DRAINAGE REPORT

FOR

KRUG SOUTH COMMERCIAL
Wichita, Kansas

REVISED DECEMBER 22, 2008
DECEMBER 2008

CITY OF WICHITA

Public Works, Engineering Division
Final Drainage Plan Submittal Checklist

Reviewer: City of Wichita Date: December 22, 2008

Subdivision Name: Krug South Commercial Location: Wichita, Kansas

Total Land Area Of Ownership: 19.0 Acres

Type: ☐ Residential ✔ Commercial ☐ Industrial ☐ Recreation ☐ Municipal ☐ Other

Applicant: Ritchie Associates Contact: Rob Ramseyer Phone #: (316) 684-7300

Engineer: MKEC Engineering Consultants, Inc. Contact: Tara Hancock E.I.T. Phone # (316) 684-9600

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	
Tab 1. Project Narrative	**I**	**NA**	**Explanation / Location in Plan**	**I**	**NA**
A. Site Location Map, using USGS Map	✔		Figure 1.1		
B. Discussion of development, existing conditions, and proposed impacts on stormwater, wetland, riparian, and flood plain	✔		Tab 1.B		
C. Discussion of offsite conditions	✔		Tab 1.C		
D. Summary of runoff calculations (pre/post development) No increase in peak discharge for all storm series	✔		Tab 1.D, Table 1		
E. Narrative description of the type and function of the permanent best management practices that are incorporated into the site design	✔		Tab 1.E		
F. Copy of the plat	✔		Figure 1.2		
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.)	✔		Figure 1.3		
H. Professional Engineer seal, signature and date on cover of report	✔		Cover		
I. CD of drainage plan in PDF format (one file) and one paper copy bound with this checklist included behind the cover	✔		Tab 1.I		

	Applicant			Engr	
Tab 2. Existing Conditions Runoff Calculations	**I**	**NA**	**Explanation / Location in Plan**	**I**	**NA**
A. Copy of applicable orthophoto showing proposed project boundaries (preferable in color)	✔		Figure 2.1		
B. Runoff Method (Rational, Hydrograph Method, or other approved methods by Engineering)	✔		Tab 2.B		
C. Existing topography (no greater than 2-foot contours, 1-foot recommend)	✔		Tab 2.C		
D. Total Site Area and Total Impervious Area (acres)	✔		Tab 2.D		
E. Benchmarks used for site control	✔		Tab 2.E		
F. Streams, creeks, and waterway labeled	✔		Tab 2.F, Figure 2.2		
G. Predominant soils from USDA soil surveys, and/or on site soil borings	✔		Tab 2.G, Figure 2.3		
H. Location and boundaries of natural features such as wetlands, lakes, and ponds with the normal water elevation noted	✔		Tab 2.H		
I. Location of existing roads, buildings, parking lots and other impervious areas.	✔		Tab 2.I		

Consulting Engineer Initials _____

J. Location of existing utilities (e.g., water, sewer, gas, electric) and easements	✔		Tab 2.J		
K. Location of existing conveyance systems such as storm drains, inlets, catch basins, channels, swales, and areas of overland flow	✔		Tab 2.K		
L. Flow paths	✔		Tab 2.L		
M. Location and dimensions of existing channels, bridges or culvert crossings	✔		Tab 2.M		
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	✔		Tab 2.N, Table 2		
O. Assumed pre-developed runoff curve numbers	✔		Tab 2.O		
P. Existing time of concentrations used in calculations	✔		Tab 2.P		
Q. Evaluate immediate downstream drainage capacity, not to exceed more than 0.25 miles downstream of site	✔		Tab 2.Q		
R. Existing structural elevations (e.g., invert of pipes, manholes, etc.)	✔		Tab 2.R		
S. Cross-section data for open channels		✔	N/A		
T. Ground water elevations, if applicable	✔		Tab 2.T		

	Applicant			Engr	
Tab 3. Post-Development Hydrologic Analysis	**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)	✔		Tab 3.A, Table 3		
B. Proposed time of concentrations used in calculations	✔		Tab 3.B		
C. Assumed post-developed runoff curve numbers	✔		Tab 3.C		
D. Proposed contours for detention facilities (to equal area used in outlet rating curves)	✔		Tab 3.D		
E. Preliminary sizing calculations for stormwater controls including contributing drainage area, storage, and outlet configuration	✔		Tab 3.E		
F. Stage-storage-discharge or outlet rating curves and inflow and outflow hydrographs for storage facilities	✔		Tab 3.F		
G. Final analysis of potential upstream/downstream impact/effects of project, where necessary	✔		Tab 3.G		
H. Existing and proposed structural elevations (e.g., invert of pipes, manholes, etc.)	✔		Tab 3.H		
I. Design water surface elevations and normal pool elevation for ponds.	✔		Tab 3.I		
J. Typical detail for outlet structures, embankments, spillways, grade control structures, conveyance channels, etc. To include height, width, elevation, and/or diameter.	✔		Tab 3.J		
K. Proposed limits of clearing and grading	✔		Tab 3.K		
L. Location of existing and proposed roads, buildings, parking lots and other impervious areas.	✔		Tab 3.L		
M. Location of existing and proposed utilities (e.g., water, sewer) and easements	✔		Tab 3.M, Figure 3.2		
N. Location of existing and proposed conveyance systems such as storm drains, inlets, catch basins, channels, swales, and areas of overland flow	✔		Tab 3.N, Figure 3.2		
O. Preliminary location and dimensions of proposed channel modifications, such as bridge or culvert crossings		✔	N/A		

Consulting Engineer Initials _____

P. Preliminary selection and location of stormwater controls	✔		Tab 3.P		
Q. Emergency overflow structure's flow path	✔		Tab 3.Q		
R. Detention facility provides one-foot of freeboard above the HWL and emergency outfall shown (top of berm elevation shown)	✔		Tab 3.R		
S. The 100-year 24-hour HWL delineated on the plan for detention pond	✔		Tab 3.S		
T. Lowest opening elevations table on the plat for structures located adjacent to channels or ponds	✔		Tab 3.T		
U. Stormwater Management Facilities located within a Reserve	✔		Tab 3.U		
V. Maintenance responsibility of stormwater management facility shall be specified in the platters text. (e.g. HOA, Lot Owners Association, or lot)	✔		Tab 3.V		
W. Off-site drainage easements or agreements required, where necessary		✔	N/A		

	Applicant			Engr	
Tab 4. Floodplain Submittal	**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		✔			

	Applicant			Engr	
Tab 5. Federal, State and Local Permits (to be provided prior to construction unless otherwise specified)	**I/R**	**NA**	**Explanation / Location in Plan**	**I/R**	**NA**
A. US Army Corps of Engineers - Regulatory program permits (404 water quality certification)		✔	Figure 5.1		
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		✔			

Consulting Engineer Initials _____

Tab 1. Project Narrative

A. Location

The site is located in Wichita, Sedgwick County, Kansas, on the southwest corner of 143rd Street East and 21st Street North. It lies in the northeast quarter of Section 11, Township 27 South, Range 2 East of the Sixth Principal Meridian, Sedgwick County, Kansas. The total site area is approximately 19 acres. The site is bounded by Krug South residential addition to the west and south, 21st Street to the north, and 143rd Street to the east. The site is shown on the USGS Map, Figure 1.1.

B. Discussion of Development

Krug South commercial will be developed as ten commercial lots. The plat area is 19 acres.

C. Discussion of Offsite

Krug South residential is to the west and south of the site. The site is bounded by 21st Street and 143rd Street to the north and east, respectively.

D. Summary of Runoff

Drainage considerations for this plat were addressed when Krug South residential addition was platted. *Preliminary Drainage Report for Krug South Addition, Wichita, Kansas Revised January 2007* should be referenced for preliminary runoff calculations; updated calculations are included in this report. This development is part of a larger common plan of development for this area. Detention for the 19 commercial acres was accounted for in the Krug South residential development. The pre- and post-development flow rates are shown below.

Comparison of Pre and Post-Development Flow Rates

Description	Design Storm Flows (cfs)			
	2-Yr	*5-Yr*	*10-Yr*	*100-Yr*
Pre-project Basin 1	477	893	1164	2081
Post-project Basin 1	435	820	1067	2033

E. Best Management Practices

The site will be seeded or sodded after construction of grading and utilities are complete. During construction best management practices will be followed to comply with state and federal stormwater regulations.

F. Plat

The plat is included, Figure 1.2. The contours shown on the drawings used in this report are in NAVD 88, the benchmarks shows on the plat are NGVD 29. The conversion between these 2 datums for the Wichita area is *NAVD 88 – 0.5' = NGVD 29*.

G. Preliminary Grading Plan

The preliminary lot grading plan is included, Figure 1.3.

H. Professional Engineer Seal

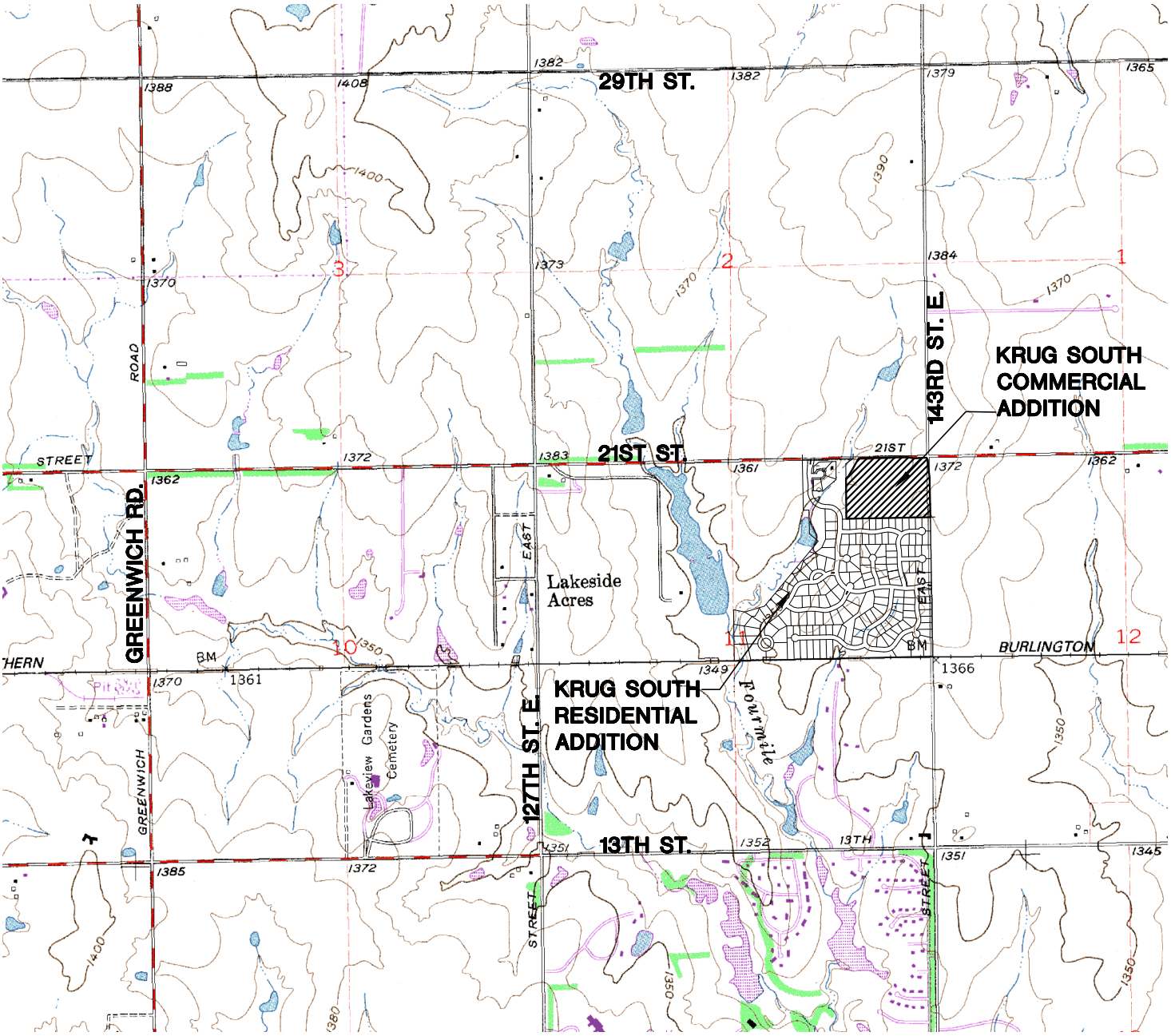
The cover of the report will be signed and dated.

I. CD

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

Figure 1.1

USGS Quadrangle Map



SCALE 1:24 000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 5 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

N

J:\Civil\08372 Krug Comm\dwg\drng\KRUG_QM.dwg

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

KRUG SOUTH COMMERCIAL
PROJECT NAME

USGS GEOLOGICAL SURVEY
WICHITA, KANSAS QUADRANGLE
SHEET TITLE

TMH	SLC	GJA
DESIGN BY:	DRAWN BY:	CHECKED BY:

NOVEMBER 2008	08372	1 / 1
DATE	JOB NO.	SHEET/OF

Figure 1.2

Plat

FINAL PLAT

KRUG SOUTH COMMERCIAL 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 platting of "KRUG SOUTH COMMERCIAL 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 tract of land lying in the Northeast Quarter of Section 11, Township 27 South, Range 2 East of the Sixth Principal Meridian, Wichita, Sedgwick County, Kansas; said tract being more particularly described as follows:

BEGINNING at the northeast corner of said Northeast Quarter, thence along the east line of said Northeast Quarter on a Kansas coordinate system of 1983 south zone grid bearing of S00°53'20"W, 850.00 feet; thence S88°37'33"W, 60.00 feet to the northeast corner of Lot 13, Block 1, Krug South Addition, an addition to Wichita, Sedgwick County, Kansas; thence along a northerly line of said Block 1, S88°37'33"W, 1093.19 feet to the southeast corner of Reserve "E", said addition; thence along the east line of said Reserve "E", N00°53'20"W, 528.84 feet; thence N47°35'57"E, 33.05 feet; thence N37°49'11"E, 37.54 feet; thence N29°15'37"E, 115.12 feet; thence N31°05'32"E, 49.58 feet; thence N29°33'01"E, 81.00 feet to a point lying 73.34 feet east of the northeast corner of said Reserve "E", thence N01°22'27"W, 60.00 feet to the north line of said Northeast Quarter; thence along said north line, N88°37'33"E, 980.36 feet to the POINT OF BEGINNING.

All reserves, streets, utility easements, building setbacks, access control, together with; a Right-Of-Way Agreement, recorded in Book Misc. 308, Page 329; together with; an Easement for roadway, recorded in Film 1970, Page 228; together with; an Easement for Right-Of-Way, recorded in Book 1662, Page 1165, together with; a Drainage easement, recorded in DOC#FLM-PG:28962793, together with; a Dedication for street purposes, recorded in DOC#/FLM-PG: 28834671, together with; Utility and Drainage easement, recorded in DOC#/FLM-PG: 28971911, 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 _____2009.

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

OWNER'S CERTIFICATE

Know all men by these presents that we the undersigned property owner 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 "KRUG SOUTH COMMERCIAL 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 5' Wall Easement along west and south lines of the addition, as shown, is hereby platted for the construction and maintenance of a private wall. Utilities may cross the wall easement.

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

All abutters right to access to or from E. 143rd Street over and across the east line of "KRUG SOUTH COMMERCIAL ADDITION," are hereby granted to the appropriate governing body, as indicated hereon. All abutters right to access to or from 21st Street N. over and across the north line of "KRUG SOUTH COMMERCIAL ADDITION," are hereby granted to the appropriate governing body, as indicated hereon.

A drainage plan has been developed for this plat. All drainage easements, rights-of-way, and 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.

Lots 2 and 3, Block 1, are required to adhere to the minimum pad elevation as shown on the "Minimum Pad Elevations".

This plat shall adhere and conform to the recitals of C.U.P. DP-302 as approved and recorded at the Wichita-Sedgwick County Metropolitan Area Planning Department.

BRISTOL SQUARE, LLC, a Kansas Limited Liability Company

_____, Managing Member
Gary L. Oborny, Managing Member

STATE OF KANSAS, SEDGWICK COUNTY} ss:

This Instrument was acknowledged before me on ____ day of _____, 2008, by Gary L. Oborny, Managing Member, Bristol Square, LLC, a Kansas limited liability.

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: _____.

MORTGAGE CERTIFICATE

We, Legacy Bank, holders of a mortgage on the above described property, do hereby consent to the plat of "KRUG SOUTH COMMERCIAL ADDITION."

Legacy Bank

_____, Vice President
Brice Malloy, Vice President

This Instrument was acknowledged before me on this ____ day of _____, 2009, by Brice Malloy, Vice President, Legacy Bank .

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: _____.

PLANNING COMMISSION CERTIFICATE

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

Dated this ____ day of _____, 2009

WICHITA-SEDGWICK COUNTY METROPOLITAN AREA PLANNING COMMISSION

_____, Chair
Darrell A. Downing, Chair

Attest:

_____, 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 _____, 2009

At the direction of the City Council.

_____, Mayor
Carl Brewer, Mayor

Attest:

_____, City Clerk
Karen Sublett, City Clerk

TRANSFER RECORD

STATE OF KANSAS, SEDGWICK COUNTY} ss:

Entered on transfer record this ____ day of _____, 2009

_____, 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 _____, 2009, at _____ o'clock _M; and is duly recorded.

_____, Register of Deeds
Bill Meek, Register of Deeds

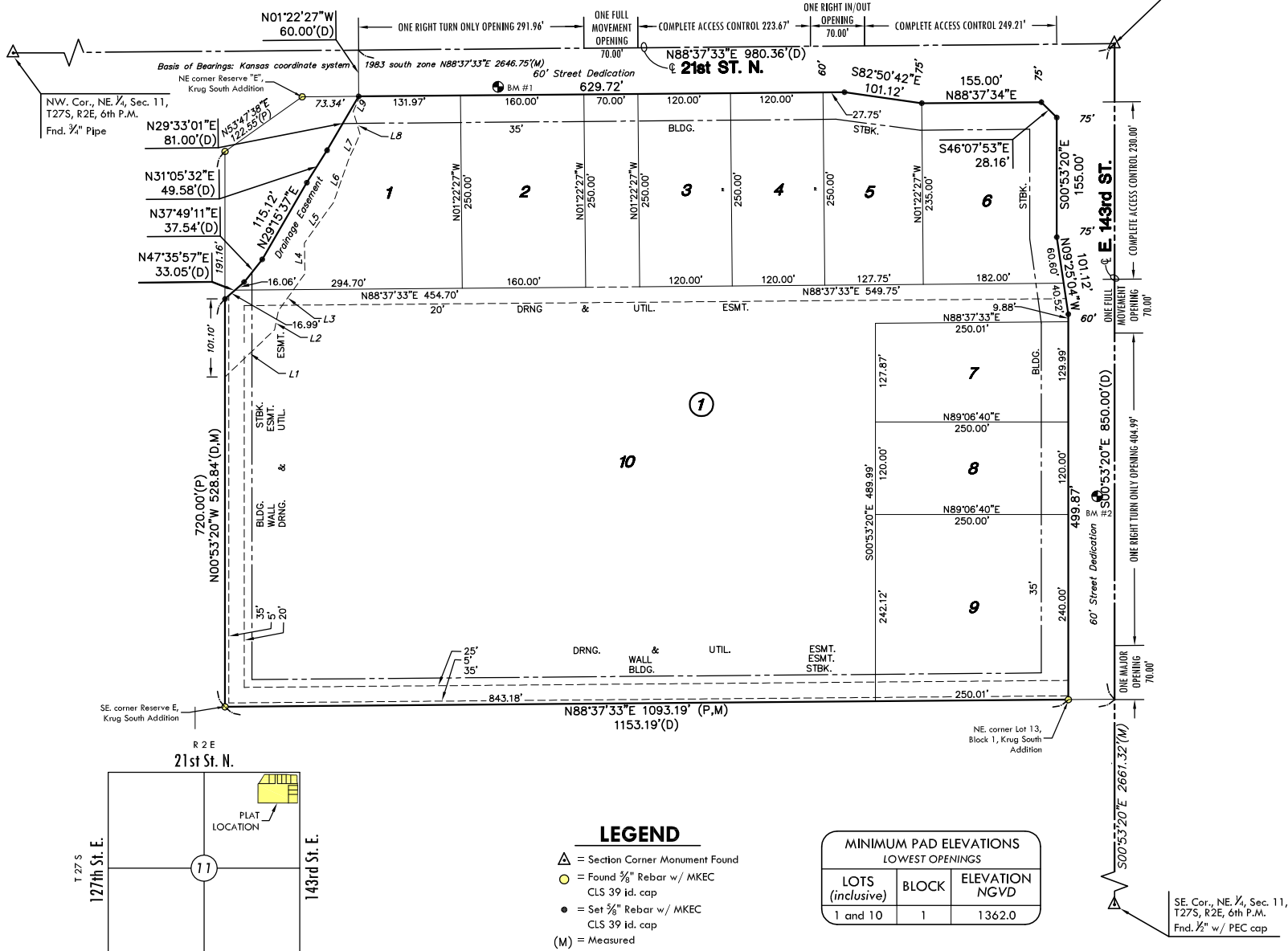
Attest:

_____, Deputy
Tonya E. Buckingham, Deputy

COUNTY SURVEYOR

Reviewed in accordance with K.S.A. 58-2005 on this ____ day of _____, 2009.

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



VICINITY MAP

N

1"=100' / 1 : 1200

100 0 100

Basis of Bearings: Kansas coordinate system 1983 south zone bearing of N88°37'33"E along the north line of Northeast Quarter, Section 11, T27S, R2E, 6th P.M.

LEGEND

- △ = Section Corner Monument Found
- ○ = Found ⅝" Rebar w/ MKEC CLS 39 id. cap
- ● = Set ⅝" Rebar w/ MKEC CLS 39 id. cap
- (M) = Measured
- (P) = Platted
- (D) = Deeded or Described

MINIMUM PAD ELEVATIONS *LOWEST OPENINGS*		
LOTS *(inclusive)*	BLOCK	ELEVATION *NGVD*
1 and 10	1	1362.0

DRAINAGE EASEMENT LINE TABLE		
LINE	LENGTH	BEARING
L1	88.47	N45°36'09"E
L2	24.83	N10°18'34"E
L3	59.85	N34°31'22"E
L4	39.57	N02°02'47"W
L5	64.45	N34°45'00"E
L6	57.39	N18°40'01"E
L7	38.29	N22°47'40"E
L8	30.37	N17°36'06"W
L9	21.26	N22°28'02"E

BENCH MARKS

Datum BM — 'T' at NE corner of inlet on S. side of Williamsgate over bridge in Hawthorne Addition.
Elev. = 1355.74 (NGVD 29)

BM#1 — RR spike in S. face of PP, 3rd PP W. of 143rd St.(799' from CL) S. side of 21st St. (49' from CL)
Elev.= 1362.17(NGVD 29)

BM#2 — FH NE bolt w/ tag on top of flange, W. side of 143rd St. NW of drive. (23' from CL)
Elev.=1382.81(NGVD29)

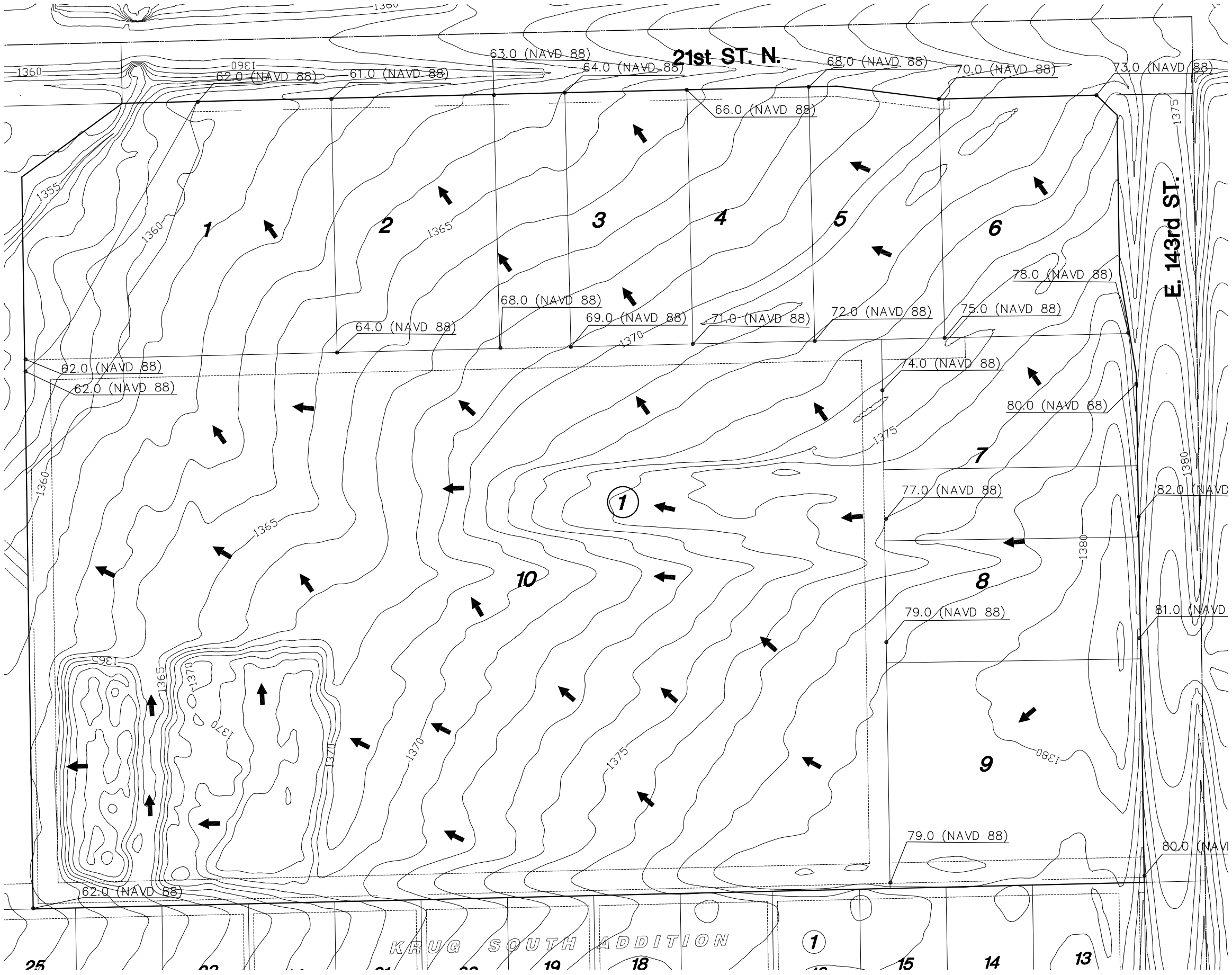
NOTE

Zoning:
This plat shall adhere and conform to the recitals of CUP DP-302 as approved and recorded at the Wichita-Sedgwick County Metropolitan Planning Area Department.

