TEXAS WATER DEVELOPMENT BOARD

REPORT 47

OCCURRENCE AND QUALITY OF GROUND WATER IN CROCKETT COUNTY, TEXAS

By

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in cooperation with the
Crockett County Commissioners Court

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FOREWORD

On September 1, 1965 the Texas Water Commission (formerly, before February 1962, the State Board of Water Engineers) experienced a far-reaching realignment of functions and personnel, directed toward the increased emphasis needed for planning and developing Texas' water resources and for administering water rights.

Realigned and concentrated in the Texas Water Development Board were the investigative, planning, development, research, financing, and supporting functions, including the reports review and publication functions. The name Texas Water Commission was changed to Texas Water Rights Commission, and responsibility for functions relating to water-rights administration was vested therein.

For the reader's convenience, references in this report have been altered, where necessary, to reflect the current (post September 1, 1965) assignment of responsibility for the function mentioned. In other words credit for a function performed by the Texas Water Commission before the September 1, 1965 realignment generally will be given in this report either to the Water Development Board or to the Water Rights Commission, depending on which agency now has responsibility for that function.

Texas Water Development Board

John J. Vandertulip

John J. Vandertulip
Chief Engineer

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OCCURRENCE AND QUALITY OF GROUND WATER IN CROCKETT COUNTY, TEXAS

ABSTRACT

Crockett County, 2,794 square miles in extent, is in southwest Texas on the western edge of the Edwards Plateau. Rocks ranging in age from Precambrian to Quaternary underlie Crockett County, but only rocks of Cretaceous and Quaternary age yield ground water of usable quality to wells. The principal water-bearing formations in Crockett County includes the sands of the Trinity Group (Trinity aquifer) and the Edwards and Georgetown Limestones (Edwards-Georgetown aquifer) of Cretaceous age, and unconsolidated alluvium of Quaternary age which overlies the older Cretaceous rocks principally along the Pecos River, Live Oak Creek, Howards Creek, and Johnsons Run.

The source of ground water in the aquifers of Crockett County is precipitation which falls upon the land surface and percolates downward to the water table. Water-table gradients indicate that the ground water in the Edwards-Georgetown aquifer moves generally southward toward the Devils River drainage area and westward toward the Pecos and its tributaries where the water which is not intercepted by pumping wells is discharged at seeps and springs.

Ground water in Crockett County occurs at varying depths depending primarily upon topography. Water levels in the alluvium along the Pecos River may be only a few feet below surface while on the high divides the water level may occur as much as 600 feet below land surface. Locally, in the northeast part of the county, a perched water table occurs as much as 200 feet above the true water table. Available records indicate that water levels, except for temporary declines during drought years, have been fairly constant over a long period of time.

Most of the water wells in Crockett County produce water from the Edwards-Georgetown and the Trinity aquifers for domestic and livestock purposes. Generally the wells yield only small quantities of water, 1 to 20 gallons per minute, although yields of up to 2,000 gallons per minute have been reported in both aquifers.

The total pumpage in Crockett County is estimated at about 1,846,300,000 gallons or about 5,670 acre-feet in 1963 for all purposes. About 3,200 acre-feet was pumped for irrigation, about 1,400 acre-feet for public supply, and 68 acre-feet for industrial uses. Livestock and domestic uses totaled an estimated 1,000 acre-feet.

The amount of underground water available for development in Crockett County can only be estimated, but probably is many times the present pumpage.

Approximately 45,000 acre-feet could theoretically be pumped annually in the county from the Edwards-Georgetown aquifer alone in addition to present pumpage. Data are not presently available to estimate the amount of additional water available from the Trinity aquifer in Crockett County.

The quality of water from wells in Crockett County varies within wide limits but is generally good quality. Of 751 water samples analyzed chemically, 61 percent contain less than 500 ppm (parts per million) dissolved solids. Only about 10 percent of the samples contain more than 2,000 ppm dissolved solids, and only 3 percent contain more than 3,000 ppm. The water is typically very hard and generally high in fluoride content. Samples from a few wells indicate that the water is undesirable for domestic use, but only a very few are considered unusable.

In several places in Crockett County, there is evidence that water in some wells has been contaminated, presumably by oil-field brine. Contamination of wells in the county is undoubtedly related to present and past practices of brine disposal.

In 1961 a total of 47,987,914 barrels of brine was reported produced in Crockett County. Of this total, 46,113,930 barrels was disposed of by reinjection into the deep subsurface, and about 1,873,984 barrels was disposed in open unlined surface pits.

Oil-field brine placed in unlined surface pits or allowed to flow upon the land is a possible and potential source of contamination of fresh water. Injection of oil-field brine into the deep subsurface is presently the best method to dispose of the brines. However, at some places in the county salt water was observed being placed into disposal wells which overflowed and into wells with badly corroded casing. Unplugged or inadequately plugged oil and stratigraphic test holes may also be a potential source of contamination of fresh water in the county.

OCCURRENCE AND QUALITY OF GROUND WATER IN CROCKETT COUNTY, TEXAS

INTRODUCTION

Purpose and Scope

The Crockett County ground-water investigation was commenced in April 1962 as a cooperative project of Crockett County and the Texas Water Development Board. The objective of this study was to determine the occurrence, availability, and chemical quality of ground water in Crockett County, Texas. Specific conditions to be determined were the extent of water-bearing formations, the movement of ground water between areas of recharge and discharge, the chemical quality of ground water, and the areas of oil-field brine disposal and its possible effects on the quality of ground water in Crockett County.

The scope of the study included the collection, compilation, and analysis of ground-water data for Crockett County. Pertinent basic data are included in the report, as are illustrations representing ground-water conditions in the county. Special emphasis is placed on those conditions relating to the chemical quality of ground water.

This report was prepared under the general direction of John J. Vandertulip, Chief Engineer, and Richard C. Peckham, director, Ground Water Division, and under the direct supervision of Bernard B. Baker, assistant director in charge of Availability Programs.

Location and Extent

Crockett County, located in southwest Texas on the western edge of the Edwards Plateau (Figure 1) is the eighth largest county in Texas, covering 2,794 square miles. The Pecos River forms the western boundary of Crockett County. On the west lie Pecos and Terrell Counties. Crane, Upton, Reagan, and Irion Counties border Crockett County to the north. On the east lie Sutton and Schleicher Counties, with Val Verde County on the south.

Method of Investigation

In conducting the detailed ground-water investigation of Crockett County the following items of work were performed:

1. Reviewed available geologic and hydrologic data.

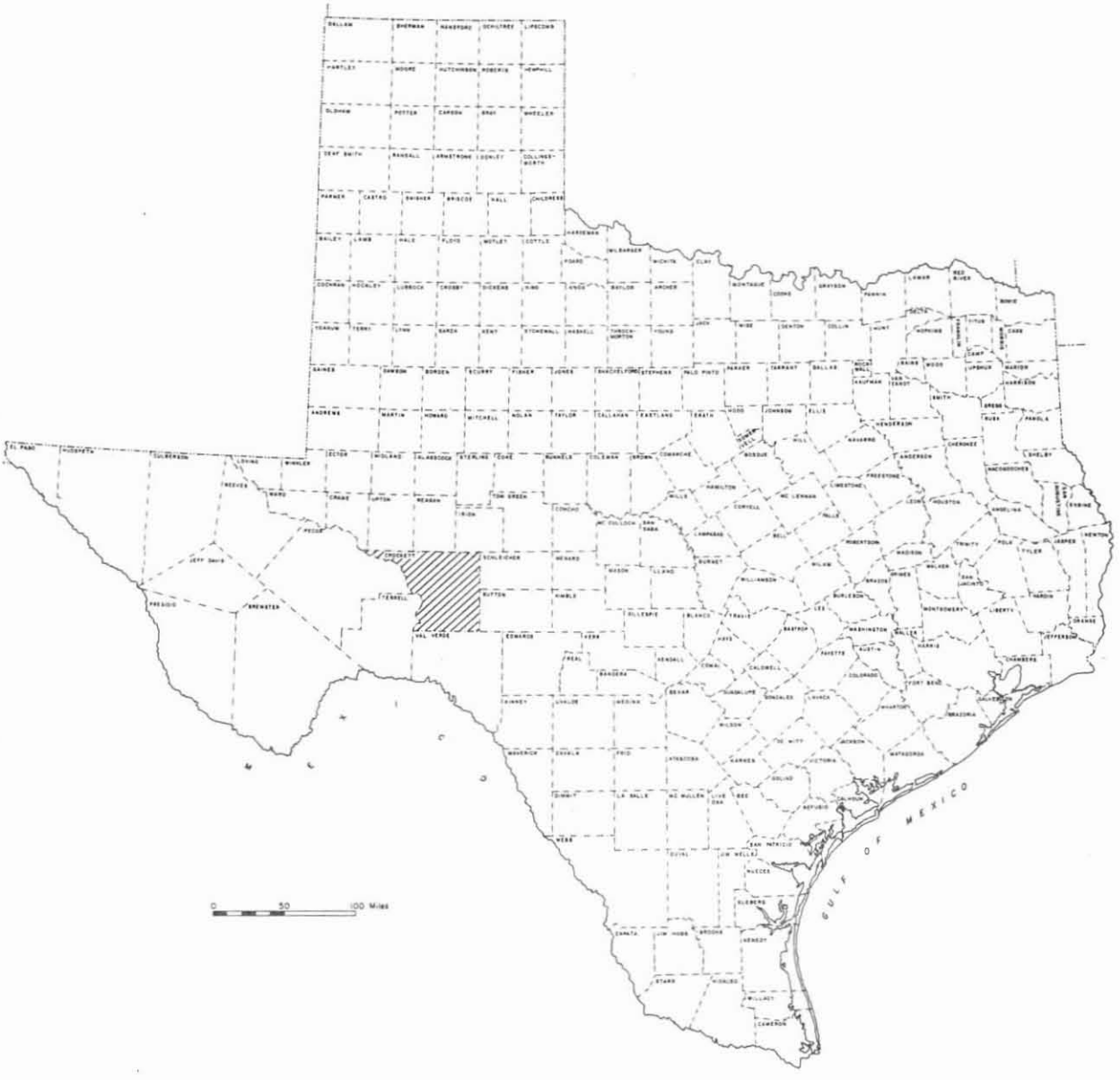


Figure 1

Map of Texas Showing Location of Crockett County

Texas Water Development Board in cooperation with the Crockett County Commissioners Court

2. Mapped surface geology.

3. Compiled and correlated available subsurface data.

4. Inventoried municipal, industrial, irrigation, domestic, and livestock wells and springs.

5. Measured water levels in wells.

6. Collected water samples from wells for chemical analysis.

7. Conducted pumping tests to determine the hydrologic characteristics of the water-bearing formations.

8. Inventoried major municipal, industrial, and irrigation ground-water pumpage.

9. Determined elevations of wells to provide control for maps and cross sections.

10. Logged selected wells to obtain shallow subsurface data.

11. Compiled and analyzed data and prepared illustrations to show the geologic and hydrologic conditions within the county.

Field investigations in Crockett County were conducted in 1962 and 1963. To collect basic ground-water data, 1,107 wells were inventoried and 879 water samples were collected for chemical analysis. For wells in which water levels were measured, land-surface elevations were determined with an altimeter. A Widco electric logger was used to obtain shallow subsurface data in 15 water wells. In addition, two aquifer tests were conducted to establish the hydraulic characteristics of the "Trinity" sand.

Previous Investigations

Prior to this investigation little detailed information had been obtained concerning the ground water or the geology of Cretaceous strata in Crockett County. The only previous ground-water data were compiled during the reconnaissance investigation of the ground-water resources of the middle Rio Grande basin (Brown and others, 1965). Armstrong and McMillion's report on Pecos County furnishes the only detailed account of ground-water resources adjacent to Crockett County.

Previous geologic investigations include work by Liddle and Prettyman (1918), Sellards and others (1932), Jones (1953), Galley (1958), and the West Texas Geological Society (1951, 1959). Most of the geologic information is of a general nature and concerns Crockett County only as it is part of the Permian basin of West Texas.

Well-Numbering System

To facilitate the location of wells and to avoid duplication of well numbers in present and future studies, the Texas Water Development Board has

adopted a statewide well-numbering system consisting of a 2-letter prefix to identify the county, followed by seven digits to locate the well according to lines of latitude and longitude. This system is illustrated in Figure 2.

Texas has been divided into a grid of 1-degree quadrangles numbered 01 through 89. The first 2 digits in a well number indicate the number of the 1-degree quadrangle. Crockett County is located in the 1-degree quadrangles numbered 43, 44, 45, 53, 54, and 55 (Figure 2A). Each 1-degree quadrangle is subdivided into $7\frac{1}{2}$-minute quadrangles numbered 01 through 64 which make up the next two digits in a well number (Figure 2B). Each $7\frac{1}{2}$-minute quadrangle is further subdivided into $2\frac{1}{2}$-minute quadrangles numbered 1 through 9. This constitutes the fifth digit of a well number (Figure 2C). The wells in each $2\frac{1}{2}$-minute quadrangle are numbered consecutively beginning with 01 to complete the well number. Thus, the well numbered HJ-54-23-201 can be located on a map as follows: HJ is the prefix for Crockett County, and the numbers indicate that the well is in the 1-degree quadrangle number 54, in the $7\frac{1}{2}$-minute quadrangle 23, the $2\frac{1}{2}$-minute quadrangle 2, and was the first (01) well inventoried in that $2\frac{1}{2}$-minute quadrangle.

On the well-location maps of this report (Figures 19 and 20), the $7\frac{1}{2}$-minute quadrangles are shown and numbered in their northwest corners. The 3-digit number shown with each well symbol contains the number of the $2\frac{1}{2}$-minute quadrangle in which the well is located and the number of the well within that quadrangle.

Acknowledgements

The author acknowledges the assistance rendered by many individuals and organizations and expresses his appreciation for their cooperation. The first to whom thanks should go is the late Judge Houston Smith, who was largely responsible for the financial support from Crockett County for this project. The County Commissioners Court headed by Judge M. Brock Jones has also shown much interest in the progress of the study and has cooperated at every opportunity. In addition, local ranchers and well drillers have made information available and permitted free access to their land.

Numerous oil companies contributed data for elevation control and subsurface geology. Among them were Humble Oil and Refining Company, Shell Development Company, Gulf Oil Corporation, Pan American Petroleum Corporation, and Mobil Oil Company. Particular recognition is given to the geological staff of Pan American Petroleum Corporation's Midland office for permitting access to their logs and other technical data and to Gulf Oil Corporation's Midland office for reproducing logs and other material needed for this study.

Dr. F. E. Lozo and Dr. Clyde Moore, Shell Development Company, furnished aerial photographs and assisted with the mapping of surface geology. Dr. Lozo also made a Widco logging machine available for use in the county.

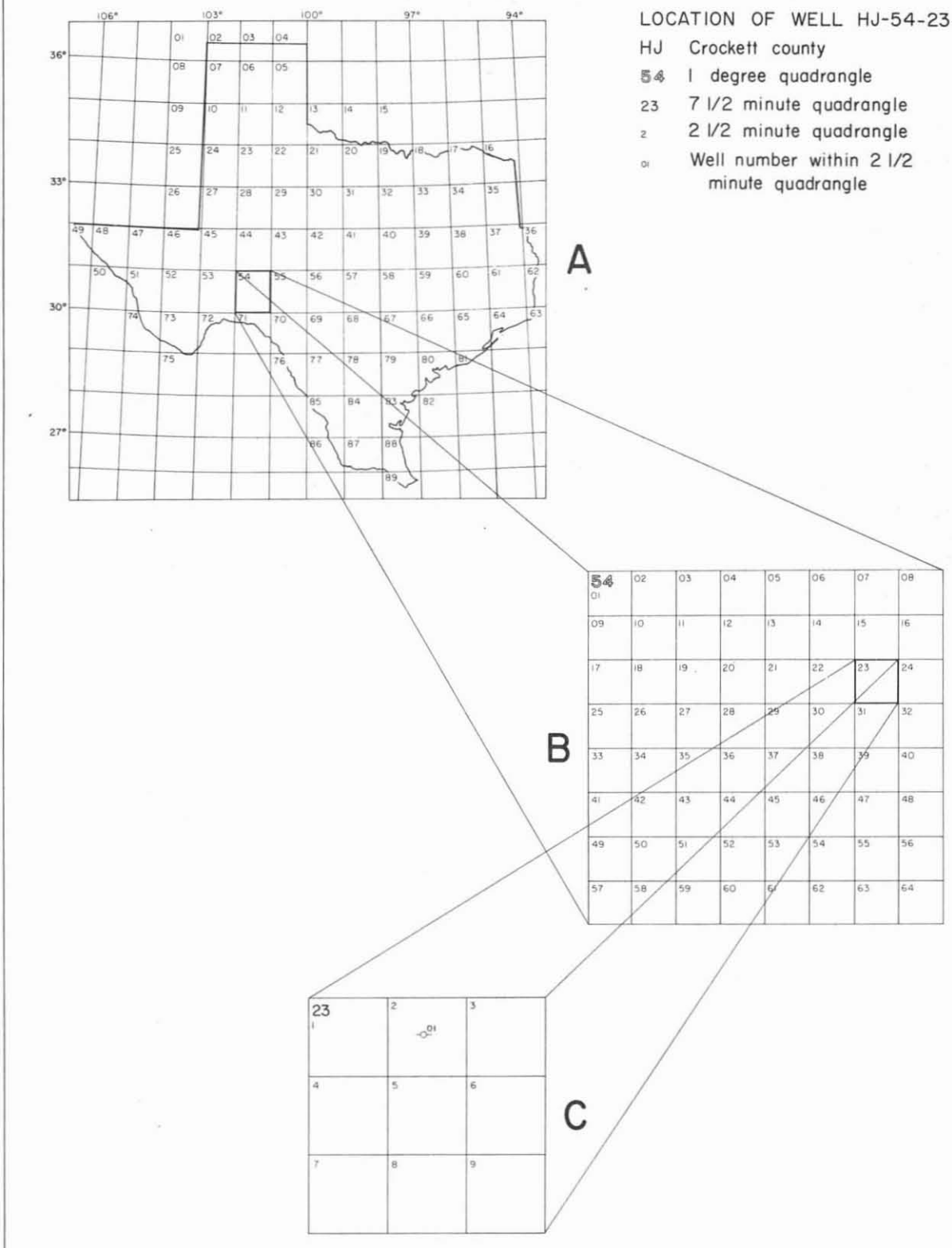


Figure 2

Well-Numbering System

Texas Water Development Board in cooperation with the Crockett County Commissioners Court

GEOGRAPHY AND HISTORY

Topography and Drainage

Crockett County's topography is characterized by deep, narrow, steep-walled canyons and flat mesas in the southern and western portions. Broad valleys and flat divides make up the northern part of the county; the northeastern area is a large flat divide. The altitude ranges from about 1,800 feet in the southwest to over 3,000 feet in the northwest. Karst topography, characterized by numerous sinkholes having under-ground drainage, occurs in the northeastern quarter of the county on the upper flat divide between the Colorado River and Rio Grande drainage basins.

Drainage of Crockett County is by means of intermittent, dendritic streams. On the east side of the county a dry tributary of Devils River drains southeastward into Sutton County. Johnsons Run and Howards Creek bisect central Crockett County and drain southward (Figure 21), joining Devils River and the Pecos River, respectively, in Val Verde County. In the northwestern part of Crockett County, Live Oak Creek drains southward into the Pecos River at Lancaster Hill. The dry bed of Spring Creek originates in the northeastern corner of the county and runs northeastward. Generally, the county can be said to lie in the Rio Grande drainage basin. Only the extreme northeastern corner of the county lies in the Colorado River drainage basin.

Soil and Vegetation

The soils of Crockett County are generally shallow to very shallow (0 to 20 inches) and gray to dark grayish brown in color. They consist of a calcareous clay loam underlain by limestone. A comparatively large area of deep soil occurs in the northeastern section of the county, but through the remainder, deep soils are present only in the draws and along the Pecos River. Steep slopes, rock outcrops, and an abundance of gravel in the soil characterize most of the county. The soil cover on the slopes is usually very thin due to the high rate of runoff. Most of the county's soils are moderately permeable because they are fine-textured and highly granular.

The typical semiarid desert vegetation found over most of southwest Texas is prevalent in Crockett County. Moisture, or the lack of it, is the chief factor determining the amount and types of plant life. Therefore, plants in this area are hearty and require small amounts of water. Among these are mesquite, scrub cedar, liveoak, shin oak, some cactus species, sotol, lechuguilla, chaparral, spanish dagger, greasewood, yucca, tasajillo, ocotillo, condalia, cenizo, tarbush, and the creosote bush. When there is sufficient rainfall to permit grass to grow, it is quite plentiful in the flat areas.

Climate

Crockett County, located in the western part of the Edwards Plateau, has a semiarid climate. Due to the higher elevation of the Edwards Plateau and the presence of constant air movements, the temperature averages higher during both summer and winter than that of lower lands to the south and east. During spring and summer months the prevailing winds are southerly and transport

modified maritime-tropical moisture from the Gulf of Mexico, producing higher dew-point temperatures. During autumn and winter, the winds prevail from a northerly direction, bringing continental air and low dew-point temperatures. The average annual rainfall in Crockett County is about 15 inches, based on records for the 30-year period 1931-60; the average annual temperature is 65°F, based on records for the 50-year period 1910-59; and the average annual potential lake evaporation depth is 87 inches, based on records for the 18-year period 1940-57.

According to U.S. Weather Bureau records beginning in 1941, the greatest rainfall depth recorded in the county during a single calendar year was in 1941, when 29.62 inches of precipitation fell at Ozona. The Humble Pump Station in adjoining Sutton County measured 40.66 inches in 1958. The largest amount of precipitation recorded during any one month was in June 1954, when 9.74 inches fell at Ozona. Flooding from heavy rains June 27 and 28, 1954 when 7.36 inches fell at Ozona caused an estimated $12 million in damages and claimed 15 lives in the county. During the same 48-hour period unofficial sources reported as much as 20 inches of rain north of Ozona. Rainfall is generally greatest during the 6-month span from May through October, when prevailing southerly winds bring in moisture from the Gulf of Mexico.

The growing season is about 230 days; the first killing frost in autumn usually occurs between November 1 and 15, and the last usually is in the spring between March 1 and 15. Average temperatures are mild, ranging from 48°F in January to 81°F in July. The greatest recorded extremes in temperatures are 112 and -8°F.

Population and Economy

In 1963 the estimated population in Crockett County was 4,821, which is a density of about 1.7 persons per square mile, and an increase of 612 persons as compared with the findings of the 1960 census. Of the 1963 total, 4,037 persons represent the urban population, and 784 persons the rural population. The 1960 labor force numbered 1,452 persons, of which 2.5 percent was unemployed. For the same year, census figures show 1,102 families with a medium income of $5,339, as compared to $4,884 medium income for families in Texas. In 1963 over 1,000 students were enrolled in Ozona's senior high school, junior high school, and three elementary schools.

The economy of Crockett County depends heavily on the oil industry, which began in 1916 when Ozela Oil Company made the first oil lease, obtaining 400,000 acres at 10 cents per acre. The discovery well was drilled in 1925 on the L. P. Powell ranch 23 miles northwest of Ozona. As of 1962 the Texas Railroad Commission has designated 102 oil fields in Crockett County, of which 62 are still producing. A total of 7,208,851 barrels of oil was produced in 1962 from 1,709 wells, making the county thirty-seventh in the State in oil production. Some 16 billion cubic feet of gas was produced that same year from 94 wells. Although oil is the primary petroleum product, gas is being developed and has good prospects for being a boon to the economy. Four gas processing plants were located in the county in 1963.

Ranching ranks second only to oil in Crockett County's economy. Some 160 ranches produce sheep, goats, and cattle. The 1959 agricultural census showed a value of $3,749,380 for ranch products. A total of 3,054,113 pounds of wool

sold for $1,980,407.45. In that same year the county was ranked second in the State in the number of sheep raised (293,561), and twenty-third in the number of goats (53,101). The 1962 tax roll reports 10,000 head of cattle in the county and 1,336 horses, some of which are quarter horses that various ranchers have begun breeding. In the county the average ranch consists of approximately 14,120 acres valued at $252,000. Prior to 1963 only six farms were located in Crockett County, containing 611 acres of dry-land farming and 727 acres of irrigated farming. Their chief crop is livestock foodstuffs. During 1963, two new irrigation operations were begun and two others resumed. More acreage is expected to be put into irrigation in 1964 and 1965.

The unincorporated city of Ozona, which is the county seat, had 71 businesses with a total of $4.5 million retail sales in 1960. As of December 1963, bank deposits totaled more than $8 million. The total county income in 1960 was $9 million, and per capita income was $2,138 as compared with the national per capita income of $1,850. The tax valuation for Crockett County was $34 million in 1963, and the county budget for the same year was $1,258,000, of which $650,000 was spent for education. The largest industry in Ozona is a commercial feed pelleting and mixing plant built to serve local ranchmen in their livestock feeding operations. In addition, the West Texas Utility Company has a hydroelectric generating station on the Pecos River in the extreme northwestern tip of the county.

History

Crockett County was named for Texas hero Colonel David Crockett at the second called session of the Fourteenth Texas Legislature on January 12, 1875. The original land area was created from Bexar County and embraced all of the present counties of Crockett, Sutton, and Schleicher; part of Edwards and Kinney Counties; and a portion of Val Verde County lying east of the Pecos River. The present county was organized on July 7, 1891, and Charles E. Davidson was elected as the first county judge. At that time, Emerald, 7 miles east of the present town of Ozona, was the only town in Crockett County. Soon after the county organization, an election was held to establish the county seat. The presence of sulphur water at Emerald brought about a decision to move the townsite to the E. M. Powell well, the present location of the city of Ozona, which derived its name from the word "ozone", meaning pure and refreshing air.

Besides its name, Crockett County has other links with historic events. Two important trails used by early pioneering travelers ran through the area. The Chihuahua Trail traversed the western section of the county, and the Spanish Trail followed the general route of the current U.S. Highway 290.

Forts were built at points along these trails, generally near a fresh water source, to provide travelers with protection from Kiowa-Comanche war parties. One such establishment, Fort Lancaster, was located in Crockett County. It was built on the banks of Live Oak Creek near the point where it joins the Pecos River. The creek was a flowing stream during the period Fort Lancaster was in operation and furnished it with both fish and water. Fort Lancaster, garrisoned from 1855 to 1861, was temporarily abandoned because of the Civil War. It was reactivated in 1866 and remained mobilized until 1868.

Between 1850 and 1880 the county was the scene of numerous Indian raids. Howard Springs, located in the southwest portion of the county on the Chihuahua Trail, was the scene of the Howards Spring massacre on April 20, 1872, when a wagon train of 16 men was annihilated by Indians. Early settlers began to move into the county in the 1870's, although Indian hostilities were still prevalent there. The W. P. Hoover family, believed to be the first permanent settlers, came to the area in 1881 (Bosworth, 1964, p. 23).

Water development in Crockett County was relatively slow. Before 1885, there were few good water holes. At that time Devils River, Pecos River, and Live Oak Creek furnished the only permanent waterings. One pothole known as the Escondido water hole was used by travelers in the early days and has reportedly never gone dry. The first water well was drilled in 1885 by Joe Moore, who brought in a heavy steam rig to drill a well which is on the present Davidson Headquarters Ranch (Bosworth, 1964, p. 55). Several years later three more wells were drilled, opening up additional land having access to permanent water.

The years between 1880 and 1890 were important years for this area. The number of permanent settlers rose from 127 to 194, and Indian hostilities virtually came to an end. By 1890 the practice of fencing land, which was to have a great effect on ranching methods, was well underway. In addition, the techniques of drilling wells made it possible by that time to keep livestock permanently in one area.

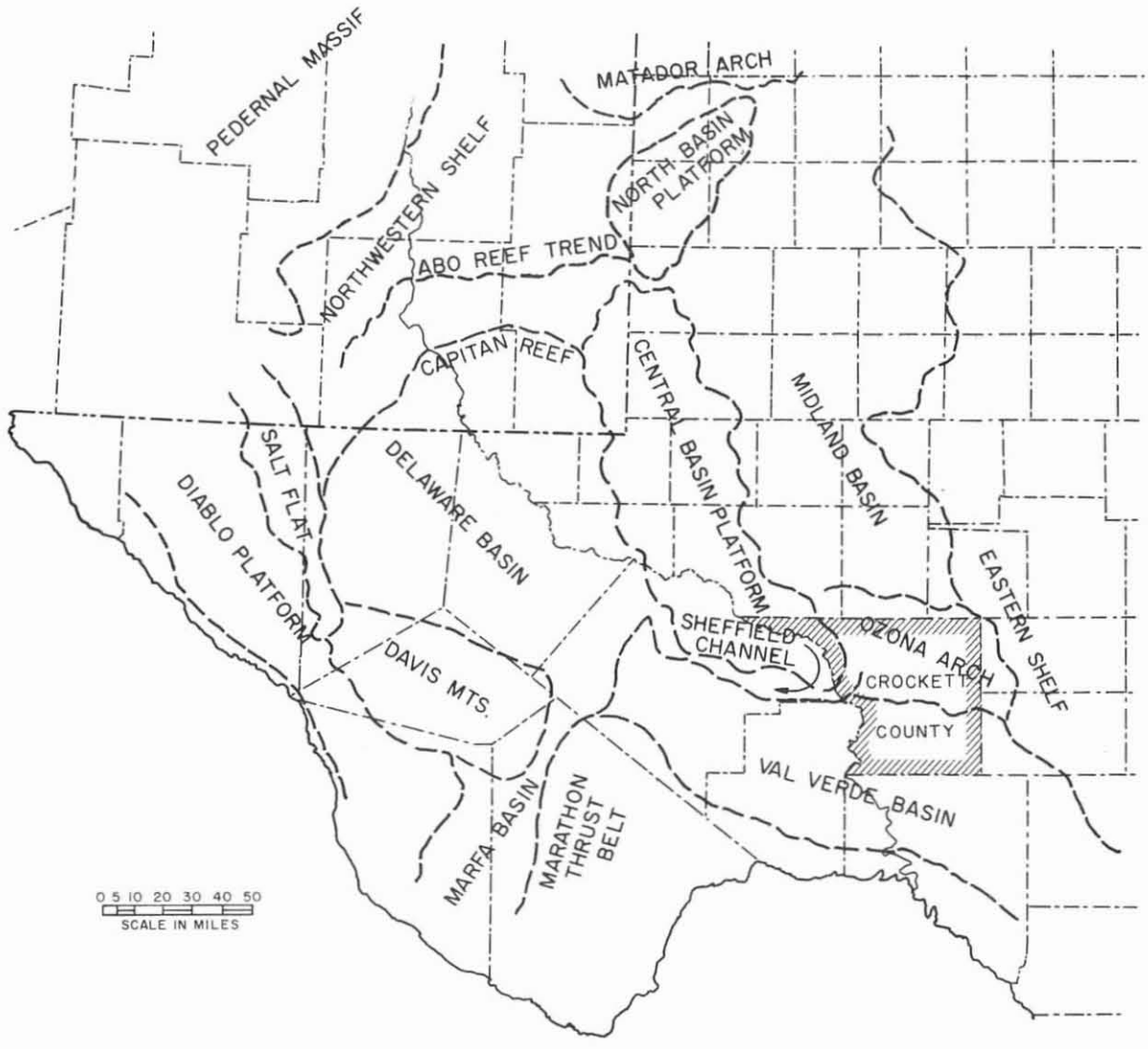
GEOLOGY

Structure

Crockett County is on the southern flank of the Permian basin, a large, buried structural depression covering much of West Texas and southeastern New Mexico. A southward-trending structural high, the Central Basin Platform, extends into northwest Crockett County and northern Pecos County, dividing the Permian basin into two sub-basins, the Midland basin on the east and the Delaware basin on the west (Figure 3). The Sheffield channel, a structural trough, extends from western Crockett County across Pecos County, connecting the Midland and Delaware basins. The Ozona arch, a pre-Pennsylvanian structure, extends eastward across northern Crockett County. The southern half of the county lies in the Val Verde basin. In general, rocks of Permian age beneath Crockett County dip northwestward into the Midland basin. The overlying Cretaceous rocks dip to the southeast at about 10 feet per mile. The general dip of Cretaceous, Permian and Triassic rocks is illustrated on the geologic sections, Figure 22.

In northwestern Crockett County a number of local structural features, including normal faults with vertical displacement ranging from a few feet to 50 feet or more, and small anticlines related to the faulting, interrupt the regional Cretaceous structure (Figure 21). These structural features probably were caused by solution and removal of underlying Permian evaporites and the subsequent collapse of the Cretaceous beds into the voids.

Perhaps a less spectacular but no less important structural feature common to most rocks is a system of joints. A joint is a fracture or break which interrupts the continuity of a rock mass and differs from faults in that no



After Charles Vertrees, C. H. Atchison, and G. L. Evans, West Texas Geological Society Guidebook, 1959, p. 64.

Figure 3

Major Geologic and Geographic Features of the Southern Permian Basin

Texas Water Development Board in cooperation with the Crockett County Commissioners Court

apparent movement has taken place along the joint plane. Joints, believed to be caused by compression and tension stresses in the earth's crust, commonly occur in sets of generally parallel joints. In Crockett County, one well-developed set of joints in Cretaceous strata strikes generally north. An apparently less developed set strikes northwest. These joints and associated fractures are of primary importance to the occurrence of ground water in Crockett County. The joints permit precipitation to percolate into the ground-water reservoirs, affect the directions of movement of ground water in the county, and, in fact, permit the movement of water through otherwise relatively impervious limestone and shale strata. In addition, joints probably have influenced strongly the development of the present stream pattern in Crockett County. Joints serve as channels for moving water, thus promoting erosion parallel to the joint pattern.

Stratigraphy

In Crockett County a great variety and thickness of sedimentary rocks overlie a Precambrian igneous complex, and range in age from Cambrian to Quaternary (Table 1). Rocks of Cretaceous age are exposed throughout most of the county; however, unconsolidated deposits of Quaternary age overlie Cretaceous rocks along the Pecos River and other major drainageways. Permian rocks are exposed in a limited area along the Pecos River in southern Crockett County and adjacent parts of Terrell and Val Verde Counties (Figure 21).

Water of usable quality is produced only from Cretaceous rocks and the unconsolidated Quaternary alluvium in Crockett County. Therefore, only the stratigraphy of these units will be discussed in detail in this report. The county's most important water-bearing units are the "Trinity" sand and the Edwards Limestone. The stratigraphy of Pre-Cretaceous strata as well as Cretaceous and Quaternary units is described briefly in Table 1.

Cretaceous System

Cretaceous strata were deposited on an eroded Permian and Triassic surface which slopes to the southeast. Permian and Triassic units subcrop beneath the Cretaceous strata in northeast-trending pattern (Figure 4). Cretaceous strata thicken southward, attaining a maximum thickness of about 1,000 feet in the extreme southern part of the county. Quaternary alluvium overlies Cretaceous strata along the Pecos River, Live Oak Creek, Howards Creek, and Johnsons Run.

Comanche Series

Trinity Group

The Trinity Group as used in this report refers to all Cretaceous strata below the base of the Edwards Limestone. In southern Crockett County the group consists of three geologic units: a "Basal" sand unit, the Glen Rose Limestone, and an upper sand unit called the Paluxy Sand. The Glen Rose does not crop out in Crockett County because it thins northward and pinches out along an east-west line generally parallel with U.S. Highway 290 across the central part of the county. Where the Glen Rose does not occur, the Paluxy

Table 1.--Geologic units and their water-bearing properties, Crockett County

Era	System	Series or Group		Stratigraphic unit		Approximate maximum thickness (feet)	Character of rocks	Water-bearing properties
Cenozoic	Quaternary	Pleistocene and Recent Series		Alluvium		200+	Sand, gravel, silt, clay, and caliche.	Yields small to large quantities of water to wells in Howards and Live Oak Draws and along Pecos River.
Mesozoic	Cretaceous	Gulf Series	Eagle Ford Group	Boquillas Flags		10	Brown to red flaggy limestone; an erosional remnant in Crockett County.	Yields no water to wells in Crockett County.
		Comanche Series	Washita Group	Buda Limestone		40	Soft nodular limestone, marl, and thin-bedded hard granular limestone.	Do.
				Georgetown Limestone	Upper unit	125	Hard massive limestone, thin-bedded limestone, and soft nodular limestone.	Yields small amounts of water to wells in northeast part of Crockett County.
					Lower unit	300	Soft nodular limestone, marl, and hard massive ledge-forming limestone.	Yields some water to wells in conjunction with Edwards Limestone.
			Fredericksburg Group	Edwards Limestone		190	Massive ledge-forming limestone and soft nodular limestone.	Yields small to large amounts of water to wells in Crockett County.
			Trinity Group	"Trinity" sand (in northern Crockett County)	Paluxy Sand	75	Fine to medium, loose sand.	Yields moderate to large amounts of water to wells in Crockett County.
					Glen Rose Limestone	100	Thin-bedded argillaceous limestone, calcareous shale, and limestone.	May yield some water to wells in conjunction with overlying beds.
					"Basal" Sand	100	Very fine to coarse, cemented to loose sand with some limestone and shale.	Not penetrated by water wells in Crockett County.
	Triassic	Dockum Group		Santa Rosa Sandstone		400	Medium to coarse, subangular, conglomeratic sandstone with variegated shale.	Not known to yield water to wells in Crockett County.
Paleozoic	Permian	Ochoa Series		Dewey Lake red beds		?	Sand, shale, gypsum, and anhydrite.	Absent in most of Crockett County; not known to yield water to wells in the county.
				Rustler Formation		?	Anhydrite, sand, limestone, halite, and shale.	Do.
				Salado Formation		?	Anhydrite, halite, and dolomite.	Do.

(Continued on next page)

Table 1.--Geologic units and their water-bearing properties, Crockett County--Continued

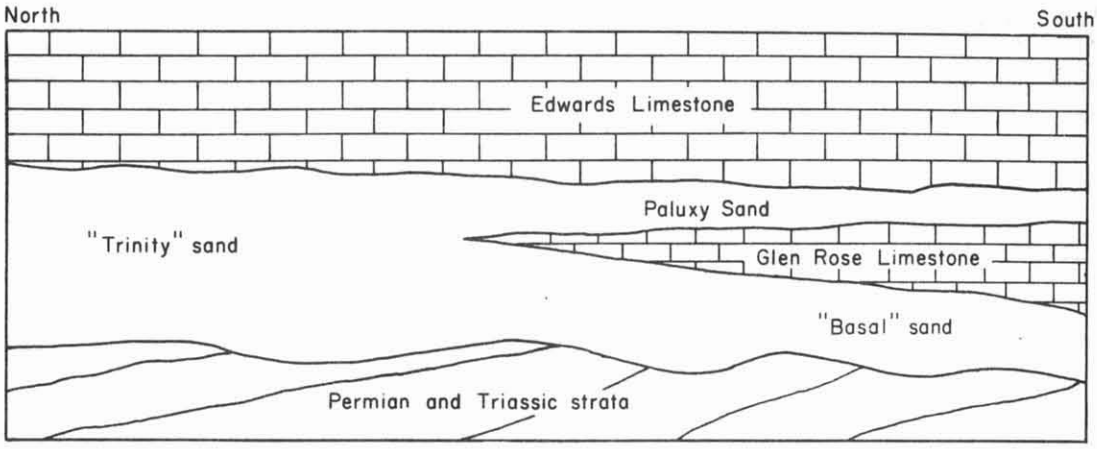
Era	System	Series or Group		Stratigraphic unit	Approximate maximum thickness (feet)	Character of rocks	Water-bearing properties
Paleozoic	Permian	Guadalupe Series	Whitehorse Group	Tansil Formation	100	Anhydrite, sand, limestone, and dolomite.	Not known to yield water to wells in Crockett County.
				Yates Sandstone	125	Sandstone, anhydrite, and shale.	Yields small quantities of salt water to oil wells in Crockett County.
				Seven Rivers Formation	650	Sandstone, dolomitic anhydrite, halite, shale, and limestone.	Do.
				Queen Formation	230	Sand, halite, anhydrite, and shale.	Yields large amounts of salt water and sulfurous water to oil wells in Crockett County.
				Grayburg Formation	230	Dolomite, anhydrite, and sand.	Yields large quantities of salt water to oil wells in Crockett County.
			Word Group	San Andres Limestone	1,000	Limestone, sandstone, and shale.	Do.
		Leonard Series			2,000	Limestone, siltstone, sandstone, and shale.	Not known to yield water to wells in Crockett County.
		Wolfcamp Series			7,500	Dolomite, limestone, and shale.	Yields small amounts of salt water to oil wells in Crockett County.
	Pennsylvanian	Cisco Series				Sandstone, shale, and limestone.	Not known to yield water to wells in Crockett County.
		Canyon Series				Shale and sandstone.	Do.
		Strawn Series			500	Limestone, sand, and shale.	Yields small quantities of salt water to oil wells in Crockett County.
		Bend Series			1,000	Cherty limestone and shale.	Not known to yield water to wells in Crockett County.
	Mississippian					Thin-bedded black shale facies--dark and slightly calcareous; some dark argillaceous and silty siliceous limestone.	Do.
	Silurian and Devonian				1,000	Cherty limestone and dolomite with shale interbeds.	Yields small amounts of brine to oil wells in Crockett County.

(Continued on next page)

Table 1.--Geologic units and their water-bearing properties, Crockett County--Continued

Era	System	Series or Group	Stratigraphic unit	Approximate maximum thickness (feet)	Character of rocks	Water-bearing properties
Paleozoic	Ordovician		Montoya Limestone	100	Cherty limestone and dolomite.	Not known to yield water to wells in Crockett County.
		Simpson Group		1,000	Sandstone, green shale, and limestone.	Do.
		Ellenburger Group		1,700	Limestone and dolomite.	Yields large quantities of brine to oil wells in Crockett County.
	Cambrian		Wilberns Formation	150	Dolomite and sandstone.	Not known to yield water to wells in Crockett County.

and "Basal" sand units coalesce forming a single sand unit herein called the "Trinity" sand. The following diagram shows the occurrence and relationships of these units in Crockett County as interpreted from well logs.



Figures 4 and 5 are contour maps showing the general configuration of the base and top of the Trinity Group.

"Trinity" Sand.-- The term "Trinity" sand in this report refers to the Maxon Sand and the Basement sands of King (1930, p. 31-33). In Crockett County it has been called "Trinity" sand by local drillers, geologists, and well owners.

The "Trinity" sand is conspicuously variegated in color and varies extremely in texture, composition, and degree of cementation. In an outcrop about 1 mile north of Iraan the sand consists of cross-bedded, fine- to coarse-grained quartz sand having varying amounts of calcareous cement. The color ranges from white to red. Well-rounded quartz and chalcedony pebbles are present in the lower part. A conglomerate is reported at the base of the formation by many well drillers. Sandy clay and thin-bedded limestone are found within this unit.

The thickness of the "Trinity" sand varies locally because the unit was deposited on a surface of moderate topographic relief. A maximum thickness of about 175 feet occurs in the northwestern part of the county. This is the sand unit exposed along the Pecos River (Figure 21) and in Pecos County just north of the town of Iraan where about 140 feet of sand is in evidence. Only a few wells pump water from the "Trinity" sand exclusively in Crockett County. However, several wells are known to produce from the sand in conjunction with the overlying Edwards Limestone. The "Trinity" sand is probably capable of yielding moderate to large quantities of water in Crockett County.

"Basal" Sand.-- The "Basal" sand unconformably overlies rocks of Permian age in southern Crockett County. It is in turn overlain by the Glen Rose Limestone. The formation dips southward at a rate of about 10 feet per mile corresponding to the general attitude of the Cretaceous structure. It ranges in thickness from about 15 feet to 100 feet.

The water-bearing properties of the "Basal" sand and the quality of its water are unknown because no water wells in the county are known which penetrate it.

Glen Rose Limestone.-- The Glen Rose Limestone does not crop out the county, southern Pecos County being the nearest exposure. Descriptions of well samples indicate the formation is thin-bedded limestone and calcareous shale. The Glen Rose Limestone is not present in northern Crockett County, as it pinches out on a line that approximates U.S. Highway 290 in the eastern two-thirds of the county. The Glen Rose is not known to yield water in Crockett County although it may yield small quantities in conjunction with the overlying strata.

Paluxy Sand.-- The Paluxy Sand overlies the Glen Rose Limestone in southern Crockett County. The Paluxy generally thickens southward, ranging up to about 75 feet. The thickness varies erratically, however, in places as much as 30 feet within one-fourth mile. The formation is absent in some localities. The Paluxy is an important source of water in Crockett County, especially in areas where the overlying Edwards Limestone lacks permeability.

Fredericksburg Group

Edwards Limestone.-- The Edwards Limestone, a massive, ledge-forming unit, crops out along the Pecos River, Live Oak Creek, and the southern part of Howard Creek (Figure 21), and is present in the subsurface of most of Crockett County. It thickens to the south, ranging from about 160 feet 5 miles north of Iraan to 190 feet at Lancaster Hill. The lower 16 feet is a soft, nodular, yellow to white, marly limestone containing Exogyra texana and is probably the unit described as Comanche Peak Limestone by Adkins (1927, p. 38) in Pecos County, by Long (1962) in Edwards County, and by Bennett and Sayre (1962) in Kinney County. Scattered nodular chert is present throughout the Edwards Limestone, and miliolids are abundant toward the top. An eroded bored surface at the top of the formation indicates an unconformable relationship with the overlying Georgetown Limestone. The Edwards Limestone is the most important water-yielding formation in Crockett County, and a great majority of the water wells in present use produce water from it.

Washita Group

Georgetown Limestone.-- The Georgetown Limestone, ranging in thickness from about 340 to 400 feet, unconformably overlies the Edwards Limestone throughout Crockett County. Lithologically, the Georgetown has been divided into upper and lower units (Figure 21).

The lower unit ranges in thickness from about 200 to 300 feet and consists of soft nodular limestone and marl with a very fossiliferous, hard, ledge-forming limestone in the lower 100 feet. This ledge-forming bed, containing abundant rudistids, thickens southward and forms sheer bluffs in southern Crockett County. The 20 to 30 feet of basal material in the lower Georgetown is a soft, nodular, marly limestone containing ammonites.

The upper Georgetown consists of massive, ledge-forming limestone beds containing abundant rudistids, and occasional oölites at the top. In the

northern part of the county the upper portion of this unit is soft nodular limestone with thin interbeds of hard limestone. The upper Georgetown weathers in a similar manner as the overlying Buda Limestone and is often mistaken for the Buda. The thickness of this unit ranges from about 100 to 125 feet. Both bioherm and biostrome reef structures are present in the upper Georgetown. In general, the Georgetown Limestone occurs above the water table and does not yield water. However, in the northeastern part of Crockett County, an impermeable zone in the Georgetown prevents water from percolating downward to the true zone of saturation. A perched water table is therefore created above the regional water table (Figure 7).

Buda Limestone.--The Buda Limestone, found only on the high flat divides (Figure 21), is up to about 40 feet thick. It consists of microcrystalline limestone at the base, yellow fossiliferous nodular marl in the middle, and thin-bedded, hard sparry limestone at the top. Cross bedding was found in the sparry limestone beds in the World field area in northern Crockett County. The ammonite Budaiceras is a marker fossil of the formation, as are echinoids and corals to some extent. Other fossils found in the Buda Limestone include gastropods, pelecypods, and stromotoporoids. The Buda is above the zone of saturation in Crockett County and is not known to yield water to wells.

Gulf Series

Eagle Ford Group

Boquillas Flags.--The Boquillas Flags is a brown to red, flaggy limestone found in patches as erosional remnants on the tops of some of the high divides (Figure 21). Up to about 10 feet of this formation is all that is left, and exposures are usually only about 3 to 5 feet thick. Weathering of this formation produces soil with a distinctively different type of vegetation than the surrounding Buda-derived soils.

