TEXAS WATER DEVELOPMENT BOARD

REPORT 82

GROUND-WATER RESOURCES OF POLK COUNTY, TEXAS

By

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GROUND-WATER RESOURCES OF POLK COUNTY, TEXAS

ABSTRACT

The principal aquifers of Polk County—the Catahoula Sandstone, Jasper aquifer, and Evangeline aquifer—contain fresh to slightly saline water to a depth of as much as 1,800 feet below sea level. In the southeastern part of the county where the base of fresh to slightly saline water is deepest, the sand that contains this water has a maximum thickness of about 800 feet. The southern two-thirds of the county, which is underlain by the principal aquifers, can supply large quantities of fresh to slightly saline water.

Large supplies of fresh water are not available in the northern one-third of the county. In the northernmost part of this area, which is underlain by the Yegua Formation and Jackson Group, even small supplies are difficult to obtain.

The ground-water resources of Polk County are practically untapped. Aquifers underlying the county contain an estimated 55 million acre-feet of fresh to slightly saline water in transient storage. Of this amount, about 10 million acre-feet is available to wells if the aquifers are dewatered to 400 feet below land surface. A total of about 34 mgd (million gallons per day) or 38,000 acre-feet per year of fresh to slightly saline water presently flows through the principal aquifers. This quantity of water represents the present rate of effective recharge and is the minimum rate that water may be pumped indefinitely. By salvaging much of the water that presently is rejected to streams as base flow and is consumed by vegetation, about 46 mgd (52,000 acre-feet per year) of ground water would be available. This is near the maximum quantity of fresh to slightly saline water that could be pumped continually without depleting the supply. The total quantity of ground water used in the county in 1965—2 mgd—is only 4 percent of the 46 mgd that is available.

Ground water in the southern two-thirds of Polk County is of good chemical quality. The water, which is principally of the calcium bicarbonate type and which is low in dissolved solids, is suitable for public supply, for many industrial uses, and for irrigation.

GROUND-WATER RESOURCES OF POLK COUNTY, TEXAS

INTRODUCTION

Location and Extent of Area

Polk County is in the West Gulf Coastal Plain in southeastern Texas, 80 to 135 miles north of the Gulf of Mexico (Figure 1). It lies between latitudes 30°29′ and 31°09′ N; and longitudes 94°32′ and 95°12′ W. The county is bounded on the northeast by Angelina County, the Neches River forming the boundary; on the east by Tyler County; on the south by Hardin and Liberty Counties; on the southwest by San Jacinto County, the Trinity River forming the boundary; and on the northwest by Trinity County. Livingston, the county seat, is about 70 miles northeast of Houston. The county has an area of 1,094 square miles.

Purpose and Scope of Investigation

The Polk County ground-water investigation was a cooperative project of the Texas Water Development Board and the U.S. Geological Survey. The purpose of the investigation was to determine the occurrence, availability, dependability, quality, and quantity of ground water suitable for development of municipal, industrial, and irrigation supplies. The results of the investigation are described in this report, which includes a discussion of the geology and hydrology as they are related to the occurrence and availability of ground water. The report also presents information and data obtained during the investigation that can be used as a guide for the development and protection of the ground-water resources of the county.

The investigation included the determination of the location and extent of aquifers containing fresh to slightly saline water, the chemical quality of the water, the quantity of ground water being withdrawn and the effects of the withdrawals on water levels, the hydraulic characteristics of the important aquifers, and an estimate of the quantity of ground water available for development.

Methods of Investigation

The investigation was begun in October 1965 and the fieldwork was completed in September 1966. Specific details of the study included:

1. An inventory of 753 wells and springs, including all municipal and industrial wells and a representative number of domestic and livestock wells. The locations of the wells are shown in Figure 13, and records of these wells are in Table 6.

2. An inventory of the use of ground water for public supply, industry, and rural domestic and livestock use.

3. Drillers' logs of 79 wells (Table 7) and electrical logs of 188 wells were collected and studied to correlate the hydrologic and geologic units and to evaluate their water-bearing characteristics. Special attention was given to the total sand thickness and to the quality of the water.

4. A map was compiled from field observations and from previously published maps to show the outcrop of the hydrologic and geologic units (Figure 3).

5. The altitudes of water wells were determined from topographic maps.

6. Climatological data were collected and compiled (Figure 2).

7. Measurements of water levels, where possible, were made in wells. Records of the measurements are included in Table 6.

8. Samples of water were collected from 199 wells and springs to determine the chemical quality of the water (Table 8).

9. Areas of recharge and natural discharge were determined.

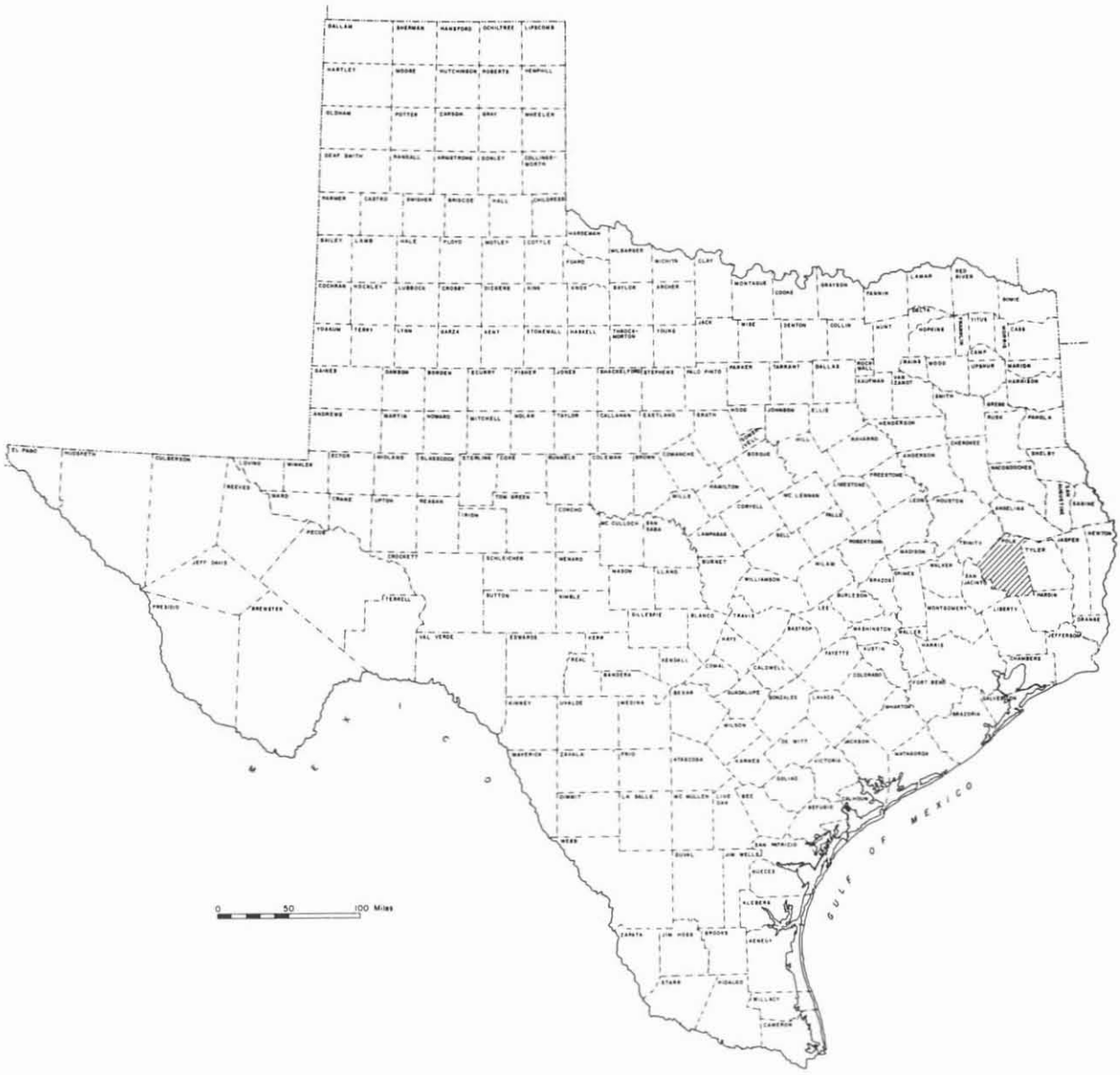


Figure 1
Location of Polk County

U.S. Geological Survey in cooperation with the Texas Water Development Board

10. Pumping tests were run in six wells to determine the hydraulic characteristics of the water-bearing sand (Table 2).

11. Maps, sections, and graphs were prepared to illustrate the geologic, hydrologic, and quality-of-water data.

12. Data were analyzed to determine the quantity and quality of water available for future development and to predict general effects of future withdrawals.

Previous Investigations

Prior to this investigation, no detailed study had been made of the ground-water resources of Polk County. Deussen (1914, p. 347-350) discussed briefly the geology and hydrology of Polk County in his reconnaissance investigation of the southeastern part of the Texas Gulf Coastal Plain. Most of Polk County was included in the report by Wood (1956) on the availability of ground water in the Gulf Coast region of Texas and in the reconnaissance report by Wood, Gabrysch, and Marvin (1963); and all of the county was included in the reconnaissance reports by Baker and others (1963) and by Peckham and others (1963) on the Neches and Trinity River basins. The report by Sundstrom, Hastings, and Broadhurst (1948, p. 238-241) on the public-water supplies in eastern Texas included inventories of the water supplies at Camden, Corrigan, Goodrich, Livingston, and New Willard. Detailed investigations of the ground-water resources of adjoining counties include: Hardin County (Baker, 1964), Liberty County (Anders, McAdoo, and Alexander, 1968), San Jacinto County (Sandeen, 1968), and Tyler County (Tarver, 1968). A considerable amount of hydrologic data was collected in 1947 by W. H. Alexander, Jr.; much of this data is included in this report.

Economic Development

The people of Polk County derive their income principally from the harvesting of timber for the production of plywood, lumber, and pulpwood; the raising of cattle and poultry; and the production of oil and gas. Livingston, which has grown steadily from a population of 928 in 1920 to 3,398 in 1960, is the principal town and center of commerce and industry. The town of Camden has a large lumber and plywood mill, and Goodrich has a compression station for the oil industry.

Forests of pine and lesser stands of hardwood occupy 610,000 acres or 87 percent of the county's area. Lumber and plywood are processed at eight mills; 2,800 board-feet of lumber per day are produced and shipped out of the county.

Farm income, derived principally from the raising of cattle, contributes $1.8 million per year to the local economy. Most of the row-crop farming has been replaced by ranching. During recent years, only two or three farms were irrigated in the county.

Oil and gas have been produced since 1930. A total of about 53.5 million barrels of oil was produced to January 1, 1961, of which 1,369,511 barrels was produced in 1960. Thirteen oil fields, some having multiple pay zones, have produced through the years. New fields are still being discovered.

The newest economic development in the area is Livingston Reservoir (under construction on the Trinity River); its future as a tourist attraction has great economic potential. Another area of interest to tourists is Texas' only Indian reservation, that of the Alabama and Coushatta Indians; the reservation is about 15 miles east of Livingston.

Drainage and Physiography

Polk County is drained by the Trinity River (54 percent) and by the Neches River (46 percent). The principal creeks are Kickapoo, Long King, and Menard which drain the southwestern part of the county into the Trinity River; and Piney and Big Sandy Creeks which drain the northern and eastern parts into the Neches River.

The county, which is in the West Gulf Coastal Plain physiographic province, comprises three distinct land forms: moderately dissected plains, slightly dissected plains, and flood plains of the Trinity and Neches Rivers and their larger tributaries.

Moderately dissected plains, which are the principal land form, compose 78 percent of the county's area. Within this area, where several changes in the appearance of the land are closely related to the geology, the altitude of the land surface ranges from about 520 feet 7 miles southeast of Camden to about 150 feet in southern Polk County. North of the latitude of Corrigan, a good growth of pine and hardwood trees flourishes in an east-west trending belt of sandy clay and shale. Between Corrigan and Moscow, alternating belts of sand and clay support a slow-growing growth of pine and scrub oak trees. South of the latitude of Moscow, a broad area of hills, many of which support a fast-growing stand of pine and hardwood trees, constitute the balance of the moderately dissected area.

The slightly dissected plains, which compose 12 percent of the county's area, are in southern Polk County, in the area bounded by Menard Creek and farm-to-market road 943 on the north and by State highway 146 on the west. The plains extend northward

along State highway 146 almost to Livingston. The area, which ranges in altitude from 150 feet along the south line of the county to 300 feet near Livingston, is covered with fine sand and supports a lush growth of pine and hardwood trees.

The flood plains that compose the third distinct land form are in the valleys of the Neches and Trinity Rivers, and along Long King and Piney Creeks. These flood plains, which constitute 10 percent of the county's area, range in altitude from 80 feet where the Trinity River leaves the county to 200 feet at the upstream extent of the flood plain of Piney Creek. The flood plains of the Neches River, which average 1.5 miles in width, form a swamp covered with hardwood trees. The flood plains of the Trinity River, which average 2 miles in width, have been cultivated and well developed agriculturally. Water, when impounded in Livingston Reservoir, will inundate much of the Trinity flood plain. Flood plains along Long King and Piney Creeks, which are covered with silty, sandy, and clayey soils, average half a mile in width.

Climate

The climate of Polk County is mild and humid. The average growing season is 250 days, and freeze warnings may be expected from middle November into early March. The average annual temperature is about 67°F. Precipitation is distributed rather equally throughout the year. The average annual gross lake surface evaporation in Polk County is 47 inches (Figure 2). At Livingston the average annual air temperature is 67.0°F, and the average annual precipitation is 47.88 inches, as calculated over the period of record from 1938 through 1965.

Well-Numbering System

The well-numbering system used in this report is the one adopted by the Texas Water Development Board for use throughout the State. Under the system, which is based upon the divisions of latitude and longitude, each 1-degree quadrangle in the State is given a number consisting of two digits, from 01 to 89. These are the first two digits appearing in the well number.

Each 1-degree quadrangle is divided into 7½-minute quadrangles which are given 2-digit numbers from 01 to 64. These are the third and fourth digits of the well number. Each 7½-minute quadrangle is divided into 2½-minute quadrangles which are given a single digit number from 1 to 9. This is the fifth digit of the well number. Each well within a 2½-minute quadrangle is given a 2-digit number in the order in which it is inventoried. These are the last two digits of the well number. The 1-degree and 7½-minute quadrangles are shown on the well-location map of this report (Figure 13).

In addition to the 7-digit well number, a 2-letter prefix is used to identify the county. The prefixes for Polk and adjacent counties are as follows:

COUNTY	PREFIX	COUNTY	PREFIX
Angelina	AD	San Jacinto	WU
Hardin	LH	Trinity	YH
Liberty	SB	Tyler	YJ
Polk	UT		

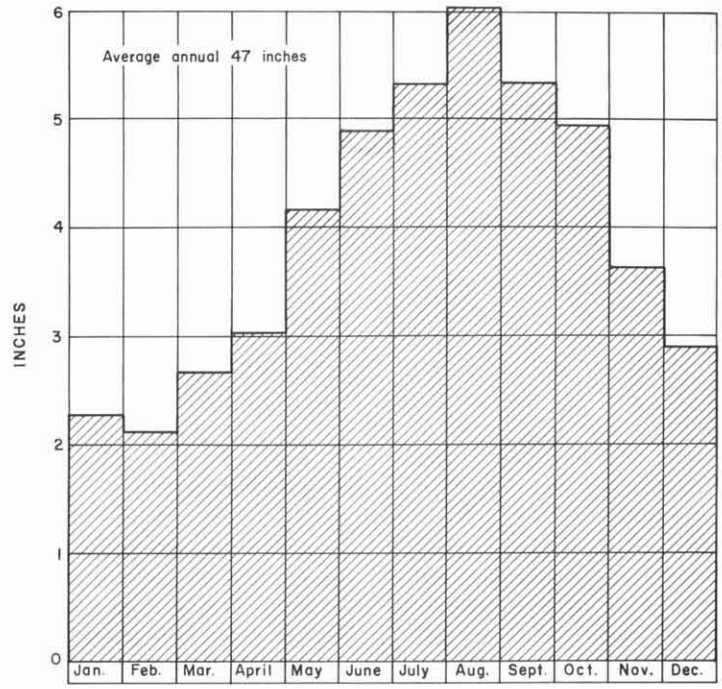
Acknowledgments

The investigation was greatly aided by the residents of Polk County who furnished information and permitted access to their wells and lands. The author gratefully acknowledges the assistance given by: W. S. Rowe, Moscow; Emanuel Miller, Livingston; and C. K. Berry, Corrigan. All are resident well drillers of Polk County, who gave data on wells and on aquifers of the county. Appreciation is extended to A. A. Wells and B. A. Glover, who furnished electrical logs of several oil test wells they had drilled; J. R. Lewis of the Pan American Petroleum Corp., who furnished various information including electrical logs of oil test wells; and Larry Hamburg of the Shell Oil Co., who furnished paleontological logs, which contributed greatly to our knowledge of the area.

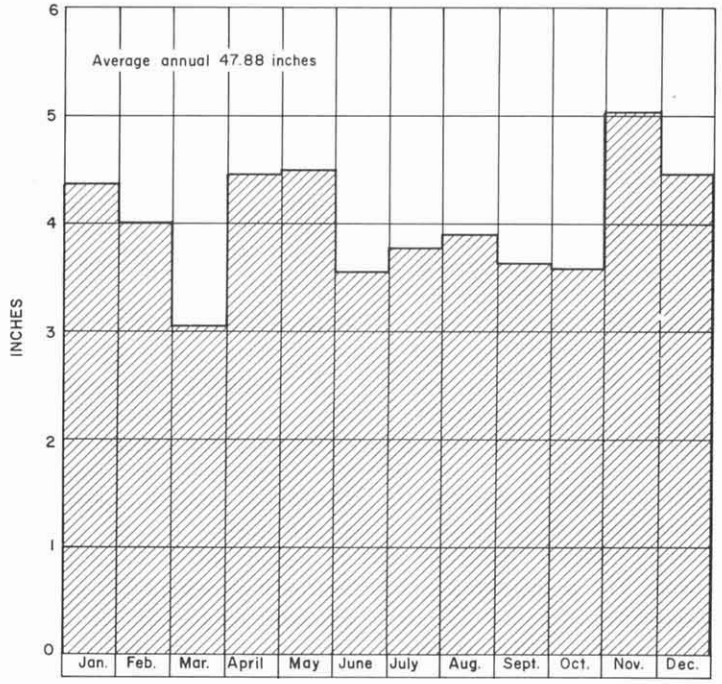
HYDROLOGIC AND GEOLOGIC UNITS AND THEIR WATER-BEARING PROPERTIES

General Stratigraphy and Structure

The rocks described in this report are sediments that accumulated along the inner border of the Gulf Coast geosyncline during the Tertiary and Quaternary Periods. The rocks, composed of sand, gravel, silt, volcanic ash, clay and bentonite, and a minor amount of limestone, are exposed in belts that are nearly parallel to the shoreline of the Gulf of Mexico. The younger beds crop out nearest the Gulf and the older beds crop out successively farther inland. The rocks dip gently toward the Gulf, with the degree of dip increasing with the age of the rocks. Dips range from about 2 feet per mile for the youngest rocks to about 110 feet per mile for the oldest. The thickness of the rock units increases in the direction of the dip. The rocks are displaced by several normal strike faults, which are mostly obscure on the surface. This obscurity is attributed to masking by a deep mantle of soil and to overlapping or burial beneath more recent deposits.



Average monthly gross lake surface evaporation in Polk County, 1940–65
(Kane, 1967)



Average monthly precipitation at Livingston, 1938–65
(U.S. Weather Bureau)

Figure 2

Average Monthly Gross Lake Surface Evaporation in Polk County, and Average Monthly Precipitation at Livingston

U.S. Geological Survey in cooperation with the Texas Water Development Board

The series of sediments found in Polk County is largely the result of cyclic uplifting of the land followed by erosion and deposition. The eroded material was transported to depositional sites by rivers, which deposited part of their loads on alluvial plains, forming continental deposits; part of the load was carried farther and deposited in bays, on deltas, and along the coast, forming transitional deposits; and the remainder of the load was carried into the Gulf, forming marine deposits. The coarser material was deposited closer to its source area, whereas the finer material was deposited at greater distances. Therefore, the continental facies of the rock units are generally sand, and the marine facies of the rock units are generally clay. The lateral shifting of the rivers and the variable quantity and the size of the transported material caused much variety in the composition of the rocks both laterally and vertically in any one rock unit. This variety is especially pronounced in the continental facies of the rock units.

The shifting of the shoreline as the seas advanced on or retreated from the land mass was accompanied by a shifting of the type of deposit (continental to marine) at any one place. Therefore, any facies of one rock unit may be overlain or underlain by any continental, transitional, or marine facies of another rock unit. During the Pliocene and earlier epochs, the continual shifting of the shoreline was caused primarily by uplift of the land, whereas during the Pleistocene Epoch, the shifting was caused primarily by changes in sea level as the result of glaciation and subsequent thawing of the ice.

Hydrologic and Geologic Units

The approximate thickness, lithology, and water-bearing properties of the hydrologic and geologic units are summarized in Table 1; the areal extent of the outcrops of these units is shown in Figure 3. Three sections show the subsurface position of the hydrologic and geologic units (Figures 14, 15, and 16), the thickness of these units, and their lithology as indicated by electrical logs.

An aquifer is a geologic formation, group of formations, or part of a formation that is water bearing. An aquiclude is an impermeable or relatively impermeable rock that may contain water but is incapable of transmitting an appreciable quantity of water. The principal hydrologic and geologic units in Polk County, in terms of quantity of water in storage, are the Catahoula Sandstone, Jasper aquifer, and Evangeline aquifer. The Yegua Formation, Jackson Group, Burkeville aquiclude, Chicot aquifer, and Recent alluvium store smaller quantities of water.

Yegua Formation

The Yegua Formation crops out in a belt about 15 miles wide from 5 to 20 miles north of Polk County. The formation consists of shale and sand in near-equal amounts with small amounts of bentonite and lignite. The Yegua, which dips gulfward at a rate of about 120 feet per mile, ranges in thickness from 1,050 to 1,150 feet in northern Polk County.

The Yegua Formation is not an important aquifer because the sand beds contain slightly saline water, are deeply buried, and have small areal extent. These sand beds yield small to moderate quantities of slightly saline water in the northern part of the county.

Jackson Group

The Jackson Group crops out in a belt about 10 to 14 miles wide between Corrigan and Diboll (Angelina County). The Jackson contains mostly silty, tuffaceous, lignitic shale, but has some thin limestone and a few persistent sand beds, which are fossiliferous. Most of the sand beds occur near the middle of the Jackson.

The Jackson, which dips gulfward at an average rate of about 115 feet per mile, ranges in thickness from 1,030 to 1,080 feet in northern Polk County.

The sand beds in the Jackson Group are thin and capable of yielding small to moderate quantities of fresh and slightly saline water to wells in the outcrop of the Jackson and to wells a short distance south of the outcrop. The water in most places is saturated with gas which causes pumping problems when jet pumps are used.

Catahoula Sandstone

The Catahoula Sandstone crops out in a belt 4 to 10 miles wide across northern Polk and southern Trinity Counties. The formation is composed of tuffaceous shale, volcanic ash, fuller's earth, sandy clay, silt, sandstone, sand, and gravel. The Catahoula, which dips gulfward at an average rate of 100 feet per mile (Figure 4), ranges in thickness from about 600 feet at the southern extent of the outcrop to about 1,200 feet in the southern part of Polk County.

The Catahoula yields small to moderate quantities of fresh to slightly saline water in the northern half of the county. The two largest consumers of industrial water in Polk County have wells that tap the Catahoula.

Jasper Aquifer

The Jasper aquifer crops out in a 4 to 10-mile wide belt across northern Polk County. The aquifer is

Table 1.--Physical Characteristics and Water-Bearing Properties of the Hydrologic and Geologic Units

SYSTEM	SERIES	GEOLOGIC UNIT	HYDROLOGIC UNIT	MAXIMUM THICKNESS (FT)	COMPOSITION	WATER-BEARING PROPERTIES AND DISTRIBUTION OF SUPPLY
Quaternary	Recent	Alluvium	--	50+	Gravel, sand, silt, clay, and organic material.	Yields small[1] quantities of fresh[2] water to a few wells along the Trinity River. Capable of yielding large[1] quantities of water.
	Pleistocene	Beaumont Clay	Chicot aquifer	150	Gravel, sand, silt, and clay.	Yields small to moderate[1] quantities of fresh water to wells in the southern one-third of the county.
		Montgomery Formation*				
		Bentley Formation*				
Tertiary(?)	Pliocene(?)	Willis Sand				
Tertiary	Pliocene	Goliad Sand	Evangeline aquifer	400	Gravel, sand, silt, and clay.	Yields small to moderate quantities of fresh to slightly saline[2] water to wells in the southern part of the county; capable of yielding large quantities of water to wells.
	Miocene	Fleming Formation	Burkeville aquiclude	650	Predominantly clay but locally includes massive beds of sand.	Yields small to moderate quantities of fresh to slightly saline water in local areas in the southern part of the county.
			Jasper aquifer	1,950	Sand, calcareous silt, and clay.	Yields small to moderate quantities of fresh to slightly saline water to wells in the southern two-thirds of the county; capable of yielding large quantities of water.
	Miocene and Oligocene(?)	Catahoula Sandstone	--	1,200	Tuffaceous shale, volcanic ash, fuller's earth, sandy clay, silt, sandstone, sand, and gravel.	Yields small to moderate quantities of fresh to slightly saline water to wells in the northern half of the county
	Eocene	Jackson Group	--	1,080	Predominantly shale with thin limestone and fossiliferous sand.	Yields small to moderate quantities of fresh to slightly saline water to wells in the northern part of the county.
		Yegua Gormation	--	1,150	Sand and shale with small amounts of bentonite and lignite.	Yields small to moderate quantities of slightly saline water to wells in the northern part of the county.

[1] Yield of wells: less than 50 gpm (gallons per minute), small; 50 to 500 gpm, moderate; more than 500 gpm, large.
[2] Quality of water as ppm (parts per million) of dissolved solids: less than 1,000 ppm, fresh; 1,000 to 3,000 ppm, slightly saline.
* The Fleming Formation is equivalent to the Oakville Sandstone and the Lagarto Clay shown on the geologic map of Texas (Darton, Stephenson, and Gardner, 1937), and the Bentley and Montgomery Formations are equivalent to the Lissie Formation of the geologic map of Texas.

Base compiled from topographic maps of the U.S. Geological Survey and general highway map of the Texas Highway Department

EXPLANATION

Qal — Alluvium (Recent; QUATERNARY)
Gravel, sand, silt, clay, and organic material. Yields small quantities of fresh water to wells along the Trinity River. Capable of yielding large quantities of water

Ch — Chicot aquifer (Pliocene(?) and Pleistocene; TERTIARY(?) AND QUATERNARY)
Gravel, sand, silt, and clay. Yields small to moderate quantities of fresh water to wells in the southern one-third of the county

Ev — Evangeline aquifer (Pliocene; TERTIARY)
Gravel, sand, silt, and clay. Yields small to moderate quantities of fresh to slightly saline water to wells in the southern part of the county. Capable of yielding large quantities of water

B — Burkeville aquiclude (Miocene; TERTIARY)
Clay and local beds of sand. Yields small to moderate quantities of fresh to slightly saline water to wells in local areas in the southern part of the county

J — Jasper aquifer (Miocene; TERTIARY)
Sand, silt, and clay. Yields small to moderate quantities of fresh to slightly saline water to wells in the southern two-thirds of the county. Capable of yielding large quantities of water

Tcs — Catahoula Sandstone (Oligocene(?) and Miocene; TERTIARY)
Tuffaceous shale, volcanic ash, fuller's earth, sandy clay, silt, sandstone, sand, and gravel. Yields small to moderate quantities of fresh to slightly saline water to wells in the northern half of the county

Tj — Jackson Group (Eocene; TERTIARY)
Predominately shale with thin limestone and fossiliferous sand. Yields small to moderate quantities of fresh to slightly saline water to wells in the northern part of the county

U / D — Fault
U, upthrown side; D, downthrown side

Contact

Figure 3
Hydrologic and Geologic Units

U.S. Geological Survey in cooperation with the Texas Water Development Board

Geology by George R. Tarver

composed of alternating beds of sand, calcareous silt, and clay. The individual sand beds are usually massive and collectively comprise about 40 percent of the total sediment in the aquifer. The Jasper, which dips gulfward at a rate of about 100 feet per mile at the base to about 50 feet per mile at the top, ranges in thickness from about 850 feet at the southern extent of the outcrop to about 1,950 feet at the Hardin County line.

The Jasper aquifer is the principal aquifer in Polk County in terms of storage, availability, and potential for development. It yields small to moderate quantities of fresh to slightly saline water to wells in the southern two-thirds of the county; but the Jasper is capable of yielding large quantities of water to wells.

Burkeville Aquiclude

The Burkeville aquiclude crops out across the middle of the county in a belt averaging 7 miles in width. The Burkeville consists chiefly of blue calcareous clay which weathers to a dark soil. Beds of sand, which collectively comprise about 15 percent of the total sediment, occur within the clay and in places become massive enough to form important water sands within the aquiclude.

The Burkeville, which dips gulfward at an average rate of about 40 feet per mile, reaches a maximum thickness of 650 feet.

Many of the sand beds in the Burkeville aquiclude yield small to moderate quantities of fresh to slightly saline water to wells in local areas of southern Polk County.

Evangeline Aquifer

The Evangeline aquifer crops out in a belt approximately 10 miles wide across southern Polk County. Because of extensive overlapping by the Chicot aquifer, the Evangeline outcrop is not continuous, but forms isolated exposures (Figure 3). The Evangeline aquifer is composed of gravel, sand, silt, and clay. Sand, the predominant material, constitutes about 50 percent of the aquifer. The Evangeline, which dips gulfward at a rate of about 40 feet per mile at the base to about 15 feet per mile at the top, attains a maximum thickness of about 400 feet in southern Polk County.

