

Drainage Report for Reed's Cove 4th Addition Wichita, Sedgwick County, Kansas

Location

The site is located in Sedgwick County, Kansas, east of 127th Street East and south of 21st Street North. It lies in the Northwest Quarter, Section 11, Township 27 South, Range 2 East. The total site area is approximately 14.3 acres. Reed Commercial Addition is north of the site, & Reed's Cove 1st Addition is south and east of the site. The site was previously platted as a portion of Reed's Cove Addition. The site is shown in the Andover, Kansas Quadrangle located in Appendix A.

Soils

According to the NRCS (SCS) Sedgwick County Soil Survey (Appendix B), nearly all of the site is in the Irwin Series (Ic: silty clay loam, with 2 to 6 percent slopes. The Hydrological Soil Group (HSG) for the site is "D".

Pre-developed Conditions

Current Development

The site is undeveloped agricultural land. The site was platted in the Reed's Cove Addition. The Reed's Cove drainage report planned for this area to develop as multi-family apartments.

Current Landform and Slope

Fourmile Creek passes through an existing pond east of the site. Onsite elevations vary from roughly 1379 feet to 1361 feet. Watershed slopes vary from 0.5% to 4.0%. A ridge runs through the middle of the site. Runoff to the east of the ridge drains into the pond on Fourmile Creek which exits Reed's Cove in the southeast corner of the addition. Runoff to the west of the ridge drains into a ditch that runs along 127th Street East.

Current Drainage Conditions

An area surrounding the existing pond in Reed's Cove, east of the site, is designated as Zone A (FIRM Panel 150, Sedgwick County, June 3, 1986) (shown in Appendix C). Reed's Cove 4th Addition is designated as Zone C.

Current Runoff Characteristics

In the proposed conditions of the original Reed's Cove drainage report the site was considered developed commercial land. Detention is provided by the existing lakes within the Reed's Cove Addition. The lakes were modeled, using Hydraflow Hydrographs by Intelisolve, in the Reed's Cove Drainage Report. The runoff exiting the site to the east was divided between 3-24" SWS. An existing stormwater sewer system routes runoff exiting the site to the west into an existing ditch along 127th Street.

Post-Developed Condition

Proposed Development

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

Proposed Landform and Slope

Final slopes in the residential development have not been determined, but the minimum will be 0.5% within street right-of-way, and 1-2% in backyards. A Preliminary Four Corner Lot Grading Plan is Appendix D.

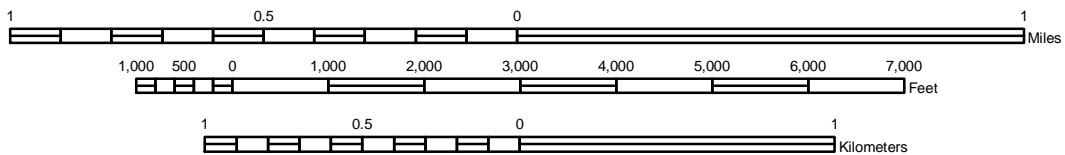
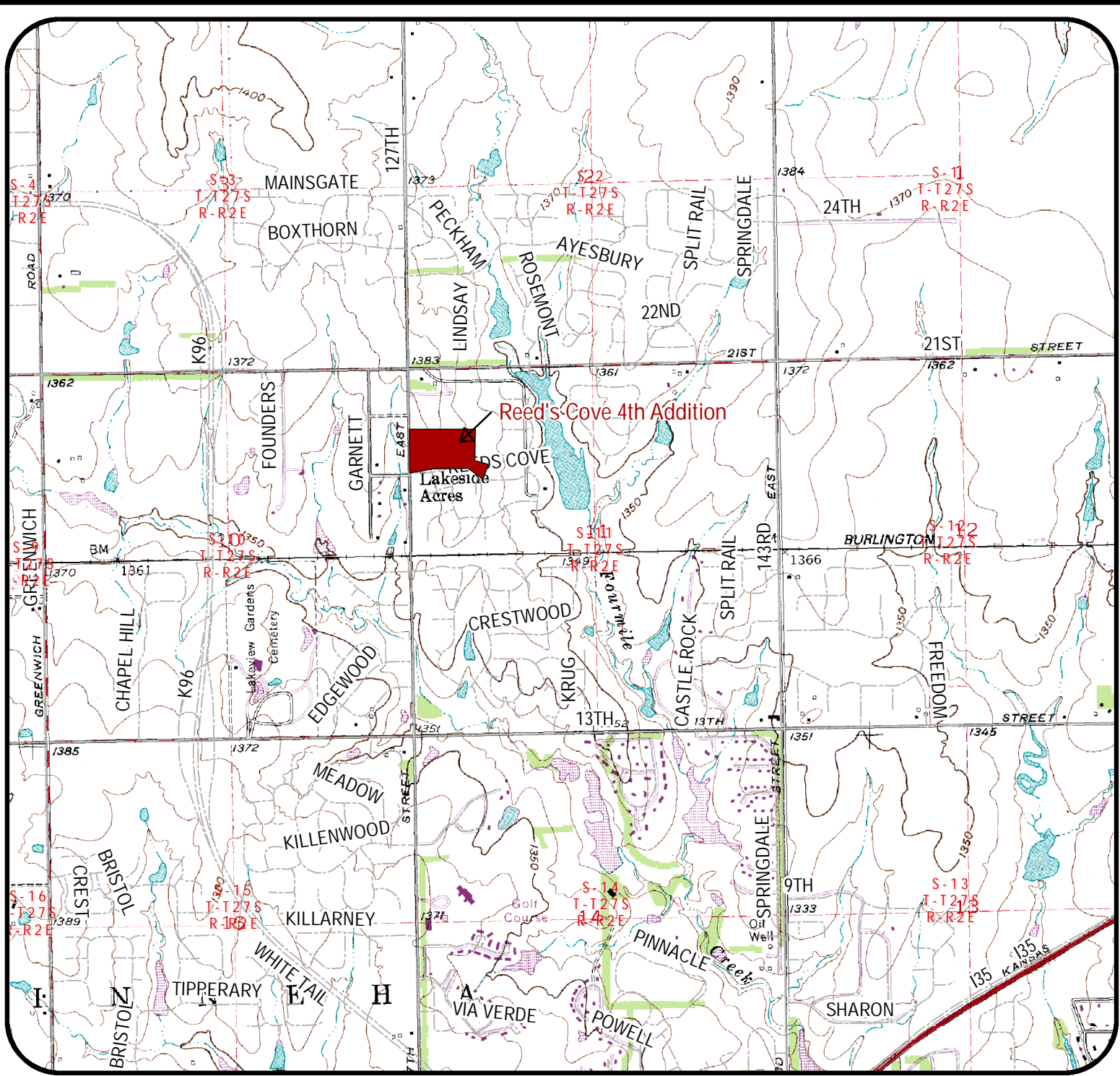
Proposed Runoff Characteristics

