PRELIMINARY ASSESMENT

of the

LORRAINE REFINERY SITE

Located near

BRISTOW, CREEK COUNTY, OKLAHOMA

September 28, 2008

STATE OF OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Prepared by:

Vanessa Peterson, Land Protection Division Intern

Pamela Turner, Land Protection Division Intern

Reviewed by:

Karen Khalaflan, Environmental Programs Specialist III

Approved by:

Hal Cantwell, Environmental Programs Specialist IV

I. Introduction

The State of Oklahoma Department of Environmental Quality (ODEQ) is tasked by the Environmental Protection Agency (EPA), as authorized by CERCLA and as amended by SARA, under the Multi-Site Cooperative Agreement (CA# V-00645-01) to conduct a preliminary assessment (PA) of the historic Lorraine Refinery site, CERCLIS ID: not yet assigned. The principle purpose of this PA is to assess the immediate or potential impact to public health and the environment as a result of wastes from the Lorraine Refinery. The information collected for the PA can be employed to establish the need for further action under CERCLA/SARA. The scope of this investigation includes the review of available information from DEQ and other state agencies' files, a comprehensive target survey, and an on-site reconnaissance.

II. Site Description, Operational History, and Waste Characteristics

Site Description

The Lorraine Refinery site is located in NW ¼ NW1/4 of S29 T16N R9E and the SW corner of S20 T16N R9E in Creek County, Oklahoma. The site's center has the coordinates 35° 50' 33.37" north latitude and 96° 23' 09.06" west longitude. The site covers approximately 15 acres (Reference 1, 2; Figure 1). The area is bounded to the south and east by the St. Louis and San Francisco Railroad, to the west by Sand Creek and highways 66 and 48, and the property extends 5.448 acres north of E0810 road. The property is divided into a northern portion and southern portion by E0810. The northern portion of the site is rural land that is no longer in use, while the southern portion of the

site is utilized by the First Assembly of God Church and one residence. Site access is not controlled. There are no fences on the property (Reference 3).

There are no schools or day cares located within 200 feet of the site. The church owning the property has two full time employees. There are 31 residences within a quarter mile of the site, as well as a hotel with 36 rooms, and an owner, his wife and two children all of whom live there full time. The drainage pattern of the southern portion of the site is primarily to the west and the drainage pattern for the northern portion of the site is to the south (Reference 3).

The site is the former location of the Lorraine Refinery, containing multiple storage tanks and refinery operation buildings. All refinery tanks and buildings have been leveled. The land is primarily pavement, church buildings, grasses, and trees. The southern portion of the site is outlined by trees and Sand Creek. There are multiple areas of stressed vegetation, barren areas, and visible black tarry waste deposits. The northern portion of the site is well vegetated, however the soil underneath the vegetation appears contaminated in addition to copious barren areas of black hard material of hydrocarbon nature (Reference 3).

The climate of Creek County is Humid Subtropical and has pronounced seasonal changes in temperature and, to a lesser extent, in precipitation. The prevailing winds are from the north from December to February and from the south during the rest of the year. Summers are long and hot. Winters are short and comparatively mild. Spring and fall

are cool and usually windy. The precipitation is fairly well distributed during the year. The average annual precipitation in the area is about 37 inches. The 2-year, 24-hour rainfall is about 3.8 inches (References 4, 5).

Operational History

A detailed title search in the County Clerk office confirms that the property was used in oil refinery operations from 1915 until it was bought by the H. F. Wilcox Oil and Gas Company in 1937. The first recorded owner of the property was (b) (6) (b) (6) sold the property to an industrial owner, the Bristow Oil and Refining Company, which purchased the property in May of 1915. The property was then sold to the Continental Refining Company in September of 1916. (b) (6) then received the company in November 1921 and then the property was sold to the Lorraine Petroleum Company in July of 1923. At some point, the Lorraine Petroleum Company became the Lorraine Refining Company. The Lorraine Refining Company then sold the property to Interocean Oil Company in October of 1925. The property was then bought by the Producers Oil Company in February of 1929. The Producers Oil Company then sold the property to the H. F. Wilcox Oil and Gas Company in June of 1937 as part of an expansion process for the Wilcox refinery. According to a report by the ODEQ in 1994, the Wilcox company area then totaled 110 acres, all of which was sold to (b) (6) in November of 1963. After this, the property in question remained in private ownership (Reference 3).

Waste Characteristics

The Sanborn Insurance Map indicates that the property contained approximately 25 storage tanks of various sizes, a cooling pond, and around 10 buildings housing refinery operations. The map also indicated that crude oil, fuel oil, gas oil, distillate, kerosene, benzene, and benzene (petroleum ether) were all stored on the property by the Lorraine Refining Company (Reference 3).

There were no releases to the air or water observed nor any unusual odors detected during the on-site reconnaissance. However, (b) (6) a member of the church, testified that a hydrocarbon sheen is visible in the moisture on the ground upon digging 2 to 3 feet. The wastes associated with this type of facility include crude oil, tank residues, brine, acid and caustic sludges, heavy metals, petroleum products, coke, sulfur compounds, and solvents (Reference 3).

There are several areas of stressed vegetation, barren soil, and spots of tarry waste. In the southern portion of the property, the church and its parking lot appear to be where the refinery buildings were located. A barren area with gravel is located at the probable area of 10,000 gallon fuel tank on the Sanborn map, the area measuring 10 yards by 7 yards. Another area, likely the stills location, possessed barren areas measuring 33 yards by 6 yards. A third barren area exists in the former location of the wooden waste tank, measuring 6 yards by 6 yards. A fourth barren area exists at the likely tank sites, running from the tree line east to the church buildings. This area had visible black tarry waste and

bare spots scattered throughout. A fifth barren area exists in the NW corner of the property, measuring 37 yards by 15 yards (Reference 3).

In the northern portion of the property, barren areas containing hard, black hydrocarbon material were present throughout the property to the extent that their size could not be quantified. The location of the largest oil tank on the refinery property was estimated in the NE portion of the property due to the discovery of a very large barren area surrounded by trees that is visible in aerial photos (Reference 3; Figure 1).

III. Pathway and Environmental Hazard Assessment

Groundwater Exposure

According to the Creek County Soil Survey, the specific soil series on the Lorraine Refinery site are Stephenville and Darnell fine sandy loam with a 4-7 percent slope, oil waste land, and Verdigris silt loam (Reference 4).

The Stephenville and Darnell fine sandy loam, sloping, is a shallow upland soil that developed over reddish-yellow to red sandstone or interbedded sandstone and sandy shale. The parent materials were slightly acidic to neutral. The Stephenville Darnell fine sandy loam, sloping, are droughty and low in natural productivity. These soils are highly susceptible to erosion. About 60 percent of the acreage consists of Stephenville soils and 40 percent of Darnell soils. The Stephenville soil depth ranges from 20-40 inches. The first four inches of the Stephenville soil is a grayish-brown fine sandy loam with a weak

granular structure and slight acidity. From 4-12 inches, the soil is a pale-brown light fine sandy loam that is very friable when moist and loose when dry and maintains a slight acidity. From 12-28 inches, the soil is a yellowish-red sandy clay loam with massive structure. At this point the soil is crumbly and friable when moist and slightly sticky when wet. The soil is porous and permeable, and maintains a medium acidity. From 28-35 inches, the soil is a yellow-red sandy clay loam that is friable, permeable, and contains small, soft fragments of slightly weathered sandstone with medium to slight acidity. The bedrock typically begins at 35 inches and is a yellowish-red sandstone that is slightly acidic to neutral. The depth of the Darnell soil ranges from 5-20 inches. The Darnell soil is a pale-brown, light, fine sandy loam that is structure less and slightly acidic to a depth of about 10 inches. From 10-16 inches, the Darnell soil is a medium acidic, reddish-yellow fine sandy loam with a lower part that is slightly heavier and contains small fragments of partly weathered sandstone. Past 16 inches, the soil is a neutral reddish-yellow bedrock (Reference 4).

Oil-waste land is listed as having contamination by oil and saltwater waste from oil wells. This land is typically gullied and eroded and bare of vegetation (Reference 4).

The Verdigris silt loam is mapped on flood plains of streams. The parent material consisted of slightly acid to weakly alkaline alluvial sediments washed from dark soils of the prairies. Runoff is slow and internal drainage is moderate. The soil is flooded one to three times per year. The surface layer of soil runs about 16 inches deep, and is a dark grayish-brown silt loam that is friable when moist and hard when dry, and maintains a

slight acidity. From 16-36 inches, the soil is a dark grayish-brown clay loam that is crumbly and friable when moist and hard when dry. At this level, the soil is porous and permeable and maintains a slight acidity to neutral pH. From 36 inches on, the soil is a dark grayish-brown clay loam that is friable, permeable, and weakly alkaline (Reference 4).

The Lorraine Refinery sits on the Pennsylvanian-aged Barnsdall Formation. This formation is composed of fine-grained sandstone overlain by shale. Thickness ranges from 80 to 200 ft (Reference 6).

At approximately 0.25 miles to the southeast of the refinery, the underlying Pennsylvanian-aged Wann Formation and underlying Iola Limestone are exposed. The Wann Formation varies in thickness from 40 to 180 feet and is comprised of shale and fine- to medium-grained sandstone. The Iola Limestone ranges in thickness from 15 to 20 feet and consists of a calcareous fine-grained sandstone and limestone with some shale (Reference 6).

Sand Creek appears to be the major drainage basin for the site. Sand Creek flows southward along the western side of the Lorraine Refinery site and begins flowing to the southeast at the southern boundary of this site. At approximately 0.25 miles to the southeast of the refinery Sand Creek is associated with Quaternary-aged alluvial deposits consisting of sand, silt, clay, and lenticular beds of gravel. Thickness in these deposits

ranges from 5 to 50 feet (25 feet average). Because Sand Creek crosses the site, localized alluvium may be present at the refinery (Reference 6).

A field of eight wells, which may be the public water supply for Bristow, Oklahoma, is located approximately 1.5 miles south of the refinery site. The average well is 200 feet deep and has a water level at 45 feet. The average yield from these wells is 25 to 50 gallons per minute (gpm). Water quality, obtained from Pennsylvanian rocks, is good with 500 mg/L or less of dissolved solids (Reference 6).

The Lorraine Refinery is located 2 miles from Little Deep Fork Creek, which is associated with the alluvial and terrace deposits of a groundwater recharge area. These deposits range in thickness from 10 to 50 feet. The yields from these aquifers are, generally, 10 to 500 (gpm) of good quality (less than 1,000 mg/L dissolved solids) water. Little Deep Fork Creek flows to the southeast, draining into the Deep Fork River, a tributary of the North Canadian River (Reference 6).

Depth to shallow groundwater is 12 to 20 feet, according to records of monitoring wells located within two miles of the site. Based on regional topography, flow direction of surface and shallow groundwater is to the south/southeast (Reference 6).

The Lorraine Refinery is located on the border between the recharge and potential recharge area of a major bedrock aquifer - the Pennsylvanian, Vamoosa Formation and Ada Group, comprised of fine- to coarse-grained sandstone irregularly interbedded with

shale. A potential recharge area includes strata that may be in hydrological communication with the bedrock aquifer, so these regions should be protected as well as the recharge area proper. In 2000, 7.34 million gallons of freshwater per day were withdrawn from the Vamoosa-Ada groundwater aquifer, 75 percent of which was used for municipal purposes and 25 percent for rural domestic and stock animal consumption. This quantity is significant and represents 10 percent of the fresh groundwater withdrawal in Oklahoma for this year (Reference 6).

There are 10 public wells within the 4-mile radius of the site. Because of the Lorraine Refinery's adjacent position to the Wilcox Refinery, the estimated population served by these public wells can be obtained from the previously completed Wilcox Preliminary Assessment. The population served by these wells is described in the following table.

Public Wells

Distance from Site (mi)	# of Wells	Est. Population Served by Public Wells
On-site	0	0
0 – ¼	1	0
¼ - ½	0	0
½ - 1	1	165
1 - 2	8	4301
2 – 3	0	0
3 – 4	0	0
Total	10	4466

The total population served by private wells is described ion the table below. The numbers were arrived at by multiplying the number of wells by the estimated average number of persons (2.53) per household in Creek County (References 7, 8, 9)

Private Wells

Distance from Site (mi)	# of Wells	Est. Population Served by Public Wells
On-site	1	2.53
0 – ¼	1	2.53
¼ - ½	3	7.59
½ - 1	9	22.7
1 - 2	45	113.85
2 – 3	47	118.91
3 – 4	75	189.75
Total	181	4466

Surface Water Exposure

The drainage pattern for the northern portion of the site is to the south. The drainage pattern for the southern portion of the site is generally west. One perennial stream exists on the site which flows east to west and links into Sand Creek. This point where the perennial stream joins Sand Creek is likely the most significant probable point of entry (PPE). The PPE occurs in the NE corner of the NE corner of S30 T16N R9E (Reference 2, 3; Figure 3). Sand Creek meanders approximately 2 miles east until it merges with Little Deep Fork Creek, which is the third surface water body within fifteen miles downstream of the PPE.

According to gauging station #07243500 located in the NW ¼ of the SW ¼ of S20 T14N R12E in Okmulgee County, approximately 25 miles southeast from the site, the annual flow rate of the Deep Fork River is 806 cfs (Reference 7).

The average annual precipitation in the area is about 37 inches. The 2-year, 24-hour rainfall is about 3.8 inches (References 4, 5). The site is not located within the 100-year flood plain (Reference 11).

According to the State of Oklahoma, Sand Creek is considered a Habitat Limited Aquatic Community, and a Secondary Body Contact Beneficial Use, as well as having agricultural and aesthetic beneficial uses. Little Deep Fork Creek downstream from Sand Creek is considered a Warm Water Aquatic Community, and a Primary Body Contact Beneficial Use, as well as having agricultural and aesthetic beneficial uses (Reference 13).

The Oklahoma Department of Wildlife Conservation lists the Heyburn Wildlife Management Area within the 15-mile target distance. This area and its associated watershed are considered to be sensitive areas (Reference 14).

There are ecological systems of importance within a 4-mile radius of the site. Habitats of the endangered, threatened, and special concern species listed below are known to occur at or near the site (Reference 14).

Endangered, threatened, and special concern species

Federal Status	State Status	Scientific Name	Common Name
Mammals			
-	SS2*	*Marmota monax*	Woodchuck
Insects			
-	SS2*	*Gryllotalpa major*	Prairie Mole Cricket
Endangered	Endangered	*Nicrophorus americanus*	American Burying Beetle
Birds			
Endangered	Endangered	*Sterna antillarum*	Interior Least Tern
-	SS2*	*Aimophila aestivalis*	Bachman's Sparrow

*SS2 – A species identified by technical experts as possibly threatened or vulnerable to extirpation but for which additional information is needed.

Soil Exposure

There are no schools or daycares within 200 feet of the site. There are two full time employees working for the First Assembly of God Church which is located on the site. There are two residences on the site, which would be considered the nearest residents, and there are 141 residents within ¼ mile of the site (Reference 3). Visible waste was seen, approximately 859 square yards. The two on-site residents are considered primary targets for the purpose of the PA. All other targets under the soil exposure pathway are considered secondary.

Air Exposure

A particulate release to the air is suspected form any contaminated source, which maybe onsite, however no release was observed upon site reconnaissance (Reference 3). The estimated population and the wetland acreage within a 4-mile radius of the site are described in the table below. The wetland acreage was obtained from the ODEQ GIS database as well as from the U.S. Fish and Wildlife Association (http://wetlandsfws.er.usgs.gov).

Wetland acreage

Distance from Site (mi)	Est. Population	Est. Wetland Acreage
On-site	5	5.37
0 – ¼	143	11.03
¼ - ½	502	7.18
½ - 1	2185	49.75
1 – 2	2042	183.43
2 – 3	251	339.88
3- 4	826	204.62
Total	5939	795.89

The population targets onsite and within the ¼ mile radius under this pathway are considered to be the primary targets. All other targets under the air pathway are considered secondary for the purpose of this PA.

IV. Summary and Conclusion

The Lorraine Refinery site is a historical refinery in Bristow, Creek County, Oklahoma. The site passed through various refinery corporations from 1915 through 1937. The site is now divided among two parties- the First Assembly of God Church and [redacted] Most of the site is well vegetated with trees, brushes, and grass; however there are multiple areas of barren soil and visible wastes. The total area of contaminated soil is estimated at approximately 859 square yards.

Habitats of the endangered or threatened species listed are known to occur near the site, as well as a nearby Wildlife Management Area. There is a possibility that contaminants could migrate from the areas of contaminated soils via groundwater and surface water runoff toward Sand Creek and the Little Deep Fork Creek. As a result of the information gathered during this PA, further investigation of this site is recommended.

V. Photo Documentation

Photographer: Pam Turner PT
Date: 09/04/08 Direction: Looking southwest

Comments: Photograph 1. This picture was taken in the central part of the north side of the site and shows area possibly containing asphalt.

PT
Photographer: Pam Turner
Date: 09/04/08 Direction: Looking northeast

Comments: Photograph 2. This picture was taken northeast of the site and shows area of black tarry waste.

er

Photographer: Pam Turner
Date: 09/04/08 Direction: Looking west

Comments: Photograph 3. This picture was taken east of site and shows the former location of 20,000 gal fuel oil tank.

PT
Photographer: Pam Turner
Date: 09/04/08 Direction: Looking northwest

Comments: Photograph 4. This picture was taken northwest of site and shows the (b) on-site residence.

Photographer: Pam Turner
Date: 09/04/08 Direction: Looking west

Comments: Photograph 5. This picture shows the dike running through the south-central region of the northern portion of the property.

PT
Photographer: Pam Turner
Date: 09/04/08 Direction: Looking northeast

Comments: Photograph 6. This picture shows former location of oil tank.

et
Photographer: Pam Tuner
Date: 09/04/08 Direction: Looking south

Comments: Photograph 7. This picture was taken from the dike and shows the First Assembly of God Church.

PT
Photographer: Pam Turner
Date: 09/04/08 Direction: Looking northeast

Comments: Photograph 8. This picture was taken west of the site and shows old refinery remnants.

Photographer: Jennifer Larsen
Date: 04/07/08 Direction: Looking southwest

Comments: Photograph 9. This picture was taken east of the site and shows the church and Pastor residence located on the southern portion of the refinery.

VI. Figures

Figure 1. Aerial Photo Showing Important Site Locations

Figure 2. Aerial Photo of Site

N

Figure 3. Surface Water Pathway

VII. List of References

1. U.S. Environmental Protection Agency. *Standard Operating Procedure to Determine Site Latitude and Longitude Coordinates.* 1991. *Calculation Worksheet for Lorraine Refinery Site, Creek County, Oklahoma.* May 9, 2008.
2. U.S. Department of the Interior, Geological Survey. *7.5 minute topographic quadrangle maps.*
3. Peterson, V., ODEQ. *Memorandum: Current Ownership of the Property, Potentially Responsible Parties (PRP) Search, and Site Reconnaissance of the Lorraine Refinery Site, Creek County, OK.* September 5, 2008.
4. U.S Department of Agriculture. *Soil Survey of Creek County, Oklahoma.* May, 1959.
5. U.S. Department of Commerce. *Rainfall Frequency Atlas of the United States.* 1961.
6. Paul, K., ODEQ. *Memorandum: Generalized Geology and Hydrology, Lorraine Refinery.* July 10, 2008.
7. U.S Department of the Commerce, Census Bureau. *Selected Population and Housing Characteristics: 2006.* Creek County, Oklahoma. 2006.
8. Larsen, J., ODEQ. *Letter of Request: Scott Christenson, U.S. Geological Survey.* April 30, 2008. (Response Attached)
9. Larsen, J., ODEQ. *Letter of Request: Theda Adkisson, Oklahoma Water Resources Board.* April 30, 2008 (Response Attached).
10. Heimann, D., Tortorelli, L., U.S. Geological Survey. *Statistical Summaries of Streamflow Records in Oklahoma and Parts of Arkansas, Missouri, and Texas Through 1984.* Pages 226-227. 1988.
11. National Flood Insurance Rate Map. *Map of Creek County, Oklahoma (Unincorporated Areas). Map Number 4004900007A.* September 21, 2001.
12. Larsen, J., ODEQ. *Letter of Request: Bob Sandbo, Planning and Management Division, Oklahoma Water Resources Board.* April 30, 2008. (Response Attached)
13. State of Oklahoma Water Resources Board Rules. *Chapter 45. Oklahoma's Water Quality Standards.* 2000.
14. Larsen, J., ODEQ. *Letter of Request: William Ray, Oklahoma Department of Wildlife Conservation.* April 30, 2008 (Response Attached).
15. U.S. Department of the Interior, Fish and Wildlife Service. *Oklahoma Federal-Listed Endangered, Threatened, Proposed and Candidate Species.* Creek County, October 17, 2007.

REFERENCE 1

APPENDIX E

STANDARD OPERATING PROCEDURE TO DETERMINE SITE LATITUDE AND LONGITUDE COORDINATES

HAZARDOUS SITE EVALUATION DIVISION
SITE ASSESSMENT BRANCH
U.S ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C.

September 1991

LATITUDE AND LONGITUDE CALCULATION WORKSHEET #2
LI USING ENGINEER'S SCALE (1/60)

SITE NAME: LORRAINE REFINERY CERCLIS #: _____

AKA: _____ SSID: _____

ADDRESS: E0810 AND BNSF RAILROAD, NORTH OF BRISTOW

CITY: BRISTOW, STATE: OK ZIP CODE: _____

SITE REFERENCE POINT: MIDDLE OF SITE

USGS QUAD MAP NAME: BRISTOW TOWNSHIP: 16 (N)/S RANGE: 9 (E)/W

SCALE: 1:24,000 MAP DATE: 1973 SECTION: 20 SW 1/4 SW 1/4 SW 1/4

MAP DATUM: (1927) 1983 (CIRCLE ONE) MERIDIAN: INDIAN

COORDINATES FROM LOWER RIGHT (SOUTHEAST) CORNER OF 7.5' MAP (attach photocopy):

LONGITUDE: 96 ° 22 ' 30 " LATITUDE: 35 ° 45 ' 00 "

COORDINATES FROM LOWER RIGHT (SOUTHEAST) CORNER OF 2.5' GRID CELL:

LONGITUDE: 96 ° 22 ' 30 " LATITUDE: 35 ° 50 ' 00 "

CALCULATIONS: LATITUDE (7.5' QUADRANGLE MAP)

A) NUMBER OF RULER GRADUATIONS FROM LATITUDE GRID LINE TO SITE REF POINT: 101

B) MULTIPLY (A) BY 0.3304 TO CONVERT TO SECONDS:

A x 0.3304 = 33.37"

C) EXPRESS IN MINUTES AND SECONDS (1'= 60"): 0 ' 33.37"

D) ADD TO STARTING LATITUDE: 35 ° 50 ' 00.00" + 0 ' 33.37 =

SITE LATITUDE: 35 ° 50 ' 33.37"

CALCULATIONS: LONGITUDE (7.5' QUADRANGLE MAP)

A) NUMBER OF RULER GRADUATIONS FROM RIGHT LONGITUDE LINE TO SITE REF POINT: 117

B) MULTIPLY (A) BY 0.3304 TO CONVERT TO SECONDS:

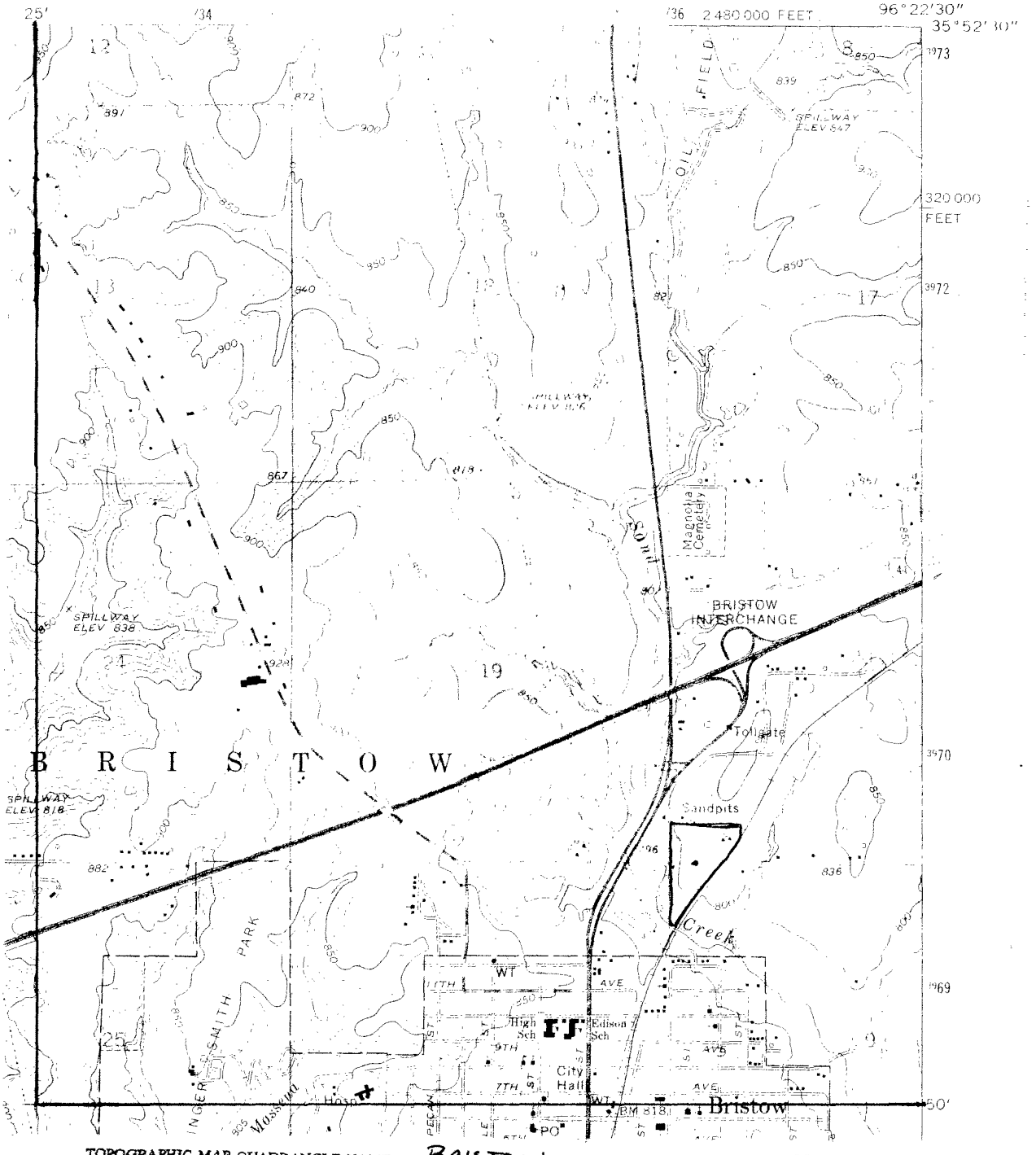
A x 0.3304 = 38.66"

C) EXPRESS IN MINUTES AND SECONDS (1'= 60"): 0 ' 39.06"

D) ADD TO STARTING LONGITUDE: 96 ° 22 ' 30.00" + 0 ' 39.06 =

SITE LONGITUDE: 96 ° 23 ' 09.06"

INVESTIGATOR: JENNIFER LARSEN DATE: 5-9-08



TOPOGRAPHIC MAP QUADRANGLE NAME: BRISTOW SCALE: 1:24,000

COORDINATES OF LOWER RIGHT-HAND CORNER OF 2.5-MINUTE GRID:

LATITUDE: 35° 50' 00" LONGITUDE: 96° 22' 30"

