

DESIGN STATEMENT  
DRAINAGE CALCULATIONS  
&  
HYDRAULIC ANALYSIS

UNIGLOBE INVESTMENTS, LLC

91 & 93 MEADOWBROOK LANE  
MANSFIELD CONNECTICUT

Civil Engineering Services, LLC  
203 Boston Hill Road  
Andover CT 06232

February 5, 2016

# UNIGLOBE INVESTMENTS, LLC

91 & 93 MEADOWBROOK LANE  
MANSFIELD CONNECTICUT

## OVERVIEW & SITE LOCATION

The project proposed entails the development of a modest residential development on a 4.6 acre parcel on the south side of Meadowbrook Lane in Mansfield, Connecticut adjacent the previously approved Whispering Glen development. The proposed development will consist of four new buildings, three of which will contain five units each of housing, one which will contain three units. The units will be a mixture of one-bedroom units and two-bedroom units with a total of 60 bedrooms in the development.

Access to the development will be by way of a 95' long boulevard from Meadowbrook Lane, and an additional access road from the Whispering Glenn development.

The parcel on which this development is proposed is currently in an (R-20) Residential 20 Zone. This application will include a request for a zone change to a Planned Residential Zone.

## GEOGRAPHY

The subject site is located on a relatively flat sandy area, with a gentle 4-5% slope from east to west and which also drains to the south through an existing well-defined gulley along the eastern property line. The far west and south side of the site is bound by an unnamed brook which empties into the Conantville Brook about 250' east of the subject parcel. The Conantville Brook in turn empties into Sawmill Brook just south of the Eastbrook Mall, and Sawmill Brook continues on to the south and meets the Natchaug River at the north end of Phillip Lauter Park in Willimantic.

According to the Natural Resources Conservation Service Web Soil Survey, the soils on the site are primarily Gloucester gravelly sandy loam on steep slopes, and Canton and Charleton soils on 3 to 8% slopes, which are typified as well-drained, sandy and gravelly sandy loams, with moderately high to high transmissivity, and greater than 80 inches to restrictive features. These soils belong to Hydrologic Soil Group B.

## EXISTING CONDITIONS / PROPOSED CONDITIONS

Most of the property to be affected by the proposed development has been previously cleared and is relatively open sandy ground. There currently exists on the parcel a wood-framed residential building, a mobile home and a number of out buildings. The proposed plan calls for an eighteen-unit development with a total of 60 bedrooms, and paved parking for 77 vehicles. Obviously, the amount of impervious coverage on the site will increase dramatically.

The stormwater management plan that we have designed will mitigate the effects of that change by utilizing the hydrologic qualities of the underlying soils in conjunction with a network of drywells and catch basins to absorb what would typically be a significant increase in stormwater run-off from the site. By breaking up the drainage areas into small enough segments, and routing the stormwater into drywells that provide both storage volume and surface interface area with surrounding soils, we are able to provide a system capable of handling any storm event up to a 50-year storm without allowing any run-off from the developed portion of the site.

In the event that the stormwater system fails to contain a storm event, and there is run-off from the site, that run-off will be routed to one of two stabilized areas: one at the northwest corner of the project near the entrance road, and one at the southeast corner of the project where stormwater run-off from the site currently discharges to the existing stream.

## DRAINAGE

As this is a residential development, the Mansfield Public Works Standards require that we design the driveway, roadway and general drainage system to meet requirements for a 10-year storm intensity. We have met those requirements and beyond.

Driveway area drainage consists of seven catch basins only, and five of those catch basins are in sag locations. Peak discharge of run-off from the drainage areas contributing to the catch basins was determined using both Rational and the SCS hydrograph methods of determination. The Rational Method was used initially because the peak discharge from that method is typically a bit more conservative (greater peak) than the SCS Method. The results of the Rational Method calculations were used to examine how much stormwater bypass we could expect from the two catch basins not in a sag configuration, and to determine the maximum expected peak flows to the catch basins in located in sags. In all instances we determined that the basins would perform satisfactorily for 10 and 25-year storm events. Drainage calculations are contained in Appendix A.

In the event that flows were to exceed those anticipated, overflow from the proposed drainage system would run to areas adjacent to established streams or channels and any negative impact would be minimized.

## HYDROLOGY

The point of interest in our comparison of present conditions to post-development stormwater conditions is the point on the southeast corner of the property where the un-named brook leaves the site. Since the brook is the receptor for all existing stormwater run-off from the site, and will remain the receptor under improved conditions, it is a logical point at which to measure the impact of the development on the site.

The stormwater management plan for the proposed design utilizes a series of drywells and lawn drains in small defined areas to capture roof run-off and stormwater and introduce it to the ground in small segments rather than gathering it in a large detention or retention area. In fact, we feel the design before the Commission will result in a significant decrease in stormwater run-off from the site and will help recharge the groundwater that eventually feeds the un-named brook.

We used the Hydraflow Hydrographs Extension for AutoCAD program to model existing conditions and proposed storm sewers and to analyze the capacity of the system for the 2-year, 10-year, 25-year, and 50-year storm events. Models were constructed utilizing SCS run-off hydrographs to generate stormwater volumes, and drywells were modeled as small ponds with a specified exfiltration rate.

The following assumptions and parameters were used as input data in our Hydraflow model of existing conditions:

A curve number (CN) of 61 was used for open space, lawns and parks (existing conditions) in hydrologic soil group B; CN of 98 was used for impervious areas (only 0.10 acre under existing conditions); existing time of concentration was calculated to be 29.9 minutes based in large part on an overland flow distance of 150 feet on slopes of 4.7%, and a manning's coefficient of 0.40 (lawn area), and a time in brook of about 8 minutes.

As mentioned above, the proposed stormwater design is based on the theory that we can capture all the stormwater from impervious areas and introduce it to a very permeable subsoil for groundwater recharge. That being the case, the stormwater run-off expected from the site under the proposed conditions would be constrained to run-off from those areas outside of the area "captured" by curbing and the proposed recharge system.

For the proposed conditions model we used a CN of 65 with the assumption that the area that would still be contributing to off-site run-off would generally be on the steeper slopes surrounding the development. We also reduced the time of concentration for proposed conditions to 15 minutes realizing that the run-off from the most remote areas

of the site would be intercepted on site. A comparison of the calculated run-off from the site under existing conditions and proposed conditions follows:

STORM EVENT	EXISTING COND.	DEVELOPED COND.
2-YR	1.3 cfs	1.1 cfs
10-YR	4.5 cfs	3.2 cfs
25-YR	6.2 cfs	4.3 cfs
50-YR	8.0 cfs	5.5 cfs

Before starting our hydrographic model of the site, we conducted soil testing on the site. We excavated four large pits on the site, physically examined the soils, and had Materials Testing, Inc. (MTI), take in-situ samples of the material to conduct permeability testing on the material. We found the majority of the material to be med to coarse sand, and sand and gravel, with one exception being in the lower, southern end of test pit #2 where the material was much finer, siltier. The test results from MTI indicated a permeability rate of 10.5 ft./day for the sample taken from the bottom test hole #2 (which we feel was not a particularly representative sample of the site as a whole), and ranged from 68.7 ft./day to 106.2 ft./day in the other three pits, and an overall average of the test results was about 65 ft./day. A copy of the MTI test data is included in Appendix B.

In modeling the proposed run-off capture and disposal plan for the on-site drainage, we modeled a yard drain (with integral 6'x6' drywell) as a pond with an incremental storage volume and an incremental rate of discharge related to depth of water in the well. Our calculations show that the storage volume of a 6'x6' drywell with 2' of stone around it will provide about 290 cubic feet of storage over the 6 foot depth, and in increments of 48.4 cubic feet per foot elevation. We then calculated the wetted surface area provided at the interface with the stone and, based on an assumed exfiltration rate of 60 feet per day, determined an initial exfiltration rate of about 0.10 cfs for one foot of depth, with an incremental increase of about 0.02 cfs per foot depth. We ran more than 30 hydrographs to determine the appropriate size areas of capture and to ensure some factor of safety.

Because there are so many small drainage areas, and variations in the percentages of impervious surfaces associated with the areas, we have simplified the smaller areas by treating the areas as if they were entirely impermeable surfaces. In doing so, we have found that a 6'x6' drywell (with 2' of stone) will accommodate approximately 3300 sf having a run-off coefficient of CN=98. If we change our permeability factor to 30 ft./day, we can still accommodate a 10-year storm event, but slightly overtops in a 25-year event. Only two drainage areas feeding drywells are greater than 3300 sf, and those areas (DW#12 and DW#13) are connected by a level perforated pipe to two other drywells (DW9 and DW#14) so that the average area for each of the drywells is less than 3300 sf.

Drywell volume calculations and a typical hydrograph for an impervious area of 3300 sf are included in Appendix C.

# Appendix A

## Drainage Calculations



Civil Engineering Services, LLC

203 Boston Hill Rd  
ANDOVER, CT 06232  
(860) 742-0364

JOB 215049 - Uniglobe

SHEET NO. 1 OF 5

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CBs in a SAG -

CB #6:  
(Bypass flows)

Area: 12,392 SF = 0.28 AC.  
C = 0.9

$t_c = 5 \text{ min (minimum)}$

$Q_{10} = 1.51 \text{ cfs}$

$Q_{25} = 1.69$

$S = .036$

$S_x = .023$

assume  $n = .013$  (smooth asphalt)

$Q_n = .020$

then  $T = \sim 5.6'$

~~$w = 1.635$~~  (STANDARD)  
Use 1.635' width

$w/T = \frac{1.35}{5.6} = .24$

from chart Fig. 11-2:  $E_o = Q_o/Q = 0.5$

$Q_{\text{bypass}} = Q_{\text{TOTAL}} \left( \frac{(T-w)^2}{T^2} \right) = \left( \frac{(5.6 - 1.6)^2}{5.6^2} \right) 1.51 = 0.77 \text{ cfs}$

$Q_{\text{into CB\#6}} = 0.74 \text{ cfs}$

CB #7: Area: 17,790 SF = 0.41 AC

$C = .06 \cdot A$

$+ .35 \cdot C = 0.34$

$t_c = 5 \text{ min}$

$Q_{10} = 2.04 \text{ cfs} + 0.77 = \underline{2.81 \text{ cfs}}$

$Q_{25} = 2.28 \text{ cfs}$

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SHEET NO. 2 OF ~~4~~ 5  
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eq. 11-7:

as a weir:

$$Q_i = \frac{C P d^{1.5}}{C_{FS}} \quad ; \quad d = \left( \frac{Q_i C_{FS}}{C P} \right)^{2/3}$$

$Q_i$  = rate of discharge into grate opening (cfs)  
 $P$  = perimeter of grate (ft)  
 $C$  = ~~3.0~~  
 $d$  = depth of water above grate (ft)  
 $C_{FS}$  = factor of safety

eq. 11-8:

as an orifice:

$$Q_i = \frac{C A (2gd)^{0.5}}{C_{FS}} \quad ; \quad d = \left( \frac{Q_i C_{FS}}{C A} \right)^2 / 2g$$

assume  $d = 0.5'$ ; then

$$Q_i = \frac{(0.67)(3.13)(64.4 \cdot 0.5)^{0.5}}{1}$$

$$= 11.9 \text{ cfs}$$

$Q_i$  = rate of discharge into grate (cfs)  
 $C$  = 0.67 orifice coefficient  
 $A$  = clear opening area of grate  
 $g$  = 32.2 ft/sec<sup>2</sup>  
 $d$  = depth of water above grate (ft)  
 $C_{FS}$  = factor of safety

for Type C CB w/ Type A grate;

$$P = 5.02'$$

$$C_{FS} = 1.0$$

$$A = 3.13 \text{ ft}^2$$

assume;  $d = 0.5'$

(as a weir)

$$Q_i = \frac{(3.0)(5.02)(0.5)^{1.5}}{1.0}$$

$$= 5.32 \text{ cfs}$$

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CB #4

6243 SF = 0.143 AC.

$Q_{max} = 5.4 \text{ in/hr} \cdot 0.143 \text{ ac} = 0.77 \text{ cfs}$

$\frac{13.6}{43.5} = 0.31 \cdot 2 = 0.62'$

$2' / 33.8' = 5.9\%$  slope      3.12% <sup>road</sup> cross slope

flow width = 3.46  
- 2.00' intercepted

1.46' wide  $\Rightarrow Q = .08 \text{ cfs}$

cross slope in CB top:

$2\frac{1}{2}'' / 1' 8\frac{3}{16}'' = 2.5'' / 20.19'' = 12.4\%$

flow width for  $Q = 0.77 \text{ cfs} = 1.46'$

no bypass

CB 2 in STG - no bypass

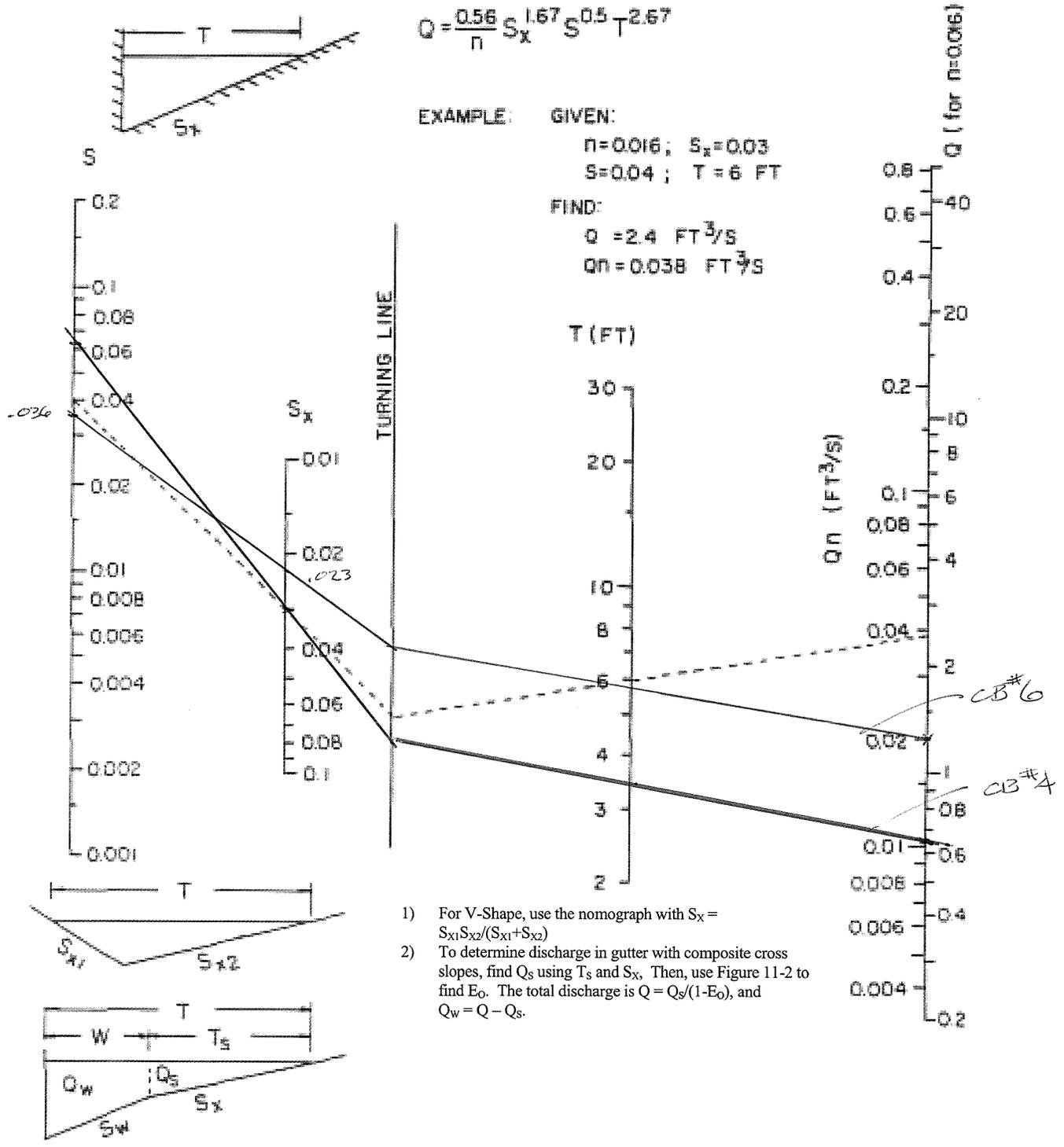
CB 3 in STG - no bypass

CB flow volume for 25-year storm event

0.143 A = 6243 SF

$\cdot \frac{5.75 \text{ inches}}{12'' / \text{ft}} = 2,991 \text{ ft}^3$

area req'd to discharge  $\frac{2,991 \text{ ft}^3 / \text{day}}{60 \text{ ft} / \text{day}} = 50 \text{ ft}^2$   
peak volume over 2 hrs = 2000 ft<sup>3</sup>



**Figure 11-1.1 Flow In Triangular Gutter Sections – English units**

Source: HEC-12

PROJECT 215049 - Artisan - Uniglobe ROADWAY TYPE PARKING

TOWN Mansfield (See Table 11-2) ADT \_\_\_\_\_

ROUTE \_\_\_\_\_ DESIGN SPEED \_\_\_\_\_

DESIGNED BY: SK DATE: \_\_\_\_\_ ALLOWABLE SPEED \_\_\_\_\_

CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

**GUTTER FLOW ANALYSIS AT LOW POINT LOCATIONS**

LOW POINT INLET STATION AND OFFSET	AREA IN ACRES (A)	RUNOFF COEFFICIENT (C)	TIME TO INLET MIN	RAINFALL INTENSITY IN/HR	AC	AC BYPASSING PREVIOUS INLET (L)	AC BYPASSING PREVIOUS INLET (R)	TOTAL AC	TOTAL Q TO LOW POINT INLET CFS	CROSS SLOPE OF SHOULDER FT/FT	DEPTH OF FLOW OF GUTTER FT	WIDTH OF FLOW FT	REMARKS
1	2	3	4	5	6	7	8	9	10	11	12	13	
CB#7	0.41	0.83	5	6.0	0.34	0.776	N/A		2.81	0.021	~.25	~10	
CB#2	.045	0.90			.0405								
	.114	0.40	5	6.0	.0456								
CB#3	0.09	0.90	5	6.0	.086	∅		.09	0.94	0.021	<.25		
					.081	∅		.08	0.48	0.021	<.25		

Sheet 5 of 5

Table 11-5.1 Low Point Analysis Computation Sheet – English units

# Appendix B

## Soil Sample Test Results



# MATERIALS TESTING, INC.

55 LAURA STREET • NEW HAVEN, CONNECTICUT 06512 • (203) 468-5216  
42 BOSTON POST ROAD • WILLIMANTIC, CONNECTICUT 06226 • (860) 423-1972

DATE: 01-04-16

REPORT: M-1000

**CLIENT:** Datum Engineering & Surveying  
132 Conantville Road  
Mansfield, CT 06250  
Attn: Mr. Edward Pelletier, L.S.

