

DRAINAGE REPORT

FOR

**WATERFRONT COMMERCIAL, WATERFRONT
RESIDENTIAL AND GREENWICH OFFICE PARK**

Wichita, Kansas

REVISED AUGUST 2007

APRIL 2007



Public Works, Engineering Division Final Drainage Plan Submittal Checklist

Reviewer: _____	Date: _____
Subdivision Name: _____	Location: _____
Total Land Area Of Ownership: _____ Acres	
Type: _____ Residential _____ Commercial _____ Industrial _____ Recreation _____ Municipal _____ Other	
Applicant: _____	Contact: _____ Phone #: _____
Engineer: _____	Contact: _____ Phone #: _____

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					
B. Nearest base flood elevations					
C. Delineation of pre-developed regulatory floodplain/floodway limits					
D. Delineation of post-developed regulatory floodplain and floodway limits					
E. Floodplain boundary determination per elevation (project limits shown)					
F. Provide source of floodway data table and discharges					
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					
H. Provide regulatory floodway and four natural profile models (10,50,100, and 500-yr) for existing and future watershed conditions					
I. Location of floodplain/floodway limits and relationship of site to upstream/downstream properties (floodplain limits to be per elevation and scaled location)					
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)					
B. Kansas Department of Agriculture - Division of Water Resources Permits (Stream Obstruction, Channel Change, Flood Plain Fill, Levee, Water Appropriations, Dam safety permit, etc.)					
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.					
D. Kansas Department of Transportation					
E. Sedgwick County Right-of-way Permit					

Tab 1. Project Narrative

A. Location

The site is located in Wichita, Sedgwick County, Kansas, on the northeast corner of Webb Road and 13th Street North. The site is bounded by Webb Road to the west, 13th Street to the south, and undeveloped meadow area to the east. The Burlington Northern Railroad abuts the property to the north, with the Eastminster Addition to the north of the railroad. It lies in the Southwest Quarter, Section 9, Township 27 South, Range 2 East. Currently, the total site area accounted for in this report is approximately 254 acres:

- 156 acres of the Waterfront Addition, including existing and future development area,
- 60 acres of the platted Waterfront Residential
- 20.8 acres of the Greenwich Office Park, including 14 acres currently platted and 6.8 acres of unplatted area.
- 17.5 acres of the Foliage Addition.

The site is shown on the Andover, Kansas Quadrangle, Figure 1.1.

B. Discussion of Development

The Waterfront is planning to expand commercial development east of the current development and the Foliage Addition will develop as commercial. Current and future development in Basins 045, 053, 055, 061, 065, 070, 080 and 166 has been modeled for commercial and residential use. Approximately, 60 acres will be developed into 75 residential lots as Waterfront Residential. Approximately, 14 acres will be developed commercially as the Greenwich Office Park. Future development is shown on the Future TR-20 key map, Figure 1.2.

C. Discussion of Offsite

Approximately 794 acres drained into the existing lake. Approximately 225 acres drained from the north to the Eastminster Addition, directly north of the site. This runoff passed through an existing detention facility east of the Eastminster Presbyterian Church, north of the railroad. An additional 105 acres drained to the existing 11'x9' reinforced concrete box (RCB) which passed under the railroad tracks. The runoff then passed through an existing channel and into the silt pond on the site. An additional 28 acres drained to the silt pond. An existing earthen dam separated the silt pond from the lake. The runoff must pass around the dam to the west and into the lake. An additional 196 acres drained to the existing lake. This includes approximately 48 acres from the west side of Webb Road. This area drains through an existing 5'X4' RCB under Webb Road and into the lake. Most of the developable area upstream of the site is already developed, with the exception of the area just west of Webb Road, which is currently undeveloped pasture land. An area of approximately 17 acres on the northeast corner of 13th Street and Webb Road drains into the pond. This land is platted as the Foliage Addition, but is currently undeveloped. This land has been modeled as undeveloped in the pre-project condition.

D. Summary of Runoff

The pre-project lakes provided 167 acre-feet of storage in the 100-year design event. Storage calculations are shown in Table 1.

Table 1. Pre-Project Storage Calculations.

Pre-Project Conditions Total Storage=167ac-ft		
Main Pond Storage = 167ac-ft	100-Year=1372.0	
Stage	Discharge (cfs)	Storage (ac-ft)
1368.7	0	0
1369	100	13.6
1370	180	60.4
1371	490	109.6
1372	1160	167.3

The Waterfront is planning to expand commercial development east of the current development and the Foliage Addition will develop as commercial. Approximately, 60 acres will be developed into 75 residential lots as Waterfront Residential. Approximately, 14 acres will be developed commercially as the Greenwich Office Park.

The current detention ponds do not provide adequate detention for future development

The size of the detention will need to be increased to decrease peak flow rates from the property. The outlet structure of the hotel pond will be modified to provide more detention and the area of the pond will be increased. Additional detention will also be constructed in the residential and commercial areas.

A comparison of pre-project and post-project flows is in Table 2

Table 2. Flow rates to 13th Street.

Description	Design Storm Flows (cfs)			
	2-Yr	5-Yr	10-Yr	100-Yr
Pre-Project to 13 th Street	78	117	143	239
Post-Project to 13 th Street	77	117	141	216
Pre-Project out of Beech Lake	224	396	527	1167
Post-Project out of Beech Lake	219	392	517	1111

The proposed detention in this project provides detention for future Waterfront Commercial, Waterfront Residential, Greenwich Business Park and Foliage Addition development.

E. Best Management Practices

The site will be seeded or sodded after construction of grading and utilities are complete. The outlet structures of the detention ponds will be protected against erosion.

F. Plat

The plats are included, Figure 1.3.

G. Preliminary Grading Plan

The preliminary lot grading plan is included for Waterfront Residential, Figure 1.4. Grades on commercial sites will be determined with site development.

H. Professional Engineer Seal

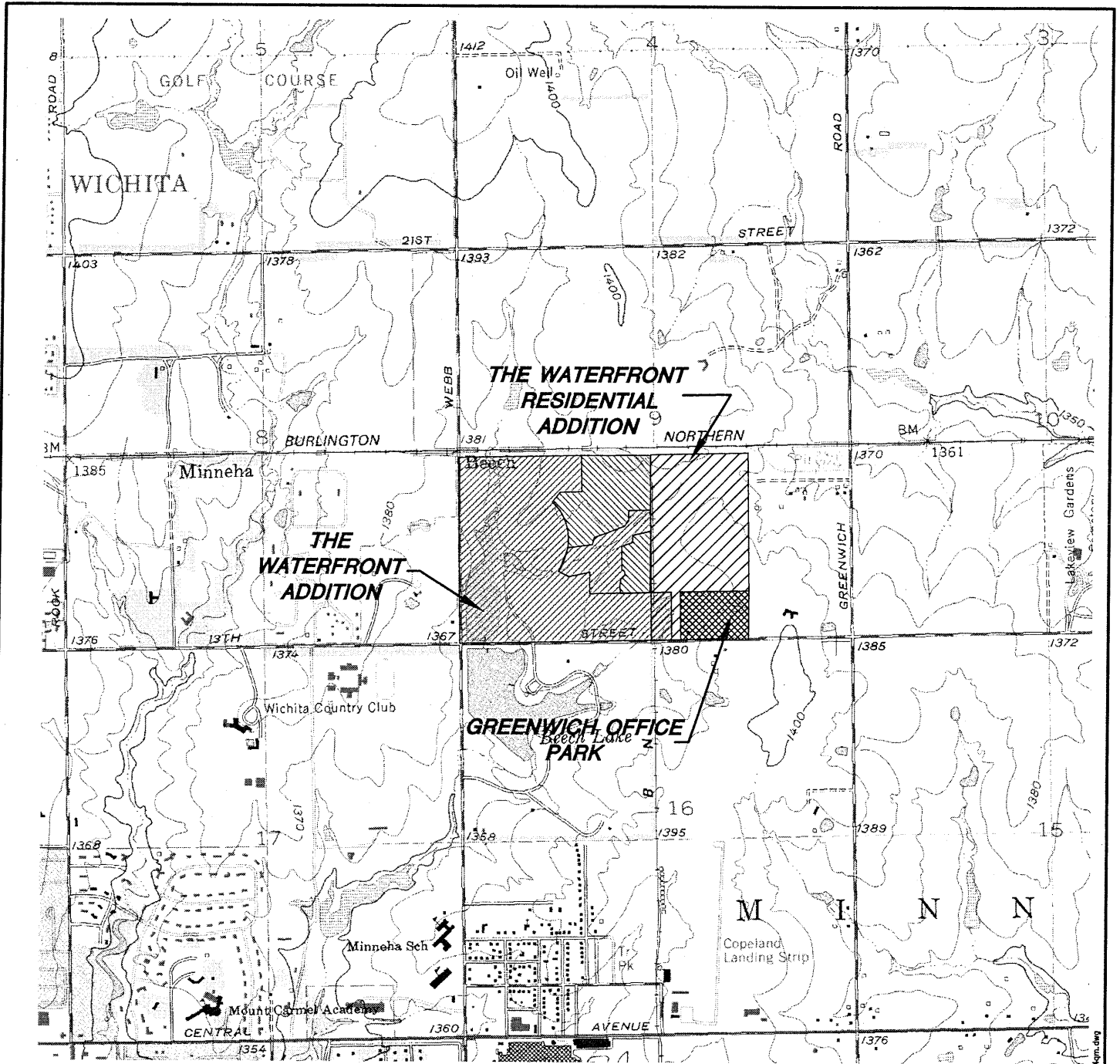
The cover of the report will be signed and dated.

I. CD

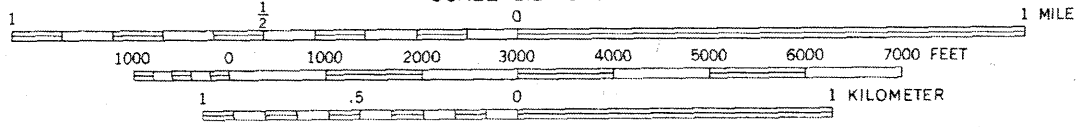
A CD of the drainage report in PDF format is attached to the inside front cover of the bound report. The checklist is included at the front of the report.

Figure 1.1

USGS Quadrangle Map



SCALE 1:24 000



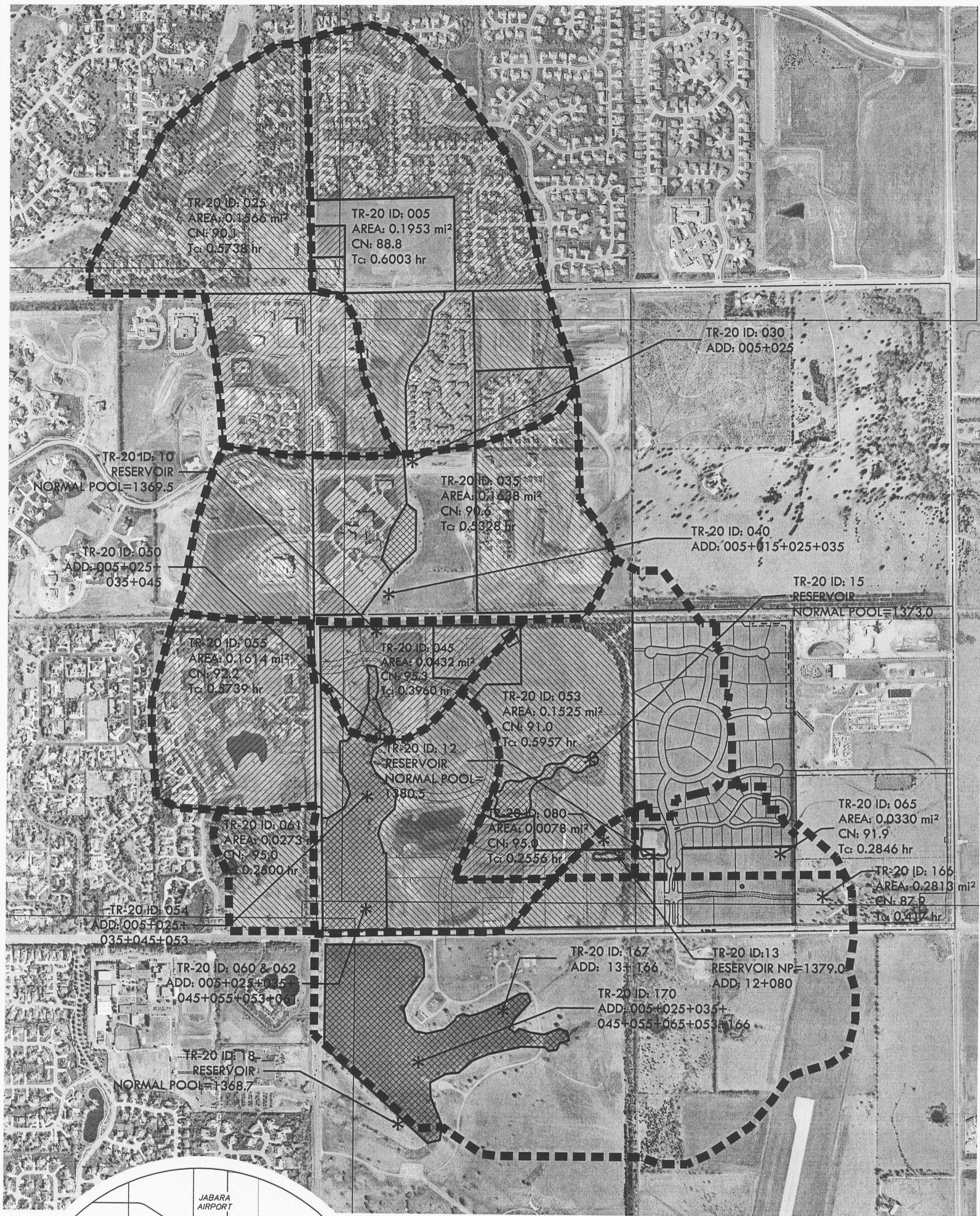
CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

MKEC ENGINEERING CONSULTANTS, INC. 411 N. WEBB ROAD WICHITA, KS. 67206 316 - 684 - 9600	THE WATERFRONT ADDITION PROJECT NAME		
	ANDOVER, KANSAS QUADRANGLE SHEET TITLE		
KLA DESIGN BY:	CMJ DRAWN BY:	GA CHECKED BY:	
APRIL 2007 DATE	02014 JOB NO.	1 / 1 SHEET/OF	

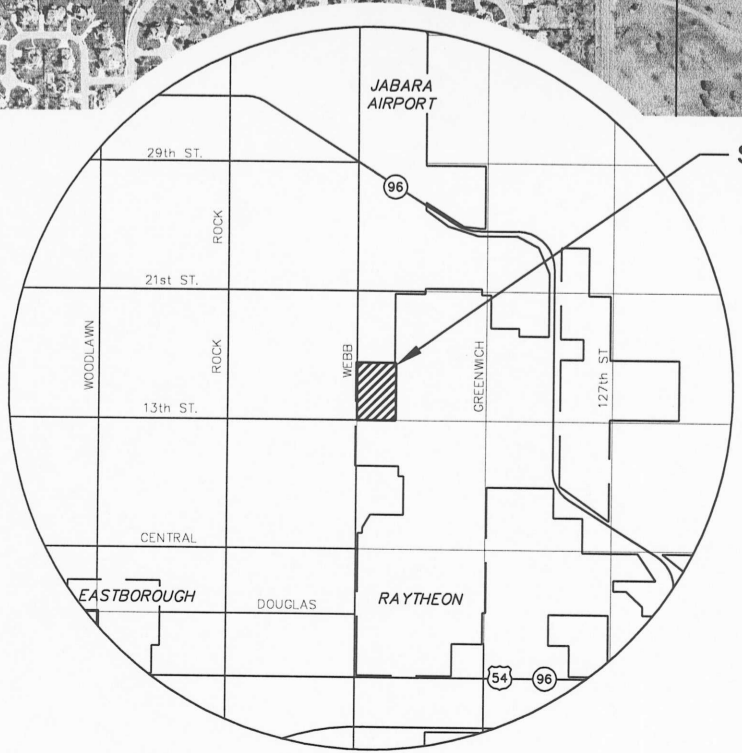
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Figure 1.2

Future TR-20 Key Map



2003 AERIAL



VICINITY MAP

SITE LOCATION

LEGEND

- POLE - POLE
- HLP - HIGH LINE POLE
- - WATERSHED BOUNDARIES
- PR - POWER POLE AND GUY ANCHOR
- TR - TELEPHONE RISER
- - INLET
- BM - BENCHMARK

BENCHMARKS

- BM#1 Square cut SE. corner headwall 44' N. and 42' E. of W. 1/4 cor., Sec. 9, T27S, R2E
ELEV. = 192.73'(City Datum)
1380.13 NGVD
- BM#2 Square cut SW. corner signal light pole base NE. corner Webb and 13th.
ELEV. = 185.945'(City Datum)
1373.345' NGVD



SCALE: 1"=400'



REVISED: AUGUST 2007

WATERFRONT ADDITION
PROJECT NAME

FUTURE CONDITIONS
TR-20 KEY MAP
DESIGN TITLE

KLA DESIGN CMJ DRAWN BY
KLA APRIL 2007 CHECKED BY: DATE

02014 1 / 1
JOB NO. SHEET / OF

MKEC
ENGINEERING
CONSULTANTS, INC.

411 N. WEBB ROAD
WICHITA, KS. 67206
316-684-9600

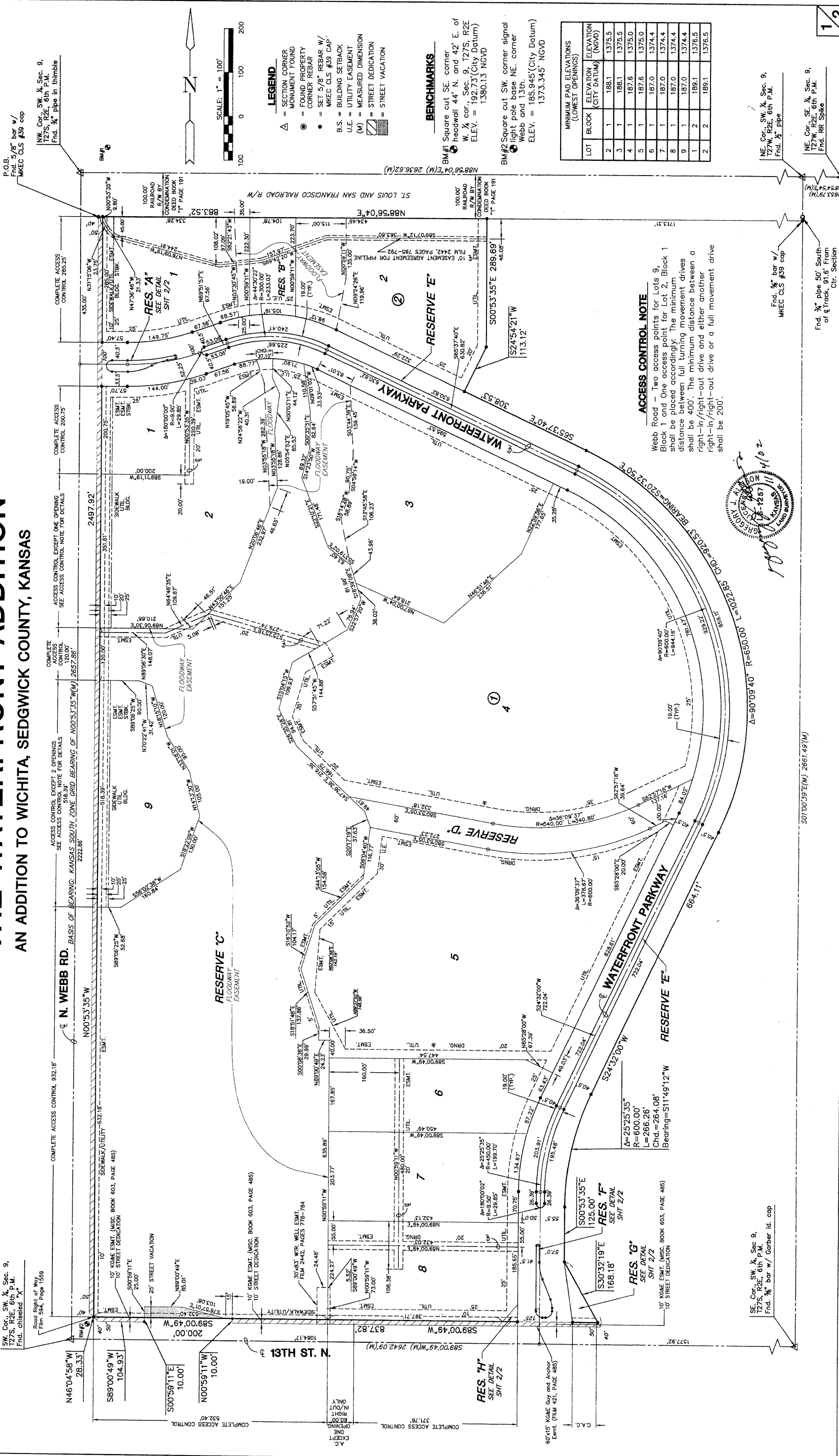
Figure 1.3

Plat

FINAL PLAT

THE WATERFRONT ADDITION

AN ADDITION TO WICHITA, SEDGWICK COUNTY, KANSAS



LEGEND

- △ = SECTION CORNER MONUMENT FOUND
- = FOUND PROPERTY CORNER REBAR
- = SET 5/8" REBAR W/ MKEC CLS #39 CAP.
- B.S. = BUILDING SETBACK
- U.E. = UTILITY EASEMENT
- (M) = MEASURED DIMENSION
- ▭ = STREET DEDICATION
- ▭ = STREET VACATION

BENCHMARKS

- BM#1 Square cut SE corner headwall 44' N. and 42' E. of W. 1/4 cor., Sec. 9, T27S, R2E ELEV. = 192.73 (City Datum) 1380.13 NGVD
- BM#2 Square cut SW corner signal light pole base NE corner Webb and 13th. ELEV. = 185.945 (City Datum) 1373.345 NGVD

MINIMUM PAD ELEVATIONS (LOWEST OPENINGS)		
LOT	BLOCK	ELEVATION (NGVD)
2	1	188.1
3	1	188.1
4	1	187.6
5	1	187.6
6	1	187.0
7	1	187.0
8	1	187.0
9	1	187.0
1	2	188.1
2	2	189.1

ACCESS CONTROL NOTE

Webb Road - Two access points for Lots 9, Block 1 and one access point for Lot 2, Block 1 shall be placed accordingly: The minimum distance between full turning movement drives shall be 400'. The minimum distance between a right-in/right-out drive and either another right-in/right-out drive or a full movement drive shall be 200'.



3000

FINAL PLAT THE WATERFRONT SECOND ADDITION AN ADDITION TO WICHITA, SEDGWICK COUNTY, KANSAS

I, Gregory J. Allison, a Registered Land Surveyor in Kansas, do hereby certify that I have been in responsible charge of surveying and planning of "THE WATERFRONT SECOND ADDITION" an addition to Wichita, Sedgwick County, Kansas, into Lots, a Block, Reserve, and a Street, the same being accurately set forth in the accompanying plat and described herein. A tract of land lying in the Southwest Quarter, Section 9, Township 27 South, Range 2 East, of the 6th Principal Meridian, Wichita, Sedgwick County, Kansas; said tract being more particularly described as follows:

COMMENCING at the Southwest corner of said Southwest Quarter; thence along the South line of said Southwest Quarter on a Kansas South Zone Grid Bearing of N89°00'49"E, 1139.25 feet; thence N00°59'11"W, 50.00 feet to the Southwest corner of Reserve "G"; The Waterfront Addition, an addition to Wichita, Sedgwick County, Kansas; said corner being the POINT OF BEGINNING; thence N09°02'13"W, 137.65 feet along the West line of said Reserve; thence N00°53'35"W, 125.00 feet along the East line of said Addition to a point on a curve to the right; thence along said curve and along said East line of said Addition, 266.26 feet, said curve having a central angle of 25°25'35", a radius of 600.00 feet, and a long chord distance of 264.08 feet, bearing N11°49'12"E, thence N24°32'00"E, 479.65 feet along said East line of said Addition; thence S65°24'40"W, 160.61 feet; thence N78°25'09"E, 284.94 feet; thence S00°59'11"E, 372.76 feet; thence S75°42'05"W, 37.54 feet to a point on a curve to the right; thence along said curve 60.95 feet, said curve having a central angle of 172°45'59", a radius of 200.50 feet, and a long chord distance of 60.71 feet, bearing S84°24'35"W; thence S00°59'11"E, 488.43 feet; thence S00°59'11"E, 69.28 feet; thence S00°59'11"E, 35.36 feet to a point lying 40 feet North of the South line of said Southwest Quarter; thence parallel with and 40 feet North of said South line S89°00'49"W, 570.34 feet; thence N30°32'19"W, 11.50 feet to the Southeast corner of said Reserve "G"; lying 50 feet North of the South line of said Southwest Quarter; thence along the South line of said Reserve "G", S89°00'49"W, 58.00 feet to the POINT OF BEGINNING.

Contingent street dedication recorded on Film 378, Page 142; and all reserves, streets, utility easements, building setbacks, and access control within the above described property is 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 ___ day of _____, 2003.

Gregory J. Allison, PE, LS #1257
MKEC Engineering Consultants, Inc.
411 North Webb Road
Wichita, Kansas 67206

Know all men by these presents that we the undersigned property owners of the land above set forth in the Registered Land Surveyor's Certificate, have caused the same to be surveyed and platted into Lots, a Block, a Reserve, and a Street the same to be known as "THE WATERFRONT SECOND ADDITION," an addition to Wichita, Sedgwick County, Kansas. Easements for the construction and maintenance of public utilities and drainage, as indicated on the accompanying plat are hereby granted to the public. Reserve "A" is platted for sidewalks, monuments, landscaping, irrigation, berming, and open space. The reserve shall be owned and maintained by the lot owners or homeowners association. The street is hereby dedicated to and for the use of the public. A drainage plan has been developed for this plat and all drainage easements, right-of-way, or reserves shall remain at established grades or as modified with the approval of the applicable City or County Engineer, and unobstructed to allow for the conveyance of storm water. All abutters right of access to or from 13th Street over and across the South line of "THE WATERFRONT SECOND ADDITION" are hereby granted to the appropriate governing body, provided however Lots 2, and 3 shall have access at two locations, each access point shall be placed accordingly. The minimum distance between full turning movement drives shall be 400'. The minimum distance between a right-in/right-out drive and either another right-in/right-out drive or a full movement drive shall be 200'; as indicated on the face of the plat.

BECH LAKE INVESTMENT, LLC, A KANSAS LIMITED LIABILITY COMPANY

Johnny Stevens, Manager
Stephen L. Clark, Manager
Manager

STATE OF KANSAS, SEDGWICK COUNTY) ss:
This instrument was acknowledged before me on ___ day of _____, 2003, by Johnny Stevens, and Stephen L. Clark, Managers, Bech Lake Investment, LLC, a Kansas Limited Liability Company.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, the day and year last above written.

My Term Expires: _____, Notary Public

The Waterfront Holding Co., LLC, A KANSAS LIMITED LIABILITY COMPANY

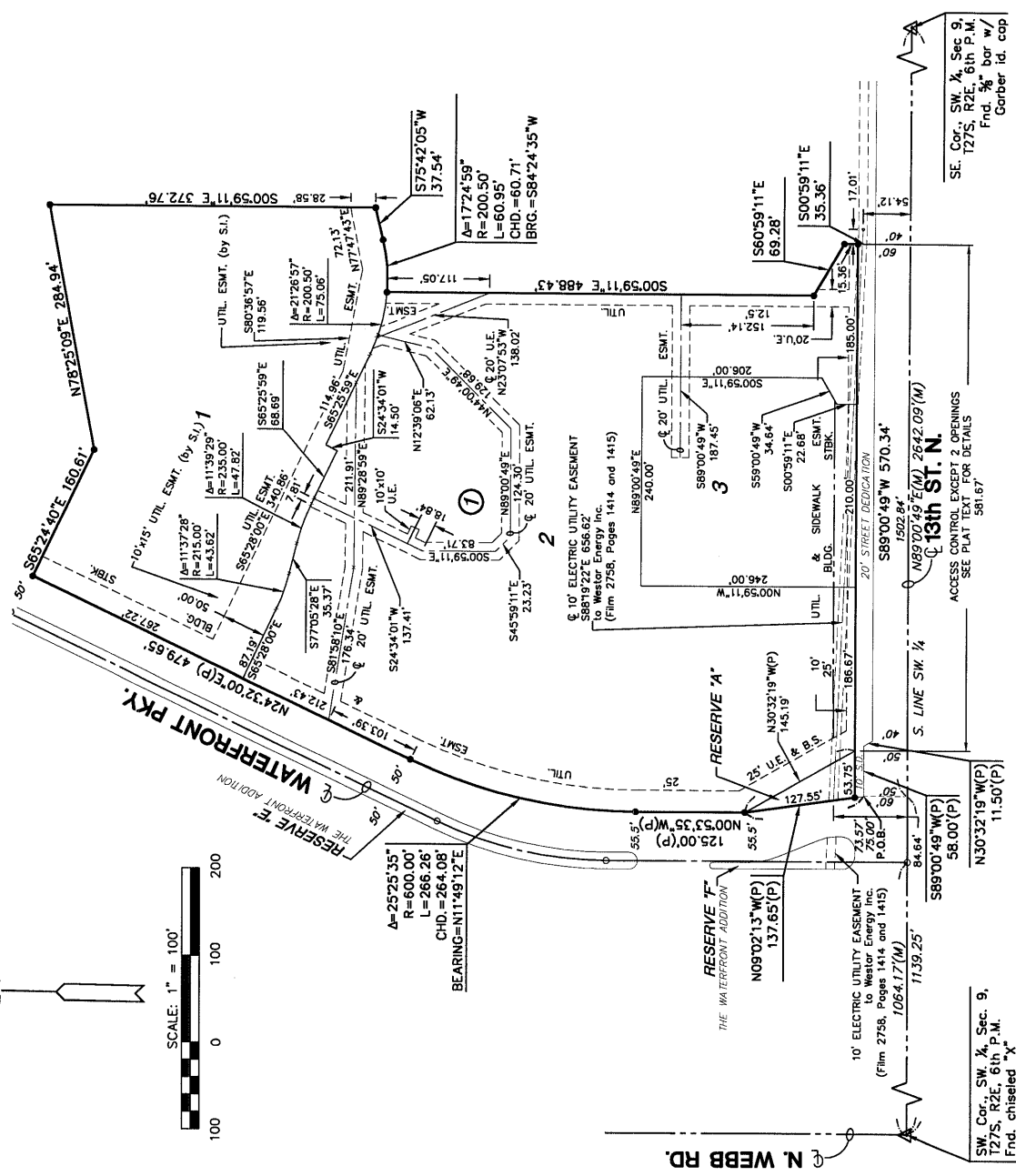
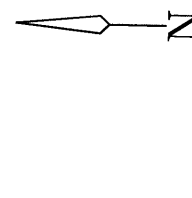
Johnny Stevens, Manager
Stephen L. Clark, Manager
Manager

STATE OF KANSAS, SEDGWICK COUNTY) ss:
This instrument was acknowledged before me on ___ day of _____, 2003, by Johnny Stevens, and Stephen L. Clark, Managers, The Waterfront Holding Co., LLC, a Kansas Limited Liability Company.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, the day and year last above written.

My Term Expires: _____, Notary Public

- LEGEND**
- ▲ = Section Corner Monument Found
 - = Set 5/8" Rebar W/ MKEC CLS 39 Id. Cap
 - S.D. = Street Dedication
 - U.E. = Utility Easement
 - D.E. = Drainage Easement
 - (P) = Platted
 - (M) = Measured



SE. Cor., SW ¼, Sec. 9, T27S, R2E, 6th P.M. Fnd. 3/4\"/>

SW. Cor., SW ¼, Sec. 9, T27S, R2E, 6th P.M. Fnd. chiseled \"/>

We Commerce Bank, N.A., holders of a mortgage on the above described property, do hereby consent to the plat of "THE WATERFRONT SECOND ADDITION."

COMMERCE BANK, N.A.

David W. Harris, Senior Vice President

This instrument was acknowledged before me on ___ day of _____, 2003, by David W. Harris, Senior Vice President, Commerce Bank, N.A.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, the day and year last above written.

My Term Expires: _____, Notary Public

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

Dated this ___ day of _____, 2003

WICHITA-SEDGWICK COUNTY METROPOLITAN PLANNING COMMISSION

Ronald L. Marnell, Chair

John L. Schlegel, Secretary

At the direction of the City Council.

Carlos Mayans, Mayor

Karen Schofield, City Clerk

Entered on transfer record this ___ day of _____, 2003

Don Brace, County Clerk

STATE OF KANSAS, SEDGWICK COUNTY) ss:

This is to certify that this instrument was filed for record in the Register of Deeds office this ___ day of _____, 2003, at ___ o'clock ___ A.M. and is duly recorded.

Bill Meek, Register of Deeds

Linda Kizfrie, Deputy

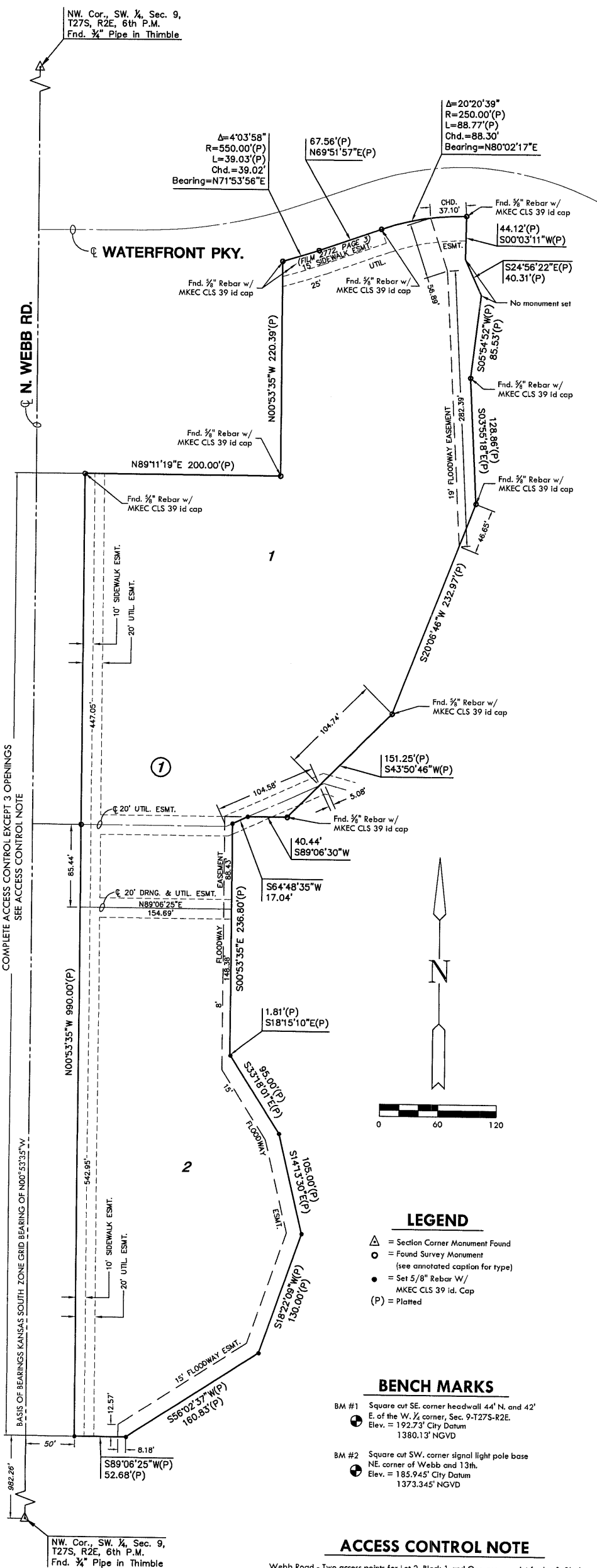
Reviewed in accordance with K.S.A. 58-2005 on this ___ day of _____, 2003.

Tricia L. Robello, LS #1246
Deputy County Surveyor
Sedgwick County, Kansas

FINAL PLAT

THE WATERFRONT THIRD ADDITION

AN ADDITION TO WICHITA, SEDGWICK COUNTY, KANSAS



We, MKEC Engineering Consultants, Inc., a Registered Corporate Land Surveyor in Kansas, do hereby certify that we have been in responsible charge of surveying and platting of "THE WATERFRONT THIRD ADDITION" an addition to Wichita, Sedgwick County, Kansas, into Lots, and a Block, the same being accurately set forth in the accompanying plat and described herein:

A replat of a portion of land lying in "The Waterfront Addition", an addition to Wichita, Sedgwick County, Kansas; A portion of Reserve "C", of said addition, TOGETHER WITH; A replat of Lots 2 and 9, Block 1, of said addition, said replat being more particularly described as follows:

BEGINNING at a the Southwest corner of said Lot 9, thence along the West line of said addition on a platted Kansas South Zone Grid Bearing of N00°53'35"W, 990.00 feet to the Southwest corner of Lot 1, said block and addition; thence along the South line of said Lot 1, N89°11'19"E, 200.00 feet to the Southeast corner of said Lot 1; thence along the East line of said Lot 1, N00°53'35"W, 220.39 feet to a point on a curve to the left said curve being coincident with the South right-of-way line of Waterfront Parkway; thence along said South line and along said curve 39.03 feet, said curve having a central angle of 04°03'58", a radius of 550.000 feet, and a long chord distance of 39.02 feet, bearing N71°53'56"E; thence along said South line N69°51'57"E, 67.56 feet to a point on a curve to the right being coincident with the said South line; thence along said curve and said South line 88.77 feet to the Northeast most corner of said Lot 2, said curve having a central angle of 20°20'39", a radius of 250.00 feet, and a long chord distance of 88.30 feet, bearing N90°02'17"E; thence along the East line of said Lot 2, S00°03'11"W, 44.12 feet; thence continuing along said East line S24°56'22"E, 40.31 feet; thence continuing along said East line S05°54'52"W, 85.53 feet; thence continuing along said East line S03°55'18"E, 128.86 feet; thence continuing along said East line S20°06'46"W, 232.97 feet; thence continuing along said East line S43°50'46"W, 151.25 feet; thence S89°06'30"W, 40.44 feet; thence S64°48'35"W, 17.04 feet; thence S00°53'35"E, 236.80 feet to the East line of said Lot 9; thence along the East line of said Lot 9 S18°15'10"E, 1.81 feet; thence along said East line S33°18'01"E, 95.00 feet; thence along said East line S14°13'30"E, 105.00 feet; thence along said East line S18°22'09"W, 130.00 feet; thence along said East line S56°02'37"W, 160.83 feet to the Southeast corner of said Lot 9; thence along the South line of said Lot 9, S89°06'25"W, 52.68 feet to the **POINT OF BEGINNING**.

All reserves, streets, utility easements, building setbacks, access control, together with that portion of a 20 foot utility easement recorded on Film 2515, Page 2202; together with any and all established public rights-of-way within the above described property is 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 ___ day of _____, 2004.

Gregory J. Allison, PE, LS #1257
MKEC Engineering Consultants, Inc.
411 North Webb Road
Wichita, Kansas 67206

Know all men by these presents that we the undersigned property owners of the land above set forth in the Registered Land Surveyor's Certificate, have caused the same to be surveyed and platted into Lots, and a Block the same to be known as "THE WATERFRONT THIRD ADDITION," an addition to Wichita, Sedgwick County, Kansas. Easements for the construction and maintenance of public utilities and drainage, as indicated on the accompanying plat are hereby granted to the public. A drainage plan has been developed for this plat and all drainage easements, right-of-way, or reserves shall remain at established grades or as modified with the approval of the applicable City or County Engineer, and unobstructed to allow for the conveyance of storm water.

The flood way, as indicated, shall be the responsibility of the owners until such time as the appropriate governing body exercising jurisdiction elects to assume the responsibility for the maintenance and improvements of the drainage, provided further, that no structure shall be constructed on or within said flood way, nor shall any fill, change of grade, creation of a channel or any other work on be carried out without the permission of the City Engineer.

Lots 1 and 2, Block 1, are required to adhere to the minimum pad elevation as shown on the "Minimum Pad Elevations" table.

BEECH LAKE INVESTMENT, LLC, A KANSAS LIMITED LIABILITY COMPANY

_____, Manager
Johnny Stevens, Manager
_____, Manager
Stephen L. Clark, Manager

STATE OF KANSAS, SEDGWICK COUNTY) ss:
This instrument was acknowledged before me on ___ day of _____, 2004, by Johnny Stevens, and Stephen L. Clark, Managers, Beech Lake Investment, LLC, a Kansas Limited Liability Company.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, the day and year last above written.

_____, Notary Public

My Term Expires: _____

We Commerce Bank, N.A., holders of a mortgage on the above described property, do hereby consent to the plat of "THE WATERFRONT THIRD ADDITION."

COMMERCE BANK, N.A.
_____, Senior Vice President
David W. Harris

This instrument was acknowledged before me on ___ day of _____, 2004, by David W. Harris, Senior Vice President, Commerce Bank, N.A.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, the day and year last above written.

_____, Notary Public

My Term Expires: _____

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

Dated this ___ day of _____, 2004

WICHITA-SEDGWICK COUNTY METROPOLITAN PLANNING COMMISSION

_____, Chair
Ronald L. Marnell, Chair
_____, Secretary
John L. Schlegel, Secretary

At the direction of the City Council.

_____, Mayor
Carlos Mayans, Mayor
_____, City Clerk
Karen Schofield, City Clerk

Entered on transfer record this ___ day of _____, 2004

_____, County Clerk
Don Brace, County Clerk

STATE OF KANSAS, SEDGWICK COUNTY) ss:

This is to certify that this instrument was filed for record in the Register of Deeds office this ___ day of _____, 2004, at _____ o'clock ___M; and is duly recorded.

_____, Register of Deeds
Bill Meek, Register of Deeds

_____, Deputy
Linda Kizzire, Deputy

Reviewed in accordance with K.S.A. 58-2005 on this ___ day of _____, 2004.

_____, Deputy County Surveyor
Tricia L. Robello, LS #1246
Deputy County Surveyor
Sedgwick County, Kansas

- LEGEND**
- △ = Section Corner Monument Found
 - = Found Survey Monument (see annotated caption for type)
 - = Set 5/8" Rebar W/ MKEC CLS 39 id. Cap
 - (P) = Platted

- BENCH MARKS**
- BM #1 Square cut SE. corner headwall 44" N. and 42" E. of the W. 1/4 corner, Sec. 9-T27S-R2E. Elev. = 192.73' City Datum 1380.13' NGVD
- BM #2 Square cut SW. corner signal light pole base NE. corner of Webb and 13th. Elev. = 185.945' City Datum 1373.345' NGVD

ACCESS CONTROL NOTE

Webb Road - Two access points for Lot 2, Block 1 and One access point for Lot 1, Block 1 shall be placed accordingly: The minimum distance between full turning movement drives shall be 400'. The minimum distance between a right-in/right-out drive and either another right-in/right-out drive or a full movement drive shall be 200'.

MINIMUM PAD ELEVATIONS (LOWEST OPENINGS)			
LOT	BLOCK	ELEVATION (CITY DATUM)	ELEVATION (NGVD)
1	1	188.1	1375.5
2	1	187.0	1374.4



FINAL PLAT

THE WATERFRONT FOURTH ADDITION

AN ADDITION TO WICHITA, SEDGWICK COUNTY, KANSAS

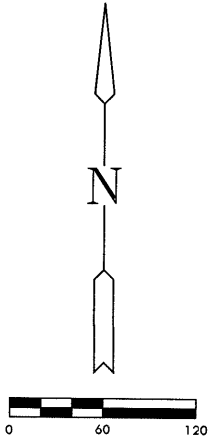
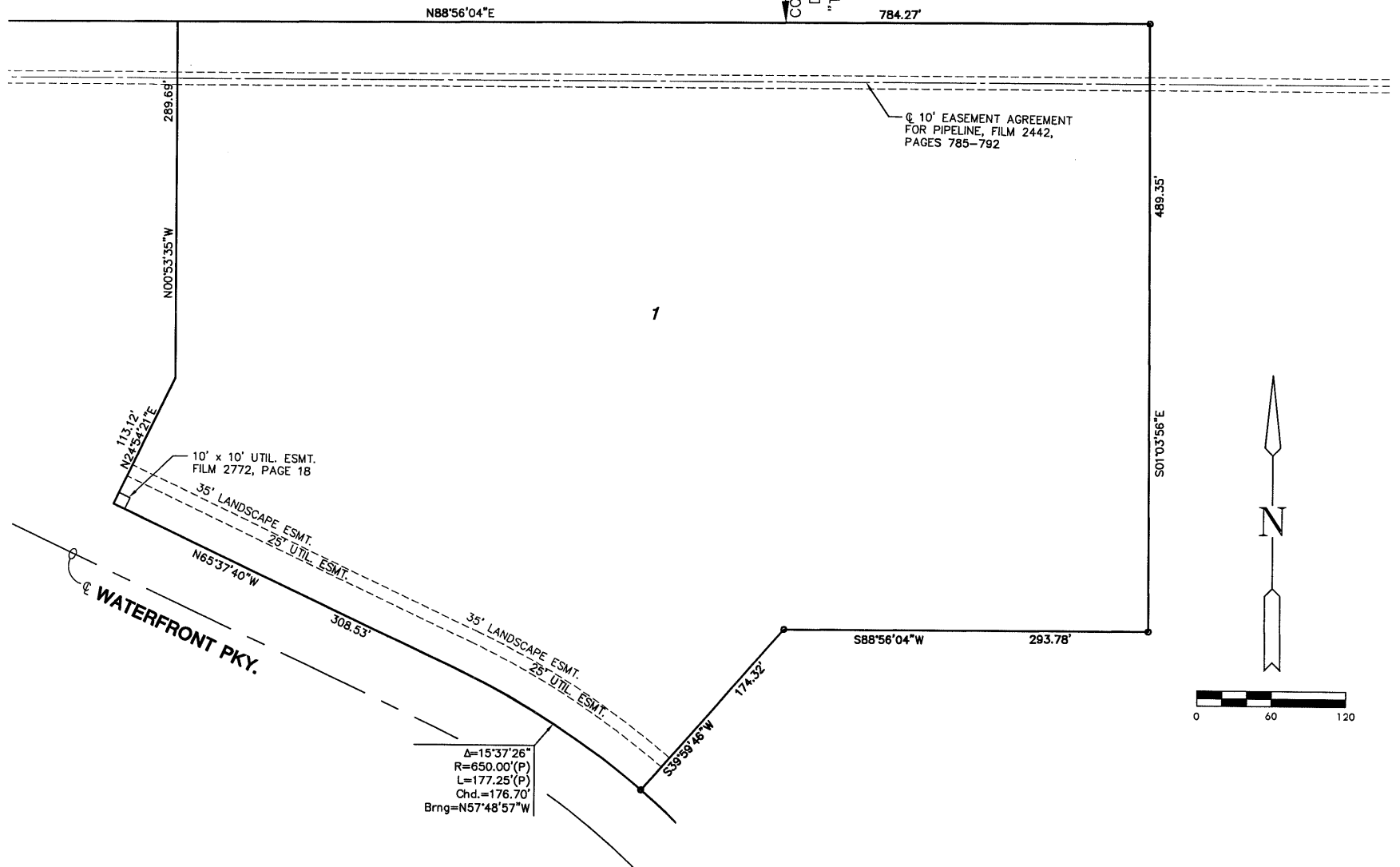
NW. Cor., SW ¼, Sec. 9,
T27S, R2E, 6th P.M.
Fnd. ¼" Pipe in Thimble

NE. Cor., SW ¼, Sec. 9,
T27S, R2E, 6th P.M.
Fnd. ¼" Pipe

BM #1

ST. LOUIS AND SAN FRANCISCO RAILROAD R/W

100.00
RAILROAD
R/W BY
CONDEMNATION
DEED BOOK
"T" PAGE 191



LEGEND

- △ = Section Corner Monument Found
- = Found Survey Monument
(see annotated caption for type)
- = Set 5/8" Rebar W/
MKEC CLS 39 Id. Cap
- (P) = Platted

BENCH MARKS

BM #1 Square cut SE. corner headwall 44' N. and 42'
E. of the W. ¼, corner, Sec. 9-T27S-R2E.
Elev. = 192.73' City Datum
1380.13' NGVD

We, MKEC Engineering Consultants, Inc., a Registered Corporate Land Surveyor in Kansas, do hereby certify that we have been in responsible charge of surveying and platting of "THE WATERFRONT FOURTH ADDITION" an addition to Wichita, Sedgwick County, Kansas, into a Lot, the same being accurately set forth in the accompanying plat and described herein:

A tract of land lying in the Southwest Quarter, Section 9, Township 27 South, Range 2 East of the 6th Principal Meridian, Wichita, Sedgwick County, Kansas; said tract being more particularly described as follows:

COMMENCING at the Northwest corner of said Southwest Quarter, thence along the West line of said Southwest Quarter on a Kansas South Zone Grid Bearing of S00°53'35"E, 100.00 feet thence parallel with and 100.00 feet South of the North line of said Southwest Quarter, N88°56'04"E, 923.52 feet to the **POINT OF BEGINNING**, said point lying on the South line of the St. Louis and San Francisco Railroad right-of-way as condemned in Condemnation Deed Book "T", Page 191; thence continuing N88°56'04"E 784.27 feet; thence S01°03'56"E 489.35 feet; thence S88°56'04"W 293.78 feet; thence S39°59'46"W 174.32 feet to a point on a curve to the left; thence along said curve 177.25 feet, said curve having a central angle of 15°37'26", a radius of 600.00 feet, and a long chord distance of 176.70 feet, bearing N57°48'57"W; thence N65°37'40"W 308.53 feet; thence N24°54'21"E 113.12 feet; thence N00°53'35"W 289.69 feet to the **POINT OF BEGINNING**.

Utility easement recorded on Film 2772, Page 18, within the above described property is 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 ___ day of _____, 2004.

Gregory J. Allison, PE, LS #1257
MKEC Engineering Consultants, Inc.
411 North Webb Road
Wichita, Kansas 67206

Know all men by these presents that we the undersigned property owners of the land above set forth in the Registered Land Surveyor's Certificate, have caused the same to be surveyed and platted into a Lot, the same to be known as "THE WATERFRONT FOURTH ADDITION," an addition to Wichita, Sedgwick County, Kansas. Easements for the construction and maintenance of public utilities and drainage, as indicated on the accompanying plat are hereby granted to the public. A drainage plan has been developed for this plat and all drainage easements, right-of-way, or reserves shall remain at established grades or as modified with the approval of the applicable City or County Engineer, and unobstructed to allow for the conveyance of storm water.

BEECH LAKE INVESTMENT, LLC, A KANSAS LIMITED LIABILITY COMPANY

_____, Manager
Johnny Stevens, Manager
_____, Manager
Stephen L. Clark, Manager

STATE OF KANSAS, SEDGWICK COUNTY) ss:

This instrument was acknowledged before me on ___ day of _____, 2004, by Johnny Stevens, and Stephen L. Clark, Managers, Beech Lake Investment, LLC, a Kansas Limited Liability Company.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, the day and year last above written.

_____, Notary Public
Notary Public:

My Term Expires: _____

We Commerce Bank, N.A., holders of a mortgage on the above described property, do hereby consent to the plat of "THE WATERFRONT FOURTH ADDITION."

COMMERCE BANK, N.A.

_____, Senior Vice President
David W. Harris

This instrument was acknowledged before me on ___ day of _____, 2004, by David W. Harris, Senior Vice President, Commerce Bank, N.A.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, the day and year last above written.

_____, Notary Public
Notary Public:
My Term Expires: _____

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

Dated this ___ day of _____, 2004

WICHITA-SEDGWICK COUNTY METROPOLITAN PLANNING COMMISSION

_____, Chair
Ronald L. Marnell, Chair

_____, Secretary
John L. Schlegel, Secretary

At the direction of the City Council.

_____, Mayor
Carlos Mayans, Mayor

_____, City Clerk
Karen Schofield, City Clerk

Entered on transfer record this ___ day of _____, 2004

_____, County Clerk
Don Brace, County Clerk

STATE OF KANSAS, SEDGWICK COUNTY) ss:

This is to certify that this instrument was filed for record in the Register of Deeds office this ___ day of _____, 2004, at _____ o'clock ___ M; and is duly recorded.

_____, Register of Deeds
Bill Meek, Register of Deeds

_____, Deputy
Linda Kizzire, Deputy

Reviewed in accordance with K.S.A. 58-2005 on this ___ day of _____, 2004.

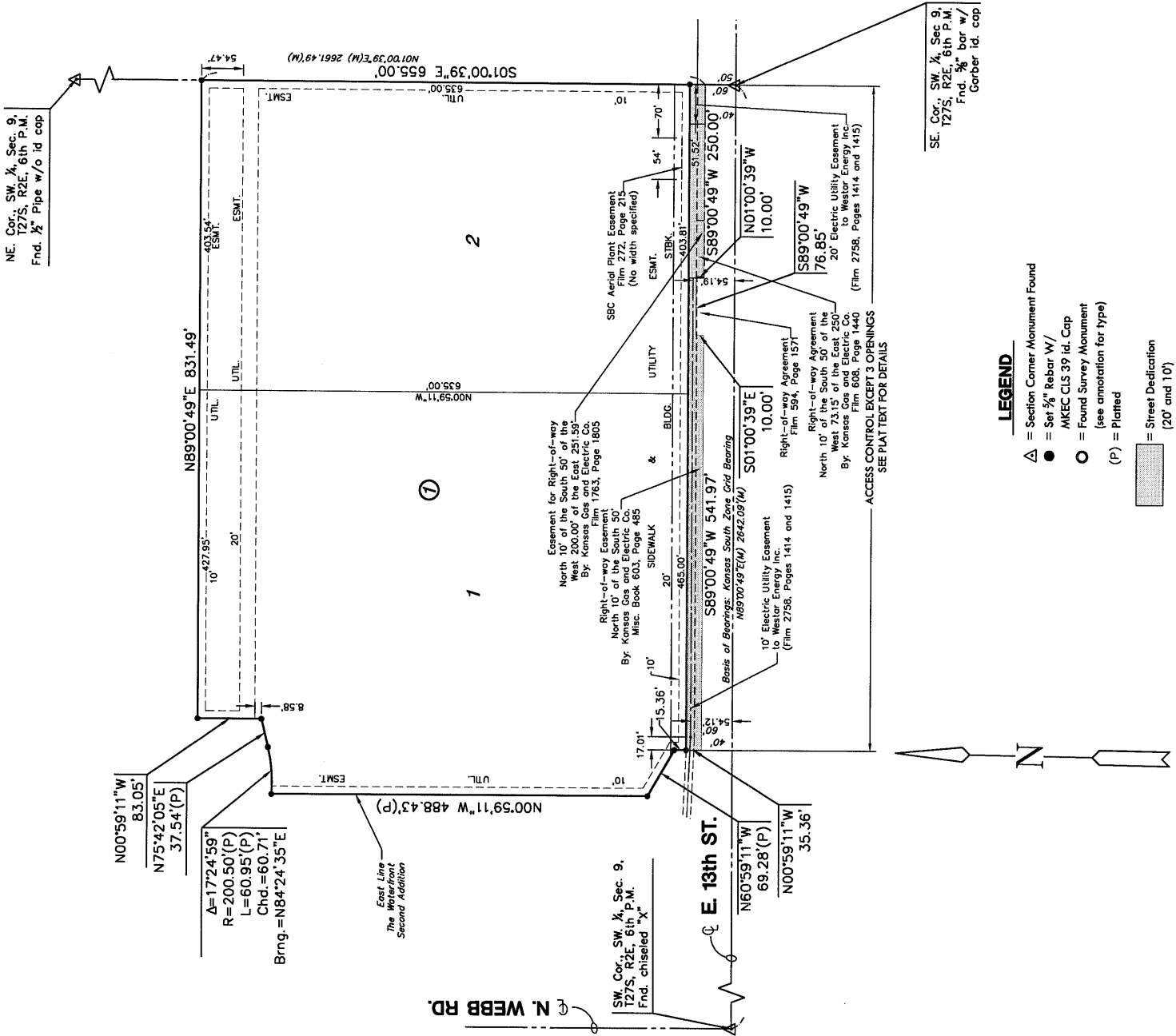
_____, Deputy County Surveyor
Tricia L. Robello, LS #1246
Deputy County Surveyor
Sedgwick County, Kansas



FINAL PLAT

THE WATERFRONT FIFTH ADDITION

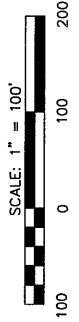
AN ADDITION TO WICHITA, SEDGWICK COUNTY, KANSAS



NE. Cor., SW. 1/4, Sec. 9, T27S, R2E, 6th P.M. Fnd. 1/2" Pipe w/o id cap

SE. Cor., SW. 1/4, Sec. 9, T27S, R2E, 6th P.M. Fnd. 3/4" bar w/ Gorber id. cap

- LEGEND**
- △ = Section Corner Monument Found
 - = Set 5/8" Rebar W/ AKCEC CLS 3/9 id. Cap
 - = Found Survey Monument (see annotation for type)
 - (P) = Platted
 - ▭ = Street Dedication (20' and 10')



I, Gregory J. Allison, a Registered Land Surveyor in Kansas, do hereby certify that I have been in responsible charge of surveying and plating of "THE WATERFRONT FIFTH ADDITION" an addition to Wichita, Sedgwick County, Kansas, into Lots a Block, a Street, the same being accurately set forth in the accompanying plat and described herein.