*U.S. GOVERNMENT PRINTING OFFICE: 1991-548-187/40685

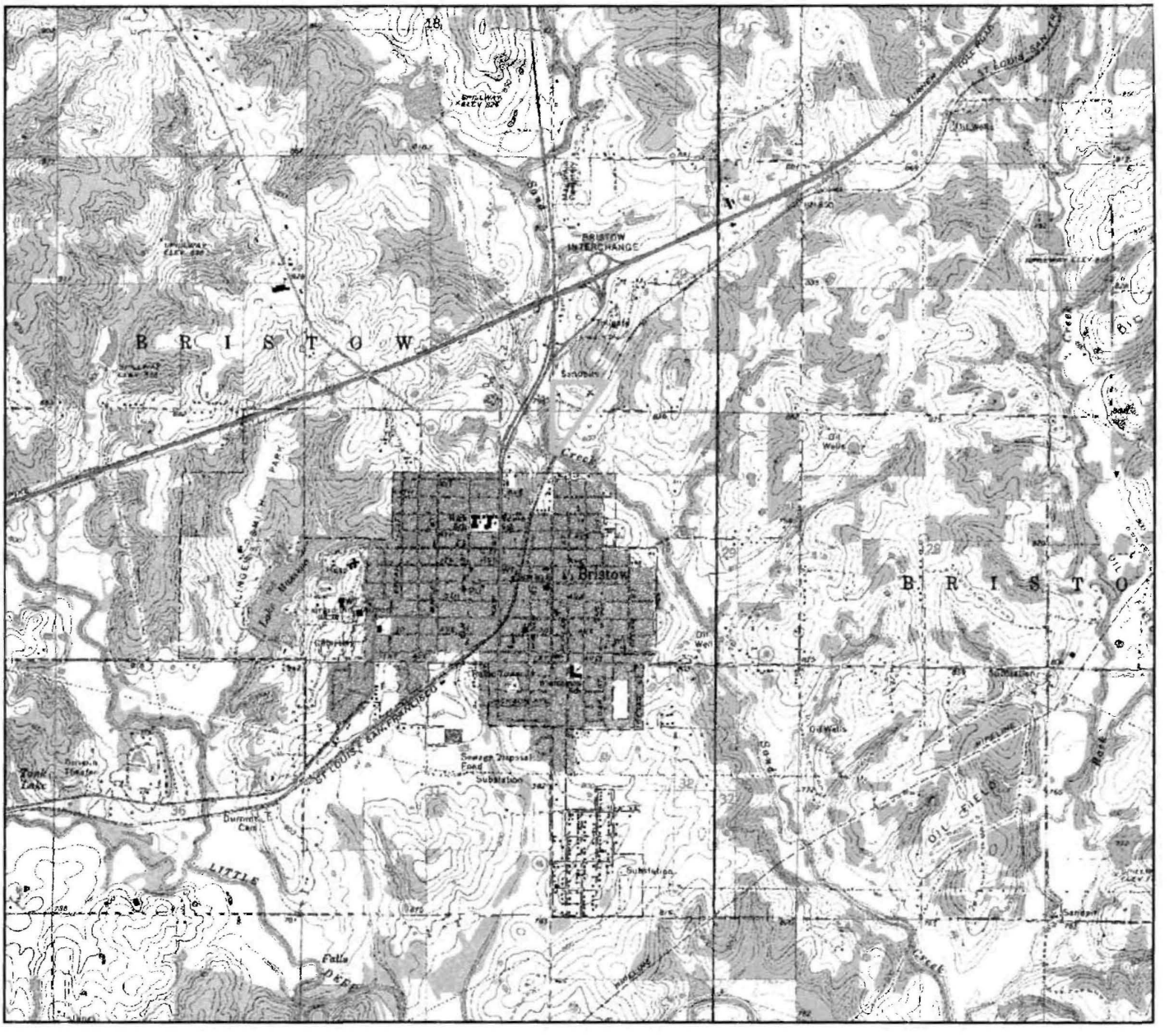
E-11

SITE NAME: LORRAINE REFINERY NUMBER: _____

REFERENCE 2

Created: July 15, 2008

Lorraine Refinery:
7.5 minute Topographic Quadrangle Map



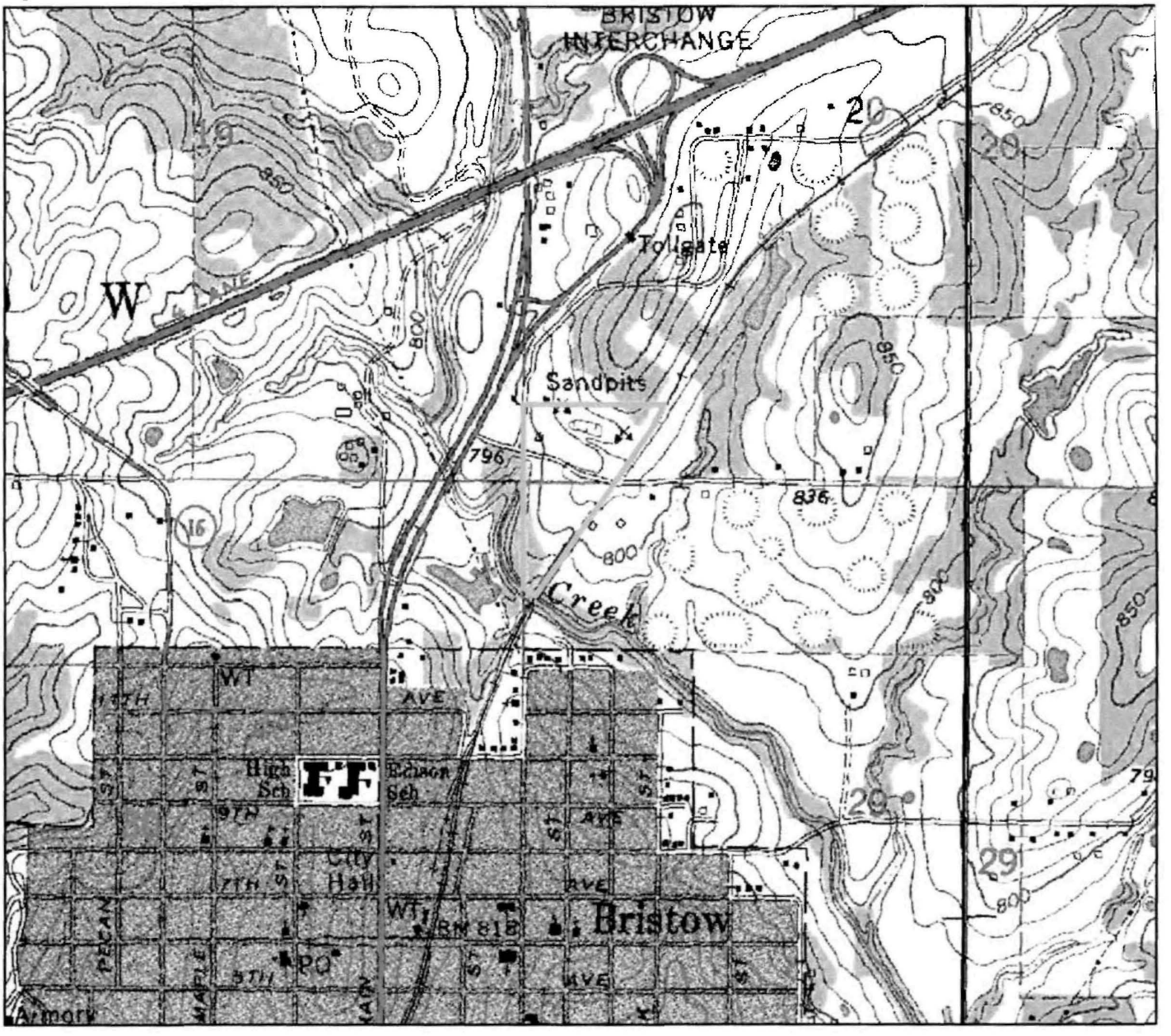
Legend

Lorraine Refinery

003166

Created: July 15, 2008

Lorraine Refinery:
7.5 minute Topographic Quadrangle Map

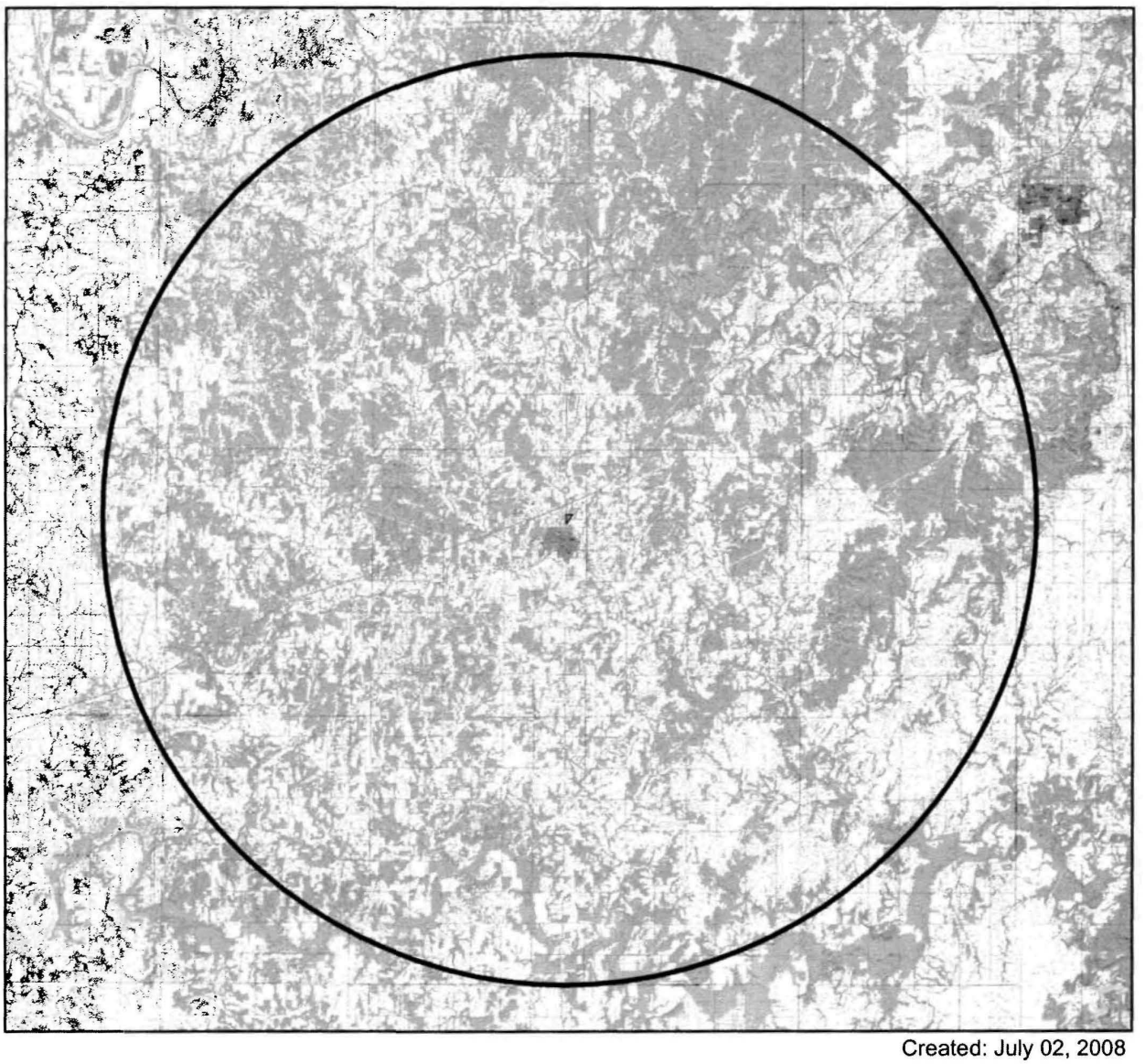


Legend

Lorraine Refinery

003167

Lorraine Refinery
7.5 Topographic Map
15 mi Radius



Created: July 02, 2008

Legend

Lorraine Refinery

15_mi

0 1.252.5 5 Miles

003168

REFERENCE 3

MEMORANDUM

September 12, 2008

To: Lorraine Refinery PA File

From: Vanessa Peterson, Technical Intern

Re: Current Ownership of said property, Potentially Responsible Parties (PRP) search, and Site Reconnaissance

The Lorraine Refinery Site, as addressed under the given name by the Sanborn Insurance Map of 1923, is located on the northwest quarter of the northwest quarter of Section 29, Township 16 North, Range 9 East; and also the southwest corner of Section 20, Township 16 North, Range 9 East. The site has the coordinates of 35° 50' 33.37" latitude and 96° 23' 09.06" longitude, and the property lies north and west of the St. Louis and San Francisco Railroad right-of-way in Creek County, Oklahoma. The property contains 15.032 acres. The property is divided into a northern portion and southern portion by a county road (currently E0810 Road), and is bordered by the railroad to the east and south while Sand Creek boarders a portion of the property to the west. The site visits were conducted in April 2008, and July 2008.

According to the Sanborn Map, the southern portion of the property was the operational facility and some storage tanks, while the northern portion was primarily storage tanks. Currently, the First Assembly of God Church in Bristow owns the

property, and according to the aerial maps, the church buildings and parking lot appear to be built in the area where the refinery buildings were located in the southern portion of the property. A house belonging to the pastor of the church is located on the southwestern portion of the property. Undeveloped property occupies the northern portion of the property, previously housing the storage tanks.

A search concerning the current ownership of a property formerly occupied by the Lorraine Refining Company located in NW corner of the NW corner of S29 T16N R9E and the SW corner of S20 T16N R9E in Creek County, Oklahoma was conducted by the Creek County Assessor's office whose records indicate that the site belongs to two owners, the First Assembly of God Church and (b) (6) (b) (6)

A detailed title search in the County Clerk's Office indicated that one of the first owners of the site was (b) (6) (b) (6) sold the property to an industrial owner, the Bristow Oil and Refining Company, which purchased the property in May of 1915 (book 112, page 644). The property was then sold to the Continental Refining Company in September of 1916 (book 130, page 604). (b) (6) hen received the company in November 1921 (book 271, page 388) and then the property was sold to the Lorraine Petroleum Company in July of 1923 (book 271, page 388). At some point, the Lorraine Petroleum Company became the Lorraine Refining Company. The Lorraine Refining Company then sold the property to Interocean Oil Company in October of 1925 (book 309, page 401). The property was then sold to the Producers Oil Company in February of 1929 (book 371, page 265). The Producers Oil Company then sold the

property to the H. F. Wilcox Oil and Gas Company in June of 1937 (book 402, page 432) as part of an expansion process for the Wilcox refinery. According to a report by the ODEQ in 1994, the Wilcox company area then totaled 110 acres, all of which was sold to (b) (6) in November of 1963. After this, the property in question remained in private ownership, and is currently in possession by the First Assembly of God Church.

There are no schools or daycares located within 200 feet of the site. The church, located on the site, maintains three employees, 2 full-time. The Carolyn Inn hotel is located within ¼ mile of the site. The inn has 36 rooms while 2 adults and 2 children living there full-time. There are 31 residences located within ¼ mile of the site. Sand Creek boarders the west portion of the property. Sand Creek is a small perennial tributary of the Little Deep Fork Creek; it enters Little Deep Fork approximately 3.5 miles downstream of the probable point of entry (PPE). Drainage of the site is primarily to the west, into Sand Creek. During heavy rain, a small perennial stream forms which flows west through the property and eventually joins Sand Creek at the west edge of the property.

The site is a former refinery plant with approximately 25 storage tanks of various sizes, a cooling pond, and around 10 buildings housing refinery operations. All of the refinery buildings have been leveled and replaced with the buildings of the current church. All of the storage tanks have also been leveled. The approximate location of the tanks can be estimated using the Sanborn Maps and noting the location of barren spots of soil.

There were no releases to the air or water observed nor were any unusual odors detected during the on-site reconnaissance. The property was divided into two portions, a southern and a northern, by E0810 road. The reconnaissance of the southern portion revealed five barren areas of soil in, many containing spots of tarry waste. (b) (6), a member of the First Assembly of God Church for over 20 years, stated that four inches of crude oil were discovered when a cap was broken off an existing pipeline. (b) (6) also stated that a well dug in 1991 was capped in 1992 due to oil contamination of the water. (b) (6) also testified that a hydrocarbon sheen on moisture in the ground is visible upon digging 2 to 3 feet. The church often discovers into concrete when digging, most likely due to foundations left over from the refinery. The wastes assumed to be associated with this type of facility include crude oil, tank residues, brine, acid and caustic sludges, heavy metals, petroleum products, coke, sulphur compounds, and solvents.

The northern portion of the property contains parts that are well vegetated with bushes, trees, and long grass. The probable refinery site is bordered by the railroad to the east, a road to the west, and a property fence to the north indicating the edge of the Yoder property. The (b) house was the only building in current use located on the northern portion of the property. There are a number of old buildings located on the west-central portion, however these buildings are not in use and do not appear to have any relation to the refinery.

Although the area was well vegetated, under the vegetation contaminated looking soil is present that is black in color and has a tar like consistency. Also, copious barren spots with refinery remnants were present all throughout the northern portion of the property to the extent that their size could not be quantified. The barren spots primarily were made up of hard, black material of a hydrocarbon nature. In some locations, a black, tar like liquid was observed oozing through openings in the hard black spots. The Sanborn map indicates the former location the largest on the Lorraine Refinery, and its area is estimated by a large barren area surrounded by trees that is visible in aerial photos.

In the south-central region of the northern portion of the property there is a dike running west to east with a height of about 20 feet. The dike appears to be man-made; however it is of unknown origin. It does not appear to be related to the refinery, and its presence is not indicated on the Sanborn Map.

The general drainage pattern for the northern portion of the property is north to south. However, there are numerous low-lying depressions throughout the property that could collect surface water. At the time of reconnaissance, no intermittent streams were seen.

Attachments:

Sanborn Map

Aerial Photos

Creek County Assessor's Office Data

TO HAVE AND TO HOLD unto the said David Gunsburg and Southwest [illegible] successors or assigns, according to the terms and conditions in said lease. The said David Gunsburg and Southwest Petroleum Co. are to perform all the conditions and covenants mentioned in said lease.

That I am the lawful owner and holder of said Oil and Gas Mining Lease and that I have good right and title to sell and assign the same.

IN WITNESS WHEREOF, he hereunto set his hand and seal the day and year first above written.

Albert E.Hall (SEAL)

STATE OF OKLAHOMA.
COUNTY OF MUSKOGEE.SS.

Before me, Eustace A. Hill a Notary Public, in and for said County and State, on this 21st day of June,1915, personally appeared Albert E.Hall to me known to be the identical person who executed the within and foregoing instrument and acknowledged to me that he executed the same as his free and voluntary act and deed for the uses and purposes therein set forth.

Witness my hand and official seal the day and year first above written.

Eustace A.Hill.
Notary Public.

SEAL.
My commission expires April 10,1916.

STATE OF OKLAHOMA.
COUNTY OF CREEK.
This instrument was filed in my office for record on JUL. 1,1915, at 8 o'clock A.M. and duly recorded in book 112 at page 643.

GUS L. COREY, County Clerk.
By, C.E.Maddox, Deputy.

***** 18806 *****

D E E D.

This indenture made this 22d day of May, A.D. 1915, between Joe Abraham and Fannie Abraham, his wife, of Bristow, Creek County, Oklahoma, parties of the first part, and the Bristow Oil and Refining Company, a corporation, of Bristow, Creek County, Oklahoma, party of the second part;

WITNESSETH: That the said parties of the first part for and in consideration of the sum of six thousand and five hundred dollars ($6,500.00), cash in hand paid, the receipt whereof is hereby acknowledged, do by these presents grant, bargain, sell and convey unto said party of the second part, the Bristow Oil and Refining Company, its assigns and successors, all that certain tract or parcel of land with the buildings thereon standing situated about one mile north of the [illegible] of Bristow, in the County of Creek, State of Oklahoma, and more particularly described as follows, to wit:

All that part of the North-west quarter (NW-4) of the North-west quarter

(NW-4) of Section Twenty-nine (29), Township Sixteen (16) North, Range

Nine (9) East, lying north and west of the St. Louis and San Francisco

Railroad right-of-way in Creek County, State of Oklahoma, containing

about seven and one-half (7,1/2) acres, more or less;

Together with the buildings, improvements, machinery and gasoline plant thereon located and the appurtenances thereunto belonging; also two certain wooden oil tanks and a quantity of galvanized iron drums used for the conveyance of gasoline, being all the drums except 165 located at Coalton, and owned by C.D.Webster Oil Company and located in various towns and cities in the State of Oklahoma and elsewhere;

To have and to hold the same, together with all and singular the tenements, hereditaments and appurtenances thereunto belonging or in any wise appertaining, forever;

It being the purpose and intention of the parties of first part to convey to the party of the second part, the said Bristow Oil and Refining Company, all the right, title and interest in and to said property acquired by Joe Abraham under and by virtue of a certain trustee's deed of May 19th,1915, from C.J.Benson as trustee in bankruptcy of C.D.Webster Oil Company, bankrupt, to Joe Abraham, as recorded in the Office of the County Clerk of Creek County, Oklahoma, May 25th,1915, and as the same appears of record in Book 111,at page 572 of the records of the said County Clerk.

In witness whereof the said parties of the first part have hereunto set their hands the day and year first above written.

Joe Abraham
Fannie Abraham.

(Revenue stamps $6.50 attached and cancelled.)

STATE OF OKLAHOMA.
COUNTY OF CREEK.SS.

On this 22d. day of May,1915, before me, the undersigned a Notary Public, in and for said County and State, personally appeared Joe Abraham and Fannie Abraham, his wife, to me known to be the identical persons who subscribed the names of the makers hereof to the aforegoing instrument and acknowledged to me that they executed the same as their free and voluntary act and deed for the uses and purposes therein set forth.

Witness my hand and official seal this 22d day of May, A.D.1915.

L.H. Creekmore,
Notary Public.

SEAL.
My commission expires March 4th,1917.

STATE OF OKLAHOMA.
COUNTY OF CREEK.
This instrument was filed in my office for record on JUL. 1,1915, at 8 o'clock A.M. and duly recorded in book 112 at page 644.

GUS L. COREY, County Clerk.
By, C.E.Maddox, Deputy.

**** 16809 ****

WARRANTY DEED.

KNOW ALL MEN BY THESE PRESENTS:

That Jake Smith heirs of Rufus Murrell of Porter, Oklahoma, in consideration of the sum of Fifteen, $15,00) Dollars, in hand paid, the receipt of which is hereby acknowledged does hereby grant, bargain, sell and convey unto Jack Summers of Haskell, Oklahoma, the following described real property and premises, situate in Creek County, Oklahoma, to-wit:

The East Half of the Southeast Quarter; and the Southwest Quarter of the

Southeast Quarter; and the Southeast Quarter of the Northeast Quarter of

Sec. 24, Township 18 North, Range 8 East.

together with all the improvements thereon and the appurtenances thereunto belonging, and warrant the title to the same.

To have and to hold said described premises unto the said Jack Summers, his heirs, successors and assigns forever, free, clear and discharged of and from all former grants, charges, taxes, judgments, mortgages and other liens and encumbrances of whatsoever nature, except.

Signed and delivered this 17th day of May 1915.

Jake Smith his thumb mark.

The name of Jake Smith was written by me at his request and in his presence, and mark made by him in our presence.
H.G.House, Witness to Mark.
Attest: Hoy Harsha.

ACKNOWLEDGMENT.

STATE OF OKLAHOMA.
MUSKOGEE COUNTY.SS.
Before me J.A.Morrison a Notary Public in and for said State and County, personally appeared Jake Smith to me known to be the identical person who executed by his mark in my presence and in the presence of H.G.House & Hoy Harsha as witnesses to his mark, the above and foregoing Warranty Deed, and acknowledged to me that he executed the same as his free and voluntary act and deed for the uses and purposes therein set forth, and I Hereby so certify.

Witness my hand as such Notary Public, at Porter Oklahoma, this 17 day of May, 1915.

J.A.Morrison.

SEAL.
My commission expires December 23,1916.

STATE OF OKLAHOMA.
COUNTY OF CREEK.

This instrument was filed in my office for record on JUL 1,1915, at 8 o'clock A.M. and duly recorded in book 112 at page 645.

GUS L. COREY, County Clerk.
By, C.E.Maddox, Deputy.

STATE OF OKLAHOMA, COUNTY OF CREEK, ss:

KNOW ALL MEN BY THESE PRESENTS: That The Bristow Oil and Refining Company [illegible] the laws of Oklahoma [illegible] part[illegible] of the first part, in consideration of the sum of One dollar and other [illegible] DOLLARS,

in hand paid, the receipt of which is hereby acknowledged, do[illegible] hereby Grant, Bargain, Sell and Convey unto [illegible] Refining Company the following described real property and premises, situate in Creek County, State of Oklahoma, to-wit:

[illegible] part of the [illegible] quarter of the [illegible] quarter of Section Twenty Nine (29) Township [illegible] North [illegible] East lying North and [illegible] of the [illegible] Railroad right of way in Creek County State of Oklahoma [illegible] together with the [illegible] refinery thereon and

together with all the improvements thereon and the appurtenances thereunto belonging, and warrant the title to the same.

TO HAVE AND TO HOLD said described premises unto the said part[illegible] of the second part, [illegible] heirs and assigns forever, free, clear and discharged of and from all former grants, charges, taxes, judgments, mortgages and other liens and incumbrances of whatsoever nature;

Signed and delivered this [illegible] day of September, 191[illegible]

Signed and delivered in the presence of:

Witnesses [illegible]

The Bristow Oil and Refining Company
[illegible] President
[illegible] Secretary

[illegible]

STATE OF OKLAHOMA, CREEK COUNTY, ss:

Before me, the undersigned, a Notary Public, in and for said County and State, on this [illegible] day of [illegible] 191[illegible], personally appeared [illegible] and [illegible] to me to be the President and Secretary respectively of the Bristow Oil and Refining Company [illegible] to me known to be the identical person[illegible] who executed the within and foregoing instrument, and acknowledged to me that [illegible] executed the same as [illegible] free and voluntary act and deed, for the uses and purposes therein set forth.

Witness my hand and official seal, the day and date above written.

My commission expires [illegible] Notary Public

STATE OF OKLAHOMA, CREEK COUNTY, ss:

This instrument was filed for record on the [illegible] day of [illegible] A. D. 191[illegible], at [illegible] o'clock [illegible] M., and duly recorded in Book 130, on page [illegible]

[illegible] County Clerk

Fee, $[illegible]

003177

IN TESTIMONY WHEREOF, I have hereunto set my hand and seal this 20th day of November 1925.

(Notary SEAL)
Baltimore MD.

C. Grant Tall
Notary Public

KANSAS ACKNOWLEDGMENT

STATE OF MARYLAND,

CITY OF BALTIMORE, SS.

BE IT REMEMBERED, that on this 20th day of November 1925, before me, the undersigned, a Notary Public within and for the City and State aforesaid, came W. D. Bahn, Vice President of Commerce Trust Company, a corporation, duly organized , incorporated and existing under the laws of the State of Maryland, who is personally known to me to be such officer and who is personally known to me to be the same person who executed, as such officer, the within instrument of writing, and such person duly acknowledged the execution of the same to be the act and deed of said corporation, Trustee as therein set forth.
My commission expires May 2, 1927

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my official seal on day and year first above written.

(Notary SEAL)
Baltimore MD.

C. Grant Tall
Notary Public

STATE OF OKLAHOMA
COUNTY OF CREEK
This instrument was filed in my office for record on Dec. 1 1925 9 o'clock A.M. and duly recorded in Book 289 at page 183.

(SEAL)

Erma Morris
County Clerk

---oOo---

INTERCOUNTY OIL COMPANY

TO

[illegible]

DEED OF TRUST
Dated July 1st, 1925

[illegible]

PRINCIPAL SUM $ 1,1925

THIS INDENTURE, made and entered into on the 8th day of October nineteen hundred and twenty-five of the 1st day of July, nineteen hundred and twenty-five by and between Intercounty Oil Company, a corporation organized and existing under and by virtue of the Laws of the State of Delaware, and hereinafter called the "corporation" party of the first part and the Century Trust Company of Baltimore, a corporation organized and existing under the Laws of the State of Maryland, hereinafter called the"Trustee," party of the second part;

WHEREAS, the Corporation has full power and authority to issue negotiable bonds and to secure the payment of such bonds and to mortgage all of its property, real and personal, wheresoever situated; and

WHEREAS, The Corporation desire now to make and issue its First Mortgage Ten Year 7% Convertible Sinking Fund Gold Bonds of which the aggregate amount outstanding at any one time shall never exceed the principal sum of Two Million ($2,000,000.00) Dollars, all of which bonds are to be issued under and in pursuance of, and are to be secured by this Indenture; and

WHEREAS, the said First Mortgage Ten Year 7% Convertible Sinking Fund Gold Bonds shall be coupon bonds, and shall be issued in denominations of One Thousand ($1,000.00) Dollars each, as provided in this Indenture, to be numbered from 1 to 2000, inclusive; and

WHEREAS, all of the bonds are to bear interest at the rate of Seven Per Cent (7%) per annum, payable as hereinafter on the first days of January and July in each year and shall be due and payable on the first day of July in the year nineteen hundred and forty-five; and

WHEREAS, each of said bonds shall be redeemable at any interest payment date before maturity at the Corporation, by payment of the principal and accrued interest

thereon, [illegible] of the amount, upon such conditions, and in such manner [illegible] designated in this Indenture. each of [illegible] bonds shall be convertible into the Class [illegible] stock of the Corporation upon the terms and conditions contained in this Indenture, and all said bonds shall be entitled to the benefit of the sinking fund hereby created; and, [illegible] the numbers of the several bonds, each of said bonds and the coupons annexed thereto and the Trustee's certificate endorsed thereon shall be substantially of the following tenor and form:

UNITED STATES OF AMERICA

STATE OF DELAWARE

INTEROCEAN OIL COMPANY

[illegible] BOND.

$1,000 No.....

The Interocean Oil Company, a corporation created and existing under the laws of the State of Delaware, hereinafter termed the "Corporation" for value received, hereby promises to pay on the 1st day of July, 1936, at the office of The Century Trust Company of Baltimore, in the City of Baltimore, to bearer, or if registered to the registered holder of this bond, One Thousand Dollars in gold coin of the United States of the present standard of weight and fineness or the equivalent thereof, and to pay interest thereon from July 1st, 19[illegible], until the payment or redemption of this bond at the rate of Seven Per Cent (7%) per annum at such office in like gold coin or the equivalent thereof, semi-annually on the first days of January and July, in each year, but only upon presentation and surrender of the respective coupons hereto attached as they severally mature. All payment upon this bond both of principal and interest, shall be made without deduction for any tax or taxes which the Corporation, its successors or assigns, may be required to pay, deduct or retain therefrom under any present or future law of the United States, or of any state, county or municipality therein or of any foreign country, and the Corporation agrees to pay the normal United States Federal Income Tax not exceeding [illegible] in the aggregate, and also to reimburse the holders of this bond for any taxes, (other than income succession and inheritance taxes) assessed or imposed by either of the States of Pennsylvania, Maryland, Connecticut and Michigan, or by any county or sub-division thereof and in excess of five mills per annum for each dollar of the principal amount hereof, upon this bond or upon the holder hereof as a resident of one of said States by reason of the ownership thereof and also to refund the assessments [illegible] exceeding [illegible] interest received [illegible] upon the [illegible] holder and written request for reimbursement [illegible] in the manner specified in the Indenture hereinafter described.

This bond is one of a duly authorized issue of bonds of the Corporation, the aggregate amount whereof is limited to One Million (1,000,000) Dollars, numbered 1 to 1000, in denominations of One Thousand Dollars each and maturing on July 1st, 1936 all of which are issued and to be issued under and in pursuance of, and are secured and to be secured, [illegible] subject to, an Indenture dated July 1st, 19[illegible], duly executed by the Corporation to The Century Trust Company of Baltimore, as Trustee, to which for entire reference is hereby specifically made for a statement of the nature and extent of the security, the rights of the holders of the bonds under the same and the terms and conditions upon which the bonds are issued and secured.

The Corporation covenants and agrees to pay to the Trustee the sum of One Hundred Fifty Thousand (150,000) Dollars annually, in equal semi-annual installments of Seventy-five Thousand (75,000) Dollars each beginning [illegible] June 1st, 19[illegible], and thereafter on the first day of June and December of each year until the maturity of this bond, as provided in said Indenture, which shall constitute a sinking fund for the purchase or redemption of bonds, all as provided in the said Indenture.

This bond is redeemable at the option of the Corporation on any interest payment date before maturity upon [illegible] days published notice upon payment of the principal and interest then due and a premium upon the principal as follows
Five Per Cent (5%) if redeemed on or before July 1st, 1926,;Four and One-Half Per Cent (4½%) if redeemed after July 1st, 1926, and on or before July 1st, 1927; the premium being reduced One-Half Per Cent (½%) each year thereafter, all as provided in the said Indenture.

This bond is convertible at the option of the holder at any time before maturity or before redemption of this bond into Class [illegible] stock of the Corporation at the face value of this bond and accrued interest, in exchange for the stock at Fourteen Dollars ($14.00) per share until July 1st, 19[illegible]; at the price of Fifteen Dollars ($15.00) per share from July 2nd, 19[illegible], until July 1st, 19[illegible], and at a price of One Dollar ($1.00) additional each year thereafter, all as provided in the said Indenture. If called for redemption, this [illegible] right [illegible] until the redemption date.

No recourse shall be had for the payment of the principal or interest of this bond against any incorporator, or stockholder or director of the Corporation, by virtue of [illegible] or by enforcement of any assessment or otherwise; any and all liability of stockholders, directors and [illegible] of the Corporation [illegible] released by the acceptance of this bond.

This bond shall pass by delivery unless registered in the owner's name on the books of the Corporation at the office of the Trustee in said City of Baltimore, such registry being noted on the bond, after which no transfer of the principal of this bond shall be valid unless made on said books in the manner prescribed in said Indenture and similarly noted on this bond; but this bond may be discharged from registry by being transferred [illegible] to bearer, after which transferability by delivery shall be restored; but [illegible], from time to time, it may be registered or transferred to bearer as before.

003179

Such registration however, shall not affect the transferability of the coupons for the interest thereon, by delivery merely, and payment to the bearer thereof shall discharge the Corporation in respect to the interest therein mentioned, whether or not the bond shall be [illegible] interest.

Neither this bond nor any coupon for interest thereon shall become or be valid until the bond shall have been authenticated by the certificate endorsed hereon duly signed by the Trustee under said indenture period. In Witness Whereof, Interocean Oil Company has caused these presents to be signed by its President or one of its Vice-Presidents, and corporate seal to be hereunto affixed, and to be attested by its Secretary or by an Assistant Secretary, and coupon for such interest bearing the fac-simile signature of its Treasurer to be attached hereto, as of the first day of July 19[illegible].

Interocean Oil Company

Attest:....... Secretary

By.............. President

(Corporate Seal)

(Form of Interest Coupon)

No....... $35.00

On the first day of ...... 19..... Interocean Oil Company, will pay to the bearer at the office of The Century Trust Company of Baltimore, in the City of Baltimore or at the office of the Mechanics and Metals National Bank in New York City, at the holder's option unless the bond to which this coupon is annexed shall have been previously redeemed or converted, thirty-five ($35.00) Dollars in the United States Gold Coin, without deduction for the taxes specified in said bond, being a semi-annual interest then due on its first mortgage Ten Year 7% Convertible, [illegible] BOND No.......

Treasurer..............

(Form of Trustees Certificate)

This is to certify that this bond is one of the bonds referred to in the within mentioned Indenture.

The Century Trust Company
of Baltimore
By.........Assistant Secretary.

AND WHEREAS, at a meeting of the stock holders of the Corporation duly called and held, the holders of all outstanding stock of the Corporation by their vote, duly authorized the execution of this Indenture and the issue of the bonds hereby secured, as herein provided; and

WHEREAS, at a meeting of the Board of Directors of the Corporation said Board of Directors duly approved the form of this Indenture and did resolve that in behalf of the Corporation, this Indenture be executed by its President or a Vice-President and that the corporate seal be affixed thereto and be attested by its Secretary or an Assistant Secretary and that this Indenture be acknowledged and delivered to the Century Trust Company of Baltimore as Trustee; that the bonds of the Corporation substantially of the tenor and effect set forth in this Indenture be executed from time to time in the name and behalf of the Corporation by the President or Vice-President and that the Corporate Seal be hereto affixed and attested by the Secretary or an Assistant Secretary of the Corporation; and such bonds be issued, certified and delivered in the manner and upon the terms and conditions and for the purposes set forth in this Indenture; and

WHEREAS, all acts and things prescribed by law and by the By-Laws of the Corporation as conditions precedent to the execution of this Indenture and the issue of the bonds hereby secured, have been duly performed, and the Corporation has executed this Indenture and has issued and delivered to the Trustee for certification the bonds hereby secured, in the exercise of each and every legal right and power in it vested;

NOW, THEREFORE, This Indenture witnesseth; that in order to secure the payment of the principal and the interest of all such first Mortgage Ten Year 7% convertible Sinking Fund Gold Bonds of the Corporation at any time issued and outstanding under this Indenture, and in consideration of the premises and of the purchase and acceptance of such bonds by the holders thereof, and of the sum of One Dollar to it duly paid by the Trustee, the receipt whereof is hereby acknowledged,

The Corporation, party of the first part hereto, has granted, bargained, aliened, conveyed, sold, assigned, transferred and set over, and does hereby grant, bargain, alien, convey, sell, assign, transfer and set over, unto the Trustee party of the second part hereto, and its successors in the trust hereby created the following described properties, viz.

IN THE STATE OF MARYLAND
1- Curtis Bay.

All those four parcels of land in Baltimore City, formerly in Anne Arundel County:

(1) Beginning for the first parcel at a point where a stone was formerly planted on the Southwest side of the right of way of the Sea Wall Branch of Baltimore and Ohio Railroad and in the division line between the land formerly of the heirs of Robert F. Crisp now belonging to The Prudential Oil Company and land formerly belonging to Curtis Bay Company now belonging to United States Asphalt Refining Company, and running thence binding on said division line south seventy-nine degrees and twenty-six minutes west one thousand three hundred and twenty-two feet and three inches; thence binding on the line of other land belonging to The Prudential Oil Company and

003180

Superintendent, Five Civilized Tribes

WHEREAS, The ~~[illegible]~~ a Tank Site [illegible], dated January 3rd 1917

[illegible] Continental Refining Company, a corporation

Yarma Harjo, Full Blood Creek, Roll #5851

[illegible] the following described lands in the Creek Nation, Oklahoma

Beginning at the Southwest Corner of Section 20, Township 16, North, Range 9 East; thence North 1090 feet; thence East 79[illegible] feet; thence South 53° East, 508 feet to the Right-of-way of the St. Louis & San Francisco Railroad; thence along said right-of-way in a Southwesterly direction 927 feet to where the said right-of-way intersects the South line of said Section 20; thence West 675 feet to the place of beginning; containing 23.6 acres more or less, heretofore assigned to and now owned by Lorraine Refining Company, a corporation, of Tulsa, Oklahoma.

Received
Supt. Five Civ. Tribes
Cashier
Nov. 3 1925
Mail Div. Nov. 3 1925
No. 39452

NOW, THEREFORE, for and in consideration of One $1.00 dollars, the receipt of which is hereby acknowledged, the said Lorraine Refining Company assigne[e] [illegible] hereby [illegible] transfers, assigns and conveys, all the right, title and interest of the lesse[e] [illegible] subject to the approval of the ~~[illegible]~~ Superintendent for the Five Civilized Tribes, to Interocean Oil Company, a corporation, Tulsa, Oklahoma. Said assignment to be effective from date of approval by the Superintendent for the Five Civilized Tribes.

IN WITNESS WHEREOF, The said [illegible] has hereunto set its hand and seal, this second day of November 1925

LORRAINE REFINING COMPANY

Attest. I. H. Patton Jr.
Assistant Secretary (CORP SEAL)

By Geo. W. Snedden,
Vice President

ACKNOWLEDGMENT OF CORPORATION

STATE OF Oklahoma
Tulsa County, ss.

Before me, a Notary Public in and for said County and State, on this 2nd day of November 1925, personally appeared Geo. W. Snedden & I. H. Patton Jr. each known to be the identical person who subscribed the name of the maker thereof to the foregoing instrument as its Vice-President and Assistant Secretary, respectively, and acknowledged to me that he executed the same as his free and voluntary act and deed, and as the free and voluntary act and deed of such corporation, for the uses and purposes therein set forth.

My commission expires May 29, 1928 (Notary SEAL) Tulsa Co. Nan H. Small,

ACKNOWLEDGMENT OF INDIVIDUAL

STATE OF
County, ss.

Before me, in and for said County and State, on this day of , personally appeared

known to be the identical person who executed the within and foregoing instrument, and acknowledged to me that executed the same as free and voluntary act and deed for the uses and purposes therein set forth.

