

INWOOD CROSSINGS

DRAINAGE REPORT



POE & ASSOCIATES, INC.
CONSULTING ENGINEERS
5940 E. Central, Suite 200 ■ Wichita, KS 67208-4242
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MAY 2007



Public Works, Engineering Division Final Drainage Plan Submittal Checklist

Reviewer: <u>Timothy R. Austin, P.E.</u>	Date: <u>31 May 2007</u>
Subdivision Name: <u>Inwood Crossings</u>	Location: <u>W 1/2, NE 1/4, Section 31-T26S-R2E</u>
Total Land Area Of Ownership: <u>24.85</u> Acres	
Type: <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Industrial <input type="checkbox"/> Recreation <input type="checkbox"/> Municipal <input type="checkbox"/> Other	
Applicant: <u>LDG Development, LLC</u>	Contact: <u>William Shircliff</u> Phone #: <u> </u>
Engineer: <u>Poe & Associates, Inc.</u>	Contact: <u>Jason P. Dickman, P.E.</u> Phone # <u>(316) 685-4114</u>

Please check the appropriate box:

I = Included; NA = Non-Applicable; R= Required prior to development
(If "NA" is checked, an explanation must be entered)

	Applicant			Engr	
	I	NA	Explanation / Location in Plan	I	NA
Tab 1. Project Narrative					
A. Site Location Map, using USGS Map	✓			✓	
B. Discussion of development, existing conditions, and proposed impacts on stormwater, wetland, riparian, and flood plain	✓			✓	
C. Discussion of offsite conditions	✓			✓	
D. Summary of runoff calculations (pre/post development) No increase in peak discharge for all storm series	✓			✓	
E. Narrative description of the type and function of the permanent best management practices that are incorporated into the site design	✓			✓	
F. Copy of the plat	✓			✓	
G. Preliminary grading plan (The final grading plan shall be sealed, signed and dated prior to Engineering receiving the final sanitary sewer plans. One plan sheet and PDF shall be submitted to the Subdivision Engineer.)	✓			✓	
H. Professional Engineer seal, signature and date on cover of report	✓			✓	
I. CD of drainage plan in PDF format (one file) and one paper copy bound with this checklist included behind the cover	✓			✓	

	Applicant			Engr	
	I	NA	Explanation / Location in Plan	I	NA
Tab 2. Existing Conditions Runoff Calculations					
A. Copy of applicable orthophoto showing proposed project boundaries (preferable in color)	✓			✓	
B. Runoff Method (Rational, Hydrograph Method, or other approved methods by Engineering)	✓			✓	
C. Existing topography (no greater than 2-foot contours, 1-foot recommend)	✓			✓	
D. Total Site Area and Total Impervious Area (acres)	✓			✓	
E. Benchmarks used for site control	✓			✓	
F. Streams, creeks, and waterway labeled	✓			✓	
G. Predominant soils from USDA soil surveys, and/or on site soil borings	✓			✓	
H. Location and boundaries of natural features such as wetlands, lakes, and ponds with the normal water elevation noted	✓			✓	
I. Location of existing roads, buildings, parking lots and other impervious areas.	✓			✓	



J. Location of existing utilities (e.g., water, sewer, gas, electric) and easements	✓			✓	
K. Location of existing conveyance systems such as storm drains, inlets, catch basins, channels, swales, and areas of overland flow	✓			✓	
L. Flow paths	✓			✓	
M. Location and dimensions of existing channels, bridges or culvert crossings	✓			✓	
N. Existing conditions hydrologic analysis for runoff rates, volumes and velocities showing methodologies used and supporting calculations (2, 5, 10, 25 & 100 year, 24-hour storm events) or Critical Duration	✓			✓	
O. Assumed pre-developed runoff curve numbers	✓			✓	
P. Existing time of concentrations used in calculations	✓			✓	
Q. Evaluate immediate downstream drainage capacity, not to exceed more than 0.25 miles downstream of site	✓			✓	
R. Existing structural elevations (e.g., invert of pipes, manholes, etc.)	✓			✓	
S. Cross-section data for open channels	✓			✓	
T. Ground water elevations, if applicable	✓			✓	

Tab 3. Post-Development Hydrologic Analysis	Applicant			Engr	
	I	NA	Explanation / Location in Plan	I	NA
A. Proposed (post-development) conditions hydrologic and hydraulic analysis for runoff rates, volumes, HGL, and velocities showing the methodologies used and supporting calculations for all applicable design storms (2, 5, 10, 25 & 100 year, 24-hour storm events)	✓			✓	
B. Proposed time of concentrations used in calculations	✓			✓	
C. Assumed post-developed runoff curve numbers	✓			✓	
D. Proposed contours for detention facilities (to equal area used in outlet rating curves)	✓			✓	
E. Preliminary sizing calculations for stormwater controls including contributing drainage area, storage, and outlet configuration	✓			✓	
F. Stage-storage-discharge or outlet rating curves and inflow and outflow hydrographs for storage facilities	✓			✓	
G. Final analysis of potential upstream/downstream impact/effects of project, where necessary	✓			✓	
H. Existing and proposed structural elevations (e.g., invert of pipes, manholes, etc.)	✓			✓	
I. Design water surface elevations and normal pool elevation for ponds.	✓			✓	
J. Typical detail for outlet structures, embankments, spillways, grade control structures, conveyance channels, etc. To include height, width, elevation, and/or diameter.	✓			✓	
K. Proposed limits of clearing and grading	✓			✓	
L. Location of existing and proposed roads, buildings, parking lots and other impervious areas.	✓			✓	
M. Location of existing and proposed utilities (e.g., water, sewer) and easements	✓			✓	
N. Location of existing and proposed conveyance systems such as storm drains, inlets, catch basins, channels, swales, and areas of overland flow	✓			✓	
O. Preliminary location and dimensions of proposed channel modifications, such as bridge or culvert crossings	✓			✓	



P. Preliminary selection and location of stormwater controls	✓			✓	
Q. Emergency overflow structure's flow path	✓			✓	
R. Detention facility provides one-foot of freeboard above the HWL and emergency outfall shown (top of berm elevation shown)	✓			✓	
S. The 100-year 24-hour HWL delineated on the plan for detention pond	✓			✓	
T. Lowest opening elevations table on the plat for structures located adjacent to channels or ponds	✓			✓	
U. Stormwater Management Facilities located within a Reserve	✓			✓	
V. Maintenance responsibility of stormwater management facility shall be specified in the platters text. (e.g. HOA, Lot Owners Association, or lot)	✓			✓	
W. Off-site drainage easements or agreements required, where necessary	✓			✓	

Tab 4. Floodplain Submittal	Applicant			Engr	
	I	NA	Explanation / Location in Plan	I	NA
A. Provide source of flood profile		✓	No changes to floodplain or floodway limits		✓
B. Nearest base flood elevations		✓	No changes to floodplain or floodway limits		✓
C. Delineation of pre-developed regulatory floodplain/floodway limits		✓	No changes to floodplain or floodway limits		✓
D. Delineation of post-developed regulatory floodplain and floodway limits		✓	No changes to floodplain or floodway limits		✓
E. Floodplain boundary determination per elevation (project limits shown)		✓	No changes to floodplain or floodway limits		✓
F. Provide source of floodway data table and discharges		✓	No changes to floodplain or floodway limits		✓
G. Provide all hydrologic and hydraulic study information for site-specific floodplain studies, unnumbered Zone A area elevation determinations and flood plain map revisions or required permits		✓	No changes to floodplain or floodway limits		✓
H. Provide regulatory floodway and four natural profile models (10,50,100, and 500-yr) for existing and future watershed conditions		✓	No changes to floodplain or floodway limits		✓
I. Location of floodplain/floodway limits and relationship of site to upstream/downstream properties (floodplain limits to be per elevation and scaled location)		✓	No changes to floodplain or floodway limits		✓
J. Flood plains and floodways located within a Reserve, where necessary	✓			✓	

Tab 5. Federal, State and Local Permits (to be provided prior to construction unless otherwise specified)	Applicant			Engr	
	I/R	NA	Explanation / Location in Plan	I/R	NA
A. US Army Corps of Engineers - Regulatory program permits (404 water quality certification)		✓	Not Required		✓
B. Kansas Department of Agriculture - Division of Water Resources Permits (Stream Obstruction, Channel Change, Flood Plain Fill, Levee, Water Appropriations, Dam safety permit, etc.)		✓	Not Required		✓
C. Federal Emergency Management Agency (FEMA) Letter of Map Changes (LOMA, LOMR, LOMR-f, CLOMR, etc.) Shall be included and approved when project modifies the limits of the floodway.		✓	Not Required		✓
D. Kansas Department of Transportation	✓		Highway Permit, Use of Right of Way	✓	
E. Sedgwick County Right-of-way Permit		✓	Not Required		✓

Tab 1. Project Narrative

A. Site location map, using USGS Map

Inwood Crossings is a 24.85-acre tract of land located in the west half of the northeast quarter of Section 31-T26S-R2E in the City of Wichita, Sedgwick County, Kansas. The site is bounded on the north by 37th Street North, on the east by Rock Road, on the south by K-96 Highway, and on the west by Woodlawn Avenue. See Exhibit 1-1 for USGS Map.

B. Discussion of development, existing conditions, and proposed impacts

The property is currently zoned to allow multi-family (MF-18 and MF-29) types of use. The site is anticipated on being developed as a multi-family subdivision, with apartments proposed on this site. Typically, this type of development will increase the impervious area of the property over the existing land use. Such would be true with this addition. Assumptions for design flows in a multi-family area include an impervious area of up to 65% within the proposed development.

Developed conditions will take advantage of the natural grades over the majority of the site. Detention in the north and south areas of the project will ensure that developed flows are at or below current flows exiting the site. The existing dry-detention area at the northeast corner will be expanded to provide added storage for the proposed northern drainage areas. A new dry-detention pond will be constructed to the south to minimize the southern area runoff. Off-site drainage enters this development from the east and into the existing northeast detention pond.

Presently, the site is a made up of vacant land. An un-named tributary of the East Fork Chisholm Creek drains generally east to west through the site and off-site near the northwest corner of the site. The majority of the site drains north to the existing detention pond and the south portion drains into the north ditch of K-96. The north runoff is routed through a 48" R.C.P. followed by a triple 10' by 4' R.C.B. draining to the northwest under Inwood Street. In the south area, runoff flows off-site after collecting just west of the center of the south line of the property. The land has natural slopes ranging from less than 1% to roughly 3%. According to the NRCS Soil Survey, the predominant soil type is a Rosehill silty clay series material. See Exhibit 1-2 for NRCS Soil Survey map and information showing existing soil types and descriptions.

The site contains a platted floodway and the north detention area is within a platted drainage easement. The platted floodway is not near nor is a part of any current FEMA floodway mapping. Refer to Exhibit 1-3 for the Killarney Plaza Second Addition, the Comotara Power Center, the Comotara Power Center 2nd Addition, and the Comotara Power Center 3rd Additions plats, and Exhibit 1-4 for FIRM Panels 0219E, 0240E, 0357E, and 0376E Wichita, Sedgwick County, Kansas, February 2, 2007. Any impact on storm water shall be addressed in the summary of runoff calculations text. The site contains two very small wetland areas within the north detention area as shown on the Wetland Delineation Map (Exhibit 1-9). All site grading will be outside the limits of the wetland areas and thus the intended development

has no impact in that regard. The United States Corps of Engineers has been contacted in regard to the need for a wetland determination; no response has been received at the time of this report.

C. Discussion of off-site conditions

Developed areas surround this site. Commercial uses lie to the east, and residential uses surround the remainder of the area. The original, modern land use for the site was a mixture of commercial, residential, and limited-industrial uses.

The overall upstream drainage basin for the un-named tributary contains just over 214 acres. See Exhibit 1-5 for delineation of the entire drainage basin. Land use within the drainage basin varies from residential, open space, limited industrial, and commercial in character. Upstream, storm water is directed to the site via underground storm sewers. Then, all off-site flows above the past existing condition are detained in a dry-detention pond at the north end of the property.

D. Summary of runoff calculations

Existing Conditions (24-Hour Storm)							
Site	Area	CN	2-Year	5-Year	10-Year	25-Year	100-Year
Off-Site	45.000	98.0	152.09	193.48	224.46	265.71	327.50
NE	11.121	84.0	16.75	23.78	29.21	36.51	47.49
Off-Site & NE	56.121	95.2	162.61	208.83	243.53	289.81	359.22
Existing NE Pond	56.121	95.2	91.27	112.14	126.20	138.42	166.17
S	6.665	83.3	14.91	21.18	25.96	32.37	41.99
NW	7.060	85.6	16.84	23.56	28.65	35.44	45.62

Developed Conditions (24-Hour Storm)							
Site	Area	CN	2-Year	5-Year	10-Year	25-Year	100-Year
Off-Site	45.000	98.0	152.09	193.48	224.46	265.71	327.50
NE	11.093	89.9	30.88	41.56	49.54	60.14	75.94
Off-Site & NE	56.093	96.4	182.97	235.04	274.00	325.85	403.43
Existing NE Pond	56.093	96.4	98.59	120.54	132.61	144.02	190.55
Proposed NE Pond	56.093	96.4	91.26	111.84	125.74	137.38	159.78
S	7.668	91.7	22.78	30.12	35.60	42.86	53.68
South Pond	7.668	91.7	11.15	13.19	18.39	26.07	36.71
NW	6.425	88.6	16.84	22.92	27.49	33.55	42.59

The 214-acre upstream drainage basin is currently fully developed and run-off has been detained for all the areas to the east of Rock Road. With that, the flows used for calculating off-site runoff for this site will be based on the remaining 45-acres of Killarney Plaza Second Addition (Exhibit 1-3), west of Rock Road. The fully developed 45-acre site has an estimated 100-year flow of approximately 328 cfs. Therefore, this flow is used for both the existing and developed conditions. Then, the flow is routed through a dry-detention pond at the northeast corner of the Inwood Crossings project and does not interfere with any on-site drainage. The existing northeast detention area shall be resized to accommodate added flows from this development. The current flows for the development, based on existing and proposed conditions are shown in the table above. Detention storage will be provided to

reduce developed flows to match the existing flows after the site is fully developed (summary information shown as Hydrograph Return Period Recap attached herewith as Exhibit 1-6). The existing site drainage is set up as three areas as shown on the attached drainage plan, Exhibit 1-7. Proposed drainage is also divided into three major areas and further subdivided to route drainage to the northeast, south, and northwest (see Exhibit 1-7). Routing will be through storm sewers with bypass flows into downstream storm sewers or driving lanes on the site as needed. Run-off from both the northeast and south areas will be routed to dry-detention ponds as shown on Exhibit 1-7.

Time of concentration for the upstream 45-acre drainage area is estimated to be 15 minutes based upon a fully developed condition with a storm sewer network routing all flows to the northeast detention area. On-site T_c for the northeast existing area is estimated to be over 38 minutes and the south and northwest areas have an existing T_c of 15 minutes. The developed T_c for all areas will be 15 minutes. On-site detention is recommended for the northeast and south areas when developed. Therefore, the added flows from the developed site will be detained to keep post-developed flows at or below the current flows. It is assumed that immediate downstream capacities are adequate for the current existing flows. The final design of on-site drainage systems shall comply with current City of Wichita design criteria.

E. Narrative description of permanent best management practices

The contractor shall provide stabilized construction entrance prior to any street paving. A buffer of 10 feet of undisturbed native vegetation shall be maintained around perimeter of site where possible. Earthwork stockpiles shall be maintained away from any ponds. Fuel storage and refueling of equipment shall not be allowed around any ponds, drainage channels, or other waterways. Sediment barriers will be placed at storm sewer inlets and rock riprap at outlets. Sediment barriers (type determined by owner or contractor) shall be used to prevent sediment from flowing off site. Disturbed earth shall be stabilized where construction activity ceases for at least 21 days with owner's choice of mulch, temporary seed (Rye grass) during the planting season or other suitable BMP device. BMP devices shall be in place until there is a good stand of grass. Disturbed portions of the site where construction activities permanently cease shall be stabilized with permanent seed no later than 21 days after the last construction activity in that area (during the planting season only). The permanent seed shall consist of fescue or grass chosen by the owner. BMP devices shall be used at back of curb/edge of pavement until vegetation is 75% established.

F. Copy of plat

A copy of the plat is attached as Exhibit 1-3.

G. Preliminary grading plan

A Preliminary grading plan is found on Exhibit 1-8. The ALTA/ACSM Land Title Survey drawing is also included as part of Exhibit 1-8 to show all existing features.

H. Professional Engineer Seal

A signed and dated Professional Engineer's seal is located on the cover of this report.

I. CD of drainage plan

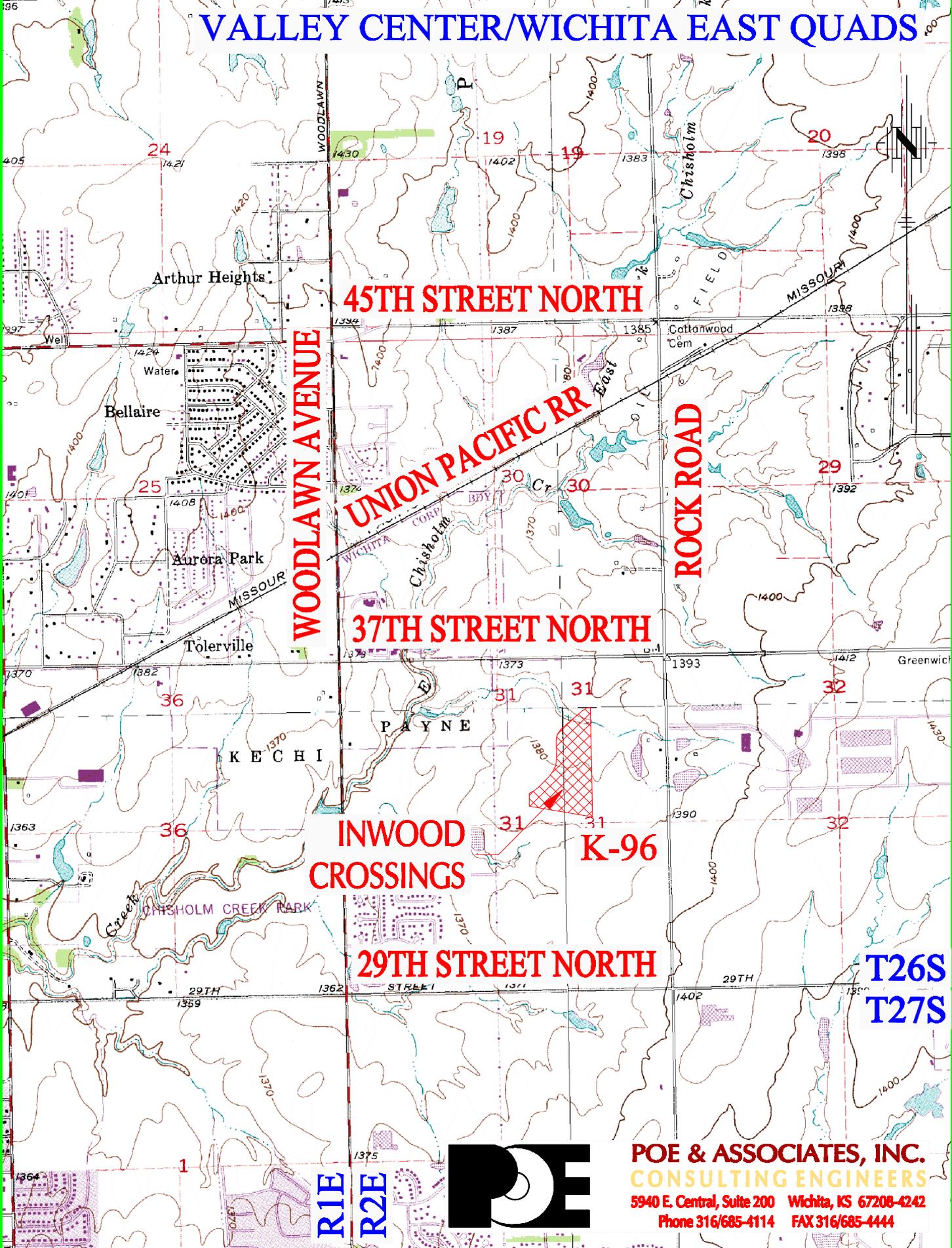
A CD of this report in full is attached herewith.

INWOOD CROSSINGS

EXHIBIT 1-1

VALLEY CENTER/WICHITA EAST QUADS

WOODLAWN AVENUE
45TH STREET NORTH
UNION PACIFIC RR
ROCK ROAD
37TH STREET NORTH
INWOOD CROSSINGS
K-96
29TH STREET NORTH



T26S
T27S

R1E
R2E



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INWOOD CROSSINGS

EXHIBIT 1-2

SOIL SURVEY OF SEDGWICK COUNTY, KANSAS

MAP LEGEND

-  Soil Survey Areas
-  Soil Map Units
-  Cities
-  Detailed Counties
-  Detailed States
-  Interstate Highways
-  Roads
-  Rails
-  Water
-  Hydrography
-  Oceans
-  Escarpment, bedrock
-  Escarpment, non-bedrock
-  Gulley
-  Levee
-  Slope
-  Blowout
-  Borrow Pit
-  Clay Spot
-  Depression, closed
-  Eroded Spot
-  Gravel Pit
-  Gravelly Spot
-  Gulley
-  Lava Flow
-  Landfill
-  Marsh or Swamp
-  Miscellaneous Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Slide or Slip
-  Sinkhole
-  Sodic Spot
-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Perennial Water
-  Wet Spot

MAP INFORMATION

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>

Coordinate System: UTM Zone 14

Soil Survey Area: Sedgwick County, Kansas
 Spatial Version of Data: 1
 Soil Map Compilation Scale: 1:24000

Map comprised of aerial images photographed on these dates:
 10/1/1991; 3/20/1996

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 Summary

Sedgwick County, Kansas

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
3858	Goessel silty clay, 1 to 3 percent slopes	214.3	12.0
3911	Rosehill silty clay, 1 to 3 percent slopes	1,075.3	60.1
4671	Irwin silty clay loam, 1 to 3 percent slopes	32.7	1.8
5893	Farnum loam, 1 to 3 percent slopes	220.9	12.4
5967	Tabler silty clay loam, 0 to 1 percent slopes	114.4	6.4
6051	Elandco silt loam, frequently flooded	86.6	4.8
6244	Elandco silt loam, rarely flooded	29.1	1.6
9999	Water	15.0	0.8

INWOOD CROSSINGS

EXHIBIT 1-3

KILLARNEY PLAZA SECOND ADDITION

AN ADDITION TO WICHITA, SEDGWICK COUNTY, KANSAS

FINAL PLAT OF

R = 206.50'
 $\Delta = 40^\circ 18' 12''$
 L = 145.26'
 Chd. = 142.28'
 Brq. = N.69°09'06"E.

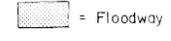
Lot	Block	City Datum	Mean Sea Level
3	I	192.5	1379.9
4	I	192.5	1379.9
6-II	I	195.0	1382.4

BENCH MARKS:

- B.M. #1 City Disc in S.W. cor. of RCB under Rock Road + 50' N of Centerline 34th St. N. Elev. = 200.18
- B.M. #2 City Disc in Retaining Wall at NE cor. of RCB under Rock Road + 100' S. of 35th St. N. Elev. = 198.29
- B.M. #3 "□" cut on top curb at W. end of N.W. Return at 36th St. N. & Inwood. Elev. = 183.53



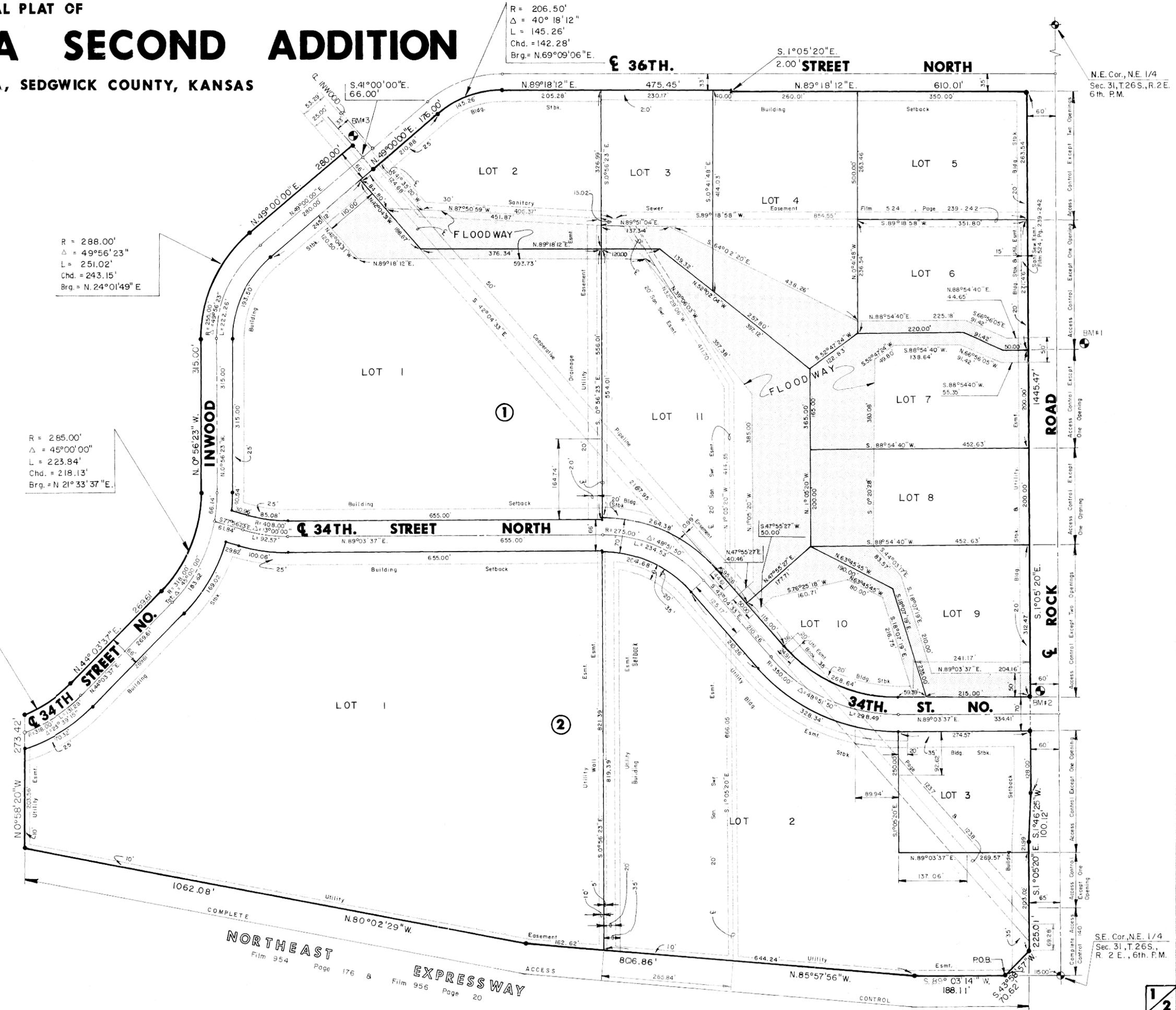
Scale : 1" = 100'



POB = Point of Beginning

R = 285.00'
 $\Delta = 49^\circ 56' 23''$
 L = 251.02'
 Chd. = 243.15'
 Brq. = N.24°01'49"E

R = 285.00'
 $\Delta = 23^\circ 39' 15''$
 L = 117.66
 Chd. = 116.83
 Brq. = N.55°53'14"E



N.E. Cor., N.E. 1/4
 Sec. 31, T.26S., R. 2 E.
 6th. P.M.

S.E. Cor., N.E. 1/4
 Sec. 31, T.26S.,
 R. 2 E., 6th. P.M.

NORTHEAST EXPRESS WAY
 Film 954 Page 176 & Film 956 Page 20

E 4-30 A



FINAL PLAT OF KILLARNEY PLAZA SECOND ADDITION

AN ADDITION TO WICHITA, SEDGWICK COUNTY, KANSAS

I, Kenneth H. Bengtson, a Civil Engineer and Licensed Land Surveyor in Kansas, do hereby certify that I have been in responsible charge of surveying and platting of "KILLARNEY PLAZA SECOND ADDITION" an addition to Wichita, Sedgwick County, Kansas, into Lots, Blocks, and Streets, the same being accurately set forth in the accompanying plat and described herein:

A tract of unplatted and platted land consisting of a portion of COMOTARA OFFICE CENTER, an addition to Wichita, Sedgwick County, Kansas, all within the Northeast Quarter, Section 31, Township 26 South, Range 2 East of the 6th P.M., Sedgwick County, Kansas, more particularly described as follows:

Commencing at the Southeast corner of said Northeast Quarter; thence S 89° 03' 14" N, 115.00 feet along the South line of said Northeast Quarter to the point of beginning; thence continuing along the said South line S 89° 03' 14" N, 188.11 feet; thence N 85° 57' 56" W, 806.86 feet; thence N 80° 02' 29" W, 1062.08 feet; thence N 00° 58' 20" W, 273.42 feet, to a point on a curve to the left; thence along said curve 117.66 feet, said curve having a central angle of 23° 39' 15", a radius of 285.00 feet, and a long chord of 116.83 feet, bearing N 55° 53' 14" E; thence N 44° 03' 37" E, 269.61 feet to a point on a curve to the left; thence along said curve 223.84 feet, said curve having a central angle of 45° 00' 00", a radius of 285.00 feet, and a long chord of 218.13 feet, bearing N 21° 33' 37" E; thence N 30° 56' 23" W, 315.00 feet to a point on a curve to the right; thence along said curve 251.02 feet, said curve having a central angle of 49° 56' 23", a radius of 288.00 feet, and a long chord of 243.15 feet, bearing N 24° 01' 49" E; thence N 49° 00' 00" E, 280.00 feet to a point on the West line of Inwood (street) as platted in 37TH ROCK ADDITION, an addition to Wichita, Sedgwick County, Kansas; thence S 41° 00' 00" E, 66.00 feet along the said West line to a point on the South line of 36th Street North as platted in said 37TH ROCK ADDITION; thence N 45° 00' 00" E, 176.00 feet along the South line of said 36th Street North to a point on a curve to the right; thence along said South line of 36th Street North and said curve 145.26 feet, said curve having a central angle of 40° 18' 12", a radius of 208.50 feet, and a long chord of 142.28 feet, bearing N 69° 09' 06" E; thence N 89° 18' 12" E, 475.45 feet along South line of 36th Street North to the Southeast corner of said 37TH ROCK ADDITION; thence S 01° 05' 20" E, 2.00 feet to the Northwest corner of Lot 3, Block 2 of COMOTARA OFFICE CENTER, an addition to Wichita, Sedgwick County, Kansas, said point also lying on the South line of 36th Street North as platted in said COMOTARA OFFICE CENTER; thence N 89° 18' 12" E, 610.01 feet along said South line of 36th Street North to a point lying 60.00 feet West of the East line of said Northeast Quarter said point also being the Northeast corner of said Lot 3, Block 2; thence S 01° 05' 20" E, 1445.47 feet along the East line of said COMOTARA OFFICE CENTER; thence continuing along the said East line of said addition, S 01° 46' 25" W, 180.12 feet; thence continuing along the said East line of said addition, S 01° 05' 20" E, 225.00 feet; thence S 43° 58' 57" W, 70.62 feet to the point of beginning.

All lots, blocks, streets, access control, easements, and building setbacks within the above described property are hereby vacated and replatted by virtue of K.S.A. 12-512(b).

I hereby certify that the details of this plat are correct to the best of my knowledge and belief this 21st day of June, 1988.

Kenneth H. Bengtson
Kenneth H. Bengtson, P.E., L.S. #322
Mid-Kansas Engineering Consultants, P.A.
3500 N. Rock Road, Building #800



Know all men by these presents that we the undersigned property owners of the land as above set forth in the Land Surveyor's Certificate, have caused the same to be surveyed and platted into lots, blocks and streets the same to be known as "KILLARNEY PLAZA SECOND ADDITION" an addition to Wichita, Sedgwick County, Kansas. The streets are hereby dedicated to and for the use of the public. Easements for the construction and maintenance of drainage and public utilities are hereby granted. The 5' wall easement is dedicated for the construction and maintenance of a wall, utilities may cross the wall easement. The floodway shall be the responsibility of the owners until such time as the City of Wichita elects to assume the responsibility for the maintenance and improvement of the drainage, provided further, that no structure shall be constructed on or within said floodway, nor shall any fill, change of grade, creation of channel or other work be carried on without the permission of the City Engineer. Minimum pad elevations for Lots 3, 4, and 6 through 11, Block 1 are as indicated on the face of the plat. All abutters rights of access to or from the South line of Killarney Plaza Second Addition are hereby dedicated to the City of Wichita. All abutters rights of access to or from the East line of KILLARNEY PLAZA SECOND ADDITION, are hereby dedicated to the City of Wichita, provided however that Lots 5 and 9, Block 1 shall have access to Rock Road at two locations each. Lots 6, 7, and 8, Block 1 and Lots 2 and 3, Block 2 shall have access at one location each. All access locations shall be determined by the City Engineer. The sanitary sewer easement is hereby granted for the construction and maintenance of sanitary sewer lines.

NORTHROCK REALTY PARTNERS
a Kansas general partnership

By: Virginia L. Adlan
Virginia L. ADLAN, President
KILLARNEY INVESTMENTS, INC.
managing partner

STATE OF KANSAS
SEDGWICK COUNTY

Be it remembered that on this 25th day of June, 1988, before me a Notary Public in and for said State and County, came Virginia L. Adlan, President of Killarney Investments, Inc. managing partner to Northrock Realty Partners, to be the same person who executed the foregoing instrument of writing and duly acknowledged the execution of the same. In testimony whereof I have hereunto set my hand and affixed my notarial seal the day and year above written.

Annette L. Woakley, Notary Public
Annette L. Woakley

My Appointment Expires: Aug. 10, 1991



This plat of "KILLARNEY PLAZA SECOND ADDITION" has been submitted to and approved by the Wichita-Sedgwick County Metropolitan Area Planning Commission, Wichita, Kansas.

Dated this 3rd day of March, 1988.

WICHITA-SEDGWICK COUNTY METROPOLITAN AREA PLANNING COMMISSION

Edon Parsons, Chairman
Marvin S. Krout, Secretary

This plat approved and all dedications shown hereon, if any, accepted by the City Council of the City of Wichita, Kansas, this 17th day of July, 1988.

Sheldon Kamen, Mayor
Ed E. Rea, Deputy City Clerk

Entered on transfer record this 17th day of July, 1988.

Ronald G. Miller, County Clerk
Ronald G. Miller

STATE OF KANSAS
SEDGWICK COUNTY

This is to certify that this instrument was filed for record in the Register of Deeds office this 19th day of JULY, 1988, at 11:00 A.M.

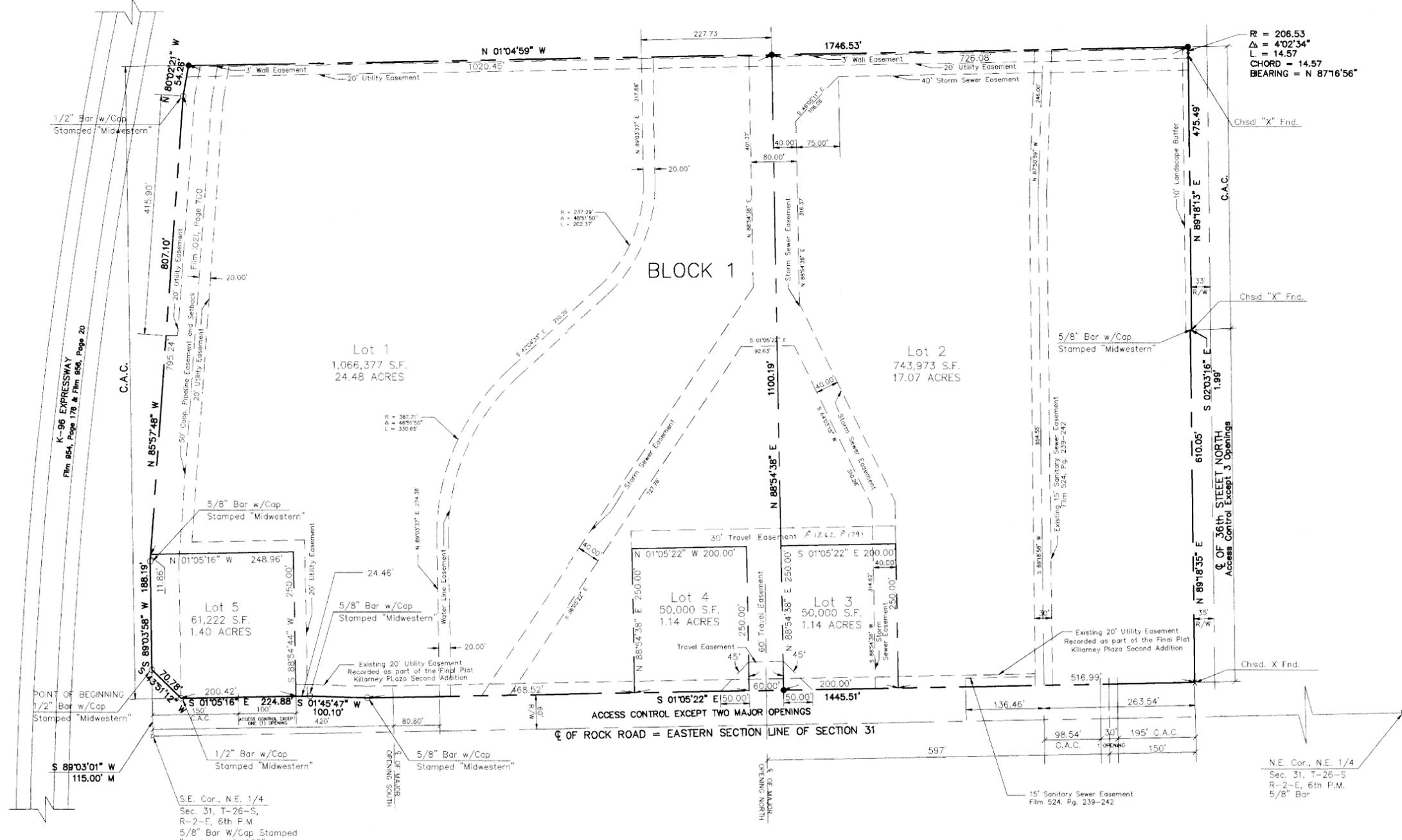
Pat Kettler, Register of Deeds

Ed Rosa, Deputy
Ed Rosa - PHILL. H. BROWN



#951838

20.00
Cl



R = 206.53
 Δ = 4°02'34"
 L = 14.57
 CHORD = 14.57
 BEARING = N 87°16'56"

I, Leon D. Osbourn, a Civil Engineer and Licensed Land Surveyor in Kansas, do hereby certify that I have been in responsible charge of surveying and plotting of "COMOTARA POWER CENTER" an addition to Wichita, Sedgwick County, Kansas, into Lots and Blocks, the same being accurately set forth in the accompanying plat and described herein:

A tract of platted land consisting of a portion of "KILLARNEY PLAZA SECOND ADDITION", an addition to Wichita, Sedgwick County, Kansas, all within the Northeast Quarter, Section 31, Township 26 South, Range 2 East of the 6th P.M., Sedgwick County, Kansas, more particularly described as follows:

Commencing at the Southeast corner of said Northeast Quarter, thence S 89° 03' 01" W, 115.00 feet on the South line of said Northeast Quarter to the POINT OF BEGINNING of the tract to be described, said point being on the North Right-of-Way of K-96 Expressway, thence continuing on said North Right-of-Way line of Northeast Expressway S 89° 03' 53" W, 188.19 feet; thence continuing on said North Right-of-Way line N 85° 57' 48" W, 807.10 feet; thence N 80° 02' 21" W, 54.26 feet; thence N 01° 04' 59" W, 1746.53 feet to a point on the South Right-of-Way line of 36th Street North; thence on a curve to the right having a radius of 206.53 feet, a long chord bearing of N 87° 16' 56" E and a long chord distance of 14.57 feet, an arc distance of 14.57 feet; thence continuing on said South Right-of-Way line, N 89° 18' 13" E, 475.49 feet; thence S 02° 03' 16" E, 1.99 feet; thence continuing on said South Right-of-Way line N 89° 18' 35" E, 610.05 feet to the Point of Intersection of said South Right-of-Way line with the West Right-of-Way line of Rock Road; thence S 01° 05' 22" E on said West Right-of-Way line, 1445.51 feet; thence continuing on said West Right-of-Way line S 01° 05' 16" E, 100.10 feet; thence continuing on said West Right-of-Way line S 01° 05' 16" E, 224.88 feet; thence S 43° 51' 12" W, 70.78 feet to the POINT OF BEGINNING. Contains 45.27 acres more or less subject to easements, reservations and restrictions of record.

All lots, blocks, streets, access control, easements and building setbacks within the above described property are hereby vacated and replatted by virtue of K.S.A. 12-512(b).

I hereby certify that the details of this plat are correct to the best of my knowledge and belief this 18th day of July, 1992.

Leon D. Osbourn
 Leon D. Osbourn, P.E., R.L.S. #800
 Kaw Valley Engineering, Inc.
 2319 North Jackson
 P.O. Box 1304
 Junction City, Kansas 66441

Know all men by these presents that we the undersigned property owners of the land as above set forth in the Land Surveyor's Certificate, have caused the same to be surveyed and platted into lots and blocks the same to be known as "COMOTARA POWER CENTER" an addition to Wichita, Sedgwick County, Kansas. The streets are hereby dedicated to and for the use of the public. Easements for the construction and maintenance of drainage and public utilities as indicated on the accompanying plat are hereby granted. The 3' wall easement is dedicated for the construction and maintenance of a wall. Utilities may cross the wall, easement. All abutters rights of access to or from the South line of "COMOTARA POWER CENTER" are hereby dedicated to the City of Wichita. All access locations are as indicated on the accompanying plat or as determined by the City Engineer.

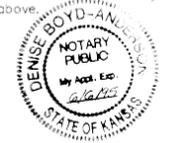
Jud W. Heflin
 Jud W. Heflin
 Assistant Vice President, Wal-Mart Stores Inc.

David C. Nesbitt
 David C. Nesbitt
 Partner, Northrock Realty Partners

State of Kansas } SS
 Sedgwick County }

Be it remembered that on this 18th day of July, 1992, before me, a Notary Public in and for said State and County, came Jud W. Heflin, Assistant Vice President, Wal-Mart Stores Inc., to be the same person who executed the foregoing instrument of writing and duly acknowledged the execution of the same. In testimony whereof I have hereunto set my hand and affixed my notary seal the day and year above.

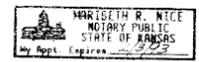
Denise Boyd Anderson
 Notary Public Denise Boyd Anderson
 My Appointment Expires June 9, 1995



State of Kansas } SS
 Sedgwick County }

Be it remembered that on this 13th day of July, 1992, before me, a Notary Public in and for said State and County, came David C. Nesbitt, a managing partner in Northrock Realty Partners, to be the same person who executed the foregoing instrument of writing and duly acknowledged the execution of the same. In testimony whereof I have hereunto set my hand and affixed my notary seal the day and year above.

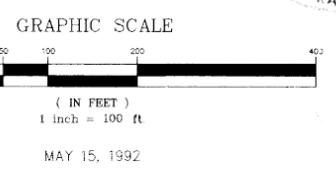
Maribeth R. Niece
 Notary Public
 My Appointment Expires 2/3/93



LEGEND

- Δ SECTION CORNER FOUND
- X CHSD. "X" FOUND IN CONCRETE
- MONUMENT SET, 2" I.D. PIPE FILLED W/CONCRETE W/ALUMINUM SURVEY CAP STAMPED "KAW VALLEY ENGINEERING"
- MONUMENT FOUND
- C.A.C. COMPLETE ACCESS CONTROL

- NOTES:
1. All setback requirements shall be in conformance with Commercial Community Unit Plan DP-195 or file with the Metropolitan Area Planning Department
 2. Regarding 3' wall easement, any wall construction that will cross sanitary sewer or drainage easement shall be approved by the City Engineer prior to construction.



This plat of "COMOTARA POWER CENTER" has been submitted to and approved by the Wichita-Sedgwick County Metropolitan Area Planning Commission, Wichita, Kansas.

Dated this 18th day of JUNE, 1992.

WICHITA-SEDGWICK COUNTY METROPOLITAN AREA PLANNING COMMISSION

Christopher Papabe Chairman
Marvin S. Wright Secretary



This plat approved and all dedications shown hereon, if any, accepted by the City Council of the City of Wichita, Kansas, this 31 day of July, 1992.

Bob Knight Mayor
Pat Burnett Deputy City Clerk

Entered on transfer record the 13 day of August, 1992.
Don Wright County Clerk

STATE OF KANSAS } SS
 SEDGWICK COUNTY }

This is to certify that this instrument was filed for record in the Register of Deeds office this 14th day of August, 1992.

Pat Kettler Register of Deeds
Ed Reso Deputy



FINAL PLAT
 of
COMOTARA POWER CENTER
 A REPLAT OF LOTS 3 THRU 11 AND
 A PORTION OF LOTS 1 AND 2, BLOCK 1 AND
 LOTS 2 AND 3 AND A PORTION OF LOT 1, BLOCK 2
 AND A PORTION OF 34th STREET NORTH RIGHT OF WAY
 KILLARNEY PLAZA SECOND ADDITION
 AN ADDITION TO WICHITA, SEDGWICK COUNTY, KANSAS

#1228680

KILLARNEY PLAZA SECOND ADDITION

I, LEON D. OSBOURN, A CIVIL ENGINEER AND LICENSED LAND SURVEYOR IN KANSAS, DO HEREBY CERTIFY THAT I HAVE BEEN IN RESPONSIBLE CHARGE OF SURVEYING AND PLATTING OF "COMOTARA POWER CENTER 2ND ADDITION" AN ADDITION TO WICHITA, SEDGWICK COUNTY, KANSAS, IN LOTS AND BLOCKS, THE SAME BEING ACCURATELY SET FORTH IN THE ACCOMPANYING PLAT AND DESCRIBED HEREIN:

A REPLAT OF LOT 1, LOT 2 AND LOT 3, BLOCK 1, COMOTARA POWER CENTER, AN ADDITION TO WICHITA, SEDGWICK COUNTY, KANSAS, AND MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF THE NORTHEAST QUARTER OF SECTION 31, TOWNSHIP 26 SOUTH, RANGE 2 EAST OF THE 6TH P.M., SEDGWICK COUNTY, KANSAS; THENCE S 89°03'01" W A DISTANCE OF 115.00 FEET TO THE SOUTH LINE OF SAID NORTHEAST QUARTER, SAID POINT BEING ON THE NORTH RIGHT-OF-WAY OF K-96 EXPRESSWAY; THENCE CONTINUING ON SAID NORTH RIGHT-OF-WAY LINE OF NORTHEAST EXPRESSWAY S 89°03'58" W A DISTANCE OF 188.19 FEET; THENCE CONTINUING ON SAID NORTH RIGHT-OF-WAY LINE N 85°57'48" W A DISTANCE OF 11.86 FEET TO THE POINT OF BEGINNING OF THE TRACT TO BE DESCRIBED; THENCE CONTINUING ON SAID NORTH RIGHT-OF-WAY LINE N 85°57'48" W A DISTANCE OF 795.24 FEET; THENCE N 80°02'21" W A DISTANCE OF 54.26 FEET; THENCE N 01°04'59" W A DISTANCE OF 1746.53 FEET TO A POINT ON THE SOUTH RIGHT-OF-WAY LINE OF 36TH STREET NORTH; THENCE ON A CURVE TO THE RIGHT HAVING A RADIUS OF 206.53 FEET, A LONG CHORD BEARING OF N 87°16'56" E A LONG CHORD DISTANCE OF 14.57 FEET, AN ARC DISTANCE OF 14.57 FEET; THENCE CONTINUING ON SAID SOUTH RIGHT-OF-WAY LINE, N 89°18'13" E A DISTANCE OF 475.49 FEET; THENCE S 02°03'16" E A DISTANCE OF 1.99 FEET; THENCE CONTINUING ON SAID SOUTH RIGHT-OF-WAY LINE N 89°18'35" E A DISTANCE OF 610.05 FEET TO THE POINT OF INTERSECTION OF SAID SOUTH RIGHT-OF-WAY LINE WITH THE WEST RIGHT-OF-WAY LINE OF ROCK ROAD; THENCE S 01°05'22" E ON SAID WEST RIGHT-OF-WAY LINE A DISTANCE OF 776.99 FEET; THENCE S 01°05'22" E A DISTANCE OF 200.00 FEET; THENCE S 01°05'22" E A DISTANCE OF 200.00 FEET; THENCE N 88°54'38" E A DISTANCE OF 250.00 FEET TO A POINT ON SAID WEST RIGHT-OF-WAY LINE; THENCE CONTINUING ON SAID WEST RIGHT-OF-WAY LINE S 01°05'22" E A DISTANCE OF 468.52 FEET; THENCE CONTINUING ON SAID WEST RIGHT-OF-WAY LINE S 01°05'22" E A DISTANCE OF 100.10 FEET; THENCE CONTINUING ON SAID WEST RIGHT-OF-WAY LINE S 01°05'22" E A DISTANCE OF 24.46 FEET; THENCE S 88°54'44" W A DISTANCE OF 250.00 FEET; THENCE S 01°05'16" E A DISTANCE OF 248.96 FEET TO THE POINT OF BEGINNING. CONTAINS 42.71 ACRES MORE OR LESS, SUBJECT TO EASEMENTS, RESERVATIONS AND RESTRICTIONS OF RECORD. END OF DESCRIPTION.

ALL LOTS, BLOCKS, STREETS, ACCESS CONTROL, EASEMENTS AND BUILDING SETBACKS WITHIN THE ABOVE DESCRIBED PROPERTY ARE HEREBY VACATED AND REPLATED BY VIRTUE OF K.S.A. 12-512(b).

I HEREBY CERTIFY THAT THE DETAILS OF THIS PLAT ARE CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF THIS 17th DAY OF July 1995.

Leon D. Osbourn
KAW VALLEY ENGINEERING, INC.
2319 N. JACKSON
P.O. BOX 1304
JUNCTION CITY, KS 66441

KNOW ALL MEN BY THESE PRESENTS THAT WE, THE UNDERSIGNED PROPERTY OWNERS OF THE LAND AS ABOVE SET FORTH IN THE CIVIL ENGINEER'S AND REGISTERED LAND SURVEYOR'S CERTIFICATE, HAVE CAUSED THE SAME TO BE SURVEYED AND PLATTED LAND INTO LOTS AND BLOCKS THE SAME TO BE KNOWN AS "COMOTARA POWER CENTER 2ND ADDITION" AN ADDITION TO THE CITY OF WICHITA, SEDGWICK COUNTY, KANSAS. THE STREETS ARE HEREBY DEDICATED TO AND FOR THE USE OF THE PUBLIC. EASEMENTS FOR THE CONSTRUCTION AND MAINTENANCE OF DRAINAGE AND PUBLIC UTILITIES AS INDICATED ON THE ACCOMPANYING PLAT ARE HEREBY GRANTED. RESERVE A IS PLATTED FOR ENTRY MONUMENTS, SIGNS, LANDSCAPING, SIDEWALKS, ACCESS AND SPRINKLERS. THE RESERVE SHALL BE OWNED AND MAINTAINED BY LOT 2. THE WALL EASEMENT IS DEDICATED FOR THE CONSTRUCTION AND MAINTENANCE FOR THE WALL UTILITIES MAY CROSS THE WALL EASEMENT. ALL ADJUTERS RIGHTS OF ACCESS TO OR FROM THE SOUTH LINE OF "COMOTARA POWER CENTER 2ND ADDITION" ARE HEREBY DEDICATED TO THE CITY OF WICHITA. ALL ACCESS LOCATIONS ARE AS INDICATED ON THE ACCOMPANYING PLAT OR AS DETERMINED BY THE CITY ENGINEER.

DATE SIGNED: July 18, 1995
David C. Nesbitt
NORTHROCK REALTY PARTNERS
DAVID C. NESBITT, PARTNER

DATE SIGNED: 7-11, 1995
Michael S. Goebel
STAR PROPERTIES, LLC
MICHAEL S. GOEBEL, MANAGING PARTNER

DATE SIGNED: 7-18, 1995
Wayne Wong
PROSPERITY ENTERPRISES, LLC
WAYNE WONG, MEMBER

KNOW ALL MEN BY THESE PRESENTS THAT WE, BANK IV KANSAS, NATIONAL ASSOCIATION, AS MORTGAGE HOLDER OF A PORTION OF THE LAND AS ABOVE SET FORTH IN THE CIVIL ENGINEER'S AND REGISTERED LAND SURVEYOR'S CERTIFICATE, DO HEREBY CONSENT TO THE PLATTING OF THE SAME TO BE KNOWN AS "COMOTARA POWER CENTER 2ND ADDITION" AN ADDITION TO THE CITY OF WICHITA, SEDGWICK COUNTY, KANSAS.

DATE SIGNED: 7-18, 1995
John Frazee
BANK IV KANSAS, NATIONAL ASSOCIATION
JOHN FRAZEE, VICE PRESIDENT

NOTARY CERTIFICATE
STATE OF KANSAS
COUNTY OF SEDGWICK
THIS INSTRUMENT WAS ACKNOWLEDGED BEFORE ME ON July 18, 1995 BY JOHN FRAZEE AS VICE PRES. OF BANK IV, KANSAS, NATIONAL ASSOCIATION ON BEHALF OF BANK IV KANSAS, NATIONAL ASSOCIATION.
SHEILA L. THURSH
Notary Public
My Commission Expires: 9-22-95

NOTARY CERTIFICATE
STATE OF KANSAS
COUNTY OF SEDGWICK
THIS INSTRUMENT WAS ACKNOWLEDGED BEFORE ME ON July 18, 1995 BY DAVID C. NESBITT AS PARTNER OF NORTHROCK REALTY PARTNERS ON BEHALF OF NORTHROCK REALTY PARTNERS.
JAYE ANN BUEHLER
Notary Public
My Commission Expires: 12-1-97

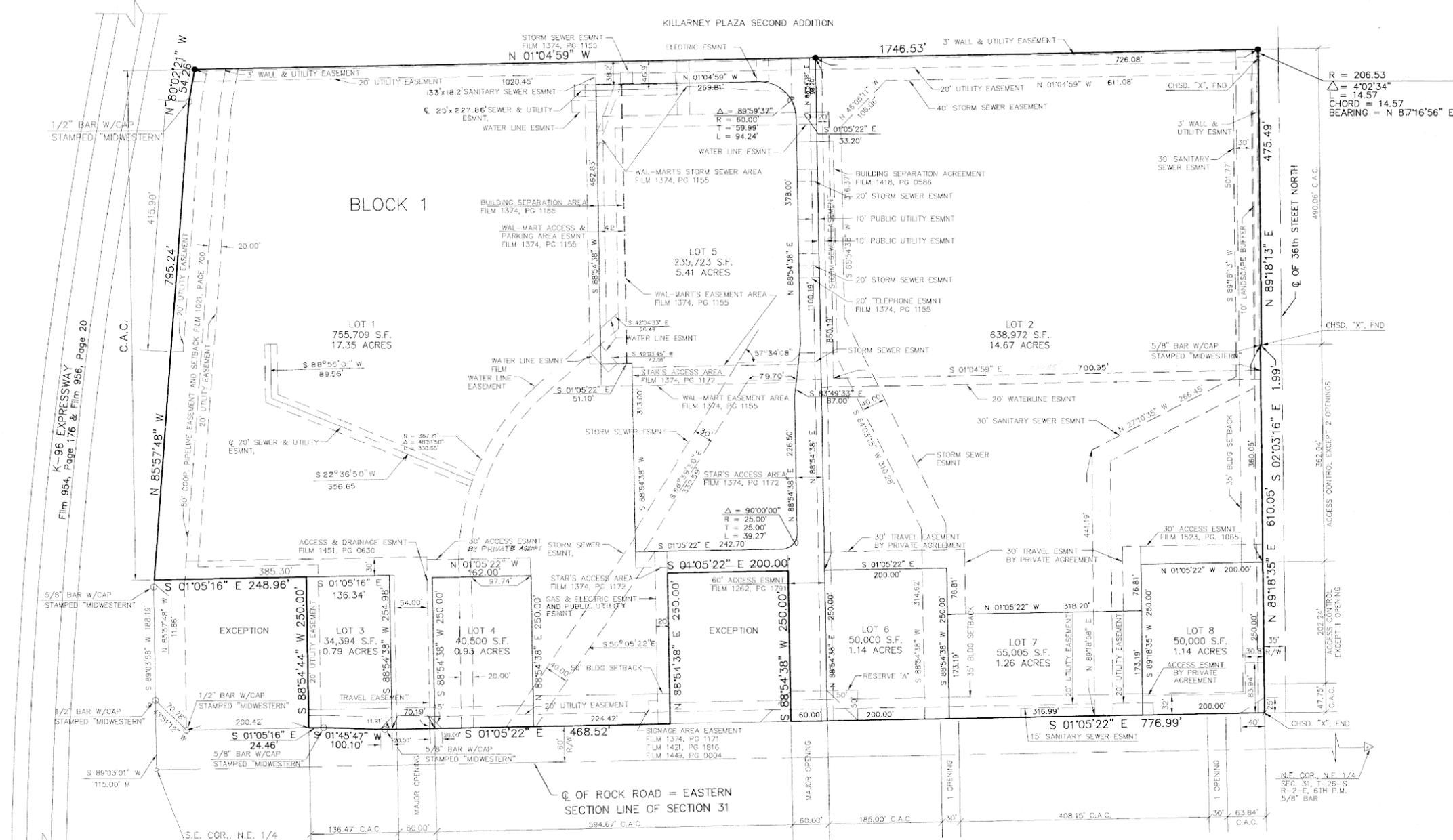
NOTARY CERTIFICATE
STATE OF KANSAS
COUNTY OF SEDGWICK
THIS INSTRUMENT WAS ACKNOWLEDGED BEFORE ME ON July 18, 1995 BY WAYNE WONG AS MEMBER OF PROSPERITY ENTERPRISES, LLC ON BEHALF OF PROSPERITY ENTERPRISES, LLC.
VIRGINIA L. ASLAK
Notary Public
My Commission Expires: 12-1-97

FINAL PLAT OF

COMOTARA POWER CENTER 2ND ADDITION

TO THE CITY OF WICHITA, SEDGWICK COUNTY, KANSAS
A REPLAT OF LOT 1, LOT 2, AND LOT 3 OF BLOCK 1 COMOTARA POWER CENTER AN ADDITION TO SEDGWICK COUNTY, KANSAS

KAW VALLEY ENGINEERING, INC
JUNCTION CITY, KANSAS 66441
PROJECT NO. 95-1683



PLANNING COMMISSION CERTIFICATE
STATE OF KANSAS
CITY OF WICHITA
THIS PLAT OF "COMOTARA POWER CENTER 2ND ADDITION", HAS BEEN SUBMITTED TO AND APPROVED BY THE WICHITA-SEDGWICK COUNTY METROPOLITAN AREA PLANNING COMMISSION, WICHITA, KANSAS.
DATED THIS 24th DAY OF June 1995
John W. McKay, Jr. CHAIRMAN
Marvin K. Krout SECRETARY

REGISTER OF DEEDS CERTIFICATE
STATE OF KANSAS
COUNTY OF SEDGWICK
THIS IS TO CERTIFY THAT THIS INSTRUMENT WAS FILED FOR RECORD IN THE REGISTER OF DEEDS OFFICE AT 10:30 A.M. ON THIS 9th DAY OF August 1995
Pat Kettler REGISTER OF DEEDS
Ed Resa DEPUTY

NOTARY CERTIFICATE
STATE OF ARKANSAS
COUNTY OF BENTON
THIS INSTRUMENT WAS ACKNOWLEDGED BEFORE ME ON 7-14-95 BY ANDREW SCHMERDTEGER AS DIRECTOR OF DEVELOPMENT FOR WAL-MART STORES, INC. ON BEHALF OF WAL-MART STORES, INC.
John Scott Greep
Notary Public
My Commission Expires: 10-20-95

NOTARY CERTIFICATE
STATE OF KANSAS
COUNTY OF SEDGWICK
THIS INSTRUMENT WAS ACKNOWLEDGED BEFORE ME ON July 18, 1995 BY THOMAS W. BOYD AS MEMBER OF BOX DEVELOPMENT, LLC ON BEHALF OF BOX DEVELOPMENT, LLC.
Teresa J. Roushkolb
Notary Public - State of Kansas
My Comm. Expires: 9/30/97

GOVERNING BODY CERTIFICATE
STATE OF KANSAS
CITY OF WICHITA
THIS PLAT IS APPROVED AND ALL DEDICATIONS SHOWN THEREON, IF ANY, ACCEPTED BY THE CITY COUNCIL OF THE CITY OF WICHITA, KANSAS.
DATED THIS 31st DAY OF August 1995
Bob Knight MAYOR
Pat Burnett DEPUTY CITY CLERK
Entered on Transfer Record this 9th day of August 1995
Susan E. Crockett-Spoon COUNTY CLERK

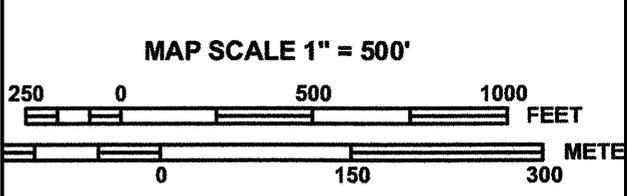
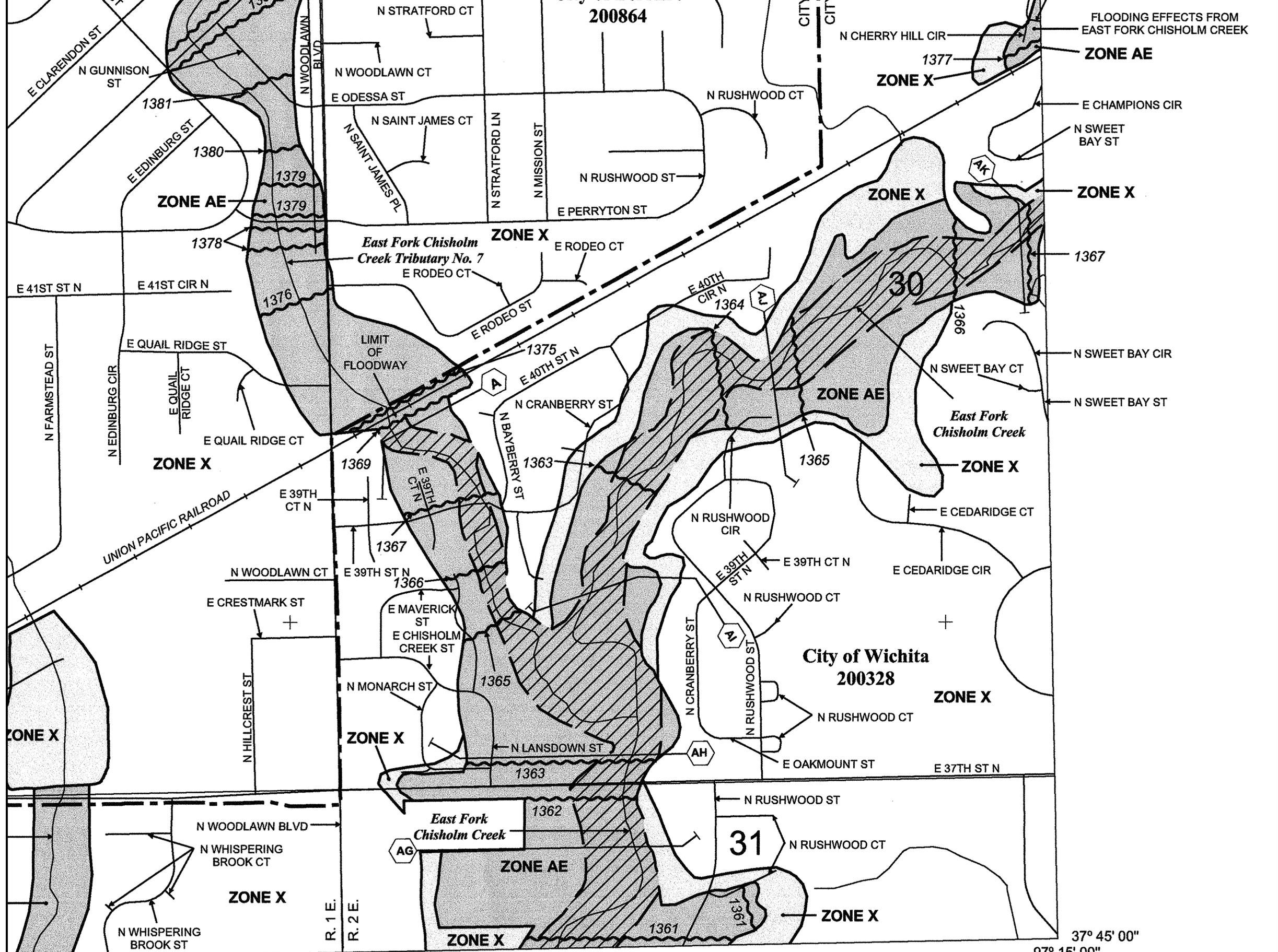
NOTARY CERTIFICATE
STATE OF OKLAHOMA
COUNTY OF OKLAHOMA
THIS INSTRUMENT WAS ACKNOWLEDGED BEFORE ME ON 7-11-95 BY W.H. BRAUM AS PRESIDENT OF RETAIL BUILDINGS, INC. ON BEHALF OF RETAIL BUILDINGS, INC.
Glenna Fuller
Notary Public
My Commission Expires: 12-17-98

LEGEND
A SECTION CORNER FOUND
● MONUMENT SET, 2" I.D. PIPE FILLED W/CONCRETE W/ALUMINUM SURVEY CAP STAMPED "KAW VALLEY ENGINEERING"
○ MONUMENT FOUND
C.A.C. COMPLETE ACCESS CONTROL
NOTES:
1. ALL SETBACK REQUIREMENTS SHALL BE IN CONFORMANCE WITH COMMERCIAL COMMUNITY UNIT PLAN DP-195 ON FILE WITH THE METROPOLITAN AREA PLANNING DEPARTMENT.
2. REGARDING 3' WALL EASEMENT, ANY WALL CONSTRUCTION THAT WILL CROSS SANITARY SEWER OR DRAINAGE EASEMENTS SHALL BE APPROVED BY THE CITY ENGINEER PRIOR TO CONSTRUCTION.
3. LOT 2 IS SUBJECT TO A GRANT OF DRAINAGE AGREEMENT RECORDED ON FILM 1523, PAGE 1064.
THE BASIS OF BEARINGS OF THIS SURVEY ARE THE SAME AS THE FINAL PLAT OF COMOTARA POWER CENTER AN ADDITION TO WICHITA, SEDGWICK COUNTY, KANSAS.
GRAPHIC SCALE
20.00 inch = 100 feet
KANSAS

#1469723

INWOOD CROSSINGS

EXHIBIT 1-4



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0219E

FIRM
FLOOD INSURANCE RATE MAP
SEDGWICK COUNTY, KANSAS
AND INCORPORATED AREAS

PANEL 219 OF 700
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BEL AIRE, CITY OF	200864	0219	E
SEDGWICK COUNTY	200321	0219	E
WICHITA, CITY OF	200328	0219	E

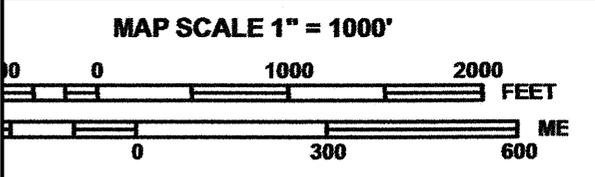
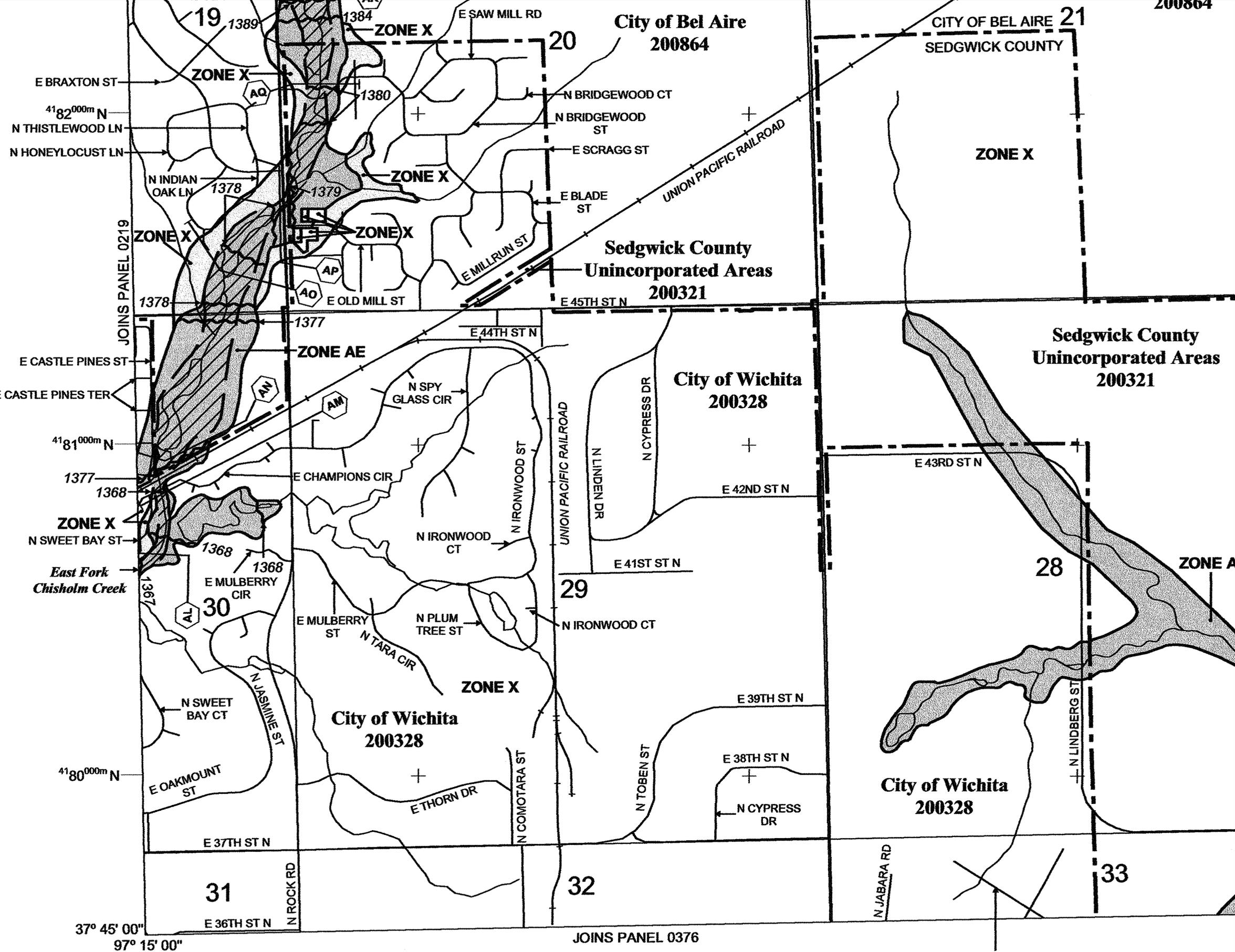
Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.



MAP NUMBER
20173C0219E
EFFECTIVE DATE
FEBRUARY 2, 2007
 Federal Emergency Management Agency

JOINS PANEL 0357

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



PANEL 0240E

FIRM
FLOOD INSURANCE RATE MAP
SEDGWICK COUNTY, KANSAS
AND INCORPORATED AREAS

PANEL 240 OF 700
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BEL AIRE, CITY OF	200864	0240	E
KECHI, CITY OF	200429	0240	E
SEDGWICK COUNTY	200321	0240	E
WICHITA, CITY OF	200328	0240	E

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

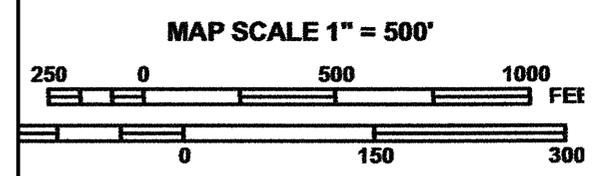
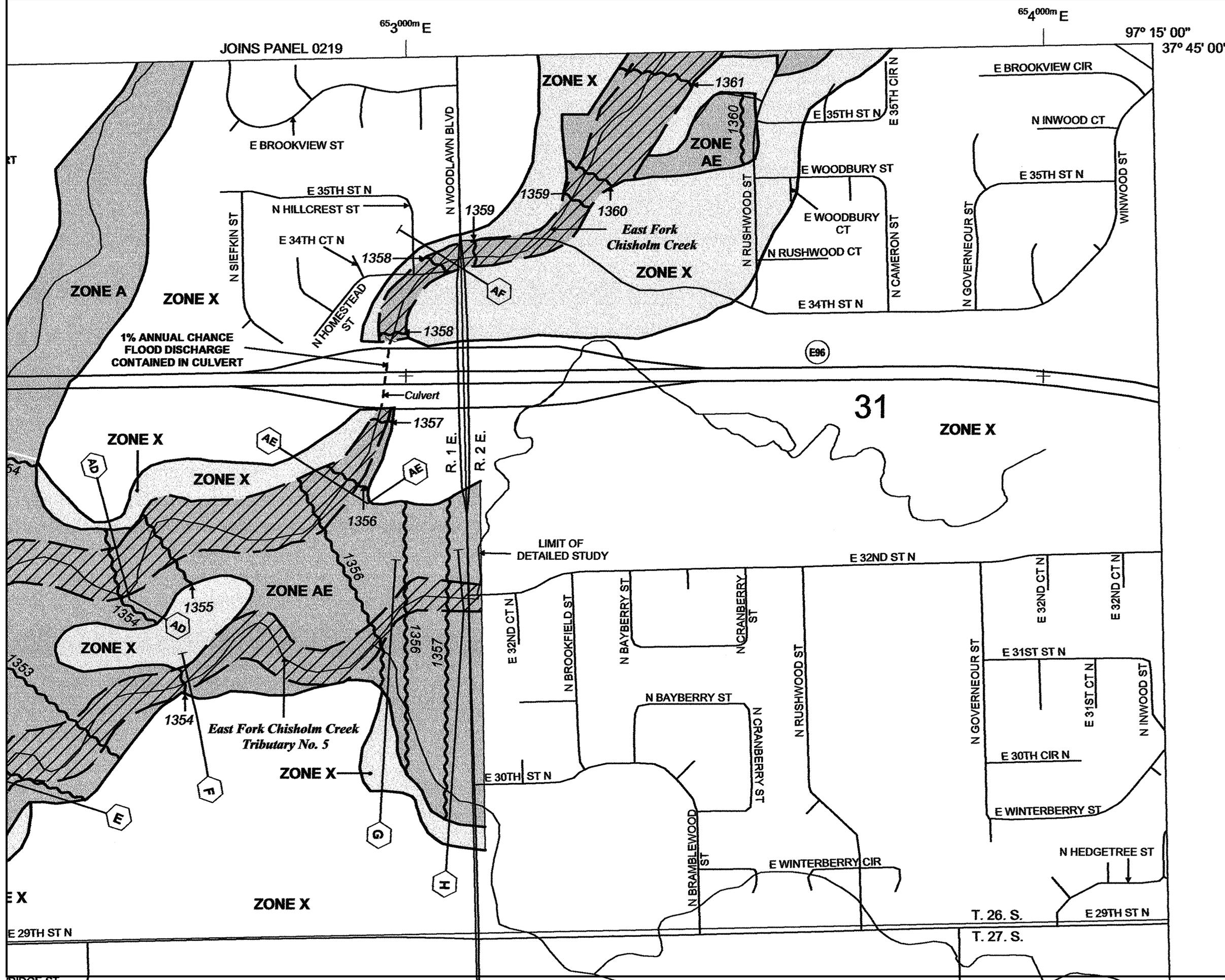


MAP NUMBER
20173C0240E

EFFECTIVE DATE
FEBRUARY 2, 2007

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



PANEL 0357E

FIRM
FLOOD INSURANCE RATE MAP

**SEDGWICK COUNTY,
 KANSAS
 AND INCORPORATED AREAS**

PANEL 357 OF 700

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
WICHITA, CITY OF	200328	0357	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.



**MAP NUMBER
 20173C0357E**

**EFFECTIVE DATE
 FEBRUARY 2, 2007**

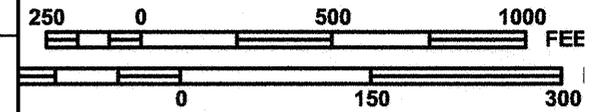
Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

65,000m E

JOINS PANEL 0240

MAP SCALE 1" = 500'



97° 15' 00"
37° 45' 00"

E 36TH ST N

N INWOOD ST

N ROCK RD

ZONE X

ZONE X

4179,000m N

E96

31

32

E96

E 32ND ST N

E 32ND ST N

N CYPRESS ST

E WINTERBERRY ST

E HEDGETREE ST

City of Wichita
200328

N PENSTEMON ST

E SHADOWRIDGE CIR

T. 26 S.

E 29TH ST N

T. 27 S.

E SHADOWRIDGE ST

PANEL 0376E

FIRM

FLOOD INSURANCE RATE MAP

SEDGWICK COUNTY, KANSAS AND INCORPORATED AREAS

PANEL 376 OF 700

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
WICHITA, CITY OF	200328	0376	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.



MAP NUMBER
20173C0376E

EFFECTIVE DATE
FEBRUARY 2, 2007

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

INWOOD CROSSINGS

EXHIBIT 1-5

VALLEY CENTER/WICHITA EAST QUADS

GREENWICH

WEBB ROAD

ROCK ROAD

WOODLAWN AVENUE

OLIVER STREET

HILLSIDE AVENUE

UNION PACIFIC RR

45TH STREET NORTH

37TH STREET NORTH

29TH STREET NORTH

21ST STREET NORTH

**TOTAL BASIN AREA =
214.350 ACRES**

**INWOOD
CROSSINGS**

**R2E
R1E**

T26S

T27S



POE & ASSOCIATES, INC.

CONSULTING ENGINEERS

5940 E. Central, Suite 200 Wichita, KS 67208-4242

Phone 316/685-4114 FAX 316/685-4444

INWOOD CROSSINGS

EXHIBIT 1-6

Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)								Hydrograph description
			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	
1	SCS Runoff	-----	120.92	152.09	-----	193.48	224.46	265.71	296.61	327.50	Off-Site North
2	SCS Runoff	-----	11.69	16.75	-----	23.78	29.21	36.51	42.00	47.49	Existing Site Northeast
3	Combine	1, 2	128.01	162.61	-----	208.83	243.53	289.81	324.52	359.22	Existing Northeast and Off-site
4	Reservoir	3	70.09	91.27	-----	112.14	126.20	138.42	146.89	166.17	Existing North Pond
5	SCS Runoff	-----	10.37	14.91	-----	21.18	25.96	32.37	37.18	41.99	Existing Site South
6	SCS Runoff	-----	11.93	16.84	-----	23.56	28.65	35.44	40.54	45.62	Existing Site Northwest
7	SCS Runoff	-----	1.907	2.519	-----	3.331	3.937	4.740	5.339	5.936	NE1
8	SCS Runoff	-----	2.199	2.905	-----	3.842	4.540	5.466	6.157	6.846	NE2
9	SCS Runoff	-----	2.435	3.217	-----	4.254	5.028	6.053	6.819	7.581	NE3
10	SCS Runoff	-----	1.135	1.500	-----	1.984	2.344	2.823	3.179	3.535	NE4
11	SCS Runoff	-----	1.225	1.619	-----	2.141	2.530	3.046	3.431	3.815	NE5
12	SCS Runoff	-----	0.803	1.060	-----	1.402	1.657	1.995	2.248	2.499	NE6
13	SCS Runoff	-----	3.087	4.078	-----	5.393	6.374	7.674	8.644	9.611	NE7
14	SCS Runoff	-----	1.365	1.803	-----	2.384	2.818	3.393	3.822	4.249	NE8
15	SCS Runoff	-----	1.333	1.761	-----	2.329	2.753	3.314	3.734	4.151	NE9
16	SCS Runoff	-----	2.997	3.959	-----	5.236	6.188	7.451	8.393	9.331	NE10
17	SCS Runoff	-----	4.468	6.427	-----	9.129	11.19	13.95	16.02	18.09	NE11
18	SCS Runoff	-----	22.89	30.88	-----	41.56	49.54	60.14	68.05	75.94	Proposed Site Northeast
19	Combine	1, 18	143.82	182.97	-----	235.04	274.00	325.85	364.67	403.43	Proposed Site Northeast & Off-site
20	Reservoir	19	78.50	98.59	-----	120.54	132.61	144.02	158.29	190.55	to Existing North Pond
21	Reservoir	19	70.35	91.26	-----	111.84	125.74	137.38	145.20	159.78	Revised North Pond
22	SCS Runoff	-----	8.259	10.91	-----	14.43	17.05	20.53	23.13	25.71	S1
23	SCS Runoff	-----	8.983	11.87	-----	15.69	18.55	22.33	25.15	27.97	S2
24	SCS Runoff	-----	17.24	22.78	-----	30.12	35.60	42.86	48.28	53.68	Proposed Site South
25	Reservoir	24	9.213	11.15	-----	13.19	18.39	26.07	31.65	36.71	Proposed South Pond
26	SCS Runoff	-----	3.732	4.930	-----	6.521	7.706	9.278	10.45	11.62	NW1
27	SCS Runoff	-----	1.534	2.138	-----	2.957	3.575	4.399	5.015	5.629	NW2
28	SCS Runoff	-----	6.520	9.046	-----	12.47	15.04	18.48	21.04	23.60	NW3
29	SCS Runoff	-----	12.32	16.84	-----	22.92	27.49	33.55	38.08	42.59	Proposed Site Northwest

INWOOD CROSSINGS

EXHIBIT 1-7

DRAINAGE PLAN FOR INWOOD CROSSINGS WICHITA, SEDGWICK COUNTY, KANSAS

CALCULATION NOTES

- Determination of Q's was made using the SCS method.
- Curve Numbers weighted based on hydrologic soil groups.

