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CIVIL ENGINEERS • LAND SURVEYORS • SITE PLANNERS

1755 MERIDEN-WATERBURY ROAD, BOX 337, MILLDALE, CONNECTICUT 06467-0337

PHONE (860) 621-3638 • FAX (860) 621-9609 • EMAIL INFO@KRATZERTJONES.COM

AN EQUAL OPPORTUNITY EMPLOYER - M - F

STORMWATER MANAGEMENT REPORT 8/10/15 UPDATED: 2/5/16

Including:

2, 5, 10, 25, and 100-Year Storms

Prepared for:

MANSOUR PRIME LLC

Climax Road
Simsbury, CT



Andrew J. Quirk, P.E.

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EXECUTIVE SUMMARY

This report summarizes the hydrologic changes and management of stormwater associated with the construction of a residential subdivision. The existing land coverage is primarily wooded with some open lawn areas with a home and associated ancillary structures and drives. The proposed development will consist of a twenty three lot residential subdivision with a Town road and associated drives and utilities. The Stormwater Management Plan will include measures to control increases in runoff and address water quality concerns associated with the development of the site.

The Stormwater Management Plan has remained essentially the same as the report dated 8/10/15 for a 15-lot subdivision. The impervious area of the roadway and site drives for the current 23-lot subdivision is the same as the 15-lot plan. The proposed homes continue to be managed by roof water infiltration to recharge the groundwater.

A copy of the positive review memorandum by the Town Engineer has been included with this report.

Watershed Description

In the pre-development condition, the site is described by two watersheds draining from the crest towards Climax Road, (See Sheet WS-1). "EX#1" watershed drains to a small depression near Climax Road before eventually draining to an unnamed watercourse running southerly from Evans Drive to Wheeler Road. "EX#2" drains across private Tallwood Drive to an offsite depression. In the post-development, the site is described by a similar two watersheds (See Sheet WS-2). The new home roof water runoff is collected in an underground groundwater recharge system. The Town Road and other site runoff is collected and detained in a roadway drainage system promoting groundwater recharge and infiltration thru the existing site depression area. As in the pre-development condition, overflow from the system is directed to the watercourse between Evans Drive and Wheeler Road. Hydrologic routing has been performed to compare the stormwater conditions for the total pre- and post-development combined watersheds. ZIRO (Zero Increase in Peak Discharge Runoff Rates) is achieved through the 100-year storm event for the watershed areas.

Erosions and Sedimentation Control

The goal of the erosion and sedimentation controls on the site is to maintain water quality to runoff and to minimize erosion to areas both on and off site. In order to accomplish these goals, several erosion control measures are proposed. The plans have been developed in accordance with the 2004 Sedimentation and Erosion Control Guidelines and the Stormwater Quality Manual.

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Water quality of the runoff will be provided through the use of **Best Management Practice (BMP)** erosion controls during construction. A sediment basin is proposed during construction to retain sediment during the construction phase. Silt fences are proposed down slope of areas proposed to be disturbed. Inlet protection devices will be installed around all catch basins during construction.

Following construction, water quality shall be maintained by a series of measures including 2' sumps in the catch basins, grassed swales and groundwater recharge systems.

Model Formulation

Pre-development and post-development hydrographs were developed using the Rational Method. C values were derived based on land cover and the hydrologic soil groups. Time of concentration values were computed using the TR-55 method which takes into account length of flow-path, basin slope and curve number. The time of concentration calculations are included in this report. Storm routing was performed for the 2-year, 10-year, 25-year, 50-year, and 100-year storm events. For pipe sizing, the runoff rates were determined using the rational formula with the times of concentrations computed using the TR-55 method.

The area of the parcel to be developed is located in Zone X of the Flood Insurance Rate Maps for Simsbury, Connecticut. This indicates that the development area is outside of the 100-year (1% chance annual occurrence) floodplain.

Hydrologic Modelling

For the pre-development condition, a hydrologic model was developed per the model formulation described above. "EX #1" generates 1.7 to 3.5 cfs for the 2-year to the 100-year storm events. Routing of this runoff thru the existing site depression results in no discharge for the 2-, 5-, and 10-year storm events. A peak discharge rate of 0.2 and 0.9 cfs are estimated in the 25- and 100-year storm events. This does not account for infiltration during the storm events but rather that the depression is drained prior to a storm event. The draining condition and larger event discharge towards Climax Road and Evans Road watercourse area consistent with site observations. "EX #2" generates 2.4 to 4.7 cfs for the 2-year to the 100-year storm events.

For the post-development condition, a similar hydrologic model was developed. "PR #1" represents most of the site developed area with runoff directed to an underground galley detention system. The system will retain runoff thru the 25-year storm event while promoting groundwater recharge and infiltration thru the existing site depression as in the pre-development condition. The 100-year storm event is estimated to have a peak discharge rate 55% less than is estimated to occur in the pre-development condition. As in the pre-development model, this does not account for infiltration during the storm event but rather that the underground system and depression are drained prior to a storm event. The post-development condition is estimated to be reduced thru the 100-year storm event.

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The proposed house runoff detention system was sized in a similar fashion by sizing an underground system for no discharge thru the 100-year storm event. An overflow from the roof leaders is to be provided for surface discharge should the runoff exceed the storage volume.

Summary of Peak Discharge Rates

WATERSHED #1

Values shown are in Runoff Volumes in Cubic Feet per Second (CFS)

Storm Event	Pre-Development	Post-Development	Δ (%)
2-year	0.0	0.0	0.0 (0%)
5-year	0.0	0.0	0.0 (0%)
10-year	0.0	0.0	0.0 (0%)
25-year	0.2	0.0	-0.2 (-100%)
100-year	0.9	0.4	-0.5 (-55%)

WATERSHED #2

Values shown are in Runoff Volumes in Cubic Feet per Second (CFS)

Storm Event	Pre-Development	Post-Development	Δ (%)
2-year	2.4	0.2	-2.2 (-92%)
5-year	3.0	0.3	-2.7 (-90%)
10-year	3.4	0.3	-3.1 (-91%)
25-year	3.9	0.4	-3.5 (-90%)
100-year	4.7	0.5	-4.2 (-89%)



Town of Simsbury

933 HOPMEADOW STREET

P.O. BOX 495

SIMSBURY, CONNECTICUT 06070

Engineering Department

MEMORANDUM

To: Michael Glidden, CFM CZEO, Assistant Town Planner

From: Jerome F. Shea, P.E., Town Engineer *JFS*

Subject: Application Comments – Hendrick Cottages – 80 Climax Road

Date: October 15, 2015

I have completed a review of the supplemental application documents received on October 12, 2015 that included the following:

1. Response to Town Engineer comments from Andrew Quirk dated October 2, 2015 including attachments related to the Stormwater Management Report previously submitted by the applicant.
2. Plans entitled “Subdivision Plans Prepared for Hendrick Cottages Workforce Housing Overlay Zone, Owner: Royce Palmer, Applicant Mansour Prime LLC”, 10/10/15, revised 10/5/15.

The applicant has provided a response to preliminary comments provided by the Town Engineer on September 15, 2015 related to the proposed storm drainage system serving the development along with the proposed discharge location for the drainage system. A drainage analysis of the total contributing drainage areas at the Evan Drive discharge point has been prepared by the applicant. The drainage analysis indicates that there is a decrease in the discharge rate for the 2, 5, 10, 25 and 100 year storm events for post development conditions at the Evan Drive discharge point. Although the contributing drainage area to the Evans Drive discharge point for post development conditions will increase from approximately 75 acres to approximately 78 acres, the discharge rate will decrease for the various design storms through use of on-site storage of stormwater provided as part of the proposed stormwater system and a controlled stormwater outlet from the development site. The proposed discharge rate to the offsite private residential area to the south of the proposed development site is also reduced as a result of a reduction in the drainage areas contributing runoff to this area.

A comment provided to the applicant previously had requested that Storm Sewer Inventory and Summary Reports should also be provided with the Stormwater Management Report for any downstream storm drainage systems proposed as part of the development. This analysis should be provided with any future application submitted for subdivision approval.

The applicant has provided revised plans on October 12, 2015 that depict a reconfiguration of the stormwater management system to address previous concerns as to the maintenance, management and access to the system. A detailed review of these plan revisions have not been completed at this time.

The applicant has also acknowledged as part of his response that remaining comments will be addressed when the overall drainage system plan has been approved.

Additional comments on the proposed development application will be provided as part of the review of the future subdivision application.

cc: Robert Decrescenzo, Updike, Kelly & Spellacy, P.C.

Project No. 214011-MANSOUR

COMPOSITE 'C' CALCULATIONS:

	C	COVERAGE (Acres)				TOTAL	C	Impervious (Roof Overflow*)
		Woods	Lawns	Impervious (Pavement & Bldgs)				
WATERSHED	0.2	0.3	0.9				0.4	
EX #1	1.18	0.49	0.30		1.97	0.33	0.00	
EX #2	3.41	0.27	0.02		3.70	0.21	0.00	
PRE-DEVELOPMENT TOTAL	4.59	0.76	0.32		5.67	0.25	0.00	
PR #1	1.51	2.30	1.00		4.81	0.39	0.55	
PR #2	0.13	0.18	0.00		0.31	0.26	0.00	
POST-DEVELOPMENT TOTAL	1.64	2.48	1.00		5.12	0.39	0.55	

*Impervious - Roof Area to Underground Retention removed from Post-Development Watershed Areas

Project No. 214011-MANSOUR

COMBINED STORMWATER DETENTION

<u>RUNNING TOTAL STORAGE</u>						
ELEVATION	DEPRESSION	3 ROWS OF 72LF - 2'x4' CONC GALLEYS	STONE (40% VOID)	3 ROWS OF 232LF - 2'x4' CONC GALLEYS	STONE (40% VOID)	TOTAL
300.5	0	0	0	0	0	0
300.7	0	0	107	0	0	107
300.9	0	0	213	0	0	213
301.1	0	73	284	0	337	695
301.3	0	220	320	0	674	1214
301.5	0	367	355	237	899	1858
301.7	0	514	391	710	1011	2626
301.9	0	661	426	1183	1123	3394
302.1	0	808	462	1656	1236	4162
302.3	0	955	497	2130	1348	4930
302.5	0	1102	533	2603	1460	5698
302.7	35	1248	568	3076	1572	6501
302.9	80	1395	604	3550	1685	7314
303.1	170	1469	675	4023	1797	8134
303.3	300	1469	781	4496	1909	8956
303.5	500	1469	888	4733	2134	9724
303.7	700	1469	888	4733	2471	10261
303.9	960	1469	888	4733	2808	10858
304.1	1050	1469	888	4733	2808	10948
304.3	1760	1469	888	4733	2808	11658
304.5	2398	1469	888	4733	2808	12296

STORM DRAINAGE VOLUME COMPUTATIONS

- SURFACE DEPRESSION VOLUME BY CONTOURS
IN HYDRAFLOW HYDROGRAPHS

- 3 ROWS OF 72 LF - 2' X 4' CONC. GALLEYS
SURROUNDED W/ 1" STONE

~~TOP = 303.0~~

~~BOTTOM = 301.0~~

2 ROWS OF 9 UNITS @ 54.4 CF/UNIT (AFTER CONCRETE)

$3 \times 9 \times 54.4 = 1468.8 \text{ CF}$

$= \underline{146.88 \text{ CF} / 0.2' \text{ HEIGHT INCREMENT}}$

6" - 1" STONE BOTTOM (300.5 - 301.0)

$0.5 \times 18' \text{ WIDE} \times 74' \text{ LONG} \times 40\% \text{ VOID} = 266.4 \text{ CF}$

$= \underline{106.56 \text{ CF} / 0.2' \text{ HEIGHT INCREMENT}}$

6" - 1" STONE TOP (303.0 - 303.5) = 266.4 CF = 106.56 CF / 0.2' HT

12" - 1" STONE EACH SIDE (301.0 - 303.0)

$12" \times 6 \text{ SIDE} \times 74 \text{ LONG} \times 2' \text{ HIGH} \times 40\% \text{ VOID} = 355.2 \text{ CF}$

$= 35.52 \text{ CF} / 0.2' \text{ HEIGHT}$

TOTAL = 1468.8 + 266.4 + 266.4 + 355.2 = 2357 CF

- 3 ROWS OF 232 LF - 2' X 4' CONC. GALLEYS
SURROUNDED BY 1" STONE

TOP = 303.4

BOTTOM = 301.4

2/2

3 ROWS OF 29 UNITS @ 54.4 CF/UNIT (AFTER CONC)

$$3 \times 29 \times 54.4 = 4732.8 \text{ CF}$$

$$= 473.28 \text{ CF} / 0.2' \text{ HT INCREMENT}$$

6" - 1" STONE BOTTOM (300.9 - 301.4)

$$0.5 \times 18' \text{ WIDE} \times 234' \text{ LONG} \times 40\% \text{ VOID} = 842.4 \text{ CF}$$

$$= 336.96 \text{ CF} / 0.2' \text{ HT INCREMENT}$$

6" - 1" STONE TOP (303.4 - 303.9)

$$= 842.4 \text{ CF} = 336.96 \text{ CF} / 0.2' \text{ HT INCREMENT}$$

12" - 1" STONE EACH SIDE (301.4 - 303.4)

$$12" \times 6 \text{ SIDES} \times 234' \text{ LONG} \times 2' \text{ HIGH} \times 40\% \text{ VOID} = 1123.2 \text{ CF}$$

$$= 112.32 \text{ CF} / 0.2' \text{ HEIGHT}$$

$$\text{TOTAL} = 4732.8 + 842.4 + 842.4 + 1123.2$$

$$= 7541 \text{ CF}$$

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Memo

February 21, 2014

To: Michael Mansour, Ed Ferrigno From: Andrew Quirk

Re: Climax Road – Simsbury – Soils Exploration

Comments:

On February 20, 2014 two soil tests were performed to assess the suitability of stormwater basins for a potential residential subdivision at 82 Climax Road in Simsbury, CT. Test Pit #1 was performed approximately 50' south-southeast of the existing home and Test Pit #2 was performed approximately 60' northeast of the existing home.

Test Pit #1:

0-6" Topsoil
6-24" Red Brown Silty Loam
24-72" Red Brown Fine Silty Sand with
6-12" Cobbles
72" Compact Restrictive Layer
Roots to 32"
No Groundwater
No Ledge
No Mottling

Test Pit #2:

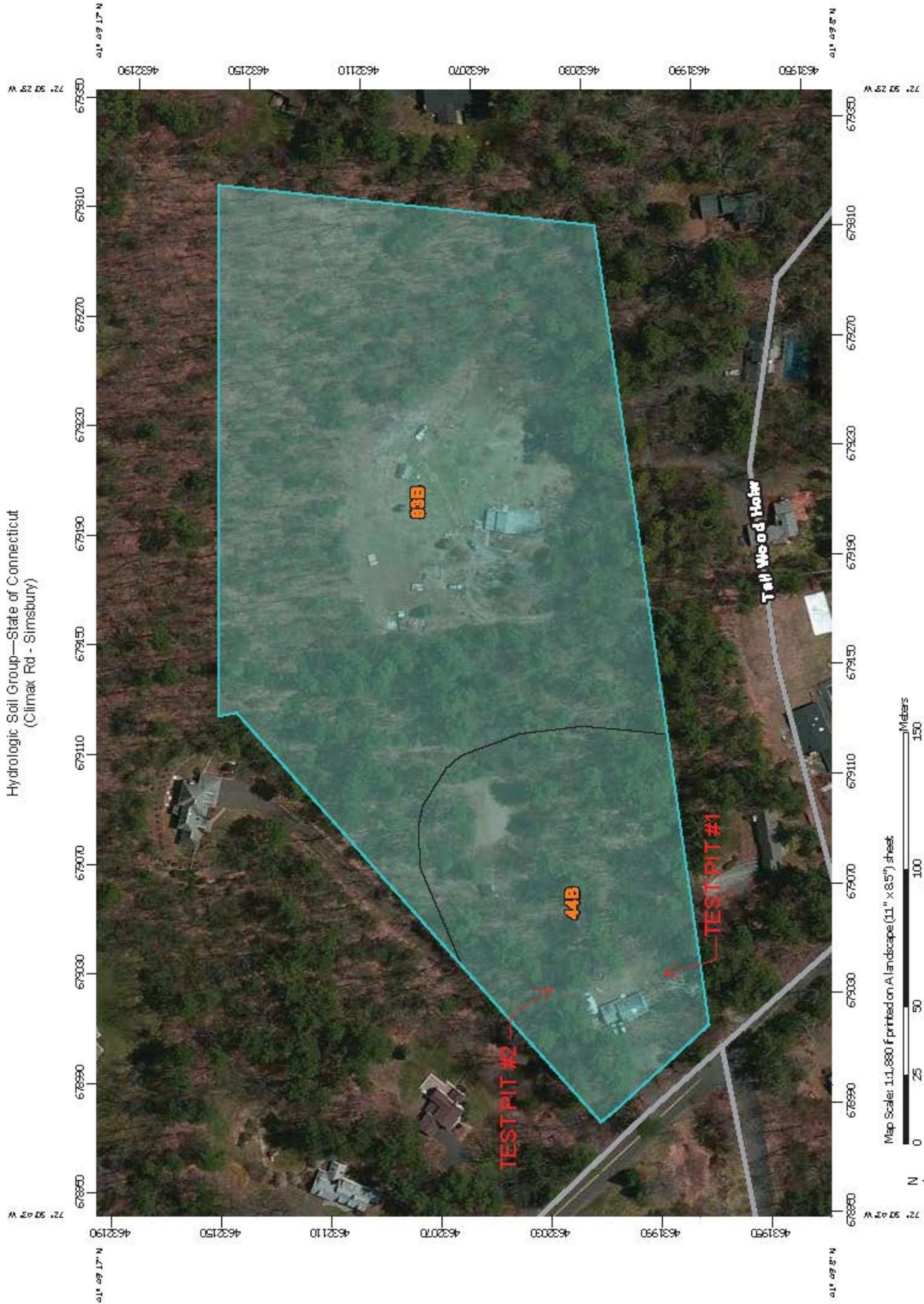
0-6" Topsoil
6-36" Red Brown Fine Silty Loam
36-75" Red Brown Very Fine Silty Sand with
3-6" Cobbles
75" Compact Restrictive Layer
Roots to 36"
No Groundwater
No Ledge
Faint Mottling at 36"

The soils were also researched in the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Survey of the State of Connecticut. See the attached mapping and hydrologic soil grouping. The site soils are categorized as Hydrologic Soil Group C. Group C soils have moderately high runoff potential when thoroughly wet and water transmission through the soil is somewhat restricted.

The specific soil classification for the area tested is described as "Rainbow silt loam" (44B) with 2 to 8 percent slopes and very stony. The soil is generally very deep to bedrock and moderately well drained (in terms of groundwater). The soil permeability is generally very slow to moderate. Specifically, the soil hydraulic conductivity is estimated at approximately 4 micrometers per second ($\mu\text{m/s}$) whereas a 1 $\mu\text{m/s}$ is nearly impervious and 40 $\mu\text{m/s}$ is permeable enough to support retention. The top 60" of the soil are generally 60% silt, 33% sand and 7% clay.

The testing and research have revealed that the soils are not appropriate for stormwater retention (no outfall) given the moderately slow permeability rates, potential seasonally high groundwater and silty nature of the soils. The soils could most likely support a detention basin (with positive outfall connection) given the adequate depth to a restrictive layer.

Hydrologic Soil Group—State of Connecticut
(Climax Rd - Simsbury)



Map Scale: 1:1,880 if printed on A landscape (11" x 8.5") sheet



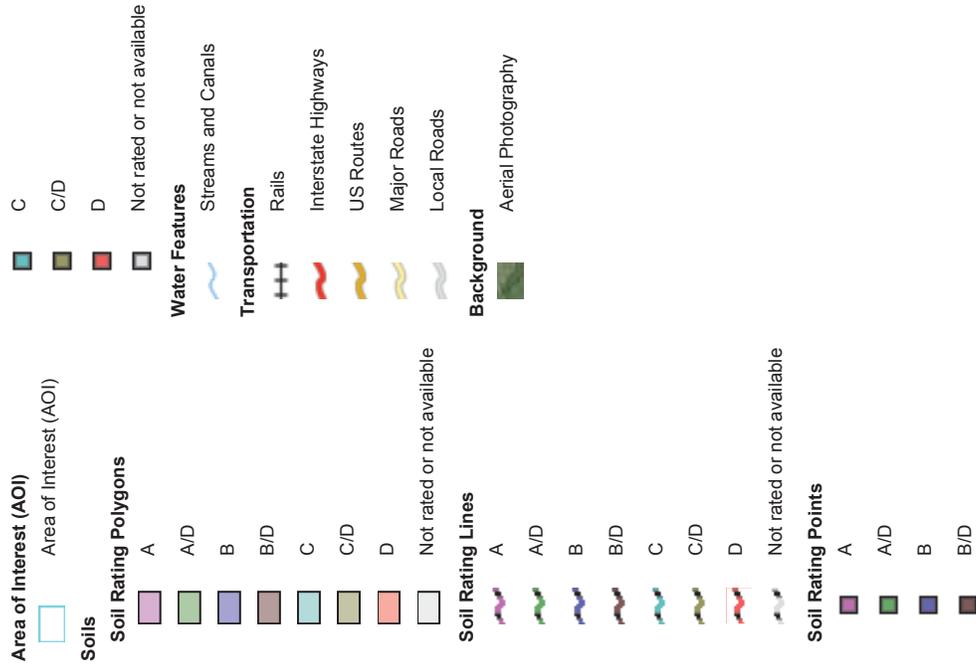
Map projection: Web Mercator Corner coordinates: WG894 Edgeatics: UTM Zone 18N WG884



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

MAP LEGEND



MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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: <http://websoilsurvey.nrcs.usda.gov>
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: State of Connecticut
Survey Area Data: Version 11, Nov 19, 2013

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

Date(s) aerial images were photographed: Mar 28, 2011—May 12, 2011

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

Hydrologic Soil Group— Summary by Map Unit — State of Connecticut (CT600)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
44B	Rainbow silt loam, 2 to 8 percent slopes, very stony	C	2.6	25.3%
83B	Broadbrook silt loam, 3 to 8 percent slopes, very stony	C	7.7	74.7%
Totals for Area of Interest			10.3	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

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

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Watershed Model Schematic

Hydraflow Hydrographs by Intelisolve v9.1

Legend

<u>Hyd.</u>	<u>Origin</u>	<u>Description</u>
1	Rational	EX#1
2	Reservoir	EX DEPRESSION
3	Rational	PR #1
4	Reservoir	UG STORAGE ROUTING
5	Rational	EX #2
6	Rational	PR #2
7	Rational	HOUSE - UNDEVELOPED
8	Rational	HOUSE - DEVELOPED
9	Reservoir	ROOF STORAGE

Hydrograph Return Period Recap

Hydraflow Hydrographs by Intelisolve v9.1

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	Rational	-----	-----	1.730	-----	2.172	2.476	2.894	-----	3.506	EX#1
2	Reservoir	1	-----	0.000	-----	0.000	0.000	0.203	-----	0.908	EX DEPRESSION
3	Rational	-----	-----	6.539	-----	8.074	9.014	10.36	-----	12.29	PR #1
4	Reservoir	3	-----	0.000	-----	0.000	0.000	0.000	-----	0.406	UG STORAGE ROUTING
5	Rational	-----	-----	2.384	-----	2.972	3.351	3.888	-----	4.658	EX #2
6	Rational	-----	-----	0.247	-----	0.308	0.348	0.403	-----	0.483	PR #2
7	Rational	-----	-----	0.034	-----	0.041	0.044	0.050	-----	0.058	HOUSE - UNDEVELOPED
8	Rational	-----	-----	0.153	-----	0.183	0.199	0.223	-----	0.260	HOUSE - DEVELOPED
9	Reservoir	8	-----	0.000	-----	0.000	0.000	0.000	-----	0.000	ROOF STORAGE

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.1

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	Rational	1.730	1	17	2,647	----	-----	-----	EX#1
2	Reservoir	0.000	1	n/a	0	1	304.20	2,647	EX DEPRESSION
3	Rational	6.539	1	10	5,885	----	-----	-----	PR #1
4	Reservoir	0.000	1	n/a	0	3	302.55	5,885	UG STORAGE ROUTING
5	Rational	2.384	1	13	2,790	----	-----	-----	EX #2
6	Rational	0.247	1	13	289	----	-----	-----	PR #2
7	Rational	0.034	1	5	15	----	-----	-----	HOUSE - UNDEVELOPED
8	Rational	0.153	1	5	69	----	-----	-----	HOUSE - DEVELOPED
9	Reservoir	0.000	1	n/a	0	8	100.27	68.8	ROOF STORAGE
CLIMAX.gpw					Return Period: 2 Year			Monday, Aug 10, 2015	

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

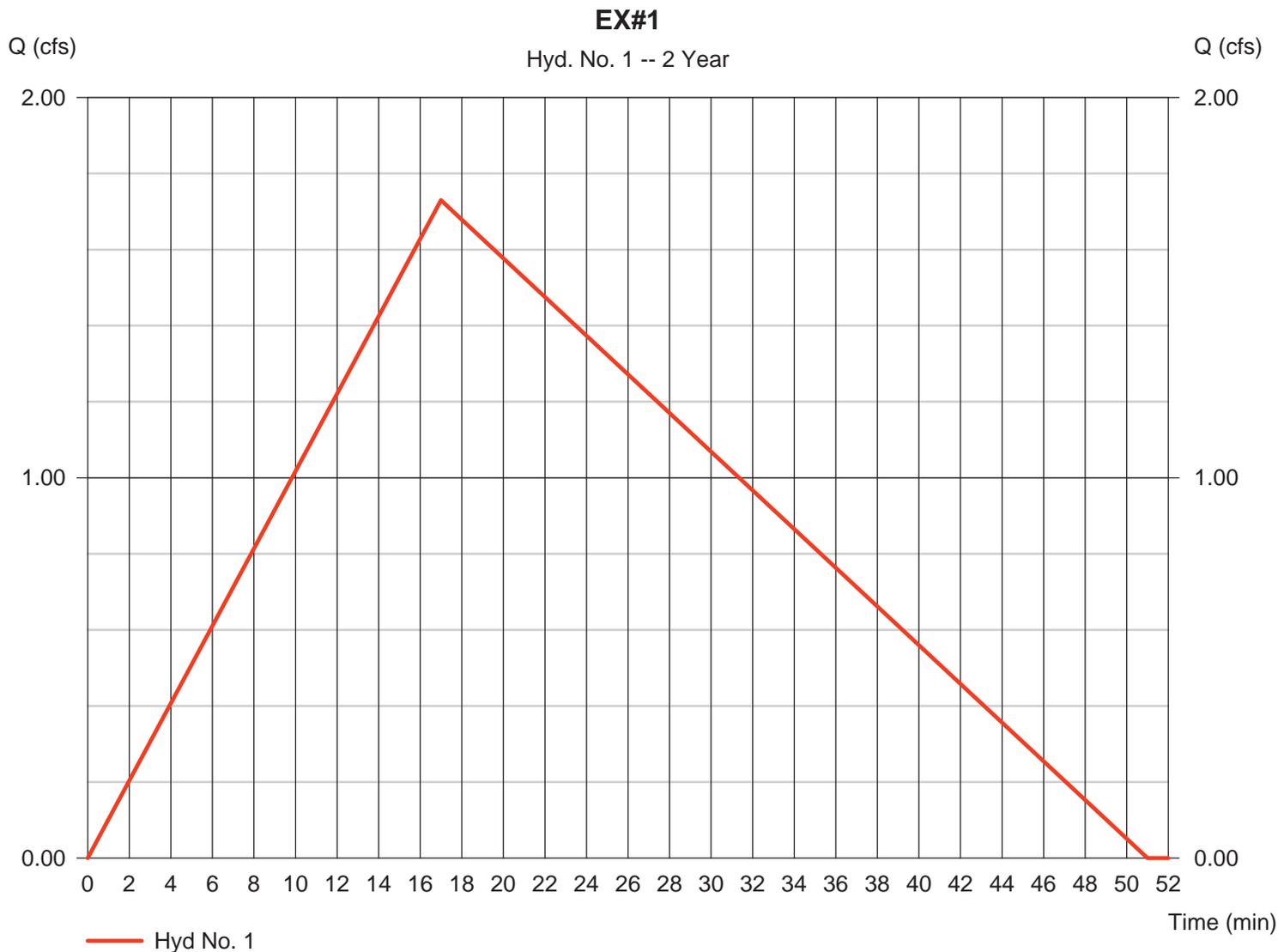
Monday, Aug 10, 2015

Hyd. No. 1

EX#1

Hydrograph type = Rational
 Storm frequency = 2 yrs
 Time interval = 1 min
 Drainage area = 1.970 ac
 Intensity = 2.661 in/hr
 IDF Curve = CONNDOT.IDF

Peak discharge = 1.730 cfs
 Time to peak = 17 min
 Hyd. volume = 2,647 cuft
 Runoff coeff. = 0.33
 Tc by TR55 = 17.00 min
 Asc/Rec limb fact = 1/2



TR55 Tc Worksheet

Hyd. No. 1

EX#1

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
Sheet Flow				
Manning's n-value	= 0.400	0.011	0.011	
Flow length (ft)	= 122.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.25	0.00	0.00	
Land slope (%)	= 8.00	0.00	0.00	
Travel Time (min)	= 14.35	+ 0.00	+ 0.00	= 14.35
Shallow Concentrated Flow				
Flow length (ft)	= 500.00	0.00	0.00	
Watercourse slope (%)	= 3.40	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	= 2.98	0.00	0.00	
Travel Time (min)	= 2.80	+ 0.00	+ 0.00	= 2.80
Channel Flow				
X sectional flow area (sqft)	= 0.00	0.00	0.00	
Wetted perimeter (ft)	= 0.00	0.00	0.00	
Channel slope (%)	= 0.00	0.00	0.00	
Manning's n-value	= 0.015	0.015	0.015	
Velocity (ft/s)	= 0.00	0.00	0.00	
Flow length (ft)	= 0.0	0.0	0.0	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Total Travel Time, Tc				17.00 min

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

Monday, Aug 10, 2015

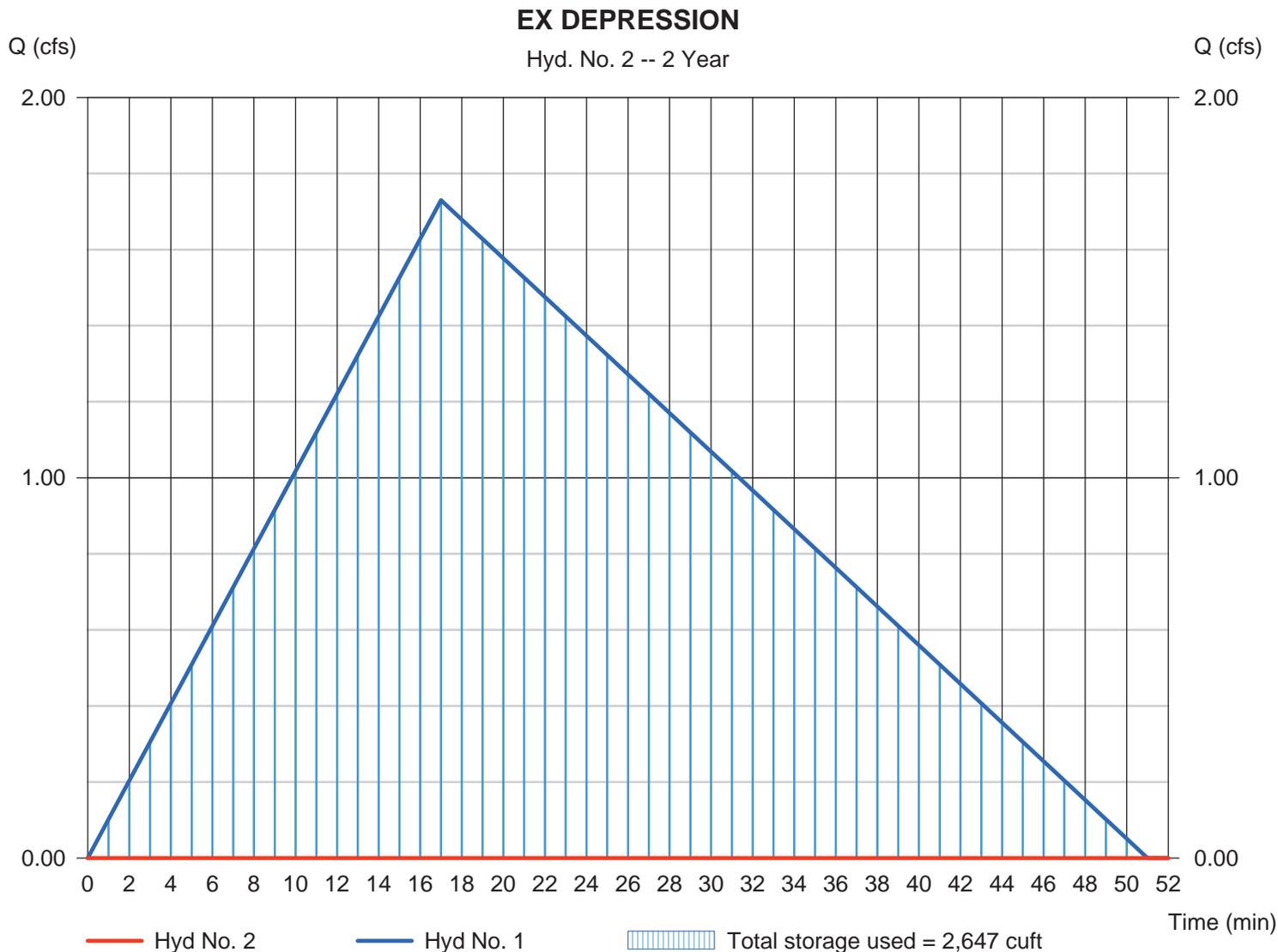
Hyd. No. 2

EX DEPRESSION

Hydrograph type = Reservoir
 Storm frequency = 2 yrs
 Time interval = 1 min
 Inflow hyd. No. = 1 - EX#1
 Reservoir name = EX DEPRESSION

Peak discharge = 0.000 cfs
 Time to peak = n/a
 Hyd. volume = 0 cuft
 Max. Elevation = 304.20 ft
 Max. Storage = 2,647 cuft

Storage Indication method used.



