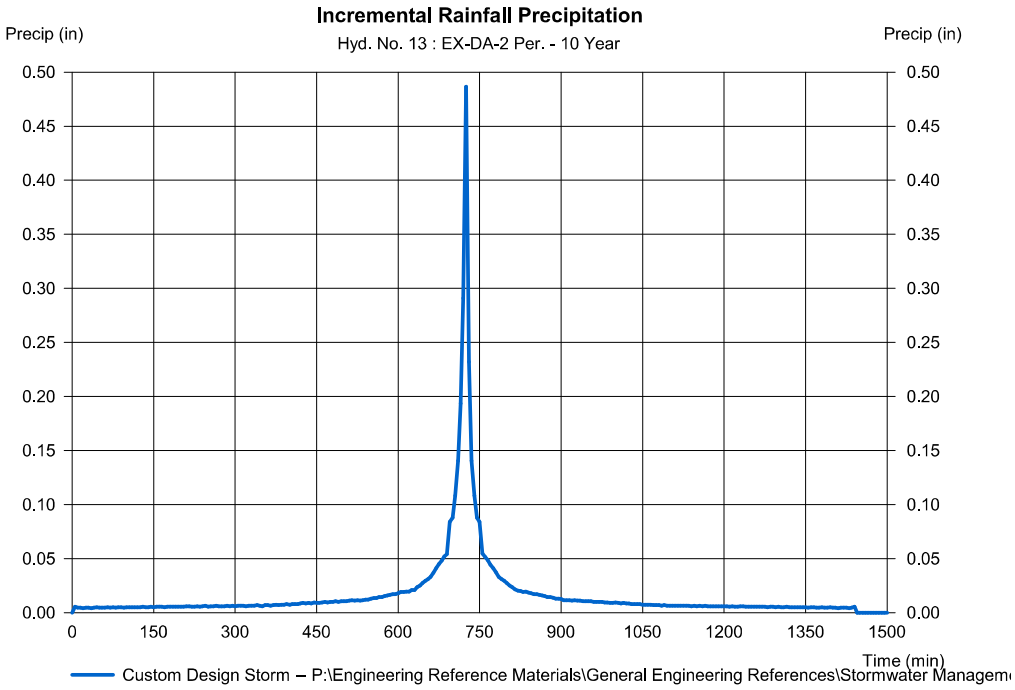


Precipitation Report

Hyd. No. 13

EX-DA-2 Per.

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

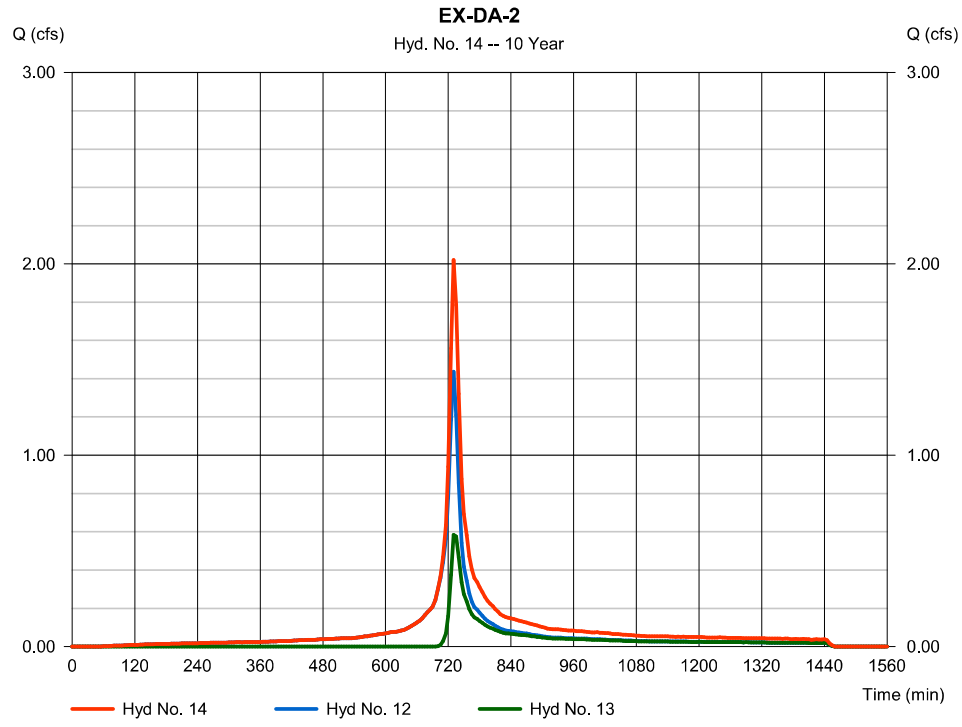


Hydrograph Report

Hyd. No. 14

EX-DA-2

Hydrograph type	= Combine	Peak discharge	= 2.021 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 8,585 cuft
Inflow hyds.	= 12, 13	Contrib. drain. area	= 1.100 ac

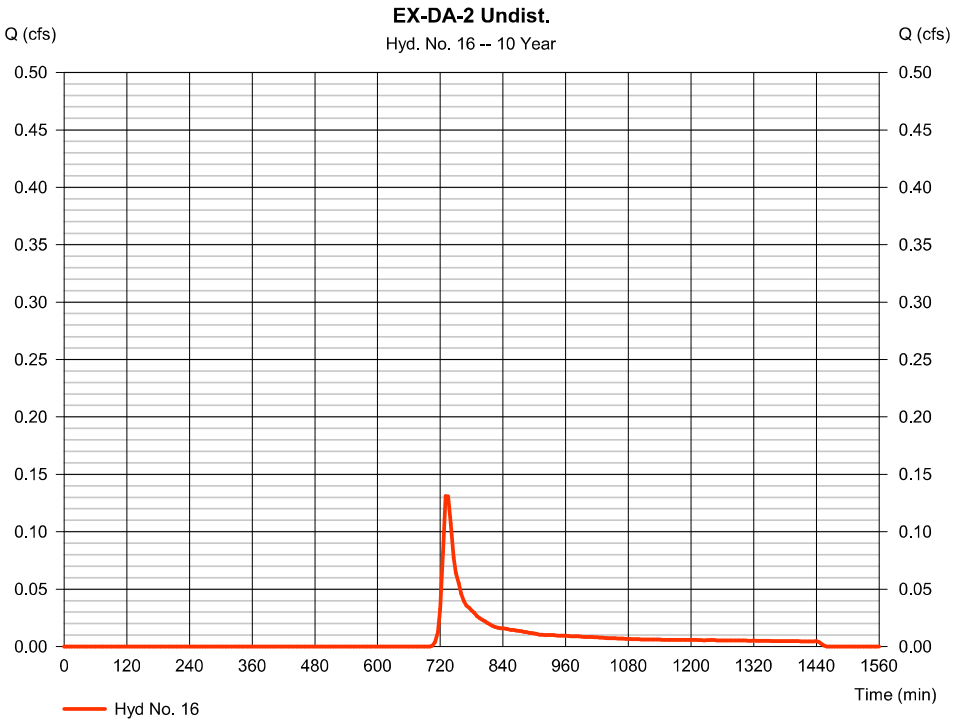


Hydrograph Report

Hyd. No. 16

EX-DA-2 Undist.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.131 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 600 cuft
Drainage area	= 0.180 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

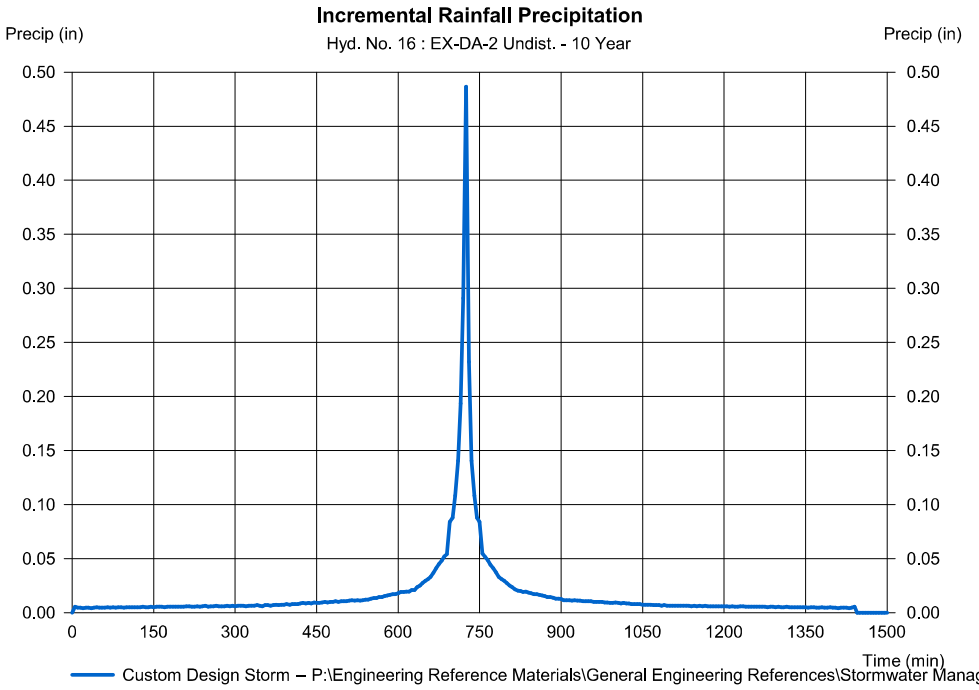


Precipitation Report

Hyd. No. 16

EX-DA-2 Undist.

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

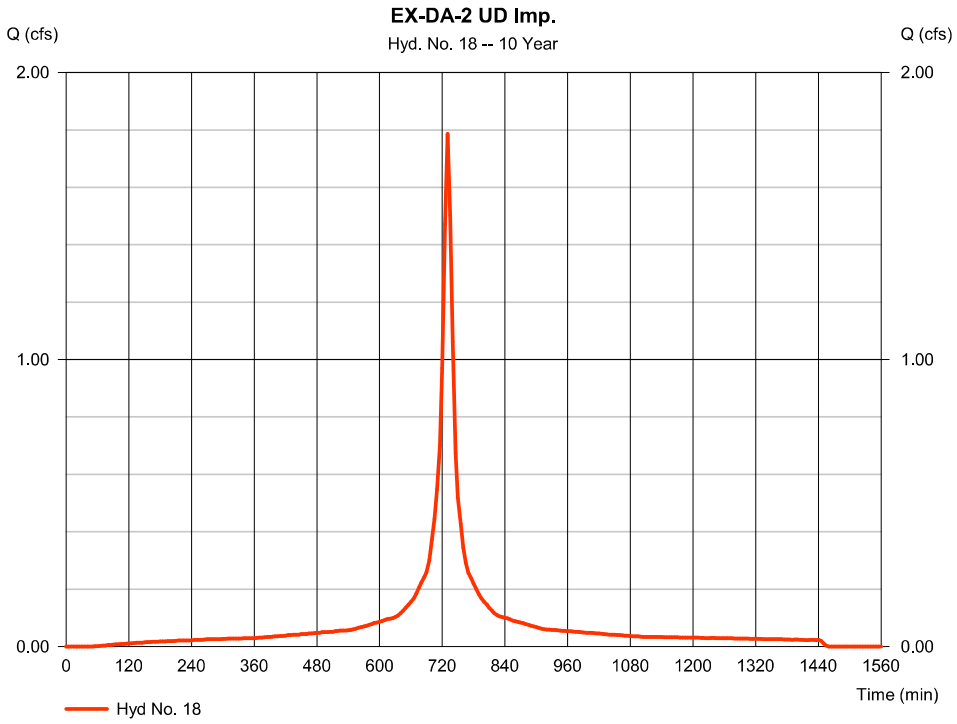


Hydrograph Report

Hyd. No. 18

EX-DA-2 UD Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 1.786 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 7,456 cuft
Drainage area	= 0.460 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

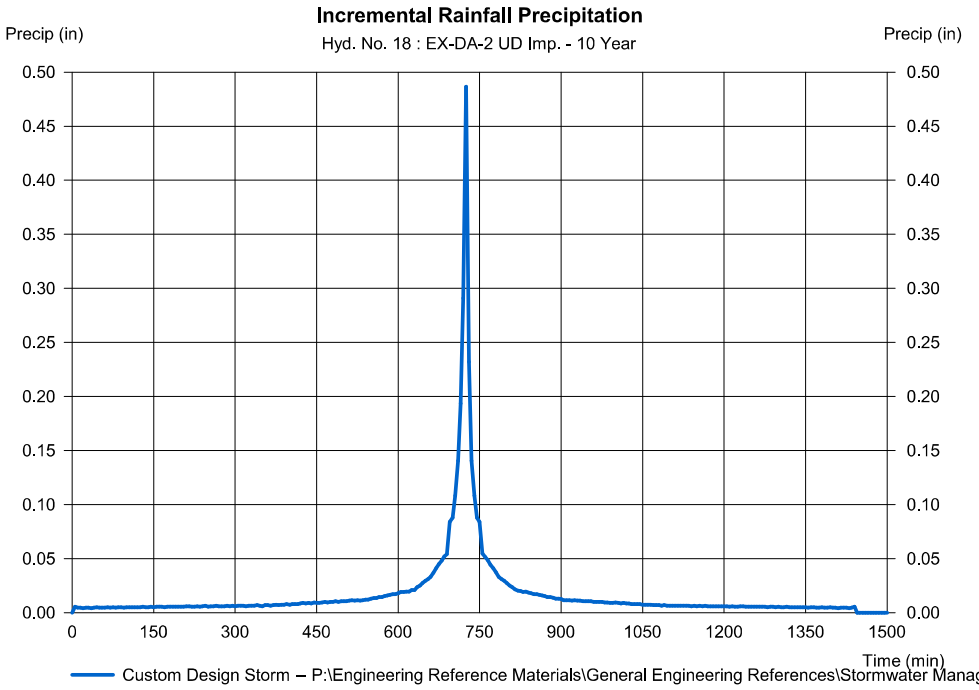


Precipitation Report

Hyd. No. 18

EX-DA-2 UD Imp.

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

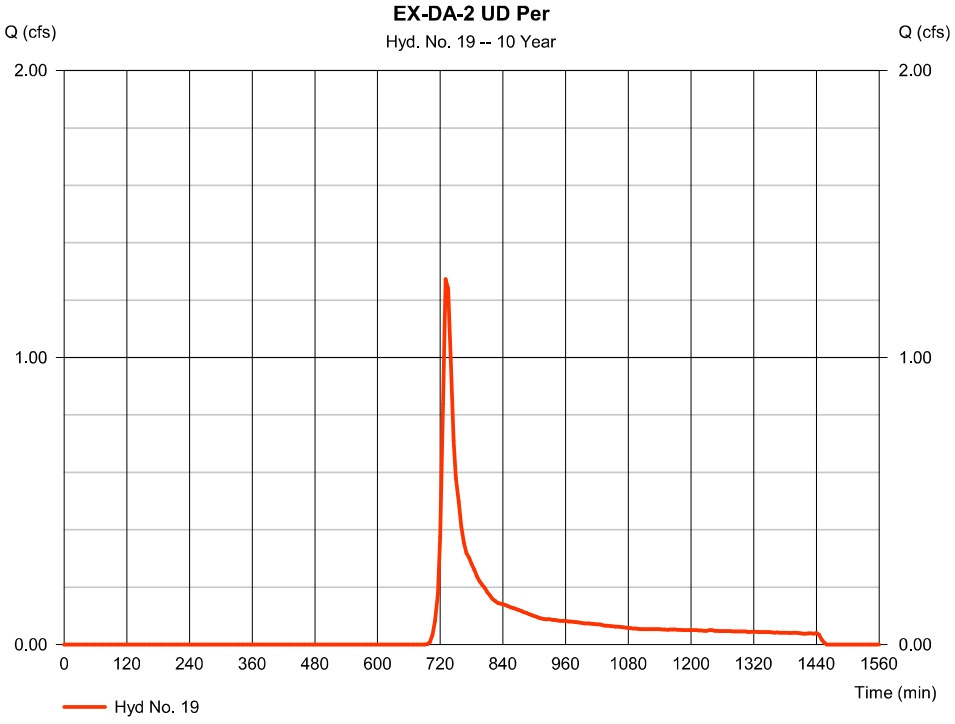


Hydrograph Report

Hyd. No. 19

EX-DA-2 UD Per

Hydrograph type	= SCS Runoff	Peak discharge	= 1.273 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 5,487 cuft
Drainage area	= 1.460 ac	Curve number	= 57
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

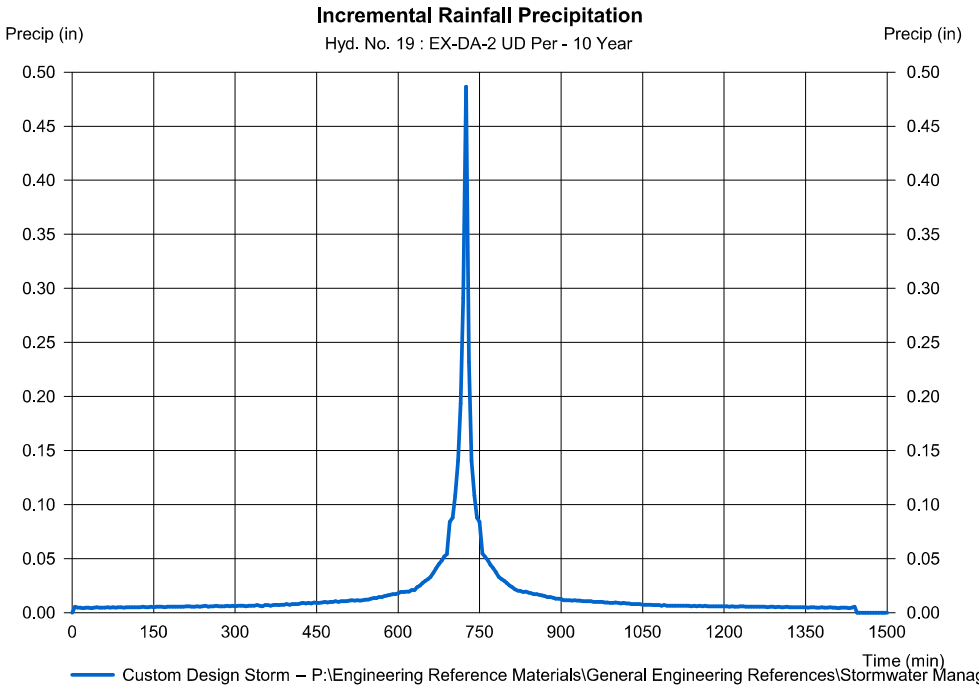


Precipitation Report

Hyd. No. 19

EX-DA-2 UD Per

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

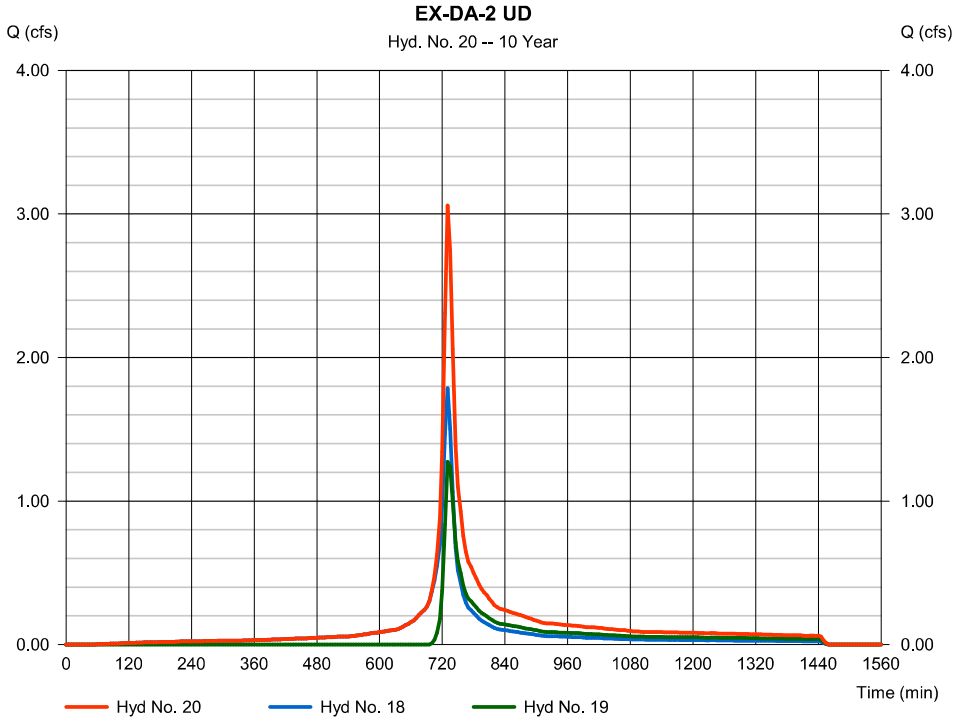


Hydrograph Report

Hyd. No. 20

EX-DA-2 UD

Hydrograph type	= Combine	Peak discharge	= 3.060 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 12,944 cuft
Inflow hyds.	= 18, 19	Contrib. drain. area	= 1.920 ac

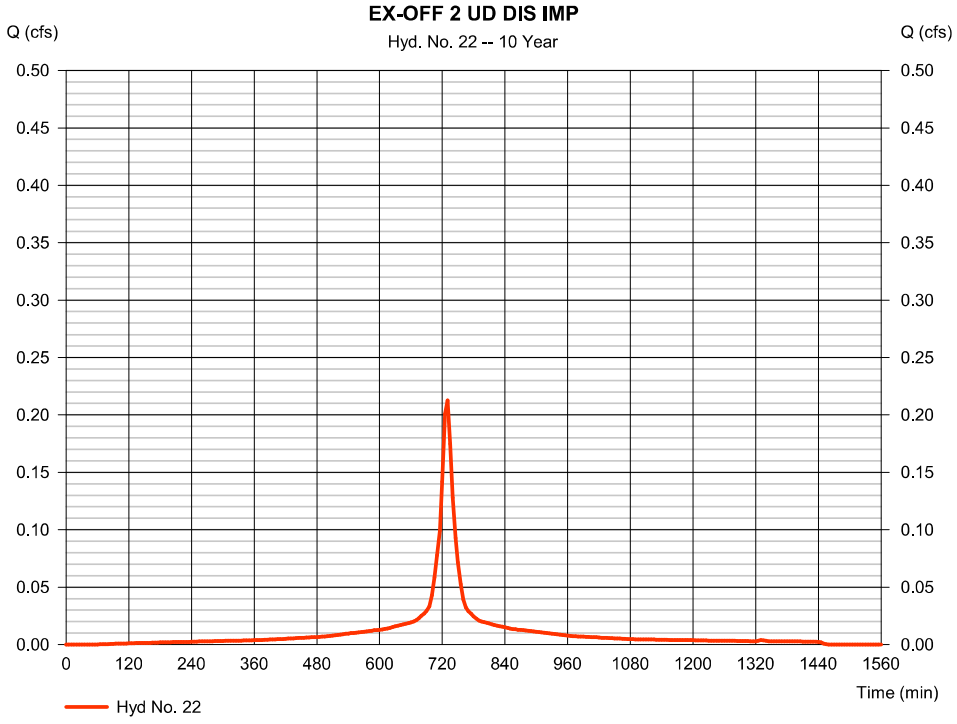


Hydrograph Report

Hyd. No. 22

EX-OFF 2 UD DIS IMP

Hydrograph type	= SCS Runoff	Peak discharge	= 0.213 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 973 cuft
Drainage area	= 0.060 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

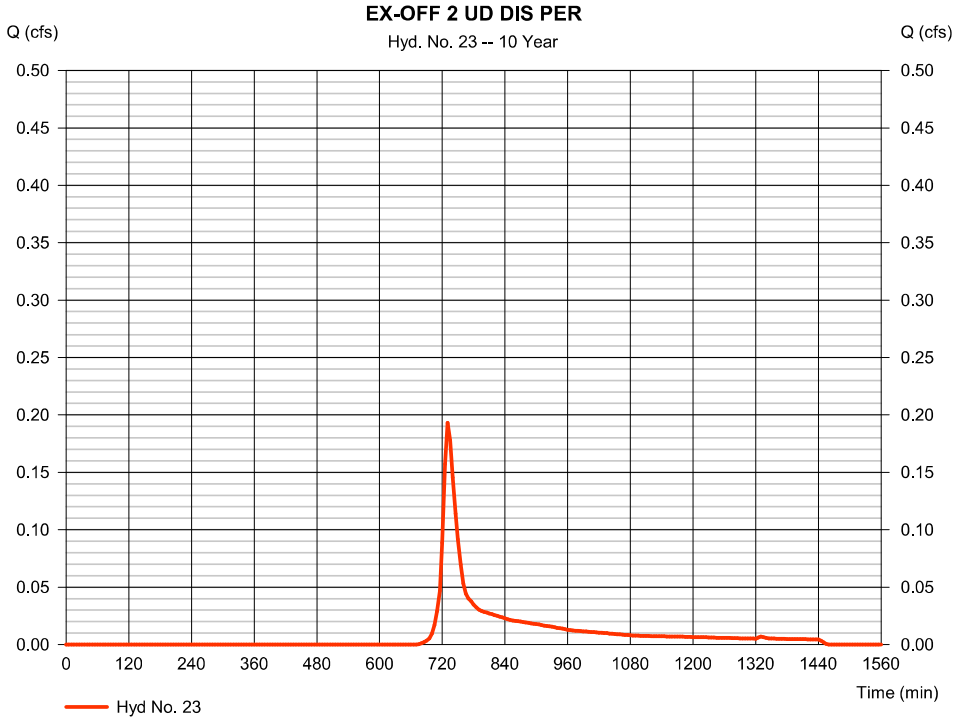


Hydrograph Report

Hyd. No. 23

EX-OFF 2 UD DIS PER

Hydrograph type	= SCS Runoff	Peak discharge	= 0.193 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 839 cuft
Drainage area	= 0.180 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

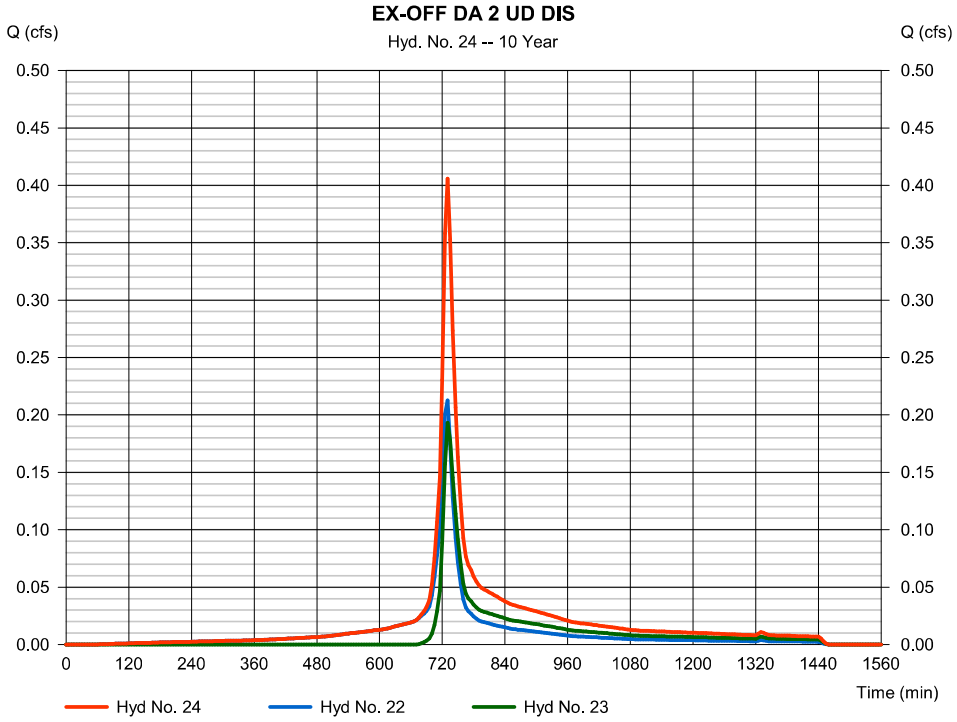


Hydrograph Report

Hyd. No. 24

EX-OFF DA 2 UD DIS

Hydrograph type	= Combine	Peak discharge	= 0.406 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,811 cuft
Inflow hyds.	= 22, 23	Contrib. drain. area	= 0.240 ac

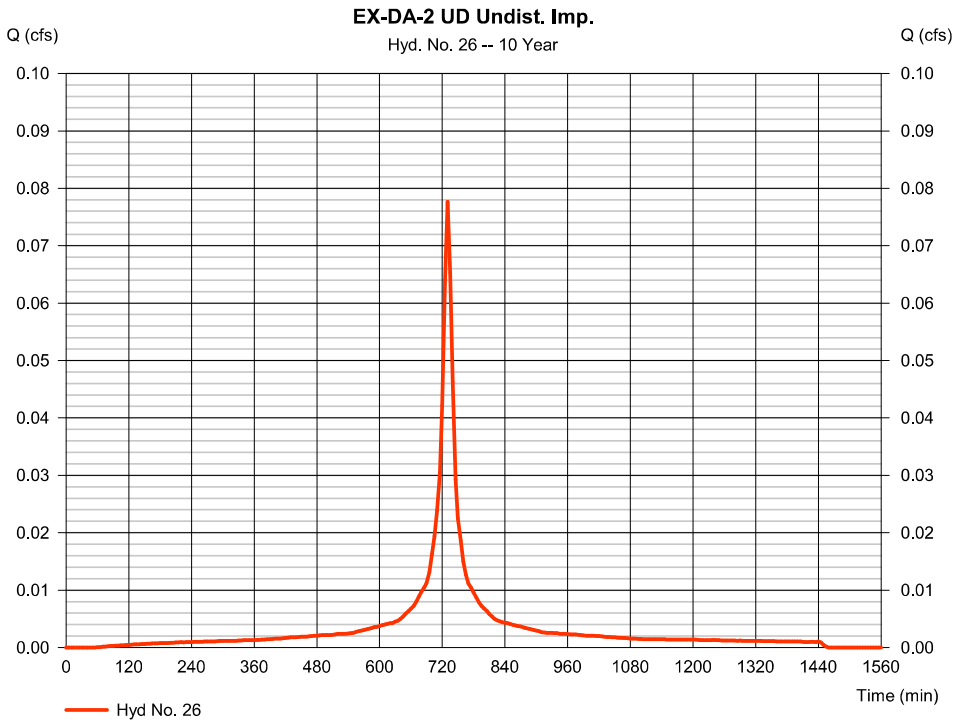


Hydrograph Report

Hyd. No. 26

EX-DA-2 UD Undist. Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.078 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 324 cuft
Drainage area	= 0.020 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

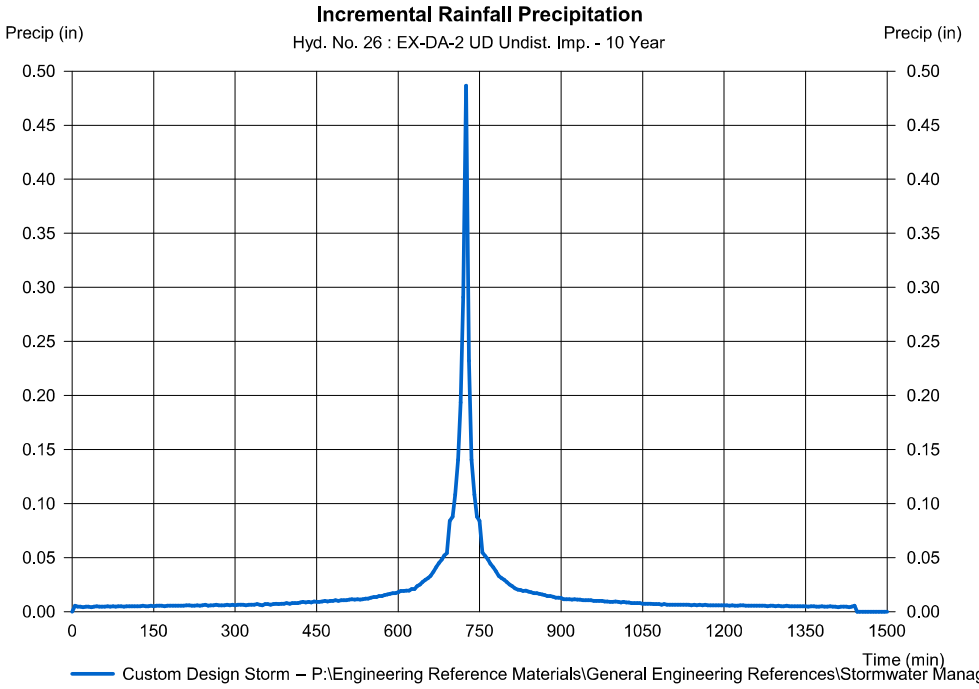


Precipitation Report

Hyd. No. 26

EX-DA-2 UD Undist. Imp.

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

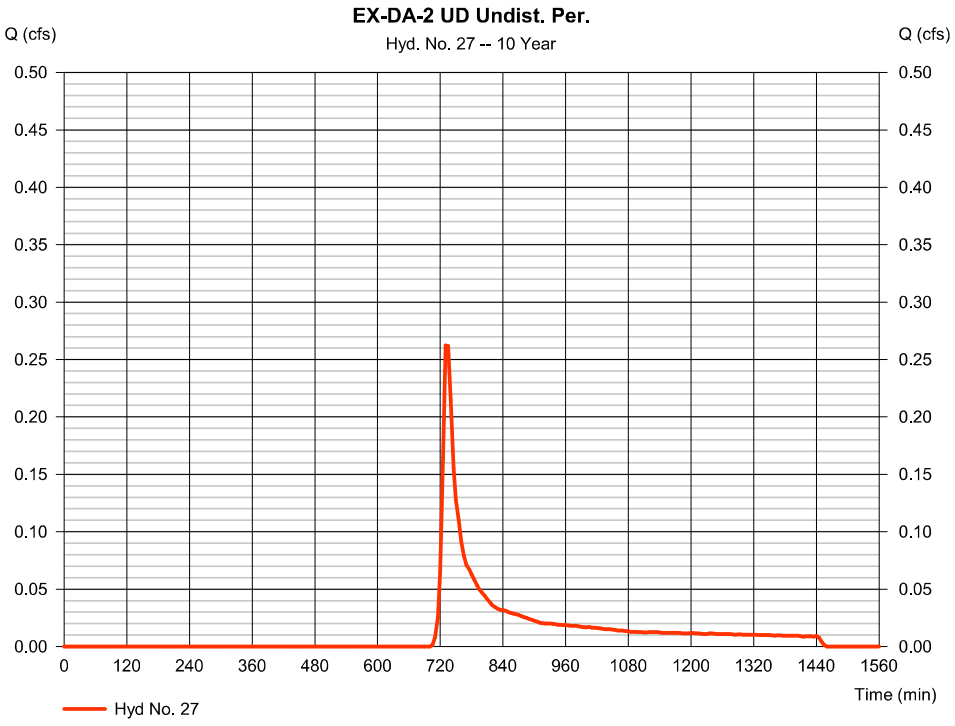


Hydrograph Report

Hyd. No. 27

EX-DA-2 UD Undist. Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.262 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,201 cuft
Drainage area	= 0.360 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

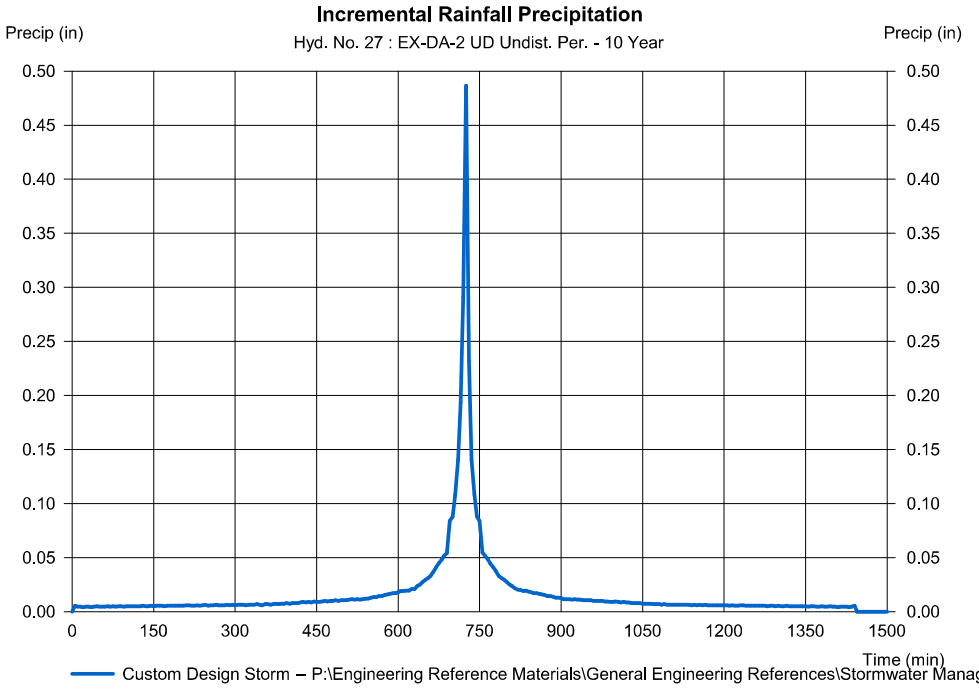


Precipitation Report

Hyd. No. 27

EX-DA-2 UD Undist. Per.

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

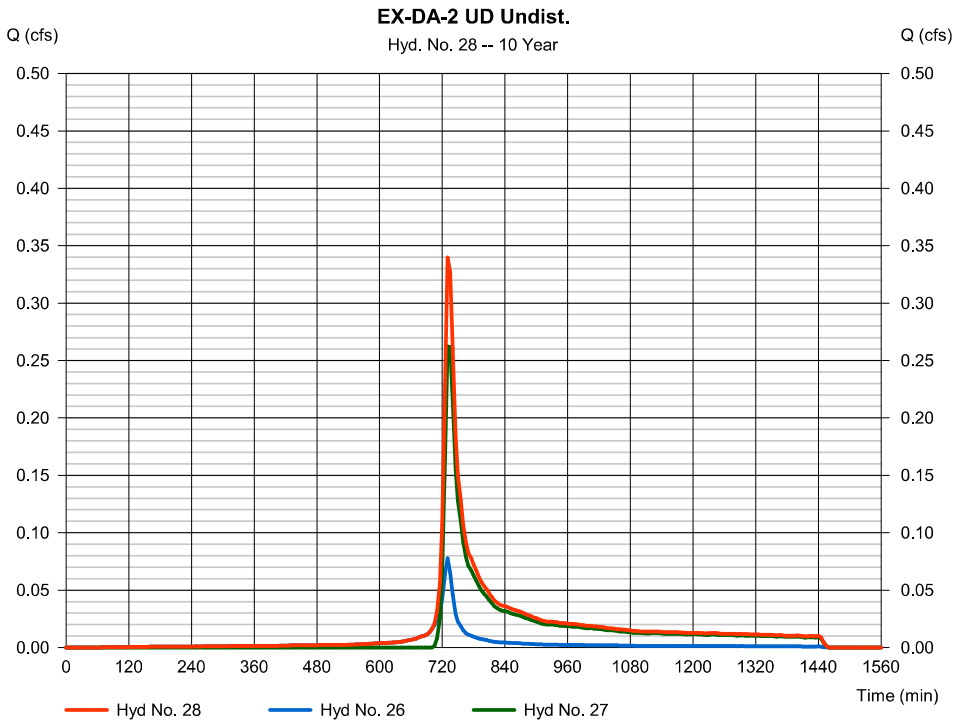


Hydrograph Report

Hyd. No. 28

EX-DA-2 UD Undist.

Hydrograph type	= Combine	Peak discharge	= 0.340 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,525 cuft
Inflow hyds.	= 26, 27	Contrib. drain. area	= 0.380 ac

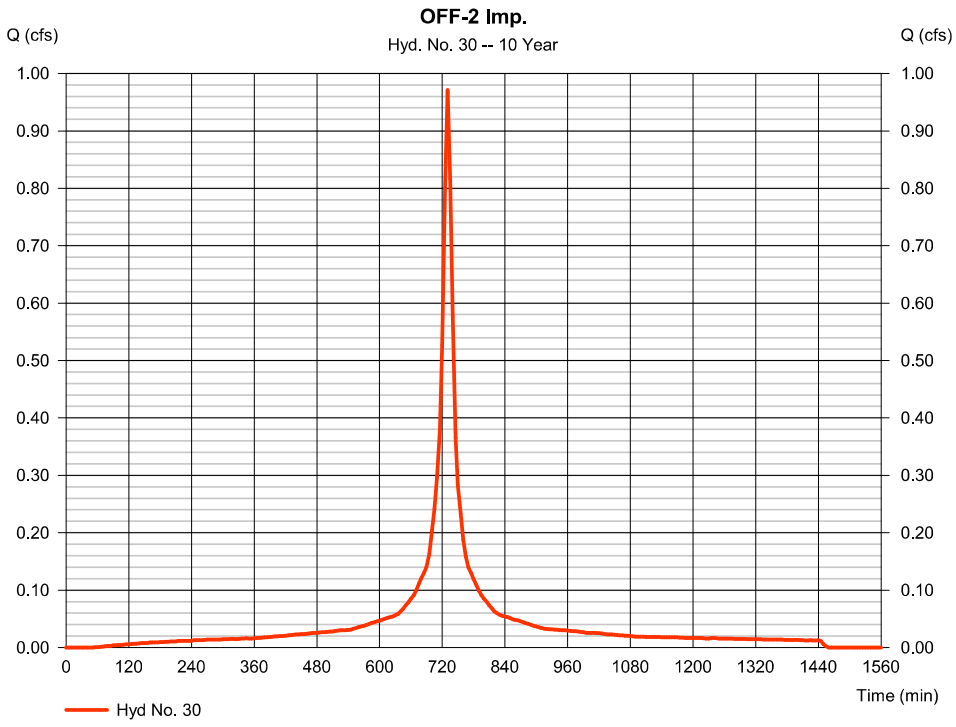


Hydrograph Report

Hyd. No. 30

OFF-2 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.971 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 4,052 cuft
Drainage area	= 0.250 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.80 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

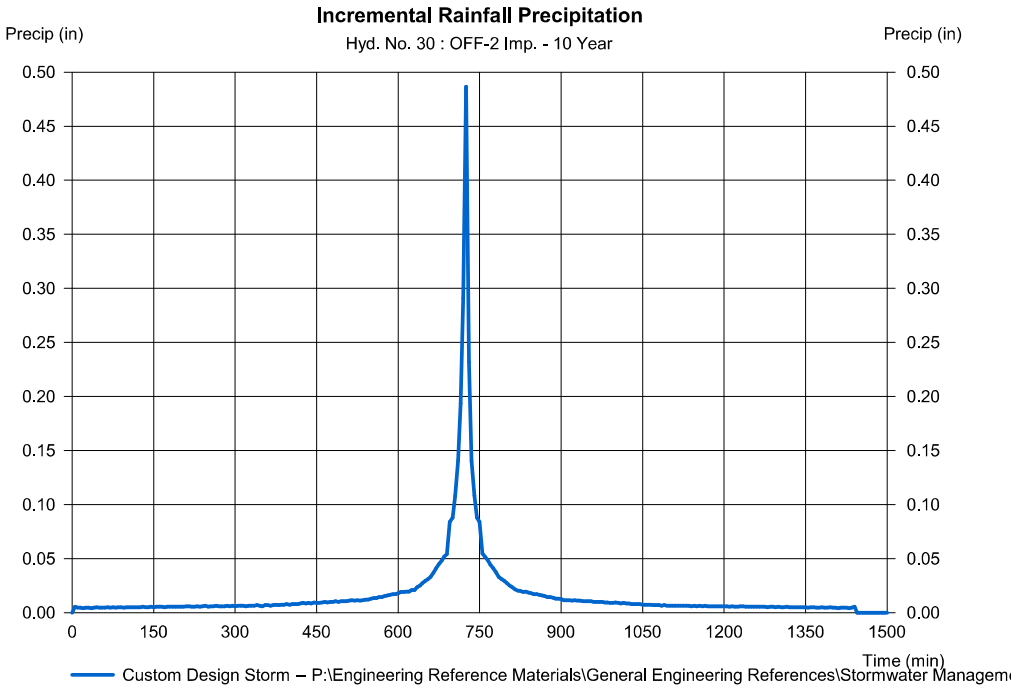


Precipitation Report

Hyd. No. 30

OFF-2 Imp.

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

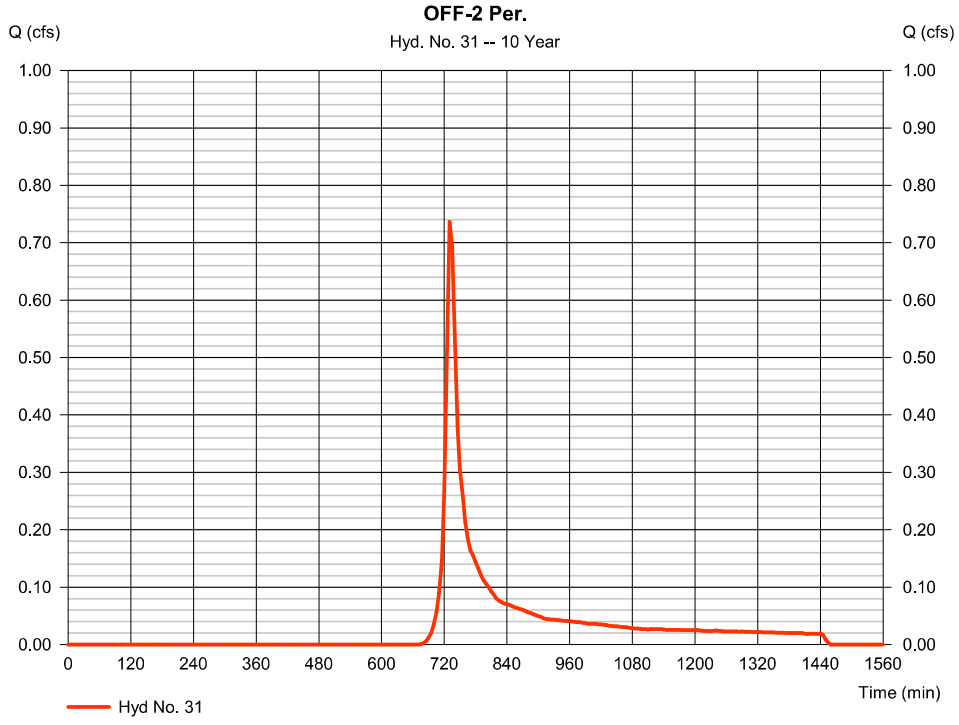


Hydrograph Report

Hyd. No. 31

OFF-2 Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.736 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,935 cuft
Drainage area	= 0.630 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.80 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

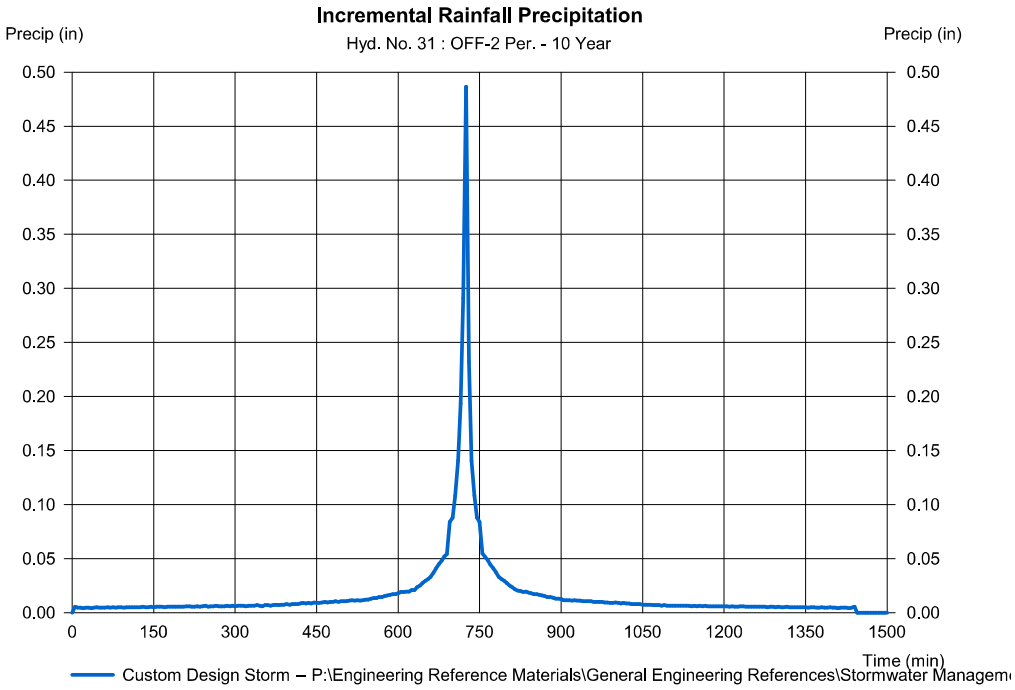


Precipitation Report

Hyd. No. 31

OFF-2 Per.

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

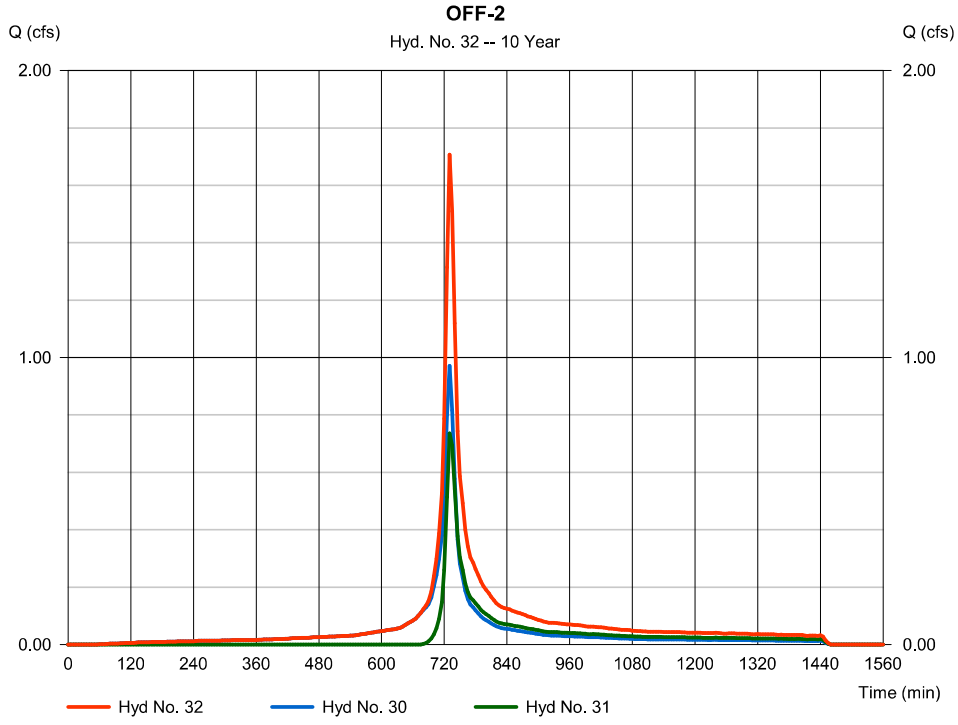


Hydrograph Report

Hyd. No. 32

OFF-2

Hydrograph type	= Combine	Peak discharge	= 1.707 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 6,988 cuft
Inflow hyds.	= 30, 31	Contrib. drain. area	= 0.880 ac

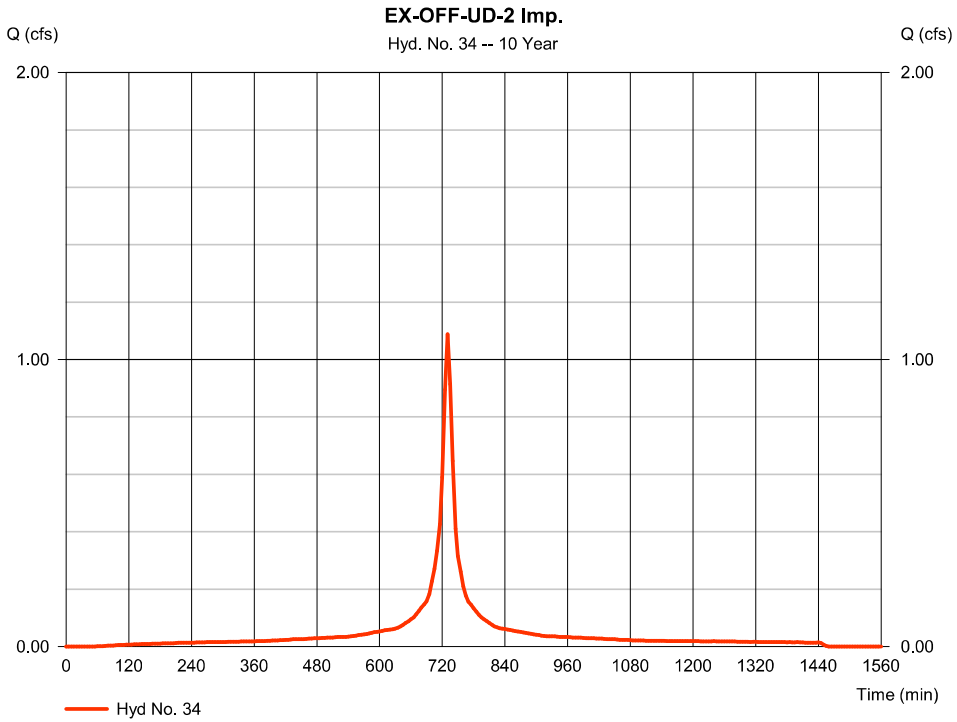


Hydrograph Report

Hyd. No. 34

EX-OFF-UD-2 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 1.087 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 4,539 cuft
Drainage area	= 0.280 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.20 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

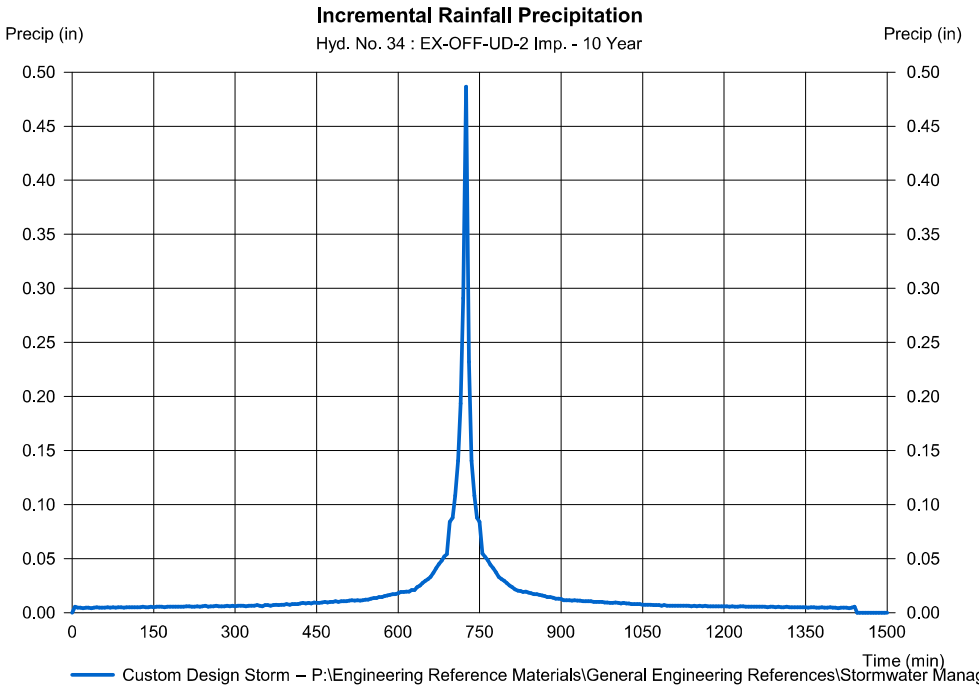


Precipitation Report

Hyd. No. 34

EX-OFF-UD-2 Imp.

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

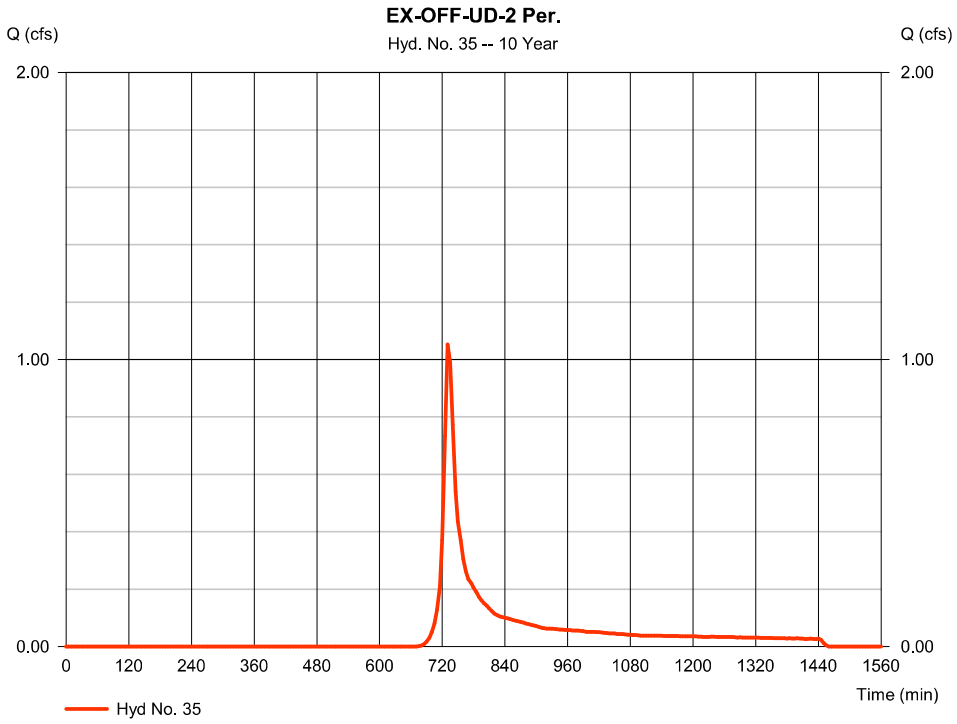


Hydrograph Report

Hyd. No. 35

EX-OFF-UD-2 Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 1.052 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 4,193 cuft
Drainage area	= 0.900 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.20 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

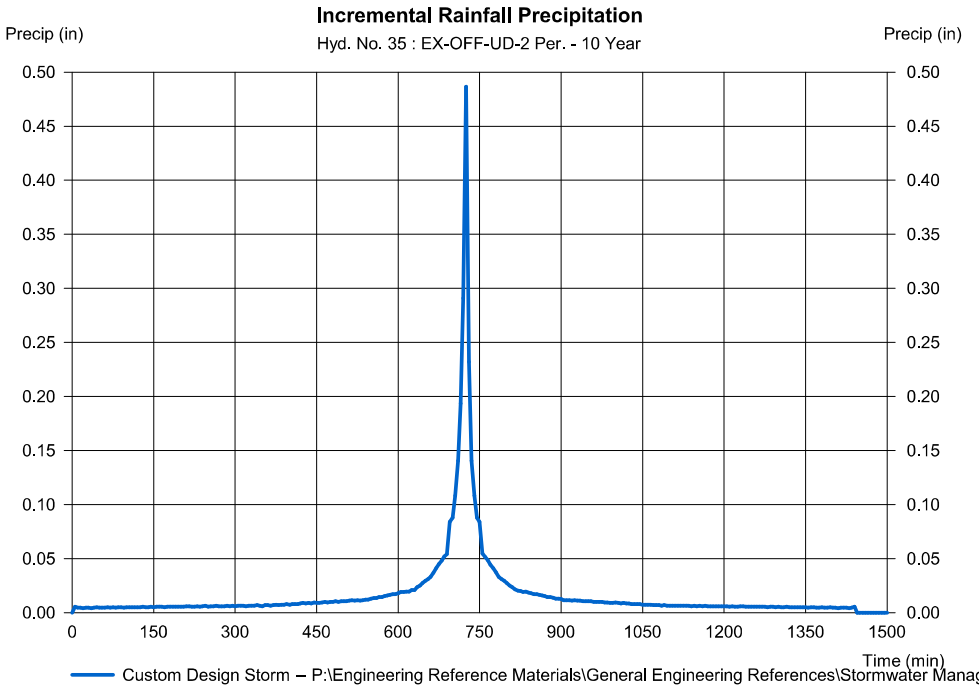


Precipitation Report

Hyd. No. 35

EX-OFF-UD-2 Per.

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

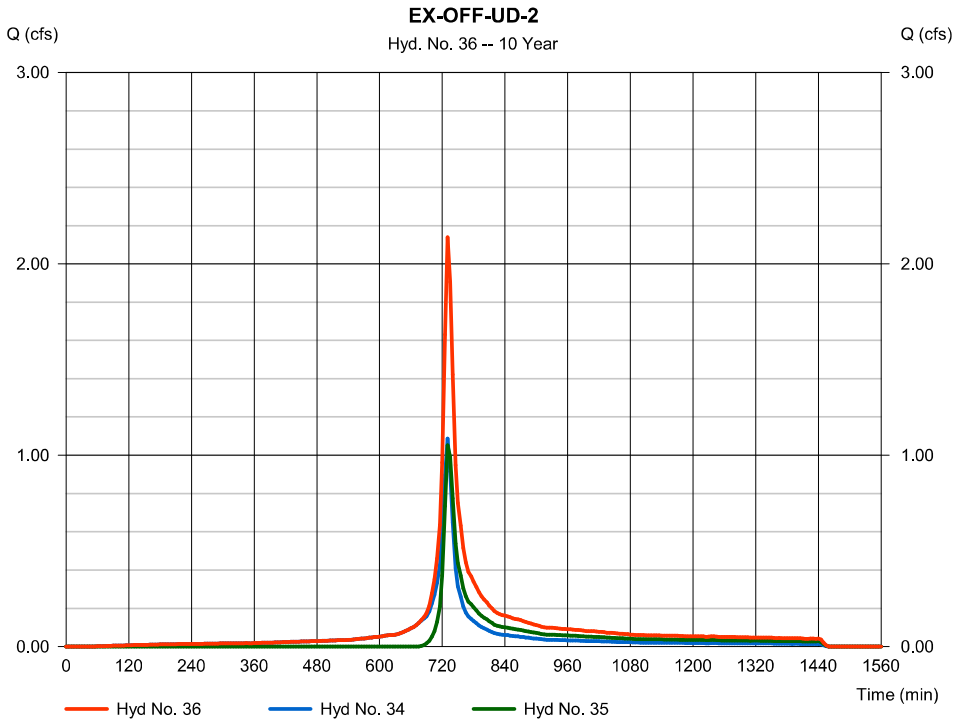


Hydrograph Report

Hyd. No. 36

EX-OFF-UD-2

Hydrograph type	= Combine	Peak discharge	= 2.139 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 8,732 cuft
Inflow hyds.	= 34, 35	Contrib. drain. area	= 1.180 ac

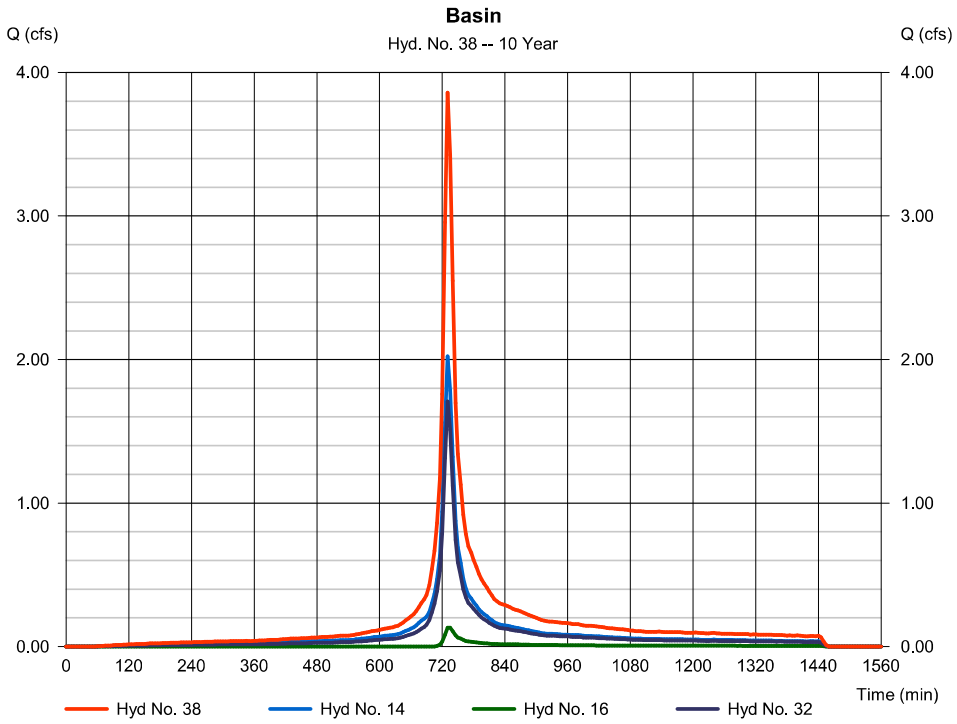


Hydrograph Report

Hyd. No. 38

Basin

Hydrograph type	= Combine	Peak discharge	= 3.859 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 16,173 cuft
Inflow hyds.	= 14, 16, 32	Contrib. drain. area	= 0.180 ac



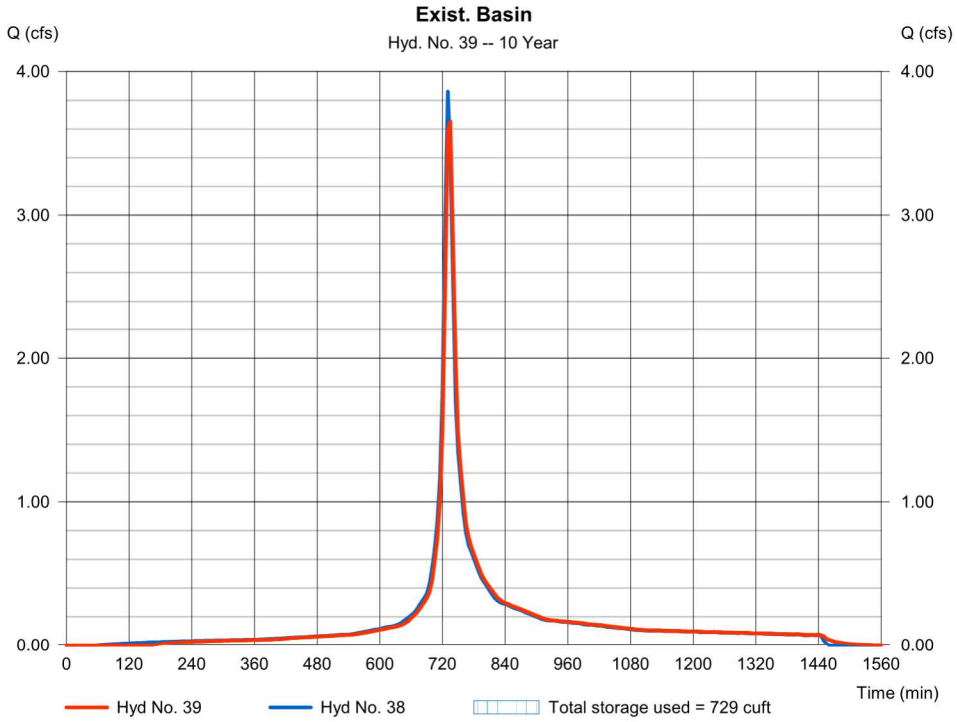
Hydrograph Report

Hyd. No. 39

Exist. Basin

Hydrograph type	= Reservoir	Peak discharge	= 3.653 cfs
Storm frequency	= 10 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 16,091 cuft
Inflow hyd. No.	= 38 - Basin	Max. Elevation	= 196.91 ft
Reservoir name	= Exist. Basin	Max. Storage	= 729 cuft

Storage Indication method used.

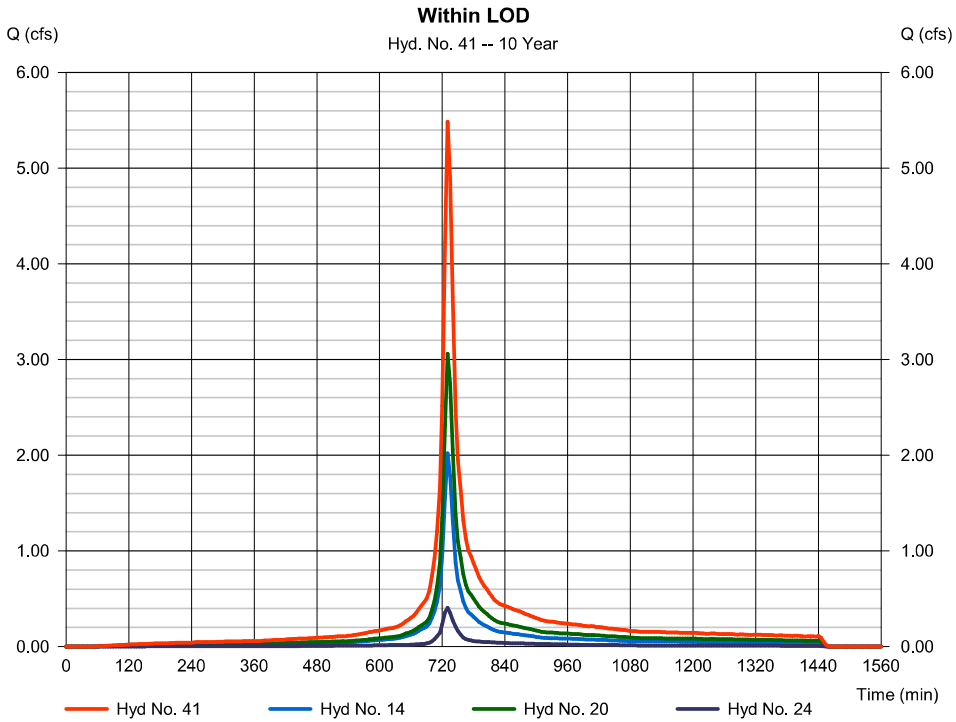


Hydrograph Report

Hyd. No. 41

Within LOD

Hydrograph type	= Combine	Peak discharge	= 5.486 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 23,340 cuft
Inflow hyds.	= 14, 20, 24	Contrib. drain. area	= 0.000 ac

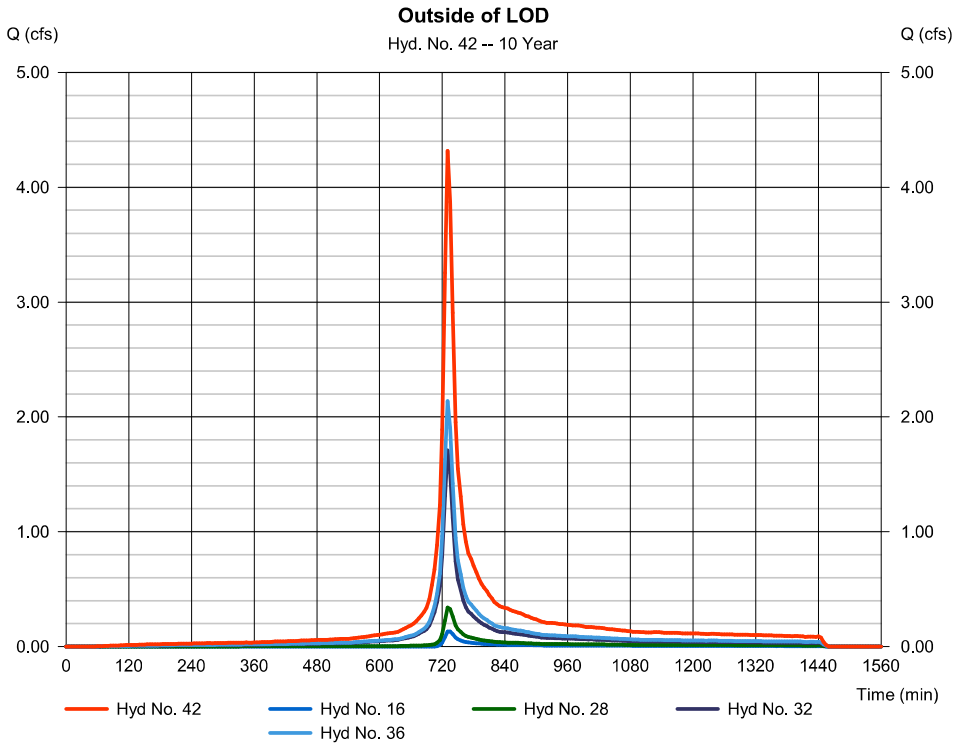


Hydrograph Report

Hyd. No. 42

Outside of LOD

Hydrograph type	= Combine	Peak discharge	= 4.318 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 17,845 cuft
Inflow hyds.	= 16, 28, 32, 36	Contrib. drain. area	= 0.180 ac

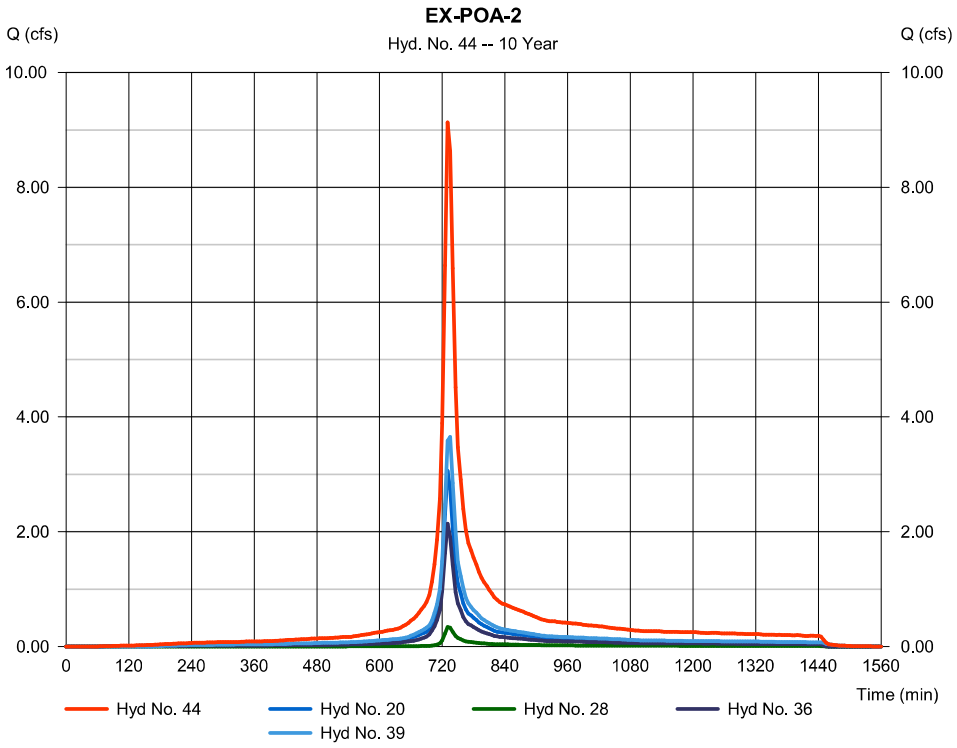


Hydrograph Report

Hyd. No. 44

EX-POA-2

Hydrograph type	= Combine	Peak discharge	= 9.128 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 39,292 cuft
Inflow hyds.	= 20, 28, 36, 39	Contrib. drain. area	= 0.000 ac

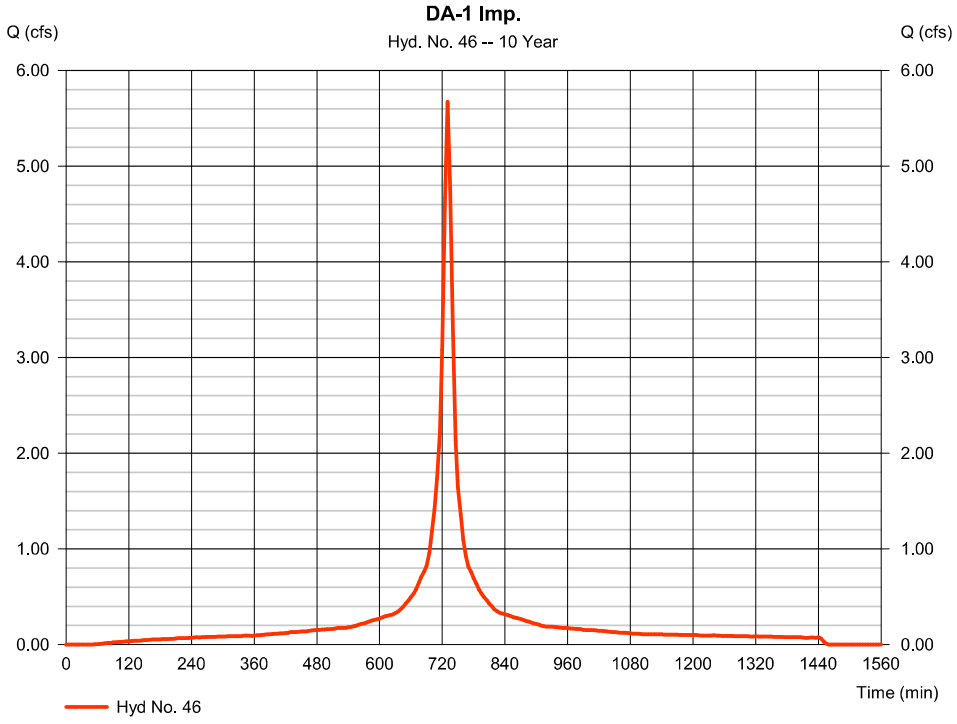


Hydrograph Report

Hyd. No. 46

DA-1 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 5.670 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 23,666 cuft
Drainage area	= 1.460 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

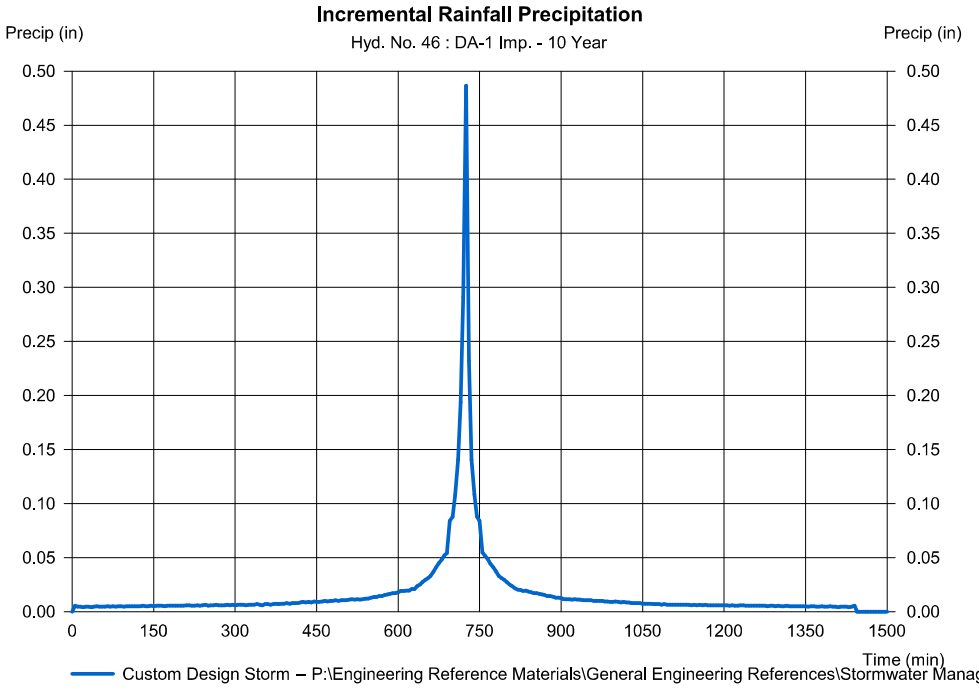


Precipitation Report

Hyd. No. 46

DA-1 Imp.