A tract of land lying in the Southwest Quarter, Section 9, Township 27 South, Range 2 East, of the 6th Principal Meridian, Wichita, Sedgwick County, Kansas; said tract being more particularly described as follows:

COMMENCING at the Southeast corner of said Southwest Quarter, thence along the East line of said Southwest Quarter on a Kansas South Zone Grid Bearing of N01°00'39"W, 40.00 feet to the POINT OF BEGINNING; thence parallel with and 40 feet North of the South line of said Southwest Quarter, S89°00'49"W, 250.00 feet; thence N00°59'11"W, 10.00 feet; thence S89°00'49"W, 76.85 feet; thence S01°00'39"E, 10.00 feet; thence parallel with and 40 feet North of said South line, S89°00'49"W, 541.97 feet; thence N00°59'11"W, 20.00 feet to the Southeast corner of The Waterfront Second Addition, an addition to Wichita, Sedgwick County, Kansas; thence along said East line of said The Waterfront Second Addition for the next six courses, N00°59'11"W, 15.36 feet; thence N60°59'11"W, 69.28 feet; thence N00°59'11"W, 488.43 feet to a point on a non-tangent curve to the left; thence along said curve 60.95 feet, said curve having a central angle of 17°24'59", a radius of 200.50 feet, and a long chord distance of 60.71 feet, bearing N84°24'35"E; thence N75°42'05"E, 37.54 feet; thence N00°59'11"W, 83.05 feet; thence N89°00'49"E, 831.49 feet to the East line of said Southwest Quarter; thence along said East line S01°00'39"E, 655.00 feet to the POINT OF BEGINNING.

Contingent street dedication recorded on Film 378, Page 142, together with a Utility Easement recorded on Film 2834, Page 121.6 and all reserves, streets, public utility easements, building setbacks, and access control within the above described property is hereby vacated and explained by virtue of K.S.A. 12-312(b).

I hereby certify that the details of this plat are correct to the best of my knowledge and belief this ___ day of _____, 2004.

Gregory J. Allison, PE, LS #1257
 AKCEC Engineering Consultants, Inc.
 411 North Webb Road
 Wichita, Kansas 67206

Know all men by these presents that we the undersigned property owners of the land above set forth in the Registered Land Surveyor's Certificate, have caused the same to be surveyed and platted into Lots, a Block, and a Street the same to be known as "THE WATERFRONT FIFTH ADDITION", an addition to Wichita, Sedgwick County, Kansas. Easements for the construction and maintenance of public utilities, as indicated on the accompanying plat are hereby granted to the public. The street is hereby dedicated to and for the use of the public. A drainage plan has been developed for this plat and all drainage easements, right-of-way, or reserves shall remain at established grades or as modified with the approval of the applicable City or County Engineer, and unsubstantiated to allow for the conveyance of storm water. All abutters rights of access to or from 13th Street over and across the South line of "THE WATERFRONT FIFTH ADDITION", are hereby granted to the appropriate governing body, provided however Lots 1 and 2, shall have access at three locations, each access point shall be placed accordingly: The minimum distance between a full movement drive and another full movement drive 400'; The minimum distance between a right-in/right-out drive and either another right-in/right-out drive or a full movement drive shall be 200' as set forth in the MAPD Access Management Regulations.

BEECH LAKE INVESTMENT, LLC, A KANSAS LIMITED LIABILITY COMPANY
 and also:
 THE WATERFRONT HOLDING CO., LLC, A KANSAS LIMITED LIABILITY COMPANY

Johnny Stevens, Manager
 Stephen L. Clark, Manager

STATE OF KANSAS, SEDGWICK COUNTY) ss:

This instrument was acknowledged before me on ___ day of _____, 2004, by Johnny Stevens, and Stephen L. Clark, Managers, Beech Lake Investment, LLC, a Kansas Limited Liability Company, and also, The Waterfront Holding Co., LLC, a Kansas Limited Liability Company.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, the day and year last above written.

My Term Expires: _____ Notary Public: Sandra M. Stevens

We Commerce Bank, N.A., holders of a mortgage on the above described property, do hereby consent to the plat of "THE WATERFRONT FIFTH ADDITION".

Commerce Bank, N.A., Senior Vice President

This instrument was acknowledged before me on ___ day of _____, 2004, by David W. Harris, Senior Vice President, Commerce Bank, N.A.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, the day and year last above written.

My Term Expires: _____ Notary Public: Shannon L. Lathrop

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

Dated this ___ day of _____, 2004

WICHITA-SEDGWICK COUNTY METROPOLITAN PLANNING COMMISSION

Ronald L. Hammell, Chair

John L. Schlegel, Secretary

At the direction of the City Council.

Carlos Mayans, Mayor

Karen Sublett, City Clerk

Entered on transfer record this ___ day of _____, 2004

Don Brace, County Clerk

STATE OF KANSAS, SEDGWICK COUNTY) ss:

This is to certify that this instrument was filed for record in the Register of Deeds office this ___ day of _____, 2004, at ___ o'clock ___ M.; and is duly recorded.

Bill Meek, Register of Deeds

Linda Kizaire, Deputy

Reviewed in accordance with K.S.A. 58-2005 on this ___ day of _____, 2004.

Tricia L. Robbello, LS #1246
 Deputy County Surveyor
 Sedgwick County, Kansas

FINAL PLAT

THE WATERFRONT SIXTH ADDITION

AN ADDITION TO WICHITA, SEDGWICK COUNTY, KANSAS

CERTIFICATE OF SURVEY

I, Gregory J. Allison, a registered land surveyor in Kansas, do hereby certify that I have been in responsible charge of surveying and plating of "THE WATERFRONT SIXTH ADDITION", an addition to Wichita, Sedgwick County, Kansas, into Lots, Blocks, Reserves, and Streets, the same being accurately set forth in the accompanying plat and described herein.

A contiguous tract of land lying within all of The Waterfront Fifth Addition to Wichita, Sedgwick County, Kansas, AND ALSO, a portion of the Southwest Quarter of Section 9, Township 27 South, Range 2 East of the Sixth Principal Meridian, Wichita, Sedgwick County, Kansas, AND ALSO, a southerly portion of the East 272.31 feet of the Southeast Quarter of said Section 9, said contiguous tract of land being more particularly described as follows:

COMMENCING at the South Quarter corner of said Section 9; thence along the west line of said Southwest Quarter, N01°00'39"W, 60.00 feet to the southeast corner of said The Waterfront Fifth Addition, said point being the POINT OF BEGINNING; thence along the south line of said addition on a Kansas state plane coordinate system 1983 south zone grid bearing S89°00'49"W, 868.81 feet; thence along the westerly lines of said addition to Wichita, Sedgwick County, Kansas, N00°59'11"W, 15.36 feet; thence N60°59'11"W, 69.28 feet; thence N00°59'11"W, 488.43 feet to a point on a non-tangent curve to the left; thence along said curve 60.95 feet, said curve having a central angle of 17°24'59", a radius of 200.50 feet, and a long chord distance of 60.71 feet, bearing N84°24'35"E; thence N75°42'05"E, 37.54 feet; thence N00°59'11"W, 83.05 feet to the northwest corner of said Waterfront Fifth Addition; thence along an easterly line of said Waterfront Second Addition, N00°59'11"W, 289.72 feet to the northeast most corner of said Waterfront Second Addition; thence along the north lines of said Waterfront Second Addition for the next two (2) courses; thence S78°25'09"W, 284.94 feet; thence N65°24'40"W, 160.61 feet to an east line of The Waterfront Addition, an addition to Wichita, Sedgwick County, Kansas; thence along said east line for the next two (2) courses N24°31'59.6"E, 184.46 feet to a point on a curve to the left; thence along said curve 163.81 feet, said curve having a central angle of 14°26'21", a radius of 650.00 feet, and a long chord distance of 163.50 feet, bearing N17°18'49"E; thence N85°23'02"E, 335.47 feet; thence N14°46'46"E, 100.00 feet; thence N69°10'27"E, 493.00 feet; thence N36°09'06"E, 104.41 feet; thence N01°00'39"W, 130.00 feet; thence N88°59'21"E, 292.00 feet to the east line of the center line of the Waterfront Addition; thence along said east line S01°00'48"E, 284.89 feet; thence S77°04'54"W, 251.74 feet; thence S00°59'50"E, 94.78 feet; thence S64°45'25"W, 132.16 feet; thence S01°00'39"E, 316.45 feet to a point on a non-tangent curve to the right; thence along said curve 135.70 feet to a reverse curve, said curve to the right having a central angle of 150°58'24", a radius of 51.50 feet, bearing S07°30'22"E; thence along said reverse curve 31.53 feet to a compound curve, said reverse curve having a central angle of 54°19'51", a radius of 33.00 feet, and a long chord distance of 30.35 feet, bearing S42°36'23"W; thence along said curve to the right having a central angle of 29°40'53", a radius of 384.00 feet, and a long chord distance of 196.71 feet, bearing S00°23'25"W, 407.93 feet to a point on said east line of said Southwest Quarter; thence N87°00'49"E, 272.31 feet; thence S01°00'39"E, 634.44 feet; thence S88°53'46"W, 272.31 feet to the POINT OF BEGINNING.

All reserves, streets, utility easements, building setbacks, and access controls, together with, a utility easement recorded in Doc#/#/Fin-PG 28793627, a drainage easement recorded in Doc#/#/Fin-PG 28649425, together with, a right-of-way easement recorded in Doc#/#/Fin 594 PG 1573, within the above described property are hereby vacated and replatted by virtue of K.S.A. 12-5112(b).

I hereby certify that the details of this plat are correct to the best of my knowledge and belief this _____ day of _____, 2007.

Gregory J. Allison, PE, LS #1257
MKEC Engineering Consultants, Inc.
411 North Webb Road
Wichita, Kansas 67206

Know all men by these presents that we the undersigned property owners of the land above set forth in the Registered Land Surveyor's Certificate, have caused the same to be surveyed and platted into Lots, Blocks, Reserves and Streets the same to be known as "THE WATERFRONT SIXTH ADDITION", an addition to Wichita, Sedgwick County, Kansas.

Easements for the construction and maintenance of public utilities and public sidewalks, as indicated on the accompanying plat are hereby granted to the public.

The streets are hereby dedicated to and for the use of the public.

Reserves "A", "B", "C", "E" and "F" are platted for utilities confined by easements, drainage, sidewalks, berms, monuments, landscaping, irrigation, and open space. Reserve "D" is platted for a private street. Reserve "E" is also platted for parking. The Reserves shall be owned and maintained by a lot owner's association and are reserved for uses stated.

A drainage plan has been developed for this plat and all drainage easements, right-of-way, or reserves shall remain at established grades or as modified with the approval of the applicable City or County Engineer, and unobstructed to allow for the conveyance of storm water.

Lot 1, Block 3, is required to adhere to the minimum pad elevation table on sheet 1/2 (Minimum Pad Elevation).

All abutters rights of access to or from 13th Street over and across the south line of "THE WATERFRONT SIXTH ADDITION" are hereby granted to the appropriate governing body, provided however Blocks 1 and 2, shall have access accordingly. The minimum distance between a full movement drive and another full movement drive shall be 400'. The minimum distance between a right-in/right-out drive and either another right-in/right-out drive or a full movement drive shall be 200' as set forth in the MAPD Access Management Regulations.

OWNER'S CERTIFICATES

BEECH LAKE INVESTMENT, LLC, a Kansas limited liability company and also, THE WATERFRONT HOLDING CO., LLC, a Kansas limited liability company THE WATERFRONT COMMERCIAL PROPERTIES, LLC, a Kansas limited liability company

Johnny Stevens, Manager _____, Manager Stephen L. Clark, Manager _____, Manager

STATE OF KANSAS, SEDGWICK COUNTY} ss

This instrument was acknowledged before me on _____ day of _____, 2007, by Johnny Stevens, and Stephen L. Clark, Managers, Beech Lake Investment, LLC, a Kansas limited liability company, and also, The Waterfront Holding Co., LLC, a Kansas limited liability company, and also The Waterfront Commercial Properties, LLC, a Kansas limited liability company.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, the day and year last above written.

My Term Expires: _____, Notary Public Notary Public Sandra M. Stevens _____, Notary Public

VIEGA, LLC, a Kansas limited liability company

Nathan L. Spearman, CFO _____, CFO

STATE OF KANSAS, SEDGWICK COUNTY} ss

This instrument was acknowledged before me on _____ day of _____, 2007, by Nathan L. Spearman, CFO, Viega, LLC, a Kansas limited liability company.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, the day and year last above written.

My Term Expires: _____, Notary Public Notary Public _____, Notary Public

PLANNING COMMISSION CERTIFICATE

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

Dated this _____ day of _____, 2007

WICHITA-SEDGWICK COUNTY METROPOLITAN AREA PLANNING COMMISSION

Darrell A. Downing, Chair _____, Chair

Affest: John L. Schlegel, Secretary _____, Secretary

GOVERNING BODY CERTIFICATE

The dedications shown on this plat are hereby accepted and this plat is hereby approved by the governing body of the City of Wichita, Kansas.

Dated this _____ day of _____, 2007

At the direction of the City Council.

Carlos Mayans, Mayor _____, Mayor

Affest: Karen Sublett, City Clerk _____, City Clerk

TRANSFER RECORD

STATE OF KANSAS, SEDGWICK COUNTY} ss
Entered on transfer record this _____ day of _____, 2007

Don Brace, County Clerk _____, County Clerk

REGISTER OF DEEDS CERTIFICATE

This is to certify that this instrument was filed for record in the Register of Deeds office this day of _____, 2007, at _____ o'clock _____M; and is duly recorded.

Bill Meek, Register of Deeds _____, Register of Deeds

Affest:

Tonya E. Buckingham, Deputy _____, Deputy

COUNTY SURVEYOR

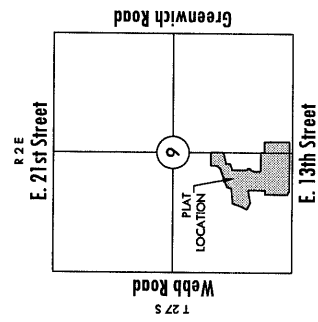
Reviewed in accordance with K.S.A. 58-2005 on this _____ day of _____, 2007.

Tricia L. Robello, LS #1246 _____, Deputy County Surveyor
Deputy County Surveyor
Sedgwick County, Kansas

FINAL PLAT

THE WATERFRONT SIXTH ADDITION

AN ADDITION TO WICHITA, SEDGWICK COUNTY, KANSAS



VICINITY MAP

LINE	LENGTH	BEARING
L1	526.69'	N00°59'11"W
L2	67.65'	N15°25'33"E
L3	141.50'	S89°00'49"W
L4	45.00'	S75°42'05"W

CURVE	LENGTH	RADIUS	DELTA
C1	156.40'	600.00'	14°56'06"
C2	218.84'	400.00'	31°20'50"
C3	193.87'	300.00'	37°01'32"
C4	82.78'	200.00'	23°42'48"
C5	64.31'	215.00'	17°08'21"

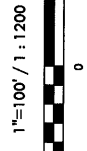
LOT	BLOCK	ELEVATION
1	3	1380.0

BENCH MARK

Square cut on SW corner of signal right pole base at NE corner of Webb Rd. and 13th St.
Elev. = 1373.345 (NGVD 29)

NOTES

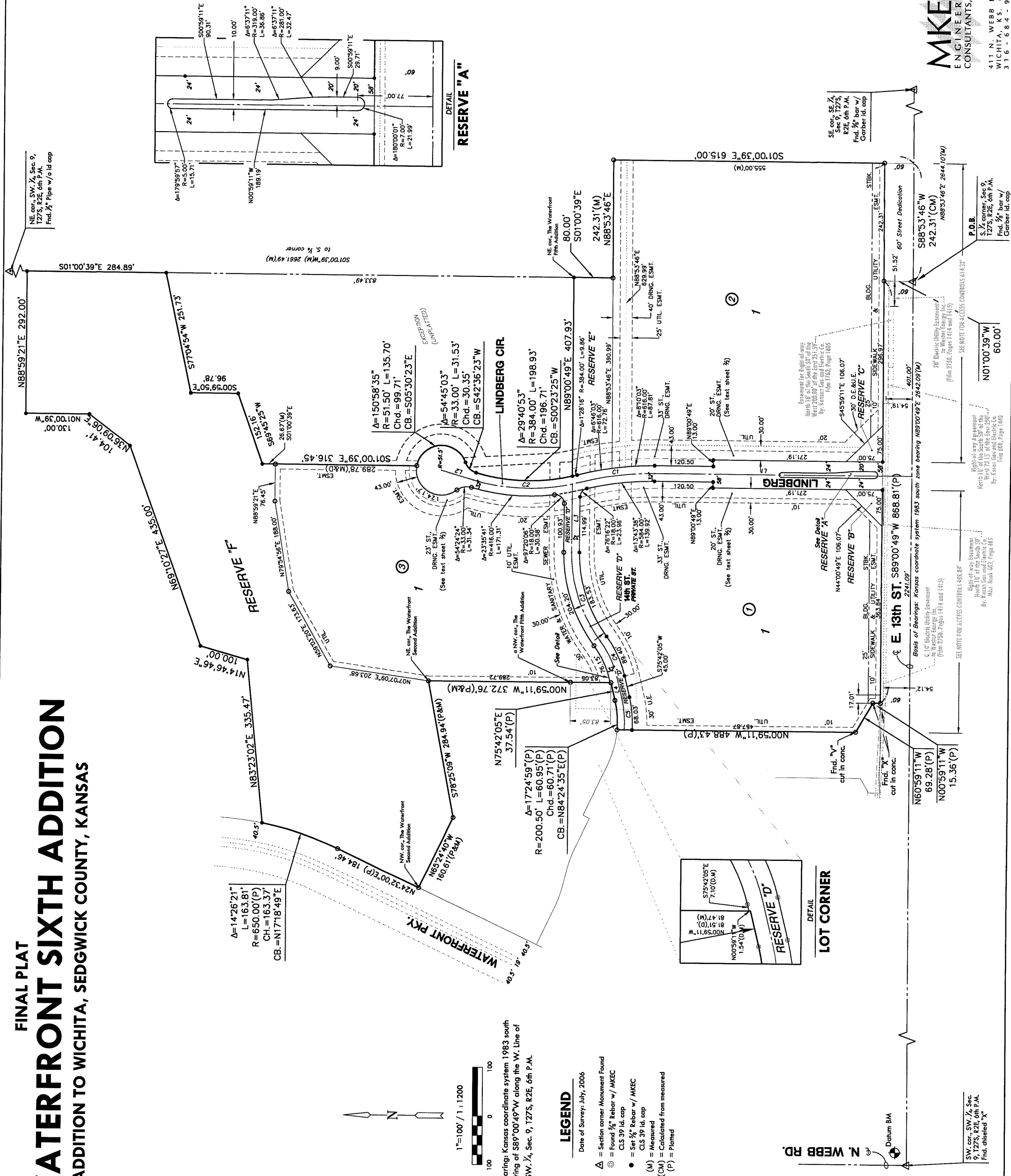
- Access Controls:
13th Street: Access points for Blocks 1 and 2 shall be placed accordingly: The minimum distance between full turning movement drives shall be 400'. The minimum distance between a right-in/right-out drive and either another right-in/right-out drive or a full movement drive shall be 200'.
- Street Drainage Easements:
Along Lindberg Street and Lindberg Circle where there is 32' of right-of-way a 15' street drainage easement is provided abutting and adjoining the 32' right-of-way as indicated.



Basis of Bearing: Kansas coordinate system 1983 south zone bearing of S89°00'49"W along the W. Line of SW 1/4, Sec. 9, T27S, R2E, 6th P.M.

LEGEND

- Date of Survey: July, 2006
- △ = Section corner Monument Found
 - ⊙ = Found 3/4" Rebar w/ MKEC
 - = Set 3/4" Rebar w/ MKEC
 - = CLS 39" id. cap
 - = CLS 39" id. cap
 - (M) = Measured
 - (CM) = Calculated from measured
 - (P) = Platted



MKEC
ENGINEERING
CONSULTANTS, INC.

411 N. WEBB ROAD
WICHITA, K.S. 67206
316-684-9600

CERTIFICATE OF SURVEY

I, Gregory J. Allison, a registered land surveyor in Kansas, do hereby certify that I have been in responsible charge of surveying and planting of "GREENWICH OFFICE PARK ADDITION", an addition to Wichita, Sedgwick County, Kansas, into Lots, a Block, and a Street, the same being accurately set forth in the accompanying plat and described hereinafter:

A tract of land lying in a portion of the West Half of the Southeast Quarter of Section 9, Township 27 South, Range 2 East of the Sixth Principal Meridian, Wichita, Sedgwick County, Kansas, said tract of land being more particularly described as follows: COMMENCING at the southwest corner of said Quarter; thence along the south line of said Southeast Quarter on a Kansas coordinate system of 1983 south zone grid bearing of N88°53'46"E, 392.31 feet to the POINT OF BEGINNING; thence parallel with the west line of said Southeast Quarter N01°00'39"W, 705.00 feet; thence parallel with the south line of said Southeast Quarter N88°53'46"E, 931.15 feet to the east line of said West Half; thence along said east line S00°54'24"E, 705.00 feet to the south line of said Southeast Quarter; thence along said south line S88°53'46"W, 929.87 feet to the POINT OF BEGINNING.

All reserves, streets, utility easements, building setbacks, and access controls, together with, an easement for right-of-way recorded in Film 594, Page 1573; a contingent street dedication recorded in Film 378, Page 142, together with all other public dedications 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 ___ day of _____, 2007.

Gregory J. Allison, PE, LS #1257
MKEC Engineering Consultants, Inc.
411 North Webb Road
Wichita, Kansas 67206

Know all men by these presents that we the undersigned property owners of the land above set forth in the Registered Land Surveyor's Certificate, have caused the same to be surveyed and platted into Lots, a Block, a Street the same to be known as "GREENWICH OFFICE PARK ADDITION", an addition to Wichita, Sedgwick County, Kansas.

Easements for the construction and maintenance of public utilities and drainage, as indicated on the accompanying plat are hereby granted to the public.

The streets are hereby dedicated to and for the use of the public.

All egress rights of access to or from 13th Street over and across the south line of "GREENWICH OFFICE PARK ADDITION", are hereby granted to the appropriate governing body, as indicated herein, Lot 2 have access locations per the access control notes as stated herein.

A drainage plan has been developed for this plat. All drainage easements, right-of-way, or reserves shall remain at established grades or as modified with the approval of the applicable City or County Engineer, and unobstructed to allow for the conveyance of storm water.

OWNER'S CERTIFICATE

Greenwich 13, L.L.C., a Kansas limited liability company

George Laham, Manager

STATE OF KANSAS, SEDGWICK COUNTY) ss:

This instrument was acknowledged before me on ___ day of _____, 2007, by George Laham, Manager, Greenwich 13, L.L.C., a Kansas limited liability company.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, the day and year last above written.

Notary Public, Notary Public
Sign and print below

My Term Expires

MORTGAGE CERTIFICATE

We, INTRUST Bank, N.A., holders of a mortgage on the above described property, do hereby consent to the plat of "MONARCH LANDING ADDITION".

INTRUST Bank, N.A.

Gary D. Schmitt, Executive Vice President, Executive Vice President

This instrument was acknowledged before me on this ___ day of _____, 2007, by Gary D. Schmitt, Executive Vice President, INTRUST Bank, N.A.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, the day and year last above written.

Notary Public, Notary Public

Sign and print below

My Term Expires

PLANNING COMMISSION CERTIFICATE

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

Dated this ___ day of _____, 2007

WICHITA-SEDGWICK COUNTY METROPOLITAN AREA PLANNING COMMISSION

Darrell A. Downing, Chair

John L. Schlegel, Secretary

GOVERNING BODY CERTIFICATE

The dedications shown on this plat are hereby accepted and this plat is hereby approved by the governing body of the City of Wichita, Kansas.

Dated this ___ day of _____, 2007

At the direction of the City Council.

Carl Brewer, Mayor

Karen Sublett, City Clerk

TRANSFER RECORD

STATE OF KANSAS, SEDGWICK COUNTY) ss:

Entered on transfer record this ___ day of _____, 2007

Don Brace, County Clerk

REGISTER OF DEEDS CERTIFICATE

This is to certify that this instrument was filed for record in the Register of Deeds office this day of _____, 2007, at ___ o'clock ___ M, and is duly recorded.

Bill Meek, Register of Deeds

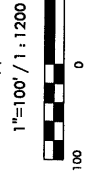
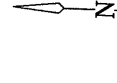
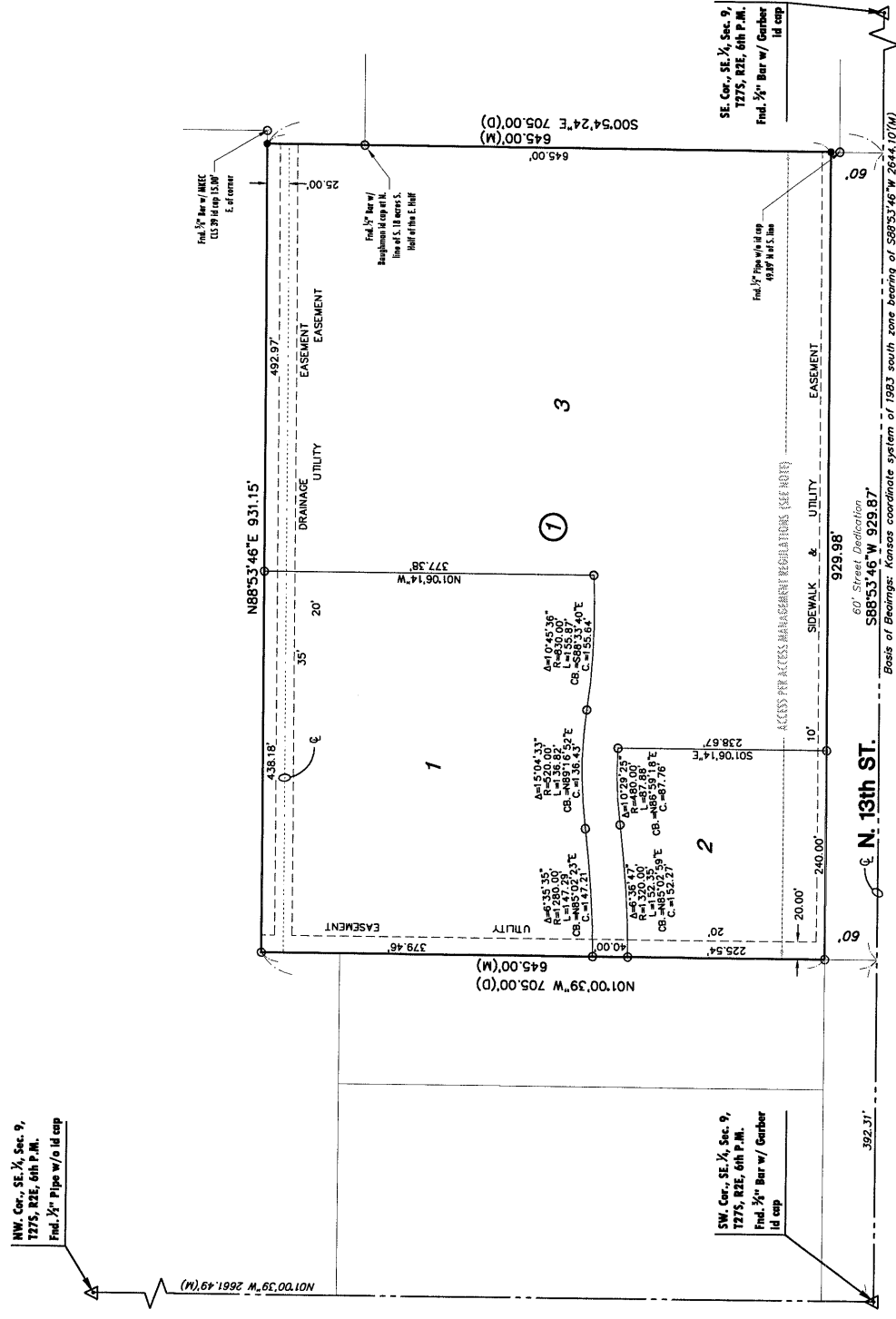
Tonya E. Buckingham, Deputy

COUNTY SURVEYOR

Reviewed in accordance with K.S.A. 58-2005 on this ___ day of _____, 2007.

Tricia L. Robello, LS #1246
Deputy County Surveyor
Sedgwick County, Kansas

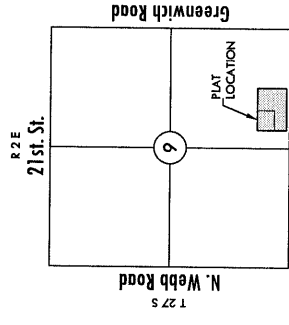
FINAL PLAT
GREENWICH OFFICE PARK ADDITION
AN ADDITION TO WICHITA, SEDGWICK COUNTY, KANSAS



LEGEND

- Date of Survey: March, 2007
Delta symbol = Section Corner Monument Found
Circle with dot = Found 3/4" rebar w/ MKEC
Circle with cross = CLS 39 id. cap unless otherwise annotated
Circle with horizontal lines = Set 3/4" rebar w/ MKEC
Circle with vertical lines = Measured
Circle with diagonal lines = Calculated from measured
Circle with diagonal lines (other) = Deeded / described

Basis of Bearings: Kansas coordinate system of 1983 south zone grid bearing of S88°53'45"E along the S. line of SE 1/4, Sec. 9, T27S, R2E, 6th P.M.

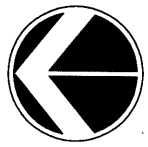


VICINITY MAP

ACCESS CONTROLS NOTE

13th Street - Access points for Lot 2 shall be placed accordingly: The minimum distance between full turning movement drives shall be 400'. The minimum distance between a right-in/right-out drive and either another right-in/right-out drive or a full movement drive shall be 200'.

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



LEGAL DESCRIPTION

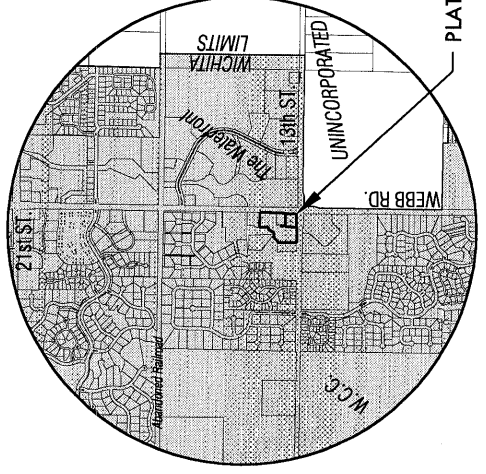
A tract of land lying in the Southeast Quarter, Section 8, Township 27 South, Range 2 East, of the 6th Principal Meridian, Wichita, Sedgwick County, Kansas; said tract being more particularly described as follows:

COMMENCING at the Southeast corner of said Southeast Quarter, thence along the South line of said Southeast Quarter, S89°04'47"W, 74.96 feet; thence N00°55'13"W, 75.00 feet to the **POINT OF BEGINNING**; thence parallel with and 75 feet North of said South line, S89°04'47"W, 175.00 feet; thence S75°00'59"W, 102.88 feet to a point lying 50 feet North of said South line, S89°04'47"W, 270.21 feet; thence N00°55'13"W, 366.89 feet; thence N89°04'47"E, 20.17 feet; thence N43°08'45"E, 90.57 feet; thence N89°04'47"E, 99.83 feet; thence N26°32'56"E, 133.03 feet; thence N89°04'47"E, 48.13 feet; thence N00°53'35"W, 32.10 feet; thence S89°04'46"W, 10.64 feet; thence N00°53'35"W, 128.04 feet; thence N89°06'25"E, 288.42 feet to a point lying 50 feet West of the East line of said Southeast Quarter; thence parallel with and 50 feet West of said East line, S00°53'35"E, 317.22 feet; thence S89°06'25"W, 10.00 feet; thence S00°53'35"E, 92.78 feet; thence S00°53'35"E, 54.75 feet; thence S88°58'14"W, 15.00 feet; thence S00°53'35"E, 220.21 feet to the **POINT OF BEGINNING**.

TOGETHER WITH:
That portion of Webb Road Right-of-Way described as follows:
COMMENCING at the Southeast corner of said Southeast Quarter, thence along the East line of said Southeast Quarter, N00°53'35"W, 249.95 feet; thence S89°06'25"W, 75.00 feet to the **POINT OF BEGINNING**; thence N00°53'35"W, 45.22 feet; thence N88°58'14"E, 6.79 feet; thence S07°38'16"W, 45.74 feet to the **POINT OF BEGINNING**. Said tract **CONTAINS**: 7.294 acres of land, more or less.

LEGEND

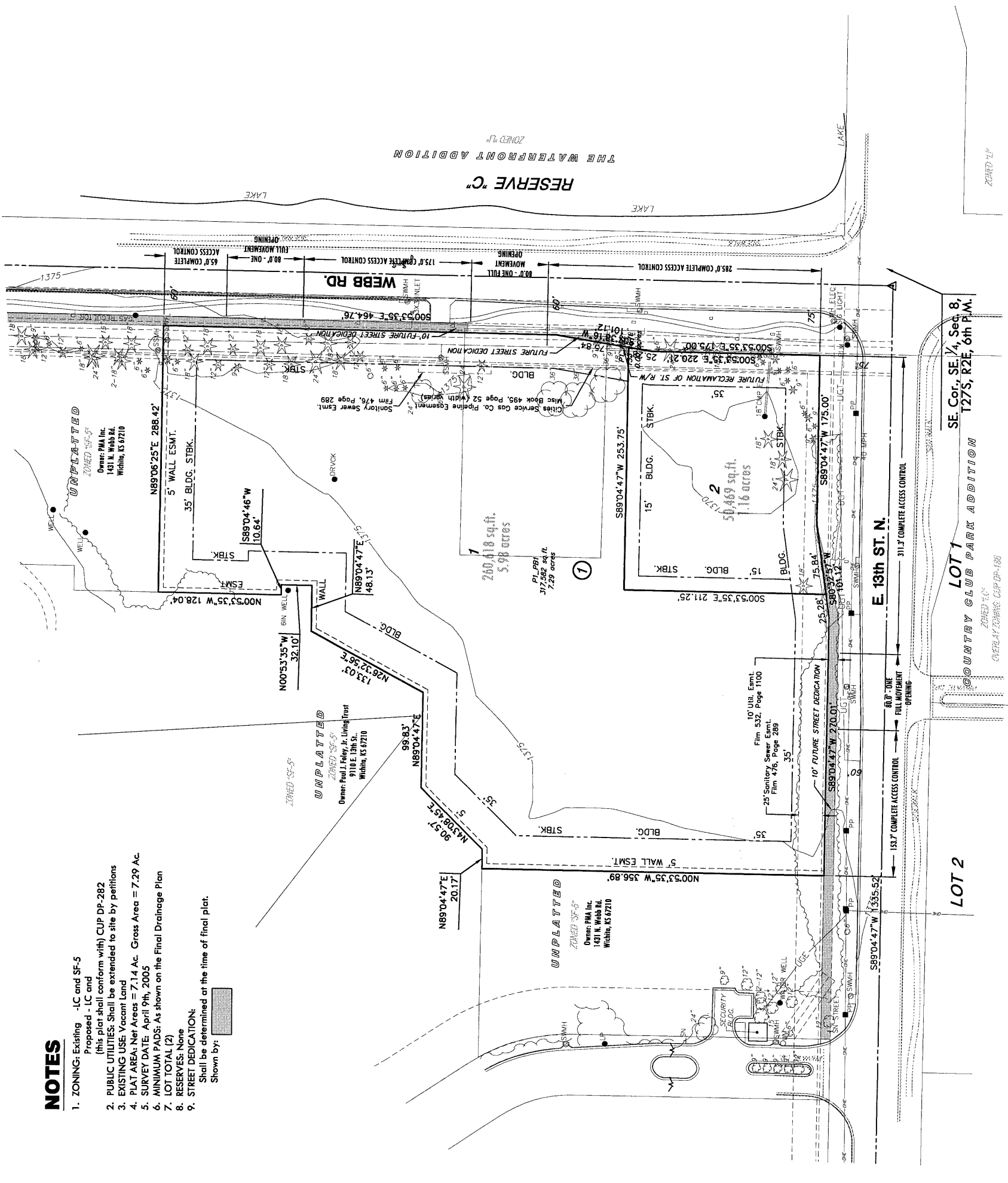
- S/L - SIGN
- GM - GAS METER
- SMH - SANITARY SEWER MANHOLE
- T - TREES
- ET - EDGE OF TREES
- F - FENCE
- G - GATE
- PA - POWER POLE/GUY ANCHOR
- EB - ELECTRIC BOX
- PO - POLE
- PH - FIRE HYDRANT
- WV - WATER VALVE
- WM - WATER METER
- TR - TELEPHONE RISER
- SR - STORM SEWER PIPE
- WL - WATER LINE
- SSL - SANITARY SEWER LINE
- GL - GAS LINE
- TL - TELEPHONE LINE
- OL - OVERHEAD ELECTRIC
- ZC - ZONE CHANGES



NOTES

1. ZONING: Existing - LC and SF-5 Proposed - LC and
2. PUBLIC UTILITIES: Shall conform with CUP DP-282 (this plat shall conform with) CUP DP-282
3. EXISTING USE: Vacant Land
4. PLAT AREA: Net Area = 7.14 Ac. Gross Area = 7.29 Ac.
5. SURVEY DATE: April 9th, 2005
6. MINIMUM PADS: As shown on the Final Drainage Plan
7. LOT TOTAL (2)
8. RESERVES: None
9. STREET DEDICATION: Shall be determined at the time of final plat.

Shown by:



PRELIMINARY PLAT
FOLIAGE CENTER ADDITION

OWNER: PMA, Inc. c/o Foley Equipment Co. - Paul J. Foley, Jr., President 1550 S. West St. Wichita, KS 67213-1638 (316) 943-4211
DEVELOPER: Beech Lake Investments LLC 1223 N. Rock Rd. Bldg H, Suite 200 Wichita, KS 67206 (316) 636-2100

Date: MAY 16th, 2005



FINAL PLAT

THE WATERFRONT RESIDENTIAL ADDITION

AN ADDITION TO WICHITA, SEDGWICK COUNTY, KANSAS

CERTIFICATE OF SURVEY

I, Gregory J. Allison, a registered land surveyor in Kansas, do hereby certify that I have been in responsible charge of surveying and plotting of "THE WATERFRONT RESIDENTIAL ADDITION", an addition to Wichita, Sedgwick County, Kansas, into Lots, Blocks, Reserves, and Streets, the same being accurately set forth in the accompanying plat and described herein:

A tract of land lying in the Southeast Quarter of Section 9, Township 27 South, Range 2 East of the Sixth Principal Meridian, Wichita, Sedgwick County, Kansas, said tract being more particularly described as follows: COMMENCING at the southwest corner of said Quarter; thence along the south line of said Quarter on a Kansas coordinate system of 1983 south zone grid bearing of N88°53'46"E, 272.31 feet to the POINT OF BEGINNING; thence parallel with the west line of said Quarter N01°00'39"W, 2561.40 feet to a point lying 100.00 feet south of the north line of said Quarter, said point being on the south right-of-way line of the Burlington Northern San Francisco Railroad right-of-way as recorded on Deed Book "U", Page 260; thence along said right-of-way and parallel with said north line N88°54'54"E, 1054.41 feet to the northeast corner of the Southeast Quarter of said Southeast Quarter; thence along the east line of said West Half S00°54'44"E, 1230.47 feet to the northwest corner of the Southeast Quarter of said Southeast Quarter; thence along the north line of said Southeast Quarter of said Southeast Quarter N88°54'23"E, 15.00 feet; thence parallel with and 15.00 feet east of the west line of said Southeast Quarter of said Southeast Quarter S00°54'24"E, 625.59 feet to a point lying 705.00 feet north of the south line of said Southeast Quarter; thence parallel with and 705.00 feet north of said south line S88°53'46"W, 946.15 feet to a point lying 392.31 feet east of the west line of said Southeast Quarter; thence parallel with and 392.31 feet east of said west line, S01°00'39"E, 705.00 feet to the south line of said Southeast Quarter; thence along said south line S88°53'46"W, 120.00 feet to the POINT OF BEGINNING.

TOGETHER WITH, A tract of land lying within a portion of the west 272.31 feet of the Southeast Quarter of Section 9, Township 27 South, Range 2 East of the Sixth Principal Meridian, Wichita, Sedgwick County, Kansas, said tract of land being more particularly described as follows: COMMENCING at the southwest corner of said Quarter; thence along the south line of said Southeast Quarter on a Kansas coordinate system of 1983 south zone grid bearing of N88°53'46"E, 242.31 feet to the POINT OF BEGINNING; thence parallel with the west line of said Southeast Quarter N01°00'39"W, 615.00 feet; thence parallel with said south line S88°53'46"W, 242.31 feet to said west line; thence along said west line N01°00'39"W, 1946.49 feet to a point lying 100.00 feet south of the north line of said Southeast Quarter, said point being on the south right-of-way line of the Burlington Northern San Francisco Railroad right-of-way as recorded on Deed Book "U", Page 260; thence along said right-of-way and parallel with said north line N88°54'54"E, 272.31 feet; thence parallel with said west line S01°00'39"E, 2561.40 feet to the POINT OF BEGINNING.

All reserves, streets, utility easements, building setbacks, and access controls, together with, an easement for right-of-way recorded in Film 594, Page 1573; a contingent street dedication recorded in Film 378, Page 142, together with all other public dedications 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 ___ day of _____, 2007.

Gregory J. Allison, PE, LS #1257
MKEC Engineering Consultants, Inc.
411 North Webb Road
Wichita, Kansas 67206

Know all men by these presents that we the undersigned property owners of the land above set forth in the Registered Land Surveyor's Certificate, have caused the same to be surveyed and platted into Lots, Blocks, Reserves, private and public Streets the same to be known as "THE WATERFRONT RESIDENTIAL ADDITION", an addition to Wichita, Sedgwick County, Kansas.

Easements for the construction and maintenance of public utilities and public sidewalks, as indicated on the accompanying plat are hereby granted to and for the use of the public. The wall easements are non-exclusive and are platted for the construction and maintenance of a private wall, utilities may cross under the private wall. However any destruction and or damage to the private wall by said public and or private utility companies shall be repaired at the expense of said public and or private utility company.

The public streets are hereby dedicated to and for the use of the public (13th Street and the southern most 446.19 feet of Veranda Street). An emergency access opening is platted along the east end of Reserve "G". All reserves are platted for utilities confined by easements, berms, landscaping, irrigation, monuments, fountains, and walkways. Reserve "J" is also platted for open space, pitch-and-putt golf areas, private parks and recreation, and drainage. Reserves "A", "B", and "L" are also platted for private walls, and gates. Reserves "A" is also platted for open space and drainage; Reserves "E", "F", and "G" are also platted for private parking or landscaping as determined by the developer or the lot owners association; Reserve "L" and the westerly portion of "H" are also platted for public access, private streets, private sidewalks, gates, and emergency access. All of Reserve "L" is also platted for public and private utilities; such utilities are not required to be confined by easement. Reserve "K" is also platted for sidewalks and utilities not confined by easement. All of the Reserves shall be owned and maintained by the developer and or a lot or homeowner owner's association and are reserved for the stated uses. A drainage plan has been developed for this plat and all drainage easements, right-of-way, or reserves shall remain at established grades or as modified with the approval of the applicable City or County Engineer, and unobstructed to allow for the conveyance of storm water.

OWNER'S CERTIFICATE

WATERFRONT RESIDENTIAL COMPANY, LLC, a Kansas limited liability company

_____, President
Kevin M. Mullen, President
Ritchie Development Corporation, manager

STATE OF KANSAS, SEDGWICK COUNTY) ss:

This instrument was acknowledged before me on ___ day of _____, 2007, by Kevin M. Mullen, President, Ritchie Development Corporation, manager, Waterfront Residential Company, LLC, a Kansas limited liability company.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, the day and year last above written.

_____, Notary Public
My Term Expires: _____

MORTGAGE CERTIFICATE

We INTRUST Bank, N.A. holders of a mortgage on the above described property, do hereby consent to the plat of "THE WATERFRONT RESIDENTIAL ADDITION."

INTRUST Bank, N.A.

_____, Executive Vice President
Gary D. Schmitt, Executive Vice President

This instrument was acknowledged before me on this ___ day of _____, 2007, by Gary D. Schmitt, Executive Vice President, INTRUST Bank, N.A.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, the day and year last above written.

_____, Notary Public
My Term Expires: _____

PLANNING COMMISSION CERTIFICATE

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

Dated this ___ day of _____, 2007

WICHITA-SEDGWICK COUNTY METROPOLITAN AREA PLANNING COMMISSION

_____, Chair
Darrell A. Downing, Chair

_____, Secretary
John L. Schlegel, Secretary

GOVERNING BODY CERTIFICATE

The dedications shown on this plat are hereby accepted and this plat is hereby approved by the governing body of the City of Wichita, Kansas.

Dated this ___ day of _____, 2007

At the direction of the City Council.

_____, Mayor
Carl Brewer, Mayor

_____, City Clerk
Karen Sublett, City Clerk

TRANSFER RECORD

STATE OF KANSAS, SEDGWICK COUNTY) ss:

Entered on transfer record this ___ day of _____, 2007

_____, County Clerk
Don Brace, County Clerk

REGISTER OF DEEDS CERTIFICATE

This is to certify that this instrument was filed for record in the Register of Deeds office this day of _____, 2007, at _____ o'clock ___M; and is duly recorded.

_____, Register of Deeds

Bill Meek, Register of Deeds

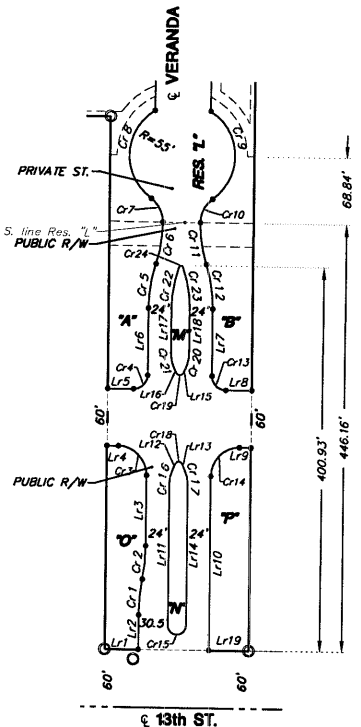
_____, Deputy
Tonya E. Buckingham, Deputy

COUNTY SURVEYOR

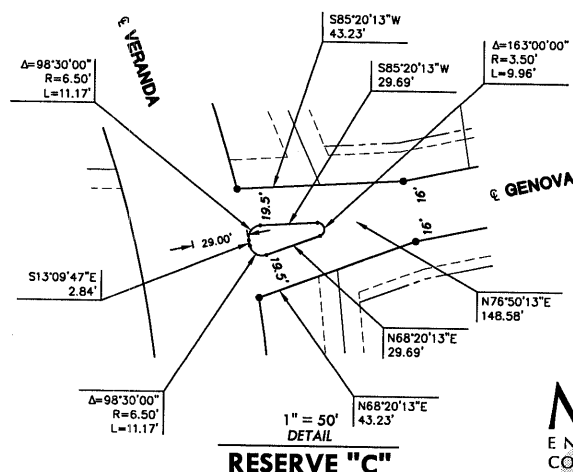
Reviewed in accordance with K.S.A. 58-2005 on this ___ day of _____, 2007.

_____, Deputy County Surveyor
Tricia L. Robello, LS #1246
Deputy County Surveyor
Sedgwick County, Kansas

CURVE	LENGTH	RADIUS	CHORD	BEARING	DELTA
Cr1	37.10'	205.50'	37.05'	S04°09'38"W	10°20'35"
Cr2	35.11'	194.50'	35.06'	N04°09'38"E	10°20'35"
Cr3	46.34'	29.50'	41.72'	N46°00'39"W	90°00'00"
Cr4	22.78'	14.50'	20.51'	N43°59'21"E	90°00'00"
Cr5	47.54'	155.00'	47.35'	S07°46'32"W	17°34'23"
Cr6	44.47'	145.00'	44.30'	N07°46'32"E	17°34'23"
Cr7	28.09'	29.50'	27.04'	N28°17'23"W	54°33'28"
Cr8	108.22'	55.00'	91.59'	S00°47'58"W	112°44'11"
Cr9	108.22'	55.00'	91.59'	N02°49'17"W	112°44'11"
Cr10	28.09'	29.50'	27.04'	S26°16'05"W	54°33'28"
Cr11	44.47'	145.00'	44.30'	S09°47'51"E	17°34'23"
Cr12	47.54'	155.00'	47.35'	N09°47'51"W	17°34'23"
Cr13	22.78'	14.50'	20.51'	S46°00'39"E	90°00'00"
Cr14	46.34'	29.50'	41.72'	S43°59'21"W	90°00'00"
Cr15	29.84'	9.50'	19.00'	N88°59'21"E	179°59'56"
Cr16	17.45'	40.00'	17.32'	S11°29'21"W	25°00'00"
Cr17	17.45'	40.00'	17.32'	N13°30'39"W	25°00'00"
Cr18	9.08'	4.00'	7.25'	S88°59'21"W	130°00'00"
Cr19	9.08'	4.00'	7.25'	N88°59'21"E	130°00'00"
Cr20	17.45'	40.00'	17.32'	N11°29'21"E	25°00'00"
Cr21	17.45'	40.00'	17.32'	S13°30'39"W	25°00'00"
Cr22	44.89'	131.00'	44.67'	S08°48'21"W	19°38'01"
Cr23	44.89'	131.00'	44.67'	N10°49'40"W	19°38'01"
Cr24	4.91'	2.00'	3.77'	S88°59'21"W	140°43'58"



LINE	LENGTH	BEARING
Lr1	35.00'	N88°53'46"E
Lr2	35.98'	S01°00'39"E
Lr3	73.42'	N01°00'39"W
Lr4	12.00'	N88°59'21"E
Lr5	27.00'	S88°59'21"W
Lr6	70.42'	S01°00'39"E
Lr7	70.42'	N01°00'39"W
Lr8	27.00'	S88°59'21"W
Lr9	12.00'	N88°59'21"E
Lr10	181.10'	N01°00'39"W
Lr11	146.49'	S01°00'39"E
Lr12	5.03'	S23°59'21"W
Lr13	5.03'	S26°00'39"E
Lr14	146.49'	S01°00'39"E
Lr15	5.03'	N23°59'21"E
Lr16	5.03'	N26°00'39"W
Lr17	46.15'	S01°00'39"E
Lr18	46.15'	N01°00'39"W
Lr19	41.50'	N88°53'46"E



RESERVES
"A", "B", "M", "N", "O", & "P"

MKEC
ENGINEERING
CONSULTANTS, INC.

411 N. WEBB ROAD
WICHITA, KS. 67206
316-684-9600

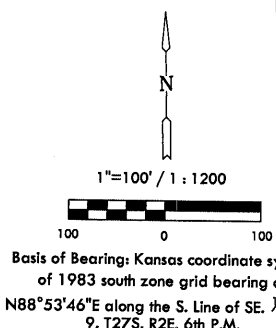
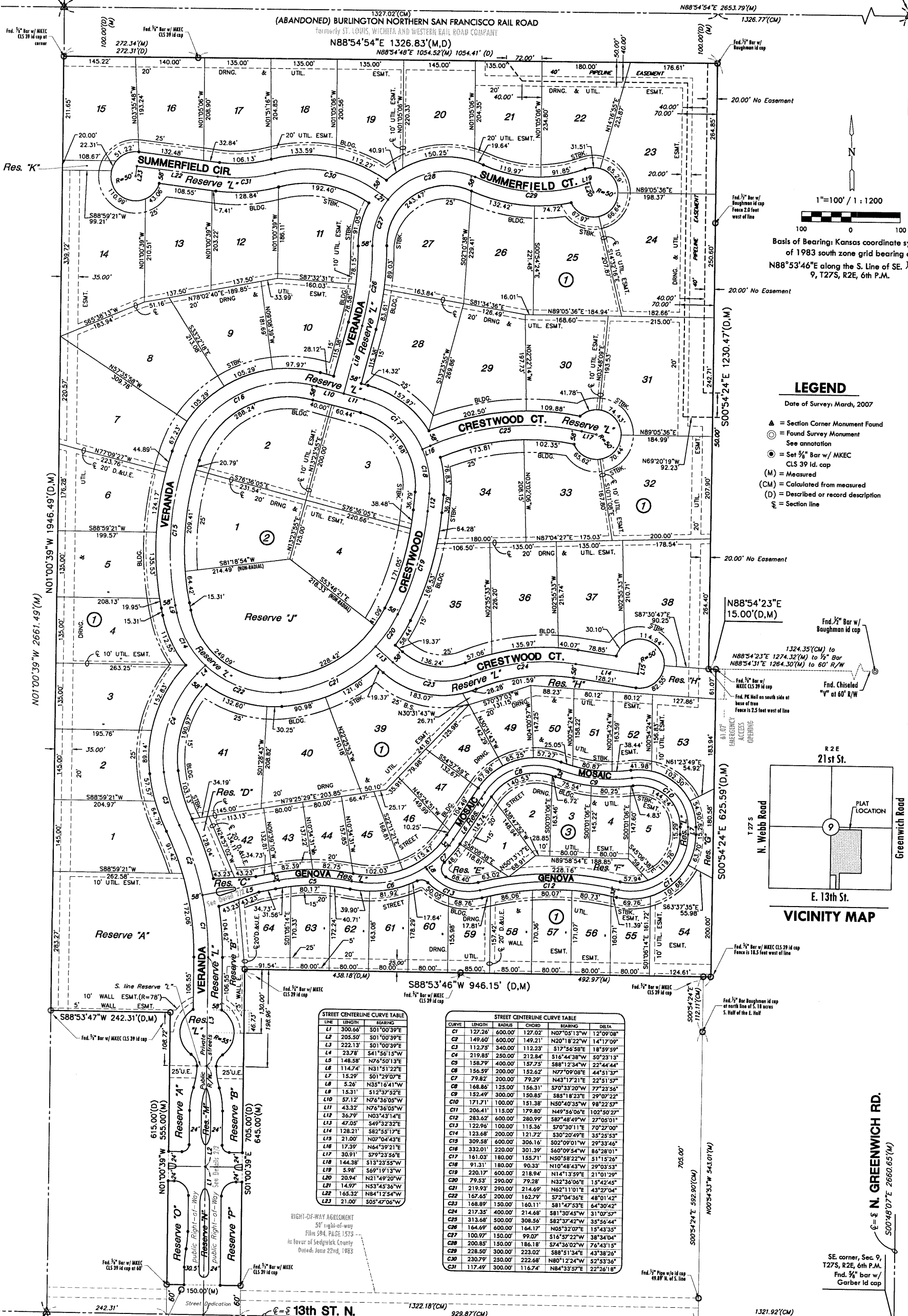
FINAL PLAT

THE WATERFRONT RESIDENTIAL ADDITION

AN ADDITION TO WICHITA, SEDGWICK COUNTY, KANSAS

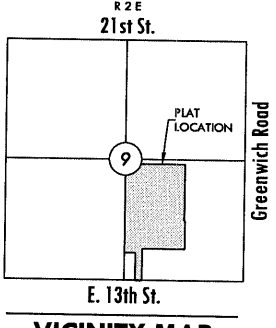
Center, Sec. 9, T27S, R2E, 6th P.M.
Fnd. 1/2" Bar w/o id cap

NE. cor., SE 1/4, Sec. 9, T27S, R2E, 6th P.M.
Set 3/8" Bar w/ MKEC CLS 39 id cap



LEGEND
Date of Survey: March, 2007

- ▲ = Section Corner Monument Found
- = Found Survey Monument
- See annotation
- = Set 3/8" Bar w/ MKEC CLS 39 id. cap
- (M) = Measured
- (CM) = Calculated from measured
- (D) = Described or record description
- = Section line



STREET CENTERLINE CURVE TABLE

LINE	LENGTH	BEARING
L1	300.66	S01°00'39"E
L2	205.50	S01°00'39"E
L3	222.13	S01°00'39"E
L4	23.78	S41°56'15"W
L5	148.88	N76°50'13"E
L6	114.74	N01°51'22"E
L7	15.29	S01°29'07"E
L8	5.26	N35°16'41"W
L9	15.31	S12°37'52"E
L10	57.12	N76°36'05"W
L11	43.32	N76°36'05"W
L12	36.79	N03°43'14"E
L13	47.05	S49°32'32"E
L14	128.21	S82°55'17"E
L15	21.00	N07°04'43"E
L16	12.39	N64°39'21"E
L17	30.81	S79°23'56"E
L18	144.38	S13°23'55"W
L19	5.98	S69°19'13"W
L20	20.94	N21°49'20"W
L21	14.97	N53°45'36"W
L22	165.32	N84°12'54"W
L23	21.00	S05°47'06"W

STREET CENTERLINE CURVE TABLE

CURVE	LENGTH	ENDITE	CHORD	BEARING	DELTA
C1	127.26	600.00	127.02	N07°05'13"W	12°09'08"
C2	149.60	600.00	149.21	N20°18'22"W	14°17'09"
C3	112.75	340.00	112.23	S17°56'58"E	18°59'59"
C4	219.85	250.00	212.84	S16°44'38"W	50°23'13"
C5	158.79	400.00	157.75	S88°12'34"W	22°44'44"
C6	156.59	200.00	152.62	N77°09'08"E	44°51'37"
C7	79.82	200.00	79.29	N43°17'21"E	22°51'57"
C8	146.86	125.00	156.31	S70°33'20"W	77°23'56"
C9	152.49	300.00	150.85	S85°18'23"E	29°07'22"
C10	171.71	100.00	151.38	N50°40'35"W	93°22'37"
C11	206.41	115.00	179.80	N49°56'06"E	102°59'27"
C12	283.62	600.00	280.99	S87°48'49"W	27°03'01"
C13	122.96	100.00	115.36	S70°30'11"E	70°27'00"
C14	123.68	200.00	121.72	S30°20'49"E	35°25'53"
C15	309.58	600.00	306.16	S02°09'01"W	29°33'46"
C16	332.01	220.00	301.39	S60°09'54"W	86°28'01"
C17	161.03	180.00	155.71	N50°58'22"W	51°15'26"
C18	91.31	180.00	90.33	N10°48'43"W	29°03'53"
C19	229.17	600.00	218.94	N14°13'59"E	21°01'29"
C20	79.53	290.00	79.28	N32°36'06"E	15°42'45"
C21	219.93	290.00	214.69	N62°11'01"E	43°27'04"
C22	167.65	200.00	162.79	S72°04'36"E	48°01'42"
C23	168.89	150.00	160.11	S81°47'53"E	64°30'42"
C24	217.35	400.00	214.68	S81°30'45"W	31°07'57"
C25	313.68	500.00	308.56	S82°37'42"W	35°56'44"
C26	164.69	600.00	164.17	N05°32'07"E	15°43'35"
C27	100.97	150.00	99.07	S16°57'22"W	38°34'04"
C28	200.85	150.00	186.18	S74°36'02"W	76°43'15"
C29	228.50	300.00	223.02	S88°51'34"E	43°38'26"
C30	230.79	250.00	222.68	N80°12'24"W	52°53'36"
C31	117.49	300.00	116.74	N84°33'57"E	22°26'18"

EIGHT-DE-WAY AGREEMENT
30' right-of-way
Film 594, PAGE 1573
in favor of Sedgwick County
Dated: June 22nd, 1983

NOTES

- Pipeline Building Setback:**
No habitable structure will be built within 50 feet of the pipeline unless the landowner agrees to pay the cost of lowering the pipeline, and or provide the appropriate cover to comply with Department of Transportation regulations, and or unless approved by the pipeline company.
- Street Drainage Easements:**
Along Genova Street and Mosaic where there is 32' of right-of-way a 15' street drainage, and utility easement is provided abutting and adjoining the 32' right-of-way as indicated.

