PRELIMINARY DRAINAGE REPORT

FOR

KRUG SOUTH ADDITION
Wichita, Kansas

SEPTEMBER 2006

Preliminary Drainage Report for Krug South Addition
Wichita, Sedgwick County, Kansas

Location

The site is located in 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 116 acres. The site is bounded by Reeds Cove Addition to the west, 21st Street to the north, and 143rd Street to the east. To the south is the Burlington Northern Railroad. The site is shown on the Andover, Kansas Quadrangle located in Appendix A.

Soils

According to the NRCS (SCS) Sedgwick County Soil Survey (Appendix B), most of the site is in the Rose Hill Series (Rd: silty clay, 1 to 3 percent slopes). The northeast section of the site is in the Irwin Series (Ia: Irwin silty clay loam, with 1 to 3 percent slopes) and a small portion in the southwest corner of the site is in the Clime Series (Ce: Clime silty clay, with 3 to 7 percent slopes). The Hydrological Soil Group (HSG) for the site is "D".

Pre-developed Conditions

Current Development

The site is undeveloped agricultural land.

Current Landform and Slope

A tributary of Fourmile Creek flows northeast to southwest through small portions of the site. Elevations on site vary from roughly 1382 feet on the east edge of the watershed, to 1340 feet in the southwest portion. Watershed slopes vary from 1.2% to 4.0%. The site drains east to west, toward the tributary. There is one pond located in the northwest section of the site.

Current Drainage Conditions

Most of the site is outside Zone A, however, portions of the site along the western boundary extend into Zone A (FIRM Panel 150, Sedgwick County, June 3, 1986) (Appendix C). A small area of Zone B is found in the southwest corner of the site.

A Letter of Map Revision (LOMR) (Case No. 05-07-0176P) was submitted for the Reed's Cove Addition. This LOMR defined the floodplain and floodway through the site (Appendix D).

Upstream of Site

Flows upstream of the site are captured by the tributary and flow into Fourmile Creek. Flows from 143rd Street are captured in a roadside drainage ditch that runs parallel to the east boundary of the site.

Current Runoff Characteristics

The pre-project site watersheds are outlined in Appendix E. Hydraflow software by Intellisolve calculated peak flows using the SCS Method (results are shown in Appendix F). The project site was delineated into two watersheds. Watershed 1 is 257 acres, with approximately 191 acres of developed land and 66 acres of undeveloped agricultural land. The area north of 21st Street, which is included in Watershed 1, was developed by others as the Krug North Addition. A weighted curve number of 86.2 was used for Watershed 1 pre-project flow calculations.

Watershed 2 (Appendix E) is 50 acres of undeveloped agricultural land. A curve number of 81 was used for this area.

Peak discharge, from the pre-project watersheds for the 100-year return period, is shown in Table 1.

Table 1. Pre-project runoff.

Watershed	100-Year (cfs)
Watershed 1	782
Watershed 2	206

Post-Developed Condition

Proposed Development

The site will develop into approximately 20 acres of commercial property and 96 acres of 1/3-acre residential lots.

Proposed Landform and Slope

Three detention ponds are proposed for the site. The three proposed ponds along with the existing pond will be designed/modified to ensure post-project flow rates are lower than or equal to pre-project flows.

Final slopes in the residential and commercial development have not been determined, but the minimum will be 0.5% within street right-of-way and for commercial development, and 1-2% in backyards (Appendix G).

Proposed Runoff Characteristics

The post-project watersheds were modified slightly from the pre-project delineation; however, all land that was included in pre-project calculations was accounted for in post-project calculations. Hydraflow software by Intellisolve calculated peak flows for the post-project watersheds using the SCS Method (results are shown in Appendix F). Watershed 1A is approximately 247 acres,10 acres less than pre-project Watershed 1. These 10 acres were redirected to Watershed 2A. A weighted curve number of 88.6 was used to represent post-project conditions in Watershed 1A. Watershed 2A is approximately 60 acres and a curve number of 88 was used to represent this area. With the proposed development, the basins will be fully developed. Table 2 shows the post-project runoff values for the 100-year design storm.

Table 2. Post-project runoff.

Watershed	100-Year (cfs)
Watershed 1A	864
Watershed 2A	279

The three proposed detention ponds and one existing pond will bring post-project flows below pre-project values. Tables 3 and 4 show the pre and post project flows and the resulting offsite flows with the use of the detention ponds for Watershed 1/Watershed 1A and Watershed 2/Watershed 2A, respectively.

Table 3. Watershed 1/1A comparison of 100-year Flows

Condition	100-year (cfs)
Pre-Project (Watershed 1)	782
Post-Project (Watershed 1A)	864
Post-Project with Detention	755

Table 4. Watershed 2/2A comparison of 100-year Flows

Condition	100-year (cfs)
Pre-Project (Watershed 2)	206
Post-Project (Watershed 2A)	279
Post-Project with Detention	161

The northwest detention ponds will provide approximately 18 acre-feet of storage and the south detention ponds will provide 10 ac-ft. The detention ponds will be modified in the final drainage report and structures will be designed for smaller storms.

Storm sewers will carry runoff from streets and yards into the ponds (Appendix H). Storm sewer design will be presented in the final drainage report. All residential storm sewers will be designed to accommodate the 2-year design storm, while commercial storm sewers will be designed according to the 5-year design storm. For the 100-year storm, post-project flows off site are reduced by 72 cfs from pre-project values.

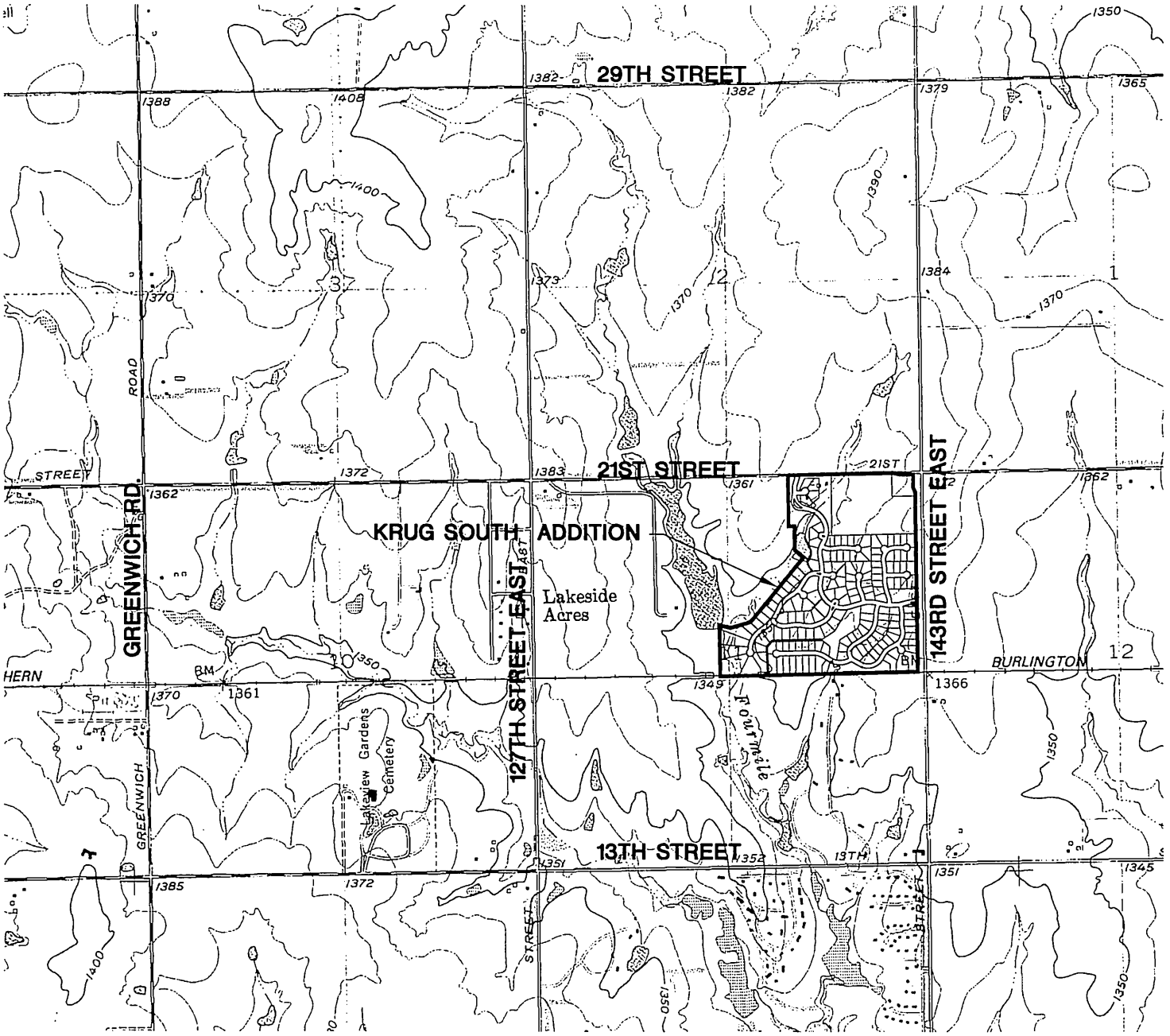
Permits

Permits will be obtained from the Division of Water Resources (DWR) for the floodplain fill and stream obstruction and channel changes. The Army Corps of Engineers will be contacted about wetland issues. A LOMR application will be submitted to FEMA to revise the floodplain and floodway on a portion of the property.

Summary

Krug South Addition is located in Sedgwick County, Kansas, on the southwest corner of 143rd Street East and 21st Street North. Krug South will develop into commercial property and residential lots. The development will include three reserves for ponds. Post-project runoff from the watershed will increase from pre-project flows. The proposed and existing ponds will provide adequate detention and prevent increased peak flows from the site. Storm sewers will carry runoff from streets and yards into the ponds. Based on the studied pre-developed and post-developed conditions, the total flow from the site is reduced by 72 cfs for the 100-year design storm.

Appendix A
Quadrangle



SCALE 1:24 000

CONTOUR INTERVAL 5 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

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

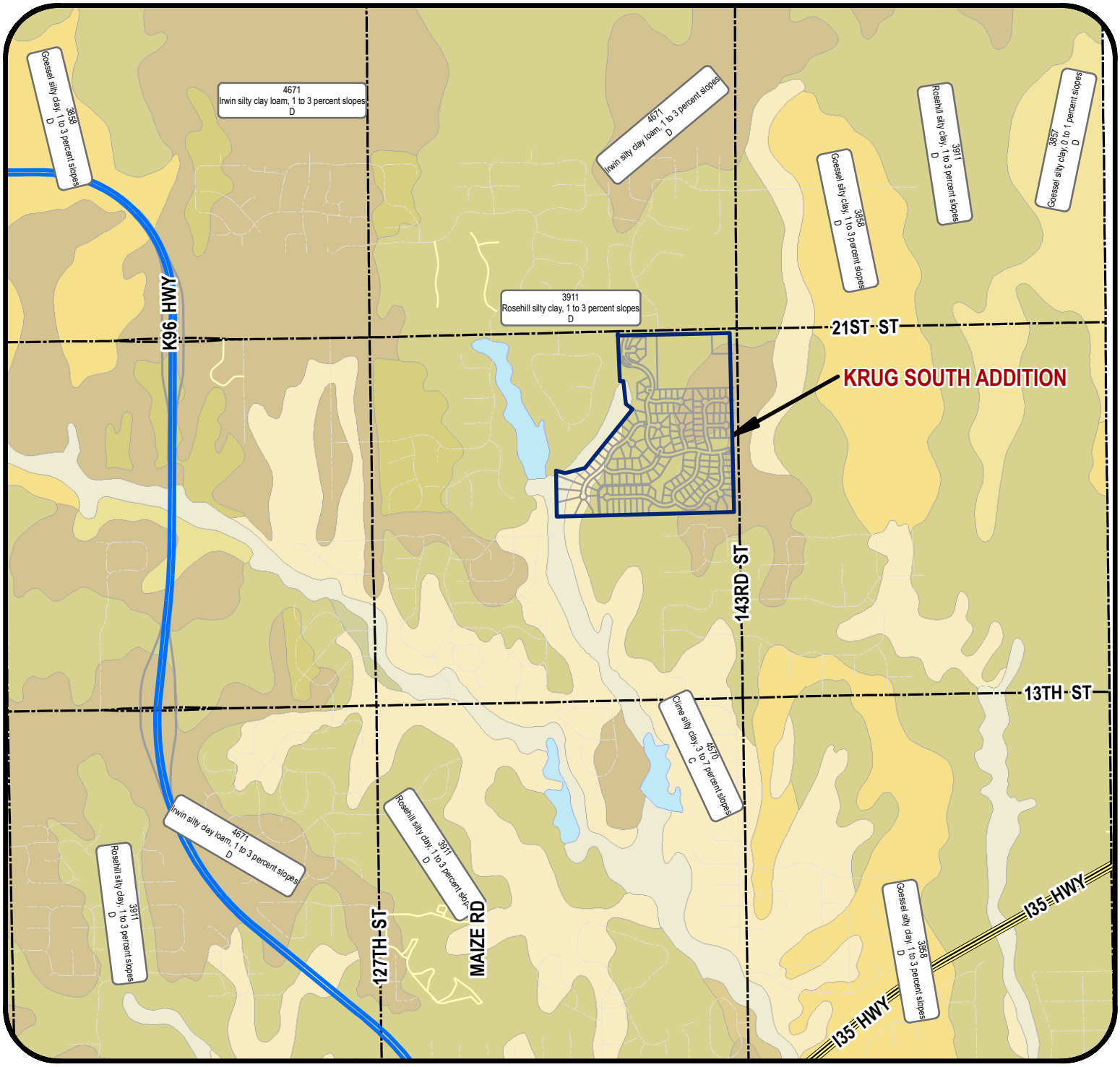
KRUG SOUTH ADDITION
PROJECT NAME

USGS GEOLOGICAL SURVEY
ANDOVER, KANSAS QUADRANGLE
SHEET TITLE

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

SEPTEMBER 2006	05291	1 / 1
DATE	JOB NO.	SHEET/OF

Appendix B
Soil Survey



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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

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Krug South Addition

Project Name:

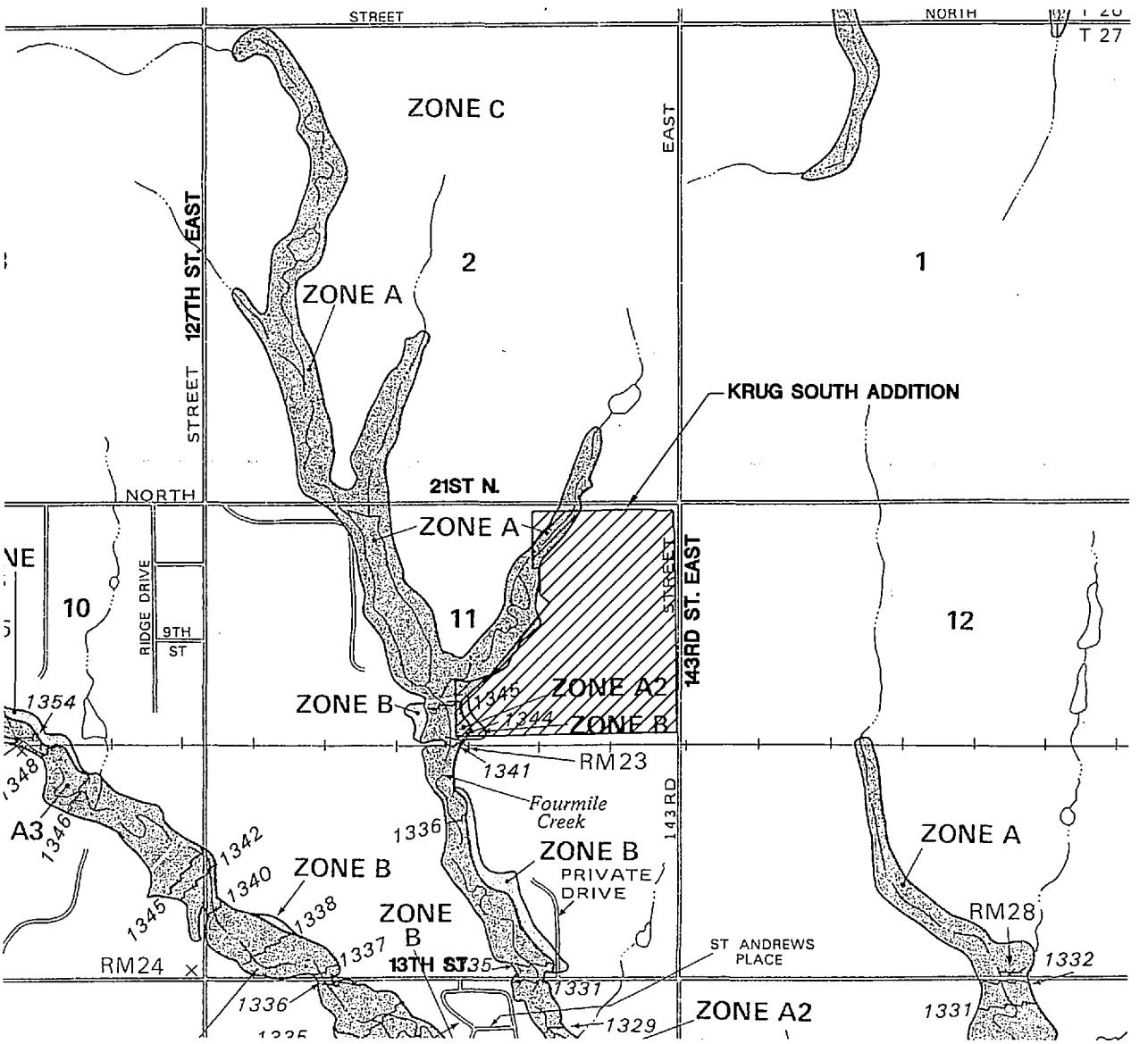
Soil Survey - Sedgwick County, KS

Sheet Title:

MKEC ENGINEERING CONSULTANTS, INC.

