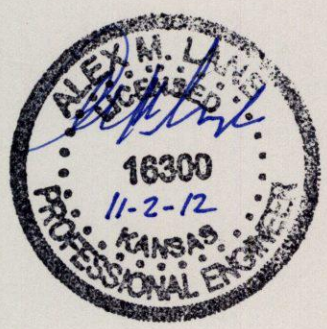


DRAINAGE REPORT
Habitat Hills
WICHITA, SEDGWICK COUNTY,
KANSAS

October 30, 2012

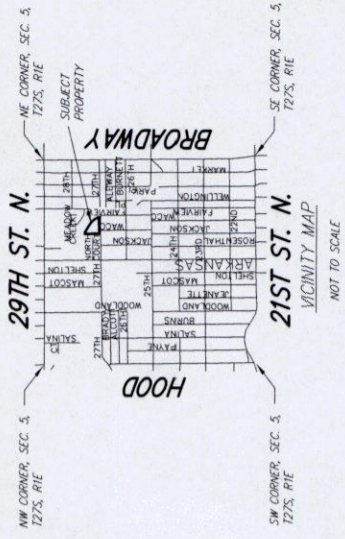
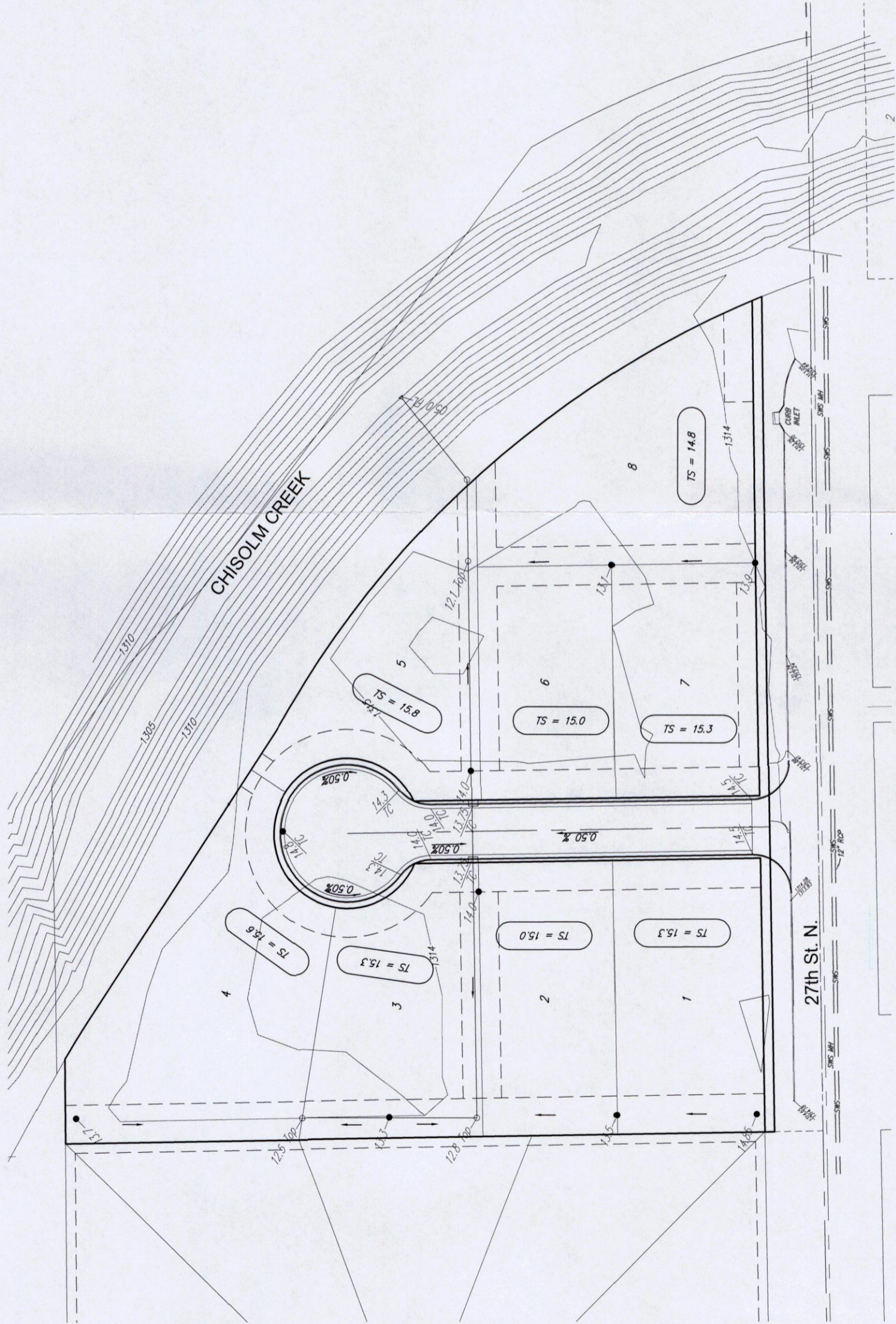


Ruggles & Bohm P.A.

