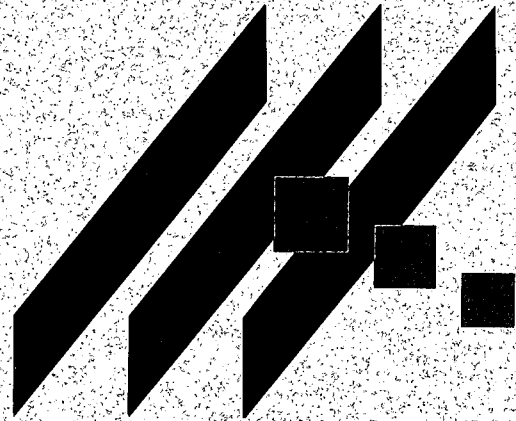


M K E C E N G I N E E R I N G C O N S U L T A N T S I N C



DRAINAGE REPORT

FOR

POWER C.D.C. THIRD ADDITION

MARCH 2003

Drainage Report for Power C.D.C. Third Addition Wichita, Kansas

Location

The site is located in Wichita, Sedgwick County, Kansas, North of 21st Street and West of Hillside Avenue. It lies in the Northwest Quarter, Section 3, Township 27 South, Range 1 East. The total site area is approximately 11.25 acres. The site is shown in the East Wichita, Kansas Quadrangle located in Appendix A.

Soils

According to the NRCS (SCS) Sedgwick County Soil Survey (Appendix B), the site is in the Elandco Series (Ea: elandco silt loam). The Hydrological Soil Group (HSG) for the site is "B".

Pre-developed Conditions

Current Development

The site is undeveloped with grass covering the entire site. Residential housing is located south and east of the site. The Power C.D.C. Second Addition is directly west of the site.

Current Landform and Slope

The East Fork Chisholm Creek (East Branch Interception Canal and Wichita Drainage Canal) is approximately 150 feet west of the site; adjacent to the Power C.D.C. Second Addition. Elevations vary from roughly 137 feet in the northeast corner of the site, to around 131 feet at the west edge of the site. Watershed slopes vary from 0.5% to 4.0%. The site flows across a reserve in the Power C.D.C. Second Addition and into the canal. The water surface elevation of the canal is approximately 117 feet near the site.

Current Drainage Conditions

The site is located in Zone B (FIRM Panel 10, Wichita, Kansas, Sedgwick County, May 15, 1986) (shown in Appendix C). It is in an area between the 100-year flood and 500-year flood. The area may be subject to a 100-year flooding with average depths less than 1 foot. The nearest Zone A is along the canal 150 feet west of the property line.

Upstream of Site

According to the FEMA Flood Insurance Study, approximately 8800 acres have drained into the East Fork Chisholm Creek when it converges with the Wichita Drainage Canal approximately 6000 feet south of the site. The 100-year peak discharge at the confluence is 9420 cfs. The site is in a watershed of approximately 300 acres that drains into the canal.

Current Runoff Characteristics

At Minnesota Avenue 25th Street ends and discharges into an existing ditch south of the site. Approximately 97.7 acres drain into this existing ditch. The rational method was used to determine flows from the site. The site was divided into several sub-watersheds as shown in the Drainage and Utility Plan in Appendix D. The time of concentrations varied from 24 to 35 minutes, which correspond to undeveloped urban lawn areas. Appendix E is a spreadsheet displaying the area, runoff coefficient (c), time of concentration (t_c), and the flow rate (Q) for each sub-watershed in the 2, 5, 10, and 100-year events. Discharge from the site is approximately 26.2 cfs in the 100-year event. The existing ditch at 25th Street was modified when the Power C.D.C. Second Addition was developed. The ditch is sized to include runoff from portions of the Power C.D.C. Third Addition in developed conditions.

Post-Developed Condition

Proposed Development

The site will develop as residential lots with an average size of approximately 1/4-acre. The development will have 30 lots.

Proposed Landform and Slope

Runoff will continue to drain through the Power C.D.C. Second Addition and into the East Fork Chisholm Creek/Wichita Drainage Canal. The ground surrounding houses will slope away from the houses at a minimum of 1.0%. Streets will have a minimum slope of 0.5%

Proposed Runoff Characteristics

Runoff from the front yards of the lots along Madison and 26th Streets will flow into the streets and eventually to the ditch at 25th Street. This was included in the original design of ditch improvements with the Power C.D.C. Second Addition. Storm water pipes will carry runoff from Piatt Circle into the reserve of Power C.D.C. Second Addition and into the drainage canal. Runoff from the backyards of lots on the north and west edges of the property will flow along the property lines, into Reserve A of the Power C.D.C. Second Addition, and to the Wichita Drainage Canal.

