APPENDICES

Appendix A

SPDES General Permit

Notice of Intent

1358331598

NOTICE OF INTENT

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

NYR _____ (for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-10-001

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

-IMPORTANT-

RETURN THIS FORM TO THE ADDRESS ABOVE

OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)
Honeywell International Inc.

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
McAuliffe

Owner/Operator Contact Person First Name
John

Owner/Operator Mailing Address
301 Plainfield Road, Suite 330

City
Syracuse

State
NY

Zip
13212-

Phone (Owner/Operator)
315-552-9781

Fax (Owner/Operator)
315-552-9780

Email (Owner/Operator)
john.mcauliffe@honeywell.com

FED TAX ID
22-2640650 (not required for individuals)

Project Site Information

Project/Site Name
WTP and Sediment Consolidation Area

Street Address (NOT P.O. BOX)
Gerelock Road, I690, I695

Side of Street
○ **North** ○ **South** ○ **East** ○ **West**

City/Town/Village (THAT ISSUES BUILDING PERMIT)
Camillus and Geddes

State: NY
Zip: 13031-
County: Onondaga
DEC Region: 7

Name of Nearest Cross Street
State Fair Boulevard

Distance to Nearest Cross Street (Feet)

Project In Relation to Cross Street
○ **North** ○ **South** ○ **East** ○ **West**

Tax Map Numbers
Section-Block-Parcel

Tax Map Numbers

1. Provide the Geographic Coordinates for the project site in NYTM Units. To do this you **must** go to the NYSDEC Stormwater Interactive Map on the DEC website at:

www.dec.ny.gov/imsmaps/stormwater/viewer.htm

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located your project site, go to the tool boxes on the top and choose "i"(identify). Then click on the center of your site and a new window containing the X, Y coordinates in UTM will pop up. Transcribe these coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting): 397638

Y Coordinates (Northing): 4769870

2. What is the nature of this construction project?

○ **New Construction**

● **Redevelopment with increase in imperviousness**

○ **Redevelopment with no increase in imperviousness**

3. Select the predominant land use for both pre and post development conditions.
SELECT ONLY ONE CHOICE FOR EACH

Pre-Development Existing Land Use

- ○ FOREST
- ○ PASTURE/OPEN LAND
- ○ CULTIVATED LAND
- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY
- ○ PARKING LOT
- ● OTHER

Settling Basin

Post-Development Future Land Use

- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION — Number of Lots
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ MUNICIPAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY (water, sewer, gas, etc.)
- ○ PARKING LOT
- ○ CLEARING/GRADING ONLY
- ○ DEMOLITION, NO REDEVELOPMENT
- ○ WELL DRILLING ACTIVITY *(Oil, Gas, etc.)
- ● OTHER

SCA and WTP

*note: for gas well drilling, non-high volume hydraulic fractured wells only

4. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law ? ○ **Yes** ● **No**

5. Is this a project which does not require coverage under the General Permit (e.g. Project done under an Individual SPDES Permit, or department approved remediation)? ● **Yes** ○ **No**

6. Is this property owned by a state authority, state agency, federal government or local government? ○ **Yes** ● **No**

7. In accordance with the larger common plan of development or sale, enter the total project site acreage, the acreage to be disturbed and the future impervious area (acreage)within the disturbed area. Round to the nearest tenth of an acre.

Total Site Acreage	**Acreage To Be Disturbed**	**Existing Impervious Area Within Disturbed**	**Future Impervious Area Within Disturbed**
180.	116.	15.	17.3

8. Do you plan to disturb more than 5 acres of soil at any one time? ● **Yes** ○ **No**

9. Indicate the percentage of each Hydrologic Soil Group(HSG) at the site.

A	**B**	**C**	**D**
%	10 %	5 %	85 %

10. Is this a phased project? ● Yes ○ No

11. Enter the planned start and end dates of the disturbance

Start Date 03 / 03 / 2011 – End Date 12 / 31 / 2016

12. Identify the nearest, natural, surface waterbody(ies) to which construction site runoff will discharge.

Name: Ninemile Creek

12a. Type of waterbody identified in Question 12?

- ○ Wetland / State Jurisdiction On Site (Answer 12b)
- ○ Wetland / State Jurisdiction Off Site
- ○ Wetland / Federal Jurisdiction On Site (Answer 12b)
- ○ Wetland / Federal Jurisdiction Off Site
- ○ Stream / Creek On Site
- ● Stream / Creek Off Site
- ○ River On Site
- ○ River Off Site
- ○ Lake On Site
- ○ Lake Off Site
- ○ Other Type On Site
- ○ Other Type Off Site

12b. How was the wetland identified?

- ○ Regulatory Map
- ○ Delineated by Consultant
- ○ Delineated by Army Corps of Engineers
- ○ Other (identify)

13. Has the surface waterbody(ies) in question 12 been identified as a 303(d) segment in Appendix E of GP-0-10-001? ○ Yes ● No

14. Is this project located in one of the Watersheds identified in Appendix C of GP-0-10-001? ● Yes ○ No

15. Is the project located in one of the watershed areas associated with AA and AA-S classified waters? **If no, skip question 16.** ○ Yes ● No

16. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? **If Yes, what is the acreage to be disturbed?** ○ **Yes** ○ **No**

[ ][ ][ ][ ].[ ]

17. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area? ○ **Yes** ● **No**

18. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? ● **Yes** ○ **No** ○ **Unknown**

19. What is the name of the municipality/entity that owns the separate storm sewer system?

Honeywell Sitewide Leachate Collection

and Conveyance System

20. Does any runoff from the site enter a sewer classified as a Combined Sewer? ○ **Yes** ● **No** ○ **Unknown**

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book) ? ● **Yes** ○ **No**

22. Does this construction activity require the development of a SWPPP that includes Water Quality and Quantity Control components (Post-Construction Stormwater Management Practices) **(If No, skip questions 23 and 27-35)** ● **Yes** ○ **No**

23. Have the Water Quality and Quantity Control components of the SWPPP been developed in comformance with the current NYS Stormwater Management Design Manual ? ● **Yes** ○ **No**

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- ● **Professional Engineer (P.E.)**
- ○ **Soil and Water Conservation District (SWCD)**
- ○ **Registered Landscape Architect (R.L.A)**
- ○ **Certified Professional in Erosion and Sediment Control (CPESC)**
- ○ **Owner/Operator**
- ○ **Other**

SWPPP Preparer
O'Brien & Gere

Contact Name (Last, Space, First)
White, Brian

Mailing Address
333 West Washington Street

City
Syracuse

State
NY

Zip
13221-4873

Phone
315-956-6100

Fax
315-463-7554

Email
brian.white@obg.com

SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-10-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name
Brian

MI
E

Last Name
White

Signature
Brian E White

Date
02 / 14 / 2011

25. Has a construction sequence schedule for the planned management practices been prepared? ○ Yes ○ No

26. Select **all** of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ● Check Dams
- ● Construction Road Stabilization
- ● Dust Control
- ○ Earth Dike
- ○ Level Spreader
- ○ Perimeter Dike/Swale
- ○ Pipe Slope Drain
- ● Portable Sediment Tank
- ○ Rock Dam
- ○ Sediment Basin
- ○ Sediment Traps
- ● Silt Fence
- ● Stabilized Construction Entrance
- ○ Storm Drain Inlet Protection
- ○ Straw/Hay Bale Dike
- ○ Temporary Access Waterway Crossing
- ○ Temporary Stormdrain Diversion
- ● Temporary Swale
- ○ Turbidity Curtain
- ○ Water bars

Biotechnical

- ○ Brush Matting
- ○ Wattling

Vegetative Measures

- ○ Brush Matting
- ○ Dune Stabilization
- ○ Grassed Waterway
- ● Mulching
- ○ Protecting Vegetation
- ○ Recreation Area Improvement
- ● Seeding
- ○ Sodding
- ○ Straw/Hay Bale Dike
- ○ Streambank Protection
- ○ Temporary Swale
- ● Topsoiling
- ○ Vegetating Waterways

Permanent Structural

- ○ Debris Basin
- ○ Diversion
- ○ Grade Stabilization Structure
- ○ Land Grading
- ○ Lined Waterway (Rock)
- ○ Paved Channel (Concrete)
- ○ Paved Flume
- ○ Retaining Wall
- ○ Riprap Slope Protection
- ○ Rock Outlet Protection
- ○ Streambank Protection

Other

Liner to collect stormwater and discharge via existing SPDES outfall

Water Quality and Quantity Control

Important: Completion of Questions 27-35 is not required if response to Question 22 is No.

Post-Construction Stormwater Management Practices

27. Indicate **all** Stormwater Management Practice(s) that will be installed/constructed on this site:

Ponds
- ○ **Micropool Extended Detention (P-1)**
- ○ **Wet Pond (P-2)**
- ○ **Wet Extended Detention (P-3)**
- ○ **Multiple Pond System (P-4)**
- ○ **Pocket Pond (P-5)**

Filtering
- ○ **Surface Sand Filter (F-1)**
- ○ **Underground Sand Filter (F-2)**
- ○ **Perimeter Sand Filter (F-3)**
- ○ **Organic Filter (F-4)**
- ○ **Bioretention (F-5)**
- ○ **Other**

Alternative Practice
- ○ **Rain Garden**
- ○ **Cistern**
- ○ **Green Roof**
- ○ **Stormwater Planters**
- ○ **Permeable Paving (Modular Block)**

Wetlands
- ○ **Shallow Wetland (W-1)**
- ○ **Extended Detention Wetland (W-2)**
- ○ **Pond/Wetland System (W-3)**
- ○ **Pocket Wetland (W-4)**

Infiltration
- ○ **Infiltration Trench (I-1)**
- ○ **Infiltration Basin (I-2)**
- ○ **Dry Well (I-3)**
- ○ **Underground Infiltration System**

Open Channels
- ○ **Dry Swale (O-1)**
- ○ **Wet Swale (O-2)**

Verified Proprietary Practice
- ○ **Hydrodynamic**
- ○ **Wet Vault**
- ○ **Media Filter**

28. Describe other stormwater management practices not listed above or explain any deviations from the technical standards.

Stormwater from the SCA, WTP, and Booster Station portions of the project area will be collected and treated in the proposed WTP. Stormwater from the Slurry Pipeline and Shoreline Facilities portions of the project area will continue to discharge to Ninemile Creek and Onondaga Lake.

29. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed? ● **Yes** ○ **No**

If Yes, Identify the entity responsible for the long term Operation and Maintenance

Honeywell International Inc.

30. Provide the total water quality volume required and the total provided for the site.

WQv Required . acre-feet

WQv Provided . acre-feet

31. Provide the following Unified Stormwater Sizing Criteria for the site.

Total Channel Protection Storage Volume (CPv) - Extended detention of post-developed 1 year, 24 hour storm event

CPv Required . acre-feet

CPv Provided . acre-feet

31a. The need to provide for channel protection has been waived because:

○ **Site discharges directly to fourth order stream or larger**

Total Overbank Flood Control Criteria (Qp) - Peak discharge rate for the 10 year storm

Pre-Development . CFS

Post-development . CFS

Total Extreme Flood Control Criteria (Qf) - Peak discharge rate for the 100 year storm

Pre-Development . CFS

Post-development . CFS

31b. The need to provide for flood control has been waived because:

○ **Site discharges directly to fourth order stream or larger**

● **Downstream analysis reveals that flood control is not required**

IMPORTANT: For questions 31 and 32, impervious area should be calculated considering the project site and all offsite areas that drain to the post-construction stormwater management practice(s). (Total Drainage Area = Project Site + Offsite areas)

32. Pre-Construction Impervious Area - As a percent of the Total Drainage Area enter the percentage of the existing impervious areas before construction begins. 8 %

33. Post-Construction Impervious Area - As a percent of the Total Drainage Area, enter the percentage of the future impervious areas that will be created/remain on the site after completion of construction. 10 %

34. Indicate the total number of post-construction stormwater management practices to be installed/constructed. 1

35. Provide the total number of stormwater discharge points from the site. (include discharges to either surface waters or to separate storm sewer systems) 1

36. Identify other DEC permits that are required for this project.

DEC Permits

○ Air Pollution Control	○ Navigable Waters Protection / Article 15
○ Coastal Erosion	○ Water Quality Certificate
○ Hazardous Waste	○ Dam Safety
○ Long Island Wells	○ Water Supply
○ Mined Land Reclamation	○ Freshwater Wetlands/Article 24
● Other SPDES	○ Tidal Wetlands
○ Solid Waste	○ Wild, Scenic and Recreational Rivers
○ None	○ Stream Bed or Bank Protection / Article 15

○ Other

37. Does this project require a US Army Corps of Engineers Wetland Permit? ○ **Yes** ● **No**
If Yes, Indicate Size of Impact. [ ][ ][ ][ ][ ].[ ]

38. Is this project subject to the requirements of a regulated, traditional land use control MS4? ○ **Yes** ● **No**
(If No, skip question 39)

39. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI? ○ **Yes** ● **No**

40. If this NOI is being submitted for the purpose of continuing coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned. NYR[ ][ ][ ][ ][ ][ ]

Owner/Operator Certification

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Print First Name John **MI** P

Print Last Name McAuliffe

Owner/Operator Signature John P. McAuliffe by ccc

Date 04/13/2011

Appendix B

SPDES NOI Acknowledgement Letter

New York State Department of Environmental Conservation
Division of Water, Region 7
615 Erie Boulevard West, Syracuse, New York 13204-2400
Phone: (315) 426-7500 • **Fax:** (315) 426-7459
Website: www.dec.ny.gov

Alexander B. Grannis
Commissioner

August 2, 2010

John McAuliffe
Honeywell International
301 Plainfield Road, Suite 330
North Syracuse, New York 13212

Re: Water Treatment Plant and Sediment Consolidation Area – Phase 1A, Camillus (T), Onondaga County

Dear Mr. McAuliffe,

The Department has received a Stormwater Pollution Prevention Plan (SWPPP) and revisions dated July 30, 2010, for the above project. Our review of this material has determined that the SWPPP meets the minimum requirements of the *SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-10-001)* with the following contingency:

- This acceptance only authorizes construction of the WTP preload area, process preload area and trailer staging area as depicted in the SWPPP. When written verification from the Metropolitan Syracuse Wastewater Treatment Plant (Metro) is received by this Department, stating that the Plant will accept stormwater discharges for treatment from the Phase 1A SCA and staging area on Wastebed 13, the remainder of Phase 1A construction will be authorized.

Authorization to disturb greater than five (5) acres of soil at any given time is also hereby granted. This acceptance does not relieve you of any other requirements listed in the General Permit (GP-0-10-001), or protect you from enforcement action initiated by this Department if permit violations are observed during inspections of the site by DEC staff.

All contractor companies involved in soil disturbing activity on the site must have a "trained contractor," who has attended a DEC-endorsed 4-hour Erosion and Sediment Control training, on site at each well site on a daily basis. Trained contractors are issued a wallet card with a trainee ID number and should be able to show their wallet card when requested by the DEC.

You must conduct inspections of the erosion and sediment controls and stormwater management structures twice weekly as required by General Permit GP-0-10-001 and you must modify those controls if they prove to be ineffective in preventing the mobilization and transport of soils from your property. The Department may also perform periodic inspections of the site to ensure compliance with this requirement.

If you have any questions or need any assistance, please contact me at (315) 426-7504.

Sincerely,

Ellen Hahn

Ellen Hahn, CPESC, CPSWQ
Stormwater Control Specialist

ecc: Al Labuz, Honeywell
Brian White, O'Brien & Gere Engineers
Paul Blue, Parsons
Tim Larson, NYSDEC
Mary Jane Peachey, NYSDEC
Richard Mustico, NYSDEC

Appendix C

SPDES Permit No. NY 0002275 Modification

New York State Department of Environmental Conservation
Division of Environmental Permits, Region 7
615 Erie Boulevard West, Syracuse, New York 13204-2400
Phone: (315) 426-7438 • **Fax:** (315) 426-7425
Website: www.dec.ny.gov

Alexander B. Grannis
Commissioner

August 12, 2010

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Al Labuz
Honeywell International, Inc.
301 Plainfield Rd, Suite 330
Syracuse, NY 13212

RE: Modification of State Pollutant Discharge Elimination System Permit No. NY 000 2275, DEC ID# 7-3132-00002/00002, for Honeywell International, Inc., Solvay (V), Onondaga Co.

Dear Mr. Labuz:

This is to inform you that pursuant to Environmental Conservation Law (ECL), Article 70, and 6NYCRR, Part 621, the New York State Department of Environmental Conservation has decided to modify your State Pollutant Discharge Elimination System Permit (SPDES) referenced above. This modification is per your request of July 21, 2010 to allow clean stormwater from the Sediment Consolidation Area (SCA), on Wastebed #13, to be discharged at existing Outfall #018.

This permit, effective today, supersedes your previous permit. Please discard the previous permit. Should you object to this modification, 6NYCRR Part 621 allows you to submit to the Department reasons why the permit should not be modified, or to request a hearing, or both. Such a submission or request must be received by the Regional Permit Administrator within 30 calendar days of your receipt of this letter.

If you have any questions, you may contact me at (315) 426-7438. Thank you.

Sincerely,

Digitally signed by Joanne L. March
DN: cn=Joanne L. March, o=NYSDEC, ou=Division of Environmental Permits, email=jlmarch@gw.dec.state.ny.us, c=US
Date: 2010.08.12 10:50:49 -04'00'

Joanne L. March
Regional Permit Administrator

cc: Water Division, Region 7
Onondaga County Health Dept.
DOW - Albany, BWP (3505)
USEPA Region II, Water Division

40 years of stewardship 1970-2010

C:\Permits\Honeywell Int'l\Mod Outfall 018\SPDES Mod 8_10.doc

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

State Pollutant Discharge Elimination System (SPDES)
DISCHARGE PERMIT

Special Conditions (Part 1)

First3.99

Industrial Code:	**2812**	SPDES Number:	**NY- 000 2275**
Discharge Class (CL):	**01**	DEC Number:	**7-3132-00002/00002**
Toxic Class (TX):	**T**	Effective Date (EDP):	**02/01/2007**
Major Drainage Basin:	**07**	Expiration Date (ExPD):	**01/31/2012**
Sub Drainage Basin:	**02**	Modification Dates:	**11/01/2009, 8/12/2010**
Water Index Number:	**Ont66-12-P154**		
Compact Area:			

This SPDES permit is issued in compliance with Title 8 of Article 17 of the Environmental Conservation Law of New York State and in compliance with the Clean Water Act, as amended, (33 U.S.C. §1251 et.seq.)(hereinafter referred to as "the Act").

PERMITTEE NAME AND ADDRESS

Name: **Honeywell International Inc.** Attention: **A. J. Labuz, Site Leader, RES**

Street: **301 Plainfield Road, Suite 330**

City: **Syracuse** State: **NY** Zip Code: **13212**

is authorized to discharge from the facility described below:

FACILITY NAME AND ADDRESS

Name: **Honeywell International Inc.**

Location (C,T,V): **Solvay (V)** County: **Onondaga**

Facility Address: **1700 Milton Avenue**

City: **Solvay** State: **NY** Zip Code: **13209-0006**

NYTM -E: NYTM - N:

From Outfall No.: **015** at Latitude: **43 ° 03 ′ 55 ″** & Longitude: **76 ° 11 ′ 30 ″**

into receiving waters known as: **Onondaga Lake** Class: **C**

and; (list other Outfalls, Receiving Waters & Water Classifications)

011: Ninemile Creek, Class C
017: Groundwater, Class GA
018: Ninemile Creek, Class C
019: Geddes Brook, Class C

in accordance with: effluent limitations; monitoring and reporting requirements; other provisions and conditions set forth this permit; and 6 NYCRR Part 750-1.2(a) and 750-2.

DISCHARGE MONITORING REPORT (DMR) MAILING ADDRESS

Mailing Name: **Honeywell International, Inc.**

Street: **301 Plainfield Road, Suite 330**

City: **Syracuse** State: **NY** Zip Code: **13212**

Responsible Official or Agent: **Al Labuz, Site Leader, Remediation & Evaluation Service** Phone: **(315)552-9700**

This permit and the authorization to discharge shall expire on midnight of the expiration date shown above and the permittee shall not discharge after the expiration date unless this permit has been renewed, or extended pursuant to law. To be authorized to discharge beyond the expiration date, the permittee shall apply for permit renewal not less than 180 days prior to the expiration date shown above.

DISTRIBUTION:

Bureau of Water Permits
Regional Water Engineer, Region 7
Onondaga County Health Department
USEPA Region II

Permit Administrator: Joanne L. March

Address: NYSDEC 615 Erie Blvd. W.
Syracuse, NY 13204-2400

Digitally signed by Joanne L. March
DN: cn=Joanne L. March, o=NYSDEC, ou=Division of Environmental Permits, email=jlmarch@gw.dec.state.ny.us, c=US
Date: 2010.08.12 10:08:05 -04'00'

PERMIT LIMITS, LEVELS AND MONITORING DEFINITIONS

OUTFALL	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
	This cell describes the type of wastewater authorized for discharge. Examples include process or sanitary wastewater, storm water, non-contact cooling water.	This cell lists classified waters of the state to which the listed outfall discharges.	The date this page starts in effect. (e.g. EDP or EDPM)	The date this page is no longer in effect. (e.g. ExDP)

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQ.	SAMPLE TYPE
e.g. pH, TRC, Temperature, D.O.	The minimum level that must be maintained at all instants in time.	The maximum level that may not be exceeded at any instant in time.	SU, °F, mg/l, etc.		

PARA-METER	EFFLUENT LIMIT	PRACTICAL QUANTITATION LIMIT (PQL)	ACTION LEVEL	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE
	Limit types are defined below in Note 1. The effluent limit is developed based on the more stringent of technology-based limits, required under the Clean Water Act, or New York State water quality standards. The limit has been derived based on existing assumptions and rules. These assumptions include receiving water hardness, pH and temperature; rates of this and other discharges to the receiving stream; etc. If assumptions or rules change the limit may, after due process and modification of this permit, change.	For the purposes of compliance assessment, the analytical method specified in the permit shall be used to monitor the amount of the pollutant in the outfall to this level, provided that the laboratory analyst has complied with the specified quality assurance/quality control procedures in the relevant method. Monitoring results that are lower than this level must be reported, but shall not be used to determine compliance with the calculated limit. This PQL can be neither lowered nor raised without a modification of this permit.	Type I or Type II Action Levels are monitoring requirements, as defined below in Note 2, that trigger additional monitoring and permit review when exceeded.	This can include units of flow, pH, mass, Temperature, concentration. Examples include µg/l, lbs/d, etc.	Examples include Daily, 3/week, weekly, 2/month, monthly, quarterly, 2/yr and yearly.	Examples include grab, 24 hour composite and 3 grab samples collected over a 6 hour period.

Note 1: **DAILY DISCHARGE.:** The discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for the purposes of sampling. For pollutants expressed in units of mass, the 'daily discharge' is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the 'daily discharge' is calculated as the average measurement of the pollutant over the day.

DAILY MAX.: The highest allowable daily discharge. **DAILY MIN.:** The lowest allowable daily discharge.

DAILY AVG or 30 DAY ARITHMETIC MEAN (30 day average).: The highest allowable average of daily discharges over a calendar month, calculated as the sum of each of the daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

7 DAY ARITHMETIC MEAN (7 day average): The highest allowable average of daily discharges over a calendar week.

30 DAY GEOMETRIC MEAN: The highest allowable geometric mean of daily discharges over a calendar month, calculated as the antilog of : the sum of the log of each of the daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

7 DAY GEOMETRIC MEAN: The highest allowable geometric mean of daily discharges over a calendar week.
RANGE: The minimum and maximum instantaneous measurements for the reporting period must remain between the two values shown.

Note 2: **ACTION LEVELS:** Routine Action Level monitoring results, if not provided for on the Discharge Monitoring Report (DMR) form, shall be appended to the DMR for the period during which the sampling was conducted. If the additional monitoring requirement is triggered as noted below, the permittee shall undertake a short-term, high-intensity monitoring program for the parameter(s). Samples identical to those required for routine monitoring purposes shall be taken on each of at least three consecutive operating and discharging days and analyzed. Results shall be expressed in terms of both concentration and mass, and shall be submitted no later than the end of the third month following the month when the additional monitoring requirement was triggered. Results may be appended to the DMR or transmitted under separate cover to the same address. If levels higher than the Action Levels are confirmed, the permit may be reopened by the Department for consideration of revised Action Levels or effluent limits. The permittee is not authorized to discharge any of the listed parameters at levels which may cause or contribute to a violation of water quality standards. TYPE I : The additional monitoring requirement is triggered upon receipt by the permittee of any monitoring results in excess of the stated Action Level. TYPE II: The additional monitoring requirement is triggered upon receipt by the permittee of any monitoring results that show the stated action level exceeded for four of six consecutive samples, or for two of six consecutive samples by 20 % or more, or for any one sample by 50 % or more.

FINAL PERMIT LIMITS, LEVELS AND MONITORING

OUTFALL NUMBER	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
015	Stormwater Runoff from Village of Solvay and Syracuse Works Manufacturing Area Storm Sewer, including Process Wastewater, Cooling Water, and Boiler Blowdown Water from Industries Located in Syracuse Works Manufacturing Area, Discharge from Semet Willis Remedial Treatment System (MP 15A).	Onondaga Lake	February 1, 2007	January 31, 2012

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FOOTNOTES (FN)
pH	6.0	9.0	SU	Monthly	Grab	1

PARAMETER	EFFLUENT LIMIT		PQL, µg/l	MONITORING ACTION LEVEL		UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FN
	Daily Avg.	Daily Max.	Daily Max.	TYPE I	TYPE II				
Flow	NA	Monitor				GPD	Monthly	Instantaneous	
Oil and Grease	NA	Monitor				mg/l	Quarterly	Grab	1
Temperature	NA	90				deg. F	Monthly	Grab	1
Ammonia	NA	7.5				mg/l	Monthly	Grab	1
Chloride, June-November	NA	2400				lb/day	Monthly	Grab	1
Chloride, Net, December-May	NA	2400				lb/day	Monthly	Grab	1,7
Chloride, Charles Avenue	NA	Monitor				lb/day	Monthly	Grab	1,7
Chloride, Outfall 15A	NA	Monitor				lb/day	Monthly	Grab	1,7
Coliform, Total	Monitor	Monitor				MPN/100 ml	Quarterly	Grab	1
Coliform, Fecal	Monitor	Monitor				MPN/100 ml	Quarterly	Grab	1
Dichlorobenzenes, Total	NA	0.05				mg/l	Monthly	Grab	1
Phenol, Chlorinated	0.010	NA				mg/l	2x/Month	Grab	1
Phosphorus	NA	0.5				mg/l	Monthly	Grab	1
Solids, Total Dissolved	NA	Monitor				mg/l	Quarterly	Grab	1
Solids, Total Suspended	NA	45				mg/l	Quarterly	Grab	1
Aluminum, Total	NA	Monitor				mg/l	Quarterly	Grab	1
Antimony, Total	NA	0.4				mg/l	Monthly	Grab	1
Arsenic, Total	NA	Monitor				mg/l	Quarterly	Grab	1
Cadmium, Total	NA	Monitor				mg/l	Quarterly	Grab	1
Chromium, Total	NA	Monitor				mg/l	Quarterly	Grab	1
Copper, Total	NA	Monitor				mg/l	Quarterly	Grab	1
Iron, Total	NA	Monitor				mg/l	Quarterly	Grab	1
Lead, Total	NA	Monitor				mg/l	Quarterly	Grab	1
Manganese, Total	NA	Monitor				mg/l	Quarterly	Grab	1
Mercury, Total, net	NA	0.0008				lb/day	Monthly	Grab	1,4,8
Mercury, Total	NA	Monitor	0.2			µg/l	Monthly	Grab	1,4
Nickel, Total	NA	Monitor				mg/l	Quarterly	Grab	1
Zinc, Total	NA	Monitor				mg/l	Quarterly	Grab	1
Chlorine, Free Avail.	NA	Monitor				mg/l	Quarterly	Grab	1
Chlorobenzene				0.05		mg/l	Quarterly	Grab	1
Naphthalene				0.1		mg/l	Quarterly	Grab	1
1,2,4-Trichlorobenzene				0.05		mg/l	Quarterly	Grab	1
Xylenes, Total				0.1		mg/l	Quarterly	Grab	1

Footnotes: See pages 6-7 of this Permit.

FINAL PERMIT LIMITS, LEVELS AND MONITORING

OUTFALL NUMBER	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
15A	Treated Semet Pond Groundwater, Willis Ave. Groundwater, Harbor Brook Groundwater, and I-690 Stormwater	Onondaga Lake	Treatment System Startup Date (TSSD)	TSSD + 5 years

The discharge monitoring requirements for this outfall are covered by Order on Consent # D7-0004-01-09, executed by the Department on April 16, 2002.

OUTFALL NUMBER	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
011	Stormwater Runoff from 24 inch diversion pipeline (and associated eastern and western diversion pipes) between Wastebeds 9-10 and Wastebed 11.	Onondaga Lake	November 1, 2009	January 31, 2012

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FOOTNOTES (FN)
pH	6.0	9.0	SU	Monthly	Grab	

PARAMETER	EFFLUENT LIMIT		PQL	MONITORING ACTION LEVEL		UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FN
	Daily Avg.	Daily Max.	Daily Max.	TYPE I	TYPE II				
Flow	NA	Monitor				GPD	Monthly	Instantaneous	
Chloride	NA	Monitor				mg/l	Monthly	Grab	
Dichlorobenzenes, Total	NA	Monitor				mg/l	Monthly	Grab	
Phosphorus	NA	0.5				mg/l	Monthly	Grab	6
Solids, Total Dissolved	NA	500				mg/l	Monthly	Grab	
Solids, Total Suspended	NA	50				mg/l	Monthly	Grab	
Mercury, Total	NA	Monitor	0.2			µg/l	Monthly	Grab	4

OUTFALL NUMBER	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
017	Storm water runoff from Wastebeds 12-15 collected in lined swales above the leachate collection system	Groundwater	Novemher 1, 2009	January 31, 2012

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FOOTNOTES (FN)
pH	6.5	8.5	SU	Monthly	Grab	

PARAMETER	EFFLUENT LIMIT		PQL	MONITORING ACTION LEVEL		UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FN
	Daily Avg.	Daily Max.	Daily Max.	TYPE I	TYPE II				
Flow	Monitor	Monitor				GPD	Monthly	Instantaneous	
Chloride	Monitor	500				mg/l	Monthly	Grab	
Solids, Total Dissolved	Monitor	Monitor				mg/l	Monthly	Grab	
Solids, Total Suspended	Monitor	50				mg/l	Monthly	Grab	
Ammonia	Monitor	Monitor				mg/l	Monthly	Grab	
Phosphorus	Monitor	Monitor				mg/l	Monthly	Grab	6
Phosphorus, Soluble Reactive	Monitor	Monitor				mg/l	Monthly	Grab	6
Benzene	Monitor	0.001				mg/l	Monthly	Grab	
Chlorobenzene	Monitor	0.005				mg/l	Monthly	Grab	
Dichlorobenzene, 1,2	Monitor	0.003				mg/l	Monthly	Grab	
Dichlorobenzene, 1,3	Monitor	0.003				mg/l	Monthly	Grab	
Dichlorobenzene, 1,4	Monitor	0.003				mg/l	Monthly	Grab	
Mercury, Total	Monitor	Monitor	0.2			µg/l	Monthly	Grab	4

Footnotes: See pages 6-7 of this Permit.

FINAL PERMIT LIMITS, LEVELS AND MONITORING

OUTFALL NUMBER	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
018	Storm water runoff from Wastebeds 12-15 collected in lined swales above the leachate collection system and collected clean stormwater from the Sediment Containment Area (SCA) liner area	Ninemile Creek	August 12, 2010	January 31, 2012

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FOOTNOTES (FN)
pH	6.0	9.0	SU	Monthly	Grab	

PARAMETER	EFFLUENT LIMIT		PQL	MONITORING ACTION LEVEL		UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FN
	Daily Avg.	Daily Max.	Daily Max.	TYPE I	TYPE II				
Flow	Monitor	Monitor				GPD	Monthly	Instantaneous	9
Chloride	Monitor	Monitor				mg/l	Monthly	Grab	
Solids, Total Dissolved	Monitor	500				mg/l	Monthly	Grab	
Solids, Total Suspended	Monitor	50				mg/l	Monthly	Grab	
Ammonia	Monitor	Monitor				mg/l	Monthly	Grab	
Phosphorus	Monitor	0.5				mg/l	Monthly	Grab	6
Phosphorus, Soluble Reactive	Monitor	Monitor				mg/l	Monthly	Grab	6
Benzene	Monitor	Monitor				mg/l	Monthly	Grab	
Chlorobenzene	Monitor	Monitor				mg/l	Monthly	Grab	
Dichlorobenzene, Total	Monitor	0.0075				mg/l	Monthly	Grab	
Mercury, Total	Monitor	Monitor	0.2			µg/l	Monthly	Grab	4

OUTFALL NUMBER	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
019	Storm water runoff from Wastebeds 12-15 collected in lined swales above the leachate collection system	Geddes Brook	November 1, 2009	January 31, 2012

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FOOTNOTES (FN)
pH	6.0	9.0	SU	Monthly	Grab	

PARAMETER	EFFLUENT LIMIT		PQL	MONITORING ACTION LEVEL		UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FN
	Daily Avg.	Daily Max.	Daily Max.	TYPE I	TYPE II				
Flow	Monitor	Monitor				GPD	Monthly	Instantaneous	
Chloride	Monitor	Monitor				mg/l	Monthly	Grab	
Solids, Total Dissolved	Monitor	500				mg/l	Monthly	Grab	
Solids, Total Suspended	Monitor	50				mg/l	Monthly	Grab	
Ammonia	Monitor	Monitor				mg/l	Monthly	Grab	
Phosphorus	Monitor	0.5				mg/l	Monthly	Grab	6
Phosphorus, Soluble Reactive	Monitor	Monitor				mg/l	Monthly	Grab	6
Benzene	Monitor	Monitor				mg/l	Monthly	Grab	
Chlorobenzene	Monitor	Monitor				mg/l	Monthly	Grab	
Dichlorobenzene, 1,4	Monitor	0.0075				mg/l	Monthly	Grab	
Mercury, Total	Monitor	Monitor	0.2			µg/l	Monthly	Grab	4

Footnotes: See pages 6-7 of this Permit.

FOOTNOTES AND CONDITIONS:

1. Should any effluent parameter listed for Outfall 015 exceed its effluent limitation for two consecutive months, a contamination trackdown will be required. The trackdown must indicate the location and probable source of the contamination, and remediate the source area immediately if possible. If the source of contamination will require ongoing remediation, the permittee must submit approvable plans to the Region 7 Regional Water Engineer detailing the proposed method of treatment and the ability of this treatment to achieve effluent limitations.* Note:The permittee may run a duplicate of this comprehensive sample to verify the result. Should the duplicate result not verify that the parameter(s) in question exceed the limitation, the permittee may continue normal monitoring until any additional sample results show value(s) exceeding a limit.

2. The permittee should determine if there are any additional outfalls discharging from their property which are not identified by this permit. If any new discharges are located, the Region 7 Office should be notified.

3. If any additional parameters are found to be discharging to the permittee's storm sewer drainage line by other tributary industries, such parameters may be added to this permit.

4. INDUSTRIAL POLLUTANT MINIMIZATION PROGRAM MERCURY

A. The permittee shall develop, maintain, and implement a Pollutant Minimization Program (PMP). The PMP is required because the calculated water quality based effluent limit (WQBEL) of 0.7 nanograms/liter (ng/L) for Total Mercury is below the permit limit of 200 ng/L using EPA Method 1631. The goal of this PMP will be to meet the calculated WQBEL. WITHIN 6 MONTHS OF THE EDPM, the completed, approvable PMP plan shall be submitted to the Regional Water Engineer and to the Bureau of Water Permits for approval. Subsequent modifications or renewal of this permit does not reset or revise this deadline unless a new deadline is set explicitly by such a permit modification or renewal.

B. The PMP plan shall be documented in narrative form and shall include any necessary plot plans, drawings, or maps. Other documents already prepared for the facility, such as a Best Management Practices Plan, may be used as part of the plan and may be incorporated by reference. As a minimum, the PMP plan shall include:

1. An on-going potential source identification, evaluation, and prioritization program.

2. Periodic monitoring designed to quantify and, over time, track the reduction of discharges of Mercury. Minimum required monitoring is as follows: monthly monitoring of wastewater effluent from these Outfalls for Mercury; and, quarterly monitoring of potential Mercury sources, including raw materials, except during the first year which shall be monthly. This monitoring shall be performed using EPA Method 1631 for water/wastewater samples and shall be coordinated with routine compliance monitoring, if applicable, so that the results can be compared. Additional Mercury monitoring must be completed as may be required elsewhere in this permit.

3. An approvable control strategy (including a schedule for implementation) for reducing Mercury discharges via cost-effective control measures, which may include but is not limited to site treatment or remediation. The schedule for implementation and the control strategy will become enforceable under this permit.

4. An approvable annual report shall be prepared and submitted to the Regional Water Engineer and to the Bureau of Water Permits by February 1of each year. This report shall summarize all Mercury monitoring data; a list of known or potential mercury sources; all control measures implemented during the previous calendar year; monitoring, investigations, and control measures to be completed during the current calendar year; and document progress toward the goal of achieving the calculated WQBEL.

C. The PMP plan shall be modified whenever: (a)changes at the facility increase the potential for discharge of the Mercury, (b) actual discharges indicate the plan is inadequate, or (c) a letter from the Department identifies inadequacies in the PMP plan.

5. Completed Best Management Practices (BMP) Plan

The completed BMP Plan submitted to this Department shall be reviewed by the permittee on an annual basis. The BMP Plan shall be modified whenever changes at the facility materially increase the potential for significant releases of toxic or hazardous pollutants or where actual releases indicate that the plan is inadequate.

6. Phosphorus

The permittee shall use EPA Method 365.3, with an MDL of 0.002 mg/l, to measure hoth Total and Soluble Recoverable Phosphorus.

7. Net Chloride limits, Outfall 015

A. The permittee shall, during the months of June through November, report the GROSS chloride load at Outfall 015, in pounds per day, on their monthly DMR.

B. The permittee shall, during the months of December through May, report the NET chloride load at Outfall 015 in pounds per day on their monthly DMR. The chloride load at monitoring location DI-1, as detailed on Drawing No. 9505-1P of the permittee's April 25, 2003 modification request to this Department, as well as the chloride load from internal monitoring location 15A, shall be determined and subtracted from the chloride load determined at Outfall 015 to obtain the net chloride load. The chloride load at monitoring point DI-1 shall be determined by using the measured chloride concentration and the estimated flow obtained by measuring the depth of the water in the sewer and applying the Manning equation for open channel flow..

8. Mercury sampling, Outfall 015

The discharge from this outfall is a NET limit, and shall be calculated by subtracting the mass loading from Monitoring Point 15A (treated effluent from the Willis Ave./Semet Treatment System) from the mass loading at the Outfall 015 sampling point..

9. Flow, Outfall 018

The permittee shall control the quantity of this discharge so that the discharge during the construction and implementation of the SCA liner area does not exceed the existing discharge flow rates of 4.8 cubic feet per second (for a 1-year 24 hour storm), 15.3 cubic feet per second (for a 10 year 24-hour storm) or 25.9 cubic feet per second (for a 100 year 24-hour storm). The permittee shall discharge in accordance with the terms and conditions of the Stormwater Pollution Prevention Plan (SWPPP) as accepted by this Department via letter dated August 2, 2010.

FIVE YEAR TOXICITY TESTING PROGRAM, TIER 1 - ACUTE TEST

The permittee shall implement an effluent toxicity monitoring program beginning on January 1, 2002 . Subsequent modifications to or renewal of this permit does not reset or revise the deadline set forth in the preceding sentence unless a new deadline is set explicitly by such permit modification or renewal. The effluent toxicity testing program shall be as follows:

Effluent Toxicity Monitoring Requirements

Outfall No.	Reason for Testing Requirement	Sample Frequency	Sample Type
015	Periodic testing	Quarterly during calendar years ending in **[2]** or **[7]**	24 hr. Composite/renewal

(a) Effluent Toxicity shall mean the toxicity of the effluent in acute static renewal tests specified as Tier 1 testing in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, Fourth Edition, EPA/600/4-90/027F (1993) or most recent edition (herein referred to as the EPA Acute Manual). Both a vertebrate and invertebrate species shall be used for the tests. Where the outfall being tested is to estuarine or ocean waters, the marine organisms shall be tested. Where the outfall being tested is to freshwaters, freshwater organisms shall be tested. Dilution water shall be collected according to the EPA Acute Manual. Receiving water shall be used as dilution water unless the Department approves a different source. Effluent sampling and holding shall be done as outlined in the EPA Acute Manual, and should consist of 24 hour composite samples. Any deviation from procedures in the EPA Acute Manual requires prior written approval by the Department.

(b) The 48-hour EC_{50} and 48-hour LC_{50} in % Effluent for both a vertebrate and an invertebrate species shall be determined and reported in accordance with the specified frequency. The 48-hour EC_{50} and 48-hour LC_{50} in % Effluent shall be compared to the Instream Waste Concentration (IWC) of the effluent calculated based on the daily average effluent flow at the time of the test and a dilution ratio of 10:1.

(c) The results of each toxicity test shall be submitted no later than 60 days following the end of each test period. These reports shall be submitted to the DEC Regional Water Engineer at NYSDEC, 615 Erie Blvd. West, Syracuse, NY 13204-2400; and to the Toxicity Testing Unit, Bureau of Watershed Assessment and Research, 625 Broadway, Albany, NY 12233-3502.

(d) Where practicable, monitoring of chemical and physical parameters limited in this permit shall be coordinated so that the resulting analysis is also representative of the sample used for toxicity testing.

(e) Discharges which use chlorination as part of the waste treatment process should he dechlorinated prior to toxicity testing.

(f) In accordance with NYSDEC guidance, the Department may determine that additional acute testing is necessary. If such additional testing is necessary, the permittee shall perform such testing upon written notification from the regional water engineer that such testing is necessary and the reason(s) why such testing is necessary.

FIVE YEAR TOXICITY TESTING PROGRAM, TIER 2 - CHRONIC TEST

The permittee shall implement this effluent toxicity monitoring program within 6 months of written notification from the NYSDEC Regional Water Engineer that chronic toxicity testing is necessary and the reasons why chronic toxicity testing is necessary and in accordance with NYSDEC guidance. The effluent toxicity monitoring program is as follows:

Monitoring Requirements

Outfall No.	Effluent Parameter	Units	Sample Frequency	Sample Type
015	Effluent Toxicity	% Effluent	In accordance with the written notification from the NYSDEC Regional Water Engineer	24 hr. Composite/renewal

(a) Effluent toxicity shall mean the toxicity of the effluent in chronic static renewal tests as specified in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms,* Third Edition, EPA/600/4-91/002 (1994), the EPA Chronic Manual for Marine Organisms (EPA/600/4-91/003(1994), or the most recent editions (herein referred to as the EPA Chronic Manuals). Both a vertebrate and invertebrate species shall be used for the tests. Where the outfall being tested is to estuarine or ocean waters, marine organisms shall be tested. Where the outfall being tested is to freshwaters, freshwater organisms shall be tested. Dilution water shall be collected according to the EPA Chronic Manuals. Each test run shall be 'bracketed' with a test of pure effluent and a test of effluent diluted sufficiently such that at least one diluted sample shows no toxic effects. Appropriate dilutions between the endpoints shall be tested to allow calculation of the Maximum Allowable Waste Concentration. Receiving water shall be used as dilution water unless the Department approves a different source. Effluent sampling and holding shall be done as outlined in of the EPA Chronic Manuals. Any deviation from procedures in the EPA Chronic Manuals requires prior written approval by the Department.

(b) The Maximum Allowable Waste Concentration (MAWC) in % Effluent, for both a vertebrate and an invertebrate species, shall be determined and reported. The MAWC in % Effluent shall be compared to the calculated Instream Waste Concentration (IWC) of the effluent. The IWC in % Effluent shall be determined using the daily average effluent flow at the time of sampling and a dilution ratio of 10:1.

(c) The results of each toxicity test shall be submitted no later than 60 days following the end of each test period. These reports shall be submitted to the Regional Water Engineer at NYSDEC, 615 Erie Blvd. West, Syracuse, NY 13204-2400; and to the Toxicity Testing Unit, Bureau of Watershed Assessment and Research, 625 Broadway, Albany, NY 12233-3502.

(d) Where practicable, monitoring of chemical and physical parameters limited in this permit shall be coordinated so that the resulting analysis is also representative of the samples used for toxicity testing.

(e) Discharges which use chlorination as part of the waste treatment process should be dechlorinated prior to toxicity testing.

TOXICITY REDUCTION EVALUATION COMPLIANCE SCHEDULE

(a) In accordance with Department guidance on whole effluent toxicity monitoring and control, Department staff will evaluate the results of acute and/or chronic toxicity testing of discharges authorized by this permit. Based on this evaluation, the DEC may require the permittee to perform a Toxicity Reduction Evaluation (TRE). The permittee shall be notified of any requirement to perform a TRE by letter notification of the DEC Regional Water Engineer, including the Department's rationale for such requirement. Within 60 days of such notification the permittee shall submit an approvable proposal for Toxicity Reduction Evaluation to the Toxicity Testing Unit, Bureau of Watershed Assessment and Research, 625 Broadway, Albany, NY 12233-3502. The TRE proposal shall be directed towards identifying the source of the toxicity, describing procedures to reduce the toxicity to an acceptable level, identifying monitoring parameters suitable for insuring control of the toxicity, and proposing a schedule for completing the TRE.

(b) Within 14 days of receipt of written approval of the TRE proposal by DEC Regional Water Engineer, the permittee shall implement the approved TRE proposal in accordance with the proposed schedule.

(c) The completed TRE, including data findings and recommendations for corrective action, permit limits, and proposed self-monitoring requirements shall be submitted to the Bureau of Watershed Assessment and Research at the address noted in (a) on this page. The Department will review the TRE and may redraft the permit to incorporate one or more of the following, consistent with the provisions of applicable law and regulation: substance specific numerical limits, toxicity limits, monitoring requirements, and/or a schedule of compliance that will ensure acceptable toxicity levels of the effluent.

SCHEDULE OF COMPLIANCE

a) The permittee shall comply with the following schedule.

Action Code	Outfall Number(s)	Compliance Action	Due Date
	011, 017, 018, 019	The permittee shall initiate leachate minimization measures to eliminate the admixture of leachate in discharges from Outfalls 011, 017, 018, and 019 from seeps, fissures, or other unpermitted sources.. The goal of this project is to demonstrate consistent improvement in leachate reduction, with the discharges from Outfalls 011, 017, 018, and 019 meeting the applicable Chloride, Total Dissolved Solids, and pH effluent limits at the conclusion of the ongoing Seep Mitigation Program and Measures as detailed in Order on Consent Index No. D-7-0001-02-03 (the "Order").	11/1/2009
		These measures shall be undertaken in phases, in accordance with the May 19, 2006 Seep Mitigation Schedule submitted to this Department for Outfalls 017, 018,and 019 . All seeps shall be considered to be unpermitted discharges to the waters of the State. Seeps shall be considered to have the potential to adversely impact water quality in the receiving stream if the discharges from these seeps violate water quality standards for pH, TDS, TSS, or any other permitted parameters. During the period EDP to the conclusion of the ongoing Seep Mitigation Program and Measures as detailed in Order, the interim effluent limits for Total Dissolved Solids, Chlorides, and pH from Outfalls 011, 017, 018, and 019 shall be "Monitor Only"	
		The permittee shall submit reports and documents detailing the projects undertaken, the results of these projects, estimates of the reduction in leachate achieved by these projects, and sampling results demonstrating the reduction in leachate discharged through Outfalls 011, 017, 018, and 019 in accordance with the schedule below. In addition, the reports shall characterize any seeps noted during that phase and detail the efforts taken to mitigate these seeps, including locations, flow rates (if known), and sampling results. All documents shall be submitted to the Region 7 Regional Water Engineer, 615 Erie Boulevard West, Syracuse, New York 13204-2400; Region 7 Solid and Hazardous Materials Engineer, 615 Erie Boulevard West, Syracuse, New York 13204-2400; and Bureau of Water Permits, Division of Water, 625 Broadway, 4th Floor South, Albany, New York 12233-3505.	8/11/06
		Submit Phase 1 Drawings for Departmental approval.	9/18/06
		Submit Annual Report #1 detailing arctivities to be undertaken	9/17/07
		Submit Annual Report #2 detailing results of Phase 1 activities	11/9/07
		Submit Phase 2 Drawings for Departmental approval	9/15/08
		Submit Annual Report #3 detailing results of Phase 2 activities	12/15/08
		Submit Phase 3 Drawings for Departmental approval	9/14/09
		Submit Annual Report #4 detailing results of Phase 3 activities and any additional measures to be taken	Conclusion of Order activites
		Meet all applicable Chloride, Total Dissolved Solids, and pH effluent limits for Outfalls 011, 017, 018, and 019.	

The above compliance actions are one time requirements. The permittee shall comply with the above compliance actions to the Department's satisfaction once. When this permit is administratively renewed by NYSDEC letter entitled "SPDES NOTICE/RENEWAL APPLICATION/PERMIT", the permittee is not required to repeat the submission. The above due dates are independent from the effective date of the permit stated in the letter of "SPDES NOTICE/RENEWAL APPLICATION/PERMIT."

b) The permittee shall submit a written notice of compliance or non-compliance with each of the above schedule dates no later than 14 days following each elapsed date, unless conditions require more immediate notice as prescribed in 6 NYCRR Part 750-1.2(a) and 750-2 All such compliance or non-compliance notification shall be sent to the locations listed under the section of this permit entitled RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS. Each notice of non-compliance shall include the following information:

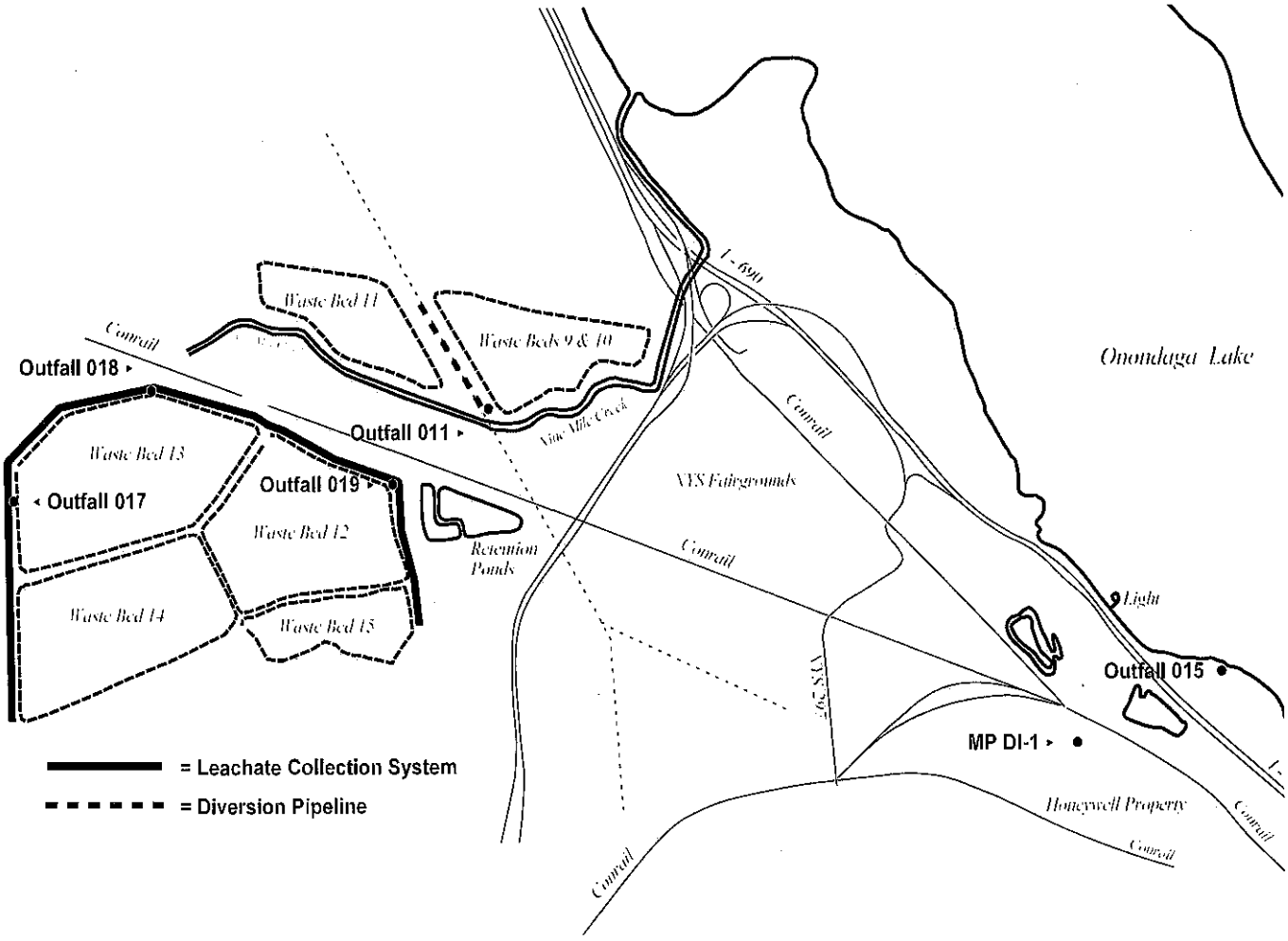
1. A short description of the non-compliance;
2. A description of any actions taken or proposed hy the permittee to comply with the elapsed schedule requirements without further delay and to limit environmental impact associated with the non-compliance;
3. A description or any faotors which tend to explain or mitigate the non-compliance; and
4. An estimate of the date the permittee will comply with the elapsed schedule requirement and an assessment of the probability that the permittee will meet the next scheduled requirement on time.

c) The permittee shall submit copies of any document required by the above schedule of compliance to NYSDEC Regional Water Engineer at the location listed under the section of this permit entitled RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS **and to the Bureau of Water Permits, 625 Broadway, Albany, N.Y. 12233-3505**, unless otherwise specified in this permit or in writing by the Department.

MONITORING LOCATIONS

The permittee shall take samples and measurements, to comply with the monitoring requirements specified in this permit, at the location(s) specified below:

Outfall 011: At the effluent side of the pump where the 24" line discharges to Ninemile Creek.
Outfall 015: At discharge point of pipeline just prior to Onondaga Lake.
Outfall 017: At lined swale just prior to discharge to abandoned gravel bed adjacent to Wastebed 13.
Outfall 018: At lined swale just prior to discharge to Nine Mile Creek.
Outfall 019: At lined swale just prior to discharge to Geddes Brook.
Monitoring point DI-1: In manhole on the east side of Access Road, approximately 100 feet south of Industrial Drive



RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS

a) The permittee shall also refer to 6 NYCRR Part 750-1.2(a) and 750-2 for additional information concerning monitoring and reporting requirements and conditions

b) The monitoring information required by this permit shall be summarized, signed and retained for a period of three years from the date of the sampling for subsequent inspection by the Department or its designated agent. **Also, monitoring information required by this permit shall be summarized and reported by submitting;**

[X] (if box is checked) completed and signed Discharge Monitoring Report (DMR) forms for each 1 month reporting period to the locations specified below. Blank forms are available at the Department's Albany office listed below. The first reporting period begins on the effective date of this permit and the reports will be due no later than the 28th day of the month following the end of each reporting period.