Existing Conditions (24-Hour Storm)							
Site	Area	CN	2-Year	5-Year	10-Year	25-Year	100-Year
Off-Site	45.000	98.0	152.09	193.48	224.46	265.71	327.50
NE	11.121	84.0	16.75	23.78	29.21	36.51	47.49
Off-Site & NE	56.121	95.2	162.61	208.83	243.53	289.81	359.22
Existing NE Pond	56.121	95.2	91.27	112.14	126.20	138.42	166.17
S	6.665	83.3	14.91	21.18	25.96	32.37	41.99
NW	7.060	85.6	16.84	23.56	28.65	35.44	45.62

Developed Conditions (24-Hour Storm)							
Site	Area	CN	2-Year	5-Year	10-Year	25-Year	100-Year
Off-Site	45.000	98.0	152.09	193.48	224.46	265.71	327.50
NE	11.093	89.9	30.88	41.56	49.54	60.14	75.94
Off-Site & NE	56.093	96.4	182.97	235.04	274.00	325.85	403.43
Existing NE Pond	56.093	96.4	98.59	120.54	132.61	144.02	190.55
Proposed NE Pond	56.093	96.4	91.26	111.84	125.74	137.38	159.79
S	7.668	91.7	22.78	30.12	35.60	42.86	53.68
South Pond	7.668	91.7	11.15	13.19	18.39	26.07	36.71
NW	6.425	88.6	16.84	22.92	27.49	33.55	42.59

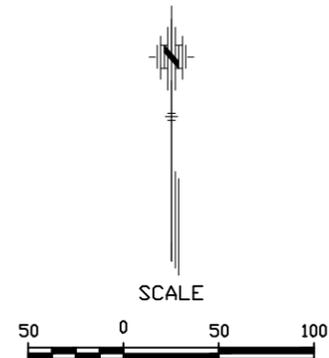
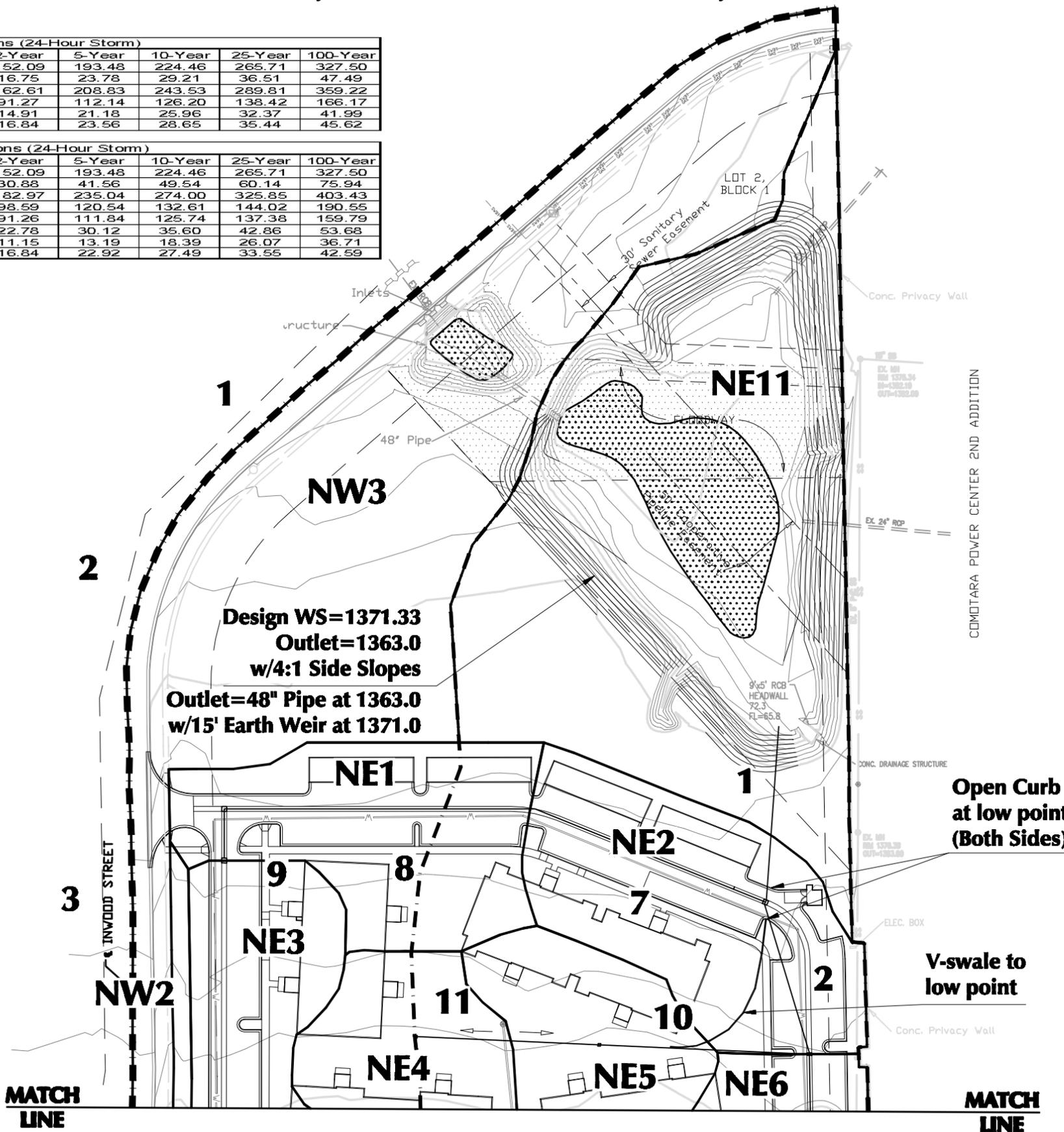
LEGAL DESCRIPTION

Parcel 1:
Lots 1 and 2, Block 1, Killarney Plaza Second Addition, an Addition to Wichita, Sedgwick County, Kansas, together with the North half of vacated 34th Street North adjoining said Lot 1 on the South, except that part platted as Comotara Power Center Addition

Parcel 2:
Lot 1, Block 2, Killarney Plaza Second Addition, an Addition to Wichita, Sedgwick County, Kansas, together with the South half of vacated 34th Street North adjoining said Lot 1 on the North, except that part platted as Comotara Power Center Addition

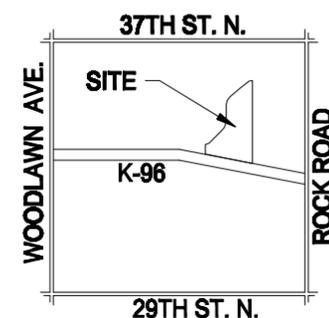
NOTES

- Cross-drainage agreement shall be required for any subsequent sub-divisions.
- Detention ponds shall be required in northeast and south developed drainage areas to reduce developed flows within this site.
- Site grading and drainage plans to be designed by a licensed professional engineer.
- Minimum Pad Elevation Northeast = 1373.4 (MSL)
Minimum Pad Elevation South = 1382.8 (MSL)
- Storm sewer easements will be provided only as needed to allow drainage to discharge across adjacent lots.
- Off-site drainage crosses the east line of the property and into the existing northeast detention area. If the existing drainage pattern is altered, a revised drainage plan must be provided and approved, that indicates how the storm water will be directed across this site.
- Any revised drainage plan must be approved by the appropriate governing body prior to building permits being issued.
- Any storm water detention areas shown may be revised when the final plans for the development are completed but the runoff amounts will be at or below the post development discharge rates. The filed final drainage report shows discharge rates and stage/storage/discharge curves for all on-site detention ponds.
- All of the detention ponding may normally be dry and will be provided in areas shown on this plan. A detailed grading plan will be provided at the time of development.



LEGEND

- Existing Drainage Area
- Proposed Drainage Area
- Bench Mark
- Water Meter
- Fire Hydrant
- Floodway
- Designated Wetland
- SWBT - Underground Telephone Line
- GAS - Underground Gas Line
- Waterline
- Sanitary Sewer Line



LOCATION MAP
No Scale

BENCHMARKS

- MSL DATUM
- BM #1 - COW disk, Northwest RCB 36th and Inwood
Elevation = 1370.65
 - BM #2 - Chiseled square on Southwest corner of the storm water sewer ±3' North, and ±9' East of the P.C. on the west side of Inwood at Lot 17, Block 1, Leewood Village
Elevation = 1378.53
 - BM #3 - Chiseled square on West return Northwest Corner of Inwood Court and 34th Street North, near mailboxes
Elevation = 1385.385



Revision
 Approved By
 Date
 No.

INWOOD CROSSINGS
 DRAINAGE PLAN
 CITY OF WICHITA, KANSAS
 JAMES L. ARMOUR P.E. - CITY ENGINEER

POE & ASSOCIATES, INC.
CONSULTING ENGINEERS
 1940 E. Central, Suite 200 in Wichita, KS 67209-0202
 Phone 316-688-1114 • FAX 316-688-4444

FINAL
 Designed By: J. Dickman
 Drawn By: S. Schmidt
 Drawing File: P:\909\inwood\HD\Drainage Plan.dwg
 Date: 5/30/2007

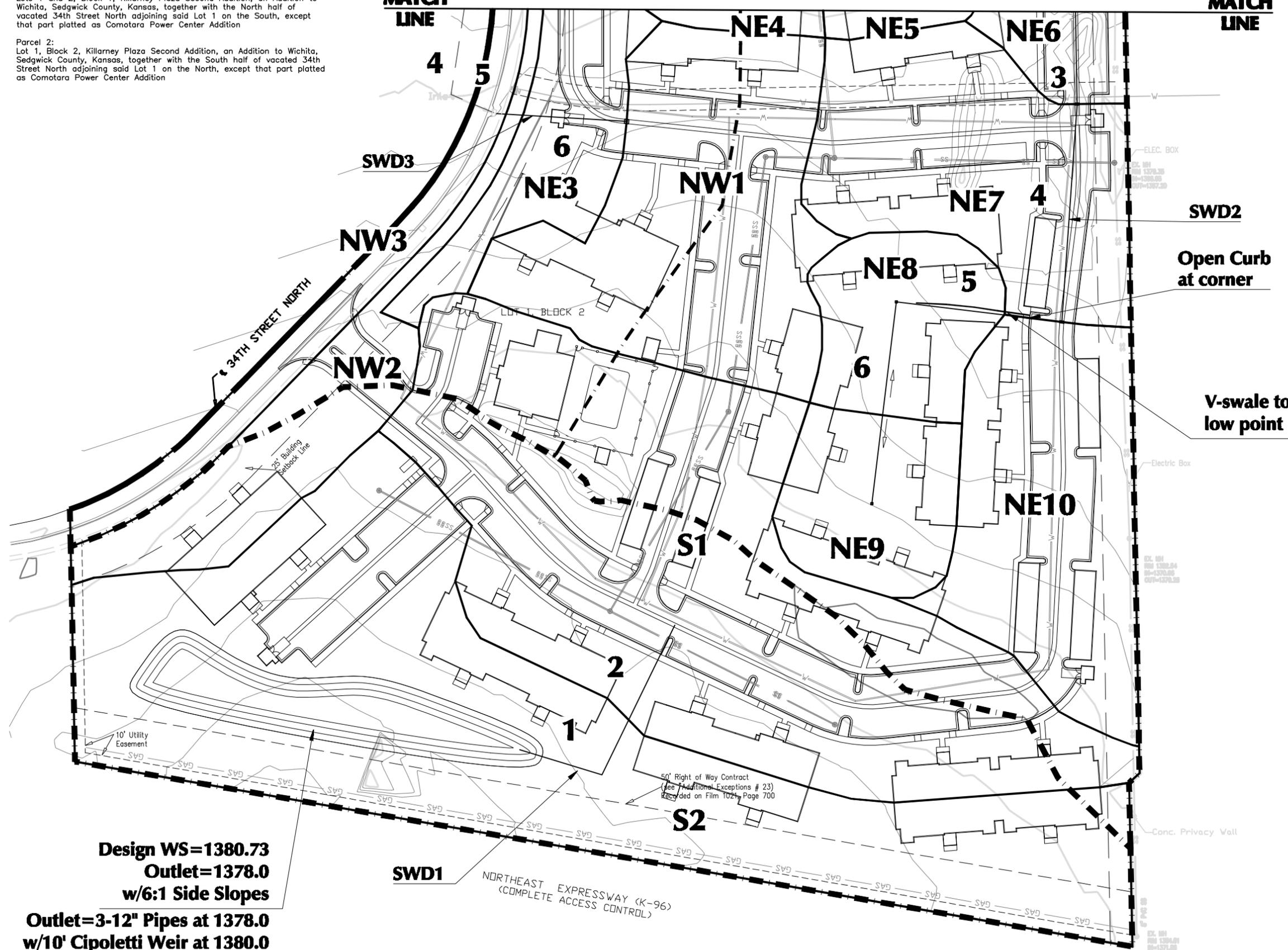
Sheet
 1 of 2

DRAINAGE PLAN FOR INWOOD CROSSINGS WICHITA, SEDGWICK COUNTY, KANSAS

LEGAL DESCRIPTION

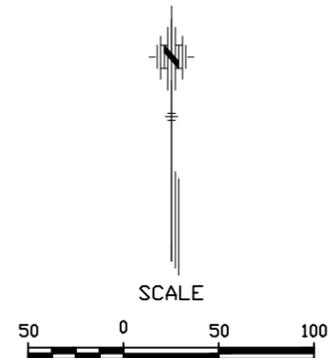
Parcel 1:
Lots 1 and 2, Block 1, Killarney Plaza Second Addition, an Addition to Wichita, Sedgwick County, Kansas, together with the North half of vacated 34th Street North adjoining said Lot 1 on the South, except that part platted as Comotara Power Center Addition

Parcel 2:
Lot 1, Block 2, Killarney Plaza Second Addition, an Addition to Wichita, Sedgwick County, Kansas, together with the South half of vacated 34th Street North adjoining said Lot 1 on the North, except that part platted as Comotara Power Center Addition



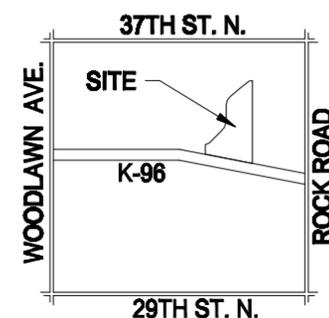
Design WS=1380.73
Outlet=1378.0
w/6:1 Side Slopes

Outlet=3-12" Pipes at 1378.0
w/10' Cipoletti Weir at 1380.0



LEGEND

- Existing Drainage Area
- Proposed Drainage Area
- Bench Mark
- Water Meter
- Fire Hydrant
- Floodway
- Designated Wetland
- SWBT - Underground Telephone Line
- GAS - Underground Gas Line
- Waterline
- Sanitary Sewer Line



LOCATION MAP
No Scale

BENCHMARKS

MSL DATUM

- BM #1 - COW disk, Northwest RCB 36th and Inwood
Elevation = 1370.65
- BM #2 - Chiseled square on Southwest corner of the storm water sewer ±3' North, and ±9' East of the P.C. on the west side of Inwood at Lot 17, Block 1, Leewood Village
Elevation = 1378.53
- BM #3 - Chiseled square on West return Northwest Corner of Inwood Court and 34th Street North, near mailboxes
Elevation = 1385.385



No.	Date	By	Approved

INWOOD CROSSINGS
 DRAINAGE PLAN
 CITY OF WICHITA, KANSAS
 JAMES L. ARMOUR P.E. - CITY ENGINEER

POE & ASSOCIATES, INC.
CONSULTING ENGINEERS
 5940 E. Central, Suite 200 in Wichita, KS 67209-0202
 Phone 316-688-1114 • FAX 316-688-4444



FINAL
 Designed By: J. Dickman
 Drawn By: S. Schmidt
 Drawing File: P:\909\inwood\HD\Drainage Plan.dwg
 Date: 5/30/2007
 Sheet
 2 of 2

INWOOD CROSSINGS

EXHIBIT 1-8

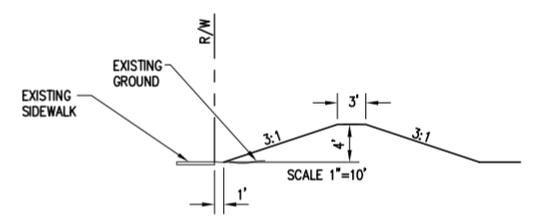
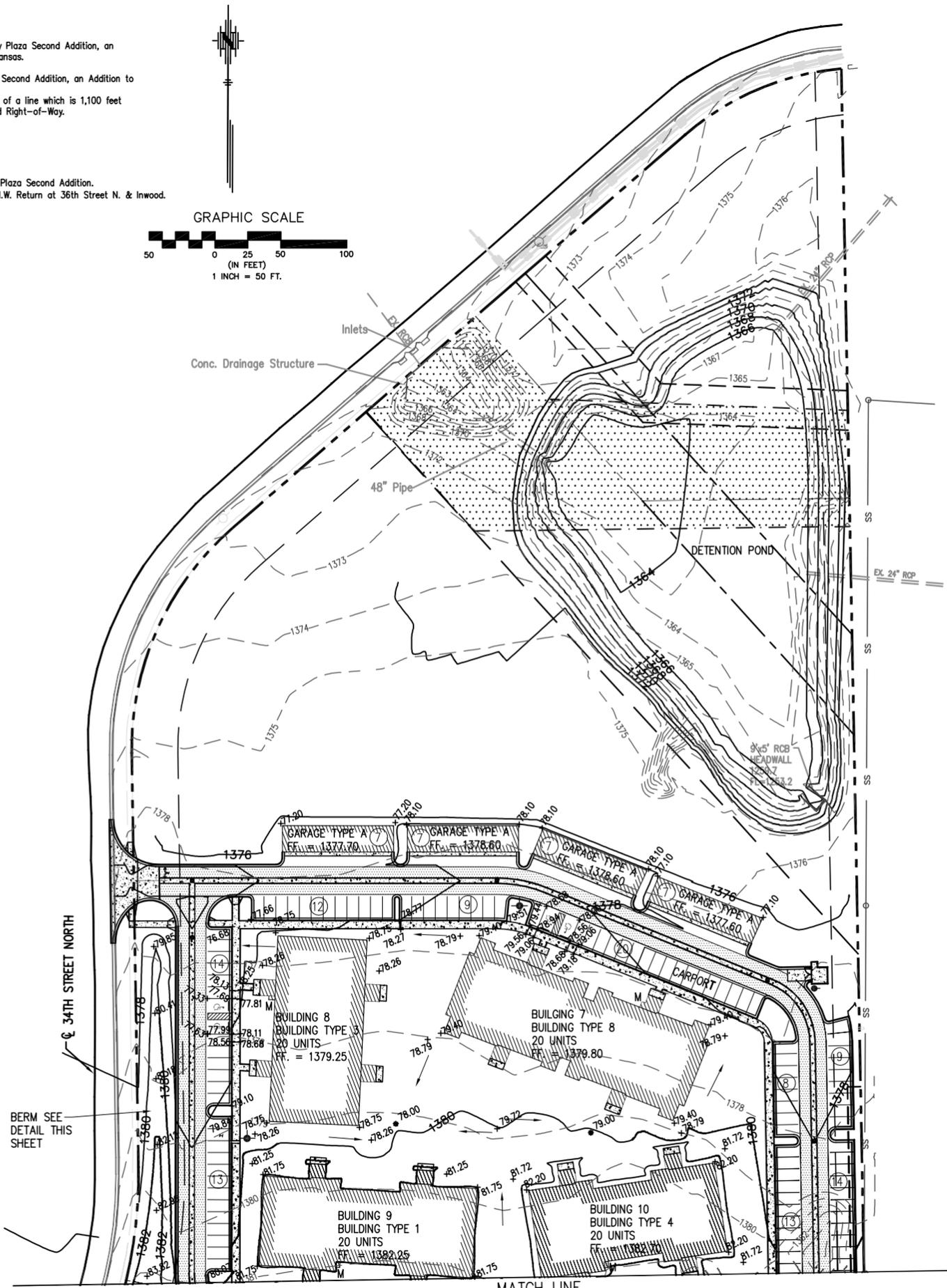
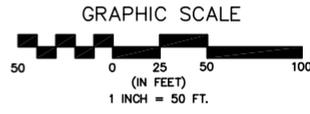
LEGAL DESCRIPTION:

Tract I: Lots 1 and 2, Block 1, Killarney Plaza Second Addition, an Addition to Wichita, Sedgwick County, Kansas.

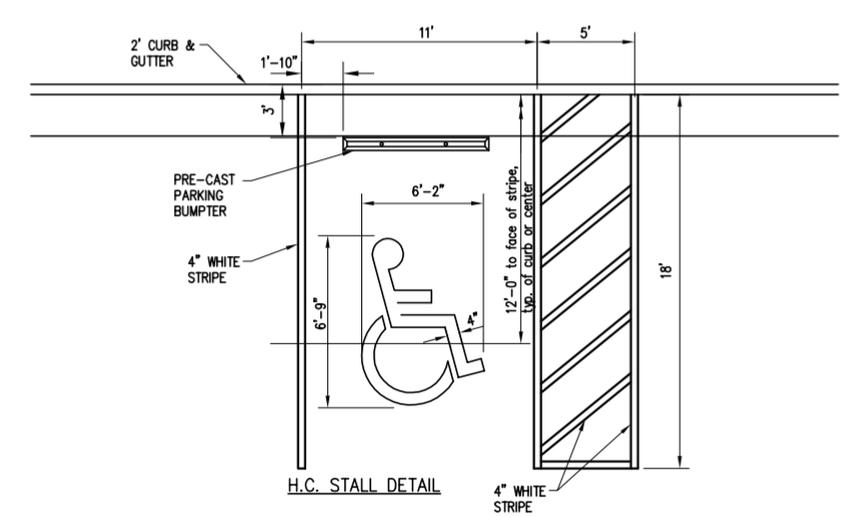
Tract II: Lot 1, Block 2, Killarney Plaza Second Addition, an Addition to Wichita, Sedgwick County, Kansas.
EXCEPT that portion of lot 1 lying East of a line which is 1,100 feet West of the West line of the Rock Road Right-of-Way.

DATUM OF ELEVATION:

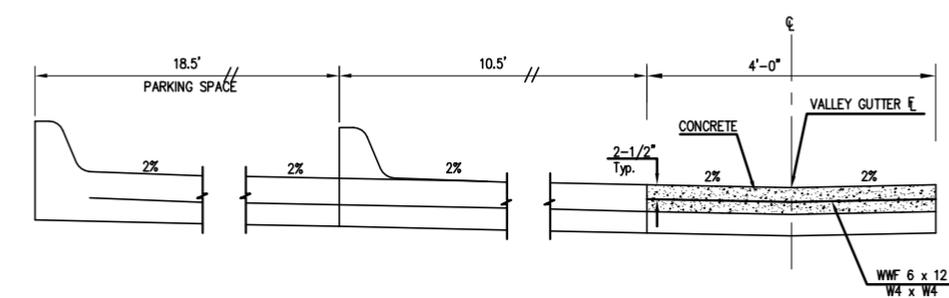
City Bench #3 from Plat of Killarney Plaza Second Addition.
Cut on top curb at W. end of N.W. Return at 36th Street N. & Inwood.
Elev. = 183.53'



BERM DETAIL
SCALE 1"=10'



H.C. STALL DETAIL



TYPICAL SECTION

BERM SEE
DETAIL THIS
SHEET

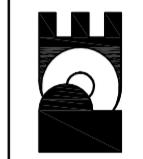
MATCH LINE

WWF 6 x 12
W4 x W4

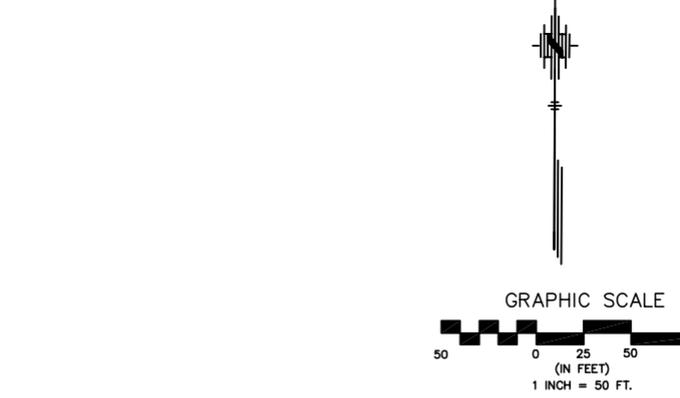
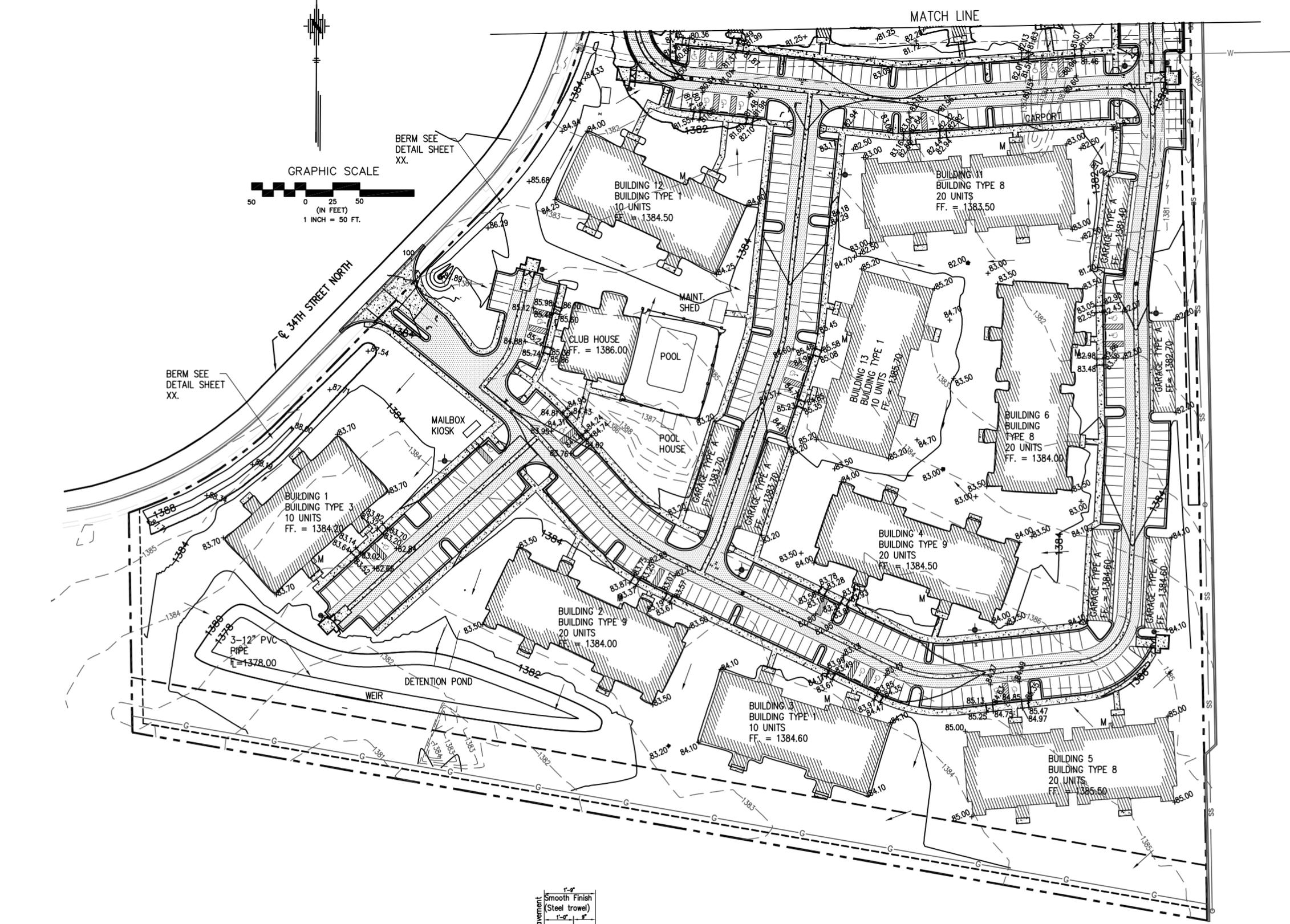
No.	Date	By	Approved	Revision
1				
2				
3				

GRADING PLAN
Inwood Apartments
Webber Group

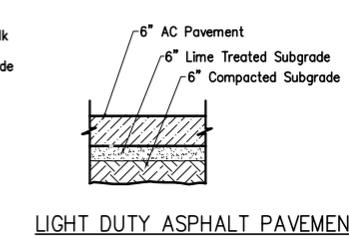
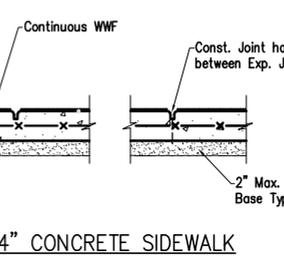
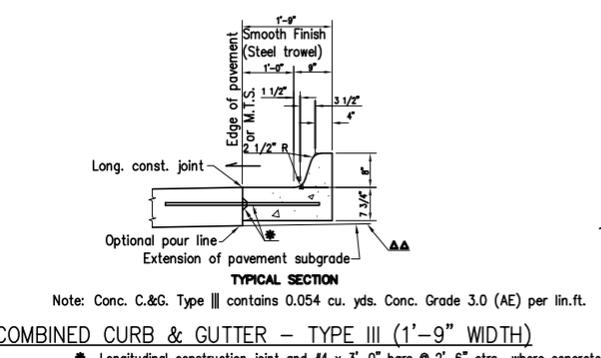
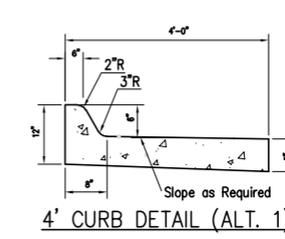
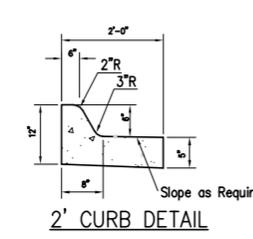
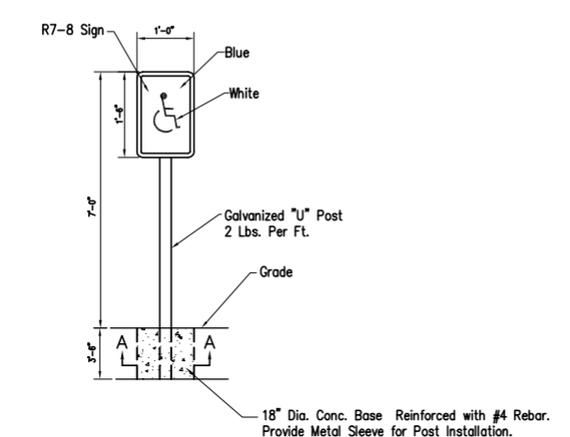
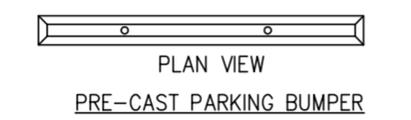
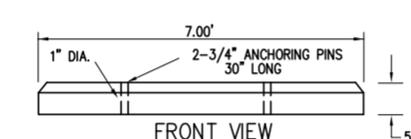
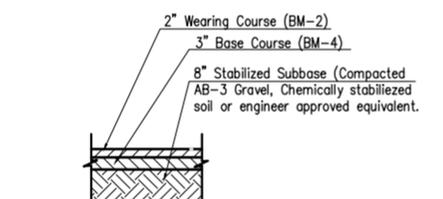
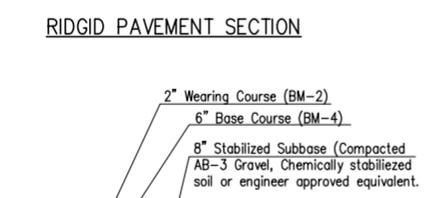
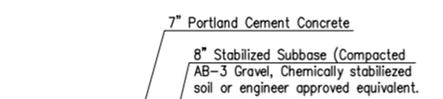
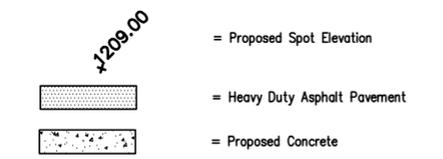
POE & ASSOCIATES, INC.
CONSULTING ENGINEERS
5940 E. Central, Suite 200 ■ Wichita, KS 67208-4242
Phone 316/685-4114 ■ FAX 316/685-4444



Engineer: _____
Designer: K. Warren
Poe Job No.: 1909
Date: NOV. 2006



LEGEND



No.	Date	By	Approved	Revision

GRADING PLAN
Inwood Apartments
Webber Group

POE & ASSOCIATES, INC.
CONSULTING ENGINEERS
5940 E. Central, Suite 200 ■ Wichita, KS 67208-4422
Phone 316/685-4114 ■ FAX 316/685-4444



Engineer: _____
Designer: K. Warren
Poe Job No.: 1909
Date: NOV. 2006

ALTA/ACSM LAND TITLE SURVEY

Items Corresponding with Schedule "B", Section Two, Exceptions:
 ALTA Commitment Number 790314, First American Title Insurance Company of Kansas, dated November 14, 2006.

- The following matters shown or disclosed by the recorded plat of Killarney Plaza Second referred to in the legal description: Building setback lines, easements, access controls and floodway.
- The floodway shall be the responsibility of the owners until such time as the City of Wichita elects to assume the responsibility for maintenance and improvement of the drainage, provided, however, that no building shall be constructed on or within said floodway, nor shall any fill, change of grade, creation of channel, or other work be carried on without the permission of the City Engineer.
- Sewer easement granted to the City of Wichita on Film 524, Page 239 over a portion of subject property and as shown on the recorded plat of Killarney Plaza Second.
- An easement of pipeline, recorded as Film 1021, Page 700 of Official Records.
 In Favor of: Farmland Industries, Inc.
 Affects: a portion of subject property
- An easement for drainage, recorded as Film 1273, Page 1580 of Official Records.
 In Favor of: City of Wichita
 Affects: a portion of subject property
- Access easement filed on Film 1262, Page 1791.
- Sanitary sewer and screening wall easement filed on Film 1431, Page 78.
- Agreement for Easements and Covenants Regarding Development of Land filed on Film 1246, Page 1705. (Cannot be shown graphically)
- The terms and provisions contained in the document entitled "Notice of Election and Assumption of Responsibility for Detention Pond" recorded as Film 1291, Page 1792 of Official Records. (Cannot be shown graphically)
- Easements, if any, for public utilities installed in, under, or upon the vacated 34th Street North prior to the vacation thereof, and for which no notice appears in the Official Records. (Cannot be shown graphically)
- Water line easement retained in Vacation Order regarding 34th Street North filed on Film 1856, Page 1534.
- Covenants and restrictions contained in/on Film 119, Page 1491. (Cannot be shown graphically)

CERTIFICATION
 To LDG Development, LLC, a Kentucky Limited Liability Company, Northrock Realty Partners, a Kansas General Partnership, and First American Title Insurance Company of Kansas:

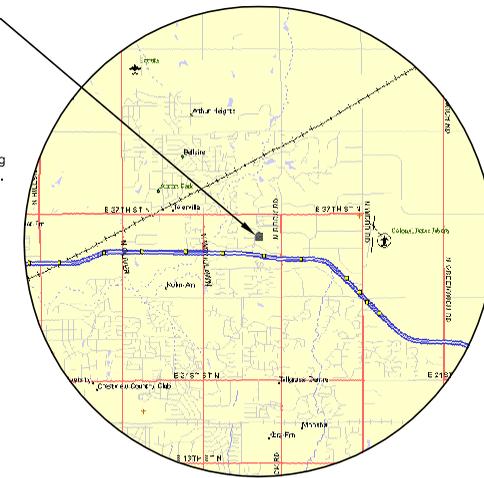
This is to certify that this map or plat and the survey on which it is based were made in accordance with the "Minimum Standard Detail Requirements for ALTA/ACSM Land Title Surveys," jointly established and adopted by ALTA and NSPS in 2005, and includes items 1, 2, 3, 4, 5, 6, 8, 10, 11b, 12, 13, 14, 15, and 16 of Table A thereof. Pursuant to the Accuracy Standards as adopted by ALTA and NSPS and in effect on the date of this certification, undersigned further certifies that in my professional opinion, as a land surveyor registered in the State of Kansas, the Relative Positional Accuracy of this survey does not exceed that which is specified therein.

Date of Survey: November 13, 2006

Curtis W. Luttrell, L.S. 1238

NOTES
ZONING INFORMATION
MF-18, Multi-Family District, Parcel 1
 According to Wichita-Sedgwick County Unified Zoning Code
 Minimum lot size: 3500 square feet for single-family; 3000 square feet per dwelling unit for duplex; 2500 square feet per unit for multi-family (maximum 17 dwelling units per acre); 6000 square feet for nonresidential use. Minimum lot width: 35 feet for single-family; 50 for all other uses
 Minimum front setback: 25 feet
 Minimum rear setback: 20 feet
 Minimum interior side setback: 6 feet
 Minimum street side set back: 20 feet
 Maximum Structure height: 45 feet

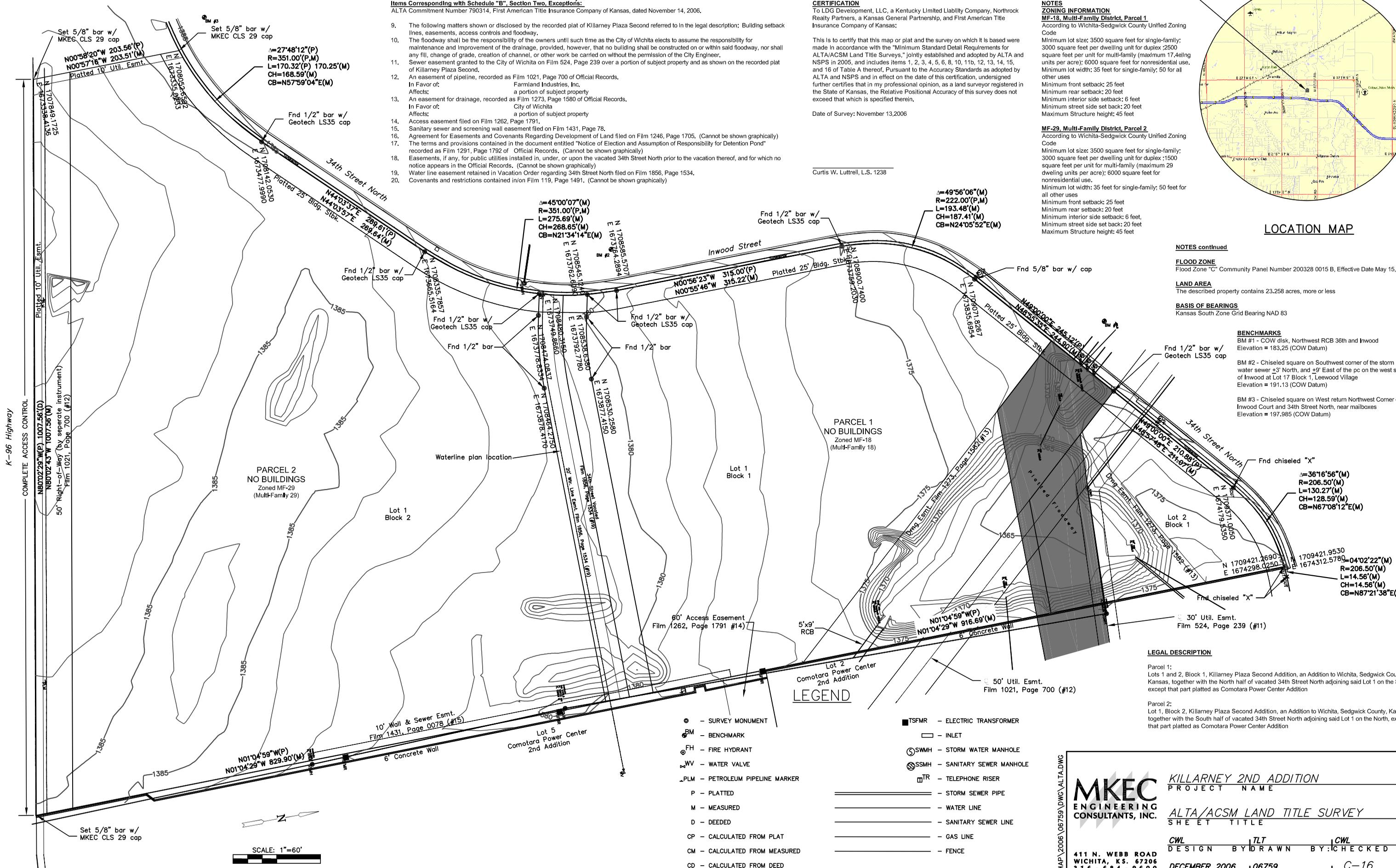
MF-29, Multi-Family District, Parcel 2
 According to Wichita-Sedgwick County Unified Zoning Code
 Minimum lot size: 3500 square feet for single-family; 3000 square feet per dwelling unit for duplex; 1500 square feet per unit for multi-family (maximum 29 dwelling units per acre); 6000 square feet for nonresidential use.
 Minimum lot width: 35 feet for single-family; 50 feet for all other uses
 Minimum front setback: 25 feet
 Minimum rear setback: 20 feet
 Minimum interior side setback: 6 feet
 Minimum street side set back: 20 feet
 Maximum Structure height: 45 feet



LOCATION MAP

NOTES continued
FLOOD ZONE
 Flood Zone "C" Community Panel Number 200328 0015 B, Effective Date May 15, 1986
LAND AREA
 The described property contains 23.258 acres, more or less
BASIS OF BEARINGS
 Kansas South Zone Grid Bearing NAD 83

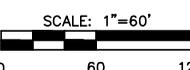
BENCHMARKS
 BM #1 - COW disk, Northwest RCB 36th and Inwood
 Elevation = 183.25 (COW Datum)
 BM #2 - Chiseled square on Southwest corner of the storm water sewer +3' North, and +9' East of the pc on the west side of Inwood at Lot 17 Block 1, Leewood Village
 Elevation = 191.13 (COW Datum)
 BM #3 - Chiseled square on West return Northwest Corner of Inwood Court and 34th Street North, near mailboxes
 Elevation = 197.985 (COW Datum)



LEGEND

- - SURVEY MONUMENT
- BM - BENCHMARK
- ⊙ FH - FIRE HYDRANT
- ⊙ WV - WATER VALVE
- PLM - PETROLEUM PIPELINE MARKER
- P - PLATTED
- M - MEASURED
- D - DEEDED
- CP - CALCULATED FROM PLAT
- CM - CALCULATED FROM MEASURED
- CD - CALCULATED FROM DEED
- TSFMR - ELECTRIC TRANSFORMER
- - INLET
- ⊙ SWMH - STORM WATER MANHOLE
- ⊙ SSMH - SANITARY SEWER MANHOLE
- TR - TELEPHONE RISER
- - STORM SEWER PIPE
- - WATER LINE
- - SANITARY SEWER LINE
- - GAS LINE
- - FENCE

LEGAL DESCRIPTION
 Parcel 1:
 Lots 1 and 2, Block 1, Killarney Plaza Second Addition, an Addition to Wichita, Sedgwick County, Kansas, together with the North half of vacated 34th Street North adjoining said Lot 1 on the South, except that part platted as Comotara Power Center Addition
 Parcel 2:
 Lot 1, Block 2, Killarney Plaza Second Addition, an Addition to Wichita, Sedgwick County, Kansas, together with the South half of vacated 34th Street North adjoining said Lot 1 on the North, except that part platted as Comotara Power Center Addition



MKEC ENGINEERING CONSULTANTS, INC.
 411 N. WEBB ROAD
 WICHITA, K.S. 67206
 316-684-9600

KILLARNEY 2ND ADDITION
 PROJECT NAME
ALTA/ACSM LAND TITLE SURVEY
 SHEET TITLE

CWL DESIGN BY | TLT DRAWN BY | CWL CHECKED BY:
 DECEMBER 2006 DATE | 06759 JOB NO. | C-16 SHEET OF C52

K-96 Highway
 COMPLETE ACCESS CONTROL
 N80°02'29"W (P) 1007.56'(O)
 N80°02'43"W 1007.56'(M)
 50' Right-of-Way (by separate instrument)
 Film 1021, Page 700 (#12)

PARCEL 2
 NO BUILDINGS
 Zoned MF-29
 (Multi-Family 29)

PARCEL 1
 NO BUILDINGS
 Zoned MF-18
 (Multi-Family 18)

10' Wall & Sewer Esmt.
 Film 1431, Page 0078 (#15)

60' Access Easement
 Film 1262, Page 1791 (#14)

Lot 2
 Comotara Power Center
 2nd Addition

Lot 5
 Comotara Power Center
 2nd Addition

30' Util. Esmt.
 Film 524, Page 239 (#11)

50' Util. Esmt.
 Film 1021, Page 700 (#12)

INWOOD CROSSINGS

EXHIBIT 1-9



LEGEND	
—	= Approximate Property Boundary
— WL	= Wetland
— UPL	= Upland
X OB-1	= Observation Point
A-1	= Area: 1,743 square feet (Approximate)
A-2	= Area: 15,873 square feet (Approximate)

DRAWN BY:	JMC
PROJ. MANGR:	GA
DWG #:	077023
DATE:	02/28/07

INWOOD APARTMENTS WETLAND
 NEAR K-96 & ROCK RD
 WICHITA, KANSAS

WETLAND DELINEATION MAP
AERIAL PHOTO - 2002

FIGURE
3

GSI GEOTECHNICAL SERVICES, INC.
 4503 EAST 47TH STREET SOUTH • WICHITA, KANSAS 67210-1651
 Phone: 316-554-0725 • Fax: 316-554-0744

Tab 2. Existing Conditions Runoff Calculations

A. Copy of orthophotograph showing proposed boundaries

See Exhibit 2-1 for aerial photograph showing proposed site boundaries.

B. Runoff method

The runoff method used to determine storm water flows was the SCS hydrograph method. Supporting data and calculation results are shown on Exhibit 2-2.

C. Existing topography

The existing topography is shown on the drainage plan as seen on Exhibit 1-7.

D. Total site area and total impervious area

The total area of Inwood Crossings encompasses nearly 25 acres. The total impervious area for the developed condition, based on multi-family residential land use, is estimated at 65% of the total site area. Therefore, the total impervious area on this site is estimated at just over 16 acres.

E. Benchmarks used for site control

The benchmarks used for site control are listed on the drainage plan, which is Exhibit 1-7.

F. Streams, creeks, and waterways labeled

Exhibit 1-7 shows any water features within the site.

G. Predominate soils from USDA soil surveys

The predominant soil type is a Rosehill silty clay series (3911) material, which is found in the majority of the drainage areas of this site. The area is also made up of a small amount of Farnum loam (5893) soil material located at the southeast corner of the property. See Exhibit 1-2 for NRCS Soil Survey map and information showing existing soil types and descriptions. The Rosehill soil is classified as Hydrologic Group D soil and the Farnum soil is a Hydrologic Group B soil. These Hydrologic Groups are used to select curve numbers for the run-off calculations in both the existing and developed conditions.

H. Location and boundaries of natural features

The existing site does not contain wetlands or lakes. A dry-detention pond is located at the northeast corner of the property.

I. Location of existing roads, buildings, parking lots, and other impervious areas

All areas within the platted property are vacant land with good grass cover and small concentrations of trees and brush. A concrete wall runs along the entire length of the east property line.

J. Location of existing utilities

The site contains an existing 8" waterline within a waterline easement that runs east to west across the center of the property. The waterline easement parallels the vacated south right-of-way line of 34th Street North. This waterline connects to another 8" waterline that runs outside and along the west and north line of the property. An existing 8" sanitary sewer line is located along the east line of the site within a 10' wall and sewer easement, and to the west across the property in a 30' sanitary sewer easement, see plat (Exhibit 1-4). A manhole is located near the northeast pond and the top of manhole elevation is approximately 1371.6. A petroleum pipeline is located along the south line of the property. The pipeline is owned by Coffeyville Resources and is within a 50' right-of-way easement that covers the south 50 feet of the property. A telephone riser is located near the center of the east line of the property. Three electric utility boxes are also found along the east property line at various locations next to the before mentioned concrete wall. The above information is shown on the drainage plan, Exhibit 1-7.

K. Location of existing conveyance systems

Flow across the site is currently overland flow. All off-site drainage from the east enters the dry-detention pond at the northeast corner of the property. Three storm sewers drain into the east side of the northeast pond. The northeast area ultimately drains into an existing pipe that controls the north pond and then off-site through a box culvert located near the northwest corner of the development and under Inwood Street.

L. Flow paths

The drainage plan (Exhibit 1-7) shows the general flow paths for the site. A slight ridge breaks the flows to the north and the south. Three-quarters of the site drains to the north and the remaining one-fourth of the site drains south. The flow exits the site near the northwest corner of the property and also to the south near the center of the south property line. Prior to that, the northeast area flow is routed through the existing pipe and then off-site to the northwest through the culvert across Inwood Street and the south flow enters the north ditch of the K-96 Highway. A Highway Permit, Use of Right of Way, has been forwarded to KDOT for approval (See Exhibit 5-1).

M. Location and dimensions of existing channels, bridges or culvert crossings

Existing channels are not defined within this site. Two 24" R.C.P.'s, along with a 9' by 5' R.C.B. drain into the northeast pond from the east off-site areas. The site also contains a 48"

R.C.P. that controls the northeast dry-detention pond. All of the northeast area flow is then routed to a triple 10' by 4' R.C.B. culvert under Inwood Street.

N. Existing conditions hydrologic analysis

The analysis was completed using the SCS Hydrograph method. The 2, 5, 10, 25, & 100 year, 24-hour storm events were evaluated and the information appears in Exhibit 2-2. The results are summarized in the following table.

Area/Frequency	24-Hour Storm Flows (cfs)				
	2-Year	5-Year	10-Year	25-Year	100-Year
Off-Site	152.09	193.48	224.46	265.71	327.50
NE	16.75	23.78	29.21	36.51	47.49
Off-Site & NE	162.61	208.83	243.53	289.81	359.22
Existing North Pond	91.27	112.14	126.20	138.42	166.17
S	14.91	21.18	25.96	32.37	41.99
NW	16.84	23.56	58.65	35.44	45.62

O. Assumed pre-developed runoff curve numbers

For the existing condition, the curve numbers were weighted based on area of their respective hydrologic soil groups and land uses over each site. The results are shown in the table below.

Area	Soil	Hydrologic Group	Area		Percent of Areas Total	CURVE NUMBER Existing
			Square Feet	Acres		
Off-Site	3911	D	1960200	45.000	100.00%	98.0
Total			1960200	45.000	100.00%	98.0

Area	Soil	Hydrologic Group	Area		Percent of Areas Total	CURVE NUMBER Existing
			Square Feet	Acres		
NE	3911	D	484448	11.121	100.00%	84.0
Total			484448	11.121	100.00%	84.0

Area	Soil	Hydrologic Group	Area		Percent of Areas Total	CURVE NUMBER Existing
			Square Feet	Acres		
Off-Site	3911	D	1960200	45.000	80.18%	98.0
NE	3911	D	484448	11.121	19.82%	84.0
Total			2444648	56.121	100.00%	95.2

Area	Soil	Hydrologic Group	Area		Percent of Areas Total	CURVE NUMBER Existing
			Square Feet	Acres		
S	3911	D	277558	6.372	95.60%	84.0
	5893	B	12769	0.293	4.40%	69.0
Total			290327	6.665	100.00%	83.3

Area	Soil	Hydrologic Group	Area		Percent of Areas	CURVE NUMBER
			Square Feet	Acres	Total	Existing
NW	3911	D	248010	5.694	80.64%	84.0
Sidewalk	3911	D	7291	0.167	2.37%	98.0
R/W	3911	D	18964	0.435	6.17%	80.0
Street	3911	D	33277	0.764	10.82%	98.0
Total			307541	7.060	100.00%	85.6

P. Existing times of concentration used in calculations

Area	T _c (min)
Off-Site	15.0
NE	38.4
S	15.0
NW	15.0

Q. Evaluation of immediate downstream drainage capacity

The downstream capacity to the northwest and south of this site shall be considered adequate to accommodate the existing flows from this site. The capacity will not be a concern since post-developed flows are intended to be less than or equal to the existing flows leaving the site.

R. Existing structural elevations

The north 24" R.C.P. has a flow line of 1365.4 and the south 24" R.C.P.'s flow line is 1366.6. The 9' by 5' R.C.B. has a flow line of 1365.8 with a top of headwall elevation of 1372.3. These three pipes all drain into the northeast pond. The existing 48" pipe controlling the northeast pond has an upstream flow line of 1363.0 and a downstream flow line of 1362.4 (All elevations are MSL Datum). The triple 10' by 4' R.C.B. has an upstream flow line of 1362.05 and a downstream flow line of 1361.5 with the top of headwall elevation at 1370.7.

S. Cross-section data for open channels

No open channels appear within this site.

T. Ground water elevations

The ground water elevation is not a concern for this area.

INWOOD CROSSINGS

EXHIBIT 2-1

AERIAL MAP

45TH STREET NORTH

WOODLAWN AVENUE

UNION PACIFIC RR

ROCK ROAD

37TH STREET NORTH

INWOOD CROSSINGS

K-96

29TH STREET NORTH

T26S

T27S

**R1E
R2E**



POE & ASSOCIATES, INC.
CONSULTING ENGINEERS

5940 E. Central, Suite 200 Wichita, KS 67208-4242
Phone 316/685-4114 FAX 316/685-4444

INWOOD CROSSINGS

EXHIBIT 2-2

Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)								Hydrograph description
			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	
1	SCS Runoff	-----	120.92	152.09	-----	193.48	224.46	265.71	296.61	327.50	Off-Site North
2	SCS Runoff	-----	11.69	16.75	-----	23.78	29.21	36.51	42.00	47.49	Existing Site Northeast
3	Combine	1, 2	128.01	162.61	-----	208.83	243.53	289.81	324.52	359.22	Existing Northeast and Off-site
4	Reservoir	3	70.09	91.27	-----	112.14	126.20	138.42	146.89	166.17	Existing North Pond
5	SCS Runoff	-----	10.37	14.91	-----	21.18	25.96	32.37	37.18	41.99	Existing Site South
6	SCS Runoff	-----	11.93	16.84	-----	23.56	28.65	35.44	40.54	45.62	Existing Site Northwest

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (acft)	Hydrograph description	
1	SCS Runoff	152.09	6	720	11.834	----	-----	-----	Off-Site North	
2	SCS Runoff	16.75	6	738	1.933	----	-----	-----	Existing Site Northeast	
3	Combine	162.61	6	720	13.767	1, 2	-----	-----	Existing Northeast and Off-site	
4	Reservoir	91.27	6	732	13.767	3	1368.07	2.640	Existing North Pond	
5	SCS Runoff	14.91	6	720	1.053	----	-----	-----	Existing Site South	
6	SCS Runoff	16.84	6	720	1.188	----	-----	-----	Existing Site Northwest	
Inwood Final Existing.gpw					Return Period: 2 Year			Thursday, May 31 2007		

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 9:57 AM

Hyd. No. 1

Off-Site North

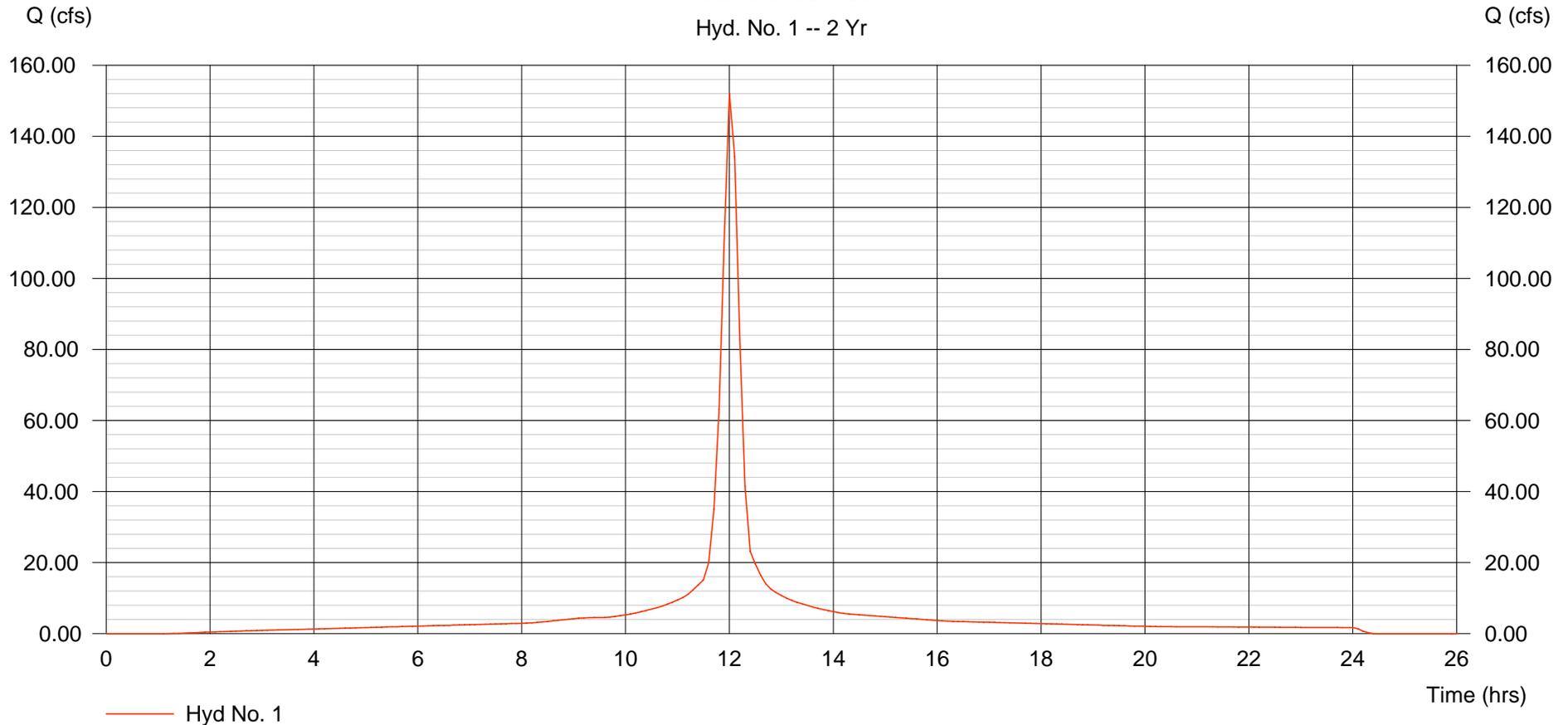
Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 45.000 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 3.60 in
Storm duration = 24 hrs

Peak discharge = 152.09 cfs
Time interval = 6 min
Curve number = 98
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 11.834 acft

Off-Site North

Hyd. No. 1 -- 2 Yr



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 9:57 AM

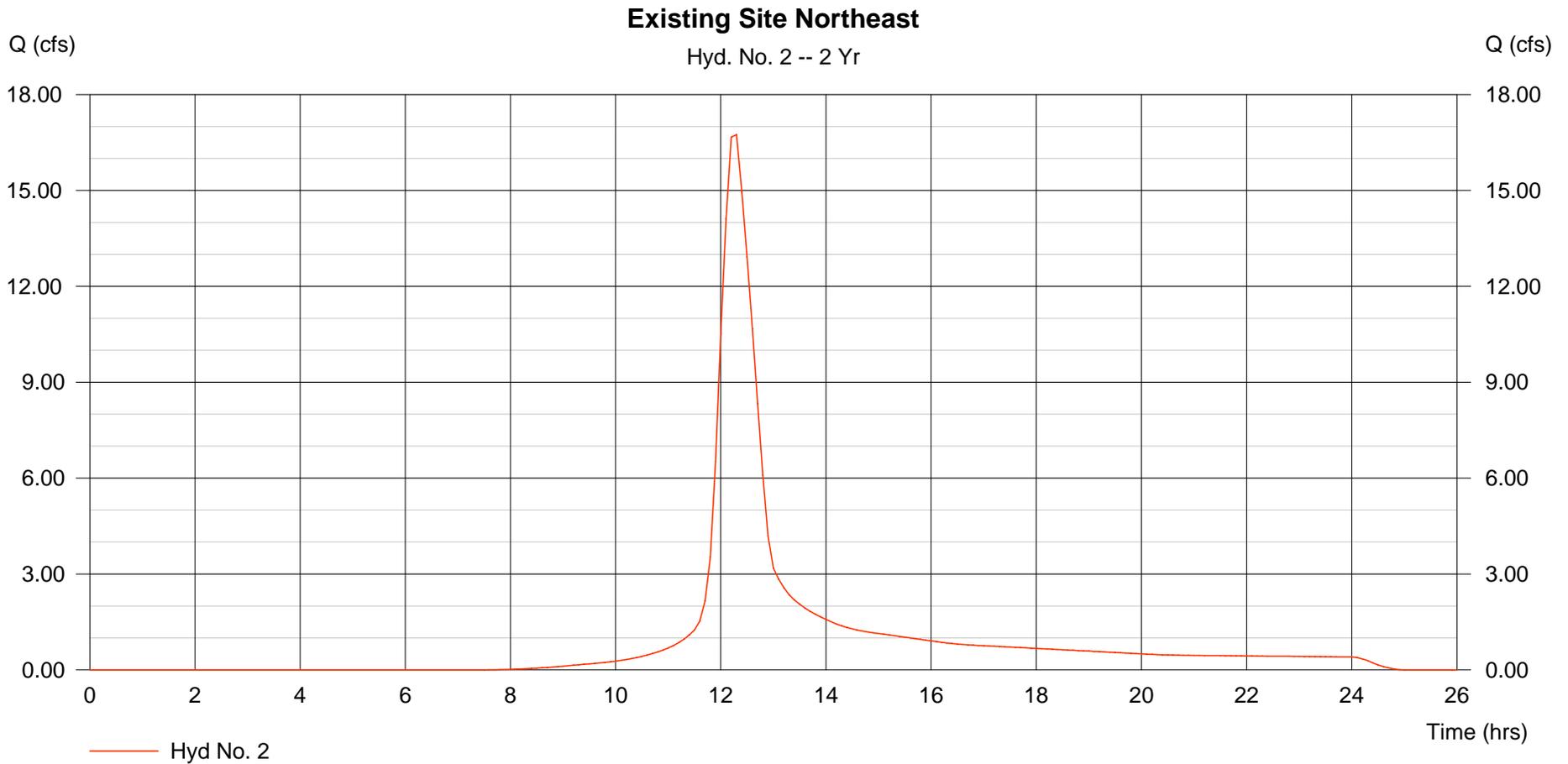
Hyd. No. 2

Existing Site Northeast

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 11.121 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 3.60 in
Storm duration = 24 hrs

Peak discharge = 16.75 cfs
Time interval = 6 min
Curve number = 84
Hydraulic length = 0 ft
Time of conc. (Tc) = 38.40 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 1.933 acft



TR55 Tc Worksheet

Hyd. No. 2

Existing Site Northeast

<u>Description</u>	<u>A</u>		<u>B</u>		<u>C</u>		<u>Totals</u>	
Sheet Flow								
Manning's n-value	= 0.240		0.011		0.011			
Flow length (ft)	= 300.0		0.0		0.0			
Two-year 24-hr precip. (in)	= 3.60		0.00		0.00			
Land slope (%)	= 1.99		0.00		0.00			
Travel Time (min)	= 32.47	+	0.00	+	0.00	=	32.47	
Shallow Concentrated Flow								
Flow length (ft)	= 610.00		40.00		0.00			
Watercourse slope (%)	= 1.49		17.50		0.00			
Surface description	= Unpaved		Unpaved		Paved			
Average velocity (ft/s)	= 1.97		6.75		0.00			
Travel Time (min)	= 5.17	+	0.10	+	0.00	=	5.27	
Channel Flow								
X sectional flow area (sqft)	= 25.00		0.00		0.00			
Wetted perimeter (ft)	= 75.00		0.00		0.00			
Channel slope (%)	= 1.48		0.00		0.00			
Manning's n-value	= 0.015		0.015		0.015			
Velocity (ft/s)	= 5.79		0.00		0.00			
Flow length (ft)	= 237.0		0.0		0.0			
Travel Time (min)	= 0.68	+	0.00	+	0.00	=	0.68	
Total Travel Time, Tc							=	38.40 min

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 9:57 AM

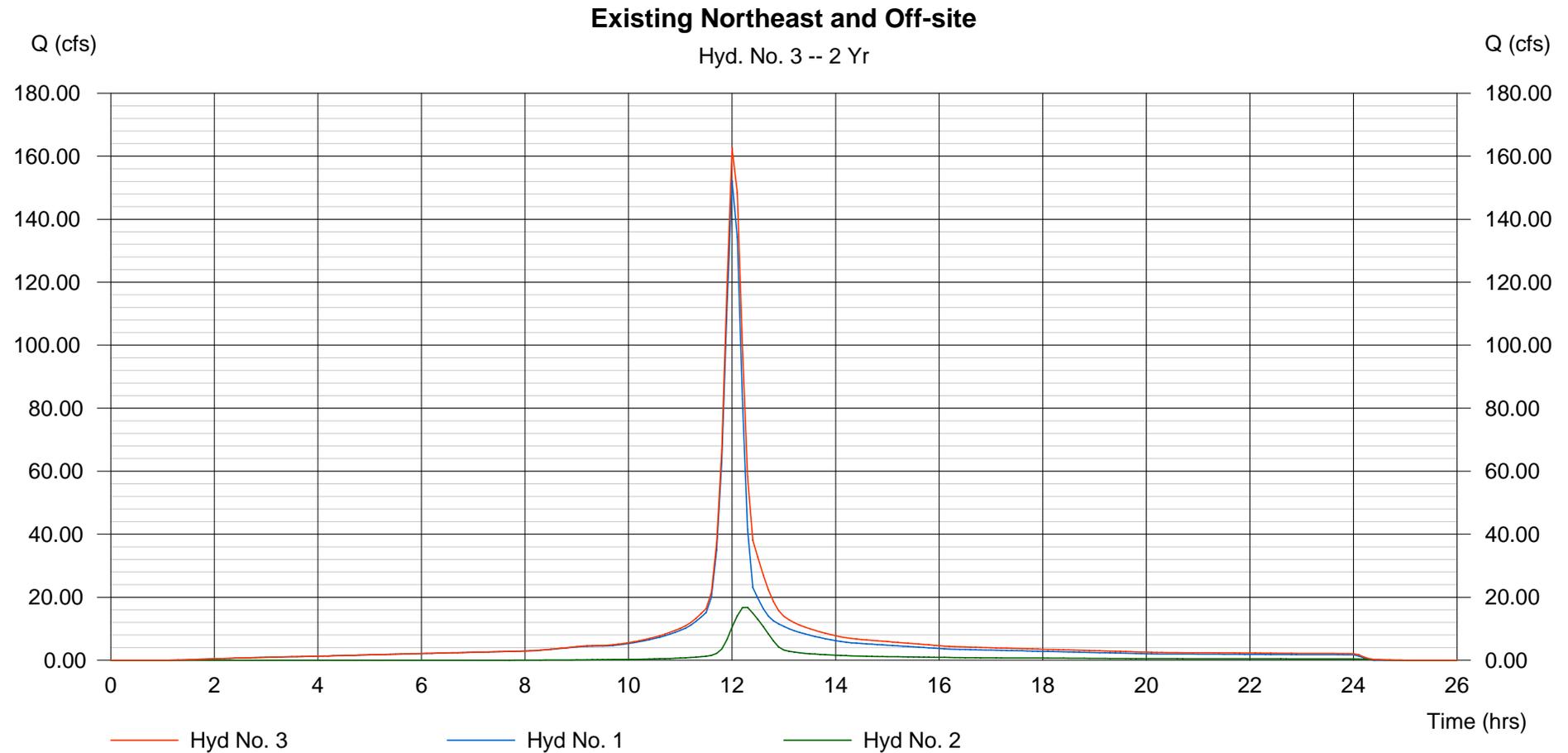
Hyd. No. 3

Existing Northeast and Off-site

Hydrograph type = Combine
Storm frequency = 2 yrs
Inflow hyds. = 1, 2

Peak discharge = 162.61 cfs
Time interval = 6 min

Hydrograph Volume = 13.767 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 9:57 AM

Hyd. No. 4

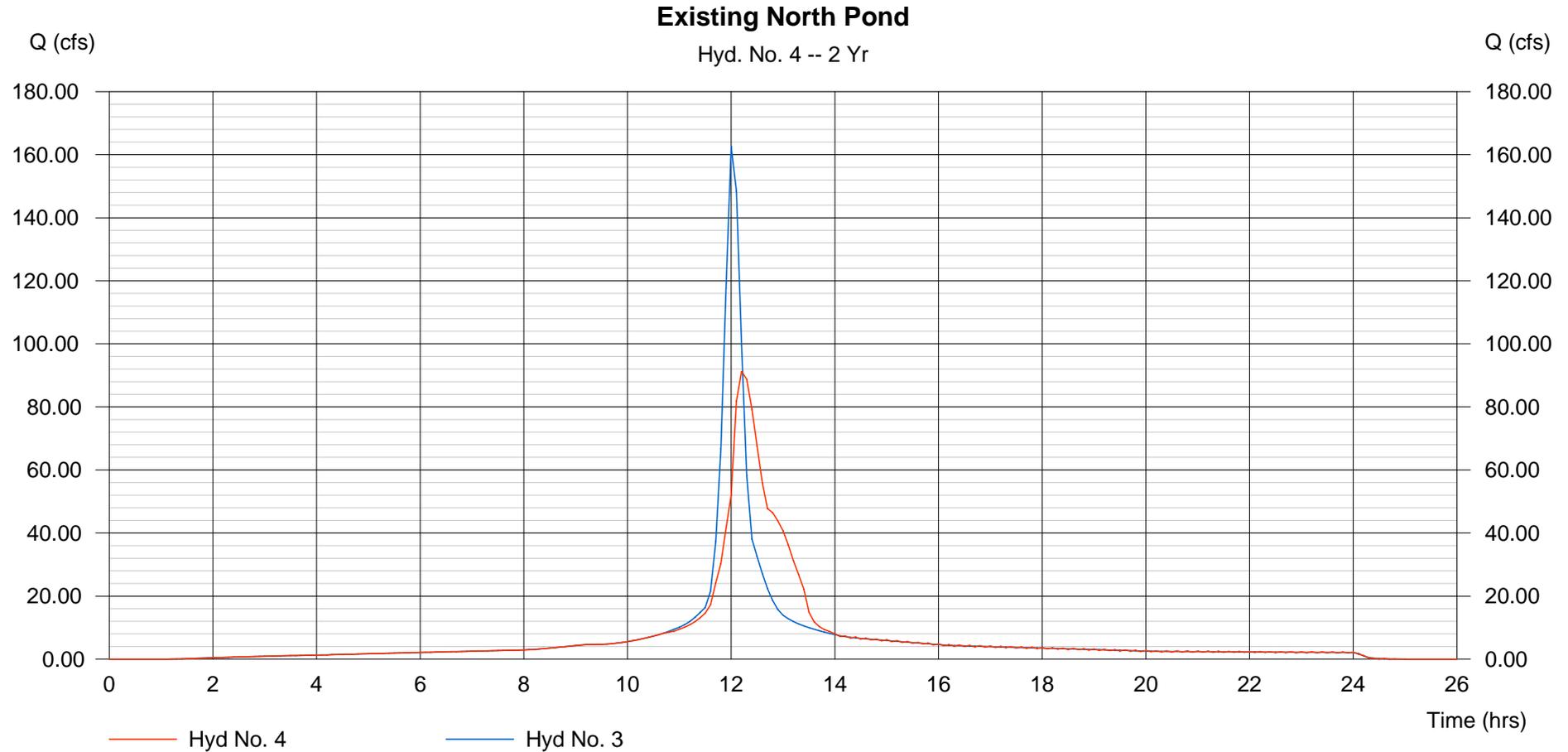
Existing North Pond

Hydrograph type = Reservoir
Storm frequency = 2 yrs
Inflow hyd. No. = 3
Reservoir name = Existing North Pond

Peak discharge = 91.27 cfs
Time interval = 6 min
Max. Elevation = 1368.07 ft
Max. Storage = 2.640 acft

Storage Indication method used.