The Evangeline aquifer yields small to moderate quantities of fresh to slightly saline water to wells in southern Polk County. The aquifer is capable of yielding large quantities of water to wells.

Chicot Aquifer

The Chicot aquifer crops out mainly in the southern one-third of the county. Much of the northern extent of the main outcrop forms north-south trending ridges separated by exposures of the Evangeline. North of the main outcrop remnants of the Chicot occur as outliers on the Burkeville aquiclude and on the Jasper aquifer. The Chicot is composed of gravel, sand, silt, and clay, being principally sand and sandy clay. Because the dip of the beds is small—15 feet per mile and less—the Chicot attains a maximum thickness at the Hardin-Polk County line of only about 150 feet.

The Chicot aquifer yields small to moderate quantities of fresh water to wells in the southern one-third of Polk County and is used extensively in this area as a rural domestic supply because of the aquifer's shallow occurrence.

Recent Alluvium

Recent alluvium occurs in the Trinity and Neches River Valleys and in the valleys of their major tributaries. The alluvium consists of gravel, sand, silt, clay, and organic material. The maximum thickness of the alluvium is estimated to be 50 feet, being thickest where the Trinity River leaves the county.

The Recent alluvium is capable of yielding large quantities of water to wells. The alluvium in the Trinity River Valley presently yields only small quantities of fresh water to shallow wells; the alluvium in the Neches River Valley is not known to yield water to wells. The alluvium deposits along most of the creeks have little potential value as aquifers. The exception may be Long King Creek which has a sand filled valley.

GROUND-WATER HYDROLOGY

Source and Occurrence of Ground Water

The principal source of ground water is rainfall on the outcrops of the aquifers. Much of this precipitation runs off as streamflow. Part of it is evaporated at the land surface, transpired by plants, or retained by capillary forces in the soil; the remainder moves downward by gravity through the zone of aeration to the zone of saturation, where it becomes ground water.

The water-bearing rock units, or aquifers, are of two types—water table, or unconfined aquifers, and artesian, or confined aquifers. Unconfined water occurs where the upper surface of the zone of saturation is under atmospheric pressure only. The water is free to

rise or fall in response to the changes in the volume of water in storage. The upper surface of the zone of saturation is the water table, and a well penetrating an aquifer under water-table conditions becomes filled with water to this level. Water-table conditions occur in the outcrop areas of the aquifers and in the alluvial deposits along the larger streams.

Confined water occurs where an aquifer is overlain by material of lower permeability, such as clay, which confines the water under a pressure greater than atmospheric pressure. Artesian conditions occur downdip from the outcrop of the aquifer. A well penetrating sands under artesian pressure becomes filled with water to a level above the base of the confining layer of rock, and if the pressure head is high enough to cause the water in the well to rise to an altitude greater than that of the land surface, the well will flow. Flowing wells are most common at lower altitudes, especially in the large creek and river valleys and in the southern part of the county. The level or surface to which water will rise in artesian wells is called the piezometric surface.

Recharge, Movement, and Discharge of Ground Water

Recharge to the aquifers in Polk County takes place by direct infiltration of rainfall on the outcrops of the aquifers and by the movement of ground water into the county from surrounding areas.

In Polk County, the amount of rainfall on the outcrop areas of the aquifers exceeds the amount that can be transmitted downdip under the present hydraulic gradients. As a result, part of the rainfall that enters the aquifers moves laterally to points of surface discharge. Consequently, the excess water is discharged to streams through springs and seeps.

The water that is not discharged through springs and seeps moves downdip into the artesian parts of the aquifers, and continues down gradient to areas of pumping or natural discharge. Velocities vary depending upon the hydraulic gradient, the permeability of the sediments, and the temperature of the water. On the basis of the present (1966) gradient, the velocity is slow, perhaps on the order of several tens of feet per year.

Hydraulic Characteristics of the Hydrologic and Geologic Units

Knowledge of the hydraulic properties of an aquifer is essential to an evaluation of the ground-water resources of an area. The more important hydraulic properties of an aquifer, which determine its capacity to transmit and store water, are expressed as the coefficients of transmissibility and storage. The coefficient of transmissibility of an aquifer is the number of gallons of water, at the prevailing water temperature, that will move in 1 day through a vertical strip of the aquifer having a width of 1 foot and a height equal to the saturated thickness of the aquifer, under a hydraulic gradient of unity. The coefficient of storage is the volume of water released from or taken into storage per unit surface area of the aquifer per unit change in the component of head normal to that surface.

Pumping tests were made in 6 wells and the data were analyzed by a graphical method devised by Cooper and Jacob (1946, p. 526-534). The coefficients of transmissibility determined from the 6 tests ranged from 1,900 to 9,600 gpd (gallons per day) per foot (Table 2). The wide range of values is due to variations in the permeability and thickness of the sand beds. Many of the wells tested did not fully penetrate the aquifer. Consequently, the results of the tests generally gave values that are less than those that would have been obtained from wells that penetrate the entire aquifer. The coefficients of permeability, which were estimated from the total amount of sand believed to be contributing to the well (in most of the tests it exceeded the amount of screen in the well), ranged from 12 gpd per square foot for a well completed in the Jackson Group to 480 gpd per square foot for a well completed in the Jasper aquifer.

Little is known about the hydraulic characteristics of the Chicot and Evangeline aquifers and Catahoula Sandstone in Polk County. In Jasper and Newton Counties, Wesselman (1967) determined that the average permeability of the Chicot was about 1,300 gpd per square foot, and in Liberty County, Anders and others (1968) determined that the average permeability of the Evangeline was about 175 gpd per square foot. These values from nearby counties may be applicable to the Chicot and Evangeline aquifers in Polk County. The permeability of the Catahoula Sandstone in Polk County is not known.

A coefficient of storage could not be determined for the aquifers in Polk County. An estimated value of 0.0001 for aquifers under artesian conditions probably is appropriate as this figure is of the same order of magnitude as values determined for coefficients of storage in nearby counties.

The coefficients of transmissibility and storage were used to construct the drawdown-distance graph (Figure 5) for a typical well completed in the Jasper or Evangeline aquifer. The graph shows the theoretical drawdown of the water level (piezometric surface) in wells at the end of various periods of time at various distances from a well pumping 150 gpm (gallons per minute). The graph is based on the assumption that the aquifer is artesian and of infinite areal extent, having a coefficient of transmissibility of 5,000 gpd per foot and a coefficient of storage of 0.0001. The graph shows that

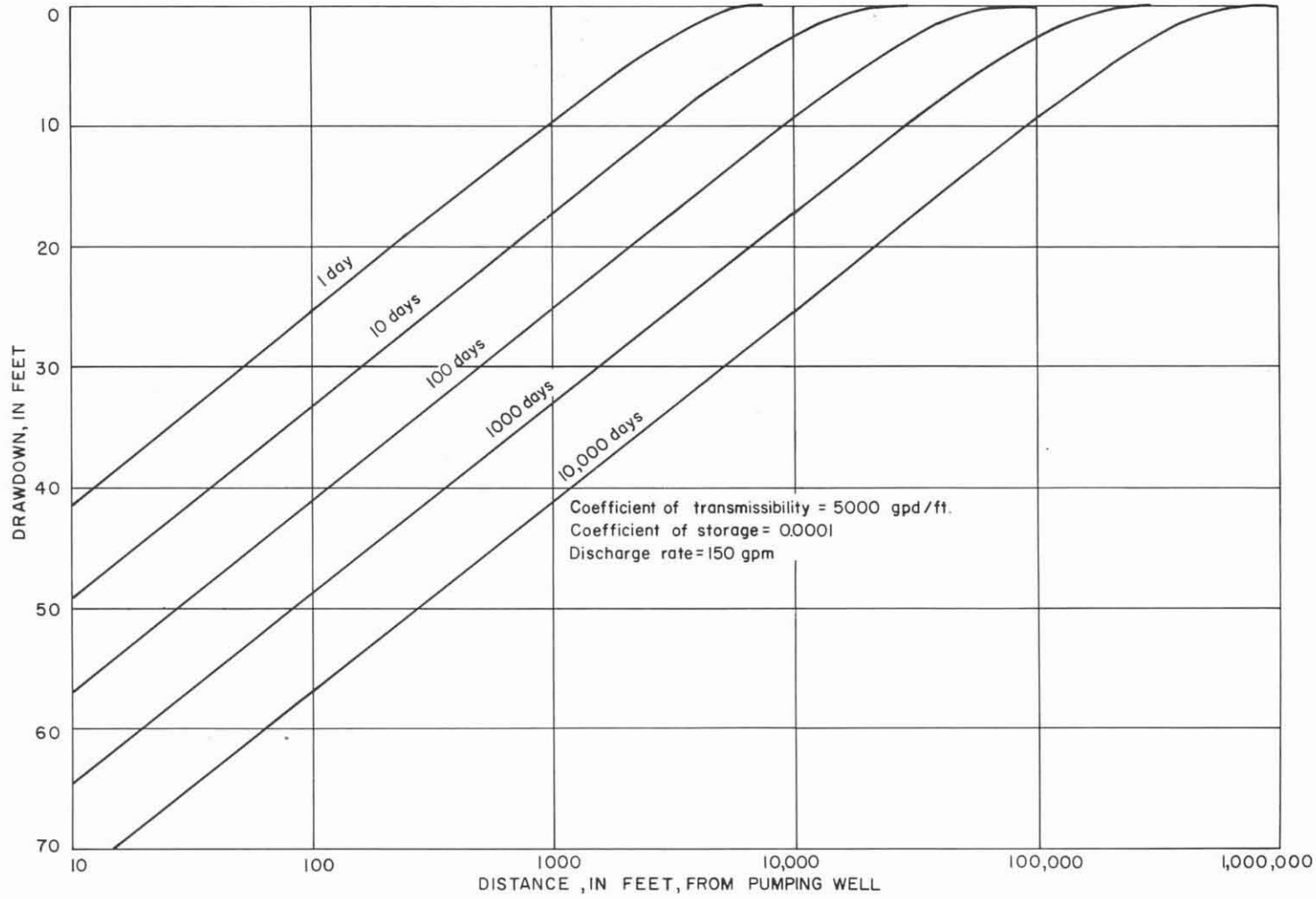


Figure 5

Relation of Drawdown to Distance and Time for a Typical Well Completed in the Jasper or Evangeline Aquifer

U.S. Geological Survey in cooperation with the Texas Water Development Board

Table 2.-- Coefficients of Transmissibility Determined from Pumping Tests of Wells

AQUIFER AND WELL	DATE OF TEST	COEFFICIENT OF TRANSMISSIBILITY (GPD PER FT)	REMARKS
Jackson Group			
UT-37-58-901	Jan. 22, 1959	1,900	Recovery test.
Jasper aquifer			
UT-61-09-802	Oct. 7, 1966	2,400	Do.
UT-61-17-201	Dec. 16, 1955	5,200	Do.
UT-61-17-215	do	3,300	Do.
UT-61-19-305	Sept. 16, 1966	9,600	Do.
Evangeline aquifer			
UT-61-26-715	Sept. 23, 1966	3,000	Do.

the declines are greatest in the early stages of pumping and continue thereafter at a lesser rate. The graph may also be used to predict drawdowns at other rates of pumping because the drawdown at any point is approximately proportional to the rate of pumping; also, the graph may be used to determine the interference of a pumping well on nearby wells. Thus, the graph serves as a guide in spacing wells to minimize interference from other wells. Such interference decreases well yields and increases pumping costs.

Use of Ground Water

During 1965, 2,300 acre-feet or an average of 2.0 mgd (million gallons per day) of ground water was used for public supply, industrial, and rural domestic and livestock purposes in Polk County. About 30 percent of this total was used for public supply, 10 percent for industry, and 60 percent for rural domestic and livestock purposes (Table 3). In addition to the water used in the county, an estimated 20 acre-feet of ground water was wasted in 1965 by uncontrollable flowing wells.

Pumpage of ground water in 1965 by cities, towns, and other public-supply systems in the county accounted for 680 acre-feet or 30 percent of the total ground water used for all purposes (Table 3). In that year there were 23 public water systems, and the number of systems probably will increase as more subdivisions are developed in the rural sectors of Polk County especially near Livingston Reservoir (under construction). The production of water by rural water systems is small and will probably remain a small part of the total public supply usage as rural water systems are used mostly on weekends. The city of Livingston is by far the largest user of water for public supply; it pumps about three-fourths of all water produced by public water systems. Variations in pumpage of ground water for public supply by Livingston, Corrigan, Goodrich, and Onalaska from 1955 to 1964 are shown in Table 4.

Industrial use of ground water accounted for 220 acre-feet or only 10 percent of the total ground water used for all purposes in 1965. Lumber mills, the largest industrial users of the water, used about four-fifths of the total industrial water in that year. Compressor stations and other oil field operations, gravel mining, and meat processing account for the remaining one-fifth.

The largest use of water is for rural domestic and livestock purposes. This use accounted for an estimated 1,400 acre-feet or 60 percent of all ground water used in Polk County in 1965. Ground water used to supply ponds and small private lakes is included with the rural domestic and livestock use.

No irrigation wells were found to be in use in 1965. Very little irrigation is practiced in Polk County as it is principally a timber and cattle country.

Table 3.-- Use of Ground Water, 1965

CLASS OF USE	QUANTITIES USED* MGD	QUANTITIES USED* AC-FT/YR	PERCENT OF TOTAL
Public supply			
Livingston	0.468	525	
Camden	.040	45	
Corrigan	.037	42	
Goodrich	.012	14	
Alabama and Coushatta Indian Reservation	.009	10	
Onalaska	.008	9	
Moscow	.003	3	
Leggett	.003	3	
Rural water systems (15)	.027	31	
Public supply subtotal	.61	680	30
Industrial			
Lumber processing	.153	172	
Compressor stations and other oil field operations	.026	29	
Gravel mining	.015	17	
Meat processing	.005	6	
Industrial subtotal	.20	220	10
Rural domestic and livestock	1.2	1,400	60
Total	2.0	2,300	100

* Figures are approximate because some of the pumpage is estimated. Figures (except totals and subtotals) are shown to nearest 0.001 mgd and to nearest ac-ft/yr. Totals and subtotals are rounded to two significant figures.

Table 4.--Pumpage of Ground Water for Public Supply
by Selected Cities and Towns, 1955-64

(Figures are approximate because some of the pumpage is estimated.
Figures are shown to nearest 0.001 mgd and to nearest ac-ft/yr.)

	LIVINGSTON		CORRIGAN		GOODRICH		ONALASKA	
YEAR	MGD	AC-FT/YR	MGD	AC-FT/YR	MGD	AC-FT/YR	MGD	AC-FT/YR
1955	0.361	405	0.120	134	0.009	10	0.003	3
1956	.288	323	.124	139	.010	11	.004	4
1957	.312	350	.125	140	.009	10	.004	4
1958	.336	377	.120	134	.012	14	Not available	Not available
1959	.369	414	.120	134	.010	11	Do.	Do.
1960	.331	371	.054	60	.008	9	.004	5
1961	.330	370	.043	48	.012	13	.004	4
1962	.359	403	.045	50	.013	15	.006	7
1963	.540	605	.045	50	.013	15	.004	4
1964	.463	519	.051	57	.013	15	.005	6

Changes in Water Levels

Long-term records of annual water levels in wells in Polk County are not available. Water-level measurements in numerous wells were made in the spring of 1947, and about 20 of the same wells were measured again in 1966. The 1947 measurements were made in April when the water levels are generally high, and the 1966 measurements were made in the drier summer months when water levels are generally lower. Of the 20 wells, 11 are water-table wells. Water-level changes recorded in these wells ranged from a rise of about 2 feet to a decline of about 7 feet. The declines are not considered significant as they probably represent a temporary seasonal change rather than a long-term drop in the water table.

Water levels in wells completed in the Jasper aquifer in the Livingston area have been declining because of heavy pumping by the city of Livingston. The water level in well UT-61-17-302 dropped 48 feet between 1960 and 1966, and well UT-61-17-408, which flowed in 1957 when drilled, had a water level of 25.2 below land surface in 1966.

Wells completed elsewhere in the county in and near centers of heavy pumping, such as Camden and Corrigan, can be expected to have declining water levels.

Well Construction

The rural domestic and livestock wells are generally either 8-inch diameter bored wells, 24- and 48-inch diameter dug wells, or 2- and 4-inch diameter drilled wells. Some bored and dug wells are still being used and constructed, but generally are being replaced by the deeper drilled wells. These drilled wells are usually 2 inches in diameter with a sand screen attached at the bottom and set in the water-bearing sand. Most wells are equipped with jet pumps, but compressor-type air lift pumps are installed in some wells where the water contains appreciable amounts of iron. The recent adoption of the air lift has resulted from the realization that this method of lift reduces most iron and corrosion problems.

The larger and more recently drilled municipal and industrial wells have from 8- to 20-inch diameter casing

and are completed with multiple screens; all are gravel packed. They are equipped with shaft-type turbine pumps driven by electrical motors.

CHEMICAL QUALITY OF GROUND WATER

Quality Standards and Suitability for Use

The chemical constituents in ground water originate principally from the soil and rocks through which the water has passed; consequently, the differences in chemical character of the water reflect in a general way the nature of the geologic formations that have been in contact with the water. Generally ground water is free from contamination by organic matter, but the chemical content increases with depth. General discussions of the quality of ground water are included in *A Primer on Water Quality,* by Swenson and Baldwin (1965), and in *Study and Interpretation of the Chemical Characteristics of Natural Water,* by Hem (1959).

The suitability of a water supply depends upon the chemical quality of the water and the limitations imposed by the contemplated use of the water. For many purposes the dissolved-solids content is a major limitation on the use of water. A general classification of water, according to dissolved-solids content, is as follows (Winslow and Kister, 1956, p. 5):

DESCRIPTION	DISSOLVED-SOLIDS CONTENT (PARTS PER MILLION)
Fresh	Less than 1,000
Slightly saline	1,000 to 3,000
Moderately saline	3,000 to 10,000
Very saline	10,000 to 35,000
Brine	More than 35,000

Certain quality standards have been established or suggested for public, industrial, and irrigational supplies. Water for public use should be free of bacteria, colorless, odorless, and should not contain excessive concentrations of dissolved solids.

The United States Public Health Service has established and periodically revises standards of drinking water to be used on common carriers engaged in interstate commerce. These standards are commonly used in evaluating water for use as a public supply. The following are the limits of concentration for some of the constituents (U.S. Public Health Service, 1962, p. 7-8):

SUBSTANCE	CONCENTRATION (PARTS PER MILLION)
Chloride (Cl)	250
Fluoride (F)	1.0*
Iron (Fe)	.3
Manganese (Mn)	.05
Nitrate (NO_3)	45
Sulfate (SO_4)	250
Dissolved solids	500

*According to the U.S. Public Health Service (1962, p. 41), the optimum fluoride level for a given community depends on climatic conditions because the amount of water (and consequently the amount of fluoride) ingested is influenced primarily by air temperature. The optimum value of 0.8 ppm (parts per million) and the upper limit of 1.0 ppm in Polk County are based on the annual average of maximum daily air temperature of 78.5°F calculated over 21 complete years (1938-52 and 1961-66) at Livingston.

Concentrations of chemical constituents exceeding the recommended limits are objectionable. Chloride concentrations exceeding 250 ppm are tolerable, but water containing as much as 500 ppm chloride tastes salty. The consumption of fluoride in excess of the recommended amount may cause mottling of the teeth; but the consumption of fluoride in optimum amounts may reduce the rate of teeth caries in children by 65 percent (Dean, Arnold, and Elvove, 1942, p. 1155-1179; Dean and others, 1941, p. 761-792).

Excessive concentrations of iron and manganese in water cause reddish-brown and dark gray deposits that stain plumbing fixtures and laundry. (The problem of excessive iron in water used for rural domestic supplies in Polk County has been alleviated by pumping the wells with compressed air and by storing the water in large cisterns. The cistern serves as a settling basin where the iron is further oxidized and precipitated. The water to be used is withdrawn from the upper part of the cistern and the iron precipitate is occasionally drained at the bottom.)

Concentrations of nitrate in excess of 45 ppm are potentially dangerous according to Maxcy (1950, p. 271) who correlated the incidence of infant cyanosis ("blue-baby" disease) with the consumption of high nitrate water. The disease causes a loss of oxygen in the blood which is a form of asphyxia.

Concentrations of nitrate in excess of a few ppm, especially when accompanied by a high chloride concentration, is considered by Hem (1959, p. 7) to be indicative of organic pollution. Concentrations of sulfate in excess of 250 ppm may have a laxative effect, but the body generally regulates in a few days to much higher concentrations.

Calcium and magnesium are the principal constituents causing hardness in water, which is objectionable because of increased soap consumption. The accumulation of white scale in cooking utensils and in pipes are indications of the hardness of water. The following is a commonly-used classification for the hardness of water:

HARDNESS RANGE (PPM)	CLASSIFICATION
60 or less	Soft
61 to 120	Moderately hard
121 to 180	Hard
More than 180	Very hard

Standards for industrial water supplies vary widely. The two most common industrial uses of water are for steam production and for cooling. The water should be of good quality—low in calcium, magnesium, silica, and iron, which form scale in heat exchangers and boilers. The water should be low in chlorides, acids, and carbon dioxide, which make water corrosive. Water for cooling is generally used in great volumes; therefore, cost of production and treatment is of primary importance. Temperature of ground water near the land surface is approximately equal to the average annual air temperature of 67°F, and increases about 1°F per 100 feet of depth.

Industrial use of process water is subject to a wide range of quality standards depending upon the product manufactured. Triple-distilled water may be essential in the manufacture of some chemical solutions and medicines. Water free of iron and manganese and low in dissolved solids is required in the manufacture of textiles. Seawater is used in the processing and packing of many seafood products. Although industrial requirements of water quality are diverse, in general, the quality must be rigidly controlled.

Figure 6 shows information on three parameters of water quality from selected wells of different depths and tapping various hydrologic and geologic units. Numerical values are shown for depth of well and concentrations of dissolved solids, iron, and hardness. The map clearly shows the wide variation in the selected parameters throughout the county.

The suitability of water for irrigation depends upon the chemical quality of water, type and permeability of the soil, rainfall, and type of crop. The most important chemical characteristics in the determination of the suitability of water for irrigation are: (1) the proportion of sodium to total cations (an index of the sodium hazard); (2) total concentration of soluble salts (an index of the salinity hazard); (3) RSC (residual sodium carbonate); and (4) the concentration of boron.

A system of classification of irrigation water used in a semiarid climate was proposed by the U.S. Salinity Laboratory Staff (1954, p. 69-82). The classification is based on the salinity hazard as measured by the electrical conductivity of the water and the sodium hazard as measured by the SAR (sodium-adsorption ratio). Wilcox (1955, p. 15) states that the sytem of classification of irrigation waters proposed by the Salinity Laboratory Staff ". . . is not directly applicable to supplemental waters used in areas of relatively high rainfall." He indicates (p. 16) that generally water can be used safely for supplemental irrigation if the conductivity is less than 2,250 micromhos per centimeter at 25°C and the SAR is less than 14. The SAR value and conductivity of samples from selected wells tapping most of the hydrologic and geologic units in Polk County are shown in Figure 7.

Another factor used in assessing the quality of water for irrigation is the RSC (residual sodium carbonate) of the water. Excessive RSC will cause the water to be alkaline, and the organic matter in the soil will dissolve. The soil becomes a grayish black and the land areas affected are referred to as "black alkali." Wilcox (1955, p. 11) states that laboratory and field studies have resulted in the conclusion that water containing more than 2.5 epm (equivalents per million) RSC is not suitable for irrigation, from 1.25 to 2.5 epm is marginal, and less than 1.25 epm RSC probably is safe.

An excessive boron content renders water unsuitable for irrigation. Wilcox (1955, p. 11) indicates that a boron concentration of as much as 1.0 ppm is permissible for irrigating sensitive crops, as much as 2.0 ppm for semitolerant crops, and as much as 3.0 ppm for tolerant crops.

Yegua Formation

Only a few wells tap the Yegua Formation. Analyses of water from three wells show the water to be a sodium bicarbonate type. The three samples, which contained dissolved solids ranging from 1,070 to 1,830 ppm, were soft and low in iron. All samples had high sodium and salinity hazards and high RSC values.

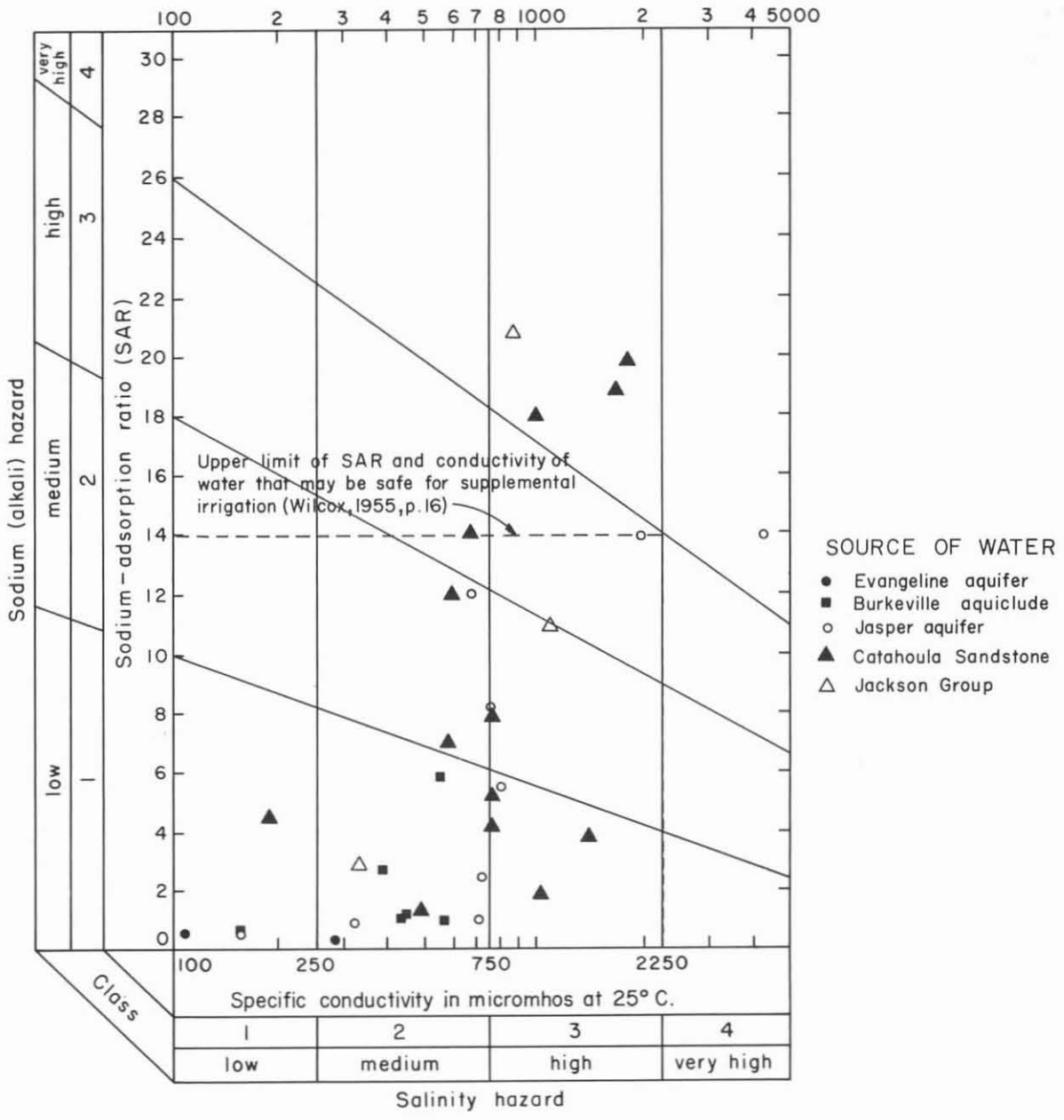


Figure 7

Classification of Irrigation Waters

U.S. Geological Survey in cooperation with the Texas Water Development Board

Jackson Group

Water was sampled from 24 wells that tap the Jackson Group. The analyses reveal that the water is of the sodium bicarbonate type and generally contains large amounts of silica. Of 23 determinations of hardness, about half showed that the water was soft. The dissolved-solids concentration ranged from 89 to 1,310 ppm except for well UT-37-50-701 which is completed in a sand stringer near the base of the Jackson Group; this well had a dissolved-solids concentration of 5,360 ppm which is not considered to representative of the Jackson. Iron concentrations exceeded 0.3 ppm in about half of the samples analyzed for iron. Most of the wells tapping the Jackson in the Corrigan area produce small amounts of gas, and one well was abandoned when it started producing a small amount of oil. About half of the samples had high to very high sodium and salinity hazards, and about half had high RSC values.

Catahoula Sandstone

The Catahoula Sandstone, which contains mostly a sodium bicarbonate type water, is also a source of good quality water that is suitable for public supply and many industrial uses. The dissolved-solids content in 33 determinations ranged from 158 to 4,750 ppm; it exceeded 500 ppm in 16 samples. Of 33 determinations of iron, 16 exceeded 0.3 ppm. In 35 samples analyzed for chloride, only 9 exceed 250 ppm. Sulfate is not a problem as none of the 35 determinations exceeded 250 ppm. Hardness in 35 samples analyzed ranged from 14 to 698 ppm, and was in the range classified as soft in slightly less than half of the determinations.

Most of the analyses indicate that the Catahoula water is suitable for supplemental irrigation. With some exceptions, the salinity and sodium hazards and RSC are not problems.

