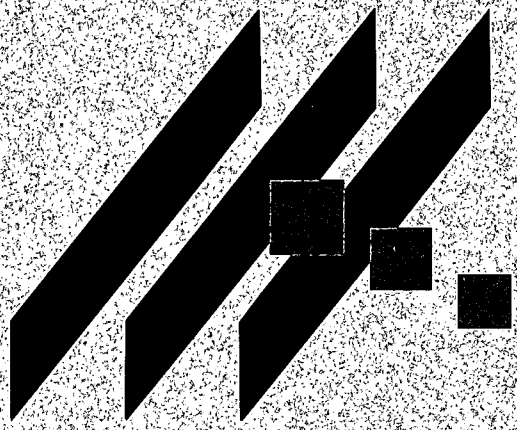
MKEC ENGINEERING CONSULTANTS, INC.



DRAINAGE REPORT

FOR

MINNEHA ELEMENTARY SCHOOL ADDITION

DECEMBER 2001

7461 N. WEBB ROAD • WICHITA, KS 67206 • 316.684.9600 • FAX 316.684.5100

Drainage Report for Minneha Elementary School Addition

Wichita, Kansas

Location

The subject property lies just north of Central Avenue on the West side of Webb Road. See Appendix A for a general location map.

Soils

According to the NRCS (SCS) Sedgwick County Soil Survey, the soil types are in the Rosehill series: Rosehill Silty Clay. This series is a well-drained, very slow permeability soil with slopes ranging from 1-3%. The Hydrological Soil Group (HSG) for this soil is "D". (See Appendix B)

Pre-developed Conditions

Current Development
The site contains approximately 15-acres, and is currently developed with several buildings and paved areas. The existing school buildings and parking areas are located on the East side of the property, and include approximately 4 acres. The remaining 11 acres is playground area with some grass and bare soil.

Current Landform and Slope
The site currently slopes to the west and south. Slopes are approximately 1% in both directions.

Current Drainage Conditions
The site is in floodplain Zone C according to FBFM Panel 150, Sedgwick County, Kansas, effective June 3, 1986. (See Appendix C.)

Upstream of Site
Minimal runoff from adjacent properties flows through the site. The general flow pattern is from east to west. Flow coming to the property from the east is collected by the stormwater sewer system in Webb Road before reaching the site.

Current Runoff Characteristics
The site was divided into four general drainage areas (See Appendix D). Approximately 3.2 acres drains from the north school building to the north (Drain Area A). This runoff drains through a break in the curb and into the adjacent inlet in the Gatewood Second Addition. Runoff from this area was considered when the Gatewood Second Addition stormwater sewer was designed. Approximately 2.1 acres drains to the south and east into Webb Road (Drain Area B).

Approximately 3.0 acres drains to the roadway south of the subject property and into the existing detention pond in the Lakepoint Office complex (Drain Area C). The remaining 6.6 acres drains to the west and into a ditch inlet structure west of the school property (Drain Area D). From this inlet, runoff drains west through a 21" RCP into the Gatewood Addition stormwater sewer system. The runoff from this area was included in the drainage area used to size the Gatewood Addition stormwater sewer.

Current runoff for these areas was calculated using the rational method. Runoff coefficients were established for each drainage area based on percent of impermeable area. These coefficients range from 0.45 to 0.53 for a 2-year storm and from 0.63 to 0.72 for a 100-year storm. Table 1 below shows the current runoff from each of these areas.

Table 1. Current runoff.

Drain Area	2-Year (cfs)	5-Year (cfs)	10-Year (cfs)	100-Year (cfs)
A	6.4	8.0	9.8	15.9
B	4.1	5.0	6.2	10.2
C	5.2	6.4	8.2	13.8
D	11.4	14.2	18.0	30.7
Total	27.1	33.6	42.2	70.6

Future Conditions

Additional Development
Plans for building and parking lot expansions are currently being prepared for this site. These improvements are included on the Drainage and Utility Plan in Appendix D.

Proposed Landform and Slope
The current drainage patterns will largely remain unchanged. The current 1% slopes will be maintained in most areas of the site.

Proposed Runoff Characteristics
Runoff coefficients for the improved conditions will increase for three of the four drainage areas. Coefficients will range from 0.47 to 0.67 for a 2-year storm, and from 0.64 to 0.77 for a 100-year storm. The time of concentration used will be 15 minutes.