KWS	SEPT. 2006
Drawn By:	Date:
TMH / KLA	05291
Design / Review:	Job No.:

Appendix C
FIRM / FBFM



NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

SEDGWICK
COUNTY,
KANSAS
(UNINCORPORATED AREAS)

PANEL 150 OF 300

COMMUNITY-PANEL NUMBER
200321 0150 A

EFFECTIVE DATE:
JUNE 3, 1986

Federal Emergency Management Agency

APPROXIMATE SCALE

2000 0 2000 FEET

MKEC
ENGINEERING
CONSULTANTS, INC.

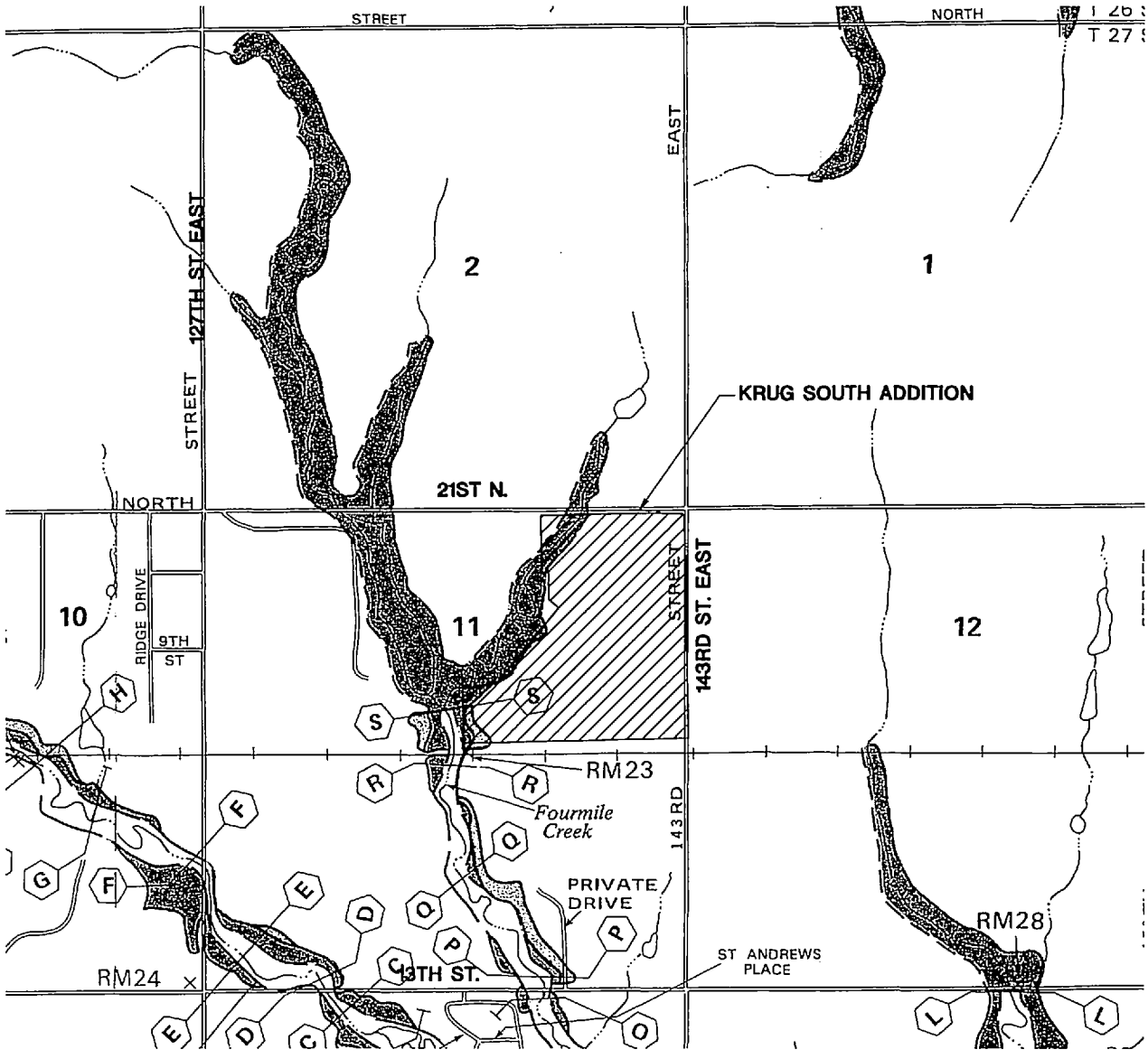
411 N. WEBB ROAD
WICHITA, KS. 67206
316 - 684 - 9600

KRUG SOUTH ADDITION
PROJECT NAME

FIRM PANEL 150 OF 300
ANDOVER, KANSAS
SHEET TITLE

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

SEPTEMBER 2006	05291	1 / 1
DATE	JOB NO.	SHEET/OF



NATIONAL FLOOD INSURANCE PROGRAM

FLOODWAY

FLOOD BOUNDARY AND FLOODWAY MAP

SEDGWICK COUNTY, KANSAS
(UNINCORPORATED AREAS)

PANEL 150 OF 300
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
200321 0150

EFFECTIVE DATE:
JUNE 3, 1986

Federal Emergency Management Agency

APPROXIMATE SCALE

2000 0 2000 FEET

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

KRUG SOUTH ADDITION
PROJECT NAME

FBFM PANEL 150 OF 300
ANDOVER, KANSAS
SHEET TITLE

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

SEPTEMBER 2006	05291	1 / 1
DATE	JOB NO.	SHEET/OF

Appendix D
LOMR

Federal Emergency Management Agency

Washington, D.C. 20472

JAN 3 0 2006

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

The Honorable Dave Unruh
Chairman, Sedgwick County
Board of Commissioners
525 North Main Street, Suite 320
Wichita, KS 67203

IN REPLY REFER TO:
Case No.: 05-07-0176P
Community Name: Sedgwick County, KS
Community No.: 200321
Effective Date of This Revision: MAY 1 8 2006

Dear Mr. Unruh:

The Flood Insurance Study report, Flood Insurance Rate Map, and Flood Boundary and Floodway Map for your community have been revised by this Letter of Map Revision (LOMR). Please use the enclosed annotated map panel(s) revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals issued in your community.

Additional documents are enclosed which provide information regarding this LOMR. Please see the List of Enclosures below to determine which documents are included. Other attachments specific to this request may be included as referenced in the Determination Document. If you have any questions regarding floodplain management regulations for your community or the National Flood Insurance Program (NFIP) in general, please contact the Consultation Coordination Officer for your community. If you have any technical questions regarding this LOMR, please contact the Director, Federal Insurance and Mitigation Division of the Department of Homeland Security's Federal Emergency Management Agency (FEMA) in Kansas City, Missouri, at (816) 283-7002, or the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP). Additional information about the NFIP is available on our website at http://www.fema.gov/nfip.

Sincerely,

Kevin C Long

Kevin C. Long, CFM, Project Engineer
Hazard Identification Section
Mitigation Division

For: Doug Bellomo, P.E., Chief
Hazard Identification Section
Mitigation Division

List of Enclosures:
Letter of Map Revision Determination Document
Annotated Flood Insurance Rate Map
Annotated Flood Boundary and Floodway Map
Annotated Flood Insurance Study Report

cc: Mr. Robert George, CFM
Floodplain Manager
Sedgwick County

Mr. Shawn Bryan, P.E.
Storm Water Engineer
City of Wichita

Mr. Rob Ramseyer
Vice President
Ritchie Associates, Inc.

Mr. Mark Buckingham, P.E.
MKEC Engineering Consultants, Inc.

Mr. Brian L. Glenn, P.E.
Baughman Company, P.A.

 | Issue Date: JAN 30 2006 | Effective Date: MAY 18 2006 | Case No.: 05-07-0176P | LOMR-APP

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT

COMMUNITY AND REVISION INFORMATION		PROJECT DESCRIPTION	BASIS OF REQUEST
COMMUNITY	Sedgwick County Kansas (Unincorporated Areas)	CHANNELIZATION CULVERT FILL WEIR STRUCTURE	HYDROLOGIC ANALYSIS HYDRAULIC ANALYSIS NEW TOPOGRAPHIC DATA
	COMMUNITY NO.: 200321		
IDENTIFIER	Rocky Creek Addition	APPROXIMATE LATITUDE & LONGITUDE: 37.719, -97.182 SOURCE: USGS QUADRANGLE DATUM: NAD 83	

FLOODING SOURCES & REVISED REACHES	Fourmile Creek – from approximately 1,530 feet downstream of the Burlington Northern Railroad (BNRR) to approximately 720 feet upstream of 21st Street North Unnamed Tributary to Fourmile Creek – from its confluence with Fourmile Creek to approximately 170 feet downstream of Williamsgate Road

SUMMARY OF REVISIONS

	Fourmile Creek			Unnamed Tributary to Fourmile Creek		
Effective Flooding:	Zone AE	BFEs*	Floodway	Zone AE	BFEs*	Floodway
Revised Flooding:	Zone AE	BFEs	Floodway	Zone AE	BFEs	Floodway
Increases:	YES	YES	YES	YES	YES	YES
Decreases:	YES	YES	YES	YES	YES	YES

* BFEs – Base Flood Elevations

ANNOTATED MAPPING ENCLOSURES			ANNOTATED STUDY ENCLOSURES
TYPE: FIRM*	NO.: 200321 0150 A	Date: June 3, 1986	DATE OF EFFECTIVE FLOOD INSURANCE STUDY: June 3, 1986 FLOODWAY DATA TABLE PROFILES: 48P and 76P SUMMARY OF DISCHARGES TABLE
TYPE: FBFM**	NO.: 200321 0150	Date: June 3, 1986	

* FIRM – Flood Insurance Rate Map; ** FBFM – Flood Boundary and Floodway Map; *** FHBM – Flood Hazard Boundary Map

DETERMINATION

This document provides the determination from the Department of Homeland Security's Federal Emergency Management Agency (FEMA) regarding a request for a Letter of Map Revision (LOMR) for the area described above. Using the information submitted, we have determined that a revision to the flood hazards depicted in the Flood Insurance Study (FIS) report and/or National Flood Insurance Program (NFIP) map is warranted. This document revises the effective NFIP map, as indicated in the attached documentation. Please use the enclosed annotated map panels revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals in your community.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional information about the NFIP is available on our website at http://www.fema.gov/nfip.

Kevin C Long

Kevin C. Long, CFM, Project Engineer
Hazard Identification Section
Mitigation Division

106979 10.3.1.05070176 102IAC

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT

COMMUNITY AND REVISION INFORMATION		PROJECT DESCRIPTION	BASIS OF REQUEST
COMMUNITY	Sedgwick County Kansas (Unincorporated Areas)	CHANNELIZATION CULVERT FILL WEIR STRUCTURE	HYDROLOGIC ANALYSIS HYDRAULIC ANALYSIS NEW TOPOGRAPHIC DATA
	COMMUNITY NO.: 200321		
IDENTIFIER	Rocky Creek Addition	APPROXIMATE LATITUDE & LONGITUDE: 37.719, -97.182 SOURCE: USGS QUADRANGLE DATUM: NAD 83	
FLOODING SOURCES & REVISED REACHES	Unnamed Tributary 2 to Fourmile Creek – from its confluence with Fourmile Creek to approximately 960 feet upstream of 21st Street North		

SUMMARY OF REVISIONS

Effective Flooding:	Zone A	No BFEs*	No Floodway
Revised Flooding:	Zone AE	BFEs	Floodway
Increases:	YES	YES	YES
Decreases:	NONE	NONE	NONE

* BFEs – Base Flood Elevations

ANNOTATED MAPPING ENCLOSURES	ANNOTATED STUDY ENCLOSURES
TYPE: FIRM* NO.: 200321 0150 A Date: June 3, 1986 TYPE: FBFM** NO.: 200321 0150 Date: June 3, 1986	DATE OF EFFECTIVE FLOOD INSURANCE STUDY: June 3, 1986 FLOODWAY DATA TABLE PROFILE: 77P SUMMARY OF DISCHARGES TABLE

* FIRM – Flood Insurance Rate Map; ** FBFM – Flood Boundary and Floodway Map; *** FHBM – Flood Hazard Boundary Map

DETERMINATION

This document provides the determination from the Department of Homeland Security's Federal Emergency Management Agency (FEMA) regarding a request for a Letter of Map Revision (LOMR) for the area described above. Using the information submitted, we have determined that a revision to the flood hazards depicted in the Flood Insurance Study (FIS) report and/or National Flood Insurance Program (NFIP) map is warranted. This document revises the effective NFIP map, as indicated in the attached documentation. Please use the enclosed annotated map panels revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals in your community.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional information about the NFIP is available on our website at http://www.fema.gov/nfip.

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Hazard Identification Section
Mitigation Division

106979 10.3.1.05070176 102IAC

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

COMMUNITY INFORMATION

APPLICABLE NFIP REGULATIONS/COMMUNITY OBLIGATION

We have made this determination pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (P.L. 93-234) and in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, P.L. 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65. Pursuant to Section 1361 of the National Flood Insurance Act of 1968, as amended, communities participating in the NFIP are required to adopt and enforce floodplain management regulations that meet or exceed NFIP criteria. These criteria, including adoption of the FIS report, FIRM, and FBFM, and the modifications made by this LOMR, are the minimum requirements for continued NFIP participation and do not supersede more stringent State/Commonwealth or local requirements to which the regulations apply.

We provide the floodway designation to your community as a tool to regulate floodplain development. Therefore, the floodway revision we have described in this letter, while acceptable to us, must also be acceptable to your community and adopted by appropriate community action, as specified in Paragraph 60.3(d) of the NFIP regulations.

NFIP regulations Subparagraph 60.3(b)(7) requires communities to ensure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained. This provision is incorporated into your community's existing floodplain management ordinances; therefore, responsibility for maintenance of the modified channel and culvert rests with your community. We may request that your community submit a description and schedule of channel and culvert maintenance activities.

COMMUNITY REMINDERS

The base (1-percent-annual-chance) flood discharges for Fourmile Creek and Unnamed Tributary to Fourmile Creek were obtained from the LOMR dated September 29, 2005 (Case No. 04-07-526P), without considering subsequent changes in watershed characteristics that could increase flood discharges. The base flood discharges for Unnamed Tributary 2 to Fourmile Creek were obtained from the submitted hydrologic model. Future development of projects upstream could cause increased flood discharges, which could cause increased flood hazards. A comprehensive restudy of your community's flood hazards would consider the cumulative effects of development on flood discharges and could, therefore, establish greater flood hazards in this area.

Your community must regulate all proposed floodplain development and ensure that permits required by Federal and/or State/Commonwealth law have been obtained. State/Commonwealth or community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction or may limit development in floodplain areas. If your State/Commonwealth or community has adopted more restrictive or comprehensive floodplain management criteria, those criteria take precedence over the minimum NFIP requirements.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional information about the NFIP is available on our website at http://www.fema.gov/nfip.

Kevin C. Long

Kevin C. Long, CFM, Project Engineer
Hazard Identification Section
Mitigation Division

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

COMMUNITY INFORMATION (CONTINUED)

We will not print and distribute this LOMR to primary users, such as local insurance agents or mortgage lenders; instead, the community will serve as a repository for the new data. We encourage you to disseminate the information in this LOMR by preparing a news release for publication in your community's newspaper that describes the revision and explains how your community will provide the data and help interpret the NFIP maps. In that way, interested persons, such as property owners, insurance agents, and mortgage lenders, can benefit from the information.

This revision has met our criteria for removing an area from the 1-percent-annual-chance floodplain to reflect the placement of fill. However, we encourage you to require that the lowest adjacent grade and lowest floor (including basement) of any structure placed within the subject area be elevated to or above the Base (1-percent-annual-chance) Flood Elevation.

We have designated a Consultation Coordination Officer (CCO) to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Mr. Robert G. Bissell
Director, Federal Insurance and Mitigation Division
Federal Emergency Management Agency, Region VII
9221 Ward Parkway, Suite 300
Kansas City, MO 64114
(816) 283-7002

STATUS OF THE COMMUNITY NFIP MAPS

Because the revisions requested in LOMR Case Nos. 04-07-A180P, 05-07-0121P, and 05-07-0176P tie together at Fourmile Creek just downstream of the confluence of Unnamed Tributary 2, the first two cases were merged together with the latter case. Therefore, this revision also includes the revisions requested for LOMR Case Nos. 04-07-A180P and 05-07-0121P.

