

2-24" CMP 50' length 0.5' vert. drop $S_p = 1\%$

Total off-site drainage equals 4.5 acres

Hydrologic Soil Types B+C

Average of C.O.M. runoff coefficients for Single Family = 1-acre lots

$C_2 = 0.35$

$C_5 = 0.38$

$C_{10} = 0.44$

$C_{100} = 0.56$

Using rational method and city design criteria $T_c = 15$ min.

$Q_2 = 6.0$ cfs

$Q_5 = 7.8$ cfs

$Q_{10} = 10$ cfs

$Q_{100} = 19$ cfs

Assume equal distribution

R.P.	Orpe	runoff depth	critical depth	Flow Regime
8	3	0.674	0.604	subcritical
5	3.7	0.775	0.692	}
10	5	0.890	0.788	
100	9.5	1.383	1.101	subcritical

using Bernoulli's eq

$$\frac{V_1^2}{2g} + y_1 = \frac{V_2^2}{2g} + y_2 + \frac{K_L V_2^2}{2g} + \frac{8fLQ^2}{\pi^5 D^5}$$

$$y_1 = y_2 + 0.5 \frac{Q_1^2}{g} + \frac{(8)(.02)(50) Q^2}{\pi^5 D^5}$$

$$y_1 = y_2 + \frac{Q^2}{1271.2} + \frac{Q^2}{847.77}$$

3 yr $y_1 = 0.692'$ $WS_2 = 1333.2$

5 yr $y_1 = 0.805'$ $WS_5 = 1333.3$

10 yr $y_1 = 0.939'$ $WS_{10} = 1333.4$

100 yr $y_1 = 1.50'$ $WS_{100} = 1334.0$

WS elev for 100-yr flow exceeds calculated WS elev.
 this implies that flood water will back pressure through
 pipe and inundate 100-yr flood plain as depicted

leave out pipe @ existing grade and reset wet pipe to $T_c = 30$

Concentrated flow to wet culvert 4.3 acres

$C_2 = 0.35$ $C_2 = 5.7$

$C_5 = 0.38$ $C_5 = 7.5$

$C_{10} = 0.44$ $C_{10} = 9.9$

$C_{100} = 0.56$ $C_{100} = 17.7$

R.P.	runoff depth	critical depth	Flow regime
2	0.359	0.243	subcritical
5	1.131	0.973	}
10	1.363	1.125	
100	1.276	1.490	