[ ] (if box is checked) an annual report to the Regional Water Engineer at the address specified below. The annual report is due by February 1 and must summarize information for January to December of the previous year in a format acceptable to the Department.

[ ] (if box is checked) a monthly "Wastewater Facility Operation Report..." (form 92-15-7) to the:
[ ] Regional Water Engineer and/or [ ] County Health Department or Environmental Control Agency specified below

Send the **original** (top sheet) of each DMR page to:

Department of Environmental Conservation
Division of Water
Bureau of Water Compliance Programs
625 Broadway,
Albany, New York 12233-3506

Phone: (518) 402-8177

Send the **first copy** (second sheet) of each DMR page to:

Department of Environmental Conservation
Regional Water Engineer
615 Erie Blvd. West
Syracuse, NY 13204-2400

Phone: (315)426-7500

c) Noncompliance with the provisions of this permit shall be reported to the Department as prescribed in 6 NYCRR Part 750-1.2(a) and 750-2.

d) Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

e) If the permittee monitors any pollutant more frequently than required by the permit, using test procedures approved under 40 CFR Part 136 or as specified in this permit, the results of this monitoring shall be included in the calculations and recording of the data on the Discharge Monitoring Reports.

f) Calculation for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in this permit.

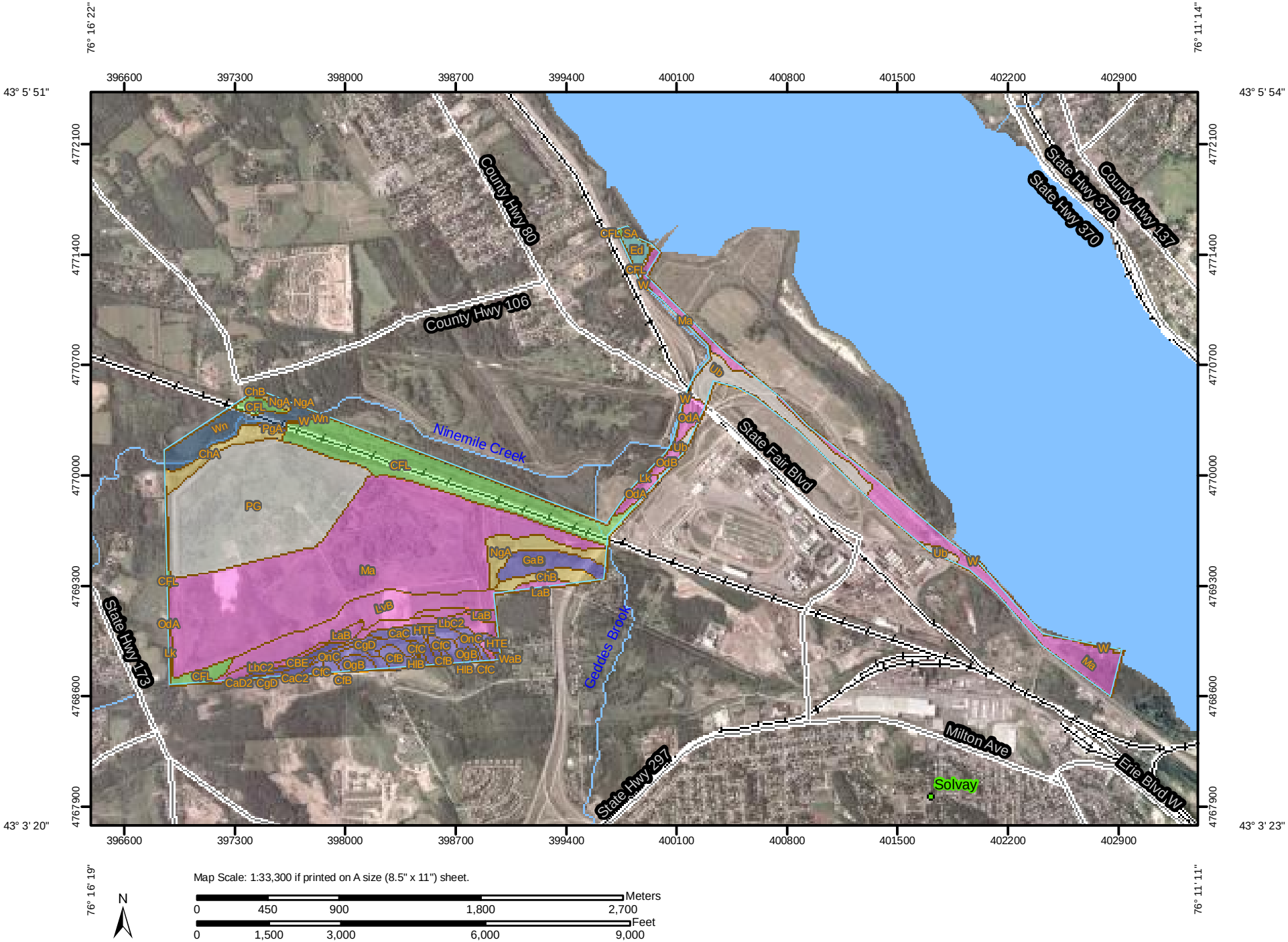
g) Unless otherwise specified, all information recorded on the Discharge Monitoring Report shall be based upon measurements and sampling carried out during the most recently completed reporting period.

h) Any laboratory test or sample analysis required by this permit for which the State Commissioner of Health issues certificates of approval pursuant to section five hundred two of the Public Health Law shall be conducted by a laboratory which has been issued a certificate of approval. Inquiries regarding laboratory certification should be sent to the Environmental Laboratory Accreditation Program, New York State Health Department Center for Laboratories and Research, Division of Environmental Sciences , The Nelson A. Rockefeller Empire State Plaza, Albany, New York 12201.

Appendix D

Soils Information

Hydrologic Soil Group—Onondaga County, New York
(SCA and Pipeline Route)



Map Scale: 1:33,300 if printed on A size (8.5" x 11") sheet.

N

Meters
0 450 900 1,800 2,700

Feet
0 1,500 3,000 6,000 9,000

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Units

Soil Ratings

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

Political Features

- Cities

Water Features

- Oceans
- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads

MAP INFORMATION

Map Scale: 1:33,300 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 18N NAD83

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

Soil Survey Area: Onondaga County, New York
Survey Area Data: Version 5, Feb 18, 2010

Date(s) aerial images were photographed: 7/16/2006; 7/7/2006

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 — Onondaga County, New York				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
CaC	Camillus silt loam, 6 to 12 percent slopes	B	6.3	0.6%
CaC2	Camillus silt loam, 6 to 12 percent slopes, eroded	B	2.3	0.2%
CaD2	Camillus silt loam, 12 to 18 percent slopes eroded	B	0.3	0.0%
CBE	Camillus and Lairdsville channery soils, steep	B	5.7	0.6%
CfB	Cazenovia silt loam, 2 to 8 percent slopes	B	8.6	0.8%
CfC	Cazenovia silt loam, 8 to 15 percent slopes	B	13.3	1.3%
CFL	Cut and fill land	A/D	110.3	10.8%
CgD	Cazenovia soils, 15 to 25 percent slopes	B	7.6	0.7%
ChA	Collamer silt loam, 0 to 2 percent slopes	C	16.0	1.6%
ChB	Collamer silt loam, 2 to 6 percent slopes	C	10.4	1.0%
Ed	Edwards muck	B/D	6.1	0.6%
GaB	Galen very fine sandy loam, 2 to 6 percent slopes	B	20.2	2.0%
HlB	Hilton loam, 3 to 8 percent slopes	B	1.7	0.2%
HTE	Honeoye, Lansing, and Ontario soils, steep	B	10.9	1.1%
LaB	Lairdsville silt loam, 2 to 6 percent slopes	D	13.4	1.3%
LbC2	Lairdsville silty clay loam, 6 to 12 percent slopes, eroded	D	22.0	2.2%
Lk	Lakemont silty clay loam	D	1.7	0.2%
LvB	Lockport and Brockport silty clay loams, 0 to 6 percent slopes	D	57.1	5.6%
Ma	Made land, chemical waste	D	389.9	38.3%
NgA	Niagara silt loam, 0 to 4 percent slopes	C	21.9	2.1%
OdA	Odessa silty clay loam, 0 to 2 percent slopes	D	12.6	1.2%
OdB	Odessa silty clay loam, 2 to 6 percent slopes	D	3.7	0.4%
OgB	Ontario loam, 2 to 8 percent slopes	B	7.6	0.7%
OnC	Ontario gravelly loam, 8 to 15 percent slopes	B	7.0	0.7%
PG	Gravel pits		188.1	18.5%
PgA	Palmyra gravelly loam, 0 to 3 percent slopes	B	1.1	0.1%
SA	Saprists and Fluvaquents, ponded	A/D	0.6	0.1%

Hydrologic Soil Group— Summary by Map Unit — Onondaga County, New York				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
Ub	Urban land		39.6	3.9%
W	Water		3.5	0.3%
WaB	Wampsville gravelly silt loam, 3 to 8 percent slopes	B	0.5	0.0%
Wn	Wayland silt loam	C/D	29.3	2.9%
Totals for Area of Interest			**1,019.2**	**100.0%**

Description

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

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

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

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

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

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

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

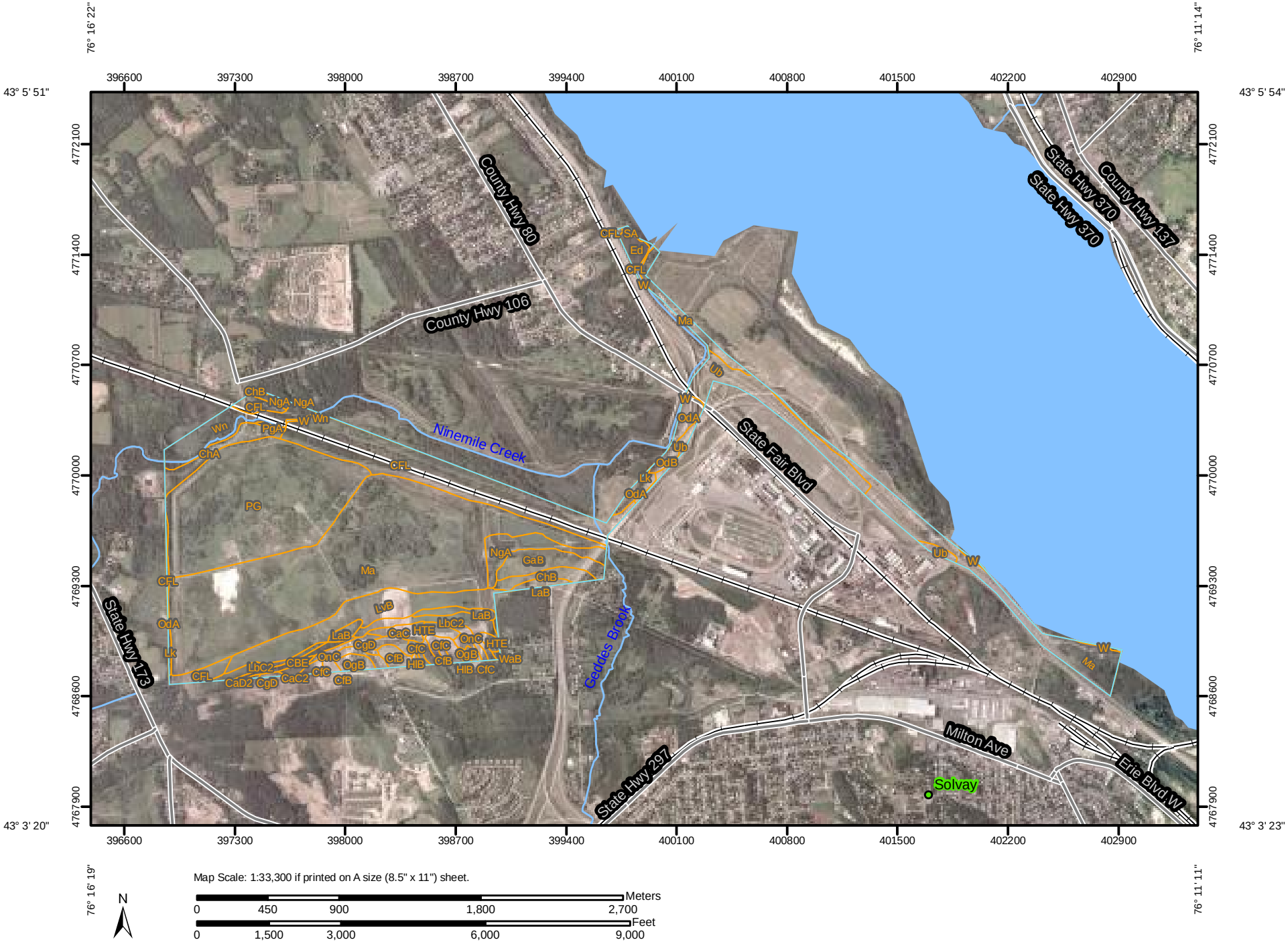
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Soil Map—Onondaga County, New York
(SCA and Pipeline Route)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads

MAP INFORMATION

Map Scale: 1:33,300 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 18N NAD83

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Survey Area Data: Version 5, Feb 18, 2010

Date(s) aerial images were photographed: 7/16/2006; 7/7/2006

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.

Map Unit Legend

Onondaga County, New York (NY067)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
CaC	Camillus silt loam, 6 to 12 percent slopes	6.3	0.6%
CaC2	Camillus silt loam, 6 to 12 percent slopes, eroded	2.3	0.2%
CaD2	Camillus silt loam, 12 to 18 percent slopes eroded	0.3	0.0%
CBE	Camillus and Lairdsville channery soils, steep	5.7	0.6%
CfB	Cazenovia silt loam, 2 to 8 percent slopes	8.6	0.8%
CfC	Cazenovia silt loam, 8 to 15 percent slopes	13.3	1.3%
CFL	Cut and fill land	110.3	10.8%
CgD	Cazenovia soils, 15 to 25 percent slopes	7.6	0.7%
ChA	Collamer silt loam, 0 to 2 percent slopes	16.0	1.6%
ChB	Collamer silt loam, 2 to 6 percent slopes	10.4	1.0%
Ed	Edwards muck	6.1	0.6%
GaB	Galen very fine sandy loam, 2 to 6 percent slopes	20.2	2.0%
HlB	Hilton loam, 3 to 8 percent slopes	1.7	0.2%
HTE	Honeoye, Lansing, and Ontario soils, steep	10.9	1.1%
LaB	Lairdsville silt loam, 2 to 6 percent slopes	13.4	1.3%
LbC2	Lairdsville silty clay loam, 6 to 12 percent slopes, eroded	22.0	2.2%
Lk	Lakemont silty clay loam	1.7	0.2%
LvB	Lockport and Brockport silty clay loams, 0 to 6 percent slopes	57.1	5.6%
Ma	Made land, chemical waste	389.9	38.3%
NgA	Niagara silt loam, 0 to 4 percent slopes	21.9	2.1%
OdA	Odessa silty clay loam, 0 to 2 percent slopes	12.6	1.2%
OdB	Odessa silty clay loam, 2 to 6 percent slopes	3.7	0.4%
OgB	Ontario loam, 2 to 8 percent slopes	7.6	0.7%
OnC	Ontario gravelly loam, 8 to 15 percent slopes	7.0	0.7%
PG	Gravel pits	188.1	18.5%
PgA	Palmyra gravelly loam, 0 to 3 percent slopes	1.1	0.1%
SA	Saprists and Fluvaquents, ponded	0.6	0.1%
Ub	Urban land	39.6	3.9%
W	Water	3.5	0.3%
WaB	Wampsville gravelly silt loam, 3 to 8 percent slopes	0.5	0.0%
Wn	Wayland silt loam	29.3	2.9%
Totals for Area of Interest		**1,019.2**	**100.0%**

Appendix E

Pre-Construction Requirements

Pre-Construction Requirements

Instructions to Owner/Operator/Contractor

1. The Owner, Operator and Contractor shall read this Stormwater Pollution Prevention Plan (SWPPP) document to become familiar with all aspects of Stormwater Pollution Prevention associated with this project. This document needs to be kept on file at the work site at all times (*i.e.*, in the work trailer).

2. The Owner, Operator, and Contractor shall read the New York State Department of Environmental Conservation SPDES General Permit for Storm Water Discharges from Construction Activities GP-0-10-001. This SWPPP has been prepared by the Owner to assist the Contractor with compliance with GP-0-10-001. The Contractor must follow the SWPPP and understand that this document constitutes the minimum standards for compliance with GP-0-10-001.

3. In the event of a transfer of ownership or responsibility for stormwater runoff, the original Owner or Operator must notify the new Owner or Operator in writing of the requirement to obtain permit coverage by submitting a new Notice of Intent (NOI). Once the new Owner or Operator obtains permit coverage, the original Owner or Operator shall submit a completed Notice of Termination (NOT) with the name and permit identification number of the new Owner or Operator. If the original Owner or Operator maintains ownership of a portion of the construction activity and will disturb soil, they must obtain their coverage under GP-0-10-001. Permit coverage for the new Owner or Operator will be effective as of the date a completed NOI is sent and an acknowledgement letter is received. Provided the original Owner or Operator was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new Owner or Operator.

4. Prior to commencing construction activities, the Owner/Operator/Contractor must complete the forms and certifications herein. This information shall be kept updated.

5. All enclosed certifications shall be completed and each one of the Contractors shall complete their portion of the certification. Each certification is to be completed and signed by a president, treasurer or vice president or any person who performs similar policy or decision making functions and by the on-site individual having responsibility for the firm and each one of the Contractors implementing erosion control measures.

Pre-Construction Requirements

I. PRE-CONSTRUCTION MEETING DOCUMENTS

Project Name _____
Permit No. _____ Date of NYSDEC Authorization _____
Name of Owner/Operator _____
Prime Contractor _____
Contractors _____

a. Preamble to Site Assessment and Inspections

The following information to be read by all person's involved in the construction of stormwater related activities:

The Owner/Operator agrees to have a qualified inspector[1] conduct an assessment of the site prior to the commencement of construction[2]. The Owner/Operator shall certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed and implemented to ensure overall preparedness of the site for the commencement of construction.

When construction starts, the qualified inspector shall conduct at least two site inspections every seven calendar days. There should be a minimum of two full calendar days between inspections. The Owner/Operator shall maintain a record of all inspection reports on site and be made available to the permitting authorities upon request.

Prior to filing the Notice of Termination or the end of permit term, the Owner/Operator shall have a qualified inspector perform a final site inspection. The qualified inspector shall certify that the site has undergone final stabilization[3] using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed.

[1] "Qualified Inspector means a person knowledgeable in the principles and practices of erosion and sediment controls, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), licensed Landscape Architect, or other Department endorsed individual. It also means someone working under the direction and supervision of a licensed Professional Engineer or licensed Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control.

[2] "Commencement of construction" means the initial disturbance of soils associated with clearing, grading or excavation activities or other construction activities that disturb or expose soils such as demolition or stockpiling of fill material.

[3] "Final stabilization" means that all soil-disturbance activities at the site have ceased and uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established or equivalent stabilization measures such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

Pre-Construction Requirements

Pre-construction Site Assessment Checklist
(NOTE: Provide comments below as necessary)

1. Notice of Intent, SWPPP, and Contractors Certification:

Yes	No	NA	
[ ]	[ ]	[ ]	Has a Notice of Intent been filed with an acknowledgement letter received from the NYS Department of Conservation?
[ ]	[ ]	[ ]	Has MS4 Approval Letter (if needed) been received?
[ ]	[ ]	[ ]	Is the SWPPP on-site? Where? _____
[ ]	[ ]	[ ]	Is the Plan current? What is the latest revision date? _____
[ ]	[ ]	[ ]	Is a copy of the NOI (with brief description) on-site: Where? _____
[ ]	[ ]	[ ]	Have all Contractors involved with the stormwater related activities signed a Contractor's Certification?
[ ]	[ ]	[ ]	Has Contractors stabilization/construction sequence been received?

2. Resource Protection

Yes	No	NA	
[ ]	[ ]	[ ]	Are construction limits clearly flagged or fenced? _____
[ ]	[ ]	[ ]	Important trees and associated rooting zones, on-site septic system absorption fields, existing vegetated areas suitable for filter strips, especially in perimeter areas, have been flagged for protection.
[ ]	[ ]	[ ]	Creek crossings installed prior to land-disturbing activity, including clearing and blasting.

3. Surface Water Protection

Yes	No	NA	
[ ]	[ ]	[ ]	Clean stormwater runoff has been diverted from areas to be disturbed.
[ ]	[ ]	[ ]	Bodies of water located either on-site or in the vicinity of the site have been identified and protected.
[ ]	[ ]	[ ]	Appropriate practices to protect on-site or downstream surface water are installed.
[ ]	[ ]	[ ]	Are clearing and grading operations divided into areas <5 acres?

4. Stabilized Construction Entrance

Yes	No	NA	
[ ]	[ ]	[ ]	A temporary construction entrance to capture mud and debris from construction vehicles before they enter the public highway has been installed.
[ ]	[ ]	[ ]	Other access areas (entrances, construction routes, and equipment parking areas) are stabilized immediately as work takes place with gravel or other cover.
[ ]	[ ]	[ ]	Sediment tracked onto public streets is removed or cleaned on a regular basis.

5. Perimeter Sediment Controls

Yes	No	NA	
[ ]	[ ]	[ ]	Silt fence material and installation comply with the standard drawing and specifications.
[ ]	[ ]	[ ]	Silt fences are installed at appropriate spacing intervals.
[ ]	[ ]	[ ]	Sediment/detention basin was installed as first land disturbing activity.
[ ]	[ ]	[ ]	Sediment traps and barriers are installed.

Pre-Construction Requirements

6. Pollution Prevention for Waste and Hazardous Materials

Yes	No	NA	
[ ]	[ ]	[ ]	The Operator or designated representative has been assigned to implement the spill prevention avoidance and response plan.
[ ]	[ ]	[ ]	The plan is contained in the SWPPP on page _____
[ ]	[ ]	[ ]	Appropriate materials to control spills are on-site. Where? _____

b. Qualified Inspector's Credentials and Certification

"I hereby certify that I meet the criteria set forth in the General Permit to conduct site inspections for this project and that the appropriate erosion and sediment controls described in the SWPPP and as described in the following Pre-construction Site Assessment Checklist have been adequately installed or implemented, ensuring the overall preparedness of this site for the commencement of construction"

Name (please print): _____

Title: _____ Date: _____

Address: _____

Phone: _____ Email: _____

Signature: _____

Pre-Construction Requirements

CONTRACTOR'S CERTIFICATION STATEMENT

(Each Contractor is required to sign the certification statement prior to working on-site).

I. SITE INFORMATION

Construction Site Name: _____

Site Location: _____

II. CONTRACTORS INFORMATION

Contracting Firm

Contracting Firm Address

Telephone Number(s)

Contact(s) 1)
2)
3)

Name(s) of Trained Contractor(s) that will be responsible from Contractor's company for implementing the SWPPP:

Name_____Title _____

Name_____Title _____

A trained contractor is an employee of the contracting company that has received four (4) hours of training, which has been endorsed by the Department from a Soil and Water Conservation District, CPESC, Inc. or other Department endorsed entity in proper erosion and sediment control principles no later than two (2) years from the date this general permit is issued. After receiving the initial training, the trained contractor shall receive four (4) hours of training every three (3) years.

III. STORMWATER MEASURES

Contractor is responsible for implementing and maintaining the following stormwater measures:

1.
2.
3.
4.

IV. CERTIFICATION

"I hereby certify that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the owner or operator must comply with the terms and conditions of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings. I also certify, that I have received a copy of the SWPPP and will retain a copy of such SWPPP on-site during construction"

V. SIGNATURE: _____ DATE

Name (print): _____ Title:

Appendix F

Inspection Reports

FIELD RECORD COPY

Honeywell Water Treatment Plant and Sediment Consolidation Area

SWPPP MAINTENANCE INSPECTION FORM

Permit No: NYR10 _____ Inspection #: _____

Name of Inspector: _____ Date/Time of Inspection: _____

Soil Conditions: **WET /DRY /SATURATED** (Circle One) Weather Conditions:_____

Type of Inspection	Yes	No
1. Initial Inspection		
2. Weekly/Biweekly Inspection		
3. Construction Shutdown Inspection		
4. Final Inspection:		
a. Has the site undergone final stabilization?		
b. Have all temporary erosion controls been removed?		

(Edit Checklist below for Project Specifics)

Project Checklist (indicate Areas of concern on the attached map)	Yes	No	N/A
Erosion and Sediment Controls:			
1. Is there any evidence of runoff leaving the site?			
2. Are silt fences in good condition and free from visible signs of erosion (___% sediment buildup)?			
3. Are sumps and weir boxes in place and functioning as shown on the plan?			
4. Are construction access/egress points stabilized?			
5. Are vehicles and equipment being washed down in a stabilized area?			
6. Are riprap chutes free of debris?			
7. Are swales functioning properly and free of debris and scour/erosion?			
8. Are dust control measures being applied as needed?			
9. Are check dams functioning as designed and free of debris?			
10. Are stormwater basins installed and functioning as designed (___% sediment buildup)?			
11. Are trenching/boring operations proceeding without impact to adjacent waters?			
Stabilization Practices:			
12. Have all disturbed portions of the site where earth disturbing activities have ceased and will not resume within 14 days been temporarily stabilized by covering with plastic, mulching, or by mulching and seeding?			
13. Have all disturbed portions of the site where earth disturbing activities have permanently ceased been stabilized with topsoil and permanent seed?			
Additional Stormwater Controls:			
14. Are material storage/handling/stockpile areas properly stabilized?			
15. Are concrete disposal areas being properly utilized?			
16. Is there any evidence of spills or leaks from vehicles/equipment?			

List Disturbed Areas	Stabilized Yes	No
1.		
2.		
3.		
4.		

FIELD RECORD COPY

FIELD RECORD COPY

Honeywell Water Treatment Plant and Sediment Consolidation Area
SWPPP MAINTENANCE INSPECTION FORM

Work Performed Since Last Inspection & Effectiveness of Corrective Actions: _____

Comments on General Site Conditions (see attached ESC Plan): _____

Remarks/Recommendations*: _____

* Please make a distinction between deficiencies to the SWPPP and normal maintenance items.

Condition of Runoff at Discharge Points (Photos Attached): _____

PLEASE SEE ATTACHED MAP FOR LOCATIONS

IF ALL QUESTIONS ARE ANSWERED "YES" OR "N/A", THEN SIGNATURE BELOW ACKNOWLEDGES COMPLIANCE WITH THE EXISTING STORM WATER POLLUTION PREVENTION PLAN AND NYSDEC SPDES PERMIT (GP-0-10-001).

Inspector: _____ **Training #:** _____ **Date:** _____
Signature of Inspector

Reviewed: _____ **Training #:** _____ **Date:** _____
Qualified Professional

FIELD RECORD COPY

Appendix G

SPDES General Permit

Notice of Termination

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505
(NOTE: Submit completed form to address above)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity

Please indicate your permit identification number: NYR ___ ___ ___ ___ ___ ___

I. Owner or Operator Information

1. Owner/Operator Name: Honeywell International, Inc.

2. Street Address: 301 Plainfield Road, Suite 330

3. City/State/Zip: Syracuse, NY 13212

4. Contact Person: Al Labuz | 4a.Telephone: 315-552-9781

5. Contact Person E-Mail: al.labuz@honeywell.com

II. Project Site Information

5. Project/Site Name: Water Treatment Plant and Sediment Consolidation Area

6. Street Address: Gerelock Road, I690 and I695

7. City/Zip: Camillus 13031 and Geddes 13209

8. County: Onondaga

III. Reason for Termination

9a. ☐ All disturbed areas have achieved final stabilization in accordance with the general permit and SWPPP.
***Date final stabilization completed** (month/year): _____

9b. ☐ Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ___ ___ ___ ___ ___ ___
(Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. ☐ Other (Explain on Page 2)

IV. Final Site Information:

10a. Did this construction activity require the development of a SWPPP that includes post-construction stormwater management practices? ☐ yes ☐ no (If no, go to question 10f.)

10b. Have all post-construction stormwater management practices included in the final SWPPP been constructed? ☐ yes ☐ no (If no, explain on Page 2)

10c. Identify the entity responsible for long-term operation and maintenance of practice(s)?

_____

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? ☐ yes ☐ no

10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s):

☐ Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.

☐ Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).

☐ For post-construction stormwater management practices that are privately owned, the deed of record has been modified to include a deed covenant that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

☐ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, college, university), or government agency or authority, policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? _____ (acres)

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? ☐ yes ☐ no
(If Yes, complete section VI - "MS4 Acceptance" statement

V. Additional Information/Explanation:
(Use this section to answer questions 9c. and 10b., if applicable)

VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage)

I have determined that it is acceptable for the owner or operator of the construction project identified in question 5 to submit the Notice of Termination at this time.

Printed Name:

Title/Position:

Signature:	Date:

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

VII. Qualified Inspector Certification - Final Stabilization:

I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):

I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

IX. Owner or Operator Certification

I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

(NYS DEC Notice of Termination - January 2010)

Appendix H

NYSOPRHP Documentation

New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau D
625 Broadway, Albany, New York 12233-7016
Phone: (518) 402-9818 • **FAX:** (518) 402-9020
Website: www.dec.state.ny.us

Alexander B. Grannis
Commissioner

September 12, 2007

Mr. John P. McAuliffe, P.E.
Program Director, Syracuse
Honeywell
5000 Brittonfield Parkway, Suite 700
East Syracuse, NY 13057

Re: Public Archaeology Facility Report, Cultural Resource Management Report, Phase 1A Cultural Resource Assessment, Onondaga Lake Project, Onondaga Lake, Wastebed B and Wastebed 13, by Binghamton University, State University of New York, Dated October 29, 2004 (734030)

Dear Mr. McAuliffe:

We have received and reviewed the October 29, 2004 version of the above-referenced document, which was transmitted by your September 10, 2007 letter to my attention. Based on our review of the report, we concur with the recommendations of the report, as stated below:

1. Due to disturbances from mining activities, no archaeological testing is recommended for Wastebed 13.

2. Wastebed B generally has a low potential for historic or prehistoric resources. Phase 1B testing is recommended only for the area of the former Geddes Pier.

3. Additional investigation is recommended for the area of Onondaga Lake itself. There are a number of known, and potentially unidentified shipwrecks located within the Lake. There is also a high probability that remains of 19th to early 20th century lakeside resorts are present beneath the water and fill along sections of the lake. Additional investigation may involve visual inspection through diving, additional sonar or other remote sensing surveys, coring, or other methods. A testing program should be developed and submitted to NYSDEC/EPA to insure that all concerns are addressed prior to conducting the survey. In addition, CR's Onondaga Lake Phase 1 Pre-Design Investigation Geophysical Survey Report should be reviewed by PAF, or some other qualified professional, during the development of a work plan for future investigatory work relating to cultural resources

(Phase 1B) in the lake and affected upland areas (e.g., Wastebed B). This review of the CR Report should be conducted in consultation with a professional underwater archeologist. FYI, EPA can be of assistance in providing contact information for qualified underwater archeologists.

Therefore, the October 29, 2004 version of the Public Archaeology Facility Report, Cultural Resource Management Report, Phase 1A Cultural Resource Assessment, Onondaga Lake Project, Onondaga Lake, Wastebed B and Wastebed 13, by Binghamton University, State University of New York, Dated October 29, 2004 , as transmitted by your September 10, 2007 cover letter, is approved. Please distribute copies of the report to the various document repositories, as discussed in the governing consent decree.

Sincerely,

Timothy J. Larson, P.E.
Project Manager

cc: T. Milch, Esq, - Arnold & Porter
R. Nunes - UPEPA
J. Davis - NYSDOL, Albany
H. Hamel - NYSDOH, Syracuse

Appendix I

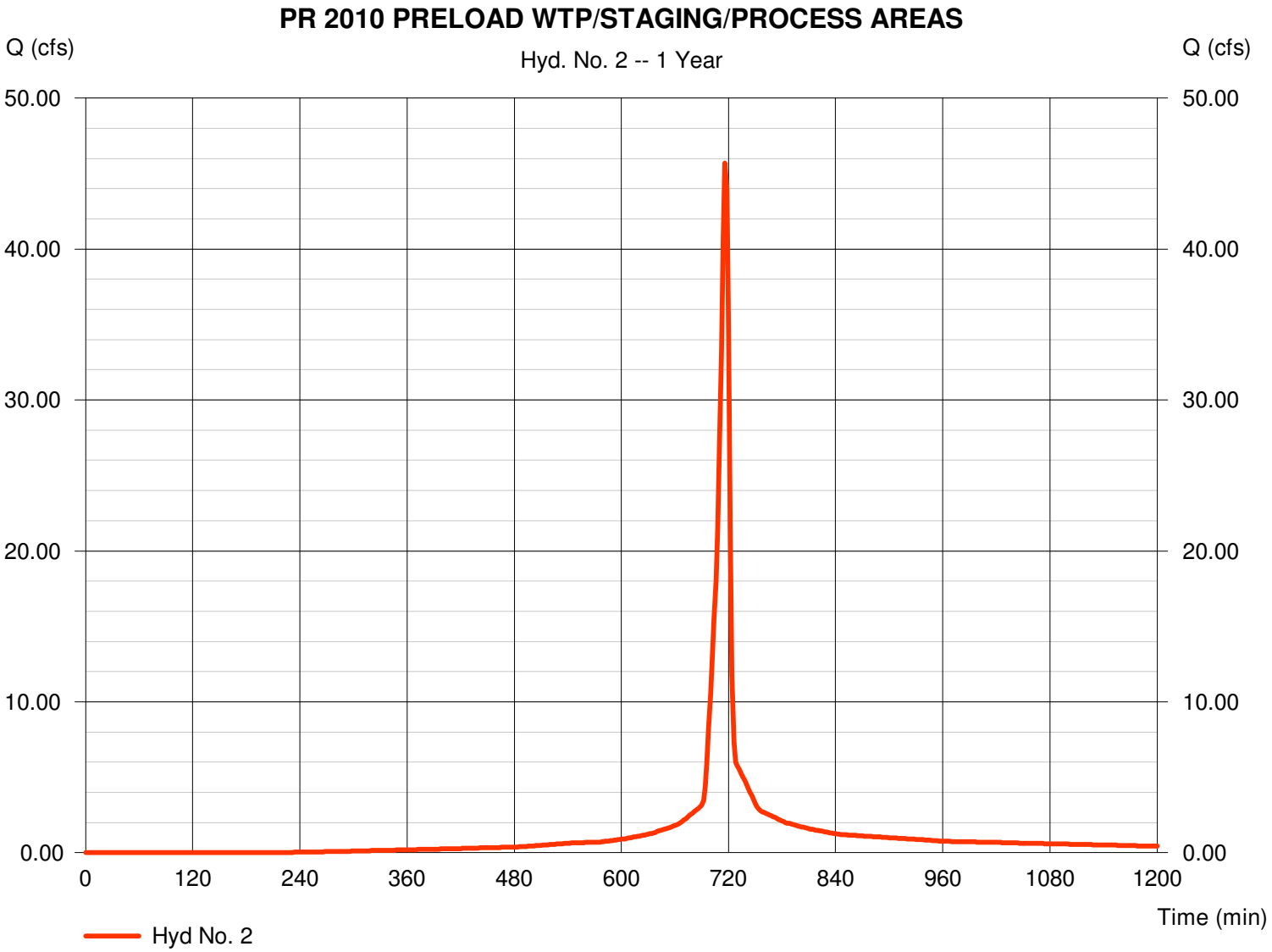
Stormwater Analyses

Hydrograph Report

Hyd. No. 2

PR 2010 PRELOAD WTP/STAGING/PROCESS AREAS

Hydrograph type	=	SCS Runoff	Peak discharge	=	45.70 cfs
Storm frequency	=	1 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	99,306 cuft
Drainage area	=	16.500 ac	Curve number	=	96
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	5.90 min
Total precip.	=	2.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



TR55 Tc Worksheet

Hyd. No. 2

PR 2010 PRELOAD WTP/STAGING/PROCESS AREAS

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.011		0.011		0.011		
Flow length (ft)	=	150.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	2.40		0.00		0.00		
Land slope (%)	=	0.50		0.00		0.00		
Travel Time (min)	**=**	**3.37**	**+**	**0.00**	**+**	**0.00**	**=**	**3.37**
Shallow Concentrated Flow								
Flow length (ft)	=	0.00		0.00		0.00		
Watercourse slope (%)	=	0.00		0.00		0.00		
Surface description	=	Paved		Paved		Paved		
Average velocity (ft/s)	=	0.00		0.00		0.00		
Travel Time (min)	**=**	**0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**
Channel Flow								
X sectional flow area (sqft)	=	9.00		0.00		0.00		
Wetted perimeter (ft)	=	13.25		0.00		0.00		
Channel slope (%)	=	0.50		0.00		0.00		
Manning's n-value	=	0.025		0.015		0.015		
Velocity (ft/s)	=	3.25		0.00		0.00		
Flow length (ft)	=	500.0		0.0		0.0		
Travel Time (min)	**=**	**2.56**	**+**	**0.00**	**+**	**0.00**	**=**	**2.56**

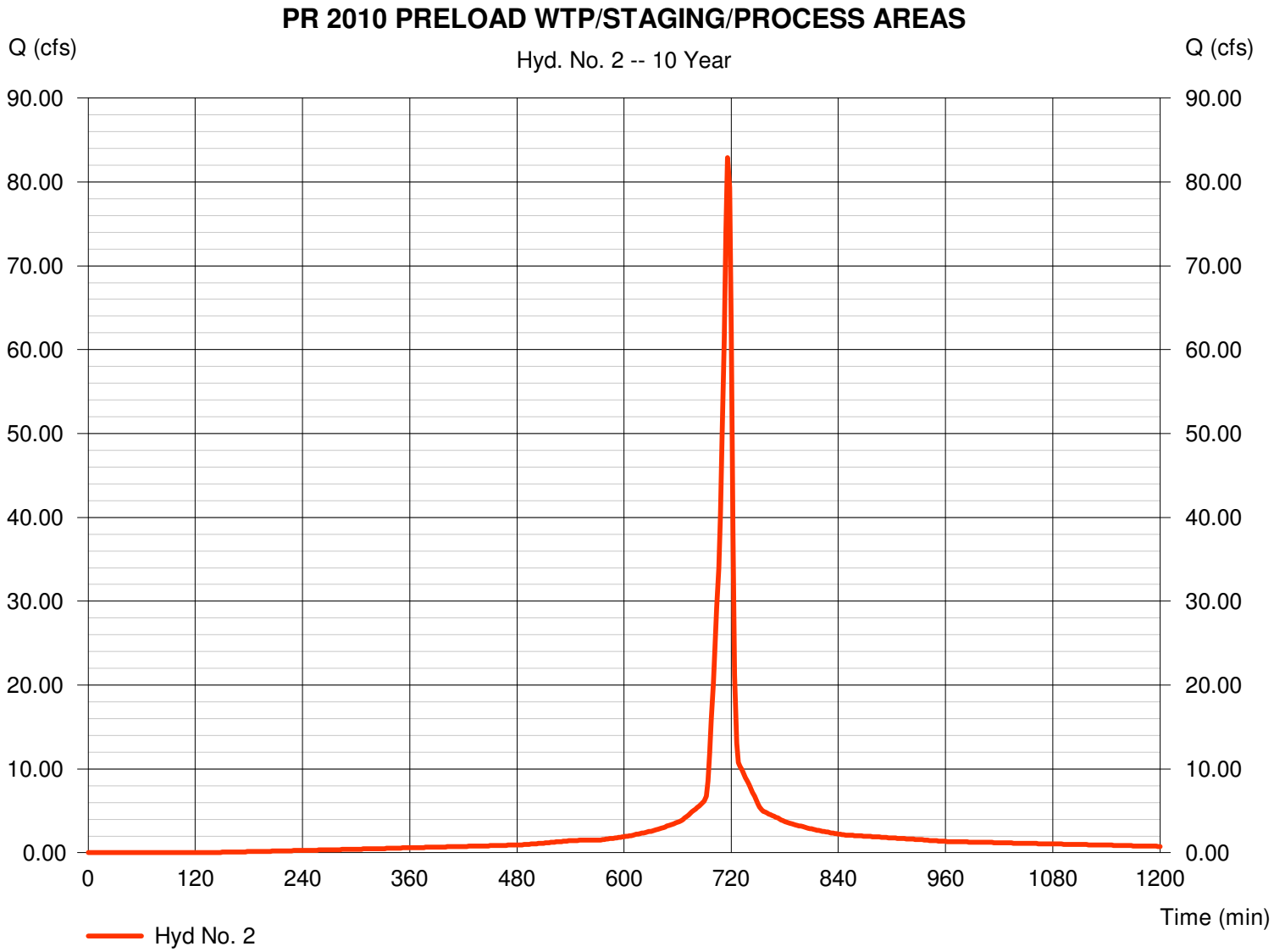
Total Travel Time, Tc ..... 5.90 min

Hydrograph Report

Hyd. No. 2

PR 2010 PRELOAD WTP/STAGING/PROCESS AREAS

Hydrograph type	=	SCS Runoff	Peak discharge	=	82.91 cfs
Storm frequency	=	10 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	187,659 cuft
Drainage area	=	16.500 ac	Curve number	=	96
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	5.90 min
Total precip.	=	3.80 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

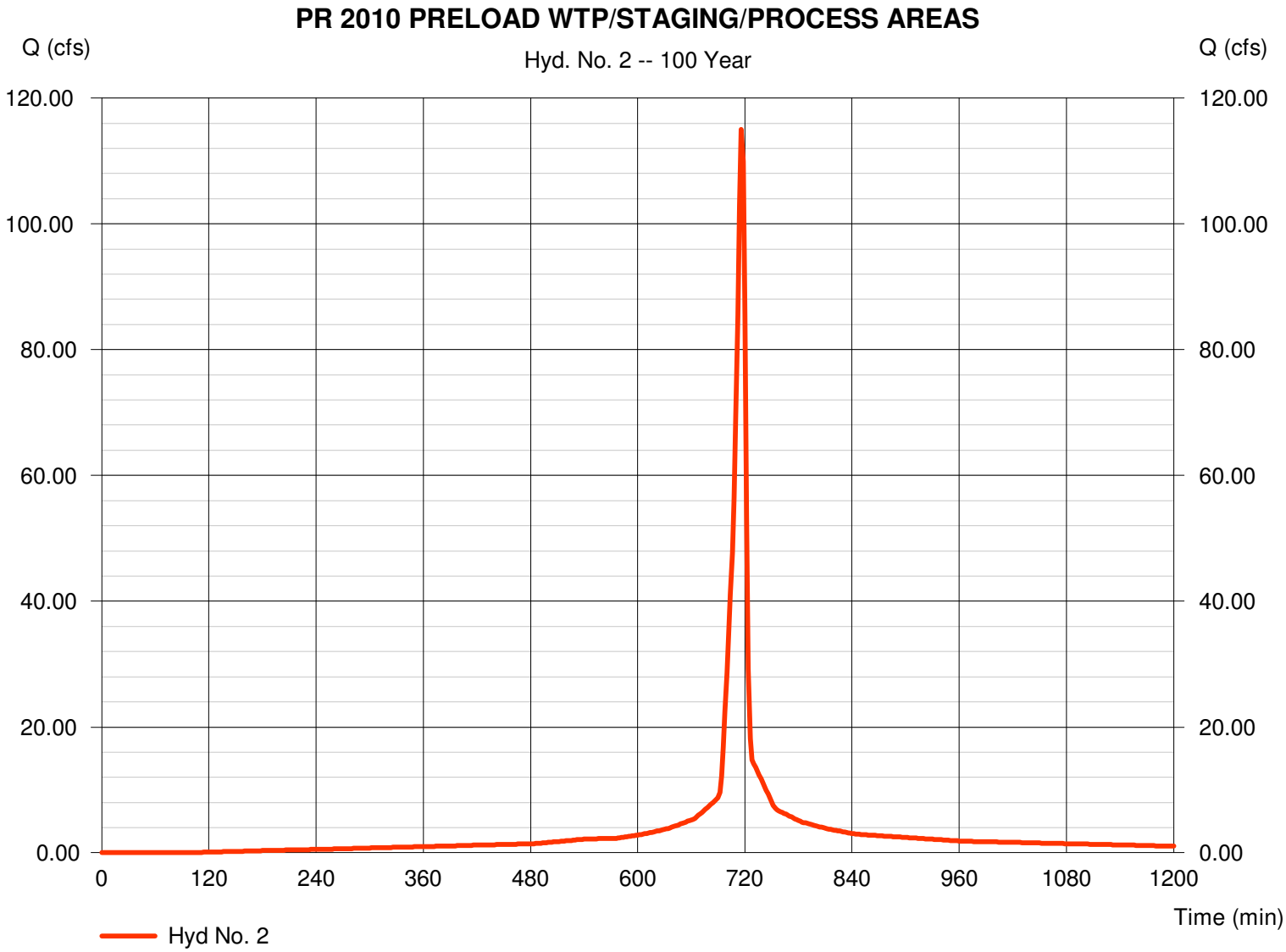


Hydrograph Report

Hyd. No. 2

PR 2010 PRELOAD WTP/STAGING/PROCESS AREAS

Hydrograph type	=	SCS Runoff	Peak discharge	=	115.05 cfs
Storm frequency	=	100 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	265,674 cuft
Drainage area	=	16.500 ac	Curve number	=	96
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	5.90 min
Total precip.	=	5.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



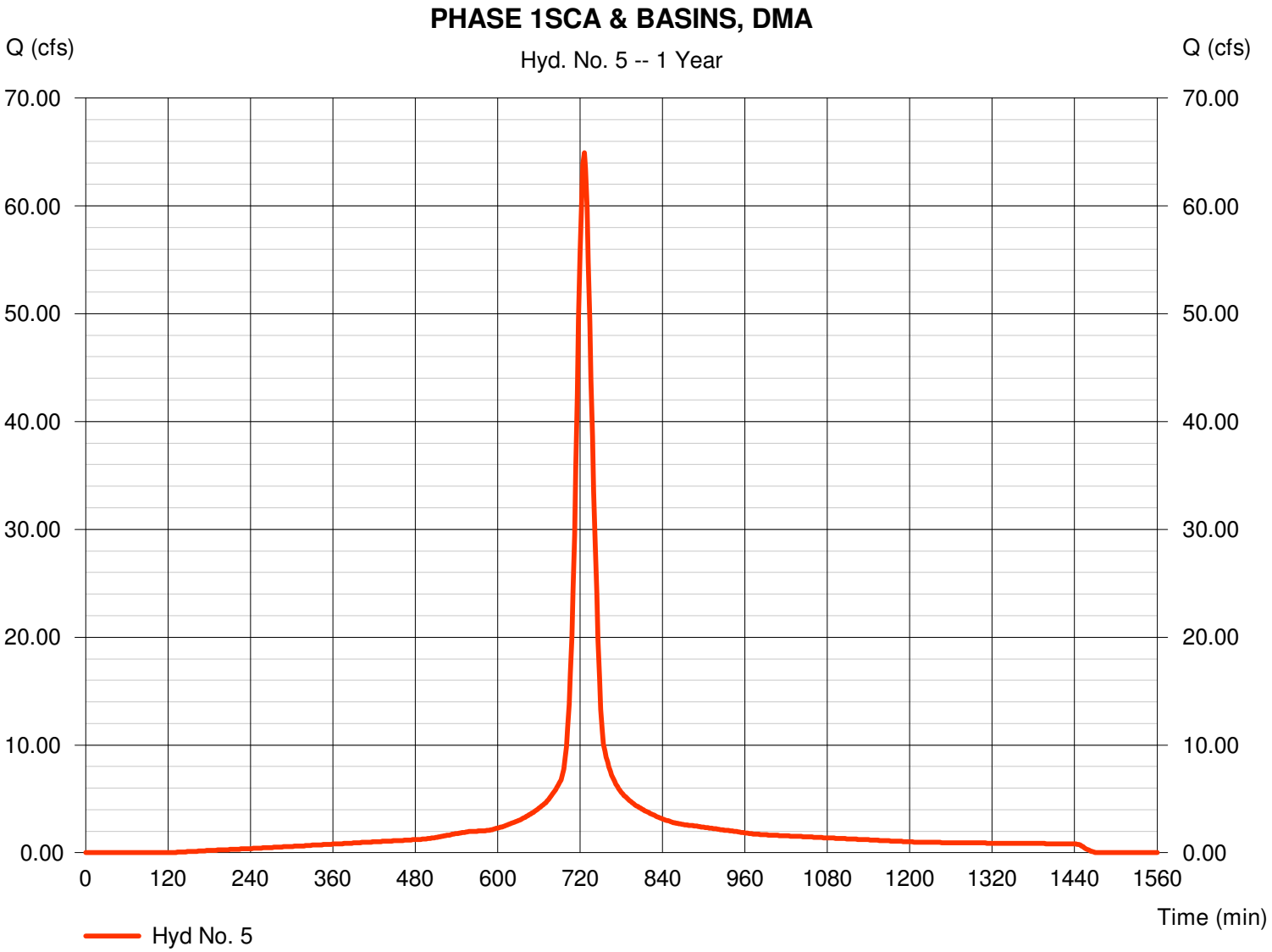
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 5

PHASE 1SCA & BASINS, DMA

Hydrograph type	=	SCS Runoff	Peak discharge	=	64.90 cfs
Storm frequency	=	1 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	242,719 cuft
Drainage area	=	33.300 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	22.40 min
Total precip.	=	2.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



TR55 Tc Worksheet

Hyd. No. 5

PHASE 1SCA & BASINS, DMA

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.011		0.011		0.011		
Flow length (ft)	=	300.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	2.40		0.00		0.00		
Land slope (%)	=	0.50		0.00		0.00		
Travel Time (min)	**=**	**5.87**	**+**	**0.00**	**+**	**0.00**	**=**	**5.87**
Shallow Concentrated Flow								
Flow length (ft)	=	1430.00		0.00		0.00		
Watercourse slope (%)	=	0.50		0.00		0.00		
Surface description	=	Paved		Paved		Paved		
Average velocity (ft/s)	=	1.44		0.00		0.00		
Travel Time (min)	**=**	**16.58**	**+**	**0.00**	**+**	**0.00**	**=**	**16.58**
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 ..... 22.40 min

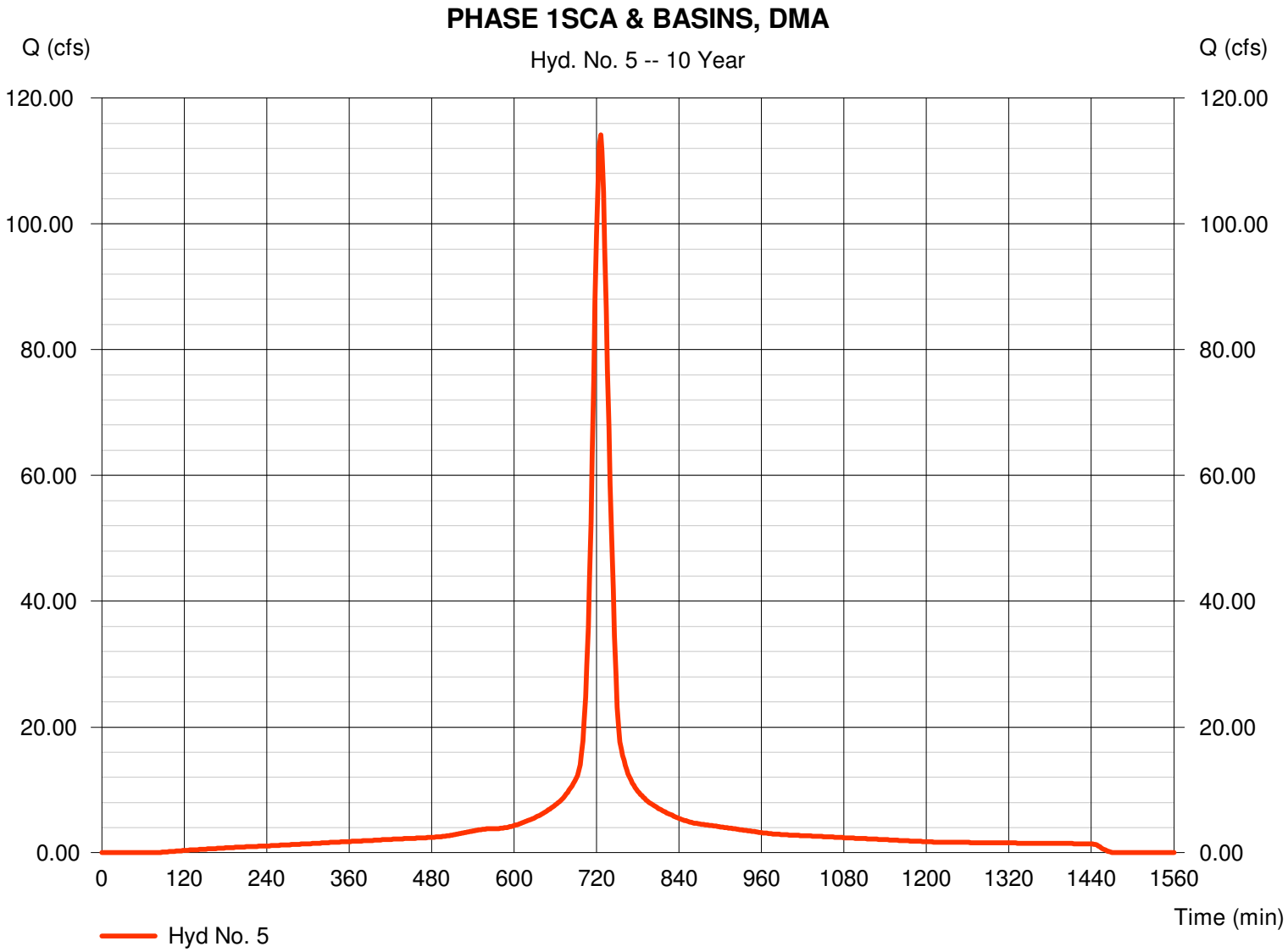
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 5

PHASE 1SCA & BASINS, DMA

Hydrograph type	=	SCS Runoff	Peak discharge	=	114.17 cfs
Storm frequency	=	10 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	438,704 cuft
Drainage area	=	33.300 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	22.40 min
Total precip.	=	3.80 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



