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March 31, 2022

Planning Board
Township of North Brunswick
710 Hermann Road
North Brunswick, NJ 08902

**RE: Stormwater Report
Preliminary & Final Major Site Plan
2720 U.S. Highway 130
Block 224, Lot 1
Township of North Brunswick, Middlesex County, New Jersey**

Dear Board Members:

The above referenced application consists of a 0.707 acre property located at the northeast corner of the intersection of U.S. Highway 130 and Davidsons Mill Road. The zoning is C-4 (Non-Restricted Commercial District) Zone. Presently, the property is occupied by a service station.

The high point elevation of the lot is located at the front left corner of the property adjacent to the existing egress driveway at Route 130 (elevation 95). From the high point, runoff from the service station flows in a southwest direction towards Davidsons Mill Road (elevation 92). A system of catch basins and pipes intercept the runoff prior to it reaching Davidsons Mill Road.

Once the water is in the storm sewer system, it flows west through a 15" ADS pipe, into the existing storm sewer system located at the corner of the site. From the corner, the stormwater is conveyed via 18" RCP pipe into an existing 60" diameter pipe.

According to the Middlesex County Soil Survey, the existing soil type on the site is Nixon moderately well drained variant loam, 2 to 5 percent slopes. The hydrologic soil group associated with the Nixon Series is Type 'B'.

The total existing lot coverage on the site is 21,380 S.F. which represents 69.5% lot coverage. By performing runoff computations for the existing condition, utilizing the NOAA 'D' distribution, the peak rate of runoff generated in the 2, 10, and 100-year storms can be summarized as follows:

Storm	<u>TABLE 1</u> Peak Rate of Runoff (Existing)
2-year	1.14 cfs
10-year	1.89 cfs
100-year	3.49 cfs

The redevelopment of the property will result in an increase of impervious surfaces of 790 square feet. Total lot coverage proposed is 22,170 S.F. (72.0% lot coverage). By re-computing the peak rate of runoff in the proposed condition, the results for the 2, 10, and 100-year storms are as follows:

Storm	<u>TABLE 2</u> Peak Rate of Runoff (Proposed)
2-year	1.18 cfs
10-year	1.94 cfs
100-year	3.54 cfs

A comparison of the existing and proposed peak rates of runoff is as follows:

Storm	<u>TABLE 3</u> Difference (Pre vs Post)
2-year	0.04 cfs
10-year	0.05 cfs
100-year	0.05 cfs

N.J.A.C. 7:8 provides for standards for which stormwater management measures are required as related to a development. The project is not classified as a Major Development as less than 1 acre of land disturbance is proposed and less than ¼ acre of new impervious surfaces are proposed.

The above peak rate of runoff increases in Table 3 can be considered *de minimus* and do not require further structural stormwater management measures. The existing storm sewer will continue to accommodate the site with regard to drainage and no additional infrastructure is required.

Should you have any questions, or require additional information, please do not hesitate to contact me at the number above.

Very truly yours,

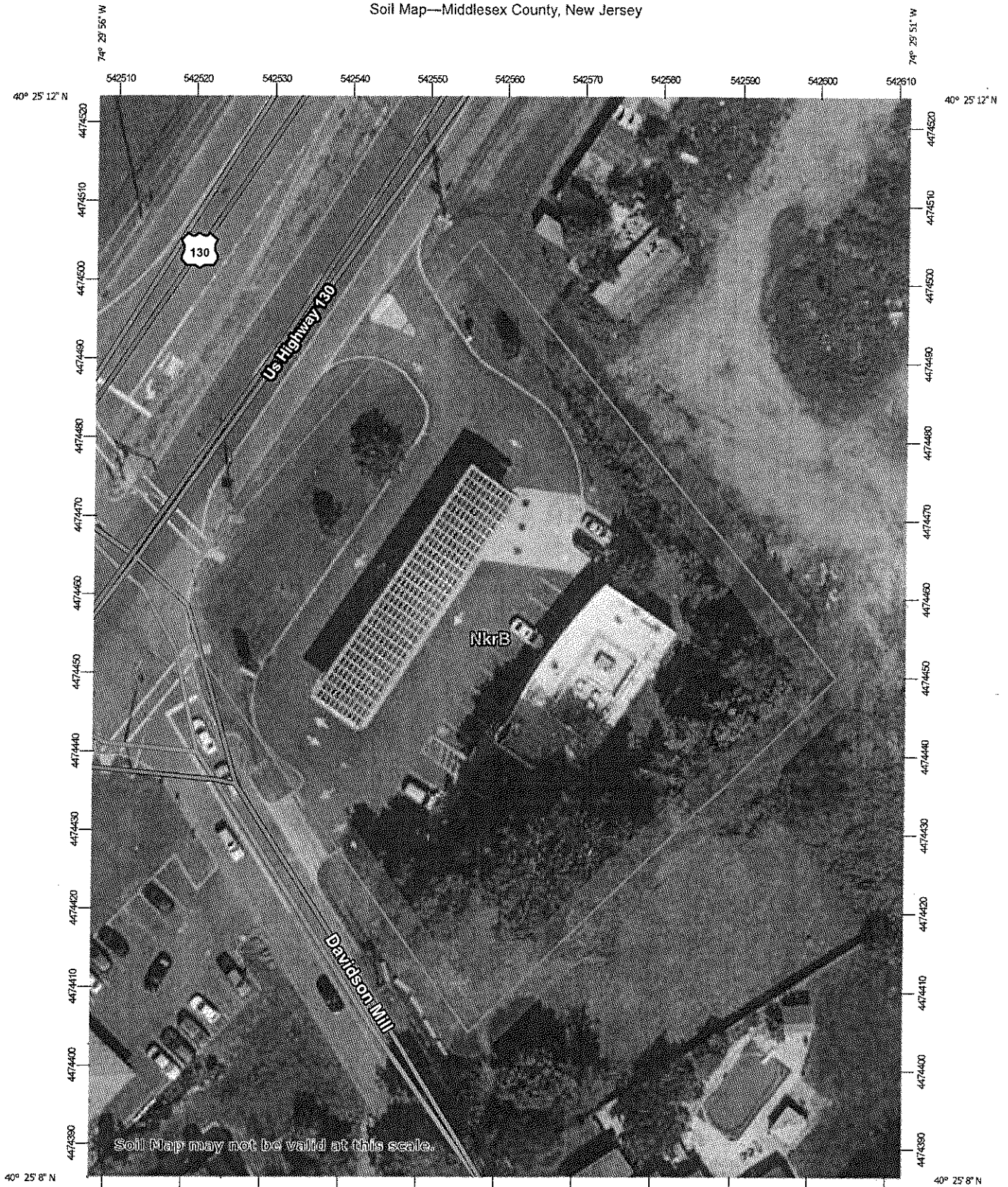
EAST POINT ENGINEERING, LLC

Marc S. Leber

Marc S. Leber, P.E., P.P., C.M.E.

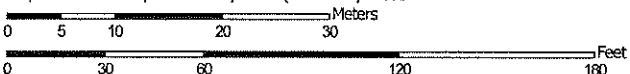
cc: Nirav Mehta, Applicant

Soil Map—Middlesex County, New Jersey



Soil Map may not be valid at this scale.

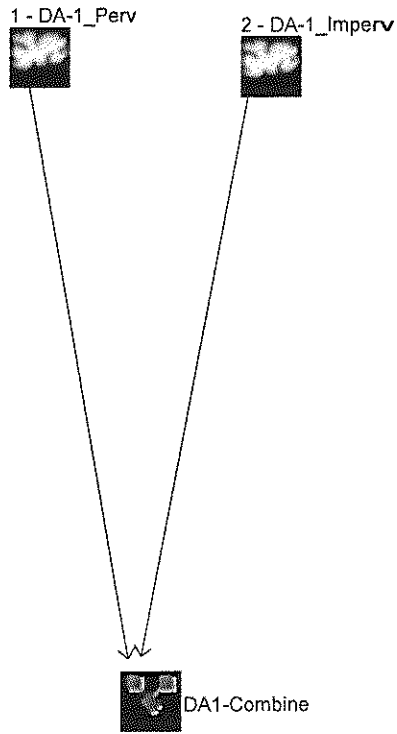
Map Scale: 1:671 if printed on A portrait (8.5" x 11") sheet.



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

Watershed Model Schematic

Hydraflow Hydrographs by Intelisolve v9.23



Legend

Hyd. Origin	Description
1	SCS Runoff DA-1_Perv
2	SCS Runoff DA-1_Imperv
3	Combine DA1-Combine

Hydrograph Return Period Recap

Hydraflow Hydrographs by Intelisolve v9.23

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)								Hydrograph description
			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	
1	SCS Runoff	----	----	0.057	----	----	0.229	----	----	0.673	DA-1_Perv
2	SCS Runoff	----	----	1.081	----	----	1.663	----	----	2.813	DA-1_Imperv
3	Combine	1, 2	----	1.138	----	----	1.892	----	----	3.486	DA1-Combine

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.23

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	0.057	6	732	371	---	----	----	DA-1_Perv
2	SCS Runoff	1.081	6	732	5,198	---	----	----	DA-1_Imperv
3	Combine	1.138	6	732	5,568	1, 2	----	----	DA1-Combine
existing 03-31-22.gpw					Return Period: 2 Year			Friday, Apr 1, 2022	