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ENGINEERING
CONSULTANTS, INC.

411 N. WEBB ROAD
WICHITA, K.S. 67206
316-684-9600

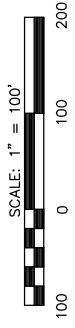
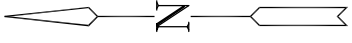
Figure 1.4

Preliminary Grading Plan

LEGEND

- CONIFEROUS TREE
- DECIDUOUS TREE
- SIGN
- POWER POLE
- ELECTRIC BOX
- LIGHT POLE
- FIRE HYDRANT
- WATER VALVE
- WATER METER
- SECTION CORNER
- BENCHMARK
- EASEMENT
- BUILDING SETBACK
- FENCE
- STORM SEWER PIPE
- WATER LINE
- SANITARY SEWER LINE
- GAS LINE
- TELEPHONE LINE
- UNDERGROUND ELEC.
- OVERHEAD ELECTRIC
- FIBER OPTIC CABLET
- DRAINAGE SUB BASIN
- DRAINAGE BASIN
- FLOW ARROW
- AREA FOR SWS SIZING
- SPOT ELEVATIONS

A17



REVISED: AUGUST 2007

PROJECT NAME
WATERFRONT RESIDENTIAL ADDITION

SHEET TITLE
LOT GRADING PLAN

MKEC
ENGINEERING
CONSULTANTS, INC.

411 N. WEBB ROAD
WICHITA, KS. 67206
316-684-9600

DESIGN BY: TMH
 DRAWN BY: CMJ
 CHECKED BY: KLA
 DATE: APRIL 2007
 JOB NO.: 02014
 SHEET OF: 1 / 1



BD_area8
1,096,394 sq. ft.
25.00 acres

Tab 2. Existing Conditions Runoff Calculations

A. Orthophotograph

The aerial photograph includes Waterfront Commercial, Waterfront Residential, Greenwich Office Park and Foliage Addition, Figure 2.1.

B. Runoff Method

The pre-project watershed has been divided into watersheds to correspond with the future conditions model. Additional watershed boundaries have been added at locations where ponds have been or will be constructed. These areas, their time of concentration, and curve number are shown on the Pre-Project TR-20 Key Map, Figure 2.2

The SCS TR-20 software model was used to calculate peak flows using the SCS 24-hour Type II design storm. A peaking factor of 484 was used for these calculations.

C. Existing Topography

Slopes across the site ranged from 1-4% from east to west. An existing lake covered approximately 14 acres of the site, with a 1.5 acre silt pond to the north of the lake. Elevations on the site ranged from 1395 ft. in the southwest portion of the proposed residential area to 1369 ft. at the lake water surface. The lake exits the property to the south through a bridge under 13th St. North. The bridge opening was 27' wide. On the south side of 13th Street, the lake is still used by the Beech Employees Club. The lake flowed to the southwest through a concrete weir structure. This structure controlled flow from both the north and south portions of the lake.

The existing site is shown on the Pre-Project TR-20 Key Map, Figure 2.2.

D. Site Areas

The total site area is 254 acres, specifically:

- 156 acres of the Waterfront Addition, including existing and future development area,
- 60 acres of the platted Waterfront Residential
- 20.8 acres of the Greenwich Office Park, including 14 acres currently platted and 6.8 acres of unplatted area.
- 17.5 acres of the Foliage Addition.

E. Benchmarks

Benchmarks used for site control are included on the Existing Conditions Drawing, Figure 2.2.

F. Streams, Creeks, and Waterways

An area surrounding the existing lake was designated as Zone A (FIRM Panel 150, Sedgwick County, June 3, 1986), Figure 2.3. The remainder of the site is in Zone C.

CLOMR case number 04-07-031R has been approved by FEMA to revise the Zone A floodplain to match current conditions.

G. Soils

According to the NRCS (SCS) Sedgwick County Soil Survey, most of the site is in the Irwin Series (Ia: Irwin silty clay loam, with 1 to 3 percent slopes) and the Rose Hill Series (Rd: silty clay, 1 to 3 percent slopes). A small portion in the northwest corner of the site is in the Vanoss Series

(Va: Vanoss silt loam, with 1 to 3 percent slopes). The Hydrological Soil Group (HSG) for the Irwin and Rose Hill series soils is D. The HSG for the Vanoss series soil is B. The Vanoss series comprises a very small portion of the area, therefore the drainage calculations were based on soil group D. The site is shown on the Soil Survey, Figure 2.4.

H. Natural Features

The site was undeveloped open space prior to the Waterfront Addition. The site was used as a recreational area for an employee's club. An existing lake covered approximately 14 acres of the site, with a 1.5 acre silt pond to the north of the lake.

I. Location of Existing Impervious Areas

An existing street and gravel parking areas were located on site before any development began. Portions of the Waterfront Addition consist of buildings, parking facilities and access streets.

J. Location of Existing Utilities

Water, sewer, and electric has been installed in various locations throughout the Waterfront Addition. The Coffeyville Pipeline transects the northeastern corner of the residential site.

K. Location of Existing Conveyance Systems

The pre-project site sheet flowed to the existing pond.

L. Flow Paths

There is a ridge that bisects the proposed Waterfront Residential. Area to the west of this ridge drains south and west. Area east of the ridge drains to the east.

M. Location and Sizes of Existing Structures

Runoff from the north passed through an existing detention facility east of the Eastminster Presbyterian Church, north of the railroad. An additional 105 acres drained to the existing 11'x9' reinforced concrete box (RCB) which passed under the railroad tracks. The runoff then passed through an existing channel and into the silt pond on the site. An additional 28 acres drained to the silt pond. An existing earthen dam separated the silt pond from the lake. The runoff must pass around the dam to the west and into the lake. An additional 196 acres drained to the existing lake. This includes approximately 48 acres from the west side of Webb Road. This area drains through an existing RCB under Webb Road and into the lake.

In addition, there is an existing 5'x4' RCB under 13th Street. The RCB was analyzed using HY-8 software, Figure 2.5. The RCB has a capacity of 157 cfs before overtopping 13th Street.

N. Existing Conditions Hydrologic Analysis

The pre-project watershed has been divided into watersheds to correspond with the future conditions model. Additional watershed boundaries have been added at locations where ponds have been or will be constructed

The SCS TR-20 software model was used to calculate peak flows using the SCS 24-hour Type II design storm. A peaking factor of 484 was used for these calculations. The modeling output is in Figure 2.6.

Due to the complexity of modeling the lakes north and south of Webb Road as separate reservoirs, the lakes were combined and modeled as one reservoir. Since the lakes are at the same normal pool elevation, the north lake and silt pond elevations are controlled by the elevation of the lake downstream. The lakes were modeled based on an existing control structure and spillway at the south end of the south lake. The existing weir is a concrete structure with a 12'

low flow crest at elevation 1368.7', and an additional 70' high flow crest at elevation 1369.7'. Rating curves for the weir were developed using the HY-8 computer software program. The pre-project lakes provided 164 acre-feet of storage in the 100-year design event.

A summary of pre-project flows from the TR-20 output is in Table 3.

Table 3. Pre-Project Flowrates.

TR-20 ID	Description	Design Storm Flows (cfs)					
		2-Yr	5-Yr	10-Yr	50-Yr	100-Yr	500-Yr
070	Flow into lakes	1046	1446	1710	2319	2596	2927
018	Flow from lake at Webb Rd	224	396	527	970	1167	1520

O. Pre-Developed Runoff Curve Numbers

The curve numbers used for the sub-watersheds were calculated based on percentage of development within each sub-watershed, Figure 2.7.

P. Existing Time of Concentration

The Time of Concentration for each watershed was calculated using the FAA method, Figure 2.8.

Q. Downstream Drainage Capacity

There is an existing 5'x4' RCB under 13th Street. The RCB has a capacity of 157 cfs before overtopping 13th Street. This RCB will handle the smaller design storms, but will overtop in large storm events.

R. Existing Structural Elevations

There were no existing structures on the pre-project site.

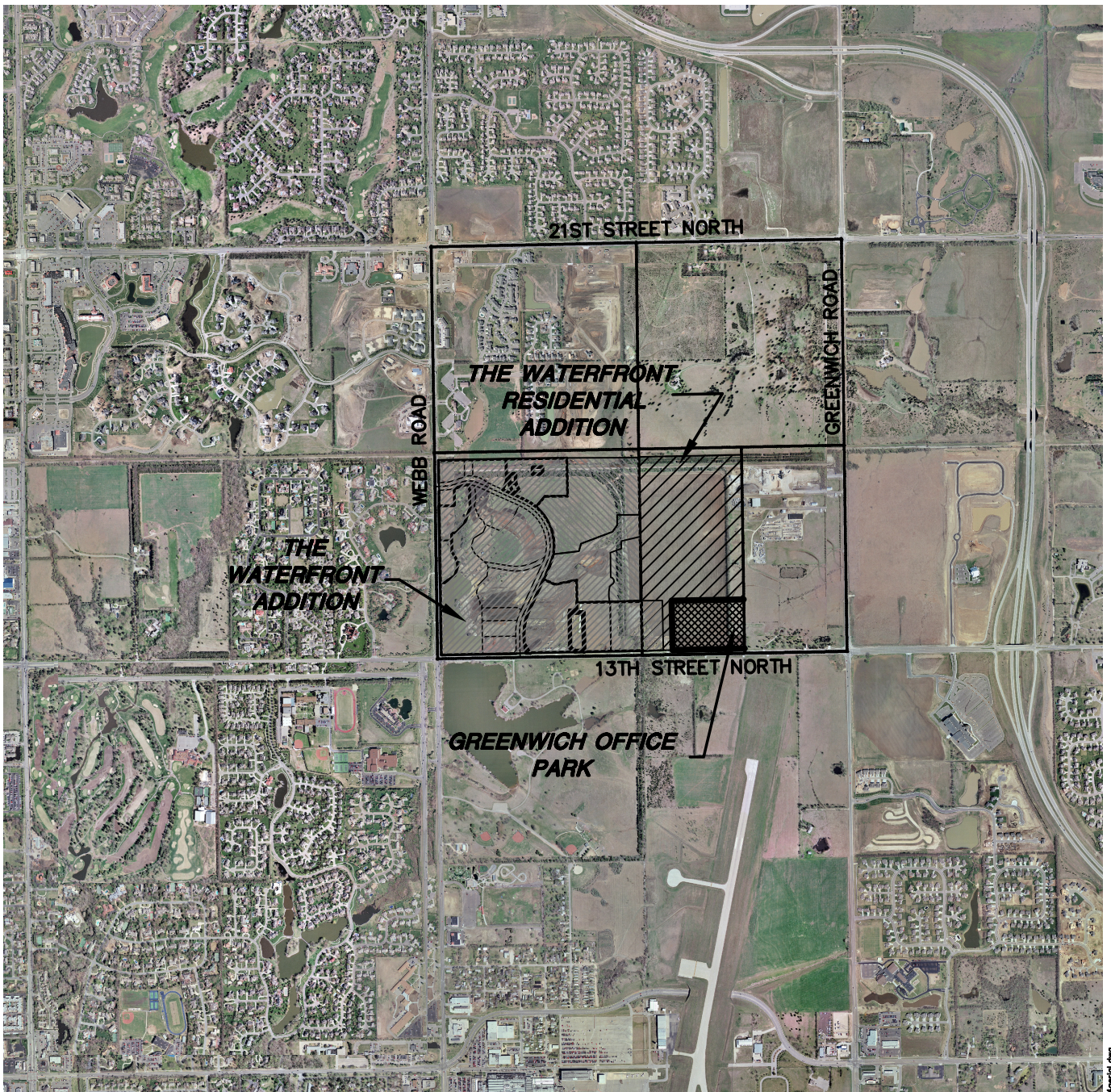
S. Open Channels

The existing channel crosses the site from north to south through the existing pond and exits the property to the south through a bridge under 13th St. North.

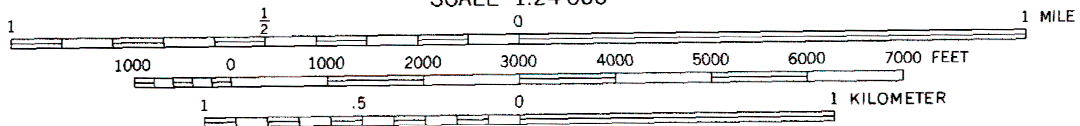
T. Groundwater Elevations

Groundwater elevations are unknown.

Figure 2.1
Orthophotograph



SCALE 1:24 000



CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

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CONSULTANTS, INC.

THE WATERFRONT ADDITION
PROJECT NAME

AERIAL MAP
SHEET TITLE

411 N. WEBB ROAD
WICHITA, KS. 67206
316 - 684 - 9600

KJA
DESIGN BY:

CMJ
DRAWN BY:

GJA
CHECKED BY:

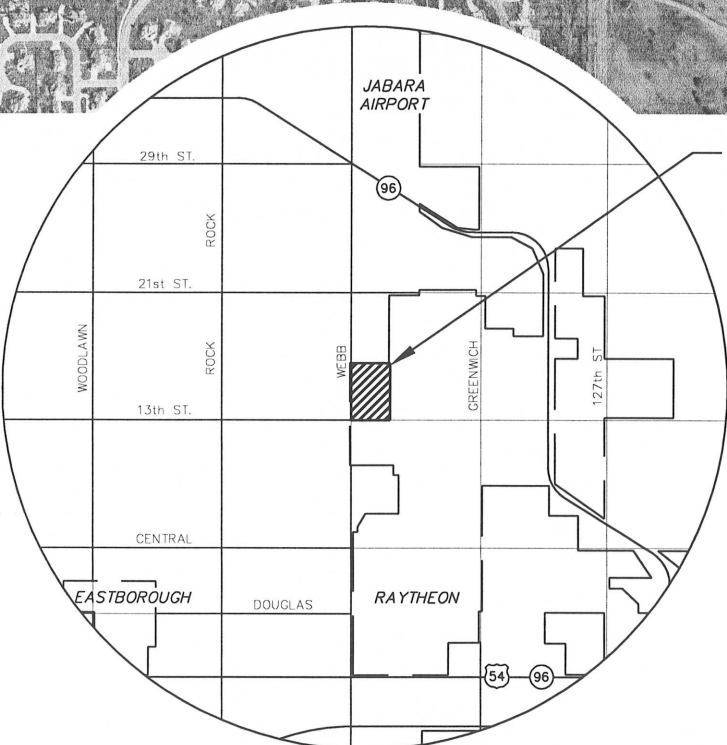
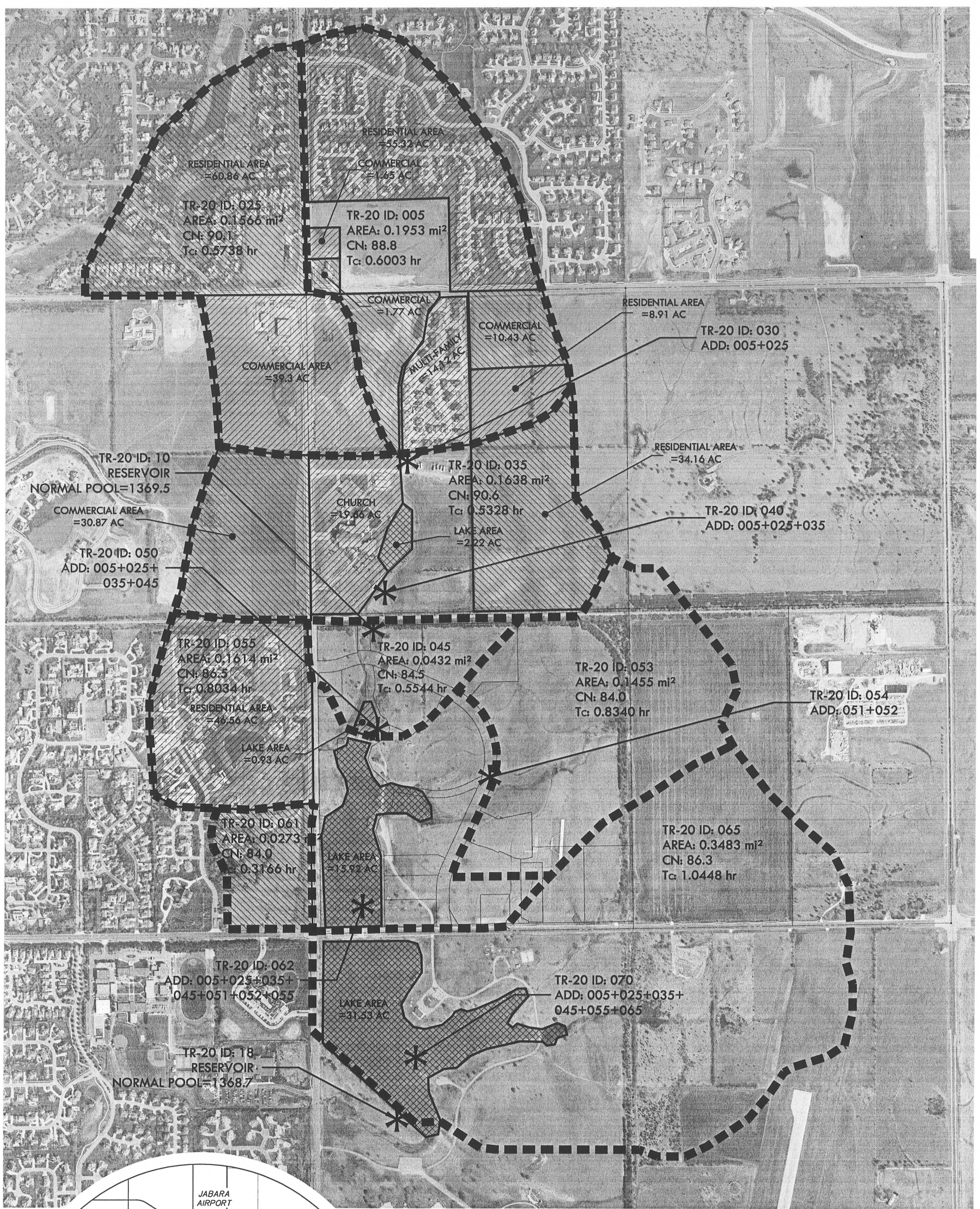
APRIL 2007
DATE

02014
JOB NO.

1 / 1
SHEET/OF

Figure 2.2

Pre-Project TR-20 Key Map



SITE LOCATION

LEGEND

- POLE - POLE
- HLP - HIGH LINE POLE
- WATERSHED BOUNDARIES
- PPA - POWER POLE AND GUY ANCHOR
- TR - TELEPHONE RISER
- INLET
- BENCHMARK

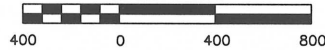
BENCHMARKS

BM#1 Square cut SE. corner headwall 44' N. and 42' E. of W. 1/4 cor., Sec. 9, T27S, R2E
 ELEV. = 192.73'(City Datum)
 1380.13 NGVD

BM#2 Square cut SW. corner signal light pole base NE. corner Webb and 13th.
 ELEV. = 185.945'(City Datum)
 1373.345' NGVD



SCALE: 1"=400'



REVISED: 1/8/07
 REVISED: 10/20/08
2000 AERIAL

WATERFRONT ADDITION
 PROJECT NAME

PRE-PROJECT TR-20 KEY MAP
 DESIGN TITLE

KLA DESIGN | JFL DRAWN BY

GJA CHECKED BY | FEB. 2006 DATE

02014 JOB NO. | 1 / 1 SHEET/OF

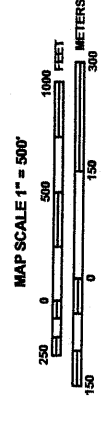
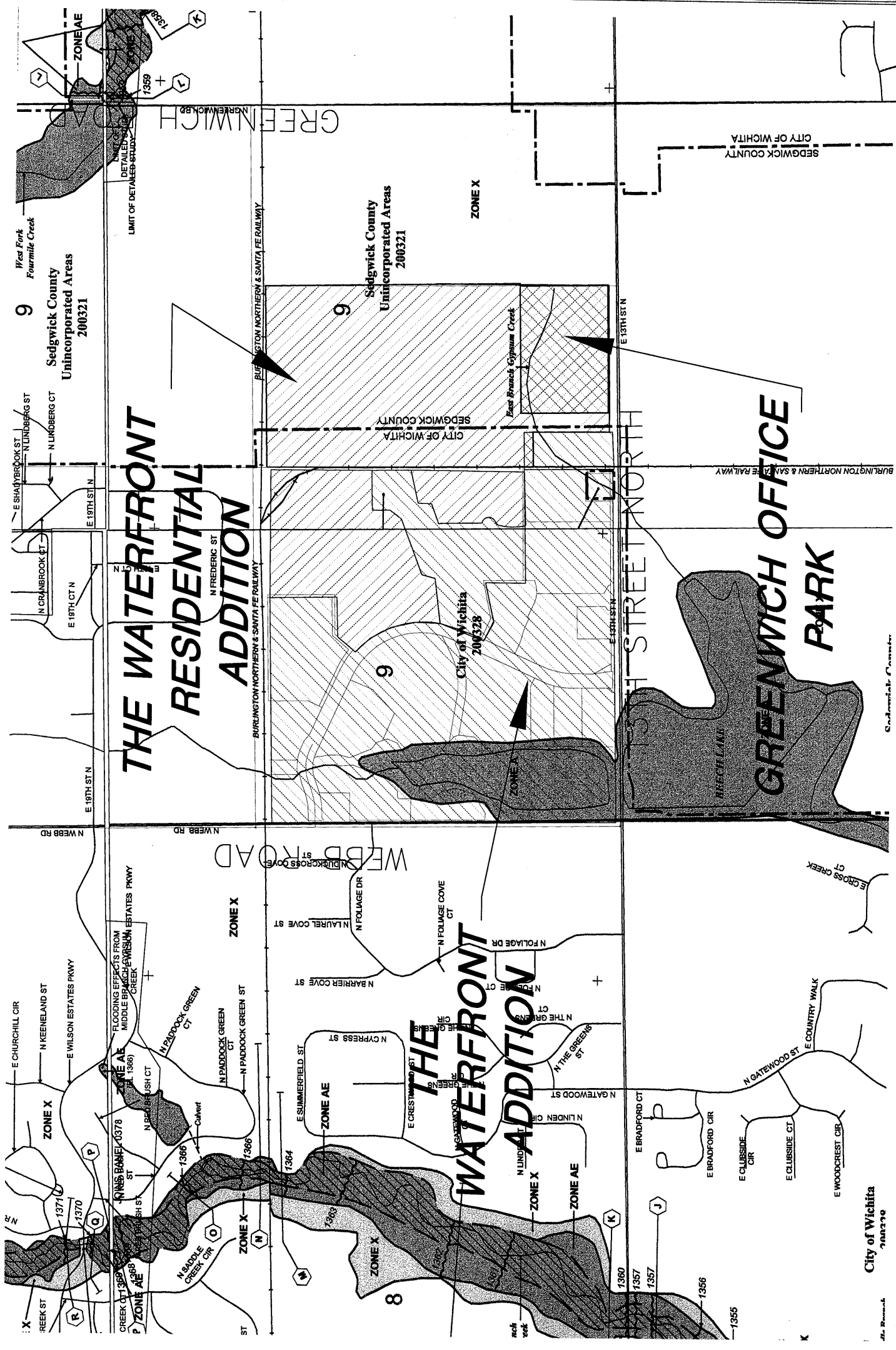
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 WICHITA, KS. 67206
 316 - 684 - 9600
 www.mkec.com

H:\Civi\02014\Views\Drawn\TR-20\TR-20_KEY_PRE.dwg 2/14/2006 11:21:09 AM CST

Figure 2.3

FIRM



NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0379E

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

PANEL 379 OF 700
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS: NUMBER: 200321 PANEL: 0379 E E
 SEDGWICK COUNTY WICHITA, CITY OF 200328 0379 E 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 20173C0379E
EFFECTIVE DATE FEBRUARY 2, 2007
 Federal Emergency Management Agency

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0378E

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

PANEL 378 OF 700
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS: NUMBER: 200321 PANEL: 0378 E E
 SEDGWICK COUNTY WICHITA, CITY OF 200328 0378 E 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 20173C0378E
EFFECTIVE DATE FEBRUARY 2, 2007
 Federal Emergency Management Agency

NFIP NATIONAL FLOOD INSURANCE PROGRAM

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: NUMBER: 200328 PANEL: 0376 E E
 SEDGWICK COUNTY WICHITA, CITY OF 200328 0376 E 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

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0377E

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

PANEL 377 OF 700
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS: NUMBER: 200328 PANEL: 0377 E E
 SEDGWICK COUNTY WICHITA, CITY OF 200328 0377 E 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 20173C0377E
EFFECTIVE DATE FEBRUARY 2, 2007
 Federal Emergency Management Agency

MKEC THE WATERFRONT ADDITION
 PROJECT NAME

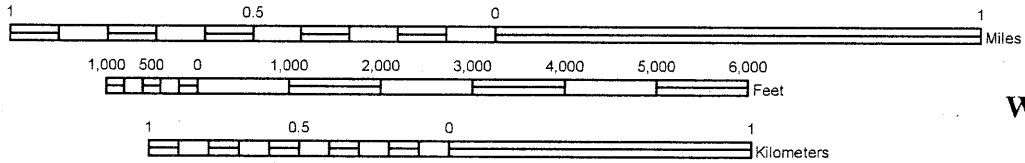
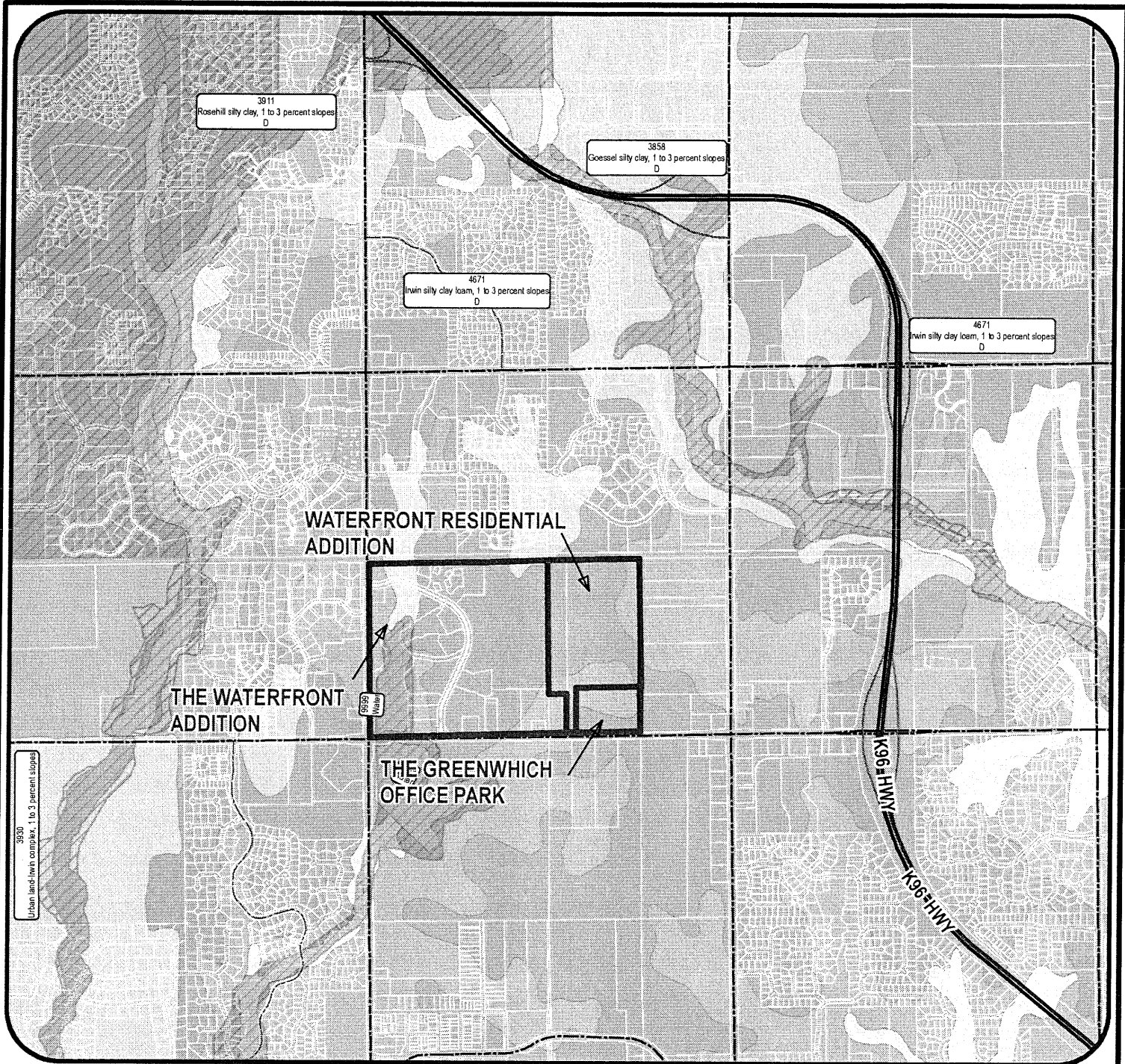
FIRM MAP
 SHEET TITLE

411 N. WEBB ROAD
 WICHITA, KS. 67206 KLA
 316-684-9000 DESIGN BY: CMJ
 DRAWN BY: GJA
 CHECKED BY: GJA

DATE: APRIL 2007 JOB NO. 02014 SHEET NO. 1 / 1

H:\CIVIL\02014\DWG\Drng\Joint_Submittal\02014fm_1.dwg

Figure 2.4
Soil Survey



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THE WATERFRONT ADDITION		
Project Name:		
Soil Survey -Sedgwick County, KS		
Sheet Title:		
	CMJ	April 2007
	Drawn By:	Date:
	TMHKLA	02014
	Design / Review:	Job No.:

Figure 2.5
HY-8 Analysis

CURRENT DATE: 12-13-2006
CURRENT TIME: 11:44:10

FILE DATE: 12-13-2006
FILE NAME: 5X4WATER

FHWA CULVERT ANALYSIS
HY-8, VERSION 6.1

C U L V E R T N O.	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (ft)	OUTLET ELEV. (ft)	CULVERT LENGTH (ft)	BARRELS SHAPE MATERIAL	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	1372.90	1372.50	79.50	1 RCB	5.00	4.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (cfs)

FILE: 5X4WATER

DATE: 12-13-2006

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1372.90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	1
1374.11	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.00	1
1374.82	40.0	40.0	0.0	0.0	0.0	0.0	0.0	0.00	1
1375.44	60.0	60.0	0.0	0.0	0.0	0.0	0.0	0.00	1
1375.98	80.0	80.0	0.0	0.0	0.0	0.0	0.0	0.00	1
1376.48	100.0	100.0	0.0	0.0	0.0	0.0	0.0	0.00	1
1376.86	115.0	115.0	0.0	0.0	0.0	0.0	0.0	0.00	1
1377.51	140.0	140.0	0.0	0.0	0.0	0.0	0.0	0.00	1
1378.05	160.0	158.8	0.0	0.0	0.0	0.0	0.0	0.76	5
1378.33	180.0	167.9	0.0	0.0	0.0	0.0	0.0	11.84	4
1378.54	200.0	174.6	0.0	0.0	0.0	0.0	0.0	24.78	3
1377.99	156.8	156.8	0.0	0.0	0.0	0.0	0.0	0.0	OVERTOPPING

SUMMARY OF ITERATIVE SOLUTION ERRORS

FILE: 5X4WATER

DATE: 12-13-2006

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
1372.90	0.000	0.00	0.00	0.00
1374.11	0.000	20.00	0.00	0.00
1374.82	0.000	40.00	0.00	0.00
1375.44	0.000	60.00	0.00	0.00
1375.98	0.000	80.00	0.00	0.00
1376.48	0.000	100.00	0.00	0.00
1376.86	0.000	115.00	0.00	0.00
1377.51	0.000	140.00	0.00	0.00
1378.05	-0.006	160.00	0.49	0.31
1378.33	-0.003	180.00	0.27	0.15
1378.54	-0.005	200.00	0.59	0.29

<1> TOLERANCE (ft) = 0.010

<2> TOLERANCE (%) = 1.000

CURRENT DATE: 12-13-2006
CURRENT TIME: 11:44:10

FILE DATE: 12-13-2006
FILE NAME: 5X4WATER

PERFORMANCE CURVE FOR CULVERT 1 - 1(5.00 (ft) BY 4.00 (ft)) RCB

DIS- CHARGE FLOW (cfs)	HEAD- WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)	
0.00	1372.90	0.00	0.00	0-NF	0.00	0.00	0.00	-0.10	0.00	0.00	
20.00	1374.11	1.21	1.21	1-S2n	0.68	0.79	0.59	0.80	6.74	1.44	
40.00	1374.82	1.92	1.92	1-S2n	1.09	1.26	1.10	1.19	7.25	1.75	
60.00	1375.44	2.54	2.54	1-S2n	1.44	1.65	1.45	1.47	8.27	1.96	
80.00	1375.98	3.08	3.08	1-S2n	1.77	2.00	1.70	1.71	9.41	2.12	
100.00	1376.48	3.58	3.58	1-S2n	2.09	2.32	2.02	1.91	9.90	2.25	
115.00	1376.86	3.96	3.96	1-S2n	2.32	2.55	2.25	2.05	10.23	2.33	
140.00	1377.51	4.61	4.61	5-S2n	2.68	2.90	2.60	2.26	10.75	2.46	
158.75	1378.04	5.14	5.14	5-S2n	2.95	3.16	2.96	2.41	10.73	2.55	
167.89	1378.32	5.42	5.42	5-S2n	3.08	3.28	3.10	2.55	10.83	2.62	
174.63	1378.53	5.63	5.63	5-S2n	3.18	3.37	3.19	2.68	10.93	2.70	
El. inlet face invert					1372.90 ft	El. outlet invert			1372.50 ft		
El. inlet throat invert					0.00 ft	El. inlet crest			0.00 ft		

***** SITE DATA ***** CULVERT INVERT *****
 INLET STATION 0.00 ft
 INLET ELEVATION 1372.90 ft
 OUTLET STATION 79.50 ft
 OUTLET ELEVATION 1372.50 ft
 NUMBER OF BARRELS 1
 SLOPE (V/H) 0.0050
 CULVERT LENGTH ALONG SLOPE 79.50 ft

***** CULVERT DATA SUMMARY *****
 BARREL SHAPE BOX
 BARREL SPAN 5.00 ft
 BARREL RISE 4.00 ft
 BARREL MATERIAL CONCRETE
 BARREL MANNING'S n 0.012
 INLET TYPE CONVENTIONAL
 INLET EDGE AND WALL SQUARE EDGE (30-75 DEG. FLARE)
 INLET DEPRESSION NONE

CURRENT DATE: 12-13-2006
 CURRENT TIME: 11:44:10

FILE DATE: 12-13-2006
 FILE NAME: 5X4WATER

TAILWATER

***** REGULAR CHANNEL CROSS SECTION *****

BOTTOM WIDTH	10.00 ft
SIDE SLOPE H/V (X:1)	6.0
CHANNEL SLOPE V/H (ft/ft)	0.002
MANNING'S n (.01-0.1)	0.035
CHANNEL INVERT ELEVATION	1372.40 ft
CULVERT NO.1 OUTLET INVERT ELEVATION	1372.50 ft

***** UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (cfs)	W.S.E. (ft)	FROUDE NUMBER	DEPTH (ft)	VEL. (f/s)	SHEAR (psf)
0.00	1372.40	0.000	0.00	0.00	0.00
20.00	1373.30	0.268	0.90	1.44	0.11
40.00	1373.69	0.273	1.29	1.75	0.16
60.00	1373.97	0.276	1.57	1.96	0.20
80.00	1374.21	0.278	1.81	2.12	0.23
100.00	1374.41	0.279	2.01	2.25	0.25
115.00	1374.55	0.280	2.15	2.33	0.27
140.00	1374.76	0.282	2.36	2.46	0.29
160.00	1374.91	0.283	2.51	2.55	0.31
180.00	1375.05	0.284	2.65	2.62	0.33
200.00	1375.18	0.285	2.78	2.70	0.35

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	60.00 ft
CREST LENGTH	20.00 ft
OVERTOPPING CREST ELEVATION	1377.99 ft

Figure 2.6

Pre-Developed TR-20 Modeling

*****80-80 LIST OF INPUT DATA FOR TR-20 HYDROLOGY*****

JOB TR-20	FULLPRINT	SUMMARY	NOPLOTS
TITLE 001 PRE-PROJECT - EAST BRANCH GYPSUM CREEK 2/14/06 ADD BASIN 052 & 051			
TITLE WTRFTPP5.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL CHANCE			
4 DIMHYD	0.02		484 SCS
8	.000	.100	.190 .310
8	.470	.660	.820 .930 .990
8	1.000	.990	.930 .860 .780
8	.680	.560	.460 .390 .330
8	.280	.241	.207 .174 .147
8	.126	.107	.091 .077 .066
8	.055	.047	.040 .034 .029
8	.025	.021	.018 .015 .013
8	.011	.009	.008 .007 .006
8	.005	.004	.003 .002 .001
8	.000	.000	.000 .000 .000
9 ENDTBL			
3 STRUCT	10		R-EB-BN
8		1369.4	0.0 0.0
8		1370.4	6.0 0.279
8		1371.4	14.0 1.093
8		1372.4	30.0 2.269
8		1373.4	60.0 3.606
8		1374.4	320.0 7.212
8		1375.4	580.0 11.361
8		1376.4	760.0 16.450
8		1377.4	925.0 23.036
8		1378.4	1085.0 31.035
8		1379.4	1240.0 40.834
9 ENDTBL			
3 STRUCT	18		NORTH &
8		1368.7	0.0 0.0
8		1369.0	100.0 13.60
8		1370.0	180.0 60.40
8		1371.0	490.0 109.58
8		1372.0	1160.0 167.28
9 ENDTBL			
6 RUNOFF 1 005	3 0.1953	88.8	0.6003
6 RUNOFF 1 025	1 0.1566	90.1	0.5738
6 ADDHYD 4 030	1 3 2		1
6 RUNOFF 1 035	1 0.1638	90.6	0.5328
6 ADDHYD 4 040	1 2 3		1
6 RESVOR 2	10 3 1 1369.4		1 EM/RR
6 RUNOFF 1 045	2 0.0432	84.5	0.5544
6 ADDHYD 4 050	1 2 3		1
6 RUNOFF 1 053	4 0.1455	84.0	0.8340
6 RUNOFF 1 055	2 0.1614	86.5	0.8034
6 ADDHYD 4 059	4 2 5		1
6 ADDHYD 4 060	5 3 1		1
6 RUNOFF 1 061	2 0.0273	84.0	0.3166
6 ADDHYD 4 062	2 1 4		1

*****80-80 LIST OF INPUT DATA (CONTINUED)*****

6	RUNOFF	1	065	3	0.3483	86.3	1.0448				1
6	ADDHYD	4	070	4	3	2					1
6	RESVOR	2	18	2	1	1368.7					1 BEECHLKE
	ENDATA										
7	INCREM	6			0.10						
7	COMPUT	7	005	18	0.0	3.50	1.0	2	2	11	01
	ENDCMP	1									
7	COMPUT	7	005	18	0.0	4.55	1.0	2	2	12	02
	ENDCMP	1									
7	COMPUT	7	005	18	0.0	5.25	1.0	2	2	13	03
	ENDCMP	1									
7	COMPUT	7	005	18	0.0	6.98	1.0	2	2	13	04
	ENDCMP	1									
7	COMPUT	7	005	18	0.0	7.80	1.0	2	2	14	05
	ENDCMP	1									
7	COMPUT	7	005	18	0.0	9.35	1.0	2	2	15	06
	ENDCMP	1									
	ENDJOB	2									

*****END OF 80-80 LIST*****

DIMENSIONLESS HYDROGRAPH TABLE ENTERED

8	.0000	.0300	.1000	.1900	.3100
8	.4700	.6600	.8200	.9300	.9900
8	1.0000	.9900	.9300	.8600	.7800
8	.6800	.5600	.4600	.3900	.3300
8	.2800	.2410	.2070	.1740	.1470
8	.1260	.1070	.0910	.0770	.0660
8	.0550	.0470	.0400	.0340	.0290
8	.0250	.0210	.0180	.0150	.0130
8	.0110	.0090	.0080	.0070	.0060
8	.0050	.0040	.0030	.0020	.0010
8	.0000	.0000	.0000	.0000	.0000

9 ENDTBL

COMPUTED TIME INCREMENT = .0200

COMPUTED PEAK RATE FACTOR = 484.000

TR20 ----- SCS -
PRE-PROJECT - EAST BRANCH GYPSUM CREEK 2/14/06 ADD BASIN 052 VERSION
01/05/** TPP5.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUA2.04TEST
11:55:45 PASS 1 JOB NO. 1 PAGE 2

EXECUTIVE CONTROL INCREM MAIN TIME INCREMENT = .100 HOURS

EXECUTIVE CONTROL COMPUT FROM XSECTION 5 TO STRUCTURE 18
STARTING TIME = .00 RAIN DEPTH = 3.50 RAIN DURATION = 1.00
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS
ALTERNATE NO. =11 STORM NO. = 1 RAIN TABLE NO. = 2

OPERATION RUNOFF XSECTION 5
OUTPUT HYDROGRAPH = 3 AREA = .20 SQ MI
INPUT RUNOFF CURVE = 89. TIME OF CONCENTRATION = .60 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0800 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.24	219.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.34 WATERSHED INCHES; 295 CFS-HRS; 24.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 25
OUTPUT HYDROGRAPH = 1 AREA = .16 SQ MI
INPUT RUNOFF CURVE = 90. TIME OF CONCENTRATION = .57 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0765 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.22	188.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.46 WATERSHED INCHES; 248 CFS-HRS; 20.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 30
INPUT HYDROGRAPHS 1,3 OUTPUT HYDROGRAPH 2

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.23	407.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.39 WATERSHED INCHES; 543 CFS-HRS; 44.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 35
OUTPUT HYDROGRAPH = 1 AREA = .16 SQ MI
INPUT RUNOFF CURVE = 91. TIME OF CONCENTRATION = .53 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0710 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.20	210.1	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.50 WATERSHED INCHES;	264 CFS-HRS;	21.8 ACRE-FEET.

OPERATION ADDHYD XSECTION 40
 INPUT HYDROGRAPHS 1,2 OUTPUT HYDROGRAPH 3

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.22	616.7	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.42 WATERSHED INCHES;	807 CFS-HRS;	66.7 ACRE-FEET.

OPERATION RESVOR STRUCTURE 10
 INPUT HYDROGRAPH 3 OUTPUT HYDROGRAPH 1
 SURFACE ELEVATION = 1369.40

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.38	515.1	1375.15
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.42 WATERSHED INCHES;	807 CFS-HRS;	66.7 ACRE-FEET.

OPERATION RUNOFF XSECTION 45
 OUTPUT HYDROGRAPH = 2 AREA = .04 SQ MI
 INPUT RUNOFF CURVE = 85. TIME OF CONCENTRATION = .55 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0739 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.22	43.3	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.97 WATERSHED INCHES;	55 CFS-HRS;	4.6 ACRE-FEET.

OPERATION ADDHYD XSECTION 50
 INPUT HYDROGRAPHS 1,2 OUTPUT HYDROGRAPH 3

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.36	550.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 2.39 WATERSHED INCHES; 862 CFS-HRS; 71.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 53
 OUTPUT HYDROGRAPH = 4 AREA = .15 SQ MI
 INPUT RUNOFF CURVE = 84. TIME OF CONCENTRATION = .83 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0910 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.40	110.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 1.94 WATERSHED INCHES; 182 CFS-HRS; 15.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 55
 OUTPUT HYDROGRAPH = 2 AREA = .16 SQ MI
 INPUT RUNOFF CURVE = 87. TIME OF CONCENTRATION = .80 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .1071 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.37	136.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 2.14 WATERSHED INCHES; 223 CFS-HRS; 18.4 ACRE-FEET.

OPERATION ADDHYD XSECTION 59
 INPUT HYDROGRAPHS 4,2 OUTPUT HYDROGRAPH 5

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.38	246.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 2.04 WATERSHED INCHES; 405 CFS-HRS; 33.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 60
 INPUT HYDROGRAPHS 5,3 OUTPUT HYDROGRAPH 1

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.37	797.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 2.27 WATERSHED INCHES; 1267 CFS-HRS; 104.7 ACRE-FEET.

TR20 ----- SCS -
PRE-PROJECT - EAST BRANCH GYPSUM CREEK 2/14/06 ADD BASIN 052 VERSION
01/05/** TPP5.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUA2.04TEST
11:55:45 PASS 1 JOB NO. 1 PAGE 5

OPERATION RUNOFF XSECTION 61
OUTPUT HYDROGRAPH = 2 AREA = .03 SQ MI
INPUT RUNOFF CURVE = 84. TIME OF CONCENTRATION = .32 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0422 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.08	36.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
1.94 WATERSHED INCHES;	34 CFS-HRS;	2.8 ACRE-FEET.

OPERATION ADDHYD XSECTION 62
INPUT HYDROGRAPHS 2,1 OUTPUT HYDROGRAPH 4

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.36	810.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.26 WATERSHED INCHES;	1301 CFS-HRS;	107.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 65
OUTPUT HYDROGRAPH = 3 AREA = .35 SQ MI
INPUT RUNOFF CURVE = 86. TIME OF CONCENTRATION = 1.04 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0964 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.52	249.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.12 WATERSHED INCHES;	477 CFS-HRS;	39.4 ACRE-FEET.

OPERATION ADDHYD XSECTION 70
INPUT HYDROGRAPHS 4,3 OUTPUT HYDROGRAPH 2

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.39	1045.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.22 WATERSHED INCHES;	1778 CFS-HRS;	146.9 ACRE-FEET.

OPERATION RESVOR STRUCTURE 18
INPUT HYDROGRAPH 2 OUTPUT HYDROGRAPH 1
SURFACE ELEVATION = 1368.70

TR20 ----- SCS -
PRE-PROJECT - EAST BRANCH GYPSUM CREEK 2/14/06 ADD BASIN 052 VERSION
01/05/** TPP5.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUA2.04TEST
11:55:45 PASS 1 JOB NO. 1 PAGE 6

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
13.49	224.1	1370.14

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.21 WATERSHED INCHES; 1772 CFS-HRS; 146.4 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 1
1

TR20 ----- SCS -
 PRE-PROJECT - EAST BRANCH GYPSUM CREEK 2/14/06 ADD BASIN 052 VERSION
 01/05/** TPP5.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUA2.04TEST
 11:55:45 PASS 2 JOB NO. 1 PAGE 7

EXECUTIVE CONTROL COMPUT FROM XSECTION 5 TO STRUCTURE 18
 STARTING TIME = .00 RAIN DEPTH = 4.55 RAIN DURATION = 1.00
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS
 ALTERNATE NO. = 12 STORM NO. = 2 RAIN TABLE NO. = 2

OPERATION RUNOFF XSECTION 5
 OUTPUT HYDROGRAPH = 3 AREA = .20 SQ MI
 INPUT RUNOFF CURVE = 89. TIME OF CONCENTRATION = .60 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0800 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.23	309.0	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.32 WATERSHED INCHES;	419 CFS-HRS;	34.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 25
 OUTPUT HYDROGRAPH = 1 AREA = .16 SQ MI
 INPUT RUNOFF CURVE = 90. TIME OF CONCENTRATION = .57 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0765 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.22	263.4	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.45 WATERSHED INCHES;	349 CFS-HRS;	28.8 ACRE-FEET.

OPERATION ADDHYD XSECTION 30
 INPUT HYDROGRAPHS 1,3 OUTPUT HYDROGRAPH 2

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.22	572.1	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.38 WATERSHED INCHES;	767 CFS-HRS;	63.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 35
 OUTPUT HYDROGRAPH = 1 AREA = .16 SQ MI
 INPUT RUNOFF CURVE = 91. TIME OF CONCENTRATION = .53 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0710 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.19	291.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 3.50 WATERSHED INCHES; 370 CFS-HRS; 30.6 ACRE-FEET.

OPERATION ADDHYD XSECTION 40
 INPUT HYDROGRAPHS 1,2 OUTPUT HYDROGRAPH 3

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.21	861.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 3.42 WATERSHED INCHES; 1137 CFS-HRS; 94.0 ACRE-FEET.

OPERATION RESVOR STRUCTURE 10
 INPUT HYDROGRAPH 3 OUTPUT HYDROGRAPH 1
 SURFACE ELEVATION = 1369.40

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.40	677.3	1375.94

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 3.42 WATERSHED INCHES; 1138 CFS-HRS; 94.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 45
 OUTPUT HYDROGRAPH = 2 AREA = .04 SQ MI
 INPUT RUNOFF CURVE = 85. TIME OF CONCENTRATION = .55 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0739 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.21	63.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 2.91 WATERSHED INCHES; 81 CFS-HRS; 6.7 ACRE-FEET.

OPERATION ADDHYD XSECTION 50
 INPUT HYDROGRAPHS 1,2 OUTPUT HYDROGRAPH 3

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.37	727.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 3.38 WATERSHED INCHES; 1219 CFS-HRS; 100.7 ACRE-FEET.

OPERATION RUNOFF XSECTION 53
OUTPUT HYDROGRAPH = 4 AREA = .15 SQ MI
INPUT RUNOFF CURVE = 84. TIME OF CONCENTRATION = .83 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0910 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.38	162.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.86 WATERSHED INCHES;	269 CFS-HRS;	22.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 55
OUTPUT HYDROGRAPH = 2 AREA = .16 SQ MI
INPUT RUNOFF CURVE = 87. TIME OF CONCENTRATION = .80 HOURS
COMPUTED INTERNAL TIME INCREMENT = .1071 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.37	195.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.09 WATERSHED INCHES;	322 CFS-HRS;	26.6 ACRE-FEET.

OPERATION ADDHYD XSECTION 59
INPUT HYDROGRAPHS 4,2 OUTPUT HYDROGRAPH 5

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.37	358.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
2.98 WATERSHED INCHES;	591 CFS-HRS;	48.8 ACRE-FEET.

OPERATION ADDHYD XSECTION 60
INPUT HYDROGRAPHS 5,3 OUTPUT HYDROGRAPH 1

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.37	1085.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.24 WATERSHED INCHES;	1810 CFS-HRS;	149.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 61
OUTPUT HYDROGRAPH = 2 AREA = .03 SQ MI
INPUT RUNOFF CURVE = 84. TIME OF CONCENTRATION = .32 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0422 HOURS

TR20 ----- SCS -
 PRE-PROJECT - EAST BRANCH GYPSUM CREEK 2/14/06 ADD BASIN 052 VERSION
 01/05/** TPP5.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUA2.04TEST
 11:55:45 PASS 2 JOB NO. 1 PAGE 10

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.08 53.7 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 2.86 WATERSHED INCHES; 50 CFS-HRS; 4.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 62
 INPUT HYDROGRAPHS 2,1 OUTPUT HYDROGRAPH 4

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.36 1105.0 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 3.23 WATERSHED INCHES; 1860 CFS-HRS; 153.7 ACRE-FEET.

OPERATION RUNOFF XSECTION 65
 OUTPUT HYDROGRAPH = 3 AREA = .35 SQ MI
 INPUT RUNOFF CURVE = 86. TIME OF CONCENTRATION = 1.04 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0964 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.51 359.2 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 3.07 WATERSHED INCHES; 691 CFS-HRS; 57.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 70
 INPUT HYDROGRAPHS 4,3 OUTPUT HYDROGRAPH 2

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.40 1445.9 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 3.18 WATERSHED INCHES; 2551 CFS-HRS; 210.8 ACRE-FEET.

OPERATION RESVOR STRUCTURE 18
 INPUT HYDROGRAPH 2 OUTPUT HYDROGRAPH 1
 SURFACE ELEVATION = 1368.70

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 13.31 396.4 1370.70

TR20 ----- SCS -
PRE-PROJECT - EAST BRANCH GYPSUM CREEK 2/14/06 ADD BASIN 052 VERSION
01/05/** TPP5.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUA2.04TEST
11:55:45 PASS 2 JOB NO. 1 PAGE 11

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.17 WATERSHED INCHES; 2543 CFS-HRS; 210.1 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 2
1

TR20 ----- SCS -
 PRE-PROJECT - EAST BRANCH GYPSUM CREEK 2/14/06 ADD BASIN 052 VERSION
 01/05/** TPP5.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUA2.04TEST
 11:55:45 PASS 3 JOB NO. 1 PAGE 12

EXECUTIVE CONTROL COMPUT FROM XSECTION 5 TO STRUCTURE 18
 STARTING TIME = .00 RAIN DEPTH = 5.25 RAIN DURATION = 1.00
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS
 ALTERNATE NO. =13 STORM NO. = 3 RAIN TABLE NO. = 2

OPERATION RUNOFF XSECTION 5
 OUTPUT HYDROGRAPH = 3 AREA = .20 SQ MI
 INPUT RUNOFF CURVE = 89. TIME OF CONCENTRATION = .60 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0800 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.23	368.9	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
3.99 WATERSHED INCHES;	502 CFS-HRS;	41.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 25
 OUTPUT HYDROGRAPH = 1 AREA = .16 SQ MI
 INPUT RUNOFF CURVE = 90. TIME OF CONCENTRATION = .57 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0765 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.22	313.0	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
4.12 WATERSHED INCHES;	417 CFS-HRS;	34.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 30
 INPUT HYDROGRAPHS 1,3 OUTPUT HYDROGRAPH 2

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.22	681.7	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
4.05 WATERSHED INCHES;	919 CFS-HRS;	76.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 35
 OUTPUT HYDROGRAPH = 1 AREA = .16 SQ MI
 INPUT RUNOFF CURVE = 91. TIME OF CONCENTRATION = .53 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0710 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.19	344.3	(RUNOFF)

TR20 ----- SCS -
 PRE-PROJECT - EAST BRANCH GYPSUM CREEK 2/14/06 ADD BASIN 052 VERSION
 01/05/** TPP5.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUA2.04TEST
 11:55:45 PASS 3 JOB NO. 1 PAGE 13

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 4.18 WATERSHED INCHES; 442 CFS-HRS; 36.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 40
 INPUT HYDROGRAPHS 1,2 OUTPUT HYDROGRAPH 3

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.21 1023.8 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 4.09 WATERSHED INCHES; 1361 CFS-HRS; 112.5 ACRE-FEET.

OPERATION RESVOR STRUCTURE 10
 INPUT HYDROGRAPH 3 OUTPUT HYDROGRAPH 1
 SURFACE ELEVATION = 1369.40

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.42 776.9 1376.50

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 4.09 WATERSHED INCHES; 1361 CFS-HRS; 112.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 45
 OUTPUT HYDROGRAPH = 2 AREA = .04 SQ MI
 INPUT RUNOFF CURVE = 85. TIME OF CONCENTRATION = .55 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0739 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.21 77.9 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 3.55 WATERSHED INCHES; 99 CFS-HRS; 8.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 50
 INPUT HYDROGRAPHS 1,2 OUTPUT HYDROGRAPH 3

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.38 835.8 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 4.05 WATERSHED INCHES; 1460 CFS-HRS; 120.7 ACRE-FEET.

OPERATION RUNOFF XSECTION 53
OUTPUT HYDROGRAPH = 4 AREA = .15 SQ MI
INPUT RUNOFF CURVE = 84. TIME OF CONCENTRATION = .83 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0910 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.39	198.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.50 WATERSHED INCHES; 328 CFS-HRS; 27.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 55
OUTPUT HYDROGRAPH = 2 AREA = .16 SQ MI
INPUT RUNOFF CURVE = 87. TIME OF CONCENTRATION = .80 HOURS
COMPUTED INTERNAL TIME INCREMENT = .1071 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.35	238.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.75 WATERSHED INCHES; 391 CFS-HRS; 32.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 59
INPUT HYDROGRAPHS 4,2 OUTPUT HYDROGRAPH 5

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.37	435.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.63 WATERSHED INCHES; 719 CFS-HRS; 59.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 60
INPUT HYDROGRAPHS 5,3 OUTPUT HYDROGRAPH 1

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.38	1271.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.90 WATERSHED INCHES; 2180 CFS-HRS; 180.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 61
OUTPUT HYDROGRAPH = 2 AREA = .03 SQ MI
INPUT RUNOFF CURVE = 84. TIME OF CONCENTRATION = .32 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0422 HOURS

TR20 ----- SCS -
 PRE-PROJECT - EAST BRANCH GYPSUM CREEK 2/14/06 ADD BASIN 052 VERSION
 01/05/** TPP5.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUA2.04TEST
 11:55:45 PASS 3 JOB NO. 1 PAGE 15

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.08 65.8 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 3.50 WATERSHED INCHES; 62 CFS-HRS; 5.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 62
 INPUT HYDROGRAPHS 2,1 OUTPUT HYDROGRAPH 4

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.36 1294.6 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 3.89 WATERSHED INCHES; 2241 CFS-HRS; 185.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 65
 OUTPUT HYDROGRAPH = 3 AREA = .35 SQ MI
 INPUT RUNOFF CURVE = 86. TIME OF CONCENTRATION = 1.04 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0964 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.51 435.3 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 3.73 WATERSHED INCHES; 839 CFS-HRS; 69.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 70
 INPUT HYDROGRAPHS 4,3 OUTPUT HYDROGRAPH 2

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.40 1709.9 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 3.84 WATERSHED INCHES; 3080 CFS-HRS; 254.5 ACRE-FEET.