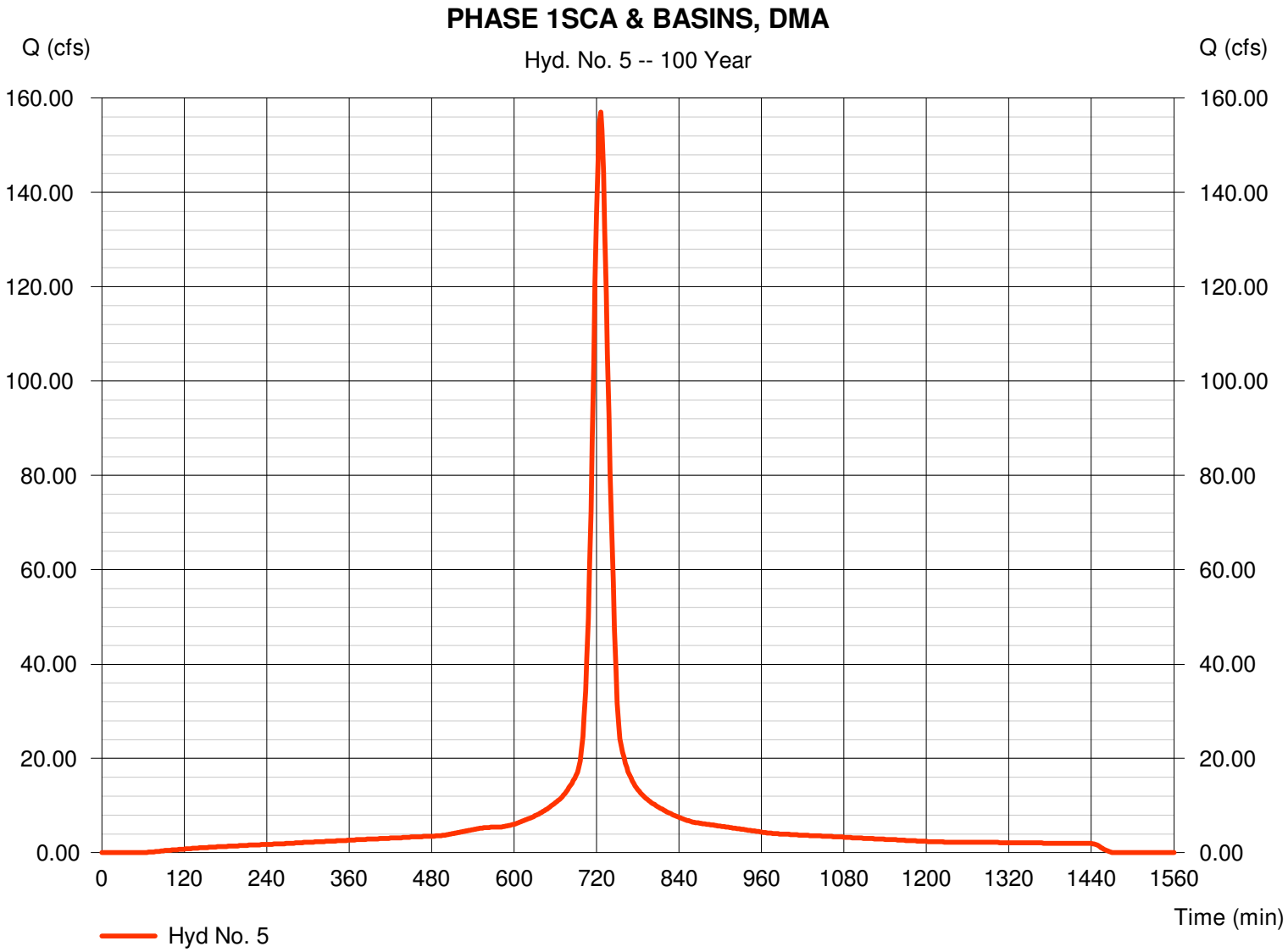
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 5

PHASE 1SCA & BASINS, DMA

Hydrograph type	=	SCS Runoff	Peak discharge	=	157.00 cfs
Storm frequency	=	100 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	610,619 cuft
Drainage area	=	33.300 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	22.40 min
Total precip.	=	5.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

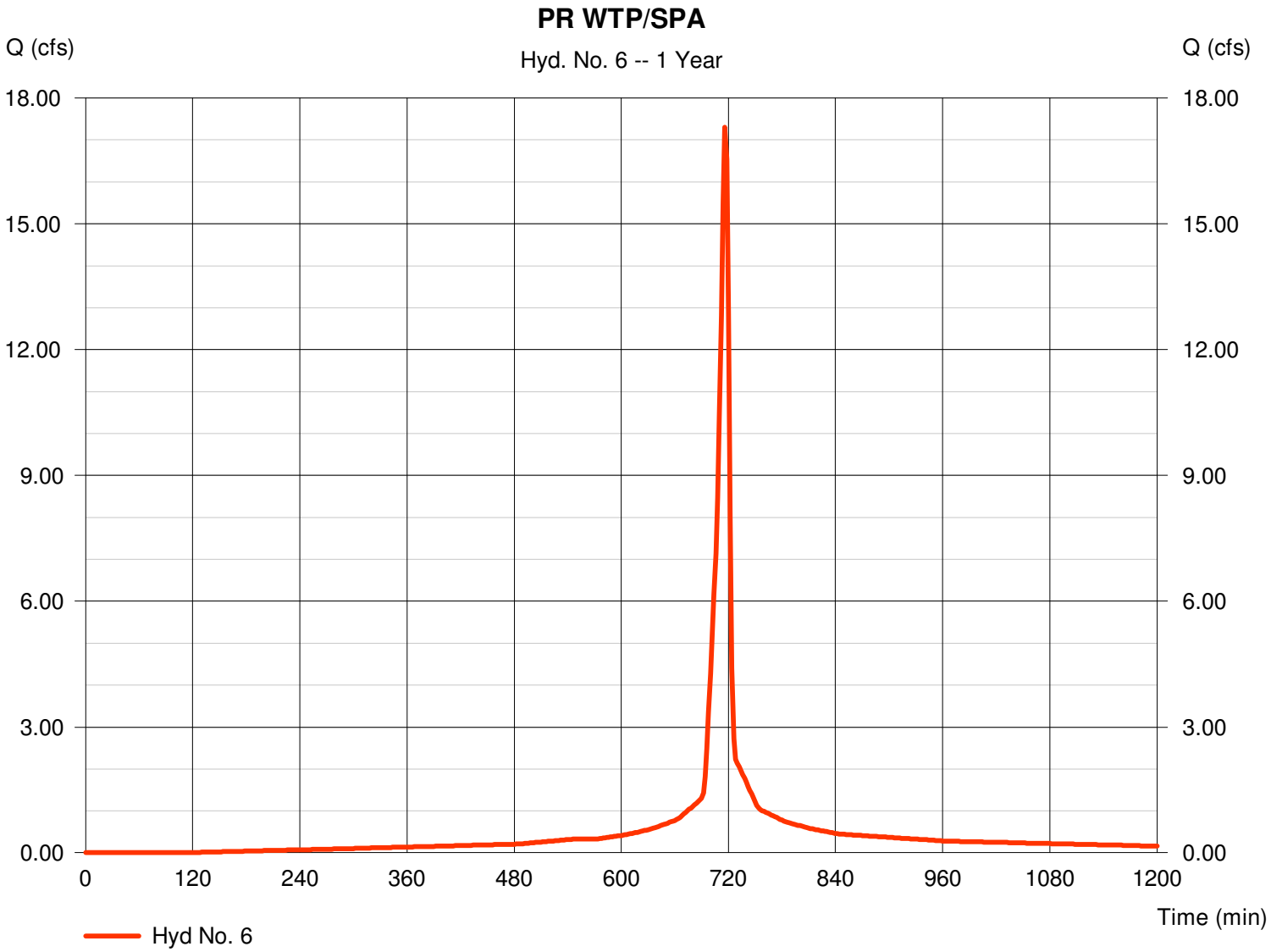


Hydrograph Report

Hyd. No. 6

PR WTP/SPA

Hydrograph type	=	SCS Runoff	Peak discharge	=	17.31 cfs
Storm frequency	=	1 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	39,609 cuft
Drainage area	=	5.900 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	6.10 min
Total precip.	=	2.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



TR55 Tc Worksheet

Hyd. No. 6

PR WTP/SPA

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.011		0.011		0.011		
Flow length (ft)	=	150.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	2.40		0.00		0.00		
Land slope (%)	=	0.50		0.00		0.00		
Travel Time (min)	**=**	**3.37**	**+**	**0.00**	**+**	**0.00**	**=**	**3.37**
Shallow Concentrated Flow								
Flow length (ft)	=	100.00		0.00		0.00		
Watercourse slope (%)	=	0.50		0.00		0.00		
Surface description	=	Paved		Paved		Paved		
Average velocity (ft/s)	=	1.44		0.00		0.00		
Travel Time (min)	**=**	**1.16**	**+**	**0.00**	**+**	**0.00**	**=**	**1.16**
Channel Flow								
X sectional flow area (sqft)	=	9.00		0.00		0.00		
Wetted perimeter (ft)	=	13.25		0.00		0.00		
Channel slope (%)	=	0.50		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	5.42		0.00		0.00		
Flow length (ft)	=	500.0		0.0		0.0		
Travel Time (min)	**=**	**1.54**	**+**	**0.00**	**+**	**0.00**	**=**	**1.54**

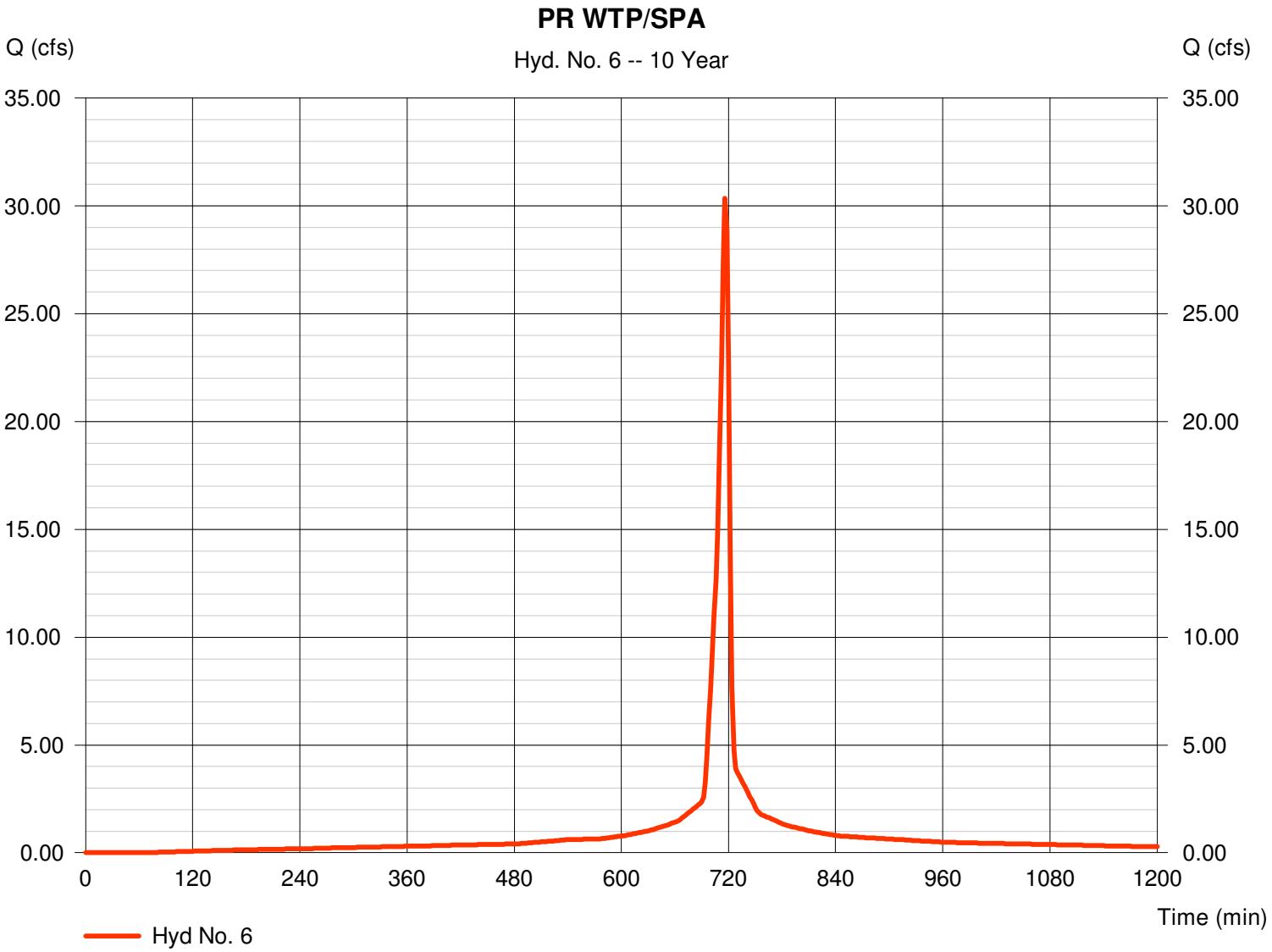
Total Travel Time, Tc ..... 6.10 min

Hydrograph Report

Hyd. No. 6

PR WTP/SPA

Hydrograph type	=	SCS Runoff	Peak discharge	=	30.36 cfs
Storm frequency	=	10 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	71,592 cuft
Drainage area	=	5.900 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	6.10 min
Total precip.	=	3.80 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

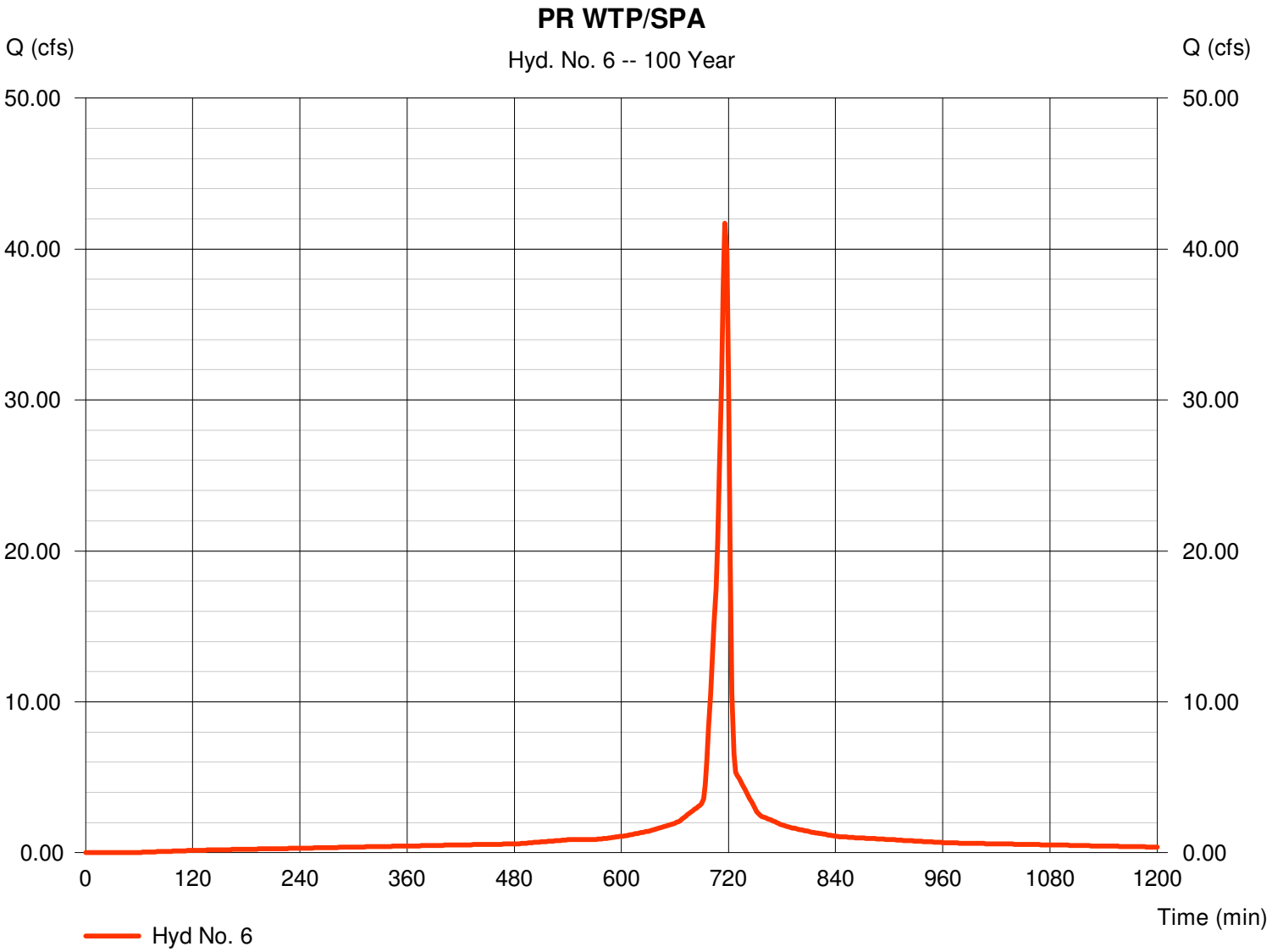


Hydrograph Report

Hyd. No. 6

PR WTP/SPA

Hydrograph type	=	SCS Runoff	Peak discharge	=	41.71 cfs
Storm frequency	=	100 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	99,647 cuft
Drainage area	=	5.900 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	6.10 min
Total precip.	=	5.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

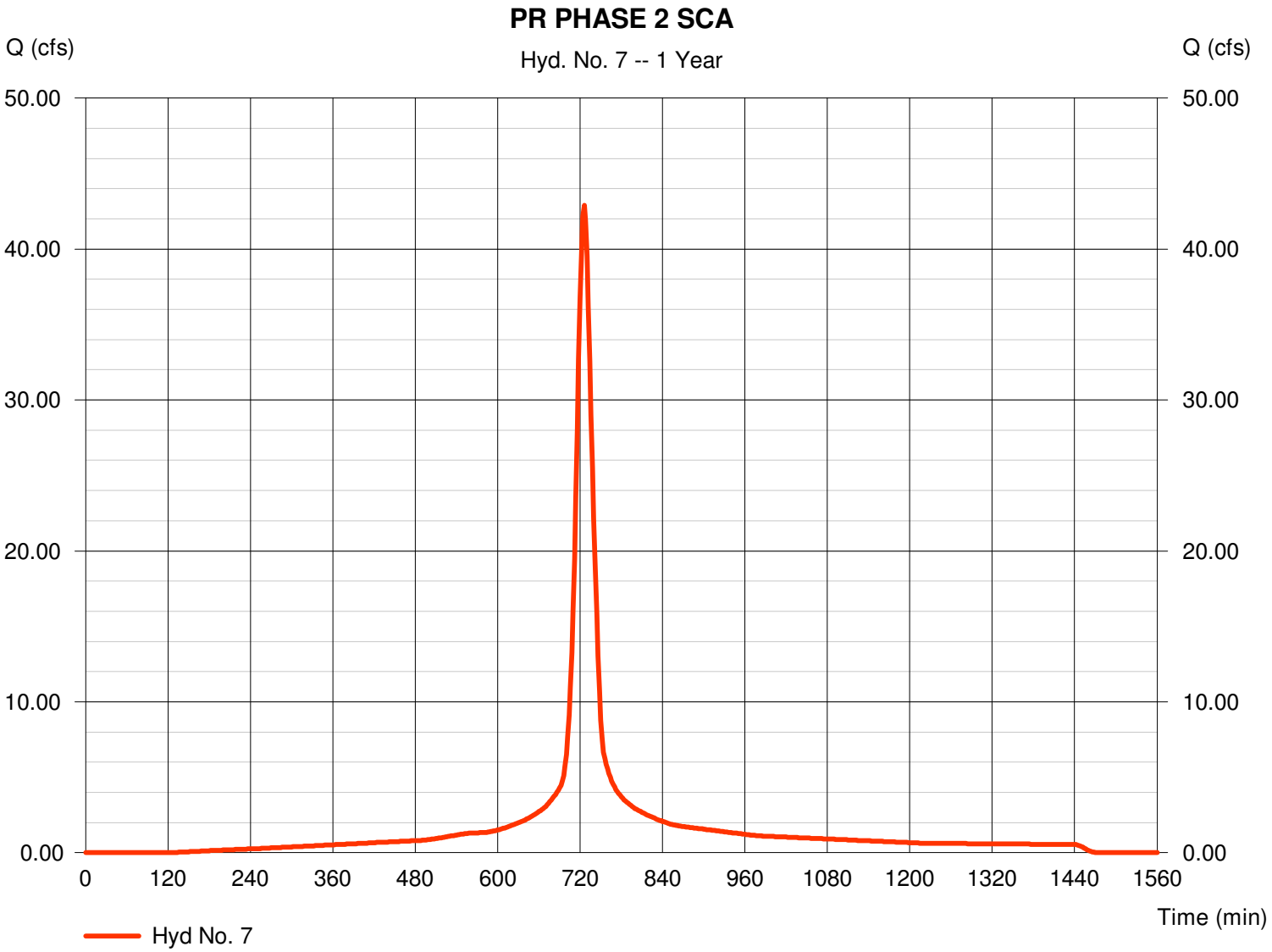


Hydrograph Report

Hyd. No. 7

PR PHASE 2 SCA

Hydrograph type	=	SCS Runoff	Peak discharge	=	42.88 cfs
Storm frequency	=	1 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	160,355 cuft
Drainage area	=	22.000 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	23.00 min
Total precip.	=	2.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



TR55 Tc Worksheet

Hyd. No. 7

PR PHASE 2 SCA

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.011		0.011		0.011		
Flow length (ft)	=	300.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	2.40		0.00		0.00		
Land slope (%)	=	0.50		0.00		0.00		
Travel Time (min)	**=**	**5.87**	**+**	**0.00**	**+**	**0.00**	**=**	**5.87**
Shallow Concentrated Flow								
Flow length (ft)	=	1480.00		0.00		0.00		
Watercourse slope (%)	=	0.50		0.00		0.00		
Surface description	=	Paved		Paved		Paved		
Average velocity (ft/s)	=	1.44		0.00		0.00		
Travel Time (min)	**=**	**17.16**	**+**	**0.00**	**+**	**0.00**	**=**	**17.16**
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**

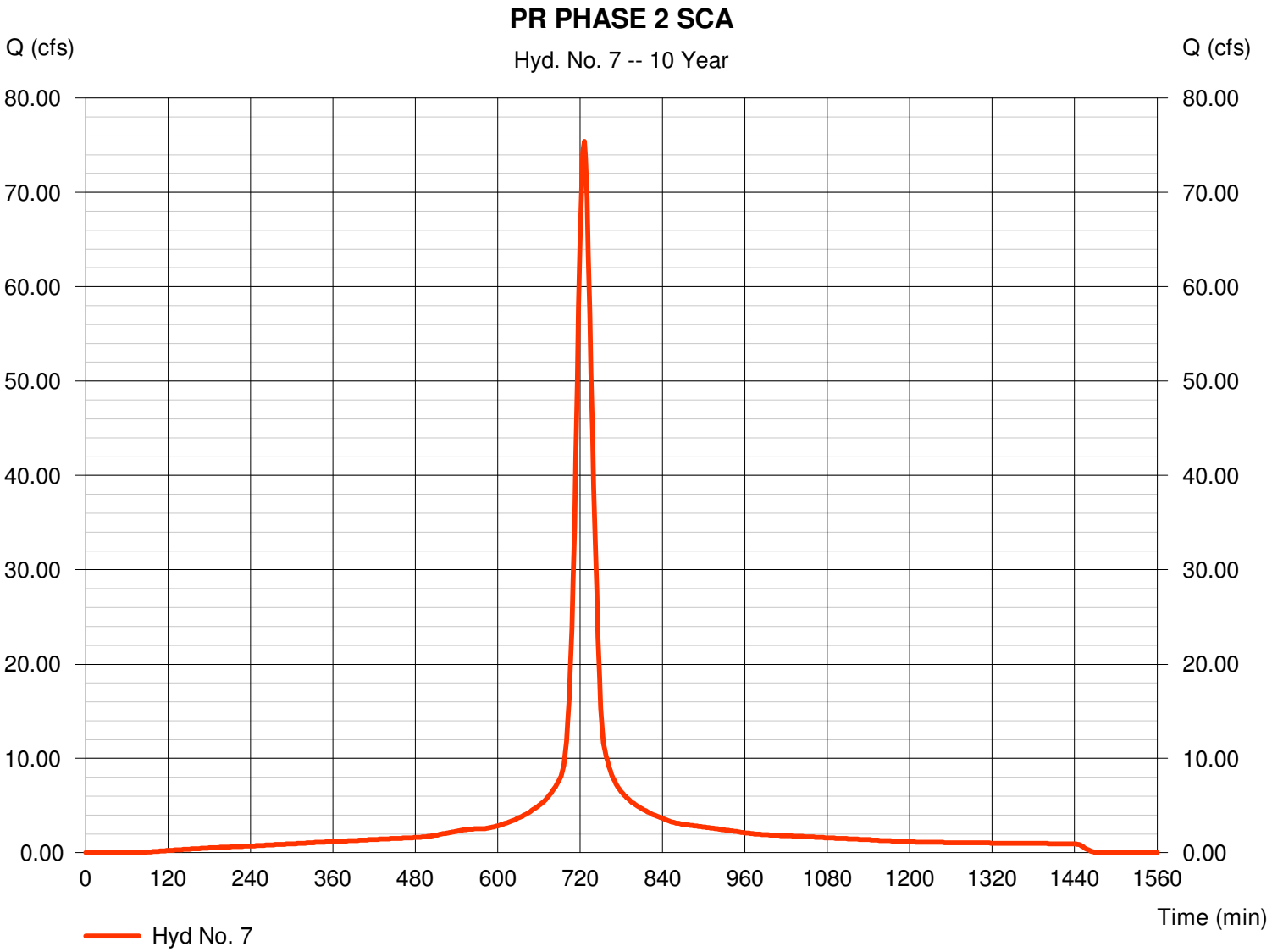
Total Travel Time, Tc ..... 23.00 min

Hydrograph Report

Hyd. No. 7

PR PHASE 2 SCA

Hydrograph type	=	SCS Runoff	Peak discharge	=	75.43 cfs
Storm frequency	=	10 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	289,834 cuft
Drainage area	=	22.000 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	23.00 min
Total precip.	=	3.80 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



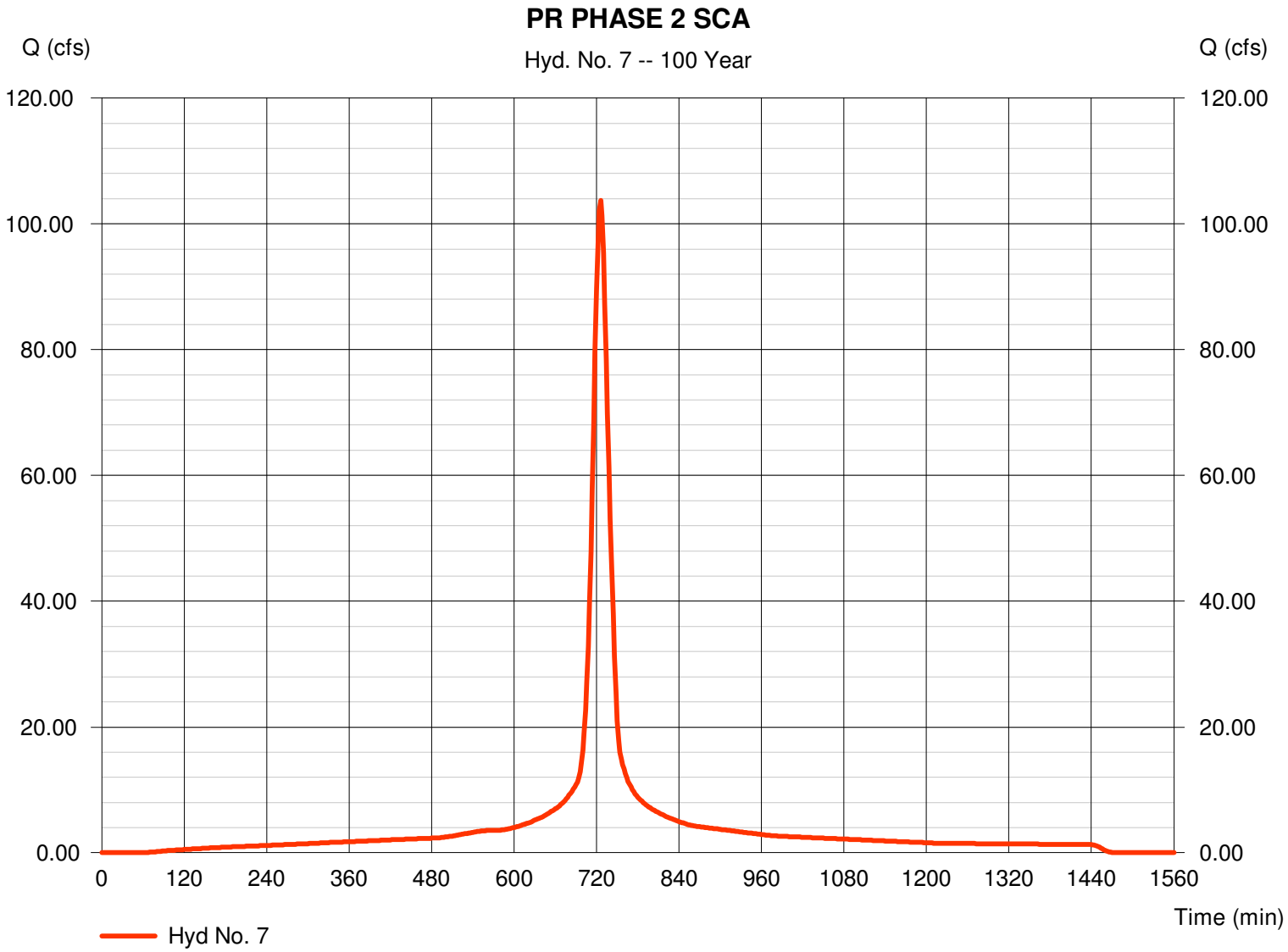
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 7

PR PHASE 2 SCA

Hydrograph type	=	SCS Runoff	Peak discharge	=	103.72 cfs
Storm frequency	=	100 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	403,412 cuft
Drainage area	=	22.000 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	23.00 min
Total precip.	=	5.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

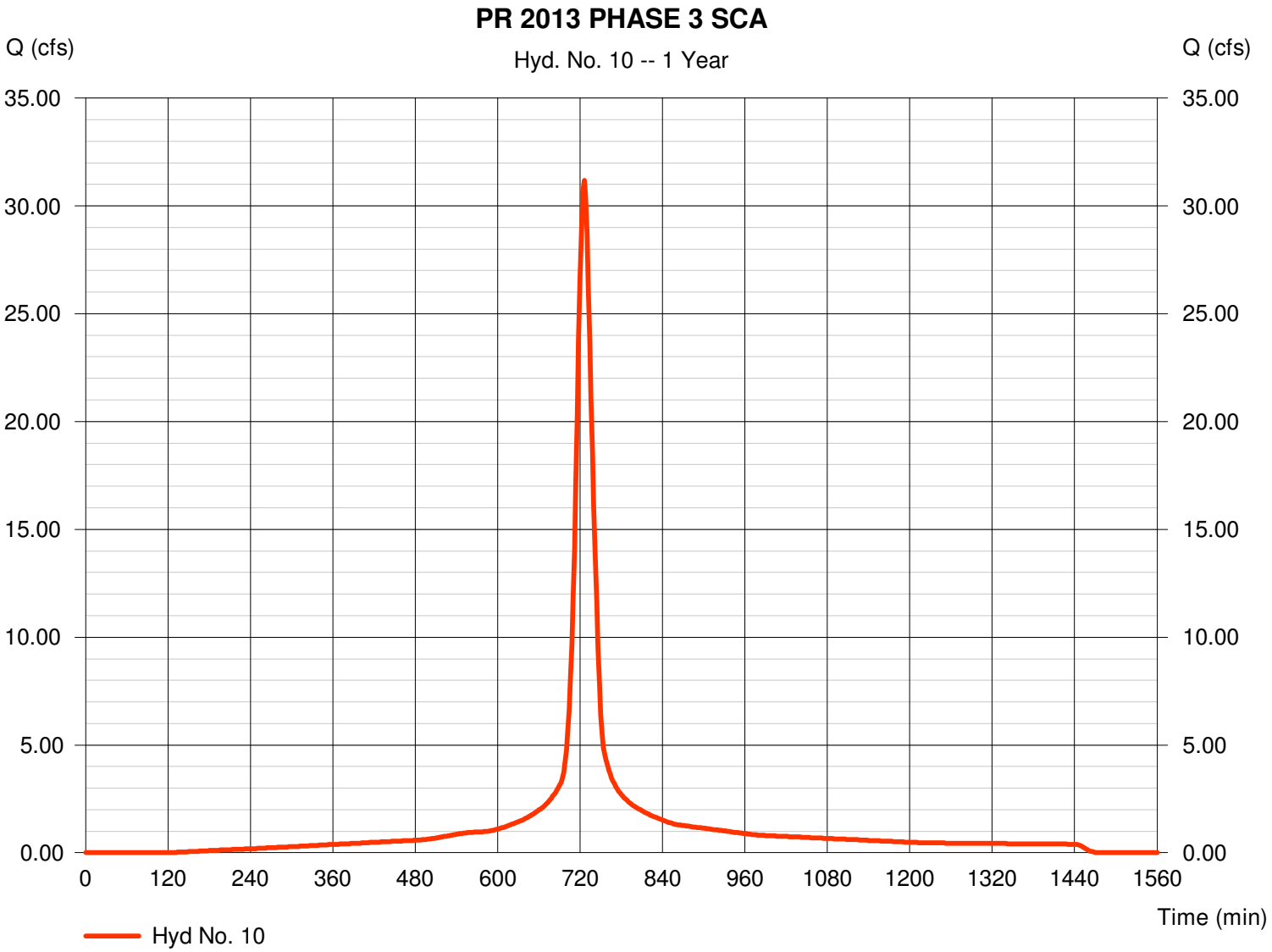


Hydrograph Report

Hyd. No. 10

PR 2013 PHASE 3 SCA

Hydrograph type	=	SCS Runoff	Peak discharge	=	31.19 cfs
Storm frequency	=	1 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	116,622 cuft
Drainage area	=	16.000 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	23.00 min
Total precip.	=	2.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



TR55 Tc Worksheet

Hyd. No. 10

PR 2013 PHASE 3 SCA

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.011		0.011		0.011		
Flow length (ft)	= 300.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 2.40		0.00		0.00		
Land slope (%)	= 0.50		0.00		0.00		
Travel Time (min)	**= 5.87**	**+**	**0.00**	**+**	**0.00**	**=**	**5.87**
Shallow Concentrated Flow							
Flow length (ft)	= 1480.00		0.00		0.00		
Watercourse slope (%)	= 0.50		0.00		0.00		
Surface description	= Paved		Paved		Paved		
Average velocity (ft/s)	= 1.44		0.00		0.00		
Travel Time (min)	**= 17.16**	**+**	**0.00**	**+**	**0.00**	**=**	**17.16**
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**

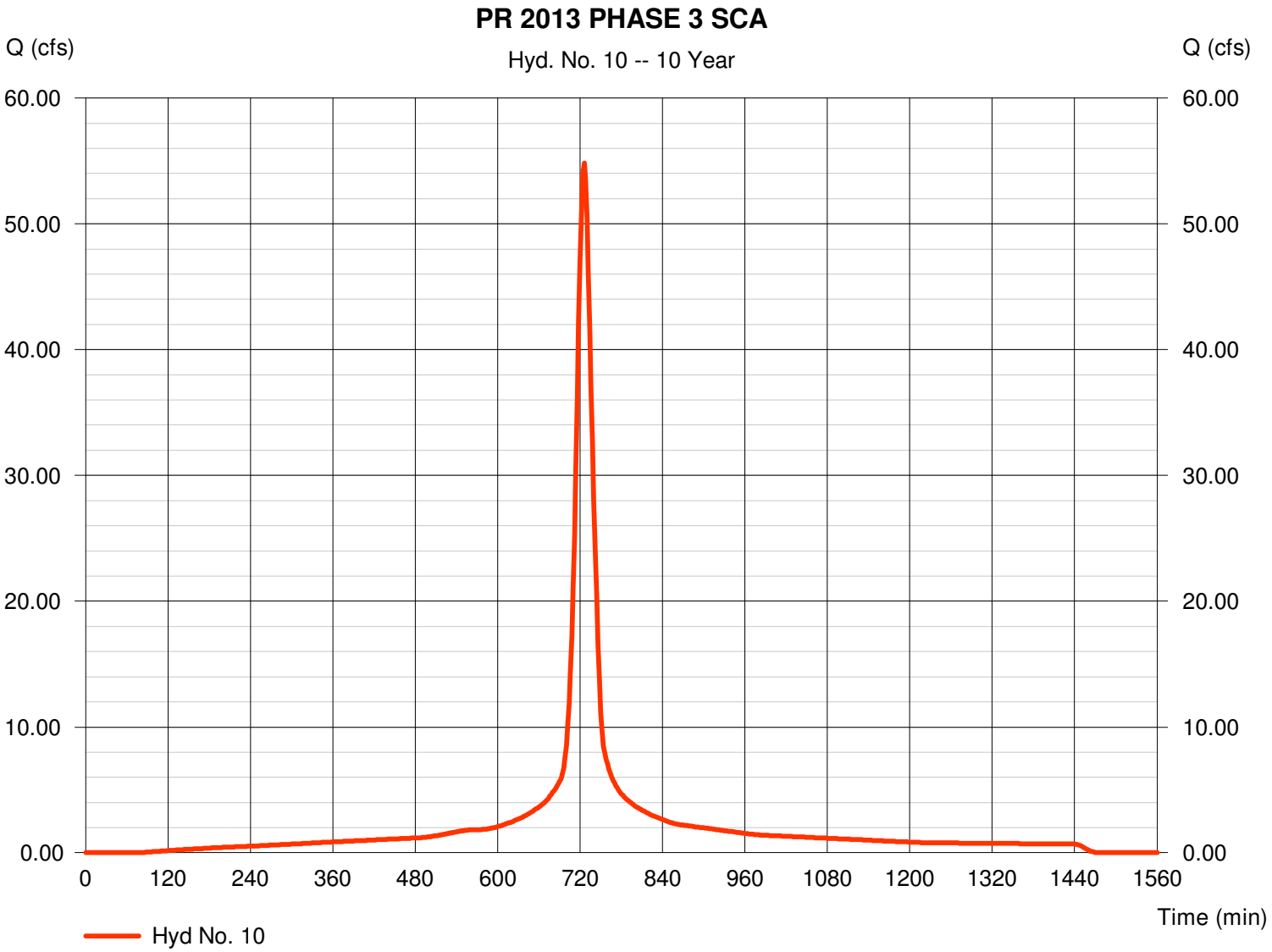
Total Travel Time, Tc ..... 23.00 min

Hydrograph Report

Hyd. No. 10

PR 2013 PHASE 3 SCA

Hydrograph type	=	SCS Runoff	Peak discharge	=	54.86 cfs
Storm frequency	=	10 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	210,789 cuft
Drainage area	=	16.000 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	23.00 min
Total precip.	=	3.80 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



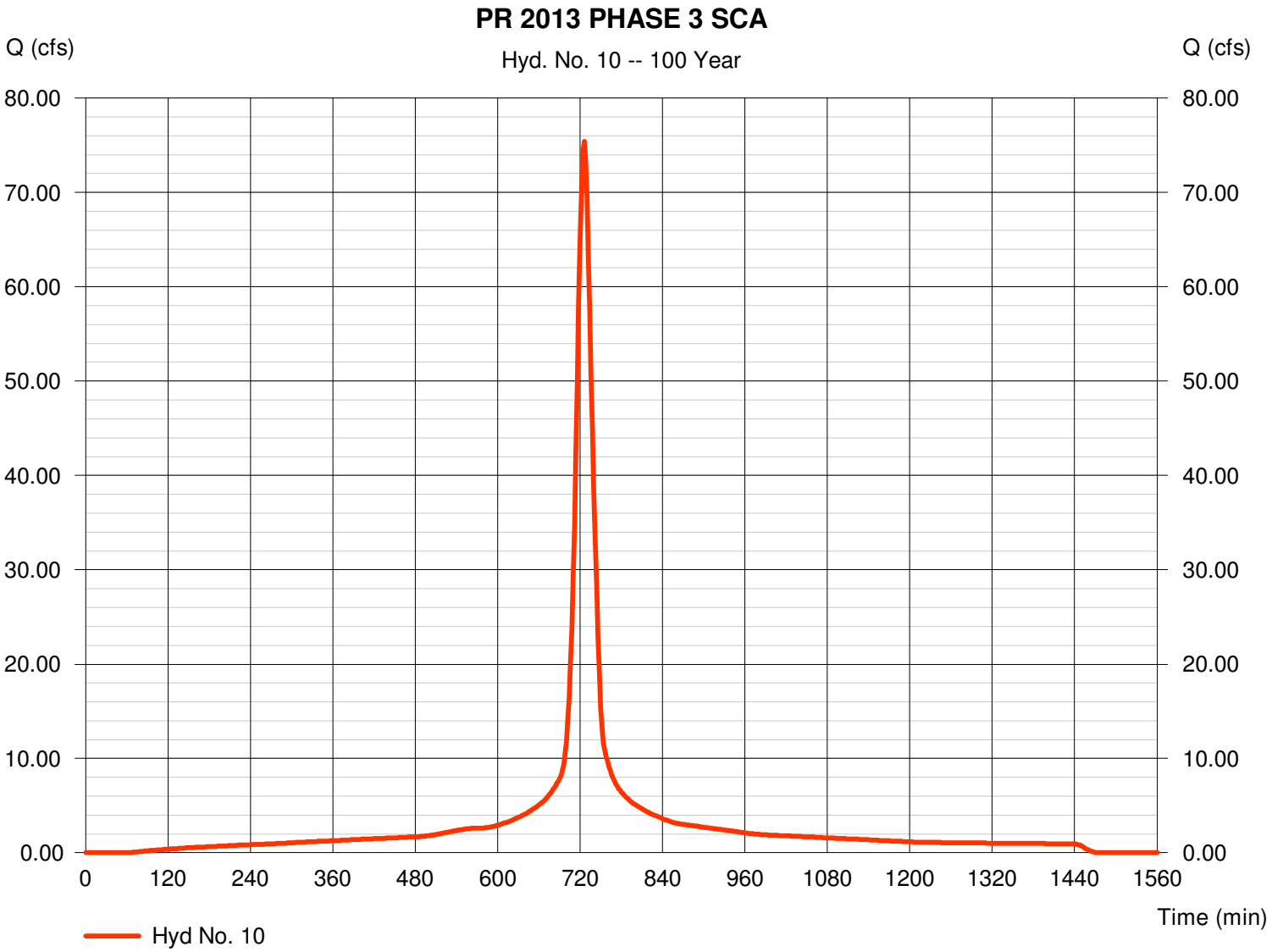
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 10

PR 2013 PHASE 3 SCA

Hydrograph type	=	SCS Runoff	Peak discharge	=	75.44 cfs
Storm frequency	=	100 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	293,391 cuft
Drainage area	=	16.000 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	23.00 min
Total precip.	=	5.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



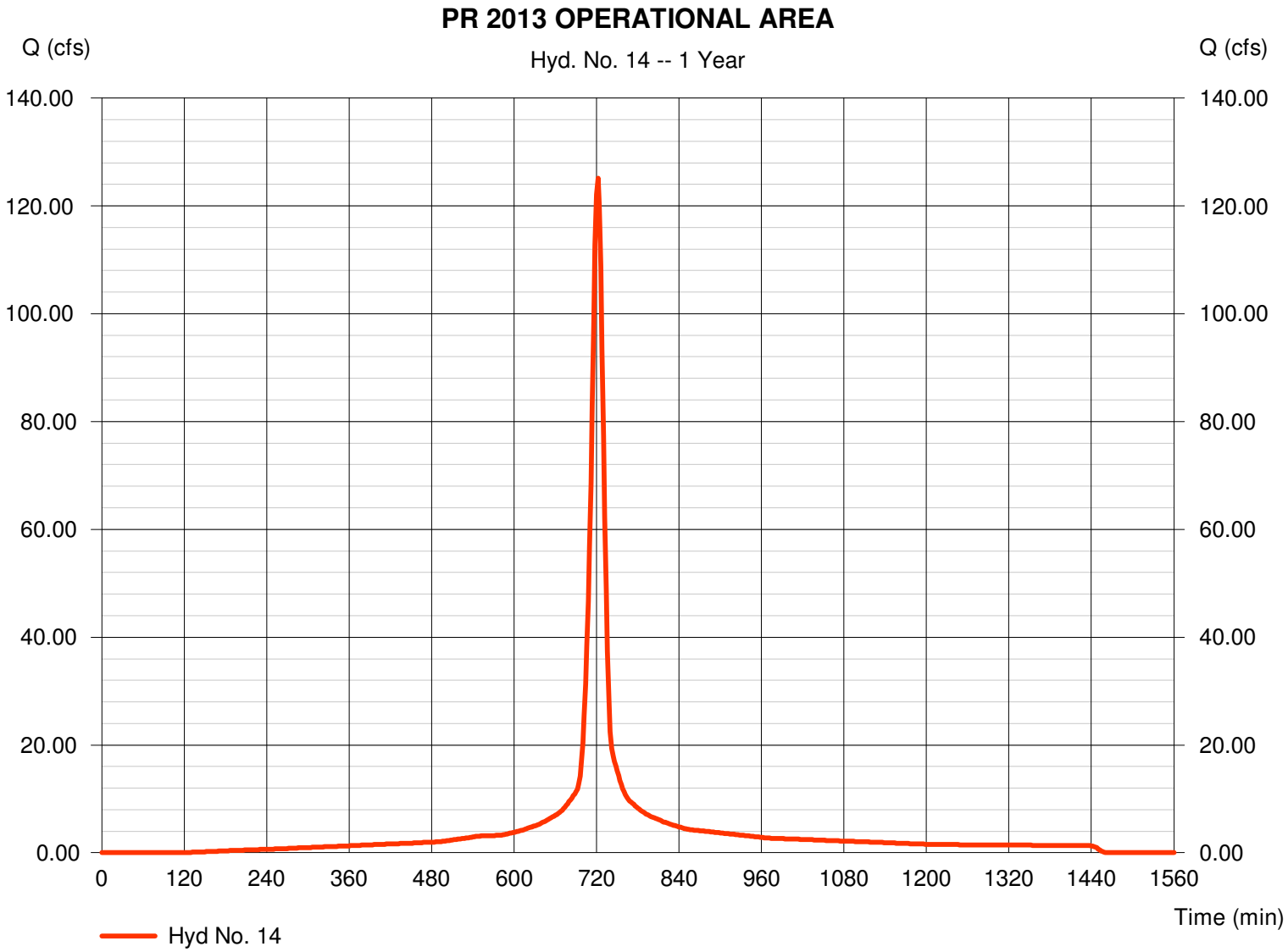
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 14

PR 2013 OPERATIONAL AREA

Hydrograph type	= SCS Runoff	Peak discharge	= 125.09 cfs
Storm frequency	= 1 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 386,103 cuft
Drainage area	= 55.300 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 15.00 min
Total precip.	= 2.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



TR55 Tc Worksheet

Hyd. No. 14

PR 2013 OPERATIONAL AREA

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.011		0.011		0.011		
Flow length (ft)	=	150.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	2.40		0.00		0.00		
Land slope (%)	=	0.50		0.00		0.00		
Travel Time (min)	**=**	**3.37**	**+**	**0.00**	**+**	**0.00**	**=**	**3.37**
Shallow Concentrated Flow								
Flow length (ft)	=	1190.00		0.00		0.00		
Watercourse slope (%)	=	0.70		0.00		0.00		
Surface description	=	Paved		Paved		Paved		
Average velocity (ft/s)	=	1.70		0.00		0.00		
Travel Time (min)	**=**	**11.66**	**+**	**0.00**	**+**	**0.00**	**=**	**11.66**
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 ..... 15.00 min

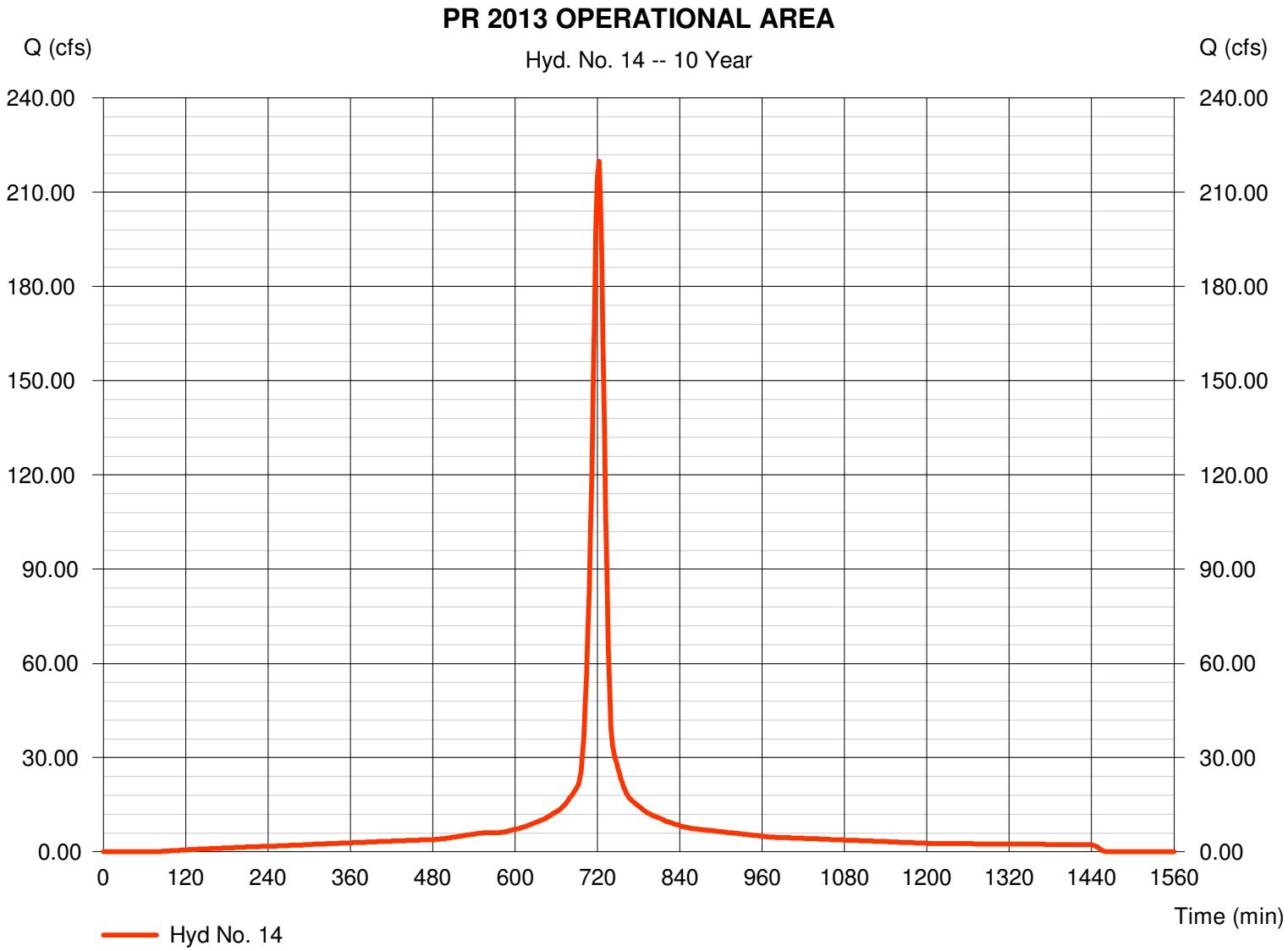
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 14

PR 2013 OPERATIONAL AREA

Hydrograph type	=	SCS Runoff	Peak discharge	=	219.77 cfs
Storm frequency	=	10 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	697,863 cuft
Drainage area	=	55.300 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	15.00 min
Total precip.	=	3.80 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



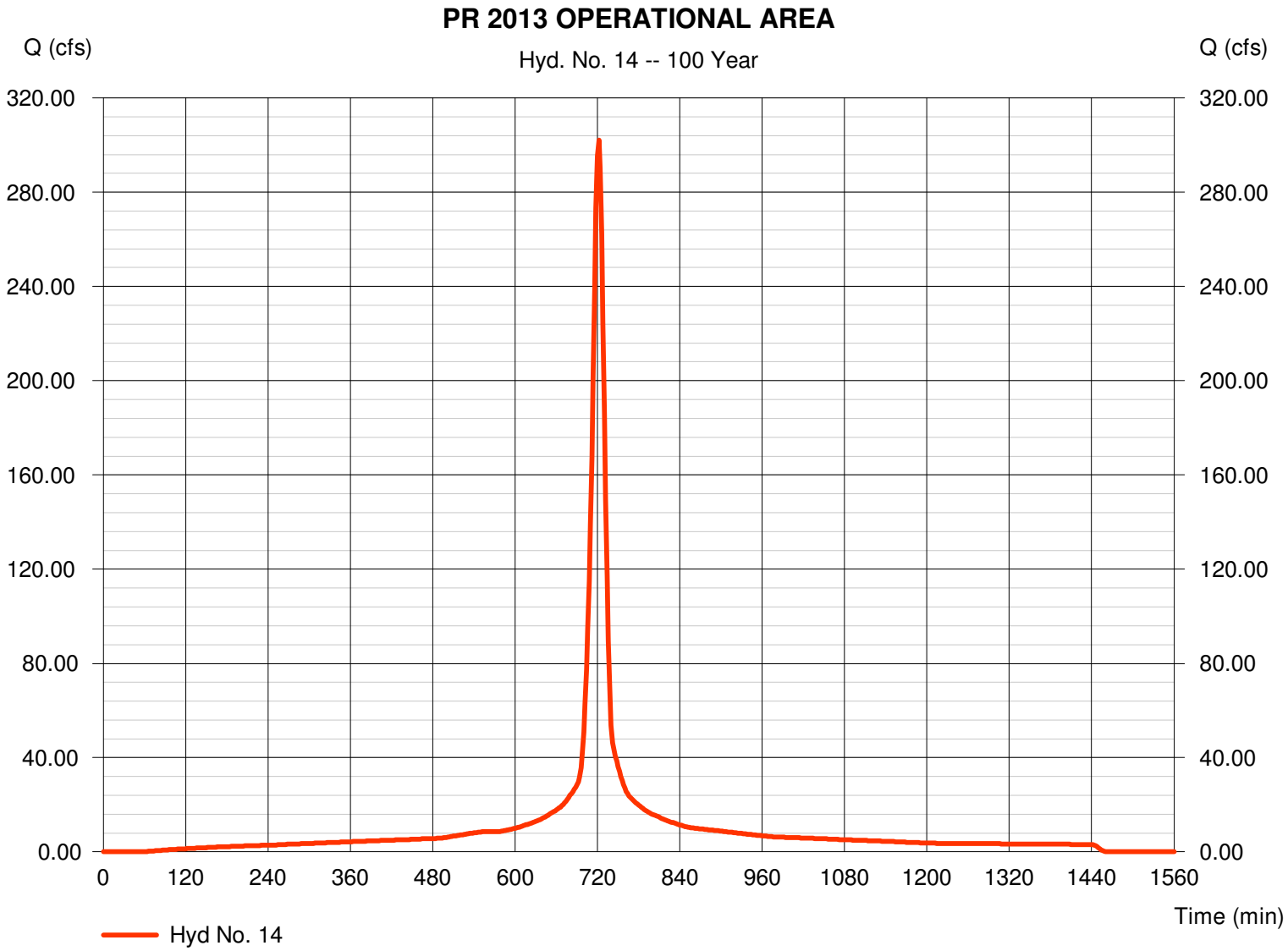
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 14