Hydrograph Report

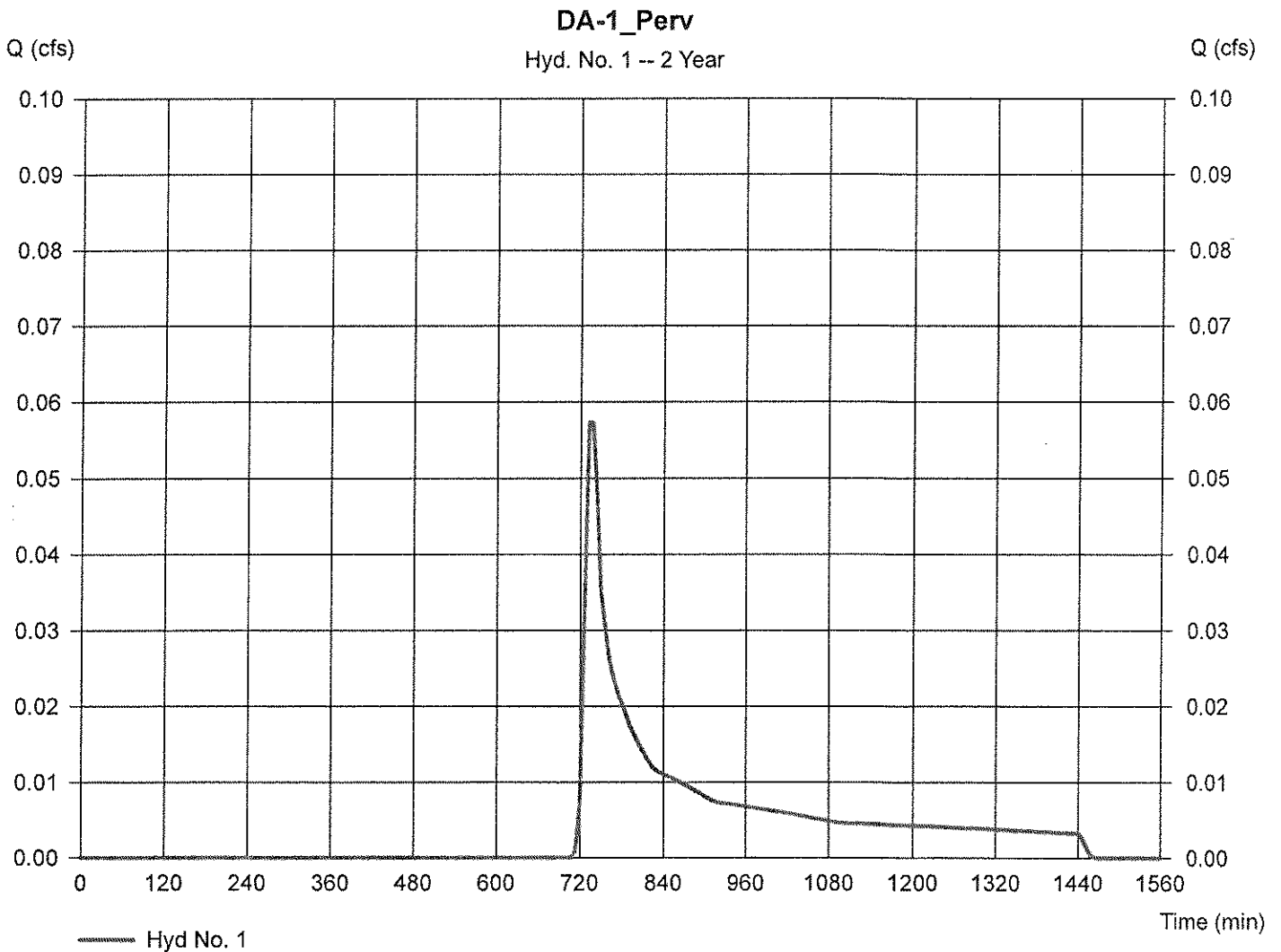
Hydraflow Hydrographs by Intelisolve v9.23

Friday, Apr 1, 2022

Hyd. No. 1

DA-1_Perv

Hydrograph type	= SCS Runoff	Peak discharge	= 0.057 cfs
Storm frequency	= 2 yrs	Time to peak	= 732 min
Time interval	= 6 min	Hyd. volume	= 371 cuft
Drainage area	= 0.215 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.35 in	Distribution	= Custom
Storm duration	= NOAA_D cds.CDS	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23

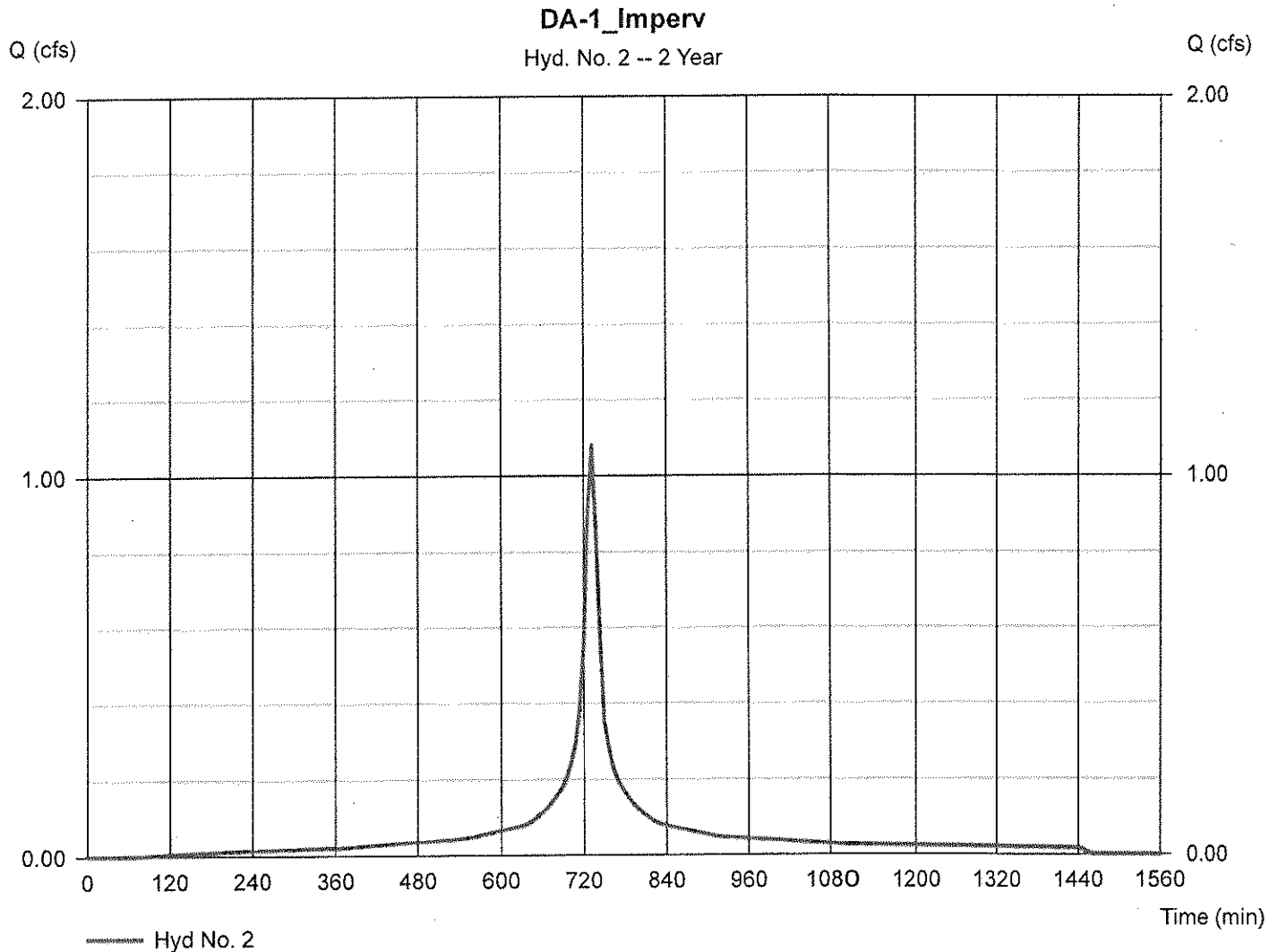
Friday, Apr 1, 2022

Hyd. No. 2

DA-1_Imperv

Hydrograph type = SCS Runoff
 Storm frequency = 2 yrs
 Time interval = 6 min
 Drainage area = 0.490 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 3.35 in
 Storm duration = NOAA_D cds.CDS

Peak discharge = 1.081 cfs
 Time to peak = 732 min
 Hyd. volume = 5,198 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 10.00 min
 Distribution = Custom
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23

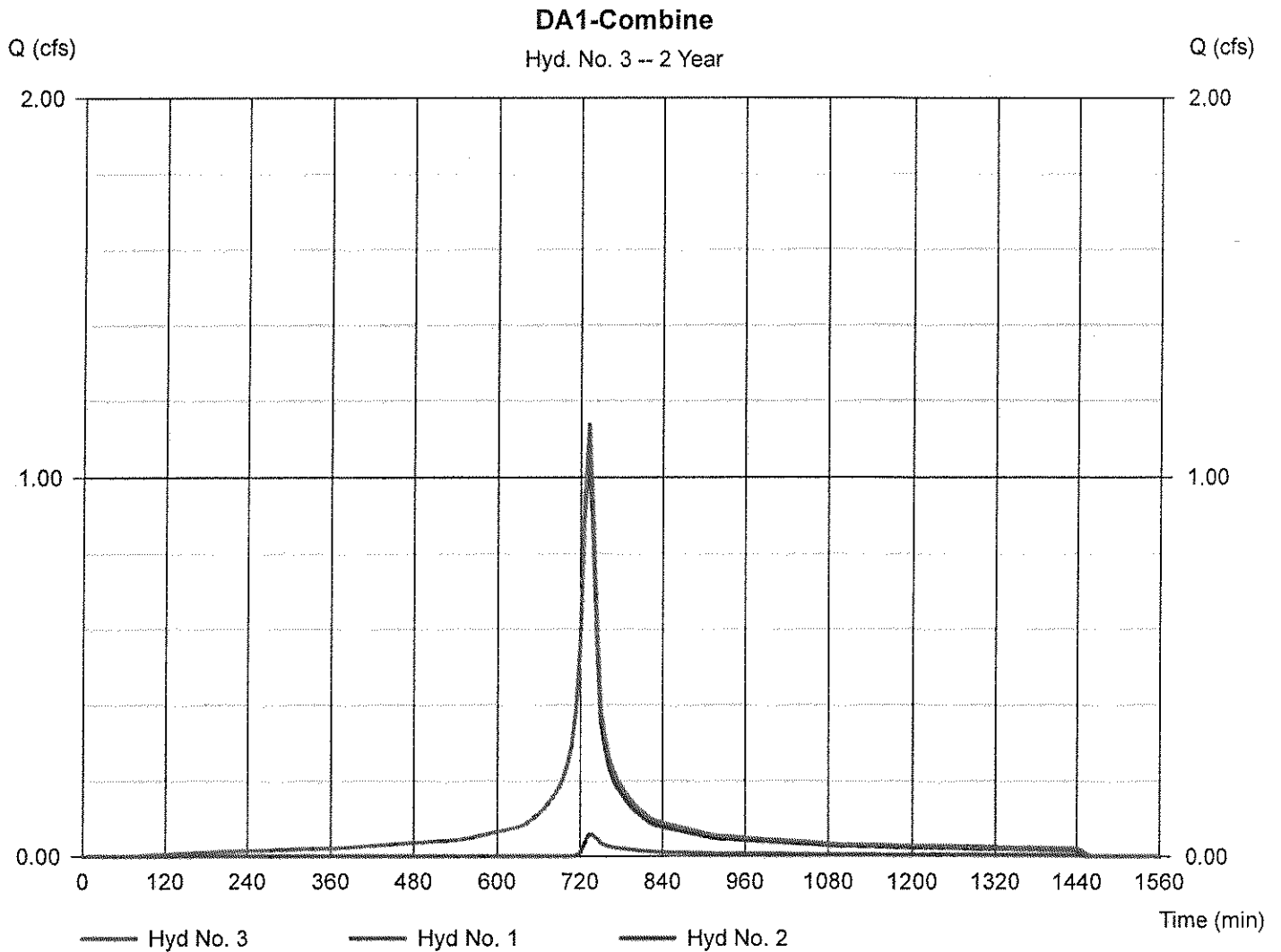
Friday, Apr 1, 2022

Hyd. No. 3

DA1-Combine

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 6 min
Inflow hyds. = 1, 2

Peak discharge = 1.138 cfs
Time to peak = 732 min
Hyd. volume = 5,568 cuft
Contrib. drain. area = 0.705 ac



Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.23

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	0.229	6	732	1,055	---	----	----	DA-1_Perv
2	SCS Runoff	1.663	6	732	8,143	---	----	----	DA-1_Imperv
3	Combine	1.892	6	732	9,197	1, 2	----	----	DA1-Combine
existing 03-31-22.gpw					Return Period: 10 Year			Friday, Apr 1, 2022	

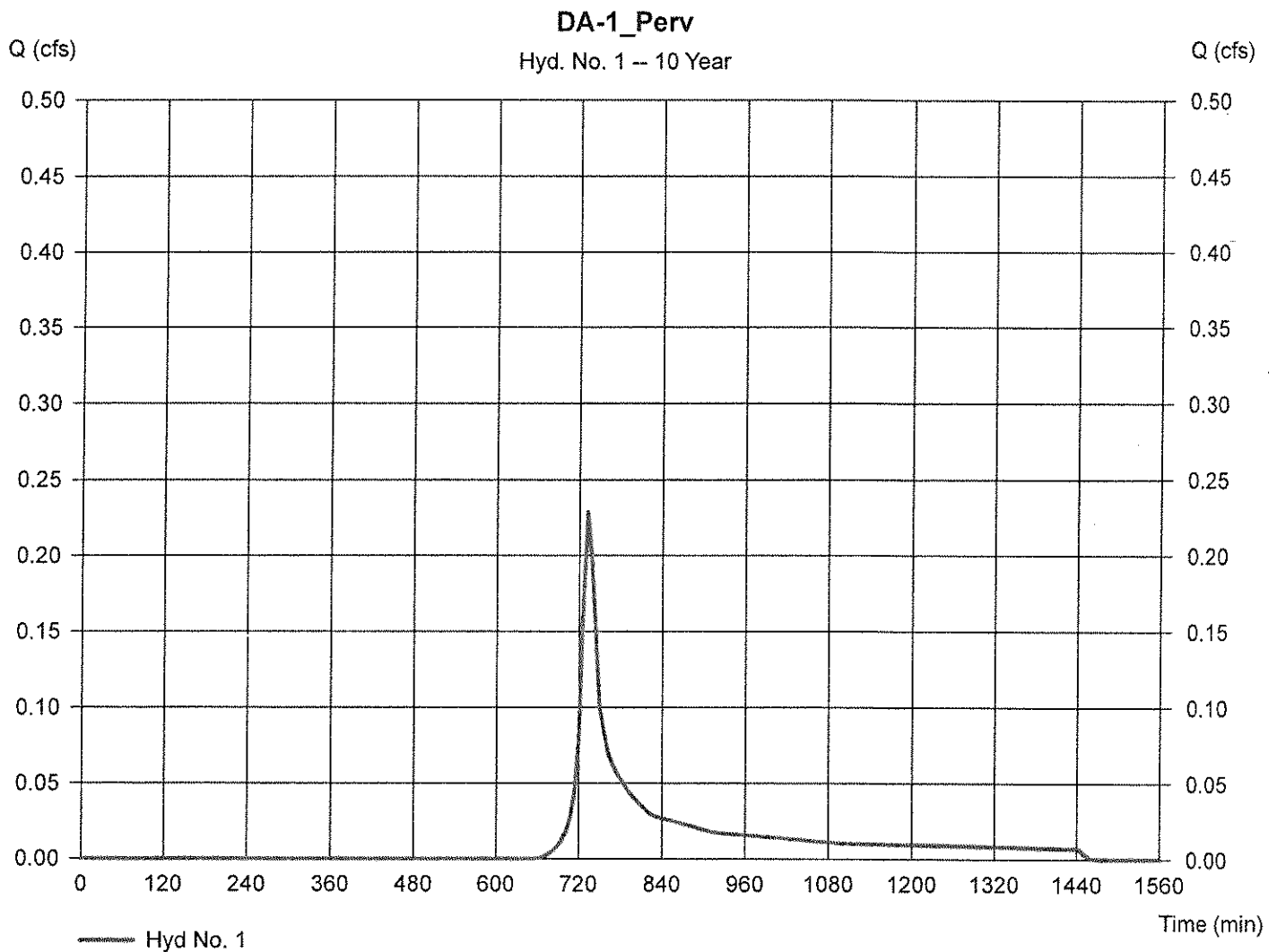
Hydrograph Report

Hyd. No. 1

DA-1_Perv

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Time interval = 6 min
Drainage area = 0.215 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 5.12 in
Storm duration = NOAA_D cds.CDS

Peak discharge = 0.229 cfs
Time to peak = 732 min
Hyd. volume = 1,055 cuft
Curve number = 61
Hydraulic length = 0 ft
Time of conc. (Tc) = 10.00 min
Distribution = Custom
Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23

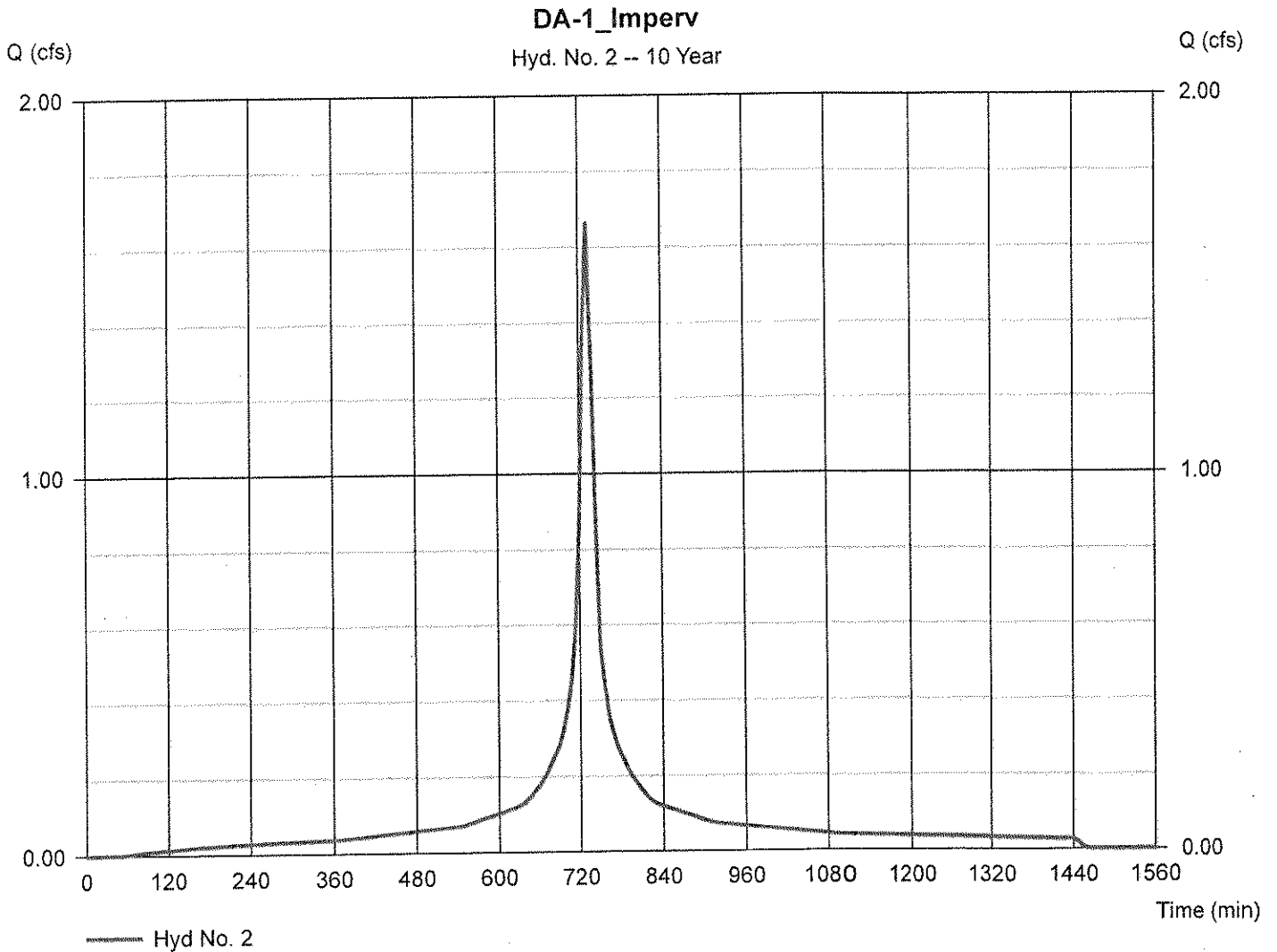
Friday, Apr 1, 2022

Hyd. No. 2

DA-1_Imperv

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 6 min
 Drainage area = 0.490 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 5.12 in
 Storm duration = NOAA_D cds.CDS

Peak discharge = 1.663 cfs
 Time to peak = 732 min
 Hyd. volume = 8,143 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 10.00 min
 Distribution = Custom
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23