The rational method was used to determine flows from the site and into the proposed storm water pipe. The site was divided into several sub-watersheds. The time of concentrations varied from 18 to 30 minutes, which correspond to 1/4 acre residential lots. Appendix E is a spreadsheet displaying the area, runoff coefficient (c), time of concentration (t_c), and the flow rate (Q) for each sub-watershed in the 2, 5, 10, and 100-year events. Discharge from the site is approximately 40.9 cfs in the 100-year event.

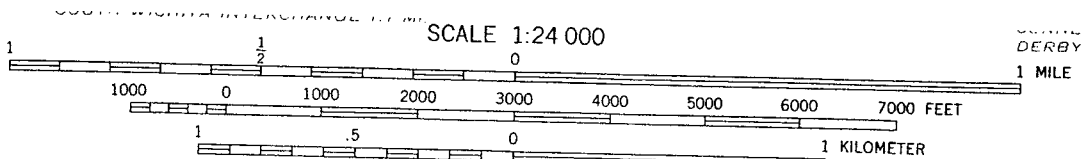
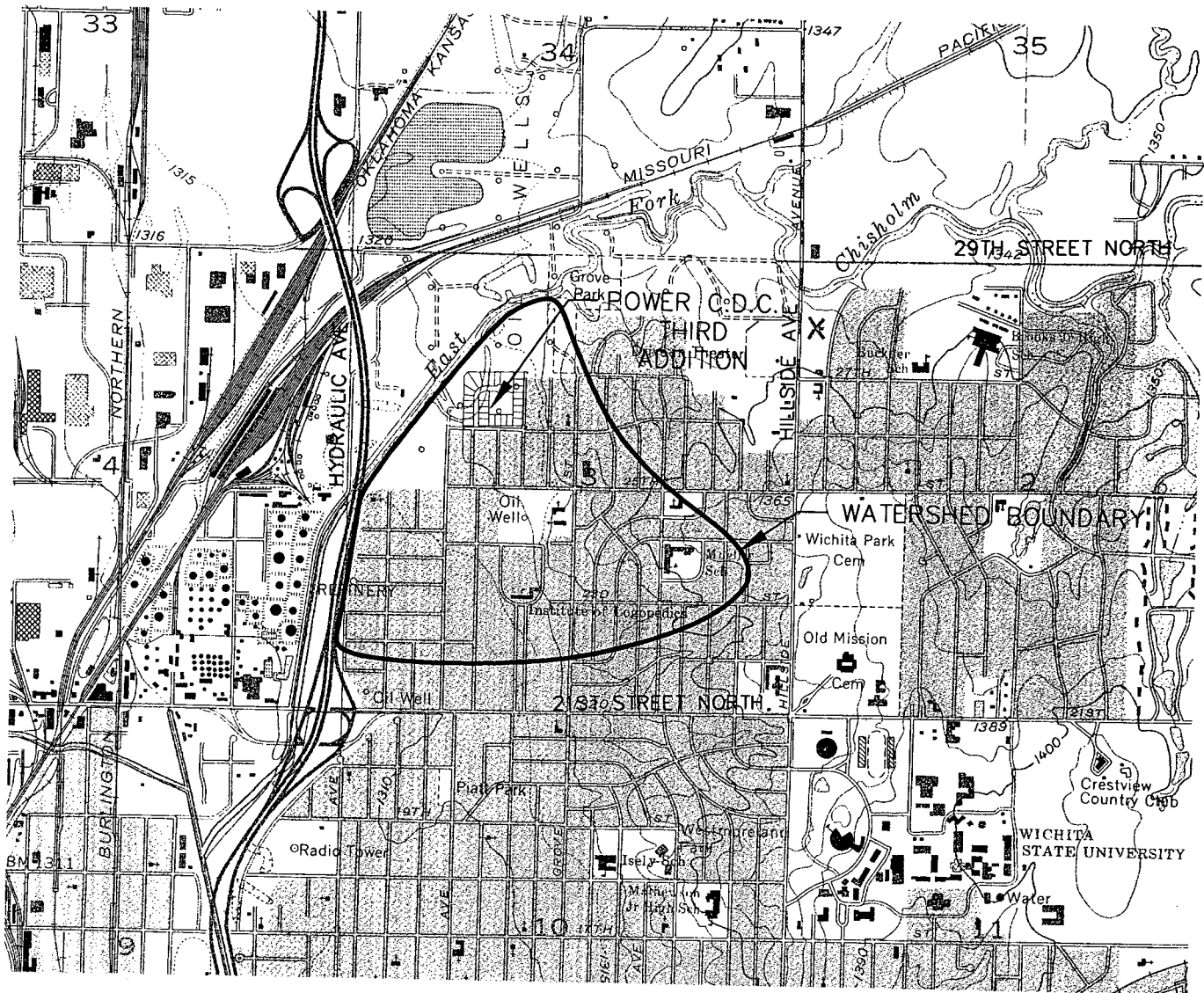
Summary