PR 2013 OPERATIONAL AREA

Hydrograph type	= SCS Runoff	Peak discharge	= 302.10 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 971,335 cuft
Drainage area	= 55.300 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 15.00 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



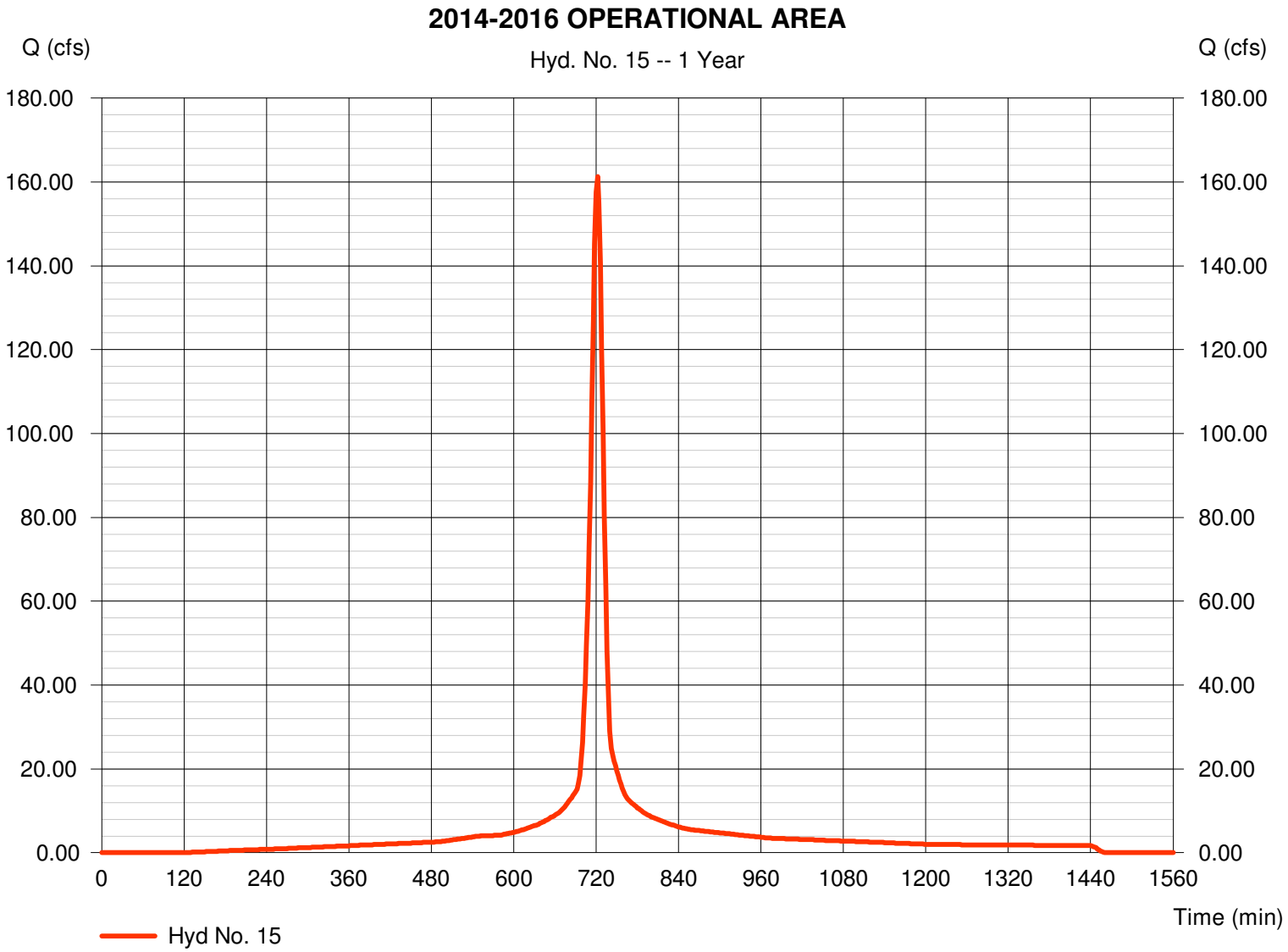
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 15

2014-2016 OPERATIONAL AREA

Hydrograph type	= SCS Runoff	Peak discharge	= 161.28 cfs
Storm frequency	= 1 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 497,815 cuft
Drainage area	= 71.300 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 15.00 min
Total precip.	= 2.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



TR55 Tc Worksheet

Hyd. No. 15

2014-2016 OPERATIONAL AREA

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.011		0.011		0.011		
Flow length (ft)	=	150.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	2.40		0.00		0.00		
Land slope (%)	=	0.50		0.00		0.00		
Travel Time (min)	**=**	**3.37**	**+**	**0.00**	**+**	**0.00**	**=**	**3.37**
Shallow Concentrated Flow								
Flow length (ft)	=	1190.00		0.00		0.00		
Watercourse slope (%)	=	0.70		0.00		0.00		
Surface description	=	Paved		Paved		Paved		
Average velocity (ft/s)	=	1.70		0.00		0.00		
Travel Time (min)	**=**	**11.66**	**+**	**0.00**	**+**	**0.00**	**=**	**11.66**
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 ..... 15.00 min

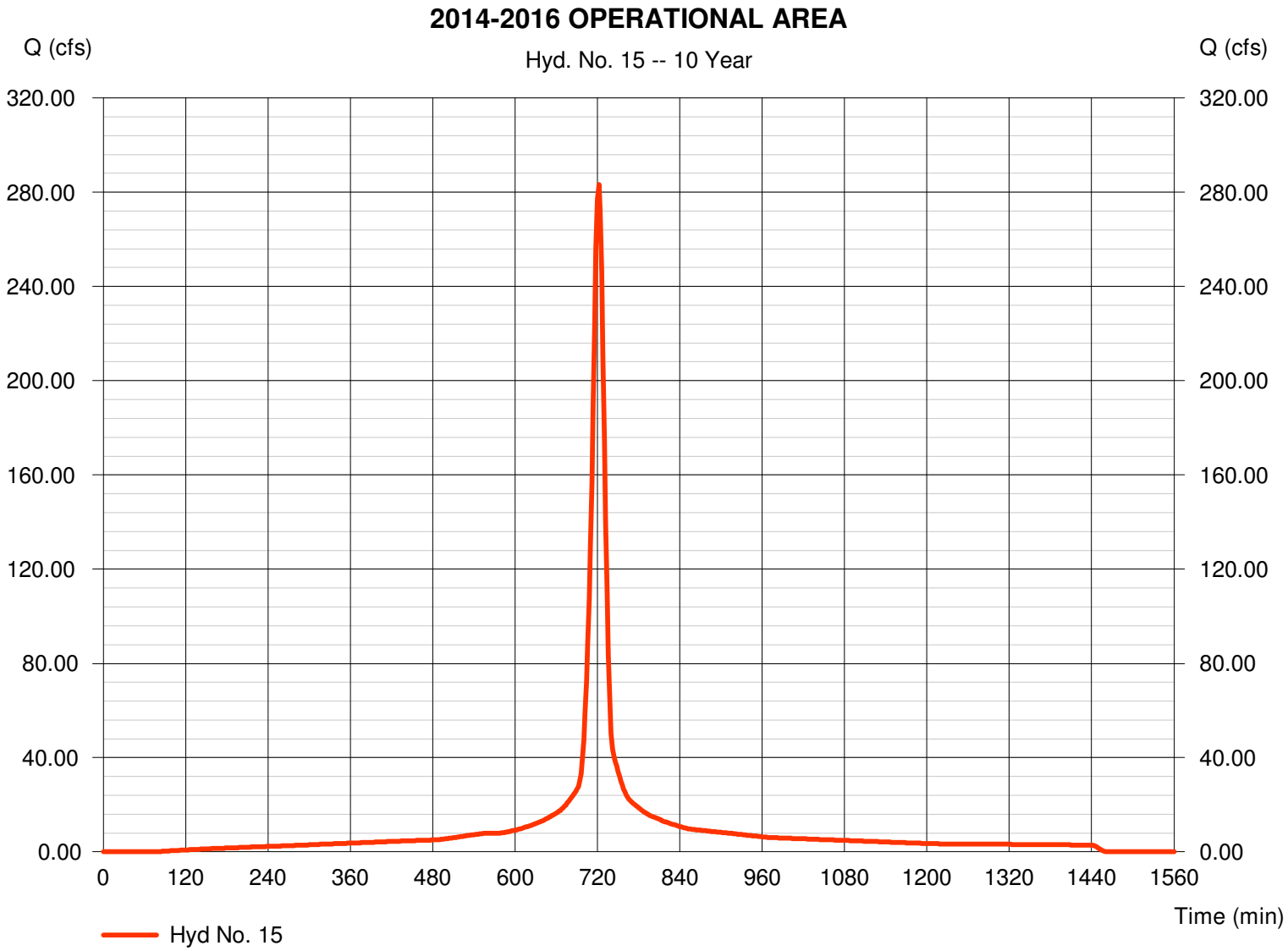
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 15

2014-2016 OPERATIONAL AREA

Hydrograph type	=	SCS Runoff	Peak discharge	=	283.36 cfs
Storm frequency	=	10 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	899,776 cuft
Drainage area	=	71.300 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	15.00 min
Total precip.	=	3.80 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



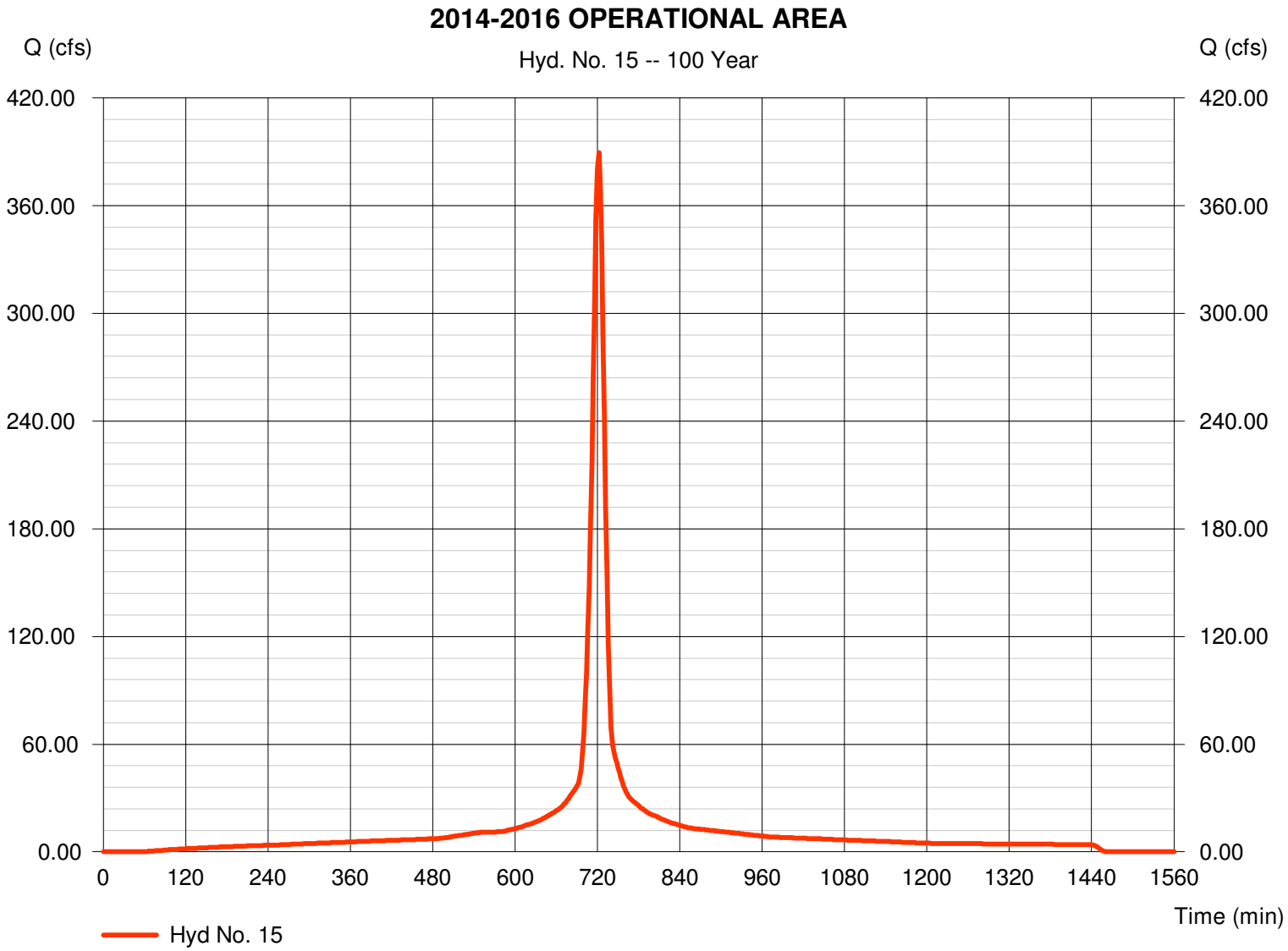
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 15

2014-2016 OPERATIONAL AREA

Hydrograph type	=	SCS Runoff	Peak discharge	=	389.50 cfs
Storm frequency	=	100 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	1,252,372 cuft
Drainage area	=	71.300 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	15.00 min
Total precip.	=	5.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

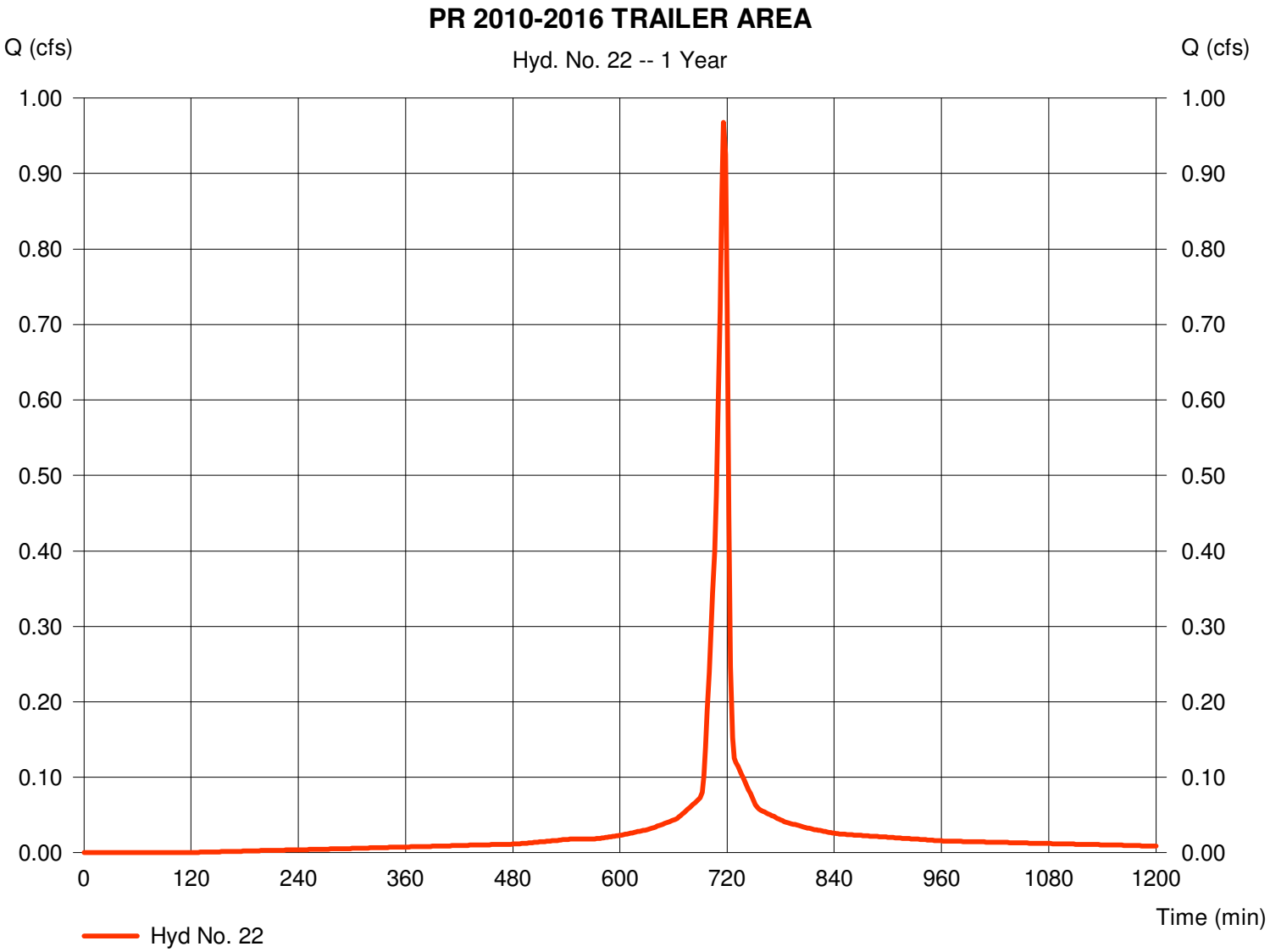


Hydrograph Report

Hyd. No. 22

PR 2010-2016 TRAILER AREA

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.968 cfs
Storm frequency	=	1 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	2,215 cuft
Drainage area	=	0.330 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	4.50 min
Total precip.	=	2.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



TR55 Tc Worksheet

Hyd. No. 22

PR 2010-2016 TRAILER AREA

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.011		0.011		0.011		
Flow length (ft)	=	150.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	2.40		0.00		0.00		
Land slope (%)	=	0.50		0.00		0.00		
Travel Time (min)	**=**	**3.37**	**+**	**0.00**	**+**	**0.00**	**=**	**3.37**
Shallow Concentrated Flow								
Flow length (ft)	=	100.00		0.00		0.00		
Watercourse slope (%)	=	0.50		0.00		0.00		
Surface description	=	Paved		Paved		Paved		
Average velocity (ft/s)	=	1.44		0.00		0.00		
Travel Time (min)	**=**	**1.16**	**+**	**0.00**	**+**	**0.00**	**=**	**1.16**
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 ..... 4.50 min

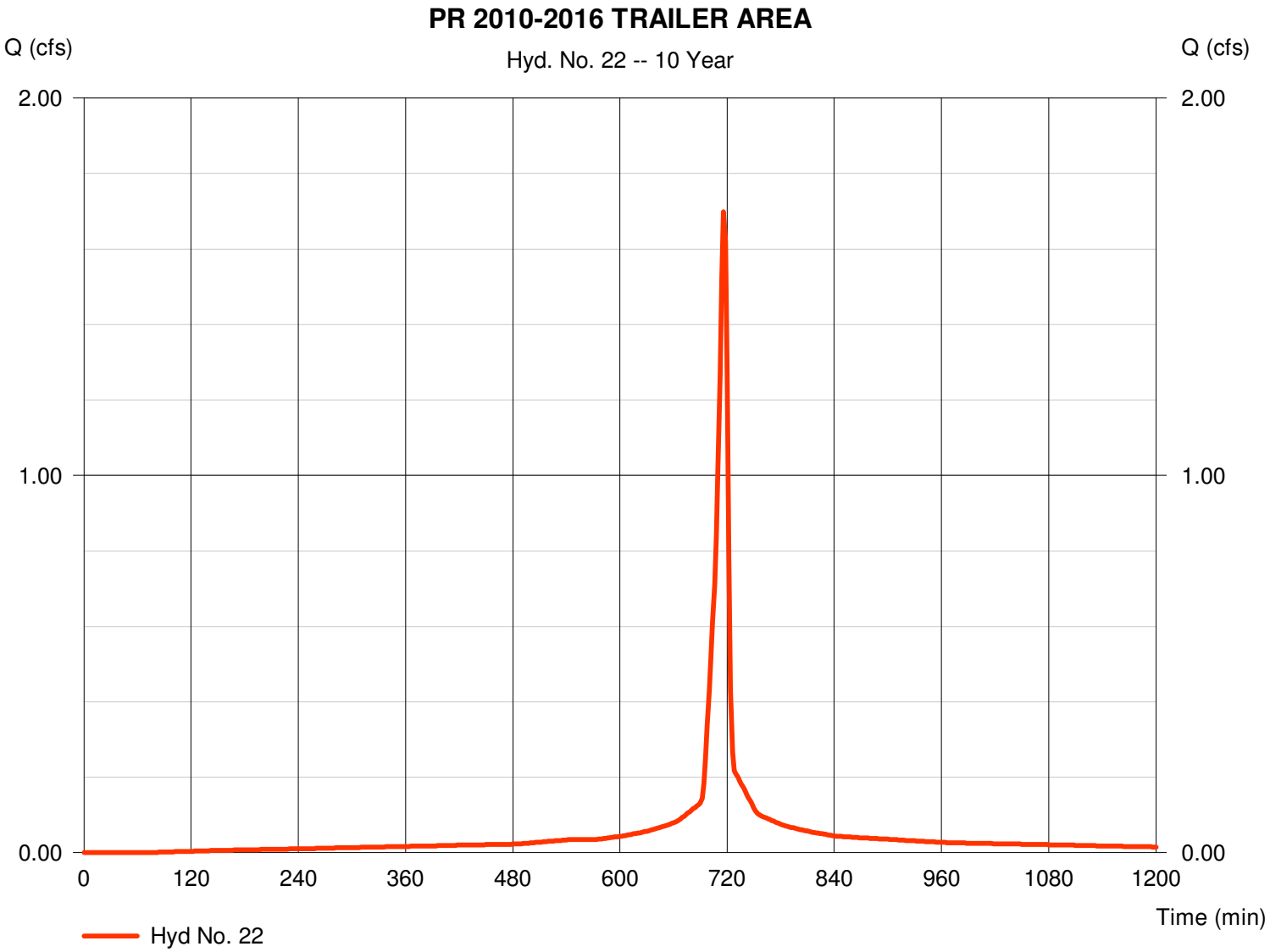
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 22

PR 2010-2016 TRAILER AREA

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.698 cfs
Storm frequency	=	10 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	4,004 cuft
Drainage area	=	0.330 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	4.50 min
Total precip.	=	3.80 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



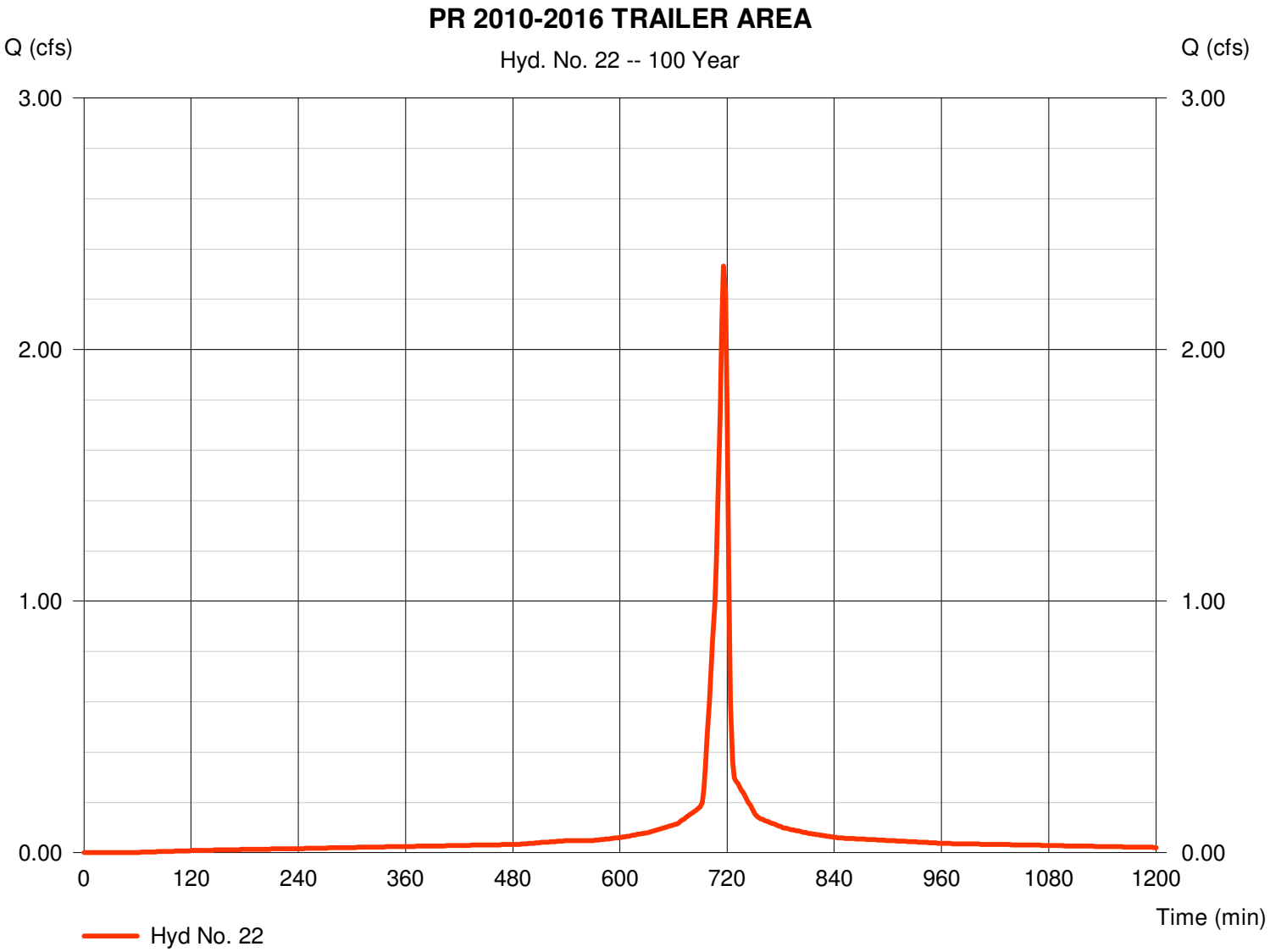
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 22

PR 2010-2016 TRAILER AREA

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.333 cfs
Storm frequency	=	100 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	5,573 cuft
Drainage area	=	0.330 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	4.50 min
Total precip.	=	5.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

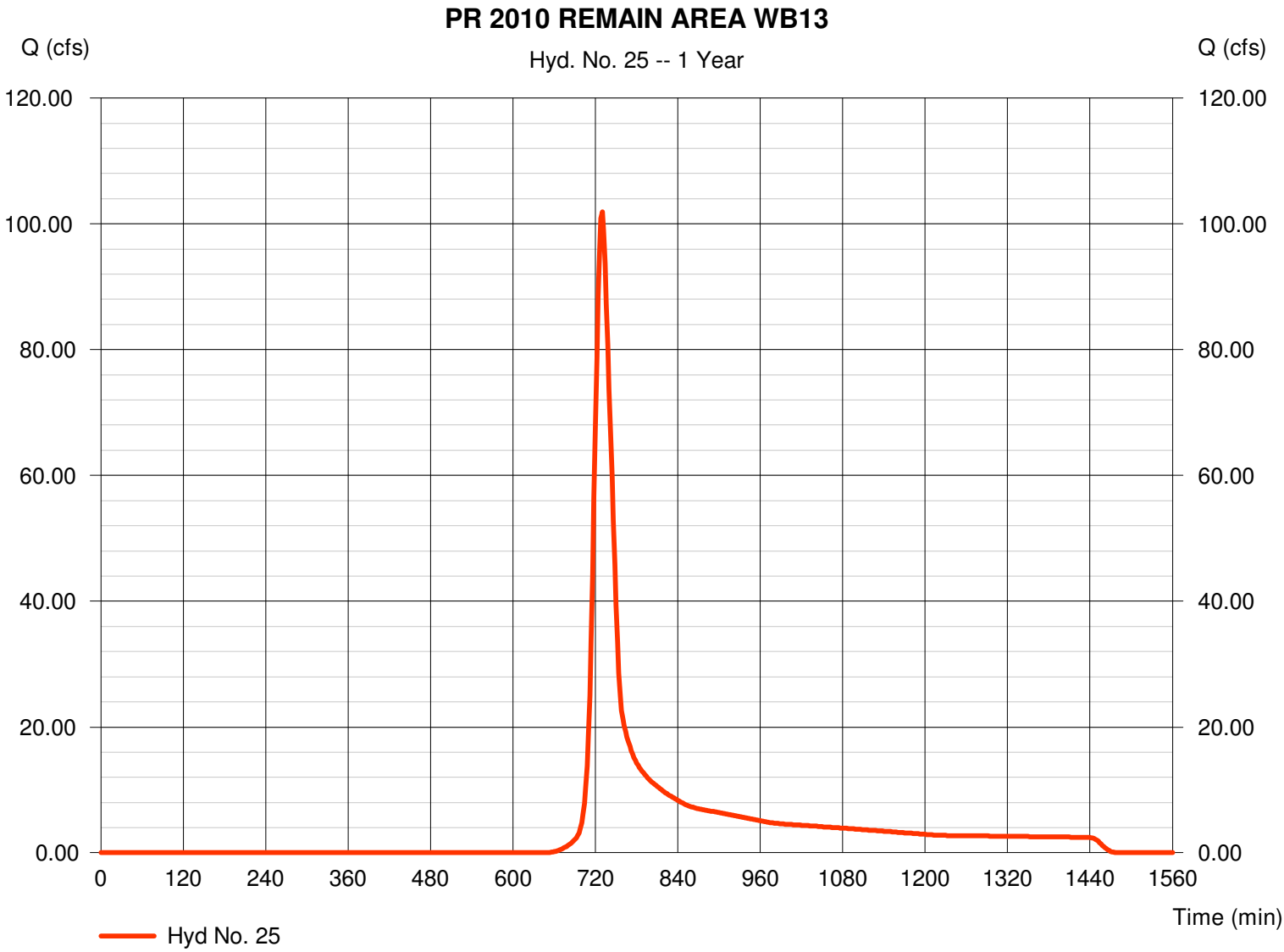
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 25

PR 2010 REMAIN AREA WB13

Hydrograph type	= SCS Runoff	Peak discharge	= 101.89 cfs
Storm frequency	= 1 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 395,219 cuft
Drainage area	= 150.500 ac	Curve number	= 81*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 26.40 min
Total precip.	= 2.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.000 x 98) + (7.500 x 83) + (101.800 x 78) + (40.200 x 86)] / 150.500



TR55 Tc Worksheet

Hyd. No. 25

PR 2010 REMAIN AREA WB13

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 180.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 2.40		0.00		0.00		
Land slope (%)	= 13.30		0.00		0.00		
Travel Time (min)	**= 12.36**	**+**	**0.00**	**+**	**0.00**	**=**	**12.36**
Shallow Concentrated Flow							
Flow length (ft)	= 1285.00		0.00		0.00		
Watercourse slope (%)	= 0.90		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	= 1.53		0.00		0.00		
Travel Time (min)	**= 13.99**	**+**	**0.00**	**+**	**0.00**	**=**	**13.99**
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 ..... 26.40 min

Hydrograph Report

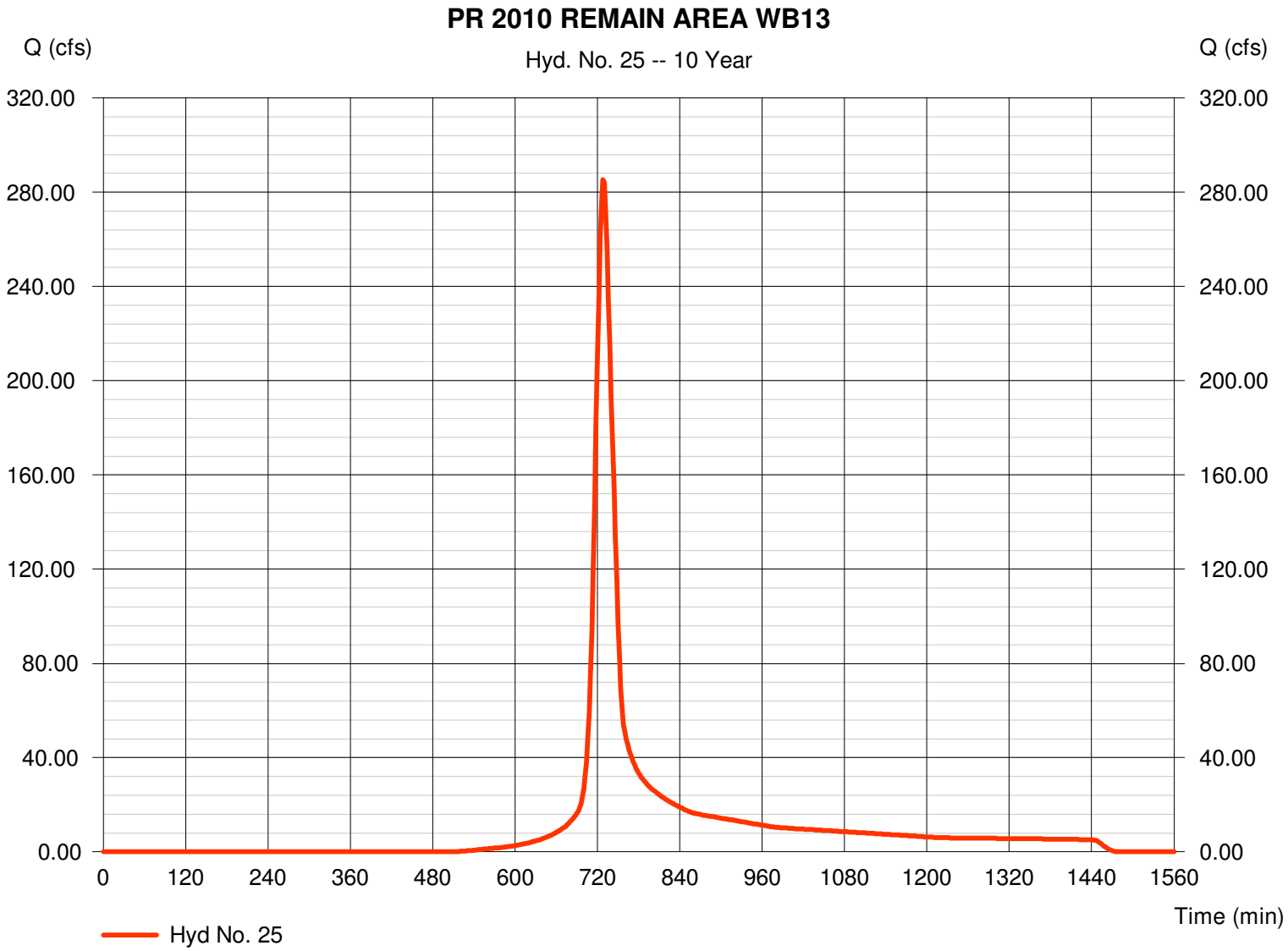
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 25

PR 2010 REMAIN AREA WB13

Hydrograph type	=	SCS Runoff	Peak discharge	=	285.39 cfs
Storm frequency	=	10 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	1,051,073 cuft
Drainage area	=	150.500 ac	Curve number	=	81*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	26.40 min
Total precip.	=	3.80 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(1.000 x 98) + (7.500 x 83) + (101.800 x 78) + (40.200 x 86)] / 150.500



Hydrograph Report

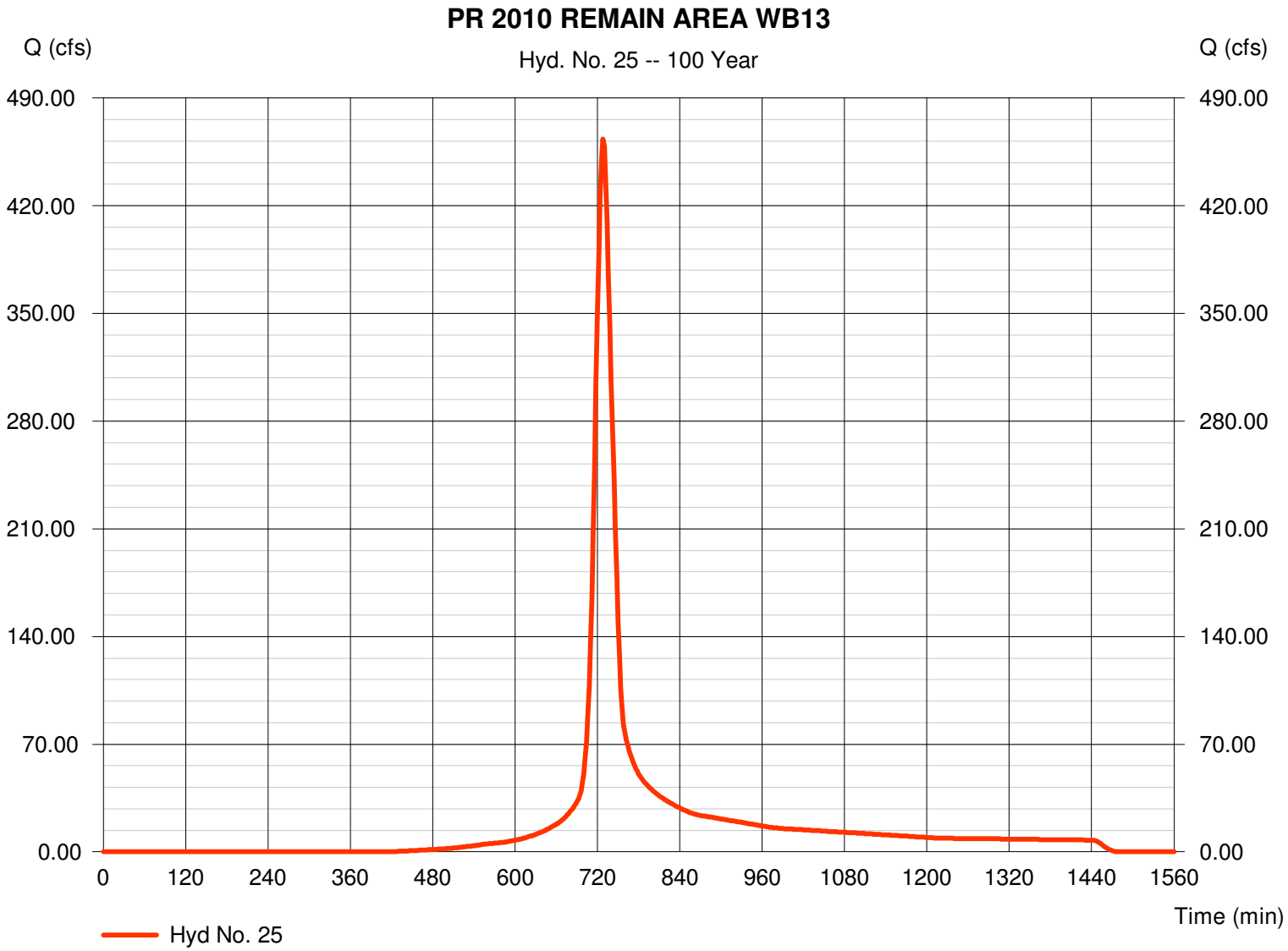
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 — Wednesday, Mar 30, 2011

Hyd. No. 25

PR 2010 REMAIN AREA WB13

Hydrograph type	= SCS Runoff	Peak discharge	= 463.40 cfs
Storm frequency	= 100 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 1,700,840 cuft
Drainage area	= 150.500 ac	Curve number	= 81*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 26.40 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.000 x 98) + (7.500 x 83) + (101.800 x 78) + (40.200 x 86)] / 150.500



Hydrograph Report

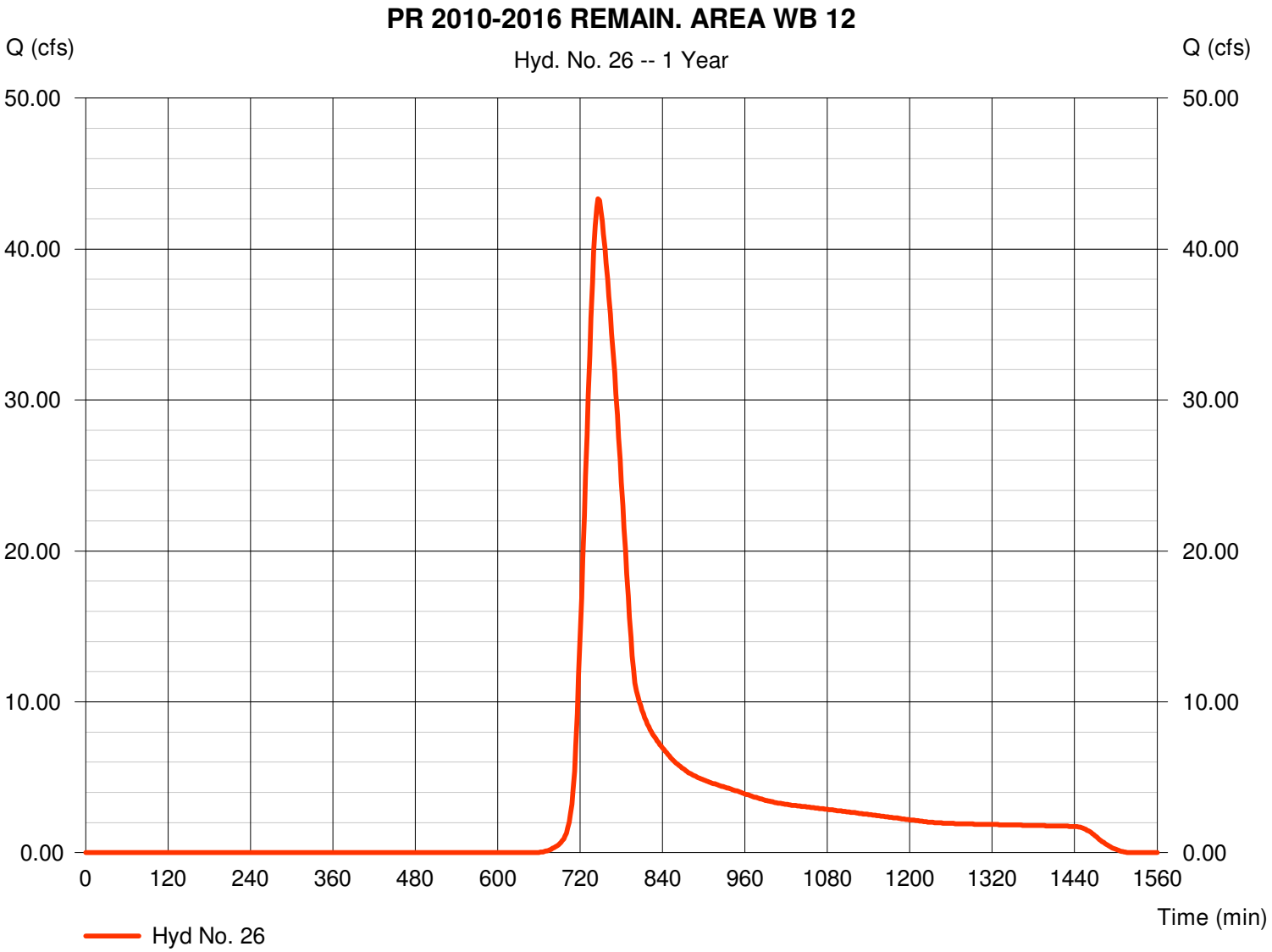
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 26

PR 2010-2016 REMAIN. AREA WB 12

Hydrograph type	= SCS Runoff	Peak discharge	= 43.34 cfs
Storm frequency	= 1 yrs	Time to peak	= 746 min
Time interval	= 2 min	Hyd. volume	= 278,804 cuft
Drainage area	= 103.700 ac	Curve number	= 81*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 52.70 min
Total precip.	= 2.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.000 x 98) + (12.100 x 83) + (65.100 x 78) + (25.500 x 86)] / 103.700



TR55 Tc Worksheet

Hyd. No. 26

PR 2010-2016 REMAIN. AREA WB 12

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.400		0.011		0.011		
Flow length (ft)	=	150.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	2.40		0.00		0.00		
Land slope (%)	=	1.20		0.00		0.00		
Travel Time (min)	**=**	**42.07**	**+**	**0.00**	**+**	**0.00**	**=**	**42.07**
Shallow Concentrated Flow								
Flow length (ft)	=	859.00		0.00		0.00		
Watercourse slope (%)	=	0.70		0.00		0.00		
Surface description	=	Unpaved		Paved		Paved		
Average velocity (ft/s)	=	1.35		0.00		0.00		
Travel Time (min)	**=**	**10.61**	**+**	**0.00**	**+**	**0.00**	**=**	**10.61**
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 ..... 52.70 min

Hydrograph Report

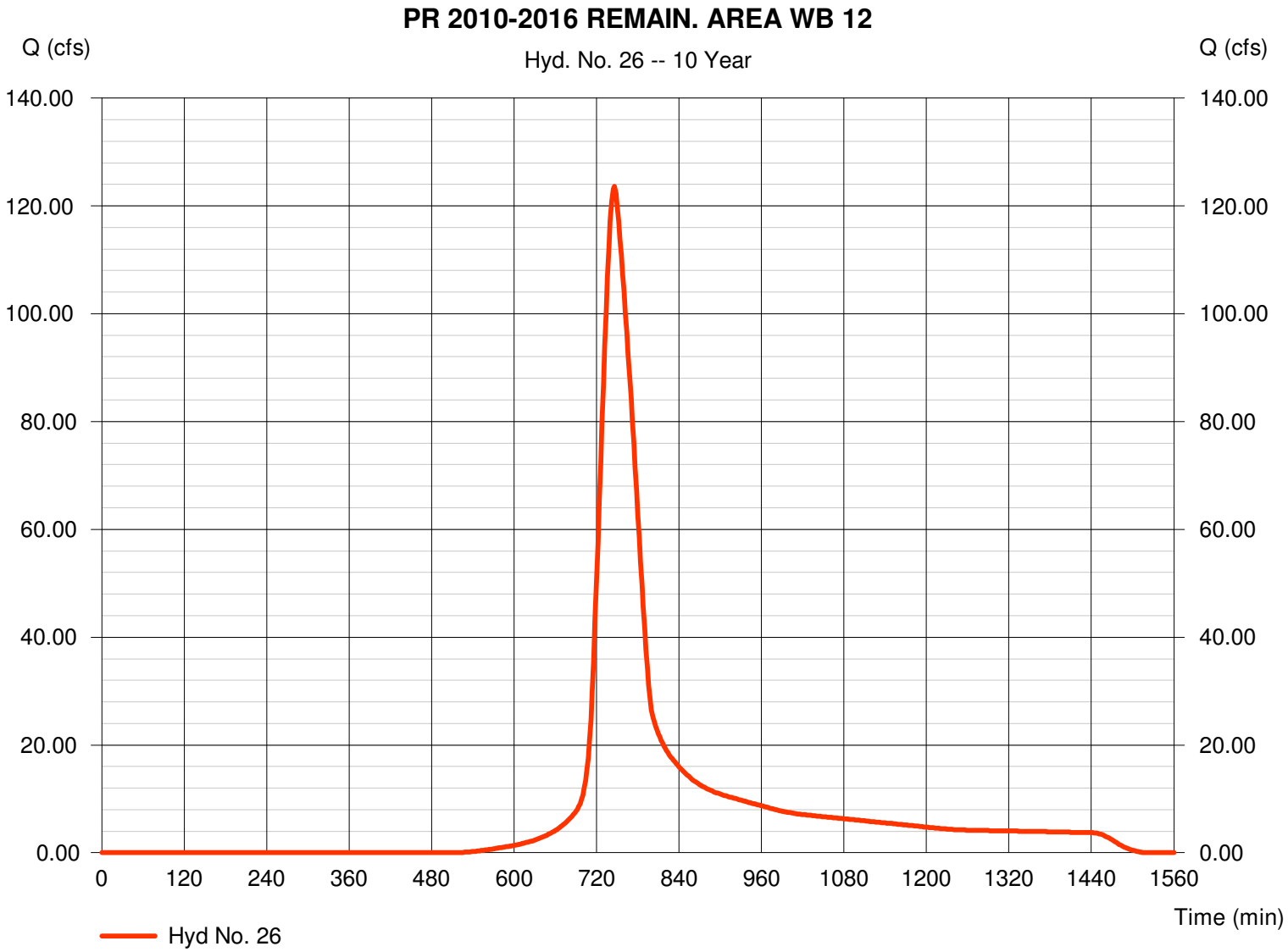
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 26

PR 2010-2016 REMAIN. AREA WB 12

Hydrograph type	= SCS Runoff	Peak discharge	= 123.59 cfs
Storm frequency	= 10 yrs	Time to peak	= 746 min
Time interval	= 2 min	Hyd. volume	= 741,472 cuft
Drainage area	= 103.700 ac	Curve number	= 81*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 52.70 min
Total precip.	= 3.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.000 x 98) + (12.100 x 83) + (65.100 x 78) + (25.500 x 86)] / 103.700



Hydrograph Report

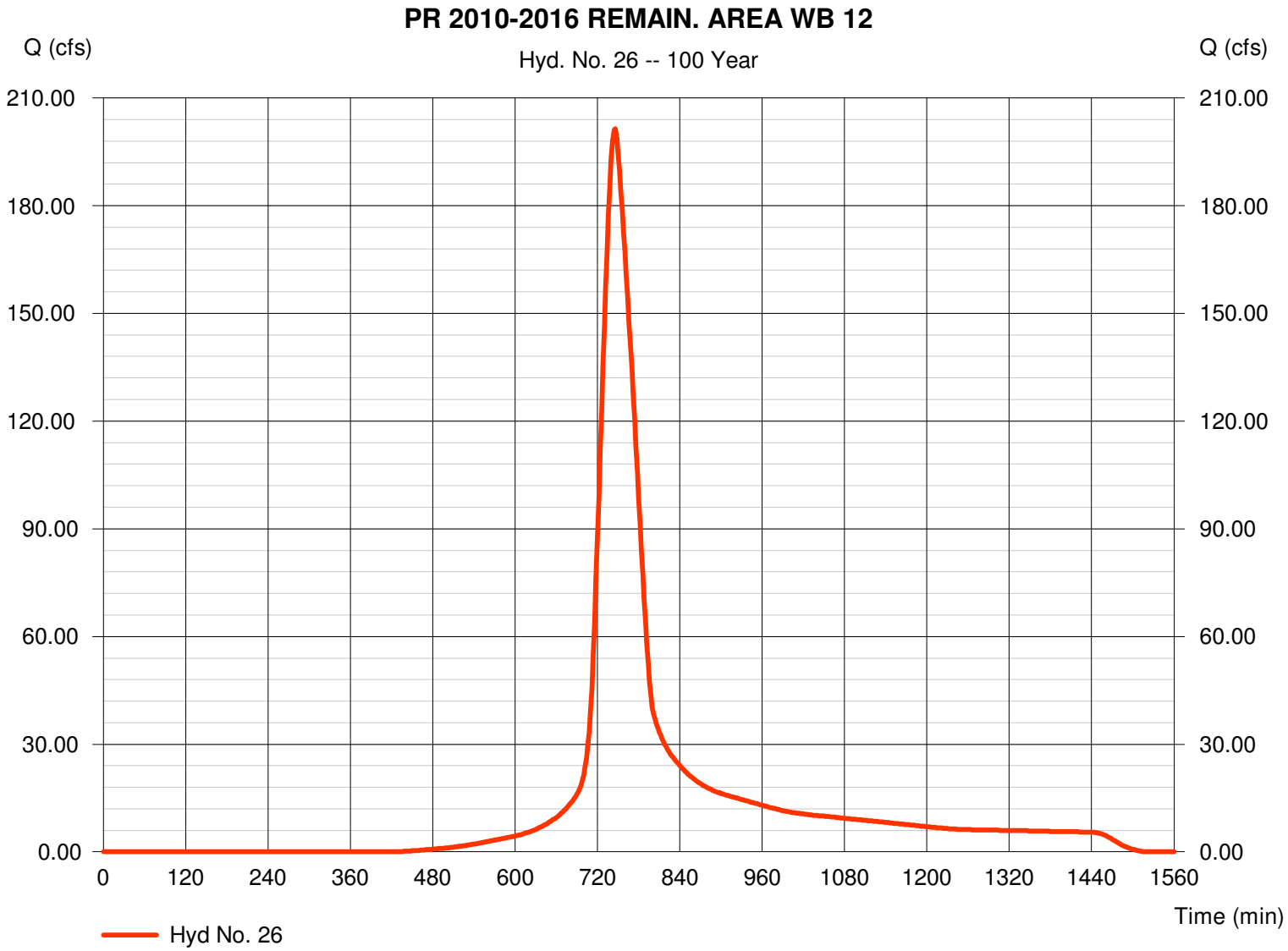
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 26

PR 2010-2016 REMAIN. AREA WB 12

Hydrograph type	= SCS Runoff	Peak discharge	= 201.35 cfs
Storm frequency	= 100 yrs	Time to peak	= 746 min
Time interval	= 2 min	Hyd. volume	= 1,199,843 cuft
Drainage area	= 103.700 ac	Curve number	= 81*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 52.70 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.000 x 98) + (12.100 x 83) + (65.100 x 78) + (25.500 x 86)] / 103.700



Hydrograph Report

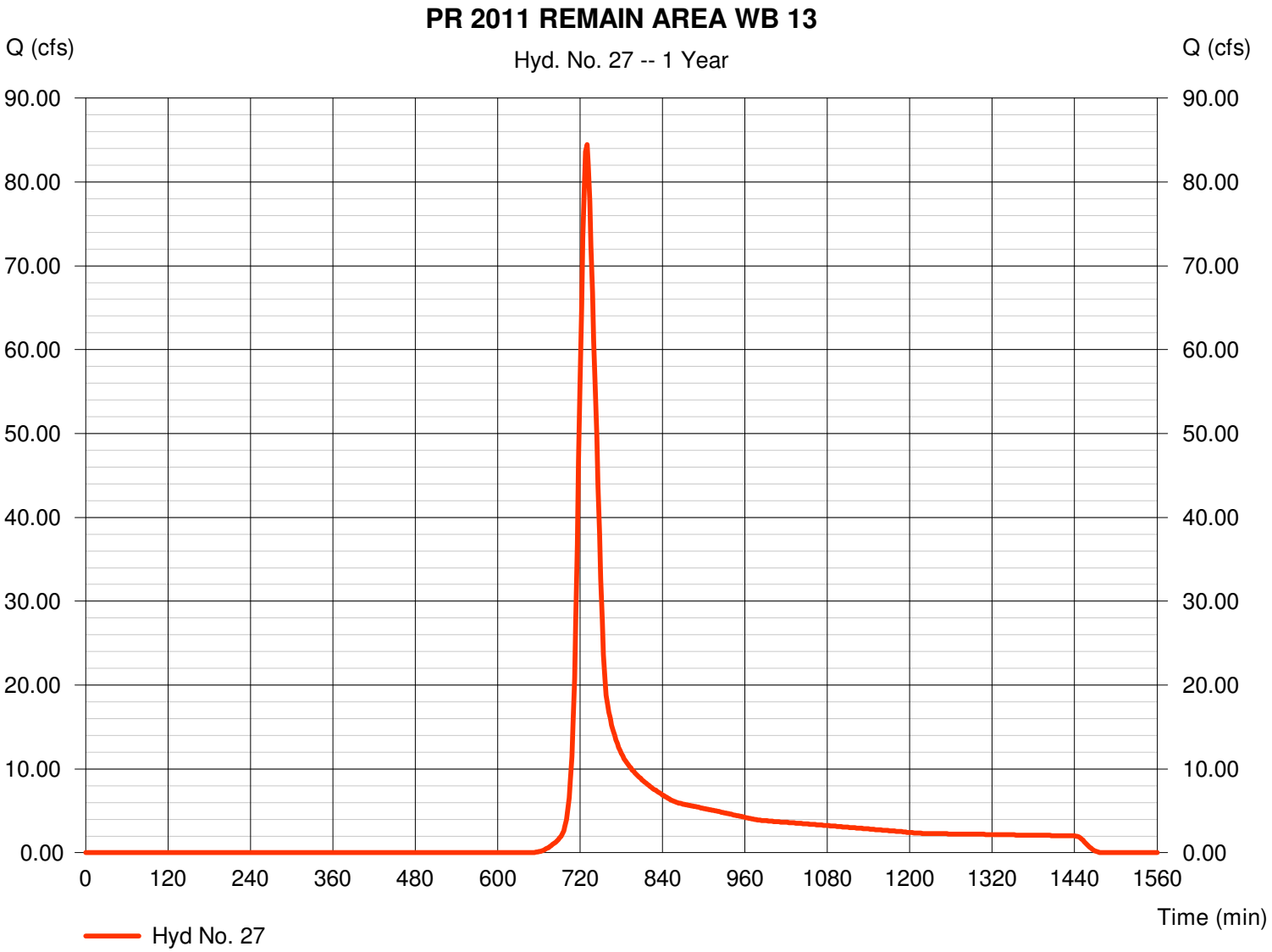
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 27