We are processing a revised FIRM and FIS report for Sedgwick County in our countywide format; therefore, we will not physically revise and republish the FIRM, FBFM, and FIS report for your community to incorporate the modifications made by this LOMR at this time. Preliminary copies of the countywide FIRM and FIS report, which present information from the effective FIRMs, FBFMs, and FIS reports for your community and incorporated communities in Sedgwick County, were submitted to your community for review on June 20, 2005. The modifications made by this LOMR will be evaluated and, if appropriate, will be incorporated into the countywide FIRM and FIS report before they become effective.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional information about the NFIP is available on our website at http://www.fema.gov/nfip.

Kevin C. Long

Kevin C. Long, CFM, Project Engineer
Hazard Identification Section
Mitigation Division

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

PUBLIC NOTIFICATION OF REVISION

Within 90 days of the second publication in the local newspaper, a citizen may request that we reconsider this determination. Any request for reconsideration must be based on scientific or technical data. Therefore, this letter will be effective only after the 90-day appeal period has elapsed and we have resolved any appeals that we receive during this appeal period. Until this LOMR is effective, the revised BFEs presented in this LOMR may be changed.

A notice of changes will be published in the *Federal Register*. This information also will be published in your local newspaper on or about the dates listed below.

LOCAL NEWSPAPER
Name: *Derby Daily Reporter*
Dates: 02/09/2006 02/16/2006

PUBLIC NOTIFICATION

FLOODING SOURCE	LOCATION OF REFERENCED ELEVATION	BFE (FEET NGVD) EFFECTIVE	BFE (FEET NGVD) REVISED	MAP PANEL NUMBER(S)
Fourmile Creek	Approximately 1,100 feet downstream of the BNRR	1,338	1,337	0150 A
	Just downstream of Glen Wood Street	1,351	1,349	
Unnamed Tributary to Fourmile Creek	At confluence with Fourmile Creek	1,351	1,349	
	Just downstream of 21st Street North	1,351	1,350	
Unnamed Tributary 2 to Fourmile Creek	At confluence with Fourmile Creek	None	1,344	
	Approximately 960 feet upstream of 21st Street North	None	1,362	

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional information about the NFIP is available on our website at http://www.fema.gov/nfip.

Kevin C. Long

Kevin C. Long, CFM, Project Engineer
Hazard Identification Section
Mitigation Division

CHANGES ARE MADE IN DETERMINATIONS OF BASE FLOOD ELEVATIONS FOR THE UNINCORPORATED AREAS OF SEDGWICK COUNTY, KANSAS, UNDER THE NATIONAL FLOOD INSURANCE PROGRAM

On June 3, 1986, the Department of Homeland Security's Federal Emergency Management Agency identified Special Flood Hazard Areas (SFHAs) in the unincorporated areas of Sedgwick County, Kansas, through issuance of a Flood Insurance Rate Map (FIRM). The Mitigation Division has determined that modification of the elevations of the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood) for certain locations in this community is appropriate. The modified Base Flood Elevations (BFEs) revise the FIRM for the community.

The changes are being made pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (Public Law 93-234) and are in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, Public Law 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65.

A hydraulic analysis was performed to incorporate the effects of construction of the Glen Wood Street culvert along Fourmile Creek; construction of new weirs along Fourmile Creek and Unnamed Tributary to Fourmile Creek; and placement of fill in the floodway fringe and channelization along Fourmile Creek from approximately 1,530 feet downstream of the Burlington Northern Railroad to approximately 720 feet upstream of 21st Street North, along Unnamed Tributary to Fourmile Creek from the confluence with Fourmile Creek to approximately 170 feet downstream of Williamsgate Road, and along Unnamed Tributary 2 to Fourmile Creek from the confluence with Fourmile Creek to approximately 960 feet upstream of 21st Street North. This has resulted in a revised delineation of the regulatory floodways, increases and decreases in SFHA widths, and increased and decreased BFEs for Fourmile Creek and Unnamed Tributary to Fourmile Creek and increases in SFHA width and establishment of BFEs and a regulatory floodway for Unnamed Tributary 2 to Fourmile Creek. The table below indicates existing and modified BFEs for selected locations along the affected lengths of the flooding source(s) cited above.

Location	Existing BFE (feet)*	Modified BFE (feet)*
Fourmile Creek:		
Approximately 1,100 feet downstream of Burlington Northern Railroad	1,338	1,337
Just downstream of Glen Wood Street	1,351	1,349
Unnamed Tributary to Fourmile Creek:		
At confluence with Fourmile Creek	1,351	1,349
Just downstream of 21st Street North	1,351	1,350
Unnamed Tributary 2 to Fourmile Creek:		
At confluence with Fourmile Creek	None	1,344
Approximately 960 feet upstream of 21st Street North	None	1,362

*National Geodetic Vertical Datum, rounded to nearest whole foot

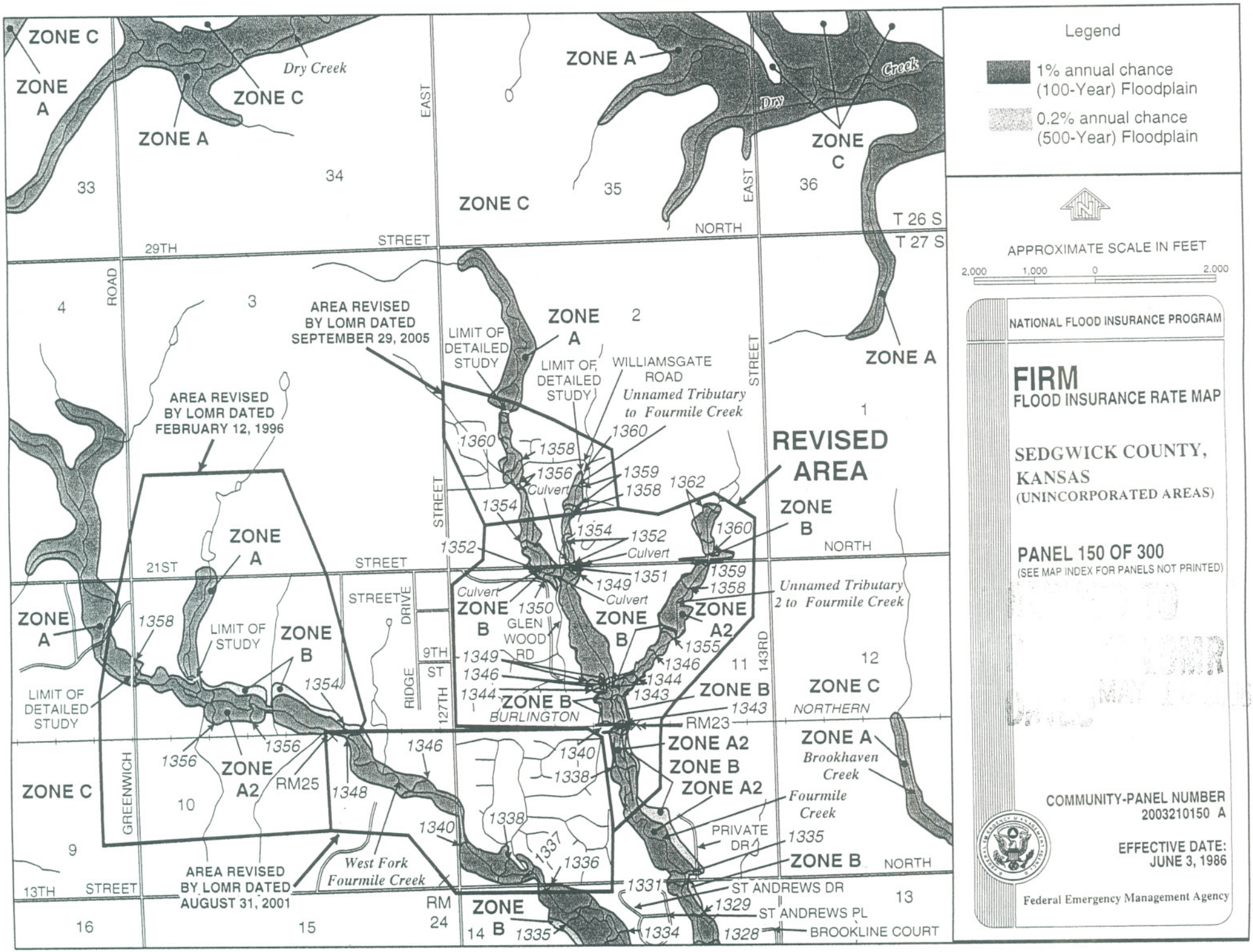
Under the above-mentioned Acts of 1968 and 1973, the Mitigation Division must develop criteria for floodplain management. To participate in the National Flood Insurance Program (NFIP), the community must use the modified BFEs to administer the floodplain management measures of the NFIP. These

modified BFEs will also be used to calculate the appropriate flood insurance premium rates for new buildings and their contents and for the second layer of insurance on existing buildings and contents.

Upon the second publication of notice of these changes in this newspaper, any person has 90 days in which he or she can request, through the Chief Executive Officer of the community, that the Mitigation Division reconsider the determination. Any request for reconsideration must be based on knowledge of changed conditions or new scientific or technical data. All interested parties are on notice that until the 90-day period elapses, the Mitigation Division's determination to modify the BFEs may itself be changed.

Any person having knowledge or wishing to comment on these changes should immediately notify:

The Honorable Dave Unruh
Chairman, Sedgwick County
Board of Commissioners
525 North Main Street, Room 320
Wichita, KS 67203


ZONE C
ZONE A
ZONE A
ZONE C
Dry Creek
ZONE A
ZONE C
ZONE C
Dry Creek
33
34
35
36
EAST
EAST
29TH STREET
NORTH
T 26 S
T 27 S
ZONE A
4
3
2
1
ROAD
STREET
AREA REVISED BY LOMR DATED SEPTEMBER 29, 2005
AREA REVISED BY LOMR DATED FEBRUARY 12, 1996
LIMIT OF DETAILED STUDY
LIMIT OF DETAILED STUDY
WILLIAMSGATE ROAD
Unnamed Tributary to Fourmile Creek
REVISED AREA
ZONE A
ZONE B
NORTH
ZONE A
21ST STREET
STREET
STREET
DRIVE
9TH ST
127TH
RIDGE
GLEN WOOD RD
143RD
11
12
Unnamed Tributary 2 to Fourmile Creek
ZONE A
LIMIT OF DETAILED STUDY
LIMIT OF STUDY
ZONE B
ZONE B
ZONE B
ZONE A2
ZONE B
ZONE B
BURLINGTON
ZONE C
NORTHERN
RM23
ZONE A2
ZONE B
ZONE A2
ZONE A
Brookhaven Creek
Fourmile Creek
ZONE C
GREENWICH
ZONE A2
RM25
10
PRIVATE DR
ZONE B
NORTH
9
13TH STREET
AREA REVISED BY LOMR DATED AUGUST 31, 2001
West Fork Fourmile Creek
RM 24
ST ANDREWS DR
ST ANDREWS PL
BROOKLINE COURT
13
16
15
ZONE B
14
1360
1358
1356
Culvert
1354
1352
1359
1358
1362
1360
1354
1352
Culvert
1349
1351
Culvert
1350
1359
1358
1355
1346
1344
1343
1349
1346
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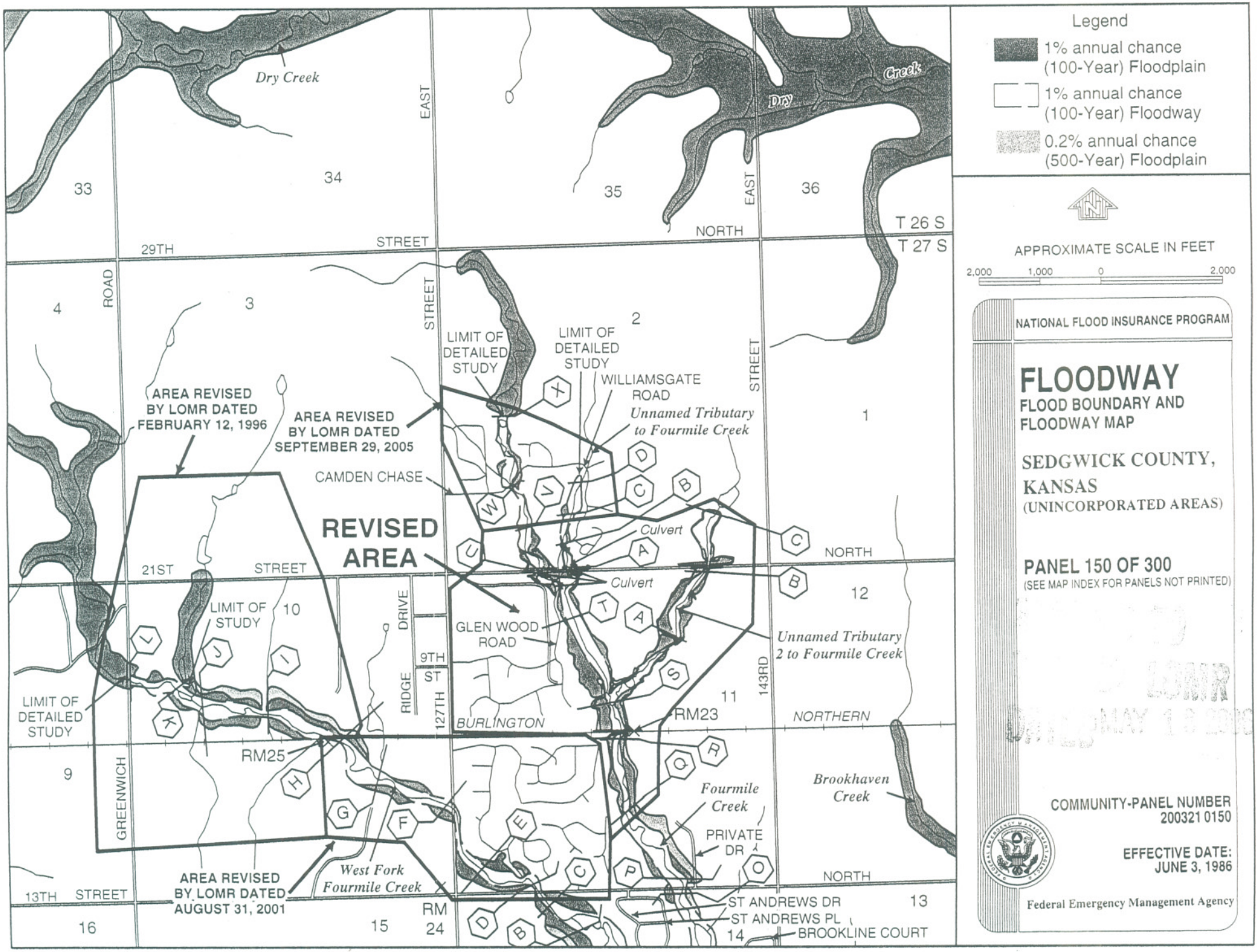
1354
1356
1356
1346
1340
1338
1348
1340
1338
1337
1336
1335
1331
1329
1334
1328
Legend
1% annual chance (100-Year) Floodplain
0.2% annual chance (500-Year) Floodplain
APPROXIMATE SCALE IN FEET
2,000 1,000 0 2,000
NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
SEDGWICK COUNTY, KANSAS
(UNINCORPORATED AREAS)
PANEL 150 OF 300
(SEE MAP INDEX FOR PANELS NOT PRINTED)
COMMUNITY-PANEL NUMBER
2003210150 A
EFFECTIVE DATE:
JUNE 3, 1986
Federal Emergency Management Agency


Legend
1% annual chance (100-Year) Floodplain
1% annual chance (100-Year) Floodway
0.2% annual chance (500-Year) Floodplain
APPROXIMATE SCALE IN FEET
2,000 1,000 0 2,000
NATIONAL FLOOD INSURANCE PROGRAM
FLOODWAY
FLOOD BOUNDARY AND FLOODWAY MAP
SEDGWICK COUNTY, KANSAS
(UNINCORPORATED AREAS)
PANEL 150 OF 300
(SEE MAP INDEX FOR PANELS NOT PRINTED)
COMMUNITY-PANEL NUMBER 200321 0150
EFFECTIVE DATE: JUNE 3, 1986
Federal Emergency Management Agency
Dry Creek
Dry Creek
AREA REVISED BY LOMR DATED FEBRUARY 12, 1996
AREA REVISED BY LOMR DATED SEPTEMBER 29, 2005
AREA REVISED BY LOMR DATED AUGUST 31, 2001
REVISED AREA
LIMIT OF DETAILED STUDY
LIMIT OF STUDY
CAMDEN CHASE
WILLIAMSGATE ROAD
GLEN WOOD ROAD
Unnamed Tributary to Fourmile Creek
Unnamed Tributary 2 to Fourmile Creek
Culvert
Culvert
West Fork Fourmile Creek
Fourmile Creek
Brookhaven Creek
BURLINGTON
NORTHERN
PRIVATE DR
ST ANDREWS DR
ST ANDREWS PL
BROOKLINE COURT
RM23
RM25
RM 24
29TH STREET
21ST STREET
13TH STREET
NORTH
EAST
ROAD
STREET
DRIVE
RIDGE
GREENWICH
143RD
127TH
9TH ST
T 26 S
T 27 S
33
34
35
36
4
3
2
1
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12
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16
15
14
13