Engineering, Surveying, Land Planning



BENCH MARK CHECKED SQUARE ON THE TOP OF CURB ON THE NORTH SIDE OF 27TH ST. N. 125' E. OF THE CENTERLINE OF WACO AVE. ELEVATION = 1314.17 (NAVD83)



Hiatt Hills 4-CORNER LOT GRADING PLAN WICHITA, KANSAS



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Wichita, Kansas 67203
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(316) 264-8008
(316) 264-4821 fax
E-mail: info@rbkansas.com

REVISION	DATE
AML DRAWN	Nov. 1, 2012
AML REVIEW	
UTILITY	

DRAWING FILE: SURVEY BASE {4 CORNER}
PROJECT NUMBER: _____
DATE: Nov. 1, 2012



**Public Works, Engineering Division
Final Drainage Plan Submittal Checklist**

Reviewer: _____ Date: 10-30-12
 Subdivision Name: Habitat Hills Location: 27th St. N. & Arkansas
 Total Land Area Of Ownership: 2.33 Acres
 Type: Residential _____ Commercial _____ Industrial _____ Recreation _____ Municipal _____ Other _____
 Applicant: _____ Contact: _____ Phone #: _____
 Engineer: Ruggles & Bohm, P.A. Contact: Alex M. Lane PE Phone # 316-264-8008

Please check the appropriate box:

I = Included; NA = Non-Applicable; R= Required prior to development
 (If "NA" is checked, an explanation must be entered)

Tab 1. Project Narrative	Applicant			Engr	
	I	NA	Explanation / Location in Plan	I	NA
A. Site Location Map, using USGS Map					
B. Discussion of development, existing conditions, and proposed impacts on stormwater, wetland, riparian, and flood plain	<input checked="" type="checkbox"/>		Drainage Report	X	
C. Discussion of offsite conditions	<input checked="" type="checkbox"/>		Drainage Report	X	
D. Summary of runoff calculations (pre/post development) No increase in peak discharge for all storm series	<input checked="" type="checkbox"/>		Drainage Map	X	
E. Narrative description of the type and function of the permanent best management practices that are incorporated into the site design			Drainage Rep.	X	
F. Copy of the plat	<input checked="" type="checkbox"/>		Drainage Report	X	
G. Preliminary grading plan (The final grading plan shall be sealed, signed and dated prior to Engineering receiving the final sanitary sewer plans. One plan sheet and PDF shall be submitted to the Subdivision Engineer.)	<input checked="" type="checkbox"/>		4-Corner Grading Plan	X	
H. Professional Engineer seal, signature and date on cover of report	<input checked="" type="checkbox"/>			X	
I. CD of drainage plan in PDF format (one file) and one paper copy bound with this checklist included behind the cover			w/ Final Report		

Tab 2. Existing Conditions Runoff Calculations	Applicant			Engr	
	I	NA	Explanation / Location in Plan	I	NA
A. Copy of applicable orthophoto showing proposed project boundaries (preferable in color)			Drainage Report	X	
B. Runoff Method (Rational, Hydrograph Method, or other approved methods by Engineering)			Rational Drainage Map	X	
C. Existing topography (no greater than 2-foot contours, 1-foot recommend)			Drainage Map, 4-corner	X	
D. Total Site Area and Total Impervious Area (acres)			Residential Development		X
E. Benchmarks used for site control			4-Corner	X	
F. Streams, creeks, and waterway labeled			Drainage Map, 4-Corner	X	
G. Predominant soils from USDA soil surveys, and/or on site soil borings			Drainage Report	X	
H. Location and boundaries of natural features such as wetlands, lakes, and ponds with the normal water elevation noted					X
I. Location of existing roads, buildings, parking lots and other impervious areas.			Drainage Map	X	



J. Location of existing utilities (e.g., water, sewer, gas, electric) and easements		Drainage Map	X	
K. Location of existing conveyance systems such as storm drains, inlets, catch basins, channels, swales, and areas of overland flow		Drainage Map	X	
L. Flow paths		DRAINAGE MAP, 4-CORNER	X	
M. Location and dimensions of existing channels, bridges or culvert crossings		DRAINAGE MAP, 4-CORNER	X	
N. Existing conditions hydrologic analysis for runoff rates, volumes and velocities showing methodologies used and supporting calculations (2, 5, 10, 25 & 100 year, 24-hour storm events) or Critical Duration		DRAINAGE MAP	X	
O. Assumed pre-developed runoff curve numbers		DRAINAGE MAP	X	
P. Existing time of concentrations used in calculations		DRAINAGE MAP	X	
Q. Evaluate immediate downstream drainage capacity, not to exceed more than 0.25 miles downstream of site				X
R. Existing structural elevations (e.g., invert of pipes, manholes, etc.)		NO PIPES ETC. ON SITE		X
S. Cross-section data for open channels				X
T. Ground water elevations, if applicable				X