Detention for this site is provided by Reed's Cove Lake. Under the proposed Reed's Cove Addition area was diverted east into the Reed's Cove Lake from the pre-developed area draining into the 127th Street ditch. This diversion reduces drainage impact to the 127th Street ditch. Reed's Cove drainage calculations considered the Reed's Cove 4th Addition site as multi-family residential. Changing the proposed use of the site from multi-family to single-family residential decreases the original proposed runoff to the lakes and to the existing ditch along 127th Street. The site has been divided into smaller watersheds, which were used to size inlets and storm water sewer, as seen in the Drainage and Utility Plan in Appendix E. Calculations for each of the onsite sub-watersheds are included in Appendix F. A copy of a previously approved drainage plan is located in Appendix G.

Summary


Reed's Cove is located in Sedgwick County, Kansas, on the southeast corner of 127th Street East and 21st Street North. The Reed's Cove 4th Addition location was proposed as commercial land in the original Reed's Cove drainage report. Now it will develop into residential lots approximately 1/4 acre in size. Storm sewers will carry runoff from streets and yards into existing ponds located within Reed's Cove Addition and the existing ditch along 127th Street. The change from commercial to residential land use will reduce the flow to the ponds.

Appendix A Quadrangle

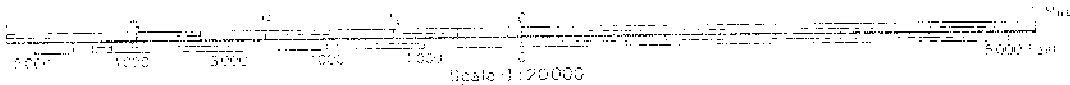
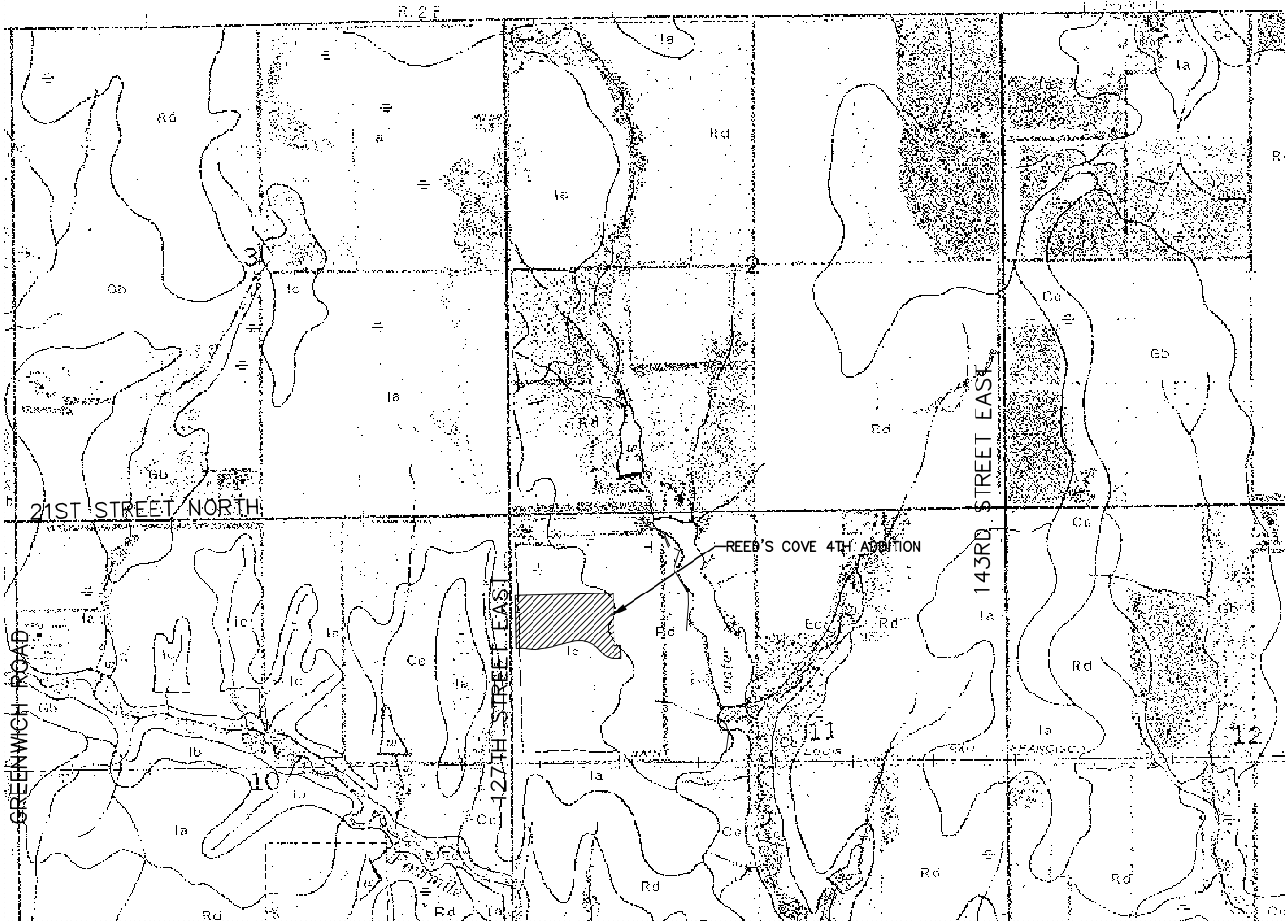