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

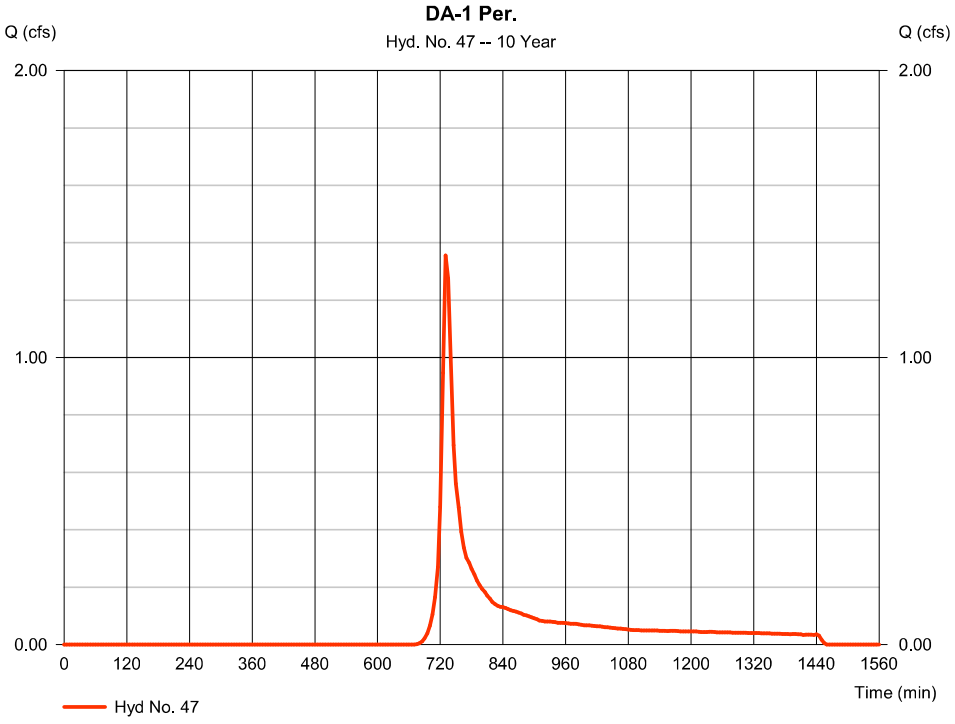


Hydrograph Report

Hyd. No. 47

DA-1 Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 1.356 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 5,405 cuft
Drainage area	= 1.160 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

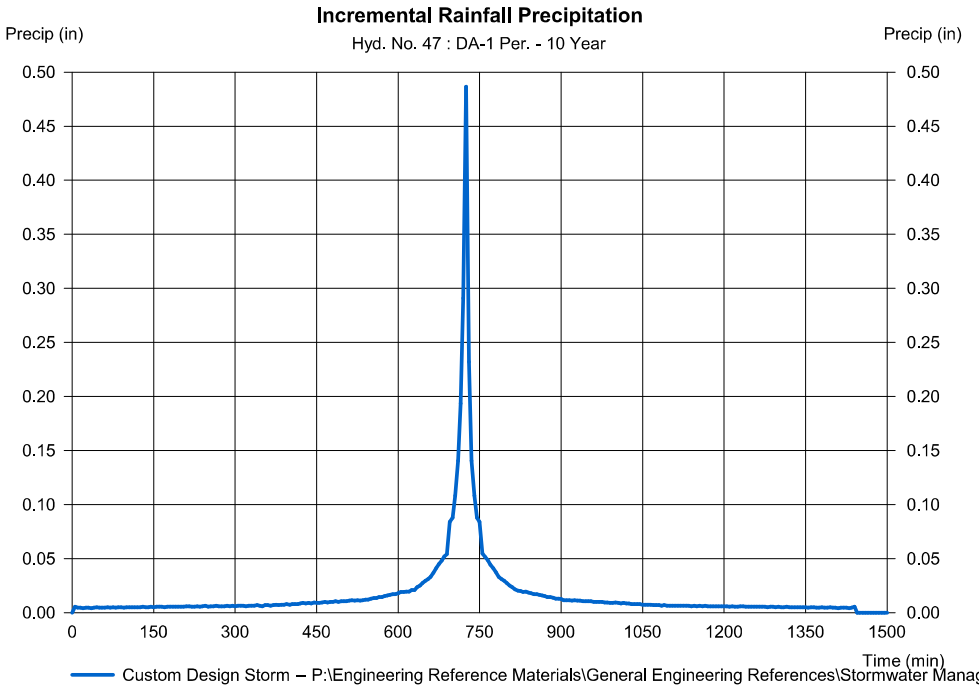


Precipitation Report

Hyd. No. 47

DA-1 Per.

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

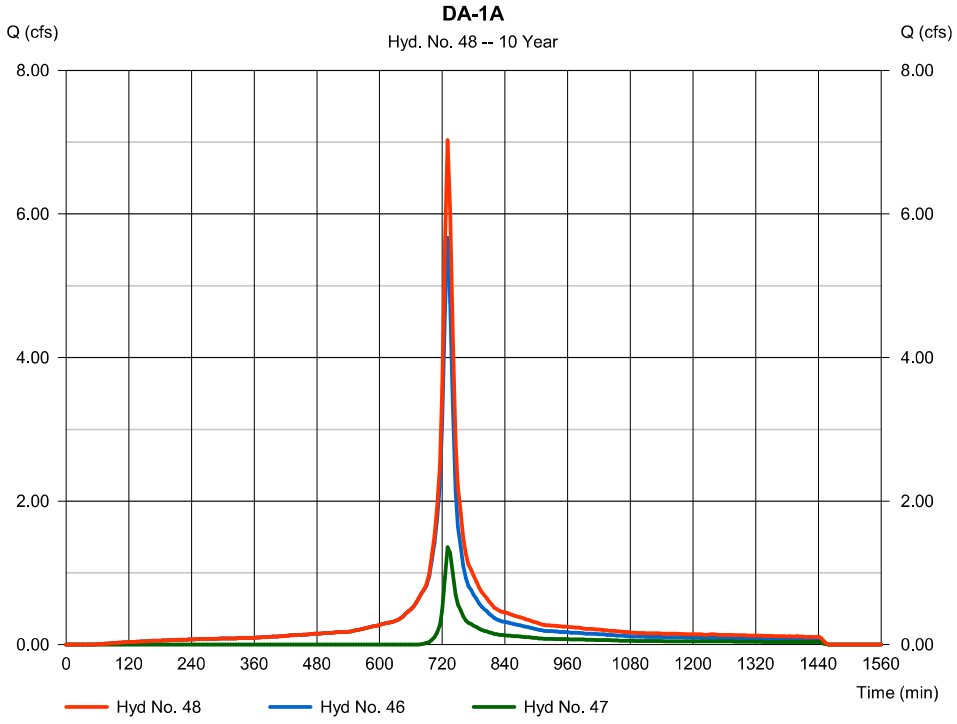


Hydrograph Report

Hyd. No. 48

DA-1A

Hydrograph type	= Combine	Peak discharge	= 7.026 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 29,071 cuft
Inflow hyds.	= 46, 47	Contrib. drain. area	= 2.620 ac

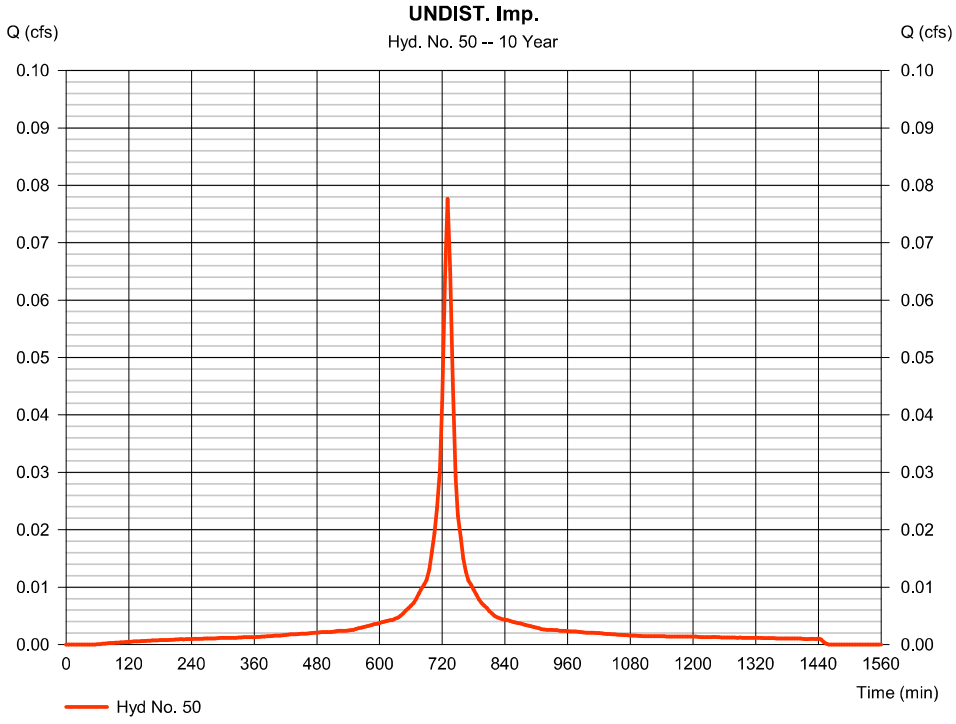


Hydrograph Report

Hyd. No. 50

UNDIST. Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.078 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 324 cuft
Drainage area	= 0.020 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

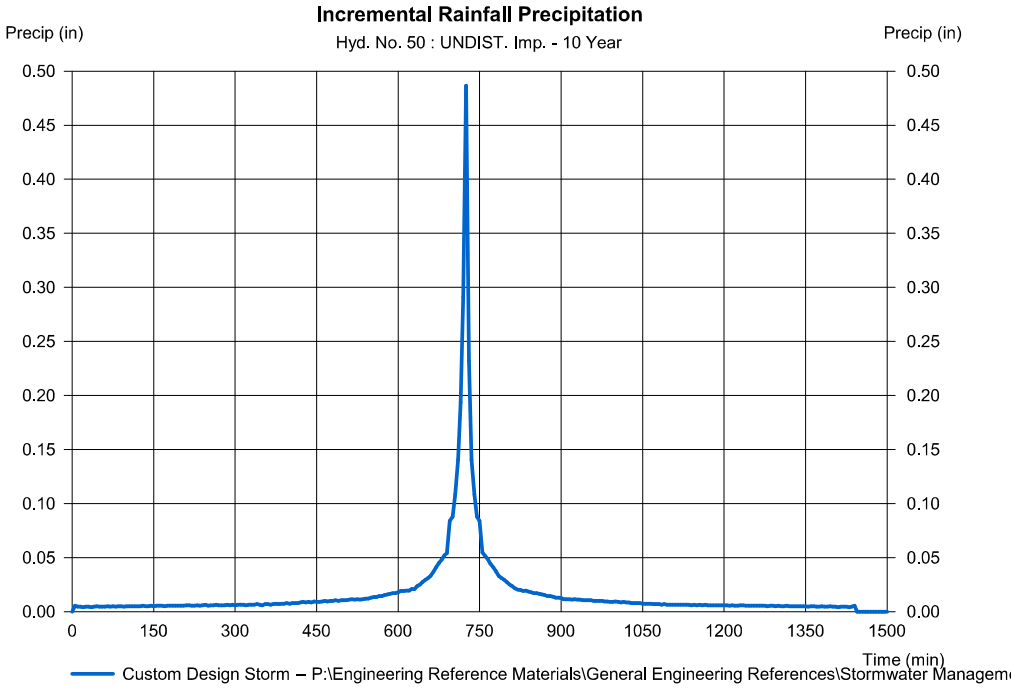


Precipitation Report

Hyd. No. 50

UNDIST. Imp.

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

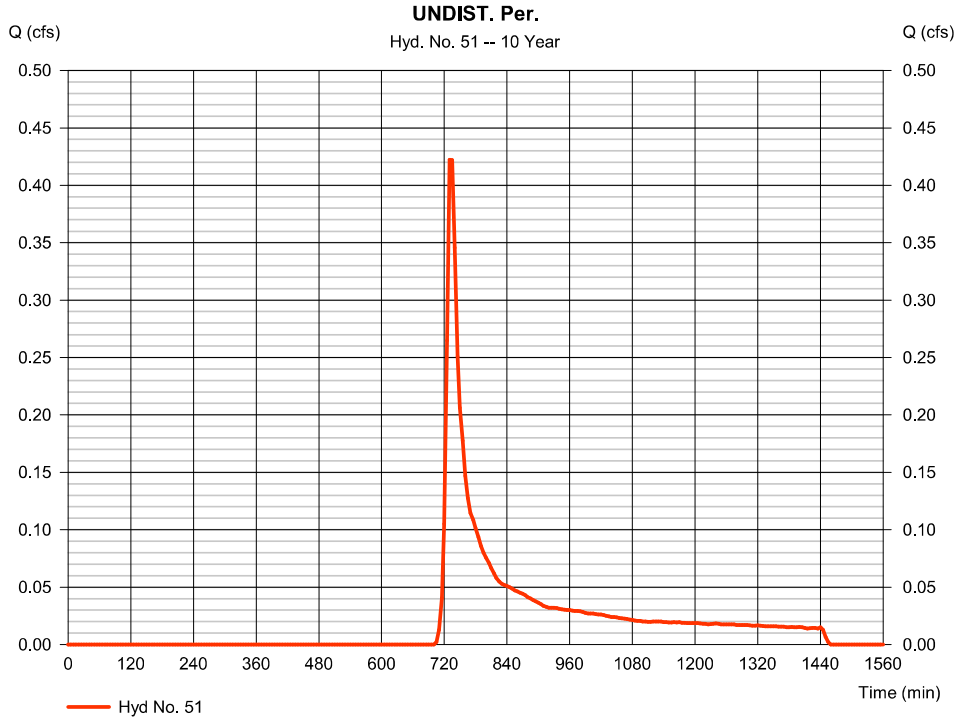


Hydrograph Report

Hyd. No. 51

UNDIST. Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.422 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,934 cuft
Drainage area	= 0.580 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

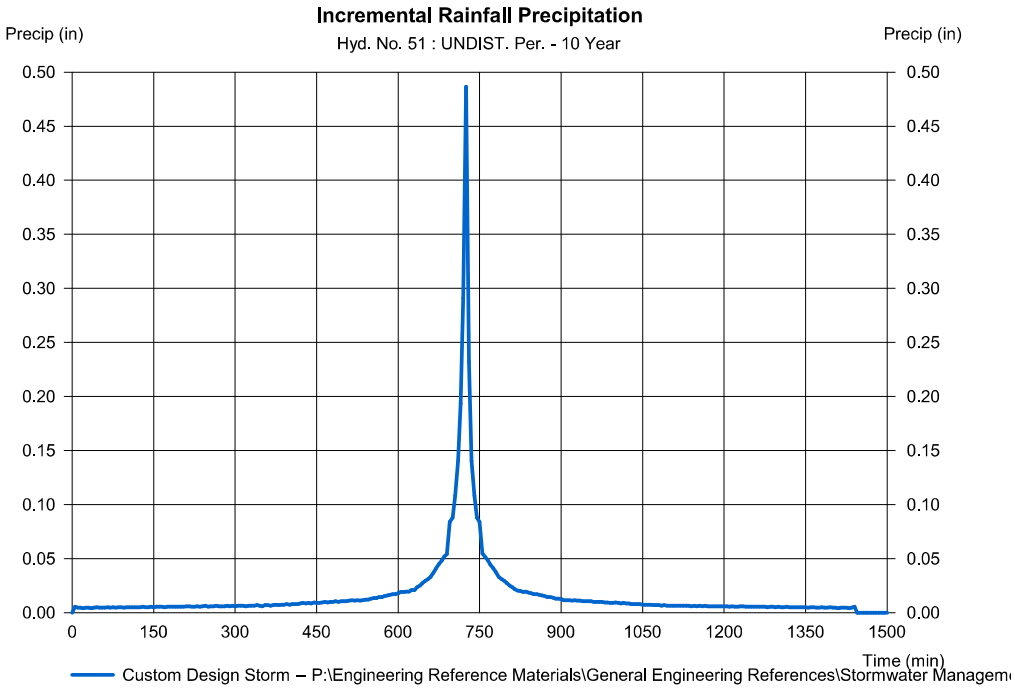


Precipitation Report

Hyd. No. 51

UNDIST. Per.

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

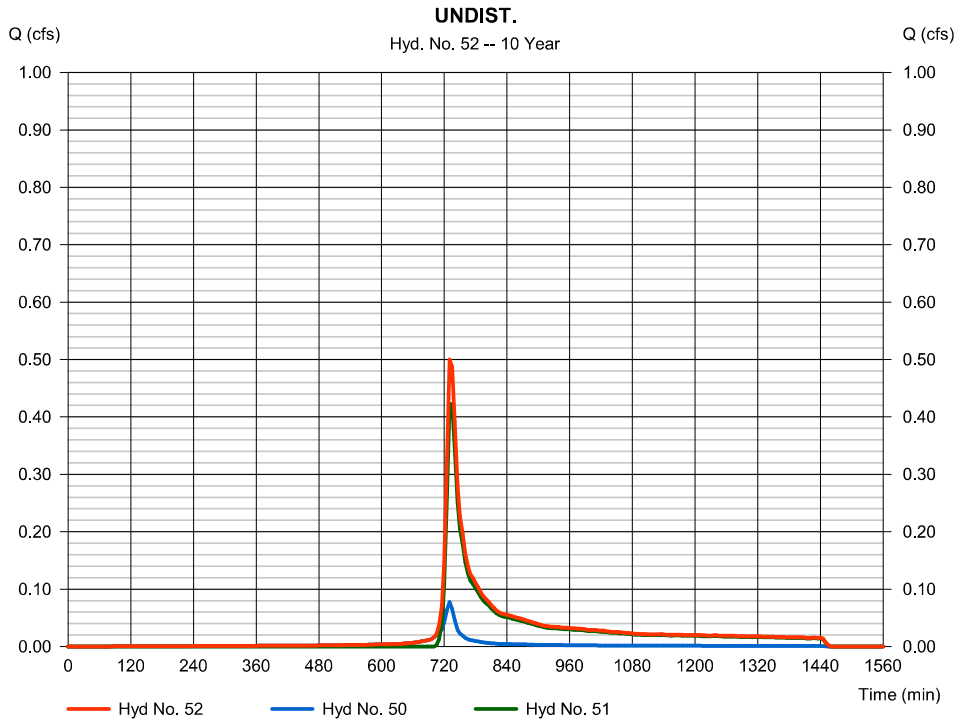


Hydrograph Report

Hyd. No. 52

UNDIST.

Hydrograph type	= Combine	Peak discharge	= 0.500 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,258 cuft
Inflow hyds.	= 50, 51	Contrib. drain. area	= 0.600 ac

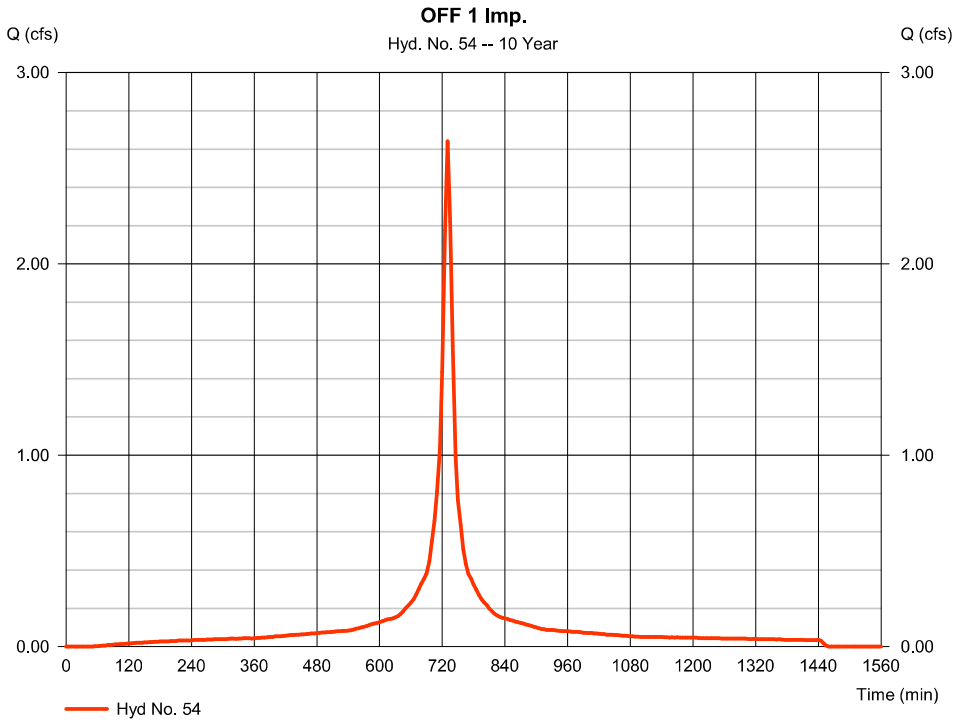


Hydrograph Report

Hyd. No. 54

OFF 1 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 2.641 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 11,023 cuft
Drainage area	= 0.680 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

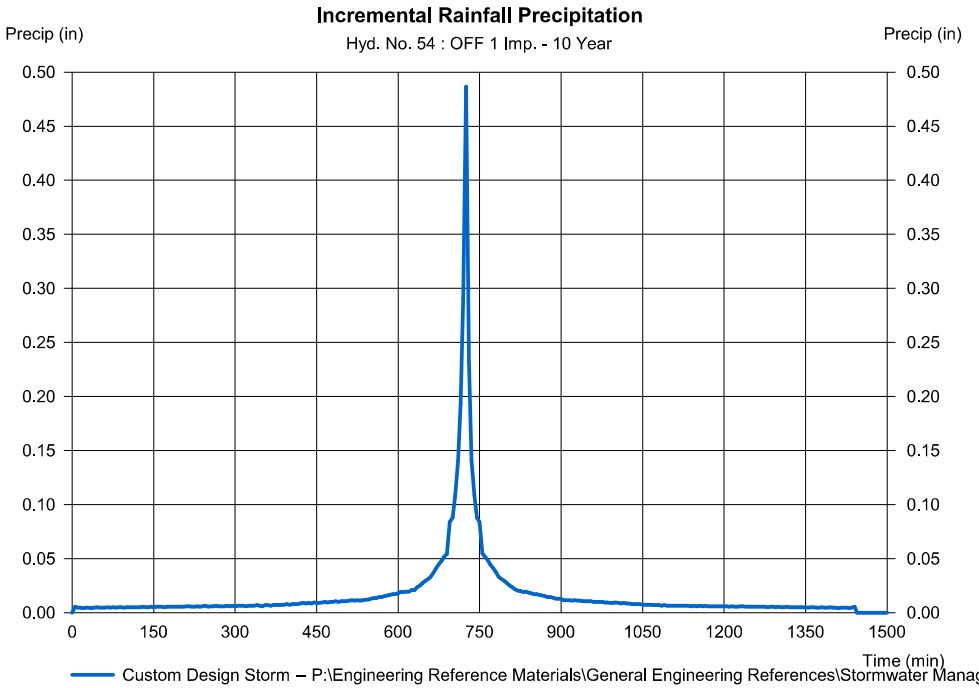


Precipitation Report

Hyd. No. 54

OFF 1 Imp.

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

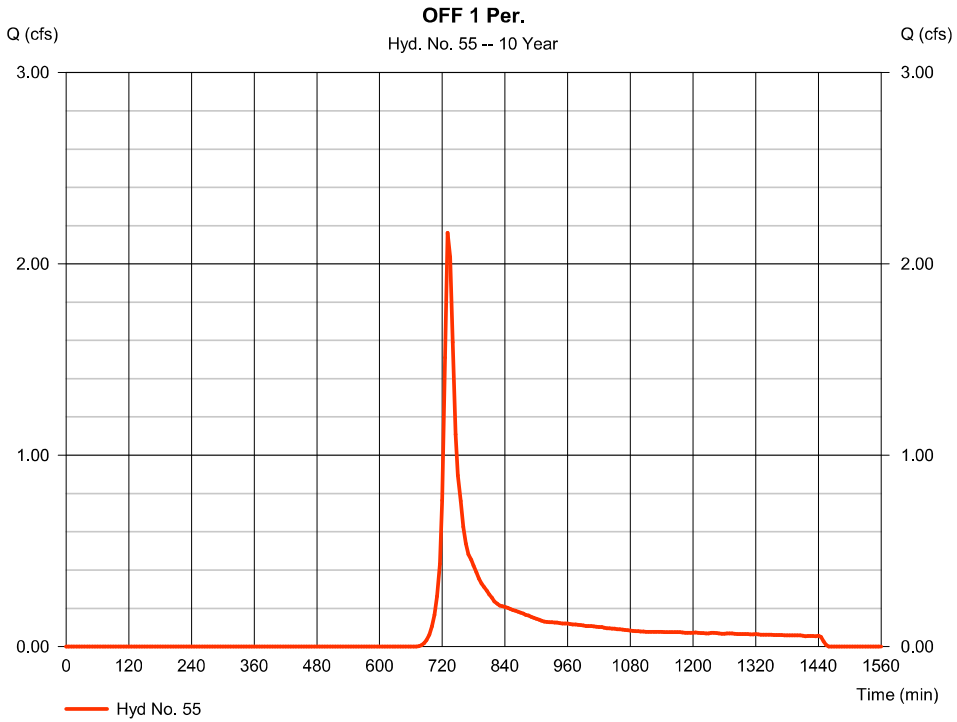


Hydrograph Report

Hyd. No. 55

OFF 1 Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 2.162 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 8,620 cuft
Drainage area	= 1.850 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

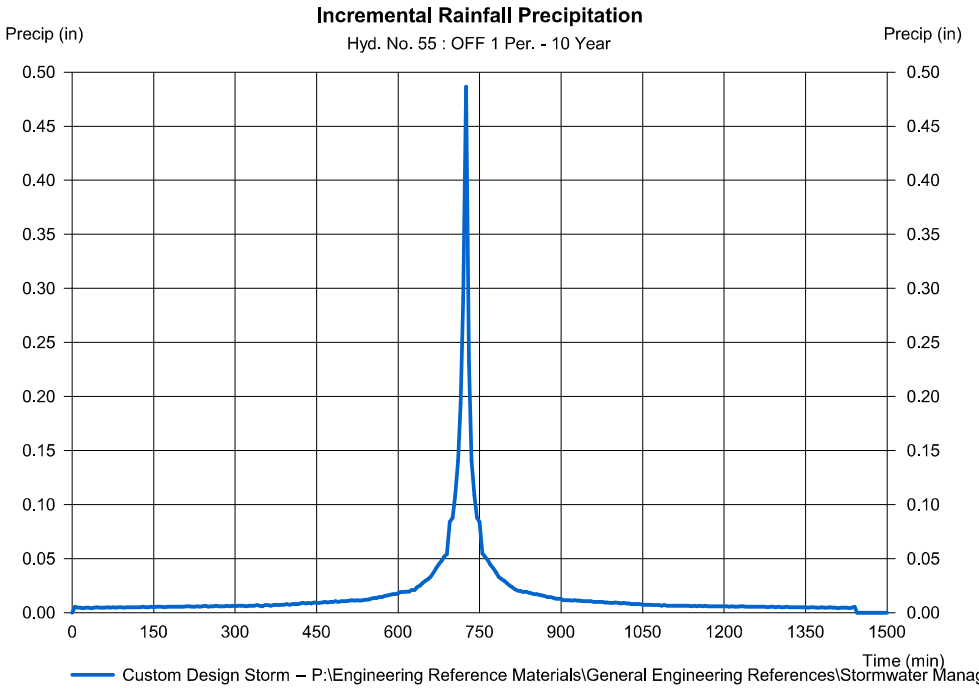


Precipitation Report

Hyd. No. 55

OFF 1 Per.

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

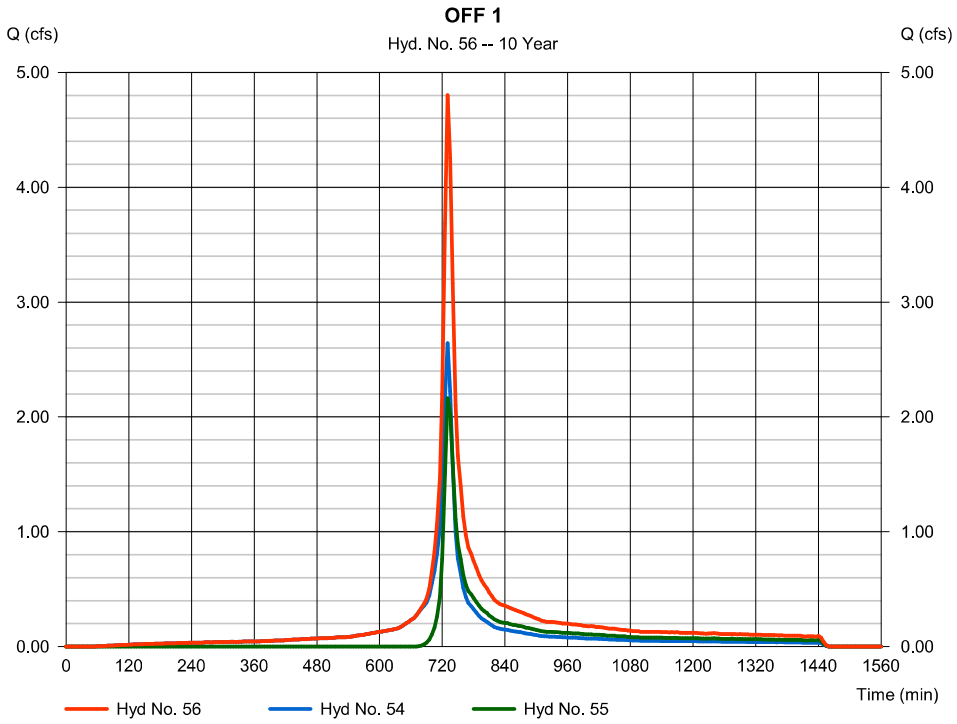


Hydrograph Report

Hyd. No. 56

OFF 1

Hydrograph type	= Combine	Peak discharge	= 4.803 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 19,642 cuft
Inflow hyds.	= 54, 55	Contrib. drain. area	= 2.530 ac

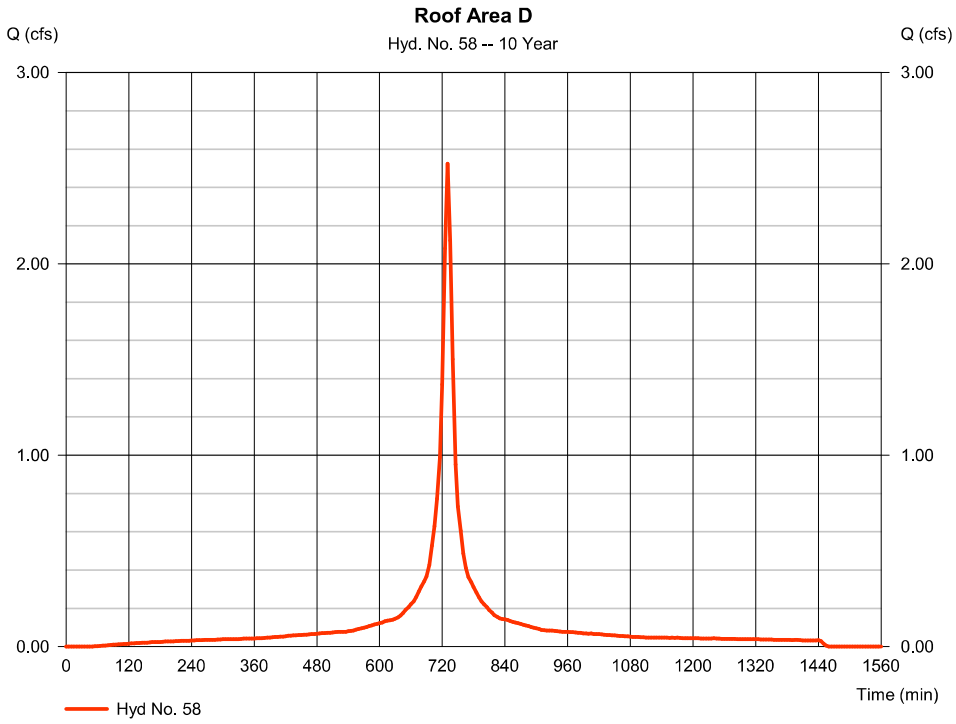


Hydrograph Report

Hyd. No. 58

Roof Area D

Hydrograph type	= SCS Runoff	Peak discharge	= 2.524 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 10,536 cuft
Drainage area	= 0.650 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

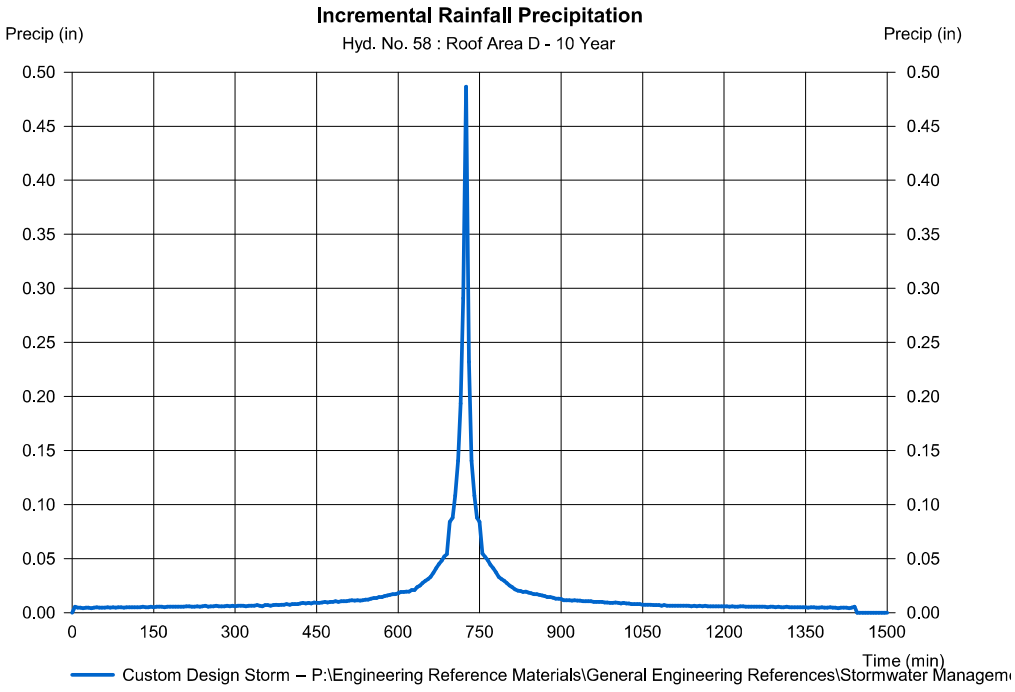


Precipitation Report

Hyd. No. 58

Roof Area D

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

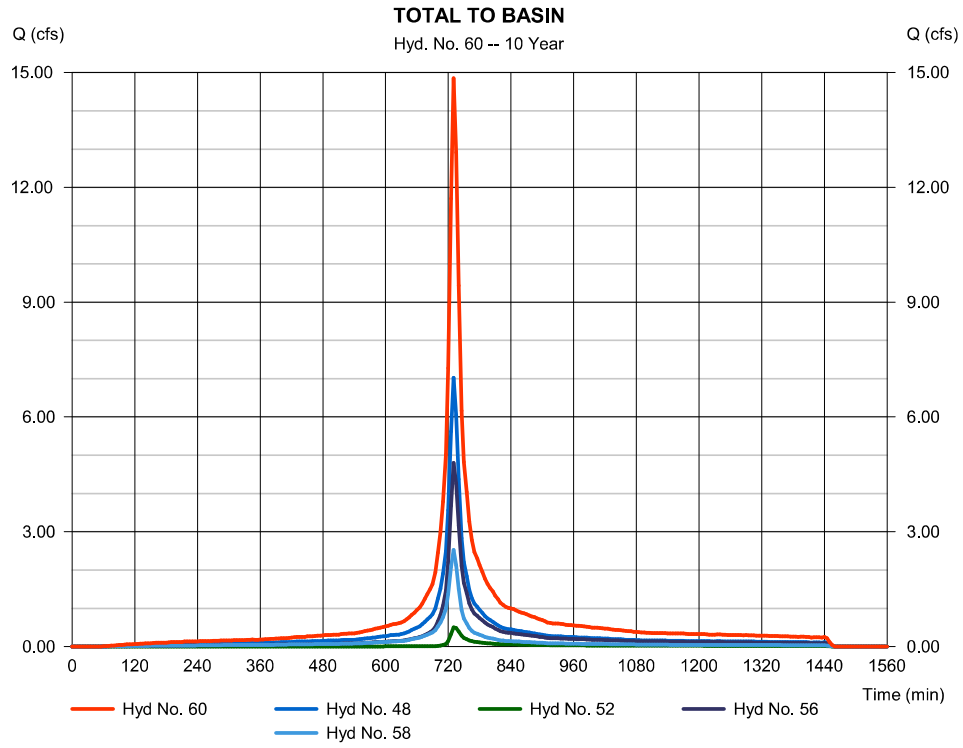


Hydrograph Report

Hyd. No. 60

TOTAL TO BASIN

Hydrograph type	= Combine	Peak discharge	= 14.85 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 61,508 cuft
Inflow hyds.	= 48, 52, 56, 58	Contrib. drain. area	= 0.650 ac



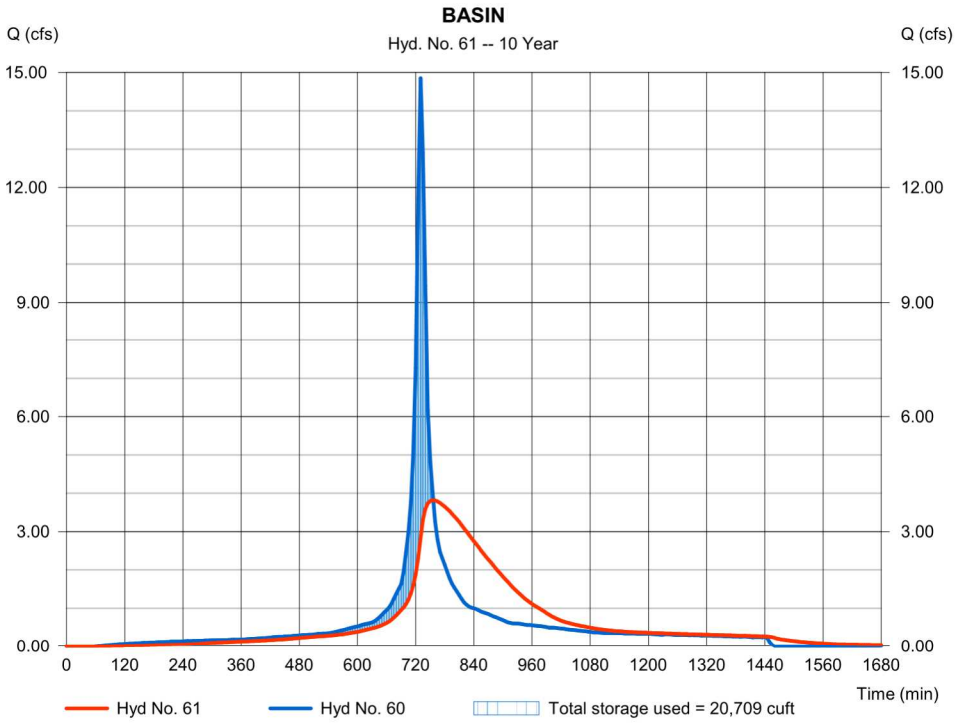
Hydrograph Report

Hyd. No. 61

BASIN

Hydrograph type	= Reservoir	Peak discharge	= 3.818 cfs
Storm frequency	= 10 yrs	Time to peak	= 755 min
Time interval	= 5 min	Hyd. volume	= 61,494 cuft
Inflow hyd. No.	= 60 - TOTAL TO BASIN	Max. Elevation	= 197.39 ft
Reservoir name	= UG STORMTRAP	Max. Storage	= 20,709 cuft

Storage Indication method used.

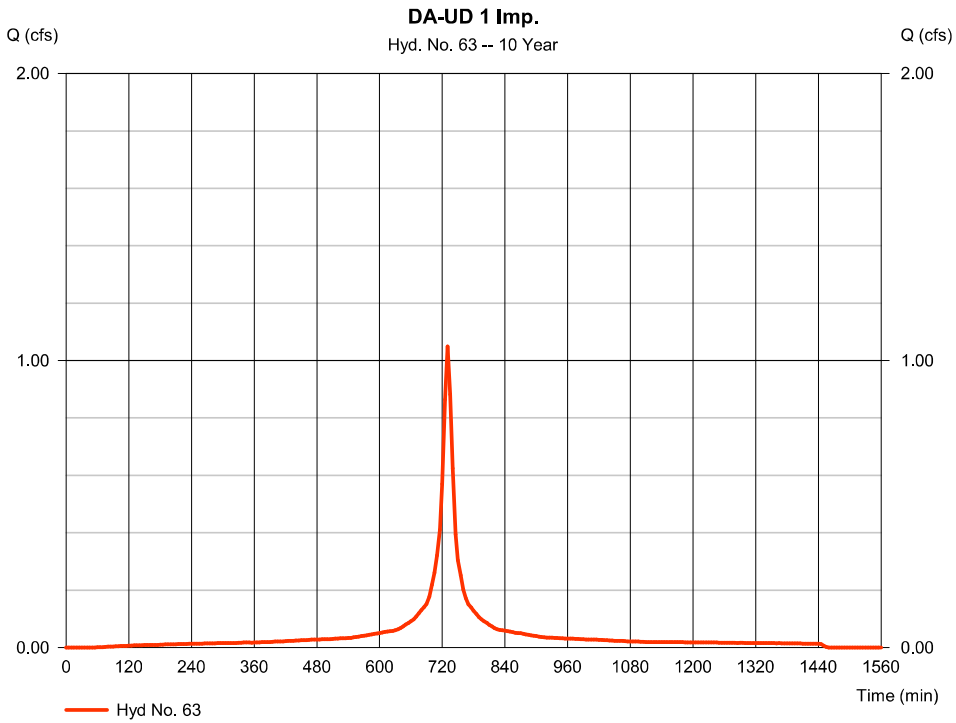


Hydrograph Report

Hyd. No. 63

DA-UD 1 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 1.049 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 4,377 cuft
Drainage area	= 0.270 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

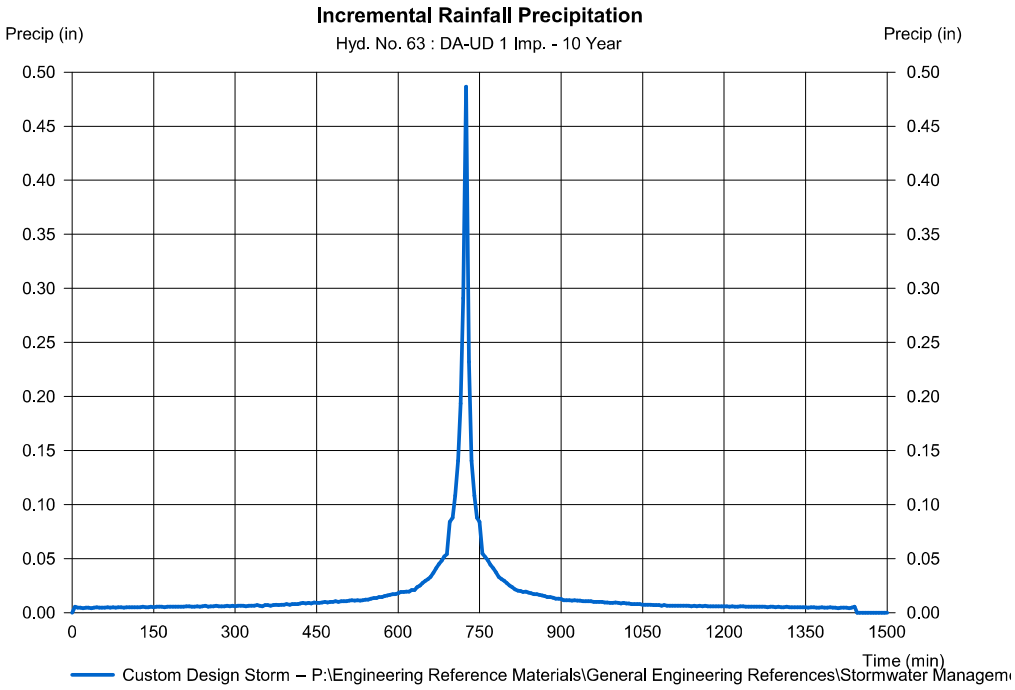


Precipitation Report

Hyd. No. 63

DA-UD 1 Imp.

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

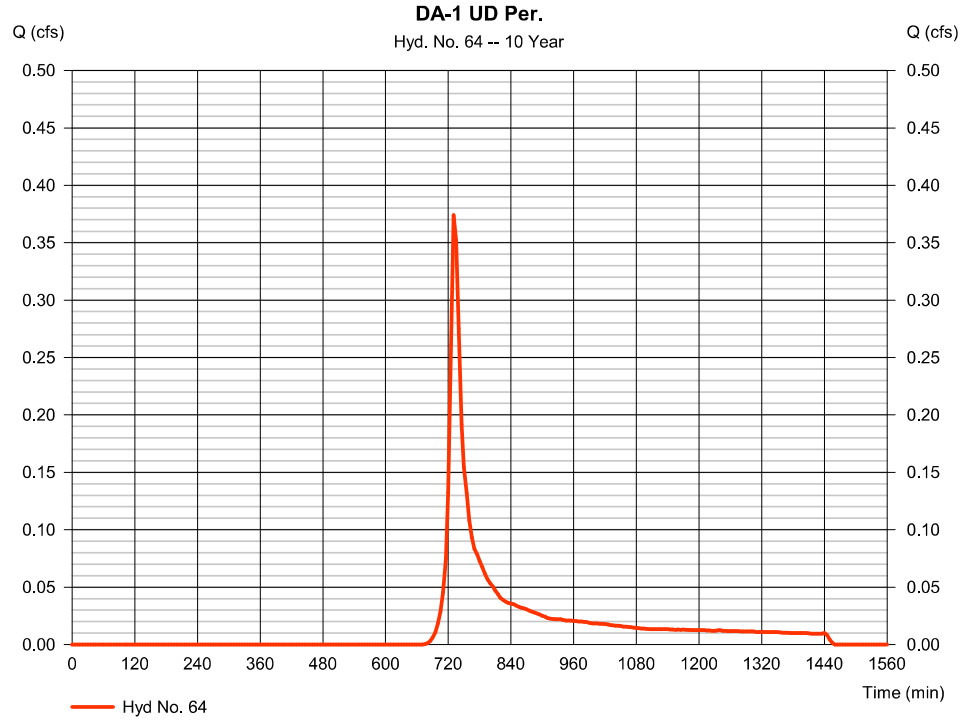


Hydrograph Report

Hyd. No. 64

DA-1 UD Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.374 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,491 cuft
Drainage area	= 0.320 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

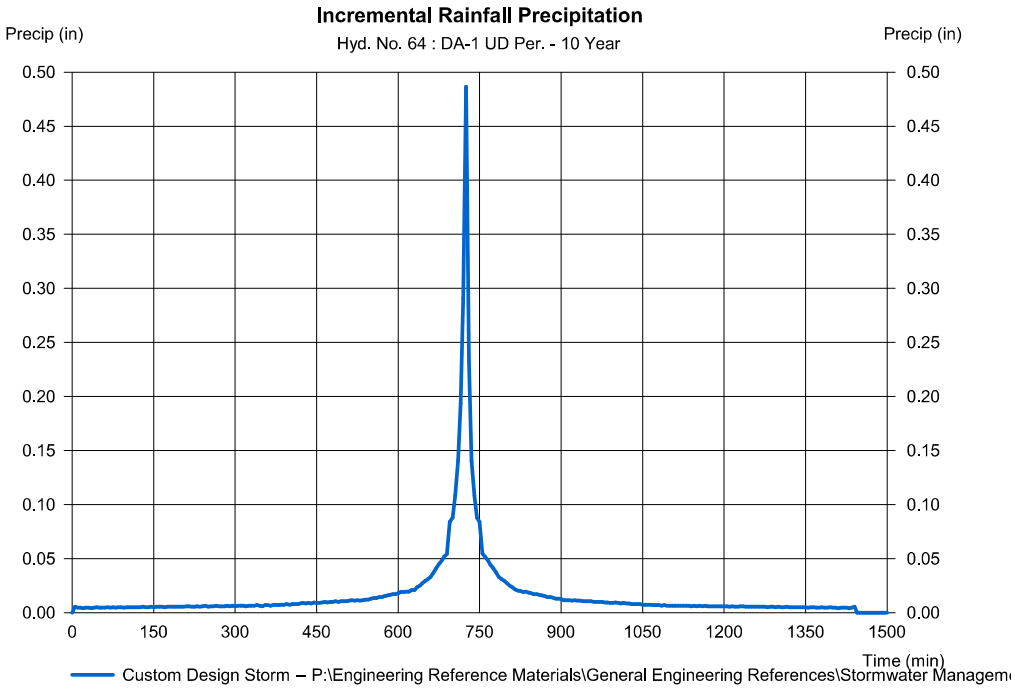


Precipitation Report

Hyd. No. 64

DA-1 UD Per.

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

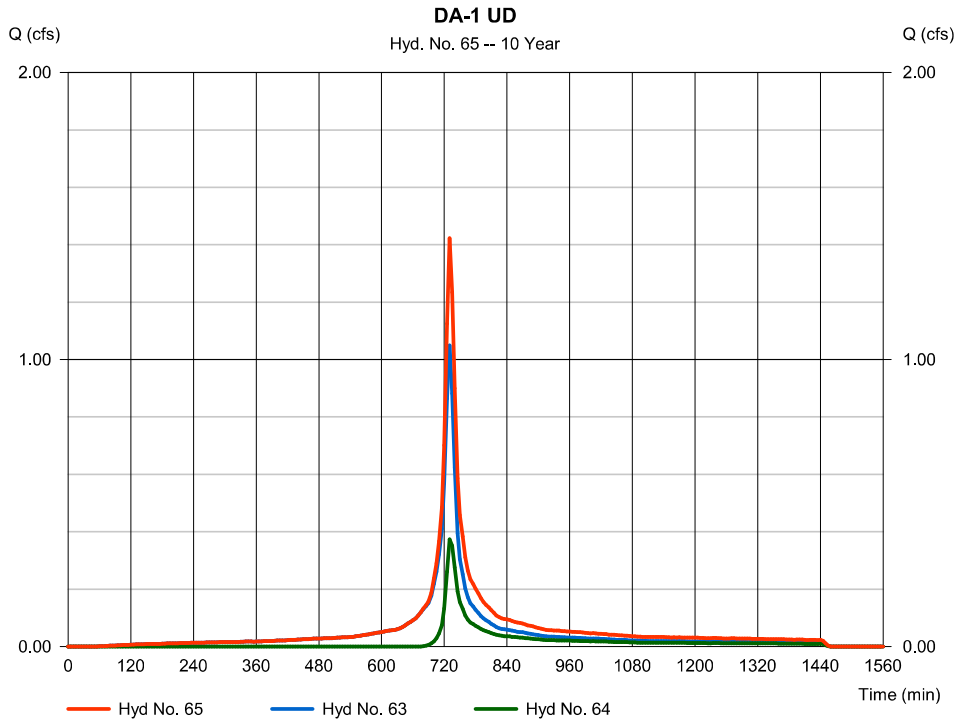


Hydrograph Report

Hyd. No. 65

DA-1 UD

Hydrograph type	= Combine	Peak discharge	= 1.423 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 5,868 cuft
Inflow hyds.	= 63, 64	Contrib. drain. area	= 0.590 ac

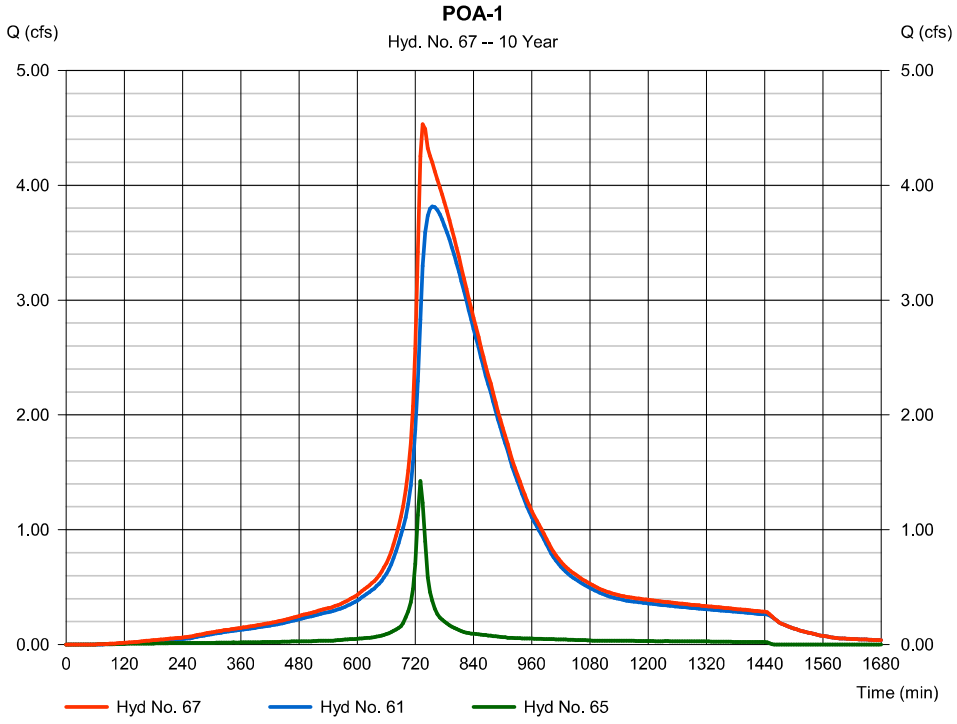


Hydrograph Report

Hyd. No. 67

POA-1

Hydrograph type	= Combine	Peak discharge	= 4.532 cfs
Storm frequency	= 10 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 67,361 cuft
Inflow hyds.	= 61, 65	Contrib. drain. area	= 0.000 ac

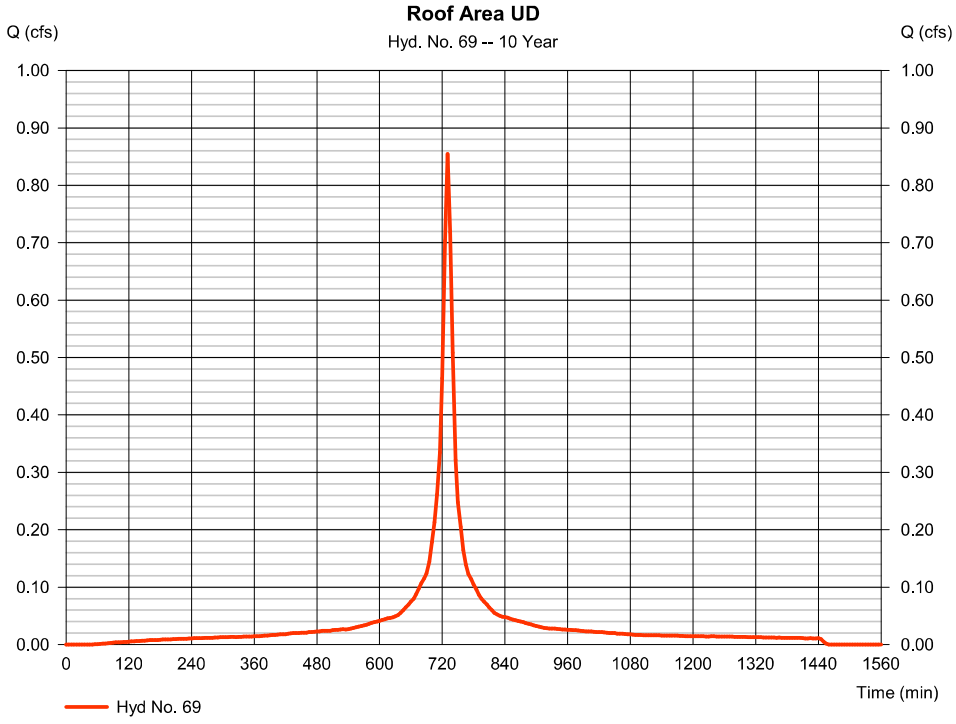


Hydrograph Report

Hyd. No. 69

Roof Area UD

Hydrograph type	= SCS Runoff	Peak discharge	= 0.854 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 3,566 cuft
Drainage area	= 0.220 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

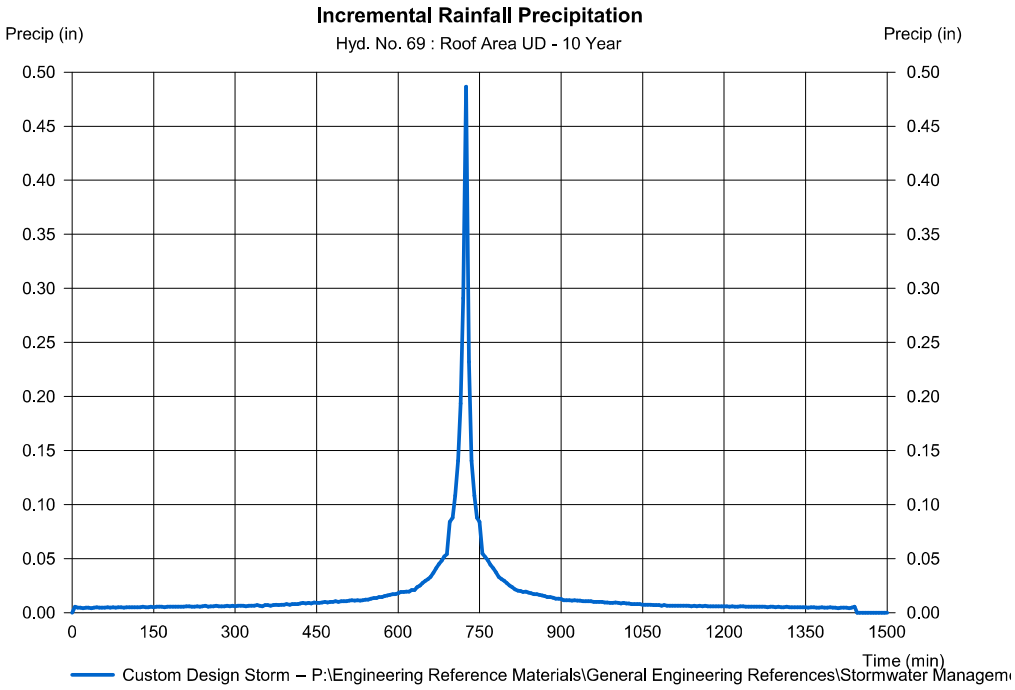


Precipitation Report

Hyd. No. 69

Roof Area UD

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

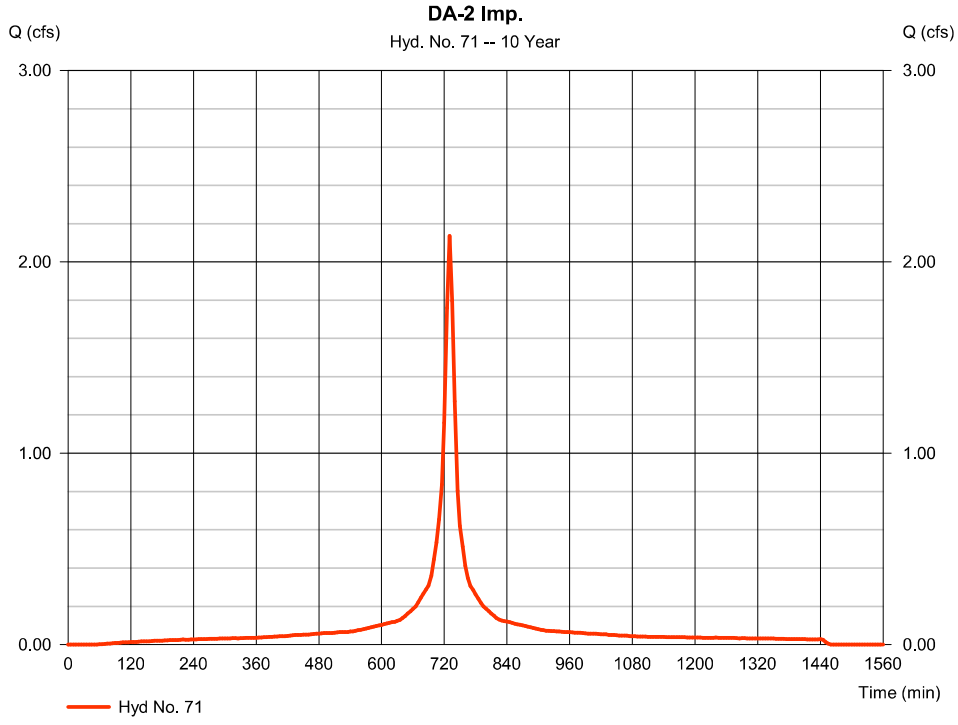


Hydrograph Report

Hyd. No. 71

DA-2 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 2.136 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 8,915 cuft
Drainage area	= 0.550 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

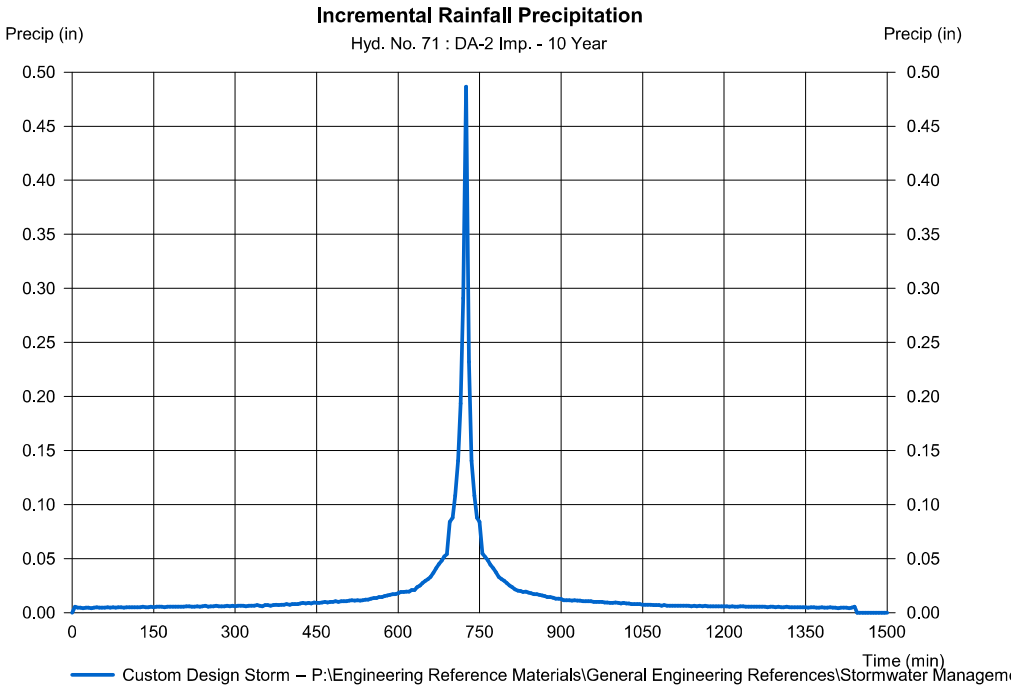


Precipitation Report

Hyd. No. 71

DA-2 Imp.

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

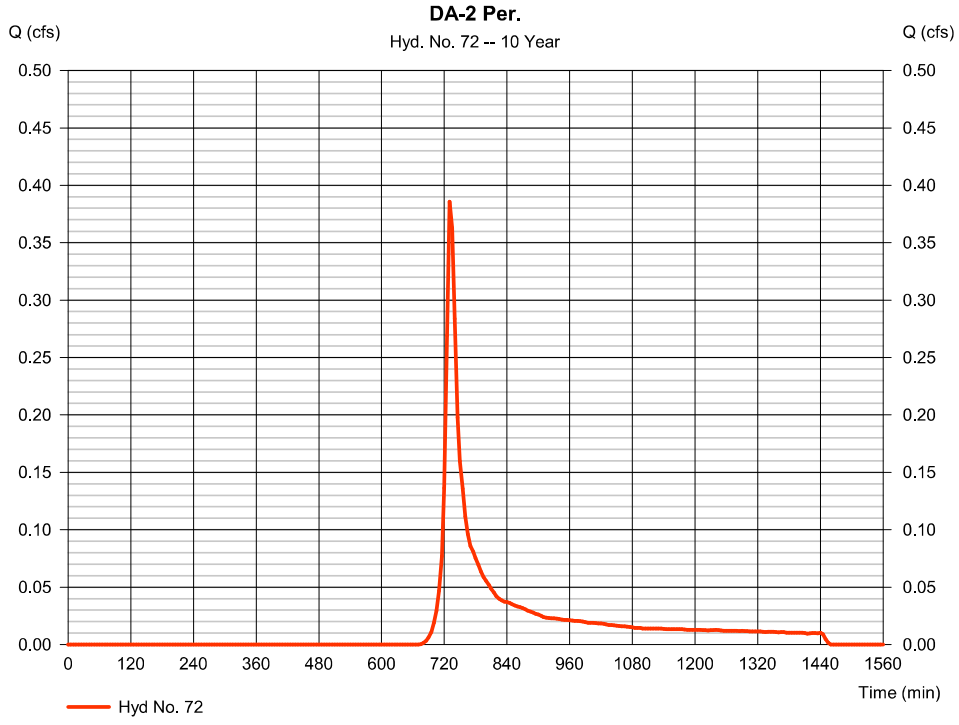


Hydrograph Report

Hyd. No. 72

DA-2 Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.386 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,538 cuft
Drainage area	= 0.330 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Storm duration	= 48

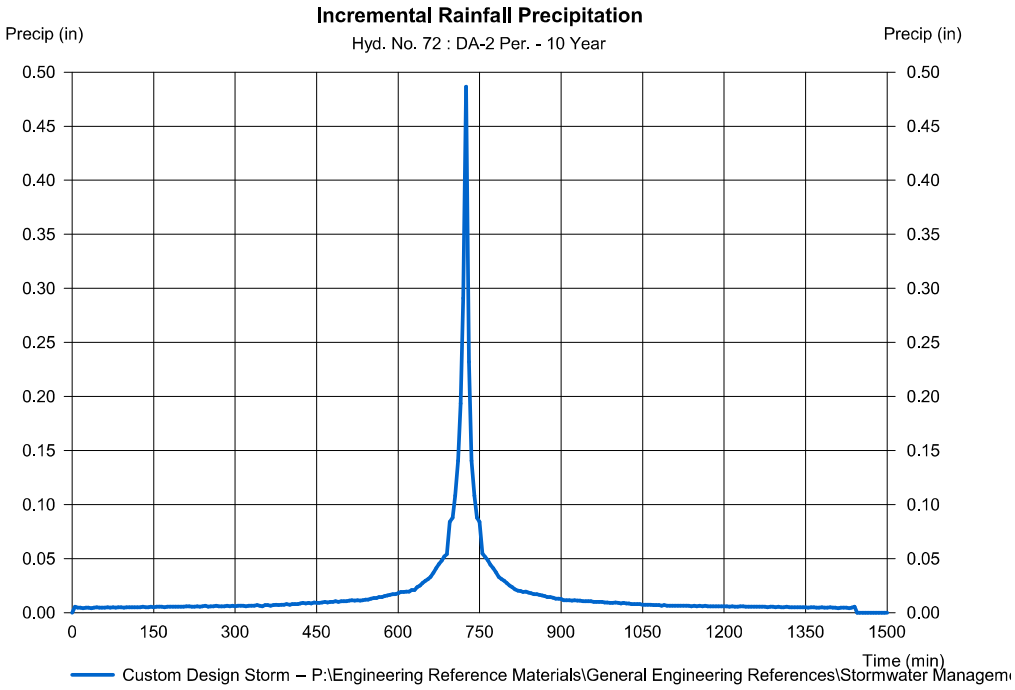


Precipitation Report

Hyd. No. 72

DA-2 Per.

