TEXAS BOARD OF WATER ENGINEERS

GROUND-WATER RESOURCES OF SAN JACINTO COUNTY, TEXAS

By W. H. Alexander, Jr.

Prepared in cooperation with the United States
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February 1947

C O N T E N T S

ILLUSTRATIONS

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INTRODUCTION

Location and extent of area

San Jacinto County is a part of the Gulf Coastal Plain in southeastern Texas and the south boundary of the county is about 70 miles from the Gulf Coast. It is bounded on the north and east by Trinity and Polk Counties, the Trinity River being the boundary line; on the south by Liberty County; and on the west by Walker and Montgomery Counties. The land surface is gently rolling to hilly except along the Trinity River where there are extensive areas of flat floodplain and terraces. The minimum elevation is about 90 feet above sea level on the floodplain of the Trinity River at the southeastern corner of the county and the maximum elevation is about 400 feet in the western portion of the county. The county has an area of 619 square miles and in 1940, according to the U. S. Bureau of the Census, had a population of 9,056, an average of 15 persons per square mile. The three most important towns and their population in 1940 are as follows: Coldspring (county seat), 500; Shepherd, 500; and Oakhurst, 500.

Economic development

Lumbering and the production of timber for pulpwood are the main industries of San Jacinto County. A portion of the county, about 100 square miles, is now included in the Sam Houston National Forest. The production of oil is also important, the total production for the county having been 3,241,801 barrels in 1945 and 1,021,787 barrels from 41 wells in 1946, according to the "Oil Weekly". Other mineral resources are natural gas, sand, and gravel. Agriculture is diversified, the most important crops being cotton, feed, and fresh vegetables. Beef cattle and hogs are the major livestock products. Dairying is also an important industry.

Precipitation

According to records of the United States Weather Bureau the average annual precipitation at Huntsville, the nearest station with a long-time record, during 63 years was 44.31 inches. Among the wettest years were 1891 with 58.22 inches; 1900 with 69.79 inches; 1923 with 58.22 inches; 1929 with 58.50 inches; 1935 with 56.62 inches; 1940 with 59.24 inches; and 1941 with 60.18 inches. The driest years include 1859 with 23.93 inches; 1901 with 28.62 inches; 1906 with 29.25 inches; 1917 with 17.93 inches; 1924 with 31.30 inches; and 1928 with 32.00 inches. The following table gives the U. S. Weather Bureau records of precipitation at Huntsville, Walker County, Texas, by months.

Precipitation in inches 1859 to 1945, at Huntsville, Walker County, Texas,

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1859	2.20	.54	2.35	.82	1.22	4.18	2.40	.72	4.43	1.67	.53	2.87	23.93
1882	-	-	-	3.04	5.42	1.39	.99	3.13	5.12	8.62	-	-	27.71
1883	-	-	-	1.72	2.35	4.24	1.55	.95	2.00	2.23	-	-	15.04
1884	-	-	-	2.50	13.65	1.61	.0	.03	2.81	-	-	-	20.60
1885	-	3.01	4.51	7.45	6.33	.71	3.10	3.02	5.37	.33	2.26	3.88	39.97
1886	2.31	3.05	3.89	3.62	.60	3.36	1.13	2.18	3.37	0	-	-	23.51
1887	-	-	-	-	2.67	2.88	1.24	1.71	3.33	4.57	-	-	16.40
1888	-	-	-	3.54	7.50	7.40	2.94	1.05	1.16	2.59	-	-	26.18
1889	7.49	2.14	3.41	3.37	2.30	7.64	2.32	1.96	2.67	.02	6.49	.40	40.21
1890	10.46	3.92	4.38	8.32	2.86	3.24	3.02	4.85	3.11	3.62	3.52	1.73	53.03
1891	10.06	3.56	2.07	13.74	1.69	1.59	3.61	4.09	4.64	.10	4.49	8.58	58.22
1892	5.25	2.00	2.49	2.91	2.97	10.82	2.70	7.35	.33	2.19	7.22	5.96	52.19
1893	1.20	.75	1.20	2.15	4.74	9.93	1.00	4.40	.23	.30	5.60	1.15	32.65
1894	3.54	2.64	4.35	2.45	1.60	3.82	1.19	6.13	6.35	.46	.65	3.11	36.29
1895	3.06	4.75	3.49	2.40	13.06	7.74	1.25	.89	1.10	5.41	2.60	2.70	48.45
1896	6.94	6.77	2.08	2.00	2.35	.45	1.42	.92	4.85	4.64	2.42	1.50	36.34
1897	4.55	.18	3.90	1.73	1.50	2.17	.30	2.98	3.44	5.86	1.78	4.25	32.64
1898	4.43	5.15	3.53	5.00	5.65	6.82	3.26	4.19	.98	6.60	4.14	3.47	53.22
1899	3.08	1.83	2.35	2.23	1.20	9.42	4.05	.33	2.48	3.35	1.55	8.06	39.93
1900	5.19	4.38	9.15	6.30	6.69	3.22	7.12	8.87	6.84	1.91	8.45	1.67	69.79
1901	1.15	3.96	4.08	3.08	3.85	2.34	2.35	1.11	1.40	.93	1.82	2.55	28.62
1902	1.68	2.52	3.14	2.95	4.31	3.27	11.90	.33	6.76	8.53	6.35	2.15	53.89
1903	5.00	7.47	5.67	1.31	2.44	4.11	5.42	1.12	1.40	4.39	1.44	3.83	43.60
1904	1.63	1.92	.58	2.30	6.46	3.91	7.80	1.87	1.34	1.54	1.34	6.45	37.14
1905	2.29	5.34	10.58	8.73	3.29	5.58	3.02	.10	.47	1.72	6.11	4.72	51.95
1906	3.45	2.53	.69	.82	2.08	3.71	6.05	1.79	1.55	2.26	1.15	3.17	29.25
1907	1.72	3.30	2.46	5.69	13.28	T	1.11	1.00	1.81	7.94	11.25	3.70	53.26
1908	1.83	5.26	1.95	7.71	10.92	1.58	.73	1.31	4.37	2.35	4.23	.47	42.71
1909	.55	2.03	2.81	3.02	10.06	2.25	1.38	.64	.18	3.07	2.11	4.90	33.00
1910	1.02	4.41	.83	6.48	4.35	4.66	5.77	.65	2.09	2.05	2.39	7.11	41.81
1911	T	3.04	4.08	11.33	2.49	3.26	3.87	.95	3.83	1.78	2.74	11.19	48.56
1912	2.08	3.04	6.14	4.14	1.88	4.68	2.22	2.32	.48	1.47	1.94	6.10	36.49
1913	1.90	4.99	3.37	3.34	2.90	2.00	T	1.01	7.16	7.81	2.44	2.82	46.80
1914	.72	5.65	6.20	9.54	4.82	.37	1.12	7.14	2.08	1.34	6.90	7.92	53.80
1915	5.04	2.62	1.55	8.51	.82	2.18	3.33	6.94	.84	.28	2.86	4.03	39.00
1916	4.23	T	.40	3.00	11.05	2.90	7.19	1.35	3.08	.58	2.68	1.55	38.01
1917	3.60	2.88	.94	3.22	1.55	.90	1.05	.45	1.57	.60	1.17	T	17.93
1918	.67	3.65	1.60	5.41	2.30	2.55	3.00	5.10	1.90	6.17	8.03	2.43	43.21
1919	2.70	5.15	2.73	2.55	10.58	8.36	1.95	8.10	2.65	8.35	1.50	1.15	55.77
1920	8.90	2.55	1.65	1.15	5.12	5.80	3.18	5.15	1.35	3.53	3.45	3.55	45.38
1921	2.50	3.95	4.35	10.85	1.30	12.75	5.20	2.65	1.50	.08	1.52	3.91	50.56
1922	5.94	4.01	8.16	8.65	8.10	4.70	1.20	3.60	.60	1.00	6.72	1.20	53.88
1923	2.50	7.04	4.20	5.95	6.35	2.95	.70	2.83	7.45	1.70	5.60	10.55	58.22