**PROJECT:** Middlebrook Road  
Mansfield, CT

**SUBJECT:** FIELD PERMEABILITY (CT DEEP Method)

Sample #	Location	Permeability, Ft/Day
1	Test Hole #1, Elevation- Bottom of hole	106.2
2	Test Hole #1, Elevation- Bottom of hole	10.5
3	Test Hole #3, Elevation- Bottom of hole	68.7
4	Test Hole #4, Elevation- Bottom of hole	75.2

Materials Testing, Inc.  
Richard C. Kearns

William J. Soucy

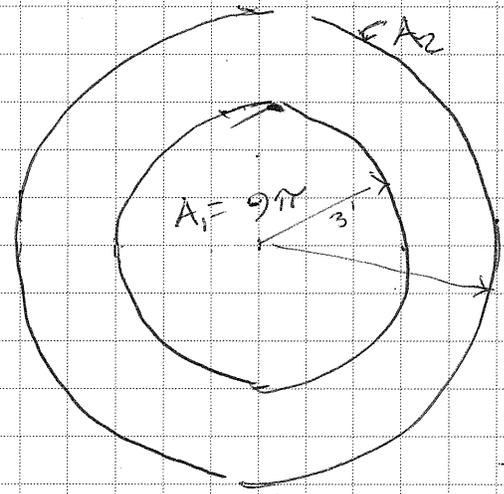


File: Original  
1cc: Client

wlb

Appendix C  
Drywell Volume Calculations  
Typical Hydrograph

6' x 6' drywell w/ 2' stone  
STORAGE:



total storage:

$$A_1 = 28.27 \text{ ft}^2$$

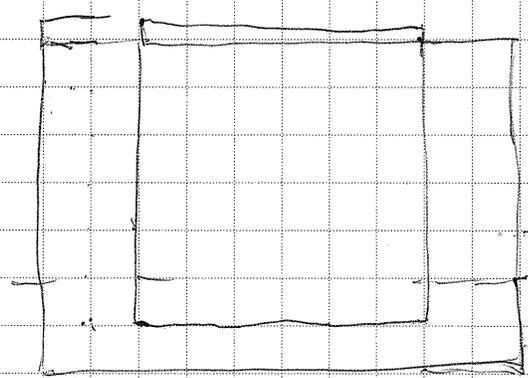
$$A_2 = 25\pi$$

$$A_2 - A_1 = 16\pi = 50.27 \text{ ft}^2$$

use 40% voids = 20.1 ft<sup>2</sup>

$$\text{total storage} = 48.4 \text{ ft}^3/\text{ft}$$

$$\times 6 = \underline{290.4 \text{ ft}^3}$$



INFILTRATION (@ 60 ft/day)

@ 1' deep; wetted surface =

$$25\pi + 2\pi \cdot 5' \cdot 2' =$$

$$78.54 + 62.83 = 141.3 \text{ ft}^2$$

exfiltration @ 60 ft/day

$$= .000694 \text{ ft/sec}$$

$$\times 141.3 \text{ ft}^2 = 0.10 \text{ cfs}$$

@ 2' deep, wetted surface =

$$25\pi + 2\pi \cdot 5' \cdot 3' =$$

$$78.54 + 94.25 = 172.8 \text{ ft}^2$$

exfiltration:  $172.8 \cdot .000694 = 0.12 \text{ cfs}$

@ 3' deep, wetted surface =

$$78.54 + 125.6 = 204.2 \text{ ft}^2$$

exfiltration:  $204.2 \cdot .000694 = 0.14 \text{ cfs}$

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INFILTRATION @ 30 ft/day:

@ 1' deep, wetted surface area =  $141.3 \text{ ft}^2$

$$\times \frac{30 \text{ ft}}{\text{day}} \cdot \frac{\text{day}}{24 \text{ hr}} \cdot \frac{\text{hr}}{3600 \text{ sec}} = .049 \text{ cfs}$$

@ 2' deep, wetted surface area =  $172.8 \text{ ft}^2$

$$\times \frac{30}{24 \cdot 3600} = .060 \text{ cfs}$$

(.000347 ft/sec)

@ 3' deep, wet surface =  $204.2 \text{ ft}^2$

$$\cdot .000347 = .071 \text{ cfs}$$

an increase of  $0.011 \text{ cfs/ft depth}$

# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Monday, Feb 8, 2016

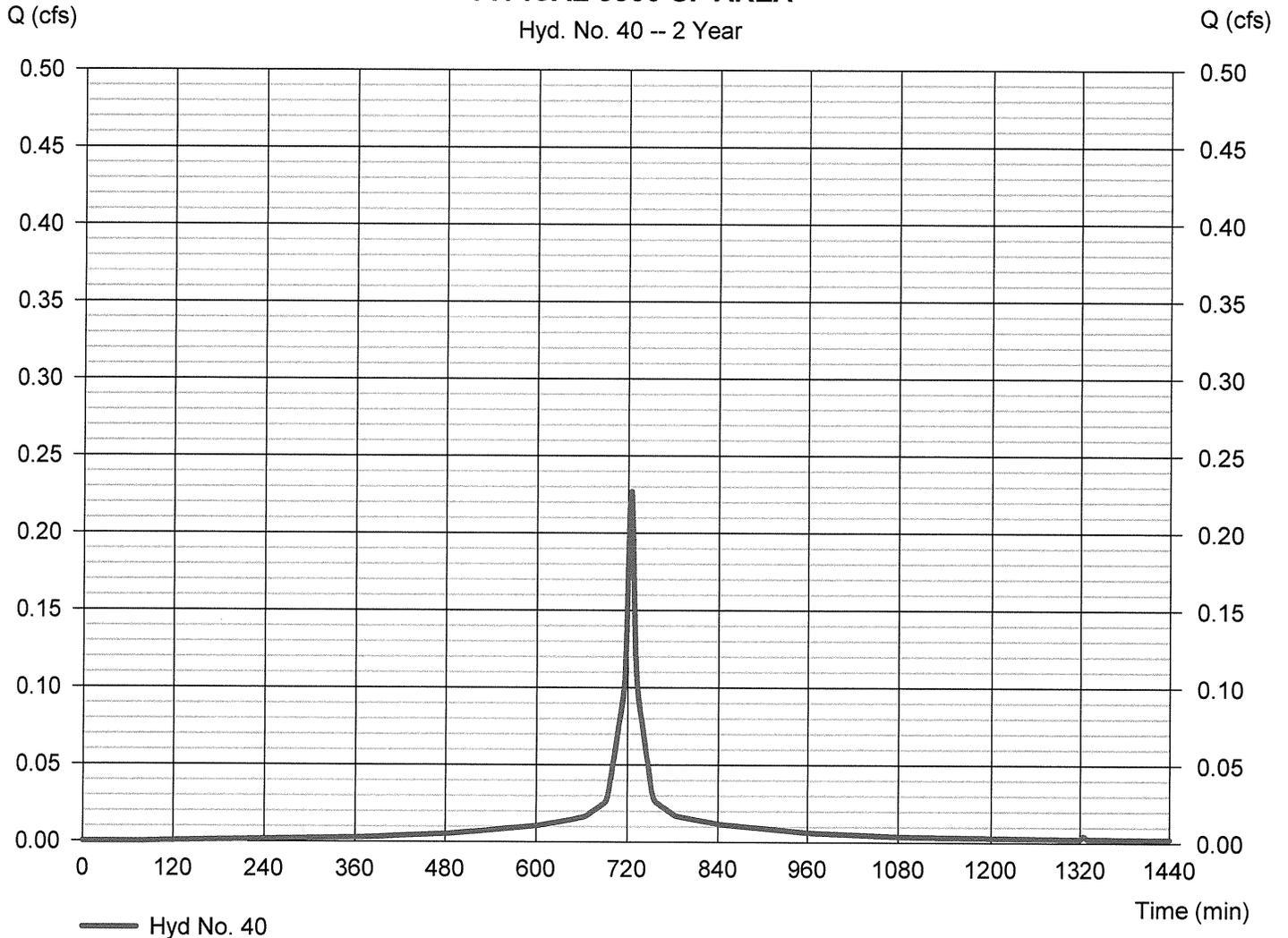
## Hyd. No. 40

### TYPICAL 3300 SF AREA

Hydrograph type	= SCS Runoff	Peak discharge	= 0.227 cfs
Storm frequency	= 2 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 765 cuft
Drainage area	= 0.076 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

### TYPICAL 3300 SF AREA

Hyd. No. 40 -- 2 Year



# Hydrograph Report

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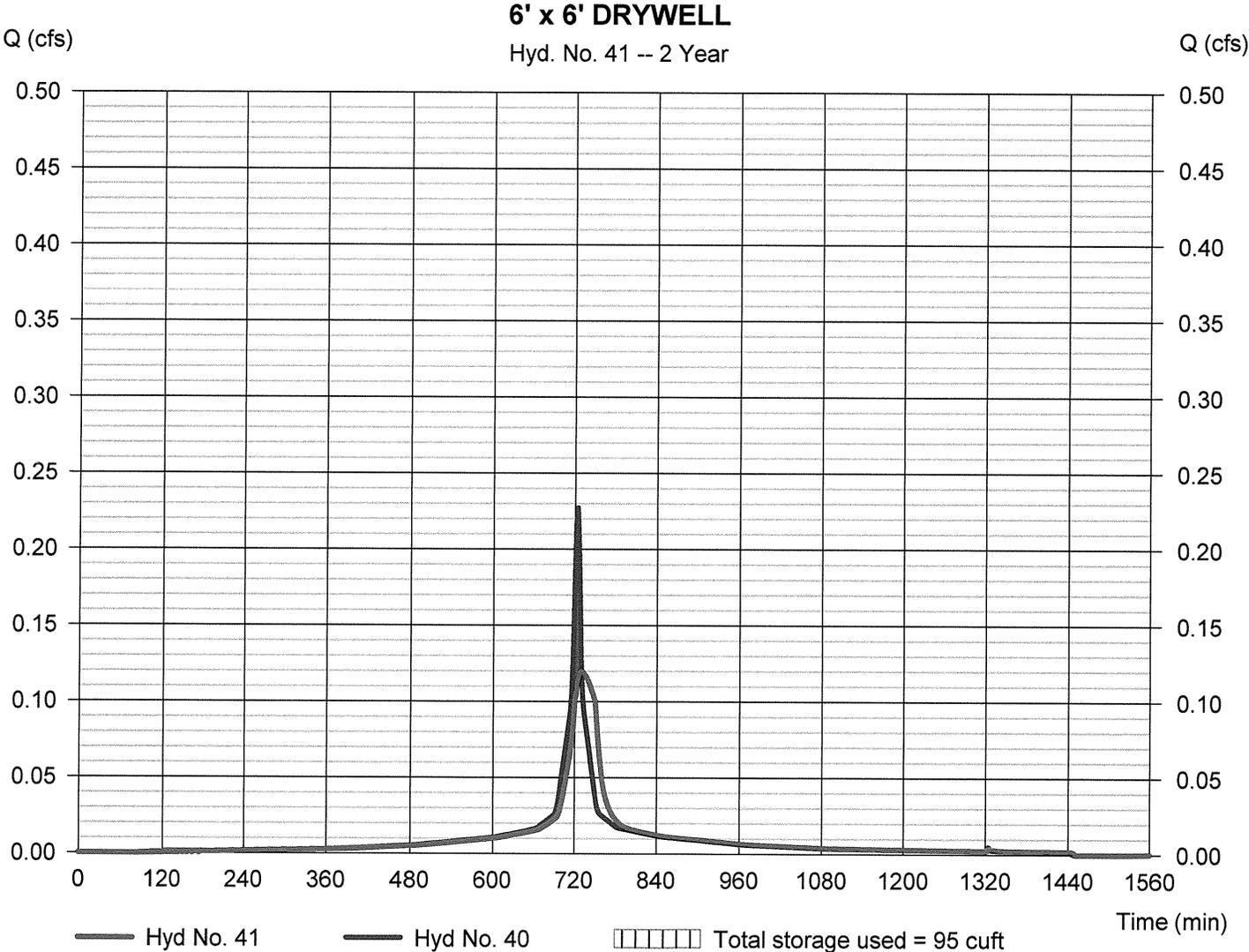
Monday, Feb 8, 2016

## Hyd. No. 41

6' x 6' DRYWELL

Hydrograph type	= Reservoir	Peak discharge	= 0.119 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 765 cuft
Inflow hyd. No.	= 40 - TYPICAL 3300 SF AREA	Max. Elevation	= 237.97 ft
Reservoir name	= 6x6 DRYWELL	Max. Storage	= 95 cuft

Storage Indication method used. Outflow includes exfiltration.



# Pond Report

## Pond No. 4 - 6x6 DRYWELL

### 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	236.00	n/a	0	0
1.00	237.00	n/a	48	48
2.00	238.00	n/a	48	97
3.00	239.00	n/a	48	145
4.00	240.00	n/a	48	194
5.00	241.00	n/a	48	242
6.00	242.00	n/a	48	290

### Culvert / Orifice Structures

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

### Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 10.000	(by Wet area)		
TW Elev. (ft)	= 0.00			

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

### Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	236.00	---	---	---	---	---	---	---	---	0.000	---	0.000
1.00	48	237.00	---	---	---	---	---	---	---	---	0.000	0.100	0.100
2.00	97	238.00	---	---	---	---	---	---	---	---	0.000	0.120	0.120
3.00	145	239.00	---	---	---	---	---	---	---	---	0.000	0.140	0.140
4.00	194	240.00	---	---	---	---	---	---	---	---	0.000	0.160	0.160
5.00	242	241.00	---	---	---	---	---	---	---	---	0.000	0.180	0.180
6.00	290	242.00	---	---	---	---	---	---	---	---	0.000	0.200	0.200

# Hydrograph Report

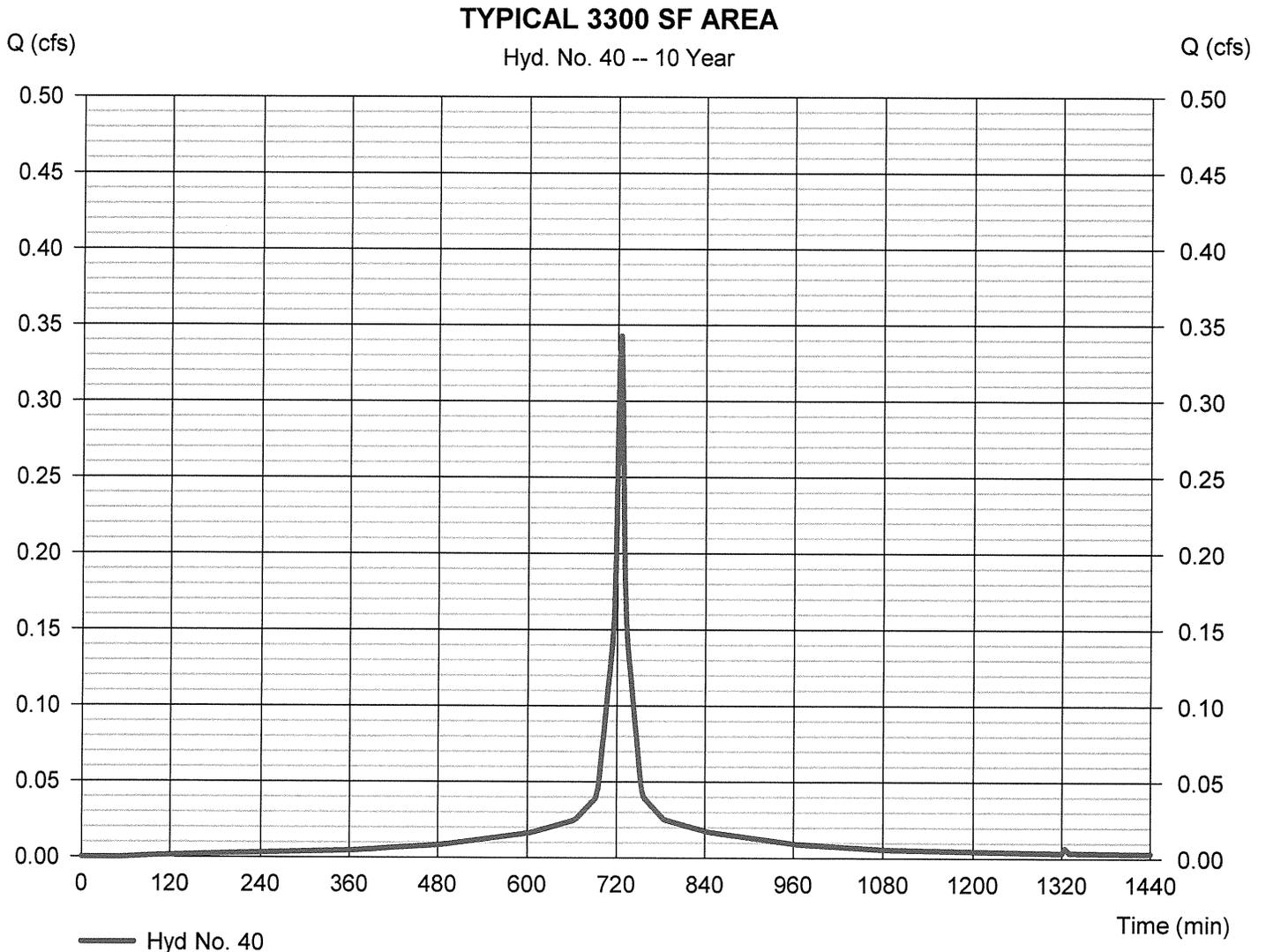
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Monday, Feb 8, 2016

## Hyd. No. 40

### TYPICAL 3300 SF AREA

Hydrograph type	= SCS Runoff	Peak discharge	= 0.343 cfs
Storm frequency	= 10 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 1,177 cuft
Drainage area	= 0.076 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.80 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

