

**KANSAS GEOLOGICAL SURVEY  
OPEN-FILE REPORT 92-59**

**KANSAS HISTORICAL OIL & GAS FIELD TOUR**

June 20, 1992

Led by Lawrence H. Skelton

Interstate Oil & Gas Compact Commission  
1992 Midyear Meeting  
Wichita, Kansas  
June 21-24, 1992

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Kansas Geological Survey  
1930 Constant Avenue  
University of Kansas  
Lawrence, KS 66047-3726

# Kansas Historical Oil & Gas Field Tour

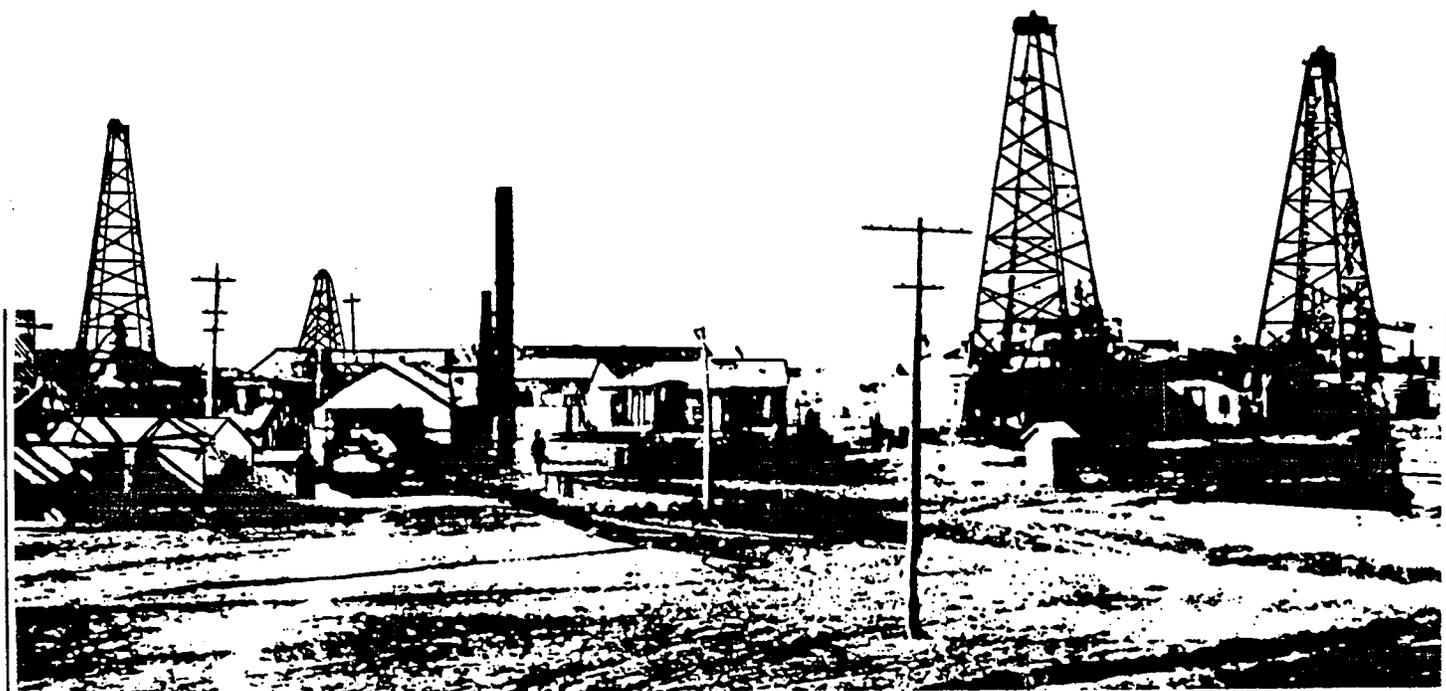
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Interstate Oil & Gas Compact Commission  
— 1992 Midyear Meeting —  
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Sponsored by  
*Kansas Independent Oil & Gas Association*



STATE OF KANSAS



OFFICE OF THE GOVERNOR

OAN FINNEY, Governor  
State Capitol, 2<sup>nd</sup> Floor  
Topeka, KS 66612-1590

913-296-3232  
1-800-432-2487  
TDD# 1-800-992-0152  
FAX# (913) 296-7973

June 1992

GREETINGS:

It is a pleasure to welcome representatives of the Interstate Oil and Gas Compact Commission to Wichita, Kansas. We are proud of the contributions our state has made to the energy industry of America during the past 125 years. Wichita and the rest of Kansas have much to offer visitors in terms of history, sight-seeing, and economic opportunity.

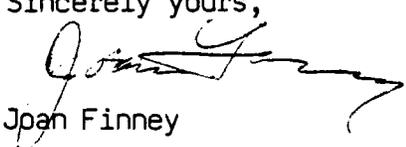
Six months ago, I spoke to the General Session of this group and called for renewed efforts to further energy independence. Since then, this nation has imported approximately 930 million barrels of crude oil at an estimated cost of 17 billion dollars. Sixty-one years ago, the New York owner of a Kansas oil field stated that the then (national) energy supply problems "stemmed directly from imports." The Interstate Oil Compact was developed out of that comment and other political-economic disruptions of the time. Then, as now, the causes of energy problems were difficult to define. A few days before the June 1939 meeting of the I.O.C.C., one of the members publicly noted that too much oil was being produced in America. Whatever the cause, a temporary solution arose 31 months later when this nation entered World War II and called on the domestic energy industry to support the civil and military war machine.

Since that time the industry has been called upon to rescue the nation from foreign intervention, most notably in the early 1970's. Our industry responded then, but it no longer is able. A disruption in supply now cannot be met with trained people or nor is there capital to invest. The various states, including Kansas (which has lost over 8000 jobs), are not at fault. Federal tax and energy policies are at fault.

A year ago, our nation triumphed in a brief war to protect foreign oil supplies while our own industry languished. We have potential for production, we have not the incentive to use it. The I.O.G.C.C. has a mandate to guide state and federal legislators in devising a workable plan to assure that the domestic oil and gas industry in our states not only survives, but flourishes. I sincerely hope that this meeting will "show the way".