The Power C.D.C. Third Addition will be an 11.25-acre development with 30 lots approximately ¼ acre in size. The site drains into the East Fork Chisholm Creek to the west. The East Fork Chisholm creek converges with the Wichita Drainage Canal approximately 6000 feet downstream of the site. At the convergence, approximately 8800 acres have drained into the system with a peak 100-year flow of approximately 9420 cfs. Under pre-developed conditions 26.2 cfs of runoff will leave the site in the 100-year event. After development 40.9 cfs will leave the site in the 100-year event. The increase of 14.7 cfs will enter into the East Fork of the Chisholm Creek. The increase of 14.7 cfs is negligible in an area the size of the East Fork Chisholm Creek watershed. Development will decrease the time of concentration from the site. Due to the proximity of the site to the East Fork Chisholm Creek/Wichita Drainage Canal, peak flows from the site will pass through the East Fork Chisholm Creek/Wichita Drainage Canal before it reaches its peak. Therefore, detention on the proposed residential development should not be required.

Storm sewer has been sized to capture 100-year flows from Piatt Circle. All other runoff will sheet flow into the drainage canal or drain through the existing streets to 25th Street and into the drainage ditch at Minnesota Avenue. The existing drainage ditch was modified to accommodate 100-year peak flows from the development of the Power C.D.C Second and Third Additions.