Precipitation in inches, 1859 to 1945, at Huntsville, Walker County--Continued

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1924	2.80	3.80	3.60	7.20	5.30	2.30	0	T	2.60	0	1.20	2.50	31.30
1925	2.20	T	.60	1.05	2.20	1.00	3.80	1.30	2.70	16.30	12.50	2.20	45.85
1926	6.20	.40	8.80	8.90	4.00	4.20	5.10	2.40	.50	2.10	2.60	8.40	53.60
1927	.80	3.70	7.90	4.90	3.50	7.40	2.00	0	.50	7.70	2.60	4.30	45.30
1928	1.00	3.50	4.50	3.70	1.30	3.40	4.40	.30	.20	2.40	4.00	3.30	32.00
1929	5.10	3.80	3.70	5.20	19.00	1.00	7.00	1.00	1.00	4.90	5.10	1.70	58.50
1930	5.90	2.70	4.40	.20	4.80	1.30	.90	2.20	2.70	7.10	6.20	3.60	42.00
1931	3.80	7.30	4.70	3.50	4.80	2.90	1.90	1.10	.40	2.40	3.70	6.60	43.10
1932	9.50	6.64	5.00	1.90	1.30	1.77	.70	2.47	.40	.40	1.50	6.75	38.33
1933	2.79	5.05	2.90	2.50	2.60	1.01	2.88	3.70	3.28	2.45	1.40	4.31	34.87
1934	7.25	4.68	3.89	5.75	1.80	.70	2.20	.60	5.10	0	7.00	4.30	43.27
1935	2.20	2.95	3.21	6.41	13.85	4.41	4.16	4.91	3.38	1.17	4.09	5.88	56.62
1936	.42	2.47	.87	2.70	7.97	3.29	13.05	2.35	1.36	4.13	2.68	2.58	43.87
1937	6.40	T	4.26	2.88	.34	2.73	2.05	3.70	4.36	4.37	5.38	3.61	40.08
1938	3.95	1.90	4.64	2.65	4.90	4.32	3.23	1.26	4.45	.33	7.96	3.29	42.88
1939	6.50	6.85	1.04	1.53	3.55	11.98	1.38	.75	2.89	2.83	3.23	4.73	47.26
1940	1.37	3.91	.73	3.95	3.92	11.24	.75	3.19	1.55	3.06	16.61	8.96	59.24
1941	2.98	5.92	3.53	6.01	5.50	9.25	4.99	1.45	7.40	8.67	3.14	1.34	60.18
1942	1.17	1.96	1.45	7.11	4.00	5.61	4.87	7.98	6.31	2.09	2.31	5.48	50.34
1943	3.92	.23	2.70	1.15	4.95	2.96	11.80	.63	4.64	2.96	2.92	4.84	43.70
1944	8.44	3.00	3.41	1.58	8.73	2.13	.32	5.09	.94	0	7.62	5.81	47.07
1945	4.40	5.32	4.90	8.59	3.73	4.38	5.37	9.40	1.96	4.39	1.70	2.46	56.60

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The work was done under the general direction of W. N. White, district engineer in charge of ground-water investigations in Texas.

The water analyses were made under the supervision of W. W. Hastings, district chemist of the Quality of Water Division of the U. S. Geological Survey. The results of the analyses, which relate to the mineral constituents in the water and not to its sanitary character, are tabulated in parts per million on pages 26 to 29.

OCCURRENCE AND MOVEMENT OF GROUND WATER

General principles

For discussion of the fundamental principles of the occurrence and movement of ground water the reader is referred to papers by Meinzer and Wenzel 1/.

1/ Meinzer, O. E., The occurrence of ground water in the United States: U. S. Geol. Survey Water-Supply Paper 489, 1923; Outline of methods for estimating ground-water supplies: U. S. Geol. Survey Water-Supply Paper 638-C, pp. 99-145, 1931.

Wenzel, L. K., Methods for determining permeability of water-bearing materials: U. S. Geol. Survey Water-Supply Paper 887, 1942.

Meinzer, O. E., and Wenzel, L. K., Physics of the Earth, vol. 9, Hydrology, pp. 385-478, McGraw-Hill, New York, 1942.

Ground water is derived chiefly from water that falls as rain and snow. A part of the water from precipitation runs off in streams; a part is returned to the atmosphere by evaporation and transpiration of trees and other plants; and a part sinks to the zone of saturation, in which all the interstitial openings of the rocks are filled with water.

In most places ground water is slowly but steadily moving under the influence of gravity from areas of intake to areas of discharge. In the more permeable rocks, such as coarse sand, gravel, and cavernous limestone, the water moves with comparative freedom although the movement generally is very slow as compared to the flow of a stream. Such rocks are capable of yielding abundant supplies of water to wells. In less permeable rocks, such as shale or clay, molecular attraction retards the movement of the water, which may be almost infinitely slow. Such rocks yield little or no water to wells.

In the outcrop areas of water-bearing beds, the water is usually unconfined and does not rise in wells above the water table, which is the upper surface of the zone of saturation and the level at which water is first encountered.

The water table is not a level surface, but it usually slopes in about the same direction as the slope of the land surface. It is generally high under areas of ground-water intake and low under areas of ground-water discharge. The land surface in places is lower than the water table in adjacent areas and in such localities some of the ground water emerges as springs. In some localities perched water accumulates above the main zone of saturation, supported by local bodies of relatively impermeable material, especially during the winter and spring when the rates of evaporation and transpiration are low. Such supplies are usually small and are not dependable.

In areas down the dip of the water-bearing beds where the rocks are under cover and inclined between relatively impermeable strata, the water usually is under artesian pressure and will rise in wells above the level at which it is first encountered. If the altitude to which the water will rise is greater than the altitude of the land surface, flowing wells may be obtained.

The rocks underlying San Jacinto County to depths of at least 2,000 feet consist chiefly of clays and shales interbedded with sands. The beds are inclined, the dip being toward the southeast in the direction of the Gulf. The general slope of the land surface is also toward the southeast. Hence, artesian conditions occur in all parts of the county and in lowland areas wells of adequate depth have a flow. The valley of the Trinity River is well known for its flowing wells, which range from about 100 to 830 feet in depth.

Most wells are subject to water-level fluctuations of varying magnitude. These fluctuations are due to many different causes, but most of them are a manifestation of a change in the ratio between the rate of groundwater intake or recharge and the rate of loss or discharge. Most water-table wells are supplied in part from intake areas close at hand and respond with a moderate lag to changes in rainfall. In very shallow wells the water level may rise several feet after heavy rains and decline until the wells go dry during prolonged droughts. Artesian wells that draw from sand or sandstone at considerable distances from the outcrops of the water-bearing beds seldom are affected by seasonal or yearly changes in rainfall, although if not too far from the outcrop they may respond to the effect of a series of wet or dry years. Usually, however, the major fluctuations in pressure in artesian wells and accompanying rise and fall in water levels are due to withdrawals of ground water from the well itself or from other wells that tap the same water-bearing beds.

When a well is pumped the water level in the well drops and a hydraulic gradient is developed toward the well from all directions. It is this hydraulic gradient that causes water to flow toward the well. Within limits the amount of water that will enter a well varies directly with the amount the water level is lowered. For example, if a pumped well in fairly permeable material will yield 50 gallons a minute when the water level is lowered 10 feet, it will yield about 100 gallons a minute when the water level is lowered 20 feet. This ratio between the drawdown and the yield of the well is called the specific capacity and is generally expressed as the yield in gallons a minute per foot of drawdown. The ratio is a very useful gage of the productivity of a well.

Large withdrawals of ground water are sure to be accompanied by a general lowering of the water table or artesian pressure, a cone of depression gradually spreading out in all directions from the center of pumping until large areas may be effected. However, this is usually considered not very serious unless the rate of decline persists without a corresponding increase in the rate of pumping or the trend is such as to indicate that the pumping lift may eventually exceed the economic limit. In some areas beds that carry fresh water contain salty water downdip or are overlain by beds carrying salty water, and excessive pumping may lead to the invasion of salt water into the wells.

GEOLOGIC FORMATIONS AND THEIR WATER-BEARING PROPERTIES

With the exception of the alluvial deposits along the Trinity River, the rocks that crop out in San Jacinto County are of Miocene, Pliocene, and Pleistocene age and belong to the Catahoula sandstone, Oakville sandstone, Lagarto clay, Willis sand, Lissie formation and Beaumont clay (see geologic map, fig. 1). These rocks are underlain in downward succession by the Jackson and Yegua formations of Eocene age, and by still older rocks. The Oakville sandstone and Lagarto clay have not been differentiated east of the Brazos River on the U. S. Geological Survey map of Texas and are considered in this report as though they were one unit. The rocks of the Jackson and Yegua formations crop out in Walker, Trinity, and Polk Counties, and a part of the outcrop area is shown on the geologic map. The Goliad sand has not been identified in outcrop in this part of Texas, but it may be present and hidden by overlap of younger formation.

The information given below is based in part on Bulletin 3232 of the Texas Bureau of Economic Geology 2/, in part on recent articles in the Bulletin of the American Association of Petroleum Geologists, and in part on well logs obtained by the writer.

2/ Sellards, E. H., Adkins, W. S., and Plummer, F. B., The geology of Texas, Vol. 1, Stratigraphy: Texas Univ. Bull. 3232, pp. 710-795, 1932.

Beginning with the Catahoula sandstone the rocks are listed in the order in which they were deposited, or in age from oldest to youngest. This is the order in which the outcrops are successively crossed in traveling over the area from northwest to southeast.

Miocene and Pliocene series

Catahoula sandstone.- The beds of the Catahoula sandstone (Miocene) which crop out in Walker, northern San Jacinto, southern Trinity, and northern Polk Counties, dip southeastward toward the Gulf at the rate of about 100 feet to the mile (see fig. 2). The lower part of this formation is characterized by beds of coarse, cross-bedded sandstone, in places cemented with white porcelaneous opaline silica. The upper portion is characterized by beds of volcanic ash, fuller's earth and tuffaceous clays 3/. Data obtained from oil tests indicate that the Catahoula has a total thickness of about 1,200 feet in northern San Jacinto County 4/.

3/ Sellards, E. H., op. cit., pp. 710-727.

4/ Ellisor, Alva C., Anahuac formation: Am. Assoc. Pet. Geologists Bull. Vol. 28, pp. 1355-1375, 1944.