Pond Report

Hydraflow Hydrographs by Intelisolve v9.1

Monday, Aug 10, 2015

Pond No. 1 - EX DEPRESSION

Pond Data

Contours - User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 302.50 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	302.50	05	0	0
0.50	303.00	1,290	229	229
1.00	303.50	1,750	757	986
1.50	304.00	2,270	1,002	1,988
2.00	304.50	4,270	1,609	3,597
2.50	305.00	6,970	2,782	6,379

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)	= 10.00	0.00	0.00	0.00
Crest El. (ft)	= 304.60	0.00	0.00	0.00
Weir Coeff.	= 2.60	3.33	3.33	3.33
Weir Type	= Broad	---	---	---
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).

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	302.50	---	---	---	---	0.00	---	---	---	---	---	0.00
0.05	23	302.55	---	---	---	---	0.00	---	---	---	---	---	0.00
0.10	46	302.60	---	---	---	---	0.00	---	---	---	---	---	0.00
0.15	69	302.65	---	---	---	---	0.00	---	---	---	---	---	0.00
0.20	92	302.70	---	---	---	---	0.00	---	---	---	---	---	0.00
0.25	115	302.75	---	---	---	---	0.00	---	---	---	---	---	0.00
0.30	138	302.80	---	---	---	---	0.00	---	---	---	---	---	0.00
0.35	160	302.85	---	---	---	---	0.00	---	---	---	---	---	0.00
0.40	183	302.90	---	---	---	---	0.00	---	---	---	---	---	0.00
0.45	206	302.95	---	---	---	---	0.00	---	---	---	---	---	0.00
0.50	229	303.00	---	---	---	---	0.00	---	---	---	---	---	0.00
0.55	305	303.05	---	---	---	---	0.00	---	---	---	---	---	0.00
0.60	381	303.10	---	---	---	---	0.00	---	---	---	---	---	0.00
0.65	456	303.15	---	---	---	---	0.00	---	---	---	---	---	0.00
0.70	532	303.20	---	---	---	---	0.00	---	---	---	---	---	0.00
0.75	608	303.25	---	---	---	---	0.00	---	---	---	---	---	0.00
0.80	683	303.30	---	---	---	---	0.00	---	---	---	---	---	0.00
0.85	759	303.35	---	---	---	---	0.00	---	---	---	---	---	0.00
0.90	835	303.40	---	---	---	---	0.00	---	---	---	---	---	0.00
0.95	911	303.45	---	---	---	---	0.00	---	---	---	---	---	0.00
1.00	986	303.50	---	---	---	---	0.00	---	---	---	---	---	0.00
1.05	1,086	303.55	---	---	---	---	0.00	---	---	---	---	---	0.00
1.10	1,187	303.60	---	---	---	---	0.00	---	---	---	---	---	0.00
1.15	1,287	303.65	---	---	---	---	0.00	---	---	---	---	---	0.00
1.20	1,387	303.70	---	---	---	---	0.00	---	---	---	---	---	0.00
1.25	1,487	303.75	---	---	---	---	0.00	---	---	---	---	---	0.00
1.30	1,587	303.80	---	---	---	---	0.00	---	---	---	---	---	0.00
1.35	1,688	303.85	---	---	---	---	0.00	---	---	---	---	---	0.00
1.40	1,788	303.90	---	---	---	---	0.00	---	---	---	---	---	0.00
1.45	1,888	303.95	---	---	---	---	0.00	---	---	---	---	---	0.00
1.50	1,988	304.00	---	---	---	---	0.00	---	---	---	---	---	0.00
1.55	2,149	304.05	---	---	---	---	0.00	---	---	---	---	---	0.00
1.60	2,310	304.10	---	---	---	---	0.00	---	---	---	---	---	0.00
1.65	2,471	304.15	---	---	---	---	0.00	---	---	---	---	---	0.00
1.70	2,632	304.20	---	---	---	---	0.00	---	---	---	---	---	0.00
1.75	2,793	304.25	---	---	---	---	0.00	---	---	---	---	---	0.00
1.80	2,954	304.30	---	---	---	---	0.00	---	---	---	---	---	0.00
1.85	3,114	304.35	---	---	---	---	0.00	---	---	---	---	---	0.00
1.90	3,275	304.40	---	---	---	---	0.00	---	---	---	---	---	0.00

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EX DEPRESSION

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
1.95	3,436	304.45	---	---	---	---	0.00	---	---	---	---	---	0.00
2.00	3,597	304.50	---	---	---	---	0.00	---	---	---	---	---	0.00
2.05	3,875	304.55	---	---	---	---	0.00	---	---	---	---	---	0.00
2.10	4,153	304.60	---	---	---	---	0.00	---	---	---	---	---	0.00
2.15	4,432	304.65	---	---	---	---	0.29	---	---	---	---	---	0.29
2.20	4,710	304.70	---	---	---	---	0.82	---	---	---	---	---	0.82
2.25	4,988	304.75	---	---	---	---	1.51	---	---	---	---	---	1.51
2.30	5,266	304.80	---	---	---	---	2.32	---	---	---	---	---	2.32
2.35	5,545	304.85	---	---	---	---	3.25	---	---	---	---	---	3.25
2.40	5,823	304.90	---	---	---	---	4.27	---	---	---	---	---	4.27
2.45	6,101	304.95	---	---	---	---	5.38	---	---	---	---	---	5.38
2.50	6,379	305.00	---	---	---	---	6.58	---	---	---	---	---	6.58

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

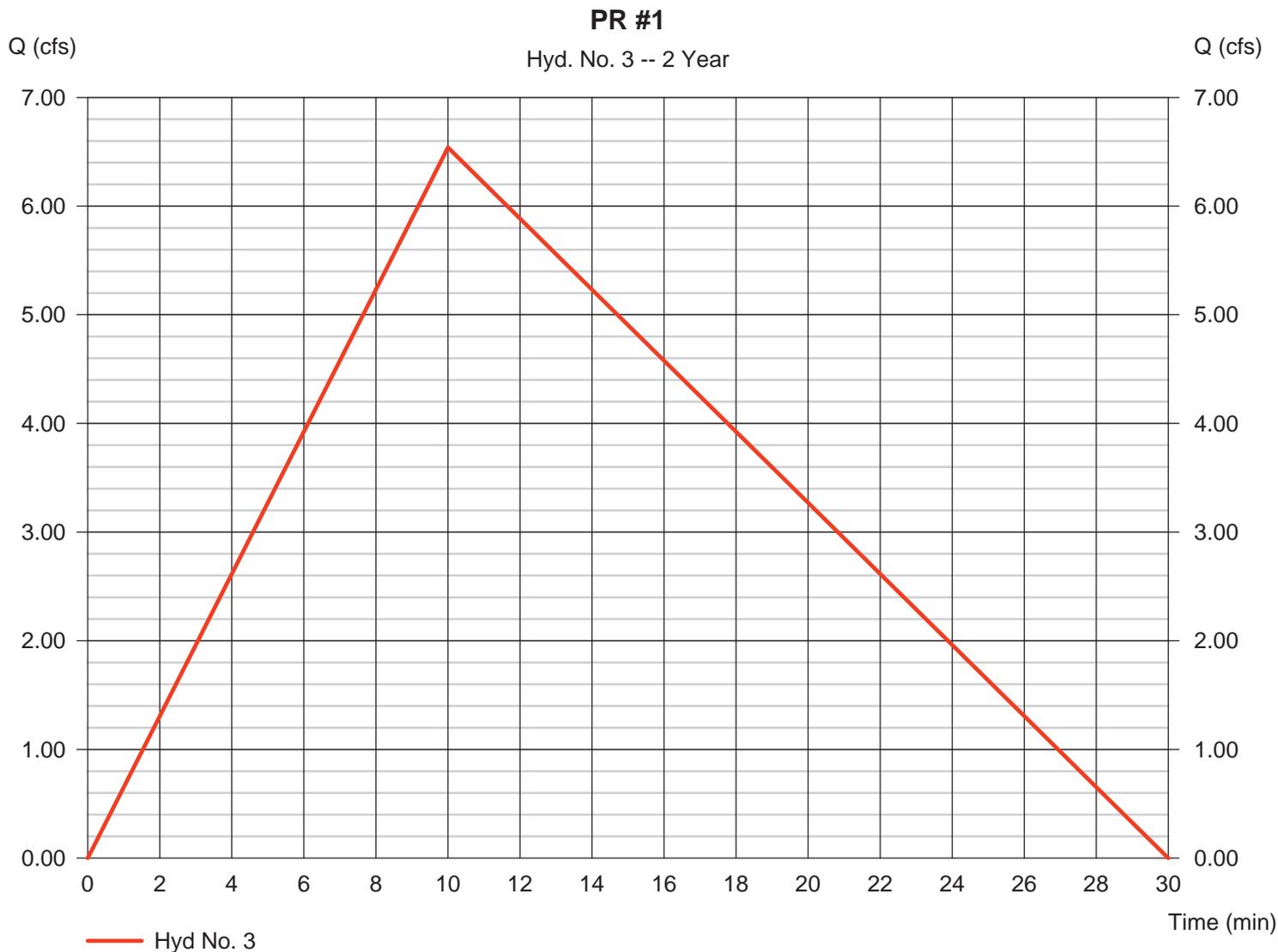
Monday, Aug 10, 2015

Hyd. No. 3

PR #1

Hydrograph type = Rational
Storm frequency = 2 yrs
Time interval = 1 min
Drainage area = 4.810 ac
Intensity = 3.486 in/hr
IDF Curve = CONNDOT.IDF

Peak discharge = 6.539 cfs
Time to peak = 10 min
Hyd. volume = 5,885 cuft
Runoff coeff. = 0.39
Tc by User = 10.00 min
Asc/Rec limb fact = 1/2



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

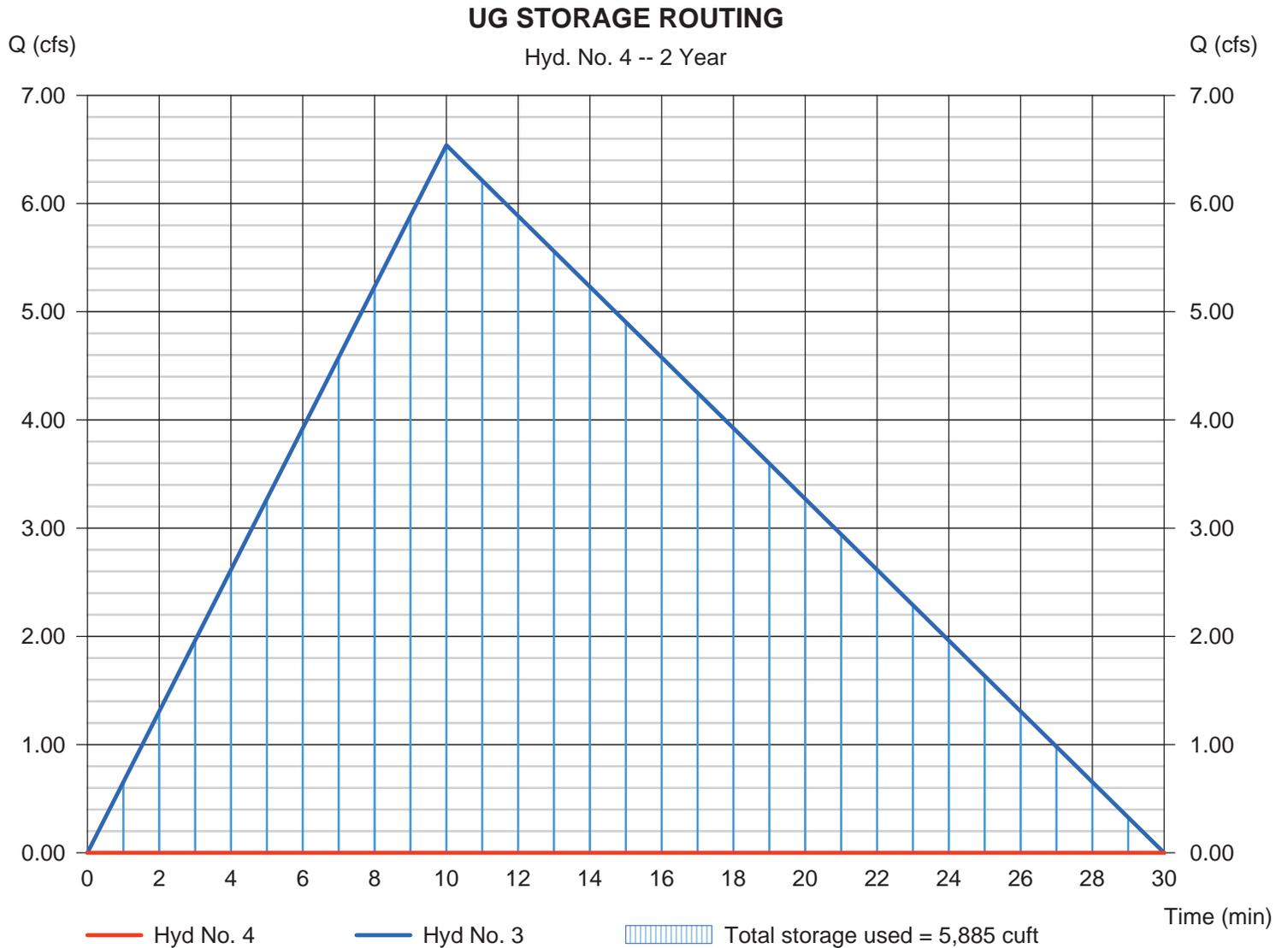
Monday, Aug 10, 2015

Hyd. No. 4

UG STORAGE ROUTING

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 3 - PR #1	Max. Elevation	= 302.55 ft
Reservoir name	= UG STORAGE + DEPRESSION	Max. Storage	= 5,885 cuft

Storage Indication method used.



Pond No. 3 - UG STORAGE + DEPRESSION

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	300.50	n/a	0	0
0.20	300.70	n/a	107	107
0.40	300.90	n/a	106	213
0.60	301.10	n/a	482	695
0.80	301.30	n/a	519	1,214
1.00	301.50	n/a	644	1,858
1.20	301.70	n/a	768	2,626
1.40	301.90	n/a	768	3,394
1.60	302.10	n/a	768	4,162
1.80	302.30	n/a	768	4,930
2.00	302.50	n/a	768	5,698
2.20	302.70	n/a	803	6,501
2.40	302.90	n/a	813	7,314
2.60	303.10	n/a	820	8,134
2.80	303.30	n/a	822	8,956
3.00	303.50	n/a	768	9,724
3.20	303.70	n/a	537	10,261
3.40	303.90	n/a	597	10,858
3.60	304.10	n/a	90	10,948
3.80	304.30	n/a	710	11,658
4.00	304.50	n/a	638	12,296

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 15.00	0.00	0.00	0.00
Span (in)	= 15.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 301.00	0.00	0.00	0.00
Length (ft)	= 58.00	0.00	0.00	0.00
Slope (%)	= 0.60	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)	= 3.00	0.00	0.00	0.00
Crest El. (ft)	= 304.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Riser	---	---	---
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).

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	300.50	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.02	11	300.52	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.04	21	300.54	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.06	32	300.56	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.08	43	300.58	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.10	54	300.60	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.12	64	300.62	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.14	75	300.64	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.16	86	300.66	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.18	96	300.68	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.20	107	300.70	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.22	118	300.72	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.24	128	300.74	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.26	139	300.76	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.28	149	300.78	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.30	160	300.80	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.32	171	300.82	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.34	181	300.84	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.36	192	300.86	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.38	202	300.88	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.40	213	300.90	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.42	261	300.92	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.44	309	300.94	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.46	358	300.96	0.00	---	---	---	0.00	---	---	---	---	---	0.00

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UG STORAGE + DEPRESSION

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
0.48	406	300.98	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.50	454	301.00	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.52	502	301.02	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.54	550	301.04	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.56	599	301.06	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.58	647	301.08	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.60	695	301.10	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.62	747	301.12	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.64	799	301.14	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.66	851	301.16	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.68	903	301.18	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.70	955	301.20	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.72	1,006	301.22	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.74	1,058	301.24	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.76	1,110	301.26	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.78	1,162	301.28	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.80	1,214	301.30	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.82	1,278	301.32	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.84	1,343	301.34	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.86	1,407	301.36	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.88	1,472	301.38	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.90	1,536	301.40	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.92	1,600	301.42	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.94	1,665	301.44	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.96	1,729	301.46	0.00	---	---	---	0.00	---	---	---	---	---	0.00
0.98	1,794	301.48	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.00	1,858	301.50	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.02	1,935	301.52	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.04	2,012	301.54	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.06	2,088	301.56	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.08	2,165	301.58	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.10	2,242	301.60	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.12	2,319	301.62	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.14	2,396	301.64	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.16	2,472	301.66	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.18	2,549	301.68	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.20	2,626	301.70	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.22	2,703	301.72	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.24	2,780	301.74	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.26	2,856	301.76	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.28	2,933	301.78	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.30	3,010	301.80	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.32	3,087	301.82	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.34	3,164	301.84	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.36	3,240	301.86	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.38	3,317	301.88	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.40	3,394	301.90	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.42	3,471	301.92	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.44	3,548	301.94	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.46	3,624	301.96	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.48	3,701	301.98	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.50	3,778	302.00	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.52	3,855	302.02	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.54	3,932	302.04	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.56	4,008	302.06	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.58	4,085	302.08	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.60	4,162	302.10	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.62	4,239	302.12	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.64	4,316	302.14	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.66	4,392	302.16	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.68	4,469	302.18	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.70	4,546	302.20	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.72	4,623	302.22	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.74	4,700	302.24	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.76	4,776	302.26	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.78	4,853	302.28	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.80	4,930	302.30	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.82	5,007	302.32	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.84	5,084	302.34	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.86	5,160	302.36	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.88	5,237	302.38	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.90	5,314	302.40	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.92	5,391	302.42	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.94	5,468	302.44	0.00	---	---	---	0.00	---	---	---	---	---	0.00

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UG STORAGE + DEPRESSION

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
1.96	5,544	302.46	0.00	---	---	---	0.00	---	---	---	---	---	0.00
1.98	5,621	302.48	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.00	5,698	302.50	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.02	5,778	302.52	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.04	5,859	302.54	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.06	5,939	302.56	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.08	6,019	302.58	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.10	6,099	302.60	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.12	6,180	302.62	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.14	6,260	302.64	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.16	6,340	302.66	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.18	6,421	302.68	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.20	6,501	302.70	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.22	6,582	302.72	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.24	6,664	302.74	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.26	6,745	302.76	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.28	6,826	302.78	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.30	6,907	302.80	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.32	6,989	302.82	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.34	7,070	302.84	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.36	7,151	302.86	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.38	7,233	302.88	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.40	7,314	302.90	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.42	7,396	302.92	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.44	7,478	302.94	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.46	7,560	302.96	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.48	7,642	302.98	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.50	7,724	303.00	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.52	7,806	303.02	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.54	7,888	303.04	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.56	7,970	303.06	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.58	8,052	303.08	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.60	8,134	303.10	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.62	8,216	303.12	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.64	8,298	303.14	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.66	8,381	303.16	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.68	8,463	303.18	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.70	8,545	303.20	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.72	8,627	303.22	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.74	8,709	303.24	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.76	8,792	303.26	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.78	8,874	303.28	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.80	8,956	303.30	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.82	9,033	303.32	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.84	9,110	303.34	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.86	9,186	303.36	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.88	9,263	303.38	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.90	9,340	303.40	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.92	9,417	303.42	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.94	9,494	303.44	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.96	9,570	303.46	0.00	---	---	---	0.00	---	---	---	---	---	0.00
2.98	9,647	303.48	0.00	---	---	---	0.00	---	---	---	---	---	0.00
3.00	9,724	303.50	0.00	---	---	---	0.00	---	---	---	---	---	0.00
3.02	9,778	303.52	0.00	---	---	---	0.00	---	---	---	---	---	0.00
3.04	9,831	303.54	0.00	---	---	---	0.00	---	---	---	---	---	0.00
3.06	9,885	303.56	0.00	---	---	---	0.00	---	---	---	---	---	0.00
3.08	9,939	303.58	0.00	---	---	---	0.00	---	---	---	---	---	0.00
3.10	9,993	303.60	0.00	---	---	---	0.00	---	---	---	---	---	0.00
3.12	10,046	303.62	0.00	---	---	---	0.00	---	---	---	---	---	0.00
3.14	10,100	303.64	0.00	---	---	---	0.00	---	---	---	---	---	0.00
3.16	10,154	303.66	0.00	---	---	---	0.00	---	---	---	---	---	0.00
3.18	10,207	303.68	0.00	---	---	---	0.00	---	---	---	---	---	0.00
3.20	10,261	303.70	0.00	---	---	---	0.00	---	---	---	---	---	0.00
3.22	10,321	303.72	0.00	---	---	---	0.00	---	---	---	---	---	0.00
3.24	10,380	303.74	0.00	---	---	---	0.00	---	---	---	---	---	0.00
3.26	10,440	303.76	0.00	---	---	---	0.00	---	---	---	---	---	0.00
3.28	10,500	303.78	0.00	---	---	---	0.00	---	---	---	---	---	0.00
3.30	10,560	303.80	0.00	---	---	---	0.00	---	---	---	---	---	0.00
3.32	10,619	303.82	0.00	---	---	---	0.00	---	---	---	---	---	0.00
3.34	10,679	303.84	0.00	---	---	---	0.00	---	---	---	---	---	0.00
3.36	10,739	303.86	0.00	---	---	---	0.00	---	---	---	---	---	0.00
3.38	10,798	303.88	0.00	---	---	---	0.00	---	---	---	---	---	0.00
3.40	10,858	303.90	0.00	---	---	---	0.00	---	---	---	---	---	0.00
3.42	10,867	303.92	0.00	---	---	---	0.00	---	---	---	---	---	0.00

Continues on next page...

UG STORAGE + DEPRESSION

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
3.44	10,876	303.94	0.00	---	---	---	0.00	---	---	---	---	---	0.00
3.46	10,885	303.96	0.00	---	---	---	0.00	---	---	---	---	---	0.00
3.48	10,894	303.98	0.00	---	---	---	0.00	---	---	---	---	---	0.00
3.50	10,903	304.00	0.00	---	---	---	0.00	---	---	---	---	---	0.00
3.52	10,912	304.02	0.03 ic	---	---	---	0.03	---	---	---	---	---	0.03
3.54	10,921	304.04	0.08 ic	---	---	---	0.08	---	---	---	---	---	0.08
3.56	10,930	304.06	0.15 ic	---	---	---	0.15	---	---	---	---	---	0.15
3.58	10,939	304.08	0.23 ic	---	---	---	0.23	---	---	---	---	---	0.23
3.60	10,948	304.10	0.33 ic	---	---	---	0.32	---	---	---	---	---	0.32
3.62	11,019	304.12	0.42 ic	---	---	---	0.42	---	---	---	---	---	0.42
3.64	11,090	304.14	0.53 ic	---	---	---	0.52	---	---	---	---	---	0.52
3.66	11,161	304.16	0.64 ic	---	---	---	0.64	---	---	---	---	---	0.64
3.68	11,232	304.18	0.77 ic	---	---	---	0.76	---	---	---	---	---	0.76
3.70	11,303	304.20	0.90 ic	---	---	---	0.89	---	---	---	---	---	0.89
3.72	11,374	304.22	1.05 ic	---	---	---	1.03	---	---	---	---	---	1.03
3.74	11,445	304.24	1.17 ic	---	---	---	1.17	---	---	---	---	---	1.17
3.76	11,516	304.26	1.33 ic	---	---	---	1.32	---	---	---	---	---	1.32
3.78	11,587	304.28	1.50 ic	---	---	---	1.48	---	---	---	---	---	1.48
3.80	11,658	304.30	1.64 ic	---	---	---	1.64	---	---	---	---	---	1.64
3.82	11,722	304.32	1.83 ic	---	---	---	1.81	---	---	---	---	---	1.81
3.84	11,786	304.34	1.98 ic	---	---	---	1.98	---	---	---	---	---	1.98
3.86	11,849	304.36	2.16 oc	---	---	---	2.16	---	---	---	---	---	2.16
3.88	11,913	304.38	2.35 oc	---	---	---	2.34	---	---	---	---	---	2.34
3.90	11,977	304.40	2.28 oc	---	---	---	1.91 ic	---	---	---	---	---	1.91
3.92	12,041	304.42	2.24 oc	---	---	---	1.96 ic	---	---	---	---	---	1.96
3.94	12,105	304.44	2.20 oc	---	---	---	2.01 ic	---	---	---	---	---	2.01
3.96	12,168	304.46	2.16 oc	---	---	---	2.05 ic	---	---	---	---	---	2.05
3.98	12,232	304.48	2.12 ic	---	---	---	2.10 ic	---	---	---	---	---	2.10
4.00	12,296	304.50	2.16 oc	---	---	---	2.14 ic	---	---	---	---	---	2.14

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

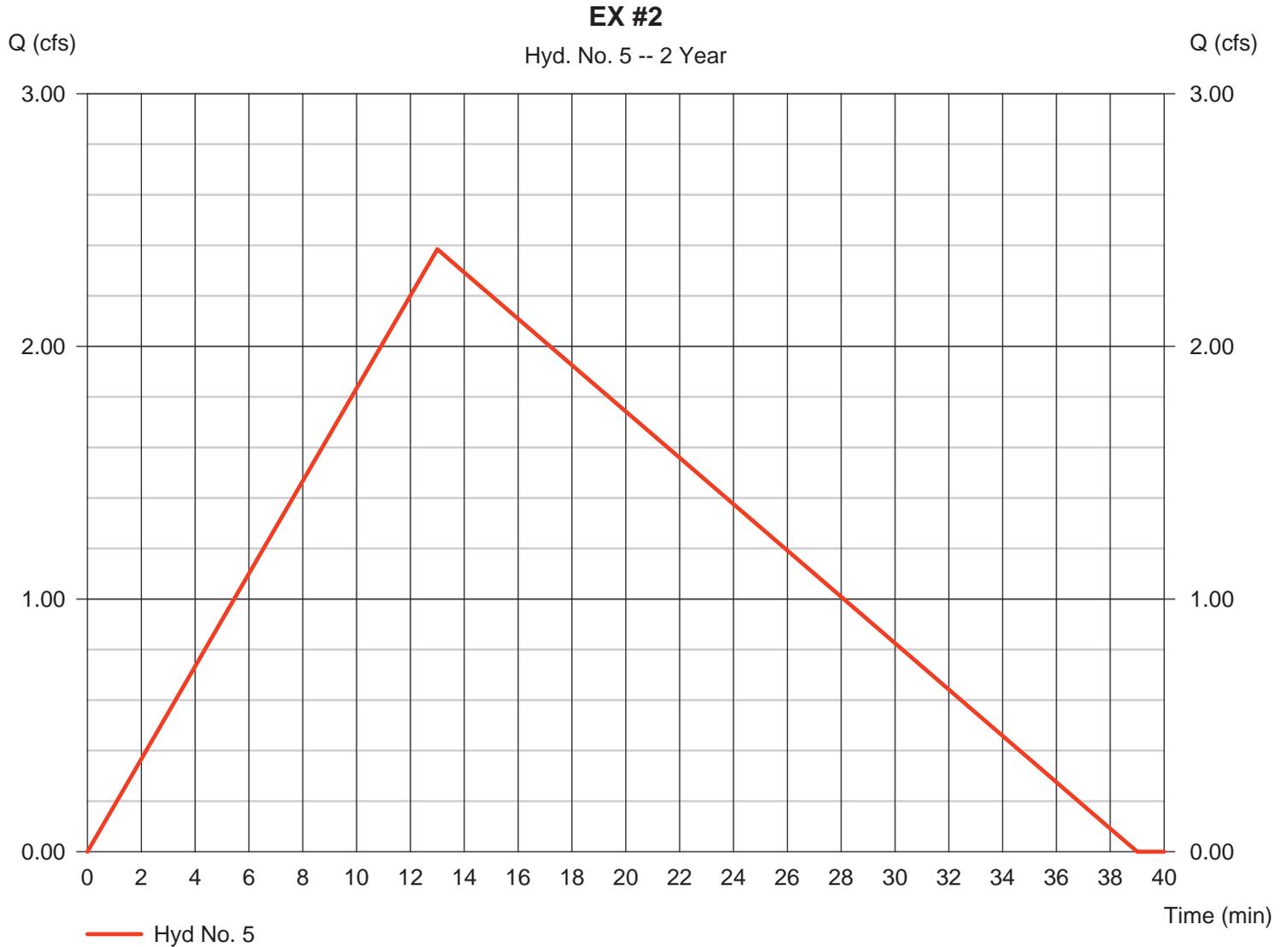
Monday, Aug 10, 2015

Hyd. No. 5

EX #2

Hydrograph type = Rational
Storm frequency = 2 yrs
Time interval = 1 min
Drainage area = 3.700 ac
Intensity = 3.069 in/hr
IDF Curve = CONNDOT.IDF

Peak discharge = 2.384 cfs
Time to peak = 13 min
Hyd. volume = 2,790 cuft
Runoff coeff. = 0.21
Tc by TR55 = 13.00 min
Asc/Rec limb fact = 1/2



TR55 Tc Worksheet

Hydraflow Hydrographs by Intelisolve v9.1

Hyd. No. 5

EX #2

<u>Description</u>	<u>A</u>		<u>B</u>		<u>C</u>		<u>Totals</u>	
Sheet Flow								
Manning's n-value	= 0.400		0.011		0.011			
Flow length (ft)	= 55.0		0.0		0.0			
Two-year 24-hr precip. (in)	= 3.25		0.00		0.00			
Land slope (%)	= 4.00		0.00		0.00			
Travel Time (min)	= 10.01	+	0.00	+	0.00	=	10.01	
Shallow Concentrated Flow								
Flow length (ft)	= 612.00		0.00		0.00			
Watercourse slope (%)	= 3.80		0.00		0.00			
Surface description	= Unpaved		Paved		Paved			
Average velocity (ft/s)	= 3.15		0.00		0.00			
Travel Time (min)	= 3.24	+	0.00	+	0.00	=	3.24	
Channel Flow								
X sectional flow area (sqft)	= 0.00		0.00		0.00			
Wetted perimeter (ft)	= 0.00		0.00		0.00			
Channel slope (%)	= 0.00		0.00		0.00			
Manning's n-value	= 0.015		0.015		0.015			
Velocity (ft/s)	= 0.00		0.00		0.00			
Flow length (ft)	= 0.0		0.0		0.0			
Travel Time (min)	= 0.00	+	0.00	+	0.00	=	0.00	
Total Travel Time, Tc							=	13.00 min