Enjoy your field trip and do come back to Kansas!

Sincerely yours,

  
Joan Finney

This excursion to the historic El Dorado Oil Field is sponsored by KIOGA, the Kansas Independent Oil and Gas Association, which has represented the interests of the independent oil and gas operators of Kansas for more than 50 years. During this trip we will visit the Butler County Historical Society Oil Field Museum and the Texaco Oil Refinery, both in El Dorado. We will also drive through the El Dorado Oil Field and the former townsite of Oil Hill. Our route crosses or passes near several historically significant oil fields and other interesting natural or cultural features.

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0.0 Depart Airport Hilton Hotel. We will be traveling east for 32 miles on US-54 into Butler County. Three miles after turning onto US-54 or Kellogg Street, we will cross Meridian Street, so-called because it lies on the sixth principal meridian. The sixth principal meridian is a dividing line that separates the original Kansas and Nebraska territories into east and west ranges for surveying and land-description purposes. The east range extends eastward from the meridian to the Missouri River in the northeast and to the Kansas-Missouri boundary from Kansas City southward. The west range extends westward from the meridian to the western boundaries of Wyoming and northern Colorado. A small portion of South Dakota has its west range determined by this line. The meridian was laid out by U.S. Army topographic engineers in 1855 and is one of several such meridians. Congress established the first meridian in 1785 in western Pennsylvania through the Northwest Ordinance, which directed the surveying system used in most of the United States.

Ahead to the left is Friends University, a private four-year college established in 1898 by the Society of Friends.

4.5 Cross Arkansas River.

9.0 Woodlawn Avenue and west edge of the Eastborough Oil Field. In 1916 the first well was drilled in the Eastborough field; that well was a dry hole, but it did contain oil shows. The discovery well, the No. 1 Mackey, a joint venture of E. W. Marland, Producers and Refiners, and Fisher and Lauck, was drilled in May 1929. In 1930 Vickers and Hinkle found deeper oil in the Misener sand in the No. 1 Keys, which showed initial production of about 1,000 barrels per day. During its life, the Eastborough Oil Field produced 9.4 million barrels of oil.

Continue east on US-54.

15.0 Sedgwick-Butler County line. One mile south of US-54 is the Andover South Oil Field. This

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field, which produces oil from the Simpson sandstone and gas from the Stalnaker sandstone, was discovered in 1937 and covers  $1\frac{3}{4}$  sections or 1,120 acres. It has produced more than 43,000 barrels of oil. The field is named after the town of Andover about 2 miles north. Andover, incidentally, was originally named Minneha; that name survives as the township name here. The town name was changed in honor of four seminary students from Andover, Massachusetts, known as the Andover band, who came to Kansas to preach, pray, and promote freedom.

21.2 We are passing over the Bausinger Oil Field, a 1929 discovery that produces from the "Wilcox" or Simpson sand at an average depth of 3,000 feet (900 meters). The discovery well, drilled by Aladdin Oil, reportedly had an initial production of 100 barrels per day. State production records began to be accumulated in 1944, and since then the field has produced 111,000 barrels. Production in 1990 was 1,136 barrels from two wells.

24.0 Note the rock outcrop on the left side of the road. This outcrop of the Barneston Limestone dips noticeably toward the west. In about another mile you will see (if you look quickly) a small rock outcrop. This is all that is presently exposed of another Barneston Limestone outcrop that dips eastward. We have traveled over a folded rock layer—an upward fold called an anticline. A typical anticline is illustrated in fig. 1. When we reach the town of Augusta, we will have crossed over the crest of the Nemaha anticline, a north-south-oriented folded ridge that extends in the subsurface across Kansas. Many important fields are located in the Nemaha anticline.

24.8 Levee marker constructed by the WPA and the City of Augusta in 1937. On our right is an oil refinery built in 1916 by the White Eagle Oil and Refining Company. The refinery had a capacity of 5,000 barrels per day. The White Eagle Company, of Chanute, Kansas, was later sold to Socony Vacuum (Standard Oil of New