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

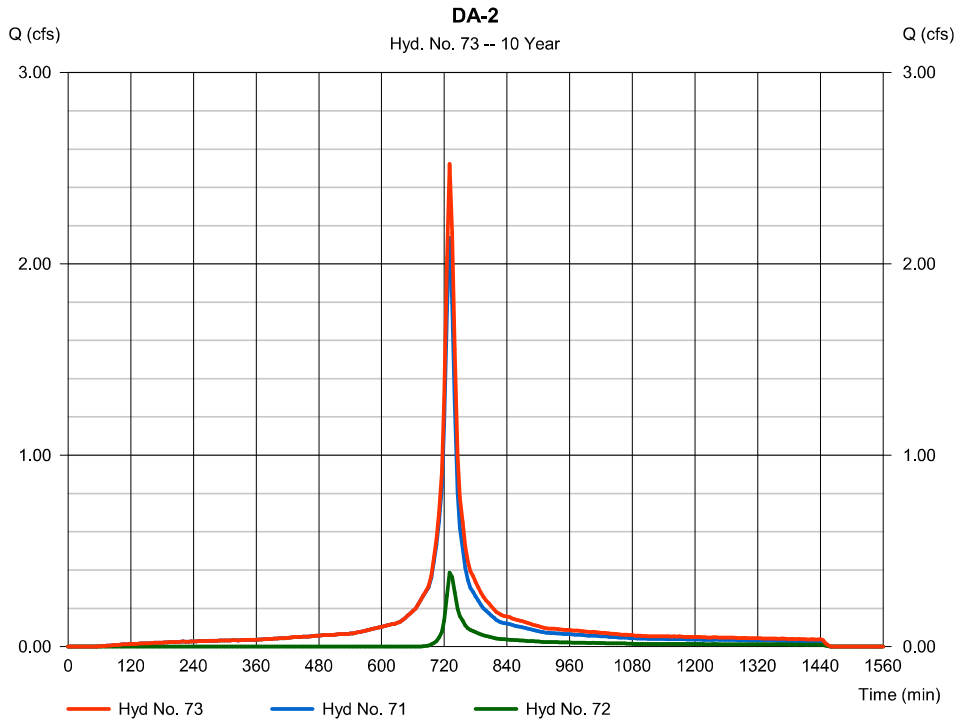


Hydrograph Report

Hyd. No. 73

DA-2

Hydrograph type	= Combine	Peak discharge	= 2.522 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 10,453 cuft
Inflow hyds.	= 71, 72	Contrib. drain. area	= 0.880 ac

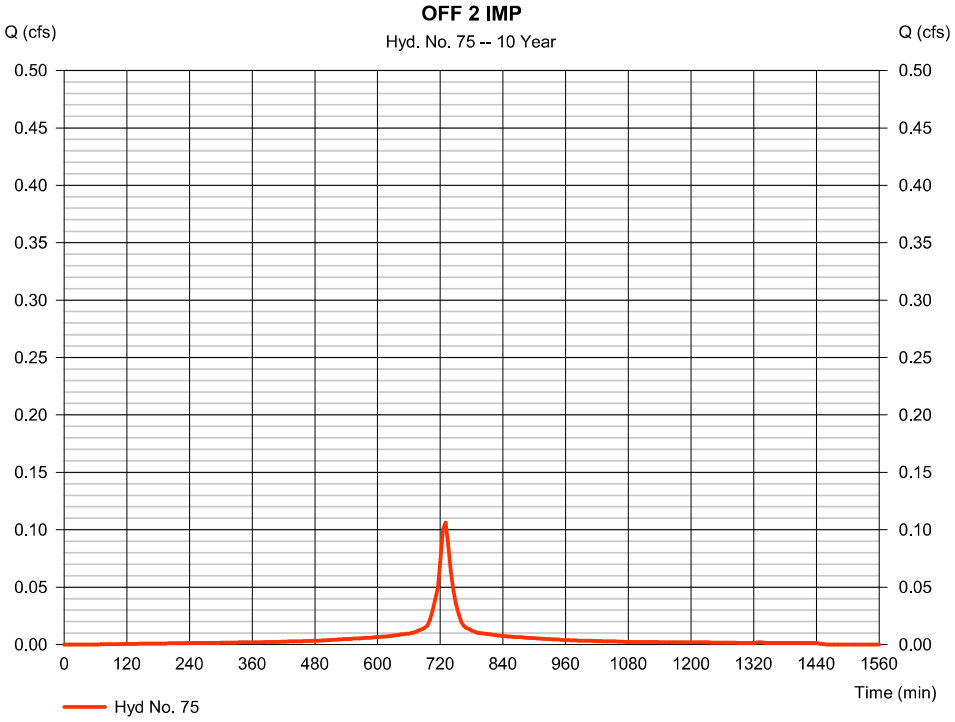


Hydrograph Report

Hyd. No. 75

OFF 2 IMP

Hydrograph type	= SCS Runoff	Peak discharge	= 0.106 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 486 cuft
Drainage area	= 0.030 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

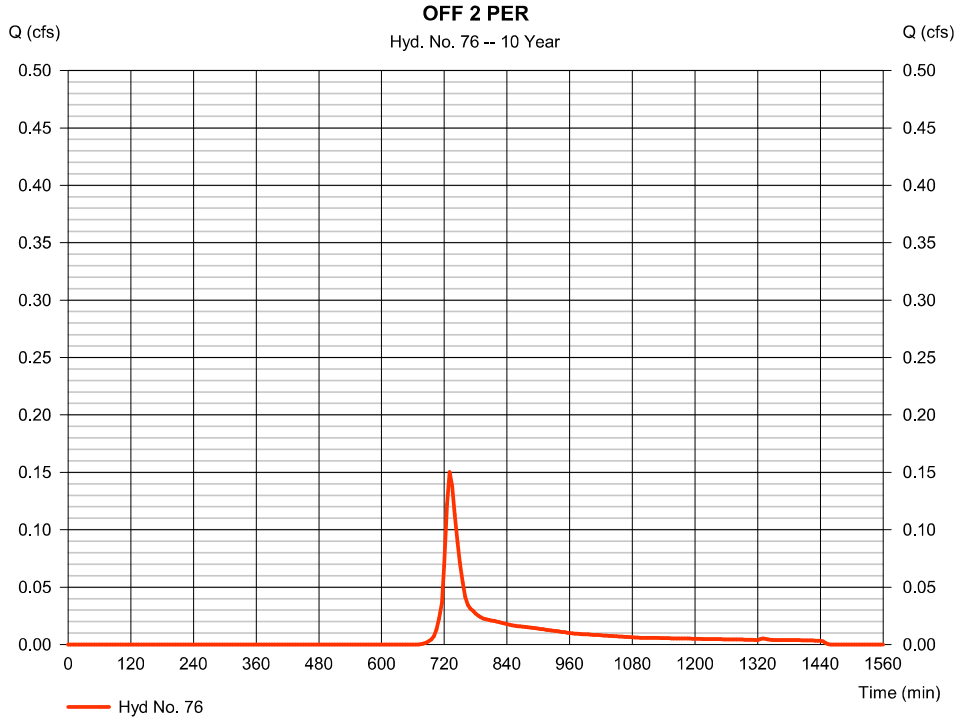


Hydrograph Report

Hyd. No. 76

OFF 2 PER

Hydrograph type	= SCS Runoff	Peak discharge	= 0.150 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 652 cuft
Drainage area	= 0.140 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

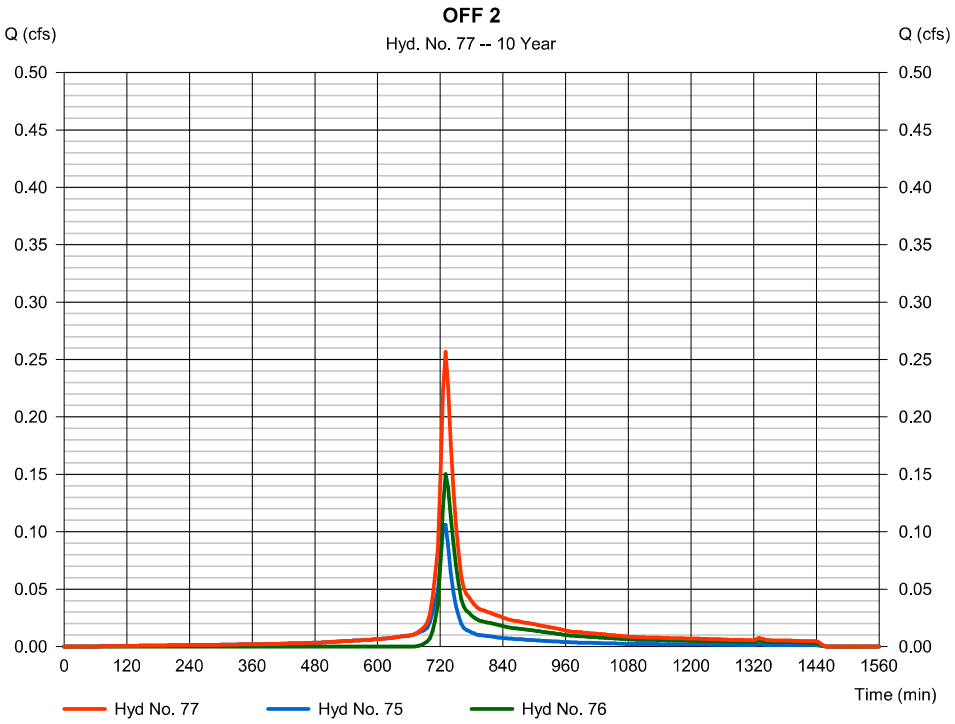


Hydrograph Report

Hyd. No. 77

OFF 2

Hydrograph type	= Combine	Peak discharge	= 0.257 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,139 cuft
Inflow hyds.	= 75, 76	Contrib. drain. area	= 0.170 ac

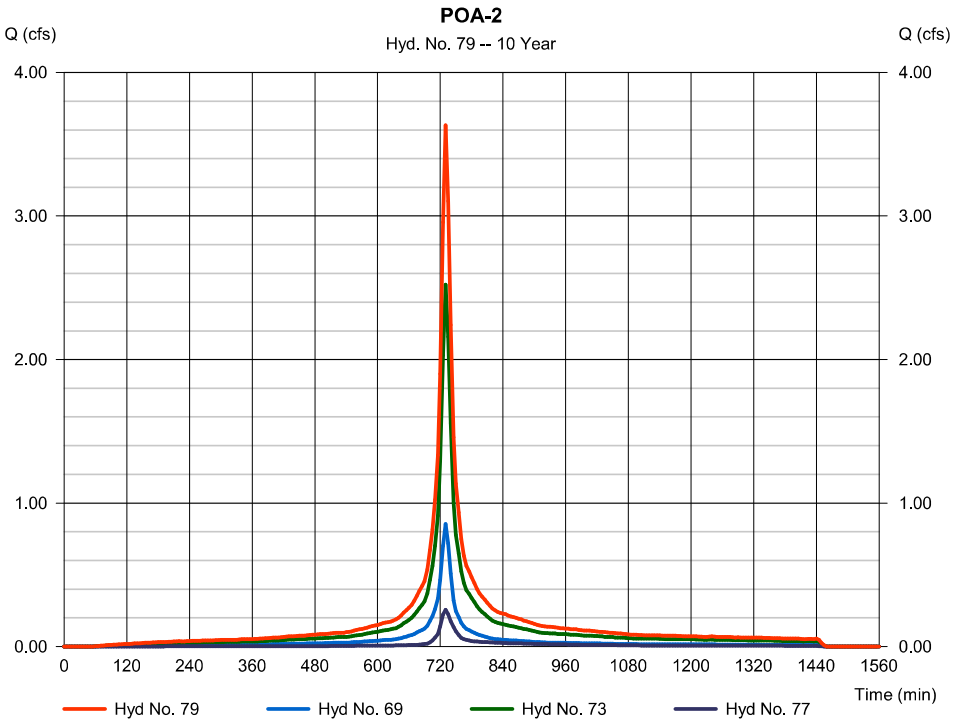


Hydrograph Report

Hyd. No. 79

POA-2

Hydrograph type	= Combine	Peak discharge	= 3.633 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 15,158 cuft
Inflow hyds.	= 69, 73, 77	Contrib. drain. area	= 0.220 ac



Hydrograph Summary Report

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

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	9.715	5	730	40,824	-----	-----	-----	EX-DA-1 Imp.
2	SCS Runoff	0.056	5	730	211	-----	-----	-----	EX-DA-1 Per
3	Combine	9.771	5	730	41,035	1, 2	-----	-----	Ex-DA-1
5	SCS Runoff	0.569	5	730	2,390	-----	-----	-----	OFF-1 Imp.
6	SCS Runoff	0.501	5	730	1,898	-----	-----	-----	OFF-1 Per.
7	Combine	1.069	5	730	4,288	5, 6	-----	-----	OFF-1
9	Combine	10.84	5	730	45,323	3, 7,	-----	-----	EX-POA-1
12	SCS Runoff	1.753	5	730	7,368	-----	-----	-----	EX-DA-2 Imp.
13	SCS Runoff	1.025	5	730	4,099	-----	-----	-----	EX-DA-2 Per.
14	Combine	2.778	5	730	11,467	12, 13	-----	-----	EX-DA-2
16	SCS Runoff	0.237	5	730	962	-----	-----	-----	EX-DA-2 Undist.
18	SCS Runoff	2.180	5	730	9,161	-----	-----	-----	EX-DA-2 UD Imp.
19	SCS Runoff	2.180	5	730	8,600	-----	-----	-----	EX-DA-2 UD Per
20	Combine	4.360	5	730	17,761	18, 19	-----	-----	EX-DA-2 UD
22	SCS Runoff	0.259	5	730	1,195	-----	-----	-----	EX-OFF 2 UD DIS IMP
23	SCS Runoff	0.306	5	730	1,266	-----	-----	-----	EX-OFF 2 UD DIS PER
24	Combine	0.566	5	730	2,460	22, 23	-----	-----	EX-OFF DA 2 UD DIS
26	SCS Runoff	0.095	5	730	398	-----	-----	-----	EX-DA-2 UD Undist. Imp.
27	SCS Runoff	0.474	5	730	1,923	-----	-----	-----	EX-DA-2 UD Undist. Per.
28	Combine	0.568	5	730	2,321	26, 27	-----	-----	EX-DA-2 UD Undist.
30	SCS Runoff	1.185	5	730	4,979	-----	-----	-----	OFF-2 Imp.
31	SCS Runoff	1.168	5	730	4,429	-----	-----	-----	OFF-2 Per.
32	Combine	2.353	5	730	9,408	30, 31	-----	-----	OFF-2
34	SCS Runoff	1.327	5	730	5,576	-----	-----	-----	EX-OFF-UD-2 Imp.
35	SCS Runoff	1.669	5	730	6,328	-----	-----	-----	EX-OFF-UD-2 Per.
36	Combine	2.996	5	730	11,904	34, 35	-----	-----	EX-OFF-UD-2
38	Combine	5.368	5	730	21,836	14, 16, 32,	-----	-----	Basin
39	Reservoir	4.905	5	735	21,754	38	197.06	981	Exist. Basin

Hydrograph Summary Report

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

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
41	Combine	7.704	5	730	31,688	14, 20, 24,	-----	-----	Within LOD
42	Combine	6.154	5	730	24,594	16, 28, 32, 36,	-----	-----	Outside of LOD
44	Combine	12.63	5	730	53,740	20, 28, 36, 39,	-----	-----	EX-POA-2
46	SCS Runoff	6.919	5	730	29,075	-----	-----	-----	DA-1 Imp.
47	SCS Runoff	2.151	5	730	8,156	-----	-----	-----	DA-1 Per.
48	Combine	9.070	5	730	37,230	46, 47	-----	-----	DA-1A
50	SCS Runoff	0.095	5	730	398	-----	-----	-----	UNDIST. Imp.
51	SCS Runoff	0.763	5	730	3,098	-----	-----	-----	UNDIST. Per.
52	Combine	0.858	5	730	3,497	50, 51	-----	-----	UNDIST.
54	SCS Runoff	3.223	5	730	13,542	-----	-----	-----	OFF 1 Imp.
55	SCS Runoff	3.431	5	730	13,007	-----	-----	-----	OFF 1 Per.
56	Combine	6.654	5	730	26,549	54, 55	-----	-----	OFF 1
58	SCS Runoff	3.080	5	730	12,944	-----	-----	-----	Roof Area D
60	Combine	19.66	5	730	80,220	48, 52, 56, 58,	-----	-----	TOTAL TO BASIN
61	Reservoir	4.640	5	760	80,206	60	198.34	28,014	BASIN
63	SCS Runoff	1.280	5	730	5,377	-----	-----	-----	DA-UD 1 Imp.
64	SCS Runoff	0.593	5	730	2,250	-----	-----	-----	DA-1 UD Per.
65	Combine	1.873	5	730	7,627	63, 64	-----	-----	DA-1 UD
67	Combine	5.567	5	735	87,832	61, 65,	-----	-----	POA-1
69	SCS Runoff	1.043	5	730	4,381	-----	-----	-----	Roof Area UD
71	SCS Runoff	2.606	5	730	10,953	-----	-----	-----	DA-2 Imp.
72	SCS Runoff	0.612	5	730	2,320	-----	-----	-----	DA-2 Per.
73	Combine	3.218	5	730	13,273	71, 72	-----	-----	DA-2
75	SCS Runoff	0.130	5	730	597	-----	-----	-----	OFF 2 IMP
76	SCS Runoff	0.238	5	730	984	-----	-----	-----	OFF 2 PER
77	Combine	0.368	5	730	1,582	75, 76	-----	-----	OFF 2
79	Combine	4.629	5	730	19,236	69, 73, 77,	-----	-----	POA-2

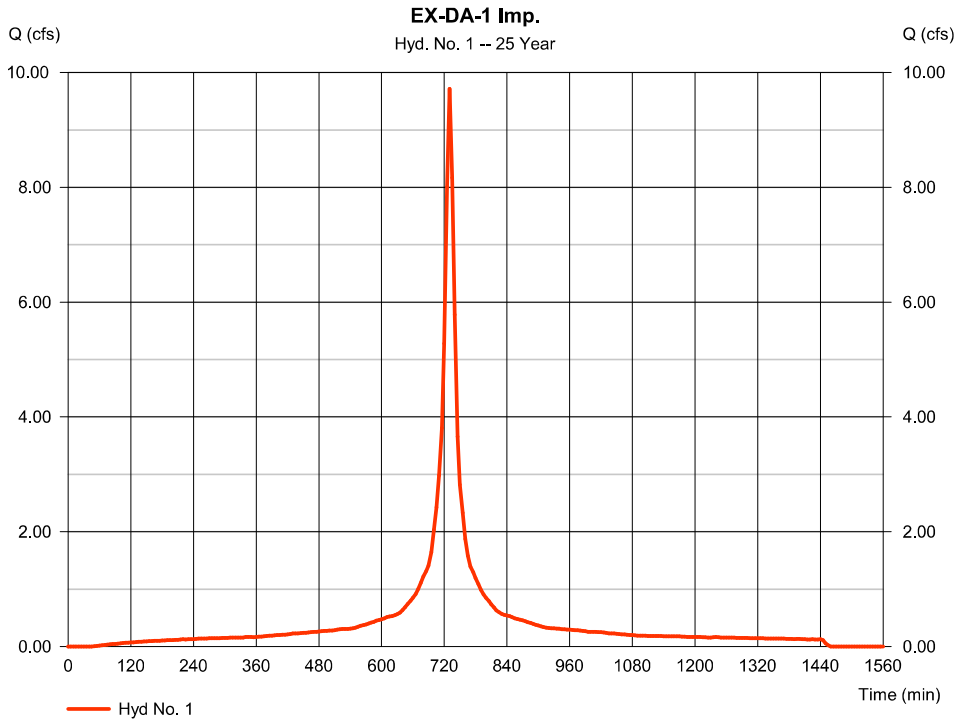
2020-08- Exist vs Prop.gpw | Return Period: 25 Year | Wednesday, 08 / 12 / 2020

Hydrograph Report

Hyd. No. 1

EX-DA-1 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 9.715 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 40,824 cuft
Drainage area	= 2.050 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

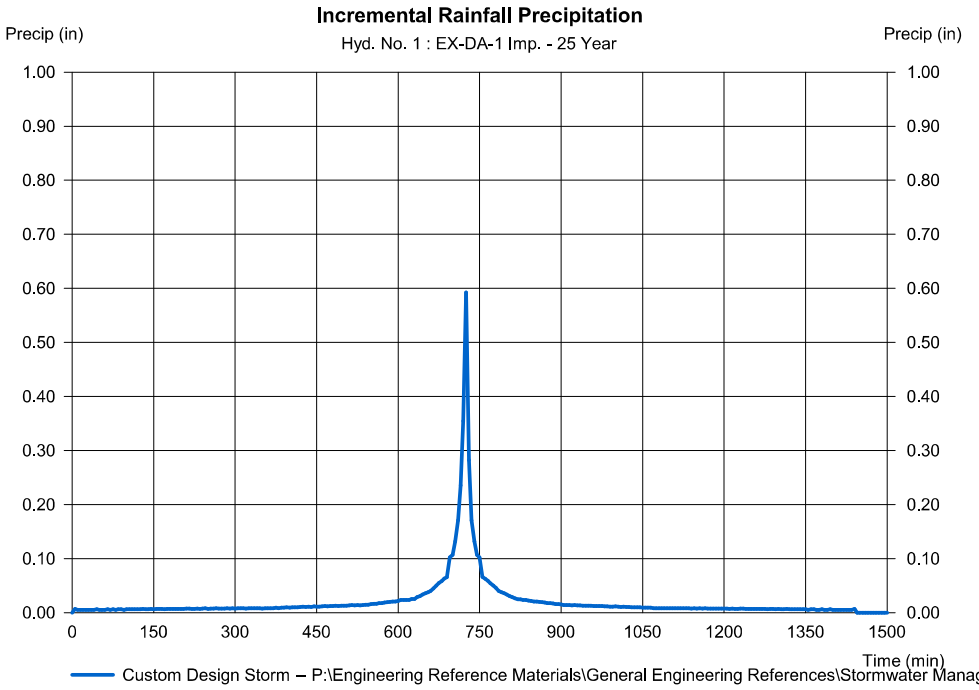


Precipitation Report

Hyd. No. 1

EX-DA-1 Imp.

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

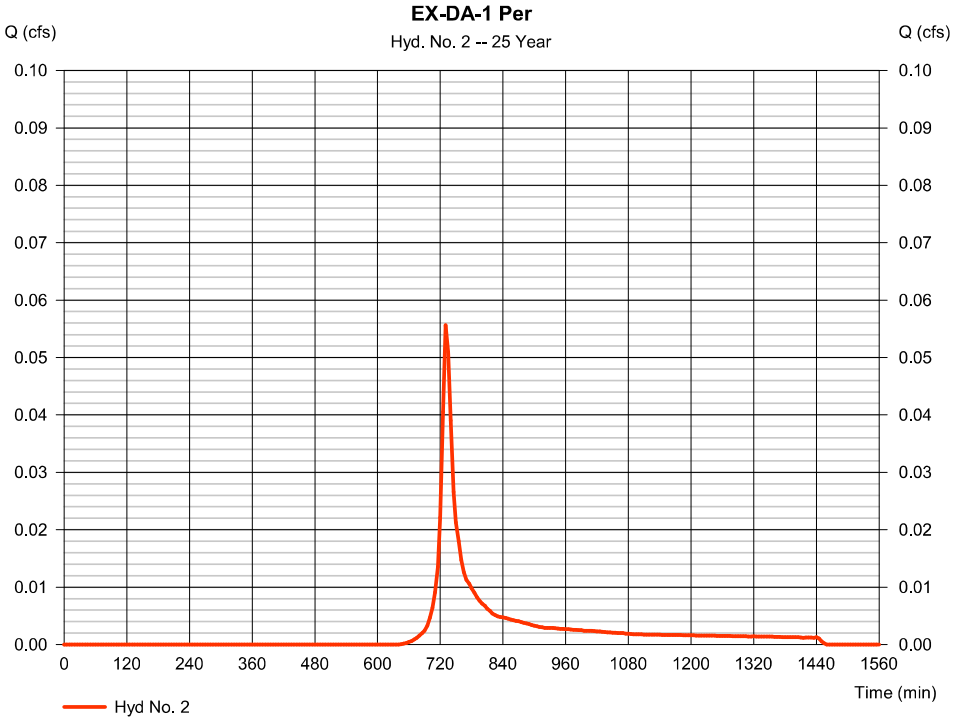


Hydrograph Report

Hyd. No. 2

EX-DA-1 Per

Hydrograph type	= SCS Runoff	Peak discharge	= 0.056 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 211 cuft
Drainage area	= 0.030 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

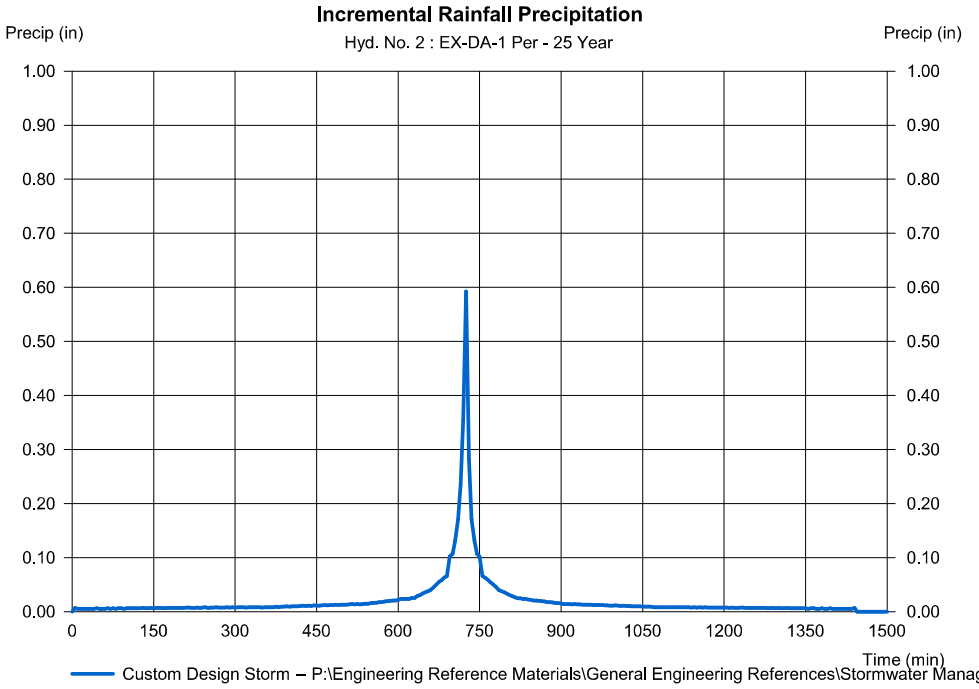


Precipitation Report

Hyd. No. 2

EX-DA-1 Per

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

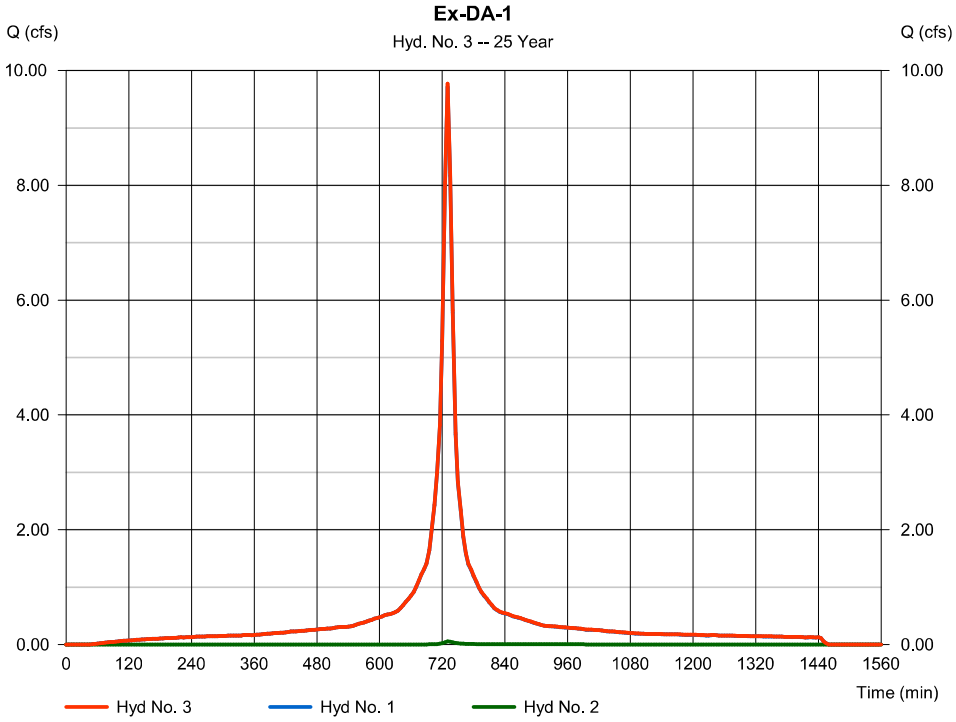


Hydrograph Report

Hyd. No. 3

Ex-DA-1

Hydrograph type	= Combine	Peak discharge	= 9.771 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 41,035 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 2.080 ac

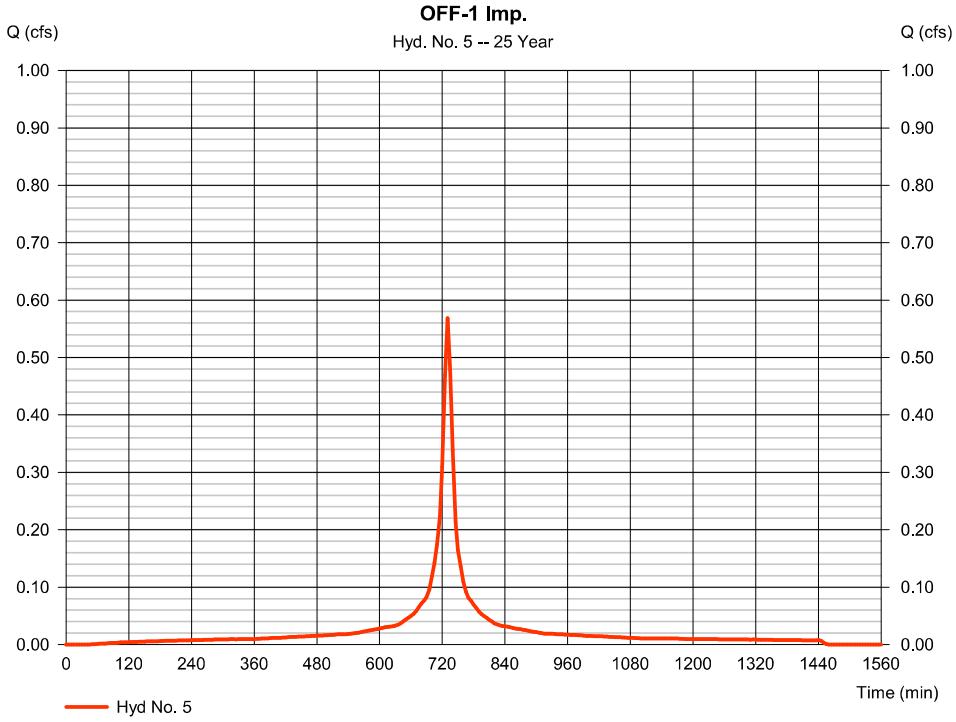


Hydrograph Report

Hyd. No. 5

OFF-1 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.569 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,390 cuft
Drainage area	= 0.120 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

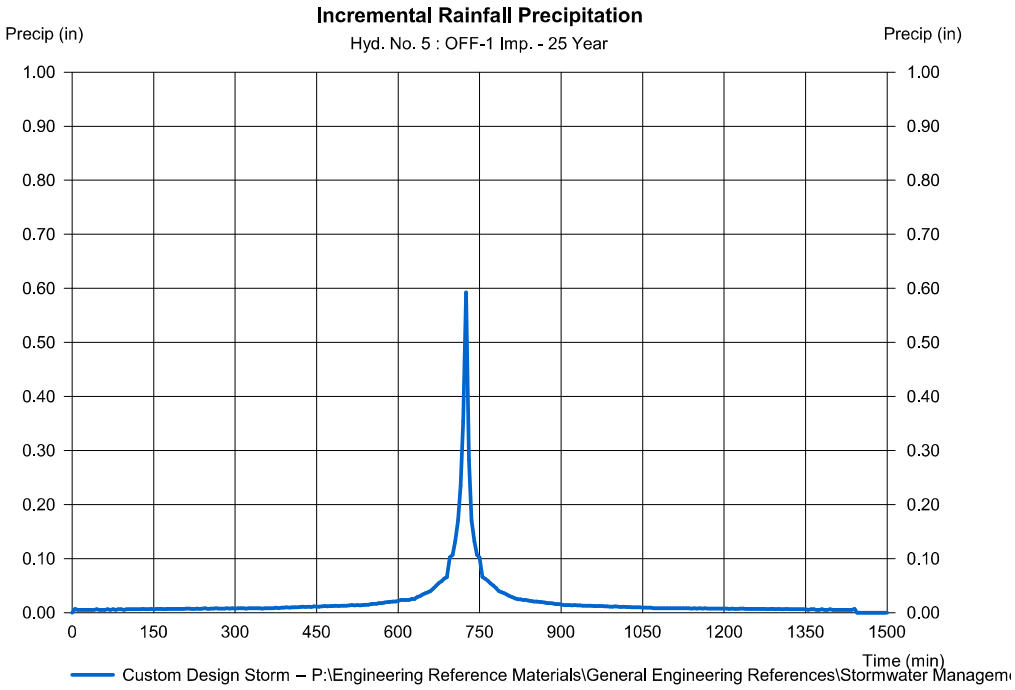


Precipitation Report

Hyd. No. 5

OFF-1 Imp.

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

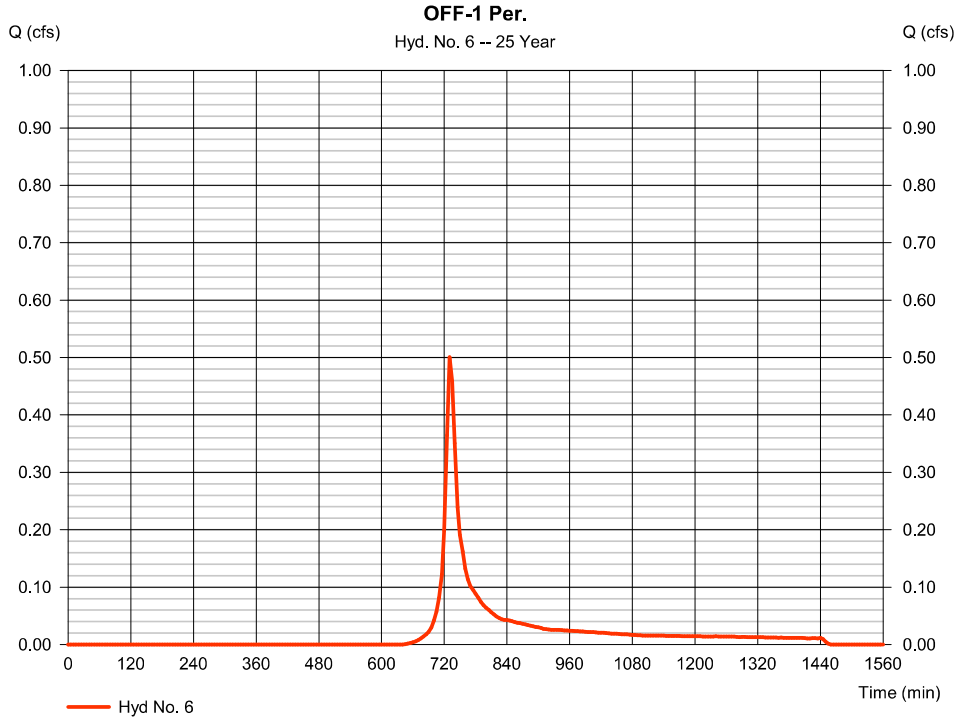


Hydrograph Report

Hyd. No. 6

OFF-1 Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.501 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,898 cuft
Drainage area	= 0.270 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

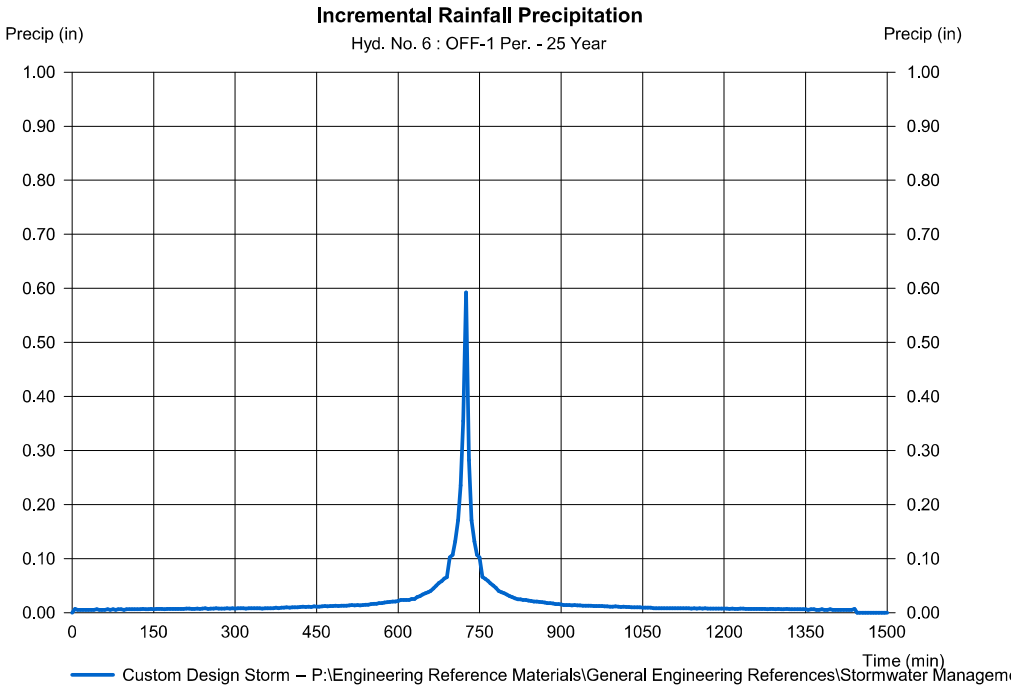


Precipitation Report

Hyd. No. 6

OFF-1 Per.

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

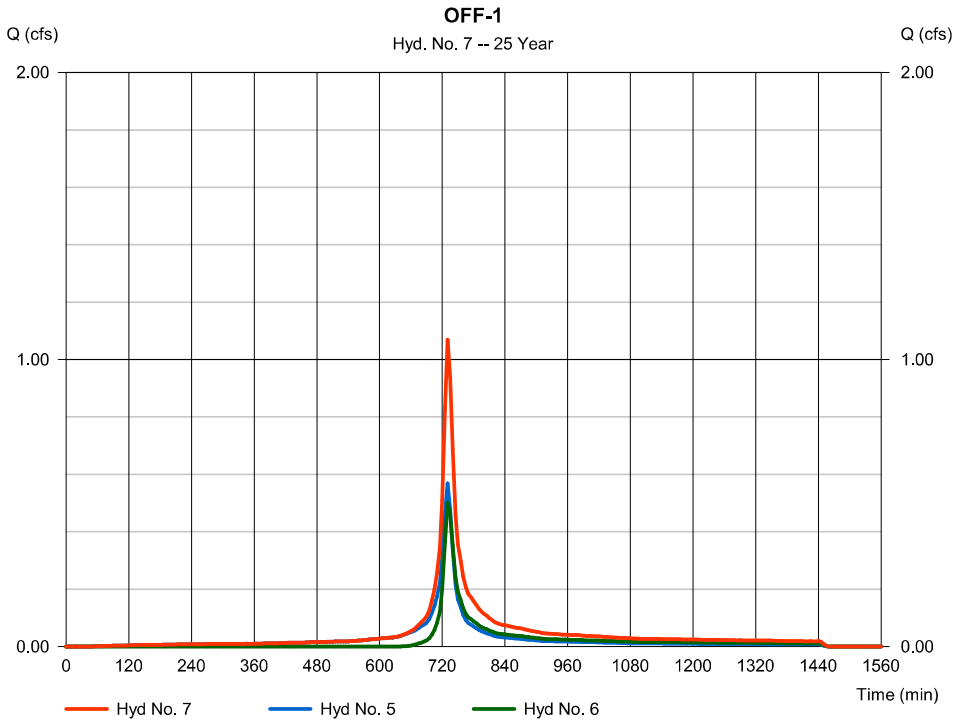


Hydrograph Report

Hyd. No. 7

OFF-1

Hydrograph type	= Combine	Peak discharge	= 1.069 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 4,288 cuft
Inflow hyds.	= 5, 6	Contrib. drain. area	= 0.390 ac

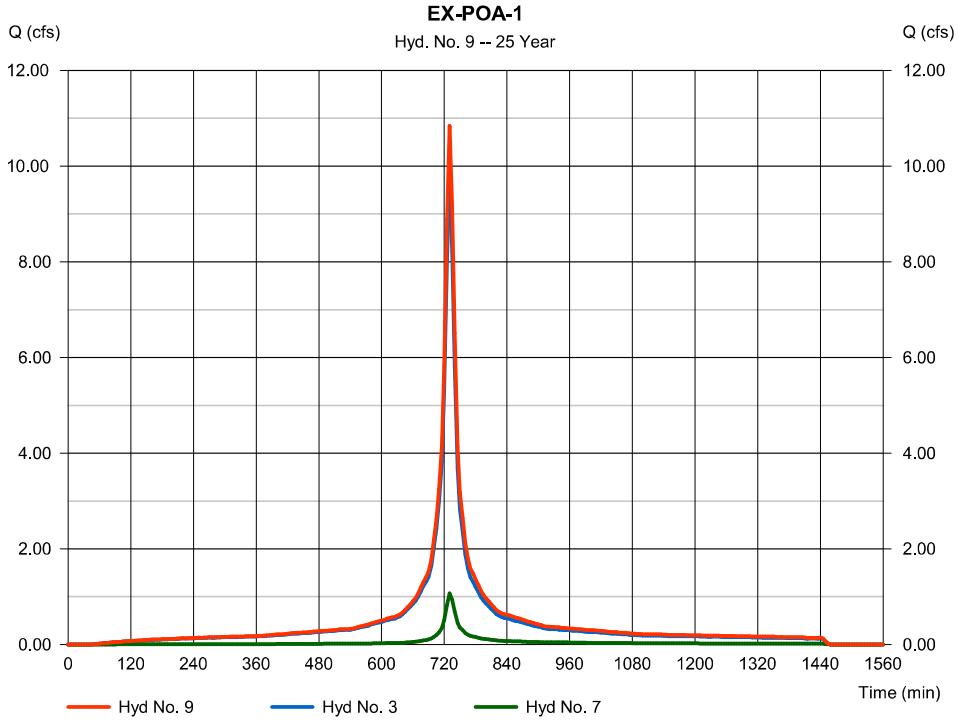


Hydrograph Report

Hyd. No. 9

EX-POA-1

Hydrograph type	= Combine	Peak discharge	= 10.84 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 45,323 cuft
Inflow hyds.	= 3, 7	Contrib. drain. area	= 0.000 ac

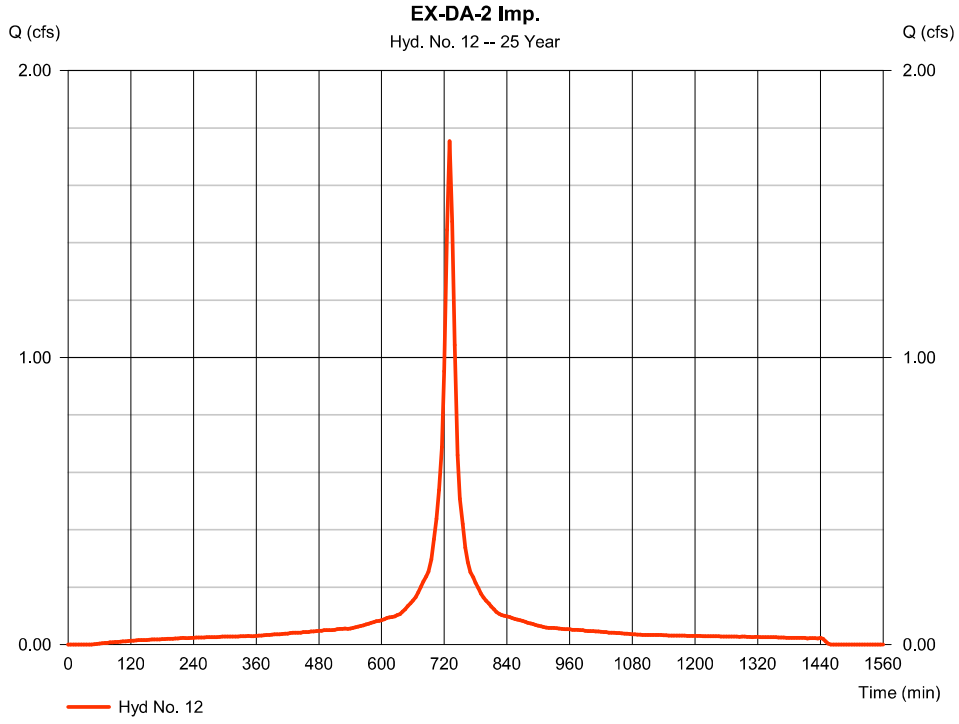


Hydrograph Report

Hyd. No. 12

EX-DA-2 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 1.753 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 7,368 cuft
Drainage area	= 0.370 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

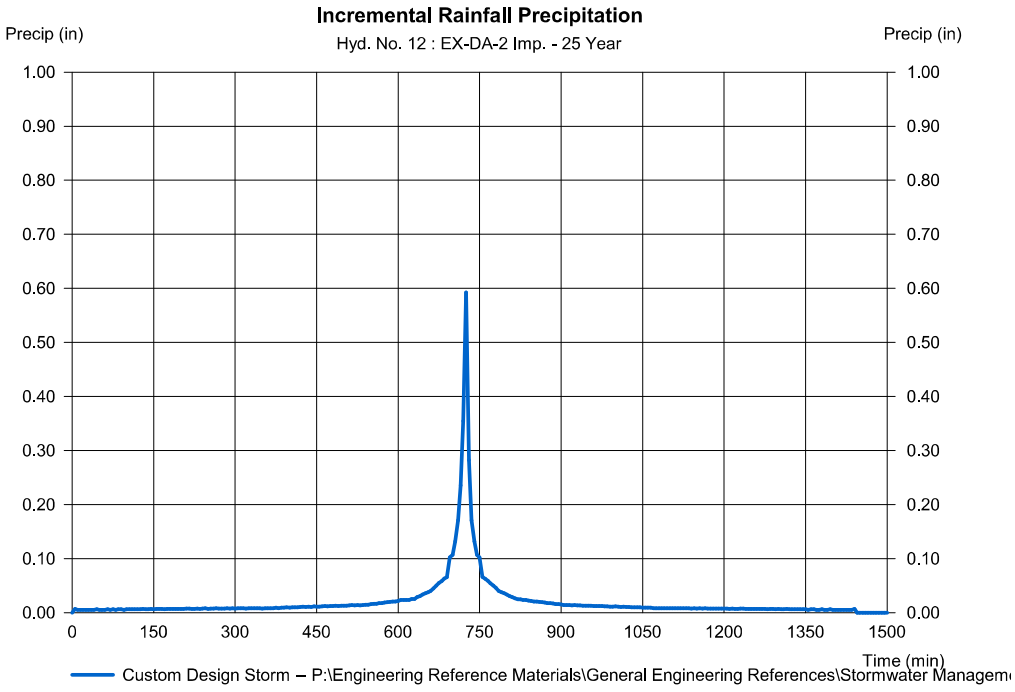


Precipitation Report

Hyd. No. 12

EX-DA-2 Imp.

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

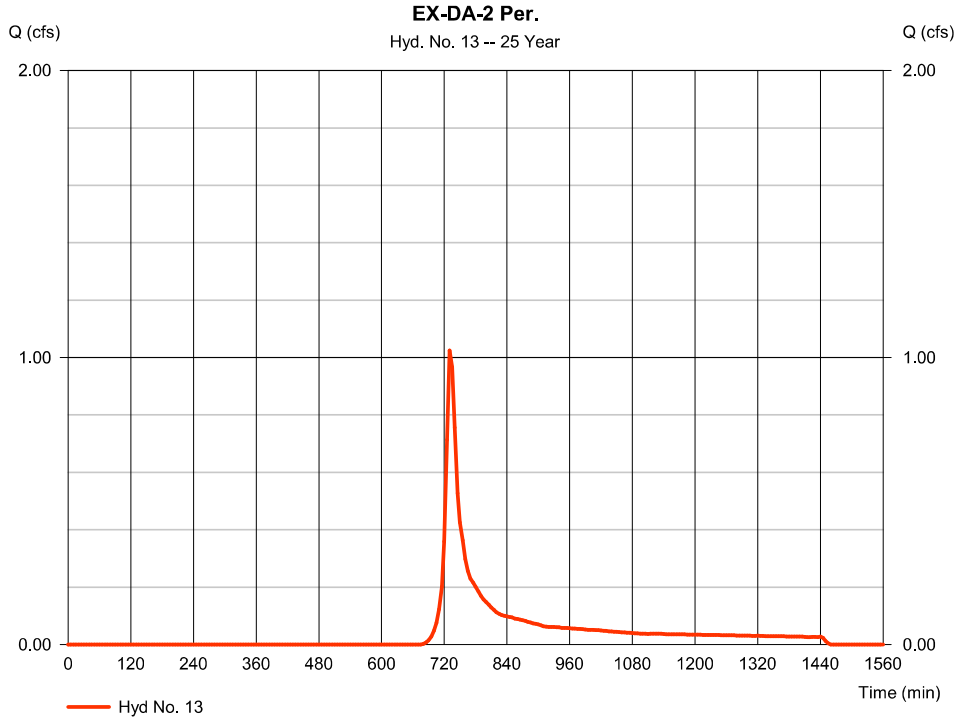


Hydrograph Report

Hyd. No. 13

EX-DA-2 Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 1.025 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 4,099 cuft
Drainage area	= 0.730 ac	Curve number	= 56
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Storm duration	= 48

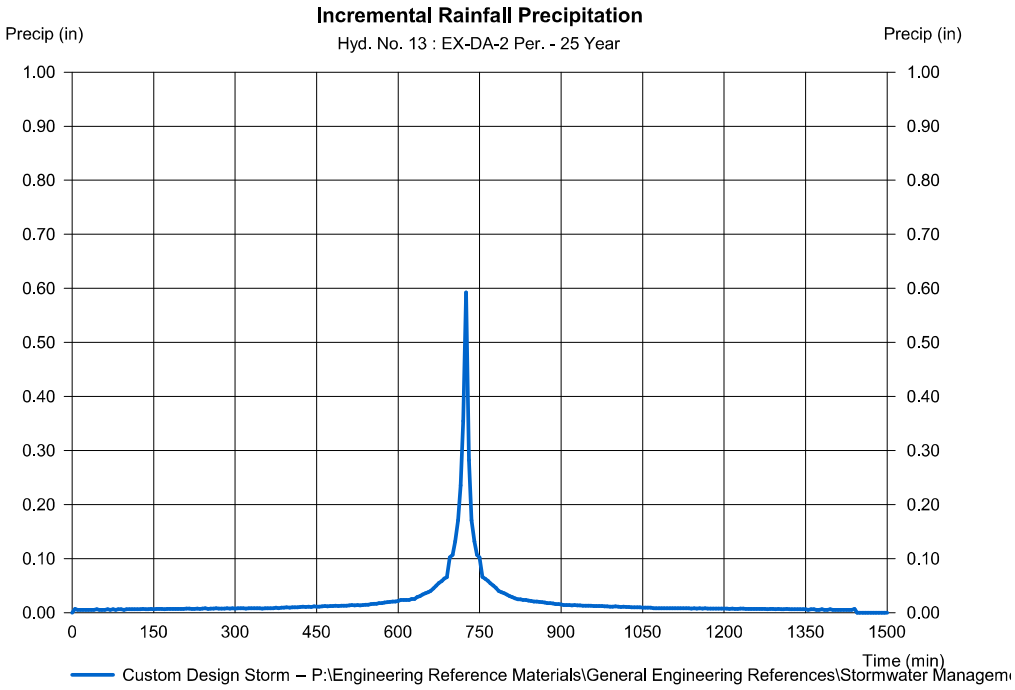


Precipitation Report

Hyd. No. 13

EX-DA-2 Per.

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

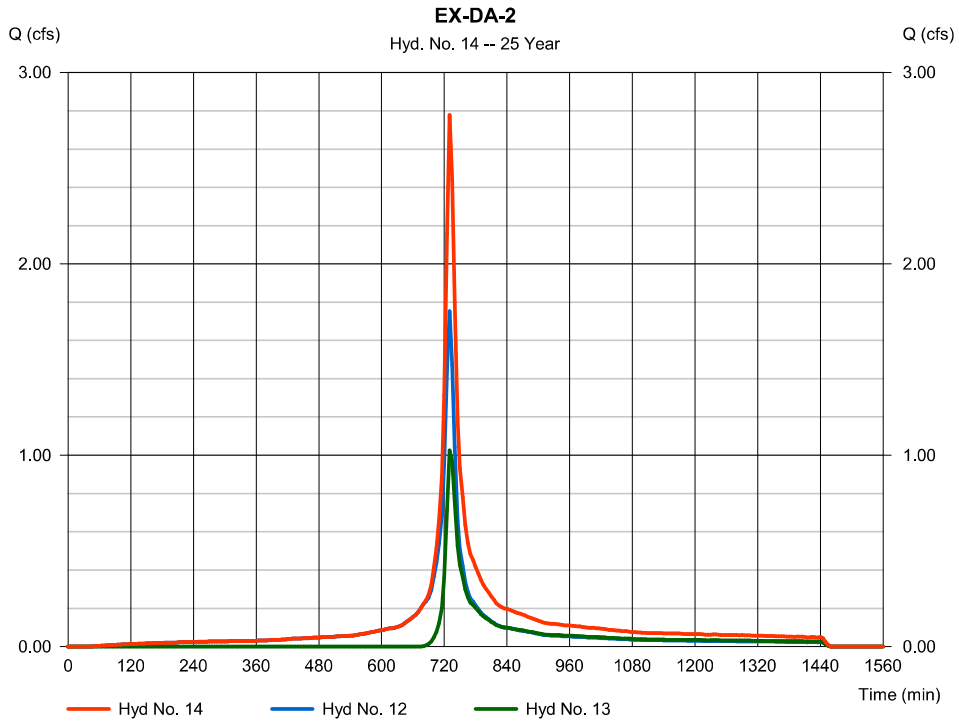


Hydrograph Report

Hyd. No. 14

EX-DA-2

Hydrograph type	= Combine	Peak discharge	= 2.778 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 11,467 cuft
Inflow hyds.	= 12, 13	Contrib. drain. area	= 1.100 ac

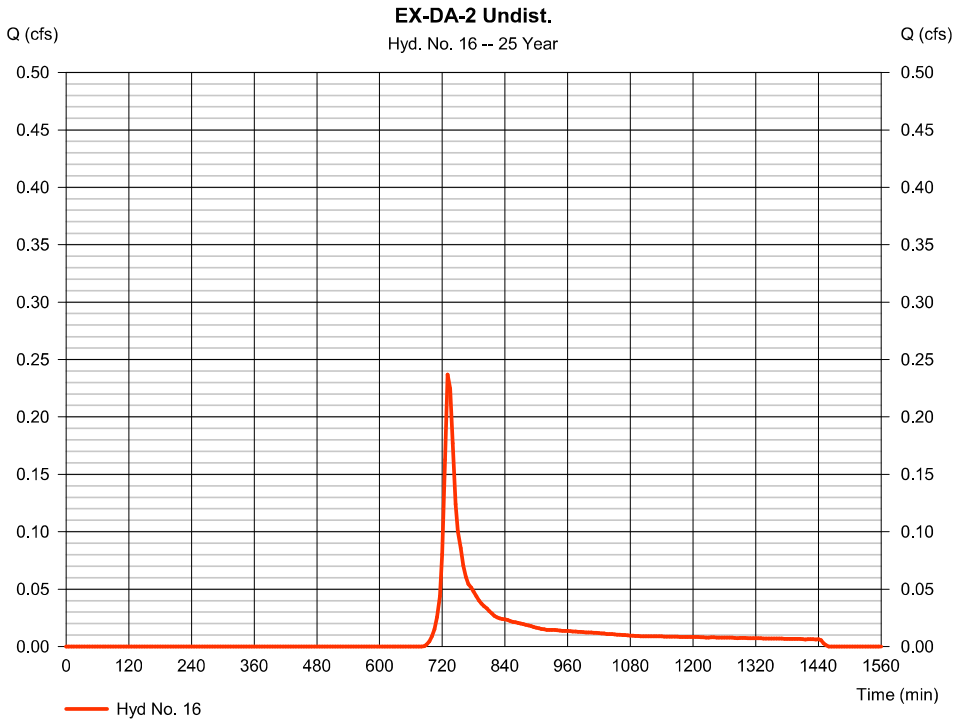


Hydrograph Report

Hyd. No. 16

EX-DA-2 Undist.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.237 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 962 cuft
Drainage area	= 0.180 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

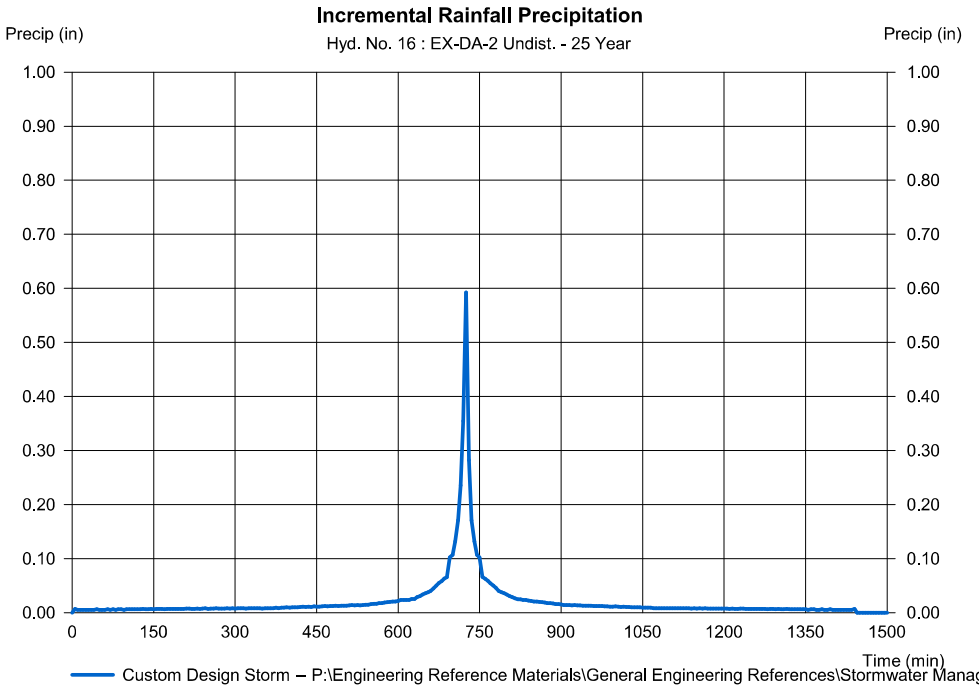


Precipitation Report

Hyd. No. 16

EX-DA-2 Undist.

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

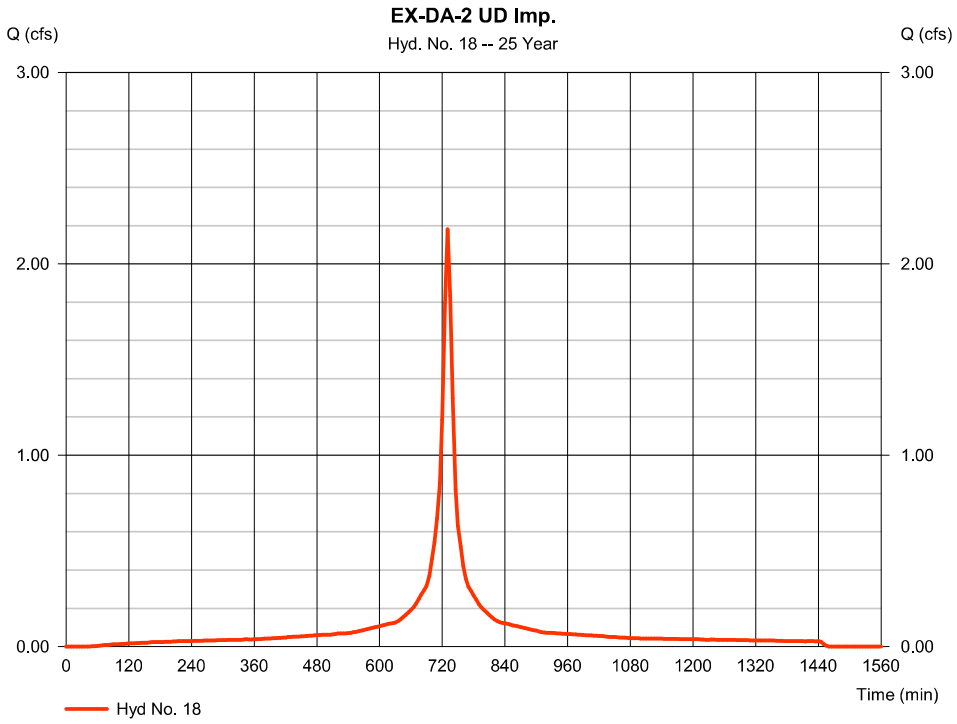


Hydrograph Report

Hyd. No. 18

EX-DA-2 UD Imp.

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.180 cfs
Storm frequency	=	25 yrs	Time to peak	=	730 min
Time interval	=	5 min	Hyd. volume	=	9,161 cuft
Drainage area	=	0.460 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	6.09 in	Distribution	=	Custom
Storm duration	=	P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	=	484

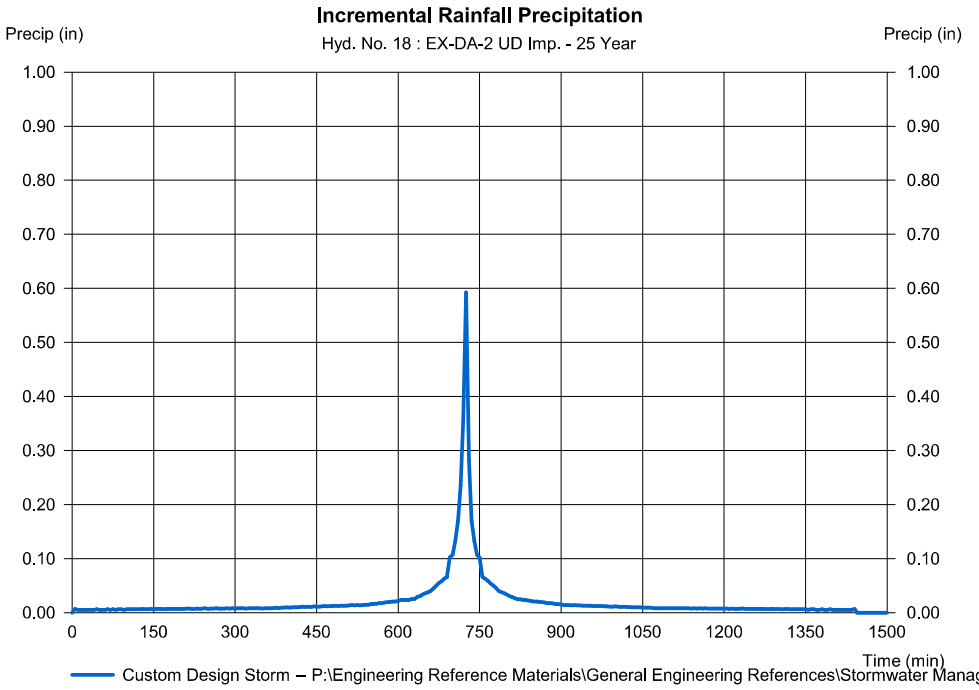


Precipitation Report

Hyd. No. 18

EX-DA-2 UD Imp.

Storm Frequency	=	25 yrs	Time interval	=	5 min
Total precip.	=	6.0900 in	Distribution	=	Custom
Storm duration	=	P:\Engineering Reference Materials\General Engineering References\Stormwat			

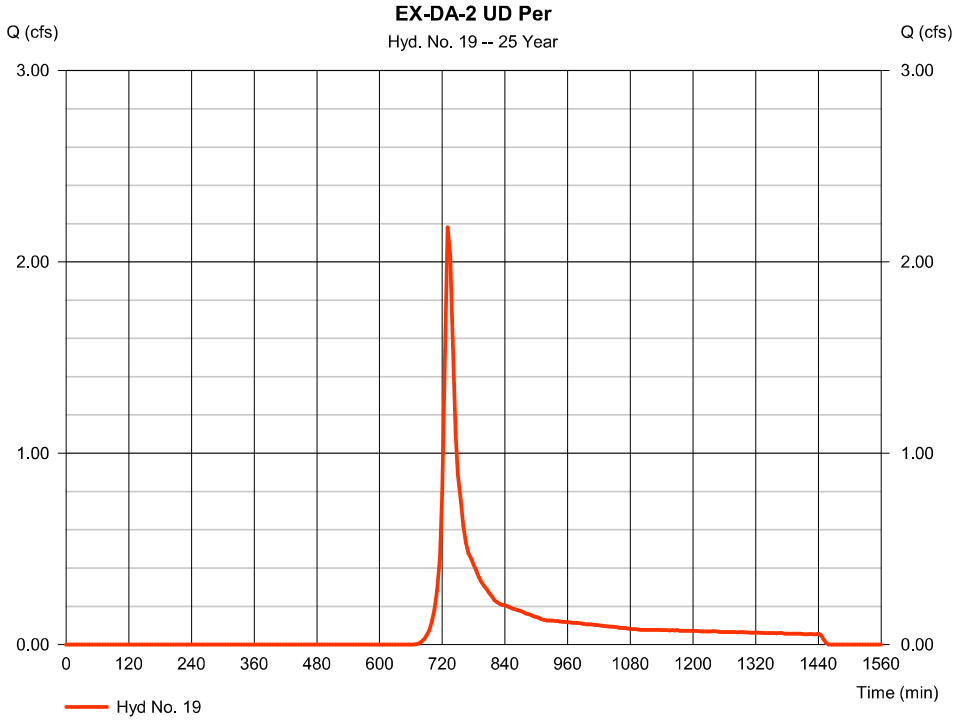


Hydrograph Report

Hyd. No. 19

EX-DA-2 UD Per

Hydrograph type	= SCS Runoff	Peak discharge	= 2.180 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 8,600 cuft
Drainage area	= 1.460 ac	Curve number	= 57
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

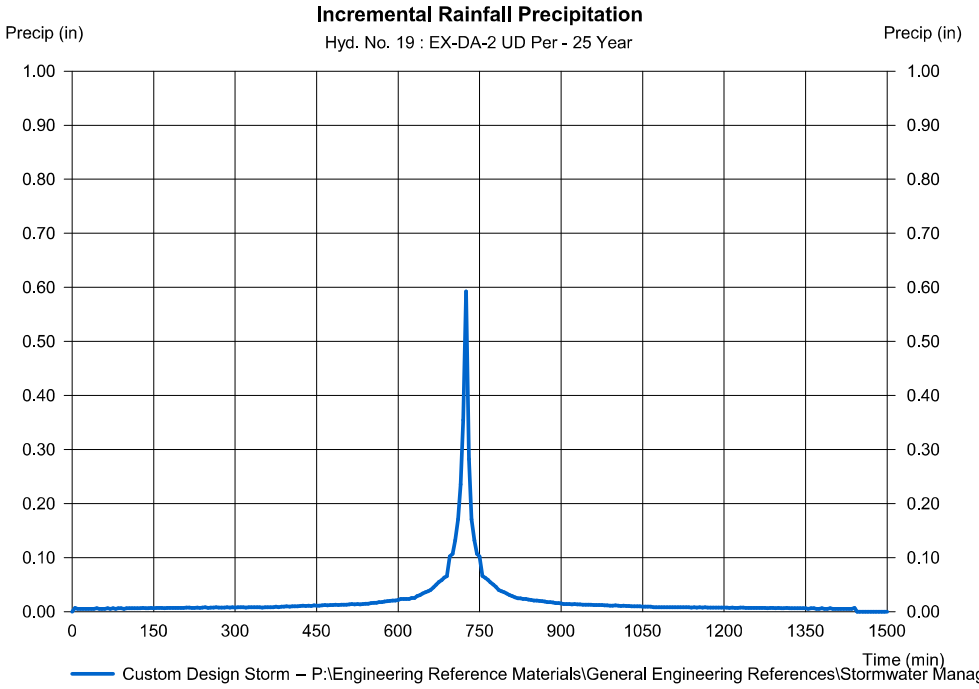


Precipitation Report

Hyd. No. 19

EX-DA-2 UD Per

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

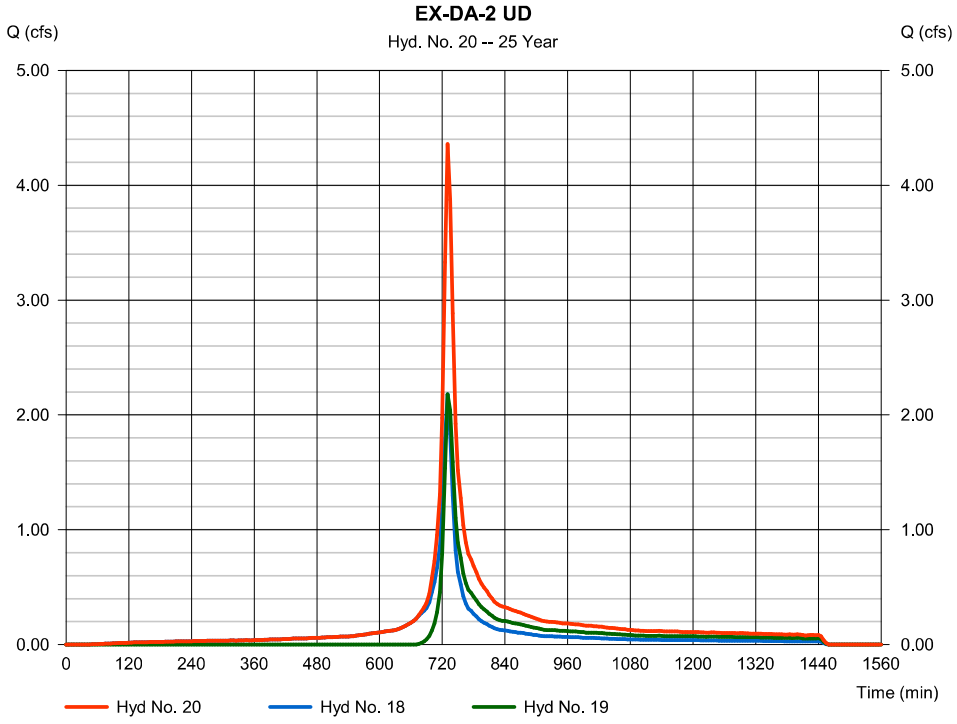


Hydrograph Report

Hyd. No. 20

EX-DA-2 UD

Hydrograph type	= Combine	Peak discharge	= 4.360 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 17,761 cuft
Inflow hyds.	= 18, 19	Contrib. drain. area	= 1.920 ac

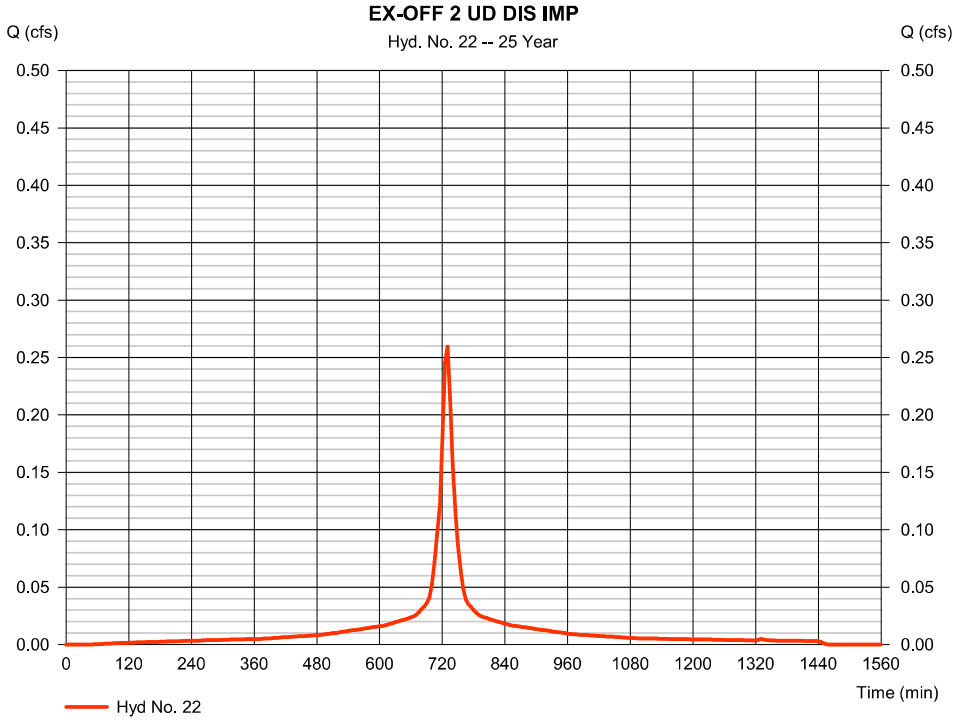


Hydrograph Report

Hyd. No. 22

EX-OFF 2 UD DIS IMP

Hydrograph type	= SCS Runoff	Peak discharge	= 0.259 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,195 cuft
Drainage area	= 0.060 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

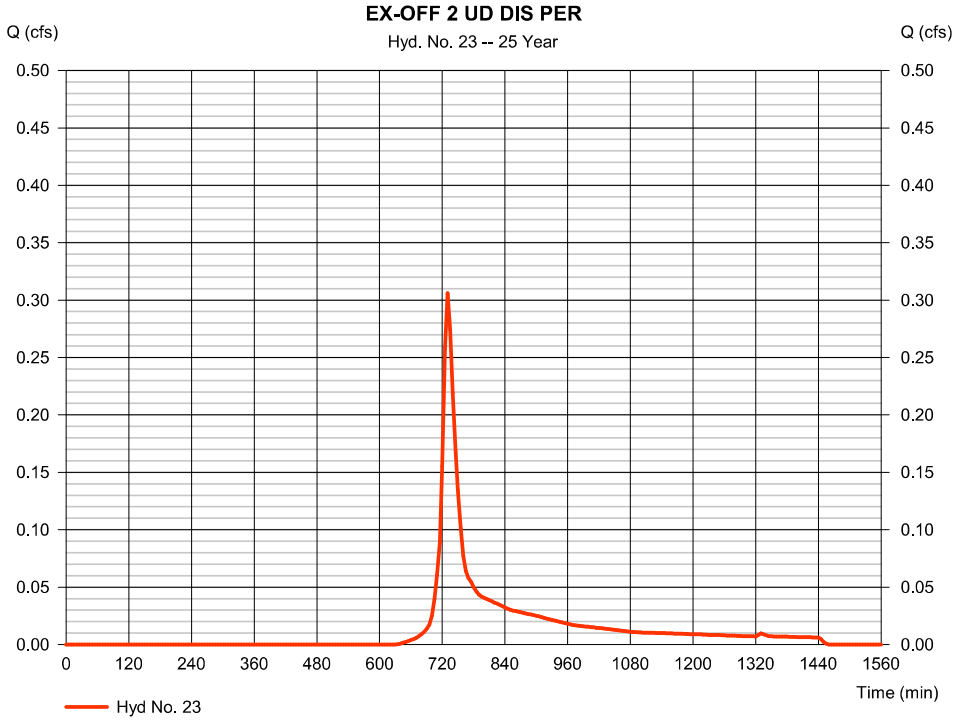


Hydrograph Report

Hyd. No. 23

EX-OFF 2 UD DIS PER

Hydrograph type	= SCS Runoff	Peak discharge	= 0.306 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,266 cuft
Drainage area	= 0.180 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

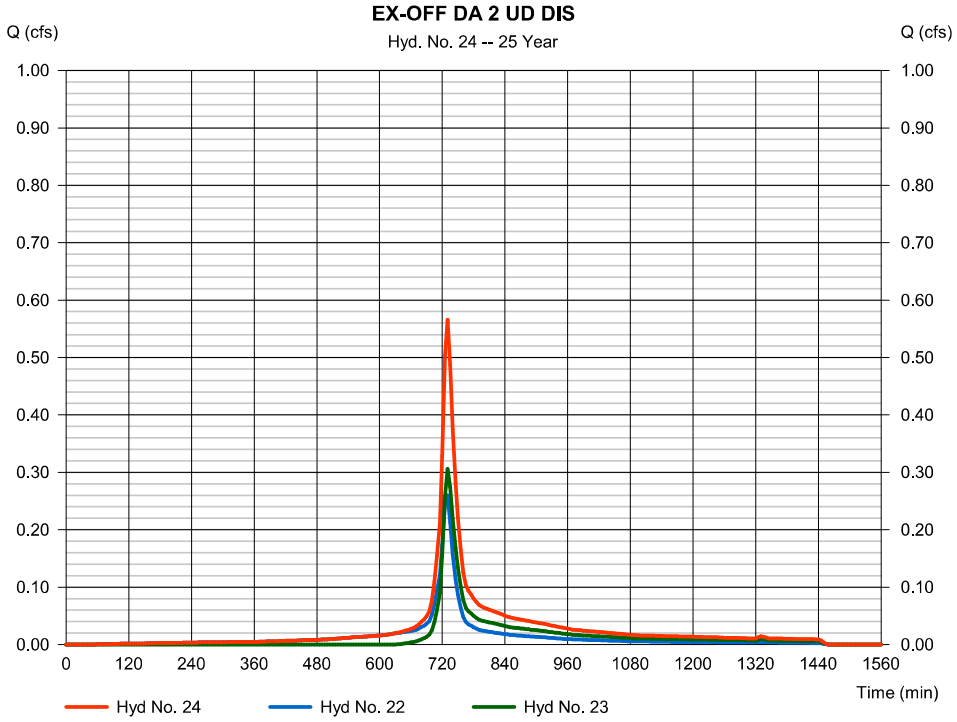


Hydrograph Report

Hyd. No. 24

EX-OFF DA 2 UD DIS

Hydrograph type	= Combine	Peak discharge	= 0.566 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,460 cuft
Inflow hyds.	= 22, 23	Contrib. drain. area	= 0.240 ac

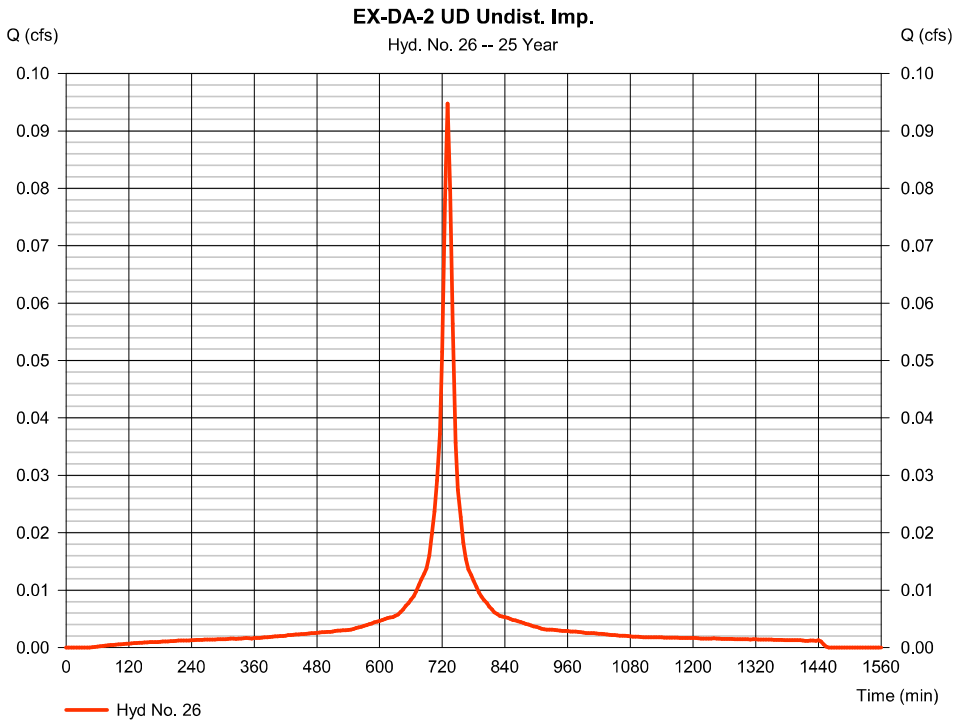


Hydrograph Report

Hyd. No. 26

EX-DA-2 UD Undist. Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.095 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 398 cuft
Drainage area	= 0.020 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

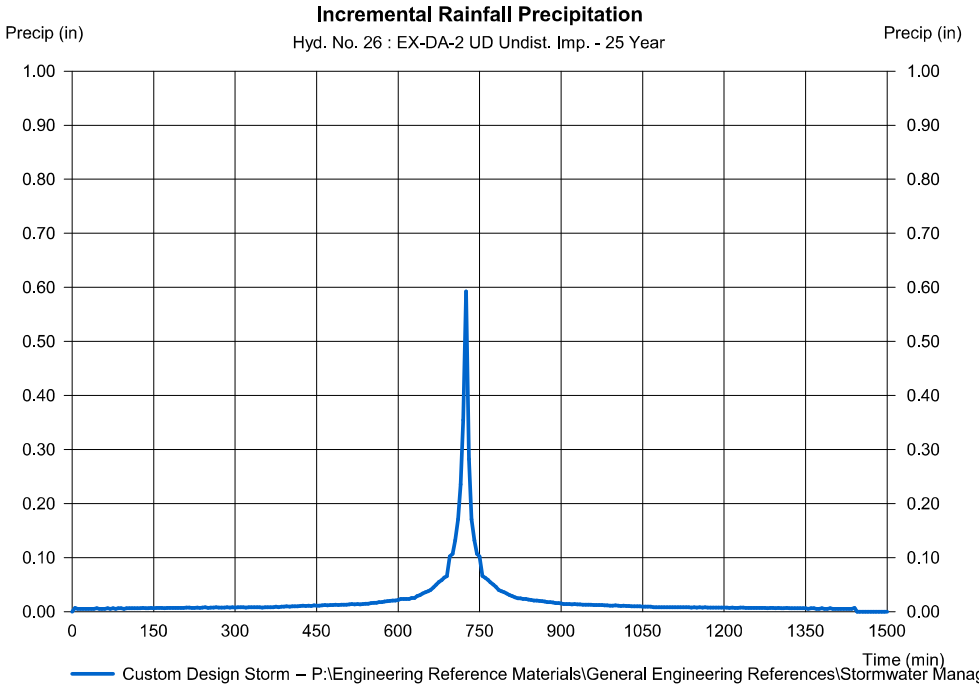


Precipitation Report

Hyd. No. 26

EX-DA-2 UD Undist. Imp.

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

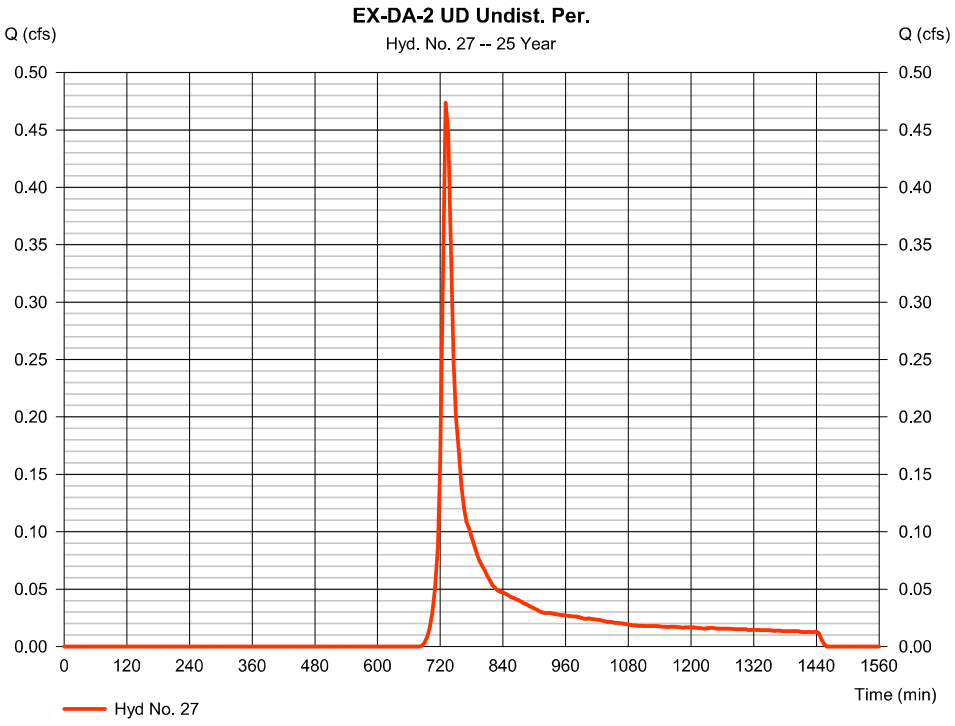


Hydrograph Report

Hyd. No. 27

EX-DA-2 UD Undist. Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.474 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,923 cuft
Drainage area	= 0.360 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

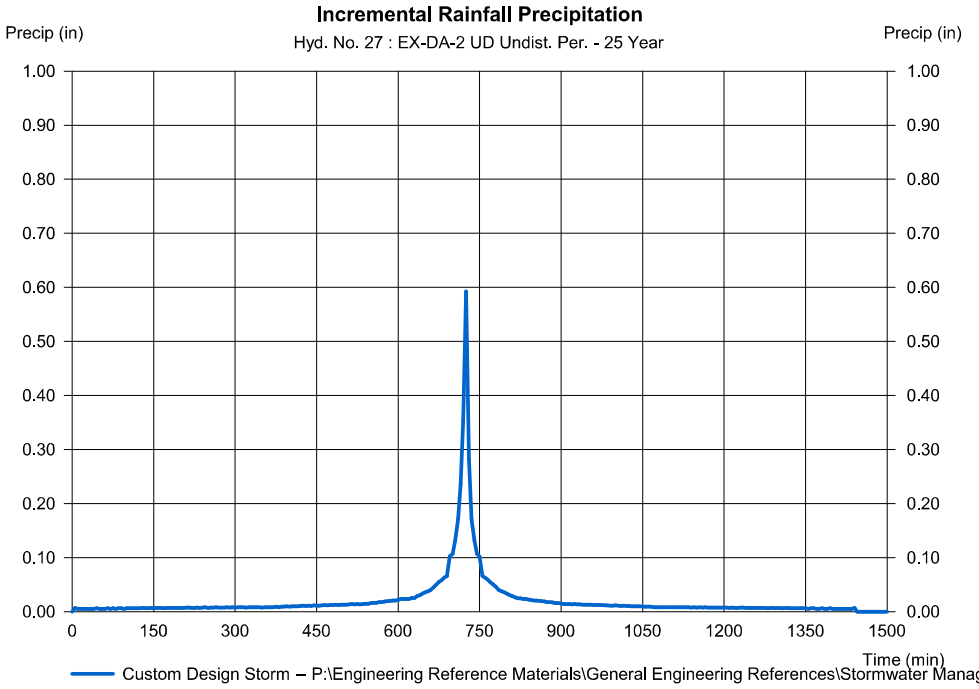


Precipitation Report

Hyd. No. 27

EX-DA-2 UD Undist. Per.