$$y_1 = y_2 + \frac{Q^2}{1271.2} + \frac{Q^2}{847.77}$$

3 yr $y_1 = 1.00'$ $WS_3 = 1333.0$

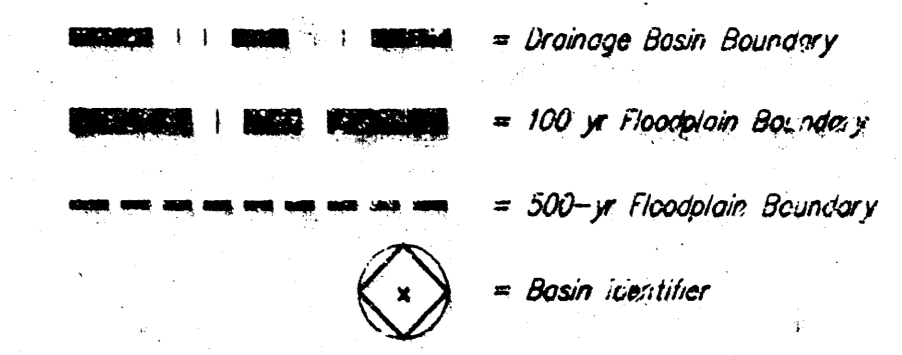
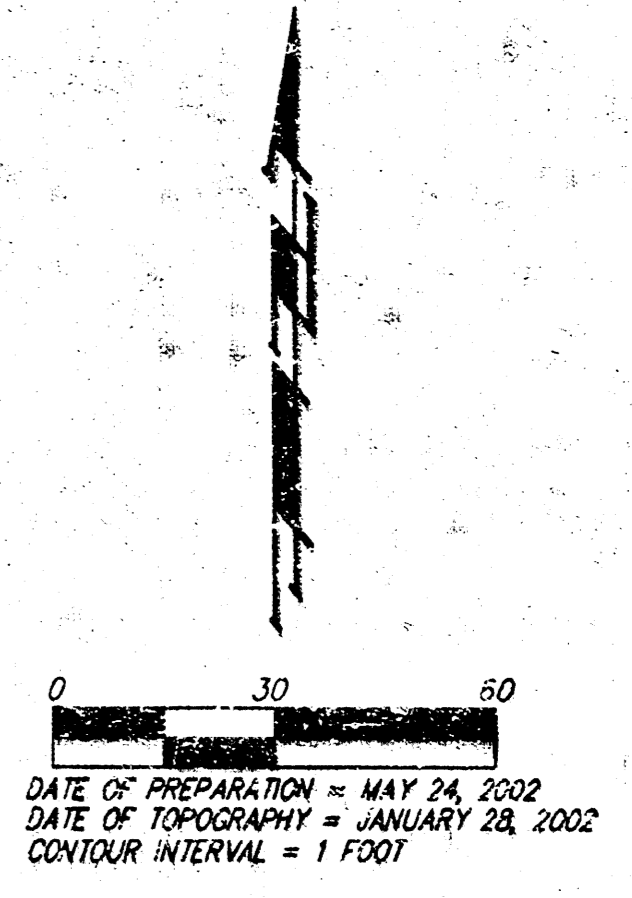
5 yr $y_1 = 1.24'$ $WS_5 = 1333.6$

10 yr $y_1 = 1.55'$ $WS_{10} = 1333.6$

100 yr $y_1 = 2.19'$ $WS_{100} = 1333.5$

The pipe is concentrated or improving the pipe size would