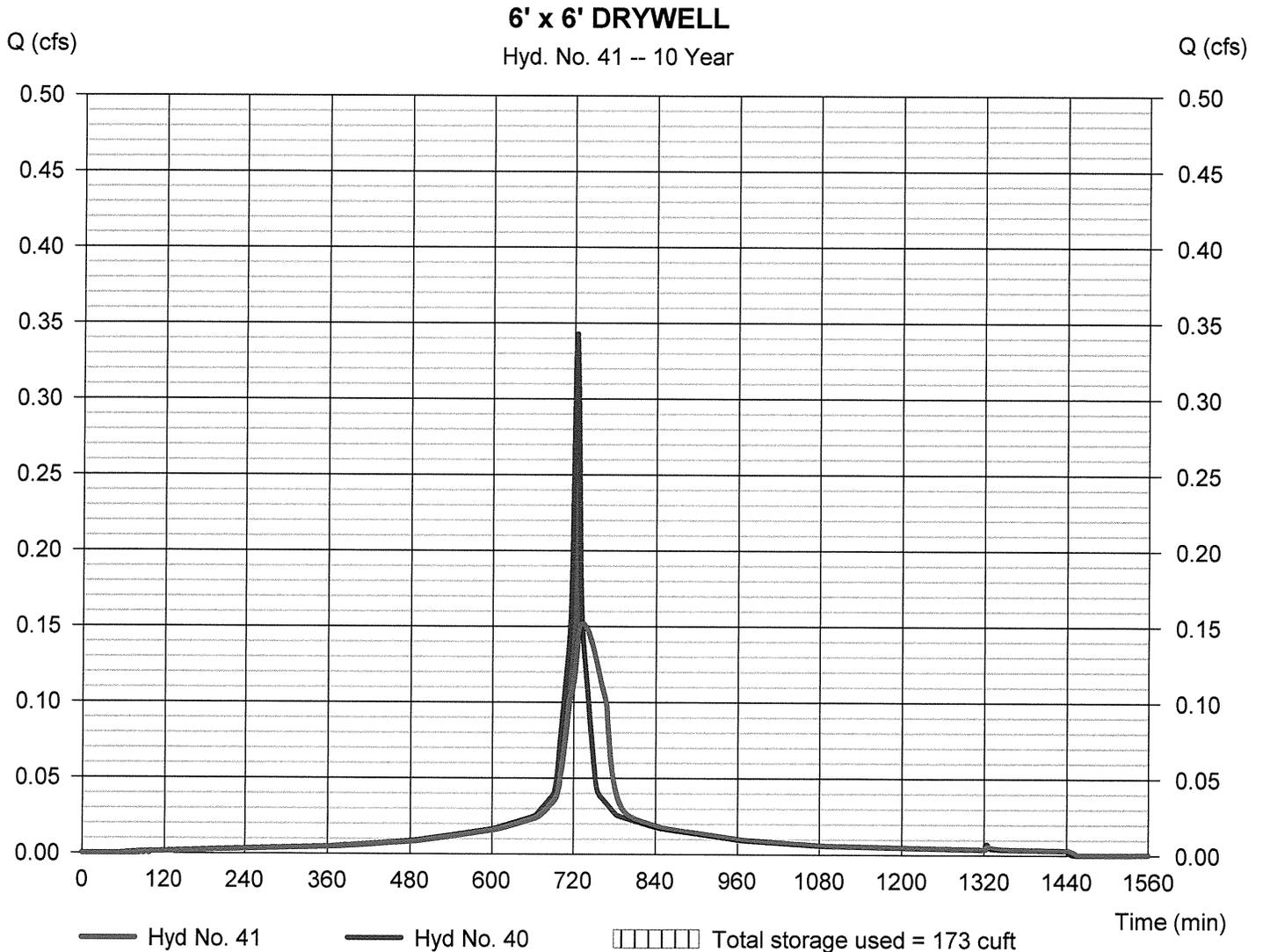
Monday, Feb 8, 2016

## Hyd. No. 41

6' x 6' DRYWELL

Hydrograph type	= Reservoir	Peak discharge	= 0.152 cfs
Storm frequency	= 10 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 1,176 cuft
Inflow hyd. No.	= 40 - TYPICAL 3300 SF AREA	Max. Elevation	= 239.59 ft
Reservoir name	= 6x6 DRYWELL	Max. Storage	= 173 cuft

Storage Indication method used. Outflow includes exfiltration.



# Hydrograph Report

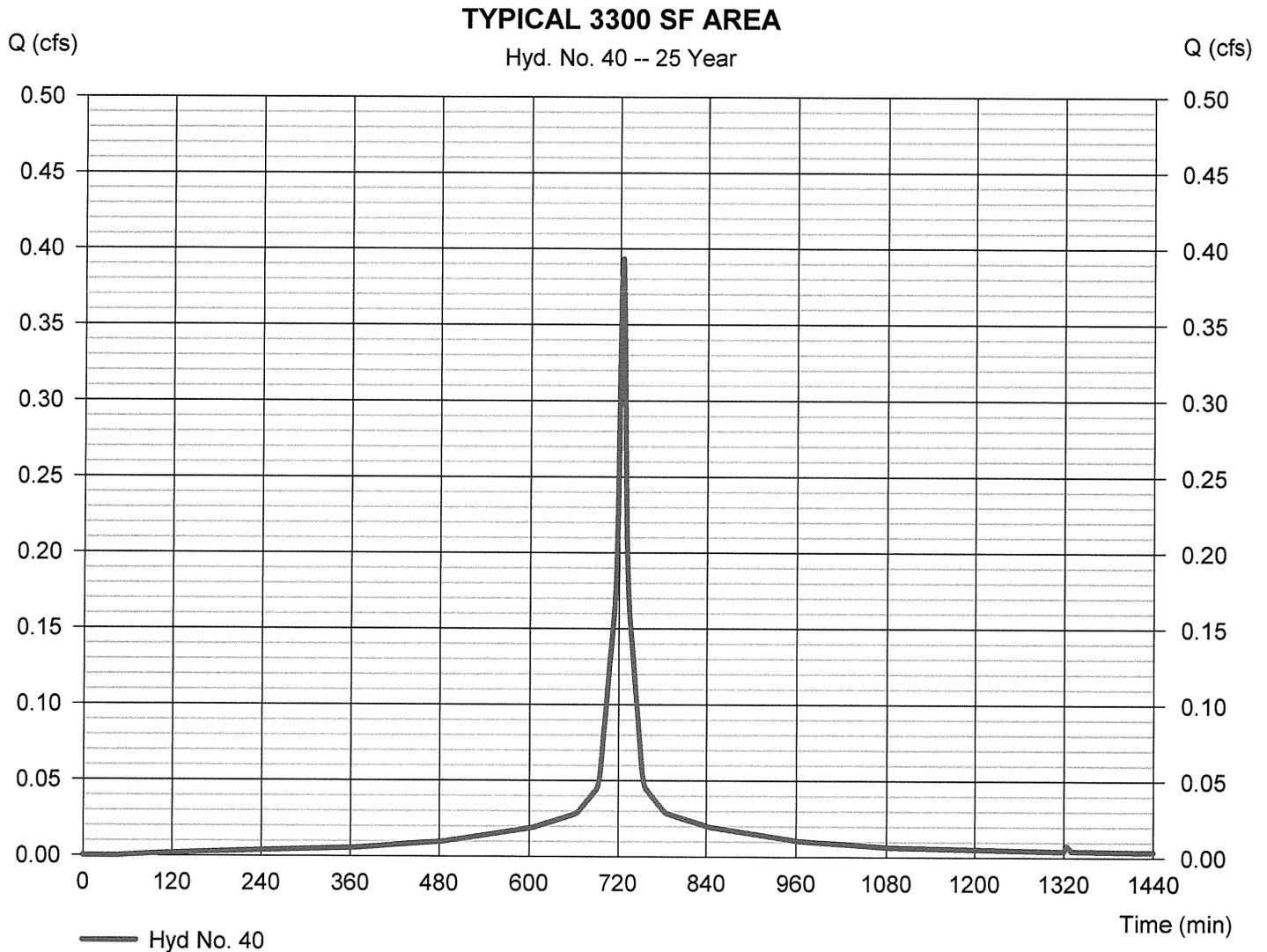
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Monday, Feb 8, 2016

## Hyd. No. 40

### TYPICAL 3300 SF AREA

Hydrograph type	= SCS Runoff	Peak discharge	= 0.393 cfs
Storm frequency	= 25 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 1,357 cuft
Drainage area	= 0.076 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

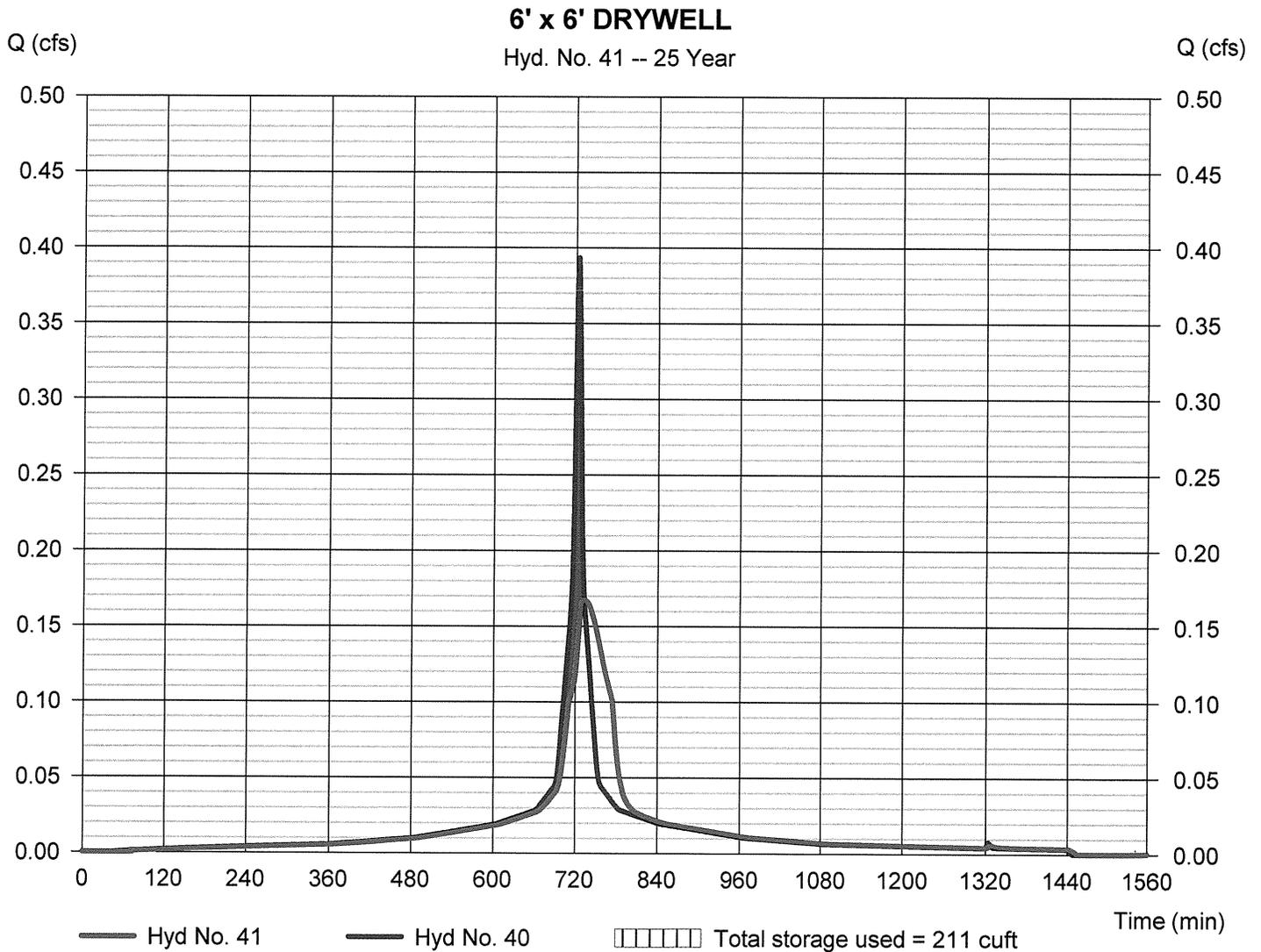
Monday, Feb 8, 2016

## Hyd. No. 41

6' x 6' DRYWELL

Hydrograph type	= Reservoir	Peak discharge	= 0.167 cfs
Storm frequency	= 25 yrs	Time to peak	= 734 min
Time interval	= 2 min	Hyd. volume	= 1,356 cuft
Inflow hyd. No.	= 40 - TYPICAL 3300 SF AREA	Max. Elevation	= 240.36 ft
Reservoir name	= 6x6 DRYWELL	Max. Storage	= 211 cuft

Storage Indication method used. Outflow includes exfiltration.



# Hydrograph Report

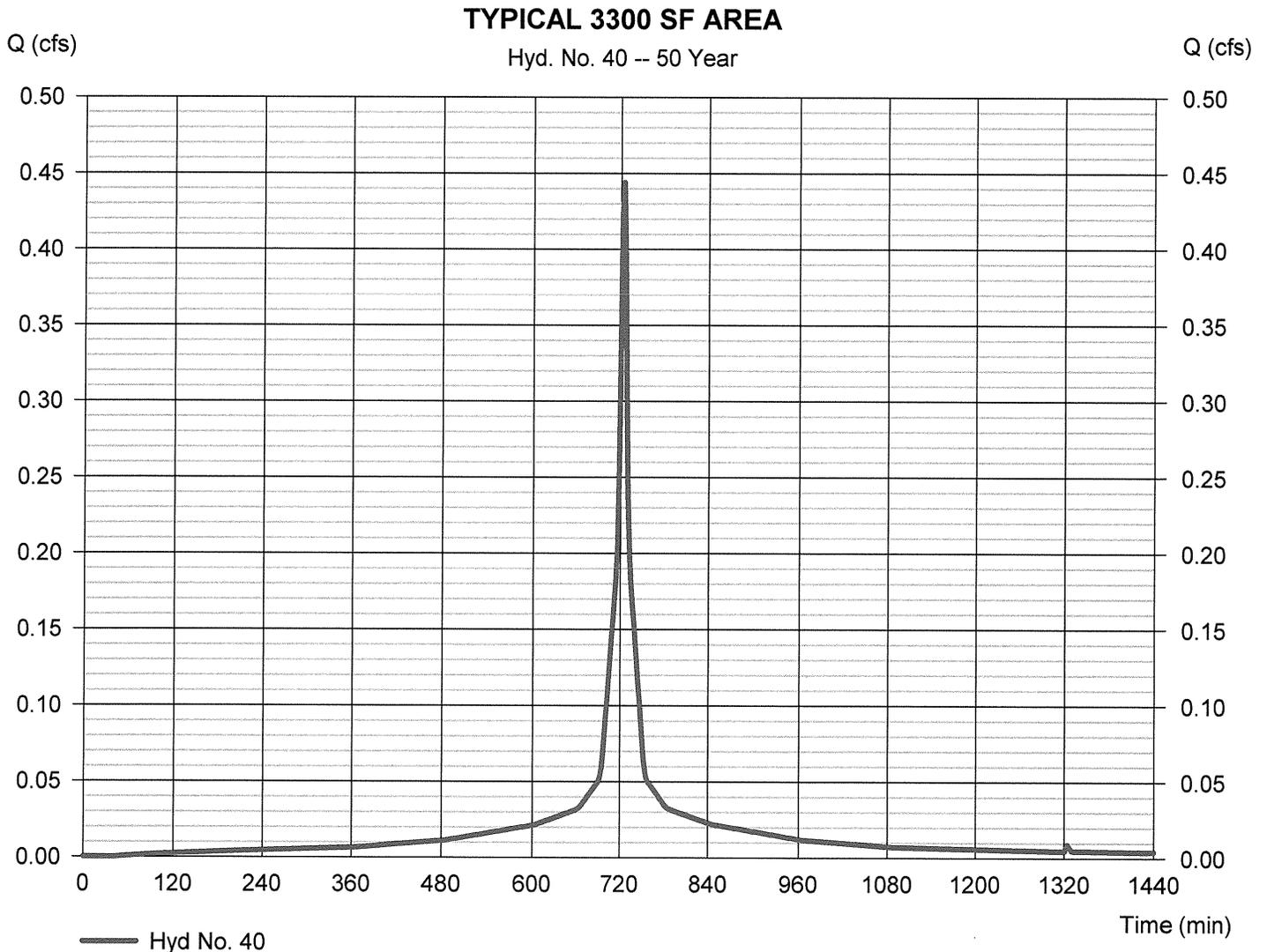
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Monday, Feb 8, 2016

## Hyd. No. 40

### TYPICAL 3300 SF AREA

Hydrograph type	= SCS Runoff	Peak discharge	= 0.444 cfs
Storm frequency	= 50 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 1,537 cuft
Drainage area	= 0.076 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.20 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