PR 2011 REMAIN AREA WB 13

Hydrograph type	= SCS Runoff	Peak discharge	= 84.43 cfs
Storm frequency	= 1 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 327,467 cuft
Drainage area	= 124.700 ac	Curve number	= 81*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 26.40 min
Total precip.	= 2.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.000 x 98) + (7.300 x 83) + (77.700 x 78) + (38.700 x 86)] / 124.700



TR55 Tc Worksheet

Hyd. No. 27

PR 2011 REMAIN AREA WB 13

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 180.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 2.40		0.00		0.00		
Land slope (%)	= 13.30		0.00		0.00		
Travel Time (min)	**= 12.36**	**+**	**0.00**	**+**	**0.00**	**=**	**12.36**
Shallow Concentrated Flow							
Flow length (ft)	= 1285.00		0.00		0.00		
Watercourse slope (%)	= 0.90		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	= 1.53		0.00		0.00		
Travel Time (min)	**= 13.99**	**+**	**0.00**	**+**	**0.00**	**=**	**13.99**
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 ..... 26.40 min

Hydrograph Report

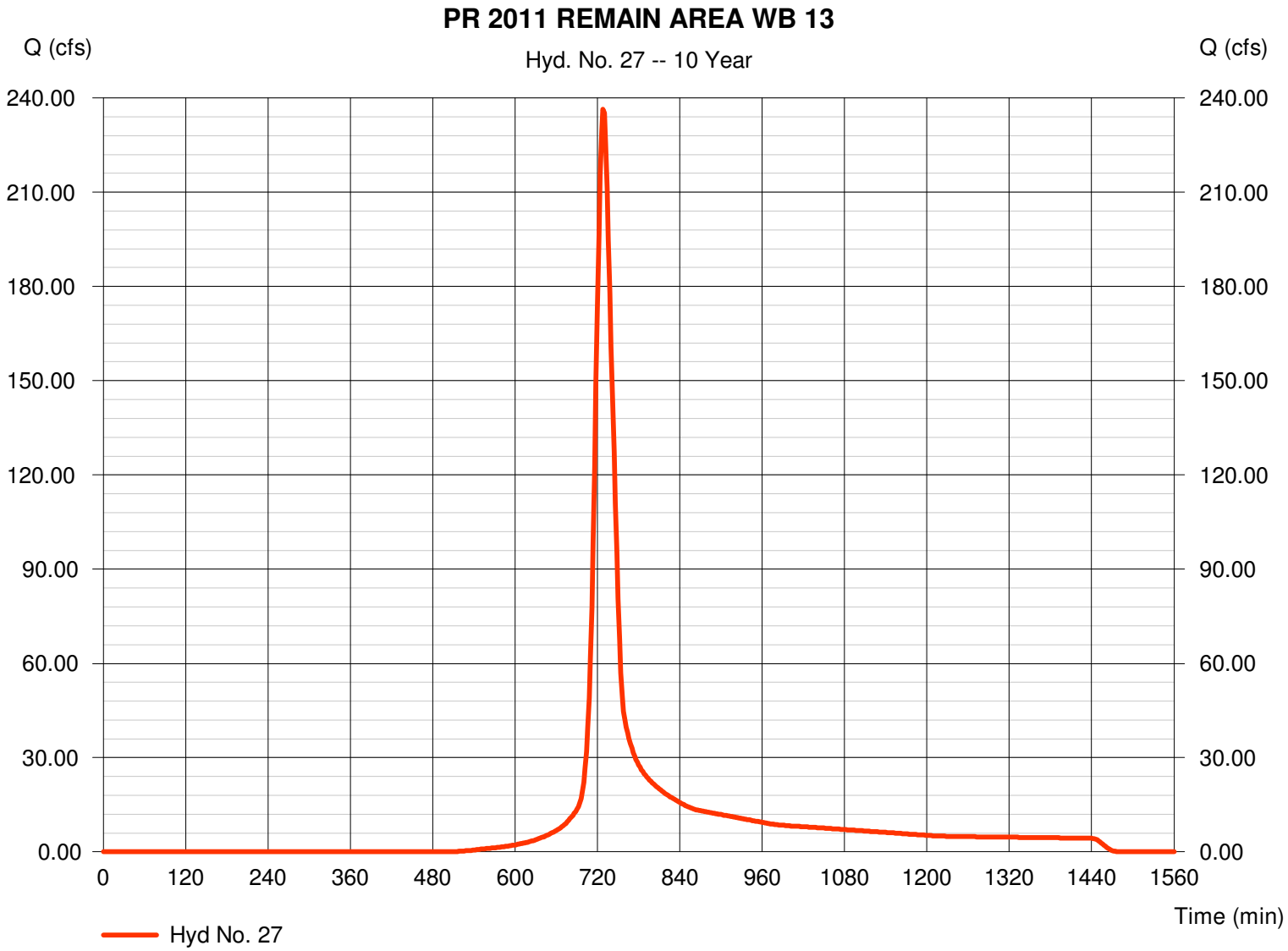
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 — Wednesday, Mar 30, 2011

Hyd. No. 27

PR 2011 REMAIN AREA WB 13

Hydrograph type	= SCS Runoff	Peak discharge	= 236.47 cfs
Storm frequency	= 10 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 870,891 cuft
Drainage area	= 124.700 ac	Curve number	= 81*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 26.40 min
Total precip.	= 3.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.000 x 98) + (7.300 x 83) + (77.700 x 78) + (38.700 x 86)] / 124.700



Hydrograph Report

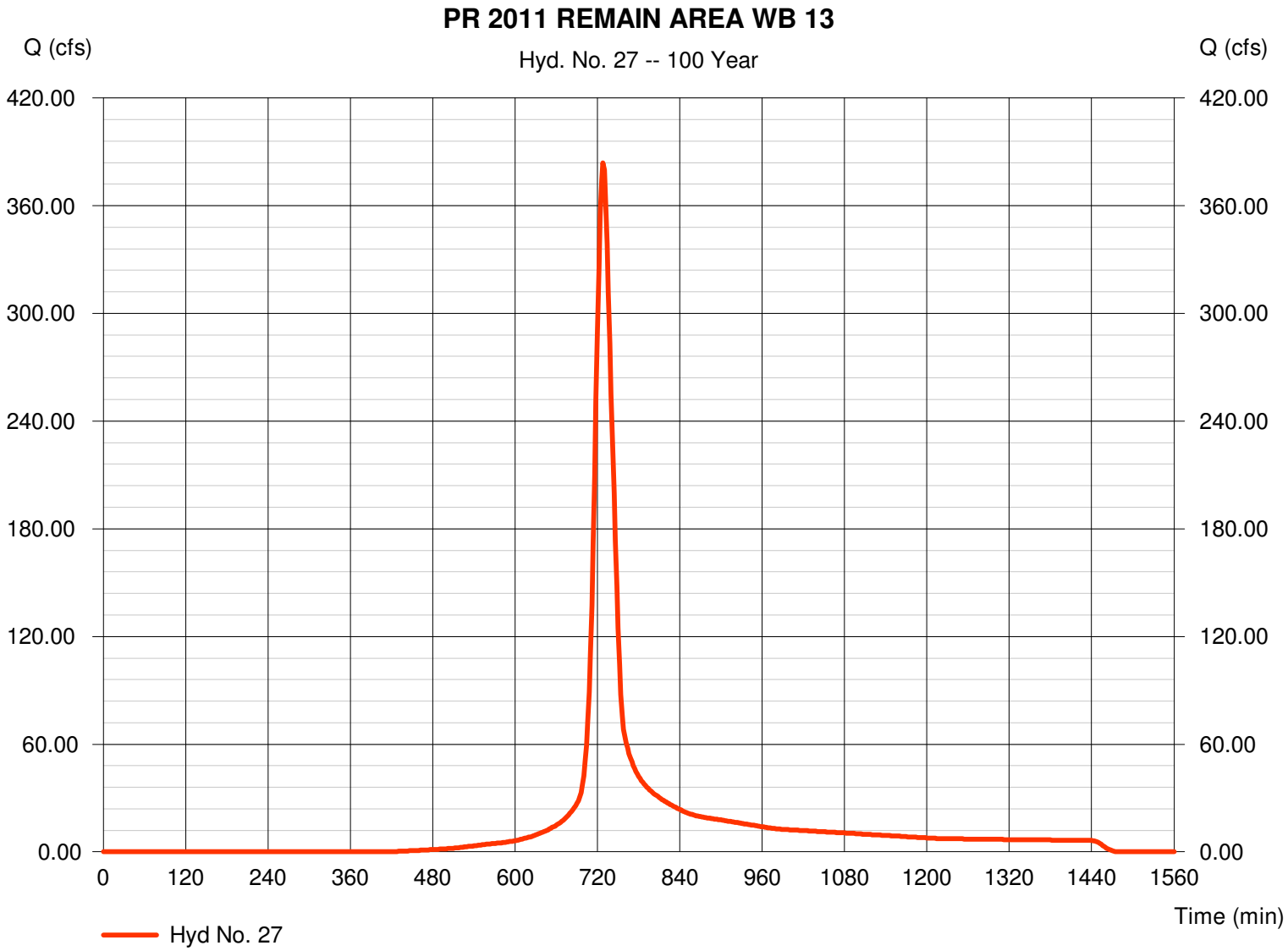
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 — Wednesday, Mar 30, 2011

Hyd. No. 27

PR 2011 REMAIN AREA WB 13

Hydrograph type	= SCS Runoff	Peak discharge	= 383.96 cfs
Storm frequency	= 100 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 1,409,266 cuft
Drainage area	= 124.700 ac	Curve number	= 81*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 26.40 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.000 x 98) + (7.300 x 83) + (77.700 x 78) + (38.700 x 86)] / 124.700



Hydrograph Report

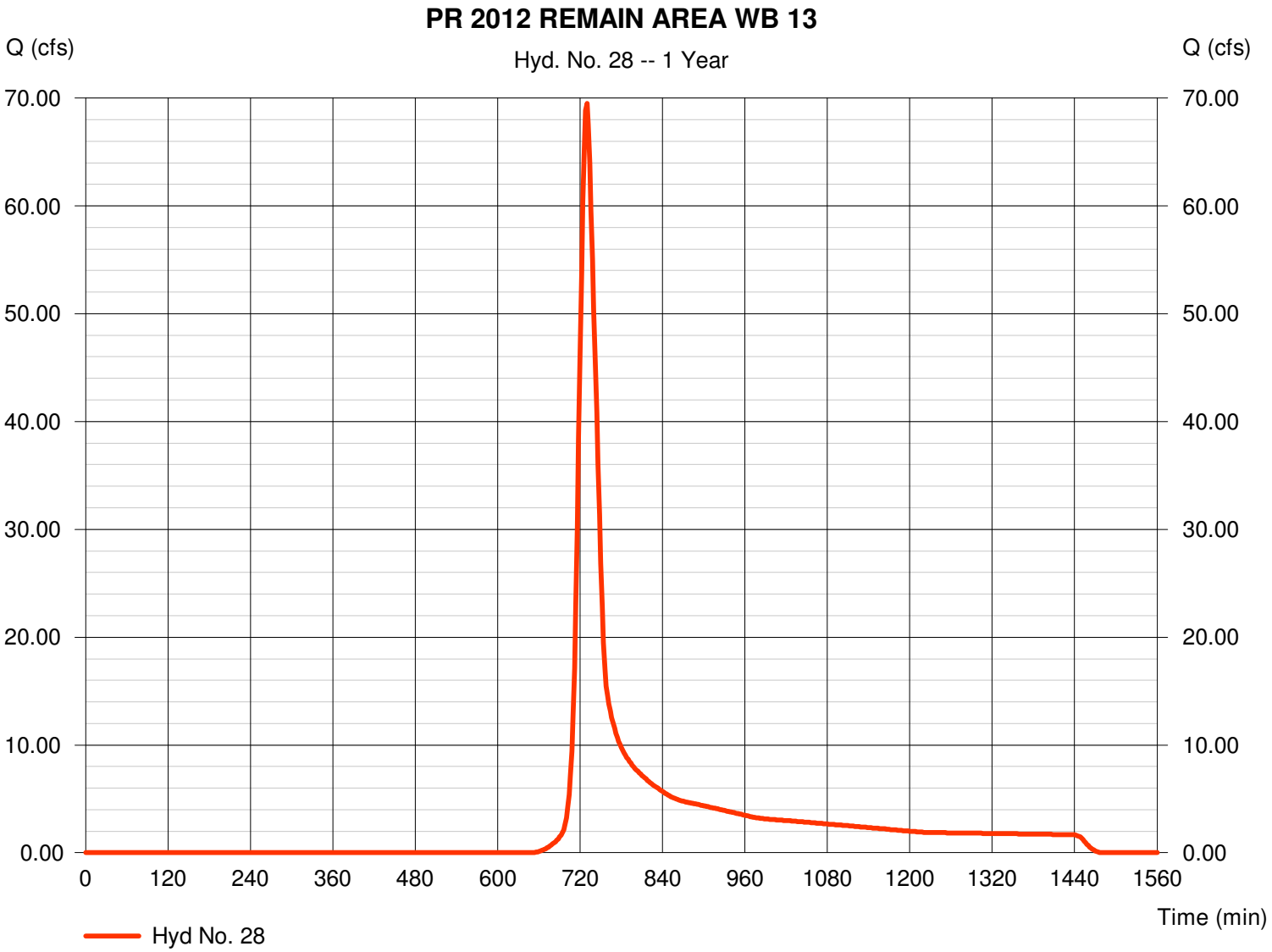
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 28

PR 2012 REMAIN AREA WB 13

Hydrograph type	=	SCS Runoff	Peak discharge	=	69.53 cfs
Storm frequency	=	1 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	269,694 cuft
Drainage area	=	102.700 ac	Curve number	=	81*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	26.40 min
Total precip.	=	2.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(1.000 x 98) + (7.300 x 83) + (59.500 x 78) + (34.900 x 86)] / 102.700



TR55 Tc Worksheet

Hyd. No. 28

PR 2012 REMAIN AREA WB 13

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 180.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 2.40		0.00		0.00		
Land slope (%)	= 13.30		0.00		0.00		
Travel Time (min)	**= 12.36**	**+**	**0.00**	**+**	**0.00**	**=**	**12.36**
Shallow Concentrated Flow							
Flow length (ft)	= 1285.00		0.00		0.00		
Watercourse slope (%)	= 0.90		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	= 1.53		0.00		0.00		
Travel Time (min)	**= 13.99**	**+**	**0.00**	**+**	**0.00**	**=**	**13.99**
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 ..... 26.40 min

Hydrograph Report

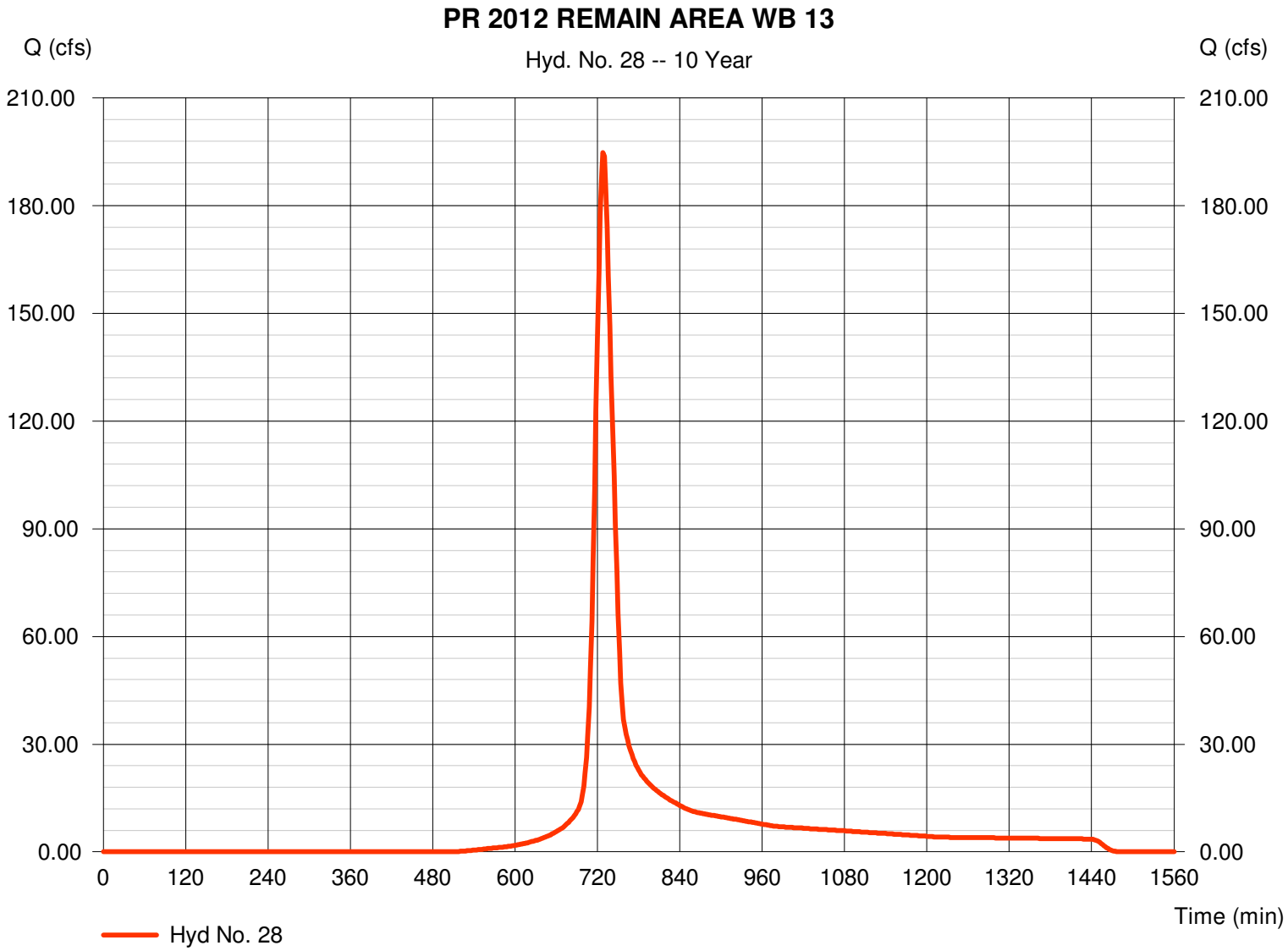
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 28

PR 2012 REMAIN AREA WB 13

Hydrograph type	=	SCS Runoff	Peak discharge	=	194.75 cfs
Storm frequency	=	10 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	717,245 cuft
Drainage area	=	102.700 ac	Curve number	=	81*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	26.40 min
Total precip.	=	3.80 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(1.000 x 98) + (7.300 x 83) + (59.500 x 78) + (34.900 x 86)] / 102.700



Hydrograph Report

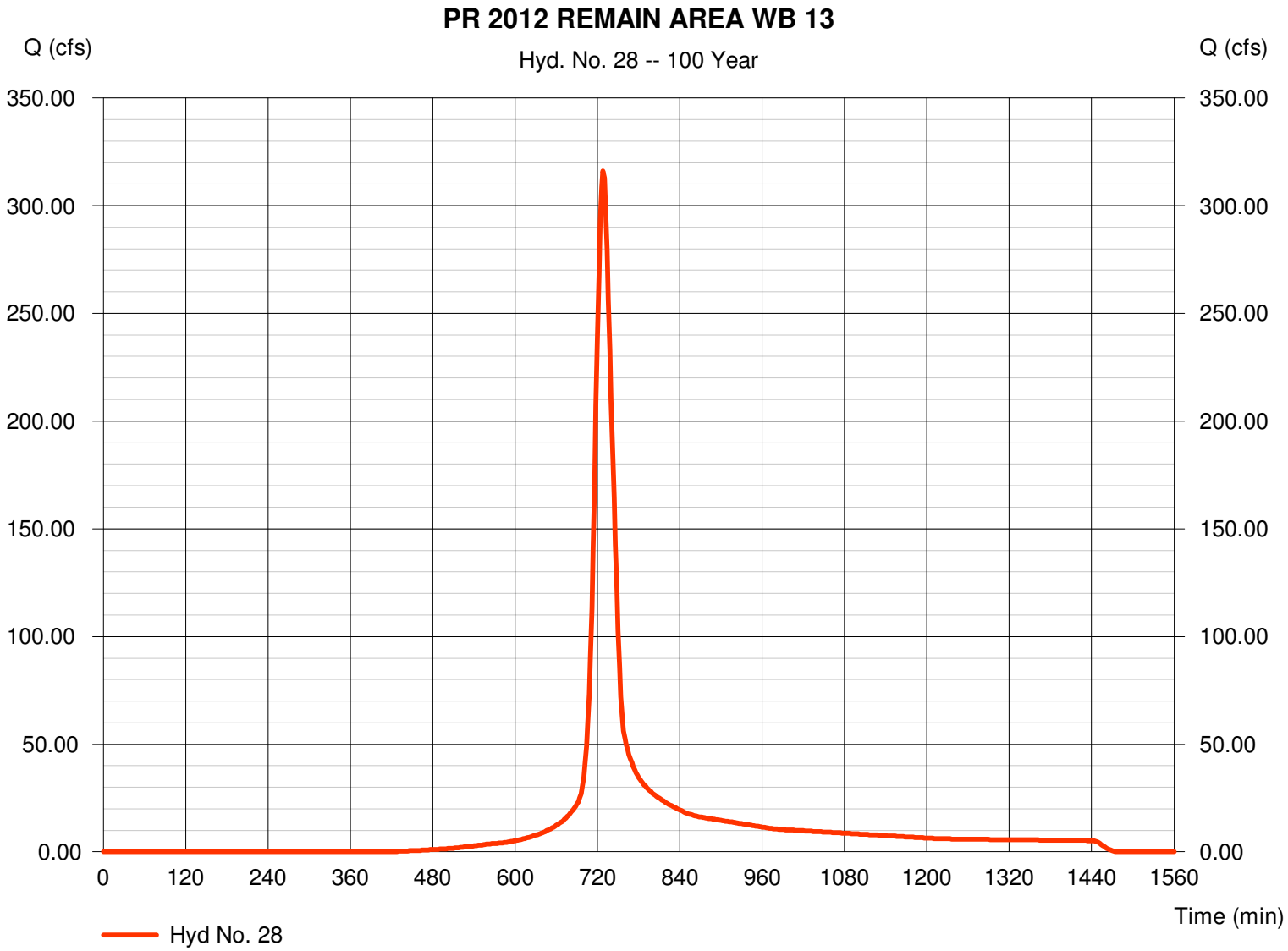
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 — Wednesday, Mar 30, 2011

Hyd. No. 28

PR 2012 REMAIN AREA WB 13

Hydrograph type	= SCS Runoff	Peak discharge	= 316.22 cfs
Storm frequency	= 100 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 1,160,640 cuft
Drainage area	= 102.700 ac	Curve number	= 81*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 26.40 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.000 x 98) + (7.300 x 83) + (59.500 x 78) + (34.900 x 86)] / 102.700



Hydrograph Report

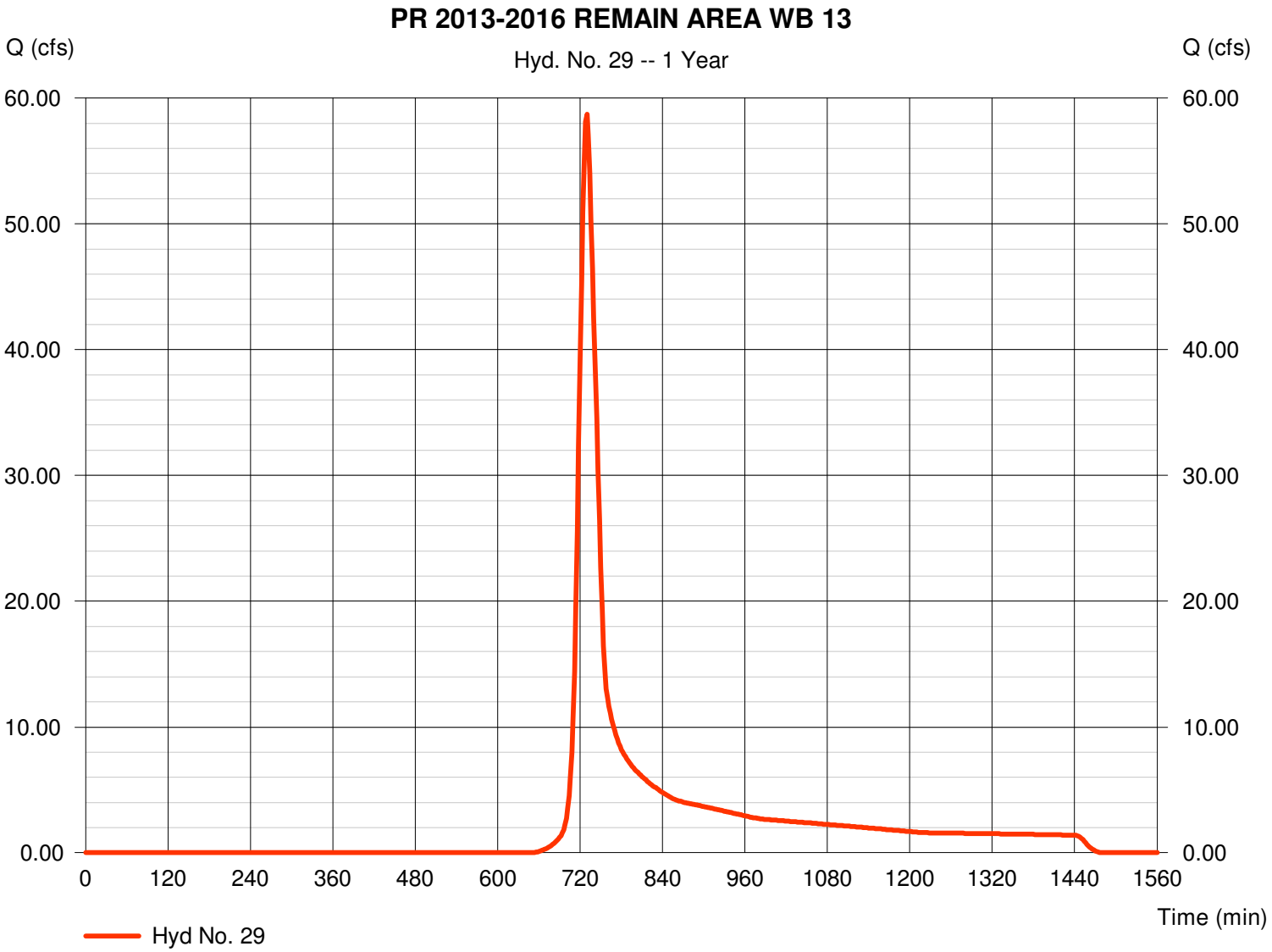
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 29

PR 2013-2016 REMAIN AREA WB 13

Hydrograph type	=	SCS Runoff	Peak discharge	=	58.70 cfs
Storm frequency	=	1 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	227,678 cuft
Drainage area	=	86.700 ac	Curve number	=	81*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	26.40 min
Total precip.	=	2.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(1.000 x 98) + (7.300 x 83) + (50.700 x 78) + (27.700 x 86)] / 86.700



TR55 Tc Worksheet

Hyd. No. 29

PR 2013-2016 REMAIN AREA WB 13

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.240		0.011		0.011		
Flow length (ft)	=	180.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	2.40		0.00		0.00		
Land slope (%)	=	13.30		0.00		0.00		
Travel Time (min)	**=**	**12.36**	**+**	**0.00**	**+**	**0.00**	**=**	**12.36**
Shallow Concentrated Flow								
Flow length (ft)	=	1285.00		0.00		0.00		
Watercourse slope (%)	=	0.90		0.00		0.00		
Surface description	=	Unpaved		Paved		Paved		
Average velocity (ft/s)	=	1.53		0.00		0.00		
Travel Time (min)	**=**	**13.99**	**+**	**0.00**	**+**	**0.00**	**=**	**13.99**
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 ..... 26.40 min

Hydrograph Report

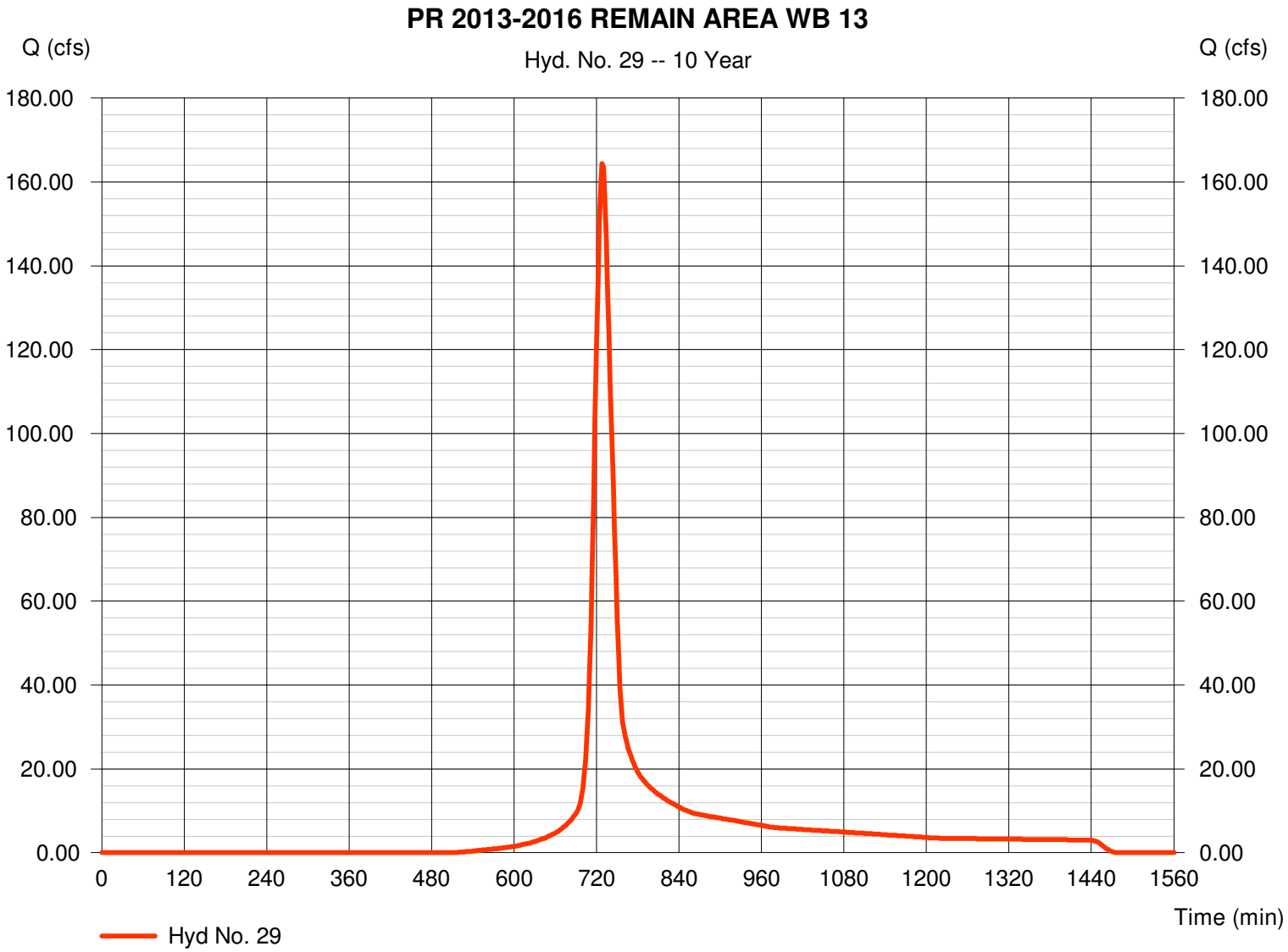
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 29

PR 2013-2016 REMAIN AREA WB 13

Hydrograph type	= SCS Runoff	Peak discharge	= 164.41 cfs
Storm frequency	= 10 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 605,503 cuft
Drainage area	= 86.700 ac	Curve number	= 81*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 26.40 min
Total precip.	= 3.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.000 x 98) + (7.300 x 83) + (50.700 x 78) + (27.700 x 86)] / 86.700



Hydrograph Report

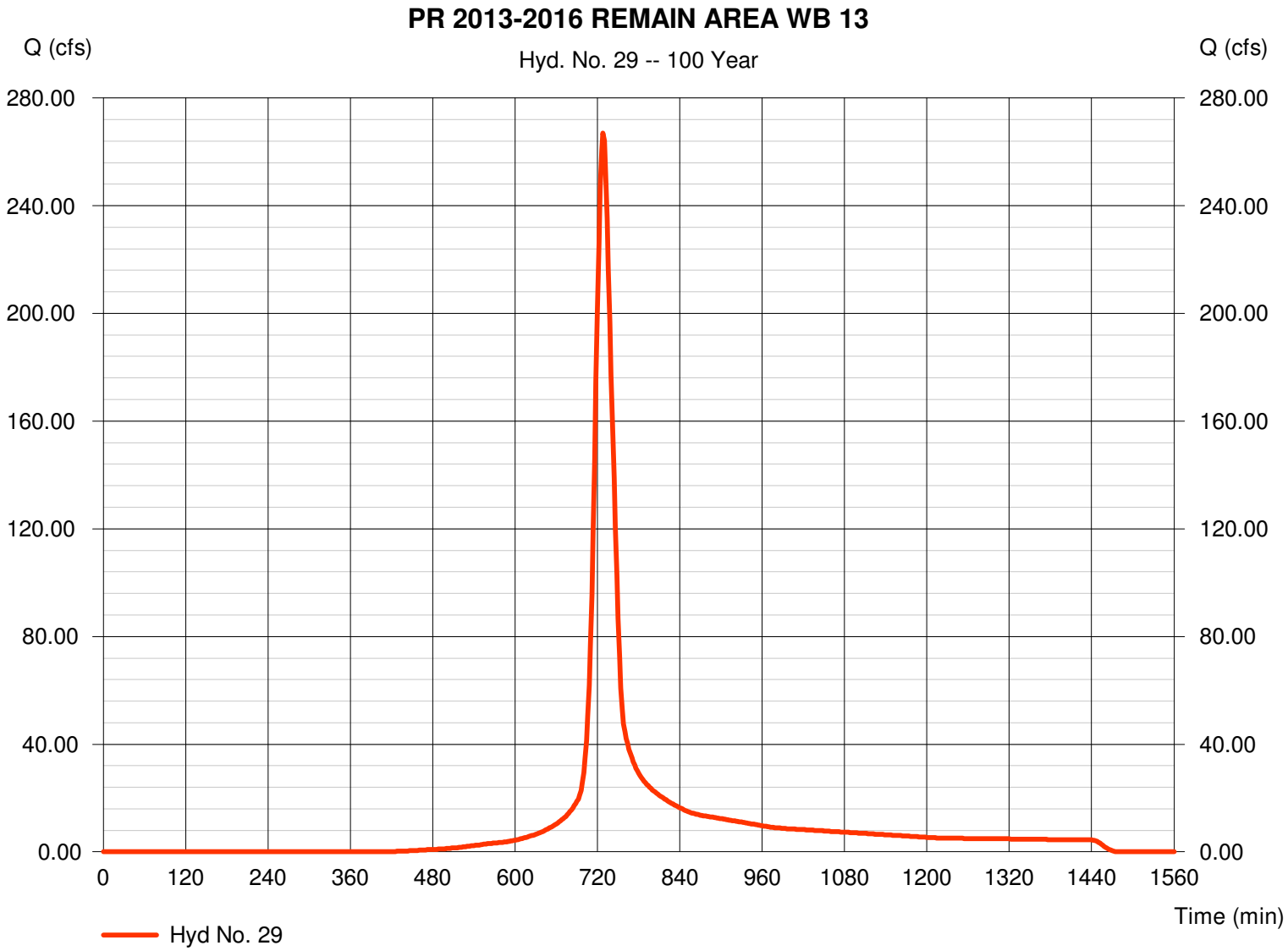
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 29

PR 2013-2016 REMAIN AREA WB 13

Hydrograph type	=	SCS Runoff	Peak discharge	=	266.95 cfs
Storm frequency	=	100 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	979,819 cuft
Drainage area	=	86.700 ac	Curve number	=	81*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	26.40 min
Total precip.	=	5.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(1.000 x 98) + (7.300 x 83) + (50.700 x 78) + (27.700 x 86)] / 86.700



Hydrograph Report

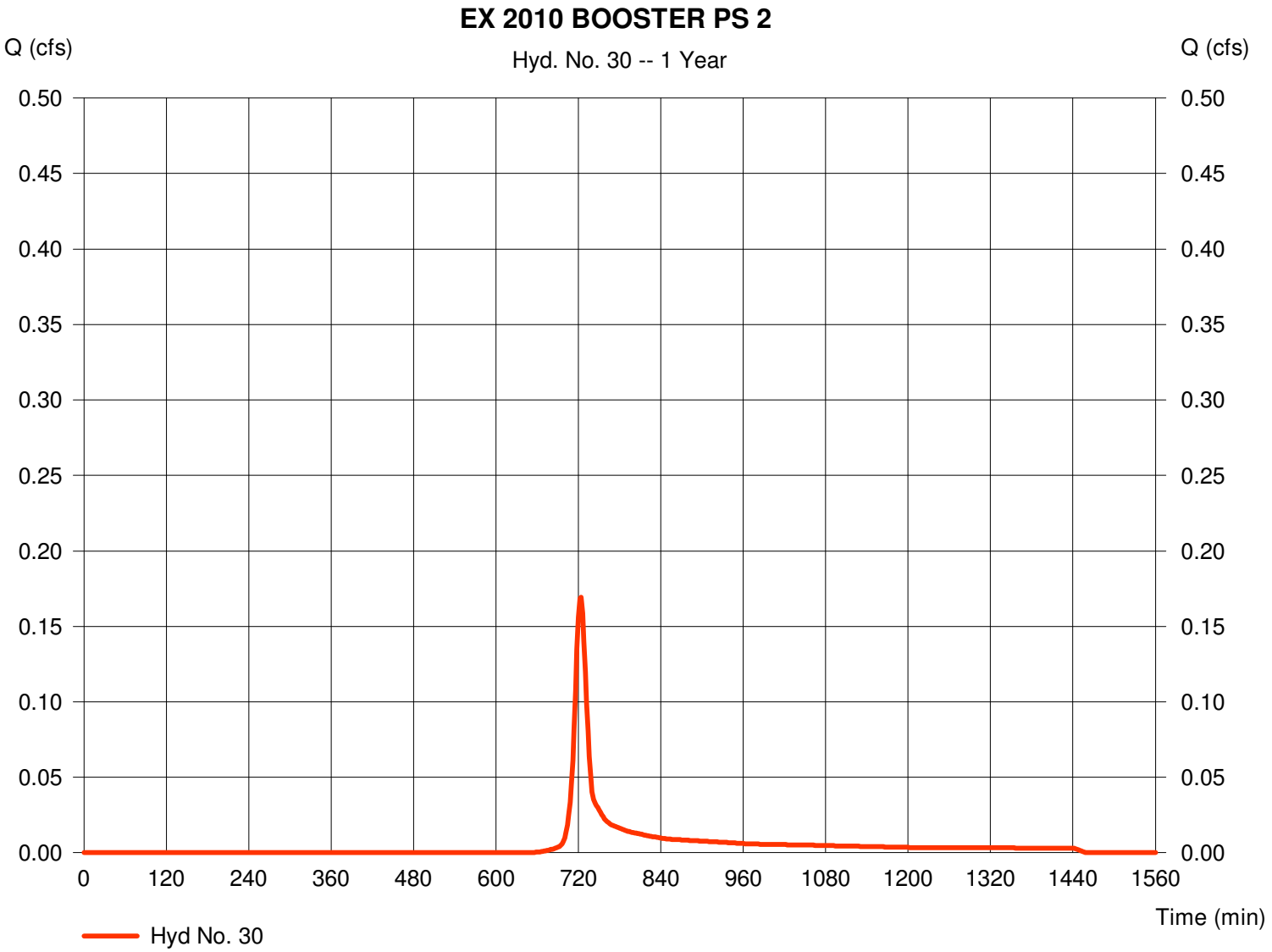
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 30

EX 2010 BOOSTER PS 2

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.169 cfs
Storm frequency	=	1 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	494 cuft
Drainage area	=	0.190 ac	Curve number	=	81*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	15.60 min
Total precip.	=	2.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.096 x 78) + (0.096 x 83)] / 0.190



TR55 Tc Worksheet

Hyd. No. 30

EX 2010 BOOSTER PS 2

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 120.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 2.40		0.00		0.00		
Land slope (%)	= 3.30		0.00		0.00		
Travel Time (min)	**= 15.60**	**+**	**0.00**	**+**	**0.00**	**=**	**15.60**
Shallow Concentrated Flow							
Flow length (ft)	= 0.00		0.00		0.00		
Watercourse slope (%)	= 0.00		0.00		0.00		
Surface description	= Paved		Paved		Paved		
Average velocity (ft/s)	= 0.00		0.00		0.00		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**
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 ..... 15.60 min

Hydrograph Report

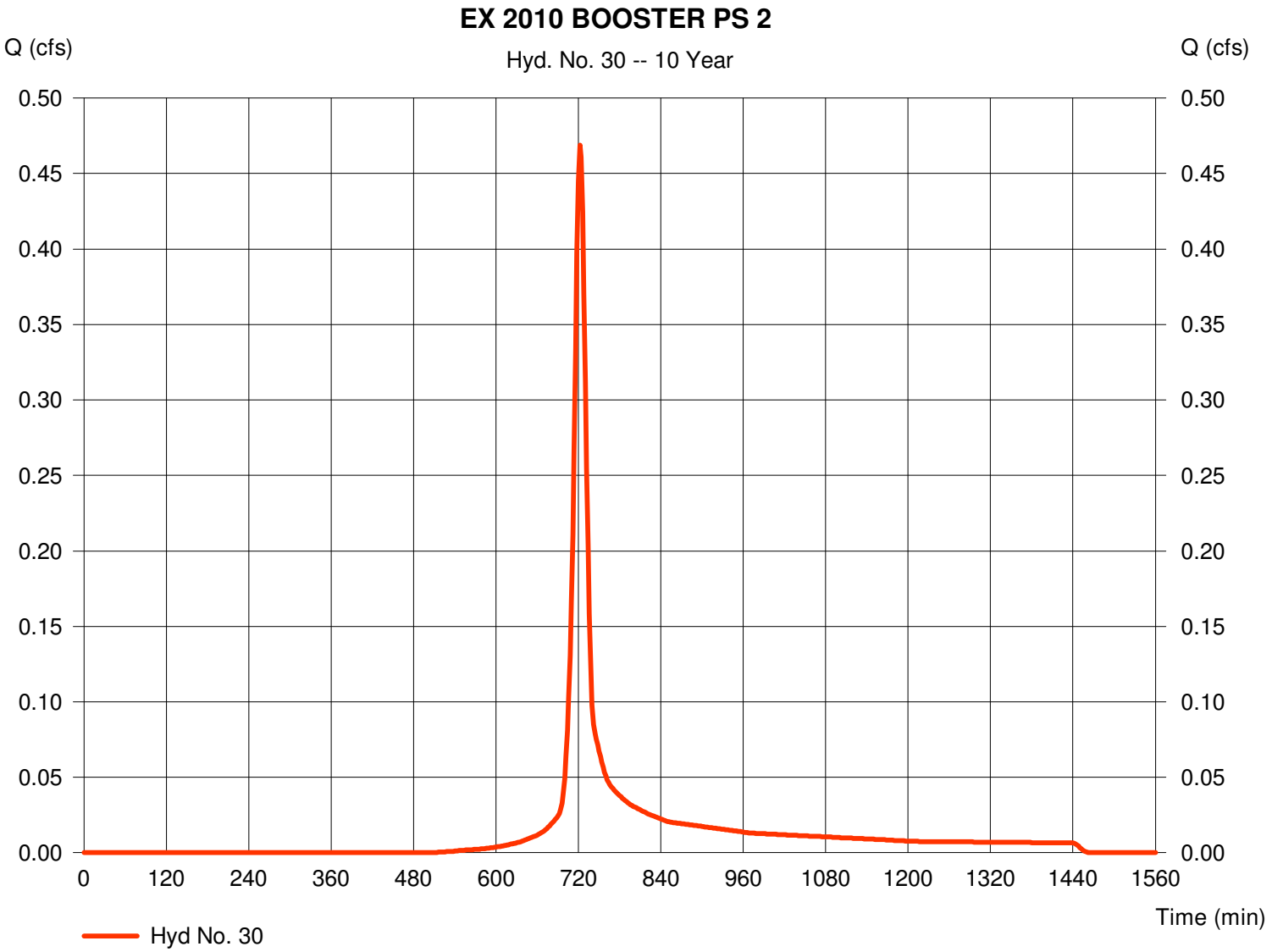
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 30

EX 2010 BOOSTER PS 2

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.469 cfs
Storm frequency	=	10 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	1,314 cuft
Drainage area	=	0.190 ac	Curve number	=	81*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	15.60 min
Total precip.	=	3.80 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.096 x 78) + (0.096 x 83)] / 0.190



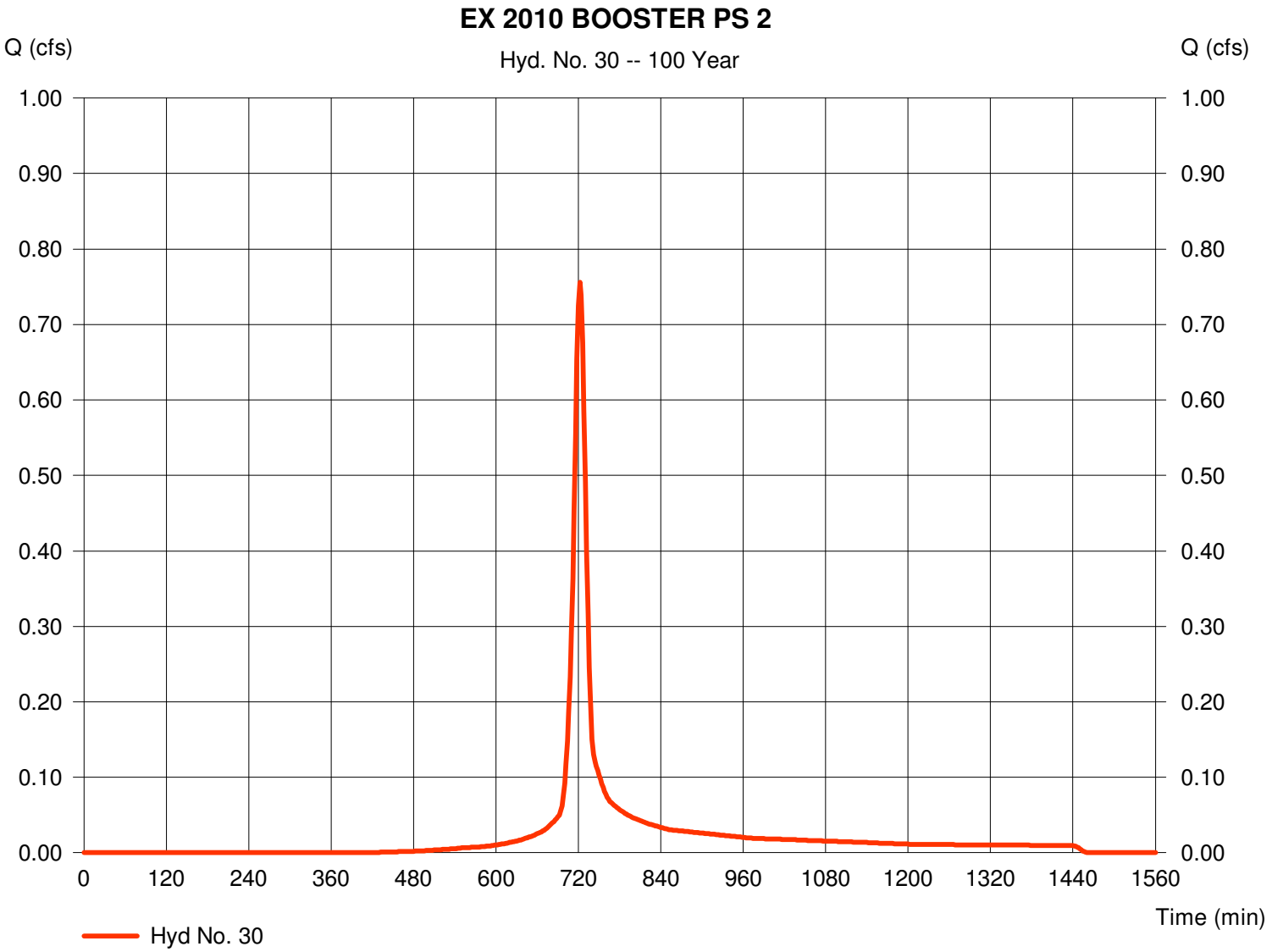
Hydrograph Report

Hyd. No. 30

EX 2010 BOOSTER PS 2

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.756 cfs
Storm frequency	=	100 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	2,127 cuft
Drainage area	=	0.190 ac	Curve number	=	81*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	15.60 min
Total precip.	=	5.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.096 x 78) + (0.096 x 83)] / 0.190



Hydrograph Report

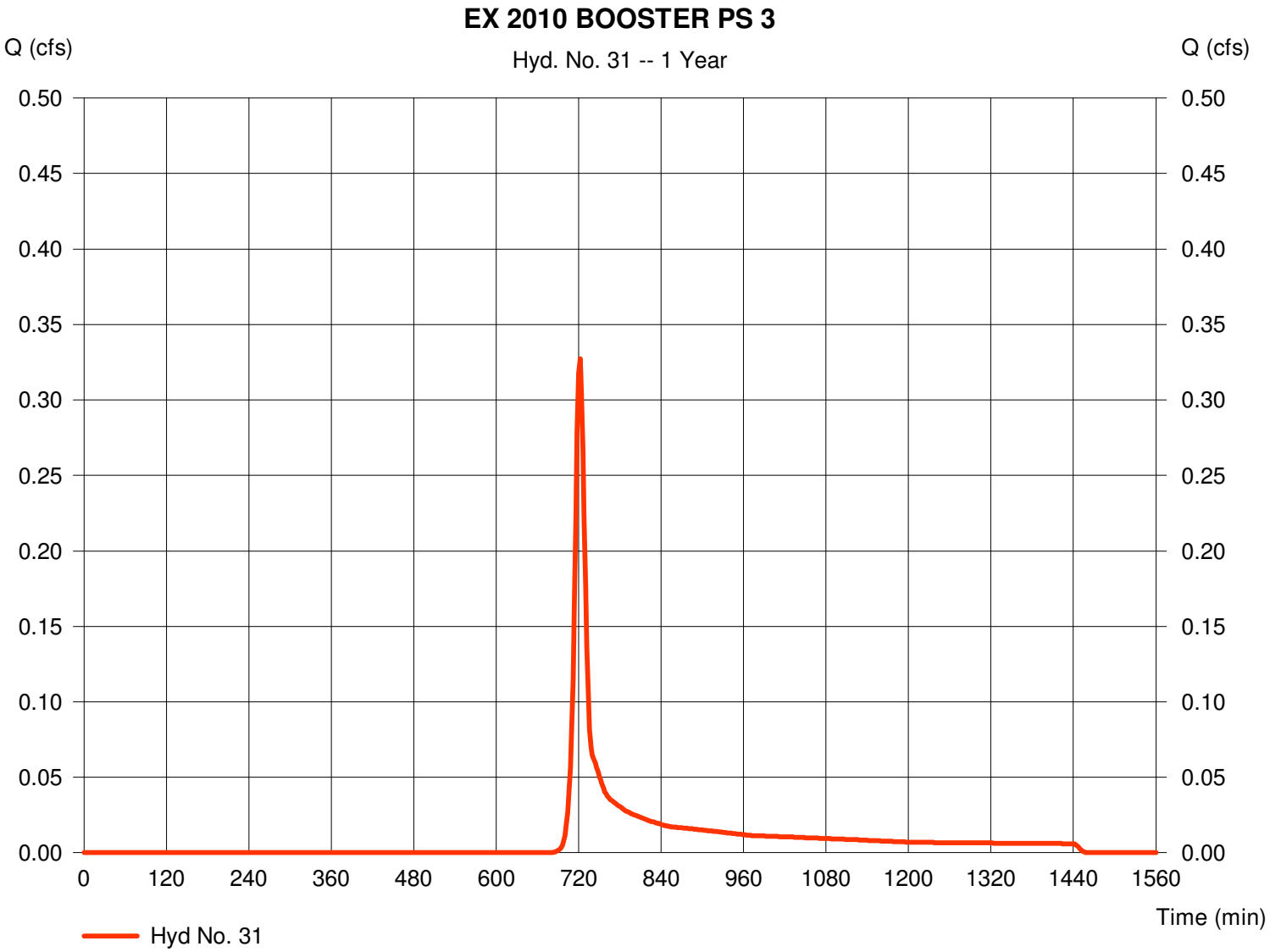
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 31

EX 2010 BOOSTER PS 3

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.327 cfs
Storm frequency	=	1 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	899 cuft
Drainage area	=	0.400 ac	Curve number	=	78*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	11.70 min
Total precip.	=	2.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.400 x 78)] / 0.400



TR55 Tc Worksheet

Hyd. No. 31

EX 2010 BOOSTER PS 3

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 150.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 2.40		0.00		0.00		
Land slope (%)	= 10.60		0.00		0.00		
Travel Time (min)	**= 11.70**	**+**	**0.00**	**+**	**0.00**	**=**	**11.70**
Shallow Concentrated Flow							
Flow length (ft)	= 0.00		0.00		0.00		
Watercourse slope (%)	= 0.00		0.00		0.00		
Surface description	= Paved		Paved		Paved		
Average velocity (ft/s)	= 0.00		0.00		0.00		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**
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 ..... 11.70 min