Oakville sandstone and Lagarto clay.- The Oakville sandstone (Miocene) and Lagarto clay (Miocene?) crop out in a belt more than 15 miles wide, paralleling and just south of the outcrop of the Catahoula sandstone, and comprising about half of San Jacinto County. These beds also dip southeastward toward the Gulf, but at a rate which appears to range from about 100 feet to the mile in the northern part of the county to 50 or 60 feet to the mile in the southern part. They consist predominantly of clay, usually containing calcareous layers, but include important beds of water-bearing sandstones and sands. They are believed to have a total thickness of about 1,200 feet. In San Jacinto County wells supplied by sands of these formations all yield water of good quality. Water from well 66, which was 977 feet deep, was reported to be suitable for boiler use without treatment. At Cleveland, in the northwest corner of Liberty County, deep wells in sands of these formations yield water of good quality.

Willis sand (and Goliad sand?).- The Willis sand of Pliocene (?) age and possibly the Goliad sand of Pliocene age crop out in a belt 10 to 15 miles wide, paralleling and just south of the outcrop of the Oakville sandstone and Lagarto clay. The Willis sand has been described 5/ in general as a red sand, coarse and

5/ Doering, John, Post-Fleming surface formations of Coastal Southeast Texas and South Louisiana: Am. Assoc. Pet. Geologists Bull., Vol. 19, pp. 660-668, 1935.

gravelly in part and slightly indurated, having a total thickness of about 85 feet. This formation caps the ridges in the central and southern parts of San Jacinto County 6/ and is extensively developed as a source of water for domestic

6/ Dumble, E. T., The geology of East Texas: Texas Univ. Bull. 1869, pp. 242-260, 1918.

and stock use. The water is very soft but locally the presence of unstable iron compounds makes it unsatisfactory for domestic use.

Pleistocene and Recent series

Lissie formation.- The Lissie formation of Pleistocene age overlies the Willis sand (and Goliad sand?) and crops out just south of the Willis sand in the southern and southeastern portions of the county. The Lissie formation has been described by Meyer 7/ as a sequence of sands, gravels, sandy clays, and

7/ Meyer, Willis G., Stratigraphy and historical geology of Gulf Coastal Plain in vicinity of Harris County, Texas: Am. Assoc. Pet. Geologists Bull., Vol 23, pp. 188-190, 1939.

clays which are distinguished from the underlying Willis sand by a generally finer texture. However, in drillers' logs and electrical logs it is not possible to differentiate between beds of the Willis sand, Goliad sand (if present), and the Lissie formation, and for convenience in this report the combination will be called the Lissie formation. In San Jacinto County the thickness of the Lissie formation, as thus designated, ranges from a feather edge at the northern edge of the outcrop to about 300 feet in the southern part of the county. Southward in Liberty County this formation increases to about 1,400 feet in thickness and is an important aquifer.

In the Trinity Valley north of Urbana the Lissie formation is believed to be represented by a high stream terrace. In this relatively narrow area the principal source of water for domestic and stock use is shallow wells in the terrace material.

Beaumont clay.- The Beaumont clay of Pleistocene age overlies the Lissie formation, and in San Jacinto County it is believed to be represented by a narrow, low stream terrace intermediate in position between the Lissie outcrop and the alluvial deposits of Recent age which border the Trinity River.

Alluvial deposits.- Deposits of Recent alluvial sand, clay, and gravel, having a thickness ranging from a few feet to about 30 feet, are reported in drillers' logs of shallow water wells drilled in the floodplain of the Trinity River. Shallow wells in the alluvial deposits are the chief source of domestic water supply in this relatively wide area.

PRESENT DEVELOPMENT OF WATER SUPPLIES FROM WELLS

All the domestic and municipal water supplies in San Jacinto County are derived from wells or springs. Wells and spring-fed streams supply most of the water for livestock and industrial use. Only one small irrigation project was found in the county, a fruit orchard and nursery near Shepherd supplied by surface water from Big Creek. The Southern Pacific Railroad obtains water at Shepherd from the same source. Most of the wells in the rural areas are less than 50 feet in depth and furnish small supplies of water for domestic use and stock.

The development of ground water in different parts of the county is briefly discussed below:

Northern part of the county, Staley (Embryfield), Oakhurst, and Pointblank areas

Well 1, drilled to 300 feet in 1906 to supply water for boilers at the Columbia Lumber Company's sawmill at Oakhurst, is now used for domestic supply by about 30 families. The water level is 114 feet below the surface of the ground. Well 4, also in Oakhurst, is 500 feet deep and the water level is reported to be about 175 feet below the surface. The water supply for Oakhurst Public School is obtained from Well 2, which was drilled to a depth of about 600 feet and cased to 250 feet. The water level is reported to be about 175 feet below the surface. These three wells draw from sands in the basal part of the Oakville-Lagarto sequence or the upper portion of the Catahoula sandstone The water is relatively low in dissolved minerals and is somewhat harder in well 2 than in wells 1 and 4.

A shallow dug well in Oakhurst (no. 6) yields soft water but the iron content, 17 parts per million, is so high that the water is unsatisfactory for domestic use. The well is 23 feet deep, and during rainy weather it flows. South of Oakhurst two springs, nos. 20 and 21, and a shallow bored well, no. 22, yield very soft water.

In the belt of clay land, or blackland, between Oakhurst and Staley (Embryfield) the water from shallow wells is usually so hard that it is not satisfactory for domestic use and rainwater is collected in cisterns, the wells being used only during periods of low rainfall.

In the Embryfield area and farther north water of good quality is reported from sands and sandstones of the Catahoula sandstone. Several springs occur in this area. The best known are the Carolina Springs (no. 10) near the junction of Carolina Creek and the Trinity River.

In the Pointblank area are two relatively deep water wells, no. 16, 645 feet deep, and no. 19, 411 feet deep. Both wells draw from sands in the basal part of the Oakville-Lagarto sequence or the upper portion of the Catahoula sandstone. Well 16 is in Pointblank, on the upland west of the Trinity River, and the water level was reported to be about 50 feet below the surface. The well supplies water for several families and a cotton gin. Well 19 is on the floodplain of the Trinity River and had an artesian head of 50 feet above the surface and flow of 10 gallons a minute in November 1946. The water from both wells is soft and comparatively low in dissolved minerals.

Central and southwestern parts of county, Coldspring, Camilla, Evergreen, and Everitt areas

The public water supply of Coldspring is obtained from a spring (no. 42) which appears at the base of the Willis sand, a short distance north of the town. The water is extremely soft and corrosive which has become a serious problem in the distribution system. Several private wells in Coldspring also draw water from the Willis sand. About 2 miles southeast of Coldspring, well 93 was drilled to about 600 feet and supplied water for 125 men at the camp of the Civilian Conservation Corps.

During the summer of 1946 seven water wells 223 to 535 feet in depth were drilled in the Camilla area. Six of the wells are used only for stock; the other, No. 100, is used for both domestic supply and stock. All draw from the Lagarto-Oakville sequence. Four of the wells are in the Trinity valley and have artesian flows ranging from 1 to 4 gallons a minute. All yield water of good chemical quality. Domestic supplies in the town of Camilla, located on the upland west of the river, are obtained from shallow wells less than 50 feet deep in the Willis sand.

In the Evergreen area seven wells ranging from 97 to 586 feet in depth draw from sands in the Lagarto-Oakville sequence. The water levels in these wells range from 36 to 85 feet below the surface. The water is extremely hard but otherwise is of satisfactory chemical quality.

In the central part of the county the presence of thick and extensive beds of clay and shale in the middle and upper portions of the Oakville-Lagarto sequence makes the search for adequate supplies of ground water particularly difficult. During the drilling of two wells north of Evergreen, the drill stems became stuck in clay at 470 feet and 500 feet, respectively, and the wells were abandoned. North of Coldspring well 66 was drilled to 977 feet before sufficient water to supply the drilling of an oil test was obtained. In the town of Coldspring well 44 was drilled to about 900 feet and abandoned because of insufficient water and the public water supply system then was developed from the spring (no. 42).

Extreme southwestern part of county

The extreme southwestern part of the county is sparsely populated and domestic and stock water supplies are obtained from shallow drilled or dug wells.

Southeastern part of county, Shepherd and Urbana areas

The lower lands in this portion of the Trinity Valley are well known for their flowing water wells. Records were obtained of 16 flowing wells, ranging in depth from 80 feet to 830 feet and with yields ranging from 1 gallon a minute to about 100 gallons a minute. The wells draw from sands in the basal part of the Lissie formation and in the Lagarto clay, and the water is of good chemical quality. Shut-in pressures measured in the wells showed artesian heads ranging from 8 to 44 feet above the land surface. Most of the water is used for stock.

No flowing wells have been reported in the upland area in this part of the county. In the vicinity of Shepherd, for example, the water levels in wells ranging from 465 to 710 feet in depth were 11 to 40 feet below the land surface. These wells are also supplied by sands in the Lissie formation or the upper portion of the Lagarto clay, and the water is of good quality although moderately hard.