Quaternary System

Pleistocene and Recent Series

Alluvium.--Pleistocene and Recent alluvium unconformably overlies rocks of Permian, Triassic, and Cretaceous age in Crockett County (Figure 21). The alluvium ranges in thickness from only a few inches where it wedges out on the sides of valleys to more than 200 feet in Live Oak and Howards Draws. Along the Pecos River, where almost continuous sorting during deposition occurred, the sand and gravel beds contain a much smaller percentage of fine-grained sediment (Armstrong and McMillion, 1961, p. 43). In other draws within the county alluvium has been derived by erosion of the limestone, clay, and marl beds of Cretaceous age, and is less sorted and less permeable than alluvium in the Pecos River Valley. The alluvium yields water to wells in the Pecos River Valley, Live Oak Draw, and Howards Draw.

Hydrologic Cycle

The hydrologic cycle can be described as the earth's circulatory system: the sum total of processes and movements of the earth's moisture from the sea through the atmosphere, to the land, and eventually by numerous routes back to the sea. Figure 6 shows the many courses water may take in completing the hydrologic cycle in the Edwards Plateau region, which includes Crockett County. All fresh water in Crockett County is derived from precipitation, and precipitation in this area is derived from moisture carried inland from the Gulf of Mexico.

Most precipitation that falls on the earth's surface runs off into streams, evaporates, or is transpired by vegetation. Water that escapes runoff, evaporation, and transpiration slowly percolates downward under the force of gravity through pervious soils and rocks until it reaches a zone in which all the voids in the rocks are filled with water. This zone is called the zone of saturation. The top of this zone is called the water table, and water within it is called ground water.

Occurrence and General Hydraulics

Ground water is contained in the voids or interstices of pervious strata. Porosity, the percent of open space or voids in the rock, and permeability, the ability of the porous material to transmit water, are the important fundamental characteristics in the occurrence of ground water. Fine-grained sediments, such as clay and silt, commonly have high porosity; but because of the small size of the voids, they have little or no permeability and consequently do not readily transmit water. Sand and gravel are usually both porous and permeable, the degree depending upon the size, shape, sorting, and amount of cementation of the grains. In limestone, igneous rocks, and tightly cemented and compacted rocks, porosity and permeability are controlled to a large degree by the occurrence and extent of joints, crevices, and solution cavities.

Water on its trip downward from the earth's surface to the zone of saturation may be trapped above a zone of impermeable rock, thus forming a perched water table. In parts of northeastern Crockett County, perched water is held above the true zone of saturation by beds of clay, shale, or impervious limestone (Figure 7).

A formation, a group of formations, or a part of a formation that yields water in usable quantities is termed an aquifer. The principal aquifers in Crockett County are the Edwards-Georgetown aquifer, in the Edwards Limestone and the saturated portion of the Georgetown Limestone; the Trinity aquifer, which includes the "Trinity" sand and the Paluxy Sand; and the alluvium which extends along the Pecos River, Live Oak Creek, and Howards Draw. A formation or part of a formation that is incapable of transmitting water in significant quantities is called an aquiclude.

Water in an aquifer is under water-table (unconfined) or artesian (confined) conditions. Water-table conditions are said to exist when the upper surface of the zone of saturation is under atmospheric pressure only. Water

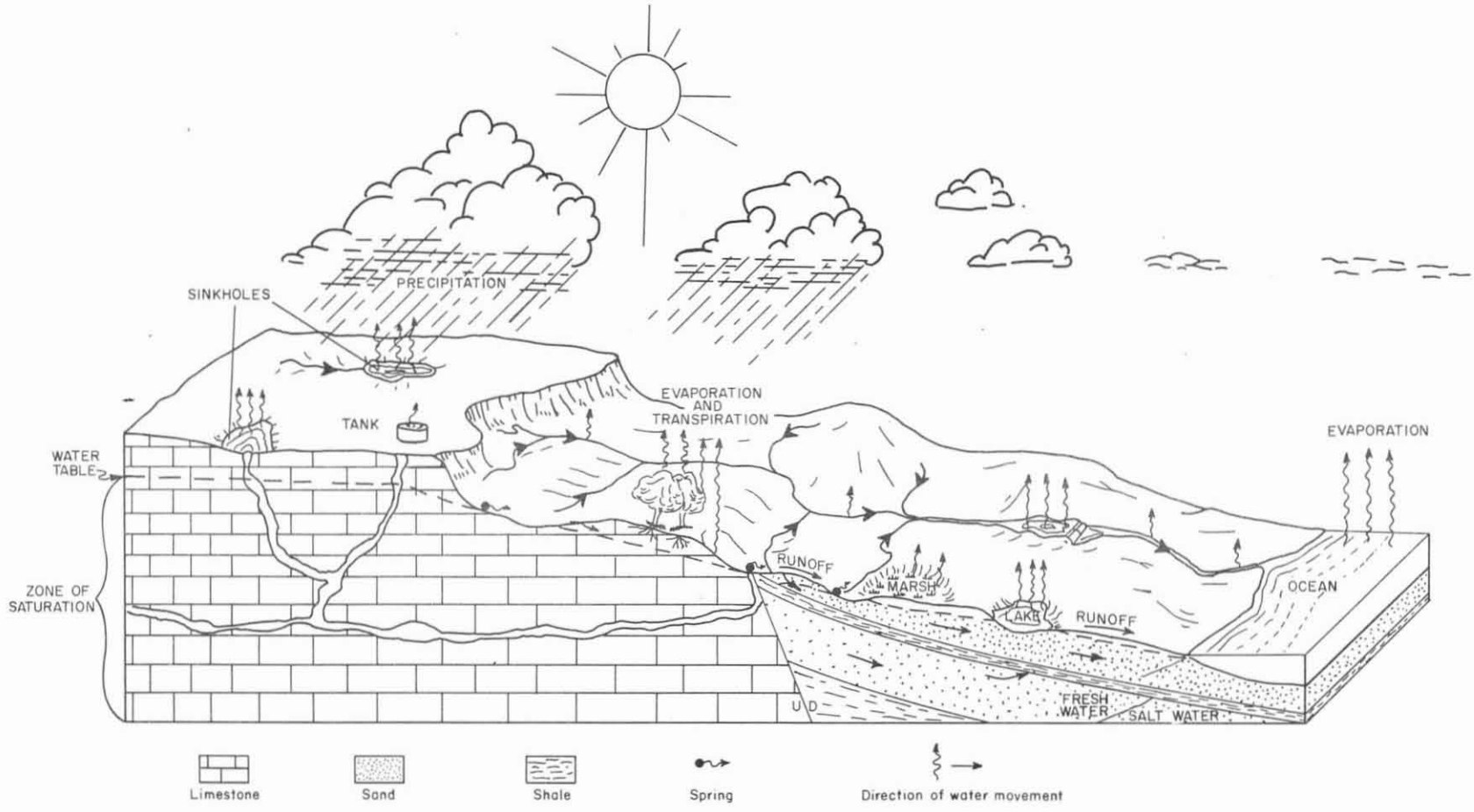


Figure 6

Hydrologic Cycle

Texas Water Development Board in cooperation with the Crockett County Commissioners Court

in the Edwards-Georgetown aquifer in Crockett County is under water-table conditions; the water levels in wells represent the water table.

In some areas, generally downdip from the outcrop, water in an aquifer may be confined between relatively impermeable strata and at greater than atmospheric pressure. If the pressure in the aquifer is sufficient to cause the water to rise above the top of the confined strata when it is penetrated by a well, artesian conditions are said to exist. The level to which water will rise in wells penetrating an artesian aquifer is called the piezometric surface. If the ground level is below the piezometric surface, the well will flow. The slope of the water table or the piezometric surface is termed the hydraulic gradient.

Water in the sands of the Trinity Group in Crockett County may be under artesian pressure at least locally. It is not known, however, whether an effective aquiclude is present between these sands and the porous zones and solution channels of the overlying Edwards Limestone. Only one or two wells in Crockett County that bottom in the sands of the Trinity Group are known to have the overlying Edwards Limestone cased off. Hydraulic pressures in the Trinity aquifer and the Edwards-Georgetown aquifer probably are different, but it is impossible to determine the elevation of the individual piezometric surfaces in well bores that are open to both aquifers.

Recharge, Discharge, and Movement

Recharge is the process by which water is added to an aquifer. Precipitation on the outcrop of an aquifer is generally the most significant source of recharge, but water may enter an aquifer from surface streams and lakes on the outcrop and by leakage from overlying or underlying aquifers. Recharge is a limiting factor in the amount of water that can be produced from an aquifer. Recharge must balance discharge over a long period of time, or the water in storage will be depleted. Factors that determine the amount of recharge received by an aquifer are the amount and frequency of precipitation, the rate of evaporation, the areal extent of the aquifer outcrop, topography, conditions of soil cover on the outcrop, the amount and type of vegetation, and the ability of the aquifer to accept recharge and transmit it to areas of discharge. An aquifer may be recharged artificially through injection wells or by spreading of water over the aquifer outcrop.

Recharge of the aquifers in Crockett County takes place both in the county and in adjoining counties, and under a variety of conditions. Loose granular soils in some areas are very favorable to recharge. In other areas light vegetational cover and steep topography favor runoff rather than recharge, especially in seasons of short hard rains. Water in the Edwards and Georgetown Limestones percolates down through joints, solution channels, and other openings on the outcrop. Numerous sinkholes in the northeastern part of the county aid recharge by intercepting surface runoff and permitting the water to percolate to the water table through solution channels and crevices.

The sands of the Trinity Group are recharged by precipitation that falls on the outcrop in the northwestern part of the county, probably to some degree by water moving downward from the overlying Edwards Limestone, and possible also by seepage of water from the Pecos River and associated alluvium. The loose,

unconsolidated alluvium found primarily along the Pecos River and the southern portion of Howards Draw is recharged by infiltration of precipitation and surface runoff.

Discharge is a process by which water is removed from an aquifer. It may be accomplished by such natural means as springs, effluent seepage, evapotranspiration, and inter-aquifer leakage, or artificially by wells. Natural discharge takes place at numerous springs and seeps in and near the county. Springs fed by water from the Edwards Limestone are particularly numerous along the Pecos River in southwestern Crockett County and along Devils River in Val Verde County. In fact, much of the base flow of Devils River is maintained by springs that emit from the Edwards Limestone. Water is discharged artificially through numerous wells, which provide water for municipal, industrial, irrigation, domestic, and livestock use. However, the amount of water discharged naturally far exceeds that which is discharged artificially.

Ground water moves from areas of recharge to areas of discharge, and in the general direction of the hydraulic gradient; that is, from areas where the altitude of the water table is high to areas where it is low. The contours on Figure 7 indicate the general direction of the hydraulic gradient, and consequently the general direction of movement of ground water. Most of the wells shown on Figure 7 produce from the Edwards-Georgetown aquifer, but because wells in Crockett County are generally uncased and may produce water from two or even all three aquifers, this map should be considered only as a general guide to water levels in the county. The map shows that the regional hydraulic gradient is generally southward at a rate of about 10 feet per mile except for the extreme western part of the county where the gradient is considerably steeper and toward the Pecos River.

Although the general direction of ground-water movement is in the direction of the hydraulic gradient, it must be emphasized that in limestone aquifers such as the Edwards-Georgetown, where movement of the water is controlled by the irregular occurrence of cracks, crevices, solution cavities, and porous zones, the movement locally may be in any direction.

The natural rate of movement in sand aquifers is generally very slow, only a few feet per year.

Water Levels

Measurements of the depth to water in wells indicate the depth of the water table in an unconfined aquifer and the piezometric surface in an artesian aquifer. Changes in water levels are due to many factors and are important in the evaluation of an aquifer. These changes can be regional or local and of short or long duration. One of the most significant causes of water-level fluctuations is a change in the balance of recharge and discharge of the aquifer. During a drought when recharge is reduced, discharge by wells, springs, and evapotranspiration comes from aquifer storage, causing the water levels to decline. Another significant cause for change in water levels is concentrated discharge through wells. If water is withdrawn at a rate exceeding the aquifer's ability to transmit water to the point of discharge, then the water levels will decline. Under natural conditions, recharge will equal discharge over a long period of time, and generally the water levels will remain fairly constant. Available records indicate that water levels have been

fairly constant over a long period of time in the aquifers of Crockett County except for temporary declines during drought years. In this area, therefore, recharge equals discharge under present conditions of development.

The depth to water in Crockett County depends on the topography as well as the elevation of the water table. Water levels in the "Trinity" sand in the Hoover farm area on Live Oak Creek range from 50 to 150 feet below the land surface, whereas on the high divide between the Pecos River and Howards Draw in southern Crockett County water levels in this aquifer are more than 600 feet below the surface. Wells drilled into the Edwards Limestone have water levels ranging from about 100 feet to more than 450 feet, depending on whether the well was drilled in the bottom of a draw or on the top of a divide. In the northeastern part of the county where perched water is found in the Georgetown Limestone, water levels are from 60 to 110 feet below land surface, or about 200 feet above the true water table. Water levels in the alluvium aquifer range from 10 to 70 feet below land surface. Well owners report that water levels in the alluvium decline during drought years, and that large-scale rises follow hard rains that cause runoff in the draws. The elevation of the water table ranges from about 1,650 feet above sea level in the southeastern part of the county to more than 2,400 feet in the northwestern part (Figure 7).

Utilization and Development

Most of the water wells in Crockett County obtain water from the Edwards-Georgetown aquifer. However, in the western part of the county many wells produce from the Trinity aquifer. These two aquifers probably produce more than 95 percent of all the water pumped in Crockett County.

Wells in the Edwards-Georgetown aquifer are usually small producers, yielding 1 to 20 gpm (gallons per minute), although yields of 2,000 gpm or more can be obtained if a well penetrates a very porous section in the limestone. "Trinity" sand wells usually produce more water on the average than do the limestone wells. On the Hoover farm on Live Oak Creek, wells producing from the sand and the alluvium yield up to 2,500 gpm.

Most of the water wells in Crockett County are uncased open holes with only a short piece of casing cemented in the top to prevent animals and debris from entering the well. Few wells have casing as deep as the water-producing zones. Two industrial wells at the Cities Service Plant and Iraan's municipal wells are cased, gravel packed, and contain screens. Windmills are used to pump most domestic and livestock wells; however, the use of submersible pumps is becoming more common. Most of the industrial, municipal, and irrigation wells within the county are equipped with turbine pumps; however, several irrigation wells have submersible pumps (Table 2).

The Edwards-Georgetown aquifer supplies most of the water used in Crockett County for municipal purposes. The Ozona water supply consists of six wells producing from this aquifer. Four wells on the east hill in Ozona pumped 260,530,000 gallons of water in 1963, and two wells on the west hill pumped 110,699,600 gallons, for a total of 371,229,600 gallons, or about 1,139 acre-feet of water in 1963. The Radar Station 5 miles east of Ozona pumped about 11,700,000 gallons (35.9 acre-feet) of water in 1963 from two wells completed in the Edwards Limestone.

At present, the town of Iraan has three wells in Crockett County pumping water from the Trinity aquifer. The quality of water in these wells is deteriorating, and plans have been made to abandon them in the near future. In 1963, 73,902,300 gallons (230 acre-feet) of water was produced by these wells. The total pumpage for municipal or public water supplies in Crockett County during 1963 was over 456,800,000 gallons (1,405 acre-feet). Of this total, over five times more water was produced from the Edwards-Georgetown aquifer than the Trinity aquifer.

Three gas plants in Crockett County use water from the Trinity aquifer. Eight industrial wells now in use in the county produced an estimated 22,000,000 gallons (68 acre-feet) of water in 1963.

The use of ground water for irrigation, although practiced on a small scale, is increasing in the county. Statewide inventories of irrigation conducted in 1958 and again in 1964 showed that the number of irrigation wells in Crockett County increased from 9 to 16 during the 6-year period, and pumpage increased from 1,839 acre-feet (about 599,200,000 gallons) in 1958 to 3,197 acre-feet (about 1,041,700,000 gallons) in 1964 (Gillett and Janca, 1965). Most of the irrigation development is in the western part of the county. Six wells on the Hoover farm in the Live Oak Creek area and two wells on the Nolke farm north of Iraan produce from the Trinity aquifer. One well each on the Richardson, Ingham, and Dunlap farms along the Pecos River in southern Crockett County produce from the river alluvium and possibly to some extent from the Trinity aquifer. The remaining irrigation wells are in the eastern part of the county and produce from the Edwards-Georgetown aquifer.

Pumpage of ground water for irrigation will probably increase in the county as a result of new irrigation projects being planned.

About 1,100 domestic and livestock wells were inventoried during the Crockett County ground-water investigation (Table 2). Of these, most produce from the Edwards-Georgetown aquifer. In the central and western parts of the county, however, many produce from the Trinity aquifer as well. The pumpage for domestic and livestock purposes in Crockett County is estimated to be about 1,000 acre-feet per year. This estimate is based on average domestic rural consumption and on the average consumption of water by livestock and the number of animals in the county (1959 agriculture census).

The total pumpage from municipal, industrial, irrigation, domestic, and livestock wells in Crockett County during 1963 was an estimated 5,670 acre-feet. The total pumpage will fluctuate yearly due to such factors as the amount of rainfall, the number of new wells drilled, the number of wells abandoned, the amount of livestock on ranches in the county, and others. Ground-water pumpage in the county in 1963 is summarized in the following table.

1963 Ground-Water Pumpage, Crockett County

Water use	Gallons	Acre-feet
Public supply	456,800,000	1,405
Industrial	22,000,000	68
Irrigation*	1,041,700,000	3,197
Livestock and domestic	325,800,000	1,000
Total	1,846,300,000	5,670

* Irrigation in 1964, based on "Inventory of Texas Irrigation, 1958 and 1964," by Gillett and Janca.

Future development of new water supplies in the county will be mainly for municipal, industrial, and especially irrigation purposes, because most ranchers have an adequate supply for livestock and domestic needs.

Availability of Ground Water

The amount of water available for additional development from the aquifers beneath Crockett County can only be estimated, but data available indicate that many times the amount presently pumped could be developed.

The source of ground water in the county is precipitation which falls upon the land surface, a small portion of which percolates downward through rock and soil to the water table and the zone of saturation. The amount of water available on a continuous basis is limited to the recharge--the amount of water which infiltrates into the aquifer. If the discharge exceeds recharge, water is removed from storage and eventually, if the trend is continued, the water in storage will be depleted. Water moves from areas of recharge in the direction of the water-table gradient to points of discharge, either natural or artificial The quantity of water from the Edwards-Georgetown aquifer in Crockett County is estimated by determining the amount of water recharged to the aquifer.

Regional water-level gradients (Brown and others) show that ground water in the Edwards-Georgetown aquifer beneath about 3,800 square miles in parts of Crockett, western Schleicher and Sutton, and southern Irion and Reagan Counties moves generally southward toward the Devils River drainageway and emerges as springs near Juno in Val Verde County.

Streamflow measured daily at the U.S. Geological Survey gaging station near Juno during the period of continuous record 1925-49 has varied greatly. (The Juno stream-gaging station was discontinued in August 1949 and re-established in September 1963.) The estimated base flow at the Juno station was as follows.

Year	Estimated base flow (acre-feet)	Year	Estimated base flow (acre-feet)	Year	Estimated base flow (acre-feet)
1925	84,000	1933	98,400	1941	57,900
1926	60,400	1934	64,900	1942	69,200
1927	57,900	1935	81,700	1943	75,700
1928	61,700	1936	95,000	1944	54,900
1929	57,700	1937	68,600	1945	50,900
1930	55,600	1938	69,200	1946	52,900
1931	80,900	1939	64,800	1947	48,600
1932	69,000	1940	59,800	1948	48,200
				1949	71,300

The estimated base flow at Juno has varied from a low of 48,200 acre-feet in 1948 to 98,400 acre-feet in 1933. From these records and the size of the contributing area (about 3,800 square miles), it appears that from 0.2 to 0.4 inch of recharge is required annually to support this discharge. This represents an average of 0.3 inch of recharge or about 2 percent of the mean annual precipitation.

In order to give meaning to this information as it applies to Crockett County, in terms of availability, the above recharge figure is applied to the area underlain by the Edwards-Georgetown aquifer in Crockett County and adjacent areas expected to contribute to the subsurface flow into Crockett County. It appears that about 45,000 acre-feet of additional ground water could be pumped annually in the county. Although this figure seems reasonable, based on discharge measurements at Juno, it is probably conservative. Mount and others estimated that 5 percent of the mean annual precipitation becomes ground water and is discharged as base flow in streams with their headwaters in various parts of the Edwards Plateau.

Although the total quantity of water available from the Edwards-Georgetown aquifer in Crockett County is large compared to the present pumpage in the county, it must be emphasized that due to the lack of uniformity in the occurrence of fractures, solution channels, and porous zones, and the wide variation in the size and shape of these openings, the amount of water which can be developed at a specific location cannot be predicted and the maximum yields of wells are likely to vary radically within short distances.

The quantity of water available from the Trinity aquifer and the alluvium is not known. Information required to make an estimate could not be obtained during this investigation, although the Trinity occurs at the surface or in the subsurface throughout most of the county. Only a few wells screen the Trinity exclusively and all of these are near the outcrop. Consequently, regional water-level gradients for this aquifer could not be determined and

the necessary aquifer tests could not be performed. An aquifer test was attempted on one of the Iraan municipal wells but the results were inconclusive.

GENERAL QUALITY OF GROUND WATER

All ground water contains minerals carried in solution, and the chemical constituents of ground water are derived principally from soil and rock through which the water has moved. Precipitation is relatively free of mineral matter until it comes in contact with the various mineral constituents which make up the soils and rocks of the earth and begins to dissolve the minerals and carry them into solution. Consequently, the chemical character of ground water reflects the differences in the mineral content of the rock through which it moves.

Factors which determine the kind and amount of chemical constituents in ground water include solubility of the minerals, the length of time the water has been in contact with the rocks and soil, the amount of free carbon dioxide present in the water, and the temperature of the formation.

Uncontaminated ground water maintains a relatively constant quality and constant year-round temperature which makes it highly desirable for many purposes, particularly for industrial processes which require rigid water-quality control. The chemical quality of ground water can be adversely altered by permitting highly mineralized water to enter fresh-water strata through inadequately constructed wells, by seepage from brine disposal pits which have been used to dispose of highly mineralized water produced with oil, and by disposal of animal wastes, sewage, or various industrial wastes into the fresh-water strata or onto aquifer recharge areas. The principal chemical constituents found in ground water are calcium, magnesium, sodium, potassium, iron, silica, bicarbonate, carbonate, sulfate, chloride, and minor amounts of manganese, nitrate, fluoride, and boron. Concentrations of these ions or chemical constituents are commonly reported in parts per million (ppm). One ppm is defined as 1 part by weight (milligram) of the ion to a million parts by weight (kilogram) of water.

The suitability of the water supply depends upon the contemplated use, and water-quality standards are based on such criteria as temperature, odor, color, turbidity, chemical constituents, and bacteria content.

The total dissolved-solids content is a major limiting factor in the use of water. The following is a general classification of water based on dissolved solids (Winslow and Kister, 1956, p. 5).

Description	Dissolved-solids content (ppm)
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 irrigation supplies. Water used for public supplies should be colorless, odorless, palatable, and if possible, within the mineral concentration limits set by the U.S. Public Health Service (1962, p. 2152-2155) for drinking water used on interstate carriers. Some of these standards are as follows:

Chloride (Cl)	250
Fluoride (F)	(*)
Iron (Fe)	.3
Manganese (Mn)	.05
Nitrate (NO_3)	45
Sulfate (SO_4)	250
Total dissolved solids	500

* When fluoride is naturally present in drinking water, the concentration should not average more than the appropriate upper limit in the following table.

Annual average of maximum daily air temperatures (°F)	Recommended control limits of fluoride concentrations (ppm)		
	Lower	Optimum	Upper
50.0 - 53.7	0.9	1.2	1.7
53.8 - 58.3	.8	1.1	1.5
58.4 - 63.8	.8	1.0	1.3
63.9 - 70.6	.7	.9	1.2
70.7 - 79.2	.7	.8	1.0
79.3 - 90.5	.6	.7	.8

Optimum fluoride concentration in drinking water depends upon climatic conditions because the quantity of water and consequently the amount of fluoride ingested is influenced primarily by air temperature. Use of drinking water having a fluoride content exceeding the upper recommended limits may cause mottling of the teeth of children (Dean, Dixon, and Cohen, 1935, p. 424-442). However, the use of drinking water that contains the optimum fluoride concentrations appears to reduce the incidence of tooth decay (Dean, Arnold, and Elvove, 1942, p. 1155-1179). The Texas State Department of Health reports some authorities as recommending that the drinking water should not contain nitrate

in excess of 20 ppm, as it may indicate organic pollution. Maxcy (1950, p. 271) states that water having a nitrate content exceeding 45 ppm should be regarded as unsafe for infant feeding.

In many areas of Texas, municipalities cannot obtain water supplies which comply with all of these standards. Nevertheless, water that failed to meet some of these standards has been used for long periods without apparent ill effects to users. The foregoing standards set by the U.S. Public Health Service were conceived primarily for the purpose of protecting travelers on public conveyances in interstate travel from consuming water of markedly different chemical characteristics.

Hardness, due primarily to Calcium and Magnesium, causes an increase in soap consumption and formation of scale in hot water heaters and pipes. The degree of hardness is expressed in parts per million as calcium carbonate. Water having a hardness of 60 ppm or less is rated soft; 61 to 120 ppm is moderately hard; and 121 to 200 ppm is hard. More than 200 ppm is considered very hard, the condition of most ground water in Crockett County.

Water having a chloride content exceeding 300 ppm will taste salty to most people. Water which contains relatively large quantities of sulfate (250 ppm) will tend to produce a laxative effect.

Standards for industrial supplies vary, depending upon the particular industry and the intended use of the water. A major concern to industries is the amount of corrosive or scale-forming constituents in a water supply. Calcium and magnesium, which directly affect the hardness, are a limiting factor in the suitability of water for boiler use. Iron and silica in excessive amounts also cause scale deposits which clog lines and reduce the efficiency of other industrial processes. Each industry interested in developing a water supply will have its own quality standards.

Whether water is suitable for irrigation depends not only on the quality of the water but also on the type of soil to which it is applied, adequacy of drainage, kinds of crops, climate conditions, and management practices. According to the U.S. Salinity Laboratory Staff (1954), the characteristics which are important in determining the suitability of water used for irrigation are: (1) the total concentration of soluble salts, (2) the proportion of sodium in relation to the other cations, (3) residual sodium carbonate, and (4) concentrations of boron or other toxic elements.

Water that does not meet the requirements of the user can usually be treated by one or more methods to render it usable. Treatment processes include softening, aeration, filtration, cooling, addition of chemicals, and dilution or blending of waters of good and poor quality. Since different water may require different treatment practices, specific treatment should be designed for that particular water. When a method is finally established, it probably should not have to be changed, since the chemical characteristics of uncontaminated ground water remain fairly constant. All of the water in Crockett County is extremely hard. Two methods are commonly used to soften large quantities of hard water. The first is the lime or lime-soda process which in addition to softening, reduces the content of dissolved solids. The other is the zeolite process, which involves the exchange of calcium and magnesium in the water for sodium in the exchange material. Carbonate hardness may be removed most economically by using lime as the precipitant.

QUALITY OF GROUND WATER IN CROCKETT COUNTY

Chemical analyses of 751 samples of water collected from water wells in Crockett County during this investigation indicate that the quality of water in the county varies within rather wide limits (Table 3). Ranges of the dissolved-solids content and some of the major chemical constituents are as follows:

Dissolved solids.....	208	to	9,160 ppm
Bicarbonate.....	22	to	448 ppm
Sulfate.....	2	to	2,400 ppm
Chloride.....	6	to	4,675 ppm
Fluoride.....	.5	to	22 ppm

Although the quality of water varies widely in the county, as indicated by the ranges of constituents listed above, for the bulk of the samples the major constituents fall in a much narrower range. The majority of the samples (460 or 61 percent) contain less than 500 ppm dissolved solids, 250 ppm chloride, and 250 ppm sulfate, thus meeting the U.S. Department of Health suggested limits for public supplies. While several analyses indicate that the water in some areas is undesirable for domestic use, only a relatively few of the waters sampled are considered to be unusable.

The differences in the quality of water from wells in Crockett County are due to a number of factors. One factor is that the physical characteristics of the water-bearing formations vary. Many wells penetrate more than one water-bearing formation, and the water produced from these wells may not be typical of either aquifer. Also, the various water-bearing formations are, in places, in contact and very probably hydrologically connected. In addition there is evidence that contamination of ground water by oil-field brine has taken place locally in some parts of Crockett County.

The dissolved-solids content of the samples collected during the study ranges from 208 ppm (well 54-37-602) to 9.160 ppm (well 44-60-703). Over 61 percent of the samples contain less than 500 ppm dissolved solids. Only 23 or about 3 percent of the samples contain more than 3,000 ppm dissolved solids, and only about 10 percent contain more than 2,000 ppm.

The chloride content of the samples ranges from 6 ppm (wells 54-21-203 and 54-74-105) to 4,675 ppm (well 44-60-703). The majority of the samples (493) contain less than 100 ppm chloride, and they typically contain less than 50 ppm. Twenty-seven samples or about 3 percent contain more than 1,000 ppm chloride.

The sulfate content ranges from less than 2 ppm (well 54-19-604) to 2,400 ppm (well 54-01-204). Four hundred eighty-two (64 percent) of the samples contain less than 100 ppm, and they typically contain less than 50 ppm. Five hundred forty-nine or 73 percent of the samples contain less than 250 ppm sulfate, the upper limit suggested by the U.S. Public Health Service.

The bicarbonate content in 751 samples ranges from 22 ppm (well 44-60-802) to 488 ppm (well 54-47-102), having the narrowest range of the major chemical constituents. The majority of the samples (88 percent) contain between 200 and 350 ppm bicarbonate.

The fluoride content of the samples collected during the Crockett County investigation ranges from less than 0.5 to 22 ppm. Four hundred fifty-seven of the samples or about 61 percent contain less than 1.5 ppm fluoride, and 694 of the samples or over 92 percent contain less than 3.0 ppm. Excessive concentration of fluoride in water may cause teeth of young children to become mottled. The U.S. Public Health Service (1962, p. 41) states that the optimum fluoride level for a given community depends upon climate conditions since the amount of water (and consequently the amount of fluoride) ingested by children is primarily influenced by air temperature. The 6-year average (1960-65) of the maximum daily air temperature at Ozona was 79.7°F. Consequently, the recommended fluoride concentration in Crockett County is from 0.6 to 0.8 ppm. Only 279 of 751, or about 37 percent of the samples collected, contain less than 0.8 ppm fluoride. The remainder of the samples exceed the recommended upper limits. Only 137 samples contained fluoride in concentrations between 0.6 and 0.8 ppm.

The nitrate content varies within wide limits, ranging from less than 0.4 to 126 ppm. The great majority of samples (631 or 84.2 percent) contain less than 5 ppm, and 208 (27.7 percent) contain less than 0.4 ppm. Only a relatively few samples have very high concentrations. Those samples that contain 30 ppm or more of nitrate are from the following wells:

45-63-501....60 ppm	45-62-102....126 ppm
44-63-401....41.5 ppm	54-12-802.... 49 ppm
54-24-603....38 ppm	44-62-902.... 35 ppm
45-64-501....30 ppm	

A high nitrate content often, but not always, indicates organic pollution. Before any water having a high nitrate content is used for drinking purposes a bacteriological analysis should be made to determine its safety for human consumption.

The hardness of samples collected during this investigation range from 38 ppm (well 54-14-204) to 2,570 ppm (well 54-01-204). Nearly all samples are very hard. Only one sample, from well 54-14-204, could be classified as soft and only one, from well 54-32-901, is moderately hard. Thirteen samples are rated as hard, the remainder very hard. Although the range varies greatly, the majority range between 200 and 300 ppm. Sixty-six percent fall between 200 and 400 ppm, and 74 percent between 200 and 500 ppm.

The temperature of the water samples at the point of collection ranges from 64 to 82°F. Most of the samples (79.7 percent), however, range from 69 to 72°F.

Chemical quality of water from about 500 selected wells completed in the "Trinity" sand (Trinity aquifer), the Edwards or Georgetown Limestones (Edwards-Georgetown aquifer), and the Edwards-Georgetown and Trinity aquifers

(undifferentiated) is shown on Figure 8. The latter group includes wells drilled into the "Trinity" sand but which are open to both the sand and the overlying limestones through uncased holes and, in addition, a large number of wells for which depth could not be determined and consequently may be open to both aquifers or only the Edwards-Georgetown aquifer. Analyses of water from all wells sampled during this investigation are shown in Table 3.

In most areas, water from the Edwards-Georgetown aquifer is of rather uniform quality and suitable for most purposes. The water typically ranges from about 200 to 400 ppm dissolved solids. The water is typically a calcium bicarbonate type, with the sulfate and chloride occurring in relatively small quantities, generally less than 50 ppm. The most objectionable characteristic of the water is its hardness, which ranges from 200 to 300 ppm.

As a general rule, water from the Edwards-Georgetown aquifer is of better quality than from other water-bearing strata in Crockett County. This is especially true in the eastern part of the county where most of the samples from the aquifer were collected.

Analyses of water from only eight wells, believed to be completed in the Trinity aquifer exclusively, indicate the quality characteristics of water from this aquifer in Crockett County (Figure 8). Water from the eight Trinity wells contains from 379 to 1,525 ppm dissolved solids. The chloride and sulfate concentrations range from 37 to 474 ppm and 54 to 660 ppm, respectively. Only two of the wells (54-02-708 and 54-19-903) contain less than 500 ppm dissolved solids. All of the wells are in the western part of the county, within a relatively short distance from the outcrop, and consequently nothing is known about the quality of water from this aquifer in the easternmost part of the county. A large number of other wells in the county also penetrate and produce water from the Trinity aquifer but generally in conjunction with overlying limestone or alluvium.

One notable quality characteristic of water from the Trinity aquifer is a high sulfate concentration relative to the other constituents. With only one exception, well 54-35-803, the sulfate content exceeds the chloride content, generally by an appreciable margin. Also, water from wells known to produce from the Trinity in conjunction with other, overlying strata commonly exhibits this characteristic.

Water from the Edwards-Georgetown and Trinity aquifers (undifferentiated) shows a wide variation in quality (Figure 8). The mineral content ranges from less than 300 to more than 9,000 ppm dissolved solids. Since the wells in the Edwards-Georgetown and Trinity aquifers (undifferentiated) may derive their water from the Edwards-Georgetown only, or from both aquifers in any proportion, the water may exhibit quality characteristics of the Trinity, the Edwards-Georgetown, or both.

Contamination of Ground Water

Information collected during this study indicates that ground water in some parts of Crockett County has been contaminated by oil-field brines. Water wells suspected to be contaminated are located in several widely separated areas in the county; however, most of the wells are in the north and central part of the

county near the World, Weger, Shannon, Todd, and Simpson oil fields (Figure 16). Very commonly, wells apparently not contaminated are located in the same vicinity as those suspected to be contaminated. Although the precise source of the contaminants cannot be determined, in every case a possible nearby source exists and apparently the contamination is due to the salt water disposal practices. These practices and their implications are described in the following sections of this report.

Water quality may be illustrated by diagrams as shown on Figures 9 and 10. The percent of each major chemical constituent--Calcium (Ca), Magnesium (Mg), Sodium (Na), Potassium (K), Chloride (Cl), Sulfate (SO_4), and Bicarbonate (HCO_3)--is plotted on radial coordinates and the plots connected. The shape of the patterns thus formed reflect the ratios of the various ions, and differences or similarities in water quality become readily apparent.

Figure 9 shows a series of quality diagrams representing chemical analyses of water from the Edwards-Georgetown aquifer, a typical oil-field brine from the Shannon, San Andres field, and hypothetical mixtures of these in proportions of 1, 2, 3, 5, 10, and 100 gallons of the brine to 1,000 gallons of the fresh ground water. The addition of only 1 gallon of brine changes the shape of the quality diagram perceptibly. When 5 gallons of brine is added to 1,000 gallons of ground water, the major constituents of the mixture are sodium and chloride (salt), and the diagram takes on the characteristics of the brine. These diagrams indicate graphically that it takes only a small amount of brine to alter the chemical quality of large quantities of fresh water. Brines, unlike fresh water, are typically very high in sodium and chloride; thus, if fresh water is being contaminated by brine it will quickly acquire characteristics similar to that of the contaminant.

Figure 10 shows a number of quality diagrams which illustrate differences between fresh water and a typical brine, as well as similarities between the brine and water from some wells in Crockett County suspected to be contaminated. In these wells thought to be contaminated, the dissolved solids range from about 3,000 to over 9,000 ppm, and sodium and chloride are the dominant ions.

POSSIBLE AND POTENTIAL SOURCES OF CONTAMINATION OF GROUND WATER BY OIL-FIELD BRINES IN CROCKET COUNTY

History of Brine Production

The production of oil-field brine in Crockett County began in 1925 with the completion of the L. P. Powell No. 1 well in the World field. This field has been the largest producer of salt water in Crockett County, having yielded a reported 23,666,901 barrels in 1961. In the early days of oil production in Crockett County, methods of brine disposal varied but the brine was usually stored in large unlined earthen reservoirs (Figures 11 and 12). At one location in the World field, brine flowed into crevices in the underlying limestone formations (Figure 13). In the Midway Lane field, a large sinkhole was used as a storage pit and in some instances pipelines were laid to dry draws into which the salt water was released (Figure 14). Figure 12 shows unlined surface pits in the Crockett field in 1963 from which salt water is permitted to flow upon the land surface through an overflow pipe.

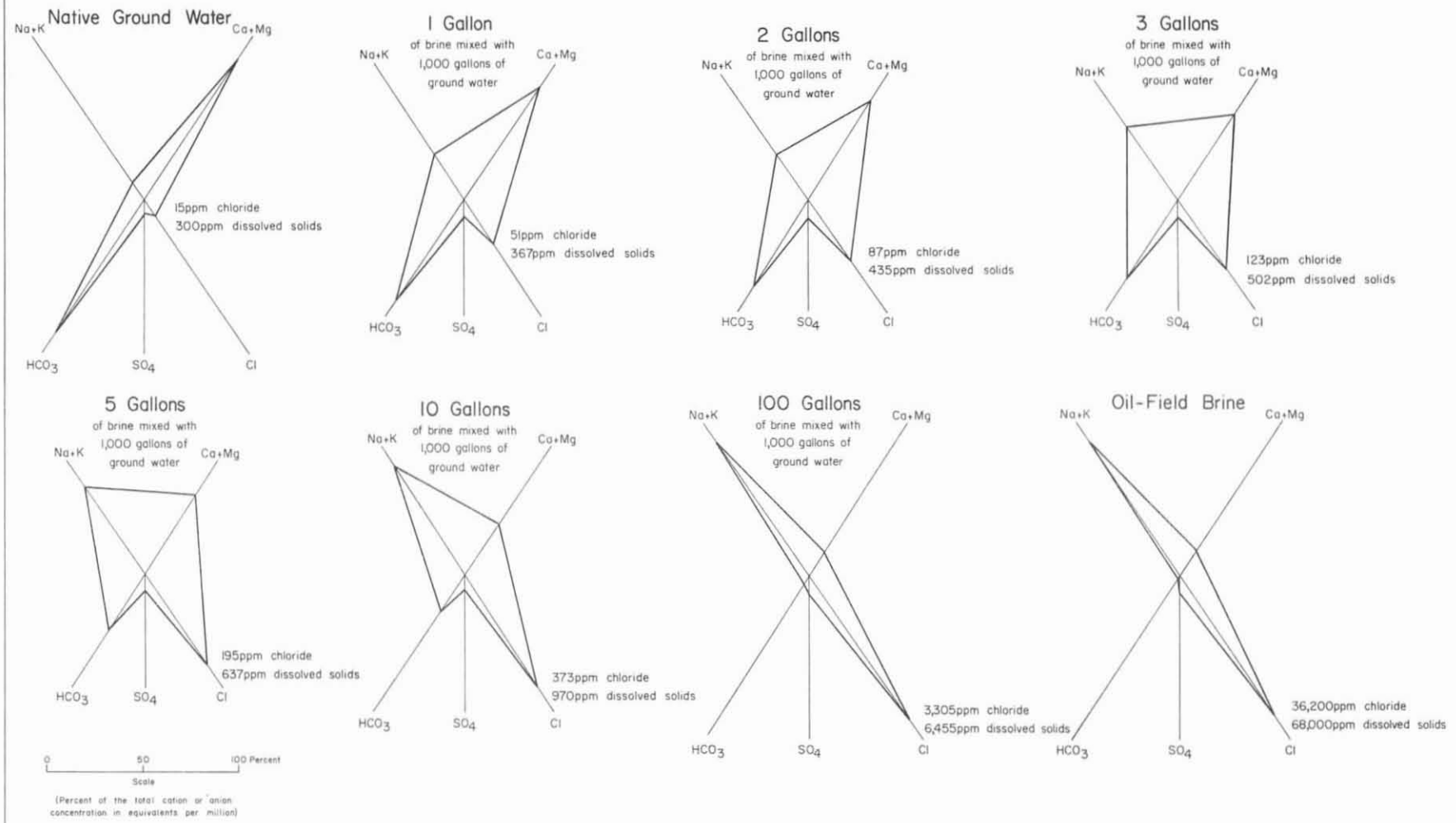


Figure 9

Chemical Quality Diagrams Showing Hypothetical Alteration of Native Ground Water by Oil-Field Brine

(Concentrations Plotted in Percent of Equivalents per Million)

Texas Water Development Board in cooperation with the Crockett County Commissioners Court

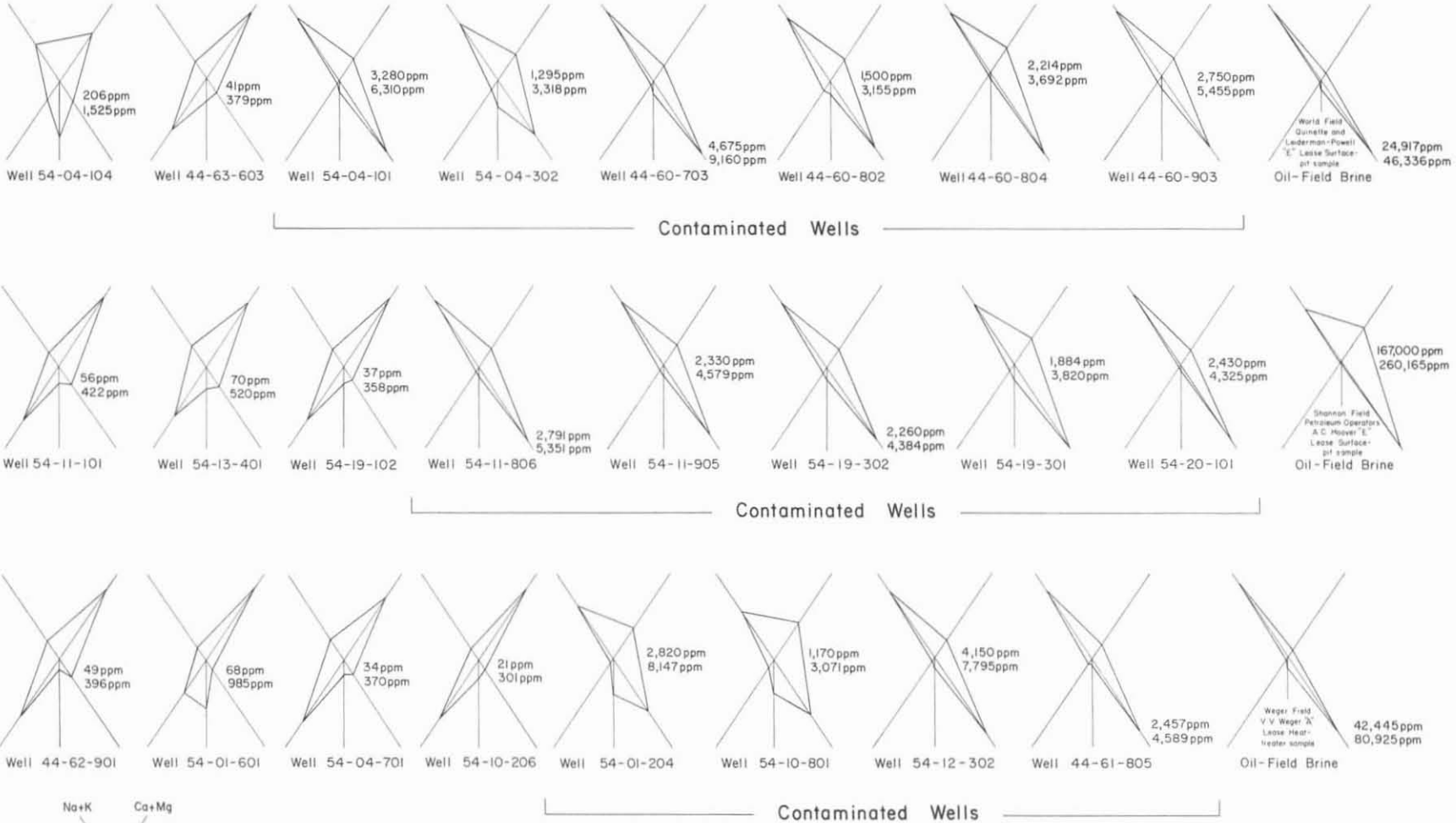


Figure 10

Diagrams of Chemical Analyses of Water from Contaminated Wells, Showing Comparison with Uncontaminated Ground Water and Typical Oil-Field Brine

(Concentrations Plotted in Percent of Equivalents per Million)

Texas Water Development Board in cooperation with the Crockett County Commissioners Court

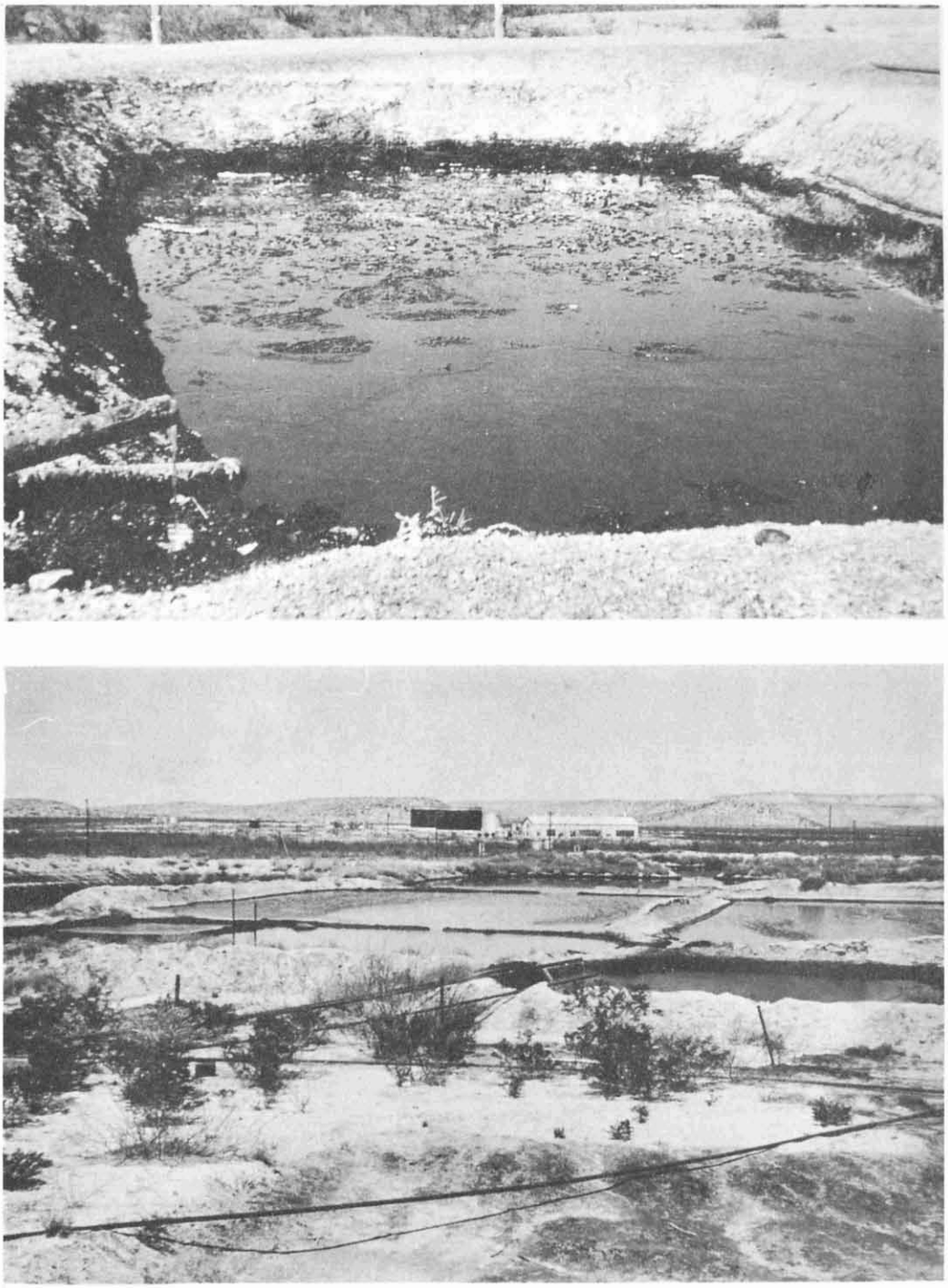


Figure 11

Unlined Surface Pits, Shannon (top)
and Toborg (bottom) Fields, Crockett County, 1963