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Aerial Photo: NAIP, March 2005

Reed's Cove 4th Addition									
Project Name:	USGS - Sedgwick County, KS								
Sheet Title:									
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KWS	Oct., 2005								
Drawn By:	Date:								
AJK / KLA	02121								
Design / Review:	Job No.:								

Appendix B
Soil Survey



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

REED'S COVE 4TH ADDITION

PROJECT NAME

**SOIL SURVEY OF
 SEDGWICK COUNTY, KANSAS**

SHEET TITLE

KLA
 DESIGN BY:

AJK
 DRAWN BY:

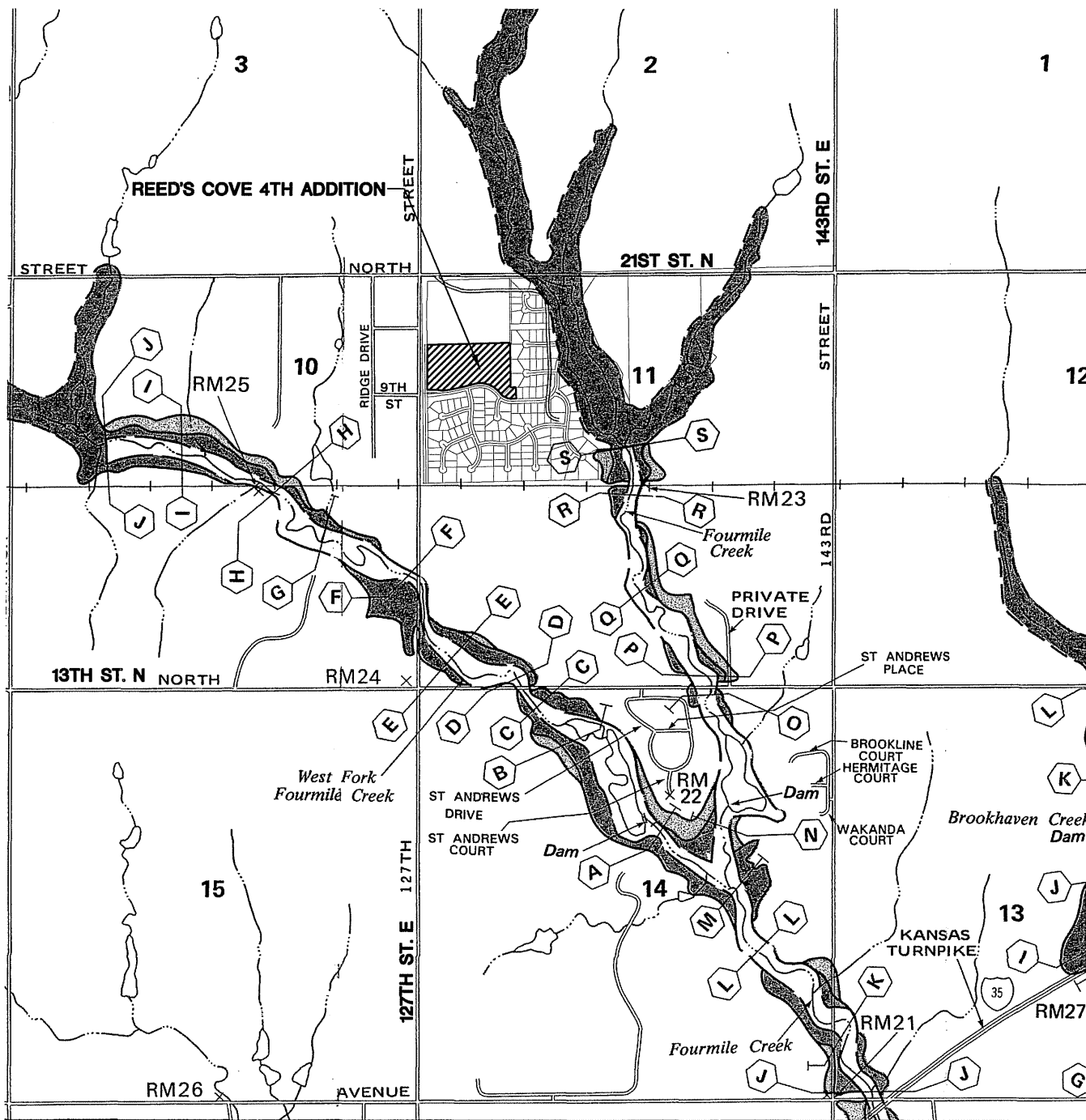
GJA
 CHECKED BY:

OCTOBER 2005
 DATE

05558
 JOB NO.

1 / 1
 SHEET/OF

Appendix C
FIRM & FBFM



SEDGWICK CO 150 FBF

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

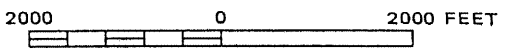
EFFECTIVE DATE:
JUNE 3, 1986



Federal Emergency Management Agency



APPROXIMATE SCALE



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

REED'S COVE 4TH ADDITION
PROJECT NAME

FLOOD BOUNDARY AND FLOODWAY MAP
SHEET TITLE

AJK DESIGN BY.	KWS DRAWN BY.	GJA CHECKED BY.
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OCTOBER 2005 DATE	02121 JOB NO.	1 / 1 SHEET/OF
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H:\CIVIL\02121\4TH ADDITION\PROP\DRNG\02121\FBFM



Appendix D
Preliminary Four Corner Lot Grading Plan

NW. Cor. NW 1/4, Sec. 11,
T27S, R2E, 6th P.M.
Fnd. 3/4" Pipe in Thimble


















NOTES

1. ZONING: Existing SF-5
2. PUBLIC UTILITIES: Shall be extended to site by petitions
3. LEGAL DESCRIPTION: See attached
4. EXISTING USE: Vacant Land
5. PLAT AREA: 14.32 AC
6. SURVEY DATE: April 9th, 2003 (by MKEC)
7. MINIMUM PADS: As shown on the Final Drainage Plan
8. LOT TOTAL (33)
9. RESERVES: "A" is platted for sidewalks, landscaping, Irrigation, open space, monuments, and water features.