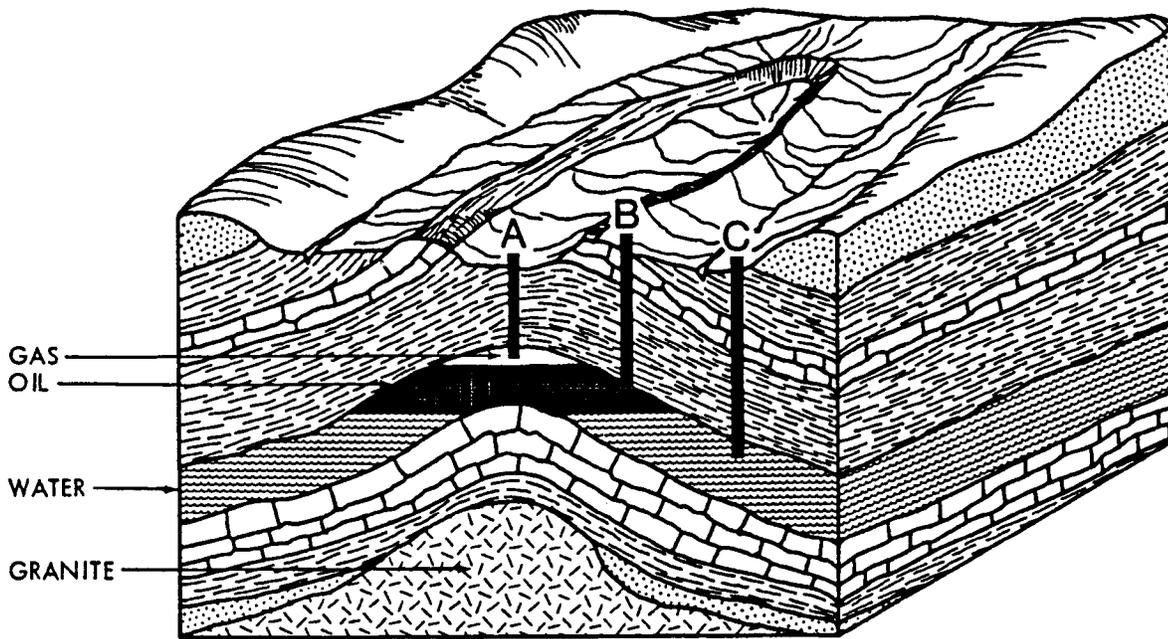


FIGURE 1—Block diagram showing anticline or bowed-up strata over a deeply buried granite ridge. Natural gas and oil, which float on the saltwater and fill the tiny openings in sandstones or other open rocks, are often trapped beneath much tighter strata at the highest part of the anticline or dome. A well drilled at point A would find gas, another at point B would strike oil, and one at point C would be called a dry hole because it would produce only salt-water. [From Wilson (1978, p. 10).]

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York). In 1940 the capacity of the refinery was increased to 23,000 barrels per day. Socony (Mobil) operated the refinery until 1985 and then sold it to Williams Brothers and Derby Oil. The refinery is outmoded but has recently been reopened at a limited capacity by Coastal Corp., the parent organization of Derby. There once were three refineries in Augusta.

25.0 Augusta, Kansas. Augusta is an old town that began as a trading post operated by C. N. James, who was also the local postmaster. A town grew around his store and he named the town after his wife, Augusta C. Boynton. There had been earlier attempts to start a town, namely Fontanella and Arizonia, but they failed. James's cabin, built in 1868, has been restored by the Augusta Historical Museum on 3d and State streets and can be seen there. The cabin later served as a post office, the Masonic

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Lodge, Baptist and Methodist churches, and a school and is the oldest house in Augusta.

We are traveling over the Augusta North and Augusta oil fields, which together are about 4 miles wide in this area. Both fields were discovered in 1914 and together have produced 64 million barrels of oil (240,000 barrels in 1990). Gas was discovered in this area in 1906 or possibly earlier. The Augusta North discovery well, McMann Oil and Gas No. 1 Kramer, had an initial production of 504 barrels per day from the Simpson and Arbuckle sands. In 1917 the Augusta area reached peak production, with over 1 million barrels of oil per month. Some wells produced 5,000 barrels per day. Gas wells produced from the Wabaunsee and Douglas Groups, and one Douglas Group gas well open-flowed as much as 300 million cubic feet per day.

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- 26.2 Continuing eastward on US-54, we pass over the channel of the Walnut River, so called because of the numerous walnut trees that grew along its banks during the settlement period.
- 31.0 Haverhill Oil Field. Like many of the fields in this area, the Haverhill is older; it was discovered in 1927. The field produced from the Bartlesville sand, a well-known shoestring sand. This area still has surprises, though. In 1978, 51 years after discovery, oil from the Simpson sandstone was found deeper in the Haverhill field, and in 1982 oil from the Arbuckle group was discovered at still greater depth. The Haverhill Oil Field has produced close to 5.5 million barrels of oil since its discovery.
- 32.0 One mile past the eastern demarcation of the Haverhill Oil Field is the intersection called Pickrell Corner. Here, US-54 turns north and follows the same route as US-77 to El Dorado. We will follow the same route for the next 9 miles.
- 36.0 On the left here and on both sides of the road for the next 2 miles we will pass over the Smock-Sluss Field, which was discovered in 1917. It is the northern end of the long Bartlesville sand trend, which begins in Cowley County. State production records are available only since 1944, but since then the Smock-Sluss Field has produced over 4 million barrels of oil. In 1980 Mississippian-age formations were found to contain oil here.
- 40.0 As we travel to El Dorado, notice the landscape on the right side of the bus. You can see numerous round or oval depressions in the rocky fields. These depressions are sinkholes, and this area exhibits karst topography, that is, topography developed by ground-water solution of limestone that is characterized by caves, sinkholes, lost rivers, springs, and the like. Near here are several of Kansas's 800 or so caves, including the largest cave in the

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- state, which extends for over a mile through the limestone ledge you see cropping out.
- 40.9 Walnut River.
- 41.0 El Dorado city limits. El Dorado was originally spelled as a single word. A newspaper editor of the *Walnut Valley Times* printed it as two words. Public support outweighed the opinion of the Post Office Department and U.S. Board of Geographic Names, both of which wanted to retain the single word. According to a pioneer settler, the town was so named because the beautiful countryside around the Walnut River reminded the settlers of the Spanish legend of El Dorado, "the golden city." In El Dorado we will visit the Butler County museum. The Butler County Historical Society and Museum has for several years been assembling an oil and gas exhibit. The collection is truly representative of Kansas's place in the petroleum industry.
- Side trip to Oil Hill.* Oil Hill, Kansas (fig. 2), located in the northwest corner of El Dorado, was once a booming town that boasted its own golf course, swimming pool, school, and other amenities essential to a town of 3,000. On our visit to Oil Hill, none of this can be seen—only scrub woods, a few pieces of pavement, and some playground equipment. At Oil Hill there is a monument (fig. 3) marking the site of the El Dorado Oil Field discovery well, Stapleton No. 1, located in NESE sec. 29, T. 25 S., R. 5 E. This well, operated by the Wichita Natural Gas Company (later the Empire Gas and Fuel Company and still later Cities Service Oil), was spudded on September 29, 1915, and completed in December when the Stapleton pay zone was reached at a depth of 2,465 feet (751 meters) (fig. 4). After its discovery in 1915 the El Dorado Oil Field soon became the greatest single field developed in Kansas (fig. 5). By 1918 it was producing 28.8 million barrels per year and was the leading oil field in the United States, producing almost 9% of the nation's oil. The Trapshooter's No. 2 well, completed