Tab 3. Post-Development Hydrologic Analysis	Applicant		Engr	
	I	NA	I	NA
A. Proposed (post-development) conditions hydrologic and hydraulic analysis for runoff rates, volumes, HGL, and velocities showing the methodologies used and supporting calculations for all applicable design storms (2, 5, 10, 25 & 100 year, 24-hour storm events)			X	
B. Proposed time of concentrations used in calculations			X	
C. Assumed post-developed runoff curve numbers			X	
D. Proposed contours for detention facilities (to equal area used in outlet rating curves)				X
E. Preliminary sizing calculations for stormwater controls including contributing drainage area, storage, and outlet configuration			X	
F. Stage-storage-discharge or outlet rating curves and inflow and outflow hydrographs for storage facilities				X
G. Final analysis of potential upstream/downstream impact/effects of project, where necessary				X
H. Existing and proposed structural elevations (e.g., invert of pipes, manholes, etc.)				X
I. Design water surface elevations and normal pool elevation for ponds.				X
J. Typical detail for outlet structures, embankments, spillways, grade control structures, conveyance channels, etc. To include height, width, elevation, and/or diameter.				X
K. Proposed limits of clearing and grading			X	
L. Location of existing and proposed roads, buildings, parking lots and other impervious areas.			X	
M. Location of existing and proposed utilities (e.g., water, sewer) and easements			X	
N. Location of existing and proposed conveyance systems such as storm drains, inlets, catch basins, channels, swales, and areas of overland flow			X	
O. Preliminary location and dimensions of proposed channel modifications, such as bridge or culvert crossings				X

DRAINAGE REPORT
Habitat Hills
WICHITA, SEDGWICK COUNTY,
KANSAS

October 30, 2012

**Habitat Hills
DRAINAGE ANALYSIS
October 30, 2012**

INTRODUCTION

This report contains supporting documentation and calculations for the proposed Habitat Hills development. The proposed site is an undeveloped 2.33 acre parcel of land located in the NE ¼ of Section 5 T27S R1E on 27th St. N. just east of Arkansas. The area is currently undeveloped urban grassed area and the soil type located on site is urban land part Tabler, in hydrologic group D. The site is very flat and generally drains to the storm sewer system in 27th St. N. Street East. No offsite tributary drain onto the proposed project site. The information located on the attached FEMA FIRM 20173C0355E, effective date Feb. 2, 2007, indicates the site is located in shaded Zone X, defined as areas in the 0.2% floodplain.

DETENTION

The site is directly adjacent to Chisholm Creek and therefore to provide detention on this site may serve to actually increase the peak flow in the downstream channel. For this reason the site will not provide stormwater detention.

CHANNEL PROTECTION AND WATER QUALITY VOLUMES

The site is 2.33 acres in area, less than the 5 acre threshold that would trigger a channel protection. Therefore provisions for channel protection are not provided in this development. Water quality will be provided by a filter inlet or other proprietary device in the proposed storm sewer system and will treat the stormwater generated from the development before it is released to Chisholm Creek.

INTERNAL DRAINAGE

The internal drainage system shall utilize grassed swales and storm sewer to direct the runoff to the Chisholm Creek. The details of the internal drainage system are shown on the attached drainage map.

PLAT

Preliminary Plat

HABITAT HILLS

an Addition to Wichita, Sedgwick County, Kansas

LEGAL DESCRIPTION:
Beginning 1320 feet north of the southeast corner of the W1/2 of the NE1/4 of Sec. 5, T23S, R1E of the 6th P.M., Sedgwick County, Kansas; thence West, parallel with the south line of said quarter section, 389 feet to a point 730 feet east of the west line of said W1/2; thence 394-1/2 feet north to a point 730 feet east and 1066.3 feet south of the northwest corner of the W1/2 of the NE1/4 aforesaid; thence East, parallel with the north line of said quarter section, 180 feet to the center of Chisholm Creek; thence southeasterly along the center of said creek to the east line of said W1/2; thence South, 83.2 feet to the place of beginning, except that part condemned by North Wichita Drainage District, Sedgwick County, Kansas.

OWNER:
Wichita Habitat for Humanity, Inc.
Attn: Laurie Walker
P.O. Box 114
Wichita, KS 67201-114
Ph: (316) 269-0755

SURVEYOR & ENGINEER:
Ruggles & Bohm P.A.

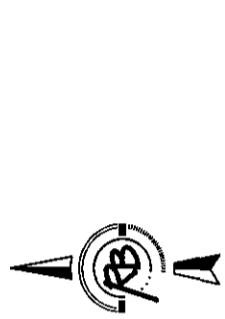
PROPOSED ZONING:
SF-5

EXISTING ZONING:
Property to the east is zoned B. Properties to the north, west and south are zoned IT-3. Subject property and the property to the northwest are zoned SF-5. Existing use is a vacant lot.