Appendix A

Quadrangle



CONTOUR INTERVAL 10 FEET
 DOTTED LINES REPRESENT 5-FOOT CONTOURS
 NATIONAL GEODETIC VERTICAL DATUM OF 1929

UNITED STATES
 DEPARTMENT OF THE INTERIOR
 GEOLOGICAL SURVEY

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

POWER C.D.C. THIRD ADDITION
 PROJECT NAME

WICHITA EAST QUADRANGLE
 SHEET TITLE

KLA DESIGN BY:	KLA DRAWN BY:	GJA CHECKED BY:
MARCH 2003 DATE	03084 JOB NO.	1 / 1 SHEET/OF

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Appendix B

Soil Survey

POWER
C.D.C. THIRD
ADDITION

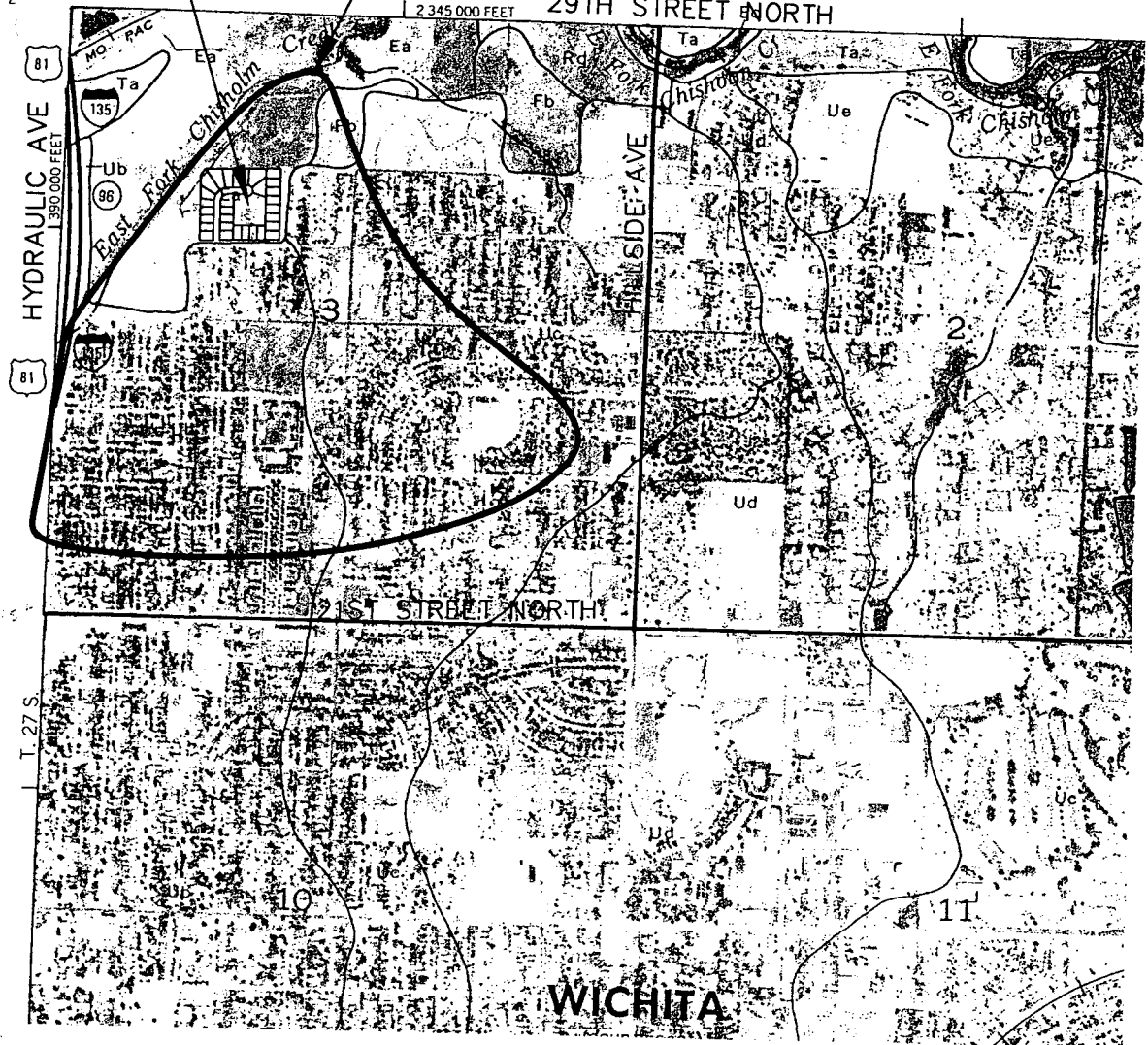
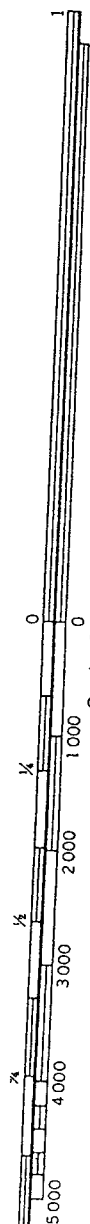
WATERSHED BOUNDARY

SEDGWICK CO

35



1 Mile
5000 Feet



UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
IN COOPERATION WITH
KANSAS AGRICULTURAL EXPERIMENT STATION



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

POWER C.D.C. THIRD ADDITION

PROJECT NAME

SEDGWICK COUNTY SOIL SURVEY

SHEET TITLE

KLA
DESIGN BY.

KLA
DRAWN BY.

GJA
CHECKED BY.