Texas Water Development Board in cooperation with the Crockett County Commissioners Court

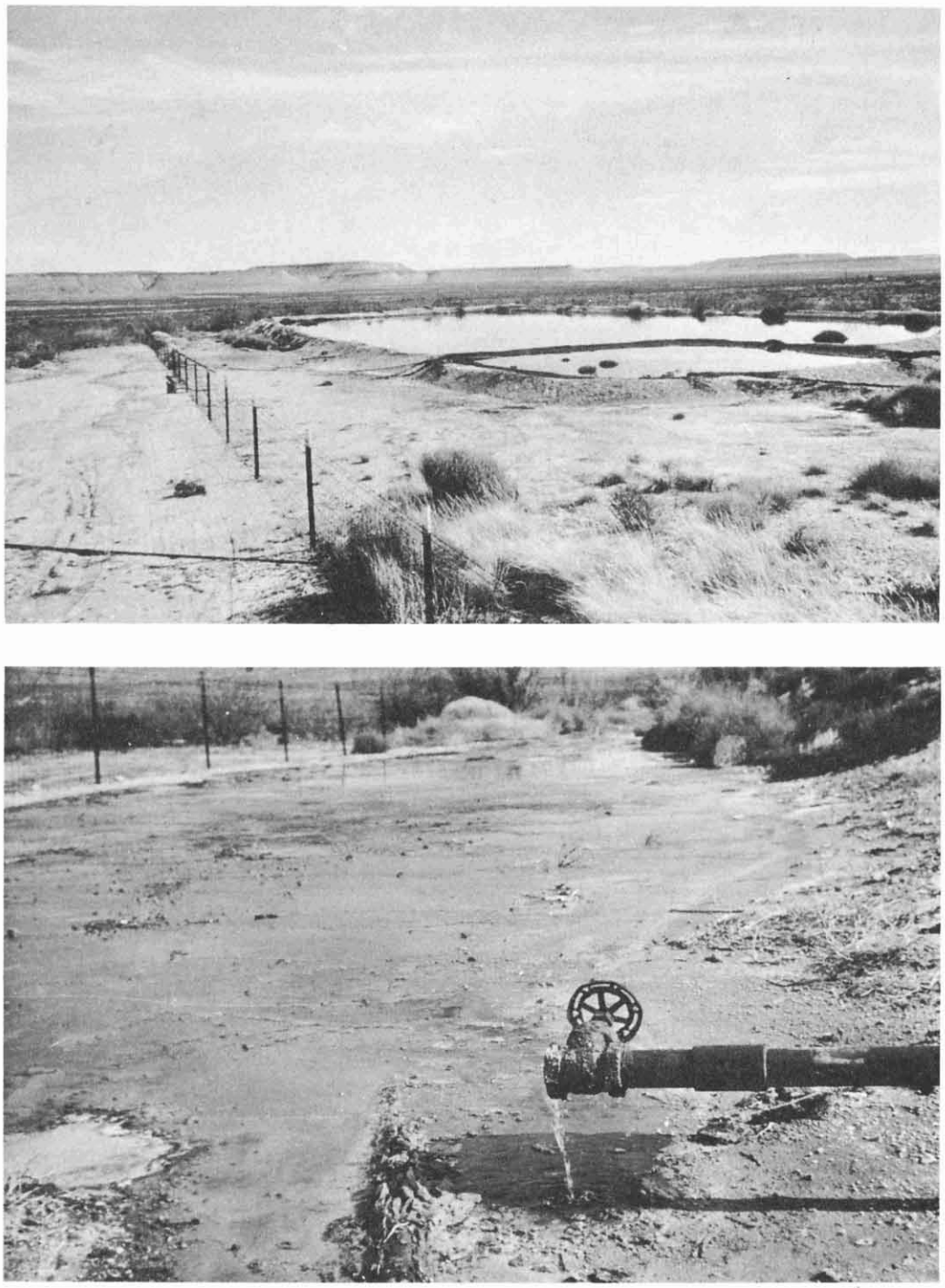


Figure 12

Unlined Surface Pit, Crockett Field, Crockett County, 1963 (top), and a Method Used to Keep the Pit from Overflowing (bottom)

Texas Water Development Board in cooperation with the Crockett County Commissioners Court

Figure 13

Salt Water Being Disposed of into a Solution Cavern, World Field, Crockett County, 1954

Texas Water Development Board in cooperation with the Crockett County Commissioners Court

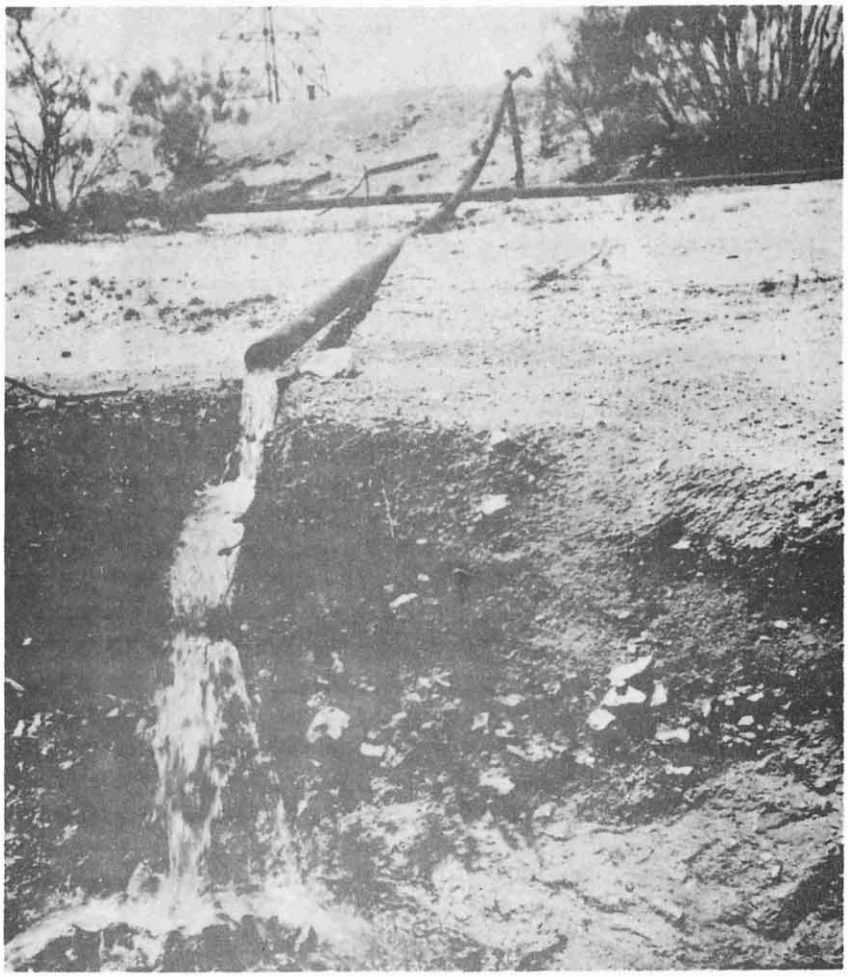


Figure 14

Salt Water Overflowing from a Surface Pit into a Dry Draw, World Field, Crockett County, 1954

Texas Water Development Board in cooperation with the Crockett County Commissioners Court

Some of these practices proved disastrous to the soil. In instances where brine was permitted to flow upon the land surface, salt accumulated in the soil. The soil, unable to support vegetation, was susceptible to erosion. On the V. J. Powell ranch in north-central Crockett County, more than 2,500 acres of soil has been reported ruined in this manner. Figure 15 shows some of the damage done by salt water on the Powell ranch.

In December of 1957, the Railroad Commission passed a "no-pit" order for Crockett County; and on January 21, 1958, this order was amended to allow no more than 15 barrels a day per lease to be disposed of in unlined earthen pits. This order greatly curtailed the disposal of brine on the surface, making it necessary that the brine be disposed of by disposal wells. Figure 16 shows the location of oil and gas fields and salt-water disposal wells in Crockett County in 1963.

A statewide salt-water survey made in 1961 showed that Crockett County had about 69 oil and gas fields producing approximately 47,987,914 barrels of salt water (Table 4). Of this total, 46,113,930 barrels, or about 96 percent, was disposed of by reinjection into the subsurface through wells. The remainder, 1,873,984 barrels or about 4 percent, was disposed of in unlined surface pits. The chemical quality of brine produced in the county ranges from 6,079 to 260,165 ppm dissolved solids (Table 5).

Unlined Pits as a Source of Contamination

Oil-field brine, stored in pits or released on the surface of the ground, takes a path of movement that is not unlike natural precipitation that falls on the ground, accumulates in ponds, and seeps downward by gravity to the water table. The movement of salt water is essentially identical to the movement of fresh water through joints and solution channels or other permeable media. That oil-field brine does move into the ground-water strata from so-called "evaporation" pits is indicated by the following:

> Chemical analyses show that a typical sample of brine taken in the county contains about 1,840 ppm calcium, 620 ppm magnesium, 23,300 ppm sodium and potassium, 1,590 ppm bicarbonate, 4,750 ppm sulfate, 36,100 ppm chloride, and a total of 68,200 ppm dissolved solids.
>
> If 5 barrels of brine of this concentration were put into a disposal pit daily and all the water evaporated, there would be a resultant deposition and accumulation of 122.8 pounds of salt per day, or 44,822 pounds per year.
>
> Should 15 barrels of brine of this concentration be placed in the pit each day and all the water evaporated, a deposition of 368 pounds of salts per day would result, or an accumulation of 134,466 pounds (66.2 tons) of salt yearly.

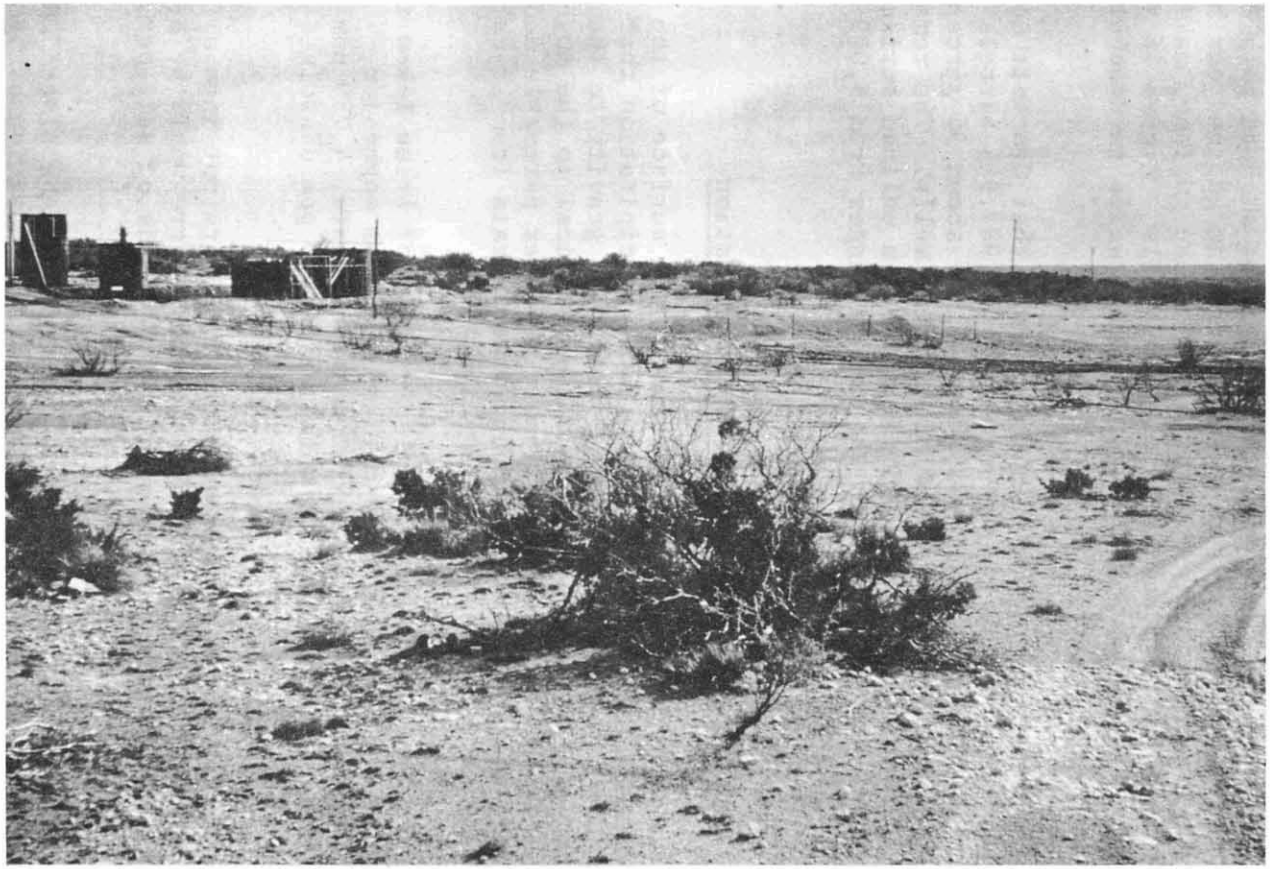


Figure 15

Salt Water Surface Damage on V. J. Powell Ranch, Crockett County, 1963

Texas Water Development Board in cooperation with the Crockett County Commissioners Court

Since there are little or no perceptible accumulated salts in pits being used for the disposal of brine in Crockett County, it must be assumed that brine is moving into the joints, fractures, and solution cavities of the fresh water-bearing limestones in this area, carrying the salts with it.

The elimination of surface pits as a means of salt-water disposal in Crockett County alone will not prevent the deterioration of the chemical quality of its ground water. If this type of disposal is permitted in the adjoining counties to the northwest, the problem of contamination will remain, since all or part of the fresh-water aquifers found in Crockett County continue into those adjoining counties. Because movement of ground water is to the south and southeast, water of poor quality would eventually migrate into Crockett County.

Disposal Wells as a Possible Source of Contamination

Disposal of oil-field brine by means of injection wells is presently the best way to dispose of brine if the wells are constructed and maintained in a manner that will effectively preclude the movement of the injected brines out of the well bore into fresh-water zones.

Investigations in the World, Clara Couch, Vaughn, and Pure Bean fields of Crockett County revealed the presence of wells used for disposal of brine which were overflowing and which apparently were poorly maintained. Figure 17 shows a salt water disposal well in the Clara Couch field in 1963. Note the absence of casing which was corroded and broken off just below the surface. Also note the dark area surrounding the well bore, marking the extent of wet soil caused by the well overflowing. Figure 18 shows a piece of casing from a salt water disposal well in the Pure Bean field, illustrating the corrosive effect of salt water on well casing. Wells used for salt-water disposal which are constructed and maintained in the manner illustrated will offer little protection to fresh-water strata.

Oil and Stratigraphic Tests as a Possible Source of Contamination

Many oil and stratigraphic test wells have been drilled in Crockett County in an attempt to locate oil reservoirs. In the past some of the wells either were not plugged or were plugged inadequately, resulting in situations which now may give rise to contamination of fresh-water supplies. In some wells, surface casing was removed, or was not cemented properly initially, or not enough casing was used to protect fresh-water zones. Such open holes existing in Crockett County may be sources of contamination. Salt water may move up the abandoned well bores, either by formational pressure or as a result of pressure created by injection wells, until the pressure of the column of water is equal to the formation pressure. If this water rises high enough, it may enter and contaminate fresh-water aquifers.

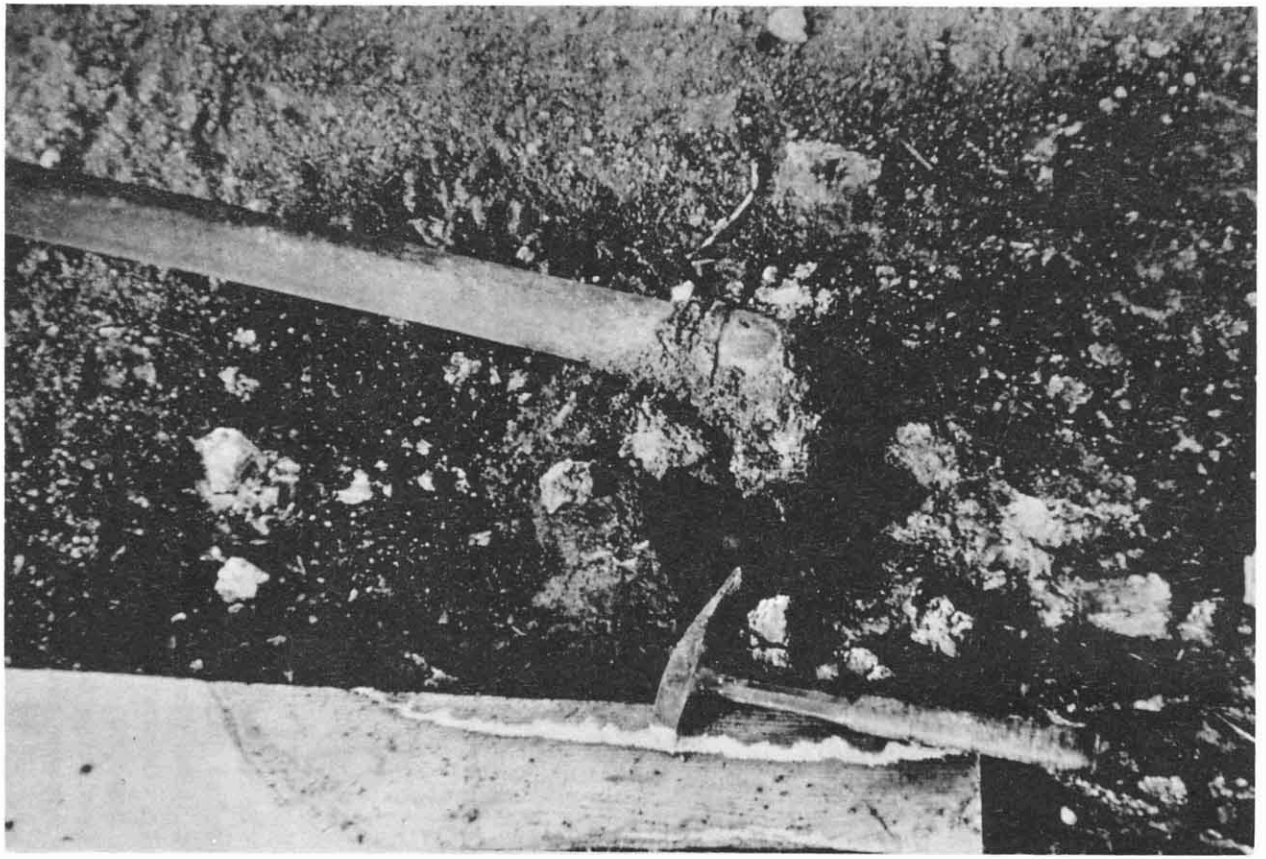


Figure 17

Salt Water Disposal Well, Clara Couch Field, Crockett County, 1963

Texas Water Development Board in cooperation with the Crockett County Commissioners Court

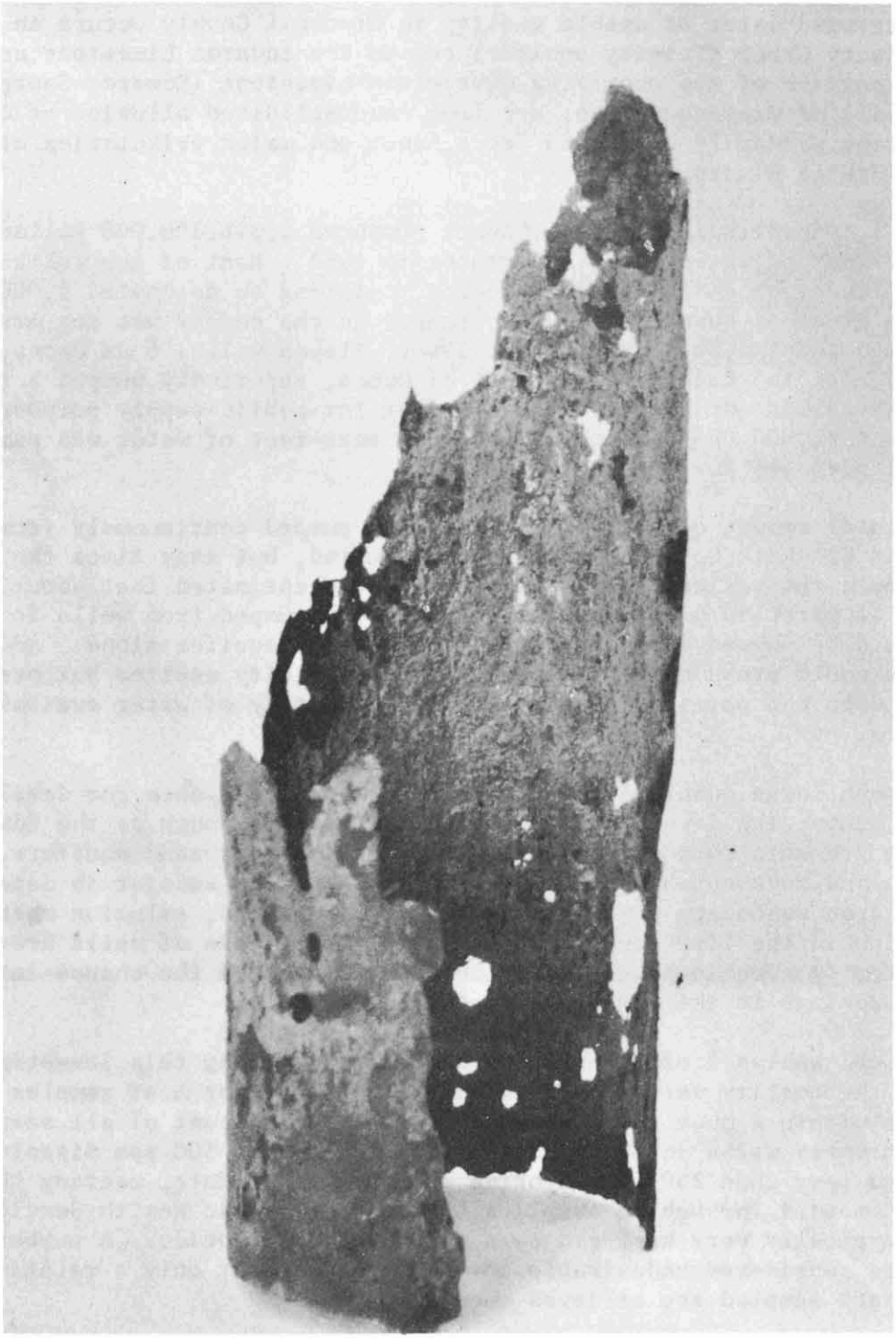


Figure 18

Casing from a Salt Water Disposal Well, Pure Bean Field, Crockett County, 1964

Texas Water Development Board in cooperation with the Crockett County Commissioners Court

SUMMARY

Underground water of usable quality in Crockett County occurs in the sands of the Trinity Group (Trinity aquifer) and in the Edwards Limestone and the saturated portion of the overlying Georgetown Limestone (Edwards-Georgetown aquifer), all of Cretaceous age, and from unconsolidated alluvium of Quaternary age occurring primarily along the Pecos River and major tributaries of the Pecos and Devils Rivers.

Over 1,100 wells in Crockett County produced 1,846,300,000 gallons or about 5,670 acre-feet of water for all purposes in 1963. Most of the wells pumped water for livestock and domestic purposes, totaling an estimated 1,000 acre-feet. The greatest quantity of water pumped in the county was for irrigation and totalled about 3,200 acre-feet in 1964. Eleven wells, 6 at Ozona, 3 at Iraan, and 2 at the Radar Station east of Ozona, reportedly pumped a total of 456,800,000 gallons or about 1,405 acre-feet for public-supply purposes in 1963. About 22,900,000 gallons or about 68 acre-feet of water was pumped for industrial purposes in the county in 1963.

The total amount of water which could be pumped continuously from the aquifers in Crockett County can only be estimated, but many times the present pumpage could theoretically be developed. It is estimated that about 45,000 acre-feet of water in addition to that presently pumped from wells in the county could be pumped from the Edwards-Georgetown aquifer alone. Additional quantities could presumably be pumped from the Trinity aquifer but present knowledge does not permit an estimate of the quantity of water available from this source.

Although large quantities of ground water are available for development in Crockett County, the development of limestone aquifers such as the Edwards-Georgetown presents some special problems. Unlike most sand aquifers, the occurrence and movement of ground water in a limestone aquifer is dependent primarily upon secondary porosity, consisting of cracks, solution channels, and cavities in the limestone. Consequently, the yields of wells are likely to vary greatly even in short distances, depending upon the chance interception of large openings in the limestone by the well bore.

Chemical analyses of water samples collected during this investigation show that the quality varies between wide limits but for most samples the quality is within a much narrower range. About 61 percent of all samples taken from water wells in the county contain less than 500 ppm dissolved solids, and less than 250 ppm chloride and 250 ppm sulfate, meeting the standards recommended for public supplies by the U.S. Public Health Service. The water is typically very hard and as a rule high in fluoride. A number of samples are considered undesirable for domestic use but only a relatively few of the waters sampled are believed unusable.

There is evidence that some wells in the county have been contaminated, presumably by oil-field brine, and probably due to disposal practices.

A total of 47,987,914 barrels of brine was reported produced in the oil and gas fields of Crockett County in 1961. Of this total, 46,113,930 barrels was disposed of by reinjection into the deep subsurface through wells, and about 1,873,984 barrels was disposed of in open unlined surface pits.

Brine which is commonly produced with oil and gas constitutes a potential source of contamination to fresh water, and adequate measures must be taken to assure that the brine does not enter the fresh-water strata. Presently, re-injection of brine into the deep subsurface seems to be the best method of disposal. Disposal of brine in open unlined surface pits is a potential source of ground-water contamination. Also, numerous unplugged or inadequately plugged stratigraphic test holes may provide avenues for poor quality water to move into the fresh-water strata.

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Table 2.--Records of wells and springs in Crockett County

All wells are drilled unless otherwise noted in Remarks.
Water-bearing unit : A, alluvium; E, Edwards and Georgetown Limestones; G, Georgetown Limestone (perched water); T, Trinity" and Paluxy Sands.
Water level : Reported water levels are followed by R; all other water levels are measured.
Method of lift and type of power: C, cylinder; E, electric; G, gasoline, butane, or diesel engine; Pj, pump-jack; S, submersible pump; T, turbine; W, windmill.
Use of water : A, abandoned; D, domestic; I, industrial; Irr, irrigation; P, public supply; S, stock.

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
HJ-43-57-401	University of Texas	C. G. VanCourt	--	-	175	E	2445	174.8	July 19, 1962	W,C	D,S	
402	do	do	--	-	300±	E	2468	201	do	-	-	Shothole. A 30-ft. cave reported at 110 ft.
701	do	A. Delong	--	-	390	E	2574	312	July 20, 1962	W,C	S	
702	do	W. W. Adams	--	-	-	E ?	2582	310	Aug. 21, 1962	W,C	S	
44-57-401	S. N. Beck	S. Rowe	Headquarters	-	-	T,A ?	2381	138.4	Dec. 10, 1962	W,C	D,S	
402	do	do	Cedar Canyon	-	-	T ?	--	--	--	W,C	S	
501	do	do	Corbert	old	-	T ?	--	--	--	W,C	S	
502	Nolke est.	--	Point	-	-	T,E ?	--	--	--	W,C	S	
601	do	--	Telephone	-	125	E	--	--	--	W,C	S	
602	do	--	Source Well	-	-	- ?	2837	409.6	Dec. 6, 1962	-	I,A	
701	do	--	Walker	-	300	T	2445	223.9	do	W,C	S	Drilled to red bed. Measured old well
702	do	--	Government	-	-	T,A ?	2299	112.2	do	W,C	S	
801	do	--	Javalina	-	600	E	--	--	--	W,C	S	
901	O. W. Parker	--	Guest	-	550+	T,E	--	--	--	W,C	S	
902	Nolke est.	--	25 foot	-	-	E ?	2950±	401.6	Dec. 6, 1962	W,C	S	
58-401	do	--	Goat	old	-	E ?	--	--	--	W,C	S	
501	W. Harris	--	Old Ranch	old	-	E ?	--	--	--	W,C	S	
502	Nolke est.	--	Lower	-	-	E ?	--	--	--	W,C	S	
701	W. Harris	--	Triangle	old	-	E ?	--	--	--	W,C	S	
702	Nolke est.	--	South	1939	480	E	--	--	--	W,C	S	
901	W. Harris	--	Santa Rosa	old	300+	E	2680	279.7	Dec. 5, 1962	W,C	S	
902	do	--	Pikes Peak	1940	543	E	--	--	--	W,C	S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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
HJ-44-58-903	W. Harris	--	Canyon	old	314	T,E	--	--	Nov. 28, 1962	W,C	S	
59-401	do	--	Redmon	-	220±	T?,E	2589	183.6	Dec. 4, 1963	W,C	S	
501	L. Harris	--	Gay	-	250±	T?,E	2616	211.6	Nov. 29, 1962	W,C	S	
503	do	--	Mesquite	-	200±	T?,E	2574	170.4	do	W,C	S	
601	do	--	Blue Ridge	-	-	T,E ?	--	--	--	W,C	S	
602	do	--	Antelope	-	-	T,E ?	--	--	--	W,C	S	Water reported salty.
603	do	--	Wildcat	-	-	T,E ?	--	--	--	W,C	S	
701	T. Harris	--	New Mill	-	150±	E	2506	132.8	Nov. 28, 1962	W,C	S	
702	do	--	Headquarters	-	250±	T?,E	2595	237.6	do.	S,E	D,S	
703	do	--	Double Circle	-	-	T,E ?	--	--	--	W,C	S	
801	do	--	Headquarters	-	-	T,E ?	--	--	--	W,C	D,S	
802	do	--	South Well	-	300	T,E	2497	138.1	Nov. 28, 1962	-	Irr,A	Not used for several years.
803	do	--	North Well	-	303	T,E	2498	141.4	do	-	Irr,A	Do.
804	do	--	Rattlesnake	-	-	T,E ?	--	--	--	W,C	S	
805	do	--	T & L	-	635	T,E	2821	481	Nov. 28, 1962	W,C	S	
806	do	--	4 Corners	-	272	T,E	--	--	--	W,C	S	
902	L. Harris	--	Aeromotor	-	400±	T,E	2703	352.3	Nov. 29, 1962	W,C	S	
903	do	--	Headquarters	-	-	T,E ?	--	--	--	S,E	D,S	
60-401	University of Texas	S. Mann	University Trap	-	600+	T,E	2790	475 R	Nov. 29, 1962	W,C	S	
402	do	do	--	-	-	- ?	--	252	do	-	A	
501	V. J. Powell	G. Powell	Eclipse	-	-	- ?	--	--	--	W,C	S	
502	University of Texas	S. Mann	North University	-	-	T,E ?	--	--	--	W,C	S	
601	V. J. Powell	G. Powell	Aeromotor	-	-	T,E ?	--	316.3	Nov. 29, 1962	W,C	S	
701	L. Harris	--	#4	-	-	T,E ?	--	--	--	W,C	S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
HJ-44-60-702	L. Harris	--	Alta Loma	-	-	T,E ?	--	--	--	W,C	S	
703	V. J. Powell	S. Mann	Sampson	-	-	E ?	--	--	--	W,C	S	
704	do	--		-	-	T ?	--	--	--	Pj,E	D	
801	do	S. Mann	Oil field trap	-	-	E ?	--	--	--	W,C	S	
802	do	do	East Pasture	-	-	E ?	--	--	--	W,C	S	
803	do	do	House	-	-	T ?	--	--	--	S,E	S,D	
804	do	do	Old House	old	350±	-	2677	331.5	Nov. 29, 1962	-	D,A	
901	J. Strauss	--	Big Nolke	old	350±	T?,E	2652	327.1	Oct. 16, 1962	W,C	S	
902	do	--	Little Cedar	old	460	T?,E	2648	333.5	do	W,C	S	
903	V. J. Powell	S. Mann	East Eclipse	old	475±	T?,E	2757	450.4	Nov. 29, 1964	W,C	S	
61-401	University of Texas	V. J. Powell	Middle Well	1940	400	E	--	--	--	W,C	S	
402	do	do	South	1924	490	E	2666	338.2	Oct. 30, 1962	W,C	S	
501	do	M. Schneemann	New Pasture	old	-	E ?	2653	349.7	Oct. 12, 1962	W,C	S	
502	J. Strauss	--	Neal	-	400	E	2600	271.2	Oct. 15, 1962	W,C	S	
503	do	--	Weager	-	270	A,E	2577	276	Oct. 16, 1962	S,E	S	
601	University of Texas	M. Schneemann	Griffith	-	-	E ?	--	--	--	Pj,E	I,S	Water supply for oil test.
602	do	do	Divide	-	-	E ?	--	--	--	W,C	S	
603	do	do	Texas National #1JJ	-	-	E ?	--	--	--	-	I,A	Water supply for oil test.
604	do	do	Frankfort D	-	-	E ?	2682	344.6	Oct. 15, 1962	-	I,A	Do.
701	J. Strauss	--	West Road	1952	460	T?,E	--	--	--	W,C	S	
702	do	--	300 Acre	-	350±	E	2619	304.5	Oct. 16, 1962	S,E	S	
703	do	--	Nolke House	-	-	E ?	--	--	--	W,C	S	
802	University of Texas	M. Schneemann	Frankfort A	-	-	E ?	2687	363	Oct. 15, 1962	-	I,A	Water supply for oil test.
803	J. Strauss	--	House	-	401	T?,E,A	2559	244.5	Oct. 16, 1962	-	D,A	Well is abandoned.

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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
4J-44-61-804	J. Strauss	--	Old House Well	-	400	T?,E,A	2559	258	Oct. 16, 1962	-	D,A	
805	do	--	House (new)	-	275	E,A	--	--	--	S,E	D,S	
806	do	--	1000 Acre	-	400	T?,E	2577	276.1	Oct. 16, 1962	W,C	S	
807	do	--	New	1963	402	T?,E,A	--	261 R	Feb. 27, 1963	S,E	S,D	
901	University of Texas	M. Schneemann	West Aeromotor	old	-	E ?	--	--	--	W,C	S	
902	do	do	Slick-Midhirst	-	-	E ?	2710	407.1	Oct. 12, 1962	-	I,A	Water supply for oil test.
903	do	do	Pan American BY	-	-	E ?	2707	406.6	do	-	I,A	Do.
904	do	do	Plymouth I	-	-	E ?	2708	406.4	Oct. 12, 1962	-	I,A	Do.
62-401	do	do	Ten Foot	-	450±	T?,E	2701	390.6	Oct. 15, 1962	-	I,D	Do.
402	do	do	American Hydro	-	-	T?,E ?	2684	376.4	do	-	I,A	Do.
403	do	do	Continental (A9)	-	-	T?,E ?	2673	344.9	do	-	I,A	Do.
501	do	B. Owens	Headquarters	-	100±	G	2671	67.4	Oct. 23, 1962	W,C	D,S	
502	do	do	West	-	400±	E	2715	379.5	do	W,C	S	
601	do	do	12 Foot	-	-	E ?	2725	389.7	do	W,C	S	
701	do	M. Schneemann	Headquarters	old	-	E ?	--	--	--	W,C	S,D	
702	do	do	Doublemill	-	350±	T?,E	2632	325.3	Oct. 15, 1962	W,C	S	
703	do	do	Willinson	-	-	E ?	--	--	--	W,C	S	
801	do	F. Coates	Texas Gulf	-	350±	E	2611	295.5	Oct. 29, 1962	-	I,A	
802	do	do	North	-	450±	T,E	2692	389.8	do	W,C	S	
803	do	do	West	-	400±	T?,E	2686	370.3	do	W,C	S	
901	do	W. R. Bissett	Coates	-	125±	G	2645	97.5	Aug. 3, 1962	W,C	S	
902	do	B. Owens	Williams	old	200±	G	--	160 R	Oct. 23, 1962	W,C	S	
63-401	do	do	Lower Ranch House	-	125	G	--	95 R	do	S,E	S,D	
402	do	F. M. Elkins	White	-	125±	G	2695	66	do	W,C	S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Lessee	Well name	Date completed	Depth of well (ft.)	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
4J-44-63-501	University of Texas	F. M. Elkins	Murphey	-	350±	E	2665	301	Oct. 23, 1962	W,C	S	
502	do	E. H. Linthican	West	-	100	G	2670	95.2	July 24, 1962	W,C	S	
503	do	do	Lake	-	-	E ?	2650	328.7	do	W,C	S	
601	do	do	South	-	350±	E	2676	334.5	do	W,C	S	
602	do	do	Jack Hertz	-	370±	E	2647	336	do	W,C	S	
603	do	do	Dipping Vat	old	-	E ?	--	--	--	W,C	S	
701	do	B. Owens	Middle	-	130	G	2712	100	Oct. 23, 1962	W,C	S	
702	do	do	--	-	400±	E	2730	342.0	Oct. 25, 1960	-	-	Shothole.
801	do	W. R. Bissett	Hoover Fence Line	-	400±	E	2675	366.7	Aug. 3, 1962	W,C	S	
802	do	do	Buckhorn	old	-	- ?	--	--	--	W,C	S	
803	do	do	North Hoover	old	460±	E	2640	335.3	Aug. 3, 1962	W,C	S	
901	do	Texas Agriculture Experiment Station	House	old	450	E	2640	321.3	July 25, 1962	W,C	S	
902	do	J. Dublin	#1	1951	400	G	2620	97.7	July 24, 1962	W,C	S	
903	do	W. R. Bissett	East Hoover	old	375±	E	2640	338.7	Aug. 3, 1962	W,C	S	
4H-401	do	E. H. Linthican	Field	-	400±	E	2632	363.9	July 24, 1962	W,C	S	
402	do	do	Little Windy	-	350±	E	2578	298.9	do	W,C	S	
403	do	do	Calf	-	350±	E	2546	279.4	do	W,C	S	
404	do	do	Little Jona	-	-	E ?	--	--	--	W,C	S	
405	do	do	East	-	400±	E	2625	354.1	July 24, 1962	W,C	S	
501	do	A. Delong	Little Woodard	-	350±	E	2510	310.8	July 20, 1962	W,C	S	
502	do	do	North Woodard	-	425±	E	2650	376.7	do	W,C	S	
503	do	do	--	-	325±	E	2590	272.6	do	-	-	Shothole.
601	do	C. G. VanCourt	West Hill	-	325±	E	2537	271	July 19, 1962	W,C	S	
701	do	J. Dublin	#2	-	400	E	2610	296.9	Aug. 27, 1962	W,C	S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
[illegible]-44-64-702	University of Texas	E. H. Linthicum	Line Camp	-	350±	E	2625	314.5	July 24, 1962	S,E	C	
801	do	A. Delong	09	old	127	G	2615	125	March 13, 1961	W,C	S	Old crevice well. Well is in a crevice in the bottom of a sink-hole.
802	--	L. StClair	Middle well	old	400±	E	2604	343.3	July 20, 1962	W,C	S	
901	do	A. Delong	House	1931	407	E	2593	360± R	do	S,E	S,D	
902	do	do	Middle well	-	325±	E	2543	284	do	W,C	S	
903	do	do	North	-	375±	E	2597	335.8	do	W,C	S	
904	do	do	Old House well	-	300±	E	2493	227.2	do	W,C	S	
45-62-102	Mrs. A. Johnson	--	House	old	-	T?,A ?	--	39.7	Dec. 11, 1962	W,C	D,S	
63-501	V. T. Anacker	--	North	-	200	T,A	--	118	do	W,C	S	
64-501	J. Mann	--	Headquarters	-	200	T,A	--	--	--	W,C	D,S	
601	Nolke est.	Burke Royalty	--	1950	100	T,A	--	89.8	Sept. 23, 1960	W,C	I	
602	do	--	JM	-	-	T,A ?	--	--	Dec. 6, 1962	W,C	S	
603	do	--	5 mile	-	-	T,A ?	2292	51.3	do	W,C	S	
604	do	--	Gilcrease	-	-	T,A ?	--	--	--	W,C	S	
701	V. T. Anacker	--	Oil Field	-	-	T,A ?	--	165.8	Dec. 11, 1962	W,C	S	
901	Nolke est.	--	--	1952	200	T,A	2259	77.1	Sept. 24, 1960	G,T	Irr	315 gpm reported. Drawdown 100 ft. in two days test.
902	do	--	--	1953	200	T,A	--	--	--	G,T	Irr	315+ gpm reported.
905	do	--	Mott	-	-	T,A ?	--	--	--	W,C	S	
53-08-301	do	--	River	-	-	T,A ?	2233	60.9	Dec. 6, 1962	W,C	S	
54-01-101	do	--	Parker	-	-	T,A ?	--	--	--	W,C	S	
201	O. W. Parker	--	Jesus Tank	-	-	T,A ?	2353	175.6	Dec. 6, 1962	W,C	S	
202	do	--	Jesus Pump	-	-	T,A ?	2305	119	do	S,E	D,S	
203	do	--	North Jesus Division	-	-	T,A ?	2279	93.6	do	W,C	S	
204	do	--	West	-	-	T,A ?	2202	23.4	do	W,C	S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
HJ-54-01-205	O. W. Parker	--	Field	-	-	T,A ?	2196	19.1	Dec. 6, 1962	W,C	S	
206	do	--	Red	-	-	T,A ?	2234	67.2	do	W,C	S	
207	do	--	South Jesus Trap	-	-	T,A ?	2281	86.5	do	W,C	S	
301	do	--	South Jesus Canyon	-	-	T,A ?	2352	171.6	do	W,C	S	
302	do	--	Simpson Tank	-	-	T,A ?	2345	157.5	do	W,C	S	
601	do	--	South Jesus South	-	-	T,A ?	2256	90.7	do	W,C	S	
602	do	--	Tank in Gap	-	-	T,A ?	2315	129.0	do	W,C	S	
603	do	--	Draw-5 Section	-	-	T,A ?	2177	24.0	do	W,C	S	
604	do	--	Foot of hill-5 Section	-	-	T,A ?	2223	69.4	do	W,C	S	
605	do	--	Headquarters	-	-	T,A ?	2229	58.2	do	W,C	S,D	
606	do	--	Lola's	-	105	T,A	2225	80.9	do	W,C	S	
901	G. L. Thompson	S. Rowe	Garden	-	-	T,A ?	--	--	Dec. 10, 1962	W,C	S	
902	C. Smith	--	New House	958	-	T,A ?	--	--	--	S,E	D	
02-101	W. Harris	--	JM	-	-	E ?	2754	383.5	Nov. 28, 1962	W,C	S	
102	O. W. Parker	--	Simpson Canyon	-	-	T ?	2483	114.1	Dec. 6, 1962	W,C	S	
103	do	--	East	1944	512	E	2885	472.7	do	W,C	S	
201	W. Harris	--	12 mile	-	-	T,E ?	2645	271.5	Nov. 28, 1962	W,C	S	
301	T. W. Harris	--	Sunset	-	-	- ?	--	--	--	W,C	S	
302	M. H. Smith	F. McMullan Jr.	Steel Tower	-	-	- ?	--	--	--	W,C	S	
401	G. L. Thompson	S. Rowe	10 foot	-	-	T ?	2237	107	Dec. 11, 1962	W,C	S	
501	L. Harris	W. Harris	Webb	-	-	E ?	--	--	--	W,C	S	
502	J. H. Shannon est.	L. Hersey	Headquarters	-	-	E ?	2797	500	Dec. 4, 1962	W,C	S,D	
503	G. L. Thompson	S. Rowe	Canyon	-	-	T,A ?	--	--	--	W,C	S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Lessee	Well name	Date completed	Depth of well (ft.)	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			
BJ-54-02-504	G. L. Thompson	S. Rowe	Middle	-	-	T ?	--	--	--	W,C	S	
601	J. M. Shannon est.	K. McMullan	Northwest	-	-	T,E ?	2578	273.8	Dec. 9, 1962	W,C	S	
602	do	L. Hersey	Source 1	-	-	T,E ?	2616	312.5	Dec. 4, 1962	-	I	
701	G. L. Thompson	S. Rowe	Rockhole	-	-	T,A ?	2183	55.7	Dec. 11, 1962	W,C	S	
702	do	do	New	-	-	T ?	2376	197.8	do	W,C	S	Observation well.
703	C. Smith	--	#3	-	-	T,A ?	2185	39.4	Dec. 10, 1962	W,C	S	
704	do	--	Old Headquarters	1923	165	T,A	--	--	--	S,E	D	
705	G. L. Thompson	S. Rowe	House	-	-	T,A ?	--	--	--	S,E	D,S	
706	Pecos County	--	#3	-	215	T,A	--	--	--	T,E	P	Iraan water supply. Reported yield 350 gpm.
707	do	--	#4	-	212	T,A	--	--	--	T,E	P	Iraan water supply. Reported yield 300 gpm.
708	do	--	#5	-	205	T	86.2	--	--	T,E	P	Iraan water supply. Reported yield 250 gpm.
801	J. M. Shannon est.	L. Hersey	New	-	-	E ?	--	--	--	W,C	S	
903	do	do	South	-	-	E ?	--	--	--	W,C	S	
03-101	Mrs. N. H. Smith	F. McMullan Jr.	Gap Tank	-	210	T,E	2486	93.8	Dec. 4, 1962	W,C	A	Well is not used.
201	T. Harris	--	Votol	-	280	T,E	--	--	--	W,C	S	
202	do	--	Lost Canyon	-	291	T,E	2584	245	Nov. 28, 1962	W,C	S	
203	J. M. Shannon est.	D. K. McMullan	Nite Trap	-	-	T,E,A ?	2454	130.8	Dec. 5, 1962	W,C	S	
204	do	do	Harris	-	-	E,A ?	2451	111.9	do	W,C	S	
205	do	do	North East	-	-	T,E ?	2518	189.4	do	W,C	S	
301	do	G. Bunger	North	-	-	T,E ?	--	500 +	--	W,C	S	
401	do	K. McMullan	Garmen	-	362	T,E	2598	310.3	Dec. 4, 1962	W,C	S	
402	Mrs. N. H. Smith	F. McMullan Jr.	Parker	-	-	- ?	--	--	--	W,C	S	
403	J. M. Shannon est.	D. K. McMullan	Gray Pasture	-	-	T,E ?	2481	174.3	Dec. 5, 1962	W,C	S	
501	do	F. McMullan	Berts	-	-	T,E ?	2437	146.1	Dec. 4, 1962	W,C	S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
HJ-54-03-502	J. M. Shannon est.	D. K. McMullan	East side Gray Pasture	-	-	T,E ?	2499	197.7	Dec. 5, 1962	W,C	S	
503	do	do	Billies Little Mill	-	-	T,E ?	2385	95.5	do	W,C	S	
504	do	do	Backside	-	-	T,E ?	2563	236	do	W,C	S	
505	do	do	Roping Arena	-	-	T,E,A ?	2420	110.5	do	W,C	S	
506	do	do	House	-	-	T?,E,A ?	2420	101.7	do	W,C	D,S	
507	do	do	Middle Byjorkman	-	-	T,E ?	2458	133.6	do	W,C	S	
601	do	F. McMullan Jr.	High Lonesome	-	-	T,E ?	--	--	--	W,C	S	
602	do	G. Bunger	Canyon	-	343	T,E	--	--	--	W,C	S	
701	do	K. McMullan	Headquarters	-	-	E ?	--	--	--	S,E	D,S	
702	do	F. McMullan	Little House	-	-	E ?	2638	382.4	Dec. 4, 1962	W,C	D,S	
703	do	K. McMullan	Little Well	-	-	E ?	--	--	--	W,C	S	
704	do	F. McMullan Jr.	77 Pens	1960	241	T,E	--	--	--	W,C	S	
801	do	do	Hackberry	-	-	T,E,A ?	2354	103.1	Dec. 4, 1962	W,C	S	
802	do	do	Highway	-	-	T,E,A ?	2354	106.6	do	-	A	
803	do	do	South	-	-	T,E ?	--	--	--	W,C	S	
804	do	do	House-old	old	-	T,E,A ?	2365	100	Dec. 4, 1962	W,C	D,S	
805	do	D. K. McMullan	Backside Gray Pasture	-	-	T,E ?	2444	203.9	Dec. 5, 1962	W,C	S	
901	do	F. McMullan	Camp	-	280	T,E	--	221.4	Dec. 4, 1962	-	I,A	Observation well.
902	do	F. McMullan Jr.	Canyon	-	-	T,E ?	2491	218.3	do	W,C	S	
903	do	do	Big Tank	-	-	E ?	2665	372.4	do	W,C	S	
904	do	do	Steel Tank	-	-	T,E ?	--	--	--	W,C	S	
04-101	V. J. Powell	C. Mann	Red Tank	-	-	T,E ?	2743	414.9	Nov. 29, 1962	W,C	S	
102	J. M. Shannon est.	G. Bunger	Headquarters	-	-	- ?	--	--	--	W,C	D,S	
103	do	--	West	1962	587	T	--	--	--	S,E	I	Cities Service Supply for gas plant.