Hydrograph Volume = 13.767 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 9:57 AM

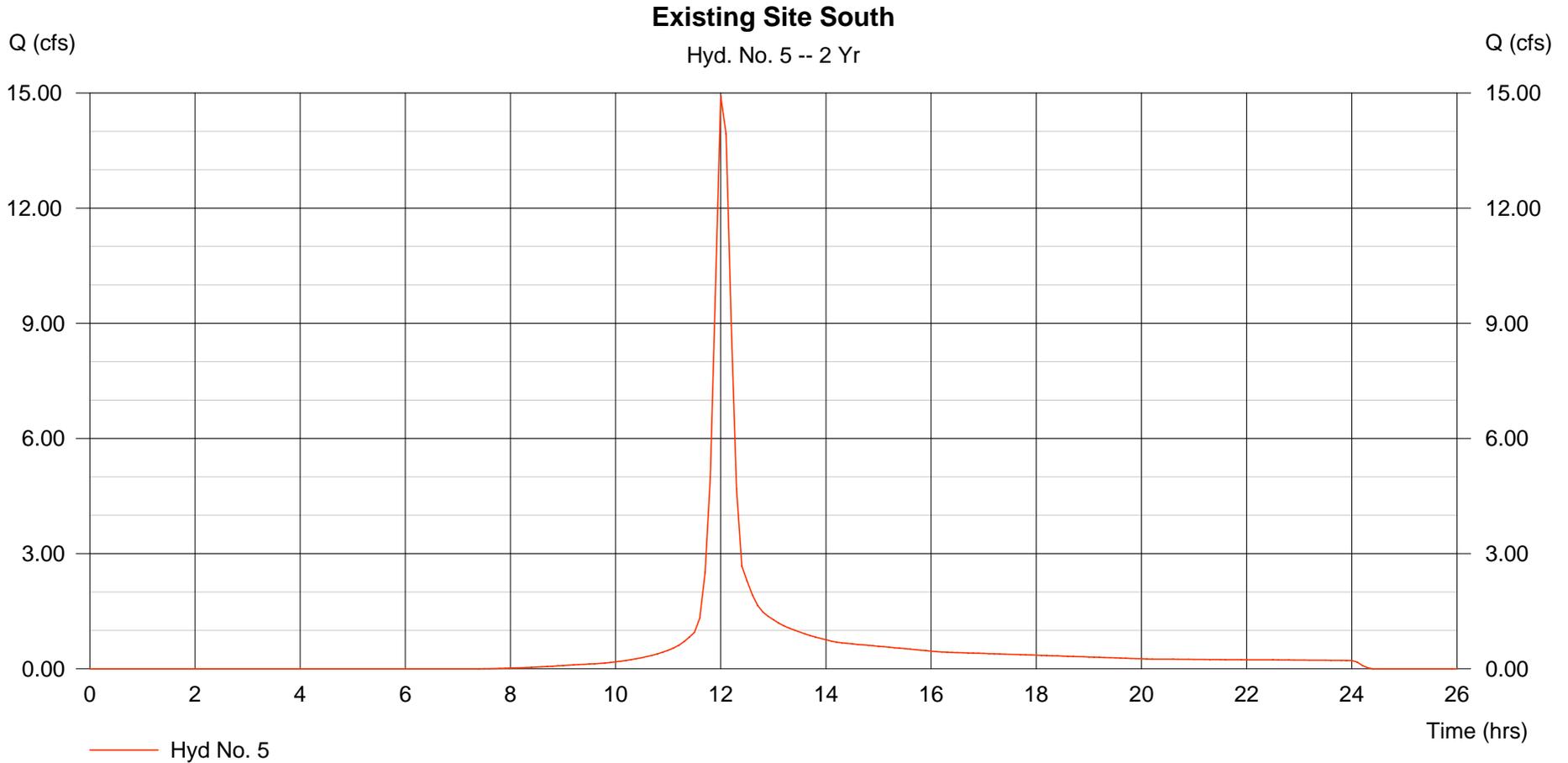
Hyd. No. 5

Existing Site South

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 6.665 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 3.60 in
Storm duration = 24 hrs

Peak discharge = 14.91 cfs
Time interval = 6 min
Curve number = 84
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 1.053 acft



TR55 Tc Worksheet

Hyd. No. 5

Existing Site South

<u>Description</u>	<u>A</u>		<u>B</u>		<u>C</u>		<u>Totals</u>	
Sheet Flow								
Manning's n-value	= 0.170		0.011		0.011			
Flow length (ft)	= 147.0		0.0		0.0			
Two-year 24-hr precip. (in)	= 3.60		0.00		0.00			
Land slope (%)	= 2.43		0.00		0.00			
Travel Time (min)	= 12.85	+	0.00	+	0.00	=	12.85	
Shallow Concentrated Flow								
Flow length (ft)	= 255.00		0.00		0.00			
Watercourse slope (%)	= 1.50		0.00		0.00			
Surface description	= Unpaved		Paved		Paved			
Average velocity (ft/s)	= 1.98		0.00		0.00			
Travel Time (min)	= 2.15	+	0.00	+	0.00	=	2.15	
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 Plot

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 9:57 AM

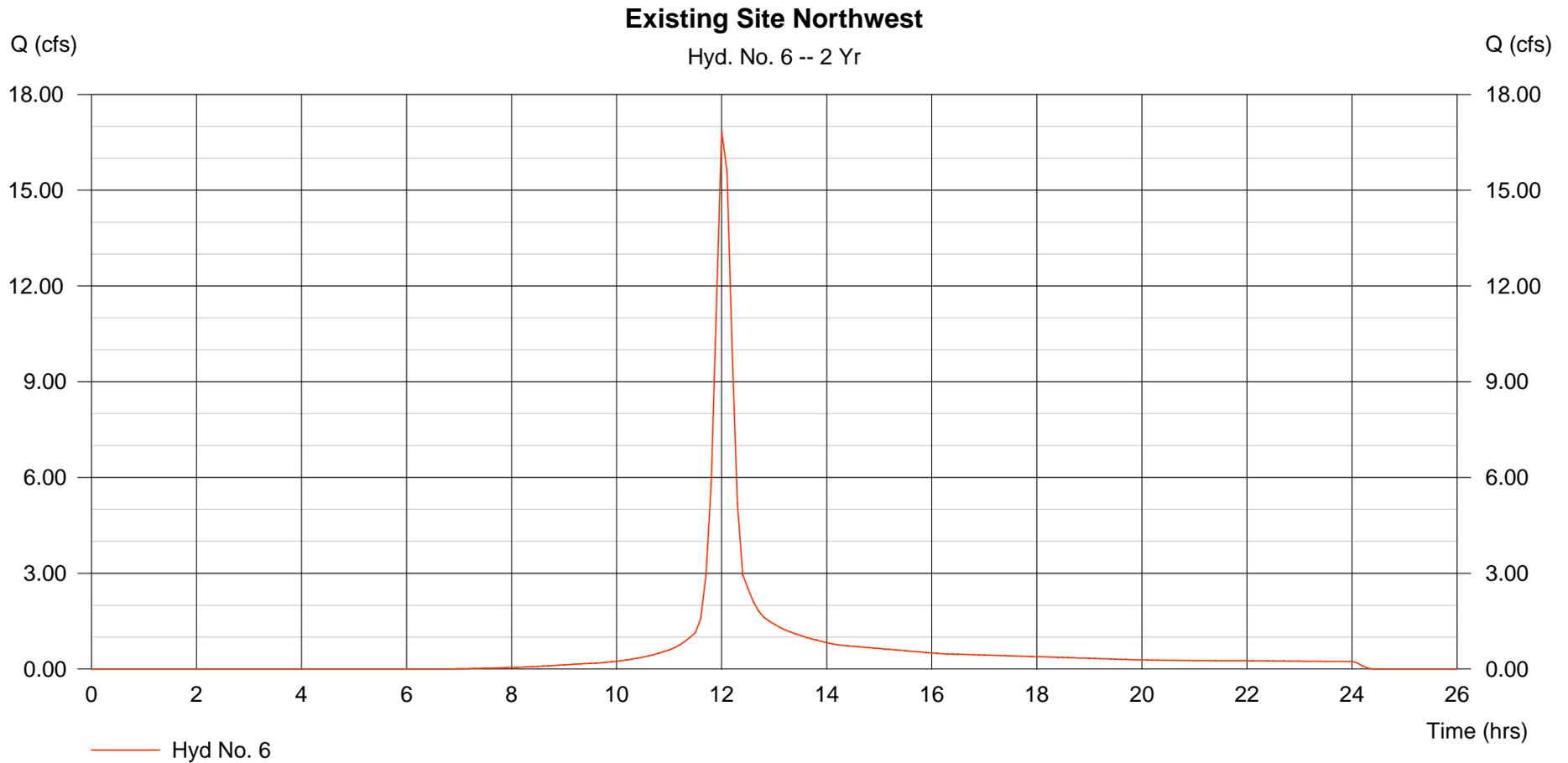
Hyd. No. 6

Existing Site Northwest

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 7.060 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 3.60 in
Storm duration = 24 hrs

Peak discharge = 16.84 cfs
Time interval = 6 min
Curve number = 85.6
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 1.188 acft



TR55 Tc Worksheet

Hyd. No. 6

Existing Site Northwest

<u>Description</u>	<u>A</u>		<u>B</u>		<u>C</u>		<u>Totals</u>	
Sheet Flow								
Manning's n-value	= 0.170		0.011		0.011			
Flow length (ft)	= 50.0		0.0		0.0			
Two-year 24-hr precip. (in)	= 3.60		0.00		0.00			
Land slope (%)	= 2.50		0.00		0.00			
Travel Time (min)	= 5.36	+	0.00	+	0.00	=	5.36	
Shallow Concentrated Flow								
Flow length (ft)	= 881.00		0.00		0.00			
Watercourse slope (%)	= 1.26		0.00		0.00			
Surface description	= Unpaved		Paved		Paved			
Average velocity (ft/s)	= 1.81		0.00		0.00			
Travel Time (min)	= 8.11	+	0.00	+	0.00	=	8.11	
Channel Flow								
X sectional flow area (sqft)	= 4.40		0.00		0.00			
Wetted perimeter (ft)	= 32.56		0.00		0.00			
Channel slope (%)	= 1.20		0.00		0.00			
Manning's n-value	= 0.015		0.015		0.015			
Velocity (ft/s)	= 2.85		0.00		0.00			
Flow length (ft)	= 261.0		0.0		0.0			
Travel Time (min)	= 1.53	+	0.00	+	0.00	=	1.53	
Total Travel Time, Tc							=	15.00 min

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (acft)	Hydrograph description
1	SCS Runoff	193.48	6	720	15.201	----	-----	-----	Off-Site North
2	SCS Runoff	23.78	6	732	2.744	----	-----	-----	Existing Site Northeast
3	Combine	208.83	6	720	17.945	1, 2	-----	-----	Existing Northeast and Off-site
4	Reservoir	112.14	6	732	17.945	3	1368.82	3.520	Existing North Pond
5	SCS Runoff	21.18	6	720	1.495	----	-----	-----	Existing Site South
6	SCS Runoff	23.56	6	720	1.666	----	-----	-----	Existing Site Northwest
Inwood Final Existing.gpw					Return Period: 5 Year			Thursday, May 31 2007	

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 9:57 AM

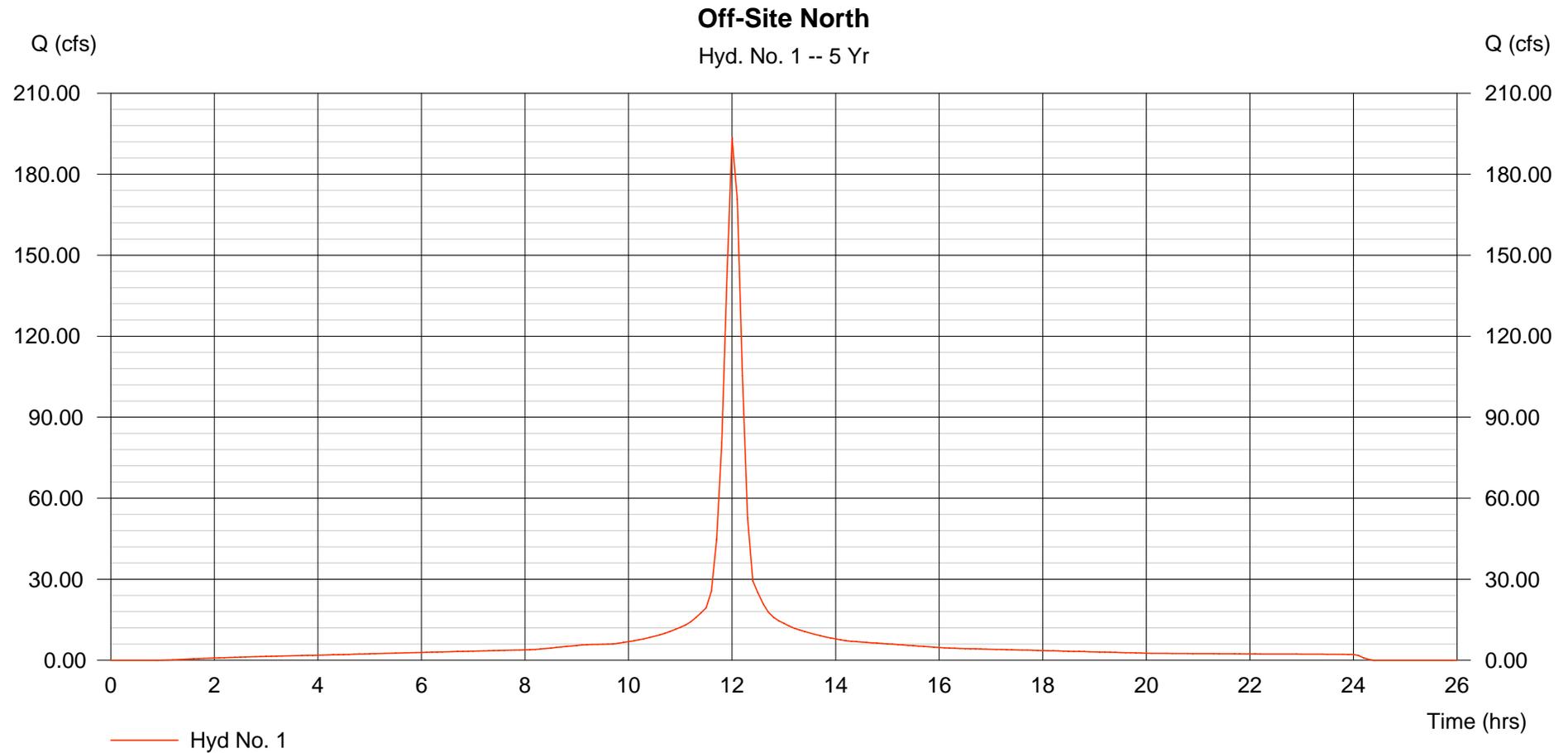
Hyd. No. 1

Off-Site North

Hydrograph type = SCS Runoff
Storm frequency = 5 yrs
Drainage area = 45.000 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 4.56 in
Storm duration = 24 hrs

Peak discharge = 193.48 cfs
Time interval = 6 min
Curve number = 98
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 15.201 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 9:57 AM

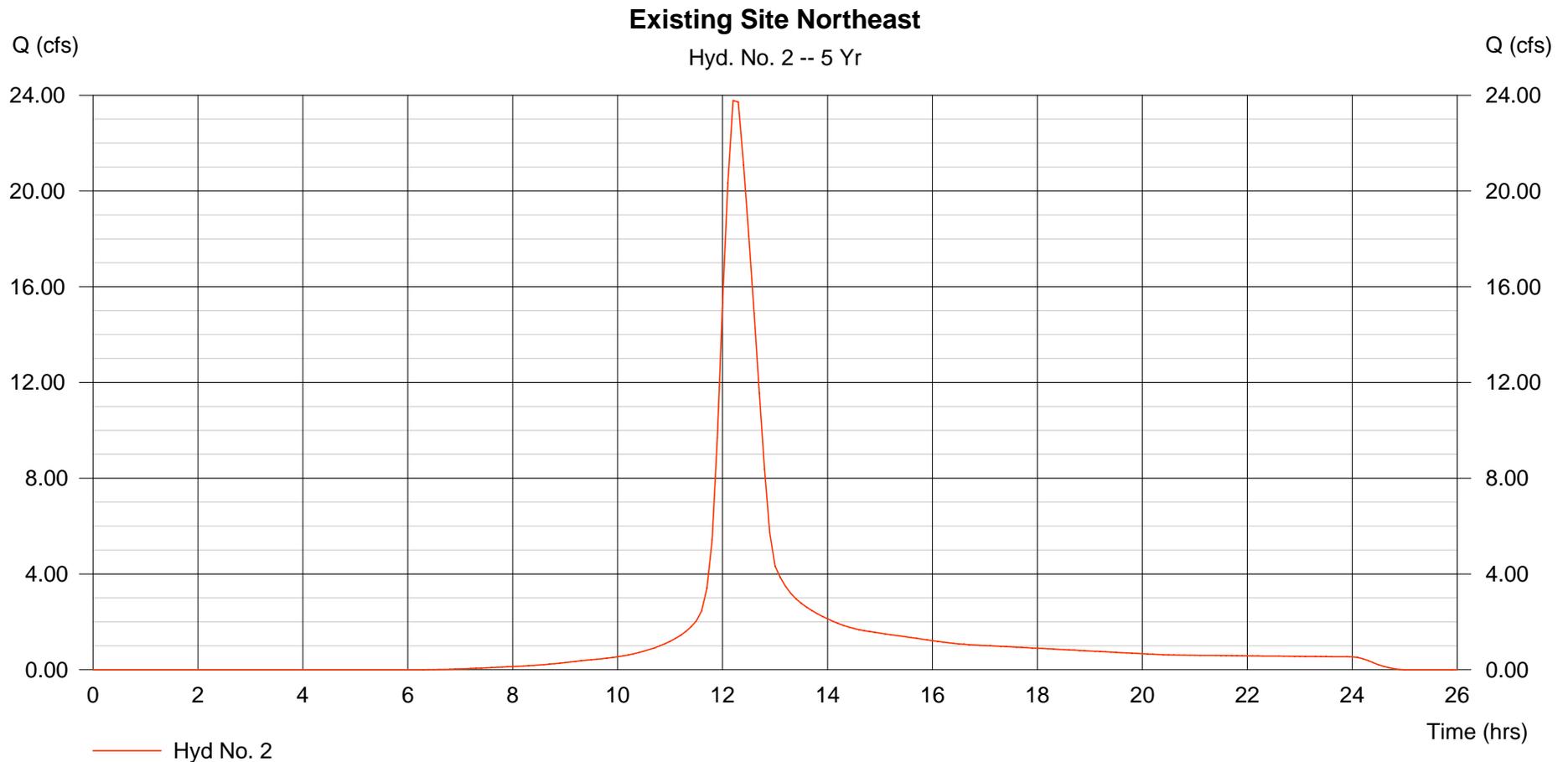
Hyd. No. 2

Existing Site Northeast

Hydrograph type = SCS Runoff
Storm frequency = 5 yrs
Drainage area = 11.121 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 4.56 in
Storm duration = 24 hrs

Peak discharge = 23.78 cfs
Time interval = 6 min
Curve number = 84
Hydraulic length = 0 ft
Time of conc. (Tc) = 38.40 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 2.744 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 9:57 AM

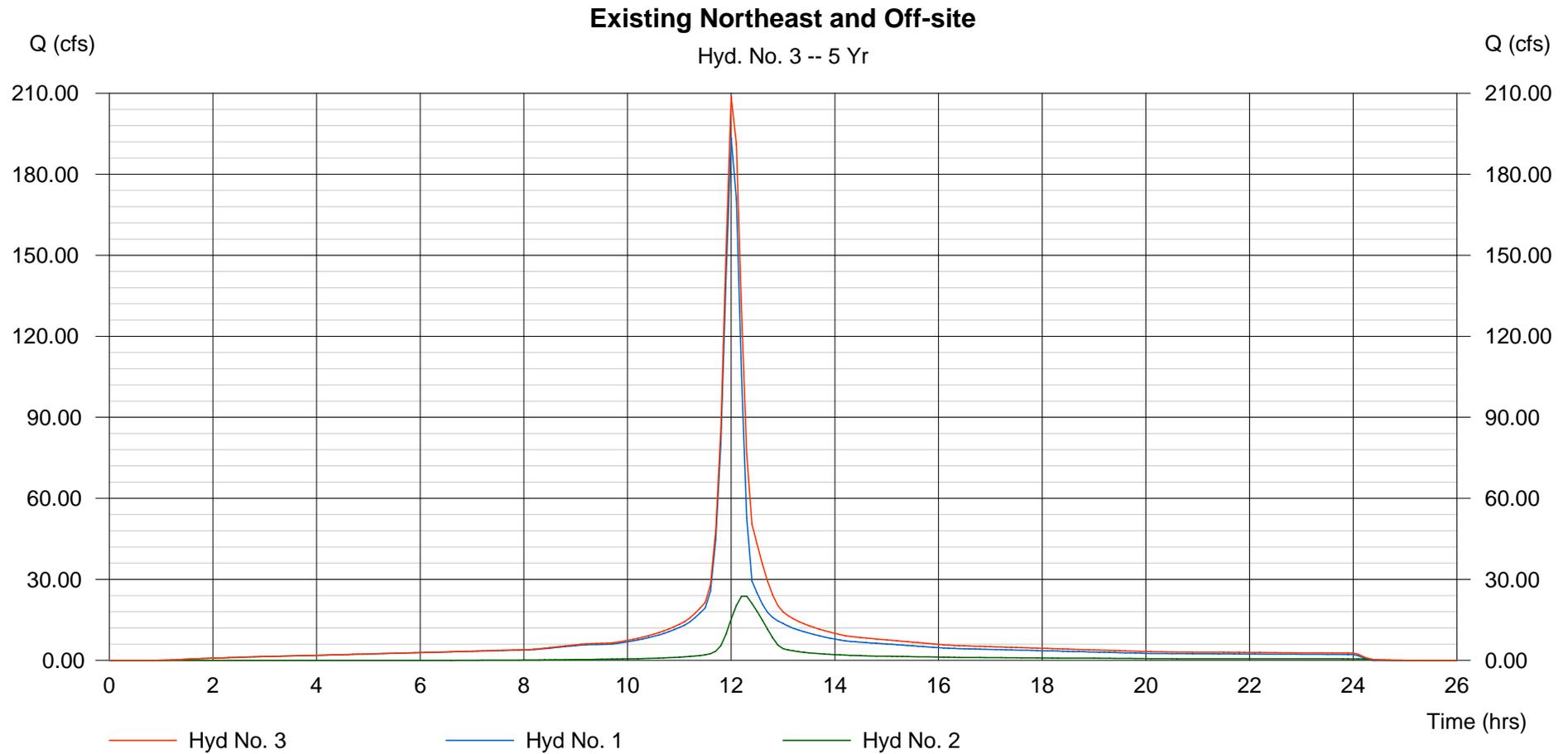
Hyd. No. 3

Existing Northeast and Off-site

Hydrograph type = Combine
Storm frequency = 5 yrs
Inflow hyds. = 1, 2

Peak discharge = 208.83 cfs
Time interval = 6 min

Hydrograph Volume = 17.945 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 9:57 AM

Hyd. No. 4

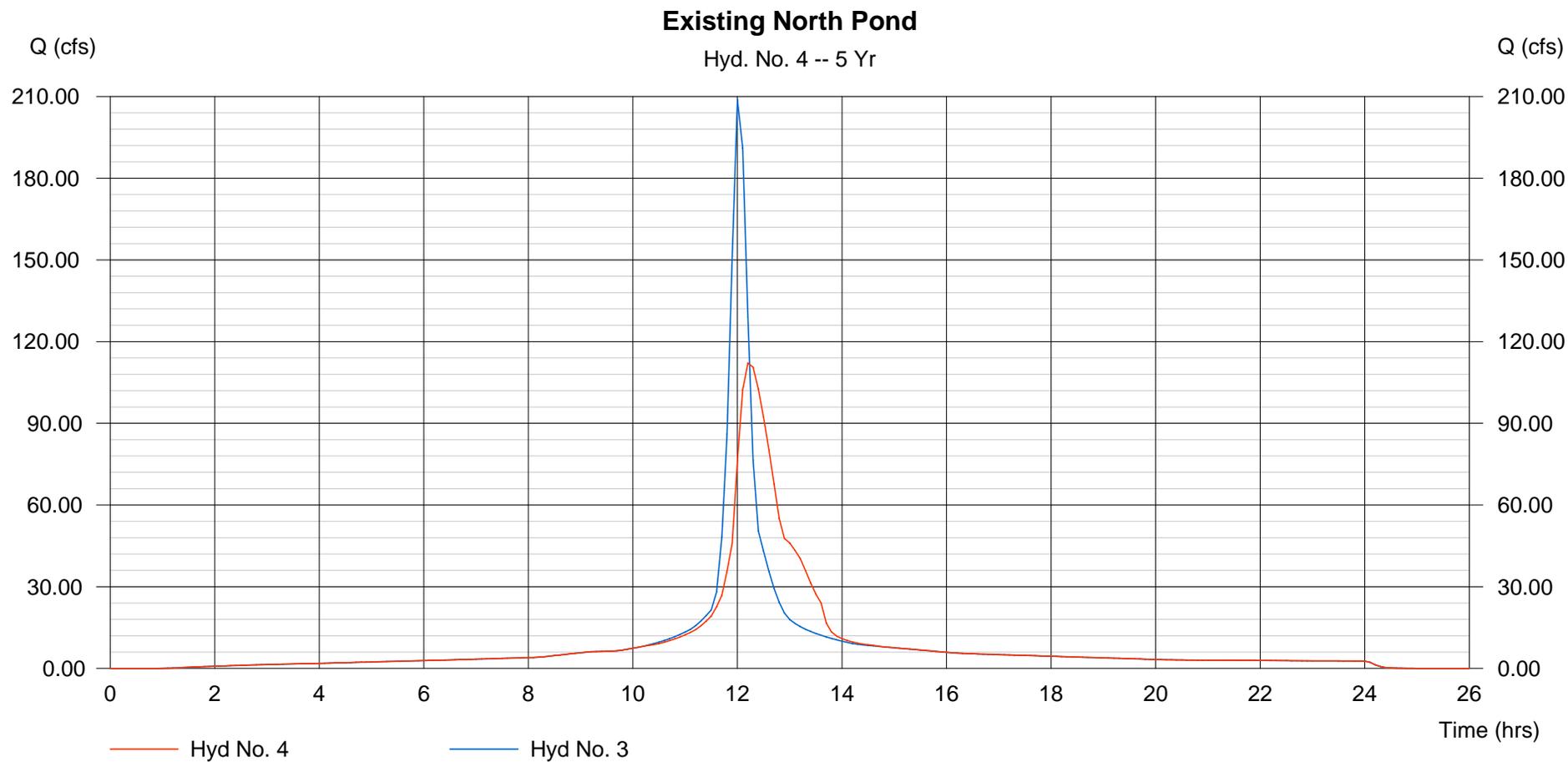
Existing North Pond

Hydrograph type = Reservoir
Storm frequency = 5 yrs
Inflow hyd. No. = 3
Reservoir name = Existing North Pond

Peak discharge = 112.14 cfs
Time interval = 6 min
Max. Elevation = 1368.82 ft
Max. Storage = 3.520 acft

Storage Indication method used.

Hydrograph Volume = 17.945 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 9:57 AM

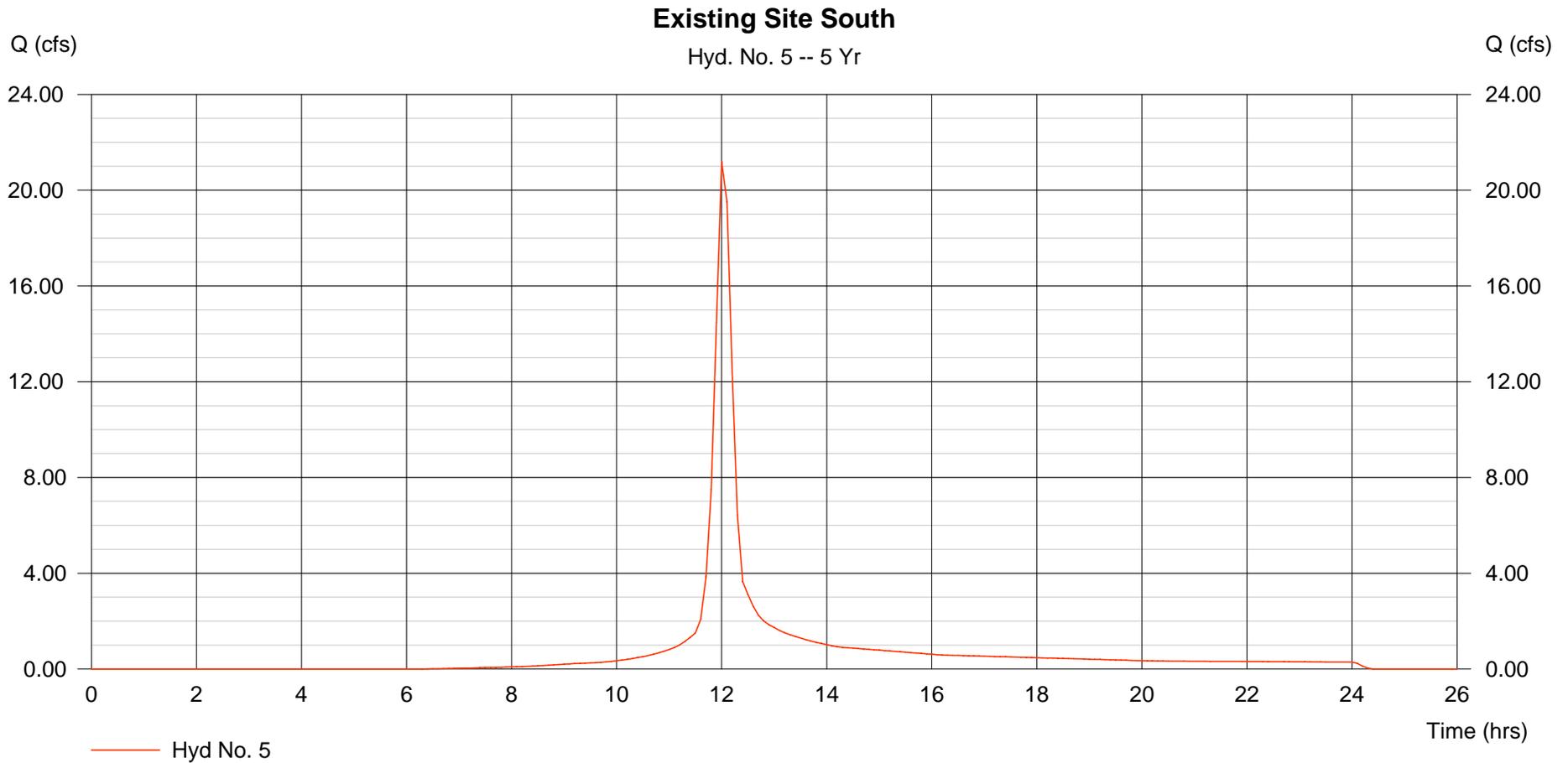
Hyd. No. 5

Existing Site South

Hydrograph type = SCS Runoff
Storm frequency = 5 yrs
Drainage area = 6.665 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 4.56 in
Storm duration = 24 hrs

Peak discharge = 21.18 cfs
Time interval = 6 min
Curve number = 84
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 1.495 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 9:57 AM

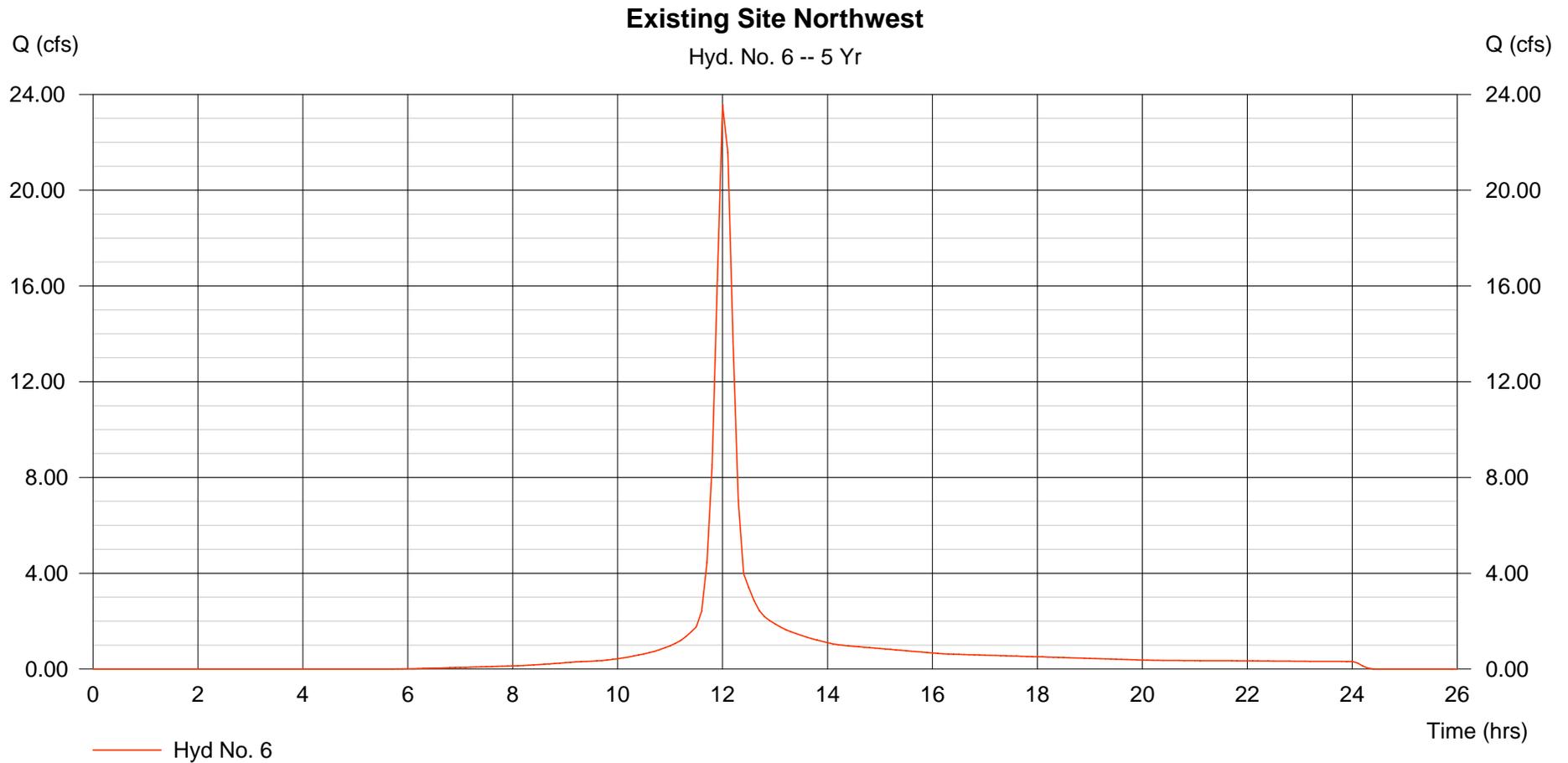
Hyd. No. 6

Existing Site Northwest

Hydrograph type = SCS Runoff
Storm frequency = 5 yrs
Drainage area = 7.060 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 4.56 in
Storm duration = 24 hrs

Peak discharge = 23.56 cfs
Time interval = 6 min
Curve number = 85.6
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 1.666 acft



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (acft)	Hydrograph description	
1	SCS Runoff	224.46	6	720	17.728	----	-----	-----	Off-Site North	
2	SCS Runoff	29.21	6	732	3.371	----	-----	-----	Existing Site Northeast	
3	Combine	243.53	6	720	21.100	1, 2	-----	-----	Existing Northeast and Off-site	
4	Reservoir	126.20	6	732	21.100	3	1369.41	4.256	Existing North Pond	
5	SCS Runoff	25.96	6	720	1.837	----	-----	-----	Existing Site South	
6	SCS Runoff	28.65	6	720	2.034	----	-----	-----	Existing Site Northwest	
Inwood Final Existing.gpw					Return Period: 10 Year			Thursday, May 31 2007		

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 9:58 AM

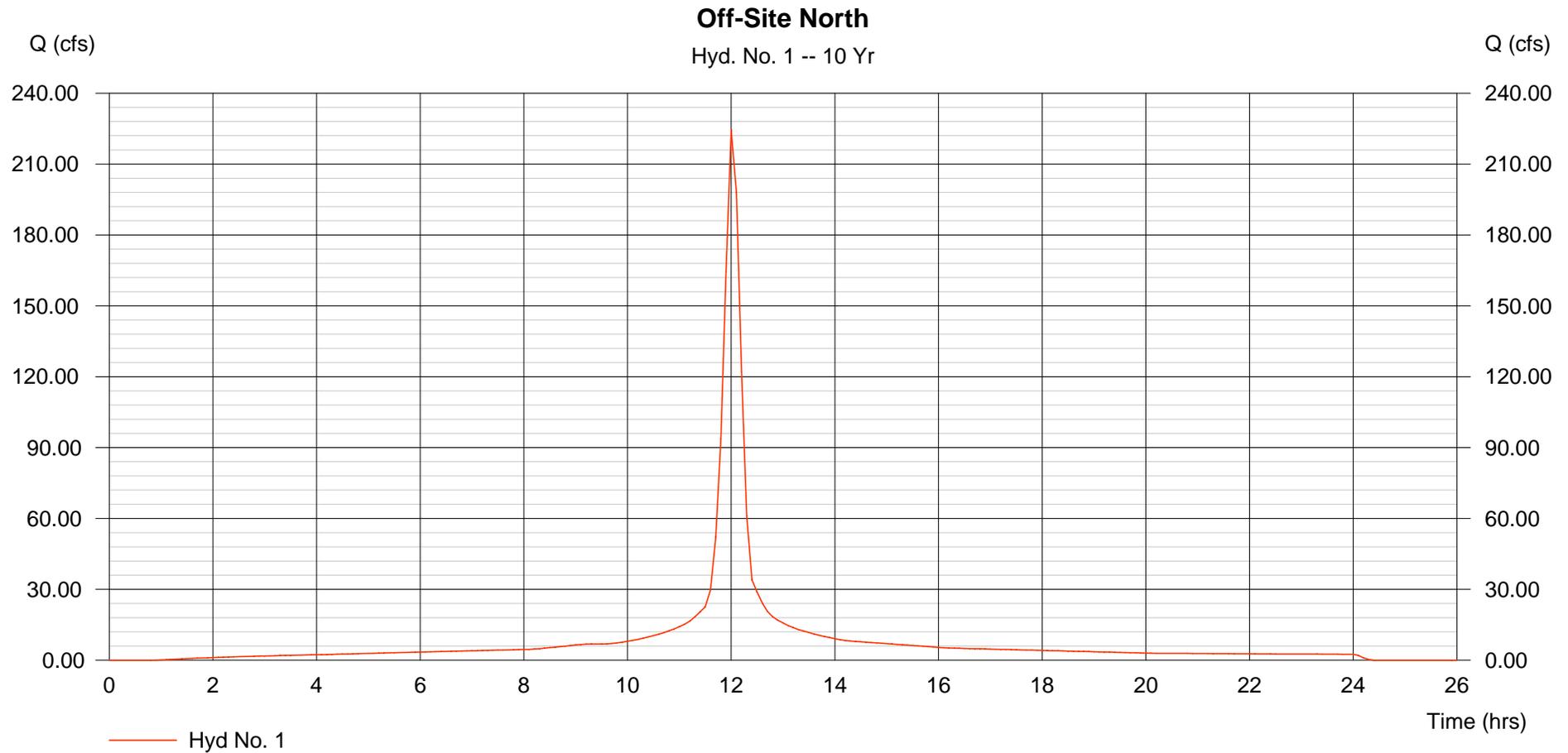
Hyd. No. 1

Off-Site North

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 45.000 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 5.28 in
Storm duration = 24 hrs

Peak discharge = 224.46 cfs
Time interval = 6 min
Curve number = 98
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 17.728 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 9:58 AM

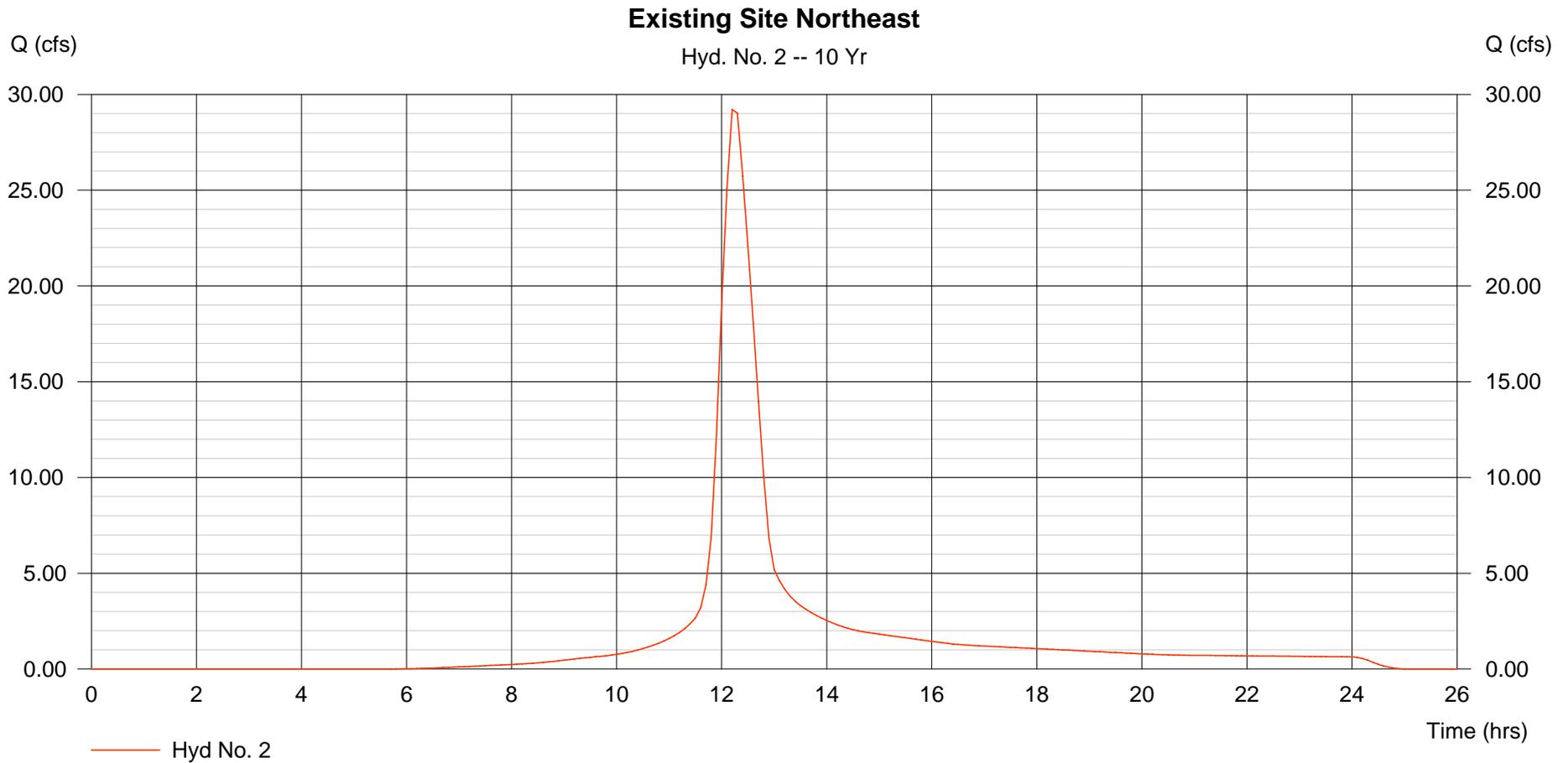
Hyd. No. 2

Existing Site Northeast

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 11.121 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 5.28 in
Storm duration = 24 hrs

Peak discharge = 29.21 cfs
Time interval = 6 min
Curve number = 84
Hydraulic length = 0 ft
Time of conc. (Tc) = 38.40 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 3.371 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 9:58 AM

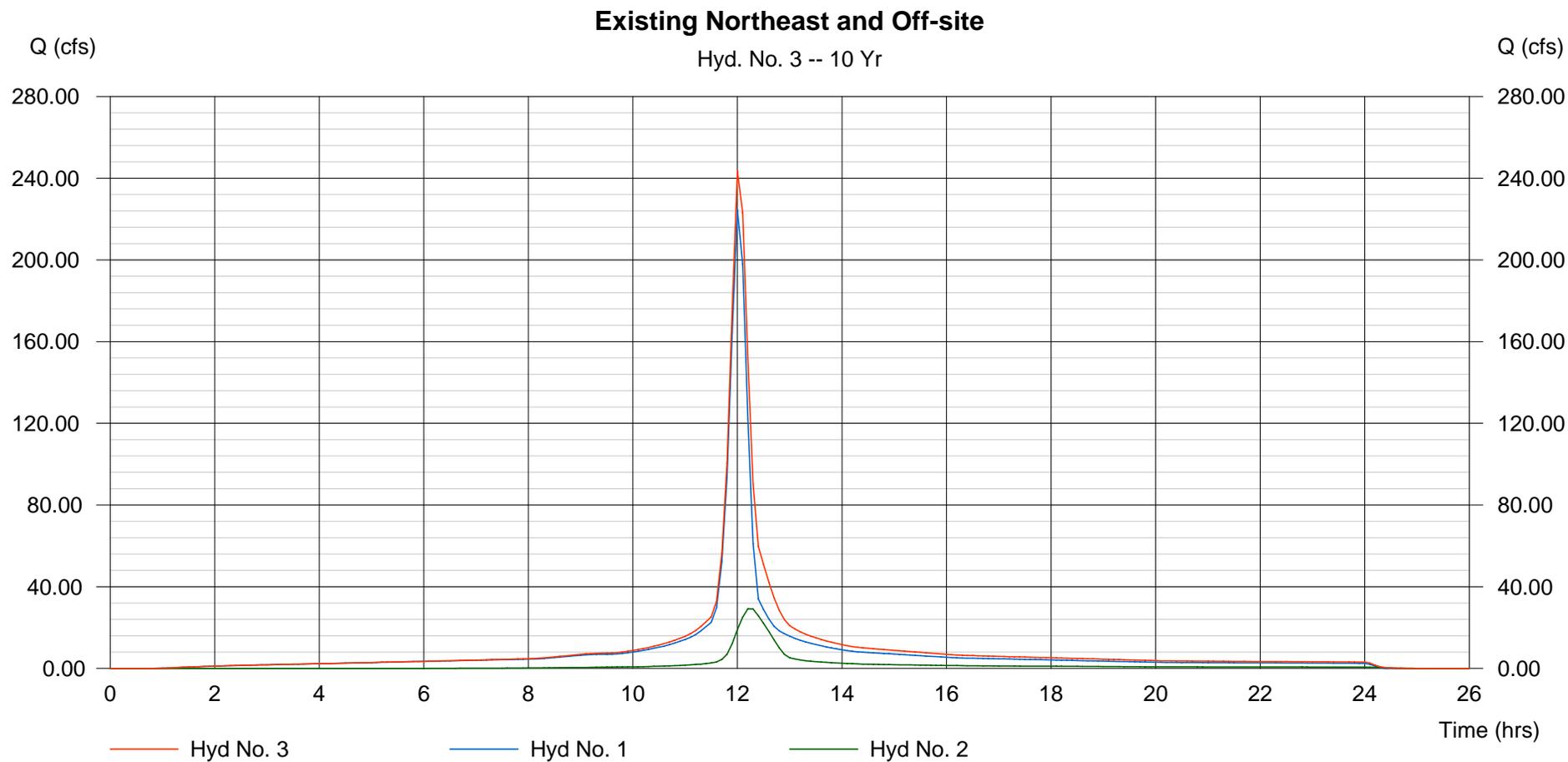
Hyd. No. 3

Existing Northeast and Off-site

Hydrograph type = Combine
Storm frequency = 10 yrs
Inflow hyds. = 1, 2

Peak discharge = 243.53 cfs
Time interval = 6 min

Hydrograph Volume = 21.100 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 9:58 AM

Hyd. No. 4

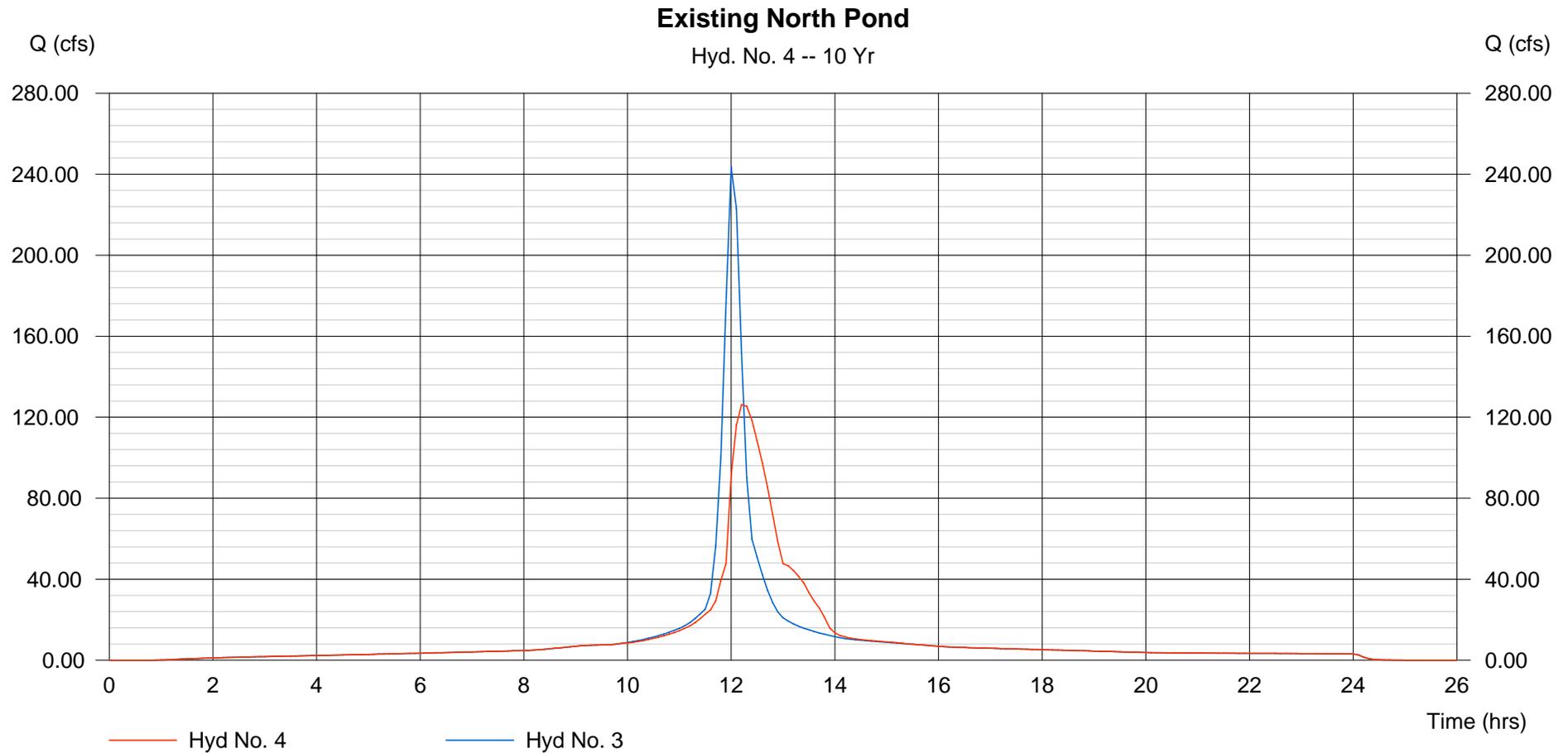
Existing North Pond

Hydrograph type = Reservoir
Storm frequency = 10 yrs
Inflow hyd. No. = 3
Reservoir name = Existing North Pond

Peak discharge = 126.20 cfs
Time interval = 6 min
Max. Elevation = 1369.41 ft
Max. Storage = 4.256 acft

Storage Indication method used.

Hydrograph Volume = 21.100 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 9:58 AM

Hyd. No. 5

Existing Site South

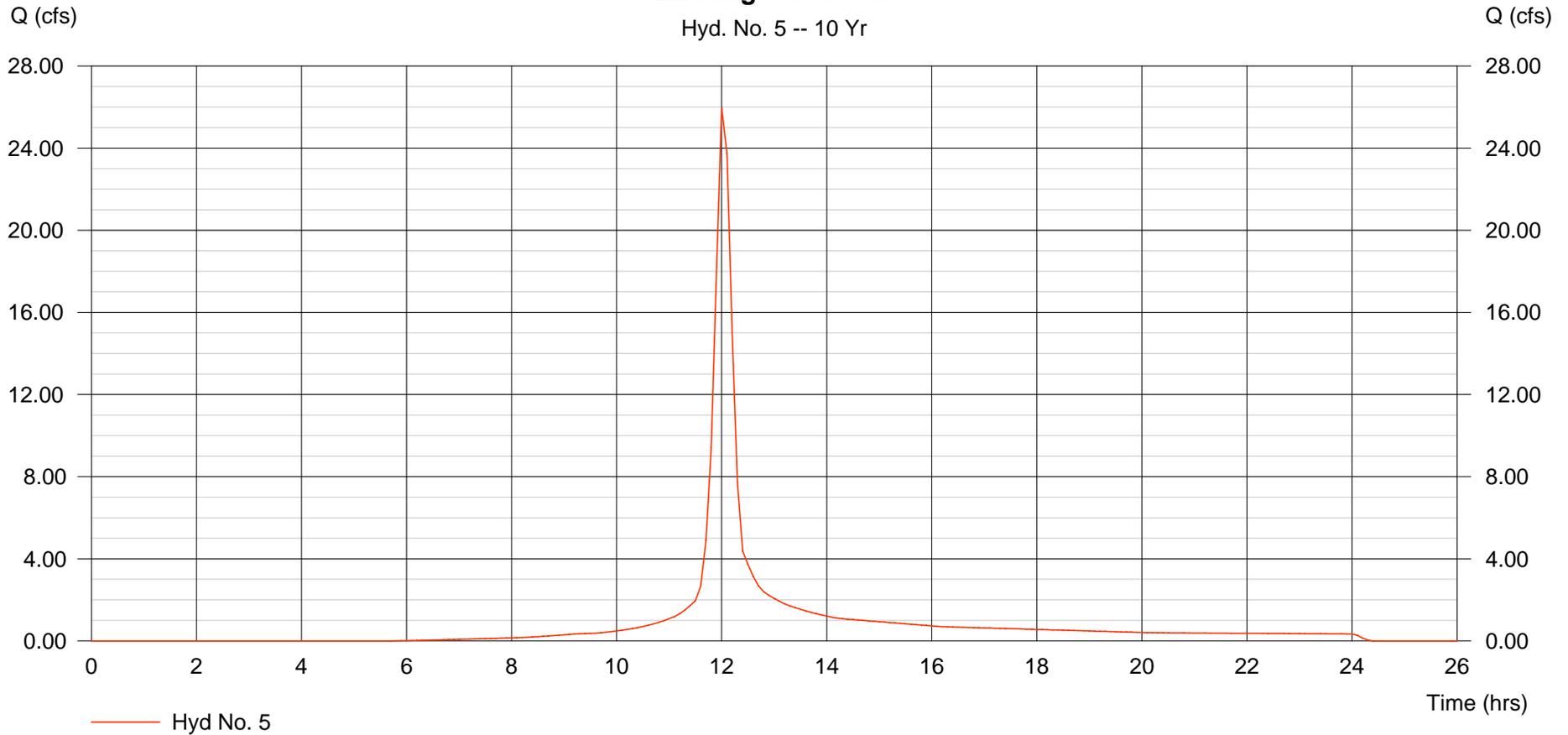
Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 6.665 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 5.28 in
Storm duration = 24 hrs

Peak discharge = 25.96 cfs
Time interval = 6 min
Curve number = 84
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 1.837 acft

Existing Site South

Hyd. No. 5 -- 10 Yr



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 9:58 AM

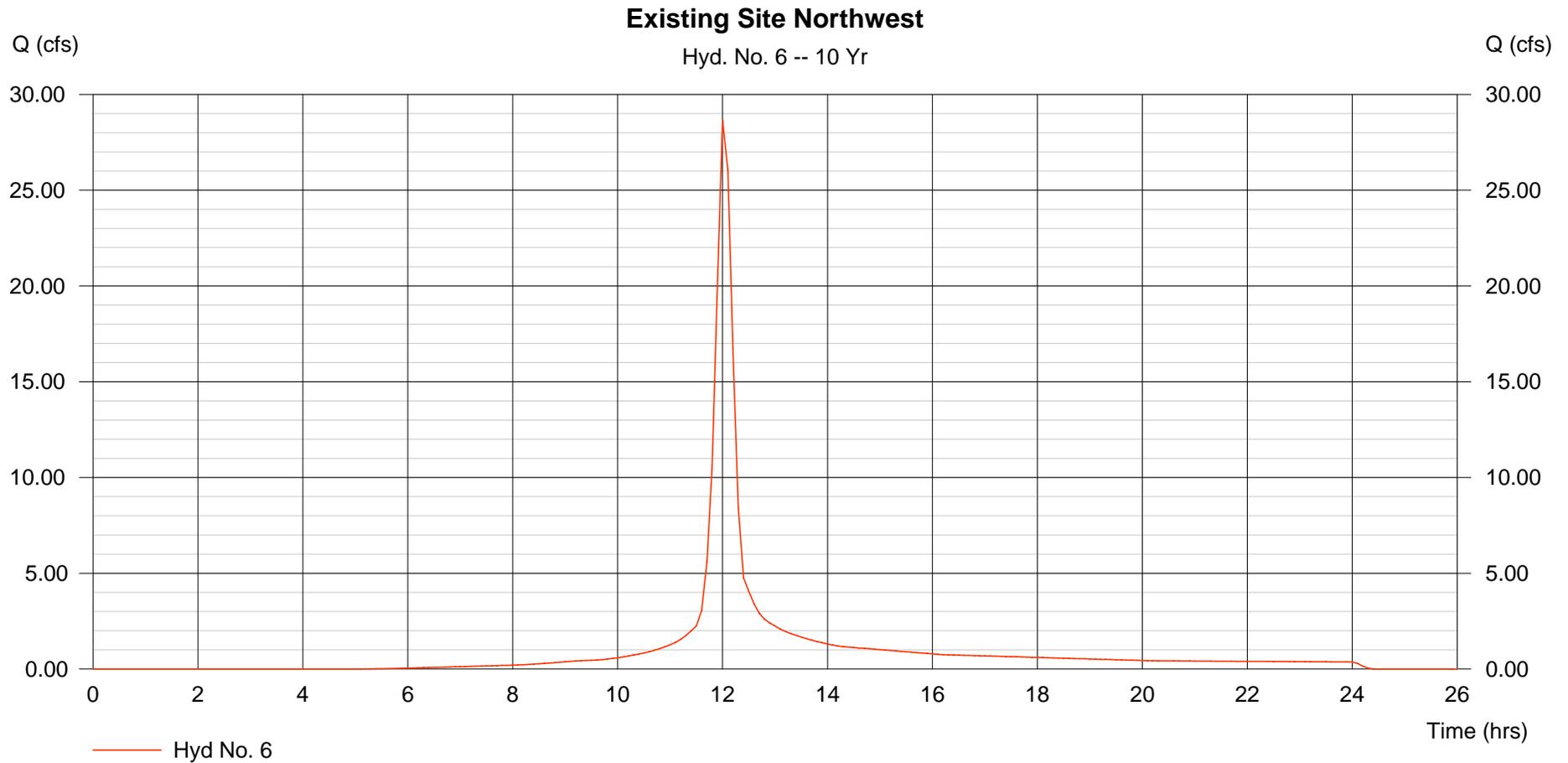
Hyd. No. 6

Existing Site Northwest

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 7.060 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 5.28 in
Storm duration = 24 hrs

Peak discharge = 28.65 cfs
Time interval = 6 min
Curve number = 85.6
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 2.034 acft



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (acft)	Hydrograph description	
1	SCS Runoff	265.71	6	720	21.099	----	-----	-----	Off-Site North	
2	SCS Runoff	36.51	6	732	4.226	----	-----	-----	Existing Site Northeast	
3	Combine	289.81	6	720	25.325	1, 2	-----	-----	Existing Northeast and Off-site	
4	Reservoir	138.42	6	738	25.325	3	1370.24	5.328	Existing North Pond	
5	SCS Runoff	32.37	6	720	2.302	----	-----	-----	Existing Site South	
6	SCS Runoff	35.44	6	720	2.534	----	-----	-----	Existing Site Northwest	
Inwood Final Existing.gpw					Return Period: 25 Year			Thursday, May 31 2007		

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 9:59 AM

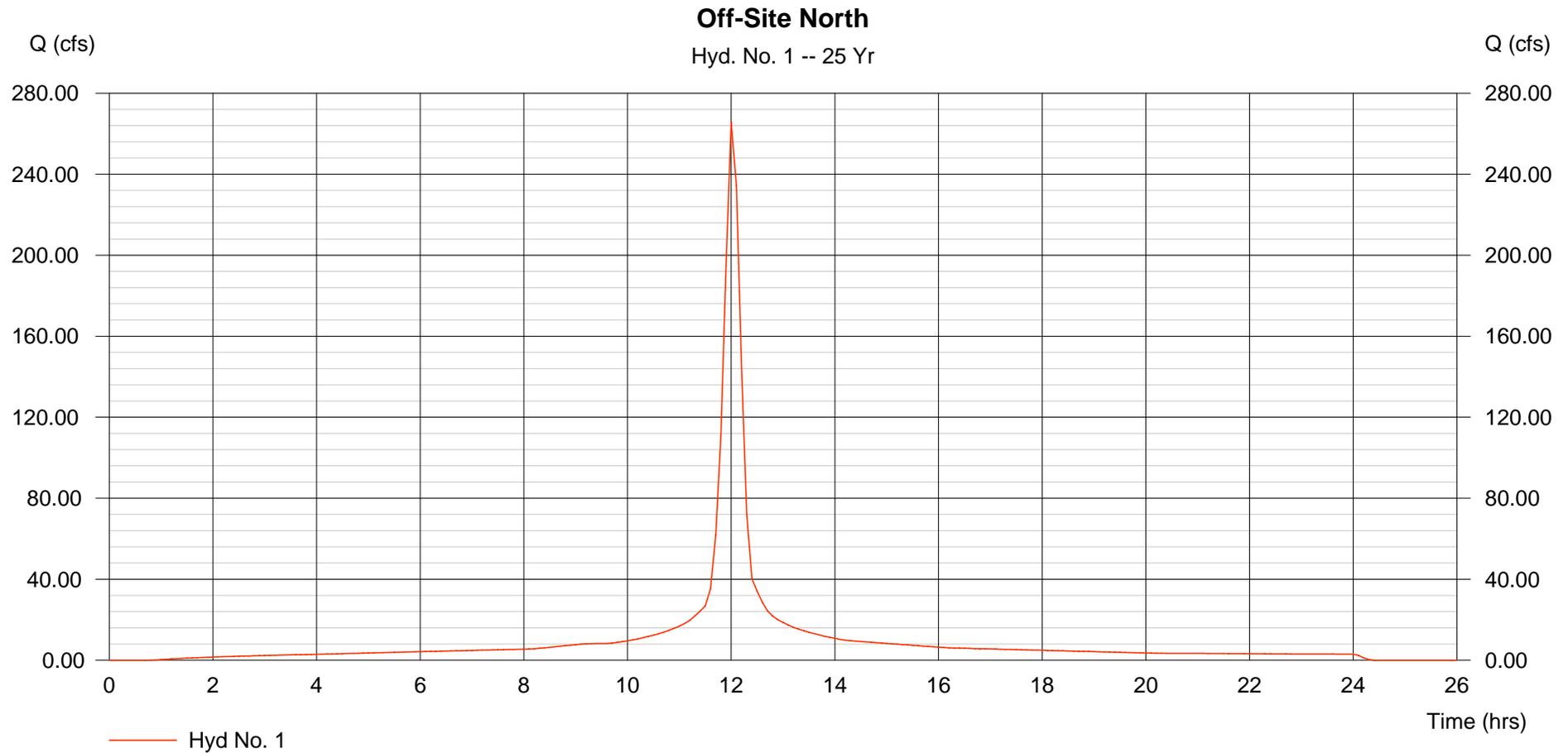
Hyd. No. 1

Off-Site North

Hydrograph type = SCS Runoff
Storm frequency = 25 yrs
Drainage area = 45.000 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 6.24 in
Storm duration = 24 hrs

Peak discharge = 265.71 cfs
Time interval = 6 min
Curve number = 98
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 21.099 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 9:59 AM

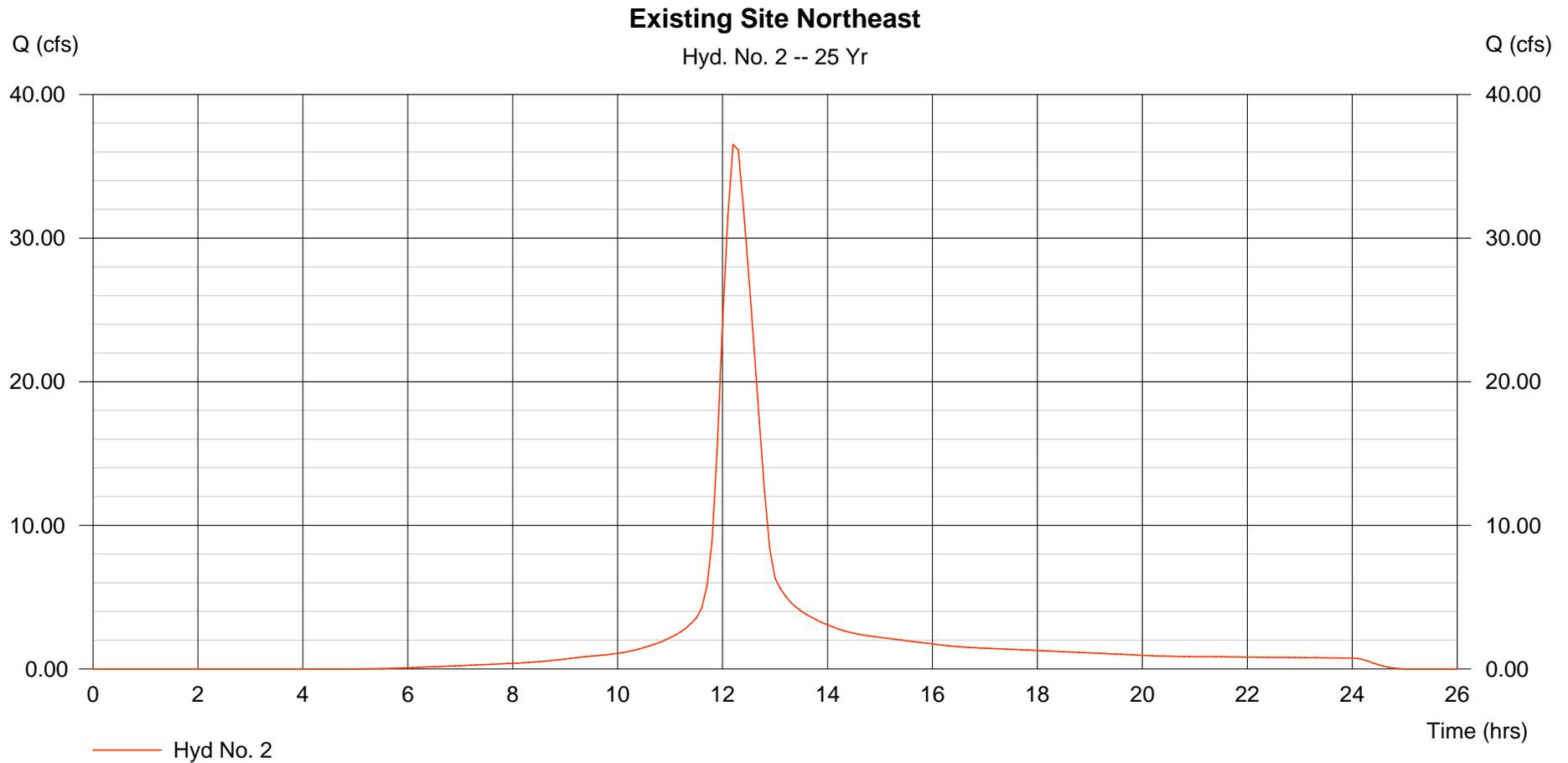
Hyd. No. 2

Existing Site Northeast

Hydrograph type = SCS Runoff
Storm frequency = 25 yrs
Drainage area = 11.121 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 6.24 in
Storm duration = 24 hrs

Peak discharge = 36.51 cfs
Time interval = 6 min
Curve number = 84
Hydraulic length = 0 ft
Time of conc. (Tc) = 38.40 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 4.226 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 9:59 AM

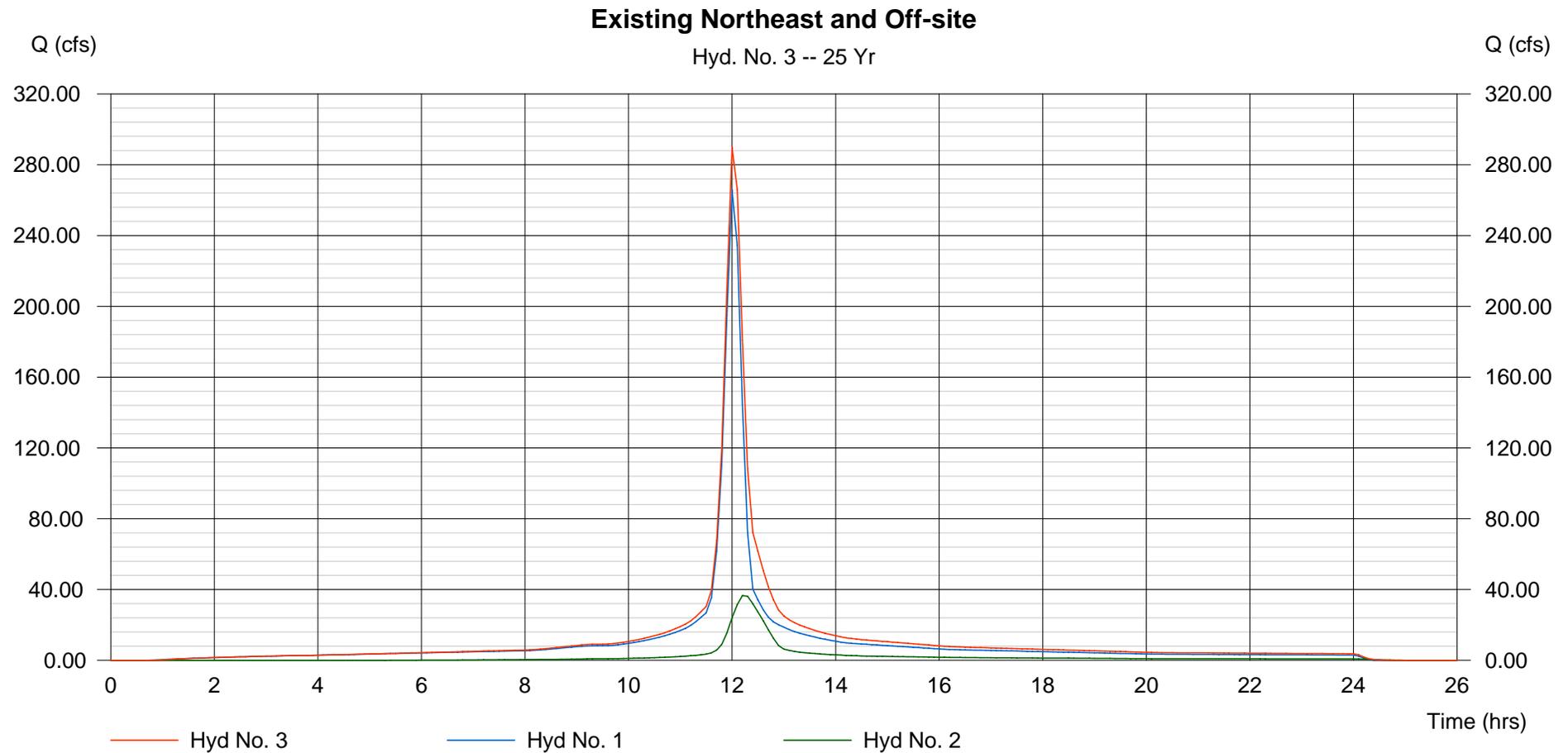
Hyd. No. 3

Existing Northeast and Off-site

Hydrograph type = Combine
Storm frequency = 25 yrs
Inflow hyds. = 1, 2

Peak discharge = 289.81 cfs
Time interval = 6 min

Hydrograph Volume = 25.325 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 9:59 AM

Hyd. No. 4

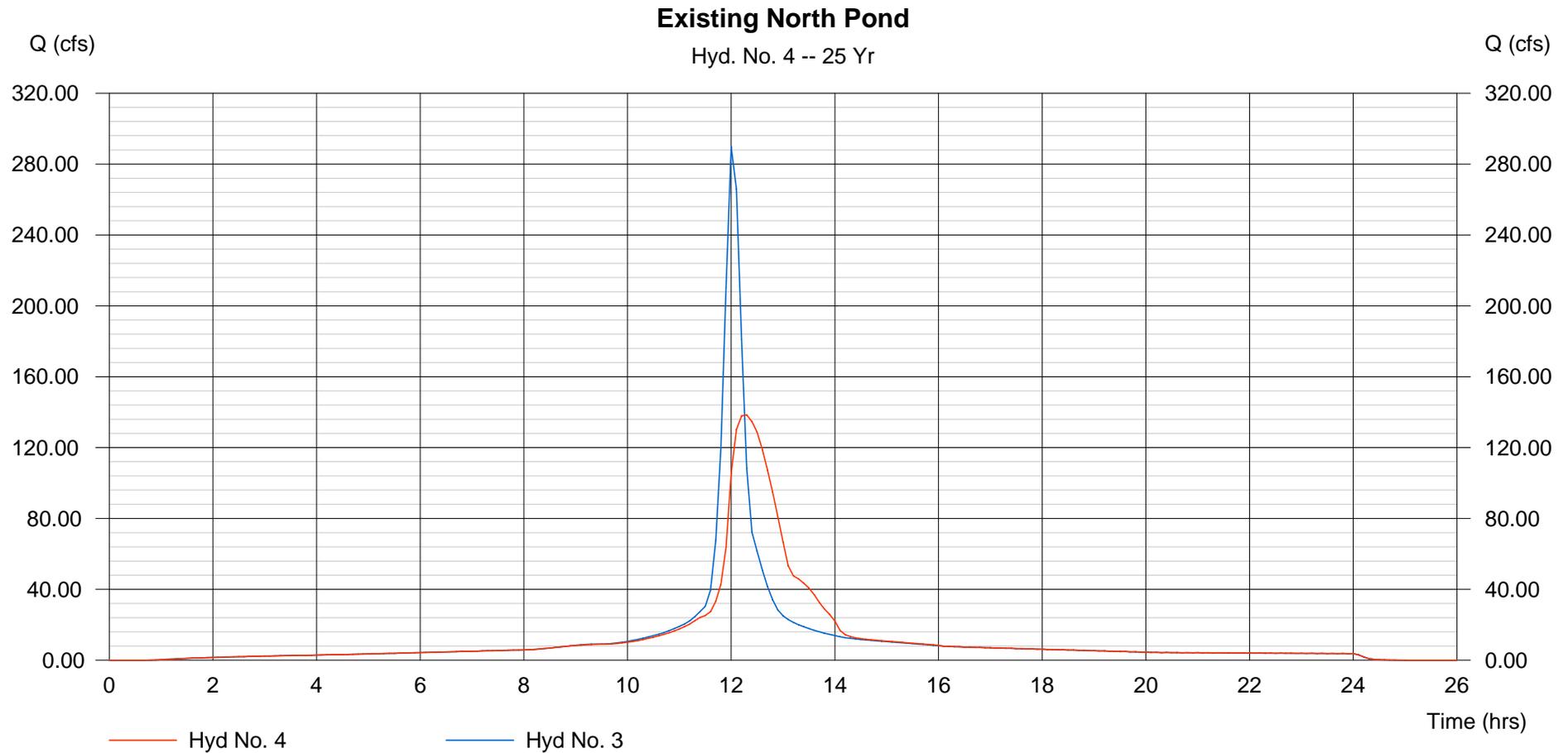
Existing North Pond

Hydrograph type = Reservoir
Storm frequency = 25 yrs
Inflow hyd. No. = 3
Reservoir name = Existing North Pond

Peak discharge = 138.42 cfs
Time interval = 6 min
Max. Elevation = 1370.24 ft
Max. Storage = 5.328 acft

Storage Indication method used.