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

Figure 1.3

Preliminary Grading Plan



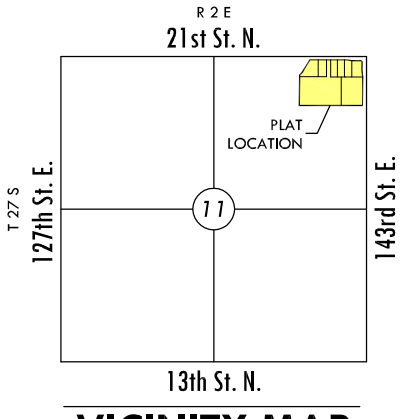
LEGEND

- 6IN - CONIFEROUS TREE
- 3IN - DECIDUOUS TREE
- SN - SIGN
- PP - POWER POLE
- ELEC BOX - ELECTRIC BOX
- LP - LIGHT POLE
- FH - FIRE HYDRANT
- WV - WATER VALVE
- WM - WATER METER
- SECTION CORNER
- BM - BENCHMARK
- EASEMENT
- BUILDING SETBACK
- FENCE
- STORM SEWER PIPE
- WATER LINE
- SANITARY SEWER LINE
- GAS LINE
- GAS PIPELINE
- TELEPHONE LINE
- UNDERGROUND ELEC.
- OVERHEAD ELECTRIC
- FIBER OPTIC CABLE
- 13XX.X - SPOT ELEVATION
- FLOW ARROW

NOTE: CONTOURS ARE IN NAVD 88 - BENCHMARKS SHOWN ON PLAT ARE IN NGVD 29
CONVERSION: NAVD 88 - 0.5' = NGVD 29
THE PROPOSED GRADES ARE IN NAVD 88

N

SCALE: 1"=50'
0 50 100 150



VICINITY MAP

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

KRUG SOUTH COMMERCIAL

N. 143RD ST. E. & 21ST ST. N.
WICHITA, KS

PRELIMINARY LOT GRADING PLAN

DATE: NOVEMBER 2008
REVISED: DECEMBER 2008
DESIGN BY: TMH
DRAWN BY: TMH
CHECKED BY: KLA
SHEET NUMBER: 1/1

J:\Civil\08372 Krug Comm\dwg\drng\08372_LGP.dwg

Tab 2. Existing Conditions Runoff Calculations

A. Orthophotograph

The aerial photograph is included, Figure 2.1.

B. Runoff Method

The existing site conditions were modeled using TR-20 software; see *Preliminary Drainage Report for Krug South Addition, Wichita, Kansas Revised January 2007.*

C. Existing Topography

The site drains from east to west. Slopes on site are about 2%. Elevations on the site range from 1380 feet in the east to 1357 feet in the west. The existing topography is shown in the *Preliminary Drainage Report for Krug South Addition, Wichita, Kansas Revised January 2007.*

D. Site Areas

Krug South commercial addition is 19 acres. The site is currently undeveloped rangeland.

E. Benchmarks

Benchmarks used for site control are included on the plat, Figure 1.2.

F. Streams, Creeks, and Waterways

A majority of the platted area is located in Zone X, areas outside the 1% annual chance storm, as shown on the revised FIRM panel 0385E, effective November 14, 2008, Figure 2.2. A portion of the northwest corner is within the 1% annual chance floodplain; however, this area is confined to a drainage easement. The FIRM is revised based on LOMR Case Number 09-07-0232P. Unnamed Tributary 2 to Fourmile Creek is west of the site.

G. Soils

According to the NRCS (SCS) Sedgwick County Soil Survey, Figure 2.3, soils on the site are:

- Irwin Series (Ia: Irwin silty clay loam, with 1 to 3 percent slopes).
- Rose Hill Series (Rd: silty clay, 1 to 3 percent slopes).

The Hydrological Soil Group (HSG) for the site is “D”.

H. Natural Features

The property is currently undeveloped rangeland.

I. Location of Existing Impervious Areas

Currently the site is undeveloped agricultural land with no impervious area.

J. Location of Existing Utilities

No existing utilities are onsite. However, utilities have been constructed for Krug South residential development which borders the site to the west and south.

K. Location of Existing Conveyance Systems

There are no existing conveyance systems onsite.

L. Flow Paths

Existing flow paths are shown in the *Preliminary Drainage Report for Krug South Addition, Wichita, Kansas Revised January 2007*.

M. Location and Sizes of Existing Structures

There are no existing structures in the area identified on the plat as Krug South commercial.

N. Existing Conditions Hydrologic Analysis

The site is part of Basin 1 as shown in Figure 2.4. Basin 1 is described as follows:

Description	Area (acres)	Land Use
Basin 1	**257**	
Upstream of Krug South Commercial & Residential	191	Developed Residential
Krug South Commercial and Residential	66	Undeveloped Agricultural 1-4 % slopes

The resulting pre-project flows are reported in the table below. Runoff calculations are in *Preliminary Drainage Report for Krug South Addition, Wichita, Kansas Revised January 2007*.

Pre-Development Flow Rates

Description	Design Storm Flows (cfs)			
	2-Yr	*5-Yr*	*10-Yr*	*100-Yr*
Pre-project Basin 1	477	893	1164	2081

O. Pre-Developed Runoff Curve Numbers

A weighted curve number of 85.4 was used for Basin 1. This weighted curve number accounts for the offsite residential use (curve number 87) and the onsite rangeland conditions (curve number 81).

P. Existing Time of Concentration

The time of concentration for pre-development conditions is shown in the following table. Time of concentration calculations are in *Preliminary Drainage Report for Krug South Addition, Wichita, Kansas Revised January 2007.*

Existing Times of Concentration

Area	T_c	Curve Number
	minutes	
Basin 1	91	85.4

Q. Downstream Drainage Capacity

Post-project runoff rates from Krug commercial and residential development remain unchanged from pre-project conditions. After development, downstream drainage effects will remain similar to what is currently experienced.

R. Existing Structural Elevations

There are no existing structures on site.

S. Open Channels

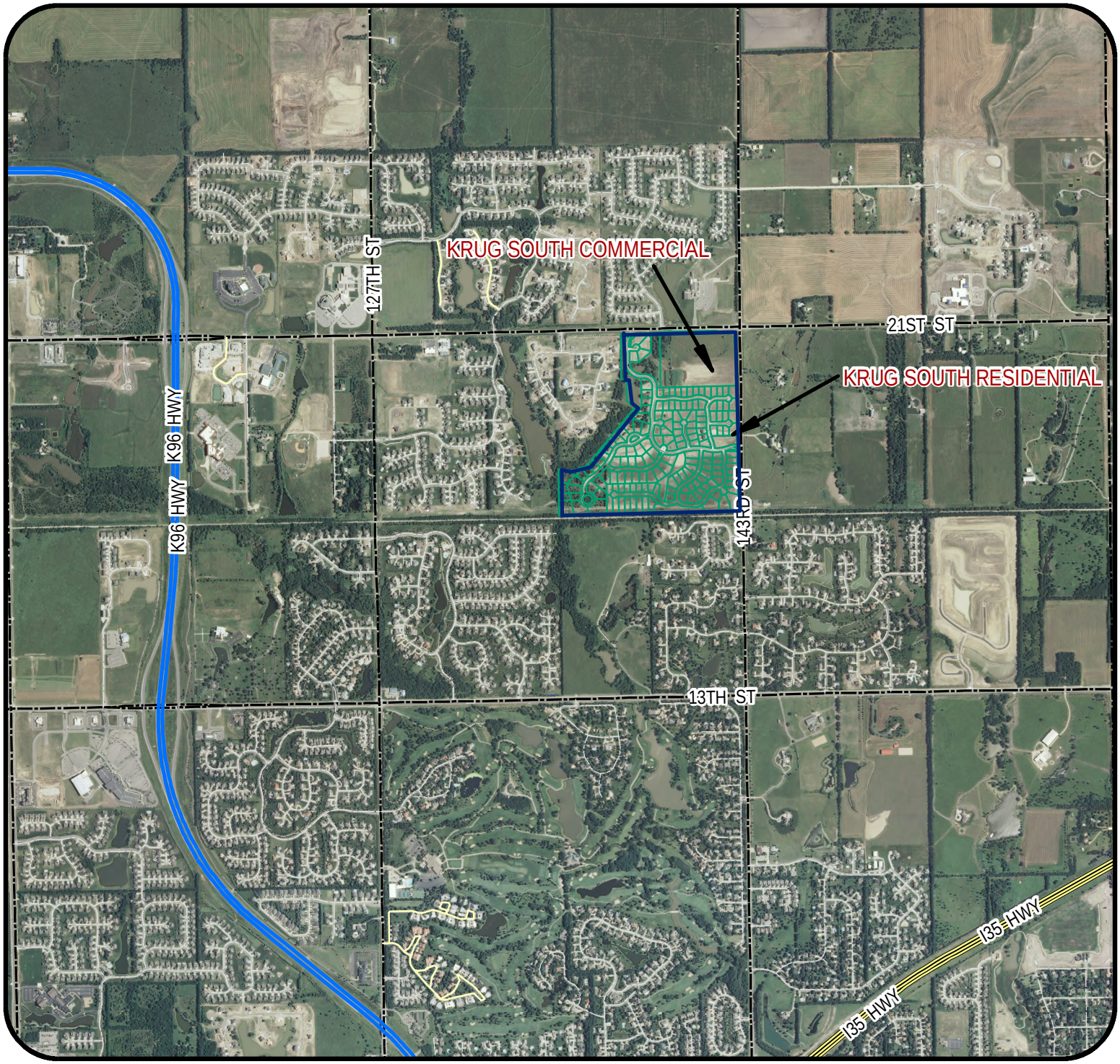
Unnamed Tributary 2 is approximately 100 feet west of the site. There are no open channels on the Krug Commercial site.

T. Groundwater Elevations

Groundwater is not a significant factor for this development.

Figure 2.1

Orthophotograph



1 0.5 0 1 Miles

1,000 500 0 1,000 2,000 3,000 4,000 5,000 6,000 7,000 Feet

1 0.5 0 1 Kilometers

J:\Civil\08372\dwg\DRNG\Soil Survey.mxd

Krug South Addition

Project Name:

Aerial - Sedgwick County, KS

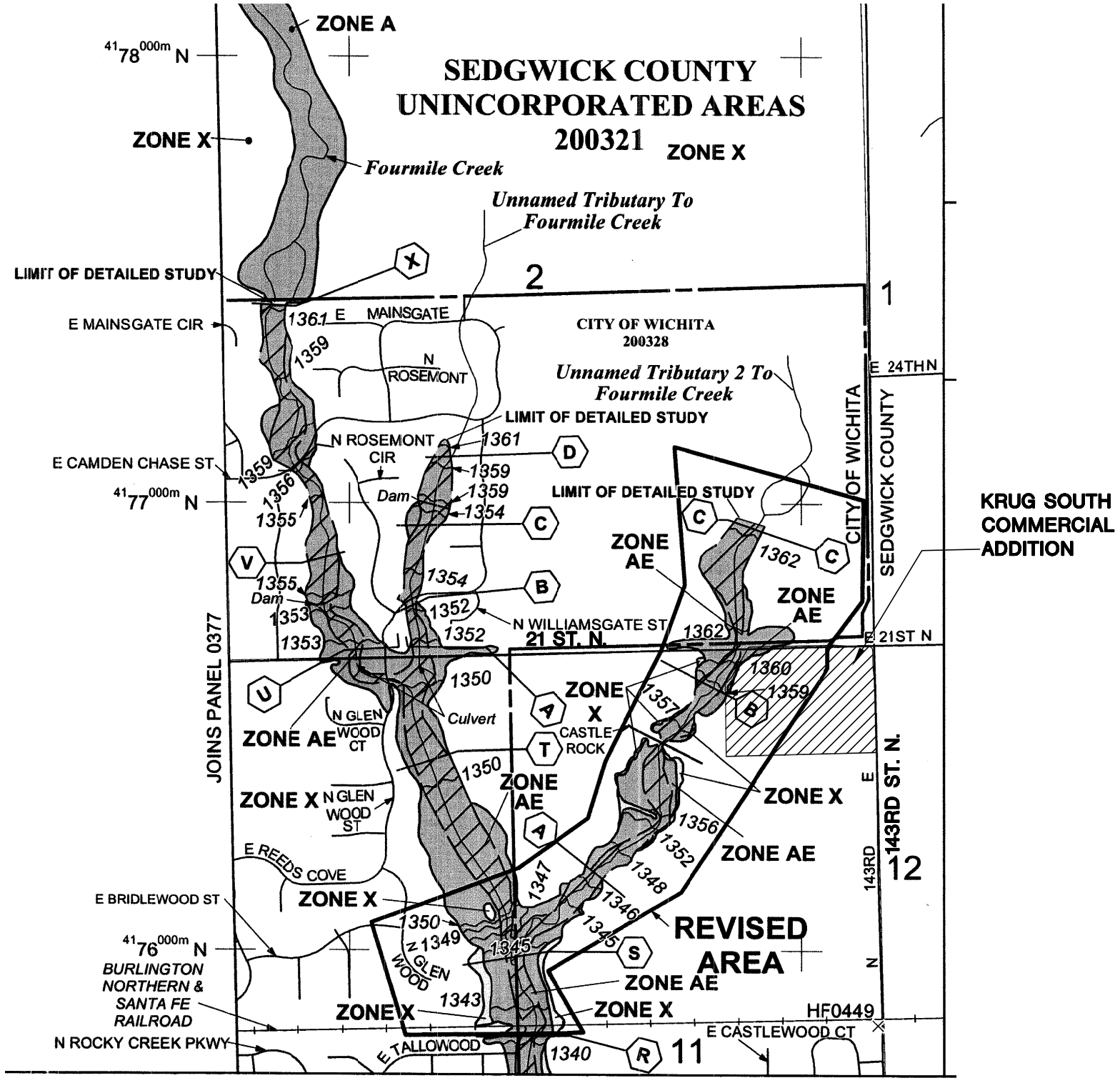
Sheet Title:

MKEC ENGINEERING CONSULTANTS, INC.

KWS	NOV. 2008
Drawn By:	Date:
TMH / KLA	08372
Design / Review:	Job No.:

Figure 2.2

FIRM



MAP SCALE 1" = 1000'

500 0 1000 FEET

300 0 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0385E

FIRM
FLOOD INSURANCE RATE MAP

SEDGWICK COUNTY,
KANSAS
AND INCORPORATED AREAS

PANEL 385 OF 700
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SEDGWICK COUNTY	200321	0385	E
WICHITA, CITY OF	200328	0385	E

REVISED TO
REFLECT LOMR
EFFECTIVE: November 14, 2008

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
20173C0385E

EFFECTIVE DATE
FEBRUARY 2, 2007

Federal Emergency Management Agency

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

KRUG SOUTH COMMERCIAL
N. 143RD ST. E. & 21ST ST. N.
WICHITA, KS
FIRM PANEL 0385E REVISED

DATE
NOVEMBER 2008
REVISED

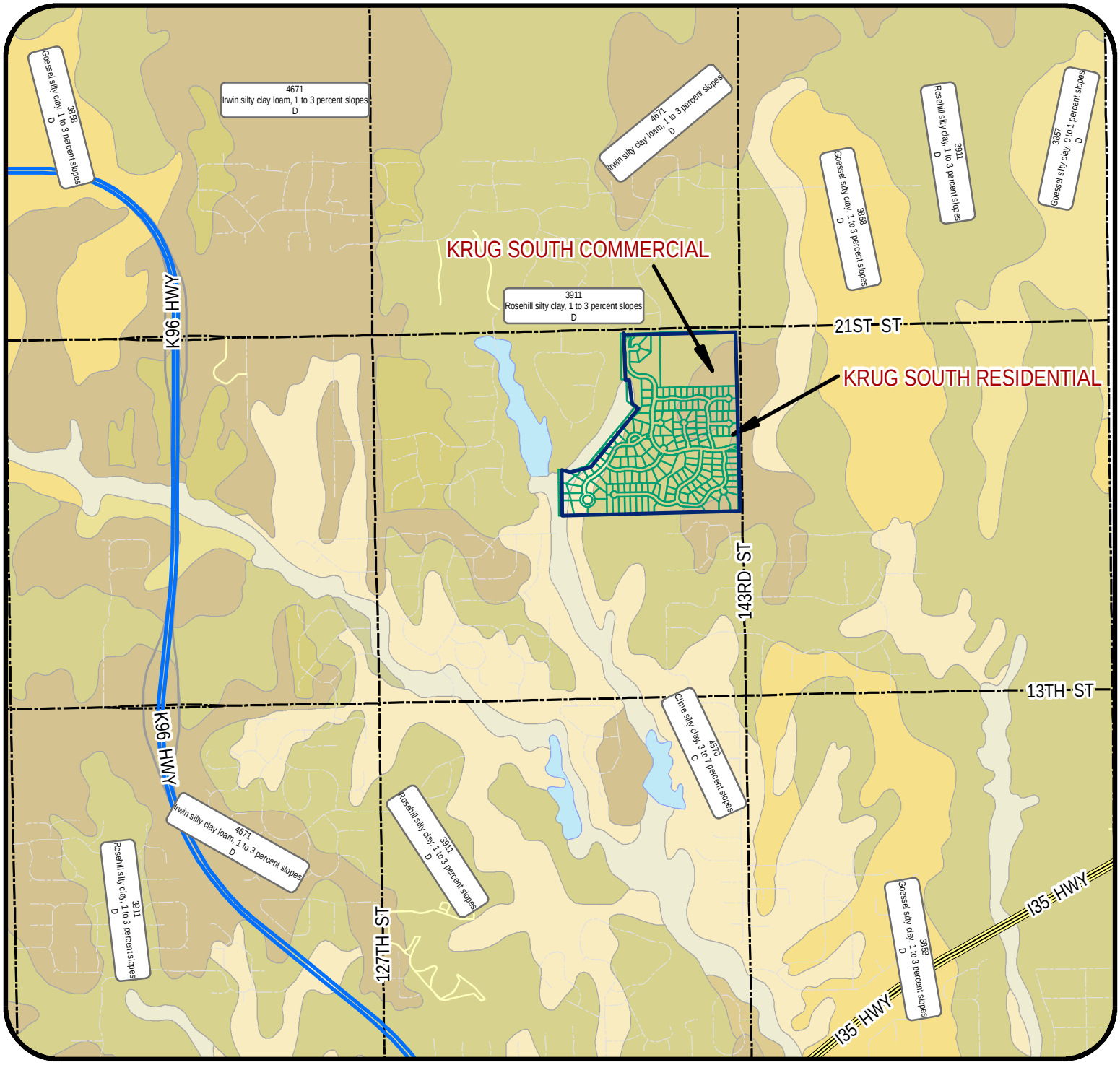
DESIGN BY
TMH
DRAWN BY
TMH
CHECKED BY
KLA

SHEET NUMBER
1/1

J: \Civil \08372 Krug Comm \dwg \drng \08372_FIRM.dwg

Figure 2.3

Soil Survey



J:\Civil\08372\dwg\DRNG\Soil Survey.mxd

Krug South Addition

Project Name:

Soil Survey - Sedgwick County, KS

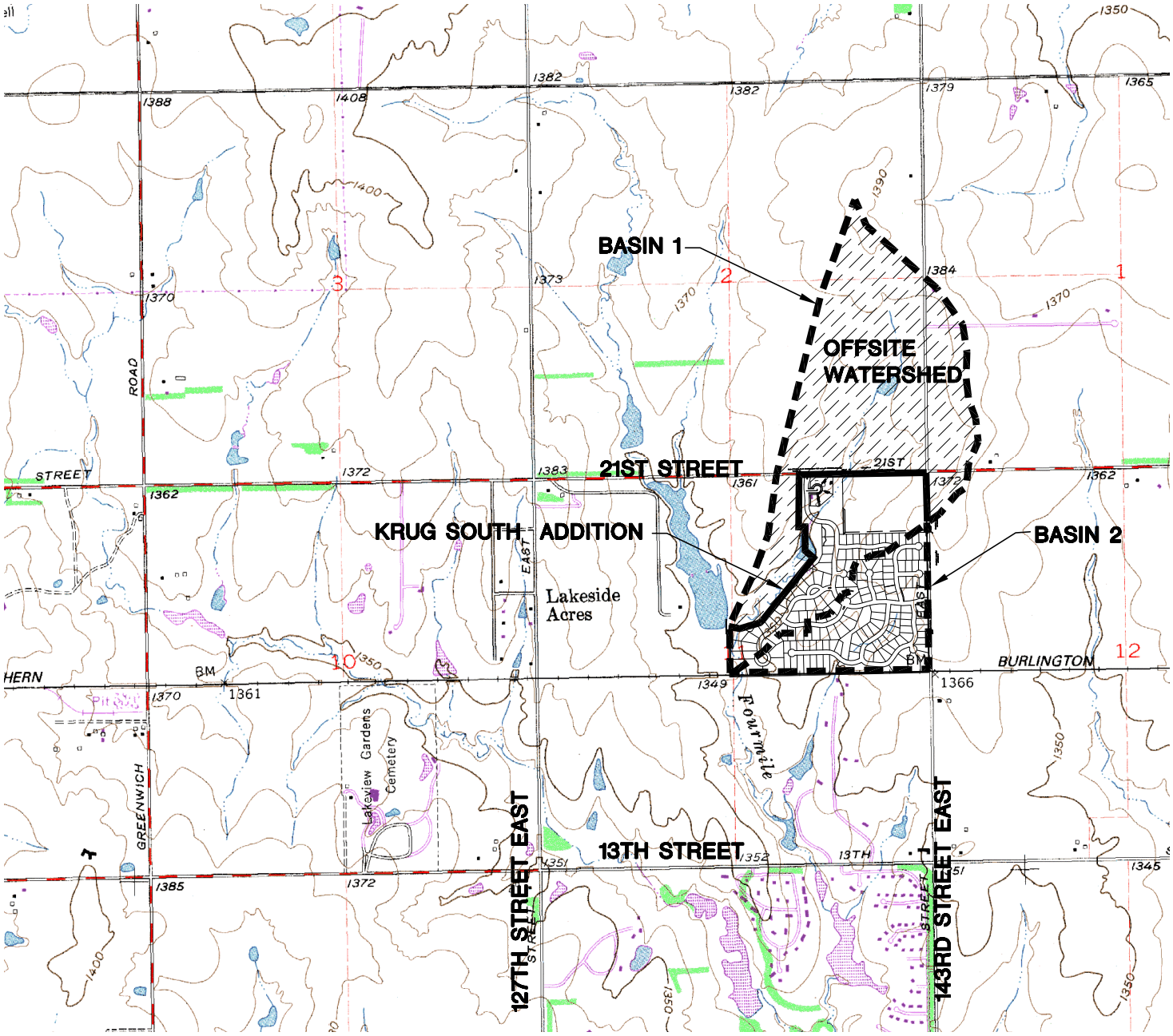
Sheet Title:

MKEC ENGINEERING CONSULTANTS, INC.

KWS	NOV. 2008
Drawn By:	Date:
TMH / KLA	08372
Design / Review:	Job No.:

Figure 2.4

Drainage Basins



SCALE 1:24 000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 5 FEET

NATIONAL GEODETIC VERTICAL DATUM OF 1929

N

J:\Civil\08372 Krug Comm\dwg\drng\08372 WATERSHED.dwg

REVISED: 12/19/06 COW COMMENTS

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

KRUG SOUTH ADDITION
PROJECT NAME

PRE\POST-PROJECT WATERSHED MAP ANDOVER, KANSAS QUADRANGLE
SHEET TITLE

TMH	CMJ	GJA
DESIGN BY:	DRAWN BY:	CHECKED BY:

NOVEMBER 2006	05291	1 / 2
DATE	JOB NO.	SHEET/OF

Tab 3. Post-Development Hydrologic Analysis

A. Proposed Conditions Hydrologic and Hydraulic Analysis

The post-project drainage basins are in Figure 2.4; onsite delineations are shown in Figure 3.1. TR-20 software was used to complete the hydrologic analysis for Krug South Commercial. Since the distribution of *Preliminary Drainage Report for Krug South Addition, Wichita, Kansas Revised January 2007,* the TR-20 model has been refined to reflect design changes within the project, TR-20 calculations from April 2007 resulted in even lower flowrates for the 100-year storm than were reported in the January 2007 report. The TR-20 model was updated in April 2007 as a part of the LOMR submittal process; this update reflects as-built survey along the west edge of Krug South residential. The tables below show what was reported in the January 2007 report and the current flow rates. The April 2007 TR-20 analysis is in Figure 3.2.