TABLE 1 - SUMMARY OF DISCHARGES (Continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA SQ MILES	PEAK DISCHARGES (CFS) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
MIDDLE BRANCH GYPSUM CREEK					
At 13th Street	2.2	740	1,090	1,240	1,590
FOURMILE CREEK					
At county boundary	27.2	11,680	17,390	20, 100	26,800
Upstream of confluence of Brookhaven Creek	8.4	3,220	4,760	5,500	7,100
Upstream of confluence of West Fork Fourmile Creek	2.2	1,410	2,070	2,400	3,130
Upstream of confluence of Unnamed Tributary to Fourmile Creek	0.8	467	*	747	925
UNNAMED TRIBUTARY TO FOURMILE CREEK					
At mouth	0.3	234	*	396	494
UNNAMED TRIBUTARY 2 TO FOURMILE CREEK					
At mouth	0.4	340	481	547	565
At 21st Street North	0.2	243	343	390	474
WEST FORK FOURMILE CREEK					
At mouth at Fourmile Creek	4.2	2,110	3,120	3,600	4,770
At 13th Street North	3.2	2,200	3,270	3,780	4,850
BROOKHAVEN CREEK					
At mouth at Fourmile Creek	4.0	2,470	3,620	4,180	5,420
At Interstate 35	1.8	2,190	3,190	3,780	5,170
MIDDLE FORK CHISHOLM CREEK					
Upstream of confluence of Tributary M1	11.7	2,980	5,280	6,190	8,920
At 53rd Street North	9.5	2,580	4,570	5,360	7,720
EAST FORK CHISHOLM CREEK					
At 45th Street North	1.6	860	1,270	1,545	2,240
CENTER DRAIN EAST TRIBUTARY					
At City of Wichita Corporate Limits	1.5	630	1,010	1,190	1,600

*data not available

AREA REVISED BY LOMR DATED 09/29/05

REVISED AREA

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE (FEET)
FOURMILE CREEK								
A	6354	608[2]	2815	2.9	1290.0	1290.0	1291.0	1.0
B	7254	248	1497	3.7	1291.1	1291.1	1292.0	0.9
C	9104	488	3217	1.7	1293.3	1293.3	1294.2	0.9
D	10,294	187	712	7.7	1293.4	1293.4	1294.4	1.0
E	10,949	144	562	9.8	1296.6	1296.6	1296.6	0.0
F	13,009	181	1306	4.2	1302.0	1302.0	1302.5	0.5
G	15,279	203	1291	4.3	1304.9	1304.9	1305.8	0.9
H	17,079	195	1094	5.0	1308.2	1308.2	1308.9	0.7
I	18,379	154	826	6.7	1312.2	1312.2	1312.5	0.3
J	18,931	158	1524	3.6	1316.8	1316.8	1316.8	0.0
K	20,111	292	2452	2.2	1317.0	1317.0	1317.3	0.3
L	21,966	246	1159	4.7	1317.6	1317.6	1318.5	0.9
M	22,866	253	1325	4.2	1321.6	1321.6	1322.5	0.9
N	23,766	200	1040	2.3	1322.9	1322.9	1323.9	1.0
O	25,766	153	723	3.3	1330.4	1330.4	1330.4	0.0
P	26,047	305	1949	1.2	1335.0	1335.0	1335.0	0.0
Q	27,847	138	359	6.6	1335.3	1335.3	1335.3	0.0
R	29,197	120	429	6.1	1339.6	1339.6	1339.0	0.4
S	29,852	118	635	3.2	1343.3	1343.3	1343.3	0.0
T	31,409	247	2236	0.7	1349.1	1349.1	1349.1	0.0
U	32,835	110	603	1.3	1352.3	1352.3	1352.3	0.0
V	33,623	220	2539	0.3	1354.7	1354.7	1354.7	0.0
W	34,402	50	148	4.7	1355.9	1355.9	1356.0	0.1
X	36,069	130	109	6.4	1360.2	1360.2	1360.2	0.0

REVISED AREA

[1]FEET ABOVE CONFLUENCE WITH SPRING BRANCH

[2]THIS WIDTH EXTENDS BEYOND COUNTY BOUNDARY

AREA REVISED BY LOMR DATED 09/29/05

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

SEDGWICK COUNTY, KS
(UNINCORPORATED AREAS)

FLOODWAY DATA

FOURMILE CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE (FEET)
Unnamed Tributary to Fourmile Creek								
A	600	85	271	1.5	1351.5	1351.5	1351.5	0.0
B	938	33	66	6.0	1351.7	1351.7	1351.7	0.0
C	1489	52	287	1.4	1353.6	1353.6	1353.6	0.0
D	2011	105	82	5.2	1360.2	1360.2	1360.2	0.0
Unnamed Tributary 2 to Fourmile Creek								
A	1844	39	94	5.8	1355.3	1355.3	1355.3	0.0
B	3274	75	298	1.4	1360.8	1360.8	1361.0	0.2
C	4211	181	312	1.3	1361.7	1361.7	1361.7	0.0

REVISED AREA

REVISED AREA

AREA REVISED BY LOMR DATED 09/29/05

[1]Feet above confluence with Fourmile Creek

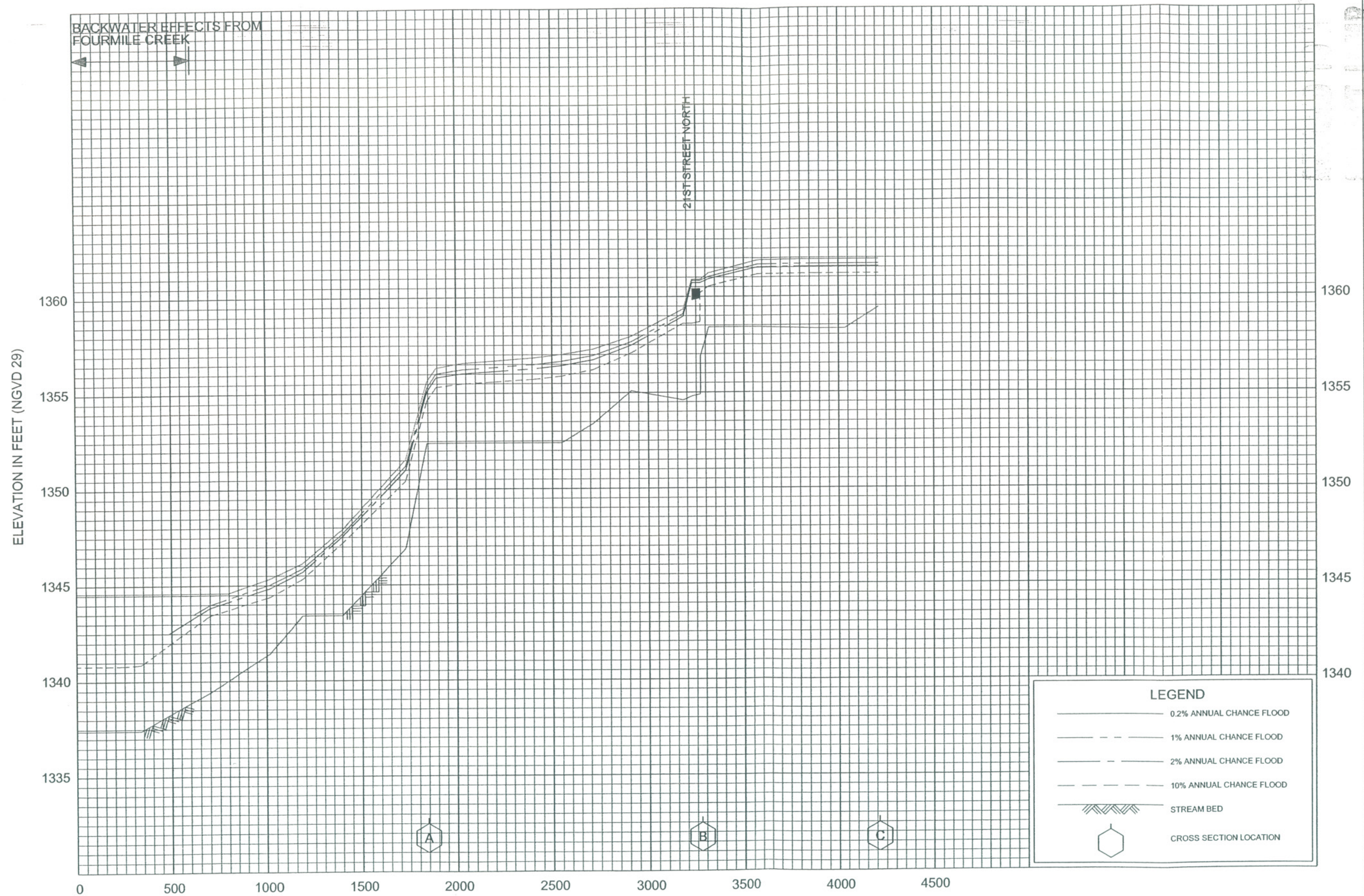
TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

SEDGWICK COUNTY, KS
(UNINCORPORATED AREAS)

FLOODWAY DATA

UNNAMED TRIBUTARY TO FOURMILE CREEK –
UNNAMED TRIBUTARY 2 TO FOURMILE CREEK



FLOOD PROFILES

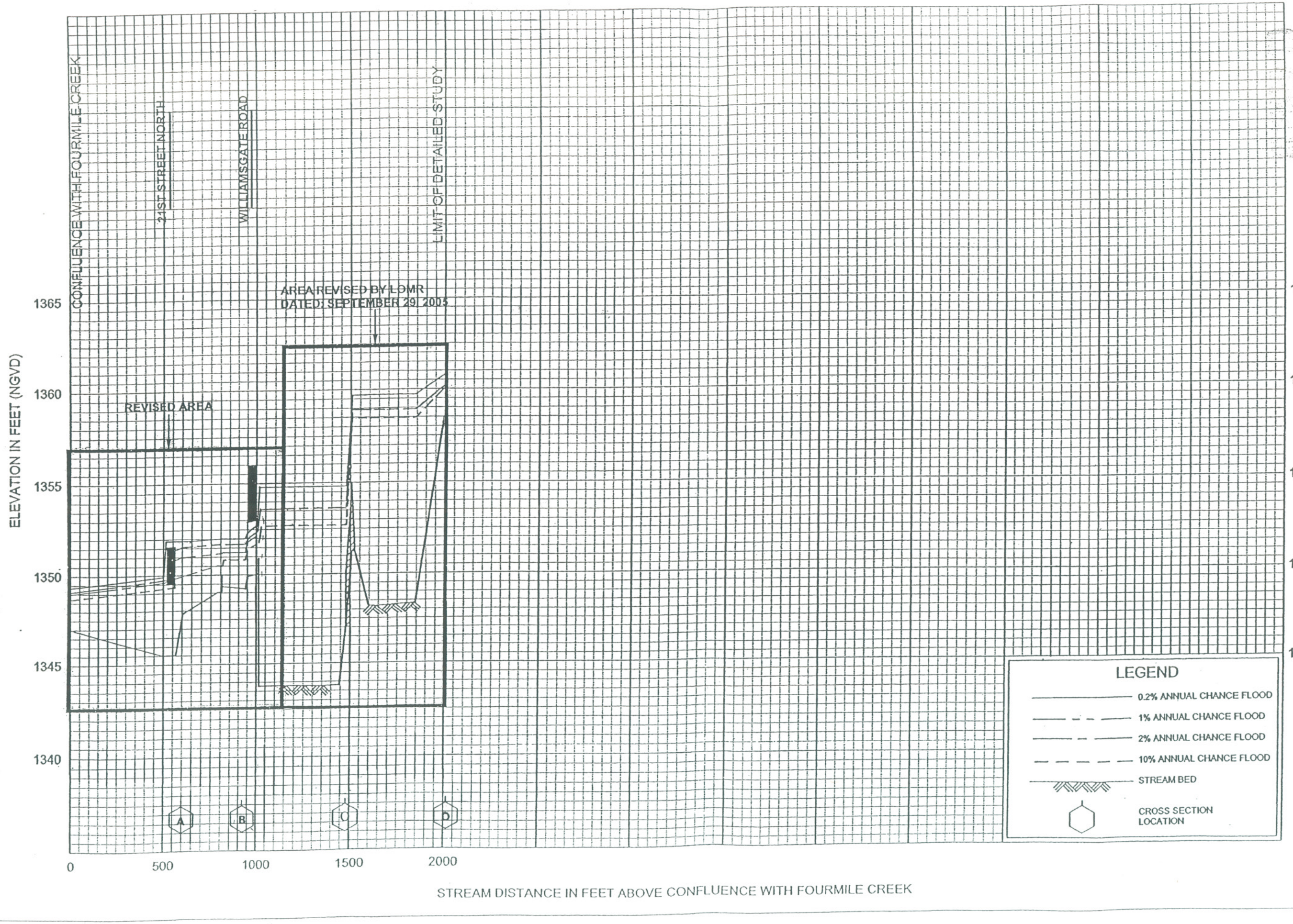
UNNAMED TRIBUTARY 2 TO FOURMILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SEDGWICK COUNTY, KS

(UNINCORPORATED AREAS)

77P



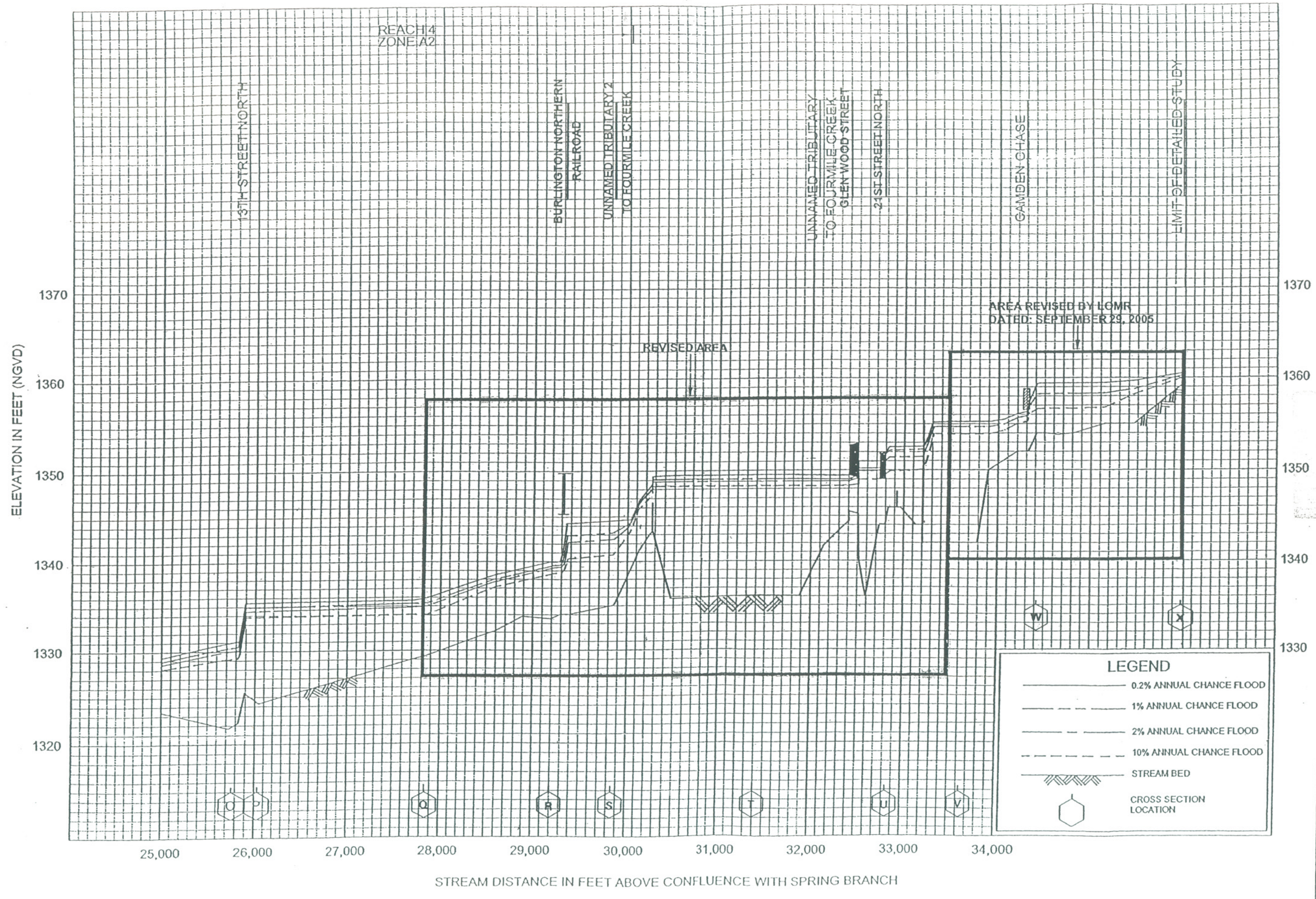
FLOOD PROFILES

UNNAMED TRIBUTARY TO FOURMILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SEDGWICK COUNTY, KS

(UNINCORPORATED AREAS)