Jasper, Evangeline, and Chicot Aquifers, and Burkeville Aquiclude

In general, the water from the Jasper, Burkeville, Evangeline, and Chicot is similar. Most of the samples show that the water is of the calcium bicarbonate type and is low in dissolved solids. The dissolved-solids content in 131 determinations ranged from 21 ppm in well UT-61-19-901 tapping the Chicot to 2,360 ppm in well UT-60-24-106 tapping the Jasper and exceeded 500 ppm in only 14 samples. Iron content of the water is erratic showing no particular pattern either vertically or horizontally; a generally higher iron content, however, is associated with the Chicot aquifer. The iron content in 124 determinations ranged from 0.00 ppm in well UT-61-17-301 tapping the Burkeville to 29 ppm in well UT-61-27-503 tapping the Evangeline. In the 125 samples analyzed for iron, 54 exceeded 0.3 ppm. Although nitrate is not a problem in Polk County, the constituent was found to be excessive in 10 wells scattered across the county. Without exception, they were shallow wells and were probably polluted. Sulfate and chloride are within acceptable limits. Of 127 determinations of sulfate, none exceeded 250 ppm, and of 133 determinations of chloride, only 8 exceeded 250 ppm. Hardness in 127 samples analyzed ranged from 8 ppm to 840 ppm; about half of the water analyzed was soft. In general, ground water of good chemical quality, suitable for public supply and many industrial purposes, is obtainable from the Jasper, Burkeville, Evangeline, and Chicot.

Most of the water samples indicate that the water from the Jasper, Burkeville, and Evangeline is safe for supplemental irrigation. With few exceptions, the salinity and sodium hazards are not problems. RSC, though generally not a problem, varies over a wide range from place to place, and this factor should be evaluated for each individual supply. Water from the Chicot, though not analyzed for RSC and SAR, is probably similar to much of the Evangeline water, which is satisfactory for irrigation.

Recent Alluvium

Water was sampled from four wells completed in the Recent alluvium. Most of the water analyzed was soft, and with the exception of iron, which was excessive in half of the samples, generally met the U.S. Public Health Service standards.

Possible Sources of Contamination

Contamination of the ground-water supplies in Polk County is possible by either improperly cased oil and gas wells or by the infiltration of oil-field brines from unlined surface pits.

Wells drilled for oil or gas normally penetrate not only sand beds containing fresh to slightly saline water but also those containing salt water. If the salt water is under greater pressure than the fresh or slightly saline water, the salt water may move up the well bore into the fresh-water sands. The Oil and Gas Division of the Railroad Commission of Texas is responsible for seeing that oil and gas wells are properly constructed, and the Texas Water Development Board furnishes ground-water data to oil operators and to the Railroad Commission in order that all "fresh-water" strata may be protected. The Railroad Commission requires that strata containing "fresh water" be protected by surface casing of new or reconditioned pipe and by cement or by alternate means. "Fresh water" as used by the Railroad Commission may include water that is more mineralized than the fresh to slightly saline water used in this report.

Table 5.--Comparison Between Maximum Depth to the Base of the Slightly Saline Water and Amount of Surface Casing Required in Oil or Gas Fields

OIL OR GAS FIELDS	AMOUNT, IN FEET, OF SURFACE CASING REQUIRED	DEPTH, IN FEET, BELOW LAND SURFACE TO BASE OF SLIGHTLY SALINE WATER
Ace (2nd Wilcox)	800	1,400
Camp Ruby (Yegua)	*	1,400
Copeland Creek	*	600
Goodrich	500	575
Livingston (Wilcox)	1,200	1,275
Long Tom Creek (Wilcox)	*	900
Menard Creek	*	1,600
Morgan's Creek	450	550
Schwab (Wilcox)	1,300	1,600
Segno	1,850	1,600
Segno, Deep	1,850	1,600
Segno, South (Wilcox)	1,850	1,600
Seven Oaks	*	850
Southland (Woodbine)	*	1,000

* Surface casing requirements are set for each well individually.

No evidence was found to indicate that inadequately constructed oil and gas wells have caused contamination of the fresh or slightly saline water sands in Polk County. However, contamination is possible where the surface casing rules are inadequate (Table 5).

Oil-field brine disposed of in surface pits is also a source of contamination of the aquifers. According to a salt-water disposal inventory (Texas Water Commission and Texas Water Pollution Control Board, 1963), 6.1 million barrels of brine was produced in 1961 in Polk County. Of this amount, 1.4 million barrels (23 percent) was discharged into surface pits, and the remainder was injected into sand beds below the base of fresh to slightly saline water.

AVAILABILITY OF GROUND WATER

The quantity of ground water available for use in Polk County depends largely upon the rate of recharge by rainfall on the outcrops of the aquifers, the transmitting capacity of the aquifers, and the quantity of ground water in storage.

Considerable quantities of water are presently moving through the aquifers each year. This is an indication of the rate of recharge that is presently available for replenishing the supply of ground water. Most of the water that is presently moving is not being pumped but is moving southward out of the county. Computations of the quantities of water presently moving through the aquifers are based on available hydrologic data; some hydrologic assumptions were necessary where data were lacking.

About 4.5 mgd (5,000 acre-feet per year) of fresh to slightly saline water is flowing through the Catahoula Sandstone. This flow, under a gradient of 10 feet per mile, is across a hypothetical line 30 miles long crossing Polk County a few miles south of the Catahoula outcrop. A coefficient of permeability of 100 gpd per square foot was assumed. A flow of 4.5 mgd requires 1.5 inches of recharge annually to the outcrop of the Catahoula Sandstone to sustain the flow.

The quantity of fresh to slightly saline water flowing through the Jasper aquifer is about 24 mgd (27,000 acre-feet per year). This flow passes through a section of sand 300 feet thick and 28 miles long, crossing the county a few miles south of the outcrop of the Jasper. The water-level gradient is about 14 feet per mile (Figure 8). To maintain this flow, an average of 2 inches of rainfall annually, which represents 4.2 percent of the total annual average rainfall, infiltrates the 154,000-acre outcrop and becomes effective recharge.

The quantity of fresh to slightly saline water flowing through the Evangeline aquifer is about 5 mgd (5,600 acre-feet per year). The flow, which passes through 170 feet of sand, crosses an east-west section 24 miles long across southern Polk County. The water-level gradient averages 8 feet per mile (Figure 9). About 2 inches of rainfall annually recharges the outcrop of the Evangeline and sustains the flow.

Estimates of the quantity of water flowing through the Yegua Formation, Burkeville aquiclude, Chicot aquifer, and Recent alluvium were not made as sufficient hydrologic data were lacking; however, the quantity of water flowing through these units would be small, when compared to the large quantity of water flowing through the Catahoula, Jasper, and Evangeline. The Chicot aquifer, which is a large source of water in areas south of Polk County, functions mainly in Polk County by providing recharge for these areas. Because the Chicot in Polk County is full of water, it also provides shallow ground water to wells on the outcrop.

A total of about 34 mgd (38,000 acre-feet per year) of fresh to slightly saline water presently flows through the Catahoula Sandstone and Jasper and Evangeline aquifers of Polk County. This quantity of water represents the present rate of effective recharge and is the minimum rate that water may be pumped indefinitely.

To arrive at a figure that more nearly approaches the maximum quantity of water that may be pumped indefinitely without depleting the ground water supply, the maximum rate of recharge from precipitation would have to be determined. The maximum rate of recharge would involve the quantity of water that enters the aquifers but is rejected to streams as seepage and spring flow, the quantity of water that enters the aquifers but is consumed by vegetation, and the additional recharge that would be induced by lowered water levels and steepened gradients, as well as the already computed quantity of water that presently moves through the aquifers after having escaped rejection to streams and consumption by vegetation.

The quantities of water rejected to streams and consumed by vegetation could not be determined; however, an estimate that approximates the maximum quantity of water that can be produced on a sustained basis was made by imposing a set of theoretical conditions upon the aquifers that would, in effect, salvage much of the water now being rejected to streams and being consumed by vegetation. To arrive at this estimate, the following theoretical conditions were assumed: (1) a line of pumping wells 20 miles long crossing the county near its southern boundary and penetrating the entire fresh to slightly saline water sections; (2) water levels drawn down to 400 feet below land surface along the line of pumping wells; (3) a line source of recharge at Livingston parallel to the line of pumping wells and bisecting the recharge area that supplies water to the pumping well; (4) a straight-line slope of the hydraulic gradient from the line source of recharge to the 400-foot level along the line of pumping wells; and (5) transmissibility of 80,000 gpd per foot for the section along the line of pumping wells.

Under these condition, 46 mgd, or 52,000 acre-feet per year, would be transmitted to the wells from the recharge area. This quantity is equivalent to 4 inches of water (8 percent of the average annual precipitation) annually recharging the sandy part of the outcrop. This rate of recharge is not unreasonable; thus, 46 mgd is a valid estimate that is near the maximum quantity of fresh to slightly saline water that could be produced indefinitely. This quantity applies mostly to the major aquifers—the Catahoula Sandstone and Jasper and Evangeline aquifers—although a small part would be contributed by the Burkeville aquiclude and Chicot aquifer. The ground water used in the county in 1965 is only 4 percent of the 46 mgd that is continually available.

To further evaluate the availability of water in Polk County, the water presently contained in the rocks was considered. In Polk County, the water-bearing formations contain an immense quantity of water in transient storage.

The quantity of water stored in the water-bearing formations depends upon the total volume and porosity of the sand. The total volume of sand containing fresh to slightly saline water under Polk County is about 185 million acre-feet. This volume of sand contains 55 million acre-feet of water. The total volume of sand was calculated from the sand-thickness map (Figure 12), and the quantity of water in the sand was estimated to be 30 percent effective porosity of the total sand volume. If this water that is stored under Polk County were impounded on the surface of the county, the county would be under almost 80 feet of water.

Of the total quantity of water in storage, less than 1 percent is in the Yegua Formation, 1 percent in the Jackson Group, 11 percent in the Catahoula Sandstone, 75 percent in the Jasper aquifer, 8 percent in the Evangeline aquifer, 4 percent in the Chicot aquifer, and less than 1 percent in the Recent alluvium.

The 55 million acre-feet of fresh to slightly saline water stored in the county occurs at depths ranging from near the land surface in numerous places to at least 1,800 feet below sea level near the Hardin County line as shown in Figures 10 and 11. Much of the 55 million acre-feet of water in storage is economically unattainable partly because of the great depth at which it occurs.

The volume of water in storage that is most readily available for use is that portion within 400 feet of the land surface (perhaps a practicable interval). The volume of water contained in the sand above the 400-foot depth is about 20 million acre-feet. Of this 20 million acre-feet in storage, about 10 million acre-feet is available to wells if the water-bearing units are dewatered to 400 feet below land surface.

Ten million acre-feet is an enormous quantity of water. For example, it would take 100 years of pumping 100,000 acre-feet per year (about 90 mgd) to dewater the sand to 400 feet, even if the sand were not recharged by rainfall during that time.

The areas in Polk County that are most favorable for developing large ground-water supplies are indicated by the sand-thickness map (Figure 12) which shows the thickness of sand containing fresh to slightly saline water throughout the county. Areas of relatively thick sand are usually able to yield relatively large quantities of ground water.

The thickness of sand in Polk County ranges from less than 100 feet along an east-west strip a few miles north of Onalaska through Corrigan to about 800 feet in a small area in the southeastern part of the county. With the exception of local sand-thinning a few miles south of Camden and in the Goodrich-Schwab City area, progressively larger supplies of water are available southeastward from the relatively thin sand along the east-west strip through Corrigan. Any future large-scale developments of ground water should, therefore, consider the advantages of the abundance of water in the southeastern part of Polk County.

The amount of water estimated to be available in Polk County depends largely on the development of the aquifers in the adjoining counties. The collection of basic hydrologic data is a prerequisite to further refinement of these estimates. The basic data should include the measuring of water levels in a network of observation wells in each of the aquifers, an inventory of the withdrawals of water from the aquifers, and a network of wells to provide for collecting water samples to detect any changes in the chemical quality of the water. Such a program should not be restricted to Polk County, but should include the adjoining counties.

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Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas

All wells are drilled unless otherwise noted in remarks column.

Method of lift and type of power: A, airlift, B, bucket; C, Cylinder; Cf, centrifugal; E, electric; G, gasoline, butane, or Diesel engine; H, hand; J, jet; N, none; Ng, natural gas; T, turbine. Number indicates horsepower.
Use of water : D, domestic; Ind, industrial; Irr, irrigation; N, none; P, public supply; S, livestock.
Water-bearing unit : Tj, Jackson Group; Ty, Yegua Formation; Tcs, Catahoula Sandstone; J, Jasper aquifer; Ch, Chicot aquifer; Qal, Alluvium; B, Burkeville aquiclude; Ev, Evangline aquifer; Tf, Fleming Formation.

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
Polk County												
*UT-37-50-701	W. R. Sanford	Seismograph Crew	1964	150	2	Tj	198	--	--	J,E	D,S	
* 702	G. J. Sanford	C. K. Berry	1962	437	--	Ty	182	+	1962	--	D,S	
* 801	Mack Hendry	do	1964	326	2	Ty	150	+	1966	C,E	D	Supplies water for fish pond and restaurant. Estimated flow 1 gpm in 1966.
57-701	Willie Jones	--	1953	138	2	Tj	235	17.7	Mar. 9, 1966	N	N	
702	do	--	1963	140	4	Tj	235	14.2	do	J,E	D,s	
801	A. D. Sailer	C. K. Berry	1961	97	2	Tj	235	--	--	J,E	D,S	
802	G. R. Brooks	Brooks Bros.	1951	36	8	--	295	26.0	Mar. 9, 1966	B,H	D,S	
* 58-101	Lee Perkins	Lee Perkins	1917	31	--	Tj	268	21.0	May 16, 1947	B,H	D,S	Dug well. Sand from 29 ft to bottom. Temp. 64°F.
* 102	Josserand Lumber Co.	--	1906	330	4	Tj	220	+	--	Flows	D,N	Reported formerly supplied sawmill boilers in dry weather; surface water used when available Temp. 70°F.
* 103	B. L. Estepp	C. K. Berry	1965	689	2	Ty	270	--	--	J,E	D	
104	A. O. Lilly	John Frye	1958	512	4	Ty	268	48.5	Mar. 11, 1966	J,E	D,S	1/
105	C. O. Estepp	Roscoe English	1964	168	4	Tj	268	60	1964	J,E	D	Screen to 12 ft.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
*UT-37-58-201	D.T. Hill	Taylor Drilling Co.	1944	185	4	Tj	232	91.0	Mar. 15, 1966	J,E	D,S	Pump set at 160 ft.
202	A.O. Lilly	A.O. Lilly	1915	18	30	Tj	268	3.2	Mar. 11, 1966	B,H	D,S	Dug well.
203	Weaver Smith	--	1930	30	48	Tj	240	3.2	Mar. 10, 1966	N	N	Do.
204	do	--	--	14	31	Tj	215	3.9	do	--	S	Dug well. Old well.
205	Southland Paper Co.	--	--	16	30	Tj	210	9.8	do	N	N	Do.
301	Harold Bates	-- Taylor	1957	875	--	--	190	--	--	--	--	Test well.
302	Lynch Davidson well 1	--	--	3,142	--	--	200	--	--	--	--	Oil test.
303	Clifford McClaskey, Sr.	Fred Stringer	1934	15	--	--	220	5.1	June 26, 1947	B,H	D,S	Dug well.
304	L. Richards	--	--	Spring	--	--	--	+	do	Flows	D	Estimated flow 1 gpm.
* 305	A. R. Snead	G. C. McClain	1963	135	2	Tj	190	55	1963	J,-	D	Drilled to 170 ft, plugged back to 135 ft. Reported from 130 to 135 ft and 160 to 165 ft; flowed 25 gpm of salt water with gas.
306	Elmer Seamans	--	--	25	36	Tj	190	12.9	June 26, 1947	B,H	S	Dug well. Old well.
307	A. R. Snead	G. C. McClain	1963	135	2	Tj	190	16.2	Mar. 15, 1966	N	N	
308	A. T. Durham	C. K. Berry	1960	180	2	Tj	227	--	--	J,E	D,S	
* 309	Mrs. U. Skinner	U. Skinner	1934	12	48	Tj	175	9.9 8.8	June 26, 1947 Mar. 15, 1966	B,H	D,S	Dug well.
310	C. S. Stamford & Jeanette Wolfe	Clayton Berry	1960	153	2	Tj	230	60	1960	J,E	D	
311	Clifford McClasky, Sr.	--	1953	104	2	Tj	220	--	--	J,E	D	
501	Mrs. Emma Pullen	Taylor Drilling	1945	160	6	Tj	280	34.9	May 27, 1947	N	N	Abandoned. 1/

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
UT-37-58-502	C. B. Bullock, Jr.	C. K. Berry	1960	200	2	Tj	185	+	1966	J,E	D,S	
503	Jay Locke	do	1952	216	2	Tj	192	--	--	--	D,S	Reported flowed two months. Makes gas.
601	J. C. Courtney	Price Miller	--	43	30	Tj	190	18.3	Mar. 16. 1966	J,E	D,S	Old well. Dug well.
702	Geo. Simmons	C. K. Berry	1964	84	--	Tj	255	35	1964	J,E	D	
* 801	Edens-Birch Lumber Co.	Taylor Drilling Co.	1944	125	8, 6	Tj	215	+	1947	Flows	N	Reported never used; sulfur water. Obtain water from the city and a spring.1/
* 802	C. Watson	H. A. Crews	1946	140	2	Tj	233	60	Feb. 1946	C,E	D,S	
* 803	O. G. Sheppard	do	1946	137	3	Tj	249	84	Mar. 1946	J,E	D,S	
* 804	E. L. Knox	--	1934	216	3	Tj	218	29	Dec. 1934	J,E	D,S	Reported slight sulfur taste.
* 805	Geo. Farrar	L. L. Marsh	1946	222	3	Tj	219	37	Nov. 1946	J,E	D	Screen from 214 ft to bottom.
* 806	Harold Woodard	--	1947	Spring	--	--	225	+	May 15, 1947	Flows	D,S	King's Spring. Estimated flow 20 gpm, May 15, 1947.
* 807	Miss Emma Edens	Lee Turner	1940	30	36	Tj	218	12.9	June 26, 1947	B,H	D,S	Dug well.
808	Tom Burchfield	Taylor Drilling	1943	203	6,4	Tj	235	29	Aug. 1943	J,E	D,S	Screen from 181 ft to bottom.1/
809	Robt. Allen	do	1944	188	6,4	Tj	235	65	Aug. 1944	J,E	D	Screen from 167 ft to bottom.1/
810	John Saxton	do	1945	207	6,4	Tj	218	40	Jan. 1945	J,E	D	Pump set at 100 ft.1/
811	J. W. Largent	L. L. Marsh	1946	296	2	Tj	230	50	Nov. 1946	J,E	N	Screen from 273-279, and 281-287 ft. Destroyed 1966.
812	Ode Jones	--	1895	40	36	Tj	220	10.8	June 26, 1947	B,H	D,S	Dug well.
813	Kenneth Knox	Albert Henderson	1956	150	2	Tj	230	60	Mar. 1966	J,E	D	Completed in fine gray sand. Reported to have had well blown out in March 1966.
814	Ira Owens Estate	Taylor Drilling Co.	1937	183	4	Tj	235	--	--	J,E	D	1/

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

	WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
									BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
	UT-37-58-815	Mrs. Carl Bergman	--	1944	25	30	Tj	241	5.1	Mar. 29, 1966	--	D,S	Cased with brick to bottom. Reported to nearly go dry in summer.
	816	Fred E. Smith	G. C. McClain	1963	117	2	Tj	232	--	--	J,E	D	Reported fine sand comes through screen.
	817	Henry E. Fox	do	1965	95	2	Tj	240	35	Apr. 1965	J,E	D	
*	818	Jess Locke	Jess Locke	1943	22	24	Tj	230	18.0	May 27, 1947	B,H	D,S	Dug well. Cased with wood.[1]
*	901	-- Reinhardt well 1	Layne-Texas Co.	1959	1,512	--	Tj	200	--	--	T,E, 25	Ind	Cased from 50 to 1,100 ft. Pump set at 250 ft. Temp. 79°F.
	902	Cameron Heirs well 1	Rio Rico Oil Co.	--	5,027	--	--	225	--	--	--	--	Oil test.
	903	Champion Paper Co.	Zeke Hollins	1957	172	36	Tcs	211	4.4	Mar. 16, 1966	C,E	N	Unused.
*	59-401	Southland Paper	--	--	Spring	--	--	250	+	--	Flows	N	Estimated flow 5 gpm, June 26, 1947.
	402	J. N. Doggs	C. K. Berry	1962	375	2	Tj	190	--	--	J,E	D,S	Screen from 50 ft to bottom.[1]
	701	Willie Reinhardt	--	1880	6	30	Tj	195	+	Mar. 17, 1966	Flows	D,S	Estimated flow 10 gpm, Mar. 17, 1966. Dug well. Temp. 66°F.
*	702	W. C. Hood	W. S. Rowe	1966	132	2	Tj	165	.5	May 28, 1966	J,E	D	[1]
	901	Carter, well 1	-- Reinhardt	--	--	--	--	200	--	--	--	--	Oil test.[2]
	301	Saner-Rugley well 1	J. Z. Werby	1944	3,908	--	--	279	--	--	--	--	Oil test. Sand from 140-295 ft. Surface casing set at 330 ft.
*	801	A. C. Elepy	do	1964	225	2	Tcs	191	25	1964	J,E, 1½	D,S	Measured discharge 15 gpm.
	802	Trinity Lumber	Gulf Oil Corp.	--	--	--	--	200	--	--	--	--	Oil test.
*	901	James Hargroves	--	1939	58	8	J	281	50.6	July 23, 1947	B,H	D	Bored well.
	201	Gulf Pipeline	J. S. Murchison	1953	680	4	--	155	--	--	N	N	Abandoned.
	202	West Texas Gulf Pipeline Co.	-- Henderson	1958	172	4	Tcs	147	16	1965	T,E, 2	Ind	Reported discharge 50 gpd.

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
UT-60-15-301	William Tipton	William Tipton	1957	28	8	Tcs	228	6.4	May 4, 1966	B,H	D,S	Bored well.
302	Burt Hodge	Charles Stokes	1961	32	8	Tcs	165	17.0	do	B,H	D,S	Bored well. Reported inadequate water supply.
* 602	Walter Dahl	W. T. Dahl	1927	30	36	Tcs	135	4.7	June 12, 1947	B,H	N	Dug well. Unused since 1966.
603	Charles E. Cook	Charles E. Cook	1950	25	30	Tcs	152	20.5	May 4, 1966	J,E	D,S	Dug well.
* 604	Walter Dahl	G. C. McClain	1963	192	2	Tcs	143	5	1963	J,E	D,S	
605	W. A. Cook	Aaron Churchill	1945	25	8	Tcs	157	25.9	May 4, 1966	B,H	N	Dug well. Cased to bottom.
606	Chas. Cook	Chas. Cook	1947	20	1½	Tcs	151	18	Apr. 1947	N	N	Driven well. Destroyed.
607	Clancy, well 1	Thomas Concert	--	5,259	--	--	141	--	--	--	--	Oil test.[2]
608	Dela Cattle Co.	Lively & Brooks	--	2,300	--	--	125	--	--	--	--	Do.
609	L. P. Atnor well 1	Christian & Harris	--	--	--	--	125	--	--	--	--	Do.
16-101	Harry Marcus	--	1940	250	4	Tcs	165	+	--	Flows	S	Estimated flow ½ gpm, July 12, 1966.
* 201	N. A. Crawford	--	1938	250	4	Tcs	165	.6	July 12, 1966	J,E	D,S	Estimated flow 2 gpm, July 12, 1947.
202	J. Robinett	Aaron Churchill	1944	40	8	J	192	26.3	June 12, 1947	B,H	D,S	Bored well. Cased to bottom.
203	Mason Churchill	--	--	59½	8	Tcs	190	51.2	July 12, 1966	B,H	D	Bored well.
* 301	Arch Hood	Wylie Hood	1893	18	48	J	300	15.7	July 23, 1947	C,E	D,S	Dug well.
* 302	W. R. Williamson	--	1947	Spring	--	Ch	310	--	--	Flows, Cf,E	--	Known as Carlton Spring. Temp. 67°F.
303	do	--	--	21	24	Ch	325	13.8 15.8	May 9, 1947 July 14, 1966	B,H	N	Abandoned.
* 304	do	Gordon Baggett	1956	500	3	Tcs	320	--	--	J,E, 3	D,S	Screen from 300 ft to bottom. Temp. 73°F.
305	--	--	--	21	36	J	283	9.1	July 14, 1966	N	N	Unused.

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
*UT-60-16-401	Wm. Carlisle & Co.	Gus Warnecke	1906	285	6	Tcs	128	+ 3	June 1947	Flows, Cf,G, 6	P	Measured flow 7 gpm, Mar. 15, 1947. Supplies water for 30 families. Temp. 70°F.
* 402	do	do	1906	285	6	Tcs	116	+	--	N	N	Abandoned industrial well. Temp. 71°F.
* 403	do	do	1907	350	8	Tcs	140	+	--	N	N	Destroyed.
* 404	A. F. Read	--	1942	320	3	Tcs	165	23 35.4	1942 Apr. 5, 1966	C,W	D	Cased to bottom. Screen from 300 ft to bottom.
405	Clancy, well 1	Spear Oil Co.	--	3,449	--	--	182	--	--	--	--	Oil test. 2/
406	Evan Andress	--	--	30	8	J	233	19.3 20.5	June 12, 1947 May 17, 1966	B,H	D,S	Bored well. Cased to bottom.
407	T. I. Simons	G. C. McClain	1965	236	2	Tcs	210	75	Sept. 1965	J,E	D	Cased to 231 ft. Screen from 200 ft to bottom. 1/
408	John F. Bocklett	do	1965	220	2	Tcs	230	75	Sept. 1965	--	D	Cased to bottom. Screen from 210 ft to bottom. 1/
409	Ted Vaughn	do	1965	85	2	J	180	40	July 1965	J,E	D	Cased to 80 ft. Screen from 75 ft to bottom. 1/
410	Major Huette	W. S. Lowe	1966	99	2	J	175	--	--	J,E	D	1/
501	Ben Haughey	Evans Andrews	1922	59	6	J	160	50	July 1922	B,H	D,S	Bored well. Unused since 1966.
502	Lute Anderson	E. Miller	1955	300	3	Tcs	165	22	1955	J,E	D	
503	Ben J. Hovey	Ben J. Hovey	1957	43½	8	J	218	38.0	July 13, 1966	--	D,S	
* 701	L. S. Stanford	--	1937	15	1½	Qal	112	5	1937	Cf,E	N	Unused 1966.
702	T. D. Stanford	-- Gay	1964	75	--	J	140	--	--	--	D	
* 703	C. L. Stanford	E. Miller	1963	500	4	Tcs	116	+	1966	J,E, Flows	D	Estimated flow 20 gpm. Screen from 360 ft to bottom.
* 801	L. O. Jackson	Long Drilling Co.	1933	840	10	Tcs	112	+ 25	1933	Flows	S	Measured flow 15 gpm, 1960 and 1966. Drilled to 5,557 ft; plugged back to 840 ft.

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
UT-60-16-802	Kickapoo Farms	Humble Oil & Refining Co.	1930	1,445	9	Tcs	108	+ 20	1930	Flows	S	Oil test; converted to water well. Reported flow 15 gpm, June 4, 1947.
803	Jackson, well 1	--	1937	5,557	--	--	119	--	--	--	--	Oil test.[1/][2/]
804	J. J. Burris	E. Miller	1957	450	4	Tcs	110	3.2	July 13, 1966	--	S	Unused.
805	do	do	1963	460	2½	Tcs	110	--	--	Flows	Ind	Estimated flow 25 gpm in 1966. Screen from 300 ft to bottom. Temp. 74°F.
806	T. D. Stanford, well 1	-- Kountz	--	5,500	--	--	121	--	--	--	--	Oil test.[2/]
807	T. D. Stanford well 2	do	--	3,220	--	--	118	--	--	--	--	Do.
808	T. D. Stanford well 3	do	--	3,451	--	--	117	--	--	--	--	Do.
809	T. D. Stanford	E. Miller	--	3,226	--	--	119	--	--	--	--	Oil test.[2/]
810	do	do	--	3,270	--	--	117	--	--	--	--	Do.
* 811	H. W. Tilson	--	1937	420	4	Tcs	109	+ 30	1937	Flows	S	Cased to bottom. Screen from 400 ft to bottom. Estimated flow 1 gpm in 1947. Reported water seeps into lake.
812	Andrew Jackson	Andrew Jackson	1945	51	8	J	172	44.2	May 27, 1966	--	D,S	
813	Mrs. Ruby Chain	--	--	39	--	J	206	29.8	do	Cf,E	S	Bored well; concrete curbing, open end. Reported water unfit for human consumption.
814	Francis Ridley	G. C. McClain	1965	225	2	J	200	102	June 1965	J,E	D	Cased to 220 ft. Screen from 215 to 225 ft.[1/]
* 23-302	M. L. Walker & Son	--	1939	30	1½	Qal	111	--	--	B,H	D,S	
602	C. L. and E. E. Cochran	--	1965	510	2	J	104	+	July 20, 1966	Flows	D,S	Estimated flow 2 gpm. Reported supplies water to fill lake.