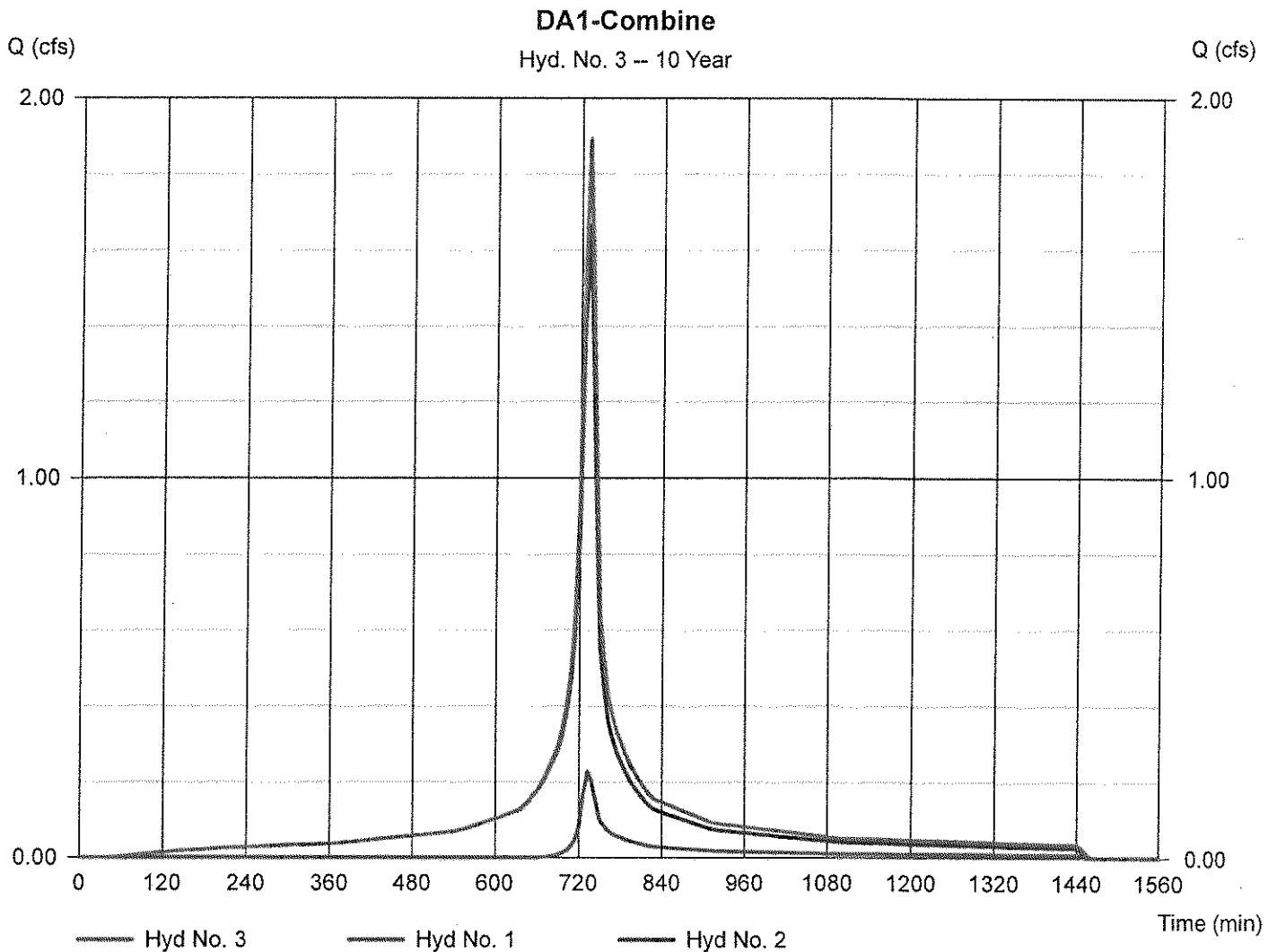
Friday, Apr 1, 2022

Hyd. No. 3

DA1-Combine

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 6 min
Inflow hyds. = 1, 2

Peak discharge = 1.892 cfs
Time to peak = 732 min
Hyd. volume = 9,197 cuft
Contrib. drain. area = 0.705 ac



Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.23

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	0.673	6	732	2,877	---	----	-----	DA-1_Perv
2	SCS Runoff	2.813	6	732	13,990	---	----	-----	DA-1_Imperv
3	Combine	3.486	6	732	16,867	1, 2	----	-----	DA1-Combine
existing 03-31-22.gpw					Return Period: 100 Year		Friday, Apr 1, 2022		

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23

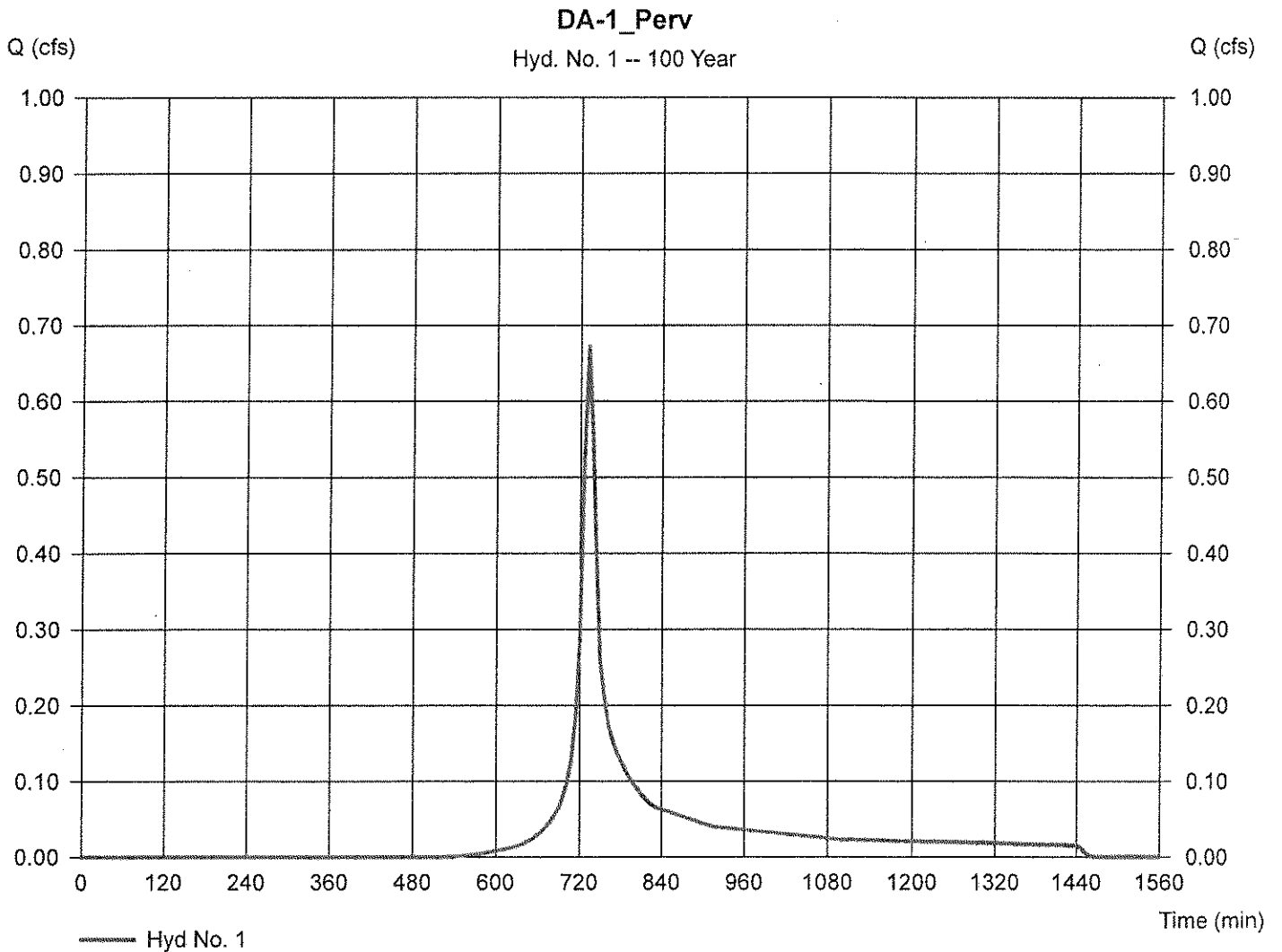
Friday, Apr 1, 2022

Hyd. No. 1

DA-1_Perv

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Time interval = 6 min
Drainage area = 0.215 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 8.63 in
Storm duration = NOAA_D cds.CDS

Peak discharge = 0.673 cfs
Time to peak = 732 min
Hyd. volume = 2,877 cuft
Curve number = 61
Hydraulic length = 0 ft
Time of conc. (Tc) = 10.00 min
Distribution = Custom
Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23

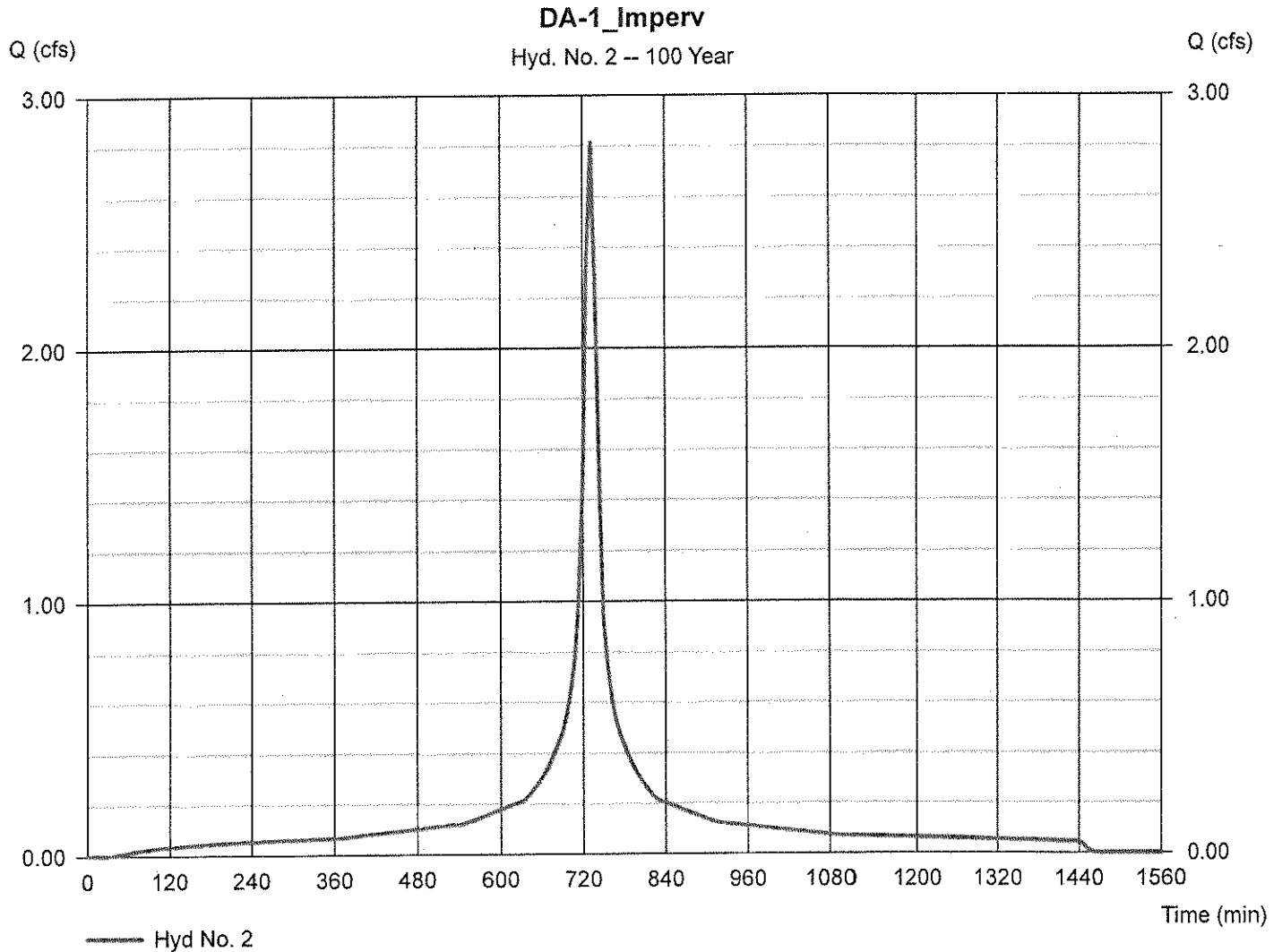
Friday, Apr 1, 2022

Hyd. No. 2

DA-1_Imperv

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Time interval = 6 min
Drainage area = 0.490 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 8.63 in
Storm duration = NOAA_D cds.CDS