FLOOD PROFILES

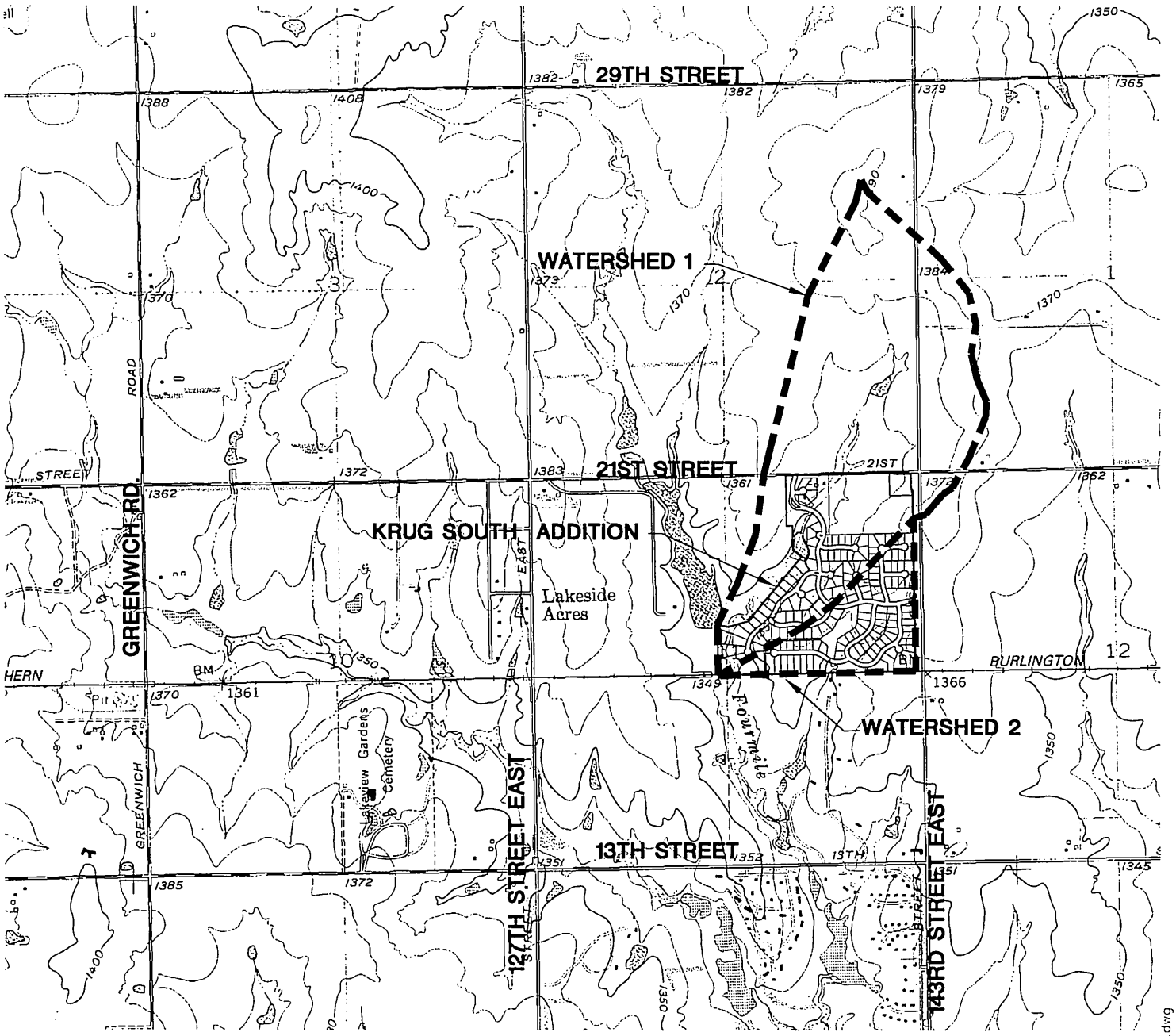
FOURMILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SEDGWICK COUNTY, KS
(UNINCORPORATED AREAS)

48P

Appendix E
Watershed Boundary



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\05291\dwg\drng\PRE_WATERSHED.dwg

MKEC ENGINEERING CONSULTANTS, INC.

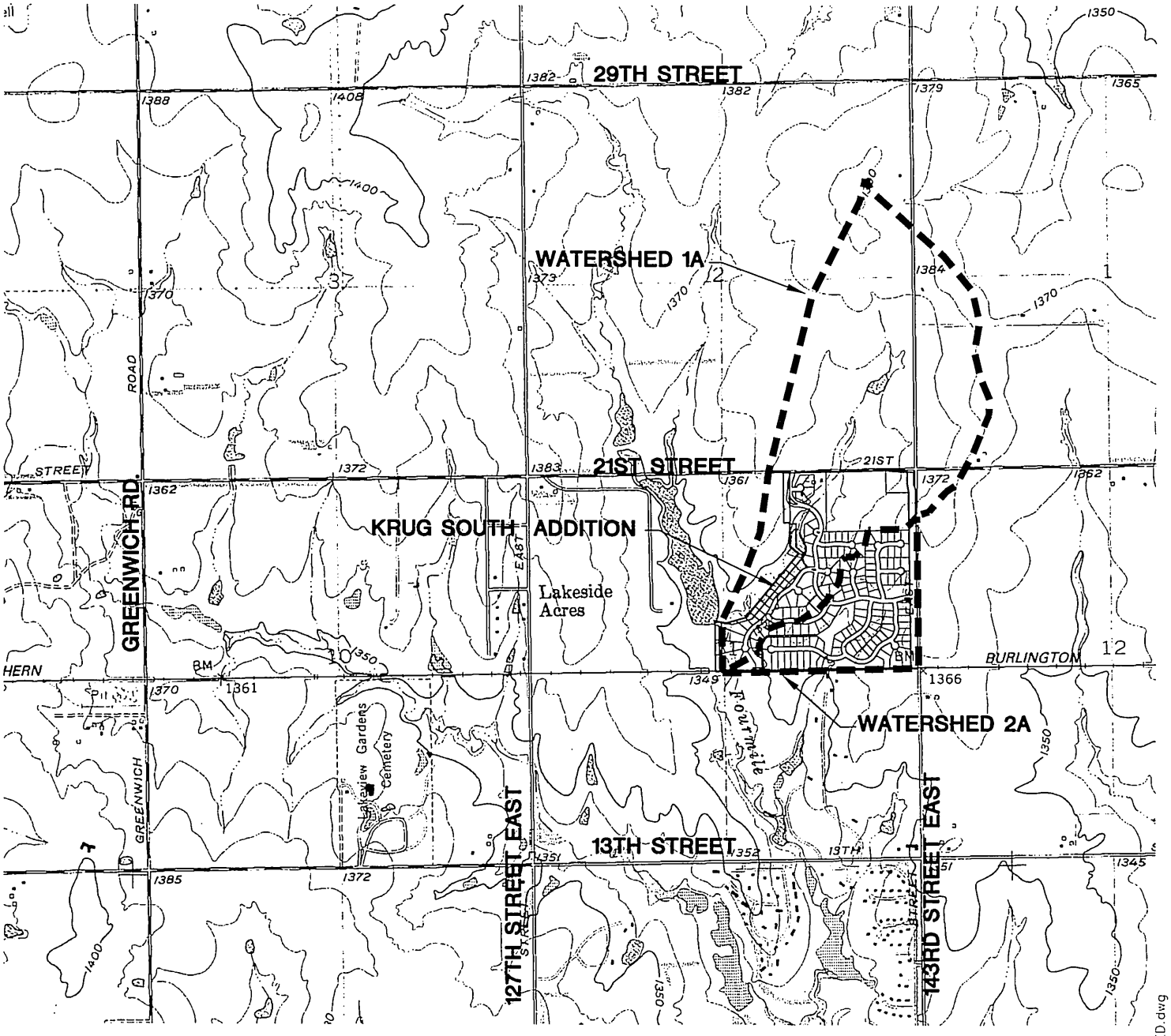
411 N. WEBB ROAD
WICHITA, KS. 67206
316 - 684 - 9600

KRUG SOUTH ADDITION
PROJECT NAME

PRE-PROJECT WATERSHED MAP
ANDOVER, KANSAS QUADRANGLE
SHEET TITLE

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

SEPTEMBER 2006	05291	1 / 1
DATE	JOB NO.	SHEET/OF



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\05291\dwg\drng\POST_WATERSHED.dwg

MKEC ENGINEERING CONSULTANTS, INC.

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

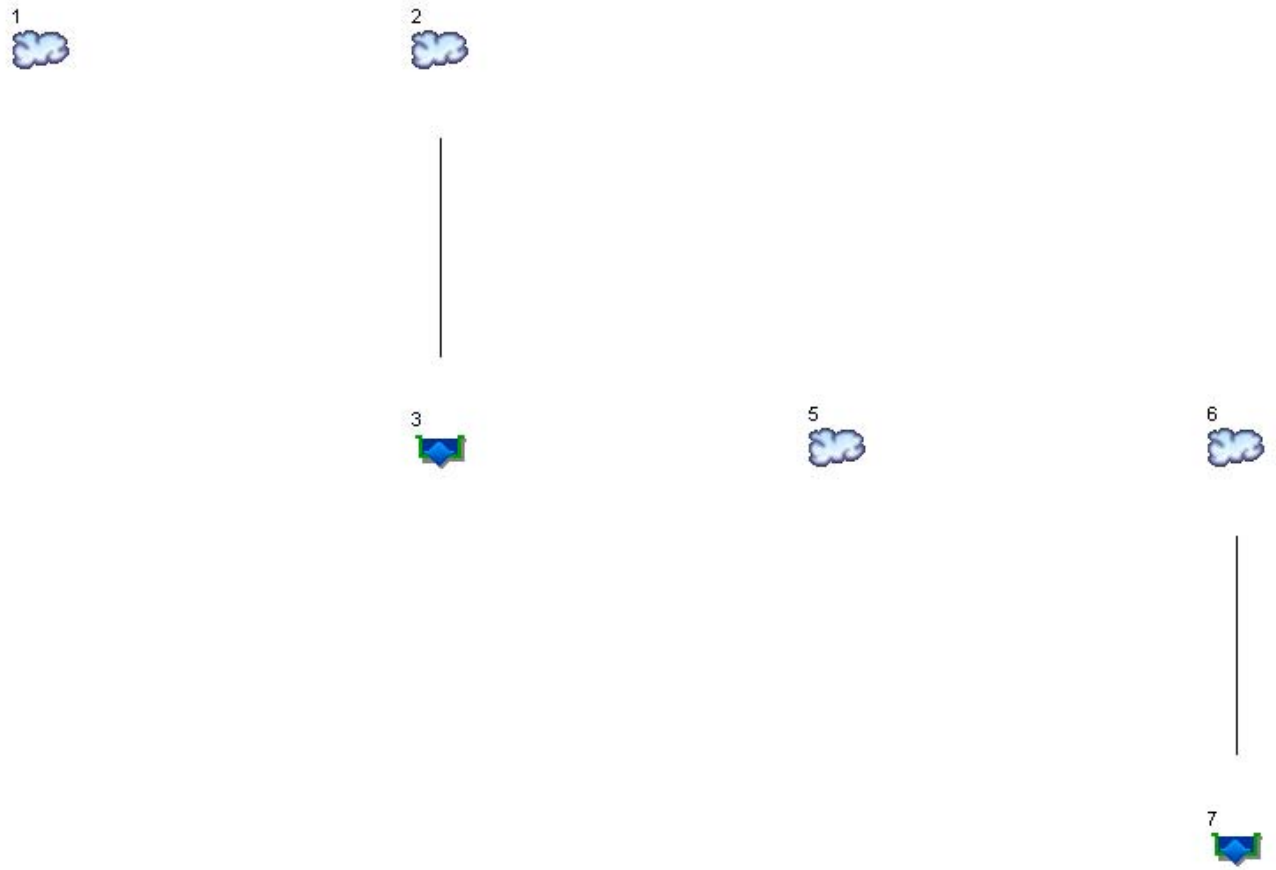
KRUG SOUTH ADDITION
PROJECT NAME

POST-PROJECT WATERSHED MAP
ANDOVER, KANSAS QUADRANGLE
SHEET TITLE

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

SEPTEMBER 2006	05291	1 / 1
DATE	JOB NO.	SHEET/OF

Appendix F
Hydraflow Hydrographs



Legend

Hyd.	Origin	Description
1	SCS Runoff	Pre Basin 24 (WS1)
2	SCS Runoff	Post Basin 24 w 10.3 acres less than pre
3	Reservoir	WS 1
5	SCS Runoff	Watershed 2 Preproject
6	SCS Runoff	Watershed 2 plus 10.3 acres Post Project
7	Reservoir	WS 2 w/ detention

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (acft)	Hydrograph description
1	SCS Runoff	781.50	6	750	134.307	----	------	------	Pre Basin 24 (WS1)
2	SCS Runoff	863.82	6	744	132.467	----	------	------	Post Basin 24 w 10.3 acres less than pr
3	Reservoir	754.85	6	762	132.467	2	4.88	17.842	WS 1
5	SCS Runoff	206.10	6	732	23.864	----	------	------	Watershed 2 Preproject
6	SCS Runoff	279.14	6	732	33.024	----	------	------	Watershed 2 plus 10.3 acres Post Proje
7	Reservoir	161.28	6	756	33.024	6	4.02	10.049	WS 2 w/ detention

Hydrograph Plot

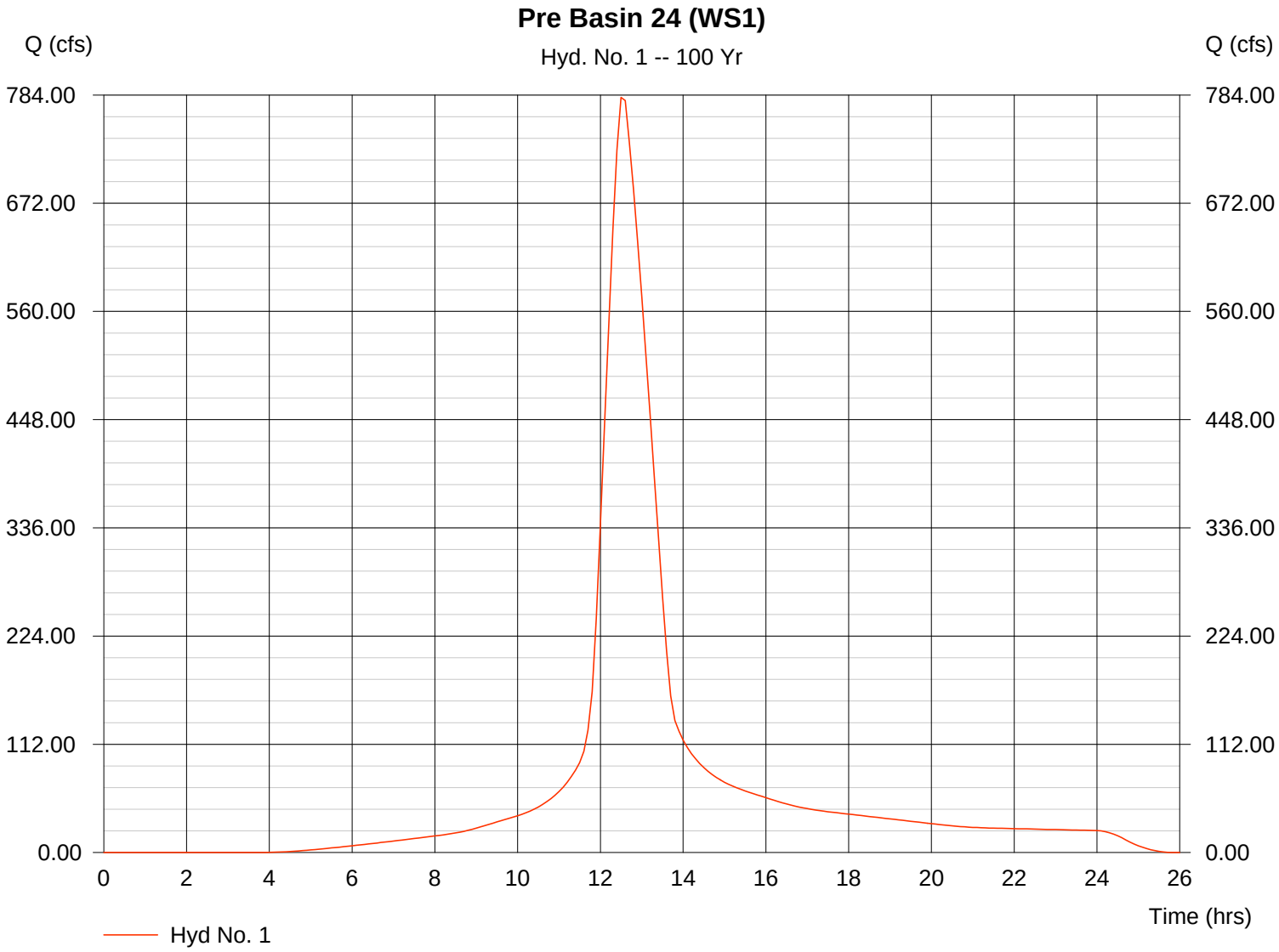
Hydraflow Hydrographs by Intelisolve | Thursday, Sep 28 2006, 8:16 AM