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

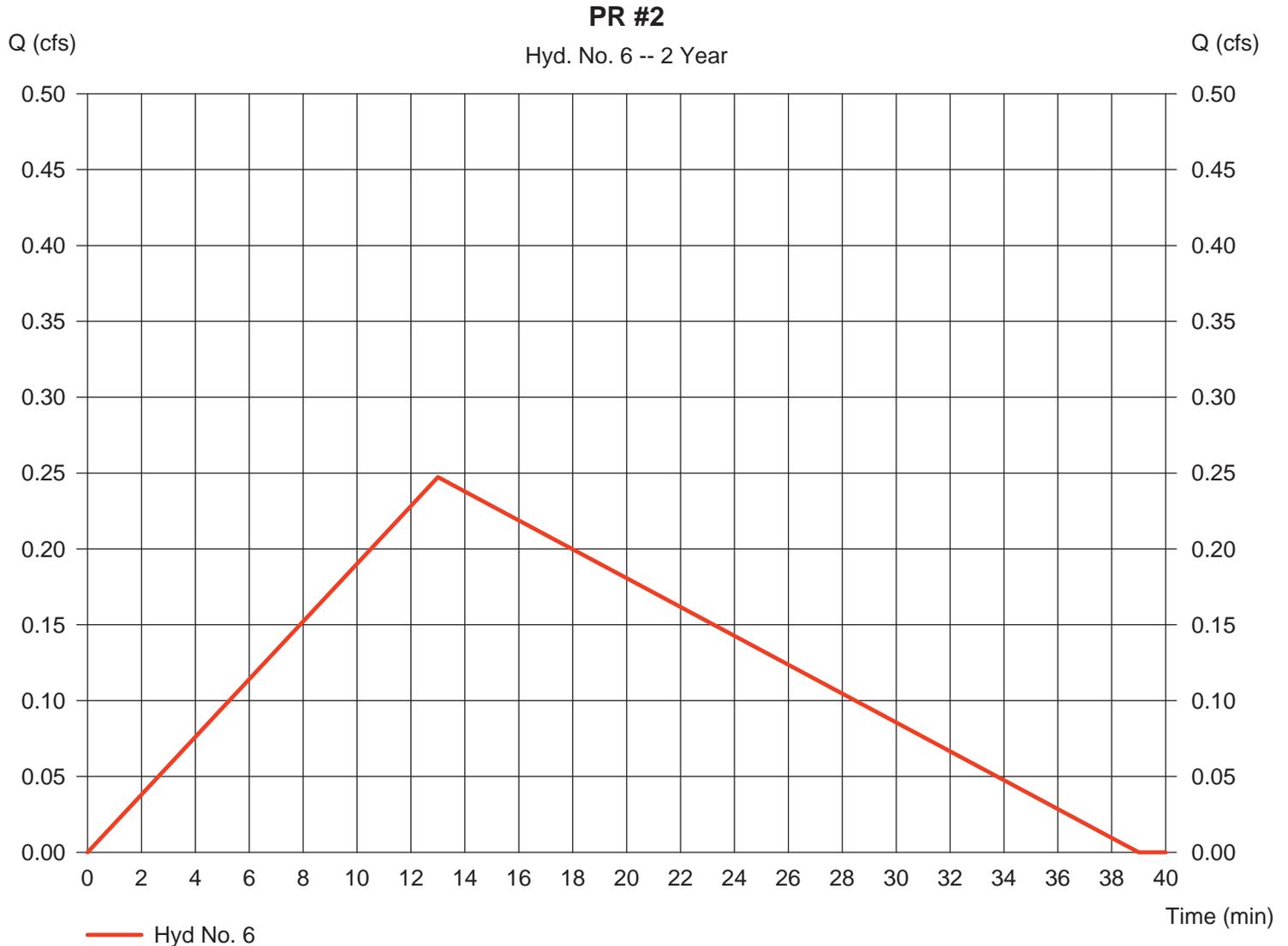
Monday, Aug 10, 2015

Hyd. No. 6

PR #2

Hydrograph type = Rational
Storm frequency = 2 yrs
Time interval = 1 min
Drainage area = 0.310 ac
Intensity = 3.069 in/hr
IDF Curve = CONNDOT.IDF

Peak discharge = 0.247 cfs
Time to peak = 13 min
Hyd. volume = 289 cuft
Runoff coeff. = 0.26
Tc by TR55 = 13.00 min
Asc/Rec limb fact = 1/2



TR55 Tc Worksheet

Hydraflow Hydrographs by Intelisolve v9.1

Hyd. No. 6

PR #2

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
Sheet Flow				
Manning's n-value	= 0.400	0.011	0.011	
Flow length (ft)	= 55.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.25	0.00	0.00	
Land slope (%)	= 4.00	0.00	0.00	
Travel Time (min)	= 10.01	+ 0.00	+ 0.00	= 10.01
Shallow Concentrated Flow				
Flow length (ft)	= 612.00	0.00	0.00	
Watercourse slope (%)	= 3.80	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	= 3.15	0.00	0.00	
Travel Time (min)	= 3.24	+ 0.00	+ 0.00	= 3.24
Channel Flow				
X sectional flow area (sqft)	= 0.00	0.00	0.00	
Wetted perimeter (ft)	= 0.00	0.00	0.00	
Channel slope (%)	= 0.00	0.00	0.00	
Manning's n-value	= 0.015	0.015	0.015	
Velocity (ft/s)	= 0.00	0.00	0.00	
Flow length (ft)	= 0.0	0.0	0.0	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Total Travel Time, Tc				13.00 min

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

Monday, Aug 10, 2015

Hyd. No. 7

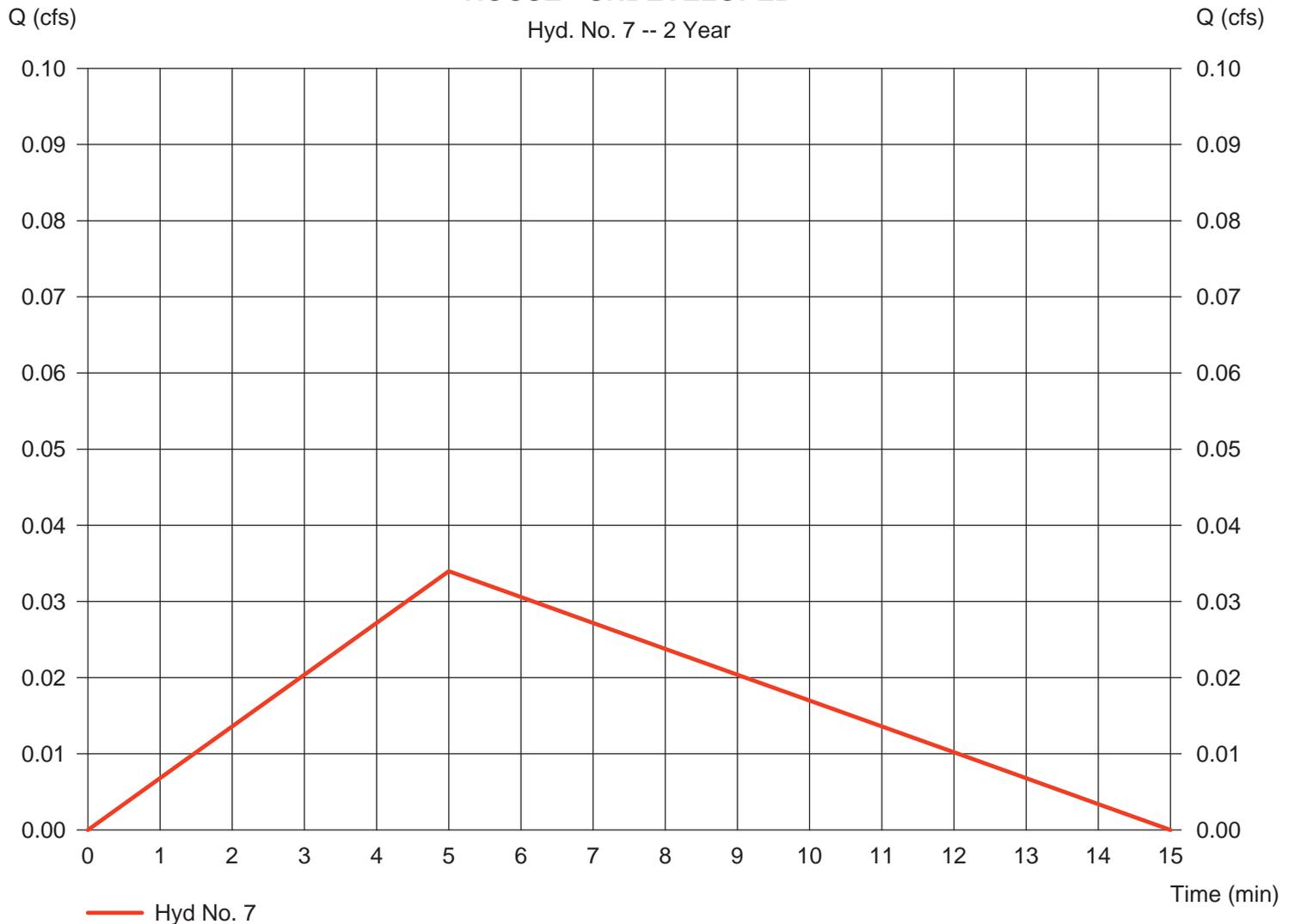
HOUSE - UNDEVELOPED

Hydrograph type = Rational
Storm frequency = 2 yrs
Time interval = 1 min
Drainage area = 0.037 ac
Intensity = 4.590 in/hr
IDF Curve = CONNDOT.IDF

Peak discharge = 0.034 cfs
Time to peak = 5 min
Hyd. volume = 15 cuft
Runoff coeff. = 0.2
Tc by User = 5.00 min
Asc/Rec limb fact = 1/2

HOUSE - UNDEVELOPED

Hyd. No. 7 -- 2 Year



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

Monday, Aug 10, 2015

Hyd. No. 8

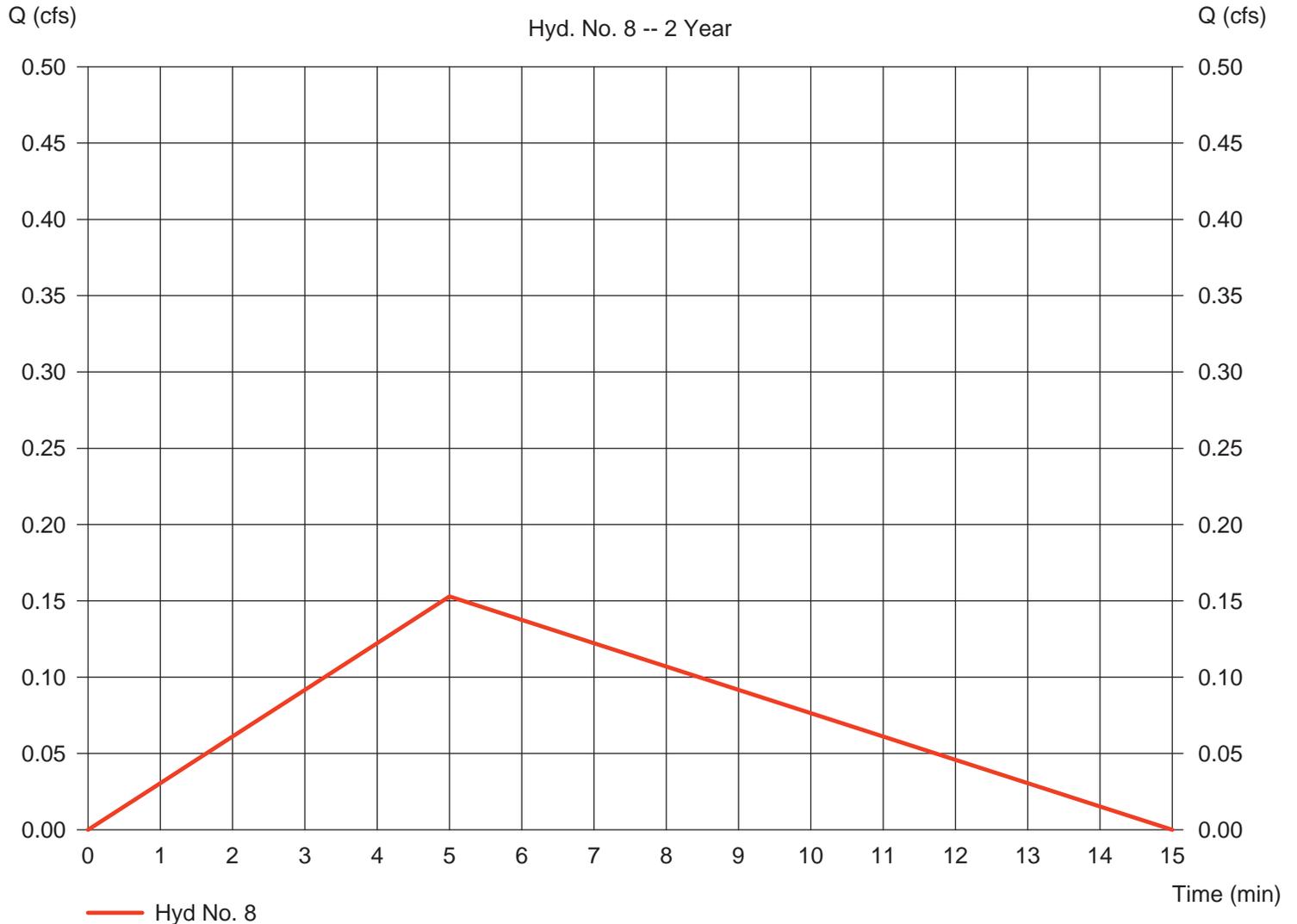
HOUSE - DEVELOPED

Hydrograph type = Rational
Storm frequency = 2 yrs
Time interval = 1 min
Drainage area = 0.037 ac
Intensity = 4.590 in/hr
IDF Curve = CONNDOT.IDF

Peak discharge = 0.153 cfs
Time to peak = 5 min
Hyd. volume = 69 cuft
Runoff coeff. = 0.9
Tc by User = 5.00 min
Asc/Rec limb fact = 1/2

HOUSE - DEVELOPED

Hyd. No. 8 -- 2 Year



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

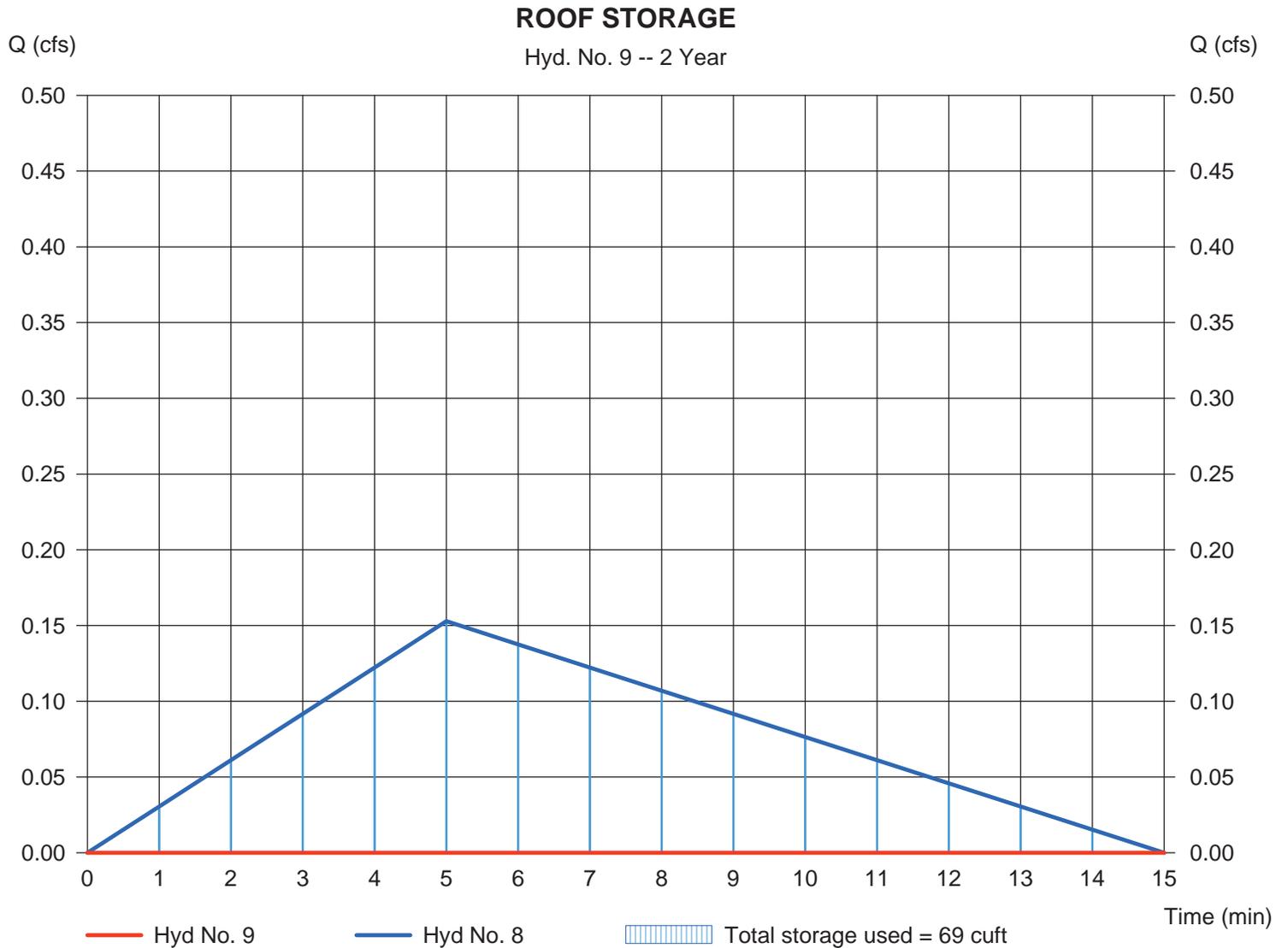
Monday, Aug 10, 2015

Hyd. No. 9

ROOF STORAGE

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 8 - HOUSE - DEVELOPED	Max. Elevation	= 100.27 ft
Reservoir name	= ROOF STORAGE	Max. Storage	= 69 cuft

Storage Indication method used.



Pond No. 2 - ROOF STORAGE

Pond Data

UG Chambers - Invert elev. = 100.00 ft, Rise x Span = 2.21 x 3.92 ft, Barrel Len = 7.00 ft, No. Barrels = 4, Slope = 0.00%, Headers = No
Encasement - Invert elev. = 99.50 ft, Width = 5.92 ft, Height = 2.71 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	99.50	n/a	0	0
0.27	99.77	n/a	18	18
0.54	100.04	n/a	21	39
0.81	100.31	n/a	36	74
1.08	100.58	n/a	35	110
1.36	100.86	n/a	35	145
1.63	101.13	n/a	34	179
1.90	101.40	n/a	33	211
2.17	101.67	n/a	31	242
2.44	101.94	n/a	28	270
2.71	102.21	n/a	24	294

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)	= 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).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Civ A cfs	Civ B cfs	Civ 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	99.50	---	---	---	---	---	---	---	---	---	---	0.00
0.03	2	99.53	---	---	---	---	---	---	---	---	---	---	0.00
0.05	4	99.55	---	---	---	---	---	---	---	---	---	---	0.00
0.08	5	99.58	---	---	---	---	---	---	---	---	---	---	0.00
0.11	7	99.61	---	---	---	---	---	---	---	---	---	---	0.00
0.14	9	99.64	---	---	---	---	---	---	---	---	---	---	0.00
0.16	11	99.66	---	---	---	---	---	---	---	---	---	---	0.00
0.19	13	99.69	---	---	---	---	---	---	---	---	---	---	0.00
0.22	14	99.72	---	---	---	---	---	---	---	---	---	---	0.00
0.24	16	99.74	---	---	---	---	---	---	---	---	---	---	0.00
0.27	18	99.77	---	---	---	---	---	---	---	---	---	---	0.00
0.30	20	99.80	---	---	---	---	---	---	---	---	---	---	0.00
0.33	22	99.83	---	---	---	---	---	---	---	---	---	---	0.00
0.35	24	99.85	---	---	---	---	---	---	---	---	---	---	0.00
0.38	26	99.88	---	---	---	---	---	---	---	---	---	---	0.00
0.41	28	99.91	---	---	---	---	---	---	---	---	---	---	0.00
0.43	30	99.93	---	---	---	---	---	---	---	---	---	---	0.00
0.46	32	99.96	---	---	---	---	---	---	---	---	---	---	0.00
0.49	35	99.99	---	---	---	---	---	---	---	---	---	---	0.00
0.51	37	100.01	---	---	---	---	---	---	---	---	---	---	0.00
0.54	39	100.04	---	---	---	---	---	---	---	---	---	---	0.00
0.57	42	100.07	---	---	---	---	---	---	---	---	---	---	0.00
0.60	46	100.10	---	---	---	---	---	---	---	---	---	---	0.00
0.62	49	100.12	---	---	---	---	---	---	---	---	---	---	0.00
0.65	53	100.15	---	---	---	---	---	---	---	---	---	---	0.00
0.68	57	100.18	---	---	---	---	---	---	---	---	---	---	0.00
0.70	60	100.20	---	---	---	---	---	---	---	---	---	---	0.00
0.73	64	100.23	---	---	---	---	---	---	---	---	---	---	0.00
0.76	67	100.26	---	---	---	---	---	---	---	---	---	---	0.00
0.79	71	100.29	---	---	---	---	---	---	---	---	---	---	0.00
0.81	74	100.31	---	---	---	---	---	---	---	---	---	---	0.00
0.84	78	100.34	---	---	---	---	---	---	---	---	---	---	0.00
0.87	82	100.37	---	---	---	---	---	---	---	---	---	---	0.00

Continues on next page...

ROOF STORAGE

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
0.89	85	100.39	---	---	---	---	---	---	---	---	---	---	0.00
0.92	89	100.42	---	---	---	---	---	---	---	---	---	---	0.00
0.95	92	100.45	---	---	---	---	---	---	---	---	---	---	0.00
0.98	96	100.48	---	---	---	---	---	---	---	---	---	---	0.00
1.00	99	100.50	---	---	---	---	---	---	---	---	---	---	0.00
1.03	103	100.53	---	---	---	---	---	---	---	---	---	---	0.00
1.06	106	100.56	---	---	---	---	---	---	---	---	---	---	0.00
1.08	110	100.58	---	---	---	---	---	---	---	---	---	---	0.00
1.11	113	100.61	---	---	---	---	---	---	---	---	---	---	0.00
1.14	117	100.64	---	---	---	---	---	---	---	---	---	---	0.00
1.17	120	100.67	---	---	---	---	---	---	---	---	---	---	0.00
1.19	124	100.69	---	---	---	---	---	---	---	---	---	---	0.00
1.22	127	100.72	---	---	---	---	---	---	---	---	---	---	0.00
1.25	131	100.75	---	---	---	---	---	---	---	---	---	---	0.00
1.27	134	100.77	---	---	---	---	---	---	---	---	---	---	0.00
1.30	138	100.80	---	---	---	---	---	---	---	---	---	---	0.00
1.33	141	100.83	---	---	---	---	---	---	---	---	---	---	0.00
1.36	145	100.86	---	---	---	---	---	---	---	---	---	---	0.00
1.38	148	100.88	---	---	---	---	---	---	---	---	---	---	0.00
1.41	152	100.91	---	---	---	---	---	---	---	---	---	---	0.00
1.44	155	100.94	---	---	---	---	---	---	---	---	---	---	0.00
1.46	158	100.96	---	---	---	---	---	---	---	---	---	---	0.00
1.49	162	100.99	---	---	---	---	---	---	---	---	---	---	0.00
1.52	165	101.02	---	---	---	---	---	---	---	---	---	---	0.00
1.54	168	101.04	---	---	---	---	---	---	---	---	---	---	0.00
1.57	172	101.07	---	---	---	---	---	---	---	---	---	---	0.00
1.60	175	101.10	---	---	---	---	---	---	---	---	---	---	0.00
1.63	179	101.13	---	---	---	---	---	---	---	---	---	---	0.00
1.65	182	101.15	---	---	---	---	---	---	---	---	---	---	0.00
1.68	185	101.18	---	---	---	---	---	---	---	---	---	---	0.00
1.71	188	101.21	---	---	---	---	---	---	---	---	---	---	0.00
1.73	192	101.23	---	---	---	---	---	---	---	---	---	---	0.00
1.76	195	101.26	---	---	---	---	---	---	---	---	---	---	0.00
1.79	198	101.29	---	---	---	---	---	---	---	---	---	---	0.00
1.82	201	101.32	---	---	---	---	---	---	---	---	---	---	0.00
1.84	205	101.34	---	---	---	---	---	---	---	---	---	---	0.00
1.87	208	101.37	---	---	---	---	---	---	---	---	---	---	0.00
1.90	211	101.40	---	---	---	---	---	---	---	---	---	---	0.00
1.92	214	101.42	---	---	---	---	---	---	---	---	---	---	0.00
1.95	217	101.45	---	---	---	---	---	---	---	---	---	---	0.00
1.98	221	101.48	---	---	---	---	---	---	---	---	---	---	0.00
2.01	224	101.51	---	---	---	---	---	---	---	---	---	---	0.00
2.03	227	101.53	---	---	---	---	---	---	---	---	---	---	0.00
2.06	230	101.56	---	---	---	---	---	---	---	---	---	---	0.00
2.09	233	101.59	---	---	---	---	---	---	---	---	---	---	0.00
2.11	236	101.61	---	---	---	---	---	---	---	---	---	---	0.00
2.14	239	101.64	---	---	---	---	---	---	---	---	---	---	0.00
2.17	242	101.67	---	---	---	---	---	---	---	---	---	---	0.00
2.20	245	101.70	---	---	---	---	---	---	---	---	---	---	0.00
2.22	248	101.72	---	---	---	---	---	---	---	---	---	---	0.00
2.25	251	101.75	---	---	---	---	---	---	---	---	---	---	0.00
2.28	253	101.78	---	---	---	---	---	---	---	---	---	---	0.00
2.30	256	101.80	---	---	---	---	---	---	---	---	---	---	0.00
2.33	259	101.83	---	---	---	---	---	---	---	---	---	---	0.00
2.36	262	101.86	---	---	---	---	---	---	---	---	---	---	0.00
2.38	265	101.88	---	---	---	---	---	---	---	---	---	---	0.00
2.41	267	101.91	---	---	---	---	---	---	---	---	---	---	0.00
2.44	270	101.94	---	---	---	---	---	---	---	---	---	---	0.00
2.47	273	101.97	---	---	---	---	---	---	---	---	---	---	0.00
2.49	275	101.99	---	---	---	---	---	---	---	---	---	---	0.00
2.52	277	102.02	---	---	---	---	---	---	---	---	---	---	0.00
2.55	280	102.05	---	---	---	---	---	---	---	---	---	---	0.00
2.57	282	102.07	---	---	---	---	---	---	---	---	---	---	0.00
2.60	285	102.10	---	---	---	---	---	---	---	---	---	---	0.00
2.63	287	102.13	---	---	---	---	---	---	---	---	---	---	0.00
2.66	289	102.16	---	---	---	---	---	---	---	---	---	---	0.00
2.68	292	102.18	---	---	---	---	---	---	---	---	---	---	0.00
2.71	294	102.21	---	---	---	---	---	---	---	---	---	---	0.00

...End

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.1

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	Rational	2.172	1	17	3,323	----	-----	-----	EX#1	
2	Reservoir	0.000	1	n/a	0	1	304.41	3,323	EX DEPRESSION	
3	Rational	8.074	1	10	7,267	----	-----	-----	PR #1	
4	Reservoir	0.000	1	n/a	0	3	302.89	7,267	UG STORAGE ROUTING	
5	Rational	2.972	1	13	3,477	----	-----	-----	EX #2	
6	Rational	0.308	1	13	361	----	-----	-----	PR #2	
7	Rational	0.041	1	5	18	----	-----	-----	HOUSE - UNDEVELOPED	
8	Rational	0.183	1	5	82	----	-----	-----	HOUSE - DEVELOPED	
9	Reservoir	0.000	1	n/a	0	8	100.37	82.3	ROOF STORAGE	
CLIMAX.gpw					Return Period: 5 Year			Monday, Aug 10, 2015		

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

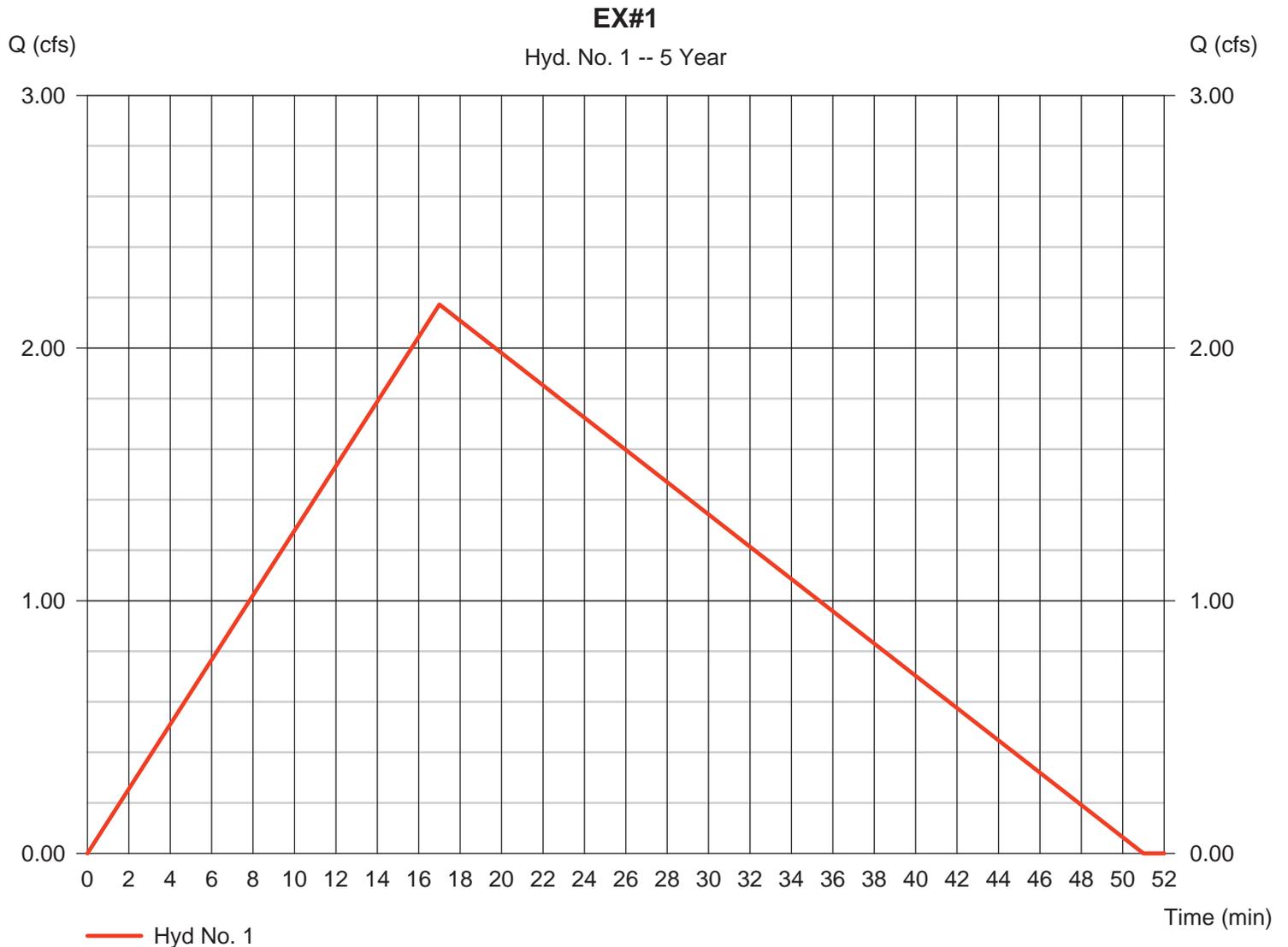
Monday, Aug 10, 2015

Hyd. No. 1

EX#1

Hydrograph type = Rational
Storm frequency = 5 yrs
Time interval = 1 min
Drainage area = 1.970 ac
Intensity = 3.341 in/hr
IDF Curve = CONNDOT.IDF