My commission expires

ACCEPTANCE BY ASSIGNEE

The assignee in the above [illegible] assignment, made subject to the approval of the Secretary of the Interior, hereby accepts such assignment and agrees to fulfill all the conditions, covenants and stipulations in said described indenture of lease, when assigned, and the rules and regulations of the Secretary of the Interior applicable thereto, and to furnish proper bond guaranteeing a faithful compliance with said lease and this agreement.

IN WITNESS WHEREOF, The said assignee has hereunto set its hand and seal, this second day November 1925.

INTEROCEAN OIL COMPANY

Attest.
I. H. Patton Jr.
Assistant Secretary

(CORP SEAL)

By Geo. W. Snedden
Vice President

CONSENT OF SURETY

The Aetna Casualty and Surety Company of Hartford Connecticut surety for Lorraine Refining Company on the bond accompanying the lease above described, hereby consents to the assignment and transfer of said lease as above made and agrees that the existing bond shall remain in force and effect covering obligations of assignee

Dated at Tulsa, Oklahoma this second day of November 1925

Attest.
M. [illegible] Vantress
Resident Assistant Secretary
(CORP SEAL)

The Aetna Casulty and Surety Company
By A. R. Willsey
Resident Vice President.

DEPARTMENT OF THE INTERIOR, Washington, D. C. Nov. 24, 1925

APPROVED: Subject to the conditions attached to the lease.
S. E. Wallen
Superintendent for the Five Civilized Tribes.

STATE OF OKLAHOMA,
County of Creek }

This instrument was filed in my office for record on Nov. 28 1925 at [illegible] o'clock A. M., and duly recorded in Book 251 at page 447

Deputy. (SEAL) Erma Morris County Clerk.

--118992--

[illegible]

[illegible] that The [illegible] Investment Company (a corporation) in consideration of value received, does hereby acknowledge full payment and complete satisfaction of a certain mortgage [illegible] by [illegible] and [illegible], [illegible] to The [illegible] Investment Company, for 700 dated the [illegible] day of [illegible] 19[illegible] recorded in Book 128 Page 217 of Records of Mortgages of Creek County, [illegible]

The [illegible] property hereby discharged and released from said Mortgage lien is situate in the [illegible], and bounded and described as follows, to-wit:

[illegible] Quarter of Northwest Quarter of Section Fifteen (1[illegible]) Township [illegible] (1[illegible]) North, Range [illegible] ([illegible] East

[illegible], The [illegible] Investment Company has caused these presents to be signed by its Vice President and its [illegible] seal to be hereunto affixed, at [illegible], Kansas, [illegible] day of July, A. D. 19[illegible].

The [illegible] Investment Company
By [illegible]
Vice President

Attest:
[illegible]
Asst. Secretary (Corp. Seal)

STATE OF [illegible])
) ss
COUNTY OF [illegible])

Before me, a Notary Public in and for said County and State on this 10th day of July A. D. 19[illegible], personally appeared [illegible] to me known to be the identical person who signed the within and foregoing instrument for The [illegible] Investment Company, (a corporation duly organized, incorporated and existing under and by virtue of the Laws of the State of Kansas) as its Vice President who is personally known to me to be such officer, and acknowledged to me that he executed the same as his free and voluntary act and deed and as the free and voluntary act and deed of said corporation, for the uses and purposes therein set forth. I am familiar with the seal of said The [illegible] Investment Company, and the same is hereto affixed in my presence.

[illegible], I have hereunto set my hand and affixed my Notarial Seal the day [illegible] first above written.

[illegible] Ward
Notary Public, [illegible], Kansas

My commission expires [illegible], 19[illegible]
([illegible] Labette Co.)

[illegible]

This instrument was filed in my office for record on [illegible], 19[illegible] at [illegible] o'clock AM and duly recorded in Book 271 at Page [illegible].

[illegible]
County Clerk

(Seal)

--118994--

[illegible]

[illegible] That,

[illegible], on the [illegible] day of November, 19[illegible], an order was entered by the District Court of Creek County, State of Oklahoma, in a case then pending in the said Court, wherein Title [illegible] & Trust Company, a corporation, was plaintiff, and

Conti
spec
the
upon

THE
enter
prope

THE
the
and h
said
the s
Twent

THE
cont
Proce
the
sum

FOR
corp
Prou
subm
Lorr
foll
of O

That
of t
9 a
comp
refi
rack

A ce
acre
lanc
foll
Nort
Sout
Fro
sout
Sout
cont
Cont

The
sit
pum
hu
bei

(a)
Hal
kno

(b)
Wes
as

(c)
Qua
Jon

The
Cre
Not
(
th
in

To
be

11
pr

Continental Refining Company, a corporation, et al., were defendants, appointing J. J. Bedford Receiver of the said Continental Refining Company, and the said J. J. Bedford thereafter duly qualified as such Receiver and entered upon the performance of his duties, and,

THAT AS, thereafter, to wit, on the 23rd day of December, 19[illegible], an order was entered by the said court in the said case directing the said Receiver to sell the property of the said Continental Refining Company, hereinafter described, and,

THAT AS, thereafter, to wit, on the [illegible] day of June, 19[illegible], in accordance with the said order of December [illegible], 19[illegible], having first given notice of the said sale and having had the said property appraised in accordance with the terms of the said order, the said Receiver did offer the said property for sale and did sell the same to the Lorraine Petroleum Company of Tulsa, Oklahoma, for the sum of Twenty-Five Thousand Dollars ($[illegible],000.00) in cash, and,

THAT AS, thereafter, to wit, on the 16th day of July, 19[illegible] the said sale was duly confirmed by the said District Court of Creek County, Oklahoma, and the said Receiver was authorized and directed to execute and deliver his deed therefor to the said Lorraine Petroleum Company upon the payment to the said Receiver of the sum of Twenty-Five Thousand Dollars ($[illegible],000.00) in cash,

NOW THEREFORE, J. J. Bedford, Receiver of the Continental Refining Company, a corporation, party of the first part, in consideration of the sum of Twenty-Five Thousand Dollars ($[illegible],000.00) cash in hand paid, the receipt of which is hereby acknowledged, does hereby quitclaim, grant, bargain, sell and convey unto the Lorraine Petroleum Company of Tulsa, Oklahoma, party of the second part, the following described real property and premises, situate in Creek County, State of Oklahoma, to-wit:

That part of the Northwest Quarter of the Northwest Quarter lying North and West of the line of the Frisco Railway Company in Section [illegible], Township 1[illegible] North, Range 9 East, in the County of Creek, and State of Oklahoma, being a tract of ground comprising approximately seven and one-half (7-1/2) acres, together with the refinery, stills, pump houses, boiler houses, and other buildings, loading racks, tracks and tanks upon the premises.

A certain leasehold covering approximately twenty-three and six tenths (23.6) acres in the [illegible] Half of the Southwest Quarter of Section [illegible], Township 1[illegible] North, Range 9 East, County of Creek and State of Oklahoma, particularly described as follows, to wit: Beginning at the Southwest corner of Section [illegible], Township 1[illegible] North, Range 9 East, running thence North 1000 feet; thence East [illegible] feet; thence South [illegible] degrees East [illegible] feet to the right-of-way of the St. Louis and San Francisco Railroad; thence along the said right-of-way of said railroad in a southeasterly direction 9[illegible] feet to where the said right-of-way intersects the South line of said section [illegible]; thence West [illegible] feet to the place of beginning, containing twenty-three and six-tenths (23.6) acres, more or less used by the Continental Refining Company as a tank farm.

The rights of the Continental Refining Company in and to three tracts of land situated in the County of Creek and State of Oklahoma, whereon are located the pump station of the Continental Refining Company, together with all of the buildings, boiler houses and equipment now located thereon, said tracts of land being described as follows, to-wit:

(a) A tract of land containing approximately five (5) acres, located on the East Half of the West Half of Section 1[illegible], Township 1[illegible] North, Range 7 East, same being known as the Nettie Turner Pump Station.

(b) Approximately five (5) acres of land located in Lot Three (3) in the Northwest Quarter of Section 17, Township 1[illegible] North, Range 7 East, same being known as the [illegible] Pump Station,

(c) Approximately one (1) acre of land located in the South Half of the Northwest Quarter of Section 1[illegible], Township 1[illegible] North, Range 7 East, same being known as the Joseph [illegible] Station.

The rights of the Continental Refining Company in and to the lands located in Creek County, Oklahoma together with the oil pipe lines of the Continental Refining Company located thereon, to wit: Approximately twenty five and one half (25-1/2) miles of three (3) inch line running from the [illegible] Pump Station on through the Nettie Turner Pump Station and on through to the refinery at [illegible], in Creek County, Oklahoma.

Together with all and singular the tenements, hereditaments and appurtenances belonging to the above described property, or in any wise thereto appertaining.

Also the following described personal property not located on the above described premises, to wit:

All tanks located on the tank farm above described, being: 1-10,000 barrel steel oil tanks four [illegible] barrel steel oil tanks, and 14-1000 barrel steel oil tanks, and all appurtenances thereto belonging.

Also all office furniture, machinery, and machines, pipe fittings, gaskets, valves, tools of every kind and description, and all other personal property of like kind and character now on the premises of the Refinery of the Continental Refining Company near Bristow, in Creek County, Oklahoma, and owned by the said Continental Refining Company.

To have and to hold said described premises unto the said party of the second part, its successors and assigns forever, the said property being sold free from liens.

Signed and delivered this [illegible] day of July, 1923

J. [illegible] Goodford
[illegible] Goodford, Receiver of the Continental Refining Company, a corporation

[illegible]

STATE OF OKLAHOMA)
) SS
[illegible] COUNTY)

Before me, a notary public, in and for said county and state on this [illegible] day of July 1923, personally appeared J. [illegible] Goodford, Receiver of the Continental Refining Company, a corporation, to me known to be the identical person who executed the within and foregoing instrument and acknowledged to me that he executed the same as Receiver of the Continental Refining Company, a corporation, as his free and voluntary act and deed as such Receiver, for the uses and purposes therein set forth.

George P. Bonnette
Notary Public

My commission expires July 8th, 1927
(Seal of Tulsa Co.)

STATE OF OKLAHOMA
COUNTY OF CREEK

This instrument was filed in my office for record on Sep 19, 1923 at 8 o'clock AM and duly recorded in Book 371 at Page 388.

[illegible]
County Clerk

(Seal)

--11 [illegible]--

[illegible]

COMPARED

THIS INDENTURE, Made this first day of October A. D. 19 25

Lorraine Refining Company, a corporation of Tulsa County, in the State of Oklahoma, party of the first part, and

Interocean Oil Company, a Delaware Corporation, party of the second part,

WITNESSETH, That said party of the first part in consideration of the sum of One ($1.00) Dollars, the receipt of which is hereby acknowledged, does by these presents, Grant, Bargain, Sell and Convey unto said party of the second part its successors and assigns, all of the following described Real Estate, situated in the County of Creek, State of Oklahoma, to-wit:

That part of the NW¼ of the NW¼ lying north and west of the line of the Frisco Railway Company in Section 29, Township 16 N. Range 9 E. containing 7½ acres of land more or less.

Revenue $7.50 attached and cancelled.

TO HAVE AND TO HOLD THE SAME, Together with all and singular the tenements, hereditaments and appurtenances thereto belonging or in anywise appertaining forever.

And said Lorraine Refining Company and its successors do -- hereby covenant, promise and agree to and with said party of the second part that at the delivery of these presents that it is lawfully seized in its own right of an absolute and indefeasible estate of inheritance in fee simple, of and in all and singular the above granted and described premises, with the appurtenances; that the same are free, clear and discharged and unincumbered of and from all former and other grants, titles, charges, estates, judgments, taxes, assessments and incumbrances, of whatever nature and kind:

and that it will warrant and forever defend the same unto the said party of the second part its successors and assigns against said party of the first part, its successors or assigns, and all and every person or persons whomsoever, lawfully claiming or to claim the same.

IN WITNESS WHEREOF, The said party of the first part has hereunto set its hand, the day and year first above written.

Witness

Attest. I. H. Patton, Jr.
Assistant Secretary (CORP SEAL)

Lorraine Refining Company
By Geo. W. Snedden
Vice President.

STATE OF OKLAHOMA,
County of Tulsa } ss.

Before me, ----- a Notary Public in and for said County and State on this 5th day of October A. D. 1925, personally appeared Geo. W. Snedden and I.H.Patton, Jr to me known to be the identical persons who executed the within and foregoing instrument, and acknowledged to me that they executed the same as their free and voluntary act and deed, for the uses and purposes therein set forth.

Witness my hand and official seal the day and year last above written.

My commission expires May 29, 1928 (Notary SEAL) Tulsa Co.

Nan H. Small
Notary Public.

STATE OF OKLAHOMA,
County of Creek }

This instrument was filed in my office for record on Oct. 7, 19 25, at 8 o'clock A. M., and duly recorded in Book 309 on page 401.

(SEAL)

Erma Morris
County Clerk.

003185

(Re-Filed)

Feb. 1 1929

374 218

003186

THIS INDENTURE, Made this First day of February A. D. 19 29 between

Interocean Oil Company, a Delaware corporation of Tulsa

party
County in the State of Oklahoma, of the first part, and Producers Oil Company, a corporation, party

of the second part,

WITNESSETH, That said party of the first part, in consideration of the sum of

One and no/100 ($1.00) DOLLARS,

of which said party of the first part
the receipt is hereby acknowledged, do es by these presents, Grant, Bargain, Sell and Convey unto said part y of the second part,

its successors and assigns, all of the following described Real Estate, situated in the County of Creek, State of Oklahoma, to wit:

That part of the NW 1/4 of the Northwest (NW 1/4) quarter, lying North and West of the line of the Frisco Railway Company in Section 28, Township 18 North, Range 8 East, containing 7 1/2 acres of land more or less, together with the refinery, stills, pump houses boiler houses, shop , other buildings, loading racks, tracks and tanks upon the premises.

TO HAVE AND TO HOLD THE SAME, Together with all and singular the tenements, hereditaments and appurtenances thereto belonging or in anywise appertaining forever.

And said Interocean Oil Company, and its successors

heirs, executors or administrators do hereby covenant, promise and agree to and with said part --

of the second part that at the delivery of these presents that it is lawfully seized in its own right of an absolute and indefeasible estate of inheritance in fee simple, of and in all and singular the above granted and described premises, with the appurtenances; that the same are free, clear and discharged and unincumbered of and from all former and other grants, titles, charges, estates, judgments, taxes, assessments and incumbrances of what ever nature and kind:

and that it will warrant and forever defend the same unto the said part y of the second part, its successors and assigns, against said part y of the first part, its successors or assigns, and all and every person or persons whomsoever, lawfully claiming or to claim the same.

IN WITNESS WHEREOF, The said part y of the first part ha s hereunto set its hand , the day and year first above written.

WITNESSES:

Attest, J. T. [illegible], Jr.
Assistant Secretary

INTEROCEAN OIL COMPANY

(CORP SEAL)

By Geo. J. Snedden
Vice-President.

STATE OF OKLAHOMA, County of Tulsa , ss.

On this first day of February, 1929

before me the undersigned, a Notary Public in and for the County and State aforesaid

personally appeared Geo. J. Snedden

subscribed the name of the maker thereof to the as its Vice President

to me known to be the identical person who executed the foregoing instrument, and acknowledged to me that he executed the same as his free and voluntary act and deed, for the uses and purposes therein set forth.

Given under my hand and seal of office the day and year last above written.

My commission expires [illegible] 1932 (Notary SEAL) [illegible] Small
Tulsa Co. Notary Public

STATE OF OKLAHOMA, County of Creek, ss.

This instrument was filed in my office for record on Feb. 18 19 29 at [illegible] o'clock M.

and duly recorded in Book 573 on page 295

[illegible] County Clerk.

(SEAL) By [illegible] Deputy.

003187

[illegible] Deed No. [illegible]

THIS INDENTURE, Made this 25th day of June A. D. 1937 between

PRODUCERS OIL COMPANY, a corporation, with its principal office at Tulsa,

of Tulsa County, in the State of Oklahoma, of the first part, and

H. F. WILCOX OIL & GAS COMPANY, a corporation second part,

WITNESSETH, That ~~said party of the first part~~ in consideration of the sum of

Ten & no/100 ($10.00) DOLLARS,

the receipt whereof is hereby acknowledged, does by these presents, Grant, Bargain, Sell and Convey unto said party of the second part its successors ~~heirs~~ and assigns, all of the following described Real Estate, situated in the County of Creek, State of Oklahoma, to-wit: said party of the first part,

That part of the Northwest Quarter (NW/4) of the Northwest Quarter (NW/4) lying north and west of the right-of-way of the St. Louis and San Francisco Railway Company, containing seven and one-half (7-1/2) acres, in Section Twenty-nine (29), Township Sixteen (16) North, Range Nine (9) East, less and except approximately one-half (1/2) acre thereof conveyed by deed dated February 27, 1917, recorded April 6, 1917, in Book 146, Page 547, executed by Continental Refining Company to St. Louis-San Francisco Railway Company

Revenue Stamp 1.00
Attached and Cancelled

TO HAVE AND TO HOLD THE SAME, Together with all and singular the tenements, hereditaments and appurtenances thereto belonging or in anywise appertaining forever.

And said PRODUCERS OIL COMPANY, a corporation, for itself, its successors and assigns ~~and for ---------------- heirs, executors or administrators~~ does hereby covenant, promise and agree to and with said party of the second part ~~that~~ at the delivery of these presents it is lawfully seized in its own right of an absolute and indefeasible estate of inheritance in fee simple, of and in all and singular the above granted and described premises, with the appurtenances; that the same are free, clear and discharged and unencumbered of and from all former and other grants, titles, charges, estates, judgments, taxes, assessments and incumbrances of whatsoever nature and kind

EXCEPT None

and that it will warrant and forever defend the same unto said party of the second part, its successors ~~heirs~~ and assigns, against said party of the first part, its successors ~~--- heirs~~ and assigns, and all and every person or persons whomsoever, lawfully claiming or to claim the same.

IN WITNESS WHEREOF, The said party of the first part has hereunto set its hand, the day and year first above written.

WITNESSES:

Attest: J. A. Catlin
Secretary.

PRODUCERS OIL COMPANY

BY: Valjean Biddison
President

(Corp. SEAL)

ACKNOWLEDGMENT FOR CORPORATION

STATE OF OKLAHOMA, County of Tulsa } ss

~~Before me,~~ On this 25th day of June, A.D., 1937 before me, the undersigned, a Notary Public, in and for ~~said~~ County and State ~~on this~~ aforesaid, ~~day~~ personally appeared Valjean Biddison and J. A. Catlin to me known to be the identical persons who subscribed ~~their~~ ~~personally appeared~~ the name of the maker thereof to the foregoing instrument as its President and Secretary, respectively, and acknowledged to me that he executed the same as his free and voluntary act and deed, and as the free and voluntary act and deed of such corporation, for the uses and purposes therein set forth.

~~---- free and voluntary act and deed for the uses and purposes therein set forth.~~

~~Witness my hand and seal the day and year above written.~~ Given under my hand and seal of office the day and year last above written.

(Notary SEAL)

My commission expires August 1, 1937. State of Oklahoma, Tulsa. Maye E. McKeown Notary Public

STATE OF OKLAHOMA, County of [illegible] } ss

This instrument was filed in my office for record on [illegible] 1937, at 1:[illegible] o'clock P. M., and duly recorded in Book 402 on page 459

[illegible] County Clerk

003188

No Documentary Stamps Required

Form 3 – Copyright© 1987 by BURKHARTS Legal Forms – Tulsa, OK (For Filing Only)

MAILING ADDRESS

94 6787

CORRECTIVE

Quit-Claim Deed

CORRECTIVE

STATE OF OKLAHOMA
COUNTY OF CREEK
THIS INSTRUMENT WAS FILED
FOR RECORD ON
MAY 12 1994
12 o'clock P M and duly recorded in
Book 321 Page 1037-38
BETTY HENRY County Clerk
By Deputy

THIS INDENTURE, made this 2 day of May, 19 94,

between Mignon S. List, Trustee, of the Mignon S. List Revocable Trust Dated February 18, 1994

of Creek County, State of Oklahoma, party of the first part,

and Raymond E. Yoder and Carolyn J. Yoder, husband and wife

419 North Maple, Bristow, Oklahoma 74010 party of the second part.

WITNESSETH, That said party of the first part, in consideration of the sum of

Ten and no/100---------- Dollars

to her duly paid, the receipt whereof is hereby acknowledged, do es hereby quit-claim, grant, bargain, sell and convey unto the said party of the second part, and to their heirs and assigns forever, all her right, title, interest and estate, both at law and in equity, of, in and to the following described real estate, situated in the County of Creek

State of Oklahoma, to wit: A tract of land located in Section 20, Township 16 North, Range 9 East, Creek County, Oklahoma, more particularly described as follows: COMMENCING at the Southwest Corner of said Section 20, THENCE N 00° 03' 31" W a distance of 239.04 feet to the POINT OF BEGINNING: THENCE N 00° 03' 31" W a distance of 239.06 feet; THENCE S 89° 35' 28" E a distance of 660 feet; THENCE S 00° 03' 31" E a distance of 478.5 feet; THENCE N 74° 12' 47" W a distance of 174.83 feet; THENCE N 66° 48' 11" W a distance of 299.01 feet; THENCE N 70° 09' 35" W a distance of 230.85 feet to the Point of Beginning, containing 5.75 acres, more or less. This tract is subject to a county road right-of-way along the West side and an existing road right-of-way along the South side. Otherwise described as TRACT 2 of the attached Plat of Survey.

This is a corrective instrument intended to correct that certain Quit-Claim Deed filed of record in Book 321, Pages 1851-52, wherein the name of the Grantor was incomplete.

Together with all and singular the hereditaments and appurtenances thereunto belonging TO HAVE AND TO HOLD the above granted premises unto the said party of the second part their heirs and assigns forever.

In Witness Whereof, The said party of the first part has hereunto set her hand the day and year above written.

Mignon S. List, Trustee of the
Mignon S. List Revocable Trust dated
February 18, 1994.

Mignon S. List

STATE OF OKLAHOMA,
County of Creek } ss

(Individual Acknowledgment)

Before me, the undersigned, a Notary Public, in and for said County and State, on this 2 day of May, 19 94, personally appeared Mignon S. List, Trustee, of the Mignon S. List Revocable Trust dated February 18, 1994

to me known to be the identical person who executed the within and foregoing instrument, and acknowledged to me that she executed the same as her free and voluntary act and deed for the uses and purposes therein set forth.

IN WITNESS WHEREOF I hereunto set my official signature and affixed my notarial seal the day and year last above written. 1037

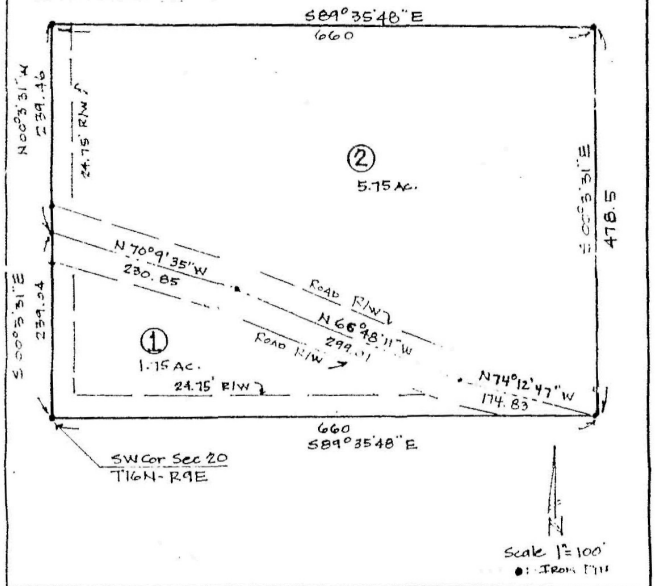
Notary Public

My commission expires June 20, 1994

003189

[redacted]

REGISTERED LAND SURVEYOR'S PLAT OF SURVEY



I, Alan Mark Penn, a Registered Land Surveyor, in the State of Oklahoma, do hereby state the above to be a true and accurate representation of a survey made and conditions are as shown, all to the best of my knowledge and ability. Due care and diligence have been exercised in performing this survey. However liability as to the correctness or completeness of this survey is limited to the amount billed for this survey and acceptance of this survey by the company or person(s) for whom this survey was made, constitutes agreement and confirmation of this limitation of liability.

Witness my hand and seal this 28th day of Oct 93

PENNCO Engineering and Land Surveying
P.O. Box 857, Bristow, OK 74010

Alan Mark Penn
Alan Mark Penn, Okla. Land Surveyor No. 1086

ALAN MARK PENN 1086 LAND SURVEYOR

TRACT 2

A tract of land located in Section 20, Township 16 North, Range 9 East, Creek County, Oklahoma more particularly described as follows:
Commencing at the Southwest Corner of said Section 20,
THENCE N 00°03'31" W a distance of 239.04 feet to the POINT OF BEGINNING;
THENCE N 00°03'31" W a distance of 239.46 feet,
THENCE S 89°35'28" E a distance of 660 feet,
THENCE S 00°03'31" E a distance of 478.5 feet,
THENCE N 74°12'47" W a distance of 174.83 feet,
THENCE N 66°48'11" W a distance of 299.01 feet,
THENCE N 70°09'35" W a distance of 230.85 feet to the Point of beginning, containing 5.75 acres more or less.
This tract is subject to a county road right-of-way along the West side and an existing road right-of-way along the South side as shown.

1038

County of Creek)

The foregoing instrument was acknowledged before me this 11th day of September, 1980, by ________, President of SECURITY NATIONAL BANK on behalf of the corporation for the uses and purposes therein set forth.

Emily R. Mokela
Notary Public
Emily R. Mokela

My commission expires: October 4, 1981

WARRANTY DEED

Statutory Form - Individual

STATE OF OKLAHOMA
COUNTY OF CREEK
THIS INSTRUMENT WAS FILED IN MY OFFICE FOR RECORD ON
SEP 12 1980
2 o'clock P.M. and duly recorded in Book 59 Page 569
W. R. Childers, County Clerk
By ________ Deputy

Know All Men by These Presents:

That C. P. MERCER and M. ALINE MERCER, husband and wife,

of Creek County, State of Oklahoma, parties of the first part, in consideration of the sum of Ten and No/100 -- DOLLARS in hand paid, the receipt of which is hereby acknowledged, does hereby Grant, Bargain, Sell and Convey unto FIRST ASSEMBLY OF GOD CHURCH, BRISTOW, OKLAHOMA of Creek County, State of Oklahoma, party of the second part, the following described real property and premises situate in Creek County, State of Oklahoma, to-wit:

That part of the Northwest Quarter (NW/4) of the Northwest Quarter (NW/4) lying North and West of the right of way of the St. Louis and San Francisco Railway Company, containing seven and one-half (7 1/2) acres, in Section Twenty-nine (29), Township Sixteen (16) North, Range Nine (9) East, less and except approximately one-half (1/2) acre thereof conveyed by deed dated February 27th, 1917, recorded April 6, 1917, in Book 146, Page 347, executed by Continental Refining Company to St. Louis-San Francisco Railway Company, in Creek County, State of Oklahoma,

together with all the improvements thereon and the appurtenances thereunto belonging, and warrant the title to the same.

TO HAVE AND TO HOLD said described premises unto the said party of the second part, its heirs and assigns forever, free, clear and discharged of and from all former grants, charges, taxes, judgments, mortgages and other liens and incumbrances of whatsoever nature.

Signed and delivered this 12th day of September, 1980.

C. P. Mercer
C. P. Mercer

M. Aline Mercer
M. Aline Mercer

STATE OF OKLAHOMA } ss.
COUNTY OF Creek }

INDIVIDUAL ACKNOWLEDGMENT
Oklahoma Form

Before me, the undersigned, a Notary Public in and for said County and State on this 12th day of September, 1980, personally appeared C. P. Mercer and M. Aline Mercer, husband and wife, to me known to be the identical persons who executed the within and foregoing instrument and acknowledged to me that they executed the same as their free and voluntary act and deed for the uses and purposes therein set forth.

Given under my hand and seal the day and year last above written.

My commission expires Nov. 13. 1980 ________ Notary Public

003191

No Revenue Required

COUNTY ABSTRACT CO.
304-306 East Dewey
P.O. Box 790
Sapulpa, Okla. 74067
(918) 224-5160

STATE OF OKLAHOMA
COUNTY OF CREEK
THIS INSTRUMENT WAS FILED
FOR RECORD ON
JAN 24 2002
12:30 o'clock P M. and duly recorded in
Book 268 Page 268-70
BETTY REITZ, County Clerk
By _____ Deputy

QUIT CLAIM DEED

02 1111

THIS INDENTURE, made this day 14 of January 2002, between FIRST ASSEMBLY OF GOD, INC., formerly known as Bristow First Assembly of God, (grantor), and FIRST ASSEMBLY OF GOD, INC., (grantee). 35146 W. 221ST ST. SOUTH
Bristow, OK 74010

WITNESSETH, That said grantor, in consideration of the sum of Ten Dollars and 00/100 and other good and valuable consideration, in hand paid, the receipt of which is hereby acknowledged, does hereby quitclaim, grant, bargain, sell and convey unto **First Assembly of God, Inc.**, their successors and assigns, the following described real estate, situated in Oklahoma County, State of Oklahoma, to-wit:

SEE ATTACHED EXHIBIT "A"

TO HAVE AND HOLD the same unto grantee, its successors and assigns forever, together with all and singular the hereditaments and appurtenances thereunto belonging or in any wise appertaining forever.

IN WITNESS WHEREOF, the grantor has hereunto set its hand on the day and year first above written.

First Assembly of God, Inc., an Oklahoma non-profit corporation, formerly known as Bristow First Assembly of God

by: _______________
Doug Sampley, President

STATE OF OKLAHOMA)

STATE OF OKLA.)ss:
COUNTY OF CREEK)

Before me, the undersigned Notary Public, in and for said County and State on this 14th day of January, 2002, personally appeared Doug Sampley, to me known to be the identical person who signed the name of the maker to the within and foregoing instrument as its President, and acknowledged to me that he executed the same as his free and voluntary act and deed and as the free and voluntary act and deed of said corporation, for the uses and purposes therein set forth.

STATE OF OKLA.
COUNTY OF CREEK

Before me, the undersigned Notary Public, in and for said County and State on this 9th day of January, 2002, personally appeared Doug Sampley, to me known to be the identical person who signed the name of the maker to the within and foregoing instrument as its President, and acknowledged to me that he executed the same as his free and voluntary act and deed and as the free and voluntary act and deed of said corporation, for the uses and purposes therein set forth.

Given under my hand and seal the day and year last above written.

Mary S Ham
Notary Public

My Commission Expires:
2-22-2005

MARY SUSAN HAM
NOTARY PUBLIC
COMM. EXP. 2-22-2005
STATE OF OKLAHOMA
CREEK COUNTY

EXHIBIT "A"

A tract of land located in the Southwest Quarter (SW/4) of the Southwest Quarter (SW/4) of Section Twenty (20), Township Sixteen (16) North, Range Nine (9) East of the Indian Base and Meridian, Creek County, Oklahoma, according to the U.S. Government Survey thereof, more particularly described as follows, to wit:
Beginning at the Southwest corner of said Section 20; Thence S 89°35'48" E a distance of 660 feet; Thence N 74°12'47" W a distance of 174.83 feet; Thence N 66°48'11" W a distance of 299.01 feet; Thence N 70°09'35" W a distance of 230.85 feet; Thence S 00°03'31" E a distance of 239.04 feet to the Point of Beginning.

270

JAN 2 4 2002

02 1112 **REAL ESTATE MORTGAGE**

THIS INDENTURE WITNESSETH, That **FIRST ASSEMBLY OF GOD, INC.** an Oklahoma not-for-profit Corporation of Creek County, State of Oklahoma ("Mortgagor"), MORTGAGE(S) AND WARRANT(S) to **ASSEMBLIES OF GOD FINANCIAL SERVICES GROUP,** a Missouri not-for-profit Corporation (the "Mortgagee") of Greene County, State of Missouri, the following described real estate in Creek County, Oklahoma:

SEE ATTACHED SCHEDULE "A"

and commonly known as: 35146 West 221st Street South, Bristow, OK (hereinafter referred to as the "Real Estate") together with all rights, privileges, interests, easements, hereditaments, appurtenances, fixtures and improvements now or hereafter belonging, appertaining, or attached to, or used in connection with the Mortgaged Premises, and owned by Mortgagors including, but not in limitation of the preceding, all gas, water and electric fixtures, radiators, heaters, fixtures, water heaters, air conditioning apparatus and units, refrigerating equipment, refrigerators, cooking apparatus, window screens, awnings, storm sash, floors and carpeting (which are or shall be attached to such building, structures or improvements), partitions, machinery, cranes, equipment, personal property of every kind and nature whatsoever now or hereafter owned by First Assembly of God, Inc., and [illegible]

[redacted]

JAN 2 4 2002

02 1112

REAL ESTATE MORTGAGE

THIS INDENTURE WITNESSETH, That **FIRST ASSEMBLY OF GOD, INC**, an Oklahoma not for profit Corporation of Creek County, State of Oklahoma ("Mortgagor"), MORTGAGE(S) AND WARRANT(S) to **ASSEMBLIES OF GOD FINANCIAL SERVICES GROUP**, a Missouri not for profit Corporation (the "Mortgagee") of Greene County, State of Missouri, the following described real estate in Creek County, Oklahoma:

SEE ATTACHED SCHEDULE "A"

and commonly known as: 35140 West 221st Street South, Bristow, OK (hereinafter referred to as the "Real Estate" together with all rights, privileges, interests, easements, hereditaments, appurtenances, fixtures and improvements now or hereafter belonging, appertaining, or attached to, or used in connection with, the Mortgaged Premises, and owned by Mortgagors including, but not in limitation of the preceding, all gas, water and electric fixtures, radiators, heaters, fixtures, water heaters, air conditioning apparatus and units, refrigerating equipment, refrigerators, cooking apparatus, window screens, awnings, storm sash, doors and carpeting (which are or shall be attached to such building, structures or improvements), partitions, machinery, stairs, equipment, personal property of every kind and nature whatsoever now or hereafter owned by First Assembly of God Inc., and located on, on or about, or used in connection with the Real Estate, whether physically attached to the Real Estate or not (hereinafter collectively referred to as the "Mortgaged Premises") and all the rents, issues, income and profits thereof and it is agreed that all similar fixtures, appliances, apparatus, equipment or articles hereafter placed on such Mortgaged Premises by First Assembly of God, Inc., and owned by First Assembly of God, Inc., its successors or assigns, including all replacements or substitutions therefor, shall be considered as constituting part of such Mortgaged Premises, all to the use and benefit of Mortgagee, its successors and assigns.