Hydrograph Volume = 25.325 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 9:59 AM

Hyd. No. 5

Existing Site South

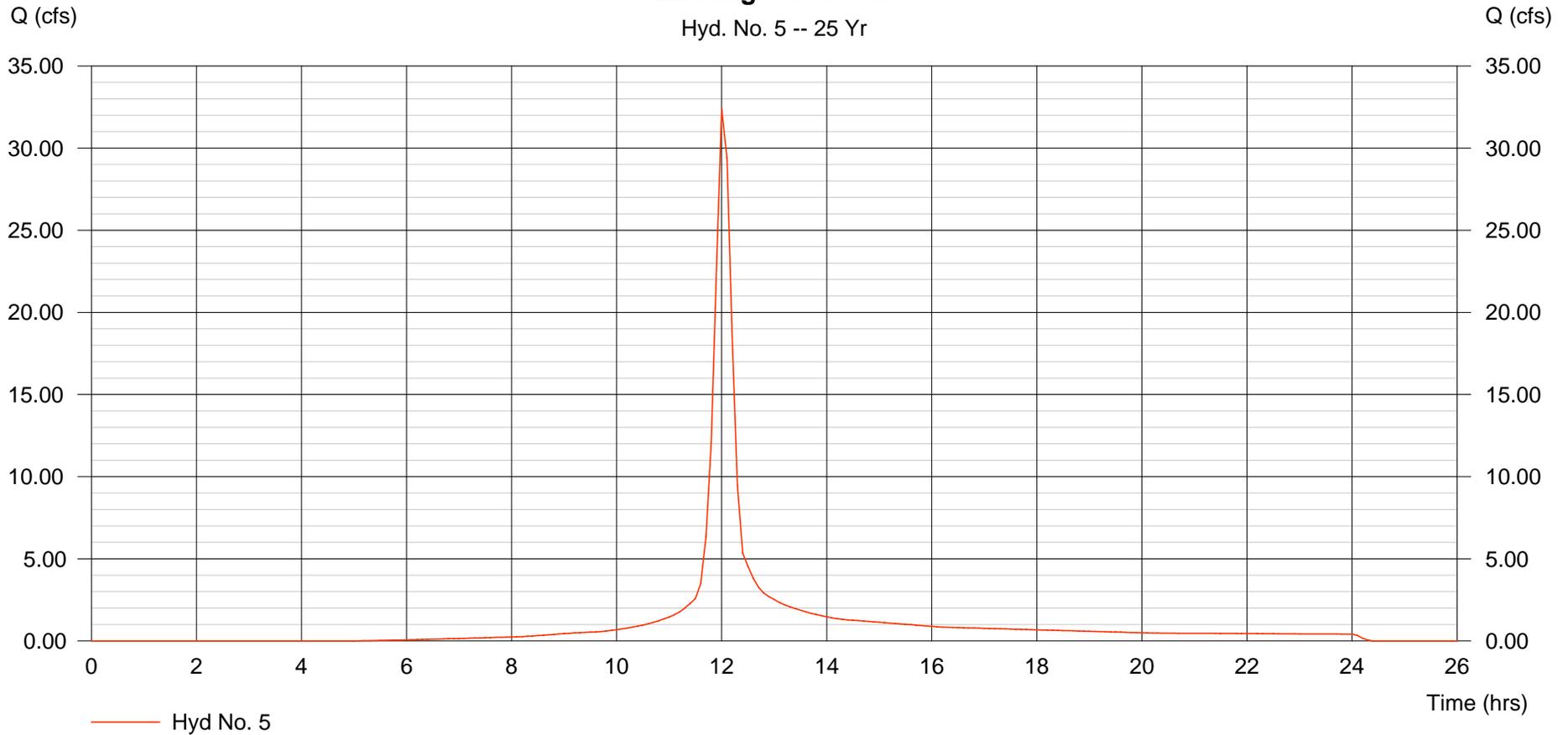
Hydrograph type = SCS Runoff
Storm frequency = 25 yrs
Drainage area = 6.665 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 6.24 in
Storm duration = 24 hrs

Peak discharge = 32.37 cfs
Time interval = 6 min
Curve number = 84
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 2.302 acft

Existing Site South

Hyd. No. 5 -- 25 Yr



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 9:59 AM

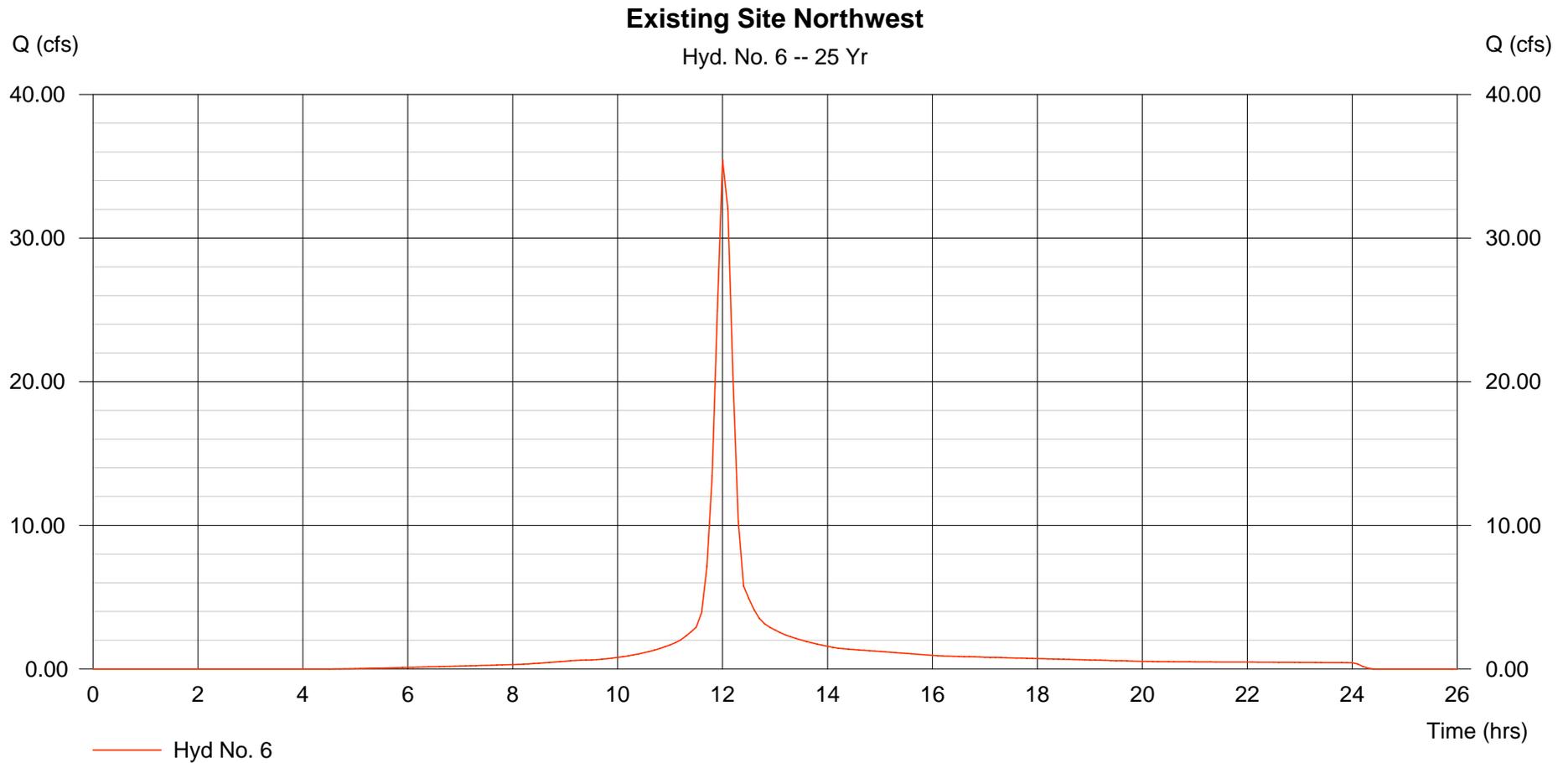
Hyd. No. 6

Existing Site Northwest

Hydrograph type = SCS Runoff
Storm frequency = 25 yrs
Drainage area = 7.060 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 6.24 in
Storm duration = 24 hrs

Peak discharge = 35.44 cfs
Time interval = 6 min
Curve number = 85.6
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 2.534 acft



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (acft)	Hydrograph description	
1	SCS Runoff	327.50	6	720	26.158	----	-----	-----	Off-Site North	
2	SCS Runoff	47.49	6	732	5.532	----	-----	-----	Existing Site Northeast	
3	Combine	359.22	6	720	31.690	1, 2	-----	-----	Existing Northeast and Off-site	
4	Reservoir	166.17	6	738	31.690	3	1371.46	7.053	Existing North Pond	
5	SCS Runoff	41.99	6	720	3.014	----	-----	-----	Existing Site South	
6	SCS Runoff	45.62	6	720	3.296	----	-----	-----	Existing Site Northwest	
Inwood Final Existing.gpw					Return Period: 100 Year			Thursday, May 31 2007		

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 10:0 AM

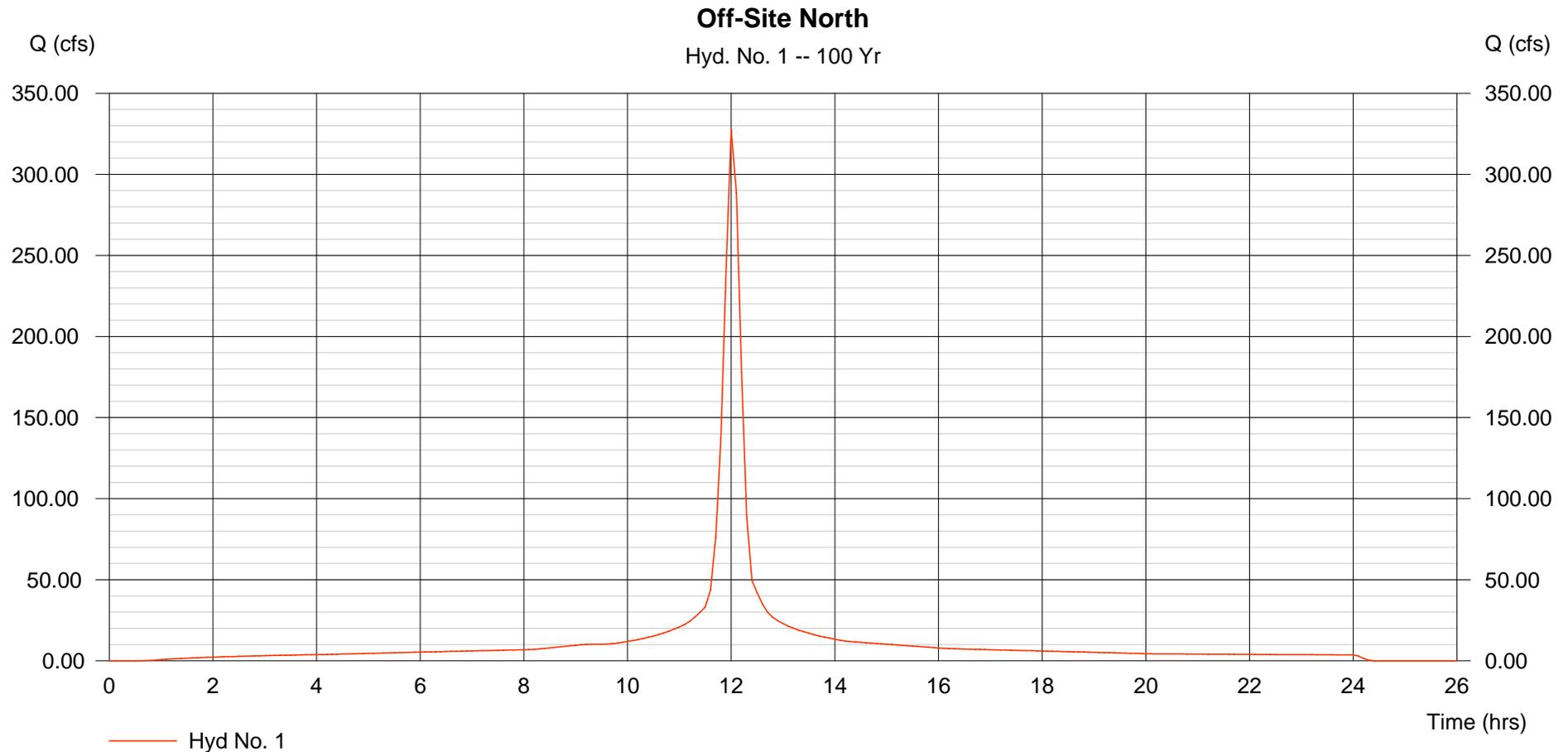
Hyd. No. 1

Off-Site North

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 45.000 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 7.68 in
Storm duration = 24 hrs

Peak discharge = 327.50 cfs
Time interval = 6 min
Curve number = 98
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 26.158 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 10:0 AM

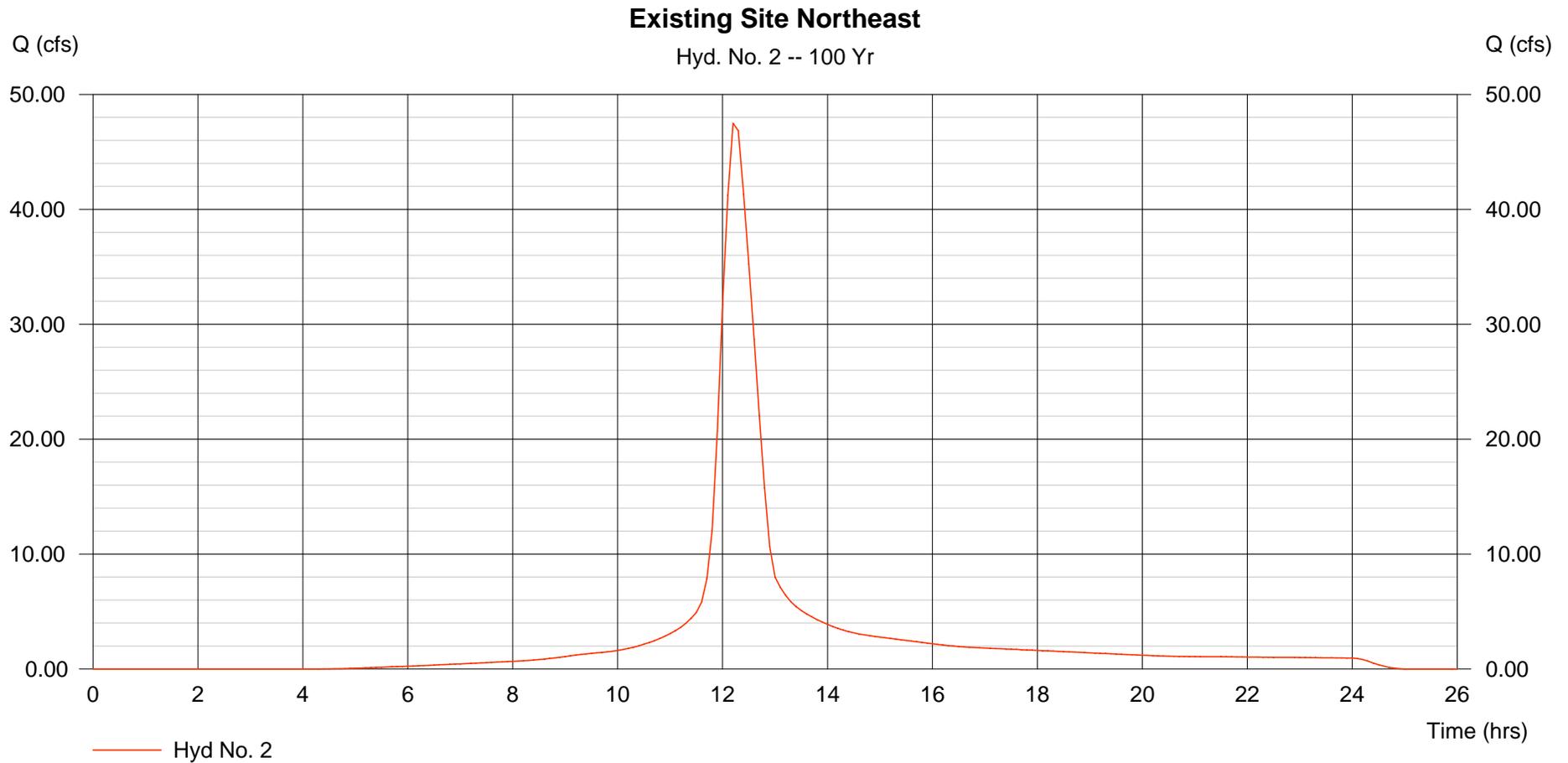
Hyd. No. 2

Existing Site Northeast

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 11.121 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 7.68 in
Storm duration = 24 hrs

Peak discharge = 47.49 cfs
Time interval = 6 min
Curve number = 84
Hydraulic length = 0 ft
Time of conc. (Tc) = 38.40 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 5.532 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 10:0 AM

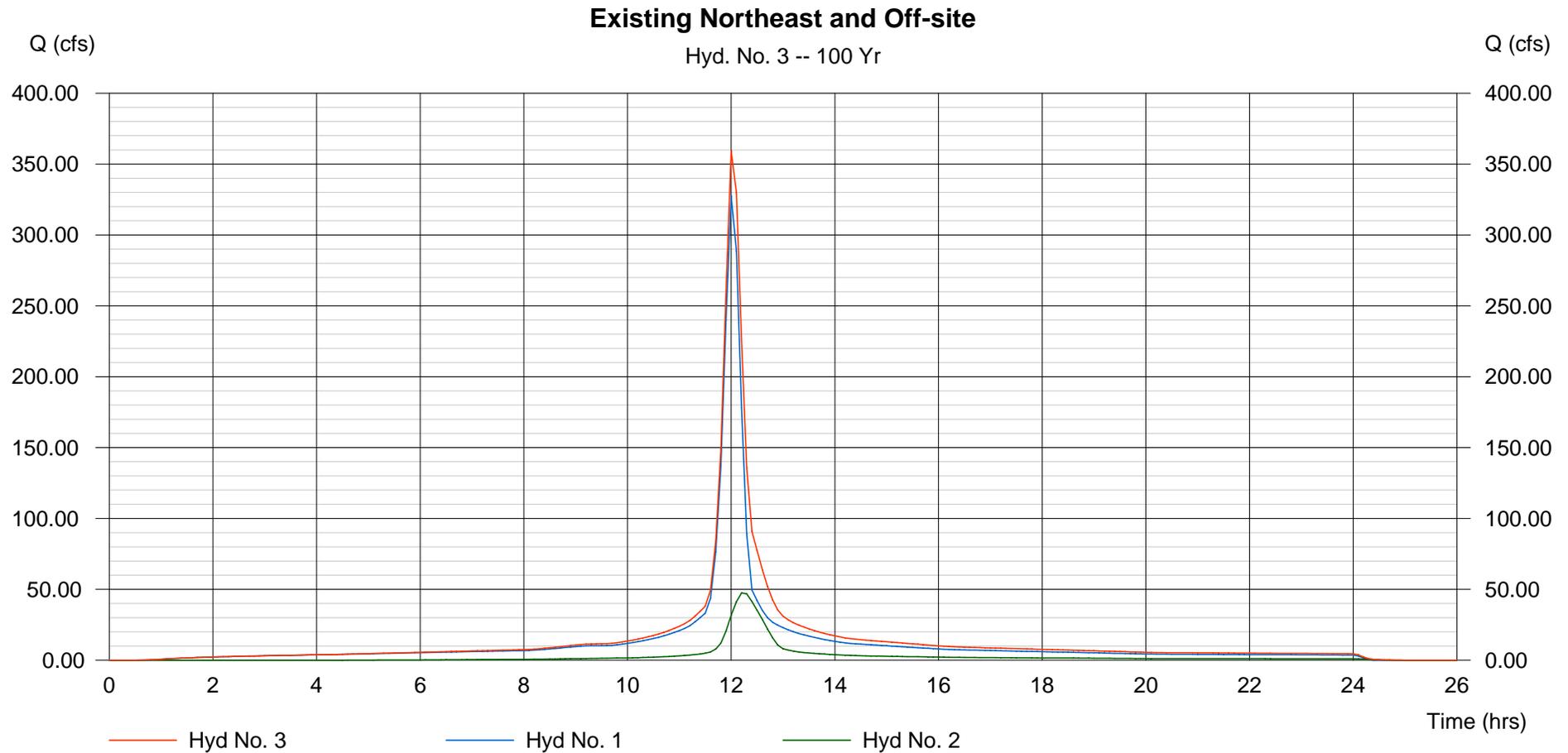
Hyd. No. 3

Existing Northeast and Off-site

Hydrograph type = Combine
Storm frequency = 100 yrs
Inflow hyds. = 1, 2

Peak discharge = 359.22 cfs
Time interval = 6 min

Hydrograph Volume = 31.690 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 10:0 AM

Hyd. No. 4

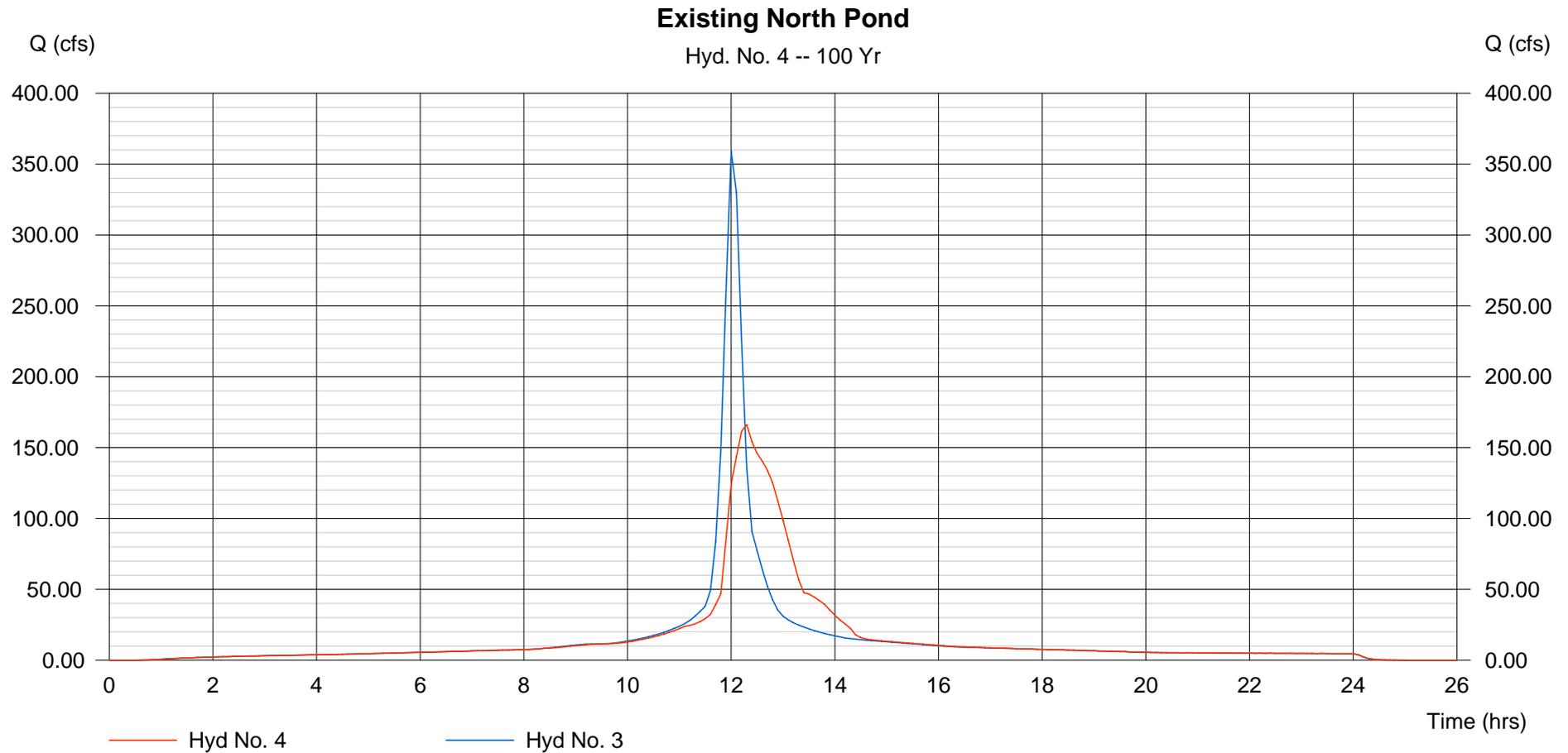
Existing North Pond

Hydrograph type = Reservoir
Storm frequency = 100 yrs
Inflow hyd. No. = 3
Reservoir name = Existing North Pond

Peak discharge = 166.17 cfs
Time interval = 6 min
Max. Elevation = 1371.46 ft
Max. Storage = 7.053 acft

Storage Indication method used.

Hydrograph Volume = 31.690 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 10:0 AM

Hyd. No. 5

Existing Site South

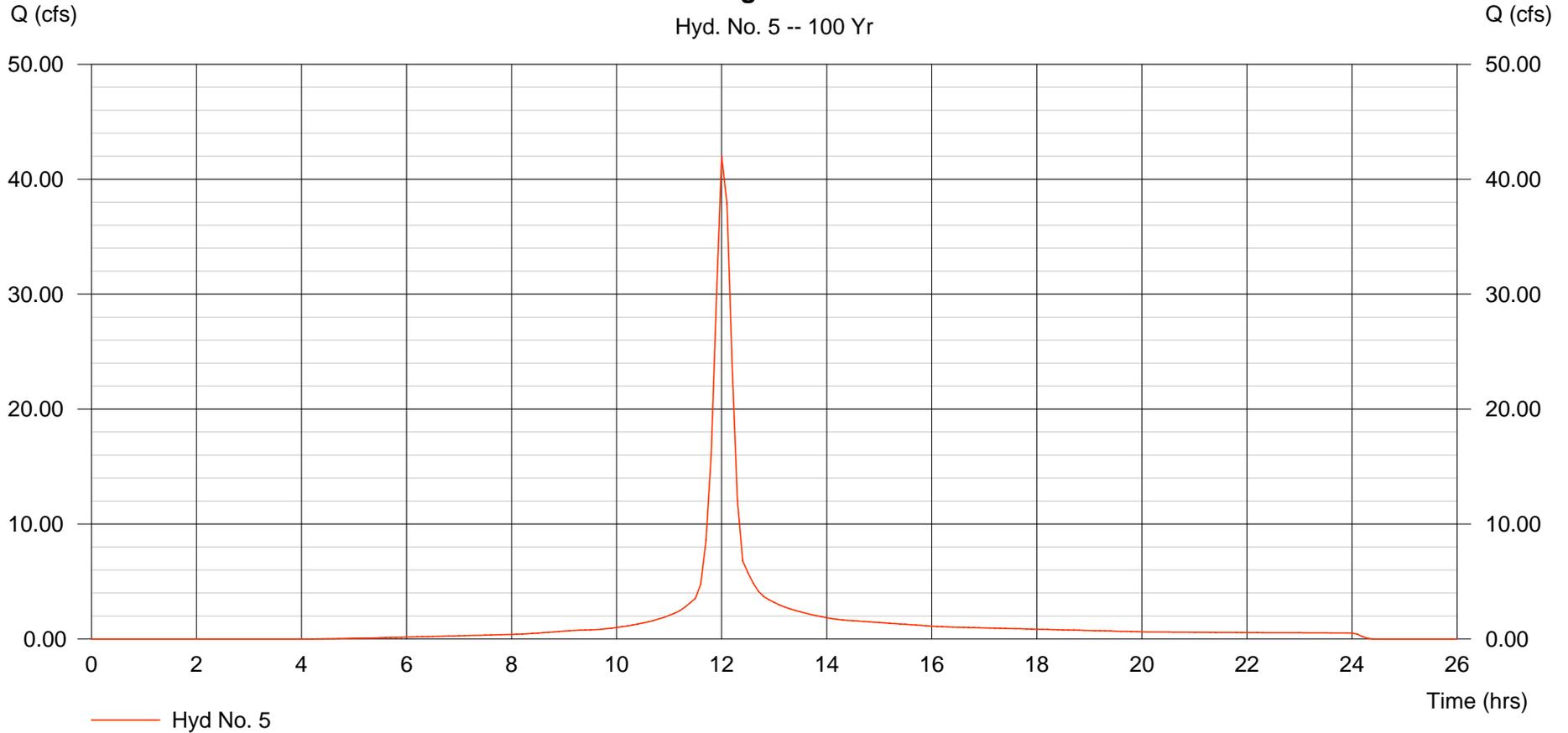
Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 6.665 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 7.68 in
Storm duration = 24 hrs

Peak discharge = 41.99 cfs
Time interval = 6 min
Curve number = 84
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 3.014 acft

Existing Site South

Hyd. No. 5 -- 100 Yr



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 10:0 AM

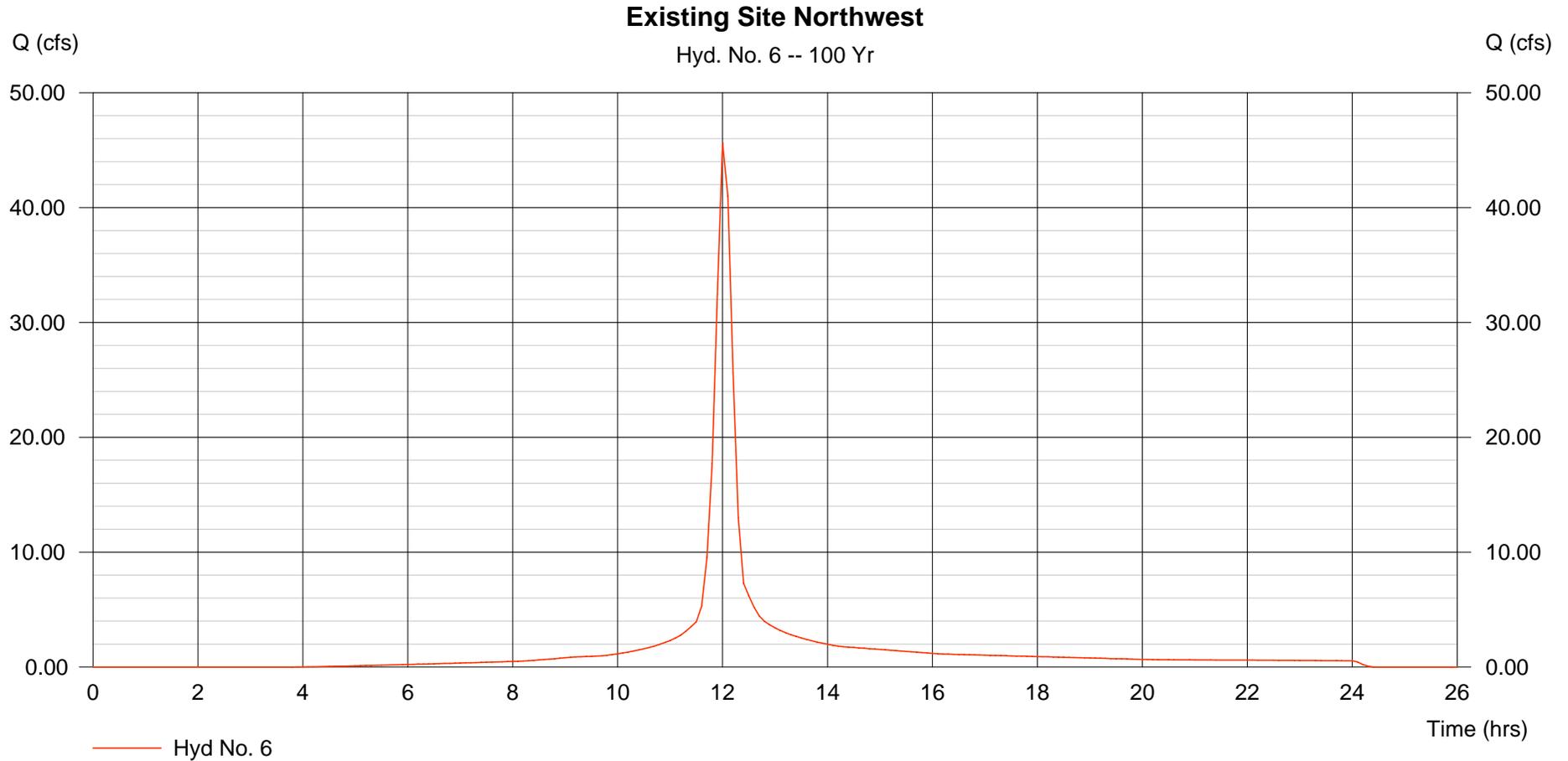
Hyd. No. 6

Existing Site Northwest

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 7.060 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 7.68 in
Storm duration = 24 hrs

Peak discharge = 45.62 cfs
Time interval = 6 min
Curve number = 85.6
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 3.296 acft



Pond Report

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 10:9 AM

Pond No. 1 - Existing North Pond

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (acft)	Total storage (acft)
0.00	1363.00	00	0.000	0.000
1.00	1364.00	09	0.000	0.000
2.00	1365.00	12,753	0.146	0.147
3.00	1366.00	32,315	0.517	0.664
4.00	1367.00	41,835	0.851	1.515
5.00	1368.00	48,901	1.042	2.557
6.00	1369.00	53,519	1.176	3.732
7.00	1370.00	57,512	1.274	5.007
8.00	1371.00	61,570	1.367	6.373
9.00	1372.00	66,083	1.465	7.839
10.00	1373.00	70,517	1.568	9.407

Culvert / Orifice Structures

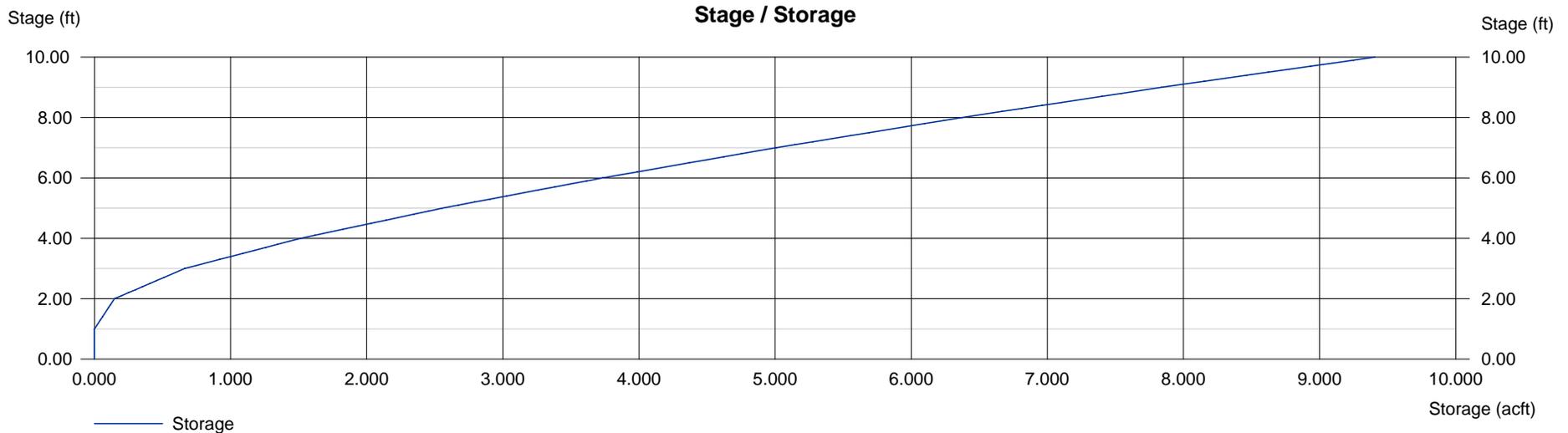
	[A]	[B]	[C]	[D]
Rise (in)	= 48.00	0.00	0.00	0.00
Span (in)	= 48.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 1363.00	0.00	0.00	0.00
Length (ft)	= 60.00	0.00	0.00	0.00
Slope (%)	= 0.67	0.00	0.00	0.00
N-Value	= .013	.000	.000	.000
Orif. Coeff.	= 0.60	0.00	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 15.00	0.00	0.00	0.00
Crest El. (ft)	= 1371.00	0.00	0.00	0.00
Weir Coeff.	= 2.60	0.00	0.00	0.00
Weir Type	= Broad	---	---	---
Multi-Stage	= No	No	No	No

Exfiltration = 0.000 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.



Pond Report

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 10:8 AM

Pond No. 1 - Existing North Pond

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (acft)	Total storage (acft)
0.00	1363.00	00	0.000	0.000
1.00	1364.00	09	0.000	0.000
2.00	1365.00	12,753	0.146	0.147
3.00	1366.00	32,315	0.517	0.664
4.00	1367.00	41,835	0.851	1.515
5.00	1368.00	48,901	1.042	2.557
6.00	1369.00	53,519	1.176	3.732
7.00	1370.00	57,512	1.274	5.007
8.00	1371.00	61,570	1.367	6.373
9.00	1372.00	66,083	1.465	7.839
10.00	1373.00	70,517	1.568	9.407

Culvert / Orifice Structures

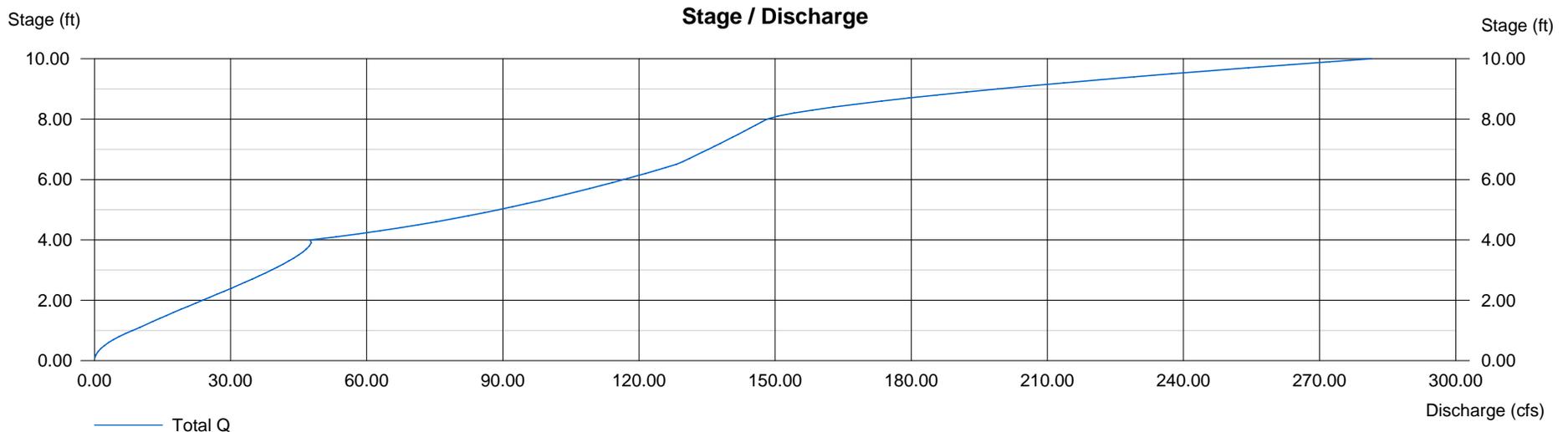
	[A]	[B]	[C]	[D]
Rise (in)	= 48.00	0.00	0.00	0.00
Span (in)	= 48.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 1363.00	0.00	0.00	0.00
Length (ft)	= 60.00	0.00	0.00	0.00
Slope (%)	= 0.67	0.00	0.00	0.00
N-Value	= .013	.000	.000	.000
Orif. Coeff.	= 0.60	0.00	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 15.00	0.00	0.00	0.00
Crest El. (ft)	= 1371.00	0.00	0.00	0.00
Weir Coeff.	= 2.60	0.00	0.00	0.00
Weir Type	= Broad	---	---	---
Multi-Stage	= No	No	No	No

Exfiltration = 0.000 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.



Tab 3. Post-Development Hydrologic Analysis

A. Proposed conditions hydrologic and hydraulic analysis

The analysis was completed using the SCS Hydrograph method. The 2, 5, 10, 25, & 100 year, 24-hour storm events were evaluated. The information appears in Exhibit 3-1. The results are summarized in the following table.

Area/Frequency	24-Hour Storm Flows (cfs)				
	2-Year	5-Year	10-Year	25-Year	100-Year
Off-Site	152.09	193.48	224.46	265.71	327.50
NE	30.88	41.56	49.54	60.14	75.94
Off-Site & NE	182.97	235.04	274.00	325.85	403.43
Existing NE Pond	98.59	120.54	132.61	144.02	190.55
Proposed NE Pond	91.26	111.84	125.74	137.38	159.78
S	22.78	30.12	35.60	42.86	53.68
South Pond	11.15	13.19	18.39	26.07	36.71
NW	16.84	22.92	27.49	33.55	42.59

B. Proposed times of concentration used in calculations

Area	T _c (min)
Off-Site	15.0
NE	15.0
S	15.0
NW	15.0

C. Assumed post-developed runoff curve numbers

For the developed condition, the curve numbers were weighted based on area of their respective hydrologic soil groups and land uses over each site. The results are shown in the table below.

Area	Soil	Hydrologic Group	Area		Percent of Areas	CURVE NUMBER
			Square Feet	Acres	Total	Developed
Off-Site	3911	D	1960200	45.000	100.00%	98.0
Total			1960200	45.000	100.00%	98.0

Area	Soil	Hydrologic Group	Area		Percent of Areas	CURVE NUMBER
			Square Feet	Acres	Total	Developed
NE1	3911	D	36919	0.848	7.64%	92.0
NE2	3911	D	42621	0.978	8.82%	92.0
NE3	3911	D	47157	1.083	9.76%	92.0
NE4	3911	D	22008	0.505	4.55%	92.0
NE5	3911	D	23729	0.545	4.91%	92.0
NE6	3911	D	15536	0.357	3.22%	92.0
NE7	3911	D	59792	1.373	12.37%	92.0
NE8	3911	D	26446	0.607	5.47%	92.0
NE9	3911	D	25823	0.593	5.34%	92.0
NE10	3911	D	58080	1.333	12.02%	92.0
NE11	3911	D	125106	2.872	25.89%	84.0
Total			483216	11.093	100.00%	89.9

Area	Soil	Hydrologic Group	Area		Percent of Areas	CURVE NUMBER
			Square Feet	Acres	Total	Developed
Off-Site	3911	D	1960200	45.000	80.22%	98.0
NE	3911	D	483216	11.093	19.78%	89.9
Total			2443416	56.093	100.00%	96.4

Area	Soil	Hydrologic Group	Area		Percent of Areas	CURVE NUMBER
			Square Feet	Acres	Total	Developed
S1	3911	D	159982	3.673	47.90%	92.0
S2	3911	D	161266	3.702	48.28%	92.0
	5893	B	12769	0.293	3.82%	85.0
Total			334017	7.668	100.00%	91.7

Area	Soil	Hydrologic Group	Area		Percent of Areas	CURVE NUMBER
			Square Feet	Acres	Total	Developed
NW1	3911	D	72292	1.660	25.71%	92.0
NW2	3911	D	37293	0.856	13.26%	92.0
Berms	3911	D	16126	0.370	5.73%	80.0
NW3	3911	D	95943	2.203	34.12%	84.0
Sidewalk	3911	D	7291	0.167	2.59%	98.0
R/W	3911	D	18964	0.435	6.74%	80.0
Street	3911	D	33277	0.764	11.83%	98.0
Total			281184	6.455	100.00%	88.6

Area	Soil	Hydrologic Group	Area		Percent of Areas	CURVE NUMBER
			Square Feet	Acres	Total	Developed
NW2	3911	D	21168	0.486	10.98%	92.0
Berms	3911	D	16126	0.370	8.37%	80.0
NW3	3911	D	95943	2.203	49.77%	84.0
Sidewalk	3911	D	7291	0.167	3.78%	98.0
R/W	3911	D	18964	0.435	9.84%	80.0
Street	3911	D	33277	0.764	17.26%	98.0
Total			192767	4.425	100.00%	87.1

Area	Soil	Hydrologic Group	Area		Percent of Areas	CURVE NUMBER
			Square Feet	Acres	Total	Developed
NW2	3911	D	21168	0.486	56.76%	92.0
Berms	3911	D	16126	0.370	43.24%	80.0
Total			37293	0.856	100.00%	86.8

Area	Soil	Hydrologic Group	Area		Percent of Areas	CURVE NUMBER
			Square Feet	Acres	Total	Developed
NW3	3911	D	95943	2.203	61.71%	84.0
Sidewalk	3911	D	7291	0.167	4.69%	98.0
R/W	3911	D	18964	0.435	12.20%	80.0
Street	3911	D	33277	0.764	21.40%	98.0
Total			155474	3.569	100.00%	87.2

D. Proposed contours for detention facilities

Proposed detention areas are shown on the drainage plan, Exhibit 1-7. The northeast pond shall be expanded without excavating within the wetland areas as shown on the Wetland Delineation Map (Exhibit 1-9). Grading for the expanded northeast pond shall allow flows to be routed to the existing 48" R.C.P. Also, the side slopes of the north pond will be no steeper than 4:1. The south pond bottom shall slope from the east and west ends to the low point at the three 12" pipes. The side slopes of the south pond shall be no greater than 6:1.

E. Preliminary sizing calculations for storm water controls

Sizing for all storm water controls is shown in Exhibit 3-2.

F. Stage-storage-discharge curve and inflow/outflow hydrographs for storage facilities

Storage facility calculations and results are found in Exhibit 3-1.

G. Final analysis of potential upstream/downstream impacts

No relevant impacts are noted from this analysis. Off-site flows that enter the site are already detained. The proposed flows will be less than or equal to the existing flows leaving the site.

H. Existing and proposed structural elevations

Existing structures are discussed in Tab 2, Section R. Preliminary storm sewer networks are evaluated in Exhibit 3-2. However, any additional storm sewer designs shall comply with the latest City of Wichita design criteria to convey added site runoff to any proposed on-site detention areas and through control structures with discharge rates at or below those existing prior to any development. The northeast dry-detention pond design will still be controlled by the 48" R.C.P. and overflow beyond that will be modeled as a 15' broad-crested weir (emergency spillway) with an elevation of 1371.0. The south dry-detention pond design will be controlled by triple 12" P.V.C. pipes constructed through an overflow spillway that is a 10' wide Cipolletti weir with an elevation of 1380.0. The 12" pipes will start at the pond bottom elevation of 1378.0 and carry a one-percent grade down to the south property line.

The proposed minimum pad elevations on the site shall be set at least two feet above the 100-year design water surface elevation of detention facilities for any given drainage area unless a higher base flood elevation exists within the same site. The detention areas are shown on the drainage plan, Exhibit 1-7.

I. Design water surface elevations and normal pool elevations for ponds

The detention areas shall be designed as dry-detention ponds, those being controlled by pipes and overflow weirs as noted above. No normal pool elevations shown for dry-detention areas. Running the 100-year design storm through each pond gives design-water surface elevations of 1371.33 for the northeast pond and 1380.73 for the south pond.

J. Typical details for structures

The control structure for the northeast pond will not be changed. The existing 48" R.C.P. shall be used to drain the pond and the earth spillway shall remain to control additional flows. The Cipoletti weir for the south pond will be constructed with reinforced concrete and riprap will be placed at the downstream side to prevent erosion. Slopes on the side of the Cipoletti weir to the top of the pond will be a maximum of 4:1 with permanent grass seeding. The 12" P.V.C. pipe shall be a minimum of Schedule 40 P.V.C. and be centered on and through the concrete weir with riprap installed at the down stream end.

K. Proposed limits of clearing and grading

Clearing and grading shall be done throughout the site and will be established upon submittal for building construction.

L. Location of existing and proposed impervious areas

Any existing impervious areas are shown on the drainage plan. The proposed impervious areas will be delineated with final construction plans, but will not exceed 65% of the total site area as per design calculations.

M. Location of existing and proposed utilities and easements

The drainage plan shows the location of existing utilities as listed in Tab 2, Section J. The plat (Exhibit 1-3) shows any existing easements, which may be the location for any future utilities.

N. Location of existing and proposed conveyance systems

Existing conveyance systems are discussed in Tab 2, Section K. Specific storm sewer networks are shown in Exhibit 3-2. Any future storm sewer designs shall comply with the latest City of Wichita design criteria to convey added site runoff to any proposed on-site detention areas and through control structures with discharge rates at or below those rates existing prior to any development.

O. Preliminary location and dimensions of proposed channel modifications

This development will not require/include any channel modifications.

P. Preliminary selection and location of storm water controls

Storm water controls will include appropriate curb/drop inlets and pipe networks at locations to be finalized as part of the construction plans. A preliminary layout is shown in Exhibit 3-2. When these networks are needed, they will convey the five-year storm event and be routed to detention facilities designed as part of this drainage plan. Any sump locations in specific drainage areas will have flows routed overland to low points and carried through the remainder of the system. Other controls will include any pond control structures as discussed above in sections H through J.

Q. Emergency overflow structure's flow path

The emergency overflow for the detention areas will route any flows, beyond the 100-year rates, to the proposed weirs as shown on the drainage plan, Exhibit 1-7.

R. Detention facility freeboard

All detention facilities will have a minimum of one foot of freeboard above the design-water surface elevation.

S. The 100-year, 24-hour High Water Line

The HWL elevation for the northeast dry-detention pond is 1371.33 and 1380.73 for the south dry-detention pond.

T. Lowest opening elevation table

The lowest opening elevation table is shown on the plat, Exhibit 1-3. Also, all buildings will be at least 2 feet above the HWL elevation for each respective detention area.

U. Storm water management facilities located within a reserve

This site contains a platted floodway reserve as shown on the plat, Exhibit 1-3.

V. Maintenance responsibility of storm water management facilities

The maintenance of storm water management facilities shall be the responsibility of the owner and shall be transferred to new owner upon the sale of any part thereof.

W. Off-site drainage easements or agreements

No off-site drainage easements or agreements will be required for this development.

INWOOD CROSSINGS

EXHIBIT 3-1

Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)								Hydrograph description
			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	
1	SCS Runoff	-----	120.92	152.09	-----	193.48	224.46	265.71	296.61	327.50	Off-Site North
2	SCS Runoff	-----	22.89	30.88	-----	41.56	49.54	60.14	68.05	75.94	Proposed Site Northeast
3	Combine	1, 2	143.82	182.97	-----	235.04	274.00	325.85	364.67	403.43	Proposed Site Northeast & Off-site
4	Reservoir	3	78.50	98.59	-----	120.54	132.61	144.02	158.29	190.55	to Existing North Pond
5	Reservoir	3	70.35	91.26	-----	111.84	125.74	137.38	145.20	159.79	Revised North Pond
6	SCS Runoff	-----	17.24	22.78	-----	30.12	35.60	42.86	48.28	53.68	Proposed Site South
7	Reservoir	6	9.213	11.15	-----	13.19	18.39	26.07	31.65	36.71	Proposed South Pond
8	SCS Runoff	-----	12.32	16.84	-----	22.92	27.49	33.55	38.08	42.59	Proposed Site Northwest

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (acft)	Hydrograph description	
1	SCS Runoff	152.09	6	720	11.834	----	-----	-----	Off-Site North	
2	SCS Runoff	30.88	6	720	2.195	----	-----	-----	Proposed Site Northeast	
3	Combine	182.97	6	720	14.029	1, 2	-----	-----	Proposed Site Northeast & Off-site	
4	Reservoir	98.59	6	732	14.029	3	1368.32	2.928	to Existing North Pond	
5	Reservoir	91.26	6	732	14.029	3	1368.07	3.141	Revised North Pond	
6	SCS Runoff	22.78	6	720	1.637	----	-----	-----	Proposed Site South	
7	Reservoir	11.15	6	732	1.636	6	1379.56	0.444	Proposed South Pond	
8	SCS Runoff	16.84	6	720	1.192	----	-----	-----	Proposed Site Northwest	
Inwood Final Proposed.gpw					Return Period: 2 Year			Friday, Jun 1 2007		

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:43 PM

Hyd. No. 1

Off-Site North

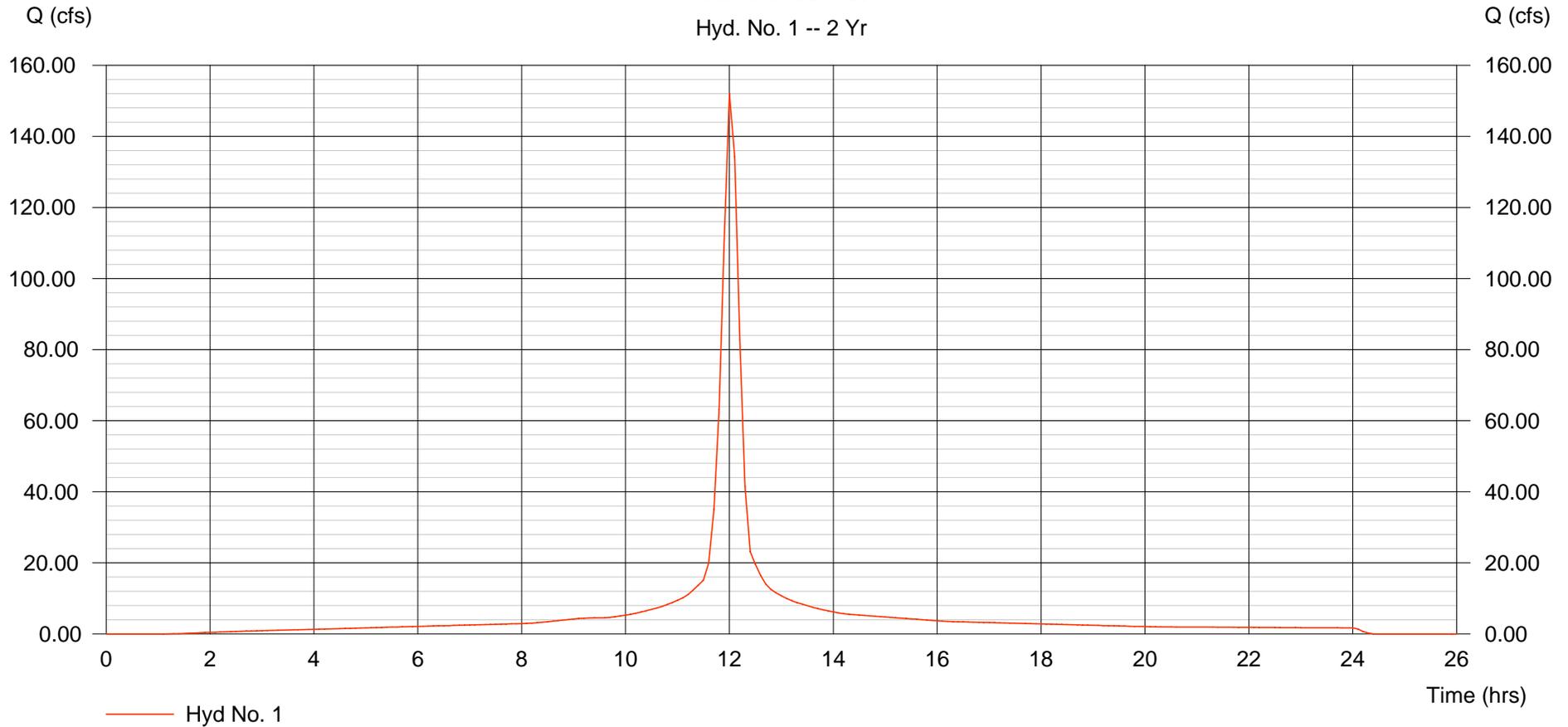
Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 45.000 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 3.60 in
Storm duration = 24 hrs

Peak discharge = 152.09 cfs
Time interval = 6 min
Curve number = 98
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 11.834 acft

Off-Site North

Hyd. No. 1 -- 2 Yr



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:43 PM

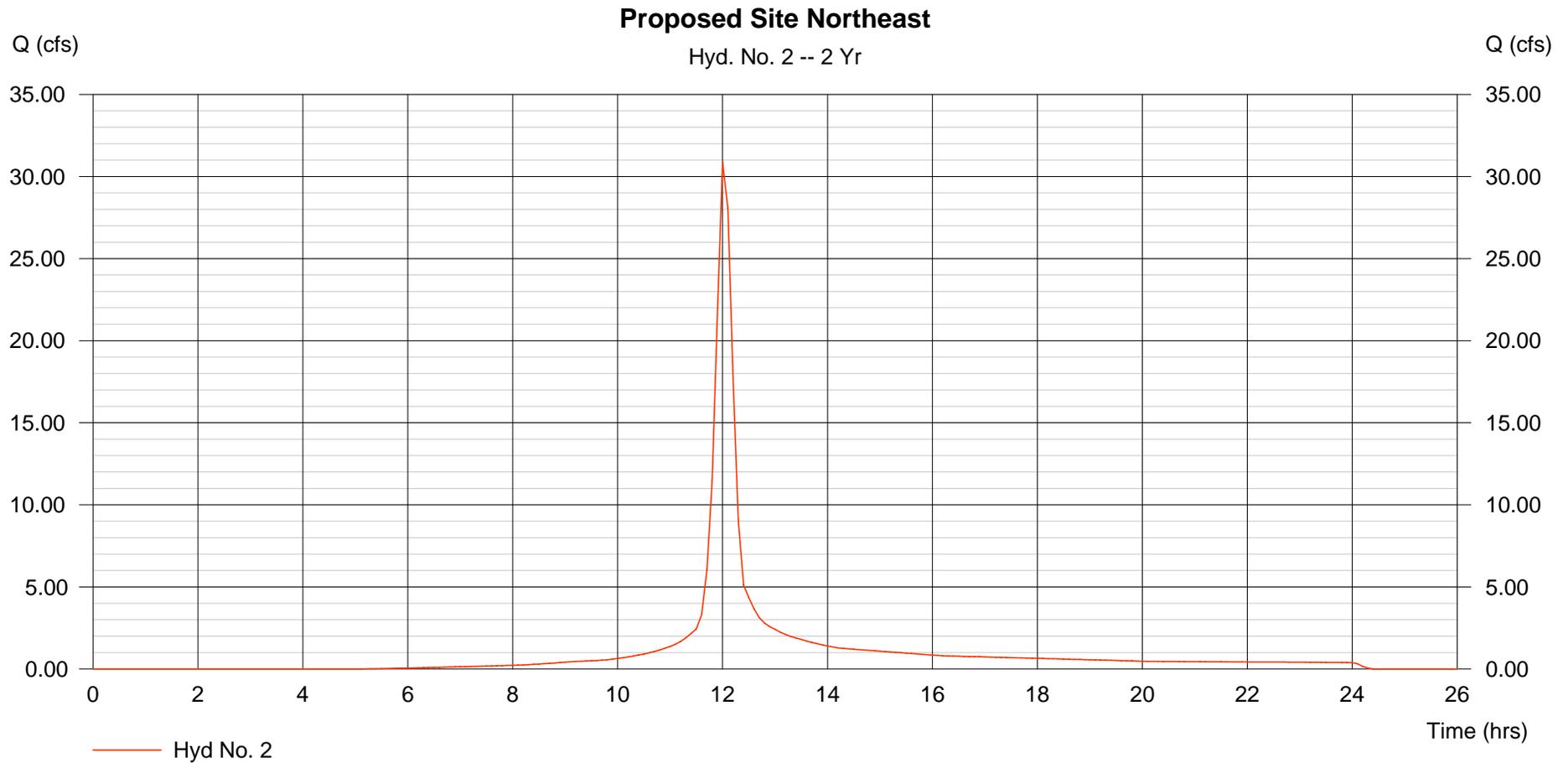
Hyd. No. 2

Proposed Site Northeast

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 11.093 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 3.60 in
Storm duration = 24 hrs

Peak discharge = 30.88 cfs
Time interval = 6 min
Curve number = 89.9
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 2.195 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:43 PM

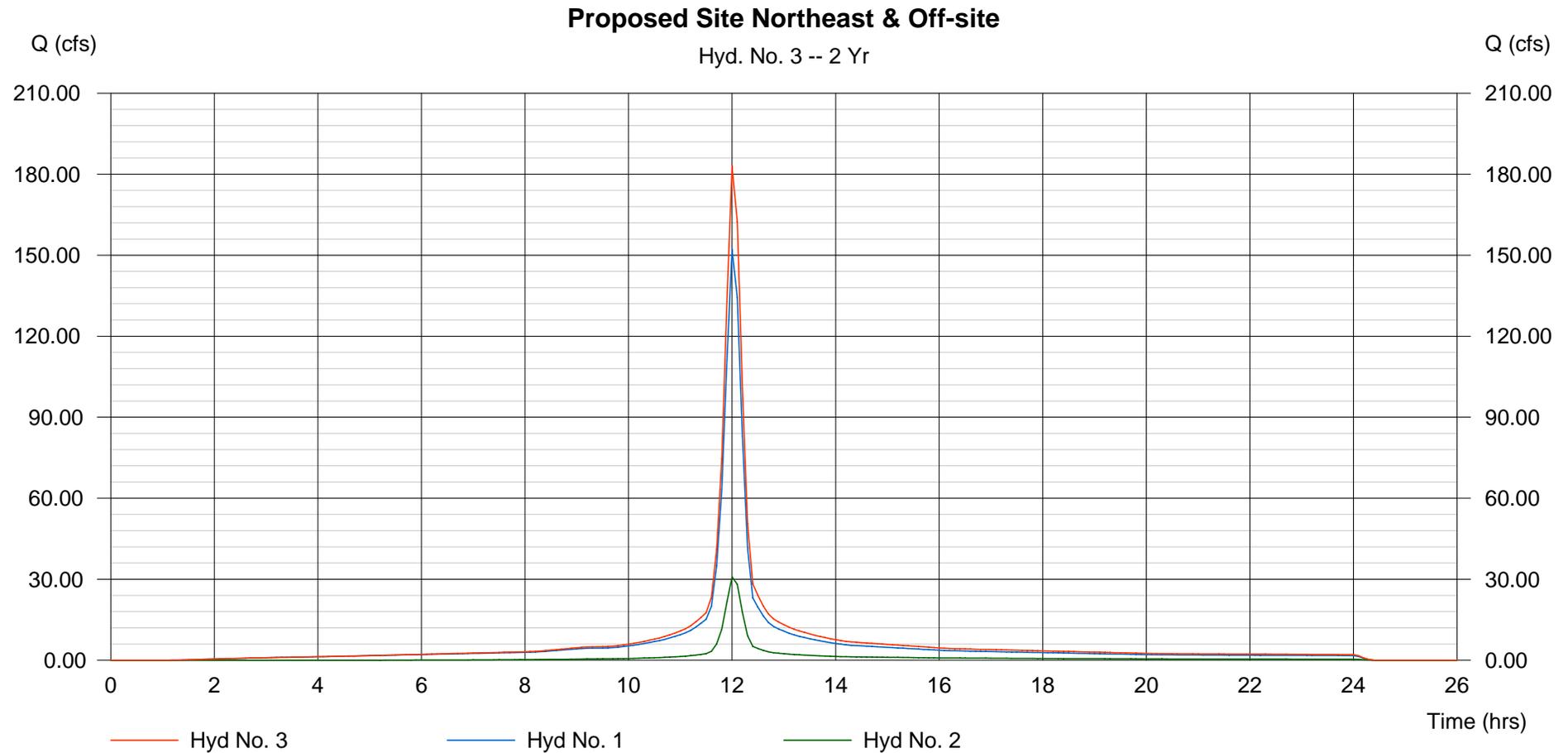
Hyd. No. 3

Proposed Site Northeast & Off-site

Hydrograph type = Combine
Storm frequency = 2 yrs
Inflow hyds. = 1, 2

Peak discharge = 182.97 cfs
Time interval = 6 min

Hydrograph Volume = 14.029 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:43 PM

Hyd. No. 4

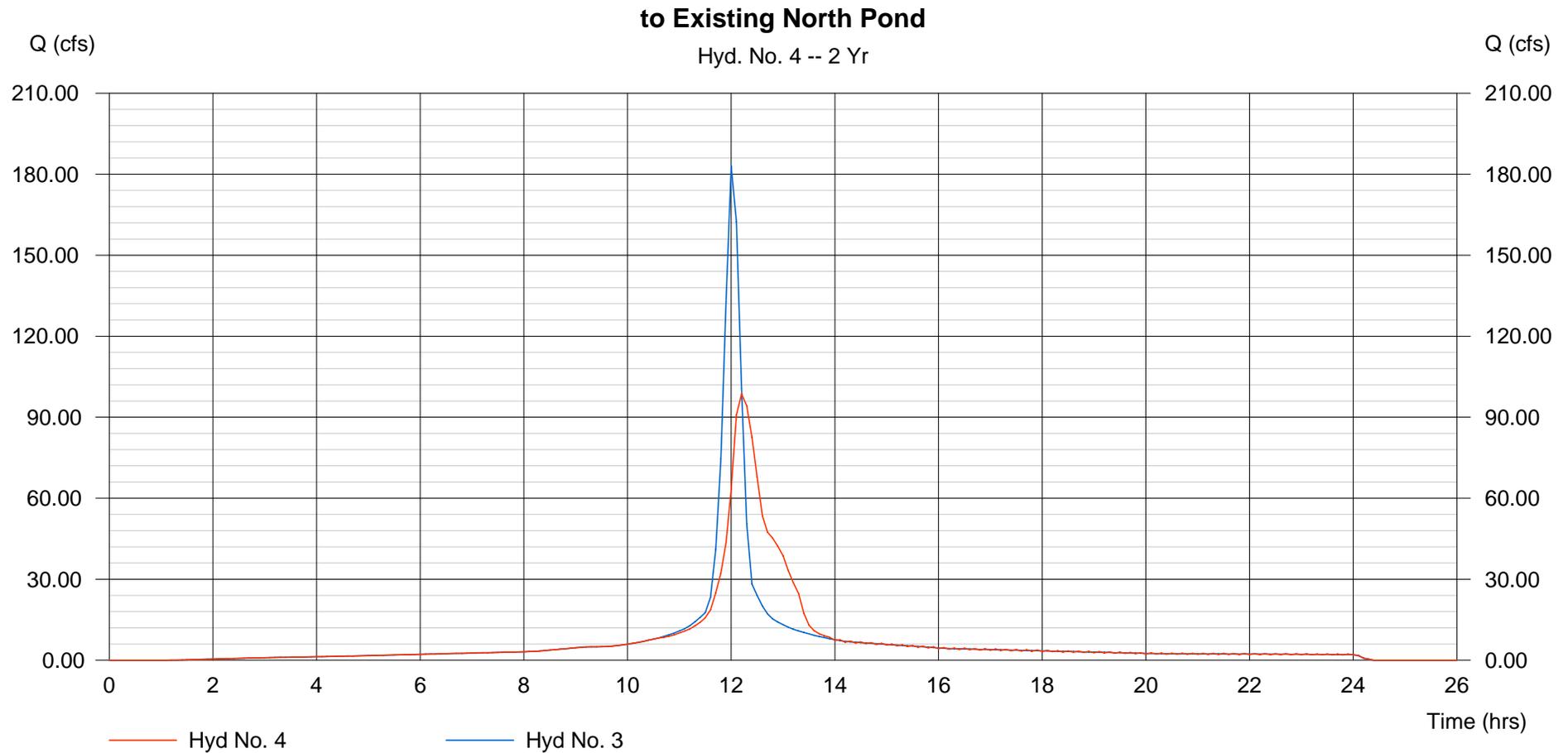
to Existing North Pond

Hydrograph type = Reservoir
Storm frequency = 2 yrs
Inflow hyd. No. = 3
Reservoir name = Existing North Pond

Peak discharge = 98.59 cfs
Time interval = 6 min
Max. Elevation = 1368.32 ft
Max. Storage = 2.928 acft

Storage Indication method used.

Hydrograph Volume = 14.029 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:43 PM

Hyd. No. 5

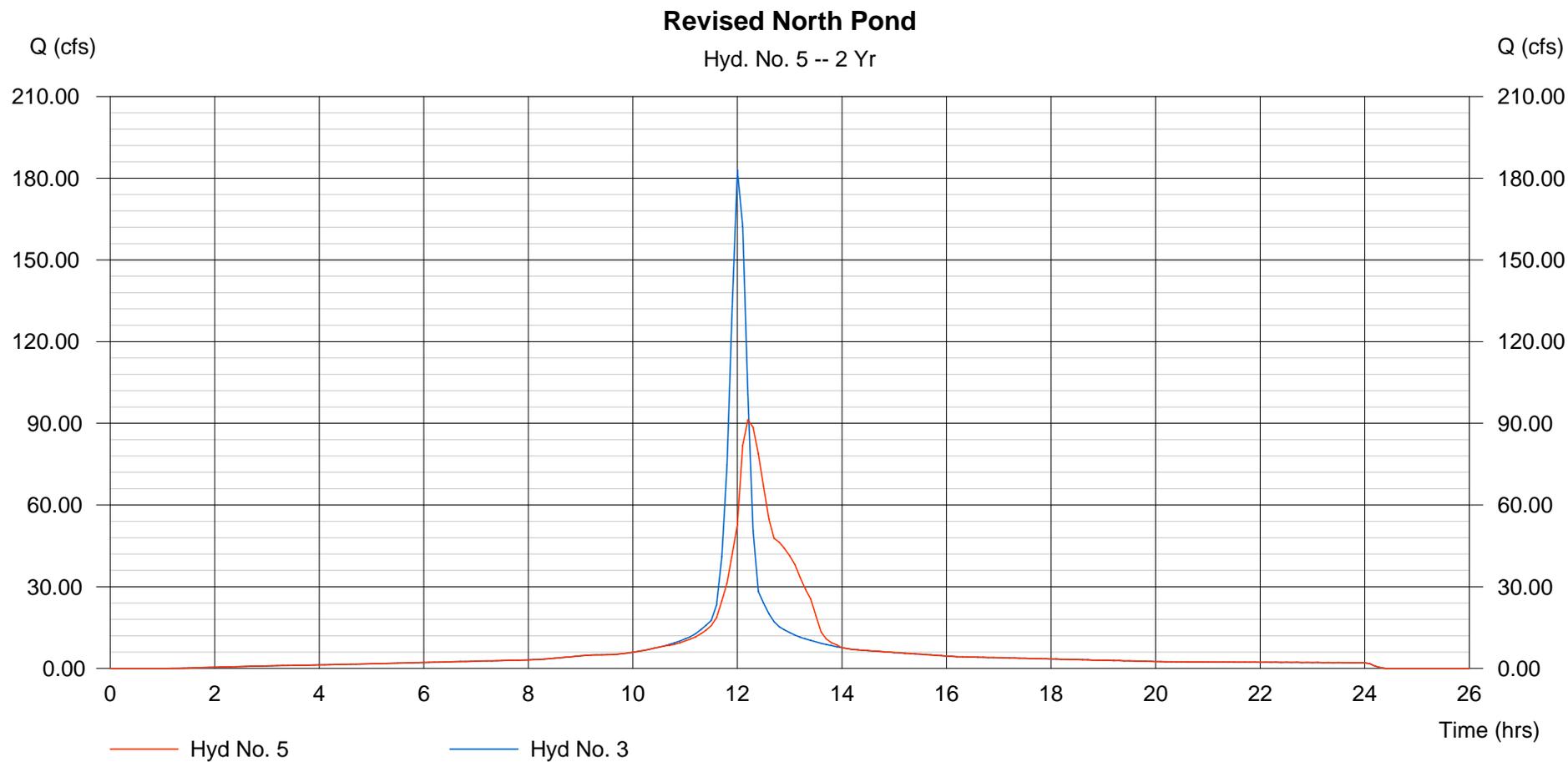
Revised North Pond

Hydrograph type = Reservoir
Storm frequency = 2 yrs
Inflow hyd. No. = 3
Reservoir name = Revised North Pond

Peak discharge = 91.26 cfs
Time interval = 6 min
Max. Elevation = 1368.07 ft
Max. Storage = 3.141 acft

Storage Indication method used.

Hydrograph Volume = 14.029 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:43 PM

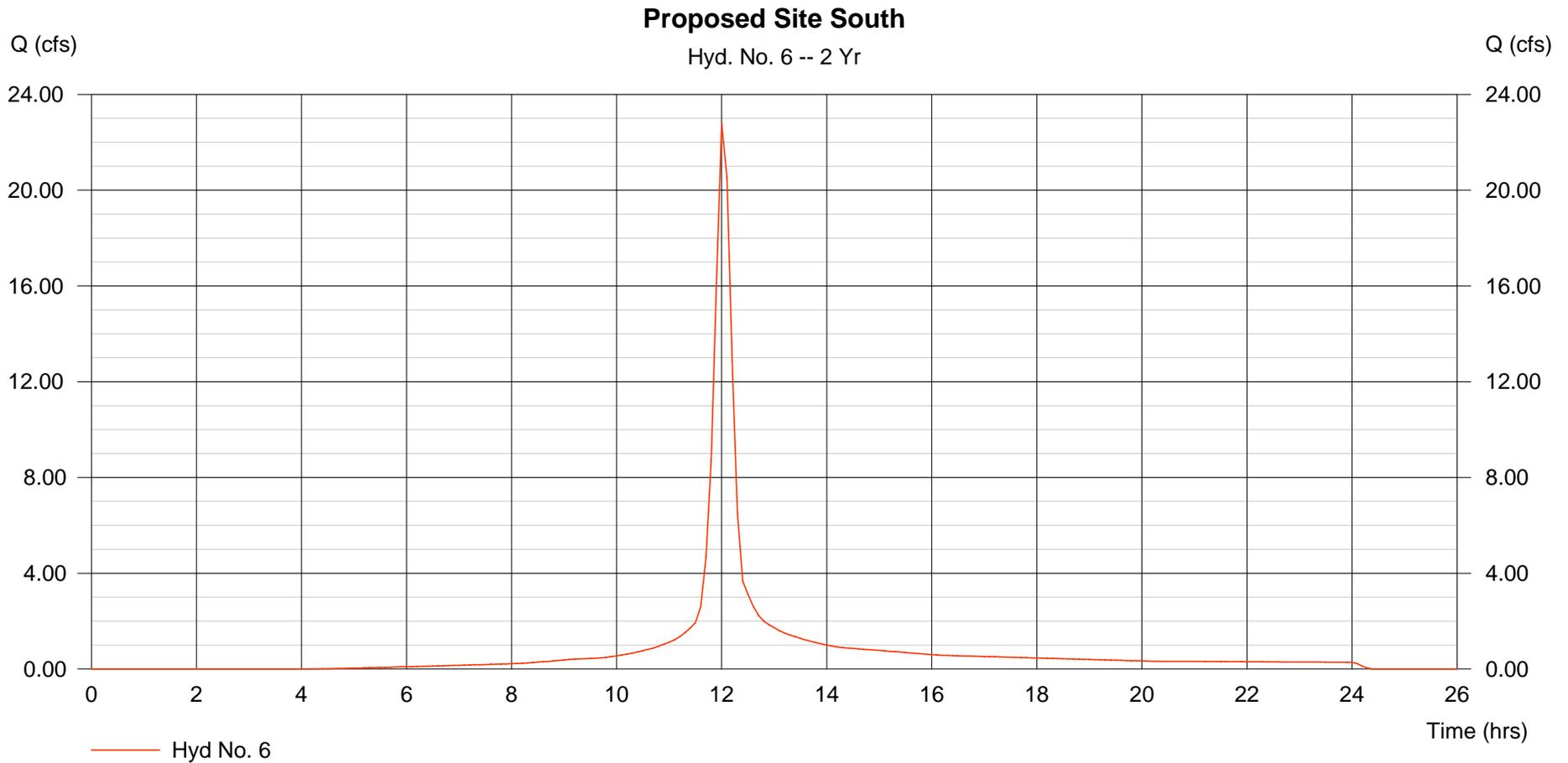
Hyd. No. 6

Proposed Site South

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 7.668 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 3.60 in
Storm duration = 24 hrs

Peak discharge = 22.78 cfs
Time interval = 6 min
Curve number = 92
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 1.637 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:43 PM

Hyd. No. 7

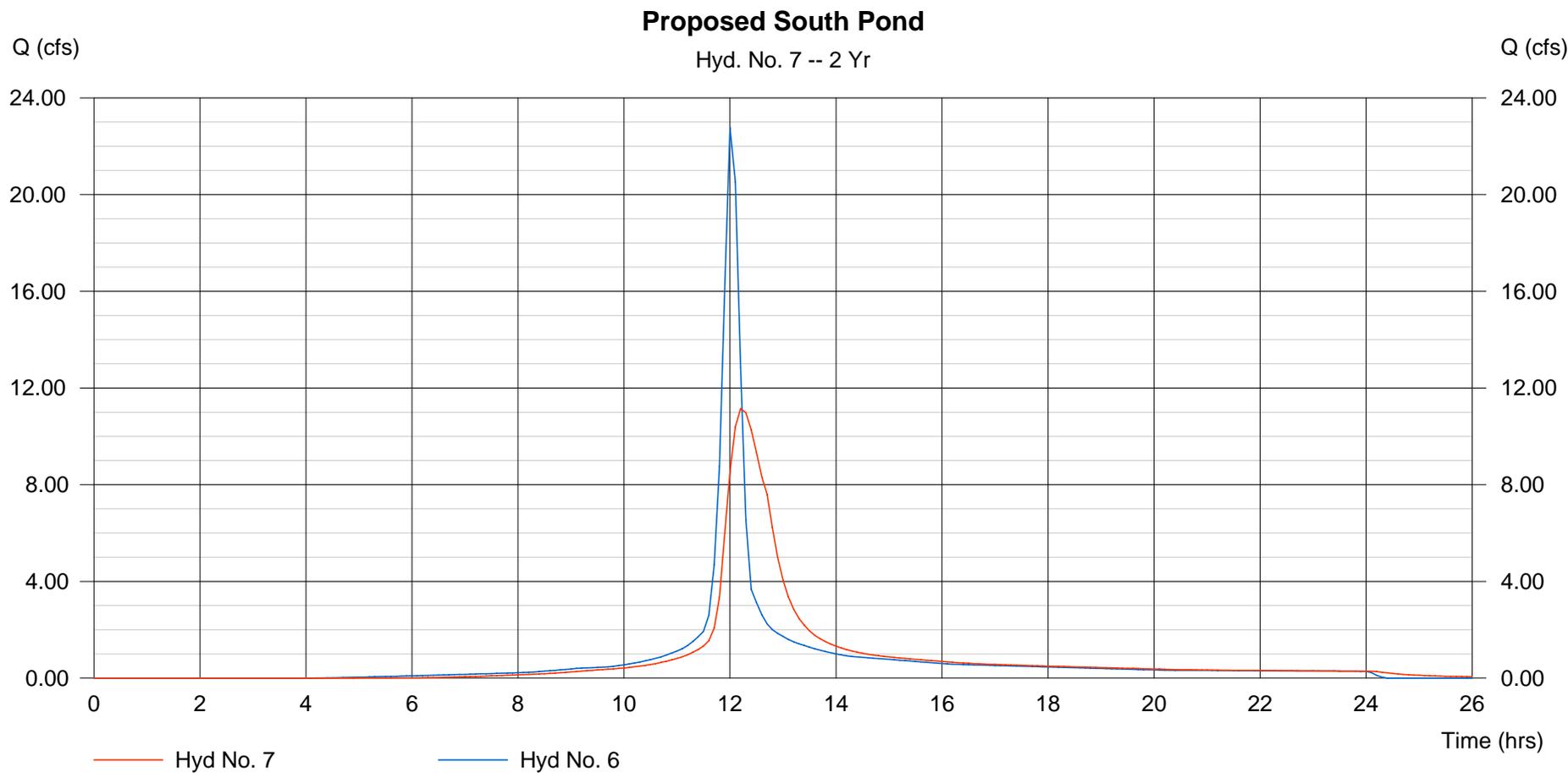
Proposed South Pond

Hydrograph type = Reservoir
Storm frequency = 2 yrs
Inflow hyd. No. = 6
Reservoir name = Proposed South Pond

Peak discharge = 11.15 cfs
Time interval = 6 min
Max. Elevation = 1379.56 ft
Max. Storage = 0.444 acft

Storage Indication method used.

Hydrograph Volume = 1.636 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:43 PM

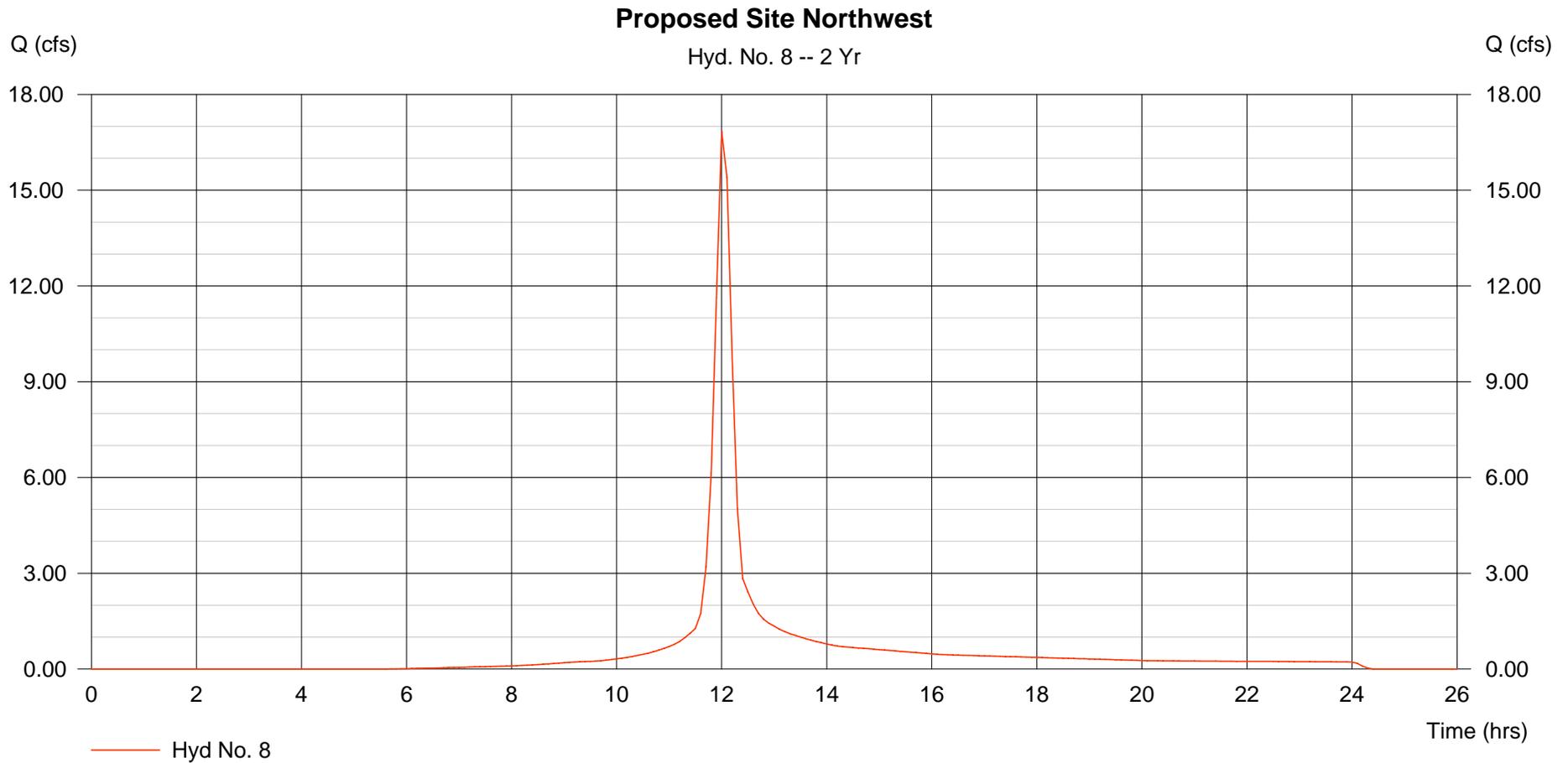
Hyd. No. 8

Proposed Site Northwest

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Drainage area = 6.455 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 3.60 in
Storm duration = 24 hrs

Peak discharge = 16.84 cfs
Time interval = 6 min
Curve number = 88.6
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 474

Hydrograph Volume = 1.192 acft



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (acft)	Hydrograph description	
1	SCS Runoff	193.48	6	720	15.201	----	-----	-----	Off-Site North	
2	SCS Runoff	41.56	6	720	2.984	----	-----	-----	Proposed Site Northeast	
3	Combine	235.04	6	720	18.185	1, 2	-----	-----	Proposed Site Northeast & Off-site	
4	Reservoir	120.54	6	732	18.185	3	1369.17	3.942	to Existing North Pond	
5	Reservoir	111.84	6	732	18.185	3	1368.81	4.177	Revised North Pond	
6	SCS Runoff	30.12	6	720	2.193	----	-----	-----	Proposed Site South	
7	Reservoir	13.19	6	732	2.192	6	1379.98	0.607	Proposed South Pond	
8	SCS Runoff	22.92	6	720	1.636	----	-----	-----	Proposed Site Northwest	
Inwood Final Proposed.gpw					Return Period: 5 Year			Friday, Jun 1 2007		

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:44 PM

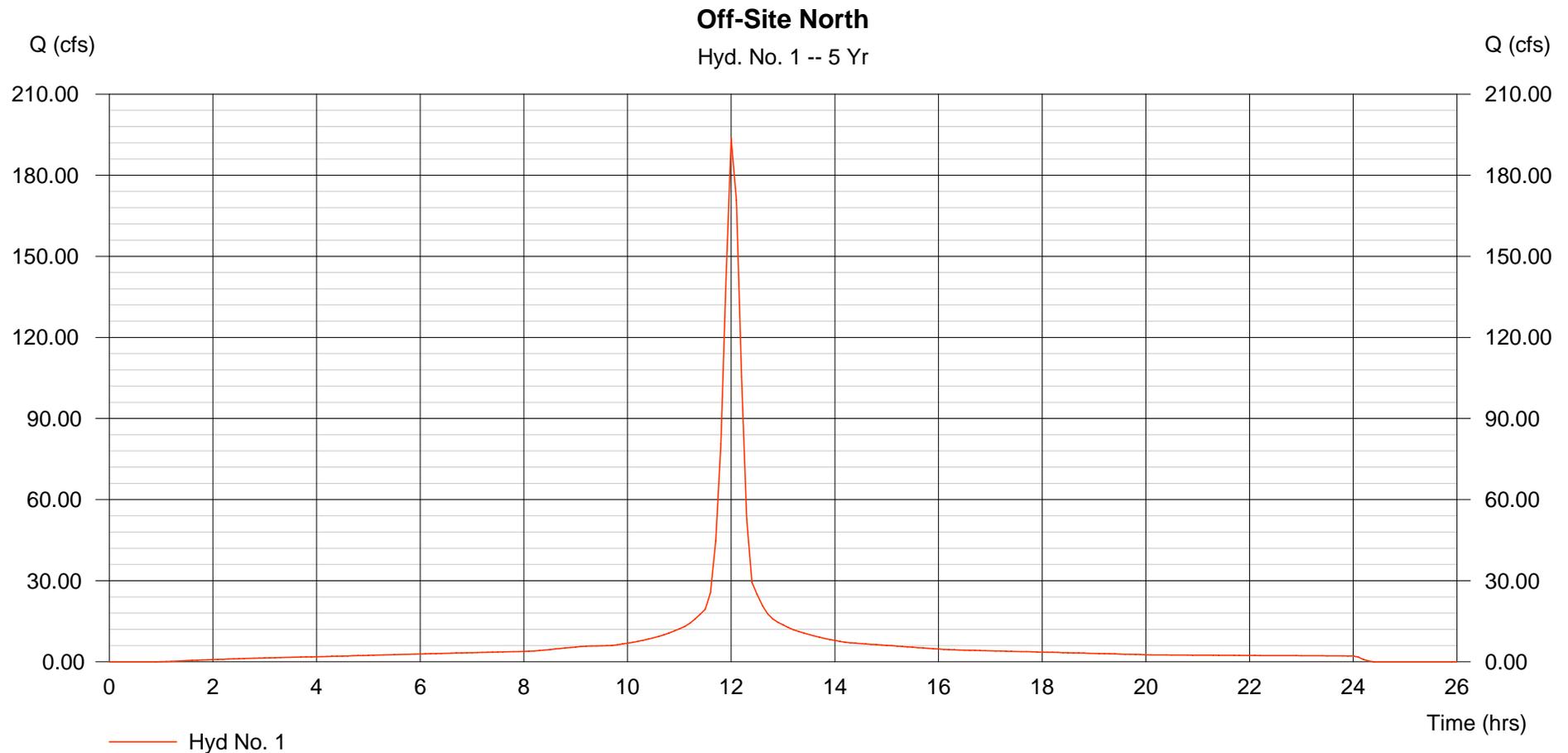
Hyd. No. 1

Off-Site North

Hydrograph type = SCS Runoff
Storm frequency = 5 yrs
Drainage area = 45.000 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 4.56 in
Storm duration = 24 hrs

Peak discharge = 193.48 cfs
Time interval = 6 min
Curve number = 98
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 15.201 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:44 PM

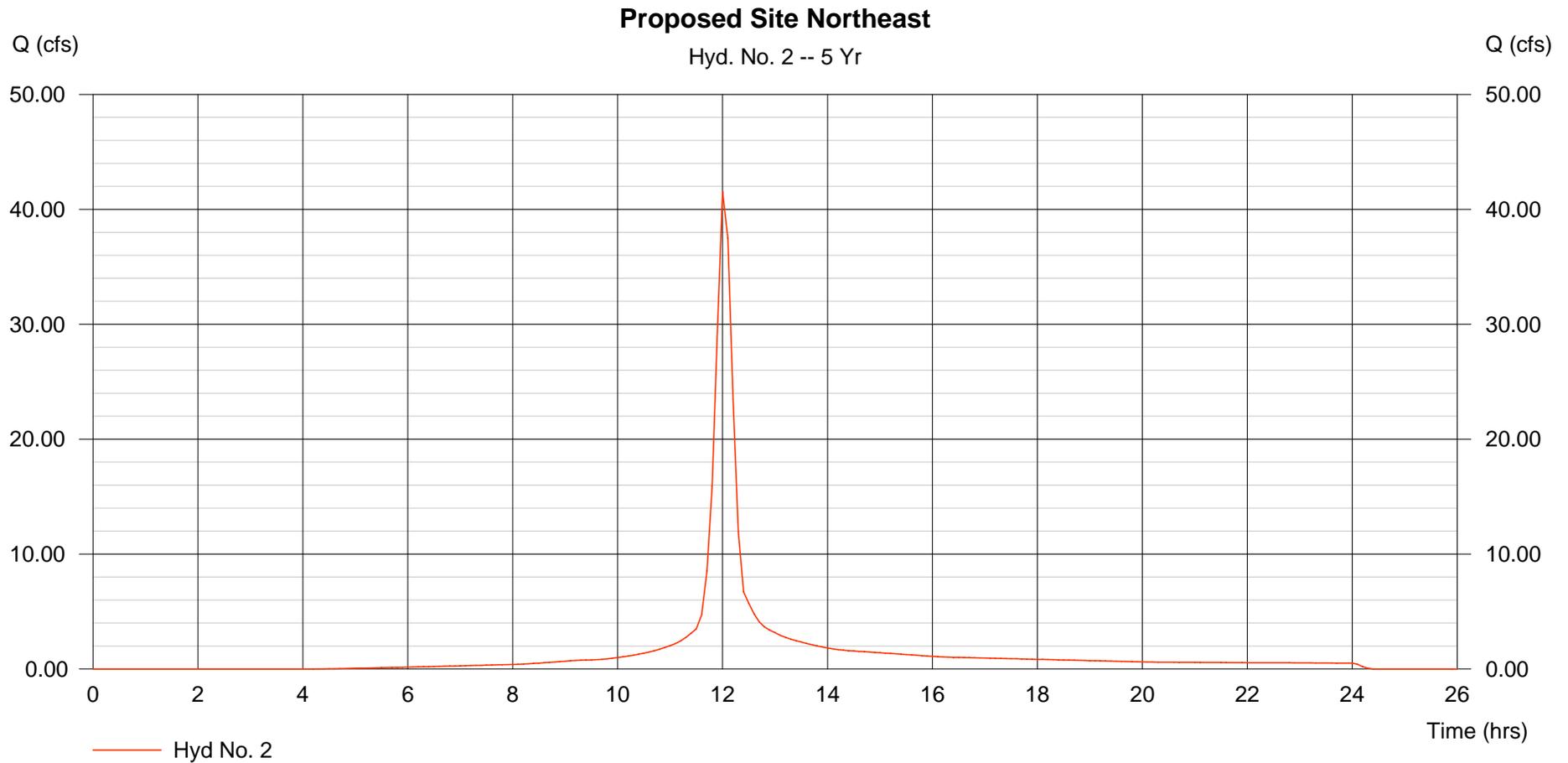
Hyd. No. 2

Proposed Site Northeast

Hydrograph type = SCS Runoff
Storm frequency = 5 yrs
Drainage area = 11.093 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 4.56 in
Storm duration = 24 hrs

Peak discharge = 41.56 cfs
Time interval = 6 min
Curve number = 89.9
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 2.984 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:44 PM

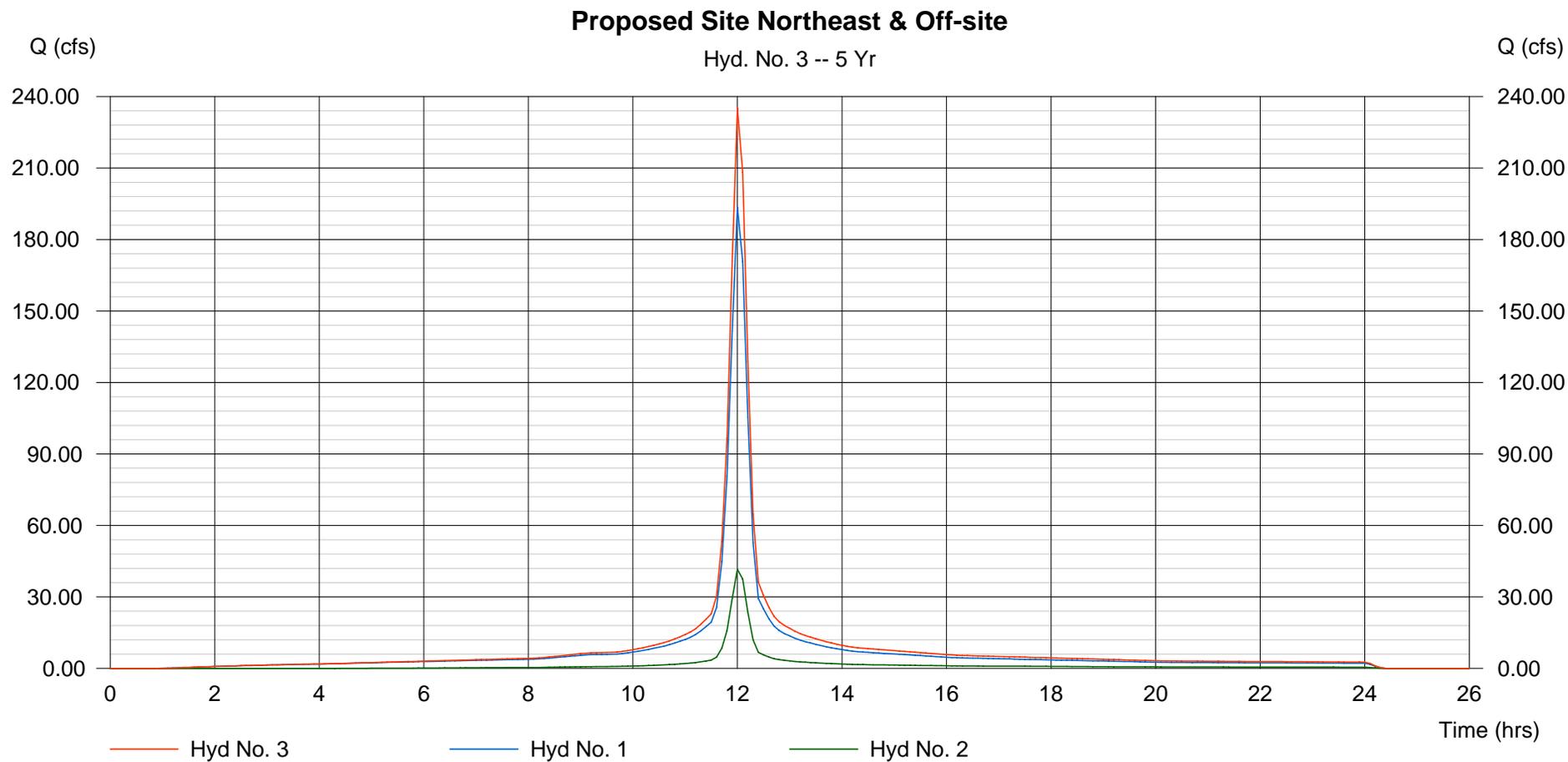
Hyd. No. 3

Proposed Site Northeast & Off-site

Hydrograph type = Combine
Storm frequency = 5 yrs
Inflow hyds. = 1, 2

Peak discharge = 235.04 cfs
Time interval = 6 min

Hydrograph Volume = 18.185 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:44 PM

Hyd. No. 4

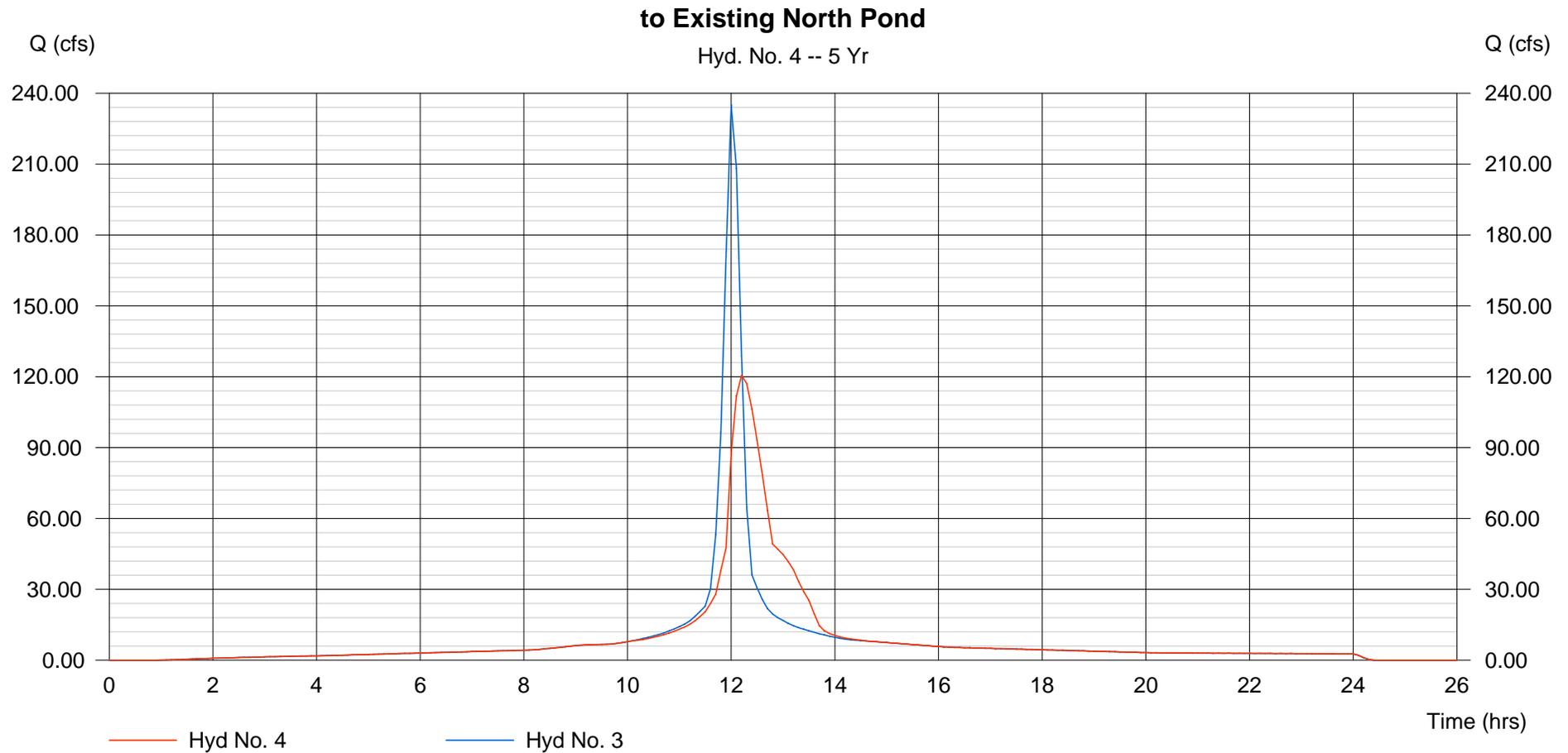
to Existing North Pond

Hydrograph type = Reservoir
Storm frequency = 5 yrs
Inflow hyd. No. = 3
Reservoir name = Existing North Pond

Peak discharge = 120.54 cfs
Time interval = 6 min
Max. Elevation = 1369.17 ft
Max. Storage = 3.942 acft

Storage Indication method used.