Hyd. No. 1

Pre Basin 24 (WS1)

Hydrograph type	= SCS Runoff	Peak discharge	= 781.50 cfs
Storm frequency	= 100 yrs	Time interval	= 6 min
Drainage area	= 257.000 ac	Curve number	= 86.2
Basin Slope	= 0.7 %	Hydraulic length	= 7000 ft
Tc method	= USER	Time of conc. (Tc)	= 61.00 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 134.307 acft



Hydrograph Plot

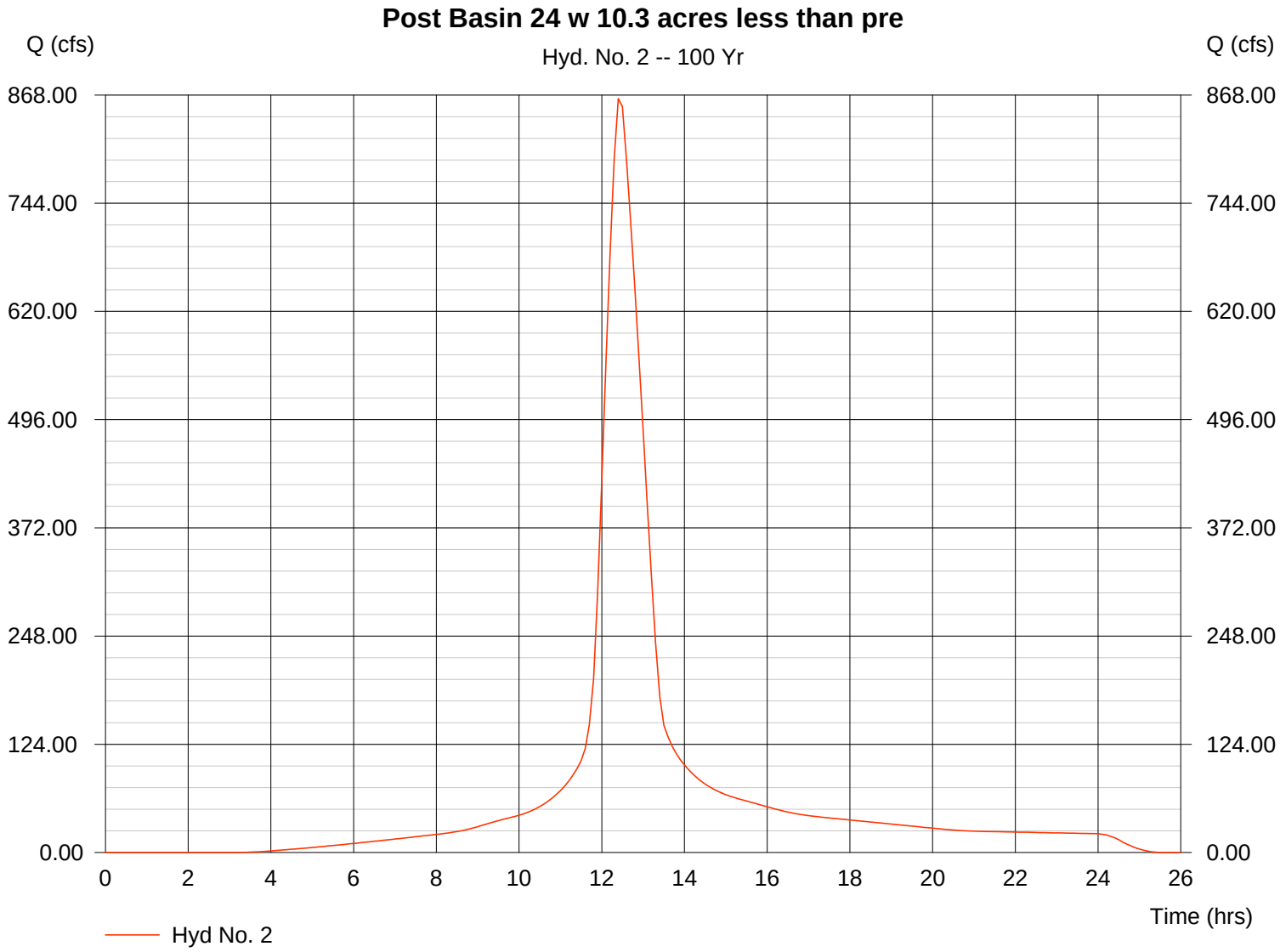
Hydraflow Hydrographs by Intelisolve | Thursday, Sep 28 2006, 8:16 AM

Hyd. No. 2

Post Basin 24 w 10.3 acres less than pre

Hydrograph type	= SCS Runoff	Peak discharge	= 863.82 cfs
Storm frequency	= 100 yrs	Time interval	= 6 min
Drainage area	= 246.700 ac	Curve number	= 88.6
Basin Slope	= 0.7 %	Hydraulic length	= 7000 ft
Tc method	= USER	Time of conc. (Tc)	= 54.00 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 132.467 acft



Hydrograph Plot

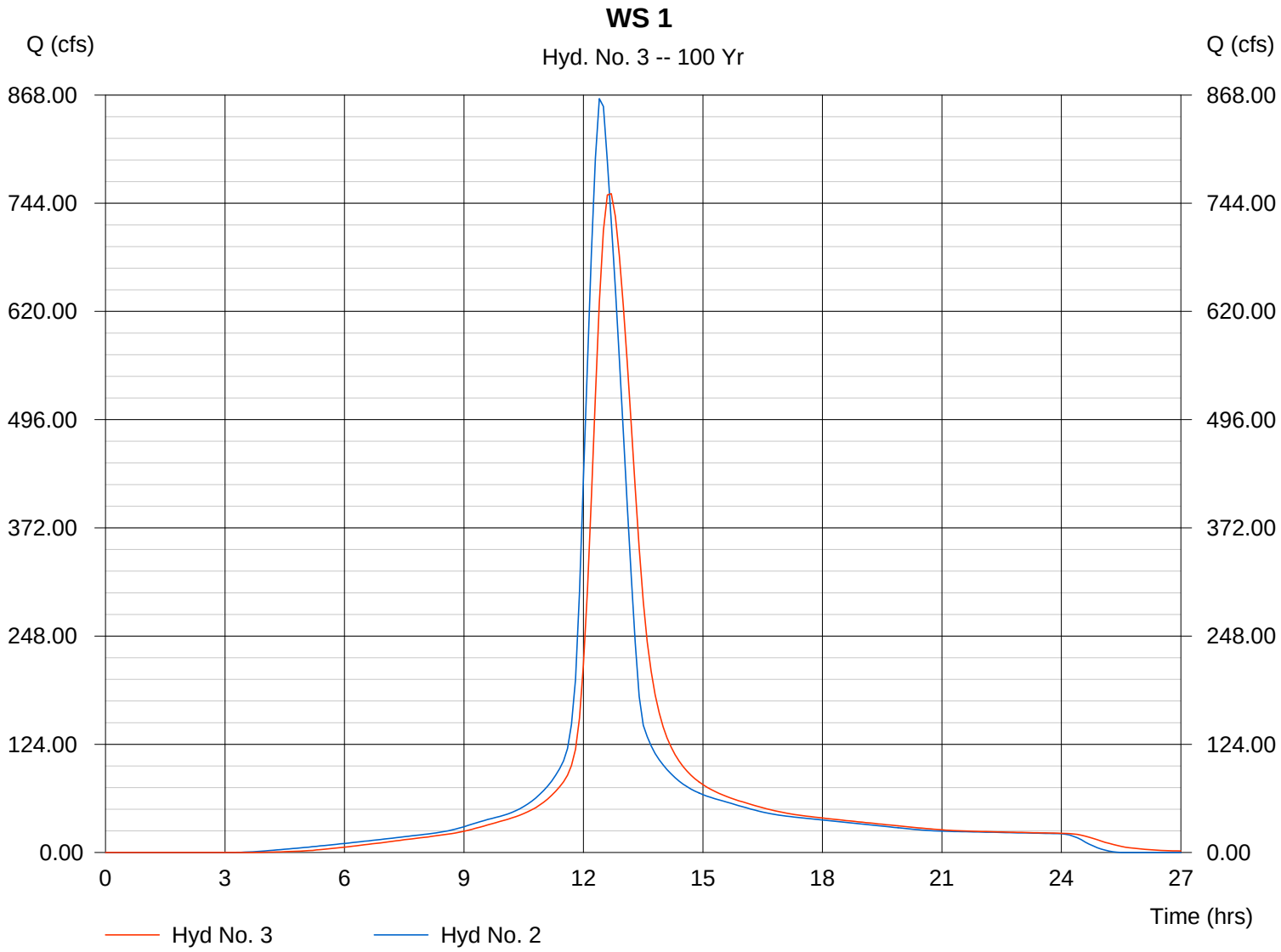
Hydraflow Hydrographs by Intelisolve | Thursday, Sep 28 2006, 8:16 AM

Hyd. No. 3

WS 1

Hydrograph type	=	Reservoir	Peak discharge	=	754.85 cfs
Storm frequency	=	100 yrs	Time interval	=	6 min
Inflow hyd. No.	=	2	Max. Elevation	=	4.88 ft
Reservoir name	=	Ponds 1 and 2	Max. Storage	=	17.842 acft

Storage Indication method used. | Hydrograph Volume = 132.467 acft



Pond Report

Pond No. 6 - Ponds 1 and 2

Pond Data

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

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (acft)	Total storage (acft)
0.00	0.00	131,319	0.000	0.000
1.00	1.00	142,358	3.141	3.141
2.00	2.00	153,662	3.398	6.539
3.00	3.00	165,208	3.660	10.199
4.00	4.00	176,999	3.928	14.127
5.00	5.00	189,003	4.201	18.328

Culvert / Orifice Structures

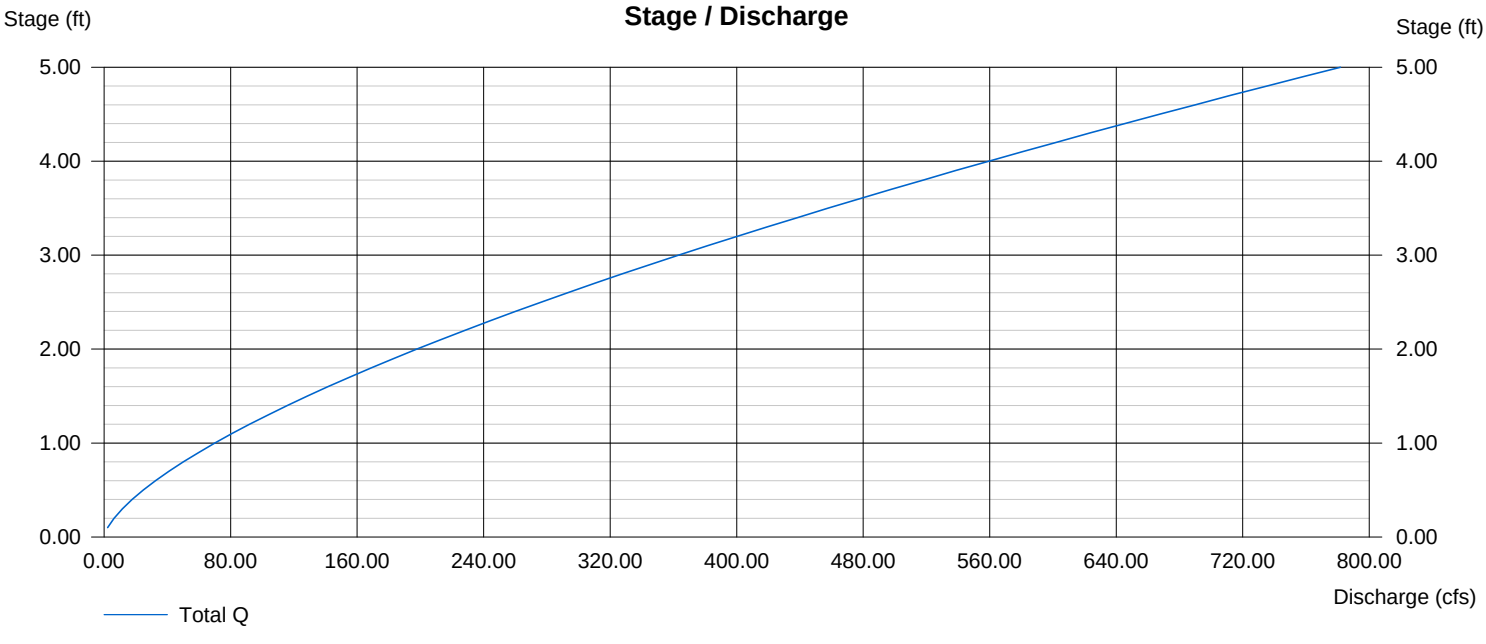
	[A]	[B]	[C]	[D]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	0.00
N-Value	= .013	.000	.000	.000
Orif. Coeff.	= 0.60	0.00	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 21.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	0.00	0.00	0.00
Weir Type	= Rect	---	---	---
Multi-Stage	= No	No	No	No

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

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



Hydrograph Plot

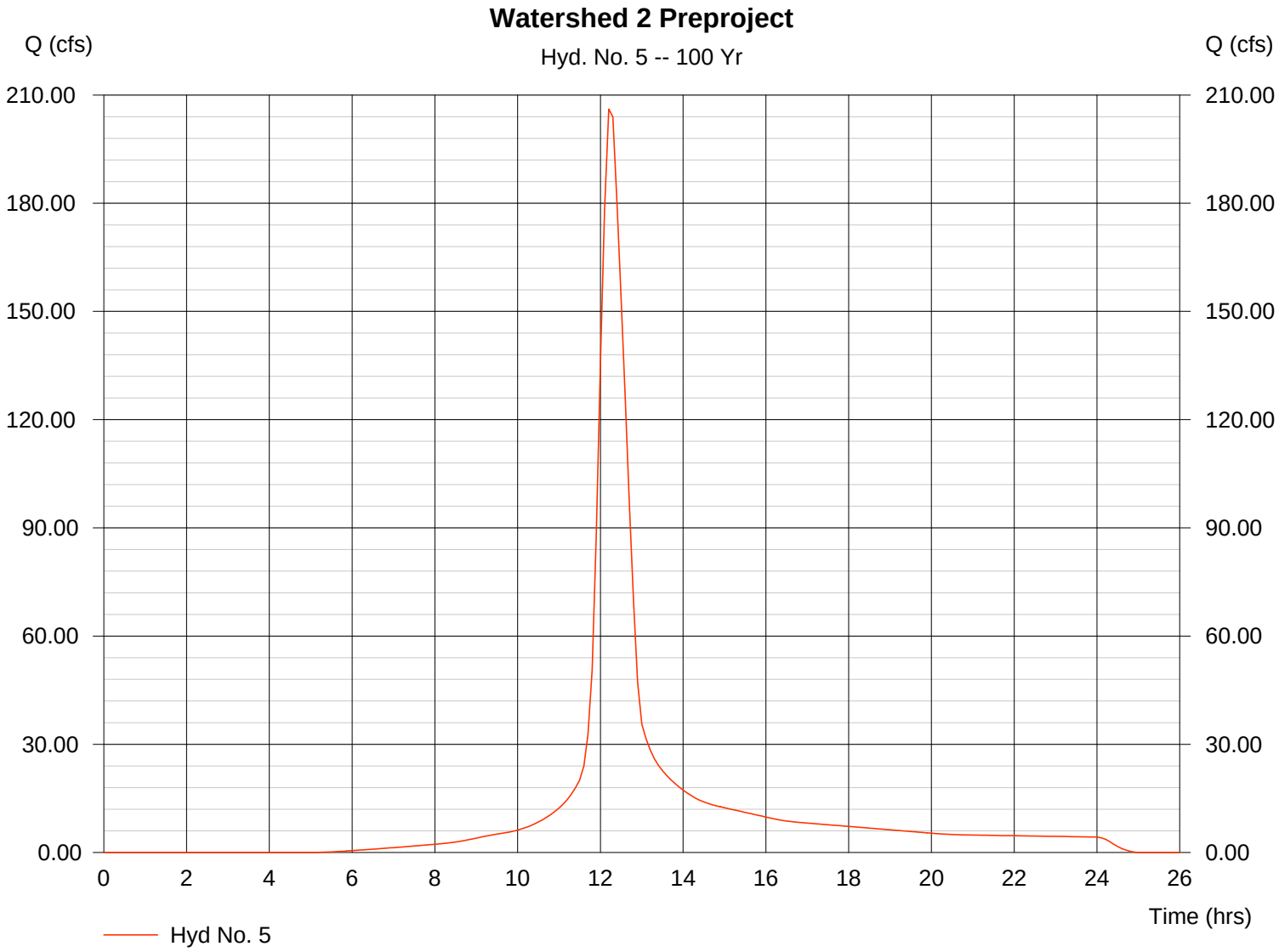
Hydraflow Hydrographs by Intelisolve | Thursday, Sep 28 2006, 8:16 AM