FLOOD ZONE:
According to the FEMA/FIRM Map No. 201730335E, effective February 2, 2007; the property shown hereon is located in Zone X

GROSS AREA:
103,289.3 Sq. Ft. ±
2.37 Acres ±

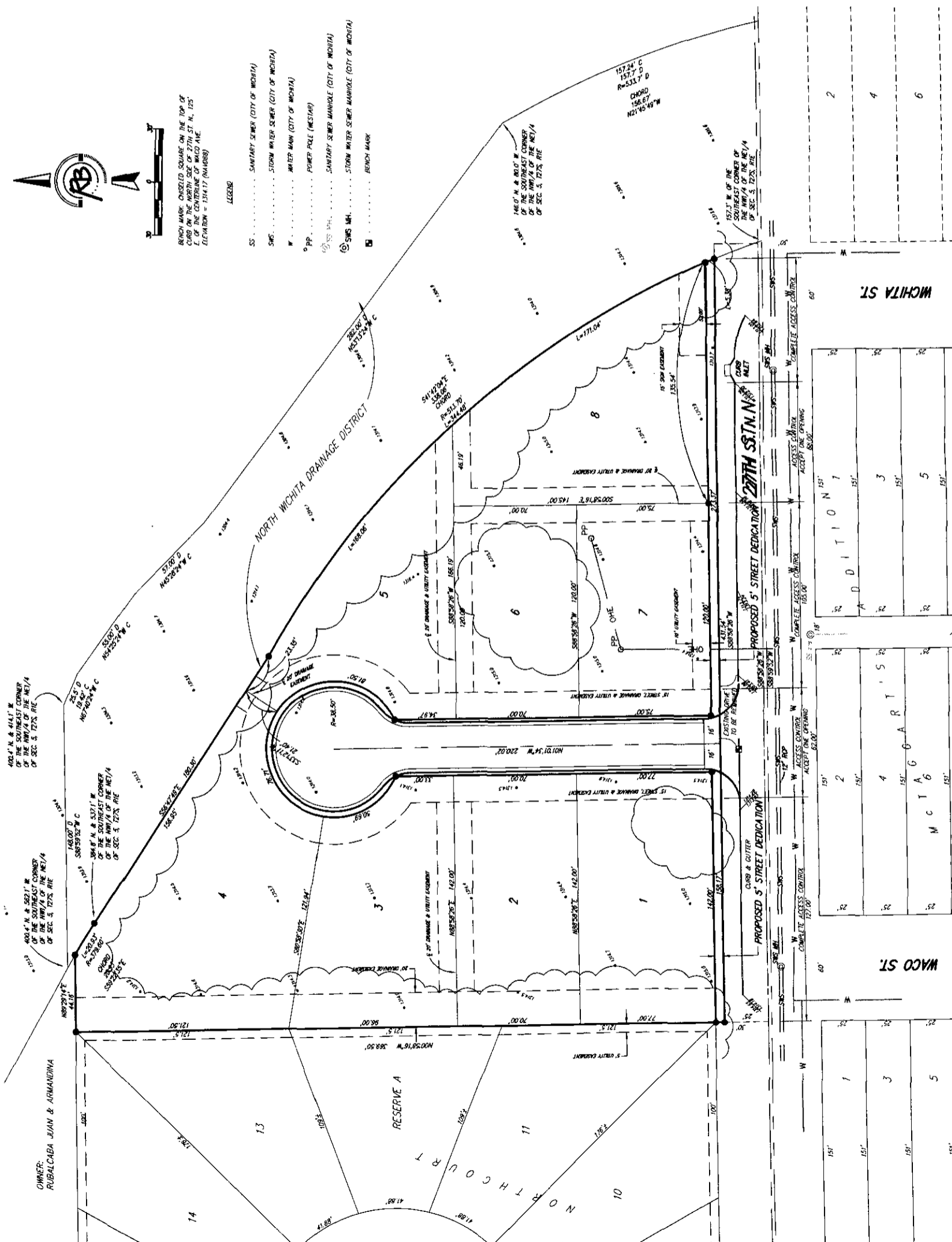
DATE OF TOPOGRAPHY:
AUGUST 10, 2012



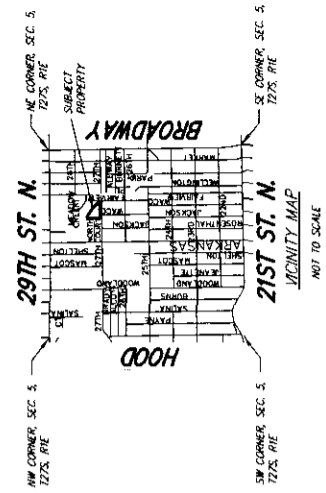
BENCH MARK: CHISELED SQUARE ON THE TOP OF CURB IN THE NORTH SIDE OF 27TH ST. N. 125' ELEVATION = 1314.17 (MADRSB)