Peak discharge = 2.172 cfs
Time to peak = 17 min
Hyd. volume = 3,323 cuft
Runoff coeff. = 0.33
Tc by TR55 = 17.00 min
Asc/Rec limb fact = 1/2



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

Monday, Aug 10, 2015

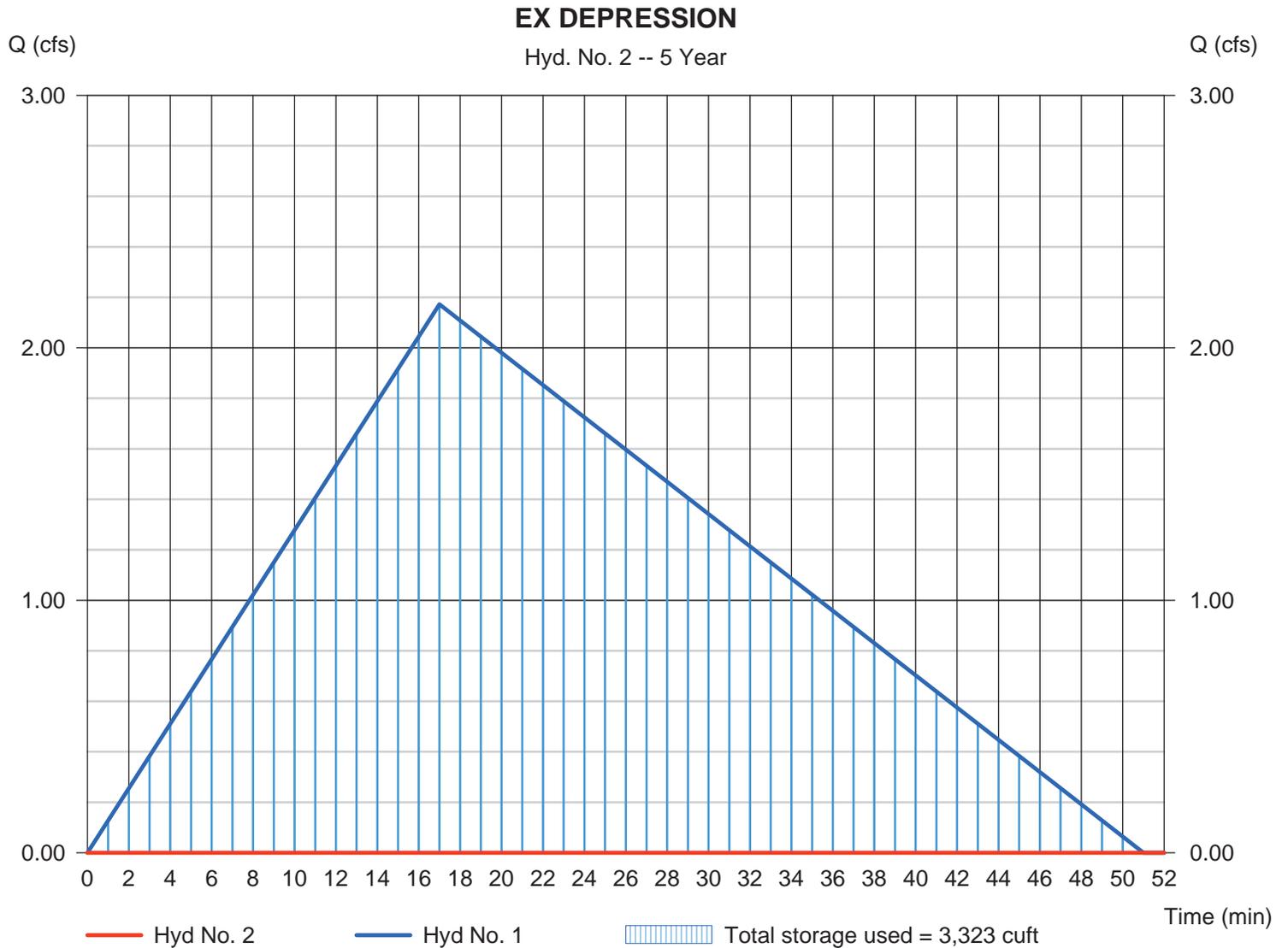
Hyd. No. 2

EX DEPRESSION

Hydrograph type = Reservoir
 Storm frequency = 5 yrs
 Time interval = 1 min
 Inflow hyd. No. = 1 - EX#1
 Reservoir name = EX DEPRESSION

Peak discharge = 0.000 cfs
 Time to peak = n/a
 Hyd. volume = 0 cuft
 Max. Elevation = 304.41 ft
 Max. Storage = 3,323 cuft

Storage Indication method used.



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

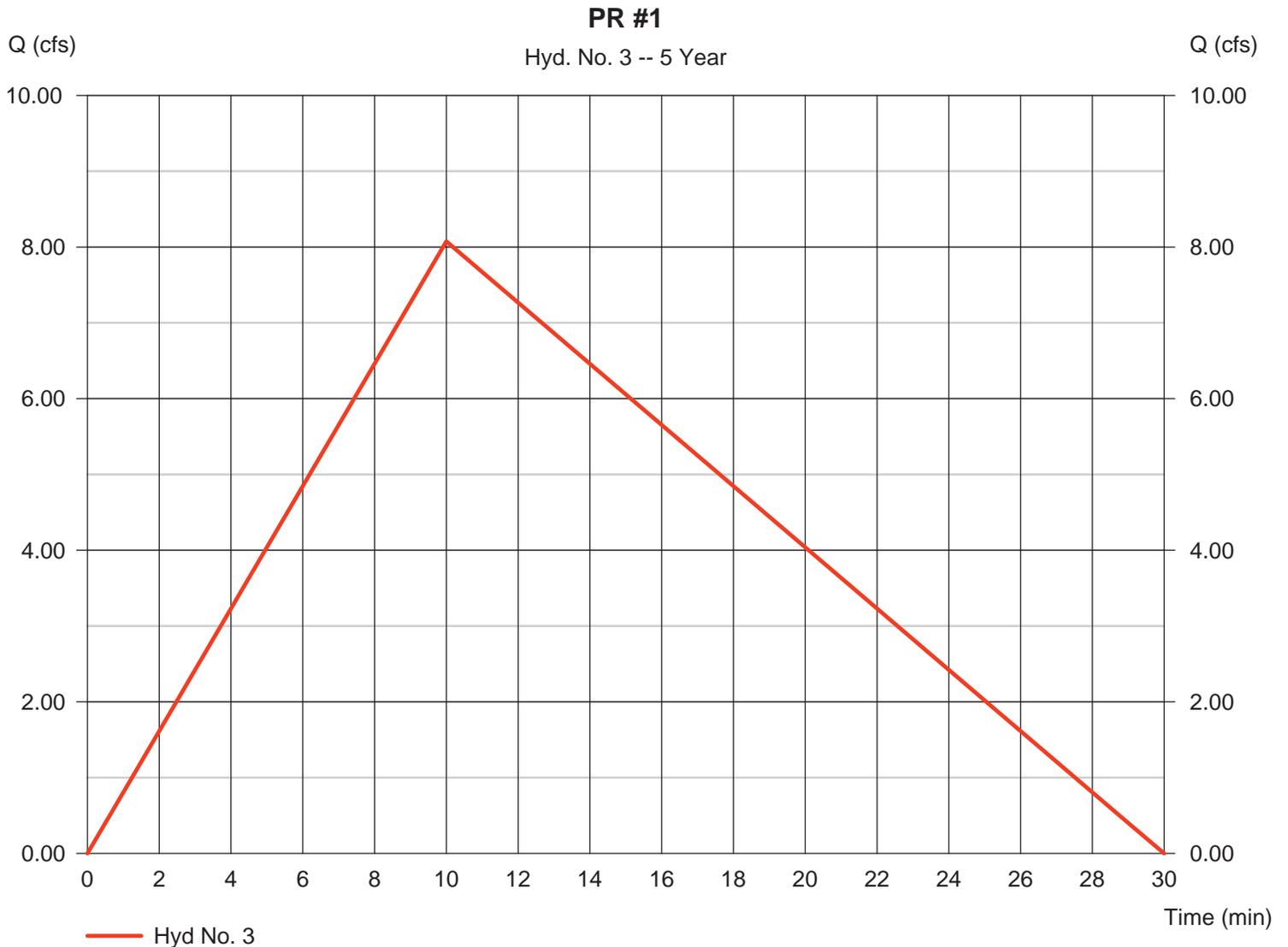
Monday, Aug 10, 2015

Hyd. No. 3

PR #1

Hydrograph type = Rational
Storm frequency = 5 yrs
Time interval = 1 min
Drainage area = 4.810 ac
Intensity = 4.304 in/hr
IDF Curve = CONNDOT.IDF

Peak discharge = 8.074 cfs
Time to peak = 10 min
Hyd. volume = 7,267 cuft
Runoff coeff. = 0.39
Tc by User = 10.00 min
Asc/Rec limb fact = 1/2



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

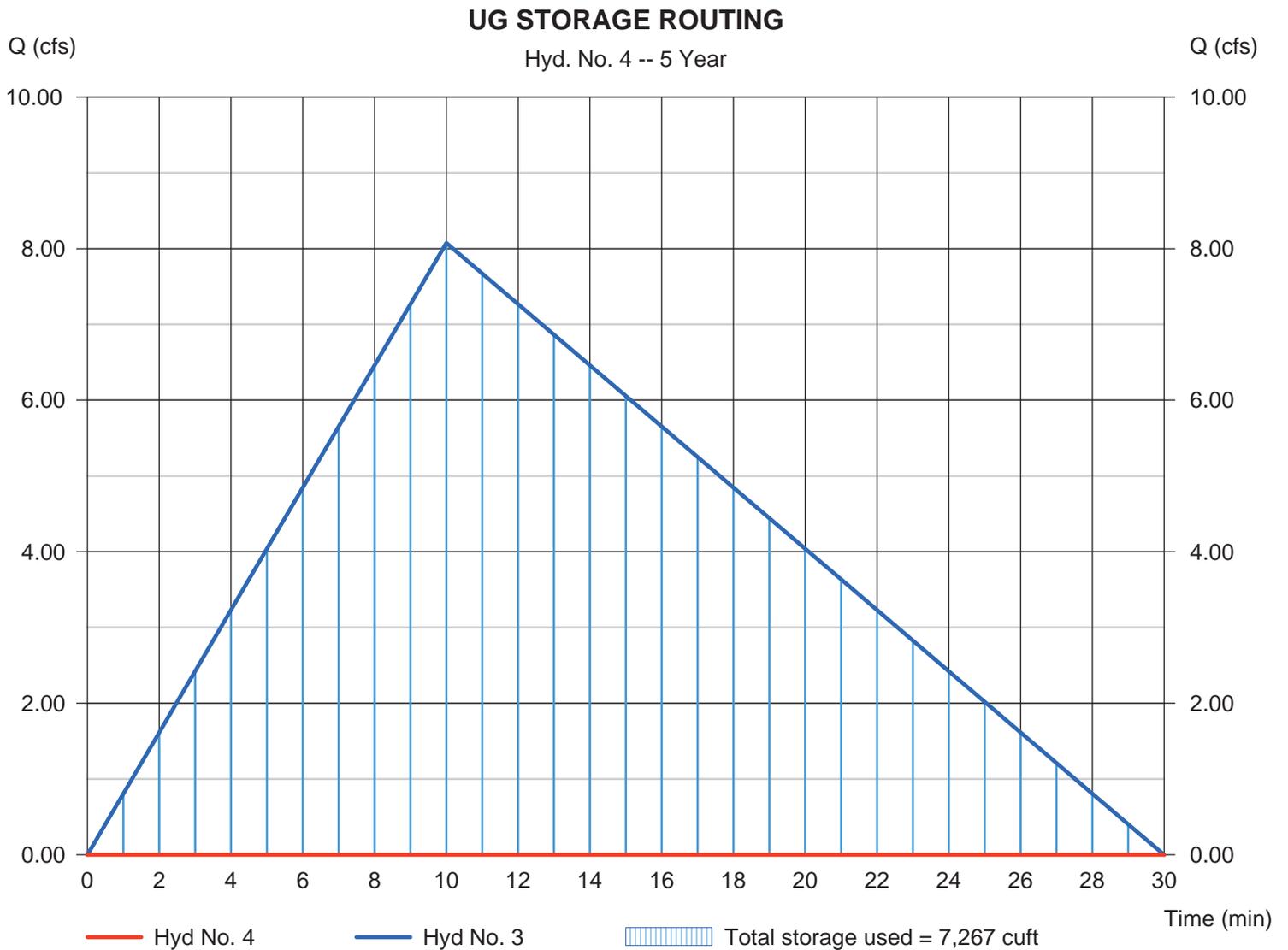
Monday, Aug 10, 2015

Hyd. No. 4

UG STORAGE ROUTING

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 5 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 3 - PR #1	Max. Elevation	= 302.89 ft
Reservoir name	= UG STORAGE + DEPRESSION	Max. Storage	= 7,267 cuft

Storage Indication method used.



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

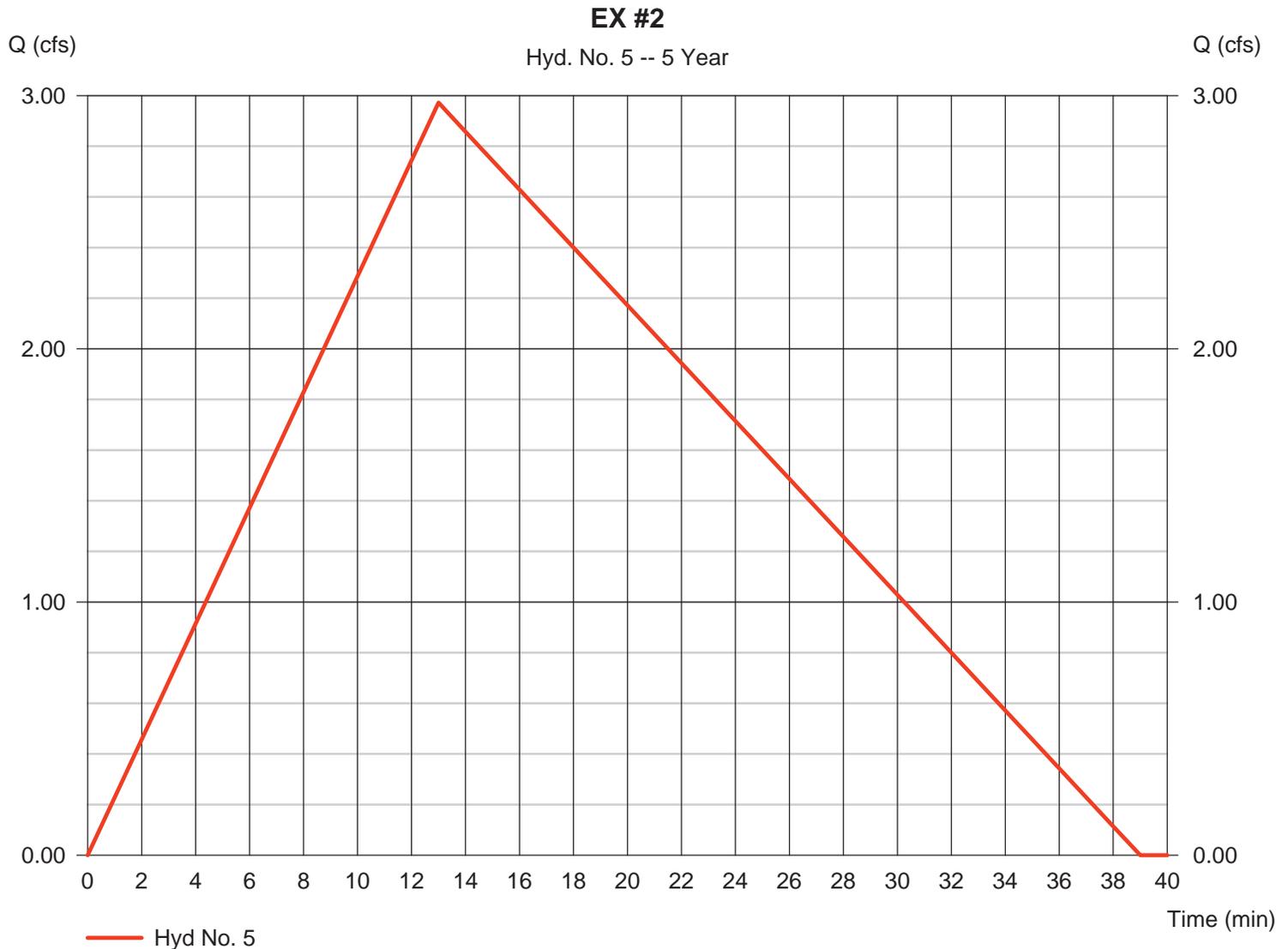
Monday, Aug 10, 2015

Hyd. No. 5

EX #2

Hydrograph type = Rational
 Storm frequency = 5 yrs
 Time interval = 1 min
 Drainage area = 3.700 ac
 Intensity = 3.825 in/hr
 IDF Curve = CONNDOT.IDF

Peak discharge = 2.972 cfs
 Time to peak = 13 min
 Hyd. volume = 3,477 cuft
 Runoff coeff. = 0.21
 Tc by TR55 = 13.00 min
 Asc/Rec limb fact = 1/2



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

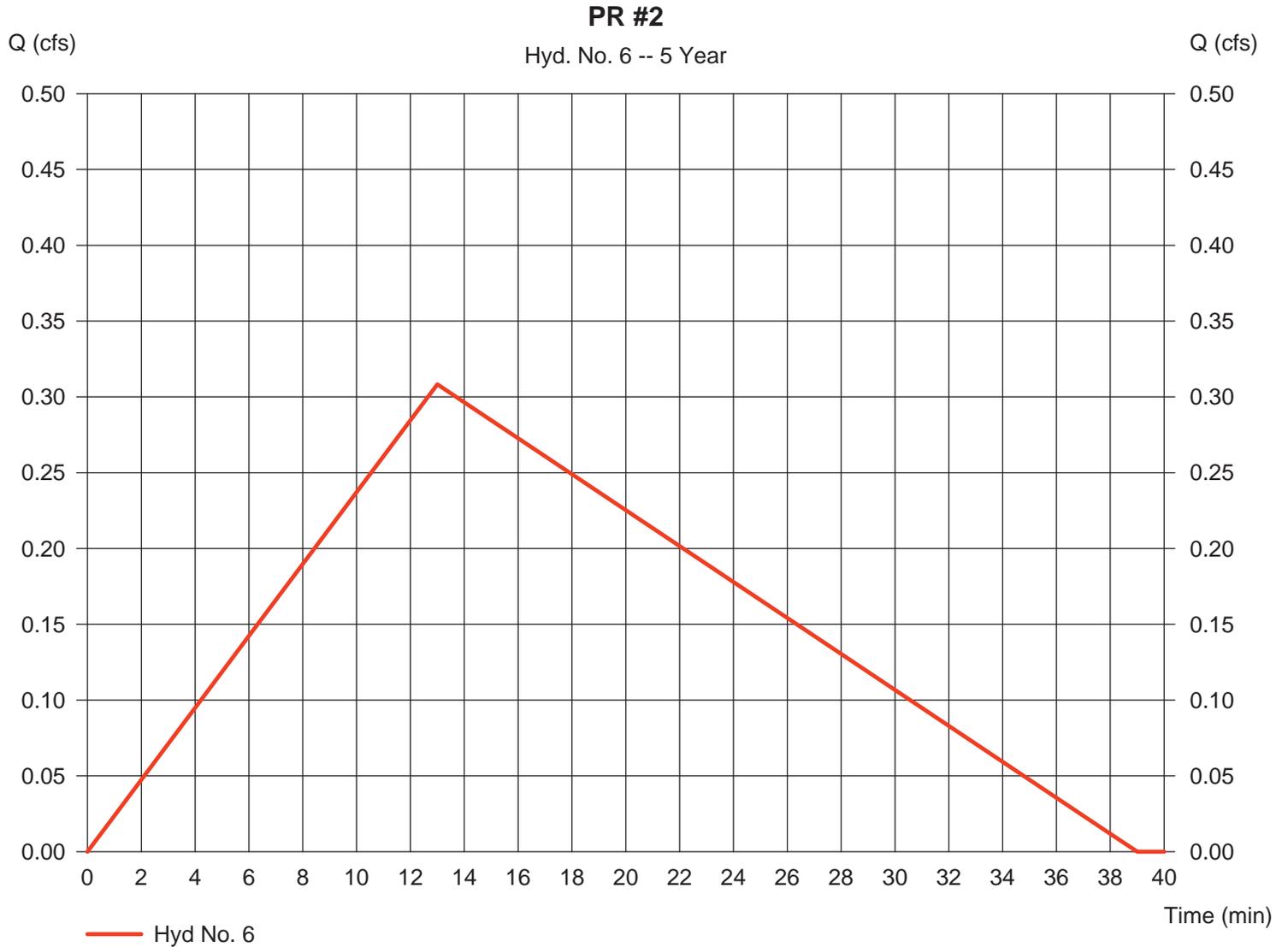
Monday, Aug 10, 2015

Hyd. No. 6

PR #2

Hydrograph type = Rational
 Storm frequency = 5 yrs
 Time interval = 1 min
 Drainage area = 0.310 ac
 Intensity = 3.825 in/hr
 IDF Curve = CONNDOT.IDF

Peak discharge = 0.308 cfs
 Time to peak = 13 min
 Hyd. volume = 361 cuft
 Runoff coeff. = 0.26
 Tc by TR55 = 13.00 min
 Asc/Rec limb fact = 1/2



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

Monday, Aug 10, 2015

Hyd. No. 7

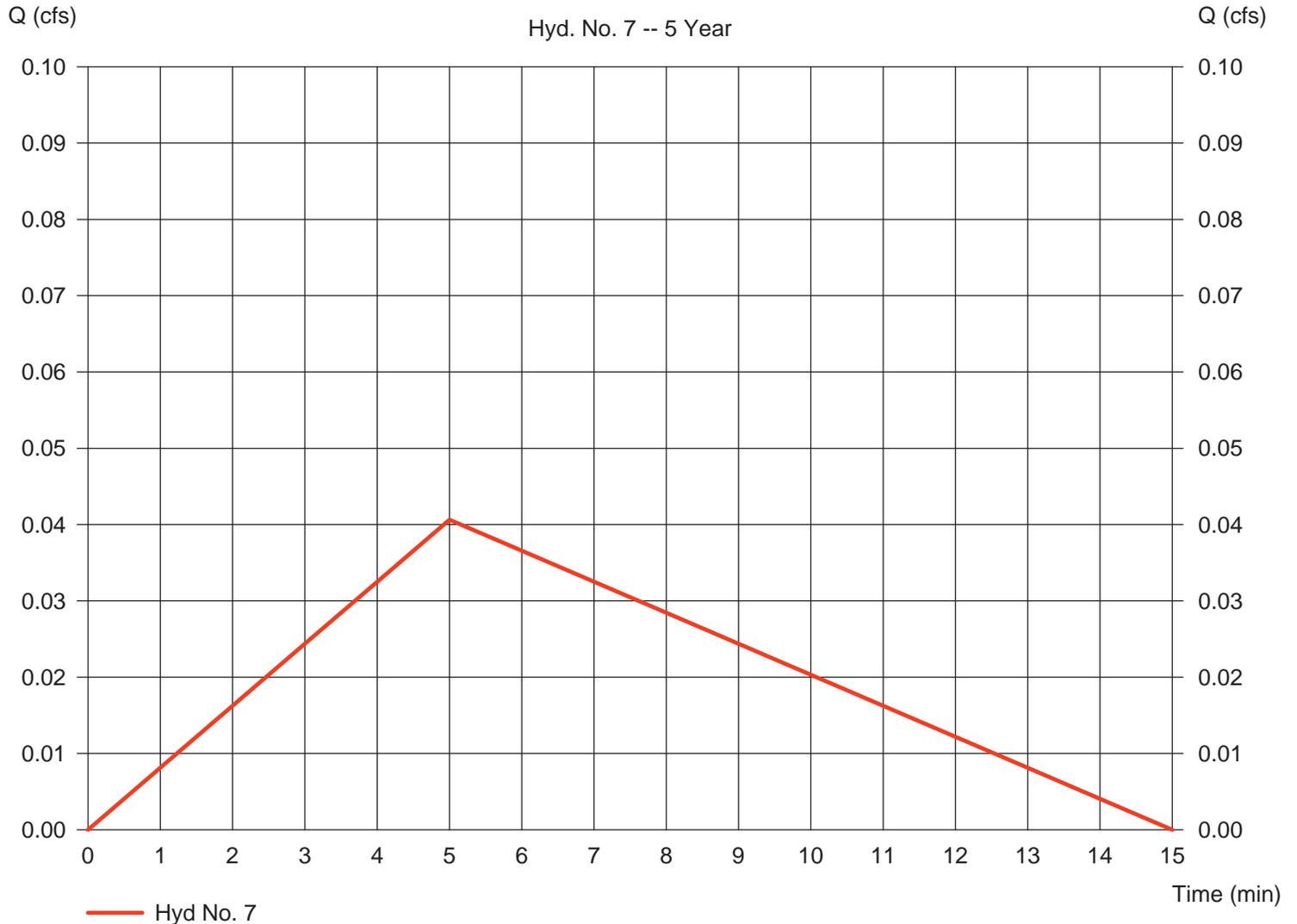
HOUSE - UNDEVELOPED

Hydrograph type = Rational
Storm frequency = 5 yrs
Time interval = 1 min
Drainage area = 0.037 ac
Intensity = 5.491 in/hr
IDF Curve = CONNDOT.IDF

Peak discharge = 0.041 cfs
Time to peak = 5 min
Hyd. volume = 18 cuft
Runoff coeff. = 0.2
Tc by User = 5.00 min
Asc/Rec limb fact = 1/2

HOUSE - UNDEVELOPED

Hyd. No. 7 -- 5 Year



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

Monday, Aug 10, 2015

Hyd. No. 8

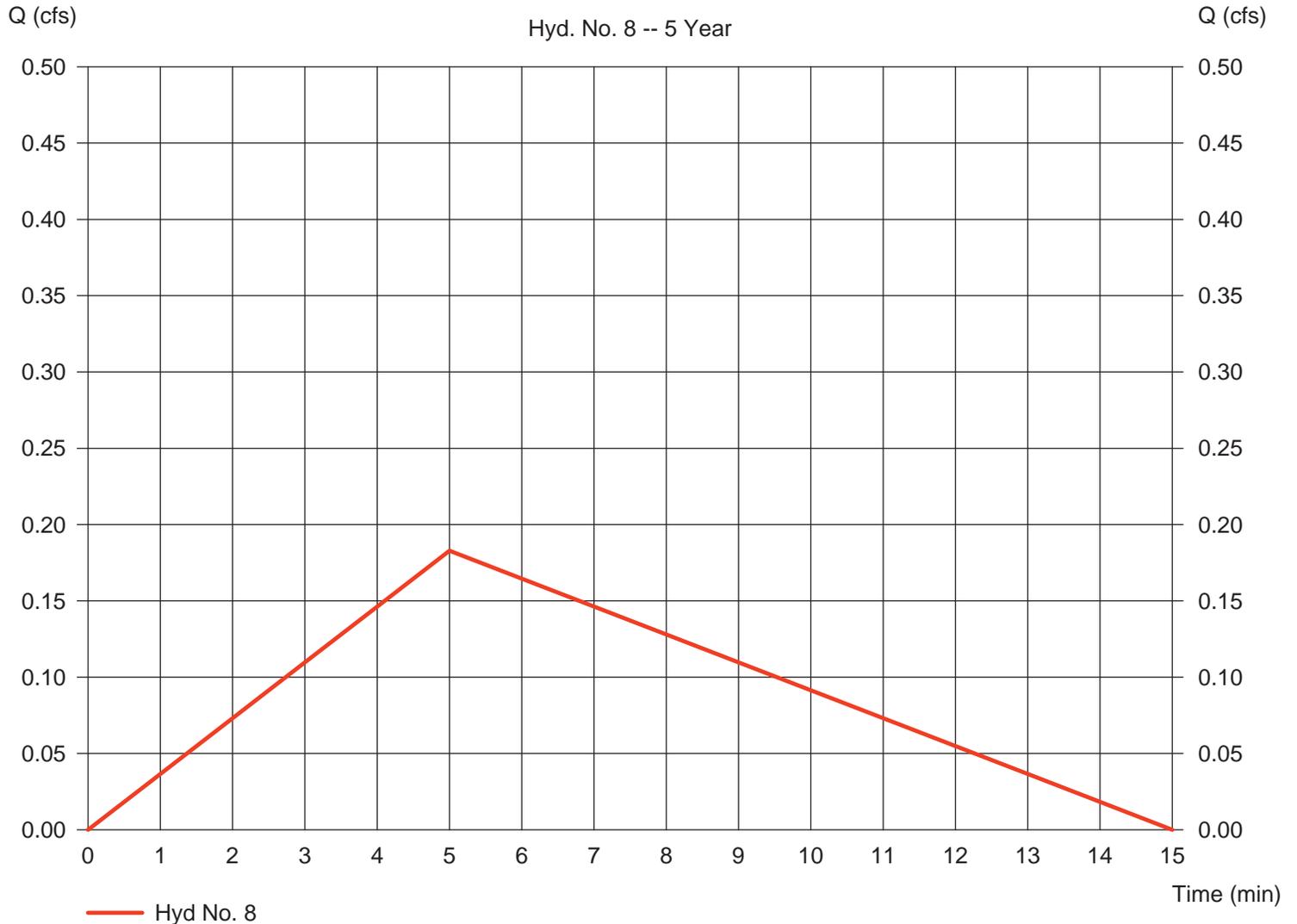
HOUSE - DEVELOPED

Hydrograph type = Rational
Storm frequency = 5 yrs
Time interval = 1 min
Drainage area = 0.037 ac
Intensity = 5.491 in/hr
IDF Curve = CONNDOT.IDF

Peak discharge = 0.183 cfs
Time to peak = 5 min
Hyd. volume = 82 cuft
Runoff coeff. = 0.9
Tc by User = 5.00 min
Asc/Rec limb fact = 1/2

HOUSE - DEVELOPED

Hyd. No. 8 -- 5 Year



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

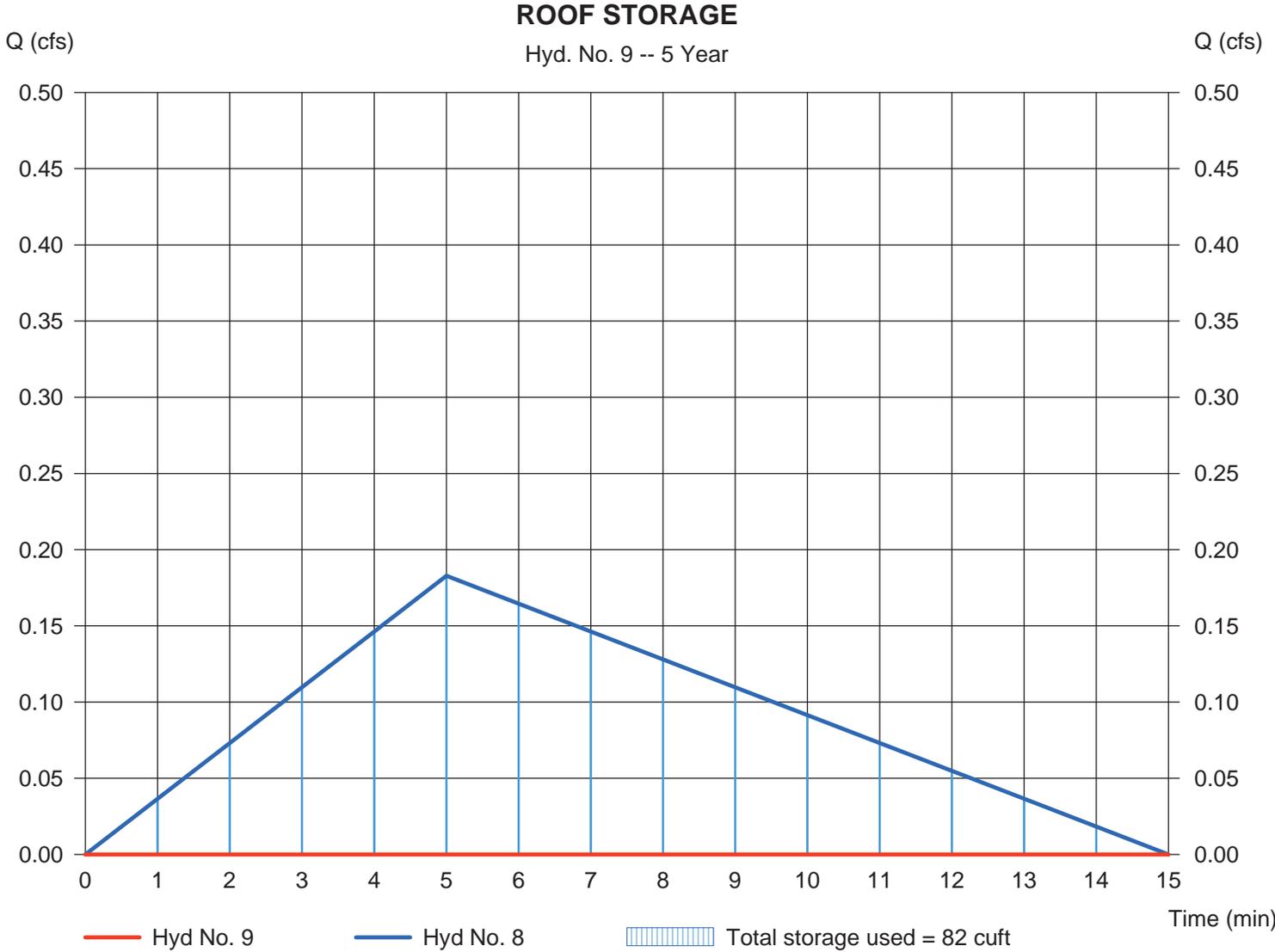
Monday, Aug 10, 2015

Hyd. No. 9

ROOF STORAGE

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 5 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 8 - HOUSE - DEVELOPED	Max. Elevation	= 100.37 ft
Reservoir name	= ROOF STORAGE	Max. Storage	= 82 cuft

Storage Indication method used.



Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.1

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	Rational	2.476	1	17	3,788	----	-----	-----	EX#1
2	Reservoir	0.000	1	n/a	0	1	304.53	3,788	EX DEPRESSION
3	Rational	9.014	1	10	8,113	----	-----	-----	PR #1
4	Reservoir	0.000	1	n/a	0	3	303.09	8,113	UG STORAGE ROUTING
5	Rational	3.351	1	13	3,921	----	-----	-----	EX #2
6	Rational	0.348	1	13	407	----	-----	-----	PR #2
7	Rational	0.044	1	5	20	----	-----	-----	HOUSE - UNDEVELOPED
8	Rational	0.199	1	5	90	----	-----	-----	HOUSE - DEVELOPED
9	Reservoir	0.000	1	n/a	0	8	100.43	89.8	ROOF STORAGE
CLIMAX.gpw					Return Period: 10 Year			Monday, Aug 10, 2015	

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

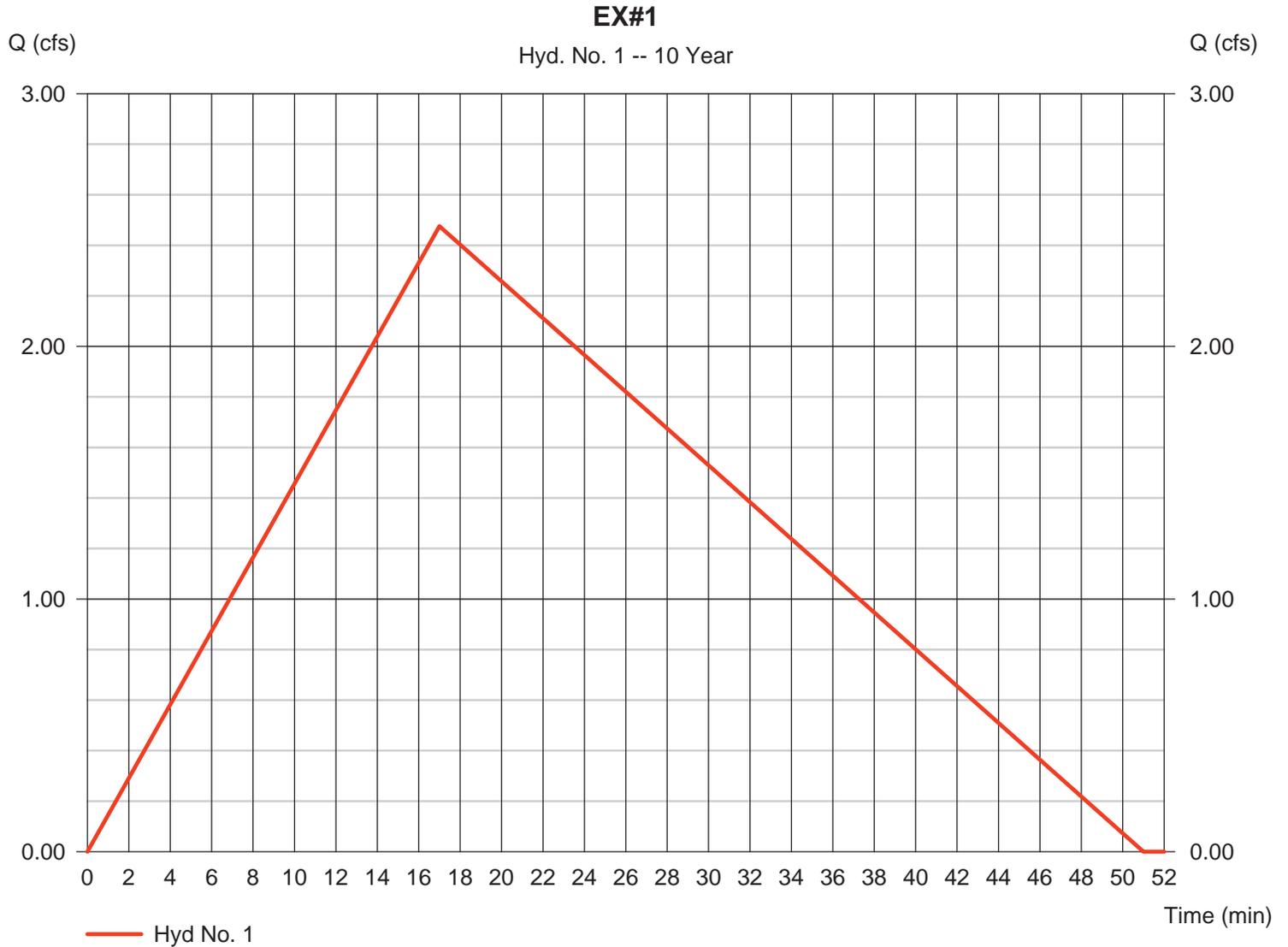
Monday, Aug 10, 2015

Hyd. No. 1

EX#1

Hydrograph type = Rational
Storm frequency = 10 yrs
Time interval = 1 min
Drainage area = 1.970 ac
Intensity = 3.808 in/hr
IDF Curve = CONNDOT.IDF

Peak discharge = 2.476 cfs
Time to peak = 17 min
Hyd. volume = 3,788 cuft
Runoff coeff. = 0.33
Tc by TR55 = 17.00 min
Asc/Rec limb fact = 1/2



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

Monday, Aug 10, 2015

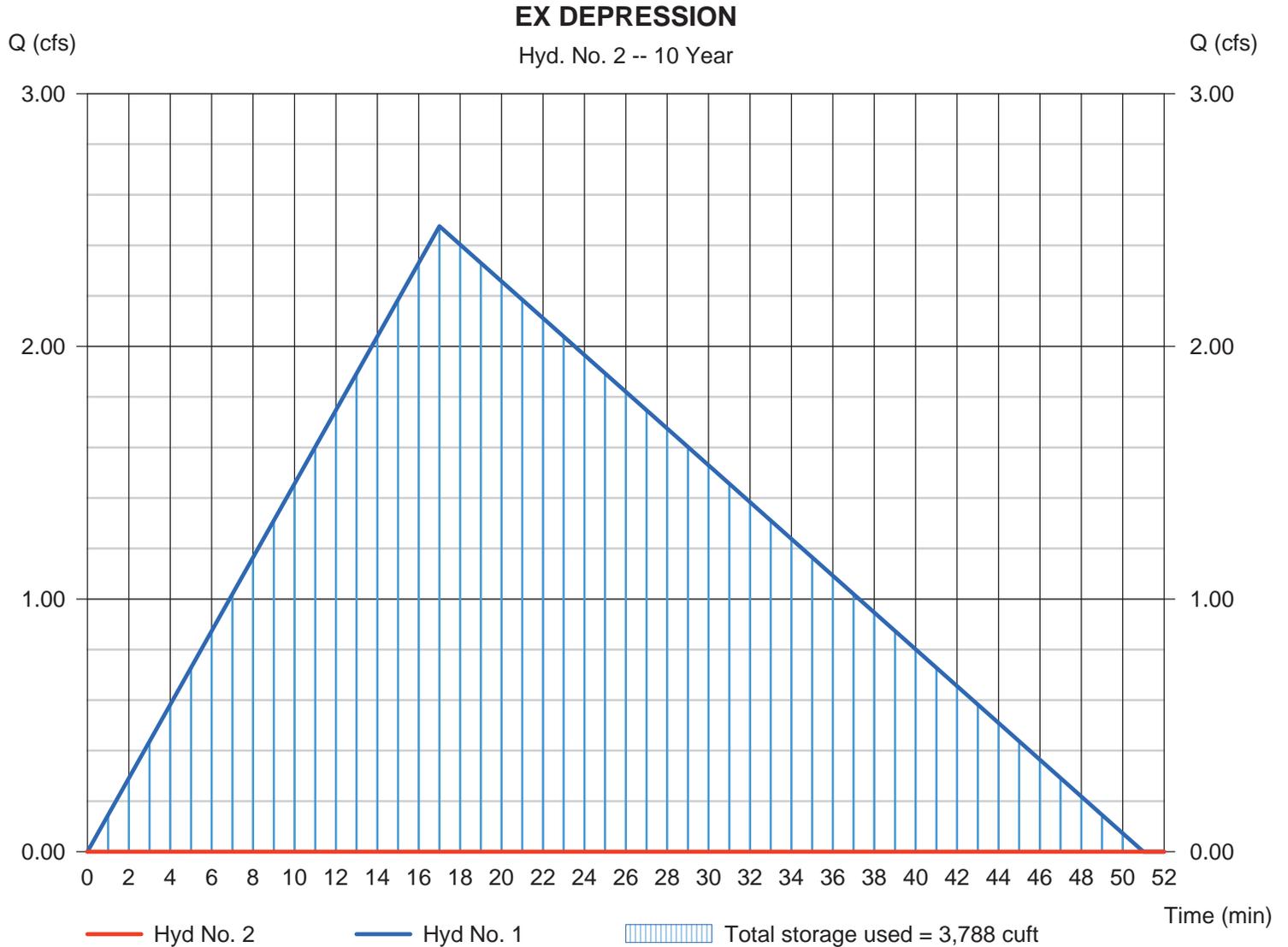
Hyd. No. 2

EX DEPRESSION

Hydrograph type = Reservoir
 Storm frequency = 10 yrs
 Time interval = 1 min
 Inflow hyd. No. = 1 - EX#1
 Reservoir name = EX DEPRESSION

Peak discharge = 0.000 cfs
 Time to peak = n/a
 Hyd. volume = 0 cuft
 Max. Elevation = 304.53 ft
 Max. Storage = 3,788 cuft

Storage Indication method used.



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

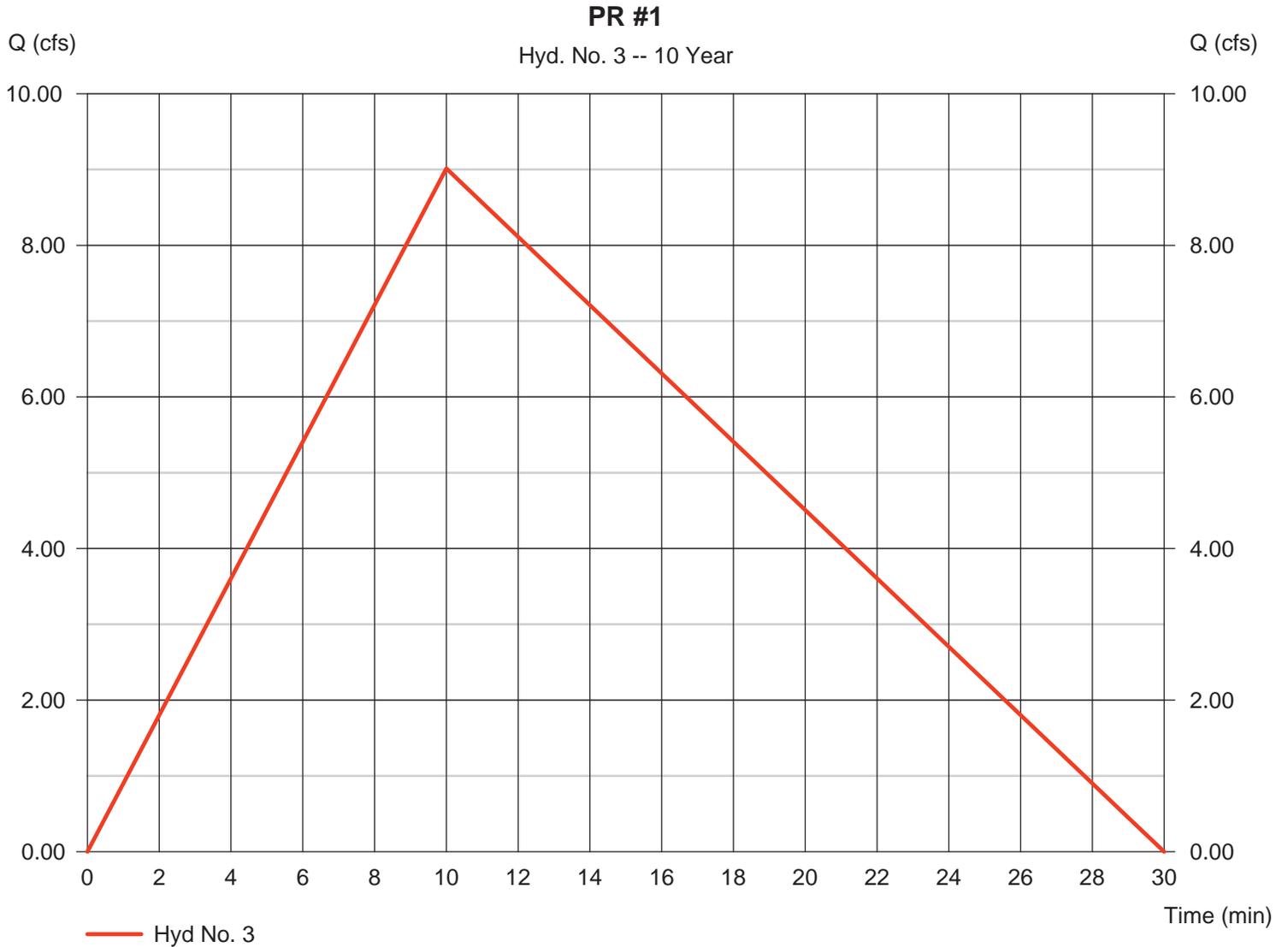
Monday, Aug 10, 2015

Hyd. No. 3

PR #1

Hydrograph type = Rational
Storm frequency = 10 yrs
Time interval = 1 min
Drainage area = 4.810 ac
Intensity = 4.805 in/hr
IDF Curve = CONNDOT.IDF

Peak discharge = 9.014 cfs
Time to peak = 10 min
Hyd. volume = 8,113 cuft
Runoff coeff. = 0.39
Tc by User = 10.00 min
Asc/Rec limb fact = 1/2



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

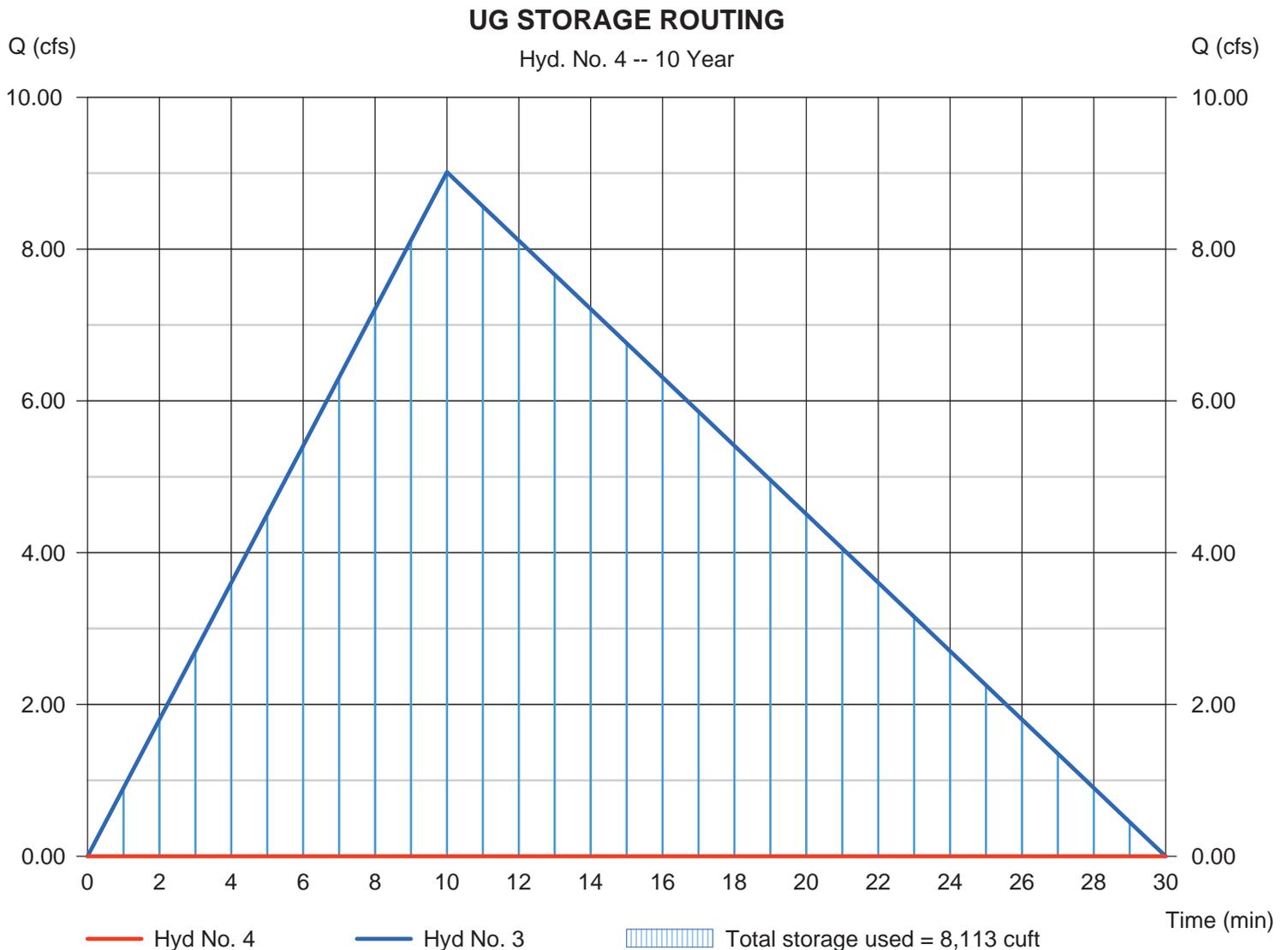
Monday, Aug 10, 2015

Hyd. No. 4

UG STORAGE ROUTING

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 3 - PR #1	Max. Elevation	= 303.09 ft
Reservoir name	= UG STORAGE + DEPRESSION	Max. Storage	= 8,113 cuft

Storage Indication method used.



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

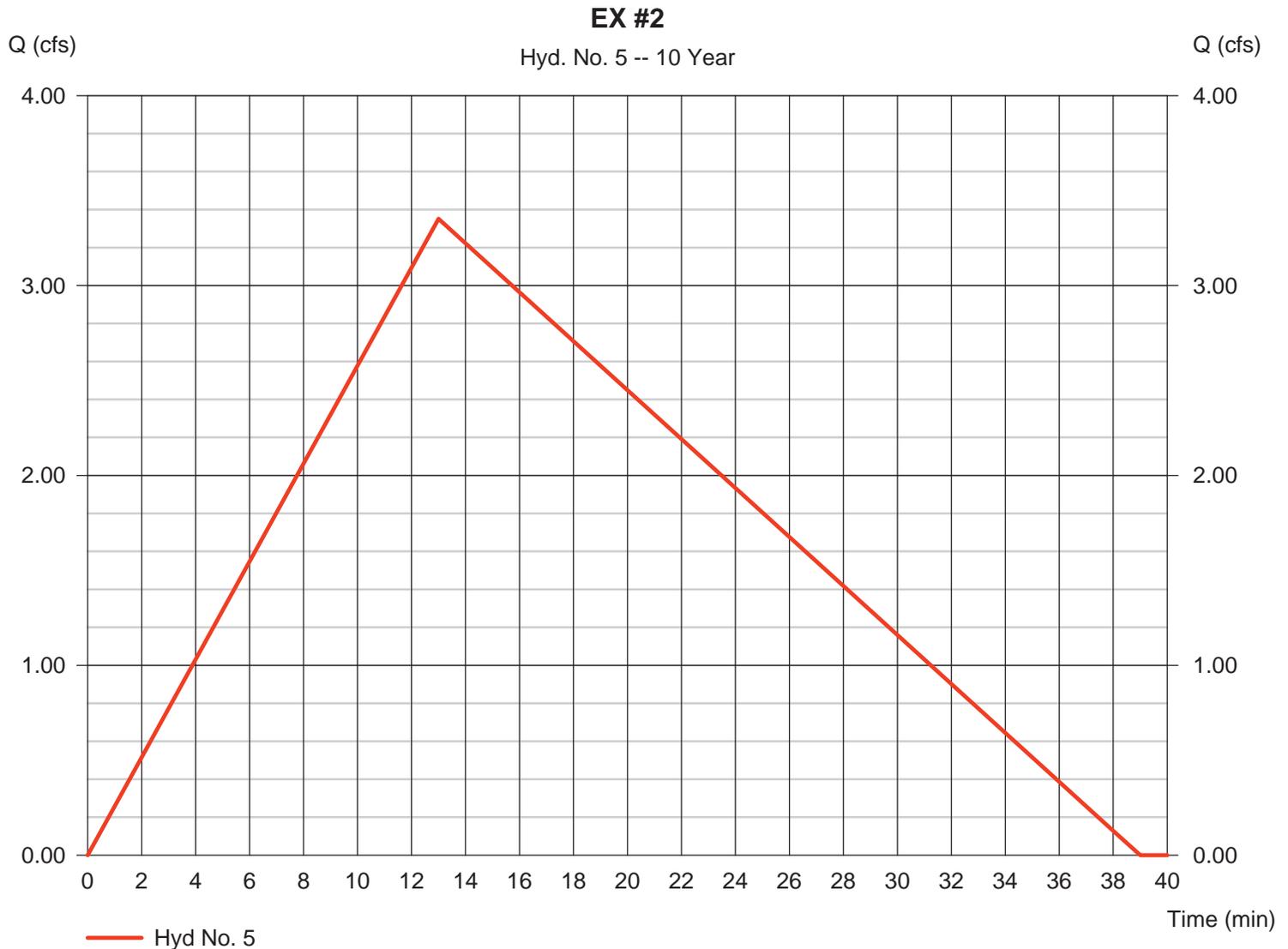
Monday, Aug 10, 2015

Hyd. No. 5

EX #2

Hydrograph type = Rational
 Storm frequency = 10 yrs
 Time interval = 1 min
 Drainage area = 3.700 ac
 Intensity = 4.313 in/hr
 IDF Curve = CONNDOT.IDF

Peak discharge = 3.351 cfs
 Time to peak = 13 min
 Hyd. volume = 3,921 cuft
 Runoff coeff. = 0.21
 Tc by TR55 = 13.00 min
 Asc/Rec limb fact = 1/2



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

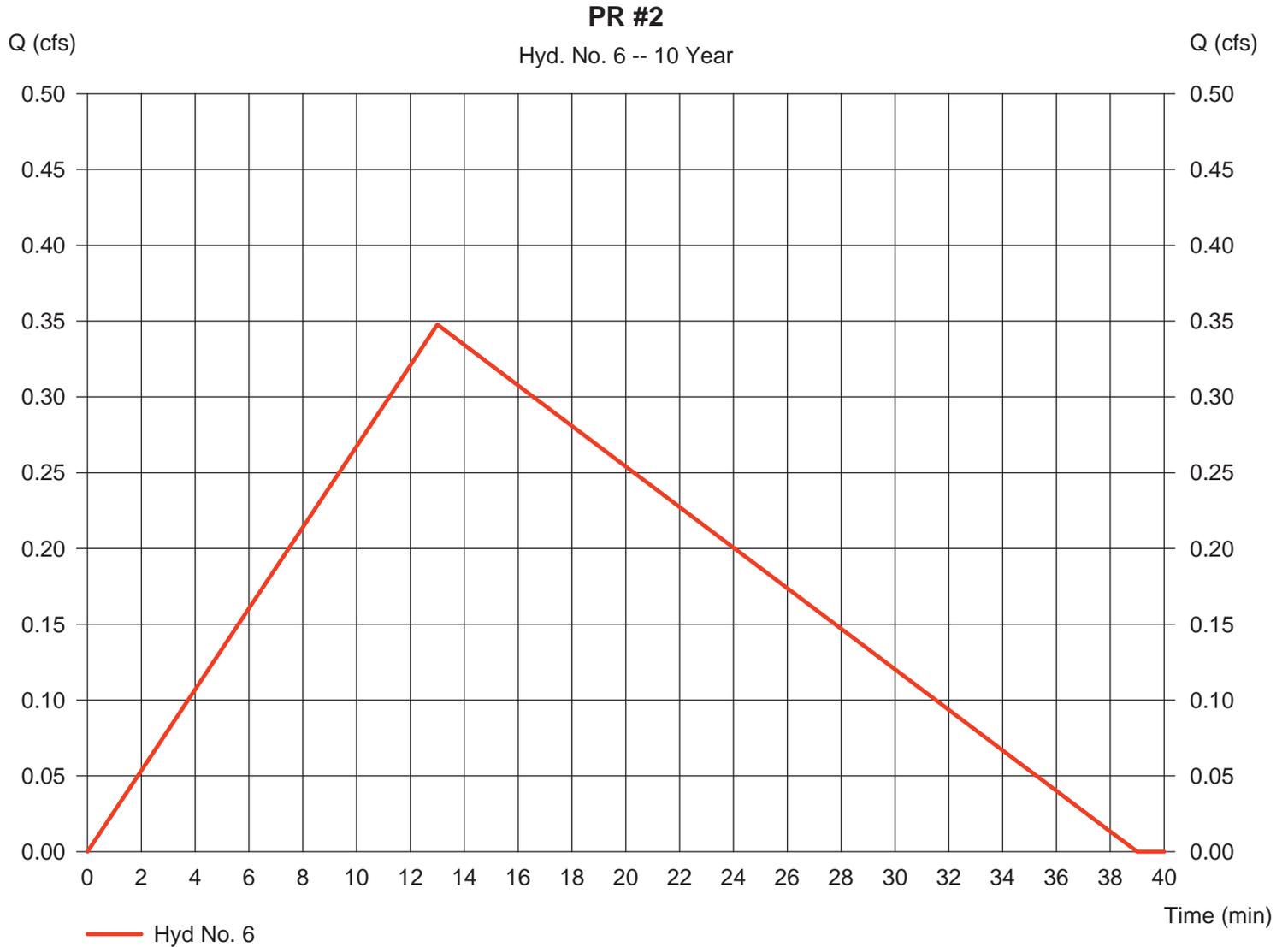
Monday, Aug 10, 2015

Hyd. No. 6

PR #2

Hydrograph type = Rational
 Storm frequency = 10 yrs
 Time interval = 1 min
 Drainage area = 0.310 ac
 Intensity = 4.313 in/hr
 IDF Curve = CONNDOT.IDF

Peak discharge = 0.348 cfs
 Time to peak = 13 min
 Hyd. volume = 407 cuft
 Runoff coeff. = 0.26
 Tc by TR55 = 13.00 min
 Asc/Rec limb fact = 1/2



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

Monday, Aug 10, 2015

Hyd. No. 7

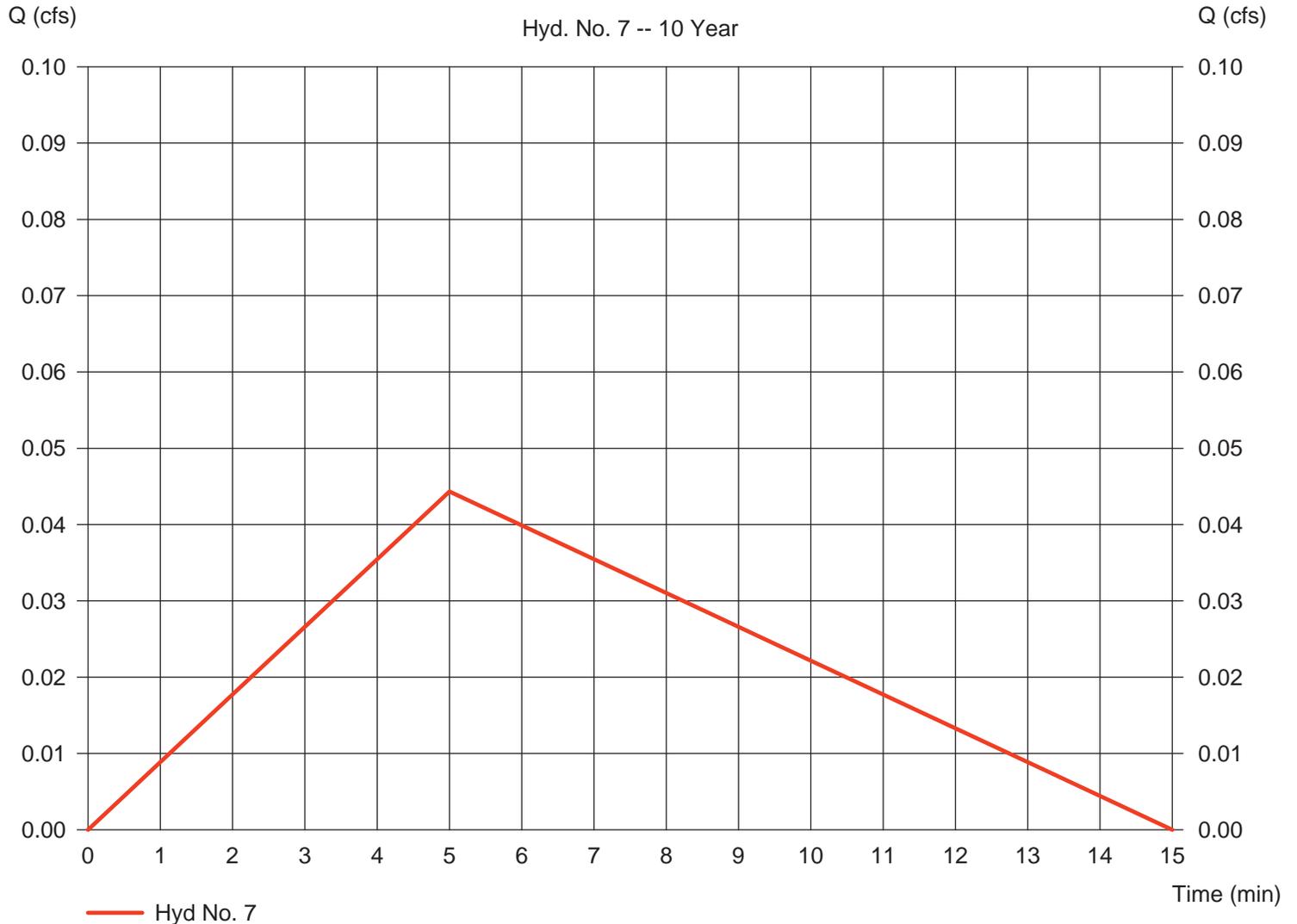
HOUSE - UNDEVELOPED

Hydrograph type = Rational
 Storm frequency = 10 yrs
 Time interval = 1 min
 Drainage area = 0.037 ac
 Intensity = 5.990 in/hr
 IDF Curve = CONNDOT.IDF