OPERATION RESVOR STRUCTURE 18
 INPUT HYDROGRAPH 2 OUTPUT HYDROGRAPH 1
 SURFACE ELEVATION = 1368.70

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 13.24 526.9 1371.06

TR20 ----- SCS -
PRE-PROJECT - EAST BRANCH GYPSUM CREEK 2/14/06 ADD BASIN 052 VERSION
01/05/** TPP5.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUA2.04TEST
11:55:45 PASS 3 JOB NO. 1 PAGE 16

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.83 WATERSHED INCHES; 3070 CFS-HRS; 253.7 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 3
1

TR20 ----- SCS -
 PRE-PROJECT - EAST BRANCH GYPSUM CREEK 2/14/06 ADD BASIN 052 VERSION
 01/05/** TPP5.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUA2.04TEST
 11:55:45 PASS 4 JOB NO. 1 PAGE 17

EXECUTIVE CONTROL COMPUT FROM XSECTION 5 TO STRUCTURE 18
 STARTING TIME = .00 RAIN DEPTH = 6.98 RAIN DURATION = 1.00
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS
 ALTERNATE NO. =13 STORM NO. = 4 RAIN TABLE NO. = 2

OPERATION RUNOFF XSECTION 5
 OUTPUT HYDROGRAPH = 3 AREA = .20 SQ MI
 INPUT RUNOFF CURVE = 89. TIME OF CONCENTRATION = .60 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0800 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.23	515.6	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
5.66 WATERSHED INCHES;	713 CFS-HRS;	58.9 ACRE-FEET.

OPERATION RUNOFF XSECTION 25
 OUTPUT HYDROGRAPH = 1 AREA = .16 SQ MI
 INPUT RUNOFF CURVE = 90. TIME OF CONCENTRATION = .57 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0765 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.21	433.7	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
5.81 WATERSHED INCHES;	587 CFS-HRS;	48.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 30
 INPUT HYDROGRAPHS 1,3 OUTPUT HYDROGRAPH 2

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.22	948.8	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
5.73 WATERSHED INCHES;	1300 CFS-HRS;	107.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 35
 OUTPUT HYDROGRAPH = 1 AREA = .16 SQ MI
 INPUT RUNOFF CURVE = 91. TIME OF CONCENTRATION = .53 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0710 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.19	478.2	(RUNOFF)

TR20 ----- SCS -
 PRE-PROJECT - EAST BRANCH GYPSUM CREEK 2/14/06 ADD BASIN 052 VERSION
 01/05/** TPP5.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUA2.04TEST
 11:55:45 PASS 4 JOB NO. 1 PAGE 18

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 5.87 WATERSHED INCHES; 620 CFS-HRS; 51.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 40
 INPUT HYDROGRAPHS 1,2 OUTPUT HYDROGRAPH 3

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.21	1424.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 5.77 WATERSHED INCHES; 1921 CFS-HRS; 158.7 ACRE-FEET.

OPERATION RESVOR STRUCTURE 10
 INPUT HYDROGRAPH 3 OUTPUT HYDROGRAPH 1
 SURFACE ELEVATION = 1369.40

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.45	981.5	1377.75

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 5.77 WATERSHED INCHES; 1920 CFS-HRS; 158.7 ACRE-FEET.

OPERATION RUNOFF XSECTION 45
 OUTPUT HYDROGRAPH = 2 AREA = .04 SQ MI
 INPUT RUNOFF CURVE = 85. TIME OF CONCENTRATION = .55 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0739 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.21	112.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 5.17 WATERSHED INCHES; 144 CFS-HRS; 11.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 50
 INPUT HYDROGRAPHS 1,2 OUTPUT HYDROGRAPH 3

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.40	1060.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 5.72 WATERSHED INCHES; 2064 CFS-HRS; 170.6 ACRE-FEET.

TR20 ----- SCS -
PRE-PROJECT - EAST BRANCH GYPSUM CREEK 2/14/06 ADD BASIN 052 VERSION
01/05/** TPP5.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUA2.04TEST
11:55:45 PASS 4 JOB NO. 1 PAGE 19

OPERATION RUNOFF XSECTION 53
OUTPUT HYDROGRAPH = 4 AREA = .15 SQ MI
INPUT RUNOFF CURVE = 84. TIME OF CONCENTRATION = .83 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0910 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.38	288.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.12 WATERSHED INCHES; 481 CFS-HRS; 39.7 ACRE-FEET.

OPERATION RUNOFF XSECTION 55
OUTPUT HYDROGRAPH = 2 AREA = .16 SQ MI
INPUT RUNOFF CURVE = 87. TIME OF CONCENTRATION = .80 HOURS
COMPUTED INTERNAL TIME INCREMENT = .1071 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.36	336.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.40 WATERSHED INCHES; 562 CFS-HRS; 46.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 59
INPUT HYDROGRAPHS 4,2 OUTPUT HYDROGRAPH 5

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.37	625.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.27 WATERSHED INCHES; 1043 CFS-HRS; 86.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 60
INPUT HYDROGRAPHS 5,3 OUTPUT HYDROGRAPH 1

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.38	1684.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.56 WATERSHED INCHES; 3108 CFS-HRS; 256.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 61
OUTPUT HYDROGRAPH = 2 AREA = .03 SQ MI
INPUT RUNOFF CURVE = 84. TIME OF CONCENTRATION = .32 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0422 HOURS

TR20 ----- SCS -
 PRE-PROJECT - EAST BRANCH GYPSUM CREEK 2/14/06 ADD BASIN 052 VERSION
 01/05/** TPP5.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUA2.04TEST
 11:55:45 PASS 4 JOB NO. 1 PAGE 20

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.07 94.8 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 5.12 WATERSHED INCHES; 90 CFS-HRS; 7.4 ACRE-FEET.

OPERATION ADDHYD XSECTION 62
 INPUT HYDROGRAPHS 2,1 OUTPUT HYDROGRAPH 4

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.37 1715.9 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 5.55 WATERSHED INCHES; 3198 CFS-HRS; 264.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 65
 OUTPUT HYDROGRAPH = 3 AREA = .35 SQ MI
 INPUT RUNOFF CURVE = 86. TIME OF CONCENTRATION = 1.04 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0964 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.50 623.9 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 5.38 WATERSHED INCHES; 1208 CFS-HRS; 99.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 70
 INPUT HYDROGRAPHS 4,3 OUTPUT HYDROGRAPH 2

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.41 2318.8 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 5.50 WATERSHED INCHES; 4406 CFS-HRS; 364.1 ACRE-FEET.

OPERATION RESVOR STRUCTURE 18
 INPUT HYDROGRAPH 2 OUTPUT HYDROGRAPH 1
 SURFACE ELEVATION = 1368.70

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 13.13 970.3 1371.72

TR20 ----- SCS -
PRE-PROJECT - EAST BRANCH GYPSUM CREEK 2/14/06 ADD BASIN 052 VERSION
01/05/** TPP5.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUA2.04TEST
11:55:45 PASS 4 JOB NO. 1 PAGE 21

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.48 WATERSHED INCHES; 4389 CFS-HRS; 362.7 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 4
1

TR20 ----- SCS -
 PRE-PROJECT - EAST BRANCH GYPSUM CREEK 2/14/06 ADD BASIN 052 VERSION
 01/05/** TPP5.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUA2.04TEST
 11:55:45 PASS 5 JOB NO. 1 PAGE 22

EXECUTIVE CONTROL COMPUT FROM XSECTION 5 TO STRUCTURE 18
 STARTING TIME = .00 RAIN DEPTH = 7.80 RAIN DURATION = 1.00
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS
 ALTERNATE NO. =14 STORM NO. = 5 RAIN TABLE NO. = 2

OPERATION RUNOFF XSECTION 5
 OUTPUT HYDROGRAPH = 3 AREA = .20 SQ MI
 INPUT RUNOFF CURVE = 89. TIME OF CONCENTRATION = .60 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0800 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.23	585.7	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
6.46 WATERSHED INCHES;	814 CFS-HRS;	67.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 25
 OUTPUT HYDROGRAPH = 1 AREA = .16 SQ MI
 INPUT RUNOFF CURVE = 90. TIME OF CONCENTRATION = .57 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0765 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.21	491.4	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
6.61 WATERSHED INCHES;	668 CFS-HRS;	55.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 30
 INPUT HYDROGRAPHS 1,3 OUTPUT HYDROGRAPH 2

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.22	1076.7	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
6.53 WATERSHED INCHES;	1483 CFS-HRS;	122.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 35
 OUTPUT HYDROGRAPH = 1 AREA = .16 SQ MI
 INPUT RUNOFF CURVE = 91. TIME OF CONCENTRATION = .53 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0710 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.19	537.2	(RUNOFF)

TR20 ----- SCS -
PRE-PROJECT - EAST BRANCH GYPSUM CREEK 2/14/06 ADD BASIN 052 VERSION
01/05/** TPP5.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUA2.04TEST
11:55:45 PASS 5 JOB NO. 1 PAGE 23

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.68 WATERSHED INCHES; 706 CFS-HRS; 58.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 40
INPUT HYDROGRAPHS 1,2 OUTPUT HYDROGRAPH 3

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.21 1610.7 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.58 WATERSHED INCHES; 2188 CFS-HRS; 180.9 ACRE-FEET.

OPERATION RESVOR STRUCTURE 10
INPUT HYDROGRAPH 3 OUTPUT HYDROGRAPH 1
SURFACE ELEVATION = 1369.40

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.46 1071.4 1378.31

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.57 WATERSHED INCHES; 2188 CFS-HRS; 180.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 45
OUTPUT HYDROGRAPH = 2 AREA = .04 SQ MI
INPUT RUNOFF CURVE = 85. TIME OF CONCENTRATION = .55 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0739 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.21 127.6 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.96 WATERSHED INCHES; 166 CFS-HRS; 13.7 ACRE-FEET.

OPERATION ADDHYD XSECTION 50
INPUT HYDROGRAPHS 1,2 OUTPUT HYDROGRAPH 3

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.42 1160.5 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.53 WATERSHED INCHES; 2354 CFS-HRS; 194.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 53
 OUTPUT HYDROGRAPH = 4 AREA = .15 SQ MI
 INPUT RUNOFF CURVE = 84. TIME OF CONCENTRATION = .83 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0910 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.37	330.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 5.90 WATERSHED INCHES; 554 CFS-HRS; 45.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 55
 OUTPUT HYDROGRAPH = 2 AREA = .16 SQ MI
 INPUT RUNOFF CURVE = 87. TIME OF CONCENTRATION = .80 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .1071 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.35	386.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 6.20 WATERSHED INCHES; 646 CFS-HRS; 53.4 ACRE-FEET.

OPERATION ADDHYD XSECTION 59
 INPUT HYDROGRAPHS 4,2 OUTPUT HYDROGRAPH 5

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.36	717.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 6.06 WATERSHED INCHES; 1200 CFS-HRS; 99.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 60
 INPUT HYDROGRAPHS 5,3 OUTPUT HYDROGRAPH 1

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.39	1873.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 6.36 WATERSHED INCHES; 3554 CFS-HRS; 293.7 ACRE-FEET.

OPERATION RUNOFF XSECTION 61
 OUTPUT HYDROGRAPH = 2 AREA = .03 SQ MI
 INPUT RUNOFF CURVE = 84. TIME OF CONCENTRATION = .32 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0422 HOURS

TR20 ----- SCS -
 PRE-PROJECT - EAST BRANCH GYPSUM CREEK 2/14/06 ADD BASIN 052 VERSION
 01/05/** TPP5.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUA2.04TEST
 11:55:45 PASS 5 JOB NO. 1 PAGE 25

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.07 108.5 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 5.90 WATERSHED INCHES; 104 CFS-HRS; 8.6 ACRE-FEET.

OPERATION ADDHYD XSECTION 62
 INPUT HYDROGRAPHS 2,1 OUTPUT HYDROGRAPH 4

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.37 1909.4 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 6.35 WATERSHED INCHES; 3658 CFS-HRS; 302.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 65
 OUTPUT HYDROGRAPH = 3 AREA = .35 SQ MI
 INPUT RUNOFF CURVE = 86. TIME OF CONCENTRATION = 1.04 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0964 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.50 710.3 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 6.17 WATERSHED INCHES; 1386 CFS-HRS; 114.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 70
 INPUT HYDROGRAPHS 4,3 OUTPUT HYDROGRAPH 2

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.41 2596.1 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 6.30 WATERSHED INCHES; 5044 CFS-HRS; 416.8 ACRE-FEET.

OPERATION RESVOR STRUCTURE 18
 INPUT HYDROGRAPH 2 OUTPUT HYDROGRAPH 1
 SURFACE ELEVATION = 1368.70

*** WARNING - DISCHARGE EXCEEDS HIGHEST RATING POINT FOR STRUCTURE 18,
 VALUE EXTRAPOLATED. ***

TR20 ----- SCS -
PRE-PROJECT - EAST BRANCH GYPSUM CREEK 2/14/06 ADD BASIN 052 VERSION
01/05/** TPP5.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUA2.04TEST
11:55:45 PASS 5 JOB NO. 1 PAGE 26

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
13.12	1166.5	1372.01

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.27 WATERSHED INCHES; 5023 CFS-HRS; 415.1 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 5
1

TR20 ----- SCS -
 PRE-PROJECT - EAST BRANCH GYPSUM CREEK 2/14/06 ADD BASIN 052 VERSION
 01/05/** TPP5.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUA2.04TEST
 11:55:45 PASS 6 JOB NO. 1 PAGE 27

EXECUTIVE CONTROL COMPUT FROM XSECTION 5 TO STRUCTURE 18
 STARTING TIME = .00 RAIN DEPTH = 9.35 RAIN DURATION = 1.00
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS
 ALTERNATE NO. = 15 STORM NO. = 6 RAIN TABLE NO. = 2

OPERATION RUNOFF XSECTION 5
 OUTPUT HYDROGRAPH = 3 AREA = .20 SQ MI
 INPUT RUNOFF CURVE = 89. TIME OF CONCENTRATION = .60 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0800 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.23	716.4	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
7.98 WATERSHED INCHES;		1006 CFS-HRS; 83.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 25
 OUTPUT HYDROGRAPH = 1 AREA = .16 SQ MI
 INPUT RUNOFF CURVE = 90. TIME OF CONCENTRATION = .57 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0765 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.21	601.5	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
8.15 WATERSHED INCHES;		823 CFS-HRS; 68.0 ACRE-FEET.

OPERATION ADDHYD XSECTION 30
 INPUT HYDROGRAPHS 1,3 OUTPUT HYDROGRAPH 2

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.22	1317.2	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
8.05 WATERSHED INCHES;		1829 CFS-HRS; 151.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 35
 OUTPUT HYDROGRAPH = 1 AREA = .16 SQ MI
 INPUT RUNOFF CURVE = 91. TIME OF CONCENTRATION = .53 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0710 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.19	654.2	(RUNOFF)

TR20 ----- SCS -
 PRE-PROJECT - EAST BRANCH GYPSUM CREEK 2/14/06 ADD BASIN 052 VERSION
 01/05/** TPP5.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUA2.04TEST
 11:55:45 PASS 6 JOB NO. 1 PAGE 28

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 8.20 WATERSHED INCHES; 867 CFS-HRS; 71.6 ACRE-FEET.

OPERATION ADDHYD XSECTION 40
 INPUT HYDROGRAPHS 1,2 OUTPUT HYDROGRAPH 3

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.21	1968.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 8.10 WATERSHED INCHES; 2696 CFS-HRS; 222.8 ACRE-FEET.

OPERATION RESVOR STRUCTURE 10
 INPUT HYDROGRAPH 3 OUTPUT HYDROGRAPH 1
 SURFACE ELEVATION = 1369.40

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.49	1224.3	1379.30

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 8.10 WATERSHED INCHES; 2696 CFS-HRS; 222.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 45
 OUTPUT HYDROGRAPH = 2 AREA = .04 SQ MI
 INPUT RUNOFF CURVE = 85. TIME OF CONCENTRATION = .55 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0739 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.20	158.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 7.46 WATERSHED INCHES; 208 CFS-HRS; 17.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 50
 INPUT HYDROGRAPHS 1,2 OUTPUT HYDROGRAPH 3

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.43	1329.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 8.05 WATERSHED INCHES; 2904 CFS-HRS; 240.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 53
 OUTPUT HYDROGRAPH = 4 AREA = .15 SQ MI
 INPUT RUNOFF CURVE = 84. TIME OF CONCENTRATION = .83 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0910 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.37	412.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 7.40 WATERSHED INCHES; 695 CFS-HRS; 57.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 55
 OUTPUT HYDROGRAPH = 2 AREA = .16 SQ MI
 INPUT RUNOFF CURVE = 87. TIME OF CONCENTRATION = .80 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .1071 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.34	477.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 7.70 WATERSHED INCHES; 802 CFS-HRS; 66.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 59
 INPUT HYDROGRAPHS 4,2 OUTPUT HYDROGRAPH 5

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.36	887.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 7.55 WATERSHED INCHES; 1496 CFS-HRS; 123.6 ACRE-FEET.

OPERATION ADDHYD XSECTION 60
 INPUT HYDROGRAPHS 5,3 OUTPUT HYDROGRAPH 1

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.39	2210.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 7.87 WATERSHED INCHES; 4400 CFS-HRS; 363.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 61
 OUTPUT HYDROGRAPH = 2 AREA = .03 SQ MI
 INPUT RUNOFF CURVE = 84. TIME OF CONCENTRATION = .32 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0422 HOURS

TR20 ----- SCS -
 PRE-PROJECT - EAST BRANCH GYPSUM CREEK 2/14/06 ADD BASIN 052 VERSION
 01/05/** TPP5.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUA2.04TEST
 11:55:45 PASS 6 JOB NO. 1 PAGE 30

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.07	135.0	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
7.39 WATERSHED INCHES;	130 CFS-HRS;	10.8 ACRE-FEET.

OPERATION ADDHYD XSECTION 62
 INPUT HYDROGRAPHS 2,1 OUTPUT HYDROGRAPH 4

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.37	2254.4	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
7.86 WATERSHED INCHES;	4530 CFS-HRS;	374.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 65
 OUTPUT HYDROGRAPH = 3 AREA = .35 SQ MI
 INPUT RUNOFF CURVE = 86. TIME OF CONCENTRATION = 1.04 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0964 HOURS

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.50	873.6	(RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
7.67 WATERSHED INCHES;	1725 CFS-HRS;	142.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 70
 INPUT HYDROGRAPHS 4,3 OUTPUT HYDROGRAPH 2

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
12.41	3099.6	(NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)		
7.81 WATERSHED INCHES;	6255 CFS-HRS;	516.9 ACRE-FEET.

OPERATION RESVOR STRUCTURE 18
 INPUT HYDROGRAPH 2 OUTPUT HYDROGRAPH 1
 SURFACE ELEVATION = 1368.70

*** WARNING - DISCHARGE EXCEEDS HIGHEST RATING POINT FOR STRUCTURE 18,
 VALUE EXTRAPOLATED. ***

TR20 ----- SCS -
PRE-PROJECT - EAST BRANCH GYPSUM CREEK 2/14/06 ADD BASIN 052 VERSION
01/05/** TPP5.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUA2.04TEST
11:55:45 PASS 6 JOB NO. 1 PAGE 31

PEAK TIME (HRS)	PEAK DISCHARGE (CFS)	PEAK ELEVATION (FEET)
13.12	1520.5	1372.54

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
7.77 WATERSHED INCHES; 6226 CFS-HRS; 514.5 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 6
1

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
				ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)

RAINFALL OF 3.50 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.
 RAINFALL NUMBER 2, ARC 2
 MAIN TIME INCREMENT .100 HOURS

ALTERNATE 11 STORM 1

XSECTION 5	RUNOFF	.20	2.34	---	12.24	219	1095.0
XSECTION 25	RUNOFF	.16	2.46	---	12.22	189	1181.3
XSECTION 30	ADDHYD	.35	2.39	---	12.23	408	1165.7
XSECTION 35	RUNOFF	.16	2.50	---	12.20	210	1312.5
XSECTION 40	ADDHYD	.52	2.42	---	12.22	617	1186.5
STRUCTURE 10	RESVOR	.52	2.42	1375.15	12.38	515	990.4
XSECTION 45	RUNOFF	.04	1.97	---	12.22	43	1075.0
XSECTION 50	ADDHYD	.56	2.39	---	12.36	551	983.9
XSECTION 53	RUNOFF	.15	1.94	---	12.40	110	733.3
XSECTION 55	RUNOFF	.16	2.14	---	12.37	137	856.3
XSECTION 59	ADDHYD	.31	2.04	---	12.38	246	793.5
XSECTION 60	ADDHYD	.87	2.27	---	12.37	797	916.1
XSECTION 61	RUNOFF	.03	1.94	---	12.08	37	1233.3
XSECTION 62	ADDHYD	.89	2.26	---	12.36	811	911.2
XSECTION 65	RUNOFF	.35	2.12	---	12.52	250	714.3
XSECTION 70	ADDHYD	1.24	2.22	---	12.39	1046	843.5
STRUCTURE 18	RESVOR	1.24	2.21	1370.14	13.49	224	180.6

RAINFALL OF 4.55 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 12 STORM 2

XSECTION 5	RUNOFF	.20	3.32	---	12.23	309	1545.0
XSECTION 25	RUNOFF	.16	3.45	---	12.22	263	1643.8
XSECTION 30	ADDHYD	.35	3.38	---	12.22	572	1634.3
XSECTION 35	RUNOFF	.16	3.50	---	12.19	291	1818.8
XSECTION 40	ADDHYD	.52	3.42	---	12.21	861	1655.8
STRUCTURE 10	RESVOR	.52	3.42	1375.94	12.40	677	1301.9

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
				ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 12 STORM 2		-----					
XSECTION 45	RUNOFF	.04	2.91	---	12.21	64	1600.0
XSECTION 50	ADDHYD	.56	3.38	---	12.37	727	1298.2
XSECTION 53	RUNOFF	.15	2.86	---	12.38	163	1086.7
XSECTION 55	RUNOFF	.16	3.09	---	12.37	196	1225.0
XSECTION 59	ADDHYD	.31	2.98	---	12.37	358	1154.8
XSECTION 60	ADDHYD	.87	3.24	---	12.37	1086	1248.3
XSECTION 61	RUNOFF	.03	2.86	---	12.08	54	1800.0
XSECTION 62	ADDHYD	.89	3.23	---	12.36	1105	1241.6
XSECTION 65	RUNOFF	.35	3.07	---	12.51	359	1025.7
XSECTION 70	ADDHYD	1.24	3.18	---	12.40	1446	1166.1
STRUCTURE 18	RESVOR	1.24	3.17	1370.70	13.31	396	319.4
RAINFALL OF		5.25 inches AND 24.00 hr DURATION,		BEGINS AT		.0 hrs.	
ALTERNATE 13 STORM 3		-----					
XSECTION 5	RUNOFF	.20	3.99	---	12.23	369	1845.0
XSECTION 25	RUNOFF	.16	4.12	---	12.22	313	1956.3
XSECTION 30	ADDHYD	.35	4.05	---	12.22	682	1948.6
XSECTION 35	RUNOFF	.16	4.18	---	12.19	344	2150.0
XSECTION 40	ADDHYD	.52	4.09	---	12.21	1024	1969.2
STRUCTURE 10	RESVOR	.52	4.09	1376.50	12.42	777	1494.2
XSECTION 45	RUNOFF	.04	3.55	---	12.21	78	1950.0
XSECTION 50	ADDHYD	.56	4.05	---	12.38	836	1492.9
XSECTION 53	RUNOFF	.15	3.50	---	12.39	199	1326.7
XSECTION 55	RUNOFF	.16	3.75	---	12.35	239	1493.8
XSECTION 59	ADDHYD	.31	3.63	---	12.37	436	1406.5
XSECTION 60	ADDHYD	.87	3.90	---	12.38	1272	1462.1
XSECTION 61	RUNOFF	.03	3.50	---	12.08	66	2200.0
XSECTION 62	ADDHYD	.89	3.89	---	12.36	1295	1455.1
XSECTION 65	RUNOFF	.35	3.73	---	12.51	435	1242.9

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
				ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)

ALTERNATE 13 STORM 3

XSECTION 70	ADDHYD	1.24	3.84	---	12.40	1710	1379.0
STRUCTURE 18	RESVOR	1.24	3.83	1371.06	13.24	527	425.0

RAINFALL OF 6.98 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 13 STORM 4

XSECTION 5	RUNOFF	.20	5.66	---	12.23	516	2580.0
XSECTION 25	RUNOFF	.16	5.81	---	12.21	434	2712.5
XSECTION 30	ADDHYD	.35	5.73	---	12.22	949	2711.4
XSECTION 35	RUNOFF	.16	5.87	---	12.19	478	2987.5
XSECTION 40	ADDHYD	.52	5.77	---	12.21	1424	2738.5
STRUCTURE 10	RESVOR	.52	5.77	1377.75	12.45	981	1886.5
XSECTION 45	RUNOFF	.04	5.17	---	12.21	112	2800.0
XSECTION 50	ADDHYD	.56	5.72	---	12.40	1061	1894.6
XSECTION 53	RUNOFF	.15	5.12	---	12.38	289	1926.7
XSECTION 55	RUNOFF	.16	5.40	---	12.36	337	2106.3
XSECTION 59	ADDHYD	.31	5.27	---	12.37	625	2016.1
XSECTION 60	ADDHYD	.87	5.56	---	12.38	1684	1935.6
XSECTION 61	RUNOFF	.03	5.12	---	12.07	95	3166.7
XSECTION 62	ADDHYD	.89	5.55	---	12.37	1716	1928.1
XSECTION 65	RUNOFF	.35	5.38	---	12.50	624	1782.9
XSECTION 70	ADDHYD	1.24	5.50	---	12.41	2319	1870.2
STRUCTURE 18	RESVOR	1.24	5.48	1371.72	13.13	970	782.3

RAINFALL OF 7.80 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 14 STORM 5

XSECTION 5	RUNOFF	.20	6.46	---	12.23	586	2930.0
XSECTION 25	RUNOFF	.16	6.61	---	12.21	491	3068.8

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
				ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 14 STORM 5		-----					
XSECTION 30	ADDHYD	.35	6.53	---	12.22	1077	3077.1
XSECTION 35	RUNOFF	.16	6.68	---	12.19	537	3356.3
XSECTION 40	ADDHYD	.52	6.58	---	12.21	1611	3098.1
STRUCTURE 10	RESVOR	.52	6.57	1378.31	12.46	1071	2059.6
XSECTION 45	RUNOFF	.04	5.96	---	12.21	128	3200.0
XSECTION 50	ADDHYD	.56	6.53	---	12.42	1161	2073.2
XSECTION 53	RUNOFF	.15	5.90	---	12.37	331	2206.7
XSECTION 55	RUNOFF	.16	6.20	---	12.35	387	2418.8
XSECTION 59	ADDHYD	.31	6.06	---	12.36	717	2312.9
XSECTION 60	ADDHYD	.87	6.36	---	12.39	1874	2154.0
XSECTION 61	RUNOFF	.03	5.90	---	12.07	108	3600.0
XSECTION 62	ADDHYD	.89	6.35	---	12.37	1909	2144.9
XSECTION 65	RUNOFF	.35	6.17	---	12.50	710	2028.6
XSECTION 70	ADDHYD	1.24	6.30	---	12.41	2596	2093.5
STRUCTURE 18	RESVOR	1.24	6.27	1372.01	13.12	1167	941.1

RAINFALL OF 9.35 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 15 STORM 6		-----					
XSECTION 5	RUNOFF	.20	7.98	---	12.23	716	3580.0
XSECTION 25	RUNOFF	.16	8.15	---	12.21	601	3756.3
XSECTION 30	ADDHYD	.35	8.05	---	12.22	1317	3762.9
XSECTION 35	RUNOFF	.16	8.20	---	12.19	654	4087.5
XSECTION 40	ADDHYD	.52	8.10	---	12.21	1969	3786.5
STRUCTURE 10	RESVOR	.52	8.10	1379.30	12.49	1224	2353.8
XSECTION 45	RUNOFF	.04	7.46	---	12.20	158	3950.0
XSECTION 50	ADDHYD	.56	8.05	---	12.43	1329	2373.2
XSECTION 53	RUNOFF	.15	7.40	---	12.37	412	2746.7
XSECTION 55	RUNOFF	.16	7.70	---	12.34	478	2987.5
XSECTION 59	ADDHYD	.31	7.55	---	12.36	887	2861.3

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE				
				ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)	
ALTERNATE	15	STORM	6					
XSECTION	60	ADDHYD	.87	7.87	---	12.39	2210	2540.2
XSECTION	61	RUNOFF	.03	7.39	---	12.07	135	4500.0
XSECTION	62	ADDHYD	.89	7.86	---	12.37	2254	2532.6
XSECTION	65	RUNOFF	.35	7.67	---	12.50	874	2497.1
XSECTION	70	ADDHYD	1.24	7.81	---	12.41	3100	2500.0
STRUCTURE	18	RESVOR	1.24	7.77	1372.54	13.12	1520	1225.8

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....				
		1	2	3	4	5
STRUCTURE 18	1.24					
ALTERNATE 11		224	*****	*****	*****	*****
ALTERNATE 12		*****	396	*****	*****	*****
ALTERNATE 13		*****	*****	527	970	*****
ALTERNATE 14		*****	*****	*****	*****	1167
STRUCTURE 10	.52					
ALTERNATE 11		515	*****	*****	*****	*****
ALTERNATE 12		*****	677	*****	*****	*****
ALTERNATE 13		*****	*****	777	981	*****
ALTERNATE 14		*****	*****	*****	*****	1071
XSECTION 5	.20					
ALTERNATE 11		219	*****	*****	*****	*****
ALTERNATE 12		*****	309	*****	*****	*****
ALTERNATE 13		*****	*****	369	516	*****
ALTERNATE 14		*****	*****	*****	*****	586
XSECTION 25	.16					
ALTERNATE 11		189	*****	*****	*****	*****
ALTERNATE 12		*****	263	*****	*****	*****
ALTERNATE 13		*****	*****	313	434	*****
ALTERNATE 14		*****	*****	*****	*****	491
XSECTION 30	.35					
ALTERNATE 11		408	*****	*****	*****	*****
ALTERNATE 12		*****	572	*****	*****	*****
ALTERNATE 13		*****	*****	682	949	*****
ALTERNATE 14		*****	*****	*****	*****	1077
XSECTION 35	.16					
ALTERNATE 11		210	*****	*****	*****	*****
ALTERNATE 12		*****	291	*****	*****	*****
ALTERNATE 13		*****	*****	344	478	*****
ALTERNATE 14		*****	*****	*****	*****	537
XSECTION 40	.52					
ALTERNATE 11		617	*****	*****	*****	*****
ALTERNATE 12		*****	861	*****	*****	*****
ALTERNATE 13		*****	*****	1024	1424	*****

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....				
		1	2	3	4	5
XSECTION 40	.52					
ALTERNATE 14		*****	*****	*****	*****	1611
XSECTION 45	.04					
ALTERNATE 11		43 *****	*****	*****	*****	*****
ALTERNATE 12		*****	64 *****	*****	*****	*****
ALTERNATE 13		*****	*****	78	112	*****
ALTERNATE 14		*****	*****	*****	*****	128
XSECTION 50	.56					
ALTERNATE 11		551 *****	*****	*****	*****	*****
ALTERNATE 12		*****	727 *****	*****	*****	*****
ALTERNATE 13		*****	*****	836	1061	*****
ALTERNATE 14		*****	*****	*****	*****	1161
XSECTION 53	.15					
ALTERNATE 11		110 *****	*****	*****	*****	*****
ALTERNATE 12		*****	163 *****	*****	*****	*****
ALTERNATE 13		*****	*****	199	289	*****
ALTERNATE 14		*****	*****	*****	*****	331
XSECTION 55	.16					
ALTERNATE 11		137 *****	*****	*****	*****	*****
ALTERNATE 12		*****	196 *****	*****	*****	*****
ALTERNATE 13		*****	*****	239	337	*****
ALTERNATE 14		*****	*****	*****	*****	387
XSECTION 59	.31					
ALTERNATE 11		246 *****	*****	*****	*****	*****
ALTERNATE 12		*****	358 *****	*****	*****	*****
ALTERNATE 13		*****	*****	436	625	*****
ALTERNATE 14		*****	*****	*****	*****	717
XSECTION 60	.87					
ALTERNATE 11		797 *****	*****	*****	*****	*****
ALTERNATE 12		*****	1086 *****	*****	*****	*****
ALTERNATE 13		*****	*****	1272	1684	*****
ALTERNATE 14		*****	*****	*****	*****	1874
XSECTION 61	.03					
ALTERNATE 11		37 *****	*****	*****	*****	*****

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....				
		1	2	3	4	5
XSECTION 61	.03					
ALTERNATE 12		*****	54	*****	*****	*****
ALTERNATE 13		*****	*****	66	95	*****
ALTERNATE 14		*****	*****	*****	*****	108
XSECTION 62	.89					
ALTERNATE 11		811	*****	*****	*****	*****
ALTERNATE 12		*****	1105	*****	*****	*****
ALTERNATE 13		*****	*****	1295	1716	*****
ALTERNATE 14		*****	*****	*****	*****	1909
XSECTION 65	.35					
ALTERNATE 11		250	*****	*****	*****	*****
ALTERNATE 12		*****	359	*****	*****	*****
ALTERNATE 13		*****	*****	435	624	*****
ALTERNATE 14		*****	*****	*****	*****	710
XSECTION 70	1.24					
ALTERNATE 11		1046	*****	*****	*****	*****
ALTERNATE 12		*****	1446	*****	*****	*****
ALTERNATE 13		*****	*****	1710	2319	*****
ALTERNATE 14		*****	*****	*****	*****	2596

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....
		6
STRUCTURE 18	1.24	
ALTERNATE 15		1520
STRUCTURE 10	.52	
ALTERNATE 15		1224
XSECTION 5	.20	
ALTERNATE 15		716
XSECTION 25	.16	
ALTERNATE 15		601
XSECTION 30	.35	

ALTERNATE	15		1317
XSECTION	35	.16	

ALTERNATE	15		654

1

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 6
XSECTION 40	.52	
-----	-----	-----
ALTERNATE 15		1969
XSECTION 45	.04	
-----	-----	-----
ALTERNATE 15		158
XSECTION 50	.56	
-----	-----	-----
ALTERNATE 15		1329
XSECTION 53	.15	
-----	-----	-----
ALTERNATE 15		412
XSECTION 55	.16	
-----	-----	-----
ALTERNATE 15		478
XSECTION 59	.31	
-----	-----	-----
ALTERNATE 15		887
XSECTION 60	.87	
-----	-----	-----
ALTERNATE 15		2210
XSECTION 61	.03	
-----	-----	-----
ALTERNATE 15		135
XSECTION 62	.89	
-----	-----	-----
ALTERNATE 15		2254
XSECTION 65	.35	
-----	-----	-----
ALTERNATE 15		874
XSECTION 70	1.24	
-----	-----	-----
ALTERNATE 15		3100

TR20 ----- SCS -
PRE-PROJECT - EAST BRANCH GYPSUM CREEK 2/14/06 ADD BASIN 052 VERSION
01/05/** TPP5.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUA2.04TEST

END OF 1 JOBS IN THIS RUN

SCS TR-20, VERSION 2.04TEST
FILES

INPUT = wtrftpp5.t20 , GIVEN DATA FILE
OUTPUT = wtrftpp5.OUT , DATED 01/05/**,11:55:45

FILES GENERATED - DATED 01/05/**,11:55:45

NONE!

TOTAL NUMBER OF WARNINGS = 2, MESSAGES = 0

*** TR-20 RUN COMPLETED ***

Figure 2.7

Pre-Developed Curve Numbers

SCS Runoff Curve Number Calculations

1/6/2007 2:02 PM

Project Name: The Waterfront Addition - Pre-Project
 Project Number: 02014
 Basin: TR-20 005

Total Area = 124.9 Acres
Total Area = 0.1952 sq. mi.
Composite Curve Number = 88.77

Land Use	Percent Impervious	Area/CN			
		Hydrological Soil Group			
		A	B	C	D
Cultivated land without conservation treatment	0	72	81	88	91
Cultivated land with conservation treatment	0	62	71	78	81
Pasture or range land - poor condition	0	68	79	86	89
Pasture or range land - good condition	0	39	61	74	80
Meadow - good condition	0	30	58	71	78
Wood or Forest land - thin stand, poor cover, no mulch	0	45	66	77	83
Wood or Forest land - good cover	0	25	55	70	77
Open spaces - good condition - grass cover on 75% or more of area	0	39	61	74	80
Open spaces - fair condition - grass cover on 50-75% of area	0	49	69	79	84
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential - 1/8 acre or less	65	77	85	90	92
Residential - 1/4 acre	38	61	75	83	87
Residential - 1/3 acre	30	57	72	81	86
Residential - 1/2 acre	25	54	70	80	85
Residential - 1 acre	20	51	68	79	84
Paved Parking lots, roofs, driveways, etc.	-	98	98	98	98
Streets and roads - paved with curbs and storm sewers	-	98	98	98	98
Streets and roads - gravel	-	76	85	89	91
Streets and roads - dirt	-	72	82	87	89
Lake/Pond	100	100	100	100	100

SCS Runoff Curve Number Calculations

1/6/2007 2:02 PM

Project Name: The Waterfront Addition - Pre-Project
 Project Number: 02014
 Basin: TR-20 025

Total Area = 100.2 Acres
Total Area = 0.1566 sq. mi.
Composite Curve Number = 90.14

Land Use	Percent Impervious	Area/CN			
		Hydrological Soil Group			
		A	B	C	D
Cultivated land without conservation treatment	0	72	81	88	91
Cultivated land with conservation treatment	0	62	71	78	81
Pasture or range land - poor condition	0	68	79	86	89
Pasture or range land - good condition	0	39	61	74	80
Meadow - good condition	0	30	58	71	78
Wood or Forest land - thin stand, poor cover, no mulch	0	45	66	77	83
Wood or Forest land - good cover	0	25	55	70	77
Open spaces - good condition - grass cover on 75% or more of area	0	39	61	74	80
Open spaces - fair condition - grass cover on 50-75% of area	0	49	69	79	84
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential - 1/8 acre or less	65	77	85	90	92
Residential - 1/4 acre	38	61	75	83	87
Residential - 1/3 acre	30	57	72	81	86
Residential - 1/2 acre	25	54	70	80	85
Residential - 1 acre	20	51	68	79	84
Paved Parking lots, roofs, driveways, etc.	-	98	98	98	98
Streets and roads - paved with curbs and storm sewers	-	98	98	98	98
Streets and roads - gravel	-	76	85	89	91
Streets and roads - dirt	-	72	82	87	89
Lake/Pond	100	100	100	100	100

SCS Runoff Curve Number Calculations

1/6/2007 2:02 PM

Project Name: The Waterfront Addition - Pre-Project
 Project Number: 02014
 Basin: TR-20 035

Total Area = 104.8 Acres
Total Area = 0.1638 sq. mi.
Composite Curve Number = 90.62

Land Use	Percent Impervious	Area/CN			
		Hydrological Soil Group			
		A	B	C	D
Cultivated land without conservation treatment	0	72	81	88	91
Cultivated land with conservation treatment	0	62	71	78	81
Pasture or range land - poor condition	0	68	79	86	89
Pasture or range land - good condition	0	39	61	74	80
Meadow - good condition	0	30	58	71	78
Wood or Forest land - thin stand, poor cover, no mulch	0	45	66	77	83
Wood or Forest land - good cover	0	25	55	70	77
Open spaces - good condition - grass cover on 75% or more of area	0	39	61	74	80
Open spaces - fair condition - grass cover on 50-75% of area	0	49	69	79	84
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential - 1/8 acre or less	65	77	85	90	92
Residential - 1/4 acre	38	61	75	83	87
Residential - 1/3 acre	30	57	72	81	86
Residential - 1/2 acre	25	54	70	80	85
Residential - 1 acre	20	51	68	79	84
Paved Parking lots, roofs, driveways, etc.	-	98	98	98	98
Streets and roads - paved with curbs and storm sewers	-	98	98	98	98
Streets and roads - gravel	-	76	85	89	91
Streets and roads - dirt	-	72	82	87	89
Lake/Pond	100	100	100	100	100

SCS Runoff Curve Number Calculations

1/6/2007 2:02 PM

Project Name: The Waterfront Addition - Pre-Project
 Project Number: 02014
 Basin: TR-20 045

Total Area = 27.6 Acres
Total Area = 0.0431 sq. mi.
Composite Curve Number = 84.52

Land Use	Percent Impervious	Area/CN			
		Hydrological Soil Group			
		A	B	C	D
Cultivated land without conservation treatment	0	72	81	88	91
Cultivated land with conservation treatment	0	62	71	78	81
Pasture or range land - poor condition	0	68	79	86	89
Pasture or range land - good condition	0	39	61	74	80
Meadow - good condition	0	30	58	71	78
Wood or Forest land - thin stand, poor cover, no mulch	0	45	66	77	83
Wood or Forest land - good cover	0	25	55	70	77
Open spaces - good condition - grass cover on 75% or more of area	0	39	61	74	80
Open spaces - fair condition - grass cover on 50-75% of area	0	49	69	79	84
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential - 1/8 acre or less	65	77	85	90	92
Residential - 1/4 acre	38	61	75	83	87
Residential - 1/3 acre	30	57	72	81	86
Residential - 1/2 acre	25	54	70	80	85
Residential - 1 acre	20	51	68	79	84
Paved Parking lots, roofs, driveways, etc.	-	98	98	98	98
Streets and roads - paved with curbs and storm sewers	-	98	98	98	98
Streets and roads - gravel	-	76	85	89	91
Streets and roads - dirt	-	72	82	87	89
Lake/Pond	100	100	100	100	100

SCS Runoff Curve Number Calculations

1/6/2007 2:02 PM

Project Name: The Waterfront Addition - Pre-Project
 Project Number: 02014
 Basin: TR-20 053

Total Area = 93.1 Acres
Total Area = 0.1455 sq. mi.
Composite Curve Number = 84.00

Land Use	Percent Impervious	Area/CN			
		Hydrological Soil Group			
		A	B	C	D
Cultivated land without conservation treatment	0	72	81	88	91
Cultivated land with conservation treatment	0	62	71	78	81
Pasture or range land - poor condition	0	68	79	86	89
Pasture or range land - good condition	0	39	61	74	80
Meadow - good condition	0	30	58	71	78
Wood or Forest land - thin stand, poor cover, no mulch	0	45	66	77	83
Wood or Forest land - good cover	0	25	55	70	77
Open spaces - good condition - grass cover on 75% or more of area	0	39	61	74	80
Open spaces - fair condition - grass cover on 50-75% of area	0	49	69	79	84
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential - 1/8 acre or less	65	77	85	90	92
Residential - 1/4 acre	38	61	75	83	87
Residential - 1/3 acre	30	57	72	81	86
Residential - 1/2 acre	25	54	70	80	85
Residential - 1 acre	20	51	68	79	84
Paved Parking lots, roofs, driveways, etc.	-	98	98	98	98
Streets and roads - paved with curbs and storm sewers	-	98	98	98	98
Streets and roads - gravel	-	76	85	89	91
Streets and roads - dirt	-	72	82	87	89
Lake/Pond	100	100	100	100	100

SCS Runoff Curve Number Calculations

1/6/2007 2:02 PM

Project Name: The Waterfront Addition - Pre-Project
 Project Number: 02014
 Basin: TR-20 055

Total Area = 103.3 Acres
Total Area = 0.1614 sq. mi.
Composite Curve Number = 86.46

Land Use	Percent Impervious	Area/CN			
		Hydrological Soil Group			
		A	B	C	D
Cultivated land without conservation treatment	0	72	81	88	91
Cultivated land with conservation treatment	0	62	71	78	81
Pasture or range land - poor condition	0	68	79	86	89
Pasture or range land - good condition	0	39	61	74	80
Meadow - good condition	0	30	58	71	78
Wood or Forest land - thin stand, poor cover, no mulch	0	45	66	77	83
Wood or Forest land - good cover	0	25	55	70	77
Open spaces - good condition - grass cover on 75% or more of area	0	39	61	74	80
Open spaces - fair condition - grass cover on 50-75% of area	0	49	69	79	84
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential - 1/8 acre or less	65	77	85	90	92
Residential - 1/4 acre	38	61	75	83	87
Residential - 1/3 acre	30	57	72	81	86
Residential - 1/2 acre	25	54	70	80	85
Residential - 1 acre	20	51	68	79	84
Paved Parking lots, roofs, driveways, etc.	-	98	98	98	98
Streets and roads - paved with curbs and storm sewers	-	98	98	98	98
Streets and roads - gravel	-	76	85	89	91
Streets and roads - dirt	-	72	82	87	89
Lake/Pond	100	100	100	100	100

SCS Runoff Curve Number Calculations

1/6/2007 2:02 PM

Project Name: The Waterfront Addition - Pre-Project
 Project Number: 02014
 Basin: TR-20 065

Total Area = 222.9 Acres
Total Area = 0.3483 sq. mi.
Composite Curve Number = 86.26

Land Use	Percent Impervious	Area/CN			
		Hydrological Soil Group			
		A	B	C	D
Cultivated land without conservation treatment	0	72	81	88	91
Cultivated land with conservation treatment	0	62	71	78	81
Pasture or range land - poor condition	0	68	79	86	89
Pasture or range land - good condition	0	39	61	74	80
Meadow - good condition	0	30	58	71	78
Wood or Forest land - thin stand, poor cover, no mulch	0	45	66	77	83
Wood or Forest land - good cover	0	25	55	70	77
Open spaces - good condition - grass cover on 75% or more of area	0	39	61	74	80
Open spaces - fair condition - grass cover on 50-75% of area	0	49	69	79	84
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential - 1/8 acre or less	65	77	85	90	92
Residential - 1/4 acre	38	61	75	83	87
Residential - 1/3 acre	30	57	72	81	86
Residential - 1/2 acre	25	54	70	80	85
Residential - 1 acre	20	51	68	79	84
Paved Parking lots, roofs, driveways, etc.	-	98	98	98	98
Streets and roads - paved with curbs and storm sewers	-	98	98	98	98
Streets and roads - gravel	-	76	85	89	91
Streets and roads - dirt	-	72	82	87	89
Lake/Pond	100	100	100	100	100

Figure 2.8

Pre-Developed Time of Concentration

Time of Concentration Calculations by the FAA method
 The Waterfront Addition - Pre-Project Calculations

$$T_c = \frac{(1.1-C)L^{1/2}}{100 S^{1/3}}$$

Area Name	Land Use	Soil Group	Maximum Elevation	Minimum Elevation	Length (L)	Rational Runoff Coefficient, C			Time of Concentration (min), T _c			Time of Concentration (hr), T _c			CN			
						2-Year	5-Year	10-Year	2-Year	5-Year	10-Year	2-Year	5-Year	10-Year				
005	Business - Neighborhood	D	1405.0	1375.0	3800	0.68	0.69	0.73	0.80	50.4	49.2	44.4	36.0	0.8404	0.8204	0.7403	0.6003	88.8
025	Business - Neighborhood	D	1405.0	1375.0	3600	0.68	0.69	0.73	0.80	48.2	47.1	42.5	34.4	0.8034	0.7842	0.7077	0.5738	90.1
035	Business - Neighborhood	D	1390.0	1370.0	2800	0.68	0.69	0.73	0.80	44.8	43.7	39.4	32.0	0.7459	0.7281	0.6571	0.5328	90.6
045	Undeveloped Urban	D	1390.0	1369.0	2000	0.52	0.54	0.59	0.68	45.9	44.4	40.4	33.3	0.7656	0.7392	0.6732	0.5544	84.5
053	Undeveloped Urban	D	1390.0	1373.0	3000	0.52	0.54	0.59	0.68	69.1	66.7	60.8	50.0	1.1517	1.1120	1.0127	0.8340	84.0
055	Undeveloped Urban	D	1385.0	1369.0	2800	0.52	0.54	0.59	0.68	66.6	64.3	58.5	48.2	1.1095	1.0713	0.9756	0.8034	86.5
065	Undeveloped Urban	D	1400.0	1369.0	5000	0.52	0.54	0.59	0.68	86.6	83.6	76.1	62.7	1.4429	1.3931	1.2687	1.0448	86.3

Tab 3. Post-Development Hydrologic Analysis

A. Proposed Conditions Hydrologic and Hydraulic Analysis

Portions of the Waterfront have already developed. The Waterfront is planning to expand commercial development east of the current development. In addition, the Foliage Addition will develop commercially. Approximately, 60 acres will be developed into 75 residential lots as Waterfront Residential. Approximately, 14 acres will be developed commercially as the Greenwich Office Park.

The current detention ponds do not provide adequate detention for future development Table 4 shows the detention characteristics of the main lake and the hotel pond.

Table 4. Current Storage Calculations.

Current Conditions Total Storage=175 ac-ft		
Main Pond Storage = 167ac-ft		100-Year=1372.0
Stage	Discharge (cfs)	Storage (ac-ft)
1368.7	0	0
1369	100	14
1370	180	63
1371	490	114
1372	1160	167
Hotel Pond = 8 ac-ft		100-Year=1376.1
Stage	Discharge (cfs)	Storage (ac-ft)
1373	0	0
1374	9	2
1375	159	4
1376	257	8
1377	332	11

The size of the detention will need to be increased to decrease peak flow rates from the property. The outlet structure of the hotel pond will be modified to provide more detention and the area of the pond will be increased. This pond expansion provides an additional 10 acre-feet of storage.

In addition, runoff will be directed to a proposed pond in the residential area and then routed west to a detention pond in the commercial area before exiting the site. Runoff will be directed, from the commercial pond, south to the storm sewer along 13th Street. An additional 4.4 ac-ft of detention is provided.

A portion of Waterfront Residential will drain to the east property line. Approximately, 4.2 ac-ft of detention will be provided just east of Waterfront Residential. The SCS Runoff Hydrograph method was used to calculate runoff flow rates to the east pond. The watershed was modeled using Hydraflow Hydrographs 2007 by Intelisolve Figure 3.1.

The post-project site was modeled using SCS TR-20 software with the Waterfront Commercial, Greenwich Business Park and Foliage Addition developed as commercial and Waterfront Residential developed as residential, Figure 3.2.

Flow rates to 13th Street were modeled using the SCS runoff method in Hydraflow Hydrographs 2007 by Intellisolve, Figure 3.3.

Post-Project flow rates are summarized in Tables 5 and 6.

Table 5. Post-Project Flow rates.

TR-20 ID	Description	Design Storm Flows (cfs)			
		2-Yr	5-Yr	10-Yr	100-Yr
170	Flow into lakes	1203	1646	1899	2782
018	Flow from lake at Webb Rd	219	392	517	1111

Table 6. Flow rates to 13th Street.

Description	Design Storm Flows (cfs)			
	2-Yr	5-Yr	10-Yr	100-Yr
Pre-Project	78	117	143	239
Post-Project	77	117	141	216

With the proposed detention, the post-project flows to 13th Street are equal to or below the pre-project rates. The detention in this project provides detention for future Waterfront Commercial, Waterfront Residential, Greenwich Business Park and Foliage Addition development.

B. Proposed Time of Concentration

Time of concentration calculations were done by the FAA method Figure 3.4

C. Assumed Post-Developed Curve Numbers

Post- developed curve numbers are in Figure 3.5.

D. Proposed Contours for Detention

The proposed contours are shown on the drainage and utility plan, Figure 3.6.

E. Preliminary SWS Sizing Calculations

Pipe sizes were determined using Hydraflow Stormsewers 2005, by Intellisolve. Pipe sizing calculations are in Figure 3.7.

F. Stage-Storage-Discharge

Table 7 shows the stage-storage-discharge for the proposed detention

Table 7. Post-Project Storage Calculations.

Post-Project Conditions Total Storage=193.9 ac-ft		
Main Pond Storage = 167 ac-ft		100-Year=1372.0
Stage	Discharge (cfs)	Storage (ac-ft)
1368.7	0	0
1369	100	14
1370	180	63
1371	490	114
1372	1160	167
Hotel Pond = 21.4 ac-ft		100-Year=1377.9
Stage	Discharge (cfs)	Storage (ac-ft)
1373	0	0
1374	3	2.0
1375	72	5.3
1376	105	10.1
1377	129	15.4
1378	150	21.4
Residential Pond = 3.2 ac-ft		100-Year=1383.8
Stage	Discharge (cfs)	Storage (ac-ft)
1380.5	0	0
1381	10	0.4
1382	37	1.3
1383	48	2.3
1384	54	3.4
1385	59	4.7
Commercial Pond = 1.2 ac-ft		100-Year =1383.1
Stage	Discharge (cfs)	Storage (ac-ft)
1379	0	0
1380	8	0.2
1381	18	0.5
1382	50	0.8
1383	56	1.1
1384	61	1.6
1385	66	2.1
East Detention = 4.2 ac-ft		100-Year =1388.9
Stage	Discharge (cfs)	Storage (ac-ft)
1387	0	0
1388	3	1.9
1389	41	4.7
1390	97	7.0

G. Analysis of upstream/downstream impact

The developments of this site are designed to maintain the 100-year water surface elevation at the North property line of the site for the main channel. There will not be an increase in water surface elevation upstream of the site.

The peak outflow at the outlet of Beech Lake will not increase from pre-project conditions with the development of Waterfront Commercial, Waterfront Residential, Greenwich Business Park and the Foliage Addition.

H. Existing and Proposed Structural Elevations

There are no existing structures on the proposed Waterfront Commercial, Waterfront Residential or Greenwich Business Park site. Where applicable, minimum pad elevations will be set 3 feet above the 100-year water surface elevation. When feasible, current grade will dictate structural elevations.

I. Pond Design Elevations

The northeast detention area will provide a total 1.7 ac-ft of detention. The outlet structure for the pond is a rectangular weir with a crest length of 4 feet. The hotel pond will be modified to provide additional storage, which is reflected in Table 8. The residential and commercial detention areas will have a normal pool of 1379.0 and a 100-year elevation of 1383.9.

J. Structure Details

The residential pond will have a 36-inch pipe with a riser structure for an outlet. The commercial pond will be controlled by a 24-inch pipe with a riser structure. The east detention pond will be controlled by an 8 and 10-foot two-stage weir and an 8-inch outlet pipe.

K. Limits of Clearing and Grading

Most of the site will be cleared and graded. Some existing trees will be left undisturbed.

L. Location of Impervious Areas

The Roads will be located as shown on the drainage and utility plan, Figure 3.6. In the Waterfront Residential area, houses will be constructed on each lot, while Greenwich Business Park and Waterfront Commercial will develop commercially

A. Location of Utilities

Proposed utilities are shown on the drainage and utility plan, Figure 3.6.

B. Location of Conveyance Systems

Proposed utilities are shown on the drainage and utility plan, Figure 3.6.

C. Location of Channel Modifications

A Conditional Letter of Map Revision, (CLOMR) was approved June 2006 case number 04-07-031RA. Letter of Map Revision (LOMR) has been submitted to FEMA. As-built survey will be done of the area and the hydraulic model will be updated to match the existing conditions. Channel modifications are not proposed for the Waterfront Commercial, Waterfront Residential or Greenwich Business Park site.

D. Selection and Location of Stormwater Controls

Stormwater controls consist of curb and area inlets, located throughout the site, storm sewer sized to handle the 2-year flows for residential and 5-year flows for commercial, detention ponds and several outlet structures to control flow.

E. Emergency Overflow

Emergency overflows will be designed to flow overland

F. Freeboard

Pond design will include 1-foot of freeboard for added safety.

G. 100-Year High Water Line

The 100-year water surface elevations are shown on the drainage and utility plan, Figure 3.5.

H. Lowest Openings

Where applicable, minimum pad elevations will be set 3 feet above the 100-year water surface elevation. When feasible, current grade will dictate structural elevations.

I. Stormwater Management Facilities

All detention ponds onsite are located within reserves.

J. Maintenance Responsibility

For Waterfront Residential, the maintenance of the reserve will be the responsibility of the owner until it is turned over to the homeowners association. The commercial areas will be maintained by the owner.

K. Offsite-Drainage Easements

Off-site drainage easements will be determined.