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
BJ-54-04-104	J. M. Shannon est.	--	East	1962	587	T	--	--	--	S,E	I	Cities Service supply for gas plant.
201	do	Anerada Petroleum Company	--	-	-	- ?	--	--	--	PJ,E	I,D	
202	do	Thomas & Doss Petroleum Company	--	1920	430	T,E	2780	421.4	Oct. 26, 1960	PJ,E	D	
203	do	C. Black	Toolie	-	-	T,E ?	--	--	--	W,C	S	
204	do	do	Oil Well	-	-	T,E ?	2704	401.4	Nov. 27, 1962	W,C	S	
301	do	do	Ranchito	-	400	-	--	--	--	W,C	S	
302	J. Strauss	--	Big Cedar	-	-	T,E ?	2705	401.4	Nov. 16, 1962	W,C	S	
303	J. M. Shannon est.	B. Black	Cedar	-	-	T,E ?	2695	401.6	Nov. 27, 1962	W,C	S	
402	do	C. Black	Double Well	-	450	T,E	2563	350.4	do	W,C	S	
403	do	do	--	-	-	E ?	2690	323.1	do	-	I,A	Hole may be bridged with dirt.
404	do	G. Bunger	Divide	-	-	- ?	--	--	--	W,C	S	
405	do	do	Trap	1947	536	T,E	2738	428.3	Dec. 5, 1962	W,C	S	
501	do	C. Black	Alto	-	438	T,E	2650±	363	Sept. 22, 1960	W,C	S	
502	do	do	Source #2	-	-	T,E ?	2616	299.5	Nov. 27, 1962	-	I,A	
602	do	do	Bill West	-	-	T,E ?	2562	301.2	do	W,C	S	
701	do	do	6 Section	-	-	E ?	--	--	--	W,C	S	
703	do	do	North Hoover	-	-	T,E ?	2605	349.8	Nov. 27, 1962	W,C	S	
704	do	do	Quien Sabe	-	485	T,E	2563	356.6	do	W,C	S	
801	do	do	Middle	-	-	T,E ?	2669	422.3	do	W,C	S	
802	do	do	Ranada	-	-	T,E ?	--	--	--	W,C	S	
803	do	do	New House	-	-	T,E ?	--	--	--	S,E	D	
804	do	do	Old House	-	-	T,E ?	--	--	--	W,C	S,D	
902	do	do	Miller	-	-	T,E ?	--	--	--	W,C	S	
903	do	do	Chivito	-	-	T,E ?	2520	283.7	Nov. 27, 1962	W,C	S	
904	do	do	Coyote	-	335	T,E	2500	298	do	W,C	S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
HJ-54-05-101	C. Pfluger	--	North & South Perner	-	-	E ?	2588	295.3	Nov. 19, 1962	W,C	S	
102	J. M. Shannon est.	B. Black	Gray	-	-	E ?	2563	285.6	Nov. 27, 1962	W,C	S	
103	C. Pfluger	--	Nolke	-	350	E	2543	273.1	Nov. 19, 1962	W,C	S	
201	do	--	North Pasture	-	-	E ?	2520	243.4	do	W,C	S	
202	do	--	Two Section	-	-	E ?	2571	292.8	do	W,C	S	
203	do	--	House Well	-	-	E ?	--	--	--	W,C	S	
204	do	--	--	-	-	E ?	2513	230.1	Nov. 19, 1962	S,E	D,S	Water supply for oil test has been equipped with submersible pump since scheduled.
205	University of Texas	L. C. Brooks	Sampson	-	-	E ?	--	--	--	W,C	D	
206	J. M. Shannon est.	B. Black	North	-	-	E ?	2535	284.3	Nov. 27, 1962	W,C	S	
301	University of Texas	M. Schneemann	Axtell	-	-	E ?	2702	418.7	Oct. 12, 1962	W,C	S	
302	do	do	South Aeromotor	-	500	E	--	--	--	W,C	S	
303	do	L. C. Brooks	Middle	-	-	E ?	--	--	--	W,C	S	
401	J. M. Shannon est.	B. Black	Headquarters	-	-	E ?	--	--	--	S,E	D,S	
402	do	do	Highway	-	-	E ?	2472	210.4	Nov. 27, 1962	W,C	S	
403	do	C. Black	Fogerty	-	-	E ?	2534	283.2	do	W,C	S	
404	do	do	Source #1	-	326	-	--	253.5	do	-	I,A	Observation well.
501	University of Texas	L. C. Brooks	West	-	-	- ?	--	--	--	W,C	S	
502	J. M. Shannon est.	B. Black	Mesquite	-	-	E ?	2520	267.3	Nov. 27, 1962	W,C	S	
503	do	do	Curve	-	-	E ?	2489	255.2	do	S,E	S	
601	University of Texas	L. C. Brooks	Shearing Pen	-	-	- ?	--	--	--	W,C	S	
602	do	do	House	-	-	- ?	--	--	--	W,C	S	
701	J. M. Shannon est.	J. Mayer	West	-	-	T,E ?	2485	249.6	Feb. 19, 1963	W,C	S	
702	do	do	House	-	-	E ?	2432	195.5	do	W,C	D,S	
703	do	do	Buck Trap	-	-	E ?	--	--	--	W,C	S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
HJ-54-05-801	J. M. Shannon est.	J. Mayer	Pump	-	-	E ?	--	--	--	W,C	S	
802	do	do	Thompson	-	-	E ?	--	--	--	W,C	S	
901	do	P. L. Childress	West	-	-	T,E ?	2596	365.5	Nov. 1, 1962	W,C	S	
06-101	University of Texas	F. Coats	West 2 Section	-	-	E ?	2601	323.1	Oct. 19, 1962	W,C	S	
102	do	L. C. Brooks	North	-	-	E ?	--	--	--	W,C	S	
103	do	do	--	-	-	E ?	2644	358.4	Nov. 21, 1962	-	I,A	Water supply for oil test.
201	do	F. Coates	Headquarters	1889	80	G	2573	65.2	Oct. 29, 1962	W,C	D,S	
202	do	do	Middle	1951	-	E ?	2645	367.7	do	W,C	S	
203	do	R. Coates	Headquarters	-	100	G	2611	62.4	do	S,E	D,S	
301	do	W. R. Bissett	Middle	1939	-	E ?	2690	390.9	Aug. 3, 1962	W,C	S	
302	do	T. Williams	North	1941	430	E	2686	397.7	Oct. 15, 1962	W,C	S	
401	do	L. C. Brooks	Headquarters	-	-	E ?	--	--	--	W,C	S	
502	do	B. Coates	Headquarters	-	-	E ?	2651	400.6	Oct. 29, 1962	W,C	D,S	Drawdown 62.6 ft. Pumping level 465 ft.
503	do	do	South	-	620	E	2661	423.5	Oct. 20, 1962	W,C	S	
504	do	do	--	-	-	E ?	2661	437.4	Oct. 29, 1962	-	I,A	Water supply for oil test.
505	do	El Paso Natural Gas Company	Well #1	-	-	T,E ?	--	421.2	do	-	A	
506	do	do	Well #3	1961	604	T,E	--	452 R	Oct. 29, 1962	T,E	I,D	
507	do	do	Well #4	1961	590	T,E	--	390	1961	S,E	I	
508	do	do	Well #2	1953	588	T,E	--	430	do	T,E	I	
509	do	Sinclair Oil Co.	--	-	-	T,E ?	--	--	--	Pj,E	I,A	
510	do	L. C. Brooks	East	-	-	T,E ?	2569	340.1	Nov. 21, 1962	W,C	S	
601	do	T. Williams	Draw	old	-	E ?	2636	378.2	Oct. 15, 1962	W,C	S	
602	do	do	South	-	-	- ?	--	--	--	W,C	S	
701	J. M. Shannon est.	P. L. Childress	House	-	-	T,E ?	--	--	--	S,E	D,S	
702	do	do	North	-	-	E ?	--	--	--	W,C	S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
BJ-54-06-703	J. M. Shannon est.	F. L. Childress	Shearing Pen	1948	601	T,E	2676	375.7	Nov. 1, 1962	W,C	S	
704	University of Texas	L. C. Brooks	New	-	-	T,E ?	--	--	--	S,E	S	
901	B. Baker	--	West	1954	-	E ?	2625	384.5	Sept. 19, 1962	W,C	S	
07-101	University of Texas	W. R. Bissett	House	-	-	E ?	--	256 R	--	S,E	D,S	
102	do	B. Owens	Bissett	1941	400	E	2665	370 R	--	W,C	S	
201	do	W. R. Bissett	Hume Ranch House	old	-	- ?	--	--	--	W,C	D,S	
301	do	Texas Agricultural Experiment Station	House	-	425-50	E	--	--	--	W,C	D,S	
401	do	T. Williams	House	-	380	E	--	--	--	W,C	D,S	
402	do	do	--	-	-	E ?	2620	383.5	Oct. 15, 1962	-	I,A	Water supply for oil test.
501	do	W. R. Bissett	Rockwater	-	353	E	2557	308	Aug. 3, 1962	S,E	S	
502	do	do	Fenceline	-	-	E ?	2551	313.1	Aug. 11, 1962	W,C	S	
503	do	do	South	-	-	- ?	--	--	--	W,C	S	
504	do	do	Divide	-	-	- ?	--	--	--	W,C	S	
601	do	do	--	1957	553	E	2613	365.9	Aug. 3, 1962	-	I,A	Water supply for oil test. Observation well.
603	do	do	Donnason	-	-	E ?	--	--	--	W,C	S	
604	do	do	New	-	-	E ?	2615	380.6	Aug. 11, 1962	W,C	S	
701	do	T. Williams	Midway	1927	240	G	2580	147.8	Oct. 21, 1960	W,C	S	
702	B. Baker	--	Headquarters	1956	446	E	2618	372.4	Sept. 19, 1962	Pj,E	D,S	
703	do	--	Old Headquarters Well	old	358	E	2598	354.6	Sept. 16, 1962	-	D,A	Well was abandoned when it became salty.
801	University of Texas	B. Bissett	--	-	264.5	G	2610	141.4	Oct. 21, 1960	-	-	Shot hole.
802	do	--	--	1960	426.5	E	2610	378.7	Aug. 3, 1962	-	I,A	
803	B. Baker	--	Middle Pasture	1956	458	E	2590	386	Sept. 19, 1962	-	I,A	Well was tested at 70,000 gpd for 3 weeks. Drilled to supply water for construction of dams.

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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
HJ-54-07-804	B. Baker	--	East Mill	old	448	E	2585	384.2	Sept. 19, 1962	W,C	S	
901	J. Childress	--	Colquite	-	425	E	2604	403.7	Aug. 22, 1962	W,C	S	
08-101	University of Texas	Mrs. L. StClair	House	-	350+	E	--	--	July 19, 1962	W,C	S,D	
102	do	J. Dublin	Pump	-	360+	E,G	2620	342.1	July 24, 1962	,E	S,D	
103	do	do	House	-	350±	E,G	2558	322.8	do	S,E	S,D	
201	do	L. Brooks	Box Car	-	340+	E	--	--	--	W,C	S	
202	do	do	North Shaffer	-	-	- ?	--	--	--	W,C	S	
302	do	A. Delong	Devil's River	-	-	E ?	2527	284.7	July 20, 1962	W,C	S	
303	do	L. Brooks	Devil's River	-	-	E ?	2550	322	Aug. 21, 1962	W,C	S	
304	do	do	2 Section	-	334	E,G	2508	265.4	do	W,C	S	
401	do	J. Dublin	Rock Wall	1943	-	E,G ?	2509	276.5	July 24, 1962	W,C	S	
402	do	do	Cedar	old	-	E,G ?	2580	237.9	July 29, 1962	W,C	S	
501	do	Mrs. L. StClair	South	1952	307	-	--	--	July 20, 1962	W,C	S	
502	do	J. Childress	East University	-	-	E ?	2551	324.7	Aug. 22, 1962	W,C	S	
601	do	L. Brooks	Yost	-	-	E ?	2529	306.4	Aug. 21, 1962	W,C	S	
701	J. Childress	--	Doublemill	-	-	E ?	2460	287.5	Aug. 27, 1962	W,C	S	
702	do	--	North	-	-	E ?	2490	289.4	Aug. 23, 1962	W,C	S	
801	University of Texas	J. Childress	Puckett	-	-	E ?	2441	--	--	W,C	S	
802	H. Moore	--	Buckhorn	-	-	E ?	2414	200±	Aug. 22, 1962	W,C	S,D	
901	University of Texas	S. Oglesby	Aeromotor	-	-	E ?	2473	265.8	Aug. 20, 1962	W,C	S	
902	do	do	West Pasture	-	-	E ?	2446	255.5	do	W,C	S	
10-101	C. Smith	--	#4	-	-	T,A ?	2168	35.1	Dec. 10, 1962	W,C	S	
102	do	--	#6	1959	-	T,A ?	--	--	--	W,C	S	
103	do	--	#7	-	-	E ?	2479	116.6	Dec. 10, 1962	W,C	S	
201	do	Ambassador Oil Company	--	-	-	T,E ?	2350±	158.8	Oct. 26, 1960	G,T	I	Water is used for water flood.

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
HJ-54-10-202	C. Smith	Ambassador Oil Company	--	-	-	T,E ?	2300±	--	Oct. 26, 1960	G,T	I	
203	J. M. Shannon est.	McMullan	Deer Canyon (Top)	-	640	T,E	--	590 R	--	W,C	S	
204	C. Smith	--	#5	-	-	T ?	2304	107.8	Dec. 10, 1962	W,C	S	
205	do	--	--	-	-	T ?	2384	138.6	do	-	I,A	
206	B. Nolke	--	Dry Trap	-	-	T,E ?	2508	315.1	do	W,C	S	
301	J. M. Shannon est.	McMullan	Deer Canyon	-	-	T ?	2591	335.9	Dec. 4, 1962	W,C	S	
302	do	A. C. Hoover	Deer Canyon Trap	1927	-	T,E ?	2447	246.6	June 4, 1963	W,C	S	
303	M. A. Shannon est.	do	Deer Canyon	-	-	- ?	--	--	--	W,C	S	
402	C. Smith	--	#8	-	-	T,A ?	2344	34.5	Dec. 10, 1962	W,C	S	
501	B. Nolke	--	River Shearing Pen	-	-	T ?	--	--	--	W,C	S	
502	do	--	#3 (Eagle Canyon)	-	-	T,E ?	2296	164.7	Dec. 10, 1962	W,C	S	
503	do	--	#4	-	-	- ?	--	--	--	W,C	S	
601	do	--	Headquarters	-	-	T,E ?	2294	157.6	Dec. 10, 1962	S,E	D,S	
602	do	--	Five Section	-	-	T,E ?	2364	187.1	do	W,C	S	
801	do	--	#2	-	-	T,A ?	2150	59.8	do	W,C	S	
901	do	--	Cedar Divide	-	-	T,E ?	--	500 R	--	W,C	S	
902	W. W. Owens	--	Divide	-	-	T,E ?	--	630 R	--	W,C	S	
11-101	J. M. Shannon est.	F. McMullan Jr.	H-Bar	-	-	T,E ?	2455	200.5	Dec. 4, 1963	W,C	S	
102	do	Marathon Oil Company	--	-	-	T,E ?	--	--	Jan. 7, 1963	PJ,E	D	
103	M. A. Shannon est.	A. C. Hoover	Newt	old	-	T,E ?	2468	262.3	June 4, 1963	W,C	S	
201	A. C. Hoover	--	North	-	-	T,E ?	2315	112	do	W,C	S	
202	do	--	North Camp	old	-	T,E,A ?	2301	111	do	W,C	S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
HJ-54-11-203	M. A. Shannon est.	A. C. Hoover	New	1960	-	T,E ?	2403	186.3	June 6, 1963	W,C	S	
301	do	--	--	1947	275	T,E	--	--	--	Pj,E	D,S	Petroleum operators house on lease.
303	A. C. Hoover	--	Divide Trap	-	-	T,E ?	--	--	--	W,C	S	
401	do	--	2 Section	-	-	T,E ?	--	--	--	W,C	S	
501	do	--	#11	-	-	T,E ?	2335	150.6	Jan. 1962	T,E	Irr	Observation well.
502	do	--	#11 A	-	-	T,E ?	2320	136.3	Jan. 1962	T,E	Irr	Observation well. Not used.
503	do	--	#14	-	-	T,E,A ?	2329	142.5	Jan. 1962	T,E	Irr	Observation well.
504	W. W. Owens	--	Headquarters	-	-	T,E,A ?	--	--	--	W,C	D,S	
505	A. C. Hoover	--	Goat Trap	-	-	T,E,A ?	--	--	--	W,C	S	
506	do	--	Big Nelson	-	-	T,E,A ?	--	102	June 4, 1963	W,C	S	
507	do	--	South Camp	-	-	T,E,A ?	2301	113	do	W,C	S	
508	do	--	Headquarters	-	-	T,E,A ?	2298	101.9	do	S,E	D,S	
509	do	--	#7	-	-	T,E,A ?	2274	99.5	Jan. 1962	T,E	Irr	Observation well.
601	do	--	Double Tank	-	-	T,E ?	2410	232.6	June 4, 1963	W,C	S	
701	W. W. Owens	--	Rock Tank	-	-	T,E ?	2434	276.9	Dec. 11, 1962	W,C	S	
702	do	--	House	-	-	T,E ?	--	--	--	W,C	S	
703	do	--	Dirt Tank	-	-	T,E ?	2466	313.1	Dec. 11, 1962	W,C	S	
704	do	--	South Trap	-	-	T,E ?	2383	230.7	do	W,C	S	
705	do	--	Cities Service	-	-	T,E ?	--	--	do	Pj,E	S	
706	A. C. Hoover	Tenneco Lease	House	-	620	T,E	--	550 R	Jan. 8, 1963	Pj,E	D	Well was drilled 11 ft. into sand.
801	do	--	#6	-	-	T,E,A ?	2255	89.6	Jan. 1962	T,E	Irr	Observation well.
802	do	--	Rough Nelson	-	-	T,E,A ?	2245	75.3	June 4, 1963	W,C	S	
803	do	--	Field	-	-	T,E,A ?	2216	49.9	Jan. 1962	W,C	S	
804	J. W. Owens	--	House	-	-	T,E,A ?	2208	68.7	Dec. 12, 1962	S,E	D,S	
805	do	--	Old Headquarters Well	-	-	T,E,A ?	2208	53.5	Dec. 11, 1962	-	I	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
HJ-54-11-806	J. W. Owens	--	--	-	-	E ?	2160	Flows	--	-	-	Spring on Live Oak Creek.
807	A. C. Hoover	--	#3	-	-	T,E,A ?	2303	137.7	Jan. 1962	W,C	S	Observation well.
808	do	--	Herman	-	-	T,E ?	--	--	--	W,C	S	
901	do	--	South White	-	-	T,E,A ?	2235	61.0	Jan. 1962	W,C	S	Observation well.
902	do	--	#4	-	-	T,E,A ?	2230	52.8	do	G,T	Irr	Do.
903	do	--	#5	-	-	T,E,A ?	2225	50.8	Jan. 1962	G,T	Irr	Do.
905	J. W. Owens	--	Buck Trap	-	-	T,E ?	2291	139.1	Dec. 11, 1962	W,C	S	
906	University of Texas	J. W. Owens	Maize House	-	-	T,E ?	--	--	--	W,C	S	
907	A. C. Hoover	--	North White	-	139	T,E	2297	121.8	June 4, 1963	W,C	S	
908	do	--	Upper North White	-	-	T,E ?	--	--	--	W,C	S	
909	do	--	Farm	-	-	T,E,A ?	2220	53.6	June 4, 1963	S,E	D	
12-101	J. M. Shannon est.	C. Black	High Lonesome	-	-	E ?	2650	455.8	Nov. 27, 1962	W,C	S	
102	do	do	--	-	-	E ?	2557	327.4	Nov. 28, 1962	-	I,A	Water supply for oil test.
201	J. S. Todd est.	V. Montgomery	Sampson	-	-	E ?	--	--	--	W,C	S	
202	do	do	Sheffield	-	-	E ?	2599	394.4	Nov. 26, 1962	W,C	S	
301	do	do	North Mill	-	-	E ?	2431	211.9	Feb. 26, 1963	W,C	S	
302	J. M. Shannon est.	J. Mayer	South West	-	-	E ?	--	--	--	W,C	S	
501	J. S. Todd est.	V. Montgomery	Corner	-	-	E ?	--	--	--	W,C	S	
502	do	do	Canyon	1958	-	E ?	2530	349.6	Nov. 26, 1962	W,C	S	
601	do	do	Miller	-	-	E ?	2500	309.5	do	W,C	S	
602	do	do	Headquarters	-	-	E ?	2377	164.4	do	W,C	S	
801	do	do	25 Foot	-	-	E ?	--	--	--	S,E	D,S	
802	do	do	Divide	-	-	E ?	--	--	--	W,C	S	
901	do	do	South	-	-	E ?	2403	224.9	Nov. 26, 1962	W,C	S	
902	University of Texas	L. Childress	North	-	-	E ?	--	--	--	W,C	S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
HJ-54-13-102	J. S. Todd est.	V. Montgomery	2 Section	-	-	- ?	--	--	--	W,C	S	
201	J. M. Shannon est.	Humble Oil Company	--	--	490	T,E	2830±	--	--	Pj,E	D	
202	do	do	--	-	628	T,E	2830±	--	--	-	A	
203	do	J. Mayer	Beef	-	390	T,E	2570	343.2	Feb. 19, 1963	W,C	S	
301	do	P. L. Childress	South	-	-	E ?	--	--	--	W,C	S	
302	J. Bean	--	Dirt Tank	-	-	E ?	--	--	--	W,C	S	
303	J. M. Shannon est.	J. Mayer	Aeromotor	1934	-	E ?	2579	166.2	Feb. 15, 1963	W,C	S	
304	do	do	Shearing Pen	-	-	T,E ?	--	450+	--	W,C	S	
305	do	--	--	-	525	T,E	2696	465	Oct. 15, 1960	G,T	I,A	Water supply for oil test by Humble Oil Company.
401	J. S. Todd est.	Continental Oil Company	--	-	-	T ?	2348	159	Dec. 13, 1962	G,T	I	
402	do	Mrs. B. Fields	--	-	-	E ?	--	--	--	W,C	S	
403	do	G. Bunger	--	-	-	T,E ?	2364	184.5	Dec. 13, 1962	-	I,A	Water supply for oil test by Delta Oil Company.
501	do	do	Round Hill	-	-	T,E ?	2487	308.5	do	W,C	S	
602	J. Bean	--	West Trap	-	-	T,E ?	2518	338.5	Feb. 28, 1963	W,C	S	
603	do	--	Middle	1940	-	T,E ?	2441	281.6	Nov. 8, 1962	W,C	S	
604	J. S. Todd est.	Mrs. B. Fields	Canyon	-	-	T,E ?	2561	391.8	Dec. 14, 1962	W,C	S	
701	do	G. Bunger	Bill West	1930	-	T,E ?	2313	248.5	Dec. 13, 1962	W,C	S	
702	do	do	--	-	-	T,E ?	2429	272.4	do	-	I,A	Water supply for oil test by Southland Royalty Oil Company.
703	University of Texas	P. L. Childress	8 Section	-	-	T,E ?	--	--	--	W,C	S	
801	J. S. Todd est.	G. Bunger	Canyon	-	-	T,E ?	2495	340	Dec. 13, 1962	W,C	S	
802	do	Mrs. B. Fields	East	-	-	T,E ?	2445	382	Dec. 14, 1962	W,C	S	
803	University of Texas	F. Henderson	Divide	old	600+	T,E	--	500+	--	W,C	S	
901	J. Bean	--	Junk	old	-	T,E ?	2399	251.6	Nov. 8, 1962	W,C	S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
HJ-54-13-902	J. Bean	--	House	-	-	T,E ?	--	--	--	S,E	D,S	
903	University of Texas	G. Bunger	Divide	-	-	T,E ?	2629	486.6	Dec. 13, 1962	W,C	S	
904	do	F. Henderson	Pike's Peak	-	-	T,E ?	2350	231.6	do	W,C	S	
905	do	--	--	-	-	T,E ?	2476	325.7	do	-	I,A	Water supply for oil test.
14-101	J. M. Shannon est.	P. L. Childress	Vaughan	1928	-	E ?	2637	377.4	Nov. 5, 1962	W,C	S	
201	R. L. Vaughan	--	North	-	-	E ?	2610	369.6	Nov. 2, 1962	W,C	S	
202	do	--	House	-	--	E ?	--	340+	--	W,C	D,S	
203	do	Antwell Petroleum Company	--	-	-	T,E ?	--	--	--	Pj,E	D,I	
204	do	do	#4	-	-	T,E ?	--	--	--	Pj,E	I	
205	H. L. Hunt	--	Camp Well	1953	555	T	2530	430	Oct. 15, 1963	Pj,E	D	
301	J. Holt	--	House	-	-	E ?	--	--	--	Pj,E	D,S	
401	R. L. Vaughan	--	Live Oak	-	-	E ?	2500	329.5	Nov. 2, 1962	W,C	S	
402	J. Bean	--	Sampson	-	-	T,E ?	2437	270.3	Nov. 8, 1962	W,C	S	
403	do	--	Live Oak	-	-	E ?	2503	318.7	do	W,C	S	
501	R. L. Vaughan	--	Shannon	-	-	E ?	2600	310.7	Nov. 2, 1962	W,C	S	
502	Mrs. C. Bean	--	House (old)	-	-	E ?	2630	429.8	do	-	D,A	
503	do	--	House (new)	-	467	E	2630	429.3	do	W,C	D,S	
504	do	--	--	-	-	E ?	--	415	Nov. 5, 1962	-	D,A	Well was abandoned because of salt in water. Logged with Widco.
601	W. R. Baggett	--	Cave	1941	401	E	--	354 R	--	W,C	S	Encountered fresh water in 2 ft. cave at 354 ft.
602	Mrs. C. Bean	--	Brushey	-	-	E ?	2590	386.8	Nov. 2, 1962	W,C	S	
603	do	--	New Well	-	458	E	2602	402.1	do	W,C	S	
702	F. R. Henderson Jr.	--	West	old	-	T,E ?	--	--	--	W,C	I	
703	A. Bean	--	House	old	-	T,E ?	2432	264.7	Nov. 8, 1962	W,C	D,S	
801	F. R. Henderson Jr.	--	Big Mill	old	600+	T,E	2582	464.3	Sept. 20, 1962	W,C	S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	[illegible]	Well name	Date completed	Depth of well (ft.)	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
BJ-34-11[illegible]02	A. Bean	--	Gray	-	-	E ?	2550	350.5	Nov. 1, 1962	[illegible],C	-	
901	W. R. Baggett	--	West	1907	450	E	--	--	--	W,C	S	Water-bearing formation between 350-390 ft.
902	F. R. Henderson Jr.	--	[illegible] Well	1923	660	E	--	--	--	W,C	S	
903	do	--	Huffman	-	-	E ?	2559	421.9	Sept. 18, 1962	-	[illegible]	
904	Mrs. C. Bean	--	East	-	-	E ?	2559	272.0	Nov. 5, 1963	W,C	S	
15-101	T. Williams	--	--	1952	-	E ?	2550	319.8	Aug. 24, 1962	-	I,A	Water supply for oil test by Humble Oil Company.
102	do	--	--	-	-	E ?	2562	336.8	do	-	-	Oil test--12-in. openhole
103	do	--	Headquarters	1936	-	E ?	2535	334	do	W,C	D,S	
104	do	--	East	1946	415	E	2563	360.2	do	W,C	S	Encountered water at 358 ft.
105	J. Holt	--	East	-	-	E ?	2590	370	Jan. 8, 1962	W,C	S	
201	B. Baker	--	McNutt	1920	-	E ?	2563	349.5	Sept. 19, 1962	W,C	S	
202	O. B. Trap Company	--	McNutt Trap	old	-	E ?	2525	323	do	W,C	S	
301	J. Childress	--	Roosevelt	old	-	E ?	2533	346	Aug. 23, 1962	W,C	S	
302	do	--	Headquarters (old)	old	-	E ?	2537	359	do	S,E	S	
303	do	--	Headquarters (new)	-	-	E ?	2537	362.7	Aug. 23, 1962	S,E	D,S	
304	do	--	Farm Well	1963	415	E	2535	352	May 17, 1963	S,E	Irr	275 gpm reported.
401	W. R. Baggett	--	North	1920	431	E	--	--	--	W,C	D,S	Water-bearing formation between 351-385 ft.
402	T. William[illegible]	--	--	-	460	E	--	350	July 17, 1963	-	-	Cleaned out oil well and tested for irrigation well.
501	W. R. Baggett	--	Electric	-	400	E	--	--	--	S,E	S	
502	J. B. Parker	--	Middle	1948	-	E ?	2522	351.5	Aug. 24, 1962	W,C	S	
503	do	--	West	-	-	E ?	2465	271.5	do	W,C	S	
601	A. [illegible] Lucket[illegible]	--	Middle	old	-	E ?	2535	351.[illegible]	Aug. 23, 1962	W,	-	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
HJ-54-15-602	T. Williams	--	North	-	-	E ?	2531	--	--	W,C	S	
603	do	--	South	-	-	E ?	2517	334.1	Aug. 24, 1962	W,C	S	
604	J. B. Parker	--	Headquarters	old	-	E ?	2514	--	--	PJ E	D,S	
605	T. Williams	--	--	1948	-	E ?	2521	325.9	Aug. 24, 1962	-	I,A	Water supply for oil test by Humble Oil Company.
702	W. R. Baggett	--	Fryer	-	402	E	--	--	--	W,C	S	
703	do	--	Road	1939	463	E	--	--	--	W,C	S	Porous Limestone 376-380 ft.
801	do	--	High	-	-	E ?	--	--	--	W,C	D,S	
802	F. Hagelstein	--	Divide	-	-	E ?	2509	359.3	Sept. 6, 1962	W,C	S	
803	do	--	North	1942	-	E ?	2422	280.9	do	W,C	S	
804	W. R. Bagett	--	House	1933	340	E	--	--	--	W,C	D,S	
901	J. B. Parker	--	South	old	-	E ?	2490	--	--	W,C	S	
16-101	A. C. Luckett	M. Black	Headquarters	old	400	E	2535	357.7	Aug. 23, 1962	W,C	D,S	
102	do	do	North	old	-	E ?	2540	--	--	W,C	S	
201	H. Moore	--	South Divide	-	-	E ?	2501	334.5	Aug. 22, 1962	W,C	S	
202	J. Childress	--	North	old	-	E ?	2436	260.4	Aug. 23, 1962	W,C	S	
301	J. Clayton	--	Crossin	-	-	E ?	2377	211.9	Aug. 28, 1962	W,C	S	
302	do	--	Headquarters	-	-	E ?	2392	238.9	do	W,C	D,S	
401	A. C. Luckett	--	South	old	-	E ?	2513	339.4	Aug. 23, 1962	W,C	S	
402	J. Childress	--	Buck	old	-	E ?	2498	311.6	do	W,C	S	
403	do	--	--	-	362	E	2520	336.6	do	-	-	Shothole.
501	do	--	Iron Tank	old	-	E ?	2500	337.6	Aug. 23, 1962	W,C	S	
502	E. H. Chandler	--	Headquarters	old	-	E ?	2486	315.7	Aug. 30, 1962	W,C	D,S	
601	T. D. Jones	--	North	-	-	E ?	--	--	Aug. 28, 1962	W,C	S	
701	E. M. Farrell	--	Headquarters	old	400	E	2485	341.3	Sept. 5, 1962	W,C	D,S	
702	J. Childress	--	Partnership	-	-	E ?	2490	325	do	W,C	S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Lessee	Well name	Date completed	Depth of well (ft.)	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
HJ-54-16-801	E. H. Chandler	--	East Pasture	-	400	E	2445	--	Aug. 20, 1962	W,C	S	Old oil test.
802	J. Childress	--	East Ranch Headquarters	-	-	E ?	--	--	Aug. 29, 1962	W,C	S	
803	E. H. Chandler	--	West Pasture	-	400	E	2480	314.7	Aug. 30, 1962	W,C	S	
901	M. B. Jones	--	Headquarters	-	--	E ?	--	--	--	Pj E	D,S	
902	P. L. Childress	--	Lanny	old	-	E ?	--	--	--	W,C	S	
18-201	A. C. Millspangh	--	Toman	-	-	T,A ?	2146	90	Dec. 10, 1962	W,C	S	
301	do	--	North Ranch	-	-	T,E ?	2244	179.6	do	W,C	S	
302	H. B. Cox est.	I. Deaton	Rainy	-	-	- ?	--	--	--	W,C	S	
601	A. C. Millspaugh	--	Headquarters	-	-	T,A ?	--	--	--	W,C	D,S	
602	H. B. Cox est.	I. Deaton	Salt	-	-	E ?	--	--	--	W,C	S	
19-101	do	do	Dirt Tank	-	-	T,E ?	2300	217.3	Dec. 14, 1962	W,C	S	
102	do	do	House Pasture	-	-	T,E ?	--	--	--	W,C	S	
103	A. Cox est.	--	--	-	420	-	--	--	--	-	-	
201	J. W. Owens	--	Garden	-	-	T,E ?	--	--	--	W,C	S	
202	do	--	West of Creek	-	-	T,E ?	2228	113.2	Dec. 11, 1962	W,C	S	
203	H. B. Cox est.	I. Deaton	Cox	-	-	T,E ?	2140	54.5	Dec. 14, 1962	W,C	S	
204	do	do	North Hollan	-	-	T,E ?	--	--	--	W,C	S	
301	University of Texas	J. W. Owens	Mail Box	-	-	T,E ?	2196	66.1	Dec. 12, 1962	W,C	S	
302	do	do	New	-	-	T,E ?	2264	117.1	Dec. 11, 1962	W,C	S	
303	do	do	Rock Tank	-	-	T,E ?	2259	137.2	Dec. 12, 1962	W,C	S	
304	do	do	--	-	-	T,E ?	2266	143.9	do	-	-	Water supply for oil test. Observation well.
305	do	do	Red	-	-	T,E ?	2361	240.7	Dec. 12, 1962	W,C	S	
401	A. C. Millspaugh	--	East	-	-	T,E ?	2105	113.1	Dec. 10, 1962	W,C	S	
402	H. B. Cox est.	I. Deaton	House	-	-	T,E ?	2169	54.7	Dec. 17, 1962	W,C	D,S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
HJ-54-19-501	H. B. Cox est.	I. Deaton	Fort	-	-	T ?	2244	193.8	Dec. 14, 1962	W,C	S	
502	do	do	Lancaster Hill	-	-	T ?	--	--	--	W,C	S	
601	University of Texas	J. Scott	North	-	-	T ?	2294	197	March 1, 1963	W,C	S	
602	J. Scott	--	Headquarters	-	-	T ?	--	--	--	W,C	D,S	
603	B. B. Ingham	J. Scott	East	-	-	T ?	--	--	--	W,C	S	
604	L. Childress	J. Childress	Scotty	-	-	T ?	--	--	June 5, 1963	W,C	S	
801	L. Richardson	--	--	1947	80	T,A	2150±	35.1	Feb. 8, 1961	T,E	Irr	Dug. Observation well.
802	do	--	--	-	40	T,A	--	8.5	Feb. 8, 1961	-	A	Dug.
803	H. B. Cox est.	I. Deaton	Farm Trap	-	100±	T,A	2047	54.3	Dec. 14, 1962	W,C	S	
804	B. B. Ingham	--	Highway	1931	178	T	2136	139	March 1, 1962	W,C	S	
901	do	--	--	1953	101	T,A	--	23.1	Feb. 8, 1961	T,E	Irr	Observation well.
902	B. B. Ingham	--	Jim	1945	145	T	2099	126.7	March 1, 1963	W,C	S	
903	do	--	North Divide	1940	600	T	--	--	--	W,C	S	
904	do	--	House Canyon	1948	156	T	2151	78	March 1, 1963	W,C	S	
HJ-54-20-101	University of Texas	J. W. Owens	Double	-	-	T,E ?	--	--	--	W,C	S	
102	do	J. Childress	Questa	-	316	T,E	--	--	--	W,C	S	
201	do	W. E. Dunlap	House	-	-	T,E ?	--	--	--	W,C	S	
202	do	L. Childress	Sweetwater	-	-	T,E ?	--	--	--	W,C	S	
203	do	do	New	-	-	T,E ?	--	--	--	W,C	S	
301	do	do	House	1900	360	T,E	--	--	--	W,C	S	
302	do	do	Frank	-	-	T,E ?	--	--	--	W,C	S	
401	do	J. Childress	West	-	-	T,E ?	--	--	--	W,C	S	
402	L. Childress	do	Headquarters Divide Ranch	-	-	T,E ?	--	--	--	W,C	D,S	
501	University of Texas	do	Colorado	1945	601	T,E	--	--	--	W,C	S	
601	do	L. Childress	6 Section	-	-	T,E ?	--	--	--	W,C	S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Lessee	Well name	Date completed	Depth of well (ft.)	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			
HJ-54-20-602	University of Texas	L. Childress	Goat Trap	-	-	T,E ?	--	--	--	W,C	S	
701	B. B. Ingham	--	Middle	-	-	T,E ?	--	--	--	W,C	S	
702	P. C. Perner	--	North	1951	600	T,E	--	--	--	W,C	S	
801	do	--	4 Corners	1938	600	T,E	--	--	--	W,C	S	
802	do	--	Escondido	old	250	T,E	--	--	--	W,C	S	
803	University of Texas	J. Wilkins	East	-	-	T,E ?	2445	354.6	--	W,C	S	
804	do	do	West	-	-	- ?	--	--	--	W,C	S	
901	do	S. Scheuber	Divide	-	-	T,E ?	--	--	--	W,C	S	
902	do	do	House	old	-	T,E ?	2402	317.1	March 22, 1963	W,C	D,S	
21-101	do	P. L. Childress	Clay Tank	-	-	T,E ?	--	--	--	W,C	S	
201	do	F. Henderson	House	-	-	E ?	2353	217.9	Dec. 13, 1962	W,C	D,S	
202	do	do	--	-	-	E ?	2395	263.5	do	-	I,A	Water supply for oil test. Observation well.
203	do	P. L. Childress	McCauley	old	-	E,A ?	--	--	--	W,C	S	
301	do	G. Bunger	Point Well	1943	614	E	2526	381.3	Dec. 13, 1962	-	A	
302	do	do	Johnnie's Well	-	387	T,E	2407	276.8	do	W,C	S	
303	do	do	Big House Well	old	-	- ?	2337	225.4	Dec. 13, 1962	W,C	S	
401	do	P. L. Childress	Grass Top	-	-	E ?	--	--	--	W,C	S	
402	do	do	House	-	-	E ?	--	--	--	W,C	S	
403	do	J. W. Henderson	Little	1952	320	E	--	--	--	W,C	S	
501	do	G. Bunger	West Trap	-	-	E ?	2327	221.3	Dec. 13, 1962	W,C	S	
601	do	do	Little House Well	-	254	-	2329	218.6	do	W,C	S	
602	do	B. Clayton	Old Headquarters	-	300	E	2373	283.7	June 3, 1963	-	A	
603	do	do	Oil Well	-	535	E	2505	418.7	do	-	A	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
HJ-54-21-701	University of Texas	J. W. Henderson	7N Headquarters	old	-	E,A ?	2201	117.6	March 18, 1963	W,C	D,S	
702	do	Mrs. A. McMullan	New	-	364	T,E	2322	341.8	March 22, 1963	W,C	S	
801	do	J. W. Henderson	East	1940	360	T,E	2304	214.4	March 18, 1963	W,C	S	
802	do	R. Henderson	Round Hill	-	195	E,A	--	--	--	W,C	S	
901	do	do	Headquarters	-	-	E ?	--	--	--	W,C	S	
902	do	do	Headquarters	-	-	E ?	--	--	--	S,E	D,S	
903	do	B. Clayton	Big Mill	-	-	E ?	2341	252.4	June 3, 1963	W,C	S	
904	do	do	Headquarters	-	-	E ?	2469	378.8	do	W,C	S	
22-102	F. R. Henderson Jr.	--	Flat Rock	1952	421	T,E	2430	316.8	Sept. 20, 1962	W,C	S	
103	C. W. Medows est.	J. Williams	North	-	-	E ?	2433	302.1	Nov. 13, 1962	W,C	S	
201	do	G. Williams	Wildcat	1940	-	- ?	--	--	--	W,C	S	
202	do	J. Williams	Division	-	-	E ?	2528	407.9	Nov. 13, 1962	W,C	S	
301	F. R. Henderson Jr.	--	Harrington	-	407	E	--	--	--	W,C	S	
302	do	--	Oil Well	-	-	E ?	2549	400	Sept. 20, 1962	W,C	S	
401	C. W. Medows est.	J. Williams	House	-	-	- ?	--	--	--	S,E	D,S	
402	do	do	Source Well	-	-	E ?	2482	374.8	Nov. 13, 1962	-	I,A	
403	Texas-New Mexico Pipe Line Company	--	--	-	-	- ?	--	--	--	Pj,E	I	
501	C. W. Medows est.	G. Williams	Word	-	-	E ?	2514	400.3	Sept. 11, 1962	W,C	S	
601	do	do	6 Mile	-	-	E ?	2520	396.2	do	W,C	S	
602	do	do	Humble Cox	-	-	E ?	2520	392	do	-	I,A	Water supply for oil test. Observation well.
603	do	J. Williams	Little 6 Mile	-	-	E ?	2525	322.6	Nov. 13, 1962	W,C	S	
701	do	do	Old Pump Station	-	-	E ?	2388	287	do	W,C	S	
702	G. M. Couch	J. Couch	Mitchell	old	425	E	2423	321.8	March 20, 1962	W,C	S	
801	do	do	Headquarters	1932	630	T,E	2516	444.9	do	W,C	D,S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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
802	G. M. Couch	J. Couch	Divide	1917	450	E	2524	419.4	March 20, 1962	W,C	S	
901	Mrs. K. Kelbing	E. L. Chandler	Oil Well	-	-	E ?	2525	412	March 19, 1962	W,C	S	
J-54-23-101	Crockett County Water Control Dist.	--	#1	-	418	E	2404	335	1960	T,E	P	935 gpm reported. Located on west hill.
102	do	--	#2	-	-	E ?	2403	--	--	-	F,A	Located on west hill.
103	F. R. Henderson Jr.	--	Airport	1961	475	T,E	2370	275	May 26, 1964	--	Irr A	Tested at 60 gpm and never used.
104	do	--	Shepherd	-	-	E ?	2373	307	Sept. 20, 1962	S,E	S	Tested at 500 gpm in 1963.
105	E. H. Chandler	--	North Pasture	-	-	E ?	--	--	--	W,C	S	
106	Crockett County Water Control Dist.	--	#4	1963	397	E	2400	331.3	Feb. 10, 1963	S,E	P	Tested at 350 gpm. Located on west hill.
107	do	--	#3	1963	390	E	2407	339.7	do	-	A	Tested at 50 gpm. Located on west hill.
108	do	--	Shepherd	1963	-	E ?	2373	307	--	T,E	P	Tested at 450 gpm.
201	do	--	#1	1941	445	E	2444	354 R	1941	-	P	450 gpm reported. Located on East hill.
202	do	--	#2	1947	440	E	2434	352 R	1960	S,E	P	400 gpm reported. Located on East hill.
203	do	--	#4	-	440	E	2444	354 R	1963	T,E	P	500 gpm reported. Located on East hill.
204	do	--	#3	1947	440	E	2448	354 R	1947	T,E	P	500 gpm reported. Located on East hill.
205	do	--	#6	-	440	E	2444	--	--	-	A	
206	W. E. Friend Jr.	--	Headquarters	-	-	E ?	2367	286.3	Sept. 4, 1962	S,E	D,S	20 gpm reported.
207	F. Hagelstein	--	Headquarters	old	375	E	2450	323.2	Sept. 6, 1962	-	A	
208	do	--	Headquarters	-	-	E ?	2497	387.8	do	W,C	D,S	
209	F. R. Henderson Jr.	--	Headquarters	1922	-	E ?	2360	270.5	Sept. 21, 1962	S,E	D,S	
301	W. E. Friend Jr.	--	Sulphur	old	-	T,E ?	2395	293.8	Sept. 4, 1962	W,C	S	
302	C. E. Davidson III	--	Dump Ground	-	-	E ?	2466	340.6	Sept. 6, 1962	W,C	S	
401	C. W. Medowcraft	G. Williams	Headquarters	old	-	E ?	2372	299	Sept. 11, 1962	W,C	[illegible]	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
HJ-54-23-402	R. J. Cook est.	--	--	-	306	E	--	276 R	July 7, 1963	W,C	D,S	
403	E. H. Chandler	--	--	-	-	E ?	--	--	--	W,C	S	
404	do	--	South Pasture	-	-	E ?	--	--	--	W,C	S	
405	C. W. Medows est.	--	Headquarters	old	-	T ?	--	--	--	W,C	A	Abandoned because of sulphur.
502	W. E. Friend Jr.	--	Fairgrounds	-	500	E	2499	418.2	June 22, 1963	S,E	S	
503	Crockett County Water Control Dist.	--	Ingham Trap	1937	370	E	--	--	--	-	A	
504	A. Kincaid est.	G. Montgomery	Headquarters	old	410	E	2376	344	July 8, 1963	W,C	D,S	
601	W. E. Friend Jr.	--	Sonora	1954	-	E ?	2488	409.1	Sept. 4, 1962	W,C	S	
602	A. Kincaid est.	G. Montgomery	Divide	-	400	E	--	--	--	W,C	S	
701	Mrs. R. Helbing	E. H. Chandler	House	-	-	E ?	2503	400.4	March 19, 1963	W,C	S	
801	F. McMullan	--	East	-	-	E ?	--	--	--	W,C	S	
802	O. B. Trap Company	--	--	-	-	T,E ?	--	--	--	W,C	S	
803	Mrs. R. Helbing	E. H. Chandler	Hulling	-	-	T,E ?	--	--	--	W,C	S	
901	C. E. Davidson Jr.	--	House #1	1951	430	E	2466	392	Sept. 25, 1962	W,C	D,S	
902	do	--	House #2	1957	450	E	2478	395.9	Sept. 25, 1962	W,C	D,S	
903	A. Kincaid est.	G. Montgomery	East	-	400	E	2477	375.8	July 8, 1963	W,C	S	
24-101	W. E. Friend Jr.	--	1 Section	-	375	E	--	--	--	W,C	S	
102	R. A. Harrell	--	Old House	old	-	E ?	2470	334.9	Sept. 5, 1962	W,C	S	
103	do	--	--	-	-	E ?	2383	335	Sep do 1962	-	-	Shothole.
201	J. Childress	--	Dirt Tank	-	401	E	--	--	--	W,C	S	
202	do	--	Southeast	1941	375	E	--	--	--	W,C	S	
203	R. A. Harrell	--	Adams	-	-	E ?	2479	338.5	Sept. 5, 1962	W,C	S	
204	C. E. Davidson III	--	Emerald	old	544	T,E	--	--	--	W,C	S	
301	F. L. Childress	--	New Pens	1939	400	E	--	--	--	W,C	S	
302	Clayton Ranch Co.	--	Little Mill	-	-	E ?	2425	340.5	Aug. 30, 1962	W,C	S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
HJ-54-24-401	Crockett County Water Control Dist.	--	#1	1960	420	E	2450	372	Aug. 15, 1960	T,E	P,S	
402	do	--	#2	1958	420	E	--	363.1	April 3, 1962	-	A	
403	do	--	#3	1925	420	E	--	--	--	S,E	P,S	Tested at 60 gpm.
404	do	--	#4	1958	420	E	--	--	--	S,E	P,S	
405	C. E. Davidson III	--	House	-	420	E	--	--	--	S,E	D,S	
501	J. Wilkins	--	--	-	-	E ?	2471	354.7	Sept. 13, 1962	-	A	Water supply for oil test.
502	C. E. Davidson III	--	Doodle bug	-	903	E	2478	357	Sept. 11, 1962	W,C	S	
503	do	--	Stripped Tank	1956	395	E	2450	2103.8	Sept. 11, 1962	W,C	S	
602	Clayton Ranch Co.	--	Old Highway	-	421	E	2475	--	--	W,C	S	
603	do	--	New Highway	-	430	E	--	--	--	W,C	S	
604	D. Jones	--	Toy	-	-	E ?	--	--	--	W,C	S	
701	J. Wilkins	--	West	1949	410	E	--	--	--	W,C	S	
702	C. E. Davidson Jr.	--	Big Mill	-	565	T,E	2475	371.8	Sept. 11, 1962	W,C	S	
703	do	--	Hog Canyon	1960	511	E	2462	379.3	Sept. 25, 1962	W,C	S	
801	J. Wilkins	--	Old Clayton	-	389	E	--	--	--	W,C	S	
802	do	--	East Clayton	-	-	E ?	2455	352.9	Sept. 13, 1962	W,C	S	
803	do	--	Headquarters	-	-	E ?	--	--	--	S,E	D,S	
901	R. Jones	--	Divide	1938	400	E	2470	359.5	Sept. 4, 1962	W,C	S	
902	do	--	--	-	-	E ?	2469	356.1	Sept. 4, 1962	-	I,A	Water supply for oil test.
903	do	--	Headquarters	old	-	- ?	--	--	--	S,E	D,S	
27-301	B. B. Ingham	--	House	1927	42	T,A	2006	56	March 1, 1963	W,C	D,S	Dug.
302	do	--	South Divide	-	-	T,E ?	--	--	--	W,C	S	
303	do	--	First Canyon	1937	225	T	2155	173.8	March 1, 1963	W,C	S	
602	R. R. Dudley	--	House	-	40	A	1973	26.9	do	W,C	S	Dug. North well of two.
801	A. Hoover	--	House	-	70	A	--	--	--	W,C	D,S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
HJ-54-25-101	P. C. Perner	--	House	old	600	T,E	--	590 R	March 11, 1963	W,C	S,D	
102	do	--	Middle	1937	600	T,E	--	--	--	W,C	S	
201	do	--	Clay Tank	1941	401	T,E	2284	267.4	March 11, 1963	W,C	S	
202	do	--	Oil Well	1932	-	T ?	--	--	--	W,C	S	
301	do	--	New Escondido	1951	380	E	2275	343.5	March 11, 1963	W,C	S	
302	do	--	Little Well	old	350	T	--	--	--	W,C	S	
303	L. B. Cox Jr.	--	Headquarters (New)	1945	223	T,E	--	190 R	March 12, 1963	S,E	D,S	
304	do	--	North Divide	1926	600	T,E	--	470 R	do	W,C	S	
305	do	--	Headquarters	1890	-	E ?	2235	168.7	do	W,C	S	
401	R. R. Dudley	--	Greer	-	160	T,E	2075	129.8	March 1, 1963	W,C	S	
402	do	--	Little Mill	-	190	T,E	2120	160.5	do	W,C	S	
403	do	--	Callahan	-	-	T,E ?	--	--	--	W,C	S	
404	do	--	South Divide	-	600	T,E	--	--	--	W,C	S	
405	do	--	3rd Canyon	-	190	T,E	2111	171	March 1, 1963	W,C	S	
502	Mrs. M. Lee	J. B. Parker	Divide	-	-	T,E ?	--	--	--	W,C	S	
601	do	do	Headquarters	old	319	T,E	2296	290	March 12, 1963	Pj,E	D,S	
602	L. B. Cox Jr.	--	South Divide	1934	593	T,E	--	405 R	do	W,C	S	
603	do	--	Southwest Divide	1939	581	T,E	--	481 R	do	W,C	S	
701	A. Hoover	--	North	-	618	T,E	--	--	--	W,C	S	
702	L. B. Cox Jr.	--	Divide	-	600	T,E	--	--	--	W,C	S	
801	A. C. Millspaugh	--	New	1950	400	T,E	2278	319.3	March 12, 1963	W,C	S	
802	L. B. Cox Jr.	--	Mills	old	-	T,E ?	--	--	--	W,C	S	
901	A. C. Millspaugh	--	House	-	250	T,E	2203	312.1	March 12, 1963	S,E	D,S	
902	do	--	Blue	old	-	E ?	2200	221.5	do	W,C	S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
HJ-54-28-903	A. C. Millspaugh	--	Author	old	-	T,E ?	2245	279.8	March 12, 1963	W,C	S	
29-101	V. B. Cox	L. B. Cox Jr.	House	1936	108	E,A	--	100 R	do	W,C	D,S	
103	do	do	Lindley	1915	-	E,A ?	--	180 R	March 12, 1963	W,C	S	
104	R. Henderson	--	Talley	-	-	E,A ?	--	--	--	W,C	S	
105	do	--	Talley Divide	-	-	T,E ?	--	--	--	W,C	S	
106	do	--	Little	-	-	- ?	--	--	--	W,C	S	
301	do	--	Oil Well	1941	600	T,E	2535	475.9	March 20, 1963	S,E	S	
302	J. W. Henderson	--	Chandler	1941	645	T,E	--	--	--	W,C	S	
303	R. Henderson	--	South	-	-	- ?	--	--	--	W,C	S	
401	L. B. Cox Jr.	--	Howards	1910	-	E,A ?	2156	86.7	March 12, 1963	W,C	S	
402	S. S. Millspaugh	A. C. Millspaugh	House	old	-	- ?	2129	123	do	W,C	S	
403	J. W. Henderson	--	Lindley #1	1920	330	T,E	2181	155.5	March 18, 1963	W,C	S	
404	do	--	Lindley #2	1950	670	T,E	--	--	--	W,C	S	
501	do	--	12 Section	1950	435	E	2439	404.2	March 18, 1963	W,C	S	
502	do	--	Tin House	-	-	E,A ?	--	--	--	W,C	S	
601	do	--	Mitchell	1905	460	T,E	2272	244.1	March 12, 1963	W,C	S	
701	S. S. Millspaugh	A. C. Millspaugh	3 Mile	-	-	E,A ?	2094	82.3	March 12, 1963	W,C	S	
702	do	do	Point	-	-	E,A ?	2129	155.8	do	W,C	S	
703	I. Carson	--	North	1951	227	T,E,A	2095	140.3	March 21, 1963	W,C	S	
902	J. W. Henderson	--	Gabor	1950	-	- ?	2450	396.4	March 18, 1963	-	I,A	Water supply for oil test.
903	do	--	Divide	-	635	T,E	--	--	--	W,C	S	
904	do	--	North Odom	1945	336	T,E	--	--	--	W,C	S	
905	B. Robertson	--	Middle	1955	380	T,E	--	--	--	W,C	S	
30-101	R. Henderson	--	East	-	-	E ?	2499	413.2	Oct. 4, 1962	W,C	S	
102	J. W. Henderson	--	Mogul	1902	-	E ?	2482	434	March 18, 1963	W,C	D,S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
HJ-54-30-103	R. Henderson	--	Old East	-	-	E ?	--	--	--	W,C	S	
201	G. M. Couch est.	J. Couch	Casey	1960	468	E	2502	406.7	March 20, 1963	W,C	S	
202	F. H. Hunt	--	--	-	-	E ?	--	--	--	W,C	S	
301	Mrs. R. Helbing	E. H. Chandler	4 Section	-	-	- ?	2526	415.4	March 19, 1963	W,C	S	
302	E. H. Hunt	--	--	-	-	E ?	--	--	--	W,C	S	
303	do	--	--	-	-	E ?	--	--	--	W,C	S	
401	Mrs. G. Bean	J. Bean	South	-	-	E ?	2311	252	March 21, 1963	W,C	S	
402	do	do	West	-	-	E ?	--	--	--	W,C	S	
501	do	do	House	old	-	E ?	2329	262.6	March 21, 1963	W,C	D,S	
502	E. H. Hunt	--	Headquarters	old	-	E ?	2475	447.8	June 3, 1963	W,C	D,S	
503	do	--	--	-	-	E ?	--	--	--	W,C	S	
504	do	--	--	-	-	E ?	--	--	--	W,C	S	
505	do	--	--	-	-	E ?	--	--	--	W,C	S	
506	do	--	--	-	-	E ?	--	--	--	W,C	S	
601	Mrs. R. Miller	--	Headquarters	-	-	E ?	--	--	--	S,E	D,S	
602	E. H. Hunt	--	Dirt Tank	-	-	E ?	--	--	--	W,C	S	
701	B. Robertson	--	House	old	400	E	2218	197.9	March 21, 1963	W,C	D,S	
702	do	--	North	1955	366	E	2243	220.3	do	W,C	S	
703	do	--	East	1955	320	E	2286	253.2	do	W,C	S	
704	Mrs. G. Bean	--	East	-	-	E ?	2265	205.1	do	W,C	S	
705	B. Robertson	--	New House	1955	380	T,E	2219	198.6	do	W,C	S	
801	C. C. Montgomery	M. Montgomery	North	-	-	E ?	--	--	--	W,C	S	
802	do	do	Head of Draw	-	-	E ?	--	--	--	W,C	S	
901	W. C. Montgomery	F. Earwood	Headquarters	old	-	E ?	--	--	--	W,C	D,S	
902	do	do	Anderson	1945	433	E	--	--	--	W,C	S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
[illegible]-54-31-201	F. McMullan	--	House	-	275	E	2262	231	Sept. 27, 1962	S,E	D,S	
202	do	--	House	-	-	E ?	2262	230.6	do	W,C	S	Observation well.
203	do	--	Lucky Strike	-	305	E	2307	281.4	do	W,C	S	
204	C. E. Davidson Jr.	--	Gap	-	432	T,E	2318	312.2	do	W,C	S	
205	do	--	Dry	old	-	T,E ?	2305	268.1	do	-	A	
301	do	--	Tucker	-	-	E ?	2256	253.8	do	W,C	S	
302	J. T. Davidson	--	Sulphur	-	-	T,E ?	--	--	--	-	A	
401	Mrs. R. Miller	--	West Lake Pasture	-	-	E ?	--	--	--	W,C	S	
402	do	--	Otto	-	-	E ?	2337	299	April 15, 1963	W,C	S	
403	do	--	Header Tank	-	-	E ?	--	--	--	W,C	S	
502	E. Baggett	--	New Sampson	-	-	E ?	--	--	--	W,C	S	
503	do	--	Old Sampson	-	-	E ?	--	--	--	W,C	S	
601	C. E. Davidson Jr.	--	Double Mill	1917	-	E ?	2220	215.7	Sept. 26, 1962	W,C	S	
602	E. Baggett	--	Pump Jack Mill	-	-	E ?	--	--	--	W,C	S	
603	do	--	Pump Jack	1947	-	E ?	--	--	--	Pj,E	D,S	
604	do	--	Home Pasture	-	-	T,E ?	--	--	--	W,C	S	
701	Mrs. R. Miller	--	Lake Pasture	-	-	E ?	2425	390	April 15, 1963	W,C	S	
702	W. C. Montgomery	F. Earwood	Lower (old)	-	-	E ?	2311	278.6	June 3, 1963	-	A	
703	do	do	Lower	-	-	E ?	--	--	--	W,C	S	
801	E. Baggett	--	Standard	old	-	E ?	--	--	--	W,C	S	
802	do	--	Divide	-	570	T,E	--	--	--	W,C	S	
901	do	--	Southeast	-	-	E ?	--	--	--	W,C	D	
32-102	S. Scheuber	--	Southwest	-	-	E ?	--	--	--	W,C	S	
103	Mrs. A. McMullan	---	Swimming Tank	1949	421	E	2466	379.7	Sept. 12, 1962	W,C	S	
104	do	--	Headquarters	-	-	E ?	2465	389.3	do	W,C	D,S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
HJ-54-32-105	J. T. Davidson	--	--	-	-	E ?	2283	261	Sept. 27, 1962	-	I,A	Water supply for oil test.
201	S. Schenber	--	Headquarters	1947	378	E	2420	350±	Sept. 13, 1962	W,C	D,S	
202	do	--	Bull Trap	1949	420	E	2423	370	do	W,C	S	
203	S. Henderson	--	Old Headquarters	-	440	E	2423	392.3	Sept. 12, 1962	-	A	Logged with Widco.
204	do	--	New Headquarters	-	-	E ?	--	--	--	W,C	D,S	
205	Mrs. A. McMullan	--	Canyon	1949	490	E	2323	285	Sept. 12, 1962	W,C	S	Encountered sulphur water at 470 ft.
301	S. Schenber	--	Cobble	-	-	T,E ?	2418	369	Sept. 13, 1962	W,C	S	
302	S. Henderson	--	4 Section	1941	476	E	2435	434.5	Sept. 12, 1962	W,C	S	
303	do	--	New Well	-	-	E ?	--	419 R	do	W,C	S	
304	do	--	H. Friend Pasture	-	-	E ?	--	--	--	W,C	S	
305	T. Glasscock	--	Whippoorwill	-	-	E ?	--	--	--	W,C	S	
401	J. T. Davidson	--	#3	-	450±	E	2434	428.5	Sept. 26, 1962	W,C	D,S	There are 5 wells at this location.
402	do	--	#5	-	-	E ?	--	--	--	W,C	D,S	
501	S. Henderson	--	Sulphur	1959	419	T,E	2271	270.9	Sept. 12, 1962	W,C	S	
502	Mrs. A. McMullan	--	Divide	1942	442	E	--	--	--	W,C	S	
503	M. Read	--	Little Mill	1938	397	E	2363	--	--	W,C	S	
504	do	--	Headquarters	1951	322	E	2250	--	--	Pj,E	S	
505	do	--	Big Mill	1920	400	E	2350	321	July 2, 1963	W,C	S	8 gpm reported.
601	D. K. McMullan Jr.	--	Headquarters	-	-	E ?	2286	369.4	June 28, 1963	-	A	There are 3 wells at this location (submersible pump, windmill and open hole.)
602	Hudspeth Memorial Hospital	--	Southwest	1952	-	E ?	2364	388.7	July 6, 1963	W,C	S	
701	J. T. Davidson	--	North Baggett	1930	-	E ?	2238	276.4	Sept. 26, 1962	-	A	
801	S. Perner	--	Double Mill	-	495	E	--	--	--	S,E	S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Lessee	Well name	Date completed	Depth of well (ft.)	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			
[illegible]-54-32-502	L. Perner	--	Double Mill	-	-	E ?	--	--	--	W,C	D,S	There are two wells here. East one was measured.
503	do	--	House	old	-	T,E ?	--	--	--	W,C	S	Sulphur Water.
901	do	--	East	-	442	I,E	--	--	--	W,C	S	Do.
904	L. W. Friend	D. K. McMullan Jr.	Cherry Canyon	-	-	E ?	2239	288.9	June 28, 1963	W,C	S	
35-201	B. Dunlap	--	--	1946	93	A	1920	58.9	March 6, 1963	G,T	Irr	850 gpm reported.
203	do	--	Barn Mill	1946	80	A	1920	58.9	do	W,C	S	
203	A. Hoover	--	--	-	-	E ?	-	flows	--	-	-	Spring is used to water stock and garden.
204	do	--	Spring Canyon	1950	-	A ?	1932	36.4	March 6, 1963	W,C	S	
301	A. Hoover Jr.	--	Headquarters	-	-	E ?	--	--	--	W,C	D,S	
302	W. P. Hoover Jr.	--	Big Canyon	-	310	E	2102	191.9	March 6, 1963	W,C	S	
303	do	--	Childress	-	165	A	2022	121.6	do	W,C	S	
402	B. Dunlap	--	Bend Mill	1946	100	E,A	1935	67.6	do	W,C	S	
501	[illegible]	--	Headquarters	1943	112	E,A	1968	84.3	do	W,C	S	West well of two at house.
502	do	--	Headquarters	-	98	E,A	1948	64.9	do	W,C	S	East well of two at house.
503	W. P. Hoover Jr.	--	West	-	-	E,A ?	2455	431.2	March 7, 1963	W,C	S	
601	B. Hoover	--	Sulphur	-	-	T,E ?	2093	190.5	March 6, 1963	W,C	S	
602	W. P. Hoover Jr.	--	Headquarters	-	600	E	2466	426	March 7, 1963	W,C	D,S	Two wells at headquarters. Measured west well and sampled east.
801	L. B. Hoover	--	--	1940	60	A	1830	27	Sept. 15, 1960	T,E	Irr	500 gpm reported.
802	[illegible]	--	House	-	60	A	1831	27.6	March 7, 1963	E	D,S	Well is pumped with a small jet pump.
803	do	--	Sulphur	-	180	T	1961	173.7	do	W,C	S	
901	W. P. Hoover Jr.	--	East India	-	-	E ?	2116	149.1	do	W,C	S	
36-101	L. Hoover est.	S. Wills	Road	-	600	T,E	--	--	--	W,C	S	
201	T. Holmsley	--	Headquarters	1942	460	T,E	--	--	--	W,C	D,S	
202	[illegible]	--	Old Ranch	1954	475	T,E	2270	236	March 12, 1963	W,C	S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
HJ-54-36-203	P. Holmsley	--	Old Well	old	-	T,E ?	--	--	--	W,C	S	
401	L. Hoover est.	E. Wills	Rock Wall	-	600	T,E	--	--	--	W,C	S	
402	do	do	House	-	600	E	--	--	--	W,C	D,S	
501	do	do	Henderson	-	600	E	--	--	--	W,C	S	
502	do	do	Prince Albert	-	350+	T,E	2123	232.2	March 7, 1963	W,C	S	
601	do	E. Graves	House	-	-	T,E ?	--	--	--	W,C	S	
602	I. Carson	--	Divide	-	600	E	--	--	--	W,C	S	
701	L. Hoover est.	--	Bumger	-	600	E	2365	408	March 7, 1963	W,C	S	
702	T. Mitchell	--	Friend	1957	650	E	2370	440	do	W,C	S	3 gpm reported.
703	do	--	West Baracho	1939	650	E	--	--	--	W,C	S	7 gpm reported.
704	do	--	East Baracho	old	-	T,E ?	--	--	--	W,C	S	Do.
801	do	--	Goat	old	150	E	2092	259.2	March 11, 1963	W,C	S	1-1/2 gpm reported.
802	do	--	Sulphur	old	250	T,E	2071	241.8	do	W,C	S	7 gpm reported.
803	do	--	High Lonesome	old	650	E	--	--	--	W,C	S	Do.
901	F. White	J. Young	North	-	-	E ?	1952	142.7	March 14, 1963	W,C	S	
37-101	J. W. Henderson	--	Headquarters	old	-	E,A ?	2030	53.7	March 18, 1963	W,C	D,S	There is another well 20 ft. west but it is not used.
102	I. Carson	--	Headquarters	1928	180	E	--	--	--	S,E	D,S	
103	do	--	North Trap	1951	200	T,E,A	2071	143.5	March 21, 1963	W,C	S	
104	do	--	Star	-	51	A	2027	50	do	W,C	S	Dug.
201	J. W. Henderson	--	Cyclone	1924	-	T,E ?	2178	254	March 18, 1963	W,C	S	
202	do	--	White	-	-	T,E ?	2155	244	do	W,C	S	
203	do	--	Yeavo	1946	468	T,E	2115	237.1	do	W,C	S	
301	do	--	County	1960	330	T,E	2162	220.1	do	W,C	S	Sulphur water.
302	do	--	Road	1960	336	T,E	2129	225.3	do	W,C	S	Do.
303	do	--	Odom House	old	-	T,E ?	--	--	--	W,C	S	Do.