 again the 100-yr flow exceeds the calculated WS elev.
 Thus the flood water will back pressure through pipe
 and inundate the flood plain as shown on the plan sheet.

DRAINAGE PLAN WOODS EDGE AN ADDITION TO WICHITA, SEDGWICK COUNTY, KANSAS



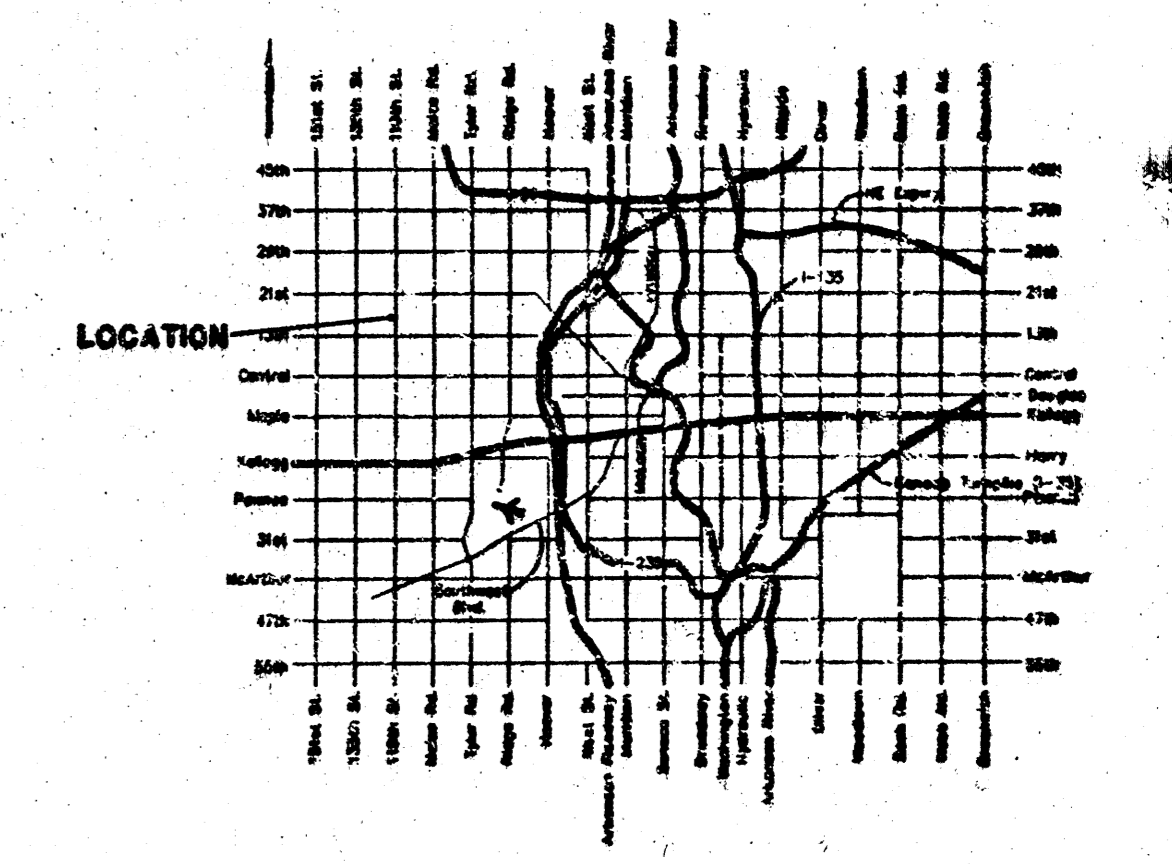
LOT	BLOCK	ELEVATION CITY DATUM
1	A	148.1
2	A	148.1