This Real Estate Mortgage is given to secure the performance of the provisions hereof and the payment of a certain promissory note ("Note") **January 14, 2002** in the principal amount of Forty Five Thousand Dollars ($45,000.00) with interest as therein provided and with a final maturity date of **January 14, 2022**.

Said principal and interest are payable as follows: One hundred eighty monthly installments of $377.00 payable on the **14th** day of **February, 2002** and the same day of each succeeding month thereafter until the note is fully paid.

The Mortgagors jointly and severally covenant and agree with the Mortgagee that:

RECEIPT NO. [redacted]
Mortage Tax Paid $ [redacted]
This [redacted] day of [redacted]
KATHY ANGLIN: Co Treas
[redacted] Deputy

271

(23)

1. **Payment of Indebtedness.** The Mortgagors shall pay to Mortgagee when due all indebtedness secured by this Real Estate Mortgage, on the dates and in the amounts as provided in the Note or in this Real Estate Mortgage, without relief from valuation and appraisement laws, and with attorneys' fees, which indebtedness shall include all renewals, modifications and extensions thereof, and also such further sums as may be advanced or loaned by Mortgagee to Mortgagors, or any of their successors or assigns, together with interest thereon at such a rate as shall be agreed upon.

2. **No Liens.** The Mortgagors shall not permit any lien of mechanics or material men to attach to and remain on the Mortgaged Premises or any part thereof for more than 45 days after receiving notice thereof from the Mortgagee.

3. **Repair of Mortgaged Premises, Insurance.** The Mortgagors shall keep the Mortgaged Premises in good repair and shall not commit waste thereon. The Mortgagors shall procure and maintain in effect at all times adequate insurance with insurance companies acceptable to the Mortgagee against loss, damage to or destruction of the Mortgaged Premises because of fire, windstorm, or other such hazards in such amounts as the Mortgagee may reasonably require from time to time, and all such insurance policies shall contain proper clauses making all proceeds of such policies payable to the Mortgagee and the Mortgagors as their respective interests may appear. All such policies payable to the Mortgagee shall be delivered to and retained by the Mortgagee until the indebtedness secured hereby is fully paid.

4. **Taxes and Assessments.** The Mortgagors shall pay all taxes or assessments levied or assessed against the Mortgaged Premises or any part thereof as and when due, and before penalties accrue.

5. **Advancements to Protect Security.** The Mortgagee may, at its option, advance and pay all sums necessary to protect and preserve the security intended to be given by this Real Estate Mortgage. All sums so advanced and paid by the Mortgagee shall be payable upon demand or shall become a part of the indebtedness secured hereby, at the election of the holder, and shall bear interest from the date or dates of payment at the rate of [illegible] per centum ([illegible]) per annum. Such sums may include, but are not limited to, insurance premiums, taxes, assessments and liens which may be or become prior and senior to this Real Estate Mortgage as a lien on the Mortgaged Premises, or any part thereof and all costs, expenses, and attorneys' fees incurred by the Mortgagee in respect of any and all legal or equitable proceedings which relate to this Real Estate Mortgage or to the Mortgaged Premises.

6. **Default by Mortgagors, Remedies of Mortgagee.** Upon default by the Mortgagors in any payment provided for herein or in the Note, trustee or receiver is appointed in any bankruptcy action, then and in any such event, the entire indebtedness secured hereby shall become immediately due and payable at the option of the Mortgagee, without notice, and this Real Estate Mortgage may be foreclosed accordingly. Upon such foreclosure the Mortgagee may continue the abstract of the title to the Mortgaged Premises, or obtain other appropriate title evidence, and may add the cost thereof to the principal balance due.

7. **Non-Waiver, Remedies Cumulative.** Time is of the essence in the performance of obligations hereunder. No delay by the Mortgagee in the exercise of any rights hereunder shall preclude the exercise thereof so long as the Mortgagors are in default hereunder, and no failure of the Mortgagee to exercise any rights hereunder shall preclude the exercise hereof in the event of subsequent default by the Mortgagors hereunder. The Mortgagee may enforce any one or more of the rights or remedies hereunder [illegible] concurrently.

8. **Extensions, Reductions, Renewals, Continued Liability of Mortgagors and Guarantor(s).** The Mortgagee, at its option, may extend the time for the payment of the indebtedness, [illegible] thereon, or accept a renewal note or notes therefore without consent of any [illegible] consent of the Mortgagors if the Mortgagors have then parted with title to the Mortgaged Premises. [illegible] extension, reduction or renewal shall affect the priority of this Real Estate Mortgage [illegible] hereof in any manner whatsoever, or release, discharge or affect in any manner the [illegible] Mortgagors and Guarantor(s), if any, to the Mortgagee.

9. **General Agreement of Parties.** All rights and obligations hereunder shall extend to and be binding [illegible] successors and assigns of the parties to this Real Estate Mortgage.

7. **Non-Waiver, Remedies Cumulative**. Time is of the essence in the performance of obligations hereunder. No delay by the Mortgagee in the exercise of any rights hereunder shall preclude the exercise thereof so long as the Mortgagors are in default hereunder, and no failure of the Mortgagee to exercise any rights hereunder shall preclude the exercise hereof in the event of subsequent default by the Mortgagors hereunder. The Mortgagee may enforce any one or more of the rights or remedies hereunder successively or concurrently.

8. **Extensions, Reductions, Renewals, Continued Liability of Mortgagors and Guarantor(s)**. The Mortgagee, at its option, may extend the time for the payment of the indebtedness, or reduce the payments thereon, or accept a renewal note or notes therefore without consent of any junior lien holder, and without consent of the Mortgagors if the Mortgagors have then parted with title to the Mortgaged Premises. No such extension, reduction or renewal shall affect the priority of this Real Estate Mortgage or impair the security hereof in any manner whatsoever, or release, discharge or affect in any manner the personal liability of the Mortgagors and Guarantor(s), if any, to the Mortgagee.

9. **General Agreement of Parties**. All rights and obligations hereunder shall extend to and be binding upon the several heirs, representatives, successors and assigns of the parties to this Real Estate Mortgage. When applicable, use of the singular form of any word also shall mean or apply to the plural and the masculine form shall mean and apply to the feminine or the neuter. The titles of the several paragraphs of this Real Estate Mortgage are for convenience only and do not define, limit or construe the contents of such paragraphs.

Mailing Address of Mortgagee

1661 Bonnville Avenue, Suite I
Springfield, Missouri 65803

IN WITNESS WHEREOF, the Mortgagors have executed this Real Estate Mortgage, this 14 day of January, 2002.

FIRST ASSEMBLY OF GOD, INC.

By: Doug Sandy

Title: President

By: _____

Title: _____

STATE OF OKLA)
) SS
COUNTY OF OKLA)

Before me, a Notary Public in and for said County and State, personally appeared Doug Sampley ________________, President and authorized representative of the Official Board of First Assembly of God, Inc., an Oklahoma non-profit corporation, who, having been duly sworn, acknowledged the execution of the foregoing document on behalf of First Assembly of God, Inc.

Witness my hand and Notarial Seal this 14th day of JAN, 2002.

Signature Mary S. Ham

________________ Notary Public

My Commission expires 2-22-2005 Residing in Creek County, Oklahoma.

MARY SUSAN HAM
NOTARY PUBLIC
STATE OF OKLAHOMA
CREEK COUNTY

This Instrument Prepared By:
Phil Illum
Manager Loan Closing
Assemblies of God Financial Services Group
Loan Services
1661 N Boonville, Ste F
Springfield, MO 65803
Phone:(800) 449-5626
Fax:(417) 862-1219

4

274

CONTINUATION SHEET
SCHEDULE "A"

Order Number:01120059

EXHIBIT "A"

Tract 1:
A tract of land located in the Southwest Quarter (SW/4) of the
Southwest Quarter (SW/4) of Section Twenty (20), Township Sixteen
(16) North, Range Nine (9) East of the Indian Base and Meridian
Creek County, Oklahoma, according to the U.S. Government Survey
thereof, more particularly described as follows, to wit:
Beginning at the Southwest corner of said Section 20; Thence
S 89°35'48" E a distance of 660 feet; Thence N 74°12'47" W a
distance of 174.83 feet; Thence N 66°48'11" W a distance of
299.01 feet; Thence N 70°09'35" W a distance of 230.95 feet;
Thence S 00°03'31" E a distance of 239.04 feet to the Point
of Beginning.

and

Tract 2:
That part of the Northwest Quarter (NW/4) of the West...
(NW/4) lying North and West...

003198

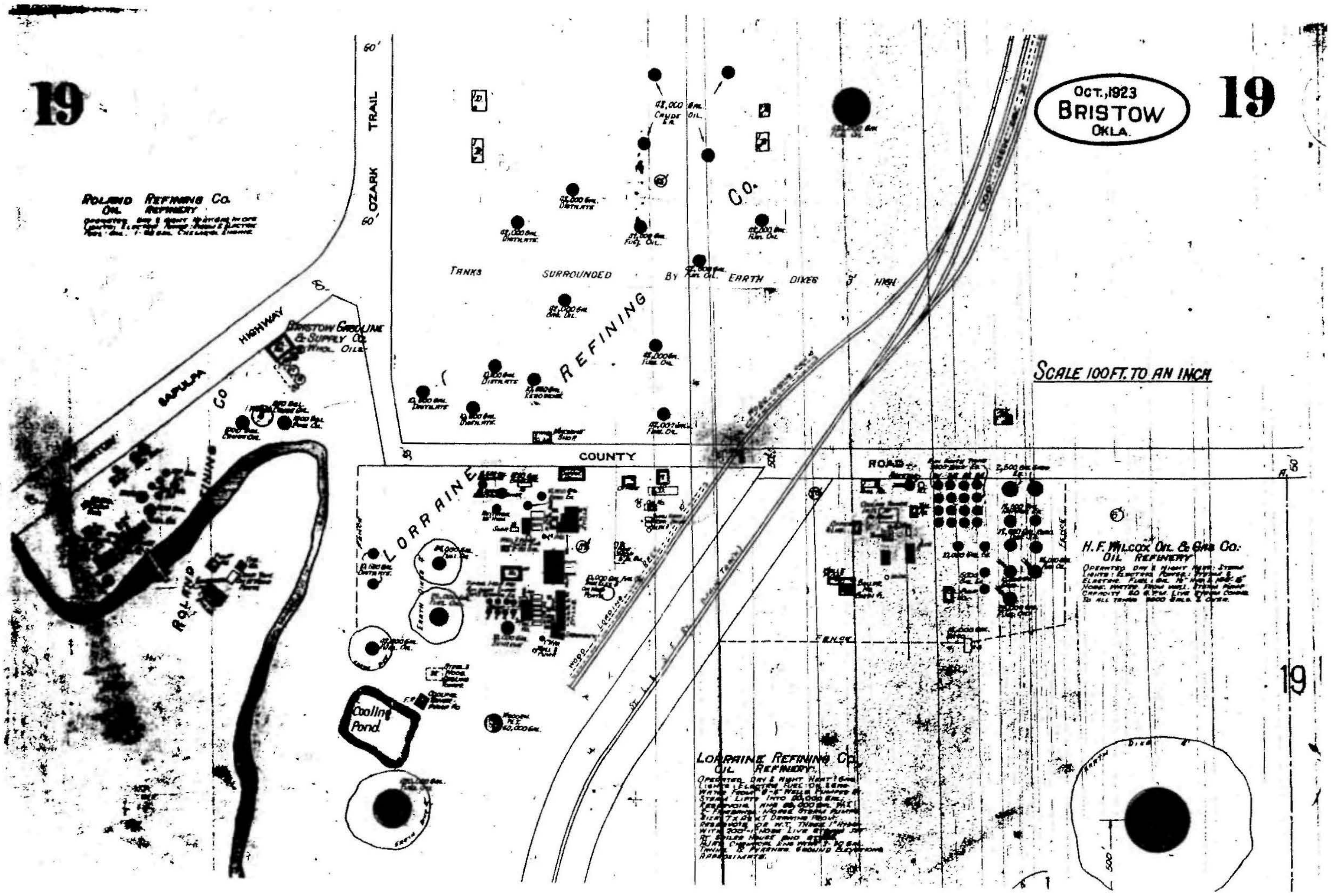
Order Number [illegible]

EXHIBIT "A"

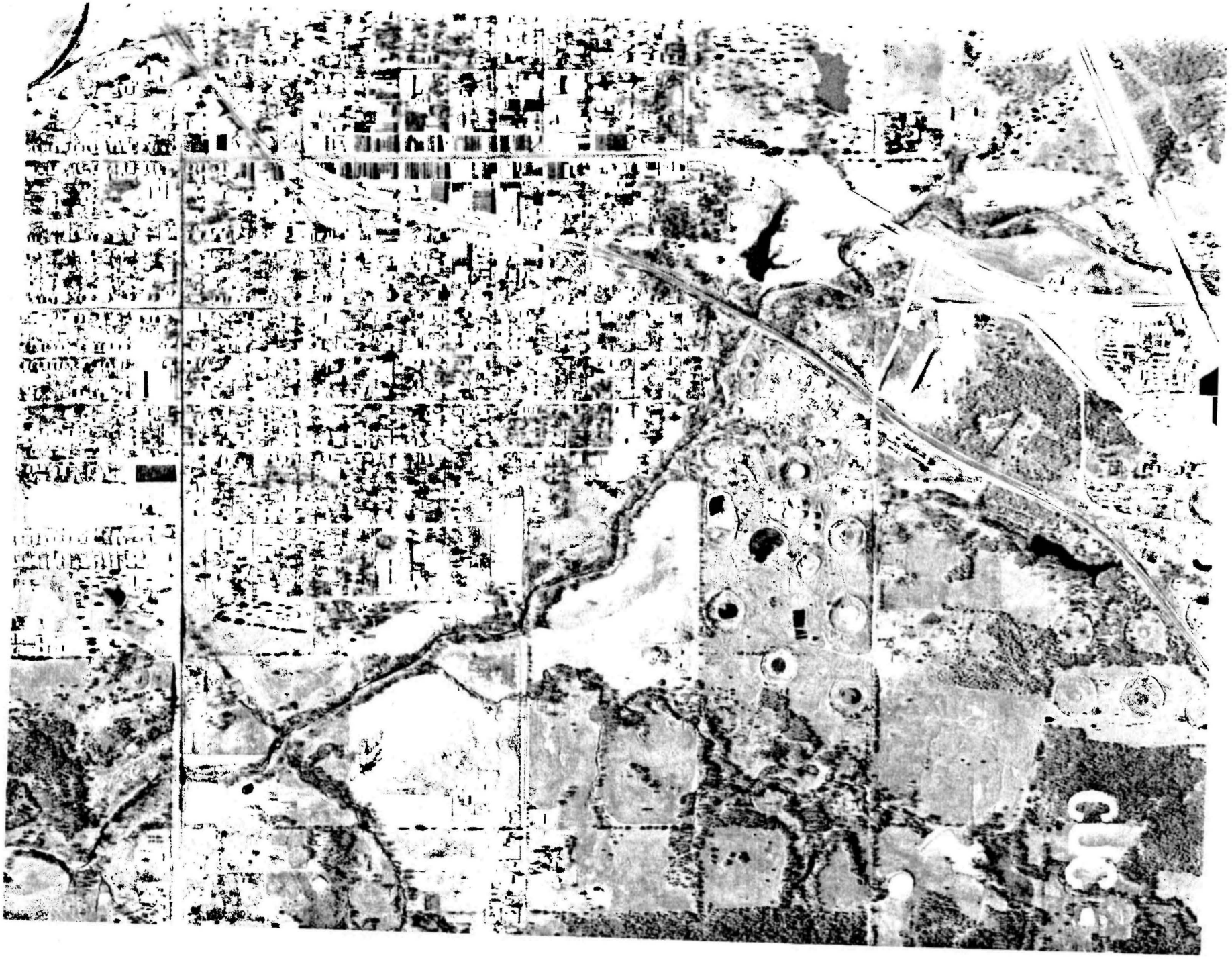
Tract 1.
A tract of land located in the Southwest Quarter (SW/4) of the Northwest Quarter (NW/4) of Section Twenty (20), Township [illegible] ([illegible]) North, Range Nine (9) East of the Indian Base and Meridian, Creek County, Oklahoma, according to the U.S. Government Survey thereof, more particularly described as follows, to wit: Beginning at the Southwest corner of said Section 20; Thence S [illegible] E a distance of 560 feet; Thence N [illegible] W a distance of 174.03 feet; Thence N 69°40'12" W a distance of [illegible] feet; Thence N 70°09'39" W a distance of 23[illegible] feet; Thence S [illegible] E a distance of 230.04 feet to the Point of Beginning.

and

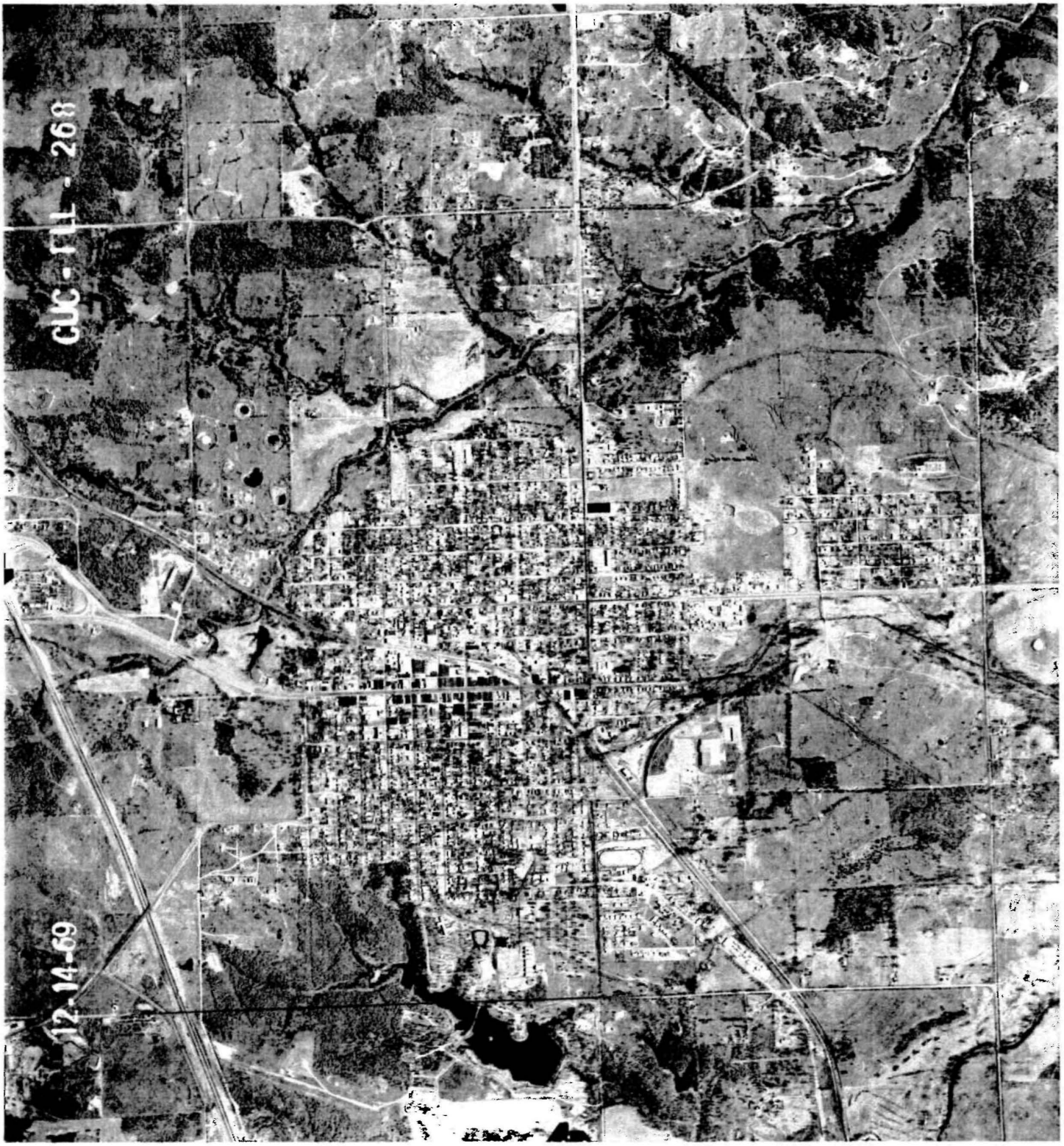
Tract 2.
That part of the Northwest Quarter (NW/4) of the Northwest Quarter (NW/4) lying North and West of the Right of Way of the St. Louis and San Francisco Railway Company, in Section Twenty-nine (29), Township Sixteen (16) North, Range Nine (9) East, less and except approximately [illegible] acre thereof conveyed by Deed dated February 1917, recorded April [illegible] 1917 in Book 166, page [illegible], executed by [illegible] Company to St. Louis-San Francisco Railway Company, in Creek County, State of Oklahoma.

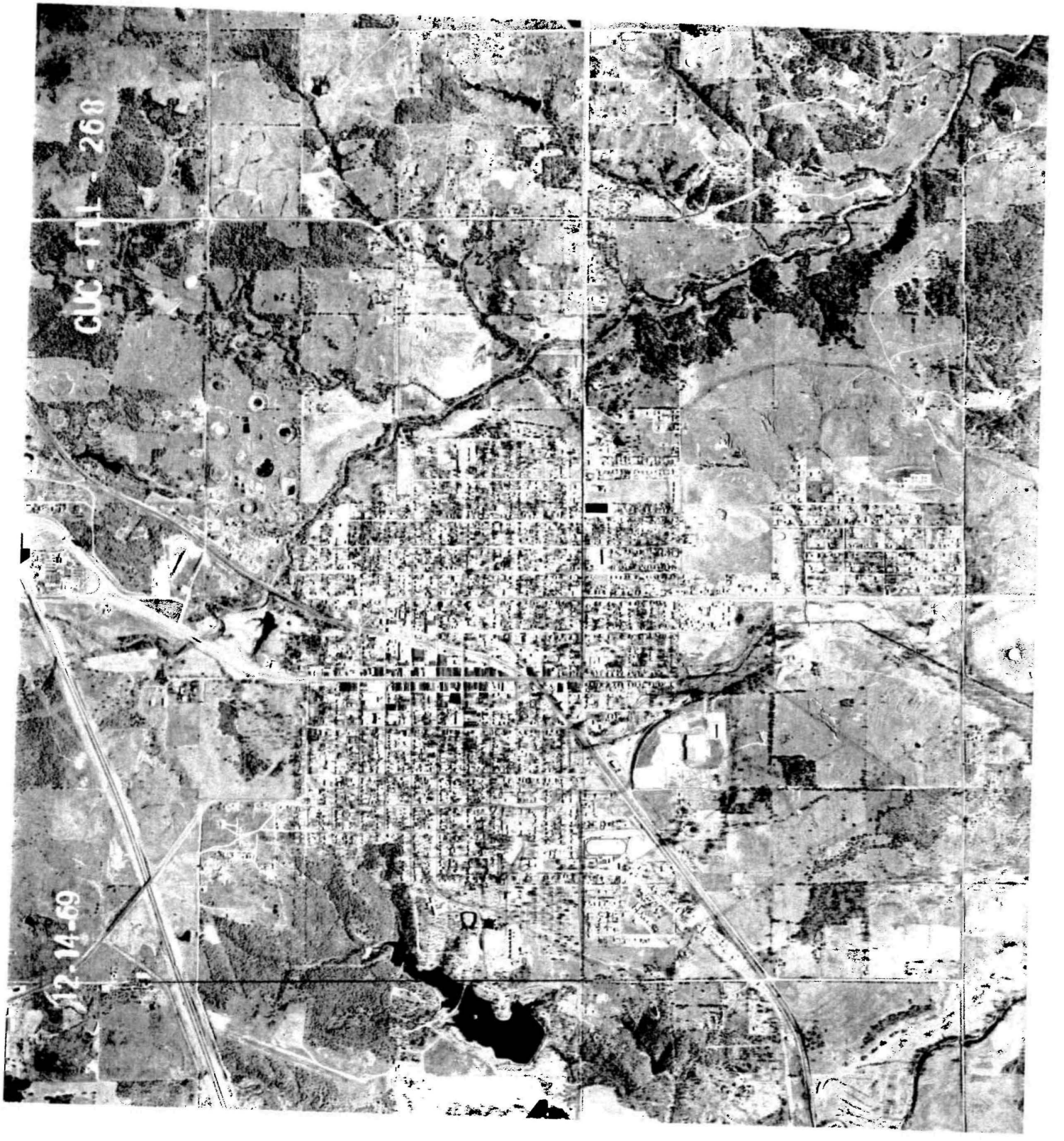


19
Oct., 1923
BRISTOW
OKLA.
19
Roland Refining Co.
Oil Refinery
Ozark Trail
Sapulpa Highway
Bristow Gasoline & Supply Co.
Tanks surrounded by earth dikes 3' high
Refining Co.
County Road
Lorraine
Scale 100 ft. to an inch
H. F. Wilcox Oil & Gas Co.
Oil Refinery
Cooling Pond
Lorraine Refining Co.
Oil Refinery
19



CUC - FLL - 268
12-14-69


CUC-FLL-268
12-14-69


CUC-FLL-268
12-14-69

8-19-41
CUC 5B-9

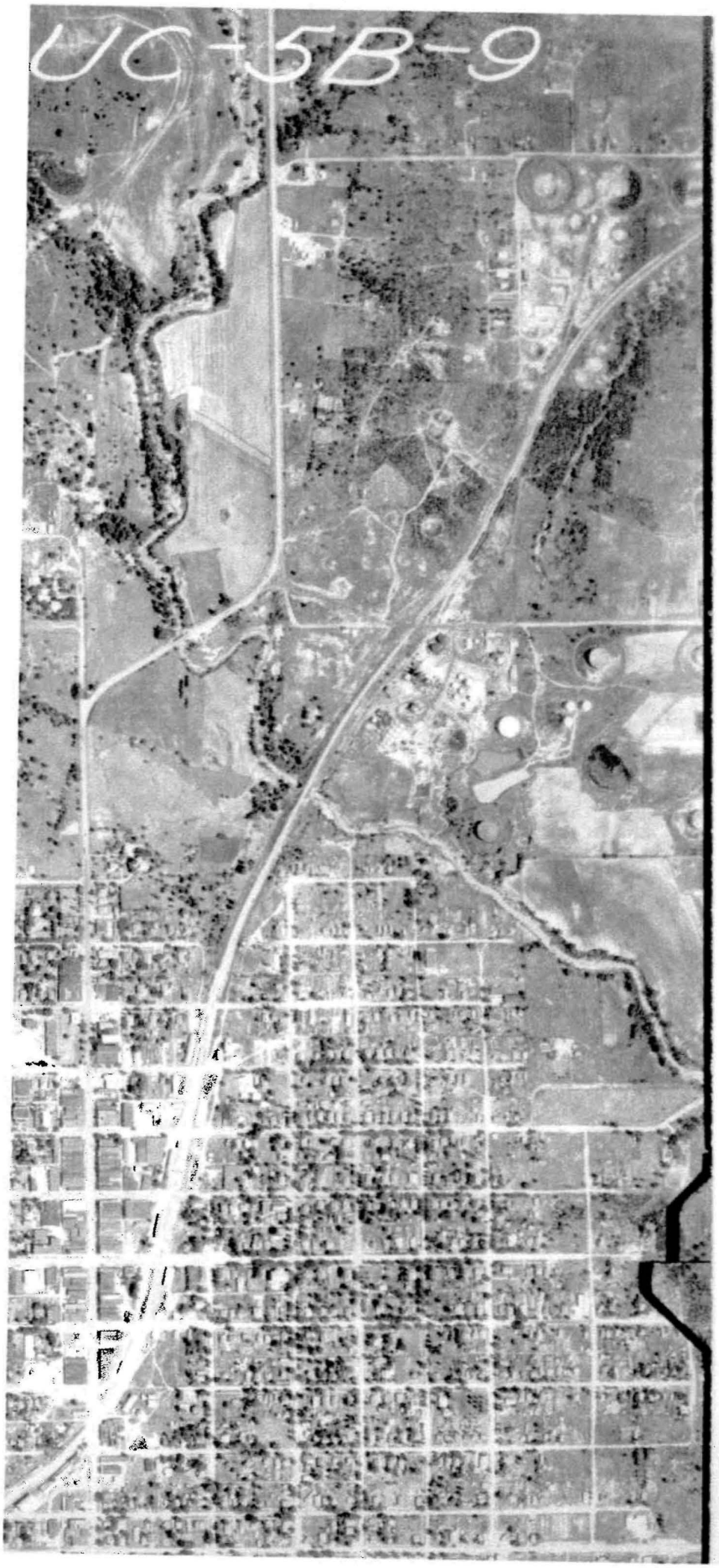
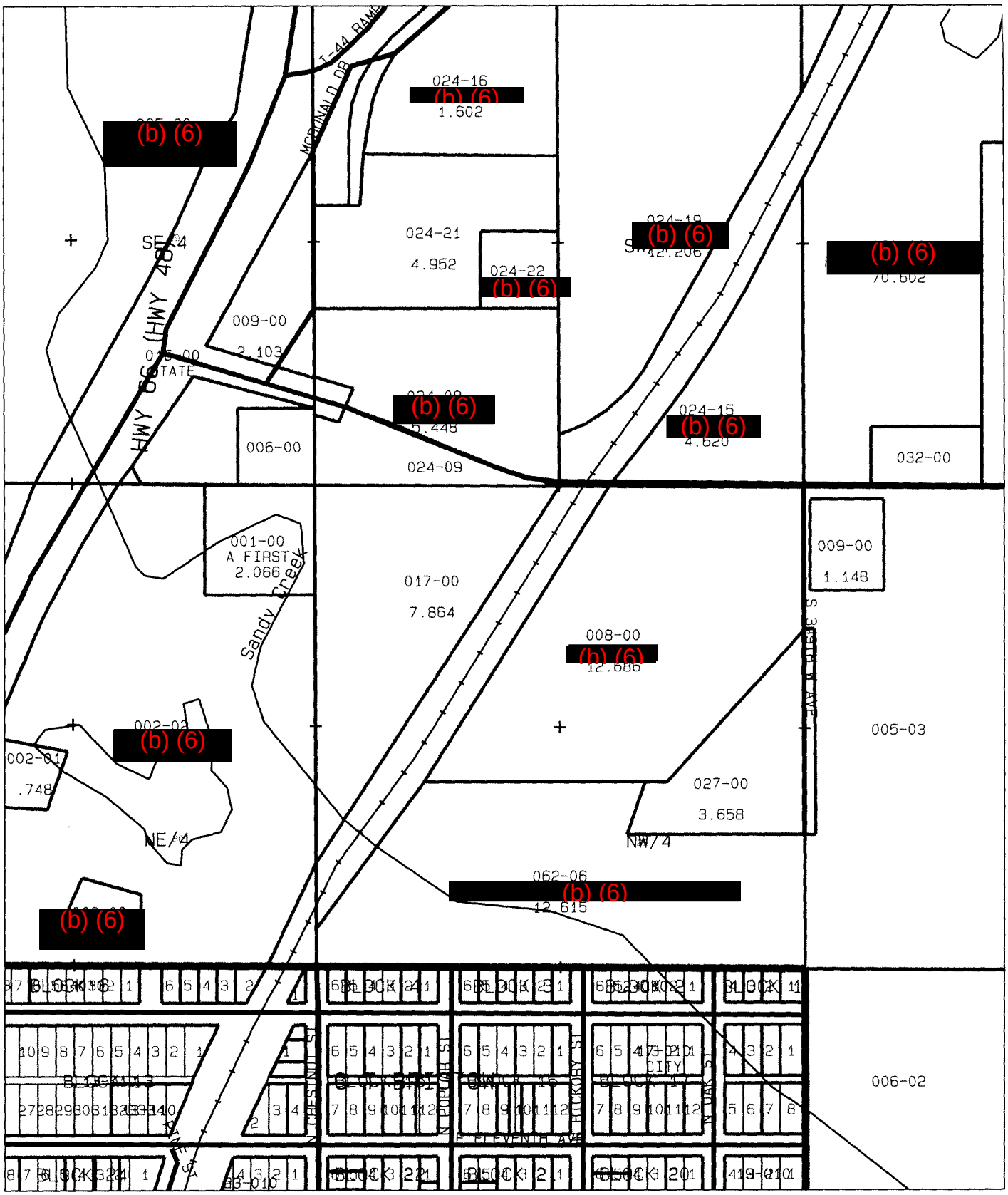

UG-5B-9


Image © 2008 DigitalGlobe
© 2008 Tele Atlas
221st St S
Google
35°50'39.22" N 96°23'06.10" W
elev 816 ft
Sep 30, 2004 Eye alt 1993 ft


Image © 2008 DigitalGlobe
© 2008 Tele Atlas
221st St S
Google
35°50'39.22" N 96°23'06.10" W
elev 816 ft
Sep 30, 2004 Eye alt 1993 ft



Scale 1"= 340 ft

PARCEL	0000-29-016-009-0-017-00
OWNER	FIRST ASSEM OF GOD CHURCH
ADDR1	(BRISTOW)
ADDR2	
CITY	NON-TAXABLE
STATE	
ZIP	000000000
SITUS	221ST STREET S W 035148
LEGAL1	29-16-9 PT NW NW LYING N
LEGAL2	R/W SF & SL RY CO LESS TR
LEGAL3	TO CONT REF CO
LEGAL4	(69 SCHULT VIN 87516 HERE
LEGAL5	
LEGAL6	
BOOKPAGE	89/569
USE	7
ACRES_ASSD	7.00
ACRES	7.864
AG_ACRES	0.00
SECONDARY	
INTEREST	0.00100
LAND	0
IMPR	0
MOBILE	0
HOMESTEAD	0
DBLE_HS	0
TAX	0.00
SCHOOL	02R
FREEZE	0000/00/00
CAP	0000/00/00
LATLONG	96.38611W 35.84134N
CHANGED	3/ 6/1991
UPDATED	4/ 1/2008

PARCEL	5999-20-016-009-0-024-09
OWNER	FIRST ASSEMBLY OF GOD INC
ADDR1	35148 W 221ST STREET S
ADDR2	NON TAXABLE
CITY	BRISTOW
STATE	OK
ZIP	740109301
SITUS	36111
LEGAL1	20-16-9
LEGAL2	TR BEG SW COR TH
LEGAL3	S89D35'48"E660'TH N74D12'
LEGAL4	47"W174.83'TH N66D48'11"
LEGAL5	W299.01'TH N70D09'35"W230
LEGAL6	S00D3'31"E239.04' TO POB
BOOKPAGE	464/268-70
USE	7
ACRES_ASSD	1.75
ACRES	1.720
AG_ACRES	0.00
SECONDARY	
INTEREST	0.00100
LAND	0
IMPR	0
MOBILE	0
HOMESTEAD	0
DBLE_HS	0
TAX	0.00
SCHOOL	
FREEZE	0000/00/00
CAP	0000/00/00
LATLONG	96.38608W 35.84304N
CHANGED	2/14/2002
UPDATED	1/ 4/2008

PARCEL	[redacted]
OWNER	
ADDR1	
ADDR2	[redacted]
CITY	BRISTOW
STATE	OK
ZIP	740100000
SITUS	MAIN ST N 001201
LEGAL1	20-16-9
LEGAL2	[redacted]
LEGAL3	
LEGAL4	
LEGAL5	
LEGAL6	
BOOKPAGE	323/1037
USE	5
ACRES_ASSD	5.75
ACRES	5.448
AG_ACRES	0.00
SECONDARY	
INTEREST	0.00100
LAND	337
IMPR	0
MOBILE	0
HOMESTEAD	0
DBLE_HS	0
TAX	0.00
SCHOOL	
FREEZE	0000/00/00
CAP	0000/00/00
LATLONG	[redacted]
CHANGED	11/12/2004
UPDATED	1/ 4/2008

REFERENCE 4

Series 1950, No. 5 Issued May 1959

SOIL SURVEY

Creek County Oklahoma

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with the
OKLAHOMA AGRICULTURAL EXPERIMENT STATION

SOIL SURVEY OF CREEK COUNTY, OKLAHOMA

By HARVEY OAKES, Soil Survey; [1] soils surveyed by O. H. BRENSING, in charge, DALE SCRIVEN, and E. C. TALLEY, Oklahoma Agricultural Experiment Station; H. P. MIKLES, Soil Conservation Service; H. M. GALLOWAY, Soil Survey and Oklahoma Agricultural Experiment Station

Correlation by JAMES THORP, Soil Survey, United States Department of Agriculture

United States Department of Agriculture in Cooperation with the Oklahoma Agricultural Experiment Station

Geography of Creek County

Creek County is in the northeastern quarter of Oklahoma (fig. 1). It is about 72 miles south of the Oklahoma-Kansas boundary and about 96 miles west of the Oklahoma-Arkansas boundary. Sapulpa, the county seat, is in the northeastern corner of the county. It is 15 miles southwest of Tulsa and 87 miles northeast of Oklahoma City.