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
HJ-54-37-304	J. W. Henderson	--	Open Hole	1961	231	T,E	2130	206.7	March 18, 1963	-	A	Observation well.
305	B. Robertson	--	South	1950	350	T,E	2191	233	March 21, 1963	W,C	S	
401	J. W. Henderson	--	South Baby	1953	90	T,E	2190	94.6	March 18, 1963	W,C	S	
402	I. Carson	--	--	1959	-	E,A ?	1985	99.3	March 21, 1963	-	A	Open hole by road.
403	do	--	Middle	1932	191	T,E	2052	147	do	W,C	S	
404	do	--	West Meral	old	-	T,E ?	--	--	--	W,C	S	
501	J. Childress	--	Headquarters	-	-	E ?	2124	243.6	June 26, 1963	W,C	D,S	
502	do	--	Money	1956	516	E	--	--	June 5, 1963	W,C	S	
503	do	--	Colorado	-	-	E ?	2396	457.5	June 26, 1963	W,C	S	
504	do	--	Sulphur	old	-	T,E ?	2113	241.6	do	W,C	S	Sulphur water.
505	do	--	Chapote	1961	360	T,E	2157	252.8	June 5, 1963	W,C	S	Do.
601	do	--	Lemone	-	-	E ?	2358	472.1	do	W,C	S	
602	do	--	Rascela	-	-	E ?	2357	375.1	June 23, 1963	W,C	S	
701	B. Clegg	--	North 7 Mile	1960	-	E,A ?	1939	102.9	March 14, 1963	W,C	S	
702	do	--	Headquarters	-	140	E,A	1943	123.1	do	S,E	S	
703	do	--	--	-	-	E,A ?	1919	103.9	do	-	A	
704	do	--	Sal	1911	180	E,A	--	--	--	W,C	S	
705	do	--	Scott Shearing Pen	-	-	E,A ?	1945	100.9	March 14, 1963	W,C	S	
706	do	--	Scott	-	225	E	2007	158.4	do	W,C	S	
801	Mrs. R. Watson	--	Dulse	1917	-	E ?	--	--	--	W,C	S	
802	B. Clegg	--	Sal Divide	1957	-	E ?	2307	450.1	March 14, 1963	W,C	S	
901	Mrs. R. Watson	--	Sulphur	-	350	T,E	2151	285.3	do	W,C	S	
902	V. I. Pierce	--	High Lonesome	-	565	T,E	2318	441	May 2, 1963	W,C	S	Sulphur water.
38-101	do	--	Headquarters	-	570	E	--	--	--	S,E	D,S	North well of two.
102	C. T. Montgomery	M. Montgomery	Little	-	-	- ?	--	--	--	W,C	S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
HJ-54-38-103	V. I. Pierce	--	North Header	-	-	E ?	--	--	--	W,C	S	
201	C. C. Montgomery	M. Montgomery	Middle	-	401	E	--	--	--	W,C	S	
202	do	do	Wildcat	-	-	E ?	--	--	--	W,C	S	
203	do	--	Headquarters	-	-	E ?	--	--	--	W,C	D,S	
204	do	--	East	-	-	E ?	--	--	--	W,C	S	
301	B. Hoover	--	Headquarters	1927	563	E	--	--	--	W,C	D,S	
302	V. I. Pierce	--	North	-	-	E ?	--	--	--	W,C	S	
303	J. Childress	--	North	-	-	E ?	--	--	--	W,C	S	
304	do	--	Square Tank	-	-	E ?	--	--	--	W,C	S	
305	do	--	Round Pens	-	-	E ?	--	--	--	W,C	S	
401	V. I. Pierce	--	Slick	-	-	E ?	--	--	--	W,C	S	
402	do	--	Sulphur	-	-	T,E ?	--	--	--	W,C	S	
501	do	--	South Header	-	-	E ?	2210	299.7	May 2, 1963	W,C	S	
502	do	--	Central Header	-	400	E	2338	371.4	do	W,C	S	
601	J. Childress	--	Middle Pasture	1960	360	E	2215	315 R	June 5, 1963	W,C	S	
602	V. I. Pierce	--	East Massie	-	365	T,E	--	--	--	W,C	S	
701	do	--	Lower Ranch Headquarters	old	-	E ?	2143	273.8	May 2, 1963	W,C	D,S	
702	do	--	Live Oak	-	370	E	--	--	--	W,C	S	
801	do	--	White	-	-	E ?	2240	330.5	May 2, 1963	W,C	S	
901	J. W. Owens	J. A. Marley	Owens #2	-	-	T,E ?	--	--	--	W,C	S	Sulphur water.
902	B. Childress	--	Headquarters	-	-	E ?	--	--	--	S,E	D,S	
903	do	--	#1	1946	354	E	--	--	--	W,C	S	
39-101	V. I. Pierce	--	Middle Ranch Headquarters	-	-	E ?	2269	369.7	May 3, 1963	W,C	S	Drawdown 23 ft.
102	do	--	do	-	-	E ?	2260	349.6	do	W,C	S	Drawdown 20 ft.
103	R. Miller	--	North	1947	405	E	--	--	--	W,C	S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
HJ-54-39-104	V. I. Pierce	--	Red Barn	-	410	E	--	--	--	W,C	S	
105	do	--	South	-	-	E ?	--	--	--	W,C	S	
201	F. Hagelstein	--	Pump Jack	1946	356	T,E	2194	314.1	Sept. 24, 1962	Pj,G	D,S	Drawdown 20 ft.
202	do	--	Aeromotor	1950	-	T,E ?	2166	324.1	do	W,C	D,S	Drawdown 8 ft.
203	R. A. Harrell	--	Johnson Draw	-	-	E ?	--	--	--	W,C	S	Sulphur Water.
204	V. I. Pierce	--	East	old	-	E ?	2212	305.3	May 3, 1963	W,C	S	
205	R. Miller	--	5 Section	-	-	- ?	--	--	--	W,C	S	
301	F. Hagelstein	--	East	1918	-	T,E ?	2150	246.7	Sept. 24, 1962	W,C	S	Sulphur Water.
401	R. Miller	--	South	-	-	E ?	2034	253.7	May 3, 1963	W,C	S	
501	R. A. Harrell	--	West Divide	-	-	E ?	--	--	--	W,C	S	
502	R. Miller	--	East	-	-	E ?	2075	243.2	May 3, 1963	S,E	D,S	Drawdown 2.7 ft. 12-14 gpm reported.
601	R. A. Harrell	--	House	-	-	E ?	--	--	--	Pj,E	D,S	
602	J. Miller	--	House	-	325	E	2120	277	Oct. 4, 1963	S,E	D,S	Drawdown 5 ft.
603	do	--	White Tank	-	-	T,E ?	2289	369.2	do	W,C	S	Sulphur Water.
701	J. Childress	--	Headquarters	old	-	E ?	--	--	--	W,C	D,S	
702	J. Miller	--	Hockett	-	320	E	2053	251.3	Oct. 4, 1962	W,C	S	Drawdown 30.6 ft.
703	do	--	West	-	-	E ?	--	--	--	W,C	S	
704	J. S. Pierce III	--	Double Wells	-	-	E ?	2143	337.1	May 3, 1963	W,C	D,S	
705	do	--	Header	-	-	E ?	--	--	--	W,C	A	Well has not been used for years.
706	J. Childress	--	South	-	-	E ?	--	--	--	W,C	S	
901	J. Miller	--	Sand Fly	-	-	E ?	--	--	--	W,C	S	
902	Mrs. A. Smith	--	Sand Fly	-	-	E ?	2124	298.1	Oct. 3, 1963	W,C	S	
903	do	--	House	-	-	E ?	--	--	--	W,C	D,S	
904	"	--	Canyon	-	-	E ?	--	--	--	W,C	S	
40-101	J. T. Davidson	--	South	old	465	T,E	--	297.1	Sept. 27, 1962	-	A	Sulphur Water. Observation well.

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
HJ-54-40-102	R. C. Ward	--	West	-	-	E ?	--	--	--	W,C	S	
201	do	--	Headquarters	old	-	E ?	2270	358	June 28, 1963	W,C	D,S	
202	do	--	Sulphur	-	-	T,E ?	2297	429.4	do	W,C	S	
301	F. Friend	--	Headquarters	-	-	E ?	2135	221	Sept. 14, 1962	Pj,E	D,S	Oil on top of water.
302	B. Seahorn	--	North	1949	300	T,E	2083	211.8	Sept. 14, 1963	W,C	S	Sulphur water.
401	R. A. Harrell	--	East Divide	-	-	E ?	--	--	Sept. 28, 1962	W,C	S	
402	A. Phillips	--	North	1920	400	E	2187	284.6	Oct. 2, 1963	W,C	S	
403	J. Miller	--	New	1962	330	E	--	285	June, 1963	W,C	S	
501	A. Phillips	--	Ridge	-	-	E ?	--	--	--	W,C	S	
502	do	--	Lower Well	-	-	E ?	--	--	--	W,C	S	
503	do	--	China	-	400	E	2143	286.1	Oct. 2, 1963	W,C	S	
504	R. C. Ward	--	South	-	-	E ?	2258	376	June 28, 1963	W,C	S	
601	B. Seahorn	--	Dirt Tank	1957	234	E	2290	203.4	Sept. 18, 1962	W,C	S	
602	do	--	Headquarters	1890	270	T,E	--	--	--	W,C	S	Sulphur water.
603	do	--	House	1949	300	E	2113	250.2	Sept. 18, 1962	W,C	S	
604	do	--	West	1955	220	E	2030	186.9	June 11, 1963	W,C	S	
605	do	--	Buck	1890	230	E	2036	181.5	Sept. 18, 1962	W,C	D,S	
606	J. Baggett	--	North	-	-	E ?	--	--	--	W,C	S	
701	Mrs. C. Adams	G. Montgomery	North	-	-	-- ?	--	--	--	W,C	S	
702	do	do	Headquarters	-	-	E ?	--	199.6	Oct. 2, 1963	W,C	S	Perched water.
801	J. Baggett	--	#3	-	-	E ?	--	--	--	W,C	S	
802	A. Phillips	--	Round Hill	-	500	E	--	--	--	W,C	S	
803	do	--	Headquarters	-	352	E	2141	294	Oct. 2, 1963	W,C	D,S	
804	do	--	Draw	1950	-	E ?	2078	231.1	do	-	-	Shothole.
901	J. Baggett	--	Oak	-	-	E ?	--	--	--	W,C	S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
HJ-54-40-902	J. Baggett	--	Jesus	-	-	E ?	2064	258	Oct. 3, 1963	W,C	S	
903	do	--	Shearing Pen	-	-	E ?	--	--	--	W,C	S	
904	do	--	Rocky	-	400	E	2195	375.1	Oct. 3, 1963	W,C	S	
43-601	Mrs. M. Mitchell	B. Montgomery	House	old	650	T,E	--	--	--	W,C	D,S	7 gpm reported.
602	do	do	Mare	old	650	T,E	--	--	--	W,C	S	3-1/2 gpm reported.
44-101	T. Mitchell	--	Little Lesa	old	300	E	2122	214.5	March 11, 1963	W,C	S	7 gpm reported.
102	do	--	Lesa	old	650	T,E	--	--	--	W,C	S	7 gpm reported.
201	J. B. Blakeney	--	North New	1939	300	E	1995	199.2	March 19, 1963	W,C	S	
301	do	--	Sulphur	old	280	T,E	1921	158.4	do	W,C	S	Sulphur water.
302	do	--	Cruger	1934	185	E,A	--	--	--	W,C	S	
303	do	--	Headquarters	old	-	E,A ?	1839	95.7	March 19, 1963	Pj,E	D,S	
304	do	--	New	1962	-	E,A ?	1830	96.7	do	W,C	S	
401	T. Mitchell	--	Headquarters	old	650	E	--	--	--	S,E	D,S	10 gpm reported.
402	do	--	Lemon	1940	650	E	--	--	--	W,C	S	7 gpm reported.
403	do	--	Antone	old	650	E	--	--	--	W,C	S	7 gpm reported.
501	do	--	Blakeney	1957	175	T,E	--	--	--	W,C	S	
502	do	--	Cayatano	old	200	T,E	--	184	March 11, 1963	W,C	S	5 gpm reported.
503	J. B. Blakeney	--	Wood Canyon	-	-	E ?	2000	206.4	March 19, 1963	W,C	S	
601	do	--	Salt	1962	250	T,E	1833	224.3	do	W,C	S	
602	do	--	Dog Canyon	-	-	E,A ?	1832	76.6	do	W,C	S	
45-101	B. Clegg	--	--	1928	174	E,A	1938	116.7	March 14, 1963	-	A	50 gpm reported. Observation well. Open hole by road.
102	do	--	South 7 Mile	1948	170	E,A	1914	136.6	do	W,C	S	
103	F. White	J. Young	House	-	-	E,A ?	--	--	--	W,C	S	50 gpm reported. Well was used to supply water for road construction.
104	J. B. Blakeney	--	North Draw	-	-	E,A ?	--	--	--	W,C	S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
46-54-45-105	J. B. Blakeney	--	Casus	-	181	E,A	1989	136.7	March 19, 1963	W,C	S	
106	do	--	Big Casus	-	-	E ?	--	--	--	W,C	S	
201	Mrs. R. Watson	--	North Word	-	-	E ?	1957	155.5	March 14, 1963	W,C	S	
202	do	--	New	1932	200	T,E	--	--	--	W,C	S	
301	do	--	Headquarters	-	325	E	--	--	--	W,C	D,S	
401	J. B. Blakeney	--	#1 Dog Canyon	-	170	E,A	--	--	--	W,C	S	
402	do	--	West Double	-	246	E	1977	204.8	March 19, 1963	W,C	S	
403	do	--	East Double	-	-	E ?	2009	278.2	do	W,C	S	
404	do	--	Old Double Mill	old	-	E ?	1968	190.3	do	-	A	East well of two.
501	M. Morrison	--	Headquarters	-	-	E ?	2000	227.9	April 22, 1963	W,C	D,S	Wooden tower.
502	do	--	Headquarters	-	-	E ?	2000	230.4	do	W,C	D,S	Steel tower.
503	do	--	Old	old	-	T,E ?	2105	308.3	do	-	S	
601	T. A. Kincaid	--	House	-	-	E ?	2074	257.6	do	S,E	D,S	
602	do	--	Divide	-	429	E	--	--	--	W,C	S	
603	do	--	Headquarters	-	-	E ?	2177	357.1	April 22, 1963	W,C	S	
46-101	Mrs. S. M. Harvick	--	Headquarters	-	-	E ?	2300	277.1	do	Pj,E	D,S	
102	do	--	#2	-	400	E	--	--	--	W,C	S	
201	do	--	#6	-	-	E ?	--	--	--	W,C	S	
202	B. Childress	--	Double Well	-	-	E ?	--	--	--	W,C	S	
203	Mrs. S. M. Harvick	--	--	-	-	E ?	2214	392.5	April 22, 1963	-	-	Shothole.
204	B. Childress	--	Middle	1929	380	E	--	--	--	W,C	S	
301	J. W. Owens	--	Owens	1941	446	E	--	--	--	W,C	S	
302	B. Childress	--	Divide	-	-	E ?	--	--	--	W,C	S	
303	D. Jones	--	#1	-	266	E	--	--	--	W,C	S	
304	[illegible]	--	Headquarters	-	-	E ?	--	--	--	W,C	D,S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
HJ-54-46-401	Mrs. E. K. Ward	--	#1	-	-	E ?	2118	295.3	April 22, 1963	S,E	D,S	
402	do	--	#7	-	-	E ?	--	--	--	S,E	S	
403	do	--	#6	-	-	E ?	2124	307.5	April 22, 1963	S,E	S	
404	do	--	#8	1959	373	E	2162	318.6	do	W,C	S	
405	do	--	#9	-	-	E ?	--	--	--	W,C	S	
501	W. West Jr.	--	House	1960	465	E	2114	369	Oct. 6, 1960	S,E	D,S	
502	do	--	House	1940	-	E ?	--	--	--	W,C	S	
601	do	--	Shearing Pen	1894	360	E	2010	254.2	April 25, 1963	W,C	S	
602	do	--	North	-	550	E	--	--	--	W,C	S	
603	Mrs. S. M. Harvick	--	#9	-	-	E ?	2204	390.1	April 22, 1963	W,C	S	
604	W. West Jr.	--	New	-	-	E ?	1919	264	April 25, 1963	W,C	S	
605	do	--	Old North	old	504	E	2163	403.4	June 12, 1963	-	A	
606	D. Jones	--	Red Bud	old	-	E ?	2053	291.7	May 1, 1963	W,C	S	
702	Mrs. E. K. Ward	--	#3	1947	462	E	2107	391.5	April 22, 1963	W,C	S	
703	do	--	#5	-	-	E ?	2184	384	do	S,E	S	
47-102	J. W. Owens	J. A. Marley	Williams	old	-	T,E ?	--	--	--	W,C	S	
103	J. S. Pierce III	--	Government	-	-	E ?	--	--	--	W,C	S	
104	D. Jones	--	White	-	-	E ?	--	--	--	W,C	S	
105	do	--	Indian	-	-	E ?	1955	246	May 1, 1963	W,C	S	
201	J. S. Pierce III	--	Little Government	-	-	E ?	2123	322.7	May 3, 1963	W,C	S	
202	do	--	Headquarters	-	-	E ?	--	--	--	W,C	D,S	West well of two.
203	do	--	Headquarters	1890	300	E	--	252.6	May 3, 1963	W,C	D,S	East well of two.
204	do	--	Headquarters	-	-	E ?	--	--	--	W,C	S	
301	J. A. Marley	--	Little Pasture	-	-	E ?	2130	379	April 29, 1963	W,C	S	
302	J. S. Pierce III	--	Lake	-	475	E	2135	386	May 3, 1963	W,C	S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
BJ-54-47-303	J. S. Pierce III	--	Eclipse	-	-	E ?	--	--	--	W,C	S	
401	W. West Jr.	--	Little Indian	-	-	E ?	1984	283.1	April 25, 1963	W,C	S	Sulphur water.
402	D. Jones	--	#2	-	-	E ?	2160	384.6	May 1, 1963	W,C	S	
501	J. A. Marley	--	Header	1946	425	E	2175	375.9	April 29, 1963	W,C	S	
502	do	--	Mexican House	-	-	E ?	2155	448.5	do	W,C	S	
503	do	--	South	-	-	E ?	2021	286	do	W,C	S	
504	do	--	Old	old	-	E ?	2043	306.6	do	-	A	Sulphur water.
601	C. B. Hudspeth est.	G. Montgomery	Divide	-	-	E ?	2130	372.1	Sept. 28, 1962	W,C	S	
602	do	do	New Wilson	-	500	E	2146	357.8	do	W,C	S	
603	J. A. Marley	--	Headquarters	-	-	E ?	2101	357.8	April 29, 1963	Pj,E	D,S	
604	do	--	Indian	-	-	E ?	--	--	--	W,C	S	
901	C. B. Hudspeth est.	--	Quien Sabe	-	-	E ?	--	--	--	W,C	S	
48-101	Mrs. C. Adams	G. Montgomery	South	1947	-	E ?	2192	381.6	Oct. 2, 1962	W,C	S	
102	do	do	South Williams	-	-	E ?	2147	341	do	W,C	S	
103	do	do	Willimson	-	-	E ?	--	--	--	W,C	S	
201	J. Baggett	--	House (old)	-	-	E ?	2140	306.4	Oct. 3, 1962	W,C	A	
202	do	--	Header	-	-	- ?	--	--	--	W,C	S	
203	do	--	#2	-	-	E ?	--	--	--	W,C	S	
301		--	House	-	-	E ?	2040	239	Oct. 3, 1962	Pj,E	D,S	
302	do	--	Tin House	-	-	E ?	2057	250.1	do	-	A	
303	do	--	#5	-	-	E ?	--	--	--	W,C	S	
304	B. Savell	--	West	-	-	E ?	2161	400.5	July 3, 1963	W,C	S	
305	do	--	Headquarters	old	-	E ?	--	--	--	Pj,E	D,S	
403	C. B. Hudspeth est.	G. Montgomery	New Well	-	-	E ?	--	--	--	W,C	S	
404	do	do	Wilson	-	400	E	--	--	--	W,C	S	
501	do	do	House	-	280	E	1980	236.8	Sept. 28, 1963	W,C	D,S	300 gpm reported.

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
HJ-54-48-502	C. B. Hudspeth est.	G. Montgomery	House	1920	-	E ?	--	--	--	W,C	D,S	Northwest side of house.
503	Mrs. M. P. Barnes	--	Northwest	-	-	E ?	--	--	--	W,C	S	
601	do	--	Northeast	-	-	E ?	--	--	--	W,C	S	
602	C. H. Kenley	--	East	-	-	E ?	2024	295.7	July 3, 1963	W,C	S	
603	do	--	Headquarters	-	-	E ?	--	--	--	Pj,E	D,S	
801	C. B. Hudspeth est.	G. Montgomery	Bullhead	-	-	E ?	1954	210.3	Oct. 5, 1962	W,C	S	
901	Mrs. M. P. Barnes	--	Headquarters	-	-	E ?	1985	240.1	July 3, 1963	W,C	S	
55-01-102	University of Texas	A. Delong	East	-	-	E ?	--	--	--	W,C	S	
103	do	W. W. Adams	--	-	-	E ?	2576	309.6	Aug. 21, 1962	W,C	S	
104	do	Mrs. L. StClair	--	-	-	E ?	2519	278.6	do	W,C	S	
105	do	L. Brooks	Sulphur	1938	250	E	--	--	--	W,C	S	
401	do	do	1600	-	-	E ?	2515	255.2	Aug. 21, 1962	W,C	S	
402	do	do	Headquarters	-	-	E ?	--	--	--	W,C	D,S	
701	do	S. Oglesby	Headquarters	old	365	E	2466	278.2	Aug. 20, 1962	Pj,E	D,S	
703	do	do	Waterhole	-	-	E ?	2436	265.1	Aug. 20, 1962	W,C	S	
704	do	do	Little Challenge	1940	-	E ?	2435	--	--	W,C	S	
09-101	do	do	East Pasture	1940	320	E	2439	275	Aug. 20, 1962	W,C	S	
103	J. Clayton	--	Draw	1944	-	E ?	2366	219.1	Aug. 28, 1962	W,C	S	
402	A. Bailey	--	Little	-	-	E ?	2495	335.9	Aug. 27, 1962	W,C	S	
403	J. Clayton	--	Bailey	-	-	E ?	2368	228.1	Aug. 28, 1962	W,C	S	
701	A. Bailey	--	South	-	331	E	2465	317.3	Aug. 27, 1962	W,C	S	
17-101	F. L. Childress	--	Headquarters	-	-	E ?	--	--	--	S,E	D,S	
103	do	--	Baugh	-	370	E	--	--	--	W,C	S	
104	do	--	--	-	-	E ?	--	--	--	W,C	A	
[illegible]	Lawton Ranch, Inc.	--	Headquarters	old	-	E ?	--	--	--	W,C	D,S	
402	do	--	2 Section	1941	501	E	--	--	--	W,C	S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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
MJ-55-17-402	Clayton Ranch Co.	--	Middle	-	-	E ?	--	--	--	W,C	S	
403	R. Jones	--	Headquarters	1924	-	E ?	2433	291	Sept. 5, 1962	Pj,E	D,S	
404	R. Jones	--	Nolen	-	-	E ?	--	--	--	W,C	S	
405	R. Jones	--	Walnut	1947	-	E ?	--	--	--	W,C	S	
406	do	--	Caliche Pit	-	-	E ?	--	--	--	Pj,E	D,S	
701	R. Jones	--	2 Section	-	415	E	2480	389	Sept. 4, 1962	W,C	S	
702	do	--	East	-	-	E ?	--	--	--	W,C	S	
25-101	T. Glasscock	--	--	1954	410	E	2411	387.7	May 12, 1961	-	I,A	Water supply for oil test.
102	do	--	Headquarters	old	-	T,E ?	2249	328.7	July 5, 1963	W,C	S	Sulphur water.
103	do	--	Little Sulphur	-	-	E ?	--	--	--	W,C	S	Not sulphur water
401	Hudspeth Memorial Hospital	--	New Northwest	1955	-	E ?	2270	298	July 6, 1963	W,C	S	
402	do	--	Divide	-	-	E ?	2374	370.2	July 6, 1963	W,C	S	Strong seepage above water level.
403	do	--	Rencon	1944	-	- ?	2201	237.8	do	W,C	S	
404	do	--	Rencon Pen	old	-	- ?	2282	345.7	do	W,C	S	
702	F. Friend	--	San Juan	-	-	- ?	--	--	--	W,C	S	
703	do	--	High Lonesome	-	-	- ?	2342	353.7	Sept. 14, 1962	W,C	S	
704	do	--	Divide	-	-	- ?	2339	363	do	W,C	S	
33-101	do	--	Carlyle	-	-	E ?	--	--	--	W,C	S	
102	do	--	Cedar Bluff	-	-	E ?	--	--	--	W,C	S	
103	do	--	Cedar Bluff	-	-	E ?	--	--	--	W,C	S	
104	G. C. Magurder	--	Northwest	-	-	E ?	--	--	--	W,C	S	
401	B. Seahorn	--	East	1924	400	E	2213	372.5	Sept. 18, 1962	W,C	S	
402	G. C. Magurder	--	Draw	-	-	E ?	--	--	--	W,C	S	
403	B. Friend	--	Headquarters	-	175	E	1999	166.3	Sept. 14, 1962	W,C	S	
702	Mrs. J. Friend	--	West	-	-	E ?	2073	332.6	Sept. 13, 1962	W,C	S	

Table 2.--Records of wells and springs in Crockett County--Continued

Well	Owner	Leasee	Well name	Date completed	Depth of well (ft.)	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			
EJ-55-33-703	Mrs. J. Friend	--	Headquarters	-	-	E ?	--	--	--	S,E	D,S	
704	do	--	--	-	215	E	1982	158.1	Sept. 13, 1962	-	I,A	Water supply for oil test.
705	B. Savell	--	North	-	345	E	2090	314.7	July 3, 1963	W,C	S	
706	B. Friend	--	New	-	296	E	1993	134.6	Sept. 14, 1963	-	A	
707	do	--	East	1943	217	E	--	--	--	W,C	S	
708	do	--	West	1940	236	E	--	--	--	W,C	S	
EJ-55-41-101	B. Savell	--	Old North	-	-	E ?	2046	234.3	July 3, 1963	W,C	S	
102	B. Hunt	--	#6	-	-	E ?	--	--	--	W,C	S	
103	B. Savell	--	East	-	-	E ?	--	--	--	W,C	S	
104	do	--	#7	-	-	E ?	--	--	--	W,C	S	
105	do	--	Phillips or #5	-	-	E ?	--	--	--	W,C	S	
106	do	--	#8	-	-	E ?	--	--	--	W,C	S	
401	do	--	Headquarters	-	-	E ?	--	--	--	Pj,E	D,S	
402	do	--	New Well	1962	360	E	2058	232.6	July 3, 1963	-	A	
403	do	--	#3	-	-	E ?	1963	169.1	do	W,C	S	
404	V. J. Glasscock	--	North	-	-	E ?	--	--	--	W,C	S	
701	Mrs. M. P. Barnes	--	East	-	-	E ?	1942	240.5	July 2, 1963	W,C	S	

Table 3.--Chemical analyses of water from wells and springs in Crockett County

(Constituents are given in parts per million.)