Records of wells and springs in San Jacinto County, Texas
All wells are drilled unless otherwise noted in the remarks column

Well	Distance from Oakhurst	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Height of measuring point above ground (ft.)a/
1	In Oakhurst	Columbia Lumber Co.	Layne-Bowler Co.	1906	300	6	0.0
2	do.	Oakhurst Public School	--	1932	600	6	0.0
3	do.	D. D. Dolive	E. T. Evans and Son	1934	40	36	0.0
4	do.	Alton Adon	Otis Knight	1931	500	4	0.0
5	do.	E. J. Niederhofer	E. T. Evans and Son	1937	25	36	0.0
6	do.	R. W. Loving	-- Evans	1939	23	36	0.0
7	$3\frac{1}{2}$ miles north	Albert Knight	Henry Dolive	1918	60	8	0.0
8	$4\frac{1}{4}$ miles north	C. D. Cowart	--	1942	47	8	2.5
9	7 miles north	T. F. Toole	--	1920	20	36	0.0
10	8 miles north	Gibbs Bros. and Co.	--	--	--	--	--
11	$8\frac{3}{4}$ miles north	do.	--	1944	90	4	0.0
12	10 miles northeast	do.	Barnett and Emory	1916	400	6	0.0
13	do.	do.	-- Sprague	1926	3,004	10	--
14	$10\frac{1}{4}$ miles northeast	do.	--	--	--	--	--
15	$7\frac{3}{4}$ miles northeast	do.	Coastal Drilling Co.	1940	5,510	--	--
16	$7\frac{3}{4}$ miles east	W. W. Butler	--	1934	645	4	0.0
17	8 miles east	I. J. Owen	Porter Hines	1945	35	6	0.0
18	do.	J. L. Capers	do.	1945	34	6	0.0
19	10 miles east	A. R Shearer	Baggett Drilling Co.	1946	411	4	0.0
20	$7\frac{1}{2}$ miles southeast	J. A. Williamson	--	--	--	--	--
21	$4\frac{3}{4}$ miles southeast	J. E. Street	--	--	--	--	--
22	$4\frac{1}{2}$ miles southeast	J. W. Johnson	-- Ellis	1939	36	8	2.5

a/ Measuring point was usually top of casing, top of pipe clamp, or top of pump base or foundation.

b/ Method of lift: C, cylinder; E, electric; G, gasoline, natural gas, butane or oil engine; W, windmill; Cf, centrifugal; A, air lift; J, jet; B, rope and bucket; H, hand. Number indicates horsepower.

Partial analyses of water from most of these wells and springs are shown in the table of analyses

Well	WATER LEVEL Below land surface (ft.)	WATER LEVEL Date of measurement	Method of lift b/	Use of water c/	Remarks
1	d/114	1940	C,G,	P	Cased to 290 feet. Reported yield 30 gallons a minute. Supplies 30 customers. Se log
2	d/175	1940	J,E, 3	P	Cased to 250 feet. Pump set at 225 feet. Supplies Oakhurst Public School.
3	29.5	Jan. 10, 1947	C,E, 1/3	D	Dug.
4	d/175	1931	C,E, 1½	D	
5	4.5	Jan. 10, 1947	B,H	D,S	Dug.
6	0.0	Aug. 31, 1945	Cf,E, ¼	D	Do.
7	22.6	do.	B,H	D,S	Bored, no casing.
8	40.6	do.	B,H	D,S	Bored, tile curb but no casing.
9	13.0	do.	B,H	D,S	Dug in sandstone, no casing.
10	---	---	Flows	---	"Carolina Springs". Strong flow reported.
11	---	---	Flows	S	Seismograph shot hole, no casing.
12	---	---	Flows	N	Strong flow of sulphur water with natural gas reported when drilled.
13	---	---	Flows	N	Strong flow of sulphur water with natural gas reported. Drilled as oil test; 10-inch casing set at 378 feet.
14	---	---	Flows	S	"Skinner Spring". See partial log.
15	---	---	---	---	Oil test. See electrical log, figure 2.
16	d/ 50	1934	A,G, 4	D, Ind	Cased to 645 feet. Supplies cotton gin and several families.
17	33.0	Jan. 10, 1947	B,H	D	Bored, wooden caseing.
18	30.4	do.	B,H	D	Do.
19	+ 50.0	Nov. 4, 1946	Flows	S	Screen from 396 to 411 feet. Measured flow 10 gallons a minute on November 4, 1946. Temperature 73° F.
20	---	---	Flows	D,S	"Williamson Spring". Estimated flow one gallon a minute on Sept. 5, 1945. Temperature 73° F.
21	---	---	Flows	D,S	"Willow Spring". Estimated flow one gallon a minute on Sept. 5, 1945. Temperature 73° F
22	19.4	Sept. 5, 1945	B,H	D,S	Bored, wooden curb but no casing.

c/ Use of water: P, public supply; D, domestic; S, stock; Ind, industrial; N, not used.

d/ Water level reported by driller or owner.

Records of wells and springs in San Jacinto County -- Continued

Well	Distance from Oakhurst	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Height of measuring point above ground (ft.) a/
23	3¾ miles south	Raven Hill Ranch	--	--	20	36	0.5
24	2 miles south	S. Knight	--	--	139	36	2.8
	Distance from Evergreen						
25	In Evergreen	J. L. Hoot	E. Turner	1932	15	8	0.0
26	do.	do.	Baggett Drilling Co.	1946	585	2	0.0
27	do.	W. T. Carter	do.	1946	586	2	0.0
28	2¼ miles north	C. T. Caldwell	T. C. Murphy	1945	97	2	0.0
29	2½ miles north	C. A. Caldwell	Geo. Crooke	1937	197	4	0.[illegible]
30	2¾ miles north	H. R. McAdams	A. Cooper	1943	60	30	3.0
31	do.	A. J. McAdams	J. Kennedy	1942	500	4	0.0
32	2¼ miles north	C. T. Caldwell	T. C. Murphy	1945	470	4	0.0
33	1 mile south	Mrs. Nannie Randolph	--	1936	523	4	0.0
34	1 mile west	C. A. Caldwell	Baggett Drilling Co.	1945	106	2	0.0
35	do.	do.	do.	1946	241	2	1.2
36	1¾ miles west	do.	-- Adams	1941	201	4	0.0
37	4½ miles southwest	A. W. Ellisor	Kike and Scott	1936	21	24	4.5
38	6¼ miles west	H. E. Lewis	--	--	--	--	--
39	6¾ miles west	F. S. Browder	W. Cotton	1937	50	48	0.0
40	5¼ miles west	W. W. Cook	-- Lowere	1944	165	4	1.0
41	5 miles northwest	Delto Land and Timber Co.	Geo. L. Face et al.	1932	4,042	--	--

Well	WATER LEVEL Below land surface (ft.)	Date of measurement	Method of lift	Use of water	Remarks
23	14.2	Sept. 5, 1945	C,W	D,S	Dug.
24	125.9	do.	B,H	N	Dug; cement plaster walls.
25	1.9	Jan. 11, 1947	B,H	N	Bored, tile casing. Water reported unsuitable for domestic use.
26	d/ 85	Apr. 1946	J,E, 3/4	D	Screen from 573 to 585 feet.
27	d/ 85	Mar. 1946	J,E, 3/4	D	Screen from 574 to 586 feet.
28	d/ 36	Nov. 1945	J,E, 1/2	D	Screen from 81 to 97 feet.
29	d/ 36	Nov. 1937	C,E, 3/4	D,S	Screen from 175 to 197 feet. Supplies dairy.
30	46.5	Nov. 28, 1946	B,H	D	Dug, cement plaster walls.
31	--	--	--	N	Reported insufficient water for domestic use; well abandoned.
32	--	--	--	N	Do.
33	d/ 25	--	--	--	Cased to 523 feet. Formerly supplied water for drilling oil test. (Frazier and Deering, Randolph, No. 1).
34	d/ 36	1945	C,H	S	Cased to 106 feet.
35	43.5	Nov. 7, 1946	C,H	S	Screen from 231 to 241 feet.
36	d/ 40	Sept. 1941	C,H	S	Screen from 181 to 199 feet.
37	17.9	Nov. 7, 1946	B,H	D	Dug, concrete tile casing.
38	--	--	Flows	D,S	"Lewis Spring". Estimated flow 50 gallons a minute on January 11, 1947. Formerly supplied boilders at cotton gin and sawmill. Temperature 68° F.
39	31.0	Jan. 11, 1947	J,E, 1/4	D	Dug. Water level reported about 43 feet below surface in summer.
40	46.9	Nov. 7, 1946	C,G, 2	D,S	Screen from 148 to 163 feet.
41	--	--	--	--	Oil test. See partial log.