January 2007 Post-Development Flowrates

Description	Design Storm Flows (cfs)			
	2-Yr	*5-Yr*	*10-Yr*	*100-Yr*
Post-project Basin 1	420	791	1030	2053

April 2007 Post-Development Flowrates

Description	Design Storm Flows (cfs)			
	2-Yr	*5-Yr*	*10-Yr*	*100-Yr*
Post-project Basin 1	435	820	1067	2033

B. Proposed Time of Concentration

The time of concentration was calculated using the FAA method. The following table shows the post-development time of concentration. Time of concentration calculations are in Figure 3.3.

Proposed Time of Concentrations

Area	T_c	Curve Number
	minutes	
Basin 1 offsite	60.1	87
Basin 1 onsite	18.7	89

C. Assumed Post-Developed Curve Numbers

Initially, Basin 1 was modeled as a complete basin, no separation between the current project and the rest of the basin. A weighted curve number and time of concentration was calculated; which included the proposed commercial development and Krug South residential development. A weighted curve number of 88 was initially used for Basin 1; however, April 2007 calculations divided the onsite and offsite contributions. Curve number calculations are in Figure 3.4. The table below shows the post-developed curve numbers for the January 2007 calculations and the current calculations done in April 2007.

January 2007 Calculations

Description	*Area (acres)*	*Soil Group*	*Land Use*	*Curve Number*
Basin 1 Onsite	*66*	*D*	*Mixed*	
Residential	47	D	¼ acre Residential	87
Commercial	19	D	Commercial	95
Basin 1 Offsite	*191*	*D*	*¼ acre Residential*	*87*
Basin 1 Overall	**257**	**D**	**Mixed**	**88***

*Weighted Curve Number

April 2007 Calculations

Description	*Area (acres)*	*Soil Group*	*Land Use*	*Curve Number*
Basin 1 Offsite	191	D	¼ acre Residential	87
Basin 1 Onsite	66	D	Commercial and Residential	89*

*Weighted curve number

D. Proposed Contours for Detention

The existing detention ponds west of the site (part of Krug South residential development) were designed to serve this development.

E. Preliminary SWS Sizing Calculations

Stormsewer within the Krug South commercial site will be designed for the 5-year storm. Pipe sizing calculations are in Figure 3.5.

F. Stage-Storage-Discharge

There are no detention areas proposed on the commercial site. Detention is provided west of the site as a part of the entire Krug South residential and commercial development.

G. Analysis of upstream/downstream impact

Runoff flows for all design storms decrease from pre to post-development; therefore, negative upstream/downstream impacts are negligible.

H. Existing and Proposed Structural Elevations

There are no existing structures on site. Minimum pad elevations will be set 3 feet above the 100-year water surface elevation of Unnamed Tributary 2. This requirement results in a minimum pad elevation of 1362.0 (NAVD 88) for Lots 1 and 10, Block 1. When feasible, current grade will dictate structural elevations.

I. Pond Design Elevations

There are no ponds proposed for Krug South commercial.

J. Structure Details

Storm sewer is proposed for the site, calculations are in Figure 3.5

K. Limits of Clearing and Grading

The entire site will be cleared and graded.

L. Location of Impervious Areas

The commercial buildings, parking areas and drives will be impervious.

M. Location of Utilities

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

N. Location of Conveyance Systems

Storm sewer will carry flow from the paving west into the existing detention ponds and Unnamed Tributary 2. Proposed storm sewer lines are shown on the drainage and utility plan, Figure 3.6.

O. Location of Channel Modifications

Unnamed Tributary 2, west of the site, was modified as a part of the Krug South residential development. A LOMR has been approved for the channel modifications; the appropriate Department of Water Resources (DWR) and United States Army Corps of Engineers (USACE) permits were obtained before construction. No further modifications are proposed

P. Selection and Location of Stormwater Controls

Stormwater controls consist of curb inlets, storm sewer sized to handle 5-year flows. The detention area west of the site adequately controls flows from this development.

Q. Emergency Overflow

Runoff from Krug South commercial will flow into Unnamed Tributary 2 in the event of an emergency.

R. Freeboard

Detention ponds are not proposed for the commercial site.

S. 100-Year High Water Line

The 100-year water surface elevation of the portion of Unnamed Tributary 2 that is adjacent to Krug South commercial is 1359.0 (NAVD 88).

T. Lowest Openings

The lowest opening for lots adjacent to the Tributary will be 1362.0 (NAVD 88). All other lots will be graded to maintain at least 0.5% slope in the parking areas and drives.

U. Stormwater Management Facilities

Stormsewer lines will be placed in a drainage easement.

V. Maintenance Responsibility

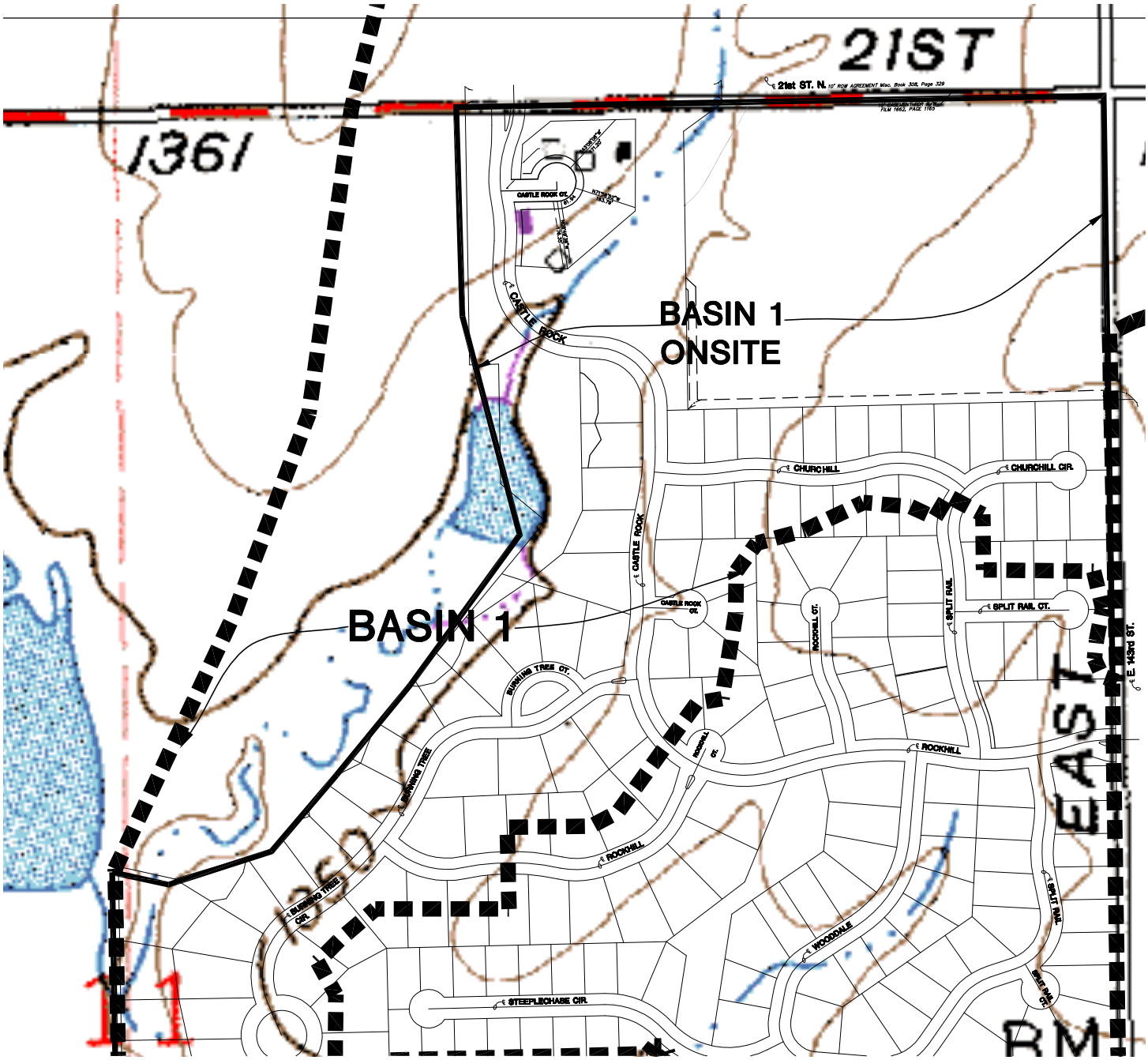
The maintenance of any easements will be the responsibility of the owner.

W. Offsite-Drainage Easements

Not applicable to Krug South commercial addition.

Figure 3.1

Drainage Boundary Onsite



SCALE: 1"=400'

400 0 400 800

N

NOTE: OFFSITE WATERSHED REMAINS UNCHANGED FROM PRE TO POST-PROEJCT

REVISED: 12/15/08 - COW COMMENTS
REVISED: 01/05/07 - COW COMMENTS

J:\Civil\08372 Krug

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

KRUG SOUTH ADDITION
PROJECT NAME

POST-PROJECT ON-SITE WATERSHEDS ANDOVER, KANSAS QUADRANGLE
SHEET TITLE

TMH	CMJ	GJA
DESIGN BY:	DRAWN BY:	CHECKED BY:
NOVEMBER 2006	05291	2 / 2
DATE	JOB NO.	SHEET/OF

Figure 3.2

Post-project TR 20 Calculations

```
1


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

 JOB TR-20                      FULLPRINT           SUMMARY   NOPLOTS
 TITLE 001 KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS  JAN 2007
 TITLE     krugsws.T20  50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STORM ZONE
 4 DIMHYD               0.020                                          484
  8          .000        .030        .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
  5 RAINFL 7             0.5
  8          .000        .002        .005        .009        .013
  8          .018        .023        .029        .035        .042
  8          .050        .059        .068        .078        .089
  8          .101        .114        .128        .144        .162
  8          .183        .208        .244        .339        .723
  8          .773        .802        .825        .844        .861
  8          .876        .890        .903        .914        .924
  8          .934        .943        .951        .959        .966
  8          .972        .977        .982        .986        .990
  8          .993        .996        .998       1.000       1.000
  9 ENDTBL
  3 STRUCT      01
  8                     1354.0      0.0         0.0
  8                     1355.0      0.1         1.446
  8                     1356.0      68.         3.249
  8                     1357.0      396.        5.367
  8                     1358.0      614.        8.605
  8                     1359.0      850.        13.269
  8                     1360.0      1105.       18.403
  9 ENDTBL
  3 STRUCT      02
  8                     1350.0      0.0         0.0
  8                     1351.0      0.1         2.782
  8                     1352.0      0.2         5.798
  8                     1353.0      190.        9.054
  8                     1354.0      527.        12.578
  8                     1355.0      958.        16.756
  9 ENDTBL
  3 STRUCT      03
  8                     1355.0      0.0         0.0
  8                     1356.0      6.7         1.273
  8                     1357.0      19.         2.683
  8                     1358.0      181.        4.271
1


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

  8                     1359.0      468.        6.149
```

```
  8                       1360.0      836.        8.327
  9 ENDTBL
  3 STRUCT      04
  8                       1351.0      0.0         0.0
  8                       1352.0      65.         1.447
  8                       1353.0      180.        3.069
  8                       1354.0      325.        4.866
  8                       1355.0      470.        6.842
  8                       1356.0      615.        9.023
  9 ENDTBL
  3 STRUCT      05
  8                       1345.0      0.0         0.0
  8                       1346.0      2.4         11.365
  8                       1347.0      12.2        23.877
  8                       1348.0      154.        37.745
  8                       1349.0      705.        54.585
  8                       1350.0      1485.       75.165
  8                       1351.0      2441.       97.658
  9 ENDTBL
  3 STRUCT      06                                                  WEIR STR
  8                       1335.5      0.0         0.0
  8                       1336.0      0.01        0.004
  8                       1337.0      0.02        0.021
  8                       1338.0      0.03        0.098
  8                       1339.0      0.04        1.105
  8                       1340.0      0.05        3.538
  8                       1341.0      517.515     7.587
  8                       1342.0      896.362     13.099
  8                       1343.0      1178.120    19.404
  8                       1344.0      1676.798    26.72
  8                       1345.0      2316.091    35.368
  9 ENDTBL
  3 STRUCT      07                                                  POND A/B
  8                       1352.0      0.0         0.0
  8                       1353.0      58.661      2.612
  8                       1354.0      240.455     5.508
  8                       1355.0      497.793     8.455
  8                       1356.0      812.145     11.404
  9 ENDTBL
  6 RUNOFF 1 001        1 0.4906      81.0        2.3250              1
  6 RUNOFF 1 002        2 0.1375      82.4        1.075               1
  6 RUNOFF 1 003        3 0.0688      87.0        0.50                1
  6 ADDHYD 4 004    1 2 4                                           1
  6 ADDHYD 4 005    3 4 5                                           1
  6 RESVOR 2    01 5    6 1354.0                                    1
  6 RUNOFF 1 006        7 0.0628      88.0        0.4167              1
  6 ADDHYD 4 007    6 7 4                                           1
  6 RUNOFF 1 008        5 0.0245      81.0        0.6667              1
  6 ADDHYD 4 009    4 5 6                                           1
1


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

  6 RESVOR 2    02 6    7 1350.0                                    1
  6 RUNOFF 1 010        4 0.1814      81.0        1.205               1
  6 RUNOFF 1 011        5 0.0523      87.0        0.50                1
  6 ADDHYD 4 012    4 5 6                                           1
  6 RESVOR 2    03 6    4 1355.0                                    1
  6 RUNOFF 1 013        5 0.0159      87.0        0.333               1
  6 ADDHYD 4 014    4 5 6                                           1
  6 RESVOR 2    04 6    4 1351.0                                    1
```

```
 6 RUNOFF 1 015       5 0.0133      87.0        0.250                1
 6 ADDHYD 4 016   4 5 6                                             1
 6 RUNOFF 1 017       4 0.0281      88.0        0.333                1
 6 ADDHYD 4 018   4 6 5                                             1
 6 ADDHYD 4 019   5 7 6                                             1
 6 RUNOFF 1 020       4 0.1167      88.0        0.500                1
 6 RUNOFF 1 021       5 0.1406      81.0        1.267                1
 6 ADDHYD 4 022   6 4 7                                             1
 6 ADDHYD 4 023   7 5 4                                             1
 6 RESVOR 2    05 4   6 1345.5                                      1
 6 RUNOFF 1 024       5 0.2984      87.0        1.0017               1
 6 RUNOFF 1 025       7 0.0317      81.0        0.333                1
 6 RUNOFF 1 026       4 0.1031      89.0        0.3117               1
 6 ADDHYD 4 027   5 4 2                                             1
 6 RESVOR 2    07 2   1 1352.0                                      1
 6 ADDHYD 4 028   6 7 3                                             1
 6 ADDHYD 4 029   3 1 5                                             1
 6 RESVOR 2    06 5   6 1335.5                                      1
 6 RUNOFF 1 030       7 0.0001      88.0        0.001                1
 6 ADDHYD 4 031   7 6 4                                             1
   ENDATA
 7 INCREM 6             0.10
 7 COMPUT 7 001   031   0.0         3.50        1.0         7 2  11  01
   ENDCMP 1
 7 COMPUT 7 001   031   0.0         4.55        1.0         7 2  12  02
   ENDCMP 1
 7 COMPUT 7 001   031   0.0         5.25        1.0         7 2  13  03
   ENDCMP 1
 7 COMPUT 7 001   031   0.0         7.10        1.0         7 2  14  04
   EMDCMP 1
 7 COMPUT 7 001   031   0.0         7.80        1.0         7 2  15  05
   ENDCMP 1
 7 COMPUT 7 001   031   0.0         9.35        1.0         7 2  16  06
   ENDCMP 1
   ENDJOB 2


 ********************************END OF 80-80 LIST*********************************
1
 TR20 ------------------------------------------------------------------------ SCS -
          KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS  JAN VERSION
 12/12/** krugsws.T20  50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
 15:04:41                    PASS   1   JOB NO.   1                      PAGE   1


        COMPUTER PROGRAM FOR PROJECT FORMULATION - HYDROLOGY  USER NOTES

 The Users' Manual for this program is SCS Technical Release 20 (TR-20), dated
 April 1990.  The TR-20 program is no longer supported on the mainframe since all
 post 1986 program changes have only been in the IBM compatable microcomputer
 environnment.

 Compatable input and data check programs are TR20INPT.EXE, version III, dated
 01/30/90 and TR20CK.EXE, version II, which is forthcoming.

 Major changes from the 1986 TR-20  microcomputer version are:

 HYDROGRAPH GENERATION: program procedure to develop runoff hydrographs
 revised to preserve total hydrograph volume as well as the peak discharge.
 Hydrographs can contain up to four hundred main time increment points from
 the beginning of runoff.

 ATTKIN ROUTING: seperate channel and floodplain lengths can be entered to
```

define additional storage in meandering channels below the representative low ground elevation. Program changes have been made to better handle multiple peaked hydrographs.

FLOW DURATION: can be obtained if requested.

OUTPUT 80 COLUMNS: Output fits 80 column paper. Hydrograph coordinates over 100 cfs are rounded and shown as whole numbers.

ERRORS, WARNINGS, AND MESSAGES: expanded and updated.

LIST OPTIONS: can print all or selected parts of input data.

INTERMEDIATE PEAKS: requires new IPEAKS record.

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

EXECUTIVE CONTROL INCREM MAIN TIME INCREMENT = .100 HOURS

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 31
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. = 7

```
 OPERATION RUNOFF   XSECTION   1
         OUTPUT HYDROGRAPH =  1      AREA =    .49 SQ MI
         INPUT RUNOFF CURVE = 81.    TIME OF CONCENTRATION =  2.33 HOURS
         COMPUTED INTERNAL TIME INCREMENT =  .1033 HOURS

    PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       13.22                        165.0                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.71 WATERSHED INCHES;     541 CFS-HRS;      44.7 ACRE-FEET.


 OPERATION RUNOFF   XSECTION   2
         OUTPUT HYDROGRAPH =  2      AREA =    .14 SQ MI
         INPUT RUNOFF CURVE = 82.    TIME OF CONCENTRATION =  1.08 HOURS
         COMPUTED INTERNAL TIME INCREMENT =  .0992 HOURS

    PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       12.43                         83.6                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.81 WATERSHED INCHES;     161 CFS-HRS;      13.3 ACRE-FEET.


 OPERATION RUNOFF   XSECTION   3
         OUTPUT HYDROGRAPH =  3      AREA =    .07 SQ MI
         INPUT RUNOFF CURVE = 87.    TIME OF CONCENTRATION =   .50 HOURS
         COMPUTED INTERNAL TIME INCREMENT =  .0667 HOURS

    PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       12.10                         75.1                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.18 WATERSHED INCHES;      97 CFS-HRS;       8.0 ACRE-FEET.


 OPERATION ADDHYD   XSECTION   4
         INPUT HYDROGRAPHS 1,2     OUTPUT HYDROGRAPH 4
1
 TR20 ------------------------------------------------------------------- SCS -
          KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS  JAN VERSION
 12/12/** krugsws.T20  50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
 15:04:41                    PASS   1   JOB NO.   1                      PAGE   4


    PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       12.91                        206.5                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.73 WATERSHED INCHES;     701 CFS-HRS;      58.0 ACRE-FEET.


 OPERATION ADDHYD   XSECTION   5
         INPUT HYDROGRAPHS 3,4     OUTPUT HYDROGRAPH 5

    PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       12.76                        220.8                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.77 WATERSHED INCHES;     798 CFS-HRS;      66.0 ACRE-FEET.
```

```
 OPERATION RESVOR   STRUCTURE  1
         INPUT HYDROGRAPH 5        OUTPUT HYDROGRAPH 6
         SURFACE ELEVATION =  1354.00

    PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       12.84                        220.2                       1356.46

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   1.74 WATERSHED INCHES;     783 CFS-HRS;      64.7 ACRE-FEET.


 OPERATION RUNOFF   XSECTION   6
         OUTPUT HYDROGRAPH =  7      AREA =    .06 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)
       12.06                         75.8                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   2.27 WATERSHED INCHES;      92 CFS-HRS;       7.6 ACRE-FEET.


 OPERATION ADDHYD   XSECTION   7
         INPUT HYDROGRAPHS 6,7     OUTPUT HYDROGRAPH 4

    PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       12.25                         242.9                       (NULL)
1
 TR20 ------------------------------------------------------------------------ SCS -
          KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS  JAN VERSION
 12/12/** krugsws.T20  50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
 15:04:41                    PASS   1   JOB NO.   1                       PAGE   5


    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   1.78 WATERSHED INCHES;     874 CFS-HRS;      72.2 ACRE-FEET.


 OPERATION RUNOFF   XSECTION   8
         OUTPUT HYDROGRAPH =  5      AREA =    .02 SQ MI
         INPUT RUNOFF CURVE = 81.    TIME OF CONCENTRATION =   .67 HOURS
         COMPUTED INTERNAL TIME INCREMENT =  .0889 HOURS

    PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       12.19                         18.2                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   1.70 WATERSHED INCHES;      27 CFS-HRS;       2.2 ACRE-FEET.


 OPERATION ADDHYD   XSECTION   9
         INPUT HYDROGRAPHS 4,5     OUTPUT HYDROGRAPH 6

    PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       12.25                         262.6                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   1.78 WATERSHED INCHES;     901 CFS-HRS;      74.5 ACRE-FEET.


 OPERATION RESVOR   STRUCTURE  2
         INPUT HYDROGRAPH 6        OUTPUT HYDROGRAPH 7
```

SURFACE ELEVATION = 1350.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.73	240.3	1353.15

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.65 WATERSHED INCHES; 833 CFS-HRS; 68.9 ACRE-FEET.

OPERATION RUNOFF XSECTION 10
OUTPUT HYDROGRAPH = 4 AREA = .18 SQ MI
INPUT RUNOFF CURVE = 81. TIME OF CONCENTRATION = 1.21 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0964 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.52	96.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.71 WATERSHED INCHES; 200 CFS-HRS; 16.5 ACRE-FEET.

1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 PASS 1 JOB NO. 1 PAGE 6

OPERATION RUNOFF XSECTION 11
OUTPUT HYDROGRAPH = 5 AREA = .05 SQ MI
INPUT RUNOFF CURVE = 87. TIME OF CONCENTRATION = .50 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0667 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.10	57.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.18 WATERSHED INCHES; 74 CFS-HRS; 6.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 12
INPUT HYDROGRAPHS 4,5 OUTPUT HYDROGRAPH 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.29	128.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.81 WATERSHED INCHES; 273 CFS-HRS; 22.6 ACRE-FEET.

OPERATION RESVOR STRUCTURE 3
INPUT HYDROGRAPH 6 OUTPUT HYDROGRAPH 4
SURFACE ELEVATION = 1355.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.46	122.8	1357.64

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.81 WATERSHED INCHES; 274 CFS-HRS; 22.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 13
OUTPUT HYDROGRAPH = 5 AREA = .02 SQ MI
INPUT RUNOFF CURVE = 87. TIME OF CONCENTRATION = .33 HOURS

COMPUTED INTERNAL TIME INCREMENT = .0444 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.01	19.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.18 WATERSHED INCHES; 22 CFS-HRS; 1.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 14
INPUT HYDROGRAPHS 4,5 OUTPUT HYDROGRAPH 6

1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 PASS 1 JOB NO. 1 PAGE 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.43	128.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.84 WATERSHED INCHES; 296 CFS-HRS; 24.5 ACRE-FEET.

OPERATION RESVOR STRUCTURE 4
INPUT HYDROGRAPH 6 OUTPUT HYDROGRAPH 4
SURFACE ELEVATION = 1351.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.67	118.3	1352.46

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.84 WATERSHED INCHES; 296 CFS-HRS; 24.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 15
OUTPUT HYDROGRAPH = 5 AREA = .01 SQ MI
INPUT RUNOFF CURVE = 87. TIME OF CONCENTRATION = .25 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0333 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
11.97	17.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.18 WATERSHED INCHES; 19 CFS-HRS; 1.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 16
INPUT HYDROGRAPHS 4,5 OUTPUT HYDROGRAPH 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.66	120.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.85 WATERSHED INCHES; 314 CFS-HRS; 26.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 17
OUTPUT HYDROGRAPH = 4 AREA = .03 SQ MI
INPUT RUNOFF CURVE = 88. TIME OF CONCENTRATION = .33 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0444 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.01	35.4	(RUNOFF)

1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 PASS 1 JOB NO. 1 PAGE 8

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.26 WATERSHED INCHES; 41 CFS-HRS; 3.4 ACRE-FEET.

OPERATION ADDHYD XSECTION 18
INPUT HYDROGRAPHS 4,6 OUTPUT HYDROGRAPH 5

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.63	126.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.89 WATERSHED INCHES; 356 CFS-HRS; 29.4 ACRE-FEET.