Hydrograph Report

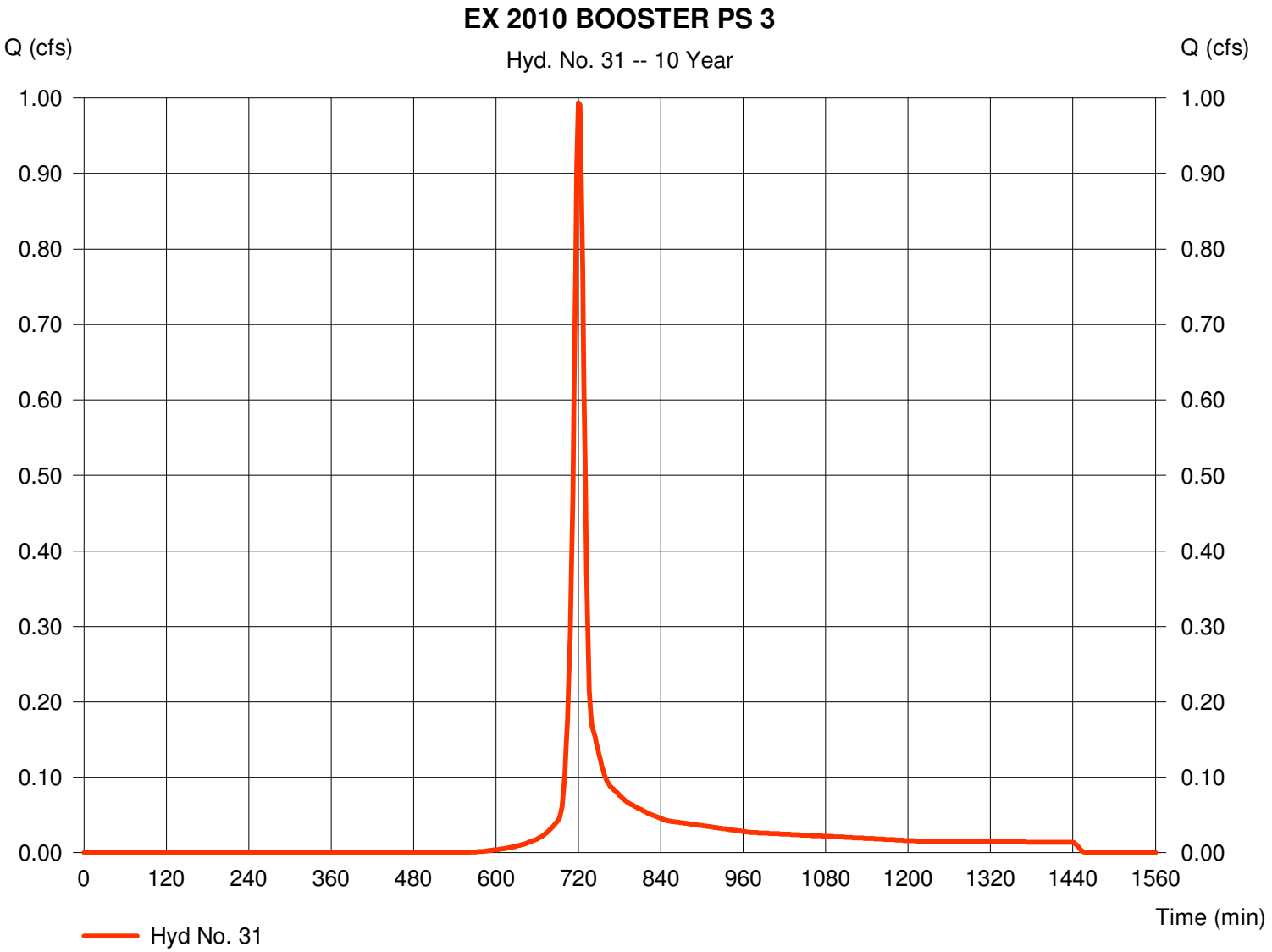
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 31

EX 2010 BOOSTER PS 3

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.993 cfs
Storm frequency	=	10 yrs	Time to peak	=	720 min
Time interval	=	2 min	Hyd. volume	=	2,589 cuft
Drainage area	=	0.400 ac	Curve number	=	78*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	11.70 min
Total precip.	=	3.80 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.400 x 78)] / 0.400



Hydrograph Report

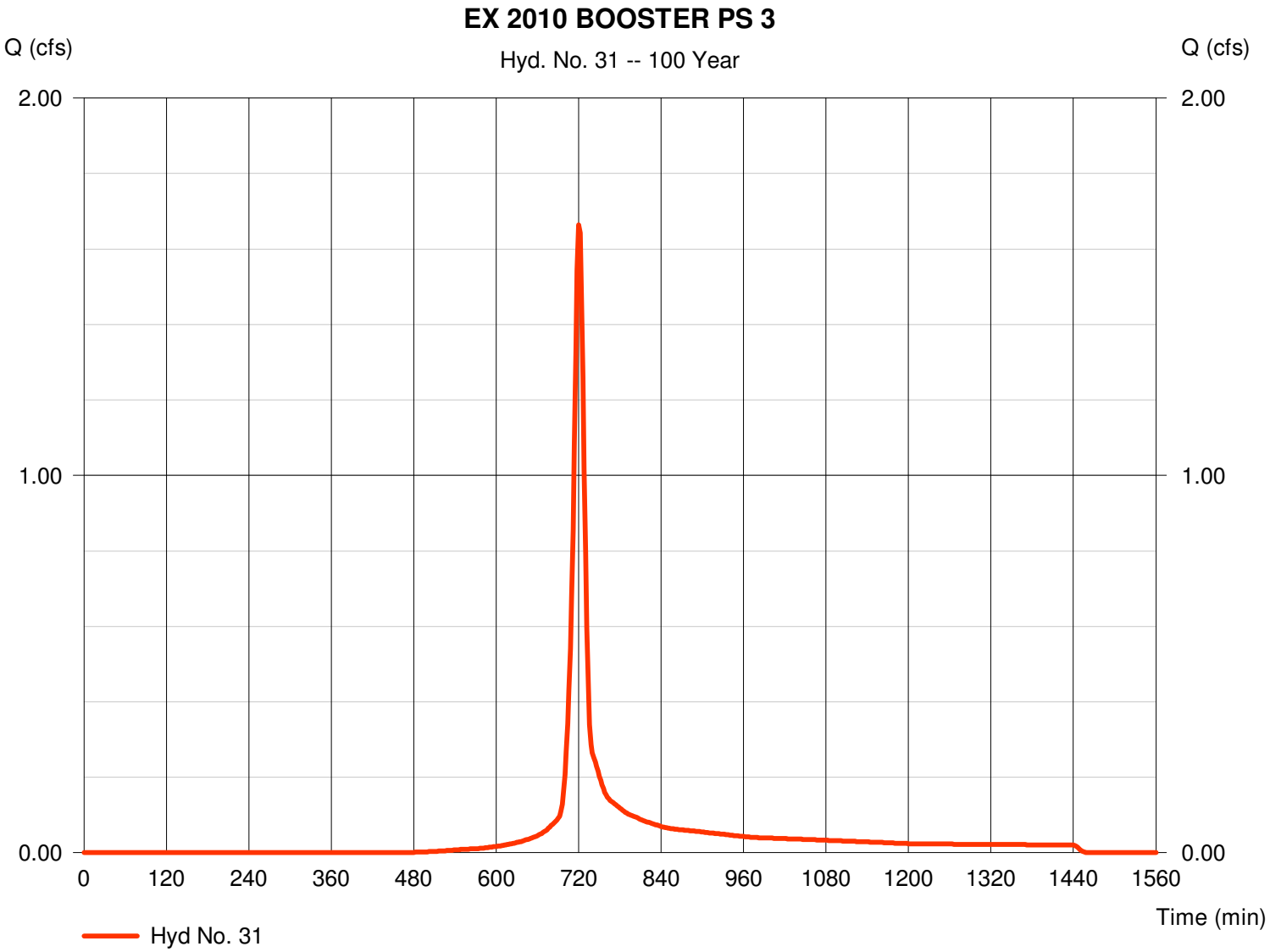
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 31

EX 2010 BOOSTER PS 3

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.664 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	2 min	Hyd. volume	=	4,316 cuft
Drainage area	=	0.400 ac	Curve number	=	78*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	11.70 min
Total precip.	=	5.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.400 x 78)] / 0.400

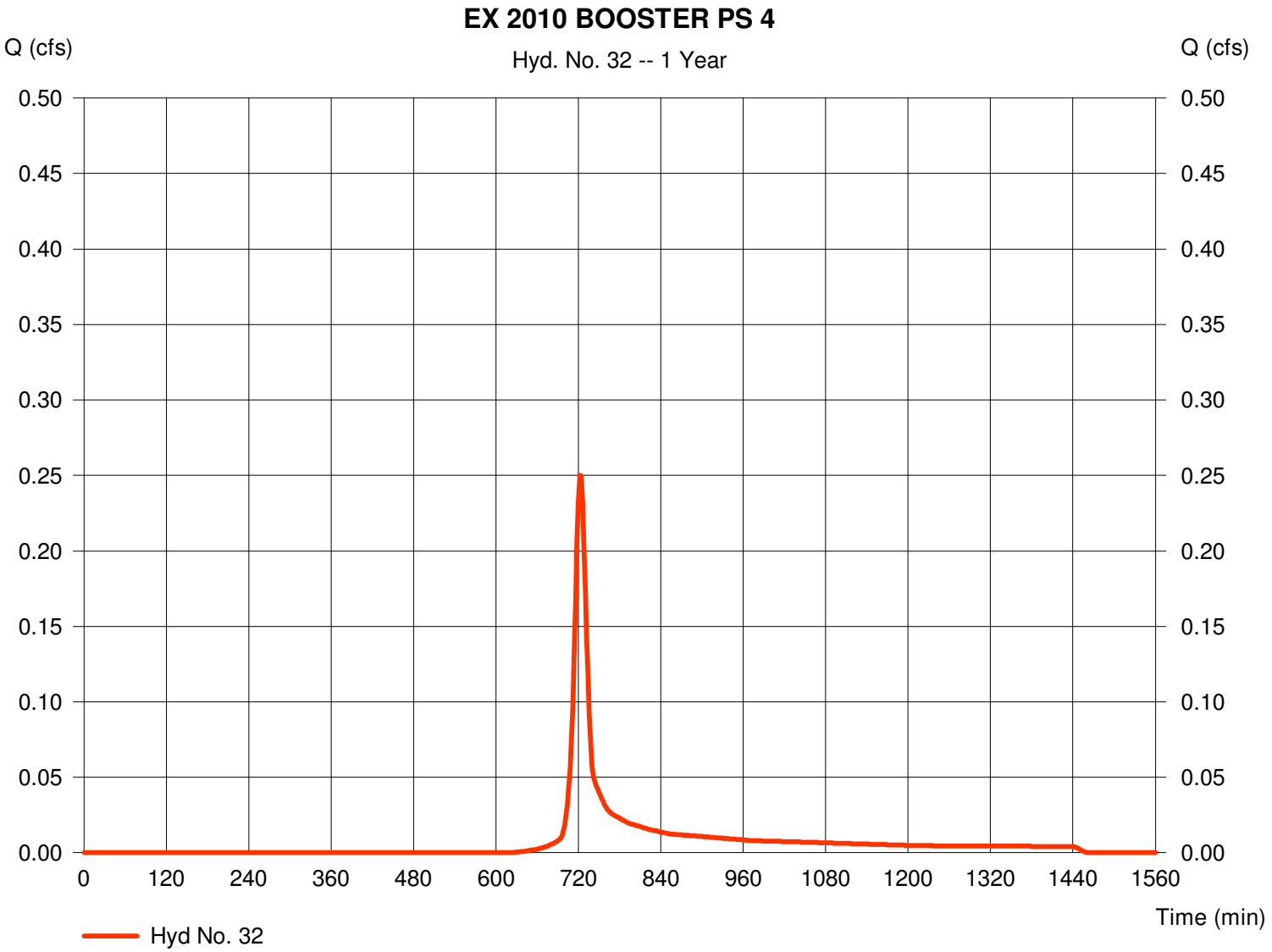


Hydrograph Report

Hyd. No. 32

EX 2010 BOOSTER PS 4

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.250 cfs
Storm frequency	=	1 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	718 cuft
Drainage area	=	0.243 ac	Curve number	=	83
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	14.60 min
Total precip.	=	2.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



TR55 Tc Worksheet

Hyd. No. 32

EX 2010 BOOSTER PS 4

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 90.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 2.40		0.00		0.00		
Land slope (%)	= 2.20		0.00		0.00		
Travel Time (min)	**= 14.58**	**+**	**0.00**	**+**	**0.00**	**=**	**14.58**
Shallow Concentrated Flow							
Flow length (ft)	= 0.00		0.00		0.00		
Watercourse slope (%)	= 0.00		0.00		0.00		
Surface description	= Paved		Paved		Paved		
Average velocity (ft/s)	= 0.00		0.00		0.00		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**
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 ..... 14.60 min

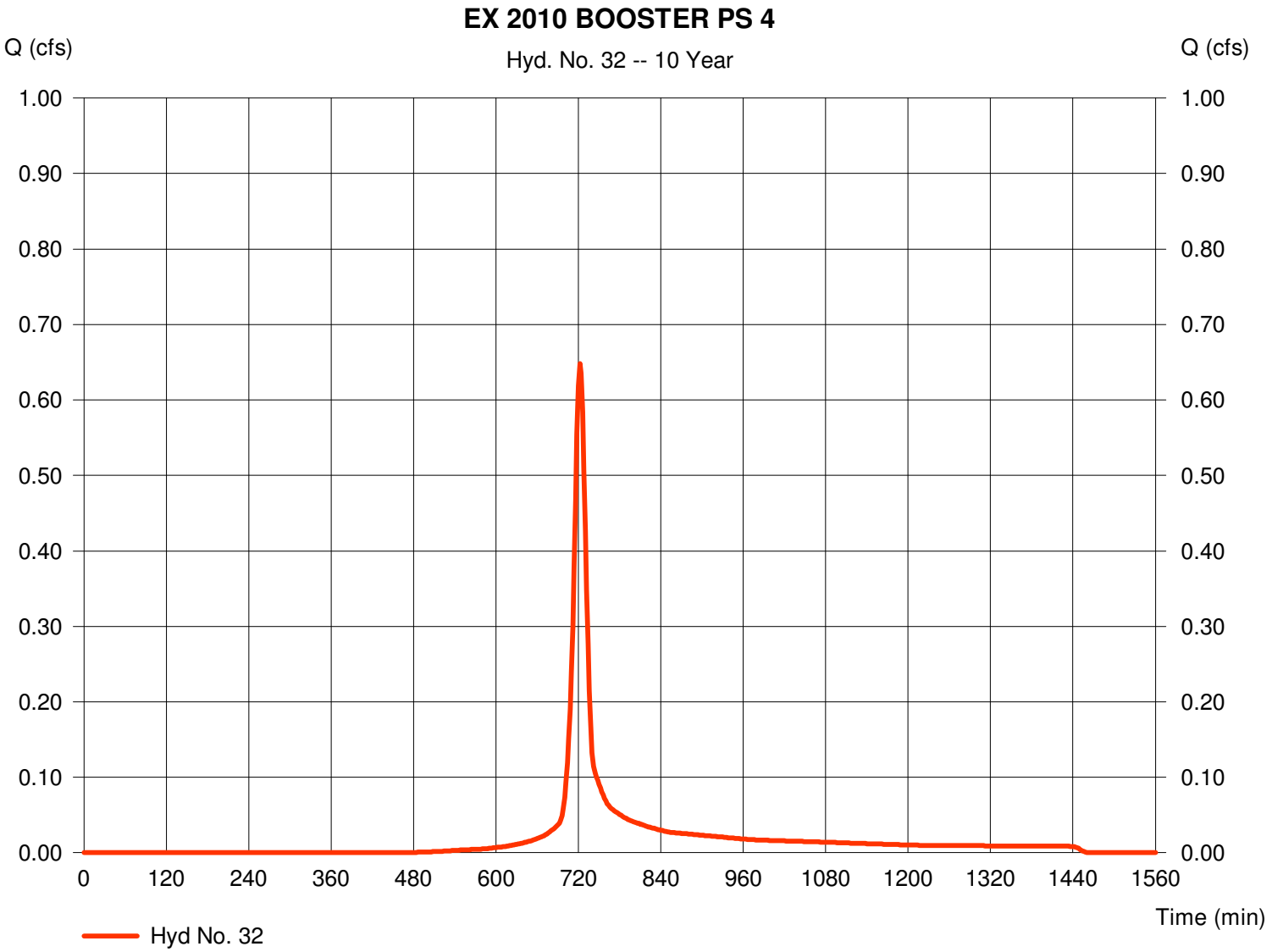
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 32

EX 2010 BOOSTER PS 4

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.648 cfs
Storm frequency	=	10 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	1,818 cuft
Drainage area	=	0.243 ac	Curve number	=	83
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	14.60 min
Total precip.	=	3.80 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



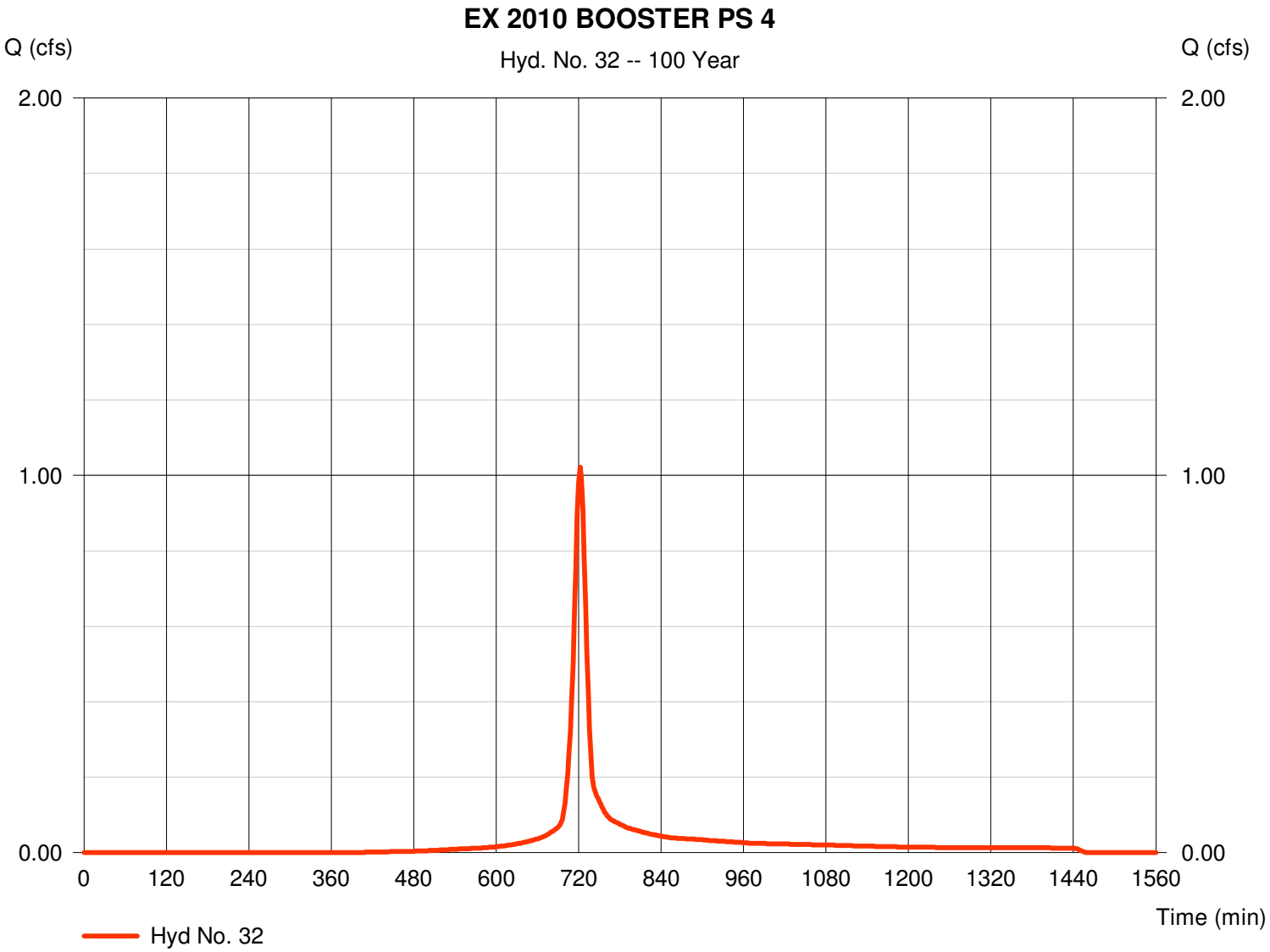
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 32

EX 2010 BOOSTER PS 4

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.022 cfs
Storm frequency	=	100 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	2,886 cuft
Drainage area	=	0.243 ac	Curve number	=	83
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	14.60 min
Total precip.	=	5.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

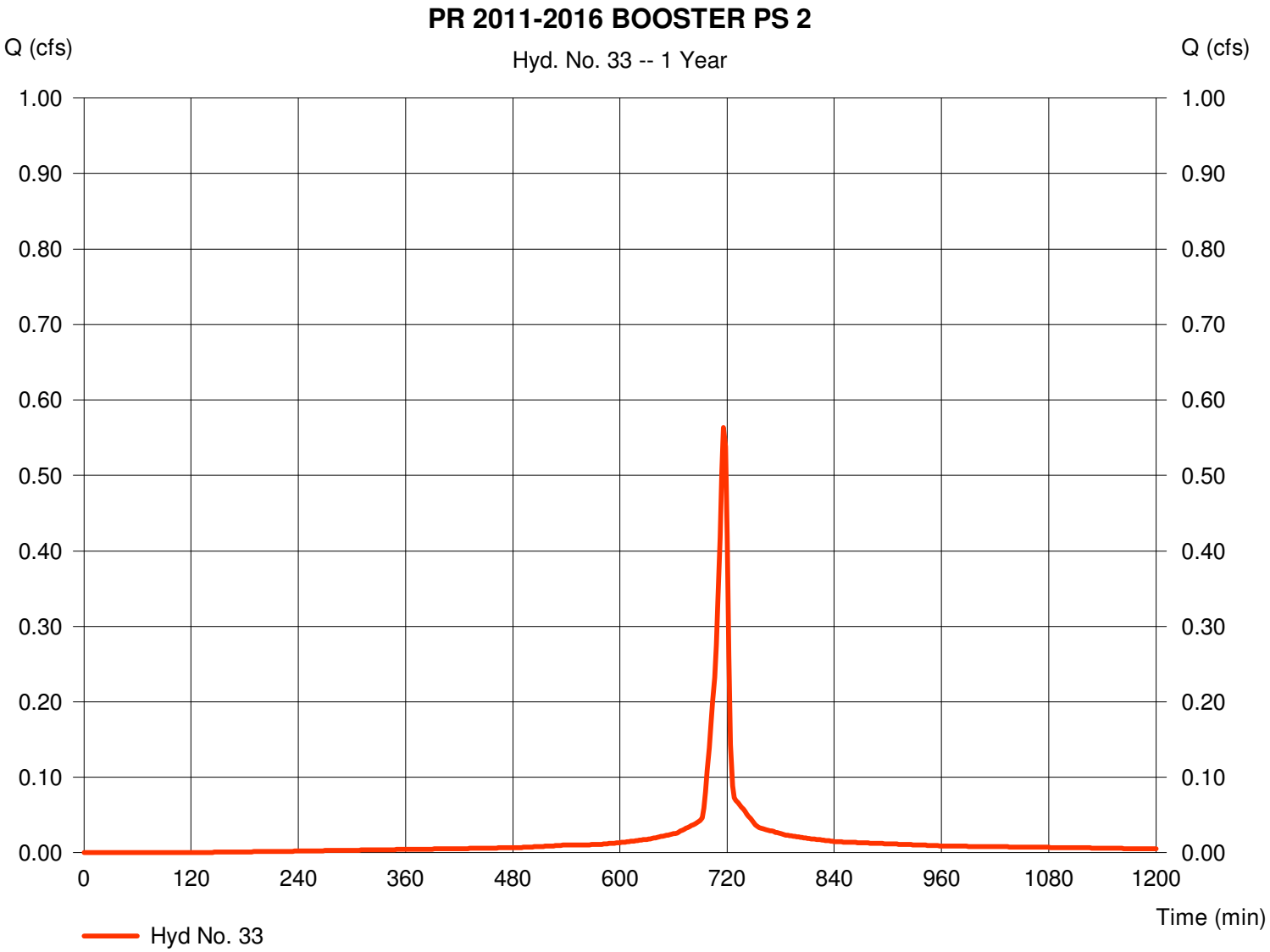


Hydrograph Report

Hyd. No. 33

PR 2011-2016 BOOSTER PS 2

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.563 cfs
Storm frequency	=	1 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	1,289 cuft
Drainage area	=	0.192 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	4.00 min
Total precip.	=	2.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



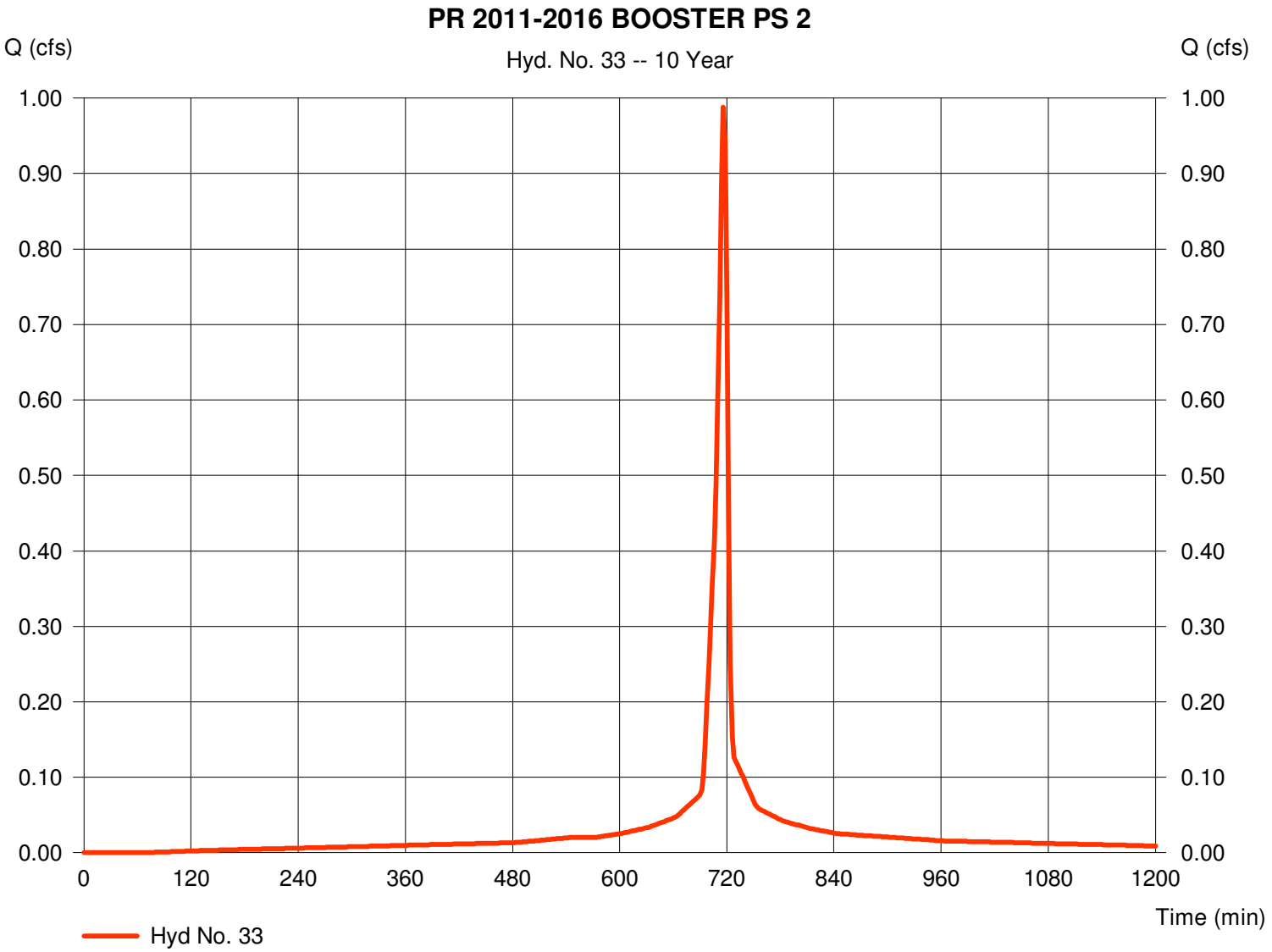
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 33

PR 2011-2016 BOOSTER PS 2

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.988 cfs
Storm frequency	=	10 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	2,330 cuft
Drainage area	=	0.192 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	4.00 min
Total precip.	=	3.80 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

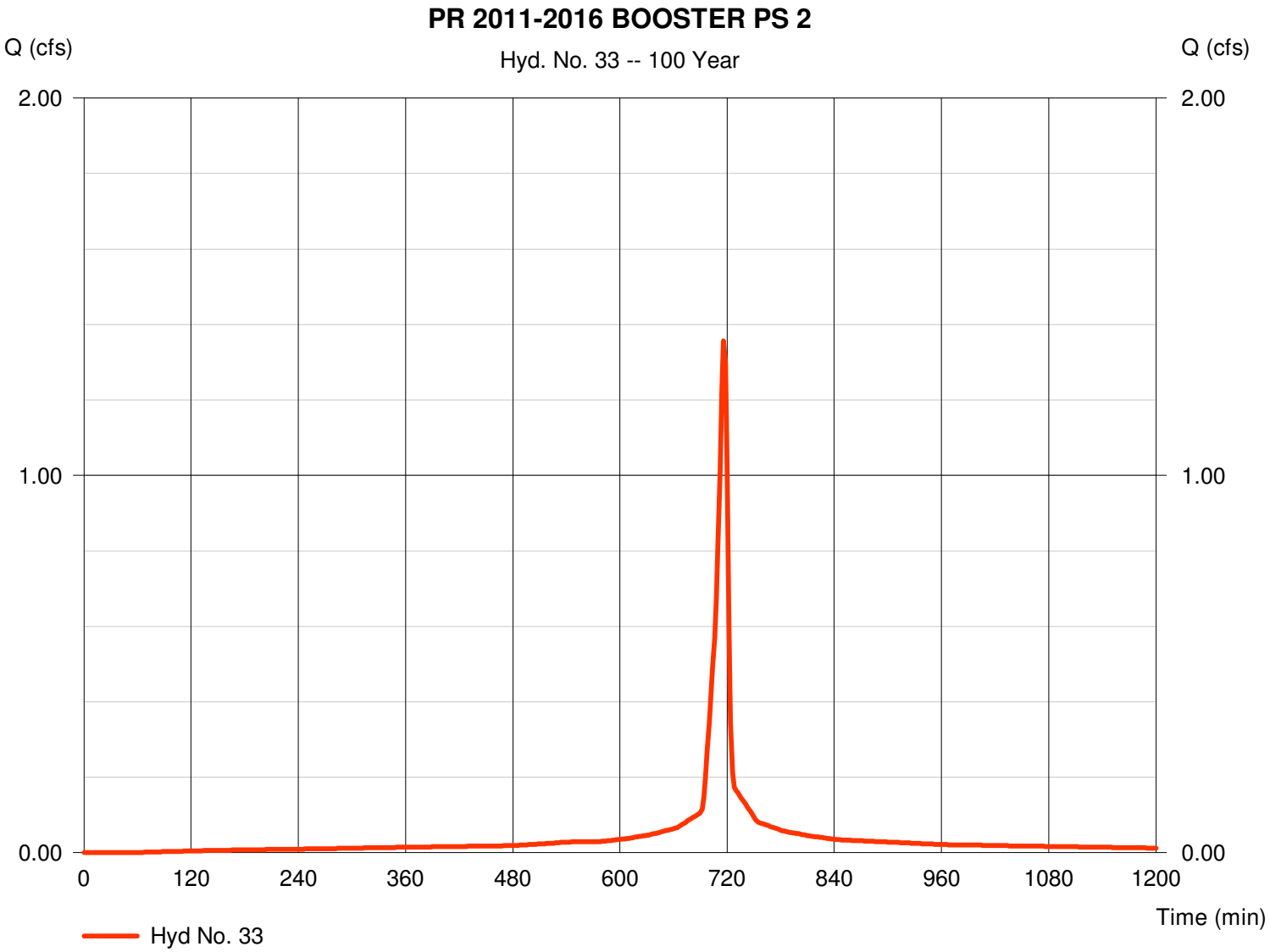


Hydrograph Report

Hyd. No. 33

PR 2011-2016 BOOSTER PS 2

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.357 cfs
Storm frequency	=	100 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	3,243 cuft
Drainage area	=	0.192 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	4.00 min
Total precip.	=	5.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

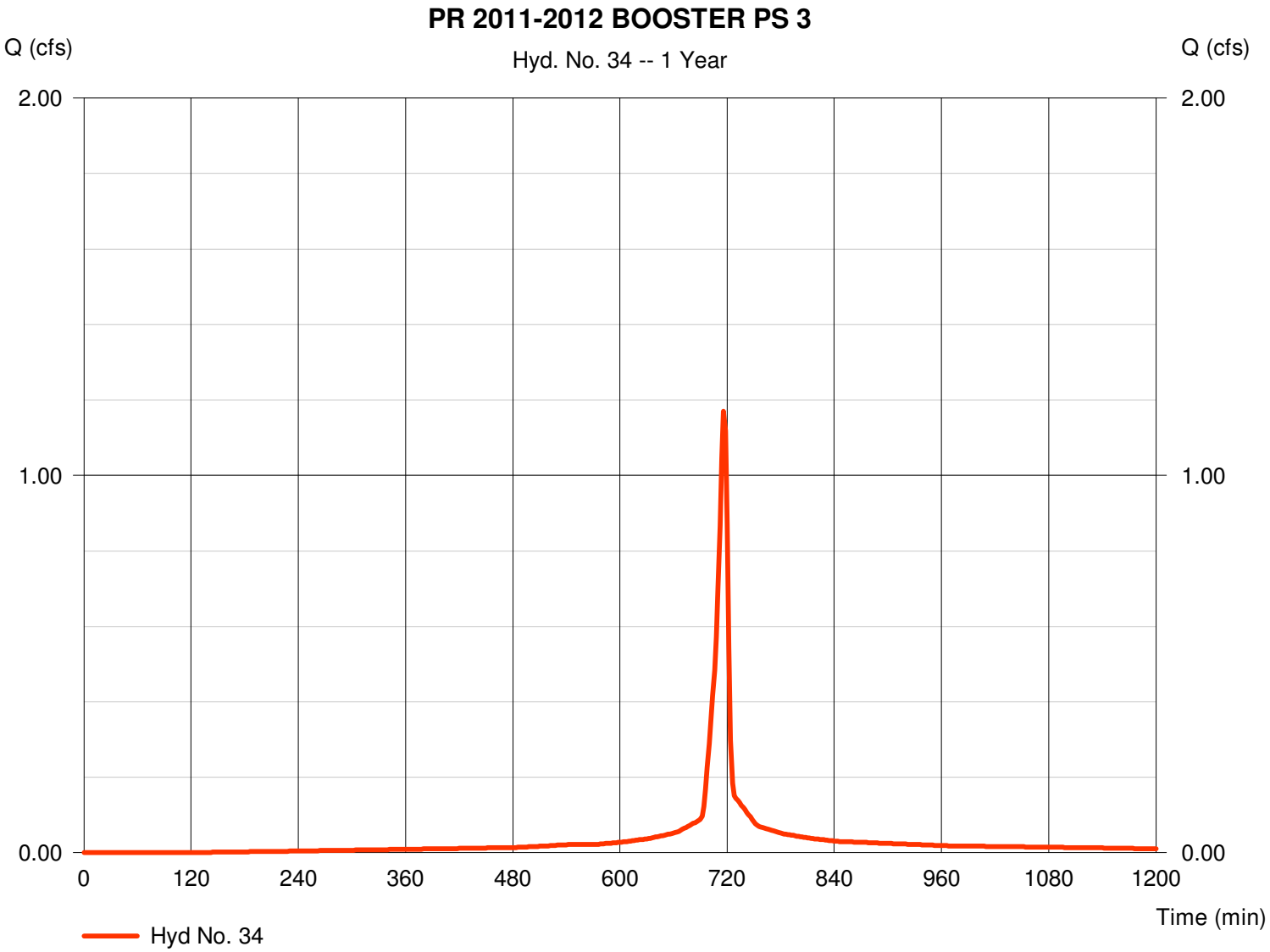


Hydrograph Report

Hyd. No. 34

PR 2011-2012 BOOSTER PS 3

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.170 cfs
Storm frequency	=	1 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	2,679 cuft
Drainage area	=	0.399 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	3.50 min
Total precip.	=	2.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

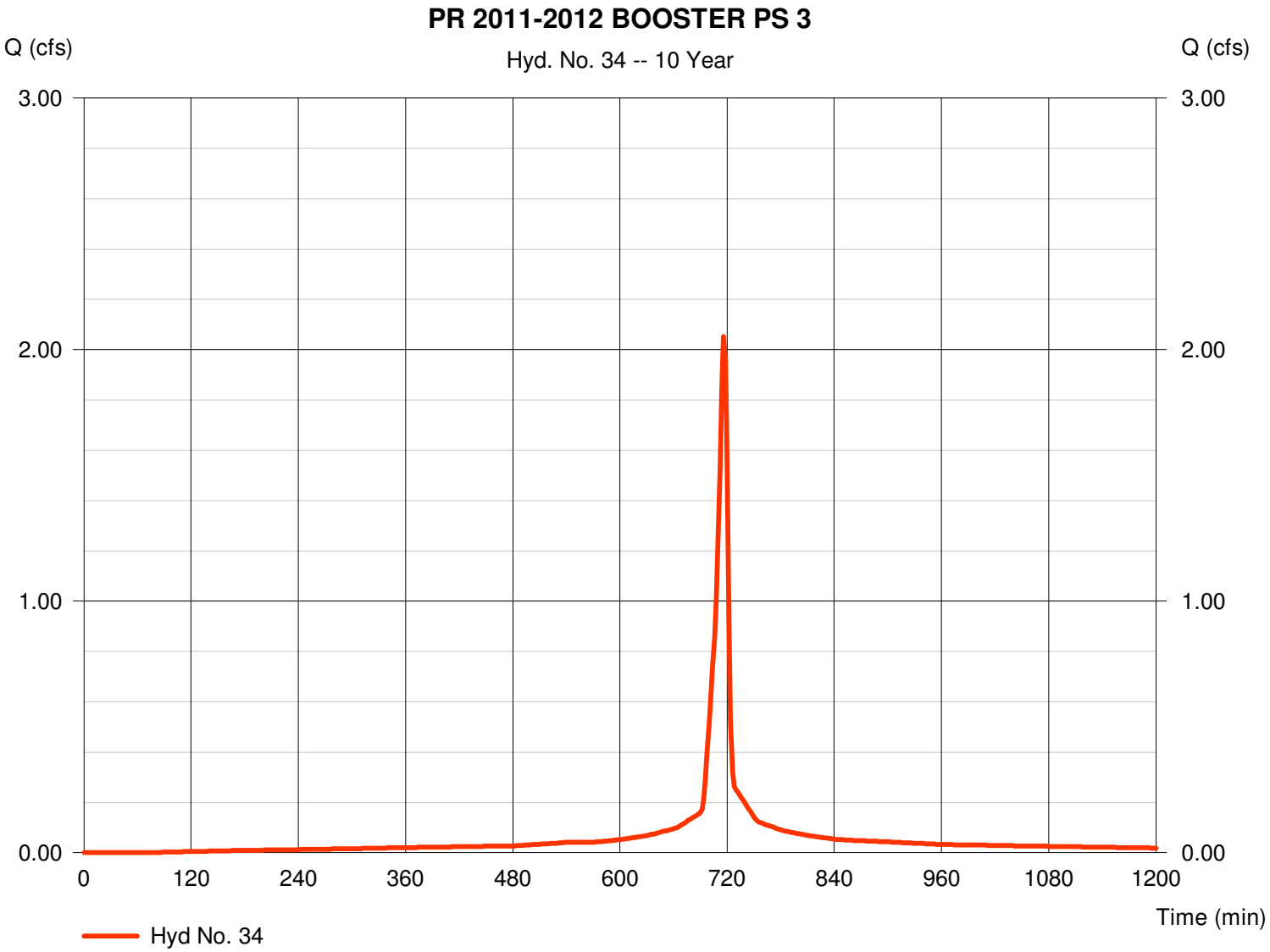


Hydrograph Report

Hyd. No. 34

PR 2011-2012 BOOSTER PS 3

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.053 cfs
Storm frequency	=	10 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	4,842 cuft
Drainage area	=	0.399 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	3.50 min
Total precip.	=	3.80 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

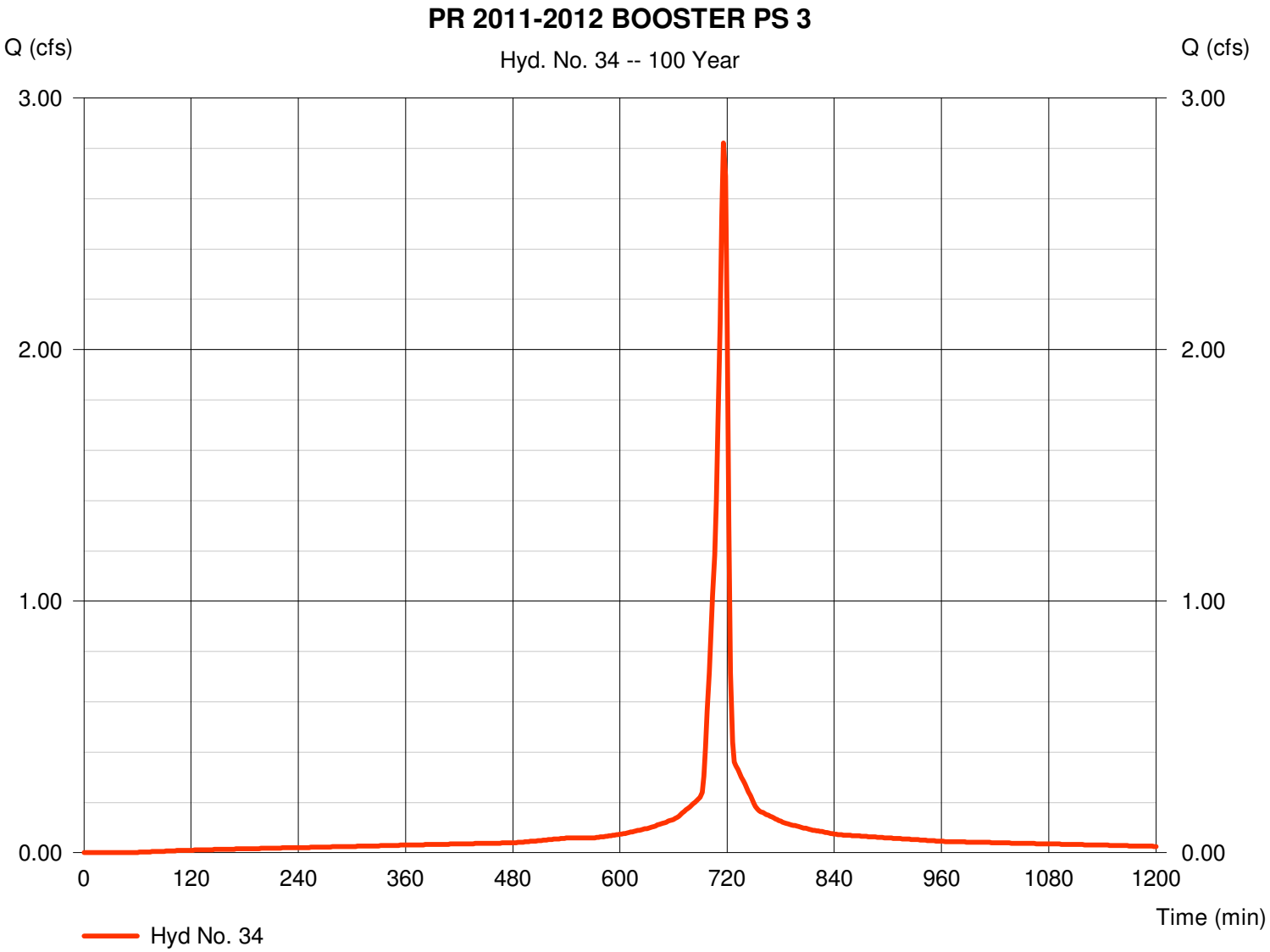


Hydrograph Report

Hyd. No. 34

PR 2011-2012 BOOSTER PS 3

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.821 cfs
Storm frequency	=	100 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	6,739 cuft
Drainage area	=	0.399 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	3.50 min
Total precip.	=	5.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

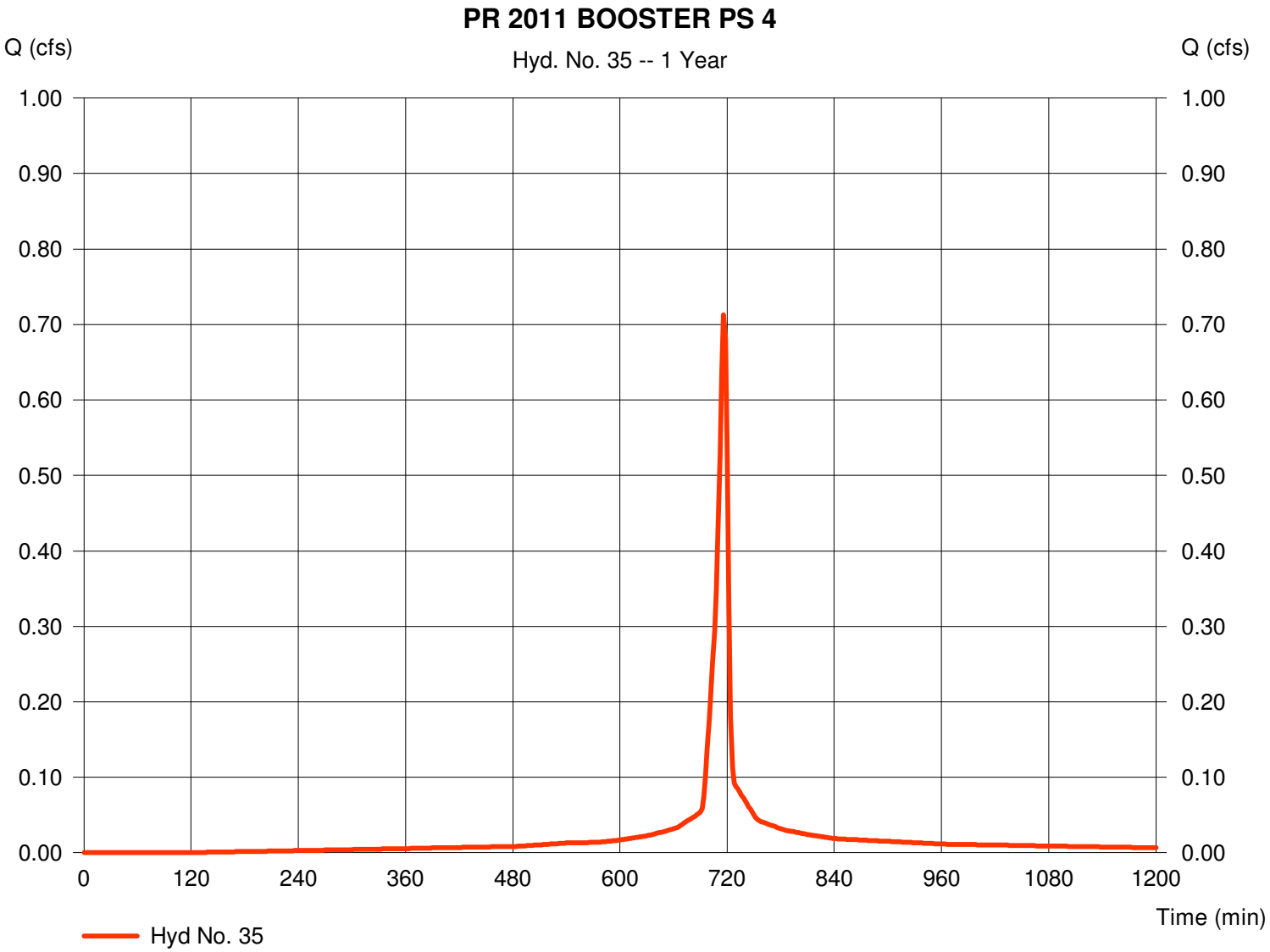


Hydrograph Report

Hyd. No. 35

PR 2011 BOOSTER PS 4

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.713 cfs
Storm frequency	=	1 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	1,631 cuft
Drainage area	=	0.243 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	4.00 min
Total precip.	=	2.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



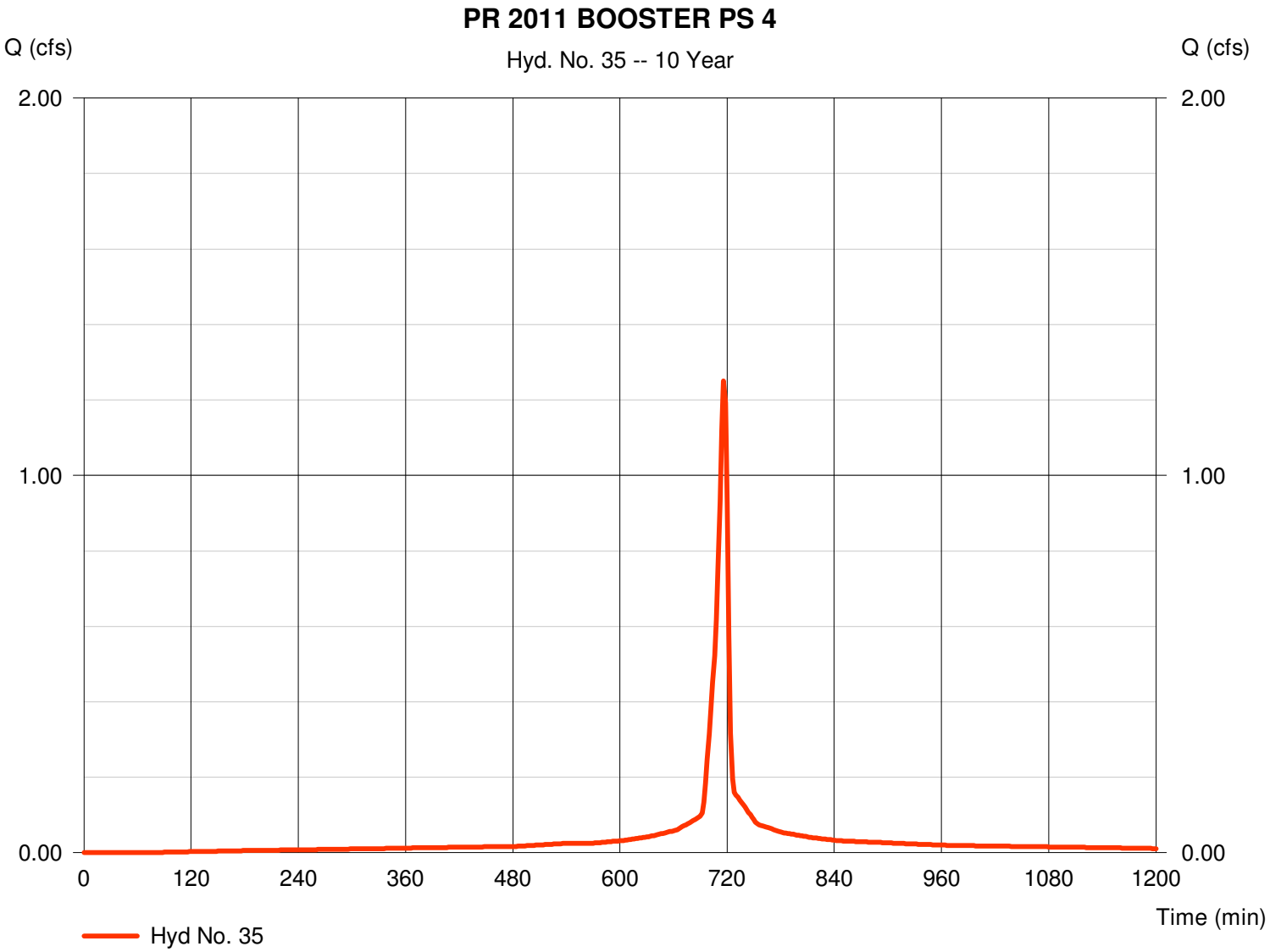
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 35

PR 2011 BOOSTER PS 4

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.250 cfs
Storm frequency	=	10 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	2,949 cuft
Drainage area	=	0.243 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	4.00 min
Total precip.	=	3.80 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



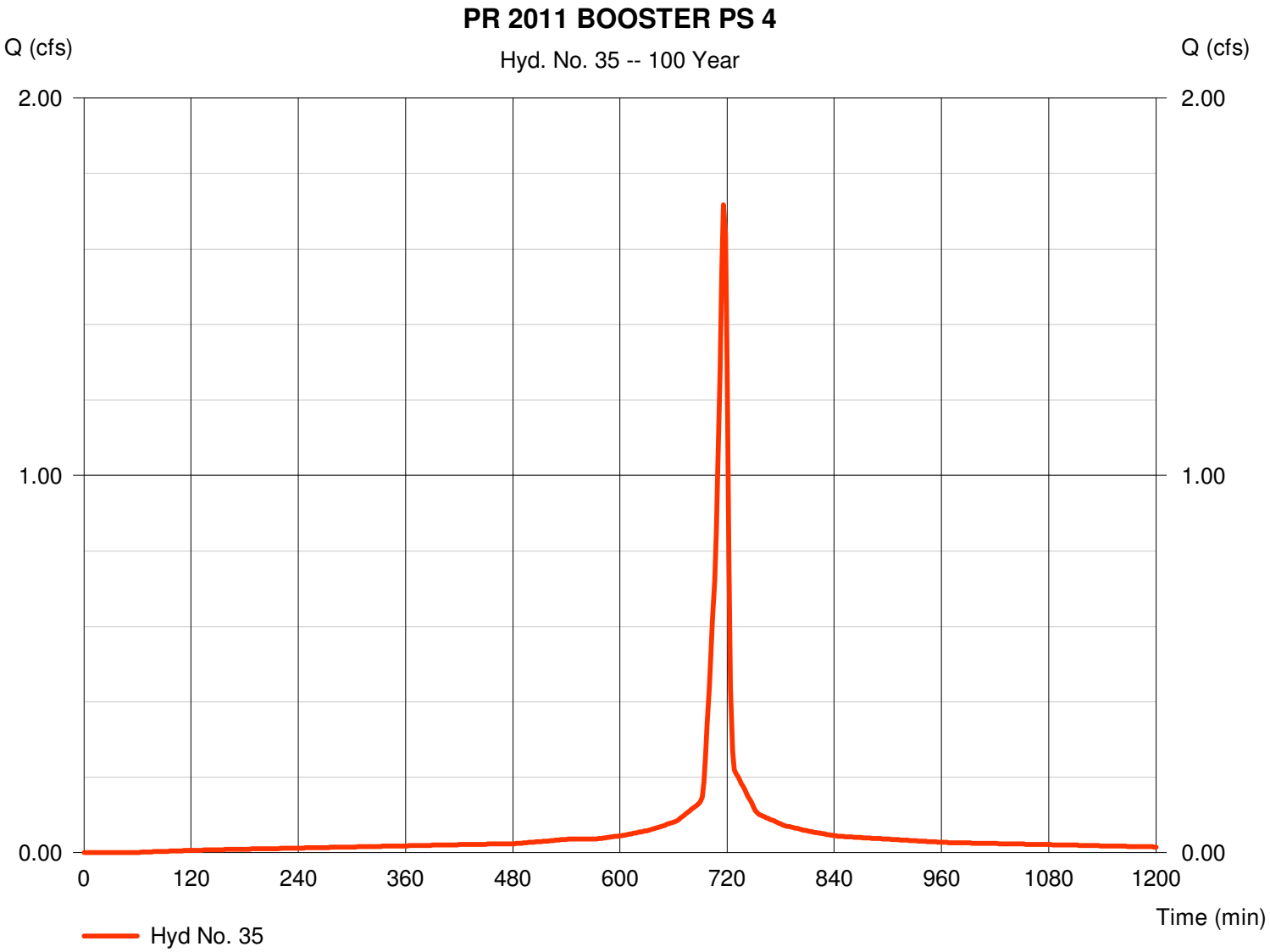
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 35