Peak discharge = 2.813 cfs
Time to peak = 732 min
Hyd. volume = 13,990 cuft
Curve number = 98
Hydraulic length = 0 ft
Time of conc. (Tc) = 10.00 min
Distribution = Custom
Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23

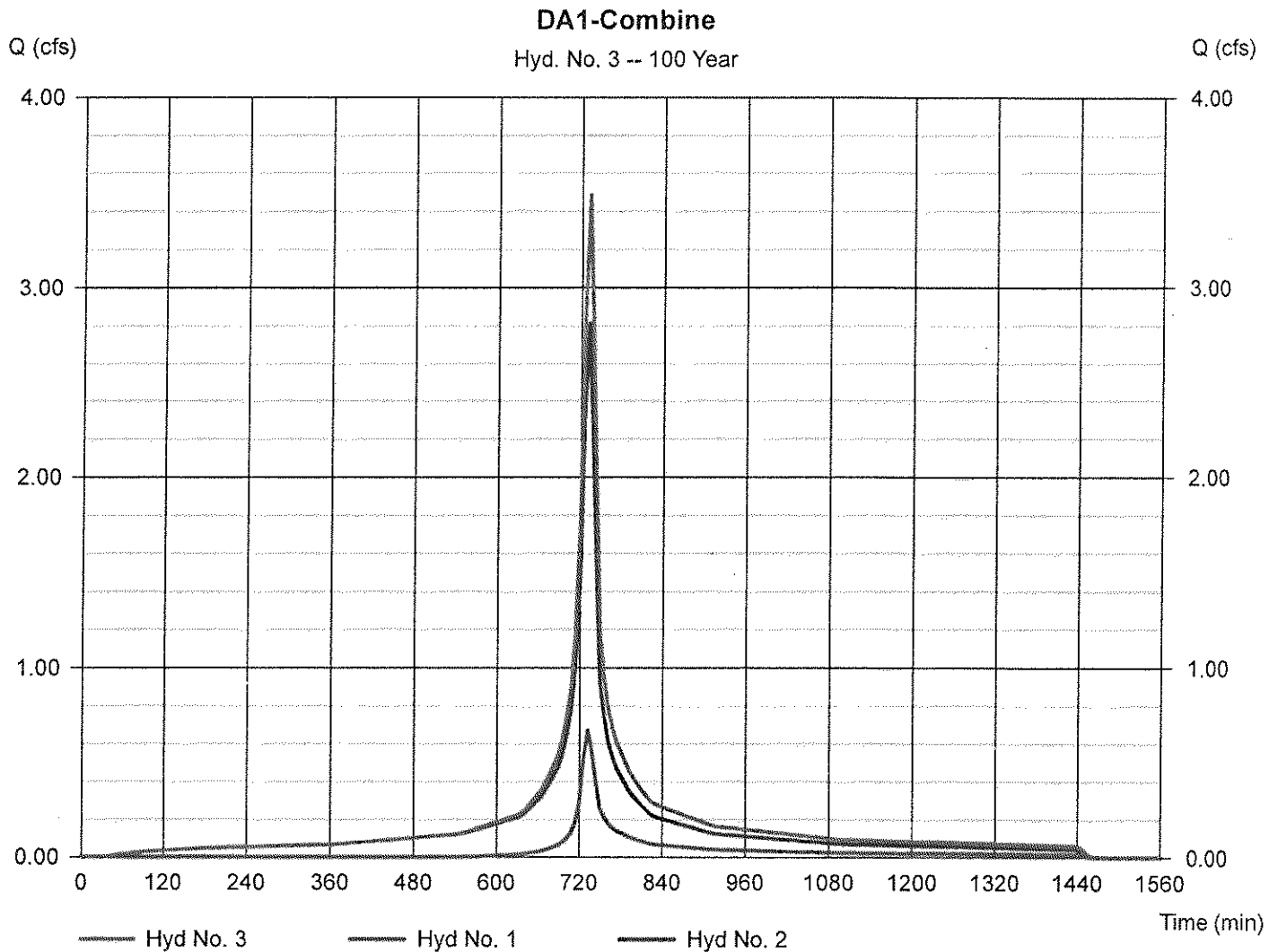
Friday, Apr 1, 2022

Hyd. No. 3

DA1-Combine

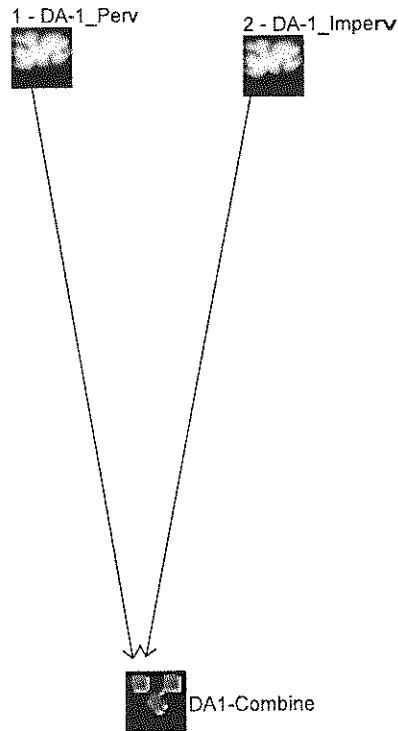
Hydrograph type = Combine
Storm frequency = 100 yrs
Time interval = 6 min
Inflow hyds. = 1, 2

Peak discharge = 3.486 cfs
Time to peak = 732 min
Hyd. volume = 16,867 cuft
Contrib. drain. area = 0.705 ac



Watershed Model Schematic

Hydraflow Hydrographs by Intelisolve v9.23



Legend

<u>Hyd.</u>	<u>Origin</u>	<u>Description</u>
1	SCS Runoff	DA-1_Perv
2	SCS Runoff	DA-1_Imperv
3	Combine	DA1-Combine

Hydrograph Return Period Recap

Hydraflow Hydrographs by Intelisolve v9.23

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)								Hydrograph description
			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	
1	SCS Runoff	-----	-----	0.052	-----	-----	0.207	-----	-----	0.611	DA-1_Perv
2	SCS Runoff	-----	-----	1.125	-----	-----	1.731	-----	-----	2.928	DA-1_Imperv
3	Combine	1, 2	-----	1.177	-----	-----	1.938	-----	-----	3.538	DA1-Combine
Proj. file: proposed 03-31-22.gpw								Friday, Apr 1, 2022			

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.23

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	0.052	6	732	336	---	----	----	DA-1_Perv
2	SCS Runoff	1.125	6	732	5,410	---	----	----	DA-1_Imperv
3	Combine	1.177	6	732	5,746	1, 2	----	----	DA1-Combine
proposed 03-31-22.gpw					Return Period: 2 Year			Friday, Apr 1, 2022	

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23

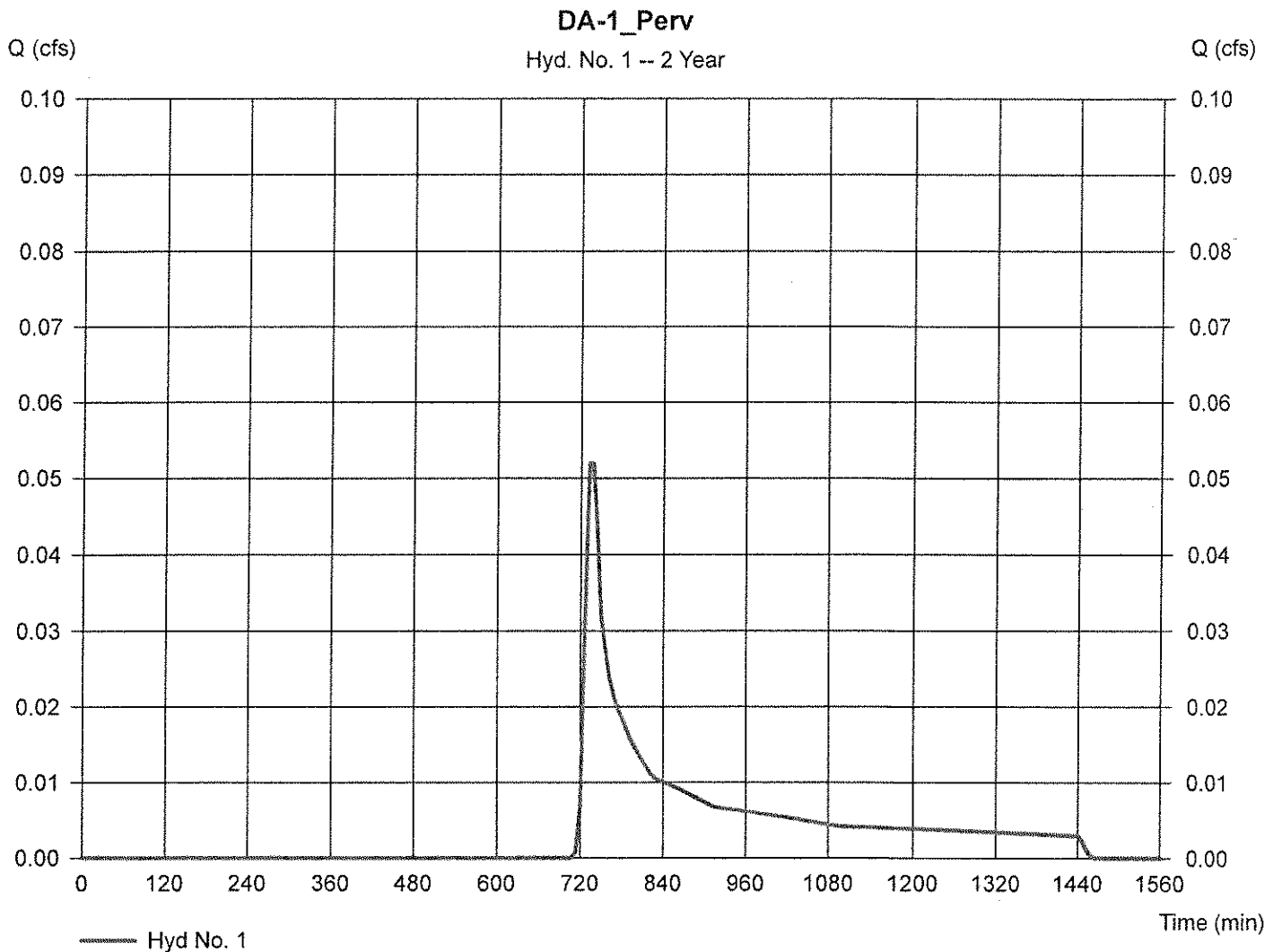
Friday, Apr 1, 2022

Hyd. No. 1

DA-1_Perv

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Time interval = 6 min
Drainage area = 0.195 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 3.35 in
Storm duration = NOAA_D cds.CDS