OPERATION ADDHYD XSECTION 19
INPUT HYDROGRAPHS 5,7 OUTPUT HYDROGRAPH 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.67	365.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.71 WATERSHED INCHES; 1189 CFS-HRS; 98.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 20
OUTPUT HYDROGRAPH = 4 AREA = .12 SQ MI
INPUT RUNOFF CURVE = 88. TIME OF CONCENTRATION = .50 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0667 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.10	131.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.27 WATERSHED INCHES; 171 CFS-HRS; 14.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 21
OUTPUT HYDROGRAPH = 5 AREA = .14 SQ MI
INPUT RUNOFF CURVE = 81. TIME OF CONCENTRATION = 1.27 HOURS
COMPUTED INTERNAL TIME INCREMENT = .1014 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.56	72.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.71 WATERSHED INCHES; 155 CFS-HRS; 12.8 ACRE-FEET.

1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 PASS 1 JOB NO. 1 PAGE 9

```
 OPERATION ADDHYD   XSECTION  22
         INPUT HYDROGRAPHS 6,4     OUTPUT HYDROGRAPH 7

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       12.55                         407.2                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.77 WATERSHED INCHES;    1360 CFS-HRS;     112.4 ACRE-FEET.


 OPERATION ADDHYD   XSECTION  23
         INPUT HYDROGRAPHS 7,5     OUTPUT HYDROGRAPH 4

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       12.55                         478.3                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.76 WATERSHED INCHES;    1515 CFS-HRS;     125.2 ACRE-FEET.


 OPERATION RESVOR   STRUCTURE  5
         INPUT HYDROGRAPH 4        OUTPUT HYDROGRAPH 6
         SURFACE ELEVATION =  1345.50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       13.43                         327.4                        1348.31

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.66 WATERSHED INCHES;    1425 CFS-HRS;     117.8 ACRE-FEET.


 OPERATION RUNOFF   XSECTION  24
         OUTPUT HYDROGRAPH =  5      AREA =    .30 SQ MI
         INPUT RUNOFF CURVE = 87.    TIME OF CONCENTRATION =  1.00 HOURS
         COMPUTED INTERNAL TIME INCREMENT =  .0925 HOURS

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       12.39                         229.4                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.18 WATERSHED INCHES;     420 CFS-HRS;      34.7 ACRE-FEET.


 OPERATION RUNOFF   XSECTION  25
         OUTPUT HYDROGRAPH =  7      AREA =    .03 SQ MI
         INPUT RUNOFF CURVE = 81.    TIME OF CONCENTRATION =   .33 HOURS
         COMPUTED INTERNAL TIME INCREMENT =  .0444 HOURS
1
 TR20 ------------------------------------------------------------------- SCS -
          KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS  JAN VERSION
 12/12/** krugsws.T20  50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
 15:04:41                    PASS   1   JOB NO.   1                      PAGE  10


    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       12.01                          30.5                       (RUNOFF)
       17.40                           1.1                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.71 WATERSHED INCHES;       35 CFS-HRS;        2.9 ACRE-FEET.


 OPERATION RUNOFF   XSECTION  26
```

OUTPUT HYDROGRAPH = 4 AREA = .10 SQ MI
INPUT RUNOFF CURVE = 89. TIME OF CONCENTRATION = .31 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0416 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.00	136.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.35 WATERSHED INCHES; 157 CFS-HRS; 12.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 27
INPUT HYDROGRAPHS 5,4 OUTPUT HYDROGRAPH 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	303.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.23 WATERSHED INCHES; 577 CFS-HRS; 47.7 ACRE-FEET.

OPERATION RESVOR STRUCTURE 7
INPUT HYDROGRAPH 2 OUTPUT HYDROGRAPH 1
SURFACE ELEVATION = 1352.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.34	275.9	1354.14

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.23 WATERSHED INCHES; 577 CFS-HRS; 47.7 ACRE-FEET.

OPERATION ADDHYD XSECTION 28
INPUT HYDROGRAPHS 6,7 OUTPUT HYDROGRAPH 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.06	34.9	(NULL)
13.43	330.0	(NULL)

1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 PASS 1 JOB NO. 1 PAGE 11

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

OPERATION ADDHYD XSECTION 29
INPUT HYDROGRAPHS 3,1 OUTPUT HYDROGRAPH 5

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.35	299.1	(NULL)
13.19	438.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.79 WATERSHED INCHES; 2037 CFS-HRS; 168.3 ACRE-FEET.

OPERATION RESVOR STRUCTURE 6
INPUT HYDROGRAPH 5 OUTPUT HYDROGRAPH 6
SURFACE ELEVATION = 1335.50

```
   PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      13.30                        434.7                       1340.84

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                1.75 WATERSHED INCHES;    1994 CFS-HRS;     164.8 ACRE-FEET.


 OPERATION RUNOFF   XSECTION  30
        OUTPUT HYDROGRAPH =  7      AREA =    .00 SQ MI
        INPUT RUNOFF CURVE = 88.    TIME OF CONCENTRATION =   .00 HOURS
        COMPUTED INTERNAL TIME INCREMENT =  .0012 HOURS

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                1.75 WATERSHED INCHES;      16 CFS-HRS;     164.8 ACRE-FEET.


 OPERATION ADDHYD   XSECTION  31
        INPUT HYDROGRAPHS 7,6     OUTPUT HYDROGRAPH 4

   PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      13.30                        434.7                       (NULL)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                1.75 WATERSHED INCHES;    1994 CFS-HRS;     164.8 ACRE-FEET.
1
 TR20 ------------------------------------------------------------------------ SCS -
         KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS  JAN VERSION
 12/12/** krugsws.T20  50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
 15:04:41                   PASS   2   JOB NO.   1                      PAGE  12



 EXECUTIVE CONTROL ENDCMP    COMPUTATIONS COMPLETED FOR PASS   1
1
 TR20 ------------------------------------------------------------------------ SCS -
         KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS  JAN VERSION
 12/12/** krugsws.T20  50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
 15:04:41                   PASS   2   JOB NO.   1                      PAGE  13



 EXECUTIVE CONTROL COMPUT    FROM XSECTION   1  TO XSECTION  31
    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. = 7


 OPERATION RUNOFF   XSECTION   1
        OUTPUT HYDROGRAPH =  1      AREA =    .49 SQ MI
        INPUT RUNOFF CURVE = 81.    TIME OF CONCENTRATION =  2.33 HOURS
        COMPUTED INTERNAL TIME INCREMENT =  .1033 HOURS

   PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      13.20                        253.1                       (RUNOFF)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                2.59 WATERSHED INCHES;     820 CFS-HRS;      67.8 ACRE-FEET.


 OPERATION RUNOFF   XSECTION   2
        OUTPUT HYDROGRAPH =  2      AREA =    .14 SQ MI
        INPUT RUNOFF CURVE = 82.    TIME OF CONCENTRATION =  1.08 HOURS
```

COMPUTED INTERNAL TIME INCREMENT = .0992 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.43	125.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.71 WATERSHED INCHES; 241 CFS-HRS; 19.9 ACRE-FEET.

OPERATION RUNOFF XSECTION 3
OUTPUT HYDROGRAPH = 3 AREA = .07 SQ MI
INPUT RUNOFF CURVE = 87. TIME OF CONCENTRATION = .50 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0667 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.09	107.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.14 WATERSHED INCHES; 140 CFS-HRS; 11.5 ACRE-FEET.

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

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.89	316.3	(NULL)

1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 PASS 2 JOB NO. 1 PAGE 14

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.62 WATERSHED INCHES; 1061 CFS-HRS; 87.7 ACRE-FEET.

OPERATION ADDHYD XSECTION 5
INPUT HYDROGRAPHS 3,4 OUTPUT HYDROGRAPH 5

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.75	336.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.67 WATERSHED INCHES; 1201 CFS-HRS; 99.2 ACRE-FEET.

OPERATION RESVOR STRUCTURE 1
INPUT HYDROGRAPH 5 OUTPUT HYDROGRAPH 6
SURFACE ELEVATION = 1354.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.83	335.8	1356.82

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.64 WATERSHED INCHES; 1185 CFS-HRS; 97.9 ACRE-FEET.

OPERATION RUNOFF XSECTION 6
OUTPUT HYDROGRAPH = 7 AREA = .06 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)
12.06	106.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.24 WATERSHED INCHES; 131 CFS-HRS; 10.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 7
INPUT HYDROGRAPHS 6,7 OUTPUT HYDROGRAPH 4

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.25	367.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.69 WATERSHED INCHES; 1317 CFS-HRS; 108.8 ACRE-FEET.

1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 PASS 2 JOB NO. 1 PAGE 15

OPERATION RUNOFF XSECTION 8
OUTPUT HYDROGRAPH = 5 AREA = .02 SQ MI
INPUT RUNOFF CURVE = 81. TIME OF CONCENTRATION = .67 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0889 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.19	28.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.59 WATERSHED INCHES; 41 CFS-HRS; 3.4 ACRE-FEET.

OPERATION ADDHYD XSECTION 9
INPUT HYDROGRAPHS 4,5 OUTPUT HYDROGRAPH 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.24	395.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.68 WATERSHED INCHES; 1358 CFS-HRS; 112.2 ACRE-FEET.

OPERATION RESVOR STRUCTURE 2
INPUT HYDROGRAPH 6 OUTPUT HYDROGRAPH 7
SURFACE ELEVATION = 1350.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.47	376.0	1353.55

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.55 WATERSHED INCHES; 1289 CFS-HRS; 106.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 10
OUTPUT HYDROGRAPH = 4 AREA = .18 SQ MI
INPUT RUNOFF CURVE = 81. TIME OF CONCENTRATION = 1.21 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0964 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.51	147.8	(RUNOFF)

```
   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                2.59 WATERSHED INCHES;     303 CFS-HRS;      25.1 ACRE-FEET.


 OPERATION RUNOFF   XSECTION  11
        OUTPUT HYDROGRAPH =  5      AREA =    .05 SQ MI
        INPUT RUNOFF CURVE = 87.    TIME OF CONCENTRATION =   .50 HOURS
        COMPUTED INTERNAL TIME INCREMENT =  .0667 HOURS
1
 TR20 ------------------------------------------------------------------- SCS -
          KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS  JAN VERSION
 12/12/** krugsws.T20  50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
 15:04:41                    PASS   2   JOB NO.   1                      PAGE  16


   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.09                         81.4                       (RUNOFF)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                3.14 WATERSHED INCHES;     106 CFS-HRS;       8.8 ACRE-FEET.


 OPERATION ADDHYD   XSECTION  12
        INPUT HYDROGRAPHS 4,5     OUTPUT HYDROGRAPH 6

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.29                         193.5                      (NULL)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                2.71 WATERSHED INCHES;     409 CFS-HRS;      33.8 ACRE-FEET.


 OPERATION RESVOR   STRUCTURE  3
        INPUT HYDROGRAPH 6        OUTPUT HYDROGRAPH 4
        SURFACE ELEVATION =  1355.00

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.42                         189.2                       1358.03

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                2.71 WATERSHED INCHES;     409 CFS-HRS;      33.8 ACRE-FEET.


 OPERATION RUNOFF   XSECTION  13
        OUTPUT HYDROGRAPH =  5      AREA =    .02 SQ MI
        INPUT RUNOFF CURVE = 87.    TIME OF CONCENTRATION =   .33 HOURS
        COMPUTED INTERNAL TIME INCREMENT =  .0444 HOURS

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.01                          27.5                       (RUNOFF)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                3.14 WATERSHED INCHES;      32 CFS-HRS;       2.7 ACRE-FEET.


 OPERATION ADDHYD   XSECTION  14
        INPUT HYDROGRAPHS 4,5     OUTPUT HYDROGRAPH 6

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.39                         196.9                      (NULL)
1
 TR20 ------------------------------------------------------------------- SCS -
```

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

OPERATION RESVOR STRUCTURE 4
INPUT HYDROGRAPH 6 OUTPUT HYDROGRAPH 4
SURFACE ELEVATION = 1351.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.59	185.5	1353.04

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

OPERATION RUNOFF XSECTION 15
OUTPUT HYDROGRAPH = 5 AREA = .01 SQ MI
INPUT RUNOFF CURVE = 87. TIME OF CONCENTRATION = .25 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0333 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
11.97	24.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.15 WATERSHED INCHES; 27 CFS-HRS; 2.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 16
INPUT HYDROGRAPHS 4,5 OUTPUT HYDROGRAPH 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.58	189.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.76 WATERSHED INCHES; 469 CFS-HRS; 38.7 ACRE-FEET.

OPERATION RUNOFF XSECTION 17
OUTPUT HYDROGRAPH = 4 AREA = .03 SQ MI
INPUT RUNOFF CURVE = 88. TIME OF CONCENTRATION = .33 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0444 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.01	49.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.24 WATERSHED INCHES; 59 CFS-HRS; 4.9 ACRE-FEET.

1
TR20 ---------- SCS -

OPERATION ADDHYD XSECTION 18
INPUT HYDROGRAPHS 4,6 OUTPUT HYDROGRAPH 5

```
   PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.54                          198.6                       (NULL)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.81 WATERSHED INCHES;     527 CFS-HRS;      43.6 ACRE-FEET.


 OPERATION ADDHYD   XSECTION  19
         INPUT HYDROGRAPHS 5,7     OUTPUT HYDROGRAPH 6

   PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.51                          573.9                       (NULL)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.62 WATERSHED INCHES;    1816 CFS-HRS;     150.1 ACRE-FEET.


 OPERATION RUNOFF   XSECTION  20
         OUTPUT HYDROGRAPH =  4      AREA =    .12 SQ MI
         INPUT RUNOFF CURVE = 88.    TIME OF CONCENTRATION =   .50 HOURS
         COMPUTED INTERNAL TIME INCREMENT =  .0667 HOURS

   PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.09                          186.3                       (RUNOFF)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.24 WATERSHED INCHES;     244 CFS-HRS;      20.2 ACRE-FEET.


 OPERATION RUNOFF   XSECTION  21
         OUTPUT HYDROGRAPH =  5      AREA =    .14 SQ MI
         INPUT RUNOFF CURVE = 81.    TIME OF CONCENTRATION =  1.27 HOURS
         COMPUTED INTERNAL TIME INCREMENT =  .1014 HOURS

   PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.55                          110.4                       (RUNOFF)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.59 WATERSHED INCHES;     235 CFS-HRS;      19.4 ACRE-FEET.


 OPERATION ADDHYD   XSECTION  22
         INPUT HYDROGRAPHS 6,4     OUTPUT HYDROGRAPH 7
1
 TR20 ------------------------------------------------------------------- SCS -
          KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS  JAN VERSION
 12/12/** krugsws.T20  50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
 15:04:41                    PASS   2   JOB NO.   1                      PAGE  19


   PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.31                          685.2                       (NULL)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.68 WATERSHED INCHES;    2060 CFS-HRS;     170.3 ACRE-FEET.


 OPERATION ADDHYD   XSECTION  23
         INPUT HYDROGRAPHS 7,5     OUTPUT HYDROGRAPH 4

   PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.34                          783.5                       (NULL)
```

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.67 WATERSHED INCHES; 2295 CFS-HRS; 189.7 ACRE-FEET.

OPERATION RESVOR STRUCTURE 5
INPUT HYDROGRAPH 4 OUTPUT HYDROGRAPH 6
SURFACE ELEVATION = 1345.50

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.08	597.7	1348.81

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.56 WATERSHED INCHES; 2203 CFS-HRS; 182.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 24
OUTPUT HYDROGRAPH = 5 AREA = .30 SQ MI
INPUT RUNOFF CURVE = 87. TIME OF CONCENTRATION = 1.00 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0925 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.38	327.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.14 WATERSHED INCHES; 605 CFS-HRS; 50.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 25
OUTPUT HYDROGRAPH = 7 AREA = .03 SQ MI
INPUT RUNOFF CURVE = 81. TIME OF CONCENTRATION = .33 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0444 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.01	46.1	(RUNOFF)
17.36	1.6	(RUNOFF)

1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 PASS 2 JOB NO. 1 PAGE 20

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.59 WATERSHED INCHES; 53 CFS-HRS; 4.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 26
OUTPUT HYDROGRAPH = 4 AREA = .10 SQ MI
INPUT RUNOFF CURVE = 89. TIME OF CONCENTRATION = .31 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0416 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.00	189.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.34 WATERSHED INCHES; 222 CFS-HRS; 18.4 ACRE-FEET.

OPERATION ADDHYD XSECTION 27
INPUT HYDROGRAPHS 5,4 OUTPUT HYDROGRAPH 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	432.7	(NULL)

```
   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                3.19 WATERSHED INCHES;     827 CFS-HRS;      68.3 ACRE-FEET.


 OPERATION RESVOR   STRUCTURE  7
         INPUT HYDROGRAPH 2        OUTPUT HYDROGRAPH 1
         SURFACE ELEVATION =  1352.00

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.31                         400.5                        1354.62

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                3.19 WATERSHED INCHES;     827 CFS-HRS;      68.3 ACRE-FEET.


 OPERATION ADDHYD   XSECTION  28
         INPUT HYDROGRAPHS 6,7     OUTPUT HYDROGRAPH 3

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      13.07                         602.2                        (NULL)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                2.56 WATERSHED INCHES;    2256 CFS-HRS;     186.4 ACRE-FEET.
1
 TR20 ------------------------------------------------------------------- SCS -
          KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS  JAN VERSION
 12/12/** krugsws.T20  50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
 15:04:41                    PASS   2   JOB NO.   1                       PAGE  21



 OPERATION ADDHYD   XSECTION  29
         INPUT HYDROGRAPHS 3,1     OUTPUT HYDROGRAPH 5

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.79                         848.9                        (NULL)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                2.70 WATERSHED INCHES;    3081 CFS-HRS;     254.6 ACRE-FEET.


 OPERATION RESVOR   STRUCTURE  6
         INPUT HYDROGRAPH 5        OUTPUT HYDROGRAPH 6
         SURFACE ELEVATION =  1335.50

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      13.01                         820.1                        1341.80

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                2.67 WATERSHED INCHES;    3038 CFS-HRS;     251.0 ACRE-FEET.


 OPERATION RUNOFF   XSECTION  30
         OUTPUT HYDROGRAPH =  7      AREA =    .00 SQ MI
         INPUT RUNOFF CURVE = 88.    TIME OF CONCENTRATION =   .00 HOURS
         COMPUTED INTERNAL TIME INCREMENT =  .0012 HOURS

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                2.67 WATERSHED INCHES;      16 CFS-HRS;     251.0 ACRE-FEET.


 OPERATION ADDHYD   XSECTION  31
```

```
        INPUT HYDROGRAPHS 7,6     OUTPUT HYDROGRAPH 4

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      13.01                         820.1                       (NULL)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                2.67 WATERSHED INCHES;    3038 CFS-HRS;     251.0 ACRE-FEET.


 EXECUTIVE CONTROL ENDCMP    COMPUTATIONS COMPLETED FOR PASS   2
1
 TR20 ------------------------------------------------------------------- SCS -
         KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS  JAN VERSION
 12/12/** krugsws.T20  50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
 15:04:41                    PASS   3   JOB NO.   1                      PAGE  22



 EXECUTIVE CONTROL COMPUT    FROM XSECTION   1  TO XSECTION  31
    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. = 7


 OPERATION RUNOFF   XSECTION   1
        OUTPUT HYDROGRAPH =  1      AREA =    .49 SQ MI
        INPUT RUNOFF CURVE = 81.    TIME OF CONCENTRATION =  2.33 HOURS
        COMPUTED INTERNAL TIME INCREMENT =  .1033 HOURS

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      13.19                         314.2                       (RUNOFF)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                3.21 WATERSHED INCHES;    1016 CFS-HRS;      83.9 ACRE-FEET.


 OPERATION RUNOFF   XSECTION   2
        OUTPUT HYDROGRAPH =  2      AREA =    .14 SQ MI
        INPUT RUNOFF CURVE = 82.    TIME OF CONCENTRATION =  1.08 HOURS
        COMPUTED INTERNAL TIME INCREMENT =  .0992 HOURS

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.43                         153.9                       (RUNOFF)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                3.34 WATERSHED INCHES;     296 CFS-HRS;      24.5 ACRE-FEET.


 OPERATION RUNOFF   XSECTION   3
        OUTPUT HYDROGRAPH =  3      AREA =    .07 SQ MI
        INPUT RUNOFF CURVE = 87.    TIME OF CONCENTRATION =   .50 HOURS
        COMPUTED INTERNAL TIME INCREMENT =  .0667 HOURS

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.09                         127.9                       (RUNOFF)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                3.80 WATERSHED INCHES;     169 CFS-HRS;      13.9 ACRE-FEET.


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

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.88	392.5	(NULL)

1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 PASS 3 JOB NO. 1 PAGE 23

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.24 WATERSHED INCHES; 1312 CFS-HRS; 108.4 ACRE-FEET.

OPERATION ADDHYD XSECTION 5
INPUT HYDROGRAPHS 3,4 OUTPUT HYDROGRAPH 5

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.74	416.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.29 WATERSHED INCHES; 1481 CFS-HRS; 122.4 ACRE-FEET.

OPERATION RESVOR STRUCTURE 1
INPUT HYDROGRAPH 5 OUTPUT HYDROGRAPH 6
SURFACE ELEVATION = 1354.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.90	412.8	1357.08

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.26 WATERSHED INCHES; 1465 CFS-HRS; 121.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 6
OUTPUT HYDROGRAPH = 7 AREA = .06 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)
12.06	127.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.90 WATERSHED INCHES; 158 CFS-HRS; 13.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 7
INPUT HYDROGRAPHS 6,7 OUTPUT HYDROGRAPH 4

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.25	450.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.31 WATERSHED INCHES; 1623 CFS-HRS; 134.1 ACRE-FEET.

1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 PASS 3 JOB NO. 1 PAGE 24

OPERATION RUNOFF XSECTION 8

```
        OUTPUT HYDROGRAPH =  5      AREA =    .02 SQ MI
        INPUT RUNOFF CURVE = 81.    TIME OF CONCENTRATION =   .67 HOURS
        COMPUTED INTERNAL TIME INCREMENT =  .0889 HOURS

   PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.19                        34.2                       (RUNOFF)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                3.20 WATERSHED INCHES;      51 CFS-HRS;       4.2 ACRE-FEET.


 OPERATION ADDHYD   XSECTION   9
        INPUT HYDROGRAPHS 4,5     OUTPUT HYDROGRAPH 6

   PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.24                        486.0                      (NULL)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                3.31 WATERSHED INCHES;    1674 CFS-HRS;     138.3 ACRE-FEET.


 OPERATION RESVOR   STRUCTURE  2
        INPUT HYDROGRAPH 6        OUTPUT HYDROGRAPH 7
        SURFACE ELEVATION =  1350.00

   PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.43                        467.4                      1353.82

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                3.17 WATERSHED INCHES;    1605 CFS-HRS;     132.6 ACRE-FEET.


 OPERATION RUNOFF   XSECTION  10
        OUTPUT HYDROGRAPH =  4      AREA =    .18 SQ MI
        INPUT RUNOFF CURVE = 81.    TIME OF CONCENTRATION =  1.21 HOURS
        COMPUTED INTERNAL TIME INCREMENT =  .0964 HOURS

   PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.50                        183.4                      (RUNOFF)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                3.21 WATERSHED INCHES;     376 CFS-HRS;      31.0 ACRE-FEET.


 OPERATION RUNOFF   XSECTION  11
        OUTPUT HYDROGRAPH =  5      AREA =    .05 SQ MI
        INPUT RUNOFF CURVE = 87.    TIME OF CONCENTRATION =   .50 HOURS
        COMPUTED INTERNAL TIME INCREMENT =  .0667 HOURS
1
 TR20 ------------------------------------------------------------------- SCS -
          KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS  JAN VERSION
 12/12/** krugsws.T20  50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
 15:04:41                    PASS   3   JOB NO.   1                      PAGE  25


   PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.09                         97.2                      (RUNOFF)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                3.80 WATERSHED INCHES;     128 CFS-HRS;      10.6 ACRE-FEET.


 OPERATION ADDHYD   XSECTION  12
```

INPUT HYDROGRAPHS 4,5 OUTPUT HYDROGRAPH 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.29	238.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.34 WATERSHED INCHES; 504 CFS-HRS; 41.6 ACRE-FEET.

OPERATION RESVOR STRUCTURE 3
INPUT HYDROGRAPH 6 OUTPUT HYDROGRAPH 4
SURFACE ELEVATION = 1355.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.39	234.7	1358.19

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.34 WATERSHED INCHES; 504 CFS-HRS; 41.7 ACRE-FEET.

OPERATION RUNOFF XSECTION 13
OUTPUT HYDROGRAPH = 5 AREA = .02 SQ MI
INPUT RUNOFF CURVE = 87. TIME OF CONCENTRATION = .33 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0444 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.01	33.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.80 WATERSHED INCHES; 39 CFS-HRS; 3.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 14
INPUT HYDROGRAPHS 4,5 OUTPUT HYDROGRAPH 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.34	246.6	(NULL)

1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 PASS 3 JOB NO. 1 PAGE 26

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.37 WATERSHED INCHES; 543 CFS-HRS; 44.9 ACRE-FEET.

OPERATION RESVOR STRUCTURE 4
INPUT HYDROGRAPH 6 OUTPUT HYDROGRAPH 4
SURFACE ELEVATION = 1351.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.53	233.7	1353.37

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.37 WATERSHED INCHES; 543 CFS-HRS; 44.9 ACRE-FEET.

OPERATION RUNOFF XSECTION 15
OUTPUT HYDROGRAPH = 5 AREA = .01 SQ MI
INPUT RUNOFF CURVE = 87. TIME OF CONCENTRATION = .25 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0333 HOURS

```
   PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      11.97                        29.1                       (RUNOFF)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.79 WATERSHED INCHES;      33 CFS-HRS;       2.7 ACRE-FEET.