A stormwater sewer system has been designed, and plans have been approved to serve the planned expansion. The stormwater sewer will collect runoff from Drain Area B and carry it to the existing stormwater sewer in Webb Road. Pipe sizes for the stormwater system are 18".

The rational method was used to calculate runoff for fully developed conditions. The resulting flows are shown in Table 2 below.

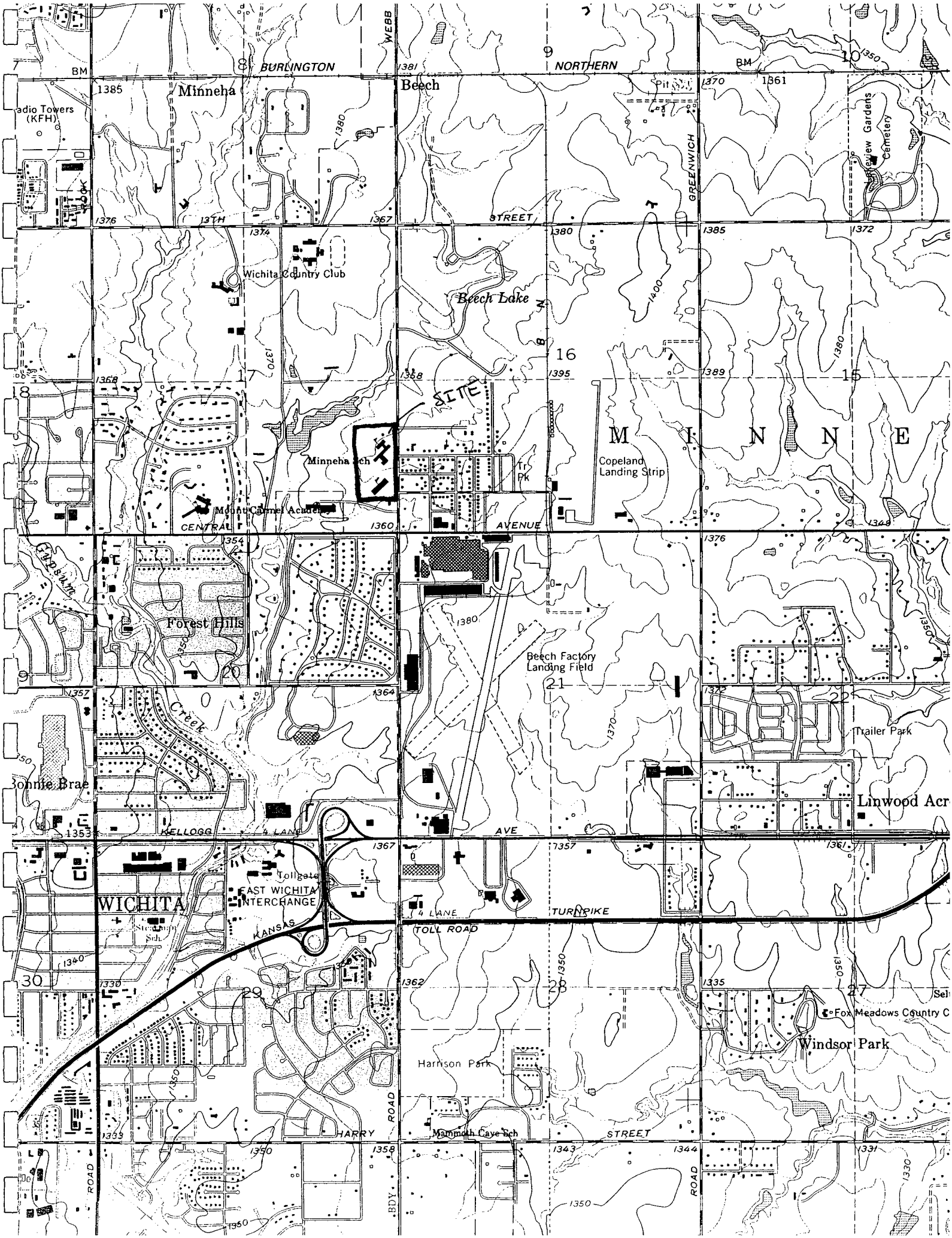
Table 2. Future conditions runoff.