LEGEND

- SS SANITARY SEWER (CITY OF WICHITA)
- SWS STORM WATER SEWER (CITY OF WICHITA)
- W WATER MAIN (CITY OF WICHITA)
- PP POWER POLE (METRA)
- 1/2" DIA. SH. SANITARY SEWER MANHOLE (CITY OF WICHITA)
- ⊙ SWS MH. STORM WATER SEWER MANHOLE (CITY OF WICHITA)
- BENCH MARK



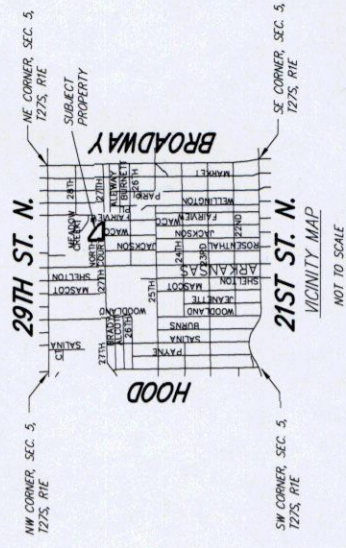
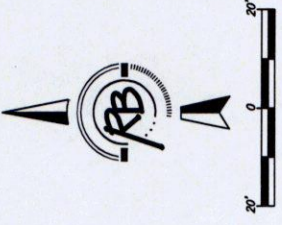
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1	151'	
2	151'	
3	151'	
4	151'	
5	151'	
6	151'	
7	151'	
8	151'	



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E-mail: info@rbkansas.com

DWG FILE SURVEY BASE
PROJECT NO. 3959
OCTOBER 10, 2012

AERIAL



**HABITAT HILLS
AERIAL
WICHITA, KANSAS**



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 E-mail: info@rbkansas.com

PERSON	DATE	PROJECT NUMBER
AML DRAWN	Oct. 30, 2012	
AML REVIEW		
UTILITY		
SHEET	1	1
OF		

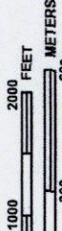
XXXX
807 Bb

SURVEY BASE {Aerial}



FEMA FIRM

MAP SCALE 1" = 1000'