 OPERATION ADDHYD   XSECTION  16
        INPUT HYDROGRAPHS 4,5     OUTPUT HYDROGRAPH 6

   PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.53                       238.1                       (NULL)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.39 WATERSHED INCHES;     575 CFS-HRS;      47.6 ACRE-FEET.


 OPERATION RUNOFF   XSECTION  17
        OUTPUT HYDROGRAPH =  4      AREA =    .03 SQ MI
        INPUT RUNOFF CURVE = 88.    TIME OF CONCENTRATION =   .33 HOURS
        COMPUTED INTERNAL TIME INCREMENT =  .0444 HOURS

   PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.01                        59.5                       (RUNOFF)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.90 WATERSHED INCHES;      71 CFS-HRS;       5.9 ACRE-FEET.
1
 TR20 ------------------------------------------------------------------- SCS -
          KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS  JAN VERSION
 12/12/** krugsws.T20  50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
 15:04:41                    PASS   3   JOB NO.   1                      PAGE  27


 OPERATION ADDHYD   XSECTION  18
        INPUT HYDROGRAPHS 4,6     OUTPUT HYDROGRAPH 5

   PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.48                       250.8                       (NULL)

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


 OPERATION ADDHYD   XSECTION  19
        INPUT HYDROGRAPHS 5,7     OUTPUT HYDROGRAPH 6

   PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.45                       717.6                       (NULL)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.24 WATERSHED INCHES;    2251 CFS-HRS;     186.0 ACRE-FEET.


 OPERATION RUNOFF   XSECTION  20
        OUTPUT HYDROGRAPH =  4      AREA =    .12 SQ MI
        INPUT RUNOFF CURVE = 88.    TIME OF CONCENTRATION =   .50 HOURS
        COMPUTED INTERNAL TIME INCREMENT =  .0667 HOURS

   PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.09                       221.7                       (RUNOFF)
```

```
   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                3.90 WATERSHED INCHES;     294 CFS-HRS;      24.3 ACRE-FEET.


 OPERATION RUNOFF   XSECTION  21
        OUTPUT HYDROGRAPH =  5      AREA =    .14 SQ MI
        INPUT RUNOFF CURVE = 81.    TIME OF CONCENTRATION =  1.27 HOURS
        COMPUTED INTERNAL TIME INCREMENT =  .1014 HOURS

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.54                         136.7                       (RUNOFF)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                3.21 WATERSHED INCHES;     291 CFS-HRS;      24.0 ACRE-FEET.


 OPERATION ADDHYD   XSECTION  22
        INPUT HYDROGRAPHS 6,4     OUTPUT HYDROGRAPH 7
1
 TR20 ------------------------------------------------------------------------ SCS -
         KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS  JAN VERSION
 12/12/** krugsws.T20  50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
 15:04:41                    PASS   3   JOB NO.   1                      PAGE  28


   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.26                         865.3                       (NULL)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                3.31 WATERSHED INCHES;    2545 CFS-HRS;     210.3 ACRE-FEET.


 OPERATION ADDHYD   XSECTION  23
        INPUT HYDROGRAPHS 7,5     OUTPUT HYDROGRAPH 4

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.31                         982.9                       (NULL)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                3.30 WATERSHED INCHES;    2836 CFS-HRS;     234.4 ACRE-FEET.


 OPERATION RESVOR   STRUCTURE  5
        INPUT HYDROGRAPH 4        OUTPUT HYDROGRAPH 6
        SURFACE ELEVATION =  1345.50

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.94                         782.5                        1349.10

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                3.19 WATERSHED INCHES;    2740 CFS-HRS;     226.4 ACRE-FEET.


 OPERATION RUNOFF   XSECTION  24
        OUTPUT HYDROGRAPH =  5      AREA =    .30 SQ MI
        INPUT RUNOFF CURVE = 87.    TIME OF CONCENTRATION =  1.00 HOURS
        COMPUTED INTERNAL TIME INCREMENT =  .0925 HOURS

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.38                         395.8                       (RUNOFF)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
```

3.80 WATERSHED INCHES; 733 CFS-HRS; 60.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 25
OUTPUT HYDROGRAPH = 7 AREA = .03 SQ MI
INPUT RUNOFF CURVE = 81. TIME OF CONCENTRATION = .33 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0444 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.01	56.7	(RUNOFF)

1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 PASS 3 JOB NO. 1 PAGE 29

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.21 WATERSHED INCHES; 66 CFS-HRS; 5.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 26
OUTPUT HYDROGRAPH = 4 AREA = .10 SQ MI
INPUT RUNOFF CURVE = 89. TIME OF CONCENTRATION = .31 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0416 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
11.99	225.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.01 WATERSHED INCHES; 267 CFS-HRS; 22.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 27
INPUT HYDROGRAPHS 5,4 OUTPUT HYDROGRAPH 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	520.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.86 WATERSHED INCHES; 999 CFS-HRS; 82.6 ACRE-FEET.

OPERATION RESVOR STRUCTURE 7
INPUT HYDROGRAPH 2 OUTPUT HYDROGRAPH 1
SURFACE ELEVATION = 1352.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.30	483.4	1354.94

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.86 WATERSHED INCHES; 999 CFS-HRS; 82.6 ACRE-FEET.

OPERATION ADDHYD XSECTION 28
INPUT HYDROGRAPHS 6,7 OUTPUT HYDROGRAPH 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.93	788.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.19 WATERSHED INCHES; 2805 CFS-HRS; 231.8 ACRE-FEET.

1

```
 TR20 ------------------------------------------------------------------- SCS -
         KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS  JAN VERSION
 12/12/** krugsws.T20  50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
 15:04:41                    PASS   3   JOB NO.   1                      PAGE  30


 OPERATION ADDHYD   XSECTION  29
         INPUT HYDROGRAPHS 3,1     OUTPUT HYDROGRAPH 5

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       12.70                        1135.3                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   3.34 WATERSHED INCHES;    3805 CFS-HRS;     314.5 ACRE-FEET.


 OPERATION RESVOR   STRUCTURE  6
         INPUT HYDROGRAPH 5        OUTPUT HYDROGRAPH 6
         SURFACE ELEVATION =  1335.50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       12.95                        1067.0                        1342.61

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   3.30 WATERSHED INCHES;    3761 CFS-HRS;     310.8 ACRE-FEET.


 OPERATION RUNOFF   XSECTION  30
         OUTPUT HYDROGRAPH =  7      AREA =    .00 SQ MI
         INPUT RUNOFF CURVE = 88.    TIME OF CONCENTRATION =   .00 HOURS
         COMPUTED INTERNAL TIME INCREMENT =  .0012 HOURS

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   3.30 WATERSHED INCHES;      16 CFS-HRS;     310.8 ACRE-FEET.


 OPERATION ADDHYD   XSECTION  31
         INPUT HYDROGRAPHS 7,6     OUTPUT HYDROGRAPH 4

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       12.95                        1067.0                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   3.30 WATERSHED INCHES;    3761 CFS-HRS;     310.8 ACRE-FEET.


 EXECUTIVE CONTROL ENDCMP    COMPUTATIONS COMPLETED FOR PASS   3
1
 TR20 ------------------------------------------------------------------- SCS -
         KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS  JAN VERSION
 12/12/** krugsws.T20  50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
 15:04:41                    PASS   4   JOB NO.   1                      PAGE  31


 EXECUTIVE CONTROL COMPUT    FROM XSECTION   1  TO XSECTION  31
    STARTING TIME =   .00       RAIN DEPTH =  7.10       RAIN DURATION =  1.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .100 HOURS
    ALTERNATE NO. =14           STORM NO. = 4            RAIN TABLE NO. = 7


 OPERATION RUNOFF   XSECTION   1
```

OUTPUT HYDROGRAPH = 1 AREA = .49 SQ MI
INPUT RUNOFF CURVE = 81. TIME OF CONCENTRATION = 2.33 HOURS
COMPUTED INTERNAL TIME INCREMENT = .1033 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.17	478.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.90 WATERSHED INCHES; 1550 CFS-HRS; 128.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 2
OUTPUT HYDROGRAPH = 2 AREA = .14 SQ MI
INPUT RUNOFF CURVE = 82. TIME OF CONCENTRATION = 1.08 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0992 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.42	230.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.05 WATERSHED INCHES; 448 CFS-HRS; 37.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 3
OUTPUT HYDROGRAPH = 3 AREA = .07 SQ MI
INPUT RUNOFF CURVE = 87. TIME OF CONCENTRATION = .50 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0667 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.09	184.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.57 WATERSHED INCHES; 247 CFS-HRS; 20.4 ACRE-FEET.

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

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.86	598.0	(NULL)

1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 PASS 4 JOB NO. 1 PAGE 32

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.93 WATERSHED INCHES; 1998 CFS-HRS; 165.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 5
INPUT HYDROGRAPHS 3,4 OUTPUT HYDROGRAPH 5

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.73	633.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.99 WATERSHED INCHES; 2246 CFS-HRS; 185.6 ACRE-FEET.

OPERATION RESVOR STRUCTURE 1
INPUT HYDROGRAPH 5 OUTPUT HYDROGRAPH 6

SURFACE ELEVATION = 1354.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.93	623.4	1358.04

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.96 WATERSHED INCHES; 2229 CFS-HRS; 184.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 6
OUTPUT HYDROGRAPH = 7 AREA = .06 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)
12.06	182.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.68 WATERSHED INCHES; 230 CFS-HRS; 19.0 ACRE-FEET.

OPERATION ADDHYD XSECTION 7
INPUT HYDROGRAPHS 6,7 OUTPUT HYDROGRAPH 4

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.30	630.5	(NULL)
12.78	646.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.02 WATERSHED INCHES; 2460 CFS-HRS; 203.3 ACRE-FEET.

1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 PASS 4 JOB NO. 1 PAGE 33

OPERATION RUNOFF XSECTION 8
OUTPUT HYDROGRAPH = 5 AREA = .02 SQ MI
INPUT RUNOFF CURVE = 81. TIME OF CONCENTRATION = .67 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0889 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.19	51.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.89 WATERSHED INCHES; 77 CFS-HRS; 6.4 ACRE-FEET.

OPERATION ADDHYD XSECTION 9
INPUT HYDROGRAPHS 4,5 OUTPUT HYDROGRAPH 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.24	682.9	(NULL)
12.65	666.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.01 WATERSHED INCHES; 2537 CFS-HRS; 209.7 ACRE-FEET.

OPERATION RESVOR STRUCTURE 2
INPUT HYDROGRAPH 6 OUTPUT HYDROGRAPH 7

SURFACE ELEVATION = 1350.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.48	668.0	1354.33

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.88 WATERSHED INCHES; 2469 CFS-HRS; 204.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 10
OUTPUT HYDROGRAPH = 4 AREA = .18 SQ MI
INPUT RUNOFF CURVE = 81. TIME OF CONCENTRATION = 1.21 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0964 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.50	276.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.89 WATERSHED INCHES; 573 CFS-HRS; 47.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 11
1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 PASS 4 JOB NO. 1 PAGE 34

OUTPUT HYDROGRAPH = 5 AREA = .05 SQ MI
INPUT RUNOFF CURVE = 87. TIME OF CONCENTRATION = .50 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0667 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.09	140.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.57 WATERSHED INCHES; 188 CFS-HRS; 15.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 12
INPUT HYDROGRAPHS 4,5 OUTPUT HYDROGRAPH 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.29	356.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.05 WATERSHED INCHES; 761 CFS-HRS; 62.9 ACRE-FEET.

OPERATION RESVOR STRUCTURE 3
INPUT HYDROGRAPH 6 OUTPUT HYDROGRAPH 4
SURFACE ELEVATION = 1355.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.38	351.3	1358.59

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.04 WATERSHED INCHES; 761 CFS-HRS; 62.9 ACRE-FEET.

OPERATION RUNOFF XSECTION 13
OUTPUT HYDROGRAPH = 5 AREA = .02 SQ MI
INPUT RUNOFF CURVE = 87. TIME OF CONCENTRATION = .33 HOURS

COMPUTED INTERNAL TIME INCREMENT = .0444 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.01	47.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.57 WATERSHED INCHES; 57 CFS-HRS; 4.7 ACRE-FEET.

OPERATION ADDHYD XSECTION 14
INPUT HYDROGRAPHS 4,5 OUTPUT HYDROGRAPH 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.32	368.0	(NULL)

1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 PASS 4 JOB NO. 1 PAGE 35

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.08 WATERSHED INCHES; 818 CFS-HRS; 67.6 ACRE-FEET.

OPERATION RESVOR STRUCTURE 4
INPUT HYDROGRAPH 6 OUTPUT HYDROGRAPH 4
SURFACE ELEVATION = 1351.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.51	351.8	1354.19

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.08 WATERSHED INCHES; 818 CFS-HRS; 67.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 15
OUTPUT HYDROGRAPH = 5 AREA = .01 SQ MI
INPUT RUNOFF CURVE = 87. TIME OF CONCENTRATION = .25 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0333 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
11.97	41.8	(RUNOFF)
17.45	1.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.58 WATERSHED INCHES; 48 CFS-HRS; 4.0 ACRE-FEET.

OPERATION ADDHYD XSECTION 16
INPUT HYDROGRAPHS 4,5 OUTPUT HYDROGRAPH 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.50	358.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.10 WATERSHED INCHES; 866 CFS-HRS; 71.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 17
OUTPUT HYDROGRAPH = 4 AREA = .03 SQ MI
INPUT RUNOFF CURVE = 88. TIME OF CONCENTRATION = .33 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0444 HOURS

```
   PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.01                        85.1                       (RUNOFF)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 5.68 WATERSHED INCHES;     103 CFS-HRS;       8.5 ACRE-FEET.
1
 TR20 ------------------------------------------------------------------- SCS -
         KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS  JAN VERSION
 12/12/** krugsws.T20  50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
 15:04:41                   PASS   4   JOB NO.   1                      PAGE  36



 OPERATION ADDHYD   XSECTION  18
        INPUT HYDROGRAPHS 4,6     OUTPUT HYDROGRAPH 5

   PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.40                       377.5                       (NULL)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 5.16 WATERSHED INCHES;     969 CFS-HRS;      80.1 ACRE-FEET.


 OPERATION ADDHYD   XSECTION  19
        INPUT HYDROGRAPHS 5,7     OUTPUT HYDROGRAPH 6

   PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.44                      1046.2                       (NULL)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 4.95 WATERSHED INCHES;    3438 CFS-HRS;     284.1 ACRE-FEET.


 OPERATION RUNOFF   XSECTION  20
        OUTPUT HYDROGRAPH =  4      AREA =    .12 SQ MI
        INPUT RUNOFF CURVE = 88.    TIME OF CONCENTRATION =   .50 HOURS
        COMPUTED INTERNAL TIME INCREMENT =  .0667 HOURS

   PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.09                       316.8                       (RUNOFF)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 5.69 WATERSHED INCHES;     428 CFS-HRS;      35.4 ACRE-FEET.


 OPERATION RUNOFF   XSECTION  21
        OUTPUT HYDROGRAPH =  5      AREA =    .14 SQ MI
        INPUT RUNOFF CURVE = 81.    TIME OF CONCENTRATION =  1.27 HOURS
        COMPUTED INTERNAL TIME INCREMENT =  .1014 HOURS

   PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.53                       208.5                       (RUNOFF)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 4.90 WATERSHED INCHES;     444 CFS-HRS;      36.7 ACRE-FEET.


 OPERATION ADDHYD   XSECTION  22
        INPUT HYDROGRAPHS 6,4     OUTPUT HYDROGRAPH 7
1
 TR20 ------------------------------------------------------------------- SCS -
         KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS  JAN VERSION
```

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.22	1294.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW =   .00 CFS)
5.03 WATERSHED INCHES;   3866 CFS-HRS;   319.5 ACRE-FEET.

OPERATION ADDHYD   XSECTION 23
INPUT HYDROGRAPHS 7,5   OUTPUT HYDROGRAPH 4

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.25	1457.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW =   .00 CFS)
5.01 WATERSHED INCHES;   4310 CFS-HRS;   356.2 ACRE-FEET.

OPERATION RESVOR   STRUCTURE 5
INPUT HYDROGRAPH 4   OUTPUT HYDROGRAPH 6
SURFACE ELEVATION = 1345.50

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.78	1255.3	1349.71

RUNOFF ABOVE BASEFLOW (BASEFLOW =   .00 CFS)
4.90 WATERSHED INCHES;   4210 CFS-HRS;   347.9 ACRE-FEET.

OPERATION RUNOFF   XSECTION 24
OUTPUT HYDROGRAPH = 5   AREA =   .30 SQ MI
INPUT RUNOFF CURVE = 87.   TIME OF CONCENTRATION = 1.00 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0925 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.37	569.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW =   .00 CFS)
5.57 WATERSHED INCHES;   1072 CFS-HRS;   88.6 ACRE-FEET.

OPERATION RUNOFF   XSECTION 25
OUTPUT HYDROGRAPH = 7   AREA =   .03 SQ MI
INPUT RUNOFF CURVE = 81.   TIME OF CONCENTRATION =   .33 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0444 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.01	85.4	(RUNOFF)

1

RUNOFF ABOVE BASEFLOW (BASEFLOW =   .00 CFS)
4.90 WATERSHED INCHES;   100 CFS-HRS;   8.3 ACRE-FEET.

OPERATION RUNOFF   XSECTION 26

OUTPUT HYDROGRAPH = 4 AREA = .10 SQ MI
INPUT RUNOFF CURVE = 89. TIME OF CONCENTRATION = .31 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0416 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
11.99	319.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.80 WATERSHED INCHES; 386 CFS-HRS; 31.9 ACRE-FEET.

OPERATION ADDHYD XSECTION 27
INPUT HYDROGRAPHS 5,4 OUTPUT HYDROGRAPH 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	749.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.63 WATERSHED INCHES; 1459 CFS-HRS; 120.5 ACRE-FEET.

OPERATION RESVOR STRUCTURE 7
INPUT HYDROGRAPH 2 OUTPUT HYDROGRAPH 1
SURFACE ELEVATION = 1352.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.26	706.9	1355.67

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.63 WATERSHED INCHES; 1458 CFS-HRS; 120.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 28
INPUT HYDROGRAPHS 6,7 OUTPUT HYDROGRAPH 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.77	1265.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.90 WATERSHED INCHES; 4310 CFS-HRS; 356.2 ACRE-FEET.

1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 PASS 4 JOB NO. 1 PAGE 39

OPERATION ADDHYD XSECTION 29
INPUT HYDROGRAPHS 3,1 OUTPUT HYDROGRAPH 5

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.55	1849.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.06 WATERSHED INCHES; 5764 CFS-HRS; 476.4 ACRE-FEET.

OPERATION RESVOR STRUCTURE 6
INPUT HYDROGRAPH 5 OUTPUT HYDROGRAPH 6
SURFACE ELEVATION = 1335.50

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)

```
      12.76                        1777.3                          1344.16

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                5.02 WATERSHED INCHES;    5723 CFS-HRS;     473.0 ACRE-FEET.


 OPERATION RUNOFF   XSECTION  30
        OUTPUT HYDROGRAPH =  7      AREA =    .00 SQ MI
        INPUT RUNOFF CURVE = 88.    TIME OF CONCENTRATION =   .00 HOURS
        COMPUTED INTERNAL TIME INCREMENT =  .0012 HOURS

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                5.02 WATERSHED INCHES;      16 CFS-HRS;     473.0 ACRE-FEET.


 OPERATION ADDHYD   XSECTION  31
        INPUT HYDROGRAPHS 7,6     OUTPUT HYDROGRAPH 4

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.76                        1777.3                        (NULL)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                5.02 WATERSHED INCHES;    5723 CFS-HRS;     473.0 ACRE-FEET.


 EXECUTIVE CONTROL EMDCMP    COMPUTATIONS COMPLETED FOR PASS   4
1
 TR20 ------------------------------------------------------------------------ SCS -
          KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS  JAN VERSION
 12/12/** krugsws.T20  50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
 15:04:41                    PASS   5   JOB NO.   1                      PAGE  40



 EXECUTIVE CONTROL COMPUT    FROM XSECTION   1  TO XSECTION  31
    STARTING TIME =   .00       RAIN DEPTH =  7.80       RAIN DURATION =  1.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .100 HOURS
    ALTERNATE NO. =15           STORM NO. = 5            RAIN TABLE NO. = 7


 OPERATION RUNOFF   XSECTION   1
        OUTPUT HYDROGRAPH =  1      AREA =    .49 SQ MI
        INPUT RUNOFF CURVE = 81.    TIME OF CONCENTRATION =  2.33 HOURS
        COMPUTED INTERNAL TIME INCREMENT =  .1033 HOURS

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      13.17                         541.8                        (RUNOFF)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                5.55 WATERSHED INCHES;    1758 CFS-HRS;     145.2 ACRE-FEET.


 OPERATION RUNOFF   XSECTION   2
        OUTPUT HYDROGRAPH =  2      AREA =    .14 SQ MI
        INPUT RUNOFF CURVE = 82.    TIME OF CONCENTRATION =  1.08 HOURS
        COMPUTED INTERNAL TIME INCREMENT =  .0992 HOURS

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.42                         259.7                        (RUNOFF)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                5.71 WATERSHED INCHES;     507 CFS-HRS;      41.9 ACRE-FEET.
```

```
 OPERATION RUNOFF   XSECTION   3
        OUTPUT HYDROGRAPH =  3      AREA =    .07 SQ MI
        INPUT RUNOFF CURVE = 87.    TIME OF CONCENTRATION =   .50 HOURS
        COMPUTED INTERNAL TIME INCREMENT =  .0667 HOURS

   PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.09                        205.2                       (RUNOFF)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                6.25 WATERSHED INCHES;     278 CFS-HRS;      22.9 ACRE-FEET.


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

   PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.85                        676.6                       (NULL)
1
 TR20 ------------------------------------------------------------------------ SCS -
         KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS  JAN VERSION
 12/12/** krugsws.T20  50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
 15:04:41                    PASS   5   JOB NO.   1                      PAGE  41


   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                5.59 WATERSHED INCHES;    2264 CFS-HRS;     187.1 ACRE-FEET.


 OPERATION ADDHYD   XSECTION   5
        INPUT HYDROGRAPHS 3,4     OUTPUT HYDROGRAPH 5

   PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.73                        716.6                       (NULL)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                5.65 WATERSHED INCHES;    2542 CFS-HRS;     210.1 ACRE-FEET.


 OPERATION RESVOR   STRUCTURE  1
        INPUT HYDROGRAPH 5        OUTPUT HYDROGRAPH 6
        SURFACE ELEVATION =  1354.00

   PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.96                        701.0                        1358.37

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                5.62 WATERSHED INCHES;    2526 CFS-HRS;     208.7 ACRE-FEET.


 OPERATION RUNOFF   XSECTION   6
        OUTPUT HYDROGRAPH =  7      AREA =    .06 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)
      12.05                        202.8                       (RUNOFF)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                6.37 WATERSHED INCHES;     258 CFS-HRS;      21.3 ACRE-FEET.


 OPERATION ADDHYD   XSECTION   7
```

INPUT HYDROGRAPHS 6,7 OUTPUT HYDROGRAPH 4

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.33	706.9	(NULL)
12.88	723.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.68 WATERSHED INCHES; 2784 CFS-HRS; 230.1 ACRE-FEET.

1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 PASS 5 JOB NO. 1 PAGE 42

OPERATION RUNOFF XSECTION 8
OUTPUT HYDROGRAPH = 5 AREA = .02 SQ MI
INPUT RUNOFF CURVE = 81. TIME OF CONCENTRATION = .67 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0889 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.18	58.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.55 WATERSHED INCHES; 88 CFS-HRS; 7.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 9
INPUT HYDROGRAPHS 4,5 OUTPUT HYDROGRAPH 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.27	761.5	(NULL)
12.70	742.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.67 WATERSHED INCHES; 2872 CFS-HRS; 237.3 ACRE-FEET.

OPERATION RESVOR STRUCTURE 2
INPUT HYDROGRAPH 6 OUTPUT HYDROGRAPH 7
SURFACE ELEVATION = 1350.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.46	747.3	1354.51

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.54 WATERSHED INCHES; 2803 CFS-HRS; 231.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 10
OUTPUT HYDROGRAPH = 4 AREA = .18 SQ MI
INPUT RUNOFF CURVE = 81. TIME OF CONCENTRATION = 1.21 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0964 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.50	312.7	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.55 WATERSHED INCHES; 650 CFS-HRS; 53.7 ACRE-FEET.

OPERATION RUNOFF XSECTION 11

```
1
 TR20 ------------------------------------------------------------------- SCS -
         KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS  JAN VERSION
 12/12/** krugsws.T20  50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
 15:04:41                    PASS   5   JOB NO.   1                     PAGE  43

         OUTPUT HYDROGRAPH =  5      AREA =    .05 SQ MI
         INPUT RUNOFF CURVE = 87.    TIME OF CONCENTRATION =   .50 HOURS
         COMPUTED INTERNAL TIME INCREMENT =  .0667 HOURS

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       12.09                         156.0                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   6.25 WATERSHED INCHES;     211 CFS-HRS;      17.4 ACRE-FEET.