Records of wells and springs in San Jacinto County -- Continued

Well	Distance from Coldspring	Owner	Driller	Date com- ple- ted	Depth of well (ft.)	Diam- eter of well (in.)	Height of measuring point above ground (ft.) a/
42	In Coldspring	San Jacinto County	--	--	--	--	--
43	do.	Baptist Church	--	--	--	--	--
44	do.	San Jacinto County	J. Kennedy	--	9[illegible]0	6,4	--
45	do.	J. C. Hogue, Jr.	-- Guthrie	1918	85	8	1.0
46	do.	do.	--	--	--	--	--
47	do.	do.	A. Hayman	1944	60	8	2.0
48	do.	Sam McMurrey	Joe Parker	1934	76	48,2	0.0
49	do.	Guy Lilley	J. B. Hayman	1929	65	8	0.0
50	1 mile southwest	W. S. Childress	Baggett Drill- ing Co.	1946	275	4	0.0
51	1½ miles southeast	R. E. Ham	J. Hayman	1943	67	6	0.0
52	2 miles southeast	Civilian Conserva- tion Corps	--	1935	550	4	--
53	3½ miles east	Mrs. Ella McMurrey	Baggett Drill- ing Co.	1946	223	2	0.0
54	4¼ miles east	Hale Bros.	--	--	--	--	--
55	do.	J. A. Jordan	A. Hayman	1946	29	8	0.0
56	do.	O. L. Jordan	--	--	42	24	1.0
57	5½ miles east	Mrs. Ella McMurrey	Baggett Drill- ing Co.	1946	425	4	0.0
58	5¼ miles east	C. L. McGowen	do.	1946	318	4	0.0
59	5¼ miles northeast	Hale Bros.	do.	1946	535	4	0.0
60	6½ miles northeast	Mrs. Ella McMurrey	do.	1946	427	4	0.0
61	6 miles northeast	do.	do.	1946	459	4	0.0
62	4¾ miles northeast	do.	do.	1946	468	4	0.0
63	5 miles northeast	do.	Arkansas Fuel Oil Co.	1931	4,050	--	--

Well	WATER LEVEL Below land surface (ft.)	WATER LEVEL Date of measurement	Method of lift b/	Use of water c/	Remarks
42	--	--	Flows	P	"Cold Spring". Estimated flow 30 gallons a minute on January 17, 1947. Supplies town of Coldspring. Temperature 68° F.
43	--	--	Flows	D,S	"Baptist Spring". Estimated flow 3 gallons a minute on December 17, 1946. Temperature 71° F.
44	--	--	--	--	Yield reported insufficient for municipal supply; well abandoned.
45	61.6	Jan. 13, 1947	B,H	D,S	Bored, tile casing.
46	--	--	Flows	S	"Harris Springs". Estimated total flow 100 gallons a minute on December 17, 1946. Temperature 69° F.
47	44.7	Dec. 17, 1946	B,H	D	Bored, wooden casing.
48	d/ 70	Nov. 20, 1946	C,E, 1/3	D	Dug to 70 feet, 2-inch screen from 70 to 76 feet.
49	d/ 50.5	Nov. 1946	J,E, ½	D	Bored, tile casing.
50	d/ 42	Apr. 1946	A,G, 5¾	D,S	Cased to 270 feet; screen from 70 to 85 feet. See log.
51	d/ 50	Dec. 1946	C,E, ¼	D	Bored, wooden casing.
52	--	--	--	N	Formerly supplied water for 125 men at camp.
53	d/110	Mar. 1946	C,G, --	S	Screen from 213 to 223 feet.
54	--	--	Flows	D,S	"Thornton Spring". Estimated flow 12 gallons a minute on January 11, 1947. Temperature 68½° F.
55	0.0	Jan. 11, 1947	J,E, ¼	D	Bored, concrete tile casing.
56	25.7	do.	B,H	D	Dug, concrete tile casing.
57	d/ 30	May 1946	C,W	S	Screen from 415 to 425 feet.
58	d/ 17	June 1946	C,G	S	Screen from 303 to 318 feet.
59	+ 10	Nov. 12, 1946	Flows	S	Screen from 510 to 535 feet. Measured flow one gallon a minute on November 12, 1946.
60	+ 24	Jan. 14, 1947	Flows	S	Screen from 412 to 427 feet. Measured flow 2½ gallons a minute on January 14, 1947. Temperature 74° F.
61	+ 27	do.	Flows	S	Screen from 444 to 459 feet. Measured flow 4 gallons a minute on January 14, 1947. Temperature 74° F.
62	+ 18	Jan. 13, 1947	Flows	S	Screen from 453 to 468 feet. Measured flow 2 gallons a minute on January 13, 1947. Temperature 73° F.
63	--	--	--	--	Oil test. See partial log.

Records of wells and springs in San Jacinto County -- Continued

Well	Distance from Coldspring	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Height of measuring point above ground (ft.) a/
64	1½ miles northeast	Woodruff Heirs	--	--	--	--	--
65	4¼ miles north	Mrs. Ella McMurrey	Baggett Drilling Co.	1946	430	4	--
66	5½ miles northwest	Foster Lumber Co.	L. Patterson	1944	977	4	0.0
67	do.	do.	Pitre Water Well Drilling Co.	1944	628	4	0.0
68	4 miles west	David Jackson	Gay and Sons	1946	142	4	0.0
69	3¼ miles south	U. S. Forest Service	W. Cotton	1938	28	36	0.0
70	3½ miles south	Foster Lumber Co.	Navarro Oil Co.	1945	9,738	10	--
71	5 miles south	do.	Piedmont Oil Co.	1933	4,474	10	--
72	4 miles south	do.	--	1944	500	4	0.0
73	4¾ miles south	E. R. Dabney	-- Angel	1938	60	8	3.5
74	15 miles south	Lobritsky and Vick	Proletarian Diamond Oil Co.	1925	4,209	10	--
75	14½ miles south	F. Yanoushek	Gay and Sons	1946	155	2	0.0
76	14¼ miles south	H. C. Rabe	-- Brown	1934	135	2½	0.0
77	11½ miles south	Shell Oil Co., Inc.	L. Patterson	1944	583	4	0.0
78	12¼ miles south	Atlantic Pipe Line Co.	do.	1943	196	4	0.0
79	13½ miles south	Dr. Allen McMurrey	--	1932	40	24	0.0
80	do.	do.	Gay and Sons	1946	115	2	0.0
81	13 miles south	Lee Stringer	do.	1946	139	4	0.0
82	12¾ miles south	Shell Oil Co., Inc.	L. Patterson	1944	552	4	0.0
83	13 miles south	do.	do.	1943	550	4	0.0
84	13½ miles south	Wright Drilling Co.	Gay and Sons	1946	154	4	0.0

Well	WATER LEVEL Below land surface (ft.)	Date of measurement	Method of lift b/	Use of water c/	Remarks
64	--	--	Flows	D,S	"Woodruff Spring". Estimated flow 5 gallons a minute on December 17, 1947.
65	--	--	Flows	S	Screen from 415 to 430 feet. Reported flow 25 gallons a minute. Temperature 70° F.
66	d/ 75	June 1944	A,G	Ind	Screen from 957 to 977 feet. Reported yield 140 gallons a minute. Formerly supplied water for drilling oil test. See log.
67	d/ 75	June 1944	A,G	Ind	Screen from 279 to 302 feet. Reported yield 20 gallons a minute. Formerly supplied water for drilling oil test. See log.
68	d/ 45	Nov. 1946	C,H	D,S	Screen from 125 to 135 feet. See log.
69	d/ 20	June 1938	C,G	P	Dug.
70	--	--	--	--	Oil test; 10-inch casing set at 2,167 feet. See electrical log, figure 2.
71	--	--	--	--	Oil test; 10-inch casing set at 916 feet. See partial driller's log.
72	d/ 75	1944	A,G	Ind	Formerly supplied water for drilling oil test.
73	51.1	Sept. 14, 1945	B,H	D,S	Bored, concrete tile casing.
74	--	--	--	--	Oil test. Sand and gravel reported from 0 to 428 feet; 10-inch casing set at 428 feet. See partial log.
75	d/ 50	Sept. 1946	J,E, 1/3	D	Screen from 133 to 153 feet. See log.
76	d/ 12	Sept. 1934	A,E, ½	D,S	Screen from 123 to 135 feet. Supplies dairy.
77	d/ 50	July 1944	C,G, 2	D	Screen from 560 to 582 feet. Supplies camp. See log.
78	d/ 20	June 1943	C,E, 2	D	Screen from 176 to 196 feet. Supplies pipe line pump station.
79	d/ 24	Dec. 20, 1946	C,W	D,S	Dug.
80	d/ 55	do.	C,E, ¼	D,S	Screen from 95 to 105 feet. See log.
81	d/ 32	Dec. 15, 1946	C,H	D,S	Screen from 123 to 133 feet. See log.
82	d/ 50	July 24, 1944	C,G, 2	D	Screen from 530 to 550 feet. Domestic supply for employee. See log.
83	d/ 50	Oct. 23, 1943	A,G, --	Ind	Screen from 496 to 517 feet. Formerly supplied water for drilling oil test. (Central Coal and Coke Co. No. 11). See log.
84	d/ 22	Oct. 14, 1946	C,G, --	Ind	Screen from 134 to 154 feet. Formerly supplied water for drilling oil test. See log.