Hydrograph Volume = 18.185 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:44 PM

Hyd. No. 5

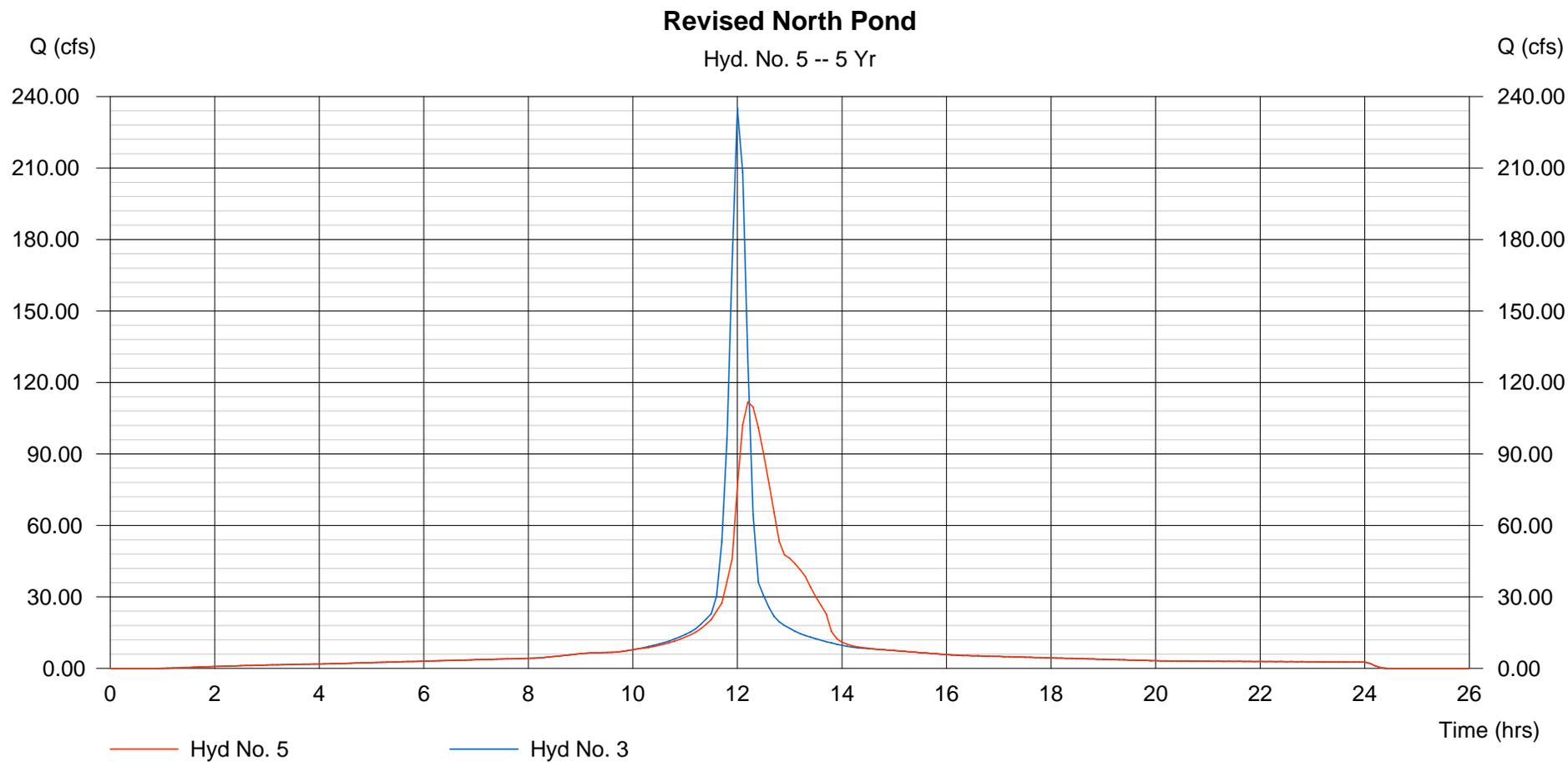
Revised North Pond

Hydrograph type = Reservoir
Storm frequency = 5 yrs
Inflow hyd. No. = 3
Reservoir name = Revised North Pond

Peak discharge = 111.84 cfs
Time interval = 6 min
Max. Elevation = 1368.81 ft
Max. Storage = 4.177 acft

Storage Indication method used.

Hydrograph Volume = 18.185 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:44 PM

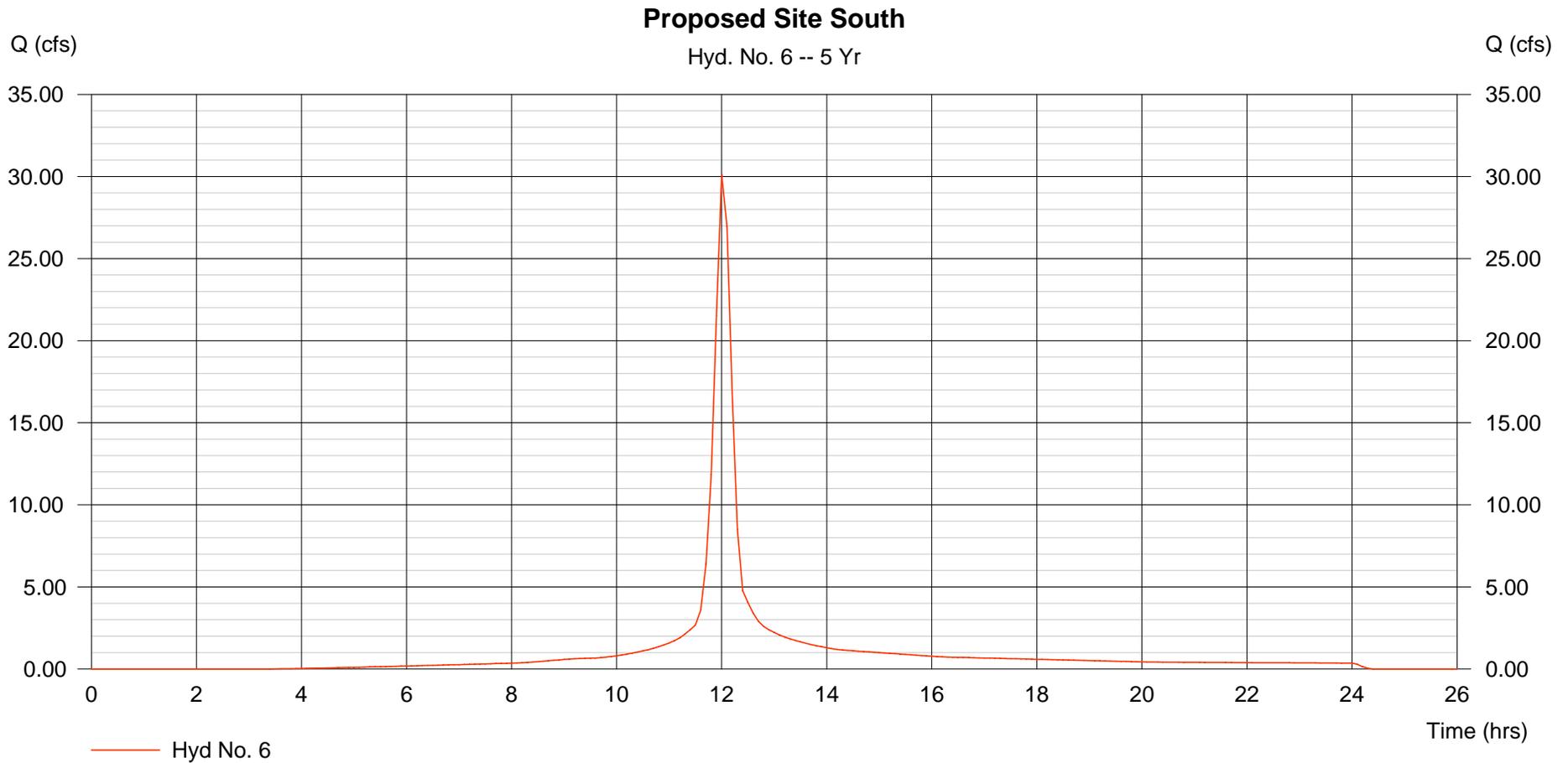
Hyd. No. 6

Proposed Site South

Hydrograph type = SCS Runoff
Storm frequency = 5 yrs
Drainage area = 7.668 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 4.56 in
Storm duration = 24 hrs

Peak discharge = 30.12 cfs
Time interval = 6 min
Curve number = 92
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 2.193 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:44 PM

Hyd. No. 7

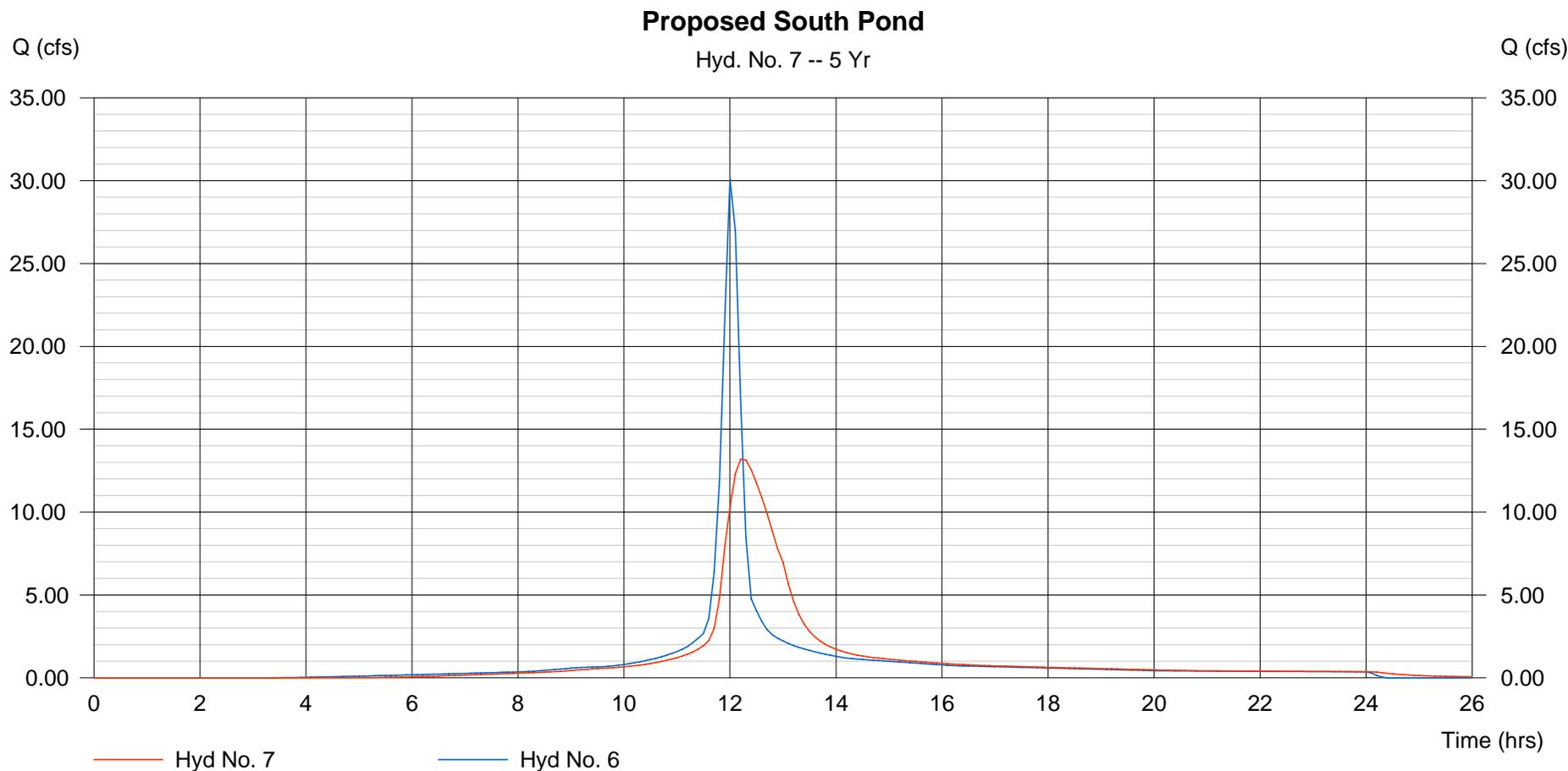
Proposed South Pond

Hydrograph type = Reservoir
Storm frequency = 5 yrs
Inflow hyd. No. = 6
Reservoir name = Proposed South Pond

Peak discharge = 13.19 cfs
Time interval = 6 min
Max. Elevation = 1379.98 ft
Max. Storage = 0.607 acft

Storage Indication method used.

Hydrograph Volume = 2.192 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:44 PM

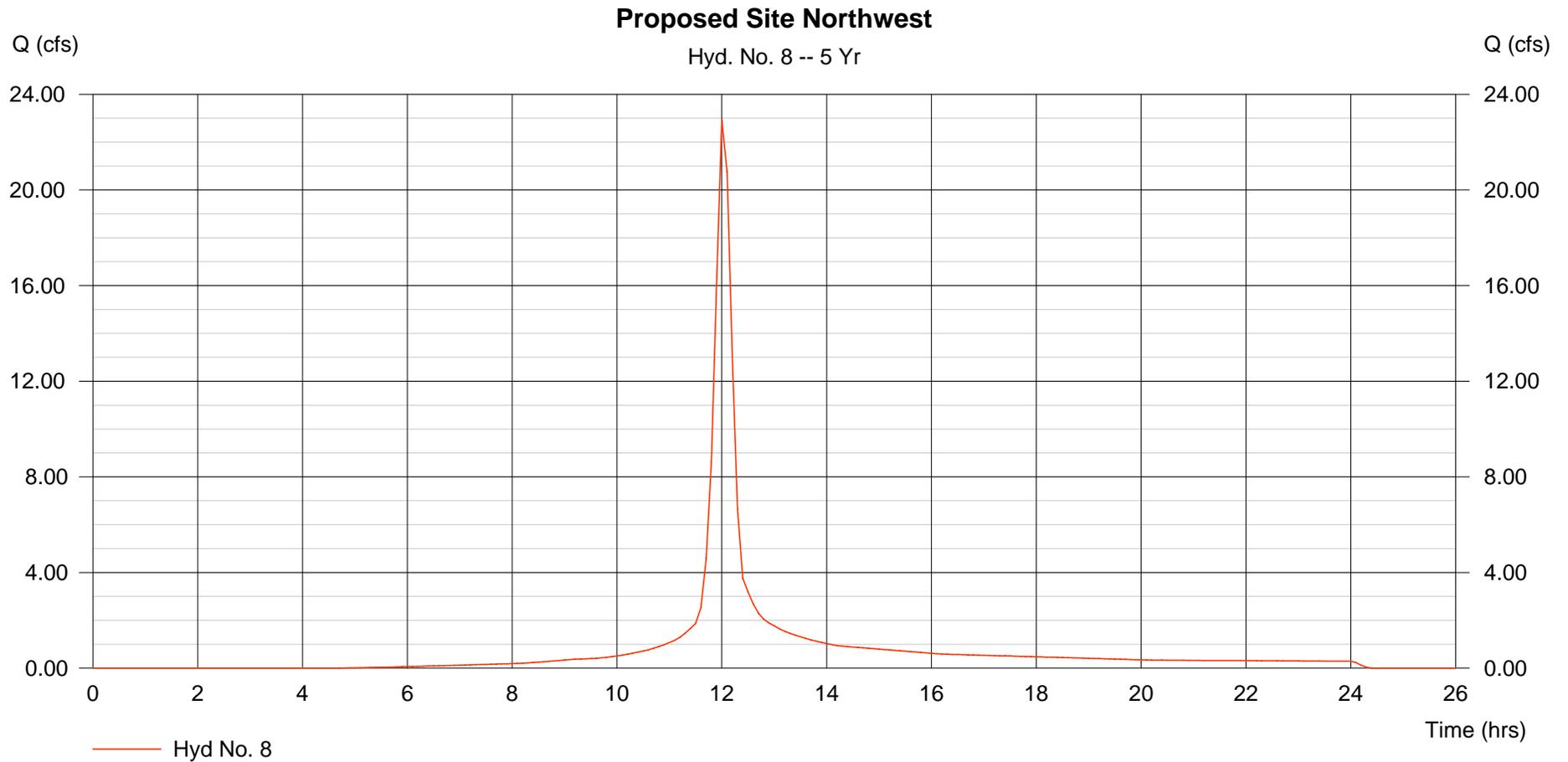
Hyd. No. 8

Proposed Site Northwest

Hydrograph type = SCS Runoff
Storm frequency = 5 yrs
Drainage area = 6.455 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 4.56 in
Storm duration = 24 hrs

Peak discharge = 22.92 cfs
Time interval = 6 min
Curve number = 88.6
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 474

Hydrograph Volume = 1.636 acft



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (acft)	Hydrograph description	
1	SCS Runoff	224.46	6	720	17.728	----	-----	-----	Off-Site North	
2	SCS Runoff	49.54	6	720	3.585	----	-----	-----	Proposed Site Northeast	
3	Combine	274.00	6	720	21.313	1, 2	-----	-----	Proposed Site Northeast & Off-site	
4	Reservoir	132.61	6	732	21.313	3	1369.81	4.758	to Existing North Pond	
5	Reservoir	125.74	6	732	21.313	3	1369.39	5.034	Revised North Pond	
6	SCS Runoff	35.60	6	720	2.614	----	-----	-----	Proposed Site South	
7	Reservoir	18.39	6	732	2.613	6	1380.25	0.717	Proposed South Pond	
8	SCS Runoff	27.49	6	720	1.975	----	-----	-----	Proposed Site Northwest	
Inwood Final Proposed.gpw					Return Period: 10 Year			Friday, Jun 1 2007		

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:45 PM

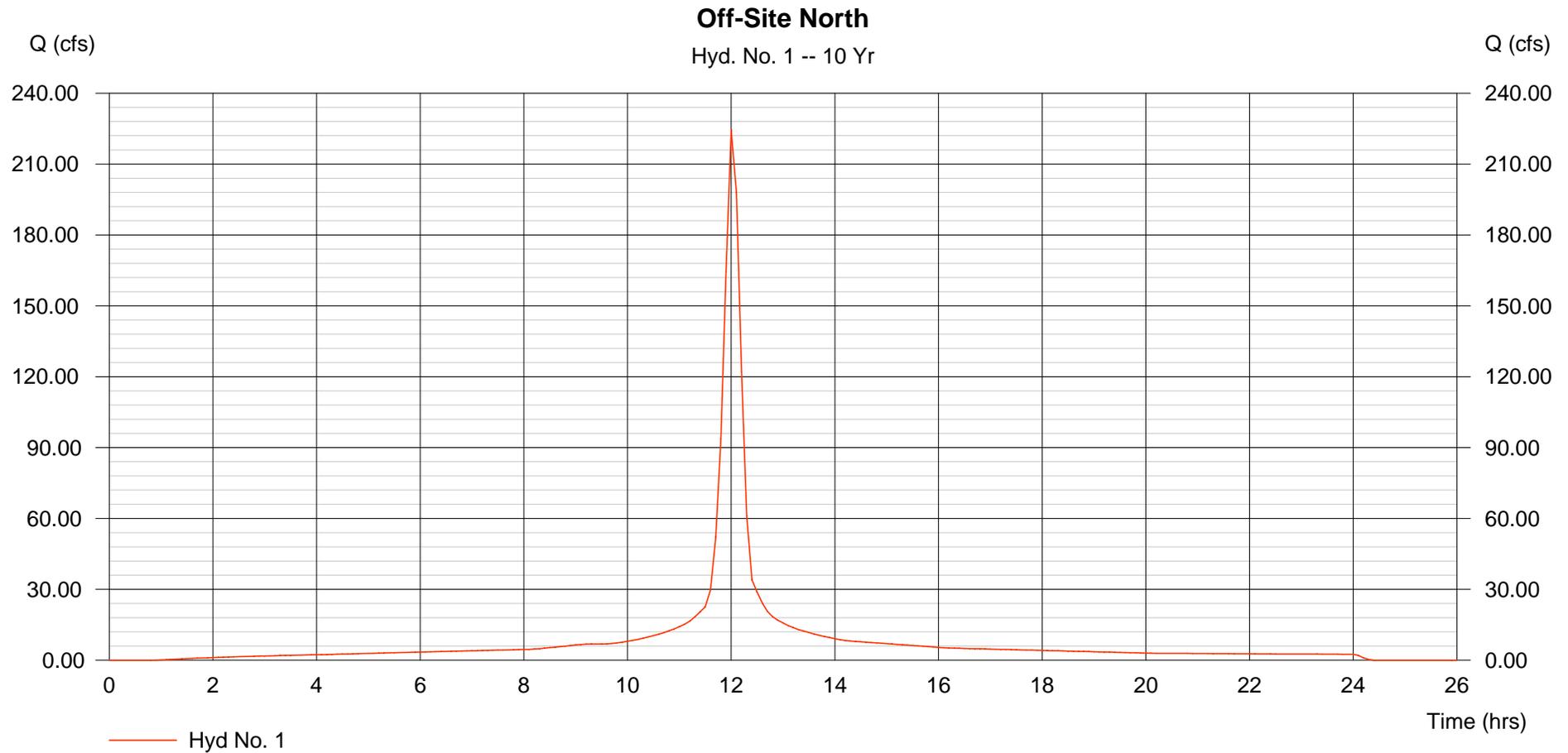
Hyd. No. 1

Off-Site North

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 45.000 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 5.28 in
Storm duration = 24 hrs

Peak discharge = 224.46 cfs
Time interval = 6 min
Curve number = 98
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 17.728 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:45 PM

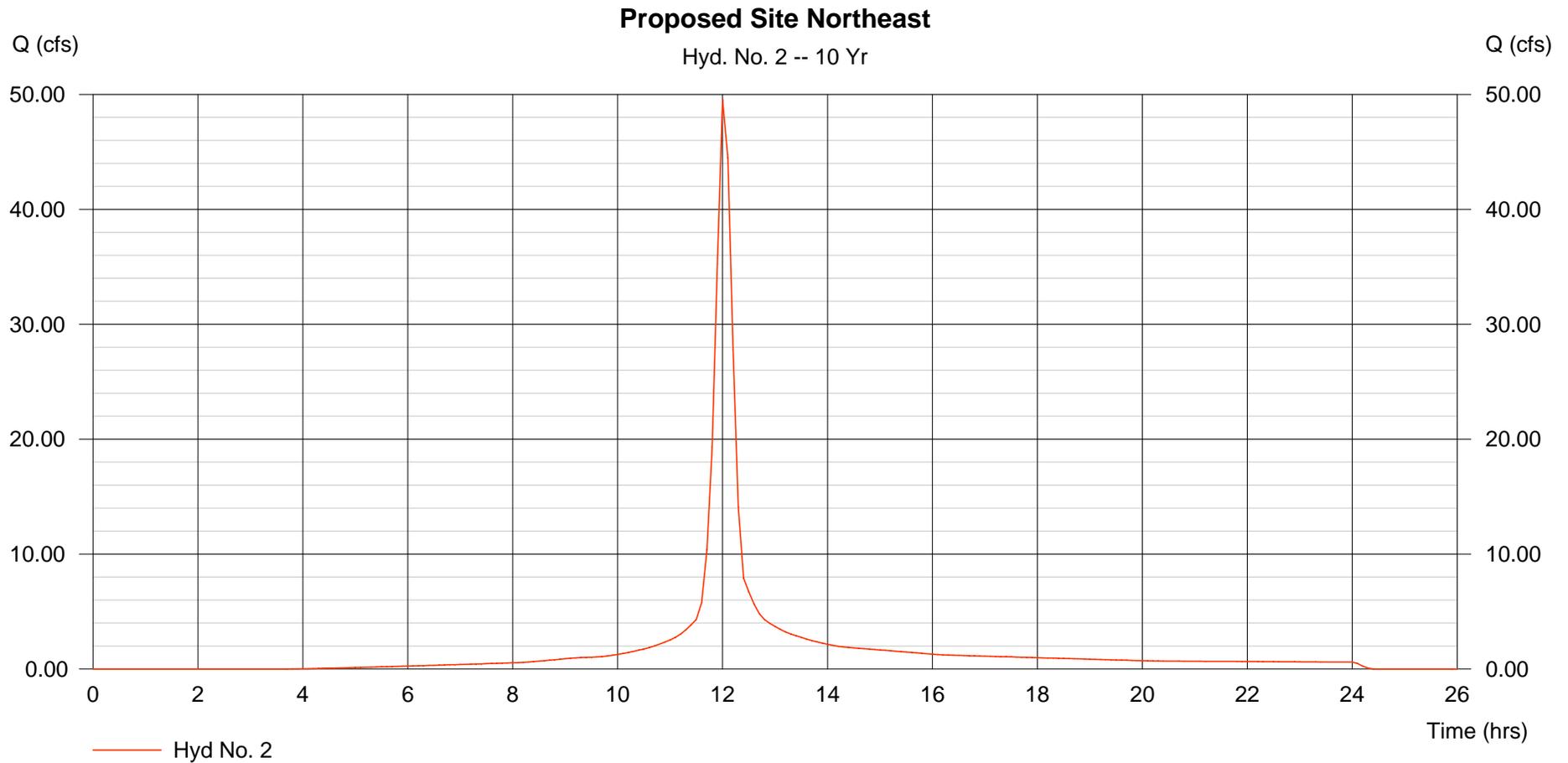
Hyd. No. 2

Proposed Site Northeast

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 11.093 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 5.28 in
Storm duration = 24 hrs

Peak discharge = 49.54 cfs
Time interval = 6 min
Curve number = 89.9
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 3.585 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:45 PM

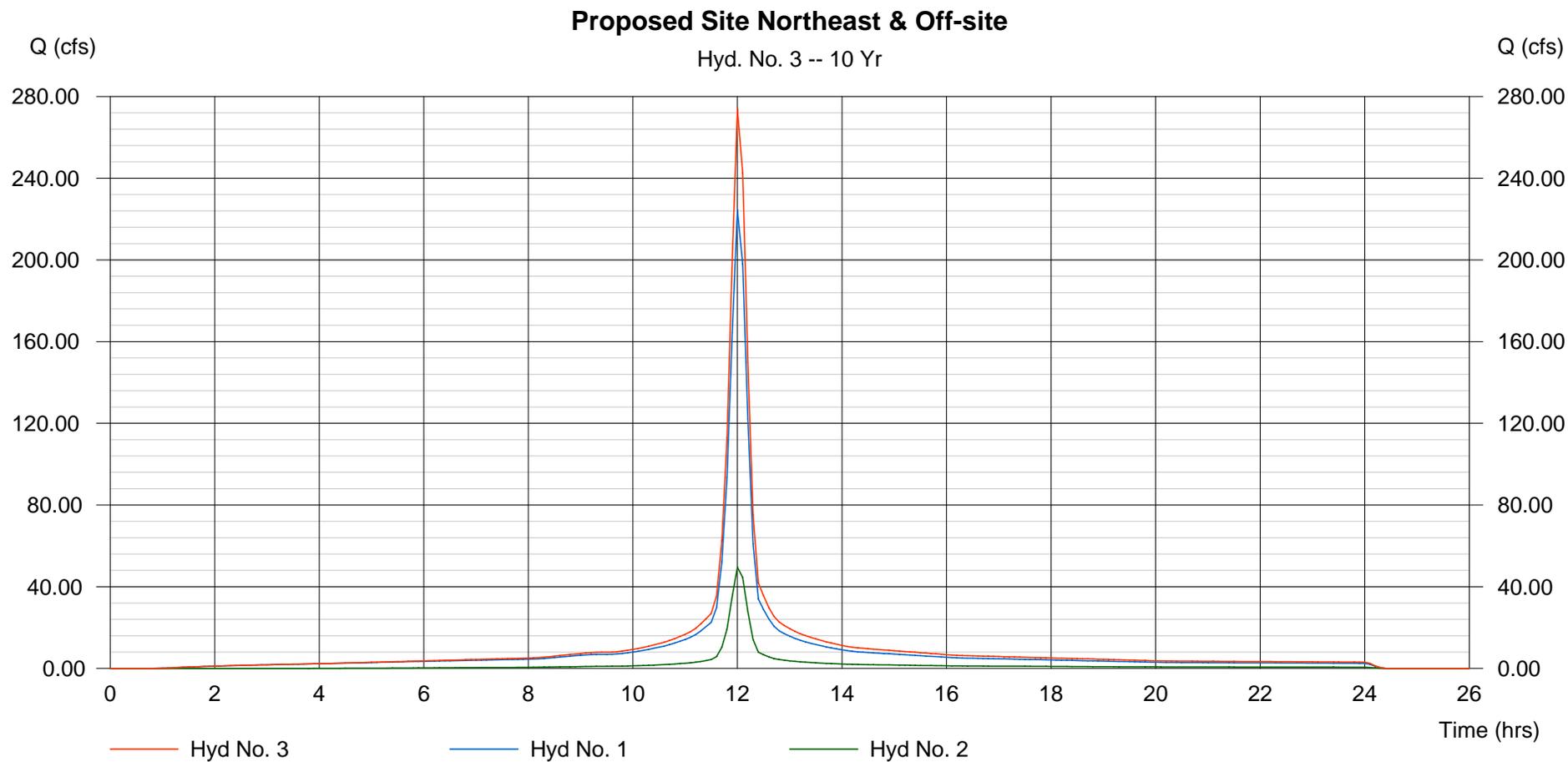
Hyd. No. 3

Proposed Site Northeast & Off-site

Hydrograph type = Combine
Storm frequency = 10 yrs
Inflow hyds. = 1, 2

Peak discharge = 274.00 cfs
Time interval = 6 min

Hydrograph Volume = 21.313 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:45 PM

Hyd. No. 4

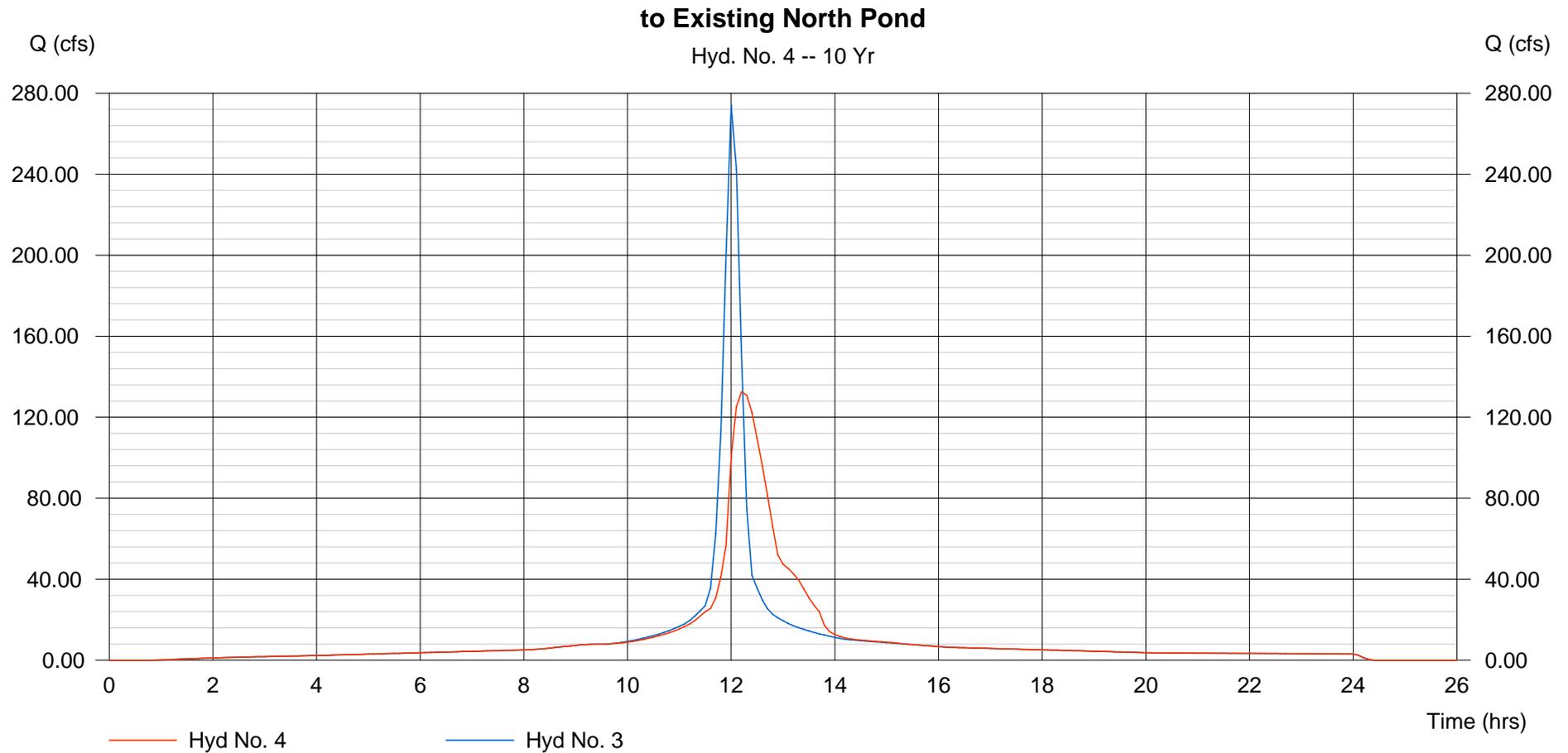
to Existing North Pond

Hydrograph type = Reservoir
Storm frequency = 10 yrs
Inflow hyd. No. = 3
Reservoir name = Existing North Pond

Peak discharge = 132.61 cfs
Time interval = 6 min
Max. Elevation = 1369.81 ft
Max. Storage = 4.758 acft

Storage Indication method used.

Hydrograph Volume = 21.313 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:45 PM

Hyd. No. 5

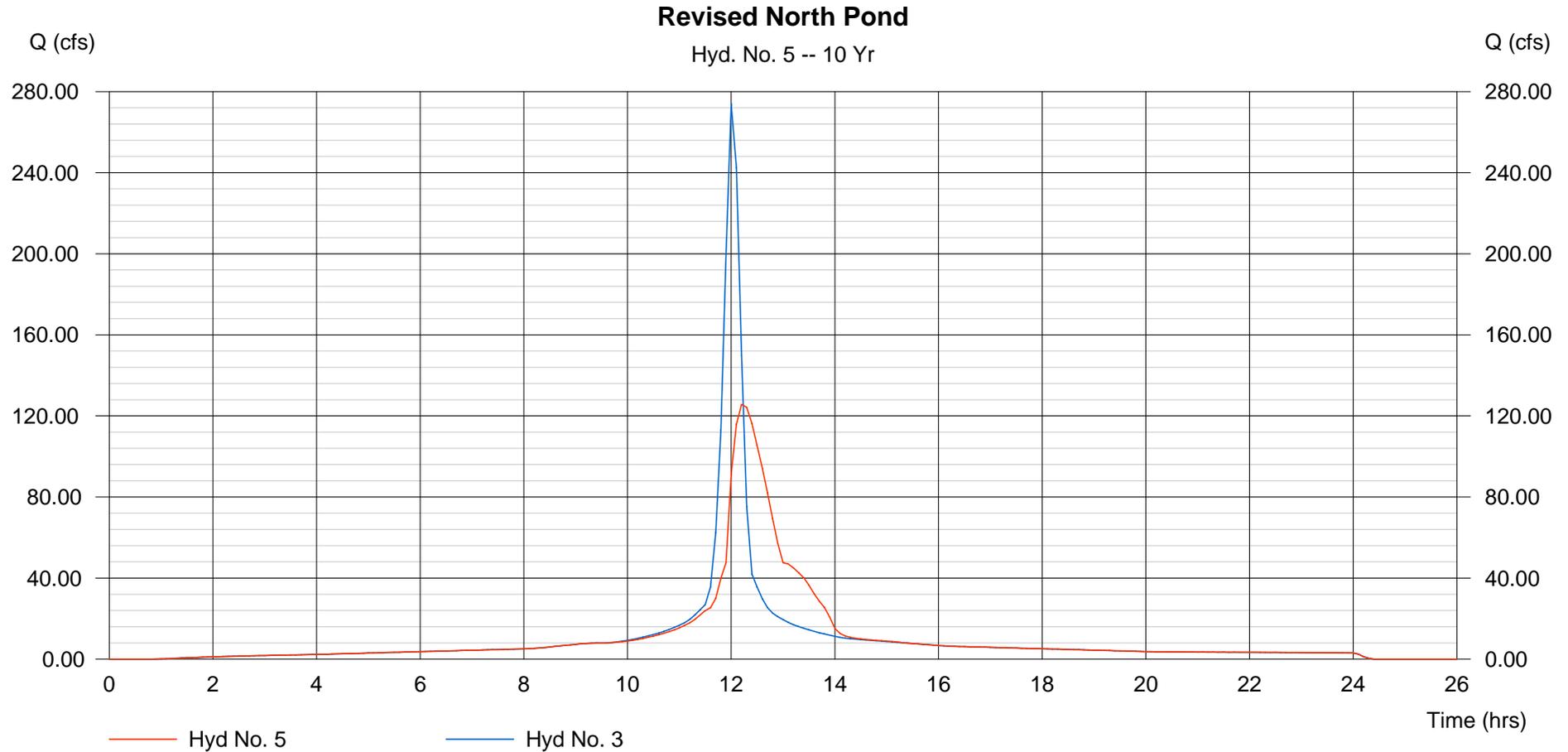
Revised North Pond

Hydrograph type = Reservoir
Storm frequency = 10 yrs
Inflow hyd. No. = 3
Reservoir name = Revised North Pond

Peak discharge = 125.74 cfs
Time interval = 6 min
Max. Elevation = 1369.39 ft
Max. Storage = 5.034 acft

Storage Indication method used.

Hydrograph Volume = 21.313 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:45 PM

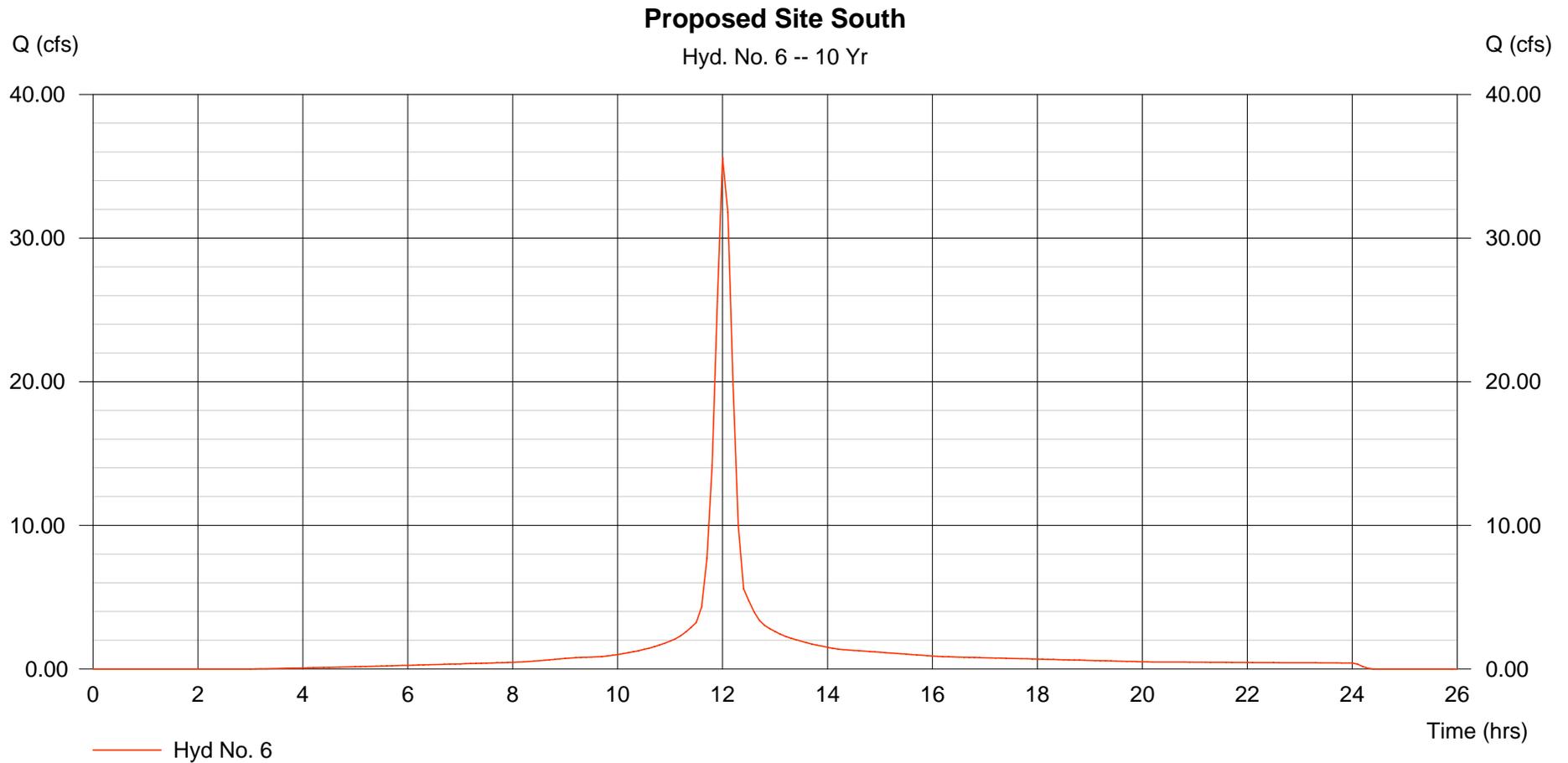
Hyd. No. 6

Proposed Site South

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 7.668 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 5.28 in
Storm duration = 24 hrs

Peak discharge = 35.60 cfs
Time interval = 6 min
Curve number = 92
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 2.614 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:45 PM

Hyd. No. 7

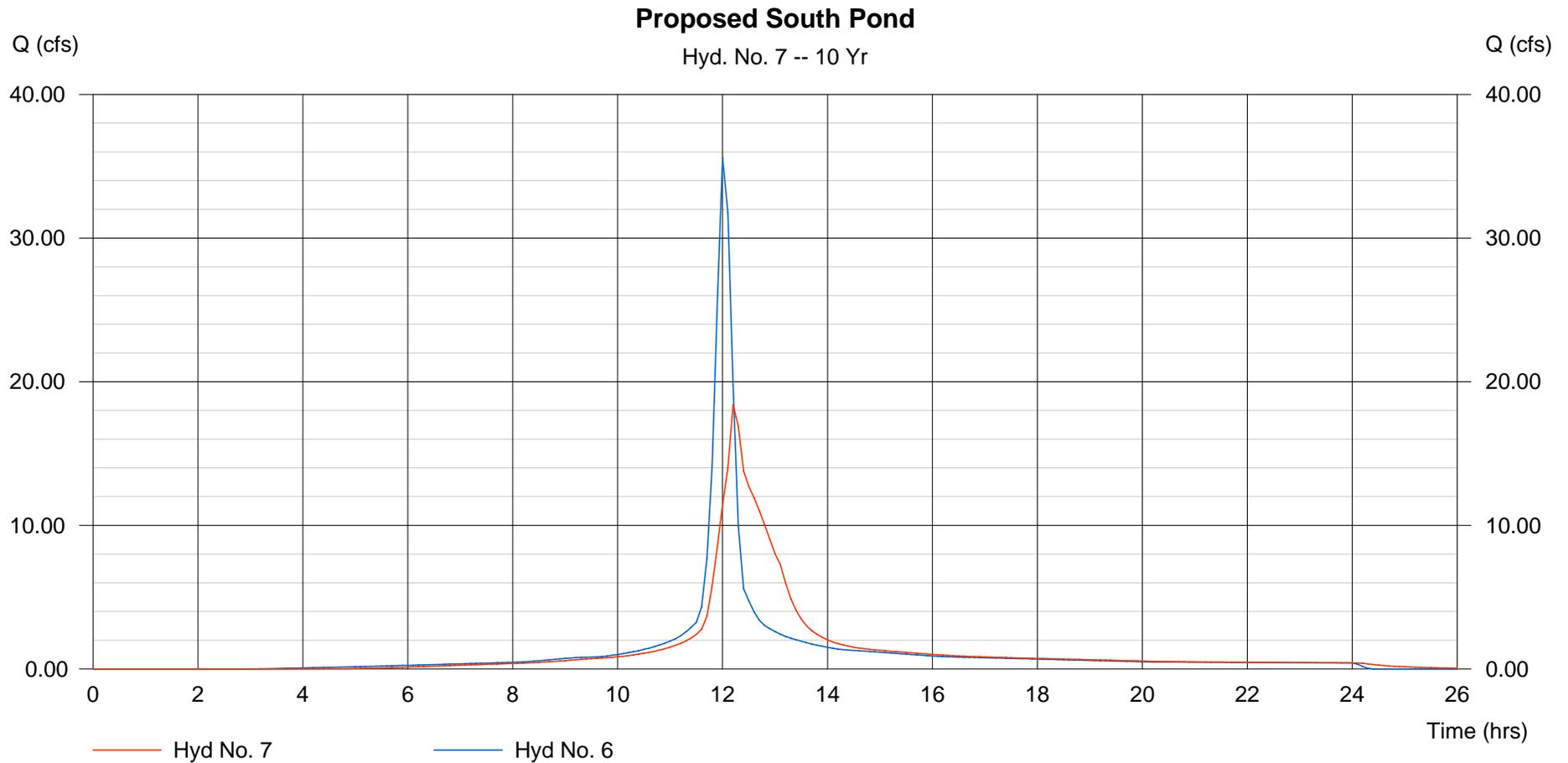
Proposed South Pond

Hydrograph type = Reservoir
Storm frequency = 10 yrs
Inflow hyd. No. = 6
Reservoir name = Proposed South Pond

Peak discharge = 18.39 cfs
Time interval = 6 min
Max. Elevation = 1380.25 ft
Max. Storage = 0.717 acft

Storage Indication method used.

Hydrograph Volume = 2.613 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:45 PM

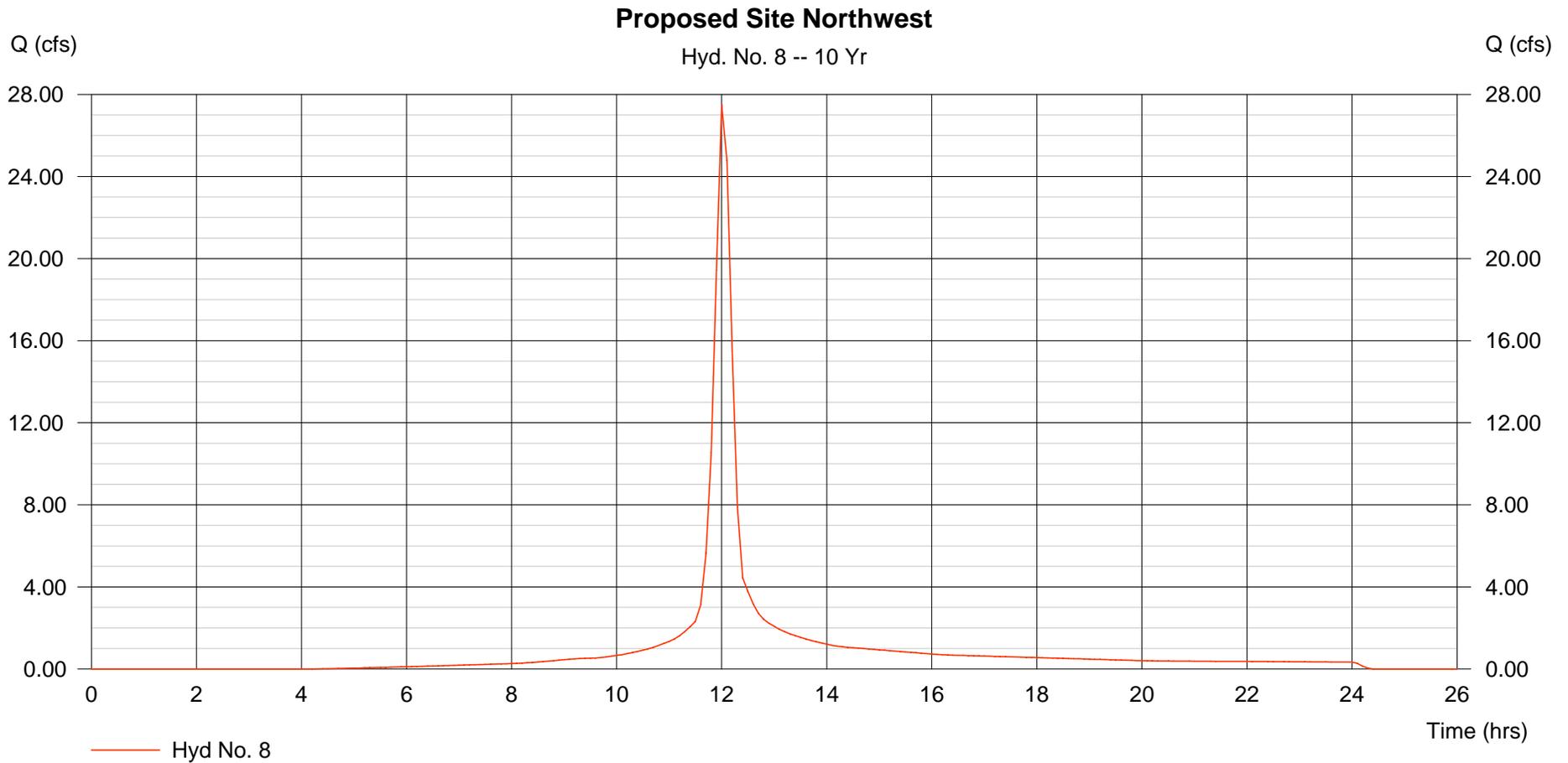
Hyd. No. 8

Proposed Site Northwest

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Drainage area = 6.455 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 5.28 in
Storm duration = 24 hrs

Peak discharge = 27.49 cfs
Time interval = 6 min
Curve number = 88.6
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 474

Hydrograph Volume = 1.975 acft



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (acft)	Hydrograph description	
1	SCS Runoff	265.71	6	720	21.099	----	-----	-----	Off-Site North	
2	SCS Runoff	60.14	6	720	4.393	----	-----	-----	Proposed Site Northeast	
3	Combine	325.85	6	720	25.492	1, 2	-----	-----	Proposed Site Northeast & Off-site	
4	Reservoir	144.02	6	732	25.492	3	1370.67	5.919	to Existing North Pond	
5	Reservoir	137.38	6	732	25.492	3	1370.16	6.200	Revised North Pond	
6	SCS Runoff	42.86	6	720	3.178	----	-----	-----	Proposed Site South	
7	Reservoir	26.07	6	732	3.177	6	1380.47	0.819	Proposed South Pond	
8	SCS Runoff	33.55	6	720	2.432	----	-----	-----	Proposed Site Northwest	
Inwood Final Proposed.gpw					Return Period: 25 Year			Friday, Jun 1 2007		

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:45 PM

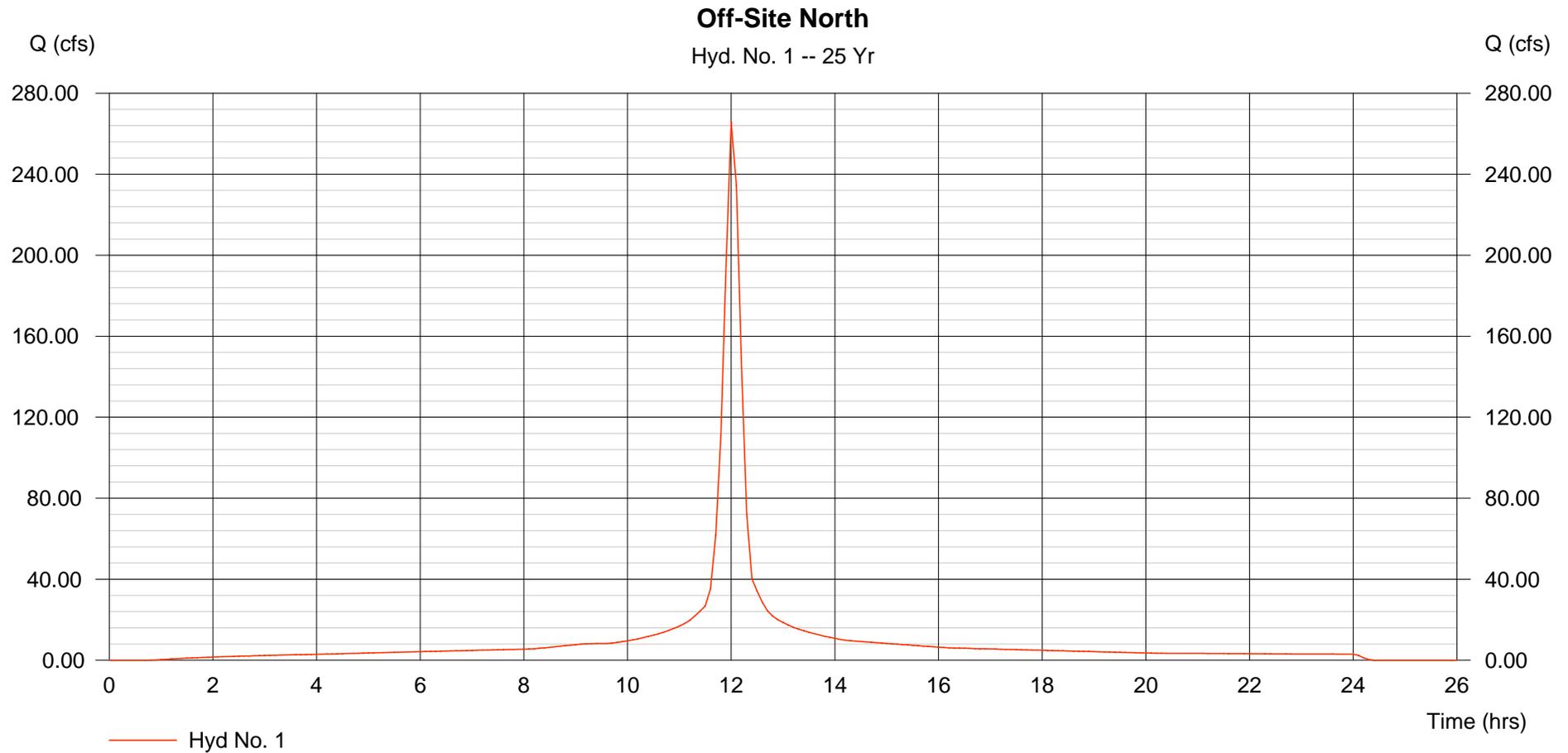
Hyd. No. 1

Off-Site North

Hydrograph type = SCS Runoff
Storm frequency = 25 yrs
Drainage area = 45.000 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 6.24 in
Storm duration = 24 hrs

Peak discharge = 265.71 cfs
Time interval = 6 min
Curve number = 98
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 21.099 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:45 PM

Hyd. No. 2

Proposed Site Northeast

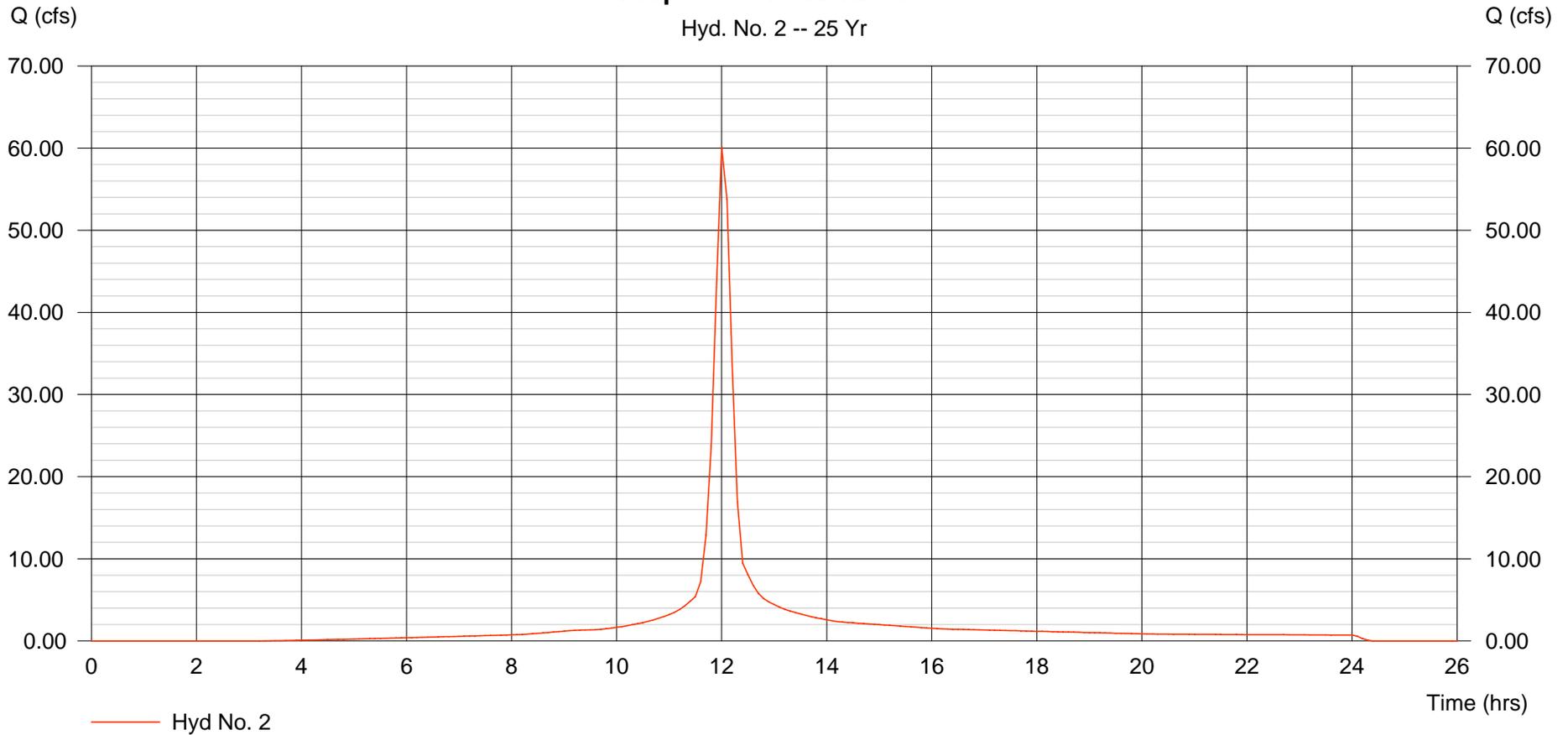
Hydrograph type = SCS Runoff
Storm frequency = 25 yrs
Drainage area = 11.093 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 6.24 in
Storm duration = 24 hrs

Peak discharge = 60.14 cfs
Time interval = 6 min
Curve number = 89.9
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 4.393 acft

Proposed Site Northeast

Hyd. No. 2 -- 25 Yr



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:45 PM

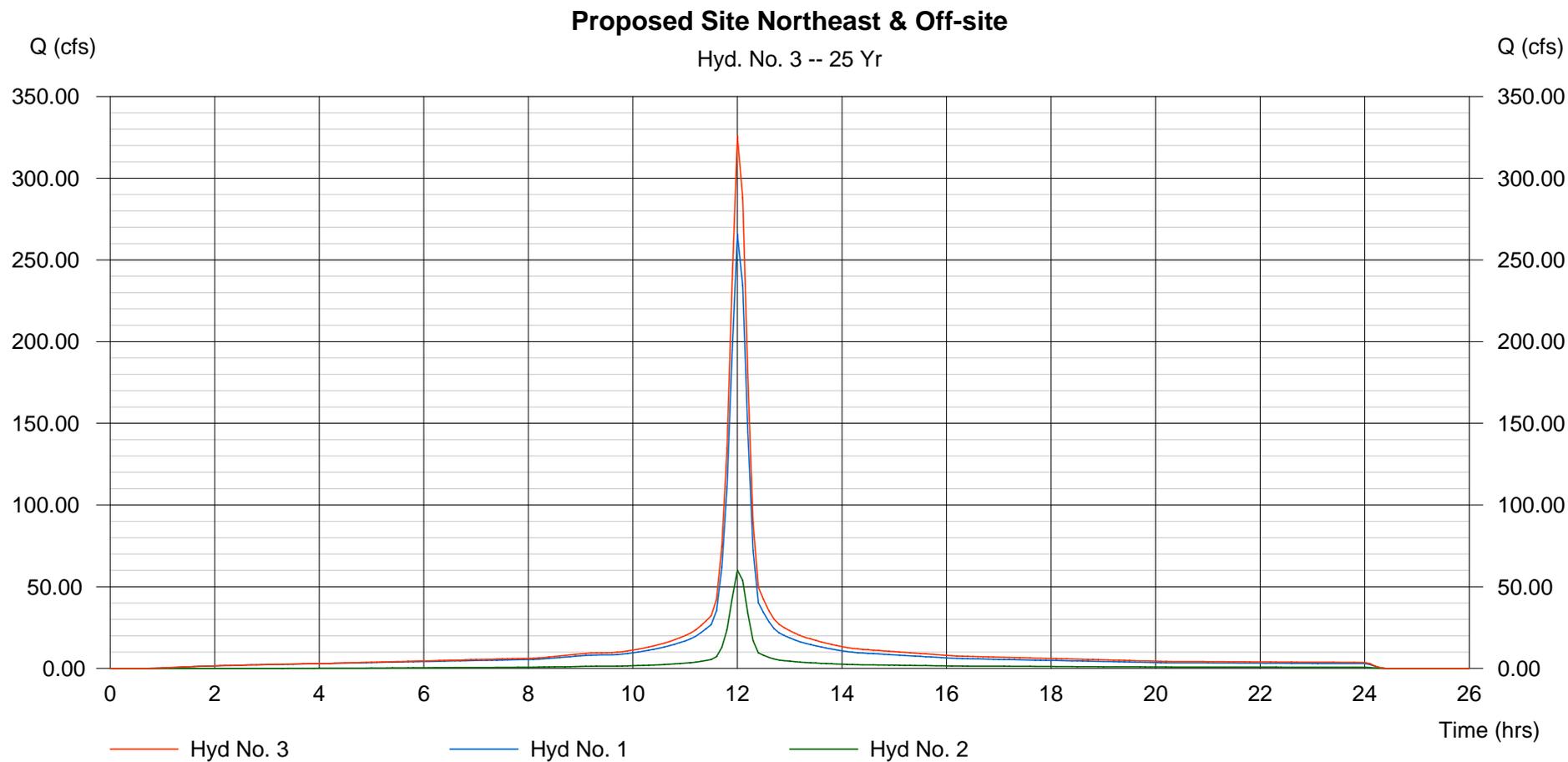
Hyd. No. 3

Proposed Site Northeast & Off-site

Hydrograph type = Combine
Storm frequency = 25 yrs
Inflow hyds. = 1, 2

Peak discharge = 325.85 cfs
Time interval = 6 min

Hydrograph Volume = 25.492 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:45 PM

Hyd. No. 4

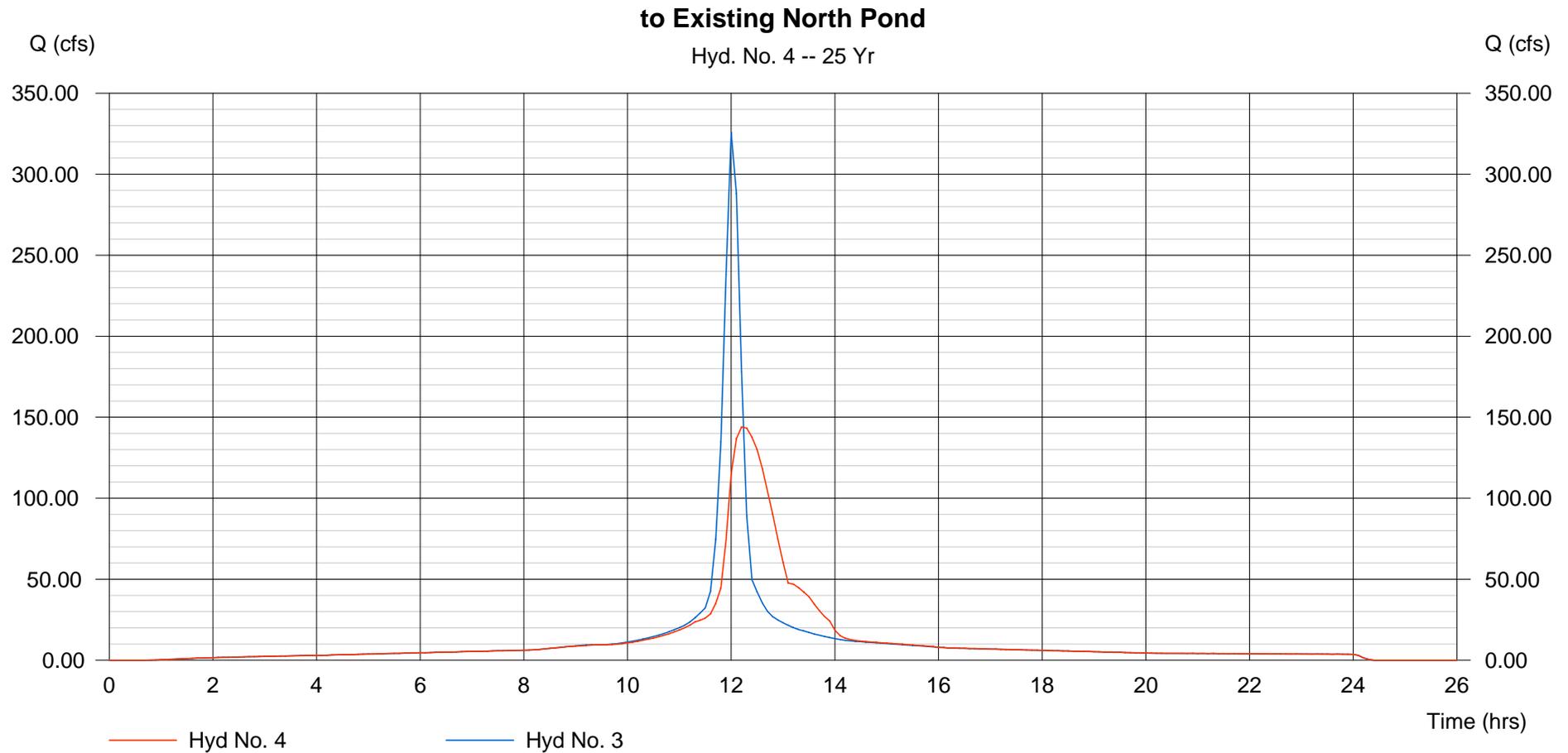
to Existing North Pond

Hydrograph type = Reservoir
Storm frequency = 25 yrs
Inflow hyd. No. = 3
Reservoir name = Existing North Pond

Peak discharge = 144.02 cfs
Time interval = 6 min
Max. Elevation = 1370.67 ft
Max. Storage = 5.919 acft

Storage Indication method used.

Hydrograph Volume = 25.492 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:45 PM

Hyd. No. 5

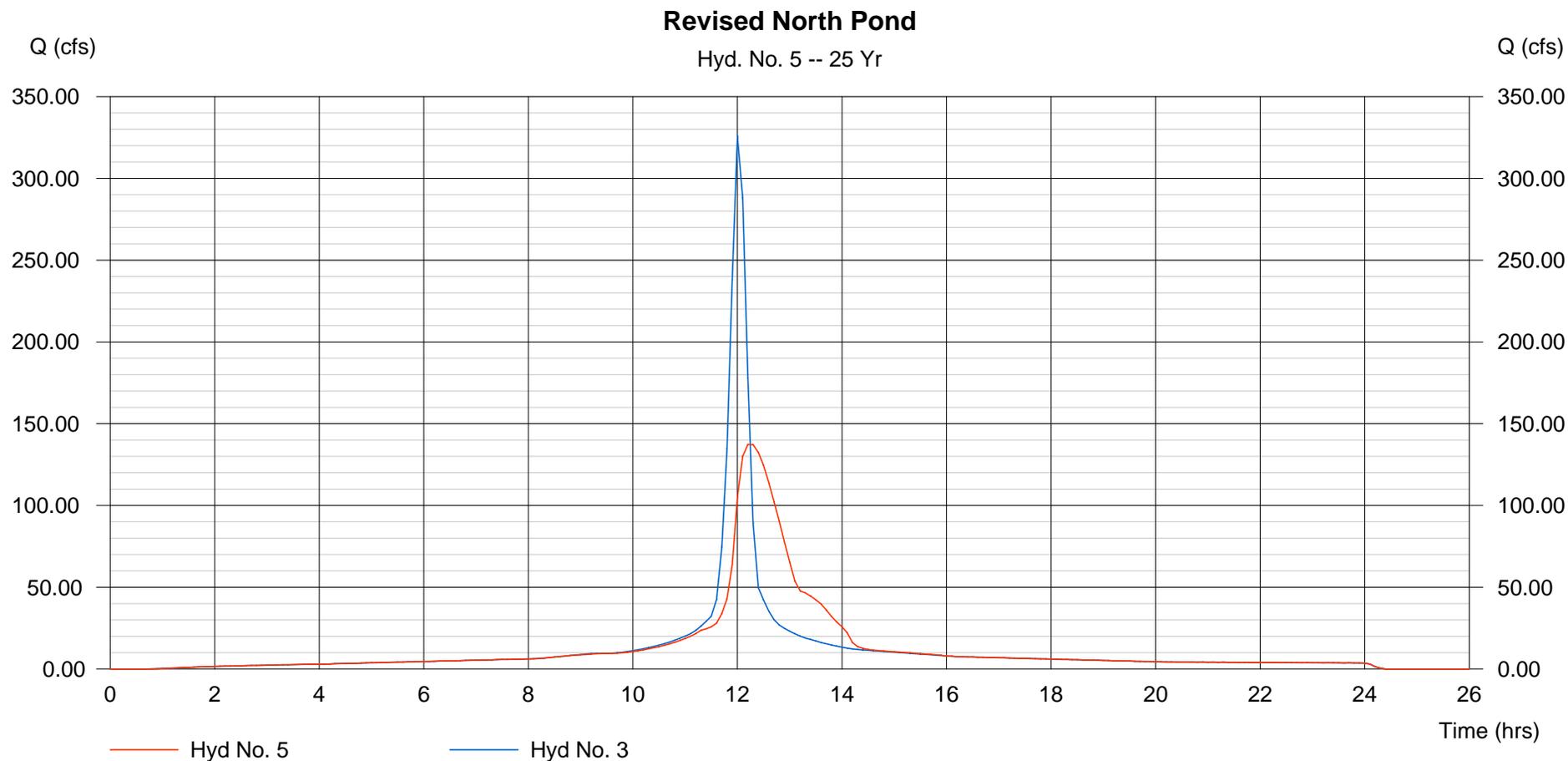
Revised North Pond

Hydrograph type = Reservoir
Storm frequency = 25 yrs
Inflow hyd. No. = 3
Reservoir name = Revised North Pond

Peak discharge = 137.38 cfs
Time interval = 6 min
Max. Elevation = 1370.16 ft
Max. Storage = 6.200 acft

Storage Indication method used.