 OPERATION ADDHYD   XSECTION  12
         INPUT HYDROGRAPHS 4,5     OUTPUT HYDROGRAPH 6

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       12.28                         401.4                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   5.71 WATERSHED INCHES;     861 CFS-HRS;      71.1 ACRE-FEET.


 OPERATION RESVOR   STRUCTURE  3
         INPUT HYDROGRAPH 6        OUTPUT HYDROGRAPH 4
         SURFACE ELEVATION =  1355.00

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       12.38                         395.8                        1358.75

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   5.71 WATERSHED INCHES;     861 CFS-HRS;      71.1 ACRE-FEET.


 OPERATION RUNOFF   XSECTION  13
         OUTPUT HYDROGRAPH =  5      AREA =    .02 SQ MI
         INPUT RUNOFF CURVE = 87.    TIME OF CONCENTRATION =   .33 HOURS
         COMPUTED INTERNAL TIME INCREMENT =  .0444 HOURS

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       12.01                          52.9                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   6.24 WATERSHED INCHES;      64 CFS-HRS;       5.3 ACRE-FEET.


 OPERATION ADDHYD   XSECTION  14
         INPUT HYDROGRAPHS 4,5     OUTPUT HYDROGRAPH 6

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       12.32                         415.0                       (NULL)
1
 TR20 ------------------------------------------------------------------- SCS -
         KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS  JAN VERSION
 12/12/** krugsws.T20  50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
 15:04:41                    PASS   5   JOB NO.   1                     PAGE  44


    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
```

5.74 WATERSHED INCHES; 925 CFS-HRS; 76.4 ACRE-FEET.

OPERATION RESVOR STRUCTURE 4
INPUT HYDROGRAPH 6 OUTPUT HYDROGRAPH 4
SURFACE ELEVATION = 1351.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.51	396.0	1354.49

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.74 WATERSHED INCHES; 925 CFS-HRS; 76.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 15
OUTPUT HYDROGRAPH = 5 AREA = .01 SQ MI
INPUT RUNOFF CURVE = 87. TIME OF CONCENTRATION = .25 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0333 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
11.97	46.6	(RUNOFF)
18.95	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.24 WATERSHED INCHES; 54 CFS-HRS; 4.4 ACRE-FEET.

OPERATION ADDHYD XSECTION 16
INPUT HYDROGRAPHS 4,5 OUTPUT HYDROGRAPH 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.50	403.1	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.77 WATERSHED INCHES; 978 CFS-HRS; 80.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 17
OUTPUT HYDROGRAPH = 4 AREA = .03 SQ MI
INPUT RUNOFF CURVE = 88. TIME OF CONCENTRATION = .33 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0444 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.01	94.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.37 WATERSHED INCHES; 116 CFS-HRS; 9.5 ACRE-FEET.

1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 PASS 5 JOB NO. 1 PAGE 45

OPERATION ADDHYD XSECTION 18
INPUT HYDROGRAPHS 4,6 OUTPUT HYDROGRAPH 5

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.41	424.5	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.82 WATERSHED INCHES; 1094 CFS-HRS; 90.4 ACRE-FEET.

```
 OPERATION ADDHYD   XSECTION  19
         INPUT HYDROGRAPHS 5,7     OUTPUT HYDROGRAPH 6

    PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       12.44                       1172.9                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   5.62 WATERSHED INCHES;    3897 CFS-HRS;     322.0 ACRE-FEET.


 OPERATION RUNOFF   XSECTION  20
         OUTPUT HYDROGRAPH =  4      AREA =    .12 SQ MI
         INPUT RUNOFF CURVE = 88.    TIME OF CONCENTRATION =   .50 HOURS
         COMPUTED INTERNAL TIME INCREMENT =  .0667 HOURS

    PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       12.09                       354.0                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   6.37 WATERSHED INCHES;     479 CFS-HRS;      39.6 ACRE-FEET.


 OPERATION RUNOFF   XSECTION  21
         OUTPUT HYDROGRAPH =  5      AREA =    .14 SQ MI
         INPUT RUNOFF CURVE = 81.    TIME OF CONCENTRATION =  1.27 HOURS
         COMPUTED INTERNAL TIME INCREMENT =  .1014 HOURS

    PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       12.53                       235.7                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   5.55 WATERSHED INCHES;     504 CFS-HRS;      41.6 ACRE-FEET.


 OPERATION ADDHYD   XSECTION  22
         INPUT HYDROGRAPHS 6,4     OUTPUT HYDROGRAPH 7
1
 TR20 ------------------------------------------------------------------- SCS -
          KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS  JAN VERSION
 12/12/** krugsws.T20  50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
 15:04:41                    PASS   5   JOB NO.   1                      PAGE  46


    PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       12.22                       1442.3                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   5.69 WATERSHED INCHES;    4376 CFS-HRS;     361.6 ACRE-FEET.


 OPERATION ADDHYD   XSECTION  23
         INPUT HYDROGRAPHS 7,5     OUTPUT HYDROGRAPH 4

    PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       12.26                       1629.7                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   5.67 WATERSHED INCHES;    4880 CFS-HRS;     403.3 ACRE-FEET.


 OPERATION RESVOR   STRUCTURE  5
```

INPUT HYDROGRAPH 4 OUTPUT HYDROGRAPH 6
SURFACE ELEVATION = 1345.50

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.75	1424.2	1349.92

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.55 WATERSHED INCHES; 4777 CFS-HRS; 394.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 24
OUTPUT HYDROGRAPH = 5 AREA = .30 SQ MI
INPUT RUNOFF CURVE = 87. TIME OF CONCENTRATION = 1.00 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0925 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.37	635.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.25 WATERSHED INCHES; 1204 CFS-HRS; 99.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 25
OUTPUT HYDROGRAPH = 7 AREA = .03 SQ MI
INPUT RUNOFF CURVE = 81. TIME OF CONCENTRATION = .33 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0444 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.01	96.3	(RUNOFF)

1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 PASS 5 JOB NO. 1 PAGE 47

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.55 WATERSHED INCHES; 114 CFS-HRS; 9.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 26
OUTPUT HYDROGRAPH = 4 AREA = .10 SQ MI
INPUT RUNOFF CURVE = 89. TIME OF CONCENTRATION = .31 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0416 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
11.99	355.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.49 WATERSHED INCHES; 432 CFS-HRS; 35.7 ACRE-FEET.

OPERATION ADDHYD XSECTION 27
INPUT HYDROGRAPHS 5,4 OUTPUT HYDROGRAPH 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	834.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.31 WATERSHED INCHES; 1636 CFS-HRS; 135.2 ACRE-FEET.

OPERATION RESVOR STRUCTURE 7

INPUT HYDROGRAPH 2 OUTPUT HYDROGRAPH 1
SURFACE ELEVATION = 1352.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.26	788.7	1355.93

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
6.31 WATERSHED INCHES; 1635 CFS-HRS; 135.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 28
INPUT HYDROGRAPHS 6,7 OUTPUT HYDROGRAPH 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.73	1436.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.55 WATERSHED INCHES; 4890 CFS-HRS; 404.1 ACRE-FEET.

1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 PASS 5 JOB NO. 1 PAGE 48

OPERATION ADDHYD XSECTION 29
INPUT HYDROGRAPHS 3,1 OUTPUT HYDROGRAPH 5

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.53	2104.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.73 WATERSHED INCHES; 6526 CFS-HRS; 539.3 ACRE-FEET.

OPERATION RESVOR STRUCTURE 6
INPUT HYDROGRAPH 5 OUTPUT HYDROGRAPH 6
SURFACE ELEVATION = 1335.50

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.72	2033.0	1344.56

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.69 WATERSHED INCHES; 6482 CFS-HRS; 535.7 ACRE-FEET.

OPERATION RUNOFF XSECTION 30
OUTPUT HYDROGRAPH = 7 AREA = .00 SQ MI
INPUT RUNOFF CURVE = 88. TIME OF CONCENTRATION = .00 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0012 HOURS

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
5.69 WATERSHED INCHES; 16 CFS-HRS; 535.7 ACRE-FEET.

OPERATION ADDHYD XSECTION 31
INPUT HYDROGRAPHS 7,6 OUTPUT HYDROGRAPH 4

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.72	2033.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)

5.69 WATERSHED INCHES; 6482 CFS-HRS; 535.7 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 5
1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 PASS 6 JOB NO. 1 PAGE 49

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 31
STARTING TIME = .00 RAIN DEPTH = 9.35 RAIN DURATION = 1.00
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .100 HOURS
ALTERNATE NO. =16 STORM NO. = 6 RAIN TABLE NO. = 7

OPERATION RUNOFF XSECTION 1
OUTPUT HYDROGRAPH = 1 AREA = .49 SQ MI
INPUT RUNOFF CURVE = 81. TIME OF CONCENTRATION = 2.33 HOURS
COMPUTED INTERNAL TIME INCREMENT = .1033 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.16	681.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
7.02 WATERSHED INCHES; 2223 CFS-HRS; 183.7 ACRE-FEET.

OPERATION RUNOFF XSECTION 2
OUTPUT HYDROGRAPH = 2 AREA = .14 SQ MI
INPUT RUNOFF CURVE = 82. TIME OF CONCENTRATION = 1.08 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0992 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.42	324.3	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
7.19 WATERSHED INCHES; 638 CFS-HRS; 52.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 3
OUTPUT HYDROGRAPH = 3 AREA = .07 SQ MI
INPUT RUNOFF CURVE = 87. TIME OF CONCENTRATION = .50 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0667 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.09	252.9	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
7.76 WATERSHED INCHES; 345 CFS-HRS; 28.5 ACRE-FEET.

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

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.84	851.1	(NULL)

1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
7.06 WATERSHED INCHES; 2862 CFS-HRS; 236.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 5
INPUT HYDROGRAPHS 3,4 OUTPUT HYDROGRAPH 5

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.73	900.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
7.13 WATERSHED INCHES; 3206 CFS-HRS; 265.0 ACRE-FEET.

OPERATION RESVOR STRUCTURE 1
INPUT HYDROGRAPH 5 OUTPUT HYDROGRAPH 6
SURFACE ELEVATION = 1354.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.97	878.2	1359.11

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
7.09 WATERSHED INCHES; 3190 CFS-HRS; 263.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 6
OUTPUT HYDROGRAPH = 7 AREA = .06 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)
12.05	248.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
7.89 WATERSHED INCHES; 320 CFS-HRS; 26.4 ACRE-FEET.

OPERATION ADDHYD XSECTION 7
INPUT HYDROGRAPHS 6,7 OUTPUT HYDROGRAPH 4

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.90	905.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
7.16 WATERSHED INCHES; 3510 CFS-HRS; 290.1 ACRE-FEET.

1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST

OPERATION RUNOFF XSECTION 8
OUTPUT HYDROGRAPH = 5 AREA = .02 SQ MI
INPUT RUNOFF CURVE = 81. TIME OF CONCENTRATION = .67 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0889 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.19	74.1	(RUNOFF)

```
   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                7.03 WATERSHED INCHES;     111 CFS-HRS;       9.2 ACRE-FEET.


 OPERATION ADDHYD   XSECTION   9
        INPUT HYDROGRAPHS 4,5     OUTPUT HYDROGRAPH 6

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.24                         932.9                       (NULL)
      12.79                         926.7                       (NULL)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                7.15 WATERSHED INCHES;    3621 CFS-HRS;     299.2 ACRE-FEET.


 OPERATION RESVOR   STRUCTURE  2
        INPUT HYDROGRAPH 6        OUTPUT HYDROGRAPH 7
        SURFACE ELEVATION =  1350.00

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.89                         925.0                        1354.92

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                7.02 WATERSHED INCHES;    3552 CFS-HRS;     293.5 ACRE-FEET.


 OPERATION RUNOFF   XSECTION  10
        OUTPUT HYDROGRAPH =  4      AREA =    .18 SQ MI
        INPUT RUNOFF CURVE = 81.    TIME OF CONCENTRATION =  1.21 HOURS
        COMPUTED INTERNAL TIME INCREMENT =  .0964 HOURS

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.49                         393.0                       (RUNOFF)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                7.02 WATERSHED INCHES;     822 CFS-HRS;      67.9 ACRE-FEET.


 OPERATION RUNOFF   XSECTION  11
1
 TR20 ------------------------------------------------------------------- SCS -
          KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS  JAN VERSION
 12/12/** krugsws.T20  50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
 15:04:41                    PASS   6   JOB NO.   1                      PAGE  52

        OUTPUT HYDROGRAPH =  5      AREA =    .05 SQ MI
        INPUT RUNOFF CURVE = 87.    TIME OF CONCENTRATION =   .50 HOURS
        COMPUTED INTERNAL TIME INCREMENT =  .0667 HOURS

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.09                         192.2                       (RUNOFF)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                7.76 WATERSHED INCHES;     262 CFS-HRS;      21.6 ACRE-FEET.


 OPERATION ADDHYD   XSECTION  12
        INPUT HYDROGRAPHS 4,5     OUTPUT HYDROGRAPH 6

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.29                         502.1                       (NULL)
```

```
   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  7.19 WATERSHED INCHES;    1084 CFS-HRS;      89.6 ACRE-FEET.


 OPERATION RESVOR   STRUCTURE  3
         INPUT HYDROGRAPH 6        OUTPUT HYDROGRAPH 4
         SURFACE ELEVATION =  1355.00

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.38                         496.0                       1359.08

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  7.19 WATERSHED INCHES;    1084 CFS-HRS;      89.6 ACRE-FEET.


 OPERATION RUNOFF   XSECTION  13
         OUTPUT HYDROGRAPH =  5      AREA =    .02 SQ MI
         INPUT RUNOFF CURVE = 87.    TIME OF CONCENTRATION =   .33 HOURS
         COMPUTED INTERNAL TIME INCREMENT =  .0444 HOURS

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.01                          64.8                       (RUNOFF)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  7.76 WATERSHED INCHES;      80 CFS-HRS;       6.6 ACRE-FEET.


 OPERATION ADDHYD   XSECTION  14
         INPUT HYDROGRAPHS 4,5     OUTPUT HYDROGRAPH 6

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.32                         519.2                       (NULL)
1
 TR20 ------------------------------------------------------------------- SCS -
          KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS  JAN VERSION
 12/12/** krugsws.T20  50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
 15:04:41                    PASS   6   JOB NO.   1                       PAGE  53


   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  7.23 WATERSHED INCHES;    1164 CFS-HRS;      96.2 ACRE-FEET.


 OPERATION RESVOR   STRUCTURE  4
         INPUT HYDROGRAPH 6        OUTPUT HYDROGRAPH 4
         SURFACE ELEVATION =  1351.00

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.52                         494.0                       1355.17

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  7.22 WATERSHED INCHES;    1164 CFS-HRS;      96.2 ACRE-FEET.


 OPERATION RUNOFF   XSECTION  15
         OUTPUT HYDROGRAPH =  5      AREA =    .01 SQ MI
         INPUT RUNOFF CURVE = 87.    TIME OF CONCENTRATION =   .25 HOURS
         COMPUTED INTERNAL TIME INCREMENT =  .0333 HOURS

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      11.97                          57.2                       (RUNOFF)
      18.95                           1.3                       (RUNOFF)
```

```
   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                7.77 WATERSHED INCHES;      67 CFS-HRS;       5.5 ACRE-FEET.


 OPERATION ADDHYD   XSECTION  16
         INPUT HYDROGRAPHS 4,5     OUTPUT HYDROGRAPH 6

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.51                         502.5                       (NULL)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                7.25 WATERSHED INCHES;    1231 CFS-HRS;     101.7 ACRE-FEET.


 OPERATION RUNOFF   XSECTION  17
         OUTPUT HYDROGRAPH =  4      AREA =    .03 SQ MI
         INPUT RUNOFF CURVE = 88.    TIME OF CONCENTRATION =   .33 HOURS
         COMPUTED INTERNAL TIME INCREMENT =  .0444 HOURS

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.01                         115.5                       (RUNOFF)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                7.89 WATERSHED INCHES;     143 CFS-HRS;      11.8 ACRE-FEET.
1
 TR20 ------------------------------------------------------------------- SCS -
          KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS  JAN VERSION
 12/12/** krugsws.T20  50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
 15:04:41                    PASS   6   JOB NO.   1                       PAGE  54


 OPERATION ADDHYD   XSECTION  18
         INPUT HYDROGRAPHS 4,6     OUTPUT HYDROGRAPH 5

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.41                         528.2                       (NULL)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                7.31 WATERSHED INCHES;    1374 CFS-HRS;     113.5 ACRE-FEET.


 OPERATION ADDHYD   XSECTION  19
         INPUT HYDROGRAPHS 5,7     OUTPUT HYDROGRAPH 6

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.47                        1441.3                       (NULL)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                7.10 WATERSHED INCHES;    4926 CFS-HRS;     407.0 ACRE-FEET.


 OPERATION RUNOFF   XSECTION  20
         OUTPUT HYDROGRAPH =  4      AREA =    .12 SQ MI
         INPUT RUNOFF CURVE = 88.    TIME OF CONCENTRATION =   .50 HOURS
         COMPUTED INTERNAL TIME INCREMENT =  .0667 HOURS

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.09                         433.1                       (RUNOFF)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                7.88 WATERSHED INCHES;     594 CFS-HRS;      49.1 ACRE-FEET.
```

```
 OPERATION RUNOFF   XSECTION  21
        OUTPUT HYDROGRAPH =  5      AREA =    .14 SQ MI
        INPUT RUNOFF CURVE = 81.    TIME OF CONCENTRATION =  1.27 HOURS
        COMPUTED INTERNAL TIME INCREMENT =  .1014 HOURS

   PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.53                        296.5                       (RUNOFF)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 7.03 WATERSHED INCHES;     637 CFS-HRS;      52.7 ACRE-FEET.


 OPERATION ADDHYD   XSECTION  22
        INPUT HYDROGRAPHS 6,4     OUTPUT HYDROGRAPH 7
1
 TR20 ------------------------------------------------------------------------ SCS -
         KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS  JAN VERSION
 12/12/** krugsws.T20  50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
 15:04:41                    PASS   6   JOB NO.   1                       PAGE  55


   PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.22                       1770.7                       (NULL)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 7.18 WATERSHED INCHES;    5519 CFS-HRS;     456.1 ACRE-FEET.


 OPERATION ADDHYD   XSECTION  23
        INPUT HYDROGRAPHS 7,5     OUTPUT HYDROGRAPH 4

   PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.27                       2009.0                       (NULL)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 7.16 WATERSHED INCHES;    6157 CFS-HRS;     508.8 ACRE-FEET.


 OPERATION RESVOR   STRUCTURE  5
        INPUT HYDROGRAPH 4        OUTPUT HYDROGRAPH 6
        SURFACE ELEVATION =  1345.50

   PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.71                       1797.2                        1350.33

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 7.04 WATERSHED INCHES;    6051 CFS-HRS;     500.1 ACRE-FEET.


 OPERATION RUNOFF   XSECTION  24
        OUTPUT HYDROGRAPH =  5      AREA =    .30 SQ MI
        INPUT RUNOFF CURVE = 87.    TIME OF CONCENTRATION =  1.00 HOURS
        COMPUTED INTERNAL TIME INCREMENT =  .0925 HOURS

   PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.37                        782.3                       (RUNOFF)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 7.77 WATERSHED INCHES;    1495 CFS-HRS;     123.6 ACRE-FEET.


 OPERATION RUNOFF   XSECTION  25
```

OUTPUT HYDROGRAPH = 7 AREA = .03 SQ MI
INPUT RUNOFF CURVE = 81. TIME OF CONCENTRATION = .33 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0444 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.01	120.4	(RUNOFF)

1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 PASS 6 JOB NO. 1 PAGE 56

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

OPERATION RUNOFF XSECTION 26
OUTPUT HYDROGRAPH = 4 AREA = .10 SQ MI
INPUT RUNOFF CURVE = 89. TIME OF CONCENTRATION = .31 HOURS
COMPUTED INTERNAL TIME INCREMENT = .0416 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
11.99	433.4	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
8.00 WATERSHED INCHES; 533 CFS-HRS; 44.0 ACRE-FEET.

OPERATION ADDHYD XSECTION 27
INPUT HYDROGRAPHS 5,4 OUTPUT HYDROGRAPH 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	1028.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
7.83 WATERSHED INCHES; 2028 CFS-HRS; 167.6 ACRE-FEET.

OPERATION RESVOR STRUCTURE 7
INPUT HYDROGRAPH 2 OUTPUT HYDROGRAPH 1
SURFACE ELEVATION = 1352.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.25	972.7	1356.51

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
7.83 WATERSHED INCHES; 2028 CFS-HRS; 167.6 ACRE-FEET.

OPERATION ADDHYD XSECTION 28
INPUT HYDROGRAPHS 6,7 OUTPUT HYDROGRAPH 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.69	1814.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
7.04 WATERSHED INCHES; 6195 CFS-HRS; 511.9 ACRE-FEET.

1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 PASS 6 JOB NO. 1 PAGE 57

```
 OPERATION ADDHYD   XSECTION  29
        INPUT HYDROGRAPHS 3,1     OUTPUT HYDROGRAPH 5

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.50                        2655.2                       (NULL)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  7.21 WATERSHED INCHES;    8221 CFS-HRS;     679.4 ACRE-FEET.


 OPERATION RESVOR   STRUCTURE  6
        INPUT HYDROGRAPH 5        OUTPUT HYDROGRAPH 6
        SURFACE ELEVATION =  1335.50

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.69                        2573.2                        1345.40

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  7.18 WATERSHED INCHES;    8176 CFS-HRS;     675.7 ACRE-FEET.


 OPERATION RUNOFF   XSECTION  30
        OUTPUT HYDROGRAPH =  7      AREA =    .00 SQ MI
        INPUT RUNOFF CURVE = 88.    TIME OF CONCENTRATION =   .00 HOURS
        COMPUTED INTERNAL TIME INCREMENT =  .0012 HOURS

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  7.18 WATERSHED INCHES;      16 CFS-HRS;     675.7 ACRE-FEET.


 OPERATION ADDHYD   XSECTION  31
        INPUT HYDROGRAPHS 7,6     OUTPUT HYDROGRAPH 4

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      12.69                        2573.2                       (NULL)

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  7.17 WATERSHED INCHES;    8176 CFS-HRS;     675.7 ACRE-FEET.