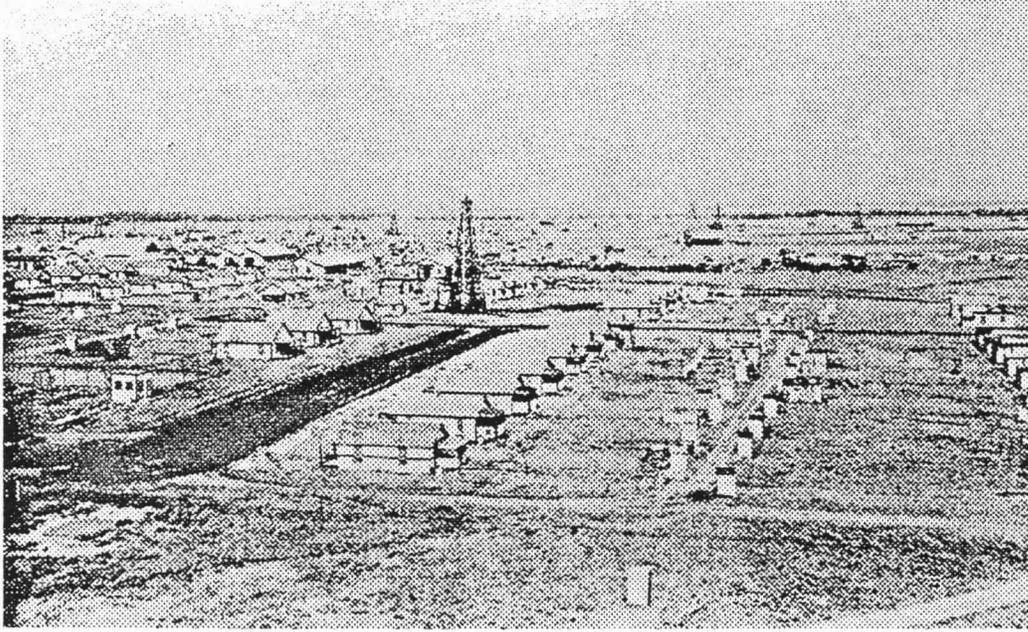


FIGURE 2—View of Oil Hill, Kansas, circa 1918. Reprinted with permission of the Butler County Historical Society.

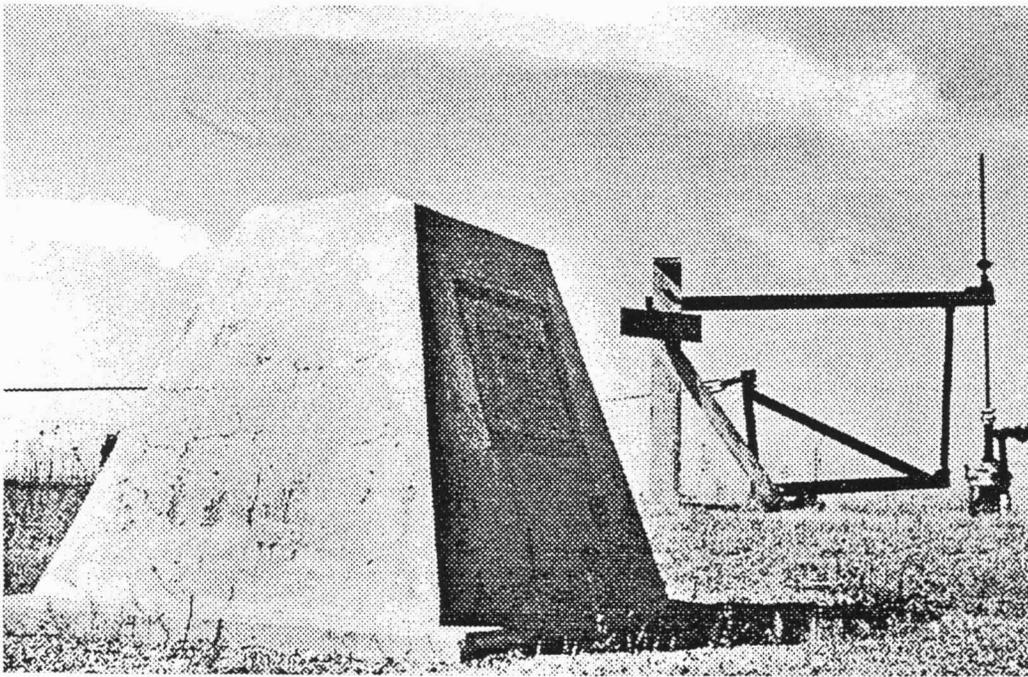


FIGURE 3—Stapleton No. 1 monument at Oil Hill. Reprinted with permission of the Butler County Historical Society.