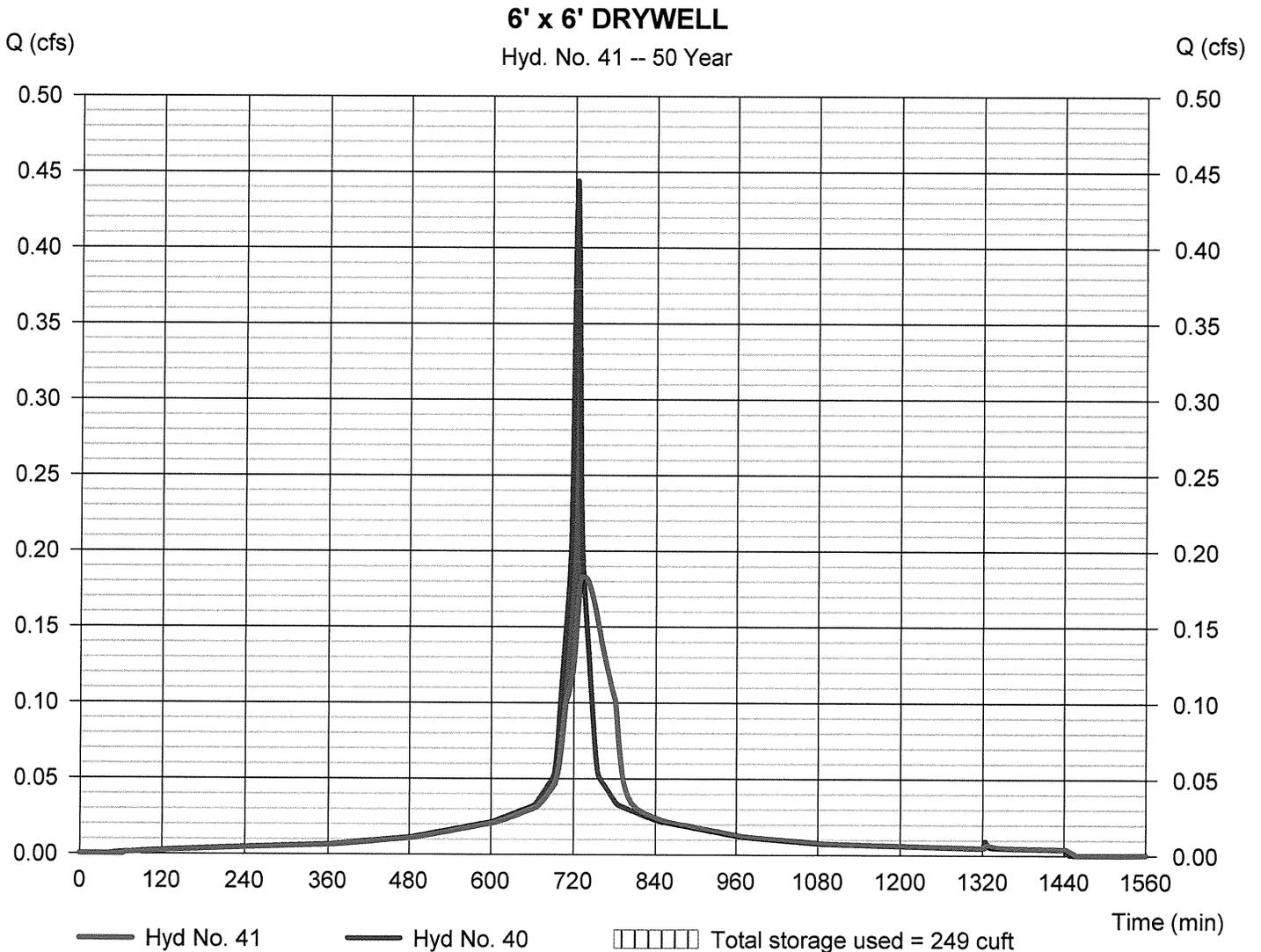
Monday, Feb 8, 2016

## Hyd. No. 41

6' x 6' DRYWELL

Hydrograph type	= Reservoir	Peak discharge	= 0.183 cfs
Storm frequency	= 50 yrs	Time to peak	= 734 min
Time interval	= 2 min	Hyd. volume	= 1,537 cuft
Inflow hyd. No.	= 40 - TYPICAL 3300 SF AREA	Max. Elevation	= 241.15 ft
Reservoir name	= 6x6 DRYWELL	Max. Storage	= 249 cuft

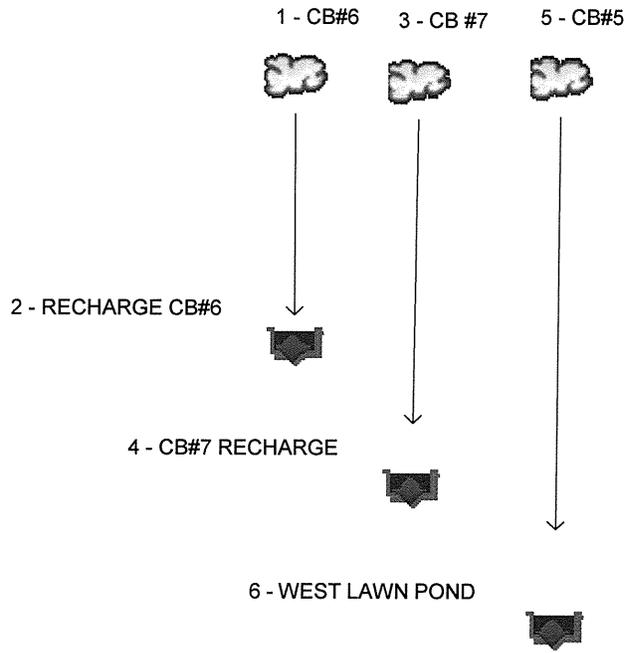
Storage Indication method used. Outflow includes exfiltration.



Appendix D  
Hydrographs of  
CB#6 Recharge Area  
CB#7 Recharge Area  
CB#5 Recharge Area

# Watershed Model Schematic

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8



# Hydrograph Report

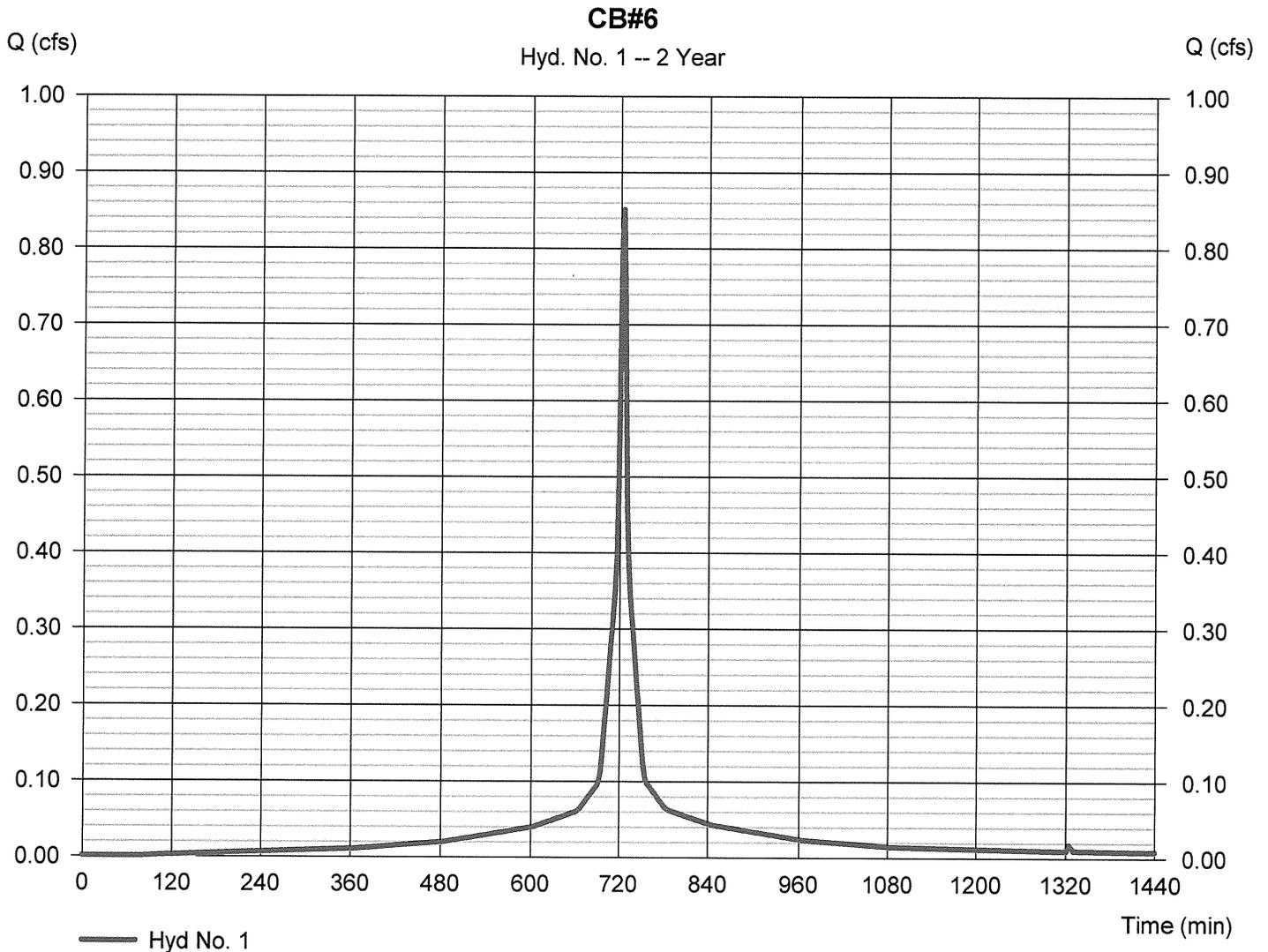
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Monday, Feb 8, 2016

## Hyd. No. 1

CB#6

Hydrograph type	= SCS Runoff	Peak discharge	= 0.850 cfs
Storm frequency	= 2 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 2,868 cuft
Drainage area	= 0.284 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

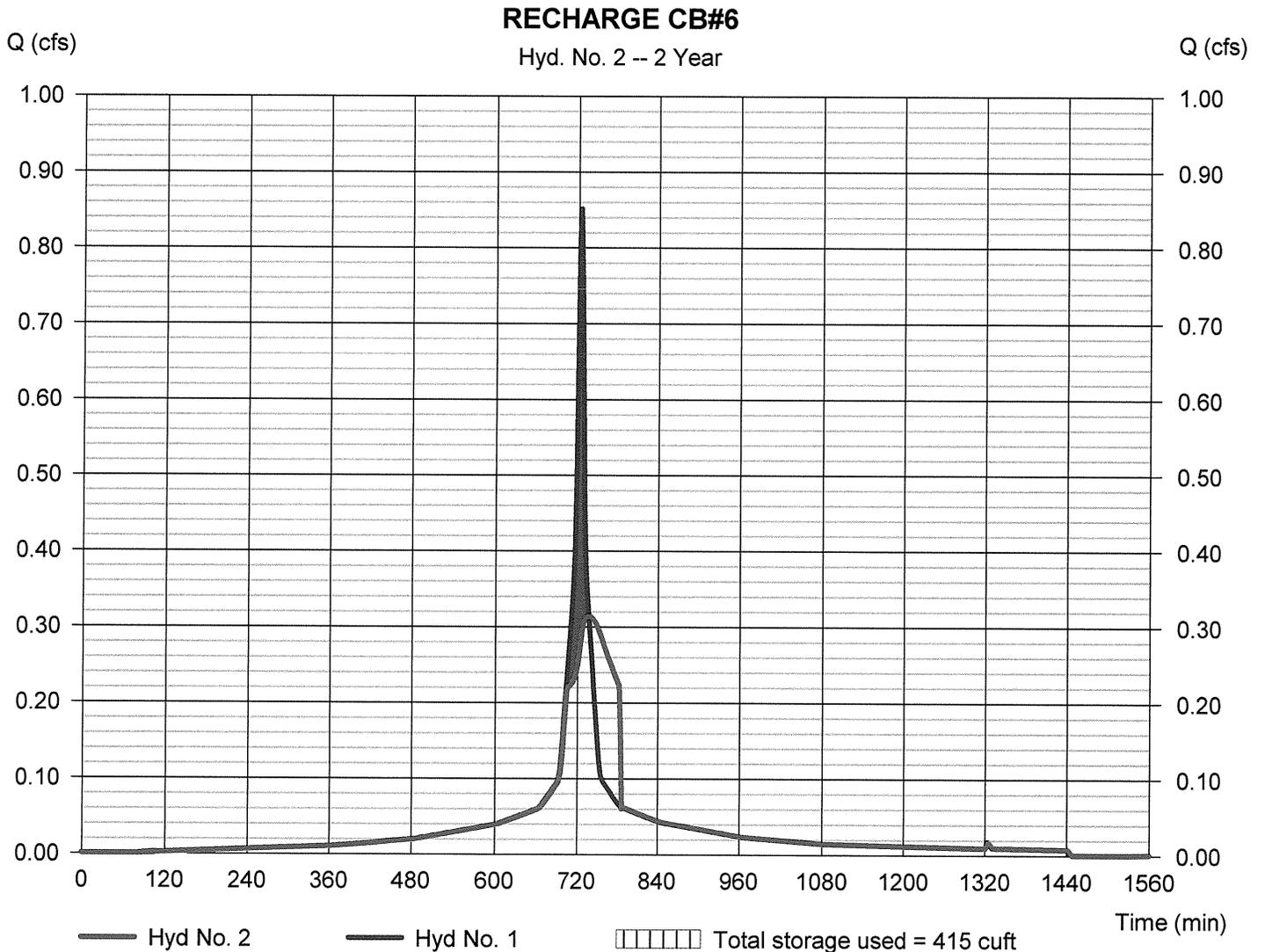
Monday, Feb 8, 2016

## Hyd. No. 2

### RECHARGE CB#6

Hydrograph type	= Reservoir	Peak discharge	= 0.313 cfs
Storm frequency	= 2 yrs	Time to peak	= 736 min
Time interval	= 2 min	Hyd. volume	= 2,868 cuft
Inflow hyd. No.	= 1 - CB#6	Max. Elevation	= 233.83 ft
Reservoir name	= CB#6 RECHARGE	Max. Storage	= 415 cuft

Storage Indication method used. Outflow includes exfiltration.



# Hydrograph Report

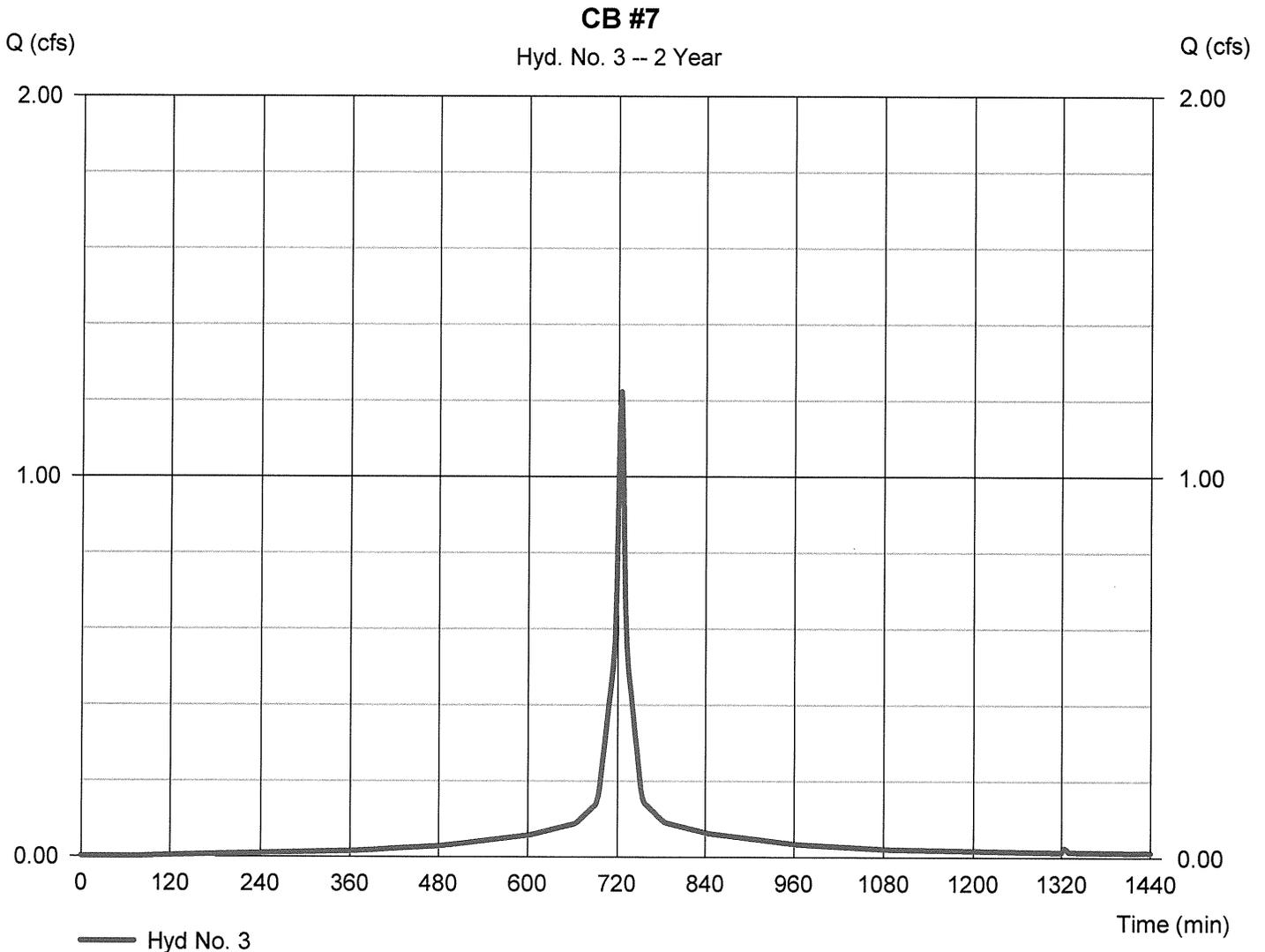
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Monday, Feb 8, 2016

## Hyd. No. 3

CB #7

Hydrograph type	= SCS Runoff	Peak discharge	= 1.222 cfs
Storm frequency	= 2 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 4,120 cuft
Drainage area	= 0.408 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