Peak discharge = 0.044 cfs
 Time to peak = 5 min
 Hyd. volume = 20 cuft
 Runoff coeff. = 0.2
 Tc by User = 5.00 min
 Asc/Rec limb fact = 1/2

HOUSE - UNDEVELOPED

Hyd. No. 7 -- 10 Year



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

Monday, Aug 10, 2015

Hyd. No. 8

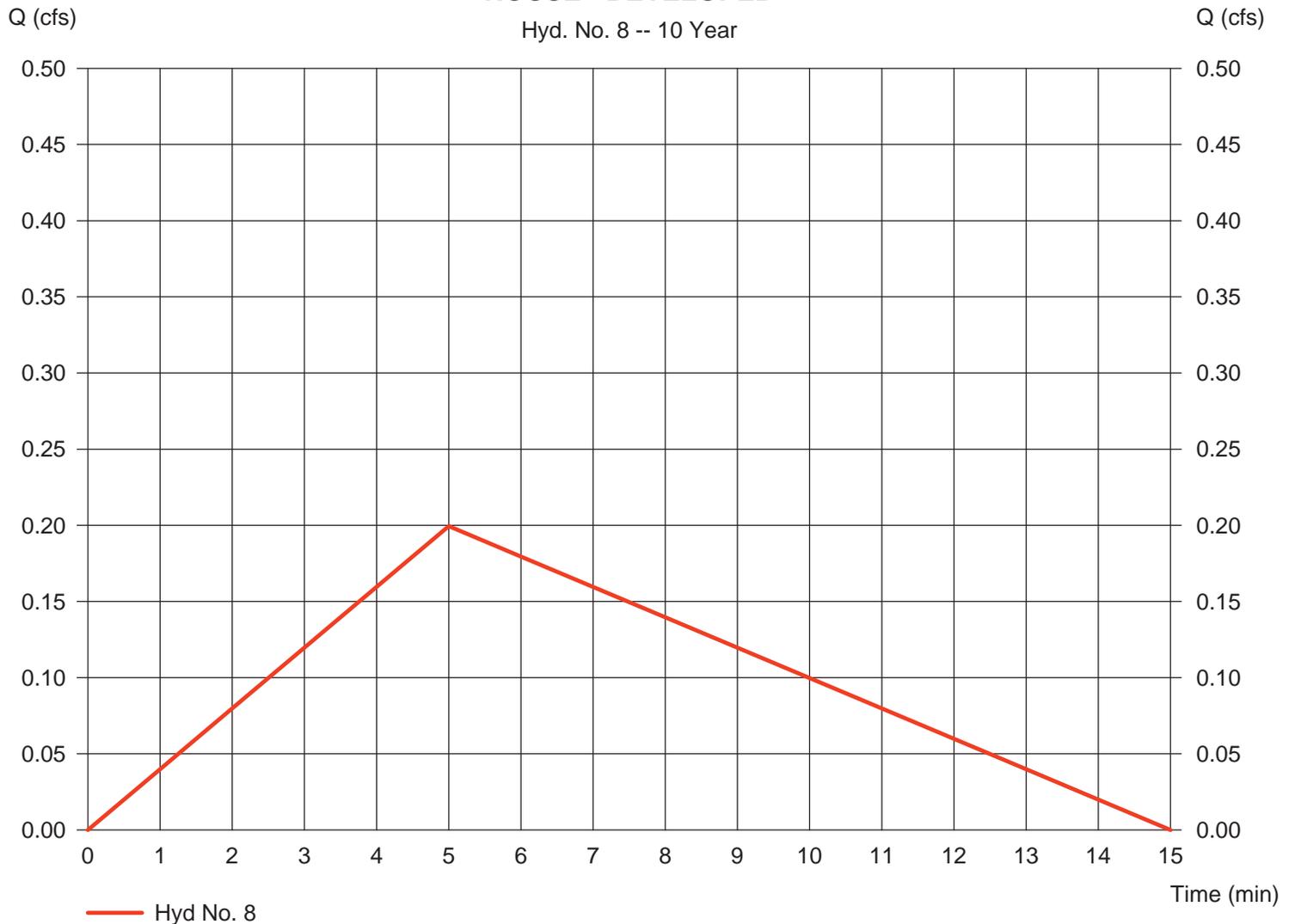
HOUSE - DEVELOPED

Hydrograph type = Rational
Storm frequency = 10 yrs
Time interval = 1 min
Drainage area = 0.037 ac
Intensity = 5.990 in/hr
IDF Curve = CONNDOT.IDF

Peak discharge = 0.199 cfs
Time to peak = 5 min
Hyd. volume = 90 cuft
Runoff coeff. = 0.9
Tc by User = 5.00 min
Asc/Rec limb fact = 1/2

HOUSE - DEVELOPED

Hyd. No. 8 -- 10 Year



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

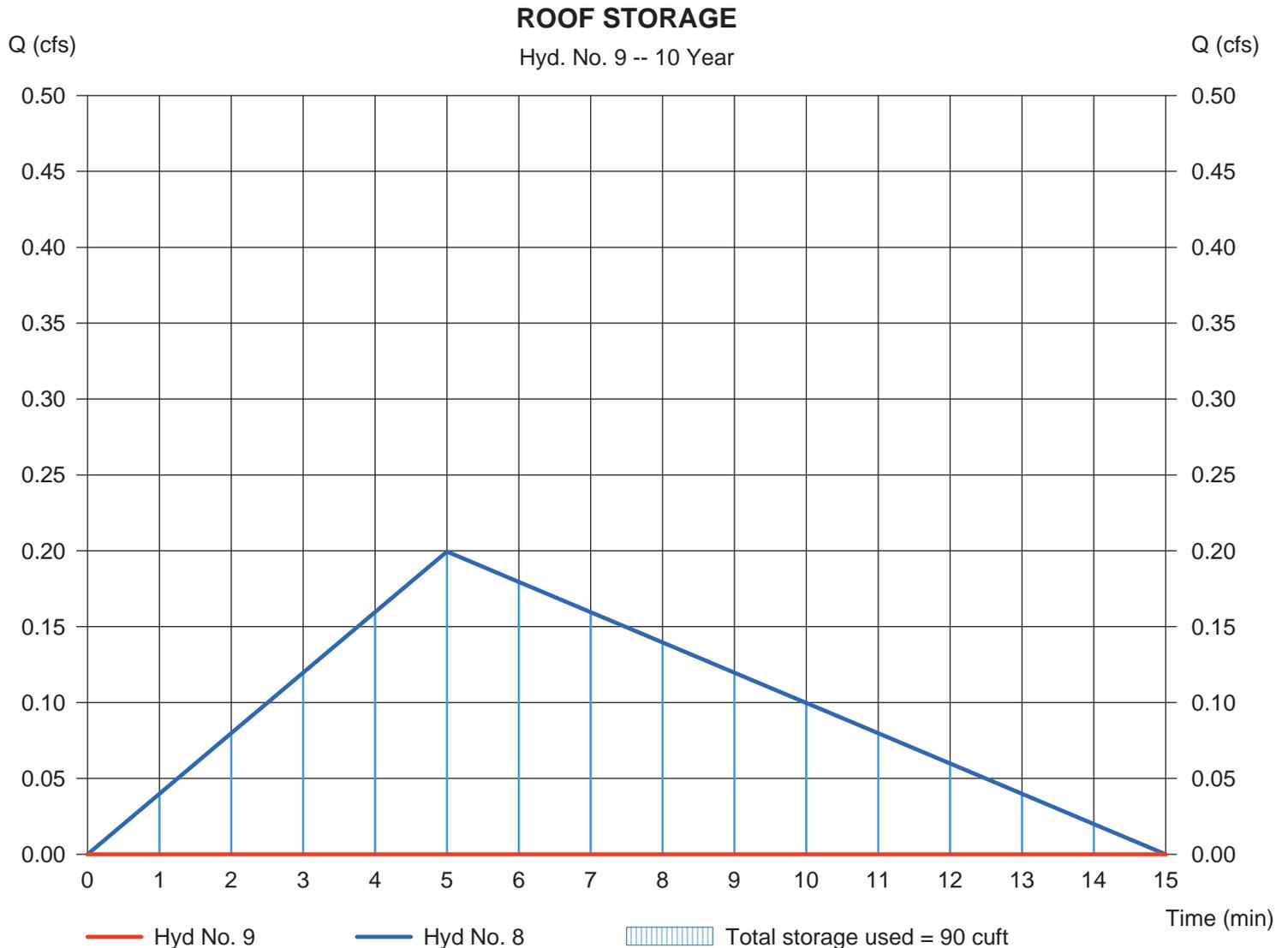
Monday, Aug 10, 2015

Hyd. No. 9

ROOF STORAGE

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 8 - HOUSE - DEVELOPED	Max. Elevation	= 100.43 ft
Reservoir name	= ROOF STORAGE	Max. Storage	= 90 cuft

Storage Indication method used.



Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.1

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	Rational	2.894	1	17	4,429	----	-----	-----	EX#1
2	Reservoir	0.203	1	49	274	1	304.64	4,347	EX DEPRESSION
3	Rational	10.36	1	10	9,323	----	-----	-----	PR #1
4	Reservoir	0.000	1	n/a	0	3	303.40	9,323	UG STORAGE ROUTING
5	Rational	3.888	1	13	4,548	----	-----	-----	EX #2
6	Rational	0.403	1	13	472	----	-----	-----	PR #2
7	Rational	0.050	1	5	22	----	-----	-----	HOUSE - UNDEVELOPED
8	Rational	0.223	1	5	100	----	-----	-----	HOUSE - DEVELOPED
9	Reservoir	0.000	1	n/a	0	8	100.51	100	ROOF STORAGE
CLIMAX.gpw					Return Period: 25 Year			Monday, Aug 10, 2015	

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

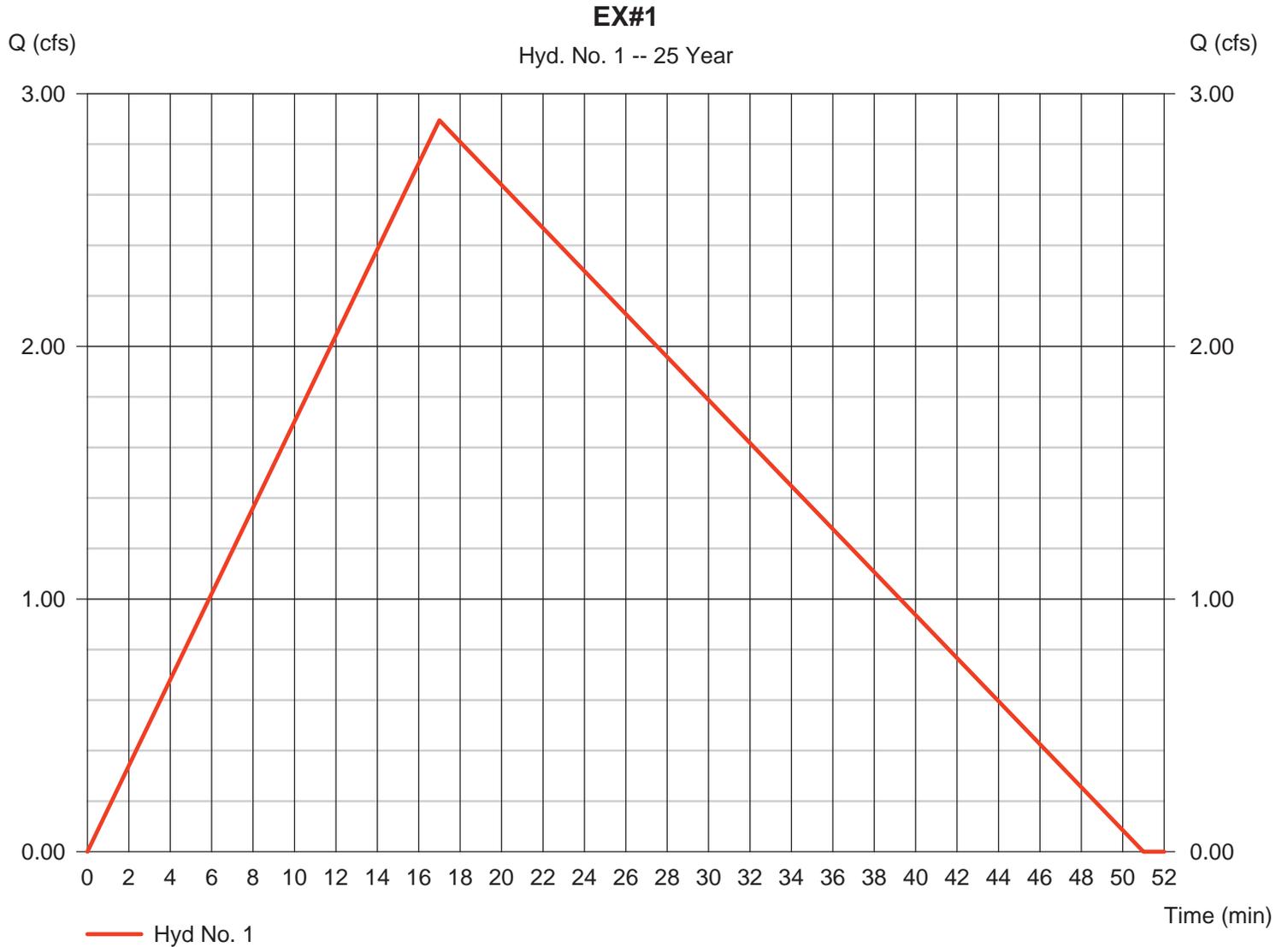
Monday, Aug 10, 2015

Hyd. No. 1

EX#1

Hydrograph type = Rational
Storm frequency = 25 yrs
Time interval = 1 min
Drainage area = 1.970 ac
Intensity = 4.452 in/hr
IDF Curve = CONNDOT.IDF

Peak discharge = 2.894 cfs
Time to peak = 17 min
Hyd. volume = 4,429 cuft
Runoff coeff. = 0.33
Tc by TR55 = 17.00 min
Asc/Rec limb fact = 1/2



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

Monday, Aug 10, 2015

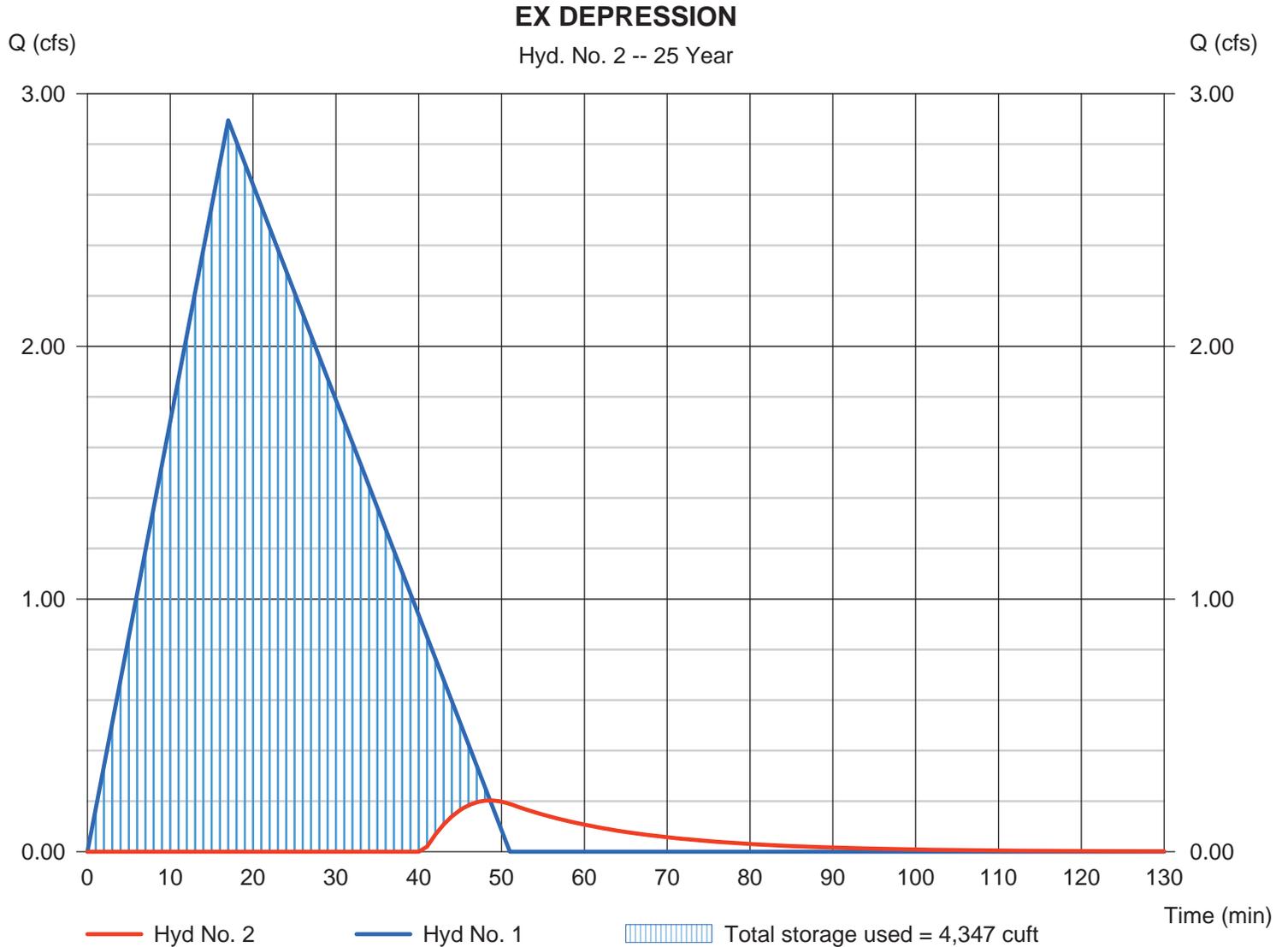
Hyd. No. 2

EX DEPRESSION

Hydrograph type = Reservoir
 Storm frequency = 25 yrs
 Time interval = 1 min
 Inflow hyd. No. = 1 - EX#1
 Reservoir name = EX DEPRESSION

Peak discharge = 0.203 cfs
 Time to peak = 49 min
 Hyd. volume = 274 cuft
 Max. Elevation = 304.64 ft
 Max. Storage = 4,347 cuft

Storage Indication method used.



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

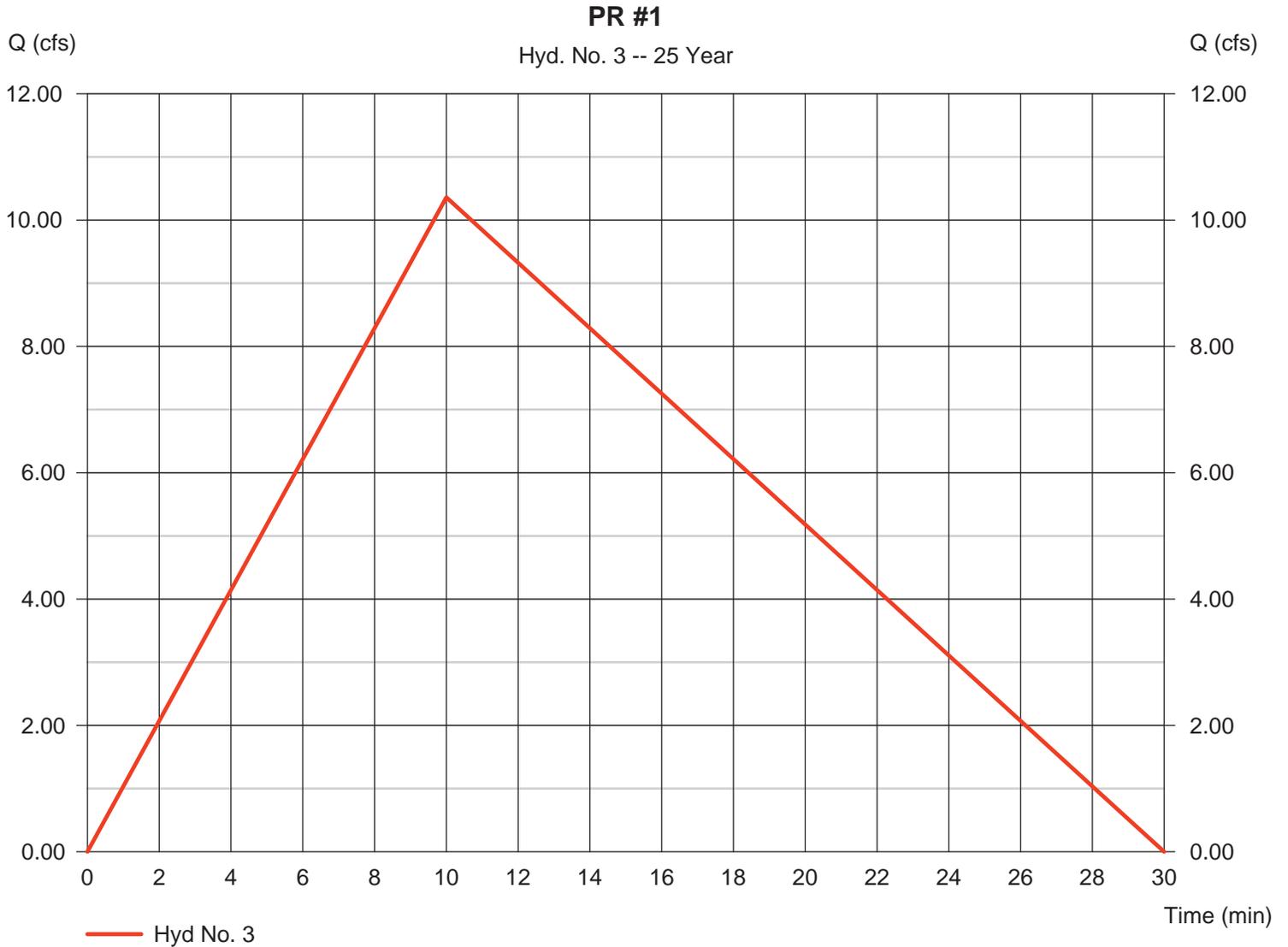
Monday, Aug 10, 2015

Hyd. No. 3

PR #1

Hydrograph type = Rational
Storm frequency = 25 yrs
Time interval = 1 min
Drainage area = 4.810 ac
Intensity = 5.522 in/hr
IDF Curve = CONNDOT.IDF

Peak discharge = 10.36 cfs
Time to peak = 10 min
Hyd. volume = 9,323 cuft
Runoff coeff. = 0.39
Tc by User = 10.00 min
Asc/Rec limb fact = 1/2



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

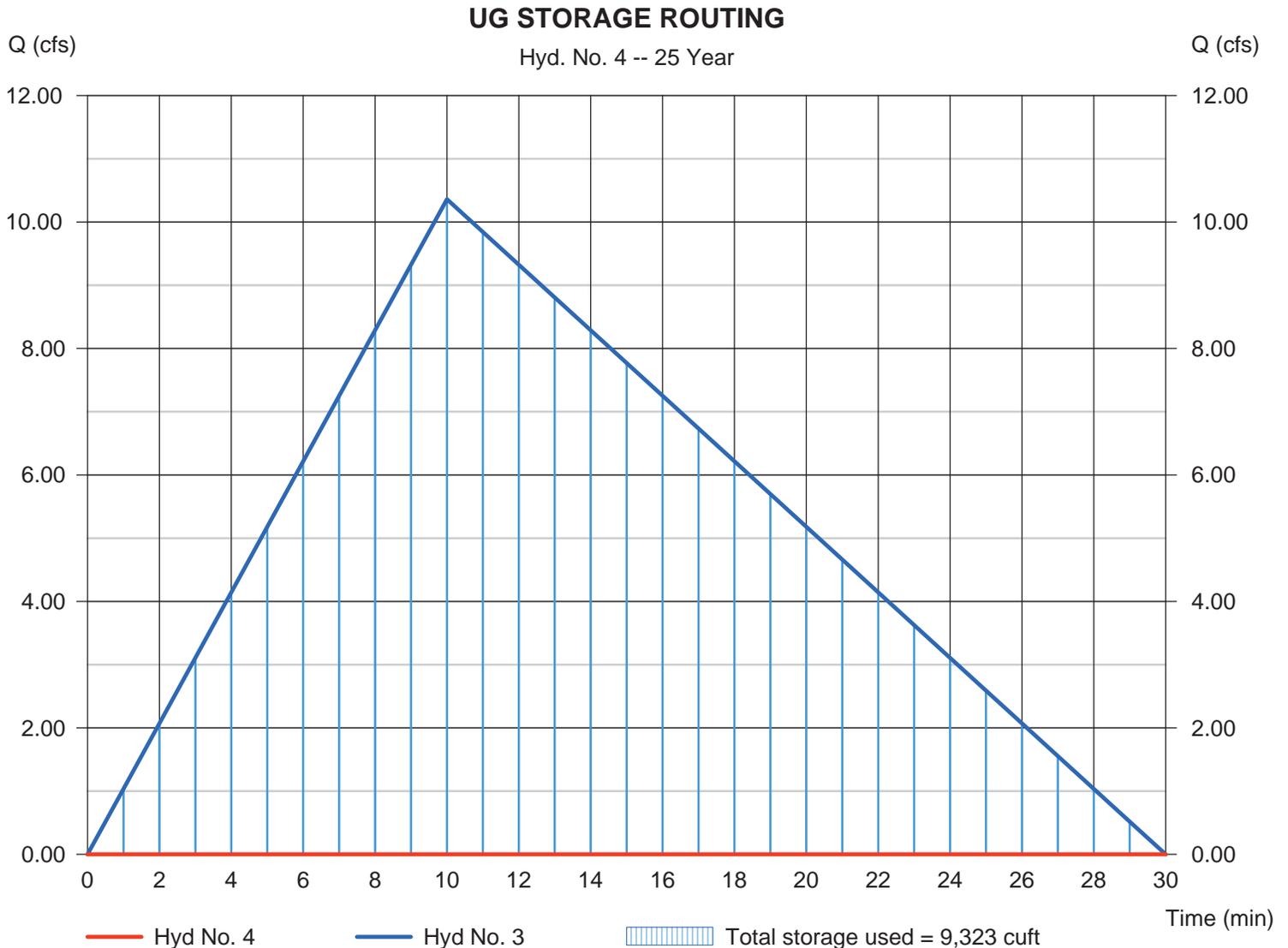
Monday, Aug 10, 2015

Hyd. No. 4

UG STORAGE ROUTING

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 25 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 3 - PR #1	Max. Elevation	= 303.40 ft
Reservoir name	= UG STORAGE + DEPRESSION	Max. Storage	= 9,323 cuft

Storage Indication method used.