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

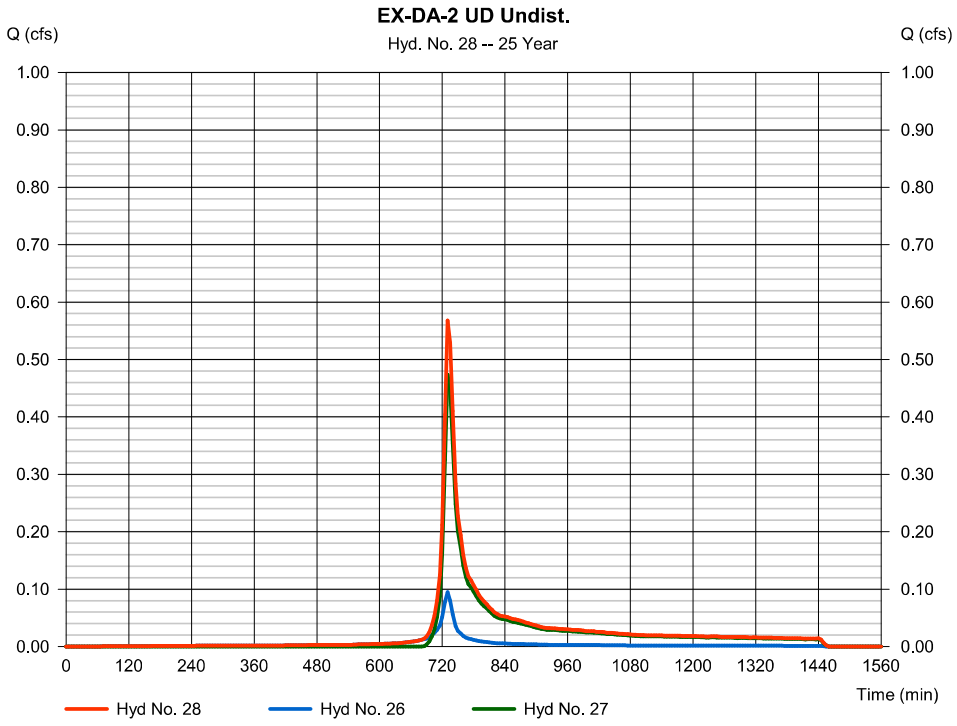


Hydrograph Report

Hyd. No. 28

EX-DA-2 UD Undist.

Hydrograph type	= Combine	Peak discharge	= 0.568 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,321 cuft
Inflow hyds.	= 26, 27	Contrib. drain. area	= 0.380 ac

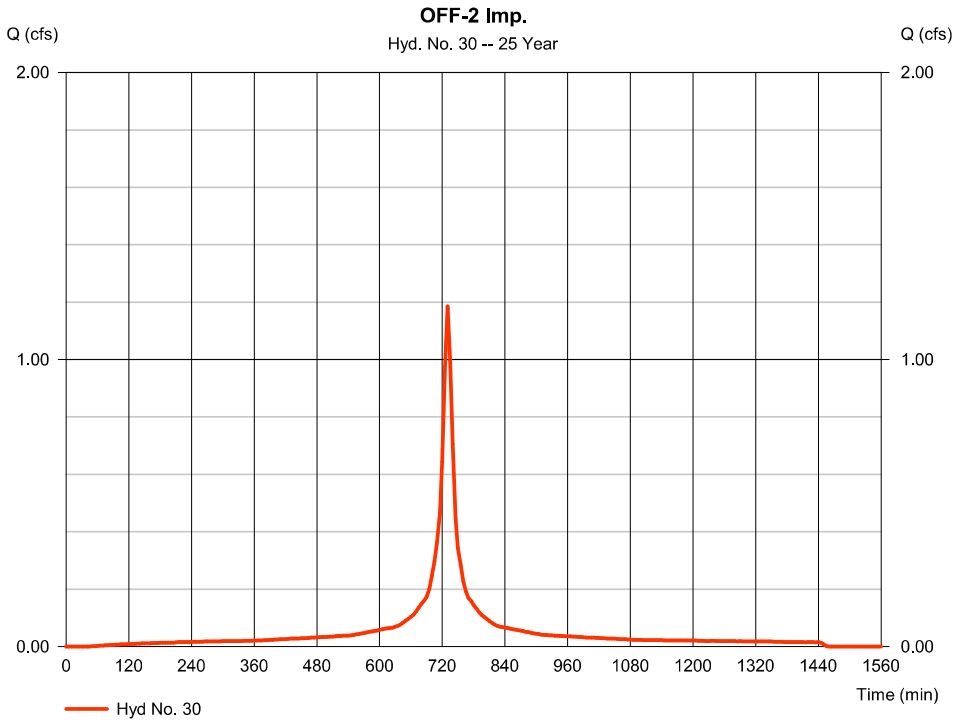


Hydrograph Report

Hyd. No. 30

OFF-2 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 1.185 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 4,979 cuft
Drainage area	= 0.250 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.80 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

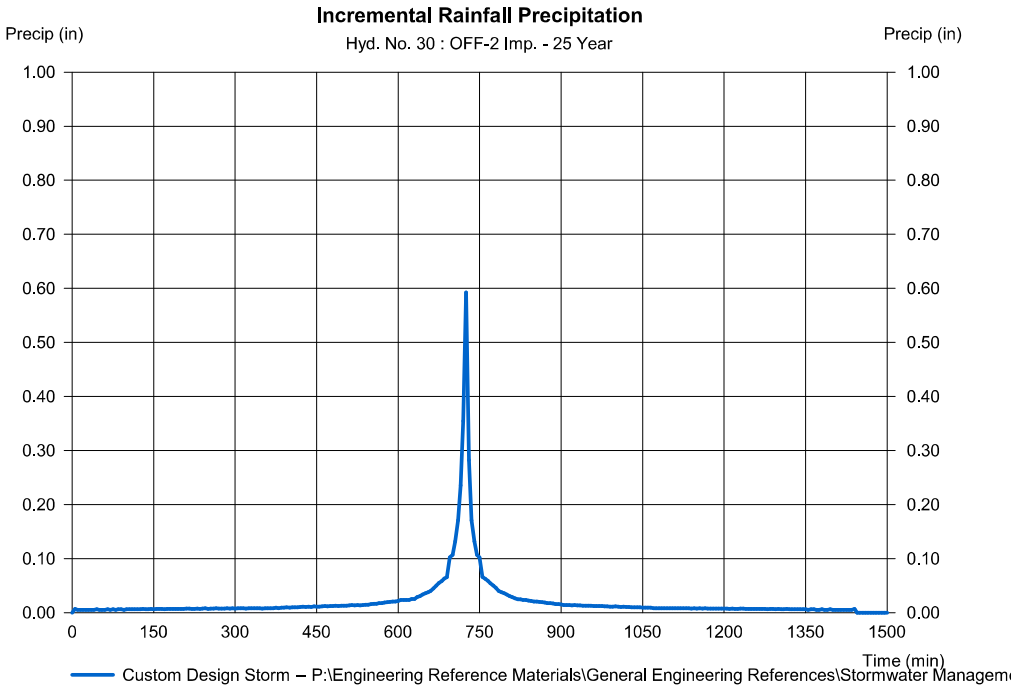


Precipitation Report

Hyd. No. 30

OFF-2 Imp.

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

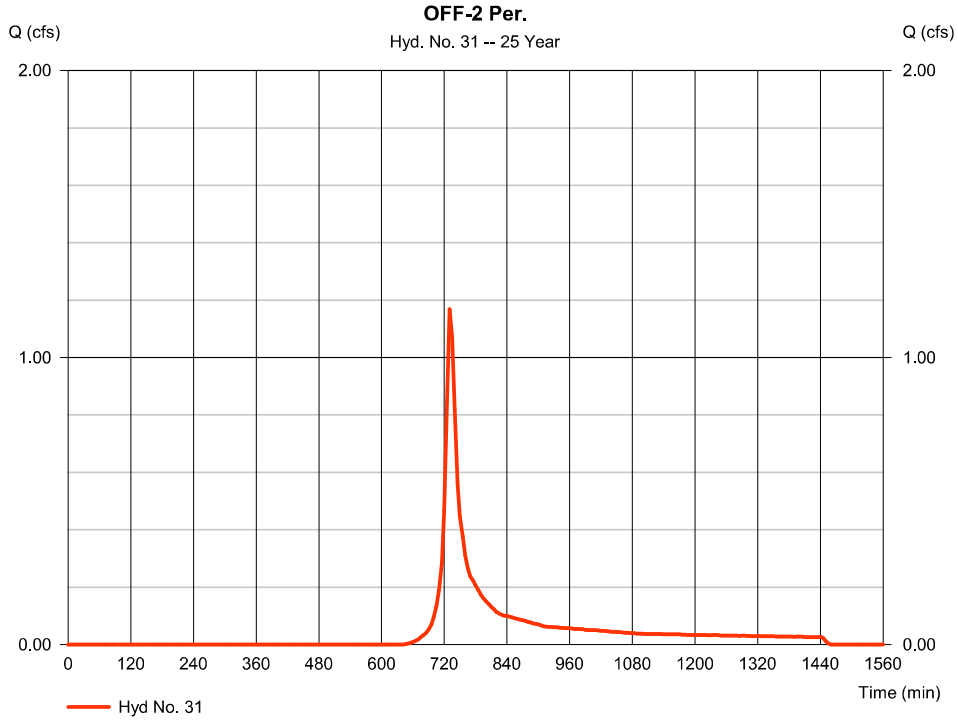


Hydrograph Report

Hyd. No. 31

OFF-2 Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 1.168 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 4,429 cuft
Drainage area	= 0.630 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.80 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

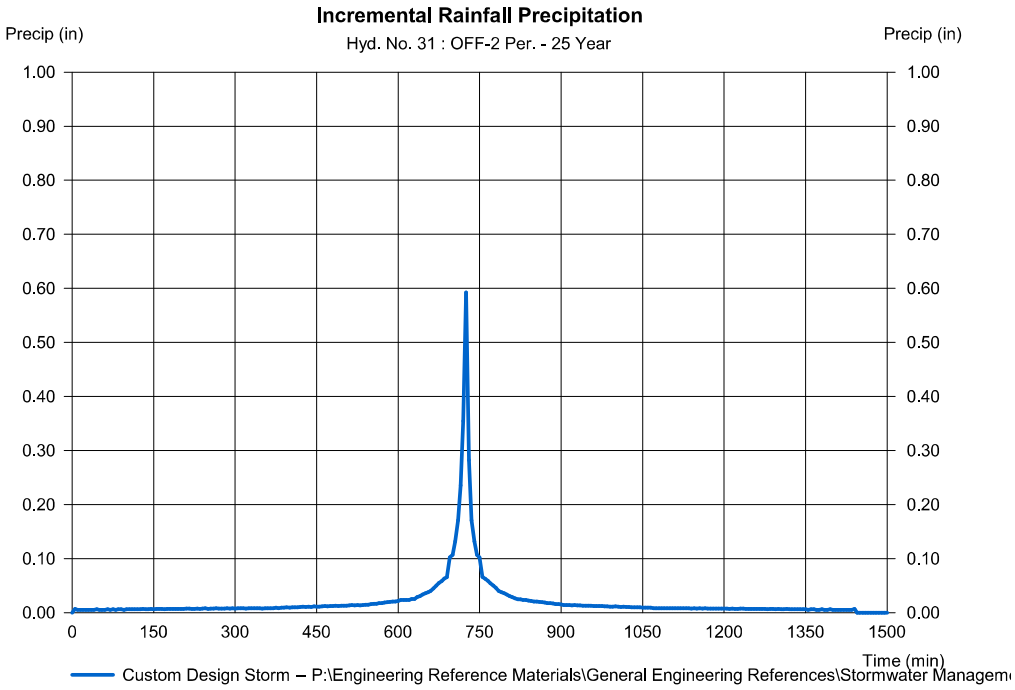


Precipitation Report

Hyd. No. 31

OFF-2 Per.

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

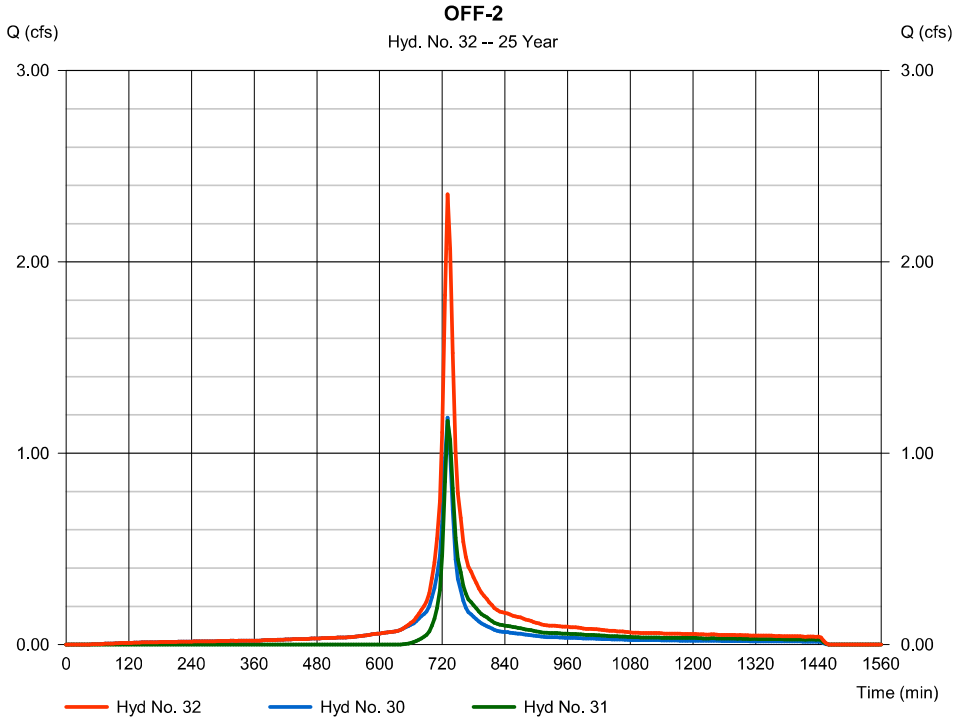


Hydrograph Report

Hyd. No. 32

OFF-2

Hydrograph type	= Combine	Peak discharge	= 2.353 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 9,408 cuft
Inflow hyds.	= 30, 31	Contrib. drain. area	= 0.880 ac

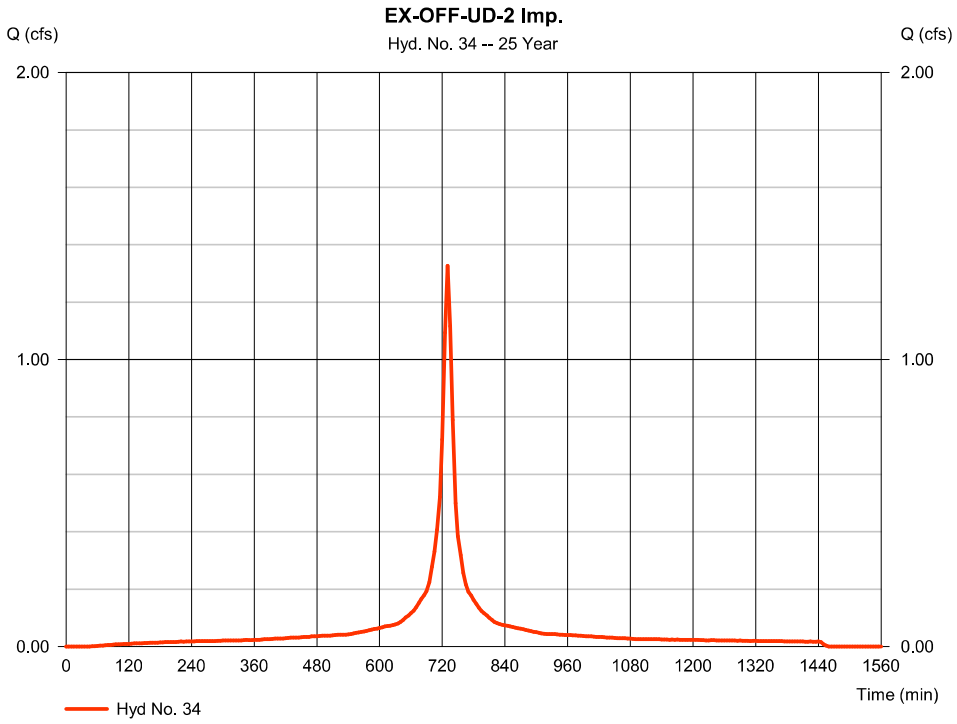


Hydrograph Report

Hyd. No. 34

EX-OFF-UD-2 Imp.

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.327 cfs
Storm frequency	=	25 yrs	Time to peak	=	730 min
Time interval	=	5 min	Hyd. volume	=	5,576 cuft
Drainage area	=	0.280 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	11.20 min
Total precip.	=	6.09 in	Distribution	=	Custom
Storm duration	=	P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	=	484

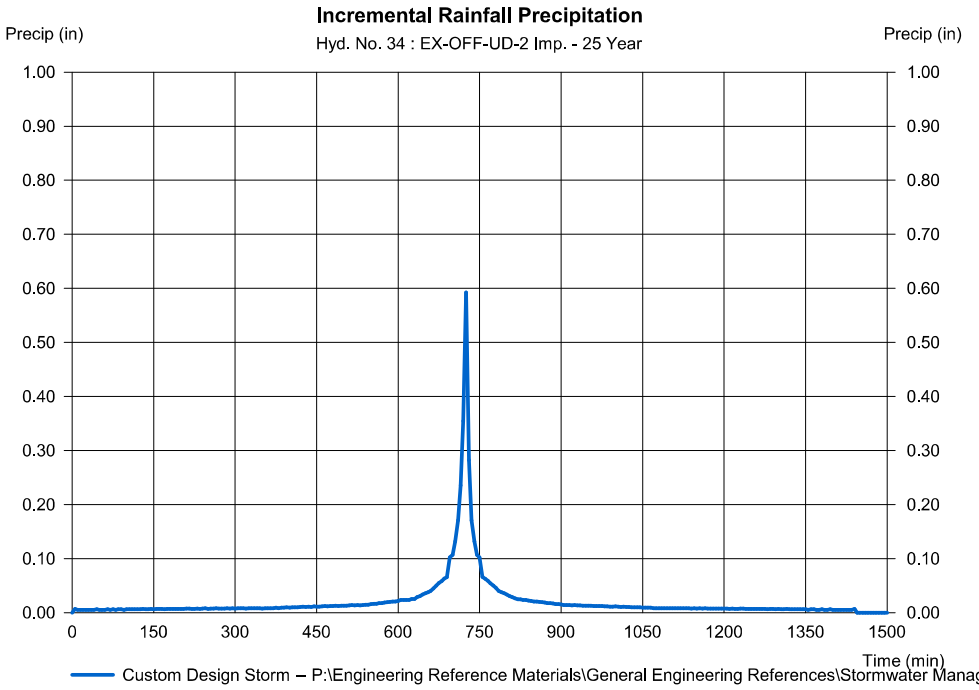


Precipitation Report

Hyd. No. 34

EX-OFF-UD-2 Imp.

Storm Frequency	=	25 yrs	Time interval	=	5 min
Total precip.	=	6.0900 in	Distribution	=	Custom
Storm duration	=	P:\Engineering Reference Materials\General Engineering References\Stormwat			

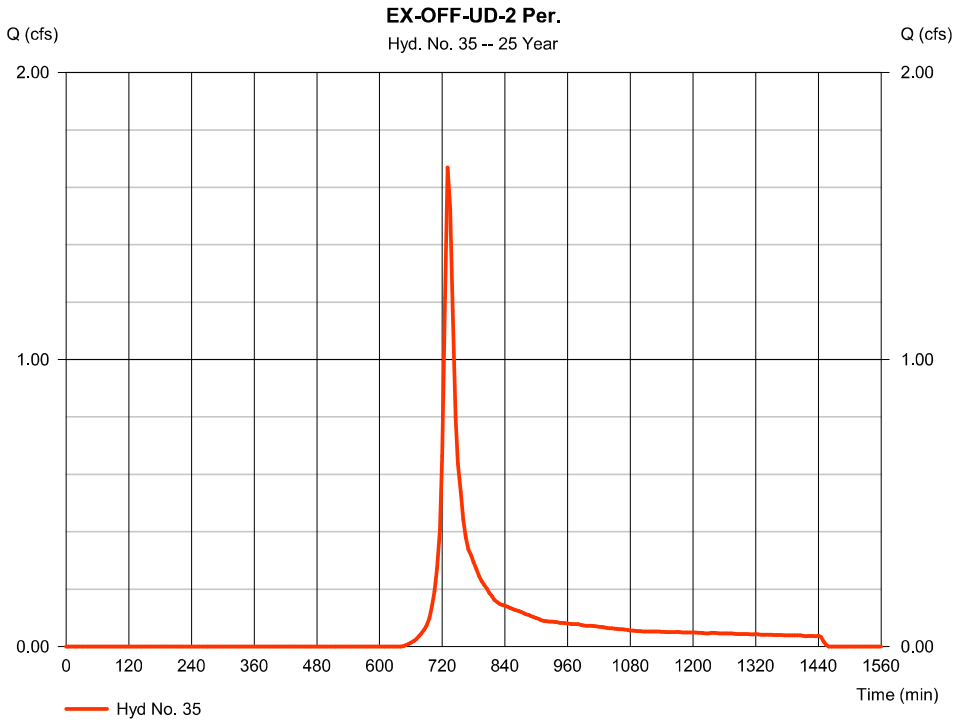


Hydrograph Report

Hyd. No. 35

EX-OFF-UD-2 Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 1.669 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 6,328 cuft
Drainage area	= 0.900 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.20 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

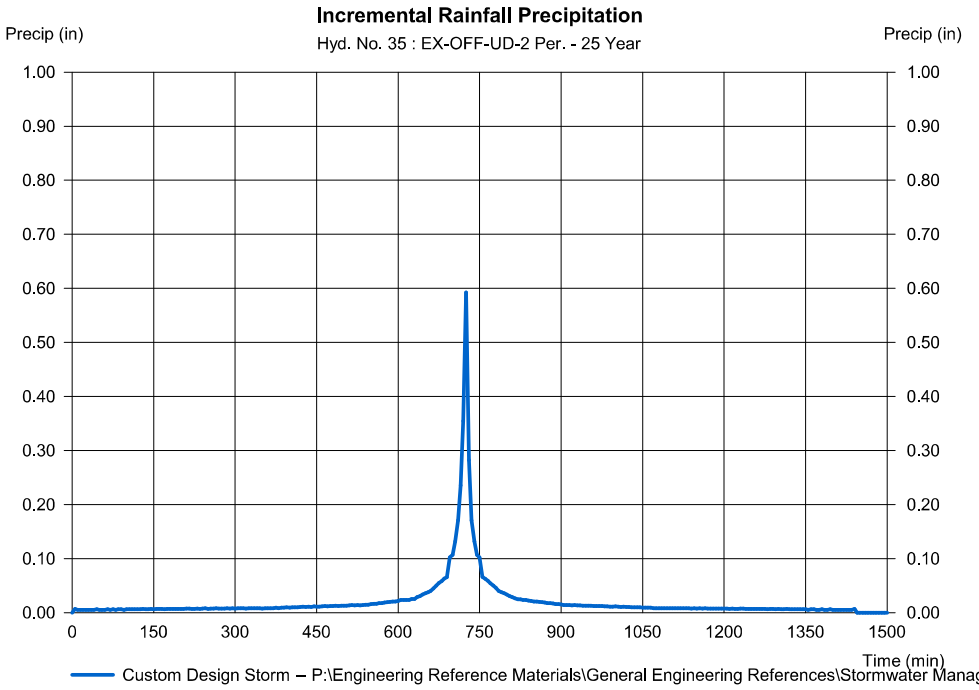


Precipitation Report

Hyd. No. 35

EX-OFF-UD-2 Per.

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

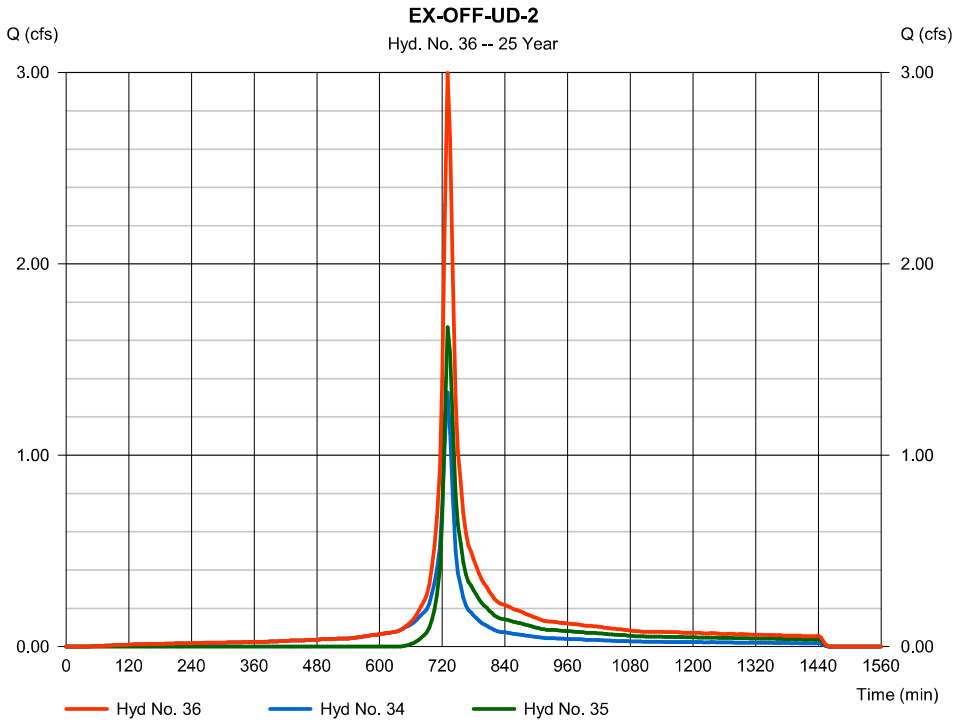


Hydrograph Report

Hyd. No. 36

EX-OFF-UD-2

Hydrograph type	= Combine	Peak discharge	= 2.996 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 11,904 cuft
Inflow hyds.	= 34, 35	Contrib. drain. area	= 1.180 ac

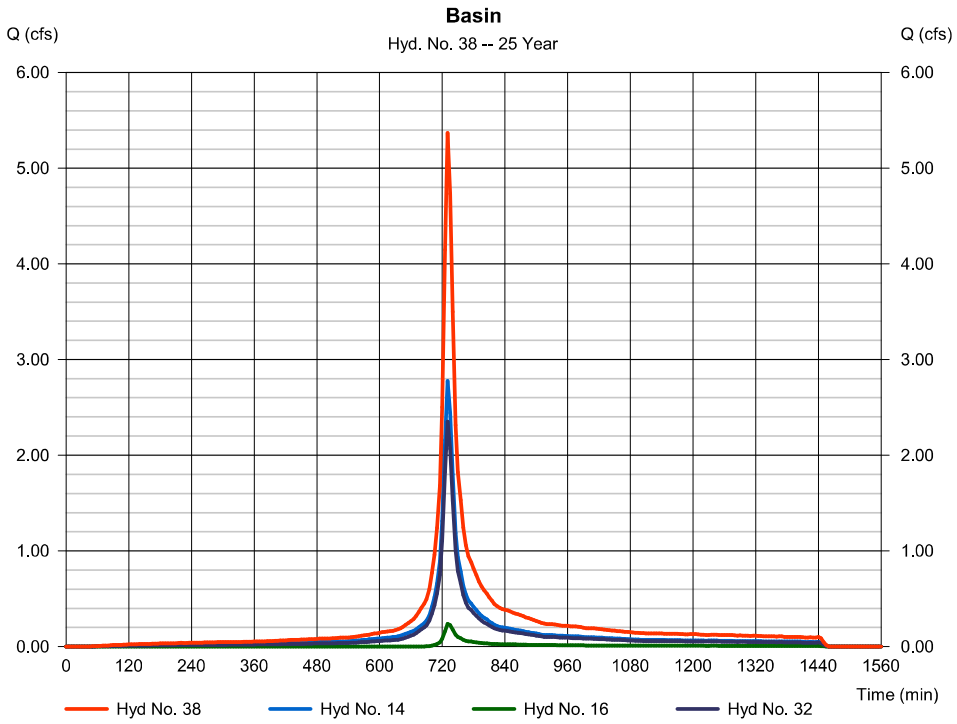


Hydrograph Report

Hyd. No. 38

Basin

Hydrograph type	= Combine	Peak discharge	= 5.368 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 21,836 cuft
Inflow hyds.	= 14, 16, 32	Contrib. drain. area	= 0.180 ac



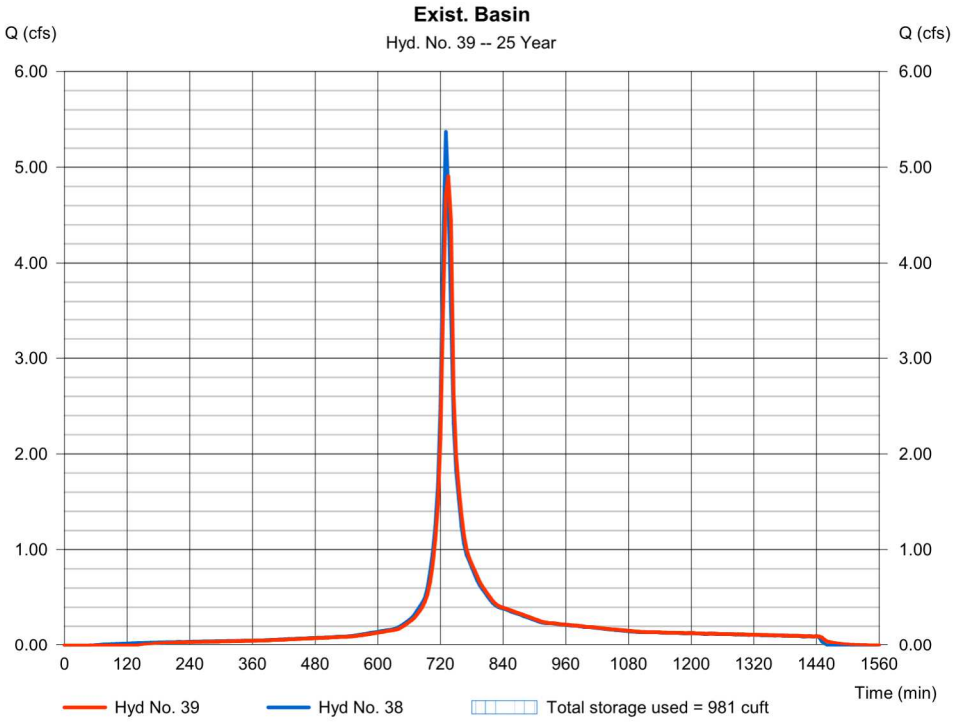
Hydrograph Report

Hyd. No. 39

Exist. Basin

Hydrograph type	= Reservoir	Peak discharge	= 4.905 cfs
Storm frequency	= 25 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 21,754 cuft
Inflow hyd. No.	= 38 - Basin	Max. Elevation	= 197.06 ft
Reservoir name	= Exist. Basin	Max. Storage	= 981 cuft

Storage Indication method used.

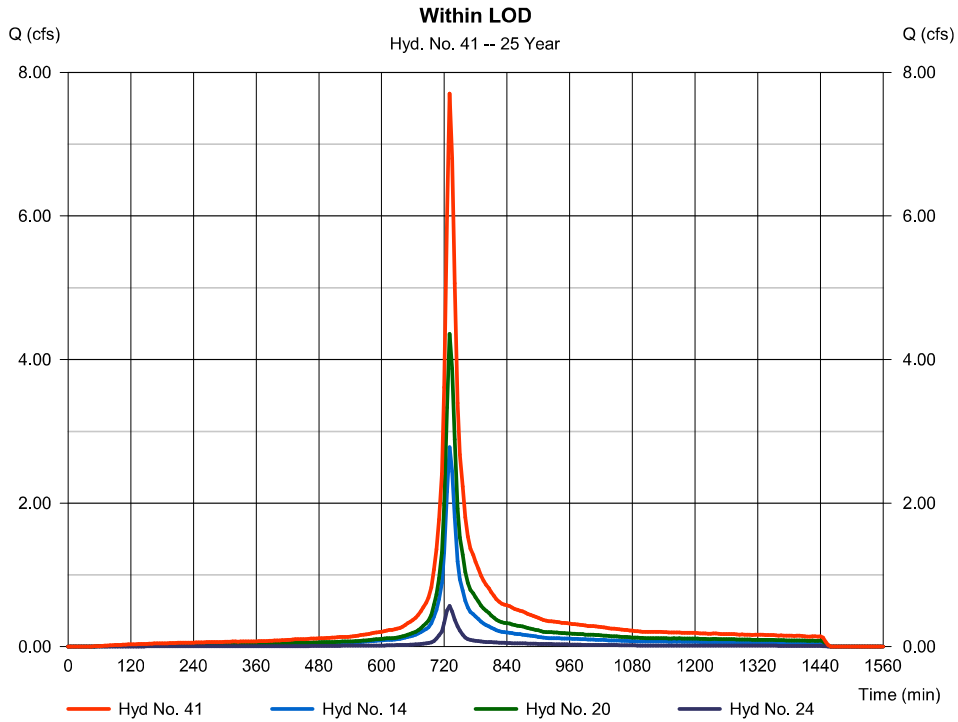


Hydrograph Report

Hyd. No. 41

Within LOD

Hydrograph type	= Combine	Peak discharge	= 7.704 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 31,688 cuft
Inflow hyds.	= 14, 20, 24	Contrib. drain. area	= 0.000 ac

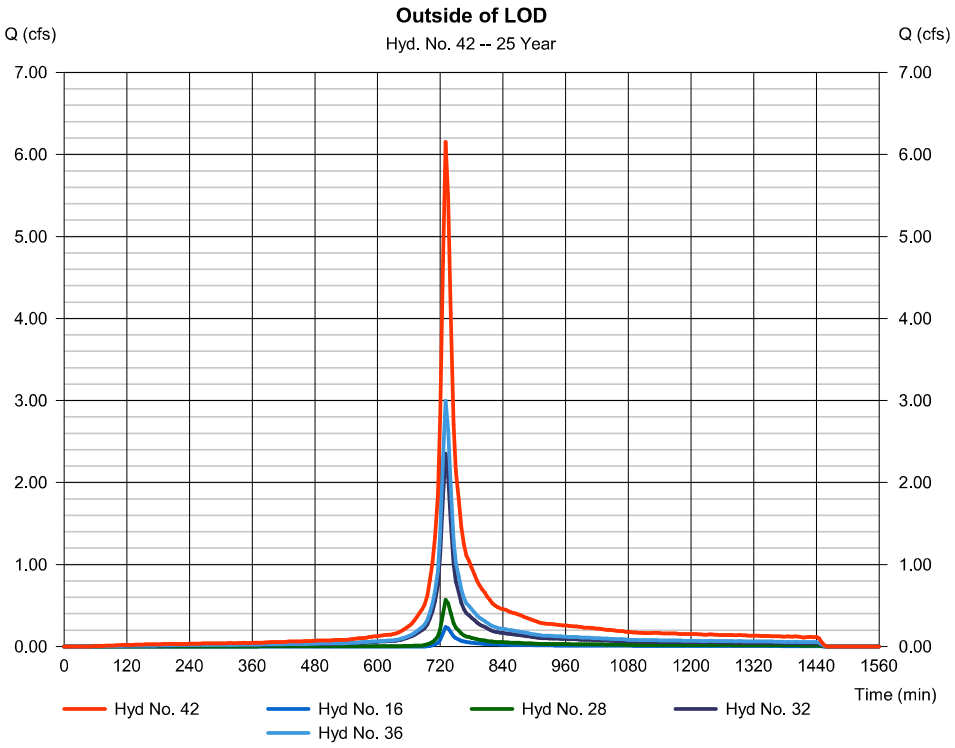


Hydrograph Report

Hyd. No. 42

Outside of LOD

Hydrograph type	= Combine	Peak discharge	= 6.154 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 24,594 cuft
Inflow hyds.	= 16, 28, 32, 36	Contrib. drain. area	= 0.180 ac

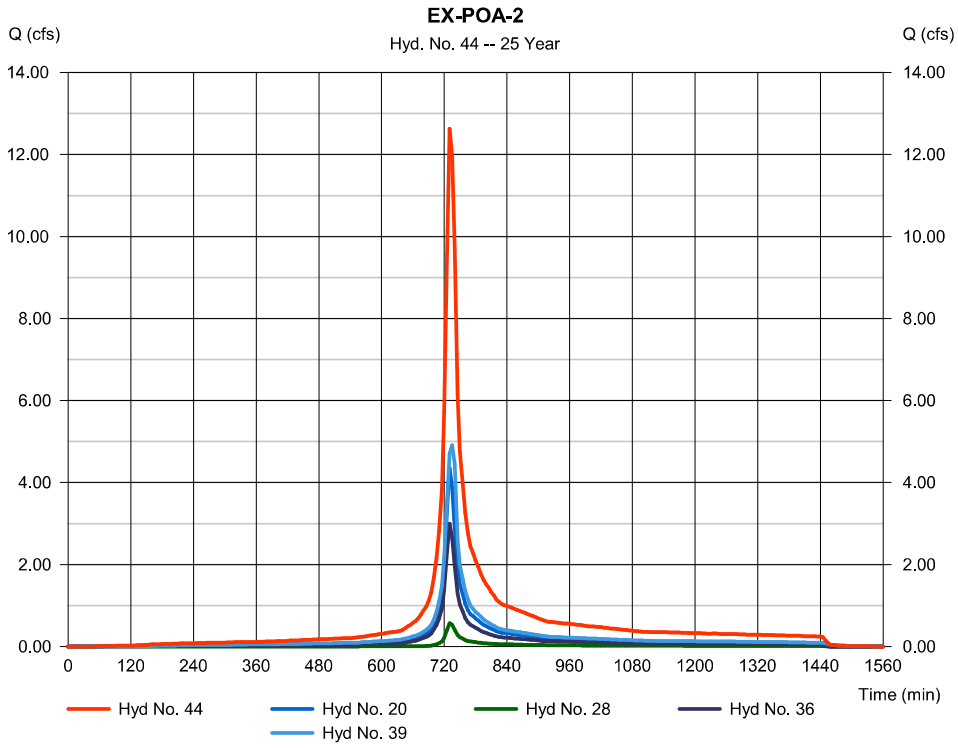


Hydrograph Report

Hyd. No. 44

EX-POA-2

Hydrograph type	= Combine	Peak discharge	= 12.63 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 53,740 cuft
Inflow hyds.	= 20, 28, 36, 39	Contrib. drain. area	= 0.000 ac

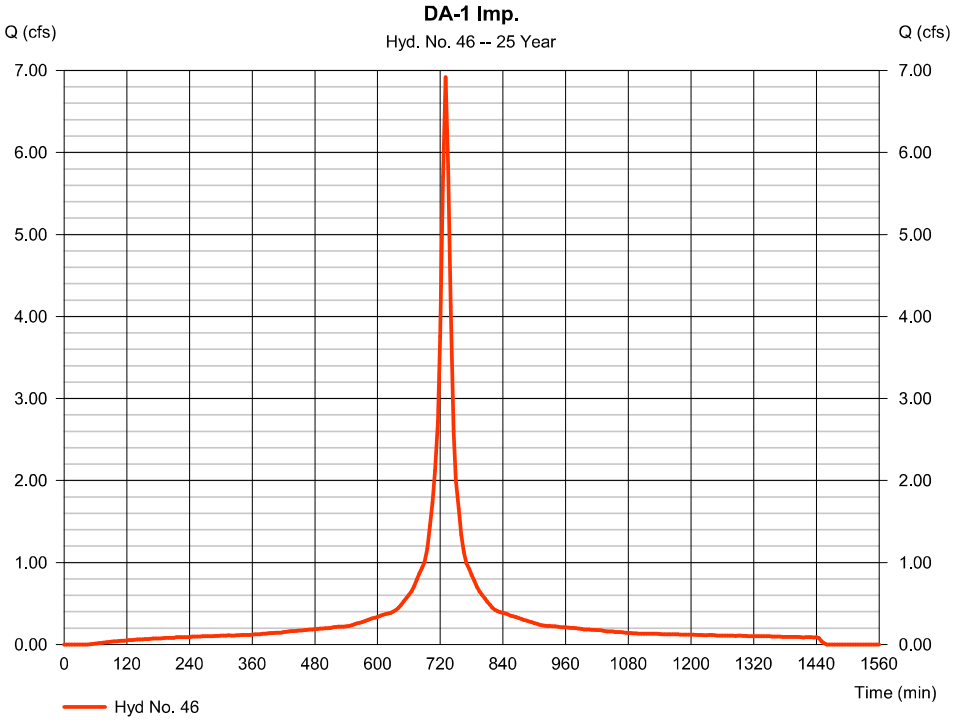


Hydrograph Report

Hyd. No. 46

DA-1 Imp.

Hydrograph type	=	SCS Runoff	Peak discharge	=	6.919 cfs
Storm frequency	=	25 yrs	Time to peak	=	730 min
Time interval	=	5 min	Hyd. volume	=	29,075 cuft
Drainage area	=	1.460 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	6.09 in	Distribution	=	Custom
Storm duration	=	P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	=	484

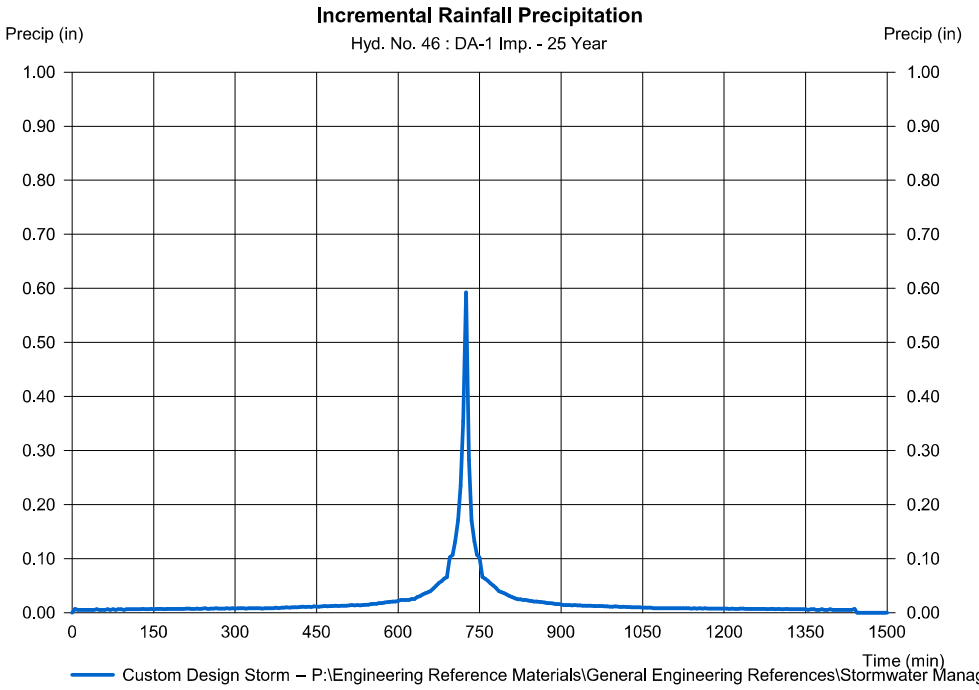


Precipitation Report

Hyd. No. 46

DA-1 Imp.

Storm Frequency	=	25 yrs	Time interval	=	5 min
Total precip.	=	6.0900 in	Distribution	=	Custom
Storm duration	=	P:\Engineering Reference Materials\General Engineering References\Stormwat			

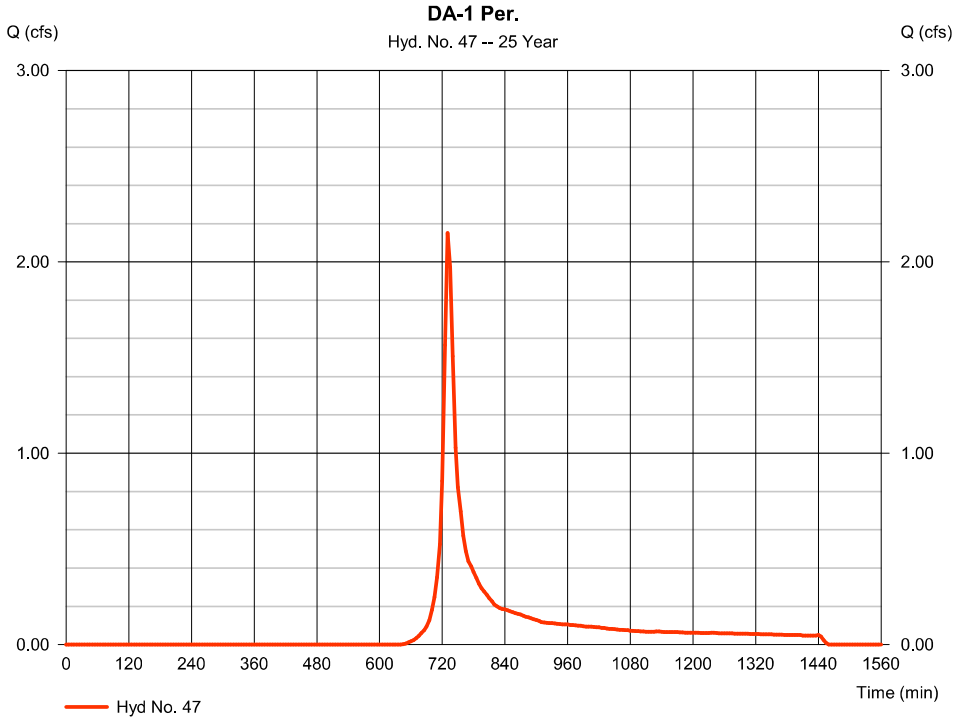


Hydrograph Report

Hyd. No. 47

DA-1 Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 2.151 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 8,156 cuft
Drainage area	= 1.160 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

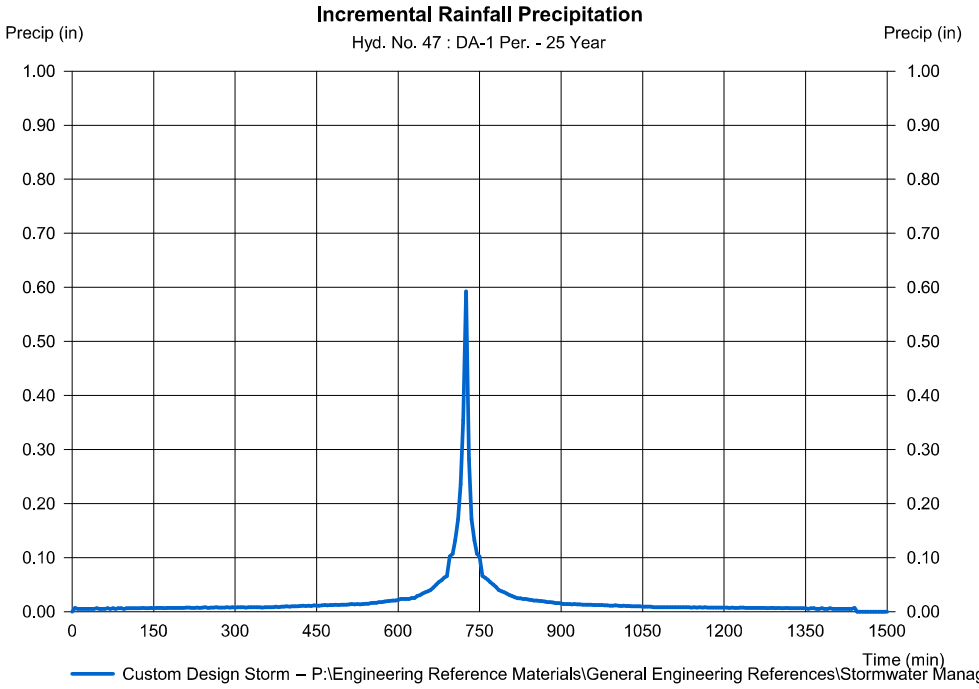


Precipitation Report

Hyd. No. 47

DA-1 Per.

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

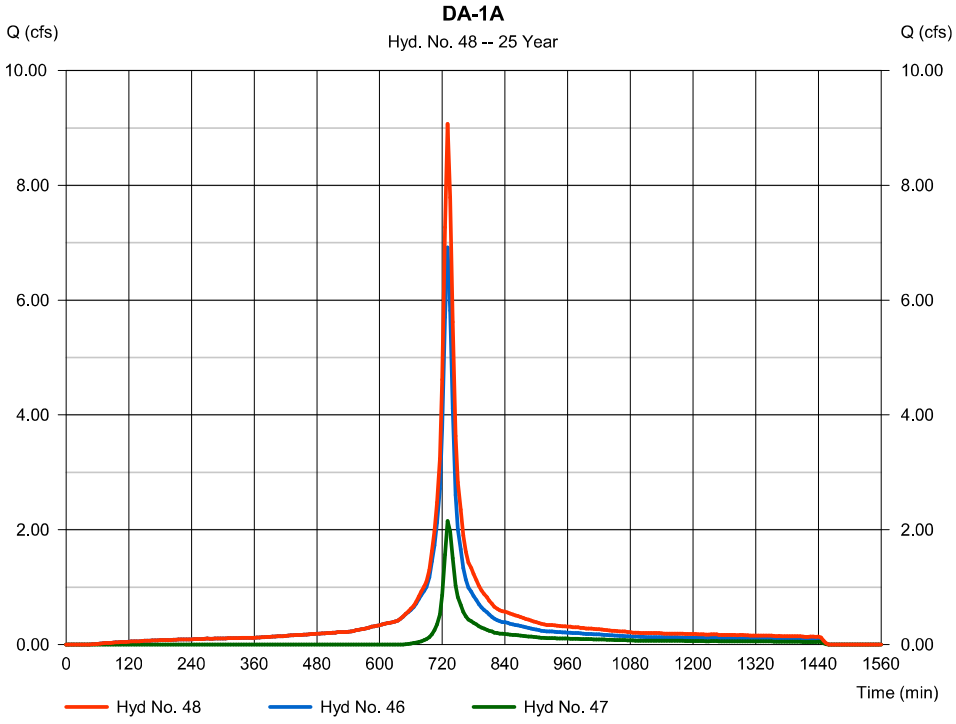


Hydrograph Report

Hyd. No. 48

DA-1A

Hydrograph type	= Combine	Peak discharge	= 9.070 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 37,230 cuft
Inflow hyds.	= 46, 47	Contrib. drain. area	= 2.620 ac

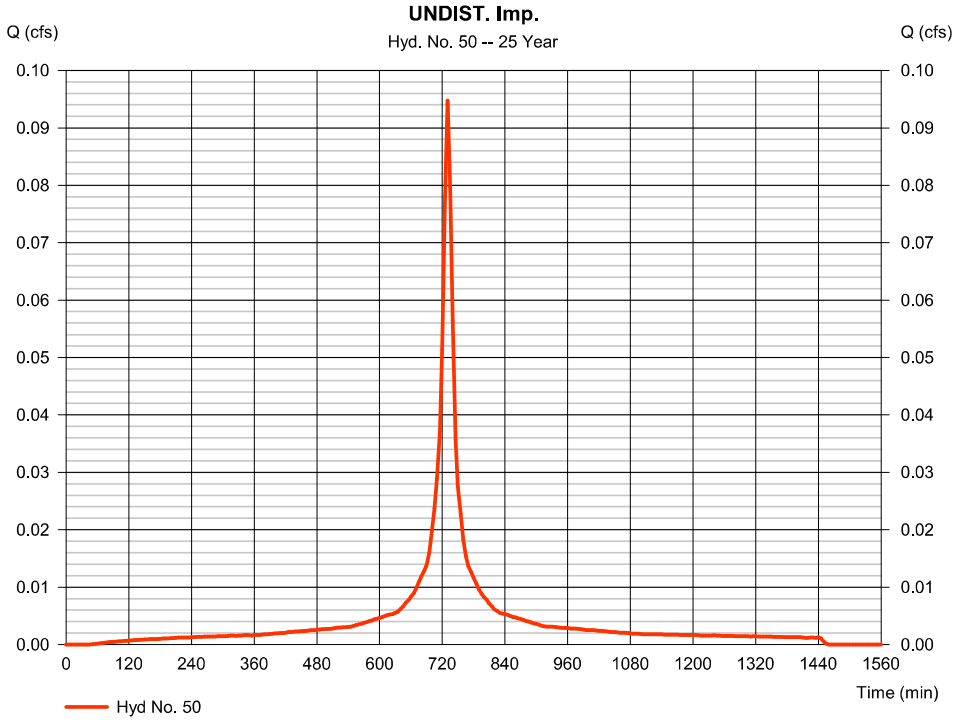


Hydrograph Report

Hyd. No. 50

UNDIST. Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.095 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 398 cuft
Drainage area	= 0.020 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

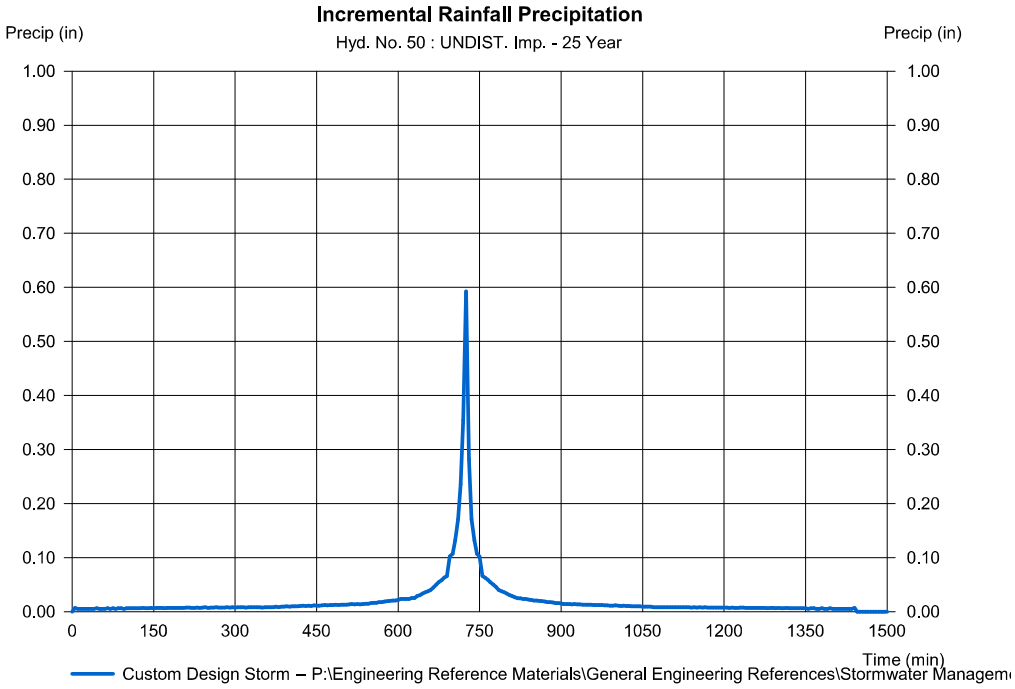


Precipitation Report

Hyd. No. 50

UNDIST. Imp.

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

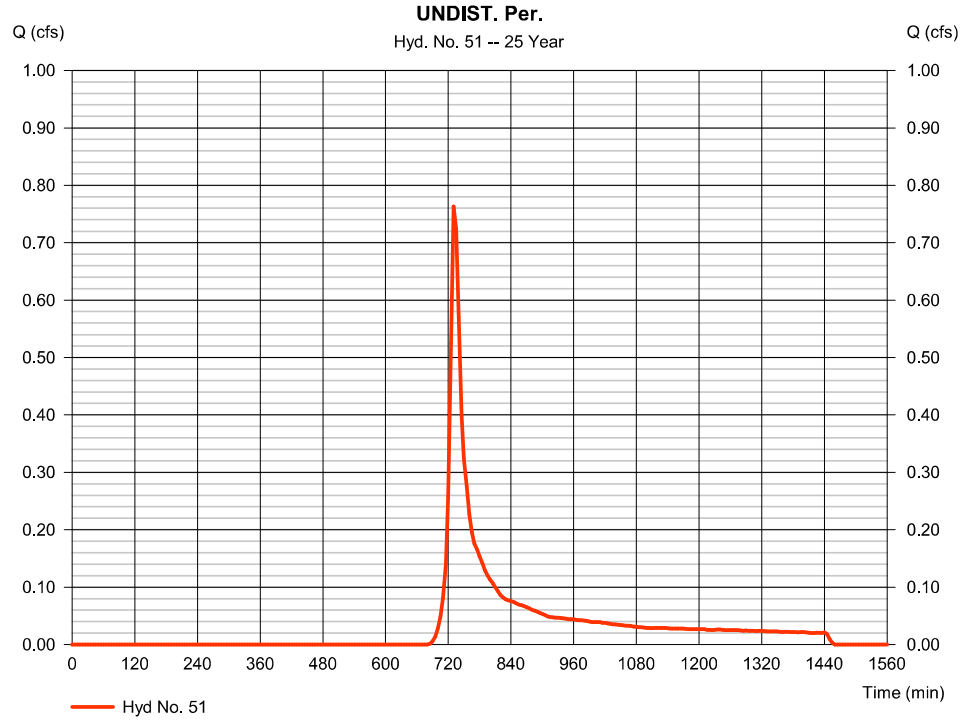


Hydrograph Report

Hyd. No. 51

UNDIST. Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.763 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 3,098 cuft
Drainage area	= 0.580 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

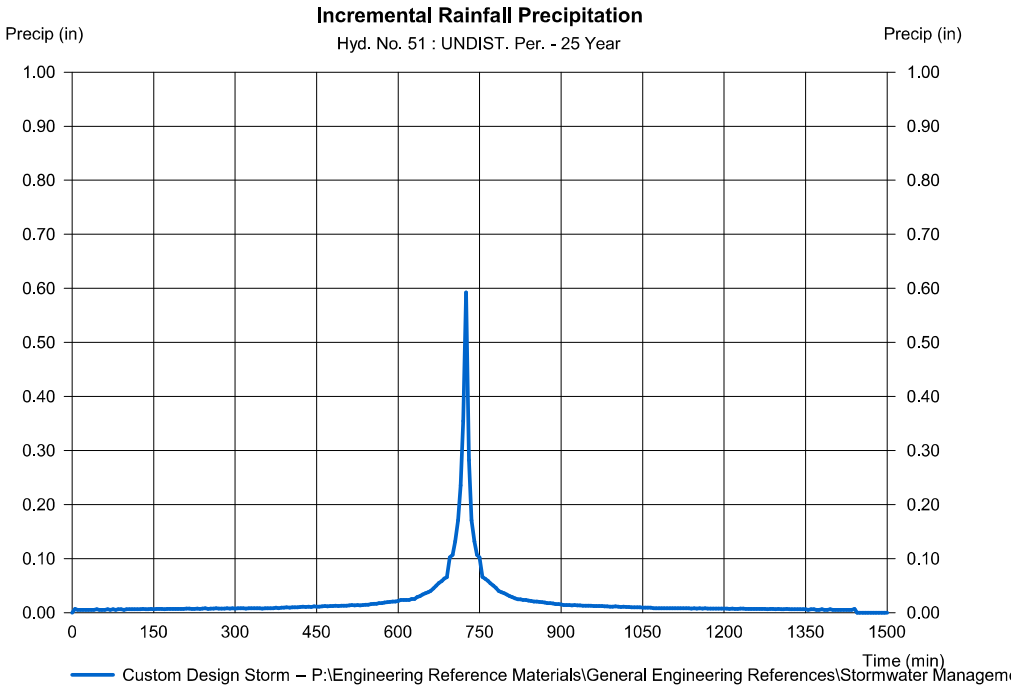


Precipitation Report

Hyd. No. 51

UNDIST. Per.

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

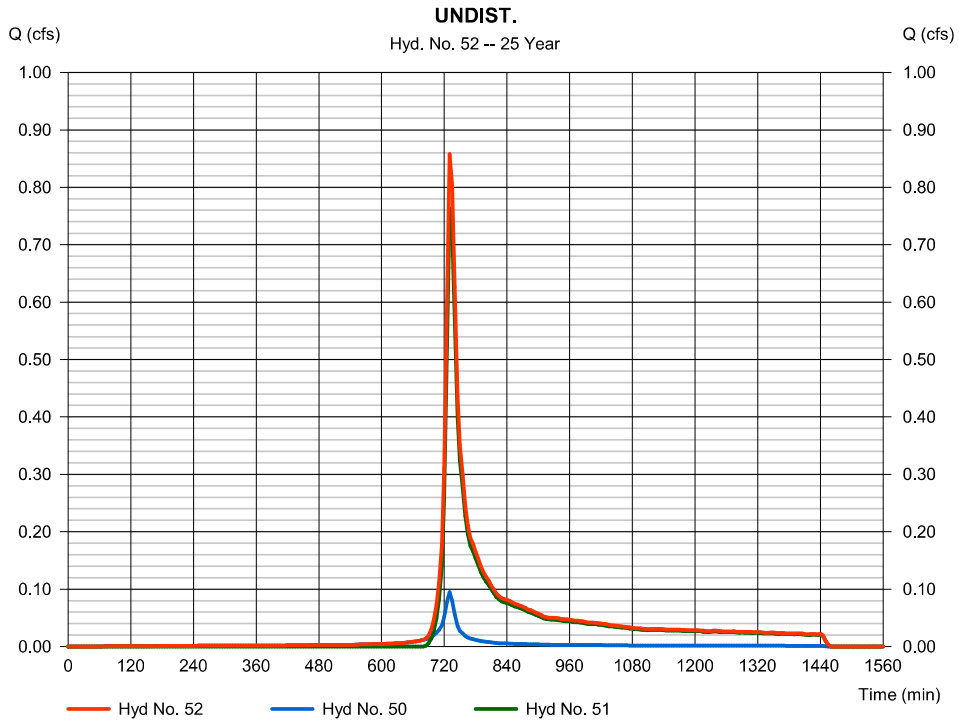


Hydrograph Report

Hyd. No. 52

UNDIST.

Hydrograph type	= Combine	Peak discharge	= 0.858 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 3,497 cuft
Inflow hyds.	= 50, 51	Contrib. drain. area	= 0.600 ac

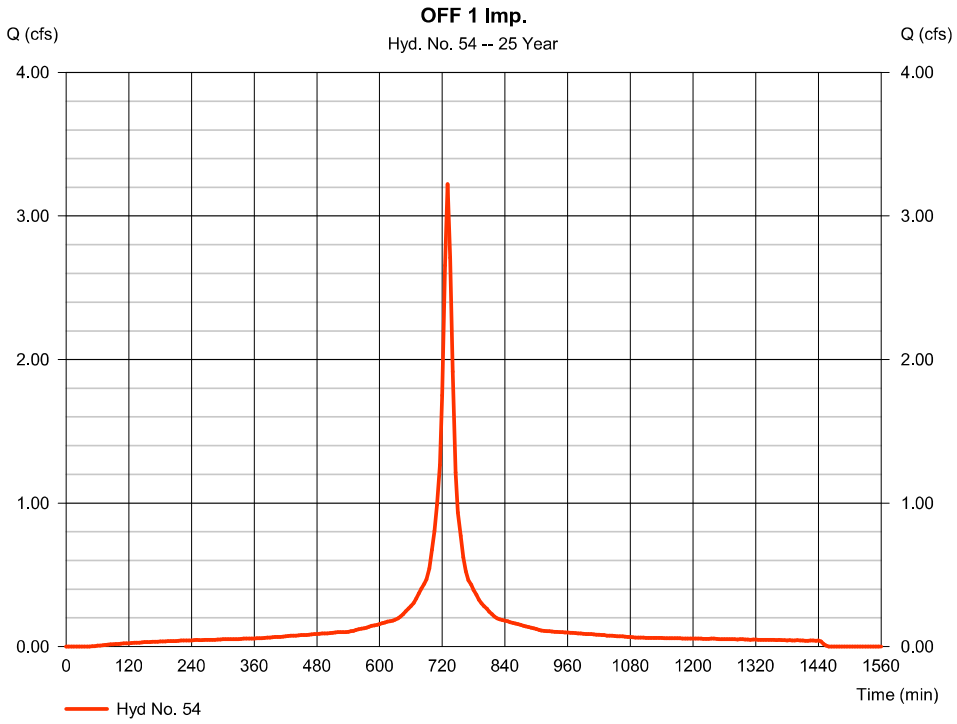


Hydrograph Report

Hyd. No. 54

OFF 1 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 3.223 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 13,542 cuft
Drainage area	= 0.680 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

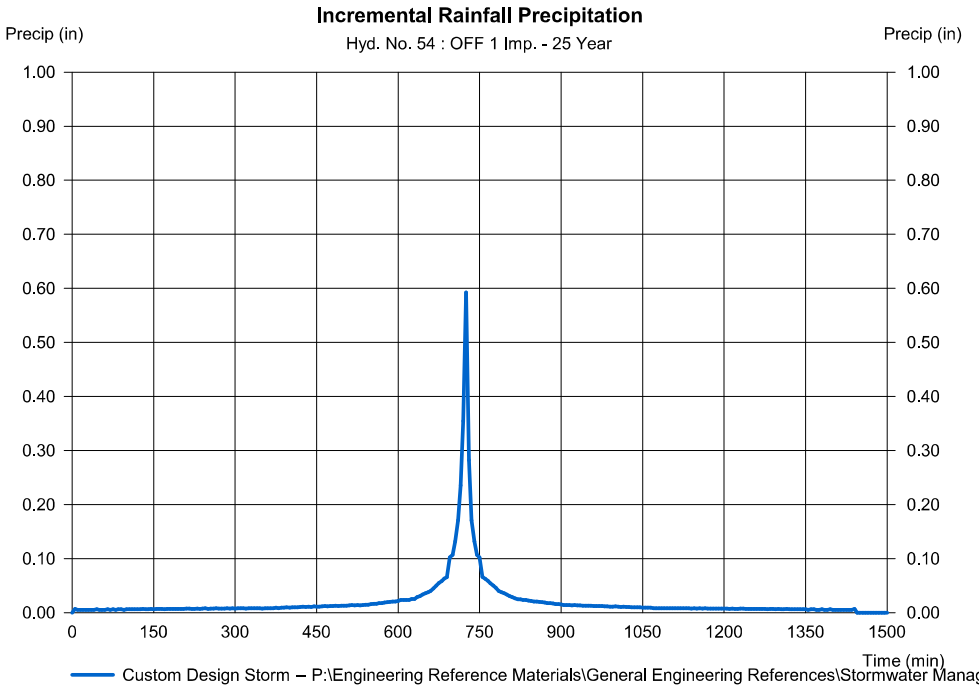


Precipitation Report

Hyd. No. 54

OFF 1 Imp.

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

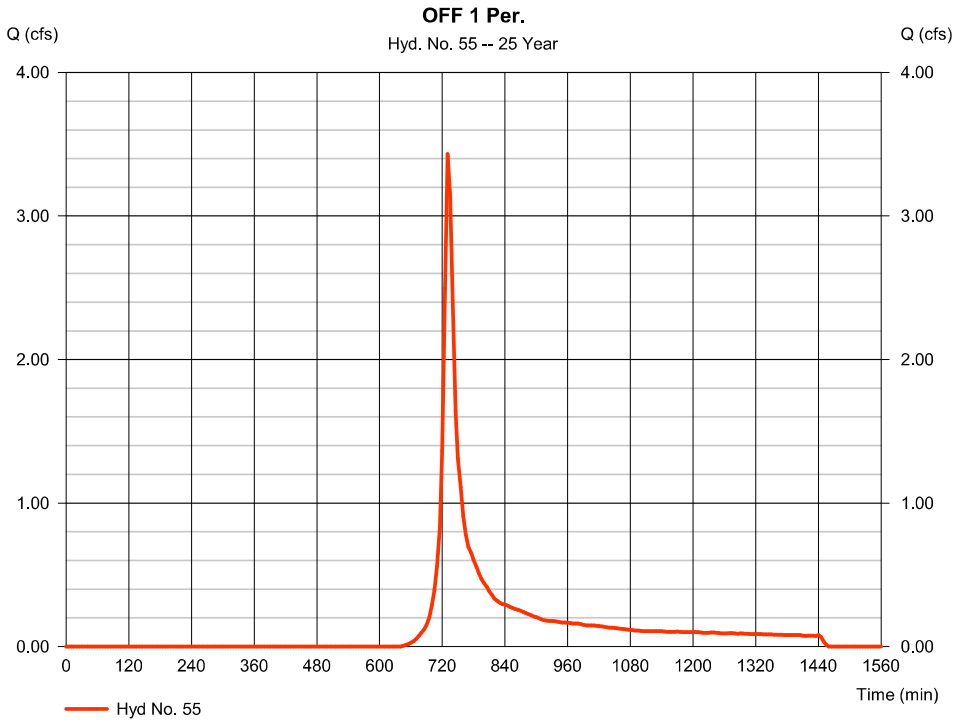


Hydrograph Report

Hyd. No. 55

OFF 1 Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 3.431 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 13,007 cuft
Drainage area	= 1.850 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

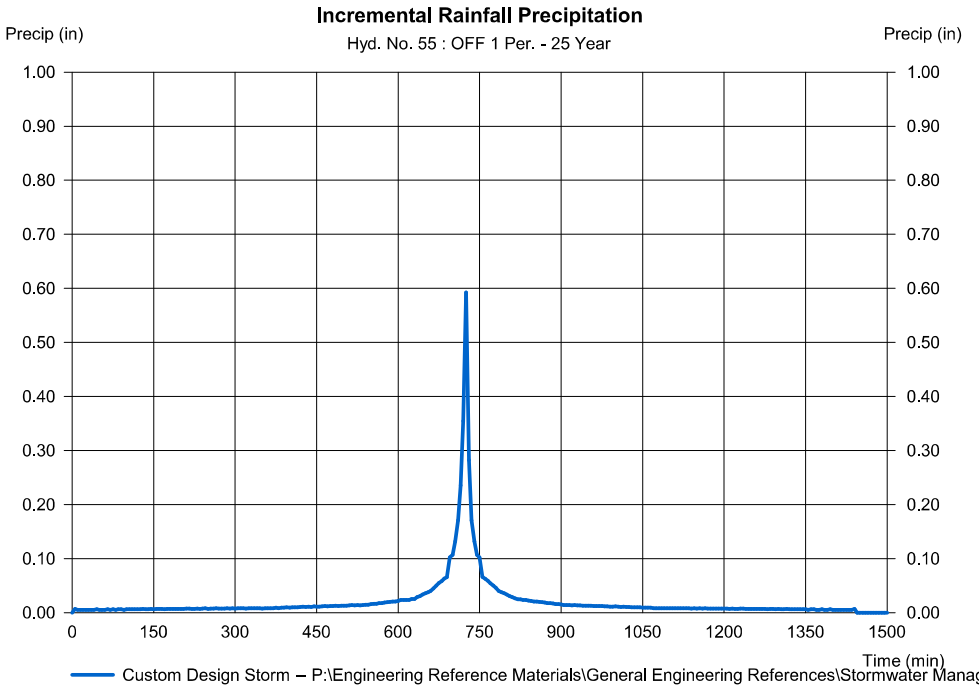


Precipitation Report

Hyd. No. 55

OFF 1 Per.

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

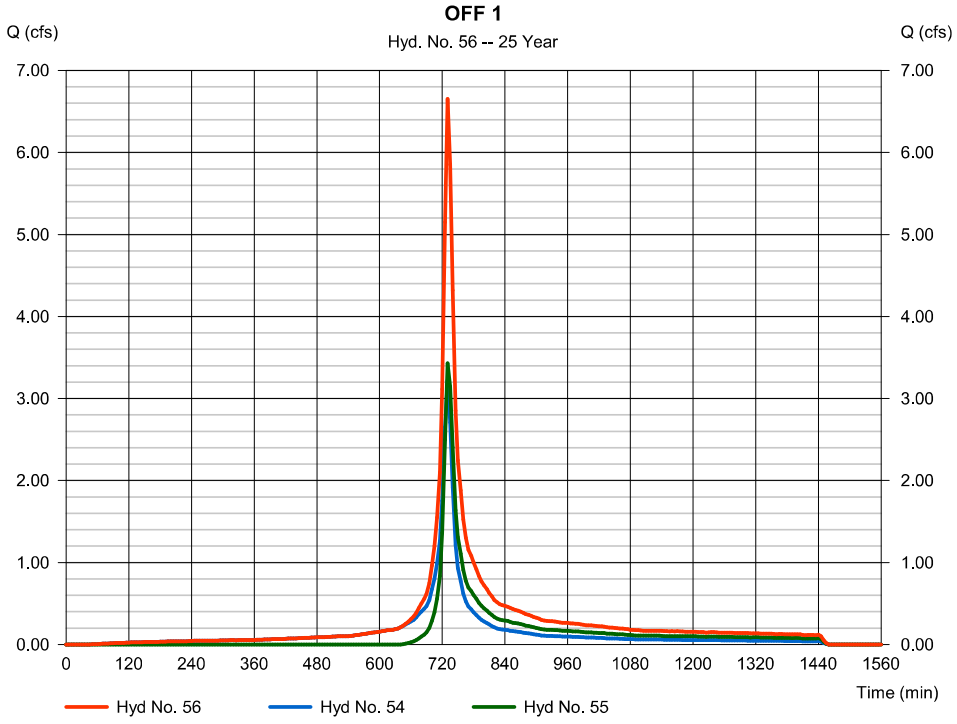


Hydrograph Report

Hyd. No. 56

OFF 1

Hydrograph type	= Combine	Peak discharge	= 6.654 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 26,549 cuft
Inflow hyds.	= 54, 55	Contrib. drain. area	= 2.530 ac

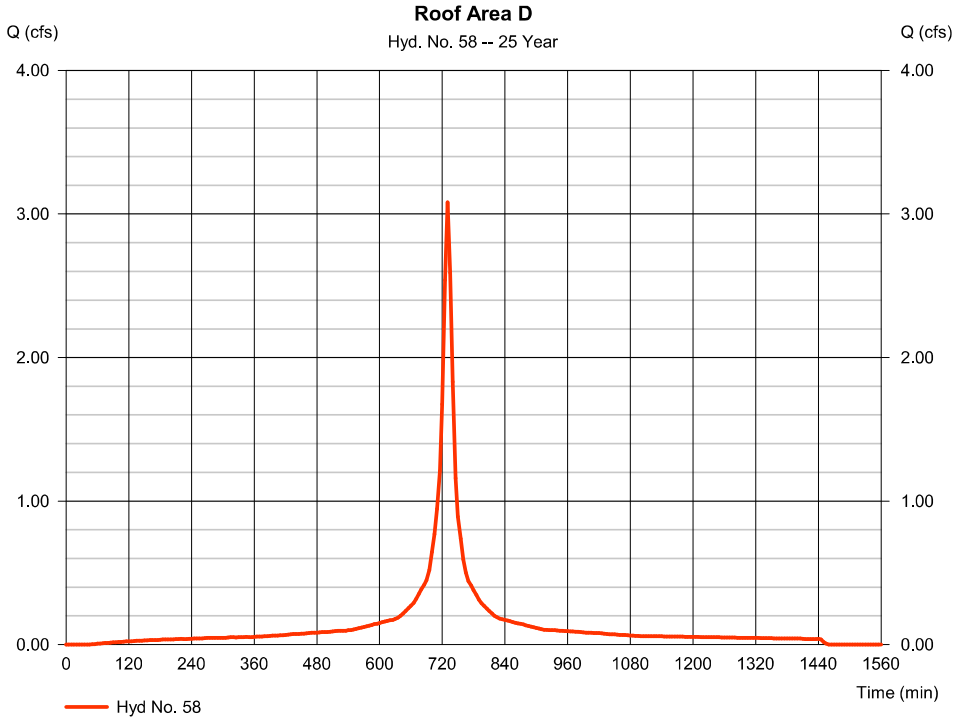


Hydrograph Report

Hyd. No. 58

Roof Area D

Hydrograph type	= SCS Runoff	Peak discharge	= 3.080 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 12,944 cuft
Drainage area	= 0.650 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

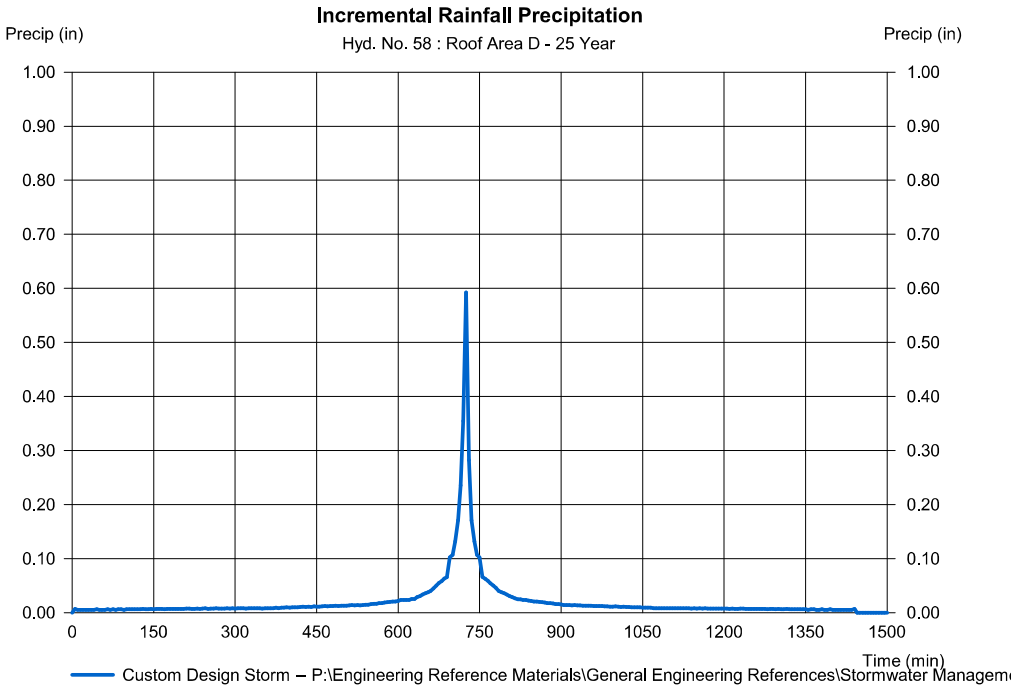


Precipitation Report

Hyd. No. 58

Roof Area D

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

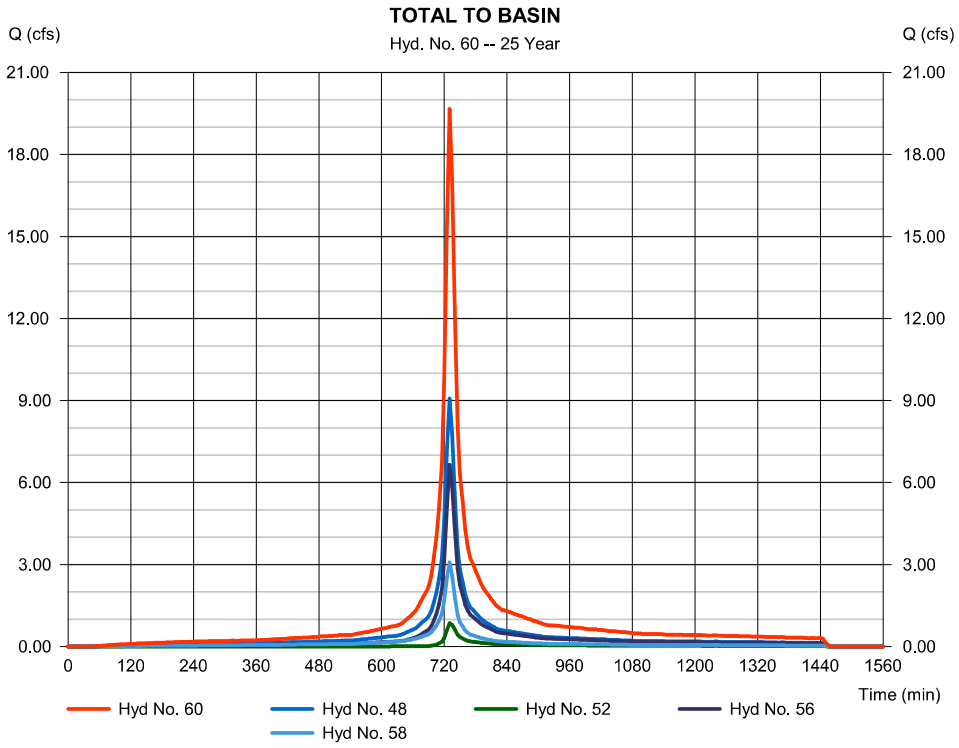


Hydrograph Report

Hyd. No. 60

TOTAL TO BASIN

Hydrograph type	= Combine	Peak discharge	= 19.66 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 80,220 cuft
Inflow hyds.	= 48, 52, 56, 58	Contrib. drain. area	= 0.650 ac



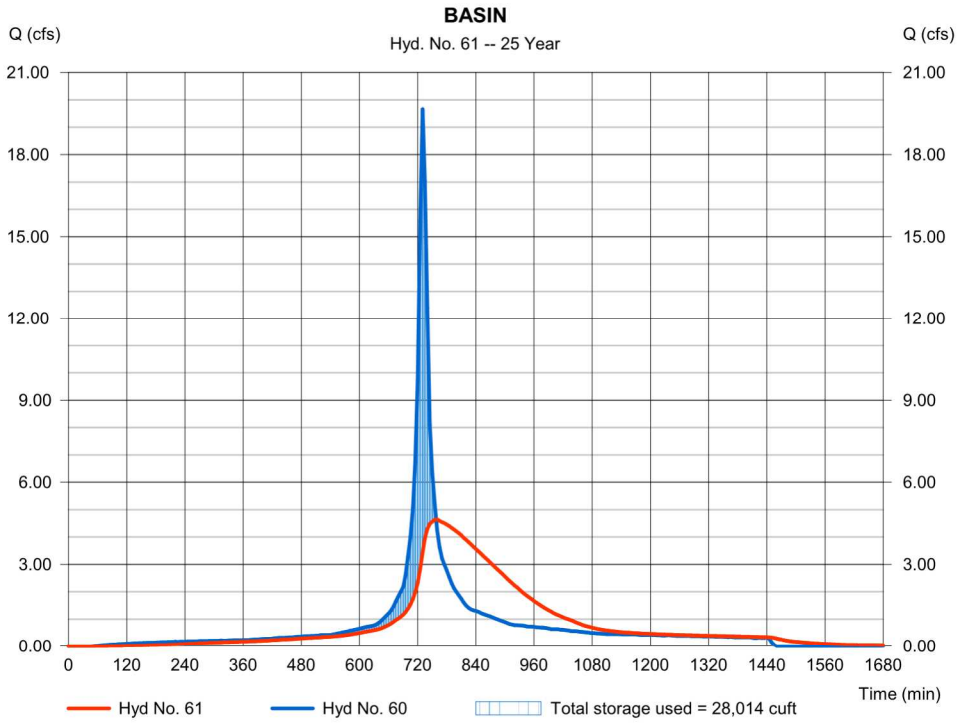
Hydrograph Report

Hyd. No. 61

BASIN

Hydrograph type	= Reservoir	Peak discharge	= 4.640 cfs
Storm frequency	= 25 yrs	Time to peak	= 760 min
Time interval	= 5 min	Hyd. volume	= 80,206 cuft
Inflow hyd. No.	= 60 - TOTAL TO BASIN	Max. Elevation	= 198.34 ft
Reservoir name	= UG STORMTRAP	Max. Storage	= 28,014 cuft

Storage Indication method used.