Peak discharge = 0.052 cfs
Time to peak = 732 min
Hyd. volume = 336 cuft
Curve number = 61
Hydraulic length = 0 ft
Time of conc. (Tc) = 10.00 min
Distribution = Custom
Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs by Intellisolve v9.23

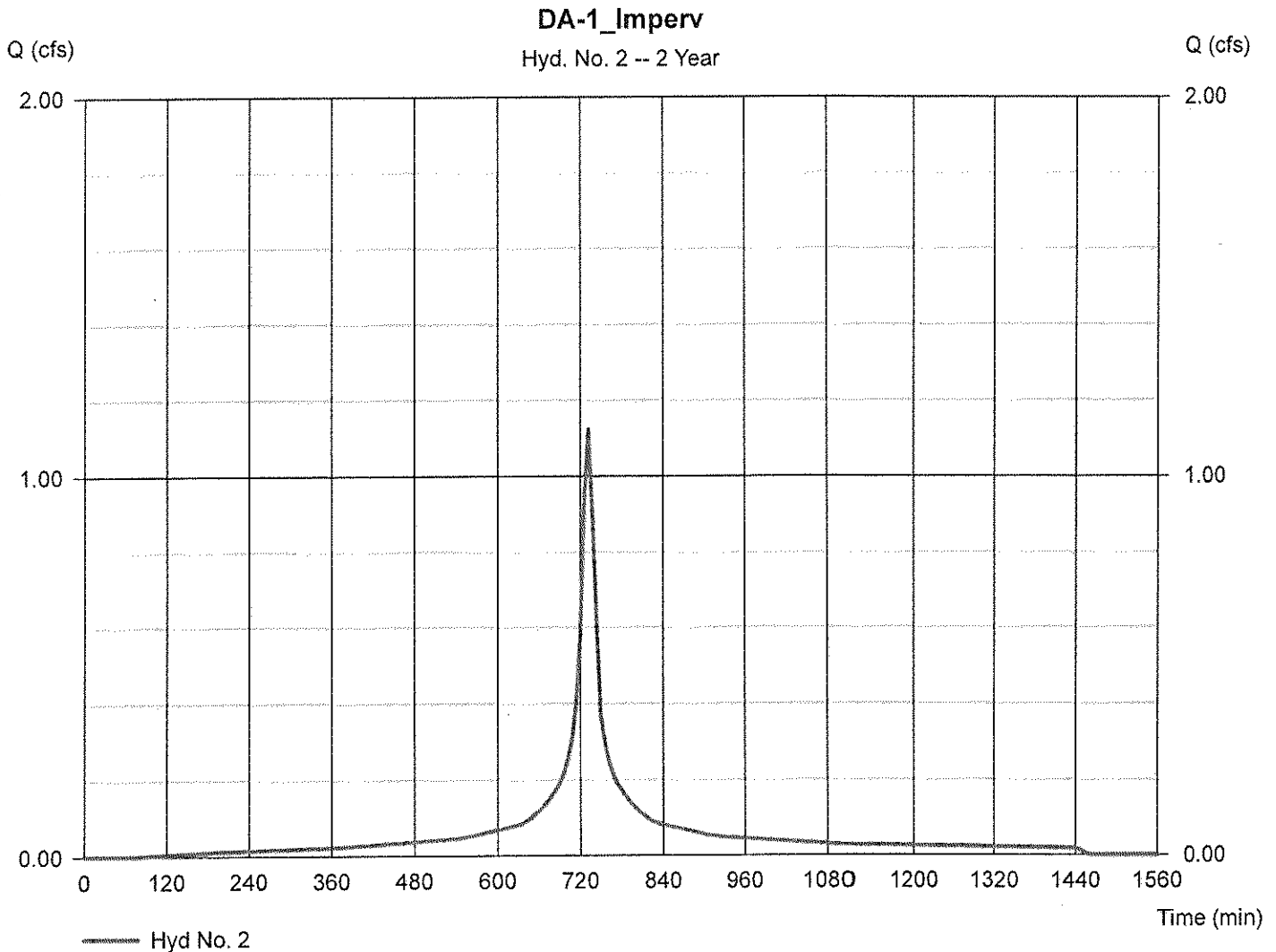
Friday, Apr 1, 2022

Hyd. No. 2

DA-1_Imperv

Hydrograph type = SCS Runoff
 Storm frequency = 2 yrs
 Time interval = 6 min
 Drainage area = 0.510 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 3.35 in
 Storm duration = NOAA_D cds.CDS

Peak discharge = 1.125 cfs
 Time to peak = 732 min
 Hyd. volume = 5,410 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 10.00 min
 Distribution = Custom
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23

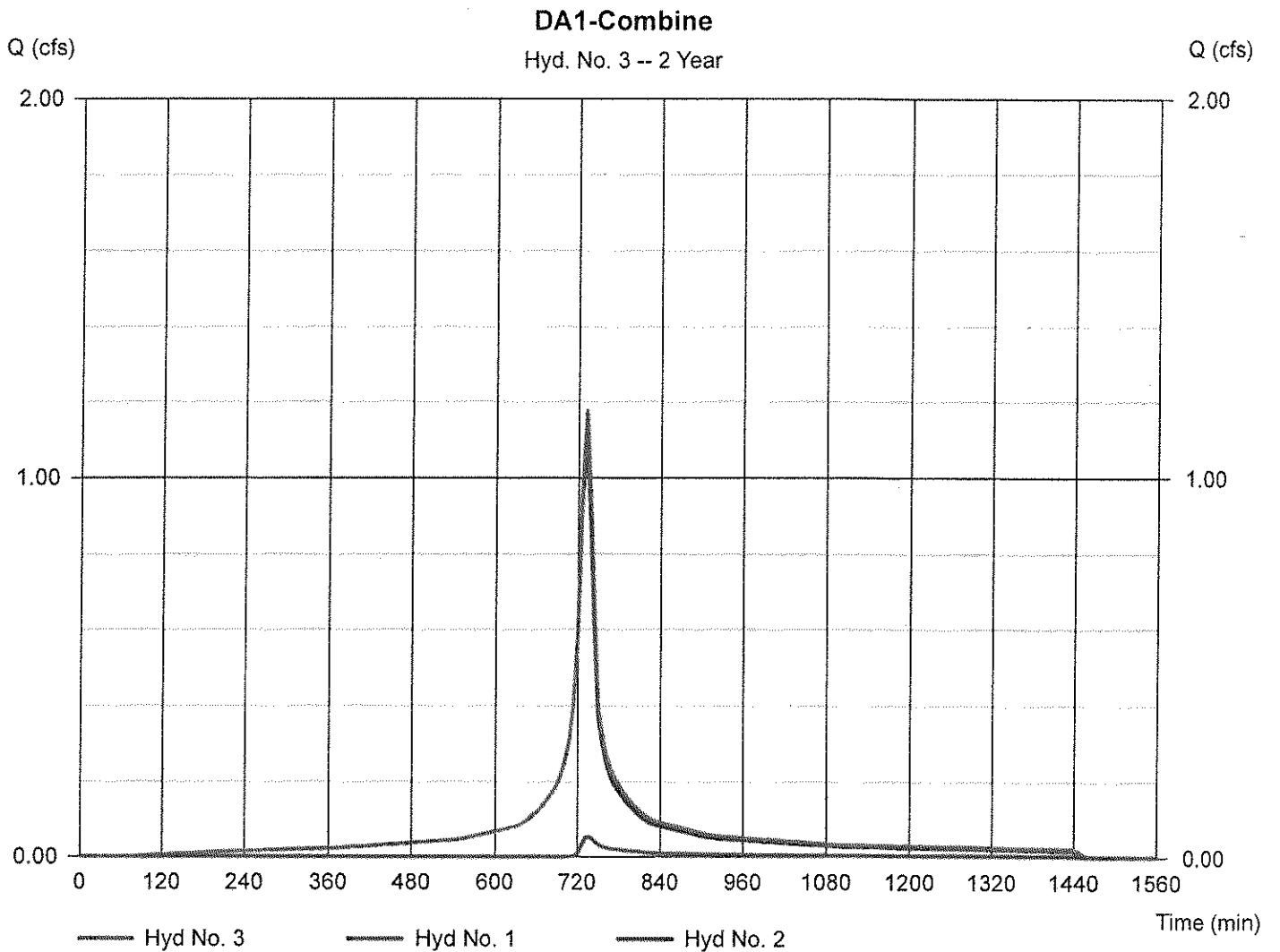
Friday, Apr 1, 2022

Hyd. No. 3

DA1-Combine

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 6 min
Inflow hyds. = 1, 2

Peak discharge = 1.177 cfs
Time to peak = 732 min
Hyd. volume = 5,746 cuft
Contrib. drain. area = 0.705 ac



Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.23

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	0.207	6	732	957	---	----	-----	DA-1_Perv
2	SCS Runoff	1.731	6	732	8,475	---	----	-----	DA-1_Imperv
3	Combine	1.938	6	732	9,432	1, 2	----	-----	DA1-Combine