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent--Continued

	WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
									BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
	UT-60-23-606	C. L. and E. E. Cochran	--	1966	140	4	J	104	13.6	July 20, 1966	J,E	D	Reported well flowed for several years, stopped flowing when dynamited. Supplies water for camp house.
*	24-101	M. L. Walker &	Baggett Drilling Co.	1947	352	2	J	111	+	--	Flows	S	Cased to bottom. Screen from 337 ft to bottom. Measured flow 12 gpm in 1947; 5 gpm in 1960, and 3 gpm in 1966. Temp. 72°F.
*	102	do	do	1947	338	2½	J	122	+12	1947	Flows	D	Cased to bottom. Screen from 330 ft to bottom. Reported flow 5 gpm, Feb. 1947. Temp. 74°F.
	103	M. L. Walker	-- Baggett	1957	312	3	--	115	--	--	T,E	S	
	104	-- Walker	-- McClain	1964	94	2	--	122	--	--	--	D,S	
	105	M. L. Walker	-- Baggett	1950	54	2	--	122	--	--	J,E	D	
*	106	Dawson et al.	E. Miller	1964	230	4	J	155	50.9	July 22, 1966	T,E, 3	P	Estimated discharge 25 gpm. Temp. 73°F.
	107	Rayburn Carroll	C. C. Tullos	1947	95	4	J	167	48	Aug. 1947	N	N	Destroyed 1966.
	108	Leta and Cecil Birdsong	J. I. Jackson	1944	130	2½	J	162	40	1944	J,-	D,S	
*	201	D. B. Dominey	A. Cooper	1941	34	36	J	153	32.1	June 2, 1947	N	N	Dug well. Destroyed.
	202	do	C. C. Tullos	1947	55	4	J	153	38	July 1947	N	N	Abandoned.
	203	do	E. Miller	1960	48	2	J	153	--	--	--	D,S	
	301	J. E. Newbill	-- Stoke	1949	36	8	J	205	28	1949	N	D	Bored well.
	302	do	E. Miller	1951	280	2	J	207	--	--	J,E	D	
	303	H. L. Cheatham	-- Jasper	1952	265	2	J	165	--	--	J,-	D	1/
*	401	E. E. Cochran	E. Miller	1957	240	2	J	101	.4	July 20, 1966	--	S	Temp. 71°F.
	402	Hampton Poorman	do	1950	190	4	J	101	+	do	Flows	S	Temp. 72°F.
	403	do	do	1950	190	4	J	191	+	July 26, 1966	Flows	D	Measured flow ½ gpm, July 26, 1966. Temp. 72°F.

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent--Continued

	WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
									BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
	UT-60-24-404	Hampton Poorman	--	--	20	2	Qal	106	5.9	July 20, 1966	--	N	
	405	M. S. Jackson	Murphy Bros.	1946	146	3	J	162	60	Sept. 1946	N	N	Unused. Will install pump as soon as electricity is available.
*	406	do	--	1944	70	3	J	125	50	Sept. 1946	C,G	D,S	Cased to bottom. Screen from 50 ft to bottom.
*	501	J. C. Caruthers	--	1937	75	6	J	165	50	1937	J,E	D,S	Cased to bottom. Screen from 72 ft to bottom. Supplies water for dairy.
*	502	Mrs. J. W. Cochran	--	1944	23	2	Qal	99	15	1944	Cf,E	D,S	Cased to bottom. Screen from 20 ft to bottom.
	503	E. E. Cochran	--	1960	22	8	Qal	105	17.0	July 20, 1966	J,E	N	
*	602	Hill Morrison	-- Deats	1957	460	12	J	89	23	1957	T,E, 100	Irr	Cased to bottom. Screen from 5 ft to bottom. Measured discharge 1,280 gpm. Supplies water for pasture land.
*	603	-- Helton	--	--	70	8	J	150	62.0 59.5	July 24, 1947 May 12, 1966	C,W	N	Abandoned.
	604	T. W. Elliott	Joe Ferguson	1964	147	2	J	152	47	1966	J,E	D,S	
	605	J. G. Brock	--	1945	150	4	J	145	--	--	--	S	Used as standby well.
	606	Alfred Chapman	E. Miller	1965	100	2	J	151	--	--	--	D,S	
	607	do	--	--	58	8	B	151	56.9	July 20, 1966	N	N	
	608	J. G. Brock well 1	G. C. McClain	1965	140	2	J	150	58	May 1965	J,E	S,Ind	Cased to 130 ft. Screen from 130 ft to bottom.
	609	J. G. Brock well 2	do	1965	150	4	J	148	57	July 1965	J,E	Ind	Cased to 126 ft. Screen from 130 ft to bottom. Estimated discharge 3,000 gpd by Brock.
*	905	Gay & Son	Gay & Son	1964	290	4	J	152	--	--	--	P	Temp. 72°F.
*	32-301	Archie Young	do	1960	240	4	B	102	14	1966	T,E,2	P	Supplies water for 8 houses. Temp. 71°F.

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent--Continued

	WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
									BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
	UT-60-32-302	C. G. Lowe	E. Miller	1952	325	2	J	102	--	--	J,E	D,S	Temp. 72°F.
	307	Jack Bergman, well 1	Jack Frazier	1938	4,219	--	--	100	--	--	--	--	Oil test.
*	61-01-101	R. M. Eagle	Taylor Drilling Co.	1946	434	6	Tj	290	80 64.4	May 1946 May 11, 1960	T,E	N	Screen from 384-404 ft.[1]
*	102	Edens-Birch Lumber Co.	University of Texas	1941	35	3	Tcs	265	+	--	Flows	S	Reported flowed 200 gpm, Oct. 1941.[1]
	103	L. J. Wilkins	--	1895	30	24	Tj	300	1.2	Feb. 25, 1966	B,H	D,S	Dug well. Reported cannot pump dry with a 2-in. pump.
	201	Lanam-Ragley well 1	Producers-Investors Corp.	--	7,658	--	--	314	--	--	--	--	Oil test.[2]
	202	B. H. Fann	B. H. Fann	1936	30	30	Tcs	300	16.1	Feb. 25, 1966	C,E	D,S	Dug well.[1]
*	301	W. F. Edens	Taylor Drilling Co.	1944	225	6	Tj	275	46.8	do	J,E	D,S	Screen from 205 ft to bottom.[1]
*	302	do	--	--	Spring	--	Tcs	300	+	May 22, 1947	Flows	N	Estimated flow 1 gpm, May 22, 1947.
*	303	S. N. Adams	Clayton Berry	1950	600	4	Tj	320	--	--	T,E	D,S	
	304	Cameron Heirs	--	--	12,781	--	--	286	--	--	--	--	Oil test.[2]
	305	S. N. Adams	C. K. Berry	--	700	4	Tj	322	--	--	-N	-N	Abandoned.
	401	Saner-Ragley Lumber Co.	--	1910	35	36	Tcs	270	4.5	June 7, 1947	B,H	N	Dug well. Reported unused in 1966.
	402	J. S. Evans, Jr	--	1875	60	30	Tcs	322	11.1	do	B,H	N	Do.
	701	Gale McClain	H. A. Crews	1945	314	--	Tcs	285	--	--	--	N	Screen from 50 ft to bottom. Reported unoccupied in 1966.
	702	R. F. Evans	C. C. Tullos	1947	25	4	Tcs	325	8	Aug. 1947	C,H	D,S	Screen from 13 ft to bottom.
*	703	J. C. Coker	G. C. McClain	1965	130	2	Tcs	310	90	Dec. 1965	J,E	D	Screen plastic from 120 ft to bottom. Temp. 70°F.[1]
	704	Joe Pridgen	do	1965	126	2	Tcs	310	80	Oct. 1965	J,E	D	Screen plastic from 115 to bottom.[1]

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent--Continued

	WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
									BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
	UT-61-01-705	B. H. Jones	G. C. McClain	1965	120	2	Tcs	310	70	Oct. 1965	J,E	D	Screen plastic from 110 ft to bottom.[1]
	706	M. E. Clark	do	1965	140	4	Tcs	320	100	Oct. 1965	T,E	D,S	Cased to 130 ft. Screen from 120 ft to bottom.[1]
*	801	Jaggers &	C. Barlow	1928	25	36	J	345	2.2	Mar. 11, 1947	B,H	D,S	Dug well. Concrete casing.[1]
*	901	Webb McQueen	McQueen and Jefferson	1943	24	24	J	345	20.4	July 23, 1947	B,H	D,S	Dug well. Cased to bottom.
	902	Cecil Price	--	--	30	30	J	310	8.8	Mar. 30, 1966	B,H	D,S	Dug well. Reported nearly goes dry in dry years.
	903	do	G. C. McClain	1963	140	2	J	310	--	--	J,E	D,S	Screen from 0 to 140 ft.
	904	Clyde Adams, Sr.	--	1958	44	8	J	300	10.7	Mar. 30, 1966	J,E	D	Concrete casing; open end. Reported supply of water too small for household use.
	905	-- Hemphill	G. C. McClain	1964	199	2	J	280	32	1964	J,E	D,S	
*	906	W. P. Scurock	--	--	30	30	J	345	--	--	--	N	Unused. Old well.
	907	Henry Hill	W. S. Rowe	1966	117	2	Tcs	300	--	--	J,E	D	Screen from 40 ft to bottom.
	02-101	Lem Lafferty	H. A. Crews	1946	195	2	Tj	275	--	--	J,E	D	Screen from 189 ft to bottom.
*	102	Mrs. Geo. F. White	--	1887	25	24	Tcs	275	2.3	May 22, 1947	B,H	D	Screen to bottom.
*	103	Clayton K. Berry	R. L. Taylor	1945	200	6	Tcs	280	50 58.9	June 1965 May 10, 1966	J,E	D,Ind	Screen from 179 ft to bottom.
	104	Leon Garrett	H. A. Crews	1945	165	2	Tcs	230	25	1945	J,E	D	Screen from 159 ft to bottom.
	105	Lynch Davidson well 1	Jordan Drilling Co.	--	--	--	--	266	--	--	--	--	Oil test.[2]
	106	Southwest Forest Industries	C. K. Berry	1960	125	4	Tcs	218	--	--	T,E, 3	Ind	
	107	do	do	1962	125	6	Tcs	218	--	--	T,E	Ind	
	108	J. B. Chandler	Taylor Drilling Co.	1944	218	6	Tj	245	20	1944	C,G, 2¾	S	Cased to 213 ft. Screen from 193 ft to 213 ft.

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
*UT-61-02-201	City of Corrigan	A. E. Fawcett	1944	180	8	Tj	240	--	--	T,E, 7½	P	Cased to bottom. Reported discharge 175 gpm. Screen from 150 ft to bottom.
* 202	do	do	1937	200	8	Tj	240	35	1937	T,E, 7½	P	Cased to bottom. Screen from 170 ft to bottom. Reported discharge 125 gpm, Oct. 25, 1941. Corrigan municipal water supply.
203	W. Hestos	Murphy Bros.	1946	100	2	Tj	235	50 27.5	1946 Mar. 16, 1966	J,E	D	Cased to bottom. Screen from 94 ft to bottom. Obstruction at 43 ft.
* 204	R. H. Reilly	C. K. Berry	1963	440	2	Tcs	255	--	--	J,E	D	
301	Pyrd Pervis	do	1964	64	2	Tcs	215	22	1964	--	D	
302	do	do	1964	54	2	Tcs	215	22	1964	J,E, 1	D	
303	F. M. Kennedy	do	1961	219	3	Tcs	250	50	1961	J,E, 1½	D,S	
304	do	--	1942	35	30	Tcs	250	13.8	Mar. 16, 1966	J,E, ½	D	Dug well. Reported goes dry in summer.
305	Jim Lunsford	--	--	31	30	Tcs	320	2.7	do	J,E, Cf	D	Dug well. Cement casing; open end. Old well.
401	Moscow Colored School	L. L. Marsh	1946	50	--	J	305	--	--	N	N	Reported no water.
* 501	C. E. Seaman	Baggett Drilling Co.	1947	535	4	Tcs	360	120	June 1947	J,E, 2	D	Cased to 350 ft. Screen from 330 to 350 ft. Sand from 330-350 ft; rock from 350-353 ft. Reported discharge 512 gph. Supplies water for service station.
* 502	G. C. McClain	--	1919	25	36	J	370	20.0	July 23, 1947	Cf,E	P	Concrete casing. Supplies water for 6 families.
503	Jim Spears	L. L. Marsh	1947	70	2	Tcs	330	38	Mar. 1947	C,H	N	Screen to 66 ft. Reported flowed 2 days when drilled.
504	Vergie Higgins	do	1947	110	2	Tcs	305	48	Mar. 1947	C,H	N	Abondoned.

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
UT-61-02-505	J. M. Walker	L. L. Marsh	1946	218	4	Tcs	360	14	Dec. 1946	N	N	Cased to bottom. Screen from 212 ft to bottom. Unused.
* 506	Gordon Reilly	John Fyre	1956	252	6	Tcs	330	--	--	T,E, 5	D	Screen from 222 ft to bottom. Supplies water for swimming pool.
507	Robert Blair	G. C. McClain	1965	126	2	Tcs	310	75	May 1965	J,E	D	Plastic casing. Screen from 121 ft to bottom.1/
508	Joe Kovar	do	1965	126	2	Tcs	340	40	Nov. 1965	J,E	D	Plastic casing to 121 ft. Screen from 110 ft to bottom.1/
509	Floyd Eleby	-- Gay	1955	225	2	Tcs	340	--	--	J,E, 1	D	Screen to 225 ft.
* 510	Moscow Public School	--	1904	25	36	J	365	12.4	Aug. 5, 1947	Cf,E	P	Dug well.
601	H. L. Ericson	Gay & Son	1966	399	4	Tcs	375	186	1966	T,-	D	Screen from 376 to 390 ft.
602	J. H. Wilson	--	1942	14	30	J	270	11.6	May 25, 1966	N	N	Dug well.
603	Lucille Manry	--	1910	44	30	Tcs	305	20.9	May 26, 1966	N	N	Do.
604	Arch Purvis	Arch Purvis	1945	20	30	Tcs	275	9.9	Mar. 29, 1966	C,E	D,S	Do.
605	Fred Sage, Jr.	C. K. Berry	1965	259	2½, 2	Tcs	290	66	July 1965	J,E	D,S	Casing: 2½-in. to 214 ft; 2-in. from 214 to 251 ft; 8-in. finish.
606	B. J. Pate	Emanuel Miller	1957	188	2	Tcs	280	8	1957	J,E	D,S	
701	Isaac Jefferson	Isaac Jefferson	1943	16	36	J	280	12	Nov. 1943	B,H	S	Dug well. Wooden casing.
702	Mrs. Polly Martin	L. L. Marsh	1947	22	22	J	340	16	Feb. 1947	C,H	N	Reported house burned in 1965. Unused.
* 703	D. Duncan	Gay & Son	--	386	4	Tcs	270	42.0 34.4	Apr. 21, 1966 Aug. 19, 1966	--	S	Temp. 72°F.
704	C. E. Seamons	G. C. McClain	1957	200	2	Tcs	325	42	Mar. 1966	A,E	D,S	Do.
705	T. E. Jones	Aline McClain	1963	147	4	J	230	+	--	Flows	D,S	Measured flow 5 gpm. Temp. 68°F.
706	J. A. Clay	do	1954	135	2	J	260	--	--	--	D,S	

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
*UT-61-02-801	W. O. Parrish	W. O. Parrish	1942	26	6	J	365	16	May 1947	B,H	D	Bored well. Cased to 14 ft with wood.
* 802	M. J. Taylor	Baggett Drilling Co.	1947	411	3	Tcs	380	130	June 1947	J,E	D	Cased to bottom. Screen from 386 ft to bottom.
901	N. K. Lee	Bill Darden	1951	56	24	J	400	49.0	July 19, 1966	J,E	D	Dug well. Concrete casing to bottom.
03-101	C. W. Splettstosser	C. W. Splettstosser	1946	12	30	Tcs	220	6.0	June 26, 1947	Cf,E	N	Destroyed in February 1966.
* 102	do	C. K. Berry	1966	305	2	Tcs	220	35	1966	--	D,S	
103	J. C. Sirmam	--	--	16	30	Tcs	260	8.4	Mar. 17, 1966	C,E	D	Dug well. Old well.
104	A. J. Howard	--	1935	18	30	Tcs	330	11.6	Mar. 30, 1966	N	N	Dug well. Unused. Reported went dry in 1964, when highway cut was made.
105	do	C. K. Berry	--	105	2	Tcs	330	--	--	J,E	D,S	
106	Willie Hickman	J. R. Williams	1907	18	30	J	330	9.9	Mar. 30, 1966	C,E	D,S	Dug well.
* 201	M. A. Swearingen	--	--	20	30	J	280	8.8	July 22, 1947	B,H	D,S	Dug well. Old Well.
202	R. S. Nowlin	-- Snowden	1964	265	2	Tcs	280	55	1964	J,E	D,S	
203	Sam Nowlin	G. C. McClain	1965	295	2	Tcs	295	142	Apr. 1965	J,E, 2	D	Cased to 290 ft; plastic casing. Sand from 285 ft to bottom.
204	C. E. Pate	C. K. Berry	1961	175	2	Tcs	325	--	--	A,E	D,S	
205	do	--	1935	28	36	Tcs	260	6.8	Mar. 30, 1966	J,E	D,S	Bored well. Cased to bottom.
* 301	H. A. Willson	-- Hennington	--	72	10	Tcs	265	--	--	J,E	N	Unused. Old well.
* 302	John W. Old	C. K. Berry	1965	636	3	Tcs	265	--	--	A,E,3	D	
401	Allen Griswald	--	1940	25	30	J	295	4.6	June 1, 1966	N	N	Dug well.
402	O. C. Nowlin	--	--	24	30	J	280	15.9	do	J,E	S	Dug well. Concrete casing. Temp. 66°F.
501	O. N. Swearingen	--	--	27	18	Tcs	275	15.0	July 22, 1947	B,H	D,S	Dug well. Concrete casing.

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas --Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
UT-61-03-602	Polk County School Board	H. A. Crews	1942	124	2	J	245	45	1942	J,E	P	Cased to bottom. Screen from 114 ft to bottom. Supplies water for about 220 students.
* 603	Roosevelt Johnson	G. C. McClain	1965	188	2	Tcs	225	35	Mar. 1965	J,E	D	Plastic casing from 150 ft to bottom. Cased to 183 ft. Temp. 71°F.[1]
* 604	H. A. Willson	Crews & Crews	1951	264	--	Tcs	265	--	--	J,E	D,S	Screen from 250 ft to bottom.
605	J. D. Hood	do	1957	150	2	J	250	--	--	J,E	D	Supplies water for about 6 houses.
* 701	W. T. Carter & Bro., well 4	Layne-Texas Co.	1955	582	14, 8, 6	Tcs	325	172	May 1955	T,E, 50	P,Ind	Cased to 759 ft; plugged back to 582 ft. Screen from 260-275, 300-310, 325-335, 370-385, 440-450, 510-520, 535-545, and 560-570 ft. Supplies water for a sawmill and the town of Camden with wells 23 and 45. Drawdown 105 ft after 24 hours pumping 350 gpm. Temp. 75°F.
702	W. T. Carter & Bro., well 3	do	1951	525	16, 10, 6	Tcs	320	250	1951	T,E, 40	P,Ind	Drilled to 600 ft; plugged back to 525 ft. Reported discharge 175 gpm. Screens from 280-340, 350-360, 450-470, 495-515 ft. Cased to 525 ft.[2]
703	W. T. Carter & Bro., well 2	do	1950	420	14	Tcs	320	199	1950	T,E, 60	Ind	Cased to bottom. Drawdown 86 ft after pumping 300 gpm.[1]
* 704	W. T. Carter & Bro., well 1	Layne-Texas Co.	1935	404	12, 8	Tcs	320	--	--	T,E, 120	P	Cased to 402 ft. Screen from 362-420 ft. Supplies water for company buildings, houses, and public school.[1]
* 705	R. D. Randolph	--	1941	325	6	Tcs	320	130.2	June 6, 1947	N	N	Abandoned.
706	Burdett Freeman	Burdett Freeman	1933	16	30	J	275	6.6	June 1, 1966	--	D,S	Dug well.
707	Alger Freeman	--	--	--	30	J	340	14.5	do	N	N	Do.
* 708	W. T. Carter & Bros., well 5	Layne-Texas Co.	1964	778	8, 6	--	320	211	Sept. 1964	T,E	Ind	Screen from 345 to 650 ft. Drawdown 108 ft while pumping 400 gpm. Gravel-packed.[1]

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
UT-61-03-801	W. T. Carter & Bros. well R-1	--	1965	3,653	--	--	324	--	--	--	--	Oil test.
* 802	John Hanley	-- Blithwood	1962	402	2	J	305	--	--	J,E	D,S	
803	W. L. Javis	Crews & Crews	1954	95	--	J	265	--	--	J,E	D,S	
804	Mrs. Laura David	do	1953	150	2	J	275	--	--	J,E	D,S	
903	-- Pierce, well 1	--	1953	7,024	--	--	270	--	--	--	--	Oil test.
* 904	J. Z. Davis	Davis & Whitworth	1928	37	36	J	310	20.5	July 22, 1947	B,H	D,S	Dug well.
905	J. M. Whitworth	Don Gay	1956	110	2	J	305	--	--	J,E	D,S	
906	Taylor Morrell	Crews & Crews	1951	190	2	J	335	--	--	J,E	D,S	
907	A. L. Gulley	--	1950	18	30	B	322	9.8	Mar. 30, 1966	C,E	D,S	Dug well.
908	Therman Gulley	Crews & Crews	1960	400	2	J	320	--	--	J,E	D,S	
* 09-101	Pan-American Pipeline Co.	--	1941	-- 576	--	Tcs	265	53.7	July 26, 1951	N	N	Unused. Reported plant to be moved soon.
* 102	Bold Spring Public School	--	1947	Spring	--	Ch	--	+	May 9, 1947	Flows	P,S	Estimated flow 3 gpm, May 9, 1947. Supplies water for Bold Spring Public School and store.
* 103	Geo. Grimshaw	--	1868	25	4 x 4	Ch	380	19.4	do	B,H	N	Dug well. Unused.
104	do	-- McClain	1957	105	2	J	380	--	--	J,E	D,S	Slotted pipe from 30 ft to bottom.
105	Cloice Chalker	C. K. Berry	1963	224	2	J	385	--	--	J,E	N	Abandoned. Unfit for household use.
106	R. H. Rogers	E. Miller	1956	131	2	J	270	--	--	J,E	D	
107	Wilburn Chalker	Wilburn Chalker	1950	22	24	Ch	385	13.0	July 14, 1966	--	D	Bored well. Cased to 17½ ft with concrete.
201	Champion, well 1	-- Kountze	--	--	--	--	--	--	--	--	--	Oil test.

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
UT-61-09-202	Champion, well 2	-- Kountze	--	5,642	--	--	239	--	--	--	--	Oil test.[2]
301	Arbra Bailey	Fred Morton	1943	12	24	J	250	7.6	July 17, 1947	B,H	D,S	Dug well. Concrete tile curbing.
302	Wirt Davis	--	1922	35	30	J	250	10.6	do	C,W	D,S	Dug well. Concrete curbing to bottom.
401	do	Williams Drilling Co.	1937	401?	10	--	314	+	--	Flows	--	Oil test. Cased to 155 ft. Sand from 156 to 200 ft. Reported strong flow of water from 150 to 200 ft.
* 402	Mrs. Emma Rogers	Payne & Rogers	1932	50	8	J	245	27.6	May 9, 1947	B,H	D,S	Bored well. Tile casing to bottom.
501	Alexander, well 1	Shell Oil Co.	--	15,196	--	--	271	--	--	--	--	Oil test.[2]
601	K. W. Davis well 1	do	--	3,400	--	--	221	--	--	--	--	Do.
* 602	Texas Long Leaf Lumber Co.	--	--	300	8	J	230	35.5	June 5, 1947	A,-	N	Used as standby well. Old well.
* 603	do	Layne-Texas Co.	1912	412	8, 4	J	230	--	--	A,-	N	Cased to 300 ft. With well 198 supplies water for sawmill company houses, and buildings. Surface water used for boilers when available. In dry weather water is treated before being used in boilers.
604	E. H. Watson	H. A. Crews	1946	88	2	J	215	30	Oct. 1946	C,E	D	Cased to bottom. Screen from 82 ft to bottom.
605	Lee Wyatt	--	1950	30	8	J	200	21.7	May 20, 1966	--	D	Supplies water for 5 houses.
701	Luthe, well 1	-- Jordan	--	6,001	--	--	283	--	--	--	--	Oil test.[2]
702	A. L. Luthe well 1	Standard of Texas	--	10,992	--	--	285	--	--	--	--	Do.
* 703	Joe McKinnon	Joe McKinnon	1947	42	8	J	225	32.0	July 23, 1947	B,H	D	Bored well.
704	Nolan Watts	Emanuel Miller	1963	250	2	J	205	--	--	J,E	D	

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
*UT-61-09-801	Frank Jordan	--	--	185	8	J	160	+12	Mar. 1947	Flows, J,E	D,S	Measured flow 25 gpm, Mar. 5, 1947. Temp. 69°F.
* 802	do	--	--	775	4	J	150	+20	Mar. 1947	N	S	Measured flow 30 gpm, Mar. 5, 1947. Temp. 68°F.
803	Tommy & Donald Blakeley	-- McClain	1950	351	3	J	220	39.6	May 20, 1966	--	D,S	
804	do	do	1964	205	4	J	220	13.2	do	T,-	D,S	
805	Ed Thomas	G. C. McClain	1963	220	3	J	160	--	--	--	S	Supplies water for fish pond. Reported by owner do not measure well, may sand up.
* 901	J. M. Rogers	Paint Woods	1934	116	6	J	180	30	1934	C,W	N	
* 902	E. C. Swilley	H. A. Crews	1945	282	2	J	240	50	1945	J,E	D,S	Cased to bottom. Screen from 276 ft to bottom. Sand from 265 ft to bottom.
* 903	J. W. Richards, Jr.	do	1946	286	2	J	220	70	1946	C,E	D,S	Cased to bottom. Screen from 276 ft to bottom.
904	M. Foster	C. S. Gay	1926	2,522	10	--	190	--	--	--	--	Oil test.2/
905	Nathan Oates	C. C. Tullos	1947	186	2	J	200	68	Mar. 1947	J,E	D	Cased to 178 ft. Screen from 168 to 178 ft.
906	W. C. Swilley	--	1932	50	24	J	190	36	1940	C,E	D	Dug well. Cased to bottom.
907	Sue Williams	G. C. McClain	1965	300	2	J	185	50	1965	J,E	D	Cased to 273 ft. Screen from 244 ft to bottom.1/
* 10-101	Texas Long Leaf Lumber Co.	Paint Woods	1935	150	6	J	245	17.0	Mar. 21, 1947	B,H	D	Supplies water for 15 houses.
* 102	Mrs. Geo. Ely	--	1893?	420	4	Tcs	240	+	--	Flows	S	Estimated flow 10 gpm, Mar. 20, 1947; 5 gpm in 1966. Reported water flows into lake.
* 103	Viola Jones	Cooper & Wilson	1936	25	36	J	225	13.9	Apr. 2, 1947	B,H	N	Destroyed.1/
104	J. W. Fortner	G. C. Booth	1934	1,312	--	--	230	--	--	--	--	Oil test.2/

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

	WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
									BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
	UT-61-10-105	J. W. Fortner	Ralph Holcomb	1922	2,826	--	--	--	--	--	--	--	Oil test.2/
	106	do	C. S. Gay	1924	1,557	--	--	230	--	--	--	--	Do.
	107	Roy Bloodworth	Murphy Bros.	1946	146	4	J	260	--	--	J,E	D	Cased to bottom. Screen from 140 ft to bottom.
	108	T. E. Jones	C. C. Tullos	1947	136	4	J	280	--	--	A,E	D	Cased to bottom. Screen from 126 ft to bottom. Reported discharge 100 gph.
	109	Seven Oaks Oil Co.	Seven Oaks Oil Co.	1920	2,018	--	--	225	--	--	--	--	Oil test.2/
	110	V. Jones	G. C. McClain	1965	266	2	J	275	80	Oct. 1965	J,E	D	Cased to 261 ft. Screen from 250 ft to bottom. Reported discharge 5 gpm.1/
	111	J. J. Jefferson	--	1950	37	8	J	225	17.4	Apr. 20, 1966	--	D	Bored well. Reported good supply of water.
	301	Southland well A-1	--	--	3,600	--	--	398	--	--	--	--	Oil test.2/
*	401	W. H. Freeman & Son	--	1914	1,000	8	Tcs	250	30 32	1914 Nov. 1959	J,E	P	Cased to bottom. Screen from 750 ft to bottom. Supplies water for 7 houses.
*	402	C. C. Tullos, Sr.	C. C. Tullos, Jr.	1947	116	4	J	260	40 51.8	Apr. 1947 Mar. 20, 1966	J,E	D	Cased to 108 ft. Screen from 98 ft to bottom.
	403	T. E. Jones	G. C. McClain	1966	140	2	J	260	70.0	May 20, 1966	--	Ind	
	404	do	do	1959	387	2	--	260	--	--	N	N	Abandoned.
	405	Sam Barrington	C. C. Tullos	1947	25	8	--	250	--	--	B,H	D	Cased to bottom.
	406	Polk County	Murphy Bros.	1946	225	3	--	260	60	1946	J,E	N	Cased to bottom. Perforated from 215 to 225 ft. Reported pump pulled in 1965.
	407	Polk County	E. Miller	1965	410	4	J	255	50	1965	--	P	
	408	J. C. Booth	C. C. Tullos	1947	110	4	--	260	60	1947	J,E	D	Cased to 108 ft. Screen from 94 to 108 ft.

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

	WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
									BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
	UT-61-10-501	J. C. Hall	Ed Malone	1930	25	36	B	390	12.1	July 18, 1947	N	N	Dug well. Abandoned.
	502	C. R. Williams	C. R. Williams	1939	20	36	B	280	16.9	do	B,H	N	Dug well. Unused in 1966.[1]
*	503	W. J. Williams	Pat Falkenberry	--	401	2	J	290	--	--	A,E	D,S	Sand from 300 to 400 ft.
	504	A. S. Jones well 1	Marathon Oil Co.	1955	3,718	--	--	372	--	--	--	--	Oil test.[1]
	601	Texas Long Leaf Lumber Co.	--	1942	6,515	--	--	308	--	--	--	--	Oil test.[2]
	602	Southland, well 1	Shell Oil Co.	--	14,509	--	--	350	--	--	--	--	Do.
	701	W. H. Freeman	C. S. Gay	1929	2,152	10	--	320	--	--	--	--	Do.
	702	do	do	1929	3,410	--	--	320	--	--	--	--	Do.
	801	Paul Matthews	Paul Matthews	1936	37	24	B	420	33.0	Apr. 8, 1966	J,E	D,S	[1]
	901	Southland well 1-B	--	--	3,830	--	--	335	--	--	--	--	Oil test.[2]
	902	Carter, well N-1	--	--	4,013	--	--	378	--	--	--	--	Do.
	903	Fred Stephenson	Cobb & Stokes	1943	48	8	B	320	40.5	July 18, 1947	B,H	D,S	Cased to bottom.
	11-101	Well R-2	--	--	3,610	--	--	381	--	--	--	--	Oil test.[2]
*	201	Buna Parker	Henry Calcuit	1916	20	24	J	325	11.3	July 18, 1947	B,H	D,S	Dug well. Concrete tile curbing. Temp. 72°F.
*	202	Ross Jackson	G. C. McClain	1965	273	2	J	380	138	Sept. 1965	J,E	D	Cased to 268 ft. Screen from 260 ft to bottom. Temp. 72°F.[1]
	203	-- Driskill	W. S. Rowe	1966	127	2	B	345	--	--	J,E	D,S	[1]
	301	W. T. Carter & Bros., well Q-1	Justiss-Mears	1965	4,002	--	--	460	--	--	--	--	Oil test.
	401	Carrie Parrish	Parrish & White	1937	50	6	B	345	39.1	July 18, 1947	B,H	D,S	Bored well.