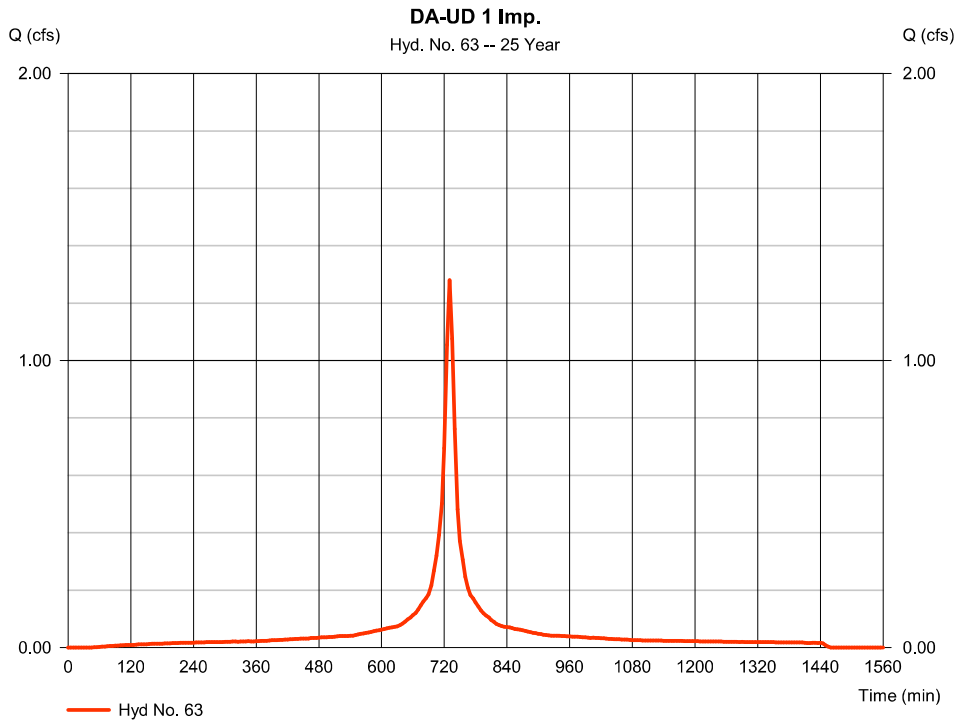


Hydrograph Report

Hyd. No. 63

DA-UD 1 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 1.280 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 5,377 cuft
Drainage area	= 0.270 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

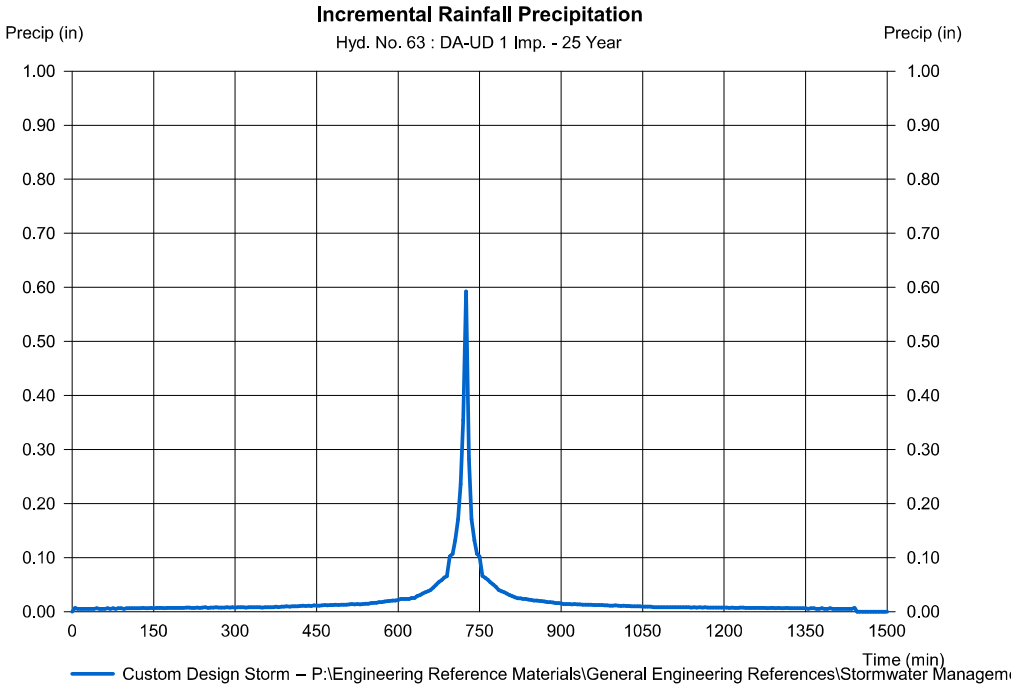


Precipitation Report

Hyd. No. 63

DA-UD 1 Imp.

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

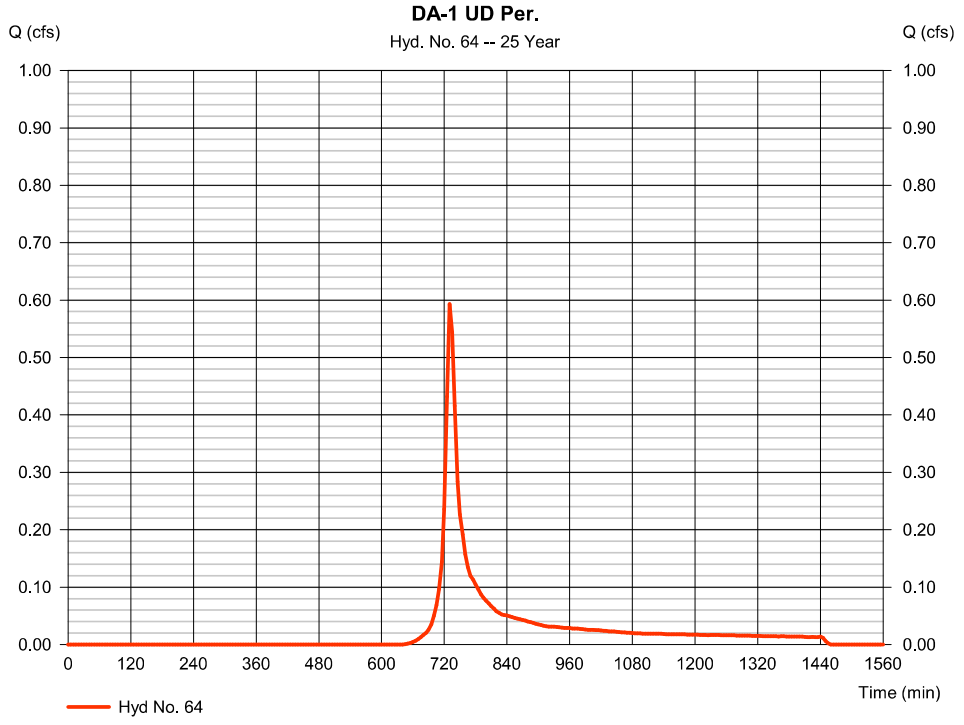


Hydrograph Report

Hyd. No. 64

DA-1 UD Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.593 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,250 cuft
Drainage area	= 0.320 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

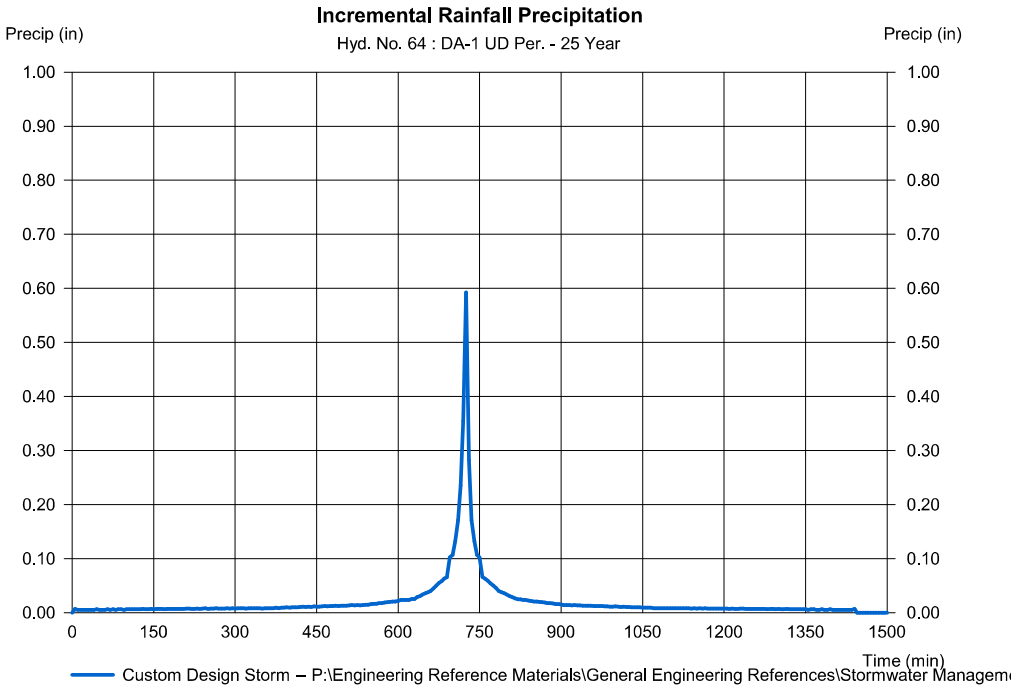


Precipitation Report

Hyd. No. 64

DA-1 UD Per.

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

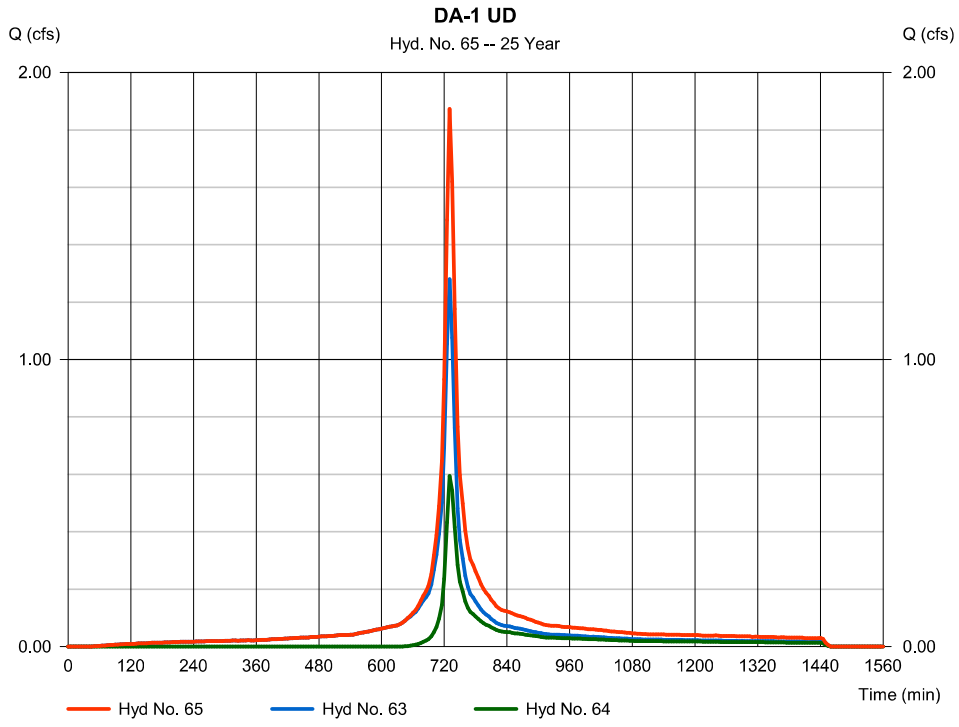


Hydrograph Report

Hyd. No. 65

DA-1 UD

Hydrograph type	= Combine	Peak discharge	= 1.873 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 7,627 cuft
Inflow hyds.	= 63, 64	Contrib. drain. area	= 0.590 ac

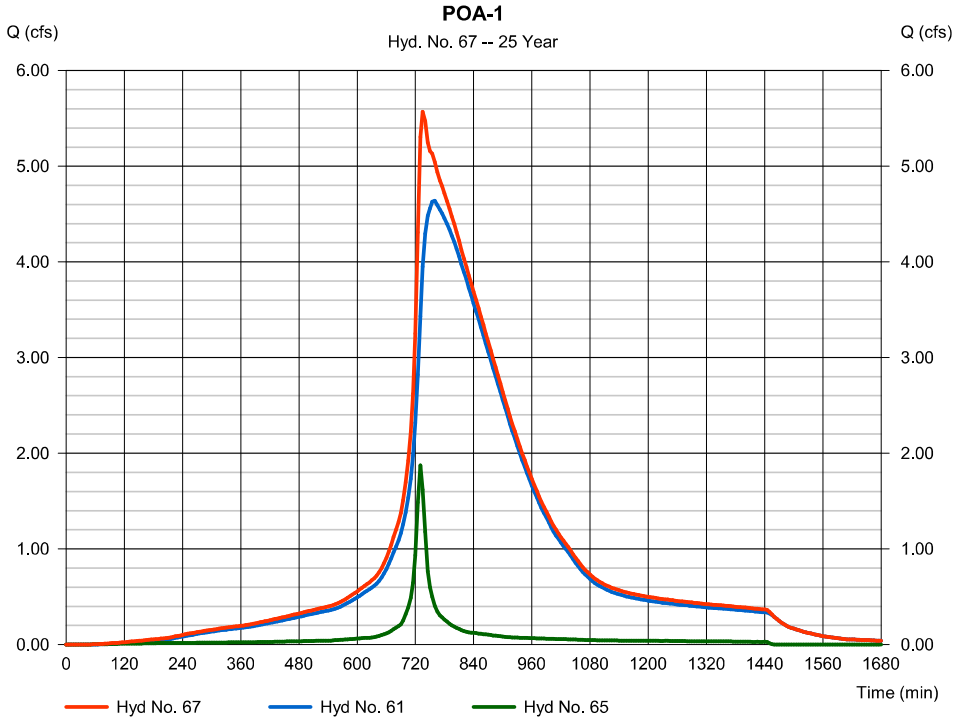


Hydrograph Report

Hyd. No. 67

POA-1

Hydrograph type	= Combine	Peak discharge	= 5.567 cfs
Storm frequency	= 25 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 87,832 cuft
Inflow hyds.	= 61, 65	Contrib. drain. area	= 0.000 ac

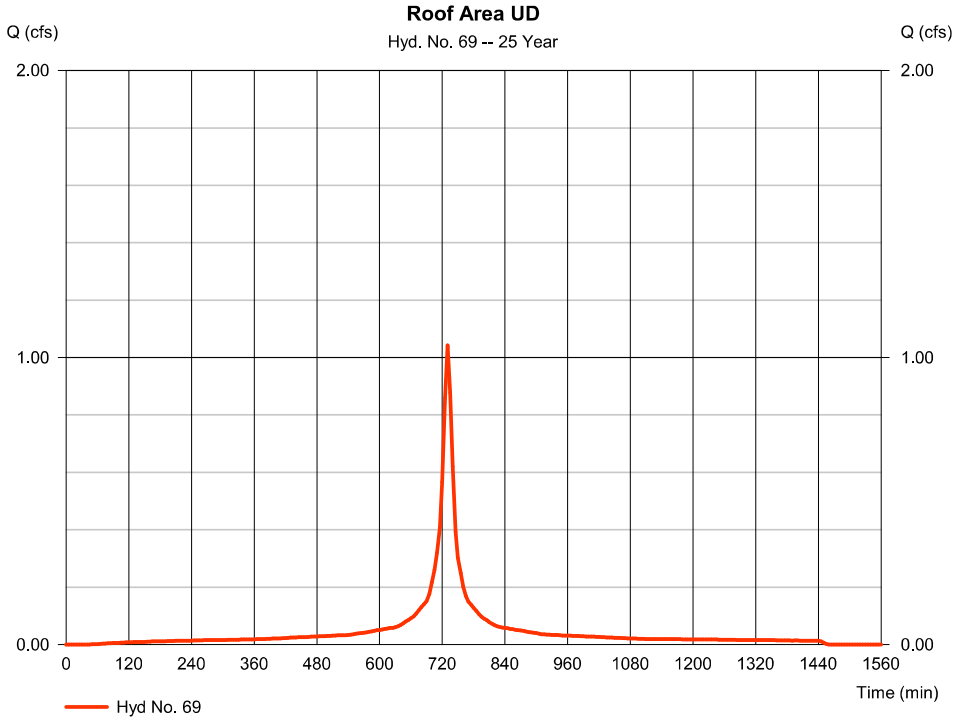


Hydrograph Report

Hyd. No. 69

Roof Area UD

Hydrograph type	= SCS Runoff	Peak discharge	= 1.043 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 4,381 cuft
Drainage area	= 0.220 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

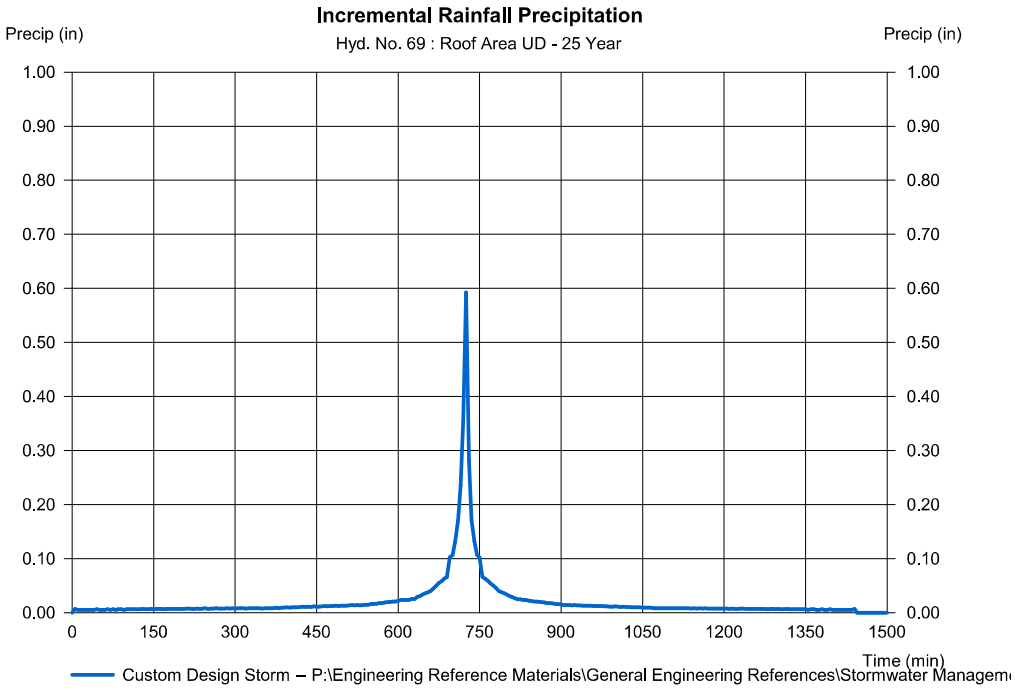


Precipitation Report

Hyd. No. 69

Roof Area UD

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

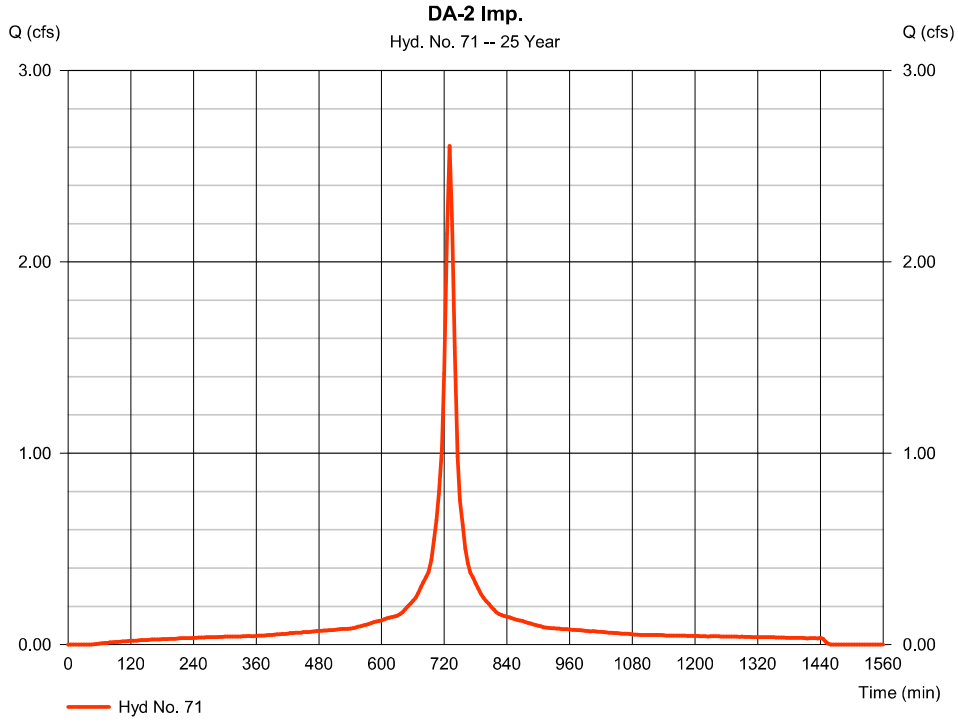


Hydrograph Report

Hyd. No. 71

DA-2 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 2.606 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 10,953 cuft
Drainage area	= 0.550 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

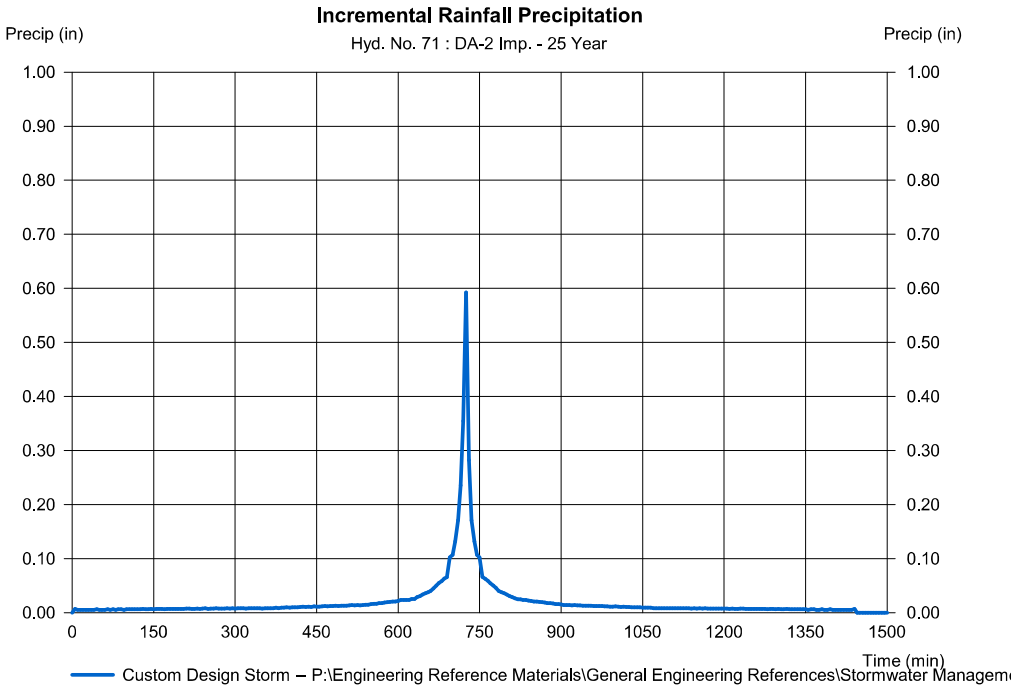


Precipitation Report

Hyd. No. 71

DA-2 Imp.

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

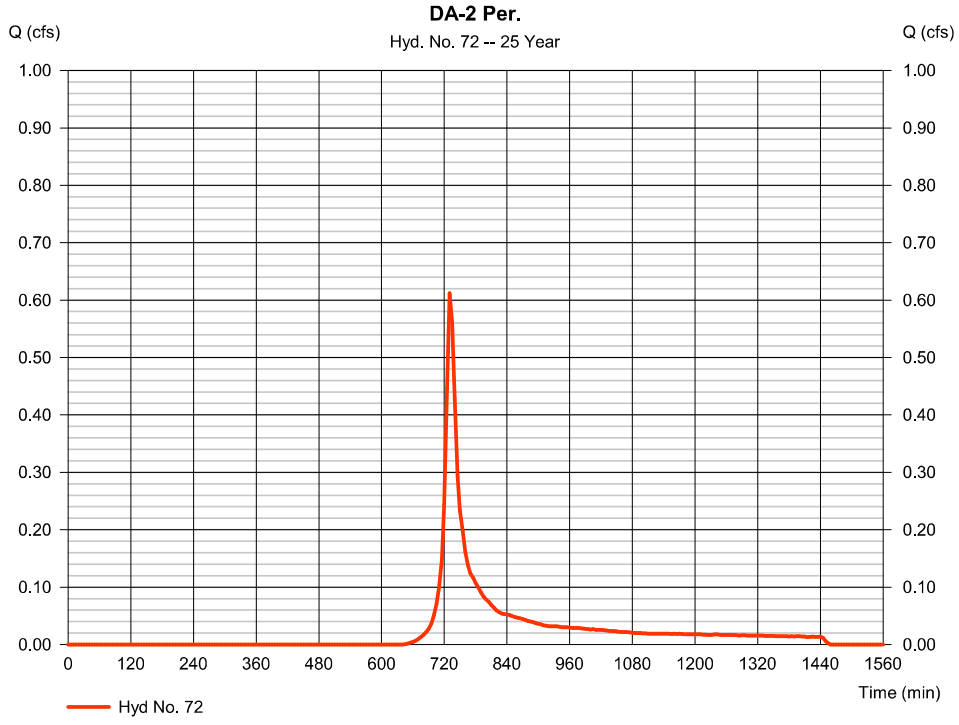


Hydrograph Report

Hyd. No. 72

DA-2 Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.612 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,320 cuft
Drainage area	= 0.330 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

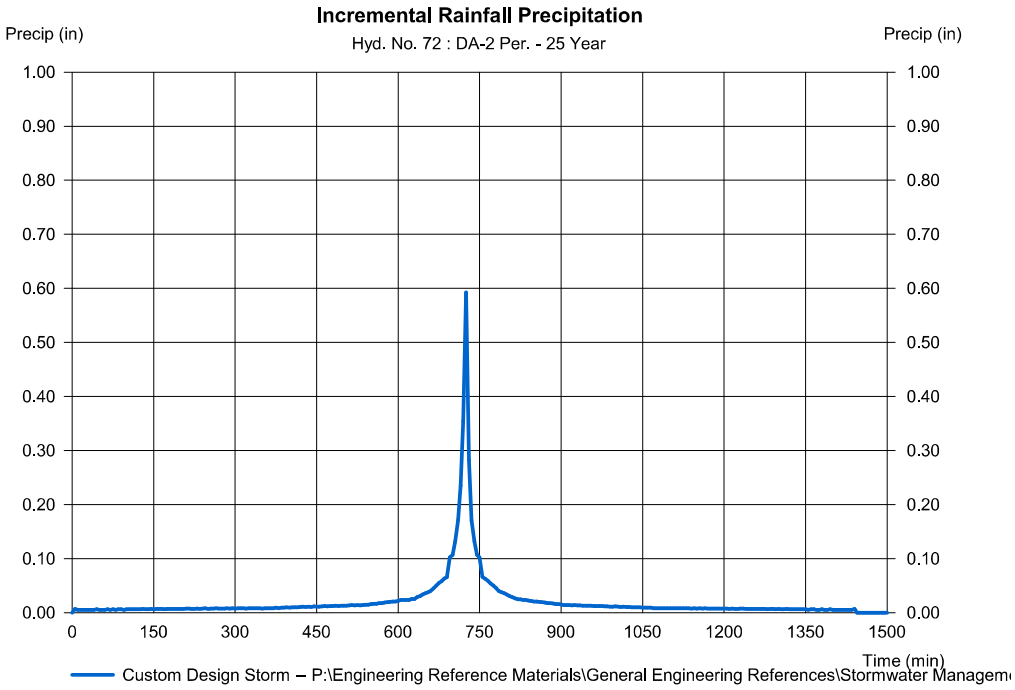


Precipitation Report

Hyd. No. 72

DA-2 Per.

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

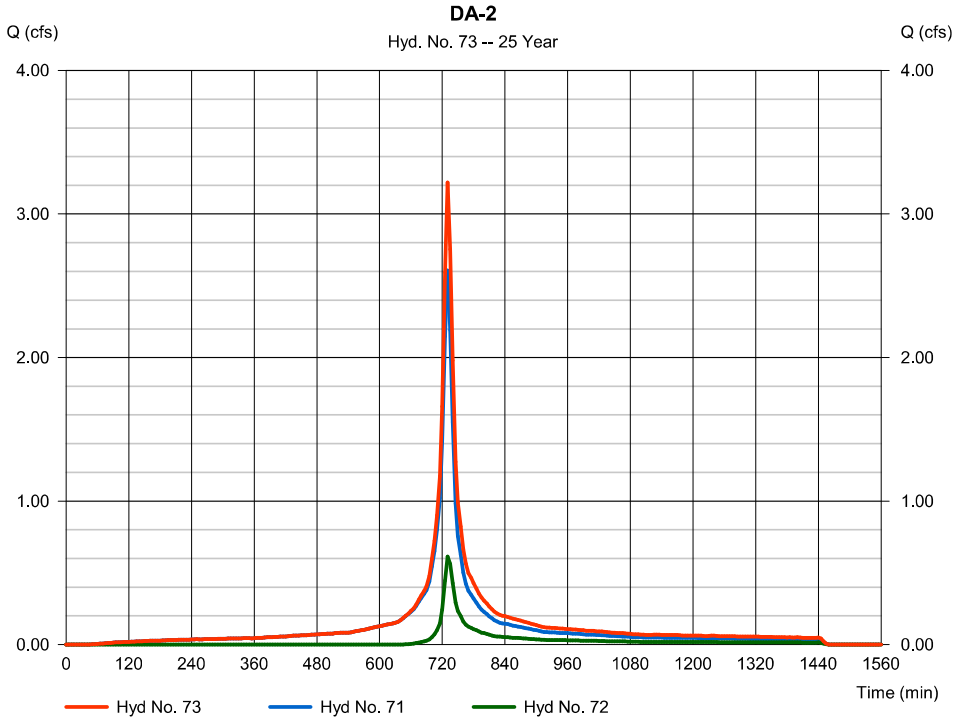


Hydrograph Report

Hyd. No. 73

DA-2

Hydrograph type	= Combine	Peak discharge	= 3.218 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 13,273 cuft
Inflow hyds.	= 71, 72	Contrib. drain. area	= 0.880 ac

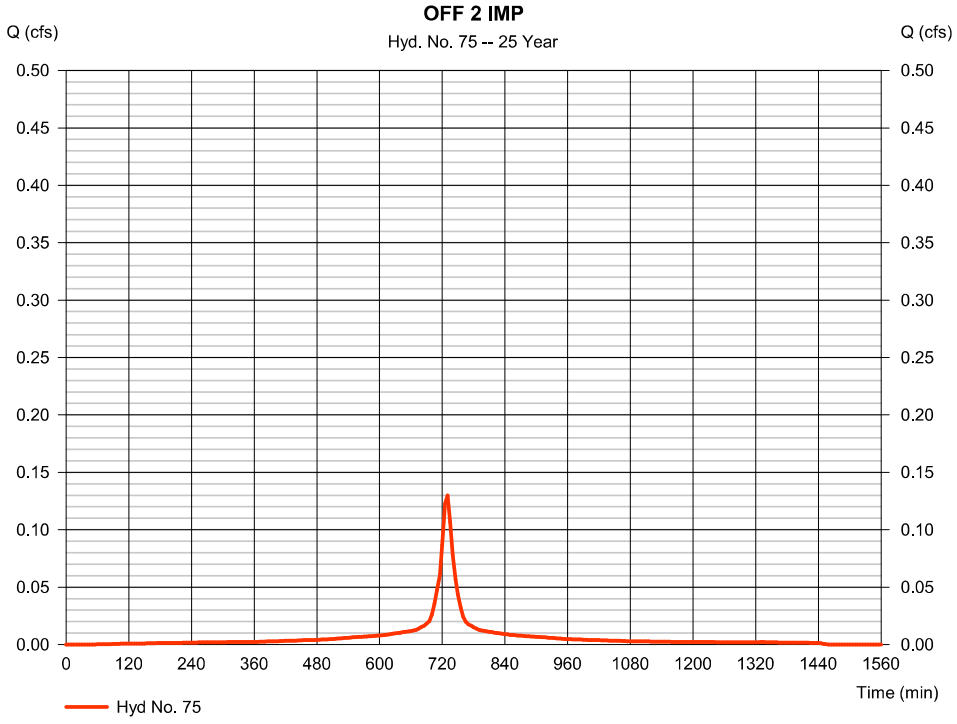


Hydrograph Report

Hyd. No. 75

OFF 2 IMP

Hydrograph type	= SCS Runoff	Peak discharge	= 0.130 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 597 cuft
Drainage area	= 0.030 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

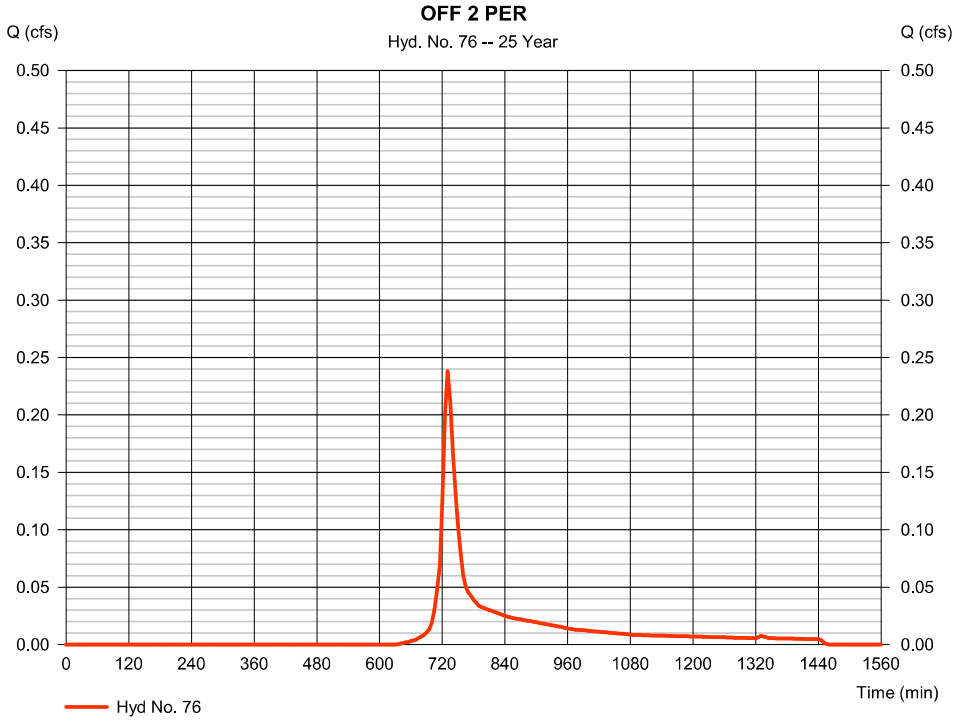


Hydrograph Report

Hyd. No. 76

OFF 2 PER

Hydrograph type	= SCS Runoff	Peak discharge	= 0.238 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 984 cuft
Drainage area	= 0.140 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

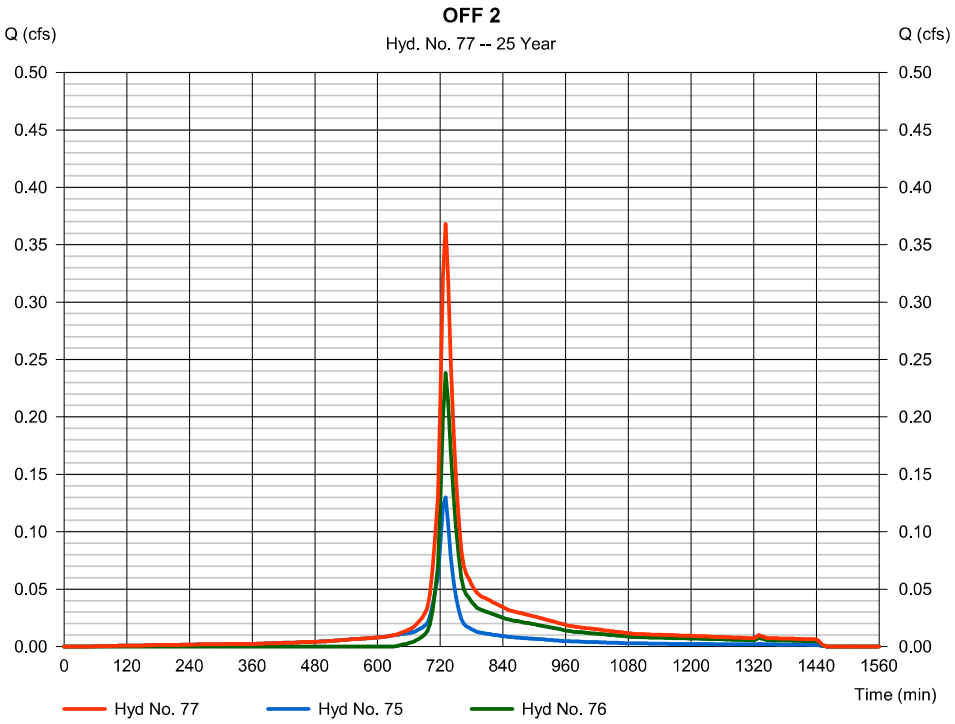


Hydrograph Report

Hyd. No. 77

OFF 2

Hydrograph type	= Combine	Peak discharge	= 0.368 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,582 cuft
Inflow hyds.	= 75, 76	Contrib. drain. area	= 0.170 ac

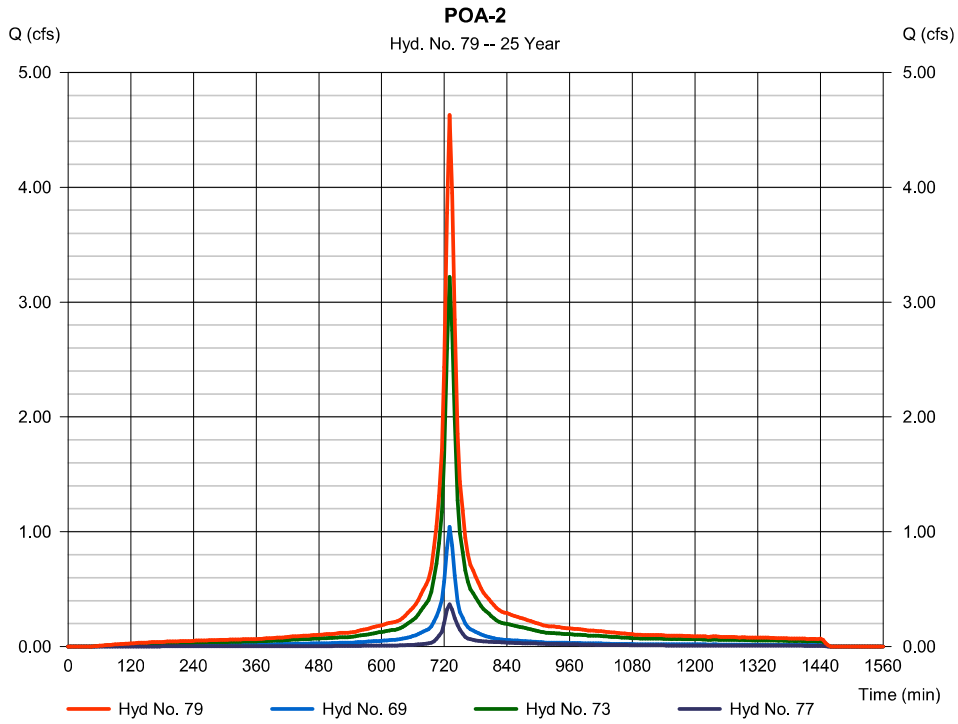


Hydrograph Report

Hyd. No. 79

POA-2

Hydrograph type	= Combine	Peak discharge	= 4.629 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 19,236 cuft
Inflow hyds.	= 69, 73, 77	Contrib. drain. area	= 0.220 ac



Hydrograph Summary Report

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

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	12.83	5	730	54,347	-----	----	-----	EX-DA-1 Imp.
2	SCS Runoff	0.096	5	730	354	-----	----	-----	EX-DA-1 Per
3	Combine	12.93	5	730	54,701	1, 2	----	-----	Ex-DA-1
5	SCS Runoff	0.751	5	730	3,181	-----	----	-----	OFF-1 Imp.
6	SCS Runoff	0.868	5	730	3,186	-----	----	-----	OFF-1 Per.
7	Combine	1.619	5	730	6,367	5, 6	----	-----	OFF-1
9	Combine	14.55	5	730	61,069	3, 7,	----	-----	EX-POA-1
12	SCS Runoff	2.316	5	730	9,809	-----	----	-----	EX-DA-2 Imp.
13	SCS Runoff	1.931	5	730	7,239	-----	----	-----	EX-DA-2 Per.
14	Combine	4.247	5	730	17,048	12, 13	----	-----	EX-DA-2
16	SCS Runoff	0.456	5	730	1,718	-----	----	-----	EX-DA-2 Undist.
18	SCS Runoff	2.879	5	730	12,195	-----	----	-----	EX-DA-2 UD Imp.
19	SCS Runoff	4.030	5	730	15,023	-----	----	-----	EX-DA-2 UD Per
20	Combine	6.909	5	730	27,218	18, 19	----	-----	EX-DA-2 UD
22	SCS Runoff	0.343	5	730	1,591	-----	----	-----	EX-OFF 2 UD DIS IMP
23	SCS Runoff	0.530	5	730	2,124	-----	----	-----	EX-OFF 2 UD DIS PER
24	Combine	0.873	5	730	3,715	22, 23	----	-----	EX-OFF DA 2 UD DIS
26	SCS Runoff	0.125	5	730	530	-----	----	-----	EX-DA-2 UD Undist. Imp.
27	SCS Runoff	0.911	5	730	3,436	-----	----	-----	EX-DA-2 UD Undist. Per.
28	Combine	1.036	5	730	3,966	26, 27	----	-----	EX-DA-2 UD Undist.
30	SCS Runoff	1.565	5	730	6,628	-----	----	-----	OFF-2 Imp.
31	SCS Runoff	2.026	5	730	7,434	-----	----	-----	OFF-2 Per.
32	Combine	3.590	5	730	14,062	30, 31	----	-----	OFF-2
34	SCS Runoff	1.753	5	730	7,423	-----	----	-----	EX-OFF-UD-2 Imp.
35	SCS Runoff	2.894	5	730	10,620	-----	----	-----	EX-OFF-UD-2 Per.
36	Combine	4.646	5	730	18,044	34, 35	----	-----	EX-OFF-UD-2
38	Combine	8.293	5	730	32,828	14, 16, 32,	----	-----	Basin
39	Reservoir	7.147	5	735	32,746	38	197.36	1,827	Exist. Basin

Hydrograph Summary Report

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

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
41	Combine	12.03	5	730	47,980	14, 20, 24,	----	-----	Within LOD
42	Combine	9.728	5	730	37,790	16, 28, 32, 36,	----	-----	Outside of LOD
44	Combine	18.96	5	730	81,973	20, 28, 36, 39,	----	-----	EX-POA-2
46	SCS Runoff	9.138	5	730	38,706	-----	----	-----	DA-1 Imp.
47	SCS Runoff	3.730	5	730	13,689	-----	----	-----	DA-1 Per.
48	Combine	12.87	5	730	52,394	46, 47	----	-----	DA-1A
50	SCS Runoff	0.125	5	730	530	-----	----	-----	UNDIST. Imp.
51	SCS Runoff	1.468	5	730	5,536	-----	----	-----	UNDIST. Per.
52	Combine	1.593	5	730	6,066	50, 51	----	-----	UNDIST.
54	SCS Runoff	4.256	5	730	18,027	-----	----	-----	OFF 1 Imp.
55	SCS Runoff	5.948	5	730	21,831	-----	----	-----	OFF 1 Per.
56	Combine	10.20	5	730	39,858	54, 55	----	-----	OFF 1
58	SCS Runoff	4.068	5	730	17,232	-----	----	-----	Roof Area D
60	Combine	28.73	5	730	115,551	48, 52, 56, 58,	----	-----	TOTAL TO BASIN
61	Reservoir	9.366	5	750	115,537	60	199.73	38,736	BASIN
63	SCS Runoff	1.690	5	730	7,158	-----	----	-----	DA-UD 1 Imp.
64	SCS Runoff	1.029	5	730	3,776	-----	----	-----	DA-1 UD Per.
65	Combine	2.719	5	730	10,934	63, 64	----	-----	DA-1 UD
67	Combine	10.30	5	745	126,471	61, 65,	----	-----	POA-1
69	SCS Runoff	1.377	5	730	5,832	-----	----	-----	Roof Area UD
71	SCS Runoff	3.443	5	730	14,581	-----	----	-----	DA-2 Imp.
72	SCS Runoff	1.061	5	730	3,894	-----	----	-----	DA-2 Per.
73	Combine	4.504	5	730	18,475	71, 72	----	-----	DA-2
75	SCS Runoff	0.171	5	730	795	-----	----	-----	OFF 2 IMP
76	SCS Runoff	0.412	5	730	1,652	-----	----	-----	OFF 2 PER
77	Combine	0.584	5	730	2,447	75, 76	----	-----	OFF 2
79	Combine	6.464	5	730	26,755	69, 73, 77,	----	-----	POA-2

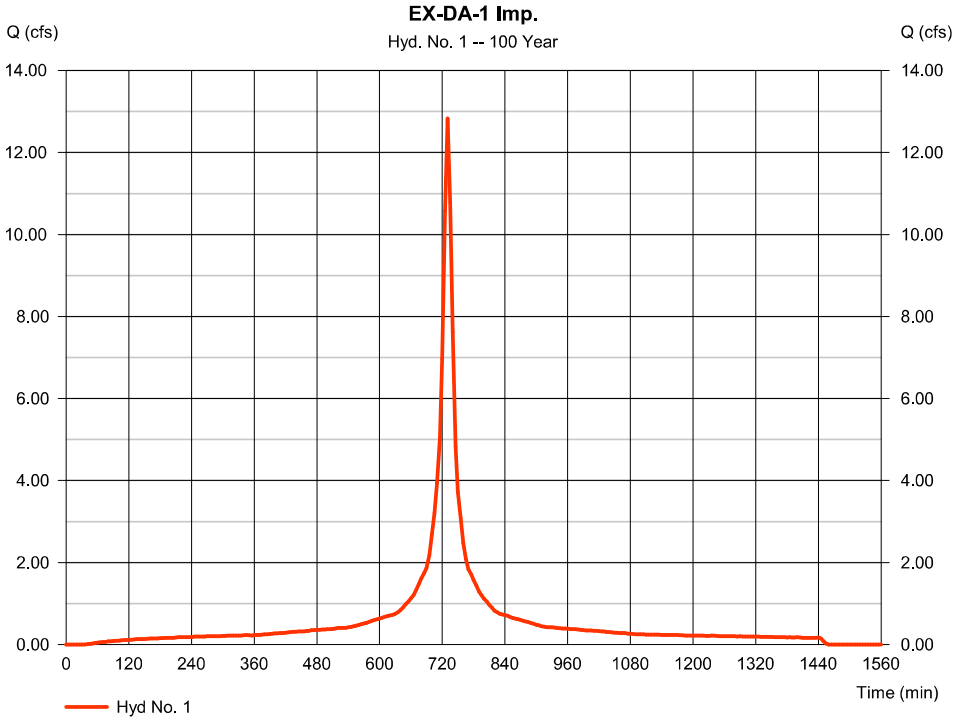
2020-08- Exist vs Prop.gpw | Return Period: 100 Year | Wednesday, 08 / 12 / 2020

Hydrograph Report

Hyd. No. 1

EX-DA-1 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 12.83 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 54,347 cuft
Drainage area	= 2.050 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

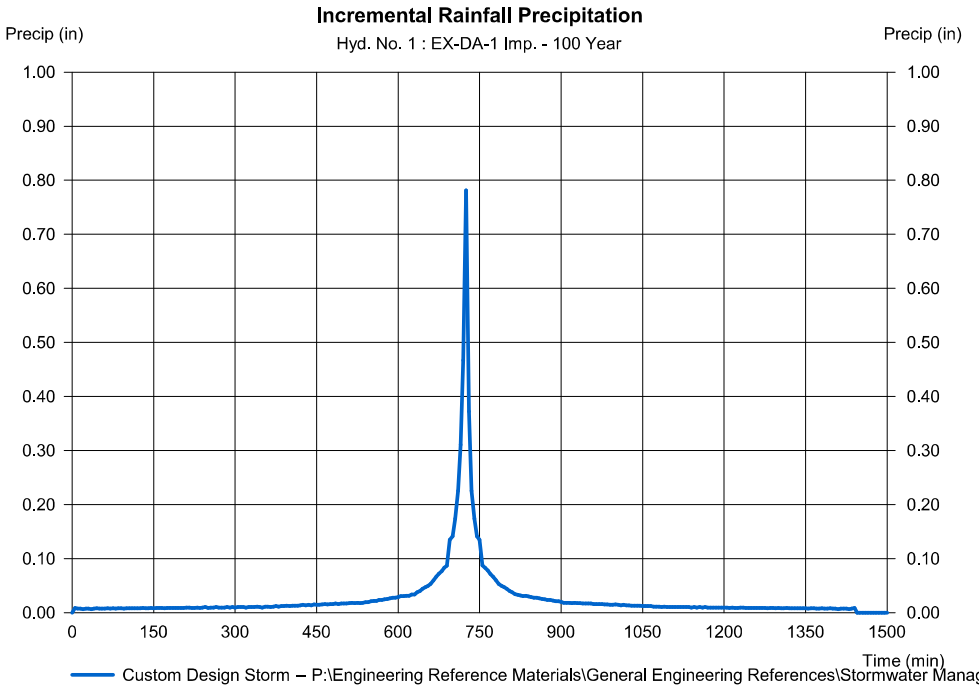


Precipitation Report

Hyd. No. 1

EX-DA-1 Imp.

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

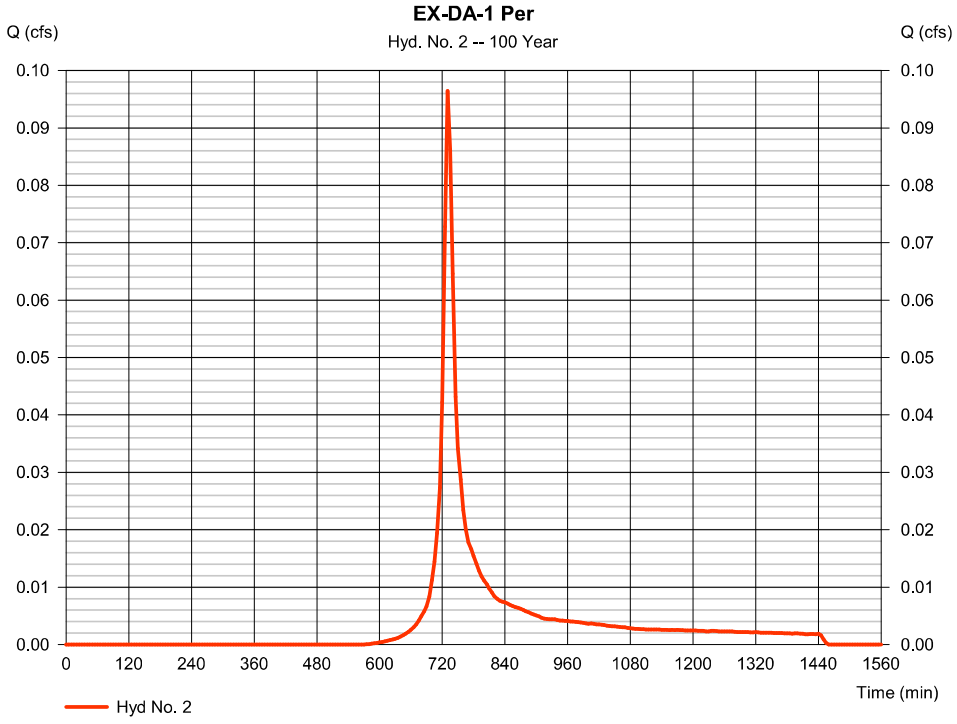


Hydrograph Report

Hyd. No. 2

EX-DA-1 Per

Hydrograph type	= SCS Runoff	Peak discharge	= 0.096 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 354 cuft
Drainage area	= 0.030 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

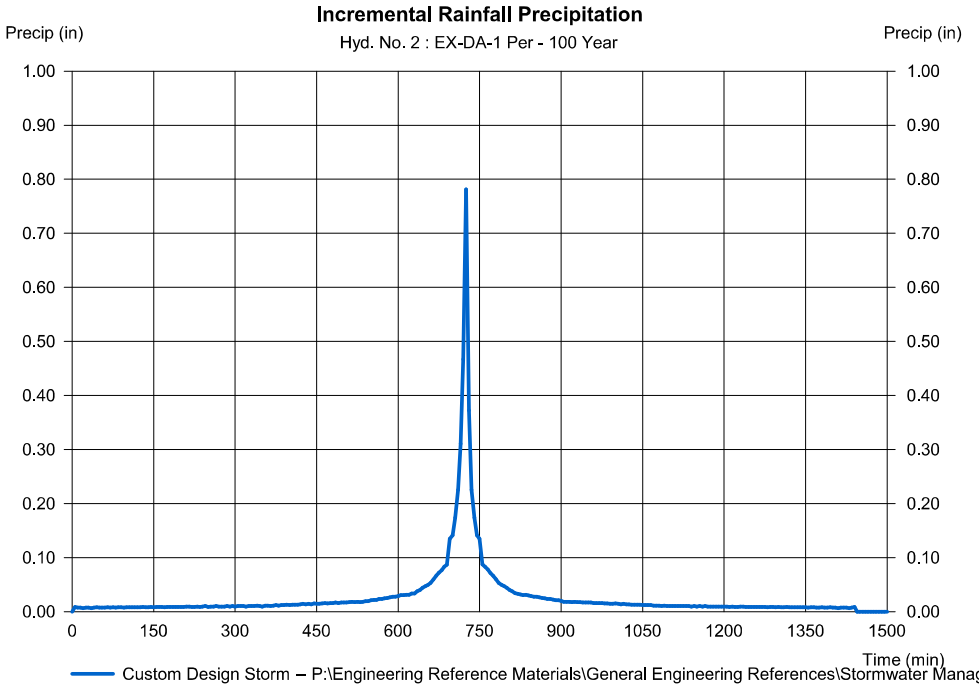


Precipitation Report

Hyd. No. 2

EX-DA-1 Per

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

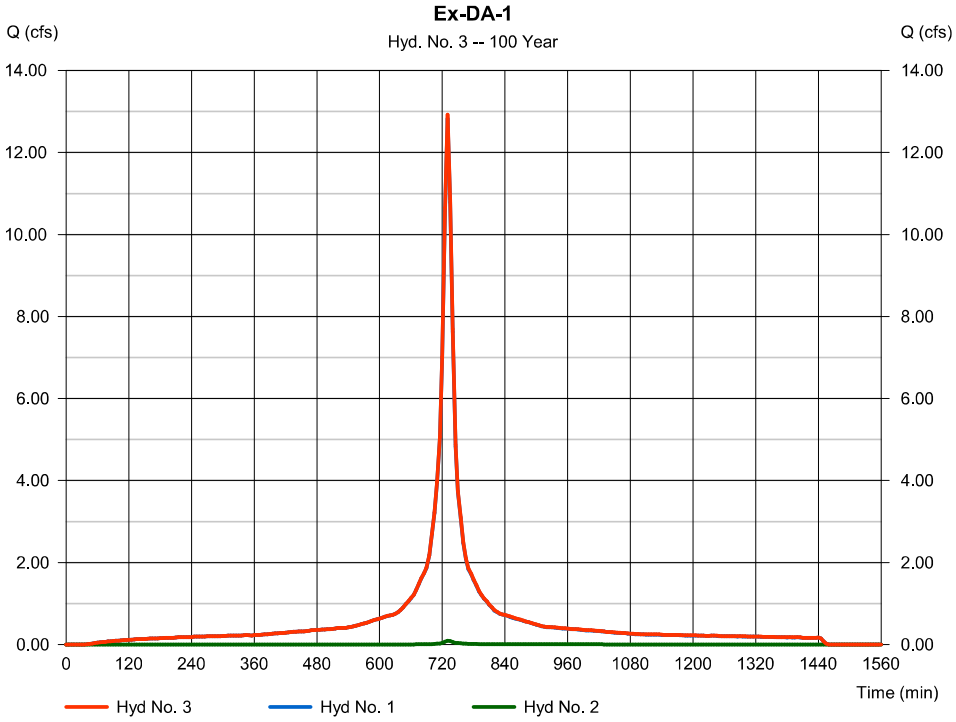


Hydrograph Report

Hyd. No. 3

Ex-DA-1

Hydrograph type	= Combine	Peak discharge	= 12.93 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 54,701 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 2.080 ac

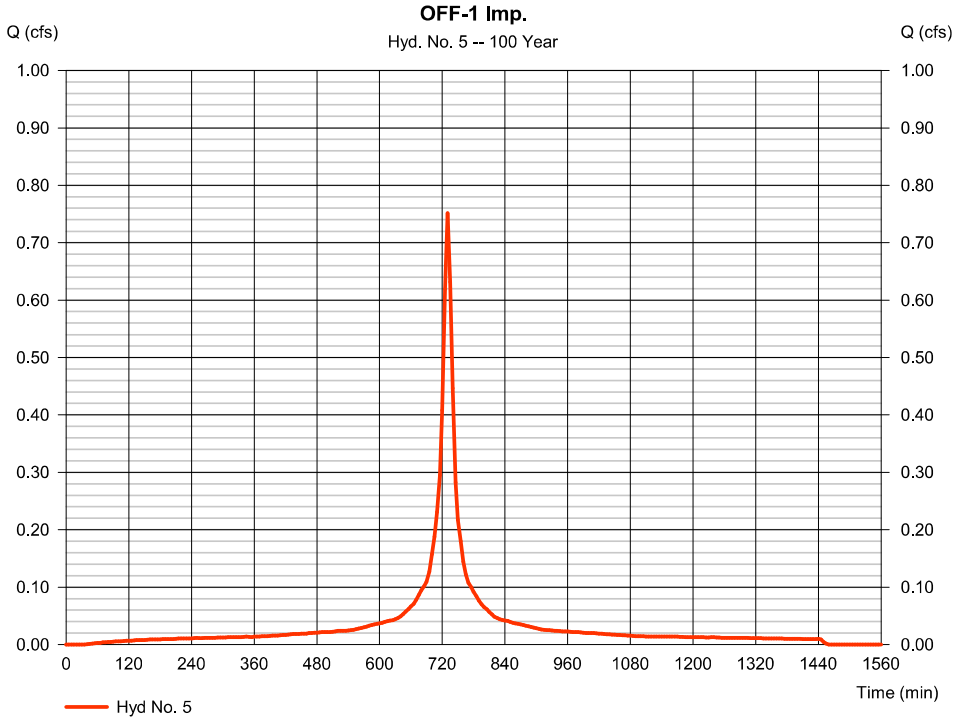


Hydrograph Report

Hyd. No. 5

OFF-1 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.751 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 3,181 cuft
Drainage area	= 0.120 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

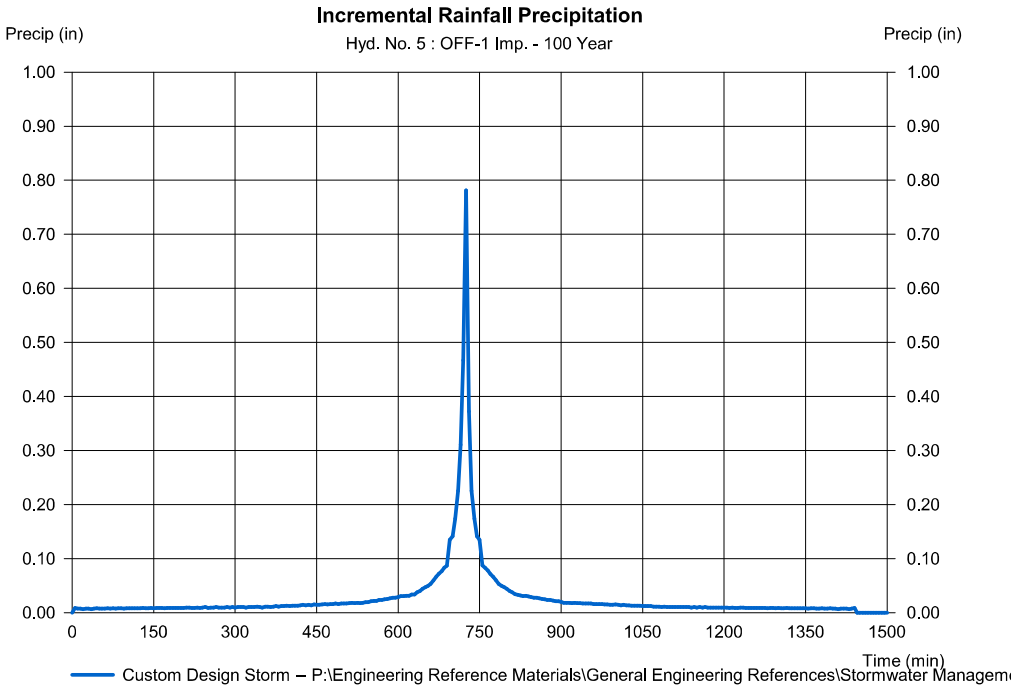


Precipitation Report

Hyd. No. 5

OFF-1 Imp.

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

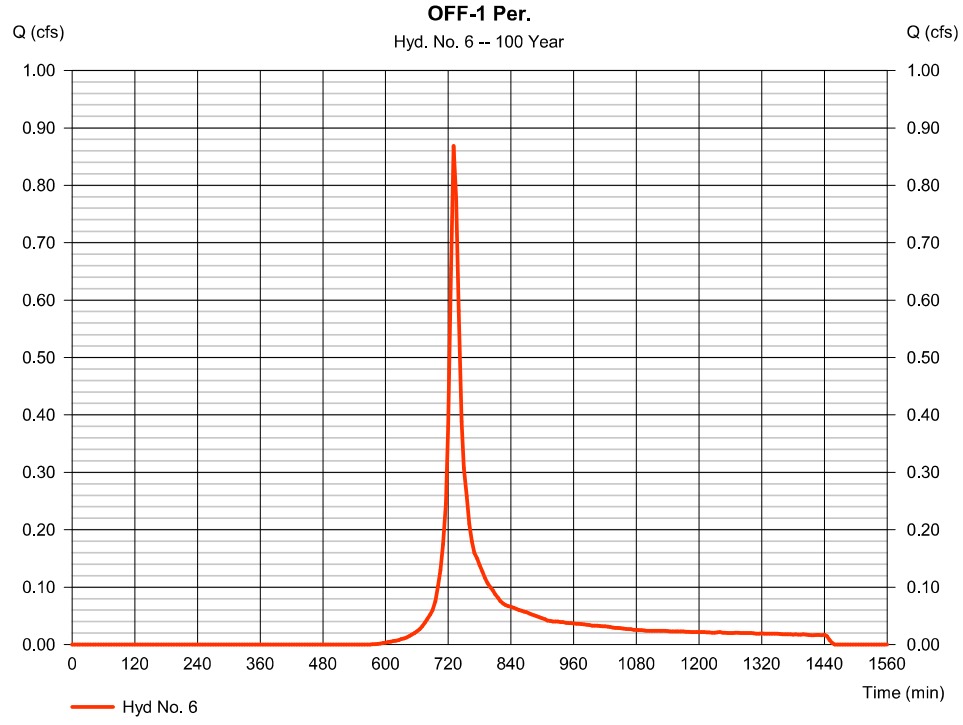


Hydrograph Report

Hyd. No. 6

OFF-1 Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.868 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 3,186 cuft
Drainage area	= 0.270 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

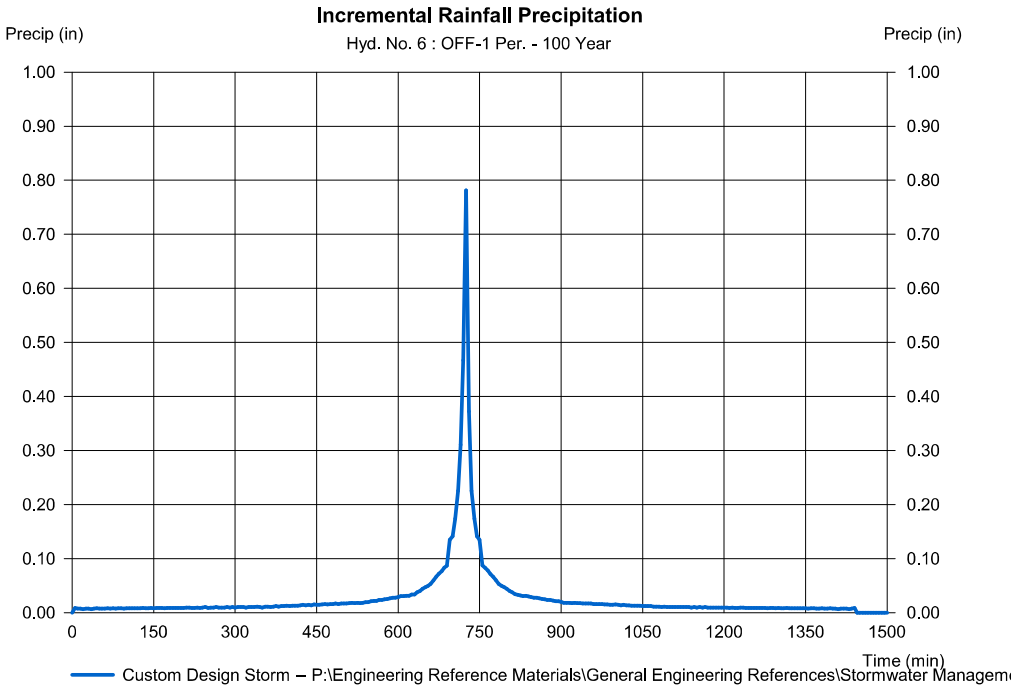


Precipitation Report

Hyd. No. 6

OFF-1 Per.

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

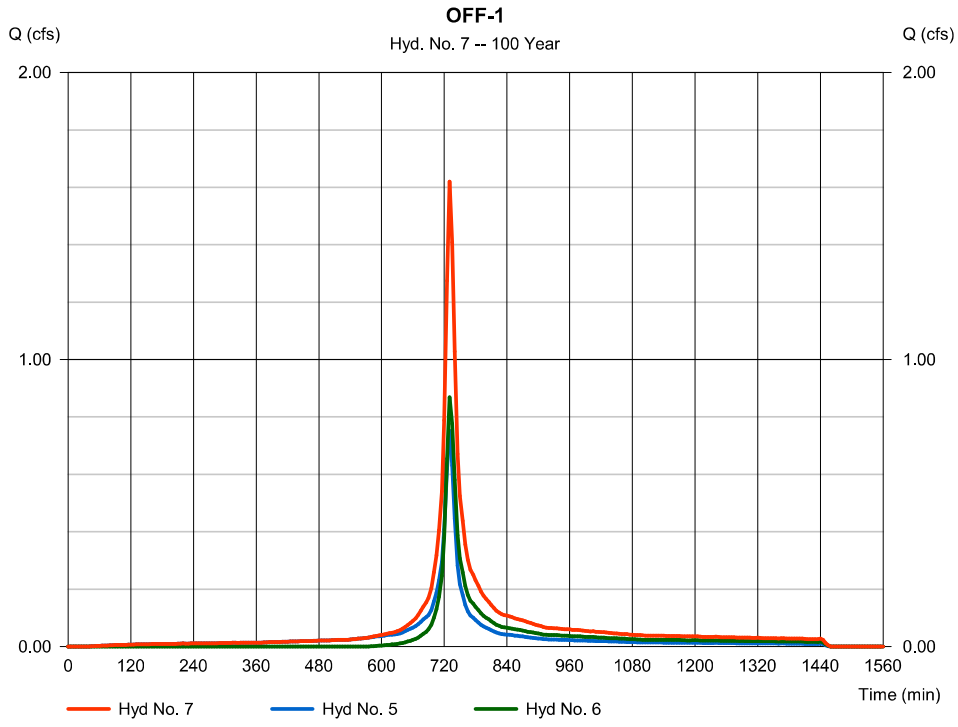


Hydrograph Report

Hyd. No. 7

OFF-1

Hydrograph type	= Combine	Peak discharge	= 1.619 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 6,367 cuft
Inflow hyds.	= 5, 6	Contrib. drain. area	= 0.390 ac

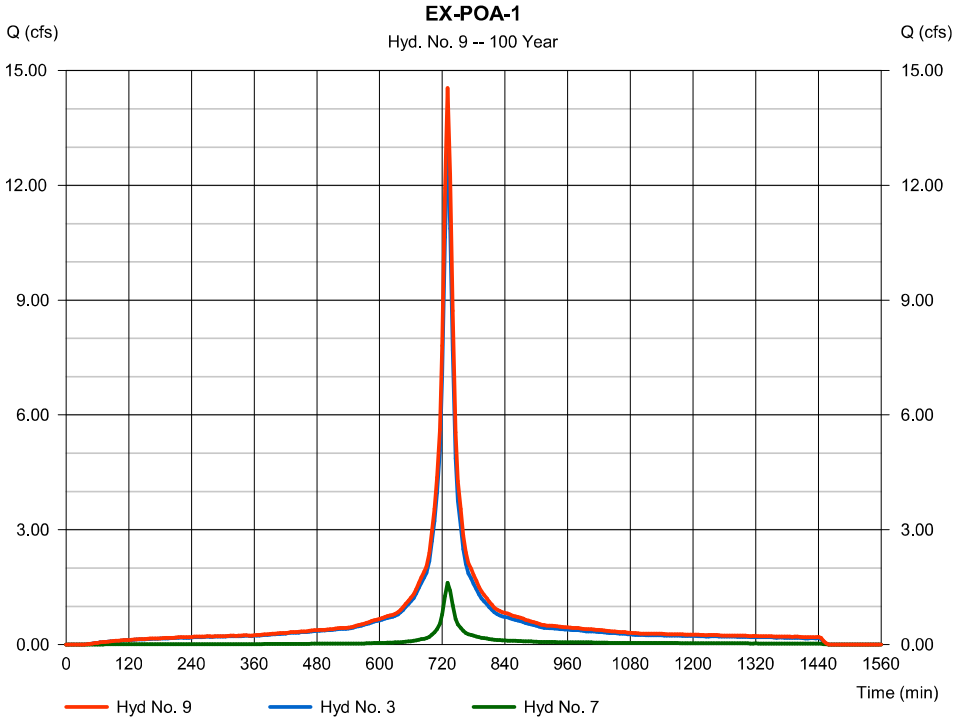


Hydrograph Report

Hyd. No. 9

EX-POA-1

Hydrograph type	= Combine	Peak discharge	= 14.55 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 61,069 cuft
Inflow hyds.	= 3, 7	Contrib. drain. area	= 0.000 ac

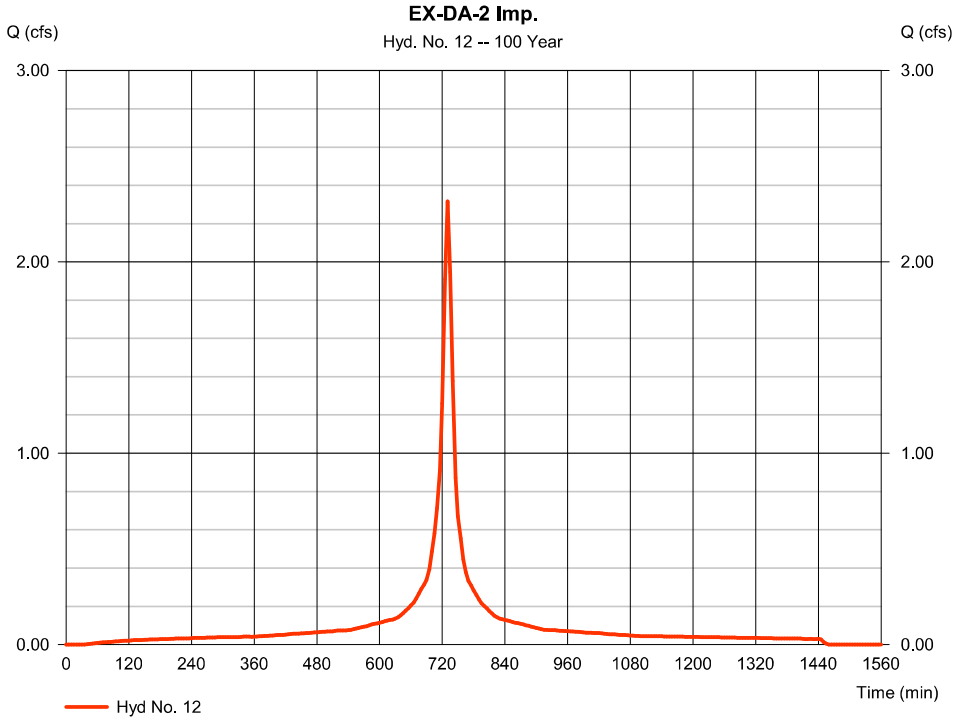


Hydrograph Report

Hyd. No. 12

EX-DA-2 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 2.316 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 9,809 cuft
Drainage area	= 0.370 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

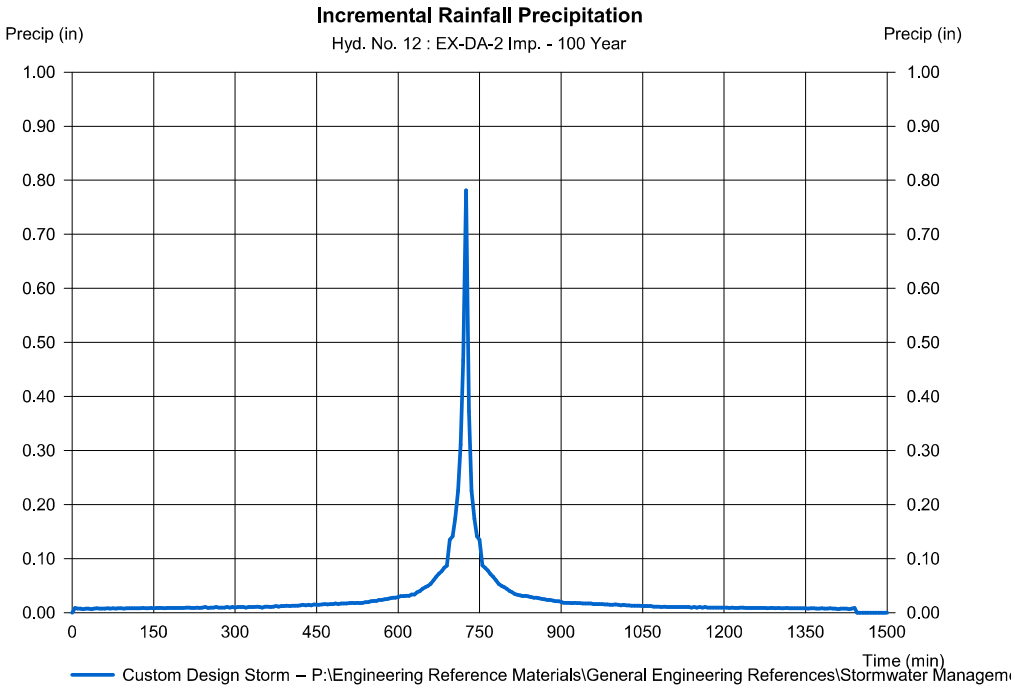


Precipitation Report

Hyd. No. 12

EX-DA-2 Imp.