BENCH MARKS

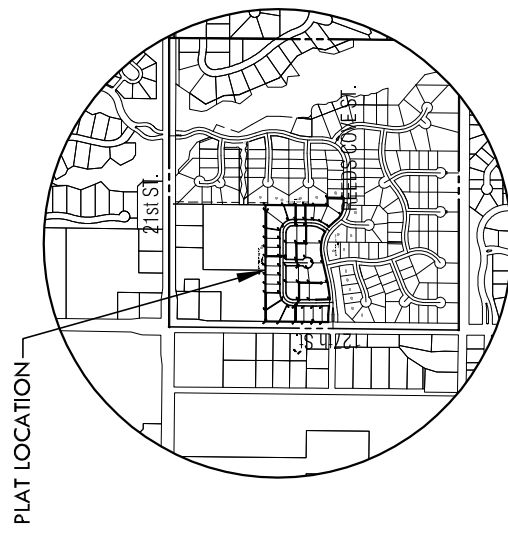
- BM 1  60" IN SOUTH LEG OF "H" POLE
HIGH LINE STRUCTURE, 75' NORTH &
80' EAST OF E 127TH STREET &
CENTERLINE BURLINGTON NORTHERN
RAILROAD.
ELEV. = 1365.37
- BM 2  Top of Iron at SW. Cor. SW 1/4, Sec. 2,
T27S, R2E, (127th St. E. & 21st St. N.).
ELEV. = 1385.41 NGVD

LEGEND

-  Sec. Corner
-  SIGN
-  GATE
-  TELEPHONE RISER
-  TELEPHONE RISER
-  FENCE
-  FENCE
-  STORM SEWER PIPE
-  WATER LINE
-  SANITARY SEWER LINE
-  GAS METER
-  SANITARY SEWER MANHOLE
-  GAS LINE
-  POWER POLE/GUY ANCHOR
-  TELEPHONE LINE
-  OVERHEAD ELECTRIC
-  ELECTRIC BOX

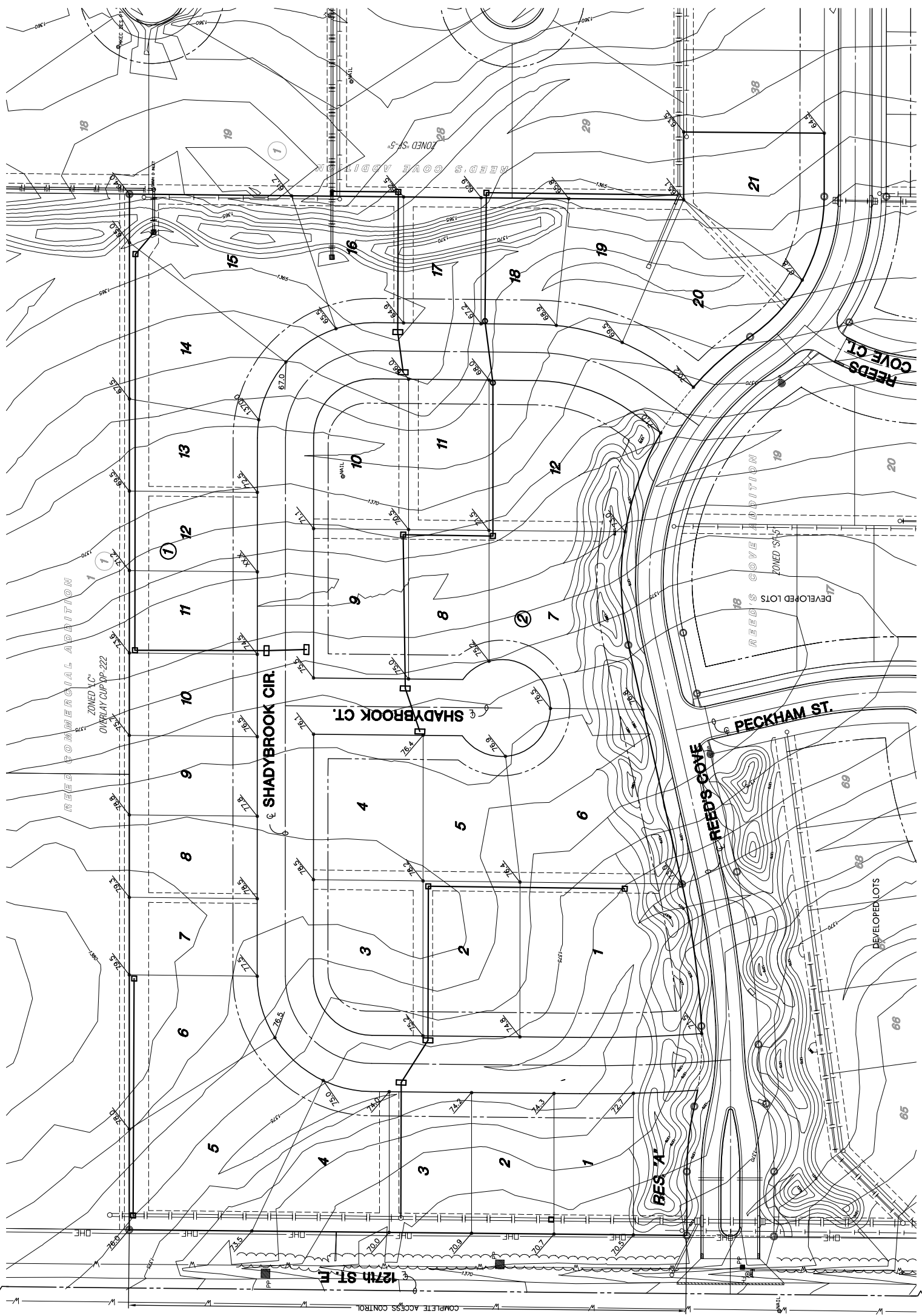
LEGAL DESCRIPTION

All of Lots 39, and 40, Block 1, Reed's Cove Addition,
an addition to Wichita, Sedgwick County, Kansas.