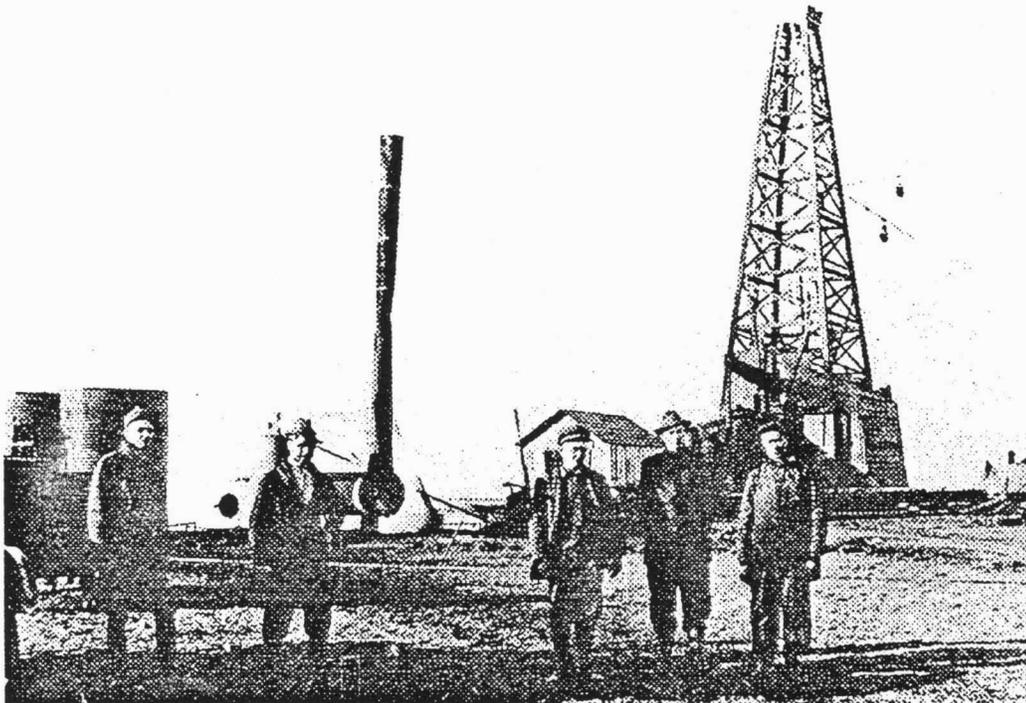


FIGURE 4—Stapleton No. 1, the El Dorado discovery well, 1915. Reprinted with permission of the Butler County Historical Society.



FIGURE 5—Panoramic view of the El Dorado Field, 1917. Reprinted with permission of the Butler County Historical Society.

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in June 1917, was the field's first gusher (fig. 6). It flowed approximately 14,000 barrels of oil per day.

There also were other important wells in the El Dorado Oil Field. During 1917 and 1918:

5 wells had an initial daily production of greater than 15,000 barrels.

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4 wells had a daily production of 10,000–15,000 barrels.

4 wells had a daily production of 5,000–10,000 barrels.

31 wells had a daily production of 2,000–5,000 barrels.

57 wells had a daily production of 1,000–2,000 barrels.



FIGURE 6—The first gusher in the El Dorado Field. Trapshooter Oil Company's No. 2 well, 1917. Reprinted with permission of the Butler County Historical Society.

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104 wells had a daily production of 500–1,000 barrels.

In 1918, 150 drilling rigs were working in the El Dorado field. At one time nearly 2,000 wells were producing oil. In 1921 there were 6 refineries in El Dorado.

El Dorado field was pumped by primary means until 1926, when air injection was introduced to provide a driving pressure. This was the first secondary recovery repressuring project in Kansas. Water flooding was added as a secondary recovery method in 1947, and now tertiary recovery using injected micellar polymer fluids is used. The micellar fluid acts as a detergent and washes additional oil from smaller pores by breaking surface tension. Other firsts include the first tubular steel derricks developed in the midcontinent, the first electric drilling and pumping in the midcontinent, and the first wide-area geologic survey to find petroleum. By the end of 1990

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there were 716 producing wells taking oil from eight different zones. The El Dorado field covers 21,480 acres. Production during 1990 was 904,376 barrels of oil from 716 wells. Since discovery in 1915 to the end of 1990, the El Dorado Oil Field has produced over 295 million barrels of oil. It is estimated that up to 22 million barrels of oil remain in reserves.

43.0 We leave El Dorado heading west on K-254. Approximately 3 miles west of the Kansas Turnpike entrance is the site of the former town of Midian, another oil-boom town similar to Oil Hill, although never as large. Midian is said to have obtained its name from the Midian Shrine Temple in Wichita; the temple band played for the town's dedication, and the bandleader suggested the name. The famous baseball player and manager Casey Stengel, playing for Oil Hill, once played a game here against the Midian team.

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- Approximately 2,800 feet (850 meters) southwest of the town site is the site of Gypsy Oil Company's No. 5 Shumway, one of the midcontinent's most productive oil wells. The well was completed on September 7, 1917, and with tools in the hole, flowed 12,000 barrels in the first 24 hours. On September 10, 1917, the well flowed an estimated 19,000 barrels. Offsetting wells affected production, and the No. 5 Shumway ceased flowing by the end of April 1918. During the 222 days of its flowing life, its total production of oil was 2.5 million barrels.
- 45.5 Circle High School, near Towanda. On the school grounds is a cave, which has been sealed off with concrete to keep students out. Towanda, a town of about 1,400 residents, takes its name from an Iroquois word.
- 50.5 Town of Benton, 5 miles west of Towanda. Benton is named for Thomas Benton Murdock, the founder and editor of El Dorado's *Walnut Valley Times* and a member of the influential Murdock family. Immediately to the north is the Benton Oil Field, a 1929 discovery of the Lario Oil Company. Initial production was 400 barrels of oil per day from Mississippian strata. Since 1944, when total production records began to be kept, approximately 152,000 barrels have been produced here; only 1,564 barrels were recovered from three wells in 1990.
- 51.5 Slightly over a mile west of Benton is the edge of the Butwick Oil Field, a 1949 discovery by J. P. Gaty. The name is a combination of Butler and Sedgwick, and the field straddles the Butler-Sedgwick County line. The oil field has produced 131,000 barrels of oil from four horizons; the most recent discovery (in Simpson sand) was in 1982.
- 53.0 Enter Sedgwick County. Sedgwick County is named for the Connecticut-born general John Sedgwick, a career soldier who met his end in the Battle of Spotsylvania in 1864. General Sedgwick served in Kansas for a few years

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- during the turbulent 1850's. His troops cautioned him about snipers, and his last recorded words were, "Nonsense! They couldn't hit an elephant at this dist...." Butler County, adjacent to a Union Army namesake, is one of the Kansas counties named for a Confederate: Senator Andrew Pickens Butler of South Carolina, a staunch supporter of slavery and a defender of states' rights. When Senator Charles Sumner of Massachusetts made a provocative oration against slavery and verbally indicted Senator Butler in the U.S. Senate, Butler's relative, Representative Preston Brooks, entered the Senate chambers and physically attacked Sumner, beating him senseless with a cane. Sumner County is named for Senator Sumner. Thus we have three contiguous counties named after Civil War characters (really more than that; over half of the counties in Kansas are named for Civil War military or political personalities).
- Just into Sedgwick County is the edge of the Greenwich Oil Field, a 1929 discovery by Shell Oil. The discovery well, the No. 1 Lygrisse, had an initial production of 2,118 barrels per day. Early drilling found oil in three zones. A fourth zone was found in 1945, and in 1980 a fifth zone of oil (from the Hunton Formation) was found. The Greenwich Oil Field has produced over 14 million barrels of oil since its discovery.
- 56.5 Continuing westward on K-254, we pass the Fairview Southeast Field and then immediately enter the Fairview Field, a 1948 discovery of J. P. Gaty in the Burgess sand. The Fairview has produced about 1 million barrels of oil.
- 58.0 The town of Kechi is to the north here. The name is from the Kechi Indian tribe, relatives of the Wichita Indians, who, according to Rydjord, are related to the Pawnees. The name, translated into English, may mean "water turtle" or "going into wet sand." The town is locally known as an antiques and arts and crafts center.