Figure 3.1

East Detention Time of Concentration and Hydraflow Hydrographs

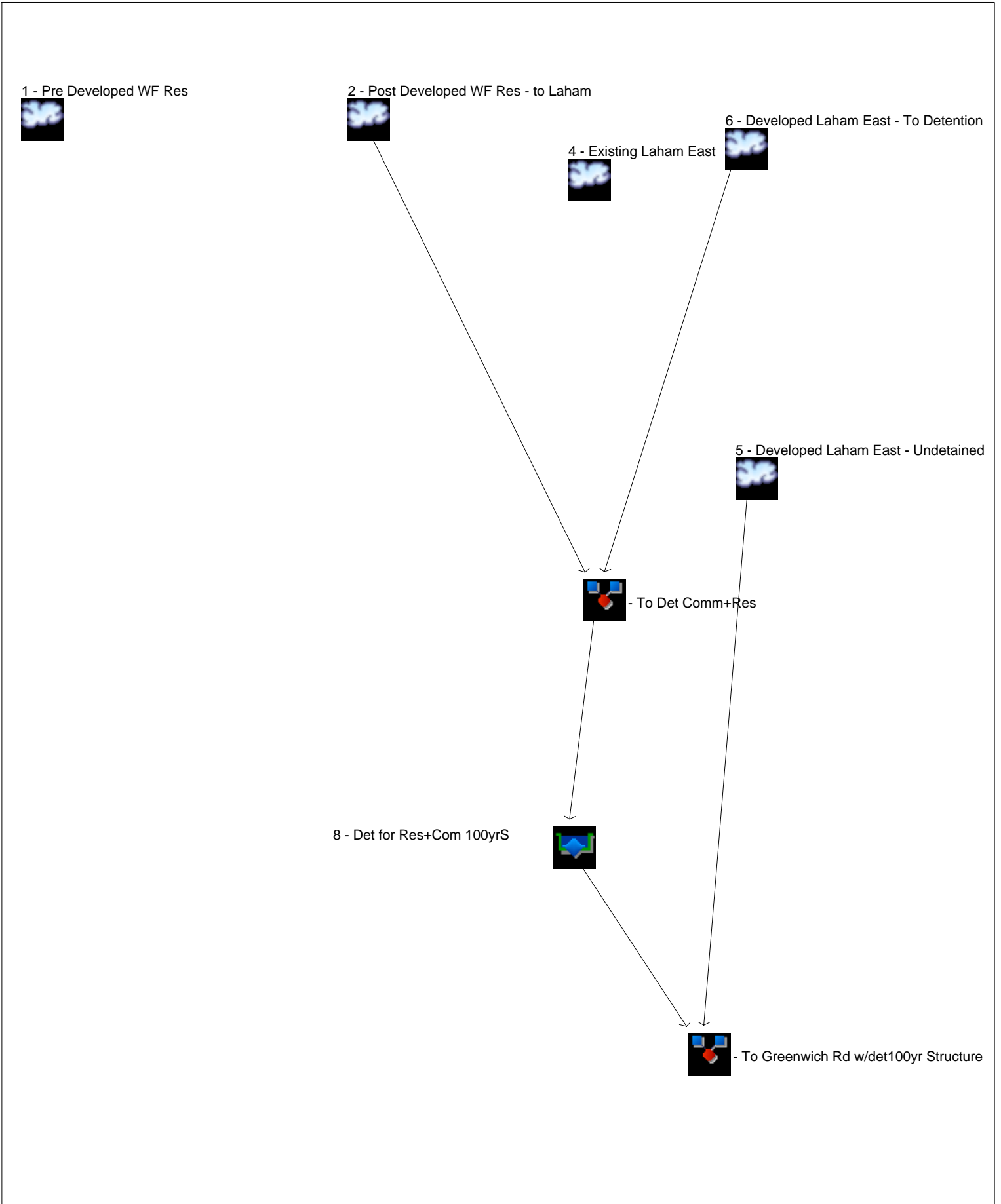
Time of Concentration Calculations by the FAA method
Waterfront East Detention

$$T_c = \frac{(1.1-C)L^{1/2}}{100 S^{1/3}}$$

Area Name	Land Use	Soil Group	Maximum Elevation	Minimum Elevation	Flow Length (L)	Rational Runoff Coefficient, C			Time of Concentration (min), T _c				
						2-Year	5-Year	10-Year	100-Year	2-Year	5-Year	10-Year	100-Year
<i>Pre-Developed</i>	<i>Agricultural - Pasture - Slopes 1-4%</i>	<i>D</i>	<i>1400.0</i>	<i>1380.0</i>	<i>850</i>	<i>0.32</i>	<i>0.37</i>	<i>0.47</i>	<i>0.67</i>	<i>30.8</i>	<i>28.8</i>	<i>24.9</i>	<i>17.0</i>
<i>Post-Developed</i>	<i>Business - Neighborhood</i>	<i>D</i>	<i>1400.0</i>	<i>1380.0</i>	<i>850</i>	<i>0.68</i>	<i>0.69</i>	<i>0.73</i>	<i>0.80</i>	<i>16.6</i>	<i>16.2</i>	<i>15.0</i>	<i>15.0</i>

Watershed Model Schematic

Hydraflow Hydrographs by Intelisolve v9.23



Hydrograph Return Period Recap

Hydraflow Hydrographs by Intelisolve v9.23

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)								Hydrograph description
			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	
1	SCS Runoff	-----	-----	23.02	-----	34.36	41.94	53.53	-----	70.13	Pre Developed WF Res
2	SCS Runoff	-----	-----	4.400	-----	6.524	7.937	10.07	-----	13.11	Post Developed WF Res - to Laham
4	SCS Runoff	-----	-----	51.27	-----	76.80	93.83	119.56	-----	156.41	Existing Laham East
5	SCS Runoff	-----	-----	49.45	-----	66.25	77.17	93.46	-----	116.63	Developed Laham East - Undetained
6	SCS Runoff	-----	-----	43.27	-----	57.97	67.52	81.78	-----	102.05	Developed Laham East - To Detentio
7	Combine	2, 6	-----	45.56	-----	61.48	71.86	87.36	-----	109.43	To Det Comm+Res
8	Reservoir	7	-----	2.687	-----	7.168	11.19	18.52	-----	31.19	Det for Res+Com 100yrS
9	Combine	5, 8	-----	52.03	-----	68.86	79.81	96.12	-----	123.39	To Greenwich Rd w/det100yr Structur

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.23

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph description
1	SCS Runoff	23.02	6	750	3.439	----	-----	-----	Pre Developed WF Res
2	SCS Runoff	4.400	6	744	0.568	----	-----	-----	Post Developed WF Res - to Laham
4	SCS Runoff	51.27	6	726	4.798	----	-----	-----	Existing Laham East
5	SCS Runoff	49.45	6	720	3.649	----	-----	-----	Developed Laham East - Undetained
6	SCS Runoff	43.27	6	720	3.193	----	-----	-----	Developed Laham East - To Detentio
7	Combine	45.56	6	720	3.762	2, 6	-----	-----	To Det Comm+Res
8	Reservoir	2.687	6	822	3.761	7	1387.99	2.14	Det for Res+Com 100yrS
9	Combine	52.03	6	720	7.410	5, 8	-----	-----	To Greenwich Rd w/det100yr Structur
Preliminary Detention Calcs 8-09-07.gpw					Return Period: 2 Year			Thursday, Aug 9, 2007	

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.23

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph description
1	SCS Runoff	34.36	6	750	5.127	----	-----	-----	Pre Developed WF Res
2	SCS Runoff	6.524	6	738	0.840	----	-----	-----	Post Developed WF Res - to Laham
4	SCS Runoff	76.80	6	726	7.154	----	-----	-----	Existing Laham East
5	SCS Runoff	66.25	6	720	4.968	----	-----	-----	Developed Laham East - Undetained
6	SCS Runoff	57.97	6	720	4.347	----	-----	-----	Developed Laham East - To Detentio
7	Combine	61.48	6	720	5.187	2, 6	-----	-----	To Det Comm+Res
8	Reservoir	7.168	6	774	5.187	7	1388.26	2.74	Det for Res+Com 100yrS
9	Combine	68.86	6	720	10.154	5, 8	-----	-----	To Greenwich Rd w/det100yr Structur
Preliminary Detention Calcs 8-09-07.gpw					Return Period: 5 Year			Thursday, Aug 9, 2007	

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.23

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph description
1	SCS Runoff	41.94	6	744	6.271	----	-----	-----	Pre Developed WF Res
2	SCS Runoff	7.937	6	738	1.024	----	-----	-----	Post Developed WF Res - to Laham
4	SCS Runoff	93.83	6	726	8.750	----	-----	-----	Existing Laham East
5	SCS Runoff	77.17	6	720	5.834	----	-----	-----	Developed Laham East - Undetained
6	SCS Runoff	67.52	6	720	5.105	----	-----	-----	Developed Laham East - To Detentio
7	Combine	71.86	6	720	6.129	2, 6	-----	-----	To Det Comm+Res
8	Reservoir	11.19	6	762	6.128	7	1388.40	3.06	Det for Res+Com 100yrS
9	Combine	79.81	6	720	11.962	5, 8	-----	-----	To Greenwich Rd w/det100yr Structur
Preliminary Detention Calcs 8-09-07.gpw					Return Period: 10 Year			Thursday, Aug 9, 2007	

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.23

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph description
1	SCS Runoff	53.53	6	744	8.023	----	-----	-----	Pre Developed WF Res
2	SCS Runoff	10.07	6	738	1.304	----	-----	-----	Post Developed WF Res - to Laham
4	SCS Runoff	119.56	6	726	11.195	----	-----	-----	Existing Laham East
5	SCS Runoff	93.46	6	720	7.137	----	-----	-----	Developed Laham East - Undetained
6	SCS Runoff	81.78	6	720	6.245	----	-----	-----	Developed Laham East - To Detentio
7	Combine	87.36	6	720	7.549	2, 6	-----	-----	To Det Comm+Res
8	Reservoir	18.52	6	750	7.549	7	1388.61	3.54	Det for Res+Com 100yrS
9	Combine	96.12	6	720	14.686	5, 8	-----	-----	To Greenwich Rd w/det100yr Structur
Preliminary Detention Calcs 8-09-07.gpw					Return Period: 25 Year			Thursday, Aug 9, 2007	

Hydraflow Table of Contents

100 - Year

Summary Report	1
Hydrograph Reports	2
Hydrograph No. 1, SCS Runoff, Pre Developed WF Res	2
Hydrograph No. 2, SCS Runoff, Post Developed WF Res - to Laham	3
Hydrograph No. 4, SCS Runoff, Existing Laham East	4
Hydrograph No. 5, SCS Runoff, Developed Laham East - Undetained	5
Hydrograph No. 6, SCS Runoff, Developed Laham East - To Detention	6
Hydrograph No. 7, Combine, To Det Comm+Res	7
Hydrograph No. 8, Reservoir, Det for Res+Com 100yrS	8
Pond Report - Detention Needs - Partial site Detained 100-year structure+ Res	9
Hydrograph No. 9, Combine, To Greenwich Rd w/det100yr Structure	10
 IDF Report	 11

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.23

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph description	
1	SCS Runoff	70.13	6	744	10.577	----	-----	-----	Pre Developed WF Res	
2	SCS Runoff	13.11	6	738	1.712	----	-----	-----	Post Developed WF Res - to Laham	
4	SCS Runoff	156.41	6	726	14.758	----	-----	-----	Existing Laham East	
5	SCS Runoff	116.63	6	720	9.003	----	-----	-----	Developed Laham East - Undetained	
6	SCS Runoff	102.05	6	720	7.877	----	-----	-----	Developed Laham East - To Detentio	
7	Combine	109.43	6	720	9.589	2, 6	-----	-----	To Det Comm+Res	
8	Reservoir	31.19	6	744	9.589	7	1388.90	4.23	Det for Res+Com 100yrS	
9	Combine	123.39	6	720	18.592	5, 8	-----	-----	To Greenwich Rd w/det100yr Structur	
Preliminary Detention Calcs 8-09-07.gpw					Return Period: 100 Year			Thursday, Aug 9, 2007		

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23

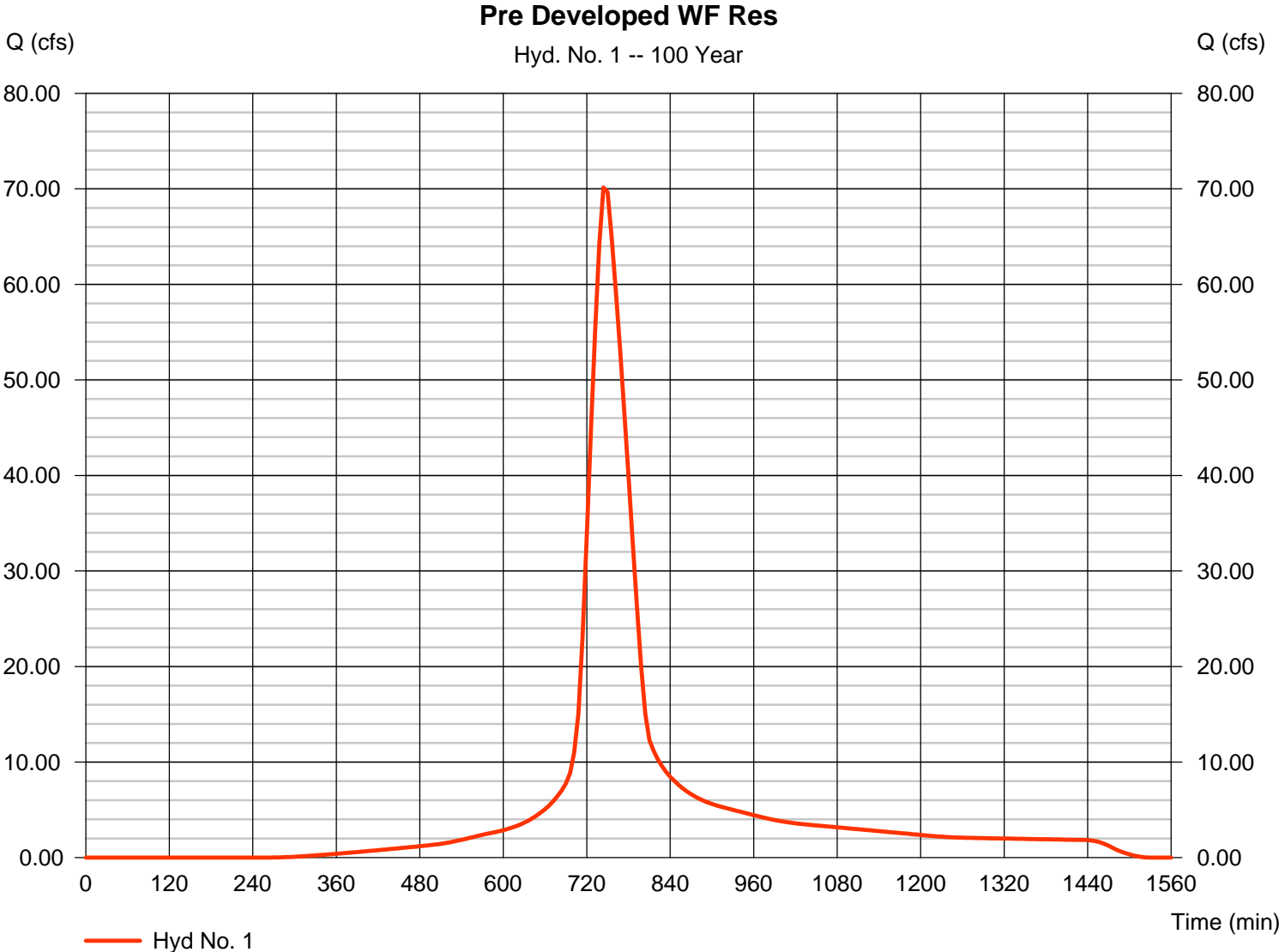
Thursday, Aug 9, 2007

Hyd. No. 1

Pre Developed WF Res

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Time interval = 6 min
Drainage area = 21.500 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 7.80 in
Storm duration = 24 hrs

Peak discharge = 70.13 cfs
Time to peak = 744 min
Hyd. volume = 10.577 acft
Curve number = 84
Hydraulic length = 0 ft
Time of conc. (Tc) = 51.40 min
Distribution = Type II
Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23

Thursday, Aug 9, 2007

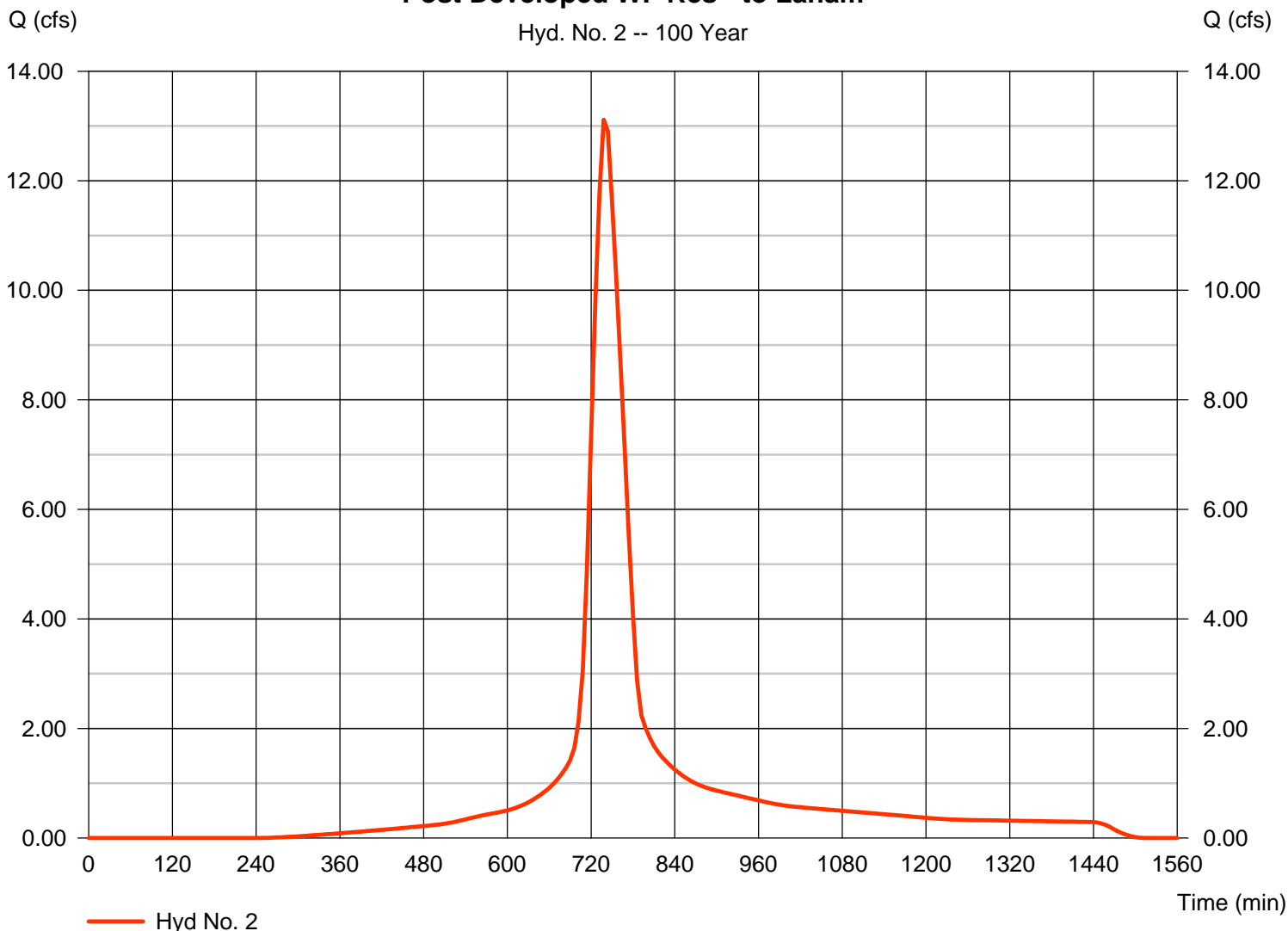
Hyd. No. 2

Post Developed WF Res - to Laham

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 6 min
 Drainage area = 3.500 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 7.80 in
 Storm duration = 24 hrs

Peak discharge = 13.11 cfs
 Time to peak = 738 min
 Hyd. volume = 1.712 acft
 Curve number = 85
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 44.00 min
 Distribution = Type II
 Shape factor = 484

Post Developed WF Res - to Laham



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23

Thursday, Aug 9, 2007

Hyd. No. 4

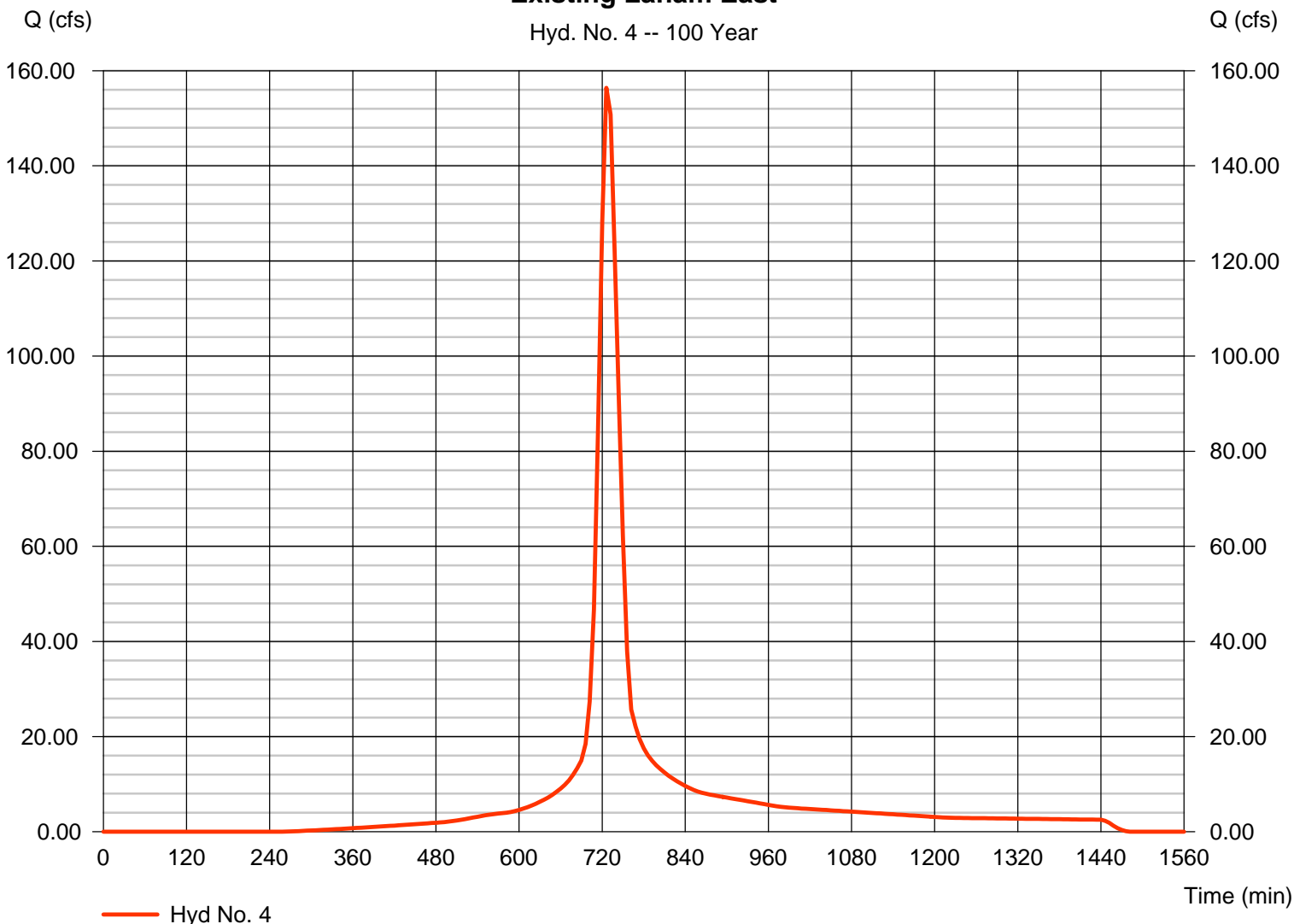
Existing Laham East

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Time interval = 6 min
Drainage area = 30.000 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 7.80 in
Storm duration = 24 hrs

Peak discharge = 156.41 cfs
Time to peak = 726 min
Hyd. volume = 14.758 acft
Curve number = 84
Hydraulic length = 0 ft
Time of conc. (Tc) = 25.00 min
Distribution = Type II
Shape factor = 484

Existing Laham East

Hyd. No. 4 -- 100 Year



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23

Thursday, Aug 9, 2007

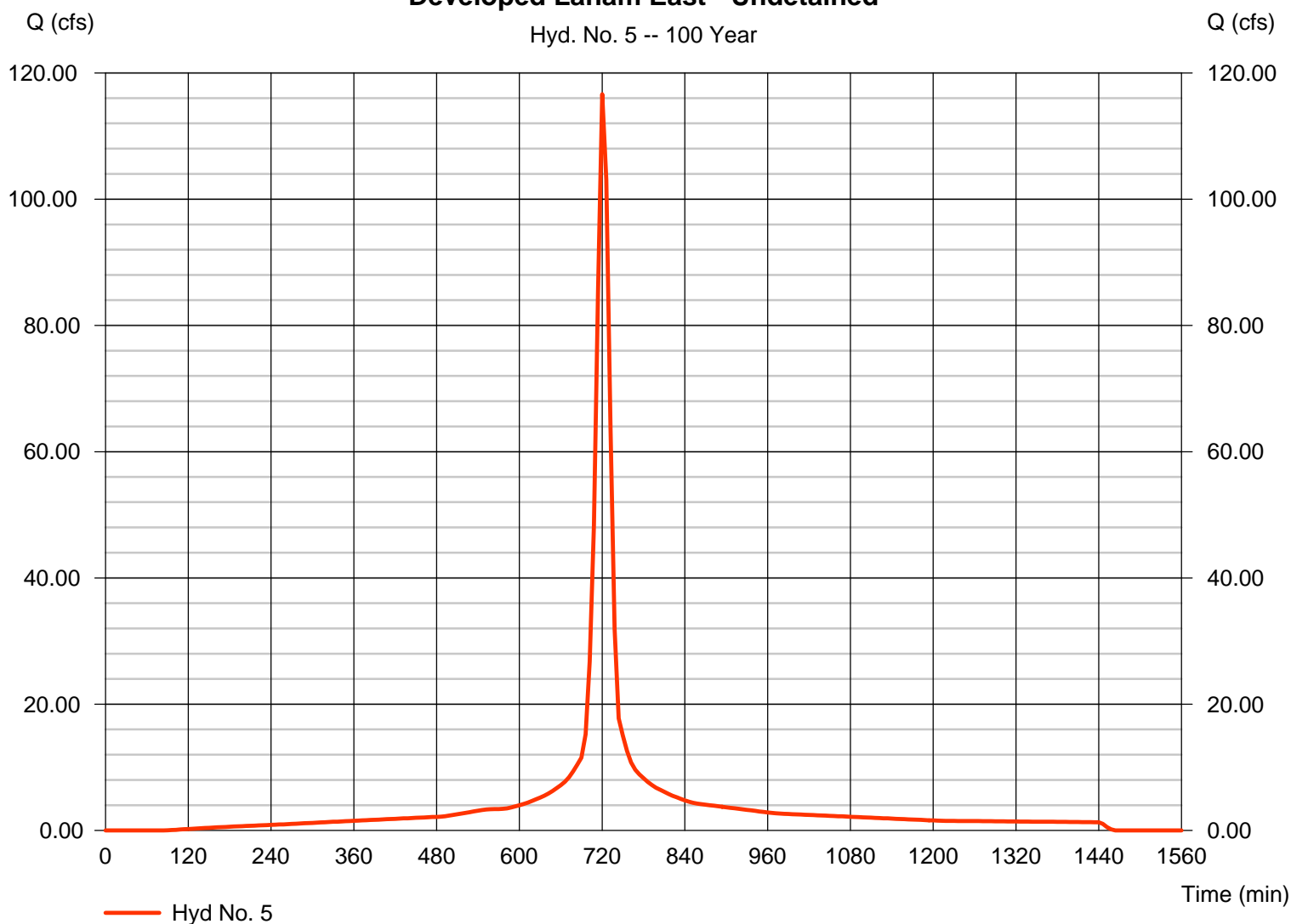
Hyd. No. 5

Developed Laham East - Undetained

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 6 min
 Drainage area = 16.000 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 7.80 in
 Storm duration = 24 hrs

Peak discharge = 116.63 cfs
 Time to peak = 720 min
 Hyd. volume = 9.003 acft
 Curve number = 95
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 15.00 min
 Distribution = Type II
 Shape factor = 484

Developed Laham East - Undetained



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23

Thursday, Aug 9, 2007

Hyd. No. 6

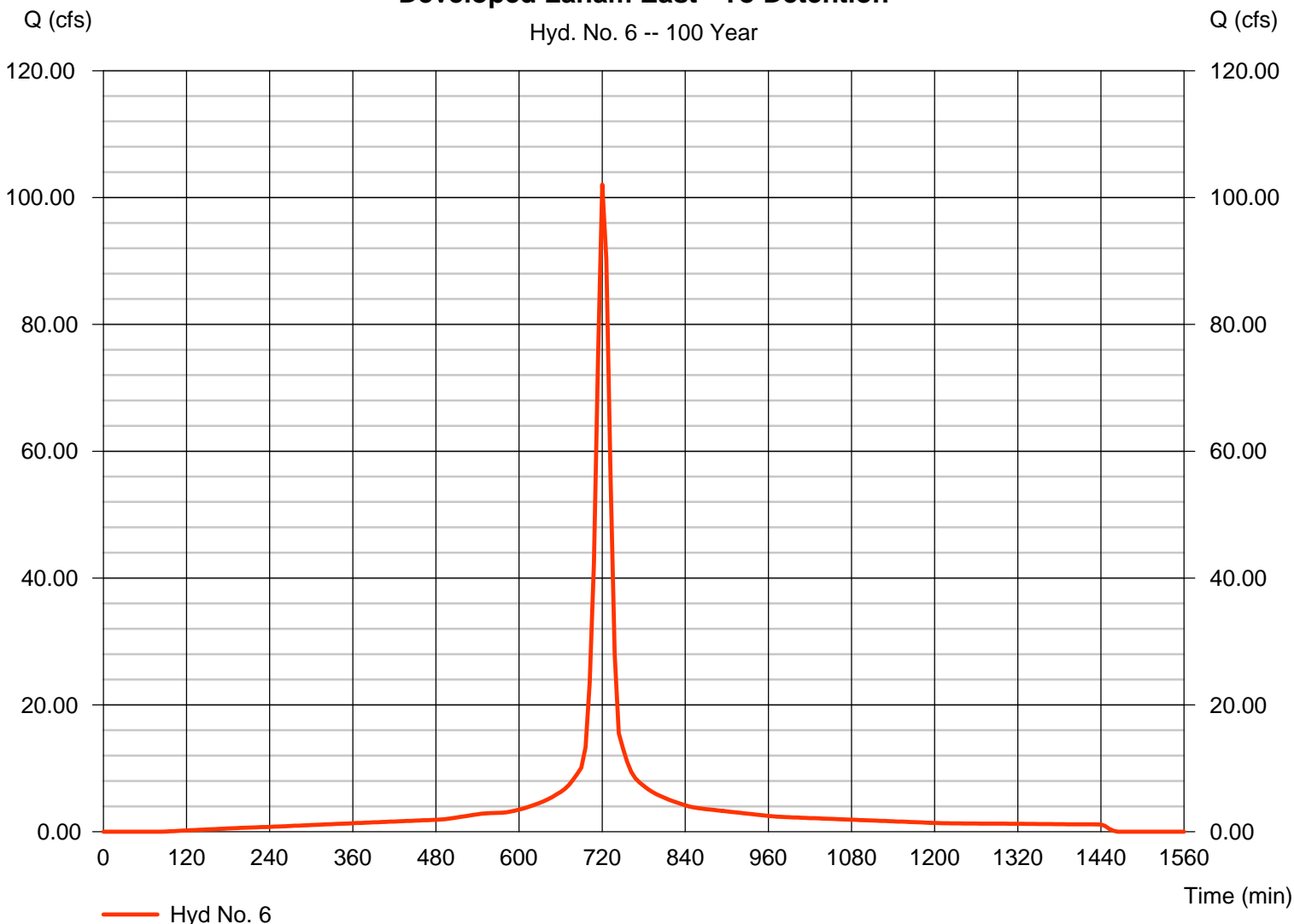
Developed Laham East - To Detention

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Time interval = 6 min
Drainage area = 14.000 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 7.80 in
Storm duration = 24 hrs

Peak discharge = 102.05 cfs
Time to peak = 720 min
Hyd. volume = 7.877 acft
Curve number = 95
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484

Developed Laham East - To Detention

Hyd. No. 6 -- 100 Year



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23

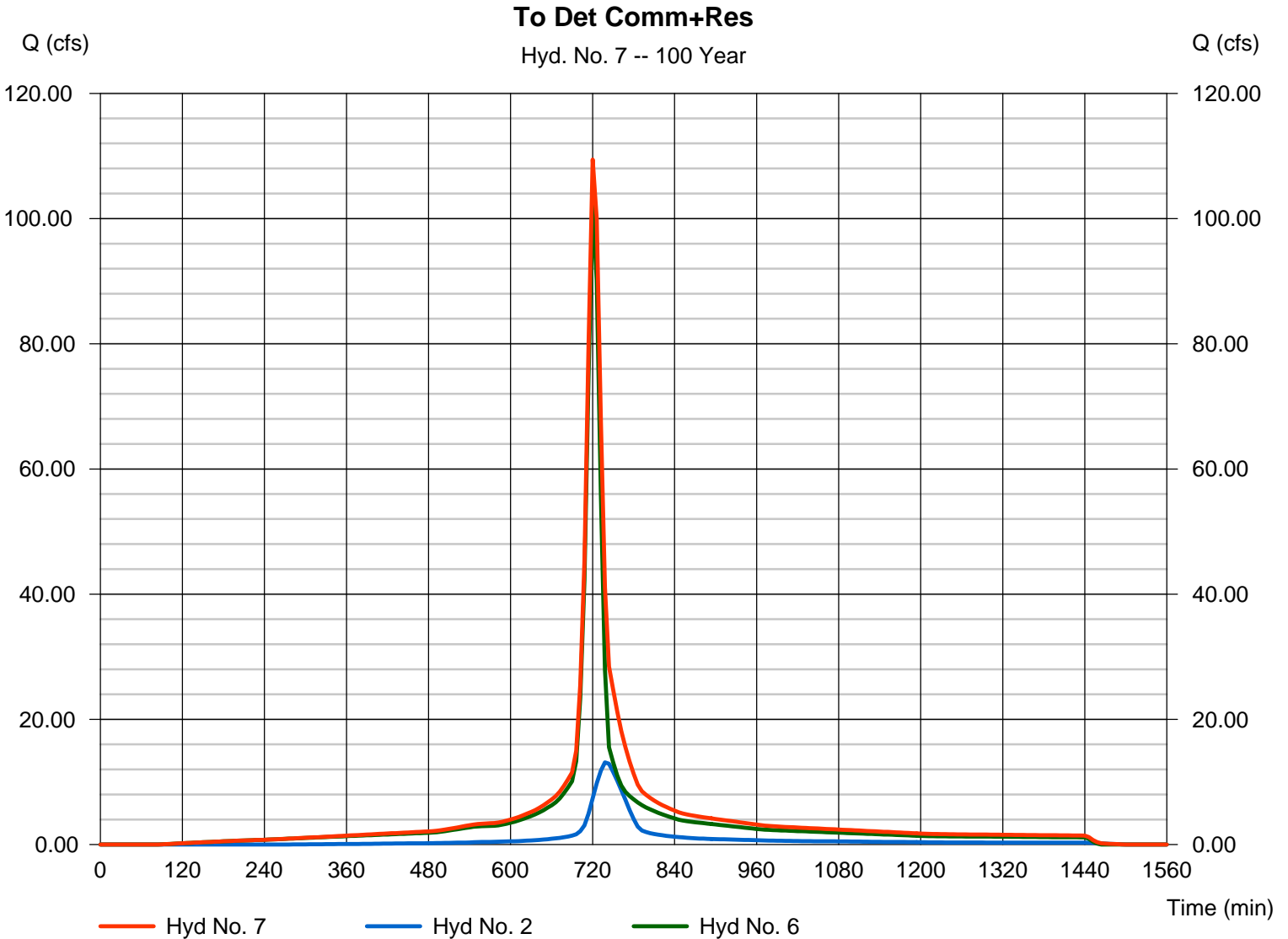
Thursday, Aug 9, 2007

Hyd. No. 7

To Det Comm+Res

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

Peak discharge = 109.43 cfs
Time to peak = 720 min
Hyd. volume = 9.589 acft
Contrib. drain. area = 17.500 ac



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23

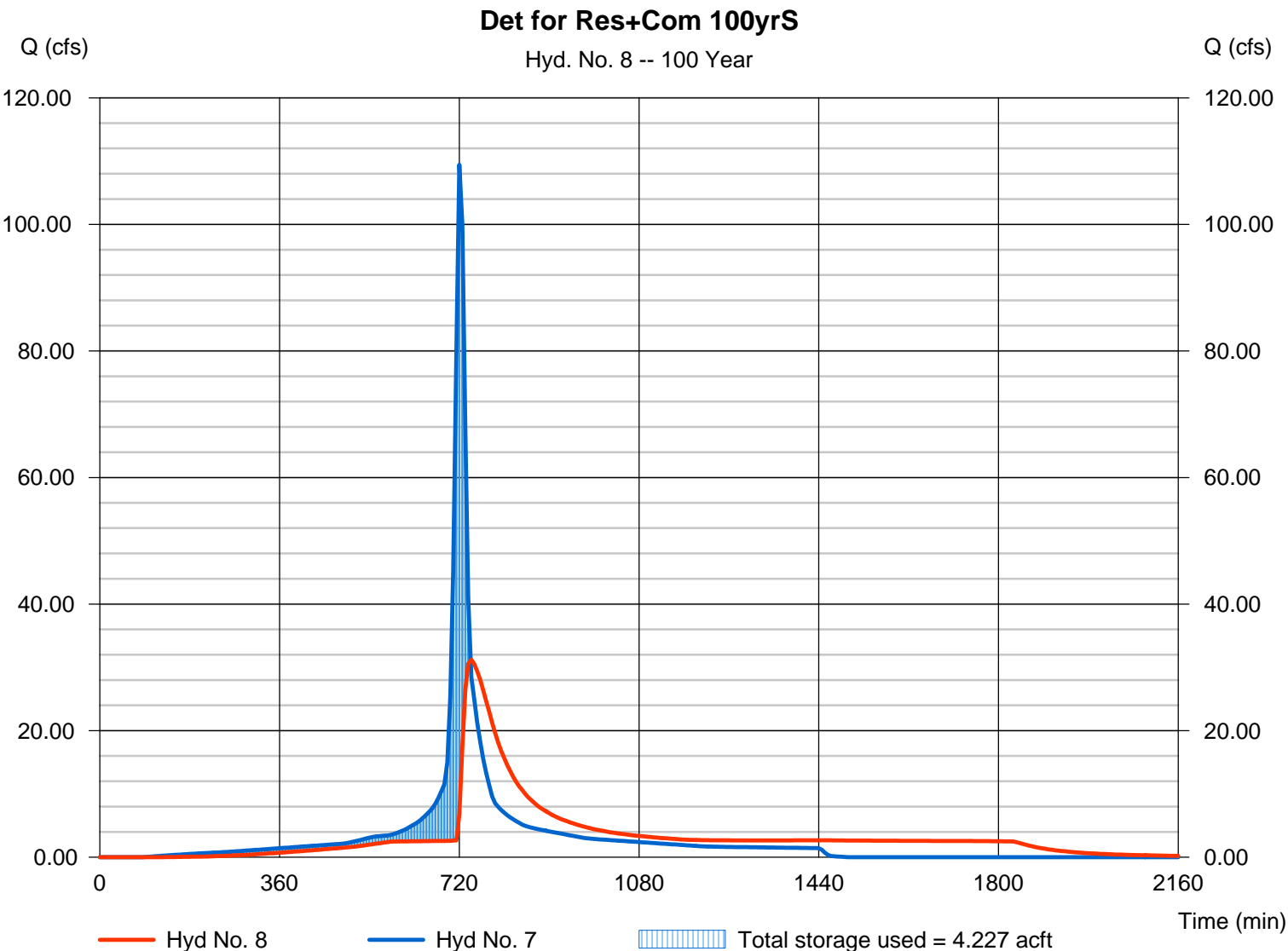
Thursday, Aug 9, 2007

Hyd. No. 8

Det for Res+Com 100yrS

Hydrograph type	= Reservoir	Peak discharge	= 31.19 cfs
Storm frequency	= 100 yrs	Time to peak	= 744 min
Time interval	= 6 min	Hyd. volume	= 9.589 acft
Inflow hyd. No.	= 7 - To Det Comm+Res	Max. Elevation	= 1388.90 ft
Reservoir name	= Detention Needs - Partial site Detained 100 year storage+ Res	Max. Storage	= 4.227 acft

Storage Indication method used.



Pond No. 5 - Detention Needs - Partial site Detained 100-year structure+ Res

Pond Data

Trapezoid - Bottom L x W = 300.0 x 300.0 ft, Side slope = 6.00:1, Bottom elev. = 1387.00 ft, Depth = 3.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (acft)	Total storage (acft)
0.00	1387.00	90,000	0.000	0.000
0.30	1387.30	92,173	0.627	0.627
0.60	1387.60	94,372	0.642	1.270
0.90	1387.90	96,597	0.658	1.927
1.20	1388.20	98,847	0.673	2.600
1.50	1388.50	101,124	0.689	3.289
1.80	1388.80	103,427	0.704	3.993
2.10	1389.10	105,755	0.720	4.714
2.40	1389.40	108,109	0.736	5.450
2.70	1389.70	110,490	0.753	6.203
3.00	1390.00	112,896	0.769	6.972

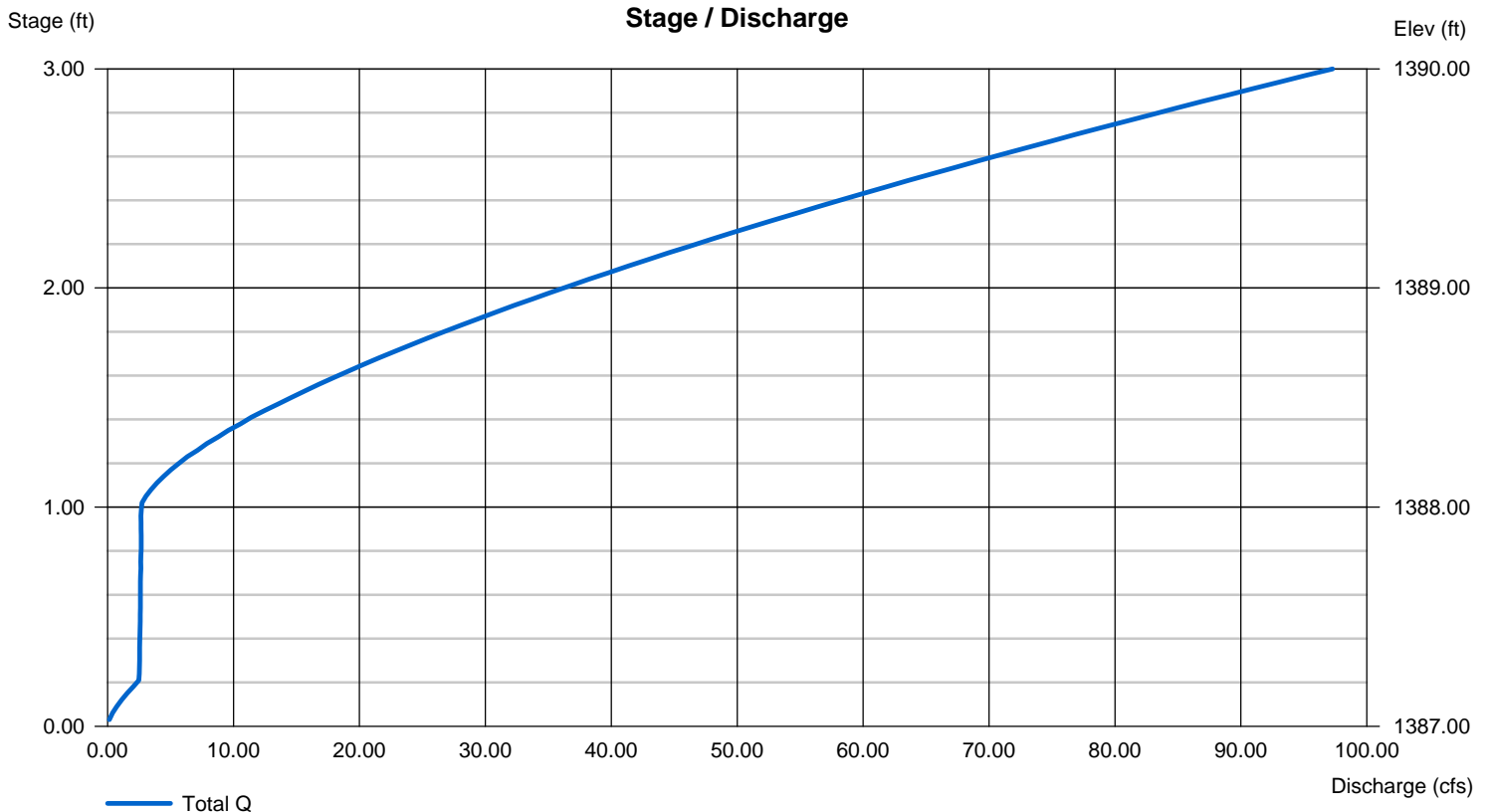
Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 8.00	0.00	0.00	0.00
Span (in)	= 8.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 1382.00	0.00	0.00	0.00
Length (ft)	= 100.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 8.00	10.00	0.00	0.00
Crest El. (ft)	= 1387.00	1388.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Riser	Rect	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 0.000	(by Wet area)		
TW Elev. (ft)	= 0.00			

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



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23

Thursday, Aug 9, 2007

Hyd. No. 9

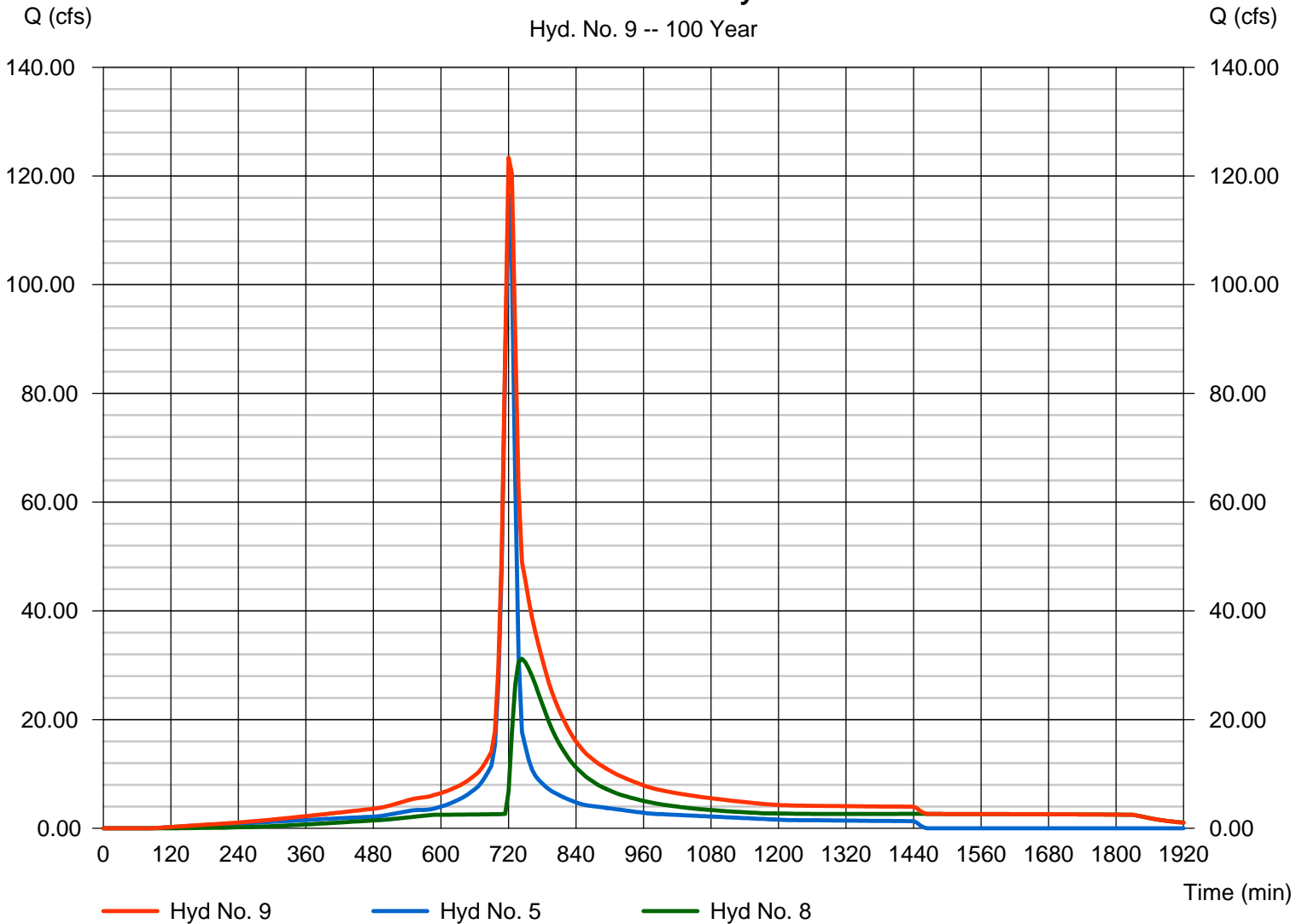
To Greenwich Rd w/det100yr Structure

Hydrograph type = Combine
Storm frequency = 100 yrs
Time interval = 6 min
Inflow hyds. = 5, 8

Peak discharge = 123.39 cfs
Time to peak = 720 min
Hyd. volume = 18.592 acft
Contrib. drain. area = 16.000 ac

To Greenwich Rd w/det100yr Structure

Hyd. No. 9 -- 100 Year



Hydraflow Rainfall Report

Hydraflow Hydrographs by Intelisolve v9.23

Thursday, Aug 9, 2007

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	-----
2	76.3137	14.3000	0.8844	-----
3	0.0000	0.0000	0.0000	-----
5	52.6224	11.2000	0.7497	-----
10	55.1841	11.1000	0.7229	-----
25	60.7012	11.1000	0.7068	-----
50	66.9222	11.3000	0.7004	-----
100	62.2794	10.1000	0.6624	-----

File name: SedgwickCoKS.IDF

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

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	5.57	4.54	3.85	3.35	2.97	2.67	2.43	2.23	2.06	1.92	1.80	1.69
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.52	5.33	4.55	3.99	3.57	3.24	2.97	2.75	2.57	2.41	2.27	2.15
10	7.40	6.09	5.22	4.60	4.13	3.76	3.46	3.21	3.00	2.82	2.67	2.53
25	8.51	7.03	6.05	5.35	4.81	4.39	4.05	3.76	3.52	3.32	3.14	2.98
50	9.47	7.86	6.78	6.00	5.41	4.94	4.56	4.24	3.98	3.75	3.55	3.37
100	10.31	8.53	7.37	6.53	5.90	5.40	5.00	4.66	4.37	4.13	3.92	3.73

T_c = time in minutes. Values may exceed 60.

Precip. file name: SedgwickCoKS.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	3.48	0.00	4.55	5.25	6.30	7.10	7.80
SCS 6-Hr	0.00	1.80	0.00	0.00	2.60	0.00	0.00	4.00
Huff-1st	0.00	1.55	0.00	2.75	4.00	5.38	6.50	8.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	1.55	0.00	2.75	4.00	5.38	6.50	8.00
Custom	0.00	2.50	0.00	0.00	0.00	4.60	5.20	5.90

Figure 3.2

Post-Project TR-20 Modeling

TR20 ----- SCS -
 WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
 08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL2.04TEST
 08:41:53 PASS 1 JOB NO. 1 PAGE 3

EXECUTIVE CONTROL INCREM MAIN TIME INCREMENT = .100 HOURS

EXECUTIVE CONTROL COMPUT FROM XSECTION 5 TO STRUCTURE 18 2XR
 STARTING TIME = .00 RAIN DEPTH = 3.50 RAIN DURATION = 1.00
 ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS
 ALTERNATE NO. = 11 STORM NO. = 1 RAIN TABLE NO. = 2

OPERATION RUNOFF XSECTION 5
 OUTPUT HYDROGRAPH = 3 AREA = .20 SQ MI
 INPUT RUNOFF CURVE = 89. TIME OF CONCENTRATION = .60 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0800 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.24 219.1 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 2.34 WATERSHED INCHES; 295 CFS-HRS; 24.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 25
 OUTPUT HYDROGRAPH = 1 AREA = .16 SQ MI
 INPUT RUNOFF CURVE = 90. TIME OF CONCENTRATION = .57 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0765 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.22 188.9 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 2.46 WATERSHED INCHES; 248 CFS-HRS; 20.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 30 OUTPUT HYDROGRAPH 2
 INPUT HYDROGRAPHS 1,3

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.23 407.8 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 2.39 WATERSHED INCHES; 543 CFS-HRS; 44.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 35
 OUTPUT HYDROGRAPH = 1 AREA = .16 SQ MI
 INPUT RUNOFF CURVE = 91. TIME OF CONCENTRATION = .53 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0710 HOURS

1

TR20 ----- SCS -
 WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
 08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL2.04TEST
 08:41:53 PASS 1 JOB NO. 1 PAGE 2

DIMENSIONLESS HYDROGRAPH TABLE ENTERED

8	.0000	.1000	.1900	.3100
8	.4700	.8200	.9300	.9900
8	1.0000	.9900	.8600	.7800
8	.6800	.4600	.3900	.3300
8	.2800	.2410	.1740	.1470
8	.1260	.0910	.0770	.0660
8	.0550	.0400	.0340	.0290
8	.0250	.0180	.0150	.0130
8	.0110	.0090	.0070	.0060
8	.0050	.0040	.0030	.0020
8	.0000	.0000	.0000	.0000

COMPUTED TIME INCREMENT = .0200

COMPUTED PEAK RATE FACTOR = 484.000

1

TR20 ----- SCS -
 WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
 08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04FEET
 08:41:53 PASS 1 JOB NO. 1 PAGE 4

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.20 210.1 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 21.8 ACRE-FEET.
 2.50 WATERSHED INCHES; 264 CFS-HRS;

OPERATION ADDHYD XSECTION 40 OUTPUT HYDROGRAPH 3
 INPUT HYDROGRAPHS 1,2

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.22 616.7 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 66.7 ACRE-FEET.
 2.42 WATERSHED INCHES; 807 CFS-HRS;

OPERATION RESVOR STRUCTURE 10 OUTPUT HYDROGRAPH 1
 INPUT HYDROGRAPH 3 SURFACE ELEVATION = 1369.40

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.38 515.1 1375.15

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 66.7 ACRE-FEET.
 2.42 WATERSHED INCHES; 807 CFS-HRS;

OPERATION RUNOFF XSECTION 45
 OUTPUT HYDROGRAPH = 2 AREA = .04 SQ MI
 INPUT RUNOFF CURVE = 95. TIME OF CONCENTRATION = .40 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0528 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.11 75.6 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 6.8 ACRE-FEET.
 2.97 WATERSHED INCHES; 83 CFS-HRS;

OPERATION ADDHYD XSECTION 50 OUTPUT HYDROGRAPH 4
 INPUT HYDROGRAPHS 1,2

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.35 554.0 (NULL)

TR20 ----- SCS -
 WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
 08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04FEET
 08:41:53 PASS 1 JOB NO. 1 PAGE 5

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 73.6 ACRE-FEET.
 2.47 WATERSHED INCHES; 890 CFS-HRS;

OPERATION RUNOFF XSECTION 53
 OUTPUT HYDROGRAPH = 6 AREA = .16 SQ MI
 INPUT RUNOFF CURVE = 91. TIME OF CONCENTRATION = .60 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0794 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.23 188.8 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 21.0 ACRE-FEET.
 2.53 WATERSHED INCHES; 254 CFS-HRS;

OPERATION RESVOR STRUCTURE 15 OUTPUT HYDROGRAPH 2
 INPUT HYDROGRAPH 6 SURFACE ELEVATION = 1373.00

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.64 86.3 1375.44

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 20.9 ACRE-FEET.
 2.51 WATERSHED INCHES; 253 CFS-HRS;

OPERATION ADDHYD XSECTION 54 OUTPUT HYDROGRAPH 3
 INPUT HYDROGRAPHS 2,4

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.36 632.4 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 94.4 ACRE-FEET.
 2.48 WATERSHED INCHES; 1142 CFS-HRS;

OPERATION RUNOFF XSECTION 55
 OUTPUT HYDROGRAPH = 2 AREA = .16 SQ MI
 INPUT RUNOFF CURVE = 92. TIME OF CONCENTRATION = .57 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0765 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.22 208.6 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 22.8 ACRE-FEET.
 2.65 WATERSHED INCHES; 276 CFS-HRS;

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04TEST
08:41:53 PASS 1 JOB NO. 1 PAGE 6

OPERATION ADDHYD XSECTION 60 OUTPUT HYDROGRAPH 1
INPUT HYDROGRAPHS 2,3
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.31 821.9 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.51 WATERSHED INCHES; 1419 CFS-HRS; 117.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 61
OUTPUT HYDROGRAPH = 2 AREA = .03 SQ MI
INPUT RUNOFF CURVE = 95. TIME OF CONCENTRATION = .25 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0333 HOURS

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.03 58.1 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.94 WATERSHED INCHES; 52 CFS-HRS; 4.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 62 OUTPUT HYDROGRAPH 4
INPUT HYDROGRAPHS 2,1
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.30 838.6 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.52 WATERSHED INCHES; 1470 CFS-HRS; 121.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 65
OUTPUT HYDROGRAPH = 1 AREA = .03 SQ MI
INPUT RUNOFF CURVE = 92. TIME OF CONCENTRATION = .28 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0379 HOURS

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.05 60.8 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.62 WATERSHED INCHES; 56 CFS-HRS; 4.6 ACRE-FEET.

OPERATION RESVOR STRUCTURE 12 OUTPUT HYDROGRAPH 2
INPUT HYDROGRAPH 1
SURFACE ELEVATION = 1380.50

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04TEST
08:41:53 PASS 1 JOB NO. 1 PAGE 7

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.24 33.2 1381.87

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.62 WATERSHED INCHES; 56 CFS-HRS; 4.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 80
OUTPUT HYDROGRAPH = 3 AREA = .01 SQ MI
INPUT RUNOFF CURVE = 95. TIME OF CONCENTRATION = .26 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0341 HOURS

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.03 22.0 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.94 WATERSHED INCHES; 20 CFS-HRS; 1.6 ACRE-FEET.