Hyd. No. 5

Watershed 2 Preproject

Hydrograph type	= SCS Runoff	Peak discharge	= 206.10 cfs
Storm frequency	= 100 yrs	Time interval	= 6 min
Drainage area	= 50.000 ac	Curve number	= 81
Basin Slope	= 1.1 %	Hydraulic length	= 2292 ft
Tc method	= USER	Time of conc. (Tc)	= 35.50 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 23.864 acft



Hydrograph Plot

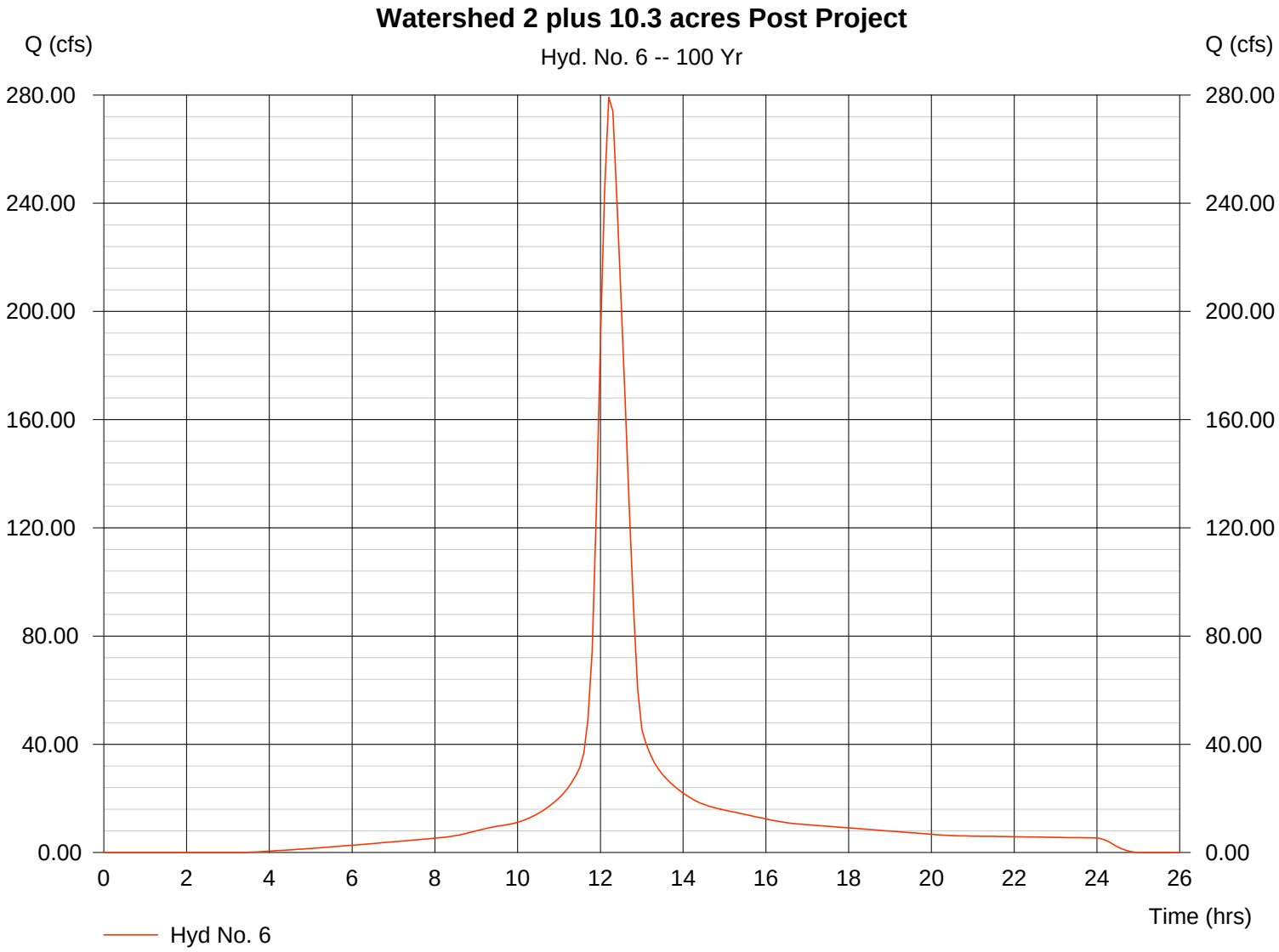
Hydraflow Hydrographs by Intelisolve | Thursday, Sep 28 2006, 8:16 AM

Hyd. No. 6

Watershed 2 plus 10.3 acres Post Project

Hydrograph type	= SCS Runoff	Peak discharge	= 279.14 cfs
Storm frequency	= 100 yrs	Time interval	= 6 min
Drainage area	= 60.300 ac	Curve number	= 88
Basin Slope	= 1.1 %	Hydraulic length	= 2298 ft
Tc method	= USER	Time of conc. (Tc)	= 30.60 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 33.024 acft



Hydrograph Plot

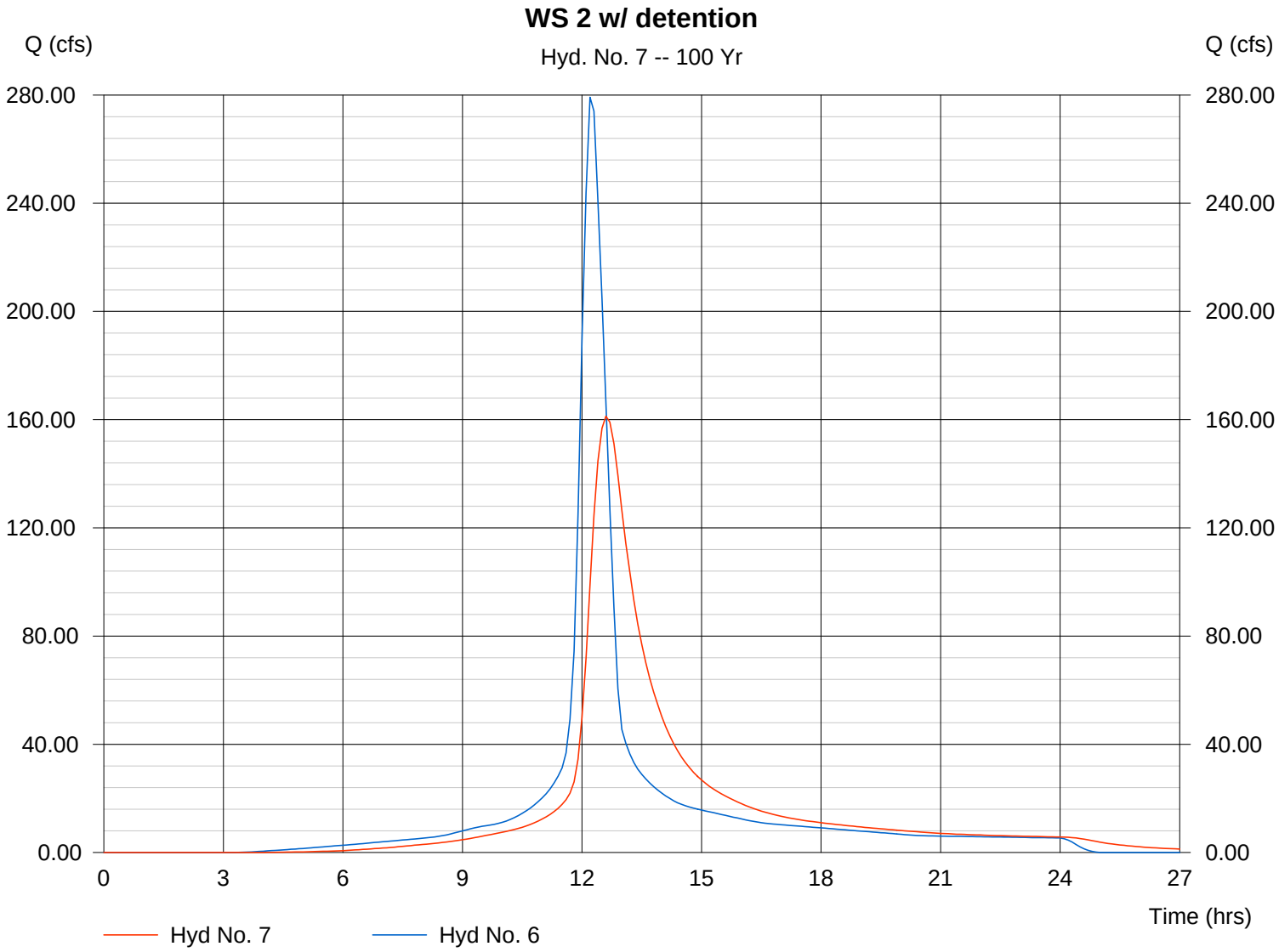
Hydraflow Hydrographs by Intelisolve | Thursday, Sep 28 2006, 8:16 AM

Hyd. No. 7

WS 2 w/ detention

Hydrograph type	=	Reservoir	Peak discharge	=	161.28 cfs
Storm frequency	=	100 yrs	Time interval	=	6 min
Inflow hyd. No.	=	6	Max. Elevation	=	4.02 ft
Reservoir name	=	Watershed 2 Ponds	Max. Storage	=	10.049 acft

Storage Indication method used. | Hydrograph Volume = 33.024 acft



Pond Report

Hydraflow Hydrographs by Intelisolve | Thursday, Sep 28 2006, 8:16 AM

Pond No. 3 - Watershed 2 Ponds

Pond Data

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

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (acft)	Total storage (acft)
0.00	0.00	87,462	0.000	0.000
1.00	1.00	97,668	2.125	2.125
2.00	2.00	108,399	2.365	4.490
3.00	3.00	119,392	2.615	7.105
4.00	4.00	130,587	2.869	9.974
5.00	5.00	141,983	3.129	13.103

Culvert / Orifice Structures

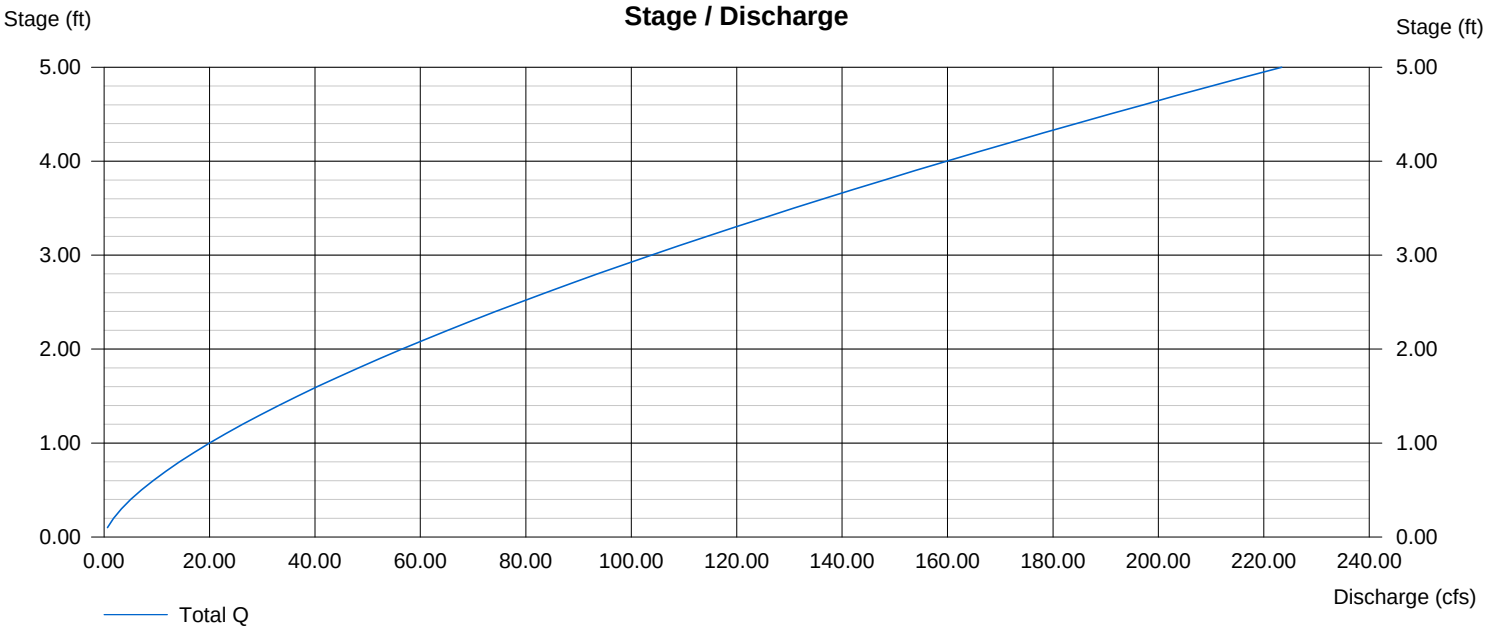
	[A]	[B]	[C]	[D]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	0.00
N-Value	= .000	.000	.000	.000
Orif. Coeff.	= 0.00	0.00	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

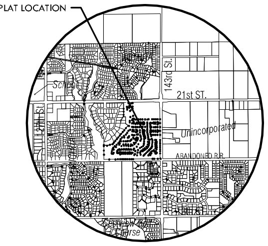
	[A]	[B]	[C]	[D]
Crest Len (ft)	= 6.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	0.00	0.00	0.00
Weir Type	= Rect	---	---	---
Multi-Stage	= No	No	No	No

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

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



Appendix G
Preliminary Grading Plan



VICINITY MAP

BENCH MARKS

BM 1 — RAILROAD SPIKE IN SOUTH FACE OF POWER POLE 3RD. POWER POLE WEST OF 143RD. STREET SOUTH SIDE OF 21ST. STREET.
Elev. = 1362.18 (NGVD 29)
174.78 (City Datum)

BM 2 — RAILROAD SPIKE IN SOUTH FACE OF POWER POLE FIRST POWERPOLE WEST OF 143RD. STREET SOUTH SIDE OF 21ST. STREET
Elev.= 1370.29(NGVD 29)
182.89 (City Datum)

LEGEND

- CONIFEROUS TREE
- DECIDUOUS TREE
- SIGN
- POWER POLE
- ELECTRIC BOX
- LIGHT POLE
- FIRE HYDRANT
- WATER VALVE
- WATER METER
- SECTION CORNER
- BENCHMARK
- EASEMENT
- BUILDING SETBACK
- FENCE
- STORM SEWER PIPE
- WATER LINE
- SANITARY SEWER LINE
- GAS LINE
- GAS PIPELINE
- TELEPHONE LINE
- UNDERGROUND ELEC.
- OVERHEAD ELECTRIC
- FIBER OPTIC CABLE !

NOTES

1. GEOGRAPHY: Located in the northeast Wichita in an area rapidly transitioning from agricultural uses into suburban residential. The property has access to K-96 via 21st Street. Existing surrounding land uses include suburban residential, rural residential, private schools, and agriculture production.
2. LOT TOTAL - 268 (264-Residential, 4-Commercial)
3. ANNEXATION: Presently unicorporated, to be annexed with platting.
4. EXISTING/PROPOSED USES: Agricultural and vacant rural residential
5. ZONING: Existing - "SF-20" Proposed - SF-5 and CUP
6. PLAT AREA: Gross - 116.448 acres
7. SURVEY DATE: Sept., 2006 (by MKEC)
8. PUBLIC UTILITIES: Municipal sanitary sewer shall extended to the site from the west southwest. Municipal water is available along 21st. St.
9. ACCESS CONTROLS: As shown
10. RESERVES: All reserves are platted for irrigation, landscaping, monuments, drainage, sidewalks and utilities in designated areas. Some reserves shall be platted for floodplain, and or floodways.
11. FLOOD: According to FEMA FIRM Community Unit Panel 200321 0150A, Effective Date June 3rd, 1986; this property lies within flood zone "C", *"areas of minimal flooding."* and westerly portions lie within flood zone "A", "A2", and "B". *LOWEST OPENING TO BE DETERMINED AT THE TIME OF FINAL PLATTING.*
12. DRAINAGE: A drainage report shall accompany this plat. The property lies within a branch of Four Mile Creek drainage basin. A LOMA is expected to accompany the development.