The county is 36 miles long from north to south and 33 miles across at the central and widest part. It is 24 miles across at the south end. All boundaries of the county are artificial. Most of the county lies between the Cimarron River on the north and the Deep Fork of the North Canadian River on the south. Small parts lie north and south of these rivers. The approximate land area of Creek County is 972 square miles, or 622,080 acres.

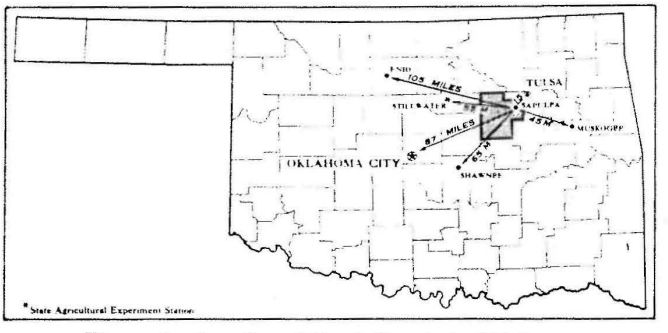


Figure 1.—Location of Creek County in Oklahoma.

Physiography, Relief, and Drainage

Creek County lies in the Osage Plains section of the Central Lowlands physiographic province. The Osage Plains, now a region of well-dissected sandstone hills, was formerly a gently sloping plain. Shallow narrow valleys separated by stony ridges are characteristic. The ridges lie roughly parallel in a northeast-southwest direction. Many of them have rather steep east-facing escarpments.

Creek County is underlain by interbedded sandstones and shales; each layer outcrops at its eastern edge. The shales, which erode more rapidly than the sandstones, occupy the shallow valleys. The ridges are capped by the more resistant sandstones.

The western part of the county is underlain mostly by sandstones. Streams have cut narrow V-shaped valleys. Much of this part of the county is rolling or sloping. The eastern and southeastern parts are underlain mostly by shales. The few beds of sandstone outcrop on ridges between the shallow, gently sloping or nearly level, shaly valleys.

The elevation is highest in the western part of the county. The altitude near Drumright, at the western edge, is about 1,100 feet. The altitude is lowest—about 600 feet—where the Deep Fork River leaves the southeastern corner.

The Cimarron River cuts across the north end of Creek County. Polecat Creek lies south of that river. These two streams drain the northern half of the county. Both are tributaries of the Arkansas River, which flows just northeast of Creek County. The Deep Fork of the North Canadian River, locally called the Deep Fork River, flows generally along the southern edge of the county and crosses the boundary a number of times. Together with Little Deep Fork Creek, which rises in the west-central part of the county, this river drains the southern half of the area. These two streams join just outside the county and flow into the North Canadian River about 50 miles to the southeast.

The county is well dissected by small streams, most of which have narrow valleys. The larger streams have rather wide, shallow valleys composed of narrow flood plains and nearly level terraces of old alluvium. All of the uplands and most of the bottom lands and terraces are well enough drained to be suitable for the common crops of the area. Only the flood plain of the Deep Fork River is so frequently flooded and so poorly drained as to prevent cultivation.

Climate

The climate of Creek County is continental and has pronounced seasonal changes in temperature and, to a lesser extent, in precipitation. It is generally warm to temperate and humid. There is a difference of about 40° F. between the average summer and the average winter temperatures. The prevailing winds are from the north from December to February and from the south during the rest of the year.

[1] Fieldwork for this survey was done while Soil Survey was part of the former Bureau of Plant Industry, Soils, and Agricultural Engineering. Soil Survey was transferred to the Soil Conservation Service on November 15, 1952.

Summers are long and hot. The highest temperatures are usually accompanied by clear skies, a moderately low humidity, southern breezes, and cooler nights. Winters are short and comparatively mild. They are characterized by periods of warm, pleasant weather followed by frequent but short spells of freezing temperatures accompanied by north winds. The ground sometimes is frozen to a depth of a few inches for several days. A few light snowfalls each winter total about 6 inches, but snow seldom remains more than a few days. Spring and fall are cool and usually windy. Tornadoes and hailstorms are rare.

The average growing season is about 219 days. The average date of the last frost in spring is March 27, but frosts have occurred as late as April 18. The average date of the first frost in the fall is November 1, but frosts have occurred as early as October 9. During normal years the growing season is long enough for all common field crops to mature. Some orchard crops, especially peaches, may be damaged by frosts late in spring. Planting of cotton or cowpeas is delayed in some years by late frosts and wet cool weather.

The average annual precipitation at Bristow, near the center of the county, is 37.19 inches. This amount of moisture is usually adequate for crops. The eastern edge of the county receives about 2 inches more rainfall than the extreme western part. The precipitation is fairly well distributed during the year. About 60 percent of it comes during the planting and growing season, or between March 1 and September 1. April, May, and June have the highest rainfall. Dry spells lasting several weeks, accompanied by drying winds and a high evaporation rate, are common in July and August. These droughts may damage late crops, especially corn. September and October have more rain, but not so much as the spring months.

Fieldwork can go on throughout the winter, except for the short periods when the ground is frozen. Sometimes spring planting is delayed by cool wet weather. Heavy-textured soils, especially, may be too wet for planting early in spring.

The normal temperature and precipitation at Bristow are fairly representative for Creek County. These figures are given in table 1.

TABLE 1.—*Normal temperature and precipitation at Bristow Station, Creek County, Okla.*

[Elevation, 818 feet]

Month	Temperature [1]			Precipitation [2]			
	Average	Absolute maximum	Absolute minimum	Average	Driest year (1936)	Wettest year (1941)	Average snowfall
	° F.	° F.	° F.	*Inches*	*Inches*	*Inches*	*Inches*
December	41.3	82	1	1.64	1.65	1.74	0.6
January	38.6	81	−13	1.91	.11	1.79	2.6
February	42.5	84	−7	1.43	.51	2.49	1.6
Winter	40.8	84	−13	4.98	2.27	6.02	4.8
March	51.0	94	−11	2.49	.44	.75	1.1
April	61.0	93	18	4.04	.30	8.62	(3)
May	69.0	98	33	4.23	3.66	6.15	(3)
Spring	60.3	98	−11	10.76	4.40	15.52	1.1
June	77.6	109	47	4.71	.90	8.04	(3)
July	83.7	114	54	3.10	.86	2.07	0
August	82.3	115	50	3.11	.25	4.18	0
Summer	80.8	115	47	10.92	2.01	14.29	(3)
September	73.9	108	33	3.87	9.62	7.36	(3)
October	63.5	98	21	4.09	3.02	16.00	0
November	49.7	88	8	2.57	1.31	2.40	.3
Fall	62.4	108	8	10.53	13.95	25.76	.3
Year	61.1	115	−13	37.19	22.63	61.59	6.2

[1] Average temperature based on a 38-year record, through 1954; highest temperature on a 21-year record, and lowest temperature on a 20-year record, through 1952.

[2] Average precipitation based on a 39-year record, through 1955; wettest and driest years based on a 26-year record, in the period 1916–55; snowfall based on a 21-year record, through 1952.

[3] Trace.

Vegetation

Most of Creek County had a forest-savanna vegetation known as the Cross Timbers.[2] Open stands of post oak, blackjack oak, and hickory grew among tall grasses. Many grassy openings were on the more clayey soils and along the foot slopes above the drainageways. Since this area became settled, the blackjack oak has spread considerably and occupied many areas that were formerly open. Much of this newer growth is small and brushy and nearly crowds out the grass.

Open prairies of bluestems, Indiangrass, and switchgrass occupy the deeper loams and clay loams and many of the shallow stony clay loams on steep slopes over interbedded clay shales and sandstones. The largest prairies occur in the eastern part of the county. The prairies were originally covered with a thick growth of coarse bunchgrasses, buffalograss (*Buchloe dactyloides*), and grama grasses. Scattered oak and sumac shrubs grew on the shallower soils. The bunchgrasses were mainly little bluestem (*Andropogon scoparius*), big bluestem (*A. gerardi*), broomsedge (*A. virginicus*), silver beardgrass (*A. saccharoides*), switchgrass (*Panicum virgatum*), and Indiangrass (*Sorghastrum nutans*). The grama grasses were mostly side-oats grama (*Bouteloua curtipendula*), hairy grama (*B. hirsuta*), and blue grama (*B. gracilis*).

All of the prairies in this county are excellent rangeland, but the deeper gently sloping soils are superior to the shallow or sloping soils. Native prairie meadows that are in excellent condition produce moderate yields of nutritious hay if the grass is cut at the right stage of growth. Many native prairie pastures and meadows have been poorly managed and now contain a high proportion of three-awn grass (*Aristida oligantha*) and weeds. The grazing is poor on such fields and the hay is of inferior quality.

The trees of the Cross Timbers consisted mainly of blackjack oak (*Quercus marilandica*), post oak (*Q. stellata*), elm (*Ulmus* sp.), and hickory (*Hicoria alba*) on the sandy soils of the uplands. On the terraces the forest was red oak (*Q. rubra*), pecan (*Carya pecan*), black oak (*Q. velutina*), elm, hickory, post oak, and blackjack oak. The bottom lands supported a fairly thick cover of elm, hack-

[2] FENNEMAN, N. M. PHYSIOGRAPHY OF EASTERN UNITED STATES. 691 pp., illus. New York and London. 1938.

Series 1950, No. 5 Issued May 1959

SOIL SURVEY

Creek County Oklahoma

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with the
OKLAHOMA AGRICULTURAL EXPERIMENT STATION

[illegible] to weakly granular structure; friable when moist, very hard and compact when dry; slightly acid.
[illegible] to 24 inches, grayish-brown heavy clay, mottled with yellowish red and yellowish brown; weak blocky structure; very compact and very sticky when moist, extremely hard when dry; very slowly permeable; medium acid.
[illegible] to 42 inches+, mottled gray and light olive-brown heavy clay, very sticky and stiff when wet; very slowly permeable, slightly acid in upper part, neutral in lower part.

The thickness of the surface soil ranges from about [illegible] to 18 inches, and the texture ranges from very fine sandy loam to loam. On a few low sandy mounds the surface soil is fine sandy loam 18 to 30 inches thick. The subsoil layer ranges from dense clay to compact, slowly permeable sandy clay; in places it contains pockets and layers of sandy loam.

Use and management (Capability unit IIs–1).—This soil is not susceptible to erosion. Fertility is low to moderate. The soil remains wet and cold late in the spring, and when it dries the surface soil crusts and bakes. If the soil is not worked at exactly the right moisture content, large clods form that make it very difficult to maintain a good seedbed.

This soil is not well suited to most common field crops, but it is moderately well suited to native hay or pasture. Most of it is now used for pasture. About one-third of the soil is used for crops, mostly cotton, corn, and sorghums. This soil is in the Claypan prairie range site.

Oil-waste land

Oil-waste land (Oa).—The areas mapped in this miscellaneous land type have been practically ruined for agricultural use by oil and salt-water waste from oil wells. They are more or less gullied and eroded and are almost free of vegetation. They range in size from about one acre to several acres.

Use and management (Capability unit VIII).—This land is of no value for crops or pasture in its present condition. Some of the less strongly sloping and less severely gullied areas may eventually be revegetated by natural means if no more oil or salt-water waste is dumped on them.

Okemah series

These soils have developed from weakly alkaline shales and clays under a cover of grass in nearly level to gently sloping shallow valleys. They are moderately well drained, dark colored, and slightly acid. They have a dark-colored, crumbly and granular surface soil and upper subsoil. Their lower subsoil is mottled olive-yellow and gray compact clay.

Okemah soils are not mapped separately in Creek County. They are closely associated with soils of the Dennis series in some places and with soils of the Woodson series in others, and are mapped in units with soils of one or the other of these series. The Woodson soils differ from the Okemah soils in being dark gray and having a claypan. The Dennis soils, where they are associated with the Okemah soils, lie in slightly higher positions and have developed from less clayey materials. The Dennis soils are browner than the Okemah soils, and they have more rapid runoff and internal drainage.

A profile of an Okemah soil as mapped with the Woodson soils is described under Okemah and Woodson clay loams, and a profile of an Okemah soil as mapped with Dennis soils is described under Dennis and Okemah loams, gently sloping.

Okemah and Woodson clay loams (0 to 1 percent slopes) (Ob).—These two soils occur intermixed in small areas or separately in areas of several acres. Woodson clay loam occupies the nearly level, usually lower-lying parts of shallow valleys, and Okemah clay loam the gently sloping, slightly higher surrounding areas, but the two soils are so closely associated that it is not practical to map them separately. They merge with little or no difference in surface appearance. The parent materials of both soils are olive or olive and yellow weakly alkaline clays and shales. The mapping unit occurs mostly in shallow valleys near Kiefer, Mounds, and Edna. Runoff is slow to moderate, and internal drainage is very slow. The native vegetation was tall grasses, mainly big bluestem, little bluestem, side-oats grama, and Indiangrass.

Profile of Okemah clay loam near Mounds in the SW¼SW¼ sec. 17, T. 16 N., R. 12 E.:

0 to 15 inches, dark-gray clay loam, lower part slightly mottled with brown; granular and friable when moist, very hard when dry; surface crusts in cultivated fields on drying; slightly acid.
15 to 20 inches, dark grayish-brown silty clay loam, slightly mottled with brownish yellow and strong brown; crumbly and friable when moist, sticky and plastic when wet; moderately permeable; slightly acid.
20 to 35 inches, mottled grayish-brown and light olive-brown heavy clay; very sticky and stiff when wet, extremely hard when dry; compact and very slowly permeable; neutral.
35 to 48 inches+, mottled light-gray and olive-yellow clay; very compact; very slowly permeable; weakly alkaline.

The texture of Okemah clay loam ranges from loam to clay loam. The depth to the heavy clay layer ranges from 18 to 25 inches. A few shotlike concretions of iron oxide occur in the two clay layers.

Profile of Woodson clay loam about 1 mile south of Kiefer in the SW¼SW¼ sec. 28, T. 17 N., R. 12 E.:

0 to 12 inches, dark-gray clay loam; the 6-inch plow layer is slightly lighter in color; crumbly and friable when moist, very hard when dry; surface crusts on drying; slightly acid.
12 to 22 inches, dark-gray heavy clay, faintly mottled with brown; very compact claypan; very sticky and stiff when wet; very slowly permeable; slightly acid to neutral.
22 to 38 inches, dark grayish-brown clay, mottled with yellowish brown; very compact; extremely hard when dry; very slowly permeable; weakly alkaline.
38 to 46 inches+, mottled gray, olive-brown, and yellowish-brown clay or shaly clay; contains a few crystals of gypsum and small shotlike concretions of iron oxide; alkaline but not calcareous.

The thickness of the surface soil ranges from 10 to 14 inches. Considerable mottling occurs in the upper subsoil in the areas that grade toward the Okemah soil.

Some small areas of Parsons silt loam near Kiefer are included in this mapping unit. These areas have a dark grayish-brown silt loam surface soil 12 inches thick, which rests on a mottled grayish-brown, strong-brown, and pale-yellow claypan subsoil. The Parsons soils are not extensive enough in Creek County to be mapped separately and are not described in this report.

Use and management (Capability unit I–4).—The two soils in this mapping unit are the darkest colored and finest textured soils of the prairies. They are the most fertile and productive soils for common field crops that occur in the uplands of this county. Okemah clay loam is slightly more productive than Woodson clay loam. Both soils have a moderately high water-holding capacity

These inclusions consist of 10 to 18 inches of light-brown fine sandy loam over dark grayish-brown silt loam or clay loam, overlain by recent deposits of lighter colored, sandier soil materials.

Use and management (Capability unit IIIw–1).—This soil is moderately productive. It is easily worked and fairly resistant to drought. It is not susceptible to erosion, but some material may be deposited on the surface by flood waters. Cropping is hazardous because most areas are flooded several times a year.

This soil is moderately well suited to crops and, in spite of the flood hazard, about one-fifth of the area is cropped. Cotton, corn, and sorghums are the chief crops. This soil is well suited to pasture, and about one-third is used for this purpose. Nearly half has been left in native forest. The soil is in the Loamy bottom-land range site.

Reinach series

Soils of the Reinach series developed from alkaline to calcareous, reddish, silty to moderately sandy alluvium on low, nearly level stream terraces. They are moderately productive soils and easily worked. They are well suited to all general crops of this area, including alfalfa.

The Reinach soils have a brown to reddish-brown friable surface soil and a silty to moderately sandy subsoil. They are similar to the Yahola soils that occur on the present flood plains, but the Reinach soils lie a little higher and are above ordinary overflow. Their surface soil is darker than the Yahola surface soil, and is alkaline, though usually noncalcareous. Only one Reinach soil is mapped in Creek County.

Reinach very fine sandy loam (0 to 1 percent slopes) (Ra).—This soil occurs on low terraces or benches a few feet higher than the flood plains of the Cimarron River. It developed from reddish, silty to moderately sandy, alkaline, calcareous alluvial sediments. Prairie grasses and scattered elm, hackberry, pecan, and oak trees were the native vegetation. Runoff is slow, and internal drainage is moderate to rapid.

Profile of Reinach very fine sandy loam about 3½ miles north of Drumright on a low terrace of the Cimarron River:

0 to 14 inches, reddish-brown very fine sandy loam; the 6-inch plow layer is light reddish brown; weak granular structure; very friable; neutral.
14 to 46 inches+, light reddish-brown very fine sandy loam that contains thin strata of reddish-brown and brown silt loam in lower part; friable; very permeable; neutral.

The surface soil ranges from brown to light reddish brown in color and from fine sandy loam to silt loam in texture. Some small areas next to more strongly sloping Teller soils have an overwash of light-brown, slightly acid fine sandy loam, 4 to 10 inches thick.

Use and management (Capability unit I–1).—This soil is well suited to crops and pasture. Most of it is cultivated. Corn, cotton, sorghums, and alfalfa are the principal crops. This soil is easily worked and is not susceptible to erosion. It is in the Loamy bottom-land range site.

Roebuck series

Soils of this series consist of only slightly modified clayey alluvium washed from prairie soils that developed over redbeds. The alluvial deposits are alkaline to weakly calcareous. The native vegetation was forest. Both runoff and internal drainage are slow to very slow. Most areas are too poorly drained or too frequently flooded to be suitable for cropping unless artificially drained and protected from floods.

The surface soil is reddish brown. The subsoil is reddish clay, slightly mottled with brown and grayish brown. Roebuck clay is the only soil of this series that is mapped in Creek County.

Roebuck clay (0 to 1 percent slopes) (Rb).—This soil occupies parts of the flood plain of the Deep Fork River, where the channel is choked or partly filled by silting. It developed from clayey and silty, alkaline or calcareous, reddish alluvium. A native forest of elm, hackberry, oak, willow, pecan, and cottonwood covers these areas.

This is a poorly drained soil. Both runoff and internal drainage are very slow. The level flood plains are subject to frequent floods. This soil is not susceptible to erosion, but most areas are rapidly being covered with silt.

Profile of Roebuck clay:

0 to 20 inches, reddish-brown clay; moderately crumbly when moist, very sticky and plastic when wet; weakly alkaline.
20 to 45 inches+, reddish-brown heavy clay, slightly mottled with other shades of brown and some grayish brown; very sticky and stiff when wet, very hard when dry; slowly permeable; weakly calcareous.

Small areas have recent deposits of reddish-brown or brown, alkaline or calcareous, somewhat stratified clay loam and clay, 5 to 15 inches thick. In some places the subsoil below about 30 inches is stratified with brown clay loam and dark-gray calcareous clay.

Use and management (Capability unit Vw–1).—Nearly all of this soil is still in woodland. It is very fertile and would be highly productive if it were drained and protected from flooding, but drainage and flood protection are so difficult as to be almost impossible. Clearing underbrush and culling trees to allow native pecan orchards and bermudagrass pastures to develop may be practical. This soil is in the Heavy bottom-land range site.

Stephenville series

Soils of this series are of medium depth over the parent materials of soft reddish sandstone or interbedded sandstone and sandy shale. They developed under a scrubby forest of mixed blackjack oak and post oak. Scattered coarse grasses grew in open areas.

These soils are slightly acid. They have a light-colored friable sandy surface layer and a yellowish-red or red friable sandy clay loam subsoil. The subsoil grades into the parent material, usually at a depth of less than 3 feet.

The Stephenville soils occupy nearly level to moderately sloping areas and are closely associated with the very shallow Darnell soils. The two soils are similar in surface appearance, but the Stephenville soils are 20 to 36 inches deep and the Darnell soils are 5 to 20 inches deep over sandstone. Sandstone outcrops are common in both.

In this county, the Stephenville soils are mapped only in units with the Darnell soils. The two series have similar uses and are about equal in productivity.

Stephenville and Darnell fine sandy loams, gently sloping (2 to 4 percent slopes) (Sa).—Stephenville fine sandy loam occupies about 70 percent of this mapping unit. Small areas of Darnell fine sandy loam make up the other 30 percent. This unit is very extensive in the central, southern, and western parts of the county.

These shallow to moderately deep upland soils developed over reddish-yellow to red sandstone or interbedded sandstone and sandy shale. The parent materials were slightly acid to neutral. The native vegetation was a thin to moderately thick forest of scrubby blackjack oak and post oak, and a thin ground cover of bluestem grasses. Both soils are well drained. Runoff is slow to moderate, but internal drainage is moderate to rapid.

Profile of Stephenville fine sandy loam, gently sloping, under a moderately thick cover of scrubby post oak and blackjack oak and bluestem grasses, about 2 miles east of Depew in the SW¼SW¼ sec. 9, T. 15 N., R. 8 E.:

0 to 4 inches, grayish-brown fine sandy loam; in plowed fields this layer is pale brown; weak granular structure; very friable; slightly acid.
4 to 12 inches, pale-brown light fine sandy loam; very friable when moist, nearly loose when dry; slightly acid.
12 to 28 inches, yellowish-red sandy clay loam; massive structure; crumbly and friable when moist, slightly sticky when wet; porous and permeable; medium acid.
28 to 35 inches, yellowish-red sandy clay loam, mottled with red; friable; permeable; contains small soft fragments of partly weathered sandstone; medium to slightly acid.
35 inches +, yellowish-red sandstone bedrock; slightly acid to neutral.

The depth to bedrock ranges from about 20 to 40 inches; normally it is less than 30 inches. A few small outcrops of the sandstone bedrock occur.

Profile of Darnell fine sandy loam in a cultivated field of about 2 percent slope, in the NW¼NW¼ sec. 16, T. 15 N., R. 8 E.:

0 to 10 inches, pale-brown light fine sandy loam; structureless; very friable when moist, nearly loose when dry; slightly acid.
10 to 16 inches, reddish-yellow fine sandy loam, slightly heavier in lower part; structureless; friable; lower part contains small fragments of partly weathered sandstone; medium acid.
16 inches +, reddish-yellow sandstone bedrock; neutral.

The depth of the Darnell soil ranges from about 5 to 20 inches. Most areas are between 8 and 15 inches deep. Small outcrops of sandstone bedrock occur here and there. The transition between the deeper Stephenville soil and the shallower Darnell soil is hardly noticeable; there is no change in slope or in color of the surface soil. Another profile of Darnell soil, as it typically occurs when associated with soils of the Pottsville series, is described under Darnell and Pottsville soils, sloping.

Use and management (Capability unit IIIe–2).—These soils are droughty and low in fertility. They are slightly to moderately susceptible to erosion if cultivated. Most of the cleared acreage has lost up to 20 percent of its surface soil through erosion. Some shallow gullies occur on the more strongly sloping cleared areas.

These soils are moderately well suited to crops and pasture. Yields are moderate under good management. Intensive management is needed to maintain or increase productivity.

About half of this mapping unit is cleared. Most of the cleared acreage has been abandoned for cropping, and it is now used for pasture. Cotton, peanuts, sorghums, corn, cowpeas, and sweetpotatoes are the principal crops. The pastures have a thin cover of three-awn grasses, bluestem grasses, and weeds. This unit is in the Sandy savanna range site. Nearly half of it is native woodland.

Stephenville and Darnell fine sandy loams, sloping (4 to 7 percent slopes) (Sb).—These soils are like Stephenville and Darnell fine sandy loams, gently sloping, except that the surface soil is somewhat thinner, the bedrock is nearer the surface, and outcrops of sandstone are more common. About 60 percent of the acreage consists of Stephenville soils and about 40 percent of Darnell soils.

Use and management (Capability unit VIe–1).—This land is not well suited to crops. It is droughty, low in natural productivity, and highly erodible if cultivated. Moderate yields of common field crops are produced when the soils are first cultivated, but yields decline rapidly.

More than half of this mapping unit is still in woodland. The remainder has been cleared, but little is still used for crops. Cotton, corn, sorghums, peanuts, and cowpeas are grown. Yields are about three-fourths as much as on the gently sloping soils. Most of the acreage that was cleared, cultivated, and abandoned is now in pasture. The vegetation is three-awn grass and weeds. This unit is in the Sandy savanna range site.

If these soils are cultivated, very careful management is needed. They should be terraced, stripcropped, and contour-cultivated, and erosion-resistant crops should be planted. Areas where the soils are too shallow to be terraced should be used for pasture.

Stephenville and Darnell fine sandy loams, sloping, severely eroded (4 to 7 percent slopes) (Sc).—The soils in this mapping unit have been so severely eroded that they are worthless for crops. Originally, they were like Stephenville and Darnell fine sandy loams, sloping, but erosion has removed much of the surface soil. Numerous gullies are now active; some cannot be crossed with tillage implements.

Use and management (Capability unit VIIe–2).—These soils were never well suited to crops, and now they are of no value for crops. All of the acreage has been cultivated, but most of it is now idle or in pasture. A thin stand of annual grasses and weeds furnishes poor grazing. It would take careful management to establish even moderately good pastures. Cotton, corn, sorghums, cowpeas, and peanuts are still grown on a few acres, but yields are low. This mapping unit is in the Eroded savanna range site.

Stidham series

The Stidham soils developed from acid sandy old alluvium on stream terraces under a mixed hardwood forest. They are low in natural fertility, but they are very responsive to management. They are well suited to fruits, special crops, and field crops.

Soils of this series have a light brownish-gray to pale-brown, friable, acid surface soil. The subsoil is yellowish-brown friable sandy clay loam, mottled with light gray and strong brown in the lower part.

Stidham soils are closely associated with Dougherty soils, which have a reddish subsoil, and with Eufaula soils, which have no loamy subsoil within 4 feet of the surface. In Creek County, the Stidham soils are not mapped separately. They are mapped in units with soils of the Dougherty series. A profile of a Stidham soil is described under Dougherty and Stidham fine sandy loams, nearly level.

Talihina series

The Talihina soils developed from beds of slightly acid to neutral, gray, brown, and olive shale that included a little sandstone. They are very shallow, slightly acid

grasses and scattered elm, hackberry, and mesquite trees grew on these soils. Runoff is slow, and internal drainage is moderate. This soil is closely associated with Teller silt loam, nearly level, but it has a darker colored surface soil and a brown or yellowish-brown, instead of a red, subsoil.

Profile of Vanoss silt loam, nearly level, in a cultivated field about 3 miles east of Oilton in the NE¼ sec. 34, T. 19 N., R. 7 E.:

0 to 16 inches, dark grayish-brown silt loam; the 6-inch plow layer is slightly lighter in color; moderate granular structure; friable when moist, hard when dry; neutral.
16 to 28 inches, dark-brown clay loam; medium granular structure; crumbly and friable when moist, hard when dry; permeable; neutral.
28 to 38 inches, brown clay loam, faintly mottled with strong brown; crumbly and friable; permeable; neutral.
38 to 48 inches +, yellowish-brown clay loam; slightly more friable and noticeably more sandy than layer above; neutral to weakly alkaline.

The surface soil ranges in color from very dark grayish brown in undisturbed areas to grayish brown in cultivated fields, and in texture from very fine sandy loam to heavy silt loam. In areas where this soil grades toward the Teller soils, the upper subsoil is brown and the lower subsoil is strong brown to reddish brown.

A few small level areas of Brewer silt loam are included in this mapping unit. These areas have a dark-gray silt loam surface soil 14 inches thick over a dark-gray crumbly clay subsoil. Brewer soils are not mapped separately in Creek County, and they are not described in this report.

Use and management (Capability unit I–3).—This is a moderately productive, easily worked soil. It responds well to good management, and it is not susceptible to erosion.

This soil is excellent for crops and well suited to pasture. About three-fourths of it is cultivated. The principal crops are cotton, corn, sorghums, and oats. The rest is used for pasture. This soil is in the Loamy prairie range site.

Vanoss silt loam, gently sloping (2 to 4 percent slopes) (Va).—This soil is similar to Vanoss silt loam, nearly level, but its slope makes it slightly susceptible to erosion if cultivated. It occurs in small areas in association with nearly level Vanoss and Teller soils.

Use and management (Capability unit IIe–1).—More than half of this soil is used for crops. The same crops are grown as on Vanoss silt loam, nearly level, but yields are slightly lower. Eroded areas are 10 to 20 percent less productive than the normal soil. Good management would restore the original productivity in 2 or 3 years. This soil is in the Loamy prairie range site.

Verdigris series

These soils occupy the flood plains of streams. The alluvium from which they developed came mostly from dark soils of the prairies; some came from light-colored soils. Soils of this series are moderately well drained, but they are flooded occasionally to frequently. The periodic floods do not prevent successful cultivation except in the narrow flood plains of small streams.

These soils have a dark grayish-brown, friable, slightly acid surface soil and a dark grayish-brown clay loam subsoil. The subsoil is slightly mottled and somewhat finer textured in the lower part. Verdigris soils are darker colored than the Pulaski soils and have mor retentive, less sandy subsoils. They are similar to th Mason soils, which lie slightly higher and are abov ordinary overflow.

Verdigris fine sandy loam (0 to 1 percent slopes) (Vd).—This soil occupies parts of narrow flood plains, mainly i the central and western parts of the county. The paren materials were slightly acid to weakly alkaline alluvia sediments, most of which were washed from dark soils o the prairie; some were derived from light-colored soils o forested areas. Runoff is slow, and internal drainage i moderate. These soils are flooded for short period several times a year. Fresh alluvial sediments are de posited on most areas during floods. Native forests o elm, hackberry, oak, pecan, and cottonwood grew or these soils, and some coarse grasses and shrubs coverec the ground.

Profile of Verdigris fine sandy loam:

0 to 14 inches, grayish-brown fine sandy loam, weakly stratifiec in lower part with dark grayish-brown silt loam; very friable when moist; slightly acid.
14 to 32 inches, dark grayish-brown clay loam; crumbly and friable when moist, moderately sticky when wet; slightly acid to neutral.
32 to 50 inches +, dark grayish-brown clay loam, mottled or splotched with light brown; contains thin seams or lenses of light-brown fine sandy loam below about 40 inches; neutral.

Most areas of this soil are covered by recent alluvium, 5 to 15 inches thick. This alluvium ranges from brown to dark grayish brown in color. The texture is fine sandy loam. It is somewhat stratified below plow depth. The clay loam subsoil is dark gray or dark grayish brown in most places.

Use and management (Capability unit I–2).—This is a moderately productive soil. It is likely to be flooded late in spring; consequently, cropping is uncertain. This soil does not erode, but a considerable amount of soil material is deposited by floodwater. Areas where floods are least frequent are well suited to crops. Corn, cotton, and sorghums are the most common crops. The soil is also well suited to pasture. Two-thirds of the acreage has been cleared for crops and pasture, and one-third is still under native forest. This soil is in the Loamy bottom-land range site.