VICINITY MAP

SW. Cor. NW 1/4, Sec. 11,
T27S, R2E, 6th P.M.,
Fnd. 3/4" Pipe in Thimble



PRELIMINARY FOUR CORNER LOT GRADING PLAN
REED'S COVE 4TH ADDITION

OWNER / DEVELOPER: 21/127 LLC, and also, Ritchie Development Corp. 8100 E. 22nd St. N., Bldg 1000, Wichita, KS. 67226 (316) 684-7300

Date: Oct. 18th, 2005
Meeting date: Oct. 27th, 2005



Appendix E
Preliminary Drainage & Utility Plan

NW. Cor. NW ¼, Sec. 11,
T27S, R2E, 6th P.M.,
Fnd. ¾" Pipe in Thimble

NOTES

1. ZONING: Existing SF-5
2. PUBLIC UTILITIES: Shall be extended to site by petitions
3. LEGAL DESCRIPTION: See attached
4. EXISTING USE: Vacant Land
5. PLAT AREA: 14.32 AC
6. SURVEY DATE: April 9th, 2003 (by MKEC)
7. MINIMUM PADS: As shown on the Final Drainage Plan
8. LOT TOTAL (33)
9. RESERVES: "A" is platted for sidewalks, landscaping, irrigation, open space, monuments, and water features.

BENCH MARKS

BM 1 60" IN SOUTH LEG OF "H" POLE
HIGH LINE STRUCTURE, 75' NORTH &
80' EAST OF E. 127TH STREET &
CENTERLINE BURLINGTON NORTHERN
RAILROAD.
ELEV. = 1365.37

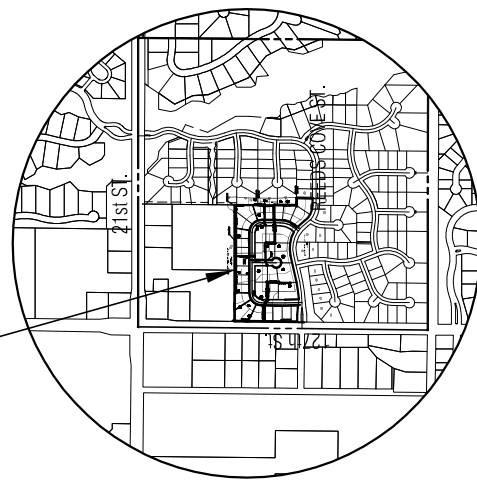
BM 2 Top of Iron at SW. Cor. SW. ¼, Sec. 2,
T27S, R2E, (127th St. E. & 21st St. N.).
ELEV. = 1385.41 NGVD

LEGEND

- Sec. Corner
- SIGN
- GATE
- WATER METER
- TELEPHONE RISER
- EDGE OF TREES
- POLE
- FIRE HYDRANT
- WATER VALVE
- WATER METER
- TELEPHONE RISER
- STORM SEWER PIPE
- WATER LINE
- SANITARY SEWER LINE
- GAS METER
- SANITARY SEWER MANHOLE
- GAS LINE
- TELEPHONE LINE
- POWER POLE/GUY ANCHOR
- ELECTRIC BOX
- DRAINAGE AREA BOUNDARY
- WATERSHED
- FLOW ARROW