Sub-Watershed	2-Year (cfs)	5-Year (cfs)	10-Year (cfs)	100-Year (cfs)
A	6.4	8.0	9.8	15.9
B	4.8	5.8	7.1	11.1
C	7.6	9.2	11.0	16.8
D	11.9	14.8	18.7	31.2
Total	30.7	37.8	46.6	75.0

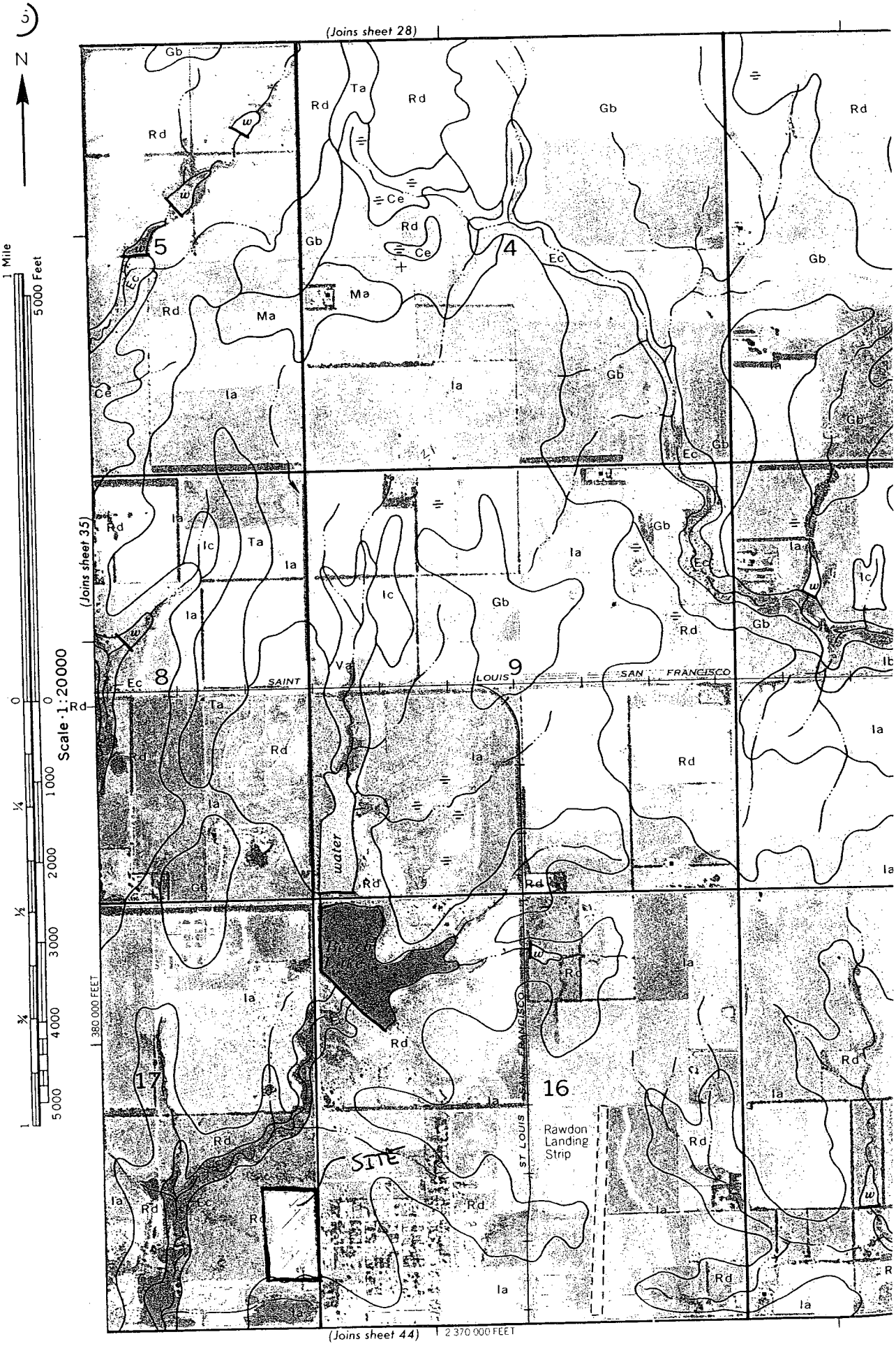
Summary

The Minneha Elementary School Addition is a 15-acre site near Central and Webb Road. The site is currently developed with several school buildings and paved parking areas. The proposed additions to the site will result in minimal increases in runoff. The largest runoff increase is in Drain Area C, where the runoff will increase by 3.0 cfs. This area drains to the detention pond in the adjacent development to the south, and will have minimal impact on the pond. The other stormwater sewer systems that drain the site appear to be adequate to handle the minimal increases.