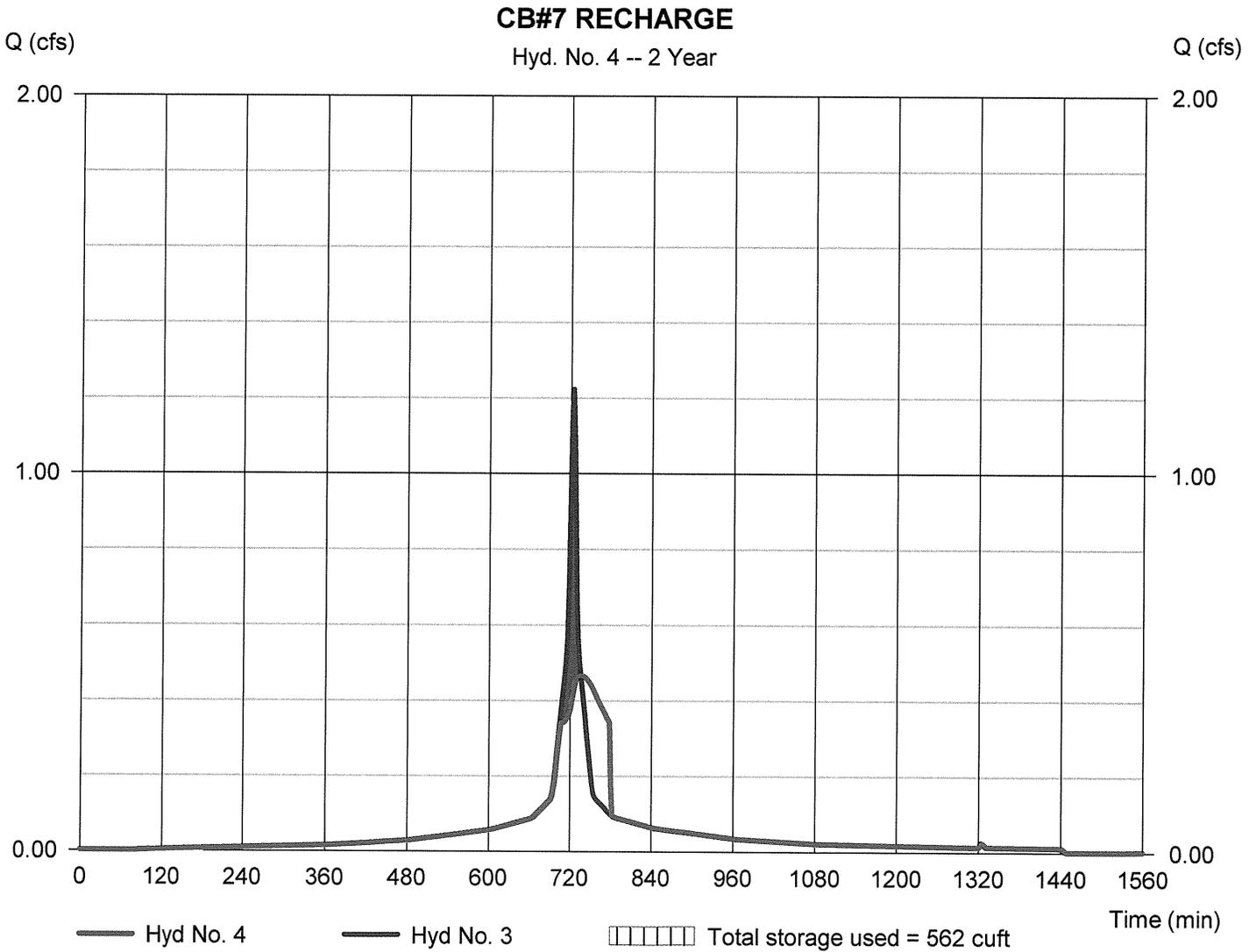
Monday, Feb 8, 2016

## Hyd. No. 4

### CB#7 RECHARGE

Hydrograph type	= Reservoir	Peak discharge	= 0.463 cfs
Storm frequency	= 2 yrs	Time to peak	= 736 min
Time interval	= 2 min	Hyd. volume	= 4,120 cuft
Inflow hyd. No.	= 3 - CB #7	Max. Elevation	= 233.17 ft
Reservoir name	= CB#7 RECHARGE	Max. Storage	= 562 cuft

Storage Indication method used. Outflow includes exfiltration.



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

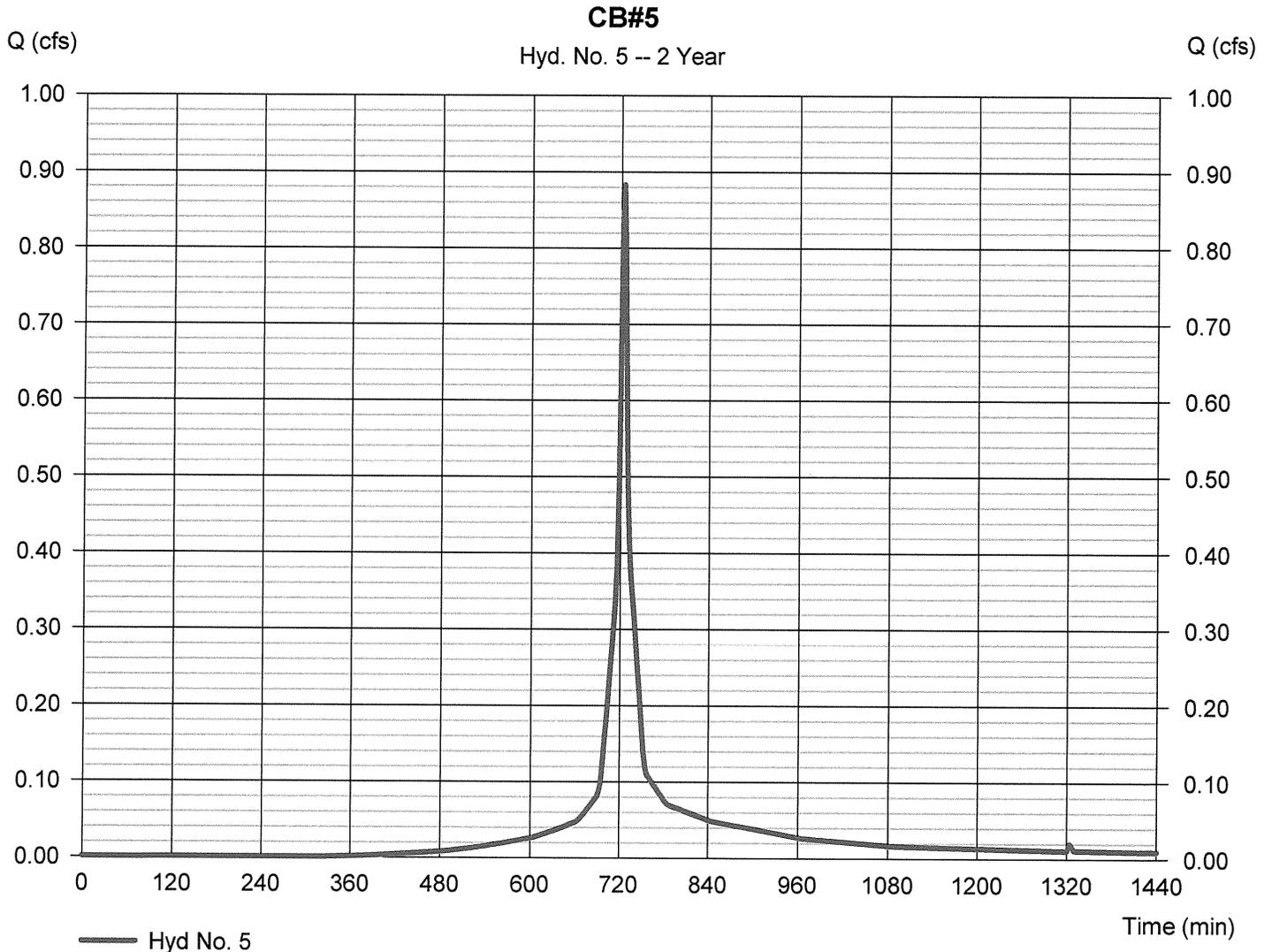
Monday, Feb 8, 2016

## Hyd. No. 5

CB#5

Hydrograph type	= SCS Runoff	Peak discharge	= 0.882 cfs
Storm frequency	= 2 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 2,690 cuft
Drainage area	= 0.350 ac	Curve number	= 91*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(0.288 x 98) + (0.066 x 61)] / 0.350



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

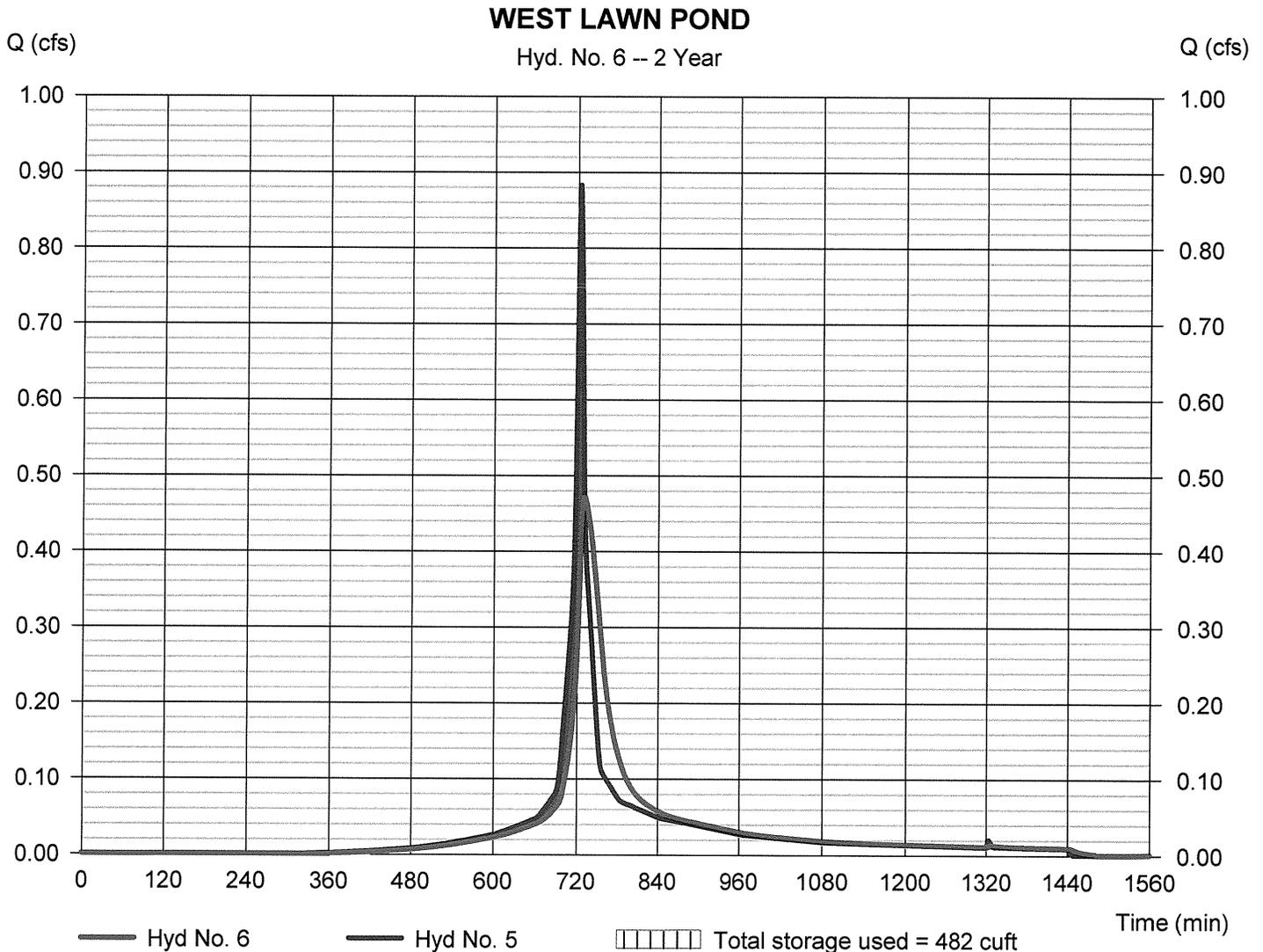
Monday, Feb 8, 2016

## Hyd. No. 6

### WEST LAWN POND

Hydrograph type	= Reservoir	Peak discharge	= 0.471 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 2,689 cuft
Inflow hyd. No.	= 5 - CB#5	Max. Elevation	= 236.69 ft
Reservoir name	= WEST LAWN	Max. Storage	= 482 cuft

Storage Indication method used. Outflow includes exfiltration.



# Hydrograph Report

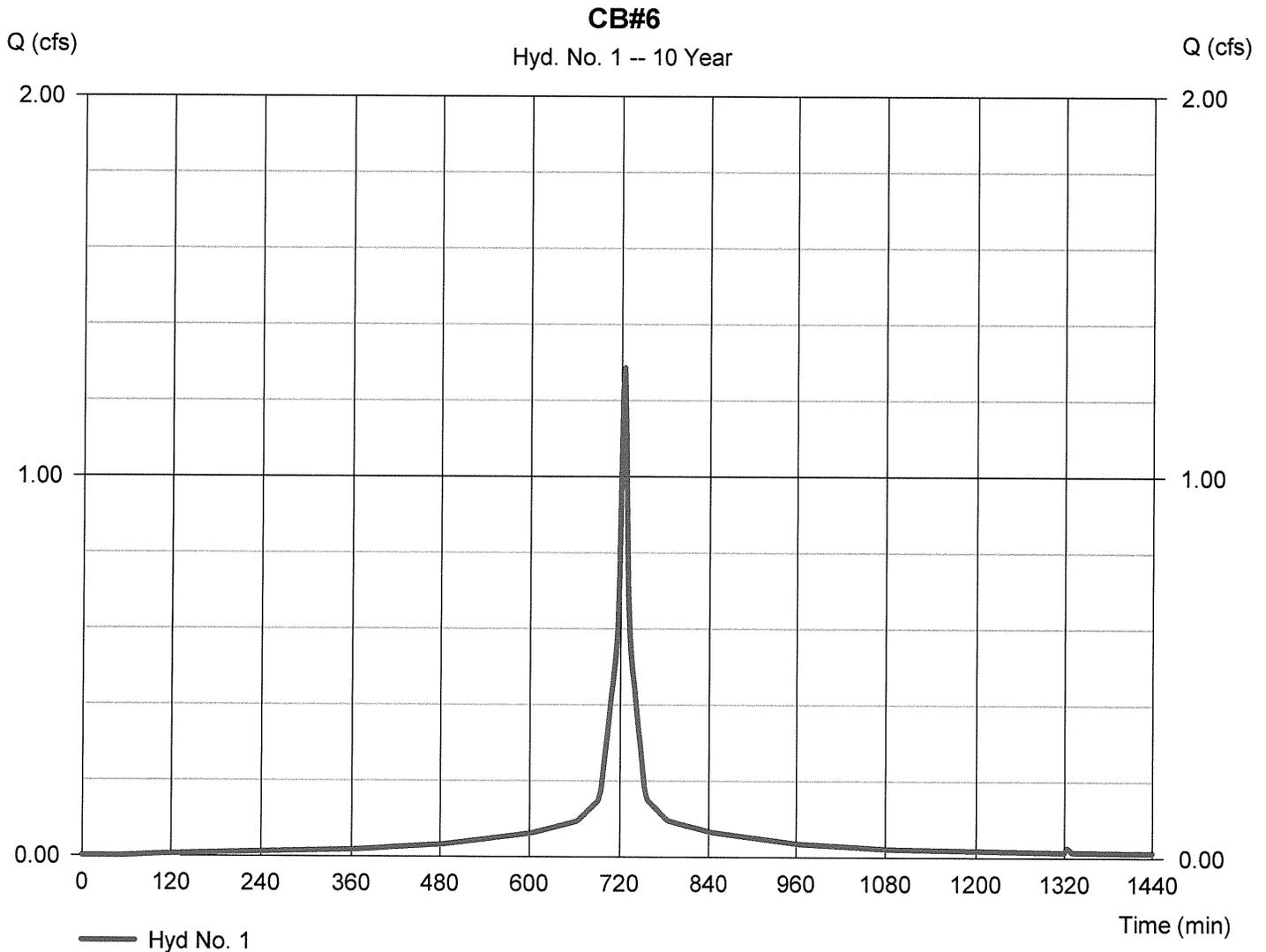
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Monday, Feb 8, 2016

## Hyd. No. 1

CB#6

Hydrograph type	= SCS Runoff	Peak discharge	= 1.285 cfs
Storm frequency	= 10 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 4,411 cuft
Drainage area	= 0.284 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.80 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

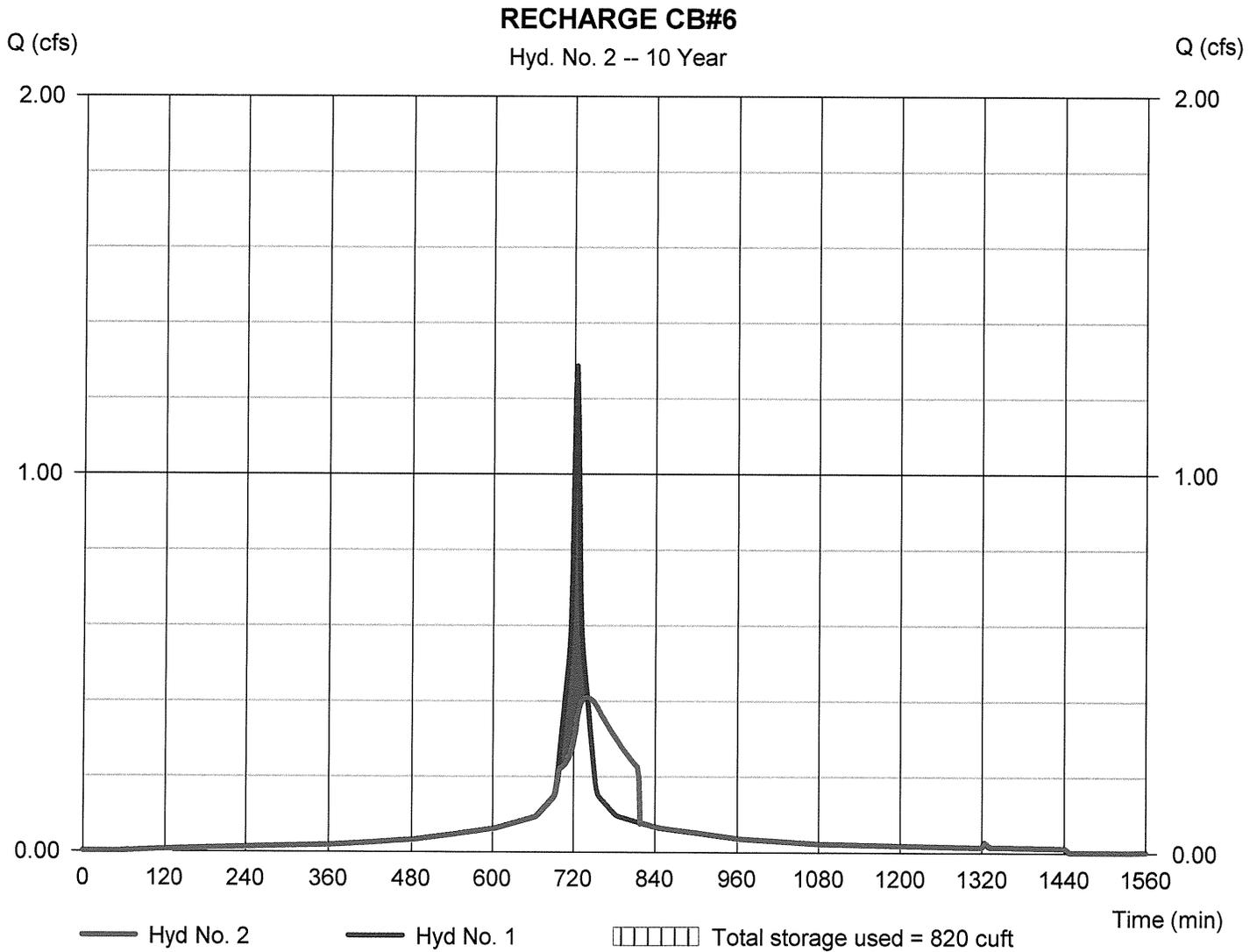
Monday, Feb 8, 2016

## Hyd. No. 2

### RECHARGE CB#6

Hydrograph type	= Reservoir	Peak discharge	= 0.406 cfs
Storm frequency	= 10 yrs	Time to peak	= 740 min
Time interval	= 2 min	Hyd. volume	= 4,410 cuft
Inflow hyd. No.	= 1 - CB#6	Max. Elevation	= 235.13 ft
Reservoir name	= CB#6 RECHARGE	Max. Storage	= 820 cuft

Storage Indication method used. Outflow includes exfiltration.