PANEL 0355E

FIRM FLOOD INSURANCE RATE MAP

SEDGWICK COUNTY, KANSAS AND INCORPORATED AREAS

PANEL 355 OF 700

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY WICHITA, CITY OF

NUMBER 200328

PANEL SUFFIX 0355

E

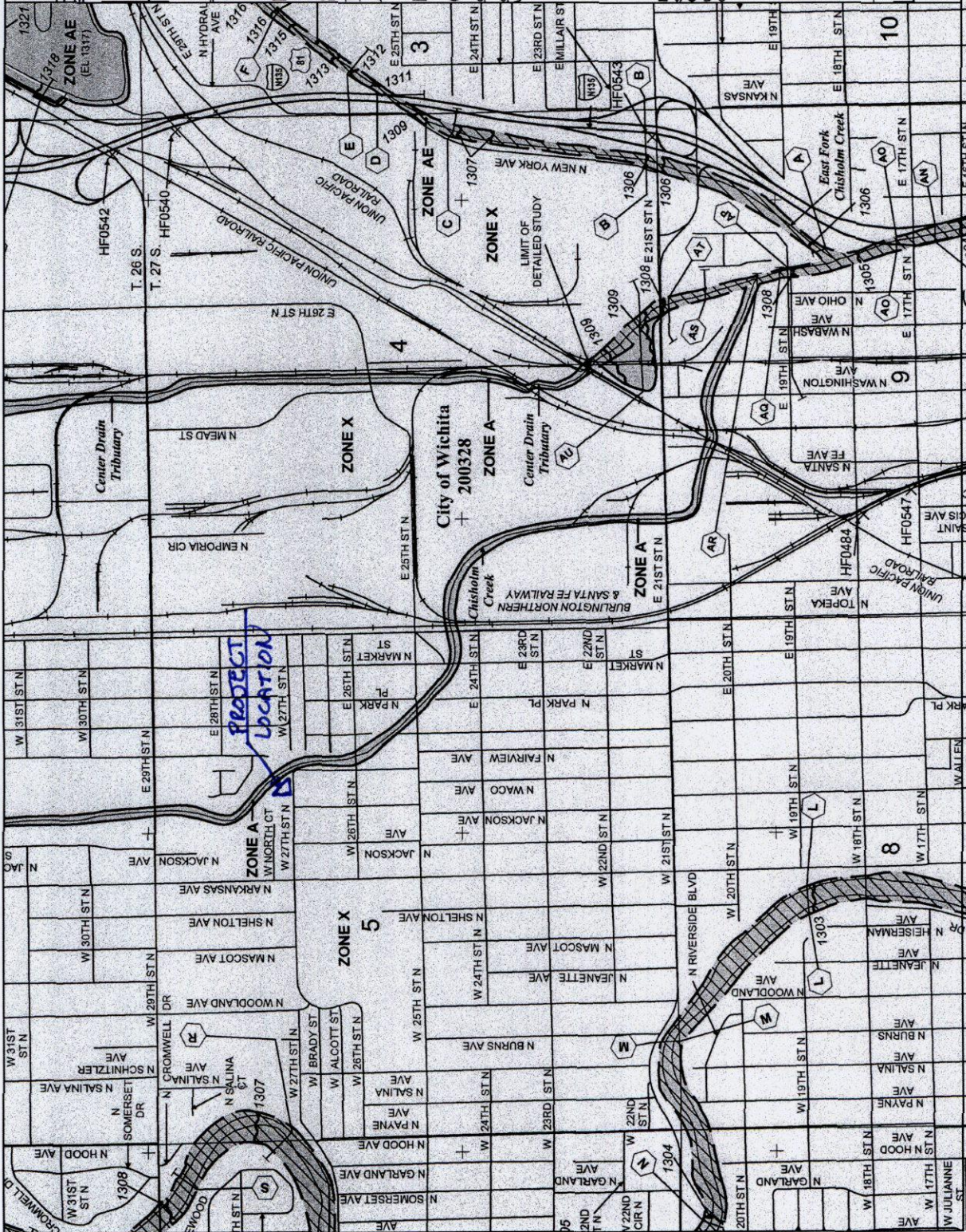
MAP NUMBER 20173C0355E

EFFECTIVE DATE FEBRUARY 2, 2007
Federal Emergency Management Agency



Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

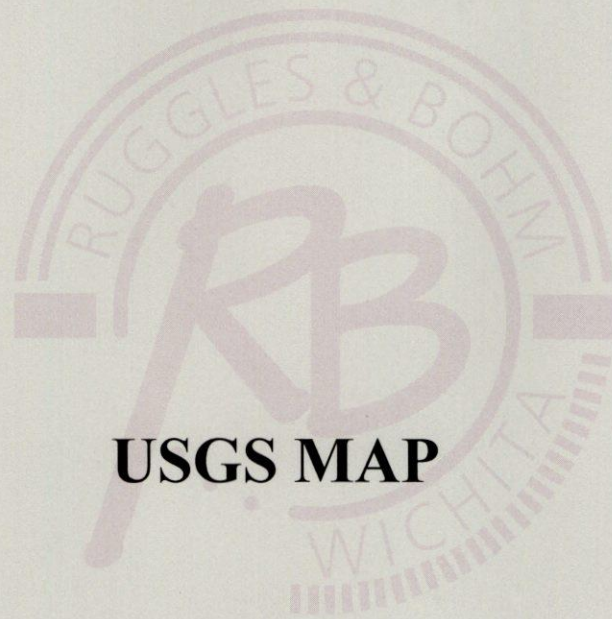
This is an official copy of a portion of the above referenced flood map. It was extracted using FIRM Online. This map does not contain any changes to the original map. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