MARCH 2003
DATE

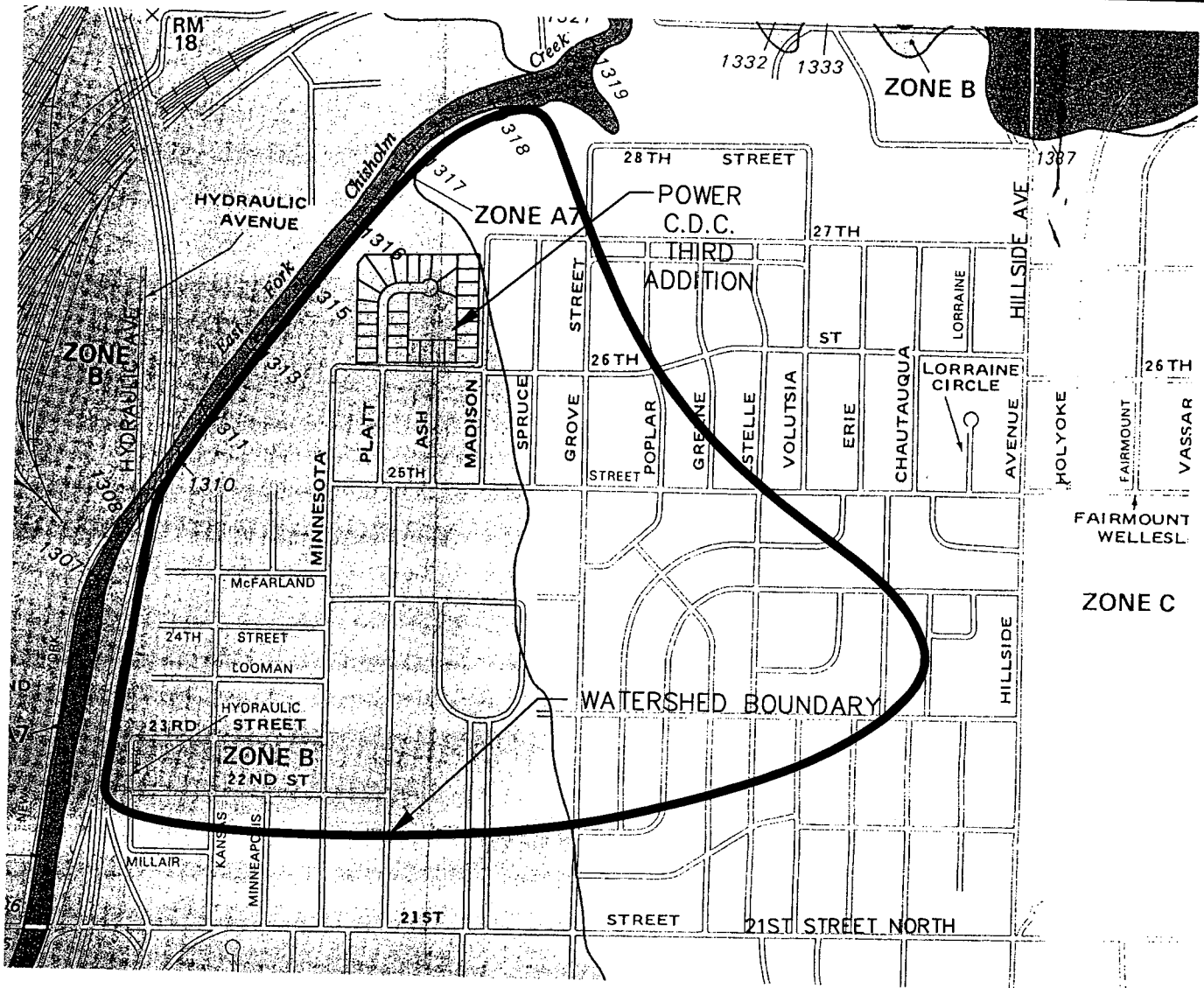
03084
JOB NO.

1 / 1
SHEET/OF

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Appendix C

Flood Insurance Rate Map



NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
WICHITA,
KANSAS
SEDGWICK COUNTY

PANEL 10 OF 40
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
200328-0010-B

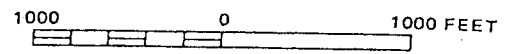
EFFECTIVE DATE:
MAY 15, 1986



Federal Emergency Management Agency



APPROXIMATE SCALE



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

POWER C.D.C. THIRD ADDITION
PROJECT NAME

WICHITA, KANSAS
FIRM PANEL 10
SHEET TITLE

KLA DESIGN BY.	KLA DRAWN BY.	GJA CHECKED BY.
--------------------------	-------------------------	---------------------------

MARCH 2003 DATE	03084 JOB NO.	1 / 1 SHEET/OF
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Appendix D