 EXECUTIVE CONTROL ENDCMP    COMPUTATIONS COMPLETED FOR PASS   6
1
 TR20 ------------------------------------------------------------------- SCS -
          KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS  JAN VERSION
 12/12/** krugsws.T20  50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
 15:04:41                    SUMMARY, JOB NO.   1                      PAGE  58


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

 RAINFALL OF   3.50 inches AND  24.00 hr DURATION, BEGINS AT    .0 hrs.
```

RAINTABLE NUMBER 7, ARC 2
MAIN TIME INCREMENT .100 HOURS

ALTERNATE 11 STORM 1

XSECTION	1	RUNOFF	.49	1.71	---	13.22	165	336.7
XSECTION	2	RUNOFF	.14	1.81	---	12.43	84	600.0
XSECTION	3	RUNOFF	.07	2.18	---	12.10	75	1071.4
XSECTION	4	ADDHYD	.63	1.73	---	12.91	207	328.6
XSECTION	5	ADDHYD	.70	1.77	---	12.76	221	315.7
STRUCTURE	1	RESVOR	.70	1.74	1356.46	12.84	220	314.3
XSECTION	6	RUNOFF	.06	2.27	---	12.06	76	1266.7
XSECTION	7	ADDHYD	.76	1.78	---	12.25	243	319.7
XSECTION	8	RUNOFF	.02	1.70	---	12.19	18	900.0
XSECTION	9	ADDHYD	.78	1.78	---	12.25	263	337.2
STRUCTURE	2	RESVOR	.78	1.65	1353.15	12.73	240	307.7
XSECTION	10	RUNOFF	.18	1.71	---	12.52	97	538.9
XSECTION	11	RUNOFF	.05	2.18	---	12.10	57	1140.0
XSECTION	12	ADDHYD	.23	1.81	---	12.29	129	560.9
STRUCTURE	3	RESVOR	.23	1.81	1357.64	12.46	123	534.8
XSECTION	13	RUNOFF	.02	2.18	---	12.01	19	950.0
XSECTION	14	ADDHYD	.25	1.84	---	12.43	128	512.0
STRUCTURE	4	RESVOR	.25	1.84	1352.46	12.67	118	472.0
XSECTION	15	RUNOFF	.01	2.18	---	11.97	17	1700.0
XSECTION	16	ADDHYD	.26	1.85	---	12.66	120	461.5
XSECTION	17	RUNOFF	.03	2.26	---	12.01	35	1166.7
XSECTION	18	ADDHYD	.29	1.89	---	12.63	126	434.5
XSECTION	19	ADDHYD	1.08	1.71	---	12.67	366	338.9
XSECTION	20	RUNOFF	.12	2.27	---	12.10	131	1091.7
XSECTION	21	RUNOFF	.14	1.71	---	12.56	72	514.3
XSECTION	22	ADDHYD	1.19	1.77	---	12.55	407	342.0
XSECTION	23	ADDHYD	1.33	1.76	---	12.55	478	359.4
STRUCTURE	5	RESVOR	1.33	1.66	1348.31	13.43	327	245.9

1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 SUMMARY, JOB NO. 1 PAGE 59

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)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)

ALTERNATE 11 STORM 1

XSECTION	24	RUNOFF	.30	2.18	---	12.39	229	763.3
XSECTION	25	RUNOFF	.03	1.71	---	12.01	30	1000.0
XSECTION	26	RUNOFF	.10	2.35	---	12.00	136	1360.0

XSECTION	27	ADDHYD	.40	2.23	---	12.13	304	760.0
STRUCTURE	7	RESVOR	.40	2.23	1354.14	12.34	276	690.0
XSECTION	28	ADDHYD	1.36	1.66	---	13.43	330	242.6
XSECTION	29	ADDHYD	1.77	1.79	---	13.19	439	248.0
STRUCTURE	6	RESVOR	1.77	1.75	1340.84	13.30	435	245.8
XSECTION	30	RUNOFF	.00	1.75	---	.00	0	********
XSECTION	31	ADDHYD	1.77	1.75	---	13.30	435	245.8

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

ALTERNATE 12 STORM 2

XSECTION	1	RUNOFF	.49	2.59	---	13.20	253	516.3
XSECTION	2	RUNOFF	.14	2.71	---	12.43	125	892.9
XSECTION	3	RUNOFF	.07	3.14	---	12.09	107	1528.6
XSECTION	4	ADDHYD	.63	2.62	---	12.89	316	501.6
XSECTION	5	ADDHYD	.70	2.67	---	12.75	337	481.4
STRUCTURE	1	RESVOR	.70	2.64	1356.82	12.83	336	480.0
XSECTION	6	RUNOFF	.06	3.24	---	12.06	107	1783.3
XSECTION	7	ADDHYD	.76	2.69	---	12.25	368	484.2
XSECTION	8	RUNOFF	.02	2.59	---	12.19	28	1400.0
XSECTION	9	ADDHYD	.78	2.68	---	12.24	395	506.4
STRUCTURE	2	RESVOR	.78	2.55	1353.55	12.47	376	482.1
XSECTION	10	RUNOFF	.18	2.59	---	12.51	148	822.2
XSECTION	11	RUNOFF	.05	3.14	---	12.09	81	1620.0
XSECTION	12	ADDHYD	.23	2.71	---	12.29	194	843.5
STRUCTURE	3	RESVOR	.23	2.71	1358.03	12.42	189	821.7
XSECTION	13	RUNOFF	.02	3.14	---	12.01	27	1350.0

1

TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 SUMMARY, JOB NO. 1 PAGE 60

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	14	ADDHYD	.25	2.74	---	12.39	197	788.0
STRUCTURE	4	RESVOR	.25	2.74	1353.04	12.59	186	744.0
XSECTION	15	RUNOFF	.01	3.15	---	11.97	24	2400.0
XSECTION	16	ADDHYD	.26	2.76	---	12.58	189	726.9
XSECTION	17	RUNOFF	.03	3.24	---	12.01	50	1666.7
XSECTION	18	ADDHYD	.29	2.81	---	12.54	199	686.2
XSECTION	19	ADDHYD	1.08	2.62	---	12.51	574	531.5
XSECTION	20	RUNOFF	.12	3.24	---	12.09	186	1550.0

XSECTION	21	RUNOFF	.14	2.59	---	12.55	110	785.7
XSECTION	22	ADDHYD	1.19	2.68	---	12.31	685	575.6
XSECTION	23	ADDHYD	1.33	2.67	---	12.34	783	588.7
STRUCTURE	5	RESVOR	1.33	2.56	1348.81	13.08	598	449.6
XSECTION	24	RUNOFF	.30	3.14	---	12.38	328	1093.3
XSECTION	25	RUNOFF	.03	2.59	---	12.01	46	1533.3
XSECTION	26	RUNOFF	.10	3.34	---	12.00	190	1900.0
XSECTION	27	ADDHYD	.40	3.19	---	12.13	433	1082.5
STRUCTURE	7	RESVOR	.40	3.19	1354.62	12.31	400	1000.0
XSECTION	28	ADDHYD	1.36	2.56	---	13.07	602	442.6
XSECTION	29	ADDHYD	1.77	2.70	---	12.79	849	479.7
STRUCTURE	6	RESVOR	1.77	2.67	1341.80	13.01	820	463.3
XSECTION	30	RUNOFF	.00	2.67	---	.00	0	********
XSECTION	31	ADDHYD	1.77	2.67	---	13.01	820	463.3

RAINFALL OF 5.25 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 13 STORM 3

XSECTION	1	RUNOFF	.49	3.21	---	13.19	314	640.8
XSECTION	2	RUNOFF	.14	3.34	---	12.43	154	1100.0
XSECTION	3	RUNOFF	.07	3.80	---	12.09	128	1828.6
XSECTION	4	ADDHYD	.63	3.24	---	12.88	392	622.2

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)

ALTERNATE 13 STORM 3

XSECTION	5	ADDHYD	.70	3.29	---	12.74	417	595.7
STRUCTURE	1	RESVOR	.70	3.26	1357.08	12.90	413	590.0
XSECTION	6	RUNOFF	.06	3.90	---	12.06	128	2133.3
XSECTION	7	ADDHYD	.76	3.31	---	12.25	450	592.1
XSECTION	8	RUNOFF	.02	3.20	---	12.19	34	1700.0
XSECTION	9	ADDHYD	.78	3.31	---	12.24	486	623.1
STRUCTURE	2	RESVOR	.78	3.17	1353.82	12.43	467	598.7
XSECTION	10	RUNOFF	.18	3.21	---	12.50	183	1016.7
XSECTION	11	RUNOFF	.05	3.80	---	12.09	97	1940.0
XSECTION	12	ADDHYD	.23	3.34	---	12.29	238	1034.8
STRUCTURE	3	RESVOR	.23	3.34	1358.19	12.39	235	1021.7
XSECTION	13	RUNOFF	.02	3.80	---	12.01	33	1650.0
XSECTION	14	ADDHYD	.25	3.37	---	12.34	247	988.0

STRUCTURE	4	RESVOR	.25	3.37	1353.37	12.53	234	936.0
XSECTION	15	RUNOFF	.01	3.79	---	11.97	29	2900.0
XSECTION	16	ADDHYD	.26	3.39	---	12.53	238	915.4
XSECTION	17	RUNOFF	.03	3.90	---	12.01	60	2000.0
XSECTION	18	ADDHYD	.29	3.44	---	12.48	251	865.5
XSECTION	19	ADDHYD	1.08	3.24	---	12.45	718	664.8
XSECTION	20	RUNOFF	.12	3.90	---	12.09	222	1850.0
XSECTION	21	RUNOFF	.14	3.21	---	12.54	137	978.6
XSECTION	22	ADDHYD	1.19	3.31	---	12.26	865	726.9
XSECTION	23	ADDHYD	1.33	3.30	---	12.31	983	739.1
STRUCTURE	5	RESVOR	1.33	3.19	1349.10	12.94	783	588.7
XSECTION	24	RUNOFF	.30	3.80	---	12.38	396	1320.0
XSECTION	25	RUNOFF	.03	3.21	---	12.01	57	1900.0
XSECTION	26	RUNOFF	.10	4.01	---	11.99	226	2260.0
XSECTION	27	ADDHYD	.40	3.86	---	12.13	520	1300.0
STRUCTURE	7	RESVOR	.40	3.86	1354.94	12.30	483	1207.5
XSECTION	28	ADDHYD	1.36	3.19	---	12.93	788	579.4

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)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 13 STORM 3							
XSECTION 29	ADDHYD	1.77	3.34	---	12.70	1135	641.2
STRUCTURE 6	RESVOR	1.77	3.30	1342.61	12.95	1067	602.8
XSECTION 30	RUNOFF	.00	3.30	---	.00	0	********
XSECTION 31	ADDHYD	1.77	3.30	---	12.95	1067	602.8

RAINFALL OF 7.10 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE	14	STORM	4					
XSECTION	1	RUNOFF	.49	4.90	---	13.17	479	977.6
XSECTION	2	RUNOFF	.14	5.05	---	12.42	230	1642.9
XSECTION	3	RUNOFF	.07	5.57	---	12.09	185	2642.9
XSECTION	4	ADDHYD	.63	4.93	---	12.86	598	949.2
XSECTION	5	ADDHYD	.70	4.99	---	12.73	634	905.7
STRUCTURE	1	RESVOR	.70	4.96	1358.04	12.93	623	890.0
XSECTION	6	RUNOFF	.06	5.68	---	12.06	182	3033.3
XSECTION	7	ADDHYD	.76	5.02	---	12.78	646	850.0
XSECTION	8	RUNOFF	.02	4.89	---	12.19	52	2600.0
XSECTION	9	ADDHYD	.78	5.01	---	12.24	683	875.6

STRUCTURE	2	RESVOR	.78	4.88	1354.33	12.48	668	856.4
XSECTION	10	RUNOFF	.18	4.89	---	12.50	277	1538.9
XSECTION	11	RUNOFF	.05	5.57	---	12.09	140	2800.0
XSECTION	12	ADDHYD	.23	5.05	---	12.29	356	1547.8
STRUCTURE	3	RESVOR	.23	5.04	1358.59	12.38	351	1526.1
XSECTION	13	RUNOFF	.02	5.57	---	12.01	48	2400.0
XSECTION	14	ADDHYD	.25	5.08	---	12.32	368	1472.0
STRUCTURE	4	RESVOR	.25	5.08	1354.19	12.51	352	1408.0
XSECTION	15	RUNOFF	.01	5.58	---	11.97	42	4200.0
XSECTION	16	ADDHYD	.26	5.10	---	12.50	358	1376.9
XSECTION	17	RUNOFF	.03	5.68	---	12.01	85	2833.3
XSECTION	18	ADDHYD	.29	5.16	---	12.40	377	1300.0

1

TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 SUMMARY, JOB NO. 1 PAGE 63

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	4				
XSECTION	19	ADDHYD	1.08	4.95	---	12.44	1046	968.5
XSECTION	20	RUNOFF	.12	5.69	---	12.09	317	2641.7
XSECTION	21	RUNOFF	.14	4.90	---	12.53	209	1492.9
XSECTION	22	ADDHYD	1.19	5.03	---	12.22	1295	1088.2
XSECTION	23	ADDHYD	1.33	5.01	---	12.25	1457	1095.5
STRUCTURE	5	RESVOR	1.33	4.90	1349.71	12.78	1255	943.6
XSECTION	24	RUNOFF	.30	5.57	---	12.37	569	1896.7
XSECTION	25	RUNOFF	.03	4.90	---	12.01	85	2833.3
XSECTION	26	RUNOFF	.10	5.80	---	11.99	320	3200.0
XSECTION	27	ADDHYD	.40	5.63	---	12.13	750	1875.0
STRUCTURE	7	RESVOR	.40	5.63	1355.67	12.26	707	1767.5
XSECTION	28	ADDHYD	1.36	4.90	---	12.77	1266	930.9
XSECTION	29	ADDHYD	1.77	5.06	---	12.55	1849	1044.6
STRUCTURE	6	RESVOR	1.77	5.02	1344.16	12.76	1777	1004.0
XSECTION	30	RUNOFF	.00	5.02	---	.00	0	********
XSECTION	31	ADDHYD	1.77	5.02	---	12.76	1777	1004.0

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

ALTERNATE	15	STORM	5					
XSECTION	1	RUNOFF	.49	5.55	---	13.17	542	1106.1
XSECTION	2	RUNOFF	.14	5.71	---	12.42	260	1857.1
XSECTION	3	RUNOFF	.07	6.25	---	12.09	205	2928.6

XSECTION	4	ADDHYD	.63	5.59	---	12.85	677	1074.6
XSECTION	5	ADDHYD	.70	5.65	---	12.73	717	1024.3
STRUCTURE	1	RESVOR	.70	5.62	1358.37	12.96	701	1001.4
XSECTION	6	RUNOFF	.06	6.37	---	12.05	203	3383.3
XSECTION	7	ADDHYD	.76	5.68	---	12.88	724	952.6
XSECTION	8	RUNOFF	.02	5.55	---	12.18	59	2950.0
XSECTION	9	ADDHYD	.78	5.67	---	12.27	762	976.9

1

TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 SUMMARY, JOB NO. 1 PAGE 64

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	5					
STRUCTURE	2	RESVOR	.78	5.54	1354.51	12.46	747	957.7
XSECTION	10	RUNOFF	.18	5.55	---	12.50	313	1738.9
XSECTION	11	RUNOFF	.05	6.25	---	12.09	156	3120.0
XSECTION	12	ADDHYD	.23	5.71	---	12.28	401	1743.5
STRUCTURE	3	RESVOR	.23	5.71	1358.75	12.38	396	1721.7
XSECTION	13	RUNOFF	.02	6.24	---	12.01	53	2650.0
XSECTION	14	ADDHYD	.25	5.74	---	12.32	415	1660.0
STRUCTURE	4	RESVOR	.25	5.74	1354.49	12.51	396	1584.0
XSECTION	15	RUNOFF	.01	6.24	---	11.97	47	4700.0
XSECTION	16	ADDHYD	.26	5.77	---	12.50	403	1550.0
XSECTION	17	RUNOFF	.03	6.37	---	12.01	94	3133.3
XSECTION	18	ADDHYD	.29	5.82	---	12.41	425	1465.5
XSECTION	19	ADDHYD	1.08	5.62	---	12.44	1173	1086.1
XSECTION	20	RUNOFF	.12	6.37	---	12.09	354	2950.0
XSECTION	21	RUNOFF	.14	5.55	---	12.53	236	1685.7
XSECTION	22	ADDHYD	1.19	5.69	---	12.22	1442	1211.8
XSECTION	23	ADDHYD	1.33	5.67	---	12.26	1630	1225.6
STRUCTURE	5	RESVOR	1.33	5.55	1349.92	12.75	1424	1070.7
XSECTION	24	RUNOFF	.30	6.25	---	12.37	636	2120.0
XSECTION	25	RUNOFF	.03	5.55	---	12.01	96	3200.0
XSECTION	26	RUNOFF	.10	6.49	---	11.99	355	3550.0
XSECTION	27	ADDHYD	.40	6.31	---	12.13	835	2087.5
STRUCTURE	7	RESVOR	.40	6.31	1355.93	12.26	789	1972.5
XSECTION	28	ADDHYD	1.36	5.55	---	12.73	1437	1056.6
XSECTION	29	ADDHYD	1.77	5.73	---	12.53	2104	1188.7
STRUCTURE	6	RESVOR	1.77	5.69	1344.56	12.72	2033	1148.6
XSECTION	30	RUNOFF	.00	5.69	---	.00	0	********
XSECTION	31	ADDHYD	1.77	5.69	---	12.72	2033	1148.6

1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 SUMMARY, JOB NO. 1 PAGE 65

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)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF 9.35 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 16 STORM 6							
XSECTION 1	RUNOFF	.49	7.02	---	13.16	682	1391.8
XSECTION 2	RUNOFF	.14	7.19	---	12.42	324	2314.3
XSECTION 3	RUNOFF	.07	7.76	---	12.09	253	3614.3
XSECTION 4	ADDHYD	.63	7.06	---	12.84	851	1350.8
XSECTION 5	ADDHYD	.70	7.13	---	12.73	900	1285.7
STRUCTURE 1	RESVOR	.70	7.09	1359.11	12.97	878	1254.3
XSECTION 6	RUNOFF	.06	7.89	---	12.05	248	4133.3
XSECTION 7	ADDHYD	.76	7.16	---	12.90	905	1190.8
XSECTION 8	RUNOFF	.02	7.03	---	12.19	74	3700.0
XSECTION 9	ADDHYD	.78	7.15	---	12.24	933	1196.2
STRUCTURE 2	RESVOR	.78	7.02	1354.92	12.89	925	1185.9
XSECTION 10	RUNOFF	.18	7.02	---	12.49	393	2183.3
XSECTION 11	RUNOFF	.05	7.76	---	12.09	192	3840.0
XSECTION 12	ADDHYD	.23	7.19	---	12.29	502	2182.6
STRUCTURE 3	RESVOR	.23	7.19	1359.08	12.38	496	2156.5
XSECTION 13	RUNOFF	.02	7.76	---	12.01	65	3250.0
XSECTION 14	ADDHYD	.25	7.23	---	12.32	519	2076.0
STRUCTURE 4	RESVOR	.25	7.22	1355.17	12.52	494	1976.0
XSECTION 15	RUNOFF	.01	7.77	---	11.97	57	5700.0
XSECTION 16	ADDHYD	.26	7.25	---	12.51	503	1934.6
XSECTION 17	RUNOFF	.03	7.89	---	12.01	116	3866.7
XSECTION 18	ADDHYD	.29	7.31	---	12.41	528	1820.7
XSECTION 19	ADDHYD	1.08	7.10	---	12.47	1441	1334.3
XSECTION 20	RUNOFF	.12	7.88	---	12.09	433	3608.3

1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 SUMMARY, JOB NO. 1 PAGE 66

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)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 16 STORM 6							
XSECTION 21	RUNOFF	.14	7.03	---	12.53	297	2121.4
XSECTION 22	ADDHYD	1.19	7.18	---	12.22	1771	1488.2
XSECTION 23	ADDHYD	1.33	7.16	---	12.27	2009	1510.5
STRUCTURE 5	RESVOR	1.33	7.04	1350.33	12.71	1797	1351.1
XSECTION 24	RUNOFF	.30	7.77	---	12.37	782	2606.7
XSECTION 25	RUNOFF	.03	7.02	---	12.01	120	4000.0
XSECTION 26	RUNOFF	.10	8.00	---	11.99	433	4330.0
XSECTION 27	ADDHYD	.40	7.83	---	12.13	1029	2572.5
STRUCTURE 7	RESVOR	.40	7.83	1356.51	12.25	973	2432.5
XSECTION 28	ADDHYD	1.36	7.04	---	12.69	1814	1333.8
XSECTION 29	ADDHYD	1.77	7.21	---	12.50	2655	1500.0
STRUCTURE 6	RESVOR	1.77	7.18	1345.40	12.69	2573	1453.7
XSECTION 30	RUNOFF	.00	7.18	---	.00	0	********
XSECTION 31	ADDHYD	1.77	7.17	---	12.69	2573	1453.7

1

TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 SUMMARY, JOB NO. 1 PAGE 67

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 7	.40					
ALTERNATE 11		276	********	********	********	********
ALTERNATE 12		********	400	********	********	********
ALTERNATE 13		********	********	483	********	********
ALTERNATE 14		********	********	********	707	********
ALTERNATE 15		********	********	********	********	789
STRUCTURE 6	1.77					
ALTERNATE 11		435	********	********	********	********
ALTERNATE 12		********	820	********	********	********
ALTERNATE 13		********	********	1067	********	********
ALTERNATE 14		********	********	********	1777	********
ALTERNATE 15		********	********	********	********	2033
STRUCTURE 5	1.33					
ALTERNATE 11		327	********	********	********	********
ALTERNATE 12		********	598	********	********	********

ALTERNATE	13	*********	*********	783	*********	*********
ALTERNATE	14	*********	*********	*********	1255	*********
ALTERNATE	15	*********	*********	*********	*********	1424

STRUCTURE 4 .25

ALTERNATE	11	118	*********	*********	*********	*********
ALTERNATE	12	*********	186	*********	*********	*********
ALTERNATE	13	*********	*********	234	*********	*********
ALTERNATE	14	*********	*********	*********	352	*********
ALTERNATE	15	*********	*********	*********	*********	396

STRUCTURE 3 .23

ALTERNATE	11	123	*********	*********	*********	*********
ALTERNATE	12	*********	189	*********	*********	*********
ALTERNATE	13	*********	*********	235	*********	*********
ALTERNATE	14	*********	*********	*********	351	*********
ALTERNATE	15	*********	*********	*********	*********	396

STRUCTURE 2 .78

ALTERNATE	11	240	*********	*********	*********	*********
ALTERNATE	12	*********	376	*********	*********	*********
ALTERNATE	13	*********	*********	467	*********	*********
ALTERNATE	14	*********	*********	*********	668	*********

1

TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 SUMMARY, JOB NO. 1 PAGE 68

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	2	.78					
ALTERNATE	15		*********	*********	*********	*********	747
STRUCTURE	1	.70					
ALTERNATE	11		220	*********	*********	*********	*********
ALTERNATE	12		*********	336	*********	*********	*********
ALTERNATE	13		*********	*********	413	*********	*********
ALTERNATE	14		*********	*********	*********	623	*********
ALTERNATE	15		*********	*********	*********	*********	701
XSECTION	1	.49					
ALTERNATE	11		165	*********	*********	*********	*********
ALTERNATE	12		*********	253	*********	*********	*********
ALTERNATE	13		*********	*********	314	*********	*********
ALTERNATE	14		*********	*********	*********	479	*********
ALTERNATE	15		*********	*********	*********	*********	542

XSECTION	2	.14				
ALTERNATE	11	84	********	********	********	********
ALTERNATE	12	********	125	********	********	********
ALTERNATE	13	********	********	154	********	********
ALTERNATE	14	********	********	********	230	********
ALTERNATE	15	********	********	********	********	260
XSECTION	3	.07				
ALTERNATE	11	75	********	********	********	********
ALTERNATE	12	********	107	********	********	********
ALTERNATE	13	********	********	128	********	********
ALTERNATE	14	********	********	********	185	********
ALTERNATE	15	********	********	********	********	205
XSECTION	4	.63				
ALTERNATE	11	207	********	********	********	********
ALTERNATE	12	********	316	********	********	********
ALTERNATE	13	********	********	392	********	********
ALTERNATE	14	********	********	********	598	********
ALTERNATE	15	********	********	********	********	677
XSECTION	5	.70				
ALTERNATE	11	221	********	********	********	********
ALTERNATE	12	********	337	********	********	********

1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 SUMMARY, JOB NO. 1 PAGE 69

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	5	.70					
ALTERNATE	13		********	********	417	********	********
ALTERNATE	14		********	********	********	634	********
ALTERNATE	15		********	********	********	********	717
XSECTION	6	.06					
ALTERNATE	11		76	********	********	********	********
ALTERNATE	12		********	107	********	********	********
ALTERNATE	13		********	********	128	********	********
ALTERNATE	14		********	********	********	182	********
ALTERNATE	15		********	********	********	********	203
XSECTION	7	.76					
ALTERNATE	11		243	********	********	********	********
ALTERNATE	12		********	368	********	********	********

ALTERNATE	13	*********	*********	450	*********	*********
ALTERNATE	14	*********	*********	*********	646	*********
ALTERNATE	15	*********	*********	*********	*********	724

XSECTION 8 .02

ALTERNATE	11	18	*********	*********	*********	*********
ALTERNATE	12	*********	28	*********	*********	*********
ALTERNATE	13	*********	*********	34	*********	*********
ALTERNATE	14	*********	*********	*********	52	*********
ALTERNATE	15	*********	*********	*********	*********	59

XSECTION 9 .78

ALTERNATE	11	263	*********	*********	*********	*********
ALTERNATE	12	*********	395	*********	*********	*********
ALTERNATE	13	*********	*********	486	*********	*********
ALTERNATE	14	*********	*********	*********	683	*********
ALTERNATE	15	*********	*********	*********	*********	762

XSECTION 10 .18

ALTERNATE	11	97	*********	*********	*********	*********
ALTERNATE	12	*********	148	*********	*********	*********
ALTERNATE	13	*********	*********	183	*********	*********
ALTERNATE	14	*********	*********	*********	277	*********
ALTERNATE	15	*********	*********	*********	*********	313

XSECTION 11 .05

1

TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 SUMMARY, JOB NO. 1 PAGE 70

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 11 .05

ALTERNATE	11	57	*********	*********	*********	*********
ALTERNATE	12	*********	81	*********	*********	*********
ALTERNATE	13	*********	*********	97	*********	*********
ALTERNATE	14	*********	*********	*********	140	*********
ALTERNATE	15	*********	*********	*********	*********	156

XSECTION 12 .23

ALTERNATE	11	129	*********	*********	*********	*********
ALTERNATE	12	*********	194	*********	*********	*********
ALTERNATE	13	*********	*********	238	*********	*********
ALTERNATE	14	*********	*********	*********	356	*********
ALTERNATE	15	*********	*********	*********	*********	401

XSECTION 13	.02					
ALTERNATE	11	19	********	********	********	********
ALTERNATE	12	********	27	********	********	********
ALTERNATE	13	********	********	33	********	********
ALTERNATE	14	********	********	********	48	********
ALTERNATE	15	********	********	********	********	53
XSECTION 14	.25					
ALTERNATE	11	128	********	********	********	********
ALTERNATE	12	********	197	********	********	********
ALTERNATE	13	********	********	247	********	********
ALTERNATE	14	********	********	********	368	********
ALTERNATE	15	********	********	********	********	415
XSECTION 15	.01					
ALTERNATE	11	17	********	********	********	********
ALTERNATE	12	********	24	********	********	********
ALTERNATE	13	********	********	29	********	********
ALTERNATE	14	********	********	********	42	********
ALTERNATE	15	********	********	********	********	47
XSECTION 16	.26					
ALTERNATE	11	120	********	********	********	********
ALTERNATE	12	********	189	********	********	********
ALTERNATE	13	********	********	238	********	********
ALTERNATE	14	********	********	********	358	********
ALTERNATE	15	********	********	********	********	403

1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 SUMMARY, JOB NO. 1 PAGE 71

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 17	.03						
ALTERNATE	11		35	********	********	********	********
ALTERNATE	12		********	50	********	********	********
ALTERNATE	13		********	********	60	********	********
ALTERNATE	14		********	********	********	85	********
ALTERNATE	15		********	********	********	********	94
XSECTION 18	.29						
ALTERNATE	11		126	********	********	********	********
ALTERNATE	12		********	199	********	********	********
ALTERNATE	13		********	********	251	********	********
ALTERNATE	14		********	********	********	377	********
ALTERNATE	15		********	********	********	********	425