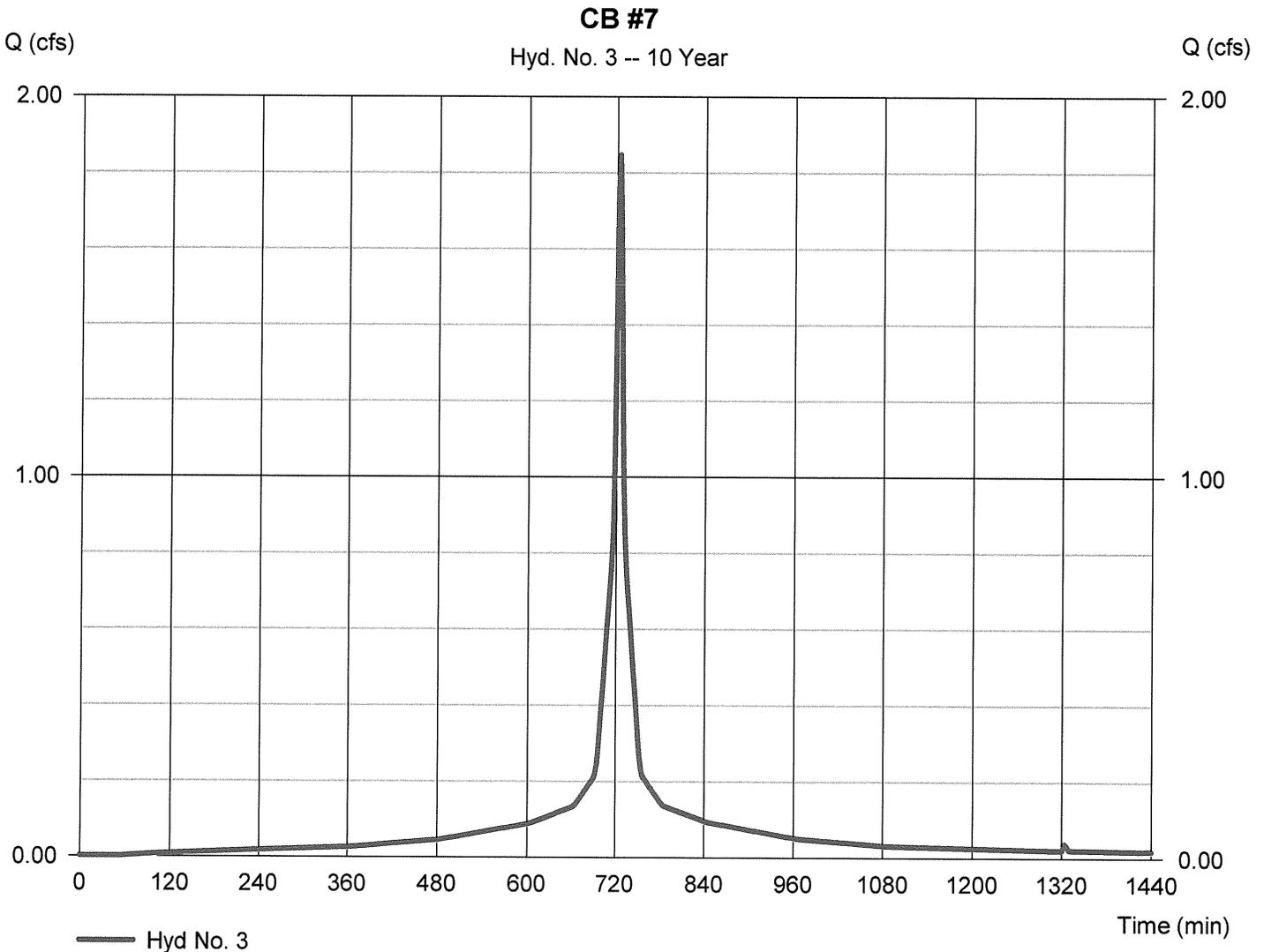


# Hydrograph Report

## Hyd. No. 3

CB #7

Hydrograph type	= SCS Runoff	Peak discharge	= 1.846 cfs
Storm frequency	= 10 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 6,336 cuft
Drainage area	= 0.408 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.80 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



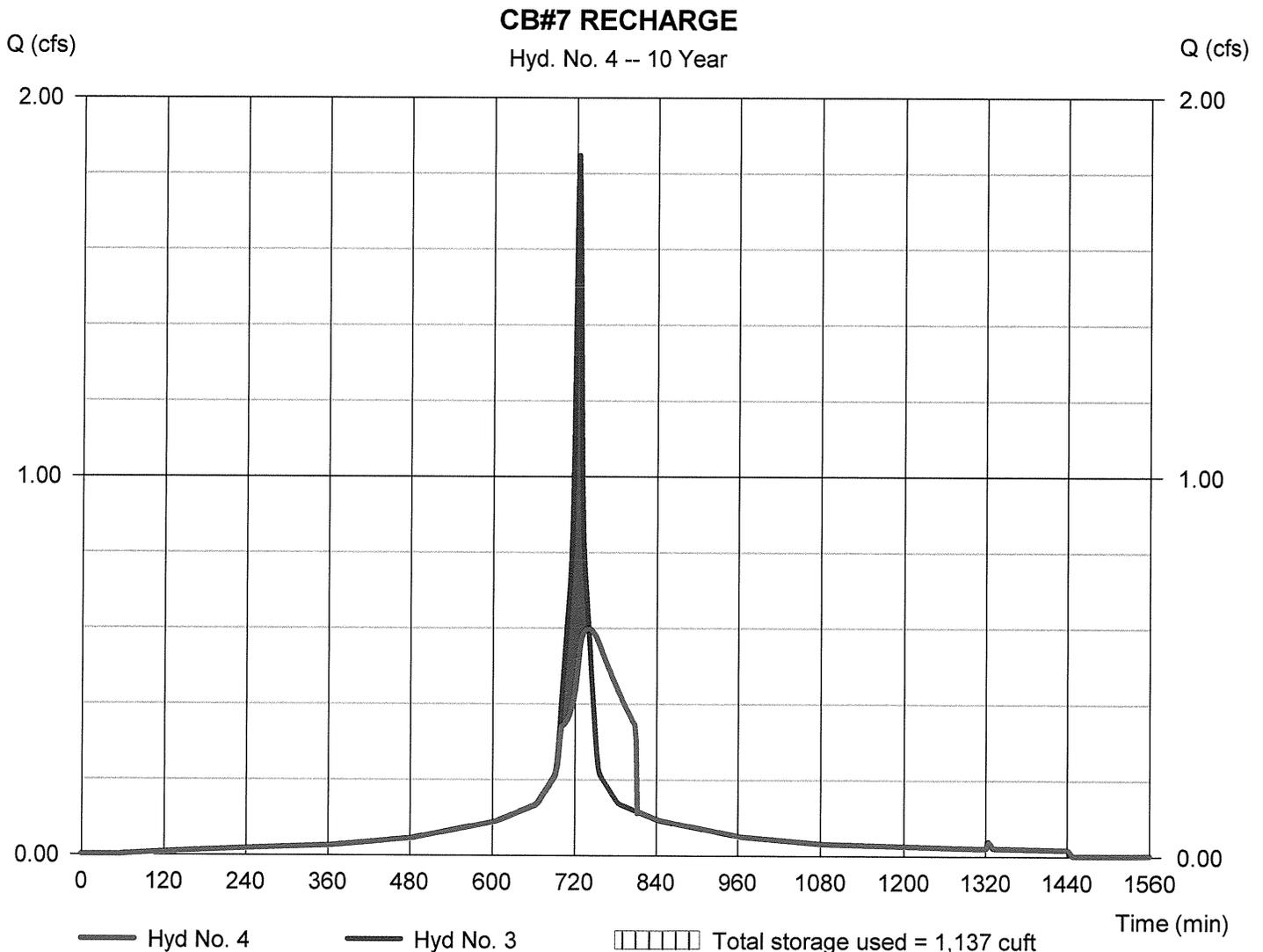
# Hydrograph Report

## Hyd. No. 4

### CB#7 RECHARGE

Hydrograph type	= Reservoir	Peak discharge	= 0.596 cfs
Storm frequency	= 10 yrs	Time to peak	= 740 min
Time interval	= 2 min	Hyd. volume	= 6,336 cuft
Inflow hyd. No.	= 3 - CB #7	Max. Elevation	= 234.37 ft
Reservoir name	= CB#7 RECHARGE	Max. Storage	= 1,137 cuft

Storage Indication method used. Outflow includes exfiltration.



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

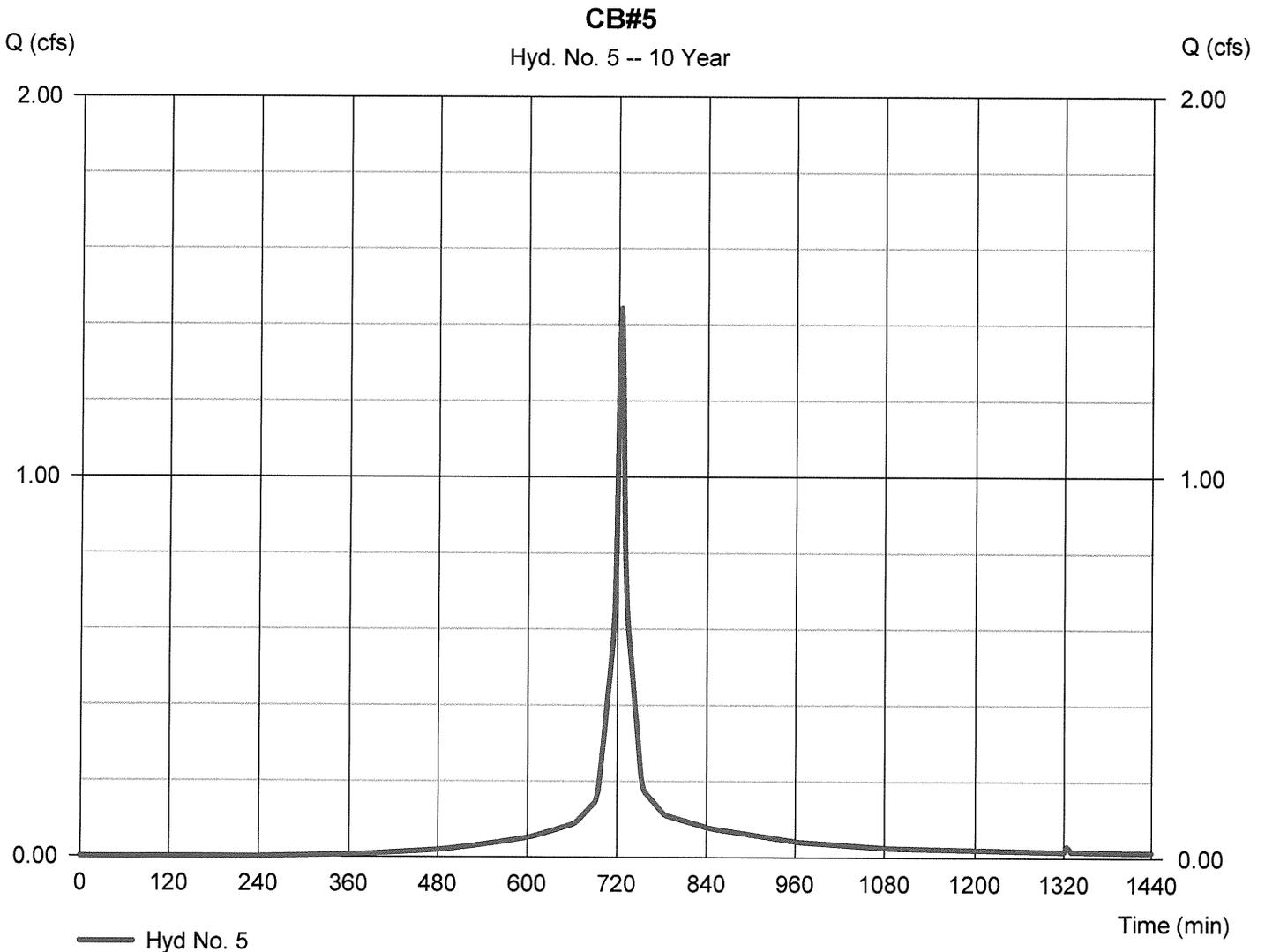
Monday, Feb 8, 2016

## Hyd. No. 5

CB#5

Hydrograph type	= SCS Runoff	Peak discharge	= 1.442 cfs
Storm frequency	= 10 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 4,512 cuft
Drainage area	= 0.350 ac	Curve number	= 91*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.80 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(0.288 x 98) + (0.066 x 61)] / 0.350



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

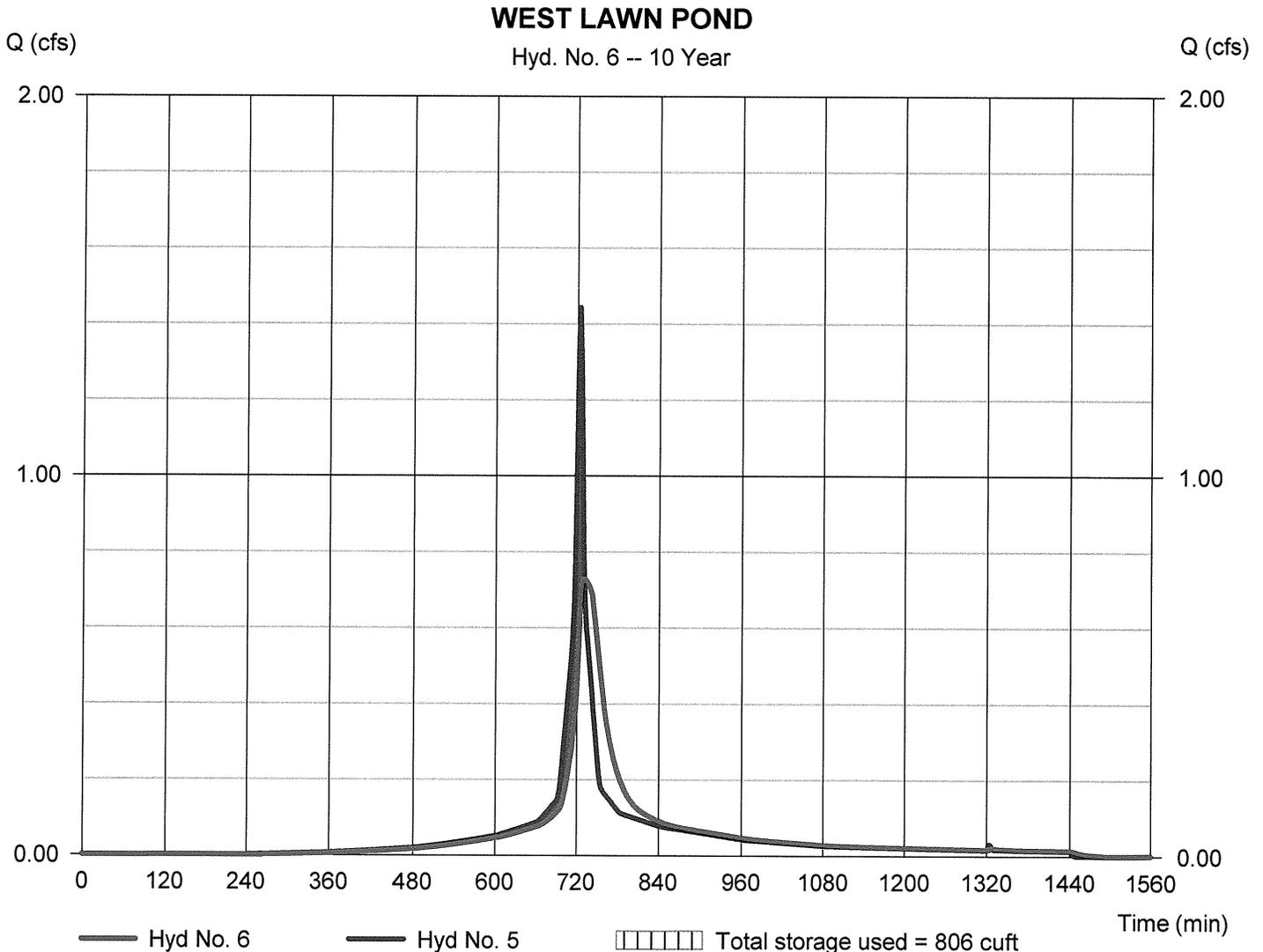
Monday, Feb 8, 2016

## Hyd. No. 6

### WEST LAWN POND

Hydrograph type	= Reservoir	Peak discharge	= 0.726 cfs
Storm frequency	= 10 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 4,511 cuft
Inflow hyd. No.	= 5 - CB#5	Max. Elevation	= 237.08 ft
Reservoir name	= WEST LAWN	Max. Storage	= 806 cuft

Storage Indication method used. Outflow includes exfiltration.