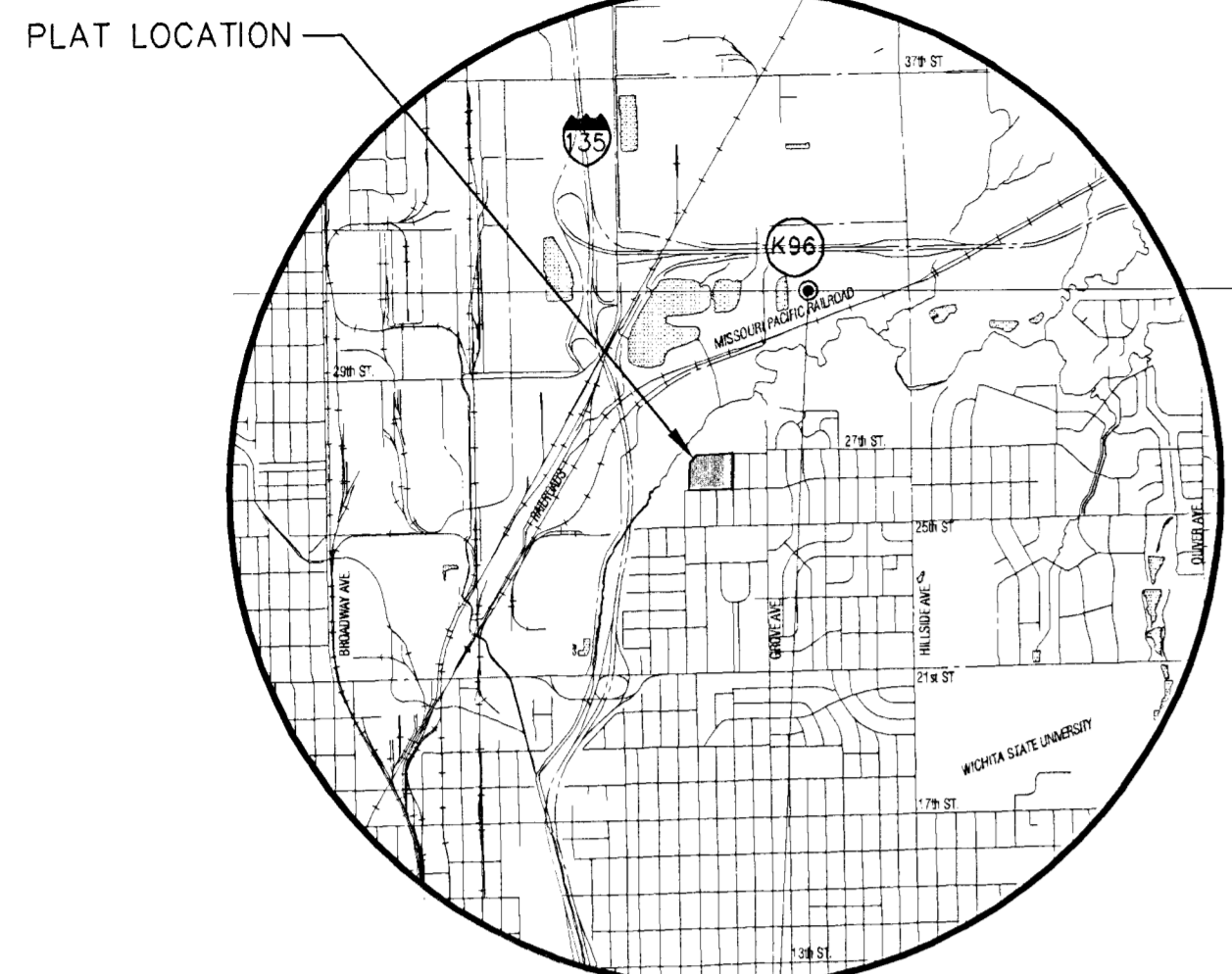
Drainage and Utility Plan

Appendix E

Drainage Analysis

**DRAINAGE CALCULATIONS
POWER C.D.C. THIRD ADDITION**

Area ID	Area ac	Accum. Area ac	C2	C5	C10	C100	Elev		Flow Length	Tc2 min	Tc5 min	Tc10 min	Tc100 min	I2 in/hr	I5 in/hr	I10 in/hr	I100 in/hr	Q2 cfs	Q5 cfs	Q10 cfs	Q100 cfs	COMMENTS
							Max	Min														
PRE-DEVELOPED																						
Soil Group B																						
A	2.3		0.20	0.22	0.28	0.41	137.0	131.0	500	34	33	31	26	2.48	3.05	3.70	5.79	1.16	1.57	2.42	5.55	
B	1.2		0.20	0.22	0.28	0.41	135.5	134.0	300	35	35	32	27	2.44	3.01	3.63	5.69	0.61	0.82	1.26	2.89	
C	1.3		0.20	0.22	0.28	0.41	135.0	131.0	400	32	32	30	25	2.57	3.19	3.83	6.01	0.66	0.91	1.38	3.18	
D	1.9		0.20	0.22	0.28	0.41	135.0	131.0	400	32	32	30	25	2.57	3.19	3.83	6.01	0.97	1.33	2.03	4.66	
E	2.0		0.20	0.22	0.28	0.41	137.0	131.0	450	31	31	28	24	2.62	3.24	3.90	6.13	1.03	1.40	2.15	4.95	
F	3.1		0.20	0.22	0.28	0.41	138.0	131.0	1400	30	30	30	30	2.67	3.24	3.76	5.40	1.68	2.22	3.27	6.89	
A+B+C+D+E+F	11.8		0.20	0.22	0.28	0.41	138.0	131.0	1400	35	35	32	30	2.44	3.01	3.63	5.40	5.78	7.84	12.03	26.21	
DEVELOPED																						
A	2.3		0.33	0.35	0.40	0.51	137.0	131.0	500	29	28	27	22	2.72	3.37	4.05	6.26	2.10	2.76	3.79	7.47	24" RCP - Sized for 100-Year Storm
B	1.2		0.33	0.35	0.40	0.51	135.5	134.0	300	30	29	27	23	2.67	3.30	3.98	6.13	1.09	1.43	1.97	3.88	