PR 2011 BOOSTER PS 4

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.718 cfs
Storm frequency	=	100 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	4,104 cuft
Drainage area	=	0.243 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	4.00 min
Total precip.	=	5.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

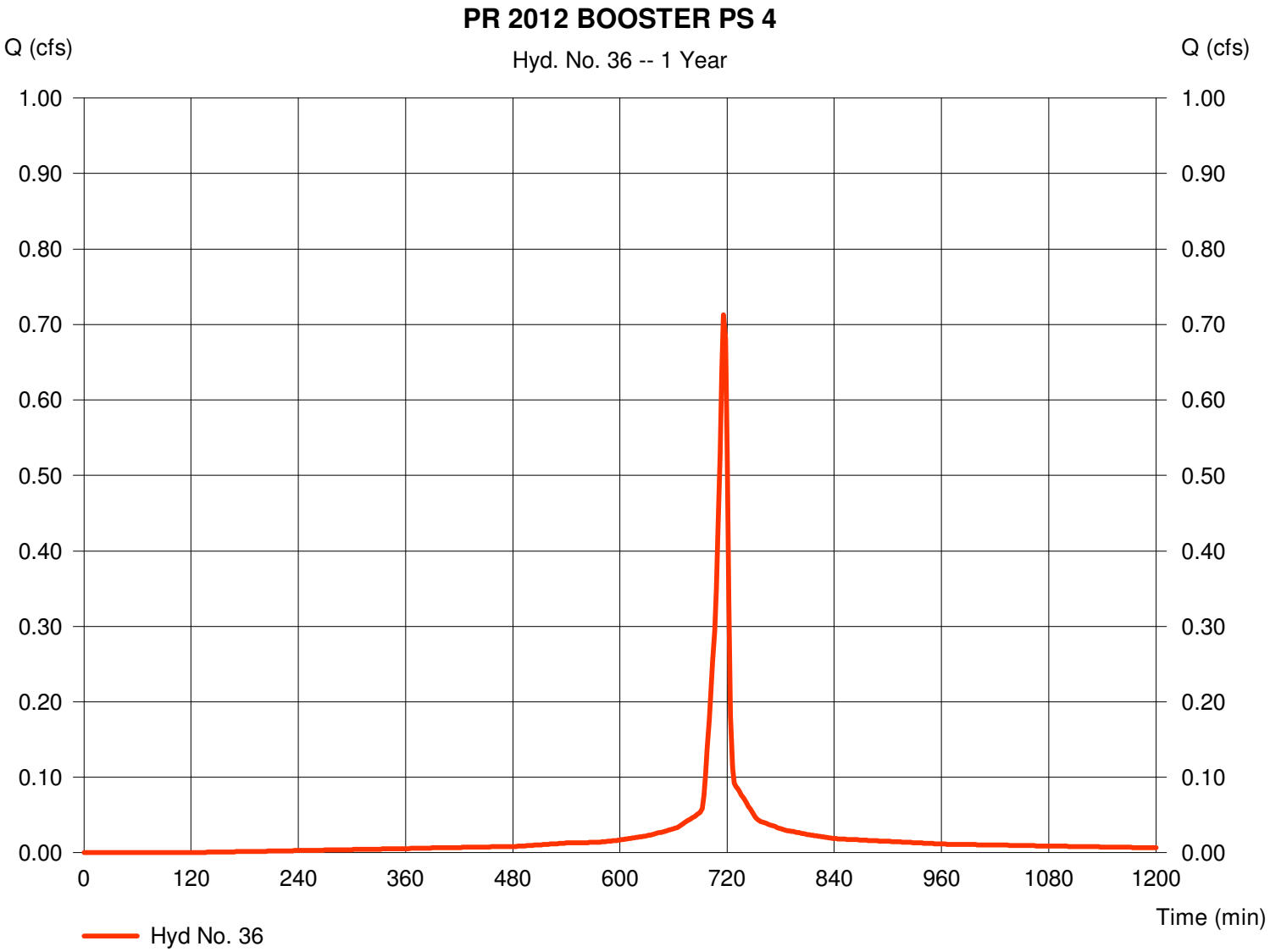


Hydrograph Report

Hyd. No. 36

PR 2012 BOOSTER PS 4

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.713 cfs
Storm frequency	=	1 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	1,631 cuft
Drainage area	=	0.243 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	4.00 min
Total precip.	=	2.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

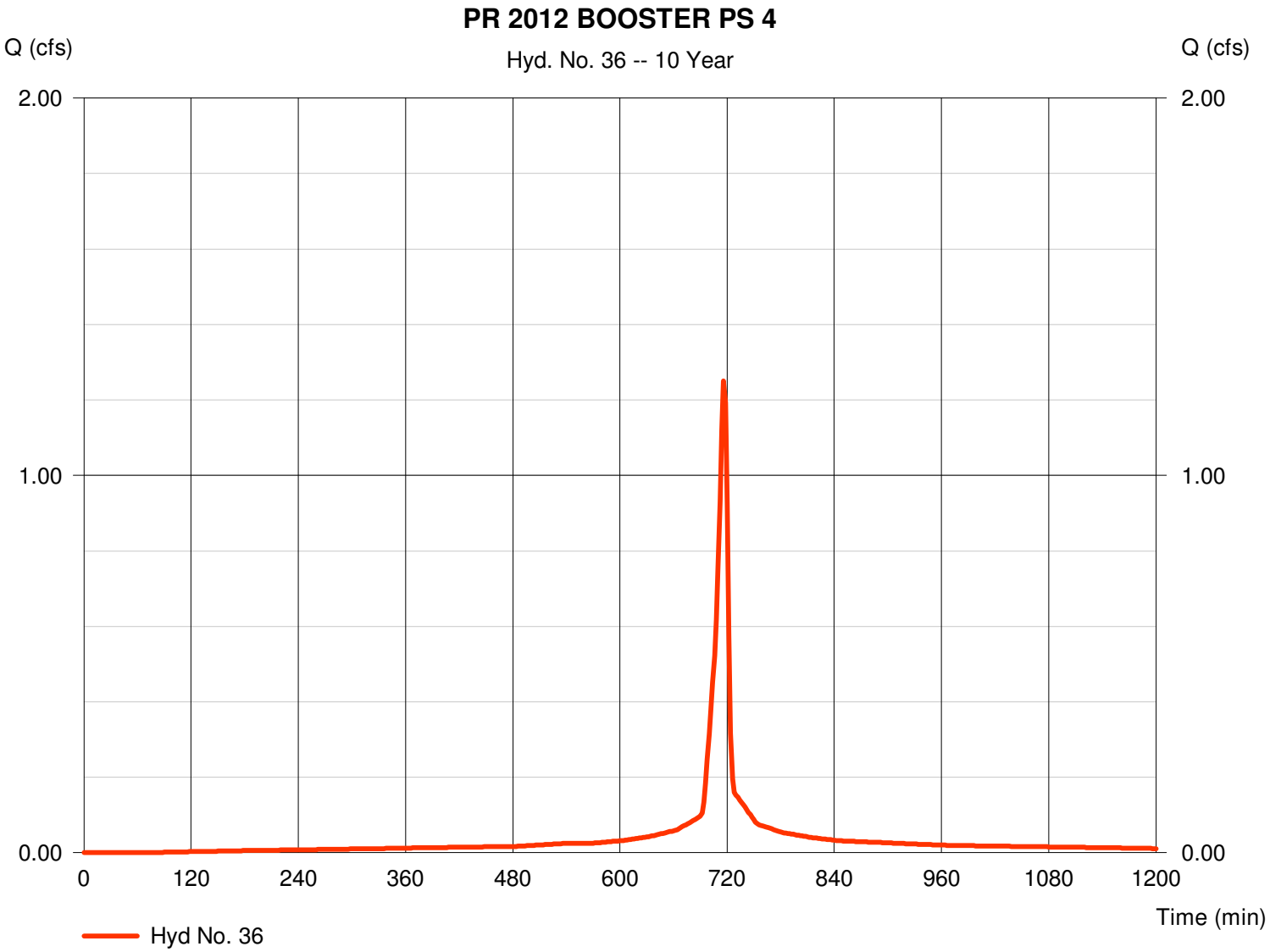


Hydrograph Report

Hyd. No. 36

PR 2012 BOOSTER PS 4

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.250 cfs
Storm frequency	=	10 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	2,949 cuft
Drainage area	=	0.243 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	4.00 min
Total precip.	=	3.80 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



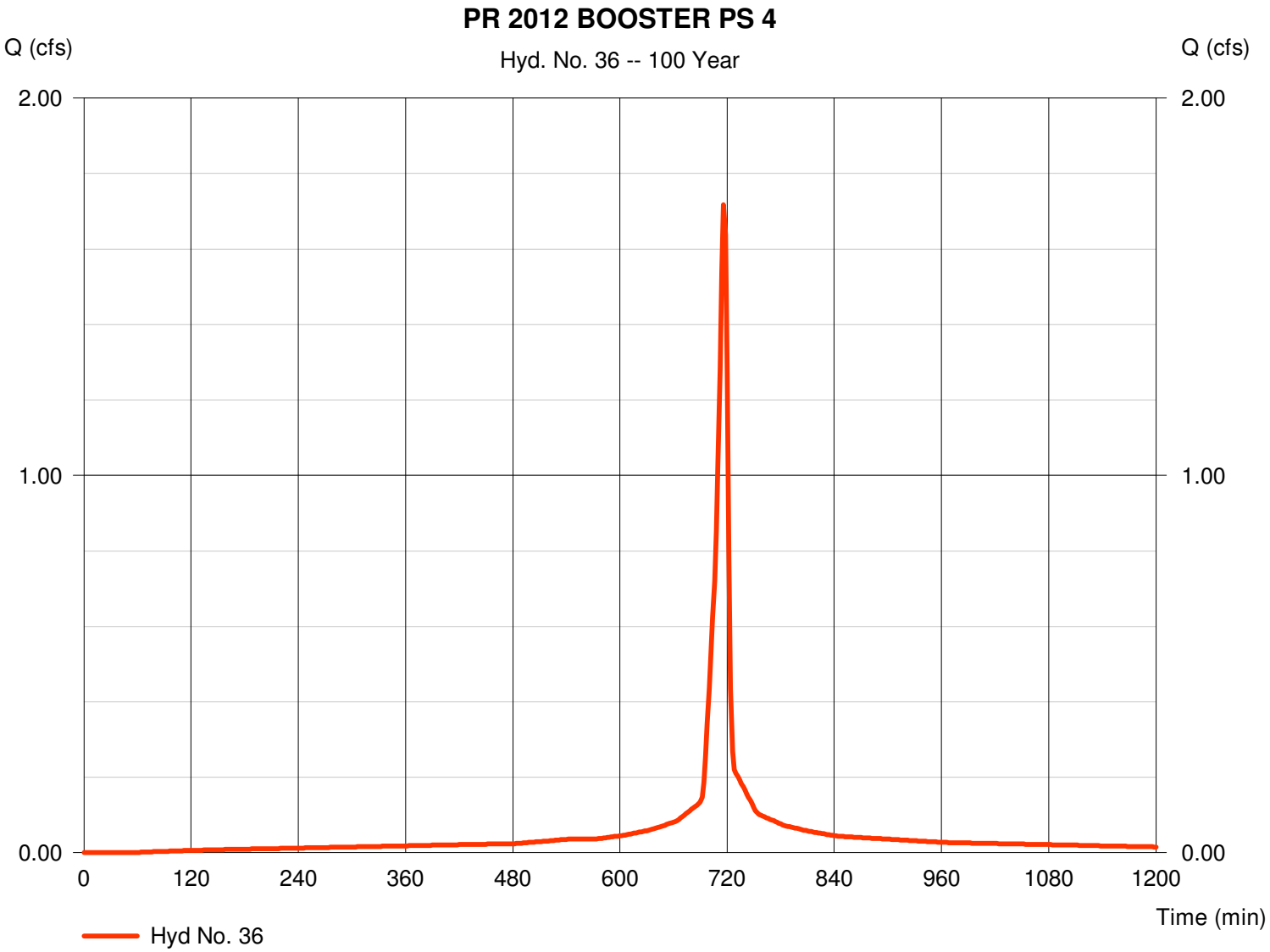
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 36

PR 2012 BOOSTER PS 4

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.718 cfs
Storm frequency	=	100 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	4,104 cuft
Drainage area	=	0.243 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	4.00 min
Total precip.	=	5.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

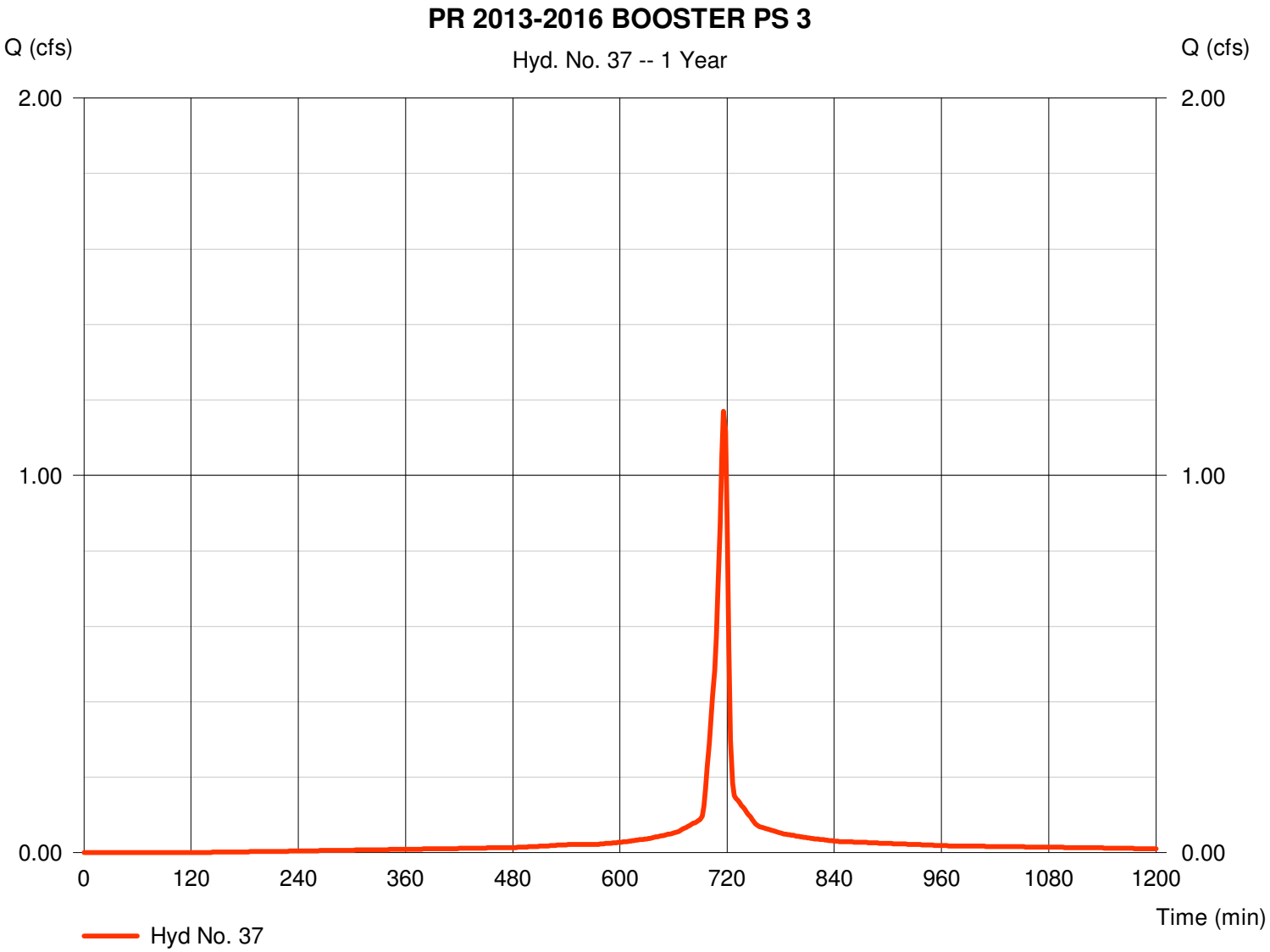


Hydrograph Report

Hyd. No. 37

PR 2013-2016 BOOSTER PS 3

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.170 cfs
Storm frequency	=	1 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	2,679 cuft
Drainage area	=	0.399 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	4.00 min
Total precip.	=	2.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



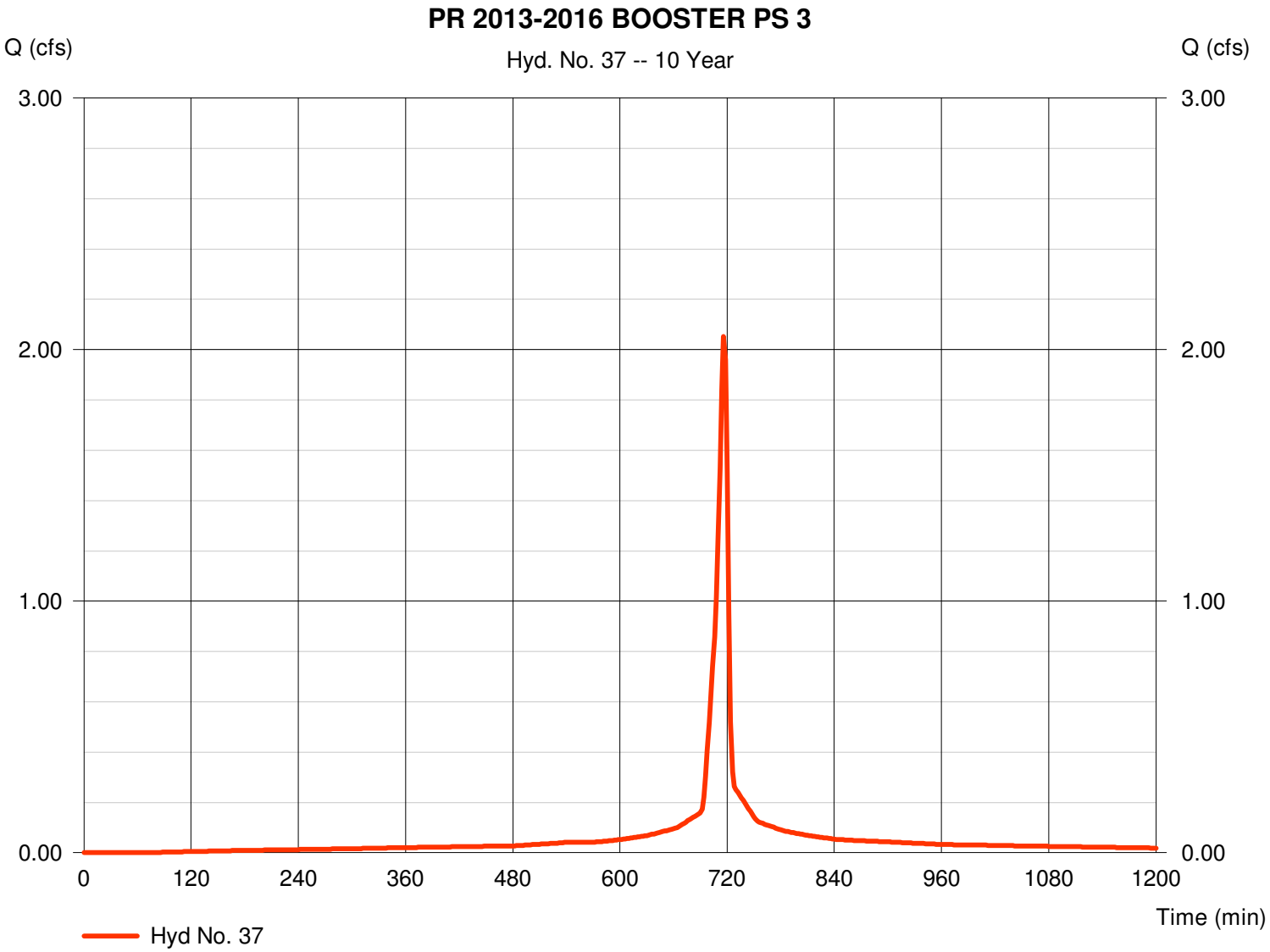
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 37

PR 2013-2016 BOOSTER PS 3

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.053 cfs
Storm frequency	=	10 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	4,842 cuft
Drainage area	=	0.399 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	4.00 min
Total precip.	=	3.80 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

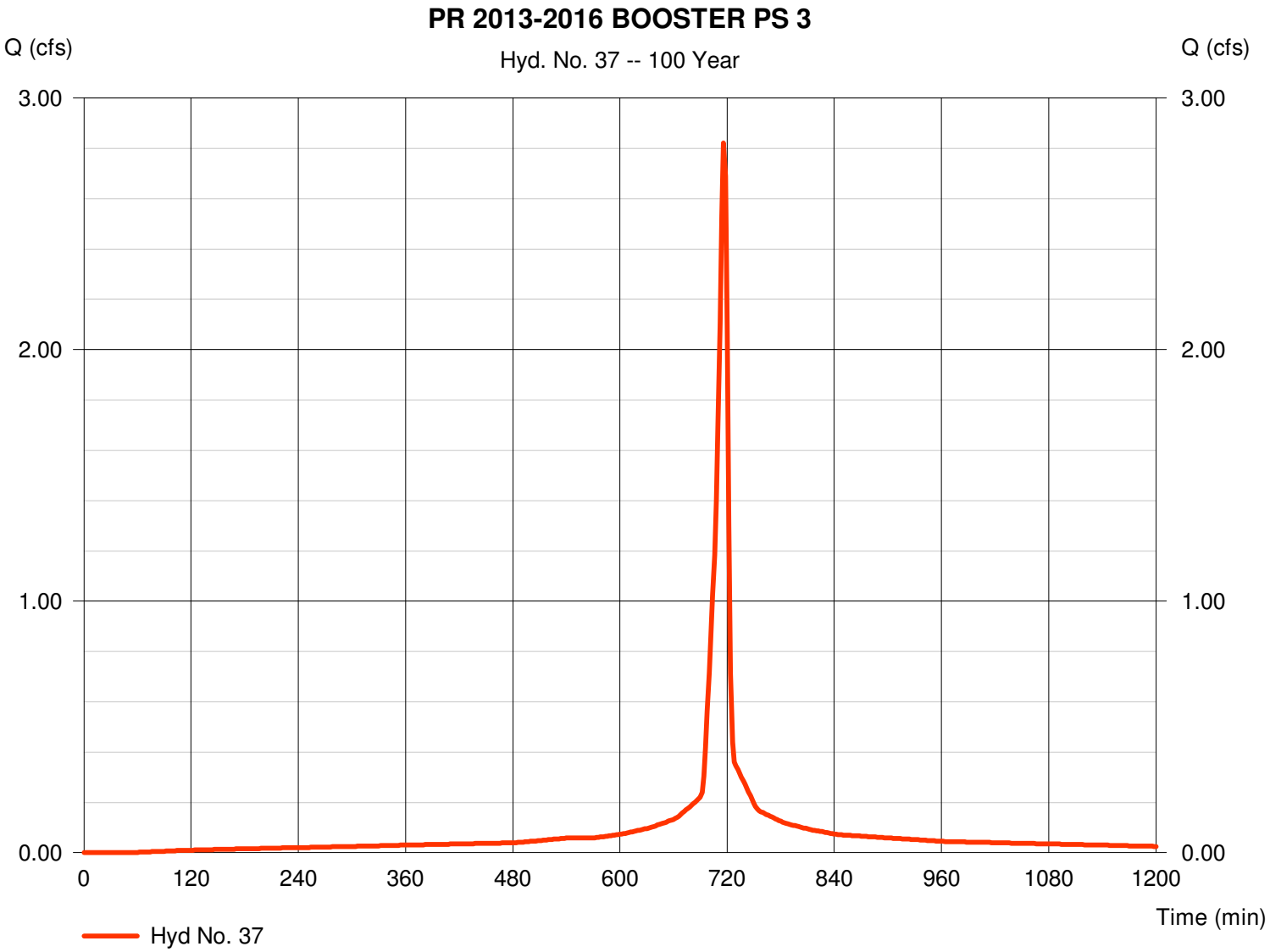


Hydrograph Report

Hyd. No. 37

PR 2013-2016 BOOSTER PS 3

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.821 cfs
Storm frequency	=	100 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	6,739 cuft
Drainage area	=	0.399 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	4.00 min
Total precip.	=	5.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

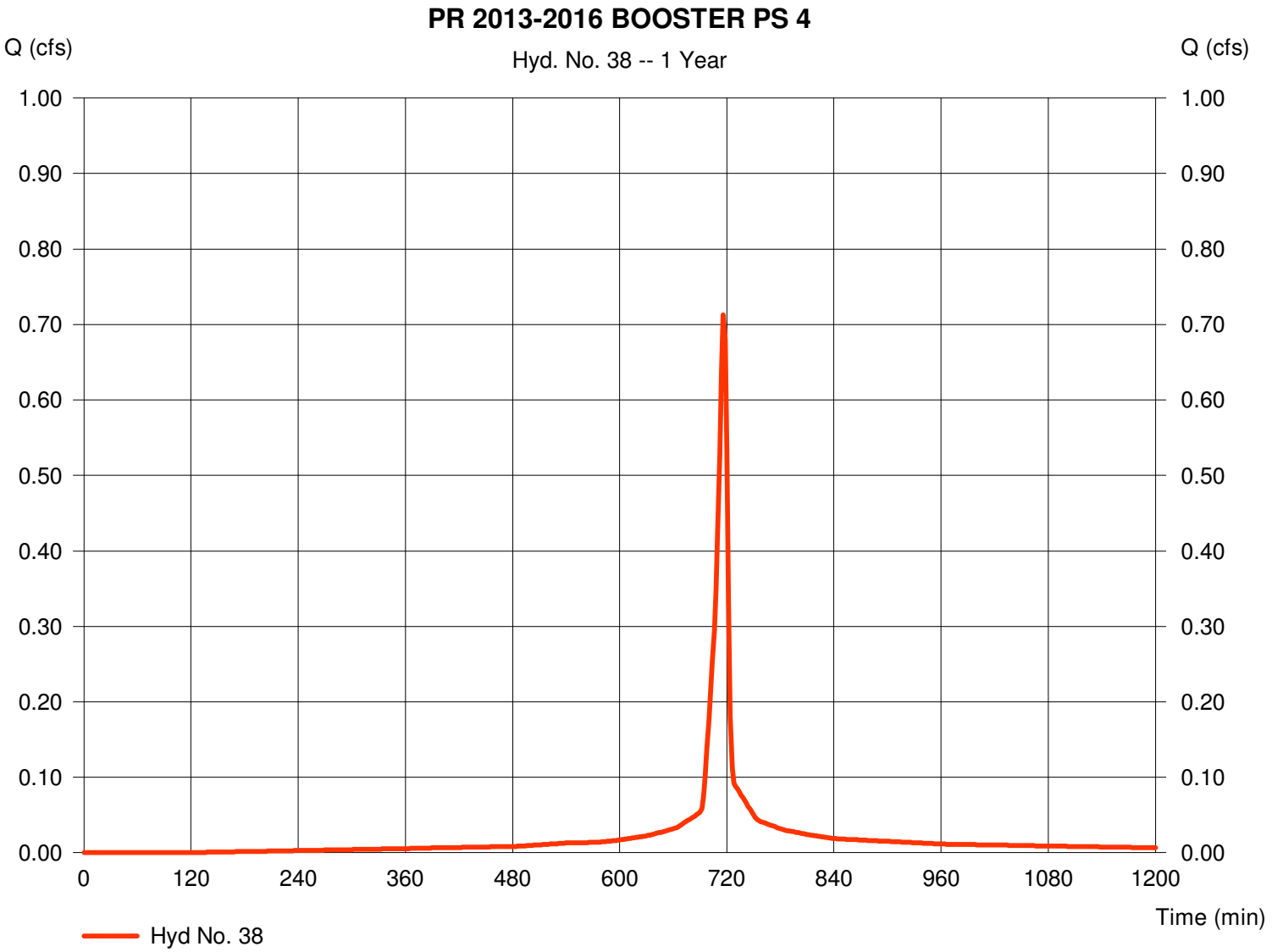


Hydrograph Report

Hyd. No. 38

PR 2013-2016 BOOSTER PS 4

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.713 cfs
Storm frequency	=	1 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	1,631 cuft
Drainage area	=	0.243 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	4.00 min
Total precip.	=	2.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



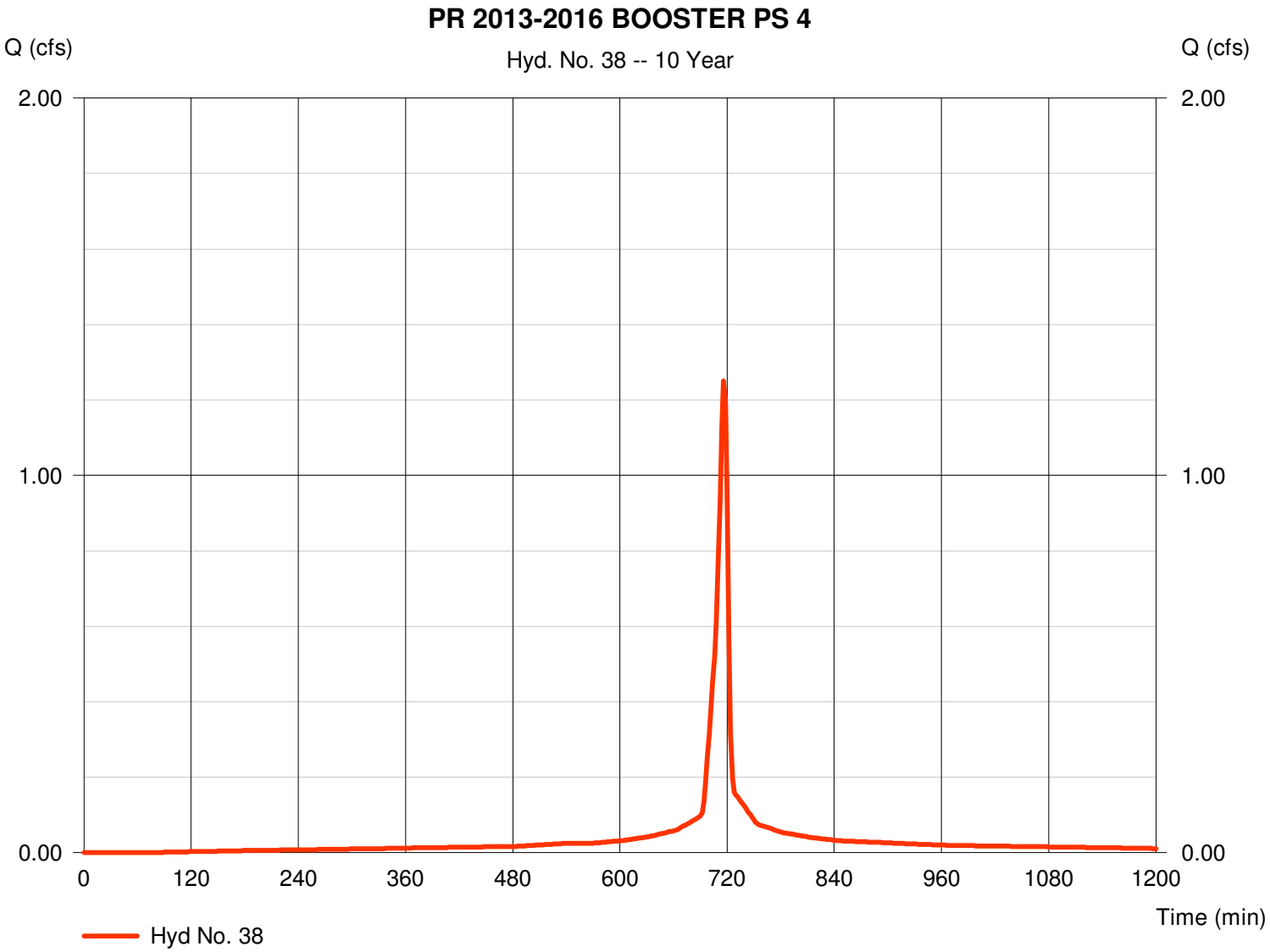
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 38

PR 2013-2016 BOOSTER PS 4

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.250 cfs
Storm frequency	=	10 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	2,949 cuft
Drainage area	=	0.243 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	4.00 min
Total precip.	=	3.80 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

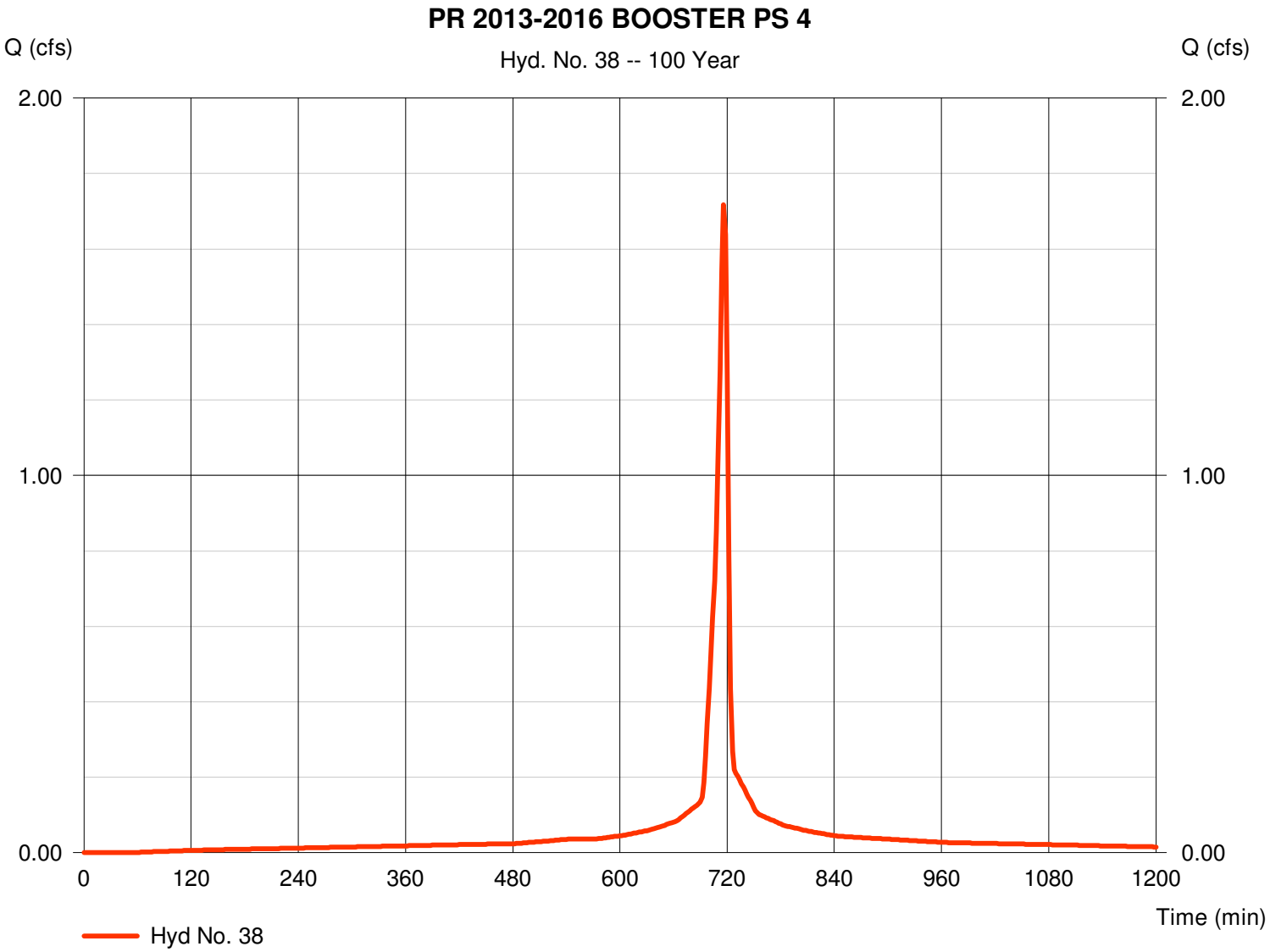


Hydrograph Report

Hyd. No. 38

PR 2013-2016 BOOSTER PS 4

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.718 cfs
Storm frequency	=	100 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	4,104 cuft
Drainage area	=	0.243 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	4.00 min
Total precip.	=	5.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



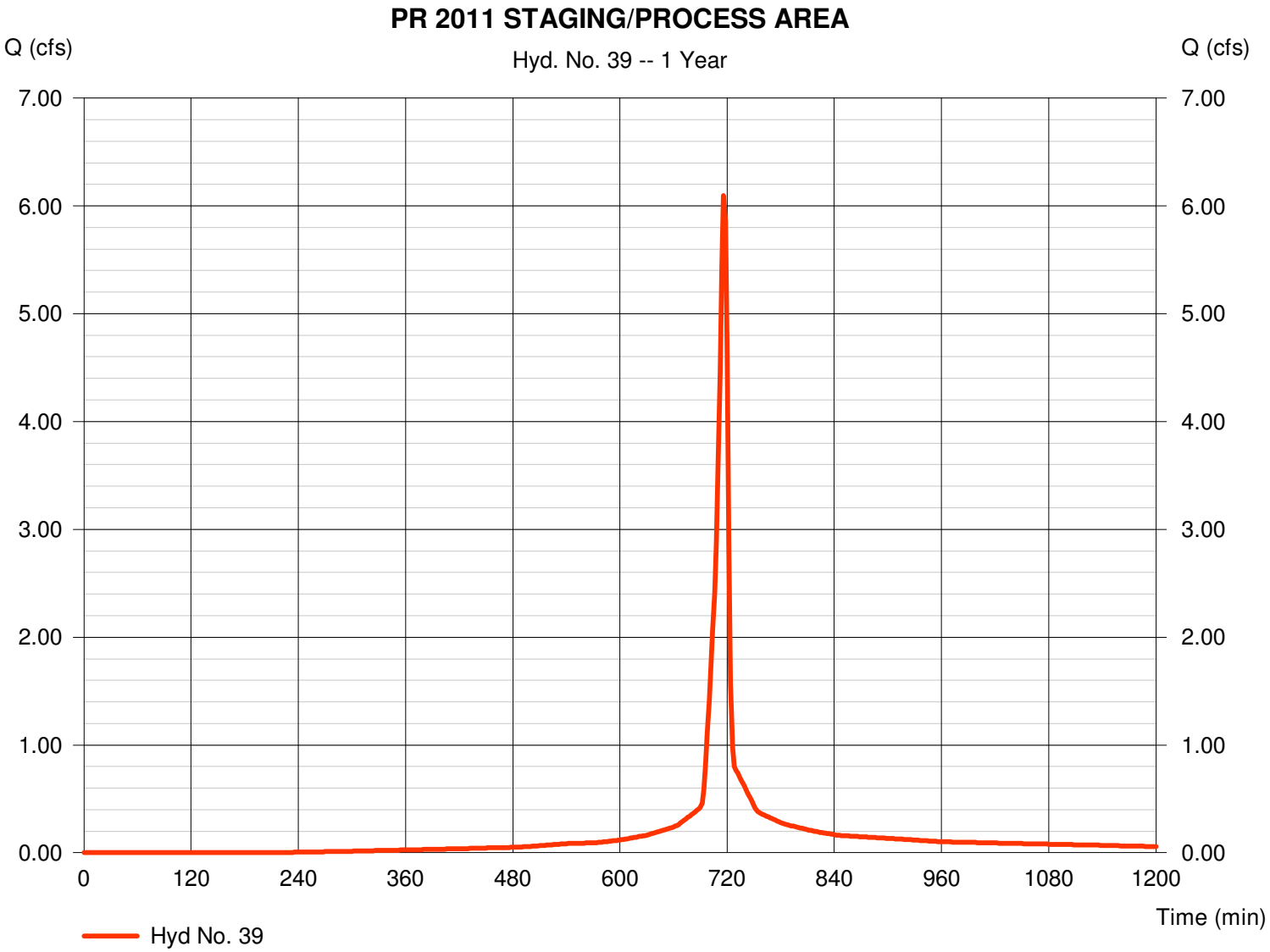
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Mar 30, 2011

Hyd. No. 39

PR 2011 STAGING/PROCESS AREA

Hydrograph type	=	SCS Runoff	Peak discharge	=	6.094 cfs
Storm frequency	=	1 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	13,241 cuft
Drainage area	=	2.200 ac	Curve number	=	96
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	2.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

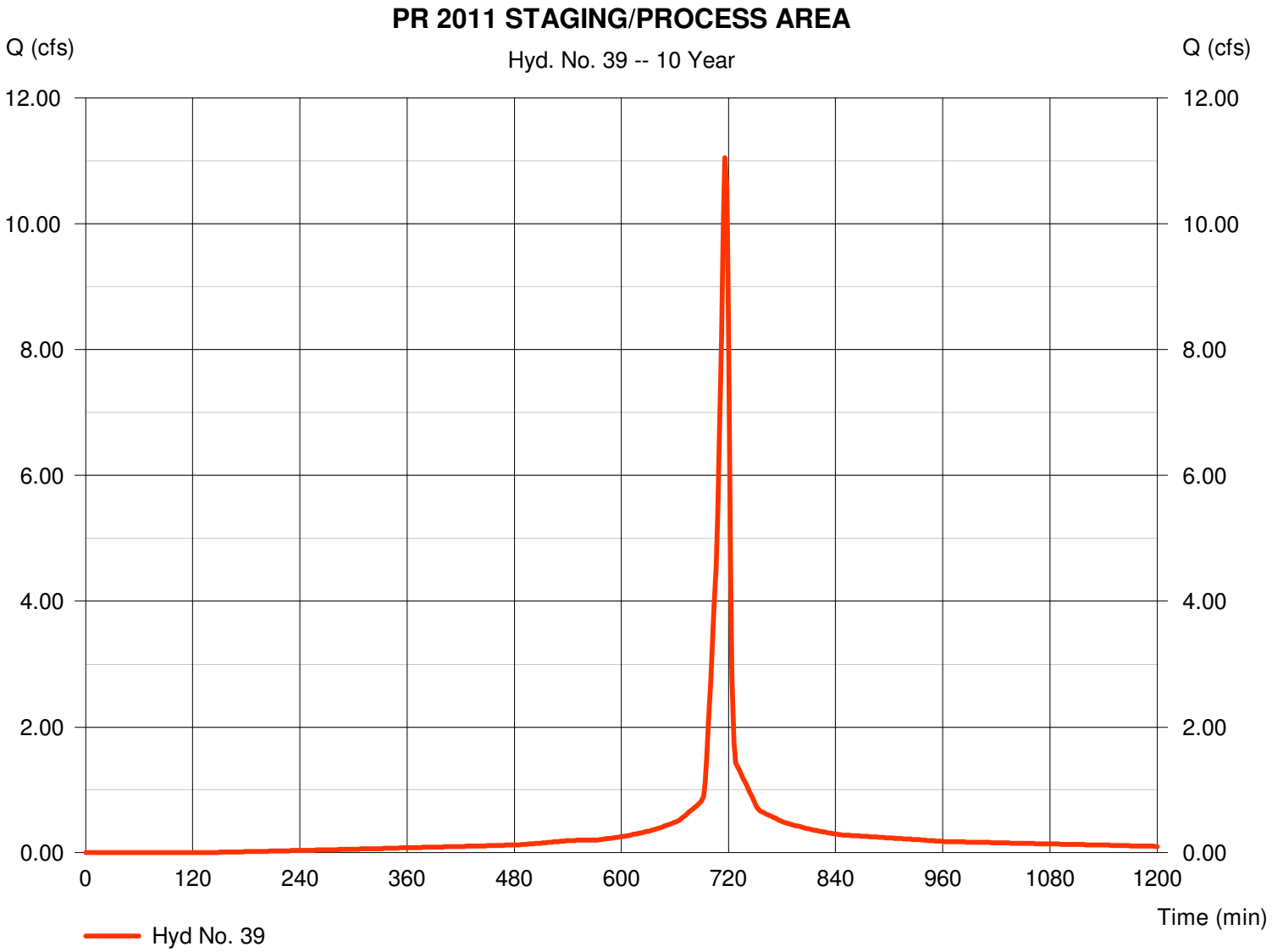


Hydrograph Report

Hyd. No. 39

PR 2011 STAGING/PROCESS AREA

Hydrograph type	=	SCS Runoff	Peak discharge	=	11.05 cfs
Storm frequency	=	10 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	25,021 cuft
Drainage area	=	2.200 ac	Curve number	=	96
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	3.80 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

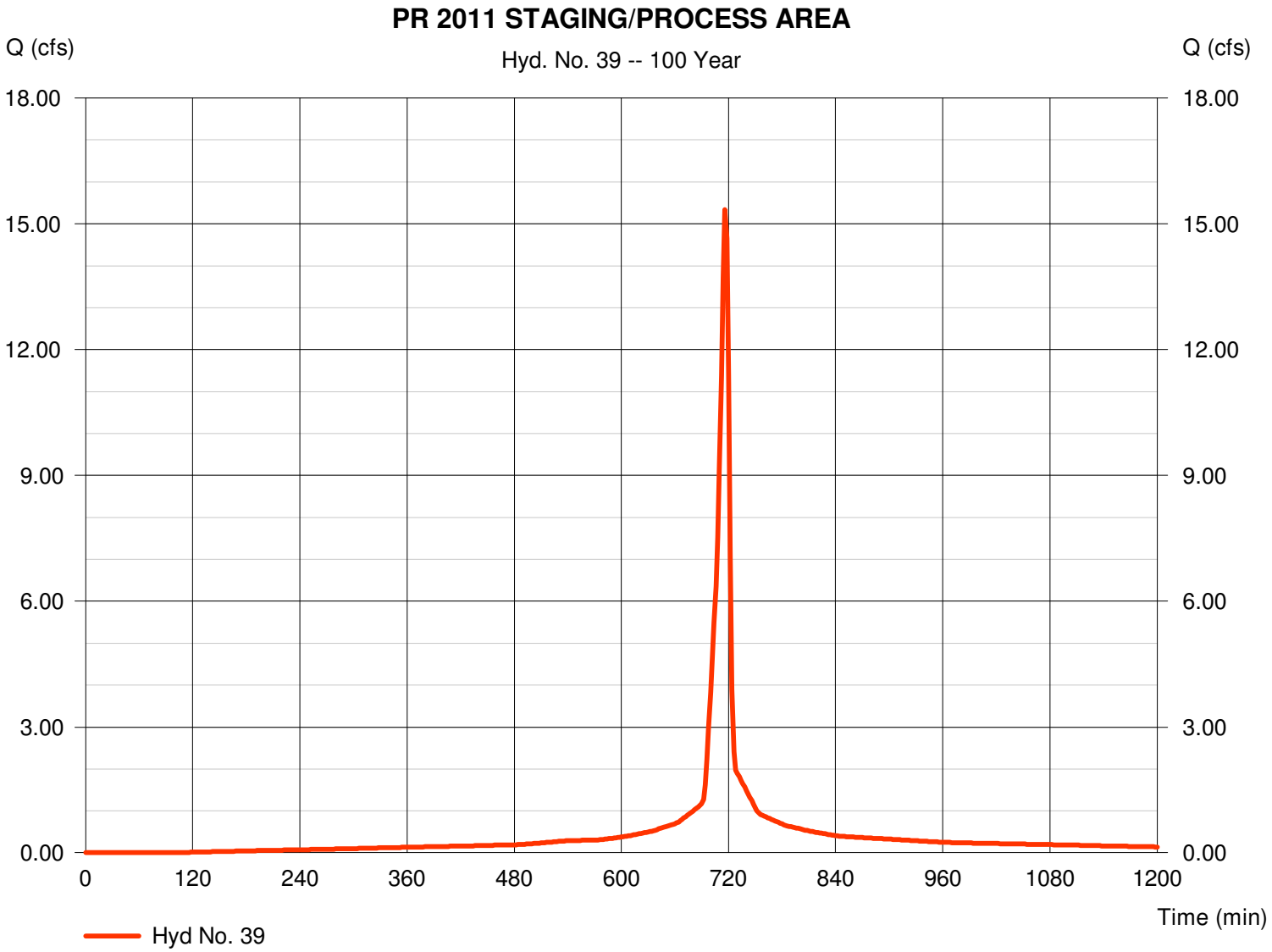


Hydrograph Report

Hyd. No. 39

PR 2011 STAGING/PROCESS AREA

Hydrograph type	=	SCS Runoff	Peak discharge	=	15.34 cfs
Storm frequency	=	100 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	35,423 cuft
Drainage area	=	2.200 ac	Curve number	=	96
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	5.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Appendix J

Material Specification

SECTION 02300

GRAVEL DRAINAGE LAYER

PART 1 – GENERAL

1.01 SCOPE OF WORK

A. The work covered in this Section consists of furnishing and placing the layer of granular material within the liner system, which is part of the Sediment Consolidation Area (SCA). The granular material is placed on top of the geotextile cushion in accordance with the Project Specifications and Drawings and in conformity with the lines, grades, thicknesses, and typical cross-sections shown on the plans or established by the Engineer.

1.02 RELATED WORK

A. Work in this section includes, but is not limited to:

1. Section 01030 Environmental Protection
2. Section 01300 Submittal Procedures
3. Section 01620 Health and Safety Requirements
4. Section 02100 Site Clearing
5. Section 02200 Earthwork
6. Section 02250 Low Permeability Soil Layer

1.03 REFERENCES

A. Latest version of American Society for Testing and Materials (ASTM) Standards:

1. ASTM C 136 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
2. ASTM D 75 Standard Practice for Sampling Aggregates
3. ASTM D 2434 Standard Test Method for Permeability of Granular Soils (Constant Head).
4. ASTM D 2487 Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).
5. ASTM D 3042 Standard Test Method for Insoluble Residue in Carbonate Aggregate.

1.04 SUBMITTALS

A. The Contractor shall submit the following information to Engineer for review and approval in accordance with Section 01300 – Submittal Procedures and as elsewhere specified in this Section 30 calendar days prior to initiating Gravel Drainage Layer activities.

1. Handling and stockpiling methods to minimize particle segregation;
2. Equipment and methods for management of various stockpiles. Management of stockpiles shall also include methods to measure and monitor material stockpiles;
3. Equipment and methods to load and haul material from the material stockpiles;
4. Equipment and methods to place the material;
5. Repair procedures;
6. Proposed offsite borrow source(s);
7. Coordination of survey requirements for the work;
8. Locations of on-site temporary soil stockpile areas;
9. Coordination of construction activities with surface-water management and erosion and sediment control measures;
10. Schedule for construction activities; and
11. Quality Control Work Plan.

B. The Contractor shall be responsible for the adequacy and safety of the methods.

C. Test results as specified herein shall be submitted to the Engineer for review within two (2) working days of receipt of results. The Contractor shall not deliver material to the site prior to submission and approval by the Engineer of the geotechnical and analytical chemistry test results.

1.05 CONSTRUCTION QUALITY CONTROL

A. The Contractor shall submit a Quality Control (QC) Workplan for review. Once instituted, the Contractor shall use the QC Workplan to ensure that the Work performed under the contract meets the requirements of the Contract Documents.

B. The Contractor shall submit the name of a qualified Independent Testing Laboratory (ITL) to the Engineer for review.

1. The Contractor shall submit to the Engineer for approval, the company name, address, and qualifications of the selected ITL proposed for use at the project. Included in this submittal will be the names and qualifications of the individuals who are proposed for assignment to the site. The Engineer reserves the right to request other information regarding the qualifications of the ITL for use in the evaluation process.

C. Sampling

1. The Contractor shall be responsible for collecting samples and conducting tests using a qualified ITL to document material property compliance with the specifications.
2. Representative samples of each specific material type from each specific material source will be obtained by compositing at least five randomly selected individual samples of approximately equal weight. The total

composite sample mass shall be at least the minimum size required to conduct all of the required material property tests for that material type. Each of the individual samples will be obtained from within the boundaries of the material mass that the composite sample represents.

3. Contractor quality control samples may be obtained from in situ samples for pre-approval of a dedicated borrow source area. The sampling methodology and means for assuring the material dedication to the project shall be submitted to the Engineer for approval prior to the commencement of sampling.
4. Contractor quality control samples may also be obtained from dedicated stockpiles or storage/transportation vessels. The sampling methodology and means for assuring the material dedication to the project shall be submitted to the Engineer for approval prior to the commencement of sampling.

D. Minimum Sample Frequency

1. QC testing per Part 360 will require a representative sample obtained and tested at the following frequencies (with a minimum of 1 sample from each borrow source area with consistent appearance):

   One soil particle size analysis and soil classification for every 1,000 cubic yards of gravel drainage material placed; and one laboratory constant head permeability test for every 2,500 cubic yards of gravel drainage material placed.

E. Material Property Testing

1. Each composite sample shall be tested for material properties as defined in the section 2.01.E.

F. General

1. No imported materials shall be delivered to the project site before the required material property testing for that batch has been provided to the Engineer and written approval received from the Engineer. Unapproved material shall be removed from the site at the Contractor's expense.
2. Contractor shall be responsible for repairing or reconstructing the deficiencies at his own expense to meet this specification and other Contract Documents.

1.06 CONSTRUCTION QUALITY ASSURANCE

A. The Engineer shall conduct quality assurance sampling on Gravel Drainage Layer materials.

1. The Contactor shall provide access and support for the sampling and testing.

2. The Engineer shall have the right to visit the borrow source at any time during borrow pit working hours to observe mining, manufacturing, stockpiling or loading operations.

PART 2 – PRODUCTS

2.01 MATERIALS

A. The drainage layer material shall be reasonably free of thin, flat, or elongated pieces, shall contain no organic matter, or soft friable particles, and shall not contain visible asbestos or hydrocarbons.

B. Drainage layer material shall be classified as GW or GP in accordance with the Unified Soil Classification System (USCS) per ASTM D 2487 and shall have 100% passing the 3" sieve, less than 5% passing the #4 sieve, and less than 3% passing the #200 sieve. Alternate gravel gradations may be allowed based on approval of the Design Engineer.

C. Drainage layer material shall have a minimum hydraulic conductivity of 10 centimeters per second (cm/s) based on laboratory permeability testing conducted in accordance with ASTM D 2434.

D. The required gradation shall be obtained by screening or blending processes as may be necessary. Crushing may be allowed based on approval by the Engineer.