OPERATION ADDHYD XSECTION 85 OUTPUT HYDROGRAPH 1
INPUT HYDROGRAPHS 2,3

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.12 48.1 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.70 WATERSHED INCHES; 76 CFS-HRS; 6.3 ACRE-FEET.

OPERATION RESVOR STRUCTURE 13 OUTPUT HYDROGRAPH 2
INPUT HYDROGRAPH 1
SURFACE ELEVATION = 1379.00

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.27 41.8 1381.75

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.70 WATERSHED INCHES; 76 CFS-HRS; 6.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 166
OUTPUT HYDROGRAPH = 3 AREA = .28 SQ MI
INPUT RUNOFF CURVE = 88. TIME OF CONCENTRATION = .42 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0556 HOURS

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.13 379.8 (RUNOFF)

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL2.04FEET
08:41:53 PASS 1 JOB NO. 1 PAGE 8

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.26 WATERSHED INCHES; 410 CFS-HRS; 33.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 167 OUTPUT HYDROGRAPH 1
INPUT HYDROGRAPHS 2,3

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.14 416.2 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.32 WATERSHED INCHES; 485 CFS-HRS; 40.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 170 OUTPUT HYDROGRAPH 2
INPUT HYDROGRAPHS 4,1

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.22 1202.8 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.47 WATERSHED INCHES; 1956 CFS-HRS; 161.6 ACRE-FEET.

OPERATION RESVOR STRUCTURE 18 OUTPUT HYDROGRAPH 3
INPUT HYDROGRAPH 2

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
13.51 219.1 1370.13

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.47 WATERSHED INCHES; 1955 CFS-HRS; 161.6 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 1

1

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL2.04FEET
08:41:53 PASS 2 JOB NO. 1 PAGE 9

EXECUTIVE CONTROL COMPUT FROM XSECTION 5 TO STRUCTURE 18
STARTING TIME = .00 RAIN DEPTH = 4.55 RAIN DURATION = 1.00
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS
ALTERNATE NO. = 12 STORM NO. = 2 RAIN TABLE NO. = 2

OPERATION RUNOFF XSECTION 5 AREA = .20 SQ MI
OUTPUT HYDROGRAPH = 3 INPUT RUNOFF CURVE = 89. TIME OF CONCENTRATION = .60 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0800 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.23 309.0 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.32 WATERSHED INCHES; 419 CFS-HRS; 34.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 25 AREA = .16 SQ MI
OUTPUT HYDROGRAPH = 1 INPUT RUNOFF CURVE = 90. TIME OF CONCENTRATION = .57 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0765 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.22 263.4 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.45 WATERSHED INCHES; 349 CFS-HRS; 28.8 ACRE-FEET.

OPERATION ADDHYD XSECTION 30 OUTPUT HYDROGRAPH 2
INPUT HYDROGRAPHS 1,3

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.22 572.1 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.38 WATERSHED INCHES; 767 CFS-HRS; 63.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 35 AREA = 16 SQ MI
OUTPUT HYDROGRAPH = 1 INPUT RUNOFF CURVE = 91. TIME OF CONCENTRATION = .53 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0710 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.19 291.0 (RUNOFF)

1

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04TEST
08:41:53 PASS 2 JOB NO. 1 PAGE 10

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.50 WATERSHED INCHES; 370 CFS-HRS; 30.6 ACRE-FEET.

OPERATION ADDHYD XSECTION 40 OUTPUT HYDROGRAPH 3
INPUT HYDROGRAPHS 1,2

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.21 861.4 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.42 WATERSHED INCHES; 1137 CFS-HRS; 94.0 ACRE-FEET.

OPERATION RESVOR STRUCTURE 10 OUTPUT HYDROGRAPH 1
INPUT HYDROGRAPH 3
SURFACE ELEVATION = 1369.40

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.40 677.3 1375.94

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.42 WATERSHED INCHES; 1138 CFS-HRS; 94.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 45
OUTPUT HYDROGRAPH = 2 AREA = .04 SQ MI
INPUT RUNOFF CURVE = 95. TIME OF CONCENTRATION = .40 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0528 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.11 99.9 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.01 WATERSHED INCHES; 112 CFS-HRS; 9.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 50 OUTPUT HYDROGRAPH 4
INPUT HYDROGRAPHS 1,2

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.35 724.6 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.46 WATERSHED INCHES; 1249 CFS-HRS; 103.2 ACRE-FEET.

1

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04TEST
08:41:53 PASS 2 JOB NO. 1 PAGE 11

OPERATION RUNOFF XSECTION 53
OUTPUT HYDROGRAPH = 6 AREA = .16 SQ MI
INPUT RUNOFF CURVE = 91. TIME OF CONCENTRATION = .60 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0794 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.23 262.5 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.53 WATERSHED INCHES; 355 CFS-HRS; 29.4 ACRE-FEET.

OPERATION RESVOR STRUCTURE 15 OUTPUT HYDROGRAPH 2
INPUT HYDROGRAPH 6
SURFACE ELEVATION = 1373.00

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.69 106.2 1376.06

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.52 WATERSHED INCHES; 354 CFS-HRS; 29.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 54 OUTPUT HYDROGRAPH 3
INPUT HYDROGRAPHS 2,4

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.37 820.8 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.47 WATERSHED INCHES; 1602 CFS-HRS; 132.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 55
OUTPUT HYDROGRAPH = 2 AREA = .16 SQ MI
INPUT RUNOFF CURVE = 92. TIME OF CONCENTRATION = .57 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0765 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.22 285.4 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.67 WATERSHED INCHES; 382 CFS-HRS; 31.6 ACRE-FEET.

OPERATION ADDHYD XSECTION 60 OUTPUT HYDROGRAPH 1
INPUT HYDROGRAPHS 2,3

1

TR20 ----- SCS -
 WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
 08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04FEET
 08:41:53 PASS 2 JOB NO. 1 PAGE 12

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.29 1079.9 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 163.9 ACRE-FEET.
 3.51 WATERSHED INCHES; 1984 CFS-HRS;

OPERATION RUNOFF XSECTION 61 AREA = .03 SQ MI
 OUTPUT HYDROGRAPH = 2 INPUT RUNOFF CURVE = 95. TIME OF CONCENTRATION = .25 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0333 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.03 77.3 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 5.8 ACRE-FEET.
 3.97 WATERSHED INCHES; 70 CFS-HRS;

OPERATION ADDHYD XSECTION 62 OUTPUT HYDROGRAPH 4
 INPUT HYDROGRAPHS 2,1

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.27 1105.2 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 169.7 ACRE-FEET.
 3.52 WATERSHED INCHES; 2054 CFS-HRS;

OPERATION RUNOFF XSECTION 65 AREA = .03 SQ MI
 OUTPUT HYDROGRAPH = 1 INPUT RUNOFF CURVE = 92. TIME OF CONCENTRATION = .28 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0379 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.05 82.9 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 6.4 ACRE-FEET.
 3.64 WATERSHED INCHES; 77 CFS-HRS;

OPERATION RESVOR STRUCTURE 12 OUTPUT HYDROGRAPH 2
 INPUT HYDROGRAPH 1 SURFACE ELEVATION = 1380.50

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.26 40.6 1382.35

1

TR20 ----- SCS -
 WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
 08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04FEET
 08:41:53 PASS 2 JOB NO. 1 PAGE 13

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 6.4 ACRE-FEET.
 3.64 WATERSHED INCHES; 77 CFS-HRS;

OPERATION RUNOFF XSECTION 80 AREA = .01 SQ MI
 OUTPUT HYDROGRAPH = 3 INPUT RUNOFF CURVE = 95. TIME OF CONCENTRATION = .26 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0341 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.03 29.1 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 2.2 ACRE-FEET.
 3.97 WATERSHED INCHES; 27 CFS-HRS;

OPERATION ADDHYD XSECTION 85 OUTPUT HYDROGRAPH 1
 INPUT HYDROGRAPHS 2,3

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.10 63.9 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 8.6 ACRE-FEET.
 3.72 WATERSHED INCHES; 104 CFS-HRS;

OPERATION RESVOR STRUCTURE 13 OUTPUT HYDROGRAPH 2
 INPUT HYDROGRAPH 1 SURFACE ELEVATION = 1379.00

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.28 51.5 1382.23

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 8.6 ACRE-FEET.
 3.71 WATERSHED INCHES; 104 CFS-HRS;

OPERATION RUNOFF XSECTION 166 AREA = .28 SQ MI
 OUTPUT HYDROGRAPH = 3 INPUT RUNOFF CURVE = 88. TIME OF CONCENTRATION = .42 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0556 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.13 539.8 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 48.5 ACRE-FEET.
 3.23 WATERSHED INCHES; 586 CFS-HRS;

1

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04FEET
08:41:53 PASS 2 JOB NO. 1 PAGE 14

OPERATION ADDHYD XSECTION 167 OUTPUT HYDROGRAPH 1
INPUT HYDROGRAPHS 2,3
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.13 590.9 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.30 WATERSHED INCHES; 691 CFS-HRS; 57.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 170 OUTPUT HYDROGRAPH 2
INPUT HYDROGRAPHS 4,1
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.20 1646.5 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.46 WATERSHED INCHES; 2745 CFS-HRS; 226.8 ACRE-FEET.

OPERATION RESVOR STRUCTURE 18 OUTPUT HYDROGRAPH 3
INPUT HYDROGRAPH 2 SURFACE ELEVATION = 1368.70
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
13.23 392.1 1370.68

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.46 WATERSHED INCHES; 2745 CFS-HRS; 226.8 ACRE-FEET.

EXECUTIVE CONTROL ENDCMPE COMPUTATIONS COMPLETED FOR PASS 2
1

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04FEET
08:41:53 PASS 3 JOB NO. 1 PAGE 15

EXECUTIVE CONTROL COMPUT FROM XSECTION 5 TO STRUCTURE 18
STARTING TIME = .00 RAIN DEPTH = 5.25 RAIN DURATION = 1.00
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS
ALTERNATE NO. = 13 STORM NO. = 3 RAIN TABLE NO. = 2

OPERATION RUNOFF XSECTION 5 AREA = .20 SQ MI
OUTPUT HYDROGRAPH = 3 INPUT RUNOFF CURVE = 89. TIME OF CONCENTRATION = .60 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0800 HOURS
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.23 368.9 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.99 WATERSHED INCHES; 502 CFS-HRS; 41.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 25 AREA = .16 SQ MI
OUTPUT HYDROGRAPH = 1 INPUT RUNOFF CURVE = 90. TIME OF CONCENTRATION = .57 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0765 HOURS
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.22 313.0 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.12 WATERSHED INCHES; 417 CFS-HRS; 34.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 30 OUTPUT HYDROGRAPH 2
INPUT HYDROGRAPHS 1,3
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.22 681.7 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.05 WATERSHED INCHES; 919 CFS-HRS; 76.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 35 AREA = 16 SQ MI
OUTPUT HYDROGRAPH = 1 INPUT RUNOFF CURVE = 91. TIME OF CONCENTRATION = .53 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0710 HOURS
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.19 344.3 (RUNOFF)

1

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04TEST
08:41:53 PASS 3 JOB NO. 1 PAGE 16

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.18 WATERSHED INCHES; 442 CFS-HRS; 36.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 40 OUTPUT HYDROGRAPH 3
INPUT HYDROGRAPHS 1,2

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.21 1023.8 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.09 WATERSHED INCHES; 1361 CFS-HRS; 112.5 ACRE-FEET.

OPERATION RESVOR STRUCTURE 10 OUTPUT HYDROGRAPH 1
INPUT HYDROGRAPH 3
SURFACE ELEVATION = 1369.40

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.42 776.9 1376.50

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.09 WATERSHED INCHES; 1361 CFS-HRS; 112.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 45
OUTPUT HYDROGRAPH = 2 AREA = .04 SQ MI
INPUT RUNOFF CURVE = 95. TIME OF CONCENTRATION = .40 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0528 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.11 117.3 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.70 WATERSHED INCHES; 131 CFS-HRS; 10.8 ACRE-FEET.

OPERATION ADDHYD XSECTION 50 OUTPUT HYDROGRAPH 4
INPUT HYDROGRAPHS 1,2

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.36 829.4 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.14 WATERSHED INCHES; 1492 CFS-HRS; 123.3 ACRE-FEET.

1

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04TEST
08:41:53 PASS 3 JOB NO. 1 PAGE 17

OPERATION RUNOFF XSECTION 53
OUTPUT HYDROGRAPH = 6 AREA = .16 SQ MI
INPUT RUNOFF CURVE = 91. TIME OF CONCENTRATION = .60 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0794 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.23 308.4 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.21 WATERSHED INCHES; 423 CFS-HRS; 35.0 ACRE-FEET.

OPERATION RESVOR STRUCTURE 15 OUTPUT HYDROGRAPH 2
INPUT HYDROGRAPH 6
SURFACE ELEVATION = 1373.00

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.72 116.1 1376.46

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.19 WATERSHED INCHES; 421 CFS-HRS; 34.8 ACRE-FEET.

OPERATION ADDHYD XSECTION 54 OUTPUT HYDROGRAPH 3
INPUT HYDROGRAPHS 2,4

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.38 936.0 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.15 WATERSHED INCHES; 1913 CFS-HRS; 158.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 55
OUTPUT HYDROGRAPH = 2 AREA = .16 SQ MI
INPUT RUNOFF CURVE = 92. TIME OF CONCENTRATION = .57 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0765 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.21 336.0 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.35 WATERSHED INCHES; 453 CFS-HRS; 37.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 60 OUTPUT HYDROGRAPH 1
INPUT HYDROGRAPHS 2,3

1

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04FEET
08:41:53 PASS 3 JOB NO. 1 PAGE 18

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.30 1239.5 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 195.5 ACRE-FEET.
4.18 WATERSHED INCHES; 2366 CFS-HRS;

OPERATION RUNOFF XSECTION 61
OUTPUT HYDROGRAPH = 2 AREA = .03 SQ MI
INPUT RUNOFF CURVE = 95. TIME OF CONCENTRATION = .25 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0333 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.02 90.0 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 6.8 ACRE-FEET.
4.66 WATERSHED INCHES; 82 CFS-HRS;

OPERATION ADDHYD XSECTION 62 OUTPUT HYDROGRAPH 4
INPUT HYDROGRAPHS 2,1

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.28 1267.6 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 202.3 ACRE-FEET.
4.20 WATERSHED INCHES; 2448 CFS-HRS;

OPERATION RUNOFF XSECTION 65
OUTPUT HYDROGRAPH = 1 AREA = .03 SQ MI
INPUT RUNOFF CURVE = 92. TIME OF CONCENTRATION = .28 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0379 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.05 97.5 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 7.6 ACRE-FEET.
4.32 WATERSHED INCHES; 92 CFS-HRS;

OPERATION RESVOR STRUCTURE 12 OUTPUT HYDROGRAPH 2
INPUT HYDROGRAPH 1
SURFACE ELEVATION = 1380.50

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.28 44.6 1382.70

1

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04FEET
08:41:53 PASS 3 JOB NO. 1 PAGE 19

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 7.6 ACRE-FEET.
4.32 WATERSHED INCHES; 92 CFS-HRS;

OPERATION RUNOFF XSECTION 80
OUTPUT HYDROGRAPH = 3 AREA = .01 SQ MI
INPUT RUNOFF CURVE = 95. TIME OF CONCENTRATION = .26 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0341 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.03 33.9 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 2.6 ACRE-FEET.
4.66 WATERSHED INCHES; 32 CFS-HRS;

OPERATION ADDHYD XSECTION 85 OUTPUT HYDROGRAPH 1
INPUT HYDROGRAPHS 2,3

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.08 71.4 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 10.2 ACRE-FEET.
4.40 WATERSHED INCHES; 124 CFS-HRS;

OPERATION RESVOR STRUCTURE 13 OUTPUT HYDROGRAPH 2
INPUT HYDROGRAPH 1
SURFACE ELEVATION = 1379.00

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.33 54.4 1382.70

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 10.2 ACRE-FEET.
4.40 WATERSHED INCHES; 123 CFS-HRS;

OPERATION RUNOFF XSECTION 166
OUTPUT HYDROGRAPH = 3 AREA = .28 SQ MI
INPUT RUNOFF CURVE = 88. TIME OF CONCENTRATION = .42 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0556 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.13 646.4 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 58.4 ACRE-FEET.
3.89 WATERSHED INCHES; 707 CFS-HRS;

1

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04FEET
08:41:53 PASS 3 JOB NO. 1 PAGE 20

OPERATION ADDHYD XSECTION 167
INPUT HYDROGRAPHS 2,3 OUTPUT HYDROGRAPH 1
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.13 699.6 (NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.96 WATERSHED INCHES; 830 CFS-HRS; 68.6 ACRE-FEET.
OPERATION ADDHYD XSECTION 170
INPUT HYDROGRAPHS 4,1 OUTPUT HYDROGRAPH 2
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.19 1899.2 (NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.14 WATERSHED INCHES; 3279 CFS-HRS; 270.9 ACRE-FEET.
OPERATION RESVOR STRUCTURE 18
INPUT HYDROGRAPH 2 OUTPUT HYDROGRAPH 3
SURFACE ELEVATION = 1368.70
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
13.15 517.2 1371.04
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.14 WATERSHED INCHES; 3279 CFS-HRS; 271.0 ACRE-FEET.

EXECUTIVE CONTROL ENDCMPE COMPUTATIONS COMPLETED FOR PASS 3

1

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04FEET
08:41:53 PASS 4 JOB NO. 1 PAGE 21

EXECUTIVE CONTROL COMPUT FROM XSECTION 5 TO STRUCTURE 18
STARTING TIME = .00 RAIN DEPTH = 6.30 RAIN DURATION = 1.00
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS
ALTERNATE NO. = 14 STORM NO. = 4 RAIN TABLE NO. = 2
OPERATION RUNOFF XSECTION 5
OUTPUT HYDROGRAPH = 3 AREA = .20 SQ MI
INPUT RUNOFF CURVE = 89. TIME OF CONCENTRATION = .60 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0800 HOURS
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.23 460.4 (RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.00 WATERSHED INCHES; 630 CFS-HRS; 52.1 ACRE-FEET.
OPERATION RUNOFF XSECTION 25
OUTPUT HYDROGRAPH = 1 AREA = .16 SQ MI
INPUT RUNOFF CURVE = 90. TIME OF CONCENTRATION = .57 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0765 HOURS
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.21 385.7 (RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.14 WATERSHED INCHES; 520 CFS-HRS; 43.0 ACRE-FEET.

OPERATION ADDHYD XSECTION 30
INPUT HYDROGRAPHS 1,3 OUTPUT HYDROGRAPH 2

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.22 845.7 (NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.06 WATERSHED INCHES; 1150 CFS-HRS; 95.1 ACRE-FEET.
OPERATION RUNOFF XSECTION 35
OUTPUT HYDROGRAPH = 1 AREA = .16 SQ MI
INPUT RUNOFF CURVE = 91. TIME OF CONCENTRATION = .53 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0710 HOURS
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.19 424.0 (RUNOFF)

1

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04TEST
08:41:53 PASS 4 JOB NO. 1 PAGE 22

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.20 WATERSHED INCHES; 550 CFS-HRS; 45.4 ACRE-FEET.

OPERATION ADDHYD XSECTION 40 OUTPUT HYDROGRAPH 3
INPUT HYDROGRAPHS 1,2

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.21 1267.0 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.11 WATERSHED INCHES; 1700 CFS-HRS; 140.5 ACRE-FEET.

OPERATION RESVOR STRUCTURE 10 OUTPUT HYDROGRAPH 1
INPUT HYDROGRAPH 3
SURFACE ELEVATION = 1369.40

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.44 905.6 1377.28

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.11 WATERSHED INCHES; 1700 CFS-HRS; 140.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 45
OUTPUT HYDROGRAPH = 2 AREA = .04 SQ MI
INPUT RUNOFF CURVE = 95. TIME OF CONCENTRATION = .40 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0528 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.11 140.7 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.74 WATERSHED INCHES; 160 CFS-HRS; 13.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 50 OUTPUT HYDROGRAPH 4
INPUT HYDROGRAPHS 1,2

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.39 963.8 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.16 WATERSHED INCHES; 1860 CFS-HRS; 153.7 ACRE-FEET.

1

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04TEST
08:41:53 PASS 4 JOB NO. 1 PAGE 23

OPERATION RUNOFF XSECTION 53
OUTPUT HYDROGRAPH = 6 AREA = .16 SQ MI
INPUT RUNOFF CURVE = 91. TIME OF CONCENTRATION = .60 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0794 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.23 379.9 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.23 WATERSHED INCHES; 526 CFS-HRS; 43.5 ACRE-FEET.

OPERATION RESVOR STRUCTURE 15 OUTPUT HYDROGRAPH 2
INPUT HYDROGRAPH 6
SURFACE ELEVATION = 1373.00

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.75 130.6 1377.06

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.21 WATERSHED INCHES; 524 CFS-HRS; 43.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 54 OUTPUT HYDROGRAPH 3
INPUT HYDROGRAPHS 2,4

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.40 1083.8 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.17 WATERSHED INCHES; 2384 CFS-HRS; 197.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 55
OUTPUT HYDROGRAPH = 2 AREA = .16 SQ MI
INPUT RUNOFF CURVE = 92. TIME OF CONCENTRATION = .57 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0765 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.21 409.3 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.38 WATERSHED INCHES; 561 CFS-HRS; 46.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 60 OUTPUT HYDROGRAPH 1
INPUT HYDROGRAPHS 2,3

1

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04TEST
08:41:53 PASS 4 JOB NO. 1 PAGE 24

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.30 1447.3 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 243.3 ACRE-FEET.
5.21 WATERSHED INCHES; 2944 CFS-HRS;

OPERATION RUNOFF XSECTION 61
OUTPUT HYDROGRAPH = 2 AREA = .03 SQ MI
INPUT RUNOFF CURVE = 95. TIME OF CONCENTRATION = .25 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0333 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.02 108.9 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 8.3 ACRE-FEET.
5.70 WATERSHED INCHES; 100 CFS-HRS;

OPERATION ADDHYD XSECTION 62 OUTPUT HYDROGRAPH 4
INPUT HYDROGRAPHS 2,1

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.27 1482.8 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 251.6 ACRE-FEET.
5.22 WATERSHED INCHES; 3045 CFS-HRS;

OPERATION RUNOFF XSECTION 65
OUTPUT HYDROGRAPH = 1 AREA = .03 SQ MI
INPUT RUNOFF CURVE = 92. TIME OF CONCENTRATION = .28 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0379 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.05 119.8 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 9.4 ACRE-FEET.
5.35 WATERSHED INCHES; 114 CFS-HRS;

OPERATION RESVOR STRUCTURE 12
INPUT HYDROGRAPH 1 OUTPUT HYDROGRAPH 2
SURFACE ELEVATION = 1380.50

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.30 49.5 1383.24

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04TEST
08:41:53 PASS 4 JOB NO. 1 PAGE 25

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 9.4 ACRE-FEET.
5.35 WATERSHED INCHES; 114 CFS-HRS;

OPERATION RUNOFF XSECTION 80
OUTPUT HYDROGRAPH = 3 AREA = .01 SQ MI
INPUT RUNOFF CURVE = 95. TIME OF CONCENTRATION = .26 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0341 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.03 41.3 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 3.2 ACRE-FEET.
5.71 WATERSHED INCHES; 39 CFS-HRS;

OPERATION ADDHYD XSECTION 85 OUTPUT HYDROGRAPH 1
INPUT HYDROGRAPHS 2,3

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.07 83.2 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 12.6 ACRE-FEET.
5.44 WATERSHED INCHES; 153 CFS-HRS;

OPERATION RESVOR STRUCTURE 13 OUTPUT HYDROGRAPH 2
INPUT HYDROGRAPH 1
SURFACE ELEVATION = 1379.00

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.40 58.0 1383.36

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 12.6 ACRE-FEET.
5.43 WATERSHED INCHES; 153 CFS-HRS;

OPERATION RUNOFF XSECTION 166
OUTPUT HYDROGRAPH = 3 AREA = .28 SQ MI
INPUT RUNOFF CURVE = 88. TIME OF CONCENTRATION = .42 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0556 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.12 810.6 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 73.5 ACRE-FEET.
4.90 WATERSHED INCHES; 890 CFS-HRS;

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04FEET
08:41:53 PASS 4 JOB NO. 1 PAGE 26

OPERATION ADDHYD XSECTION 167
INPUT HYDROGRAPHS 2,3 OUTPUT HYDROGRAPH 1
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.12 865.8 (NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.97 WATERSHED INCHES; 1043 CFS-HRS; 86.2 ACRE-FEET.
OPERATION ADDHYD XSECTION 170
INPUT HYDROGRAPHS 4,1 OUTPUT HYDROGRAPH 2
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.18 2273.1 (NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.16 WATERSHED INCHES; 4087 CFS-HRS; 337.8 ACRE-FEET.
OPERATION RESVOR STRUCTURE 18
INPUT HYDROGRAPH 2 OUTPUT HYDROGRAPH 3
SURFACE ELEVATION = 1368.70
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
13.06 780.5 1371.43
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.16 WATERSHED INCHES; 4087 CFS-HRS; 337.8 ACRE-FEET.

EXECUTIVE CONTROL ENDCMPE COMPUTATIONS COMPLETED FOR PASS 4
1

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04FEET
08:41:53 PASS 5 JOB NO. 1 PAGE 27

EXECUTIVE CONTROL COMPUT FROM XSECTION 5 TO STRUCTURE 18
STARTING TIME = .00 RAIN DEPTH = 7.10 RAIN DURATION = 1.00
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS
ALTERNATE NO. = 15 STORM NO. = 5 RAIN TABLE NO. = 2
OPERATION RUNOFF XSECTION 5
OUTPUT HYDROGRAPH = 3 AREA = .20 SQ MI
INPUT RUNOFF CURVE = 89. TIME OF CONCENTRATION = .60 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0800 HOURS
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.23 528.6 (RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.78 WATERSHED INCHES; 728 CFS-HRS; 60.2 ACRE-FEET.
OPERATION RUNOFF XSECTION 25
OUTPUT HYDROGRAPH = 1 AREA = .16 SQ MI
INPUT RUNOFF CURVE = 90. TIME OF CONCENTRATION = .57 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0765 HOURS
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.21 442.1 (RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.93 WATERSHED INCHES; 599 CFS-HRS; 49.5 ACRE-FEET.
OPERATION ADDHYD XSECTION 30
INPUT HYDROGRAPHS 1,3 OUTPUT HYDROGRAPH 2
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.22 970.2 (NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.84 WATERSHED INCHES; 1327 CFS-HRS; 109.7 ACRE-FEET.
OPERATION RUNOFF XSECTION 35
OUTPUT HYDROGRAPH = 1 AREA = .16 SQ MI
INPUT RUNOFF CURVE = 91. TIME OF CONCENTRATION = .53 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0710 HOURS
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.19 484.5 (RUNOFF)

1

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04TEST
08:41:53 PASS 5 JOB NO. 1 PAGE 28

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.99 WATERSHED INCHES; 633 CFS-HRS; 52.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 40 OUTPUT HYDROGRAPH 3
INPUT HYDROGRAPHS 1,2

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.21 1452.3 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.89 WATERSHED INCHES; 1960 CFS-HRS; 162.0 ACRE-FEET.

OPERATION RESVOR STRUCTURE 10 OUTPUT HYDROGRAPH 1
INPUT HYDROGRAPH 3
SURFACE ELEVATION = 1369.40

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.45 994.0 1377.83

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.89 WATERSHED INCHES; 1960 CFS-HRS; 162.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 45
OUTPUT HYDROGRAPH = 2 AREA = .04 SQ MI
INPUT RUNOFF CURVE = 95. TIME OF CONCENTRATION = .40 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0528 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.11 158.9 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.53 WATERSHED INCHES; 182 CFS-HRS; 15.0 ACRE-FEET.

OPERATION ADDHYD XSECTION 50 OUTPUT HYDROGRAPH 4
INPUT HYDROGRAPHS 1,2

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.39 1058.4 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.94 WATERSHED INCHES; 2142 CFS-HRS; 177.0 ACRE-FEET.

1

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04TEST
08:41:53 PASS 5 JOB NO. 1 PAGE 29

OPERATION RUNOFF XSECTION 53
OUTPUT HYDROGRAPH = 6 AREA = .16 SQ MI
INPUT RUNOFF CURVE = 91. TIME OF CONCENTRATION = .60 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0794 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.22 434.9 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.02 WATERSHED INCHES; 605 CFS-HRS; 50.0 ACRE-FEET.

OPERATION RESVOR STRUCTURE 15 OUTPUT HYDROGRAPH 2
INPUT HYDROGRAPH 6
SURFACE ELEVATION = 1373.00

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.78 139.5 1377.49

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.00 WATERSHED INCHES; 603 CFS-HRS; 49.8 ACRE-FEET.

OPERATION ADDHYD XSECTION 54 OUTPUT HYDROGRAPH 3
INPUT HYDROGRAPHS 2,4

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.41 1188.0 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.95 WATERSHED INCHES; 2745 CFS-HRS; 226.9 ACRE-FEET.

OPERATION RUNOFF XSECTION 55
OUTPUT HYDROGRAPH = 2 AREA = .16 SQ MI
INPUT RUNOFF CURVE = 92. TIME OF CONCENTRATION = .57 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0765 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.21 470.4 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.17 WATERSHED INCHES; 643 CFS-HRS; 53.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 60 OUTPUT HYDROGRAPH 1
INPUT HYDROGRAPHS 2,3

1

TR20 ----- SCS -
 WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
 08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04TEST
 08:41:53 PASS 5 JOB NO. 1 PAGE 30

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.29 1602.2 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 280.0 ACRE-FEET.
 5.99 WATERSHED INCHES; 3388 CFS-HRS;

OPERATION RUNOFF XSECTION 61 AREA = .03 SQ MI
 OUTPUT HYDROGRAPH = 2 INPUT RUNOFF CURVE = 95. TIME OF CONCENTRATION = .25 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0333 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.02 123.3 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 9.5 ACRE-FEET.
 6.50 WATERSHED INCHES; 115 CFS-HRS;

OPERATION ADDHYD XSECTION 62 OUTPUT HYDROGRAPH 4
 INPUT HYDROGRAPHS 2,1

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.27 1642.8 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 289.5 ACRE-FEET.
 6.01 WATERSHED INCHES; 3503 CFS-HRS;

OPERATION RUNOFF XSECTION 65 AREA = .03 SQ MI
 OUTPUT HYDROGRAPH = 1 INPUT RUNOFF CURVE = 92. TIME OF CONCENTRATION = .28 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0379 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.05 136.0 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 10.8 ACRE-FEET.
 6.14 WATERSHED INCHES; 131 CFS-HRS;

OPERATION RESVOR STRUCTURE 12 OUTPUT HYDROGRAPH 2
 INPUT HYDROGRAPH 1 SURFACE ELEVATION = 1380.50

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.32 51.9 1383.65

1

TR20 ----- SCS -
 WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
 08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04TEST
 08:41:53 PASS 5 JOB NO. 1 PAGE 31

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 10.8 ACRE-FEET.
 6.14 WATERSHED INCHES; 131 CFS-HRS;

OPERATION RUNOFF XSECTION 80 AREA = .01 SQ MI
 OUTPUT HYDROGRAPH = 3 INPUT RUNOFF CURVE = 95. TIME OF CONCENTRATION = .26 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0341 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.03 46.9 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 3.6 ACRE-FEET.
 6.50 WATERSHED INCHES; 44 CFS-HRS;

OPERATION ADDHYD XSECTION 85 OUTPUT HYDROGRAPH 1
 INPUT HYDROGRAPHS 2,3

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.07 91.5 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 14.4 ACRE-FEET.
 6.22 WATERSHED INCHES; 175 CFS-HRS;

OPERATION RESVOR STRUCTURE 13 OUTPUT HYDROGRAPH 2
 INPUT HYDROGRAPH 1 SURFACE ELEVATION = 1379.00

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.43 60.4 1383.84

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 14.4 ACRE-FEET.
 6.22 WATERSHED INCHES; 175 CFS-HRS;

OPERATION RUNOFF XSECTION 166 AREA = .28 SQ MI
 OUTPUT HYDROGRAPH = 3 INPUT RUNOFF CURVE = 88. TIME OF CONCENTRATION = .42 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0556 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.12 927.3 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 85.1 ACRE-FEET.
 5.67 WATERSHED INCHES; 1030 CFS-HRS;

1

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04FEET
08:41:53 PASS 5 JOB NO. 1 PAGE 32

OPERATION ADDHYD XSECTION 167 OUTPUT HYDROGRAPH 1
INPUT HYDROGRAPHS 2,3
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.13 984.9 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.75 WATERSHED INCHES; 1205 CFS-HRS; 99.6 ACRE-FEET.

OPERATION ADDHYD XSECTION 170 OUTPUT HYDROGRAPH 2
INPUT HYDROGRAPHS 4,1
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.18 2550.6 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.94 WATERSHED INCHES; 4708 CFS-HRS; 389.0 ACRE-FEET.

OPERATION RESVOR STRUCTURE 18 OUTPUT HYDROGRAPH 3
INPUT HYDROGRAPH 2 SURFACE ELEVATION = 1368.70
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
13.04 962.0 1371.70

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.94 WATERSHED INCHES; 4707 CFS-HRS; 389.0 ACRE-FEET.

EXECUTIVE CONTROL ENDCMPE COMPUTATIONS COMPLETED FOR PASS 5

1

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04FEET
08:41:53 PASS 6 JOB NO. 1 PAGE 33

EXECUTIVE CONTROL COMPUT FROM XSECTION 5 TO STRUCTURE 18
STARTING TIME = .00 RAIN DEPTH = 7.80 RAIN DURATION = 1.00
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS
ALTERNATE NO. = 16 STORM NO. = 6 RAIN TABLE NO. = 2

OPERATION RUNOFF XSECTION 5
OUTPUT HYDROGRAPH = 3 AREA = .20 SQ MI
INPUT RUNOFF CURVE = 89. TIME OF CONCENTRATION = .60 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0800 HOURS
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.23 585.7 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.46 WATERSHED INCHES; 814 CFS-HRS; 67.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 25
OUTPUT HYDROGRAPH = 1 AREA = .16 SQ MI
INPUT RUNOFF CURVE = 90. TIME OF CONCENTRATION = .57 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0765 HOURS
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.21 491.4 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.61 WATERSHED INCHES; 668 CFS-HRS; 55.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 30 OUTPUT HYDROGRAPH 2
INPUT HYDROGRAPHS 1,3
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.22 1076.7 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.53 WATERSHED INCHES; 1483 CFS-HRS; 122.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 35
OUTPUT HYDROGRAPH = 1 AREA = .16 SQ MI
INPUT RUNOFF CURVE = 91. TIME OF CONCENTRATION = .53 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0710 HOURS
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.19 537.2 (RUNOFF)

1

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04TEST
08:41:53 PASS 6 JOB NO. 1 PAGE 34

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.68 WATERSHED INCHES; 706 CFS-HRS; 58.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 40 OUTPUT HYDROGRAPH 3
INPUT HYDROGRAPHS 1,2

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.21 1610.7 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.58 WATERSHED INCHES; 2188 CFS-HRS; 180.9 ACRE-FEET.

OPERATION RESVOR STRUCTURE 10 OUTPUT HYDROGRAPH 1
INPUT HYDROGRAPH 3
SURFACE ELEVATION = 1369.40

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.46 1071.4 1378.31

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.57 WATERSHED INCHES; 2188 CFS-HRS; 180.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 45
OUTPUT HYDROGRAPH = 2 AREA = .04 SQ MI
INPUT RUNOFF CURVE = 95. TIME OF CONCENTRATION = .40 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0528 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.11 174.8 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
7.23 WATERSHED INCHES; 202 CFS-HRS; 16.7 ACRE-FEET.

OPERATION ADDHYD XSECTION 50 OUTPUT HYDROGRAPH 4
INPUT HYDROGRAPHS 1,2

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.40 1139.1 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.63 WATERSHED INCHES; 2390 CFS-HRS; 197.5 ACRE-FEET.

1

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04TEST
08:41:53 PASS 6 JOB NO. 1 PAGE 35

OPERATION RUNOFF XSECTION 53
OUTPUT HYDROGRAPH = 6 AREA = .16 SQ MI
INPUT RUNOFF CURVE = 91. TIME OF CONCENTRATION = .60 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0794 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.22 480.9 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.71 WATERSHED INCHES; 674 CFS-HRS; 55.7 ACRE-FEET.

OPERATION RESVOR STRUCTURE 15 OUTPUT HYDROGRAPH 2
INPUT HYDROGRAPH 6
SURFACE ELEVATION = 1373.00

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.80 147.3 1377.86

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.69 WATERSHED INCHES; 672 CFS-HRS; 55.6 ACRE-FEET.

OPERATION ADDHYD XSECTION 54 OUTPUT HYDROGRAPH 3
INPUT HYDROGRAPHS 2,4

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.42 1275.6 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.64 WATERSHED INCHES; 3062 CFS-HRS; 253.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 55
OUTPUT HYDROGRAPH = 2 AREA = .16 SQ MI
INPUT RUNOFF CURVE = 92. TIME OF CONCENTRATION = .57 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0765 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.21 518.0 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.86 WATERSHED INCHES; 715 CFS-HRS; 59.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 60 OUTPUT HYDROGRAPH 1
INPUT HYDROGRAPHS 2,3

1

TR20 ----- SCS -
 WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
 08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04TEST
 08:41:53 PASS 6 JOB NO. 1 PAGE 36

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.29 1731.9 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 312.1 ACRE-FEET.
 6.68 WATERSHED INCHES; 3776 CFS-HRS;

OPERATION RUNOFF XSECTION 61 AREA = .03 SQ MI
 OUTPUT HYDROGRAPH = 2 INPUT RUNOFF CURVE = 95. TIME OF CONCENTRATION = .25 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0333 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.02 135.9 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 10.5 ACRE-FEET.
 7.19 WATERSHED INCHES; 127 CFS-HRS;

OPERATION ADDHYD XSECTION 62 OUTPUT HYDROGRAPH 4
 INPUT HYDROGRAPHS 2,1

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.26 1777.1 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 322.6 ACRE-FEET.
 6.69 WATERSHED INCHES; 3903 CFS-HRS;

OPERATION RUNOFF XSECTION 65 AREA = .03 SQ MI
 OUTPUT HYDROGRAPH = 1 INPUT RUNOFF CURVE = 92. TIME OF CONCENTRATION = .28 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0379 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.05 150.2 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 12.0 ACRE-FEET.
 6.83 WATERSHED INCHES; 145 CFS-HRS;

OPERATION RESVOR STRUCTURE 12 OUTPUT HYDROGRAPH 2
 INPUT HYDROGRAPH 1 SURFACE ELEVATION = 1380.50

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.33 54.0 1384.02

1

TR20 ----- SCS -
 WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
 08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04TEST
 08:41:53 PASS 6 JOB NO. 1 PAGE 37

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 12.0 ACRE-FEET.
 6.82 WATERSHED INCHES; 145 CFS-HRS;

OPERATION RUNOFF XSECTION 80 AREA = .01 SQ MI
 OUTPUT HYDROGRAPH = 3 INPUT RUNOFF CURVE = 95. TIME OF CONCENTRATION = .26 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0341 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.03 51.6 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 4.0 ACRE-FEET.
 7.20 WATERSHED INCHES; 49 CFS-HRS;

OPERATION ADDHYD XSECTION 85 OUTPUT HYDROGRAPH 1
 INPUT HYDROGRAPHS 2,3

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.06 97.6 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 16.0 ACRE-FEET.
 6.92 WATERSHED INCHES; 194 CFS-HRS;

OPERATION RESVOR STRUCTURE 13 OUTPUT HYDROGRAPH 2
 INPUT HYDROGRAPH 1 SURFACE ELEVATION = 1379.00

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.46 62.3 1384.23

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 16.1 ACRE-FEET.
 6.92 WATERSHED INCHES; 194 CFS-HRS;

OPERATION RUNOFF XSECTION 166 AREA = .28 SQ MI
 OUTPUT HYDROGRAPH = 3 INPUT RUNOFF CURVE = 88. TIME OF CONCENTRATION = .42 HOURS
 COMPUTED INTERNAL TIME INCREMENT = .0556 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
 12.12 1033.0 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 95.3 ACRE-FEET.
 6.35 WATERSHED INCHES; 1154 CFS-HRS;

1

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04FEET
08:41:53 PASS 6 JOB NO. 1 PAGE 38

OPERATION ADDHYD XSECTION 167
INPUT HYDROGRAPHS 2,3 OUTPUT HYDROGRAPH 1
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.12 1091.8 (NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.43 WATERSHED INCHES; 1348 CFS-HRS; 111.4 ACRE-FEET.
OPERATION ADDHYD XSECTION 170
INPUT HYDROGRAPHS 4,1 OUTPUT HYDROGRAPH 2
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.17 2782.2 (NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.62 WATERSHED INCHES; 5251 CFS-HRS; 433.9 ACRE-FEET.
OPERATION RESVOR STRUCTURE 18
INPUT HYDROGRAPH 2 OUTPUT HYDROGRAPH 3
SURFACE ELEVATION = 1368.70
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
13.03 1111.2 1371.93
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.62 WATERSHED INCHES; 5251 CFS-HRS; 433.9 ACRE-FEET.

EXECUTIVE CONTROL ENDCMPE COMPUTATIONS COMPLETED FOR PASS 6
1

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04FEET
08:41:53 PASS 7 JOB NO. 1 PAGE 39

EXECUTIVE CONTROL COMPUT FROM XSECTION 5 TO STRUCTURE 18
STARTING TIME = .00 RAIN DEPTH = 9.35 RAIN DURATION = 1.00
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS
ALTERNATE NO. = 17 STORM NO. = 7 RAIN TABLE NO. = 2
OPERATION RUNOFF XSECTION 5
OUTPUT HYDROGRAPH = 3 AREA = .20 SQ MI
INPUT RUNOFF CURVE = 89. TIME OF CONCENTRATION = .60 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0800 HOURS
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.23 716.4 (RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
7.98 WATERSHED INCHES; 1006 CFS-HRS; 83.1 ACRE-FEET.
OPERATION RUNOFF XSECTION 25
OUTPUT HYDROGRAPH = 1 AREA = .16 SQ MI
INPUT RUNOFF CURVE = 90. TIME OF CONCENTRATION = .57 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0765 HOURS
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.21 601.5 (RUNOFF)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
8.15 WATERSHED INCHES; 823 CFS-HRS; 68.0 ACRE-FEET.
OPERATION ADDHYD XSECTION 30
INPUT HYDROGRAPHS 1,3 OUTPUT HYDROGRAPH 2
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.22 1317.2 (NULL)
RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
8.05 WATERSHED INCHES; 1829 CFS-HRS; 151.2 ACRE-FEET.
OPERATION RUNOFF XSECTION 35
OUTPUT HYDROGRAPH = 1 AREA = .16 SQ MI
INPUT RUNOFF CURVE = 91. TIME OF CONCENTRATION = .53 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0710 HOURS
PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.19 654.2 (RUNOFF)

1

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04TEST
08:41:53 PASS 7 JOB NO. 1 PAGE 40

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
8.20 WATERSHED INCHES; 867 CFS-HRS; 71.6 ACRE-FEET.

OPERATION ADDHYD XSECTION 40 OUTPUT HYDROGRAPH 3
INPUT HYDROGRAPHS 1,2

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.21 1968.6 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
8.10 WATERSHED INCHES; 2696 CFS-HRS; 222.8 ACRE-FEET.

OPERATION RESVOR STRUCTURE 10 OUTPUT HYDROGRAPH 1
INPUT HYDROGRAPH 3
SURFACE ELEVATION = 1369.40

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.49 1224.3 1379.30

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
8.10 WATERSHED INCHES; 2696 CFS-HRS; 222.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 45
OUTPUT HYDROGRAPH = 2 AREA = .04 SQ MI
INPUT RUNOFF CURVE = 95. TIME OF CONCENTRATION = .40 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0528 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.11 210.9 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
8.78 WATERSHED INCHES; 245 CFS-HRS; 20.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 50 OUTPUT HYDROGRAPH 4
INPUT HYDROGRAPHS 1,2

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.42 1300.0 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
8.15 WATERSHED INCHES; 2941 CFS-HRS; 243.0 ACRE-FEET.

1

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04TEST
08:41:53 PASS 7 JOB NO. 1 PAGE 41

OPERATION RUNOFF XSECTION 53
OUTPUT HYDROGRAPH = 6 AREA = .16 SQ MI
INPUT RUNOFF CURVE = 91. TIME OF CONCENTRATION = .60 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0794 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.22 584.7 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
8.24 WATERSHED INCHES; 828 CFS-HRS; 68.5 ACRE-FEET.

OPERATION RESVOR STRUCTURE 15 OUTPUT HYDROGRAPH 2
INPUT HYDROGRAPH 6
SURFACE ELEVATION = 1373.00

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.84 165.0 1378.72

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
8.21 WATERSHED INCHES; 826 CFS-HRS; 68.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 54 OUTPUT HYDROGRAPH 3
INPUT HYDROGRAPHS 2,4

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.44 1451.6 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
8.17 WATERSHED INCHES; 3766 CFS-HRS; 311.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 55
OUTPUT HYDROGRAPH = 2 AREA = .16 SQ MI
INPUT RUNOFF CURVE = 92. TIME OF CONCENTRATION = .57 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0765 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.21 626.5 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
8.40 WATERSHED INCHES; 875 CFS-HRS; 72.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 60 OUTPUT HYDROGRAPH 1
INPUT HYDROGRAPHS 2,3

1

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04TEST
08:41:53 PASS 7 JOB NO. 1 PAGE 42

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.29 2004.3 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 383.5 ACRE-FEET.
8.21 WATERSHED INCHES; 4641 CFS-HRS;

OPERATION RUNOFF XSECTION 61
OUTPUT HYDROGRAPH = 2 AREA = .03 SQ MI
INPUT RUNOFF CURVE = 95. TIME OF CONCENTRATION = .25 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0333 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.02 163.6 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 12.7 ACRE-FEET.
8.74 WATERSHED INCHES; 154 CFS-HRS;

OPERATION ADDHYD XSECTION 62 OUTPUT HYDROGRAPH 4

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.26 2060.5 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 396.3 ACRE-FEET.
8.22 WATERSHED INCHES; 4795 CFS-HRS;

OPERATION RUNOFF XSECTION 65
OUTPUT HYDROGRAPH = 1 AREA = .03 SQ MI
INPUT RUNOFF CURVE = 92. TIME OF CONCENTRATION = .28 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0379 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.05 182.1 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 14.7 ACRE-FEET.
8.36 WATERSHED INCHES; 178 CFS-HRS;

OPERATION RESVOR STRUCTURE 12 OUTPUT HYDROGRAPH 2
INPUT HYDROGRAPH 1
SURFACE ELEVATION = 1380.50

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.35 57.9 1384.80

TR20 ----- SCS -
WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION
08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04TEST
08:41:53 PASS 7 JOB NO. 1 PAGE 43

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 14.7 ACRE-FEET.
8.36 WATERSHED INCHES; 178 CFS-HRS;

OPERATION RUNOFF XSECTION 80
OUTPUT HYDROGRAPH = 3 AREA = .01 SQ MI
INPUT RUNOFF CURVE = 95. TIME OF CONCENTRATION = .26 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0341 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.03 61.9 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 4.9 ACRE-FEET.
8.74 WATERSHED INCHES; 59 CFS-HRS;

OPERATION ADDHYD XSECTION 85 OUTPUT HYDROGRAPH 1
INPUT HYDROGRAPHS 2,3

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.05 112.6 (NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 19.6 ACRE-FEET.
8.45 WATERSHED INCHES; 237 CFS-HRS;

OPERATION RESVOR STRUCTURE 13 OUTPUT HYDROGRAPH 2
INPUT HYDROGRAPH 1
SURFACE ELEVATION = 1379.00

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.53 66.1 1385.08

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 19.6 ACRE-FEET.
8.45 WATERSHED INCHES; 237 CFS-HRS;

OPERATION RUNOFF XSECTION 166
OUTPUT HYDROGRAPH = 3 AREA = .28 SQ MI
INPUT RUNOFF CURVE = 88. TIME OF CONCENTRATION = .42 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0556 HOURS

PEAK TIME (HRS) PEAK DISCHARGE (CFS) PEAK ELEVATION (FEET)
12.12 1272.9 (RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS) 118.2 ACRE-FEET.
7.88 WATERSHED INCHES; 1430 CFS-HRS;

TR20 ----- WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION SCS -
 08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04TEST
 08:41:53 PASS 7 JOB NO. 1 PAGE 44

OPERATION ADDHYD XSECTION 167
 INPUT HYDROGRAPHS 2,3 OUTPUT HYDROGRAPH 1
 PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
 12.12 1334.5 (NULL)
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 7.95 WATERSHED INCHES; 1667 CFS-HRS; 137.7 ACRE-FEET.
 OPERATION ADDHYD XSECTION 170
 INPUT HYDROGRAPHS 4,1 OUTPUT HYDROGRAPH 2
 PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
 12.17 3291.6 (NULL)
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 8.15 WATERSHED INCHES; 6462 CFS-HRS; 534.0 ACRE-FEET.
 OPERATION RESVOR STRUCTURE 18
 INPUT HYDROGRAPH 2 OUTPUT HYDROGRAPH 3
 SURFACE ELEVATION = 1368.70
 PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
 13.00 1426.4 1372.40
 RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
 8.15 WATERSHED INCHES; 6461 CFS-HRS; 534.0 ACRE-FEET.