Water-bearing unit: A, alluvium; E, Edwards and Georgetown Limestones; G, Georgetown Limestone (perched water); T, "Trinity" and Paluxy Sands.
Analyses are by Texas State Department of Health except as noted.

Well	Owner	Leasee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
HJ-43-57-401	University of Texas	C. G. VanCourt	E	175±	7-19-62	24	78	10	21	248	24	23	0.6	10	313	235	582	7.6	-
702	do	W. W. Adams	E ?	-	8-21-62	17	46	22	12	227	20	15	0.9	4	249	206	425	7.6	-
44-57-401	S. N. Beck	S. Rowe	T,A?	-	12-10-62	18	98	106	430	173	724	463	2.3	< .4	1,926	680	2,950	8.2	-
501	do	do	T ?	-	12-10-62	12	97	60	103	277	357	114	2.5	9	891	490	1,330	8.1	-
601	Nolke est.	--	E	125	12-6-62	31	96	16	78	237	98	123	1.5	7	568	304	934	8.2	-
702	do	--	T,A?	-	12-6-62	20	353	254	666	315	1,573	1,030	1.5	7	4,060	1,925	5,560	7.6	-
801	do	--	E	600	12-6-62	17	51	34	27	214	83	38	2.0	4.2	361	264	606	8.3	-
901	O. W. Parker	--	T,E	550+	12-6-62	14	74	48	55	276	194	44	1.5	7	574	380	931	7.4	-
902	Nolke est.	--	E ?	-	12-6-62	29	75	19	47	228	66	73	.5	< .4	422	266	704	7.8	-
58-401	do	--	E ?	-	12-6-62	17	67	43	50	271	131	64	2.0	6	513	345	845	8.2	-
702	do	--	E	480	12-6-62	15	51	29	40	261	60	35	1.3	4.4	365	246	625	8.2	-
902	W. Harris	--	E	543	11-28-62	23	63	34	32	290	57	43	1.3	5.6	402	297	680	7.6	70
903	do	--	T,E	314	11-28-62	12	80	48	70	299	217	47	1.8	6.5	629	395	956	7.6	70
59-401	do	--	T?,E	220±	12-5-62	14	131	92	172	295	602	131	1.5	8	1,297	705	1,890	7.6	-
501	L. Harris	--	T?,E	250±	11-29-62	15	201	147	230	312	1,008	170	2.0	5.1	1,931	1,105	2,590	7.3	70
601	do	--	T,E?	-	6-19-51	28	206	103	*1,290	280	412	2,190	-	-	4,370	938	7,570	7.5	-
601	do	--	T,E?	-	11-29-62	11	65	51	79	296	182	80	2.0	< .4	616	370	1,010	7.6	71
701	T. Harris	--	E	150±	11-28-62	25	83	42	46	330	140	41	1.0	12	552	381	885	7.3	67
702	do	--	T?,E	250±	11-28-62	17	93	61	69	308	291	69	.8	4.0	756	482	1,152	7.5	-
703	do	--	T,E?	-	11-28-62	25	98	56	64	326	239	63	1.3	8	714	453	1,090	7.3	69
801	do	--	T,E?	-	11-28-62	15	204	137	180	278	999	178	2.0	4.4	1,856	1,075	2,440	7.3	70
† 802	do	--	T,E	300	12- -58	-	220	191	130	266	826	166	-	-	1,779	60	--	-	-
805	do	--	T,E	635	11-28-62	7	119	98	215	295	666	170	2.0	< .4	1,442	701	2,080	7.5	68
806	do	--	T,E	272	11-28-62	19	96	62	65	258	271	92	2.0	2.0	754	--	1,200	7.4	69

See footnotes at end of table.

Table 3.--Chemical analyses of water from wells and springs in Crockett County--Continued

Well	Owner	Leasee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
HJ-44-59-902	L. Harris	--	T,E	400±	11-29-62	15	88	65	103	294	314	100	2.0	4.2	836	486	1,260	7.4	72
903	do	--	T,E?	-	11-29-62	21	74	49	60	305	71	64	1.3	2.7	629	384	960	7.4	68
60-401	University of Texas	S. Mann	T,E	600+	11-29-62	4	56	124	400	45	787	420	1.8	< .4	1,838	648	2,760	7.3	-
502	do	do	T,E?	-	11-29-62	5	70	106	367	104	724	402	1.8	< .4	1,727	607	2,650	7.0	68
701	L. Harris	--	T,E?	-	11-29-62	13	122	112	460	334	650	556	2.5	< .4	2,090	768	3,100	7.4	70
702	do	--	T,E?	-	11-29-62	6	71	55	160	295	314	156	2.3	< .4	909	432	1,500	7.7	68
703	V. J. Powell	S. Mann	E ?	-	11-29-62	16	294	173	2,961	299	884	4,675	1.5	8	9,160	1,447	>12,000	7.1	67
704	do	--	T ?	-	1-15-63	13	64	62	113	315	245	116	1.5	< .4	770	415	1,210	7.5	-
801	do	S. Mann	E ?	-	11-29-62	4	49	100	392	138	571	483	1.5	< .4	1,722	534	2,630	7.7	70
802	do	do	E ?	-	11-29-62	16	159	70	924	367	303	1,500	.5	2.1	3,155	683	5,300	7.4	69
803	do	do	T ?	-	11-29-62	12	117	134	420	398	837	415	2.8	< .4	2,134	834	3,000	7.4	70
804	do	do	-	350±	11-29-62	2	326	40	1,037	22	61	2,214	.6	< .4	3,692	980	6,660	6.7	-
901	J. Strauss	--	T?,E	350±	10-16-62	11	154	126	739	346	645	1,081	2.7	< .4	2,929	902	4,220	7.4	70
902	do	--	T?,E	460	10-16-62	10	120	119	298	370	592	328	2.8	< .4	1,652	701	2,350	7.3	71
903	V. J. Powell	S. Mann	T?,E	475±	11-29-62	12	216	122	1,650	306	551	2,750	.8	3.1	5,455	1,039	8,500	7.4	68
61-401	University of Texas	V. J. Powell	E	400	10-10-62	12	127	107	245	357	612	253	3.1	< .4	1,535	755	2,130	7.5	70
402	do	do	E	490	10-30-62	11	119	111	430	364	736	420	3.0	< .4	2,009	759	2,450	7.6	70
502	J. Strauss	--	E	400	10-16-62	10	119	104	367	323	736	293	3.0	< .4	1,791	725	2,500	7.5	70
† 502	do	--	E	400	4- -58	-	135	107	423	308	871	380	-	-	2,224	--	--	-	-
503	do	--	A,E	270	10-16-62	20	160	40	443	330	114	760	.6	4.9	1,738	565	2,760	7.2	68
‡ 503	do	--	A,E	270	7-3-57	-	152	0	327	359	260	372	-	-	--	--	--	-	-
† 503	do	--	A,E	270	4- -58	-	301	53	1,111	314	242	2,039	-	-	4,060	--	--	-	-
§ 601	University of Texas	M. Scheemann	E ?	-	10-26-60	18	63	30	58	281	75	65	-	6.7	454	280	769	7.4	-
601	do	do	E ?	-	10-15-62	17	94	69	228	307	412	253	2.0	2.7	1,229	517	1,850	7.4	70
602	do	do	E ?	-	10-12-62	16	64	39	33	299	88	34	1.2	4.7	427	318	690	7.7	69
701	J. Strauss	--	T?,E	460	10-16-62	10	109	104	455	367	692	444	3.0	< .4	1,992	701	2,800	7.6	70

See footnotes at end of table.

Table 3.--Chemical analyses of water from wells and springs in Crockett County--Continued

Well	Owner	Leasee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
Bd-44-61-702	J. Strauss	--	E	350±	10-16-62	10	27	104	415	361	697	415	3.0	< .4	1,940	745	2,760	7.4	70
703	do	--	E ?	-	10-16-62	11	124	124	397	351	686	448	2.7	< .4	1,956	818	2,750	7.4	70
‡ 803	do	--	T?,E,A	401	1951	-	-	-	-	-	-	90	-	-	--	280	--	-	-
‡ 803	do	--	T?,E,A	401	7-3-57	-	204	17	937	359	280	1,440	-	-	--	--	--	-	-
† 804	do	--	T?,E,A	400	4- -58	-	33	104	618	383	761	529	-	-	2,428	--	--	-	-
† 805	do	--	E,A	275	4- -58	-	333	66	2,186	326	321	3,728	-	-	6,860	--	--	-	-
805	do	--	E,A	275	10-16-62	21	204	53	1,473	333	212	2,457	.5	4.4	4,589	726	6,550	7.4	68
† 806	do	--	T,E	400	4- -58	-	119	105	518	360	802	514	-	-	2,418	--	--	-	-
806	do	--	T,E	400	10-16-62	10	116	68	443	351	702	407	3.0	< .4	1,917	568	2,740	7.4	70
807	do	--	T?,E,A	402	3-27-63	10	120	101	416	331	810	347	3.4	< .4	1,970	710	2,850	7.5	-
901	University of Texas	M. Schneemann	E ?	-	10-12-62	11	119	102	402	328	644	426	2.8	< .4	1,868	716	2,650	7.5	73
62-401	do	do	T?,E	450±	10-15-62	19	72	41	59	296	117	70	1.8	4.4	530	348	850	7.6	74
501	do	B. Owens	G	100±	10-23-62	24	90	10	38	284	33	49	.4	22.5	407	268	635	7.5	69
502	do	do	E	400±	10-23-62	15	70	43	71	322	143	67	2.0	< .4	569	351	849	7.6	69
601	do	do	E ?	-	2-8-63	20	62	24	28	365	38	41	1.3	6	299	253	609	7.5	-
701	do	M. Schneemann	E ?	-	10-12-62	16	68	25	29	289	40	36	.8	5.3	362	272	611	7.5	-
702	do	do	T?,E	350±	10-15-62	13	97	73	250	334	454	240	2.3	< .4	1,293	534	1,930	7.4	71
703	do	do	E ?	-	10-15-62	15	65	41	40	326	94	37	1.5	< .4	454	330	738	7.4	70
802	do	F. Coates	T,E	450±	10-29-62	13	79	59	248	353	366	196	2.0	< .4	1,137	439	1,580	7.6	68
803	do	do	T?,E	400±	10-29-62	14	68	40	90	264	182	76	1.5	< .4	602	335	915	7.8	67
901	do	W. R. Bissett	G	125±	8-3-62	31	81	17	33	272	33	49	.6	17	396	272	655	7.6	71
902	do	B. Owens	G	200±	10-23-62	20	82	18	31	270	32	48	.8	35	400	278	629	7.3	65
63-401	do	do	G	125	10-23-62	26	88	18	58	282	35	85	.3	41.5	491	296	759	7.7	64
402	do	F. M. Elkins	G	125±	10-23-62	29	90	14	46	300	38	60	.6	12	438	284	684	7.7	68
501	do	do	E	350±	10-23-62	17	62	32	28	292	61	34	1.0	1.6	381	288	605	7.8	68
503	do	E. H. Linthican	E ?	-	7-24-62	15	58	31	35	276	58	46	.8	< .4	380	274	666	8.2	-

See footnotes at end of table.

Table 3.--Chemical analyses of water from wells and springs in Crockett County--Continued

Well	Owner	Leasee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
HJ-44-63-603	University of Texas	E. H. Linthican	E ?	-	7-24-62	14	55	33	32	264	73	41	1.3	< .4	379	275	665	8.3	75
§ 701	do	B. Owens	G	130	10-25-60	20	62	9.5	22	222	18	24	10	-	274	194	459	7.2	-
701	do	do	G	130	10-23-62	24	67	17	17	242	17	19	2.7	11	288	213	451	7.3	66
803	do	W. R. Bissett	E	460±	8-3-62	22	63	26	38	264	48	49	.7	11	388	265	650	7.4	69
901	do	Texas Agriculture Experiment Station	E	450	7-19-62	24	65	29	36	268	62	42	.8	3	394	283	--	7.8	-
902	do	J. Dublin	G	400	7-24-62	15	62	26	20	271	25	28	1.2	21.2	331	263	581	8.1	67
64-401	do	E. H. Linthican	E	400±	7-24-62	14	70	37	35	298	104	40	1.3	< .4	448	330	758	8.2	74
402	do	do	E	350±	7-24-62	14	58	48	49	303	128	53	1.7	< .4	501	346	840	8.3	72
403	do	do	E	350±	7-24-62	15	62	38	55	298	108	57	1.2	2.4	486	315	828	8.3	82
405	do	do	E	400±	7-24-62	19	71	35	39	303	104	42	1.9	4.7	465	323	770	8.1	69
501	do	A. Delong	E	350±	7-20-62	24	58	28	34	261	52	36	.8	< .4	361	260	624	7.7	69
502	do	do	E	425±	7-20-62	21	66	39	57	277	100	68	1	3.5	492	238	855	8.0	74
601	do	C. G. VanCourt	E	325±	7-19-62	24	61	22	26	237	41	27	1	11	330	240	--	7.9	-
702	do	E. H. Linthican	E	350±	7-24-62	15	75	36	39	271	125	46	2.1	2.7	464	336	789	8.2	67
802	do	L. StClair	E	400±	7-20-62	22	54	25	28	245	34	33	1	8	325	238	--	7.8	73
901	do	A. Delong	E	407	7-20-62	22	63	26	26	262	46	31	1	6.9	351	263	612	7.9	69
902	do	do	E	325±	7-20-62	23	59	16	11	231	16	15	4	6.2	264	214	458	7.5	69
903	do	do	E	375±	7-20-62	20	56	27	17	255	46	21	1.2	< .4	313	253	551	7.6	69
904	do	do	E	300±	7-20-62	26	59	21	22	245	26	27	.6	7	309	233	550	7.5	69
§ 45-62-102	Mrs. A. Johnson	--	T?,A?	-	1-27-57	-	151	30	95	344	140	112	-	112	902	500	138	-	-
102	do	--	T?,A?	-	12-11-62	37	114	32	94	356	112	80	.4	126	770	416	1,250	7.7	-
63-501	V. T. Anacker	--	T,A	200	12-11-62	18	244	133	258	179	1,268	195	2.0	60	2,266	1,154	2,840	7.3	70
64-501	J. Mann	--	T,A	200	12-10-62	20	68	56	24	438	47	12	1.5	30	474	401	787	7.8	-
§ 601	Nolke est.	Burke Royalty	T,A	100	9-23-60	12	206	120	179	0	880	192	.8	11	1,720	1,010	2,290	7.0	-
602	do	--	T,A?	-	12-6-62	21	232	123	298	286	950	348	1.3	19	2,133	1,086	2,950	7.4	-

See footnotes at end of table.

Table 3.--Chemical analyses of water from wells and springs in Crockett County--Continued

Well	Owner	Leasee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
HJ-45-64-603	Nolke est.	--	T,A ?	-	12-6-62	24	232	136	291	357	1,060	273	1.3	21	2,214	1,138	2,910	7.3	70
604	do	--	T,A ?	-	12-6-62	24	216	145	270	211	968	400	1.8	4.2	2,136	1,150	3,450	7.9	-
§ 901	do	--	T,A	200	1-26-54	20	256	128	232	309	1,010	238	1.4	8.4	2,050	1,160	2,750	7.2	-
§ 901	do	--	T,A	200	9-24-60	-	-	-	-	257	-	885	-	-	3,255	1,740	4,650	6.8	-
905	do	--	T,A ?	-	12-6-62	23	258	128	211	338	1,056	225	1.5	12.5	2,081	1,169	2,730	7.2	72
53-08-301	do	--	T,A ?	-	12-6-62	19	280	186	735	332	1,536	750	1.8	5.3	3,681	1,463	5,120	7.4	-
54-01-101	do	--	T,A ?	-	12-6-62	18	186	122	362	355	756	498	2.0	9	2,128	968	3,270	7.4	71
201	O. W. Parker	--	T,A ?	-	12-6-62	16	53	51	110	345	173	66	2.0	13	654	342	1,070	7.5	-
202	do	--	T,A ?	-	12-6-62	15	67	63	142	287	303	126	2.3	15	874	424	1,410	7.5	-
203	do	--	T,A ?	-	12-6-62	27	232	226	579	352	1,220	860	3.0	4.9	3,325	1,507	4,550	7.4	-
204	do	--	T,A ?	-	12-6-62	22	505	318	1,960	245	2,400	2,820	1.5	< .4	8,147	2,570	10,400	7.1	-
206	do	--	T,A ?	-	12-6-62	20	365	222	848	264	1,480	1,370	1.5	5.1	4,442	1,824	6,150	7.7	-
207	do	--	T,A ?	-	12-6-62	20	300	197	652	278	1,140	1,126	1.5	7.5	3,581	1,560	5,370	7.4	-
601	do	--	T,A ?	-	12-6-62	18	134	97	62	415	395	68	2.0	4.7	985	733	1,470	7.4	-
604	do	--	T,A ?	-	12-6-62	18	201	119	444	276	756	652	1.5	5.6	2,333	993	3,809	7.3	-
605	do	--	T,A ?	-	12-6-62	27	78	42	43	345	94	49	1.8	17	522	369	870	7.6	-
901	G. L. Thompson	S. Rowe	T,A ?	-	12-10-62	22	187	96	420	237	666	595	1.5	10	2,105	861	3,300	7.2	70
902	C. Smith	--	T,A ?	-	12-10-62	19	69	34	98	288	121	100	1.5	4.4	588	311	1,020	7.6	-
02-101	W. Harris	--	E ?	-	11-28-62	25	75	21	34	259	49	54	1.0	6	392	274	666	7.5	68
103	O. W. Parker	--	E	512	12-6-62	17	68	26	28	281	52	35	1.0	5.3	370	277	636	7.5	-
201	do	--	T,E ?	-	11-28-62	23	64	24	24	268	37	31	.8	7	343	259	572	7.6	69
401	G. L. Thompson	S. Rowe	T ?	-	12-11-62	15	55	75	103	328	190	133	1.0	9	742	446	1,300	7.7	70
501	L. Harris	W. Harris	E ?	-	11-28-62	22	66	21	19	262	39	26	.8	5.1	328	252	554	7.5	70
502	J. M. Shannon est.	L. Hersey	E ?	-	12-4-62	25	68	18	16	256	25	21	.8	6	306	242	515	7.4	71
503	G. L. Thompson	S. Rowe	T,A? ?	-	12-10-62	20	64	22	24	249	38	35	.9	5.3	331	250	584	7.6	70
504	do	do	T ?	-	12-10-62	15	61	24	25	245	45	32	1.1	3.3	327	252	590	7.7	70

See footnotes at end of table.

Table 3.--Chemical analyses of water from wells and springs in Crockett County--Continued

Well	Owner	Leasee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
HJ-54-02-601	J. M. Shannon est.	K. McMullan	T,E ?	-	12-4-62	16	62	30	31	265	56	38	1.0	8	372	277	644	7.6	69
701	G. L. Thompson	S. Rowe	T,A ?	-	12-11-62	27	61	29	57	293	37	34	.9	6	396	273	642	7.8	-
702	do	do	T ?	-	12-11-62	17	51	28	28	211	50	45	1.2	4.9	329	241	595	8.2	-
704	C. Smith	--	T,A	165	12-10-62	29	72	29	21	288	39	39	2.3	12.5	386	299	662	7.2	-
705	G. L. Thompson	S. Rowe	T,A ?	-	12-10-62	17	63	34	29	281	63	53	1.3	7	405	297	700	7.7	-
706	Pecos County	--	T,A	215	6-7-63	20	138	64	291	255	280	494	1.1	3.0	1,416	610	2,390	7.4	72
707	do	--	T,A	212	6-7-63	20	109	50	134	271	165	252	1.1	2.5	867	480	1,500	7.5	72
708	do	--	T	205	6-7-63	20	67	31	29	278	54	37	1.0	4.5	379	292	638	7.6	72
801	J. M. Shannon est.	L. Hersey	E ?	-	12-4-62	13	65	24	19	262	36	25	.8	< .4	312	258	561	6.9	68
903	do	do	E ?	-	12-4-62	12	76	24	18	322	11	28	.8	< .4	328	288	600	6.9	70
03-201	T. Harris	--	T,E	280	11-28-62	27	80	40	46	328	156	30	1.3	5.3	547	365	856	7.5	69
202	do	--	T,E	291	11-28-62	14	98	61	80	328	291	78	1.8	< .4	789	495	1,210	7.3	70
203	J. M. Shannon est.	D. K. McMullan	T,E,A?	-	12-5-62	25	103	65	77	333	219	130	1.0	7	791	525	1,300	7.4	68
204	do	do	E,A ?	-	12-5-62	27	89	22	17	292	60	25	.5	9.5	394	313	664	7.9	-
205	do	do	T,E ?	-	12-5-62	19	131	72	103	304	403	100	1.0	6.5	985	625	1,530	7.5	-
401	do	K. McMullan	T,E	362	12-4-62	15	57	29	31	261	55	35	1.0	8	359	261	625	7.6	69
403	J. M. Shannon est.	D. K. McMullan	T,E ?	-	12-5-62	29	29	71	39	299	123	48	1.3	8	501	336	829	7.5	-
501	do	F. McMullan	T,E ?	-	12-4-62	20	100	52	62	300	256	69	1.0	3.4	738	464	1,117	7.3	69
502	do	D. K. McMullan	T,E ?	-	12-5-62	19	68	40	50	287	120	50	1.3	7	496	333	806	8.1	-
503	do	do	T,E ?	-	12-5-62	22	77	8	8	216	37	15	.1	11	284	226	480	7.6	-
505	do	do	T,E,A?	-	12-5-62	27	132	65	77	315	415	62	1.0	7	441	597	1,340	7.4	-
506	do	do	T?,E,A?	-	12-5-62	26	85	24	24	281	95	21	.5	15	429	311	689	7.3	-
507	do	do	T,E ?	-	12-5-62	24	129	71	69	307	375	90	1.0	5.6	915	614	1,460	7.9	-
601	do	F. McMullan Jr.	T,E ?	-	12-4-62	8	60	53	99	231	254	94	1.8	< .4	684	365	1,125	7.5	69
701	do	K. McMullan	E ?	-	12-4-62	19	65	32	31	290	62	43	1.0	2.7	399	290	671	7.1	-
702	do	F. McMullan	E ?	-	12-4-62	20	88	17	11	320	27	17	.5	< .4	338	290	580	7.3	69

See footnotes at end of table.

Table 3.--Chemical analyses of water from wells and springs in Crockett County--Continued

Well	Owner	Leasee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
HJ-54-03-703	J. M. Shannon est.	K. McMullan	E ?	-	12-4-62	19	61	31	35	320	69	40	1.0	6.5	370	281	670	7.4	70
704	do	F. McMullan Jr.	T,E	241	12-4-62	22	71	38	60	277	129	71	1.3	8	536	334	881	7.4	69
801	do	do	T,E,A?	-	12-4-62	25	92	41	46	333	150	44	1.0	6	569	397	926	7.3	70
803	do	do	T,E?	-	12-4-62	21	79	43	49	305	144	52	1.0	5.3	544	372	902	7.4	70
804	do	do	T,E,A?	-	12-4-62	16	90	39	40	327	133	45	1.0	8.5	534	383	886	7.3	69
805	do	D. K. McMullan	T,E?	-	12-5-62	45	80	34	72	380	85	58	.8	23	585	341	924	7.8	69
902	do	F. McMullan Jr.	T,E?	-	12-4-62	18	92	55	72	275	254	88	1.5	7	723	456	1,100	7.4	70
903	do	do	E ?	-	12-4-62	28	71	21	25	271	39	36	.8	10	364	264	621	7.5	70
904	do	do	T,E?	-	12-4-62	13	94	63	113	292	331	102	2.0	< .4	866	492	1,360	7.4	70
04-101	V. J. Powell	S. Mann	T,E?	-	11-29-62	17	280	175	1,910	267	512	3,280	1.2	4.2	6,310	1,414	9,450	7.4	70
103	J. M. Shannon est.	--	T	587	7-8-63	6	104	90	240	238	620	178	3.1	< .4	1,448	630	1,970	8.0	78
104	do	--	T	587	7-8-63	11	112	110	258	336	660	206	2.9	< .4	1,525	730	2,200	7.5	75
§ 202	do	Thomas & Doss Petroleum Company	T,E	430	10-26-60	9.6	60	55	123	302	219	119	--	.2	735	376	1,210	7.2	69
203	do	C. Black	T,E?	-	11-28-62	13	84	94	228	331	444	258	2.3	< .4	1,287	598	1,950	7.7	70
§ 301	do	do	-	400	9-21-60	6	96	109	469	306	596	588	2.3	1	2,020	688	3,200	7.3	-
301	do	do	--	400	11-28-62	10	110	116	334	370	655	345	2.5	< .4	1,755	749	2,650	7.4	-
302	J. Strauss	--	T,E?	-	10-16-62	13	146	128	889	367	665	1,295	2.1	< .4	3,318	890	4,650	7.4	70
303	J. M. Shannon est.	B. Black	T,E?	-	11-28-62	11	115	124	334	377	655	367	2.5	< .4	1,635	796	2,650	7.4	73
402	do	C. Black	T,E	450	11-28-62	13	98	86	200	326	514	148	2.3	< .4	1,221	598	1,800	7.5	69
405	do	G. Bunger	T,E	536	12-5-62	13	90	82	175	322	446	154	2.0	< .4	1,119	563	1,700	8.1	-
501	do	C. Black	T,E	438	12-5-62	12	75	75	142	309	354	133	2.3	< .4	945	498	1,500	7.5	69
602	do	do	T,E?	-	11-28-62	12	118	114	324	371	655	330	2.5	< .4	1,738	763	2,600	7.4	70
701	do	do	E ?	-	11-28-62	26	65	28	27	284	44	34	.8	5.6	370	277	615	7.5	69
703	do	do	T,E?	-	6-4-63	11	79	60	121	306	328	87	1.5	< .4	831	444	1,260	7.9	-
704	do	do	T,E	485	11-28-63	11	82	69	143	323	378	106	2.0	< .4	950	490	1,460	7.6	69

See footnotes at end of table.

Table 3.--Chemical analyses of water from wells and springs in Crockett County--Continued

Well	Owner	Leasee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
HJ-54-04-801	J. M. Shannon est.	C. Black	T,E ?	-	12-5-62	11	69	56	138	312	285	110	2.5	< .4	825	402	1,330	7.4	69
802	do	do	T,E ?	-	12-5-62	11	188	38	215	325	512	221	2.5	< .4	1,348	626	2,010	7.5	-
803	do	do	T,E ?	-	11-27-62	12	61	55	142	348	285	88	2.8	< .4	817	379	1,250	7.6	-
804	do	do	T,E ?	-	11-27-62	8	65	56	179	310	346	118	2.8	< .4	927	392	1,450	8.1	69
902	do	do	T,E ?	-	12-5-62	10	84	85	228	332	475	188	2.5	< .4	1,236	557	1,900	7.5	69
903	do	do	T,E ?	-	11-28-62	11	115	111	336	367	645	355	2.5	< .4	1,756	742	2,560	7.4	72
904	do	do	T,E	335	12-5-62	28	74	25	43	266	52	70	1.0	6	430	289	729	7.4	70
05-102	do	B. Black	E ?	-	11-28-62	12	115	124	359	361	687	415	2.5	< .4	1,893	796	2,820	7.4	70
103	C. Fluger	--	E	350	11-19-62	9	81	85	417	312	539	400	2.8	< .4	1,687	553	2,840	7.4	68
202	do	--	E ?	-	11-19-62	9	90	82	500	345	671	460	2.5	< .4	1,985	564	3,350	7.7	-
203	do	--	E ?	-	11-19-62	12	125	111	470	364	397	480	2.5	< .4	1,777	766	2,470	7.3	-
205	University of Texas	L. C. Brooks	E ?	-	11-21-62	11	124	109	432	355	697	440	2.5	< .4	1,991	758	3,210	7.3	70
301	do	M. Schneemann	E ?	-	10-12-62	10	124	97	475	350	687	480	2.7	2.4	2,050	708	2,995	7.5	69
302	do	do	E	500	10-12-62	17	68	32	59	292	88	63	.9	3.4	475	301	780	7.6	69
303	do	L. C. Brooks	E ?	-	11-21-62	16	59	35	24	271	79	22	2.0	2.7	373	290	641	7.4	69
401	J. M. Shannon est.	B. Black	E ?	-	11-27-62	11	127	120	379	360	692	403	2.5	< .4	1,912	810	2,800	7.3	72
402	do	do	E ?	-	11-27-62	8	127	110	493	330	734	520	2.5	< .4	2,157	769	3,234	7.3	70
502	do	do	E ?	-	11-28-62	11	132	106	544	361	817	553	2.5	< .4	2,344	765	3,310	7.5	71
503	do	do	E ?	-	11-27-62	11	128	109	536	367	767	550	2.5	< .4	2,284	768	3,280	7.3	71
601	University of Texas	L. C. Brooks	- ?	-	11-21-62	11	106	78	544	359	697	470	2.5	< .4	2,086	585	3,440	7.3	71
602	do	do	- ?	-	11-21-62	10	79	68	422	330	512	370	2.5	< .4	1,626	477	2,770	7.5	-
702	J. M. Shannon est.	J. Mayer	E ?	-	2-19-63	6	82	97	508	249	742	533	2.5	< .4	2,093	602	3,200	7.7	69
703	do	do	E ?	-	2-19-63	10	87	99	434	245	699	475	2.0	< .4	1,926	624	2,950	8.1	-
801	do	do	E ?	-	2-19-63	14	116	61	456	314	251	712	1.0	3.0	1,768	540	3,050	7.8	69
901	do	P. L. Childress	T,E?	-	11-1-62	15	87	48	262	292	360	253	1.0	16	1,186	415	1,650	7.8	65

See footnotes at end of table.

Table 3.--Chemical analyses of water from wells and springs in Crockett County--Continued

Well	Owner	Leasee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
HJ-54-06-101	University of Texas	F. Coates	E ?	-	10-29-62	13	69	45	35	284	157	28	1.5	< .4	489	358	718	7.7	67
102	do	L. C. Brooks	E ?	-	11-21-62	17	79	25	34	277	84	34	.5	2.7	413	301	708	7.5	68
201	do	F. Coates	G	80	10-29-62	23	97	14	37	310	29	26	2.5	10	421	298	680	7.2	64
202	do	do	E ?	-	10-29-62	12	71	42	43	266	161	38	.4	< .4	498	348	730	7.8	68
203	do	R. Coates	G	100	10-29-62	22	101	18	53	362	32	73	.8	9.5	487	328	784	7.3	66
301	do	W. R. Bissett	E ?	-	8-3-62	21	64	38	24	277	99	25	.7	5	413	314	665	7.7	69
302	do	T. Williams	E	430	10-15-62	16	67	32	26	260	77	36	.8	11	394	297	640	7.6	69
401	do	L. C. Brooks	E ?	-	11-21-62	16	90	41	230	299	143	350	1	2.1	1,020	392	1,850	7.5	-
502	do	B. Coates	E ?	-	10-29-62	19	64	31	51	272	90	59	.2	4.9	453	288	700	7.6	67
503	do	do	E	620	11-5-62	15	64	39	179	259	104	254	1.2	6	790	321	1,460	7.9	68
506	do	El Paso Natural Gas Company	T,E	604	10-29-62	11	77	63	329	344	475	273	2.3	< .4	1,399	452	2,250	7.7	71
507	do	do	T,E	590	10-29-62	31	51	80	352	292	240	490	1.1	8	1,397	455	2,480	7.6	68
509	do	Sinclair Oil Company	T,E ?	-	11-5-62	10	75	56	336	348	433	288	2.3	< .4	1,371	417	2,240	7.8	70
510	do	L. C. Brooks	T,E ?	-	11-21-62	11	66	55	276	327	354	220	2.3	< .4	1,145	393	2,010	7.4	68
601	do	T. Williams	E ?	-	10-15-62	21	59	26	29	253	49	38	.8	9	329	255	590	7.5	69
701	J. M. Shannon est.	P. L. Childress	T,E ?	-	11-1-62	10	67	44	299	379	392	217	2	< .4	1,217	348	1,700	7.6	70
702	do	do	E ?	-	11-1-62	14	46	33	37	261	57	35	.2	< .4	350	249	566	7.7	70
703	do	do	T,E	601	11-1-62	13	65	44	199	322	256	158	.6	< .4	894	342	1,280	7.7	70
901	B. Baker	--	E ?	-	9-24-62	21	52	26	31	239	33	44	1.7	16	343	236	577	7.6	-
07-101	University of Texas	W. R. Bissett	E ?	-	2-8-63	23	62	25	32	265	38	41	1.3	14	366	259	610	7.6	-
102	do	B. Owens	E	400	10-23-62	21	68	26	29	260	52	40	.6	22	387	279	590	7.7	67
301	do	Texas Agricultural Experiment Station	E	425-50	7-19-62	22	63	34	28	262	69	34	.8	5	385	295	670	7.8	-
401	do	T. Williams	E	380	10-15-62	16	71	28	23	272	55	31	.6	9	368	294	609	7.5	68
502	do	W. R. Bissett	E ?	-	8-11-62	18	61	21	19	259	27	24	.5	9	307	240	520	7.7	76
603	do	do	E ?	-	8-11-62	21	58	21	21	245	26	29	.6	12	309	230	525	7.8	80

See footnotes at end of table.

Table .--Chemical analyses of water from wells and springs in Crockett County--Continued

Well	Owner	Leasee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
HJ-54-07-604	University of Texas	W. R. Bissett	E ?	-	8-11-62	20	50	24	20	237	25	28	.7	7	292	224	495	7.4	69
702	B. Baker	--	E	446	9-26-62	23	80	35	253	260	111	425	1.1	4.9	1,061	343	1,780	7.5	-
804	do	--	E	448	1- -57	-	50	39	40	256	54	46	-	-	379	--	--	-	-
804	do	--	E	448	9-19-62	20	61	24	24	244	40	35	.7	14	339	252	598	7.6	68
901	J. Childress	--	E	425	6-15-60	17	55	20	21	246	21	25	.8	6.5	287	219	485	7.0	-
901	do	--	E	425	8-22-62	17	54	22	17	247	22	21	.5	4	279	225	477	7.5	69
08-101	University of Texas	Mrs. L. StClair	E	350+	7-19-62	24	60	24	20	245	37	25	.8	6	317	248	558	7.8	-
102	do	J. Dublin	E,G	360+	7-24-62	19	75	26	34	256	88	47	.8	8.6	424	294	712	8.1	69
103	do	do	E,G	350±	7-24-62	17	57	25	20	259	28	29	.8	15.9	319	249	560	8.2	69
201	do	L. Brooks	E	340+	8-21-62	18	57	25	24	244	46	36	.8	4.7	331	243	553	7.6	70
302	do	A. Delong	E ?	-	7-20-62	-	54	17	14	218	20	18	.6	6	236	203	459	-	70
303	do	L. Brooks	E ?	-	8-21-62	17	55	19	17	237	20	22	.7	2.7	270	217	475	7.6	69
304	do	do	E,G	334	8-21-62	17	67	16	11	251	14	15	.4	11	274	233	457	7.6	69
401	do	J. Dublin	E,G ?	-	7-24-62	17	63	18	19	242	31	26	.6	9.2	303	233	528	8.3	71
402	do	do	E,G ?	-	7-24-62	15	58	23	11	256	17	18	1.0	16.3	285	241	499	8.2	80
501	do	Mrs. L. StClair	-	307	7-20-62	21	62	22	19	254	28	25	.6	9.3	312	243	552	7.8	-
502	do	J. Childress	E ?	-	8-22-62	17	57	21	21	238	26	27	.7	4.7	291	228	505	7.6	69
601	do	L. Brooks	E ?	-	8-21-62	15	73	15	9	297	12	13	.3	< .4	283	243	500	7.5	70
701	J. Childress	--	E ?	-	8-22-62	20	56	19	15	240	23	21	.5	5.3	278	217	478	7.5	69
702	do	--	E ?	-	8-22-62	17	57	15	10	236	16	14	.4	5.3	251	203	425	7.6	69
801	University of Texas	J. Childress	E ?	-	8-22-62	17	60	19	11	254	16	17	.4	5.3	271	227	473	7.7	69
802	H. Moore	--	E ?	-	8-22-62	18	58	19	17	238	27	26	.5	5.8	288	223	500	7.6	69
901	University of Texas	S. Oglesby	E ?	-	8-20-62	16	59	19	11	247	17	15	.5	4.7	263	225	450	7.4	69
902	do	do	E ?	-	8-20-62	16	59	20	16	247	24	21	.6	4.7	282	228	476	7.4	69
10-101	C. Smith	--	T,A ?	-	12-10-62	15	159	98	222	268	555	365	2.3	4.2	1,553	798	2,454	7.5	-
102	do	--	T,A ?	-	12-10-62	22	85	35	39	284	61	105	1	5.1	493	355	875	7.4	-

See footnotes at end of table.

Table 3.--Chemical analyses of water from wells and springs in Crockett County--Continued

Well	Owner	Leasee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
§ HJ-54-10-202	C. Smith	Ambassador Oil Company	T,E ?	-	10-26-60	13	72	29	38	264	92	48	-	1.2	423	298	714	7.3	70
203	J. M. Shannon est.	K. McMullan	T,E	640	12-4-62	18	60	23	19	250	33	28	.8	4.2	309	244	539	7.5	70
206	Nolke est.	--	T,E ?	-	12-10-62	15	63	20	17	237	45	21	1.1	2.2	301	241	530	8.1	-
302	J. M. Shannon est.	A. C. Hoover	T,E ?	-	6-4-63	13	62	29	22	270	50	28	1.2	< .4	338	274	585	7.8	72
303	M. A. Shannon est.	do	- ?	-	6-4-63	20	73	18	18	259	35	29	.8	7	328	258	563	7.6	71
402	C. Smith	--	T,E ?	-	12-10-63	22	272	123	700	283	696	1,210	1	3.8	3,167	1,185	5,000	7.5	-
501	B. Nolke	--	T ?	-	12-10-62	20	72	23	21	293	33	30	2.3	< .4	345	276	613	7.2	-
502	do	--	T,E ?	-	12-10-62	26	63	25	24	248	53	35	1.2	< .4	349	261	586	7.7	-
601	do	--	T,E ?	-	12-10-62	21	69	22	23	275	36	31	.8	< .4	338	261	585	7.4	-
602	do	--	T,E ?	-	12-10-62	32	78	21	14	319	24	16	.6	4.4	347	--	573	7.5	-
801	do	--	T,A ?	-	12-10-62	11	268	121	700	293	656	1,170	1.1	< .4	3,071	1,165	4,900	7.1	-
901	do	--	T,E ?	-	12-10-62	16	60	25	24	260	38	29	1.2	4.2	325	251	583	7.5	68
902	W. W. Owens	--	T,E ?	-	12-11-62	14	59	24	29	256	43	30	1	3.1	329	245	590	7.6	69
11-101	J. M. Shannon est.	F. McMullan Jr.	T,E ?	-	12-4-62	28	79	28	28	279	58	56	.8	7.5	422	310	717	7.5	70
102	do	Marathon Oil Company	T,E ?	-	1-7-63	14	56	21	17	240	42	23	.9	< .4	292	226	495	7.8	70
103	M. A. Shannon est.	A. C. Hoover	T,E ?	-	6-4-63	14	61	30	39	267	76	47	1.1	5.5	505	275	693	7.7	70
202	A. C. Hoover	--	T,E,A?	-	6-4-63	24	98	42	55	343	158	65	1.1	7	619	415	969	7.4	70
203	M. A. Shannon est.	A. C. Hoover	T,E ?	-	6-4-63	25	80	31	36	271	62	76	.9	5.5	449	327	729	7.6	70
§ 301	do	--	T,E	275	10-15-60	12	90	52	89	263	282	85	1.5	0	740	438	1,150	7.0	70
401	A. C. Hoover	--	T,E ?	-	6-4-63	26	101	14	9	343	9	13	.2	15	356	308	604	7.4	70
§ 501	do	--	T,E ?	-	1-26-54	22	83	42	58	281	126	93	1.4	3.2	569	380	953	7.6	70
§ 503	do	--	T,E,A?	-	12-8-57	32	80	34	--	308	108	51	1.4	6.1	513	340	829	7.7	71
504	W. W. Owens	--	T,E,A?	-	12-11-62	15	57	27	28	265	44	29	1.1	5.6	337	256	604	7.4	70
505	A. C. Hoover	--	T,E,A?	-	6-4-63	42	64	30	87	254	150	23	2.9	5.5	579	284	889	7.6	70
601	do	--	T,E?	-	6-4-63	24	113	59	177	303	193	317	1.2	5	1,038	522	1,776	7.6	70
701	W. W. Owens	--	T,E?	-	12-11-63	17	60	21	17	250	27	22	.8	4.4	292	238	522	7.6	68

See footnotes at end of table.

Table 3.--Chemical analyses of water from wells and springs in Crockett County--Continued

Well	Owner	Leasee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
HJ-54-11-702	W. W. Owens	--	T,E ?	-	12-11-63	23	89	35	97	284	110	172	.8	7.5	674	367	1,176	7.4	68
703	do	--	T,E ?	-	12-11-63	15	61	22	22	256	28	29	.9	4	308	243	557	7.7	69
704	do	--	T,E ?	-	12-11-63	20	60	22	37	281	71	44	1	5.5	399	292	719	7.5	70
705	do	--	T,E ?	-	12-11-63	8	48	22	24	217	41	29	1	< .4	280	213	518	7.7	-
706	A. C. Hoover	Tenneco Lease	T,E	620	1-8-63	17	61	26	28	264	50	35	1.2	7	355	259	604	7.6	-
802	do	--	T,E,A?	-	6-4-63	26	106	43	76	353	130	114	1.0	9	679	442	1,119	7.4	70
804	J. W. Owens	--	T,E,A?	-	12-12-62	27	89	33	36	333	90	42	.8	4.4	486	356	830	7.2	69
§ 806	do	--	E ?	-	12-7-59	20	365	98	1,230	218	338	2,450	-	-	4,610	1,310	7,800	7.2	-
806	do	--	E ?	-	12-11-62	21	273	80	1,639	264	412	2,791	.3	4.4	5,351	1,009	8,550	7.8	-
§ 808	A. C. Hoover	--	T,E ?	-	1-26-54	18	76	50	135	302	278	105	2.2	.5	820	395	1,290	7.5	71
§ 902	do	--	T,E,A?	-	1-26-54	32	95	52	126	279	194	205	1.8	2.2	848	451	1,450	7.9	70
§ 903	do	--	T,E,A?	-	1-26-54	31	111	48	62	350	161	100	1.0	4.0	693	474	1,120	7.6	-
905	J. W. Owens	--	T,E ?	-	12-11-62	24	260	77	1,370	271	379	2,330	.5	5.5	4,579	965	7,350	7.2	70
906	University of Texas	J. W. Owens	T,E ?	-	12-11-62	5	21	19	158	220	22	184	1.8	< .4	519	130	990	7.6	69
907	A. C. Hoover	--	T,E	139	6-4-63	25	140	64	182	287	218	394	.9	4	1,169	620	1,950	7.5	70
908	do	--	T,E ?	-	6-4-63	25	93	37	58	342	139	65	1	7	593	386	934	7.5	70
909	do	--	T,E,A?	-	6-4-63	26	152	62	86	327	208	216	.9	18	930	630	1,530	7.4	70
12-101	J. M. Shannon est.	C. Black	E ?	-	12-5-62	26	193	67	763	249	161	1,372	.8	7	2,711	759	4,600	7.2	69
201	J. S. Todd est.	V. Montgomery	E ?	-	2-26-63	18	284	80	1,970	272	520	3,320	1.5	4.2	6,332	1,040	9,800	7.2	-
202	do	do	E ?	-	11-26-62	12	66	59	171	347	326	118	2.5	< .4	926	407	1,420	7.6	70
302	J. M. Shannon est.	C. Mayer	E ?	-	12-19-62	17	366	108	2,380	244	652	4,150	.2	2	7,795	1,356	11,500	7.5	-
501	J. S. Todd est.	V. Montgomery	E ?	-	11-26-62	12	73	66	200	359	380	157	3	< .4	1,068	453	1,650	7.6	67
502	do	do	E ?	-	11-26-62	13	75	64	207	343	331	180	2.3	< .4	1,041	449	1,620	7.4	-
601	do	do	E ?	-	11-26-62	22	70	18	11	273	17	24	.5	12	309	251	524	7.5	69
602	do	do	E ?	-	2-26-63	14	59	36	112	277	175	105	2	.5	644	295	1,066	7.5	-
801	do	do	E ?	-	11-26-62	20	57	17	12	217	14	24	.5	16	268	212	450	7.9	-

See footnotes at end of table.