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

	WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
									BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
	UT-61-11-402	Hortense Public School	--	1934	18	36	B	330	10.2	July 17, 1947	C,H	P	Dug well. Cased to bottom. Formerly supplied Hortense Public School; in 1966 the school was closed, and is now being used as a church.
	501	Stevens, well 1	Glover & Wells	--	4,025	--	--	--	--	--	--	--	Oil test.[2]
	502	Cantu, well G-3	--	--	3,610	--	--	--	--	--	--	--	Do.
	503	Cantu, well G-1	Glover & Wells	--	3,620	--	--	--	--	--	--	--	Do.
	504	Ellie Haynes	Thompson, et al.	1935	4,016	--	--	318	--	--	--	--	Do.
	601	W. T. Carter & Bros.	Justiss-Mears	1965	4,017	--	--	462	--	--	--	--	Do.
	602	Carter well L-2	--	--	4,024	--	--	416	--	--	--	--	Do.
	603	Carter well L-3	--	--	4,010	--	--	401	--	--	--	--	Do.
	604	Carter well Q-2	--	--	4,010	--	--	337	--	--	--	--	Do.
*	701	C. C. Parrish	G. C. McClain	1966	287	2	J	360	105	Jan. 1966	J,E	D	Cased to 282 ft. Screen from 270 ft to bottom.[1]
	702	Southland, well 2	Shell Oil Co.	--	15,150	--	--	368	--	--	--	--	Oil test.[2]
	703	Puckett, well 1	Glover & Wells	--	3,620	--	--	285	--	--	--	--	Do.
	704	Carter, well 1	National Standard Oil Co.	--	2,920	--	--	298	--	--	--	--	Do.
	801	Carter, well G-1	Brown & Bledsoe	--	--	--	--	401	--	--	--	--	Oil test.[2]
*	901	E. N. Dickens	E. N. Dickens	1944	37	36	B	410	31.0	June 27, 1944	J,E	D,S	Dug well. Sand from 34 to 37 ft.
*	902	do	--	--	16	48	B	340	15.0	do	B,H	D,S	Well designed and curbed with 30-in. concrete curbing.
	903	Carter well G-1	--	--	4,010	--	--	362	--	--	--	--	Oil test.[2]
*	12-703	J. E. Dickens	-- Samples	1946	63	24	Ev	400	53.2	June 22, 1947	N	N	Abandoned.

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
*UT-61-17-101	W. W. Windham	Baggett Drilling Co.	1947	364	2½	J	155	14	Apr. 1947	J,E	N	Abandoned. Replaced by well UT-61-17-105.
* 102	W. I. Sears	do	1946	216	3	J	190	68	Sept. 1946	J,E	D,S	Cased to bottom. Screen from 209 ft to bottom.
103	Seaman Flores	--	1944	140	4	--	210	--	--	C,E	D,S	Cased to bottom. Screen from 134 ft to bottom.
104	Chas. Moore	Chas. Moore	1938	20	2	B	170	18	1938	C,E	D,S	Bored well. Cased to bottom. Screen from 17 ft to bottom. Supplies water for dairy.
105	Iva E. Davis	E. Miller	1962	235	2	J	155	--	--	J,E	D,S	
106	E. W. Pinkhard	Baggett & Sons	1948	273	2	J	195	60	1948	J,E	D	Screen from 261 ft to bottom.
* 201	City of Livingston	Layne-Texas Co.	1946	228	20, 10	B	190	101	July 1946	T,E, 40	N	Measured discharge 272 gpm, July 5, 1946. Temp. 72°F.1/
* 202	do	do	1959	610	14, 8	J	165	48 55.3	1959 May 11, 1960	T,E, 40	P	Drawdown 64 ft after pumping 608 gpm.
203	C. Pratt	--	1904	964	4	J	175	3	Aug. 1904	N	N	Reported filled to prevent fire from gas. Not good for boilers until water has remained for sometime in the pond.
* 204	H. D. Nixon	Baggett Drilling Co.	1947	455	4	J	125	+19	June 1947	N	N	Cased to bottom. Screen from 435 ft to bottom. Measured flow 6 gpm, June 3, 1947. Reported no longer flows. Temp. 73°F.
* 205	J. M. Fincher	Murphy Bros.	1947	248	4	B	192	70.6 83.3	June 3, 1947 Apr. 20, 1966	J,E	D	Cased to bottom. Screen from 242 ft to bottom. 20 ft of sand from 230 to bottom.
* 206	A. V. Kohrman	Baggett Drilling Co.	1947	228	4	B	182	32	May 1947	J,E	D,S	Cased to bottom. Screen from 213 ft to bottom.
* 207	A. J. McIntyre	Murphy Bros.	1946	210	2	B	185	5	Nov. 1946	J,E	N	Cased to bottom. Screen from 200 ft to bottom.
208	Joe Gassiot	Baggett Drilling Co.	1947	220	2	J	185	40	July 1947	J,E	D,S	Cased to bottom. Screen from 195 ft to bottom.

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

	WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
	UT-61-17-209	A. V. Kohrman	Baggett Drilling Co.	1957	617	4, 3	J	182	20	1951	J,E, 2	D,S	
	210	C. Pratt	--	1944	557	2½	J	180	47 60	1944 1966	T,E	P	Supplies water for 10 houses.
	211	H. D. Nixon	G. A. McClain	1964	480	4	--	125	46.6	Apr. 20, 1966	--	D	
	212	W. B. Hayes	G. C. McClain	1965	90	2	B	175	25	June 1965	J,E	D	Cased to 85 ft. Screen from 60 ft to bottom.
*	213	City of Livingston	Layne-Texas Co.	1926	232	16, 8	J	192	80	Apr. 1938	T,E, 40	P	Livingston municipal water supply supply. Reported discharge 235 gpm, Oct. 24, 1941. 1/
*	214	City of Livingston well 3	do	1939	268	16, 8	J	165	106.5	Oct. 24, 1941	--	P	1/
	215	City of Livingston well 5	do	1955	529	14, 8 5/8	J	165	40	Mar. 1955	T,E, 25	P	Cased to bottom. Screens from 279-300; 329-354; 384-409; 485-515 ft. Gravel-walled. Drawdown 133 ft after 24 hours pumping at 264 gpm, Mar. 13, 1955. Temp. 74°F. 1/
	216	City of Livingston	do	1954	1,699	--	--	--	--	--	--	--	Oil test. 2/
	217	Jack Todd	--	1950	65	8	B	155	18.3	Apr. 8, 1966	J,E	D	Bored well.
*	301	Wallace Buller	C. C. Tullos	1947	155	2	B	310	90	Feb. 1947	J,E	D	
*	302	Ben Ogeltree	L. Patterson	1946	528	4	J	180	55 90.8 139.2	Oct. 1946 Apr. 28, 1960 Sept.21, 1966	T,E,3	D	1/
	303	Walter Westerhall	-- McClain	1966	40	2	B	192	22	1966	--	D	
	304	R. L. Stephens	Milk Water Well Co.	1958	80	2	B	270	--	--	J,E,1	Ind	Reported supplies water to cool saw blades at about ½ gpm.
	305	Charles E. Fuller	G. C. McClain	1965	200	4	J	285	126 118.5	June 1965 Apr. 8, 1966	T,E	D	Cased to 178 ft. Screen from 147 ft to bottom. 1/

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

	WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
	UT-61-17-306	W. L. Brough	G. C. McClain	1965	294	2	J	350	150	Apr. 1965	J,E,2	D	Cased to 284 ft. Screen from 280 ft to bottom.1/
	307	E. C. Phillips	do	1965	250	2	J	387	140	Mar. 1965	J,E,1	D	Cased to 240 ft. Screen from 240 ft to bottom.1/
	308	Mary Jane Koepke	E. Miller	1956	535	2	--	355	--	--	T,E	D	
	309	do	-- Mills	1950	25	8	--	--	6.2	Apr. 8, 1966	--	D	
*	401	H. U. Davis	Baggett Drilling Co.	1947	470	3	J	120	11	June 1947	N	S	Cased to bottom. Screen from 458 ft to bottom. Temp. 72°F.
*	402	Murphy Bros.	--	--	1,400	4	Tcs	143	+	--	Flows	S	Estimated flow 30 gpm, Mar. 21, 1947.
	403	H. U. Davis	Seismograph Crew	1951	220	3	J	120	4	1966	J,E	D,S	
	404	Mrs. E. B. Gott	--	--	--	7 5/8	--	145	27.2	May 12, 1966	N	N	
	405	do	Baggett Drilling Co.	1949	473	2	J	145	1	1949	A,E	D,S	
	406	M. G. Peters	G. R. Stokes	1935	20	8	B	140	20.1	May 12, 1966	B,H	D,S	Bored well. Unused.
	407	-- Whitehead	Murphy Bros.	1946	50	4	--	140	--	--	N	N	Plugged 1966, and abandoned.
	408	Remona Lusby	Emanuel Miller	1957	520	2	J	117	+ 25.2	1957 Apr. 6, 1966	N	N	
	409	do	do	1963	168	2	J	117	+ 8	Apr. 1963	--	D,S	Cased to 160 ft. Reported flowed 2 gpm in 1955. Flow discontinued when city put in deep well about 10 years ago.
*	501	James E. Hill, Jr.	Pat O'Day	1946	176	3	B	150	--	--	J,E	D,S	Cased to bottom. Screen from 168 ft to bottom. Reported has supplied 3 families and 26 head of livestock. Unused in 1966.
	502	A. A., well 1	Texas Coastal	--	6,514	--	--	327	--	--	--	--	Oil test.2/
	503	W. C. Buford	Gay & Sons	1947	215	--	B	330	60	Jan. 1947	N	N	Abandoned.

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
*UT-61-17-504	W. C. Buford	Baggett Drilling Co.	1947	650	4,3	J	330	170	May 1947	J,E, 2	D,S	Cased to bottom. Screen from 428 to 440 ft. Well deepened in July 1947; screen from 621 to 650 ft; sand from 615 to 633 ft. Trace of gas in water.1/
505	City of Livingston	A. E. Kerns	1946	600	--	J	185	--	--	--	N	Test well.1/
506	do	do	1946	546	--	J	320	--	--	--	N	Do.
507	M. P. Lindsley	E. Miller	--	198	--	B	170	--	--	J,E	D,S	
508	L. N. Haynes	do	1963	200	4	B	160	54.9	May 5, 1966	T,E	P	Supplies water for 3 families.
601	Allen Haines	Pat O'Day	1946	300	--	B	305	--	--	--	N	Reported no water.
602	Jack Nettles Estate	E. Miller	1953	400	3	J	325	135	1953	J,E	D,S	
603	J. L. Maze	do	1964	133	2	B	323	19	1964	J,E	D,S	
701	-- McCamdell well 1	W. K. Davis	--	6,615	--	--	148	--	--	--	--	Oil test.2/
* 801	H. Bergman	Jordan Drilling Co.	1935	4,006	10	J	115	+	--	Flows	S	Cased to 440 ft. Screen from 702 to 852 ft. Oil test; converted to water well for stock. Estimated flow ½ gpm, 1960.1/
802	C. L. Henderson	M. Miller	1958	396	12, 9	B	104	40	1958	N	N	
* 803	do	do	1959	520	3	J	135	--	--	J,E	P	Supplies water for cafe and business. Temp. 74°F.
804	Phillips, well 1	-- Beraman	1950	3,711	--	--	140	--	--	--	--	Oil test.2/
805	Edmonds, well 1	Livingston Drilling & Well Services Inc.	--	3,963	--	--	215	--	--	--	--	Do.
806	W. W. Windham	Murphy Bros.	1946	50	4	B	113	10.6	May 5, 1966	J,E	D,S	Cased to bottom. Screen from 42 ft to bottom.

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

	WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
									BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
	UT-61-17-807	Wyman Windham	--	1965	425	--	J	200	78.3	June 5, 1966	T,E	D,S	Supplies water for 3 houses.
	808	Albert Laramore	--	1942	86	8	B	179	78	Mar. 1949	N	N	Unused. Reported supply of water inadequate.
	809	do	--	1942	197	8	B	135	14	Mar. 1949	N	S	Bored well. Supplies water for 20 head of stock.
*	810	H. T. Everett	Baggett Drilling Co.	1946	243	3	B	132	35	Feb. 1946	J,E	N	Cased to bottom. Replaced by new well.
	811	C. L. Henderson	Gay & Sbn	1963	240	4	J,B	185	--	--	T,-	P	
	812	do	-- Miller	1959	240	2	J,B	120	--	--	--	S	
	901	Public, well 1	Head & Grath	--	3,500	--	--	292	--	--	--	--	Oil test.2/
*	902	Leggett Lumber Co.	E. Miller	1963	416	4	B	315	164.1 170.6	May 5, 1966 Aug. 19, 1966	T,E, 2	Ind	Cased to 401 ft. Estimated by foreman to discharge 4,000 gpd. Temp. 74°F.
	903	Bobby Cox	G. C. McClain	1965	395	2	B	312	162	Mar. 1965	J,E, 2	S	Screen from 380 ft to bottom.1/
	904	Fred Murphy	Julius Cole	1958	47	8	Ch	312	38.7	May 19, 1966	J,E	D	Bored well. Concrete curbing; open end.
	905	E. E. Trollinger	E. Miller	1963	221	2	B	303	--	--	J,E	D,S	
	906	E. V. Tullos	do	1953	354	2	B	310	90	1953	A,-	D,S	
	907	E. J. Galloway well 1	Steward & Co.	1937	4,256	--	--	322	--	--	--	--	Oil test.
	18-101	Leggett, well 1	Texas Coastal Oil Corp.	--	8,215	--	--	290	--	--	--	--	Oil test.2/
	102	L. E. Buckles	Emanuel Miller	1958	300	2	B	300	55	1958	--	D,S	
*	201	A. L. Davidson	E. Miller	1954	385	2	J	290	--	--	J,E	D	Temp. 72°F.
	202	I. Harrell	Wilburn Ashburn	1961	96	4	B	280	34 12.8	1961 Mar. 3, 1966	J,E	D,S	
*	301	H. Walker	Murphy Bros.	1946	76	4	B	330	36	Nov. 1946	C,H	N	

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
UT-61-18-302	H. Walker	-- Ashburn	1956	75	4	B	330	15.8	Mar. 3, 1966	J,E	D,S	
* 303	W. J. Dykes	Murphy Bros.	1946	156	4	B	338	60	1946	C,G	N	Unused. Cased to bottom. Screen from 150 ft to bottom.
304	T. W. Wilson	A. J. Leggett	1890	118	8	B	370	--	--	N	N	Reported not used in years.
305	C. D. Kent	E. Miller	1964	247	2	B	382	80	1964	J,E	D,S	
306	Mrs. J. B. Richey	--	--	95	2	B	340	--	--	J,E	D	
401	L. J. Fletcher	Murphy Bros.	1947	79	2	B	310	48	1947	C,H	S	Cased to bottom. Screen from 73 ft to bottom.
402	Jess Tolly	Murphy Bros.	1947	99	4	B	285	55	1947	J,E	S	
403	-- Laraby	C. C. Tullos	1947	205	3	B	285	52.3	Mar. 2, 1966	A,E	D,S	Cased to 199 ft. Screen from 189 to 199 ft.
404	Beech Creek Assembly of God Church	--	1940	33	8	Ch	335	32.6	do	N	N	Abandoned.
405	do	E. Miller	1965	286	2	B	335	--	--	G,E	D	Screen from 35 ft to bottom.
* 501	A. L. Williams	W. A. Taylor	1937	35	8	Ch	333	27	Sept. 1942	J,E	N	Unused.
502	do	-- Ashor	1964	160	2	B	333	90	1966	A,E, 5	P	
* 503	J. J. McCormack	J. J. McCormack	1933	43	8	Ev	278	39.0	July 30, 1947	B,H	D,S	Bored well. Cased to bottom. Screen from 40 ft to bottom. 1/
504	do	--	1953	80	2	B	278	--	--	J,E	Irr	
505	J. H. Young	--	1955	130	2	B	295	57.0	Mar. 2, 1966	N	N	Abandoned.
506	do	M. Miller	1964	312	2½	B	295	--	--	J,G	D,S	
507	J. B. Johnson	E. Miller	1961	354	2	B	308	--	--	J,E	D,S	
601	E. R. Rutledge	Crews & Crews	1960	174	2	B	310	70	1965	J,E	D,S	Screen from 108 ft to bottom.
701	Elmer Capps	Elmer Capps	1935	75	2	Ch,Ev	292	--	--	Cf,G,3 D,S		

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
*UT-61-18-702	C. E. Emmons	-- Farguson	1963	241	4	B	238	66.3	May 19, 1966	J,G,E	S	Temp. 70°F.
703	Honaker-Carrier	Gem Oil Co.	1949	6,980	--	--	277	--	--	--	--	Oil test.2/
704	G. C. Flannery well 1	Hawkeye Petroleum Corp.	1949	7,156	--	--	283	--	--	--	--	Do.
705	Ed Duff, well 1	Petroleum Management Co.	--	4,255	--	--	269	--	--	--	--	Do.
706	J. C. Whittforth well 2	Humble Oil & Refining Co.	--	6,233	--	--	283	--	--	--	--	Do.
707	Humble Oil & Refining Co.	L. Patterson	1946	284	4	B	230	--	--	A,-	N	Cased to bottom. Screen from 258 ft to bottom.1/
708	H. Breziel	E. Miller	1950	240	2	B	270	--	--	J,E	D,S	
709	Ester Duff	Ed Duff	1925	35	8	Ch	237	12.6	May 19, 1966	J,E	D	Bored well.
710	do	Frank McClain	1964	150	2	Ev	237	--	--	J,E	D	
801	W. H. Roberds	Bennie Smith	1963	42	30	Ev	230	18.8	May 19, 1966	J,E	D,S	Dug well. Concrete curbing.
901	Mrs. J. E. Richardson	E. Miller	1957	245	2	Ev	290	--	--	J,E	D,S	
* 902	B. J. Richardson	Wilburn Ashburn	1965	88	4	Ev	295	25.0	May 11, 1966	J,E	D	Screen from 30 ft to bottom. Temp. 72°F.
19-101	-- Carter well N-2	--	--	4,010	--	--	280	--	--	--	--	Oil test.2/
* 201	State Board of Control	Layne-Texas Co.	1946	600	8	J	350	146 152.6	Dec. 1946 Apr. 28, 1960	T,E	D,S	Cased to bottom. Supplies water for 6 families and reservation offices. Unused.1/
202	Carter, well C-1	--	--	11,205	--	--	298	--	--	--	--	Oil test.2/
203	Carter, well C-2	--	--	3,765	--	--	278	--	--	--	--	Do.
204	Carter, well 1	-- Kountze	--	3,680	--	--	277	--	--	--	--	Do.
205	Carter, well E-1	do	11	3,050	--	--	277	--	--	--	--	Do.

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

	WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
									BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
	UT-61-19-206	Carter, well 4	-- Kountze	--	3,765	--	--	305	--	--	--	--	Oil test.[2]
	207	Carter, well 2	Pan-American	--	--	--	--	36	--	--	--	--	Do.
	208	Carter, well 1	Brown & Bledsoe	--	3,788	--	--	345	--	--	--	--	Do.
	301	B. B. Robinson	-- Kountze	--	4,008	--	--	408	--	--	---	--	Do.
	302	Carter, well E-1	Glover & Wells	--	4,020	--	--	288	--	--	--	--	Do.
	303	Carter, well E-1	--	--	4,006	--	--	404	--	--	--	--	Do.
	304	Carter, well E-2	--	--	--	--	--	413	--	--	--	--	Do.
*	305	John L. Funk	Couger, Gay & Son	1966	408	4	J	300	78	Sept. 1966	T,E	P	Drilled to 168 ft. By Gay & Son and 240 ft by Couger. Estimated discharge 20 gpm.
*	306	O. F. Lamdry	Murphy Bros.	1946	90	2	B	375	--	--	C,E	D	Cased to bottom. Screen from 84 ft to bottom.
*	307	W. A. Holder	W. A. Holder	1932	54	3	Ev	320	36	June 1932	C,E	D,S	Cased to bottom. Screen from 51 ft to bottom.
	308	J. E. Adams	Adams & Dickens	1930	55	6	Ch	395	43.0	June 27, 1947	B,H	D,S	Bored well.
	309	Midway Public School	-- Stokes	1940	40	4	Ev	365	35	1940	C,E	P	Bored well. Supplies water for church.
	310	D. W. Young	Wilburn Asher	1962	47	2	Ch,Ev	360	--	--	J,E	D	
*	401	John Alford	Murphy Bros.	1947	200	2	B	365	150	June 1947	C,E	N	Destroyed.
	402	Dan Evans	Wilburn Ashburn	1963	152	4	B	365	130.3	May 10, 1966	J,E	D,S	Screen from 137 ft to bottom. Reported very hard rock from 45 ft to 120 ft.
	403	do	--	1957	33½	30	Ch	365	6.1	do	J,E	D,S	Dug well.
	404	Hebert Hammond	--	1955	30	30	Ch	370	14.6	May 11, 1966	J,E	D	Do.
*	405	-- Reed	--	1946	125	2	B	280	--	--	C,E	D,S	Cased to bottom.
*	406	Barney Wiggins	E. Miller	1966	320	4	B	340	135.2	Aug. 15, 1966	T,E, 3	P	Screen from 280 to 300 ft. Measured discharge 20 gpm, Aug. 1966. Temp. 70°F.

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
*UT-61-19-407	V. A. Collins	--	1935	180	2	B	290	90	July 1947	N	N	Abandoned.
* 408	W. T. Carter & Bro.	--	1925	35	40	Ch	335	8.0	May 19, 1946	N	N	Destroyed.
* 409	do	--	1925	35	70	Ch	318	8.0	Mar. 19, 1947	Cf,E	S	
410	Alvin A. Wells	E. Miller	1966	330	2	B	285	67.3	June 3, 1966	--	P	
411	do	--	1958	155	2	B	265	--	--	J,E	P	
412	do	--	1949	246	2	B	280	67.8	June 2, 1966	N	N	Unused.
413	do	E. Miller	1961	265	4	B	260	51.1	June 3, 1966	T,-	P	Supplies water for swimming pool.
414	W. T. Carter & Bro.	--	1925	28	30	Ch	333	22.9	May 11, 1966	N	N	Dug well.
415	J. E. Adams	--	1940	52	8	Ch	355	33.0	do	B,H	D,S	
501	Willie Cotton	Wilburn Ash	1959	186	4	B	230	40.8	June 3, 1966	J,E	D,S	
502	Emery Bailey	W. C. Crews	1954	150	2	B	245	--	--	J,E	D,S	
601	H. L. Sander	W. W. Asher	1956	48	2	Ch	330	35	1956	J,E	D,S	
701	L. Murphy	-- Smith	1960	65	20	Ch	320	44.9	May 11, 1966	J,E	D,S	Dug well. Concrete curb.
702	A. A. McMillen	E. Miller	1955	260	2	Ev	265	--	--	J,E	D,S	Supplies water for 3 houses.
703	Dan Evans	W. W. Ashen	1963	96	4	Ev	270	48.5	May 11, 1966	J,E	D	
* 901	I. V. Burkett	-- Hendrix	1944	42	8	Ch	240	30	1944	C,E	N	Destroyed.
* 902	Big Sandy Public School	G. O. Tannahill	1945	80	3	Ev	240	40	1945	C,E, 2	P	Cased to bottom. Screen from 70 ft to bottom. Supplies water for school.1/
903	J. E. Hendrix	J. E. Hendrix	1937	51	48	Ch	300	39.6	June 18, 1947	B,H	D,S	Dug well. Screen from 20 ft to bottom.
904	E. E. Hendrix	E. E. Hendrix	1941	70	8	--	283	--	--	B,H	N	Bored well. Destroyed.

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
UT-61-19-905	Gabe Collins	Gabe Collins	1930	28	48	Ch	300	17.7	June 3, 1966	C,E	D,S	Dug well. Supplies sufficient water for house only in dry weather.
* 906	do	Vanger Water Well Drilling Co.	1965	147	2	Ev	295	--	--	J,E	D,S	Temp. 75°F.
907	Kirby, well 1	-- Jordan	--	7,688	--	--	297	--	--	--	--	Oil test.[2]
908	H. L. Shaw	W. W. Ashen	1964	987	4	Ev	260	40.9	June 3, 1966	J,E	S	
909	Jay Lillie	do	1965	79	4	Ev	228	38.7	do	J,E	D	
20-101	H. K. Adams	--	1950	56	8	Ev	325	37.1	Mar. 3, 1966	T,E	S	
401	W. T. Carter & Bros. well J-1	Justiss-Mears	1965	4,350	--	--	290	--	--	--	--	Oil test.[2]
402	W. T. Carter & Bros. well J-2	do	--	4,410	--	--	232	--	--	--	--	Do.
403	H. J. Lamb	H. J. Lamb	1948	25	30	Ev	248	13.9	June 3, 1966	C,G	D,S	Dug well.
701	J. V. Lapham well 1	Jordan Drilling Co.	1951	7,515	--	--	307	--	--	--	--	Oil test.[2]
702	do	J. V. Lapham	1940	55	8	Ch	283	--	--	J,E	D,S	Dug well.
703	S. J. Denson	S. J. Denson	1922	38	36	Ch	252	--	--	--	N	Dug well. Destroyed.
25-101	Shell Pipeline Co.	Layne-Texas Co.	1954	294	--	T,J	109	80 17.8 16.5	1954 July 17, 1966 Apr. 27, 1960	J,E 3	Ind	
102	Bergman, well 2	S. R. Casey	--	4,210	--	--	114	--	--	--	--	Oil test.[2]
* 103	Shell Pipeline	-- Bolt	1936	620	6	J	109	30	Feb. 1947	C,E, 2	N	Casing cemented to 600 ft. Screen from 600 ft to bottom. Supplies water for 4 families.
104	L. K. Golden	Gay & Son	1966	112	--	B	102	--	--	J,E	D	Cased to 102 ft. Screen from 98 ft to bottom.
105	M. P. Lourent	--	1943	20	1½	B	105	15	1943	Cf,G	N	Abandoned.

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
UT-61-25-106	M. P. Lourent	E. Miller	1951	240	3	B	105	--	--	--	D,S	
107	Ellis Grimes	Ellis Grimes	1938	21	1½	Qal	95	--	--	B,H	D,S	
* 201	E. D. Edmond	--	1940	370	4	Tf,B	110	--	--	T,E, 3	P	Cased to bottom. Screen from 342 ft to bottom. Reported discharge 50 gpm. Pump set at 50 ft. Supplies water for 85 families. Reported 90 customers in 1966.
202	United Gas Pipeline Co.	Layne-Texas Co.	1951	235	8 5/8	Tf,B	170	54	1951	T,E, 10	Ind	Cased to 150 ft. Drawdown 80 ft after 7 hours pumping at 150 gpm Supplies water for 30 houses and cooling tower.[1]
* 203	do	do	1934	421	9	Tf,B	178	58	July 1934	A,E, 10	N	Cased to 407 ft. Screen from 166 to 210; and alluvium from 385 to 407 ft. Reported discharge 147 gpm, July 25, 1935.[1]
204	United Gas Pipeline Co.	Layne-Texas Co.	1951	210	8 5/8	Tf,B	168	53.3	July 15, 1966	T,E, 10	Ind	Drilled to 425 ft; plugged back to 210 ft. Drawdown 55 ft after pumping 150 gpm.[1]
205	J. LaRoe	--	1945	100	3	Tf,B	105	3	June 1945	J,E	D,S	Cased to 80 ft. Screen from 80 to 100 ft. Measured discharge 2 gpm in 1947 and 1960. Temp. 70°F.
206	E. D. Edwards	--	--	--	--	Tf,B	112	--	--	T,E, 3	P	Used in conjunction with well F-6.
207	J. H. Edmonds well 1	Woodley Petroleum Co.	1948	8,535	--	--	143	--	--	--	--	Oil test.[2]
* 208	J. L. Pixley	E. Miller	1965	214	4	B	175	61.7 62	July 15, 1966 Aug. 1966	T,E, 2	P	Screen from 194 ft to bottom. Supplies water for 3 houses and week-end guests.
* 209	J. J. Mowets	Gay & Son	1947	111	2	B	98	10	July 1947	Flows	D,S	Cased to bottom. Screen from 101 ft to bottom. Measured flow 10 gpm, July 24, 1947. Temp. 69°F.[1]
210	C. C. Perkins well 1	C. D. Speed, Jr.	--	4,012	--	--	168	--	--	--	--	Oil test.[2]

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
UT-61-25-211	Texas Long Leaf Lumber Co. Well 3	Woodley Petroleum Co.	1949	3,423	--	--	211	--	--	--	--	Oil test.2/
212	W. A. Crum well 1	--	1949	7,792	--	--	186	--	--	--	--	Do.
213	H. Beraman well 1	--	1949	7,148	--	--	176	--	--	--	--	Do.
214	Southland well 1	J. D. Glynn	--	3,512	--	--	--	--	--	--	--	Do.
215	Mrs. Emilie J. Walter	G. C. McClain	1965	120	2	B	109	--	--	J,E	D	Cased to 100 ft. Screen from 100 ft to bottom.1/
216	W. H. Hammons	do	1965	172	2	B	155	40	Nov. 1965	J,E	D	1/
217	Carney Henderson	Donald N. Gay	1965	323	2	B	102	10	1965	J,E	D,S	Cased to 304 ft. Screen from 291 ft to bottom.
218	J. D. Crawford	-- Stokes	1942	58	8	Ev	160	38 8.9	Sept. 1942 May 5, 1966	B,H	N	Unused.
219	D. D. Stephens	Gay & Sons	1963	241	2½	B	160	--	--	T,E	D	
220	M. Gates	G. C. McClain	1965	200	2	B	165	120	July 1965	J,E	D	1/
221	Fred Grimes	E. Miller	1958	300	2	B	173	--	--	J,E	Ind	Supplies water for industry, sawmill; and livestock. Reported discharge 2 gpm.
222	Frank Hunt	Don Griffin	1966	163	2	B	80		1966	J,E	D	
223	Goodrich Community well 1	Pan American Petroleum Co.	--	5,407	--	--	201	--	--	--	--	Oil test.2/
301	West Securities & Texas Long Leaf Lumber Co., well 1	W. W. & J. M. West	1949	7,549	--	--	187	--	--	--	--	Do.