10

8

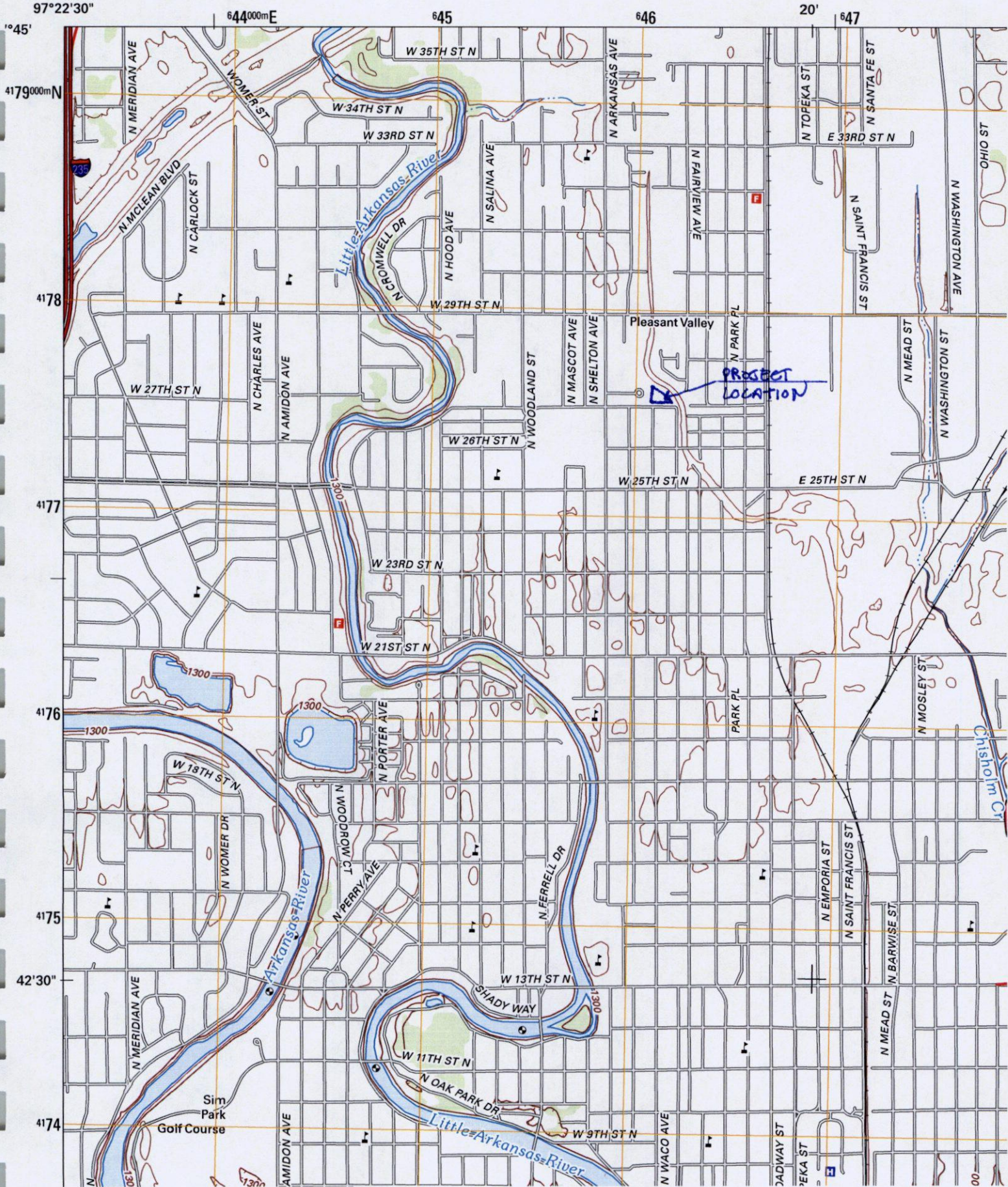
PROTECT LOCATION



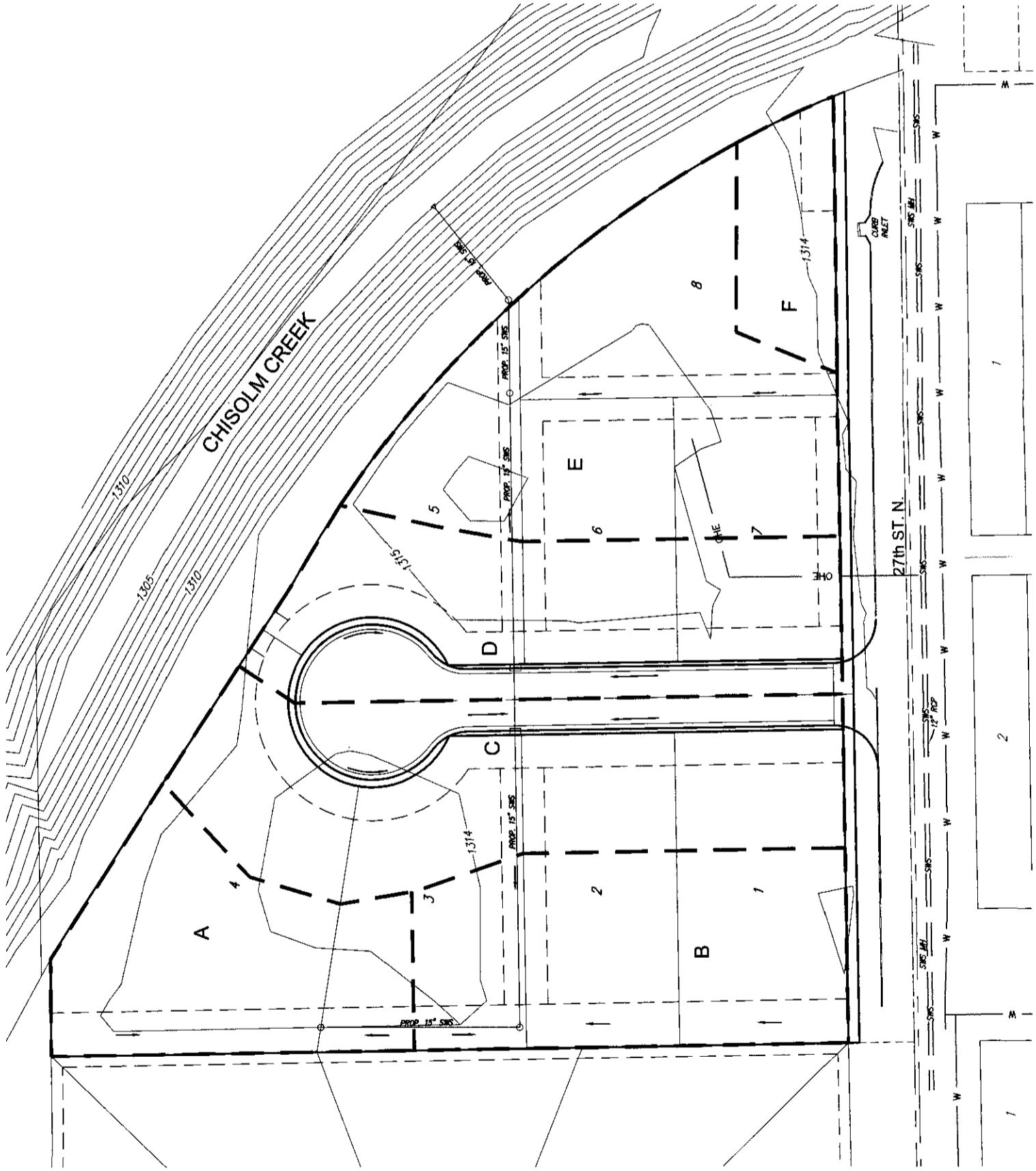
USGS MAP



U.S. DEPARTMENT OF THE INTERIOR
U. S. GEOLOGICAL SURVEY

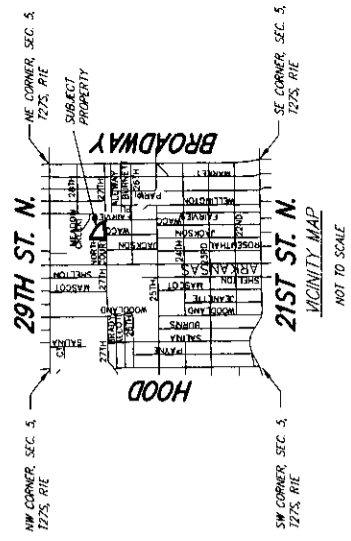


DRAINAGE MAP



Existing Conditions		Proposed Conditions	
Area (Ac.)	Co. (ft.)	Area (Ac.)	Co. (ft.)
2.37	15	0.37	15
		0.39	15
		0.70	15
		1.22	15
		1.69	15
		2.20	15
		0.17	15

Area (Ac.)	Co. (ft.)	Area (Ac.)	Co. (ft.)	Area (Ac.)	Co. (ft.)	Area (Ac.)	Co. (ft.)	Area (Ac.)	Co. (ft.)
0.37	15	0.39	15	0.70	15	1.22	15	1.69	15
0.41	15	0.41	15	0.41	15	0.41	15	0.41	15
0.45	15	0.45	15	0.45	15	0.45	15	0.45	15
0.52	15	0.52	15	0.52	15	0.52	15	0.52	15
0.63	15	0.63	15	0.63	15	0.63	15	0.63	15
0.77	15	0.77	15	0.77	15	0.77	15	0.77	15
0.96	15	0.96	15	0.96	15	0.96	15	0.96	15
1.23	15	1.23	15	1.23	15	1.23	15	1.23	15
1.61	15	1.61	15	1.61	15	1.61	15	1.61	15