Verdigris silt loam (0 to 1 percent slopes) (Ve).—This soil is mapped on flood plains of streams throughout the county. The parent material consisted of slightly acid to weakly alkaline alluvial sediments washed from dark soils of the prairies. The native vegetation was a hardwood forest of elm, oak, hackberry, cottonwood, and pecan trees, and scattered coarse grasses. Runoff is slow, and internal drainage is moderate. This soil is flooded one to three times a year; nevertheless, most of it can be successfully cropped.

Profile of Verdigris silt loam in a cultivated field about 4 miles west of Bristow in the SW¼SW¼ sec. 34, T. 16 N., R. 8 E.:

0 to 16 inches, dark grayish-brown silt loam; friable and easily worked when moist, hard when dry; slightly acid.
16 to 36 inches, dark grayish-brown clay loam, faintly mottled with brown in the lower part; crumbly and friable when moist, hard when dry; porous and permeable; slightly acid to neutral.
36 to 46 inches +, dark grayish-brown clay loam, splotched or mottled with brown and gray; friable; permeable; weakly alkaline.

The surface layer is 10 to 20 inches thick. In some places the lower part of this layer is weakly stratified with fine sandy loam and clay loam. The subsoil is slightly acid to weakly alkaline. Stratified darker colored and lighter colored sediments may occur in the lowest layer.

Use and management (Capability unit I–2).—This soil is well suited to crops or pasture. It is somewhat more productive than Verdigris fine sandy loam. It is not susceptible to erosion, but soil material may be deposited on the surface by floods. The flood-deposited material replenishes the supply of plant nutrients. About one-fourth of this soil is still under native forest. Half of the remainder is cropped, mostly to corn, cotton, sorghums, and alfalfa. Yields range from almost complete failures to very high yields. Some of the soil is in pasture. This soil is in the Loamy bottom-land range site.

Verdigris clay loam (0 to 1 percent slopes) (Vc).—This soil occurs on the wider flood plains of the larger creeks of the county. The alluvial sediments from which it developed are slightly acid to weakly alkaline. They were washed from dark-colored soils of the prairies. Runoff is slow, and internal drainage is moderate. The native vegetation was a forest of elm, hackberry, ash, oak, pecan, and cottonwood, and coarse grasses.

Profile of Verdigris clay loam about ½ mile southeast of Sapulpa in the NW¼SW¼ sec. 6, T. 17 N., R. 12 E.:

0 to 20 inches, dark grayish-brown clay loam; moderately granular structure; crumbly and friable when moist, hard when dry; porous; slightly acid.
20 to 38 inches, grayish-brown clay loam, slightly mottled with brown and some pale brown; friable; permeable; slightly acid.
38 to 46 inches +, grayish-brown clay loam, mottled with other shades of brown; contains pockets and thin seams of brown fine sandy loam; slightly acid.

The color of the surface layer ranges from very dark brown in undisturbed areas to dark grayish brown or dark brown where cultivated. Small areas have a 3- to 5-inch layer of grayish-brown loam that has been deposited on the surface by floodwaters.

Use and management (Capability unit I–2).—This is a highly productive soil. Most of the areas are flooded one to three times a year, but this does not prevent their use for cultivated crops. This soil is not susceptible to erosion, but on most areas soil material is deposited during floods.

About one-third of this soil is cultivated. Corn, cotton, and sorghums are the principal crops. About one-fourth is in woodland. The rest is idle or used for pasture. This soil is in the Loamy bottom-land range site.

Woodson series

These are claypan soils that developed from alkaline or weakly calcareous shales and clays on nearly level to gently sloping prairies. They occupy small nearly level areas in gently sloping shallow valleys. These soils are dark grayish brown to dark gray. They are slightly acid.

Woodson soils are closely associated with soils of the Okemah series. The two series differ little in surface appearance. The Woodson soils have a thinner and more granular surface soil than the Okemah soils, and they have a dark-gray claypan subsoil. Woodson soils are not mapped separately in this county. Areas of Woodson clay loam are included in Okemah and Woodson clay loams, and a profile of the Woodson soil is described under that unit.

Yahola series

These soils occur on the flood plains of the Deep Fork and Cimarron Rivers and other large streams. The parent material was alluvium derived from grassland soils underlain by redbeds. Soils of the Yahola series have a reddish-brown alkaline or calcareous surface soil and a moderately sandy subsoil.

These soils are moderately to highly productive. Areas that are not flooded too often are well suited to general field crops. Yahola soils are similar to Port soils in surface appearance, but they have a sandier subsoil. They are more alkaline than Pulaski soils. Yahola soils have a sandier subsoil and more rapid internal drainage than the Roebuck soils.

Yahola very fine sandy loam (0 to 1 percent slopes) (Yb).—This soil occurs on the flood plains of the Cimarron and Deep Fork Rivers. It developed from calcareous or alkaline sandy alluvial sediments washed from prairies underlain by redbeds. Runoff is slow to moderate, and internal drainage is moderate to rapid. All areas of this soil are periodically flooded. Those on the flood plain of the Deep Fork River are too frequently flooded to be suitable for crops, and they have been left in native hardwood forest. The native vegetation was a forest of elm, ash, oak, cottonwood, and pecan trees. Coarse grasses grew where the forest was thin.

Profile of Yahola very fine sandy loam about ½ mile north of Oilton in the NW¼SW¼ sec. 28, T. 19 N., R. 7 E.

0 to 16 inches, reddish-brown very fine sandy loam; structureless; very friable; alkaline but not calcareous.
16 to 46 inches+, reddish-yellow light fine sandy loam, weakly stratified in the lower part with loamy fine sand; very friable and freely permeable; alkaline but not calcareous

The surface soil is alkaline or calcareous. In color it ranges from light brown to reddish brown and in texture from fine sandy loam to silt loam. Small areas where floodwaters have recently deposited sediments may be weakly stratified.

Use and management (Capability unit I–2).—This soil is easily worked and moderately productive. Areas that are not flooded too often are well suited to crops. The soil is not susceptible to erosion. It receives fresh deposits of soil material during floods.

All of the cropland is on the flood plain of the Cimarron River. Cotton, corn, and sorghums are the principal crops. This soil is in the Loamy bottom-land range site.

Yahola clay loam (0 to 1 percent slopes) (Ya).—This soil developed from reddish, calcareous, sandy alluvium on the flood plains of the Deep Fork and Cimarron Rivers. The native vegetation was a forest of elm, hackberry, oak, pecan, cottonwood, and ash. Coarse grasses grew where the forest was thin. Runoff is slow but internal drainage is rapid through the sandy substratum.

This soil is associated with Yahola very fine sandy loam. It is like that soil except for having a finer textured surface soil.

Profile of Yahola clay loam:

0 to 14 inches, reddish-brown clay loam; crumbly and friable when moist, moderately sticky when wet; alkaline or weakly calcareous.
14 to 45 inches +, reddish-yellow very fine sandy loam, weakly stratified in lower part with loamy sands and clay loams; very permeable; weakly calcareous.

- Qa
- Ve
- Sb

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

CREEK COUNT

SOILS LEGEND

SYMBOL	NAME
Ba	Bates fine sandy loam, gently sloping
Bb	Bates fine sandy loam, sloping
Bc	Bates fine sandy loam, sloping, severely eroded
Bd	Broken or gullied sandy upland
Ca	Choteau very fine sandy loam, gently sloping
Cb	Choteau very fine sandy loam, nearly level
Cc	Cleburnes fine sandy loam
Cd	Collinsville and Bates soils, gently sloping
Ce	Collinsville and Talihina soils, sloping
Cf	Collinsville and Talihina soils, strongly sloping
Da	Darnell and Pottsville soils, sloping
Db	Darnell and Pottsville soils, strongly sloping
Dc	Dennis and Okemah loams, gently sloping
Dd	Dennis and Okemah loams, sloping
De	Dennis and Okemah loams, sloping, severely eroded
Df	Dougherty and Stidham fine sandy loams, gently sloping
Dg	Dougherty and Stidham fine sandy loams, nearly level
Dh	Dougherty and Stidham fine sandy loams, sloping
Dk	Dougherty and Stidham loamy fine sands, gently sloping
Dl	Dougherty and Stidham loamy fine sands, nearly level
Ea	Eufaula loamy fine sand, gently sloping
Eb	Eufaula loamy fine sand, strongly sloping
Ga	Gullied bottom land
Ma	Mason clay loam
Mb	Mason silt loam
Na	Neosho silt loam
Oa	Oil-waste land
Ob	Okemah and Woodson clay loams
Pa	Port clay loam
Pb	Pulaski fine sandy loam
Ra	Reinach very fine sandy loam
Rb	Roebuck clay
Sa	Stephenville and Darnell fine sandy loams, gently sloping
Sb	Stephenville and Darnell fine sandy loams, sloping
Sc	Stephenville and Darnell fine sandy loams, sloping, severely eroded
Ta	Teller silt loam, gently sloping
Tb	Teller silt loam, nearly level
Tc	Teller silt loam, sloping
Va	Vanoss silt loam, gently sloping
Vb	Vanoss silt loam, nearly level
Vc	Verdigris clay loam
Vd	Verdigris fine sandy loam
Ve	Verdigris silt loam
Wa	Riverwash
Ya	Yahola clay loam
Yb	Yahola very fine sandy loam

WORKS AND

- Roads
  - Good motor
  - Poor motor
  - Trail
  - Marker, U. S.
- Railroads
  - Single track
  - Multiple track
  - Abandoned
- Bridges and crossings
  - Road
  - Trail, foot
  - Railroad
  - Ferry
  - Ford
  - Grade
  - R. R. over
  - R. R. under
  - Tunnel
- Buildings
  - School
  - Church
  - Station
- Mine and Quarry
  - Shaft
  - Dump
  - Prospect
- Pits, gravel or other
- Power line
- Pipeline
- Cemetery
- Dam
- Levee
- Tank
- Oil well
- Windmill
- Canal lock (point upstream)

Soils surveyed 1940-1949 by O. H. Brensing, Dale Scriven, E. C. Talley, Oklahoma Agricultural Experiment Station; H. P. Mikles, Soil Conservation Service, and H. M. Galloway, Oklahoma Agricultural Experiment Station and U. S. Department of Agriculture.
Correlation by James Thorp, U. S. Department of Agriculture.

Soil map constructed by Cartographic Division, Soil Conservation Service, USDA, from 1949 aerial photographs. Controlled mosaic based on polyconic projection, 1927 North American datum.

REFERENCE 5

TECHNICAL PAPER NO. 40

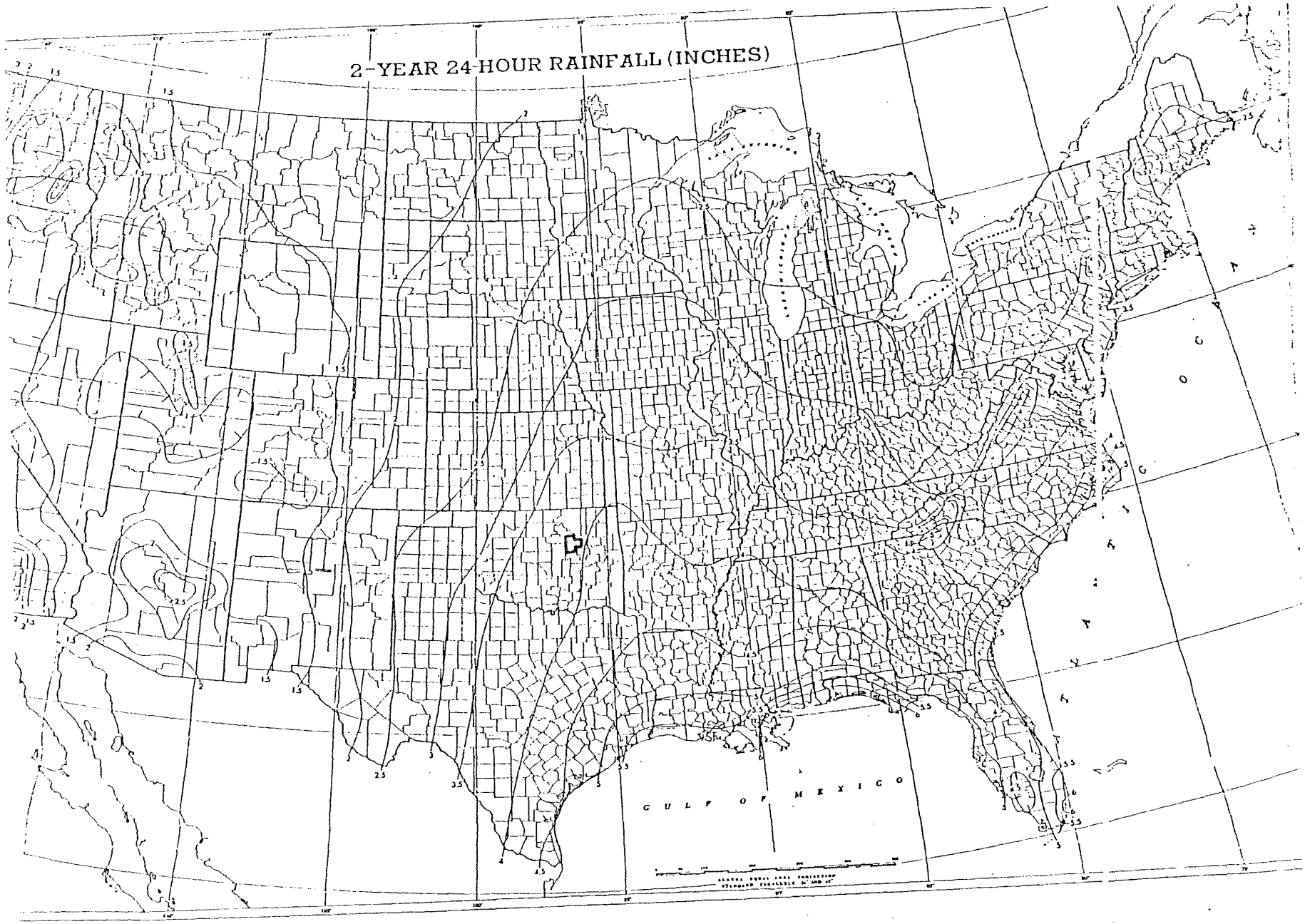
RAINFALL FREQUENCY ATLAS OF THE UNITED STATES

for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years

WASHINGTON, D.C.

May 1961

Repaginated and Reprinted January 1963


2-YEAR 24-HOUR RAINFALL (INCHES)
GULF OF MEXICO

REFERENCE 6

Memorandum

July 10, 2008

To: Lorraine Refinery, PA File

From: Kerry Paul, Technical Intern

Re: Generalized Geology and Hydrogeology
Lorraine Refinery
S1/2 SW1/4 SW1/4 Sec20 T16N R9E IM
NW1/4 NW1/4 NW1/4 Sec29 T16N R9E IM
Creek County, Oklahoma

Climate

Creek County is in the Central Lowland physiographic province. The summers are hot and the winters are cool. The mean annual precipitation is 37 inches and the average annual runoff is 5 inches.

Geology

The Lorraine Refinery sits on the Pennsylvanian-aged Barnsdall Formation. This formation is composed of fine-grained sandstone overlain by shale. Thickness ranges from 80 to 200 ft.

At approximately 0.25 miles to the southeast of the refinery, the underlying Pennsylvanian-aged Wann Formation and underlying Iola Limestone are exposed. The Wann Formation varies in thickness from 40 to 180 feet and is comprised of shale and fine- to medium-grained sandstone. The Iola Limestone ranges in thickness from 15 to 20 feet and consists of a calcareous fine-grained sandstone and limestone with some shale.

Sand Creek flows southward along the western side of the Lorraine Refinery site and begins flowing to the southeast at the southern boundary of this site. At approximately 0.25 miles to the southeast of the refinery Sand Creek is associated with Quaternary-aged alluvial deposits consisting of sand, silt, clay, and lenticular beds of gravel. Thickness in these deposits ranges from 5 to 50 feet (25 feet average). Because Sand Creek crosses the site, localized alluvium may be present at the refinery.

The regional dip is to the northwest at approximately 40 feet per mile.

Hydrogeology

The Lorraine Refinery is located on the border between the recharge and potential recharge area of a major bedrock aquifer - the Pennsylvanian, Vamoosa Formation and Ada Group, comprised of fine- to coarse-grained sandstone irregularly interbedded with shale. A potential recharge area includes strata that may be in hydrological communication with the bedrock aquifer, so these regions should be protected as well as the recharge area proper. In 2000, 7.34 million gallons of freshwater per day were withdrawn from the Vamoosa-Ada groundwater aquifer, 75 percent of

which was used for municipal purposes and 25 percent for rural domestic and stock animal consumption. This quantity is significant and represents 10 percent of the fresh groundwater withdrawal in Oklahoma for this year.

A field of eight wells, which may be the public water supply for Bristow, Oklahoma, is located approximately 1.5 miles south of the refinery site. The average well is 200 feet deep and has a water level at 45 feet. The average yield from these wells is 25 to 50 gallons per minute (gpm). Water quality, obtained from Pennsylvanian rocks, is good with 500 mg/L or less of dissolved solids.

The Lorraine Refinery is located 2 miles from Little Deep Fork Creek, which is associated with the alluvial and terrace deposits of a groundwater recharge area. These deposits range in thickness from 10 to 50 feet. The yields from these aquifers are, generally, 10 to 500 (gpm) of good quality (less than 1,000 mg/L dissolved solids) water. Little Deep Fork Creek flows to the southeast, draining into the Deep Fork River, a tributary of the North Canadian River.

Depth to shallow ground water is 12 to 20 feet, according to records of monitoring wells located within two miles of the site. Based on regional topography, flow direction of surface and shallow ground water is to the south/southeast.

References:

Bingham, RH and Moore, RL (1975) "Reconnaissance of the Water Resources of the Oklahoma City Quadrangle, Central Oklahoma" Oklahoma Geological Society, Norman, Oklahoma.

Johnson, KS (1991) "Maps Showing Principal Ground-Water Resources and Recharge Areas in Oklahoma" Oklahoma State Department of Health, Oklahoma City, Oklahoma.

Oklahoma Water Resources Board. http://www.owrb.ok.gov/maps/ Water Information Mapping System (WIMS) ©1998-2008. Last updated: March 27, 2008. Accessed: June 25, 2008.

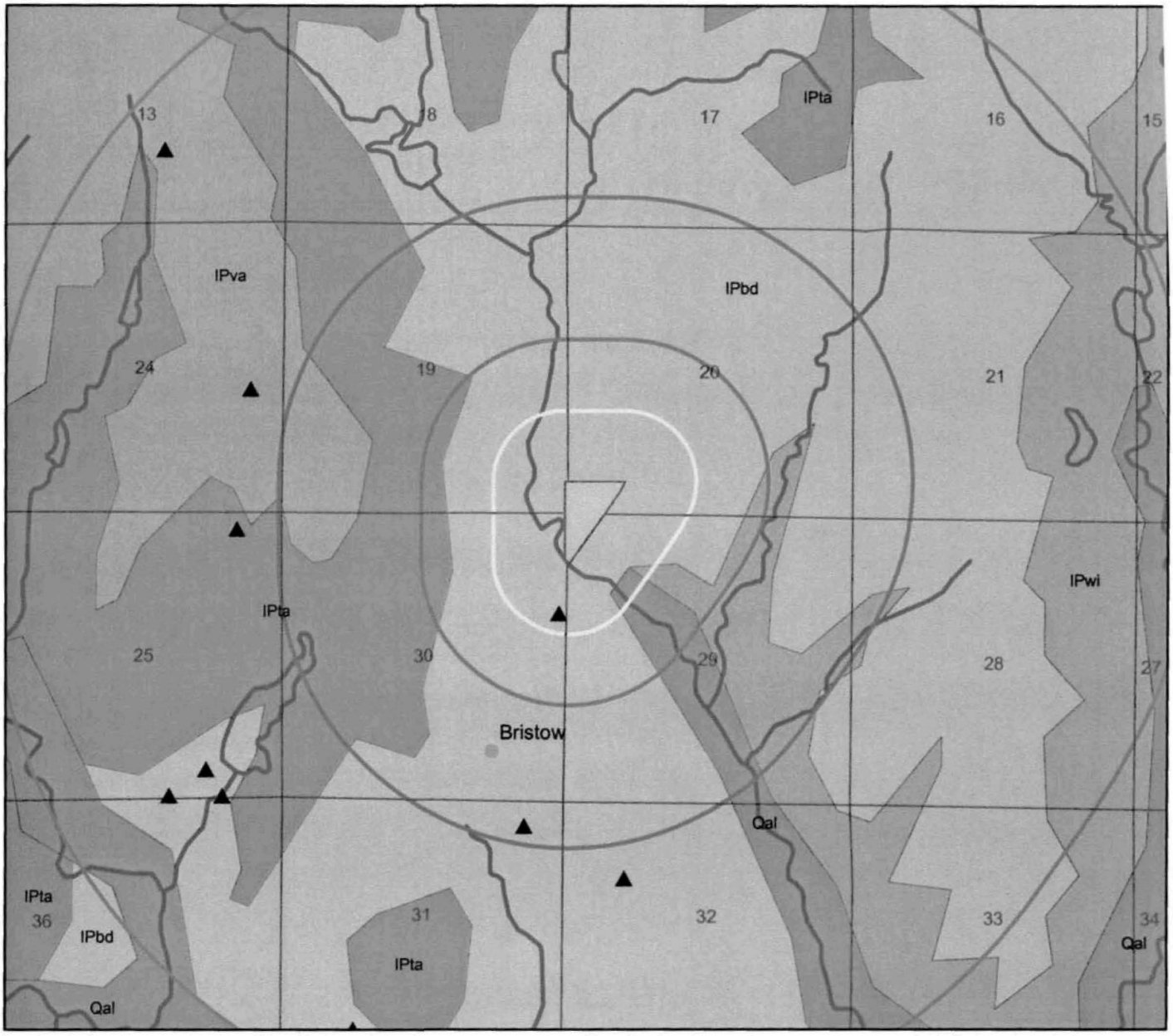
United States Geological Survey (2008) http://pubs.usgs.gov/ha/ha730/index.html Ground Water Atlas of the United States. Last Modified: Friday, 27-Jun-2008. Accessed: June 30, 2008.

United States Geological Survey by Tortorelli, RL. (2000) Estimated Freshwater Withdrawals in Oklahoma. http://ok.water.usgs.gov/wateruse/wateruse00.html. No last modified date. Accessed: July 10, 2008.

Attachment (map)

Created: July 15, 200

Lorraine Refinery:
Local Features including Geology and Hydrology



Legend

- Lorraine Refinery
- Township & Range
- 0.25 Mile Radius
- 0.5 Mile Radius
- 1 Mile Radius
- 2 Mile Radius
- Public Water Well
- Cities
- Streams

Geology

- IPbd: Barnsdall
- IPta: Tallant
- IPva: Vamoosa
- IPwi: Wann Formation & Iola Limestone
- Qal: Qauternary Alluvial Deposiits

Miles

0 0.5 1 2

003234

REFERENCE 7

FACT SHEET

Creek County, Oklahoma

2006 American Community Survey
Data Profile Highlights:

NOTE. Income and Poverty data from the 2007 American Community Survey (ACS) are available from the data sets page. Additional data are scheduled to be released in September.

NOTE. Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the official estimates of the population for the nation, states, counties, cities and towns and estimates of housing units for states and counties.

Social Characteristics - show more >>	Estimate	Percent	U.S.	Margin of Error
Average household size	2.53	(X)	2.61	+/-0.07
Average family size	2.98	(X)	3.20	+/-0.14
Population 25 years and over	46,982			+/-477
High school graduate or higher	(X)	80.2	84.1%	(X)
Bachelor's degree or higher	(X)	14.0	27.0%	(X)
Civilian veterans (civilian population 18 years and over)	6,788	13.1	10.4%	+/-805
Disability status (population 5 years and over)	14,868	23.5	15.1%	+/-1,391
Foreign born	1,141	1.7	12.5%	+/-274
Male, Now married, except separated (population 15 years and over)	15,656	58.4	52.4%	+/-1,246
Female, Now married, except separated (population 15 years and over)	15,633	55.4	48.4%	+/-1,512
Speak a language other than English at home (population 5 years and over)	N	N	19.7%	N
Household population	68,352			+/-67
Group quarters population	(X)	(X)	(X)	(X)

Economic Characteristics - show more >>	Estimate	Percent	U.S.	Margin of Error
In labor force (population 16 years and over)	32,927	61.0	65.0%	+/-1,269
Mean travel time to work in minutes (workers 16 years and over)	24.1	(X)	25.0	+/-1.6
Median household income (in 2006 inflation-adjusted dollars)	37,473	(X)	48,451	+/-4,242
Median family income (in 2006 inflation-adjusted dollars)	44,332	(X)	58,526	+/-3,137
Per capita income (in 2006 inflation-adjusted dollars)	19,126	(X)	25,267	+/-1,494
Families below poverty level	(X)	17.1	9.8%	(X)
Individuals below poverty level	(X)	21.2	13.3%	(X)

Housing Characteristics - show more >>	Estimate	Percent	U.S.	Margin of Error
Total housing units	29,324			+/-49
Occupied housing units	27,057	92.3	88.4%	+/-736
Owner-occupied housing units	20,960	77.5	67.3%	+/-1,169
Renter-occupied housing units	6,097	22.5	32.7%	+/-926
Vacant housing units	2,267	7.7	11.6%	+/-743
Owner-occupied homes	20,960			+/-1,169
Median value (dollars)	88,600	(X)	185,200	+/-4,752
Median of selected monthly owner costs				
With a mortgage (dollars)	952	(X)	1,402	+/-40
Not mortgaged (dollars)	299	(X)	399	+/-23

ACS Demographic Estimates - show more >>	Estimate	Percent	U.S.	Margin of Error

REFERENCE 8

April 30, 2008

Scott Christenson
United States Geological Survey
202 NW 66th Street
Building 7
Oklahoma City, Oklahoma 73101

Dear Mr. Christenson:

The purpose of this letter is to request information regarding the location and use of wells located in the areas listed on the attached page. The information provided by your office will be used to partly describe ground water targets for a CERCLA Preliminary Assessment that will be conducted by the DEQ (Site Assessment Unit), as authorized by a cooperative agreement with the U. S. Environmental Protection Agency.

Your assistance is greatly appreciated. If you have any questions, please call Hal Cantwell at (405)702-5139. Please direct your response to Hal Cantwell, Land Protection Division as well.

Sincerely,

Jennifer Larsen
Environmental Programs Specialist I
Site Assessment Unit
Land Protection Division

Attachment

SITE NAME	SECTIONS	TOWNSHIP	RANGE	COUNTY
Lorraine Refinery	31-33	17N	9E	Creek
Lorraine Refinery	3-11, 13-35	16N	9E	Creek
Lorraine Refinery	1-2, 10-15, 22-27, 34-36	16N	8E	Creek
Lorraine Refinery	2-10, 17-18	15N	9E	Creek
Lorraine Refinery	1-3, 11-12	15N	8E	Creek

United States Department of the Interior

U.S. GEOLOGICAL SURVEY

Water Resources Discipline
5338 Montgomery Blvd. NE
Albuquerque, NM 87109
May 14, 2008

Dr. Jennifer Larsen
Oklahoma Department of Environmental Quality
P.O. Box 1677
Oklahoma City, OK 73101-1677

Dear Dr. Larsen:

Enclosed please find the data you requested. I retrieved data for all wells in the U.S. Geological Survey's National Water Information System (NWIS) database for the area of your request. I retrieved some data elements for all the wells in the U.S. Geological Survey's National Water Information System database for the area of your request; however, some additional data elements for some of these wells may be available. If you need additional data for these wells, further checking may be warranted.

Abbreviations used on the retrieval include:
Primary use of water
I = irrigation
U = unused
P = public supply
H = domestic
N = industrial

Aquifer code
332VMOS = Vamoosa Formation
323TLNT = Tallant Formation
323BRDL = Barnsdall Formation
322NLBL = Nellie Blye Formation
323WANN = Wann Formation
323DEWY = Dewey Limestone

I transferred from USGS in Oklahoma to USGS in Albuquerque, New Mexico in 2006. While I am still willing and able to assist you by retrieving data from the USGS NWIS database, it might be faster to contact the local USGS office for data retrievals. You can direct your requests to the Information Officer at the USGS Oklahoma City office. You

can also retrieve these directly from the USGS Oklahoma Water Science Center web site at: http://waterdata.usgs.gov/ok/nwis

If I can be of further assistance to you, please feel free to contact me at the address shown on the letterhead, by telephone (505.830.7963), or email (schris@usgs.gov).

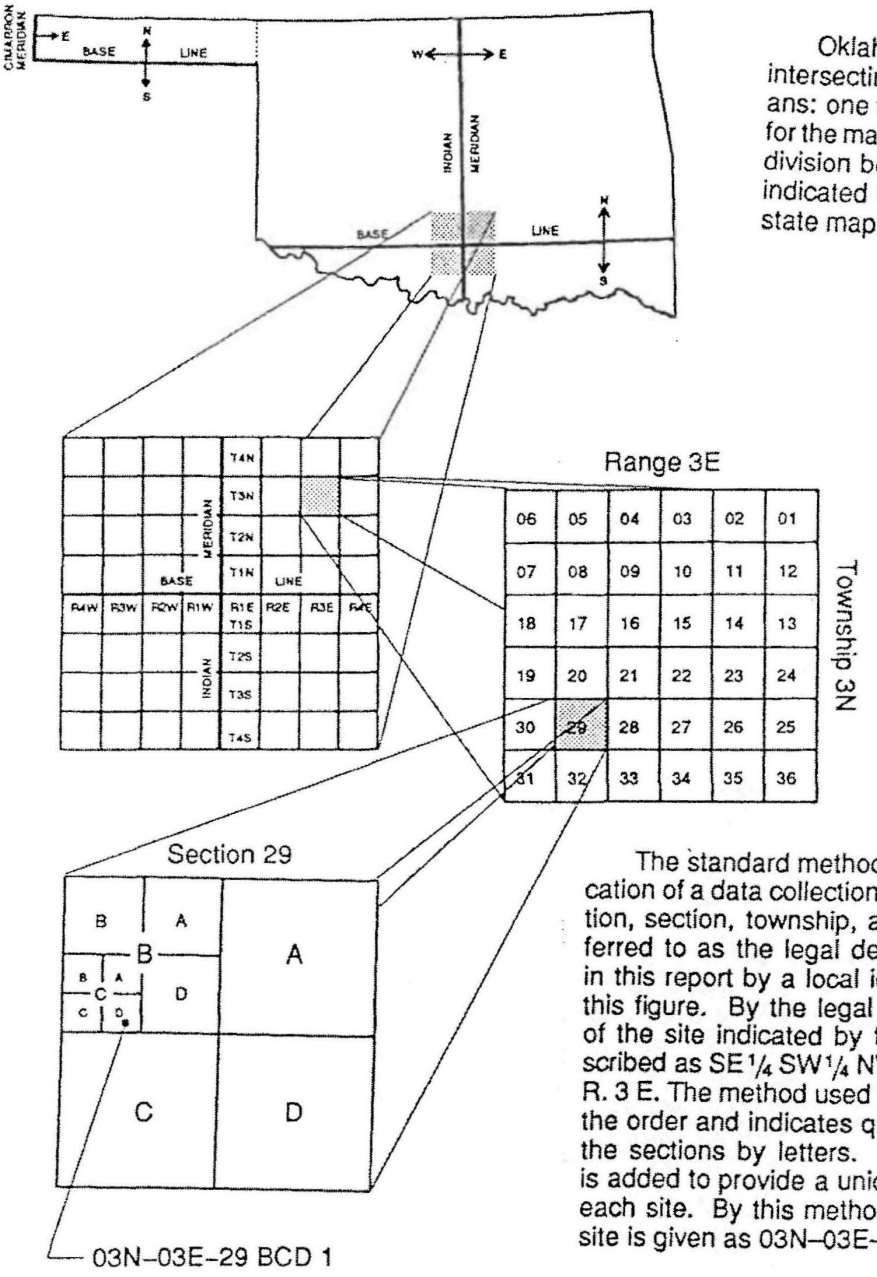
Best regards,

Scott C. Christenson
Hydrologist

SCC:scc

COUNTY	LOCAL WELL NUMBER	ALTITUDE OF LAND SURFACE (FEET)	ALTITUDE DATUM (CODE)	DEPTH DRILLED (FEET)	DEPTH OF WELL (FEET)	WATER LEVEL (FEET)	WATER-LEVEL DATE	AQUIFER CODE	PRIMARY USE OF WATER
037	15N-08E-04 BB 1	--	--	--	162	3	12-23-1970	322VMOS	I
037	15N-08E-04 BBC 1	800	NGVD29	--	162	3	09-16-1970	322VMOS	I
037	15N-08E-04 DCD 1	--	--	--	41	--	--	--	U
037	15N-08E-06 B 1	820	NGVD29	--	200	--	--	322VMOS	P
037	15N-08E-06 C 1	820	NGVD29	--	185	--	--	322VMOS	P
037	15N-08E-06 CDB 1	830	NGVD29	--	124	--	--	322VMOS	P
037	15N-08E-07 BBB 1	--	--	--	159	--	--	322VMOS	U
037	15N-08E-11 AAA 1	--	--	--	119	--	--	323TLNT	U
037	15N-08E-15 CDC 1	--	--	--	134	--	--	322VMOS	U
037	15N-08E-17 CDD 1	--	--	--	85	--	--	322VMOS	U
037	15N-08E-20 CDD 1	840	NGVD29	--	71.0	25.00	10-01-1974	322VMOS	H
037	15N-08E-24 BAA 1	860	NGVD29	--	23.0	13.00	10-01-1970	323TLNT	U
037	15N-08E-29 BCB 1	800	NGVD29	--	28.0	22.00	10-01-1970	322VMOS	U
037	15N-08E-30 CCB 1	845	NGVD29	--	107	72.00	10-01-1974	322VMOS	H
037	15N-08E-33 CBB 1	--	--	--	51	--	--	322VMOS	U
037	15N-08E-34 DDD 1	--	--	--	114	--	--	322VMOS	U
037	15N-08E-35 CB 1	--	--	--	375	130	06-01-1957	323BRDL	I
037	15N-08E-36 DAA 1	880	NGVD29	--	180	60	02-25-1970	323BRDL	H
037	15N-09E-07 DDA 1	--	--	--	69.0	43.00	04-01-1970	323BRDL	U
037	15N-09E-13 DCC 1	--	--	--	43.0	10.00	04-01-1970	323NLBL	U
037	15N-09E-13 DDD 1	--	--	--	33.0	18.00	11-01-1970	323NLBL	H
037	15N-09E-21 CDD 1	880	NGVD29	--	36.0	11.00	11-01-1970	323BRDL	U
037	15N-09E-27 CD 1	--	--	--	708	--	--	323NLBL	U
037	15N-09E-31 CCC 1	--	--	--	99	--	--	323BRDL	U
037	15N-09E-35 CD 1	--	--	--	381	151	12-17-1970	323NLBL	N
037	15N-09E-35 DD 1	--	--	--	405	155	11-01-1965	323NLBL	N
037	15N-09E-35 DD 2	--	--	--	405	155	12-17-1970	323NLBL	N
037	15N-09E-36 CD 1	--	--	--	381	230	05-01-1966	323NLBL	U
037	16N-08E-04 BAC 1	--	--	--	34	--	--	322VMOS	U
037	16N-08E-07 CAD 1	--	--	--	210	--	--	--	U
037	16N-08E-09 DDA 1	880	NGVD29	--	48.0	26.00	11-01-1970	322VMOS	U
037	16N-08E-13 DCD 1	--	--	--	158	--	--	--	U
037	16N-08E-16 DDA 1	--	--	--	99	--	--	322VMOS	U
037	16N-08E-19 BDC 1	--	--	--	101	--	--	322VMOS	U
037	16N-08E-22 CCD 1	850	NGVD29	--	92.0	65	10-15-1970	322VMOS	U
037	16N-08E-25 DCD 1	790.0	NGVD29	--	--	24.89	03-26-2007	--	-
037	16N-08E-27 DDA 1	--	--	--	140	--	--	--	U
037	16N-09E-06 DA 1	--	--	--	400	50	08-01-1969	323WANN	N
037	16N-09E-06 DDD 1	--	--	--	120	--	--	323TLNT	U
037	16N-09E-08 CB 1	--	--	--	325	60	11-01-1965	323WANN	U

COUNTY	LOCAL WELL NUMBER	ALTITUDE OF LAND SURFACE (FEET)	ALTITUDE DATUM (CODE)	DEPTH DRILLED (FEET)	DEPTH OF WELL (FEET)	WATER LEVEL (FEET)	WATER-LEVEL DATE	AQUIFER CODE	PRIMARY USE OF WATER
037	16N-09E-25 ABB 1	830	NGVD29	--	52.0	37.00	10-01-1970	323DEWY	U
037	16N-09E-29 C 1	--	--	--	200	120	07-20-1971	323BRDL	P
037	17N-09E-06 ABB 1	--	--	--	100	--	--	323TLNT	H
037	17N-09E-19 CCB 1	--	--	--	100	--	--	--	H
037	17N-09E-21 CDC 1	--	--	--	112	91.00	11-01-1970	323BRDL	U
037	17N-09E-35 DCC 1	910	NGVD29	--	34.0	14.00	10-01-1970	323BRDL	U



Oklahoma has two systems of intersecting base lines and meridians: one for the Panhandle, and one for the major portion of the state. The division between the two systems is indicated by the dashed line on the state map to the left.