Appendix A


BURLINGTON
NORTHERN
WEBB
GREENWICH
Minneha
Beech
Pit
Cemetery
13TH
STREET
Wichita Country Club
Beech Lake
SITE
Minneha Sch
Mount Carmel Academy
Tr Pk
Copeland Landing Strip
CENTRAL
AVENUE
Forest Hills
Beech Factory Landing Field
Trailer Park
Linwood Acr
KELLOGG
4 LANE
AVE
Tollgate
EAST WICHITA INTERCHANGE
WICHITA
KANSAS
TURNPIKE
TOLL ROAD
Fox Meadows Country C
Windsor Park
Harrison Park
Mammoth Cave Sch
HARRY
STREET
ROAD

Appendix B


N
(Joins sheet 28)
(Joins sheet 35)
(Joins sheet 44)
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
380 000 FEET
2 370 000 FEET
SAINT LOUIS
SAN FRANCISCO
ST LOUIS SAN FRANCISCO
water
SITE
Rawdon Landing Strip
5
4
8
9
17
16
Gb
Rd
Ta
Ce
Ec
Ma
Ia
Ic
Va

Appendix C

NATIONAL FLOOD INSURANCE PROGRAM

FLOODWAY
FLOOD BOUNDARY AND FLOODWAY MAP

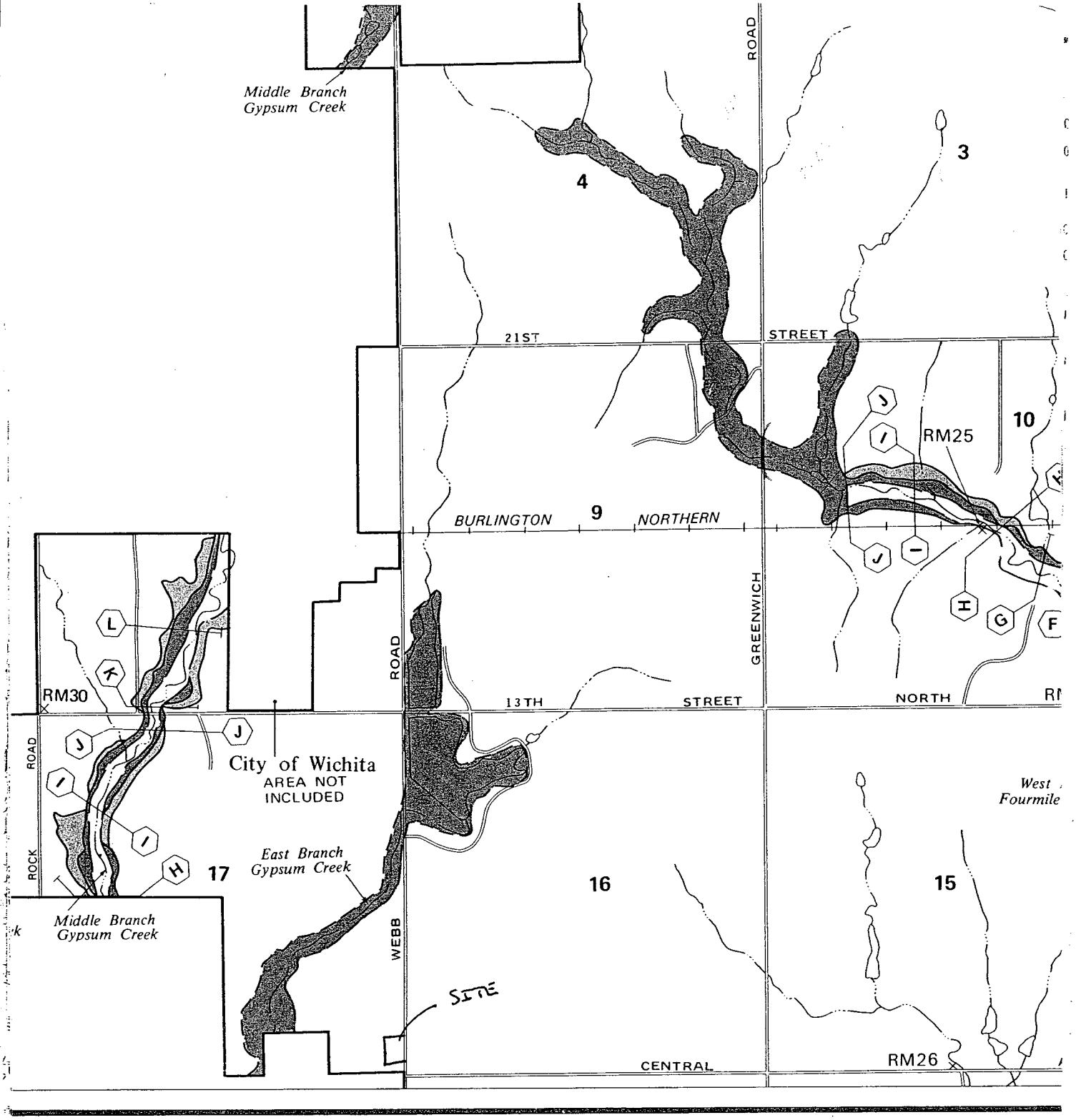
SEDGWICK COUNTY, KANSAS
(UNINCORPORATED AREAS)