Records of wells and springs in San Jacinto County -- Continued

Well	Distance from Shepherd	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well	Height of measuring point above ground (ft.) a/
85	½ mile south	R. L. Bledsoe	Jones and Tarbett	1924	2,990	10	--
86	In Shepherd	Shepherd Public School	--	1938	465	3	0.0
87	do.	Shepherd Ice Plant	J. Parker	1934	40	2	0.0
88	do.	B. Finger	O. D. Adams	1940	100	4,2	0.0
89	1 mile southwest	C. O. Ford	do.	1941	469	4	0.0
90	In Shepherd	J. R. Elmore	Baggett Drilling Co.	1946	685	2	0.0
91	do.	A. R. Cronin	-- Angel	1937	72	8	0.0
92	1 mile southwest	J. R. Elmore	A. E. Fawcett, Sr.	1945	710	4	0.0
93	3¾ miles south	J. S. Abercrombie Co.	--	1940	180	4	0.0
94	6½ miles southwest	Joe E. Gay	Gay and Sons	1946	80	4	0.0
95	7½ miles southwest	W. R. Stephens	-- Angel	1942	30	8	0.0
96	7¼ miles southwest	Hinchliff-Sims	Magnolia Petroleum Co.	1945	11,078	16,10	--
97	8¼ miles southwest	Whitten Estate	Cockburn Oil Co.	1937	5,602	--	--
98	5 miles west	R. I. Smith	Gay and Sons	1946	150	4	0.0
99	3¾ miles northwest	San Jacinto County Road	--	1940	70	4	0.0
100	4¼ miles northwest	John P. Shirley	Baggett Drilling Co.	1946	520	2	0.0
101	1½ miles north	-- Tribe	Tarbett Oil Co.	1928	1,447	--	--
102	1½ miles northeast	W. H. Worshan	--	1941	36	4	0.0
103	2½ miles northeast	Texas Long Leaf Lumber Co.	J. E. Blair	1930	164	2½	0.0
104	5¼ miles north	Miss E. Langham	Baggett Drilling Co.	1946	273	4	0.0
105	5 miles north	do.	--	1937	300	2	0.0
106	5¼ miles north	do.	O. D. Adams	1941	265	2	0.0

Well	WATER LEVEL Below land surface (ft.)	Date of measurement	Method of lift b/	Use of water c/	Remarks
85	--	--	--	--	Oil test; 10-inch casing set at 140 feet. See partial log.
86	d/ 11	1938	C,E, --	P	Screen from 453 to 465 feet. Supplies Shepherd Public School.
87	d/ 15	1934	C,E, 1/6	Ind	Bored. Supplies ice plant.
88	d/ 45	Dec. 1940	J,E, $\frac{1}{2}$	D	Screen from 90 to 100 feet.
89	d/ 49	Jan. 7, 1941	J,E, $\frac{1}{2}$	D	Screen from 430 to 438 feet. See log.
90	d/ 40	Oct. 1946	J,E, $\frac{3}{4}$	D	Screen from 670 to 685 feet.
91	d/ 41	June 1943	J,E, 1/3	D	
92	d/ 4[illegible]	Aug. 1945	--	--	Screen from 680 to 710 feet. Formerly supplied water for drilling oil test.
93	d/ 55	Dec. 15, 1946	J,E, 1	D	Screen from 160 to 180 feet. Domestic supply for employee; formerly supplied water for drilling oil test.
94	d/ 21	Apr. 1946	J,E, 1/3	D	Screen from 66 to 76 feet. See log.
95	d/ 25	Aug. 1942	J,E, $\frac{1}{4}$	D	Bored, concrete tile casing.
96	--	--	--	--	Oil test; 10-inch casing set at 2,485 feet. See electrical log, figure 2.
97	--	--	--	--	Oil test. See electrical log, figure 2.
98	d/ 50	May 1946	C,H	D,S	Screen from 50 to 60 feet.
99	--	--	Flows	S	Seismograph shot hole; no casing. Estimated flow 3 gallons a minute on November 15, 1946.
100	d/ 56	Sept. 1946	C,W	D,S	Screen from 499 to 520 feet.
101	--	--	--	--	Oil test. See log.
102	d/ 23	Apr. 1941	C,E, $\frac{1}{2}$	D	Screen from 30 to 36 feet.
103	d/+10	1930	Flows	D,S	Screen from 144 to 164 feet. Measured flow 7 gallons a minute on November 8, 1946. Formerly supplied boilers at sawmill. Temperature 69° F.
104	+ 20	Nov. 25, 1946	Flows	S	Screen from 258 to 273 feet. Measured flow 8 gallons a minute on November 25, 1946. Temperature $71\frac{1}{2}$° F.
105	+ 15	Jan. 6, 1947	Flows	S	Cased to 300 feet. Measured flow 10 gallons a minute on January 6, 1947. Temperature 70° F.
106	+ 9	Nov. 25, 1946	Flows	D,S	Screen from 255 to 265 feet. Measured flow 5 gallons a minute on November 25, 1946. Temperature 71° F.

Records of wells and springs in San Jacinto County -- Continued

Well	Distance from Shepherd	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Height of measuring point above ground (ft.) a/
107	$5\frac{1}{2}$ miles northeast	J. E. Blair	J. E. Blair	1929	121	$2\frac{1}{2}$	0.0
108	5 miles northeast	Mrs. D. M. Filler	--	1929	29	$1\frac{1}{2}$	0.0
109	$4\frac{1}{2}$ miles northeast	Urbana Sand and Gravel Co.	--	1907	120	$1\frac{1}{2}$	0.0
110	5 miles northeast	do.	--	1915	120	3	0.0
111	$7\frac{1}{4}$ miles northeast	Ty Parker	--	1934	15	$1\frac{1}{4}$	0.0
112	8 miles east	Obie Sels	J. B. Hayman	1939	27	8	3.0
113	$8\frac{1}{2}$ miles east	West Lumber Co.	--	--	150	4	0.0
114	$9\frac{3}{4}$ miles east	Lucy B. Modesett	--	1903	400	6	0.0
115	8 miles east	J. G. Greathouse	J. G. Greathouse	1946	457	2	0.0
116	$7\frac{1}{2}$ miles east	do.	--	1943	830	4	0.0
117	$5\frac{3}{4}$ miles east	J. R. Elmore	Baggett Drilling Co.	1946	240	4	0.0
118	$5\frac{1}{2}$ miles east	Cochran and James	--	--	200	6	0.0
119	do.	do.	--	--	600	10	0.0
120	$4\frac{1}{2}$ miles east	Jess Schrader	Gay and Sons	1946	334	2	0.0
121	4 miles east	San Jacinto County Road	--	1939	80	4	0.0
122	2 miles east	G. W. Parker	G. W. Parker	1942	21	$1\frac{1}{4}$	0.0
123	$9\frac{1}{4}$ miles southwest	Cochran and Falvey	Gay and Sons	1946	180	4	0.0

a/ Measuring point was usually top of casing, top of pipe clamp, or top of pump base or foundation.

b/ Method of lift: C, cylinder; E, electric; G, gasoline natural gas, butane or oil engine; W, windmill; Cf, centrifugal; A, air lift; J, jet; B, rope and bucket; H, hand. Number indicates horsepower.

Well	WATER LEVEL Below land surface (ft.)	Date of measurement	Method of lift b/	Use of water c/	Remarks
107	+ 8	Nov. 8, 1946	Flows	D	Screen from 101 to 121 feet. Measured flow one gallon a minute on November 8, 1946. Temperature 69° F.
108	d/ 15	1929	C,E, 1/3	D	Driven.
109	--	--	Flows	S	Measured flow 3 gallons a minute on January 6, 1947. Temperature 70° F.
110	d/+10	1929	Flows	D	Do.
111	d/ 10	1934	C,H	D	Driven.
112	9.5	Nov. 26, 1946	C,H	D,S	Bored, concrete tile casing.
113	--	--	Flows	D,S	Estimated flow 25 gallons a minute on November 26, 1946. Temperature 70½° F.
114	--	--	Flows	S	Estimated flow 100 gallons a minute on November 21, 1946. Temperature 72° F.
115	+ 27	Nov. 25, 1946	Flows	S	Cased to 300 feet. Measured flow 9 gallons a minute on November 25,1946. Temperature 72½° F.
116	+ 44	do.	Flows	D	Reported flow 75 gallons a minute. Temperature 77½° F.
117	+ 18	Nov. 26, 1946	Flows	S	Screen from 225 to 240 feet. Measured flow 25 gallons a minute on November 26, 1946. Temperature 69° F.
118	--	--	Flows	S	Estimated flow 75 gallons a minute on November 21, 1946. Temperature 71° F.
119	--	--	Flows	S	Estimated flow 75 gallons a minute on November 21, 1946. Temperature 75° F.
120	+ 10	Nov. 18, 1946	Flows	D,S	Screen from 210 to 230 feet. Measured flow 4 gallons a minute on November 18, 1946. Temperature 70° F. See log.
121	--	--	Flows	D,S	Seismograph shot hole; no casing. Estimated flow one gallon a minute on November 18, 1946.
122	d/ 13	June 1942	C,H	D,S	Bored.
123	d/ 2	July 1946	J,E, 3/4	D	Screen from 165 to 175 feet. See log. (Well is in Liberty County.)

c/ Use of water: P, public supply; D, domestic; S, stock; Ind, industrial; N, not used.

d/ Water level reported by driller or owner.

Table of drillers' logs, San Jacinto County, Texas

Well 1

Columbia Lumber Company, in Oakhurst

	Thickness (feet)	Depth (feet)
Soil	15	15
Sand	105	120
Clay	150	270
Sand	20	290
Clay	10	300

Well 13, partial log

Gibbs Brothers and Company, Sprague et al., No. 1, Embry, 10 miles north of Oakhurst, (from files of Texas Railroad Commission).