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

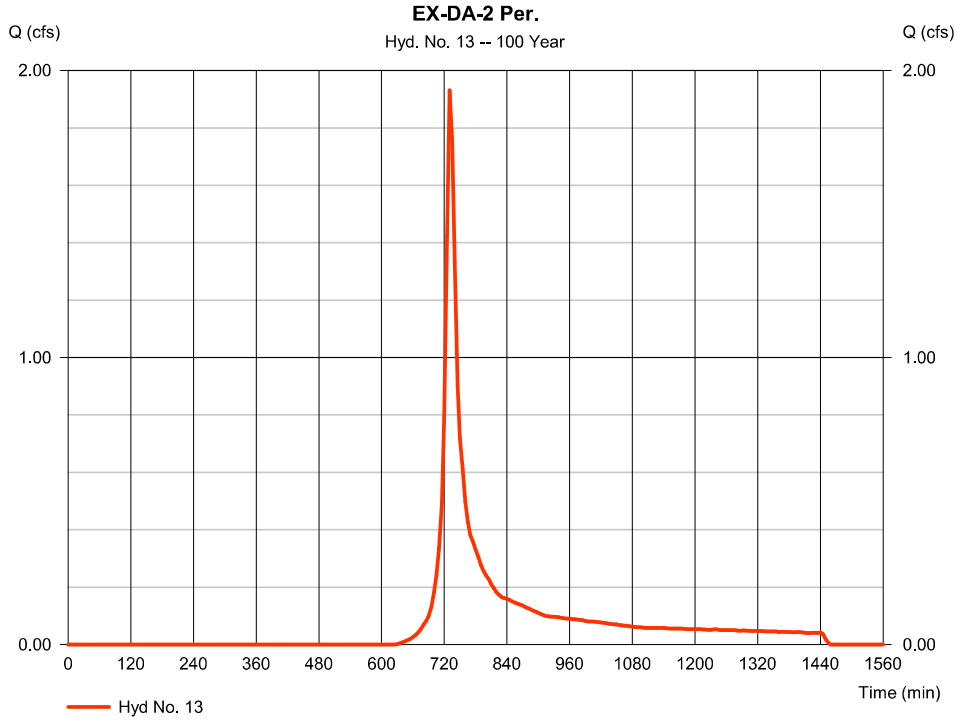


Hydrograph Report

Hyd. No. 13

EX-DA-2 Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 1.931 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 7,239 cuft
Drainage area	= 0.730 ac	Curve number	= 56
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

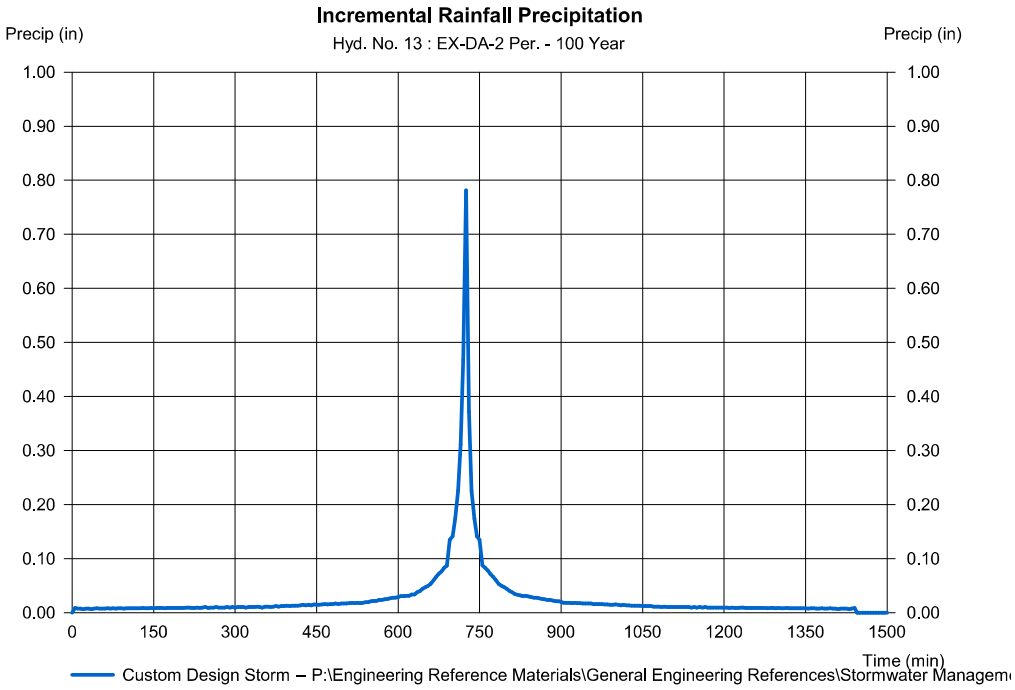


Precipitation Report

Hyd. No. 13

EX-DA-2 Per.

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

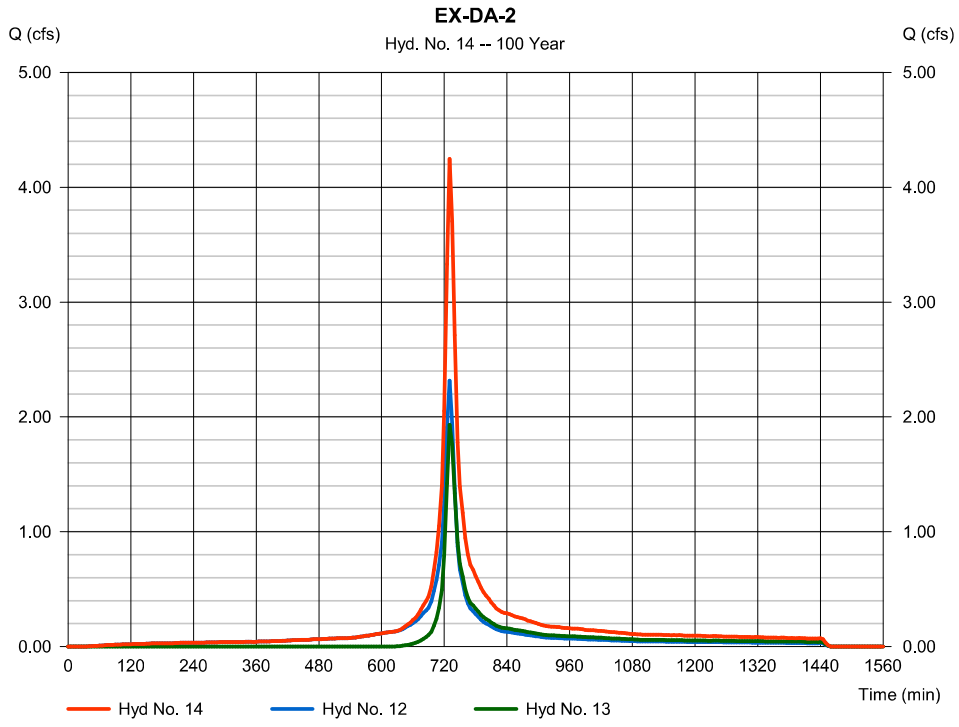


Hydrograph Report

Hyd. No. 14

EX-DA-2

Hydrograph type	= Combine	Peak discharge	= 4.247 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 17,048 cuft
Inflow hyds.	= 12, 13	Contrib. drain. area	= 1.100 ac

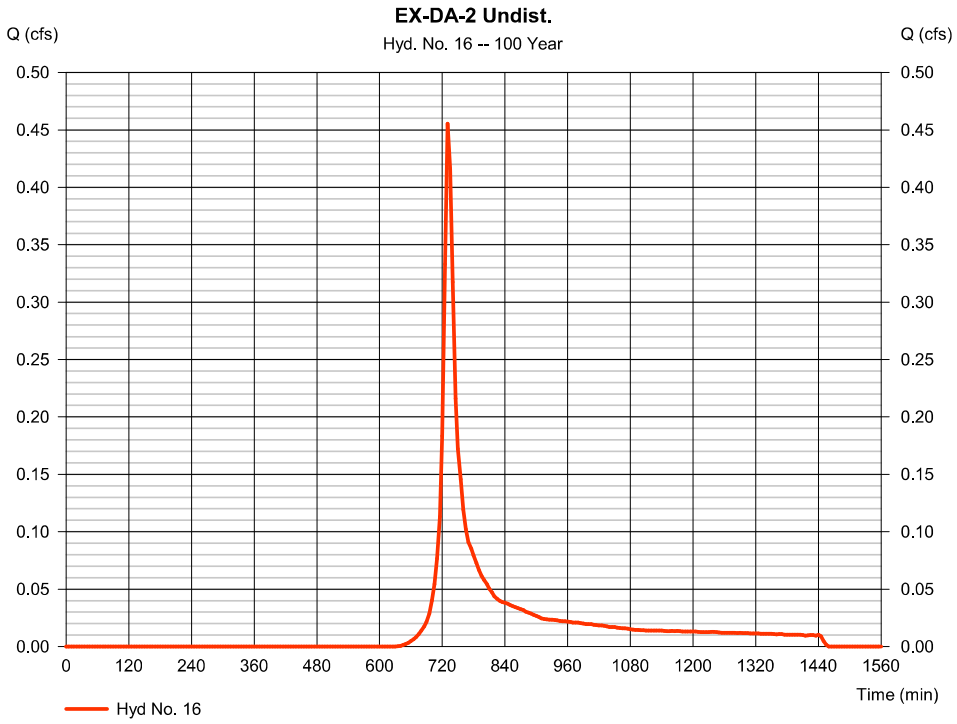


Hydrograph Report

Hyd. No. 16

EX-DA-2 Undist.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.456 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,718 cuft
Drainage area	= 0.180 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

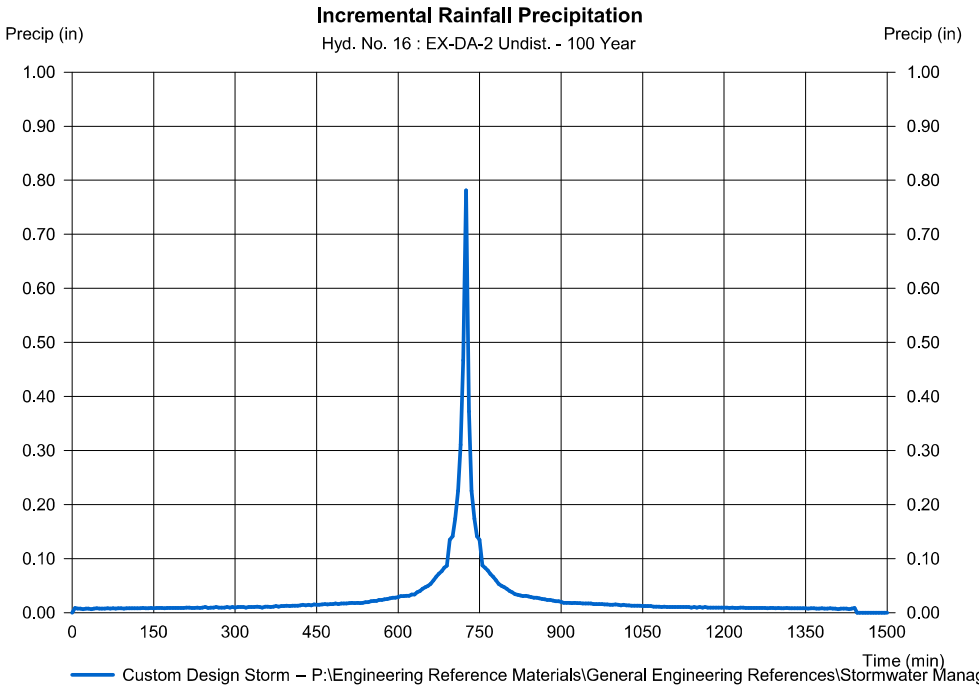


Precipitation Report

Hyd. No. 16

EX-DA-2 Undist.

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

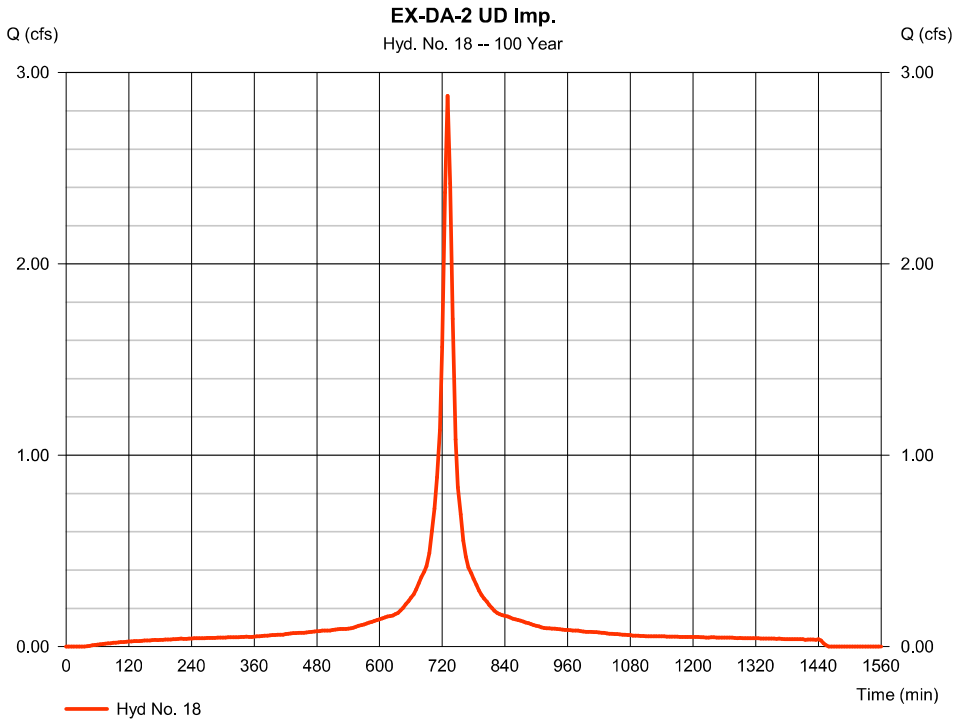


Hydrograph Report

Hyd. No. 18

EX-DA-2 UD Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 2.879 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 12,195 cuft
Drainage area	= 0.460 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

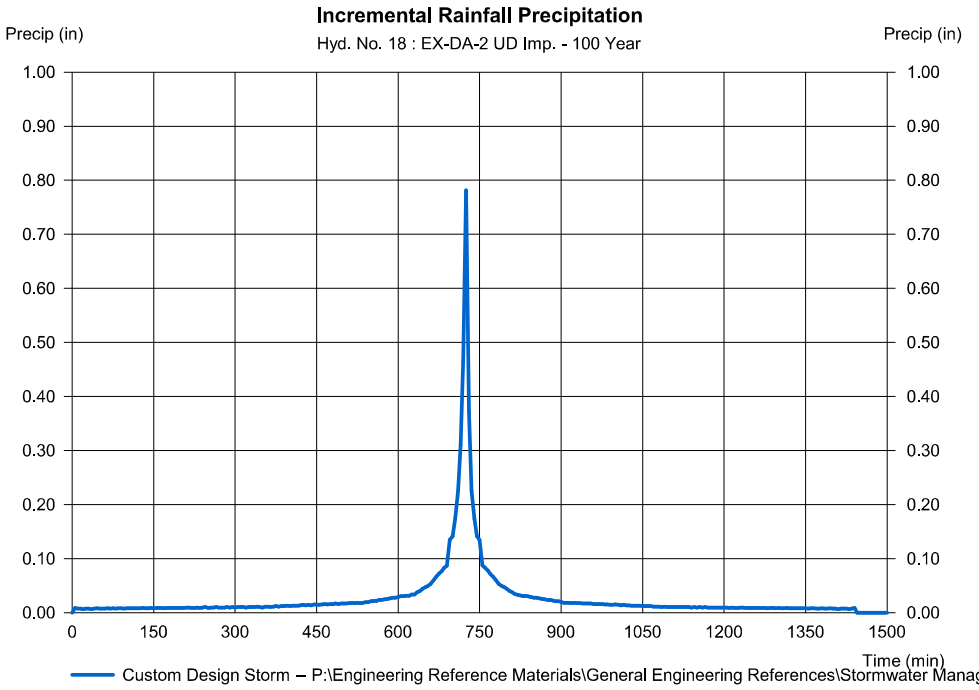


Precipitation Report

Hyd. No. 18

EX-DA-2 UD Imp.

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

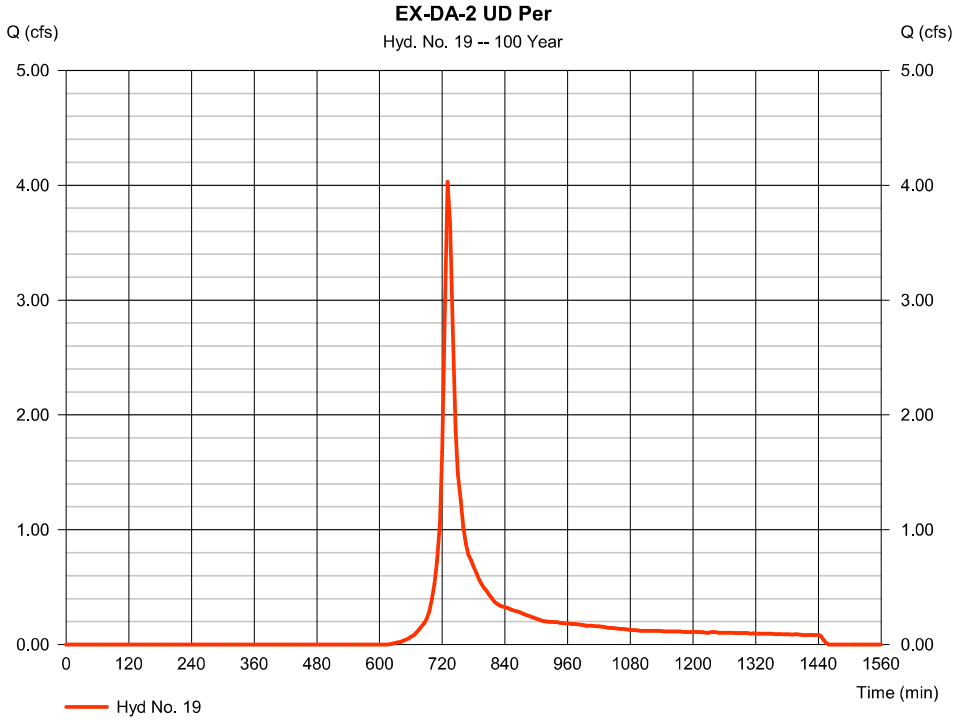


Hydrograph Report

Hyd. No. 19

EX-DA-2 UD Per

Hydrograph type	= SCS Runoff	Peak discharge	= 4.030 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 15,023 cuft
Drainage area	= 1.460 ac	Curve number	= 57
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

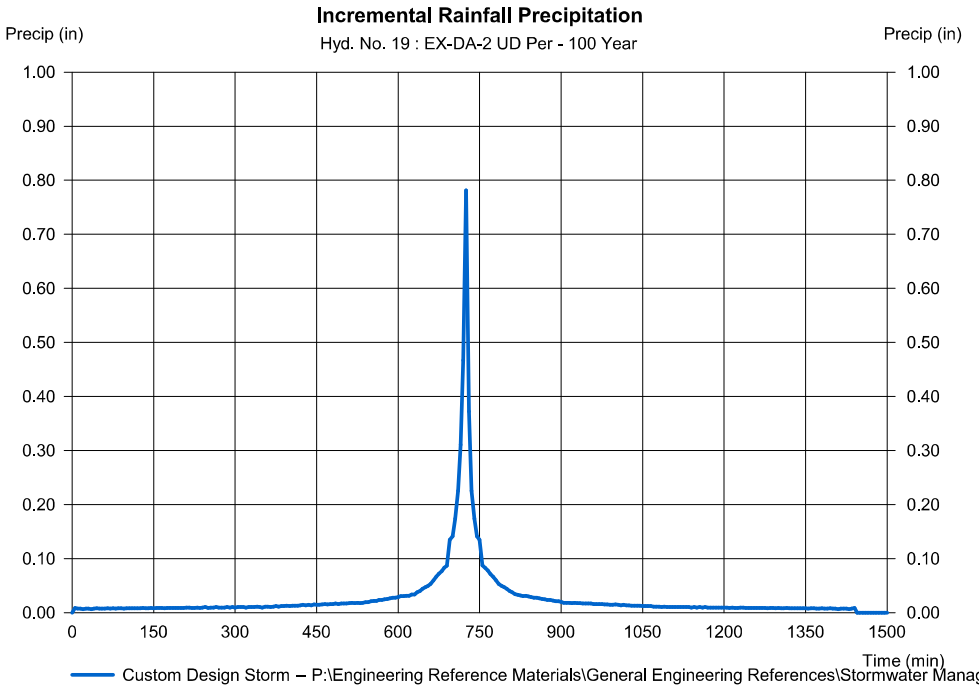


Precipitation Report

Hyd. No. 19

EX-DA-2 UD Per

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwate		

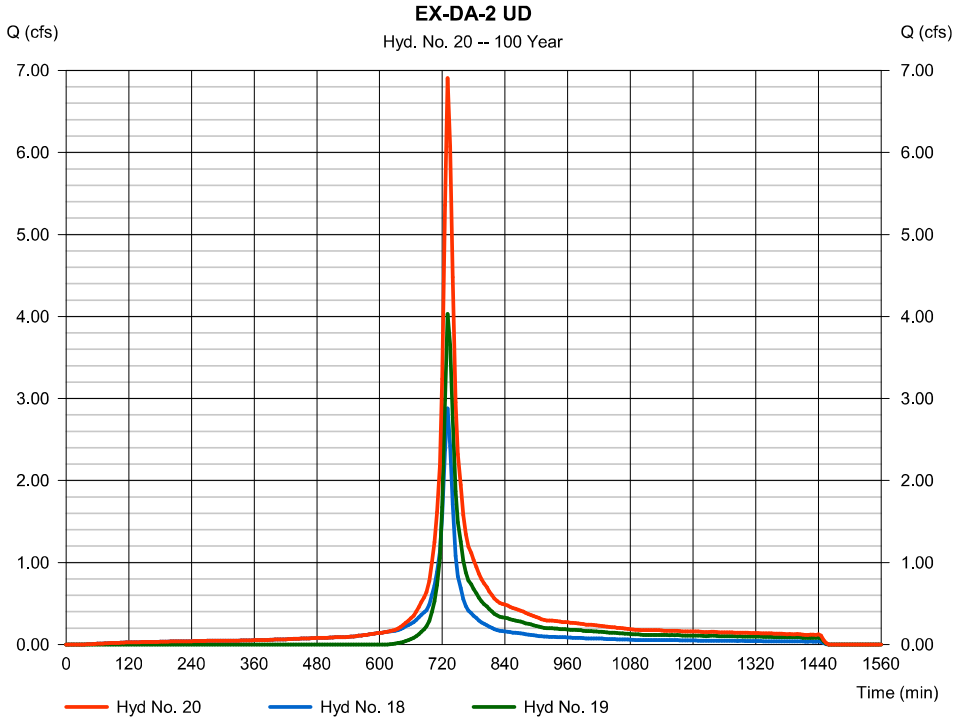


Hydrograph Report

Hyd. No. 20

EX-DA-2 UD

Hydrograph type	= Combine	Peak discharge	= 6.909 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 27,218 cuft
Inflow hyds.	= 18, 19	Contrib. drain. area	= 1.920 ac

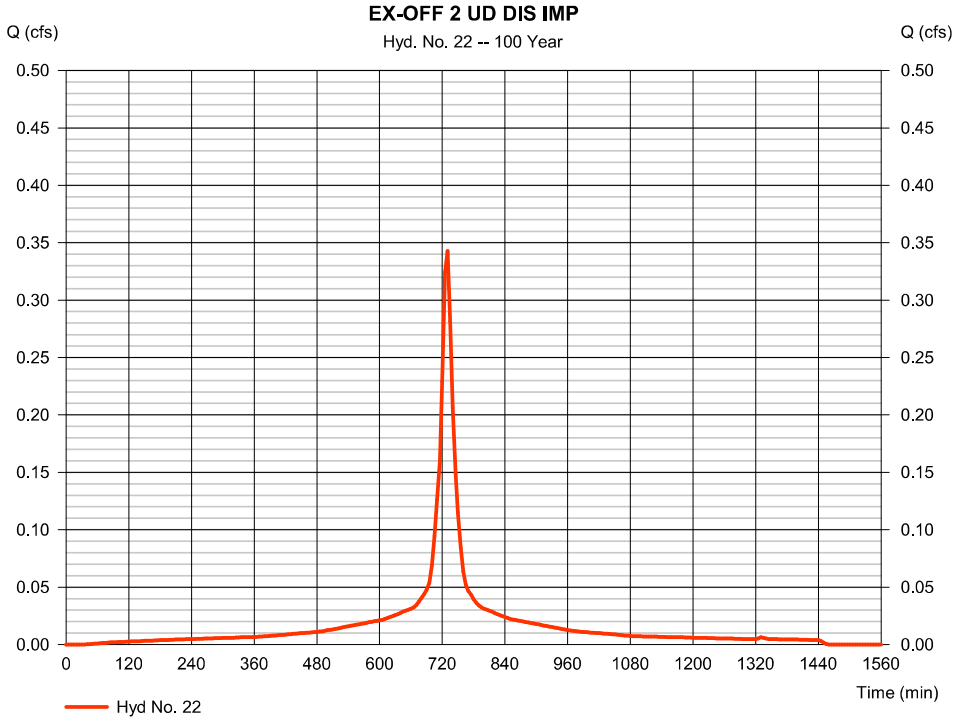


Hydrograph Report

Hyd. No. 22

EX-OFF 2 UD DIS IMP

Hydrograph type	= SCS Runoff	Peak discharge	= 0.343 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,591 cuft
Drainage area	= 0.060 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

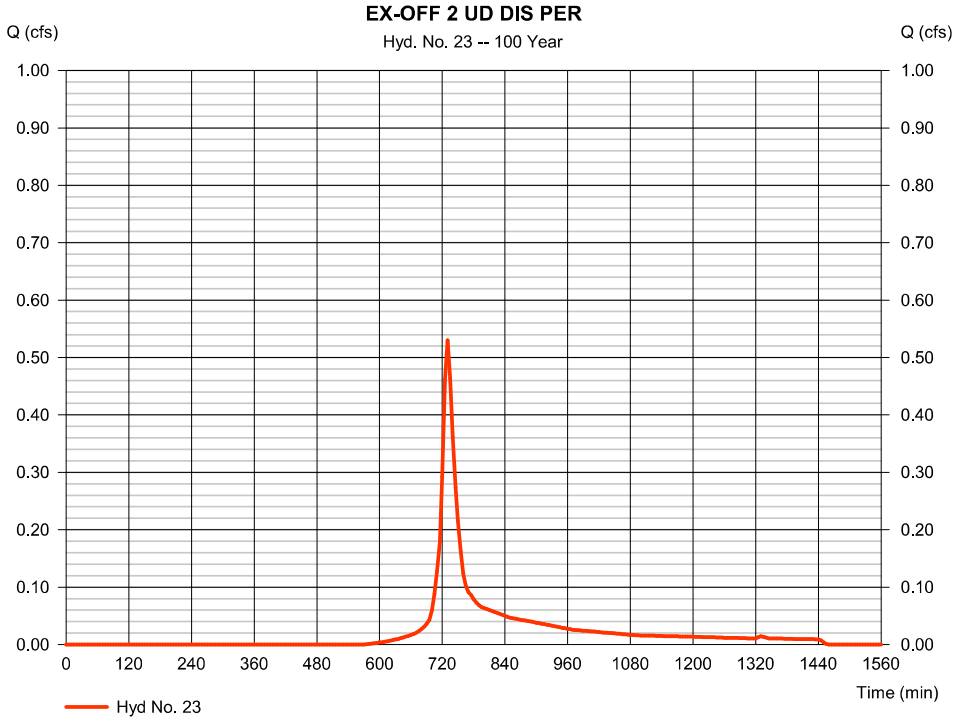


Hydrograph Report

Hyd. No. 23

EX-OFF 2 UD DIS PER

Hydrograph type	= SCS Runoff	Peak discharge	= 0.530 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,124 cuft
Drainage area	= 0.180 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

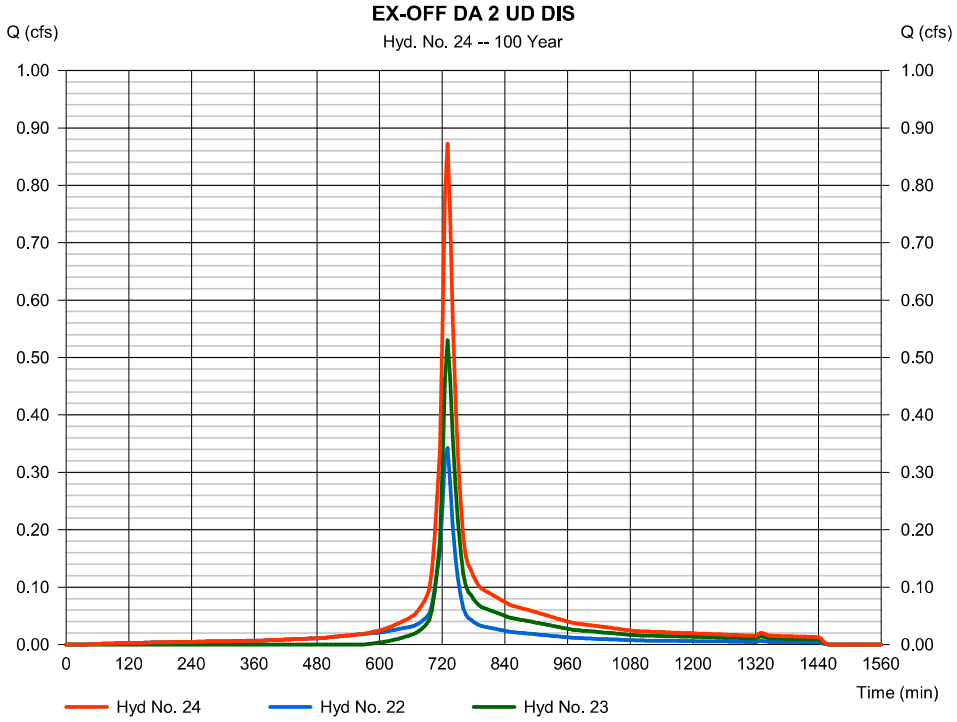


Hydrograph Report

Hyd. No. 24

EX-OFF DA 2 UD DIS

Hydrograph type	= Combine	Peak discharge	= 0.873 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 3,715 cuft
Inflow hyds.	= 22, 23	Contrib. drain. area	= 0.240 ac

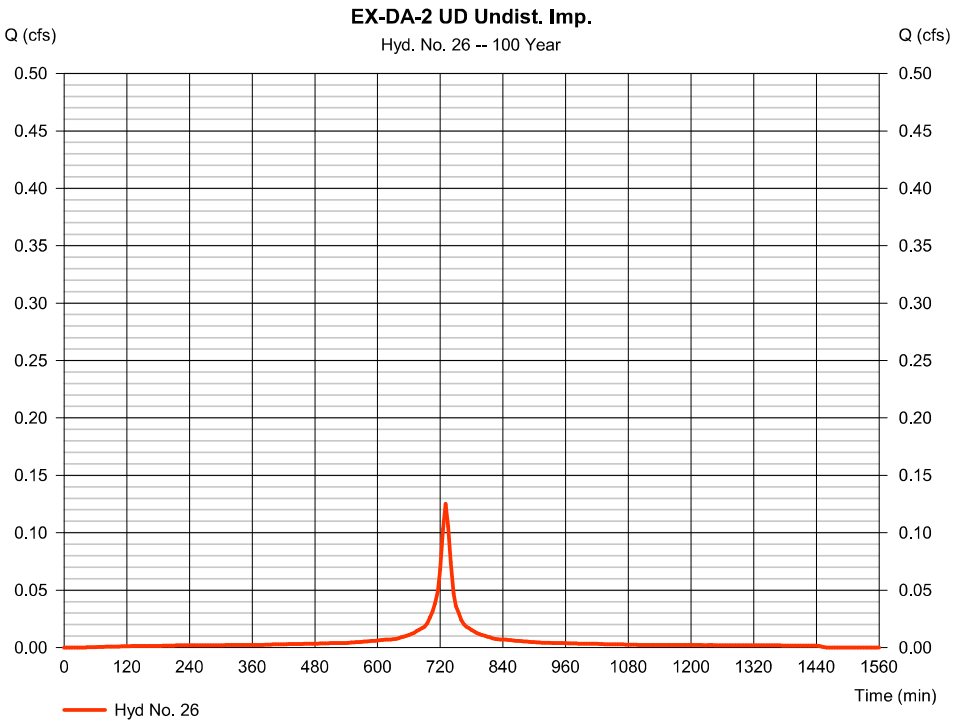


Hydrograph Report

Hyd. No. 26

EX-DA-2 UD Undist. Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.125 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 530 cuft
Drainage area	= 0.020 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

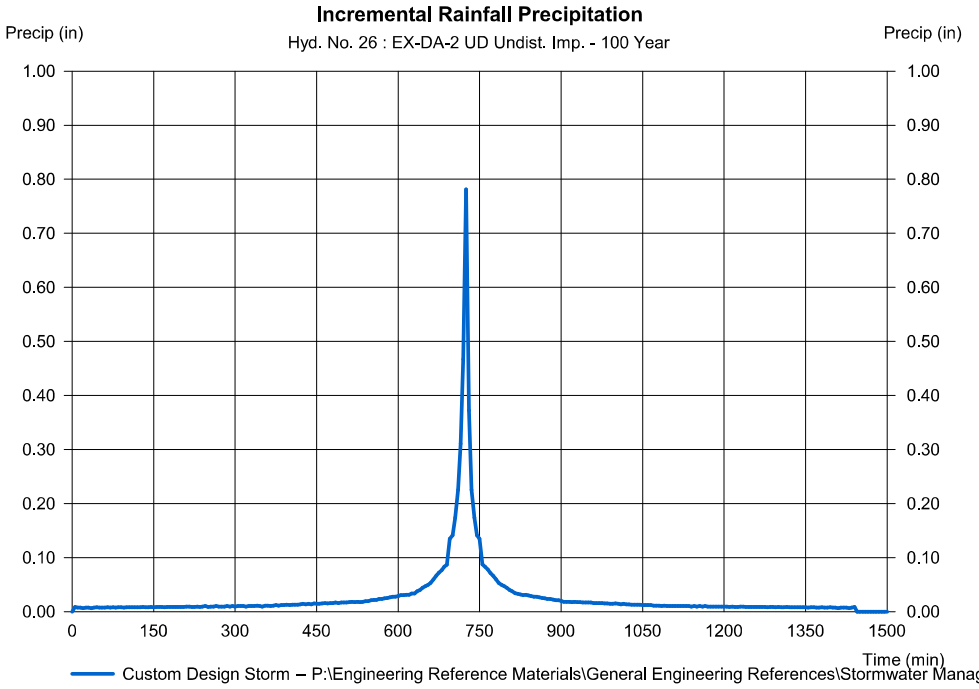


Precipitation Report

Hyd. No. 26

EX-DA-2 UD Undist. Imp.

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

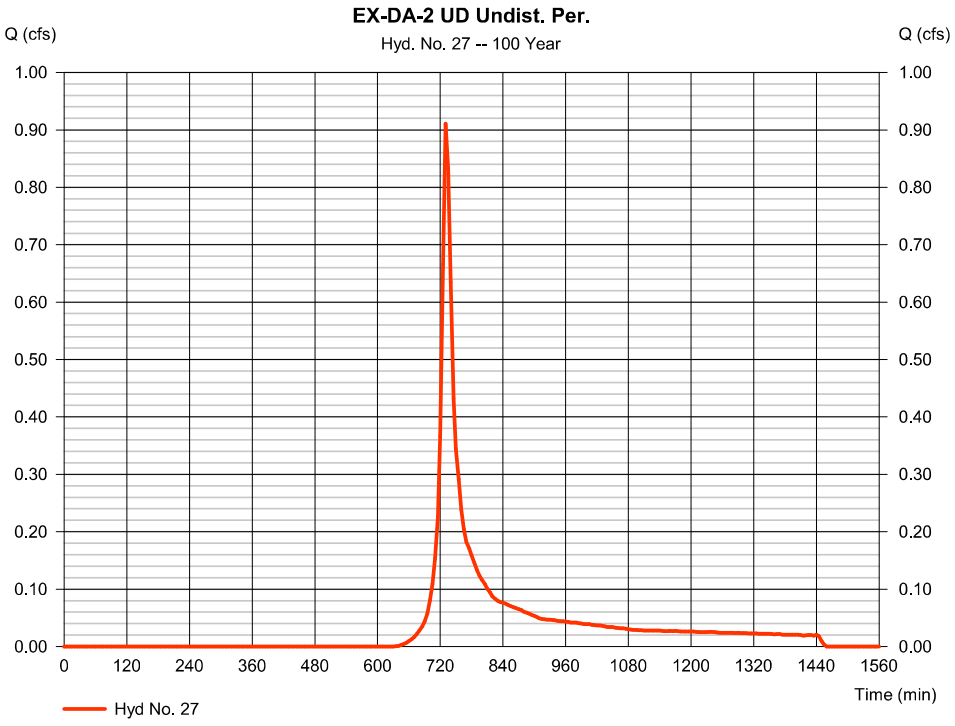


Hydrograph Report

Hyd. No. 27

EX-DA-2 UD Undist. Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.911 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 3,436 cuft
Drainage area	= 0.360 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

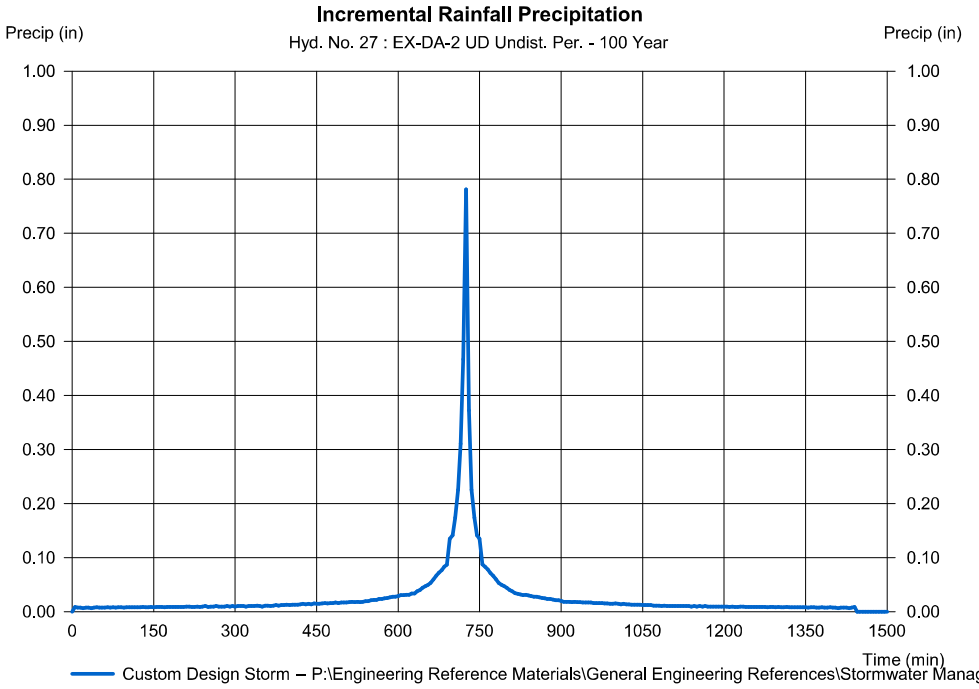


Precipitation Report

Hyd. No. 27

EX-DA-2 UD Undist. Per.

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

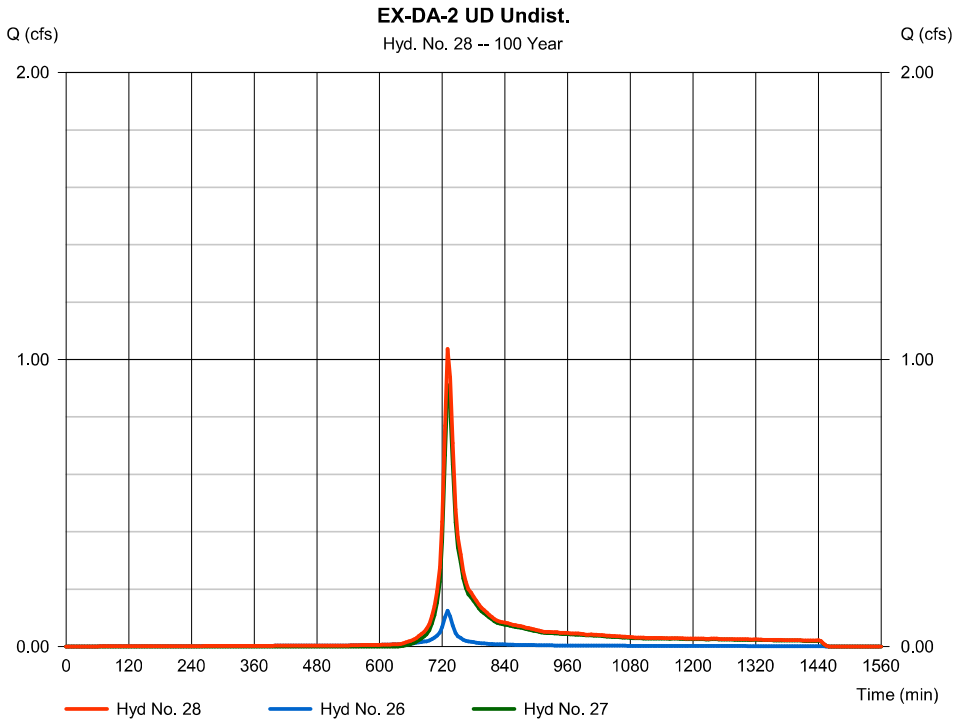


Hydrograph Report

Hyd. No. 28

EX-DA-2 UD Undist.

Hydrograph type	= Combine	Peak discharge	= 1.036 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 3,966 cuft
Inflow hyds.	= 26, 27	Contrib. drain. area	= 0.380 ac

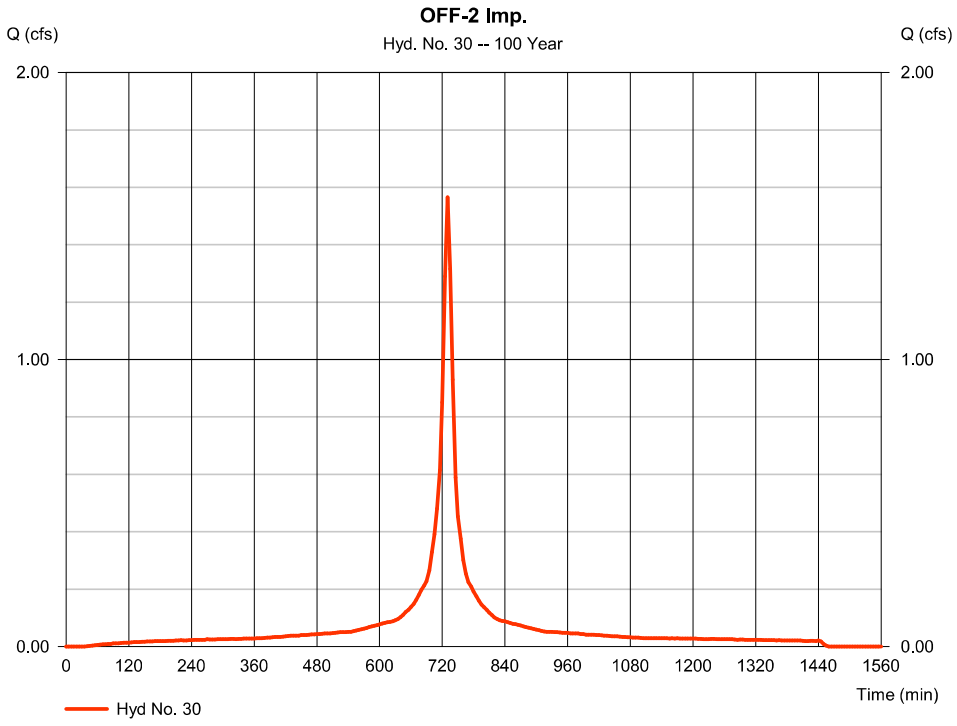


Hydrograph Report

Hyd. No. 30

OFF-2 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 1.565 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 6,628 cuft
Drainage area	= 0.250 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.80 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

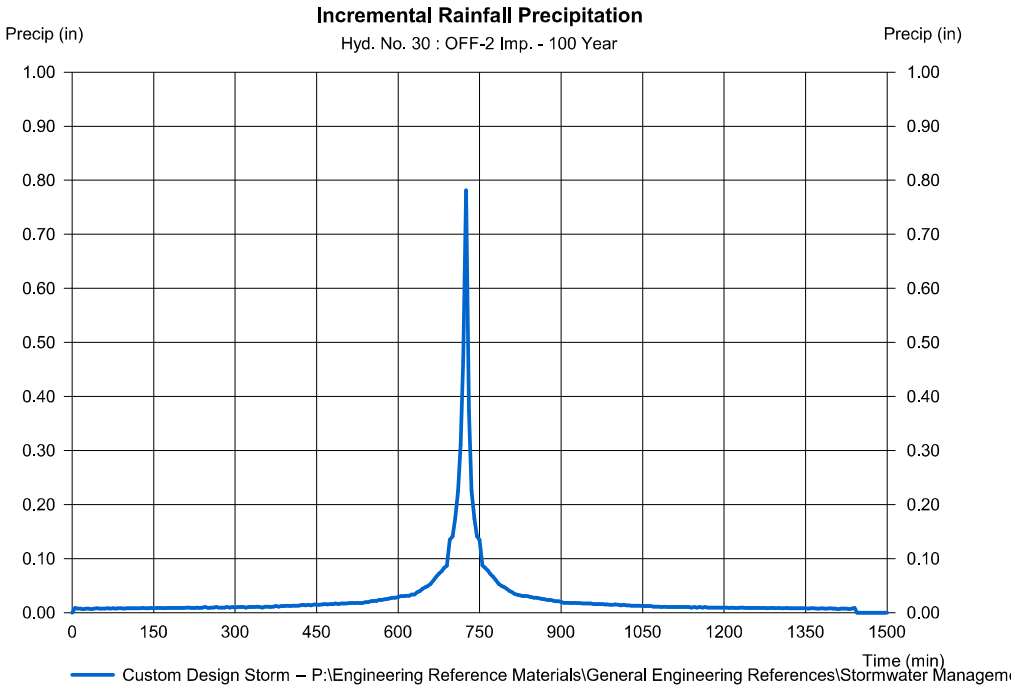


Precipitation Report

Hyd. No. 30

OFF-2 Imp.

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

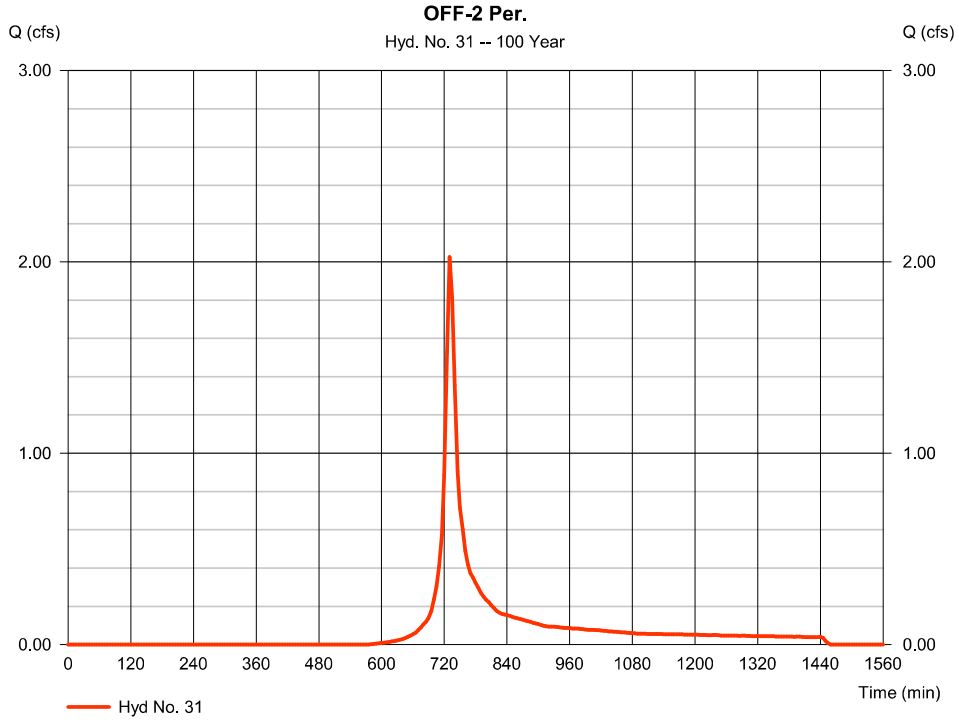


Hydrograph Report

Hyd. No. 31

OFF-2 Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 2.026 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 7,434 cuft
Drainage area	= 0.630 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.80 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

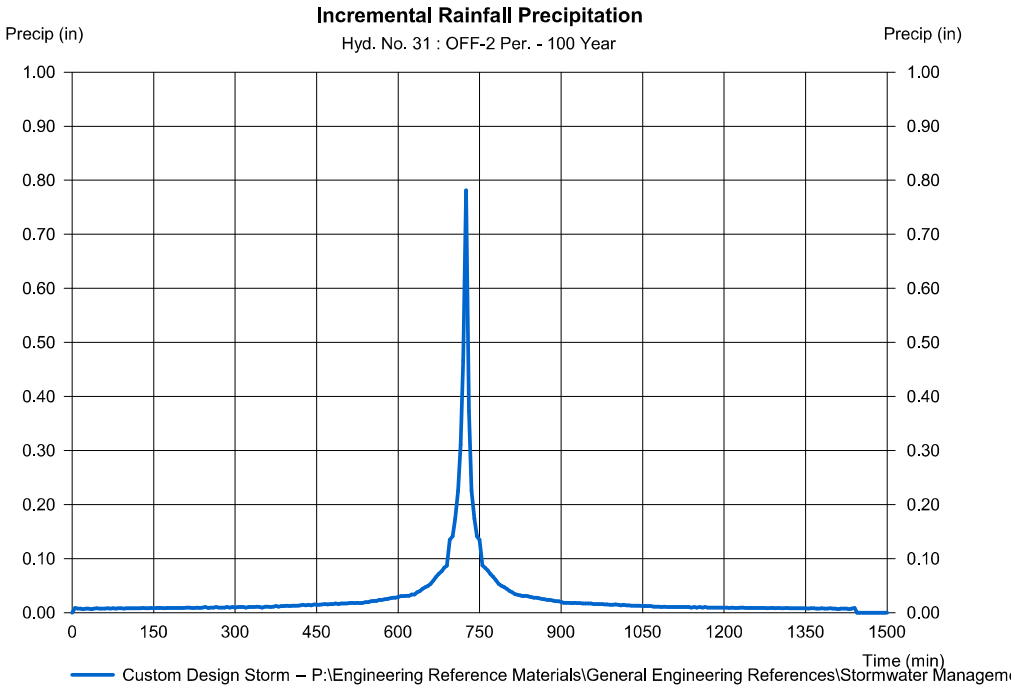


Precipitation Report

Hyd. No. 31

OFF-2 Per.

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

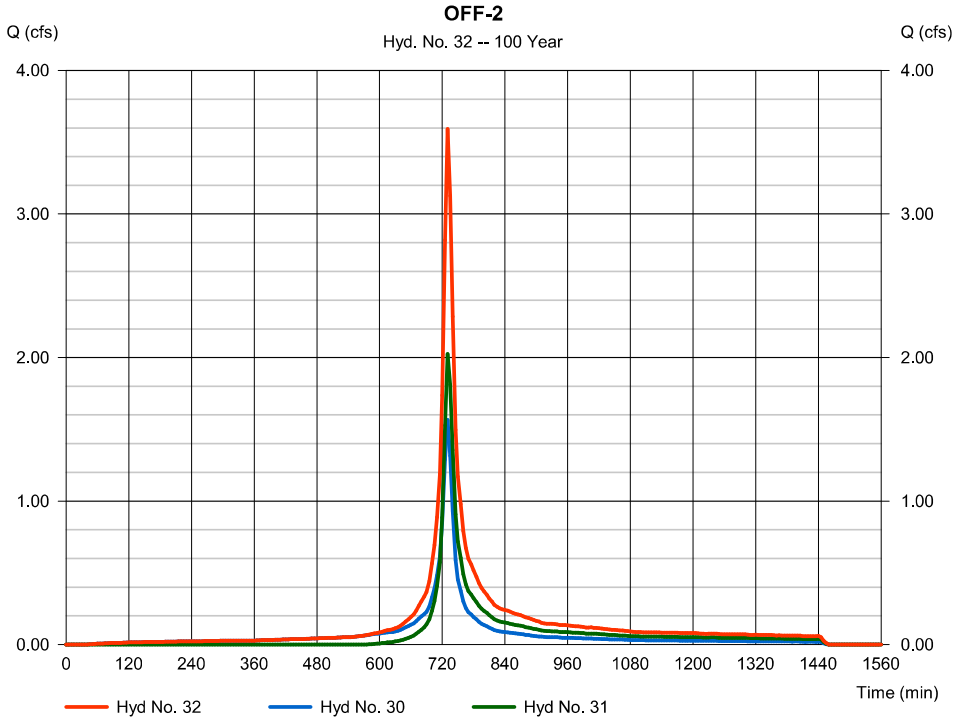


Hydrograph Report

Hyd. No. 32

OFF-2

Hydrograph type	= Combine	Peak discharge	= 3.590 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 14,062 cuft
Inflow hyds.	= 30, 31	Contrib. drain. area	= 0.880 ac

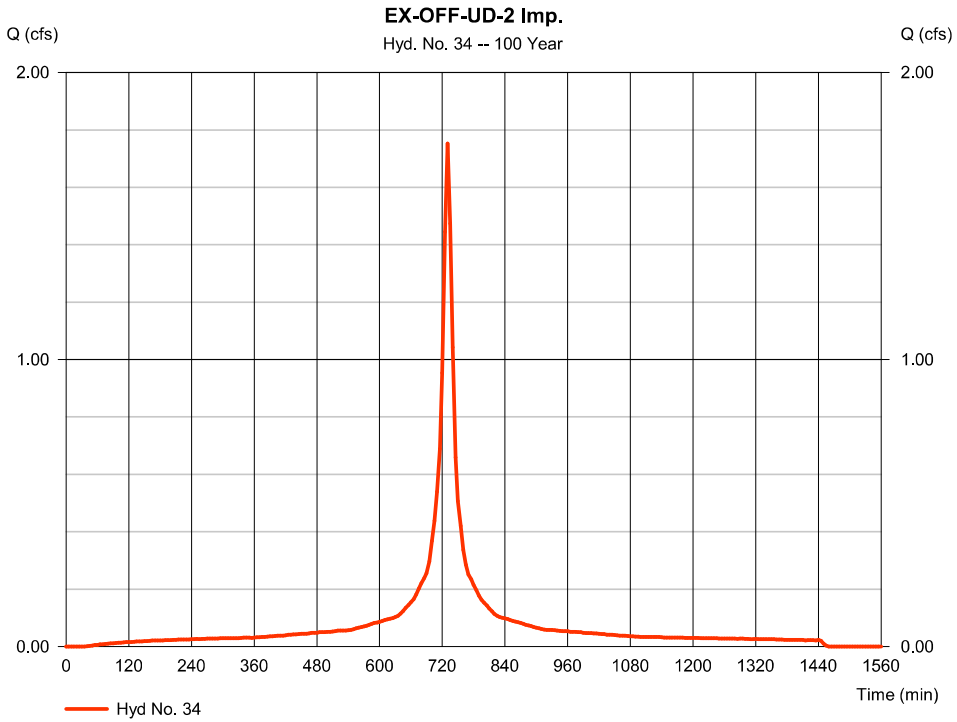


Hydrograph Report

Hyd. No. 34

EX-OFF-UD-2 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 1.753 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 7,423 cuft
Drainage area	= 0.280 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.20 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

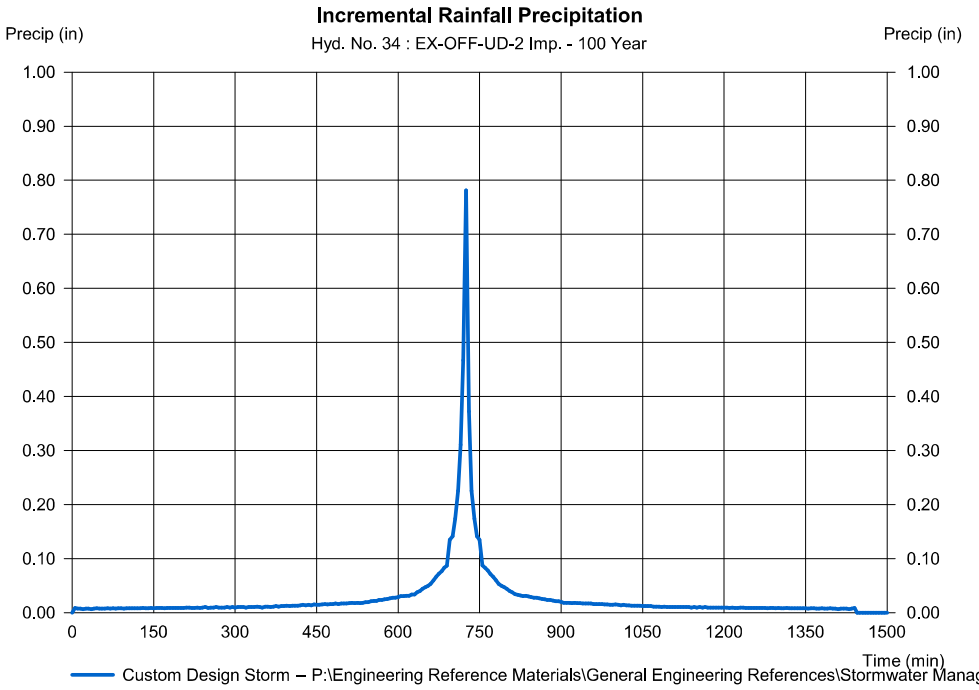


Precipitation Report

Hyd. No. 34

EX-OFF-UD-2 Imp.

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

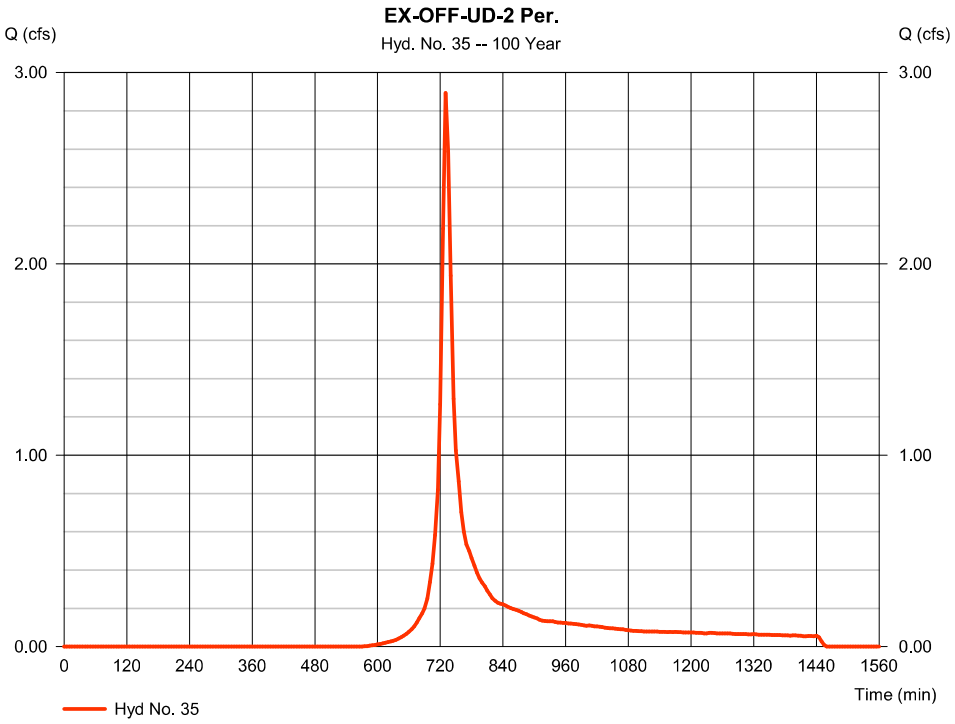


Hydrograph Report

Hyd. No. 35

EX-OFF-UD-2 Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 2.894 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 10,620 cuft
Drainage area	= 0.900 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.20 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

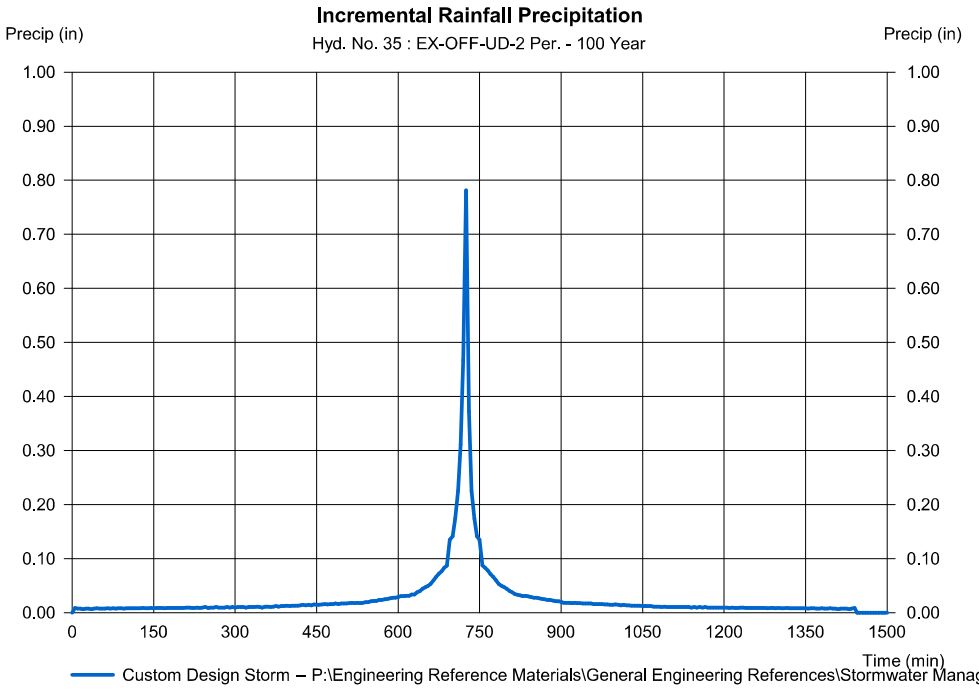


Precipitation Report

Hyd. No. 35

EX-OFF-UD-2 Per.

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

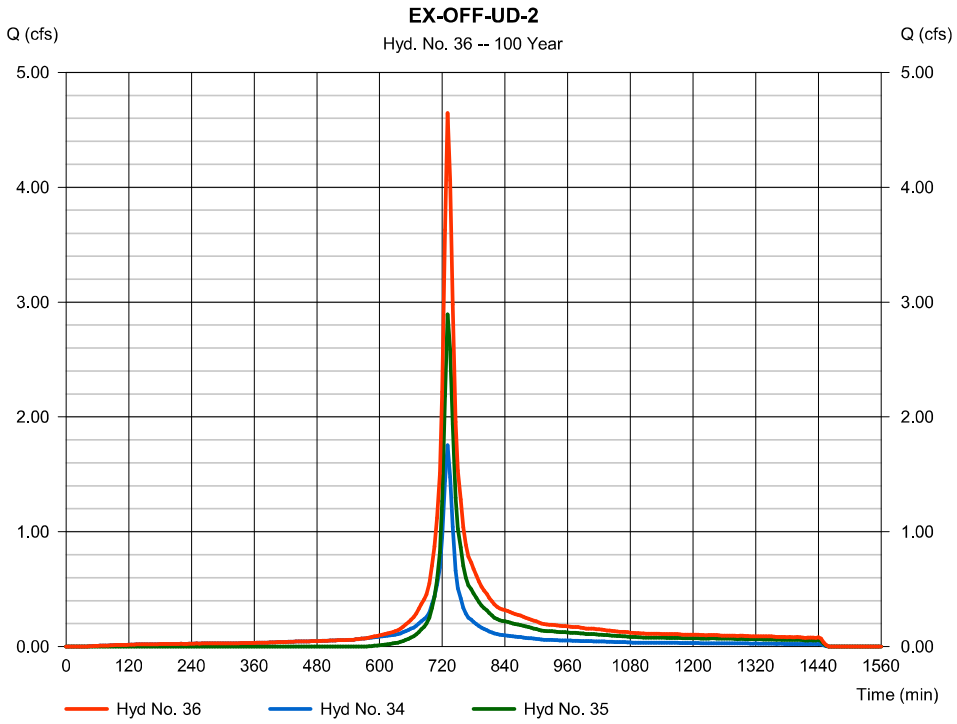


Hydrograph Report

Hyd. No. 36

EX-OFF-UD-2

Hydrograph type	= Combine	Peak discharge	= 4.646 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 18,044 cuft
Inflow hyds.	= 34, 35	Contrib. drain. area	= 1.180 ac

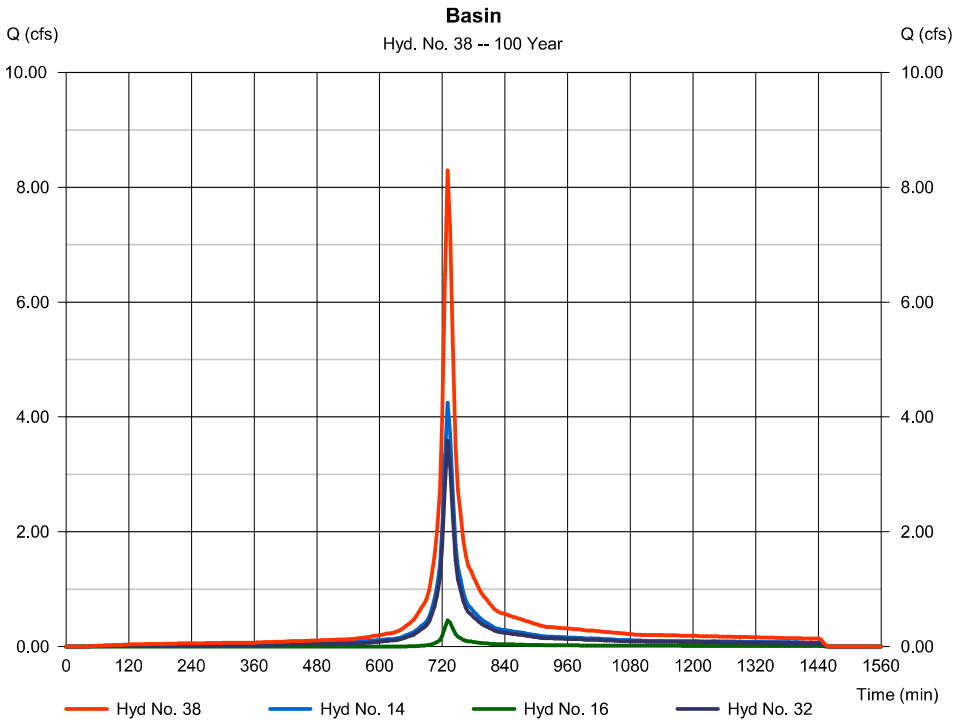


Hydrograph Report

Hyd. No. 38

Basin

Hydrograph type	= Combine	Peak discharge	= 8.293 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 32,828 cuft
Inflow hyds.	= 14, 16, 32	Contrib. drain. area	= 0.180 ac



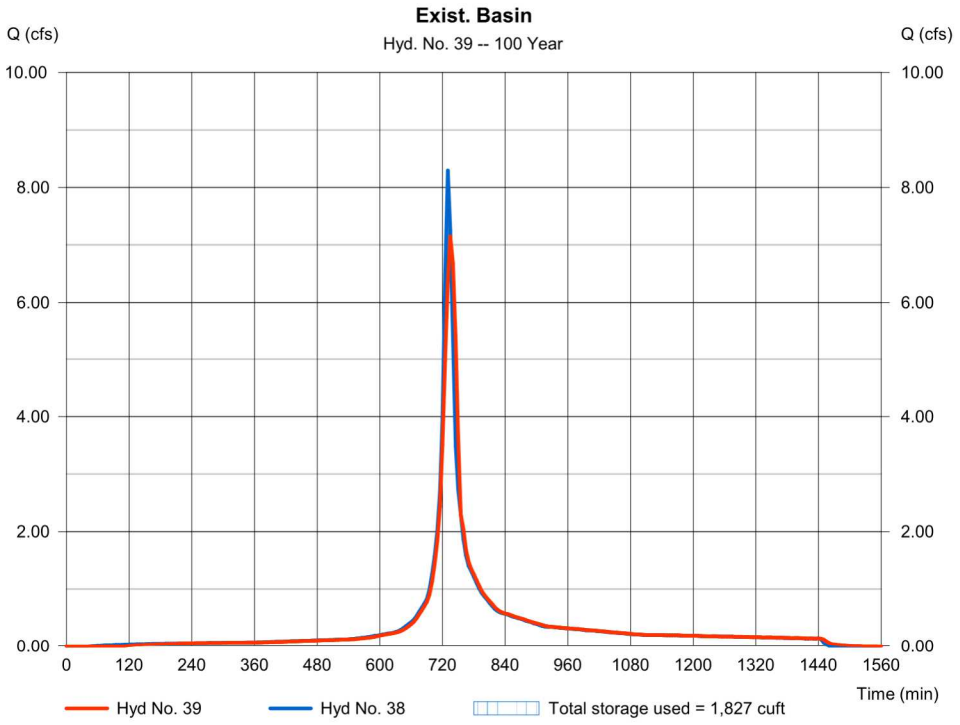
Hydrograph Report

Hyd. No. 39

Exist. Basin

Hydrograph type	= Reservoir	Peak discharge	= 7.147 cfs
Storm frequency	= 100 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 32,746 cuft
Inflow hyd. No.	= 38 - Basin	Max. Elevation	= 197.36 ft
Reservoir name	= Exist. Basin	Max. Storage	= 1,827 cuft

Storage Indication method used.

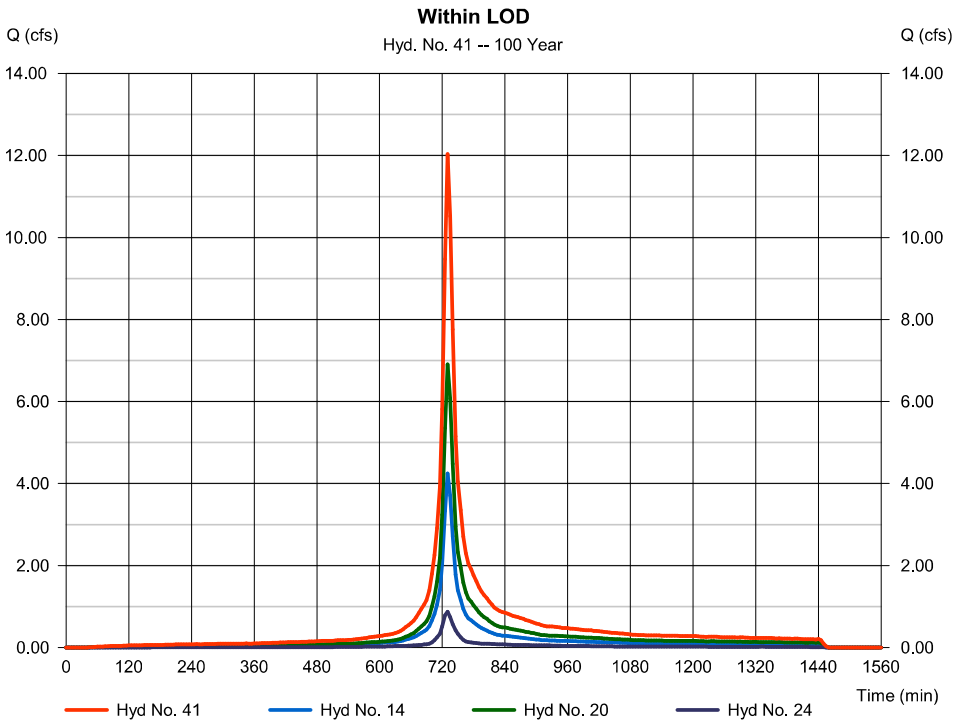


Hydrograph Report

Hyd. No. 41

Within LOD

Hydrograph type	= Combine	Peak discharge	= 12.03 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 47,980 cuft
Inflow hyds.	= 14, 20, 24	Contrib. drain. area	= 0.000 ac

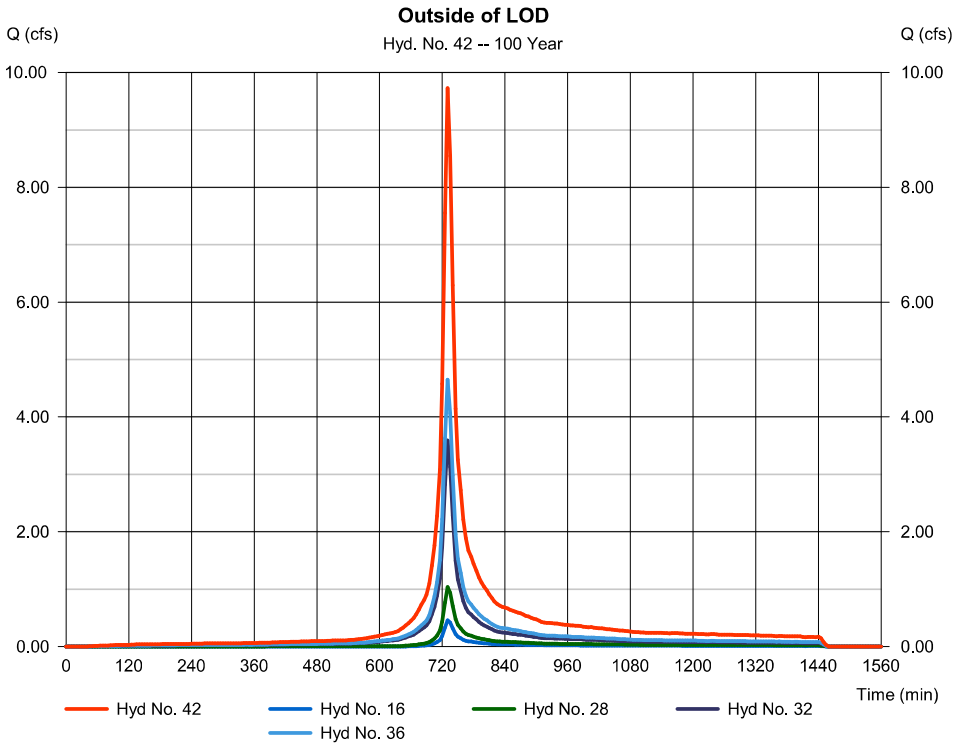


Hydrograph Report

Hyd. No. 42

Outside of LOD

Hydrograph type	= Combine	Peak discharge	= 9.728 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 37,790 cuft
Inflow hyds.	= 16, 28, 32, 36	Contrib. drain. area	= 0.180 ac

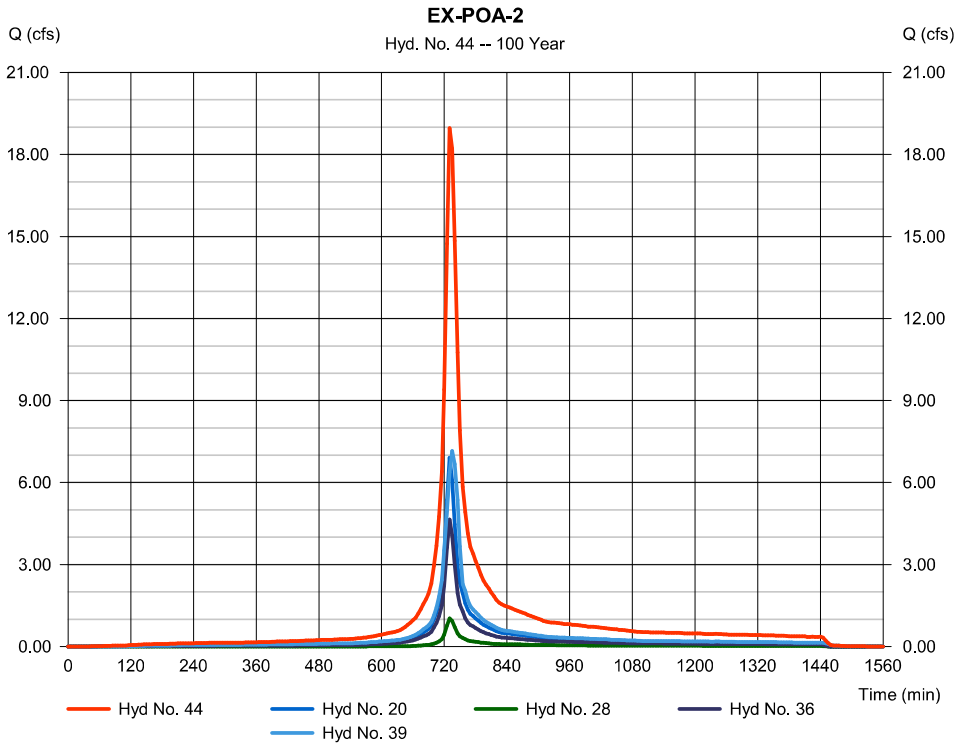


Hydrograph Report

Hyd. No. 44

EX-POA-2

Hydrograph type	= Combine	Peak discharge	= 18.96 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 81,973 cuft
Inflow hyds.	= 20, 28, 36, 39	Contrib. drain. area	= 0.000 ac

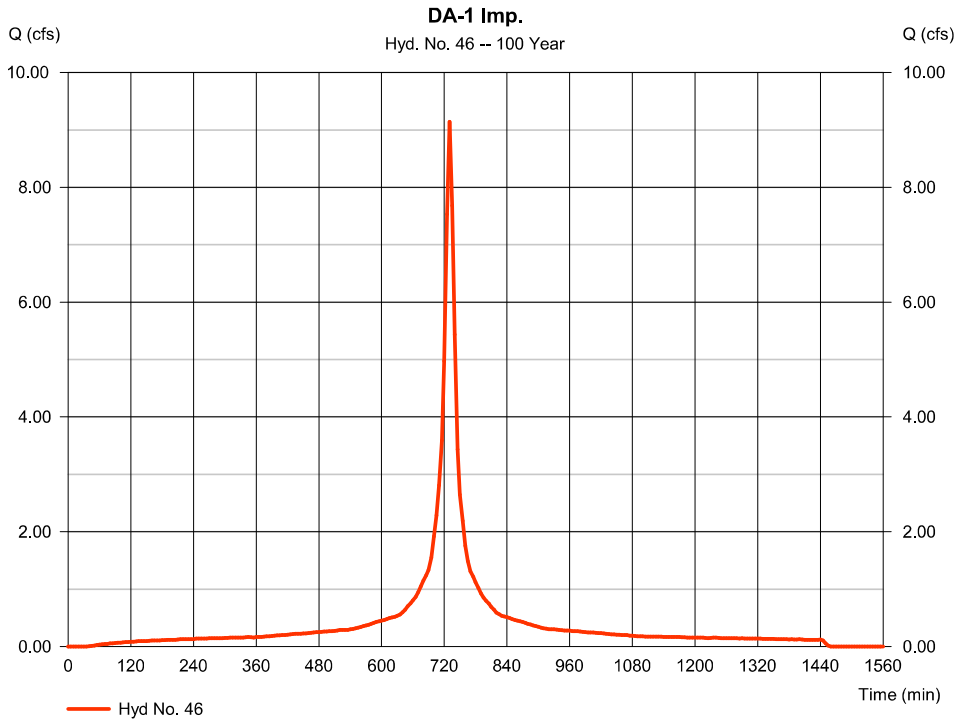


Hydrograph Report

Hyd. No. 46

DA-1 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 9.138 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 38,706 cuft
Drainage area	= 1.460 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

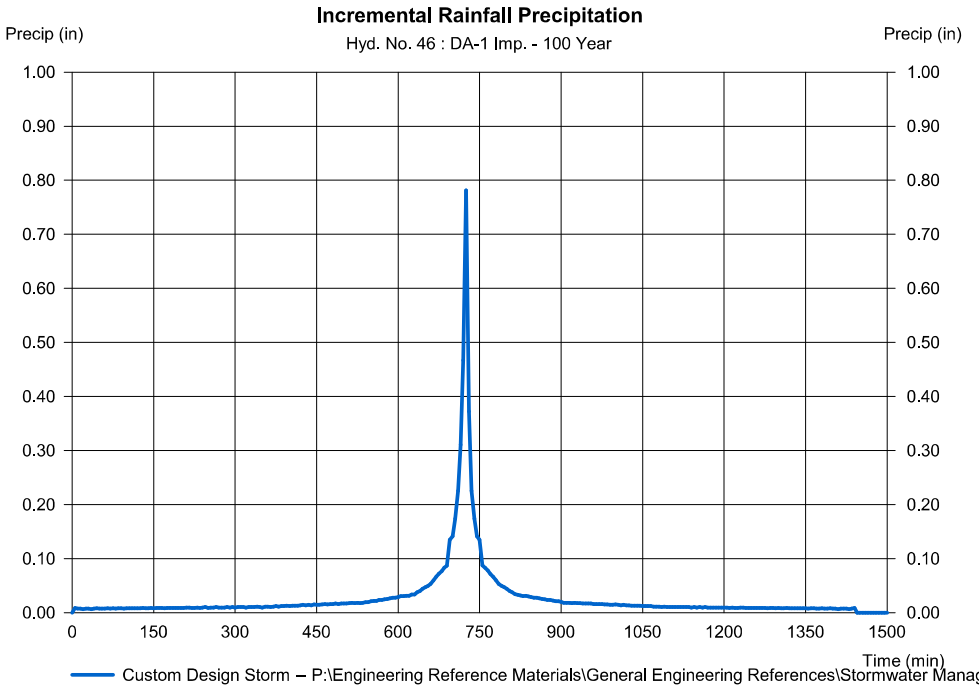


Precipitation Report

Hyd. No. 46

DA-1 Imp.