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

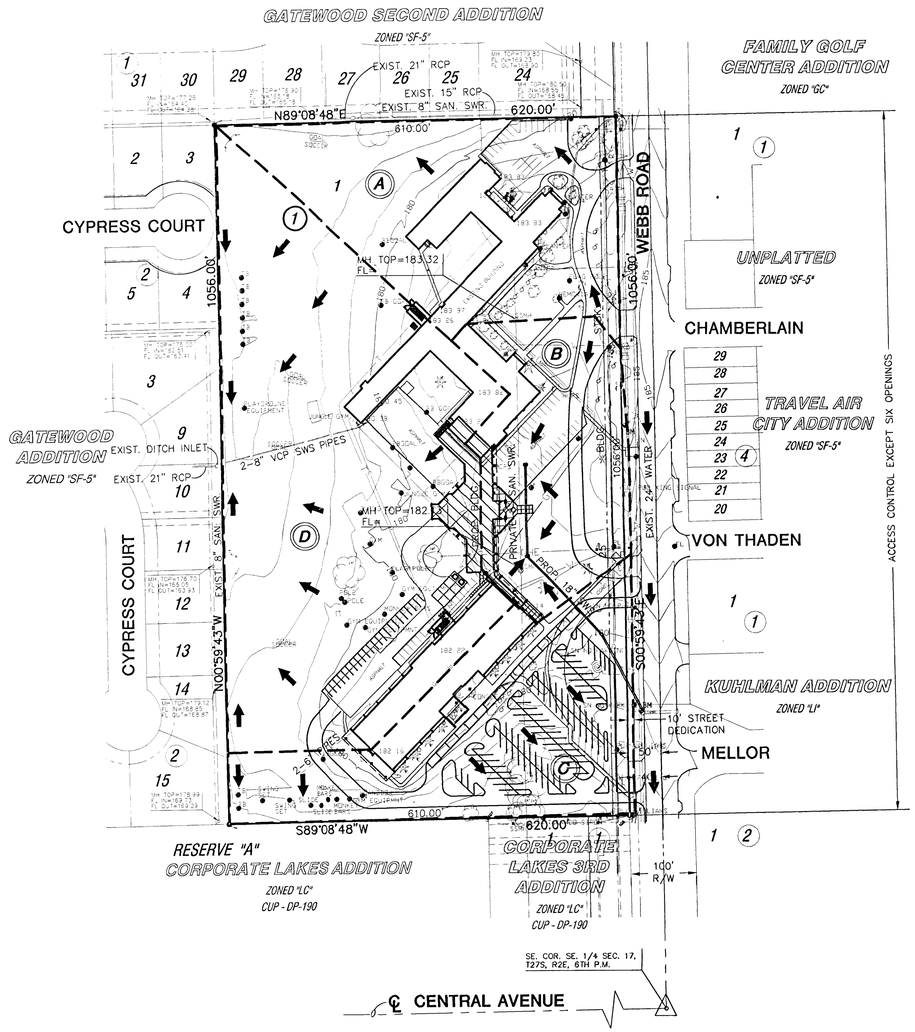
COMMUNITY-PANEL NUMBER
200321 0150

EFFECTIVE DATE:
JUNE 3, 1986

Federal Emergency Management Agency


Middle Branch
Gypsum Creek
ROAD
4
3
21ST
STREET
J
I
RM25
10
BURLINGTON
9
NORTHERN
L
K
RM30
ROAD
GREENWICH
J
J
I
I
H
G
F
13TH
STREET
NORTH
City of Wichita
AREA NOT
INCLUDED
ROCK
ROAD
I
H
17
East Branch
Gypsum Creek
16
15
West
Fourmile
Middle Branch
Gypsum Creek
WEBB
SITE
CENTRAL
RM26