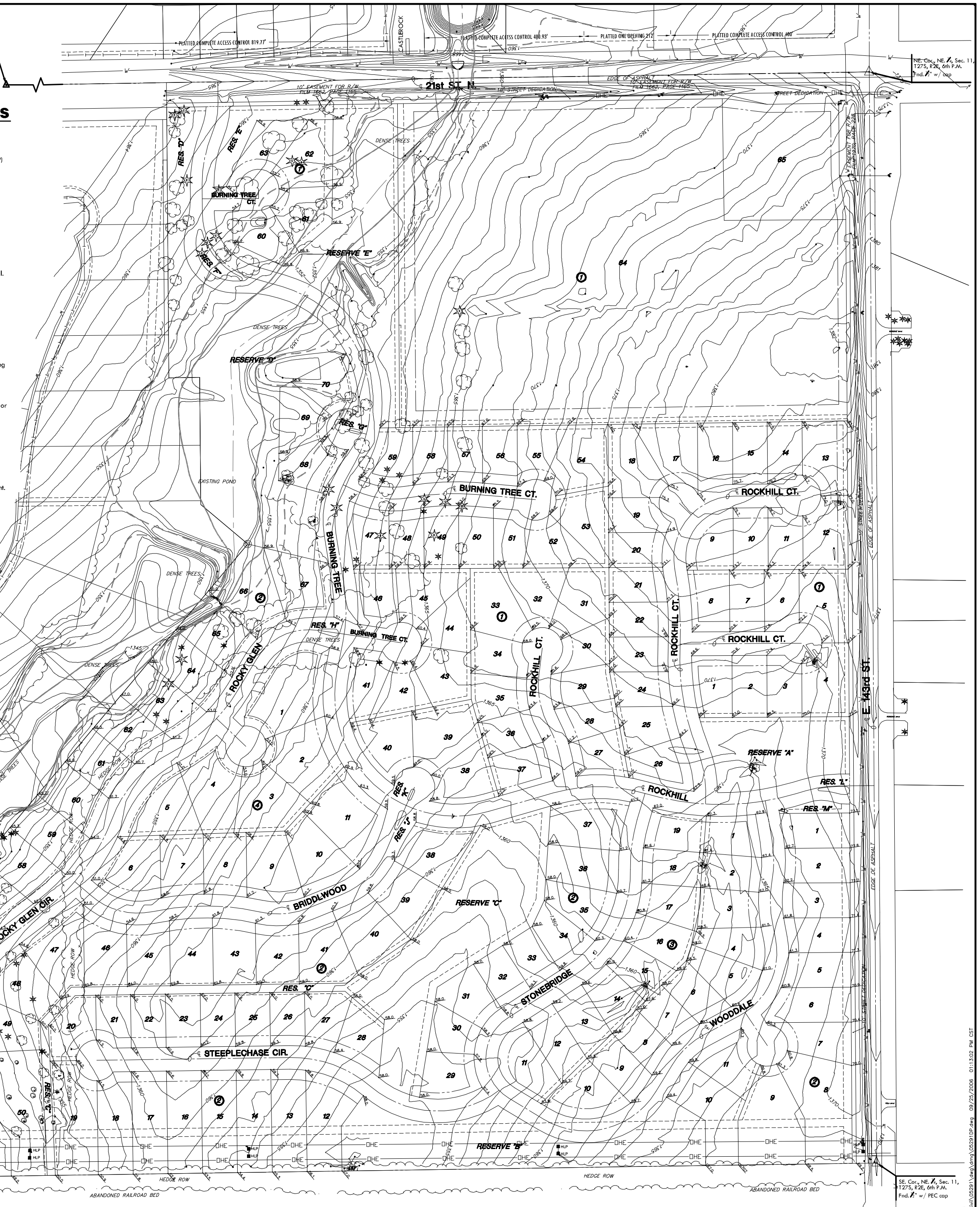
LEGAL DESCRIPTION

A tract of land located in the Northeast One-Quarter of Section 11, Township 27 South, Range 2 East of the Sixth Principal Meridian, Sedgwick County, Kansas and being more particularly described as follows: COMMENCING at the Northeast corner of said Northeast One-Quarter; thence along the East line of said Northeast One-Quarter, on a Kansas coordinate system 1983 south zone bearing of S00°53'20"E, a distance of 850.00 feet to the POINT OF BEGINNING; thence continuing south on said East line, S00°53'20"E, a distance of 1811.32 feet to the Southeast corner of said Northeast One-Quarter; thence along the south line of said Northeast One-Quarter, S88°38'21"W, a distance of 2643.28 feet to the Southwest corner of said Northeast One-Quarter; thence along the west line of said Northeast One-Quarter, N00°57'48"W, a distance of 665.78 feet to a point on a southerly line of Reeds Cove 3rd Addition, Wichita, Sedgwick County, Kansas, as recorded on DOC#/FLM-PG: 28573853 in the Sedgwick County Register of Deeds office; thence along the southerly and easterly lines of said addition through the following seven courses; S77°35'17"E, a distance of 149.26 feet; N73°29'13"E, a distance of 269.96 feet; N39°30'04"E, a distance of 1100.06 feet; N50°29'57"W, a distance of 150.00 feet; N00°59'12"W, a distance of 309.98 feet; S88°37'36"W, a distance of 75.00 feet; N00°57'58"W, a distance of 720.00 feet to a point on the North line of said Northeast One-Quarter; thence N88°37'33"E, along said North line, a distance of 563.62 feet; thence S00°53'20"E, parallel with the East line of said Northeast One-Quarter, a distance of 850.00 feet; thence N88°37'33"E, parallel with the North line of said Northeast One-Quarter, a distance of 1153.19 feet to the POINT OF BEGINNING, TOGETHER WITH, Beginning at the Northeast corner of said Northeast One-Quarter; thence along the East line of said Northeast One-Quarter, on a Kansas coordinate system 1983 south zone bearing of S 00 degree 53'20" E, a distance of 850.00 feet; thence S 88°37'33" W, parallel with the North line of said Northeast One-Quarter, a distance of 1153.19 feet; thence N 00°53'20"W, parallel with the East line of said Northeast One-Quarter; a distance of 850.00 feet to a point on the North line of said Northeast One-Quarter; thence along said North line, N 88°37'33" E, a distance of 1153.19 feet to the POINT OF BEGINNING. Said tract contains: 116.488 acres more or less.

NORTH

100 0 100 200

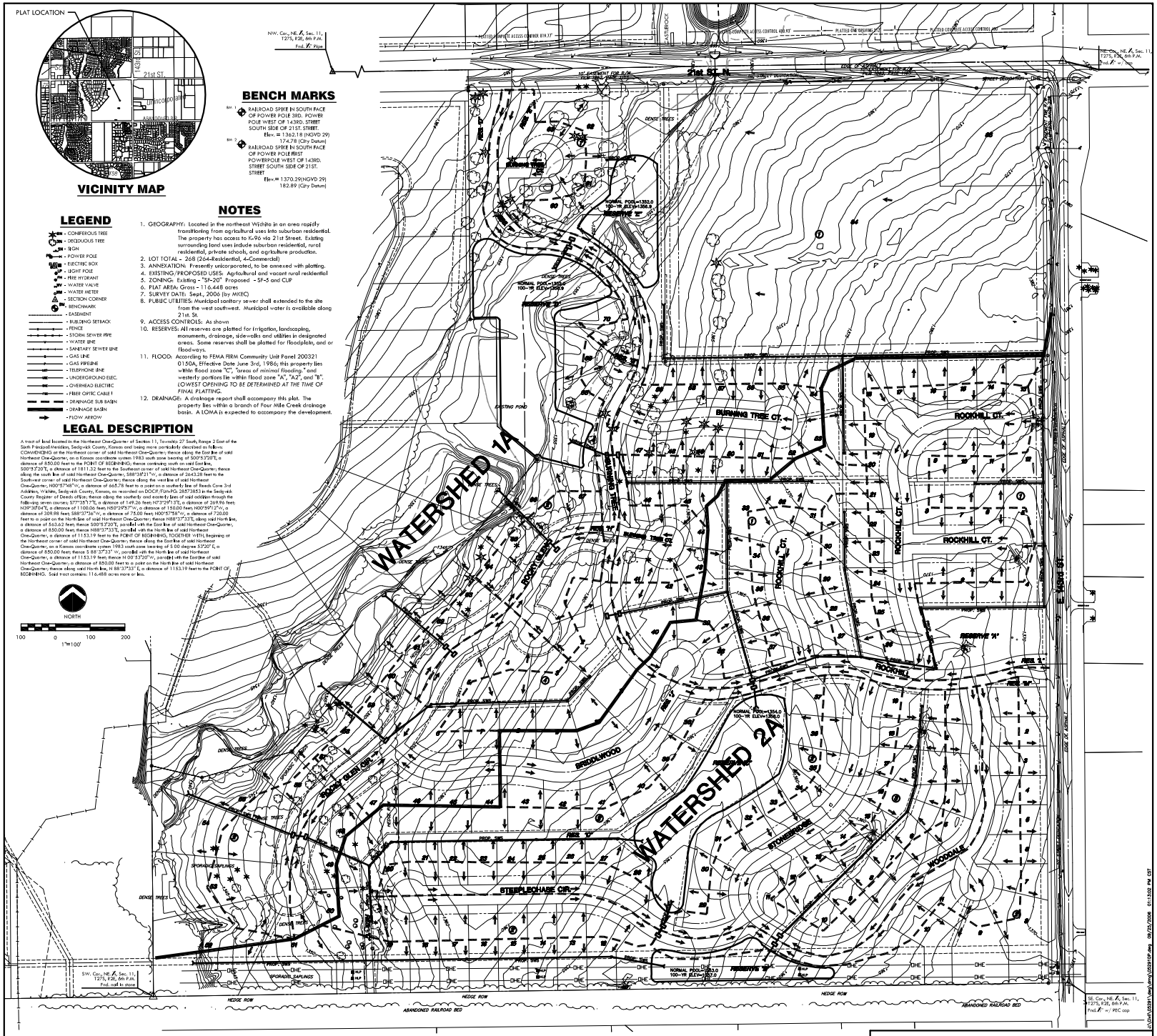
1"=100'



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

KRUG SOUTH ADDITION (PROJECT NAME)		
GRADING PLAN (SHEET TITLE)		
TMH (DESIGN BY:)	KWS/CMJ (DRAWN BY:)	GJA (CHECKED BY:)
SEPTEMBER 2006 (DATE)	05291 (JOB NO.)	1 / 1 (SHEET/OF)

Appendix H
Preliminary Drainage and Utility Plan



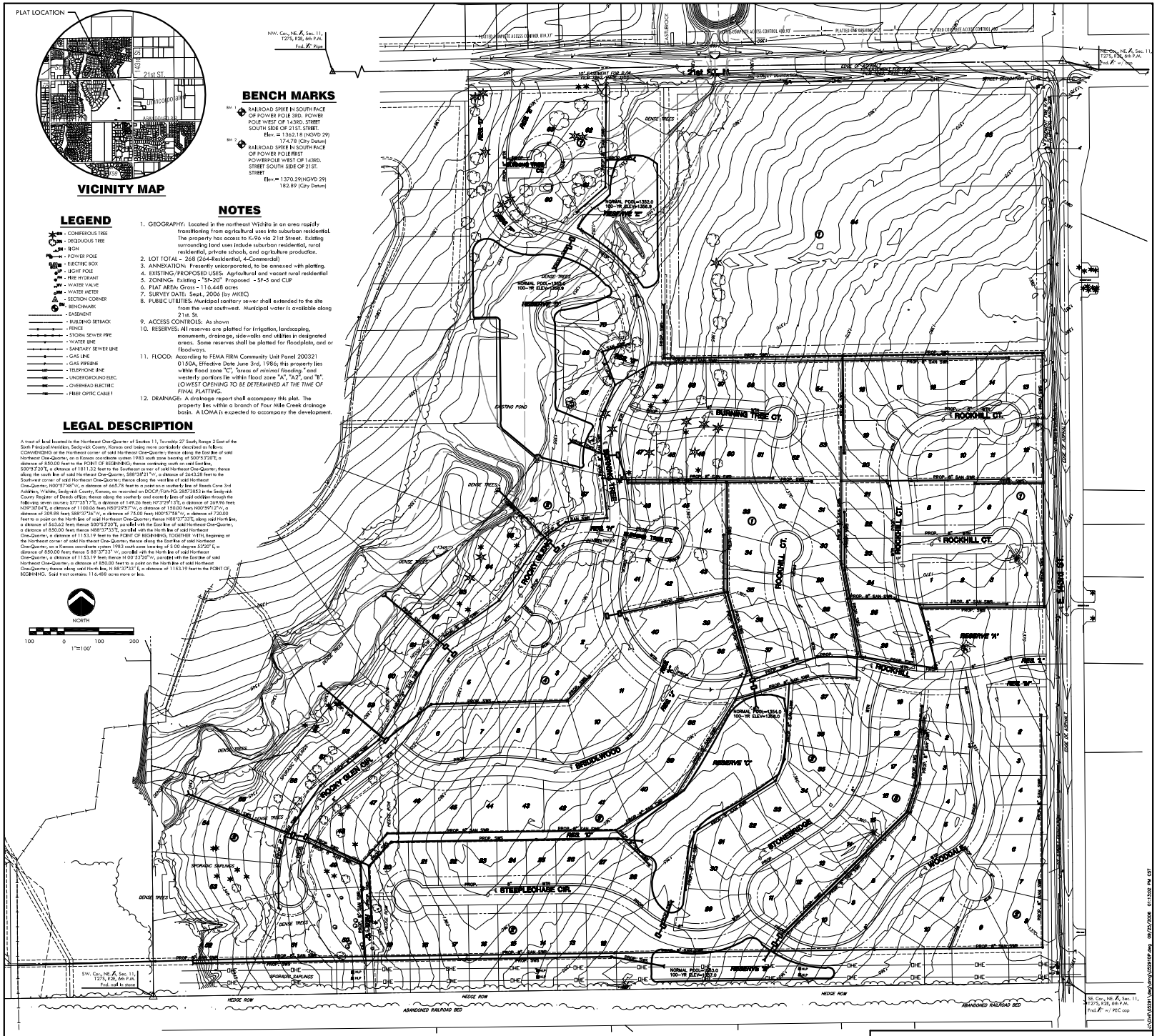
MKEC ENGINEERING CONSULTANTS, INC.
411 N. WEBB ROAD
WICHITA, KS. 67206
316 - 664 - 9600

KRUG SOUTH ADDITION
PROJECT NAME

DRAINAGE PLAN
SHEET TITLE

TMH	KWS	GJA
DESIGN BY.	DRAWN BY.	CHECKED BY.
SEPTEMBER 2006	05291	1 / 1
DATE	JOB NO.	SHEET/OF

L:\Civil\05291\work\dwg\05291DP.dwg 09/25/2006 01:13:52 PM CST


PLAT LOCATION
21st ST.
VICINITY MAP
BENCH MARKS
BM #1 RAILROAD SPIKE IN SOUTH FACE OF POWER POLE 38D. POWER POLE WEST OF 143RD. STREET SOUTH SIDE OF 21ST. STREET.
Elev.= 1362.18 (NGVD 29)
174.78 (City Datum)
BM #2 RAILROAD SPIKE IN SOUTH FACE OF POWER POLE FIRST POWERPOLE WEST OF 143RD. STREET SOUTH SIDE OF 21ST. STREET
Elev.= 1370.29(NGVD 29)
182.89 (City Datum)
NOTES
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DECIDUOUS TREE
SIGN
POWER POLE
ELECTRIC BOX
LIGHT POLE
FIRE HYDRANT
WATER VALVE
WATER METER
SECTION CORNER
BENCHMARK
EASEMENT
BUILDING SETBACK
FENCE
STORM SEWER PIPE
WATER LINE
SANITARY SEWER LINE
GAS LINE
GAS PIPELINE
TELEPHONE LINE
UNDERGROUND ELEC.
OVERHEAD ELECTRIC
FIBER OPTIC CABLE
LEGAL DESCRIPTION
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NORTH
1"=100'
NW. Cor., NE 1/4 Sec. 11, T27S, R2E, 6th P.M. Fnd. 1/2" Pipe
NE. Cor., NE 1/4 Sec. 11, T27S, R2E, 6th P.M. Fnd. 1/2" w/ Cap
SW. Cor., NE 1/4 Sec. 11, T27S, R2E, 6th P.M. Fnd. cut in stone
SE. Cor., NE 1/4 Sec. 11, T27S, R2E, 6th P.M. Fnd. 1/2" w/ PEC cap
21st ST. SO.
143rd E. AVE.
BURNING TREE CT.
ROCKHILL CT.
ROCKY GLEN CIR.
BRIDLEWOOD
STEEPLECHASE CIR.
STONEBRIDGE
WOODDALE
RESERVE "A"
RESERVE "B"
RESERVE "C"
RESERVE "D"
RESERVE "E"
RESERVE "F"
RESERVE "G"
RESERVE "H"
EXISTING POND
DENSE TREES
SPORADIC SAPLINGS
HEDGE ROW
ABANDONED RAILROAD BED
MKEC ENGINEERING CONSULTANTS, INC.
411 N. WEBB ROAD
WICHITA, KS. 67206
316 - 664 - 9600
KRUG SOUTH ADDITION
PROJECT NAME
UTILITY PLAN
SHEET TITLE
TMH DESIGN BY.
KWS DRAWN BY.
GJA CHECKED BY.
SEPTEMBER 2006 DATE
05291 JOB NO.
1 / 1 SHEET NO.