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
UT-61-25-302	Texas Long Leaf Lumber Co. well 1	Pan American Petroleum Co.	1942	4,136	--	--	180	--	--	--	--	Oil test.[2]
303	Southland, well 1	-- Smythe	--	4,380	--	--	--	--	--	--	--	Do.
304	Hardman, well 1	-- Baynes	--	--	--	--	220	--	--	--	--	Do.
305	Granbury, well 48	Humble Oil & Refining Co.	--	7,408	--	--	175	--	--	--	--	Do.
306	Pan American Production Co.	Pitre Water Well Drilling Co.	1942	497	4	B	257	67	June 1942	--	N	Cased to 445 ft. Screen from 423 ft to 445 ft. Reported discharge 60 gpm, June 6, 1942.[1]
508	J. C. Towns	Pat O'Day	1945	160	3	B	81	+15	June 1945	Flows	S	Cased to bottom. Screen from 140 ft to bottom. Estimated flow 1 gpm. Reported to stop flowing at times.
509	Charles Jones	T. J. Hyde	1950	30	1¼	Qal	92	--	--	--	S	Screen from 18 ft to bottom. Driven well.
510	do	Gay & Sons	1947	149	4	B	90	+ 1	--	Flows	S	Measured flow 1 gpm.
511	Jones, well 1	Sinclair Oil & Gas Co.	--	10,137	--	--	88	--	--	---	--	Oil test.[2]
* 608	Donald N. Gay	Donald N. Gay	1964	218	4	B	95	+	Aug. 18, 1966	Flows, T,E	P	Screen from 190 ft to bottom. Reported flow 10 gpm, Aug. 18, 1966. Temp. 73°F.
609	do	do	1964	251	4	B	119	14.2	do	T,E	P	Screen from 122 ft to 150 ft. Drawdown 25 ft after ½ hour pumping at 40 gpm. Temp. 73°F.
610	Garlach, well 1	-- Campbell	--	--	--	--	--	--	--	--	--	Oil test.[2]
611	Barnes, well 1	A. O. Phillips	--	7,530	--	--	--	--	--	--	--	Do.
612	Lester Emanuel	E. Miller	1949	285	2	B	175	70	1949	J,E	D,S	
613	J. C. Towns	--	1955	89	4	Ev	110	--	--	--	S	

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

	WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
									BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
	*UT-61-26-101	Humble Oil & Refining Co.	L. Patterson	1936	286	6	B	225	61	Mar. 1946	T,E, 3	P	Cased to bottom. Screen from 243 to 265 ft, blank from 265 ft to bottom.1/
	102	do	do	1944	295	4	B	195	--	--	N	N	Abandoned and casing pulled.1/
	103	Granberry well 10	Humble Oil & Refining Co.	1935	4,206	--	--	208	--	--	--	--	Oil test.2/
	104	O. L. Munson well 1	The Shell Co.	--	4,110?	--	--	222	--	--	--	--	Do.
	105	Jim Duff, well 1	do	--	4,360	--	--	222	--	--	--	--	Do.
	106	Granberry well 50	Humble Oil & Refining Co.	--	7,318	--	--	233	--	--	--	--	Do.
	107	J. C. Wittforth well 1	do	--	11,021	--	--	236	--	--	--	--	Do.
	108	Howard, well 1	B. A. Glover	--	--	--	--	238	--	--	--	--	Do.
*	109	Shell Oil Co. Inc.	L. Patterson	1945	336	4	B	233	64.5	May 27, 1966	N	N	Unused.
*	110	Gem Oil Co.	Pat O'Day	1946	331	4	B	214	--	--	N	N	Do.
*	111	Weaver Chesser	L. Patterson	1946	85	4	Ev	220	16	Oct. 1946	J,E	D	Cased to bottom. Screen from 65 ft to bottom.
*	112	Shell Oil Co. Inc.	do	1945	342	4	B	225	60 56.2	Nov. 1946 Apr. 21, 1966	J,E	D	Screen from 320 ft to bottom.
*	113	Humble Oil & Refining Co.	do	1933	347	7	B	218	50	1933	J,E	D	Cased to 346 ft. Screen from 305 to 346 ft. Supplies water for one family.1/
*	114	W. C. Munson	Murphy Bros.	1946	50	4	Ev	220	30	Dec. 1946	J,E	D	Screen from 44 ft to bottom.
	115	Humble Oil & Refining Co.	L. Patterson	1943	368	4	B	230	--	--	A,-	N	Cased to 365 ft. Screen from 341 to 365 ft.1/
	116	Jordan Drilling Co.	H. A. Crews	1945	318	2	B	233	60	1945	J,E	D	Cased to bottom. Screen from 308 ft to bottom.

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
UT-61-26-117	-- Tate	C. C. Tullas	1947	65	4	Ev	235	27	June 1947	J,E	D	Cased to 58 ft. Screen from 48 ft to 58 ft.
118	Shell Oil Co. Inc.	L. Patterson	1944	293	4	B	233	50	Oct. 1944	A,-	Ind	Cased to 292 ft. Screen from 268 to 292 ft.[1/]
119	Humble Oil & Refining Co.	Pitre Water Well Drilling Co.	1944	540	4	B	220	--	--	N	N	Insufficient water. Abandoned.[1/]
120	do	do	1944	328	4	B	220	--	--	--	N	Cased to 315 ft. Screen from 293 ft to 315 ft.[1/]
121	Shell Oil Co. Inc.	L. Patterson	1944	324	4	B	228	50	June 1944	A,-	Ind	Cased to 322 ft. Screen from 277 to 322 ft.[1/]
122	Humble Oil & Refining Co.	Pitre Water Well Drilling Co.	1944	388	4	B	195	58	Apr. 1944	A,-	N	Cased to bottom. Screen from 367 ft to bottom.[1/]
123	do	L. Patterson	1944	1,077	4	J	195	--	--	N	N	Casing pulled. Abandoned.[1/]
124	do	Pitre Water Well Drilling Co.	1944	591	4	B	220	--	--	--	N	Cased to 584 ft. Screen from 563 to 584 ft.[1/]
125	do	do	1944	326	4	B	225	57	Feb. 1944	N	N	Casing pulled. Abandoned.
126	do	L. Patterson	1945	604	--	B	210	--	--	N	N	Abandoned.[1/]
127	Shell Oil Co. Inc.	do	1944	334	4	B	205	50	Aug. 1944	A,-	Ind	Cased to bottom. Screen from 313 ft to bottom.[1/]
128	B. L. Tourea	--	1946	350	4	B	218	53.4	Apr. 21, 1966	J,E	S	
129	Humble Oil & Refining Co.	L. Patterson	1947	616	--	B	220	--	--	N	N	Abandoned.[1/]
201	Davis & Holmes well 1	Shell Oil Co.	--	4,319	--	--	--	--	--	--	--	Oil test.[2/]
202	Davis & Holmes well 3	do	--	4,202	--	--	--	--	- --	--	--	Do.
203	West Davis & The Texas Co. well 3	do	1946	6,176	--	--	--	--	--	--	--	Do.

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
*UT-61-26-204	J. Browder	--	1933	300	4	B	112	40	1933	C,G	D	Cased to bottom. Supplies water for three families.
205	C. D. Brazell	-- Burford	1965	333	4	B	229	40.5	May 19, 1966	J,E	D	
* 301	Allen Baxter	-- Stokes	1945	57	8	Ev	232	35.3	Apr. 14, 1947	N	N	Destroyed.
302	do	do	1955	67	8	Ev	232	44.6	May 19, 1966	J,E	D,S	Bored well.
* 401	Humble Oil & Refining Co.	L. Patterson	1946	284	4	B	165	12.5	Apr. 11, 1947	A,-	N	Casing pulled. Observation well. Temp. 71°F.1/
* 501	County Road	--	1947	Spring	--	Ch	160	+	Apr. 17, 1947	Flows	S	Estimated flow 30 gpm, Apr. 17, 1947.
* 502	F. P. Chambliss	C. C. Tullas	1947	138	2	Ev	202	90	Mar. 1947	J,E	D,S	Cased to bottom. Screen from 126 ft to bottom.
503	Carter, well B-1	Continental Oil Co.	--	--	--	--	223	--	--	--	--	Oil test.2/
* 601	J. D. Vanya	Murphy Bros.	1947	131	2	Ev	220	35	Apr. 1947	N	N	Abandoned.1/
* 602	G. W. Buckalew	E. Miller	1963	397	2	Ev	218	--	--	A,E,I	D	
603	Lewis Griffin	Lewis Griffin	1948	39	3x3	Ch	219	33.8	May 19, 1966	J,E	S	Dug well.
604	Ottice Moore	Ottice Moore	1951	54	8	Ch	223	41.1	do	J,E	D,S	Bored well.
* 713	T. E. Duke	--	--	947	4	Ev,B	78	+	--	Flows	P	Estimated flow 5 gpm, Sept. 1966.
714	T. E. Duke well 1	Oil Reserve Corp.	1962	8,500	--	--	--	--	--	--	--	Oil test.2/
* 715	T. E. Duke	--	1952	412	4	Ev,B	77	+34	Sept. 1966	Flows	P	Measured flow 17 gpm, Sept. 1966. Temp. 71°F.
716	E. L. Duke well 1	Crosby Drilling Co.	1946	8,750	--	--	94	--	--	--	--	Oil test.2/
717	-- Wiggins well 1	-- Jordan	1952	8,257	--	--	96	--	--	--	--	Do.

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
*UT-61-26-801	E. I. Duke	Anderson Drilling Co. & Brown Drilling Co.	1932	1,200	10	J	85	+84	Nov. 1932	N	D,S, Irr	Cased to bottom. With well UT-61-26-802, irrigates about 10 acres.
* 802	do	J. S. Brown Drilling Co.	1932	685	6	B	85	+50	Nov. 1932	N	D,S, Irr.	Cased to bottom. Perforated from 645 ft to bottom.
803	-- McDonald well 1	Clark Davis & Peyton Bros.	1936	5,146	--	--	--	--	--	--	--	Oil test.2/
* 804	G. R. Munson	G. R. Munson	1936	22	24	Ch	151	8.7 16.5	Apr. 17, 1947 Sept.20, 1966	C,E	D,S	Dug well. Concrete curbing.
* 805	J. H. Walters	J. H. Walters	1946	30	1½	Qal	86	20	1946	C,E	D,S	Driven well. Screen from 27 ft to bottom.
901	F. L. Doucette well 2	Shell Oil Co.	1958	7,900	--	--	115	--	--	--	--	Oil test.2/
902	-- Waldman	Peyton Bros.	--	4,985	--	--	134	--	--	--	--	Do.
903	Kirby-West well C-1	do	1939	7,788	--	--	139	--	--	--	--	Do.
904	Bailey, well 1	Shell Oil Co.	--	11,496	--	--	186	--	--	--	--	Do.
905	Withers-Skipper well 1	R. B. Gilmour	--	4,971	--	--	171	--	--	--	--	Do.
* 906	Shell Oil Co. Inc.	--	1940	110	4	Ev	165	--	--	C,Ng	D,S	Cased to bottom. Screen from 100 ft to bottom.
* 907	Easterwood Oil Co.	Seismograph Crew	1939	130	2½	Ev	125	16.3	Sept.20, 1966	C,Ng, 2	D	Cased to bottom.
* 908	Peyton Bros.	--	1940	185	4	Ev	155	40 43.1	1940 Sept.20, 1966	C,G	D,S	
27-101	J. C. Brackin	J. E. Creek	1959	384	3	Ev	231	--	--	J,E	D,S	Cased to 365 ft. Screen from 344 ft to bottom.
201	-- Carter, well 1	Humble Oil & Refining Co.	--	5,012	--	--	229	--	--	--	--	Oil test.2/

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

	WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
									BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
	UT-61-27-202	Monron Lillie	C. C. Smith	1951	40	2	Ch	203	9.9	June 3, 1966	B,H	D	1/
	203	Jessie Lillie	Wilburn Ashe	1965	90	4	Ev	240	49.0	do	J,E	D	
	301	G. W. Moye	G. O. Tannahill	1941	55	2	Ch	235	35	1941	J,E	D,S	
	302	J. L. Williford	-- Smith	1950	50	2	Ch	235	--	--	J,E	D,S	
*	401	B. S. Blankenship	Chas. Collins	1939	55	6	Ch	231	35.91	Apr. 14, 1947	N	N	Bored well. Curbing collapsed. Abandoned.
	402	do	-- Gibson	1952	55	8	Ch	230	48.2	June 2, 1966	J,E	D,S	Bored well.
	403	C. B. Richardson	--	--	25	48	Ch	192	7.5	do	--	N	Dug well.
*	501	W. N. Cain	W. N. Cain	1909	36	--	Ch	195	17.5	Apr. 22, 1947	N	N	Abandoned. 1/
	502	Ben Gay	C. C. Tullos	1947	95	2	Ev	191	33	June 1947	C,G,2	N	Destroyed.
*	503	J. M. Bullon	E. Miller	1955	287?	4	Ev	215	--	--	T,E,3	Irr	Temp. 69°F.
	504	C. Mayo, well 1	--	--	5,102	--	--	200	---	--	--	--	Oil test. 2/
	505	J. M. Bull	--	1930	37	8	Ch	215	--	--	Cf,E	D	Bored well.
	506	E. A. Somerall	-- Smith	1951	60	2	Ch	215	--	--	Cf,E	D	
	507	R. H. Gay	R. H. Gay	1944	40	8	Ch	188	22.5	June 2, 1966	--	S	Bored well. Reported goes dry in winter and summer.
	508	do	W. Ashen	1963	84	4	Ev	188	24.6	do	J,E	D,S	
	509	Ben Gay	E. Miller	1960	220	2	Ev	191	33.5	do	A,E	D,S	
	510	do	--Cole	1960	60	8	Ch	191	37.8	do	J,E	D,S	Bored well.
*	601	J. H. Knight	E. Hondrix	1940	24	8	Ch	185	5.4 11.0	Apr. 18, 1947 Apr. 7, 1966	N	N	Bored well. Not used in 1966.
*	602	J. P. Galloway	Galloway Lumber Co.	1946	30	1½	Ch	181	7	Apr. 1946	B,H	D	Driven well. Reported not used since 1950.
*	603	J. S. Wiggins	J. S. Wiggins	1922	30	36	Ch	185	10.6 18.6	Apr. 22, 1947 July 7, 1966	B,H	D,S	Dug well. Cased to 8 ft.

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
UT-61-27-604	J. H. Knight	--	1955	80	2	Ev	185	--	--	J,E	D,S	
* 701	Holly Grove Public School	Mack Wilson	1942	34	30	Ch	162	28	June 1942	C,H	P	Dug well. Supplies water for church.1/
702	Clyde Richardson	Clyde Richardson	--	36	8	Ch	171	23.0	June 2, 1966	--	D,S	
* 801	D. Salter	S. M. Rye	1946	30	8	Ch	172	24.5 34.1	Apr. 18, 1947 June 2, 1966	B,H	N	Bored well. Unused.
* 802	Jack Jackson	Jackson Bros.	1944	34	8	Ch	163	11.8	Apr. 16, 1947	B,H	N	Bored well. Destroyed.
* 803	do	E. Miller	1962	290	2½	Ev	164	23	1962	J,E	D,S	Casing: 2½-in. to 168 ft; 2-in. from 168 ft to bottom. Screen from 269 ft to bottom. Temp. 70°F.
804	Carter, well A-1	Continental Oil Co.	--	10,621	--	--	184	--	--	--	--	Oil test.2/
805	Carter, well 1	Oil Reserve	--	11,025	--	--	189	--	--	--	--	Do.
806	J. S. Gay	G. C. McClain	1963	240	2	--	158	20	1963	J,E	D,S	Sand and gravel from 127-140, and 140-240 ft.
807	D. C. Salter	E. Miller	1957	285	2	Ev	135	15	1957	J,E	D,S	
901	Shell-Kirby well 125-A	Shell Oil Co.	1952	7,004	--	--	177	--	--	--	--	Oil test.2/
902	Kirby, well 1	L. M. Josey	--	8,619	--	--	177	--	--	--	--	Do.
903	Atterburg, well 1	Newton & Thomas	--	5,616	--	--	181	--	--	--	--	Do.
904	Kirby "C" K-2	Oil Reserve	--	6,765	--	--	171	--	--	--	--	Do.
905	Carter, well C-1	Humble Oil & Refining Co.	--	8,902	--	--	190	--	--	--	--	Do.
906	Humble Oil & Refining Co.	Pitre Water Well Drilling Co.	1943	557	4 --	B --	178	3.8 --	Dec. 28, 1943 --	-- --	N --	Cased to 547 ft. Screen from 524 to 547 ft.1/
28-101	W. T. Carter & Bros. well C-1	Oil Reserve	1961	10,505	--	--	246	--	--	--	--	Oil test.2/

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
UT-61-28-102	Kirby Lumber Co.	Frank Balcar	1941	145	4	Ev	200	--	--	A,E, 10	D, Ind	Cased to 125 ft. Screen from 105 to 125 ft. Supplies water for 100 houses and a railroad.1/
* 103	Big Sandy Seale Church	C. C. Smith	1947	45	3	Ch	207	40	1947	C,H	N	Destroyed, 1966.
401	W. T. Carter well B-3	Humble Oil & Refining Co.	1943	10,185	--	--	195	--	--	--	--	Oil test.2/
402	Kelly, well 1	J. B. Fuller	--	8,220	--	--	183	--	--	--	--	Do.
* 403	Cox Spring	--	--	Spring	--	Ch	165	+	--	Flows	N	Estimated flow 8 gpm, Apr. 22, 1947. Temp. 68°F.
* 404	T. F. Moye	Alen Humbles	1946	45	36	Ch	202	36.3	Apr. 22, 1947	N	N	Dug well. Destroyed.
* 405	C. W. Crosby	W. W. Asher	1965	108	2	Ev	168	33	June 1965	J,E	D	Screen from 94 to 108 ft. Plastic casing. Temp. 72°F.
* 406	R. C. Overstreet	R. C. Overstreet	1929	62	--	Ch	181	45	1929	C,H	D,S	Dug well to 47 ft; bored well from 47 to 62 ft.
407	Humble Oil & Refining Co.	Pitre Water Well Drilling Co.	1943	487	4	Ev	180	7	Aug. 1943	A,-	N	Screen from 448 to 470 ft. Reported discharge 108 gpm, Aug. 31, 1943. Unused.1/
501	S. Overstreet	--	1935	40	8	Ch	170	34.5	July 8, 1966	N	N	Bored well.
502	S. H. Overstreet	Mitchell Bros.	1956	344	2	Ev	170	--	--	J,E	D,S	Cased to 336 ft.
701	Gulf Oil Co.	Pitre Water Well Drilling Co.	1953	389	5, 3½	Ev	155	20	Sept. 1953	T,E,	Ind	Reported discharge 225 gpm. Supplies water for cooling tower at compression station.1/
702	Carter-Quinn well 1	Continental Oil Co.	1953	10,522	--	--	181	--	--	--	--	Oil test.
703	Carter, well D-1	Oil Reserve	--	6,750	--	--	172	--	--	--	--	Oil test.2/
704	Sarah F. Wing well 1	--	1937	5,194	--	--	158	--	--	--	--	Do.
705	Sarah F. Wing well 2	--	--	5,259	--	--	160	--	--	--	--	Do.

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

	WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
									BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
	UT-61-28-706	Quinn, well B-2	The Gulf Corp.	1939	5,181	--	--	166	--	--	--	--	Oil test.[2]
	707	Quinn, well B-3	do	1939	5,273	--	--	167	--	--	--	--	Do.
	708	Sarah F. Wing well 3	do	1937	5,183	--	--	163	--	--	--	--	Do.
	709	Sarah F. Wing well 4	do	1939	5,244	--	--	157	--	--	--	--	Do.
	710	Sarah F. Wing well 12	do	1938	5,525	--	--	167	--	--	--	--	Do.
	711	Sarah F. Wing well 13	do	1938	5,196	--	--	169	--	--	--	--	Do.
	712	B. E. Quinn well B-6	do	1939	5,201	--	--	167	--	--	--	--	Do.
*	713	J. K. Durrance	Pitre Water Well Drilling Co.	1943	325	3	Ev	155	15 22.0	1943 July 8, 1966	J,E	N	Unused.
*	714	Ray Oil Co.	Crosby Drilling Co.	1937	375	4	Ev	154	50	1937	A,Ng	Ind	Cased to bottom. Screen from 355 ft to bottom.
*	715	J. K. Dorrance	Pitre Water Well Drilling Co.	1945	194	3	Ev	155	15	May 1945	J,E,	N	Reported casing is a rusty snag in 1966.[1]
	716	Kirby Lumber Co.	E. Miller	1961	350	4	Ev	154	19.0	July 8, 1966	T,E	Ind	Supplies water for 3 cooling towers and 2 houses.
	717	do	W. W. Ashen	1966	340	4	Ev	154	18.4	do	T,E	Ind	
*	718	Gulf Oil Corp.	Pitre Water Well Drilling Co.	1938	345	4	Ev	155	18.5	do	C,Ng, 15	P	Supplies water for 9 houses.
*	801	--	--	1937	300	--	Ev	155	20.1	July 7, 1966	T,E,3	P	
	802	Gulf Oil Corp.	Pitre Water Well Drilling Co.	1949	400	6 5/8	Ev	155	16.4 16.4	Feb. 1949 July 8, 1966	T,E	P	Supplies water to about 11 houses at camp; only 7 houses in 1966.
	806	Sarah F. Wing well 2	Gulf Oil Corp.	1937	5,199	--	--	161	--	--	--	--	Oil test.[2]

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
UT-61-28-807	Sarah F. Wing well 6	Gulf Oil Corp.	1938	5,190	--	--	156	--	--	--	--	Oil test.2/
808	Sarah F. Wing well 10	do	1938	5,184	--	--	161	--	--	--	--	Do.
809	Whitesides Estate, well 1	Weinert & Williams	1938	5,681	--	--	156	--	--	--	--	Do.
810	Jordan Drilling Co.	Pitre Water Well Drilling Co.	1940	219	4	Ev	149	30	June 1940	A,-	Ind	Cased to 195 ft. Screen from 173 to 193 ft. Reported discharge 75 gpm, June 20, 1940.1/
811	Humble Oil & Refining Co.	do	1940	366	4	Ev	145	16	Aug. 1940	A,-	N	Destroyed.1/
812	do	do	1940	208	4	Ev	143	32	June 1940	A,-	Ind	Cased to 192 ft. Screen from 175 to 199 ft. Reported discharge 45 gpm, June 14, 1940.1/
813	do	do	1940	357	4	Ev	145	16.5	Sept. 18, 1940	A,-	N	Cased to 333 ft. Screen from 310 to 333 ft. Reported discharge 125 gpm, Sept. 18, 1940. Destroyed.1/
814	do	do	1941	337	4	Ev	145	11	Apr. 1941	A,-	N	Cased to 322 ft. Screen from 298 to 322 ft. Reported discharge 125 gpm, Apr. 7, 1941. Destroyed.1/
815	do	do	1941	275	4	Ev	145	18	July 1941	A,-	N	Cased to 257 ft. Screen from 234 to 257 ft. Reported discharge 100 gpm, July 11, 1941. Destroyed.1/
816	do	do	1941	375	4	Ev	143	10	Sept. 1941	A,-	N	Cased to 365 ft. Screen from 341 to 365 ft. Reported discharge 125 gpm, Sept. 30, 1941. Destroyed.1/
817	do	do	1941	342	4	Ev	138	13.5	Apr. 19, 1941	A,-	N	Cased to bottom. Screen from 318 ft to bottom. Reported discharge 100 gpm, Apr. 19, 1941. Destroyed.1/

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
UT-61-28-818	Humble Oil & Refining Co.	Pitre Water Well Drilling Co.	1940	200	4	Ev	139	22	May 1940	A,-	N	Cased to 181 ft. Screen from 158 to bottom. Reported discharge 100 gpm, May 28, 1940. Destroyed.1/
819	do	do	1941	379	4	Ev	141	9.5	Feb. 21, 1941	A,-	N	Cased to 365 ft. Screen from 342 to 365 ft. Reported discharge 250 gpm, Feb. 21, 1941. Destroyed.1/
820	do	do	1940	348	4	Ev	145	19	Oct. 1940	A,-	N	Screen from 317 to 340 ft. Reported discharge 85 gpm, Oct. 17, 1940. Destroyed.1/
321	do	do	1941	342	4	Ev	147	--	--	A,-	N	Cased to 322 ft. Screen from 299 to 322 ft. Reported discharge 125 gpm, Jan. 31, 1941. Destroyed.1/
822	do	do	1940	340	4	Ev	148	15	Nov. 1940	A,-	N	Cased to 334 ft. Screen from 311 to 334 ft. Reported discharge 150 gpm, Nov. 7, 1940. Destroyed.1/
* 34-202	Williams Creek Spring	--	1947	Spring	--	Ev	--	+	--	Flows	A,S	Estimated flow 3 gpm, Apr. 17, 1947. Temp. 63°F.
301	Mrs. M. E. Roberts, well 1	Turnbull & Erwin	--	5,271	--	--	165	--	--	--	--	Oil test.2/
302	F. S. Roberts	Pan-American	--	11,472	--	--	181	--	--	--	--	Do.
303	M. E. Roberts well 1	Alpha Petroleum Co.	1934	5,141	--	--	133	--	--	--	--	Do.
35-203	Kirby, well 1-K	Oil Reserve	--	6,896	--	--	142	--	--	--	--	Do.
204	Kirby (Crane) well 1	do	--	6,895	--	--	170	--	--	--	--	Do.
						Angelina County						
AD-37-50-601	Southern Pine Lumber Co. well 1	Southern Pine Lumber Co.	--	2,683	--	--	220	--	--	--	Ind	
59-302	Fairchild, well 1	-- McHenry	--	--	--	--	--	--	--	--	--	Oil test.2/

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
Hardin County												
LH-61-35-301	Kirby, well 2	Weiner, et al.	--	7,013	--	--	149	--	--	--	--	Oil test.[2]
36-202	Kirby, well 1	Shell Oil Co.	--	9,001	--	--	148	--	--	--	--	Do.
401	Kirby 105-A well well 1	do	--	7,539	--	--	152	--	--	--	--	Do.
Liberty County												
SB-61-34-201	Roberts, well 1	J. A. Mayo	--	5,350	--	--	--	--	--	--	--	Oil test.[2]
San Jacinto County												
WU-60-15-401	-- Gibbs, well 1	Ray O. Baker	--	5,511	--	--	258	--	--	--	--	Oil test.[2]
503	Carey Hale well 1	Sparta Oil & Thomas Concrete Pipe Co.	--	9,766	--	--	194	--	--	--	--	Do.
703	Ben Ogletree well 1	Humble Oil & Refining Co.	--	14,478	--	--	273	--	--	--	--	Do.
206	A. Hale, well 1	W. K. Davis	--	5,515	--	--	302	--	--	--	--	Do.
61-25-405	-- Langham well 1	Stanolind Oil & Gas Co.	--	10,510	--	--	129	--	--	--	--	Do.
503	Wade Parker Fee	--	--	252	--	--	--	--	--	--	S	[2]
804	M. M. LeMay	Sunray Oil Co.	--	7,849	--	--	--	--	--	--	--	Oil test.[2]
33-305	Frost Lumber Co. well 1	Continental Oil Co.	--	13,078	--	--	80	--	--	--	--	Do.
Tyler County												
YJ-61-04-403	Lelia S. Kirby Trust, well 2	--	--	5,022	--	--	322	--	--	--	--	Oil test.
413	Lelia S. Kirby Trust, well 1	--	1960	9,002	--	--	222	--	--	--	--	Do.
414	Lelia S. Kirby Trust well 3	--	--	2,510	--	--	369	--	--	--	--	Do.

See footnotes at end of table.

Table 6.--Records of Wells, Springs, and Test Holes in Polk County and Adjacent Areas--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
YJ-61-04-501	W. T. Carter & Bros. Well F-1	Justiss-Mears	1965	4,000	--	--	283	--	--	--	--	Oil test.
803	W. T. Carter & Bros. well D-1	--	1964	9,310	--	--	317	--	--	--	--	Do.
12-608	Carter well P-2	Justiss & Mears	--	4,310	--	--	381	--	--	--	--	Oil test.2/
701	W. T. Carter & Bros. well G-2	do	1965	4,006	--	--	403	--	--	--	--	Do.
805	W. T. Carter & Bros. well K-1	do	1965	4,010	--	--	397	--	--	--	--	Do.
28-601	T. W. Chambers well 1	Sinclair & Atlantic	1958	2,222	--	--	136	--	--	--	--	Oil test.
603	Shell-Kirby 165-A, well 2	Shell Oil Co.	1956	11,007	--	--	143	--	--	--	--	Do.
604	Kirby-Grant well 1	Oil Reserve	1958	10,042	--	--	175	--	--	--	--	Do.