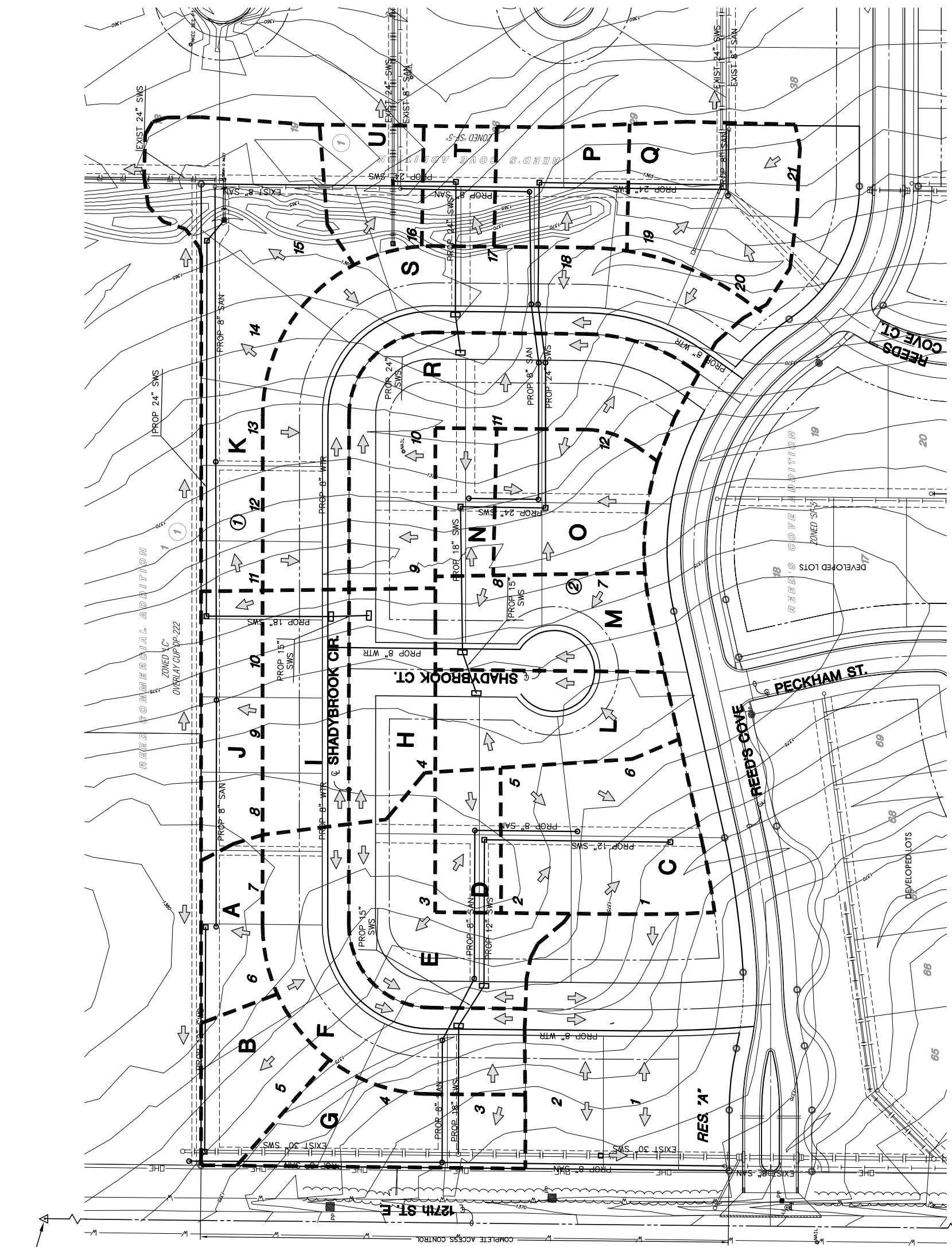
LEGAL DESCRIPTION

All of Lots 39, and 40, Block 1, Reed's Cove Addition,
an addition to Wichita, Sedgwick County, Kansas.



VICINITY MAP

SW. Cor. NW ¼, Sec. 11,
T27S, R2E, 6th P.M.,
Fnd. ¾" Pipe in Thimble



PRELIMINARY DRAINAGE & UTILITY PLAN
REED'S COVE 4TH ADDITION

OWNER / DEVELOPER: 21/127 LLC, and also, Ritchie Development Corp. 8100 E. 22nd St. N., Bldg 1000, Wichita, KS. 67226 (316) 684-7300