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

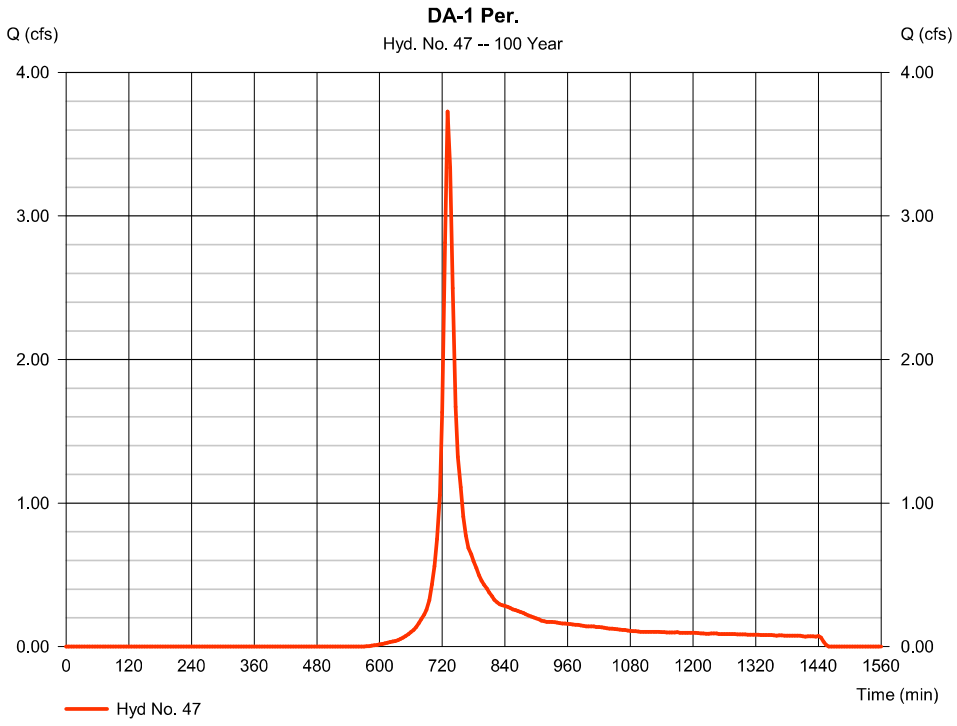


Hydrograph Report

Hyd. No. 47

DA-1 Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 3.730 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 13,689 cuft
Drainage area	= 1.160 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

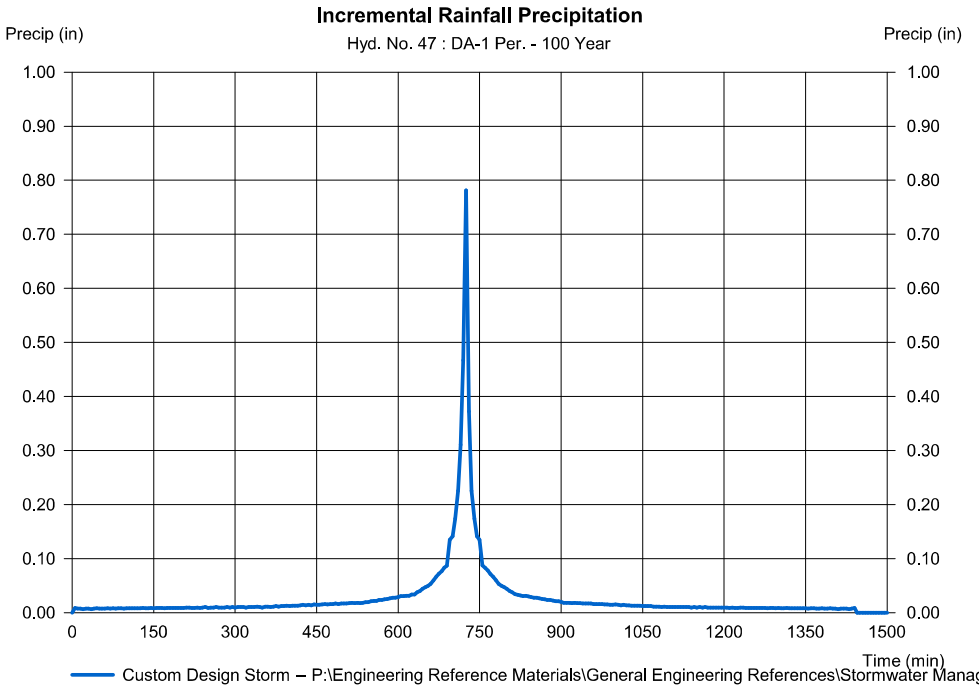


Precipitation Report

Hyd. No. 47

DA-1 Per.

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

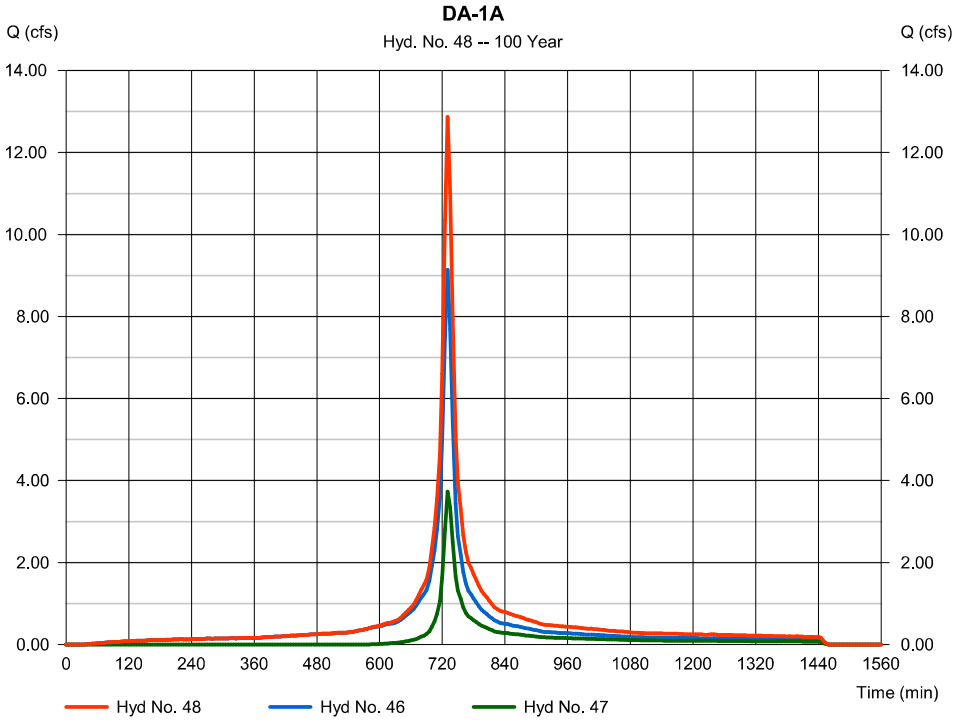


Hydrograph Report

Hyd. No. 48

DA-1A

Hydrograph type	= Combine	Peak discharge	= 12.87 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 52,394 cuft
Inflow hyds.	= 46, 47	Contrib. drain. area	= 2.620 ac

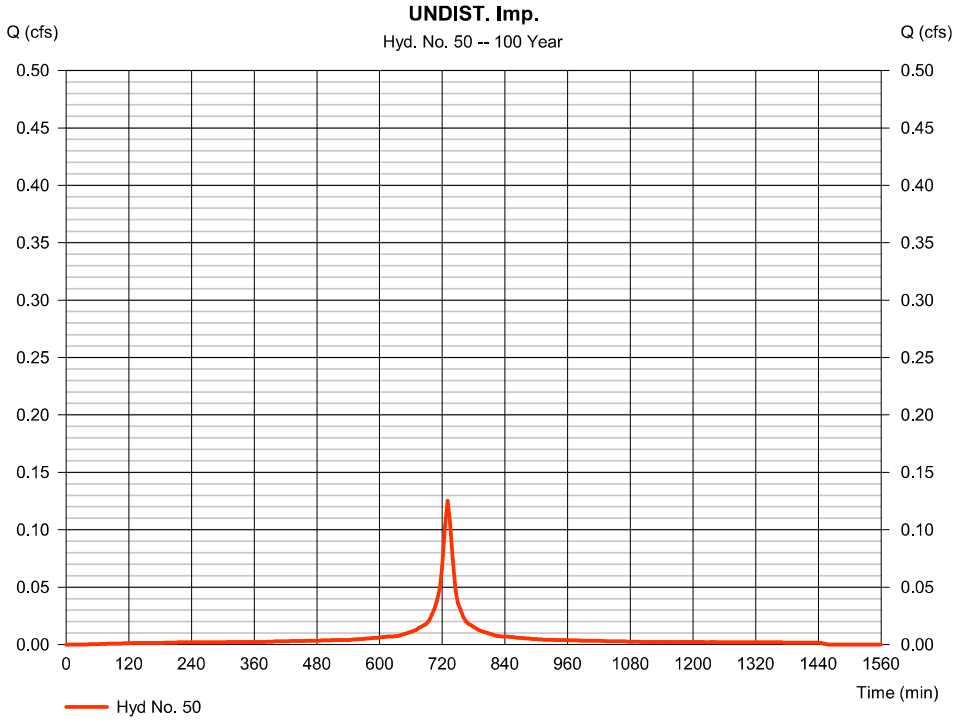


Hydrograph Report

Hyd. No. 50

UNDIST. Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.125 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 530 cuft
Drainage area	= 0.020 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

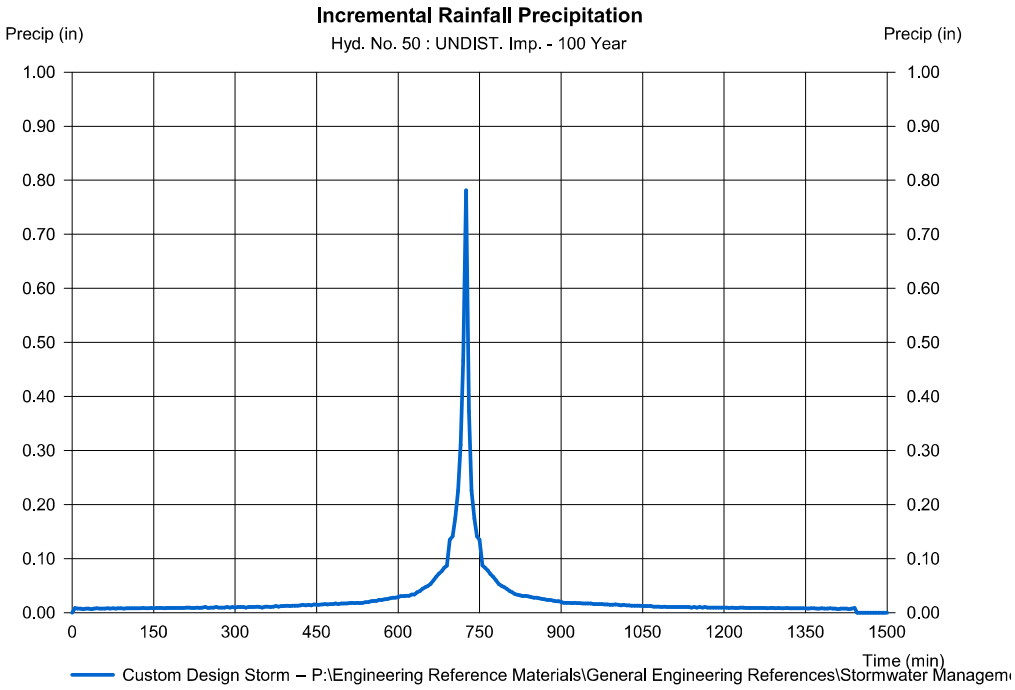


Precipitation Report

Hyd. No. 50

UNDIST. Imp.

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

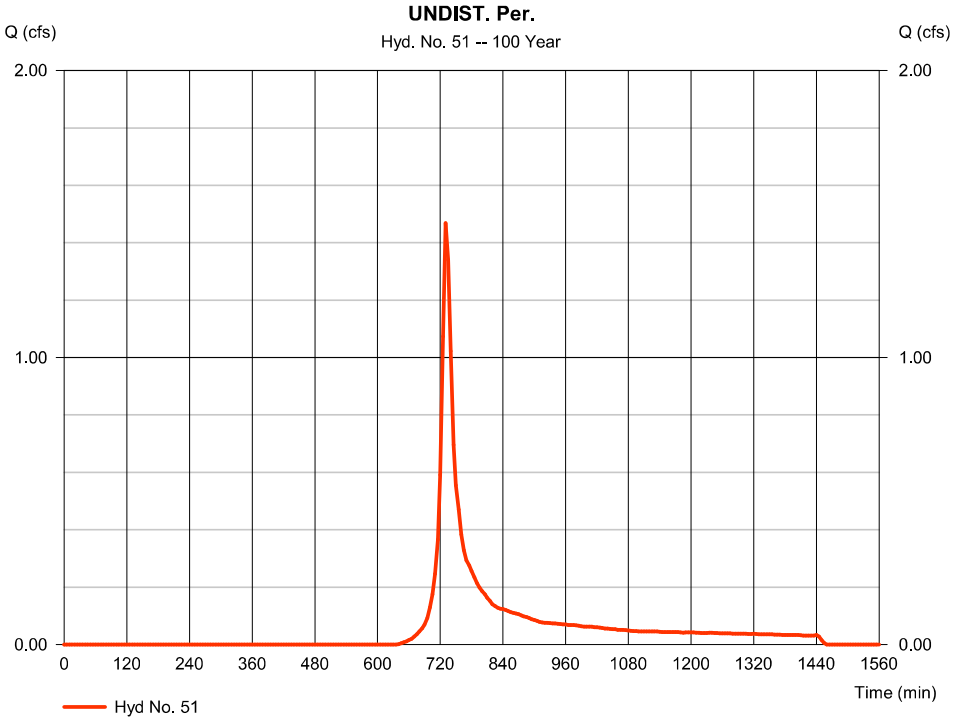


Hydrograph Report

Hyd. No. 51

UNDIST. Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 1.468 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 5,536 cuft
Drainage area	= 0.580 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

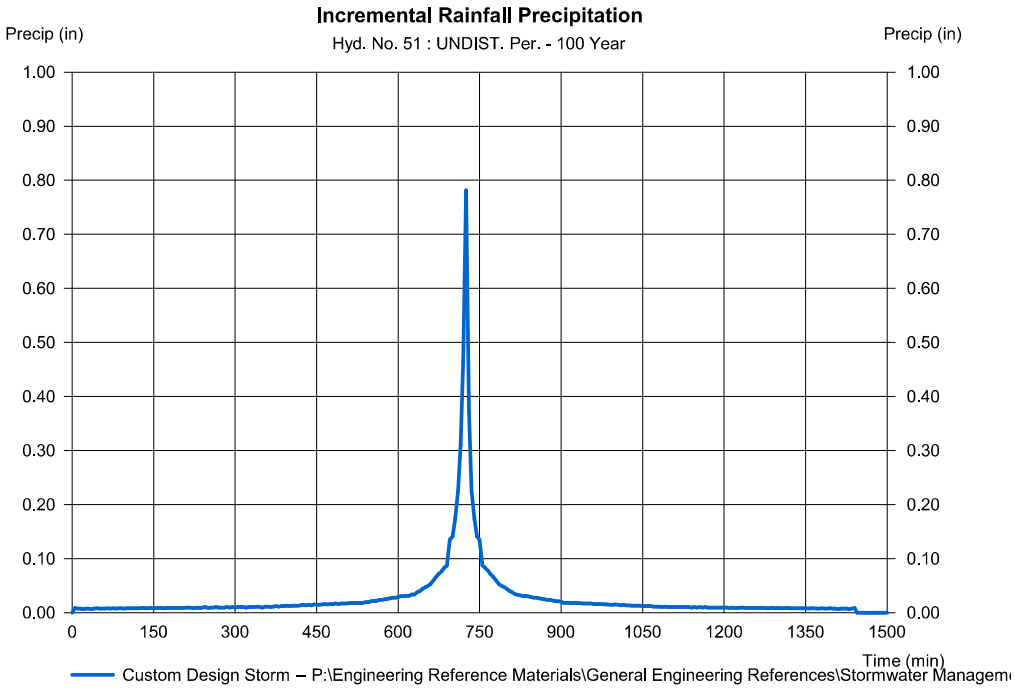


Precipitation Report

Hyd. No. 51

UNDIST. Per.

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

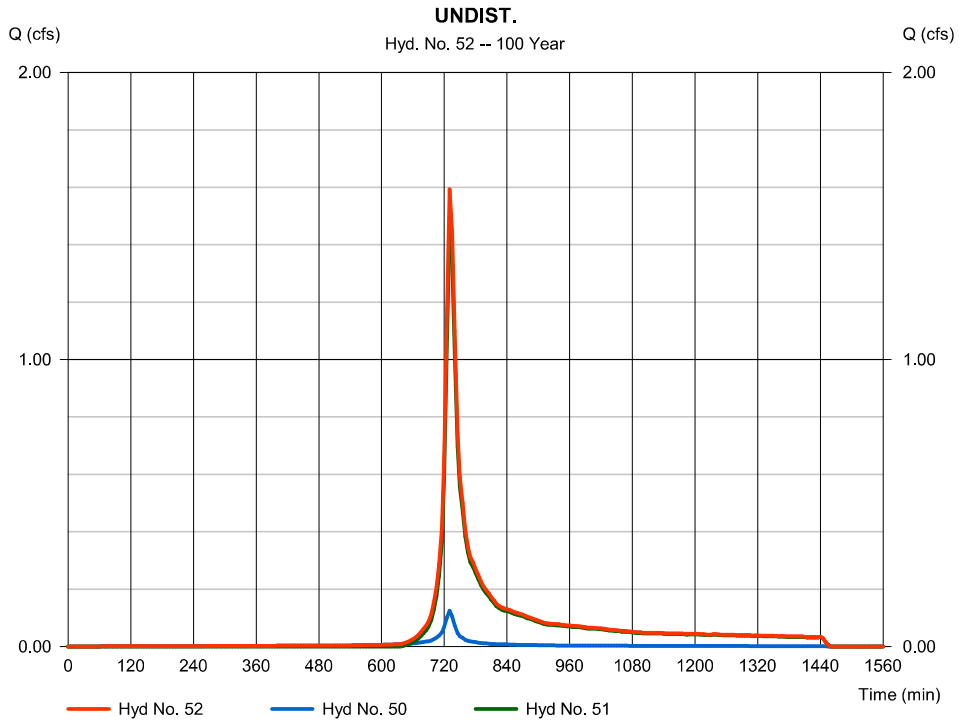


Hydrograph Report

Hyd. No. 52

UNDIST.

Hydrograph type	= Combine	Peak discharge	= 1.593 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 6,066 cuft
Inflow hyds.	= 50, 51	Contrib. drain. area	= 0.600 ac

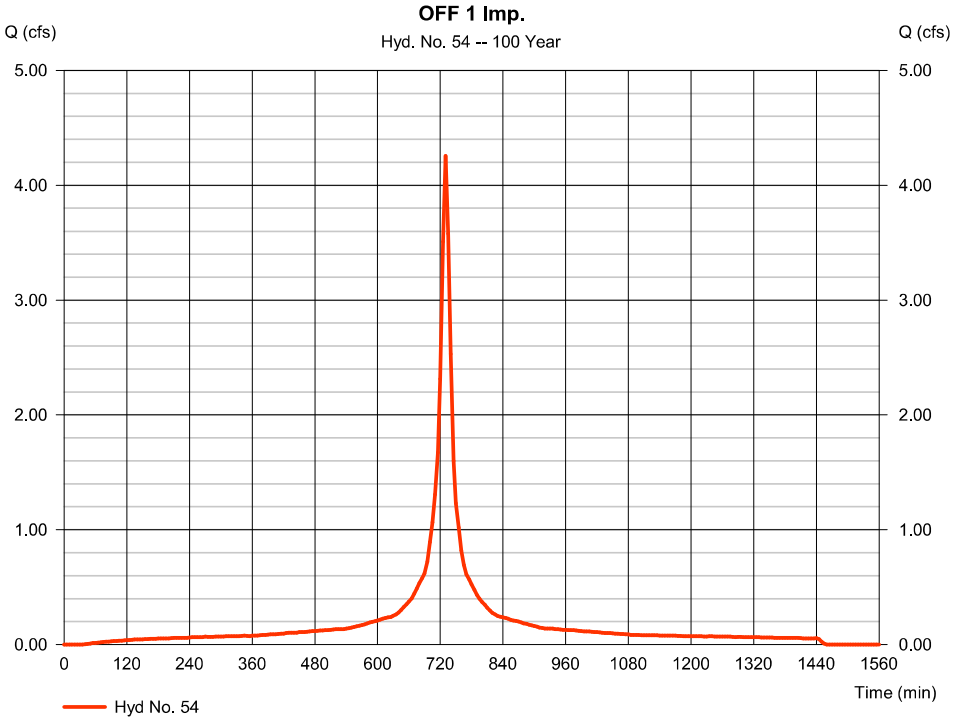


Hydrograph Report

Hyd. No. 54

OFF 1 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 4.256 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 18,027 cuft
Drainage area	= 0.680 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

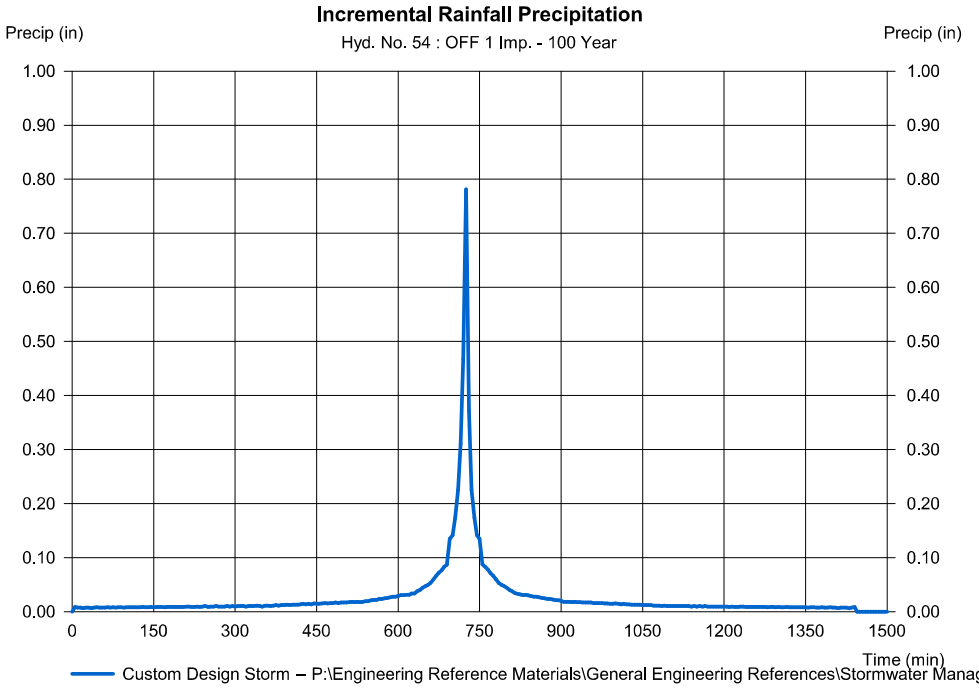


Precipitation Report

Hyd. No. 54

OFF 1 Imp.

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

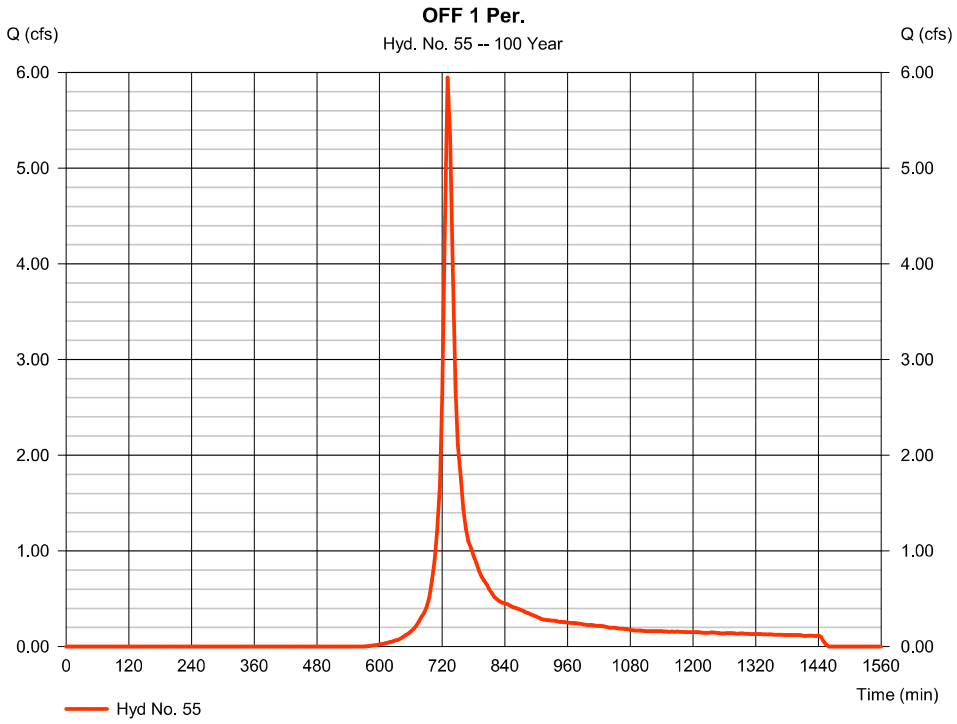


Hydrograph Report

Hyd. No. 55

OFF 1 Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 5.948 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 21,831 cuft
Drainage area	= 1.850 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

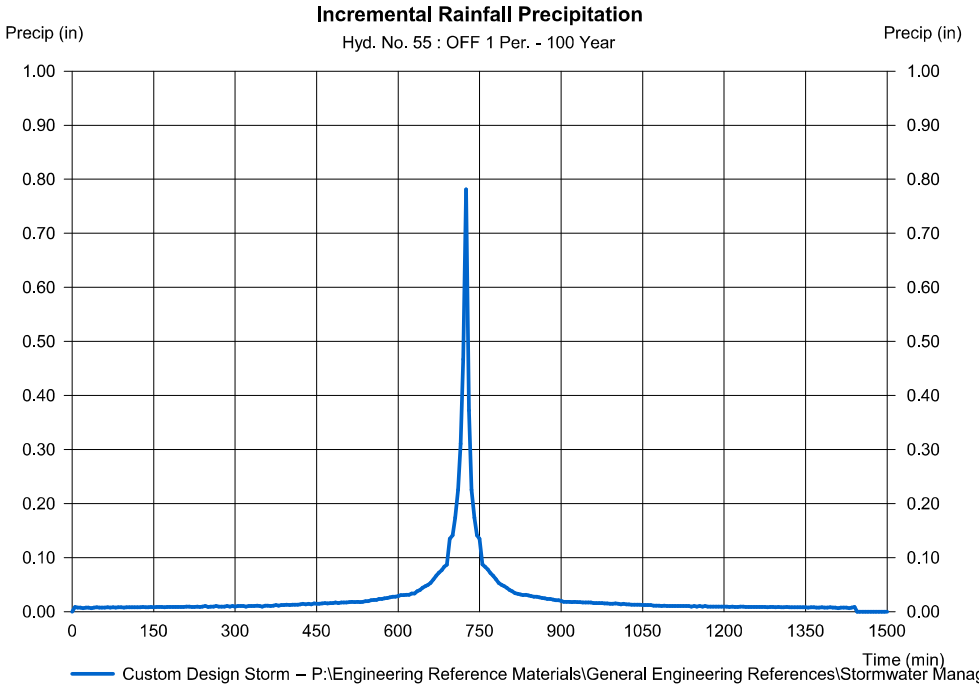


Precipitation Report

Hyd. No. 55

OFF 1 Per.

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

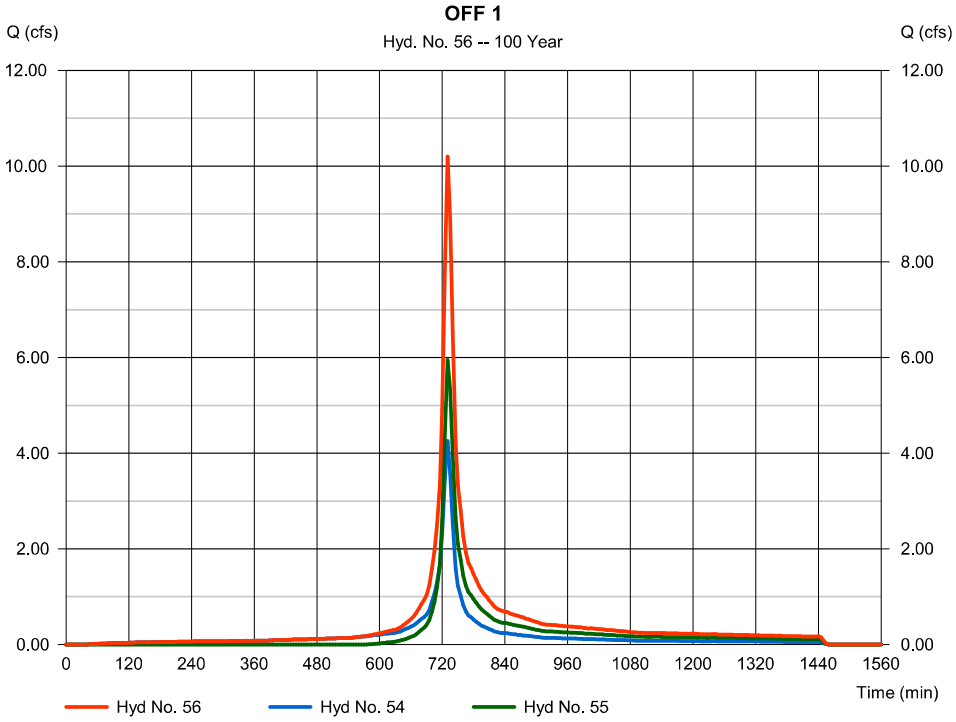


Hydrograph Report

Hyd. No. 56

OFF 1

Hydrograph type	= Combine	Peak discharge	= 10.20 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 39,858 cuft
Inflow hyds.	= 54, 55	Contrib. drain. area	= 2.530 ac

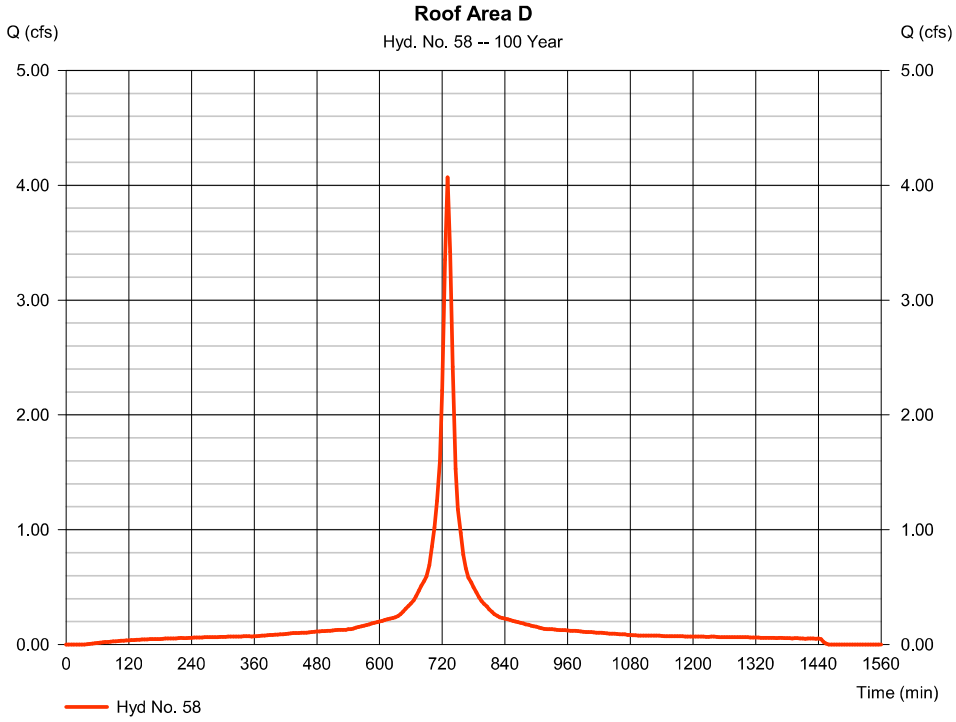


Hydrograph Report

Hyd. No. 58

Roof Area D

Hydrograph type	= SCS Runoff	Peak discharge	= 4.068 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 17,232 cuft
Drainage area	= 0.650 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

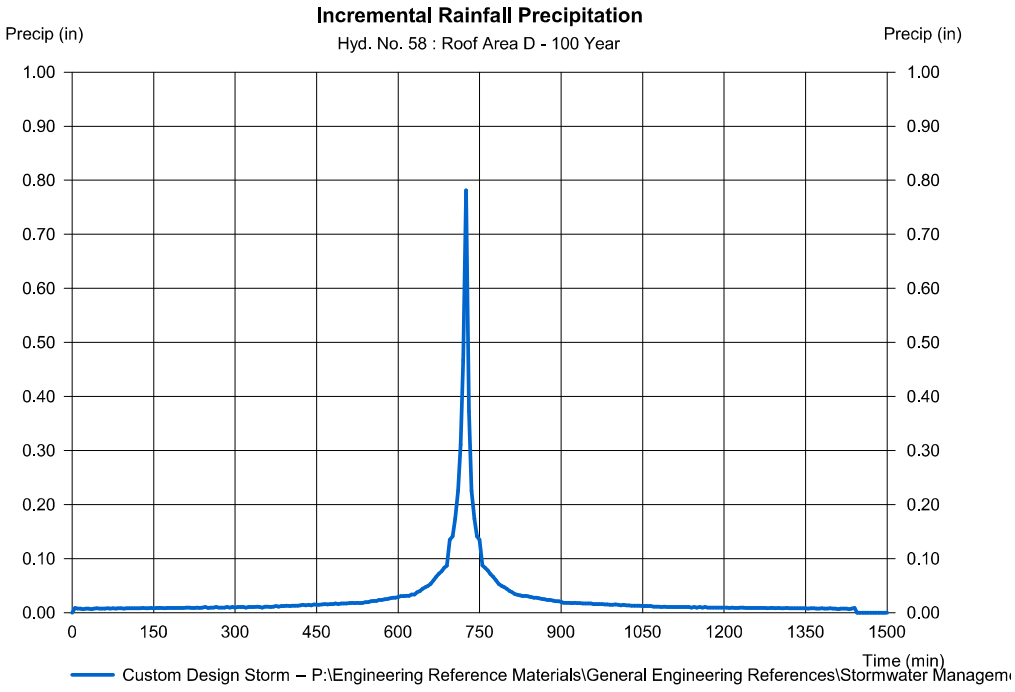


Precipitation Report

Hyd. No. 58

Roof Area D

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

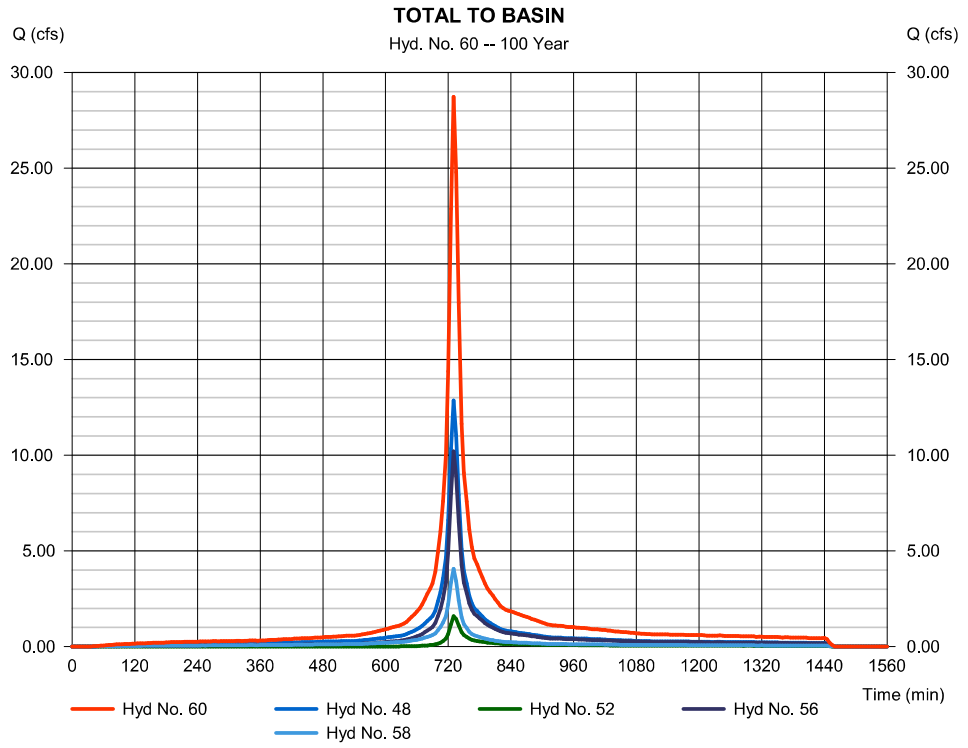


Hydrograph Report

Hyd. No. 60

TOTAL TO BASIN

Hydrograph type	= Combine	Peak discharge	= 28.73 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 115,551 cuft
Inflow hyds.	= 48, 52, 56, 58	Contrib. drain. area	= 0.650 ac



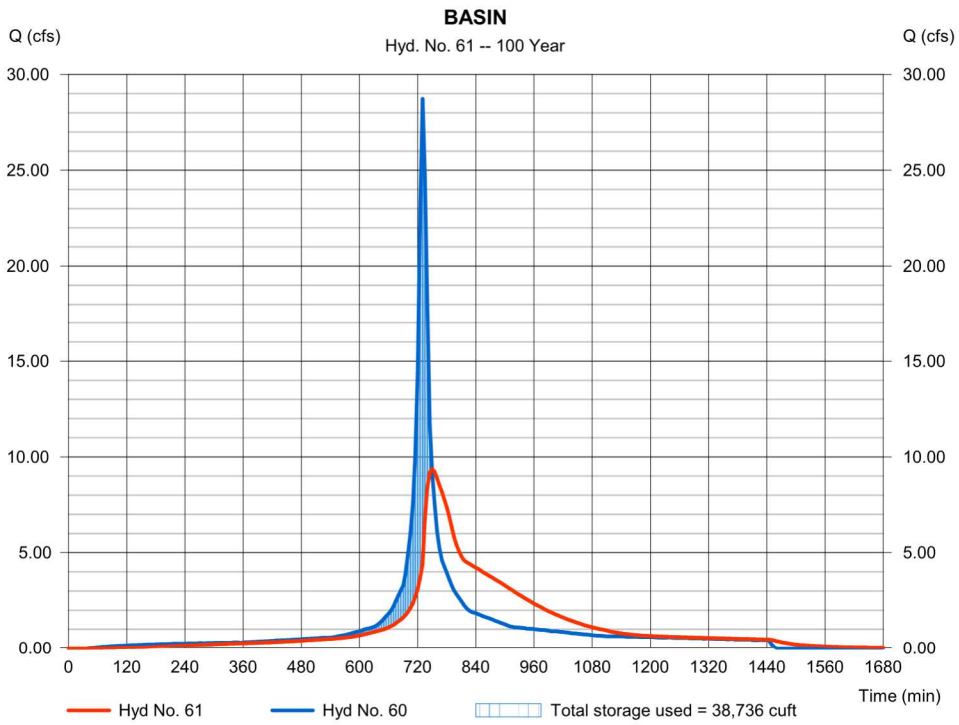
Hydrograph Report

Hyd. No. 61

BASIN

Hydrograph type	= Reservoir	Peak discharge	= 9.366 cfs
Storm frequency	= 100 yrs	Time to peak	= 750 min
Time interval	= 5 min	Hyd. volume	= 115,537 cuft
Inflow hyd. No.	= 60 - TOTAL TO BASIN	Max. Elevation	= 199.73 ft
Reservoir name	= UG STORMTRAP	Max. Storage	= 38,736 cuft

Storage Indication method used.

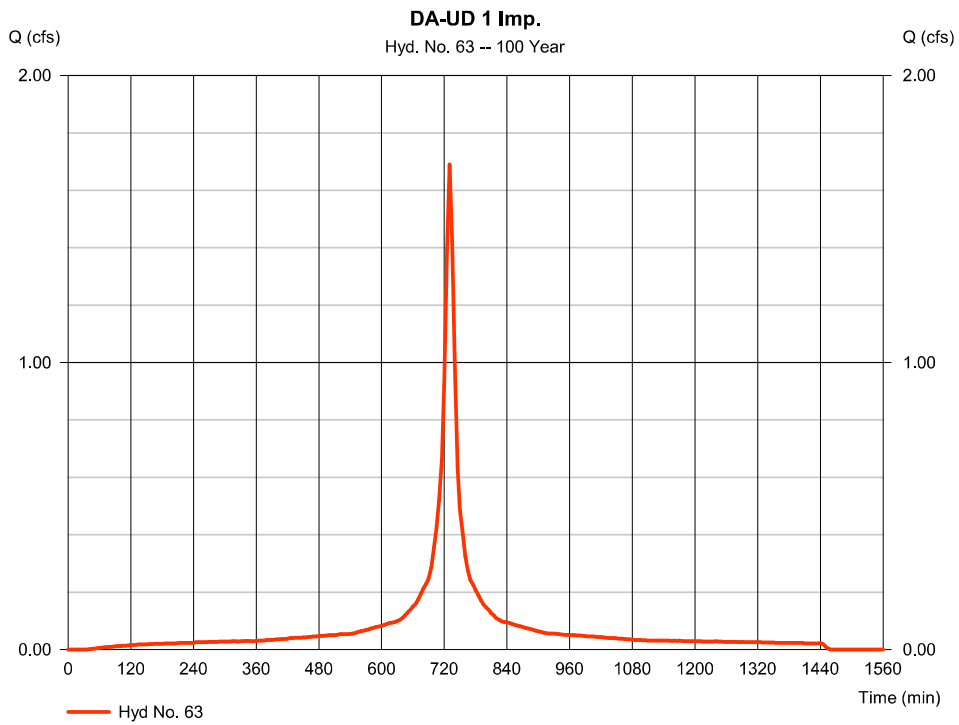


Hydrograph Report

Hyd. No. 63

DA-UD 1 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 1.690 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 7,158 cuft
Drainage area	= 0.270 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

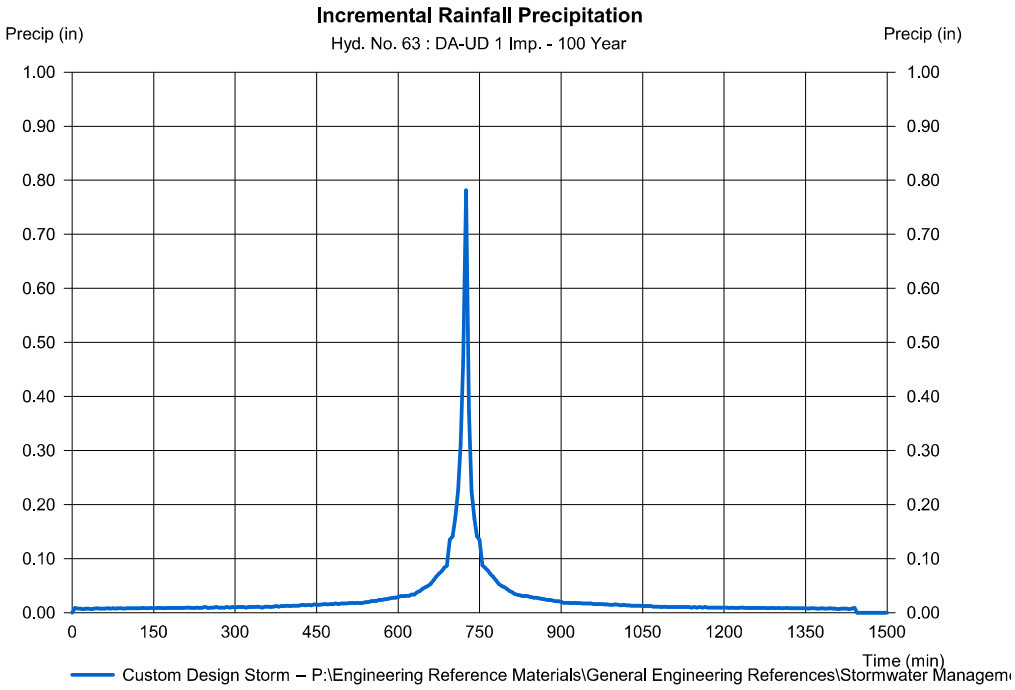


Precipitation Report

Hyd. No. 63

DA-UD 1 Imp.

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

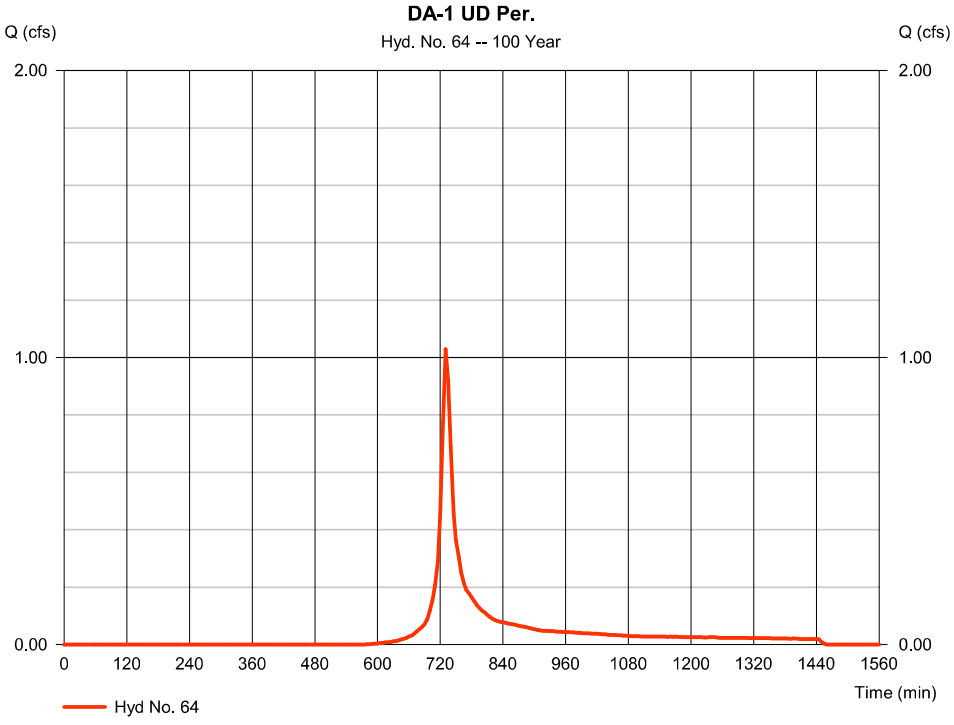


Hydrograph Report

Hyd. No. 64

DA-1 UD Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 1.029 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 3,776 cuft
Drainage area	= 0.320 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Storm Frequency	= 100 yrs

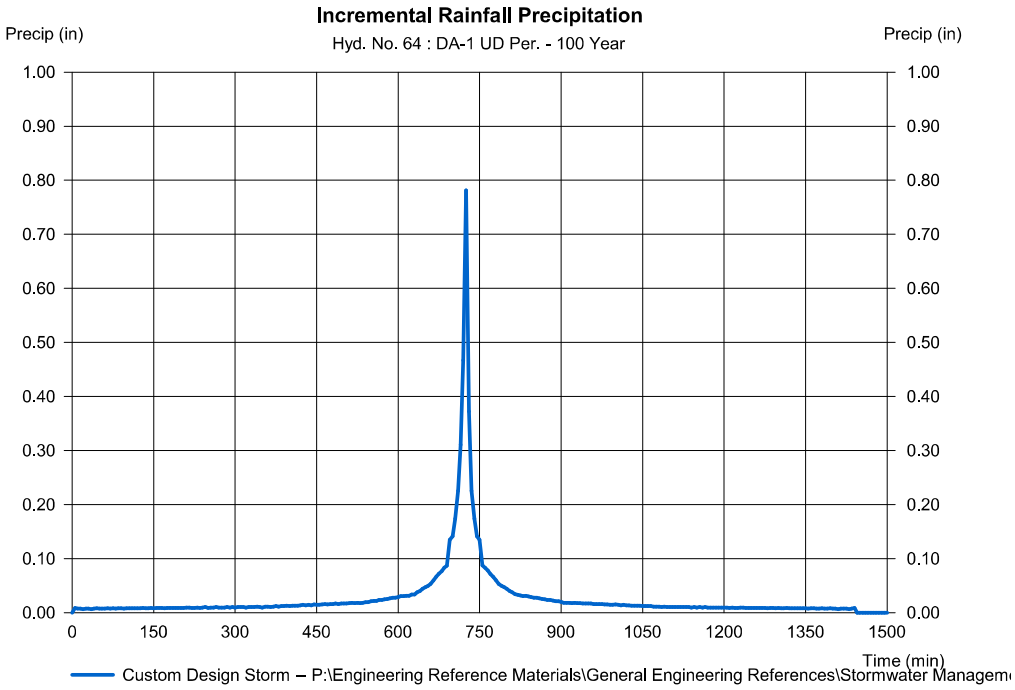


Precipitation Report

Hyd. No. 64

DA-1 UD Per.

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

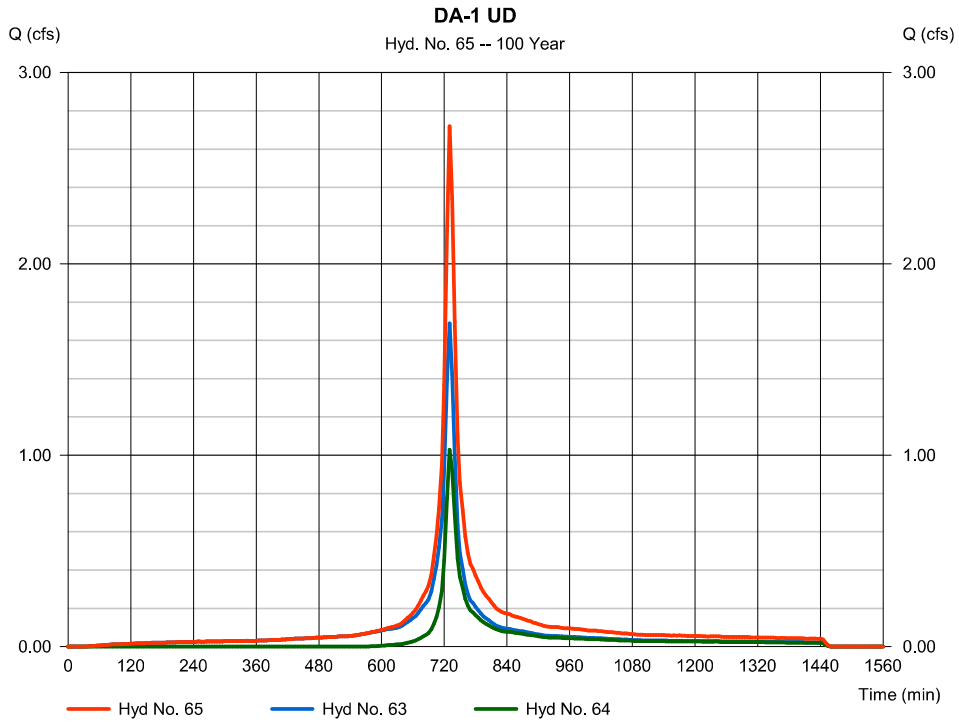


Hydrograph Report

Hyd. No. 65

DA-1 UD

Hydrograph type	= Combine	Peak discharge	= 2.719 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 10,934 cuft
Inflow hyds.	= 63, 64	Contrib. drain. area	= 0.590 ac

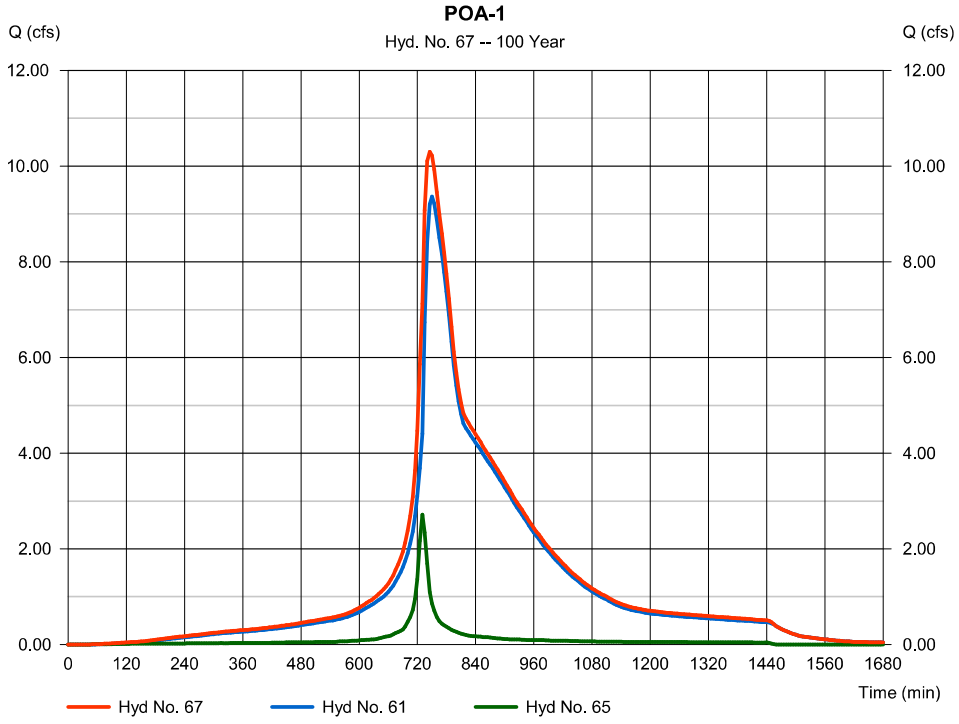


Hydrograph Report

Hyd. No. 67

POA-1

Hydrograph type	= Combine	Peak discharge	= 10.30 cfs
Storm frequency	= 100 yrs	Time to peak	= 745 min
Time interval	= 5 min	Hyd. volume	= 126,471 cuft
Inflow hyds.	= 61, 65	Contrib. drain. area	= 0.000 ac

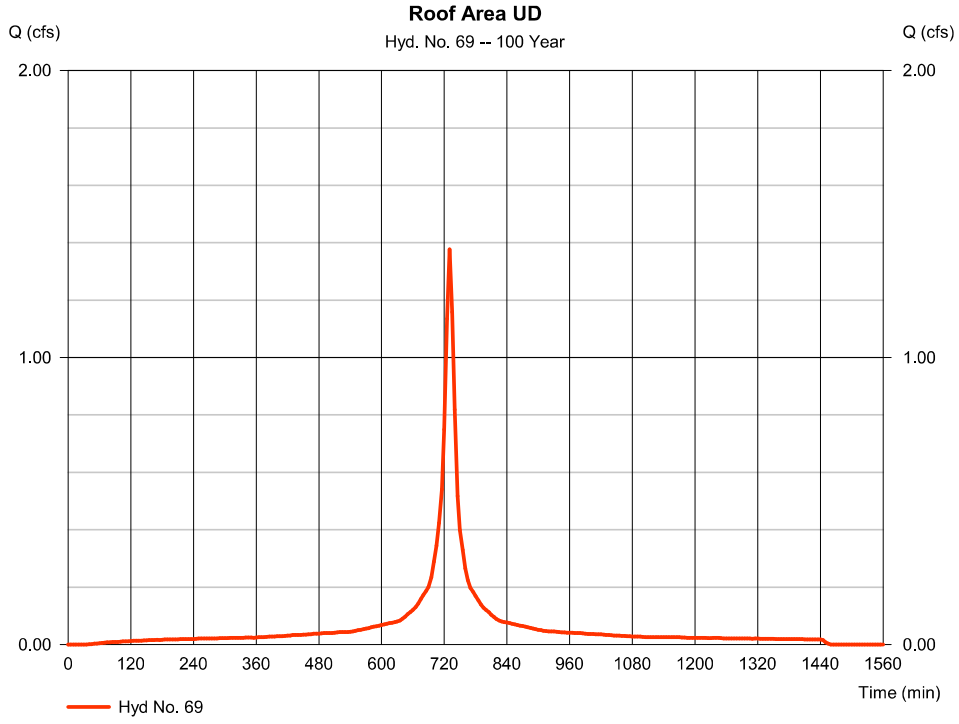


Hydrograph Report

Hyd. No. 69

Roof Area UD

Hydrograph type	= SCS Runoff	Peak discharge	= 1.377 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 5,832 cuft
Drainage area	= 0.220 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

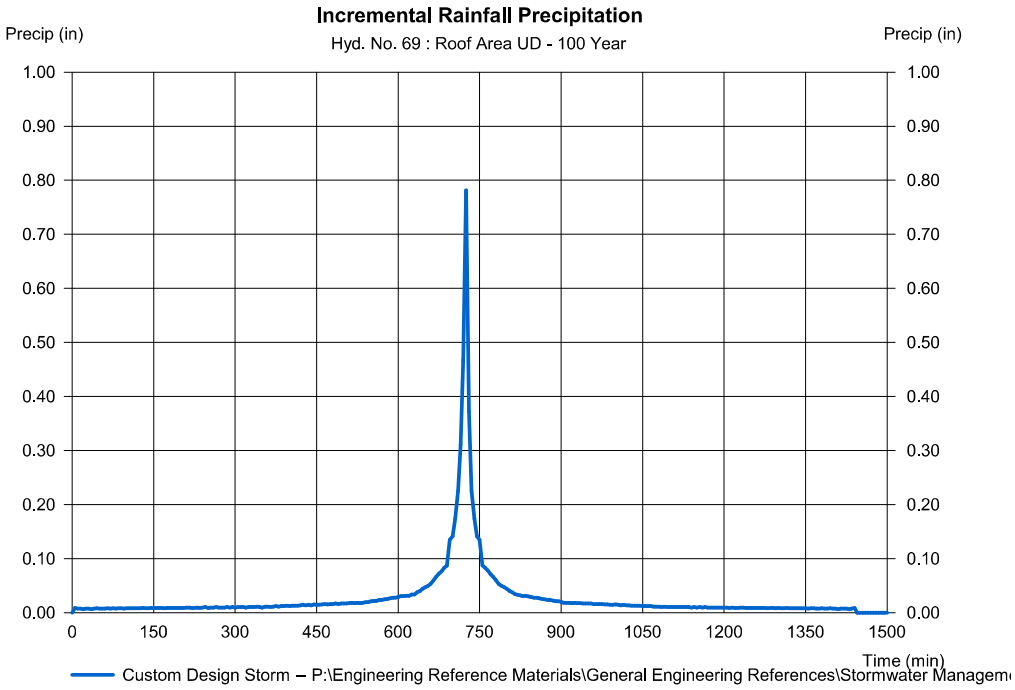


Precipitation Report

Hyd. No. 69

Roof Area UD

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

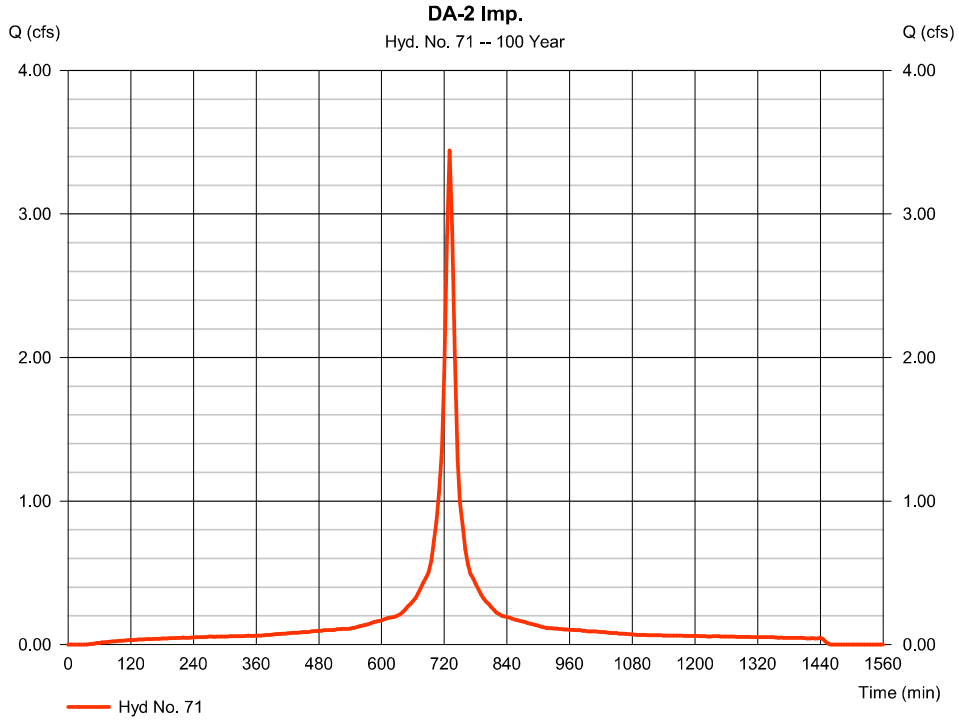


Hydrograph Report

Hyd. No. 71

DA-2 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 3.443 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 14,581 cuft
Drainage area	= 0.550 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

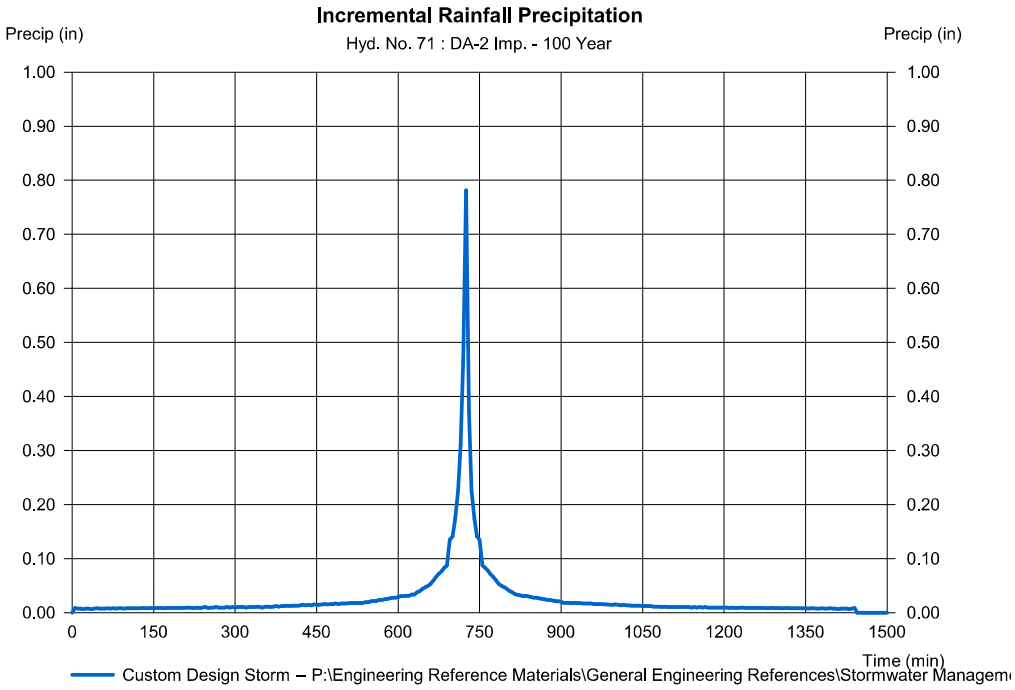


Precipitation Report

Hyd. No. 71

DA-2 Imp.

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

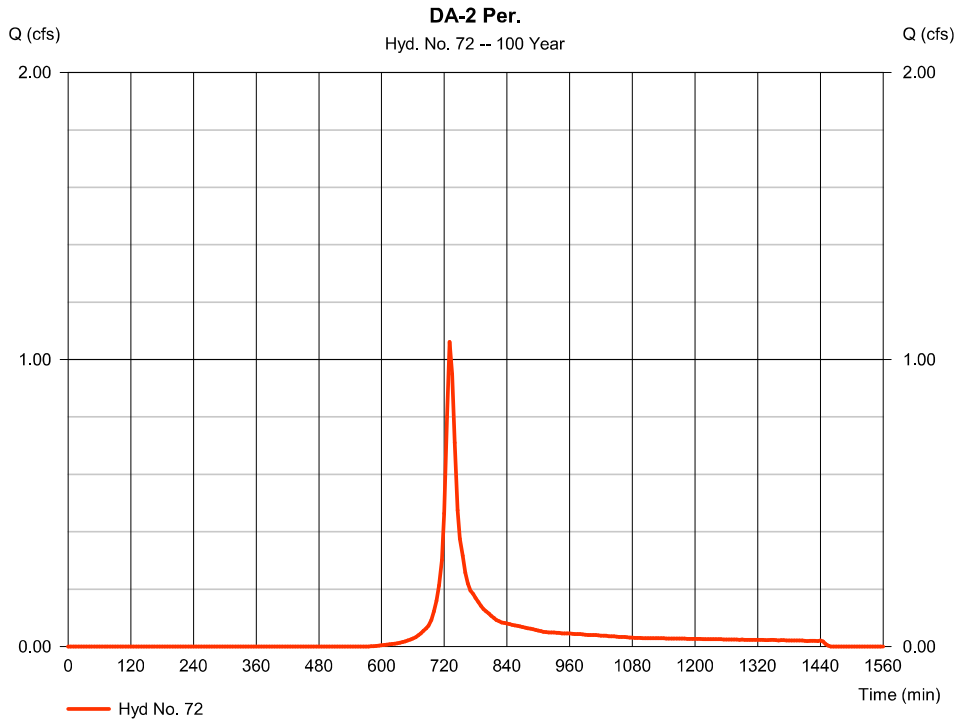


Hydrograph Report

Hyd. No. 72

DA-2 Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 1.061 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 3,894 cuft
Drainage area	= 0.330 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

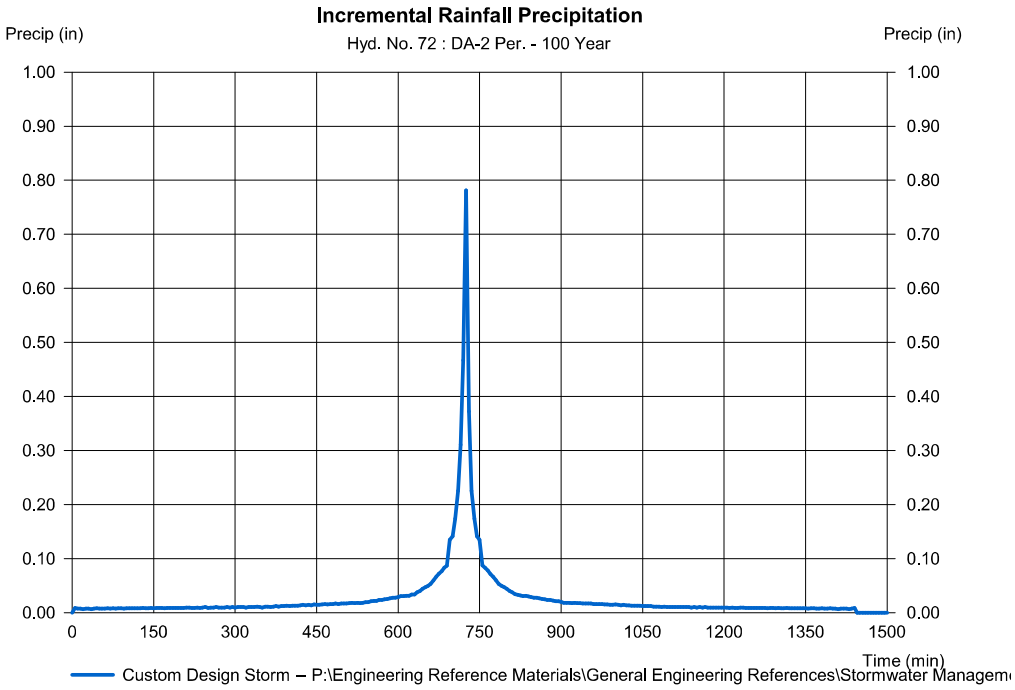


Precipitation Report

Hyd. No. 72

DA-2 Per.