1/ For drillers' logs of wells see Table 7.
2/ For electric logs of wells see files of Texas Water Development Board or U.S. Geological Survey, Austin, Texas.
* For chemical analyses of water from wells and springs see Table 8.

Table 7.--Drillers' Logs of Wells in Polk County

Well UT-37-58-104

Owner: A. O. Lilly
Driller: John Frye

	THICKNESS (FEET)	DEPTH (FEET)
Sand	18	18
Lignite	4	22
Gumbo, blue	58	80
Sand	4	84
Gumbo, blue	411	495
Sand	14	509
Rock, hard	3	512

Well UT-37-58-501

Owner: Mrs. Emma Pullen
Driller: Taylor Drilling Co.

	THICKNESS (FEET)	DEPTH (FEET)
Clay	20	20
Gumbo	12	32
Rock	3	35
Sand and clay, mixed	45	80
Coal	6	86
Gumbo	1	87
Sand	2	89
Sand and clay, mixed	61	150
Coal	1	151
Sand, water	6	157
Clay	3	160

Well UT-37-58-801

Owner: Edens-Birch Lumber Co.
Driller: Taylor Drilling Co.

	THICKNESS (FEET)	DEPTH (FEET)
Clay	3	3
Quicksand	7	10
Sand, hard	3	13
Sand, soft	4	17
Shale, blue	8	25
Sand, water	50	75
Shale, blue	5	80
Packsand, hard	11	91
Sand, extra coarse	4	95
Shale, blue	2	97
Sand, water	28	125

Well UT-37-58-808

Owner: Tom Burchfield
Driller: Taylor Drilling Co.

	THICKNESS (FEET)	DEPTH (FEET)
Sand	2	2
Clay	43	45
Water seep, bad		45
Shale, blue (seep)	20	65
Shale, blue	125	190
Sand, good water	13	203

Table 7.--Drillers' Logs of Wells in Polk County--Continued

	THICKNESS (FEET)	DEPTH (FEET)
Well UT-37-58-809		
Owner: Robert Allen Driller: Taylor Drilling Co.		
Clay	50	50
Sand, slum water, red	5	55
Shale, blue	120	175
Sand, water	13	188
Well UT-37-58-810		
Owner: John Saxton Driller: Taylor Drilling Co.		
Clay	80	80
Sand, red, water, (bad)	10	90
Shale, blue	107	197
Sand, good water	10	207
Well UT-37-58-814		
Owner: Ira Owens Estate Driller: Taylor Drilling Co.		
Sand	6	6
Shale, gray (seep)	54	60
Sand	9	69
Shale, black	19	88
Gumbo, black	77	165
Sand and water	1	166
Sand and clay, mixed	14	180
Rock		
Sand, water	3	183
Well UT-37-58-818		
Owner: Jess Locke Driller: Jess Locke		
Soil	4	4
Gumbo	8	12
Sand	8	20
Soapstone	2	22
Well UT-37-59-402		
Owner: J. N. Doggs Driller: C. K. Berry		
Sand and clay	50	50
Sand	6	56
Gumbo, blue	319	375
Well UT-37-59-702		
Owner: W. C. Hood Driller: W. S. Rowe		
Soil, top	16	16
Sand and gravel	14	30
Shale, blue	91	121
Sand	11	132
Well UT-60-16-407		
Owner: T. I. Simons Driller: G. C. McClain		
Clay, red	20	20
Sand	10	30
Clay, gray	10	40
Sand	10	50

Table 7.--Drillers' Logs of Wells in Polk County--Continued

	THICKNESS (FEET)	DEPTH (FEET)
Well UT-60-16-407--Continued		
Shale, brown	40	90
Shale, gray	110	200
Sand	36	236
Well UT-60-16-408		
Owner: John F. Bocklett Driller: G. C. McClain		
Clay, red	20	20
Sand	5	25
Clay, gray	15	40
Sand	5	45
Shale, brown	45	90
Shale, gray	110	200
Sand	20	220
Well UT-60-16-409		
Owner: Ted Vaughn Driller: G. C. McClain		
Clay, red	20	20
Sand	5	25
Shale, gray	50	75
Sand	10	85
Well UT-60-16-410		
Owner: Major Huette Driller: W. S. Lowe		
Surface	4	4
Clay, red	6	10
Gravel	15	25
Shale, blue	67	92
Sand	7	99
Well UT-60-16-814		
Owner: Francis Ridley Driller: G. C. McClain		
Sand, top	12	12
No record	26	38
Clay and shale, gray	32	70
Sand and shale streaks	10	80
Shale, gray	88	168
Shale, blue	47	215
Sand	10	225
Well UT-60-24-303		
Owner: H. L. Cheatham Driller: Jasper		
Clay, blue, white nodules	83	83
Sand	5	88
Clay, blue, white nodules	32	120
Sand, salt and pepper	145	265
Well UT-61-01-101		
Owner: R. M. Eagle Driller: Taylor Drilling Co.		
Sand	42	42
Shale, blue	7	49
Shale, hard, blue	11	60
Shale, brittle	3	63

Table 7.--Drillers' Logs of Wells in Polk County--Continued

	THICKNESS (FEET)	DEPTH (FEET)
Well UT-61-01-101--Continued		
Shale, hard blue and gumbo	132	195
Gumbo, tough	68	263
Shale, sandy, brittle	37	300
Gumbo	44	344
Shale, brittle	20	364
Shale, sandy	18	382
Rock	2	384
Sand, water	22	406
Shale, sandy and sand	28	434
Well UT-61-01-102		
Owner: Edens-Birch Lumber Co. Driller: University of Texas		
Volcanic ash	20	20
Lignitic, ash, impure	15	35
Salt and pepper		
Sand, water		35
Well UT-61-01-202		
Owner: B. H. Fann Driller: B. H. Fann		
Sand	3	3
Clay	6	9
Clay, joint, and soapstone	19	28
Sand, coarse, red	2	30
Well UT-61-01-703		
Owner: J. C. Coker Driller: G. C. McClain		
Topsoil	10	10
Clay, red	20	30
Shale, gray	50	80
Sand	20	100
Shale, gray	20	120
Sand	10	130
Well UT-61-01-704		
Owner: Joe Pridgen Driller: G. C. McClain		
Topsoil	10	10
Clay, red	20	30
Shale, gray	50	80
Sand	10	90
Shale, gray	25	115
Sand	11	126
Well UT-61-01-705		
Owner: B. H. Jones Driller: G. C. McClain		
Clay, red	30	30
Shale, gray and sand		
Rock	50	80
Sand	10	90
Shale, gray	20	110
Sand (bottom)	10	120

Table 7.--Drillers' Logs of Wells in Polk County--Continued

Well UT-61-01-706

Owner: M. E. Clark
Driller: G. C. McClain

	THICKNESS (FEET)	DEPTH (FEET)
Topsoil	10	10
Clay, red	10	20
Shale, brown and gray	30	50
Shale, gray	70	120
Sand	20	140

Well UT-61-01-801

Owner: Jaggers and Crawford
Driller: C. Barlow

	THICKNESS (FEET)	DEPTH (FEET)
Sand	4	4
Clay, gray	6	10
Clay, red and white	12	22
Sand, red (water)	1	23
Clay, blue	2	25

Well UT-61-02-507

Owner: Robert Blair
Driller: G. C. McClain

	THICKNESS (FEET)	DEPTH (FEET)
Clay, red	18	18
Sand	12	30
Shale, gray	30	60
Sand	10	70
Shale, gray	30	100
Shale, blue	21	121
Sand	5	126

Well UT-61-02-508

Owner: Joe Kovar
Driller: G. C. McClain

	THICKNESS (FEET)	DEPTH (FEET)
Clay, red	20	20
Sand	10	30
Shale, gray	80	110
Sand	16	126

Well UT-61-03-603

Owner: Roosevelt Johnson
Driller: G. C. McClain

	THICKNESS (FEET)	DEPTH (FEET)
Topsoil	3	3
Clay, red	7	10
Sand	8	18
Shale, blue	17	35
Sand streaks, blue shale	5	40
Shale, brown	5	45
Shale, gray	20	65
Shale, blue (hard)	85	150
Sand, bottom	38	188

Well UT-61-03-704

Owner: W. T. Carter and Brothers
Driller: Layne-Texas Co.

	THICKNESS (FEET)	DEPTH (FEET)
Soil, clay	34	34
Sand, broken and clay	103	137
Shale	226	363
Sand	41	404

Table 7.--Drillers' Logs of Wells in Polk County--Continued

Well UT-61-03-708

Owner: W. T. Carter & Brothers
Driller: Layne-Texas Co.

	THICKNESS (FEET)	DEPTH (FEET)
Surface	8	8
Sand and topsoil		
Clay, sandy	22	30
Clay and sand	42	72
Sand, gray and clay	38	110
Clay, white	75	185
Clay and sand lenses	37	222
Sand	12	234
Clay	13	247
Clay, thin and sand lenses	24	271
Sand and clay lenses	26	297
Clay	15	312
Sand and clay	29	341
Clay and sand	19	360
Sand and thin clay lenses	12	372
Clay and sand streaks	14	386
Clay and sand lenses	10	396
Shale	13	409
Shale and sand streaks	50	450
Sand and shale lenses	16	475
Sandy shale and sand lenses	20	495
Sand and hard streaks	4	499
Shale, sandy	8	507
Sand and shale lenses	7	514
Shale and sand lenses	21	535
Sand, streaks, shale	21	556
Shale and sand streaks	40	596
Shale and sand streaks	28	624
Sand and shale lenses	23	647
Shale, sandy	14	661
Shale, hard lenses	3	664
Shale and sandy shale	23	687
Shale, sandy	11	698
Shale and sand streaks	11	709
Shale and sand lenses	9	718
Shale and sandy shale	25	743
Shale and hard streaks	27	770
Sand and shale	8	778

Well UT-61-09-907

Owner: Sue Williams
Driller: G. C. McClain

	THICKNESS (FEET)	DEPTH (FEET)
Clay, red, sandy	25	25
Sand and gravel	5	30
Clay, soft and white	20	50
Shale, brown	5	55
Shale, gray	5	60
Lime, white and limerock	10	70
Shale, brown and gray	15	85
Shale, gray	159	244
Sand	56	300

Table 7.--Drillers' Logs of Wells in Polk County--Continued

	THICKNESS (FEET)	DEPTH (FEET)
Well UT-61-10-103		
Owner: Viola Jones Driller: Cooper & Wilson		
Sand, surface	5	5
Clay, hard	6	11
Clay, soft, sandy	4	15
Clay, hard	9	24
Clay, sandy, water	1	25
Well UT-61-10-110		
Owner: V. Jones Driller: G. C. McClain		
Clay, red	15	15
Sand	5	20
Shale, gray	60	80
Sandy	10	90
Shale, gray	30	120
Sand	20	140
Shale, gray	110	250
Sand	16	266
Well UT-61-10-502		
Owner: C. R. Williams Driller: C. R. Williams		
Soil	1	1
Clay	3	4
Sand, white	16	20
Well UT-61-10-801		
Owner: Paul Matthews Driller: Paul Matthews		
Sand	2	2
Clay	3	5
Sand, white, loose, coarse	31	36
Clay	1	37
Well UT-61-11-202		
Owner: Ross Jackson Driller: G. C. McClain		
Clay, red	20	20
Sand	5	25
Shale, gray	65	90
Clay, sandy	20	110
Shale, gray	60	170
Shale, brown and gray	20	190
Shale, gray	60	250
Shale, blue	10	260
Sand	13	273
Well UT-61-11-203		
Owner: Driskill Driller: W. S. Rowe		
Clay, red	15	15
Clay, gray	47	62
Rock	1	63
Clay, gray	17	80

Table 7.--Drillers' Logs of Wells in Polk County--Continued

	THICKNESS (FEET)	DEPTH (FEET)
Well UT-61-11-203--Continued		
Shale, brown	20	100
Shale, gray	16	116
Sand	11	127
Well UT-61-11-701		
Owner: C. C. Parrish Driller: G. C. McClain		
Iron rock and clay, red	20	20
Clay, red and blue	60	80
Sand, fine, red	40	120
Shale, gray	150	270
Sand	17	287
Well UT-61-17-102		
Owner: W. I. Sears Driller: Baggett Drilling Co.		
Clay and sand	22	22
Sand, fine	14	36
Clay, blue	73	109
Sand	8	117
Clay	23	140
Sand	9	149
Clay	47	196
Sand	20	216
Well UT-61-17-201		
Owner: City of Livingston Driller: Layne-Texas Co.		
Soil and clay	12	12
Clay, white	80	92
Shale	60	152
Sand, fine	59	211
Shale	17	228
Well UT-61-17-212		
Owner: W. B. Hayes Driller: G. C. McClain		
Clay, red and gray mixed	26	26
Sand	4	30
Shale, blue-gray	30	60
Sand	30	90
Well UT-61-17-213		
Owner: City of Livingston Driller: Layne-Texas Co.		
Surface soil	1	1
Clay	84	85
Shale, hard	20	105
Sand	26	131
Shale, gummy	34	165
Sand, hard, muddy	20	185
Sand, white (good)	47	232

Table 7.--Drillers' Logs of Wells in Polk County--Continued

Well UT-61-17-214

Owner: City of Livingston
Driller: Layne-Texas Co.

	THICKNESS (FEET)	DEPTH (FEET)
Surface soil	1	1
Clay	67	68
Sand with layers of clay	40	108
Shale	86	194
Sand with hard layers of shale	35	229
Shale, brittle	12	241
Shale, hard	27	268

Well UT-61-17-215

Owner: City of Livingston
Driller: Layne-Texas Co.

	THICKNESS (FEET)	DEPTH (FEET)
Soil, sandy	7	7
Sand	5	12
Clay	40	52
Shale streaks and sand, fine gray	30	82
Shale and sandy shale	199	281
Sand, fine, gray	20	301
Shale	57	358
Sand and shale, streaks	10	368
Shale	18	386
Sand, fine, white	23	409
Shale	47	456
Sand, fine	11	467
Shale	19	486
Sand, fine, gray	31	517

Well UT-61-17-305

Owner: Charles E. Fuller
Driller: G. C. McClain

	THICKNESS (FEET)	DEPTH (FEET)
Clay, red	25	25
Gravel	2	27
Shale, gray	33	60
Clay, sandy	50	110
Shale, crumbly	37	147
Sand	53	200

Well UT-61-17-306

Owner: W. L. Brough
Driller: G. C. McClain

	THICKNESS (FEET)	DEPTH (FEET)
Clay, red	20	20
Sand	2	22
Shale, gray	38	60
Clay, sandy	70	130
Shale, gray	150	280
Sand	14	294

Well UT-61-17-307

Owner: E. C. Phillips
Driller: G. C. McClain

	THICKNESS (FEET)	DEPTH (FEET)
Clay, red	10	10
Clay, brown and gray	10	10
Sand	3	23
Clay and shale, brown	40	63
Shale, brown and gray	63	126
Shale, gray	114	240
Sand	10	250

Table 7.--Drillers' Logs of Wells in Polk County--Continued

Well UT-61-17-503

Owner: W. C. Buford
Driller: Gay & Sons

	THICKNESS (FEET)	DEPTH (FEET)
Clay	35	35
Sand	6	41
Clay	24	65
Sand rock	4	69
Clay, sandy	14	83
Clay, yellow	67	150
Sand, very fine (too fine)	13	163
Clay, rainbow	52	215

Well UT-61-17-505

Owner: City of Livingston
Driller: A. E. Kerns

	THICKNESS (FEET)	DEPTH (FEET)
Clay, sandy	30	30
Sand	76	106
Clay	74	180
Rock	8	188
Clay	4	192
Sand and clay	15	207
Shale	241	448
Sand	14	262
Shale	4	466
Sand	25	491
Shale	109	600

Well UT-61-17-506

Owner: City of Livingston
Driller: A. E. Kerns

	THICKNESS (FEET)	DEPTH (FEET)
Clay, sandy	27	27
Sand, red	21	48
Clay	22	70
Sand, hard	44	114
Clay	11	125
Sand	19	144
Clay	44	188
Rock	5	193
Shale, blue	353	546

Well UT-61-17-508

Owner: L. N. Haynes
Driller: E. Miller

	THICKNESS (FEET)	DEPTH (FEET)
Sand	30	30
Clay, blue with white pebbles	140	170
Rock	1	171
Sand	29	200

Well UT-61-17-903

Owner: Bobby Cox
Driller: G. C. McClain

	THICKNESS (FEET)	DEPTH (FEET)
Clay, red	21	21
Sand, red	29	50
Gravel	1	51
Shale, brown with gray streaks	39	90
Sand (iron water)	130	220

Table 7.--Drillers' Logs of Wells in Polk County--Continued

	THICKNESS (FEET)	DEPTH (FEET)
Well UT-61-17-903--Continued		
Sand, gray	155	375
Rock	5	380
Sand	15	395
Well UT-61-18-301		
Owner: H. Walker Driller: Murphy Brothers		
Clay, white and red	36	36
Sand, white	40	76
Well UT-61-18-503		
Owner: J. J. McCormack Driller: J. J. McCormack		
Sand	3	3
Sandy clay, red	37	40
Sand, white	3	43
Well UT-61-18-707		
Owner: Humble Oil & Refining Co. Driller: L. Patterson		
Surface	26	26
Shale	44	70
Sand	22	92
Sand and shale	22	114
Shale	121	235
Sand	49	284
Well UT-61-19-902		
Owner: Big Sandy Public School Driller: G. O. Tannahill		
Clay and gravel	20	20
Sand, coarse, red	15	35
Quicksand, white	5	40
Water sand, coarse	4	44
Clay, white	2	46
Sand and clay, red	14	60
Water sand, white	20	80
Well UT-61-25-202		
Owner: United Gas Pipe Line Co. Driller: Layne-Texas Co.		
Soil, sandy	10	10
Clay, sandy	8	18
Clay	77	95
Sand, fine, brown	20	115
Sand, coarse, grained	52	167
Shale	10	177
Sand, fine, brown	28	205
Sand and shale	19	224
Shale	11	235
Well UT-61-25-204		
Owner: United Gas Pipe Line Co. Driller: Layne-Texas Co.		
Soil, sandy	2	2
Clay	8	10
Clay, sandy	10	20

Table 7.--Drillers' Logs of Wells in Polk County--Continued

	THICKNESS (FEET)	DEPTH (FEET)
Well UT-61-25-204--Continued		
Clay	60	80
Clay with sand streaks	30	110
Shale, and sand, fine brown	119	229
Sand	35	284
Shale and sandy shale	73	357
Shale and sand, fine grained	61	418
Shale	6	424
Well UT-61-25-209		
Owner: J. J. Mowets Driller: Gay & Sons		
Sand	50	50
Clay, white, broken	20	70
Sand	41	111
Well UT-61-25-215		
Owner: Mrs. Emilie J. Walter Driller: G. C. McClain		
Clay, red	20	20
Sand	30	50
Shale, gray	30	100
Sand and rock	20	120
Well UT-61-25-216		
Owner: W. H. Hammons Driller: G. C. McClain		
Clay, red	10	10
Clay, red and gray	20	30
Sand	5	35
Shale, gray	125	160
Sand	12	172
Well UT-61-25-220		
Owner: M. Gates Driller: G. C. McClain		
Sand	10	10
Clay, red	10	20
Sand	20	40
Shale, gray	40	80
Sand	20	100
Shale, gray	80	180
Sand	20	200
Well UT-61-26-101		
Owner: Humble Oil & Refining Co. Driller: L. Patterson		
Surface	85	85
Shale and boulders	155	240
Sand	46	286
Well UT-61-26-102		
Owner: Humble Oil & Refining Co. Driller: L. Patterson		
Surface	24	24
Sand	31	55
Shale	31	86
Sand and shale	21	107

Table 7.--Drillers' Logs of Wells in Polk County--Continued

	THICKNESS (FEET)	DEPTH (FEET)
Well UT-61-26-102--Continued		
Shale	87	194
Sand and shale	22	216
Shale	43	259
Sand	36	295
Well UT-61-26-113		
Owner: Humble Oil & Refining Co. Driller: L. Patterson		
Surface clay	24	24
Sand, red	22	46
Shale	45	91
Sand, fine	22	113
Shale	178	291
Rock	5	296
Sand, medium, coarse	51	347
Well UT-61-26-115		
Owner: Humble Oil & Refining Co. Driller: L. Patterson		
Surface	25	25
Sand	43	68
Shale	195	263
Sand	42	305
Shale	21	326
Sand	42	368
Well UT-61-26-118		
Owner: Shell Oil Co. Inc. Driller: L. Patterson		
Surface	24	24
Sand	22	46
Shale	22	68
Sand	43	111
Shale	21	132
Sand and shale	86	218
Shale	32	250
Sand	43	293
Well UT-61-26-121		
Owner: Shell Oil Co. Inc. Driller: L. Patterson		
Surface	22	22
Sand	38	60
Shale	35	95
Sand	10	105
Shale	172	277
Sand	47	324
Well UT-61-26-123		
Owner: Humble Oil & Refining Co. Driller: L. Patterson		
Surface	23	23
Sand	12	35

Table 7.--Drillers' Logs of Wells in Polk County--Continued

	THICKNESS (FEET)	DEPTH (FEET)
Well UT-61-26-123--Continued		
Shale	7	42
Sand	24	66
Shale	18	84
Sand	46	130
Shale	191	321
Sand	17	338
Sand	40	378
Sand	14	392
Shale	118	510
Shale, sandy	80	590
Shale	51	641
Sand	16	657
Shale	71	728
Shale, sandy	18	746
Shale	311	1057
Sand	20	1077
Well UT-61-26-126		
Owner: Humble Oil & Refining Co. Driller: L. Patterson		
Surface	25	25
Sand	21	46
Sand and shale	22	68
Sand	21	89
Sand and shale	67	156
Shale	131	287
Sand and shale	16	303
Shale	291	594
Sand and shale	10	604
Well UT-61-26-129		
Owner: Humble Oil & Refining Co. Driller: L. Patterson		
Surface clay and sand	26	26
Sand	43	69
Sand and shale	66	135
Shale	22	157
Shale and boulders	87	244
Shale	44	288
Sand and shale	21	309
Shale	154	463
Sand and shale	22	485
Shale	131	616
Well UT-61-26-401		
Owner: Humble Oil & Refining Co. Driller: L. Patterson		
Surface	26	26
Sand and shale	21	47
Sand	45	92
Shale	45	137
Shale and rock	21	158
Shale	77	235
Sand	49	284

Table 7.--Drillers' Logs of Wells in Polk County--Continued

	THICKNESS (FEET)	DEPTH (FEET)
Well UT-61-26-601		
Owner: J. D. Vanya		
Driller: Murphy Brothers		
Clay, red	50	50
Sand	8	58
Clay, gray	60	118
Gravel and sand, coarse	13	131
Well UT-61-27-202		
Owner: Monron Lillie		
Driller: C. C. Smith		
Sand	6	6
Clay	19	25
Sand	15	40
Well UT-61-27-501		
Owner: W. N. Cain		
Driller: W. N. Cain		
Surface	2	2
Clay, red	15	17
Clay, white	13	30
Sand, white	6	36
Well UT-61-27-701		
Owner: Holly Grove Public School		
Driller: Mack Wilson		
Clay, red	14	14
Sand, red and clay streaks, white	10	24
Sand, white, water	6	30
Gravel	4	34
Well UT-61-28-102		
Owner: Kirby Lumber Co.		
Driller: Frank Balcar		
Clay, red	21	21
Sand	2	23
Clay	7	30
Sand, brown	44	74
Clay	24	98
Sand and gravel	47	145
Well UT-61-28-701		
Owner: Gulf Oil Co.		
Driller: Pitre Water Well Drilling Co.		
Sand, red	15	15
Clay, red	20	35
Sand, white	10	45
Shale, blue	30	75
Shale, blue sandy	18	93
Sand, iron	48	141
Shale, blue, sandy	9	150
Sand, irony and shale	44	194
Shale, sandy blue	85	279
Sand, iron	41	320
Shale, blue	22	342
Sand, coarse, white	47	389

Table 7.--Drillers' Logs of Wells in Polk County--Continued

Well UT-61-28-802

Owner: Gulf Oil Corp.
Driller: Pitre Water Well Drilling Co.

	THICKNESS (FEET)	DEPTH (FEET)
Sand	11	11
Sand, fine	56	67
Clay, white	31	98
Sand, medium, dirty	89	187
Clay, red	51	238
Rock	4	242
Clay, red	25	267
Clay, rock streaks	30	297
Sand, good	55	352
Shale	13	365
Sand, medium	4	369
Shale	31	400

Table 8.--Chemical Analyses of Water from Wells and Springs in Polk County

(Analyses given are in parts per million except specific conductance, pH, percent sodium, sodium adsorption ratio, and residual sodium carbonate.)

Water-bearing unit: Qal, Alluvium; Ch, Chicot aquifer; Ev, Evangeline aquifer; B, Burkeville aquiclude; J, Jasper aquifer; Tcs, Catahoula Sandstone; Tj, Jackson Group; Ty, Yegua Formation.

WELL	DEPTH OF WELL (FT)	DATE OF COLLECTION	WATER-BEARING UNIT	SILICA (SiO_2)	IRON (FE)	CALCIUM (CA)	MAGNESIUM (MG)	SODIUM (NA)	POTASSIUM (K)	BICARBONATE (HCO_3) [a/]	SULFATE (SO_4)	CHLORIDE (CL)	FLUORIDE (F)	NITRATE (NO_3)	DISSOLVED SOLIDS	HARDNESS AS $CaCO_3$	PERCENT SODIUM	SODIUM ADSORPTION RATIO (SAR)	RESIDUAL SODIUM CARBONATE (RSC)	SPECIFIC CONDUCTANCE (MICROMHOS AT 25°C)	PH
UT-37-50-701	150	Aug. 24, 1966	Tj	33	23	445	106	1,110	45	472	2,810	578	0.2	0.5	5,360	1,550	60	12	0.00	6,590	7.2
702	437	do	Ty	27	.10	3.5	.3	410	4.5	746	103	156	1.8	.2	1,070	10	98	56	12.0	1,800	8.0
801	326	do	Ty	33	.07	12	1.7	708	9.4	1,050	.0	550	.5	.5	1,830	37	97	51	16.5	3,170	7.8
58-101	31	May 16, 1947	Tj	--	.15	31	7.6	* 155	--	24	161	142	--	72	781	108	--	--	--	977	--
102	330	May 27, 1947	Tj	--	.02	16	5.4	* 210	--	168	212	112	--	3.8	742	62	--	--	--	1,040	--
103	689	Aug. 24, 1966	Ty	44	.08	4.4	.5	514	5.9	1,040	.0	210	1.0	.2	1,290	13	98	62	16.8	2,130	7.8
201	185	May 27, 1947	Tj	--	.05	13	2.1	* 371	--	568	2	268	--	.8	972	41	--	--	--	1,640	--
305	135	--	Tj	--	--	--	--	--	--	--	--	710	--	--	--	--	--	--	--	3,300	--
309	12	June 26, 1947	Tj	--	.64	7.4	2.9	* 37	--	10	44	38	--	4.8	208	30	--	--	--	246	--
801	125	May 22, 1947	Tj	--	.04	2.4	.2	* 22	--	38	8	10	--	.0	138	7	--	--	--	119	--
802	140	May 27, 1947	Tj	--	.38	104	19	* 121	--	176	191	182	--	2.0	845	338	--	--	--	1,160	--
803	137	do	Tj	--	.36	93	21	* 86	--	134	182	146	--	.4	674	318	--	--	--	1,040	--
804	216	May 15, 1947	Tj	--	.08	14	2.7	* 315	--	708	2	104	--	3.2	840	46	--	--	--	1,280	--
805	222	May 27, 1947	Tj	--	.04	26	4.4	* 336	--	770	2	128	--	.0	933	83	--	--	--	1,470	--
806	Spring	May 15, 1947	Tj	--	.02	4.2	1.2	* 25	--	16	8	34	--	1.5	150	15	--	--	--	164	--
807	30	June 26, 1947	Tj	--	1.6	22	8.8	* 134	--	20	149	150	--	.2	543	91	--	--	--	844	--
818	22	May 27, 1947	Tj	--	.38	33	13	* 147	--	130	96	174	--	3.8	696	136	--	--	--	970	--
901	1,512	July 15, 1960	Tj	43	--	13	1.8	* 505	--	708	.0	395	--	.0	1,310	40	96	35	--	2,240	7.4
59-401	Spring	June 26, 1947	Tj	--	.05	13	1.9	* 20	--	20	12	38	--	1.8	185	40	--	--	--	172	--
702	132	Aug. 25, 1966	Tj	37	.12	34	3.4	260	12	300	266	128	.2	2.0	89	99	83	11	2.94	1,440	7.4
60-08-801	225	Aug. 22, 1966	Tcs	70	.03	11	.3	216	8.7	400	.2	176	1.1	.0	630	28	92	18	5.99	1,000	7.5
901	58	July 23, 1947	J	--	.66	116	9.5	* 100	--	352	15	170	--	2.0	648	328	--	--	--	1,070	--
15-602	30	June 12, 1947	Tcs	--	.74	26	2.1	* 22	--	100	5	24	--	1.2	158	74	--	--	--	256	--
604	192	Aug. 22, 1966	Tcs	46	.05	20	.8	314	14	360	.0	348	.6	.2	921	54	91	19	4.83	1,650	7.4
16-201	250	June 12, 1947	Tcs	--	.20	65	4.5	* 98	--	332	10	78	--	.2	503	180	--	--	--	755	--

See footnotes at end of table.