Date: Oct. 18th, 2005
Meeting date: Oct. 27th, 2005



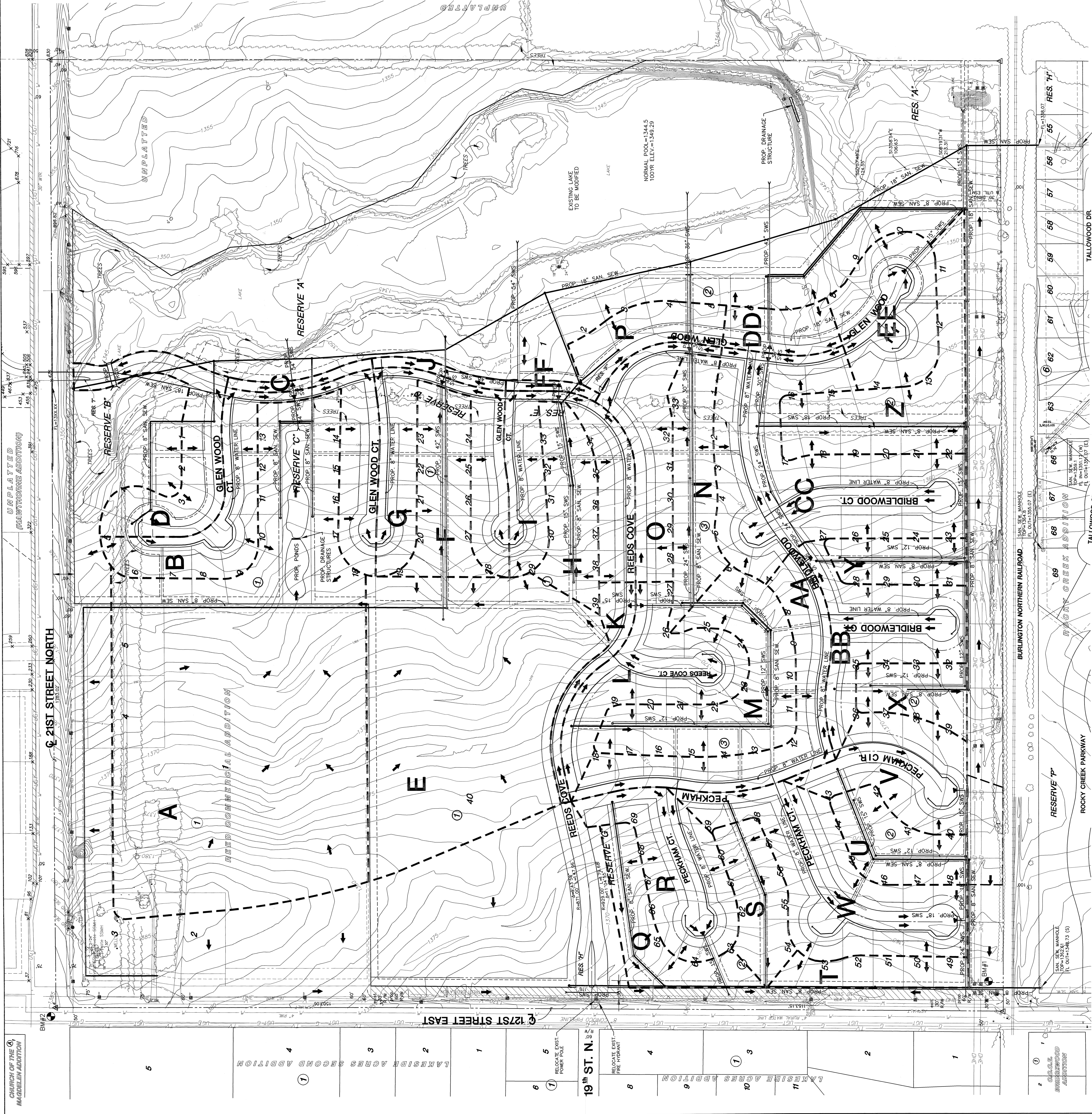
Appendix F
Sub-Watershed Calculations

**REED'S COVE 4TH ADDITION
WICHITA, SEDGWICK COUNTY, KANSAS
PRELIMINARY STORM SEWER DESIGN
BY THE RATIONAL METHOD**

Project Number: 05-403
Soil Group: D
Manning's "n": 0.013

Area ID	Area ac.	Accum. Area ac.	Land Use	% Impervious	Rueff Coefficients				Time of Concentration				Rainfall Intensity				Storm Flows				Pipe Sizing							
					C2	C5	C10	C100	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	Design Storm Q (cfs)	Design Length of Pipe (ft)	Suggested Pipe at Minimum Slope (ft)	Design Pipe Size (in)	Design Slope (ft)	Minimum Slope (ft)	Design Velocity (ft/s)	Capacity of Design Pipe (cfs)
A	0.29		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	0.56	0.71	0.94	1.62	2	0.56	12	12	0.40	0.02	2.9	2.3
B	0.38		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	0.73	0.94	1.23	2.13	None							
C	0.84		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	1.61	2.07	2.72	4.71	2	1.61	12	12	0.40	0.20	2.9	2.3
D	0.25		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	0.48	0.62	0.81	1.40	None							
C-D	0.70	1.09	Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	2.09	2.88	3.53	6.11	2	2.09	12	12	0.40	0.34	2.9	2.3
E	0.70		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	1.34	1.72	2.27	3.92	None							
C-E	0.70	1.79	Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	3.43	4.41	5.79	10.03	2	3.43	15	15	0.40	0.28	3.3	4.1
F	0.91		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	1.74	2.24	2.95	5.10	None							
C-F	0.56	2.70	Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	5.17	6.65	8.74	15.12	2	5.17	18	18	0.32	0.24	3.4	5.9
G	2.02		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	1.07	1.38	1.81	3.14	None							
H	2.02		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	3.87	4.97	6.54	11.31	None							
A-H	0.56	5.95	Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	11.39	14.65	19.26	33.33	None							
I	0.56		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	1.07	1.38	1.81	3.14	100	3.14	15	15	0.40	0.24	3.3	4.1
J	0.51		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	0.98	1.26	1.65	2.86	None							
I-J	0.43	1.07	Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	2.05	2.63	3.46	5.99	100	5.99	24	18	0.33	0.33	3.4	6.0
K	0.43		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	0.82	1.06	1.39	2.41	None							
I-K	1.31	1.50	Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	2.87	3.69	4.85	8.40	100	8.40	24	24	0.21	0.14	3.3	10.4
L	1.31		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	2.51	3.23	4.24	7.34	None							
I-L	0.59	2.81	Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	5.38	6.92	9.09	15.74	100	15.74	30	24	0.50	0.48	5.1	16.0
M	0.59		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	1.13	1.45	1.91	3.30	100	3.30	15	15	0.40	0.26	3.3	4.1
N	0.57		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	1.09	1.40	1.84	3.19	None							
M-N	0.24	1.16	Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	2.22	2.86	3.75	6.50	100	6.50	24	18	0.39	0.38	3.7	6.6
O	0.24		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	0.46	0.59	0.78	1.34	None							
M-O	0.59	1.40	Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	2.68	3.45	4.53	7.84	100	7.84	24	24	0.21	0.12	3.3	10.4
P	0.59		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	1.13	1.45	1.91	3.30	None							
M-P	0.44	1.99	Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	3.81	4.90	6.44	11.15	100	11.15	30	24	0.25	0.24	3.6	11.3
Q	0.44		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	0.84	1.08	1.42	2.46	None							
M-Q	0.70	2.43	Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	4.65	5.98	7.86	13.61	100	13.61	30	24	0.37	0.36	4.4	13.8
R	0.70		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	1.34	1.72	2.27	3.92	None							
M-R	1.16	3.13	Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	5.99	7.71	10.13	17.53	100	17.53	36	24	0.61	0.60	5.6	17.7
S	1.16		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	2.22	2.86	3.75	6.50	100	6.50	24	24	0.61	0.08	5.6	17.7
T	1.64		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	3.14	4.04	5.31	9.19	None							
S-T	0.24	2.80	Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	5.36	6.89	9.06	15.68	100	15.68	30	24	0.50	0.48	5.1	16.0
U	0.24		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	0.46	0.59	0.78	1.34	None							
S-U	0.34	3.04	Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	5.82	7.49	9.84	17.03	100	17.03	36	24	0.57	0.57	5.4	17.1
V	0.34		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	0.65	0.84	1.10	1.90	None							
S-V	0.34	3.38	Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	6.47	8.32	10.94	18.93	100	18.93	36	24	0.71	0.70	6.1	19.1