Hydrograph Volume = 25.492 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:45 PM

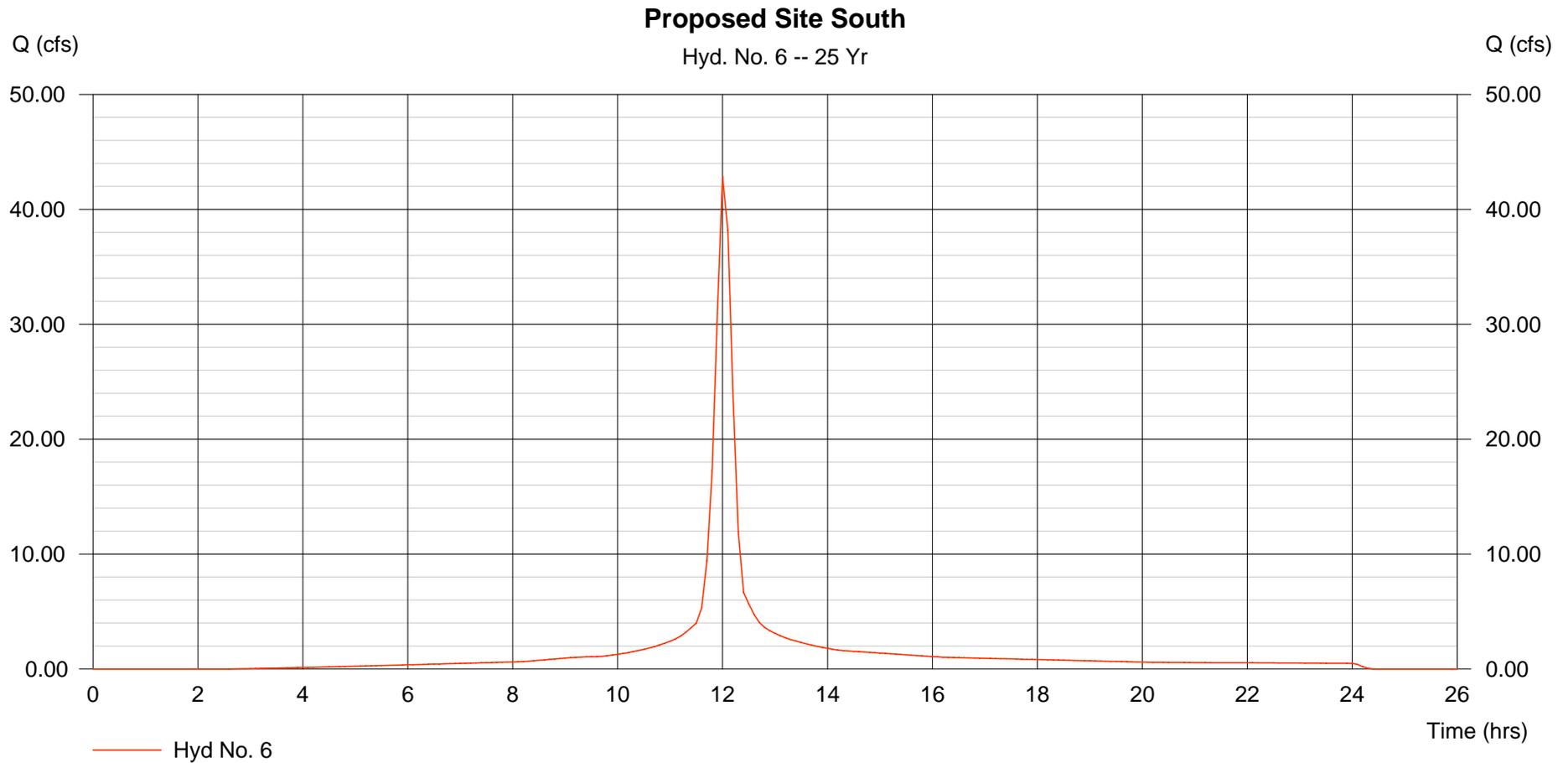
Hyd. No. 6

Proposed Site South

Hydrograph type = SCS Runoff
Storm frequency = 25 yrs
Drainage area = 7.668 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 6.24 in
Storm duration = 24 hrs

Peak discharge = 42.86 cfs
Time interval = 6 min
Curve number = 92
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 3.178 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:45 PM

Hyd. No. 7

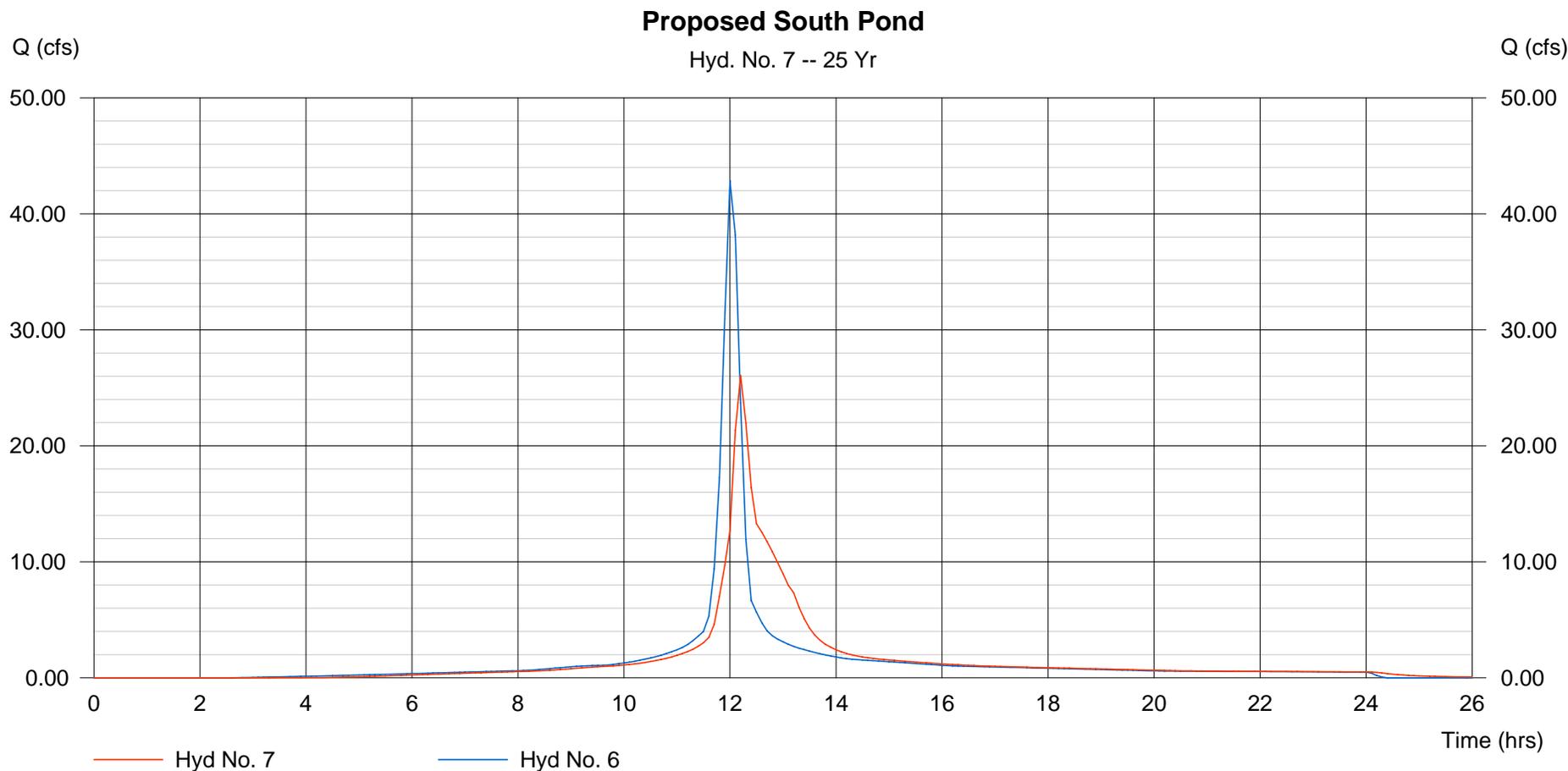
Proposed South Pond

Hydrograph type = Reservoir
Storm frequency = 25 yrs
Inflow hyd. No. = 6
Reservoir name = Proposed South Pond

Peak discharge = 26.07 cfs
Time interval = 6 min
Max. Elevation = 1380.47 ft
Max. Storage = 0.819 acft

Storage Indication method used.

Hydrograph Volume = 3.177 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:45 PM

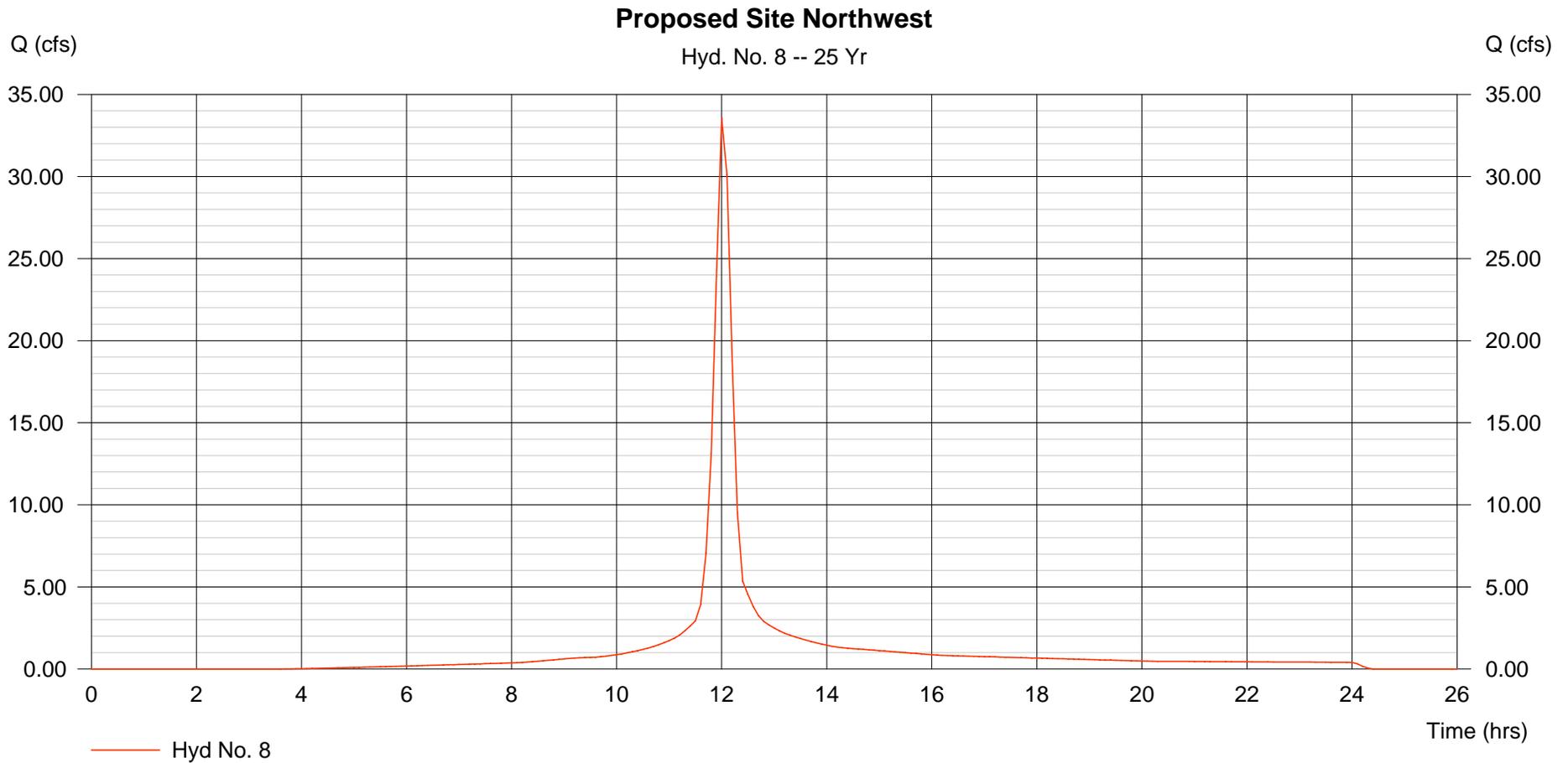
Hyd. No. 8

Proposed Site Northwest

Hydrograph type = SCS Runoff
Storm frequency = 25 yrs
Drainage area = 6.455 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 6.24 in
Storm duration = 24 hrs

Peak discharge = 33.55 cfs
Time interval = 6 min
Curve number = 88.6
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 474

Hydrograph Volume = 2.432 acft



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (acft)	Hydrograph description	
1	SCS Runoff	327.50	6	720	26.158	----	-----	-----	Off-Site North	
2	SCS Runoff	75.94	6	720	5.615	----	-----	-----	Proposed Site Northeast	
3	Combine	403.43	6	720	31.773	1, 2	-----	-----	Proposed Site Northeast & Off-site	
4	Reservoir	190.55	6	732	31.773	3	1371.88	7.655	to Existing North Pond	
5	Reservoir	159.78	6	738	31.773	3	1371.33	8.129	Revised North Pond	
6	SCS Runoff	53.68	6	720	4.030	----	-----	-----	Proposed Site South	
7	Reservoir	36.71	6	732	4.029	6	1380.73	0.937	Proposed South Pond	
8	SCS Runoff	42.59	6	720	3.124	----	-----	-----	Proposed Site Northwest	
Inwood Final Proposed.gpw					Return Period: 100 Year			Friday, Jun 1 2007		

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:46 PM

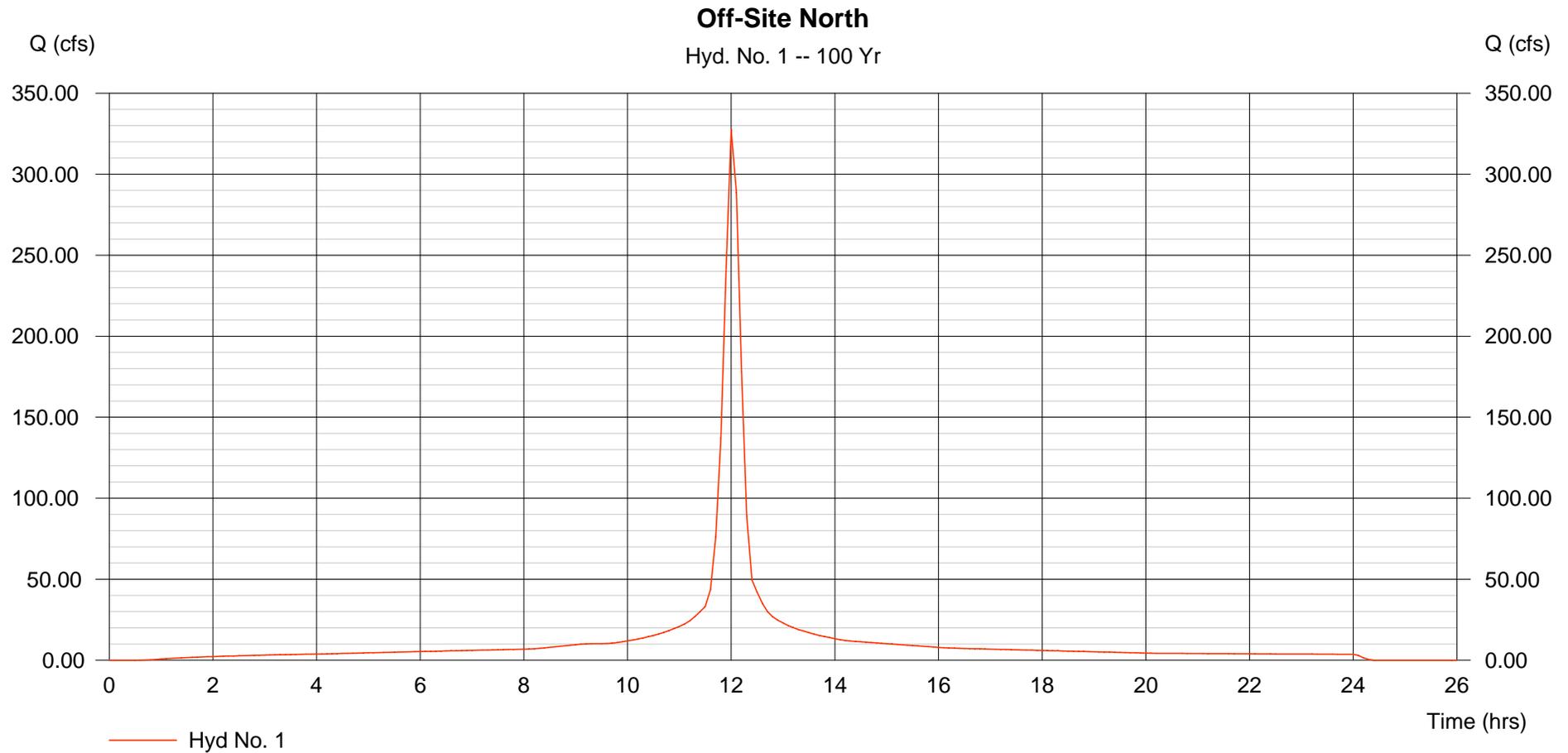
Hyd. No. 1

Off-Site North

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 45.000 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 7.68 in
Storm duration = 24 hrs

Peak discharge = 327.50 cfs
Time interval = 6 min
Curve number = 98
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 26.158 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:46 PM

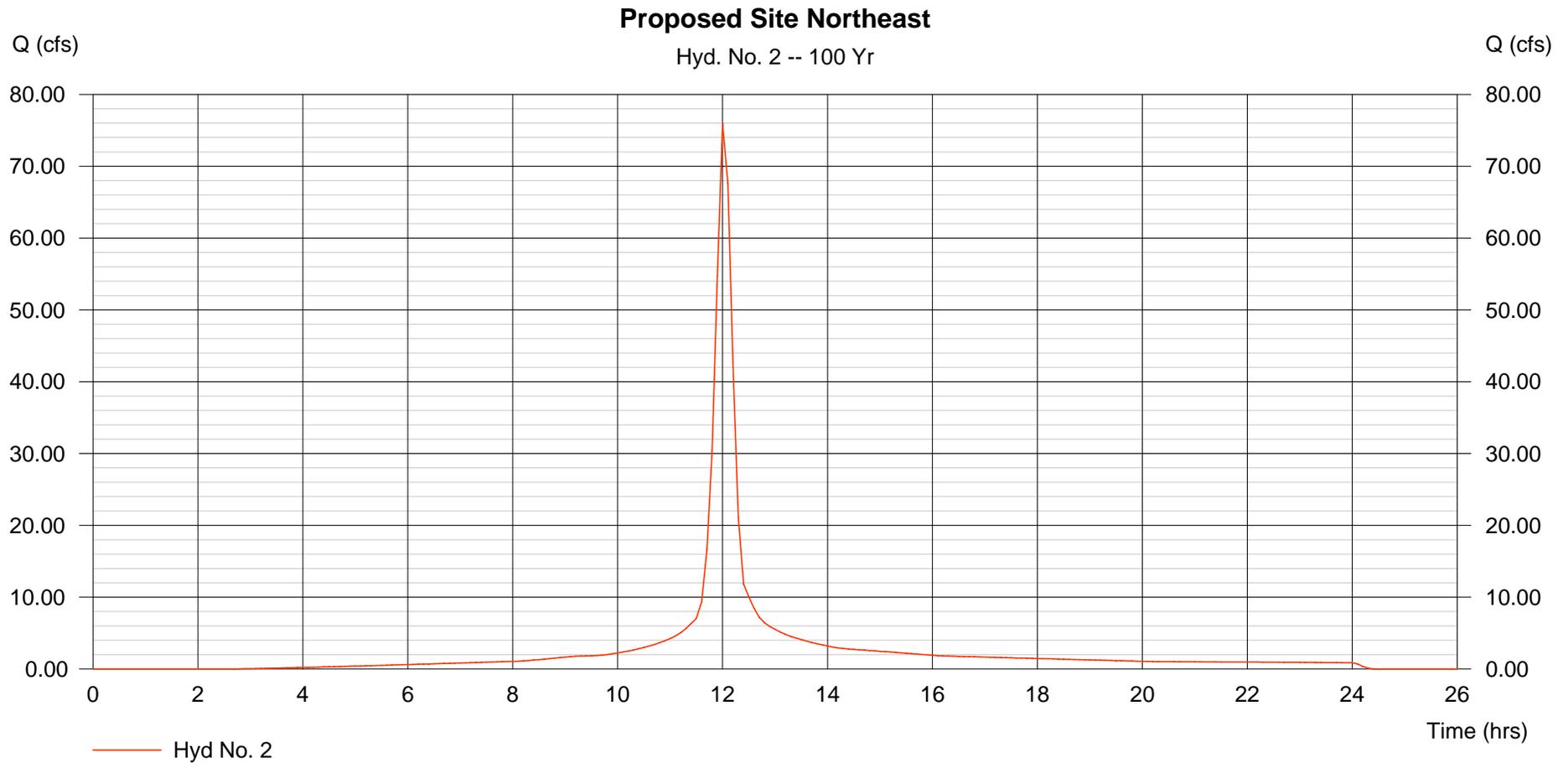
Hyd. No. 2

Proposed Site Northeast

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 11.093 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 7.68 in
Storm duration = 24 hrs

Peak discharge = 75.94 cfs
Time interval = 6 min
Curve number = 89.9
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 5.615 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:46 PM

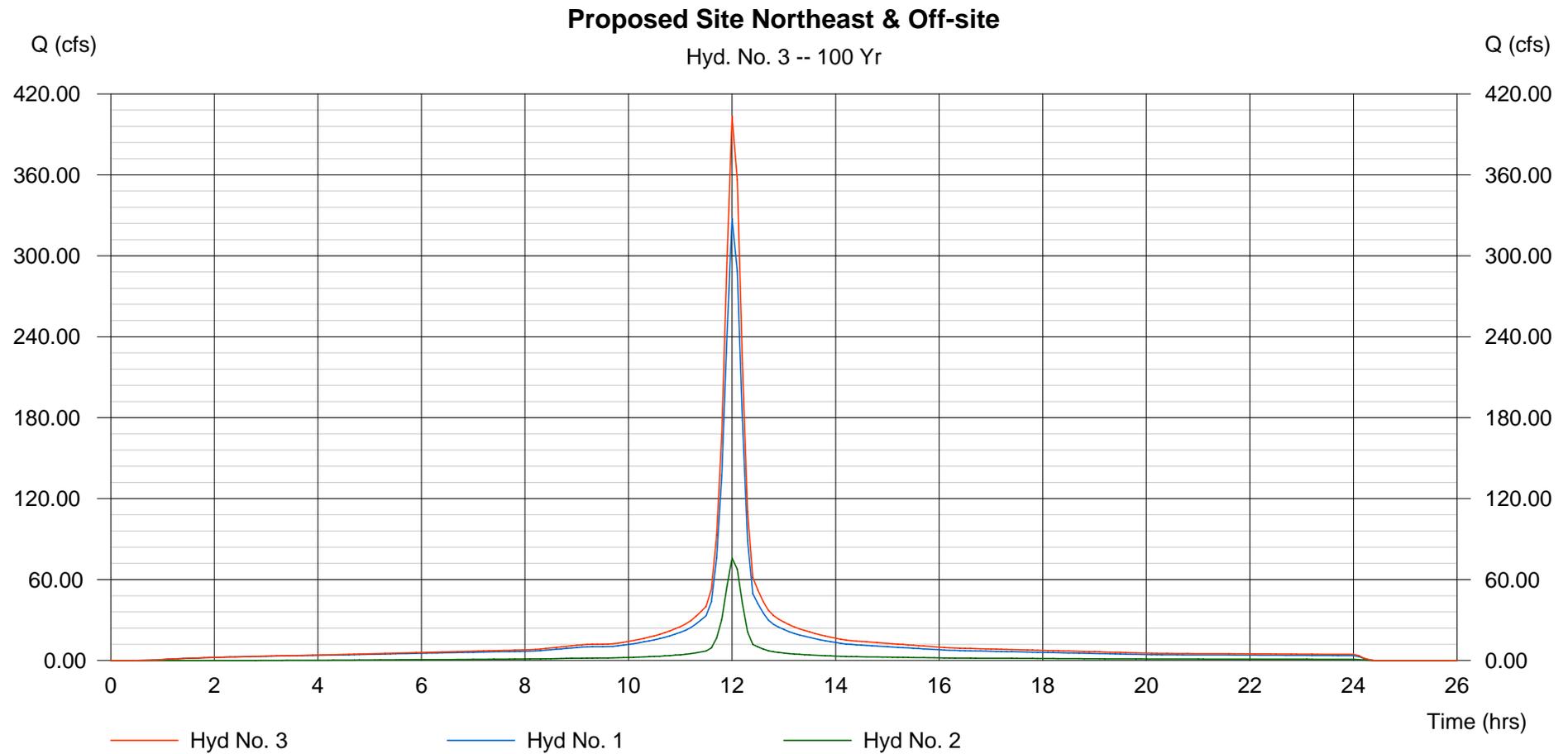
Hyd. No. 3

Proposed Site Northeast & Off-site

Hydrograph type = Combine
Storm frequency = 100 yrs
Inflow hyds. = 1, 2

Peak discharge = 403.43 cfs
Time interval = 6 min

Hydrograph Volume = 31.773 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:46 PM

Hyd. No. 4

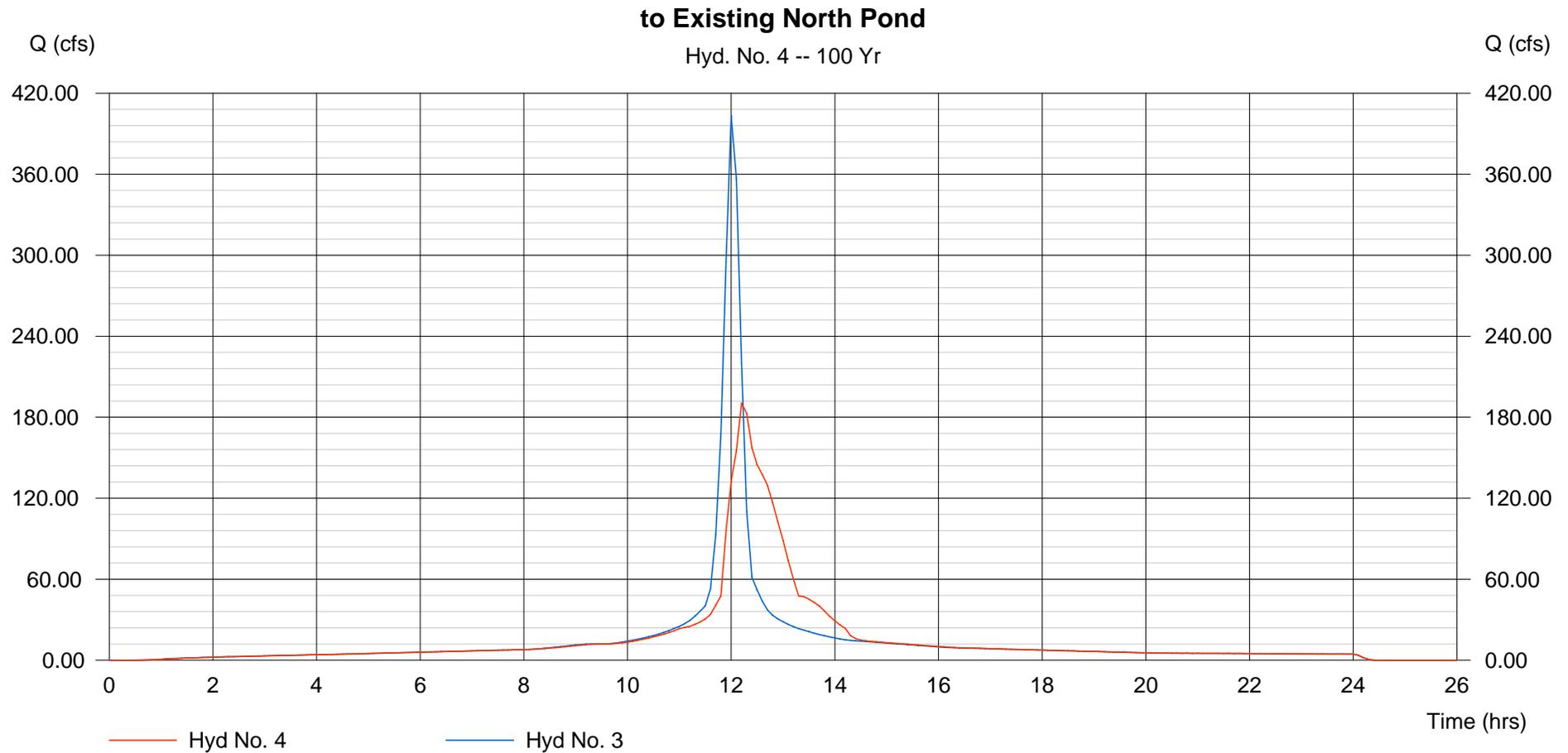
to Existing North Pond

Hydrograph type = Reservoir
Storm frequency = 100 yrs
Inflow hyd. No. = 3
Reservoir name = Existing North Pond

Peak discharge = 190.55 cfs
Time interval = 6 min
Max. Elevation = 1371.88 ft
Max. Storage = 7.655 acft

Storage Indication method used.

Hydrograph Volume = 31.773 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:46 PM

Hyd. No. 5

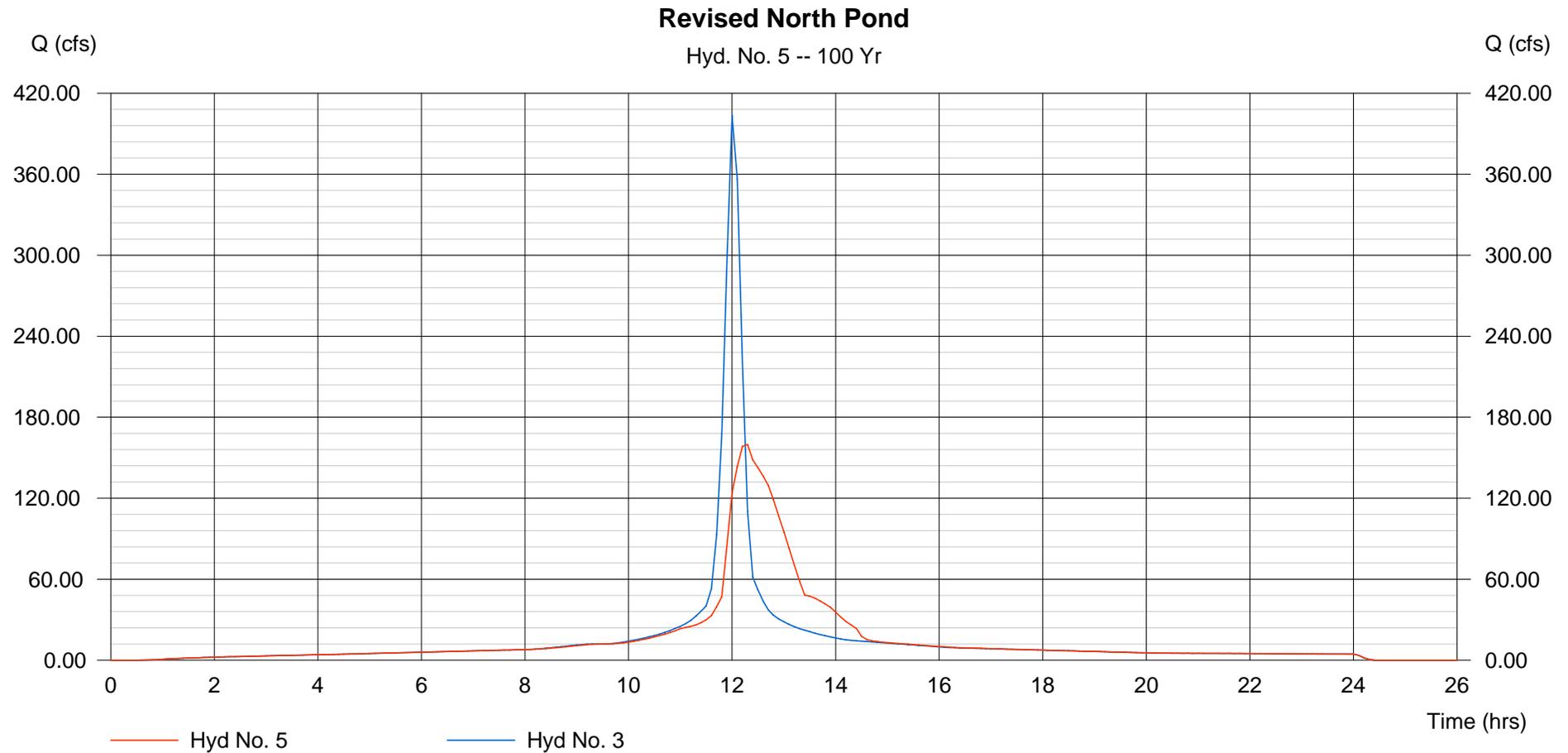
Revised North Pond

Hydrograph type = Reservoir
Storm frequency = 100 yrs
Inflow hyd. No. = 3
Reservoir name = Revised North Pond

Peak discharge = 159.78 cfs
Time interval = 6 min
Max. Elevation = 1371.33 ft
Max. Storage = 8.129 acft

Storage Indication method used.

Hydrograph Volume = 31.773 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:46 PM

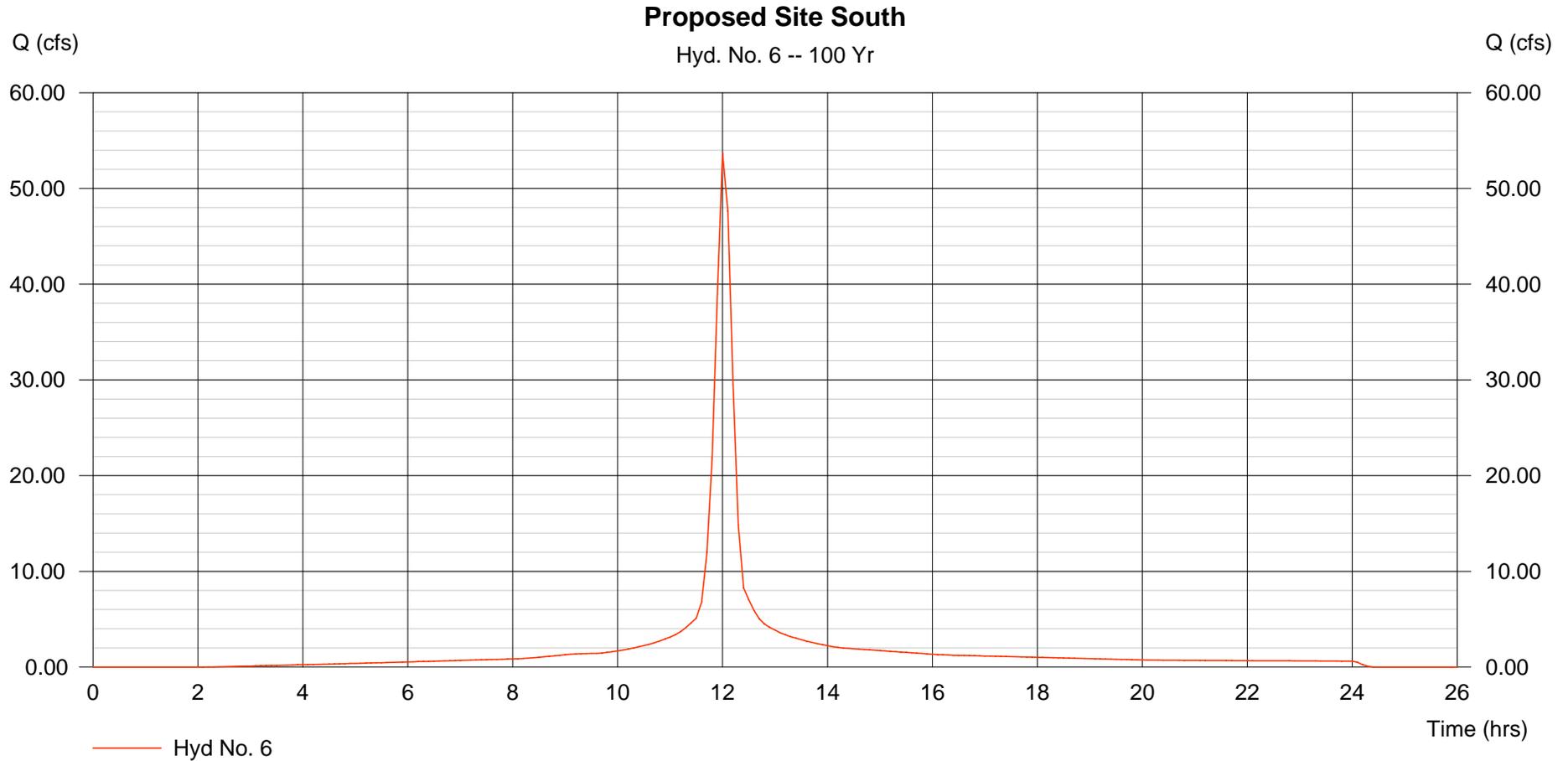
Hyd. No. 6

Proposed Site South

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 7.668 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 7.68 in
Storm duration = 24 hrs

Peak discharge = 53.68 cfs
Time interval = 6 min
Curve number = 92
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 4.030 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:46 PM

Hyd. No. 7

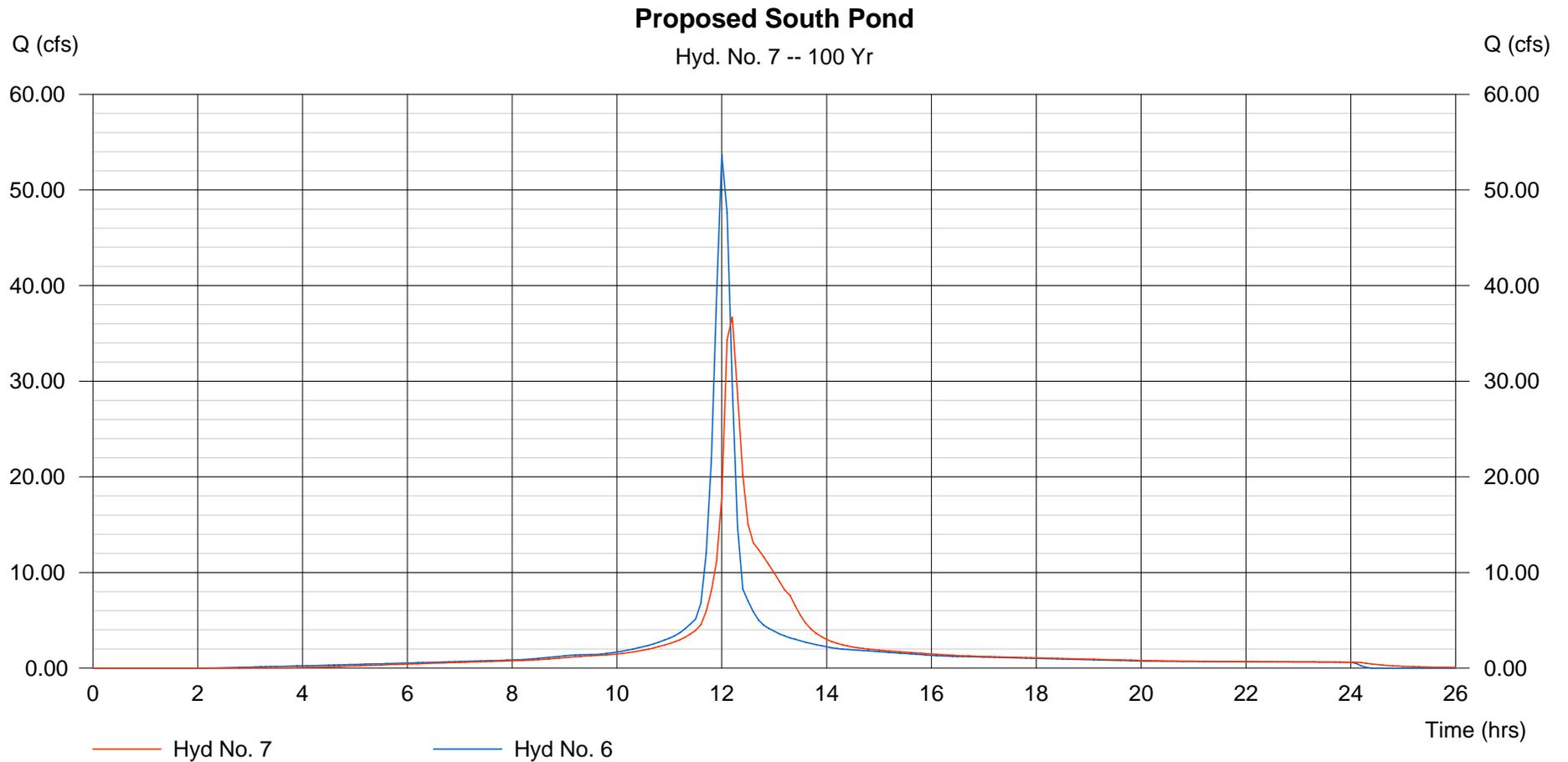
Proposed South Pond

Hydrograph type = Reservoir
Storm frequency = 100 yrs
Inflow hyd. No. = 6
Reservoir name = Proposed South Pond

Peak discharge = 36.71 cfs
Time interval = 6 min
Max. Elevation = 1380.73 ft
Max. Storage = 0.937 acft

Storage Indication method used.

Hydrograph Volume = 4.029 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 1 2007, 4:46 PM

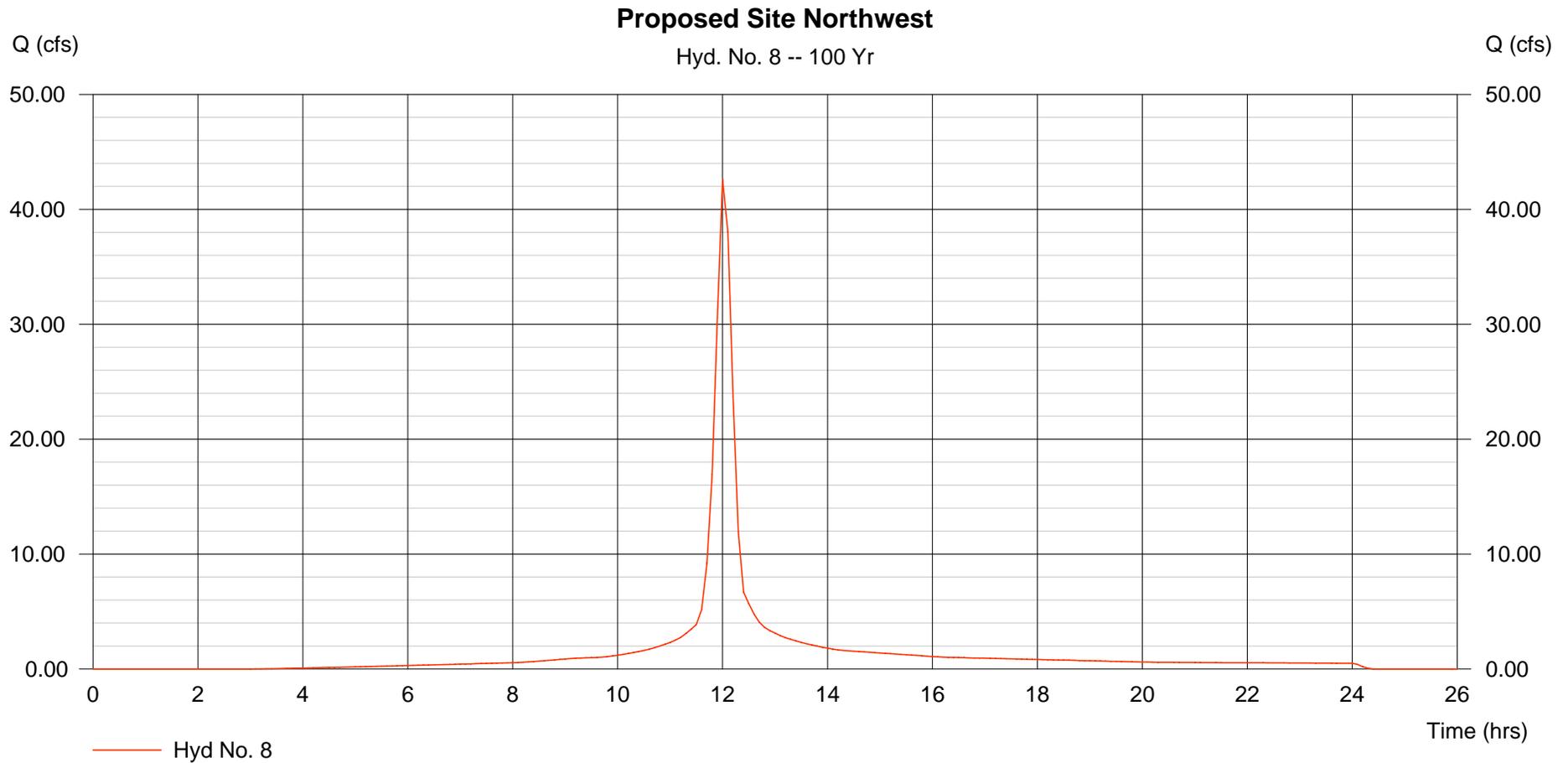
Hyd. No. 8

Proposed Site Northwest

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 6.455 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 7.68 in
Storm duration = 24 hrs

Peak discharge = 42.59 cfs
Time interval = 6 min
Curve number = 88.6
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 474

Hydrograph Volume = 3.124 acft



Pond Report

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 10:34 AM

Pond No. 1 - Existing North Pond

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (acft)	Total storage (acft)
0.00	1363.00	00	0.000	0.000
1.00	1364.00	09	0.000	0.000
2.00	1365.00	12,753	0.146	0.147
3.00	1366.00	32,315	0.517	0.664
4.00	1367.00	41,835	0.851	1.515
5.00	1368.00	48,901	1.042	2.557
6.00	1369.00	53,519	1.176	3.732
7.00	1370.00	57,512	1.274	5.007
8.00	1371.00	61,570	1.367	6.373
9.00	1372.00	66,083	1.465	7.839
10.00	1373.00	70,517	1.568	9.407

Culvert / Orifice Structures

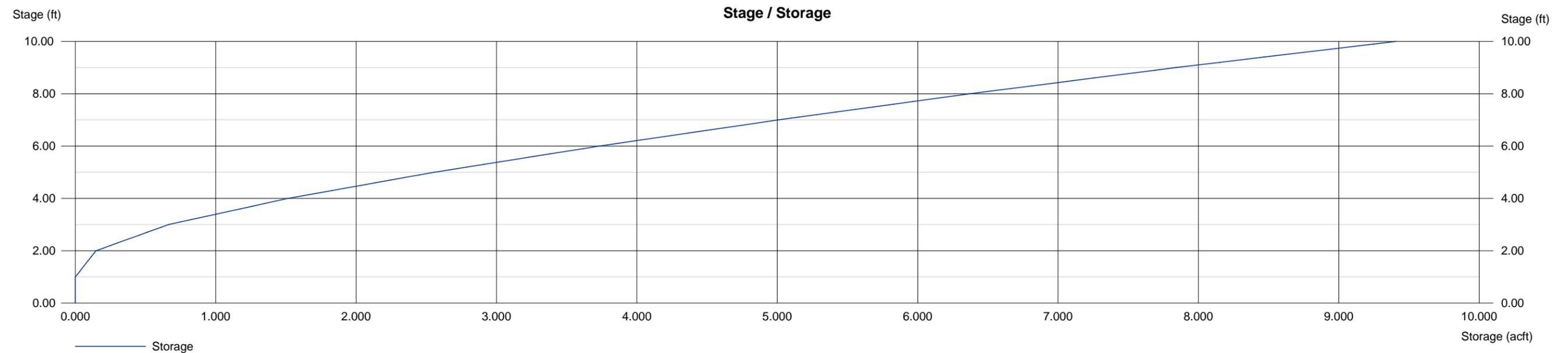
	[A]	[B]	[C]	[D]
Rise (in)	= 48.00	0.00	0.00	0.00
Span (in)	= 48.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 1363.00	0.00	0.00	0.00
Length (ft)	= 60.00	0.00	0.00	0.00
Slope (%)	= 0.67	0.00	0.00	0.00
N-Value	= .013	.000	.000	.000
Orif. Coeff.	= 0.60	0.00	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 15.00	0.00	0.00	0.00
Crest El. (ft)	= 1371.00	0.00	0.00	0.00
Weir Coeff.	= 2.60	0.00	0.00	0.00
Weir Type	= Broad	---	---	---
Multi-Stage	= No	No	No	No

Exfiltration = 0.000 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.



Pond Report

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 10:34 AM

Pond No. 1 - Existing North Pond

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (acft)	Total storage (acft)
0.00	1363.00	00	0.000	0.000
1.00	1364.00	09	0.000	0.000
2.00	1365.00	12,753	0.146	0.147
3.00	1366.00	32,315	0.517	0.664
4.00	1367.00	41,835	0.851	1.515
5.00	1368.00	48,901	1.042	2.557
6.00	1369.00	53,519	1.176	3.732
7.00	1370.00	57,512	1.274	5.007
8.00	1371.00	61,570	1.367	6.373
9.00	1372.00	66,083	1.465	7.839
10.00	1373.00	70,517	1.568	9.407

Culvert / Orifice Structures

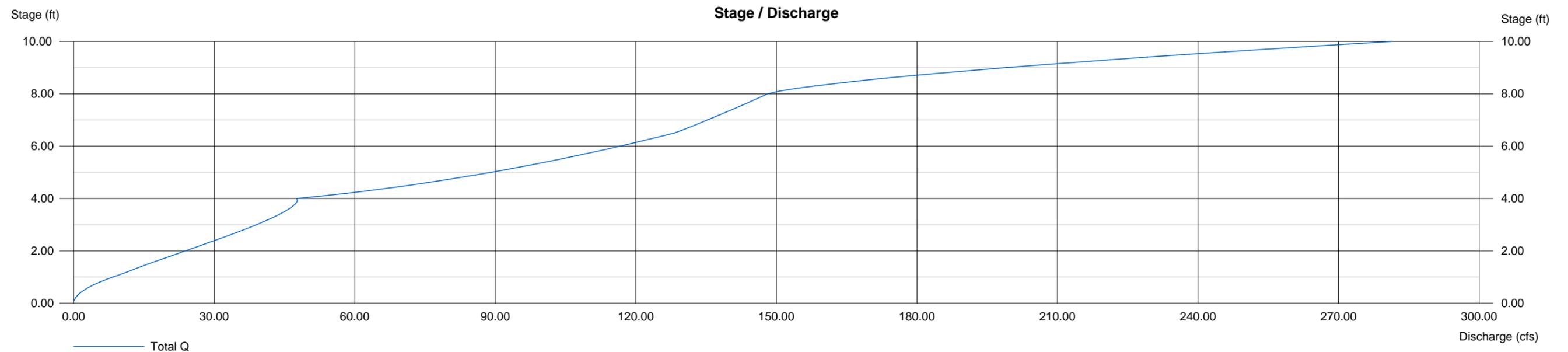
	[A]	[B]	[C]	[D]
Rise (in)	= 48.00	0.00	0.00	0.00
Span (in)	= 48.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 1363.00	0.00	0.00	0.00
Length (ft)	= 60.00	0.00	0.00	0.00
Slope (%)	= 0.67	0.00	0.00	0.00
N-Value	= .013	.000	.000	.000
Orif. Coeff.	= 0.60	0.00	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 15.00	0.00	0.00	0.00
Crest El. (ft)	= 1371.00	0.00	0.00	0.00
Weir Coeff.	= 2.60	0.00	0.00	0.00
Weir Type	= Broad	---	---	---
Multi-Stage	= No	No	No	No

Exfiltration = 0.000 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.



Pond Report

Pond No. 2 - Revised North Pond

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (acft)	Total storage (acft)
0.00	1363.00	00	0.000	0.000
1.00	1364.00	09	0.000	0.000
2.00	1365.00	12,754	0.146	0.147
3.00	1366.00	39,653	0.602	0.748
4.00	1367.00	50,454	1.034	1.782
5.00	1368.00	59,241	1.259	3.042
6.00	1369.00	63,269	1.406	4.448
7.00	1370.00	67,467	1.501	5.948
8.00	1371.00	72,575	1.607	7.556
9.00	1372.00	77,427	1.722	9.278
10.00	1373.00	82,213	1.832	11.110

Culvert / Orifice Structures

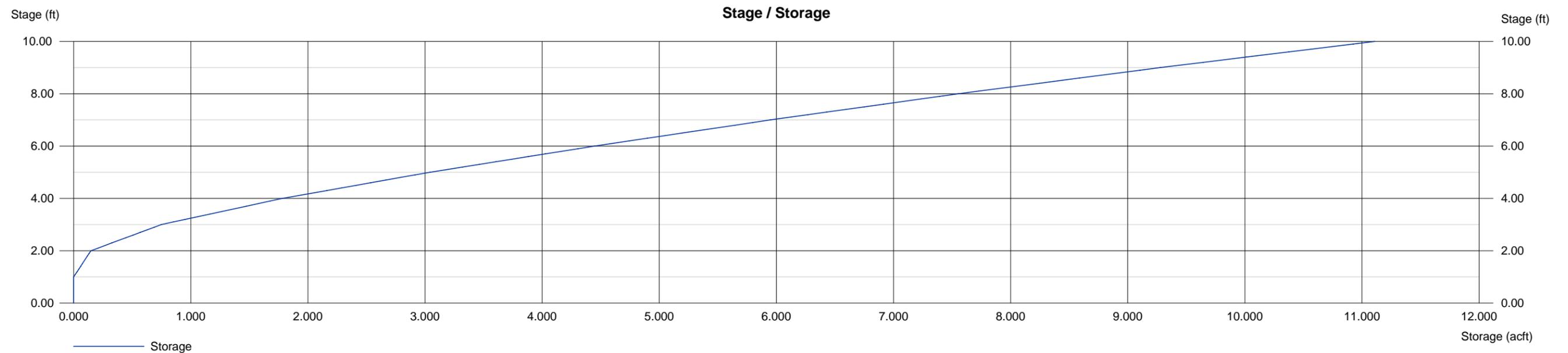
	[A]	[B]	[C]	[D]
Rise (in)	= 48.00	0.00	0.00	0.00
Span (in)	= 48.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 1363.00	0.00	0.00	0.00
Length (ft)	= 60.00	0.00	0.00	0.00
Slope (%)	= 0.67	0.00	0.00	0.00
N-Value	= .013	.000	.000	.000
Orif. Coeff.	= 0.60	0.00	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 15.00	0.00	0.00	0.00
Crest El. (ft)	= 1371.00	0.00	0.00	0.00
Weir Coeff.	= 2.60	0.00	0.00	0.00
Weir Type	= Broad	---	---	---
Multi-Stage	= No	No	No	No

Exfiltration = 0.000 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.



Pond Report

Pond No. 2 - Revised North Pond

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (acft)	Total storage (acft)
0.00	1363.00	00	0.000	0.000
1.00	1364.00	09	0.000	0.000
2.00	1365.00	12,754	0.146	0.147
3.00	1366.00	39,653	0.602	0.748
4.00	1367.00	50,454	1.034	1.782
5.00	1368.00	59,241	1.259	3.042
6.00	1369.00	63,269	1.406	4.448
7.00	1370.00	67,467	1.501	5.948
8.00	1371.00	72,575	1.607	7.556
9.00	1372.00	77,427	1.722	9.278
10.00	1373.00	82,213	1.832	11.110

Culvert / Orifice Structures

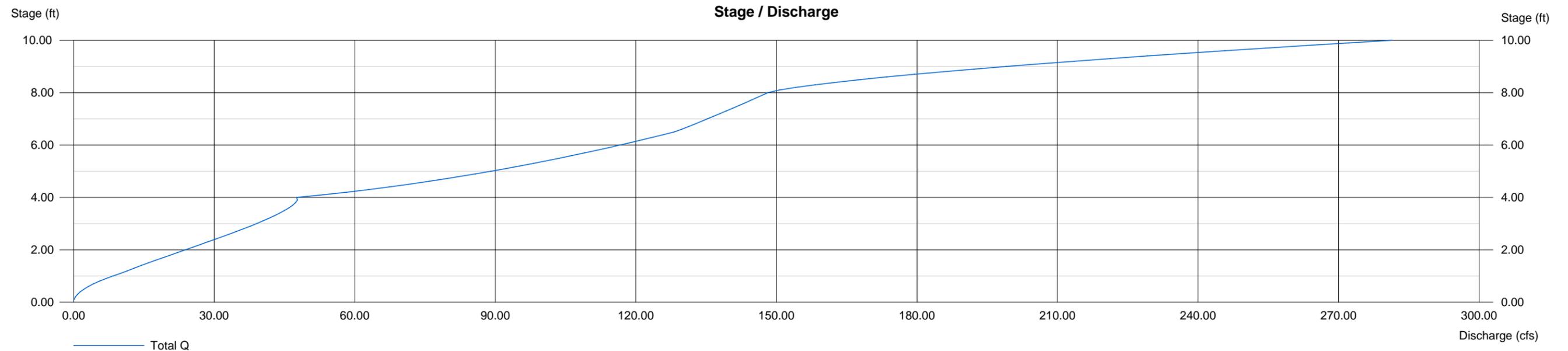
	[A]	[B]	[C]	[D]
Rise (in)	= 48.00	0.00	0.00	0.00
Span (in)	= 48.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 1363.00	0.00	0.00	0.00
Length (ft)	= 60.00	0.00	0.00	0.00
Slope (%)	= 0.67	0.00	0.00	0.00
N-Value	= .013	.000	.000	.000
Orif. Coeff.	= 0.60	0.00	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 15.00	0.00	0.00	0.00
Crest El. (ft)	= 1371.00	0.00	0.00	0.00
Weir Coeff.	= 2.60	0.00	0.00	0.00
Weir Type	= Broad	---	---	---
Multi-Stage	= No	No	No	No

Exfiltration = 0.000 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.



Pond Report

Pond No. 3 - Proposed South Pond

Pond Data

Bottom LxW = 304.9 x 30.0 ft Side slope = 6.0:1 Bottom elev. = 1378.00 ft Depth = 3.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (acft)	Total storage (acft)
0.00	1378.00	9,146	0.000	0.000
0.15	1378.15	9,752	0.033	0.033
0.30	1378.30	10,364	0.035	0.067
0.45	1378.45	10,983	0.037	0.104
0.60	1378.60	11,609	0.039	0.143
0.75	1378.75	12,241	0.041	0.184
0.90	1378.90	12,879	0.043	0.227
1.05	1379.05	13,524	0.045	0.273
1.20	1379.20	14,175	0.048	0.320
1.35	1379.35	14,833	0.050	0.370
1.50	1379.50	15,497	0.052	0.422
1.65	1379.65	16,168	0.055	0.477
1.80	1379.80	16,845	0.057	0.534
1.95	1379.95	17,529	0.059	0.593
2.10	1380.10	18,219	0.062	0.655
2.25	1380.25	18,916	0.064	0.718
2.40	1380.40	19,619	0.066	0.785
2.55	1380.55	20,329	0.069	0.854
2.70	1380.70	21,045	0.071	0.925
2.85	1380.85	21,768	0.074	0.999
3.00	1381.00	22,497	0.076	1.075

Culvert / Orifice Structures

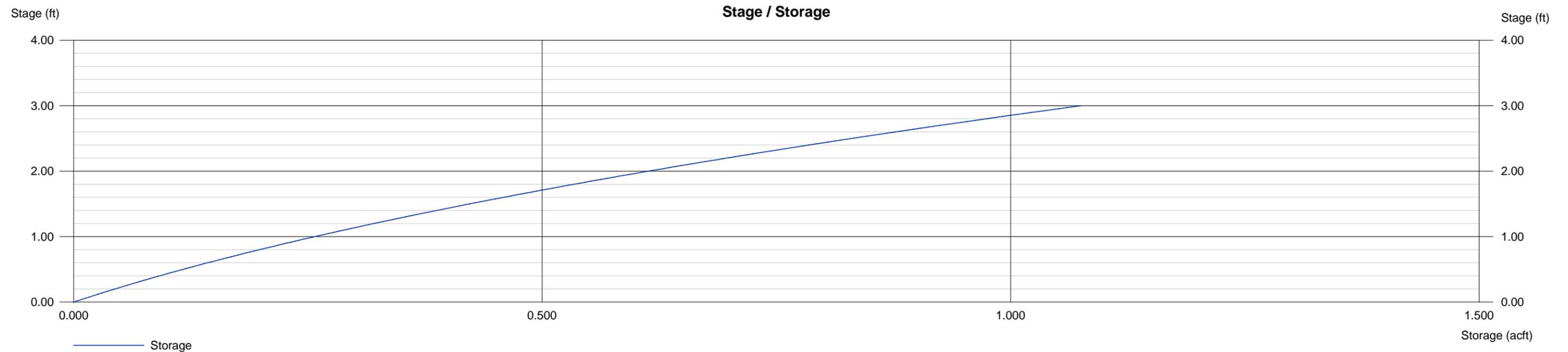
	[A]	[B]	[C]	[D]
Rise (in)	= 12.00	0.00	0.00	0.00
Span (in)	= 12.00	0.00	0.00	0.00
No. Barrels	= 3	0	0	0
Invert El. (ft)	= 1378.00	0.00	0.00	0.00
Length (ft)	= 50.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	0.00
N-Value	= .013	.013	.013	.013
Orif. Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 10.00	0.00	0.00	0.00
Crest El. (ft)	= 1380.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	0.00	0.00
Weir Type	= Ciphti	---	---	---
Multi-Stage	= No	No	No	No

Exfiltration = 0.000 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.



Pond Report

Hydraflow Hydrographs by Intelisolve

Thursday, May 31 2007, 10:36 AM

Pond No. 3 - Proposed South Pond

Pond Data

Bottom LxW = 304.9 x 30.0 ft Side slope = 6.0:1 Bottom elev. = 1378.00 ft Depth = 3.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (acft)	Total storage (acft)
0.00	1378.00	9,146	0.000	0.000
0.15	1378.15	9,752	0.033	0.033
0.30	1378.30	10,364	0.035	0.067
0.45	1378.45	10,983	0.037	0.104
0.60	1378.60	11,609	0.039	0.143
0.75	1378.75	12,241	0.041	0.184
0.90	1378.90	12,879	0.043	0.227
1.05	1379.05	13,524	0.045	0.273
1.20	1379.20	14,175	0.048	0.320
1.35	1379.35	14,833	0.050	0.370
1.50	1379.50	15,497	0.052	0.422
1.65	1379.65	16,168	0.055	0.477
1.80	1379.80	16,845	0.057	0.534
1.95	1379.95	17,529	0.059	0.593
2.10	1380.10	18,219	0.062	0.655
2.25	1380.25	18,916	0.064	0.718
2.40	1380.40	19,619	0.066	0.785
2.55	1380.55	20,329	0.069	0.854
2.70	1380.70	21,045	0.071	0.925
2.85	1380.85	21,768	0.074	0.999
3.00	1381.00	22,497	0.076	1.075

Culvert / Orifice Structures

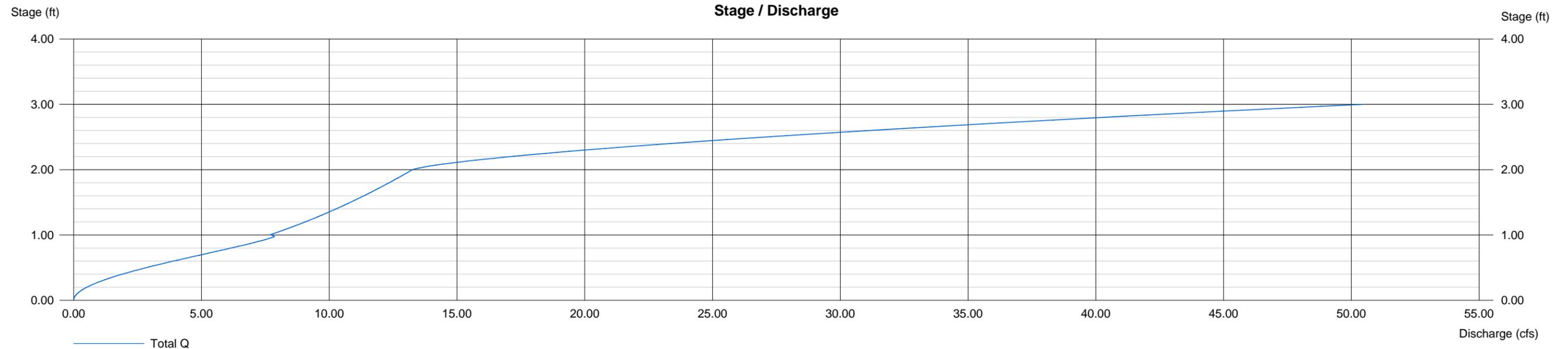
	[A]	[B]	[C]	[D]
Rise (in)	= 12.00	0.00	0.00	0.00
Span (in)	= 12.00	0.00	0.00	0.00
No. Barrels	= 3	0	0	0
Invert El. (ft)	= 1378.00	0.00	0.00	0.00
Length (ft)	= 50.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	0.00
N-Value	= .013	.013	.013	.013
Orif. Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 10.00	0.00	0.00	0.00
Crest El. (ft)	= 1380.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	0.00	0.00
Weir Type	= Cipiti	---	---	---
Multi-Stage	= No	No	No	No

Exfiltration = 0.000 in/hr (Contour) Tailwater Elev. = 0.00 ft

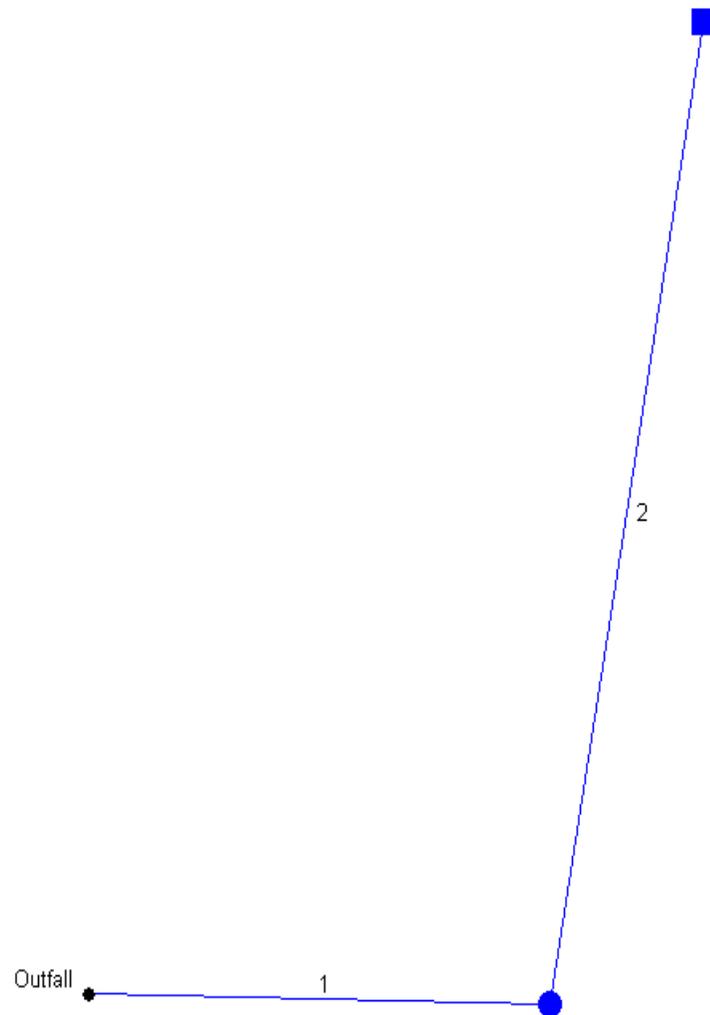
Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.



INWOOD CROSSINGS

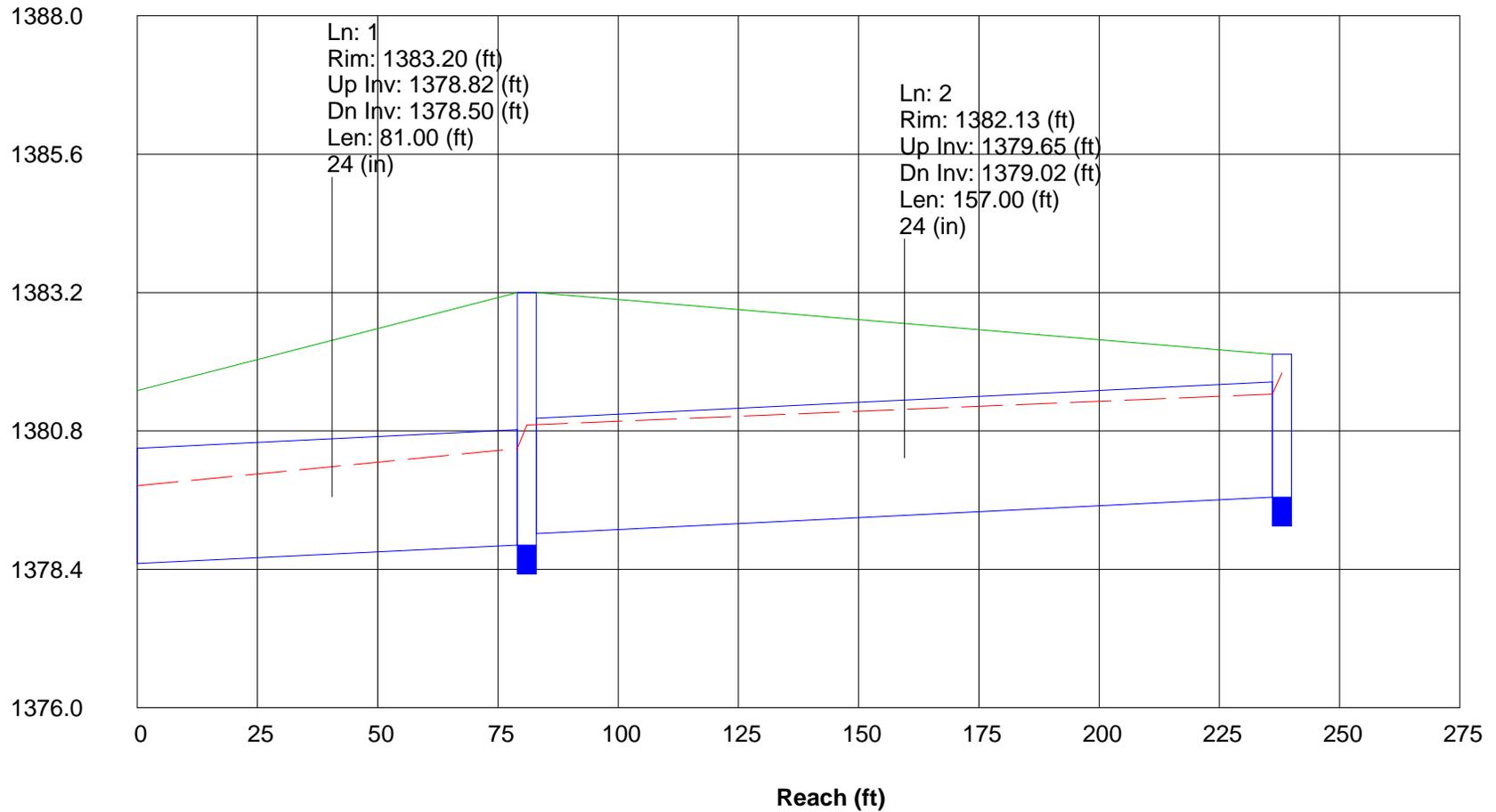
EXHIBIT 3-2

Hydraflow Plan View



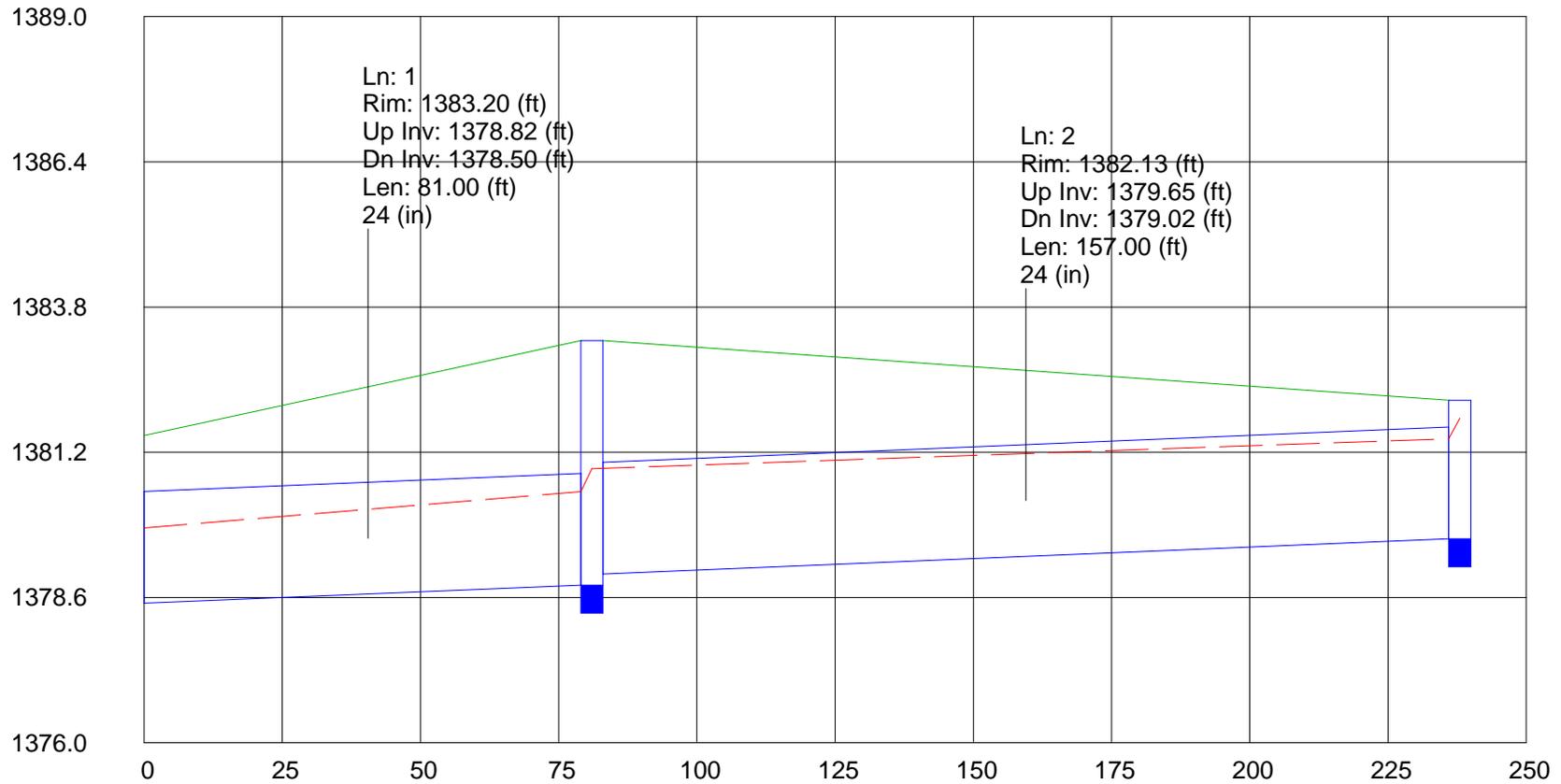
Storm Sewer Profile

Elev. (ft)



Storm Sewer Profile

Elev. (ft)



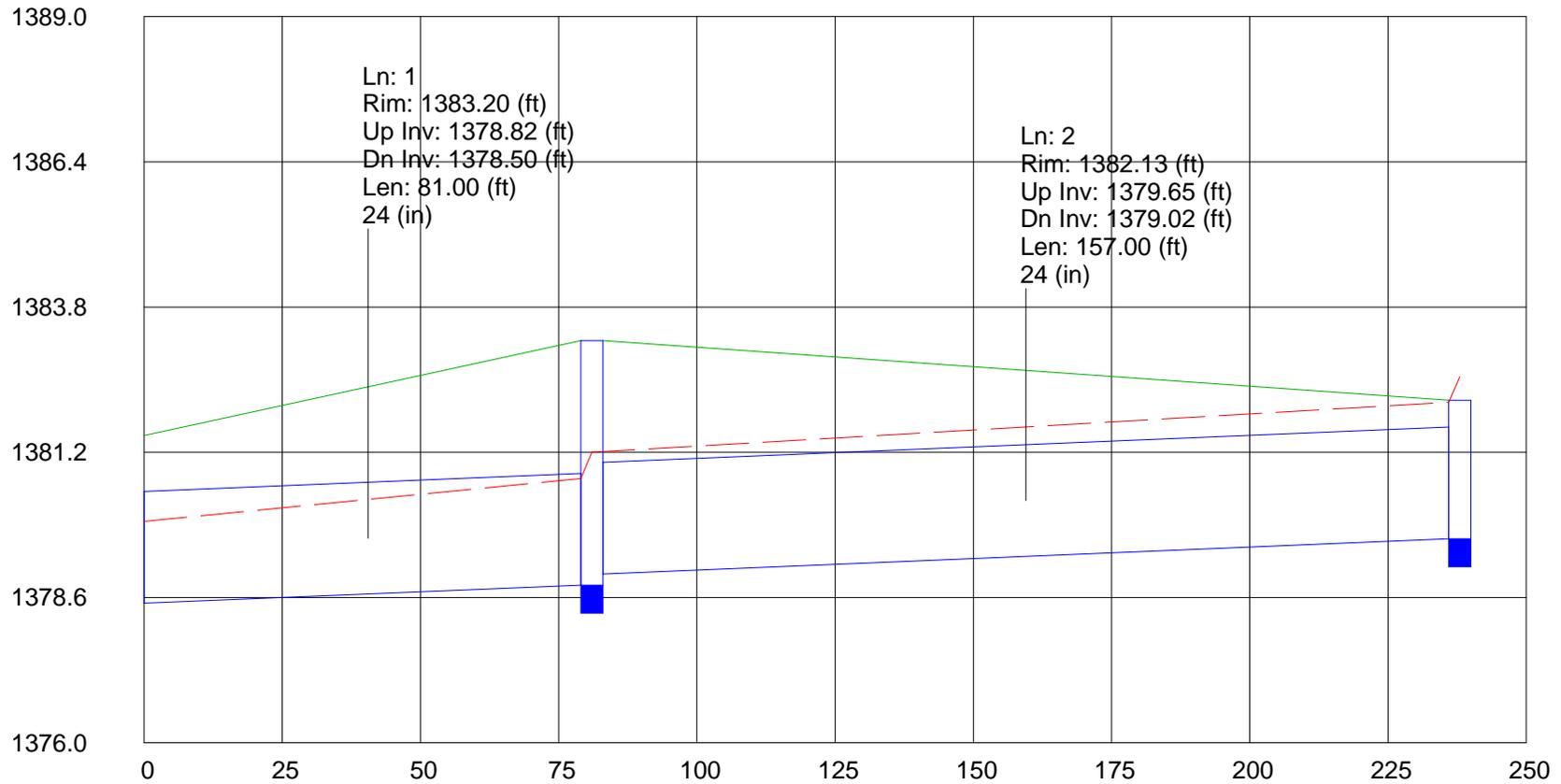
Ln: 1
Rim: 1383.20 (ft)
Up Inv: 1378.82 (ft)
Dn Inv: 1378.50 (ft)
Len: 81.00 (ft)
24 (in)

Ln: 2
Rim: 1382.13 (ft)
Up Inv: 1379.65 (ft)
Dn Inv: 1379.02 (ft)
Len: 157.00 (ft)
24 (in)

Reach (ft)

Storm Sewer Profile

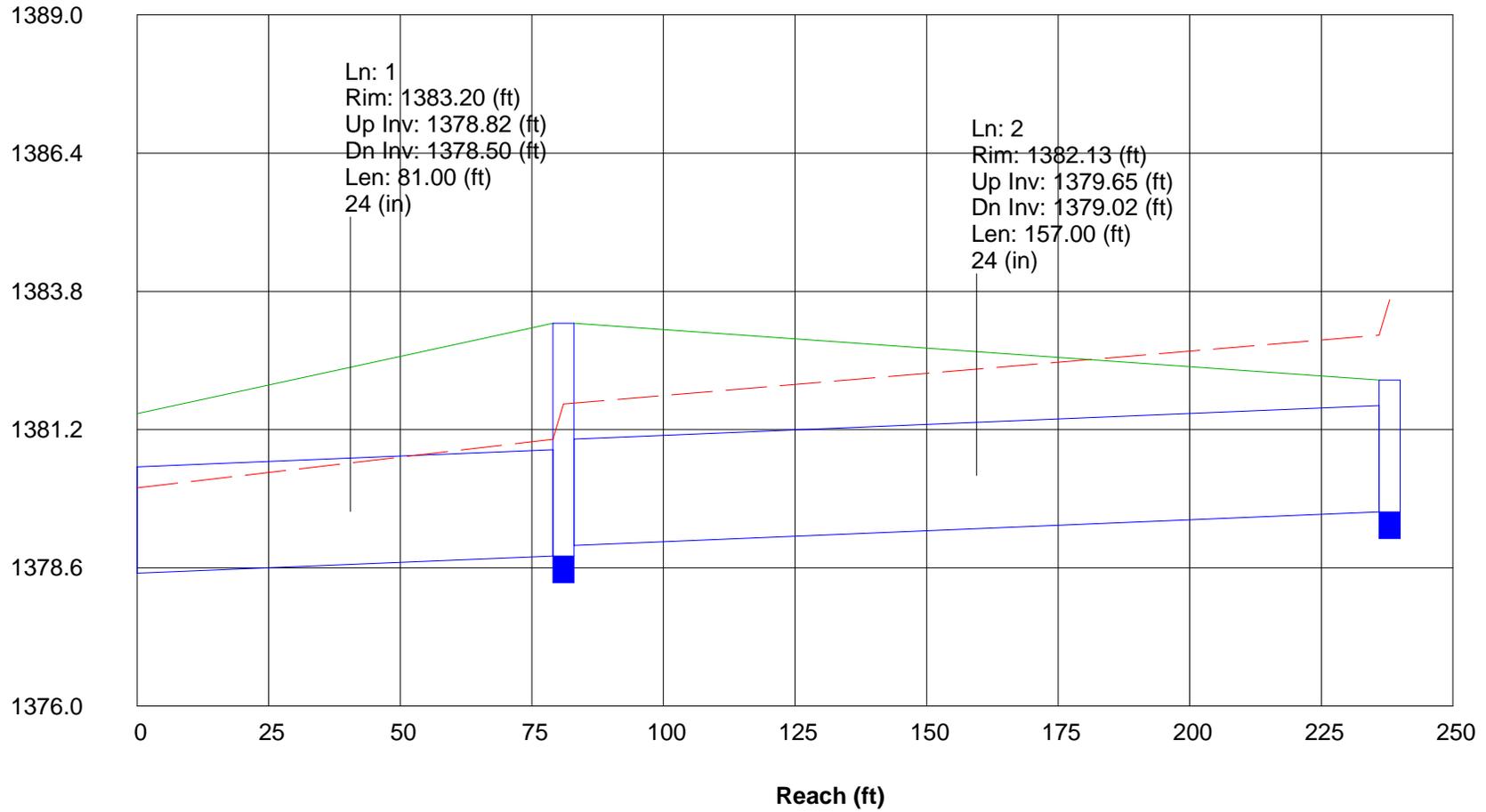
Elev. (ft)



Reach (ft)

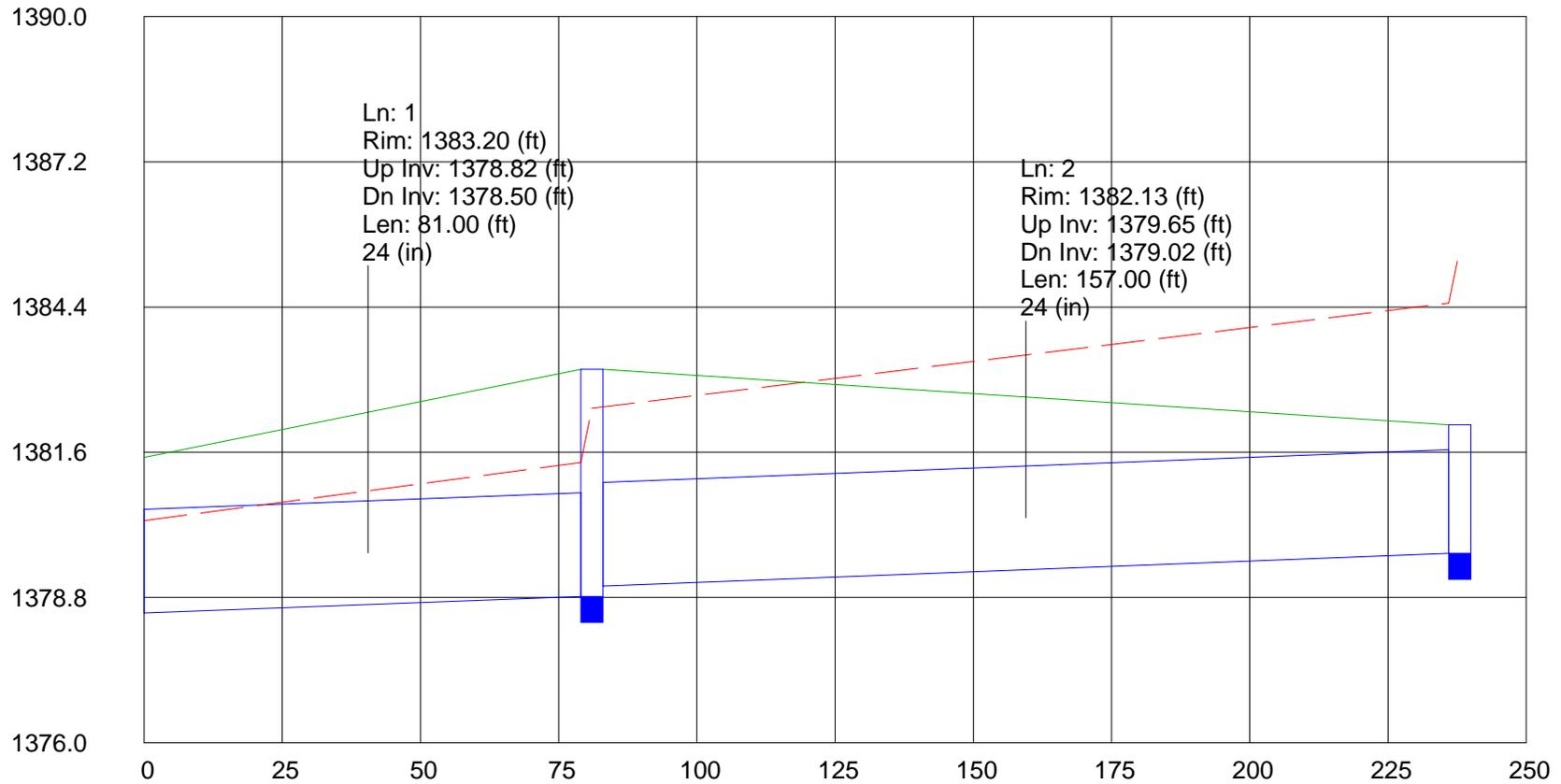
Storm Sewer Profile

Elev. (ft)



Storm Sewer Profile

Elev. (ft)



Reach (ft)

Hydraflow Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr line No.	Line length (ft)	Defl angle (deg)	Junc type	Known Q (cfs)	Drng area (ac)	Runoff coeff (C)	Inlet time (min)	Invert El Dn (ft)	Line slope (%)	Invert El Up (ft)	Line size (in)	Line type	N value (n)	J-loss coeff (K)	Inlet/ Rim El (ft)	
1	End	81.0	1.1	MH	0.00	0.00	0.00	0.0	1378.50	0.39	1378.82	24	Cir	0.013	1.00	1383.20	
2	1	157.0	-81.3	DrGrt	10.91	0.00	0.00	0.0	1379.02	0.40	1379.65	24	Cir	0.013	1.00	1382.13	
Project File: SWD1 2-YEAR.stm						IDF File: SedgwickCo.IDF						Total number of lines: 2				Date: 06-07-2007	

Hydraflow Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	Dns line No.
1		10.91	24 c	81.0	1378.50	1378.82	0.395	1379.67	1380.20	0.35	End
2		10.91	24 c	157.0	1379.02	1379.65	0.401	1380.54	1380.96	0.39	1

Project File: SWD1 2-YEAR.stm

IDF File: SedgwickCo.IDF

Total No. Lines: 2

Run Date: 05-31-2007

NOTES: c = circular; e = elliptical; b = box; Return period = 2 Yrs.; * Indicates surcharge condition.