Table 3.--Chemical analyses of water from wells and springs in Crockett County--Continued

Well	Owner	Leasee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
MJ-54-12-802	J. S. Todd est.	V. Montgomery	E ?	-	11-26-62	21	61	23	12	245	17	23	1	49	327	249	543	7.5	70
901	do	do	E ?	-	2-26-63	7	70	32	357	298	540	356	3.2	< .4	1,562	310	2,430	7.8	-
902	University of Texas	L. Childress	E ?	-	6-7-63	22	64	21	17	265	19	24	.9	9	307	247	530	7.5	72
S 13-201	J. M. Shannon est.	Humble Oil Company	T,E	490	10-15-60	11	62	54	299	278	193	452	2	7	1,240	426	2,150	7.0	70
‡ 202	do	do	T,E	628	1951	-	120	88	-	177	625	548	-	-	1,986	661	--	8.6	-
301	do	P. L. Childress	E ?	-	11-1-62	18	57	28	30	268	44	30	1.5	16	357	260	565	7.6	70
302	J. Bean	--	E ?	-	2-28-63	20	159	52	850	294	253	1,410	1.7	4.2	2,896	620	5,000	7.3	68
303	J. M. Shannon est.	J. Mayer	E ?	-	12-19-62	15	131	51	896	210	243	1,517	.6	4	2,961	539	5,025	7.6	68
401	J. S. Todd est.	Continental Oil Co.	T ?	-	2-19-63	22	105	18	51	317	86	70	.3	12	520	335	866	7.3	-
402	do	Mrs. B. Fields	E ?	-	2-26-63	18	72	22	58	284	87	53	1.1	3.8	455	268	752	7.3	68
501	do	G. Bunger	T,E ?	-	2-26-63	10	132	96	560	328	820	570	3.6	< .4	2,353	720	3,470	7.9	-
602	J. Bean	--	T,E ?	-	2-28-63	10	141	82	497	372	790	490	3.5	< .4	2,232	690	3,350	7.5	70
603	do	--	T,E ?	-	2-28-63	10	140	92	497	367	810	490	3.6	< .4	2,223	730	3,350	7.6	70
604	J. S. Todds est.	Mrs. B. Fields	T,E ?	-	12-14-62	8	120	82	497	370	705	493	2	< .4	2,089	638	3,200	7.7	-
701	do	G. Bunger	T,E ?	-	2-19-63	14	82	42	166	312	252	162	1.5	4.2	877	377	1,400	7.5	68
703	University of Texas	P. L. Childress	T,E ?	-	12-14-62	9	148	83	478	331	788	506	2	< .4	2,177	711	3,250	7.8	-
801	J. S. Todd est.	G. Bunger	T,E ?	-	2-19-63	10	156	92	555	371	871	562	2.4	< .4	2,430	770	3,650	7.4	70
802	do	Mrs. B. Fields	T,E ?	-	2-14-63	6	121	98	589	318	913	570	2.5	< .4	2,265	705	3,625	7.8	-
803	University of Texas	F. Henderson	T,E	600	12-13-63	11	152	92	515	359	807	491	2	< .4	2,245	751	3,300	7.9	70
901	J. Bean	--	T,E ?	-	2-26-63	10	268	16	520	351	790	520	3.2	< .4	2,300	740	3,300	7.7	70
902	do	--	T,E ?	-	11-8-63	11	135	90	288	355	713	488	2	< .4	1,901	703	2,962	7.5	71
903	University of Texas	G. Bunger	T,E ?	-	2-19-63	12	122	78	357	324	605	387	2.1	2.9	1,726	624	2,650	7.6	70
904	do	F. Henderson	T,E ?	-	12-13-62	11	151	89	533	311	872	525	2.5	< .4	2,337	741	3,400	7.8	-
904	do	do	T,E ?	-	2-28-63	10	150	101	517	356	870	540	3.3	< .4	2,366	790	3,560	7.6	-
14-101	J. M. Shannon est.	P. L. Childress	T,E ?	-	2-14-63	18	54	31	24	281	25	31	2.5	< .4	324	262	586	7.6	-
201	P. L. Vaughan	--	E ?	-	11-6-62	16	59	34	61	331	4	95	1.5	< .4	434	286	804	7.4	68

See footnotes at end of table.

Table 3.--Chemical analyses of water from wells and springs in Crockett County--Continued

Well	Owner	Lessee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
HJ-54-14-203	R. L. Vaughan	Antwell-Petroleum Co.	T,E ?	-	11-2-62	15	49	37	36	277	51	34	2.5	7	378	273	603	7.7	68
204	do	do	T,E ?	-	11-2-62	6	6	6	240	198	51	240	3.5	< .4	650	38	1,250	7.9	68
301	J. Holt	--	E ?	-	11-8-62	16	51	20	10	229	12	16	.5	8	247	208	445	7.6	-
403	J. Bean	--	T,E ?	-	2-28-62	10	113	85	550	281	790	530	3.2	< .4	2,220	640	3,290	8.1	68
503	Mrs. C. Bean	--	E	467	11-5-62	16	102	57	932	258	61	1,546	1	6	2,848	490	5,130	7.7	68
† 601	W. R. Baggett	--	E	401	10- -60	-	59	23	23	220	31	57	-	-	413	--	--	-	-
601	do	--	E	401	11-7-62	15	46	21	8	231	13	11	.8	< .4	229	202	421	7.4	-
602	Mrs. C. Bean	--	E ?	-	11-5-62	13	52	23	39	238	12	68	.6	1.1	326	221	619	7.5	67
603	do	--	E	458	11-6-62	15	45	26	18	231	15	25	.9	10	269	221	489	7.7	68
702	F. R. Henderson Jr.	--	T,E ?	-	9-20-62	13	117	77	329	309	523	348	2.5	1.4	1,563	608	2,380	7.4	72
703	A. Bean	--	T,E ?	-	2-28-63	15	134	91	449	295	750	497	3.1	< .4	2,131	710	3,100	7.4	-
801	F. R. Henderson Jr.	--	T,E	600+	9-20-62	12	102	68	248	295	444	254	2	2	1,277	534	1,940	7.4	73
802	A. Bean	--	E ?	-	11-5-62	15	71	11	12	250	9	19	.4	4.9	265	222	478	7.7	68
† 901	W. R. Baggett	--	E	450	10- -60	-	57	29	26	256	31	53	-	-	452	--	--	-	-
902	F. R. Henderson Jr.	--	E	660	9-20-62	15	51	24	13	255	19	17	1	4.9	270	227	471	7.6	71
15-103	T. Williams	--	E ?	-	8-24-62	15	54	24	9	260	13	14	.4	2	259	233	455	7.8	70
104	do	--	E	415	8-24-62	16	51	27	18	253	21	25	1.2	4.9	288	239	505	7.6	71
105	J. Holt	--	E ?	-	11-8-62	16	52	25	21	242	26	28	1.7	17	306	233	546	7.7	68
201	B. Baker	--	E ?	-	9-19-62	18	57	23	22	255	32	27	1	7	312	238	531	7.6	70
202	O. B. Trap Company	--	E ?	-	9-19-62	17	54	25	20	250	31	26	1.2	8	305	238	546	7.5	72
301	J. Chil[illegible]	--	E ?	-	8-23-62	21	58	27	45	247	53	66	1.1	10	401	255	695	7.6	69
303	do	--	E ?	-	8-23-62	18	59	19	17	242	21	22	1.2	5.3	280	224	492	7.8	72
† 401	W. R. Baggett	--	E	431	10- -60	-	60	33	16	265	33	50	-	-	457	--	--	-	-
401	do	--	E	431	11-7-62	18	49	25	12	256	20	18	.8	3.4	272	227	486	7.6	69
† 501	do	--	E	400	10- -60	-	66	26	30	265	31	51	-	-	478	--	--	-	-
502	J. B. Parke[illegible]	--	E ?	-	8-24-62	20	34	23	-	267	9	11	.3	4	259	229	450	7.7	69

See footnotes at end of table.

Table 3.--Chemical analyses of water from wells and springs in Crockett County--Continued

Well	Owner	Leasee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
EJ-54-15-503	J. B. Parker	--	E ?	-	8-24-62	17	53	20	12	242	17	19	.2	5	263	215	456	7.7	69
601	A. C. Luckett	--	E ?	-	8-23-62	17	49	27	16	244	36	22	1.7	10	301	234	518	7.7	70
603	T. Williams	--	E ?	-	8-24-62	18	53	22	14	248	16	20	1.7	6.9	274	223	475	7.7	70
† 702	W. R. Baggett	--	E	402	10- -60	-	83	16	7	259	34	28	-	-	427	--	--	-	-
702	do	--	E	402	11-7-62	15	73	10	9	253	8	16	.9	5.3	261	220	466	7.5	68
703	do	--	E	463	11-7-62	14	50	26	17	255	20	24	1	7	284	230	519	7.4	69
† 801	do	--	E ?	-	10- -60	-	61	46	16	323	30	58	-	-	534	--	--	-	-
801	do	--	E ?	-	11-7-62	16	53	25	11	265	18	16	.5	3.8	273	236	493	7.3	69
803	F. Hagelstein	--	E ?	-	9-6-62	17	64	25	23	283	27	27	.8	2.9	325	262	556	7.3	72
804	W. R. Baggett	--	E	340	11-7-62	16	50	27	14	264	21	18	.5	4.4	281	236	504	7.4	69
901	J. B. Parker	--	E ?	-	8-24-62	17	56	22	11	255	14	16	2	3.5	267	228	472	7.8	69
16-101	A. C. Luckett	M. Black	E	400	8-23-62	18	53	27	24	248	45	34	1.5	6.2	330	246	570	7.7	69
102	do	do	E ?	-	8-23-62	17	57	24	24	251	43	30	1.2	2.9	322	240	592	7.9	69
201	H. Moore	--	E ?	-	8-22-63	17	51	20	16	231	22	22	.5	2.9	265	211	470	7.7	69
202	J. Childress	--	E ?	-	8-22-62	20	56	20	18	242	24	25	.6	5.8	288	224	500	7.8	72
301	J. Clayton	--	E ?	-	8-28-62	17	81	13	8	284	8	13	.1	5.1	285	259	491	7.6	70
302	do	--	E ?	-	8-28-62	16	65	19	11	261	15	17	.3	8.9	279	239	579	7.6	73
401	A. C. Luckett	--	E ?	-	8-23-62	12	53	28	14	292	23	19	1.5	< .4	295	248	520	7.7	74
402	J. Childress	--	E ?	-	8-23-62	17	56	23	21	232	27	36	.8	20	315	235	549	7.9	69
501	do	--	E ?	-	8-23-62	18	53	26	21	244	38	27	1.3	5.8	310	238	560	7.8	69
502	E. H. Chandler	--	E ?	-	8-30-62	15	52	32	21	244	47	30	1.9	8.9	328	260	558	7.7	70
701	R. A. Harrell	--	E	400	9-5-62	18	55	25	23	249	31	29	2	9	314	240	530	7.5	70
702	J. Childress	--	E ?	-	9-5-62	18	52	24	17	242	23	22	2	6	283	230	481	7.6	70
801	E. H. Chandler	--	E	400	8-30-62	15	52	20	13	223	20	20	1	11.1	261	214	445	7.7	70
802	J. Childress	--	E ?	-	8-29-62	14	62	22	9	267	14	14	.8	6.7	274	244	478	7.7	69
803	E. H. Chandler	--	E	400	8-30-62	15	50	25	15	233	22	17	1.9	5.8	267	227	459	7.5	70

See footnotes at end of table.

Table 3.--Chemical analyses of water from wells and springs in Crockett County--Continued

Well	Owner	Leasee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
HJ-54-16-902	P. L. Childress	--	E ?	-	8-29-62	15	55	22	14	245	15	21	.7	7.8	271	228	467	7.7	72
18-201	A. C. Millspaugh	--	T,A?	-	12-10-62	24	59	31	31	283	48	37	1.1	7	377	274	665	7.5	-
301	do	--	T,E?	-	12-10-62	14	56	27	29	259	53	31	1.3	3.8	342	252	600	7.7	-
602	H. B. Cox est.	I. Deaton	E ?	-	12-10-62	15	81	46	797	231	89	1,288	1	< .4	2,431	393	4,220	7.6	-
19-101	do	do	T,E?	-	12-14-62	15	57	27	31	264	47	36	1.1	2	346	253	600	7.4	-
102	do	do	T,E?	-	12-14-62	15	57	29	32	261	53	37	1.2	5.5	358	261	625	7.8	-
# 103	A. Cox est.	--	-	420	7-9-50	40	55	22	29	207	28	29	1.3	-	430	226	--	7.6	-
201	J. W. Owens	--	T,E?	-	12-11-62	25	227	86	177	281	132	680	.5	5.3	1,471	920	2,600	7.2	70
202	do	--	T,E?	-	12-11-62	22	78	29	41	289	53	68	.7	7	441	313	765	7.7	70
203	H. B. Cox est.	I. Deaton	T,E?	-	12-14-62	23	82	31	33	315	65	50	.8	4	444	330	745	7.6	68
301	University of Texas	J. W. Owens	T,E?	-	12-12-62	22	292	74	999	261	414	1,884	.4	7	3,820	1,032	6,200	7.1	70
302	do	do	T,E?	-	12-11-62	21	122	74	1,375	262	398	2,260	.4	4.4	4,384	863	7,250	7.4	70
303	do	do	T,E?	-	12-12-62	14	63	29	92	258	92	116	.9	5.5	539	276	945	7.6	-
304	do	do	T,E?	-	7-20-63	16	56	32	68	261	82	77	1.1	3.0	463	270	825	7.7	-
305	do	do	T,E?	-	7-20-63	16	61	24	29	264	41	33	.7	4.9	341	250	592	7.6	-
401	A. C. Millspaugh	--	T,E?	-	12-10-62	18	51	37	37	293	49	41	1	5.1	383	279	673	7.6	-
402	H. B. Cox est.	I. Deaton	T,E?	-	12-14-62	26	50	43	43	310	47	53	.8	10.5	425	301	735	7.4	-
601	University of Texas	J. Scott	T ?	-	3-1-63	8	55	34	51	278	81	62	1.1	< .4	429	279	752	8.2	69
604	L. Childress	J. Childress	T ?	-	6-5-63	8	28	26	24	246	< 2	22	.2	7	236	178	445	7.5	-
801	B. B. Ingham	--	T	178	3-1-63	19	76	43	51	281	65	131	1.1	5.5	530	367	943	7.6	-
803	do	--	T	600	3-1-63	14	52	34	43	267	72	47	2.5	13	409	271	706	7.7	70
904	do	--	T	156	3-1-63	12	58	38	102	299	155	92	2.3	< .4	606	302	1,160	7.6	72
20-101	University of Texas	J. W. Owens	T,E?	-	12-11-62	5	167	57	1,410	151	182	2,430	.4	< .4	4,325	652	7,151	6.9	69
102	do	J. Childress	T,E	316	6-5-63	16	67	29	17	336	9	26	1.3	< .4	330	286	586	7.3	-
201	do	W. E. Dunlap	T,E?	-	12-14-62	10	71	67	198	348	354	165	2.3	< .4	1,039	453	1,650	8.1	-
202	do	L. Childress	T,E?	-	6-7-63	16	60	30	21	277	33	30	1.4	7	334	274	595	7.6	72

See footnotes at end of table.

Table 3.--Chemical analyses of water from wells and springs in Crockett County--Continued

Well	Owner	Leasee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
HJ-54-20-203	University of Texas	L. Childress	T,E ?	-	6-7-63	10	80	75	253	351	412	222	2.8	< .4	1,228	510	1,950	7.5	73
§ 301	do	do	T,E	360	9-14-60	10	106	82	333	350	564	315	-	.2	1,590	602	2,430	7.0	-
302	do	do	T,E ?	-	6-7-63	13	90	62	243	379	348	222	1.6	< .4	1,166	480	1,870	7.2	-
402	L. Childress	J. Childress	T,E ?	-	6-5-63	11	65	52	153	325	239	122	1.5	1	804	376	1,330	7.7	-
501	University of Texas	do	T,E	600	6-5-63	11	76	68	186	321	361	136	2.6	< .4	999	468	1,600	7.5	-
601	do	L. Childress	T,E ?	-	12-14-62	12	83	82	329	311	523	306	2	< .4	1,419	544	2,310	7.9	-
602	do	do	T,E ?	-	6-7-62	10	104	88	314	359	496	328	1.6	< .4	1,519	620	2,400	7.4	72
701	B. B. Ingham	--	T,E ?	-	3-1-62	13	46	30	32	245	44	32	2.7	10	330	237	566	7.4	70
702	P. C. Perner	--	T,E	600	3-11-63	14	42	38	33	254	46	45	2.8	9	355	263	644	8.0	-
801	do	--	T,E	600	3-11-63	12	65	85	213	273	423	198	3.8	< .4	1,145	509	1,800	8.5	-
802	do	--	T,E	250	3-11-63	18	80	38	106	296	165	115	1.7	11	681	356	1,100	7.4	70
901	University of Texas	S. Scheuber	T,E ?	-	3-22-63	14	45	27	26	221	30	39	1.8	8	300	225	529	7.5	70
902	do	do	T,E ?	-	3-22-63	14	59	22	15	251	19	22	1.2	6	281	235	491	7.3	70
21-101	do	P. L. Childress	T,E ?	-	12-14-62	11	70	56	212	349	290	168	2.5	< .4	982	404	1,600	7.7	-
201	do	F. Henderson	E ?	-	12-13-62	26	70	24	34	276	49	41	.6	9	390	273	650	7.7	-
203	do	P. L. Childress	E,A ?	-	6-3-63	20	70	4	4	211	4	6	.1	16	228	198	392	7.6	-
302	do	G. Bunger	T,E	387	2-19-63	10	125	79	420	332	667	433	2.5	< .4	1,900	636	2,920	7.7	70
303	do	do	- ?	-	2-19-63	10	133	83	431	338	703	452	2.5	< .4	1,981	671	3,000	7.6	69
402	do	P. L. Childress	E ?	-	12-14-62	20	64	16	23	253	33	25	.4	2	307	226	528	7.3	-
403	do	J. W. Henderson	E	320	3-18-63	18	73	18	19	282	29	27	1	< .4	324	257	560	7.5	-
§ 602	do	B. Clayton	E	300	9-16-54	18	205	58	673	273	196	1,260	-	9	2,550	750	4,500	8.0	-
701	do	J. W. Henderson	E,A ?	-	3-18-63	24	79	15	18	277	24	23	1.1	15	335	257	560	7.5	70
702	do	Mrs. A. McMullan	T,E	364	3-22-63	8	112	108	316	339	600	326	2.3	< .4	1,640	730	2,500	7.4	-
801	do	J. W. Henderson	T,E	360	6-19-63	21	101	27	224	291	60	370	.7	3.5	956	363	1,700	7.5	72
802	do	R. Henderson	E,A	195	3-20-63	20	152	42	460	278	130	840	.7	6	1,787	550	3,210	7.3	-
901	do	do	E ?	-	3-20-63	14	72	33	117	266	53	203	1.2	4.3	629	314	1,150	7.5	70

See footnotes at end of table.

Table 3.--Chemical analyses of water from wells and springs in Crockett County--Continued

Well	Owner	Leasee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
HJ-54-21-903	University of Texas	B. Clayton	E ?	-	6-3-63	18	69	16	12	267	13	18	1.1	8	286	239	494	7.5	70
904	do	do	E ?	-	6-3-63	18	105	38	331	270	9	560	1	4	1,280	418	2,300	7.7	73
22-102	F. R. Henderson Jr.	--	T,E	421	9-20-62	11	132	87	455	333	660	470	2.1	< .4	1,981	688	2,950	7.4	72
103	C. W. Medows est.	J. Williams	E ?	-	11-13-62	17	56	25	20	253	25	32	1.1	4.7	275	241	548	7.6	70
201	do	G. Williams	- ?	-	9-11-62	16	51	27	18	258	23	24	1.3	8	295	239	511	7.6	72
202	do	J. Williams	E ?	-	11-13-62	15	56	26	50	247	26	81	.9	8.5	384	246	714	7.6	70
301	F. R. Henderson Jr.	--	E	407	9-20-62	16	48	26	13	249	22	16	1.1	7	271	226	466	7.6	71
302	do	--	E ?	-	9-20-62	16	56	21	11	253	16	16	.9	7	268	227	462	7.7	70
401	C. W. Medows est.	J. Williams	- ?	-	11-13-62	19	57	23	18	258	22	29	1.3	6	297	234	530	7.6	72
403	Texas-New Mexico Pipe Line Company	--	- ?	-	7-8-63	17	70	29	63	268	34	121	1.4	4.5	471	293	850	7.5	72
601	C. W. Medows est.	G. Williams	E ?	-	9-11-62	14	55	26	28	254	41	30	23	2.2	324	242	550	7.7	72
603	do	J. Williams	E ?	-	11-13-62	12	66	31	56	272	89	64	1.9	< .4	454	290	804	7.6	70
702	G. M. Couch	J. Couch	E	425	3-20-63	14	52	28	20	253	33	26	1	8	306	244	540	7.6	-
801	do	do	T,E	630	3-20-63	12	64	43	278	291	355	239	2.3	2.9	1,139	335	1,860	7.6	-
802	do	do	E	450	3-20-63	14	44	23	14	216	14	17	2.3	14	248	203	444	7.5	69
901	Mrs. R. Helbing	E. H. Chandler	E ?	-	3-19-63	18	52	26	22	244	18	36	2.1	13	307	238	542	7.4	70
23-101	Crockett County Water Control District	--	E	418	7-22-47	15	72	17	11	272	16	22	.8	7.8	299	250	--	7.7	-
102	do	--	E ?	-	7-22-47	15	72	17	11	272	16	22	.8	7.8	299	250	--	7.7	-
† 103	F. R. Henderson Jr.	--	T,E	475	6- -61	-	174	134	150	299	614	301	-	-	1,214	--	--	-	-
104	do	--	E ?	-	9-20-62	17	68	20	20	267	26	33	.7	7	323	253	550	7.5	71
206	W. E. Friend Jr.	--	E ?	-	9-4-62	18	66	21	12	271	15	20	.5	3.1	289	250	482	7.4	70
208	F. Hagelstein	--	E ?	-	9-6-62	16	53	28	17	271	26	19	2.5	3.8	298	246	503	7.6	78
209	F. R. Henderson Jr.	--	E ?	-	9-21-62	18	65	21	21	278	23	29	.4	7	321	247	540	7.5	74
301	W. E. Friend Jr.	--	T,E ?	-	9-4-62	12	95	70	392	347	565	370	2	6	1,683	524	2,500	7.6	71

See footnotes at end of table.

Table 3.--Chemical analyses of water from wells and springs in Crockett County--Continued

Well	Owner	Leasee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
HJ-54-23-302	C. E. Davidson III	--	E ?	-	9-6-62	17	59	26	34	242	59	34	2.5	7	358	255	602	7.3	70
401	C. W. Medows est.	G. Williams	E ?	-	9-11-62	17	56	24	18	262	23	19	1.1	5.5	293	239	497	7.4	72
502	W. E. Friend Jr.	--	E	500	9-4-62	16	60	20	20	245	22	30	1.3	10	299	233	510	7.4	70
503	Crockett County Water Control District	--	E	370	11-20-62	15	62	22	13	256	17	28	1	8	292	245	528	7.7	-
601	W. E. Friend Jr.	--	E ?	-	9-4-62	16	46	13	21	171	22	25	1.2	7	236	168	400	8.4	70
602	A. Kincaid est.	G. Montgomery	E	400	7-8-63	15	49	32	27	244	36	33	2.4	21	335	255	582	7.6	71
701	Mrs. R. Helbing	E. H. Chandler	E ?	-	3-19-63	15	51	24	20	234	23	30	1.4	14	293	225	513	7.6	71
801	F. McMullan	--	E ?	-	9-25-62	18	53	31	20	285	18	28	1.1	8	317	259	545	7.8	70
§ 901	C. E. Davidson Jr.	--	E	430	7-28-60	18	57	31	30	252	27	60	2	13	362	270	621	6.9	-
901	do	--	E	430	9-25-62	19	57	30	35	261	28	58	2	14	371	267	643	7.6	71
903	A. Kincaid est.	G. Montgomery	E	400	7-8-63	15	52	25	27	231	24	39	1.9	20	318	232	552	8.6	70
24-101	W. E. Friend Jr.	--	E	375	9-4-62	18	54	25	17	244	26	23	2	< .4	285	236	498	7.5	70
102	R. A. Harrell	--	E ?	-	9-5-62	17	55	26	21	238	40	28	1.7	9	315	244	533	7.6	70
201	J. Childress	--	E	401	8-29-62	15	50	26	17	237	28	22	2.1	4.9	282	232	492	7.8	70
202	do	--	E	375	8-29-62	13	57	17	12	228	14	18	1.1	5.8	250	214	441	7.8	70
203	R. A. Harrell	--	E ?	-	9-5-62	16	54	21	16	233	22	23	2	4.6	274	220	465	7.7	70
204	C. E. Davidson III	--	T,E	544	9-11-62	14	57	42	217	312	256	178	2.5	1.6	921	314	1,470	7.5	70
301	P. L. Childress	--	E	400	8-29-62	16	51	29	13	257	20	15	1.9	2	274	243	498	7.7	70
302	Clayton Ranch Co.	--	E ?	-	8-30-62	14	48	27	18	248	26	20	1.7	2.2	279	231	486	7.3	72
§ 401	Crockett County Water Control District	--	E	420	8-15-60	14	52	22	20	230	25	24	2.2	12	292	220	480	7.3	73
402	do	--	E	420	8-15-60	15	54	20	21	227	25	26	2.1	11	296	216	482	7.1	72
§ 403	do	--	E	420	10-23-61	15	36	19	--	220	25	29	.1	23	290	218	508	6.9	69
§ 404	do	--	E	420	10-23-61	15	52	22	--	225	25	24	2.3	12	281	220	492	6.8	69
405	C. E. Davidson III	--	E	420	9-11-62	17	56	21	20	229	26	29	2	10	295	226	491	7.5	74

See footnotes at end of table.

Table 3.--Chemical analyses of water from wells and springs in Crockett County--Continued

Well	Owner	Lessee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
HJ-54-24-502	C. E. Davidson III	--	E	903	9-11-62	17	50	26	27	229	35	31	2.7	15	317	233	535	7.6	70
503	do	--	E	395	9-11-62	16	56	23	21	238	33	25	2.3	9	302	237	510	7.7	70
602	Clayton Ranch Co.	--	E	421	8-30-62	15	51	27	28	224	30	40	2	13	316	237	557	7.6	71
603	[illegible]	--	E	430	8-30-62	17	52	32	43	219	34	79	1.7	38	405	261	665	7.5	72
604	D. Jones	--	E ?	-	9-5-62	18	54	27	24	248	23	45	1.2	5.8	320	249	553	7.5	72
701	J. Wilkins	--	E	410	9-13-62	18	49	25	24	236	22	31	2	12	299	227	515	7.6	70
702	C. E. Davidson Jr.	--	T,E	565	9-11-62	13	75	55	278	306	370	245	2.5	1.6	1,190	413	1,800	7.5	70
703	do	--	E	511	9-25-62	20	51	30	30	257	24	47	2	14	344	249	588	7.5	71
801	J. Wilkins	--	E	389	9-13-62	17	55	23	22	259	14	30	1.1	8	297	231	506	7.6	-
802	do	--	E ?	-	9-13-62	14	52	23	27	229	26	32	1.5	11	299	223	515	7.5	-
901	R. Jones	--	E	400	9-4-62	16	47	22	9	231	14	14	1.3	8	245	208	417	7.5	70
903	do	--	- ?	-	9-4-62	18	48	27	35	240	29	51	1.2	9	336	232	574	7.6	-
27-301	B. B. Ingham	--	T,A	42	3-1-63	34	83	34	30	383	48	35	2.2	2.9	456	345	762	7.5	71
302	do	--	T,E?	-	3-1-63	10	73	58	190	336	334	158	2.6	< .4	991	418	1,590	7.7	70
303	do	--	T	225	3-1-63	10	93	74	243	338	444	226	2.5	< .4	1,259	538	1,970	7.7	-
602	R. B. Dudley	--	A	40	3-1-63	36	83	31	64	338	97	65	2.3	10	554	335	919	7.3	71
801	A. Hoover	--	A	70	3-7-63	21	71	20	21	272	26	32	1.5	9	336	258	580	7.4	72
28-101	P. C. Perner	--	T,E	600	3-11-63	12	77	64	191	349	376	143	2.5	< .4	1,038	457	1,660	7.5	70
102	do	--	T,E	600	3-11-63	16	56	42	71	298	127	64	2.2	4.2	529	311	871	8.2	-
201	do	--	T,E	401	3-11-63	37	21	22	143	142	125	153	1.7	< .4	539	145	976	8.1	-
[illegible]	do	--	E	380	3-11-63	18	54	31	17	278	38	20	1.7	< .4	317	261	555	7.4	70
203	L. B. Cox Jr.	--	T,E	223	3-12-63	22	89	21	32	276	23	85	1.1	6	415	309	748	7.6	70
304	do	--	T,E	600	3-12-63	12	135	88	261	332	600	293	2.7	< .4	1,555	700	2,360	7.4	-
402	R. B. Dudley	--	T,E	190	3-1-63	10	96	79	223	339	470	216	3.2	< .4	1,264	560	1,995	7.6	72
404	do	--	T,E	600	3-1-63	12	46	21	25	267	35	31	2.6	< .4	314	244	563	7.5	70
[illegible]	--	--	T,E	190	3-1-63	12	101	59	195	322	365	193	2	< .4	1,085	493	1,710	7.6	72

See footnotes at end of table.

Table 3.--Chemical analyses of water from wells and springs in Crockett County--Continued

Well	Owner	Leasee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
HJ-54-28-502	Mrs. M. Lee	J. B. Parker	T,E?	-	3-12-63	18	58	30	22	253	40	39	3.3	11	345	269	601	7.5	71
§ 601	do	do	T,E	319	9-15-60	10	99	74	289	350	492	270	-	.2	1,410	552	2,170	7.0	-
601	do	do	T,E	319	3-12-63	10	103	77	268	349	483	271	3.2	< .4	1,287	570	2,210	7.5	72
602	L. B. Cox Jr.	--	T,E	593	3-12-63	21	53	33	48	262	45	64	3.5	11	408	268	715	7.5	71
603	do	--	T,E	581	3-12-63	10	114	76	271	354	500	280	2.7	< .4	1,428	590	2,250	7.4	71
701	A. Hoover	--	T,E	618	3-7-63	12	49	29	52	238	59	64	3.1	4.4	390	241	677	7.5	72
702	L. B. Cox Jr.	--	T,E	600	3-11-63	13	51	28	40	239	47	56	3.2	6	367	245	645	7.5	72
801	A. C. Millspaugh	--	T,E	400	3-12-63	10	81	57	156	296	302	160	2.4	< .4	914	435	1,500	7.3	72
802	L. B. Cox Jr.	--	T,E?	-	3-12-63	8	78	56	156	316	269	170	2.8	< .4	895	425	1,540	7.6	72
901	A. C. Millspaugh	--	T,E	250	3-12-63	8	145	99	305	318	690	345	2.3	< .4	1,750	770	2,640	7.4	-
902	do	--	E ?	-	3-12-63	27	80	21	57	232	55	105	1.0	18	478	287	816	7.3	71
903	do	--	T,E?	-	3-12-63	8	110	80	295	353	550	293	3	< .4	1,513	600	2,350	7.6	71
29-103	V. B. Cox	L. B. Cox Jr.	E,A	108	3-12-63	32	70	24	34	256	33	75	1.3	4.2	400	272	675	7.9	-
104	R. Henderson	--	E,A?	-	3-20-63	20	75	18	16	276	21	26	.7	8	321	261	548	7.4	-
301	do	--	T,E	600	10-4-62	15	121	88	536	339	702	519	2.8	< .4	2,148	666	3,150	7.4	71
302	J. W. Henderson	--	T,E	645	3-18-63	12	80	51	354	337	483	312	3.4	< .4	1,461	412	2,370	7.3	-
§ 401	L. B. Cox Jr.	--	E,A?	-	9-15-60	21	69	18	22	269	28	27	-	7.3	336	246	547	7.0	-
401	do	--	E,A?	-	3-12-63	20	59	28	20	277	28	29	1.3	7	328	261	572	7.5	70
402	S. S. Millspaugh	A. C. Millspaugh	- ?	-	3-12-63	23	139	33	180	265	47	416	1.3	5.3	975	483	1,850	7.4	70
404	J. W. Henderson	--	T,E	670	3-18-63	20	31	32	301	409	143	279	3.5	< .4	1,019	209	1,800	8.5	-
502	do	--	E,A?	-	3-18-63	24	58	34	31	273	39	48	2.3	21	391	283	660	7.5	70
701	S. S. Millspaugh	A. C. Millspaugh	E,A?	-	3-21-63	22	109	29	75	276	39	203	.8	< .4	614	390	1,138	7.2	70
702	do	do	E,A?	-	3-12-63	18	149	42	530	279	161	950	1.5	4.2	1,993	550	3,590	7.3	70
703	I. Carson	--	T,E,A	227	3-21-63	12	96	53	151	260	316	181	2.0	< .4	944	476	1,550	7.4	71
903	J. W. Henderson	--	T,E	635	3-18-63	8	108	73	497	350	710	494	3.4	< .4	2,065	570	3,250	7.5	72
904	do	--	T,E	336	3-18-63	6	47	52	493	242	550	481	3	< .4	1,751	330	2,910	7.8	-

See footnotes at end of table.

Table 3.--Chemical analyses of water from wells and springs in Crockett County--Continued

Well	Owner	Leasee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
HJ-54-30-101	R. Henderson	--	E ?	-	3-20-63	12	46	33	19	256	32	23	3	9	303	250	543	7.5	-
102	J. W. Henderson	--	E ?	-	3-18-63	6	90	53	235	281	364	250	2.8	11	1,150	441	1,900	7.4	70
201	G. M. Couch est.	J. Couch	E	468	3-20-63	12	47	27	28	240	27	36	1.8	12	309	228	560	7.5	-
301	Mrs. R. Helbing	E. H. Chandler	- ?	-	3-19-63	16	47	23	15	233	14	20	1.4	12	263	213	463	7.7	70
401	Mrs. G. Bean	J. Bean	E ?	-	3-21-63	18	58	27	20	277	19	29	.9	7	315	255	555	7.6	71
402	do	do	E ?	-	3-21-63	15	59	21	25	253	27	35	1.8	3.1	311	234	550	7.2	-
501	do	do	E ?	-	3-21-63	14	48	19	15	214	17	23	.8	5.5	247	199	435	7.6	70
502	E. H. Hunt	--	E ?	-	6-3-63	14	51	32	217	283	240	181	2.4	< .4	876	256	1,450	7.5	71
601	Mrs. R. Miller	--	E ?	-	4-15-63	14	54	19	8	242	11	12	.7	5.5	243	214	440	7.5	70
701	B. Robertson	--	E	400	3-21-63	20	63	26	15	283	16	23	1.1	10	313	262	535	7.4	-
702	do	--	E	366	3-21-63	16	51	28	13	275	14	18	.7	5.3	281	244	500	7.4	71
703	do	--	E	320	3-21-63	14	54	26	12	270	13	19	.8	6	278	243	496	7.6	71
704	Mrs. G. Bean	--	E ?	-	3-21-63	18	85	15	12	306	13	19	1	7	320	276	560	7.5	70
802	C. C. Montgomery	M. Montgomery	E ?	-	4-25-63	16	38	27	13	231	15	18	1.7	4.5	247	205	440	8.0	-
901	W. C. Montgomery	F. Earwood	E ?	-	6-3-63	16	61	17	11	249	9	16	.8	5	258	224	457	7.4	-
31-201	F. McMullan	--	E	275	9-25-62	19	74	17	19	277	21	29	.8	9	325	255	550	7.5	70
203	do	--	E ?	-	9-25-62	17	84	30	193	257	29	343	.5	3.1	326	331	1,500	7.6	70
204	C. E. Davidson Jr.	--	T,E	432	9-25-62	10	76	52	693	371	649	601	2.5	< .4	2,266	404	3,350	7.6	72
402	Mrs. R. Miller	--	E ?	-	4-15-63	14	56	31	12	244	20	17	.5	4.5	265	225	472	7.4	-
403	do	--	E ?	-	4-15-63	15	57	22	10	266	13	15	.6	4.5	268	233	483	7.6	70
502	E. Baggett	--	E ?	-	9-26-62	14	51	26	10	267	16	13	.4	4.9	266	235	473	7.5	70
601	C. E. Davidson Jr.	--	E ?	-	9-26-62	25	63	19	13	262	15	17	.5	11	293	234	505	7.5	70
602	E. Baggett	--	E ?	-	9-26-62	25	72	20	16	292	17	21	.4	12	327	264	555	7.4	70
604	do	--	T,E ?	-	9-26-62	11	98	73	430	338	560	406	2.5	< .4	1,747	546	2,600	7.2	70
701	Mrs. R. Miller	--	E ?	-	4-15-63	14	48	25	14	251	15	22	1	< .4	262	223	474	7.5	-
703	W. C. Montgomery	F. Earwood	E ?	-	6-3-63	14	47	19	10	211	15	16	.7	7	233	196	410	7.5	-

See footnotes at end of table.

Table 3.--Chemical analyses of water from wells and springs in Crockett County--Continued

Well	Owner	Leasee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
HJ-54-31-801	E. Baggett	--	E ?	-	9-26-62	15	60	16	9	242	13	15	.5	8	255	216	445	7.5	70
802	do	--	T,E	570	9-26-62	17	48	29	17	249	18	28	1.3	11	291	241	524	7.6	70
901	do	--	E ?	-	9-26-62	22	67	19	13	273	16	21	.4	6	298	245	502	7.5	71
32-102	S. Scheuber	--	E ?	-	9-14-62	19	52	28	14	279	11	17	1	3.8	283	246	487	7.5	-
103	Mrs. A. McMullan	--	E	421	9-12-62	17	52	30	26	274	11	37	1.3	< .4	329	253	553	7.6	70
104	do	--	E ?	-	9-12-62	18	48	23	10	240	12	13	.7	11	254	216	428	7.5	70
201	S. Scheuber	--	E	378	10-25-60	11	42	19	26	218	15	26	1.2	6	253	183	440	7.7	-
201	do	--	E	378	9-13-62	16	56	21	16	250	9	25	1	7	274	226	488	7.4	-
202	do	--	E	420	9-13-63	18	55	33	61	265	31	105	1.3	10	444	271	785	7.5	-
204	S. Henderson	--	E ?	-	9-12-63	14	51	25	15	264	12	22	1.3	3.1	273	231	468	7.7	-
205	Mrs. A. McMullan	--	E	490	9-12-63	13	47	25	23	266	17	22	.7	2	281	223	485	7.5	70
301	S. Scheuber	--	T,E?	-	9-13-63	15	44	22	179	298	144	125	2.2	3.1	681	202	1,092	7.7	-
302	S. Henderson	--	E	476	9-12-63	17	52	29	32	254	19	53	1	4.9	333	248	580	7.7	72
303	do	--	E ?	-	9-12-63	18	50	25	13	264	12	18	.7	5.3	272	229	460	7.4	72
304	do	--	E ?	-	9-12-63	14	59	23	14	266	10	21	.6	10	283	242	490	7.5	72
401	J. T. Davidson	--	E	450±	9-26-62	22	46	23	12	234	13	20	.8	6	258	209	445	7.6	70
402	do	--	E ?	-	9-26-62	22	43	25	12	228	14	19	1	11	261	208	459	7.6	70
501	S. Henderson	--	T,E	419	9-12-62	12	40	26	531	434	422	416	3.3	< .4	1,662	207	2,610	7.7	72
503	M. Read	--	E	397	7-2-63	11	55	20	12	238	18	17	.6	5	256	221	442	7.7	72
504	do	--	E	322	7-2-63	10	49	27	14	266	16	17	.6	< .4	265	235	465	7.7	71
601	D. K. McMullan Jr.	--	E ?	-	6-28-63	14	48	24	12	254	11	15	.7	4.5	254	223	448	7.6	74
602	Hudspeth Memorial Hospital	--	E ?	-	7-6-63	13	47	24	8	239	10	12	.6	5	238	216	419	7.8	71
801	S. Perner	--	E	495	10-3-63	18	51	24	9	262	8	13	.3	4.9	257	225	445	7.3	75
803	do	--	T,E?	-	10-3-63	16	32	18	480	464	317	342	3.8	< .4	1,437	153	2,250	7.7	71
901	do	--	T,E	442	10-3-63	16	19	12	241	355	130	127	1.5	< .4	722	97	1,170	7.6	70

See footnotes at end of table.

Table 3.--Chemical analyses of water from wells and springs in Crockett County--Continued

Well	Owner	Lessee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
HJ-54-32-902	F. C. Friend	D. K. McMullan Jr.	E ?	-	6-28-63	12	61	22	6	268	9	11	.6	3	257	241	450	7.1	76
§ 35-202	B. Dunlap	--	A	80	9-14-60	23	88	18	38	275	42	68	-	13	447	294	722	6.9	-
202	do	--	A	80	3-6-63	24	91	19	41	379	50	70	.7	14	396	304	760	7.2	72
203	A. Hoover	--	E ?	-	3-6-63	20	49	22	13	216	22	24	1.4	10	267	216	475	7.5	-
303	W. P. Hoover Jr.	--	A	165	3-6-63	24	78	9	10	253	13	16	.5	12	287	233	495	7.2	72
402	B. Dunlap	--	E,A	100	3-6-63	19	349	118	641	179	1,012	1,067	1	< .4	3,295	1,354	4,850	7.1	72
501	do	--	E,A	112	3-6-63	10	132	161	530	220	660	880	2.3	< .4	2,483	990	3,850	7.2	72
502	do	--	E,A	98	3-6-63	28	134	36	105	242	156	238	1	15	832	482	1,390	7.1	-
503	W. P. Hoover Jr.	--	E,A ?	-	3-7-63	15	45	30	31	229	30	46	3.1	16	329	235	571	7.4	70
601	B. Hoover	--	T,E ?	-	3-6-63	10	78	53	275	329	374	254	3.1	< .4	1,208	413	1,960	7.5	71
602	W. P. Hoover Jr.	--	E	600	3-7-63	18	53	24	17	253	16	25	1.6	11	290	233	500	7.6	72
§ 802	L. B. Hoover	--	A	60	9-15-60	24	100	26	47	268	50	125	-	15	555	356	919	6.9	-
802	do	--	A	60	3-7-63	23	237	62	313	226	364	680	1.5	6	1,798	850	3,010	7.3	73
803	do	--	T	180	3-7-63	10	55	45	423	310	343	474	3.2	< .4	1,505	324	2,550	7.6	73
901	W. P. Hoover Jr.	--	E ?	-	3-7-63	22	47	22	13	214	24	21	1.5	5.3	261	209	438	7.6	-
36-101	L. Hoover est.	S. Wills	T,E	600	3-7-63	12	68	49	167	315	250	162	2.7	< .4	866	373	1,440	7.5	71
201	P. Holmsley	--	T,E	460	3-12-63	12	71	50	155	309	270	145	2.3	< .4	857	381	1,400	7.9	-
202	do	--	T,E	475	3-12-63	23	100	7	63	193	46	112	.2	7.6	522	280	863	7.5	72
203	do	--	T,E ?	-	3-12-63	10	95	74	271	328	500	263	3.2	< .4	1,377	540	2,180	7.4	73
401	L. Hoover est.	S. Wills	T,E	600	3-7-63	12	75	52	195	328	300	182	3.0	2.4	982	402	1,550	7.5	-
402	do	do	T,E	600	3-7-63	16	45	30	22	226	27	30	3.6	21	306	234	525	7.5	72
501	do	do	E	600	3-7-63	14	48	25	20	239	31	22	2.3	< .4	280	222	482	7.5	-
502	do	do	E	350+	3-7-63	10	86	101	394	316	650	390	3.5	< .4	1,779	630	2,850	7.7	-
601	do	E. Graves	T,E ?	-	3-12-63	10	108	81	286	349	540	292	2.8	< .4	1,492	600	2,330	7.4	72
602	I. Carson	--	E	600	3-21-63	10	45	26	16	239	15	29	1	< .4	260	220	434	7.6	-
701	L. Hoover est.	--	E	600	3-7-63	16	48	24	23	221	21	38	2.7	9	291	219	532	7.6	70

See footnotes at end of table.

Table 3.--Chemical analyses of water from wells and springs in Crockett County--Continued

Well	Owner	Leasee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
HJ-54-36-702	T. Mitchell	--	E	650	3-7-63	16	47	24	26	224	24	43	2.8	10	303	218	548	7.6	70
703	do	--	E	650	3-11-63	15	57	23	16	251	18	28	1.5	3.5	287	234	513	7.1	72
801	do	--	E	150	3-11-63	14	32	32	13	231	15	20	2.6	4.9	248	213	455	7.3	71
802	do	--	T,E	250	3-11-63	10	95	75	276	351	489	267	2.8	< .4	1,388	550	2,200	7.4	73
901	F. White	J. Young	E ?	-	3-14-63	21	94	25	54	276	25	134	.5	9	490	335	905	7.5	70
37-101	J. W. Henderson	--	E,A?	-	3-18-63	21	161	45	497	265	154	940	1.4	7	1,956	580	3,450	7.3	70
102	I. Carson	--	E	180	3-21-63	20	119	36	328	275	107	640	.8	7	1,423	521	2,530	7.3	-
103	--	--	T,E,A	200	3-21-63	9	96	82	276	200	520	330	2.3	11	1,424	580	2,250	7.1	-
201	J. W. Henderson	--	T,E?	-	3-18-63	12	42	31	367	378	317	293	2.8	< .4	1,251	233	2,050	7.6	73
202	do	--	T,E?	-	3-18-63	10	99	61	580	372	670	530	3.4	< .4	2,136	496	3,350	7.4	73
203	do	--	T,E	468	3-18-63	10	48	28	309	351	270	257	2.3	< .4	1,097	235	1,820	7.5	72
302	do	--	T,E	336	3-18-63	10	99	61	580	377	710	520	2.8	< .4	2,154	520	3,300	7.5	72
303	do	--	T,E?	-	3-18-63	10	103	71	520	354	690	496	3.5	< .4	2,064	550	3,270	7.4	72
305	B. Robertson	--	T,E	350	3-21-63	12	70	54	520	354	590	422	2.7	< .4	1,845	395	2,950	7.6	-
401	J. W. Henderson	--	E,A	98	3-18-63	21	175	36	261	285	91	570	1.1	7	1,302	590	2,350	7.4	74
403	I. Carson	--	T,E	191	3-21-63	12	110	74	258	296	455	283	1.7	< .4	1,340	580	2,130	7.5	70
501	J. Childress	--	E ?	-	6-5-63	20	117	28	215	279	57	415	.5	9	1,009	404	1,800	7.4	-
502	do	--	E	516	6-5-63	18	50	31	26	264	25	32	1.6	10	316	250	569	7.4	-
503	do	--	E ?	-	6-5-63	14	47	31	16	256	26	25	.9	2	288	244	511	7.6	-
505	do	--	T,E	360	6-5-63	12	31	64	397	345	397	367	1.6	< .4	1,440	340	2,350	7.4	-
601	do	--	E ?	-	6-5-63	14	48	25	14	251	16	17	.6	9	267	222	460	716	-
602	do	--	E ?	-	6-5-63	22	32	21	11	193	10	16	.5	< .4	208	165	354	7.9	-
701	B. Clegg	--	E,A?	-	3-14-63	20	172	41	190	260	57	520	.5	9	1,138	600	2,130	7.1	69
702	do	--	E,A	140	3-14-63	21	126	34	253	275	77	493	1.1	9	1,149	454	2,090	7.5	72
704	do	--	E,A	140	3-14-63	19	65	20	20	249	19	38	1.3	11	315	244	560	7.5	70
705	do	--	E,A?	-	3-14-63	21	114	25	74	257	34	208	.5	9	612	338	1,125	7.4	71

See footnotes at end of table.