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59.0 53d Street. About 1 mile west of here is perhaps the easternmost exposure of the Ogallala Formation, a Pliocene formation which is the primary source of freshwater in western Kansas. Although the Ogallala was deposited as far east as the Flint Hills, 7 to 10 million years ago, by torrents washing sand and gravel off the Rocky Mountains, it has since been eroded from most of central Kansas. Here, it rests on top of the Permian-age Wellington Formation. The entire Mesozoic Era is missing—a time gap of 130 million years or more!

*45th Street.* The “Old Indian Treaty Boundary” extends east-west along 45th Street. This is the boundary set by the Treaty of the Little Arkansas, which was negotiated and signed about 5 miles northwest of here (at the present intersection of Seneca and 63d streets) in 1865. The treaty signing was attended by several thousand representatives of the Apache, Cheyenne, Arapaho, Kiowa, and Comanche nations. The Kiowa chief Satanta was present, as were Jesse Chisholm, Samuel Kingman, and many other notables. The treaty led to the more well known Medicine Lodge Peace Treaty in 1867. A mile south of 45th Street is the Wichita Oil Field, a 1957 discovery of Derby Oil. It has produced 3 million barrels of oil from the Viola and Simpson sands and presently has three pumping wells.

61.0 Intersection with I-135.

62.5 Intersection of the Little Arkansas River and the Wichita-Valley Center Floodway, also known as the Big Ditch, an originally derisive term applied by local farmers who opposed construction. The Big Ditch provides a bypass route for floodwaters that periodically inundate Wichita, located on the floodplain. Excavation for the \$20 million project began in 1950 and was completed in 1958. The project was funded by the federal government

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(65%), the county and the city (15% each), and the state (5%). The ditch, designed to carry a throughput of 46,000 cubic feet (344,104 gallons) of water per second seems to have done its job; there has been no major flood damage in Wichita since the bypass was completed. The farmers opposed the construction because they weren't being flooded (the city shouldn't have been on the river!) and yet county taxes were being levied against them to support a project solely for the city; in addition, the state condemned over 6,000 acres of farmland for the construction.

About 2 miles north is the southern edge of the Valley Center Oil Field, which was discovered 64 years ago with the completion of the Wright No. 1 by a consortium of the Bu-Vi-Bar, Continental, and Gypsy oil companies. Initial production was 1,700 barrels per day from the Simpson sand. The discovery was the result of core drilling by Conoco. Coring was an up-and-coming exploration method at that time. Within 18 months, 125 wells had been completed and 7.5 million barrels of oil produced. The Valley Center Oil Field still produces more than 85,000 barrels annually and by the end of 1990 had produced 24,283,000 barrels from six zones, the most recently discovered being oil from the Simpson sand in 1985.

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## A short history of the Kansas oil and gas industry

The Kansas oil and gas industry began on June 1, 1860, when a well was drilled south of Kansas City on a 30,000-acre lease in Miami County. Although this well was a dry hole, it was followed by two more wells, the last of which, the Lykins well, reportedly produced 1 barrel per day. All work stopped when the Civil War broke out. After the war natural gas was discovered in the late 1860's near Fort Scott in Bourbon County; an enterprising farmer piped it into his home for lighting. In 1873 gas at Iola was used for lighting a health spa that obtained its mineral water from the same well. Commercial quantities of gas discovered near Paola in July 1882 were piped the 7 miles into town in 1884, making Paola the first municipality in Kansas to be so furnished. Gas was discovered at Lyons in Rice County in 1887 while drilling to locate salt.

By the early 1900's, southeastern Kansas contained some of the world's largest gas fields. Some of the wells in Allen County produced more than 25 million cubic feet per day. By 1905 open-flow gas, amounting to 700 million cubic feet per day, was available near Independence in Montgomery County. The gas attracted industry. By 1904 Kansas produced 57% of the metallic zinc smelted in the United States, and by 1909 5% of the window glass produced in the United States was made in Kansas. Eastern Kansas became a center for cement and brick manufacturing, and the town of Iola possessed the largest iron foundry west of the Mississippi River. Uncontrolled production and profligate waste were the order of the day; the fields were depleted and most of the gas-consuming industries gone by the start of World War I.

Scarcely more than a decade after the collapse of the southeastern gas fields, wildcatting in southwestern Kansas discovered the No. 1 Boles in December 1922. This find in Seward County was the discovery well for the Kansas portion of the Hugoton-Panhandle gas field. The field grew from that point, and production peaked in the late 1960's and early 1970's.

Although oil was discovered occasionally, there was little market for it in the pre-automobile age. The major market for crude oil was in the manufacture of kerosene and lubricating grease. There was increased interest, however, when the No. 1 Norman was dis-

covered near Neodesha in Wilson County on October 4, 1892. It initially produced 12 barrels per day and at the time was the largest well yet found in Kansas. By 1900, state production was about 91,000 barrels, selling at 80¢ per barrel. Production, all in the eastern range, increased to 4.25 million barrels during 1904. In the interim, during the late 1890's, Standard Oil had built the first and most modern refinery west of Chicago at Neodesha.

However, in 1905, the Glenn Pool in Creek and Tulsa counties, Oklahoma, was discovered and soon became the first oil field in the United States to produce more than 100,000 barrels daily. Other major Oklahoma discoveries followed, and oil glutted the market. By 1908, the price of crude oil was 30¢ per barrel, and Kansas's production plummeted to less than 1.25 million barrels by 1910.