Hydrograph Report

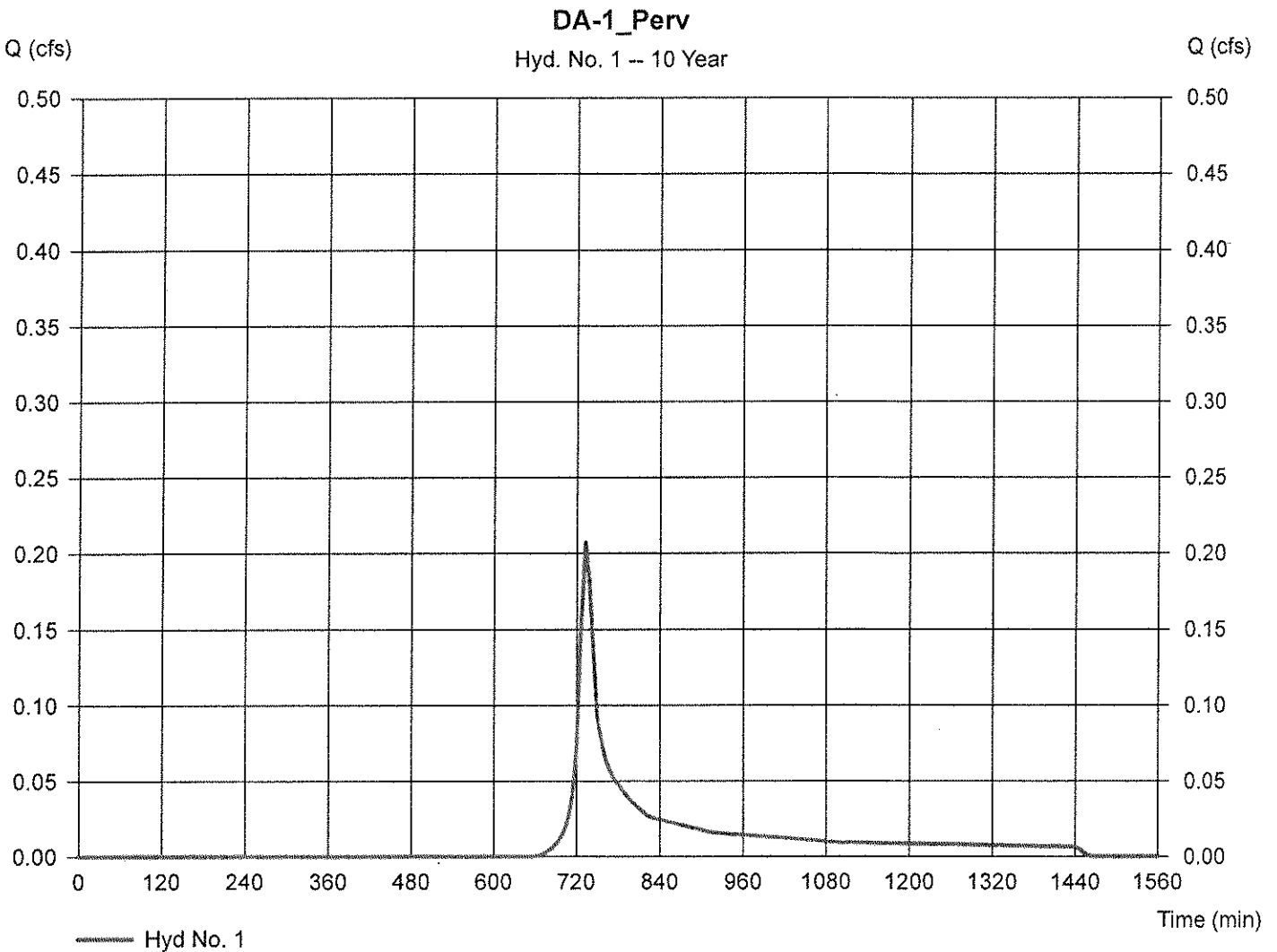
Hydraflow Hydrographs by Intelisolve v9.23

Friday, Apr 1, 2022

Hyd. No. 1

DA-1_Perv

Hydrograph type	= SCS Runoff	Peak discharge	= 0.207 cfs
Storm frequency	= 10 yrs	Time to peak	= 732 min
Time interval	= 6 min	Hyd. volume	= 957 cuft
Drainage area	= 0.195 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.12 in	Distribution	= Custom
Storm duration	= NOAA_D cds.CDS	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23

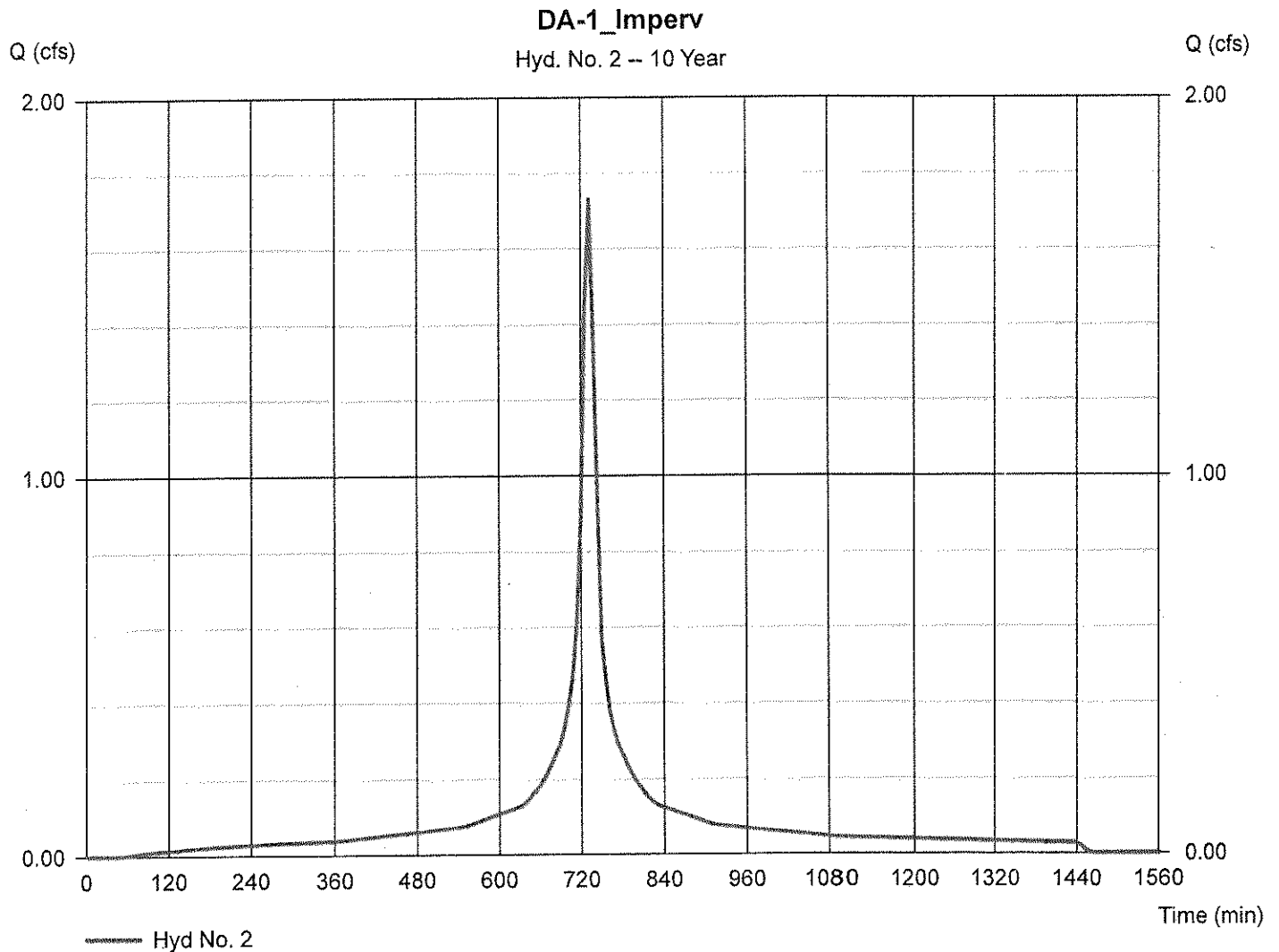
Friday, Apr 1, 2022

Hyd. No. 2

DA-1_Imperv

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 6 min
 Drainage area = 0.510 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 5.12 in
 Storm duration = NOAA_D cds.CDS

Peak discharge = 1.731 cfs
 Time to peak = 732 min
 Hyd. volume = 8,475 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 10.00 min
 Distribution = Custom
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23

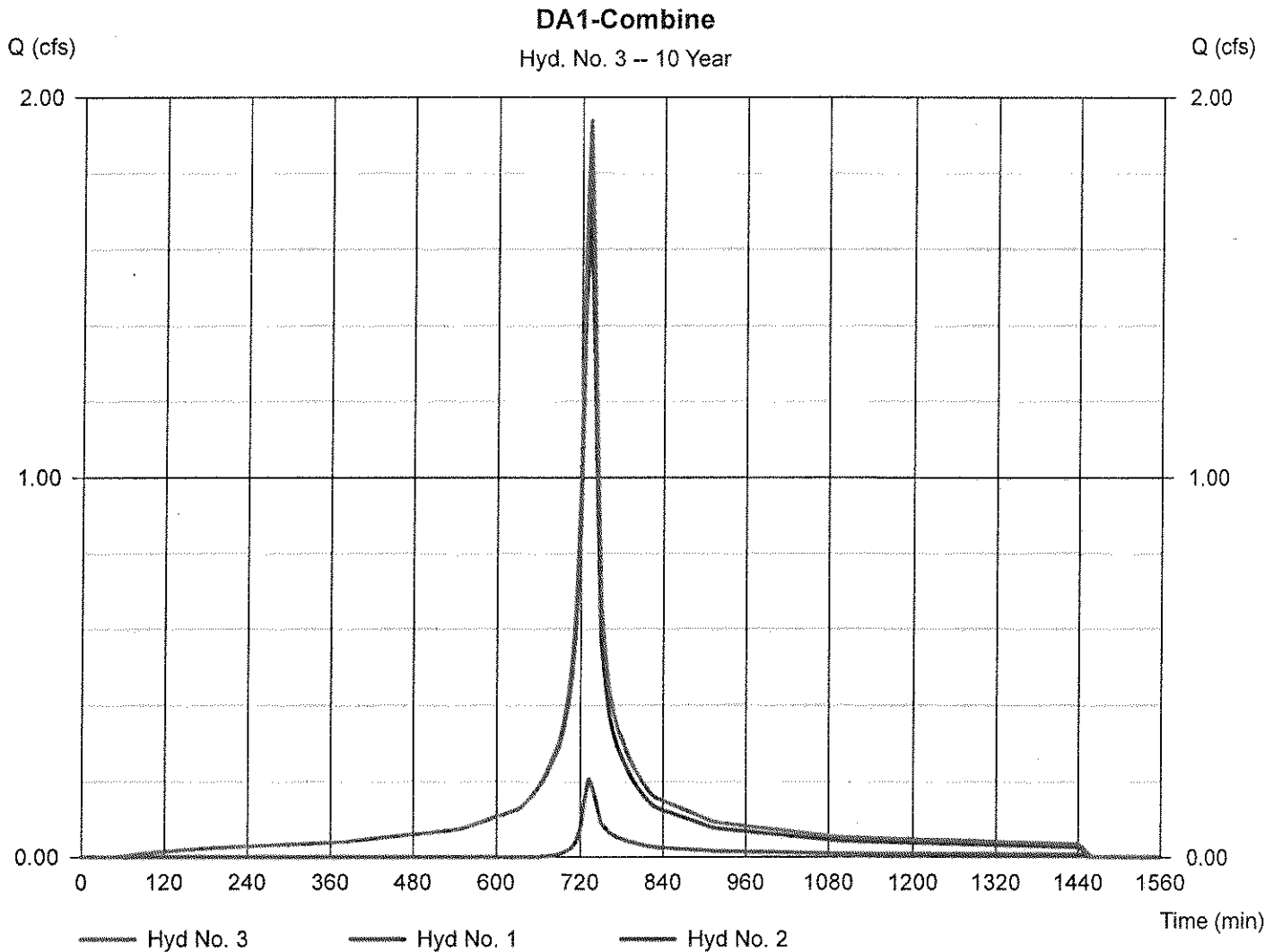
Friday, Apr 1, 2022

Hyd. No. 3

DA1-Combine

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 6 min
Inflow hyds. = 1, 2

Peak discharge = 1.938 cfs
Time to peak = 732 min
Hyd. volume = 9,432 cuft
Contrib. drain. area = 0.705 ac