A+B	3.6		0.33	0.35	0.40	0.51	135.5	134.0	300	30	29	27	23	2.67	3.30	3.98	6.13	3.15	4.13	5.70	11.19	30" RCP - Sized for 100-Year Storm
C	1.3		0.44	0.46	0.52	0.61	135.0	131.0	400	24	23	21	18	3.10	3.73	4.60	7.00	1.76	2.21	3.09	5.51	
A+B+C	4.9		0.36	0.38	0.43	0.54	135.5	134.0	300	29	28	26	22	2.72	3.37	4.05	6.26	4.76	6.22	8.52	16.36	30" RCP - Sized for 100-Year Storm
D	1.9		0.44	0.46	0.52	0.61	135.0	131.0	400	24	23	21	18	3.10	3.73	4.60	7.00	2.58	3.24	4.52	8.07	
A+B+C+D	6.8		0.38	0.40	0.46	0.56	135.5	134.0	300	28	27	25	21	2.78	3.43	4.13	6.39	7.17	9.32	12.74	24.06	36" RCP - Sized for 100-Year Storm
E	2.0		0.33	0.35	0.40	0.51	137.0	131.0	450	27	26	24	20	2.90	3.50	4.22	6.53	1.88	2.41	3.33	6.56	
F	3.1		0.44	0.46	0.52	0.61	138.0	131.0	1400	22	22	22	22	3.17	3.81	4.40	6.26	4.34	5.45	7.12	11.88	
A+B+C+D+E+F	11.8		0.39	0.41	0.46	0.56	138.0	131.0	1400	30	29	27	23	2.67	3.30	3.98	6.13	12.28	15.96	21.85	40.87	



VICINITY MAP

Lot	Sq. Ft.	Acres
1	10,056	0.23
2	8,480	0.19
3	8,480	0.19
4	8,480	0.19
5	8,091	0.18
6	11,139	0.25
7	19,613	0.45
8	18,596	0.42
9	13,525	0.31
10	11,550	0.26
11	10,966	0.25
12	19,888	0.45
13	13,142	0.30
14	10,899	0.25
15	9,757	0.22
16	9,756	0.22
17	9,756	0.22
18	9,756	0.22
19	9,756	0.22
20	9,756	0.22
21	10,877	0.24
22	9,396	0.21
23	9,396	0.21
24	9,396	0.21
25	9,400	0.21
26	10,197	0.23
27	8,398	0.19
28	8,398	0.19
29	8,398	0.19
30	12,233	0.28

UNPLATTED CITY OF WICHITA
455 N MAIN
WICHITA, KS 67202-1600
ZONED "SF-5"