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

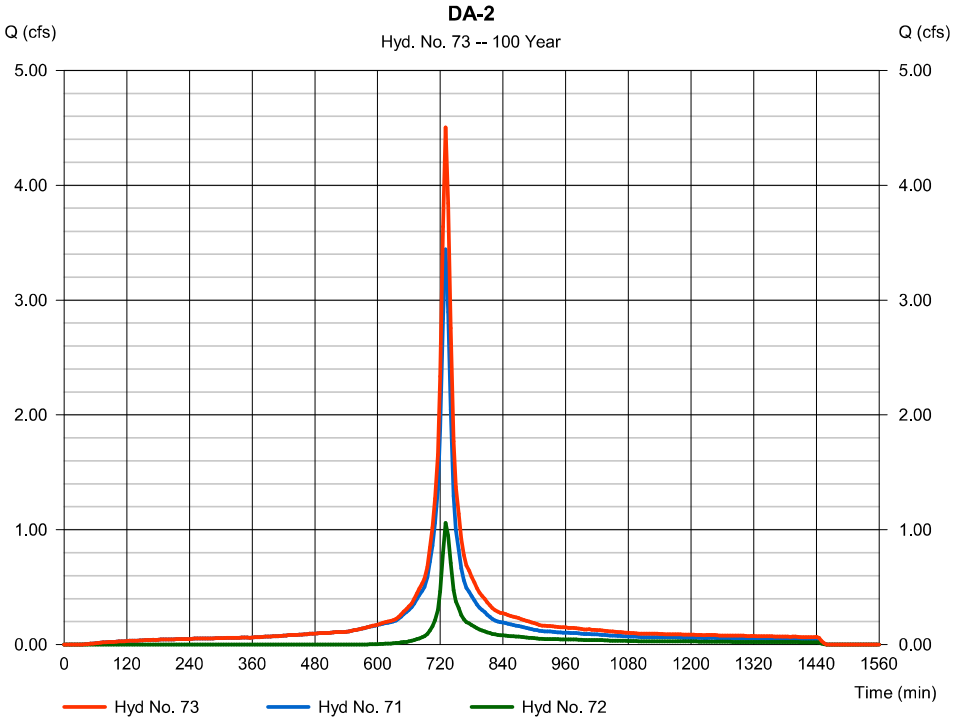


Hydrograph Report

Hyd. No. 73

DA-2

Hydrograph type	= Combine	Peak discharge	= 4.504 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 18,475 cuft
Inflow hyds.	= 71, 72	Contrib. drain. area	= 0.880 ac

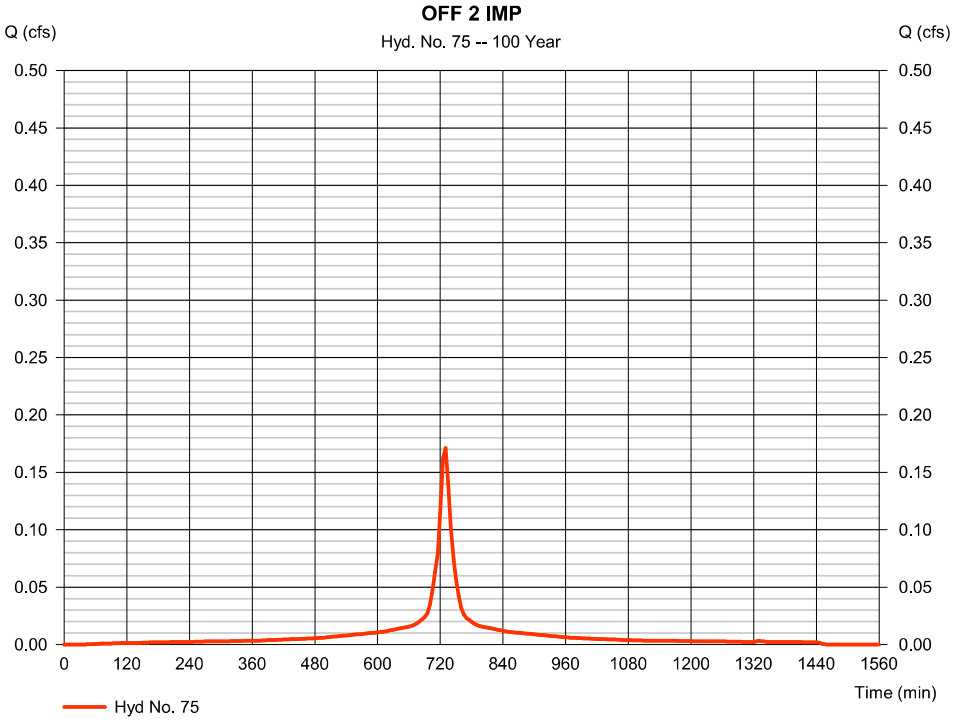


Hydrograph Report

Hyd. No. 75

OFF 2 IMP

Hydrograph type	= SCS Runoff	Peak discharge	= 0.171 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 795 cuft
Drainage area	= 0.030 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

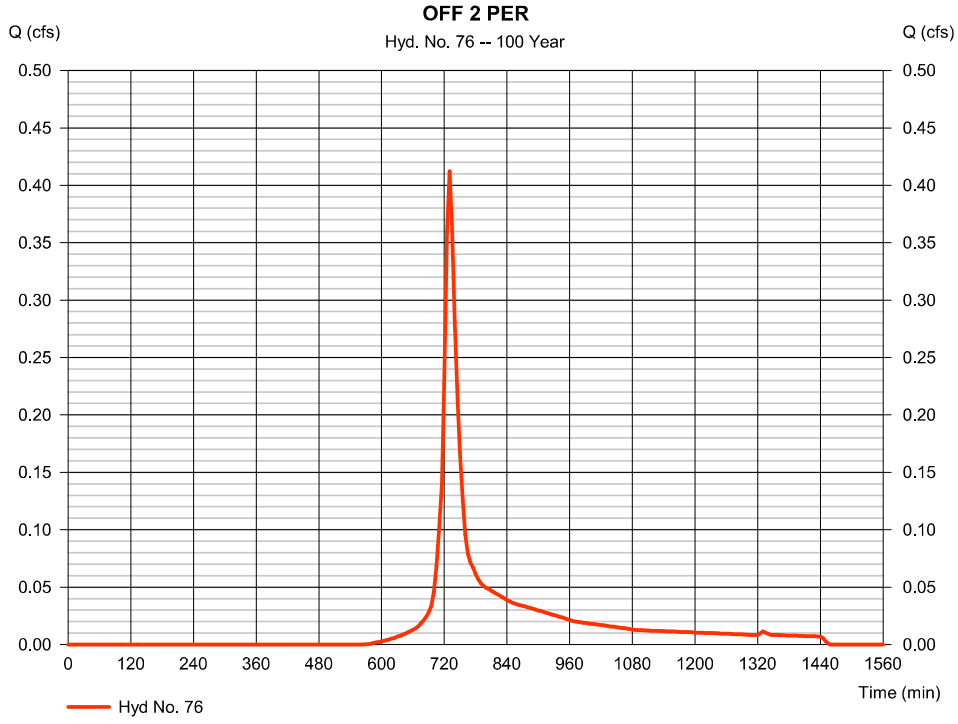


Hydrograph Report

Hyd. No. 76

OFF 2 PER

Hydrograph type	= SCS Runoff	Peak discharge	= 0.412 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,652 cuft
Drainage area	= 0.140 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

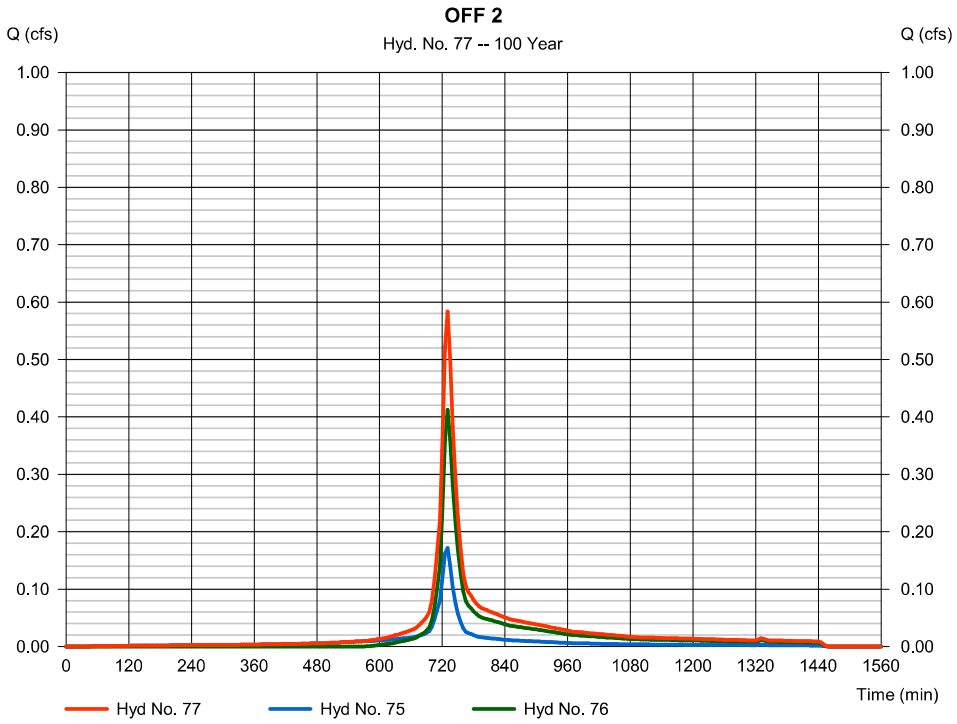


Hydrograph Report

Hyd. No. 77

OFF 2

Hydrograph type	= Combine	Peak discharge	= 0.584 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,447 cuft
Inflow hyds.	= 75, 76	Contrib. drain. area	= 0.170 ac

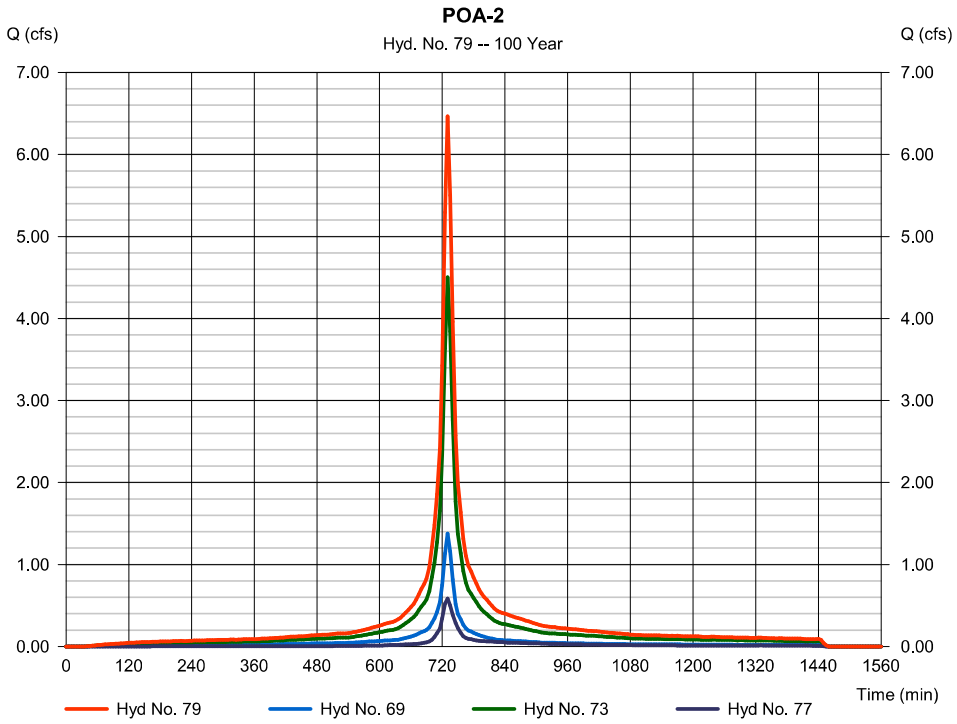


Hydrograph Report

Hyd. No. 79

POA-2

Hydrograph type	= Combine	Peak discharge	= 6.464 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 26,755 cuft
Inflow hyds.	= 69, 73, 77	Contrib. drain. area	= 0.220 ac



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	49.1011	12.2000	0.8732	------
2	64.7016	13.2000	0.8896	------
3	0.0000	0.0000	0.0000	------
5	68.3423	13.2000	0.8484	------
10	60.4476	11.9000	0.7892	------
25	57.1992	11.1000	0.7398	------
50	53.8609	10.3000	0.7021	------
100	47.6740	9.0000	0.6516	------

File name: New Jersey for Storm & San Analysis.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	4.09	3.28	2.74	2.37	2.09	1.87	1.70	1.55	1.43	1.33	1.25	1.17
2	4.90	3.95	3.32	2.87	2.53	2.27	2.06	1.89	1.74	1.62	1.51	1.42
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	5.83	4.74	4.02	3.50	3.11	2.80	2.55	2.35	2.17	2.03	1.90	1.79
10	6.49	5.29	4.50	3.93	3.50	3.17	2.90	2.68	2.49	2.33	2.19	2.07
25	7.32	5.99	5.12	4.50	4.03	3.66	3.36	3.12	2.91	2.73	2.58	2.44
50	7.93	6.51	5.57	4.91	4.41	4.02	3.70	3.44	3.22	3.03	2.86	2.72
100	8.54	7.00	6.01	5.31	4.79	4.38	4.05	3.77	3.54	3.34	3.17	3.02

Tc = time in minutes. Values may exceed 60.

neral Engineering References\Stormwater Management\- New Jersey\Design Storms\Hydraflow\Hunterdon County.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	3.38	0.00	0.00	5.00	6.09	0.00	8.03
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	1.25	3.38	0.00	0.00	5.00	6.09	0.00	8.03

HYDROGRAPH SUMMARY REPORTS – WATER QUALITY STORM

Hydrograph Return Period Recap

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

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	-----	1.330	-----	-----	-----	-----	-----	-----	-----	DA-1 Imp.
2	SCS Runoff	-----	0.000	-----	-----	-----	-----	-----	-----	-----	DA-1 Per.
3	Combine	1, 2	1.330	-----	-----	-----	-----	-----	-----	-----	DA-1A
5	SCS Runoff	-----	0.018	-----	-----	-----	-----	-----	-----	-----	UNDIST. Imp.
6	SCS Runoff	-----	0.000	-----	-----	-----	-----	-----	-----	-----	UNDIST. Per.
7	Combine	5, 6	0.018	-----	-----	-----	-----	-----	-----	-----	UNDIST.
9	SCS Runoff	-----	0.620	-----	-----	-----	-----	-----	-----	-----	OFF 1 Imp.
10	SCS Runoff	-----	0.000	-----	-----	-----	-----	-----	-----	-----	OFF 1 Per.
11	Combine	9, 10	0.620	-----	-----	-----	-----	-----	-----	-----	OFF 1
13	SCS Runoff	-----	0.392	-----	-----	-----	-----	-----	-----	-----	ROOF
15	Combine	3, 7, 11, 13,	2.360	-----	-----	-----	-----	-----	-----	-----	TOTAL TO WQ

Hydrograph Summary Report

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

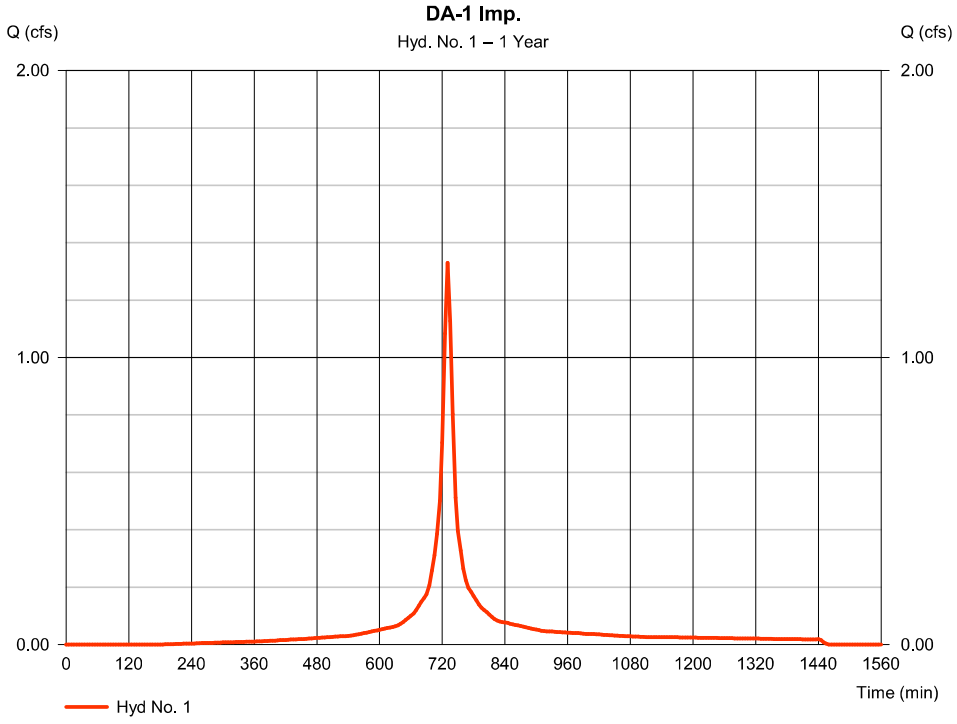
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	1.330	5	730	5,140	-----	-----	-----	DA-1 Imp.
2	SCS Runoff	0.000	5	n/a	0	-----	-----	-----	DA-1 Per.
3	Combine	1.330	5	730	5,140	1, 2	-----	-----	DA-1A
5	SCS Runoff	0.018	5	730	70	-----	-----	-----	UNDIST. Imp.
6	SCS Runoff	0.000	5	n/a	0	-----	-----	-----	UNDIST. Per.
7	Combine	0.018	5	730	70	5, 6	-----	-----	UNDIST.
9	SCS Runoff	0.620	5	730	2,394	-----	-----	-----	OFF 1 Imp.
10	SCS Runoff	0.000	5	n/a	0	-----	-----	-----	OFF 1 Per.
11	Combine	0.620	5	730	2,394	9, 10	-----	-----	OFF 1
13	SCS Runoff	0.392	5	730	1,514	-----	-----	-----	ROOF
15	Combine	2.360	5	730	9,119	3, 7, 11, 13,	-----	-----	TOTAL TO WQ

Hydrograph Report

Hyd. No. 1

DA-1 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 1.330 cfs
Storm frequency	= 1 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 5,140 cuft
Drainage area	= 1.460 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 1.25 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

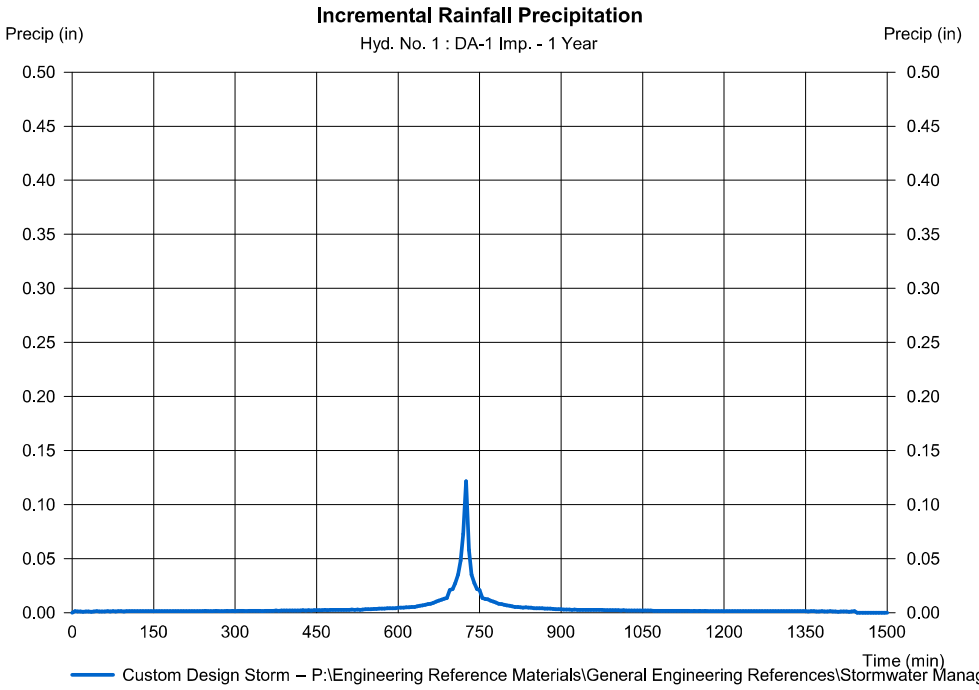


Precipitation Report

Hyd. No. 1

DA-1 Imp.

Storm Frequency	= 1 yrs	Time interval	= 5 min
Total precip.	= 1.2500 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

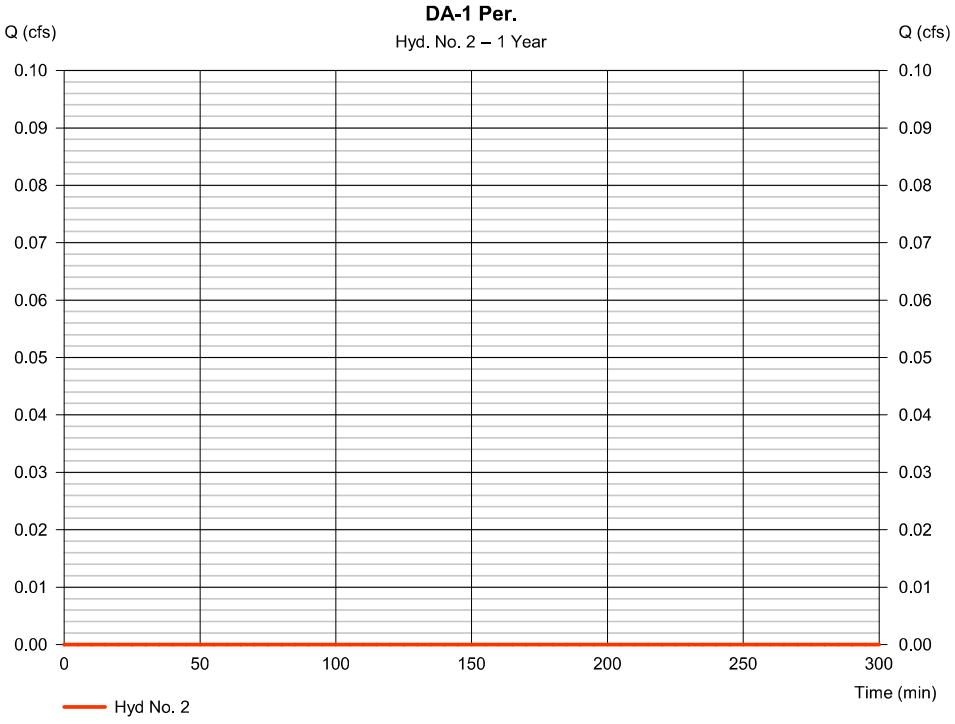


Hydrograph Report

Hyd. No. 2

DA-1 Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 5 min	Hyd. volume	= 0 cuft
Drainage area	= 1.160 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 1.25 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

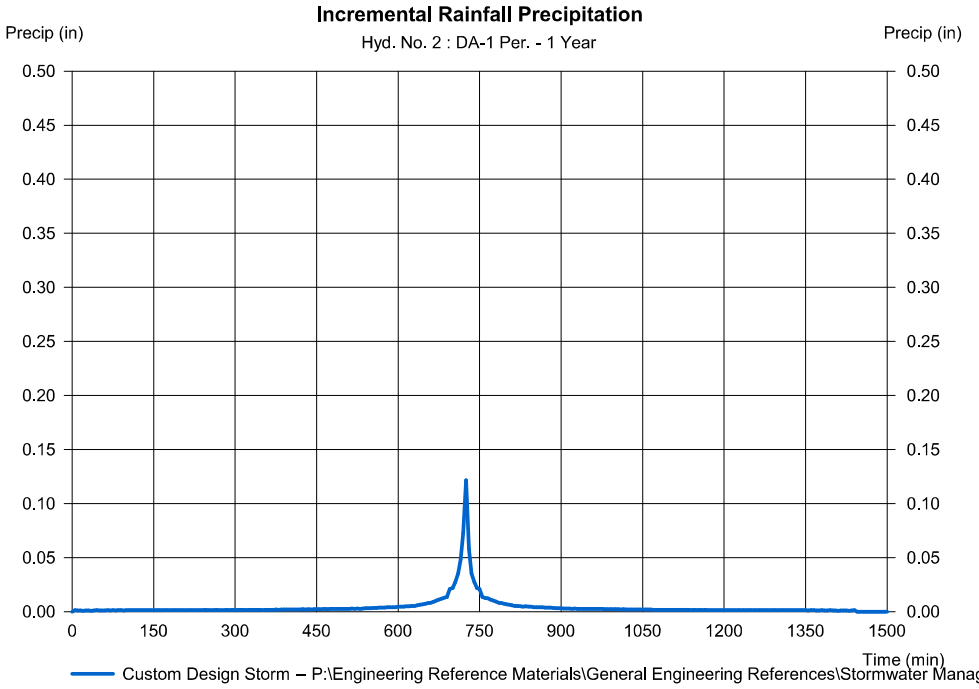


Precipitation Report

Hyd. No. 2

DA-1 Per.

Storm Frequency	= 1 yrs	Time interval	= 5 min
Total precip.	= 1.2500 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

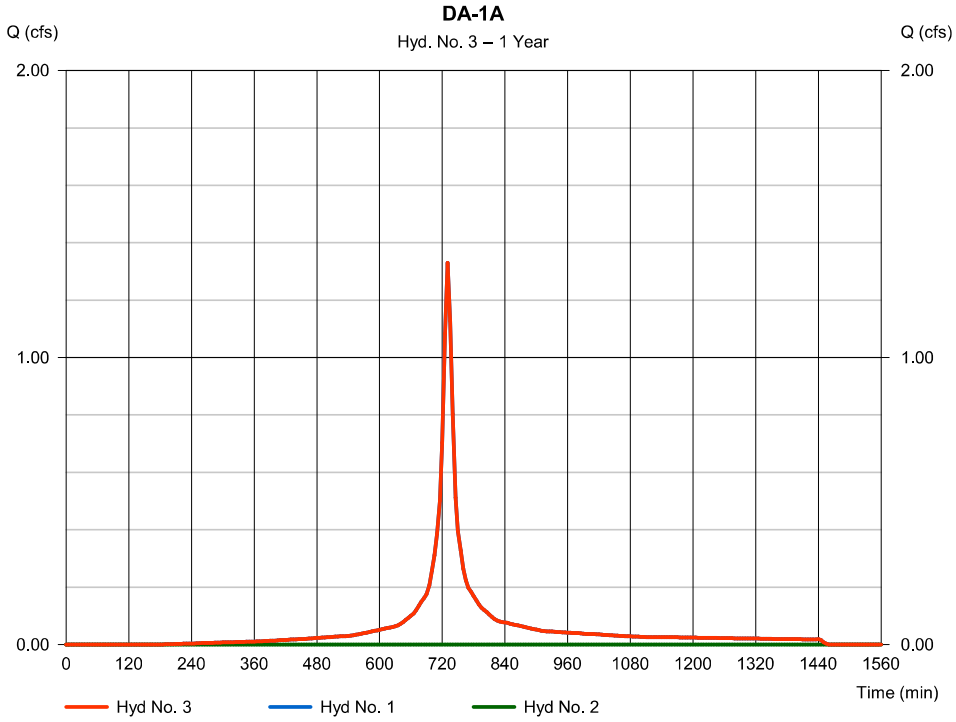


Hydrograph Report

Hyd. No. 3

DA-1A

Hydrograph type	= Combine	Peak discharge	= 1.330 cfs
Storm frequency	= 1 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 5,140 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 2.620 ac

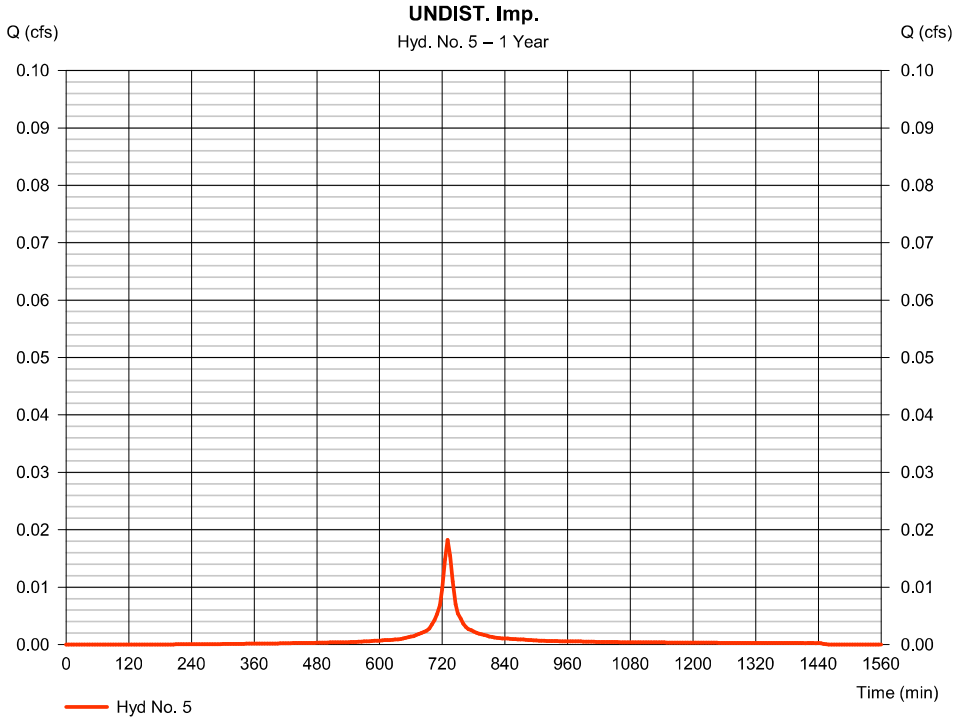


Hydrograph Report

Hyd. No. 5

UNDIST. Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.018 cfs
Storm frequency	= 1 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 70 cuft
Drainage area	= 0.020 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 1.25 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

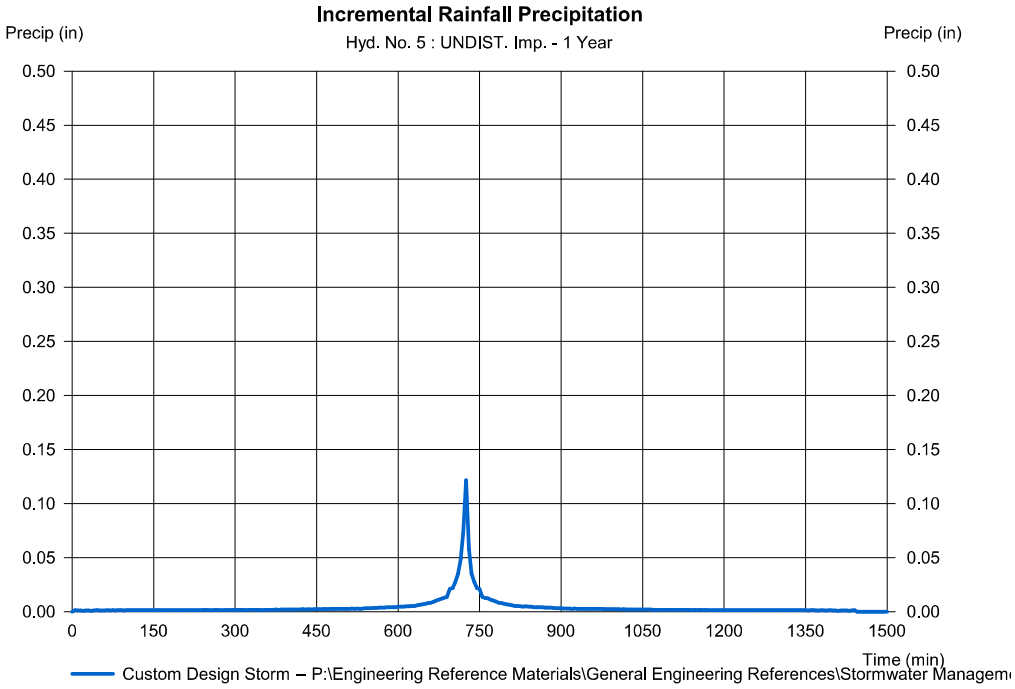


Precipitation Report

Hyd. No. 5

UNDIST. Imp.

Storm Frequency	= 1 yrs	Time interval	= 5 min
Total precip.	= 1.2500 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

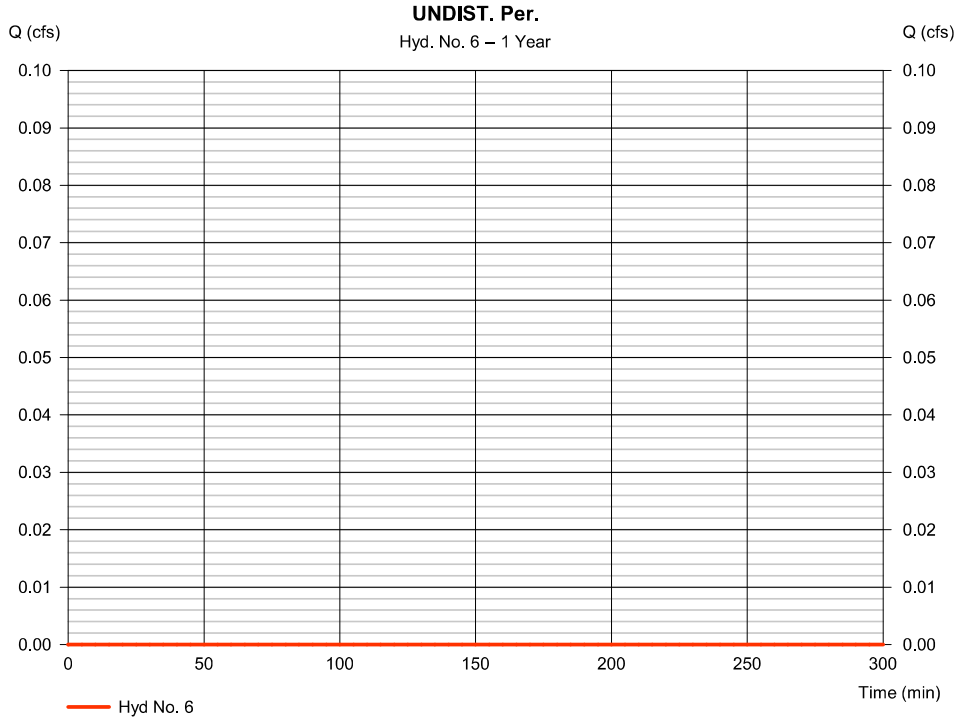


Hydrograph Report

Hyd. No. 6

UNDIST. Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 5 min	Hyd. volume	= 0 cuft
Drainage area	= 0.580 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 1.25 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

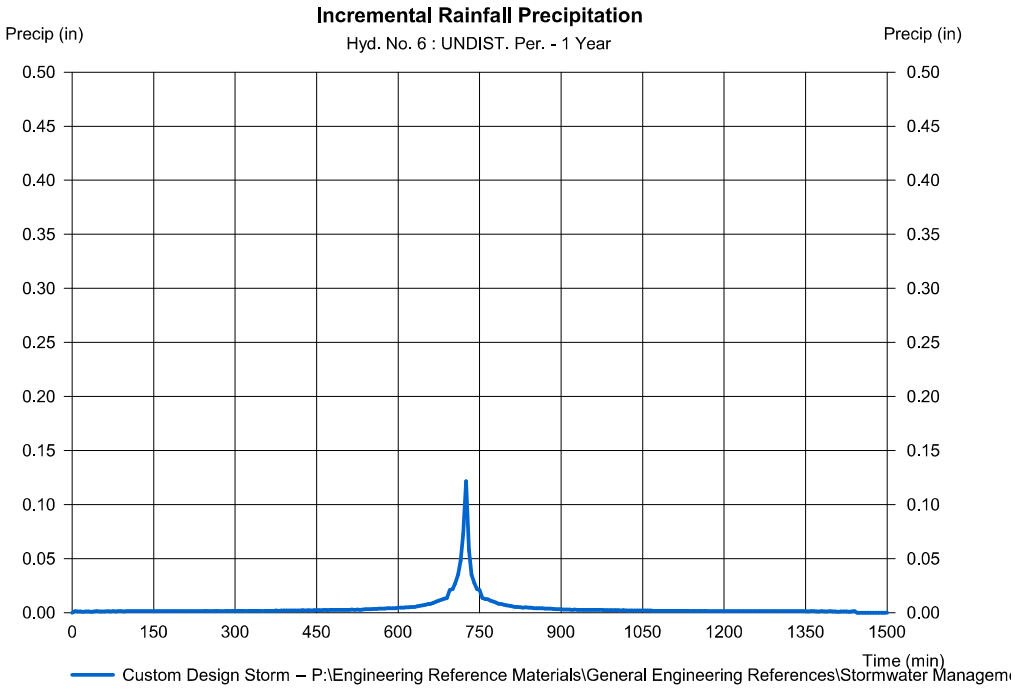


Precipitation Report

Hyd. No. 6

UNDIST. Per.

Storm Frequency	= 1 yrs	Time interval	= 5 min
Total precip.	= 1.2500 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

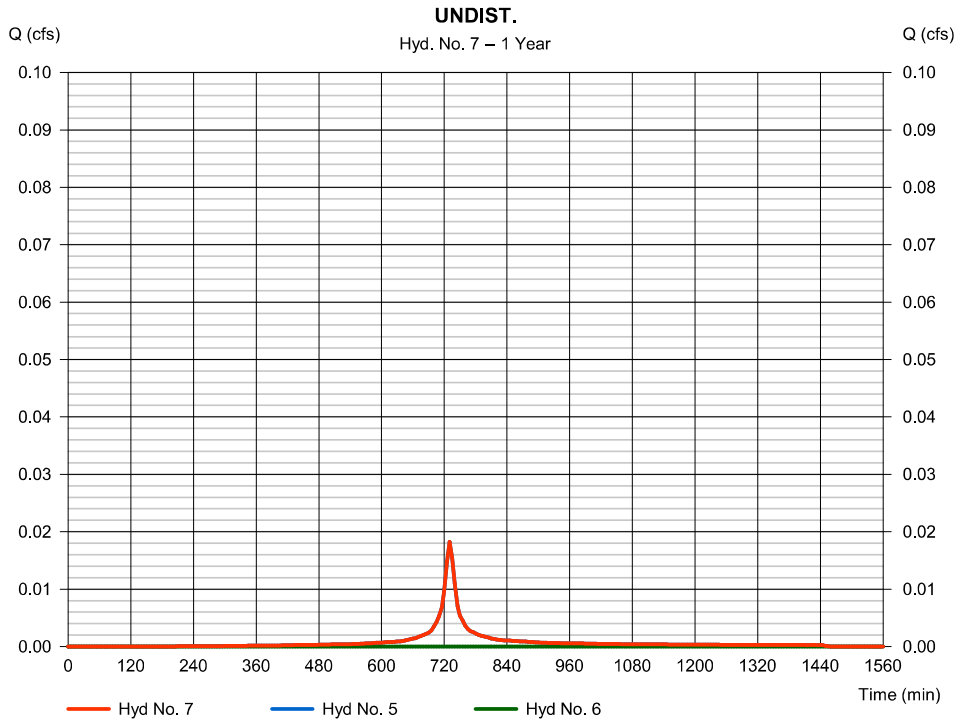


Hydrograph Report

Hyd. No. 7

UNDIST.

Hydrograph type	= Combine	Peak discharge	= 0.018 cfs
Storm frequency	= 1 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 70 cuft
Inflow hyds.	= 5, 6	Contrib. drain. area	= 0.600 ac

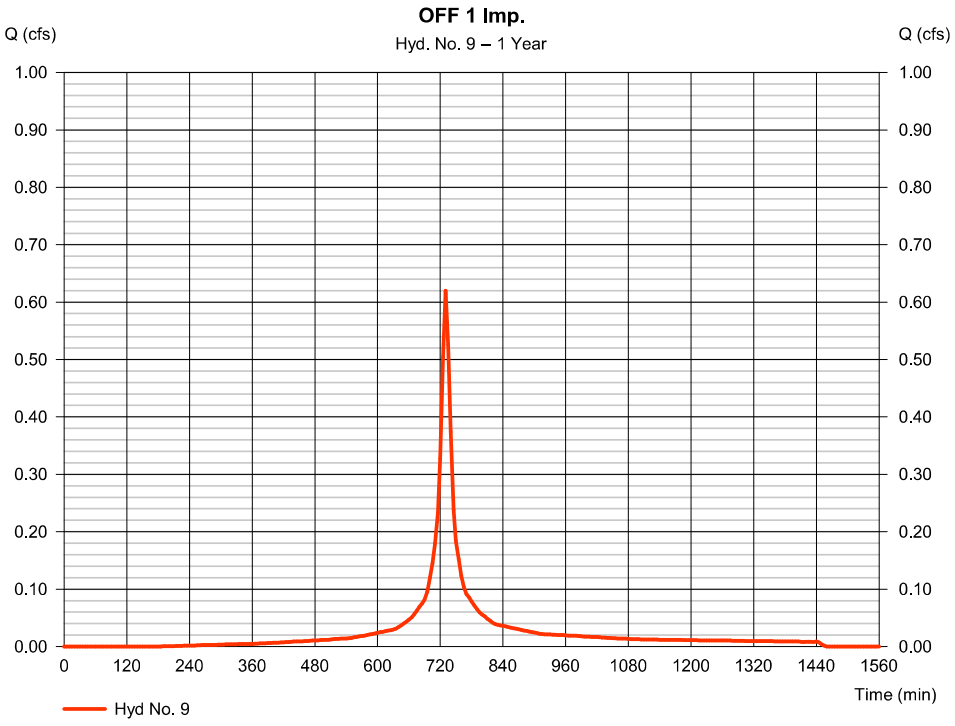


Hydrograph Report

Hyd. No. 9

OFF 1 Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.620 cfs
Storm frequency	= 1 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,394 cuft
Drainage area	= 0.680 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 1.25 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

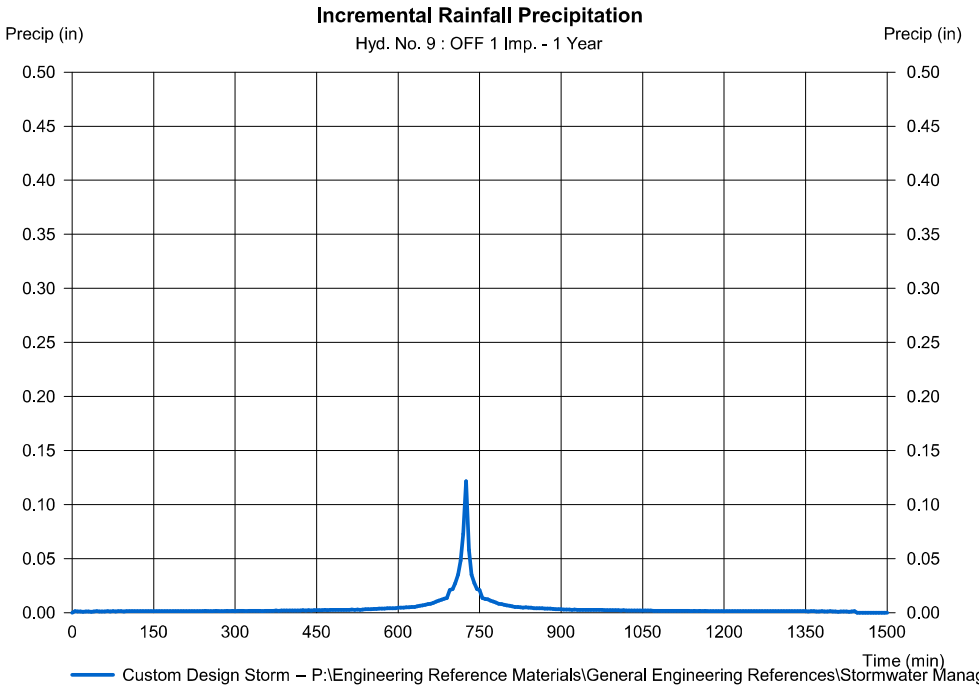


Precipitation Report

Hyd. No. 9

OFF 1 Imp.

Storm Frequency	= 1 yrs	Time interval	= 5 min
Total precip.	= 1.2500 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

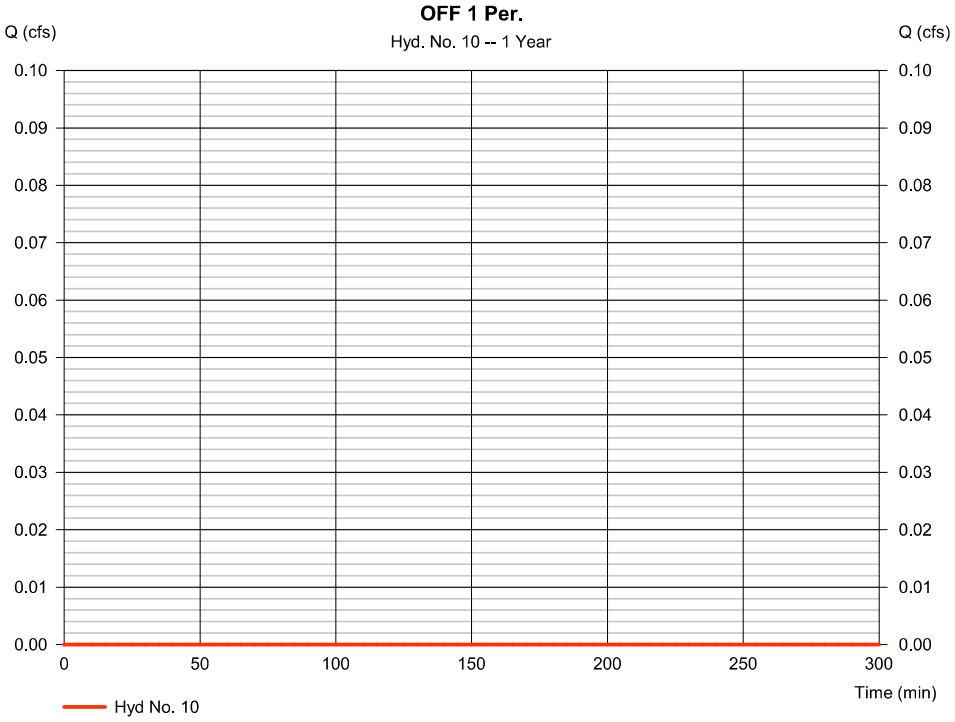


Hydrograph Report

Hyd. No. 10

OFF 1 Per.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 5 min	Hyd. volume	= 0 cuft
Drainage area	= 1.850 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 1.25 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

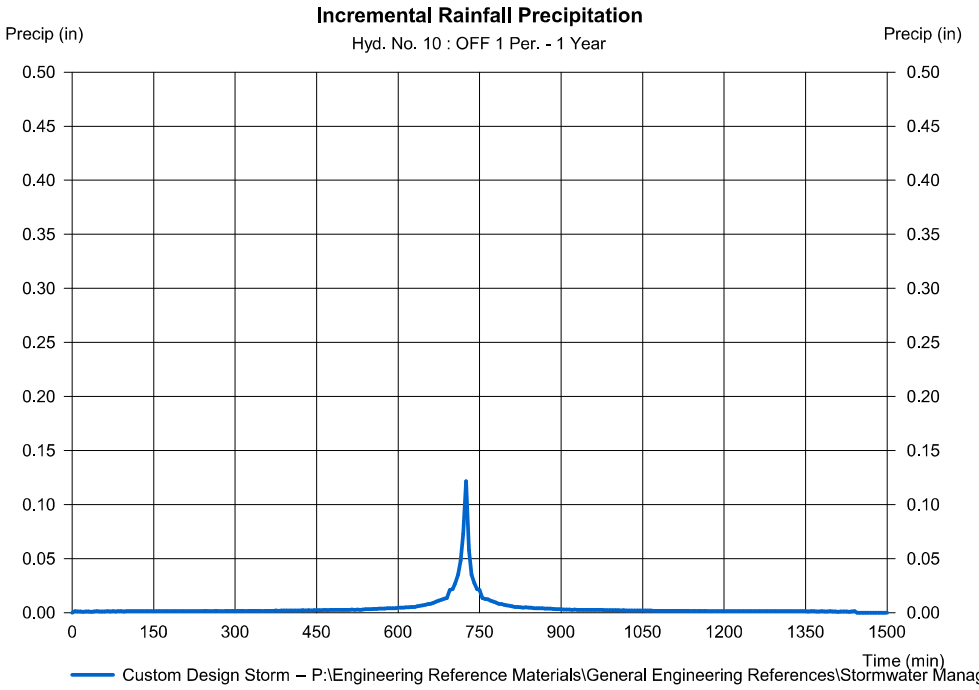


Precipitation Report

Hyd. No. 10

OFF 1 Per.

Storm Frequency	= 1 yrs	Time interval	= 5 min
Total precip.	= 1.2500 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

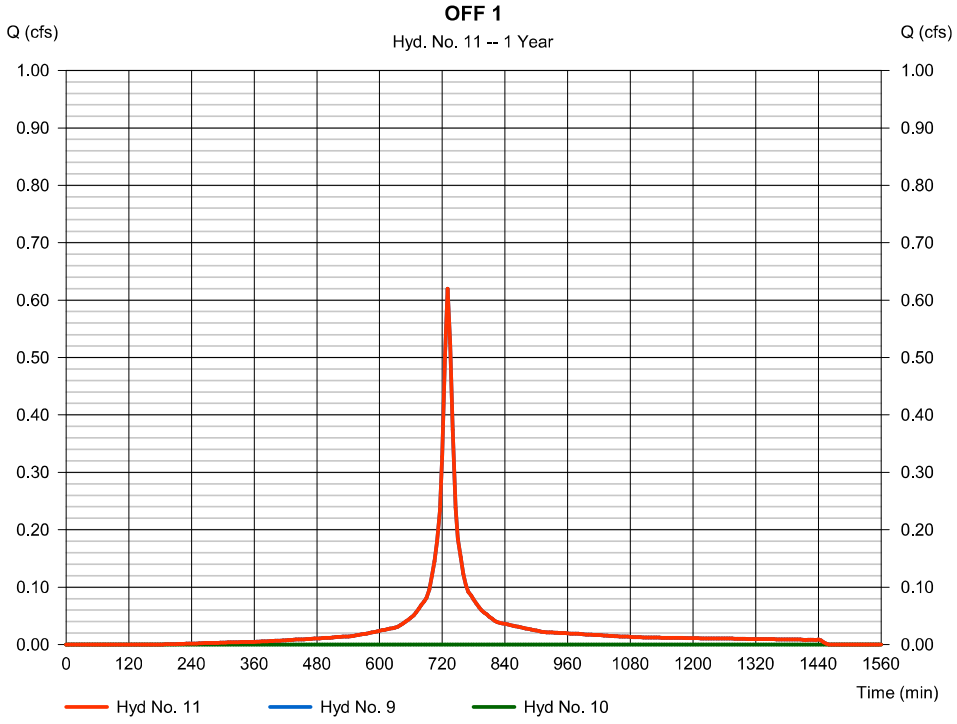


Hydrograph Report

Hyd. No. 11

OFF 1

Hydrograph type	= Combine	Peak discharge	= 0.620 cfs
Storm frequency	= 1 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,394 cuft
Inflow hyds.	= 9, 10	Contrib. drain. area	= 2.530 ac

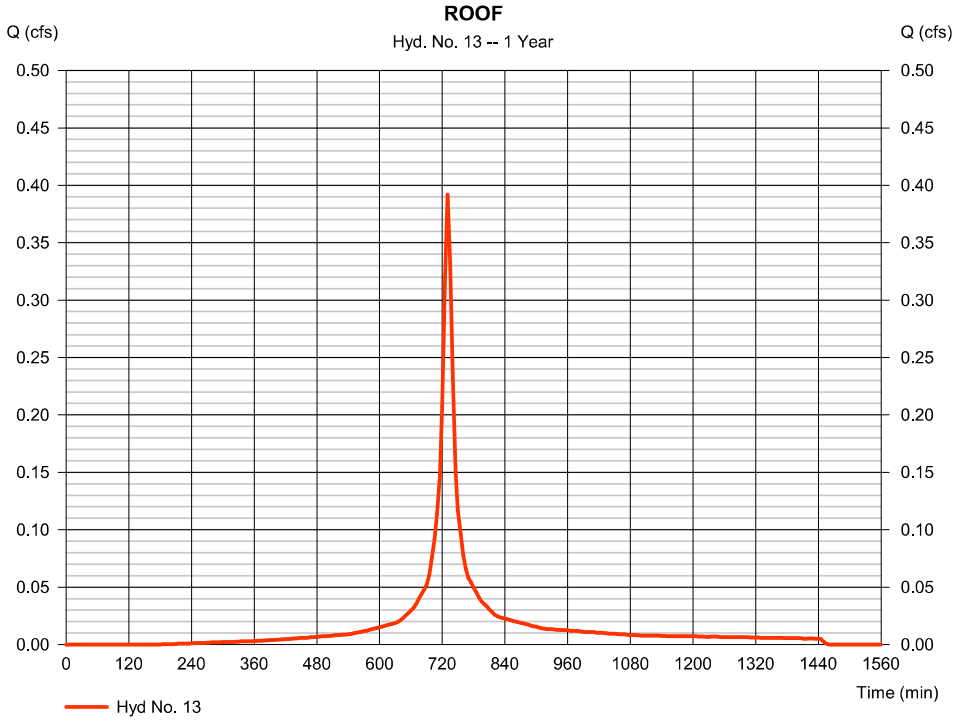


Hydrograph Report

Hyd. No. 13

ROOF

Hydrograph type	= SCS Runoff	Peak discharge	= 0.392 cfs
Storm frequency	= 1 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,514 cuft
Drainage area	= 0.430 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 1.25 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwater	Shape factor	= 484

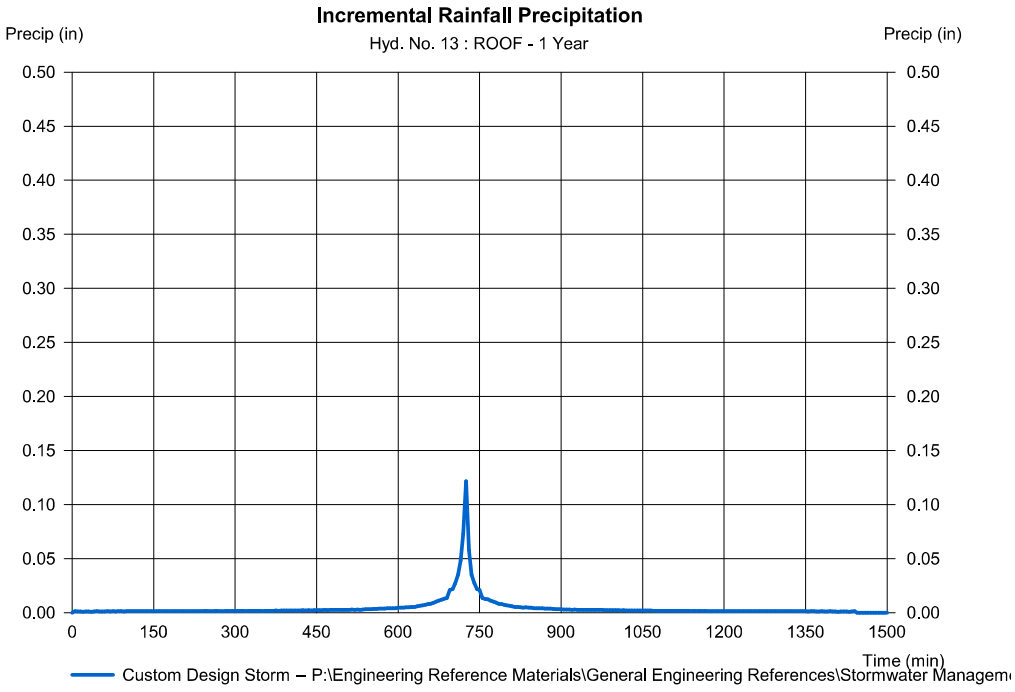


Precipitation Report

Hyd. No. 13

ROOF

Storm Frequency	= 1 yrs	Time interval	= 5 min
Total precip.	= 1.2500 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Materials\General Engineering References\Stormwat		

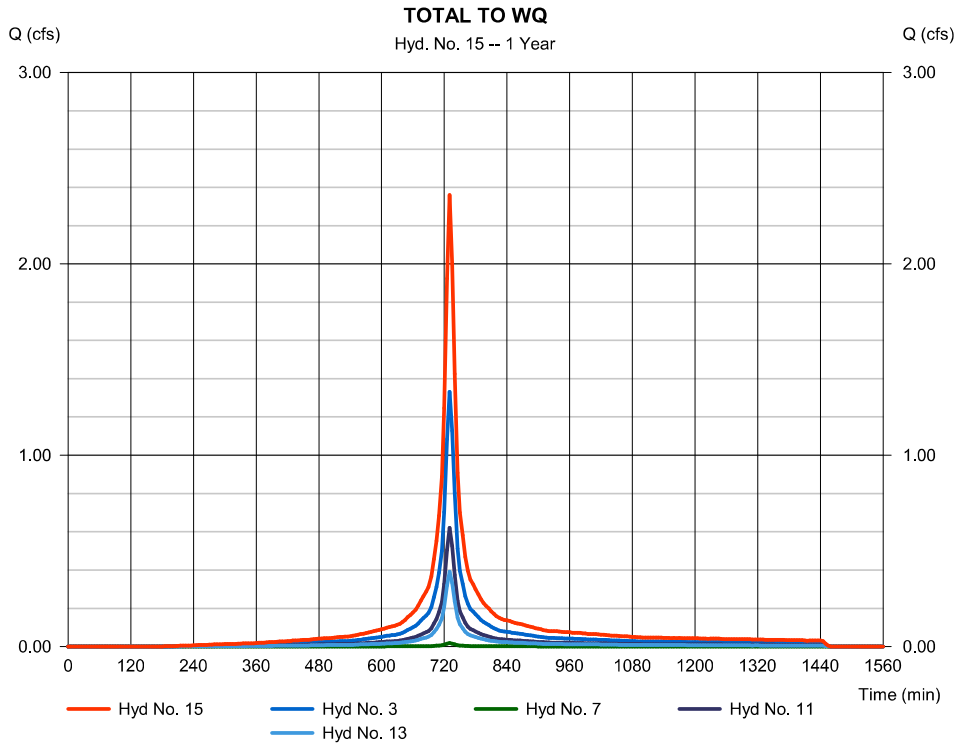


Hydrograph Report

Hyd. No. 15

TOTAL TO WQ

Hydrograph type	= Combine	Peak discharge	= 2.360 cfs
Storm frequency	= 1 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 9,119 cuft
Inflow hyds.	= 3, 7, 11, 13	Contrib. drain. area	= 0.430 ac



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	49.1011	12.2000	0.8732	------
2	64.7016	13.2000	0.8896	------
3	0.0000	0.0000	0.0000	------
5	68.3423	13.2000	0.8484	------
10	60.4476	11.9000	0.7892	------
25	57.1992	11.1000	0.7398	------
50	53.8609	10.3000	0.7021	------
100	47.6740	9.0000	0.6516	------

File name: New Jersey for Storm & San Analysis.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	4.09	3.28	2.74	2.37	2.09	1.87	1.70	1.55	1.43	1.33	1.25	1.17
2	4.90	3.95	3.32	2.87	2.53	2.27	2.06	1.89	1.74	1.62	1.51	1.42
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	5.83	4.74	4.02	3.50	3.11	2.80	2.55	2.35	2.17	2.03	1.90	1.79
10	6.49	5.29	4.50	3.93	3.50	3.17	2.90	2.68	2.49	2.33	2.19	2.07
25	7.32	5.99	5.12	4.50	4.03	3.66	3.36	3.12	2.91	2.73	2.58	2.44
50	7.93	6.51	5.57	4.91	4.41	4.02	3.70	3.44	3.22	3.03	2.86	2.72
100	8.54	7.00	6.01	5.31	4.79	4.38	4.05	3.77	3.54	3.34	3.17	3.02

Tc = time in minutes. Values may exceed 60.

neral Engineering References\Stormwater Management\- New Jersey\Design Storms\Hydraflow\Hunterdon County.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	3.38	0.00	0.00	5.00	6.09	0.00	8.03
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	1.25	3.38	0.00	0.00	5.00	6.09	0.00	8.03

STORMWATER COLLECTION SYSTEM CALCULATIONS (PIPE SIZING)

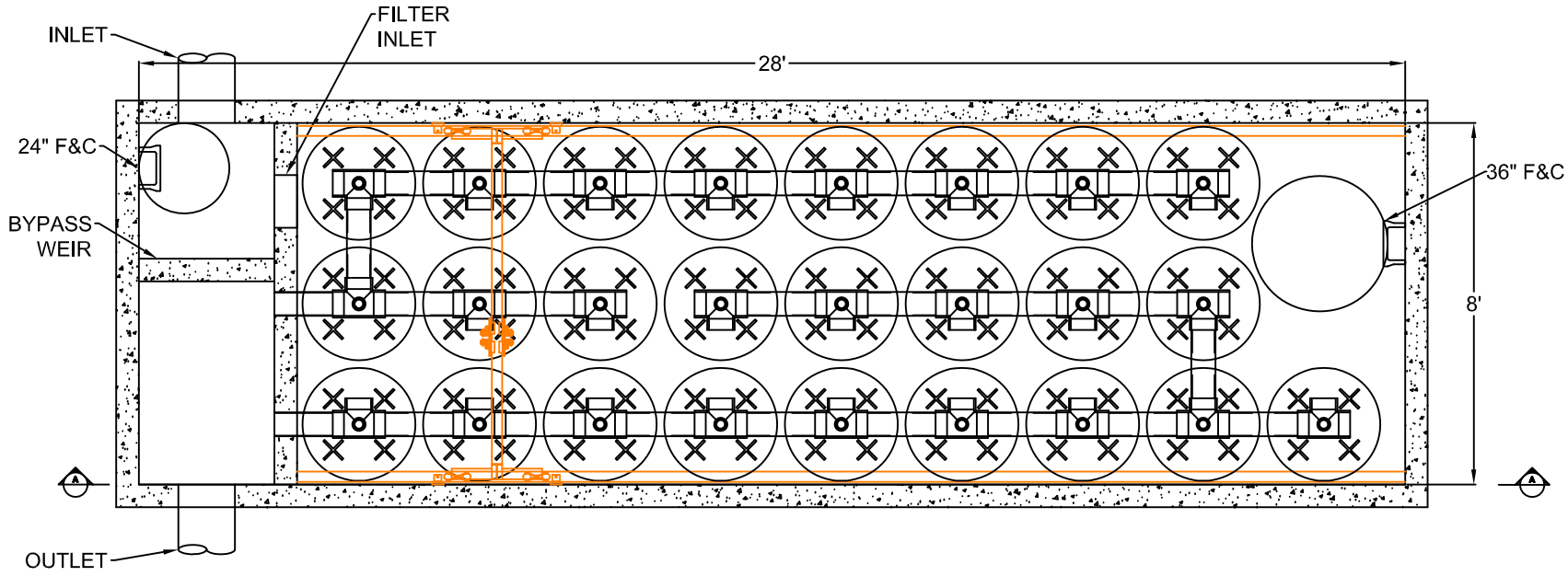
Report

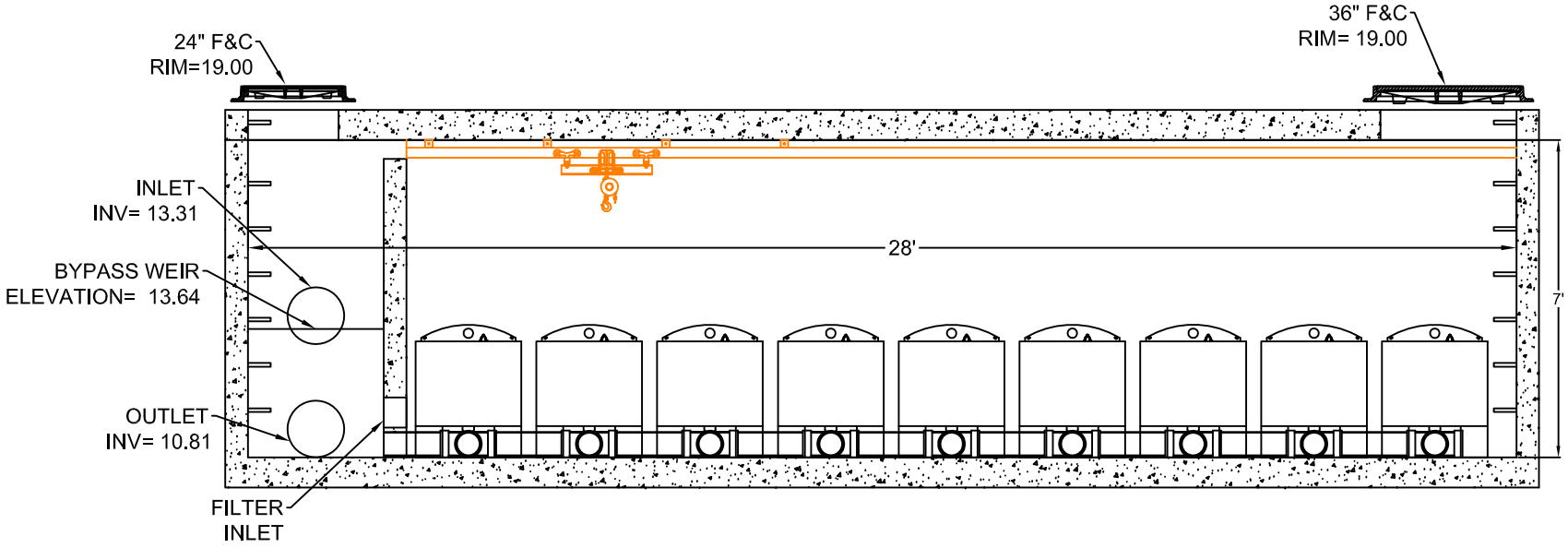
Line No.	DnStm Ln No	Inlet ID	Drng Area (ac)	Runoff Coeff (C)	Incr CxA	Total CxA	Inlet Time (min)	Tc (min)	i Sys (in/hr)	Line Size (in)	Line Length (ft)	Line Slope (%)	Line Type	Capac Full (cfs)	Flow Rate (cfs)	Vel Ave (ft/s)	n-val Pipe	
1	Outfall	44	0.00	0.00	0.00	3.77	0.0	13.5	6.26	30	6	0.54	Cir	32.55	23.61	6.21	0.012	
2	1	43	0.10	0.25	0.03	0.62	10.0	11.9	6.57	18	25	0.47	Cir	7.90	4.04	3.37	0.012	
3	2	117	0.62	0.77	0.48	0.59	10.0	11.5	6.66	15	89	0.50	Cir	4.95	3.93	4.49	0.012	
4	3	118	0.12	0.95	0.11	0.11	10.0	10.0	7.00	15	58	0.50	Cir	4.91	0.80	1.90	0.012	
5	1	48	1.04	0.62	0.64	3.15	10.0	13.1	6.35	30	119	0.50	Cir	31.31	20.03	6.45	0.012	
6	5	108	0.42	0.58	0.24	2.51	10.0	12.9	6.39	30	39	0.51	Cir	31.87	16.03	5.96	0.012	
7	6	106	1.13	0.58	0.66	1.21	10.0	11.8	6.59	24	164	0.30	Cir	13.41	7.99	4.19	0.012	
8	7	104	0.00	0.00	0.00	0.55	0.0	11.2	6.72	18	81	0.31	Cir	6.30	3.72	2.55	0.012	
9	8	103	0.34	0.47	0.16	0.16	10.0	10.0	7.00	15	66	0.29	Cir	3.46	1.12	0.98	0.013	
10	8	105	1.09	0.36	0.39	0.39	10.0	10.0	7.00	15	26	0.99	Cir	6.95	2.75	4.05	0.012	
11	6	110	0.17	0.99	0.17	1.05	10.0	11.0	6.77	18	58	0.53	Cir	8.40	7.12	5.11	0.012	
12	11	109	0.29	0.90	0.26	0.26	10.0	10.0	7.00	15	41	0.61	Cir	5.44	1.83	1.49	0.012	
13	11	40	0.63	0.62	0.39	0.62	10.0	10.5	6.88	15	111	0.49	Cir	4.86	4.29	3.50	0.012	
14	13	41	0.28	0.83	0.23	0.23	10.0	10.0	7.00	15	39	0.62	Cir	5.47	1.63	1.33	0.012	
15	Outfall	100	0.53	0.86	0.46	0.99	10.0	11.6	6.65	18	51	0.49	Cir	7.39	6.55	4.94	0.013	
16	15	101	0.21	0.62	0.13	0.53	10.0	10.4	6.90	18	139	0.50	Cir	7.46	3.63	2.88	0.013	
17	16	102	0.64	0.62	0.40	0.40	10.0	10.0	7.00	15	59	0.49	Cir	4.53	2.78	2.91	0.013	
18	Outfall	46	0.00	0.00	0.00	0.00	0.0	0.0	0.00	30	3	0.58	Cir	33.72	23.61	4.81	0.012	
19	Outfall	120	0.29	0.92	0.27	0.27	10.0	10.4	6.91	24	44	0.50	Cir	15.95	11.08	3.74	0.013	
20	19	27	0.00	0.00	0.00	0.00	10.0	10.0	0.00	24	64	0.48	Cir	17.21	9.23	4.24	0.012	

Project File: 2020-08-11 Pipe Sizing.stm | Number of lines: 20 | Date: 8/12/2020

NOTES: Intensity = 47.67 / (Inlet time + 9.00) ^ 0.65 -- Return period = 100 Yrs. ; ** Critical depth

BAYFILTER DETAIL





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Mount Airy, MD 21771 1-800-229-7283

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4640 TRUEMAN BLVD
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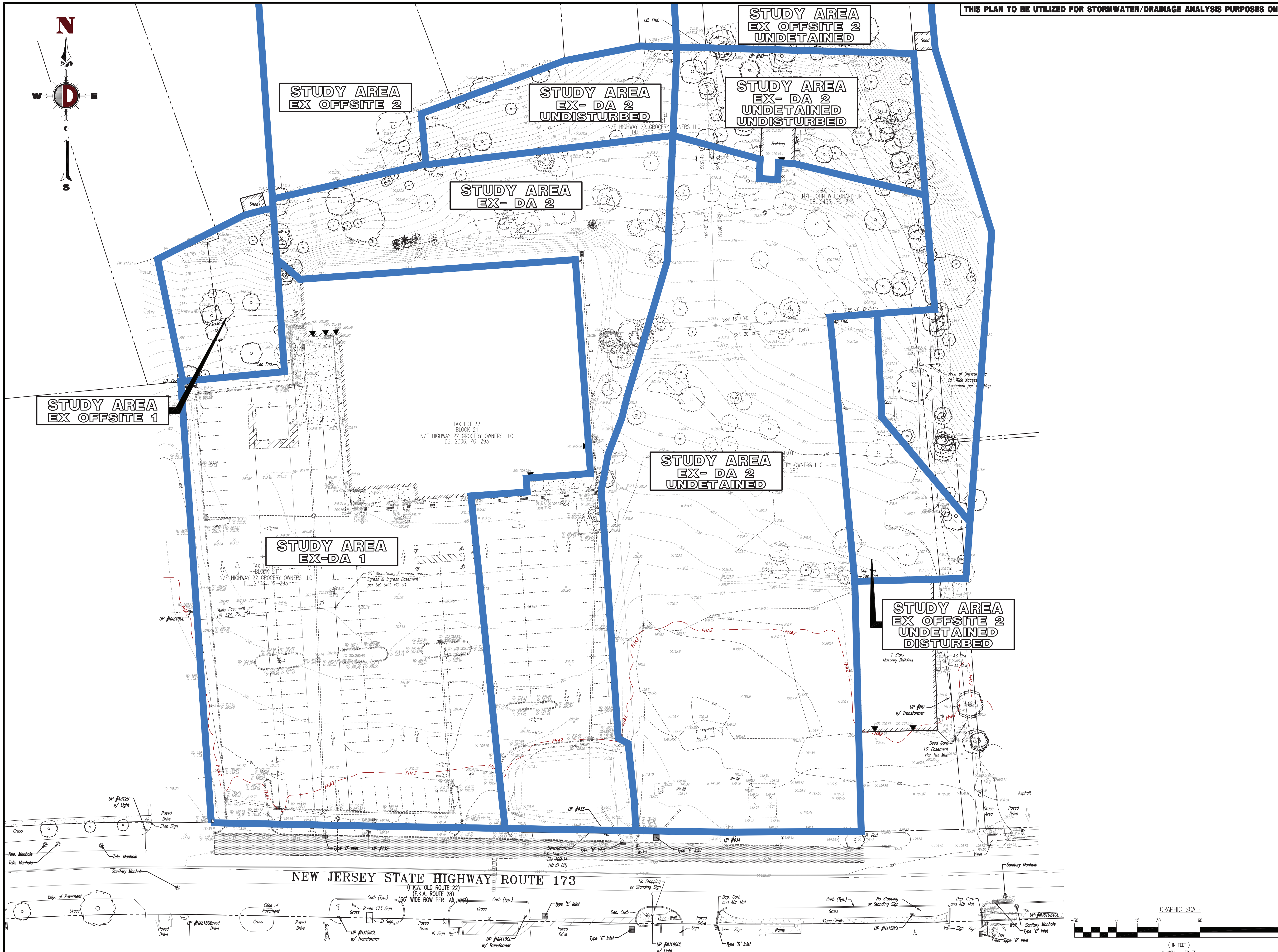
THE BAYFILTER STORMWATER MANAGEMENT SYSTEM IS A STORMWATER FILTRATION DEVICE DESIGNED TO REMOVE FINE SEDIMENTS, HEAVY METALS, AND PHOSPORUS. THE BAYFILTER SYSTEM RELIES ON A SPIRAL WOUND MEDIA FILTER CARTRIDGE WITH APPROXIMATELY 90 SQUARE FEET OF FILTRATION AREA. THE FILTER CARTRIDGES ARE HOUSED IN A CONCRETE STRUCTURE THAT EVENLY DISTRIBUTES THE FLOW BETWEEN CARTRIDGES. THE SYSTEM IS INLINE WITH AN INTERNAL BYPASS WEIR THAT ROUTES HIGH INTENSITY STORMS AROUND THE CARTRIDGES. THE FILTER CARTRIDGES REMOVE POLLUTANTS FROM RUNOFF BY FILTRATION (INTERCEPTION/ATTACHMENT) AND ADSORPTION.

FLOW RATE	2.50 CFS
CARTRIDGE TYPE	545
QTY. CARTRIDGES	25
SEDIMENT CAPACITY	6550 LBS
DATE	9/12/17
DRAWN	AM
CHECKED	EKH
SCALE	N.T.S.

BAYFILTER BF-8-28-25
SYSTEM DETAIL (BF #2)

DRAINAGE AREA MAPS

THIS PLAN TO BE UTILIZED FOR STORMWATER/DRAINAGE ANALYSIS PURPOSES ONLY



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REV.	DATE	COMMENTS	BY

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DRAWN BY:	DESIGNED BY:	CHECKED BY:	CHECKED BY:
ZZ	JW	SLS	—

PROJECT: OLD 22 URBAN RENEWAL ASSOCIATES, LLC
PROPOSED MIXED-USE DEVELOPMENT
BLOCK 21, LOTS 29, 30.01, & 31-33
49 NJSH ROUTE 173 (OLD HIGHWAY 22)
TOWN OF CLINTON, HUNTERDON COUNTY, NEW JERSEY

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BRETT W. SKAPINETZ
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 41985

STEPHEN L. SCHWARTZ
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 48126

TITLE:
EXISTING DRAINAGE AREA MAP

SCALE: (H) 1"=30' (V)
DATE: 08/13/2020
PROJECT No: 2362-99-007
SHEET No: 1 OF 3
Rev. #: 0

EXISTING OFFSITE DRAINAGE AREA MAP

8/12/2020, 9:54:01 AM

Roads

Parcels

1:2,257

0 0.02 0.04 0.08 mi

0 0.03 0.07 0.13 km

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Web AppBuilder for ArcGIS

State of New Jersey, Esri, HERE, Garmin, INCREMENT P, NGA, USGS | NJDEP | NJ Office of Information Technology, Office of GIS (NJOGIS) | New Jersey Office of Information Technology (NJOIT), Office of Geographic Information Systems | New Jersey Office of Information Technology (NJOIT), Office of Geographic

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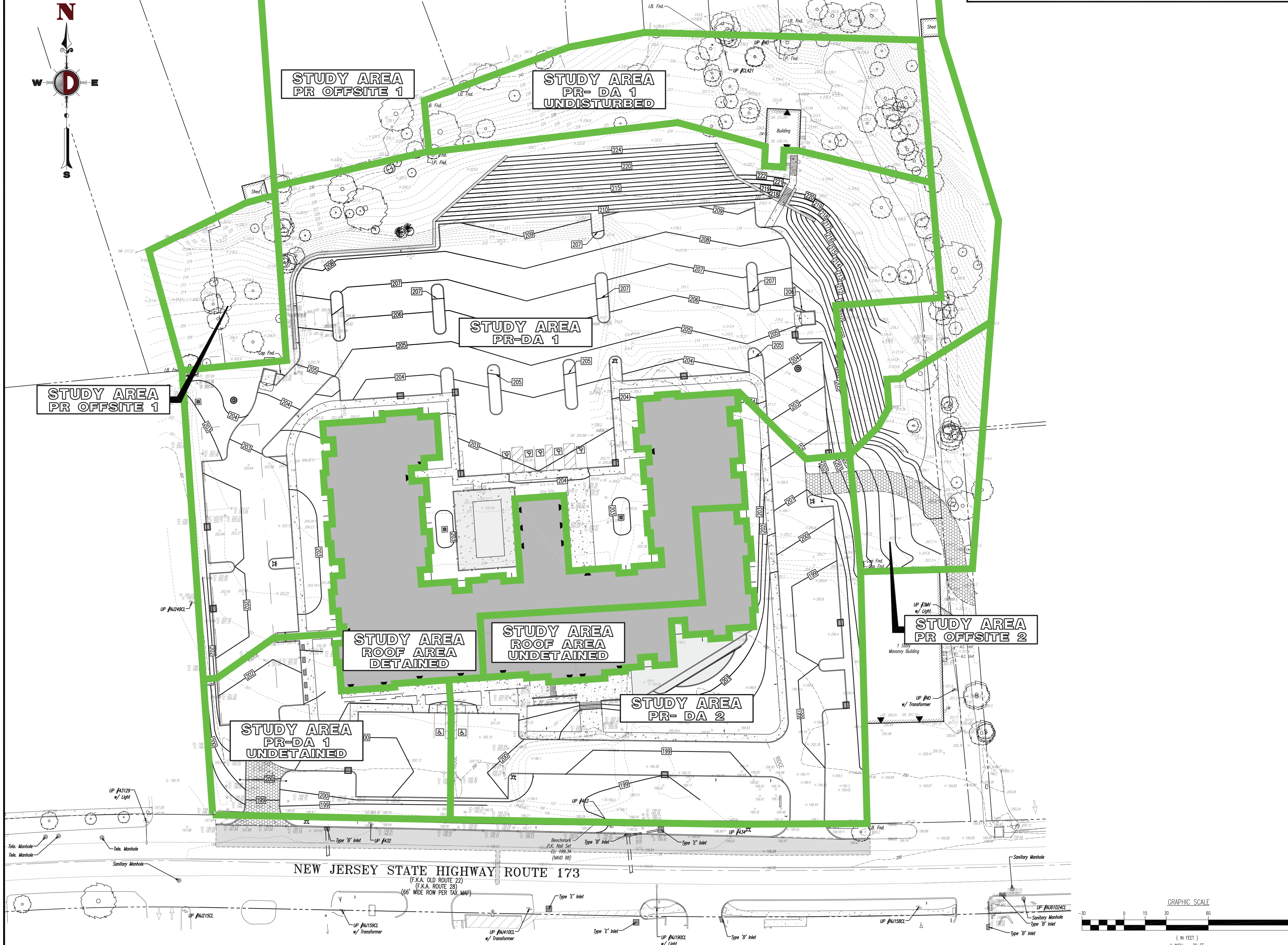

Plotted: 08/12/20 – 1:53 PM, By: zzou
File: P:\DECPC PROJECTS\2362 Ingerman\99-007 Clinton – Rt 173\Dwg\DA Maps\D2362990007PDAM.dwg, ---> Proposed Drainage Area Map

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STEPHEN L. SCHWARTZ
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 48126

TITLE: PROPOSED DRAINAGE AREA MAP

SCALE: (H) 1"=30' (V)
DATE: 08/13/2020
PROJECT No: 2362-99-007
SHEET No: 2 OF 3
Rev. #: 0

PROPOSED OFFSITE DRAINAGE AREA MAP

8/12/2020, 9:54:01 AM

Roads

Parcels

1:2,257

0 0.02 0.04 0.08 mi

0 0.03 0.07 0.13 km

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

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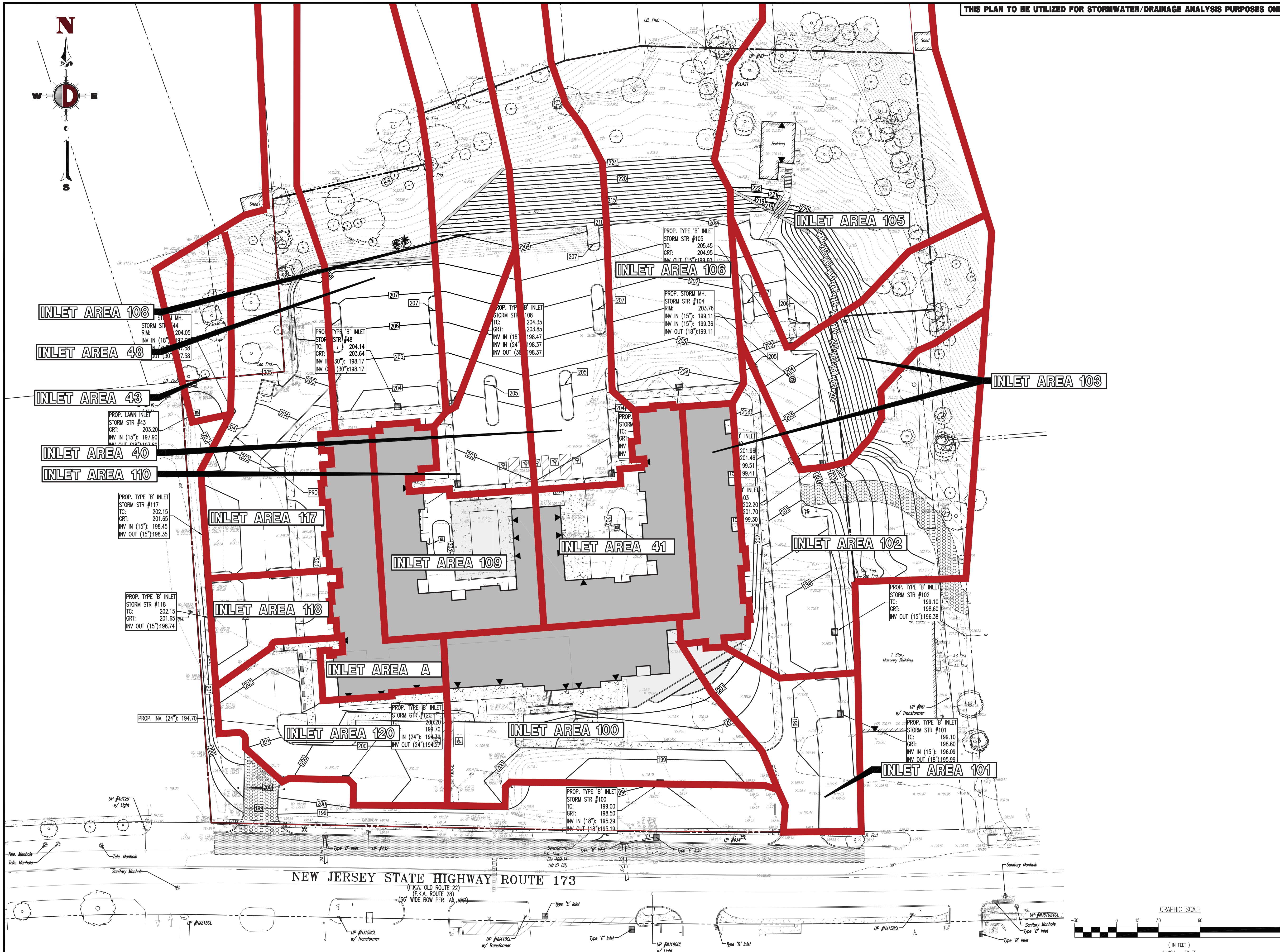

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Plotted: 08/12/20 – 10:38 AM, By: zzou
File: P:\DECPC PROJECTS\2362 Ingerman\99-007 Clinton – Rt 173\Dwg\DA Maps\D2362990071DAM.dwg, ---> Inlets Area Map

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PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 48126

TITLE: INLETS AREA MAP

SCALE: (H) 1"=30' (V)
DATE: 08/13/2020
PROJECT No: 2362-99-007

SHEET No: 3 OF 3
Rev. #: 0