# Hydrograph Report

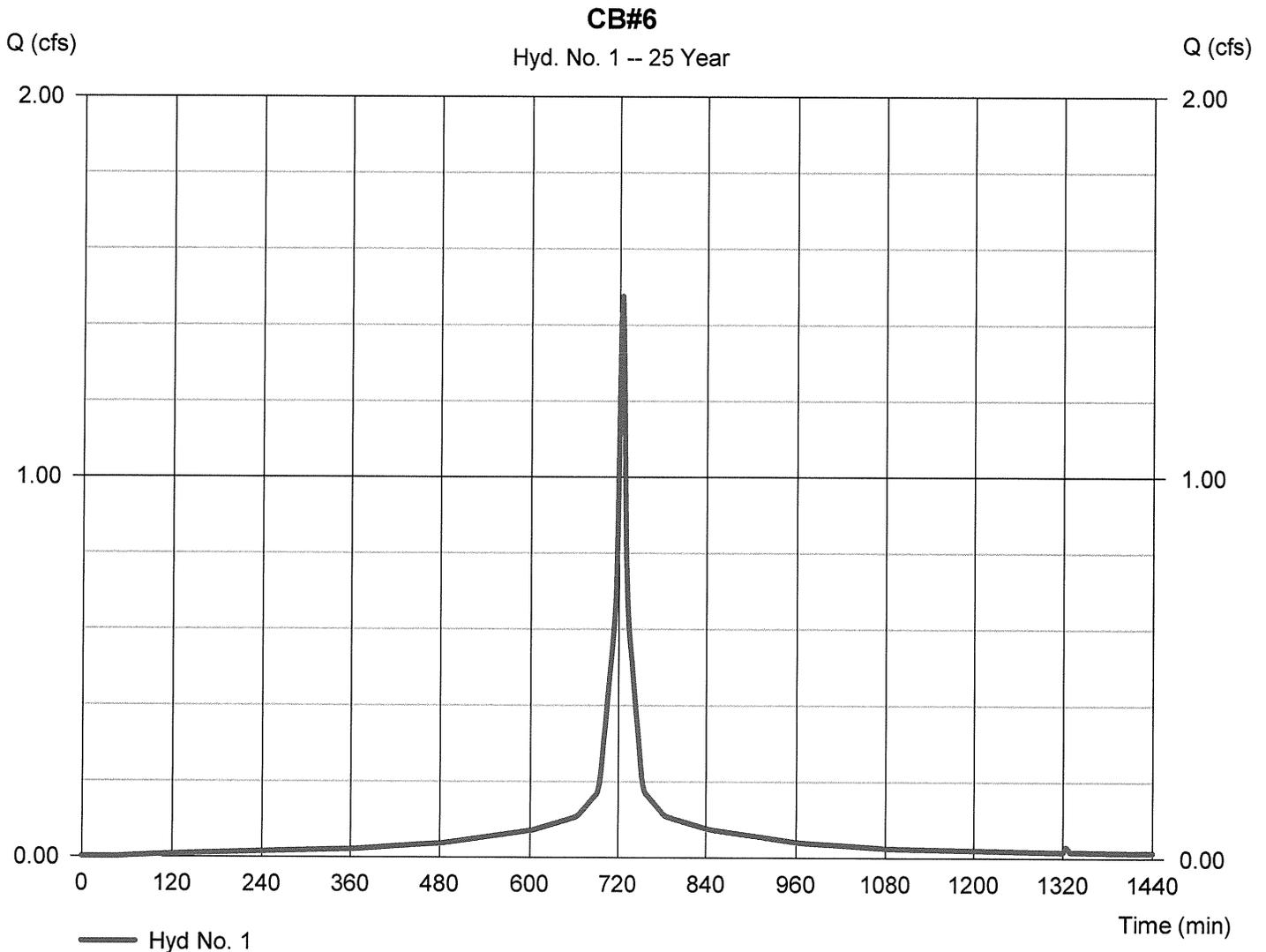
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Monday, Feb 8, 2016

## Hyd. No. 1

CB#6

Hydrograph type	= SCS Runoff	Peak discharge	= 1.474 cfs
Storm frequency	= 25 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 5,086 cuft
Drainage area	= 0.284 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



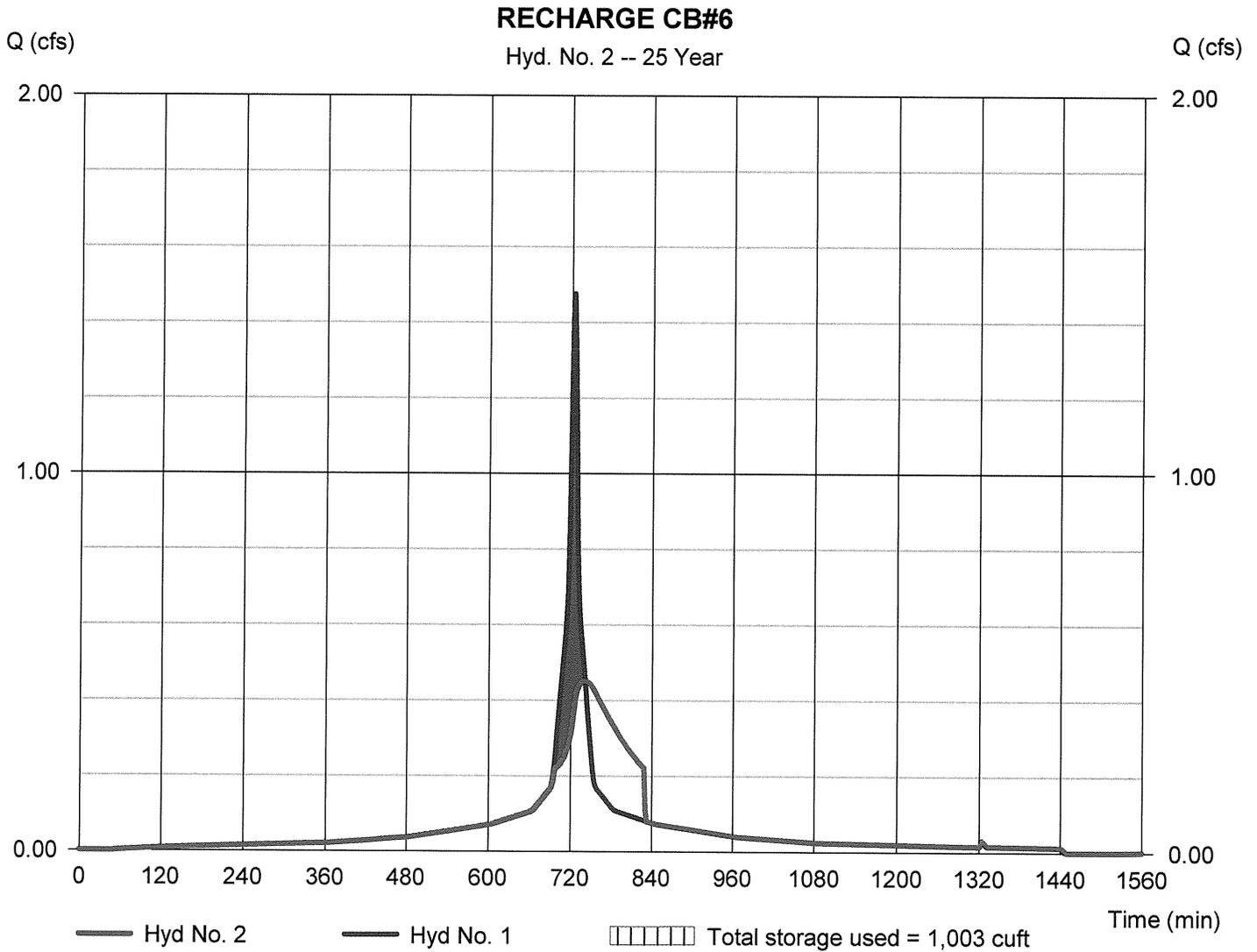
# Hydrograph Report

## Hyd. No. 2

### RECHARGE CB#6

Hydrograph type	= Reservoir	Peak discharge	= 0.449 cfs
Storm frequency	= 25 yrs	Time to peak	= 740 min
Time interval	= 2 min	Hyd. volume	= 5,086 cuft
Inflow hyd. No.	= 1 - CB#6	Max. Elevation	= 235.72 ft
Reservoir name	= CB#6 RECHARGE	Max. Storage	= 1,003 cuft

Storage Indication method used. Outflow includes exfiltration.



# Hydrograph Report

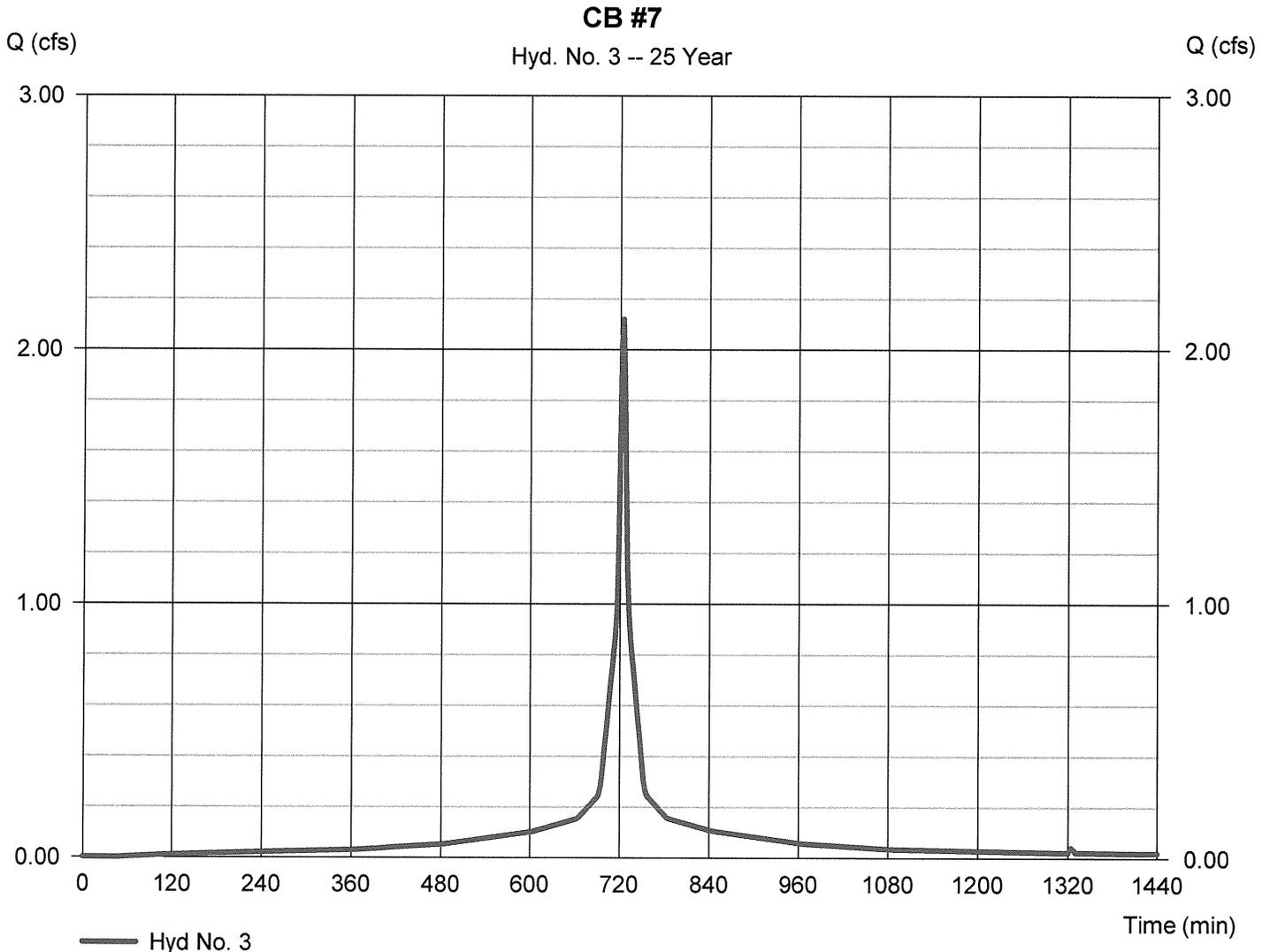
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Monday, Feb 8, 2016

## Hyd. No. 3

CB #7

Hydrograph type	= SCS Runoff	Peak discharge	= 2.118 cfs
Storm frequency	= 25 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 7,307 cuft
Drainage area	= 0.408 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

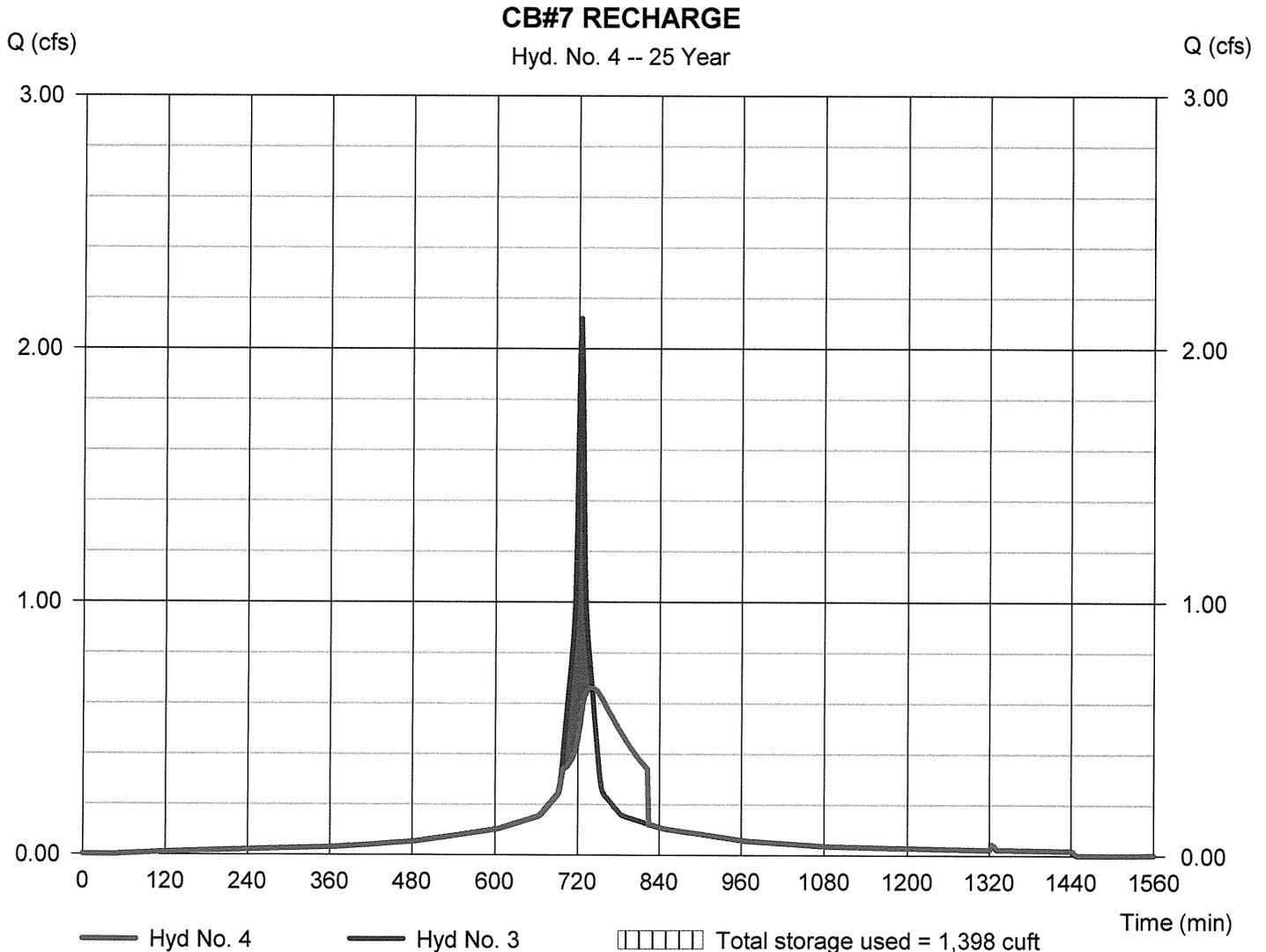
Monday, Feb 8, 2016

## Hyd. No. 4

### CB#7 RECHARGE

Hydrograph type	= Reservoir	Peak discharge	= 0.657 cfs
Storm frequency	= 25 yrs	Time to peak	= 740 min
Time interval	= 2 min	Hyd. volume	= 7,307 cuft
Inflow hyd. No.	= 3 - CB #7	Max. Elevation	= 234.92 ft
Reservoir name	= CB#7 RECHARGE	Max. Storage	= 1,398 cuft

Storage Indication method used. Outflow includes exfiltration.



# Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

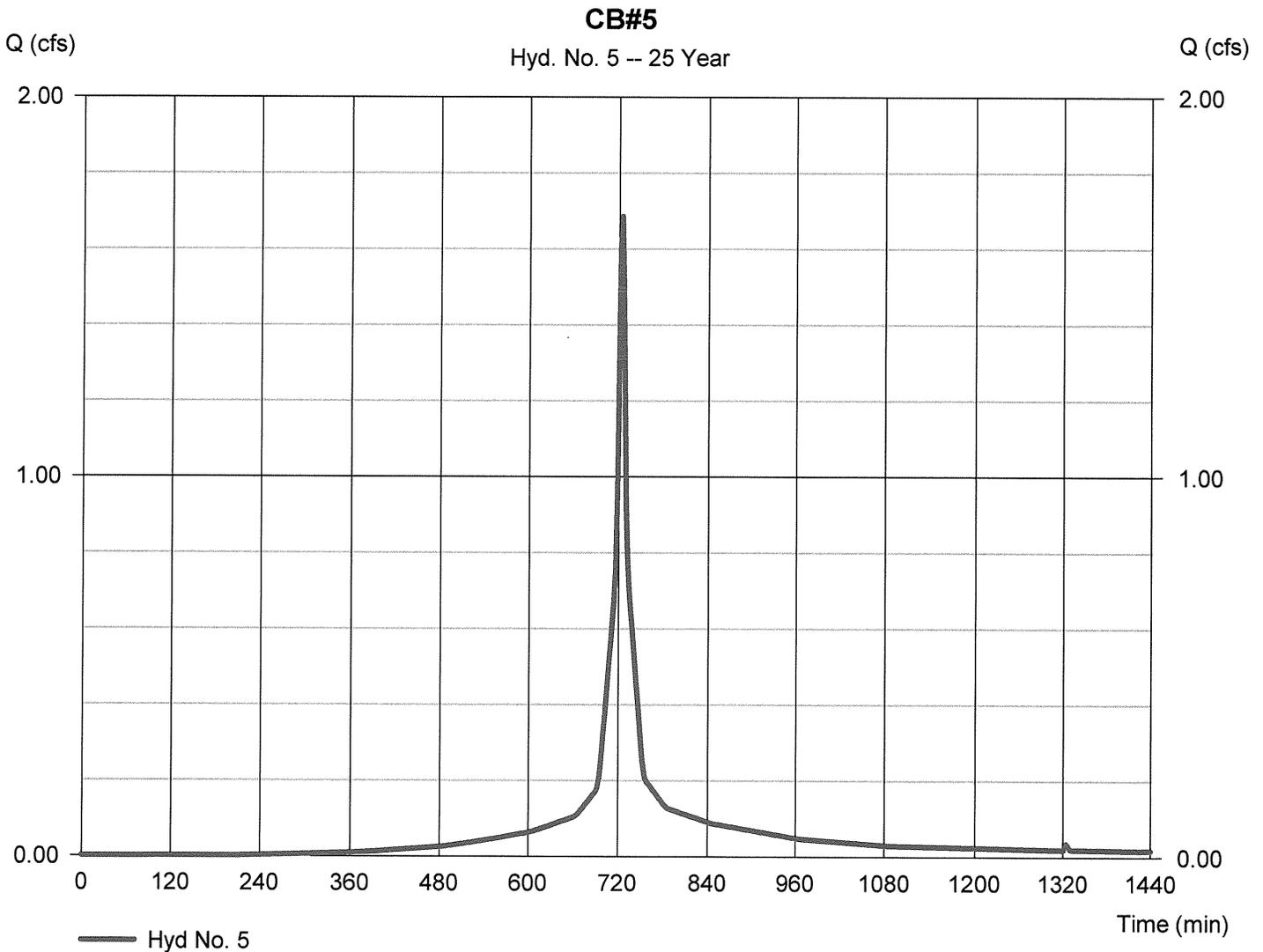
Monday, Feb 8, 2016

## Hyd. No. 5

CB#5

Hydrograph type	= SCS Runoff	Peak discharge	= 1.685 cfs
Storm frequency	= 25 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 5,323 cuft
Drainage area	= 0.350 ac	Curve number	= 91*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(0.288 x 98) + (0.066 x 61)] / 0.350



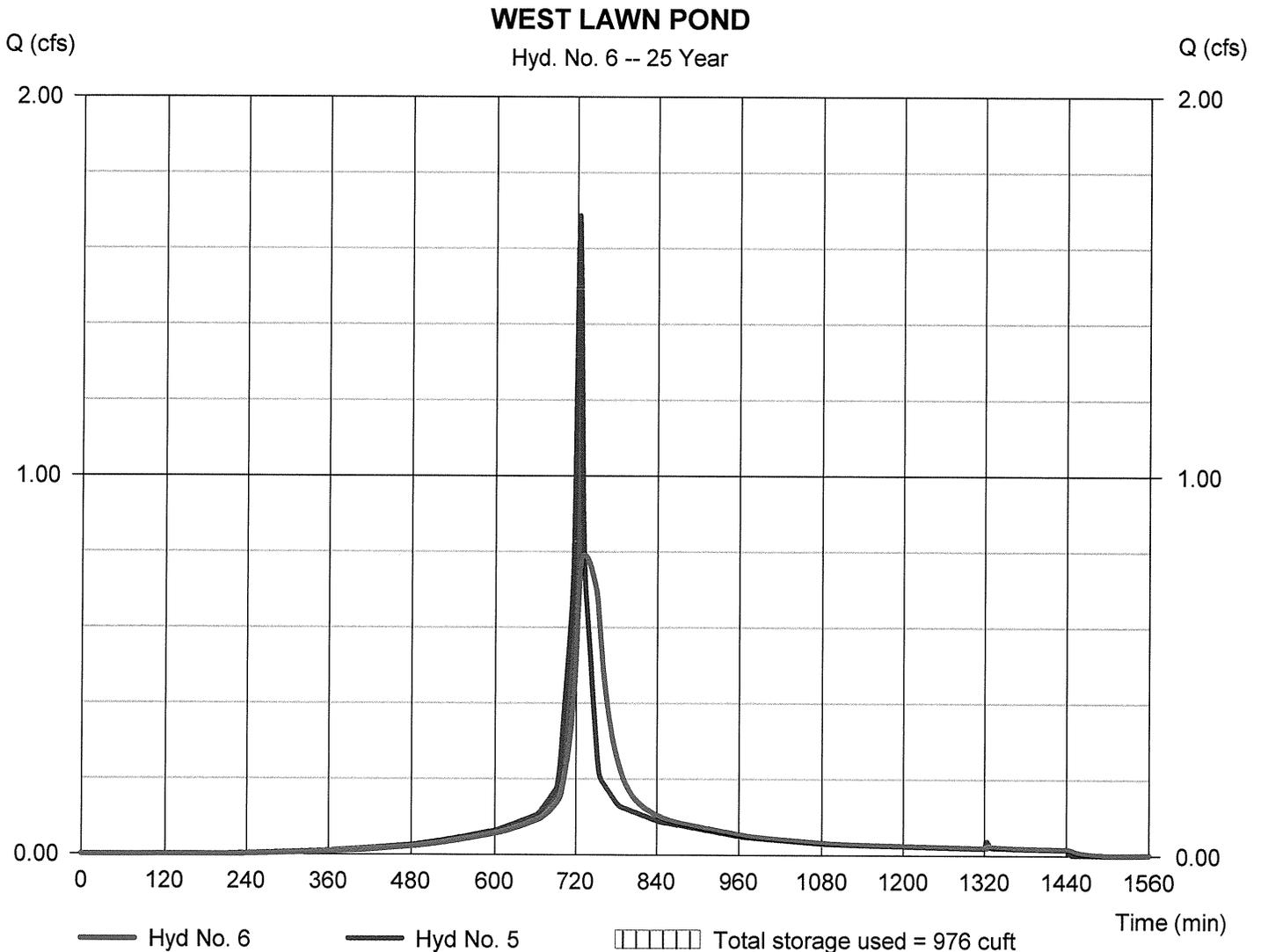
# Hydrograph Report

## Hyd. No. 6

### WEST LAWN POND

Hydrograph type	= Reservoir	Peak discharge	= 0.790 cfs
Storm frequency	= 25 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 5,322 cuft
Inflow hyd. No.	= 5 - CB#5	Max. Elevation	= 237.20 ft
Reservoir name	= WEST LAWN	Max. Storage	= 976 cuft

Storage Indication method used. Outflow includes exfiltration.

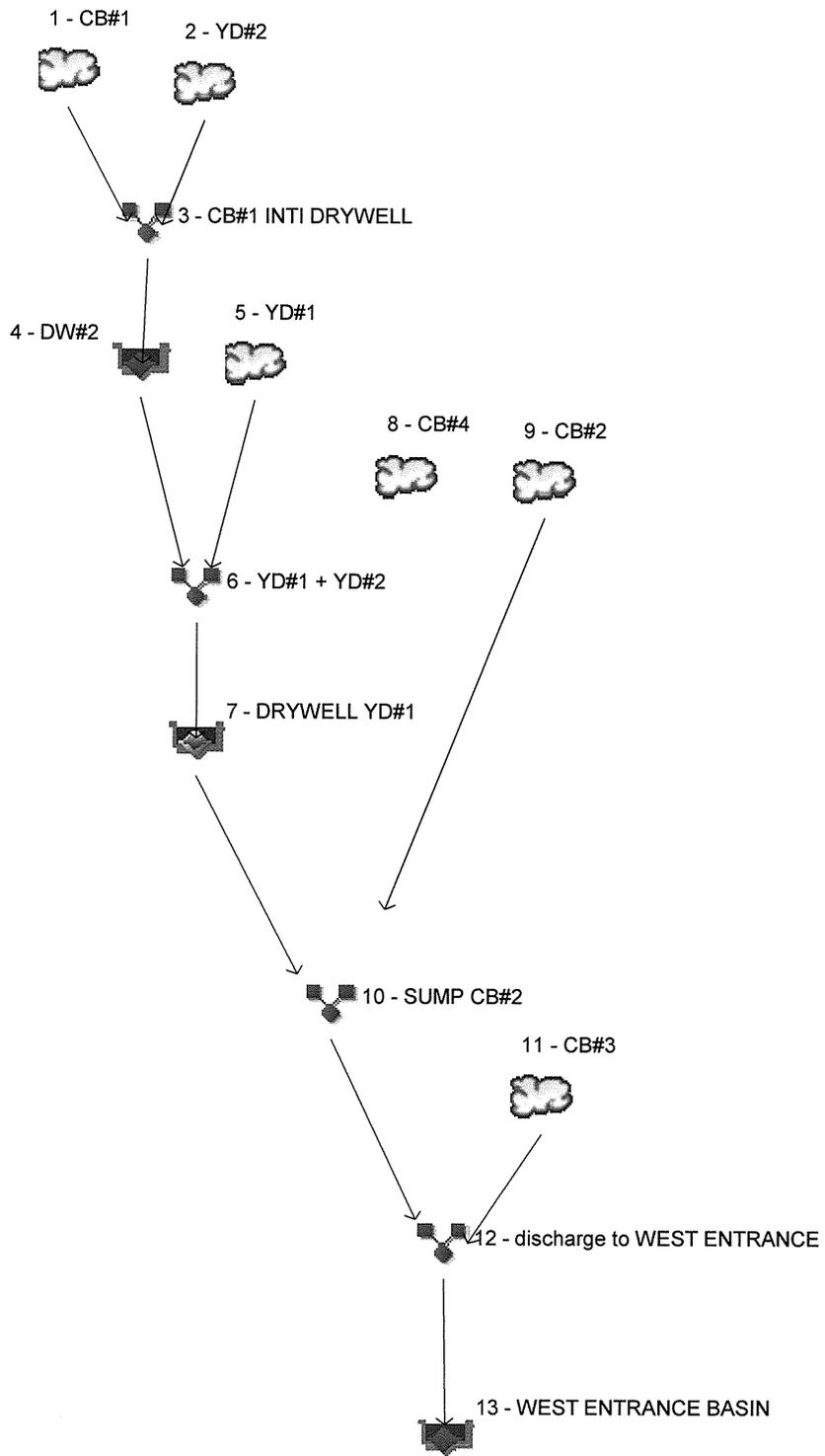


# Appendix E

## Hydrograph of North End Storm System

# Watershed Model Schematic

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8



# Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

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	-----	-----	0.345	-----	0.557	0.689	0.846	1.006	-----	CB#1
2	SCS Runoff	-----	-----	0.013	-----	0.035	0.051	0.072	0.094	-----	YD#2
3	Combine	1, 2	-----	0.357	-----	0.591	0.740	0.918	1.099	-----	CB#1 INTI DRYWELL
4	Reservoir	3	-----	0.154	-----	0.536	0.732	0.932	1.105	-----	DW#2
5	SCS Runoff	-----	-----	0.012	-----	0.033	0.048	0.068	0.089	-----	YD#1
6	Combine	4, 5	-----	0.162	-----	0.564	0.780	0.992	1.194	-----	YD#1 + YD#2
7	Reservoir(i)	6	-----	0.127	-----	0.193	0.319	0.450	0.521	-----	DRYWELL YD#1
8	SCS Runoff	-----	-----	0.428	-----	0.599	0.700	0.818	0.936	-----	CB#4
9	SCS Runoff	-----	-----	0.146	-----	0.271	0.353	0.453	0.557	-----	CB#2
10	Combine	7, 9	-----	0.205	-----	0.357	0.471	0.706	0.948	-----	SUMP CB#2
11	SCS Runoff	-----	-----	0.270	-----	0.356	0.407	0.467	0.527	-----	CB#3
12	Combine	10, 11	-----	0.473	-----	0.713	0.858	1.063	1.415	-----	discharge to WEST ENTRANCE
13	Reservoir	12	-----	0.331	-----	0.458	0.541	0.677	0.802	-----	WEST ENTRANCE BASIN

# Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

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	0.345	2	724	1,046	----	----	----	CB#1
2	SCS Runoff	0.013	2	726	60	----	----	----	YD#2
3	Combine	0.357	2	724	1,107	1, 2	----	----	CB#1 INTI DRYWELL
4	Reservoir	0.154	2	738	1,106	3	239.68	177	DW#2
5	SCS Runoff	0.012	2	726	57	----	----	----	YD#1
6	Combine	0.162	2	736	1,164	4, 5	----	----	YD#1 + YD#2
7	Reservoir(i)	0.127	2	770	1,163	6	238.44	186	DRYWELL YD#1
8	SCS Runoff	0.428	2	724	1,306	----	----	----	CB#4
9	SCS Runoff	0.146	2	724	478	----	----	----	CB#2
10	Combine	0.205	2	726	1,641	7, 9	----	----	SUMP CB#2
11	SCS Runoff	0.270	2	724	909	----	----	----	CB#3
12	Combine	0.473	2	724	2,550	10, 11	----	----	discharge to WEST ENTRANCE
13	Reservoir	0.331	2	730	2,549	12	233.38	181	WEST ENTRANCE BASIN
UNIGLOBE_NORTH.gpw					Return Period: 2 Year			Tuesday, Feb 9, 2016	

# Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

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	0.557	2	724	1,665	-----	-----	-----	CB#1
2	SCS Runoff	0.035	2	724	125	-----	-----	-----	YD#2
3	Combine	0.591	2	724	1,790	1, 2	-----	-----	CB#1 INTI DRYWELL
4	Reservoir	0.536	2	728	1,789	3	241.45	256	DW#2
5	SCS Runoff	0.033	2	724	118	-----	-----	-----	YD#1
6	Combine	0.564	2	728	1,908	4, 5	-----	-----	YD#1 + YD#2
7	Reservoir(i)	0.193	2	750	1,906	6	241.13	351	DRYWELL YD#1
8	SCS Runoff	0.599	2	724	1,857	-----	-----	-----	CB#4
9	SCS Runoff	0.271	2	724	835	-----	-----	-----	CB#2
10	Combine	0.357	2	724	2,740	7, 9	-----	-----	SUMP CB#2
11	SCS Runoff	0.356	2	724	1,214	-----	-----	-----	CB#3
12	Combine	0.713	2	724	3,955	10, 11	-----	-----	discharge to WEST ENTRANCE
13	Reservoir	0.458	2	730	3,954	12	233.56	284	WEST ENTRANCE BASIN
UNIGLOBE_NORTH.gpw					Return Period: 5 Year			Tuesday, Feb 9, 2016	

# Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

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	0.689	2	724	2,059	-----	-----	-----	CB#1	
2	SCS Runoff	0.051	2	724	170	-----	-----	-----	YD#2	
3	Combine	0.740	2	724	2,229	1, 2	-----	-----	CB#1 INTI DRYWELL	
4	Reservoir	0.732	2	724	2,229	3	241.45	261	DW#2	
5	SCS Runoff	0.048	2	724	162	-----	-----	-----	YD#1	
6	Combine	0.780	2	724	2,390	4, 5	-----	-----	YD#1 + YD#2	
7	Reservoir(i)	0.319	2	740	2,400	6	241.57	433	DRYWELL YD#1	
8	SCS Runoff	0.700	2	724	2,192	-----	-----	-----	CB#4	
9	SCS Runoff	0.353	2	724	1,071	-----	-----	-----	CB#2	
10	Combine	0.471	2	736	3,470	7, 9	-----	-----	SUMP CB#2	
11	SCS Runoff	0.407	2	724	1,398	-----	-----	-----	CB#3	
12	Combine	0.858	2	724	4,868	10, 11	-----	-----	discharge to WEST ENTRANCE	
13	Reservoir	0.541	2	744	4,868	12	233.76	434	WEST ENTRANCE BASIN	
UNIGLOBE_NORTH.gpw					Return Period: 10 Year			Tuesday, Feb 9, 2016		

# Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

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	0.846	2	724	2,533	-----	-----	-----	CB#1	
2	SCS Runoff	0.072	2	724	229	-----	-----	-----	YD#2	
3	Combine	0.918	2	724	2,762	1, 2	-----	-----	CB#1 INTI DRYWELL	
4	Reservoir	0.932	2	722	2,761	3	241.64	266	DW#2	
5	SCS Runoff	0.068	2	724	217	-----	-----	-----	YD#1	
6	Combine	0.992	2	722	2,979	4, 5	-----	-----	YD#1 + YD#2	
7	Reservoir(i)	0.450	2	736	2,989	6	241.97	541	DRYWELL YD#1	
8	SCS Runoff	0.818	2	724	2,585	-----	-----	-----	CB#4	
9	SCS Runoff	0.453	2	724	1,362	-----	-----	-----	CB#2	
10	Combine	0.706	2	728	4,351	7, 9	-----	-----	SUMP CB#2	
11	SCS Runoff	0.467	2	724	1,612	-----	-----	-----	CB#3	
12	Combine	1.063	2	726	5,963	10, 11	-----	-----	discharge to WEST ENTRANCE	
13	Reservoir	0.677	2	744	5,962	12	234.04	664	WEST ENTRANCE BASIN	
UNIGLOBE_NORTH.gpw					Return Period: 25 Year			Tuesday, Feb 9, 2016		

# Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

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	1.006	2	724	3,020	-----	-----	-----	CB#1	
2	SCS Runoff	0.094	2	724	291	-----	-----	-----	YD#2	
3	Combine	1.099	2	724	3,312	1, 2	-----	-----	CB#1 INTI DRYWELL	
4	Reservoir	1.105	2	724	3,311	3	241.64	270	DW#2	
5	SCS Runoff	0.089	2	724	277	-----	-----	-----	YD#1	
6	Combine	1.194	2	724	3,588	4, 5	-----	-----	YD#1 + YD#2	
7	Reservoir(i)	0.521	2	736	3,585	6	241.83	677	DRYWELL YD#1	
8	SCS Runoff	0.936	2	724	2,981	-----	-----	-----	CB#4	
9	SCS Runoff	0.557	2	724	1,667	-----	-----	-----	CB#2	
10	Combine	0.948	2	726	5,252	7, 9	-----	-----	SUMP CB#2	
11	SCS Runoff	0.527	2	724	1,826	-----	-----	-----	CB#3	
12	Combine	1.415	2	726	7,078	10, 11	-----	-----	discharge to WEST ENTRANCE	
13	Reservoir	0.802	2	744	7,077	12	234.17	832	WEST ENTRANCE BASIN	
UNIGLOBE_NORTH.gpw					Return Period: 50 Year			Tuesday, Feb 9, 2016		