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

Monday, Aug 10, 2015

Hyd. No. 5

EX #2

Hydrograph type = Rational
Storm frequency = 25 yrs
Time interval = 1 min
Drainage area = 3.700 ac
Intensity = 5.003 in/hr
IDF Curve = CONNDOT.IDF

Peak discharge = 3.888 cfs
Time to peak = 13 min
Hyd. volume = 4,548 cuft
Runoff coeff. = 0.21
Tc by TR55 = 13.00 min
Asc/Rec limb fact = 1/2



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

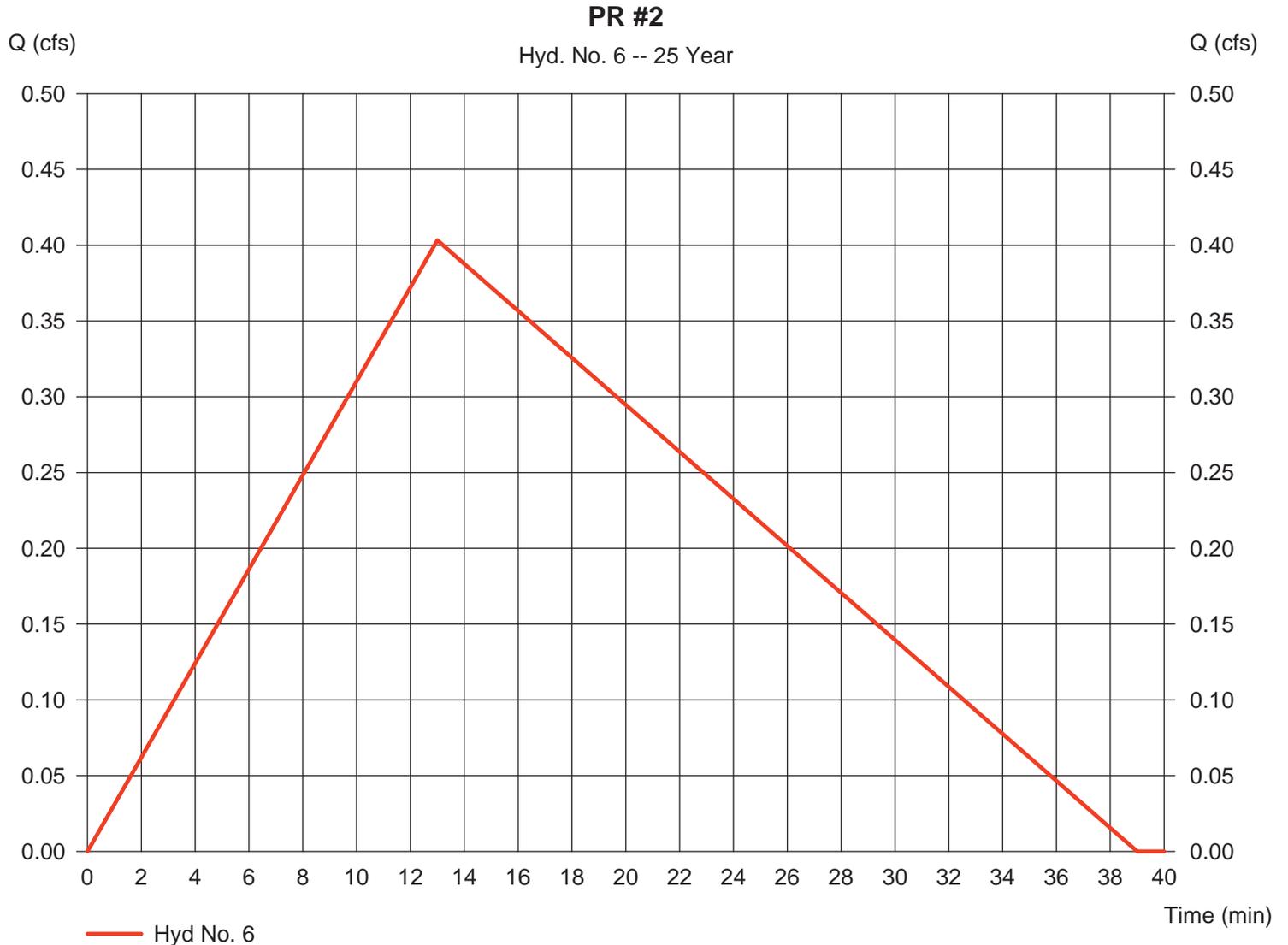
Monday, Aug 10, 2015

Hyd. No. 6

PR #2

Hydrograph type = Rational
 Storm frequency = 25 yrs
 Time interval = 1 min
 Drainage area = 0.310 ac
 Intensity = 5.003 in/hr
 IDF Curve = CONNDOT.IDF

Peak discharge = 0.403 cfs
 Time to peak = 13 min
 Hyd. volume = 472 cuft
 Runoff coeff. = 0.26
 Tc by TR55 = 13.00 min
 Asc/Rec limb fact = 1/2



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

Monday, Aug 10, 2015

Hyd. No. 7

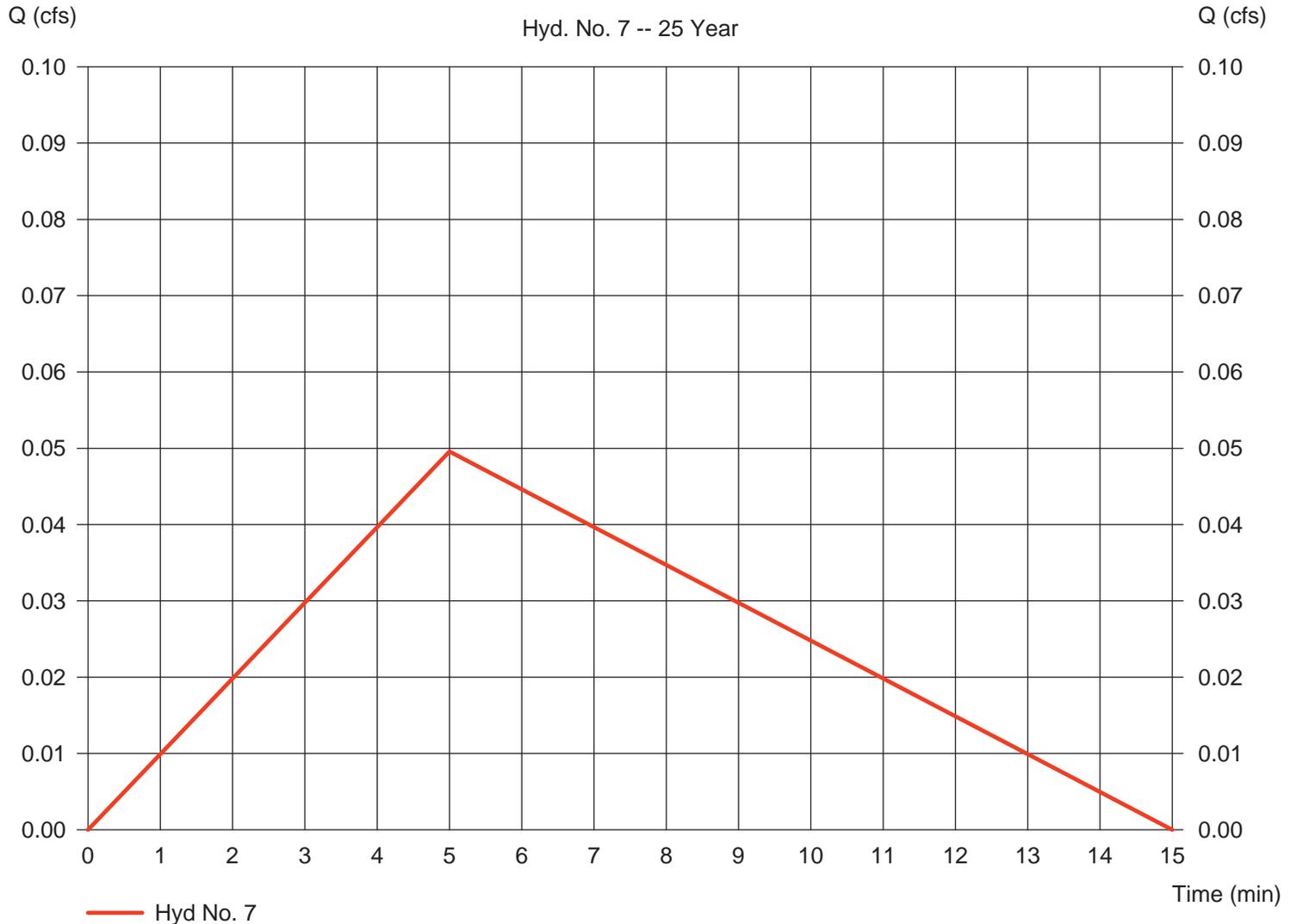
HOUSE - UNDEVELOPED

Hydrograph type = Rational
 Storm frequency = 25 yrs
 Time interval = 1 min
 Drainage area = 0.037 ac
 Intensity = 6.700 in/hr
 IDF Curve = CONNDOT.IDF

Peak discharge = 0.050 cfs
 Time to peak = 5 min
 Hyd. volume = 22 cuft
 Runoff coeff. = 0.2
 Tc by User = 5.00 min
 Asc/Rec limb fact = 1/2

HOUSE - UNDEVELOPED

Hyd. No. 7 -- 25 Year



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

Monday, Aug 10, 2015

Hyd. No. 8

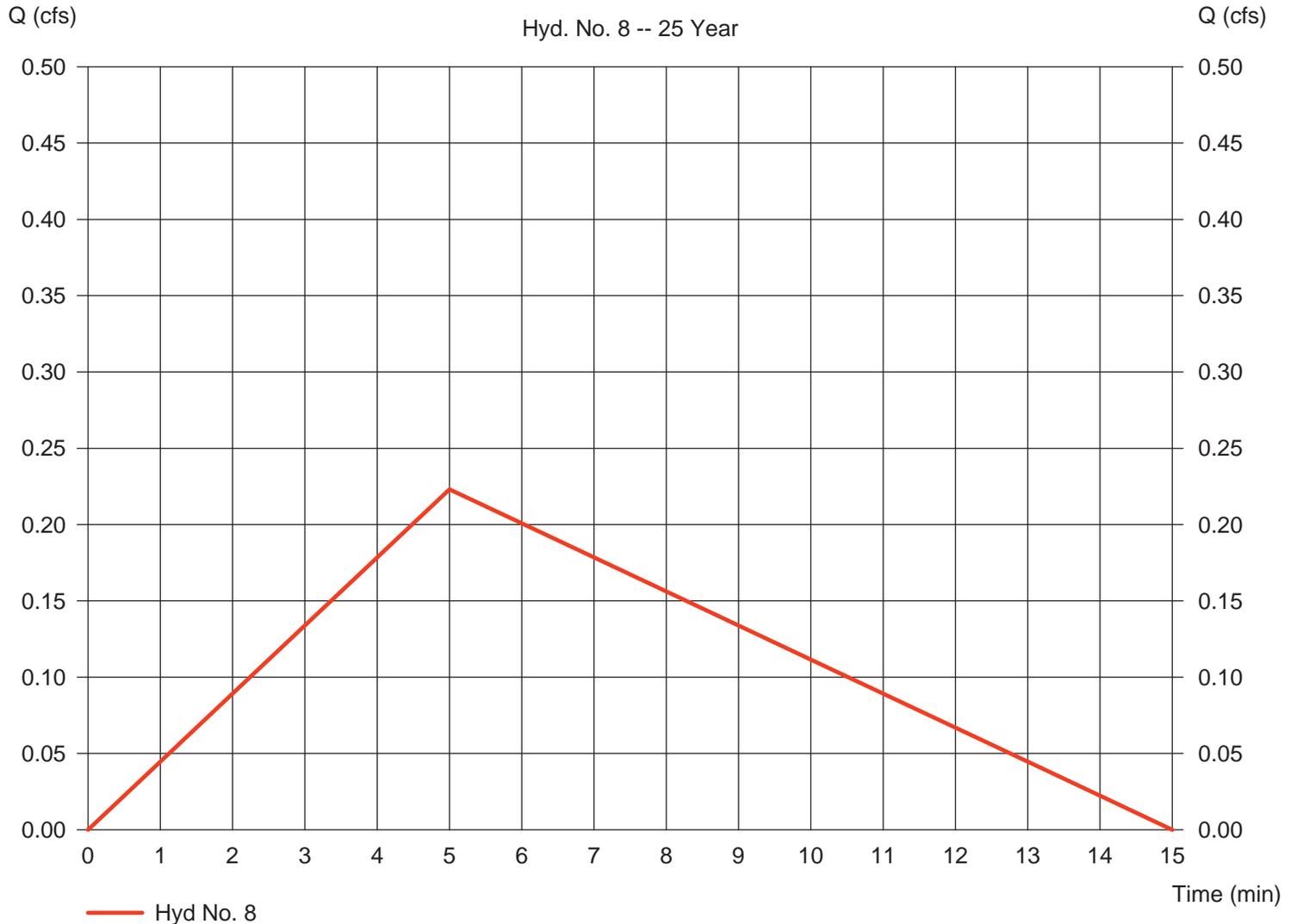
HOUSE - DEVELOPED

Hydrograph type = Rational
Storm frequency = 25 yrs
Time interval = 1 min
Drainage area = 0.037 ac
Intensity = 6.700 in/hr
IDF Curve = CONNDOT.IDF

Peak discharge = 0.223 cfs
Time to peak = 5 min
Hyd. volume = 100 cuft
Runoff coeff. = 0.9
Tc by User = 5.00 min
Asc/Rec limb fact = 1/2

HOUSE - DEVELOPED

Hyd. No. 8 -- 25 Year



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

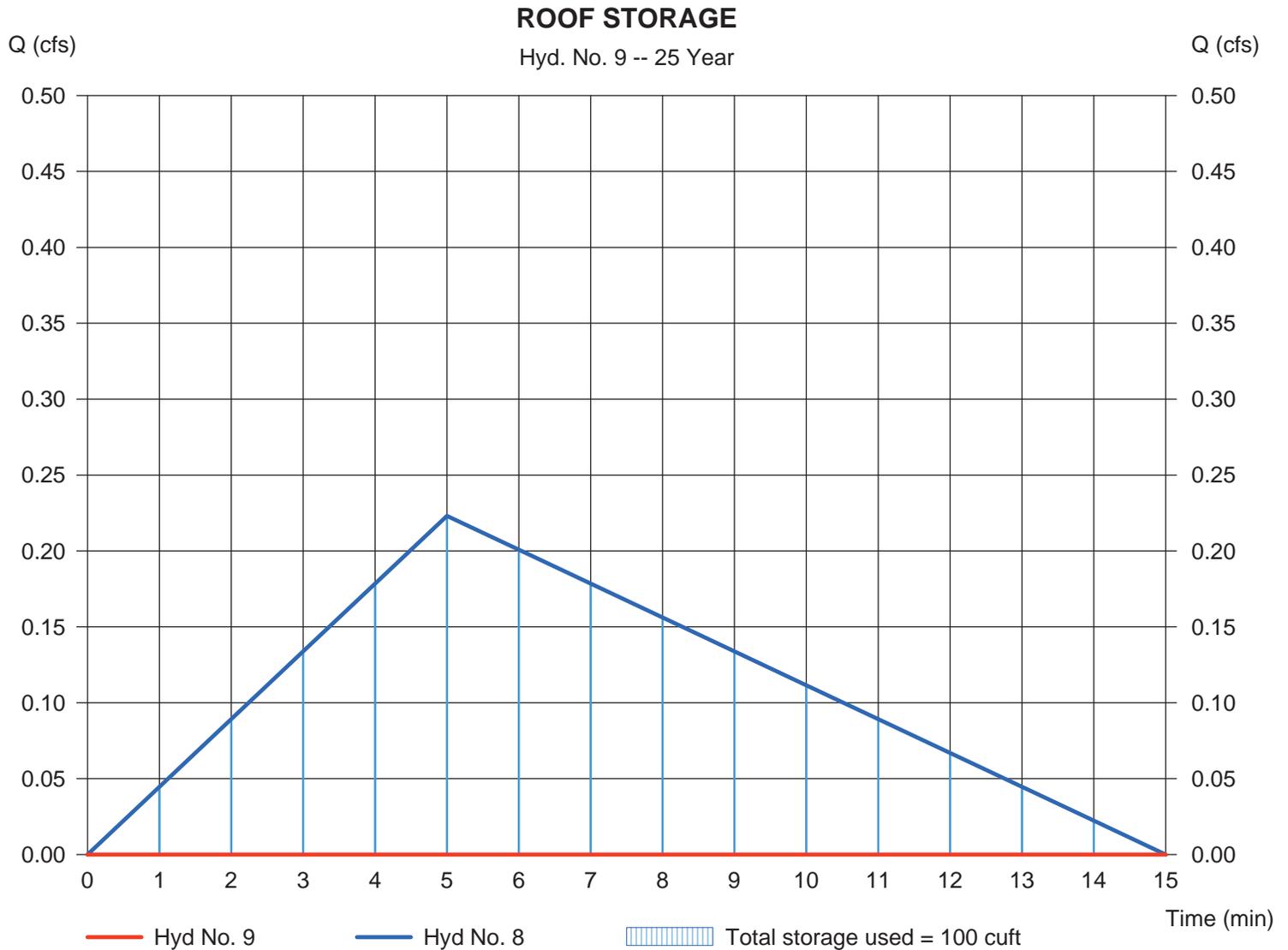
Monday, Aug 10, 2015

Hyd. No. 9

ROOF STORAGE

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 25 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 8 - HOUSE - DEVELOPED	Max. Elevation	= 100.51 ft
Reservoir name	= ROOF STORAGE	Max. Storage	= 100 cuft

Storage Indication method used.



Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.1

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	Rational	3.506	1	17	5,363	----	-----	-----	EX#1	
2	Reservoir	0.908	1	42	1,209	1	304.71	4,745	EX DEPRESSION	
3	Rational	12.29	1	10	11,065	----	-----	-----	PR #1	
4	Reservoir	0.406	1	29	162	3	304.12	11,013	UG STORAGE ROUTING	
5	Rational	4.658	1	13	5,450	----	-----	-----	EX #2	
6	Rational	0.483	1	13	565	----	-----	-----	PR #2	
7	Rational	0.058	1	5	26	----	-----	-----	HOUSE - UNDEVELOPED	
8	Rational	0.260	1	5	117	----	-----	-----	HOUSE - DEVELOPED	
9	Reservoir	0.000	1	n/a	0	8	100.64	117	ROOF STORAGE	
CLIMAX.gpw					Return Period: 100 Year			Monday, Aug 10, 2015		

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

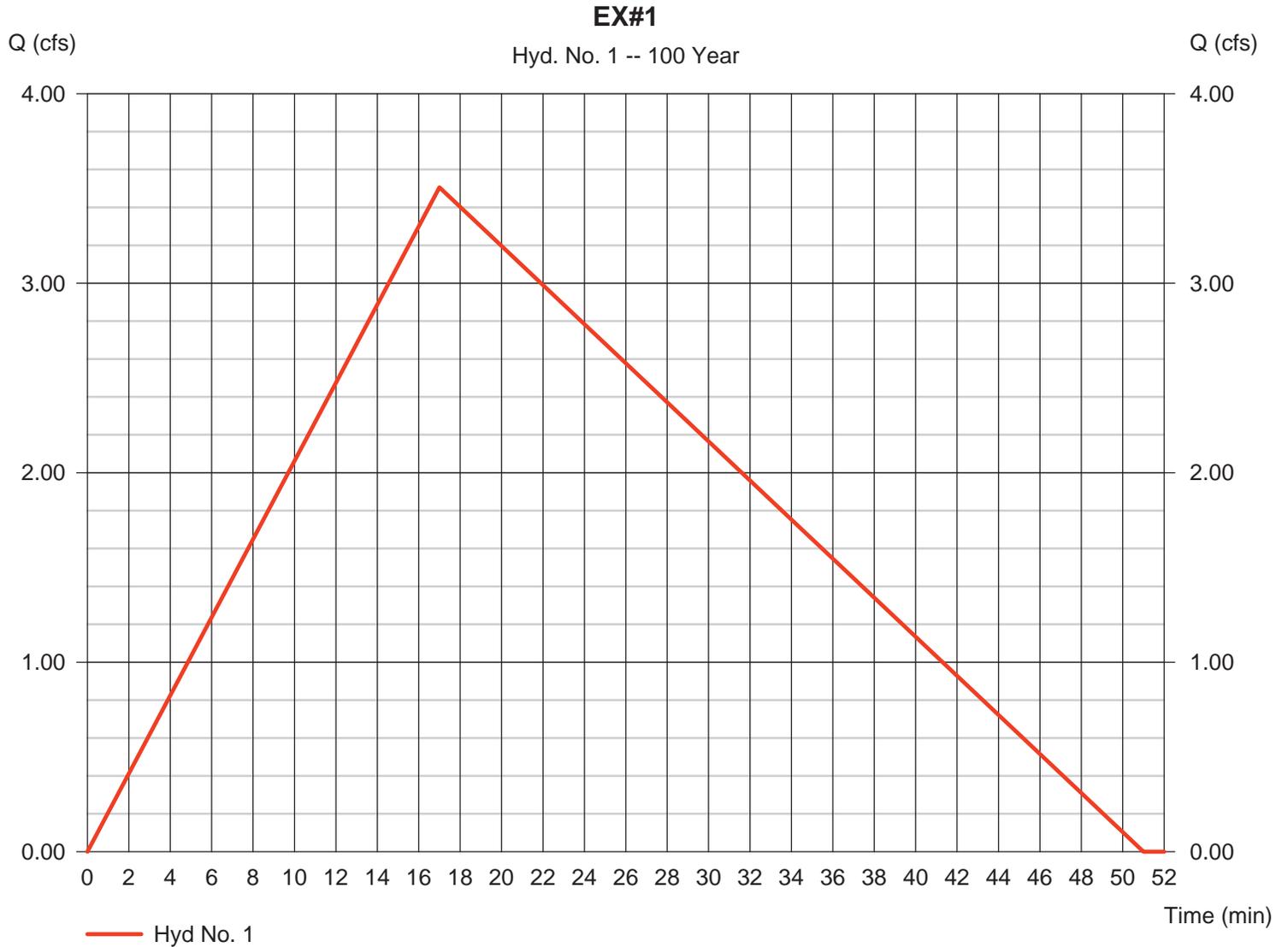
Monday, Aug 10, 2015

Hyd. No. 1

EX#1

Hydrograph type = Rational
 Storm frequency = 100 yrs
 Time interval = 1 min
 Drainage area = 1.970 ac
 Intensity = 5.392 in/hr
 IDF Curve = CONNDOT.IDF

Peak discharge = 3.506 cfs
 Time to peak = 17 min
 Hyd. volume = 5,363 cuft
 Runoff coeff. = 0.33
 Tc by TR55 = 17.00 min
 Asc/Rec limb fact = 1/2



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

Monday, Aug 10, 2015

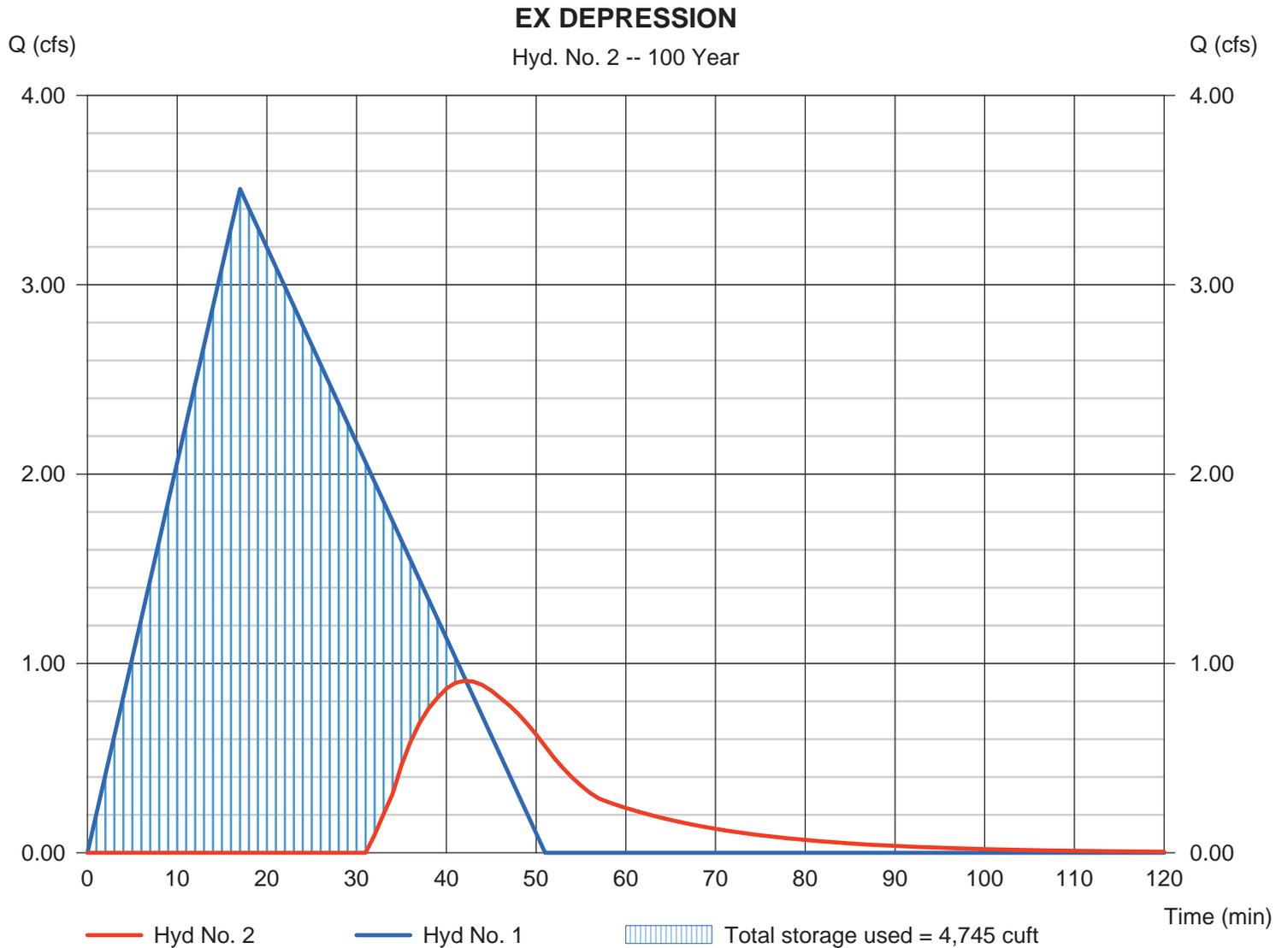
Hyd. No. 2

EX DEPRESSION

Hydrograph type = Reservoir
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyd. No. = 1 - EX#1
 Reservoir name = EX DEPRESSION

Peak discharge = 0.908 cfs
 Time to peak = 42 min
 Hyd. volume = 1,209 cuft
 Max. Elevation = 304.71 ft
 Max. Storage = 4,745 cuft

Storage Indication method used.



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

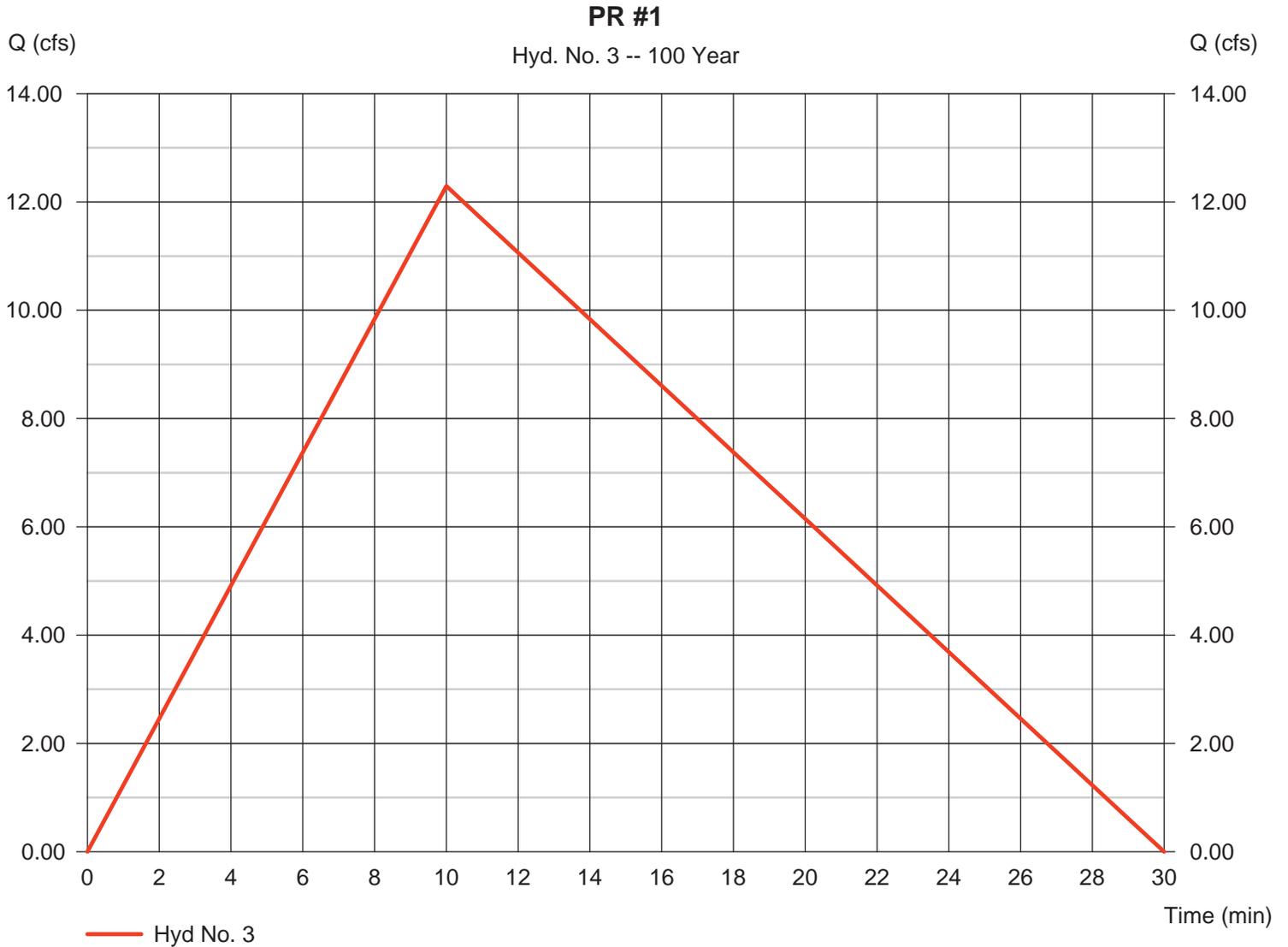
Monday, Aug 10, 2015

Hyd. No. 3

PR #1

Hydrograph type = Rational
 Storm frequency = 100 yrs
 Time interval = 1 min
 Drainage area = 4.810 ac
 Intensity = 6.554 in/hr
 IDF Curve = CONNDOT.IDF

Peak discharge = 12.29 cfs
 Time to peak = 10 min
 Hyd. volume = 11,065 cuft
 Runoff coeff. = 0.39
 Tc by User = 10.00 min
 Asc/Rec limb fact = 1/2



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

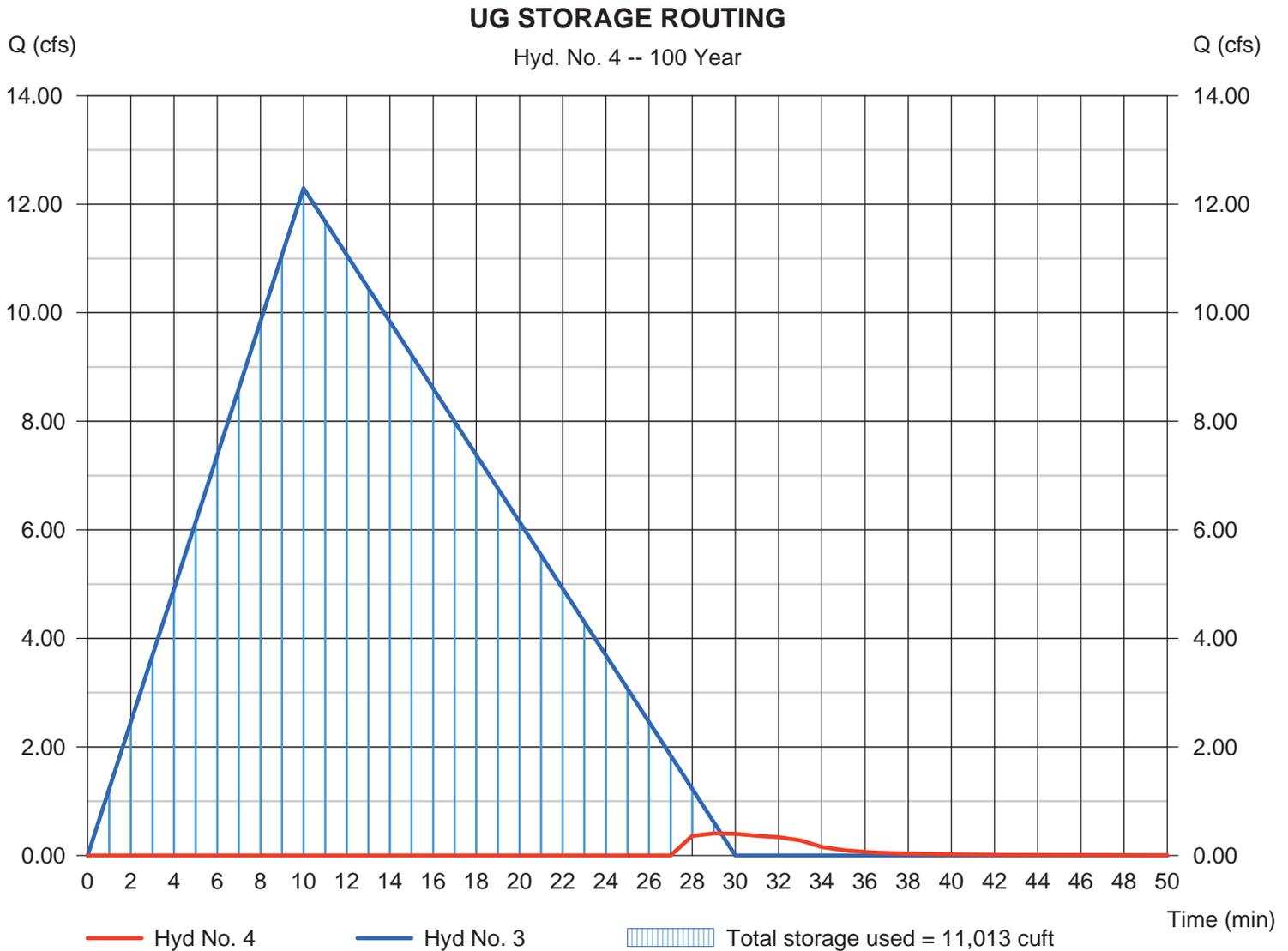
Monday, Aug 10, 2015

Hyd. No. 4

UG STORAGE ROUTING

Hydrograph type	= Reservoir	Peak discharge	= 0.406 cfs
Storm frequency	= 100 yrs	Time to peak	= 29 min
Time interval	= 1 min	Hyd. volume	= 162 cuft
Inflow hyd. No.	= 3 - PR #1	Max. Elevation	= 304.12 ft
Reservoir name	= UG STORAGE + DEPRESSION	Max. Storage	= 11,013 cuft

Storage Indication method used.