Hydraflow Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q byp (cfs)	Junc type	Curb Inlet		Grate Inlet			Gutter						Inlet			Byp line No		
							Ht (in)	L (ft)	area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	depth (ft)	spread (ft)	depth (ft)	spread (ft)		Dep (in)	
1		0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.0	Off
2		10.91*	0.00	10.91	0.00	DrGrt	0.0	0.00	4.61	2.00	4.00	Sag	4.00	0.030	0.030	0.000	0.51	37.95	0.51	37.95	0.0	Off	

Project File: SWD1 2-YEAR.stm

I-D-F File: SedgwickCo.IDF

Total number of lines: 2

Run Date: 05-31-2007

NOTES: Inlet N-Values = 0.013 ; Intensity = 50.00 / (Inlet time + 11.60) ^ 0.78; Return period = 2 Yrs. ; * Indicates Known Q added

Hydraflow Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr line No.	Line length (ft)	Defl angle (deg)	Junc type	Known Q (cfs)	Drng area (ac)	Runoff coeff (C)	Inlet time (min)	Invert El Dn (ft)	Line slope (%)	Invert El Up (ft)	Line size (in)	Line type	N value (n)	J-loss coeff (K)	Inlet/ Rim El (ft)	
1	End	81.0	1.1	MH	0.00	0.00	0.00	0.0	1378.50	0.39	1378.82	24	Cir	0.013	1.00	1383.20	
2	1	157.0	-81.3	DrGrt	14.43	0.00	0.00	0.0	1379.02	0.40	1379.65	24	Cir	0.013	1.00	1382.13	
Project File: SWD1 5-YEAR.stm						IDF File: SedgwickCo.IDF						Total number of lines: 2				Date: 05-31-2007	

Hydraflow Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	Dns line No.
1		14.43	24 c	81.0	1378.50	1378.82	0.395	1379.85	1380.50	0.41	End
2		14.43	24 c	157.0	1379.02	1379.65	0.401	1380.91	1381.44	0.37	1

Project File: SWD1 5-YEAR.stm

IDF File: SedgwickCo.IDF

Total No. Lines: 2

Run Date: 05-31-2007

NOTES: c = circular; e = elliptical; b = box; Return period = 5 Yrs.; * Indicates surcharge condition.

Hydraflow Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q byp (cfs)	Junc type	Curb Inlet		Grate Inlet			Gutter						Inlet			Byp line No		
							Ht (in)	L (ft)	area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	depth (ft)	spread (ft)	depth (ft)	spread (ft)		Dep (in)	
1		0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.0	Off
2		14.43*	0.00	14.43	0.00	DrGrt	0.0	0.00	4.61	2.00	4.00	Sag	4.00	0.030	0.030	0.000	0.61	44.92	0.61	44.92	0.0	Off	

Project File: SWD1 5-YEAR.stm

I-D-F File: SedgwickCo.IDF

Total number of lines: 2

Run Date: 05-31-2007

NOTES: Inlet N-Values = 0.013 ; Intensity = 64.67 / (Inlet time + 13.40) ^ 0.79; Return period = 5 Yrs. ; * Indicates Known Q added

Hydraflow Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr line No.	Line length (ft)	Defl angle (deg)	Junc type	Known Q (cfs)	Drng area (ac)	Runoff coeff (C)	Inlet time (min)	Invert El Dn (ft)	Line slope (%)	Invert El Up (ft)	Line size (in)	Line type	N value (n)	J-loss coeff (K)	Inlet/ Rim El (ft)	
1	End	81.0	1.1	MH	0.00	0.00	0.00	0.0	1378.50	0.39	1378.82	24	Cir	0.013	1.00	1383.20	
2	1	157.0	-81.3	DrGrt	17.05	0.00	0.00	0.0	1379.02	0.40	1379.65	24	Cir	0.013	1.00	1382.13	
Project File: SWD1 10-YEAR.stm						IDF File: SedgwickCo.IDF						Total number of lines: 2				Date: 05-31-2007	

Hydraflow Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	Dns line No.
1		17.05	24 c	81.0	1378.50	1378.82	0.395	1379.96	1380.73	0.47	End
2		17.05	24 c	157.0	1379.02	1379.65	0.401	1381.20*	1382.10*	0.46	1

Project File: SWD1 10-YEAR.stm

IDF File: SedgwickCo.IDF

Total No. Lines: 2

Run Date: 05-31-2007

NOTES: c = circular; e = elliptical; b = box; Return period = 10 Yrs.; * Indicates surcharge condition.

Hydraflow Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q byp (cfs)	Junc type	Curb Inlet		Grate Inlet			Gutter						Inlet			Byp line No	
							Ht (in)	L (ft)	area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	depth (ft)	spread (ft)	depth (ft)	spread (ft)		Dep (in)
1		0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
2		17.05*	0.00	17.05	0.00	DrGrt	0.0	0.00	4.61	2.00	4.00	Sag	4.00	0.030	0.030	0.000	0.69	49.73	0.69	49.73	0.0	Off

Project File: SWD1 10-YEAR.stm

I-D-F File: SedgwickCo.IDF

Total number of lines: 2

Run Date: 05-31-2007

NOTES: Inlet N-Values = 0.013 ; Intensity = 79.39 / (Inlet time + 14.80) ^ 0.80; Return period = 10 Yrs. ; * Indicates Known Q added

Hydraflow Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr line No.	Line length (ft)	Defl angle (deg)	Junc type	Known Q (cfs)	Drng area (ac)	Runoff coeff (C)	Inlet time (min)	Invert El Dn (ft)	Line slope (%)	Invert El Up (ft)	Line size (in)	Line type	N value (n)	J-loss coeff (K)	Inlet/ Rim El (ft)	
1	End	81.0	1.1	MH	0.00	0.00	0.00	0.0	1378.50	0.39	1378.82	24	Cir	0.013	1.00	1383.20	
2	1	157.0	-81.3	DrGrt	20.53	0.00	0.00	0.0	1379.02	0.40	1379.65	24	Cir	0.013	1.00	1382.13	
Project File: SWD1 25-YEAR.stm						IDF File: SedgwickCo.IDF						Total number of lines: 2				Date: 05-31-2007	

Hydraflow Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	Dns line No.
1		20.53	24 c	81.0	1378.50	1378.82	0.395	1380.11*	1381.02*	0.66	End
2		20.53	24 c	157.0	1379.02	1379.65	0.401	1381.68*	1382.98*	0.66	1

Project File: SWD1 25-YEAR.stm

IDF File: SedgwickCo.IDF

Total No. Lines: 2

Run Date: 05-31-2007

NOTES: c = circular; e = elliptical; b = box; Return period = 25 Yrs.; * Indicates surcharge condition.

Hydraflow Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q byp (cfs)	Junc type	Curb Inlet		Grate Inlet			Gutter						Inlet			Byp line No		
							Ht (in)	L (ft)	area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	depth (ft)	spread (ft)	depth (ft)	spread (ft)		Dep (in)	
1		0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.0	Off
2		20.53*	0.00	20.53	0.00	DrGrt	0.0	0.00	4.61	2.00	4.00	Sag	4.00	0.030	0.030	0.000	0.78	55.76	0.78	55.76	0.0	Off	

Project File: SWD1 25-YEAR.stm I-D-F File: SedgwickCo.IDF Total number of lines: 2 Run Date: 05-31-2007

NOTES: Inlet N-Values = 0.013 ; Intensity = 97.12 / (Inlet time + 15.90) ^ 0.80; Return period = 25 Yrs. ; * Indicates Known Q added

Hydraflow Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr line No.	Line length (ft)	Defl angle (deg)	Junc type	Known Q (cfs)	Drng area (ac)	Runoff coeff (C)	Inlet time (min)	Invert El Dn (ft)	Line slope (%)	Invert El Up (ft)	Line size (in)	Line type	N value (n)	J-loss coeff (K)	Inlet/ Rim El (ft)	
1	End	81.0	1.1	MH	0.00	0.00	0.00	0.0	1378.50	0.39	1378.82	24	Cir	0.013	1.00	1383.20	
2	1	157.0	-81.3	DrGrt	25.71	0.00	0.00	0.0	1379.02	0.40	1379.65	24	Cir	0.013	1.00	1382.13	
Project File: SWD1 100-YEAR.stm						IDF File: SedgwickCo.IDF						Total number of lines: 2				Date: 05-31-2007	

Hydraflow Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	Dns line No.
1		25.71	24 c	81.0	1378.50	1378.82	0.395	1380.28*	1381.41*	1.04	End
2		25.71	24 c	157.0	1379.02	1379.65	0.401	1382.45*	1384.48*	1.04	1

Project File: SWD1 100-YEAR.stm

IDF File: SedgwickCo.IDF

Total No. Lines: 2

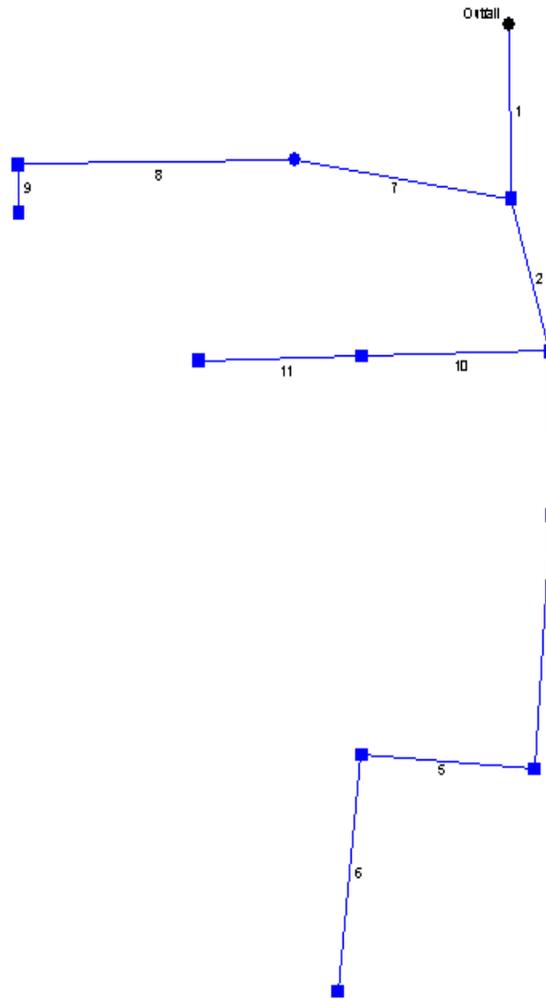
Run Date: 05-31-2007

NOTES: c = circular; e = elliptical; b = box; Return period = 100 Yrs.; * Indicates surcharge condition.

Hydraflow Inlet Report

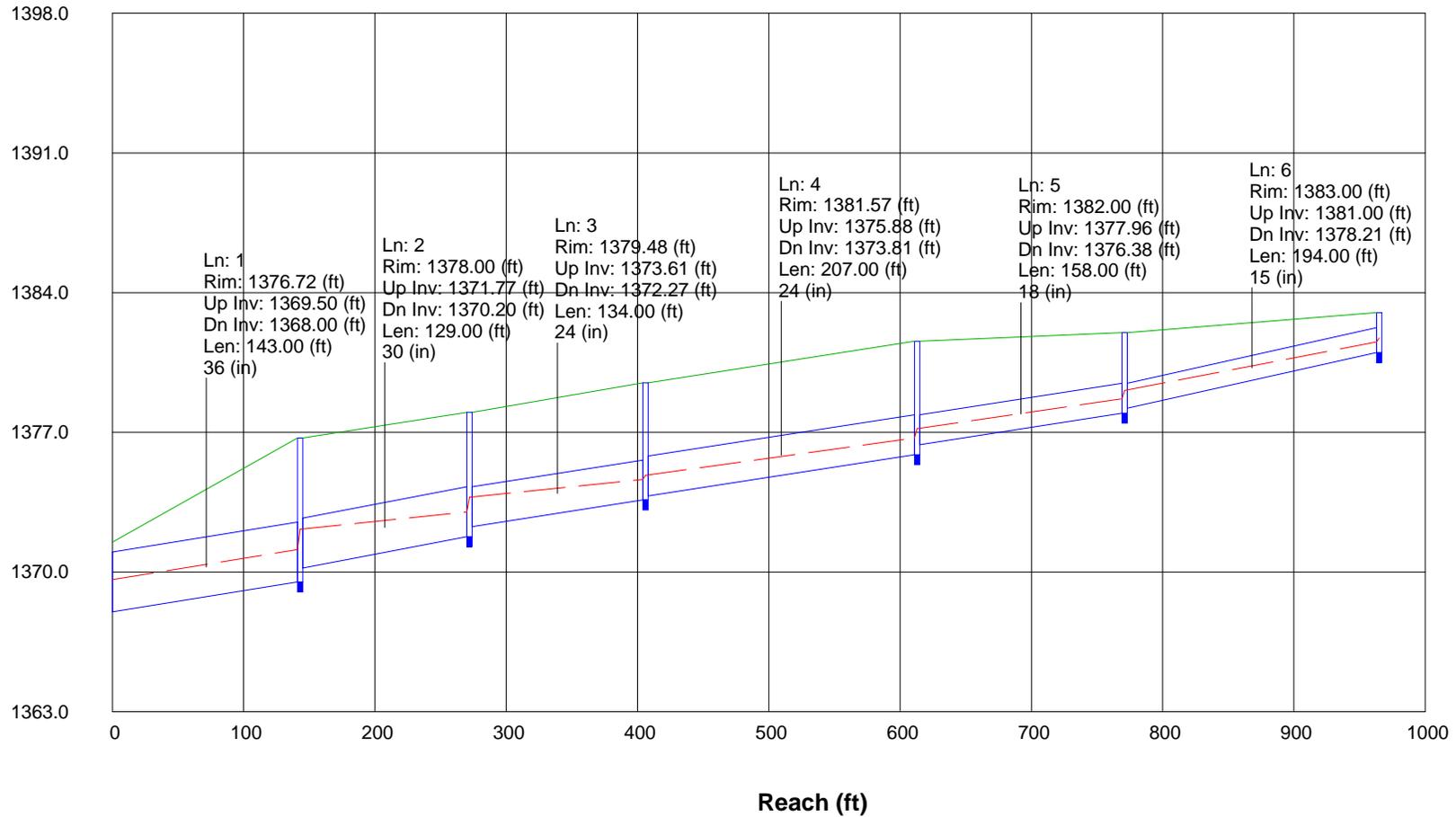
Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q byp (cfs)	Junc type	Curb Inlet		Grate Inlet			Gutter						Inlet			Byp line No		
							Ht (in)	L (ft)	area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	depth (ft)	spread (ft)	depth (ft)	spread (ft)		Dep (in)	
1		0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.0	Off
2		25.71*	0.00	25.71	0.00	DrGrt	0.0	0.00	4.61	2.00	4.00	Sag	4.00	0.030	0.030	0.000	1.08	75.82	1.08	75.82	0.0	Off	
Project File: SWD1 100-YEAR.stm						I-D-F File: SedgwickCo.IDF						Total number of lines: 2						Run Date: 05-31-2007					
NOTES: Inlet N-Values = 0.013 ; Intensity = 126.77 / (Inlet time + 17.20) ^ 0.81; Return period = 100 Yrs. ; * Indicates Known Q added																							

Hydraflow Plan View



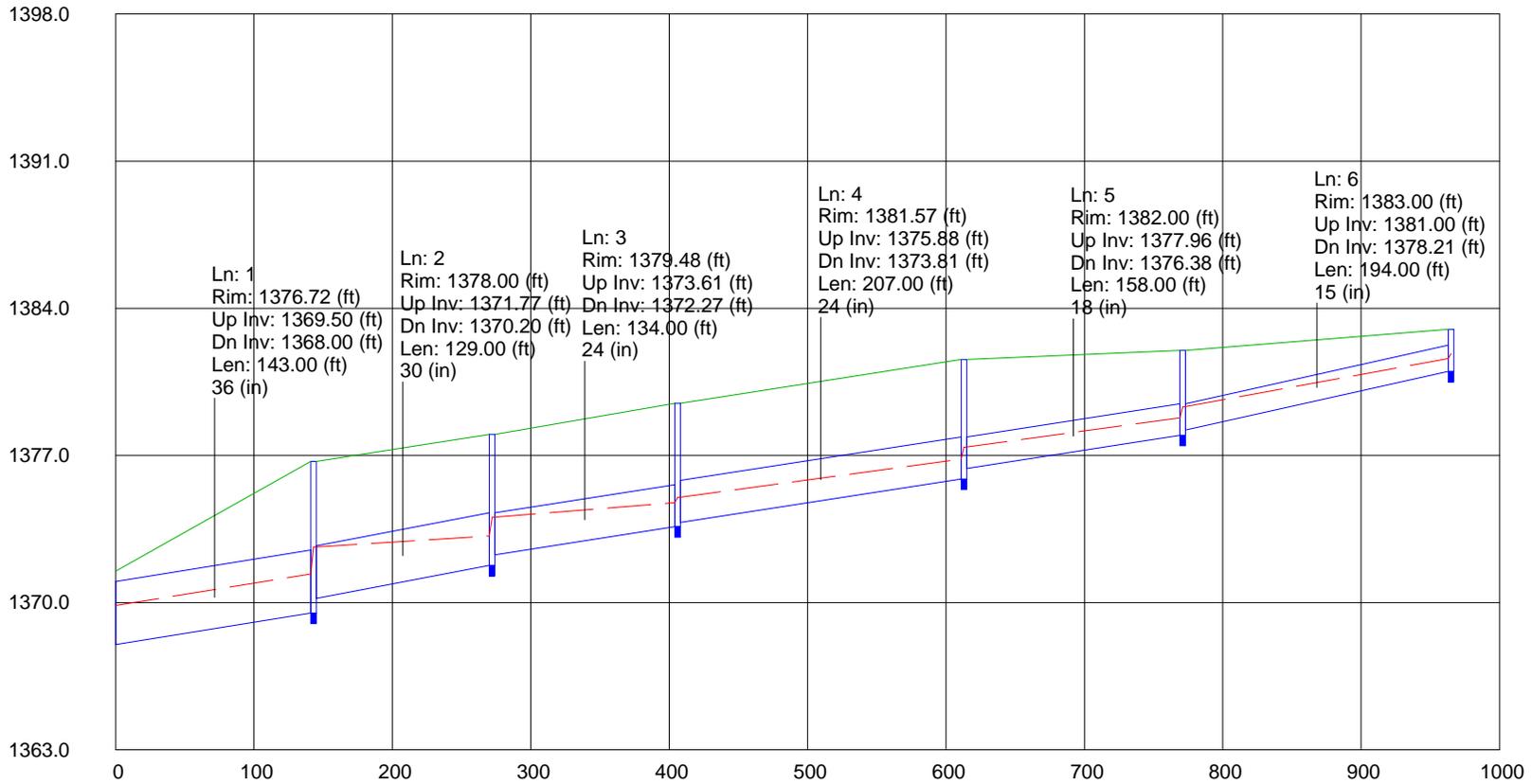
Storm Sewer Profile

Elev. (ft)



Storm Sewer Profile

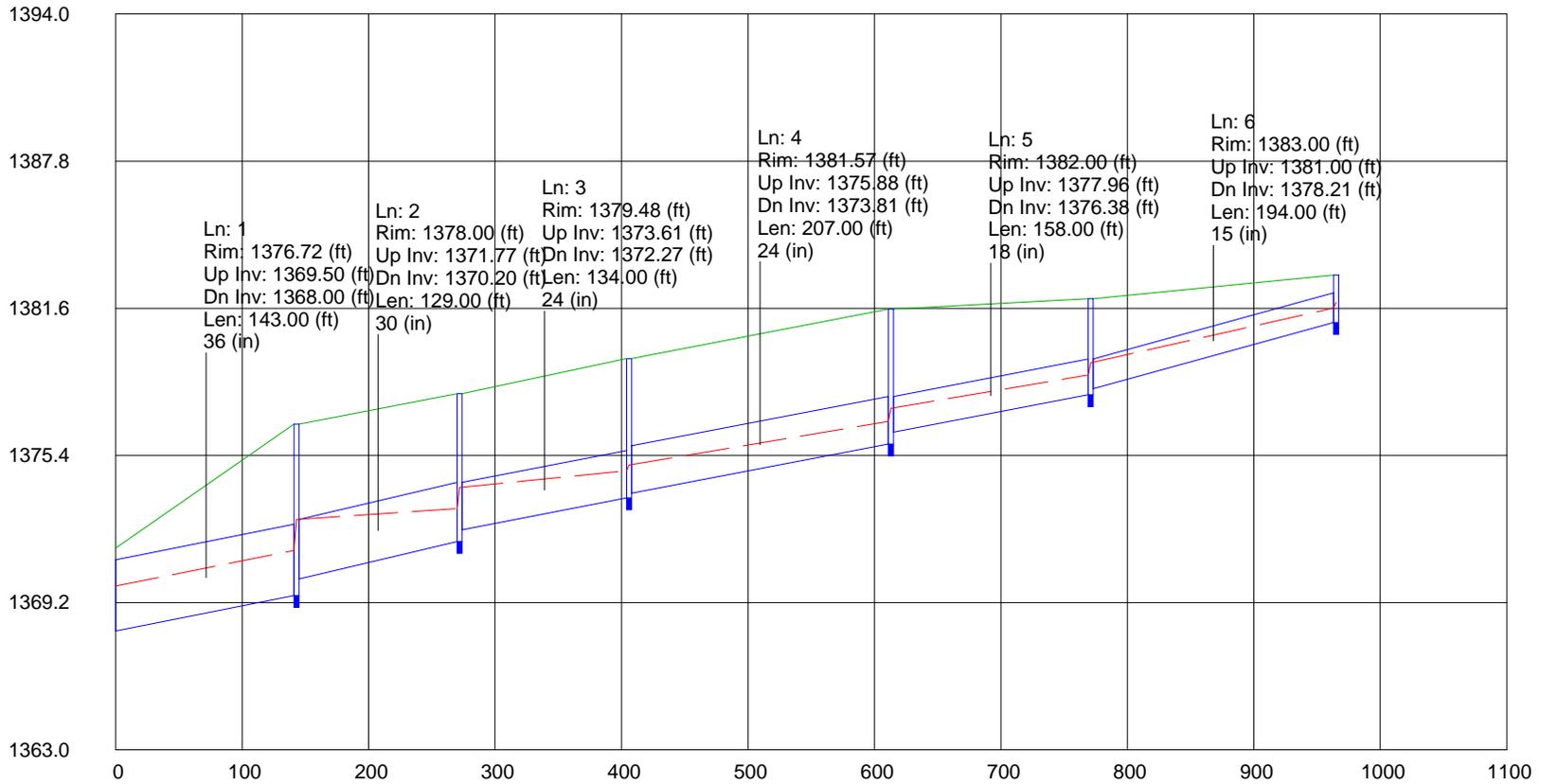
Elev. (ft)



Reach (ft)

Storm Sewer Profile

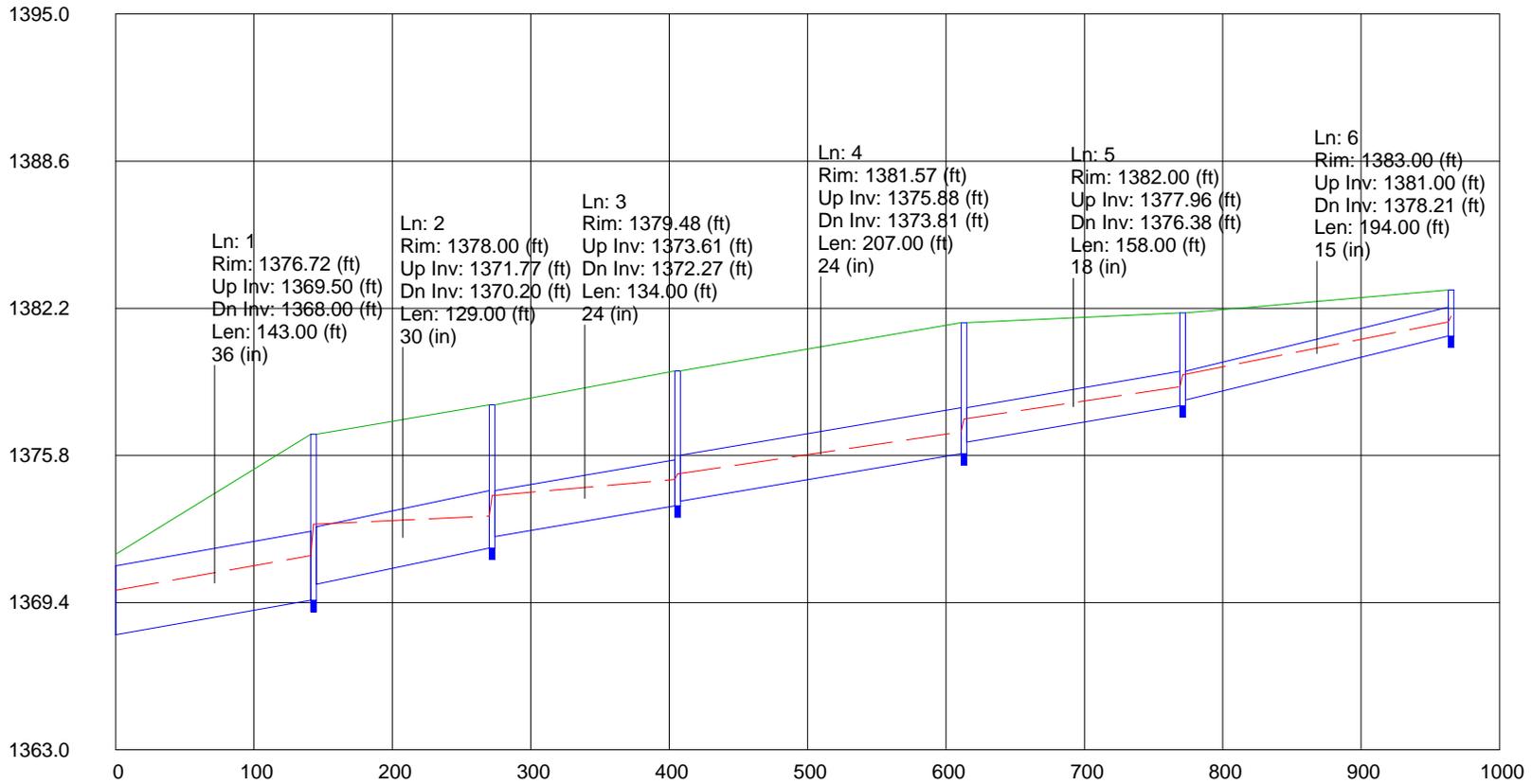
Elev. (ft)



Reach (ft)

Storm Sewer Profile

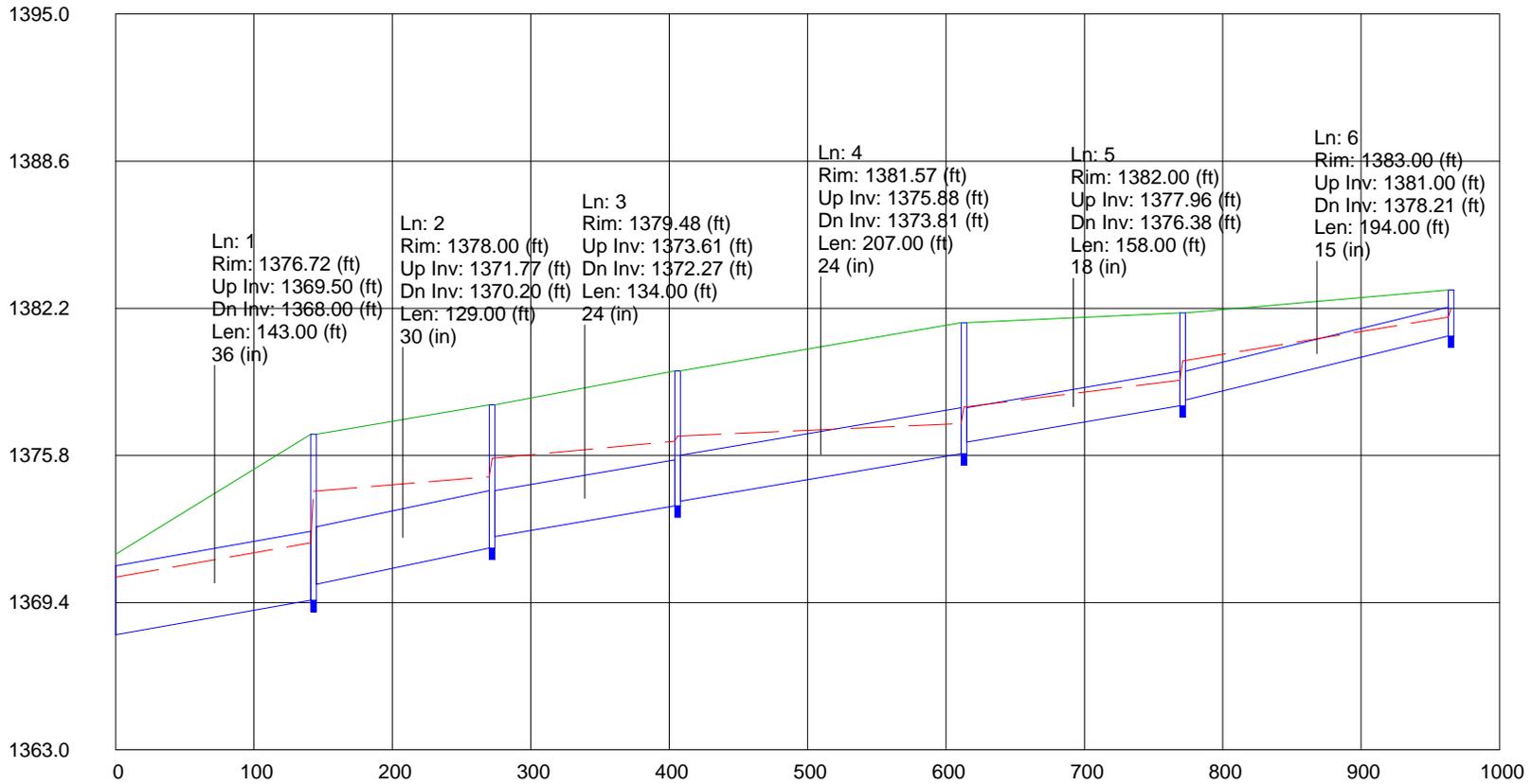
Elev. (ft)



Reach (ft)

Storm Sewer Profile

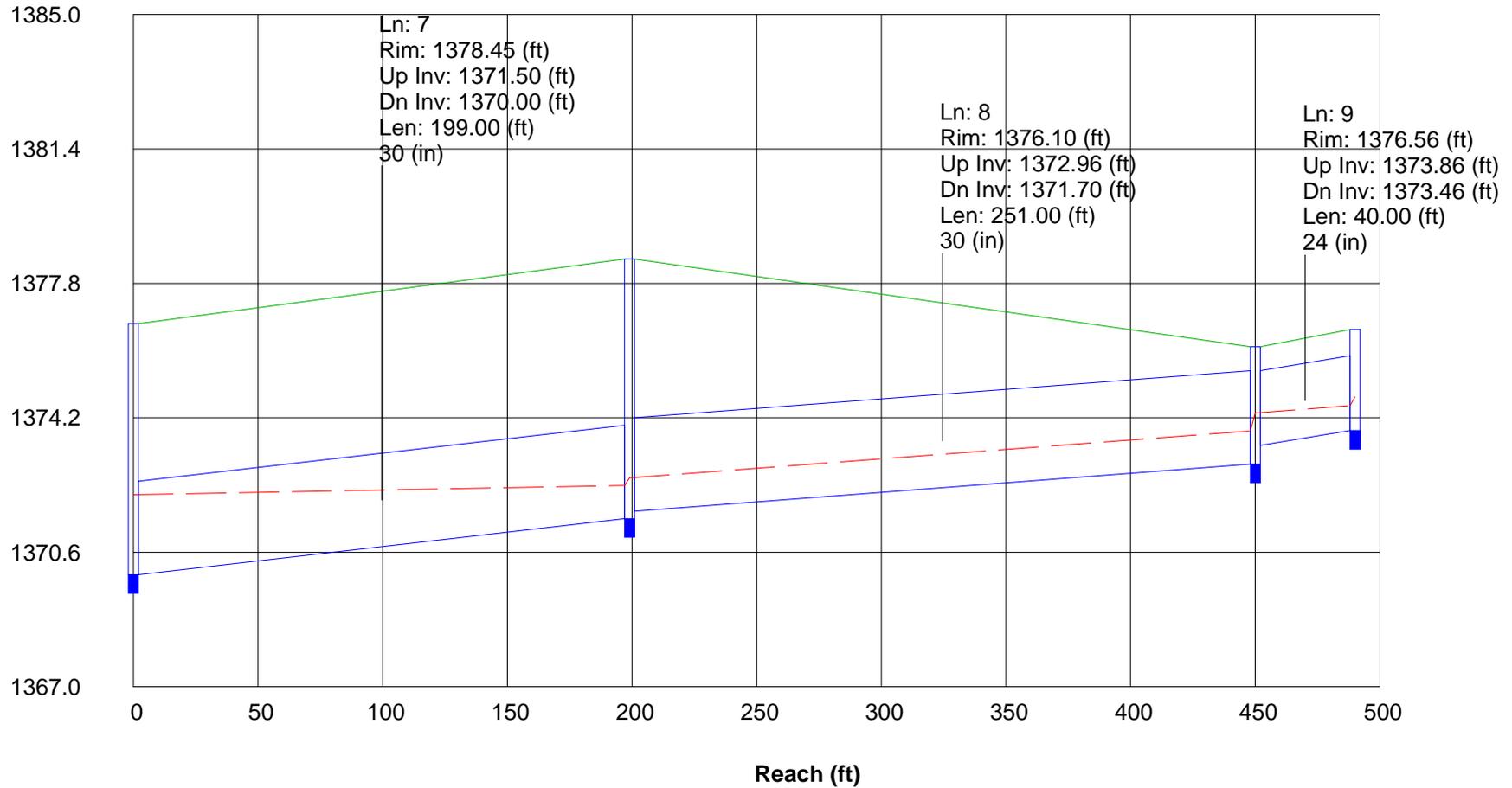
Elev. (ft)



Reach (ft)

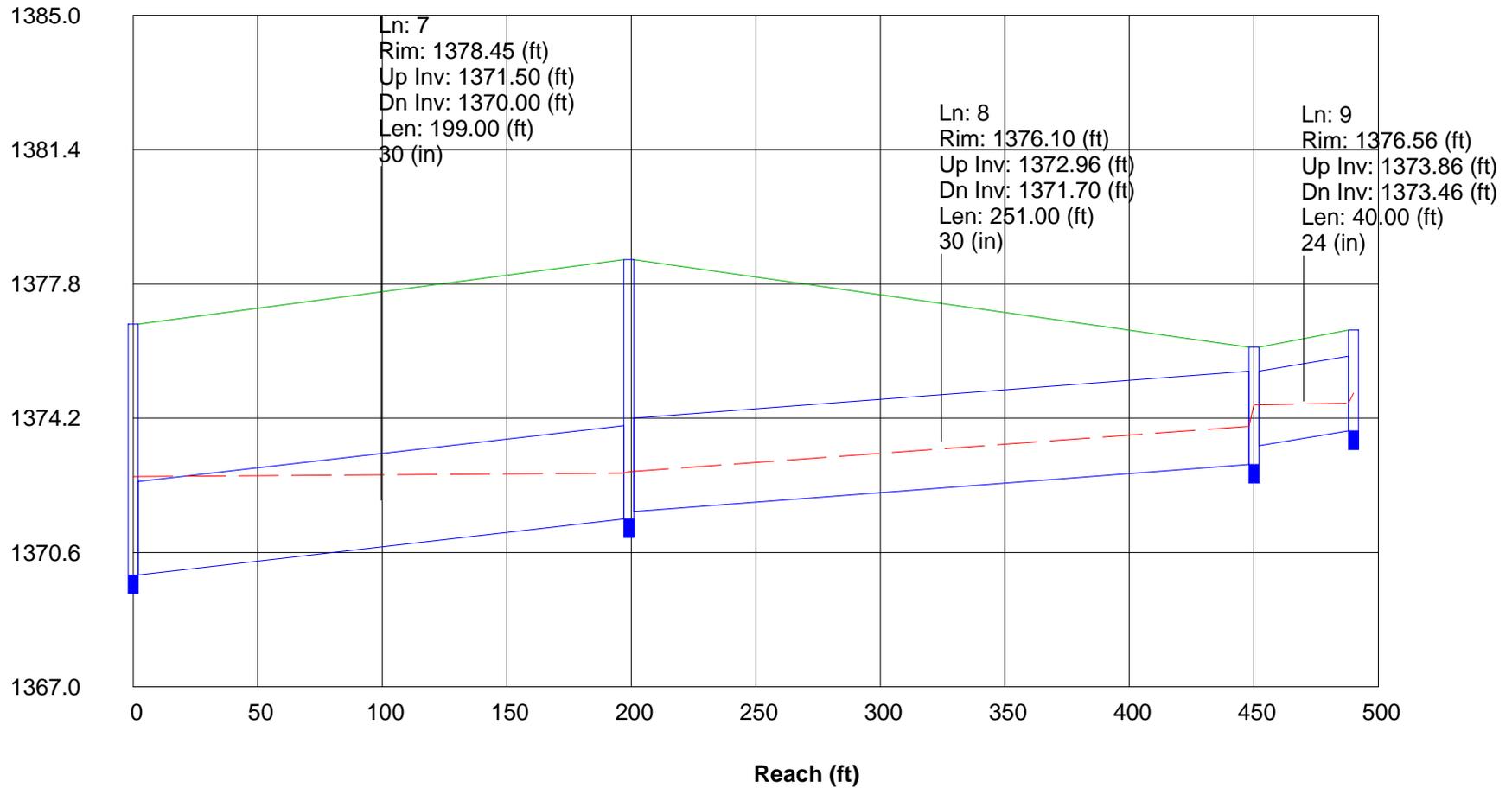
Storm Sewer Profile

Elev. (ft)



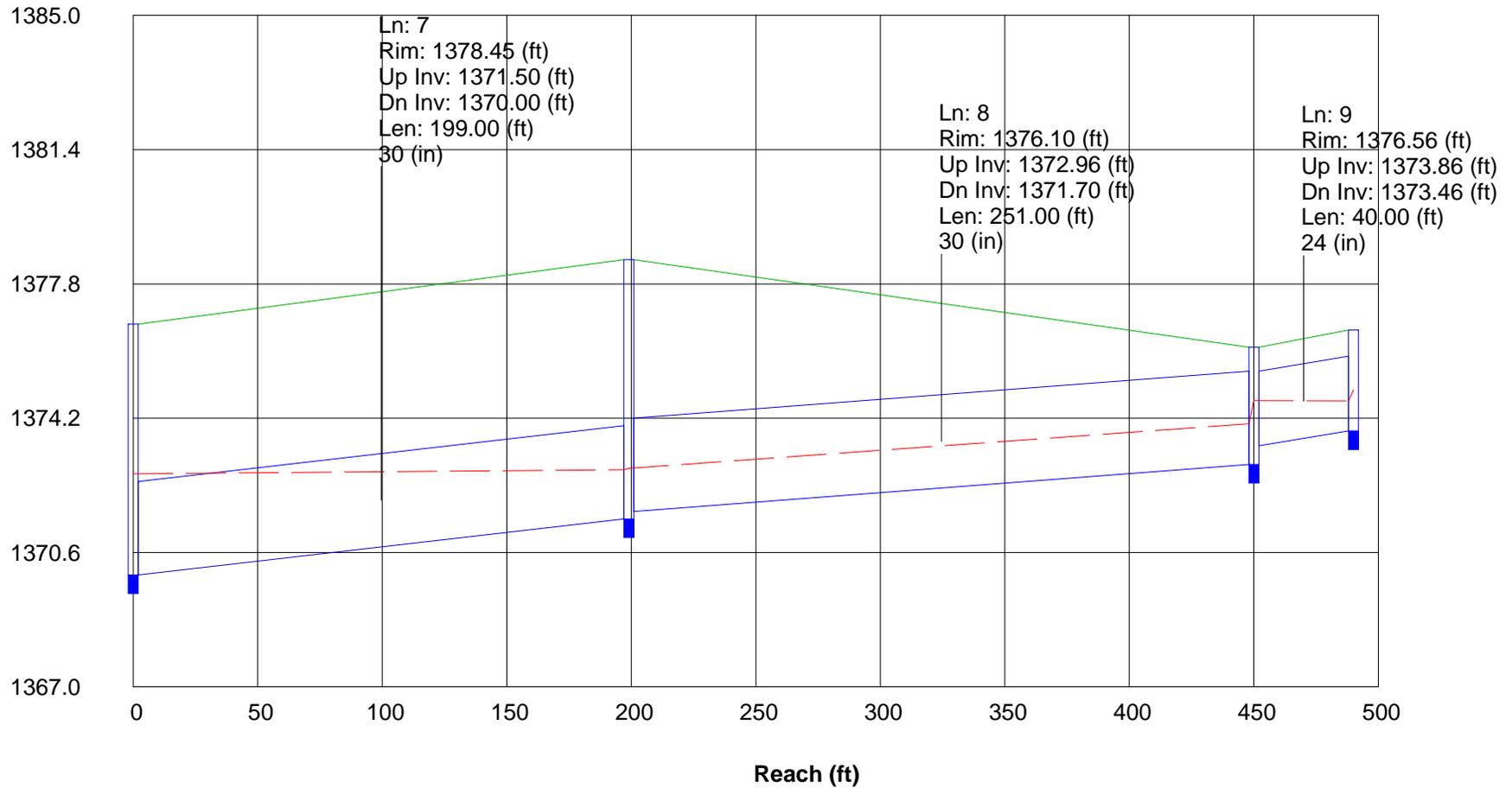
Storm Sewer Profile

Elev. (ft)



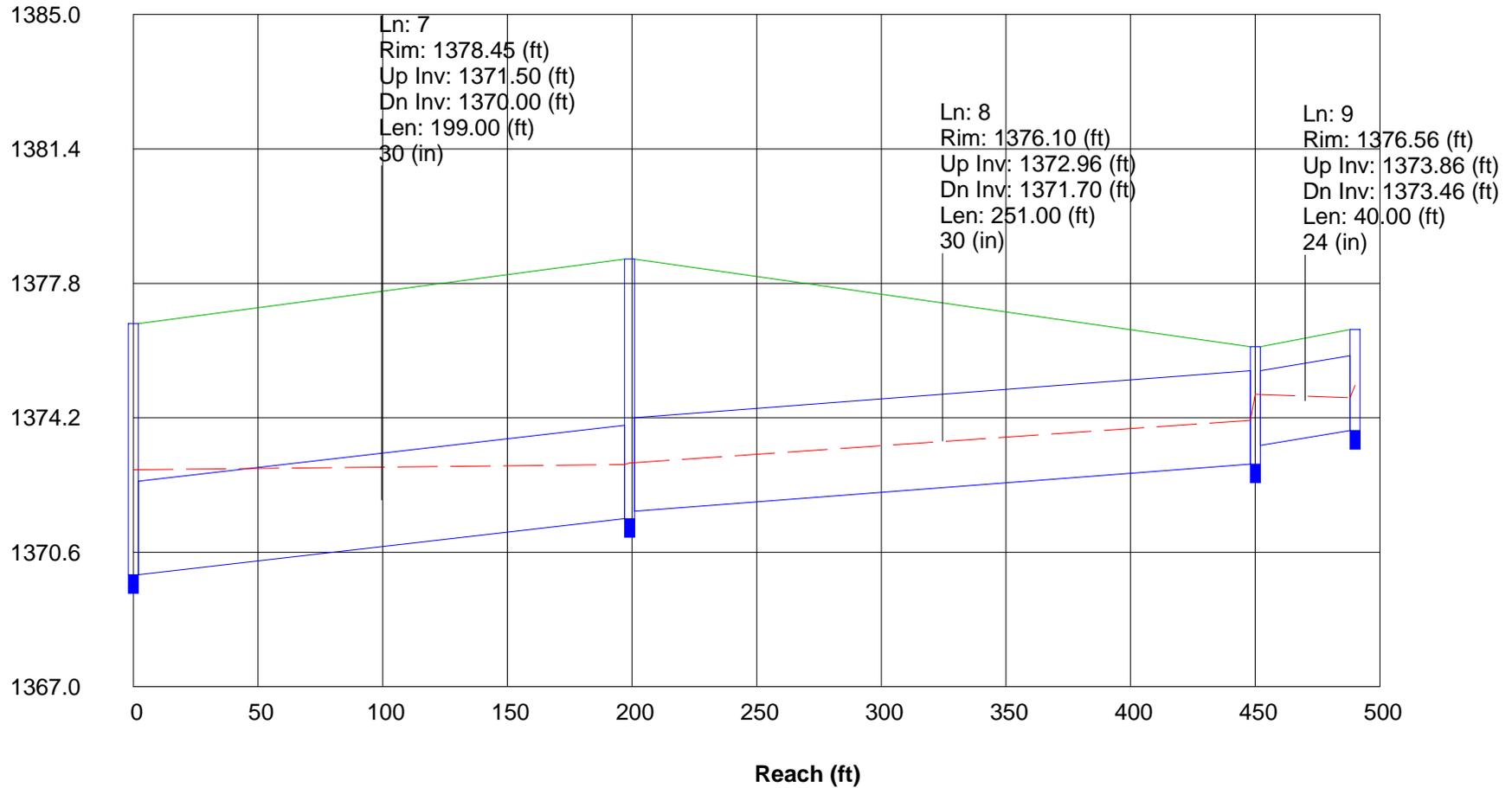
Storm Sewer Profile

Elev. (ft)



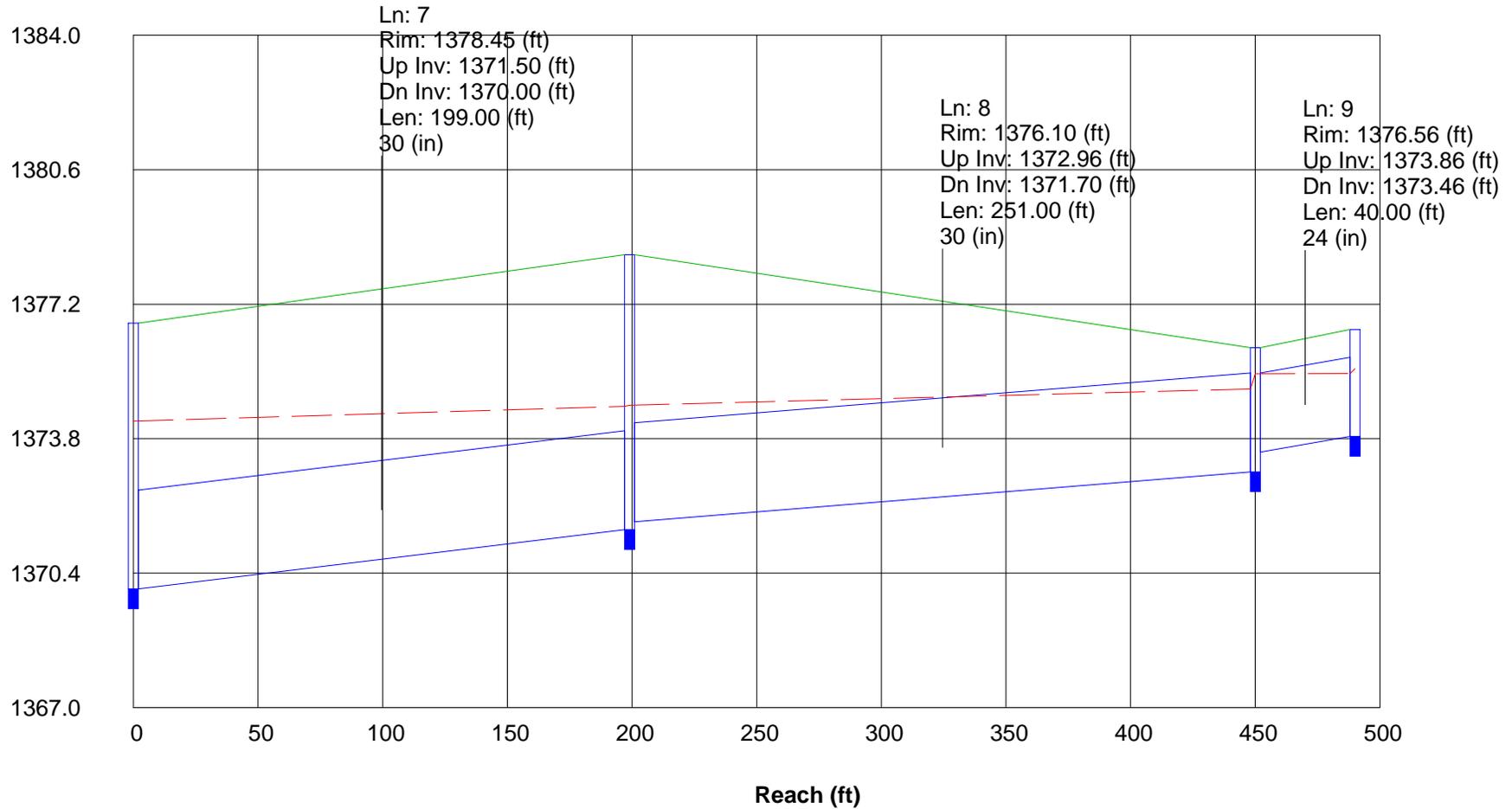
Storm Sewer Profile

Elev. (ft)



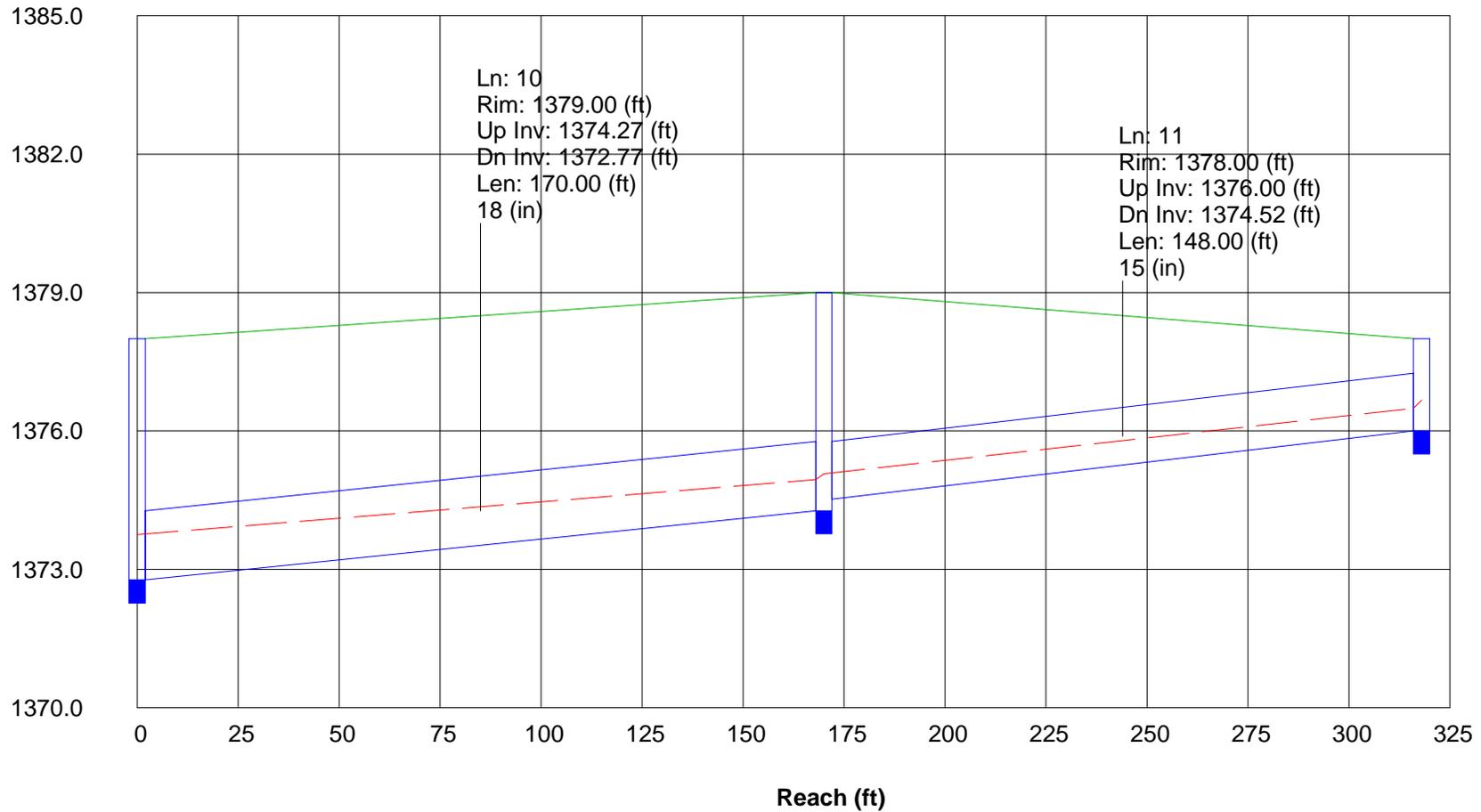
Storm Sewer Profile

Elev. (ft)



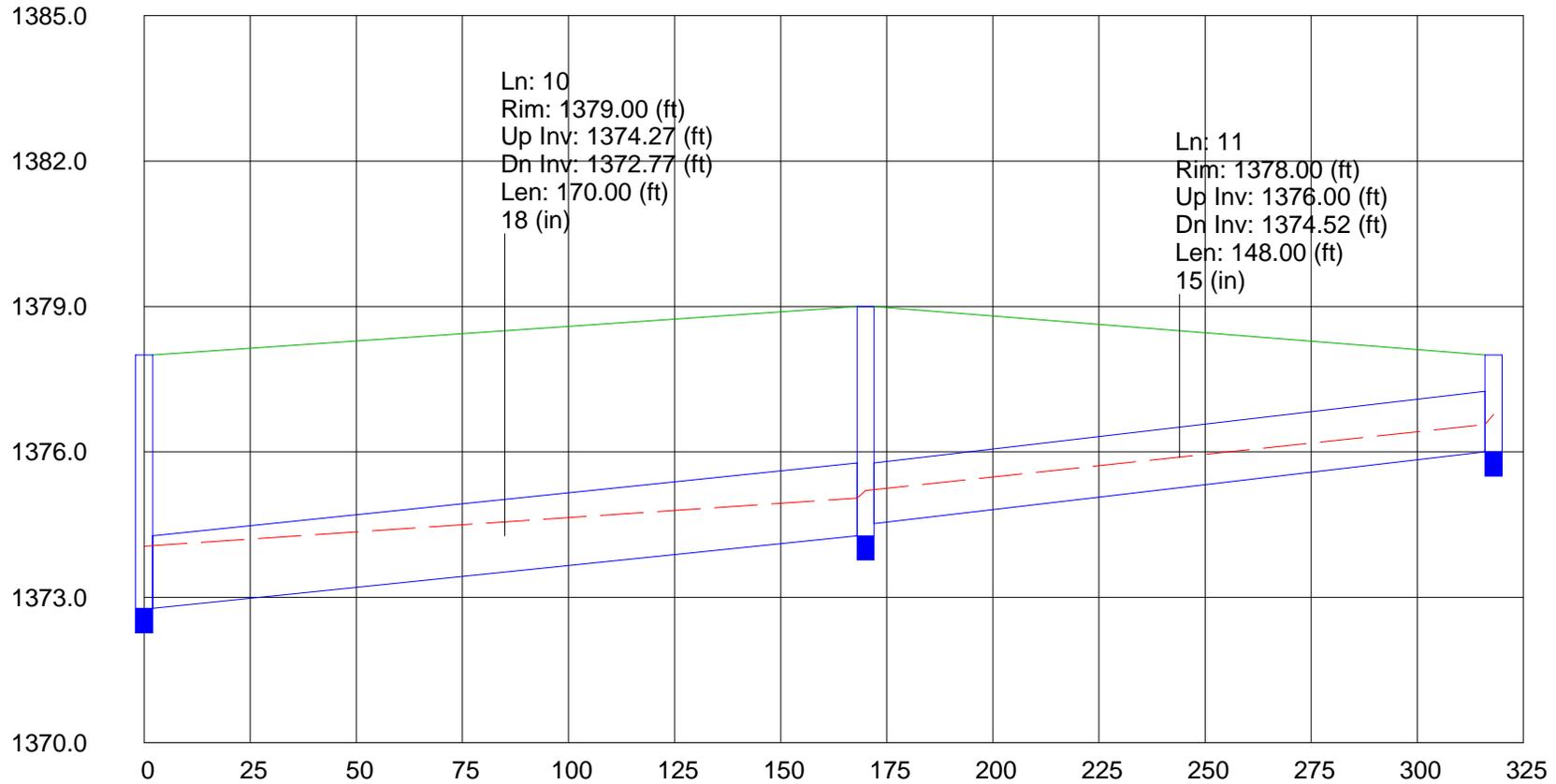
Storm Sewer Profile

Elev. (ft)



Storm Sewer Profile

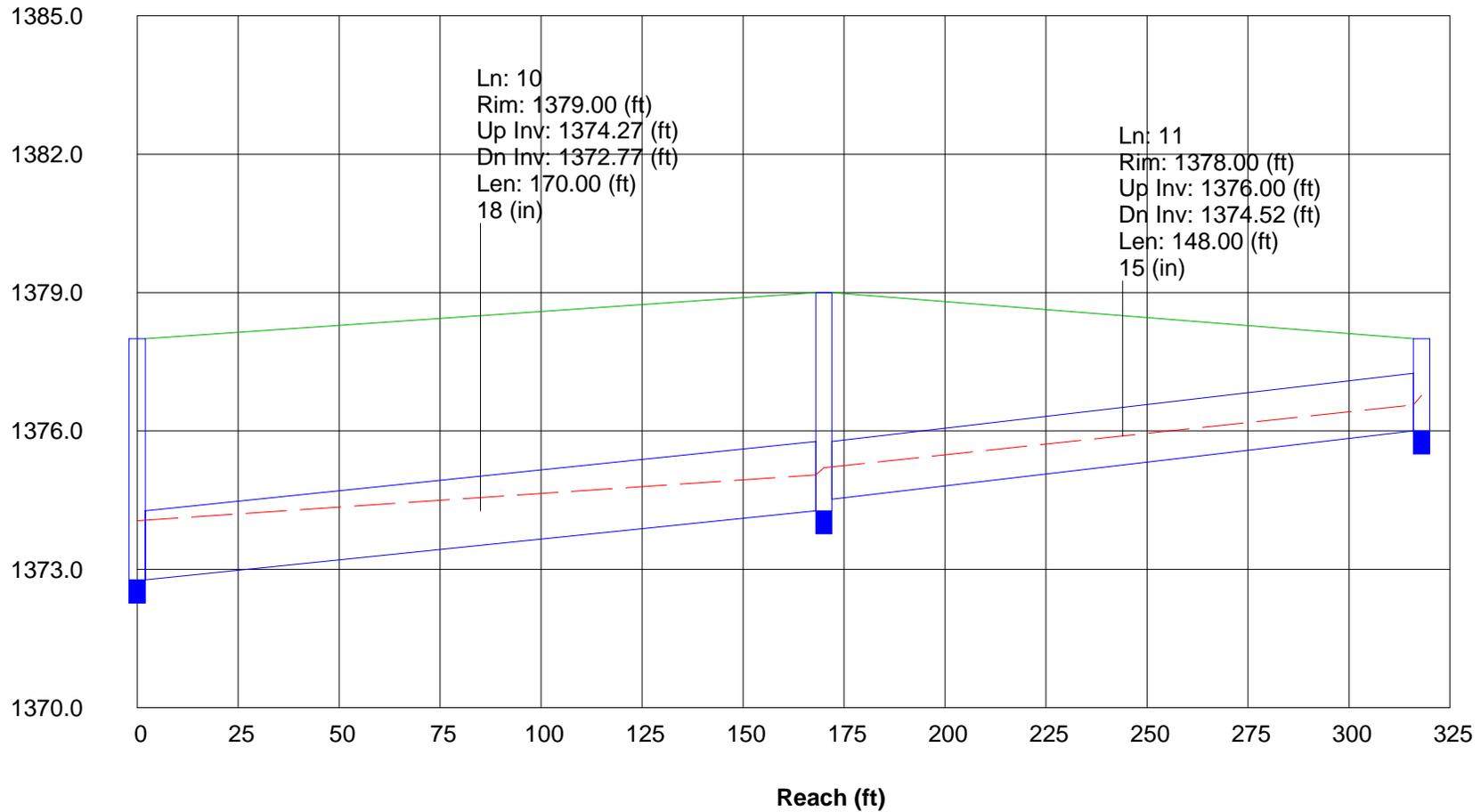
Elev. (ft)



Reach (ft)

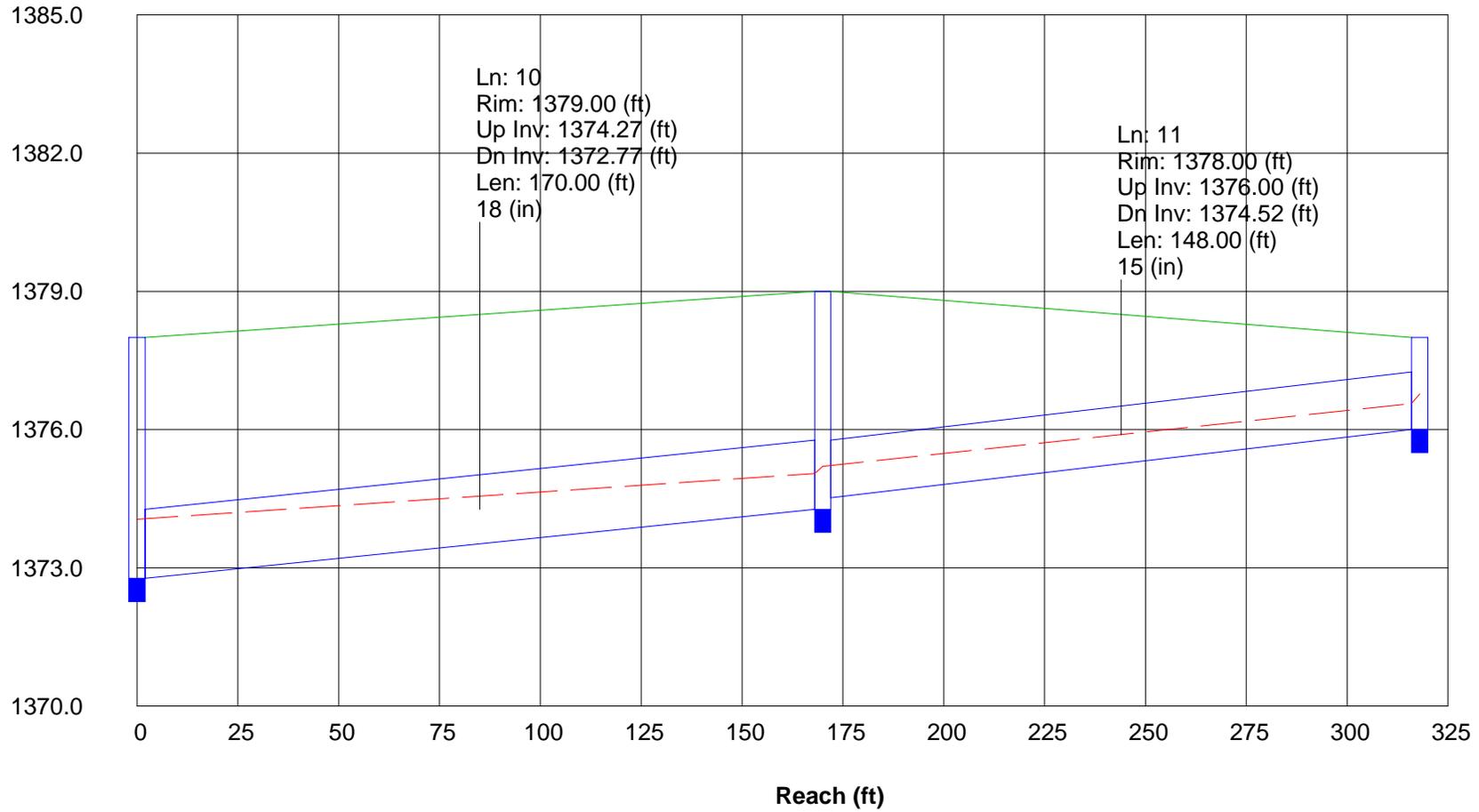
Storm Sewer Profile

Elev. (ft)



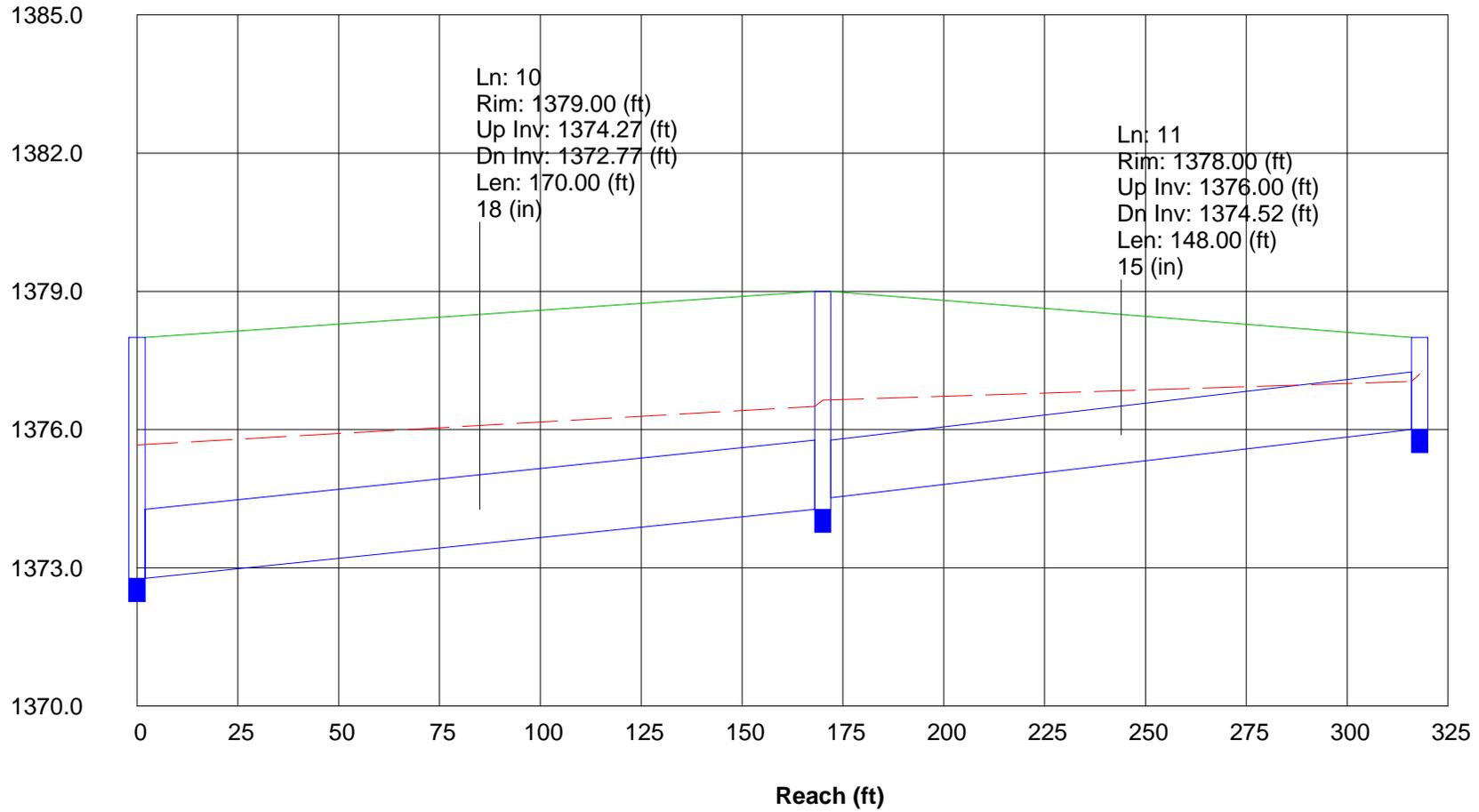
Storm Sewer Profile

Elev. (ft)



Storm Sewer Profile

Elev. (ft)



Hydraflow Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data							Line ID
	Dnstr line No.	Line length (ft)	Defl angle (deg)	Junc type	Known Q (cfs)	Drng area (ac)	Runoff coeff (C)	Inlet time (min)	Invert EI Dn (ft)	Line slope (%)	Invert EI Up (ft)	Line size (in)	Line type	N value (n)	J-loss coeff (K)	
1	End	143.0	89.1	DrGrt	2.91	0.00	0.00	0.0	1368.00	1.05	1369.50	36	Cir	0.013	1.50	1376.72
2	1	129.0	-14.7	DrGrt	1.06	0.00	0.00	0.0	1370.20	1.22	1371.77	30	Cir	0.013	1.50	1378.00
3	2	134.0	14.8	DrGrt	4.08	0.00	0.00	0.0	1372.27	1.00	1373.61	24	Cir	0.013	0.50	1379.48
4	3	207.0	5.0	DrGrt	3.96	0.00	0.00	0.0	1373.81	1.00	1375.88	24	Cir	0.013	1.50	1381.57
5	4	158.0	90.0	DrGrt	1.80	0.00	0.00	0.0	1376.38	1.00	1377.96	18	Cir	0.013	1.50	1382.00
6	5	194.0	-88.0	DrGrt	1.76	0.00	0.00	0.0	1378.21	1.44	1381.00	15	Cir	0.013	1.00	1383.00
7	1	199.0	100.1	MH	0.00	0.00	0.00	0.0	1370.00	0.75	1371.50	30	Cir	0.013	0.15	1378.45
8	7	251.0	-10.0	DrGrt	2.52	0.00	0.00	0.0	1371.70	0.50	1372.96	30	Cir	0.013	1.50	1376.10
9	8	40.0	-89.7	DrGrt	4.55	0.00	0.00	0.0	1373.46	1.00	1373.86	24	Cir	0.013	1.00	1376.56
10	2	170.0	104.3	DrGrt	1.62	0.00	0.00	0.0	1372.77	0.88	1374.27	18	Cir	0.013	0.50	1379.00
11	10	148.0	-0.2	DrGrt	1.50	0.00	0.00	0.0	1374.52	1.00	1376.00	15	Cir	0.013	1.00	1378.00
Project File: SWD2 2-YEAR.stm						IDF File: SedgwickCo.IDF						Total number of lines: 11			Date: 06-07-2007	

Hydraflow Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	Dns line No.
1		25.76	36 c	143.0	1368.00	1369.50	1.049	1369.62	1371.12	1.02	End
2		13.69	30 c	129.0	1370.20	1371.77	1.217	1372.14	1373.01	0.75	1
3		8.37	24 c	134.0	1372.27	1373.61	1.000	1373.75	1374.64	0.21	2
4		5.62	24 c	207.0	1373.81	1375.88	1.000	1374.84	1376.72	0.47	3
5		3.56	18 c	158.0	1376.38	1377.96	1.000	1377.19	1378.68	0.42	4
6		1.76	15 c	194.0	1378.21	1381.00	1.438	1379.10	1381.53	0.20	5
7		7.07	30 c	199.0	1370.00	1371.50	0.754	1372.14	1372.39	0.05	1
8		7.07	30 c	251.0	1371.70	1372.96	0.502	1372.59	1373.85	0.48	7
9		3.54	24 c	40.0	1373.46	1373.86	1.000	1374.33	1374.53	0.23	8
10		3.12	18 c	170.0	1372.77	1374.27	0.882	1373.75	1374.94	0.13	2
11		1.50	15 c	148.0	1374.52	1376.00	1.000	1375.07	1376.49	0.18	10

Project File: SWD2 2-YEAR.stm

IDF File: SedgwickCo.IDF

Total No. Lines: 11

Run Date: 06-07-2007

NOTES: c = circular; e = elliptical; b = box; Return period = 2 Yrs.; * Indicates surcharge condition.