The standard method for describing the location of a data collection site by fractional section, section, township, and range, usually referred to as the legal description, is replaced in this report by a local identifier illustrated by this figure. By the legal method, the location of the site indicated by the dot would be described as SE¼ SW¼ NW¼, Sec. 29, T. 3 N., R. 3 E. The method used in this report changes the order and indicates quarter subdivisions of the sections by letters. A sequence number is added to provide a unique local identifier for each site. By this method, the location of the site is given as 03N–03E–29 BCD 1.

Figure 7.—Explanation of local identifier.

REFERENCE 9

STEVEN A. THOMPSON
Executive Director

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

BRAD HENRY
Governor

April 30, 2008

Theda Adkisson
Planning and Management Division
Oklahoma Water Resources Board
3800 N. Classen
Oklahoma City, Oklahoma 73118

Dear Ms. Adkisson:

The purpose of this letter is to request copies of domestic well logs for both private and municipal wells that are presumably active and are in the locations described on the attached sheet. Please include copies from your files, archive files, and permit application files; (copies of the actual well log are preferred and most helpful since they contain local geological information).

Copies of the well logs may be sent to the DEQ through inter-agency mail. The information provided by your office will be used to partly describe ground water targets for a CERCLA Preliminary Assessment that will be conducted by the DEQ (Site Assessment Unit), as authorized by a cooperative agreement with the U. S. Environmental Protection Agency.

Your assistance is greatly appreciated. If you have any questions, please call Hal Cantwell at 702-5139. Please direct your response to Hal Cantwell, Land Protection Division as well.

Sincerely,

Jennifer Larsen
Environmental Programs Specialist I
Site Assessment Unit
Land Protection Division

Attachment

OWRB
the water agency

OKLAHOMA WATER RESOURCES BOARD
Planning & Management Division
3800 Classen Blvd.
Oklahoma City, OK 73118
Telephone: (405) 530-8800
Fax: (405) 530-8900
Web: www.owrb.ok.gov

Date: May 15, 2008

To the Attention of: Ms. Jennifer Larsen
Environmental Programs Specialist I
Department of Environmental Quality

From: Theda Adkisson

The attached material or information is sent to you:

- ☒ **In response to your request**
- ☐ **For your information**
- ☐ **Please see note**

I've enclosed spread sheets of the requested well search in Creek County. If a report is required please follow the instruction on the attached "NOTICE TO WELL RECORDS SEARCH CUSTOMERS".

If I can be of further help, please let me know.

NOTICE TO WELL RECORDS SEARCH CUSTOMERS

The Oklahoma Water Resources Board is pleased to announce the availability of a web-based well record search application which is accessible through the agency's web site. **This service is free to the public**. The address for our web site is www.owrb.ok.gov

You will be able to search by the well id number, county, or legal location. You must then select the type and uses of the well records you are interested in finding. You can select all groundwater and/or monitoring well uses or only selected uses, such as public water supply wells. You can also select some other type of well record, such as groundwater test holes, geotechnical borings, etc. The search can be further modified to select wells you want which were completed before, on, or after a certain date.

The summary results of the search you have completed can be downloaded in a .csv format by clicking on the 'download search results' line near the top of the screen. This file can then be opened in Excel or other comparable spreadsheet.

From the results display screen you can also view the entire record for an individual well or boring by clicking on any one of the displayed well id numbers. The well construction data available for that well will be displayed which can then be printed.

OKLAHOMA
DEPARTMENT OF ENVIRONMENTAL QUALITY

STEVEN A. THOMPSON
Executive Director

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

BRAD HENRY
Governor

	SITE NAME	SECTIONS	TOWNSHIP	RANGE	COUNTY
1	Lorraine Refinery	31-33	17N	9E	Creek
2, 3	Lorraine Refinery	3-11, 13-35 13-25 2A 26-35 2B	16N	9E	Creek
3-4	Lorraine Refinery	(1-2, 10-15, 22-27, (34-36) (3) 4	16N	8E	Creek
5 ✓	Lorraine Refinery	2-10, 17-18	15N	9E	Creek
6	Lorraine Refinery	1-3, 11-12	15N	8E	Creek

707 NORTH ROBINSON, P.O. BOX 1677, OKLAHOMA CITY, OKLAHOMA 73101-1677

Download Results to CSV (ALT-D) | New Search (ALT-N) | Graph Water Levels (ALT-G) | Save Wells for Graphing (ALT-W)

View Drought Monitoring Map and Water Level Graphs | Help & Search Results Key

Search Results for 33,32,31, 17N, 09EI Displaying Results 1 through 9 of 9.

Well ID	County	Owner Name	Qtrs	SEC-TWP-RGE	Date Const	Well Type	Use	TD (ft)	Static WL	First Zone	Meas. WL	Est. Yld	WL Graph
12503	Creek	(b) (6)	SWNESE	33-17N-09EI	09/03/88	Groundwater Well	Domestic	176	n/a	45	n/a	15	
12504	Creek	(b) (6)	SWSESW	33-17N-09EI	08/23/83	Groundwater Well	Domestic	165	n/a	35	n/a	9	
12505	Creek	(b) (6)	NWNENE	33-17N-09EI	12/22/87	Groundwater Well	Domestic	230	n/a	145	n/a	15	
17447	Creek	(b) (6)	SENESW	33-17N-09EI	01/09/90	Groundwater Well	Domestic	175	n/a	95	n/a	15	
22296	Creek	(b) (6)	NESWSW	33-17N-09EI	08/18/90	Groundwater Well	Domestic	236	n/a	25	n/a	15	
30485	Creek	(b) (6)	NENESE	33-17N-09EI	04/30/94	Groundwater Well	Domestic	207	n/a	160	n/a	n/a	
53098	Creek	(b) (6)	SWNWSW	32-17N-09EI	04/30/00	Groundwater Well	Domestic	162	40	123	n/a	15	
59411	Creek	(b) (6)	SWSESW	31-17N-09EI	03/21/01	Groundwater Well	Domestic	99	n/a	80	n/a	10	
69804	Creek	(b) (6)	NWSESE	31-17N-09EI	10/25/01	Groundwater Well	Domestic	160	n/a	110	n/a	10	

Help & Search Results Key

This search does not necessarily contain information about all of the water wells within the area of interest. The multi-purpose well completion report database consists of information submitted to the Board for all well data reported by licensed firms since 1982 and monitoring well data reported since 1988. There could be other wells in the area, which are not included in our database. Wells drilled prior to the licensing requirements for well drillers would not necessarily have had a well log submitted to the OWRB. A field survey may need to be conducted to verify the presence or absence of other water wells.

The Oklahoma Water Resources Board does not guarantee the accuracy of the data shown in the well completion records. Data entered into the database are as reported by the well drillers and much of the data have not been field verified for accuracy. If any errors in the records are discovered, please bring them to our attention so that corrections to the database may be made.

contact OWRB | disclaimer

Visit www.ok.gov, the Oklahoma State Portal

Download Results to CSV (ALT-D) | New Search (ALT-N) | Graph Water Levels (ALT-G) | Save Wells for Graphing (ALT-W)

View Drought Monitoring Map and Water Level Graphs | Help & Search Results Key

Your search returned 50 or more results. Try using more search options to limit the number of results returned.

Search Results for 1,2,10,11,12,12,14,15,22,23,24,25,26,27, 16N, 08EI

Displaying Results 1 through 40 of 58.

Well ID	County	Owner Name	Qtrs	SEC-TWP-RGE	Date Const	Well Type	Use	TD (ft)	Static WL	First Zone	Meas. WL	Est. Yld	WL Graph
12385	Creek	(b) (6)	NWNESW	10-16N-08EI	02/26/84	Groundwater Well	Domestic	131	n/a	90	n/a	8	
12386	Creek	(b) (6)	SWSWSW	11-16N-08EI	07/21/84	Groundwater Well	Domestic	120	n/a	50	n/a	10	
12387	Creek	(b) (6)	SESWNE	11-16N-08EI	03/26/85	Groundwater Well	Domestic	150	n/a	30	n/a	24	
12390	Creek	(b) (6)	SENWNW	14-16N-08EI	11/10/85	Groundwater Well	Domestic	195	n/a	35	n/a	5	
12391	Creek	(b) (6)	NWNWNW	14-16N-08EI	04/21/84	Groundwater Well	Domestic	164	n/a	34	n/a	10	
12392	Creek	(b) (6)	NWNWSE	15-16N-08EI	08/09/88	Groundwater Well	Domestic	102	n/a	50	n/a	12	
12393	Creek	(b) (6)	SENENW	15-16N-08EI	06/18/85	Groundwater Well	Domestic	147	n/a	107	n/a	18	
12394	Creek	(b) (6)	SENENW	15-16N-08EI	06/19/85	Groundwater Well	Domestic	150	n/a	110	n/a	18	
12395	Creek	(b) (6)	NWSWNW	15-16N-08EI	05/09/87	Groundwater Well	Domestic	135	n/a	90	n/a	15	
12396	Creek	(b) (6)	SWSWNE	15-16N-08EI	09/24/86	Groundwater Well	Domestic	138	n/a	103	n/a	18	
12397	Creek	(b) (6)	SWSWSW	15-16N-08EI	08/21/85	Groundwater Well	Domestic	105	n/a	30	n/a	12	
12398	Creek	(b) (6)	NWSWSW	15-16N-08EI	05/06/85	Groundwater Well	Domestic	150	n/a	90	n/a	20	
12402	Creek	(b) (6)	SWSWSW	24-16N-08EI	05/25/88	Groundwater Well	Domestic	80	n/a	15	n/a	8	
12403	Creek	City Of Bristow	NENESE	24-16N-08EI	04/30/84	Groundwater Well	Public Water Supply	425	n/a	174	n/a	300	
12404	Creek	(b) (6)	NESENE	24-16N-08EI	08/01/83	Groundwater Well	Domestic	105	n/a	60	n/a	5	
12405	Creek	(b) (6)	NWNWNE	25-16N-08EI	05/03/86	Groundwater Well	Domestic	180	n/a	80	n/a	7	
12406	Creek	(b) (6)	SWSWSW	25-16N-08EI	10/16/85	Groundwater Well	Domestic	135	n/a	75	n/a	10	

003251

12407	Creek	(b) (6)	NESESW	25-16N-08EI	04/25/85	Groundwater Well	Domestic	320	n/a	49	n/a	100	
12408	Creek	(b) (6)	SENENW	25-16N-08EI	01/05/84	Groundwater Well	Domestic	138	n/a	88	n/a	15	
12409	Creek	City Of Bristow Ok	NESESE	25-16N-08EI	08/02/82	Groundwater Well	Public Water Supply	300	n/a	80	n/a	75	
12410	Creek	(b) (6)	SENESW	27-16N-08EI	09/20/88	Groundwater Well	Domestic	111	n/a	70	n/a	10	
17445	Creek	(b) (6)	SENWSW	15-16N-08EI	06/11/90	Groundwater Well	Domestic	160	n/a	25	n/a	10	
22291	Creek	(b) (6)	SESWSE	11-16N-08EI	08/03/90	Groundwater Well	Domestic	300	n/a	95	n/a	60	
24741	Creek	(b) (6)	SWNENE	24-16N-08EI	04/26/91	Groundwater Well	Domestic	100	n/a	20	n/a	20	
25747	Creek	City Of Bristow	NWNENE	25-16N-08EI	04/03/70	Groundwater Well	Public Water Supply	431	n/a	118	n/a	273	
26626	Creek	(b) (6)	NWNWNW	02-16N-08EI	10/05/91	Groundwater Well	Domestic	99	n/a	30	n/a	15	
28566	Creek	(b) (6)	NWSWNW	25-16N-08EI	07/31/92	Groundwater Well	Domestic	160	n/a	30	n/a	30	
28838	Creek	(b) (6)	SWNWNW	25-16N-08EI	07/31/92	Groundwater Well	Domestic	160	n/a	30	n/a	25	
32407	Creek	City Of Bristow	SESWSE	25-16N-08EI	n/a	Groundwater Well	Public Water Supply	206	n/a	n/a	view	n/a	
35089	Creek	(b) (6)	SWSWSW	23-16N-08EI	09/29/96	Groundwater Well	Domestic	201	30	85	n/a	10	
35091	Creek	(b) (6)	NENENE	12-16N-08EI	01/20/96	Groundwater Well	Domestic	280	80	85	n/a	12	
35092	Creek	(b) (6)	SENENE	15-16N-08EI	04/29/96	Groundwater Well	Domestic	120	20	50	n/a	8	
35094	Creek	(b) (6)	NENESE	01-16N-08EI	09/23/95	Groundwater Well	Domestic	81	38	38	n/a	15	
42949	Creek	(b) (6)		15-16N-08EI	09/02/90	Groundwater Well	Domestic	102	n/a	60	n/a	20	
48795	Creek	(b) (6)	SENWSE	02-16N-08EI	03/03/99	Groundwater Well	Domestic	111	n/a	n/a	n/a	10	
48803	Creek	(b)	NENENE	24-16N-08EI	09/11/98	Groundwater Well	Domestic	240	n/a	n/a	n/a	15	
48699	Creek	(b) (6)	SENWSE	22-16N-08EI	11/01/99	Groundwater Well	Domestic	235	n/a	n/a	n/a	12	
54472	Creek	(b) (6)	SWNWNW	22-16N-08EI	04/26/00	Groundwater Well	Domestic	100	n/a	22	n/a	12	
54478	Creek	(b) (6)	NENENE	22-16N-08EI	05/10/00	Groundwater Well	Domestic	140	n/a	65	n/a	7	
62897	Creek	(b) (6)	SWSWSE	27-16N-08EI	06/02/01	Groundwater Well	Domestic	320	n/a	35	n/a	60	

Help & Search Results Key Go To Results: 41-58

This search does not necessarily contain information about all of the water wells within the area of interest. The multi-purpose well completion report database consists of information submitted to the Board for all well data reported by licensed firms since 1982 and monitoring well data reported since 1988. There could be other wells in the area, which are not included in our database. Wells drilled prior to the licensing requirements for well drillers would not necessarily have had a well log submitted to the OWRB. A field survey may need to be conducted to verify the presence or absence of other water wells.

The Oklahoma Water Resources Board does not guarantee the accuracy of the data shown in the well completion records. Data entered into the database are as reported by the

well drillers and much of the data have not been field verified for accuracy. If any errors in the records are discovered, please bring them to our attention so that corrections to the database may be made.

contact OWRB | disclaimer

OWRB the water agency — the oklahoma water resources board

Download Results to CSV (ALT-D) | New Search (ALT-N) | Graph Water Levels (ALT-G) | Save Wells for Graphing (ALT-W)

View Drought Monitoring Map and Water Level Graphs | Help & Search Results Key

Search Results for 1,2,3,11,12, 15N, 08EI

Displaying Results 1 through 9 of 9.

Well ID	County	Owner Name	Qtrs	SEC-TWP-RGE	Date Const	Well Type	Use	TD (ft)	Static WL	First Zone	Meas. WL	Est. Yld	WL Graph
12334	Creek	(b) (6)	NESESE	12-15N-08EI	11/07/85	Groundwater Well	Domestic	123	n/a	n/a	n/a	n/a	
12335	Creek	(b) (6)	SENESE	12-15N-08EI	10/31/85	Groundwater Well	Domestic	105	n/a	n/a	n/a	n/a	
26618	Creek	(b) (6)	NWSWNW	12-15N-08EI	12/07/91	Groundwater Well	Domestic	150	n/a	105	n/a	15	
35008	Creek	(b) (6)	NENENE	12-15N-08EI	07/08/96	Groundwater Well	Domestic	108	30	15	n/a	20	
35009	Creek	(b) (6)	NENENE	12-15N-08EI	07/08/96	Groundwater Well	Domestic	140	50	70	n/a	30	
80245	Creek	(b) (6)	NENENE	12-15N-08EI	08/04/03	Groundwater Well	Domestic	140	n/a	n/a	n/a	n/a	
91833	Creek	(b) (6)	SENESE	11-15N-08EI	10/20/04	Groundwater Well	Domestic	170	20	140	n/a	10	
103635	Creek	(b) (6)	NWNWNE	11-15N-08EI	12/23/05	Groundwater Well	Domestic	140	117	117	n/a	0	
111635	Creek	(b) (6)	SENWNW	12-15N-08EI	05/16/07	Groundwater Well	Domestic	165	50	105	n/a	20	

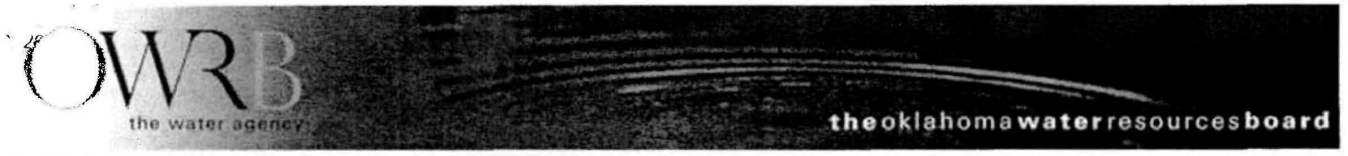
Help & Search Results Key

This search does not necessarily contain information about all of the water wells within the area of interest. The multi-purpose well completion report database consists of information submitted to the Board for all well data reported by licensed firms since 1982 and monitoring well data reported since 1988. There could be other wells in the area, which are not included in our database. Wells drilled prior to the licensing requirements for well drillers would not necessarily have had a well log submitted to the OWRB. A field survey may need to be conducted to verify the presence or absence of other water wells.

The Oklahoma Water Resources Board does not guarantee the accuracy of the data shown in the well completion records. Data entered into the database are as reported by the well drillers and much of the data have not been field verified for accuracy. If any errors in the records are discovered, please bring them to our attention so that corrections to the database may be made.

contact OWRB | disclaimer

Visit www.ok.gov, the Oklahoma State Portal



Download Results to CSV (ALT-D) | New Search (ALT-N) | Graph Water Levels (ALT-G) | Save Wells for Graphing (ALT-W)

View Drought Monitoring Map and Water Level Graphs | Help & Search Results Key

Your search returned 50 or more results. Try using more search options to limit the number of results returned.

Search Results for 2,3,4,5,6,7,8,9,10,17,18, 15N, 09EI

Displaying Results 1 through 40 of 52.

Well ID	County	Owner Name	Qtrs	SEC-TWP-RGE	Date Const	Well Type	Use	TD (ft)	Static WL	First Zone	Meas. WL	Est. Yld	WL Graph
12349	Creek	(b) (6)	NENENE	04-15N-09EI	03/25/84	Groundwater Well	Domestic	202	n/a	100	n/a	10	
12350	Creek	(b) (6)	NWSWSE	07-15N-09EI	09/10/85	Groundwater Well	Domestic	80	n/a	30	n/a	15	
12351	Creek	(b) (6)	SESWSE	08-15N-09EI	08/28/87	Groundwater Well	Domestic	65	n/a	10	n/a	30	
12352	Creek	(b) (6)	SWSWSW	08-15N-09EI	01/24/84	Groundwater Well	Domestic	51	n/a	12	n/a	10	
12353	Creek	(b) (6)	SESESW	09-15N-09EI	05/20/88	Groundwater Well	Domestic	206	n/a	80	n/a	18	
12355	Creek	(b) (6)	NWNESE	17-15N-09EI	02/21/89	Groundwater Well	Domestic	102	n/a	52	n/a	15	
12356	Creek	(b) (6)	NENENE	17-15N-09EI	03/06/84	Groundwater Well	Domestic	115	n/a	50	n/a	5.5	
12357	Creek	(b) (6)	NENENE	17-15N-09EI	05/18/84	Groundwater Well	Domestic	118	n/a	60	n/a	12	
12358	Creek	(b) (6)	SWNWSE	17-15N-09EI	10/24/88	Groundwater Well	Domestic	68	n/a	23	n/a	18	
12359	Creek	(b) (6)	NENENE	17-15N-09EI	02/02/84	Groundwater Well	Domestic	107	n/a	57	n/a	6	
12360	Creek	(b) (6)	SESWNE	17-15N-09EI	11/07/83	Groundwater Well	Domestic	78	n/a	18	n/a	20	
22288	Creek	(b) (6)	SWSWSW	06-15N-09EI	10/31/90	Groundwater Well	Domestic	66	n/a	25	n/a	11	
26621	Creek	(b) (6)	SWNWNW	05-15N-09EI	08/18/91	Groundwater Well	Domestic	50	n/a	15	n/a	30	
26622	Creek	(b) (6)	SWSWSE	08-15N-09EI	10/01/91	Groundwater Well	Domestic	135	n/a	32	n/a	5	
26623	Creek	(b) (6)	SWNWSW	08-15N-09EI	12/05/91	Groundwater Well	Domestic	99	n/a	60	n/a	30	
28834	Creek	(b) (6)	SESENE	18-15N-09EI	08/25/92	Groundwater Well	Domestic	87	n/a	50	n/a	20	
30478	Creek	(b) (6)	SWSWSW	17-15N-09EI	03/20/94	Groundwater Well	Domestic	130	n/a	100	n/a	40	

003256

OWRB the water agency theoklahomawaterresourcesboard

Download Results to CSV (ALT-D) | New Search (ALT-N) | Graph Water Levels (ALT-G) | Save Wells for Graphing (ALT-W)

View Drought Monitoring Map and Water Level Graphs | Help & Search Results Key

Your search returned 50 or more results. Try using more search options to limit the number of results returned.

Search Results for 2,3,4,5,6,7,8,9,10,17,18, 15N, 09EI

Displaying Results 41 through 52 of 52.

Well ID	County	Owner Name	Qtrs	SEC-TWP-RGE	Date Const	Well Type	Use	TD (ft)	Static WL	First Zone	Meas. WL	Est. Yld	WL Graph
77211	Creek	(b) (6)	SWNWNW	05-15N-09EI	11/09/02	Groundwater Well	Domestic	140	n/a	18	n/a	20	
80191	Creek	(b) (6)	SENENE	17-15N-09EI	08/12/03	Groundwater Well	Domestic	260	100	55	n/a	60	
85241	Creek	(b) (6)	NWSENE	08-15N-09EI	09/10/03	Groundwater Well	Domestic	200	n/a	n/a	n/a	n/a	
85597	Creek	(b) (6)	SWNWSE	08-15N-09EI	04/02/04	Groundwater Well	Domestic	140	30	60	n/a	12	
90436	Creek	(b) (6)	NENWNW	07-15N-09EI	07/23/04	Groundwater Well	Domestic	100	n/a	40	n/a	30	
93777	Creek	(b) (6)	NENENE	06-15N-09EI	04/12/05	Groundwater Well	Domestic	120	35	60	n/a	10	
103655	Creek	(b) (6)	NWNWSW	18-15N-09EI	01/30/06	Groundwater Well	Domestic	160	5	12	n/a	20	
103674	Creek	(b) (6)	NWNWNW	06-15N-09EI	04/12/06	Groundwater Well	Domestic	120	35	60	n/a	10	
104820	Creek	(b) (6)	NESWSW	09-15N-09EI	06/23/06	Groundwater Well	Domestic	260	35	35	n/a	10	
109013	Creek	(b) (6)	SENWNW	08-15N-09EI	07/17/06	Groundwater Well	Domestic	250	60	65	n/a	15	
114005	Creek	(b) (6)	NENWSW	03-15N-09EI	04/20/07	Groundwater Well	Domestic	260	40	40	n/a	10	
114012	Creek	(b) (6)	NENWSW	03-15N-09EI	04/20/07	Groundwater Well	Domestic	260	40	40	n/a	10	

Help & Search Results Key Go To Results: 1-40

This search does not necessarily contain information about all of the water wells within the area of interest. The multi-purpose well completion report database consists of information submitted to the Board for all well data reported by licensed firms since 1982 and monitoring well data reported since 1988. There could be other wells in the area, which are not included in our database. Wells drilled prior to the licensing requirements for well drillers would not necessarily have had a well log submitted to the OWRB. A field survey may need to be conducted to verify the presence or absence of other water wells.

The Oklahoma Water Resources Board does not guarantee the accuracy of the data shown in the well completion records. Data entered into the database are as reported by the well drillers and much of the data have not been field verified for accuracy. If any errors in the records are discovered, please bring them to our attention so that corrections to the database may be made.

contact OWRB | disclaimer

Download Results to CSV (ALT-D) | New Search (ALT-N) | Graph Water Levels (ALT-G) | Save Wells for Graphing (ALT-W)

View Drought Monitoring Map and Water Level Graphs

Help & Search Results Key

Search Results for 34,35,36, 16N, 08EI

Displaying Results 1 through 9 of 9.

Well ID	County	Owner Name	Qtrs	SEC-TWP-RGE	Date Const	Well Type	Use	TD (ft)	Static WL	First Zone	Meas. WL	Est. Yld	WL Graph
12414	Creek	(b) (6)	SWSWNE	34-16N-08EI	05/20/85	Groundwater Well	Domestic	105	n/a	60	n/a	12	
22443	Creek	(b) (6)	NWNWNE	36-16N-08EI	11/26/90	Groundwater Well	Domestic	140	n/a	50	n/a	40	
29930	Creek	(b) (6)	NENENW	35-16N-08EI	06/29/93	Groundwater Well	Domestic	81	n/a	25	n/a	7	
35090	Creek	(b) (6)	NESENE	36-16N-08EI	12/21/96	Groundwater Well	Domestic	101	50	80	n/a	10	
39108	Creek	(b) (6)	NWNWSE	36-16N-08EI	12/09/97	Groundwater Well	Domestic	100	30	30	n/a	20	
69816	Creek	(b) (6)	SENENW	35-16N-08EI	10/13/01	Groundwater Well	Domestic	160	n/a	75	n/a	10	
69911	Creek	(b) (6)	NENWNW	35-16N-08EI	07/13/00	Groundwater Well	Observation Well	165	n/a	125	n/a	10	
89901	Creek	(b) (6)	NENENE	35-16N-08EI	07/23/03	Groundwater Well	Domestic	250	n/a	10	n/a	30	
97058	Creek	(b) (6)	NWSENW	36-16N-08EI	06/01/05	Groundwater Well	Domestic	150	60	110	n/a	15	

Help & Search Results Key

This search does not necessarily contain information about all of the water wells within the area of interest. The multi-purpose well completion report database consists of information submitted to the Board for all well data reported by licensed firms since 1982 and monitoring well data reported since 1988. There could be other wells in the area, which are not included in our database. Wells drilled prior to the licensing requirements for well drillers would not necessarily have had a well log submitted to the OWRB. A field survey may need to be conducted to verify the presence or absence of other water wells.

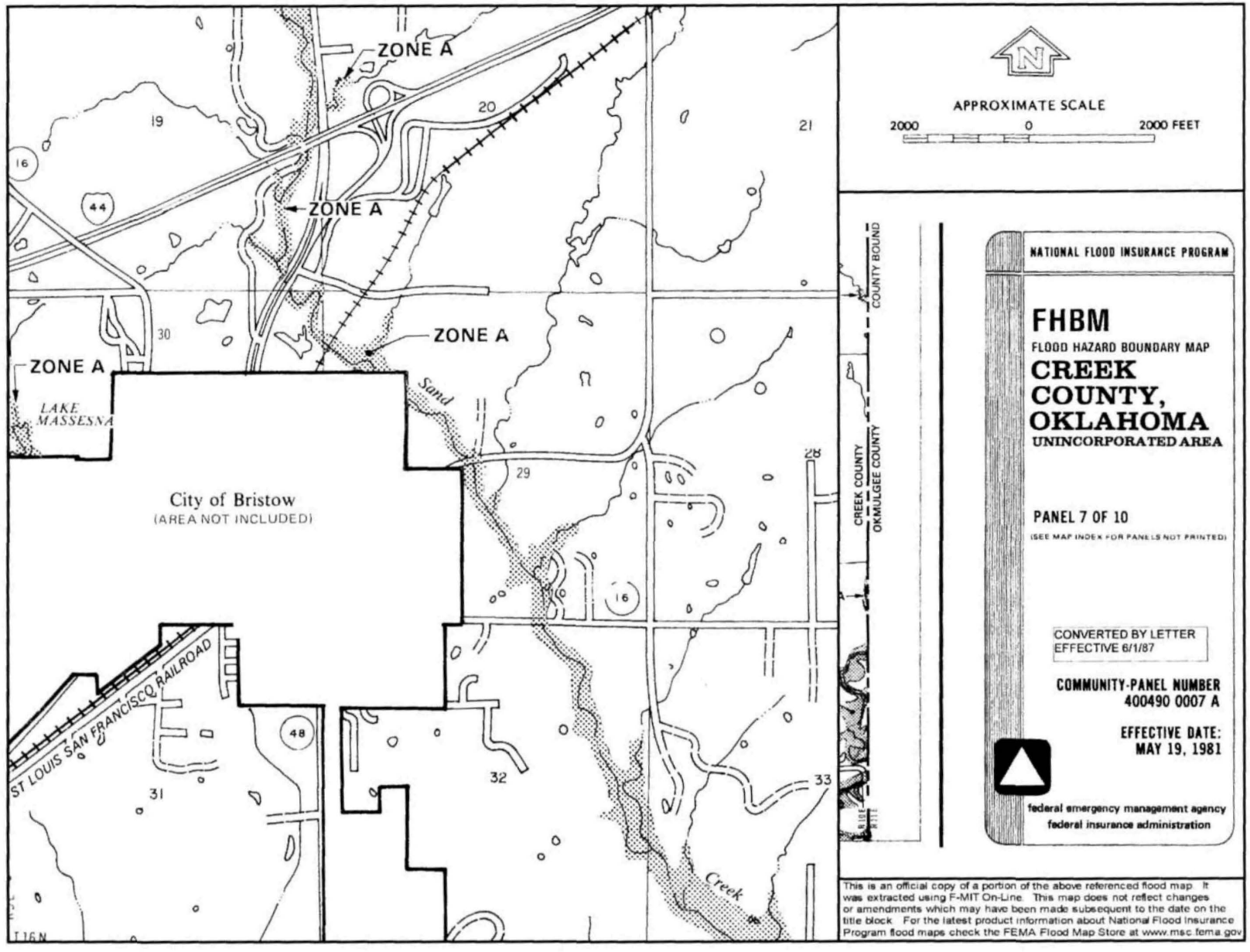
The Oklahoma Water Resources Board does not guarantee the accuracy of the data shown in the well completion records. Data entered into the database are as reported by the well drillers and much of the data have not been field verified for accuracy. If any errors in the records are discovered, please bring them to our attention so that corrections to the database may be made.

contact OWRB | disclaimer

Visit www.ok.gov, the Oklahoma State Portal

003258

REFERENCE 11


ZONE A
ZONE A
ZONE A
ZONE A
LAKE MASSENA
City of Bristow
(AREA NOT INCLUDED)
Sand
Creek
ST LOUIS SAN FRANCISCO RAILROAD
T 16 N
19
20
21
30
29
28
31
32
33
16
44
48
APPROXIMATE SCALE
2000 0 2000 FEET
COUNTY BOUND
CREEK COUNTY
OKMULGEE COUNTY
NATIONAL FLOOD INSURANCE PROGRAM
FHBM
FLOOD HAZARD BOUNDARY MAP
CREEK COUNTY, OKLAHOMA
UNINCORPORATED AREA
PANEL 7 OF 10
(SEE MAP INDEX FOR PANELS NOT PRINTED)
CONVERTED BY LETTER EFFECTIVE 6/1/87
COMMUNITY-PANEL NUMBER 400490 0007 A
EFFECTIVE DATE: MAY 19, 1981
federal emergency management agency
federal insurance administration
This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

G

LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

ZONE A No base flood elevations determined

ZONE AE Base flood elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding; velocities also determined.