Table 3.--Chemical analyses of water from wells and springs in Crockett County--Continued

Well	Owner	Leasee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
HJ-54-37-706	B. Clegg	--	E	225	3-14-63	18	73	25	48	270	36	96	1.3	3.5	434	287	770	7.5	-
801	Mrs. R. Watson	--	E ?	-	3-14-63	19	58	21	20	248	17	33	1	7	298	232	525	7.6	-
901	do	--	T,E	350	3-14-63	6	50	46	570	318	620	473	3.2	< .4	1,924	316	2,100	7.4	-
902	V. I. Pierce	--	T,E	565	5-2-63	12	62	48	600	368	690	474	3	< .4	2,070	355	3,160	7.5	73
§ 38-101	do	--	E	570	7-26-60	-	-	-	--	237	--	38	-	-	306	240	511	7.2	-
101	do	--	E	570	5-2-63	17	42	27	21	232	17	29	2	7	276	216	496	7.5	73
103	do	--	E ?	-	5-2-63	16	56	18	7	243	10	12	.6	5	244	214	430	7.4	73
202	C. C. Montgomery	M. Montgomery	E	401	4-25-63	16	43	20	12	212	13	16	1.1	4.5	230	190	406	7.9	-
203	do	do	E ?	-	4-25-63	14	43	23	11	227	13	16	1	7	240	204	432	7.6	-
§ 301	B. Hoover	--	E	563	7-26-60	18	49	30	9.4	238	20	20	3	18	314	246	499	7.0	-
302	V. I. Pierce	--	E ?	-	5-3-63	15	49	23	13	239	11	18	1.1	5	253	216	455	7.4	-
305	J. Childress	--	E ?	-	6-5-63	13	57	15	8	234	7	13	.6	< .4	229	206	410	7.4	-
401	V. I. Pierce	--	E ?	-	5-2-63	15	42	24	14	220	16	18	1.7	4.5	243	205	435	7.5	70
402	do	--	T,E?	-	5-2-63	15	47	28	590	388	580	444	3.7	< .4	1,899	234	2,940	7.6	73
501	do	--	E ?	-	5-2-63	15	67	13	6	246	7	11	.4	5	245	220	438	7.4	71
502	do	--	E	400	5-2-63	15	44	22	8	221	8	13	1	7	227	201	408	7.7	71
§ 601	J. Childress	--	E	360	7-27-60	-	-	-	--	256	632	538	-	-	2,275	260	3,250	8.5	-
701	V. I. Pierce	--	E ?	-	5-2-63	17	50	26	47	272	44	44	1.1	3	467	232	635	7.5	71
801	do	--	E ?	-	5-2-63	15	46	21	7	228	6	11	.5	4	223	199	400	7.6	-
902	B. Childress	--	E ?	-	5-3-63	15	53	20	9	248	8	14	.5	2.5	244	217	441	7.5	72
903	do	--	E	354	5-3-63	18	62	15	9	253	8	13	.3	3	252	219	450	7.5	-
39-103	R. Miller	--	E	405	5-3-63	18	52	12	14	193	12	23	.6	7	234	178	413	7.4	-
104	V. I. Pierce	--	E	410	5-3-63	15	48	16	15	195	15	22	.6	5	233	184	415	7.6	72
201	F. Hagelstein	--	T,E	356	9-23-62	12	51	37	595	378	576	469	3	< .4	1,929	282	2,920	7.6	73
204	V. I. Pierce	--	E ?	-	5-3-63	20	63	19	21	260	19	28	1	5	304	237	532	7.6	-
301	F. Hagelstein	--	T,E ?	-	9-23-62	11	91	68	562	367	634	536	2.5	< .4	2,085	508	3,130	7.4	74

See footnotes at end of table.

Table 3.--Chemical analyses of water from wells and springs in Crockett County--Continued

Well	Owner	Leasee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
HJ-54-39-502	R. Miller	--	E ?	-	5-3-63	18	63	21	12	273	10	17	.4	7	282	242	495	7.4	71
601	R. A. Harrell	--	E ?	-	10-5-63	19	63	20	10	272	11	16	.4	11	286	240	480	7.6	-
602	J. Miller	--	E	325	10-3-63	21	64	17	10	260	8	18	.3	8	274	230	476	7.4	71
701	J. Childress	--	E ?	-	6-5-63	14	59	12	6	228	6	10	.3	4	223	196	390	7.5	-
702	J. Miller	--	E	320	10-3-63	20	55	23	3	264	4	9	.1	13	257	231	450	7.4	74
703	do	--	E ?	-	10-3-63	20	58	19	8	259	8	12	.3	4.4	257	224	440	7.4	70
704	J. S. Pierce III	--	E ?	-	5-3-63	17	47	27	13	256	20	17	.5	2	270	229	473	7.9	-
706	J. Childress	--	E ?	-	6-5-63	14	52	25	7	267	13	12	.4	< .4	255	232	470	7.5	-
902	Mrs. A. Smith	--	E ?	-	10-3-63	18	55	10	8	193	6	15	.1	14	220	178	380	7.6	71
903	do	--	E ?	-	5-3-63	15	41	27	9	244	13	13	.4	2.5	241	212	430	7.6	-
904	do	--	E ?	-	5-3-63	14	49	20	7	231	6	11	.3	6	227	204	407	7.5	72
40-201	R. C. Ward	--	E ?	-	6-28-63	13	55	28	19	276	16	30	.7	< .4	298	252	527	7.6	72
202	do	--	E ?	-	6-28-63	11	32	23	412	470	285	295	3	< .4	1,292	173	2,100	7.8	70
301	F. Friend	--	E ?	-	9-14-62	15	58	23	9	282	10	14	.3	< .4	268	240	460	7.4	-
302	B. Seahorn	--	T,E	300	7-5-63	9	35	21	493	418	438	327	3.2	< .4	1,532	175	2,420	7.9	72
401	R. A. Harrell	--	E ?	-	10-5-62	15	53	22	9	256	11	15	.3	6	257	222	440	7.6	-
602	B. Seahorn	--	E	234	9-14-62	12	34	21	526	440	412	335	3.5	< .4	1,560	170	2,440	7.7	-
603	do	--	E	300	7-5-63	16	55	27	10	277	8	13	.6	9	275	249	480	7.6	72
605	do	--	E	230	7-5-63	16	56	29	19	277	16	29	.6	9	311	260	543	7.6	72
606	J. Baggett	--	E ?	-	10-3-62	18	61	17	6	240	4	14	.3	14	252	223	434	7.5	71
701	Mrs. C. Adams	G. Montgomery	- ?	-	10-5-62	16	45	23	9	232	12	16	.7	9	245	209	421	7.5	72
702	do	do	E ?	-	10-5-62	17	68	6	11	209	8	20	.1	19	252	195	422	7.6	70
902	J. Baggett	--	E ?	-	10-3-63	25	54	27	21	280	8	29	.4	8	310	246	552	7.6	71
904	do	--	E	400	10-3-63	16	42	25	10	236	12	17	.4	5.3	244	209	426	7.5	71
49-601	Mrs. M. Mitchell	B. Montgomery	T,E	650	3-11-63	15	59	30	42	231	49	77	3.2	16	405	272	725	7.6	-
602	do	do	T,E	650	3-11-63	14	56	29	23	212	72	39	2.9	13	341	261	600	7.7	73

See footnotes at end of table.

Table 3.--Chemical analyses of water from wells and springs in Crockett County--Continued

Well	Owner	Leasee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
BJ-54-44-101	T. Mitchell	--	E	300	3-11-63	14	46	25	9	227	19	15	2.6	3.8	246	217	440	7.4	73
102	do	--	T,E	650	3-11-63	12	67	44	153	296	229	146	2.4	< .4	799	348	1,350	7.5	74
201	J. B. Blakeney	--	E	300	3-19-63	15	49	23	12	233	17	18	1.8	4.9	256	218	445	7.5	71
301	do	--	T,E	280	3-19-63	10	96	46	342	337	560	306	1.5	< .4	1,558	550	2,440	7.5	-
302	do	--	E,A	185	3-19-63	20	140	33	278	265	91	550	.7	7	1,250	487	2,250	7.3	70
303	do	--	E,A ?	-	3-19-63	22	182	43	185	248	85	510	.5	7	1,157	630	2,130	7.2	70
304	do	--	E,A ?	-	3-19-63	21	99	23	86	260	36	194	.5	10	598	344	1,110	7.4	71
401	T. Mitchell	--	E	650	3-11-63	14	45	25	22	222	24	32	2.9	6	280	216	506	7.3	73
402	do	--	E	650	3-11-63	15	66	15	8	255	10	14	1	4.4	258	227	465	7.3	73
501	do	--	T,E	175	3-11-63	16	88	35	167	293	166	231	1.4	7	849	363	1,490	7.2	70
502	do	--	T,E	200	3-11-63	12	91	59	197	317	326	232	2.3	3.1	1,077	473	1,730	7.5	70
503	J. B. Blakeney	--	E ?	-	3-19-63	14	49	28	17	246	28	25	1.2	5.3	289	238	510	7.6	71
601	do	--	T,E	250	3-19-63	10	95	71	336	353	530	296	2.3	< .4	1,514	530	2,390	7.7	70
602	do	--	E,A ?	-	3-19-63	19	94	24	95	250	60	185	.6	8	608	332	1,095	7.4	70
45-102	B. Clegg	--	E,A	170	3-14-63	21	76	26	73	220	26	172	1	4.2	507	297	945	7.6	-
103	F. White	J. Young	E,A ?	-	3-19-63	20	96	25	79	264	30	182	.5	9	572	344	1,050	7.6	73
105	J. B. Blakeney	--	E,A	181	3-19-63	19	72	17	21	260	14	38	.5	9	319	248	568	7.5	71
106	do	--	E ?	-	3-19-63	14	64	21	20	273	12	35	.5	< .4	301	246	536	7.5	-
201	Mrs. R. Watson	--	E ?	-	3-14-63	19	119	33	238	267	74	462	.7	7	1,084	434	2,000	7.7	-
202	do	--	T,E	200	3-14-63	16	59	30	97	275	121	82	1.4	3.1	536	290	900	7.5	70
301	do	--	E	325	3-14-63	15	53	31	26	284	30	30	1	7	332	259	581	7.7	-
401	J. B. Blakeney	--	E,A	170	3-19-63	19	71	17	22	265	13	40	.5	6	319	248	569	7.5	70
402	do	--	E	246	3-19-63	18	69	19	23	265	13	40	.5	8	321	250	570	7.5	71
403	do	--	E ?	-	3-19-63	18	67	20	21	265	14	38	.5	8	317	250	560	7.6	71
501	M. Morrison	--	E ?	-	4-22-63	15	48	28	19	259	27	22	1.4	2.5	290	236	521	7.5	71
503	do	--	T,E ?	-	6-18-63	10	54	41	171	285	239	136	2.8	< .4	794	303	1,290	7.5	76

See footnotes at end of table.

Table 3.--Chemical analyses of water from wells and springs in Crockett County--Continued

Well	Owner	Leasee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
HJ-54-45-601	T. A. Kincaid	--	E ?	-	4-22-63	14	51	26	15	265	19	17	1.2	2	275	233	500	7.6	73
602	do	--	E	429	4-22-63	14	57	17	11	233	12	17	.4	8	251	212	444	7.7	-
46-101	Mrs. S. M. Harvick	--	E ?	-	4-22-63	15	47	25	19	256	19	19	.3	2.5	273	221	490	7.6	-
102	do	--	E	400	4-22-63	16	47	23	10	240	12	13	.7	3	243	213	435	7.5	72
202	B. Childress	--	E ?	-	4-22-63	15	48	14	10	184	12	23	.4	9	221	180	397	7.2	-
204	do	--	E	380	5-3-63	15	46	26	13	248	15	18	.8	< .4	256	221	459	7.3	-
301	J. W. Owens	--	E	446	4-29-63	13	45	23	7	237	12	11	.7	3	232	208	420	7.6	72
302	B. Childress	--	E ?	-	5-3-63	15	52	21	7	248	10	12	.4	5	244	217	432	7.5	-
304	D. Jones	--	E ?	-	5-1-63	20	57	24	13	268	13	18	.5	9	287	241	500	7.6	-
401	Mrs. E. K. Ward	--	E ?	-	4-22-63	15	58	20	14	254	13	19	.5	5	270	227	487	7.5	73
403	do	--	E ?	-	4-22-63	15	52	23	10	250	13	16	1.2	4	257	223	471	7.4	-
501	W. West Jr.	--	E	465	4-25-63	13	51	27	14	253	26	18	1.4	< .4	272	237	495	7.5	71
502	do	--	E ?	-	10-5-60	16	52	26	18	277	12	20	-	9.6	290	236	497	7.0	-
606	D. Jones	--	E ?	-	5-1-63	16	49	21	14	233	13	19	.6	5	253	209	445	7.4	-
703	Mrs. E. K. Ward	--	E ?	-	4-22-63	15	52	21	19	210	12	34	.6	26	283	215	508	7.5	-
47-102	J. W. Owens	J. A. Marley	T,E ?	-	4-29-63	10	57	40	630	488	550	520	3.3	< .4	2,050	305	3,270	7.6	72
105	D. Jones	--	E ?	-	5-1-63	22	96	4	3	289	5	6	< .1	18	296	258	504	7.4	71
201	J. S. Pierce III	--	E ?	-	5-3-63	15	45	27	9	256	12	13	.5	2.5	250	221	442	7.6	72
202	do	--	E ?	-	5-3-63	18	50	27	14	275	12	16	.4	1	273	236	485	7.3	71
301	J. A. Marley	--	E ?	-	4-29-63	12	39	19	9	190	11	14	.4	9	206	175	375	7.6	70
302	J. S. Pierce III	--	E	475	5-3-63	14	42	22	11	212	10	17	.4	7	227	194	410	7.7	72
402	D. Jones	--	E ?	-	5-1-63	15	50	28	14	265	15	21	.7	8	282	241	501	7.4	72
502	J. A. Marley	--	E ?	-	4-29-63	13	48	24	14	242	14	20	.5	5	258	217	470	7.5	-
503	do	--	E ?	-	4-29-63	14	54	20	10	245	12	15	.4	9	254	215	452	7.5	71
602	C. B. Hudspeth est.	G. Montgomery	E	500	10-5-62	15	48	21	10	228	8	18	.3	12	244	208	434	7.4	72
603	J. A. Marley	--	E ?	-	4-29-63	16	58	18	10	246	10	15	.4	10	258	218	453	7.5	71

See footnotes at end of table.

Table 3.--Chemical analyses of water from wells and springs in Crockett County--Continued

Well	Owner	Leasee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
HJ-54-47-604	J. A. Marley	--	E ?	-	4-29-63	14	49	26	12	259	12	17	.4	8	265	231	477	7.7	71
901	C. B. Hudspeth	--	E ?	-	10-5-62	16	52	19	13	227	10	20	.4	19	261	209	450	7.6	72
48-101	Mrs. C. Adams	G. Montgomery	E ?	-	10-5-63	14	41	24	15	210	13	26	.4	10	250	201	438	7.8	73
102	do	do	E ?	-	10-5-63	14	50	24	9	261	9	15	.3	8	257	225	450	7.6	72
203	J. Baggett	--	E ?	-	10-3-63	20	55	19	10	242	9	18	.3	9	259	217	443	7.4	72
301	do	--	E ?	-	10-3-63	16	51	22	10	247	8	16	.3	9	253	218	436	7.7	70
303	do	--	E ?	-	10-3-63	18	49	22	8	237	8	18	.3	12	252	215	430	7.6	71
304	B. Savell	--	E ?	-	7-3-63	14	50	24	9	255	8	14	.6	4.5	249	224	447	7.6	72
305	do	--	E ?	-	7-3-63	14	69	21	12	284	13	16	.7	7	293	259	512	7.6	71
403	C. B. Hudspeth Jr.	G. Montgomery	E ?	-	10-5-63	17	48	23	15	238	11	22	.4	10	263	212	470	7.6	72
404	do	do	E	400	10-5-63	17	49	23	13	245	9	18	.6	7	257	216	460	7.6	72
502	do	do	E ?	-	10-5-63	21	54	27	32	267	12	38	.5	25	341	245	596	7.6	72
601	Mrs. M. P. Barnes	--	E ?	-	7-2-63	15	70	20	11	284	12	15	.6	7	290	259	512	7.5	71
602	C. L. Kenley	--	E ?	-	7-3-63	15	50	29	11	273	13	15	.7	4.5	272	245	477	7.8	73
603	do	--	E ?	-	7-3-63	14	69	20	11	284	16	16	.6	2.5	289	253	505	7.5	-
801	C. B. Hudspeth	G. Montgomery	E ?	-	10-5-62	17	64	20	9	269	9	17	.3	10	278	239	478	7.5	72
901	Mrs. M. P. Barnes	--	E ?	-	7-2-63	15	59	25	10	275	14	15	.7	7	280	251	482	7.5	72
55-01-102	University of Texas	A. Delong	E ?	-	7-20-62	22	52	22	17	235	21	19	.8	2.2	222	218	480	7.6	-
103	do	W. W. Adams	E ?	-	8-21-62	17	53	19	17	231	21	20	.7	6.2	268	209	460	7.7	72
104	do	Mrs. L. StClair	E ?	-	8-21-62	16	56	24	17	266	24	21	1	4.7	295	238	510	7.6	69
105	do	L. Brooks	E	250	8-21-62	17	78	13	8	292	7	12	.2	< .4	279	251	475	7.6	69
401	do	do	E ?	-	8-21-62	21	60	14	22	234	17	24	.4	6.4	280	206	478	7.6	69
402	do	do	E ?	-	8-21-62	17	89	7	11	272	10	18	.2	12	298	250	512	7.4	69
701	do	S. Oglesby	E	365	8-20-62	17	55	19	12	244	12	15	.4	4.7	255	216	445	7.4	70
703	do	do	E ?	-	8-20-62	10	57	17	11	244	12	14	.5	2.9	244	215	442	7.5	70
704	do	do	E ?	-	8-20-62	15	54	21	12	240	15	17	.6	6.7	259	222	448	7.5	70

See footnotes at end of table.

Table 3.--Chemical analyses of water from wells and springs in Crockett County--Continued

Well	Owner	Leasee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
HJ-55-09-101	University of Texas	S. Oglesby	E	320	8-20-62	10	52	22	12	244	14	16	.5	5.3	251	219	455	7.4	71
103	J. Clayton	--	E ?	-	8-28-62	16	61	19	12	252	13	16	.4	3.1	264	230	463	7.7	71
402	A. Bailey	--	E ?	-	8-27-62	14	56	20	18	240	22	24	.5	2.2	275	225	479	8.2	74
403	J. Clayton	--	E ?	-	8-28-62	15	62	19	12	260	13	16	.3	2.7	268	233	473	7.6	71
701	A. Bailey	--	E	331	8-27-62	16	56	20	15	239	18	21	.6	4.2	269	223	474	7.8	-
17-101	P. L. Childress	--	E ?	-	8-29-62	18	61	22	16	258	21	22	.5	6.9	294	241	505	7.6	70
102	do	--	E	370	8-29-62	17	58	21	22	238	23	30	.7	6.9	296	230	507	7.8	72
104	Clayton Ranch Co.	--	E ?	-	8-30-62	15	65	21	12	273	15	15	.5	4.9	282	250	495	7.5	70
401	do	--	E	501	8-30-62	11	51	27	10	271	7	14	.3	2.2	256	238	451	7.6	72
402	do	--	E ?	-	8-30-62	15	32	38	9	260	10	14	.6	3.5	250	238	465	7.6	80
403	D. Jones	--	E ?	-	9-5-62	17	61	17	14	239	17	19	.8	6	270	224	462	7.5	72
404	R. Jones	--	E ?	-	9-4-62	15	72	15	9	256	23	14	.3	7	281	238	464	7.2	-
405	D. Jones	--	E ?	-	9-5-62	15	63	19	11	261	13	15	.6	5.8	270	236	465	7.4	70
701	R. Jones	--	E	415	9-4-62	16	50	26	24	259	21	29	1	4.9	299	232	513	7.5	71
702	do	--	E ?	-	9-4-62	19	51	32	43	273	25	57	.8	8	370	259	627	7.6	70
25-102	T. Glasscock	--	T,E ?	-	7-5-63	7	37	25	498	417	444	365	3.3	< .4	1,584	195	2,470	7.4	73
103	do	--	E ?	-	7-5-63	13	55	24	18	259	16	26	1	5.5	286	237	502	7.6	71
401	Hudspeth Memorial Hospital	--	E ?	-	7-6-63	10	49	24	10	248	11	15	.3	3	244	233	435	7.6	71
402	do	--	E ?	-	7-6-63	10	60	18	6	253	7	10	.3	4.5	240	224	420	7.9	71
403	do	--	- ?	-	7-6-63	9	47	23	6	242	9	9	.3	1	223	213	395	7.7	-
702	F. Friend	--	- ?	-	9-14-62	16	48	22	9	244	9	12	.3	4.2	241	211	413	7.7	-
704	do	--	- ?	-	9-14-62	15	56	24	10	281	9	15	.4	< .4	267	237	466	7.3	-
33-101	do	--	- ?	-	9-14-62	18	62	20	9	277	9	16	.2	4.2	275	240	464	7.5	-
102	do	--	- ?	-	9-14-62	14	47	25	10	251	10	15	.4	3.4	247	220	430	7.7	-
401	B. Seahorn	--	E	400	7-5-63	12	54	26	7	268	10	12	.3	4	257	241	455	7.6	72

See footnotes at end of table.

Table 3.--Chemical analyses of water from wells and springs in Crockett County--Continued

Well	Owner	Leasee	Water-bearing unit	Depth of well (ft.)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25° C.)	pH	Temp. (°F)
HJ-55-33-403	B. Friend	--	E	175	9-14-63	18	60	21	12	266	10	16	.3	10	278	237	472	7.5	-
702	Mrs. J. Friend	--	E ?	-	9-13-62	16	53	27	13	276	12	19	.3	3.8	279	241	475	7.6	-
703	do	--	E ?	-	9-13-62	19	58	27	14	288	13	19	.4	9	301	255	505	7.6	-
705	B. Savell	--	E	345	7-3-63	14	50	27	11	262	10	17	.6	2.5	261	235	466	7.6	-
41-101	do	--	E ?	-	7-3-63	14	51	25	9	256	12	14	.6	4	256	230	452	7.5	72
102	B. Hunt	--	E ?	-	7-3-63	15	70	21	11	285	13	15	.6	9	295	262	510	7.6	71
103	B. Savell	--	E ?	-	7-3-63	13	49	29	13	266	14	17	.7	5	272	240	478	7.7	70
401	B. Hunt	--	E ?	-	7-3-63	14	68	22	13	285	14	16	.7	8	296	259	510	7.7	-
403	do	--	E ?	-	7-3-63	15	75	18	9	289	10	14	.7	9	293	263	515	7.5	72
404	V. J. Glasscock	--	E ?	-	7-5-63	16	84	14	7	289	11	11	.6	12	298	266	505	7.6	72
701	Mrs. M. P. Barnes	--	E ?	-	7-2-63	11	49	31	10	275	16	14	.9	4	271	248	484	7.6	71

*Analysis reports sodium (Na) only.
†Analysis made by Texas A & M College.
‡Analysis made by commercial laboratory.
§Analysis made by U. S. Geological Survey.

Table 4.--Salt-water production and disposal in oil and gas fields in Crockett County, 1961, reported by operators

(Locations of fields are shown on Figure 16.)

Field	Producing horizon	Number of producing wells	Salt-water production (barrels)	Disposal in pits (barrels)	Injection into wells (barrels)
Amigo	San Andres	23	49,180	34,990	14,190
B & H	Queen	1	0	--	--
Bair	San Andres	1	0	--	--
Betty	Grayburg	2	0	--	--
Block 44	Ellenburger	1	15,330	--	15,330
Do.	Shallow	8	1,345	1,345	--
Block 46, East	Grayburg	1	0	--	--
Block 47	Shallow	5	0	--	--
Block 51	San Andres	1	0	--	--
Buckhorn	--	--	5,630	5,630	--
Clara Couch	San Andres	51	167,821	13,366	154,455
Cox, North	--	--	0	--	--
Crockett	Grayburg	91	411,960	229,500	182,460
Donham	--	--	920	--	920
El Cinco	Detrital	34	6	6	--
Do.	Devonian	33	8,565	8,565	--
Elkhorn	Ellenburger	43	2,716,311	--	2,716,311
Farmer	San Andres	140	233,403	28,220	205,183
Halff	--	90	14,725	14,725	--
Hanson	Grayburg	3	0	--	--
Hoover	Queen	4	400	400	--
Howard Draw	Shallow	4	9,005	9,005	--
Ingham	--	--	30	30	--
Lancaster Hill	San Andres	3	100	100	--
Maggie Neal	Grayburg	2	33	33	--
Mesa	Strawn	--	13,500	--	13,500

Table 4.--Salt-water production and disposal in oil and gas fields in Crockett County, 1961, reported by operators--Continued

Field	Producing horizon	Number of producing wells	Salt-water production (barrels)	Disposal in pits (barrels)	Injection into wells (barrels)
Midway Lane	Ellenburger	1	12,013	--	12,013
Do.	Permian	33	145,480	2,020	143,460
Do.	1300 Queen	24	241,519	1,079	240,440
Noelke	Clearfork	29	1,008,304	1,461	1,006,843
Do.	4400 Sand	--	110	110	--
Noelke, Northeast	--	--	465	100	365
Noelke, West	Clearfork	--	650	--	650
Noelke, Southeast	Queen	4	0	--	--
Do.	Queen, Lower	5	0	--	--
Olson	San Andres	122	2,854,799	--	2,854,799
Do.	Wolfcamp	--	10,500	--	10,500
Ozona, Northwest	Canyon	5	0	--	--
Ozona, West	Clearfork	--	0	--	--
Pure-Bean	San Andres	29	703,180	--	703,180
Ranch	Strawn	10	349,212	--	349,212
Refoil	Clearfork, Upper	3	0	--	--
Do.	2850 Clearfork	1	0	--	--
Do.	3200 Sand	22	365	365	--
Shannon	Grayburg	2	0	--	--
Do.	San Andres	160	534,112	61,721	472,391
Simpson	Seven Rivers-Queens	6	1,200	1,200	--
Tippett	--	15	28,220	20,883	7,337
Do.	Clearfork, Lower	1	1,050	1,050	--
Do.	Leonard, Lower	2	0	--	--
Do.	Tubb, Lower	2	3,360	3,360	--
Do.	Wolfcamp, Upper	3	232	232	--

Table 4.--Salt-water production and disposal in oil and gas fields in Crockett County, 1961, reported by operators--Continued

Field	Producing horizon	Number of producing wells	Salt-water production (barrels)	Disposal in pits (barrels)	Injection into wells (barrels)
Todd	Deep, Crinoidal	26	214,328	--	214,328
Do.	Deep, Ellenburger	55	3,319,706	180,873	3,138,833
Do.	Grayburg	1	0	--	--
Do.	San Andres	6	0	--	--
Todd, East	Ellenburger	--	228	228	--
Todd, North	San Andres	6	5,110	5,110	--
Todd, Northwest	Grayburg	2	90	90	--
Toborg	"Trinity"	--	1,589,941	1,173,111	416,830
Vaughn	San Andres	208	603,823	22,936	580,887
Do.	Ellenburger	2	1,460	1,460	--
Weger	San Andres	61	35,858	35,858	--
Weger, North	--	6	4,350	4,350	--
Weger, West	Grayburg	6	5,523	5,523	--
World	--	160	32,655,901	--	32,655,901
World, West	Strawn	34	8,357	4,745	3,612
Wyatt	Ellenburger	1	204	204	--
	Total.....		47,987,914	1,873,984	46,113,930

Table 5.--Chemical analyses of salt water produced in oil and gas fields in Crockett County

(Analyses in parts per million except specific conductance and pH.)

Analyses by Texas State Department of Health.

Field	Producing horizon	Lease	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	pH
Clara Couch	San Andres	E. J. McCurdy, Jr. Couch "B"	1,280	2,020	67,000	427	9,000	108,000	2.6	< 0.4	188,513	15,600	>12,000	7.2
Crockett	Grayburg	F. J. Finch University of Texas	16	147	1,960	1,100	87	2,700	--	< .4	5,520	646	8,950	8.9
Elkhorn	Ellenburger	Continental Oil Co. Shannon "A"	1,263	281	18,599	781	2,300	30,141	--	< .4	62,972	4,305	>12,000	7.7
Farmer	San Andres	E. G. Hall University of Texas	1,280	560	30,000	2,140	7,240	44,000	--	< .4	84,410	5,500	>12,000	8.5
Halff	--	J. R. Rich Medows "D"	3,120	2,150	23,900	4,090	4,320	44,000	3.3	< .4	79,754	16,700	>12,000	8.9
Hoover	Queen	Grandride Corp. A. C. Hoover	9,500	16,600	49,000	--	1,380	141,000	--	< .4	217,540	92,000	>12,000	4.4
Midway Lane	Ellenburger	Shell Oil Co. Chambers County School Land	1,820	354	24,700	580	1,720	41,500	2.0	< .4	70,381	6,000	>12,000	7.3
Do.	Permian	do	2,680	1,700	24,000	1,050	2,160	45,100	--	< .4	76,165	13,700	>12,000	7.4
Noelke	Clearfork	George Thompson	2,680	3,140	61,200	300	4,510	105,800	2.9	< .4	177,482	19,600	>12,000	7.0
Noelke, Southeast	Queen	F. Turner, Jr. Shannon "AA" and "BB"	1,740	732	15,700	425	3,696	27,290	.1	< .4	49,381	74	>12,000	7.2
Olson	San Andres	Marathon Oil Co. Shannon "O"	943	442	12,368	1,350	4,440	18,540	--	< .4	37,397	4,170	>12,000	7.2
Pure-Bean	do	Sinclair Oil Co. Nettie Holt	1,944	401	23,726	286	1,281	40,130	4.3	< .4	67,628	6,500	>12,000	6.8
Do.	do	Barron Kidd Isable Vaughn	1,020	720	23,828	1,423	575	39,725	--	< .4	66,568	5,500	>12,000	7.2
Ranch	Strawn	Continental Oil Co. C. T. Harris	800	354	17,300	0	2,140	27,300	4.7	< .4	47,899	3,450	>12,000	--
Shannon	San Andres	Petroleum Operators A. C. Hoover "E"	10,000	17,000	65,000	61	1,100	167,000	4.0	< .4	260,134	93,000	>12,000	6.0
Do.	do	D. L. Dorland Corp. Shannon	1,840	620	23,300	1,590	4,750	36,100	--	< .4	67,392	7,160	>12,000	7.2
Simpson	Seven Rivers-Queens	Petroleum Operators A. C. Hoover "K"	9,940	17,100	62,000	59	930	167,000	--	< .4	257,000	95,000	>12,000	6.3
Toborg	"Trinity"	Pan American Petroleum Corp. G. L. Thompson	129	140	2,475	184	16	4,447	2.5	< .4	7,314	897	11,330	7.6

Table 5.--Chemical analyses of salt water produced in oil and gas fields in Crockett County--Continued

Field	Producing horizon	Lease	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	pH
Todd	Deep, Crinoidal	Continental Oil Co. J. S. Todd	1,060	280	15,000	890	2,780	23,000	4.6	< 0.4	42,263	3,800	>12,000	7.2
Do.	Deep, Ellenburger	Humble Oil and Refining Co. Shannon "C"-7	1,116	262	15,436	708	2,850	24,050	--	--	45,800	--	--	7.5
Vaughn	San Andres	Kirby Moore Vaughn "Dixon"	2,000	800	27,000	1,000	4,900	44,000	2.9	< .4	79,203	8,400	>12,000	7.0
Weger	do	Harperd Huffman V. V. Weger "A"	1,263	584	28,392	1,550	7,413	42,445	--	< .4	80,925	5,550	>12,000	8.9
Weger, West	Grayburg	J. I. Moore University of Texas "E"	1,940	854	39,997	1,220	5,808	61,415	--	< .4	110,608	8,350	>12,000	7.8
World	do	Quinette and Leiderman Powell "E"	728	468	16,783	1,118	2,890	24,917	--	< .4	46,336	3,736	>12,000	7.1
World, West	Strawn	Cities Service Petroleum Co. Shannon "E"	10,700	670	4,760	20	464	27,700	2.3	< .4	44,306	29,500	>12,000	5.5

Table 6.--Oil and stratigraphic tests selected as data-control points

(For location of wells, see Figure 20)

Well	Operator	Lease and well
HJ 44-57-603	Sinclair	Sue Nolke Houser #1
903	Amercian Trading & Prod. Co.	University 1-D
HJ 44-58-503	Shell Oil Co.	University No. 1-5
HJ 44-59-504	Los Nietos	University No. 1
604	Pan American	University "DL" No. 1
807	Continental	C. T. Harris No. 2
808	do	C. T. Harris 1 "F"
HJ 44-60-503	Kewanee	University 1-S
805	Tenneco	Powell "A" No. 2
806	Continental Oil Co.	Powell E-2
904	Hydr Drilling Co.	Maggie Neal No. 2
HJ 44-61-605	Plymouth Oil Co.	University "M"-1
606	do	University "O"-1
607	Union Oil Co.	University "D"-1
608	Stanolind Oil & Gas Co.	University "CO"-4
609	Texas Oil & Gas Co.	University "B"-2
610	Hancock Oil Co.	University "A"-1
704	Lion Oil Co.	Neal No. 1
808	Seaboard Oil Co.	Strauss No. 2
809	Plymouth Oil Co.	University "X"-2
810	C. L. Brown, Jr.	Maggie Neal No. 4
905	Plymouth Oil Co.	University "I"-5
906	Slick Oil Co.	University "A"-1
HJ 44-62-404	Falcon Oil Corp.	University "B"-1
405	Stanolind	University No. 1
406	Superior Oil Co.	University - A-47-4-P
903	Pure Oil Co.	University "D"-1
904	do	University "D"-2
HJ 45-62-401	J. S. Abercrombie	Felps No. 1
903	El Cinco Prod. Co.	C. D. Johns No. 2
HJ 45-63-801	Texaco Inc.	W. A. Wood "B" NCT-2 No. 1
802	do	W. M. Weatherred No. 1
HJ 45-64-410	Humble Oil Co.	Mary D. Woolley No. 1
605	Burke Royalty	University No. 7
606	Clifford H. Sherrod, Jr.	University No. 1
702	Shell Oil Co.	Hill & State No. 1
703	Signal Oil Co.	R. M. Forristall "41" 2-A
HJ 54-02-104	Continental Oil Co.	Harris "B"-1
505	The Stratton Co.	Shannon "D"-1
506	Argo Oil Corp	Shannon No. 1
802	Ledge Petr. Co.	Bouscaren "A"-1
901	Sun Oil Co.	Shannon Est. "C"-1
902	do	Shannon Gas Unit No. 1

Table 6.--Oil and stratigraphic tests
selected as data-control points--Continued

Well	Operator	Lease and well
HJ 54-02-904	Robertson & Brown	Shannon "C"-1
905	The Stratton Co.	Shannon "C"-2
906	do	Shannon "G"-1
907	Amerada Petr. Corp.	Shannon Est. D-1
HJ 54-03-206	Cities Service Oil Co.	Shannon "L"-1
404	Monterey Oil Co.	Harris 23-40
HJ 54-04-105	Cities Service Oil Co.	Shannon "M"-1
205	Tennessee Prod. Co.	Powell "B"-12
206	H. G. Eastham, Jr.	L. P. Powell "A"-3
207	Amerada Petr. Corp.	L. P. Powell 1
208	do	L. P. Powell 7
209	do	Shannon "F"-6
210	do	A. S. Walser 1
304	do	Wesler 2
305	Earl T. Hays	Maggie Neal 1
401	Superior Oil Co.	Shannon Est. 1-22
407	Standard Oil Co.	M. S. Shannon 1-2
408	Superior Oil Co.	Shannon 1-10
503	Monsanto Chem. Co.	Alex 1
601	A. W. Cherry Oil Co.	M. A. Shannon 1
603	Magnolia Petr. Co.	Shannon 1-B
702	C. M. Cribbs	J. M. Shannon 1
705	Amerada Petr. Corp.	Shannon E-1
706	John I. Moore	Shannon 1-67
707	Amerada Petr. Corp.	W. M. Graham 1
805	Standard Oil Co.	Shannon Est. 3
901	Magnolia Petr. Co.	Shannon Hospital - 1
HJ 54-05-207	Gulf Oil Corp.	Texas "CCC" 1-E
304	Christo Ray Petr. Co.	University 1
305	Guy Maybee Drlg. Co.	University 1-A
405	E. B. Fletcher	Shannon Est. 1
HJ 54-06-104	G. W. Eason	University Blk. 46 B-1
402	M. D. Bryant	University 1
403	Superior Oil Co.	University 1-27
404	do	University 3-27
405	Stanolind Oil Co.	University B.P.-1
501	Sinclair Oil Co.	University 62-3
511	Sinclair & Atlantic	University 62A-1
512	do	University 67-1
513	Sinclair Oil Co.	University 68-7
705	Continental Oil Co.	University 27-7
706	do	Shannon "A"-11
801	Shell Oil Co.	Chambers Co. 1
802	Sinclair & Atlantic	University 67-4
803	Shell Oil Co.	Chambers Co. No. 36
805	Sinclair Oil Corp.	University 68-5
902	Gulf Oil Corp.	Chambers Co. B-3
HJ 54-07-403	J. C. Williamson Co. & Cosden	"Crockett-University" 1
505	C. W. Brown	University Lands 1
602	Phillips Petr. Co.	University "R"-1
605	Gulf Oil Corp.	University

Table 6.--Oil and stratigraphic tests
selected as data-control points--Continued

Well	Operator	Lease and well
HJ 54-07-704	J. I. O'Neill, Jr.	W. E. West 1
806	Keyser Kennedy & Blanks	W. E. West 1
902	Gulf Oil Corp.	E. Mitchan 2
903	do	E. Mitchan 3
904	do	E. Mitchan 4
HJ 54-08-104	Stanolind Oil & Gas Co.	University GG 1
703	Humble Oil Co.	E. Mitchan
HJ 54-10-207	Ambassador Oil Corp.	W. T. Nolke "H" - 1
304	Fred Turner, Jr.	Shannon "B" - 1
603	Cities Service	Nolke "F" - 1
802	Lydia Johnson	H. M. Halff Est. -1
904	Cities Service	J. W. Owens-1
905	Oliver & Kotyza	C. W. Medows 1
906	Humble Oil Co.	Owens 1-C
907	Grapeland	Couch 1
HJ 54-11-104	Amerada Petr. Corp.	Shannon C-1
105	J. L. Cooper	Shannon Est. No. 5
106	Sun Oil Co.	Shannon No. 1
204	Cocoanut Oil Co.	A. C. Hoover No. 1
304	Bruce & Somerville	Hoover No. 1
402	Plymouth Oil Co.	A. C. Hoover "M" No. 2
403	do	Nolke "M" No. 11
404	W. D. Lane et al.	J. W. Owens No. 1
510	C. W. Brown	A. C. Hoover "F" No. 1
707	Humble Oil Co.	Bertha M. Hobbs No. 2
708	Cities Service Oil Co.	Hoover No. 12
709	Humble Oil Co.	Owens 1-B
710	Cities Service Oil Co.	Owens 1-B
809	Humble Oil Co.	Bertha Hobbs No. 1
904	C. W. Brown	A. C. Hoover "A-C" 1
HJ 54-12-103	SOHIO Petr. Co.	Shannon "B" No. 6
104	Texita Oil Co.	Shannon "B" 2
105	J. I. & P. D. Moore Co.	Shannon "R" 1
303	Amerada Petr. Corp.	Todd K-1
304	Val Carroll Oil Co.	J. S. Todd Est. No. 2
305	N. G. Penrose Inc.	Amerada Todd No. 1
306	Southland Royalty	Todd 1-14
401	SOHIO Petr. Co.	J. S. Todd "A" 1-14
402	Forrest Oil Co.	Todd No. 1
803	Southland Royalty Co.	Todd 1-3
804	Gulf Oil Corp.	University 8-30
903	C. W. Brown	University "C" No. 1
HJ 54-13-103	Amerada Petr. Corp.	Todd Est. B-5
104	do	Todd Est. A-9
105	do	Todd Est. A-7
106	do	Todd Est. A-11
107	do	Todd Est. B-1
204	Continental Oil Co.	Todd Unit No. 25
306	Chambers & Kennedy	Hugh Andrews No. 1

Table 6.--Oil and stratigraphic tests selected as data-control points--Continued

Well	Operator	Lease and well
HJ 54-13-404	Continental Oil Co.	Todd Unit Block No. 4
605	Crockett Development Co.	Doris Johnson No. 2
606	Lion Oil Co.	Bean No. 1
704	Gulf Oil Corp.	University 9-30
705	Deep Rock Oil Corp.	University "A"-1
706	Southland Royalty Co.	J. S. Todd 1-33
906	Continental Oil Co.	University "31" 36-1
907	Bruce & Somerville	University No. 1
HJ 54-14-102	Oliver & Kotya	Carruthers "A"-1
404	A. Bean	A. Bean No. 1
405	Malco Refineries Inc.	A. Bean No. 4
604	Barron Kidd	Christine Bean 1-66
605	Gulf Oil Corp.	W. R. Baggett No. 1
701	Northern Natural Gas Co.	Bean No. 1-A
704	Gulf Oil Corp.	University
803	do	Ed Bean No. 1
905	do	Ed Bean No. 2
906	do	Ed Bean No. 3
HJ 54-15-106	La Gorce Oil Co.	W. P. Martin No. 1
107	Humble Oil Co.	W. P. Martin No. 1
305	Gulf Oil Corp.	E. Mitchan No. 1
306	do	E. Mitchan No. 1
307	do	J. W. Childress A-3
308	do	J. W. Childress A-5
309	do	J. W. Childress A-4
310	do	J. W. Childress A-1
504	McAlester Fuel Co.	J. A. Harvick A-1
505	Humble Oil Co.	J. A. Harvick No. 2
701	Ted Weiner	Baggett No. 1
HJ 54-16-103	Earle M. Craig	M. C. Smith No. 1
602	Humble Oil Co.	J. R. Bailey No. 1
603	Gulf Oil Corp.	J. R. Bailey No. 2
801	C. B. Simons	Powell No. 1
804	Gulf Oil Corp.	J. W. Henderson No. 1
903	do	J. R. Bailey No. 1
904	do	J. W. Henderson No. 3
HJ 54-18-202	Sun Oil Co.	Couch & Halff No. 1
303	J. H. Buchanan	Cox Medows No. 1
603	Texita Oil Co.	H. B. Cox No. 1
HJ 54-19-104	McCurdy & McElroy	Mrs. Clara Couch No. 2
105	Humble Oil Co.	Alma Cox B- No. 1
306	Tennessee Gas & Oil Co.	University "J" No. 1
307	Drilling & Exploration Inc.	University 29 No. 3-3
308	do	University "29" No. 1-3
309	Bruce & Somerville	University Lands No. 1
310	Gulf Oil Corp.	University Lands 15-29
311	do	University Lands 13-29
312	do	University Lands
313	do	University Lands 12-29
314	do	University Lands 19-29
403	Southland Royalty Co.	H. B. Cox No. 1-C

Table 6.--Oil and stratigraphic tests
selected as data-control points--Continued

Well	Operator	Lease and well
HJ 54-19-503	Gulf Oil Corp.	H. B. Cox
605	Northern Natural Gas Co.	University No. 1-14
606	J. E. Jones	Ingham No. 1
607	do	Ingham 2-5
608	Gulf Oil Corp.	Mrs. Frankie Ingham
609	do	University Lands No. 6
610	do	University Lands 14-29
611	do	University Lands 16-29
612	do	Mrs. Date Scott
613	Sun Oil Co.	University No. 1
805	Gulf Oil Corp.	H. B. Cox No. 3
HJ 54-20-204	Gulf Oil Corp.	University Lands 16-30
403	do	University Lands No. 11
404	do	University Lands 18-29
405	do	A. K. Webster No. 1
406	do	University Lands 15-30
502	do	University Lands 11-30
503	do	University Lands 17-30
504	do	University Lands No. 18
505	do	University Lands 15-30
506	do	University Lands 2-33
507	do	University Lands 13-30
603	do	University Lands 19-30
604	do	University Lands 12-30
605	do	University Lands 14-30
805	Texas Gulf Prod. Co.	University "BB" No. 1
903	Gulf Oil Corp.	University Lands No. 1
HJ 54-21-102	Gulf Oil Corp.	University Lands 10-30
204	Humble Oil Co.	University Lands No. 1-V
205	Trebel et al.	University Lands No. 1-D
206	Gulf Oil Corp.	University Lands No. 1
404	Humble Oil Co.	University C. R. No. 1
405	Scott Hammonds	University CA No. 1
406	Gulf Oil Corp.	University Lands 2-30
502	Humble Oil Co.	University X No. 1
503	Rodman et al.	University Lands No. 1-E
504	C & H Drlg. Co.	University Lands No. 1
603	J. M. Giles et al.	University-Continental No. 2
604	Continental Oil Co.	University 32-13
605	J. M. Giles	Continental University No. 2
HJ 54-22-404	Argo Oil Corp.	Alma Cox No. 1
604	Humble Oil Co.	Alma Cox D-1
605	do	C. W. Medows Jr. No. 1
HJ 54-23-109	Gulf Oil Corp.	F. R. Henderson, Jr. "A"-1-CA
406	Delta-Pauley	Medows No. 1
407	do	Kincaid No. 3
501	Shell Oil Co.	Friend No. 1
505	Delta-Pauley	Friend No. 1-B
506	do	Friend No. 1-A
507	do	Kincaid No. 2
508	Shell Oil Co.	A. R. Kincaid No. 1

Table 6.--Oil and stratigraphic tests
selected as data-control points--Continued

Well	Operator	Lease and well
HJ 54-23-509	Texaco Inc.	A. R. Kincaid Trust No. 1
510	Delta-Pauley	Kincaid No. 1
HJ 54-24-205	Gulf Oil Corp.	J. W. Childress No. 2
303	do	P. L. Childress No. 4
304	do	P. L. Childress No. 1
406	Ozona Radar Sta.	W. W. No. 3
601	Pan American Oil Co.	A. Clayton A-1
605	Magnolia Pet. Co.	Clayton Ranch Co.
606	do	Boyd Clayton
904	Sinclair Oil Co.	M. S. Jones No. 1
HJ 54-28-104	Moore Brothers Corp.	P. Perner No. 1
306	T. W. & J. M. Lofland, Jr.	P. Perner
406	J. E. Jones & Union Oil Co.	Dudley No. 1-C
803	Pure Oil Co.	L. B. Cox No. 1
HJ 54-29-102	J. M. Loffland	V. B. Cox No. 1
108	Stewart Oil and Gas Co.	V. B. Cox No. 1
301	Indian Terr. Illum. Oil & Gas Co.	Henderson No. 1
403	J. M. Loffland	L. B. Cox, Jr. No. 1
602	Delta-Pauley	Henderson No. 1
603	Honolulu Signal	J. W. Henderson No. 1
906	Blue Danube Oil Co.	Henderson No. 1
908	Magnolia Pet. Co.	J. W. Henderson No. 1
909	Cities Service Oil Co.	J. W. Henderson "B" No. 1
HJ 54-30-104	Humble Oil Co.	Roy Henderson No. 1
203	Delta-Pauley & Cobb	Couch No. 1
403	Cities Service Oil Co.	Bean No. 1-B
603	Cosden Pet. Co.	E. H. Hunt No. 1
604	Cosden Hunt	Montogmery No. 1
605	Magnolia Pet. Corp.	Montgomery No. 1
606	R. E. Fair	W. C. Montgomery No. 1
903	do	W. C. Montgomery No. 1-A
HJ 54-31-101	Cosden Pet. Corp.	Miller "BB" No. 1
404	do	Miller
405	do	Miller No. 6
406	do	Roy Miller No. 9
501	Magnolia Pet. Co.	E. G. Baggett No. 1
504	Cosden Pet. Co.	E. G. Baggett No. 1-B
605	Santiago Oil Co.	Davidson No. 1
902	do	Davidson No. 1-A
HJ 54-32-101	Humble Oil Co.	C. E. Davidson
603	L. R. French, Jr.	Friend No. 1
804	Cities Service Pet. Co.	Perner No. 1
HJ 54-35-504	M. H. McKinnly	W. P. Hoover No. 1
505	Texita Oil Co.	W. P. Hoover No. 1
506	Perkins-Prothro Co.	W. P. Hoover No. 1
HJ 54-36-102	Perkins-Prothro Co.	Laura Hoover No. 1
705	do	John Mitchell

Table 6.--Oil and stratigraphic tests
selected ad data-control points--Continued

Well	Operator	Lease and well
HJ 54-37-306	Texas American Oil Corp.	Henderson No. 1
HJ 54-38-205	Rodes Drlg. Co.	C. Montgomery No. 1
HJ 54-39-604	Texas Co.	V. I. Pierce No. 2
HJ 54-43-501	Sun Oil Co.	Mitchell 1-A
HJ 54-47-101	Delta Gulf	Robinson No. 1
HJ 55-01-101	Continental Oil Co.	University 55-8 No. 1
702	Sinclair Oil Co.	University No. 127
HJ 55-09-104	Gulf Oil Corp.	J. R. Bailey No. 4
401	Magnolia Pet. Co.	Addie Clayton No. 1
404	Gulf Oil Corp.	J. R. Bailey No. 3
703	do	P. L. Childress No. 3
HJ 55-25-104	Southern Union	Glasscock No. 1
701	Sinclair Oil Co.	Friend No. 1
HJ 55-33-701	Continental Oil Co.	D. A. Friend No. 1