Hydraflow Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q byp (cfs)	Junc type	Curb Inlet		Grate Inlet			Gutter						Inlet			Byp line No	
							Ht (in)	L (ft)	area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	depth (ft)	spread (ft)	depth (ft)	spread (ft)		Dep (in)
1		2.91*	2.09	5.00	0.00	DrGrt	0.0	0.00	9.22	4.00	4.00	Sag	4.00	0.020	0.020	0.000	0.27	30.81	0.27	30.81	0.0	Off
2		1.06*	3.23	2.20	2.09	DrGrt	0.0	0.00	0.00	2.00	4.00	0.010	4.00	0.020	0.020	0.013	0.24	28.00	0.24	28.00	0.0	1
3		4.08*	1.90	2.75	3.23	DrGrt	0.0	0.00	0.00	2.00	4.00	0.010	4.00	0.020	0.020	0.013	0.27	31.00	0.27	31.00	0.0	2
4		3.96*	0.00	2.06	1.90	DrGrt	0.0	0.00	0.00	2.00	4.00	0.010	4.00	0.020	0.020	0.013	0.23	27.00	0.23	27.00	0.0	3
5		1.80*	0.00	1.80	0.00	DrGrt	0.0	0.00	4.61	2.00	2.00	Sag	2.00	0.020	0.020	0.000	0.22	23.53	0.22	23.53	0.0	Off
6		1.76*	0.00	1.76	0.00	DrGrt	0.0	0.00	4.61	2.00	2.00	Sag	2.00	0.020	0.020	0.000	0.21	23.21	0.21	23.21	0.0	Off
7		0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
8		2.52*	1.01	3.53	0.00	DrGrt	0.0	0.00	9.22	4.00	4.00	Sag	4.00	0.020	0.020	0.000	0.21	25.24	0.21	25.24	0.0	Off
9		4.55*	0.00	3.54	1.01	DrGrt	0.0	0.00	0.00	4.00	4.00	0.011	4.00	0.020	0.020	0.013	0.24	28.00	0.24	28.00	0.0	8
10		1.62*	0.00	1.62	0.00	DrGrt	0.0	0.00	4.61	2.00	2.00	Sag	2.00	0.020	0.020	0.000	0.20	22.07	0.20	22.07	0.0	Off
11		1.50*	0.00	1.50	0.00	DrGrt	0.0	0.00	4.61	2.00	2.00	Sag	2.00	0.020	0.020	0.000	0.19	21.06	0.19	21.06	0.0	Off

Project File: SWD2 2-YEAR.stm

I-D-F File: SedgwickCo.IDF

Total number of lines: 11

Run Date: 06-07-2007

NOTES: Inlet N-Values = 0.013 ; Intensity = 50.00 / (Inlet time + 11.60) ^ 0.78; Return period = 2 Yrs. ; * Indicates Known Q added

Hydraflow Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data							Line ID
	Dnstr line No.	Line length (ft)	Defl angle (deg)	Junc type	Known Q (cfs)	Drng area (ac)	Runoff coeff (C)	Inlet time (min)	Invert EI Dn (ft)	Line slope (%)	Invert EI Up (ft)	Line size (in)	Line type	N value (n)	J-loss coeff (K)	
1	End	143.0	89.1	DrGrt	3.84	0.00	0.00	0.0	1368.00	1.05	1369.50	36	Cir	0.013	1.50	1376.72
2	1	129.0	-14.7	DrGrt	1.40	0.00	0.00	0.0	1370.20	1.22	1371.77	30	Cir	0.013	1.50	1378.00
3	2	134.0	14.8	DrGrt	5.39	0.00	0.00	0.0	1372.27	1.00	1373.61	24	Cir	0.013	0.50	1379.48
4	3	207.0	5.0	DrGrt	5.24	0.00	0.00	0.0	1373.81	1.00	1375.88	24	Cir	0.013	1.50	1381.57
5	4	158.0	90.0	DrGrt	2.38	0.00	0.00	0.0	1376.38	1.00	1377.96	18	Cir	0.013	1.50	1382.00
6	5	194.0	-88.0	DrGrt	2.33	0.00	0.00	0.0	1378.21	1.44	1381.00	15	Cir	0.013	1.00	1383.00
7	1	199.0	100.1	MH	0.00	0.00	0.00	0.0	1370.00	0.75	1371.50	30	Cir	0.013	0.15	1378.45
8	7	251.0	-10.0	DrGrt	3.33	0.00	0.00	0.0	1371.70	0.50	1372.96	30	Cir	0.013	1.50	1376.10
9	8	40.0	-89.7	DrGrt	6.04	0.00	0.00	0.0	1373.46	1.00	1373.86	24	Cir	0.013	1.00	1376.56
10	2	170.0	104.3	DrGrt	2.14	0.00	0.00	0.0	1372.77	0.88	1374.27	18	Cir	0.013	0.50	1379.00
11	10	148.0	-0.2	DrGrt	1.98	0.00	0.00	0.0	1374.52	1.00	1376.00	15	Cir	0.013	1.00	1378.00
Project File: SWD2 5-YEAR.stm						IDF File: SedgwickCo.IDF					Total number of lines: 11				Date: 06-07-2007	

Hydraflow Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	Dns line No.
1		34.07	36 c	143.0	1368.00	1369.50	1.049	1369.86	1371.36	1.28	End
2		17.37	30 c	129.0	1370.20	1371.77	1.217	1372.64	1373.16	0.89	1
3		10.44	24 c	134.0	1372.27	1373.61	1.000	1374.05	1374.76	0.25	2
4		7.17	24 c	207.0	1373.81	1375.88	1.000	1375.00	1376.83	0.56	3
5		4.71	18 c	158.0	1376.38	1377.96	1.000	1377.39	1378.79	0.52	4
6		2.33	15 c	194.0	1378.21	1381.00	1.438	1379.31	1381.61	0.24	5
7		9.37	30 c	199.0	1370.00	1371.50	0.754	1372.64	1372.73	0.04	1
8		9.37	30 c	251.0	1371.70	1372.96	0.502	1372.76	1373.98	0.57	7
9		4.42	24 c	40.0	1373.46	1373.86	1.000	1374.56	1374.60	0.27	8
10		4.12	18 c	170.0	1372.77	1374.27	0.882	1374.05	1375.05	0.16	2
11		1.98	15 c	148.0	1374.52	1376.00	1.000	1375.20	1376.56	0.21	10

Project File: SWD2 5-YEAR.stm

IDF File: SedgwickCo.IDF

Total No. Lines: 11

Run Date: 06-07-2007

NOTES: c = circular; e = elliptical; b = box; Return period = 5 Yrs.; * Indicates surcharge condition.

Hydraflow Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q byp (cfs)	Junc type	Curb Inlet		Grate Inlet			Gutter						Inlet			Byp line No	
							Ht (in)	L (ft)	area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	depth (ft)	spread (ft)	depth (ft)	spread (ft)		Dep (in)
1		3.84*	3.49	7.33	0.00	DrGrt	0.0	0.00	9.22	4.00	4.00	Sag	4.00	0.020	0.020	0.000	0.35	38.60	0.35	38.60	0.0	Off
2		1.40*	4.90	2.81	3.49	DrGrt	0.0	0.00	0.00	2.00	4.00	0.010	4.00	0.020	0.020	0.013	0.27	31.00	0.27	31.00	0.0	1
3		5.39*	2.78	3.27	4.90	DrGrt	0.0	0.00	0.00	2.00	4.00	0.010	4.00	0.020	0.020	0.013	0.29	33.00	0.29	33.00	0.0	2
4		5.24*	0.00	2.46	2.78	DrGrt	0.0	0.00	0.00	2.00	4.00	0.010	4.00	0.020	0.020	0.013	0.25	29.00	0.25	29.00	0.0	3
5		2.38*	0.00	2.38	0.00	DrGrt	0.0	0.00	2.30	2.00	2.00	Sag	2.00	0.020	0.020	0.000	0.26	27.94	0.26	27.94	0.0	Off
6		2.33*	0.00	2.33	0.00	DrGrt	0.0	0.00	2.30	2.00	2.00	Sag	2.00	0.020	0.020	0.000	0.26	27.57	0.26	27.57	0.0	Off
7		0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
8		3.33*	1.62	4.95	0.00	DrGrt	0.0	0.00	9.22	4.00	4.00	Sag	4.00	0.020	0.020	0.000	0.27	30.64	0.27	30.64	0.0	Off
9		6.04*	0.00	4.42	1.62	DrGrt	0.0	0.00	0.00	4.00	4.00	0.011	4.00	0.020	0.020	0.013	0.26	30.00	0.26	30.00	0.0	8
10		2.14*	0.00	2.14	0.00	DrGrt	0.0	0.00	2.30	2.00	2.00	Sag	2.00	0.020	0.020	0.000	0.24	26.16	0.24	26.16	0.0	Off
11		1.98*	0.00	1.98	0.00	DrGrt	0.0	0.00	2.30	2.00	2.00	Sag	2.00	0.020	0.020	0.000	0.23	24.94	0.23	24.94	0.0	Off

Project File: SWD2 5-YEAR.stm

I-D-F File: SedgwickCo.IDF

Total number of lines: 11

Run Date: 06-07-2007

NOTES: Inlet N-Values = 0.013 ; Intensity = 64.67 / (Inlet time + 13.40) ^ 0.79; Return period = 5 Yrs. ; * Indicates Known Q added

Hydraflow Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data							Line ID	
	Dnstr line No.	Line length (ft)	Defl angle (deg)	Junc type	Known Q (cfs)	Drng area (ac)	Runoff coeff (C)	Inlet time (min)	Invert EI Dn (ft)	Line slope (%)	Invert EI Up (ft)	Line size (in)	Line type	N value (n)	J-loss coeff (K)		Inlet/ Rim EI (ft)
1	End	143.0	89.1	DrGrt	3.84	0.00	0.00	0.0	1368.00	1.05	1369.50	36	Cir	0.013	1.50	1376.72	
2	1	129.0	-14.7	DrGrt	1.40	0.00	0.00	0.0	1370.20	1.22	1371.77	30	Cir	0.013	1.50	1378.00	
3	2	134.0	14.8	DrGrt	5.39	0.00	0.00	0.0	1372.27	1.00	1373.61	24	Cir	0.013	0.50	1379.48	
4	3	207.0	5.0	DrGrt	5.24	0.00	0.00	0.0	1373.81	1.00	1375.88	24	Cir	0.013	1.50	1381.57	
5	4	158.0	90.0	DrGrt	2.38	0.00	0.00	0.0	1376.38	1.00	1377.96	18	Cir	0.013	1.50	1382.00	
6	5	194.0	-88.0	DrGrt	2.33	0.00	0.00	0.0	1378.21	1.44	1381.00	15	Cir	0.013	1.00	1383.00	
7	1	199.0	100.1	MH	0.00	0.00	0.00	0.0	1370.00	0.75	1371.50	30	Cir	0.013	0.15	1378.45	
8	7	251.0	-10.0	DrGrt	3.33	0.00	0.00	0.0	1371.70	0.50	1372.96	30	Cir	0.013	1.50	1376.10	
9	8	40.0	-89.7	DrGrt	7.28	0.00	0.00	0.0	1373.46	1.00	1373.86	24	Cir	0.013	1.00	1376.56	
10	2	170.0	104.3	DrGrt	2.14	0.00	0.00	0.0	1372.77	0.88	1374.27	18	Cir	0.013	0.50	1379.00	
11	10	148.0	-0.2	DrGrt	1.98	0.00	0.00	0.0	1374.52	1.00	1376.00	15	Cir	0.013	1.00	1378.00	
Project File: SWD2 10-YEAR.stm						IDF File: SedgwickCo.IDF						Total number of lines: 11			Date: 06-07-2007		

Hydraflow Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	Dns line No.
1		35.31	36 c	143.0	1368.00	1369.50	1.049	1369.89	1371.39	1.31	End
2		17.37	30 c	129.0	1370.20	1371.77	1.217	1372.71	1373.16	0.89	1
3		10.44	24 c	134.0	1372.27	1373.61	1.000	1374.05	1374.76	0.25	2
4		7.17	24 c	207.0	1373.81	1375.88	1.000	1375.00	1376.83	0.56	3
5		4.71	18 c	158.0	1376.38	1377.96	1.000	1377.39	1378.79	0.52	4
6		2.33	15 c	194.0	1378.21	1381.00	1.438	1379.31	1381.61	0.24	5
7		10.61	30 c	199.0	1370.00	1371.50	0.754	1372.71	1372.82	0.04	1
8		10.61	30 c	251.0	1371.70	1372.96	0.502	1372.86	1374.05	0.62	7
9		5.16	24 c	40.0	1373.46	1373.86	1.000	1374.67	1374.66	0.30	8
10		4.12	18 c	170.0	1372.77	1374.27	0.882	1374.05	1375.05	0.16	2
11		1.98	15 c	148.0	1374.52	1376.00	1.000	1375.20	1376.56	0.21	10

Project File: SWD2 10-YEAR.stm

IDF File: SedgwickCo.IDF

Total No. Lines: 11

Run Date: 06-07-2007

NOTES: c = circular; e = elliptical; b = box; Return period = 10 Yrs.; * Indicates surcharge condition.

Hydraflow Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q byp (cfs)	Junc type	Curb Inlet		Grate Inlet			Gutter						Inlet			Byp line No	
							Ht (in)	L (ft)	area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	depth (ft)	spread (ft)	depth (ft)	spread (ft)		Dep (in)
1		3.84*	3.49	7.33	0.00	DrGrt	0.0	0.00	9.22	4.00	4.00	Sag	4.00	0.020	0.020	0.000	0.35	38.60	0.35	38.60	0.0	Off
2		1.40*	4.90	2.81	3.49	DrGrt	0.0	0.00	0.00	2.00	4.00	0.010	4.00	0.020	0.020	0.013	0.27	31.00	0.27	31.00	0.0	1
3		5.39*	2.78	3.27	4.90	DrGrt	0.0	0.00	0.00	2.00	4.00	0.010	4.00	0.020	0.020	0.013	0.29	33.00	0.29	33.00	0.0	2
4		5.24*	0.00	2.46	2.78	DrGrt	0.0	0.00	0.00	2.00	4.00	0.010	4.00	0.020	0.020	0.013	0.25	29.00	0.25	29.00	0.0	3
5		2.38*	0.00	2.38	0.00	DrGrt	0.0	0.00	2.30	2.00	2.00	Sag	2.00	0.020	0.020	0.000	0.26	27.94	0.26	27.94	0.0	Off
6		2.33*	0.00	2.33	0.00	DrGrt	0.0	0.00	2.30	2.00	2.00	Sag	2.00	0.020	0.020	0.000	0.26	27.57	0.26	27.57	0.0	Off
7		0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
8		3.33*	2.12	5.45	0.00	DrGrt	0.0	0.00	9.22	4.00	4.00	Sag	4.00	0.020	0.020	0.000	0.28	32.39	0.28	32.39	0.0	Off
9		7.28*	0.00	5.16	2.12	DrGrt	0.0	0.00	0.00	4.00	4.00	0.011	4.00	0.020	0.020	0.013	0.28	32.00	0.28	32.00	0.0	8
10		2.14*	0.00	2.14	0.00	DrGrt	0.0	0.00	2.30	2.00	2.00	Sag	2.00	0.020	0.020	0.000	0.24	26.16	0.24	26.16	0.0	Off
11		1.98*	0.00	1.98	0.00	DrGrt	0.0	0.00	2.30	2.00	2.00	Sag	2.00	0.020	0.020	0.000	0.23	24.94	0.23	24.94	0.0	Off

Project File: SWD2 10-YEAR.stm

I-D-F File: SedgwickCo.IDF

Total number of lines: 11

Run Date: 06-07-2007

NOTES: Inlet N-Values = 0.013 ; Intensity = 79.39 / (Inlet time + 14.80) ^ 0.80; Return period = 10 Yrs. ; * Indicates Known Q added

Hydraflow Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data							Line ID
	Dnstr line No.	Line length (ft)	Defl angle (deg)	Junc type	Known Q (cfs)	Drng area (ac)	Runoff coeff (C)	Inlet time (min)	Invert EI Dn (ft)	Line slope (%)	Invert EI Up (ft)	Line size (in)	Line type	N value (n)	J-loss coeff (K)	
1	End	143.0	89.1	DrGrt	3.84	0.00	0.00	0.0	1368.00	1.05	1369.50	36	Cir	0.013	1.50	1376.72
2	1	129.0	-14.7	DrGrt	1.40	0.00	0.00	0.0	1370.20	1.22	1371.77	30	Cir	0.013	1.50	1378.00
3	2	134.0	14.8	DrGrt	5.39	0.00	0.00	0.0	1372.27	1.00	1373.61	24	Cir	0.013	0.50	1379.48
4	3	207.0	5.0	DrGrt	5.24	0.00	0.00	0.0	1373.81	1.00	1375.88	24	Cir	0.013	1.50	1381.57
5	4	158.0	90.0	DrGrt	2.38	0.00	0.00	0.0	1376.38	1.00	1377.96	18	Cir	0.013	1.50	1382.00
6	5	194.0	-88.0	DrGrt	2.33	0.00	0.00	0.0	1378.21	1.44	1381.00	15	Cir	0.013	1.00	1383.00
7	1	199.0	100.1	MH	0.00	0.00	0.00	0.0	1370.00	0.75	1371.50	30	Cir	0.013	0.15	1378.45
8	7	251.0	-10.0	DrGrt	3.33	0.00	0.00	0.0	1371.70	0.50	1372.96	30	Cir	0.013	1.50	1376.10
9	8	40.0	-89.7	DrGrt	9.01	0.00	0.00	0.0	1373.46	1.00	1373.86	24	Cir	0.013	1.00	1376.56
10	2	170.0	104.3	DrGrt	2.14	0.00	0.00	0.0	1372.77	0.88	1374.27	18	Cir	0.013	0.50	1379.00
11	10	148.0	-0.2	DrGrt	1.98	0.00	0.00	0.0	1374.52	1.00	1376.00	15	Cir	0.013	1.00	1378.00
Project File: SWD2 25-YEAR.stm						IDF File: SedgwickCo.IDF					Total number of lines: 11				Date: 06-07-2007	

Hydraflow Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	Dns line No.
1		37.04	36 c	143.0	1368.00	1369.50	1.049	1369.94	1371.44	1.37	End
2		17.37	30 c	129.0	1370.20	1371.77	1.217	1372.81	1373.16	0.89	1
3		10.44	24 c	134.0	1372.27	1373.61	1.000	1374.05	1374.76	0.25	2
4		7.17	24 c	207.0	1373.81	1375.88	1.000	1375.00	1376.83	0.56	3
5		4.71	18 c	158.0	1376.38	1377.96	1.000	1377.39	1378.79	0.52	4
6		2.33	15 c	194.0	1378.21	1381.00	1.438	1379.31	1381.61	0.24	5
7		12.34	30 c	199.0	1370.00	1371.50	0.754	1372.81	1372.95	0.04	1
8		12.34	30 c	251.0	1371.70	1372.96	0.502	1372.99	1374.13	0.69	7
9		6.07	24 c	40.0	1373.46	1373.86	1.000	1374.83	1374.74	0.33	8
10		4.12	18 c	170.0	1372.77	1374.27	0.882	1374.05	1375.05	0.16	2
11		1.98	15 c	148.0	1374.52	1376.00	1.000	1375.20	1376.56	0.21	10

Project File: SWD2 25-YEAR.stm

IDF File: SedgwickCo.IDF

Total No. Lines: 11

Run Date: 06-07-2007

NOTES: c = circular; e = elliptical; b = box; Return period = 25 Yrs.; * Indicates surcharge condition.

Hydraflow Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q byp (cfs)	Junc type	Curb Inlet		Grate Inlet			Gutter						Inlet			Byp line No	
							Ht (in)	L (ft)	area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	depth (ft)	spread (ft)	depth (ft)	spread (ft)		Dep (in)
1		3.84*	3.49	7.33	0.00	DrGrt	0.0	0.00	9.22	4.00	4.00	Sag	4.00	0.020	0.020	0.000	0.35	38.60	0.35	38.60	0.0	Off
2		1.40*	4.90	2.81	3.49	DrGrt	0.0	0.00	0.00	2.00	4.00	0.010	4.00	0.020	0.020	0.013	0.27	31.00	0.27	31.00	0.0	1
3		5.39*	2.78	3.27	4.90	DrGrt	0.0	0.00	0.00	2.00	4.00	0.010	4.00	0.020	0.020	0.013	0.29	33.00	0.29	33.00	0.0	2
4		5.24*	0.00	2.46	2.78	DrGrt	0.0	0.00	0.00	2.00	4.00	0.010	4.00	0.020	0.020	0.013	0.25	29.00	0.25	29.00	0.0	3
5		2.38*	0.00	2.38	0.00	DrGrt	0.0	0.00	2.30	2.00	2.00	Sag	2.00	0.020	0.020	0.000	0.26	27.94	0.26	27.94	0.0	Off
6		2.33*	0.00	2.33	0.00	DrGrt	0.0	0.00	2.30	2.00	2.00	Sag	2.00	0.020	0.020	0.000	0.26	27.57	0.26	27.57	0.0	Off
7		0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
8		3.33*	2.94	6.27	0.00	DrGrt	0.0	0.00	9.22	4.00	4.00	Sag	4.00	0.020	0.020	0.000	0.31	35.17	0.31	35.17	0.0	Off
9		9.01*	0.00	6.07	2.94	DrGrt	0.0	0.00	0.00	4.00	4.00	0.011	4.00	0.020	0.020	0.013	0.30	34.00	0.30	34.00	0.0	8
10		2.14*	0.00	2.14	0.00	DrGrt	0.0	0.00	2.30	2.00	2.00	Sag	2.00	0.020	0.020	0.000	0.24	26.16	0.24	26.16	0.0	Off
11		1.98*	0.00	1.98	0.00	DrGrt	0.0	0.00	2.30	2.00	2.00	Sag	2.00	0.020	0.020	0.000	0.23	24.94	0.23	24.94	0.0	Off

Project File: SWD2 25-YEAR.stm

I-D-F File: SedgwickCo.IDF

Total number of lines: 11

Run Date: 06-07-2007

NOTES: Inlet N-Values = 0.013 ; Intensity = 97.12 / (Inlet time + 15.90) ^ 0.80; Return period = 25 Yrs. ; * Indicates Known Q added

Hydraflow Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data							Line ID
	Dnstr line No.	Line length (ft)	Defl angle (deg)	Junc type	Known Q (cfs)	Drng area (ac)	Runoff coeff (C)	Inlet time (min)	Invert EI Dn (ft)	Line slope (%)	Invert EI Up (ft)	Line size (in)	Line type	N value (n)	J-loss coeff (K)	
1	End	143.0	89.1	DrGrt	6.85	0.00	0.00	0.0	1368.00	1.05	1369.50	36	Cir	0.013	1.50	1376.72
2	1	129.0	-14.7	DrGrt	2.50	0.00	0.00	0.0	1370.20	1.22	1371.77	30	Cir	0.013	1.50	1378.00
3	2	134.0	14.8	DrGrt	9.61	0.00	0.00	0.0	1372.27	1.00	1373.61	24	Cir	0.013	0.50	1379.48
4	3	207.0	5.0	DrGrt	9.33	0.00	0.00	0.0	1373.81	1.00	1375.88	24	Cir	0.013	1.50	1381.57
5	4	158.0	90.0	DrGrt	4.25	0.00	0.00	0.0	1376.38	1.00	1377.96	18	Cir	0.013	1.50	1382.00
6	5	194.0	-88.0	DrGrt	4.15	0.00	0.00	0.0	1378.21	1.44	1381.00	15	Cir	0.013	1.00	1383.00
7	1	199.0	100.1	MH	0.00	0.00	0.00	0.0	1370.00	0.75	1371.50	30	Cir	0.013	0.15	1378.45
8	7	251.0	-10.0	DrGrt	5.94	0.00	0.00	0.0	1371.70	0.50	1372.96	30	Cir	0.013	1.50	1376.10
9	8	40.0	-89.7	DrGrt	11.79	0.00	0.00	0.0	1373.46	1.00	1373.86	24	Cir	0.013	1.00	1376.56
10	2	170.0	104.3	DrGrt	3.82	0.00	0.00	0.0	1372.77	0.88	1374.27	18	Cir	0.013	0.50	1379.00
11	10	148.0	-0.2	DrGrt	3.54	0.00	0.00	0.0	1374.52	1.00	1376.00	15	Cir	0.013	1.00	1378.00
Project File: SWD2 100-YEAR.stm						IDF File: SedgwickCo.IDF						Total number of lines: 11			Date: 06-07-2007	

Hydraflow Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	Dns line No.
1		61.78	36 c	143.0	1368.00	1369.50	1.049	1370.51	1372.01	2.24	End
2		28.65	30 c	129.0	1370.20	1371.77	1.217	1374.24*	1374.87*	0.79	1
3		16.90	24 c	134.0	1372.27	1373.61	1.000	1375.67*	1376.42*	0.23	2
4		12.03	24 c	207.0	1373.81	1375.88	1.000	1376.64	1377.19	0.71	3
5		8.40	18 c	158.0	1376.38	1377.96	1.000	1377.90	1379.07	0.84	4
6		4.15	15 c	194.0	1378.21	1381.00	1.438	1379.91	1381.82	0.37	5
7		17.73	30 c	199.0	1370.00	1371.50	0.754	1374.24*	1374.62*	0.03	1
8		17.73	30 c	251.0	1371.70	1372.96	0.502	1374.65	1375.06	0.38	7
9		7.46	24 c	40.0	1373.46	1373.86	1.000	1375.44	1375.45	0.12	8
10		7.36	18 c	170.0	1372.77	1374.27	0.882	1375.67*	1376.50*	0.13	2
11		3.54	15 c	148.0	1374.52	1376.00	1.000	1376.64	1377.04	0.16	10
Project File: SWD2 100-YEAR.stm			IDF File: SedgwickCo.IDF			Total No. Lines: 11			Run Date: 06-07-2007		
NOTES: c = circular; e = elliptical; b = box; Return period = 100 Yrs.; * Indicates surcharge condition.											

Hydraflow Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q byp (cfs)	Junc type	Curb Inlet		Grate Inlet			Gutter						Inlet			Byp line No	
							Ht (in)	L (ft)	area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	depth (ft)	spread (ft)	depth (ft)	spread (ft)		Dep (in)
1		6.85*	8.55	15.40	0.00	DrGrt	0.0	0.00	9.22	4.00	4.00	Sag	4.00	0.020	0.020	0.000	0.57	60.75	0.57	60.75	0.0	Off
2		2.50*	10.44	4.39	8.55	DrGrt	0.0	0.00	0.00	2.00	4.00	0.010	4.00	0.020	0.020	0.013	0.34	38.00	0.34	38.00	0.0	1
3		9.61*	5.70	4.88	10.44	DrGrt	0.0	0.00	0.00	2.00	4.00	0.010	4.00	0.020	0.020	0.013	0.36	40.00	0.36	40.00	0.0	2
4		9.33*	0.00	3.63	5.70	DrGrt	0.0	0.00	0.00	2.00	4.00	0.010	4.00	0.020	0.020	0.013	0.31	35.00	0.31	35.00	0.0	3
5		4.25*	0.00	4.25	0.00	DrGrt	0.0	0.00	4.61	2.00	2.00	Sag	2.00	0.020	0.020	0.000	0.38	40.18	0.38	40.18	0.0	Off
6		4.15*	0.00	4.15	0.00	DrGrt	0.0	0.00	4.61	2.00	2.00	Sag	2.00	0.020	0.020	0.000	0.38	39.58	0.38	39.58	0.0	Off
7		0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
8		5.94*	4.33	10.27	0.00	DrGrt	0.0	0.00	9.22	4.00	4.00	Sag	4.00	0.020	0.020	0.000	0.43	47.33	0.43	47.33	0.0	Off
9		11.79*	0.00	7.46	4.33	DrGrt	0.0	0.00	0.00	4.00	4.00	0.011	4.00	0.020	0.020	0.013	0.33	37.00	0.33	37.00	0.0	8
10		3.82*	0.00	3.82	0.00	DrGrt	0.0	0.00	4.61	2.00	2.00	Sag	2.00	0.020	0.020	0.000	0.36	37.56	0.36	37.56	0.0	Off
11		3.54*	0.00	3.54	0.00	DrGrt	0.0	0.00	4.61	2.00	2.00	Sag	2.00	0.020	0.020	0.000	0.34	35.80	0.34	35.80	0.0	Off

Project File: SWD2 100-YEAR.stm

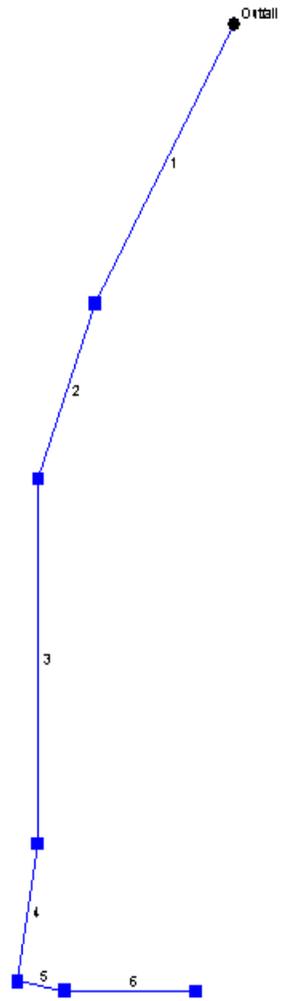
I-D-F File: SedgwickCo.IDF

Total number of lines: 11

Run Date: 06-07-2007

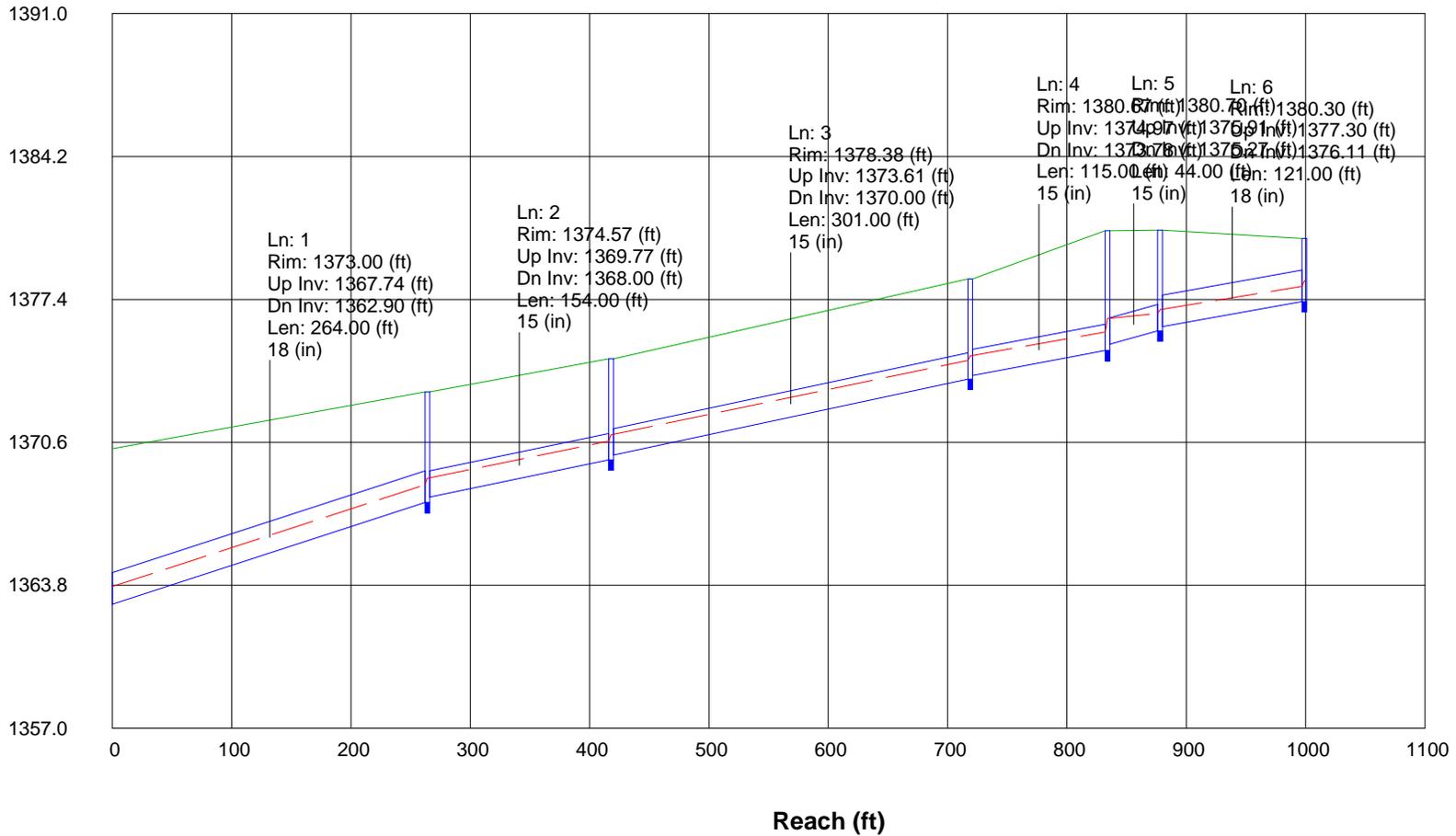
NOTES: Inlet N-Values = 0.013 ; Intensity = 126.77 / (Inlet time + 17.20) ^ 0.81; Return period = 100 Yrs. ; * Indicates Known Q added

Hydraflow Plan View



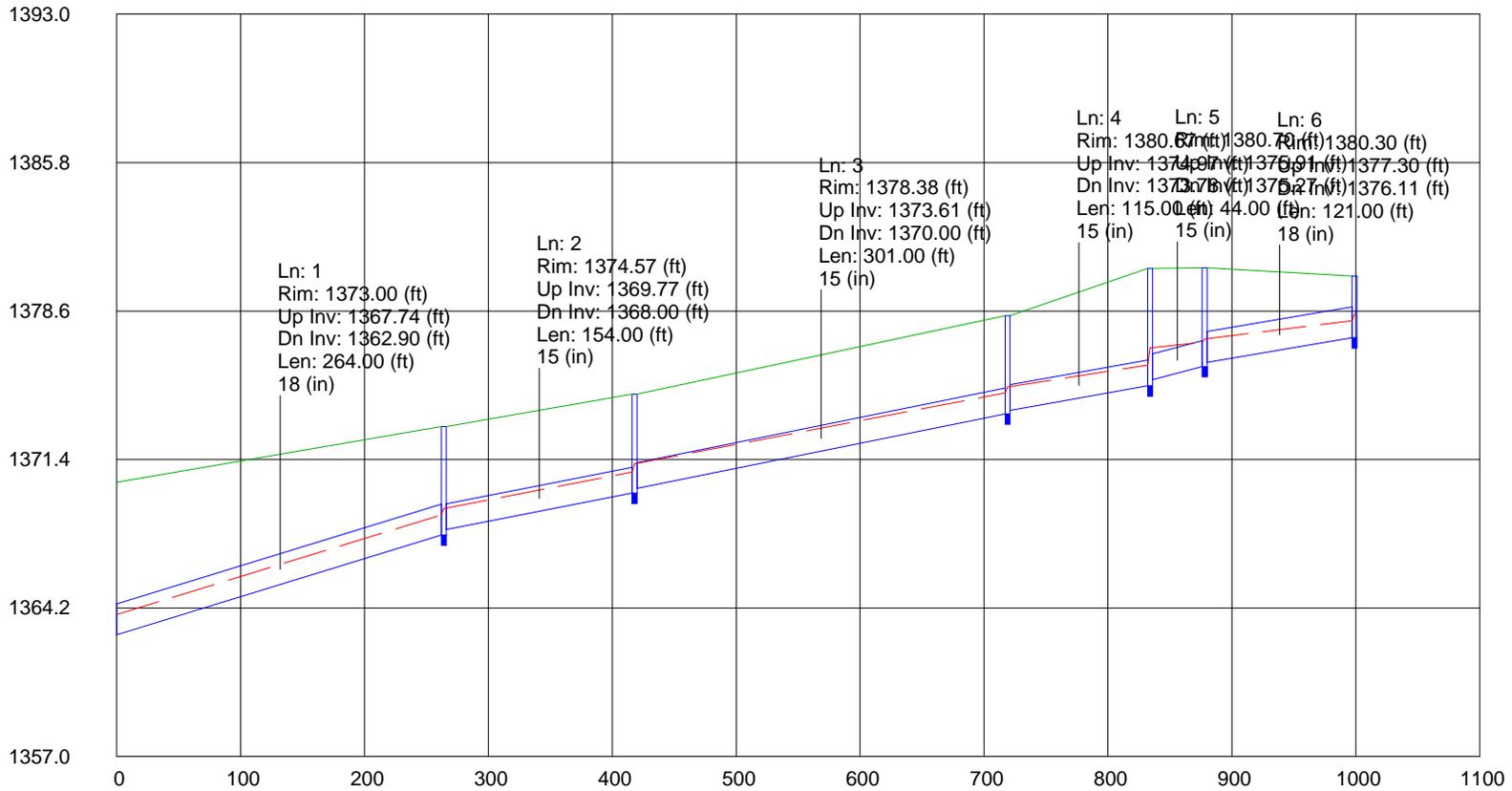
Storm Sewer Profile

Elev. (ft)



Storm Sewer Profile

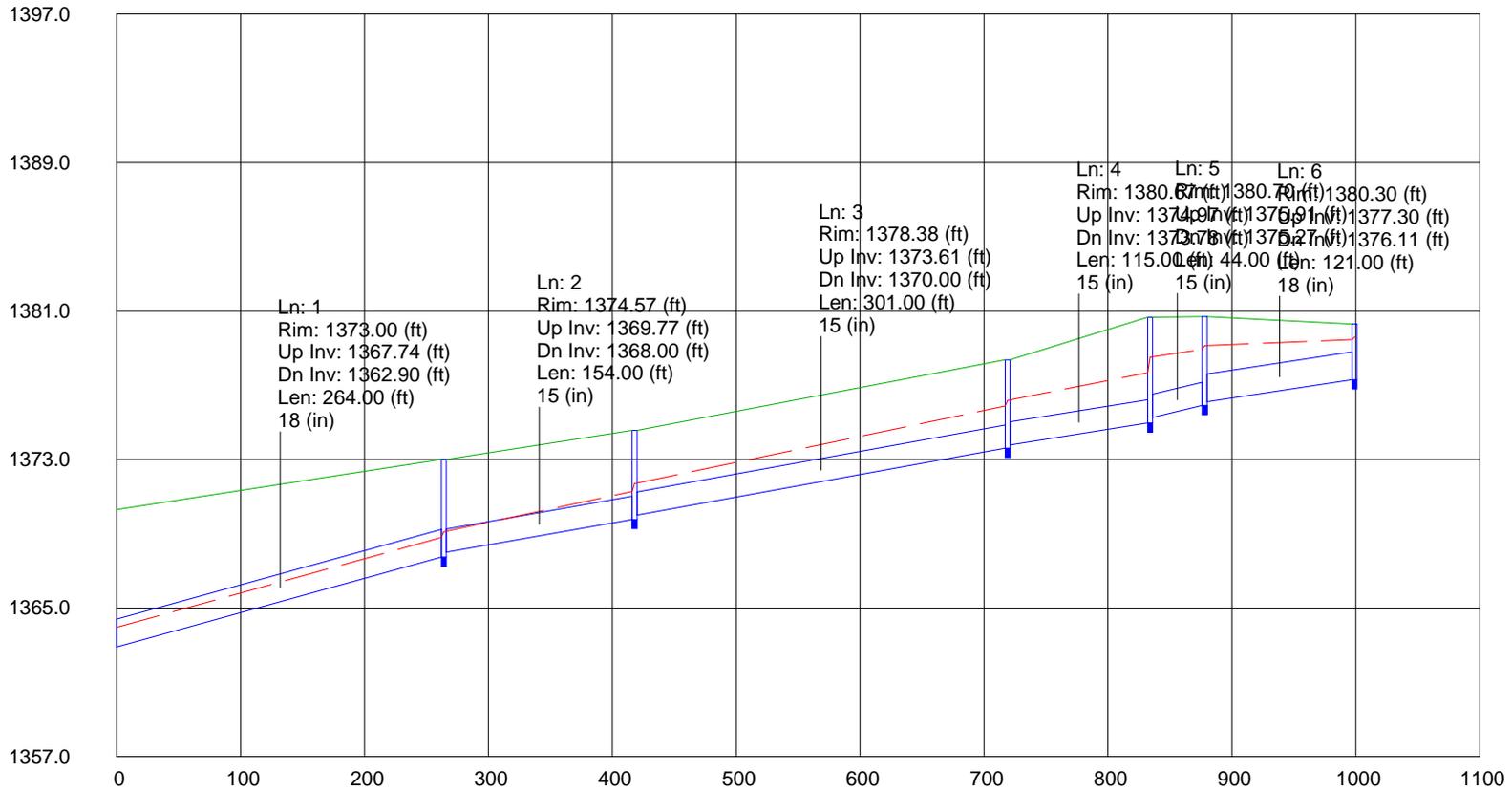
Elev. (ft)



Reach (ft)

Storm Sewer Profile

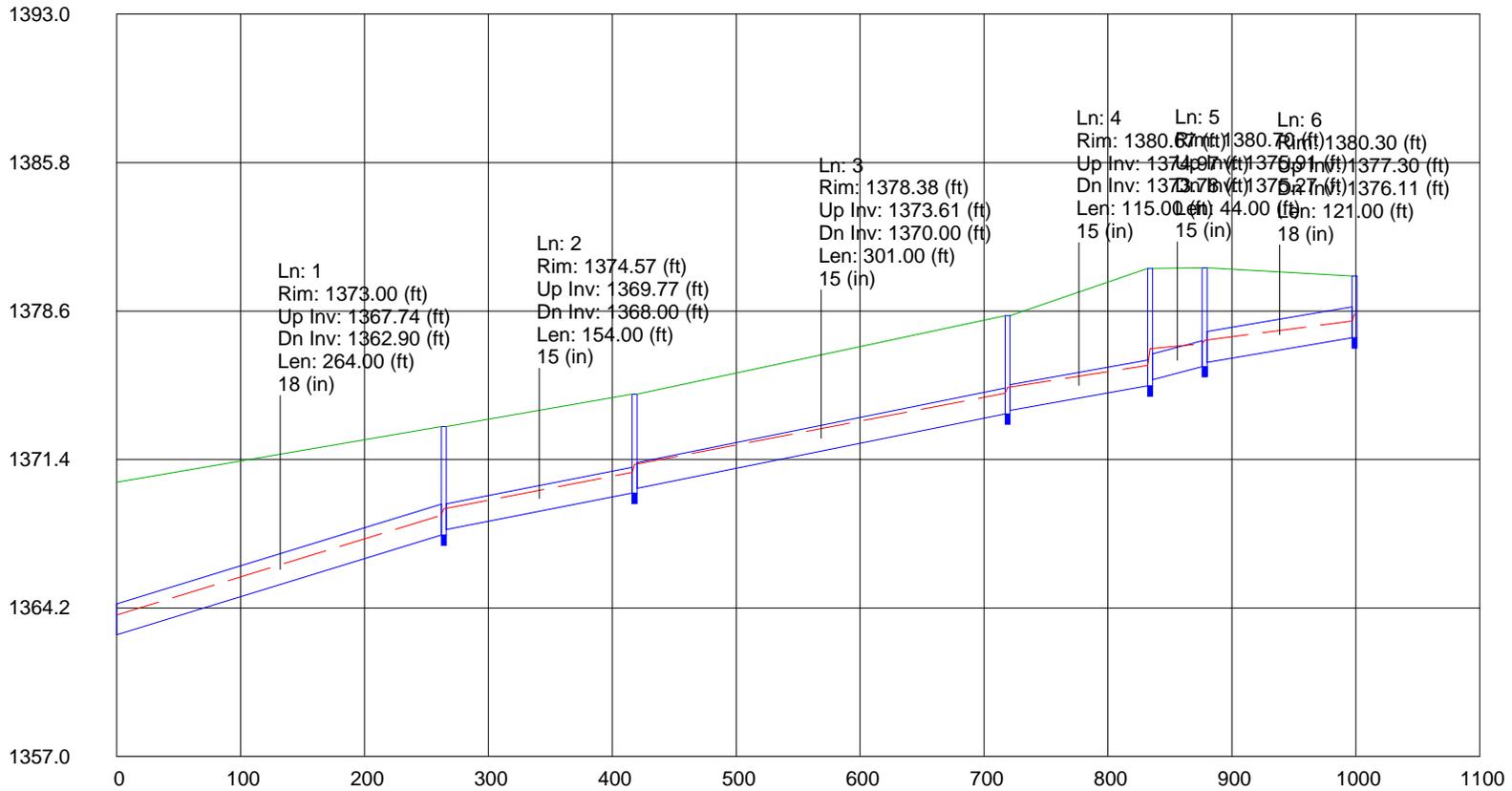
Elev. (ft)



Reach (ft)

Storm Sewer Profile

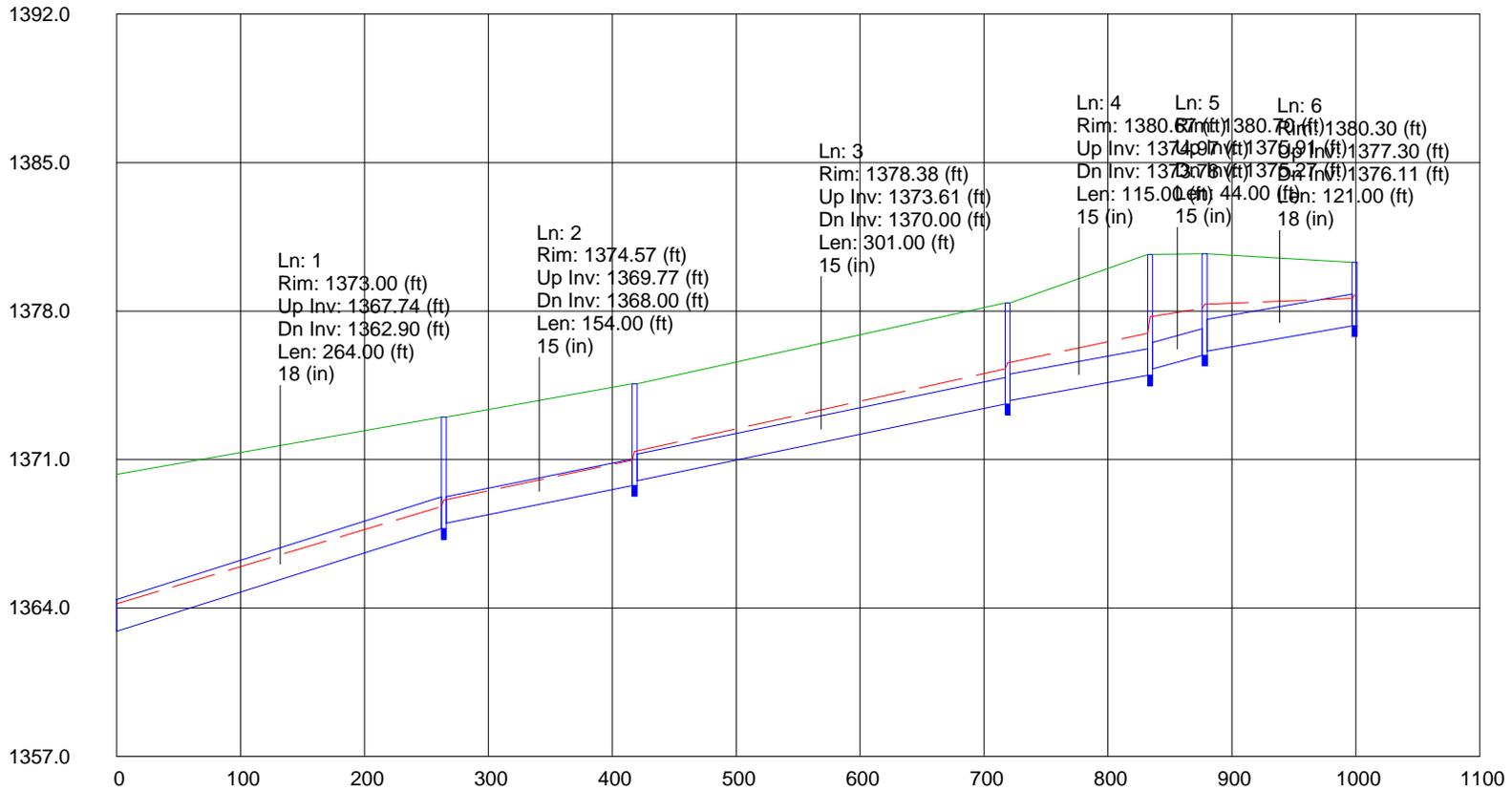
Elev. (ft)



Reach (ft)

Storm Sewer Profile

Elev. (ft)



Reach (ft)

Hydraflow Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data							Line ID	
	Dnstr line No.	Line length (ft)	Defl angle (deg)	Junc type	Known Q (cfs)	Drng area (ac)	Runoff coeff (C)	Inlet time (min)	Invert El Dn (ft)	Line slope (%)	Invert El Up (ft)	Line size (in)	Line type	N value (n)	J-loss coeff (K)		Inlet/ Rim El (ft)
1	End	264.0	119.0	Curb	0.00	0.00	0.00	0.0	1362.90	1.83	1367.74	18	Cir	0.013	0.50	1373.00	
2	1	154.0	-9.2	Curb	0.00	0.00	0.00	0.0	1368.00	1.15	1369.77	15	Cir	0.013	0.70	1374.57	
3	2	301.0	-19.7	Curb	0.00	0.00	0.00	0.0	1370.00	1.20	1373.61	15	Cir	0.013	0.50	1378.38	
4	3	115.0	9.2	Curb	0.00	0.00	0.00	0.0	1373.78	1.03	1374.97	15	Cir	0.013	1.50	1380.67	
5	4	44.0	-88.4	Curb	0.00	0.00	0.00	0.0	1375.27	1.45	1375.91	15	Cir	0.013	0.50	1380.70	
6	5	121.0	-10.8	DrGrt	4.93	0.00	0.00	0.0	1376.11	0.98	1377.30	18	Cir	0.013	1.00	1380.30	
Project File: SWD3 2-YEAR.stm						IDF File: SedgwickCo.IDF						Total number of lines: 6			Date: 06-07-2007		

Hydraflow Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	Dns line No.
1		4.93	18 c	264.0	1362.90	1367.74	1.833	1363.75	1368.59	0.18	End
2		4.93	15 c	154.0	1368.00	1369.77	1.149	1368.89	1370.66	0.30	1
3		4.93	15 c	301.0	1370.00	1373.61	1.199	1370.96	1374.50	0.22	2
4		4.86	15 c	115.0	1373.78	1374.97	1.035	1374.72	1375.85	0.64	3
5		4.20	15 c	44.0	1375.27	1375.91	1.455	1376.50	1376.73	0.19	4
6		3.60	18 c	121.0	1376.11	1377.30	0.984	1376.92	1378.03	0.28	5

Project File: SWD3 2-YEAR.stm

IDF File: SedgwickCo.IDF

Total No. Lines: 6

Run Date: 06-06-2007

NOTES: c = circular; e = elliptical; b = box; Return period = 2 Yrs.; * Indicates surcharge condition.

Hydraflow Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q byp (cfs)	Junc type	Curb Inlet		Grate Inlet			Gutter						Inlet			Byp line No	
							Ht (in)	L (ft)	area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	depth (ft)	spread (ft)	depth (ft)	spread (ft)		Dep (in)
1		0.00	0.00	0.00	0.00	Curb	6.0	10.00	0.00	0.00	0.00	Sag	2.00	0.038	0.030	0.000	0.02	0.42	0.02	0.42	0.00	Off
2		0.00	0.00	0.00	0.00	Curb	6.0	10.00	0.00	0.00	0.00	0.012	2.00	0.038	0.030	0.013	0.01	0.26	0.00	0.08	0.00	1
3		0.00	0.07	0.07	0.00	Curb	6.0	5.00	0.00	0.00	0.00	0.012	2.00	0.038	0.030	0.013	0.07	1.84	0.06	1.61	0.00	2
4		0.00	0.73	0.66	0.07	Curb	6.0	10.00	0.00	0.00	0.00	0.012	2.00	0.038	0.030	0.013	0.15	4.47	0.15	4.30	0.00	3
5		0.00	1.33	0.59	0.73	Curb	6.0	5.00	0.00	0.00	0.00	0.012	2.00	0.038	0.030	0.013	0.18	5.47	0.18	5.43	0.00	4
6		4.93*	0.00	3.60	1.33	DrGrt	0.0	0.00	0.00	4.00	4.00	0.010	4.00	0.020	0.020	0.013	0.25	29.00	0.25	29.00	0.0	5

Project File: SWD3 2-YEAR.stm

I-D-F File: SedgwickCo.IDF

Total number of lines: 6

Run Date: 06-06-2007

NOTES: Inlet N-Values = 0.013 ; Intensity = 50.00 / (Inlet time + 11.60) ^ 0.78; Return period = 2 Yrs. ; * Indicates Known Q added

Hydraflow Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr line No.	Line length (ft)	Defl angle (deg)	Junc type	Known Q (cfs)	Drng area (ac)	Runoff coeff (C)	Inlet time (min)	Invert El Dn (ft)	Line slope (%)	Invert El Up (ft)	Line size (in)	Line type	N value (n)	J-loss coeff (K)	Inlet/ Rim El (ft)	
1	End	264.0	119.0	Curb	0.00	0.00	0.00	0.0	1362.90	1.83	1367.74	18	Cir	0.013	0.50	1373.00	
2	1	154.0	-9.2	Curb	0.00	0.00	0.00	0.0	1368.00	1.15	1369.77	15	Cir	0.013	0.70	1374.57	
3	2	301.0	-19.7	Curb	0.00	0.00	0.00	0.0	1370.00	1.20	1373.61	15	Cir	0.013	0.50	1378.38	
4	3	115.0	9.2	Curb	0.00	0.00	0.00	0.0	1373.78	1.03	1374.97	15	Cir	0.013	1.50	1380.67	
5	4	44.0	-88.4	Curb	0.00	0.00	0.00	0.0	1375.27	1.45	1375.91	15	Cir	0.013	0.50	1380.70	
6	5	121.0	-10.8	DrGrt	6.52	0.00	0.00	0.0	1376.11	0.98	1377.30	18	Cir	0.013	1.00	1380.30	
Project File: SWD3 5-YEAR.stm						IDF File: SedgwickCo.IDF						Total number of lines: 6				Date: 06-07-2007	

Hydraflow Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	Dns line No.
1		6.52	18 c	264.0	1362.90	1367.74	1.833	1363.88	1368.72	0.22	End
2		6.52	15 c	154.0	1368.00	1369.77	1.149	1369.02	1370.79	0.40	1
3		6.49	15 c	301.0	1370.00	1373.61	1.199	1371.19	1374.63	0.29	2
4		6.32	15 c	115.0	1373.78	1374.97	1.035	1374.92	1375.98	0.83	3
5		5.44	15 c	44.0	1375.27	1375.91	1.455	1376.81	1377.08	0.16	4
6		4.73	18 c	121.0	1376.11	1377.30	0.984	1377.24	1378.13	0.35	5

Project File: SWD3 5-YEAR.stm

IDF File: SedgwickCo.IDF

Total No. Lines: 6

Run Date: 06-06-2007

NOTES: c = circular; e = elliptical; b = box; Return period = 5 Yrs.; * Indicates surcharge condition.

Hydraflow Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q byp (cfs)	Junc type	Curb Inlet		Grate Inlet			Gutter						Inlet			Byp line No	
							Ht (in)	L (ft)	area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	depth (ft)	spread (ft)	depth (ft)	spread (ft)		Dep (in)
1		0.00	0.00	0.00	0.00	Curb	6.0	10.00	0.00	0.00	0.00	Sag	2.00	0.038	0.030	0.000	0.02	0.42	0.02	0.42	0.00	Off
2		0.00	0.03	0.03	0.00	Curb	6.0	10.00	0.00	0.00	0.00	0.012	2.00	0.038	0.030	0.013	0.05	1.32	0.04	1.18	0.00	1
3		0.00	0.20	0.17	0.03	Curb	6.0	5.00	0.00	0.00	0.00	0.012	2.00	0.038	0.030	0.013	0.09	2.47	0.09	2.47	0.00	2
4		0.00	1.08	0.88	0.20	Curb	6.0	10.00	0.00	0.00	0.00	0.012	2.00	0.038	0.030	0.013	0.17	5.13	0.17	5.00	0.00	3
5		0.00	1.79	0.71	1.08	Curb	6.0	5.00	0.00	0.00	0.00	0.012	2.00	0.038	0.030	0.013	0.20	6.13	0.20	6.10	0.00	4
6		6.52*	0.00	4.73	1.79	DrGrt	0.0	0.00	0.00	4.00	4.00	0.010	4.00	0.020	0.020	0.013	0.27	31.00	0.27	31.00	0.0	5

Project File: SWD3 5-YEAR.stm I-D-F File: SedgwickCo.IDF Total number of lines: 6 Run Date: 06-06-2007

NOTES: Inlet N-Values = 0.013 ; Intensity = 64.67 / (Inlet time + 13.40) ^ 0.79; Return period = 5 Yrs. ; * Indicates Known Q added

Hydraflow Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr line No.	Line length (ft)	Defl angle (deg)	Junc type	Known Q (cfs)	Drng area (ac)	Runoff coeff (C)	Inlet time (min)	Invert El Dn (ft)	Line slope (%)	Invert El Up (ft)	Line size (in)	Line type	N value (n)	J-loss coeff (K)	Inlet/ Rim El (ft)	
1	End	264.0	119.0	Curb	0.00	0.00	0.00	0.0	1362.90	1.83	1367.74	18	Cir	0.013	0.50	1373.00	
2	1	154.0	-9.2	Curb	0.00	0.00	0.00	0.0	1368.00	1.15	1369.77	15	Cir	0.013	0.70	1374.57	
3	2	301.0	-19.7	Curb	0.00	0.00	0.00	0.0	1370.00	1.20	1373.61	15	Cir	0.013	0.50	1378.38	
4	3	115.0	9.2	Curb	0.00	0.00	0.00	0.0	1373.78	1.03	1374.97	15	Cir	0.013	1.50	1380.67	
5	4	44.0	-88.4	Curb	0.00	0.00	0.00	0.0	1375.27	1.45	1375.91	15	Cir	0.013	0.50	1380.70	
6	5	121.0	-10.8	DrGrt	7.71	0.00	0.00	0.0	1376.11	0.98	1377.30	18	Cir	0.013	1.00	1380.30	
Project File: SWD3 10-YEAR.stm						IDF File: SedgwickCo.IDF						Total number of lines: 6				Date: 06-07-2007	

Hydraflow Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	Dns line No.
1		5.46	18 c	264.0	1362.90	1367.74	1.833	1363.96	1368.63	0.19	End
2		5.46	15 c	154.0	1368.00	1369.77	1.149	1368.94	1370.71	0.33	1
3		5.46	15 c	301.0	1370.00	1373.61	1.199	1371.04	1374.55	0.24	2
4		5.38	15 c	115.0	1373.78	1374.97	1.035	1374.78	1375.90	0.71	3
5		4.71	15 c	44.0	1375.27	1375.91	1.455	1376.61	1376.78	0.21	4
6		4.11	18 c	121.0	1376.11	1377.30	0.984	1376.99	1378.07	0.31	5

Project File: SWD3 10-YEAR.stm

IDF File: SedgwickCo.IDF

Total No. Lines: 6

Run Date: 06-07-2007

NOTES: c = circular; e = elliptical; b = box; Return period = 10 Yrs.; * Indicates surcharge condition.

Hydraflow Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q byp (cfs)	Junc type	Curb Inlet		Grate Inlet			Gutter						Inlet			Byp line No	
							Ht (in)	L (ft)	area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	depth (ft)	spread (ft)	depth (ft)	spread (ft)		Dep (in)
1		0.00	0.00	0.00	0.00	Curb	6.0	10.00	0.00	0.00	0.00	Sag	2.00	0.038	0.030	0.000	0.02	0.42	0.02	0.42	0.00	Off
2		0.00	0.00	0.00	0.00	Curb	6.0	10.00	0.00	0.00	0.00	0.012	2.00	0.038	0.030	0.013	0.01	0.26	0.01	0.21	0.00	1
3		0.00	0.08	0.08	0.00	Curb	6.0	5.00	0.00	0.00	0.00	0.012	2.00	0.038	0.030	0.013	0.07	1.84	0.06	1.66	0.00	2
4		0.00	0.75	0.68	0.08	Curb	6.0	10.00	0.00	0.00	0.00	0.012	2.00	0.038	0.030	0.013	0.15	4.47	0.15	4.33	0.00	3
5		0.00	1.35	0.60	0.75	Curb	6.0	5.00	0.00	0.00	0.00	0.012	2.00	0.038	0.030	0.013	0.18	5.47	0.18	5.47	0.00	4
6		5.46*	0.00	4.11	1.35	DrGrt	0.0	0.00	0.00	4.00	4.00	0.010	4.00	0.020	0.020	0.013	0.26	30.00	0.26	30.00	0.0	5

Project File: SWD3 10-YEAR.stm

I-D-F File: SedgwickCo.IDF

Total number of lines: 6

Run Date: 06-07-2007

NOTES: Inlet N-Values = 0.013 ; Intensity = 79.39 / (Inlet time + 14.80) ^ 0.80; Return period = 10 Yrs. ; * Indicates Known Q added

Hydraflow Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr line No.	Line length (ft)	Defl angle (deg)	Junc type	Known Q (cfs)	Drng area (ac)	Runoff coeff (C)	Inlet time (min)	Invert El Dn (ft)	Line slope (%)	Invert El Up (ft)	Line size (in)	Line type	N value (n)	J-loss coeff (K)	Inlet/ Rim El (ft)	
1	End	264.0	119.0	Curb	0.00	0.00	0.00	0.0	1362.90	1.83	1367.74	18	Cir	0.013	0.50	1373.00	
2	1	154.0	-9.2	Curb	0.00	0.00	0.00	0.0	1368.00	1.15	1369.77	15	Cir	0.013	0.70	1374.57	
3	2	301.0	-19.7	Curb	0.00	0.00	0.00	0.0	1370.00	1.20	1373.61	15	Cir	0.013	0.50	1378.38	
4	3	115.0	9.2	Curb	0.00	0.00	0.00	0.0	1373.78	1.03	1374.97	15	Cir	0.013	1.50	1380.67	
5	4	44.0	-88.4	Curb	0.00	0.00	0.00	0.0	1375.27	1.45	1375.91	15	Cir	0.013	0.50	1380.70	
6	5	121.0	-10.8	DrGrt	9.28	0.00	0.00	0.0	1376.11	0.98	1377.30	18	Cir	0.013	1.00	1380.30	
Project File: SWD3 25-YEAR.stm						IDF File: SedgwickCo.IDF						Total number of lines: 6				Date: 06-07-2007	

Hydraflow Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	Dns line No.
1		6.32	18 c	264.0	1362.90	1367.74	1.833	1363.86	1368.70	0.22	End
2		6.32	15 c	154.0	1368.00	1369.77	1.149	1369.01	1370.78	0.39	1
3		6.30	15 c	301.0	1370.00	1373.61	1.199	1371.16	1374.62	0.28	2
4		6.16	15 c	115.0	1373.78	1374.97	1.035	1374.89	1375.96	0.81	3
5		5.33	15 c	44.0	1375.27	1375.91	1.455	1376.77	1377.01	0.17	4
6		4.65	18 c	121.0	1376.11	1377.30	0.984	1377.18	1378.12	0.34	5

Project File: SWD3 25-YEAR.stm

IDF File: SedgwickCo.IDF

Total No. Lines: 6

Run Date: 06-07-2007

NOTES: c = circular; e = elliptical; b = box; Return period = 25 Yrs.; * Indicates surcharge condition.

Hydraflow Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q byp (cfs)	Junc type	Curb Inlet		Grate Inlet			Gutter						Inlet			Byp line No	
							Ht (in)	L (ft)	area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	depth (ft)	spread (ft)	depth (ft)	spread (ft)		Dep (in)
1		0.00	0.00	0.00	0.00	Curb	6.0	10.00	0.00	0.00	0.00	Sag	2.00	0.038	0.030	0.000	0.02	0.42	0.02	0.42	0.00	Off
2		0.00	0.02	0.02	0.00	Curb	6.0	10.00	0.00	0.00	0.00	0.012	2.00	0.038	0.030	0.013	0.04	1.05	0.04	0.97	0.00	1
3		0.00	0.16	0.14	0.02	Curb	6.0	5.00	0.00	0.00	0.00	0.012	2.00	0.038	0.030	0.013	0.09	2.47	0.08	2.23	0.00	2
4		0.00	0.99	0.83	0.16	Curb	6.0	10.00	0.00	0.00	0.00	0.012	2.00	0.038	0.030	0.013	0.17	5.13	0.16	4.83	0.00	3
5		0.00	1.67	0.68	0.99	Curb	6.0	5.00	0.00	0.00	0.00	0.012	2.00	0.038	0.030	0.013	0.20	6.13	0.20	5.97	0.00	4
6		6.32*	0.00	4.65	1.67	DrGrt	0.0	0.00	0.00	4.00	4.00	0.010	4.00	0.020	0.020	0.013	0.27	31.00	0.27	31.00	0.0	5

Project File: SWD3 25-YEAR.stm

I-D-F File: SedgwickCo.IDF

Total number of lines: 6

Run Date: 06-07-2007

NOTES: Inlet N-Values = 0.013 ; Intensity = 97.12 / (Inlet time + 15.90) ^ 0.80; Return period = 25 Yrs. ; * Indicates Known Q added

Hydraflow Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr line No.	Line length (ft)	Defl angle (deg)	Junc type	Known Q (cfs)	Drng area (ac)	Runoff coeff (C)	Inlet time (min)	Invert El Dn (ft)	Line slope (%)	Invert El Up (ft)	Line size (in)	Line type	N value (n)	J-loss coeff (K)	Inlet/ Rim El (ft)	
1	End	264.0	119.0	Curb	0.00	0.00	0.00	0.0	1362.90	1.83	1367.74	18	Cir	0.013	0.50	1373.00	
2	1	154.0	-9.2	Curb	0.00	0.00	0.00	0.0	1368.00	1.15	1369.77	15	Cir	0.013	0.70	1374.57	
3	2	301.0	-19.7	Curb	0.00	0.00	0.00	0.0	1370.00	1.20	1373.61	15	Cir	0.013	0.50	1378.38	
4	3	115.0	9.2	Curb	0.00	0.00	0.00	0.0	1373.78	1.03	1374.97	15	Cir	0.013	1.50	1380.67	
5	4	44.0	-88.4	Curb	0.00	0.00	0.00	0.0	1375.27	1.45	1375.91	15	Cir	0.013	0.50	1380.70	
6	5	121.0	-10.8	DrGrt	11.62	0.00	0.00	0.0	1376.11	0.98	1377.30	18	Cir	0.013	1.00	1380.30	
Project File: SWD3 100-YEAR.stm						IDF File: SedgwickCo.IDF						Total number of lines: 6				Date: 06-07-2007	

Hydraflow Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	Dns line No.
1		7.41	18 c	264.0	1362.90	1367.74	1.833	1364.20	1368.78	0.25	End
2		7.41	15 c	154.0	1368.00	1369.77	1.149	1369.09	1370.97	0.41	1
3		7.34	15 c	301.0	1370.00	1373.61	1.199	1371.38*	1375.27*	0.28	2
4		7.12	15 c	115.0	1373.78	1374.97	1.035	1375.55*	1376.95*	0.79	3
5		6.12	15 c	44.0	1375.27	1375.91	1.455	1377.73*	1378.13*	0.19	4
6		5.34	18 c	121.0	1376.11	1377.30	0.984	1378.32	1378.59	0.17	5

Project File: SWD3 100-YEAR.stm

IDF File: SedgwickCo.IDF

Total No. Lines: 6

Run Date: 06-07-2007

NOTES: c = circular; e = elliptical; b = box; Return period = 100 Yrs.; * Indicates surcharge condition.

Hydraflow Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q byp (cfs)	Junc type	Curb Inlet		Grate Inlet			Gutter						Inlet			Byp line No	
							Ht (in)	L (ft)	area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	depth (ft)	spread (ft)	depth (ft)	spread (ft)		Dep (in)
1		0.00	0.00	0.00	0.00	Curb	6.0	10.00	0.00	0.00	0.00	Sag	2.00	0.038	0.030	0.000	0.02	0.42	0.02	0.42	0.00	Off
2		0.00	0.07	0.07	0.00	Curb	6.0	10.00	0.00	0.00	0.00	0.012	2.00	0.038	0.030	0.013	0.07	1.84	0.06	1.61	0.00	1
3		0.00	0.29	0.22	0.07	Curb	6.0	5.00	0.00	0.00	0.00	0.012	2.00	0.038	0.030	0.013	0.11	3.13	0.10	2.90	0.00	2
4		0.00	1.29	1.01	0.29	Curb	6.0	10.00	0.00	0.00	0.00	0.012	2.00	0.038	0.030	0.013	0.18	5.47	0.18	5.40	0.00	3
5		0.00	2.07	0.77	1.29	Curb	6.0	5.00	0.00	0.00	0.00	0.012	2.00	0.038	0.030	0.013	0.21	6.47	0.21	6.47	0.00	4
6		7.41*	0.00	5.34	2.07	DrGrt	0.0	0.00	0.00	4.00	4.00	0.010	4.00	0.020	0.020	0.013	0.29	33.00	0.29	33.00	0.0	5

Project File: SWD3 100-YEAR.stm

I-D-F File: SedgwickCo.IDF

Total number of lines: 6

Run Date: 06-07-2007

NOTES: Inlet N-Values = 0.013 ; Intensity = 126.77 / (Inlet time + 17.20) ^ 0.81; Return period = 100 Yrs. ; * Indicates Known Q added

Tab 4. Floodplain Submittal

A. Source of flood profile

The flood profile is not applicable to this development.

B. Nearest base flood elevations

The base flood elevations are shown off-site on FEMA maps, Exhibit 1-4.

C. Delineation of pre-developed regulatory floodplain/floodway limits

Limits of pre-developed floodplain/floodway limits are off-site (see Exhibit 1-4).

D. Delineation of post-developed regulatory floodplain/floodway limits

The limits of post-developed floodplain/floodway limits are not applicable to this development. The existing regulatory limits will not be changed.

E. Floodplain boundary determination per elevation

Not applicable to this development.

F. Provide source of floodway data table and discharges

Not applicable to this development.

G. Provide all hydrologic and hydraulic study information for site-specific floodplain studies

Not applicable to this development.

H. Provide regulatory floodway and four natural profile models (10, 50, 100, & 500-yr) for existing and future watershed conditions

Not applicable to this development.

I. Location of floodplain/floodway limits and relationship of site to upstream/downstream properties

Not applicable to this development.

J. Floodplains and floodways located within a Reserve

Not applicable to this development.

Tab 5. Federal, State, and Local Permits

A. US Army Corps of Engineers – Regulatory Program Permits

Not applicable to this development.

B. Kansas Department of Agriculture – Division of Water Resources Permits

Not applicable to this development.

C. Federal Emergency Management Agency (FEMA) Letter of Map Changes

Not applicable to this development.

D. Kansas Department of Transportation

A KDOT Right-of-Way use Permit is included as Exhibit 5-1.

E. Sedgwick County Right-of-Way Permit

Not applicable to this development.

INWOOD CROSSINGS

EXHIBIT 5-1

Const./Maint.
Petitioner
District
Area
City or Sub-Area

KANSAS DEPARTMENT OF TRANSPORTATION
Bureau of Construction and Maintenance

Permit No. _____
Route _____
Co. _____
State Highway _____
City Conn. Link _____
City _____

**HIGHWAY PERMIT
USE OF RIGHT OF WAY**

THIS AGREEMENT, made and entered into, by and between the Secretary of Transportation of the State of Kansas, hereinafter referred to as the "Secretary" and LDG Developments, LLC (Name of Firm or Individual) (_____) (Tel. No.)
1473 South Fourth Street, Louisville, Kentucky, 40208,
(Street) (City) (State) (Zip),
hereinafter referred to as the "Petitioner" and the City of, N/A, hereinafter referred to as the "City".
(If Not Applicable, Enter N/A)

WHEREAS, the Secretary has jurisdiction over highway right-of-ways within the State Highway System of Kansas, and

WHEREAS, the Secretary (and City) believe it is in the interest of the Citizens of the State of Kansas to permit certain work or projects to be performed upon Highway right-of-ways, and

WHEREAS, the Petitioner requests permission and authority from the Secretary (and City) to perform certain work, described as follows:

The construction needing Right of Way use shall include three 12" PVC pipes along with an overflow ditch, both of which will daylight into the north ditch along K-96. Erosion protection at all outlets shall be included. The run-off will be out of a dry-detention basin within the proposed development and the flow volume will be less than currently discharging from the site and into the K-96 ditch.

Said work is located on public right-of-way in, upon or along State Highway Route K-96, Reference Point _____ (or City Connecting Link Route _____ on Inwood/34th North St.) in Sec. 31 TWP. 26S Range 2E, Sedgwick County, 0.4 Miles(km) West (direction) from K-96 and Rock Road Interchange (Jct. or county line), and

WHEREAS, the Secretary has delegated full and complete authority to the District Engineers of the Kansas Department of Transportation (KDOT) to execute Highway Permit Agreements, hereinafter referred to as "Permits," for and on the Secretary's behalf.

NOW THEREFORE, in consideration of the permission granted hereunder by the Secretary (and City) to utilize Highway right-of-ways in the manner described above, the following terms and conditions are mutually agreed to by the Petitioner, the Secretary (and the City).

1.0 PLANS: Petitioner shall furnish five (5) sets of comprehensive plans or sketches, 8 1/2" x 11" or 11" x 17", of the proposed work.

1.1 Plans for utility installations must include a description of the size, type, and method of installation for the proposed facilities to be located within highway right-of-ways, and adequate sketches to indicate the location of the proposed installation with respect to the traveled way of the highway, the right-of-way lines and, where applicable, the control of access lines,

1.2 An accurate "As Built" Construction Plan shall be provided for deviation from the approved Plan.

2.0 MATERIAL AND METHODS: All requests to perform work in, upon or along Highway right-of-ways must be approved by the District Engineer (and City). In Cities the Petitioner will obtain additional Permits, as required by the City.

2.1 The Petitioner shall furnish all material, do all work and pay all costs for the work described on this Permit,

2.2 All utility installations shall comply with the conditions and requirements of the KDOT Utility Accommodation Policy, current edition, (and City standards when they exceed those of the KDOT).

2.3 Drainage structure requirements shall be determined by the Petitioner, but said requirements are subject to review and approval by the District Engineer (and City).

2.4 All materials and construction methods used on work within the limits of the right-of-way shall be equal to or better than that required by the "Standard Specifications for State Road and Bridge Construction," current edition.

3.0 INITIATION AND COMPLETION OF WORK: Petitioner agrees to notify the District Engineer (and City) or their duly authorized KDOT representative _____

before work is initiated and again when the work is completed.

3.1 An approved signed copy of this Permit shall be on the premises before and during the period any work is performed.

3.2 All-work, including right-of-way restoration, shall be completed within _____ calendar days of APPROVAL DATE, otherwise all this Permit is rescinded. If work has not been started within the completion time, this Permit becomes null and void.

4.0 INSPECTION: The Petitioner will be responsible for supervising construction to insure compliance with KDOT (and City) policies and standards.

5.0 ACCEPTANCE: (Check One) KDOT ; City ; will be responsible for acceptance of restored right-of-way.

6.0 RIGHT-OF-WAY: Except for authorized changes, Petitioner agrees to restore said right-of-way to a condition equal to or better than existed prior to approval of the work described on this Permit.

6.1 Any sod, shrubs or trees destroyed by this work shall be replaced as directed by the District Engineer (and City).

6.2 The right-of-way shall be kept free from parking, advertising signs or any other commercial activity.

7.0 OBSTRUCTION OF TRAFFIC: Petitioner agrees that highway (and connecting link) traffic will be free of interference unless specifically provided for as a part of this Permit. Traffic protection shall be in accordance with the "Manual on Uniform Traffic Control Devices," current edition. This includes the use of approved safety vests and traffic control devices.

8.0 MAINTENANCE: All utility installations shall be maintained or caused to be maintained by the Owner.

9.0 BOND WAIVED: In lieu of bond, Petitioner agrees that the Secretary may revoke the permit and remove any work performed. The Petitioner agrees to reimburse the Secretary for any cost incurred by the Secretary to restore the right-of-way. The Secretary will not authorize any other highway permits until the Petitioner has either reimbursed the Secretary or restored the right-of-way.

10.0 LIABILITY: The Petitioner shall hold harmless the Secretary from personal injury and property damage claims arising out of the Petitioner's act or omission. If the Secretary defends a third party's claim, the Petitioner shall indemnify the Secretary for personal injury damages, property damages, and related expenses the Secretary incurs arising out of the Petitioner's act or omission. For purposes of this provision, the term Petitioner includes Petitioner's employees, agents, subcontractors (at any tier), suppliers (at any tier), successors, and assigns. The Petitioner shall obtain the insurance coverage specified below unless the Secretary or the District Engineer modifies these requirements.

10.1 INSURANCE: Liability Insurance. The Petitioner shall carry "General Liability" insurance under a claims-made policy that has a minimum combined single limit of \$2,000,000 for personal injury and property damage and that contains the following coverage: Comprehensive Form, Premises-Operation, Underground Hazard, Products/Completed Operations Hazard, Contractual Insurance, Broad form Property Damage, Independent Contractors, and Personal Injury. Worker's Compensation: The Petitioner shall carry "Worker's Compensation and Employer's Liability" insurance that complies with Kansas state law. Automobile Liability: The Petitioner shall carry "Automobile Liability" insurance under a claims-made policy that has a minimum combined single limit of \$1,000,000.00 for personal injury and property damage and that contains the following coverage: Comprehensive Form, Owned, Hired, and Non-Owned.

10.2 "Certificate of Insurance". "Certificate of Insurance". Before signing the permit, the Petitioner shall furnish to the Secretary "Certificates of Insurance" showing the Petitioner carries insurance in the amounts and type this section requires. The Petitioner shall obtain insurance only from insurers on the approved Federal Treasury List and authorized by the Kansas Commissioner of Insurance. The "Certificates of Insurance" shall include a clause requiring the insurer to notify the Secretary thirty (30) days in advance of a change in or cancellation of the insurance contracts.

10.3 The Petitioner shall maintain this insurance until the District Engineer releases the Petitioner from any Permit obligation.

11.0 PIPELINE LIABILITY: For attachments to bridges or other structures and for roadway crossings of PIPELINES CARRYING PETROLEUM, HAZARDOUS AND/OR CORROSIVE PRODUCTS, the Petitioner shall solely assume all risk and liability for accidents and damages that may occur to persons or property by reason of the operation of the pipeline attached to said bridge or structure or crossing said roadway.

11.1 The Petitioner shall maintain the insurance required in Section 9.0 for as long as the pipeline remains attached to the bridge or other structure or for as long as the pipeline crosses the roadway. The insurance contract shall cover claims for such length of time as the law permits such claims.

12.0 ENVIRONMENTAL LIABILITY AND INDEMNIFICATION: The Petitioner shall assume all risk and liability for all claims suits, actions, causes of actions, demands, rights, damages, costs, expenses, penalties, fines or compensation whatsoever, direct or indirect, which the Petitioner now has or which the Petitioner may have in the future on account of or in any arising out of or in connection with known or unknown physical or environmental condition of the Petitioner's property or operation. The Petitioner shall comply with federal, state and local rules and regulations. These rules include, without limitation, the Toxic Substances Control Act, the Comprehensive Environmental Response, Compensation and Liability Act, and the Resource Conservation Recovery Act. The Petitioner shall indemnify the Secretary against and from all damages, expenses and costs incurred by any person, the State of Kansas, or the United States Government for determining and undertaking remedial action, any fines or penalties assessed under state or federal laws, contract claims, personal injury claims, and damage of or loss of natural resources. For purposes of this provision, the term Petitioner includes Petitioner's employees, agents, subcontractors (at any tier), suppliers (at any tier), successors, and assigns.

13.0 HIGHWAY IMPROVEMENTS AND/OR MAINTENANCE: In the event the Secretary deems it necessary or proper to make any alteration or improvement along or upon the highway right-of-way which is the subject of this Permit, the Petitioner agrees to hold the Secretary harmless for any and all damage or injury to said Petitioner's facilities, whether finished or unfinished, as well as damage or injury to Petitioner's equipment, materials, employees, agents or contractees. The Petitioner further agrees that the work approved on this permit will be conducted in such a manner as not to interfere with construction or other work being performed by the KDOT (or City) or its contractors in the vicinity of the Petitioner's work or project.

13.1 The Petitioner agrees, that within a reasonable time after receiving written notice from the Secretary that Petitioner's facilities are in conflict with KDOT's new construction or major maintenance operations, to alter, change location or move their construction work or facilities without cost or expense to the Secretary.

13.2 It is further agreed that written notice will not be required for KDOT normal maintenance such as sign installation or replacement, cleaning existing ditches and channels, etc., whether planned or not.

14.0 ABANDONED OR RETIRED IN PLACE: The Petitioner agrees to notify the Secretary when the permit work has been abandoned or retired in place and to be responsible for all cost associated with removal of abandoned or retired in place upon highway right-of-way.

This Permit is hereby accepted and its provisions agreed to by the parties hereto.

APPROVED:

PETITIONER:

CITY OF _____
(when applicable)

Mayor City Mgr. City Engr.

City Clerk

Owner (Signature)

William Shircliff

Owner

1473 South Fourth Street, Louisville, KY 40208

Street Address (City, State, Zip Code)

Timothy R. Austin, P.E.

Agent Lessee Contractor

5940 East Central, Suite #200, Wichita, KS 67208

Street Address (City, State, Zip Code)

timaustin@poekansas.com

Contact Email

RECOMMENDED BY: _____

Area/Metro Engr. Area Supt. Utility Coord.

PERMIT APPROVAL DATE: _____

SECRETARY OF TRANSPORTATION
OF THE STATE OF KANSAS

BY: _____
District Engineer