ZONE A99 To be protected from 100-year flood by Federal flood protection system under construction; no base flood elevations determined.

ZONE V Coastal flood with velocity hazard (wave action); no base flood elevations determined.

ZONE VE Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

ZONE X Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

ZONE X Areas determined to be outside 500-year floodplain.

ZONE D Areas in which flood hazards are undetermined.

UNDEVELOPED COASTAL BARRIERS†

Identified 1983 | Identified 1990 | Otherwise Protected Areas

†Coastal barrier areas are normally located within or adjacent to special flood hazard areas.

Floodplain Boundary

Floodway Boundary

Zone D Boundary

Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Dif-

N

APPROXIMATE SCALE IN FEET

2000 0 2000

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

CREEK COUNTY, OKLAHOMA
(UNINCORPORATED AREAS)

(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
4004900225 C

MAP REVISED:
SEPTEMBER 21, 2001

Federal Emergency Management Agency

REFERENCE 12

OKLAHOMA
DEPARTMENT OF ENVIRONMENTAL QUALITY

STEVEN A. THOMPSON
Executive Director

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

BRAD HENRY
Governor

April 30, 2008

Bob Sandbo
Planning and Management Division
Oklahoma Water Resources Board
3800 N. Classen
Oklahoma City, Oklahoma 73118

Dear Mr. Sandbo:

The purpose of this letter is to request any information regarding surface water intakes that may be located within 15 miles downstream from the point of entry (PPE) into perennial waters. Enclosed is the legal location of a **PPE** and **15-mile end** of a site. The information provided by your office will be used to partly describe surface water targets in CERCLA Preliminary Assessments that will be conducted by the DEQ (Site Assessment Unit), as authorized by a cooperative agreement with the U. S. Environmental Protection Agency.

Your assistance is greatly appreciated. If you have any questions, please call Hal Cantwell at 702-5139. Please direct your response to Hal Cantwell, Land Protection Division as well.

Sincerely,

Jennifer Larsen
Environmental Programs Specialist I
Site Assessment Unit
Land Protection Division

Attachment

OKLAHOMA
DEPARTMENT OF ENVIRONMENTAL QUALITY

STEVEN A. THOMPSON
Executive Director

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

BRAD HENRY
Governor

SITE NAME	SECTIONS	TOWNSHIP	RANGE	COUNTY
Lorraine Refinery	31-33	17N	9E	Creek
Lorraine Refinery	3-11, 13-35	16N	9E	Creek
Lorraine Refinery	1-2, 10-15, 22-27, 34-36	16N	8E	Creek
Lorraine Refinery	6-8, 17, 20	15N	10E	Creek
Lorraine Refinery	1-12, 17-18	15N	9E	Creek
Lorraine Refinery	1-3, 11-12	15N	8E	Creek

Attention: Jennifer Larsen

Date: May 16, 2008

The attached material is sent to you:

XX In response to your request

_____ For your information

_____ Additional information needed

Oklahoma Water Resources Board
3800 North Classen
Oklahoma City, Oklahoma 73118
Phone: (405) 530-8800
Fax: (405) 530-8900
www.owrb.ok.gov

by: Bob Sandbo
Planning and Management Division

Comments:

Re: PPE & 15-mile end for Lorraine Refinery

Enclosed is a map showing the area of concern per your letter dated April 30, 2008. It appears that there is only one permitted surface water diversion within the area stated. Please note that there may be others taking water for domestic purposes for their household use within the area that we are not aware of since we do not regulate domestic use of water.

If you have any questions or need further information, please feel free to contact me at 405-530-8800.

Lorraine Refinery PPE & 15-mile End Creek County

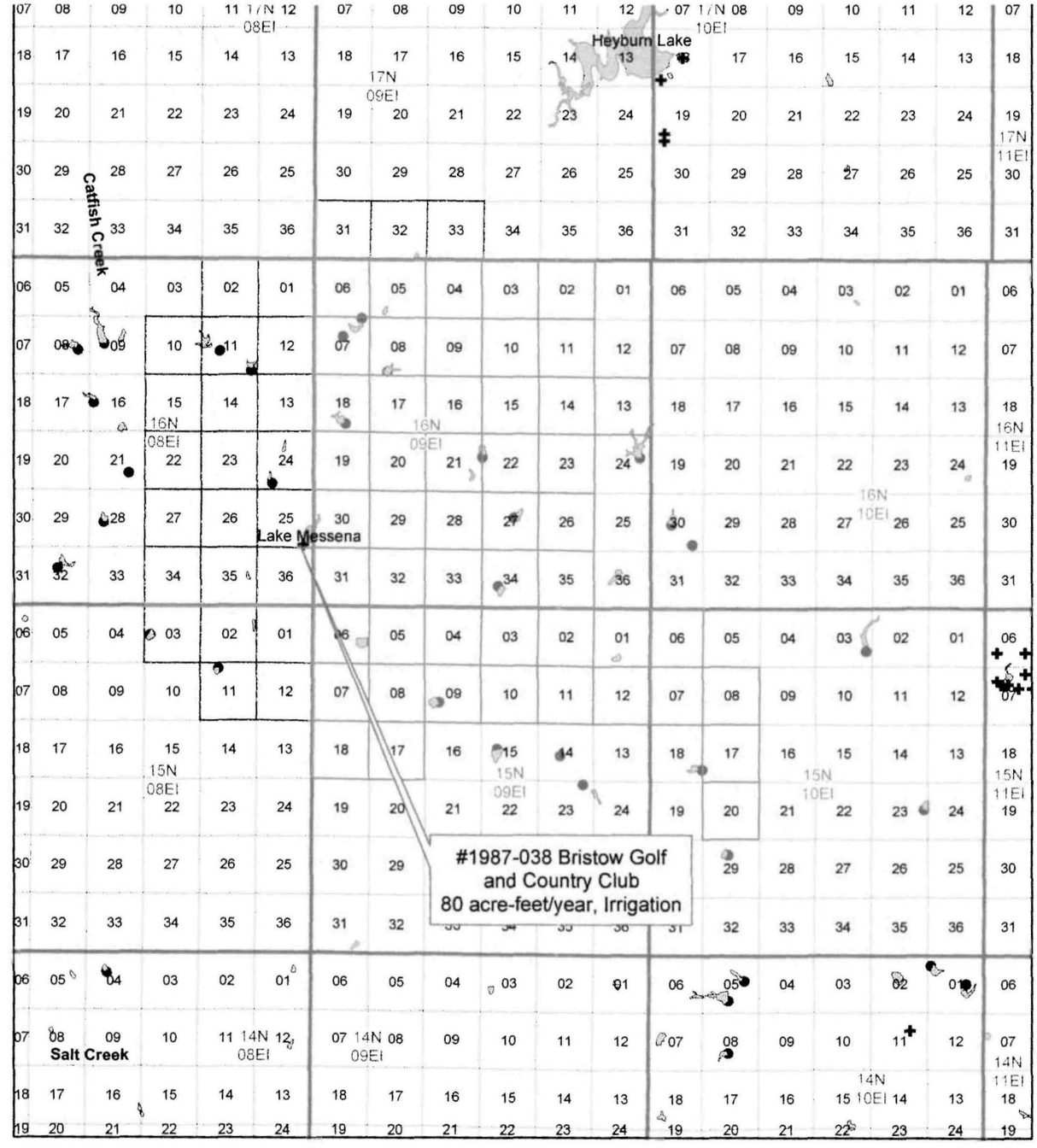
Legend

- Lorraine Refinery PPE & 15mi End
- SW Permitted Diversions
- Sections
- Township/Range
- Lakes
- NRCS Sites
- Streams - Full Detail

N
W E
S

Created by: Bob Sandbo
Oklahoma Water Resources Board
May 16, 2008

0 1.5 3 6 Miles



003267

REFERENCE 13

UNOFFICIAL

TITLE 785. OKLAHOMA WATER RESOURCES BOARD
CHAPTER 45. OKLAHOMA'S WATER QUALITY STANDARDS

Introduction:

This document contains the Oklahoma Water Quality Standards promulgated by the Oklahoma Water Resources Board including all amendments which are effective as of May 27, 2008. This document was prepared by Oklahoma Water Resources Board staff as a convenience to the reader, and is not a copy of the official Title 785 of the Oklahoma Administrative Code. The rules in the official Oklahoma Administrative Code control if there are any discrepancies between the Code and this document.

Subchapter		Section
1.	General Provisions	785:45-1-1
3.	Antidegradation Requirements	785:45-3-1
5.	Surface Water Quality Standards	785:45-5-1
7.	Groundwater Quality Standards	785:45-7-1

Appendix A.	Designated Beneficial Uses for Surface Waters
Appendix B.	Areas With Waters of Recreational and/or Ecological Significance
Appendix C.	Suitability of Water for Livestock and Irrigation Uses [REVOKED]
Appendix D.	Classifications for Groundwater in Oklahoma
Appendix E.	Requirements for Development of Site Specific Criteria for Metals
Appendix F.	Statistical Values of the Historical Data for Mineral Constituents of Water Quality (beginning October 1976 ending September 1983, except as indicated)
Appendix G.	Numerical Criteria to Protect Beneficial Uses
Appendix H.	Beneficial Use Designations for Certain Limited Areas of Groundwater

SUBCHAPTER 1. GENERAL PROVISIONS

Section	
785:45-1-1.	Purpose
785:45-1-2.	Definitions
785:45-1-3.	Adoption and enforceability of the standards
785:45-1-4.	Testing procedures
785:45-1-5.	Revision procedures
785:45-1-6.	Errors and separability

785:45-1-1. Purpose

(a) The Oklahoma Water Resources Board's statutory authority and responsibility concerning establishment of standards of quality of waters of the state are provided for under 82 O.S., §1085.30. Under this statute the Oklahoma Water Resources Board is authorized to promulgate rules *which establish classifications of uses of waters of the state, criteria to maintain and protect such classifications, and other standards or policies pertaining to the quality of such waters* [82:1085.30(A)]. These Standards are designed to maintain and protect the quality of the waters of the state.

(b) The Standards specify numerical and narrative criteria to protect beneficial uses designated for certain waters of the State. Beneficial use designations can be found in Appendix A of this Chapter for listed surface waters and in 785:45-5-3 for unlisted surface waters. The numerical and narrative criteria assigned to protect surface water beneficial uses are shown in Subchapter 5 of this Chapter. Classifications for groundwater can be found in Subchapter 7 and Appendix D of this Chapter. Narrative criteria to protect groundwater are shown in Subchapter 7 of this Chapter. The criteria that are the standards for a specific water of the State are the most stringent assigned to its designated beneficial uses. Since these criteria will protect the most sensitive use assigned, they will protect all designated uses. The

APPENDIX A. DESIGNATED BENEFICIAL USES FOR SURFACE WATERS

(a) **Introduction.** The Tables in the following Appendices A.1 through A.7 identify certain waterbodies throughout the state of Oklahoma and designate beneficial uses for those waterbodies. The waterbodies are identified by their name (e.g., "Horse Creek") or other description (e.g., "Tributary of Lebos Creek at Sec. 2, T2N, R 26W, IM", "Red River from the Arkansas State Line to the Kiamichi River") and a Waterbody ID Number. The Waterbody ID numbers are used in the State of Oklahoma "Water Quality Assessment Integrated Report" published by the Oklahoma Department of Environmental Quality. The first digit of the Waterbody ID number indicates the basin number; the next three digits indicate the major drainage segment within that basin; the next two digits indicate the subdivision of the major drainage segment, the next two digits indicate a smaller section of that six digit basin, and the last four digits represent a hydrologic sequence of waterbodies, going from the most downstream point in the eight-digit watershed up to the furthest upstream point in the watershed. In some cases, two additional digits are added to indicate further delineations within the waterbody segment. Not all waterbodies have a Waterbody ID number, primarily due to limited resources and need. Where a specific Waterbody ID has not been assigned, the six-digit Water Quality Management Segment is listed until such time as the waterbody is assigned a specific Waterbody ID number. The Tables in Appendices A.1 through A.7 also set forth columns to show the beneficial uses or subcategories of uses which are designated for each identified waterbody.

(b) **Beneficial Use designations.** Designations of beneficial uses for a waterbody are reflected in the Tables in Appendices A.1 through A.7 by the presence of the following codes or a dot ("•") in the columns to the right of the waterbody name. An empty space in a column means that column's beneficial use or subcategory thereof is not designated for that waterbody.

(1) EWS - Emergency Water Supply beneficial use
(2) PPWS - Public and Private Water Supply beneficial use
(3) F&W Prop. - Fish and Wildlife Propagation beneficial use
  (A) WWAC - Warm Water Aquatic Community subcategory
  (B) HLAC - Habitat Limited Aquatic Community subcategory
  (C) CWAC - Cool Water Aquatic Community subcategory
  (D) Trout - Trout Fishery (put and take) subcategory
(4) Ag - Agriculture beneficial use
(5) Rec - Recreation beneficial use
  (A) PBCR - Primary Body Contact beneficial use
  (B) SBCR - Secondary Body Contact beneficial use
(6) Nav – Navigation beneficial use
(7) Aes - Aesthetics beneficial use

A dot ("•") used in a column indicates that the beneficial use in that column's heading is designated for that waterbody without a more specific subcategory or other designation.

The criteria to protect the beneficial uses are provided in Subchapter 5 and Appendix G of this Chapter.

[AGENCY NOTE: The following sections (c) and (d) were inadvertently omitted when this Appendix was amended in 2008. It is anticipated that these two sections will be re-adopted in the future. In the meantime, they are included here as an aid to the reader in understanding Appendices A.1 through A.7.]

(c) **Limitations for Additional Protection.**

(1) Limitations for additional protection are described in 785:45-5-25.

(2) Waterbodies that are subject to limitations for additional protection in 785:45-5-25 are identified by the designation of any of the following codes in the "Limitations" column to the right of the waterbody's name:
  (A) "ORW" - indicates waters designated Outstanding Resource Waters;
  (B) "HQW" - indicates waters designated High Quality Waters; and
  (C) "SWS" - indicates waters designated Sensitive Public and Private Water Supplies.

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Tributary of Wewoka Creek at SE NE SW Sec. 27, T9N, R10E, IM (Wetumka Creek)	520500020035		HLAC	•	SBCR		•		
Graves Creek	520500020060	PPWS	WWAC	•	PBCR		•		
Little Wewoka Creek	520500020090	PPWS	WWAC	•	PBCR		•		
Tributary of Wewoka Creek at Sec. 20, T8N, R8E, IM (Oakwood Cemetery Creek)	520500020280		HLAC	•	SBCR		•		
Wewoka Lake and Watershed	520500020170, 520500020180, 520500020190	PPWS	WWAC	•	PBCR		•	SWS	
Wewoka Creek upstream from the boundaries of Sec. 27 & 28, T9N, R6E, IM	520500020240_10	PPWS	HLAC	•	SBCR		•		
Tributary of Wewoka Creek at NW 1/4, Sec. 16, T9N, R5E, IM	520500		HLAC	•	SBCR		•		
Tributary of North Canadian River at Sec. 22, T10N, R11E, IM	520500		HLAC	•	SBCR		•		
Wetumka City Lake	520500010270	PPWS	WWAC	•	PBCR		•		
Flat Rock Creek	520510010280	PPWS	WWAC	•	PBCR		•		
Sand Creek	520510000050		HLAC	•	SBCR		•		
Tributary of Sand Creek at SW 1/4, Sec. 34, T11N, R8E, IM	520510		HLAC	•	SBCR		•		
Boley Creek	520510000055		HLAC	•	SBCR		•		
Turkey Creek	520510000100	PPWS	WWAC	•	PBCR		•		
Tecumseh Lake and Watershed	520510000200, 520510000210, 520510000220	PPWS	WWAC	•	PBCR		•	SWS	
Shan Creek	520510000120		HLAC	•	SBCR		•		
Tributary of Squirrel Creek at SE 1/4 of NW 1/4 of SW 1/4 of Sec. 6, T9N, R4E, IM	520510		WWAC	•	PBCR		•		
Shawnee Twin Lakes and Watershed	520510000250, 520510000280, 520510000290, 520510000300	PPWS	WWAC	•	PBCR		•	SWS	
North Deer Creek including Wes Watkins Reservoir (N. Deer Creek Lake)	520510000310, 520510000255	PPWS	WWAC	•	PBCR		•		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Little Deep Fork Creek downstream from Sand Creek	520700060010, 520700060100		WWAC	•	PBCR		•		
Brown's Creek	520700060050	PPWS	WWAC		PBCR		•		
Little Deep Fork Creek upstream from Sand Creek to State Hwy. 48 Bridge	520700060130_00	PPWS	HLAC	•	SBCR		•		
Little Deep Fork Creek upstream from State Hwy. 48 Bridge	520700060130_10	PPWS	WWAC	•	PBCR		•		
Catfish Creek	520700060140	PPWS	WWAC	•	PBCR		•		
Tributary of Little Deep Fork Creek at SE 1/4, Sec. 6, T15N, R8E, IM	520700		HLAC	•	SBCR		•		
Nuyaka Creek	520700020200	PPWS	WWAC	•	PBCR		•		
Buckeye Creek	520700020270, 520700020280	PPWS	WWAC	•	PBCR		•		
Okemah Lake and Watershed	520700020280, 520700020290, 520700020300	PPWS	WWAC	•	PBCR		•	SWS	
Salt Creek	520700030100	PPWS	WWAC	•	PBCR		•		
Camp Creek downstream from Stroud Lake	520700030220	PPWS	WWAC	•	PBCR		•		
Stroud Lake and Watershed	520700030220, 520700030230, 520700030240	PPWS	WWAC	•	PBCR		•	SWS	
Gray Horse Creek	520700040030		HLAC	•	SBCR		•		
Dry Creek	520700040020	PPWS	WWAC	•	PBCR		•		
Chuckaho Creek	520700040060	PPWS	WWAC	•	PBCR		•		
West Beaver Creek	520700040170		WWAC	•	SBCR		•		
Deer Creek	520700040190	PPWS	WWAC	•	PBCR		•		
Robinson Creek	520700040180	PPWS	WWAC	•	PBCR		•		
Prague City Lake	520720040025		WWAC	•	PBCR		•		
Quapaw Creek	520700040260	PPWS	WWAC	•	PBCR		•		
Sparks City Lake	520700040280	PPWS	WWAC	•	PBCR		•		
Meeker Lake and Watershed	520700040350, 520700040360, 520700040370	PPWS	WWAC	•	PBCR		•	SWS	
Bellcow Creek including Bell Cow Lake	520700050020, 520700050030, 520720040025	PPWS	WWAC	•	PBCR		•		

REFERENCE 14

April 30, 2008

Buck Ray
Natural Resources Biologist
Oklahoma Department of Wildlife Conservation
1801 N. Lincoln
P.O. Box 53465
Oklahoma City, Oklahoma 73152

Dear Mr. Ray:

The purpose of this letter is to request information regarding ecological systems of importance within a 4-mile radius of the site and 15 miles downstream of the surface water entry (PPE) of the site listed on the attached page. If possible, please provide a map depicting the location of each habitat in relation to the site.

The information provided by your office will be used to partly describe sensitive environments in a CERCLA Preliminary Assessment conducted by the DEQ (Site Assessment Unit), as authorized by a cooperative agreement with the U. S. Environmental Protection Agency.

Your assistance is greatly appreciated. If you have any questions, please call Hal Cantwell at 702-5139. Please direct your response to Hal Cantwell, Land Protection Division as well.

Sincerely,

Jennifer Larsen
Environmental Programs Specialist I
Site Assessment Unit
Land Protection Division

Attachment

SITE NAME	SECTIONS	TOWNSHIP	RANGE	COUNTY
Lorraine Refinery	31-33	17N	9E	Creek
Lorraine Refinery	3-11, 13-35	16N	9E	Creek
Lorraine Refinery	1-2, 10-15, 22-27, 34-36	16N	8E	Creek
Lorraine Refinery	6-8, 17, 20	15N	10E	Creek
Lorraine Refinery	1-12, 17-18	15N	9E	Creek
Lorraine Refinery	1-3, 11-12	15N	8E	Creek

OKLAHOMA

BRAD HENRY, GOVERNOR
GREG D. DUFFY, DIRECTOR

DEPARTMENT OF WILDLIFE CONSERVATION

P.O. Box 53465 Oklahoma City, OK 73152 PH. (405) 521-3851

May 19, 2008

Ms. Jennifer Larsen
Environmental Programs Specialist I
Site Assessment Unit
Land Protection Division
Oklahoma Department of Environmental Quality
P.O. Box 1677
Oklahoma City, Ok 73101-1677

RE: Ecological Information for CERCLA Preliminary Assessment, Creek Co., Oklahoma

Dear Ms. Larsen,

This responds to your letter of April 30th requesting information regarding ecological systems of importance within a 4-mile radius of the Lorraine Refinery Site and 15 miles downstream of the surface water PPE of the site occurring in Creek County, Oklahoma. Site specific information has been requested for the following legal descriptions:

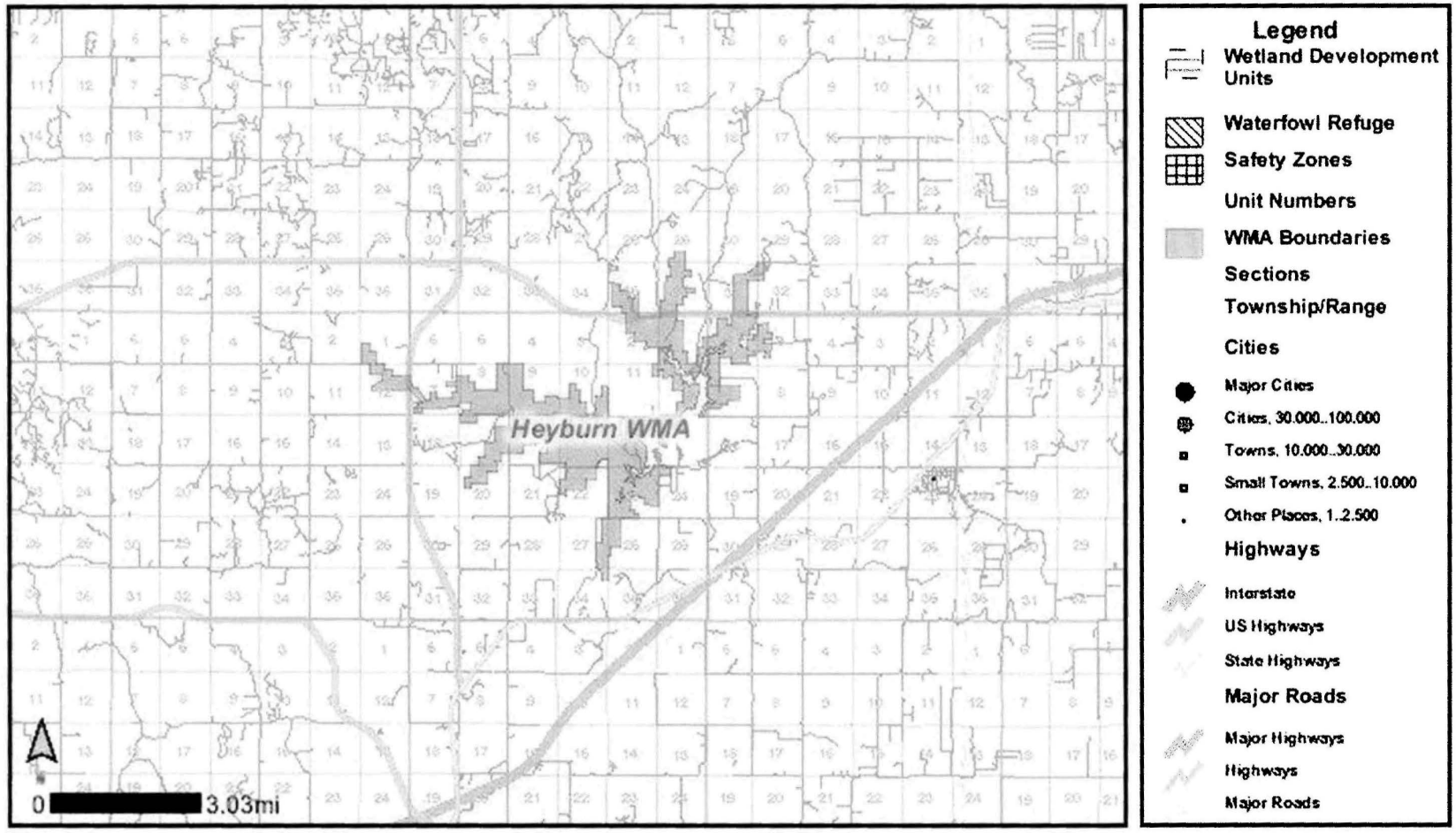
Sections 31-33 T17N R9E;
Sections 3-11, 13-35 T16N R9E;
Sections 1-2, 10-15, 22-27, 34-36 T16N R8E;
Sections 6-8, 17, 20 T15N R10E;
Sections 1-12, 17-18 T15N R9E;
Sections 1-3, 11-12 T15N R8E;

Please understand that, due to financial and personnel constraints, the Oklahoma Department of Wildlife Conservation (ODWC) has not conducted an actual field survey of the proposed project. However, based on our review of the material provided and our current records to determine presence and/or impacts on state-listed threatened or endangered species, species of special concern, critical habitat or Wildlife Management Areas (WMAs) two (2) federally listed species, three (3)state listed species, and one (1) WMA were found that may be effected by this site.

The Species of Special Concern Category 2 (SSII) Prairie Mole Cricket (*Gryllotalpa major*), Bachmann's Sparrow (*Aimophila aestivalis*), and Woodchuck (*Marmota monax*) have been known to occur in the area and may be affected by this project. A SSII is a species that has been identified by technical experts as possibly threatened or extirpation but for which additional

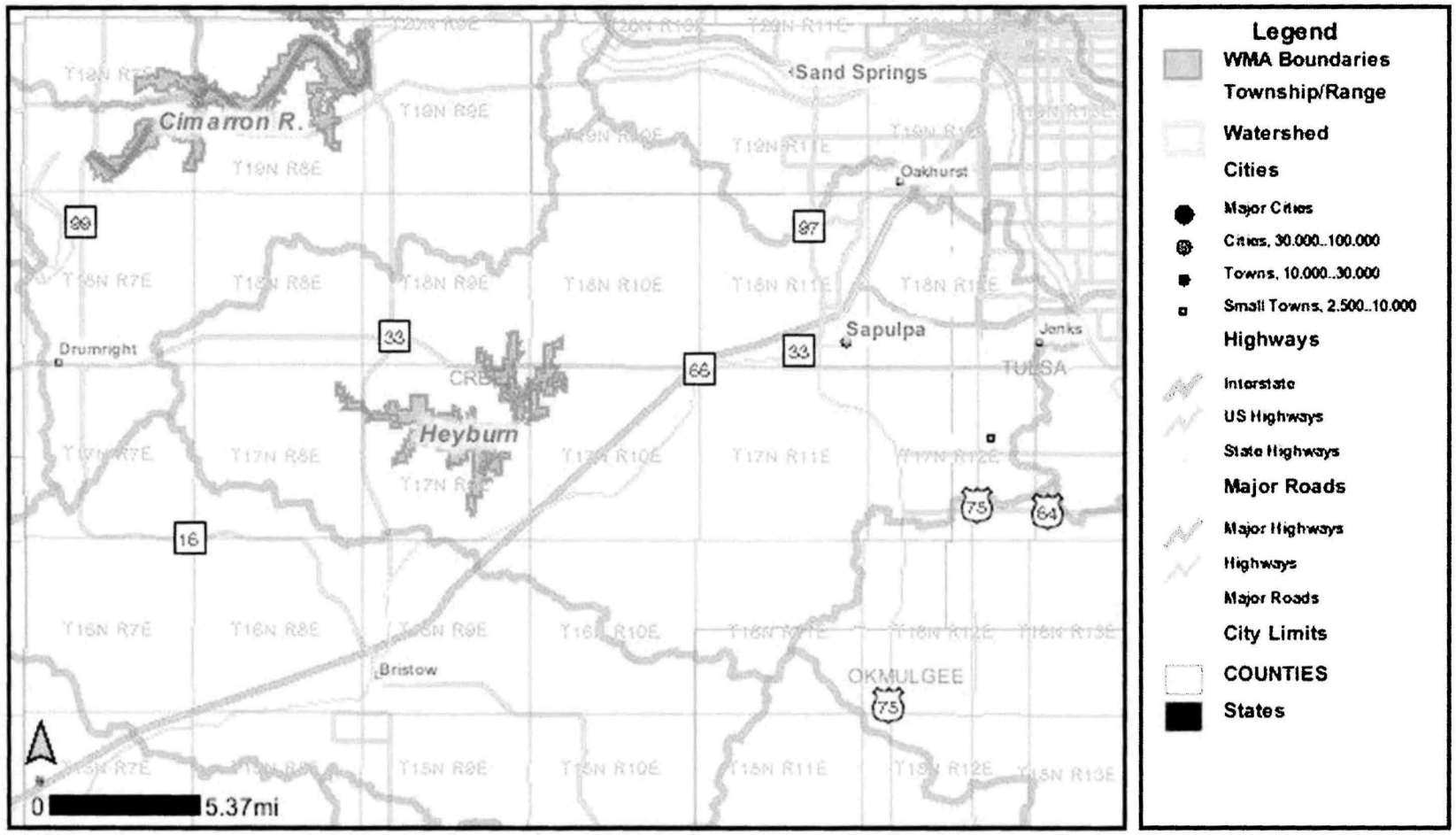
ODWC Heyburn WMA

5/19/2008



ODWC Heyburn WMA Watershed

5/19/2008



REFERENCE 15

U.S. FISH AND WILDLIFE SERVICE
OKLAHOMA ECOLOGICAL SERVICES FIELD OFFICE

COUNTY OCCURRENCES OF OKLAHOMA FEDERALLY-LISTED ENDANGERED, THREATENED, PROPOSED AND CANDIDATE SPECIES

October 17, 2007

COUNTY	SPECIES	CLASSIFICATION
Adair	American burying beetle [1, A]	Endangered
	gray bat	Endangered
	Indiana bat	Endangered
	interior least tern [7]	Endangered
	Ozark big-eared bat	Endangered
	piping plover [10]	Threatened
	Neosho mucket mussel	Candidate
Alfalfa	interior least tern [6, 7]	Endangered
	whooping crane [8c, 9]	Endangered, Critical habitat designated
	piping plover [10]	Threatened
	lesser prairie chicken [12]	Candidate, Warranted but precluded
Atoka	American burying beetle [1, B]	Endangered
	interior least tern [7]	Endangered
	whooping crane [9]	Endangered
	piping plover [10]	Threatened
Beaver	interior least tern [7]	Endangered
	whooping crane [8c, 9]	Endangered
	Arkansas River shiner	Threatened, Critical habitat designated
	piping plover [10]	Threatened
	Arkansas darter	Candidate
	lesser prairie chicken [11]	Candidate, Warranted but precluded
Beckham	whooping crane [9]	Endangered
	interior least tern [7]	Endangered
	piping plover [10]	Threatened
	lesser prairie chicken [11]	Candidate, Warranted but precluded
Blaine	black-capped vireo [4, 5]	Endangered
	interior least tern [6, 7]	Endangered
	whooping crane [8c, 9]	Endangered
	Arkansas River shiner	Threatened, Critical habitat designated
	piping plover [10]	Threatened
	lesser prairie chicken [12]	Candidate, Warranted but precluded
Bryan	American burying beetle [1, B]	Endangered
	interior least tern [6, 7]	Endangered
	whooping crane [8h]	Endangered
	piping plover [10]	Threatened
Caddo	black-capped vireo [5]	Endangered
	interior least tern [6, 7]	Endangered

County occurrences of Oklahoma federally-listed endangered, threatened, proposed and candidate species prepared by the U.S. Fish & Wildlife Service, Oklahoma Ecological Services Field Office, 9014 East 21st Street, Tulsa, OK 74129.
For the most recent information visit our website, http://www.fws.gov/southwest/es/oklahoma/, write, or call (918) 581-7458.

	piping plover [10]	Threatened
	lesser prairie chicken [12]	Candidate, Warranted but precluded
Craig	American burying beetle [1, B]	Endangered
	gray bat [3]	Endangered
	interior least tern [7]	Endangered
	Neosho madtom	Threatened
	piping plover [10]	Threatened
	Arkansas darter	Candidate
	Neosho mucket mussel	Candidate
Creek	American burying beetle [1, A]	Endangered
	interior least tern [6, 7]	Endangered
	piping plover [10]	Threatened
Custer	interior least tern [6, 7]	Endangered
	whooping crane [8c, 9]	Endangered
	Arkansas River shiner	Threatened, Critical habitat designated
	piping plover [10]	Threatened
	lesser prairie chicken [12]	Candidate, Warranted but precluded
Delaware	American burying beetle [1, A]	Endangered
	gray bat	Endangered
	Indiana bat	Endangered
	interior least tern [7]	Endangered
	Ozark big-eared bat	Endangered
	Ozark cavefish	Threatened
	piping plover [10]	Threatened
	Arkansas darter	Candidate
	Neosho mucket mussel	Candidate
Dewey	interior least tern [6, 7]	Endangered
	whooping crane [9]	Endangered
	Arkansas River shiner	Threatened
	piping plover [10]	Threatened
	lesser prairie chicken [12]	Candidate, Warranted but precluded
Ellis	interior least tern [6, 7]	Endangered
	whooping crane [8c, 9]	Endangered
	Arkansas River shiner	Threatened
	piping plover [10]	Threatened
	lesser prairie chicken [11]	Candidate, Warranted but precluded
Garfield	whooping crane [8c, 9]	Endangered
	interior least tern [7]	Endangered
	piping plover [10]	Threatened
	lesser prairie chicken [12]	Candidate, Warranted but precluded
Garvin	whooping crane [9]	Endangered
	interior least tern [7]	Endangered
	piping plover [10]	Threatened
Grady	interior least tern [6, 7]	Endangered
	whooping crane [8c, 9]	Endangered
	Arkansas River shiner	Threatened, Critical habitat designated
	piping plover [10]	Threatened