Crude production had recovered to 4 million barrels by 1915, at which time a fortuitous combination of events occurred for the oil industry: a big increase in the popularity of the automobile and the beginning of the trucking industry; a need for more paved roads, which called for asphalt; the beginning of World War I; and the discovery of the El Dorado Oil Field in Butler County, Kansas. A market was finally available for large volumes of gasoline, asphalt, and navy fuel oil (the world's navies were beginning to convert to oil).

The El Dorado Oil Field was discovered late in 1915 and soon became the greatest single field developed in Kansas. By 1918 it was producing 28.8 million barrels per year and had become the leading oil field in the entire United States, producing almost 9% of the nation's oil.

The discovery well, No. 1 Stapleton, was drilled by the Wichita Natural Gas Company and was completed in October 1915. It produced oil from a sand 660 feet below the surface and from the prolific Stapleton zone stratum of beveled and eroded older rocks at a depth of 2,465 feet (751 meters). Wichita Natural Gas later became the Empire Oil and Gas Company, which evolved into Cities Service and is now the Occidental Oil Company. The most productive well was Gypsy Oil Company's (later Gulf Oil) No. 5 Shumway, which was completed September 7, 1917. It flowed 12,000 barrels of oil the first day, 14,000 barrels the second day, and 8,500 barrels the

third day. During its total flowing period of 222 days, it produced 2.5 million barrels of oil, or an average of 11,261 barrels per day. El Dorado and other big Kansas fields contributed to the war effort, and in 1918 the state produced 43.25 million barrels of oil, a record that stood until 1934.

In November 1923 the first commercial oil well west of Wichita was discovered in Russell County, Kansas, more than 160 miles from the nearest commercial production. Other important discoveries followed in Russell, Ellis, Rooks, and Rice counties in the west, in Marion County, and in Greenwood County, where the fields of the well-known Golden Trend were discovered.

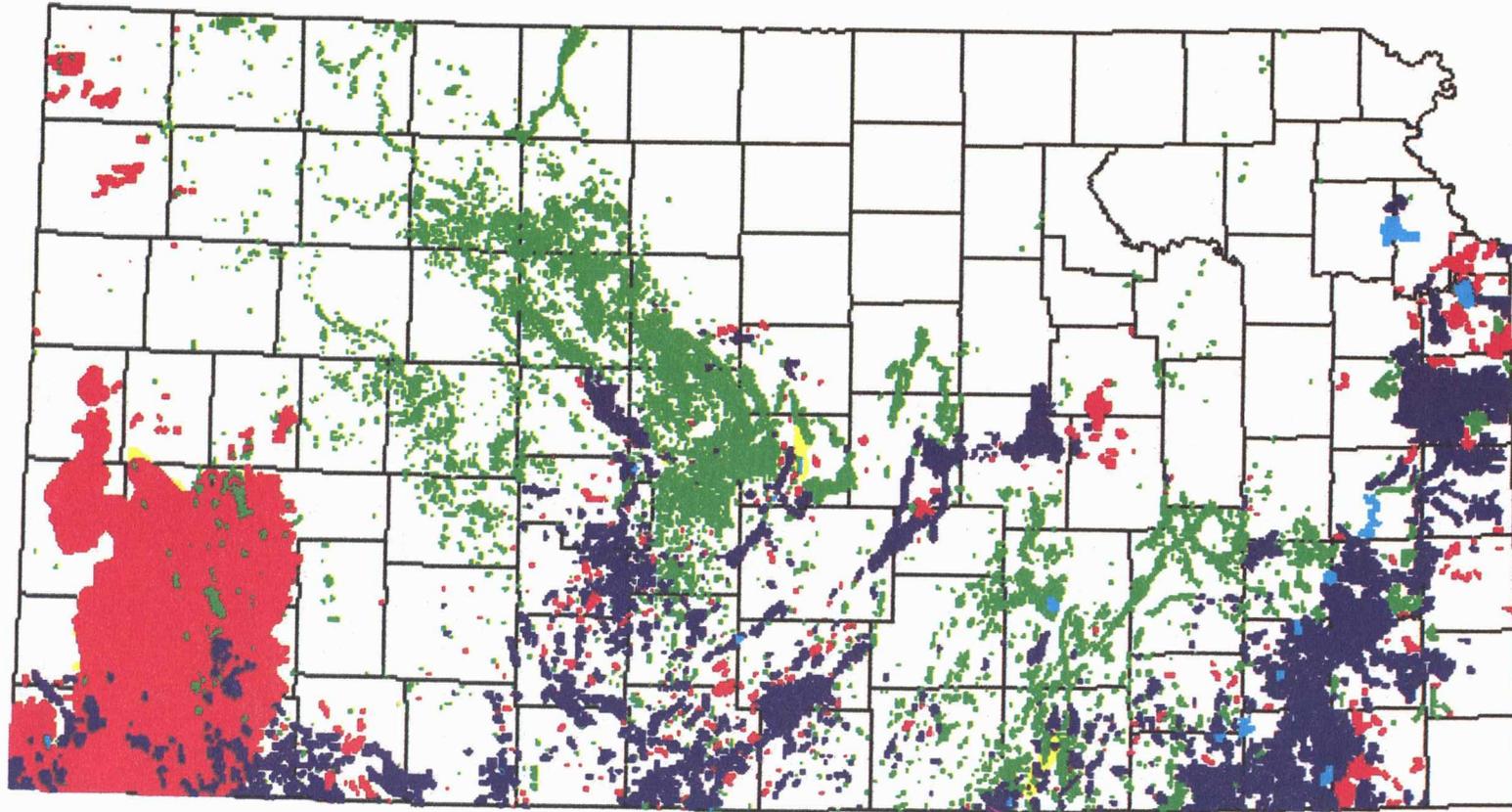
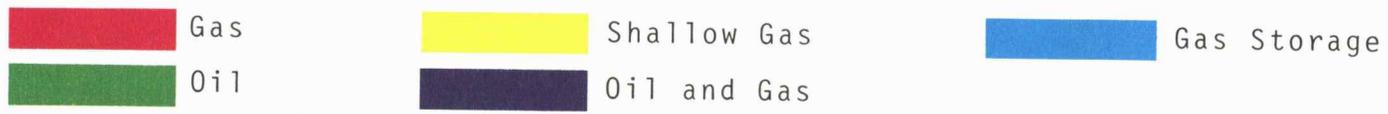
Statewide oil production peaked again in 1929, when 42.8 million barrels were produced. After that, because of the Depression, both production and drilling declined until the mid-1930's. The later part of the 1920's saw the introduction of the rotary drilling rig in Kansas. Before that time, all wells had been drilled with the percussion or cable-tool rig. The Fairport Field in Russell County is said to have been the last major U.S. discovery completely drilled by cable tool.