	Thickness (feet)	Depth (feet)
Surface	20	20
Gumbo	5	25
Blue shale	15	40
Shale	120	160
Gumbo	53	213
Hard rock	2	215
Sand	104	319
Gumbo	37	356
Sand	8	364
Gumbo	54	418
Hard shale and sand	17	435
Gumbo	52	487
Gumbo and sand	7	494
Gumbo	77	571
Packsand and boulders	37	608
Gumbo	34	642
Packsand	2	644
Gumbo	57	701
Sand	7	708
Gumbo	9	717
Sand	20	737
Gumbo	41	778
Sand	14	792
Gumbo	32	824
Sand, rock	8	832
Gumbo	4	836
Sand, rock	6	842
Gumbo	8	850
Black shale	12	862
Gumbo	24	886
Shale	9	895
Gumbo	199	1094

Well 13, partial log -- continued

	Thickness (feet)	Depth (feet)
Shale	12	1106
Gumbo	59	1165
Sand, gumbo and boulders	35	1200
TOTAL DEPTH		3004

Well 41, partial log

Delta Land and Timber Company, Pace et al , No. 1, 5 miles northwest of Evergreen, (from files of Texas Railroad Commission).

	Thickness (feet)	Depth (feet)
Surface clay	18	18
Sand	4	22
Shale	360	382
Shale and sand	301	683
Shale, sand and shells	120	803
Sandy lime	5	808
Sandy shale	89	897
Shale and shells	106	1003
Sandy shale, and shells	224	1227
Broken sand	116	1343
Sticky shale	81	1424
Shale	30	1454
Sand and shale	51	1505
Lime	2	1507
Hard sandy lime	4	1511
Broken lime	4	1515
Shale and shells	8	1523
Shale	79	1602
Sand	95	1697
Shale	43	1740
Broken lime	16	1756
Shale and shells	83	1839
Sand and shells	80	1919
Sandy shale	51	1970
Shale	20	1990
Sand, shells and lignite	102	2092
Sandy shale	24	2116
Gumbo	21	2137
Shale and shells	9	2146
Sticky shale	34	2180

(Continued on next page)

Table of drillers' logs, San Jacinto County -- Continued

	Thickness (feet)	Depth (feet)
Well 41, partial log -- continued		
Shale	64	2244
Sand	80	2324
Shale and shells	28	2352
Broken sand	64	2416
Sand	7	2423
Sticky shale	27	2450
Shale	120	2570
Sticky shale	17	2587
Shale	3	2590
Sticky shale	30	2620
Shale	28	2648
Sticky shale	18	2666
Shale	13	2679
Gumbo	7	2686
Shale	13	2699
Shale and shells	11	2710
Sticky shale	161	2871
TOTAL DEPTH		4042

Well 50

W. S. Childress, 1 mile southwest of Coldspring.

	Thickness (feet)	Depth (feet)
Clay and sand	42	42
Water sand	22	64
Clay	2	66
Sand	25	91
Blue and brown clay	184	275

Well 63, partial log

Mrs. Ella McMurrey, Arkansas Fuel Oil Company, No. 1, 5 miles northeast of Coldspring.

	Thickness (feet)	Depth (feet)
Surface sand	30	30
Sand and clay	280	310
Sand	10	320
Sand and clay	38	358
Hard gummy clay	5	363
Sand and streaks of clay	167	530
Sand and gumbo	254	784
Gumbo and gummy shale	166	950
Gummy shale and boulders	65	1015

	Thickness (feet)	Depth (feet)
Well 63, partial log -- continued		
Sticky shale	240	1255
Shale	40	1295
Broken lime and shale	20	1315
TOTAL DEPTH		4050

Well 66

Foster Lumber Company, 5½ miles northwest of Coldspring.

	Thickness (feet)	Depth (feet)
Surface	23	23
Sand	16	39
Shale	10	49
Sand	53	102
Shale	11	113
Sand	16	129
Shale	6	135
Sand	14	149
Shale	99	248
Sand	23	271
Shale	12	283
Sand	23	306
Shale	100	406
Sandy shale	16	422
Shale	94	516
Sandy shale	37	553
Shale	64	617
Sandy shale	30	647
Shale	146	793
Sandy shale	26	819
Shale	34	853
Sandy shale	38	891
Shale	68	959
Sand	18	977

Well 67

Foster Lumber Company, 5½ miles northwest of Coldspring.

	Thickness (feet)	Depth (feet)
Sandy clay	42	42
Clay	18	60
Sand	16	76
Clay	7	83
Fine-grained sand	15	98
Clay	17	115

(Continued on next page)

Table of drillers' logs, San Jacinto County -- Continued

	Thickness (feet)	Depth (feet)
Well 67 -- continued		
Rock	2	117
Hard sand	4	121
Rock	4	125
Tight sand	17	142
Clay	18	160
Rock	5	165
Clay	90	255
Fine-grained sand	16	271
Clay	8	279
Fine-grained sand	25	304
Clay	116	420
Sand	3	423
Clay	101	524
Fine-grained sand	11	535
Clay	93	628

Well 68

David Jackson, 4 miles west of Coldspring.

	Thickness (feet)	Depth (feet)
Clay	18	18
Sand and rock	2	20
Clay	23	43
Sand	5	48
Clay	63	111
Sand	31	142

Well 71, partial log

Foster Lumber Company, Piedmont Oil Company, No. 1, 5 miles south of Coldspring.

	Thickness (feet)	Depth (feet)
Sand and gravel, water	245	245
Shale and shells	370	615
Shale	85	700
Broken sand	150	850
Hard sand	50	900
Sticky shale	70	970
Shale and shells	515	1485
TOTAL DEPTH		4474

Well 74, partial log

Lobritsky and Vick, Proletarian Diamond Oil Company, No. 1, 15 miles south of Coldspring.

	Thickness (feet)	Depth (feet)
Sand and gravel	428	428
Shale	327	755
Packsand and boulders	3	758
Gumbo	7	765
Packsand and boulders	7	772
Gumbo, shale and lime	133	905
Gumbo and shale	66	971
Blue sandy shale	21	992
Lime	15	1007
Sand	10	1017
Shale	7	1024
Sand	31	1055
Gumbo	39	1094
Shale	46	1140
Sand	37	1177
Gumbo, lime and shale	332	1509
Sand	26	1535
Gumbo and lime	363	1898
TOTAL DEPTH		4209

Well 75

F. Yanoushek, 14½ miles south of Coldspring.

	Thickness (feet)	Depth (feet)
Sand	41	41
Gravel	10	51
Clay	28	79
Rock	2	81
Clay	41	122
Sand	31	153

Well 77

Mercy Camp, Shell Oil Company, Inc., [illegible] 11½ miles south of Coldspring.

	Thickness (feet)	Depth (feet)
Surface	24	24
Sand	156	180
Shale	176	356
Sand and shale	44	400
Shale	143	543
Sand	40	583

Table of drillers' logs, San Jacinto County -- Continued

Well 80

Dr. Allen McMurrey, 13½ miles south of Coldspring.

	Thickness (feet)	Depth (feet)
Clay	31	31
Sand	14	45
Clay	5	50
Sand	9	59
Clay	26	85
Sand	30	115

Well 81

Lee Stringer, 13 miles south of Coldspring.

	Thickness (feet)	Depth (feet)
Clay	28	28
Sand	8	36
Clay and sand streaks	44	80
Hard blue clay	20	100
Sand	39	139

Well 82

Shell Oil Company, Inc., 12¾ miles south of Coldspring.

	Thickness (feet)	Depth (feet)
Surface	24	24
Sand and shale	21	45
Shale	68	113
Sand	46	159
Sand and shale	22	181
Sand	22	203
Shale	44	247
Sand	20	267
Sand and shale	66	333
Shale	132	465
Sand and shale	23	488
Shale	16	504
Sand	13	517
Shale	13	530
Sand	22	552

Well 83

Central Coal and Coke Company, 13 miles south of Coldspring.

	Thickness (feet)	Depth (feet)
Surface	21	21
Sand	16	37
Shale	8	45
Sand	19	64
Shale	66	130
Sand	38	168
Shale	17	185
Sand	23	208
Shale	64	272
Sand	18	290
Shale	181	471
Sand	11	482
Shale	12	494
Sand	24	518
Shale	32	550

Well 84

Wright Drilling Company, 13½ miles south of Coldspring.

	Thickness (feet)	Depth (feet)
Clay	21	21
Sand	41	62
Clay	38	100
Sand	54	154

Well 85, partial log

R. L. Bledsoe, Jones and Tarbett No. 1, ½ mile south of Shepherd.

	Thickness (feet)	Depth (feet)
Sand	45	45
Clay	17	62
Sandy clay	28	90
Sand	20	110
Gravel	22	132
Gumbo	126	258
Hard shale	38	296
Sand	4	300

(Continued on next page)

Table of drillers' logs, San Jacinto County -- Continued

Well 85, partial log -- continued

	Thickness (feet)	Depth (feet)
Rock	2	302
Sand	5	307
Gumbo and boulders	20	327
Hard shale	15	342
Gumbo	38	380
Sand and boulders	5	385
Shale	17	402
Gumbo	7	409
Hard sand	10	419
Hard shale	41	460
Gumbo and boulders	20	480
Water sand	60	540
Gumbo and boulders	128	668
Water sand	26	694
Gumbo and shale	55	749
Gumbo	23	772
Hard sand	9	781
Gumbo	36	817
Gumbo and boulders	8	825
Water sand	22	847
Gumbo	38	885
Shale	7	892
Water sand	17	909
Gumbo	4	913
Shale	8	921
Sandy gumbo	49	970
Gray gumbo	102	1072
TOTAL DEPTH		2900

Well 89

C. O. Ford, 1 mile southwest of Shepherd.

	Thickness (feet)	Depth (feet)
Clay	23	23
Fine-grained sand	21	44
Sand and gravel	58	102
Gumbo	91	193
Rock	1	194
Fine-grained sand	5	199
Rock	2	201
Gumbo	9	210
Rock	1	211
Shale	1	212
Rock	1	213
Shale	41	254
Gumbo	65	319
Shale	11	330
Rock	1	331
Shale	29	360

Well 89 -- continued

	Thickness (feet)	Depth (feet)
Sand	4	364
Rock	2	366
Shale	5	371
Rock	1	372
Shale and boulders	48	420
Water sand	20	440
Shale	29	469

Well 94

Joe E. Gay, 6½ miles southwest of Shepherd.