Appendix G
Copy of Original Reed's Cove Drainage Plan



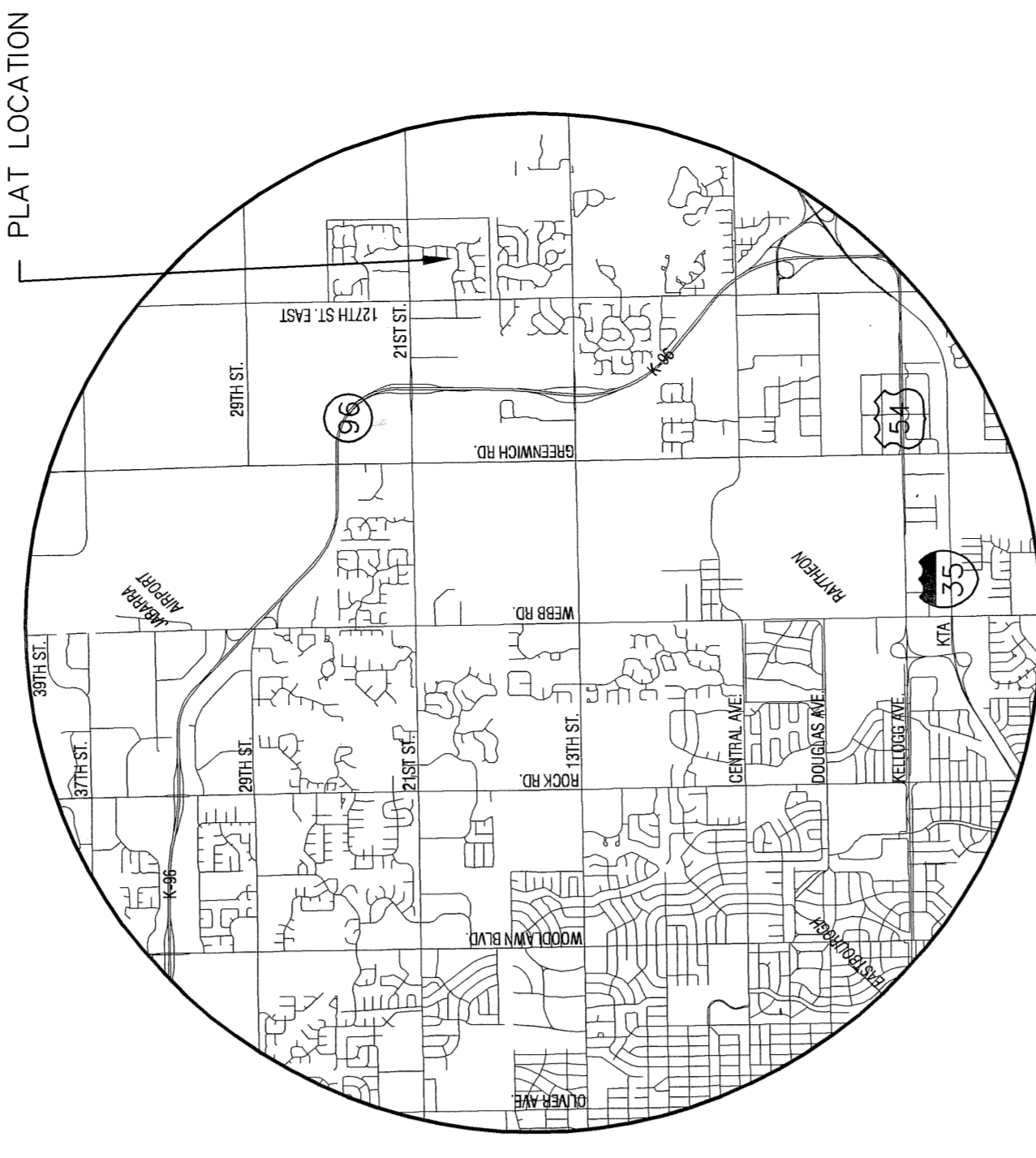
NOTES

- ZONING: Existing Single Family "SF-20", Proposed Single Family "SF-5"
- RESERVES plotted for:
 "A" - lakes, floodway, and drainage in designated locations, club house, pool, playground, sidewalks, landscaping, irrigation, berming, and open space.
 "B" - lakes, floodway, and drainage in designated locations, sidewalks, landscaping, irrigation, berming, monuments, and open space.
 "C" - "D" - "E" - monuments, landscaping, berming, and open space.
 "F" - "G" - "H" - irrigation, and open space.
- Lot minimum pad elevations as indicated on the DRAINAGE PLAN, provided at the time of FINAL PLATTING.

BENCHMARK

BM#1 60d IN SOUTH LEG OF "H" POLE
 HIGH LINE STRUCTURE, 75' NORTH &
 80' EAST OF 127TH STREET & CENTERLINE
 BURLINGTON NORTHERN RAILROAD.
 ELEV. = 1365.37

BM#2 Top of Iron at SW Cor. SW 1/4, Sec. 2, T27S,
 R2E, (127th St. E. & 21st St. N.).
 ELEV. = 1385.41 (CITY DATUM)
 = 1385.41 (NGVD)

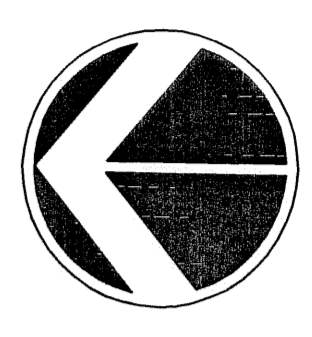


VICINITY MAP

LOT BLOCK	ELEVATION (USGS)	ELEVATION (CITY DATUM)
1	165.60	1353.00
2	165.60	1353.00
3	165.60	1353.00
4	165.60	1353.00
5	165.60	1353.00
9	169.60	1357.00
10	169.10	1356.50
11	168.10	1355.50
12	168.10	1355.50
13	166.60	1354.00
14	166.60	1354.00
15	168.10	1355.50
16	168.10	1355.50
17	169.60	1357.00
18	169.60	1357.00
1	165.60	1353.00
2	165.60	1353.00
3	165.60	1353.00
4	165.60	1353.00
5	165.60	1353.00
6	165.60	1353.00
7	165.60	1353.00
8	163.60	1351.00
9	163.60	1351.00
10	161.60	1349.00

LEGEND

- CONCRETE TREE & DIAMETER
- WOODS TREE & DIAMETER
- SOIL
- BUSH
- EDGE OF TREES
- FENCE
- SANITARY SEWER MANHOLE
- CAS METER
- POLE
- POLE AND GUY ANCHOR
- WATER VALVE
- WATER METER
- POWER POLE AND GUY ANCHOR
- TELEPHONE RISER
- INLET
- STORM SEWER PIPE
- SANITARY SEWER LINE
- GAS LINE
- TELEPHONE LINE
- UNDERGROUND ELECTRIC LINE
- OVERHEAD ELECTRIC
- OVERHEAD TELEPHONE
- UNDERGROUND FIBER OPTIC CABLE
- PROPERTY CORNER POINT
- BENCHMARK



DRAINAGE AND UTILITY PLAN

REED'S COVE ADDITION

DATE: JUNE 2002

OWNERS/DEVELOPER: 21/127 L.L.C. 8100 E. 22nd Street N., Suite 1000, Wichita, KS 67226