```
 XSECTION   19         1.08
 ---------------------------
    ALTERNATE   11              366 ******** ******** ******** ********
    ALTERNATE   12         ********      574 ******** ******** ********
    ALTERNATE   13         ******** ******** ********      718 ********
    ALTERNATE   14         ******** ******** ******** ********     1046
    ALTERNATE   15         ******** ******** ******** ******** ********

 XSECTION   20          .12
 ---------------------------
    ALTERNATE   11              131 ******** ******** ******** ********
    ALTERNATE   12         ********      186 ******** ******** ********
    ALTERNATE   13         ******** ******** ********      222 ********
    ALTERNATE   14         ******** ******** ******** ********      317
    ALTERNATE   15         ******** ******** ******** ******** ********

 XSECTION   21          .14
 ---------------------------
    ALTERNATE   11               72 ******** ******** ******** ********
    ALTERNATE   12         ********      110 ******** ******** ********
    ALTERNATE   13         ******** ******** ********      137 ********
    ALTERNATE   14         ******** ******** ******** ********      209
    ALTERNATE   15         ******** ******** ******** ******** ********

 XSECTION   22         1.19
 ---------------------------
    ALTERNATE   11              407 ******** ******** ******** ********
    ALTERNATE   12         ********      685 ******** ******** ********
    ALTERNATE   13         ******** ********      865 ******** ********
1
 TR20 ------------------------------------------------------------------- SCS -
          KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS  JAN VERSION
 12/12/** krugsws.T20  50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
 15:04:41                    SUMMARY, JOB NO.   1                     PAGE  72


                            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       STORM NUMBERS.....
   ID                (SQ MI)         1         2         3         4         5


 XSECTION   22         1.19
 ---------------------------
    ALTERNATE   14         ******** ******** ********      1295 ********
    ALTERNATE   15         ******** ******** ******** ********      1442

 XSECTION   23         1.33
 ---------------------------
    ALTERNATE   11              478 ******** ******** ******** ********
    ALTERNATE   12         ********      783 ******** ******** ********
    ALTERNATE   13         ******** ********      983 ******** ********
    ALTERNATE   14         ******** ******** ********      1457 ********
    ALTERNATE   15         ******** ******** ******** ********      1630

 XSECTION   24          .30
 ---------------------------
    ALTERNATE   11              229 ******** ******** ******** ********
```

ALTERNATE	12	*********	328	********	********	********
ALTERNATE	13	********	********	396	********	********
ALTERNATE	14	********	********	********	569	********
ALTERNATE	15	********	********	********	********	636

XSECTION 25 .03

ALTERNATE	11	30	********	********	********	********
ALTERNATE	12	*********	46	********	********	********
ALTERNATE	13	********	********	57	********	********
ALTERNATE	14	********	********	********	85	********
ALTERNATE	15	********	********	********	********	96

XSECTION 26 .10

ALTERNATE	11	136	********	********	********	********
ALTERNATE	12	*********	190	********	********	********
ALTERNATE	13	********	********	226	********	********
ALTERNATE	14	********	********	********	320	********
ALTERNATE	15	********	********	********	********	355

XSECTION 27 .40

ALTERNATE	11	304	********	********	********	********
ALTERNATE	12	*********	433	********	********	********
ALTERNATE	13	********	********	520	********	********
ALTERNATE	14	********	********	********	750	********
ALTERNATE	15	********	********	********	********	835

XSECTION 28 1.36

ALTERNATE	11	330	********	********	********	********

1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
15:04:41 SUMMARY, JOB NO. 1 PAGE 73

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	28	1.36					
ALTERNATE	12		*********	602	********	********	********
ALTERNATE	13		*********	********	788	********	********
ALTERNATE	14		*********	********	********	1266	********
ALTERNATE	15		*********	********	********	********	1437
XSECTION	29	1.77					
ALTERNATE	11		439	********	********	********	********
ALTERNATE	12		*********	849	********	********	********
ALTERNATE	13		********	********	1135	********	********
ALTERNATE	14		********	********	********	1849	********
ALTERNATE	15		********	********	********	********	2104

```
 XSECTION   30          .00
 ---------------------------
    ALTERNATE   11              0 ******** ******** ******** ********
    ALTERNATE   12       ********         0 ******** ******** ********
    ALTERNATE   13       ******** ********         0 ******** ********
    ALTERNATE   14       ******** ******** ********         0 ********
    ALTERNATE   15       ******** ******** ******** ********         0

 XSECTION   31         1.77
 ---------------------------
    ALTERNATE   11            435 ******** ******** ******** ********
    ALTERNATE   12       ********       820 ******** ******** ********
    ALTERNATE   13       ******** ********      1067 ******** ********
    ALTERNATE   14       ******** ******** ********      1777 ********
    ALTERNATE   15       ******** ******** ******** ********      2033

                            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       STORM NUMBERS.....
   ID                (SQ MI)          6


 STRUCTURE   7          .40
 ---------------------------
    ALTERNATE   16                 973

 STRUCTURE   6         1.77
 ---------------------------
    ALTERNATE   16                2573

 STRUCTURE   5         1.33
 ---------------------------
    ALTERNATE   16                1797

 STRUCTURE   4          .25
 ---------------------------
    ALTERNATE   16                 494

 STRUCTURE   3          .23
 ---------------------------
    ALTERNATE   16                 496
1
 TR20 ------------------------------------------------------------------------ SCS -
          KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS  JAN VERSION
 12/12/** krugsws.T20  50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
 15:04:41                    SUMMARY, JOB NO.   1                     PAGE  74


                            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       STORM NUMBERS.....
   ID                (SQ MI)          6
```

```
 STRUCTURE   2          .78
 ---------------------------
    ALTERNATE   16                925

 STRUCTURE   1          .70
 ---------------------------
    ALTERNATE   16                878

 XSECTION    1          .49
 ---------------------------
    ALTERNATE   16                682

 XSECTION    2          .14
 ---------------------------
    ALTERNATE   16                324

 XSECTION    3          .07
 ---------------------------
    ALTERNATE   16                253

 XSECTION    4          .63
 ---------------------------
    ALTERNATE   16                851

 XSECTION    5          .70
 ---------------------------
    ALTERNATE   16                900

 XSECTION    6          .06
 ---------------------------
    ALTERNATE   16                248

 XSECTION    7          .76
 ---------------------------
    ALTERNATE   16                905

 XSECTION    8          .02
 ---------------------------
    ALTERNATE   16                 74

 XSECTION    9          .78
 ---------------------------
    ALTERNATE   16                933

 XSECTION   10          .18
 ---------------------------
    ALTERNATE   16                393

 XSECTION   11          .05
 ---------------------------
    ALTERNATE   16                192
1
 TR20 ------------------------------------------------------------------------ SCS -
          KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS  JAN VERSION
 12/12/** krugsws.T20  50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST
 15:04:41                    SUMMARY, JOB NO.   1                     PAGE  75


                             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	12	.23	
ALTERNATE	16		502
XSECTION	13	.02	
ALTERNATE	16		65
XSECTION	14	.25	
ALTERNATE	16		519
XSECTION	15	.01	
ALTERNATE	16		57
XSECTION	16	.26	
ALTERNATE	16		503
XSECTION	17	.03	
ALTERNATE	16		116
XSECTION	18	.29	
ALTERNATE	16		528
XSECTION	19	1.08	
ALTERNATE	16		1441
XSECTION	20	.12	
ALTERNATE	16		433
XSECTION	21	.14	
ALTERNATE	16		297
XSECTION	22	1.19	
ALTERNATE	16		1771
XSECTION	23	1.33	
ALTERNATE	16		2009
XSECTION	24	.30	
ALTERNATE	16		782

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	25	.03	
ALTERNATE	16		120
XSECTION	26	.10	
ALTERNATE	16		433
XSECTION	27	.40	
ALTERNATE	16		1029
XSECTION	28	1.36	
ALTERNATE	16		1814
XSECTION	29	1.77	
ALTERNATE	16		2655
XSECTION	30	.00	
ALTERNATE	16		0
XSECTION	31	1.77	
ALTERNATE	16		2573

1
TR20 ---------- SCS -
KRUG DEVELOPED/HAWTHORNE/REED'S COVE DEVELOPED CONDITIONS JAN VERSION
12/12/** krugsws.T20 50%, 20%, 10%, 2%, 1%, AND 0.2% ANNUAL CHANCE STO2.04TEST

END OF 1 JOBS IN THIS RUN

SCS TR-20, VERSION 2.04TEST
FILES

INPUT = krugUSE.t20 , GIVEN DATA FILE
OUTPUT = krugUSE.OUT , DATED 12/12/**,15:04:41

FILES GENERATED - DATED 12/12/**,15:04:41

FILE krugUSE.TMG CONTAINS MESSAGE + WARNING INFORMATION

TOTAL NUMBER OF WARNINGS = 9, MESSAGES = 30

*** TR-20 RUN COMPLETED ***

Figure 3.3

Time of Concentration Calculations

TIME OF CONCENTRATION CALCULCATIONS BY THE FAA METHOD

Krug South Commercial

Wichita, Kansas

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

REVISED: 01/11/07

Area Name	Land Use	Soil Group	Maximum Elevation	Minimum Elevation	Length	Rational Runoff Coefficient, C				Time of Concentration (min.), Tc			
					(ft)	2-Year	5-Year	10-Year	100-Year	2-Year	5-Year	10-Year	100-Year
BASIN 1													
Pre-Project													
Onsite	Agricultural - Pasture - Slopes 1-4%	D	1,380	1,350	4,203	0.32	0.37	0.47	0.67	101.8	95.3	82.3	56.1
Pre and Post-project Offsite watershed	Residential - 1/4 Acre	D	1390.0	1360.0	4000	0.50	0.54	0.62	0.76	75.2	70.2	60.1	42.6
Post-Project													
Onsite portion of Basin 1 - to Ponds A&B	Residential - 1/4 Acre	D	1,361	1,352	610	0.50	0.54	0.62	0.76	23.4	21.9	18.7	15.0

Figure 3.4

Curve Number Calculations

Krug South Curve Number Evaluation

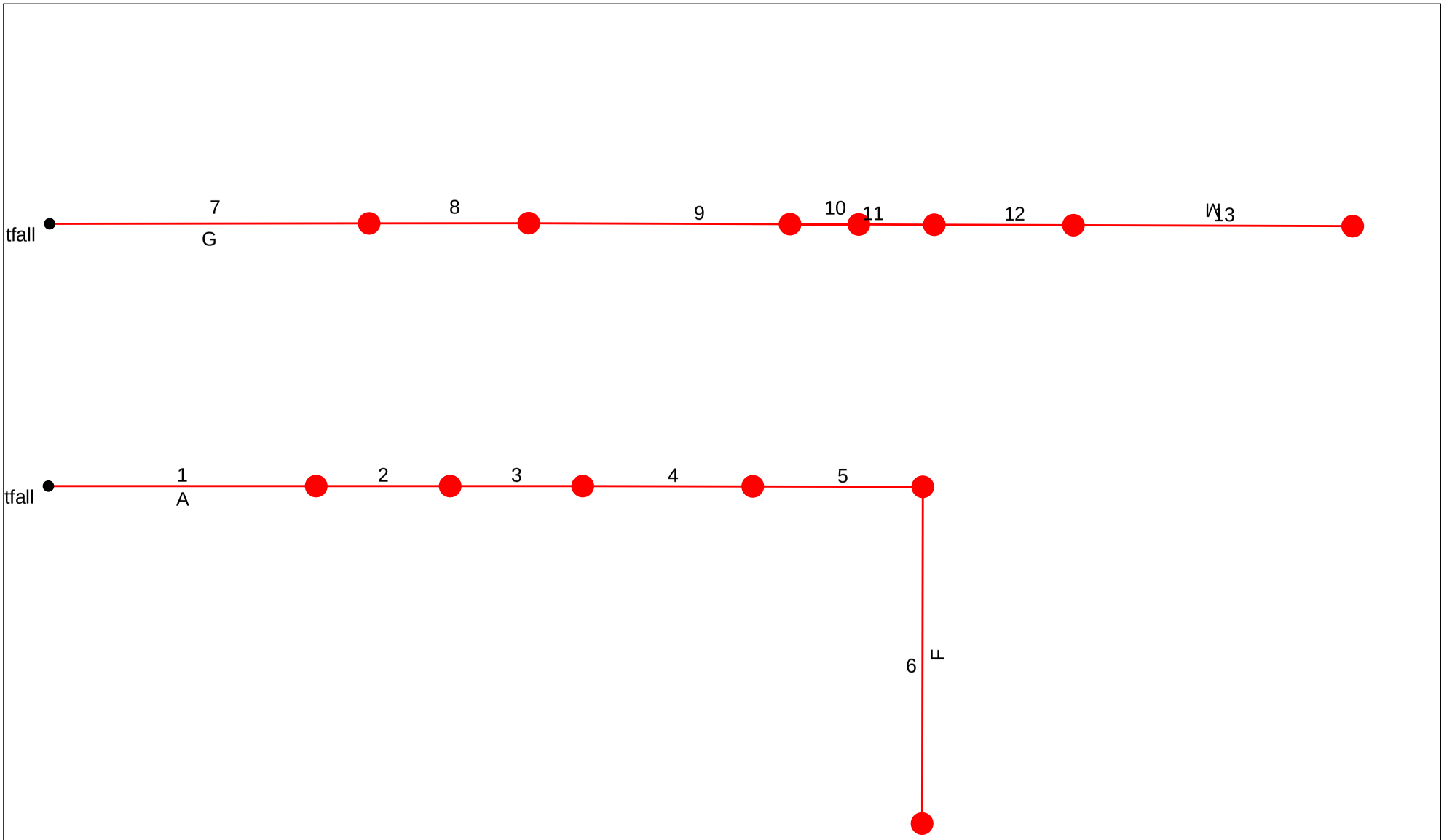
Watershed 2: 66 acres
Residential: 47 acres (curve number = 87, soil group D and 1/4 acre residential land use)
Commercial: 19 acres (curve number = 95, soil group D with commercial land use - 85% impervious)
Offsite: 191 acres
Residential: 191 acres (curve number = 87, soil group D and 1/4 acre residential land use)

Weighted Curve Number for all of Basin 1: 87.6
((46*87)+(20*95)+(191*87)+(17*87))/267
Weighted Curve Number for Onsite Portion of Basin 1: 89.3
((19*95)+(47*87))/66
Curve Number for Offsite: 87

Figure 3.5

Pipe Sizing

Hydraflow Storm Sewers Plan



Project File: 08372SWS.stm	Number of lines: 13	Date: 12-16-2008

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	52	4.30	10.60	0.87	3.74	9.22	15.0	15.9	4.4	40.90	20.69	5.79	36	0.10	1353.50	1353.55	1356.50	1356.70	1359.00	1359.00	A
2	1	26	3.30	6.30	0.87	2.87	5.48	15.0	15.8	4.4	24.37	13.91	4.97	30	0.12	1354.05	1354.08	1357.09	1357.19	1359.00	1359.00	
3	2	26	0.40	3.00	0.87	0.35	2.61	15.0	15.6	4.5	11.66	11.44	2.38	30	0.08	1354.08	1354.10	1357.67	1357.69	1359.00	1359.00	
4	3	33	0.40	2.60	0.87	0.35	2.26	15.0	15.5	4.5	10.14	3.66	5.74	18	0.12	1355.10	1355.14	1357.74	1358.05	1359.00	1362.01	
5	4	33	1.40	2.20	0.87	1.22	1.91	15.0	15.4	4.5	8.60	3.17	4.87	18	0.09	1355.14	1355.17	1358.44	1358.67	1362.01	1365.03	
6	5	65	0.80	0.80	0.87	0.70	0.70	15.0	15.0	4.5	3.17	2.11	2.58	15	0.11	1355.42	1355.49	1359.48	1359.64	1365.03	1371.00	F
7	End	62	1.20	5.50	0.87	1.04	4.79	15.0	15.9	4.4	21.22	17.27	4.71	30	0.18	1353.50	1353.61	1355.63	1355.80	1354.00	1357.64	G
8	7	31	0.90	4.30	0.87	0.78	3.74	15.0	15.8	4.4	16.64	9.09	5.30	24	0.16	1354.11	1354.16	1356.11	1356.28	1357.64	1359.46	
9	8	64	0.40	3.40	0.87	0.35	2.96	15.0	15.5	4.5	13.25	6.32	4.22	24	0.08	1354.16	1354.21	1356.29	1356.51	1359.46	1361.25	
10	9	13	0.70	3.00	0.87	0.61	2.61	15.0	15.5	4.5	11.71	10.73	3.73	24	0.23	1354.21	1354.24	1356.99	1357.03	1361.25	1362.03	
11	10	28	0.70	2.30	0.87	0.61	2.00	15.0	15.3	4.5	9.02	9.56	2.87	24	0.18	1354.19	1354.24	1357.44	1357.48	1362.03	1364.07	
12	11	27	0.70	1.60	0.87	0.61	1.39	15.0	15.2	4.5	6.30	4.52	3.56	18	0.19	1354.74	1354.79	1357.55	1357.64	1364.07	1366.04	
13	12	54	0.90	0.90	0.87	0.78	0.78	15.0	15.0	4.5	3.56	1.45	4.54	12	0.17	1355.29	1355.38	1357.74	1358.28	1366.04	1370.00	M

Project File: 08372SWS.stm

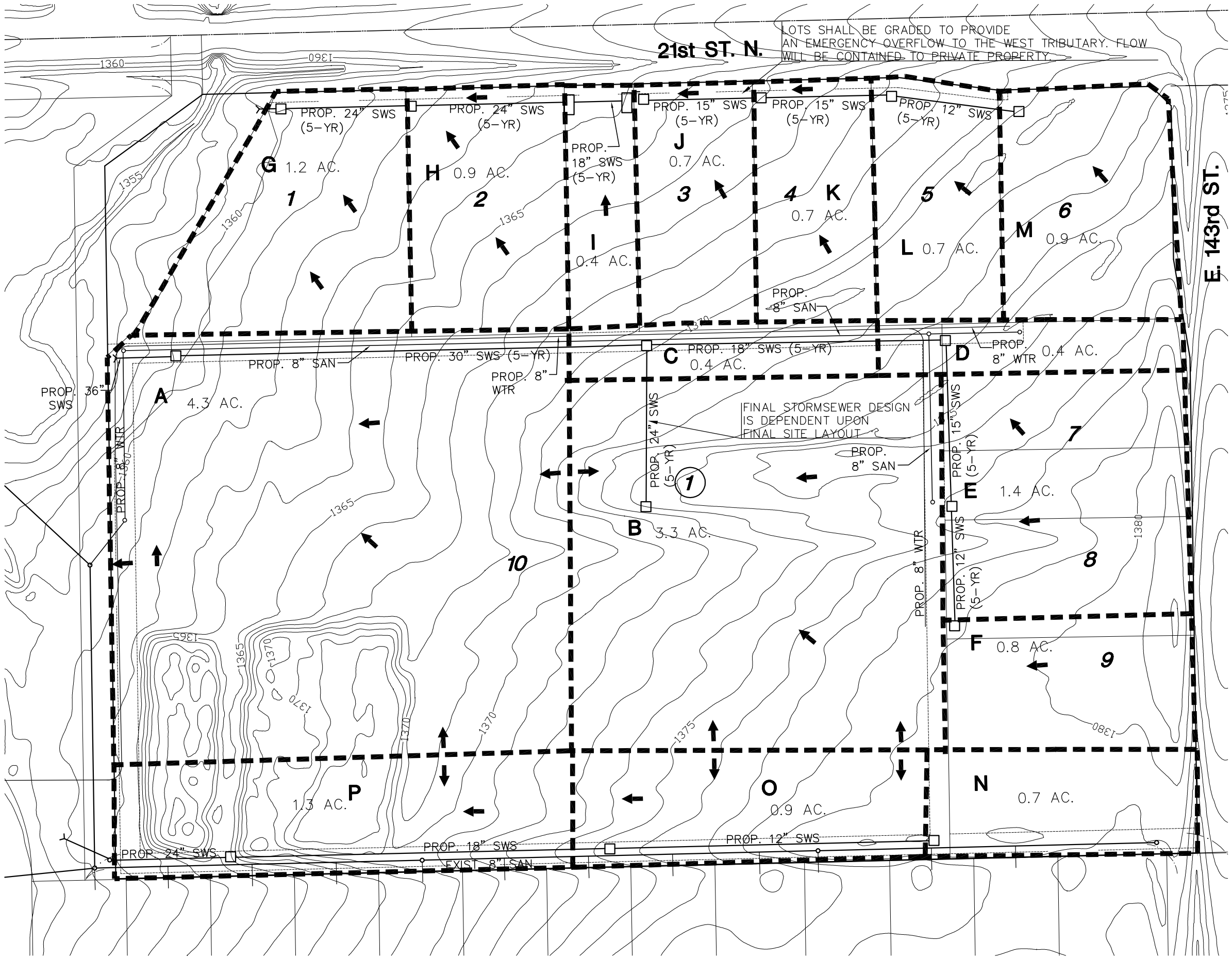
Number of lines: 13

Run Date: 12-16-2008

NOTES: Intensity = 52.62 / (Inlet time + 11.20) ^ 0.75; Return period = 5 Yrs. ; c = cir e = ellip b = box

Figure 3.6

Drainage and Utility Plan

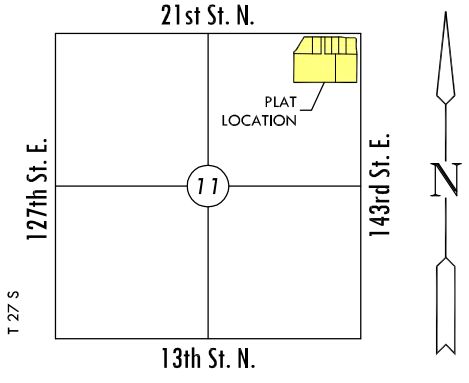


LEGEND

- 6IN - CONIFEROUS TREE
- 3IN - DECIDUOUS TREE
- SN - SIGN
- PP - POWER POLE
- ELEC BOX - ELECTRIC BOX
- LP - LIGHT POLE
- FH - FIRE HYDRANT
- WV - WATER VALVE
- WM - WATER METER
- SECTION CORNER
- BM - BENCHMARK
- EASEMENT
- BUILDING SETBACK
- FENCE
- STORM SEWER PIPE
- WATER LINE
- SANITARY SEWER LINE
- GAS LINE
- GAS PIPELINE
- TELEPHONE LINE
- UNDERGROUND ELEC.
- OVERHEAD ELECTRIC
- FIBER OPTIC CABLE
- DRAINAGE SUB BASIN
- DRAINAGE BASIN
- FLOW ARROW
- A - AREA FOR SWS SIZING

NOTE: CONTOURS ARE IN NAVD 88 - BENCHMARKS SHOWN ON PLAT ARE IN NGVD 29
CONVERSION: NAVD 88 - 0.5' = NGVD 29

SCALE: 1"=50'
0 50 100 150



VICINITY MAP

BASIN	AREA (AC.)
A	4.3
B	3.3
C	0.4
D	0.4
E	1.4
F	0.8
G	1.2
H	0.9
I	0.4
J	0.7
K	0.7
L	0.7
M	0.9
N	0.7
O	0.9
P	1.3

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

KRUG SOUTH COMMERCIAL

N. 143RD ST. E. & 21ST ST. N.
WICHITA, KS

DRAINAGE & UTILITY PLAN

DATE: NOVEMBER 2008
REVISED:
DESIGN BY: TMH
DRAWN BY: TMH
CHECKED BY: KLA
SHEET NUMBER: 1/1

J:\Civil\08372 Krug Comm\dwg\drng\08372_DUP.dwg

Tab 4. Floodplain Submittal

Not applicable to Krug South commercial addition; however, LOMR Case Number 09-07-0232P (November 14, 2008) was approved as a part of the Krug South residential development, south and west of the site.

Tab 5. Permits

A. US Army Corps of Engineers

Not applicable to Krug South commercial addition; however, the Krug South residential development was permitted under Nationwide Permit 29 (NWK-2007-1070, June 1, 2007).

B. Kansas Department of Agriculture

Not applicable to Krug South commercial addition; however, the following DWR permits were approved for Krug South residential addition:

- CSG-0266 (Approved 08-13-07)
- SSG-0564-L (Approved 08-13-07)
- LSG-0335-S (Approved 08-13-07)
- LSG-0330 (Approved 08-13-07)
- SSG-0563-L (Approved 08-13-07)
- LSG-0331-S (Approved 08-13-07)

Stream obstruction permits may be required depending on the final stormsewer design.

C. Federal Emergency Agency (FEMA)

Not applicable to Krug South commercial addition; however, LOMR Case Number 09-07-0232P was approved as a part of the Krug South residential development, south and west of the site.

D. Kansas Department of Transportation

Not applicable to Krug South commercial addition.

E. Sedgwick County Right-of-way Permit

Not applicable to Krug South commercial addition.