Appendix D



SCALE: 1" = 100'

100 0 100 200

NOTES

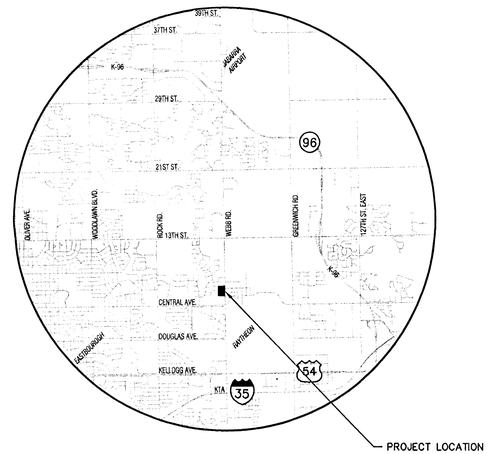
1. ZONING: SF-5
   BZA -01-66
2. UTILITY LOCATIONS WERE DERIVED FROM RECORD DRAWINGS
3. BLANKET PIPELINE EASEMENT MISC. BOOK 236, PAGE 189

BENCHMARK

BM #1 C.O.W. Benchmark Southwest corner hubguard of RCBC ±200' North of Central, West side of Webb Elevation = 174.73'

BM #2 Chisled Square on Northwest corner of curb inlet 762' North of the Southeast corner Sec. 17, T27S, R2E, 158' North of the South property line of Minneha Elementary School and 29' West of the C of Webb Road.
Elevation = 177.91'

BM #3 Railroad Spike in the West face of a Power Pole ±40' North of the school crossing, 468' South of the North property line of Minneha Elementary School, 42' West of the ℄ of Webb Road.
Elecation = 186.82'



VICINITY MAP

LEGEND

- ● = 5/8" REBAR/MKEC CLS #39 SET
- △ = SECTION CORNER MONUMENT
- BM#1 = BENCHMARK
- B.S. = BUILDING SETBACK
- U.E. = UTILITY EASEMENT
- (P) = PLATTED MEASURMENT
- (D) = DEED MEASUREMENT
- (M) = MEASURED
- (CD) = CALCULATED FROM DEEDED MEASUREMENT
- (CM) = CALCULATED FROM MEASUREMENT

LEGEND

- GAS METER
- GROUND YARD LIGHT
- YARD LIGHT ON POLE
- ELECTRIC MANHOLE
- SIGNAL LIGHT
- CONIFEROUS TREE & DIAMETER
- DECIDUOUS TREE & DIAMETER
- SIGN
- BUSH
- POWER POLE AND GUY ANCHOR
- ELECTRIC BOX
- SEWER CLEANOUT
- EDGE OF TREES
- FENCE
- BENCHMARK
- STORM WATER MANHOLE
- SANITARY SEWER MANHOLE
- TELEPHONE MANHOLE
- SECTION CORNER
- 5/8" REBAR/MKEC CLS #39 SET
- PROPERY CORNER FOUND
- POLE
- GATE
- TRAFFIC SIGNAL MANHOLE
- SPRINKLER HEAD
- WALL
- LIGHT POLE
- FIRE HYDRANT
- WATER VALVE
- WATER METER
- IRRIGATION CONTROL VALVE
- GRATE INLET
- TELEPHONE RISER
- INLET
- STORM SEWER PIPE
- WATER LINE
- SANITARY SEWER LINE
- GAS LINE
- TELEPHONE LINE
- UNDERGROUND ELECTRIC LINE
- OVERHEAD TELEPHONE
- OVERHEAD ELECTRIC
- UNDERGROUND FIBER OPTIC CABLE

DATE: DECEMBER 2001

DRAINAGE & UTILITY PLAN

MINNEHA ELEMENTARY SCHOOL ADDITION

OWNER/DEVELOPER: Unified School District #259 201 N. Water Street, Wichita, KS 67202 316-973-4000

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

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