Table 8.--Chemical Analyses of Water from Wells and Springs in Polk County--Continued

WELL	DEPTH OF WELL (FT)	DATE OF COLLECTION	WATER-BEARING UNIT	SILICA (SiO_2)	IRON (FE)	CALCIUM (CA)	MAGNESIUM (MG)	SODIUM (NA)	POTASSIUM (K)	BICARBONATE (HCO_3) a/	SULFATE (SO_4)	CHLORIDE (CL)	FLUORIDE (F)	NITRATE (NO_3)	DISSOLVED SOLIDS	HARDNESS AS $CaCO_3$	PERCENT SODIUM	SODIUM ADSORPTION RATIO (SAR)	RESIDUAL SODIUM CARBONATE (RSC)	SPECIFIC CONDUCTANCE (MICROMHOS AT 25°C)	PH
UT-60-16-301	18	July 23, 1947	J	--	0.35	37	9.8	* 47	--	64	17	42	--	132	453	133	--	--	--	517	--
302	Spring	May 9, 1947	Ch	--	.05	8.2	.9	* 19	--	26	3	32	--	10	137	24	--	--	--	134	--
304	500	Aug. 13, 1966	Tcs	45	.02	22	.6	140	10	306	60	49	0.2	.2	477	58	81	8.0	3.87	762	7.6
401	285	Mar. 15, 1947	Tcs	--	.17	79	5.4	* 474	--	350	2	680	--	.8	1,410	219	--	--	--	2,720	--
402	285	do	Tcs	--	.11	84	5.4	* 521	--	440	2	710	--	.8	1,520	282	--	--	--	2,860	--
403	350	do	Tcs	--	2.7	33	2.7	* 406	--	378	2	470	--	1.0	1,130	94	--	--	--	2,030	--
404	320	June 12, 1947	Tcs	--	.50	141	13	* 656	--	560	2	970	--	1.5	2,060	406	--	--	--	3,680	--
701	15	do	Qal	--	2.2	194	7.9	* 23	--	350	23	180	--	.0	646	516	--	--	--	1,190	--
703	500	Aug. 22, 1966	Tcs	76	.16	20	.7	330	16	476	.2	318	.5	.2	996	53	91	20	6.74	1,710	7.4
801	840	June 4, 1947	Tcs	--	1.0	155	10	*1,380	--	368	2	2,210	--	--	3,940	428	--	--	--	6,940	--
811	420	do	Tcs	--	11	50	3.5	* 453	--	410	2	555	--	4.5	1,270	140	--	--	--	2,340	--
23-302	30	July 24, 1947	Qal	--	.17	17	2.4	* 72	--	24	12	6.0	--	34	119	52	--	--	--	141	--
24-101	352	do	J	--	.05	46	5.1	* 352	--	738	2	208	--	.0	477	136	--	--	--	1,690	--
102	338	June 2, 1947	J	--	.08	74	6.1	* 414	--	770	2	338	--	.0	1,290	210	--	--	--	2,060	--
106	230	Aug. 15, 1966	J	34	1.4	170	14	702	18	456	1.2	1,200	.2	1.0	2,360	482	75	14	.00	4,340	7.3
201	34	June 2, 1947	J	--	1.2	161	11	* 146	--	282	41	348	--	.2	1,000	447	--	--	--	1,520	--
401	240	Aug. 22, 1966	J	35	.23	22	1.4	146	4.3	338	5.6	77	.8	.0	458	61	83	8.1	4.32	768	7.7
406	70	June 2, 1947	J	--	.05	125	3.2	* 14	--	292	8	62	--	25	490	325	--	--	--	650	--
501	75	June 4, 1947	J	--	10	90	12	* 118	--	386	11	144	--	.0	819	274	--	--	--	1,080	--
502	23	July 24, 1947	Qal	--	1.5	5.0	1.3	* 5.7	--	16	5	8.0	--	.8	61	18	--	--	--	52	--
601	460	July 15, 1960	J	41	--	53	4.3	408	12	544	.2	425	--	.0	1,210	150	84	14	--	2,010	7.1
603	70	July 24, 1947	J	--	15	157	16	* 73	--	534	13	118	--	.2	680	458	--	--	--	1,170	--
905	290	Aug. 18, 1966	J	24	.01	21	2.3	117	2.9	284	11	55	.9	.2	374	62	80	6.5	3.4	63	7.7
32-301	240	do	B	19	.05	20	8.5	103	2.4	250	15	46	1.0	.0	332	60	78	5.8	2.85	577	7.8
302	325	Aug. 18, 1966	J	--	--	--	--	--	--	--	--	48	--	--	--	--	--	--	--	586	--
61-01-101	434	Mar. 20, 1947	Tj	--	1.5	23	2.7	* 230	--	200	214	128	--	.0	753	68	--	--	--	116	--
102	35	1941	Tcs	--	--	7.8	2.1	* 65	--	45	48	55	--	.1	306	23	--	--	--	--	--
301	225	May 22, 1947	Tj	--	.47	14	5.2	* 147	--	176	55	122	--	3.8	464	56	--	--	--	781	--
302	Spring	do	Tcs	--	.12	2.6	1.7	* 25	--	36	18	14	--	1.0	177	14	--	--	--	125	--

See footnotes at end of table.

Table 8.--Chemical Analyses of Water from Wells and Springs in Polk County--Continued

WELL	DEPTH OF WELL (FT)	DATE OF COLLECTION	WATER-BEARING UNIT	SILICA (SiO_2)	IRON (FE)	CALCIUM (CA)	MAGNESIUM (MG)	SODIUM (NA)	POTASSIUM (K)	BICARBONATE (HCO_3) a/	SULFATE (SO_4)	CHLORIDE (CL)	FLUORIDE (F)	NITRATE (NO_3)	DISSOLVED SOLIDS	HARDNESS AS $CaCO_3$	PERCENT SODIUM	SODIUM ADSORPTION RATIO (SAR)	RESIDUAL SODIUM CARBONATE (RSC)	SPECIFIC CONDUCTANCE (MICROMHOS AT 25°C)	PH
UT-61-01-303	600	Aug. 25, 1966	Tj	41	0.08	5.0	0.4	179	6.5	284	28	106	0.6	1.8	508	14	95	21	4.37	844	7.2
703	130	Aug. 19, 1966	Tcs	87	.10	58	2.0	36	4.2	208	3.2	47	.3	.2	340	153	33	1.3	.35	494	6.8
801	25	Mar. 11, 1947	J	--	.44	34	4.1	* 39	--	138	23	26	--	16	291	102	--	--	--	374	--
901	24	July 23, 1947	J	--	.05	297	2.4	*342	--	442	108	740	--	81	1,810	840	--	--	--	3,400	--
906	30	July 24, 1948	J	69	--	3.2	2.5	* 59	--	6	4.6	94	--	.5	244	18	--	--	--	304	--
02-102	25	May 22, 1947	Tcs	--	.12	14	2.5	* 18	--	44	18	16	--	10	202	45	--	--	--	158	--
103	200	do	Tcs	--	1.2	9.6	1.2	* 45	--	92	23	20	--	.2	238	29	--	--	--	251	--
† 201	180	Aug. 25, 1966	Tj	77	.74	15	1.5	45	5.2	40	72	29	.2	.0	265	44	66	2.9	.00	339	5.8
202	200	Oct. 23, 1941	Tj	72	.15	19	3.6	* 31	--	37	61	24	.1	0	229	62	--	--	--	--	--
204	440	Aug. 15, 1966	Tcs	77	3.6	3.5	.2	33	4.0	70	10	14	.2	.2	176	10	83	4.5	.96	190	6.3
501	435	June 26, 1947	Tcs	--	.22	36	2.5	*184	--	296	98	110	--	.0	603	100	--	--	--	984	--
502	25	July 23, 1947	J	--	.10	30	4.8	* 47	--	18	4	80	--	80	369	95	--	--	--	465	--
506	252	Aug. 15, 1966	Tcs	91	1.7	110	9.9	155	17	88	240	250	.0	.0	916	315	50	3.8	.00	1,410	6.5
510	25	Aug. 5, 1947	Tj	--	.00	31	12	* 60	--	20	12	86	--	132	502	127	--	--	--	593	--
703	386	Aug. 19, 1966	Tcs	82	5.0	32	1.3	110	12	120	100	104	--	.2	500	86	70	5.2	.26	762	6.9
704	200	do	Tcs	30	.03	50	1.6	111	12	270	70	66	.0	.2	474	32	62	4.2	1.80	772	7.3
801	26	May 29, 1947	J	--	.05	15	7.4	* 53	--	80	2	102	--	38	308	68	--	--	--	431	--
802	411	June 9, 1947	Tcs	--	1.7	18	1.7	*159	--	252	83	74	--	.2	460	52	--	--	--	766	--
03-102	305	Aug. 25, 1966	Tcs	62	.22	7.0	.4	119	7.5	174	65	57	.1	.2	404	19	90	12	2.47	594	7.0
201	20	July 22, 1947	J	--	.10	53	7.9	*111	--	52	38	218	--	22	642	165	--	--	--	942	--
301	72	do	Tcs	--	.08	124	11	* 99	--	462	30	114	--	.0	710	354	--	--	--	1,110	--
302	636	Aug. 23, 1966	Tj	64	.03	7.0	.3	134	7.1	169	40	85	.3	.0	434	18	91	14	.84	674	7.2
603	188	do	Tcs	41	.09	82	4.6	130	10	352	33	145	.3	.0	619	224	54	3.8	1.3	1,060	7.1
604	264	do	Tcs	6	.64	15	8	103	7.6	150	36	83	.1	.0	336	41	82	7.0	1.64	592	7.0
701	582	June --, 1955	Tcs	28	3.0	24	1	*211	--	317	103	128	--	--	846	64	--	--	--	--	8.0
704	404	Oct. 23, 1941	Tcs	48	.14	13	2.4	* 29	--	79	12	19	.3	0	163	42	--	--	--	--	--
705	325	June 6, 1947	Tcs	--	1.0	3.0	2.1	*127	--	194	24	106	--	3.8	464	84	--	--	--	763	--
708	778	Sept.--, 1964	Tcs	26	2	28	1	*199	--	290	67	141	--	--	754	75	--	--	--	1,040	7.7
802	402	Aug. 23, 1966	J	41	.28	42	2.0	134	7.5	344	25	78	.2	.0	499	113	70	5.5	3.38	816	7.4

See footnotes at end of table.

Table 8.--Chemical Analyses of Water from Wells and Springs in Polk County--Continued

WELL	DEPTH OF WELL (FT)	DATE OF COLLECTION	WATER-BEARING UNIT	SILICA (SiO_2)	IRON (FE)	CALCIUM (CA)	MAGNESIUM (MG)	SODIUM (NA)	POTASSIUM (K)	BICARBONATE (HCO_3) a/	SULFATE (SO_4)	CHLORIDE (CL)	FLUORIDE (F)	NITRATE (NO_3)	DISSOLVED SOLIDS	HARDNESS AS $CaCO_3$	PERCENT SODIUM	SODIUM ADSORPTION RATIO (SAR)	RESIDUAL SODIUM CARBONATE (RSC)	SPECIFIC CONDUCTANCE (MICROMHOS AT 25°C)	PH
UT-61-03-904	37	July 22, 1947	J	--	0.15	1.6	1.2	* 7.1	--	10	2	8.0	--	3.5	55	9	--	--	--	59	--
09-101	576	Mar. 21, 1947	Tcs	--	.78	39	2.8	*103	--	260	55	44	--	1.0	470	109	--	--	--	640	--
102	Spring	May 9, 1947	Ch	--	.04	13	1.1	* 16	--	46	5	19	--	2.0	111	37	--	--	--	136	--
103	25	do	Ch	--	.10	12	5.1	* 28	--	42	5	40	--	20	166	51	--	--	--	233	--
402	50	July 17, 1947	J	46	.06	1.6	11	48	3.1	0	1.0	70	0.4	70	292	49	--	--	--	570	--
602	300	June 5, 1947	J	--	.91	32	1.6	* 34	--	118	8	40	--	.0	237	86	--	--	--	325	--
603	412	Oct. 23, 1941	J	60	.04	37	3.4	* 29	--	128	8.0	40	.2	0	241	107	--	--	--	--	--
703	42	July 23, 1947	J	--	.30	156	15	*223	--	296	40	462	--	.0	1,260	451	--	--	--	1,960	--
801	185	Mar. 5, 1947	J	--	2.0	48	3.1	* 60	--	224	7	52	--	.0	324	133	--	--	--	485	--
802	775	do	J	--	3.4	52	3.4	* 52	--	198	7	62	--	.0	330	144	--	--	--	494	--
901	116	do	J	--	.10	176	8.7	* 24	--	194	14	162	--	1.5	610	350	--	--	--	984	--
902	282	June 6, 1947	J	--	.55	57	3.0	* 33	--	182	5	50	--	.2	308	155	--	--	--	506	--
903	286	do	J	--	.19	61	2.9	* 43	--	232	7	42	--	.5	317	164	--	--	--	473	--
10-101	150	Mar. 20, 1947	J	--	.40	8.0	.9	*187	--	366	9	84	--	.5	517	24	--	--	--	817	--
102	420	do	Tcs	--	.44	35	1.3	*128	--	296	59	48	--	.0	475	93	--	--	--	690	--
103	25	Apr. 2, 1947	J	--	.40	10	2.6	* 40	--	36	10	58	--	.0	189	36	--	--	--	263	--
401	1,000	June 6, 1947	Tcs	--	.56	7.4	1.0	*234	--	474	2	98	--	1.0	631	22	--	--	--	971	--
402	116	May 14, 1947	J	--	.05	94	6.2	* 49	--	324	11	64	--	.2	461	260	--	--	--	738	--
503	401	Aug. 17, 1966	J	44	.38	70	4.2	72	7.2	254	12	.0	.2	.2	435	192	44	2.3	0.32	738	7.3
11-201	20	July 18, 1947	B	44	.38	40	5.9	*134	--	136	69	164	--	.2	547	124	--	--	--	866	--
202	273	Aug. 23, 1966	J	46	.72	38	2.0	21	2.0	154	.4	19	.0	.2	206	103	30	.9	.46	330	6.4
701	287	Aug. 17, 1966	J	27	.28	102	4.9	38	4.5	308	6.4	76	.0	.2	410	274	23	1.0	.00	722	7.1
901	37	June 27, 1947	B	--	.33	3.8	1.2	* 14	--	10	2	20	--	6.9	60	14	--	--	--	121	--
902	16	do	B	--	.16	9.4	7.0	* 88	--	3.0	2	80	--	223	424	106	--	--	--	700	--
12-702	63	do	Ev	--	.05	23	1.1	* 9.2	--	74	2	12	--	2.8	90	62	--	--	--	151	--
17-101	364	June 3, 1947	J	--	.12	13	1.7	*167	--	368	2	70	--	.0	456	40	--	--	--	730	--
102	216	June 2, 1947	J	--	.04	46	3.8	* 83	--	286	8	48	--	.2	365	130	--	--	--	568	--
201	228	Mar. 5, 1947	J	26	.05	45	4.8	67	8.5	274	10	38	.4	.0	326	132	--	--	--	517	7.4
202	610	July 15, 1960	J	32	.04	16	1.0	155	4.6	362	3.8	62	.3	.0	456	44	--	--	--	738	7.2

See footnotes at end of table.

Table 8.--Chemical Analyses of Water from Wells and Springs in Polk County--Continued

WELL	DEPTH OF WELL (FT)	DATE OF COLLECTION	WATER-BEARING UNIT	SILICA (SiO_2)	IRON (FE)	CALCIUM (CA)	MAGNESIUM (MG)	SODIUM (NA)	POTASSIUM (K)	BICARBONATE (HCO_3) a/	SULFATE (SO_4)	CHLORIDE (CL)	FLUORIDE (F)	NITRATE (NO_3)	DISSOLVED SOLIDS	HARDNESS AS $CaCO_3$	PERCENT SODIUM	SODIUM ADSORPTION RATIO (SAR)	RESIDUAL SODIUM CARBONATE (RSC)	SPECIFIC CONDUCTANCE (MICROMHOS AT 25°C)	PH
UT-61-17-204	455	June 3, 1947	J	32	0.30	13	1.4	* 141	--	342	2	44	--	0.2	388	38	--	--	--	604	--
205	248	do	B	--	.41	26	3.3	* 104	--	254	11	32	--	1.5	352	78	--	--	--	559	--
206	228	do	B	--	.08	48	4.8	* 61	--	258	12	34	--	.2	347	140	--	--	--	559	--
207	210	do	B	--	.06	56	4.3	* 50	--	254	12	32	--	.2	375	158	--	--	--	562	--
213	232	Oct. 24, 1941	J	27	.06	36	7.3	* 69	--	259	12	31	0.1	.2	311	120	--	--	--	--	--
214	268	do	J	25	.06	221	21	* 80	--	305	8	392	.2	0	897	638	--	--	--	--	--
301	155	Aug. 5, 1947	B	--	.00	84	7.9	* 29	--	284	5	48	--	.5	361	242	--	--	--	588	--
302	528	do	J	--	.21	23	2.6	* 166	--	406	2	66	--	1.5	494	68	--	--	--	806	--
401	470	--	J	--	1.3	138	15	* 647	--	382	2	1,060	--	1.0	2,210	406	--	--	--	3,730	--
402	1,400	Mar. 21, 1947	Tcs	--	2.2	250	18	*1,300	--	478	.5	2,230	--	--	4,750	698	--	--	--	7,310	--
501	176	Mar. 5, 1947	B	--	.05	29	3.7	* 60	--	196	2	20	--	.2	235	88	--	--	--	385	--
504	440	May 22, 1947	J	--	.08	17	2.4	* 87	--	222	6	18	--	.5	264	52	--	--	--	435	--
504	650	Aug. 4, 1947	J	--	.04	16	2.8	* 133	--	330	10	42	--	.2	413	52	--	--	--	627	--
801	4,006	Oct. 24, 1941	J	22	1.0	14	1.2	* 157	--	342	2	70	--	0	456	41	--	--	--	--	--
803	520	Aug. 18, 1966	J	30	.02	10	.9	160	2.6	340	1.6	55	.2	.2	418	28	91	12	5.00	694	7.3
810	243	Aug. 5, 1947	B	--	.03	19	3.0	* 84	--	254	2	22	--	.5	273	60	--	--	--	444	--
902	416	Aug. 16, 1966	B	22	.06	28	2.8	55	2.5	208	4.8	20	.3	.0	237	81	59	2.7	1.78	400	7.1
18-201	385	Aug. 19, 1966	J	--	--	--	--	--	--	--	--	37	--	--	--	--	--	--	--	541	--
301	76	July 28, 1947	B	--	.40	11	1.4	* 35	--	88	2	24	--	.5	144	33	--	--	--	207	--
303	156	July 30, 1947	B	--	.51	13	1.9	* 29	--	96	2	16	--	.0	129	40	--	--	--	188	--
501	35	do	Ch	--	.06	126	8.0	* 48	--	360	26	68	--	42	554	348	--	--	--	888	--
503	43	do	Ev	--	.33	82	4.5	* 15	--	160	2	24	--	110	360	223	--	--	--	520	--
702	241	Aug. 16, 1966	B	32	.02	86	4.0	27	2.2	256	3.2	58	.0	.0	338	231	20	.8	.00	590	6.8
902	88	Aug. 15, 1966	Ev	--	--	--	--	--	--	--	--	6.0	--	--	--	--	--	--	--	45	--
19-201	600	Mar. 19, 1947	J	--	1.6	84	5.6	* 23	--	256	5.8	47	--	.2	363	232	--	--	--	564	--
305	408	Aug. 17, 1966	J	27	.13	18	1.5	7.2	3.2	70	.8	9.2	.0	.2	101	51	22	.4	.13	149	6.5
306	90	June 18, 1947	J	--	.22	3.8	1.0	* 10	--	24	2	10	--	.2	45	14	--	--	--	67	--
307	54	June 27, 1947	Ev	--	14	4.8	2.1	* 6.3	--	12	2	12	--	6.8	42	21	--	--	--	52	--
401	200	June 28, 1947	B	--	.75	33	3.6	* 36	--	75	2	80	--	.0	312	97	--	--	--	373	--

See footnotes at end of table.

Table 8.--Chemical Analyses of Water from Wells and Springs in Polk County--Continued

WELL	DEPTH OF WELL (FT)	DATE OF COLLECTION	WATER-BEARING UNIT	SILICA (SiO_2)	IRON (FE)	CALCIUM (CA)	MAGNESIUM (MG)	SODIUM (NA)	POTASSIUM (K)	BICARBONATE (HCO_3) [a]	SULFATE (SO_4)	CHLORIDE (CL)	FLUORIDE (F)	NITRATE (NO_3)	DISSOLVED SOLIDS	HARDNESS AS $CaCO_3$	PERCENT SODIUM	SODIUM ADSORPTION RATIO (SAR)	RESIDUAL SODIUM CARBONATE (RSC)	SPECIFIC CONDUCTANCE (MICROMHOS AT 25°C)	PH
UT-61-19-405	125	July 28, 1947	B	--	0.38	72	4.2	*36	--	106	2	112	--	34	458	197	--	--	--	628	--
406	320	Aug. 15, 1966	B	27	.08	18	.8	8.4	2.9	66	.2	12	0.1	.0	101	48	26	0.5	0.12	155	6.1
407	180	July 28, 1947	B	--	1.4	9.3	1.0	*13	--	41	2	14	--	.5	65	27	--	--	--	95	--
408	35	Mar. 19, 1947	Ch	--	.00	9.6	5.6	*27	--	9	5	53	--	22	183	47	--	--	--	255	--
409	35	do	Ch	--	.32	5.2	3.8	*19	--	24	2	27	--	12	105	29	--	--	--	152	--
901	42	June 18, 1947	Ch	--	.56	3.2	.9	*33	--	10	2	6.0	--	.2	21	12	--	--	--	30	--
902	80	Mar. 19, 1947	Ev	--	.43	2.2	.8	* 6.6	--	10	2	9.0	--	.2	24	9	--	--	--	29	--
906	147	Aug. 15, 1966	Ev	15	.40	14	.7	6.1	.4	52	.0	8.0	.1	.0	70	38	26	.4	.10	111	6.2
25-103	620	Mar. 21, 1947	J	--	1.6	18	3.3	*60	--	240	5	22	--	.2	261	58	--	--	--	427	--
201	370	Oct. 23, 1941	B	19	.13	17	2.4	*87	--	244	12	18	1.0	--	277	52	--	--	--	--	--
203	421	Oct. 24, 1941	B	28.0	.1	69	4.9	*23	--	238	5	31	--	0	218	193	--	--	--	--	--
208	214	Aug. 18, 1966	B	21	.04	54	5.6	34	2.8	224	5.6	33	.1	.2	266	158	31	1.2	.52	462	7.5
209	111	Aug. 4, 1947	B	--	.08	58	6.9	*31	--	292	2	28	--	.2	265	173	--	--	--	457	--
608	218	Aug. 18, 1966	B	23	.41	49	5	30	3.0	215	5.6	2.3	.2	.0	245	145	30	1.1	.63	418	7.3
26-101	286	Apr. 11, 1947	B	--	.08	73	5.7	*15	--	236	2	30	--	.0	282	206	--	--	--	433	--
109	336	Apr. 9, 1947	B	--	9.9	94	5.9	*19	--	260	2	60	--	.0	380	259	--	--	--	570	--
110	331	do	B	--	.16	94	5.0	*21	--	296	2	40	--	.0	352	255	--	--	--	517	--
111	85	Apr. 11, 1947	Ev	--	15	5.2	1.3	* 8.4	--	18	2	14	--	.0	53	18	--	--	--	70	--
112	342	Apr. 9, 1947	B	--	1.9	91	6.1	*12	--	272	2	38	--	.0	333	252	--	--	--	511	--
113	347	June 13, 1947	B	--	2.4	78	4.6	* 6.9	--	224	2	30	--	.2	284	214	--	--	--	473	--
114	50	Apr. 9, 1947	Ev	--	.25	15	5.0	*41	--	84	2	52	--	3.5	213	58	--	--	--	319	--
204	300	June 13, 1947	B	--	15	15	6.2	*28	--	20	2	74	--	.2	200	63	--	--	--	287	--
301	57	Apr. 14, 1947	Ev	--	.16	3.2	1.6	* 8.1	--	14	2	10	--	5.6	42	15	--	--	--	60	--
401	284	Apr. 11, 1947	B	--	.19	80	5.5	*10	--	248	2	28	--	.0	299	222	--	--	--	439	--
501	Spring	Apr. 17, 1947	Ch	--	.08	2.2	.6	*10	--	10	2	12	--	3.0	39	8	--	--	--	46	--
502	138	do	Ev	--	1.1	14	1.6	*31	--	102	2	16	--	.2	80	42	--	--	--	177	--
601	131	June 13, 1947	Ev	--	.33	5.6	1.4	*16	--	42	2	12	--	.2	68	20	--	--	--	103	--
602	397	Aug. 16, 1966	Ev	--	--	72	3.5	--	--	232	48	24	--	--	--	194	--	--	--	441	7.6
713	947	Sept. 1, 1965	Ev,B	--	--	--	--	--	--	322	--	53	--	--	--	22	--	--	--	694	7.8

See footnotes at end of table.

Table 8.--Chemical Analyses of Water from Wells and Springs in Polk County--Continued

WELL	DEPTH OF WELL (FT)	DATE OF COLLECTION	WATER-BEARING UNIT	SILICA (SiO_2)	IRON (FE)	CALCIUM (CA)	MAGNESIUM (MG)	SODIUM (NA)	POTASSIUM (K)	BICARBONATE (HCO_3) a/	SULFATE (SO_4)	CHLORIDE (CL)	FLUORIDE (F)	NITRATE (NO_3)	DISSOLVED SOLIDS	HARDNESS AS $CaCO_3$	PERCENT SODIUM	SODIUM ADSORPTION RATIO (SAR)	RESIDUAL SODIUM CARBONATE (RSC)	SPECIFIC CONDUCTANCE (MICROMHOS AT 25°C)	PH
UT-61-26-715	412	Sept. 2, 1965	Ev,B	--	--	--	--	--	--	215	--	20	--	--	--	141	--	--	--	--	7.2
801	1,200	Apr. 16, 1947	J	--	0.39	24	5.8	*65	--	222	6	26	--	--	193	84	--	--	--	391	--
802	685	do	B	--	.38	--	--	--	--	214	8	24	--	0.05	--	--	--	--	--	356	--
804	22	Apr. 17, 1947	Ch	--	.37	10	4.6	*34	--	12	8	42	--	49	197	44	--	--	--	272	--
805	30	Apr. 16, 1947	Qal	--	.16	9.2	1.4	* 9.6	--	18	6	10	--	18	83	29	--	--	--	90	--
906	110	Apr. 11, 1947	Ev	--	3.5	3.9	1.2	*15	--	30	3	14	--	.5	60	15	--	--	--	118	--
907	130	Apr. 16, 1947	Ev	--	.38	55	3.3	*33	--	242	2	16	--	.0	217	151	--	--	--	409	--
908	185	Apr. 11, 1947	Ev	--	.22	66	2.1	*17	--	230	2	14	--	.0	236	173	--	--	--	369	--
27-401	55	Apr. 14, 1947	Ch	--	.17	5.0	3.8	*16	--	18	2	18	--	25	101	28	--	--	--	120	--
501	36	Apr. 22, 1947	Ch	--	.08	16	8.4	*36	--	12	2	68	--	66	242	74	--	--	--	335	--
503	287	Aug. 16, 1966	Ev	18	29	6.8	.7	4.3	2.4	30	.0	5.4	0.1	.0	53	20	29	0.4	0.10	70	6.1
601	24	Apr. 18, 1947	Ch	--	.17	3.2	1.7	* 7.8	--	12	2	12	--	3.8	40	15	--	--	--	47	--
602	30	do	Ch	--	1.8	4.4	1.8	* 7.2	--	12	2	14	--	2.8	50	18	--	--	--	55	--
603	30	Apr. 22, 1947	Ch	--	.08	18	4.8	*24	--	32	14	26	--	50	208	65	--	--	--	270	--
701	34	Apr. 16, 1947	Ch	--	1.7	9.6	1.9	*88	--	34	2	14	--	1.5	56	32	--	--	--	80	--
801	30	Apr. 18, 1947	Ch	--	1.9	33	3.5	*13	--	94	2	20	--	21	167	97	--	--	--	233	--
802	34	Apr. 16, 1947	Ch	--	.17	25	5.0	*15	--	50	2	36	--	28	177	83	--	--	--	254	--
803	290	Aug. 16, 1966	Ev	28	.02	40	1.0	5.9	3.0	135	.0	6.8	.1	.0	151	104	11	.3	.14	243	6.7
28-102	145	Apr. 19, 1947	Ev	--	.03	5.0	1.6	* 9.6	--	22	2	14	--	.0	52	19	--	--	--	64	--
103	45	Apr. 22, 1947	Ch	--	.21	2.5	.6	*31	--	63	2	16	--	.0	56	9	--	--	--	9.6	--
403	Spring	do	Ch	--	.08	3.6	.8	* 7.8	--	12	2	12	--	.4	29	12	--	--	--	35	--
404	45	do	Ch	--	.10	20	1.3	*34	--	72	7	42	--	4.0	154	55	--	--	--	203	--
405	108	--	Ev	--	--	--	--	--	--	--	--	9.4	--	--	--	--	--	--	--	525	--
406	62	Apr. 22, 1947	Ch	--	.10	2.8	.9	*23	--	48	2	12	--	3.0	55	11	--	--	--	93	--
713	325	Apr. 14, 1947	Ev	--	.55	19	1.1	*14	--	78	2	11	--	.0	98	52	--	--	--	141	--
714	375	Apr. 30, 1947	Ev	--	2.5	9.4	2.5	*26	--	22	2	50	--	.0	143	34	--	--	--	198	--
715	194	Apr. 14, 1947	Ev	--	2.4	4.8	1.2	*15	--	28	2	17	--	.0	65	17	--	--	--	88	--
718	345	Apr. 19, 1947	Ev	--	2.2	18	1.5	*11	--	67	2	12	--	.0	98	51	--	--	--	136	--

See footnotes at end of table.