EXECUTIVE CONTROL ENDCMPE COMPUTATIONS COMPLETED FOR PASS 7
 1

TR20 ----- WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION SCS -
 08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04TEST
 08:41:53 SUMMARY, JOB NO. 1 PAGE 45

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	ELEVATION (FT)	TIME (HR)	RATE (CFS)	PEAK DISCHARGE (CSM)
RAINFALL OF 3.50 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
RAINFALL NUMBER 2, ARC 2							
MAIN TIME INCREMENT .100 HOURS							
ALTERNATE	11	STORM	1				
XSECTION 5	RUNOFF	.20	2.34	---	12.24	219	1095.0
XSECTION 25	RUNOFF	.16	2.46	---	12.22	189	1181.3
XSECTION 30	ADHYD	.35	2.39	---	12.23	408	1165.7
XSECTION 35	RUNOFF	.16	2.50	---	12.20	210	1312.5
XSECTION 40	ADHYD	.52	2.42	---	12.22	617	1186.5
STRUCTURE 10	RESVOR	.52	2.42	1375.15	12.38	515	990.4
XSECTION 45	RUNOFF	.04	2.97	---	12.11	76	1900.0
XSECTION 50	ADHYD	.56	2.47	---	12.35	554	989.3
XSECTION 53	RUNOFF	.16	2.53	---	12.23	189	1181.3
STRUCTURE 15	RESVOR	.16	2.51	1375.44	12.64	86	537.5
XSECTION 54	ADHYD	.71	2.48	---	12.36	632	890.1
XSECTION 55	RUNOFF	.16	2.65	---	12.22	209	1306.3
XSECTION 60	ADHYD	.88	2.51	---	12.31	822	934.1
XSECTION 61	RUNOFF	.03	2.94	---	12.03	58	1933.3
XSECTION 62	ADHYD	.90	2.52	---	12.30	839	932.2
XSECTION 65	RUNOFF	.03	2.62	---	12.05	61	2033.3
STRUCTURE 12	RESVOR	.03	2.62	1381.87	12.24	33	1100.0
XSECTION 80	RUNOFF	.01	2.94	---	12.03	22	2200.0
XSECTION 85	ADHYD	.04	2.70	---	12.12	48	1200.0
STRUCTURE 13	RESVOR	.04	2.70	1381.75	12.27	42	1050.0
XSECTION 166	RUNOFF	.28	2.26	---	12.13	380	1357.1
XSECTION 167	ADHYD	.32	2.32	---	12.14	416	1300.0
XSECTION 170	ADHYD	1.23	2.47	---	12.22	1203	978.0
STRUCTURE 18	RESVOR	1.23	2.47	1370.13	13.51	219	178.0

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	ELEVATION (FT)	PEAK DISCHARGE		
					TIME (HR)	RATE (CFS)	RATE (CSM)

RAINFALL OF 4.55 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 12 STORM 2							
XSECTION 5	RUNOFF	.20	3.32	---	12.23	309	1545.0
XSECTION 25	RUNOFF	.16	3.45	---	12.22	263	1643.8
XSECTION 30	ADHHD	.35	3.38	---	12.22	572	1634.3
XSECTION 35	RUNOFF	.16	3.50	---	12.19	291	1818.8
XSECTION 40	ADHHD	.52	3.42	---	12.21	861	1655.8
STRUCTURE 10	RESVOR	.52	3.42	1375.94	12.40	677	1301.9
XSECTION 45	RUNOFF	.04	4.01	---	12.11	100	2500.0
XSECTION 50	ADHHD	.56	3.46	---	12.35	725	1294.6
XSECTION 53	RUNOFF	.16	3.53	---	12.23	263	1643.8
STRUCTURE 15	RESVOR	.16	3.52	1376.06	12.69	106	662.5
XSECTION 54	ADHHD	.71	3.47	---	12.37	821	1156.3
XSECTION 55	RUNOFF	.16	3.67	---	12.22	285	1781.3
XSECTION 60	ADHHD	.88	3.51	---	12.29	1080	1227.3
XSECTION 61	RUNOFF	.03	3.97	---	12.03	77	2566.7
XSECTION 62	ADHHD	.90	3.52	---	12.27	1105	1227.8
XSECTION 65	RUNOFF	.03	3.64	---	12.05	83	2766.7
STRUCTURE 12	RESVOR	.03	3.64	1382.35	12.26	41	1366.7
XSECTION 80	RUNOFF	.01	3.97	---	12.03	29	2900.0
XSECTION 85	ADHHD	.04	3.72	---	12.10	64	1600.0
STRUCTURE 13	RESVOR	.04	3.71	1382.23	12.28	51	1275.0
XSECTION 166	RUNOFF	.28	3.23	---	12.13	540	1928.6
XSECTION 167	ADHHD	.32	3.30	---	12.13	591	1846.9
XSECTION 170	ADHHD	1.23	3.46	---	12.20	1646	1338.2
STRUCTURE 18	RESVOR	1.23	3.46	1370.68	13.23	392	318.7

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	ELEVATION (FT)	PEAK DISCHARGE		
					TIME (HR)	RATE (CFS)	RATE (CSM)

RAINFALL OF 5.25 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 13 STORM 3							
XSECTION 5	RUNOFF	.20	3.99	---	12.23	369	1845.0
XSECTION 25	RUNOFF	.16	4.12	---	12.22	313	1956.3
XSECTION 30	ADHHD	.35	4.05	---	12.22	682	1948.6
XSECTION 35	RUNOFF	.16	4.18	---	12.19	344	2150.0
XSECTION 40	ADHHD	.52	4.09	---	12.21	1024	1969.2
STRUCTURE 10	RESVOR	.52	4.09	1376.50	12.42	777	1494.2
XSECTION 45	RUNOFF	.04	4.70	---	12.11	117	2925.0
XSECTION 50	ADHHD	.56	4.14	---	12.36	829	1480.4
XSECTION 53	RUNOFF	.16	4.21	---	12.23	308	1925.0
STRUCTURE 15	RESVOR	.16	4.19	1376.46	12.72	116	725.0
XSECTION 54	ADHHD	.71	4.15	---	12.38	936	1318.3
XSECTION 55	RUNOFF	.16	4.35	---	12.21	336	2100.0
XSECTION 60	ADHHD	.88	4.18	---	12.30	1239	1408.0
XSECTION 61	RUNOFF	.03	4.66	---	12.02	90	3000.0
XSECTION 62	ADHHD	.90	4.20	---	12.28	1268	1408.9
XSECTION 65	RUNOFF	.03	4.32	---	12.05	97	3233.3
STRUCTURE 12	RESVOR	.03	4.32	1382.70	12.28	45	1500.0
XSECTION 80	RUNOFF	.01	4.66	---	12.03	34	3400.0
XSECTION 85	ADHHD	.04	4.40	---	12.08	71	1775.0
STRUCTURE 13	RESVOR	.04	4.40	1382.70	12.33	54	1350.0
XSECTION 166	RUNOFF	.28	3.89	---	12.13	646	2307.1
XSECTION 167	ADHHD	.32	3.96	---	12.13	700	2187.5
XSECTION 170	ADHHD	1.23	4.14	---	12.19	1899	1543.9
STRUCTURE 18	RESVOR	1.23	4.14	1371.04	13.15	517	420.3

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	ELEVATION (FT)	PEAK DISCHARGE		
					TIME (HR)	RATE (CFS)	RATE (CSM)
RAINFALL OF 6.30 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 14 STORM 4							
XSECTION 5	RUNOFF	.20	5.00	---	12.23	460	2300.0
XSECTION 25	RUNOFF	.16	5.14	---	12.21	386	2412.5
XSECTION 30	ADDDHD	.35	5.06	---	12.22	846	2417.1
XSECTION 35	RUNOFF	.16	5.20	---	12.19	424	2650.0
XSECTION 40	ADDDHD	.52	5.11	---	12.21	1267	2436.5
STRUCTURE 10	RESVOR	.52	5.11	1377.28	12.44	906	1742.3
XSECTION 45	RUNOFF	.04	5.74	---	12.11	141	3525.0
XSECTION 50	ADDDHD	.56	5.16	---	12.39	964	1721.4
XSECTION 53	RUNOFF	.16	5.23	---	12.23	380	2375.0
STRUCTURE 15	RESVOR	.16	5.21	1377.06	12.75	131	818.8
XSECTION 54	ADDDHD	.71	5.17	---	12.40	1084	1526.8
XSECTION 55	RUNOFF	.16	5.38	---	12.21	409	2556.3
XSECTION 60	ADDDHD	.88	5.21	---	12.30	1447	1644.3
XSECTION 61	RUNOFF	.03	5.70	---	12.02	109	3633.3
XSECTION 62	ADDDHD	.90	5.22	---	12.27	1483	1647.8
XSECTION 65	RUNOFF	.03	5.35	---	12.05	120	4000.0
STRUCTURE 12	RESVOR	.03	5.35	1383.24	12.30	49	1633.3
XSECTION 80	RUNOFF	.01	5.71	---	12.03	41	4100.0
XSECTION 85	ADDDHD	.04	5.44	---	12.07	83	2075.0
STRUCTURE 13	RESVOR	.04	5.43	1383.36	12.40	58	1450.0
XSECTION 166	RUNOFF	.28	4.90	---	12.12	811	2896.4
XSECTION 167	ADDDHD	.32	4.97	---	12.12	866	2706.3
XSECTION 170	ADDDHD	1.23	5.16	---	12.18	2273	1848.0
STRUCTURE 18	RESVOR	1.23	5.16	1371.43	13.06	781	635.0

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	ELEVATION (FT)	PEAK DISCHARGE		
					TIME (HR)	RATE (CFS)	RATE (CSM)
RAINFALL OF 7.10 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 15 STORM 5							
XSECTION 5	RUNOFF	.20	5.78	---	12.23	529	2645.0
XSECTION 25	RUNOFF	.16	5.93	---	12.21	442	2762.5
XSECTION 30	ADDDHD	.35	5.84	---	12.22	970	2771.4
XSECTION 35	RUNOFF	.16	5.99	---	12.19	485	3031.3
XSECTION 40	ADDDHD	.52	5.89	---	12.21	1452	2792.3
STRUCTURE 10	RESVOR	.52	5.89	1377.83	12.45	994	1911.5
XSECTION 45	RUNOFF	.04	6.53	---	12.11	159	3975.0
XSECTION 50	ADDDHD	.56	5.94	---	12.39	1058	1889.3
XSECTION 53	RUNOFF	.16	6.02	---	12.22	435	2718.8
STRUCTURE 15	RESVOR	.16	6.00	1377.49	12.78	139	868.8
XSECTION 54	ADDDHD	.71	5.95	---	12.41	1188	1673.2
XSECTION 55	RUNOFF	.16	6.17	---	12.21	470	2937.5
XSECTION 60	ADDDHD	.88	5.99	---	12.29	1602	1820.5
XSECTION 61	RUNOFF	.03	6.50	---	12.02	123	4100.0
XSECTION 62	ADDDHD	.90	6.01	---	12.27	1643	1825.6
XSECTION 65	RUNOFF	.03	6.14	---	12.05	136	4533.3
STRUCTURE 12	RESVOR	.03	6.14	1383.65	12.32	52	1733.3
XSECTION 80	RUNOFF	.01	6.50	---	12.03	47	4700.0
XSECTION 85	ADDDHD	.04	6.22	---	12.07	91	2275.0
STRUCTURE 13	RESVOR	.04	6.22	1383.84	12.43	60	1500.0
XSECTION 166	RUNOFF	.28	5.67	---	12.12	927	3310.7
XSECTION 167	ADDDHD	.32	5.75	---	12.13	985	3078.1
XSECTION 170	ADDDHD	1.23	5.94	---	12.18	2551	2074.0
STRUCTURE 18	RESVOR	1.23	5.94	1371.70	13.04	962	782.1

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	ELEVATION (FT)	PEAK DISCHARGE		
					TIME (HR)	RATE (CFS)	RATE (CSM)
RAINFALL OF 7.80 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 16 STORM 6							
XSECTION 5	RUNOFF	.20	6.46	---	12.23	586	2930.0
XSECTION 25	RUNOFF	.16	6.61	---	12.21	491	3068.8
XSECTION 30	ADDDHD	.35	6.53	---	12.22	1077	3077.1
XSECTION 35	RUNOFF	.16	6.68	---	12.19	537	3356.3
XSECTION 40	ADDDHD	.52	6.58	---	12.21	1611	3098.1
STRUCTURE 10	RESVOR	.52	6.57	1378.31	12.46	1071	2059.6
XSECTION 45	RUNOFF	.04	7.23	---	12.11	175	4375.0
XSECTION 50	ADDDHD	.56	6.63	---	12.40	1139	2033.9
XSECTION 53	RUNOFF	.16	6.71	---	12.22	481	3006.3
STRUCTURE 15	RESVOR	.16	6.69	1377.86	12.80	147	918.8
XSECTION 54	ADDDHD	.71	6.64	---	12.42	1276	1797.2
XSECTION 55	RUNOFF	.16	6.86	---	12.21	518	3237.5
XSECTION 60	ADDDHD	.88	6.68	---	12.29	1732	1968.2
XSECTION 61	RUNOFF	.03	7.19	---	12.02	136	4533.3
XSECTION 62	ADDDHD	.90	6.69	---	12.26	1777	1974.4
XSECTION 65	RUNOFF	.03	6.83	---	12.05	150	5000.0
STRUCTURE 12	RESVOR	.03	6.82	1384.02	12.33	54	1800.0
XSECTION 80	RUNOFF	.01	7.20	---	12.03	52	5200.0
XSECTION 85	ADDDHD	.04	6.92	---	12.06	98	2450.0
STRUCTURE 13	RESVOR	.04	6.92	1384.23	12.46	62	1550.0
XSECTION 166	RUNOFF	.28	6.35	---	12.12	1033	3689.3
XSECTION 167	ADDDHD	.32	6.43	---	12.12	1092	3412.5
XSECTION 170	ADDDHD	1.23	6.62	---	12.17	2782	2261.8
STRUCTURE 18	RESVOR	1.23	6.62	1371.93	13.03	1111	903.3

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	ELEVATION (FT)	PEAK DISCHARGE		
					TIME (HR)	RATE (CFS)	RATE (CSM)
RAINFALL OF 9.35 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 17 STORM 7							
XSECTION 5	RUNOFF	.20	7.98	---	12.23	716	3580.0
XSECTION 25	RUNOFF	.16	8.15	---	12.21	601	3756.3
XSECTION 30	ADDDHD	.35	8.05	---	12.22	1317	3762.9
XSECTION 35	RUNOFF	.16	8.20	---	12.19	654	4087.5
XSECTION 40	ADDDHD	.52	8.10	---	12.21	1969	3786.5
STRUCTURE 10	RESVOR	.52	8.10	1379.30	12.49	1224	2353.8
XSECTION 45	RUNOFF	.04	8.78	---	12.11	211	5275.0
XSECTION 50	ADDDHD	.56	8.15	---	12.42	1300	2321.4
XSECTION 53	RUNOFF	.16	8.24	---	12.22	585	3656.3
STRUCTURE 15	RESVOR	.16	8.21	1378.72	12.84	165	1031.3
XSECTION 54	ADDDHD	.71	8.17	---	12.44	1452	2045.1
XSECTION 55	RUNOFF	.16	8.40	---	12.21	626	3912.5
XSECTION 60	ADDDHD	.88	8.21	---	12.29	2004	2277.3
XSECTION 61	RUNOFF	.03	8.74	---	12.02	164	5466.7
XSECTION 62	ADDDHD	.90	8.22	---	12.26	2061	2290.0
XSECTION 65	RUNOFF	.03	8.36	---	12.05	182	6066.7
STRUCTURE 12	RESVOR	.03	8.36	1384.80	12.35	58	1933.3
XSECTION 80	RUNOFF	.01	8.74	---	12.03	62	6200.0
XSECTION 85	ADDDHD	.04	8.45	---	12.05	113	2825.0
STRUCTURE 13	RESVOR	.04	8.45	1385.08	12.53	66	1650.0
XSECTION 166	RUNOFF	.28	7.88	---	12.12	1273	4546.4
XSECTION 167	ADDDHD	.32	7.95	---	12.12	1335	4171.9
XSECTION 170	ADDDHD	1.23	8.15	---	12.17	3292	2676.4
STRUCTURE 18	RESVOR	1.23	8.15	1372.40	13.00	1426	1159.3

TR20 ----- WATERFRONT CURRENT/Future EAST BRANCH GYPSUM CREEK 1/07 VERSION - SCS -
 08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04TEST
 08:41:53 SUMMARY, JOB NO. 1 PAGE 52

XSECTION 5 ----- .20
 ALTERNATE 11
 ALTERNATE 12
 ALTERNATE 13
 ALTERNATE 14
 1

***** 219 ***** 309 ***** 460 *****
 ***** 369 *****

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....	3	4	5
STRUCTURE 18	1.23				
ALTERNATE 11		219			
ALTERNATE 12		392			
ALTERNATE 13		517			
ALTERNATE 14		781			
ALTERNATE 15					962
STRUCTURE 15	.16				
ALTERNATE 11		86			
ALTERNATE 12		106			
ALTERNATE 13		116			
ALTERNATE 14				131	
ALTERNATE 15					139
STRUCTURE 13	.04				
ALTERNATE 11		42			
ALTERNATE 12		51			
ALTERNATE 13		54			
ALTERNATE 14				58	
ALTERNATE 15					60
STRUCTURE 12	.03				
ALTERNATE 11		33			
ALTERNATE 12		41			
ALTERNATE 13		45			
ALTERNATE 14				49	
ALTERNATE 15					52
STRUCTURE 10	.52				
ALTERNATE 11		515			
ALTERNATE 12		677			
ALTERNATE 13		777			
ALTERNATE 14				906	
ALTERNATE 15					994

TR20 ----- WATERFRONT CURRENT/Future EAST BRANCH GYPSUM CREEK 1/07 VERSION - SCS -
 08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04TEST
 08:41:53 SUMMARY, JOB NO. 1 PAGE 53

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	1	2	3	4	5
XSECTION 5	.20					
ALTERNATE 15						529
XSECTION 25	.16					
ALTERNATE 11		189				
ALTERNATE 12		263				
ALTERNATE 13			313			
ALTERNATE 14				386		
ALTERNATE 15						442
XSECTION 30	.35					
ALTERNATE 11		408				
ALTERNATE 12		572				
ALTERNATE 13			682			
ALTERNATE 14				846		
ALTERNATE 15						970
XSECTION 35	.16					
ALTERNATE 11		210				
ALTERNATE 12		291				
ALTERNATE 13			344			
ALTERNATE 14				424		
ALTERNATE 15						485
XSECTION 40	.52					
ALTERNATE 11		617				
ALTERNATE 12		861				
ALTERNATE 13			1024			
ALTERNATE 14				1267		
ALTERNATE 15						1452

XSECTION 45 .04
 ALTERNATE 11
 ALTERNATE 12 76
 ALTERNATE 13 100
 ALTERNATE 14 117
 ALTERNATE 15 141
 159

XSECTION 50 .56
 ALTERNATE 11 554
 ALTERNATE 12 725

TR20 ----- WATERFRONT CURRENT/Future EAST BRANCH GYPSUM CREEK 1/07 VERSION - SCS -
 08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04TEST
 08:41:53 SUMMARY, JOB NO. 1 PAGE 54

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....				
		1	2	3	4	5
XSECTION 50	.56					
ALTERNATE 13			829			
ALTERNATE 14				964		
ALTERNATE 15					1058	
XSECTION 53	.16					
ALTERNATE 11		189				
ALTERNATE 12			263			
ALTERNATE 13				308		
ALTERNATE 14					380	
ALTERNATE 15						435
XSECTION 54	.71					
ALTERNATE 11		632				
ALTERNATE 12			821			
ALTERNATE 13				936		
ALTERNATE 14					1084	
ALTERNATE 15						1188
XSECTION 55	.16					
ALTERNATE 11		209				
ALTERNATE 12			285			
ALTERNATE 13				336		
ALTERNATE 14					409	
ALTERNATE 15						470
XSECTION 60	.88					
ALTERNATE 11		822				
ALTERNATE 12			1080			
ALTERNATE 13				1239		
ALTERNATE 14					1447	
ALTERNATE 15						1602

XSECTION 61 .03
 ALTERNATE 11
 ALTERNATE 12
 ALTERNATE 13
 ALTERNATE 14
 ALTERNATE 15

XSECTION 62 .90

TR20 ----- WATERFRONT CURRENT/Future EAST BRANCH GYPSUM CREEK 1/07 VERSION - SCS -
 08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04TEST
 08:41:53 SUMMARY, JOB NO. 1 PAGE 55

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....				
		1	2	3	4	5
XSECTION 62	.90					
ALTERNATE 11		839				
ALTERNATE 12			1105			
ALTERNATE 13				1268		
ALTERNATE 14					1483	
ALTERNATE 15						1643
XSECTION 65	.03					
ALTERNATE 11		61				
ALTERNATE 12			83			
ALTERNATE 13				97		
ALTERNATE 14					120	
ALTERNATE 15						136
XSECTION 80	.01					
ALTERNATE 11		22				
ALTERNATE 12			29			
ALTERNATE 13				34		
ALTERNATE 14					41	
ALTERNATE 15						47
XSECTION 85	.04					
ALTERNATE 11		48				
ALTERNATE 12			64			
ALTERNATE 13				71		
ALTERNATE 14					83	
ALTERNATE 15						91
XSECTION 166	.28					
ALTERNATE 11		380				
ALTERNATE 12			540			
ALTERNATE 13				646		
ALTERNATE 14					811	
ALTERNATE 15						927

XSECTION 167 .32
 ALTERNATE 11
 ALTERNATE 12
 ALTERNATE 13
 ALTERNATE 14
 ALTERNATE 15

416 *****
 ***** 591 *****
 ***** 700 *****
 ***** 866 *****
 ***** 985 *****

TR20 ----- WATERFRONT CURRENT/Future EAST BRANCH GYPSUM CREEK 1/07 VERSION SCS -
 08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04TEST
 08:41:53 SUMMARY, JOB NO. 1 PAGE 56

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....	3	4	5
XSECTION 170	1.23				
ALTERNATE 11		1203 *****	*****	*****	*****
ALTERNATE 12		*****	1646 *****	*****	*****
ALTERNATE 13		*****	*****	1899 *****	*****
ALTERNATE 14		*****	*****	*****	2273 *****
ALTERNATE 15		*****	*****	*****	***** 2551

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....	6	7
STRUCTURE 18	1.23			
ALTERNATE 16		1111 *****		
ALTERNATE 17		*****	1426	
STRUCTURE 15	.16			
ALTERNATE 16		147 *****		
ALTERNATE 17		*****	165	

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....	66	54	58
STRUCTURE 13	.04				
ALTERNATE 16		62 *****			
ALTERNATE 17		*****	66		
STRUCTURE 12	.03				
ALTERNATE 16		54 *****			
ALTERNATE 17		*****	58		

STRUCTURE 10	.52			
ALTERNATE 16		1071 *****		
ALTERNATE 17		*****	1224	
XSECTION 5	.20			
ALTERNATE 16		586 *****		
ALTERNATE 17		*****	716	
XSECTION 25	.16			
ALTERNATE 16		491 *****		
ALTERNATE 17		*****	601	

XSECTION 30	.35			
ALTERNATE 16		1077 *****		
ALTERNATE 17		*****	1317	

TR20 ----- WATERFRONT CURRENT/FUTURE EAST BRANCH GYPSUM CREEK 1/07 VERSION SCS -
 08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL.2.04TEST
 08:41:53 SUMMARY, JOB NO. 1 PAGE 57

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/
 STRUCTURE DRAINAGE
 ID AREA
 (SQ MI) STORM NUMBERS.....

XSECTION 35	.16		
ALTERNATE 16		537 *****	654
ALTERNATE 17		*****	
XSECTION 40	.52		
ALTERNATE 16		1611 *****	1969
ALTERNATE 17		*****	
XSECTION 45	.04		
ALTERNATE 16		175 *****	211
ALTERNATE 17		*****	
XSECTION 50	.56		
ALTERNATE 16		1139 *****	1300
ALTERNATE 17		*****	
XSECTION 53	.16		
ALTERNATE 16		481 *****	585
ALTERNATE 17		*****	
XSECTION 54	.71		
ALTERNATE 16		1276 *****	1452
ALTERNATE 17		*****	
XSECTION 55	.16		
ALTERNATE 16		518 *****	626
ALTERNATE 17		*****	
XSECTION 60	.88		
ALTERNATE 16		1732 *****	2004
ALTERNATE 17		*****	

XSECTION 61 .03
 ALTERNATE 16
 ALTERNATE 17

 136 *****
 ***** 164

XSECTION 62 .90
 ALTERNATE 16
 ALTERNATE 17

 1777 *****
 ***** 2061

TR20 ----- SCS -
 WATERFRONT CURRENT/Future EAST BRANCH GYPSUM CREEK 1/07 VERSION
 08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL2.04TEST
 08:41:53 SUMMARY, JOB NO. 1 PAGE 56

TR20 ----- SCS -
 WATERFRONT CURRENT/Future EAST BRANCH GYPSUM CREEK 1/07 VERSION
 08/09/** TC6.T20 50%(2) 20%(5) 10%(10) 5%(50) 1%(100) & .2%(500) ANNUAL2.04TEST

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
 QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ DRAINAGE
 STRUCTURE AREA
 ID (SQ MI) STORM NUMBERS.....

XSECTION 65 .03
 ALTERNATE 16 150 *****
 ALTERNATE 17 ***** 182

XSECTION 80 .01
 ALTERNATE 16 52 *****
 ALTERNATE 17 ***** 62

XSECTION 85 .04
 ALTERNATE 16 98 *****
 ALTERNATE 17 ***** 113

XSECTION 166 .28
 ALTERNATE 16 1033 *****
 ALTERNATE 17 ***** 1273

XSECTION 167 .32
 ALTERNATE 16 1092 *****
 ALTERNATE 17 ***** 1335

XSECTION 170 1.23
 ALTERNATE 16 2782 *****
 ALTERNATE 17 ***** 3292

END OF 1 JOBS IN THIS RUN

SCS TR-20, VERSION 2.04TEST
 FILES

INPUT = wtfltc6.t20 , GIVEN DATA FILE
 OUTPUT = wtfltc6.OUT , DATED 08/09/**,08:41:53

FILES GENERATED - DATED 08/09/**,08:41:53

FILE wtfltc6.TMG CONTAINS MESSAGE + WARNING INFORMATION

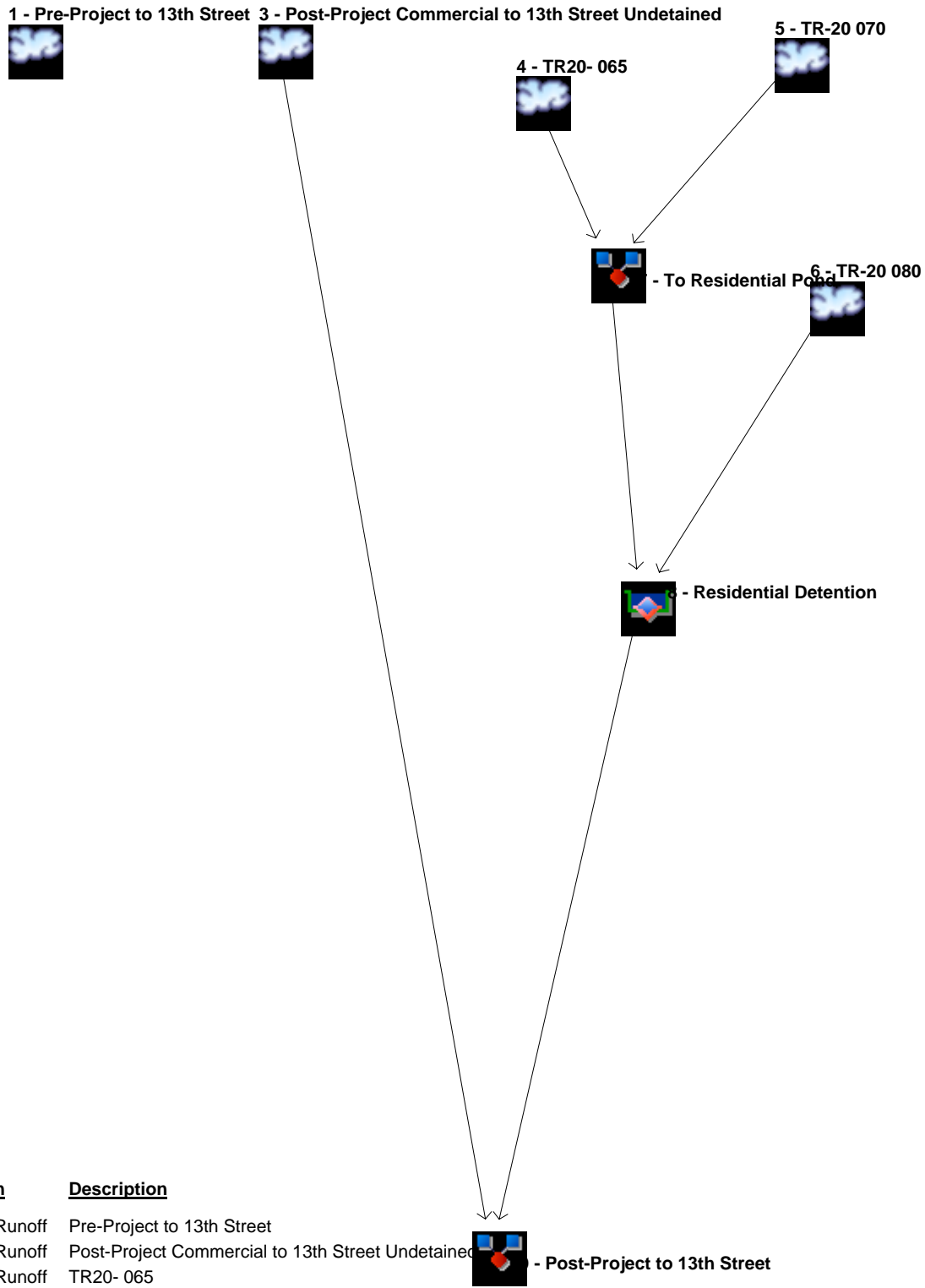
TOTAL NUMBER OF WARNINGS = 3, MESSAGES = 0

*** TR-20 RUN COMPLETED ***

Figure 3.3

Hydraflow Hydrographs - 13th Street

Watershed Model Schematic



Legend

Hyd.	Origin	Description
1	SCS Runoff	Pre-Project to 13th Street
3	SCS Runoff	Post-Project Commercial to 13th Street Undetained
4	SCS Runoff	TR20- 065
5	SCS Runoff	TR-20 070
6	SCS Runoff	TR-20 080
7	Combine	To Residential Pond
8	Reservoir(i)	Residential Detention
9	Combine	Post-Project to 13th Street

Hydrograph Return Period Recap

Hydraflow Hydrographs by Intelisolve v9.23

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)								Hydrograph description
			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	
1	SCS Runoff	-----	-----	78.30	-----	116.81	142.82	182.16	-----	238.52	Pre-Project to 13th Street
3	SCS Runoff	-----	-----	66.98	-----	92.08	108.40	132.74	-----	167.25	Post-Project Commercial to 13th Stre
4	SCS Runoff	-----	-----	33.23	-----	46.72	55.53	68.69	-----	87.37	TR20- 065
5	SCS Runoff	-----	-----	12.08	-----	17.07	20.34	25.22	-----	32.14	TR-20 070
6	SCS Runoff	-----	-----	15.45	-----	20.70	24.12	29.21	-----	36.45	TR-20 080
7	Combine	4, 5,	-----	45.31	-----	63.79	75.87	93.91	-----	119.51	To Residential Pond
8	Reservoir(i)	7, 6	-----	31.26	-----	45.55	49.28	52.88	-----	56.99	Residential Detention
9	Combine	3, 8	-----	77.34	-----	117.10	140.54	172.81	-----	215.81	Post-Project to 13th Street

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.23

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph description
1	SCS Runoff	78.30	6	738	9.039	----	-----	-----	Pre-Project to 13th Street
3	SCS Runoff	66.98	6	720	4.806	----	-----	-----	Post-Project Commercial to 13th Stre
4	SCS Runoff	33.23	6	726	3.106	----	-----	-----	TR20- 065
5	SCS Runoff	12.08	6	726	1.128	----	-----	-----	TR-20 070
6	SCS Runoff	15.45	6	720	1.140	----	-----	-----	TR-20 080
7	Combine	45.31	6	726	4.234	4, 5,	-----	-----	To Residential Pond
8	Reservoir(i)	31.26	6	744	5.390	7, 6	1381.82	1.67	Residential Detention
9	Combine	77.34	6	720	10.196	3, 8	-----	-----	Post-Project to 13th Street
13th Street07-27-07.gpw					Return Period: 2 Year			Thursday, Aug 9, 2007	

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.23

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph description
1	SCS Runoff	116.81	6	732	13.476	----	-----	-----	Pre-Project to 13th Street
3	SCS Runoff	92.08	6	720	6.702	----	-----	-----	Post-Project Commercial to 13th Stre
4	SCS Runoff	46.72	6	726	4.406	----	-----	-----	TR20- 065
5	SCS Runoff	17.07	6	726	1.607	----	-----	-----	TR-20 070
6	SCS Runoff	20.70	6	720	1.552	----	-----	-----	TR-20 080
7	Combine	63.79	6	726	6.013	4, 5,	-----	-----	To Residential Pond
8	Reservoir(i)	45.55	6	738	7.577	7, 6	1382.20	2.13	Residential Detention
9	Combine	117.10	6	726	14.280	3, 8	-----	-----	Post-Project to 13th Street
13th Street07-27-07.gpw					Return Period: 5 Year			Thursday, Aug 9, 2007	

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.23

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph description	
1	SCS Runoff	142.82	6	732	16.482	----	-----	-----	Pre-Project to 13th Street	
3	SCS Runoff	108.40	6	720	7.956	----	-----	-----	Post-Project Commercial to 13th Stre	
4	SCS Runoff	55.53	6	726	5.271	----	-----	-----	TR20- 065	
5	SCS Runoff	20.34	6	726	1.926	----	-----	-----	TR-20 070	
6	SCS Runoff	24.12	6	720	1.823	----	-----	-----	TR-20 080	
7	Combine	75.87	6	726	7.196	4, 5,	-----	-----	To Residential Pond	
8	Reservoir(i)	49.28	6	738	9.024	7, 6	1382.50	2.54	Residential Detention	
9	Combine	140.54	6	726	16.980	3, 8	-----	-----	Post-Project to 13th Street	
13th Street07-27-07.gpw					Return Period: 10 Year			Thursday, Aug 9, 2007		

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.23

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph description	
1	SCS Runoff	182.16	6	732	21.089	----	-----	-----	Pre-Project to 13th Street	
3	SCS Runoff	132.74	6	720	9.849	----	-----	-----	Post-Project Commercial to 13th Stre	
4	SCS Runoff	68.69	6	726	6.580	----	-----	-----	TR20- 065	
5	SCS Runoff	25.22	6	726	2.409	----	-----	-----	TR-20 070	
6	SCS Runoff	29.21	6	720	2.230	----	-----	-----	TR-20 080	
7	Combine	93.91	6	726	8.989	4, 5,	-----	-----	To Residential Pond	
8	Reservoir(i)	52.88	6	744	11.220	7, 6	1383.05	3.25	Residential Detention	
9	Combine	172.81	6	720	21.069	3, 8	-----	-----	Post-Project to 13th Street	
13th Street07-27-07.gpw					Return Period: 25 Year			Thursday, Aug 9, 2007		

100 - Year

Summary Report	1
Hydrograph Reports	2
Hydrograph No. 1, SCS Runoff, Pre-Project to 13th Street	2
Hydrograph No. 3, SCS Runoff, Post-Project Commercial to 13th Street Undetained	3
Hydrograph No. 4, SCS Runoff, TR20- 065	4
Hydrograph No. 5, SCS Runoff, TR-20 070	5
Hydrograph No. 6, SCS Runoff, TR-20 080	6
Hydrograph No. 7, Combine, To Residential Pond	7
Hydrograph No. 8, Reservoir, Residential Detention	8
Pond Report - Resid. Det. (RES 12)	9
Pond Report - Comm. Det. (RES 13)	10
Hydrograph No. 9, Combine, Post-Project to 13th Street	11
IDF Report	12

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.23

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph description	
1	SCS Runoff	238.52	6	732	27.801	----	-----	-----	Pre-Project to 13th Street	
3	SCS Runoff	167.25	6	720	12.568	----	-----	-----	Post-Project Commercial to 13th Stre	
4	SCS Runoff	87.37	6	726	8.466	----	-----	-----	TR20- 065	
5	SCS Runoff	32.14	6	726	3.105	----	-----	-----	TR-20 070	
6	SCS Runoff	36.45	6	720	2.813	----	-----	-----	TR-20 080	
7	Combine	119.51	6	726	11.572	4, 5,	-----	-----	To Residential Pond	
8	Reservoir(i)	56.99	6	750	14.390	7, 6	1383.84	4.41	Residential Detention	
9	Combine	215.81	6	720	26.958	3, 8	-----	-----	Post-Project to 13th Street	
13th Street07-27-07.gpw					Return Period: 100 Year			Thursday, Aug 9, 2007		

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23

Thursday, Aug 9, 2007

Hyd. No. 1

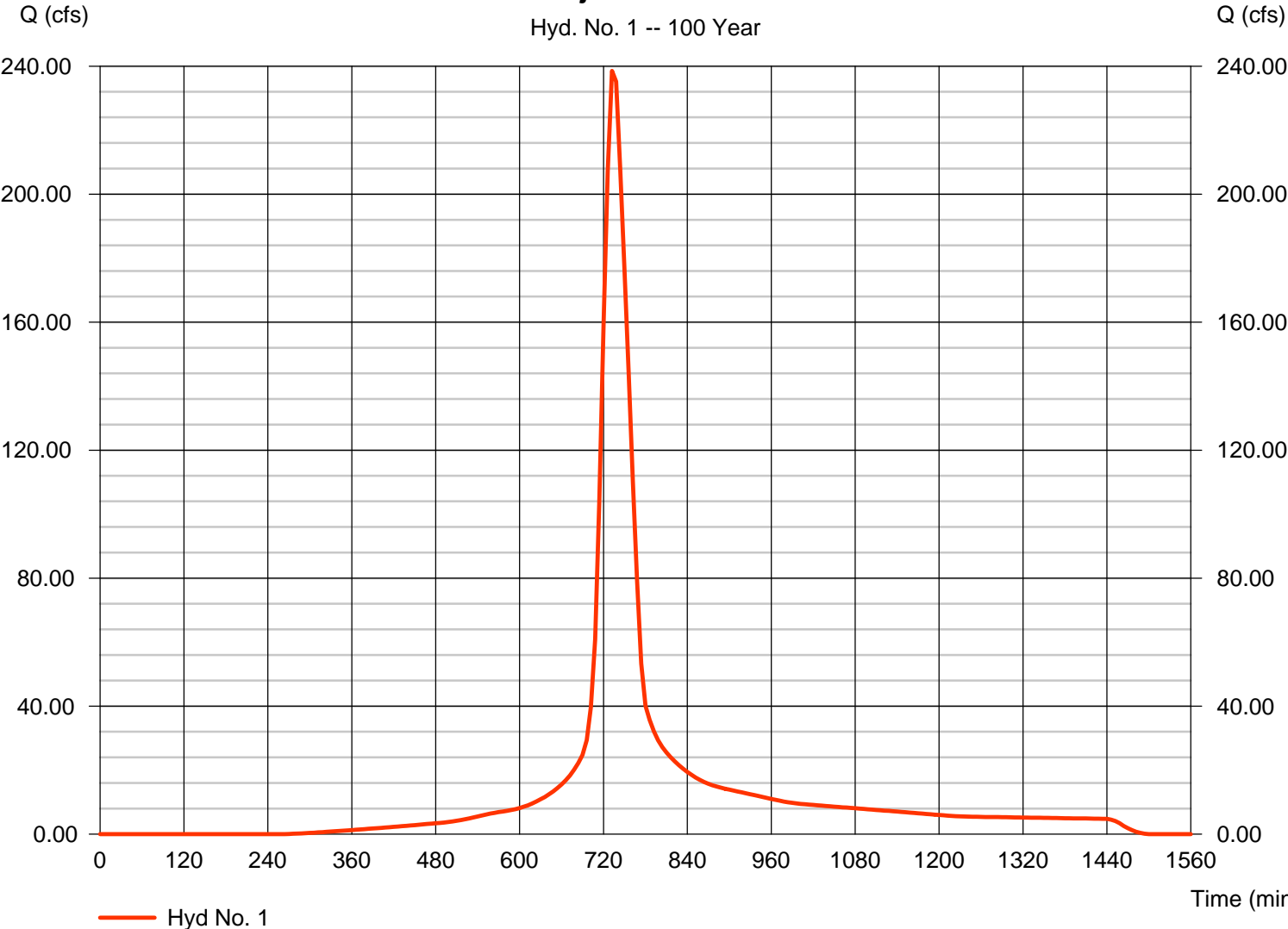
Pre-Project to 13th Street

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Time interval = 6 min
Drainage area = 54.800 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 7.80 in
Storm duration = 24 hrs

Peak discharge = 238.52 cfs
Time to peak = 732 min
Hyd. volume = 27.801 acft
Curve number = 84
Hydraulic length = 0 ft
Time of conc. (Tc) = 30.60 min
Distribution = Type II
Shape factor = 484

Pre-Project to 13th Street

Hyd. No. 1 -- 100 Year



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23

Thursday, Aug 9, 2007

Hyd. No. 3

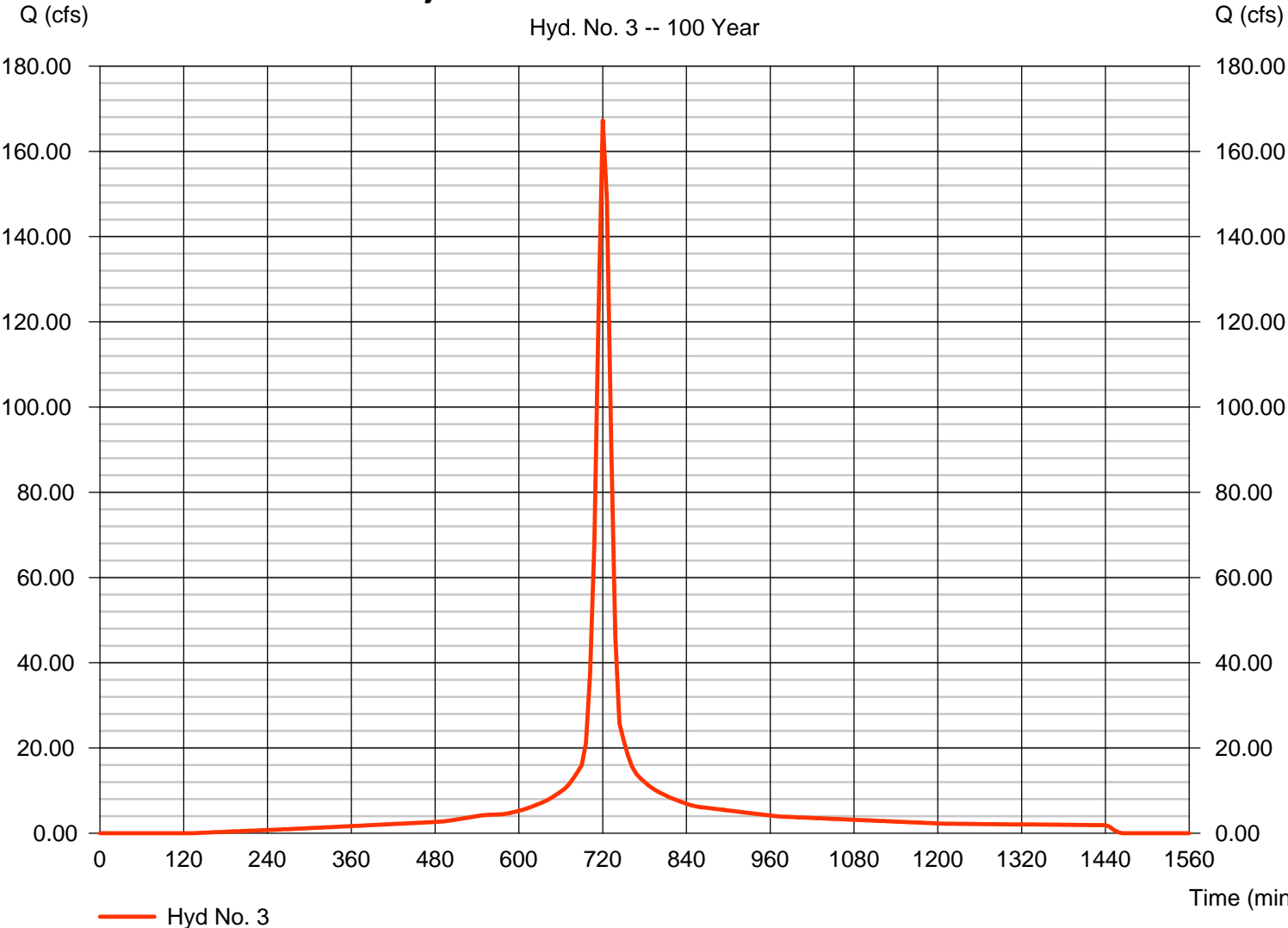
Post-Project Commercial to 13th Street Undetained

Hydrograph type	= SCS Runoff	Peak discharge	= 167.25 cfs
Storm frequency	= 100 yrs	Time to peak	= 720 min
Time interval	= 6 min	Hyd. volume	= 12.568 acft
Drainage area	= 23.500 ac	Curve number	= 92*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 15.00 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(21.400 x 95) + (6.600 x 84)] / 23.500

Post-Project Commercial to 13th Street Undetained

Hyd. No. 3 -- 100 Year



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23

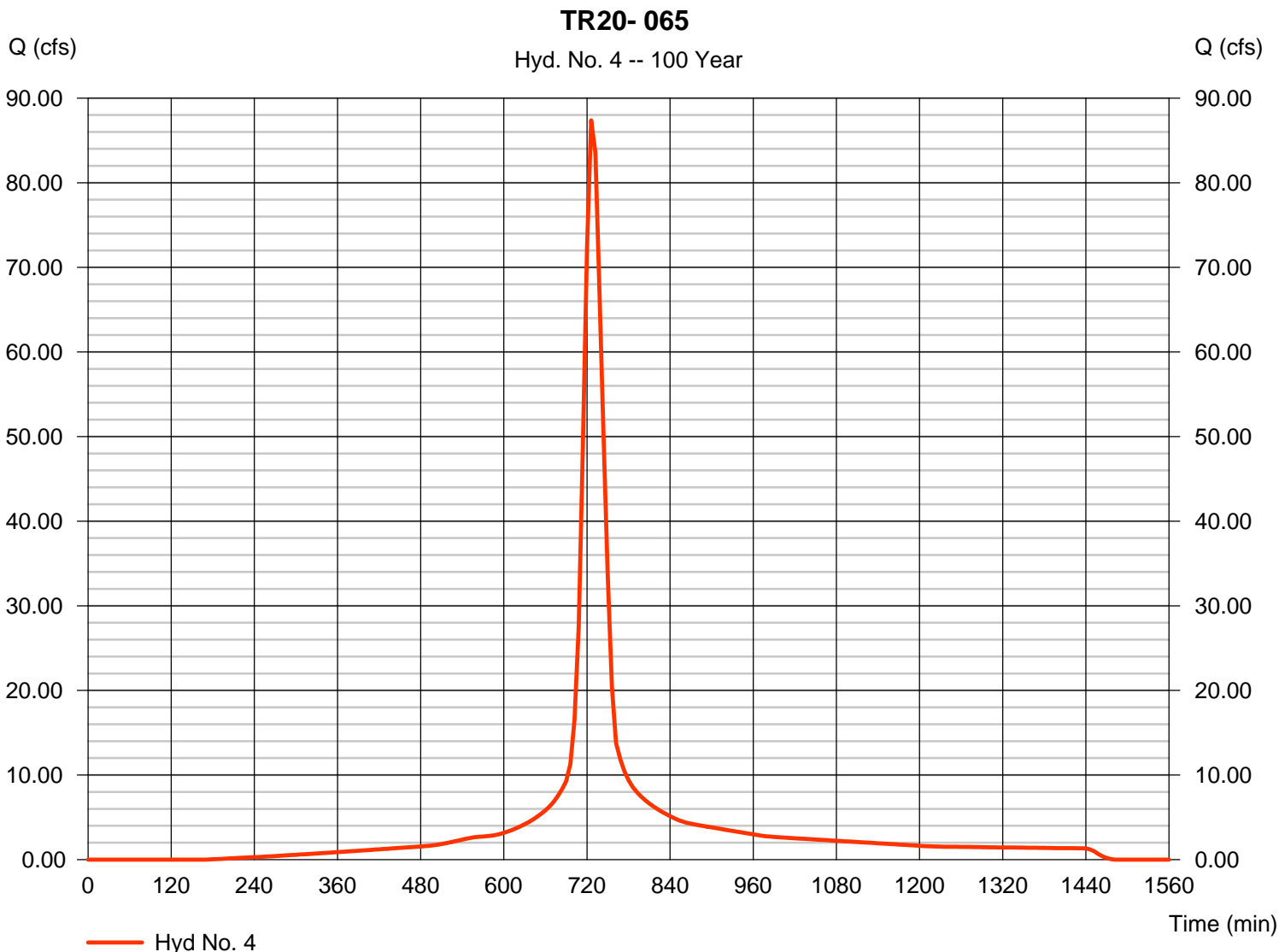
Thursday, Aug 9, 2007

Hyd. No. 4

TR20- 065

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 6 min
 Drainage area = 15.400 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 7.80 in
 Storm duration = 24 hrs

Peak discharge = 87.37 cfs
 Time to peak = 726 min
 Hyd. volume = 8.466 acft
 Curve number = 89.9
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 21.10 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23

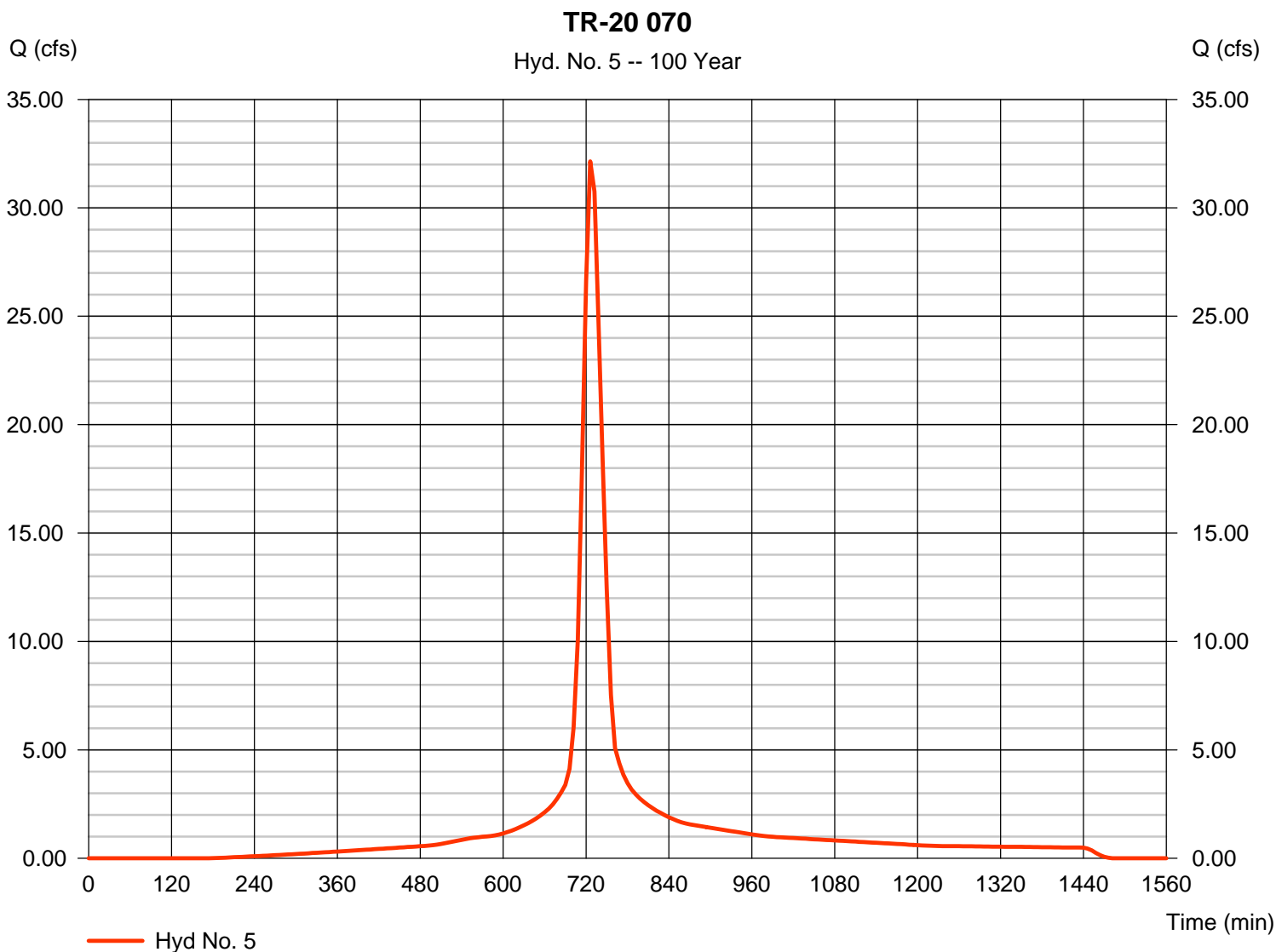
Thursday, Aug 9, 2007

Hyd. No. 5

TR-20 070

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 6 min
 Drainage area = 5.700 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 7.80 in
 Storm duration = 24 hrs

Peak discharge = 32.14 cfs
 Time to peak = 726 min
 Hyd. volume = 3.105 acft
 Curve number = 89.4
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 20.90 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23

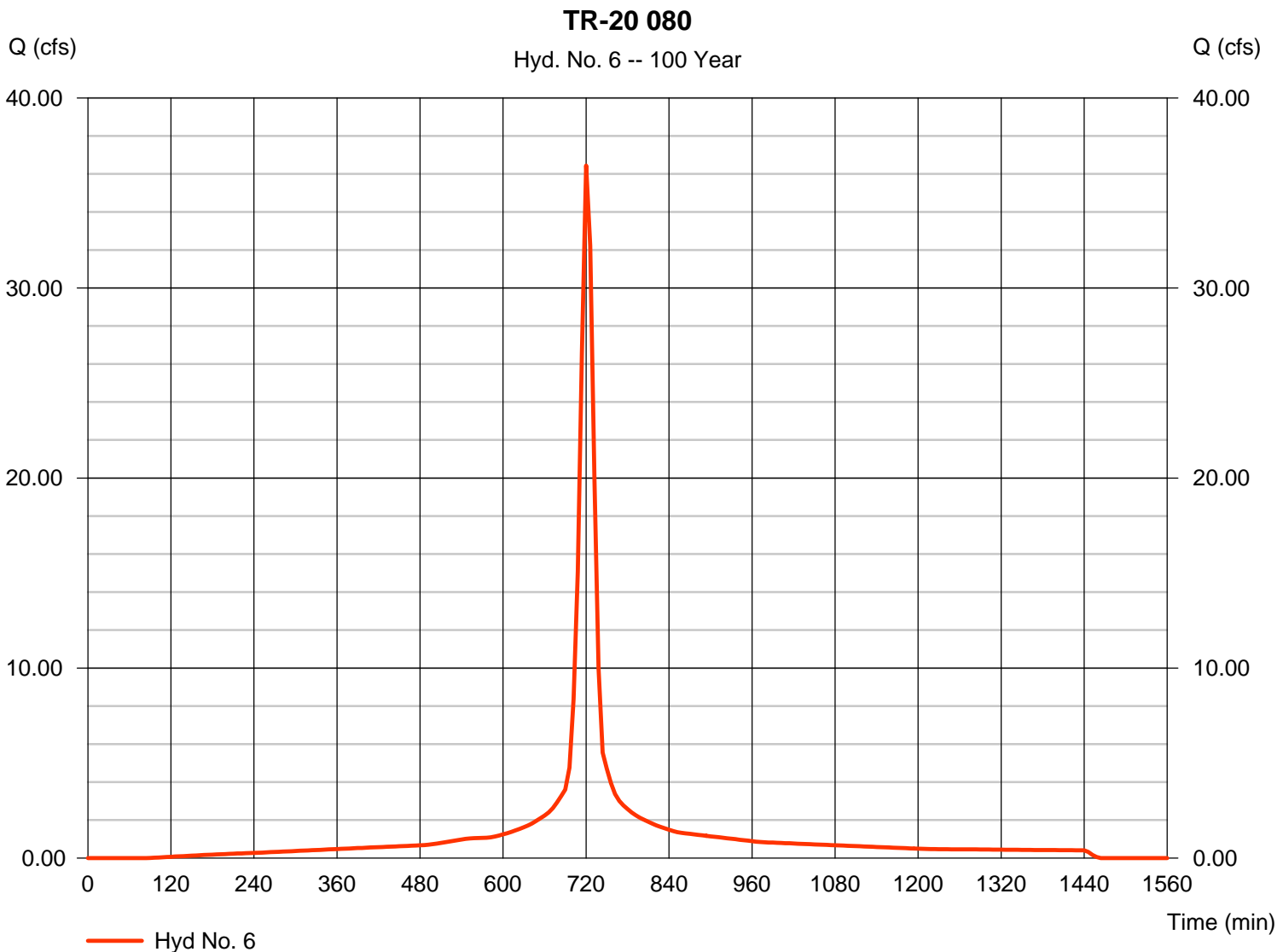
Thursday, Aug 9, 2007

Hyd. No. 6

TR-20 080

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 6 min
 Drainage area = 5.000 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 7.80 in
 Storm duration = 24 hrs

Peak discharge = 36.45 cfs
 Time to peak = 720 min
 Hyd. volume = 2.813 acft
 Curve number = 95
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 18.90 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23

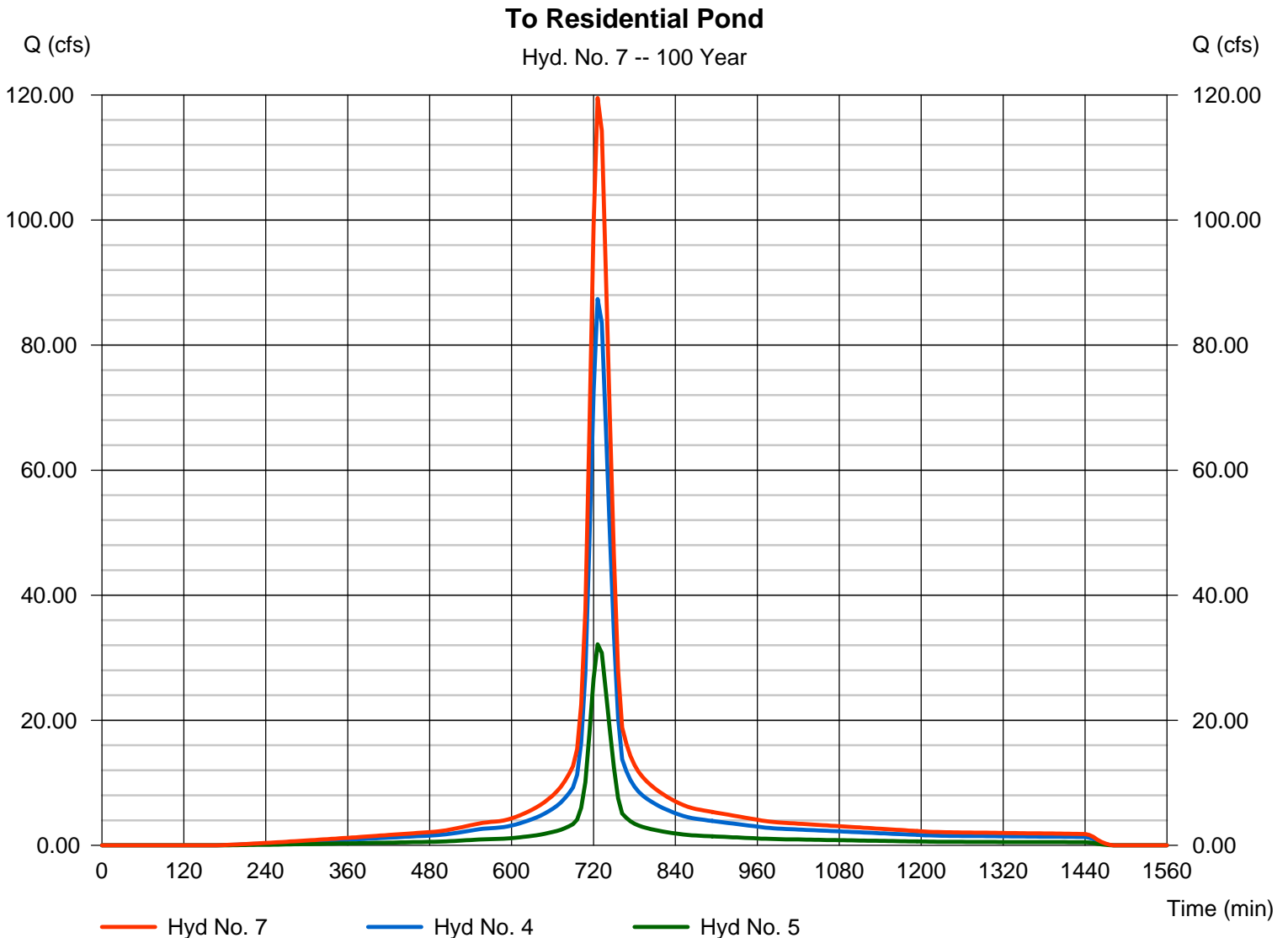
Thursday, Aug 9, 2007

Hyd. No. 7

To Residential Pond

Hydrograph type = Combine
Storm frequency = 100 yrs
Time interval = 6 min
Inflow hyds. = 4, 5

Peak discharge = 119.51 cfs
Time to peak = 726 min
Hyd. volume = 11.572 acft
Contrib. drain. area = 21.100 ac



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23

Thursday, Aug 9, 2007

Hyd. No. 8

Residential Detention

Hydrograph type = Reservoir (Interconnected)
 Storm frequency = 100 yrs
 Time interval = 6 min

Peak discharge = 56.99 cfs
 Time to peak = 750 min
 Hyd. volume = 14.390 acft

Upper Pond

Pond name = Resid. Det. (RES 12)
 Inflow hyd. = 7 - To Residential Pond
 Max. Elevation = 1383.84 ft
 Max. Storage = 3.212 acft

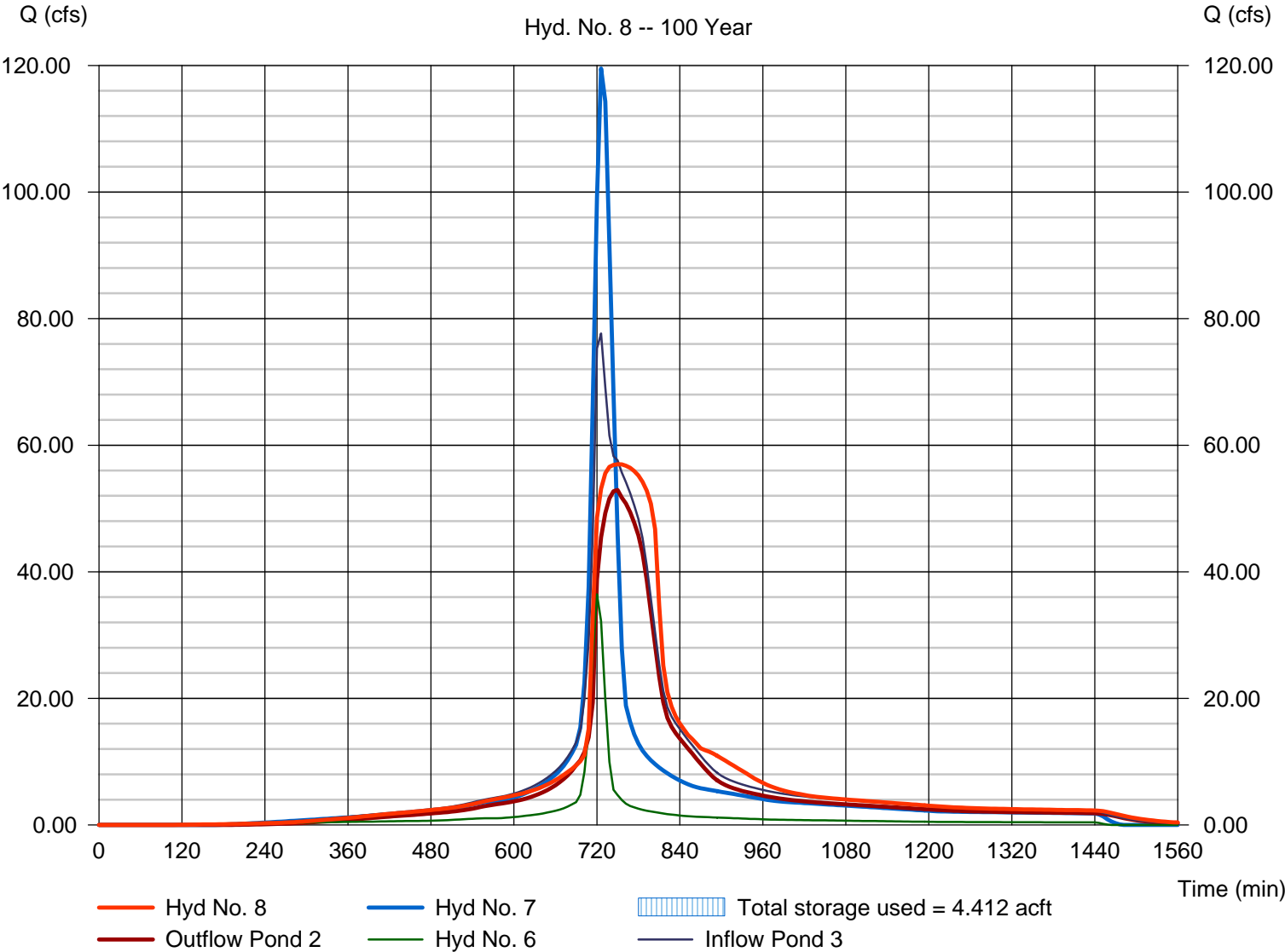
Lower Pond

Pond name = Comm. Det. (RES 13)
 Other Inflow hyd. = 6 - TR-20 080
 Max. Elevation = 1383.14 ft
 Max. Storage = 1.200 acft

Interconnected Pond Routing. Storage Indication method used.