Hydrograph Summary Report

Hydraflow Hydrographs by Intellisolve v9.23

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	0.611	6	732	2,609	---	---	----	DA-1_Perv
2	SCS Runoff	2.928	6	732	14,561	---	---	----	DA-1_Imperv
3	Combine	3.538	6	732	17,170	1, 2	---	----	DA1-Combine

Hydrograph Report

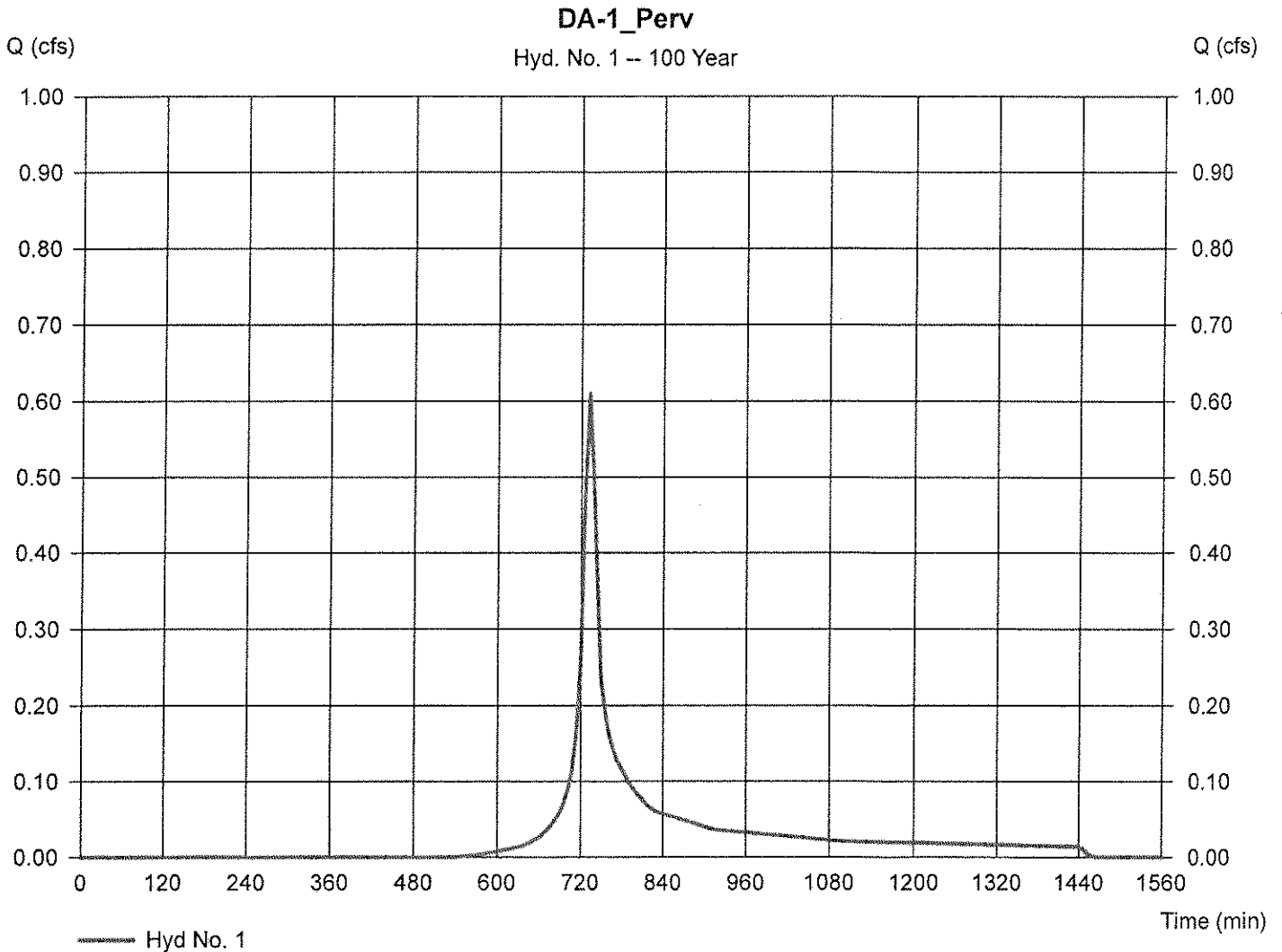
Hydraflow Hydrographs by Intelisolve v9.23

Friday, Apr 1, 2022

Hyd. No. 1

DA-1_Perv

Hydrograph type	= SCS Runoff	Peak discharge	= 0.611 cfs
Storm frequency	= 100 yrs	Time to peak	= 732 min
Time interval	= 6 min	Hyd. volume	= 2,609 cuft
Drainage area	= 0.195 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.63 in	Distribution	= Custom
Storm duration	= NOAA_D cds.CDS	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs by Intellisolve v9.23

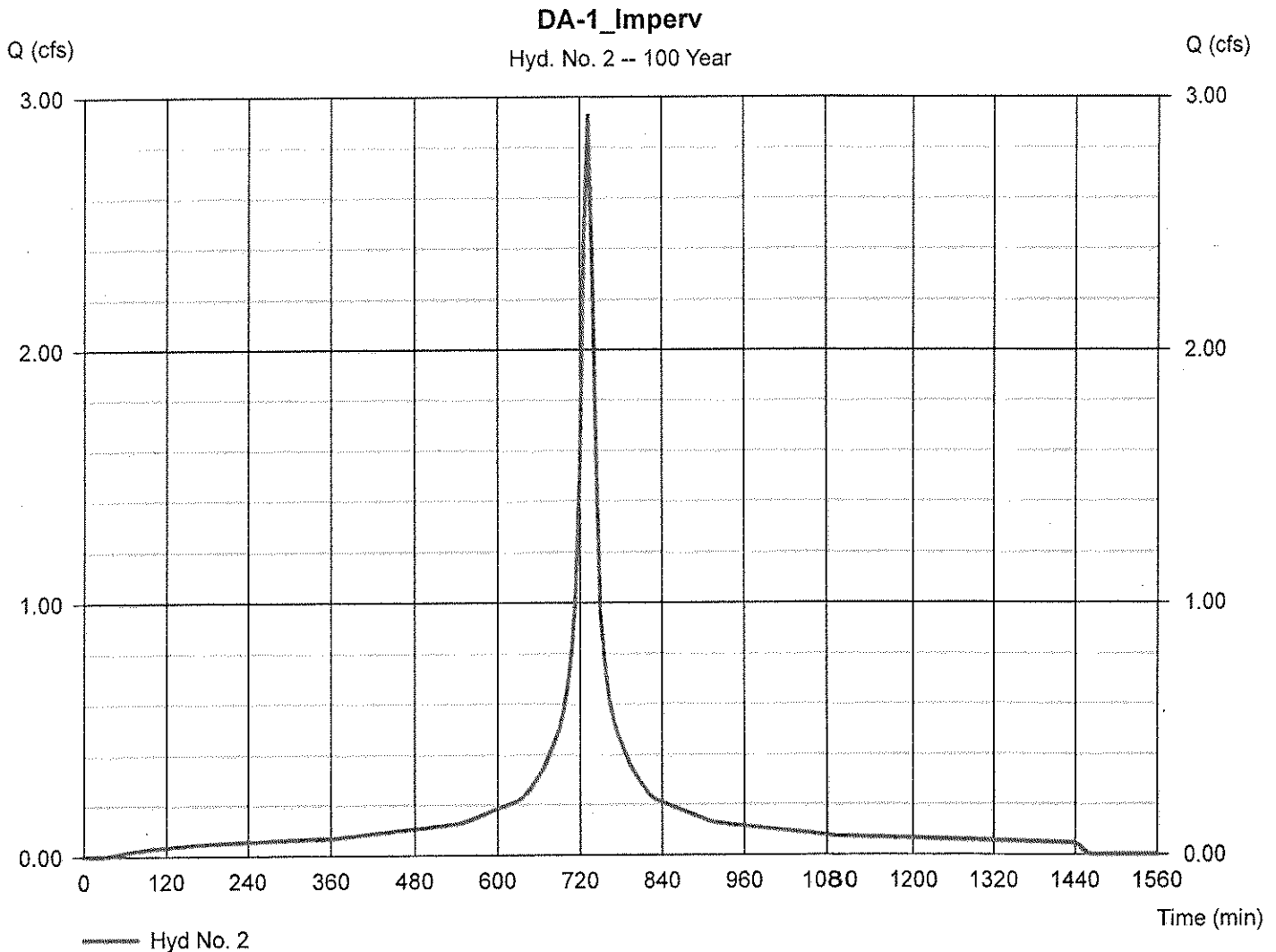
Friday, Apr 1, 2022

Hyd. No. 2

DA-1_Imperv

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 6 min
 Drainage area = 0.510 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 8.63 in
 Storm duration = NOAA_D cds.CDS

Peak discharge = 2.928 cfs
 Time to peak = 732 min
 Hyd. volume = 14,561 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 10.00 min
 Distribution = Custom
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs by Intellisolve v9.23

Friday, Apr 1, 2022

Hyd. No. 3

DA1-Combine

Hydrograph type = Combine
Storm frequency = 100 yrs
Time interval = 6 min
Inflow hyds. = 1, 2

Peak discharge = 3.538 cfs
Time to peak = 732 min
Hyd. volume = 17,170 cuft
Contrib. drain. area = 0.705 ac