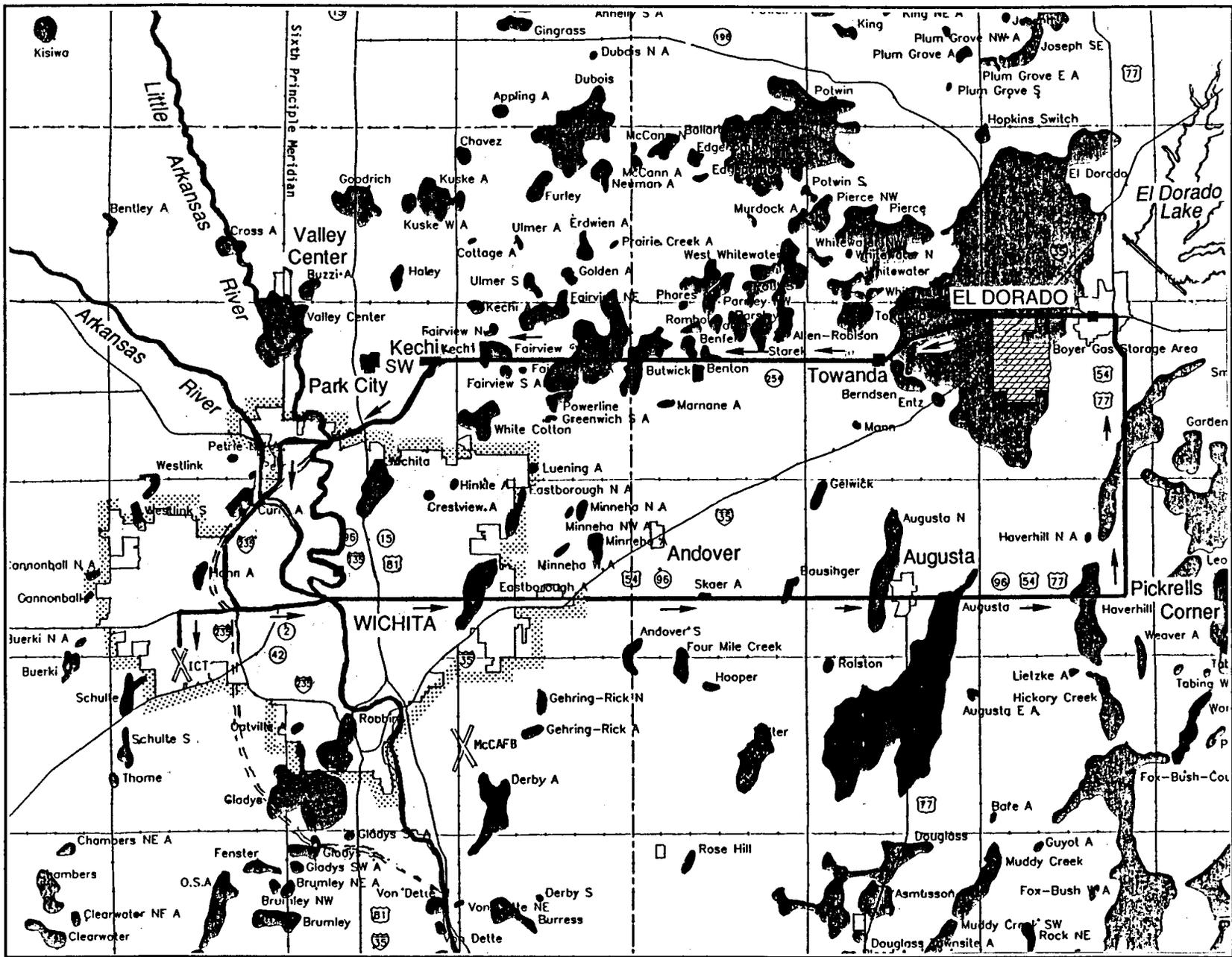
Production held steady or increased during the Depression years of the 1930's, reaching a new high

of 71 million barrels in 1937. World War II shook away the economic doldrums, with new industry and the war machine demanding oil. Exploration expanded, and production quickly increased to 108 million barrels by 1943. A slight drop followed the end of war, but the ensuing boom years of the late 1940's and early 1950's pushed oil recovery to an all-time peak of 124 million barrels in 1956.

From 1948 until the OPEC embargo in 1973, the price paid for Kansas crude oil increased 36%—from \$2.59 to \$3.52 per barrel. During the same period the consumer price index (CPI, 1967 = 100) increased from 72.1 to 133.1, or 84.6%. Production steadily declined through 1979, when only 56.1 million barrels were produced. By 1980 increasing worldwide oil prices reinvigorated the U.S. oil industry, and production climbed from 60 million barrels in 1980 to 75.4 million in 1985. Since 1985, tumbling and erratic price changes and a glut of cheap foreign oil have caused oil production in Kansas to drop—to 55.7 million barrels in 1990, the lowest production since 1936. It is estimated that 11 billion barrels of oil remain in Kansas's reserves. Improved technology and dependable pricing adequate to attract investors will allow that reserve to be produced.

# Oil and Gas Fields in Kansas





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