Residential Detention

Hyd. No. 8 -- 100 Year



Pond No. 2 - Resid. Det. (RES 12)

Pond Data

Contours - User-defined contour areas. Average end area method used for volume calculation. Beginning Elevation = 1380.50 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (acft)	Total storage (acft)
0.00	1380.50	34,200	0.000	0.000
0.50	1381.00	36,500	0.406	0.406
1.50	1382.00	41,250	0.892	1.298
2.50	1383.00	46,250	1.004	2.303
3.50	1384.00	51,500	1.122	3.425
4.50	1385.00	56,250	1.237	4.661

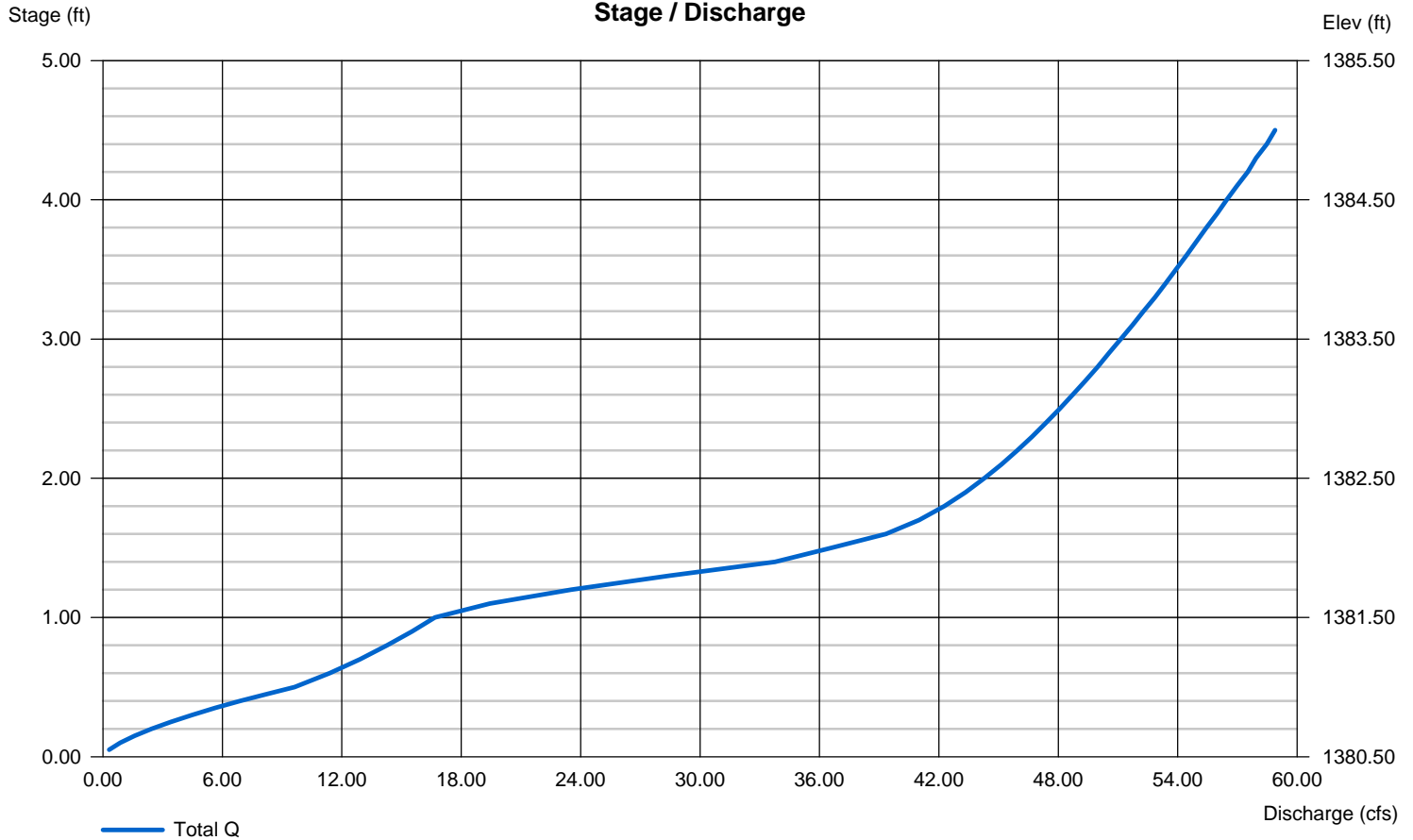
Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 30.00	6.00	0.00	0.00
Span (in)	= 30.00	24.00	0.00	0.00
No. Barrels	= 1	4	0	0
Invert El. (ft)	= 1377.50	1380.50	0.00	0.00
Length (ft)	= 0.00	0.50	0.00	0.00
Slope (%)	= 0.00	0.10	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 16.00	0.00	0.00	0.00
Crest El. (ft)	= 1381.50	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Riser	---	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 0.000 (by Contour)			
TW Elev. (ft)	= 0.00			

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



Pond No. 3 - Comm. Det. (RES 13)

Pond Data

Contours - User-defined contour areas. Average end area method used for volume calculation. Beginning Elevation = 1379.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (acft)	Total storage (acft)
0.00	1379.00	7,948	0.000	0.000
1.00	1380.00	10,024	0.206	0.206
2.00	1381.00	12,199	0.255	0.461
3.00	1382.00	14,475	0.306	0.768
4.00	1383.00	18,058	0.373	1.141
5.00	1384.00	21,299	0.452	1.593
6.00	1385.00	22,000	0.497	2.090

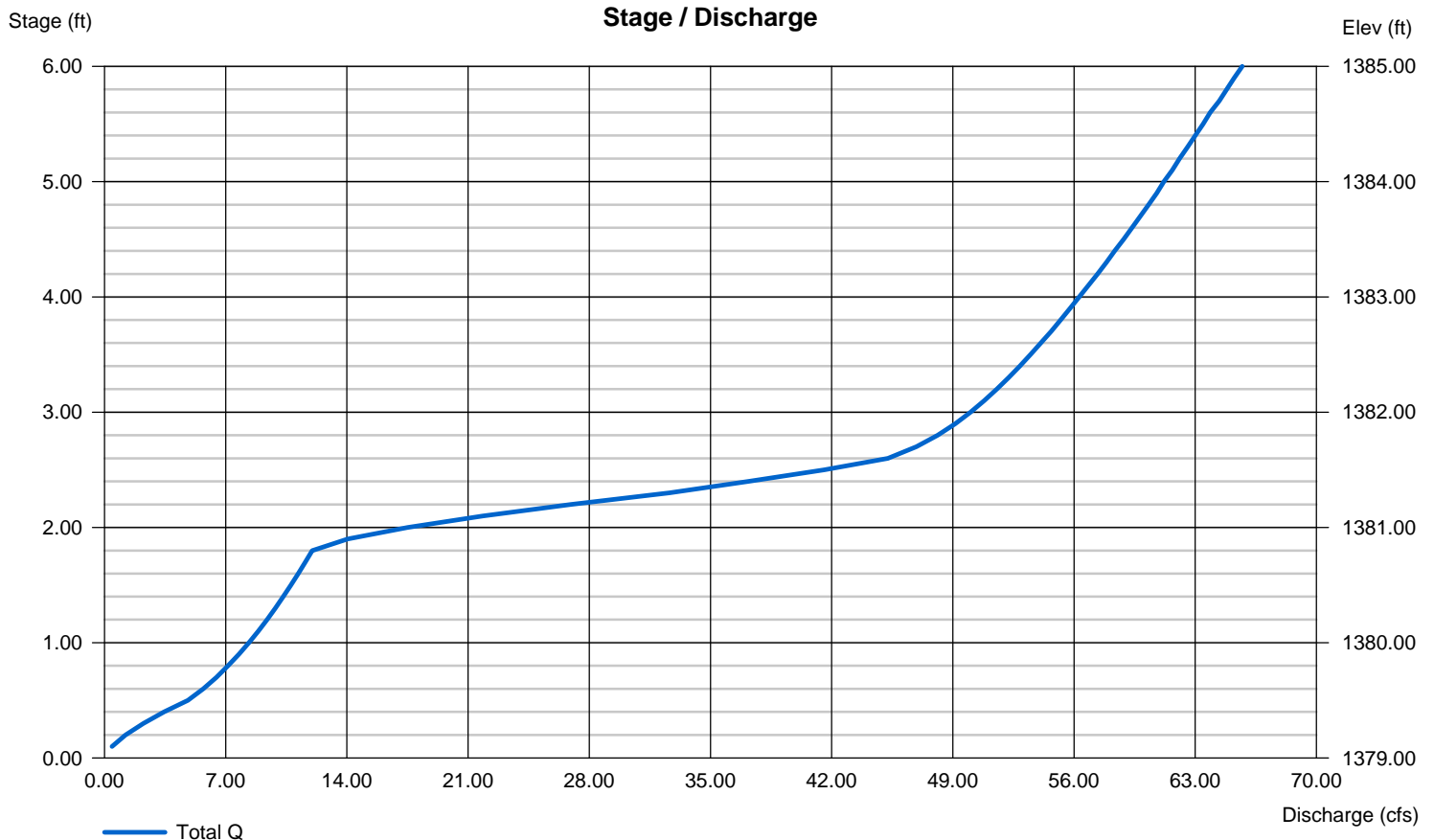
Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 30.00	6.00	0.00	0.00
Span (in)	= 30.00	12.00	0.00	0.00
No. Barrels	= 1	4	0	0
Invert El. (ft)	= 1376.00	1379.00	0.00	0.00
Length (ft)	= 0.00	0.50	0.00	0.00
Slope (%)	= 0.00	0.10	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 16.00	0.00	0.00	0.00
Crest El. (ft)	= 1380.80	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Riser	---	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 0.000 (by Contour)			
TW Elev. (ft)	= 0.00			

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



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23

Thursday, Aug 9, 2007

Hyd. No. 9

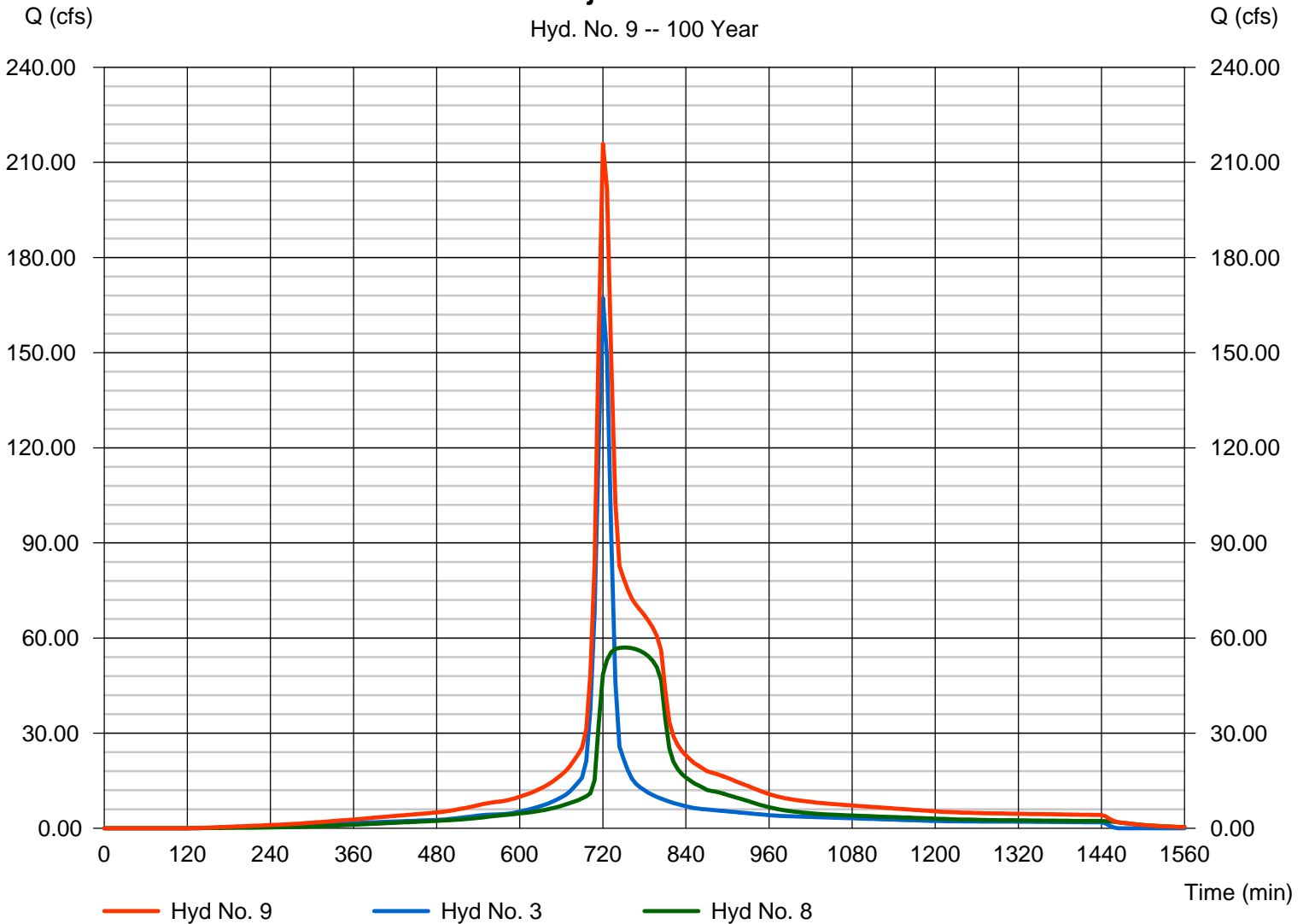
Post-Project to 13th Street

Hydrograph type = Combine
Storm frequency = 100 yrs
Time interval = 6 min
Inflow hyds. = 3, 8

Peak discharge = 215.81 cfs
Time to peak = 720 min
Hyd. volume = 26.958 acft
Contrib. drain. area = 23.500 ac

Post-Project to 13th Street

Hyd. No. 9 -- 100 Year



Hydraflow Rainfall Report

Hydraflow Hydrographs by Intelisolve v9.23

Thursday, Aug 9, 2007

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	-----
2	76.3137	14.3000	0.8844	-----
3	0.0000	0.0000	0.0000	-----
5	52.6224	11.2000	0.7497	-----
10	55.1841	11.1000	0.7229	-----
25	60.7012	11.1000	0.7068	-----
50	66.9222	11.3000	0.7004	-----
100	62.2794	10.1000	0.6624	-----

File name: SedgwickCoKS.IDF

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

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	5.57	4.54	3.85	3.35	2.97	2.67	2.43	2.23	2.06	1.92	1.80	1.69
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.52	5.33	4.55	3.99	3.57	3.24	2.97	2.75	2.57	2.41	2.27	2.15
10	7.40	6.09	5.22	4.60	4.13	3.76	3.46	3.21	3.00	2.82	2.67	2.53
25	8.51	7.03	6.05	5.35	4.81	4.39	4.05	3.76	3.52	3.32	3.14	2.98
50	9.47	7.86	6.78	6.00	5.41	4.94	4.56	4.24	3.98	3.75	3.55	3.37
100	10.31	8.53	7.37	6.53	5.90	5.40	5.00	4.66	4.37	4.13	3.92	3.73

T_c = time in minutes. Values may exceed 60.

Precip. file name: SedgwickCoKS.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	3.48	0.00	4.55	5.25	6.30	7.10	7.80
SCS 6-Hr	0.00	1.80	0.00	0.00	2.60	0.00	0.00	4.00
Huff-1st	0.00	1.55	0.00	2.75	4.00	5.38	6.50	8.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	1.55	0.00	2.75	4.00	5.38	6.50	8.00
Custom	0.00	2.50	0.00	0.00	0.00	4.60	5.20	5.90

Figure 3.4

Post-Project Time of Concentration

Time of Concentration Calculations by the FAA method
 The Waterfront Addition - Post-Project Conditions Calculations

$$T_c = \frac{(1.1-C)L^{1/2}}{100 S^{1/3}}$$

Area Name	Land Use	Soil Group	Maximum Elevation	Minimum Elevation	Length (L)	Rational Runoff Coefficient, C			Time of Concentration (min), T _c			Time of Concentration (hr), T _c			CN			
						2-Year	5-Year	10-Year	2-Year	5-Year	10-Year	2-Year	5-Year	10-Year				
005	Business - Neighborhood	D	1405.0	1375.0	3800	0.68	0.69	0.73	0.80	50.4	49.2	44.4	36.0	0.8404	0.8204	0.7403	0.6003	88.8
025	Business - Neighborhood	D	1405.0	1375.0	3600	0.68	0.69	0.73	0.80	48.2	47.1	42.5	34.4	0.8034	0.7842	0.7077	0.5738	90.1
035	Business - Neighborhood	D	1390.0	1370.0	2800	0.68	0.69	0.73	0.80	44.8	43.7	39.4	32.0	0.7459	0.7281	0.6571	0.5328	90.6
045	Business - Neighborhood	D	1390.0	1369.0	2000	0.68	0.69	0.73	0.80	33.3	32.5	29.3	23.8	0.5544	0.5412	0.4884	0.3960	95.3
053	Business - Neighborhood	D	1390.0	1373.0	3000	0.68	0.69	0.73	0.80	50.0	48.8	44.1	35.7	0.8340	0.8141	0.7347	0.5957	91.0
055	Business - Neighborhood	D	1385.0	1369.0	2800	0.68	0.69	0.73	0.80	48.2	47.1	42.5	34.4	0.8034	0.7843	0.7078	0.5739	92.2
061	Business - Neighborhood	D	1379.0	1370.0	600	0.68	0.69	0.73	0.80	16.2	15.8	15.0	15.0	0.2696	0.2632	0.2500	0.2500	95.0
065	Business - Neighborhood	D	1395.0	1385.0	1000	0.68	0.69	0.73	0.80	23.9	23.3	21.1	17.1	0.3984	0.3890	0.3510	0.2846	92.3
166	Business - Neighborhood	D	1400.0	1369.0	3000	0.68	0.69	0.73	0.80	41.0	40.0	36.1	29.3	0.6826	0.6664	0.6014	0.4876	87.9
080	Business - Neighborhood	D	1385.0	1384.0	350	0.68	0.69	0.73	0.80	21.5	21.0	18.9	15.3	0.3579	0.3494	0.3153	0.2556	95.0

Figure 3.5

Post-Project Curve Numbers

SCS Runoff Curve Number Calculations

4/13/2007 11:15 AM

Project Name: The Waterfront Addition - Post-Project
 Project Number: 02014
 Basin: TR-20 005

Total Area = 125.0 Acres
Total Area = 0.1953 sq. mi.
Composite Curve Number = 88.77

Land Use	Percent Impervious	Area/CN			
		Hydrological Soil Group			
		A	B	C	D
Cultivated land without conservation treatment	0	72	81	88	91
Cultivated land with conservation treatment	0	62	71	78	81
Pasture or range land - poor condition	0	68	79	86	89
Pasture or range land - good condition	0	39	61	74	80
Meadow - good condition	0	30	58	71	78
Wood or Forest land - thin stand, poor cover, no mulch	0	45	66	77	83
Wood or Forest land - good cover	0	25	55	70	77
Open spaces - good condition - grass cover on 75% or more of area	0	39	61	74	80
Open spaces - fair condition - grass cover on 50-75% of area	0	49	69	79	84
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential - 1/8 acre or less	65	77	85	90	92
Residential - 1/4 acre	38	61	75	83	87
Residential - 1/3 acre	30	57	72	81	86
Residential - 1/2 acre	25	54	70	80	85
Residential - 1 acre	20	51	68	79	84
Paved Parking lots, roofs, driveways, etc.	-	98	98	98	98
Streets and roads - paved with curbs and storm sewers	-	98	98	98	98
Streets and roads - gravel	-	76	85	89	91
Streets and roads - dirt	-	72	82	87	89
Lake/Pond	100	100	100	100	100

SCS Runoff Curve Number Calculations

4/13/2007 11:15 AM

Project Name: The Waterfront Addition - Post-Project
 Project Number: 02014
 Basin: TR-20 025

Total Area = 100.2 Acres
Total Area = 0.1566 sq. mi.
Composite Curve Number = 90.14

Land Use	Percent Impervious	Area/CN			
		Hydrological Soil Group			
		A	B	C	D
Cultivated land without conservation treatment	0	72	81	88	91
Cultivated land with conservation treatment	0	62	71	78	81
Pasture or range land - poor condition	0	68	79	86	89
Pasture or range land - good condition	0	39	61	74	80
Meadow - good condition	0	30	58	71	78
Wood or Forest land - thin stand, poor cover, no mulch	0	45	66	77	83
Wood or Forest land - good cover	0	25	55	70	77
Open spaces - good condition - grass cover on 75% or more of area	0	39	61	74	80
Open spaces - fair condition - grass cover on 50-75% of area	0	49	69	79	84
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential - 1/8 acre or less	65	77	85	90	92
Residential - 1/4 acre	38	61	75	83	87
Residential - 1/3 acre	30	57	72	81	86
Residential - 1/2 acre	25	54	70	80	85
Residential - 1 acre	20	51	68	79	84
Paved Parking lots, roofs, driveways, etc.	-	98	98	98	98
Streets and roads - paved with curbs and storm sewers	-	98	98	98	98
Streets and roads - gravel	-	76	85	89	91
Streets and roads - dirt	-	72	82	87	89
Lake/Pond	100	100	100	100	100

SCS Runoff Curve Number Calculations

4/13/2007 11:15 AM

Project Name: The Waterfront Addition - Post-Project
 Project Number: 02014
 Basin: TR-20 035

Total Area = 104.8 Acres
Total Area = 0.1638 sq. mi.
Composite Curve Number = 90.62

Land Use	Percent Impervious	Area/CN			
		Hydrological Soil Group			
		A	B	C	D
Cultivated land without conservation treatment	0	72	81	88	91
Cultivated land with conservation treatment	0	62	71	78	81
Pasture or range land - poor condition	0	68	79	86	89
Pasture or range land - good condition	0	39	61	74	80
Meadow - good condition	0	30	58	71	78
Wood or Forest land - thin stand, poor cover, no mulch	0	45	66	77	83
Wood or Forest land - good cover	0	25	55	70	77
Open spaces - good condition - grass cover on 75% or more of area	0	39	61	74	80
Open spaces - fair condition - grass cover on 50-75% of area	0	49	69	79	84
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential - 1/8 acre or less	65	77	85	90	92
Residential - 1/4 acre	38	61	75	83	87
Residential - 1/3 acre	30	57	72	81	86
Residential - 1/2 acre	25	54	70	80	85
Residential - 1 acre	20	51	68	79	84
Paved Parking lots, roofs, driveways, etc.	-	98	98	98	98
Streets and roads - paved with curbs and storm sewers	-	98	98	98	98
Streets and roads - gravel	-	76	85	89	91
Streets and roads - dirt	-	72	82	87	89
Lake/Pond	100	100	100	100	100

SCS Runoff Curve Number Calculations

4/13/2007 11:15 AM

Project Name: The Waterfront Addition - Post-Project
 Project Number: 02014
 Basin: TR-20 045

Total Area = 27.6 Acres
Total Area = 0.0431 sq. mi.
Composite Curve Number = 95.33

Land Use	Percent Impervious	Area/CN			
		Hydrological Soil Group			
		A	B	C	D
Cultivated land without conservation treatment	0	72	81	88	91
Cultivated land with conservation treatment	0	62	71	78	81
Pasture or range land - poor condition	0	68	79	86	89
Pasture or range land - good condition	0	39	61	74	80
Meadow - good condition	0	30	58	71	78
Wood or Forest land - thin stand, poor cover, no mulch	0	45	66	77	83
Wood or Forest land - good cover	0	25	55	70	77
Open spaces - good condition - grass cover on 75% or more of area	0	39	61	74	80
Open spaces - fair condition - grass cover on 50-75% of area	0	49	69	79	84
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential - 1/8 acre or less	65	77	85	90	92
Residential - 1/4 acre	38	61	75	83	87
Residential - 1/3 acre	30	57	72	81	86
Residential - 1/2 acre	25	54	70	80	85
Residential - 1 acre	20	51	68	79	84
Paved Parking lots, roofs, driveways, etc.	-	98	98	98	98
Streets and roads - paved with curbs and storm sewers	-	98	98	98	98
Streets and roads - gravel	-	76	85	89	91
Streets and roads - dirt	-	72	82	87	89
Lake/Pond	100	100	100	100	100

SCS Runoff Curve Number Calculations

4/13/2007 11:15 AM

Project Name: The Waterfront Addition - Post-Project
 Project Number: 02014
 Basin: TR-20 053

Total Area = 97.6 Acres
Total Area = 0.1525 sq. mi.
Composite Curve Number = 90.97

Land Use	Percent Impervious	Area/CN			
		Hydrological Soil Group			
		A	B	C	D
Cultivated land without conservation treatment	0	72	81	88	91
Cultivated land with conservation treatment	0	62	71	78	81
Pasture or range land - poor condition	0	68	79	86	89
Pasture or range land - good condition	0	39	61	74	80
Meadow - good condition	0	30	58	71	78
Wood or Forest land - thin stand, poor cover, no mulch	0	45	66	77	83
Wood or Forest land - good cover	0	25	55	70	77
Open spaces - good condition - grass cover on 75% or more of area	0	39	61	74	80
Open spaces - fair condition - grass cover on 50-75% of area	0	49	69	79	84
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential - 1/8 acre or less	65	77	85	90	92
Residential - 1/4 acre	38	61	75	83	87
Residential - 1/3 acre	30	57	72	81	86
Residential - 1/2 acre	25	54	70	80	85
Residential - 1 acre	20	51	68	79	84
Paved Parking lots, roofs, driveways, etc.	-	98	98	98	98
Streets and roads - paved with curbs and storm sewers	-	98	98	98	98
Streets and roads - gravel	-	76	85	89	91
Streets and roads - dirt	-	72	82	87	89
Lake/Pond	100	100	100	100	100

SCS Runoff Curve Number Calculations

4/13/2007 11:15 AM

Project Name: The Waterfront Addition - Post-Project
 Project Number: 02014
 Basin: TR-20 055

Total Area = 103.3 Acres
Total Area = 0.1614 sq. mi.
Composite Curve Number = 92.19

Land Use	Percent Impervious	Area/CN			
		Hydrological Soil Group			
		A	B	C	D
Cultivated land without conservation treatment	0	72	81	88	91
Cultivated land with conservation treatment	0	62	71	78	81
Pasture or range land - poor condition	0	68	79	86	89
Pasture or range land - good condition	0	39	61	74	80
Meadow - good condition	0	30	58	71	78
Wood or Forest land - thin stand, poor cover, no mulch	0	45	66	77	83
Wood or Forest land - good cover	0	25	55	70	77
Open spaces - good condition - grass cover on 75% or more of area	0	39	61	74	80
Open spaces - fair condition - grass cover on 50-75% of area	0	49	69	79	84
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential - 1/8 acre or less	65	77	85	90	92
Residential - 1/4 acre	38	61	75	83	87
Residential - 1/3 acre	30	57	72	81	86
Residential - 1/2 acre	25	54	70	80	85
Residential - 1 acre	20	51	68	79	84
Paved Parking lots, roofs, driveways, etc.	-	98	98	98	98
Streets and roads - paved with curbs and storm sewers	-	98	98	98	98
Streets and roads - gravel	-	76	85	89	91
Streets and roads - dirt	-	72	82	87	89
Lake/Pond	100	100	100	100	100

SCS Runoff Curve Number Calculations

4/13/2007 11:15 AM

Project Name: The Waterfront Addition - Post-Project
 Project Number: 02014
 Basin: TR-20 061

Total Area = 17.5 Acres
Total Area = 0.0273 sq. mi.
Composite Curve Number = 95.00

Land Use	Percent Impervious	Area/CN			
		Hydrological Soil Group			
		A	B	C	D
Cultivated land without conservation treatment	0	72	81	88	91
Cultivated land with conservation treatment	0	62	71	78	81
Pasture or range land - poor condition	0	68	79	86	89
Pasture or range land - good condition	0	39	61	74	80
Meadow - good condition	0	30	58	71	78
Wood or Forest land - thin stand, poor cover, no mulch	0	45	66	77	83
Wood or Forest land - good cover	0	25	55	70	77
Open spaces - good condition - grass cover on 75% or more of area	0	39	61	74	80
Open spaces - fair condition - grass cover on 50-75% of area	0	49	69	79	84
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential - 1/8 acre or less	65	77	85	90	92
Residential - 1/4 acre	38	61	75	83	87
Residential - 1/3 acre	30	57	72	81	86
Residential - 1/2 acre	25	54	70	80	85
Residential - 1 acre	20	51	68	79	84
Paved Parking lots, roofs, driveways, etc.	-	98	98	98	98
Streets and roads - paved with curbs and storm sewers	-	98	98	98	98
Streets and roads - gravel	-	76	85	89	91
Streets and roads - dirt	-	72	82	87	89
Lake/Pond	100	100	100	100	100

SCS Runoff Curve Number Calculations

4/13/2007 11:15 AM

Project Name: The Waterfront Addition - Post-Project
 Project Number: 02014
 Basin: TR-20 065

Total Area = 15.4 Acres
Total Area = 0.0241 sq. mi.
Composite Curve Number = 92.27

Land Use	Percent Impervious	Area/CN				Calculation
		Hydrological Soil Group				
		A	B	C	D	
Cultivated land without conservation treatment	0	72	81	88	91	0
Cultivated land with conservation treatment	0	62	71	78	81	0
Pasture or range land - poor condition	0	68	79	86	89	0
Pasture or range land - good condition	0	39	61	74	80	0
Meadow - good condition	0	30	58	71	78	0
Wood or Forest land - thin stand, poor cover, no mulch	0	45	66	77	83	0
Wood or Forest land - good cover	0	25	55	70	77	0
Open spaces - good condition - grass cover on 75% or more of area	0	39	61	74	80	0
Open spaces - fair condition - grass cover on 50-75% of area	0	49	69	79	84	0
Commercial and business	85	89	92	94	95	1064
Industrial	72	81	88	91	93	0
Residential - 1/8 acre or less	65	77	85	90	92	0
Residential - 1/4 acre	38	61	75	83	87	0
Residential - 1/3 acre	30	57	72	81	86	0
Residential - 1/2 acre	25	54	70	80	85	357
Residential - 1 acre	20	51	68	79	84	0
Paved Parking lots, roofs, driveways, etc.	-	98	98	98	98	0
Streets and roads - paved with curbs and storm sewers	-	98	98	98	98	0
Streets and roads - gravel	-	76	85	89	91	0
Streets and roads - dirt	-	72	82	87	89	0
Lake/Pond	100	100	100	100	100	0

SCS Runoff Curve Number Calculations

4/13/2007 11:15 AM

Project Name: The Waterfront Addition - Post-Project
 Project Number: 02014
 Basin: TR-20 166

Total Area = 183.5 Acres
Total Area = 0.2867 sq. mi.
Composite Curve Number = 87.90

Land Use	Percent Impervious	Area/CN			
		Hydrological Soil Group			
		A	B	C	D
Cultivated land without conservation treatment	0	72	81	88	91
Cultivated land with conservation treatment	0	62	71	78	81
Pasture or range land - poor condition	0	68	79	86	89
Pasture or range land - good condition	0	39	61	74	80
Meadow - good condition	0	30	58	71	78
Wood or Forest land - thin stand, poor cover, no mulch	0	45	66	77	83
Wood or Forest land - good cover	0	25	55	70	77
Open spaces - good condition - grass cover on 75% or more of area	0	39	61	74	80
Open spaces - fair condition - grass cover on 50-75% of area	0	49	69	79	84
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential - 1/8 acre or less	65	77	85	90	92
Residential - 1/4 acre	38	61	75	83	87
Residential - 1/3 acre	30	57	72	81	86
Residential - 1/2 acre	25	54	70	80	85
Residential - 1 acre	20	51	68	79	84
Paved Parking lots, roofs, driveways, etc.	-	98	98	98	98
Streets and roads - paved with curbs and storm sewers	-	98	98	98	98
Streets and roads - gravel	-	76	85	89	91
Streets and roads - dirt	-	72	82	87	89
Lake/Pond	100	100	100	100	100

SCS Runoff Curve Number Calculations

4/13/2007 11:15 AM

Project Name: The Waterfront Addition - Post-Project
 Project Number: 02014
 Basin: TR-20 070

Total Area = 5.7 Acres
Total Area = 0.0089 sq. mi.
Composite Curve Number = 91.14

Land Use	Percent Impervious	Area/CN			
		Hydrological Soil Group			
		A	B	C	D
Cultivated land without conservation treatment	0	72	81	88	91
Cultivated land with conservation treatment	0	62	71	78	81
Pasture or range land - poor condition	0	68	79	86	89
Pasture or range land - good condition	0	39	61	74	80
Meadow - good condition	0	30	58	71	78
Wood or Forest land - thin stand, poor cover, no mulch	0	45	66	77	83
Wood or Forest land - good cover	0	25	55	70	77
Open spaces - good condition - grass cover on 75% or more of area	0	39	61	74	80
Open spaces - fair condition - grass cover on 50-75% of area	0	49	69	79	84
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential - 1/8 acre or less	65	77	85	90	92
Residential - 1/4 acre	38	61	75	83	87
Residential - 1/3 acre	30	57	72	81	86
Residential - 1/2 acre	25	54	70	80	85
Residential - 1 acre	20	51	68	79	84
Paved Parking lots, roofs, driveways, etc.	-	98	98	98	98
Streets and roads - paved with curbs and storm sewers	-	98	98	98	98
Streets and roads - gravel	-	76	85	89	91
Streets and roads - dirt	-	72	82	87	89
Lake/Pond	100	100	100	100	100

SCS Runoff Curve Number Calculations

4/13/2007 11:15 AM

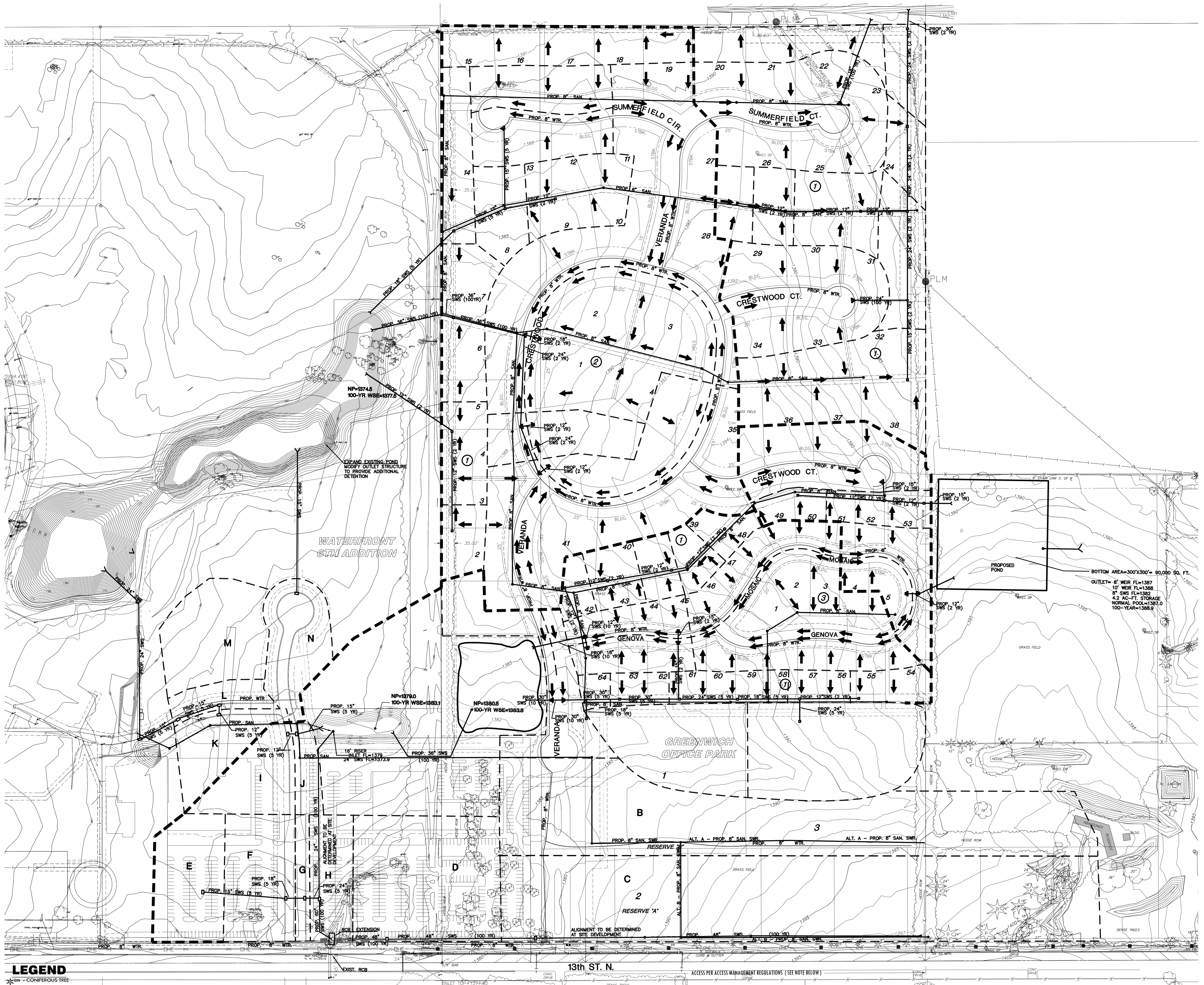
Project Name: The Waterfront Addition - Post-Project
 Project Number: 02014
 Basin: TR-20 080

Total Area = 5.0 Acres
Total Area = 0.0078 sq. mi.
Composite Curve Number = 95.00

Land Use	Percent Impervious	Area/CN			
		Hydrological Soil Group			
		A	B	C	D
Cultivated land without conservation treatment	0	72	81	88	91
Cultivated land with conservation treatment	0	62	71	78	81
Pasture or range land - poor condition	0	68	79	86	89
Pasture or range land - good condition	0	39	61	74	80
Meadow - good condition	0	30	58	71	78
Wood or Forest land - thin stand, poor cover, no mulch	0	45	66	77	83
Wood or Forest land - good cover	0	25	55	70	77
Open spaces - good condition - grass cover on 75% or more of area	0	39	61	74	80
Open spaces - fair condition - grass cover on 50-75% of area	0	49	69	79	84
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential - 1/8 acre or less	65	77	85	90	92
Residential - 1/4 acre	38	61	75	83	87
Residential - 1/3 acre	30	57	72	81	86
Residential - 1/2 acre	25	54	70	80	85
Residential - 1 acre	20	51	68	79	84
Paved Parking lots, roofs, driveways, etc.	-	98	98	98	98
Streets and roads - paved with curbs and storm sewers	-	98	98	98	98
Streets and roads - gravel	-	76	85	89	91
Streets and roads - dirt	-	72	82	87	89
Lake/Pond	100	100	100	100	100

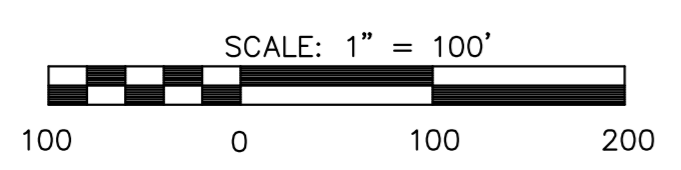
Figure 3.6

Drainage and Utility Plan



LEGEND

- ☉ CONIFEROUS TREE
- ☉ DECIDUOUS TREE
- SIGN
- POWER POLE
- ELECTRIC BOX
- LIGHT POLE
- FIRE HYDRANT
- WATER VALVE
- WATER METER
- SECTION CORNER
- BENCHMARK
- EASEMENT
- BUILDING SETBACK
- FENCE
- STORM SEWER PIPE
- WATER SEWER PIPE
- SANITARY SEWER LINE
- GAS LINE
- GAS PIPELINE
- TELEPHONE LINE
- UNDERGROUND ELEC.
- OVERHEAD ELECTRIC
- FIBER OPTIC CABLE
- DRAINAGE SUB BASIN
- DRAINAGE BASIN
- FLOW ARROW
- AREA FOR SWS SIZING



A17

REVISED: AUGUST 2007
 REVISED: JUNE 2007
 REVISED: MAY 2007 - PIPE SIZING

MKEC
 ENGINEERING
 CONSULTANTS, INC.

**WATERFRONT COMMERCIAL,
 WATERFRONT RESIDENTIAL, &
 GREENWICH OFFICE PARK ADDITIONS**
 PROJECT NAME
DRAINAGE AND UTILITY PLAN
 SHEET TITLE

411 N. WEBB ROAD
 WICHITA, KS. 67206
 316 - 684 - 9600

DATE: APRIL 2007
 JOB NO.: 02014

CMJ/DDG
 GJA

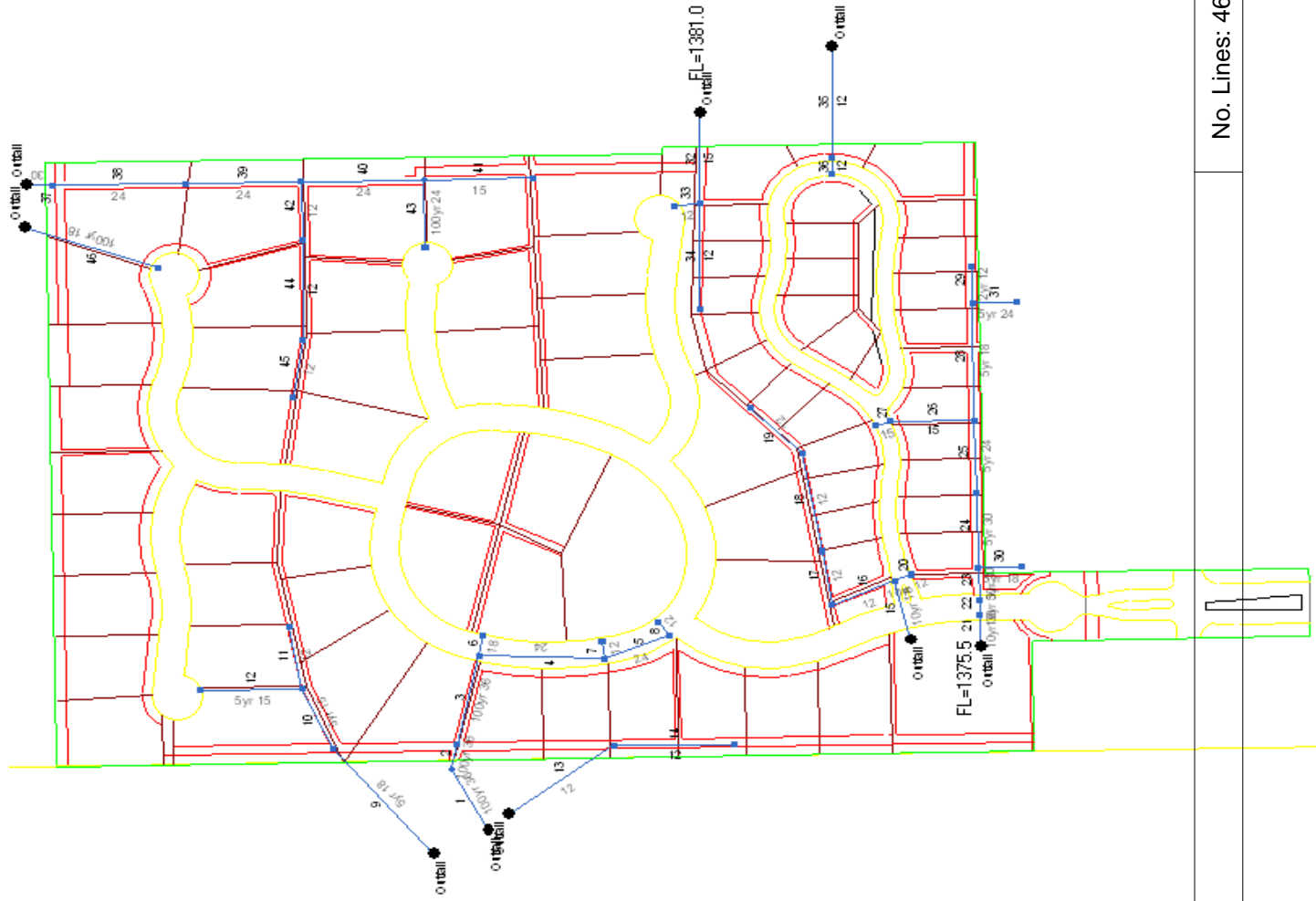
DESIGN BY: TMH
 DRAWN BY: CMJ/DDG
 CHECKED BY: GJA

1 / 1
 SHEET/OF

Figure 3.7

Pipe Sizing Calculations

Hydraflow Plan View



Wtrft. Res.Combined_opt1

No. Lines: 46

08-09-2007

Storm Sewer Tabulation

Station	Line To Line	Len (ft)	Drng Area (ac)		Rnoff coeff (C)	Area x C		Tc		Rain (l) (in/hr)	Total flow (cfs)	Cap full (cfs)	Vel (ft/s)	Pipe		Invert Elev (ft)		HGL Elev (ft)		Grnd / Rim Elev (ft)		Line ID
			Incr	Total		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Up	Dn	Up	Dn	Up	Dn	
1	End	152.8	0.00	18.00	0.00	7.56	0.00	28.8	2.7	20.69	22.90	2.93	1370.18	1370.00	1374.65	1374.50	1383.50	1383.50	0.00	100yr 36		
2	1	55.3	1.30	18.00	0.42	7.56	0.55	28.5	2.8	20.82	23.73	2.95	1370.27	1370.20	1374.80	1374.74	1383.50	1383.50	1383.50	100yr 36		
3	2	200.1	5.70	16.70	0.42	7.01	2.39	27.3	2.8	19.80	21.08	2.80	1370.50	1370.30	1375.05	1374.88	1385.50	1383.50	1383.50	100yr 36		
4	3	251.1	0.40	7.10	0.42	2.98	0.17	22.2	3.2	9.46	9.03	3.01	1370.95	1370.55	1375.75	1375.31	1387.00	1385.50	1385.50	24		
5	4	138.5	4.50	5.90	0.42	2.48	1.89	21.3	3.2	8.04	13.73	2.56	1371.51	1371.00	1376.18	1376.00	1388.00	1387.00	1387.00	24		
6	3	45.4	3.90	3.90	0.42	1.64	1.64	27.0	2.8	4.65	4.68	2.63	1370.69	1370.60	1375.41	1375.32	1385.00	1385.00	1385.00	18		
7	4	38.0	0.80	0.80	0.42	0.34	0.34	15.0	3.8	1.29	2.24	1.65	1371.15	1371.00	1376.11	1376.06	1387.00	1387.00	1387.00	12		
8	5	37.7	1.40	1.40	0.42	0.59	0.59	21.0	3.3	1.92	2.25	2.44	1371.75	1371.60	1376.45	1376.34	1388.00	1388.00	1388.00	12		
9	End	306.5	1.20	5.50	0.42	2.31	0.50	16.6	3.7	8.48	3.93	4.80	1372.69	1372.26	1376.50	1374.50	1384.50	1383.50	1383.50	5yr 18		
10	9	144.0	0.80	4.30	0.42	1.81	0.34	16.2	3.7	6.71	2.74	5.47	1372.95	1372.69	1378.24	1376.68	1385.50	1384.50	1384.50	5yr 15		
11	10	138.3	1.30	1.30	0.42	0.55	0.55	15.0	3.8	2.10	2.20	2.68	1373.98	1373.45	1379.72	1379.24	1386.00	1385.50	1385.50	12		
12	10	203.9	2.20	2.20	0.42	0.92	0.92	15.0	3.8	3.56	3.10	2.90	1374.45	1373.98	1379.84	1379.22	1387.00	1385.50	1385.50	5yr 15		
13	End	258.3	0.80	1.30	0.42	0.55	0.34	18.9	3.4	1.88	2.48	2.40	1371.55	1370.30	1375.22	1374.50	1384.50	1383.50	1383.50	12		
14	13	241.1	0.50	0.50	0.42	0.21	0.21	15.0	3.8	0.81	2.38	1.03	1372.68	1371.60	1375.50	1375.38	1385.50	1384.50	1384.50	12		
15	End	132.8	0.90	4.00	0.42	1.68	0.38	20.6	3.3	5.54	3.53	3.14	1376.45	1376.30	1380.87	1380.50	1387.00	1387.00	1387.00	10yr 18		
16	15	134.3	0.40	2.10	0.42	0.17	0.88	15.0	3.3	2.95	2.32	3.76	1377.07	1376.50	1382.13	1381.21	1388.00	1388.00	1387.00	12		
17	16	120.2	0.50	1.70	0.42	0.71	0.21	19.4	3.4	2.43	2.25	3.09	1377.68	1377.20	1383.09	1382.53	1389.00	1388.00	1388.00	12		
18	17	219.1	0.80	1.20	0.42	0.34	0.50	17.9	3.5	1.78	2.49	2.27	1378.87	1377.80	1383.79	1383.24	1389.00	1389.00	1389.00	12		
19	18	142.9	0.40	0.40	0.42	0.17	0.17	15.0	3.8	0.65	1.11	0.82	1378.14	1378.00	1383.98	1383.93	1391.00	1389.00	1389.00	12		
20	15	35.6	1.00	1.00	0.42	0.42	0.42	15.0	3.8	1.62	2.39	2.06	1376.86	1376.70	1381.37	1381.30	1387.05	1387.00	1387.00	10yr 12		
21	End	70.4	1.20	12.40	0.42	6.70	0.50	19.0	3.4	23.04	12.93	4.69	1375.57	1375.50	1380.72	1380.50	1386.00	0.00	10yr 30			
Wtrft. Res. Combined_opt1		Number of lines: 46										Run Date: 08-09-2007										

NOTES: Intensity = 76.31 / (Inlet time + 14.30) ^ 0.88; Return period = 2 Yrs.

Storm Sewer Tabulation

Station	Line	To Line	Len (ft)	Drng Area (ac)		Rhoff coeff (C)	Area x C		Tc		Rain (l) (in/hr)	Total flow (cfs)	Cap full (cfs)	Vel (ft/s)	Pipe		Invert Elev (ft)		HGL Elev (ft)		Grnd / Rim Elev (ft)		Line ID	
				Incr	Total		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Up	Dn	Up	Dn	Up	Dn		Up
22	21		29.6	0.70	11.20	0.42	0.29	6.19	15.0	18.8	3.5	21.37	15.09	4.35	30	0.14	1375.64	1375.60	1381.02	1380.94	1386.00	1386.00	10yr 30	
23	22		72.9	0.30	10.50	0.42	0.13	5.90	15.0	18.5	3.5	20.52	25.41	4.18	30	0.38	1375.98	1375.70	1381.38	1381.19	1386.50	1386.00	5yr 30	
24	23		164.0	0.30	8.20	0.42	0.13	4.31	15.0	17.7	3.6	15.36	16.95	3.13	30	0.17	1376.28	1376.00	1382.13	1381.90	1386.50	1386.50	5yr 30	
25	24		159.6	0.40	7.90	0.42	0.17	4.19	15.0	17.1	3.6	15.14	7.80	4.82	24	0.12	1376.59	1376.40	1382.92	1382.21	1387.00	1386.50	5yr 24	
26	25		167.6	1.90	3.80	0.42	0.80	1.60	15.0	15.2	3.8	6.10	2.64	4.97	15	0.17	1376.98	1376.70	1385.05	1383.55	1389.00	1387.00	15	
27	26		30.9	1.90	1.90	0.42	0.80	0.80	15.0	15.0	3.8	3.07	3.85	2.50	15	0.36	1377.11	1377.00	1385.62	1385.55	1389.00	1389.00	15	
28	25		257.8	0.40	3.70	0.42	0.17	2.42	15.0	16.3	3.7	8.97	4.24	5.08	18	0.16	1377.42	1377.00	1385.43	1383.55	1390.50	1387.00	5yr 18	
29	28		80.0	0.50	0.50	0.42	0.21	0.21	15.0	15.0	3.8	0.81	2.25	1.03	12	0.40	1377.82	1377.50	1386.46	1386.42	1393.00	1390.50	2yr 12	
30	23		87.5	2.00	2.00	0.73	1.46	1.46	15.0	15.0	3.8	5.62	7.01	3.18	18	0.45	1378.17	1377.78	1382.15	1381.90	1386.50	1386.50	5yr 18	
31	28		88.7	2.80	2.80	0.73	2.04	2.04	15.0	15.0	3.8	7.87	10.19	2.50	24	0.20	1377.68	1377.50	1386.44	1386.34	1391.00	1390.50	5yr 24	
32	End		200.0	0.60	3.00	0.42	0.25	1.26	15.0	19.7	3.4	4.25	2.99	3.47	15	0.22	1382.03	1381.60	1385.87	1385.00	1390.00	1389.00	15	
33	32		52.0	2.00	2.00	0.42	0.84	0.84	15.0	15.0	3.8	3.23	2.84	4.12	12	0.63	1382.61	1382.28	1386.58	1386.15	1390.50	1390.00	12	
34	32		231.0	0.40	0.40	0.42	0.17	0.17	15.0	15.0	3.8	0.65	2.27	0.82	12	0.41	1383.22	1382.28	1386.40	1386.32	1392.00	1390.00	12	
35	End		247.0	0.90	1.40	0.42	0.38	0.59	15.0	15.6	3.8	2.22	2.20	2.83	12	0.38	1382.79	1381.85	1385.96	1385.00	1392.00	1389.00	12	
36	35		35.7	0.50	0.50	0.42	0.21	0.21	15.0	15.0	3.8	0.81	2.31	1.03	12	0.42	1382.94	1382.79	1386.15	1386.13	1392.00	1392.00	12	
37	End		52.1	0.50	9.70	0.42	0.21	4.07	15.0	21.4	3.2	13.17	16.07	3.75	30	0.15	1380.08	1380.00	1381.77	1381.68	1383.00	1382.00	30	
38	37		265.0	0.60	9.20	0.42	0.25	3.86	15.0	20.3	3.3	12.82	8.10	4.08	24	0.13	1380.42	1380.08	1382.93	1382.08	1384.00	1383.00	24	
39	38		231.9	1.10	8.60	0.42	0.46	3.61	15.0	19.4	3.4	12.28	8.79	3.91	24	0.15	1381.27	1380.92	1383.77	1383.08	1385.10	1384.00	24	
40	39		244.3	0.00	5.40	0.00	0.00	2.27	0.0	16.8	3.7	8.29	11.58	2.64	24	0.26	1381.91	1381.27	1384.58	1384.25	1385.60	1385.10	24	
41	40		218.1	2.70	2.70	0.42	1.13	1.13	15.0	15.0	3.8	4.36	4.03	3.56	15	0.39	1383.26	1382.41	1385.69	1384.69	1386.60	1385.60	15	
42	39		128.1	1.10	2.10	0.42	0.46	0.88	15.0	18.9	3.4	3.04	2.20	3.87	12	0.38	1382.51	1382.02	1385.06	1384.13	1386.00	1385.10	12	
Wtrft. Res. Combined_opt1																							Run Date: 08-09-2007	
Number of lines: 46																								
NOTES: Intensity = 76.31 / (Inlet time + 14.30) ^ 0.88; Return period = 2 Yrs.																								

Storm Sewer Tabulation

Station Line	To Line	Len (ft)	Drng Area (ac)		Rnoff coeff (C)	Area x C		Tc		Rain (l) (in/hr)	Total flow (cfs)	Cap full (cfs)	Vel (ft/s)	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
			Incr	Total		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
43	40	148.0	2.70	2.70	0.42	1.13	1.13	15.0	15.0	3.8	4.36	14.16	1.42	24	0.39	1382.99	1382.41	1384.82	1384.77	1386.10	1385.60	100yr 24
44	42	218.3	0.50	1.00	0.42	0.21	0.42	15.0	17.1	3.6	1.52	2.24	1.94	12	0.39	1383.37	1382.51	1385.75	1385.35	1388.00	1386.00	12
45	44	127.7	0.50	0.50	0.42	0.21	0.21	15.0	15.0	3.8	0.81	1.14	1.03	12	0.10	1383.50	1383.37	1385.89	1385.82	1388.00	1388.00	12
46	End	280.5	3.40	3.40	0.42	1.43	1.43	15.0	15.0	3.8	5.50	6.08	4.11	18	0.34	1382.36	1381.42	1383.72	1382.32	1387.00	1384.00	100yr 18
Wtrft. Res. Combined_opt1														Number of lines: 46				Run Date: 08-09-2007				

NOTES: Intensity = 76.31 / (Inlet time + 14.30) ^ 0.88; Return period = 2 Yrs.

Tab 4. Floodplain Submittal

A Conditional Letter of Map Revision, (CLOMR) was approved June 2006 case number 04-07-031RA. Letter of Map Revision (LOMR) will be completed once all construction around the Waterfront lake is complete. As-built survey will be done of the area and the hydraulic model will be updated to match the existing conditions. Channel modifications are not proposed for the Waterfront Commercial, Waterfront Residential or Greenwich Business Park site.

Tab 5. Permits

A. *US Army Corps of Engineers*

N/A

B. *Kansas Department of Agriculture*

Permits were obtained for structures in the Waterfront Addition, but will not be required for the proposed ponds due to the drainage area size.

C. *Federal Emergency Agency (FEMA)*

A Conditional Letter of Map Revision, (CLOMR) was approved June 2006 case number 04-07-031RA. Letter of Map Revision (LOMR) will be completed once all construction around the Waterfront lake is complete.

D. *Kansas Department of Transportation*

N/A

E. *Sedgwick County Right-of-way Permit*

N/A