MH TOP=129.49
FL IN=118.79
FL OUT=118.34(S)

PROP DITCH
10' BOTTOM
4:1 SIDESLOPES
0.3% SLOPE

FUTURE HEARTLAND PREPAREDNESS CENTER

UNPLATTED CITY OF WICHITA
455 N MAIN
WICHITA, KS 67202-1600
ZONED "SF-5"

NE. Cor., NW ¼, Sec. 3,
T26S, R1E, 6th P.M.
Fnd. Stone
UNPLATTED
BOARD OF PARK COMMISSIONERS
1901 E. 29TH ST. N. / 455 N. MAIN
WICHITA, KS 67202-1600
ZONED "H-79-16"
SW. Cor., Govt. Lot 3
No monument found
30'(P)
23.63' (M)

27th St. N.

BENCHMARK

- BM#1 City disc at SE cor. of 25th and Grove. ELEV. = 141.65 City Datum 1329.05 NGVD
- BM#2 "□" Top of curb W. side of Minnesota, S. of & 26th St. 30'±. ELEV. = 130.60 City Datum 1318.00 NGVD
- BM#3 "□" Top of curb at NE. cor. of Madison and 26th St. ELEV. = 134.505 City Datum 1321.905 NGVD

NOTES

1. Zoning: Single Family SF-5
2. Reserves: "A" is platted for open space and is owned and maintained by the home owner association
3. According to FIRM Community-Panel Number 20032B 0010 B this plat lies within flood zone "B".
4. Survey Date: October 30th, 2002
5. Existing Use: None - vacant lot
6. Total Lots: 30
7. Total Area: 11.25 acres

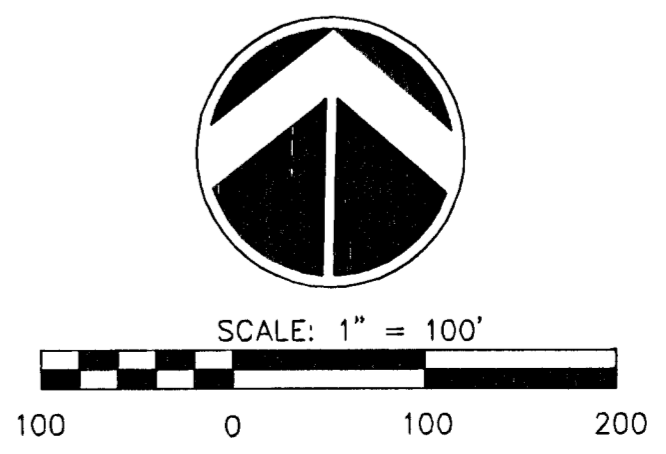
LEGEND

- ✱ - CONIFEROUS TREE & DIAMETER
- - DECIDUOUS TREE & DIAMETER
- - SIGN
- - BUSH
- ⊕ - POWER POLE AND GUY ANCHOR
- ⊕ - ELECTRIC BOX
- - EDGE OF TREES
- - FENCE
- BM# - BENCHMARK
- ⊕ - STORM WATER MANHOLE
- ⊕ - SANITARY SEWER MANHOLE
- ⊕ - TELEPHONE MANHOLE
- △ - SECTION CORNER
- - 5/8" REBAR/MKEC CLS #39 SET
- ⊕ - PROPERTY CORNER FOUND
- - POLE
- - GATE
- ⊕ - GAS METER
- - WALL
- ⊕ - LIGHT POLE
- ⊕ - FIRE HYDRANT
- ⊕ - WATER VALVE
- ⊕ - WATER METER
- ⊕ - TELEPHONE RISER
- ⊕ - INLET
- - STORM SEWER PIPE
- - WATER LINE
- - SANITARY SEWER LINE
- - GAS LINE
- - TELEPHONE LINE
- - UNDERGROUND ELECTRIC LINE
- - OVERHEAD TELEPHONE
- - OVERHEAD ELECTRIC

PRELIMINARY LOT GRADING PLAN POWER C.D.C. THIRD ADDITION

OWNERS: City of Wichita, Wichita City Hall 455 N. Main St., Wichita, KS 67202 316-268-4351
DEVELOPER: Power Community Development Corporation, Inc. 1802 N. Hydraulic St., Wichita, KS 67204 316-267-3036

DATE: MARCH 2003



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