E. The Contractor shall perform the following tests, prior to material being delivered to the site, at the frequency specified in Section 1.05:

1. Grain size (ASTM C 136)
2. Hydraulic Conductivity (ASTM D 2434)

F. The Contractor shall perform a minimum of one round of the following tests per borrow source, prior to material being delivered to the site:

1. Certification and test results certifying that the material meets Table 375-6.8(b) "Restricted Use Soil Cleanup Objectives" in NYSDEC Subpart 375. All test results shall be below the Commercial cleanup objective concentrations provided in this table.

G. These control tests will be performed at each visual or textural change in source material, or as directed by the Engineer. Test results shall be submitted to the Engineer in accordance with Part 1.04.

2.02 EQUIPMENT

A. Furnish equipment to haul, place, spread, and compact drainage layer materials.

B. Low ground pressure equipment shall be used to place, spread and compact drainage layer materials, as approved by the Engineer. Areas such as access roads that may have truck traffic shall have at least 24 inches of gravel thickness before such traffic can be allowed.

PART 3 – EXECUTION

3.01 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Drainage layer material delivered to the site may be stockpiled in areas designated on the Project Drawings or other areas approved by the Engineer.

B. Stockpiled drainage material shall be managed and controlled to prevent mixing with other materials in accordance with the Contractor's procedures.

3.02 MATERIAL PLACEMENT

A. The drainage layer materials shall not be placed until Engineer has reviewed and approved the initial source certifications, required test data for material stockpiled at the site, and required test data and submittals, including survey information, for the underlying soil layer.

B. Place the drainage layer material directly on top of the underlying geotextile layer, as shown on the Project Drawings and then carefully spread using equipment and procedures that will not cause damage or rutting to the underlying geotextile. The Gravel Drainage Layer thicknesses at each location shall be in accordance with the Project Drawings and shall not be less than 12 inches at any location. Areas such as access roads that may have truck traffic shall have at least 24 inches of gravel thickness before such traffic can be allowed.

C. The drainage layer material shall be delivered as a uniform mixture and shall be placed to limit segregation of materials and the formation of pockets of coarse and fine materials. Placement of the materials in windrows or layers shall be done to limit the distance that the drainage layer materials must be spread to achieve the required thickness.

D. Drainage layer materials shall not be hauled directly on the underlying layers.

E. Spread the drainage layer material over the underlying geotextile by pushing the material forward to cascade rather than be shoved across the underlying layer.

F. Drainage layer material shall be placed in loose lift thicknesses of one foot or greater to the lines, thicknesses and grades shown on the drawings and as approved by Engineer. The thickness of the Drainage Layer at any location shall be measured perpendicular to the plane of the slope at each location. Due to the compressible nature of the foundation, a strict conformance with the design elevations is not required. Gravel Drainage Layer material can be used

to locally adjust the slopes to improve stability during filling of geo-tubes as needed.

G. Drainage layer material should be placed in coordination with the Engineer. Gravel shall not be placed when snow cover is present on the geotextile cushion. Gravel placement shall continue after the snow cover has melted sufficiently to proceed with placement. All safety procedures regarding operating equipment under snow events shall be followed.

3.03 SURVEY CONTROL

A. Contractor shall provide as-built documentation for the top surface of the Gravel Drainage Layer. In addition, Contractor shall also provide thickness measurements or calculations for the Gravel Drainage Layer as it is being constructed. These thickness values measured or calculated during construction are less likely to be affected by the settlement of the soft foundation material than the elevation measurements of the top of the Gravel Drainage Layer taken after the construction. Therefore, the thickness measurements or calculations performed during construction shall be used to verify that the minimum thickness requirements are met. The elevation measurements of the top of the Gravel Drainage Layer taken after the construction shall be used to verify general conformance with base slopes. The elevation measurements shall be performed at a maximum spacing of 50 feet. The thickness measurements or calculations shall be performed at a maximum spacing of 100 feet.

B. Provide survey information for Engineer to confirm the thicknesses and grades of complete areas. A maximum of 3 working days shall be allowed for the Engineer to confirm and accept the survey results.

3.04 TOLERANCES

A. Construct the finished surface of the Gravel Drainage Layer slopes to a tolerance of +/-0.2% of the slopes indicated on the Project Drawings when measured at any point along a 50 feet straight-edge.

B. Tolerance requirement may be waived by the Engineer to achieve grades in a manner to facilitate placement of geotextile tubes.

[END OF SECTION]

Appendix K

Letter Requesting >5 acre Land Disturbance

Honeywell
301 Plainfield Road
Suite 330
Syracuse, NY 13212
315-552-9700
315-552-9780 Fax

April 13, 2011

Ms. Ellen Hahn
Stormwater Control Specialist
New York State Department of Environmental Conservation
Region 7
615 Erie Blvd. West, Suite 204
Syracuse, NY 13204-2400

RE: Honeywell Water Treatment Plant and Sediment Consolidation Area
Consent Order #89-CV-815

Dear Ms. Hahn:

Enclosed for your review is a copy of the Stormwater Pollution Prevention Plan (SWPPP) prepared on behalf of Honeywell International, Inc., in support of the construction and operation of the Sediment Consolidation Area (SCA), SCA Water Treatment Plant, and associated dredge support facilities for your review and comment. This SWPPP has been prepared in accordance with the New York State Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activities, Permit No. GP-0-10-001.

This SWPPP addresses stormwater runoff associated with proposed construction and operation activities to occur between 2011 and 2016 and represents an update to the SWPPP for 2010 activities that was approved by the NYSDEC on August 2, 2010. As discussed with the NYSDEC, additional updates will be prepared by the project team to address project modifications and/or post-operation closure activities.

We are also seeking the NYSDEC's approval to disturb more than five acres during construction activities associated with the Project.

Your cooperation in finalizing this document is appreciated. Please do not hesitate to contact the project team if you have any questions or comments or if additional information is required.

Sincerely,

John P. McAuliffe by ccc

John P. McAuliffe, P.E.
Program Director, Syracuse

/Two hardcopy, 1 CD

cc:	Mr. Robert Edwards	NYSDEC, Albany (1 copy)
	Mr. Robert Nunes	USEPA, Albany (1 copy, 1 CD)
	Mr. Mark Sergott	NYSDOH (1 copy, 1 CD)
	Mr. Steven Bates	NYSDOH (1 copy, 1 CD)
	Mr. Geoffrey Laccetti	NYSDOH (ec or ec ltr only)
	Mr. Timothy Larson	NYSDEC, Albany (3 copies, 1 CD)
	Ms. Sandy Lizlovs	NYSDEC, Syracuse (1 copy)
	Mr. Richard Mustico	NYSDEC, Albany (1 copy)
	Ms. Mary Jane Peachey	NYSDEC, Region 7 (ltr only)
	Joseph J. Heath, Esq.	Onondaga Nation (ec ltr only)
	Thane Joyal, Esq.	Onondaga Nation (ec or ec ltr only)
	Mr. Fred Kirschner	HETF/Onondaga Nation (ec or CD)
	Ms. Jeanne Shenandoah	Onondaga Nation (1 copy and ec ltr only)
	Ms. Heidi Kuhl	Onondaga Nation (1 copy)
	Mr. Curtis Waterman	Onondaga Nation (ec or ec ltr only)
	Ms. Alma Lowry	Onondaga Nation (ec ltr only)
	Brian D. Israel, Esq.	Arnold & Porter (ec or CD)
	Argie Cirillo, Esq.	USEPA (ec ltr only)
	Margaret A. Sheen, Esq.	NYSDEC, Region 7 (ec ltr only)
	Mr. Al Labuz	Honeywell (ec ltr only)
	Mr. Paul Blue	Parsons (ec ltr only)
	Mr. David Steele	Parsons (ec ltr only)
	Mr. Kyle Buelow	O'Brien & Gere (ec ltr only)
	Mr. Paul Schultz	O'Brien & Gere (ec ltr only)
	Mr. Brian White	O'Brien & Gere (ec ltr only)

Appendix L

Stormwater Containment Volume Summary Calculations

Rev	Date	Preparer	Reviewer	
A	28 Feb. 2011	AJD	XDH	Client: Honeywell
B	8 Mar. 2011	AJD	XDH	Project: WTP and SCA
C	01 Apr. 2011	AJD	XDH	Facility: WTP and SCA 2011-2016 SWPPP
				Subject: 100-yr Storm Containment Calculations

1.0 Objective:

These calculations demonstrate the storage capacity available for the 100-yr storm event at the facilities associated with the WTP and SCA Project.

2.0 Methods:

Where precipitation was incident to a defined area, it was assumed that 100% of the stormwater would be contained (i.e., a runoff curve number of 100 with no infiltration, evapotranspiration, or off-site discharge). The demand volume values in these areas were determined by multiplying the ground surface area by the 100-yr 24-hr rainfall depth of 5.2" (A*R).

The containment volume values were determined by one of two methods:

1) The containment volume values in these areas were determined by multiplying the ground surface area by the designed berm height.
2) AutoCAD Civil 3D TIN-to-TIN composite modeling method, denoted as "Parsons & Geosyntec, 2010" or "O'Brien & Gere, 2010" where this method was used.

2.1 Containment Volume: SCA Phase 1 Perimeter Channel - TC1

$V_{TC1} := 1980000gal$ (Parsons & Geosyntec, 2010)

Shown on Figure 1

2.2 Containment Volume: SCA Phase 2 Perimeter Channel - TC2

$V_{TC3} := 67000gal$ (Parsons & Geosyntec, 2010)

Shown on Figure 2

2.3 Containment Volume: SCA West Basin

$V_{WestBasin} := 13acre \cdot ft$

$V_{WestBasin} = 4236068 \cdot gal$ (Parsons & Geosyntec, 2010)

Shown on Figures 1 & 2

2.4 Containment Volume: SCA East Basin

$V_{EastBasin} := 13acre \cdot ft$

$V_{EastBasin} = 4236068 \cdot gal$ (Parsons & Geosyntec, 2010)

Shown on Figures 1 & 2

2.5 Containment Volume: Debris Management Area (DMA) within SCA Phase 2

$A_{DMA} := 2.0acre$ Interior Area of DMA to toe of gravel berm base

$A_{DMA} = 87120 \cdot ft^2$

$H_{DMABerm} := 8.0in$ Height of gravel berm at DMA

$V_{DMA} := A_{DMA} \cdot H_{DMABerm}$ Total water containment capacity

$V_{DMA} = 434469 \cdot gal$

Shown on Figure 3

2.6 Containment Volume: SCA Phase 1, 2, & 3

$A_{Phase1} := 25acre$ Phase 1 Area

$A_{Phase2} := 22acre$ Phase 2 Area, excluding the 2.0 acre DMA

$A_{Phase3} := 16acre$ Phase 3 Area

$H_{SCABerm} := 4ft$ Average berm height at SCA

$V_{Phase1} := A_{Phase1} \cdot H_{SCABerm}$ Phase 1 containment volume

$V_{Phase1} = 32585141 \cdot gal$

Shown on Figure 1

$V_{Phase2} := A_{Phase2} \cdot H_{SCABerm}$ Phase 2 containment volume

$V_{Phase2} = 28674924 \cdot gal$

Shown on Figure 4

$V_{Phase3} := A_{Phase3} \cdot H_{SCABerm}$ Phase 3 containment volume

$V_{Phase3} = 20854490 \cdot gal$

Not shown on figure

2.7 Slurry Pipeline Volume:

$D_{Pipe} := 12.91in$ Inside diameter of 16" DR-11 HDPE pipe

$A_{Pipe} := \frac{\pi \cdot D_{Pipe}^2}{4}$ $A_{Pipe} = 131 \cdot in^2$ Cross sectional area of 16" DR-11 HDPE pipe

$L_{PipeLand} := 20700ft$ Length of pipe on land

$L_{PipeWater} := 6000ft$ Maximum length of pipe on water

$V_{Pipe} := A_{Pipe} \cdot (L_{PipeLand} + L_{PipeWater})$

$V_{Pipe} = 181561 \cdot gal$ Total volume of water contained in one length of slurry pipeline

Note: Slurry pipeline volume is a single flush volume to remove sediment and water from the pipeline prior to shutdown events. Thisvolume contributes to the total demand volume at the SCA

Not shown on figure

2.8 Containment Volume: SPA - Lined

$A_{SPALined} := 1.0acre$ Area of lined section of the SPA

$A_{SPALined} = 43560\,ft^2$

$V_{SPALined} := 0gal$ Total lined section of SPA water containment capacity

Note: Lined part of the SPA is a catchment area only.

Shown on Figures 5 & 6

2.9 Containment Volume: SPA - Paved

$A_{SPAPaved} := 1.7acre$ Area of paved section of the SPA

$A_{SPAPaved} = 74052\,ft^2$

$V_{SPAPaved} := 1223780gal$ Total paved section of SPA water containment capacity

Shown on Figures 5 & 6

2.10 Containment Volume: WTP

$A_{WTP} := 3.2acre$ WTP Area

$A_{WTP} = 139392 \cdot ft^2$

$V_{WTP} := 40500ft^3$ Total WTP water containment capacity

$V_{WTP} = 302961 \cdot gal$ (O'Brien & Gere, 2010)

Shown on Figures 5 & 6

2.11 Containment Volume: Staging Area

$A_{Stage} := 43560ft^2$ Staging area

$V_{Stage} := A_{Stage} \cdot H_{BermStage}$ $V_{Stage} = 43560\,ft^3$ Assumes a berm height of 12".

$V_{StageReduced} := V_{Stage} - 4760ft^3$ $V_{StageReduced} = 38800\,ft^3$ Decrease in storage volume associated with interior portion of berm.

$V_{StageReduced} = 290244 \cdot gal$ Available storage volume in the staging area

Shown on Figure 7

2.12 Geotextile Tube Post-Shutdown Filtrate Volume Analysis:

Geosynthetic Dewatering Tube Filtrate Analysis				
Flow: (gpm)	Start Hour:	Finish Hour:	Total Minutes:	Total Volume: (gal)
1250	0	12	720	900,000
625	12	24	720	450,000
312.50	36	48	720	225,000
156.25	60	72	720	112,500
			Total:	**1,687,500**

Note: It is assumed that filtrate drains from the geotextile tubes for three days after a shutdown.

Not shown on figure

2.13 Containment Volume: SCA Gravel Layer

$V_{GravelP1} := 8600000gal$ Volume of water that could be contained within the SCA Phase 1 gravel drainage layer. Parsons and Geosyntec, 2010. Assumes gravel porosity is 40%

$V_{GravelP2} := 3500000gal$ Volume of water that could be contained within the SCA Phase 2 gravel drainage layer. Parsons and Geosyntec, 2010. Assumes gravel porosity is 40%

$V_{GravelTotal} := 9300000gal$ Total Volume of water that could be contained within the SCA Phase 1 & 2 gravel drainage layer(s). Parsons and Geosyntec, 2010. Assumes gravel porosity is 40%

Shown on Figures 5 & 6

3.0 SCA and WTP Construction: Case 1

Assumptions:

1. Stormwater that falls on Phase 1 SCA, East Basin, West Basin, and Debris Management Area (DMA) will be detained in these lined areas prior to being discharged to SPDES Outfall No. 18, in accordance with Stormwater Management Strategy No. 4.
   1.1. Phase 1 SCA + East Basin + West Basin comprise a self contained area to detain the stormwater volume associated with the 100-year storm event prior to being discharged to SPDES Outfall No. 18.
   1.2. The DMA is a self contained area to detain the stormwater volume associated with the 100-year storm event prior to being discharged to SPDES Outfall No. 18.
2. Stormwater that falls on the WTP, SPA-Lined, and SPA-Paved areas will be bermed to detain the stormwater volume associated with the 100-year storm event prior to being routed to the wet well of the booster station located adjacent to the existing retention ponds, in accordance with Stormwater Strategy No.2. The lined portion of the SPA is designed to contain the screening process debris, therefore it is assumed to have no containment volume.

WTP and SCA Construction - Case 1								
	Area: (acres)	100-yr 24-hour Rainfall: (in)	Demand Volume: (gal)	Containment Volume: (gal)	Assumption No.:	Demand Volume Basis:	Containment Volume Basis:	Notes:
Phase1 SCA + East Basin + West Basin + Gravel Layer + TC1 - Construction								
Phase 1 SCA:	25.0	5.2	3,530,057	32,585,141	1.1	Area*Rainfall	Method 1	Average berm Height of 4ft
East Basin:	4.0	5.2	564,809	4,236,068			Method 2	Parsons & Geosyntec, 2010
West Basin:	2.3	5.2	324,765	4,236,068				Parsons & Geosyntec, 2010
Phase 1 Gravel Layer	25.0	5.2	Included in Phase 1 Demand	8,600,000			Method 2	Parsons & Geosyntec, 2010
TC1		5.2		1,980,000			Method 2	
Subtotal:			4,419,631	51,637,277				

3.0 SCA and WTP Construction: Case 1 (cont.)

WTP and SCA Construction - Case 1 (cont.)								
	Area: (acres)	100-yr 24-hour Rainfall: (in)	Demand Volume: (gal)	Containment Volume: (gal)	Assumption No.:	Demand Volume Basis:	Containment Volume Basis:	Notes:
DMA - Construction								
DMA:	2.0	5.2	282,405	434,469	1.2	Area*Rainfall	Method 1	Average berm Height of 8in
SPA + WTP - Construction								
SPA-Lined:	1.0	5.2	141,202	0	2	Area*Rainfall	Assumption 2	Assumed no Available Containment Volume
SPA-Paved:	1.7	5.2	240,044	1,223,780			Method 2	Containment Volume Based Upon SPA and WTP Design
WTP:	3.2	5.2	451,847	302,961				
Subtotal:			833,093	1,526,741				
Staging Area - Construction								
Staging Area:	1.0	5.2	141,202	290,244		Area*Rainfall	Method 1	O'Brien & Gere, 2010

4.0 SCA and WTP Construction: Case 2

Assumptions:

1. Stormwater that falls on Phase 1, East Basin, West Basin, WTP, SPA-Paved, SPA-Lined, and DMA will be routed to the SCA and WTP for treatment in accordance with Stormwater Strategy No. 6.
   1.1. Phase 1 SCA + East Basin + West Basin comprise a self contained area to detain the stormwater volume associated with the 100-year storm event prior to being routed to the SCA and WTP.
   1.2. WTP + SPA-Paved + SPA-Lined comprise a self contained area to detain the stormwater volume associated with the 100-year storm event prior to being routed to the SCA and WTP. The lined portion of the SPA is designed to contain the screening process debris, therefore it is assumed to have no containment volume.
   1.3. The DMA is a self contained area to detain the stormwater volume associated with the 100-year storm event prior to being routed to the SCA and WTP.
2. Stormwater that falls on Phase 2 SCA will be detained on this lined area prior to being discharged to SPDES Outfall No. 18, in accordance with Stormwater Management Strategy No.4.
3. For the purpose of these calculations, dredging operations will be suspended upon notification from OCDWEP (Metro) to suspend WTP effluent discharges.
4. The SCA composite liner and liquid collection system is designed to achieve a head no greater than 1 ft on the liner during operations. In addition to the operational capacity of the liquid collection system, the SCA basins will provide storage for high precipitation events. The calculations below present the containment volume of the SCA basins compared to the expected precipitation demand volume.
5. Pipeline volume is a single flush volume to remove sediments and water from the pipeline prior to shutdown events.

WTP and SCA 2012 Construction - Case 2								
	Area: (acres)	100-yr 24-hour Rainfall: (in)	Demand Volume: (gal)	Containment Volume: (gal)	Assumption No.:	Demand Volume Basis:	Containment Volume Basis:	Notes:
Phase1 SCA + Gravel Lyer + East Basin + West Basin + Pipe Flush Volume + Geotextile Tube Filtrate + TC1 + TC2 - Operations								
Phase 1 SCA:	25.0	5.2	3,530,057	0	4	Area*Rainfall	Assumption 4	Assumed no Available Containment Volume
Phase 1 Gravel Layer	25.0	5.2	Included in Phase 1 Demand	8,600,000			Method 2	Parsons & Geosyntec, 2010
East Basin:	4.0	5.2	564,809	4,236,068	1.1	Area*Rainfall	Method 2	Parsons & Geosyntec, 2010
West Basin:	2.3	5.2	324,765	4,236,068				Parsons & Geosyntec, 2010
Slurry Pipeline:	N/A		181,561	N/A	5	Attached Calculation		26,700 ft of DR-11 16"-OD
Geotextile Tube Filtrate:	n/a	n/a	1,687,500	0		Model	See Section 2.12	

4.0 SCA and WTP Construction: Case 2 (cont.)

WTP and SCA 2012 Construction - Case 2 (cont.)								
	Area: (acres)	100-yr 24-hour Rainfall:	Demand Volume: (gal)	Containment Volume: (gal)	Assumption No.:	Demand Volume Basis:	Containment Volume Basis:	Notes:
Phase1 SCA + Gravel Lyer + East Basin + West Basin + Pipe Flush Volume + Geotextile Tube Filtrate + TC1 + TC2 - Operations								
TC1		5.2	Included in Phase 1 & Phase 2	1,980,000			Method 2	
Subtotal:			6,288,692	19,052,136				
SPA + WTP - Operations								
SPA-Lined:	1.0	5.2	141,202	0	1.2	Area*Rainfall	Assumption 1.2	Assumed no Available Containment Volume
SPA-Paved:	1.7	5.2	240,044	1,223,780			Method 2	Containment Volume Based Upon SPA and WTP Design
WTP:	3.2	5.2	451,847	302,961				
Subtotal:			833,093	1,526,741				
DMA - Operations								
DMA:	2.0	5.2	282,405	434,469	1.3	Area*Rainfall	Method 1	Average berm Height of 8in
Phase 2 + Phase 2 Gravel Layer- Construction								
Phase 2 SCA:	22.0	5.2	3,106,450	28,674,924	2	Area*Rainfall	Method 1	Average berm Height of 4ft
Phase 2 Gravel Layer	22.0	5.2	Included in Phase 2 Demand	3,500,000			Method 2	Parsons & Geosyntec, 2010
TC2		5.2		67,000			Method 2	
Subtotal:			3,106,450	32,241,924				
Staging Area - Operations								
Staging Area:	1.0	5.2	141,202	290,244		Area*Rainfall	Method 1	O'Brien & Gere, 2010

5.0 SCA and WTP Operation: Case 1

Assumptions:

1. Stormwater that falls on Phase 1 SCA, Phase 2 SCA, East Basin, West Basin, WTP, SPA-Paved, SPA-Lined, and DMA will be routed to the SCA and WTP for treatment in accordance with Stormwater Strategy No. 6.
   1.1. Phase 1 SCA + Phase 2 SCA + East Basin + West Basin + DMA comprise a self contained area to detain the stormwater volume associated with the 100-year storm event prior to being routed to the WTP.
   1.1. WTP + SPA-Lined + SPA-Paved comprise a self contained area to detain the stormwater volume associated with the 100-year storm event prior to being routed to the WTP. The lined portion of the SPA is designed to contain the screening process debris, therefore it is assumed to have no containment volume.
2. Stormwater that falls on Phase 3 SCA will be detained on this lined area prior to being discharged to SPDES Outfall No. 18, in accordance with Stormwater Management Strategy No. 4.
3. For the purpose of these calculations, dredging operations will be suspended upon notification from OCDWEP (Metro) to suspend WTP effluent discharges.
4. The SCA composite liner and liquid collection system is designed to achieve a head no greater than 1 ft on the liner during operations. In addition to the operational capacity of the liquid collection system, the SCA basins will provide storage for high precipitation events. The calculations below present the containment volume of the SCA basins compared to the expected precipitation demand volume.
5. Pipeline volume is a single flush volume to remove sediments and water from the pipeline prior to shutdown events.

WTP and SCA Operations - Case 1

	Area: (acres)	100-yr 24-hour Rainfall: (in)	Demand Volume: (gal)	Containment Volume: (gal)	Assumption No.:	Demand Volume Basis:	Containment Volume Basis:	Notes:
Ph.1 + Ph. 2 + Gravel Layer + E. Basin + W Basin + Pipe Flush + DMA + Geotextile Filtrate + Channels -Operations								
Phase 1 SCA:	25.0	5.2	3,530,057	0	4	Area*Rainfall	Assumption 4	Assumed no Available Containment Volume
Phase 2 SCA:	22.0	5.2	3,106,450	0				Assumed no Available Containment Volume
Phase 1 & 2 Gravel Layers	25.0	5.2	Included in Phase 1 Demand	9,300,000			Method 2	Parsons & Geosyntec, 2010
East Basin:	4.0	5.2	564,809	4,236,068	1.1		Method 2	Parsons & Geosyntec, 2010
West Basin:	2.3	5.2	324,765	4,236,068				Parsons & Geosyntec, 2010

5.0 SCA and WTP Operation: Case 1 (cont.)

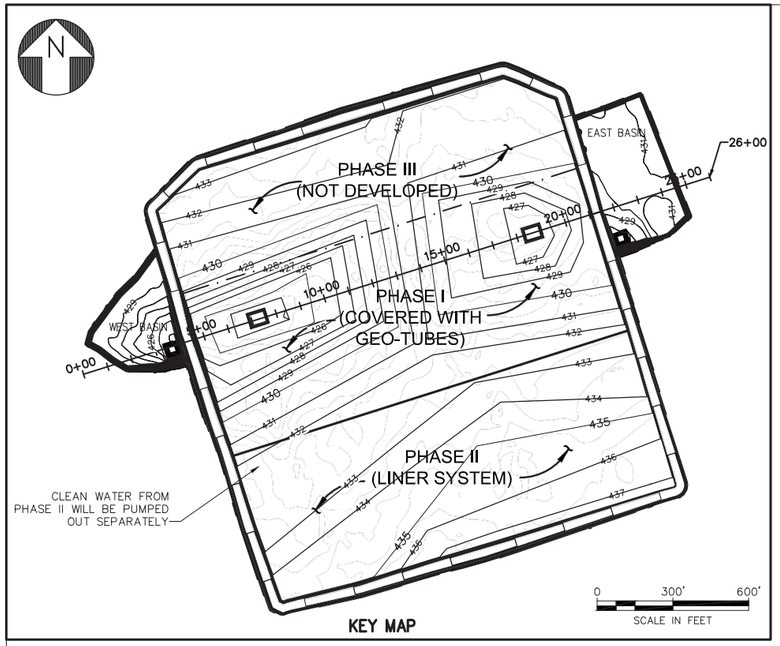
WTP and SCA Operations - Case 1 (cont.)								
	Area: (acres)	100-yr 24-hour Rainfall: (in)	Demand Volume: (gal)	Containment Volume: (gal)	Assumption No.:	Demand Volume Basis:	Containment Volume Basis:	Notes:
Ph.1 + Ph. 2 + Gravel Layer + E. Basin + W Basin + Pipe Flush + DMA + Geotextile Filtrate + Channels -Operations								
Slurry Pipeline:	N/A		181,561	N/A	5	Attached Calculation		26,700ft of DR-11 16"-OD
Geotextile Tube Filtrate:	n/a	n/a	1,687,500	0		Model	See Section 2.12	
TC1	Included in Phase 1 Area	5.2	Included in Phase 1 & Phase 2	1,980,000			Method 2	
TC2		5.2		67,000			Method 2	
DMA:	2.0	5.2	282,405	434,469	1.1	Area*Rainfall	Method 1	Average berm Height of 8in
Subtotal:			9,677,547	20,253,605				
SPA + WTP - Operations								
SPA-Lined:	1.0	5.2	141,202	0	1.2	Area*Rainfall	Assumption 1.2	Assumed no Available Containment Volume
SPA-Paved:	1.7	5.2	240,044	1,223,780			Method 2	Containment Volume Based Upon SPA and WTP Design
WTP:	3.2	5.2	451,847	302,961				
Subtotal:			833,093	1,526,741				
Phase 3 SCA - Construction								
Phase 3 SCA:	16.0	5.2	2,259,236	20,854,490	2	Area*Rainfall	Method 1	Berm Height of 4ft
Staging Area - Operations								
Staging Area:	1.0	5.2	141,202	290,244		Area*Rainfall	Method 1	O'Brien & Gere, 2010

References:

O'Brien & Gere. 2010. Appendix L, Stormwater Pollution Prevention Plan, Waste Treatment Plant and Sediment Consolidation Area. Honeywell, Town of Camillus, Onondaga County, New York, August 2010.

Parsons. 2011. Appendix G, Draft Onondaga Lake Sediment Management Design. Prepared for Honeywell, Syracuse, New York, January, 2011.

Parsons & Geosyntec. 2010. Appendix K, Draft Onondaga Lake Sediment Consolidation Area Civil & Geotechnical Final Design. Prepared for Honeywell, Syracuse, New York, January, 2010.



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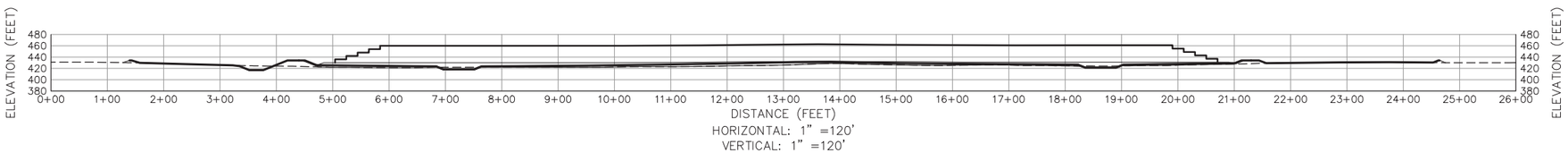

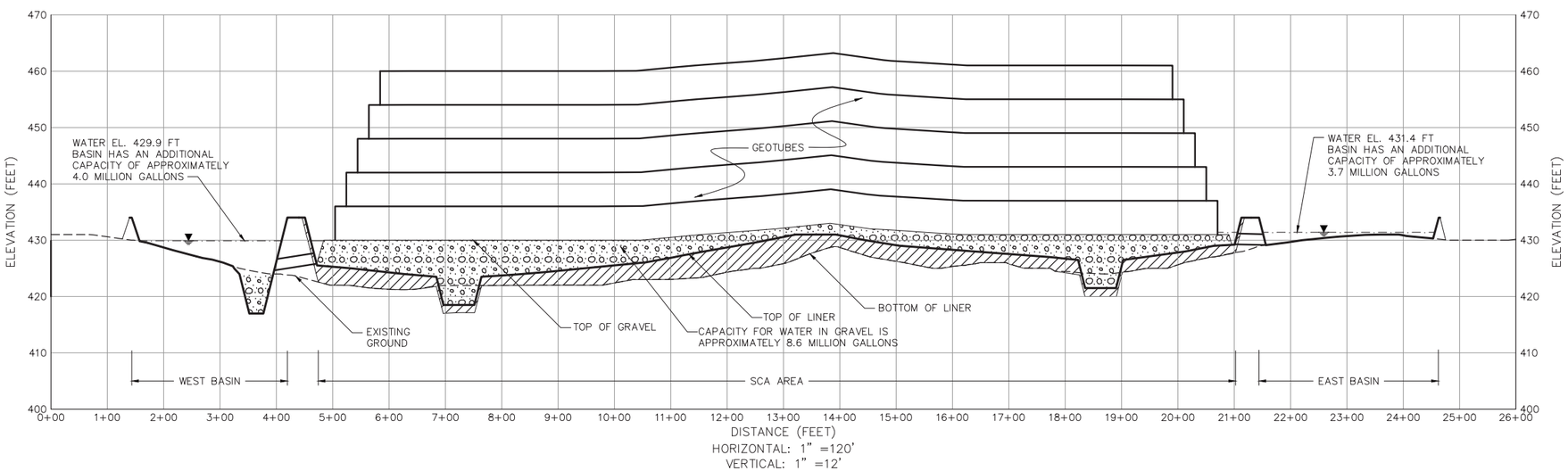

NOTE:

1. THE WATER ELEVATIONS SHOWN IN THIS FIGURE ARE APPROXIMATE WATER ELEVATIONS ASSUMING THE 100-YEAR STORM CONTAINED IN THE PERIMETER CHANNELS AND BASINS.

Geosyntec consultants

KENNESAW, GA

DATE:	MARCH 2011	SCALE:	AS-SHOWN
PROJECT NO.	GJ4706	FILE NO.	—
DOCUMENT NO.	—	FIGURE NO.	1

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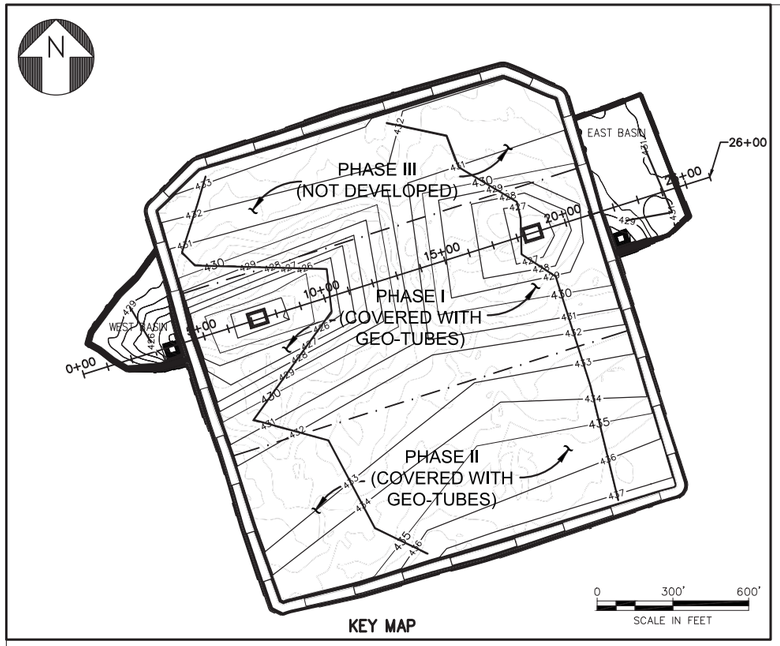

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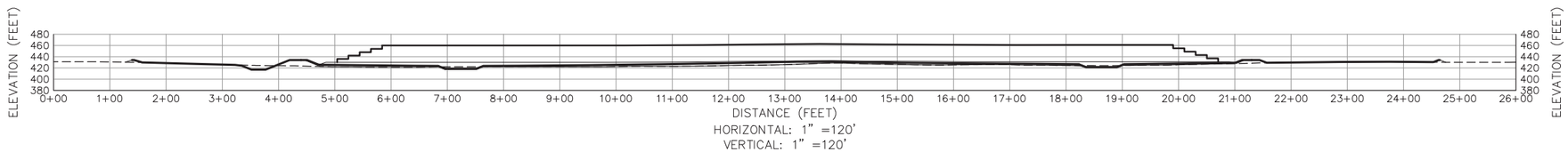

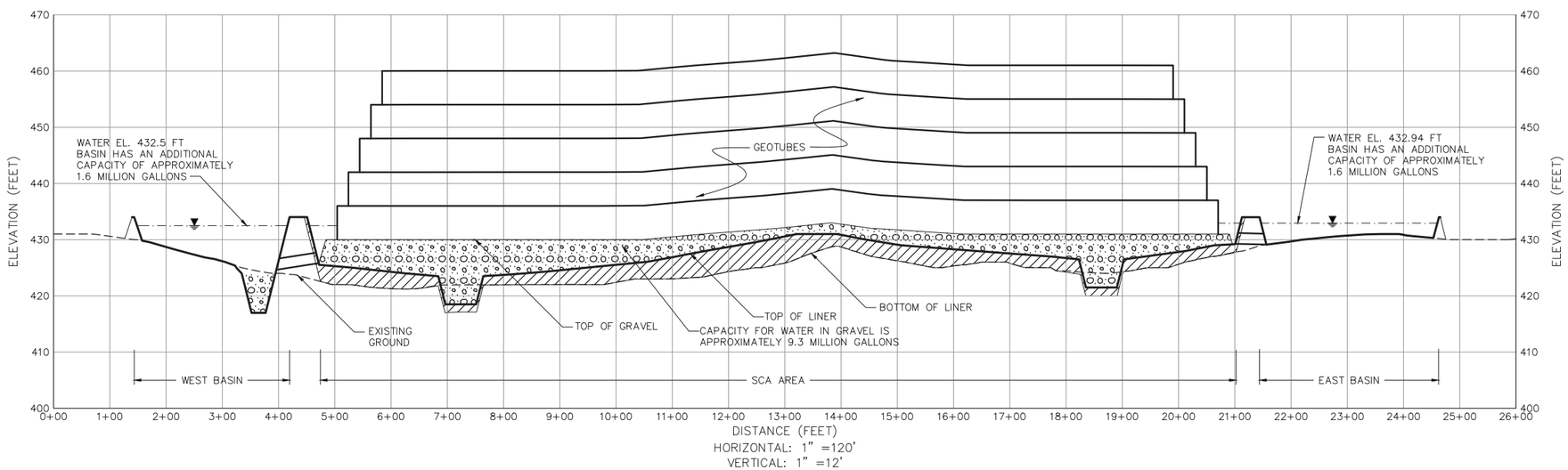

NOTE:

1. WATER ELEVATIONS ASSUME 100-YEAR STORM CONTAINED IN THE PERIMETER CHANNELS AND BASINS.

Geosyntec consultants

KENNESAW, GA

DATE:	MARCH 2011	SCALE:	AS-SHOWN
PROJECT NO.	GJ4706	FILE NO.	—
DOCUMENT NO.	—	FIGURE NO.	2

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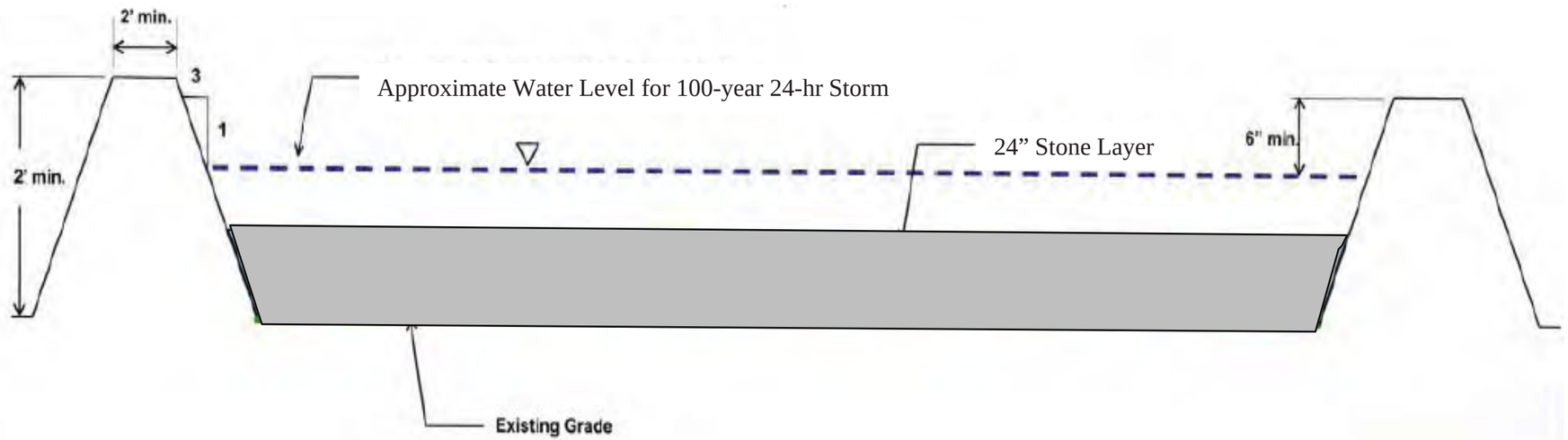

Figure 3

Debris Management Area – Cross Section

Water Treatment Plant & Sediment Consolidation Area SWPPP

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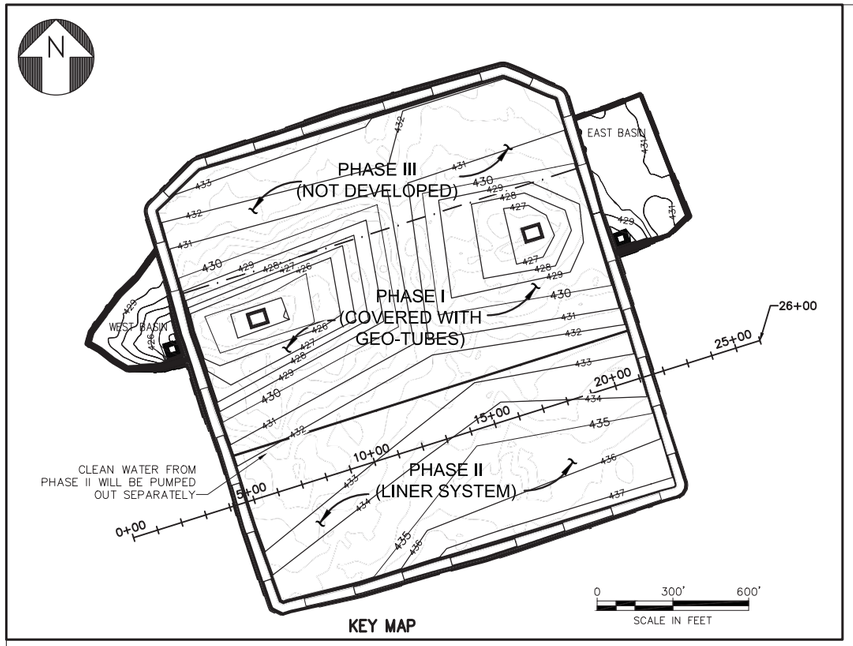

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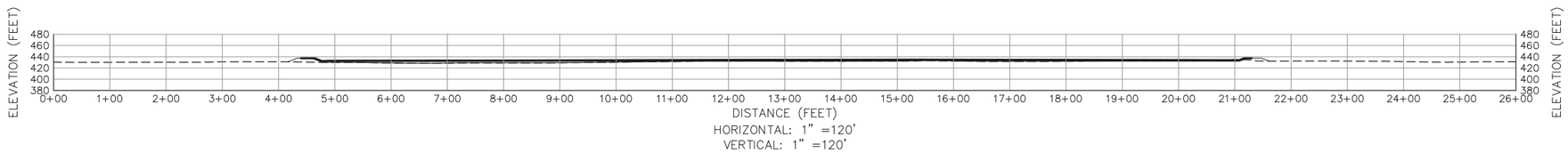

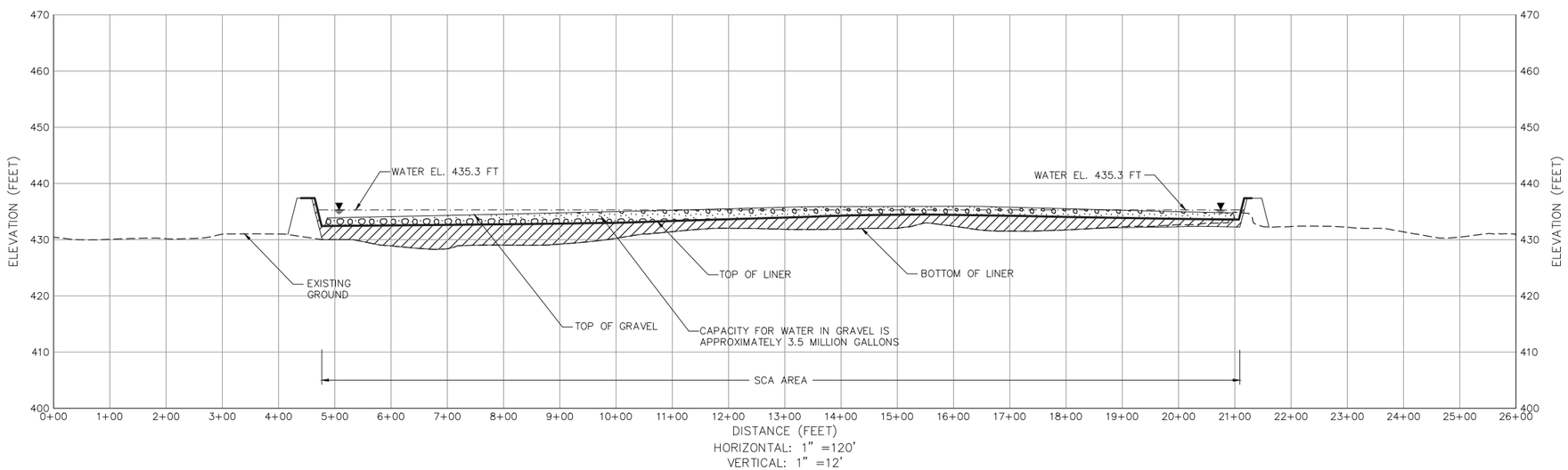

NOTE:

1. THE WATER ELEVATIONS SHOWN IN THIS FIGURE ARE APPROXIMATE WATER ELEVATIONS ASSUMING THE 100-YEAR STORM CONTAINED IN THE PERIMETER CHANNELS AND BASINS.

Geosyntec consultants

KENNESAW, GA

DATE:	MARCH 2011	SCALE:	AS-SHOWN
PROJECT NO.	GJ4706	FILE NO.	—
DOCUMENT NO.	—	FIGURE NO.	4

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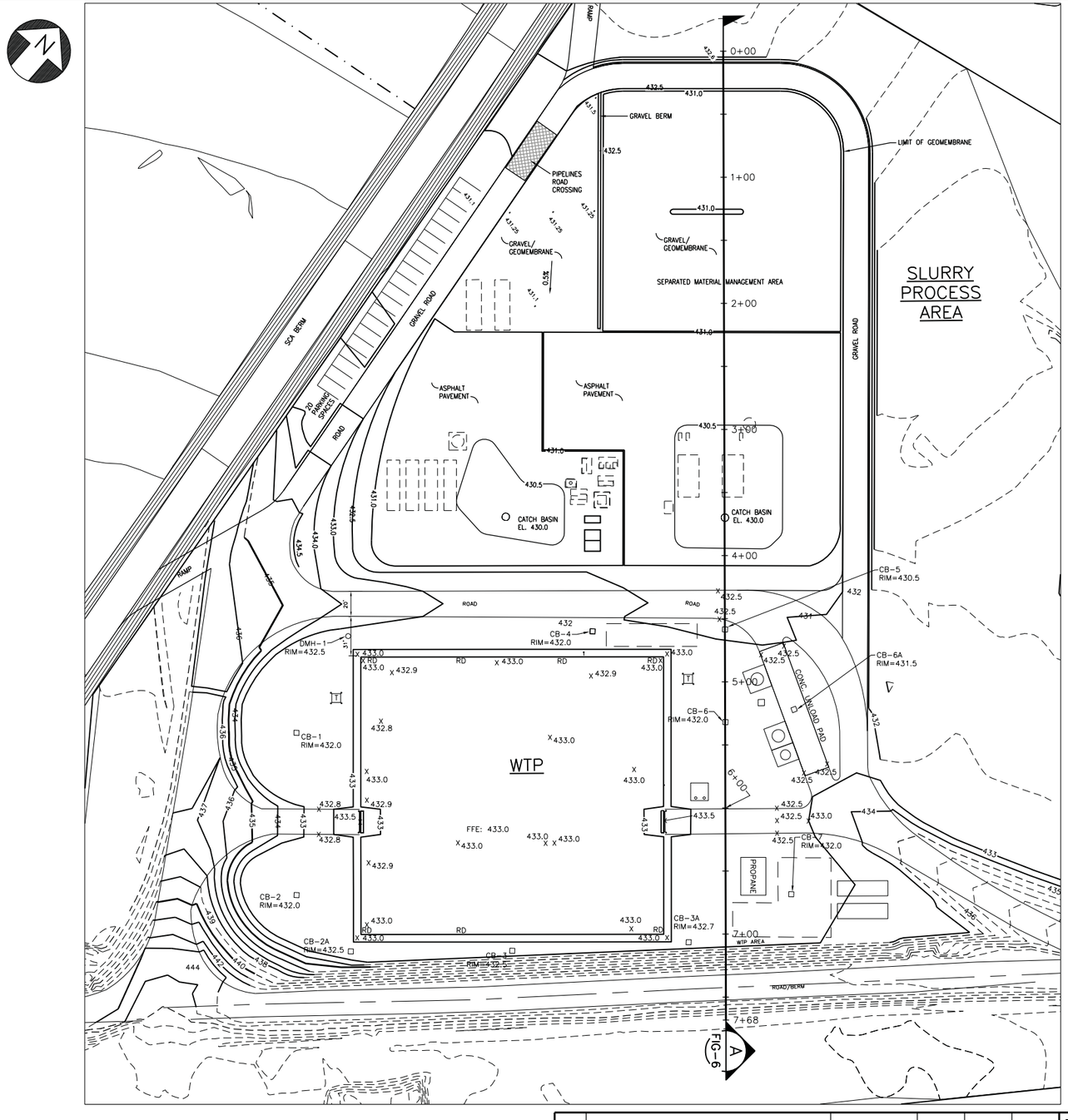

SITE GRADING PLAN

SCALE: 1" = 50'
(WHEN PRINTED ON 22"x 34")

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SCALE: 1"=50'

NO.	DESCRIPTION	DATE	DRAWN	CHK'D	APPV'D
A	ISSUED FOR SWPPP	3/31/11	JTS	XH	DDS

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DRAWING TITLE
Honeywell
SEDIMENT MANAGEMENT DESIGN
SLURRY PROCESS AREA AND WATER TREATMENT PLANT GRADING PLAN

DRAWN BY	CHECKED BY	DRAWING NO.	SCALE
JTS	XH	FIGURE 5	AS SHOWN
DATE 4/31/11	APPROVED BY DDS		JOB 444853

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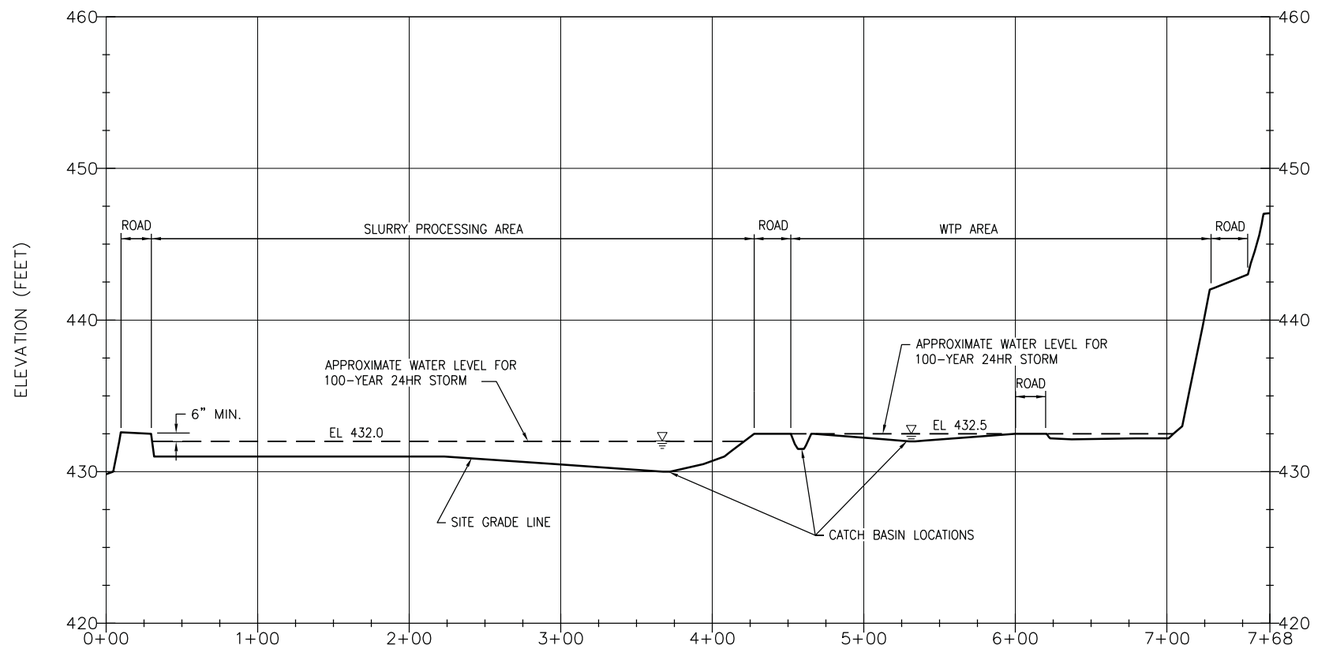

SECTION A

HORIZONTAL SCALE: 1"=50'
VERTICAL SCALE: 1" = 5'
(WHEN PRINTED ON 22"x 34")

50 25 0 50 100
HORIZONTAL SCALE: 1"=50'

5 2.5 0 5 10
VERTICAL SCALE: 1"=5'

NO.	DESCRIPTION	DATE	DRAWN	CHK'D	APPV'D
A	ISSUED FOR SWPPP	3/31/11	JTS	XH	DDS

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DRAWING TITLE
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SEDIMENT MANAGEMENT DESIGN
SLURRY PROCESS AREA AND WATER TREATMENT PLANT SECTION

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JTS	XH
DATE	APPROVED BY
4/31/11	DDS

DRAWING NO.
FIGURE 6

SCALE
AS SHOWN

JOB
444853

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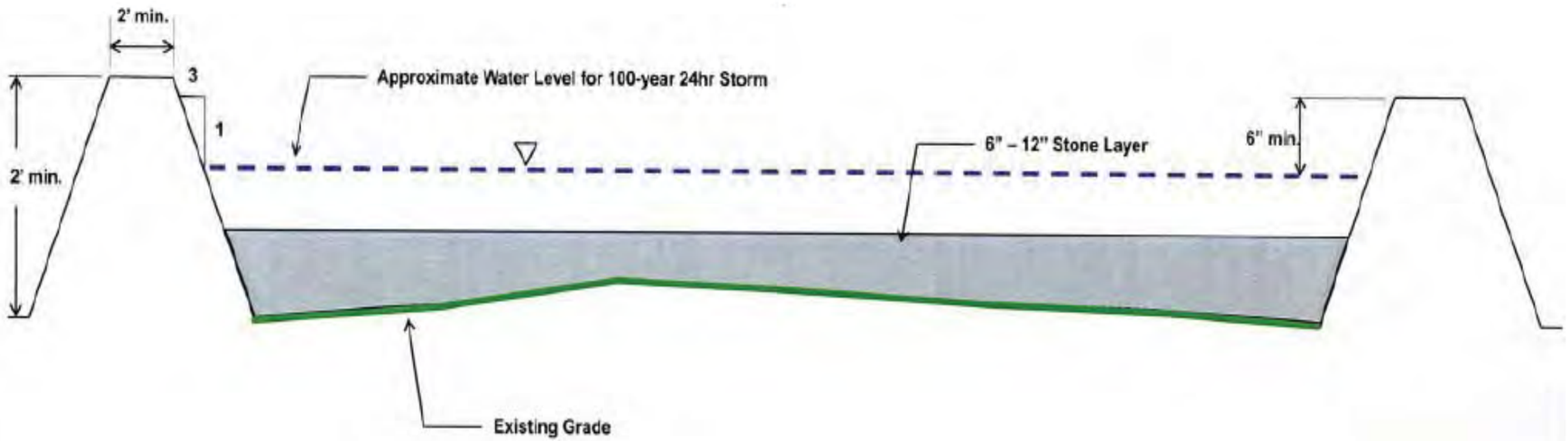

Figure 7

Staging Area – Cross Section

Water Treatment Plant & Sediment Consolidation Area SWPPP

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