2.10	15	2.10	15	2.10	15	2.10	15	2.10	15
2.77	15	2.77	15	2.77	15	2.77	15	2.77	15
3.63	15	3.63	15	3.63	15	3.63	15	3.63	15
4.86	15	4.86	15	4.86	15	4.86	15	4.86	15
6.47	15	6.47	15	6.47	15	6.47	15	6.47	15
8.64	15	8.64	15	8.64	15	8.64	15	8.64	15
11.52	15	11.52	15	11.52	15	11.52	15	11.52	15
15.36	15	15.36	15	15.36	15	15.36	15	15.36	15
20.16	15	20.16	15	20.16	15	20.16	15	20.16	15
26.88	15	26.88	15	26.88	15	26.88	15	26.88	15
35.84	15	35.84	15	35.84	15	35.84	15	35.84	15
47.84	15	47.84	15	47.84	15	47.84	15	47.84	15
63.36	15	63.36	15	63.36	15	63.36	15	63.36	15
83.84	15	83.84	15	83.84	15	83.84	15	83.84	15
110.88	15	110.88	15	110.88	15	110.88	15	110.88	15



**HABITAT HILLS
DRAINAGE MAP
WICHITA, KANSAS**



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DESIGN	AML	DATE	Oct. 30, 2012
DRAWN	AML	PROJECT NUMBER	
REVIEW		SURVEY BASE	[inserted]
UTILITY		SHEET	1 of 1
		NO. OF SHEETS	1 of 1

PROJECT NUMBER