OWNER:
James Goolsby
628 W. 9th Street
Wichita, Ks 67203

LEGAL DESCRIPTION:
Beginning at NE cor. of the SE 1/4 of Sec. 13, Twp. 27-S, R-2-W of the 6th P.M., Sedgwick County, Kansas; thence South 149.75 feet more or less to a point 2492.5 feet north of SE cor. of said SE 1/4; thence west parallel with the south line of said SE 1/4, 100.00 feet; thence west parallel with the south line of said SE 1/4, 217.80 feet; thence north parallel with the east line of said SE 1/4, 251.79 feet more or less, to the north line of said SE 1/4; thence east 433.8 feet to beginning.

BENCHMARK:
□ Cut - Top of curb, W. side of 119th St. W. next to catch basin.
Elev. = 147.32 City Datum
(1334.72 M.S.L.)

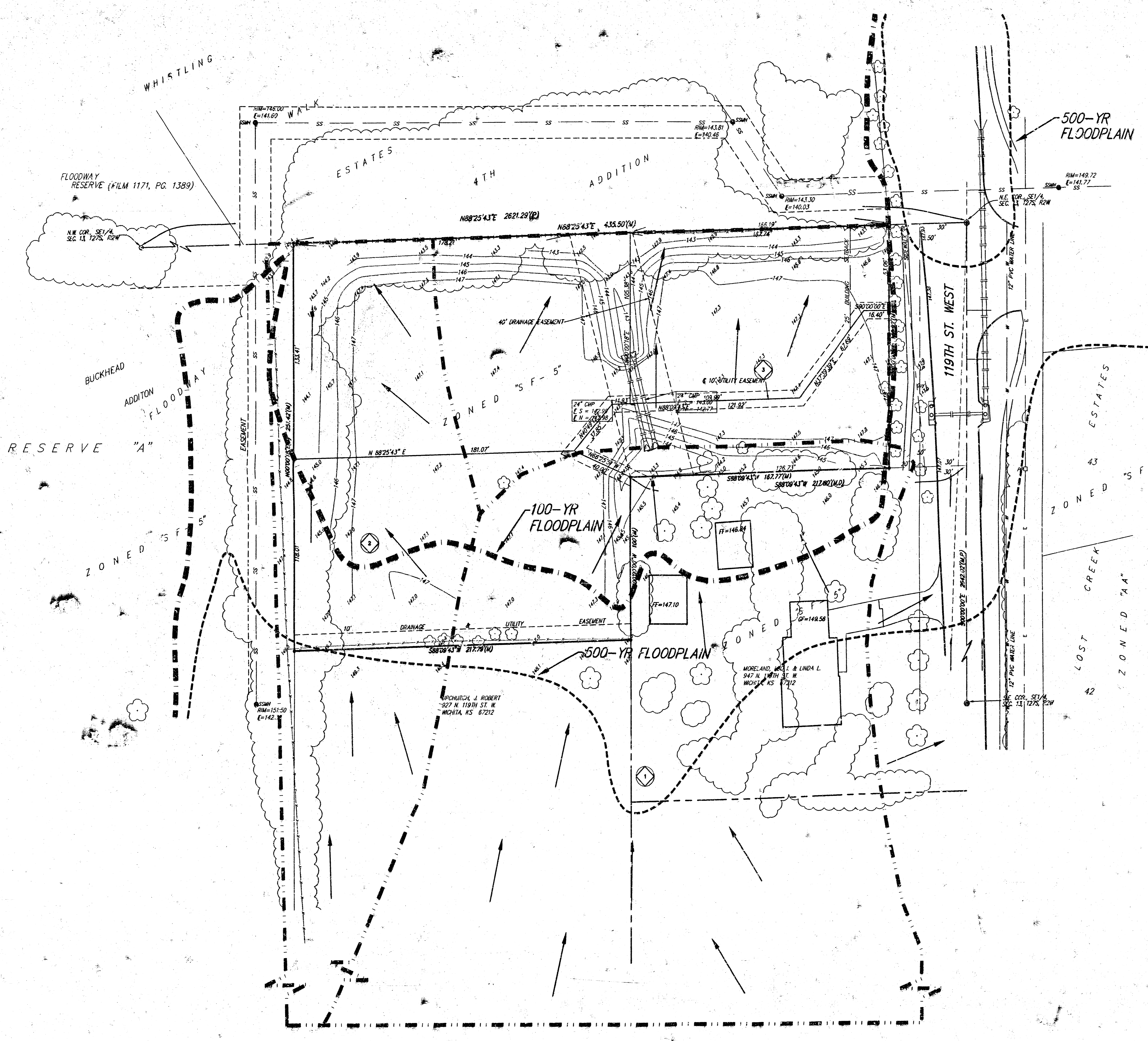
RESERVE "A" IS RESERVED FOR PRIVATE ACCESS DRIVE, DRAINAGE PURPOSES, OPEN SPACE, LANDSCAPING, AND UTILITIES AS CONFIRMED TO EASEMENTS.



NOTE:
PORTIONS OF THIS PROPERTY HAVE BEEN REMOVED FROM THE SPECIAL FLOOD HAZARD AREA (SFHA), BY LETTER OF MAP REVISION, BASED ON FILL (LOWR-F), CASE # 02-07-180A, EFFECTIVE DATE FEBRUARY 27, 2002. CONSTRUCTION PROJECTS ON THIS PROPERTY SHALL CONFORM TO ANY AND ALL CONDITIONS OF THIS LOWR-F.

- Drainage calculations have been performed with the following:
1. Average City of Wichita runoff coefficients for single family 1-acre lots
 2. Hydrologic soil types B and C
 3. Calculations of pipe capacity has been previously submitted to the City of Wichita's Storm Water Management Dept.
 4. 100-yr Base Flood Elevation = 1334.0 msl = 146.6 (City Datum)

Drainage Area	Area (acres)	C ₁	C ₂	T _c (min.)	I ₁ (in/hr)	I ₂ (in/hr)	Q ₁ (cfs)	Q ₂ (cfs)
1	4.5	0.35	0.56	15	3.83	7.37	6.0	19
2	1.1	0.35	0.56	15	3.83	7.37	1.5	4.5
3	0.9	0.35	0.56	15	3.83	7.37	1.2	3.7



01 JULY 2002