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

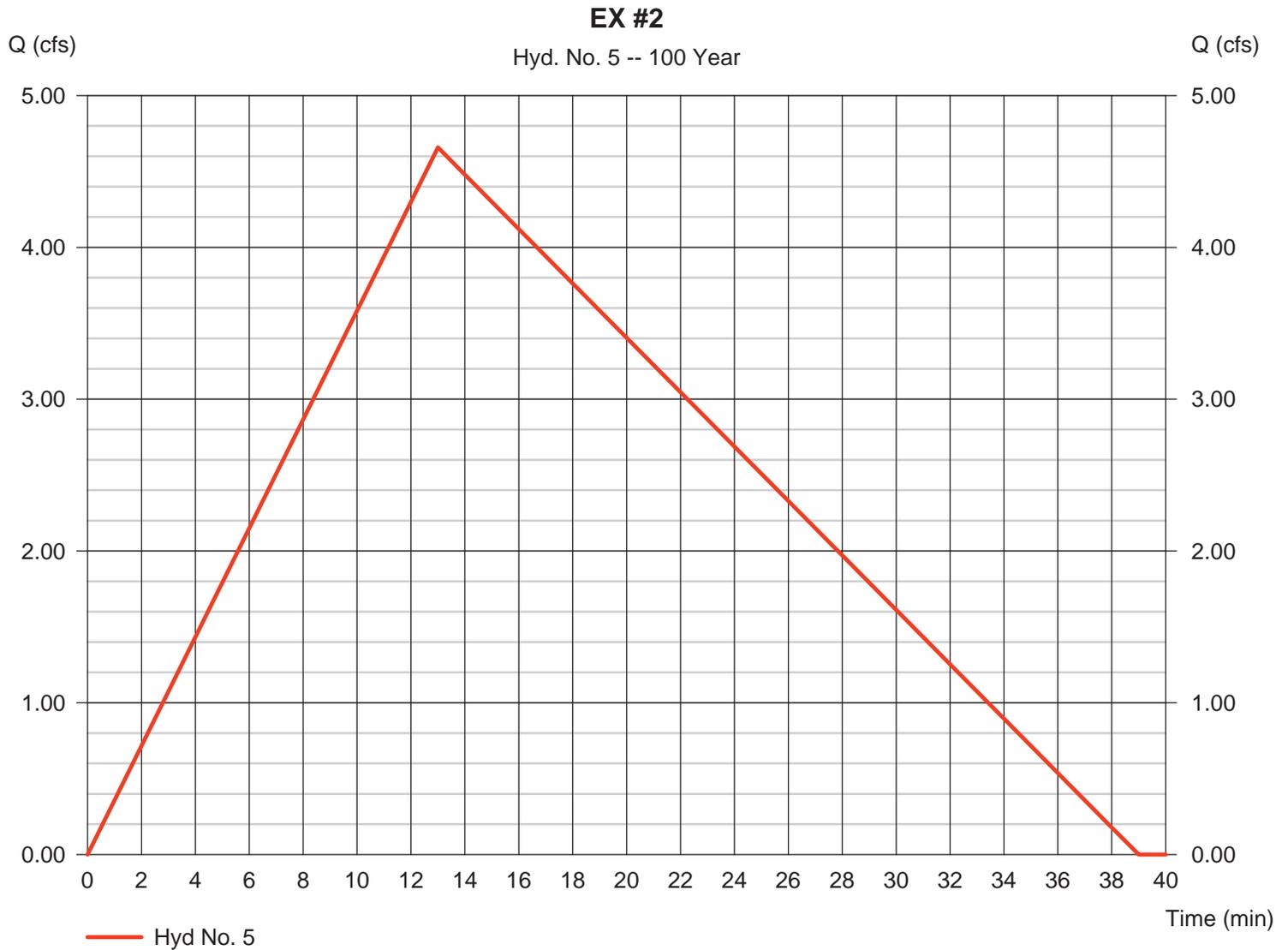
Monday, Aug 10, 2015

Hyd. No. 5

EX #2

Hydrograph type = Rational
 Storm frequency = 100 yrs
 Time interval = 1 min
 Drainage area = 3.700 ac
 Intensity = 5.995 in/hr
 IDF Curve = CONNDOT.IDF

Peak discharge = 4.658 cfs
 Time to peak = 13 min
 Hyd. volume = 5,450 cuft
 Runoff coeff. = 0.21
 Tc by TR55 = 13.00 min
 Asc/Rec limb fact = 1/2



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

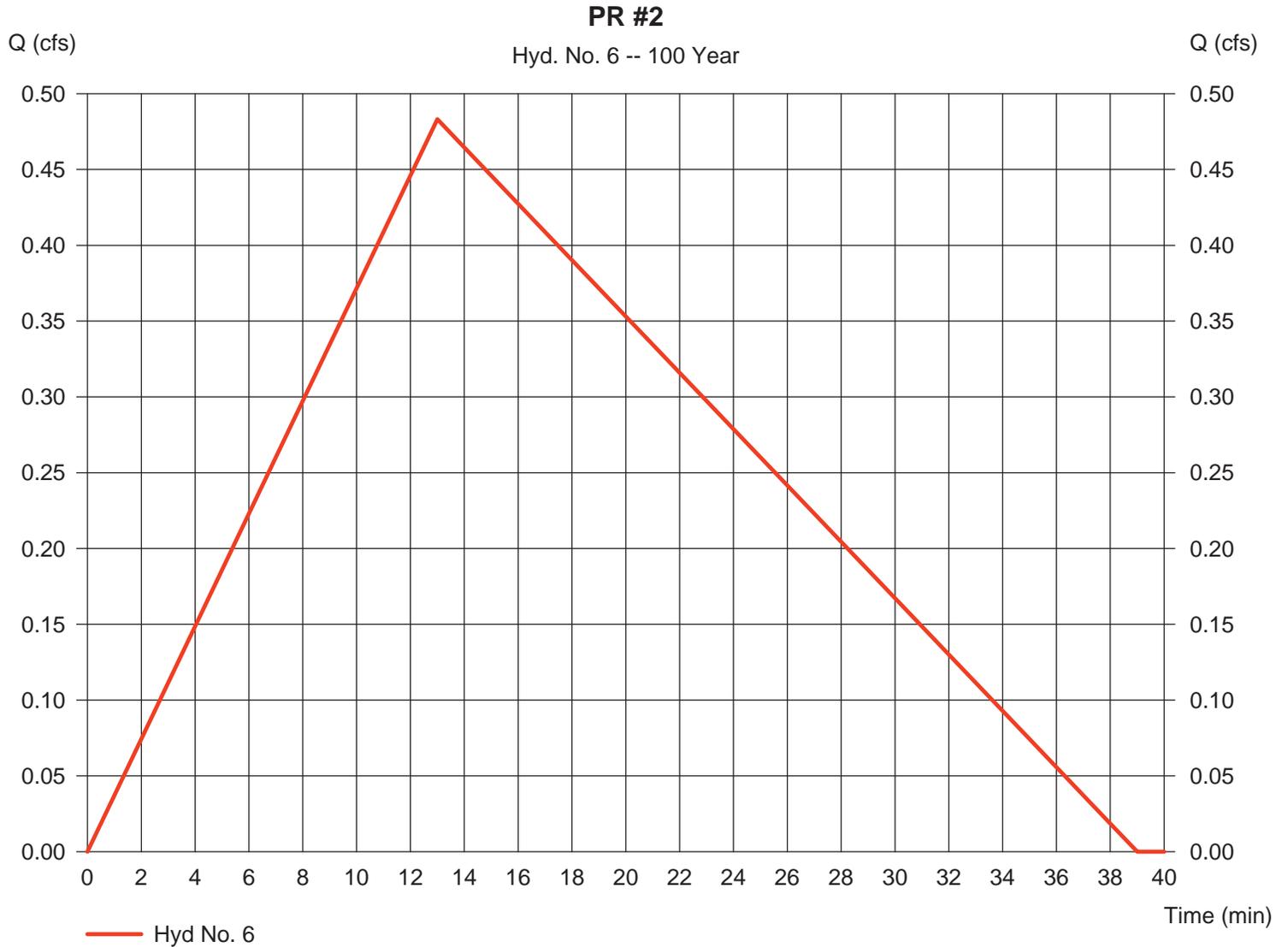
Monday, Aug 10, 2015

Hyd. No. 6

PR #2

Hydrograph type = Rational
 Storm frequency = 100 yrs
 Time interval = 1 min
 Drainage area = 0.310 ac
 Intensity = 5.995 in/hr
 IDF Curve = CONNDOT.IDF

Peak discharge = 0.483 cfs
 Time to peak = 13 min
 Hyd. volume = 565 cuft
 Runoff coeff. = 0.26
 Tc by TR55 = 13.00 min
 Asc/Rec limb fact = 1/2



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

Monday, Aug 10, 2015

Hyd. No. 7

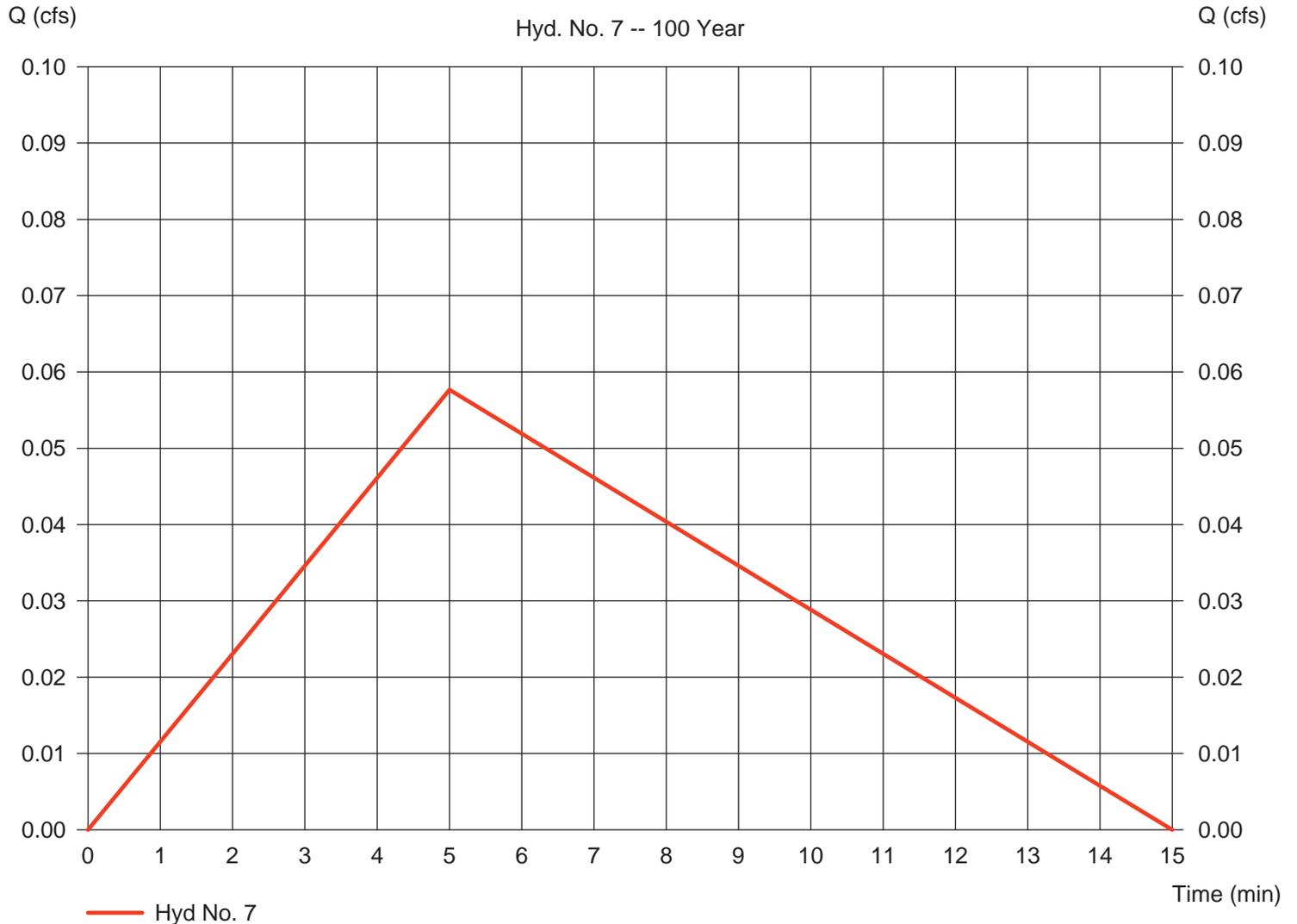
HOUSE - UNDEVELOPED

Hydrograph type = Rational
 Storm frequency = 100 yrs
 Time interval = 1 min
 Drainage area = 0.037 ac
 Intensity = 7.794 in/hr
 IDF Curve = CONNDOT.IDF

Peak discharge = 0.058 cfs
 Time to peak = 5 min
 Hyd. volume = 26 cuft
 Runoff coeff. = 0.2
 Tc by User = 5.00 min
 Asc/Rec limb fact = 1/2

HOUSE - UNDEVELOPED

Hyd. No. 7 -- 100 Year



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

Monday, Aug 10, 2015

Hyd. No. 8

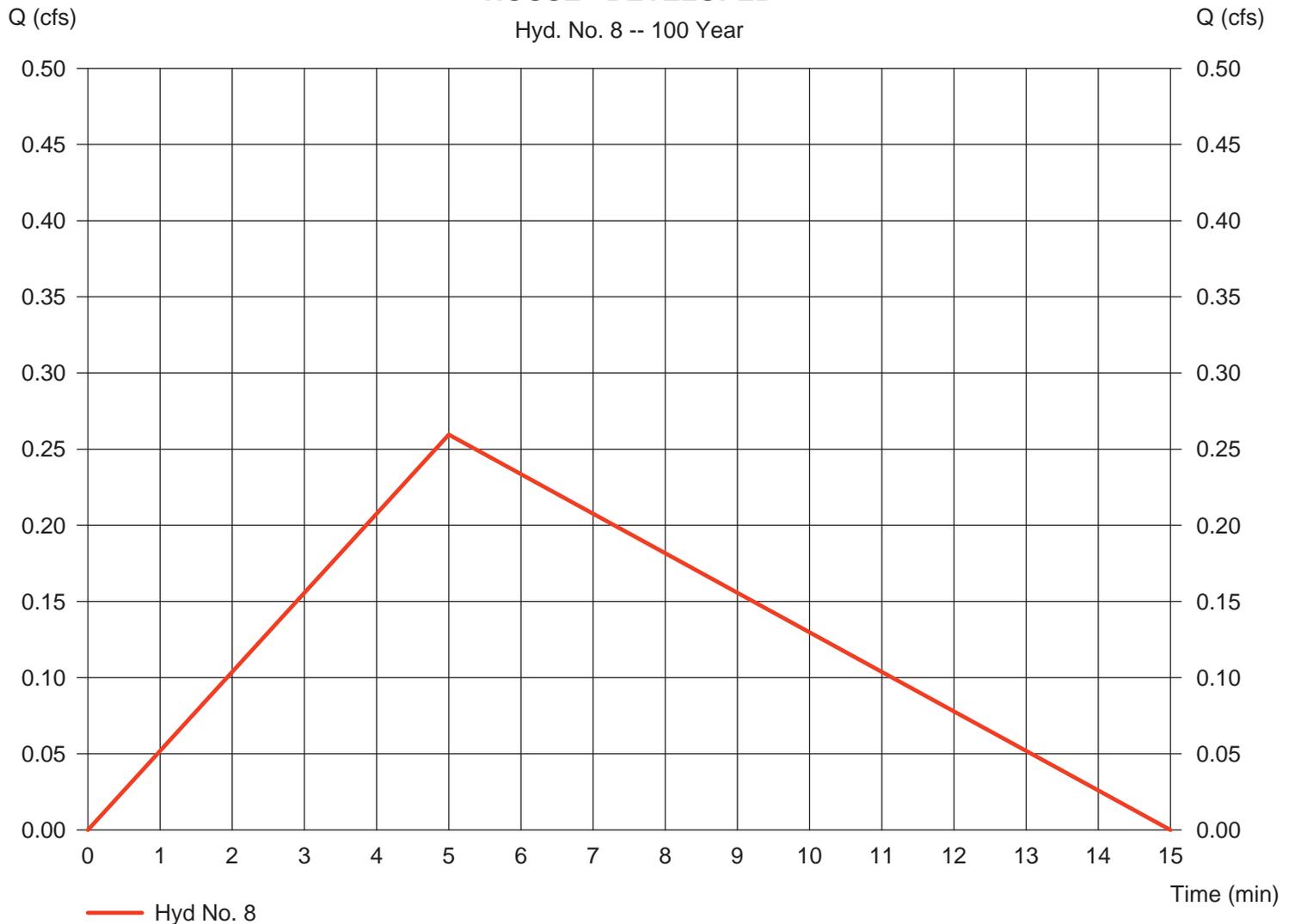
HOUSE - DEVELOPED

Hydrograph type = Rational
 Storm frequency = 100 yrs
 Time interval = 1 min
 Drainage area = 0.037 ac
 Intensity = 7.794 in/hr
 IDF Curve = CONNDOT.IDF

Peak discharge = 0.260 cfs
 Time to peak = 5 min
 Hyd. volume = 117 cuft
 Runoff coeff. = 0.9
 Tc by User = 5.00 min
 Asc/Rec limb fact = 1/2

HOUSE - DEVELOPED

Hyd. No. 8 -- 100 Year



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

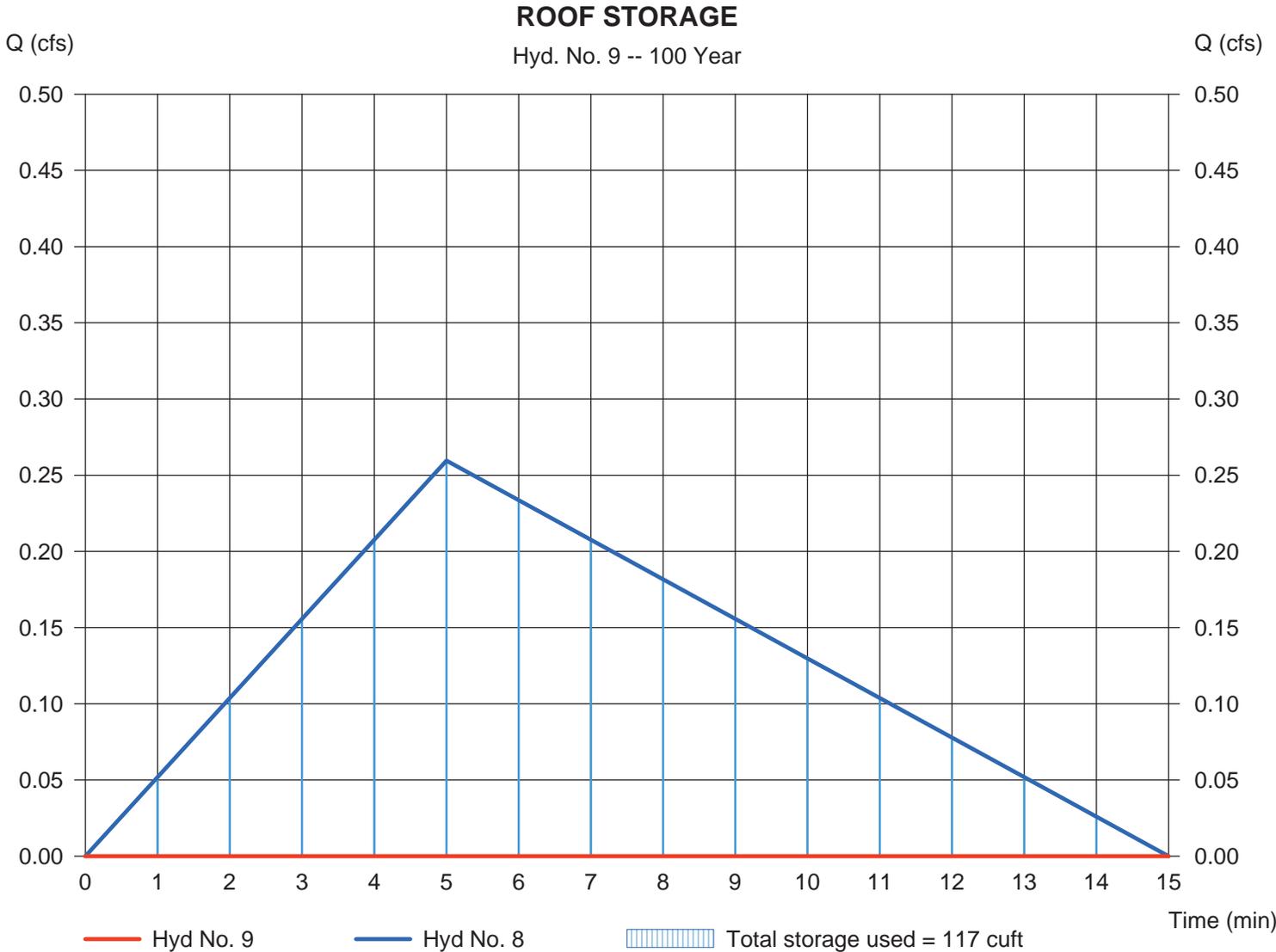
Monday, Aug 10, 2015

Hyd. No. 9

ROOF STORAGE

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 8 - HOUSE - DEVELOPED	Max. Elevation	= 100.64 ft
Reservoir name	= ROOF STORAGE	Max. Storage	= 117 cuft

Storage Indication method used.



Hydraflow Rainfall Report

Hydraflow Hydrographs by Intelisolve v9.1

Monday, Aug 10, 2015

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	-----
2	30.1225	6.6000	0.7676	-----
3	0.0000	0.0000	0.0000	-----
5	52.3308	9.8000	0.8367	-----
10	54.7383	10.8000	0.8016	-----
25	101.9813	15.8000	0.8971	-----
50	98.1551	15.7000	0.8577	-----
100	106.5909	17.0000	0.8462	-----

File name: CONNDOT.IDF

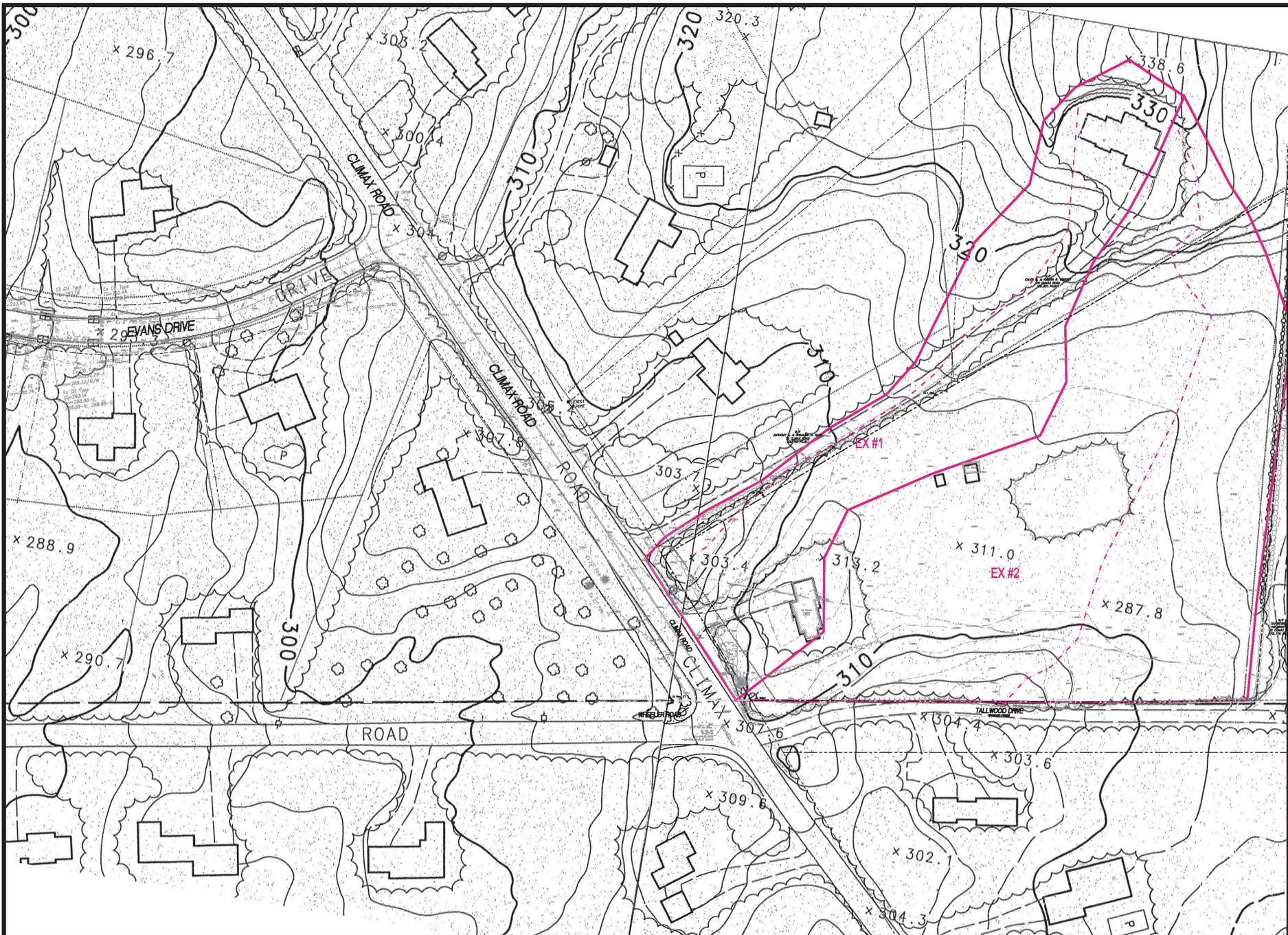
$$\text{Intensity} = B / (T_c + D)^E$$

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	4.59	3.49	2.85	2.43	2.13	1.90	1.72	1.58	1.46	1.36	1.27	1.20
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	5.49	4.30	3.57	3.06	2.69	2.40	2.17	1.99	1.84	1.71	1.60	1.50
10	5.99	4.81	4.04	3.51	3.11	2.80	2.55	2.35	2.18	2.03	1.91	1.80
25	6.70	5.52	4.71	4.12	3.66	3.30	3.01	2.76	2.56	2.38	2.23	2.10
50	7.30	6.06	5.20	4.57	4.09	3.70	3.38	3.12	2.90	2.71	2.54	2.40
100	7.79	6.55	5.68	5.02	4.51	4.10	3.76	3.48	3.24	3.04	2.86	2.70

T_c = time in minutes. Values may exceed 60.

Precip. file name: CONNDOT.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	3.25	0.00	4.20	4.95	5.75	6.35	7.00
SCS 6-Hr	0.00	2.35	0.00	2.95	3.45	4.00	4.55	5.00
Huff-1st	0.00	1.55	0.00	2.75	4.00	5.38	6.50	8.00
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	1.55	0.00	2.75	4.00	5.38	6.50	8.00
Custom	0.00	1.75	0.00	2.80	3.90	5.25	6.00	7.10



Utilities Disclaimer:
 The underground utilities shown have been located from limited field survey information and existing drawings. The surveyor makes no guarantee that the underground utilities shown comprise all such utilities in the area either in service or abandoned. The surveyor further does not warrant that the underground utilities shown are in their exact location indicated although he does declare that they are located as accurately as possible from information available. The surveyor has not physically located the underground utilities.

REVISIONS TO THESE PLANS BY ANYONE OTHER THAN KJA SHALL MAKE THESE PLANS NULL AND VOID. KJA SHALL TAKE NO RESPONSIBILITY FOR SAID REVISIONS.

REVISION: 7
REVISION: 6
REVISION: 5
REVISION: 4
REVISION: 3
REVISION: 2
REVISION: 1
PROJECT: 214011-MANSOUR
DATE: 08/10/15
SCALE: 1"=40'

SEAL:
 James N. Sbragaglia
 CT P.E. & L.S. #11302

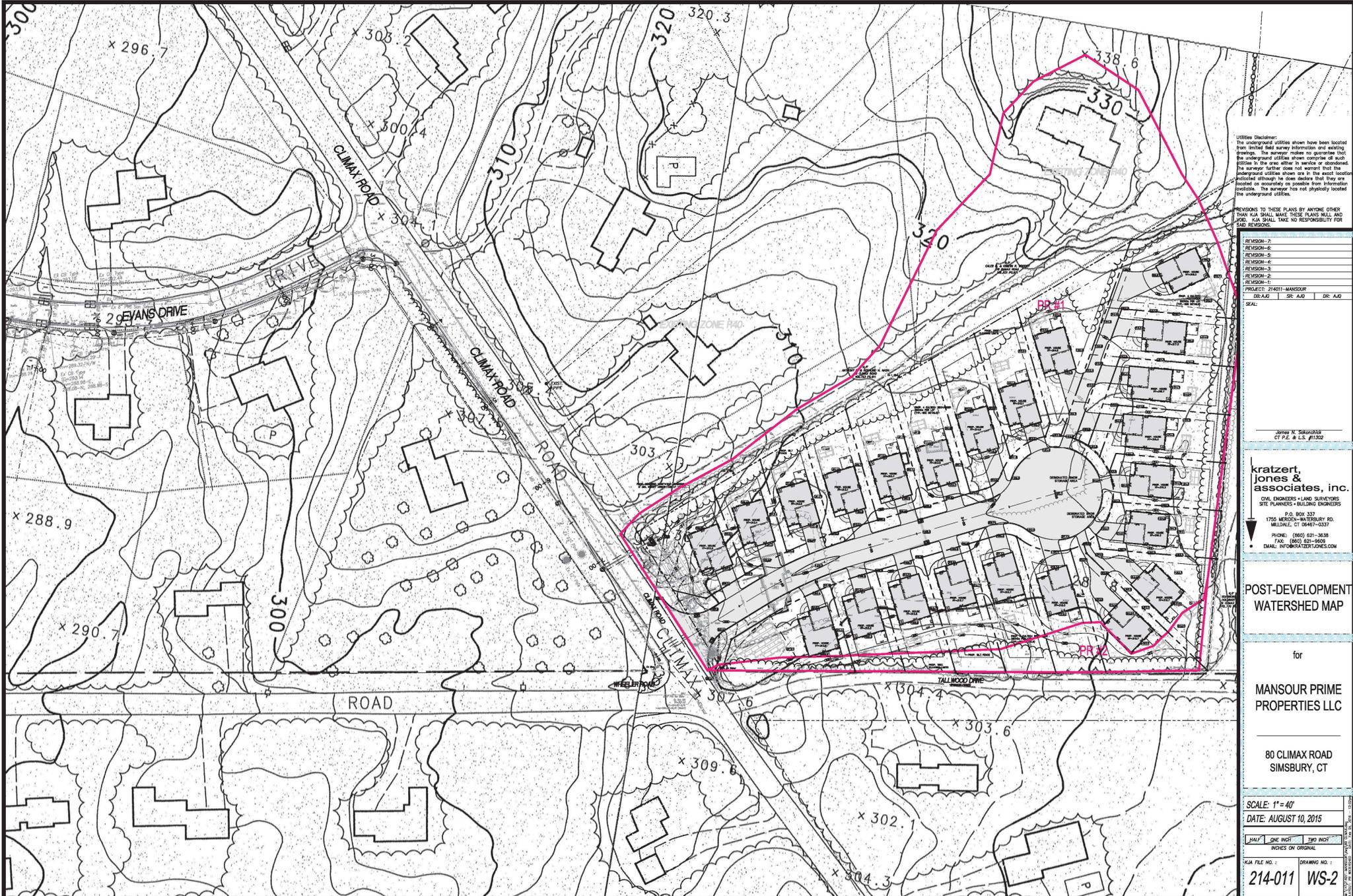
kratzer, jones & associates, inc.
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 SITE PLANNERS • BUILDING ENGINEERS
 P.O. BOX 337
 1755 MERRIMAN-WATERBURY RD.
 MIDDLETOWN, CT 06447-0337
 PHONE: (860) 621-3638
 FAX: (860) 621-8009
 EMAIL: INFO@KRATZERJONES.COM

PRE-DEVELOPMENT WATERSHED MAP

for
MANSOUR PRIME LLC
 80 CLIMAX ROAD
 SIMSBURY, CT

SCALE: 1"=40'
 DATE: AUGUST 10, 2015

HALF	ONE INCH	TWO INCH
INCHES ON ORIGINAL		
KJA FILE NO.:	DRAWING NO.:	
214-011	WS-1	



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REVISION-7
REVISION-6
REVISION-5
REVISION-4
REVISION-3
REVISION-2
REVISION-1
PROJECT: 214011-MANSOUR
DR: AAD SR: AAD DC: AAD

SEAL:
 James N. Szegezard
 CT P.E. & L.S. #1132

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 EMAIL: INFO@KRATZERJONES.COM

POST-DEVELOPMENT WATERSHED MAP

for
MANSOUR PRIME PROPERTIES LLC

80 CLIMAX ROAD
 SIMSBURY, CT

SCALE: 1" = 40'
 DATE: AUGUST 10, 2015

HALF	ONE INCH	TWO INCH
INCHES ON ORIGINAL		
KJA FILE NO.:	DRAWING NO.:	
214-011	WS-2	