	Thickness (feet)	Depth (feet)
Clay	18	18
Sand	17	35
Clay	7	42
Sand and gravel	38	80

Well 101

Tribe, Tarbett Oil Company, No. 1, 1½ miles north of Shepherd.

	Thickness (feet)	Depth (feet)
Surface	1	1
Pink sand	29	30
Joint clay	10	40
White sand	35	75
Clay	75	150
Rock	4	154
Gumbo	26	180
Coarse shale	10	190
Gumbo	40	230
Sand rock	5	235
Pink sand	25	260
Gumbo	30	290
Sand rock	5	295
Sandy shale	55	350
Gumbo	25	375
Sand and shale	50	425
Sand rock	7	432
Gumbo	18	450
Rock	5	455
Sand and shale	40	495
Gumbo	75	570
Sand and shale	48	618
Very tough blue gumbo	102	720
Sand	10	730
Gumbo	65	795

(Continued on next page)

Table of drillers' logs, San Jacinto County -- Continued

	Thickness (feet)	Depth (feet)
Well 101 -- continued		
Sand and shale, gummy streaks	25	820
Gumbo	50	870
Sandy shale	10	880
Lime rock with pyrites	25	905
Gumbo and lime	10	915
Sand and lignite	49	964
Gumbo and lime	24	988
Sandy shale and lime	18	1006
Lime rock	2	1008
Lime and gumbo	197	1205
White sand	13	1218
Very tough blue gumbo	5	1223
Sandy shale, gummy streaks	12	1235
Sand	45	1280
Red sandy shale and salt water sand	15	1295
Black and blue gumbo	53	1348
Red and white clay	4	1352
Soft gumbo and shale	13	1365
Hard gumbo	30	1395
Hard sandy shale and gummy lime	10	1405
Gumbo and lime	25	1430
Hard shale and lime	6	1436
Hard gumbo and lime	11	1447

	Thickness (feet)	Depth (feet)
Well 120		
Jess Schrader, 4½ miles east of Shepherd.		
Sand	8	8
Clay	10	18
Sand	15	33
Clay	52	85
Fine-grained sand	15	100
Clay and boulders	15	115
Clay	40	155
Hard sand	3	158
Clay	27	185
Hard sand	10	195
Packsand	15	210
Sand rock	5	215
Sand and boulders	10	225
Sand	3	228
Sandy shale	22	250
Clay	84	334
Well 123		
Cochran and Falvey, 9¼ miles southwest of Shepherd.		
Sand and clay	35	35
Gravel	20	55
Hard sand	5	60
Hard clay	95	155
Sand and gravel	25	180

Partial analyses of water from wells and springs in San Jacinto County, Texas

Analyzed at The University of Texas under the direction of W. W. Hastings, Chemist, U. S. Department of the Interior, Geological Survey, and Dr. E. P. Schoch, Director of the Bureau of Industrial Chemistry. Results are in parts per million. Well numbers correspond to numbers in table of well records.

Well	Owner	Depth of well (ft.)	Date of collection	Total dissolved solids	Silica (SiO_2)	Iron (fe)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K) (calc.)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Total hardness as $CaCO_3$ (calc.)
1	Columbia Lumber Co.	300	Oct. 23, 1941	366	61	0.18	55	3.6	56	268	12	28	0.4	0-	152
2	Oakhurst Public School	600	do.	460	29	0.22	124	9.7	32	403	115	52	0.2	0	351
3	D. D. Dolive	40	Jan. 10, 1947	210	-	0.39	25	4.8	38	96	24	30	-	24	82
4	Alton Aden	500	Sept. 5, 1945	341	-	-	68	6.3	37	261	11	36	-	0.2	196
5	E.J.Niederhofer	25	Jan. 10, 1947	220	-	0.11	22	7.1	37	66	30	44	-	22	84
6	R. W. Loving	23	Aug. 31, 1945	102	-	17	4.4	2.2	15	27	4	18	-	0	20
7	Albert Knight	60	do.	2,610	-	-	498	63	386	392	125	1,340	-	1.5	1,500
8	C. D. Cowart	47	do.	944	-	-	145	11	166	536	43	196	-	7.5	407
9	T. F. Toole	20	do.	321	-	-	18	0.9	54	8	24	90	-	9.6	49
16	W. W. Butler	645	Oct. 8, 1946	458	-	0.04	24	0.8	141	342	16	52	-	0.2	64
17	I. J. Owen	35	Jan. 10, 1947	607	-	0.20	82	3.5	98	87	18	242	-	0.5	219
18	J. L. Capers	34	do.	312	-	0.06	26	2.3	48	64	10	74	-	14	74
19	A. R. Shearer	411	Oct. 8, 1946	918	-	0.11	31	1.9	317	585	1	208	-	0	86
20	G.A.Williamson	Spring	Sept. 5, 1945	-	-	-	0.7	0.9	8.7	12	3	6	-	3.8	5
21	J. E. Street	Spring	do.	-	-	-	1.4	0.4	20	15	7	20	-	0.4	5
22	J. W. Johnson	36	do.	141	-	-	2.3	1.3	15	13	7	12	-	6.6	11
25	J. L. Hoot	15	Jan. 11, 1947	239	-	5.2	4.4	2.8	17	14	30	10	-	2.0	22
26	do.	585	Oct. 10, 1946	370	-	0.14	73	7.9	64	284	14	75	-	0	214
27	W. T. Carter	586	do.	386	-	0.03	79	7.4	52	270	10	77	-	0	228
28	C. T. Caldwell	97	do.	361	-	0.17	110	3.1	12	332	4	24	-	3.0	287
29	C. A. Caldwell	197	do.	373	-	0.03	100	5.5	19	292	10	45	-	0	272
30	H. R. McAdams	60	Nov. 28, 1946	-	-	0.08	-	-	-	176	10	685	-	9.0	698
34	C. A. Caldwell	106	Nov. 7, 1946	486	-	1.5	99	7.0	77	345	2	113	-	0.2	276
36	do.	201	Oct. 10, 1946	350	-	0.04	97	3.3	17	280	6	40	-	0	256
37	A. W. Ellisor	21	Nov. 7, 1946	494	-	0.05	118	4.8	58	468	18	20	-	11	314
38	H. F. Lewis	Spring	Jan. 11, 1947	50	-	0.09	3.5	1.8	7.4	12	2	12	-	4.3	16
39	F. S. Browder	50	do.	98	-	0.03	18	2.5	7.5	56	2	14	-	4.7	55

a/ Hardness by the soap method.

Partial analyses of water from wells and springs in San Jacinto County -- continued
(Results are in parts per million)

Well	Owner	Depth of well (ft.)	Date of collection	Total dis-solved solids	Silica (SiO_2)	Iron (Fe)	Cal-cium (Ca)	Magne-sium (Mg)	Sodium and Potas-sium (Na+K) (calc.)	Bicar-bonate (HCO_3)	Sul-fate (SO_4)	Chlo-ride (Cl)	Fluor-ide (F)	Ni-trate (NO_3)	Total hardness as $CaCO_3$ (calc.)
40	W. W. Cook	165	Nov. 7, 1946	211	-	5	22	2.6	49	135	2	42	-	0	66
42	San Jacinto County	Spring	Oct. 23, 1941	39	12	0.16	4.2	2.0	1.2	6	3	8	0.3	5	22
43	Baptist Church	Spring	Dec. 17, 1946	42	-	0.35	3.8	1.4	6.9	12	4	10	-	2.8	15
45	J.C.Hogue,Jr.	85	Jan. 11, 1947	108	-	0.06	7.6	2.7	20	32	7	20	-	15	30
46	do.	Spring	Dec. 17, 1946	-	-	.08	-	-	-	11	1	10	-	1.8	6a/
47	do.	60	do.	-	-	1.0	-	-	-	18	2	14	-	0.4	15a/
48	Sam McMurrey	76	Nov. 20, 1946	52	-	2.29	9.0	2.0	7.3	17	6.6	16	-	4	31
49	Guy Lilley	65	Nov. 28, 1946	82	-	0.43	4.0	2.0	23	48	2	14	-	7.8	18
50	W.S.Childress	-	Dec. 17, 1946	109	-	0.25	19	2.5	13	69	5	16	-	2.0	53
54	Hale Bros.	Spring	Jan. 11, 1947	107	-	0.03	5.0	2.6	13	8.0	2	18	-	22	23
55	J. A. Jordan	29	do.	374	-	1.6	39	5.1	61	102	14	96	-	23	113
56	O. L. Jordan	42	do.	234	-	0.06	16	7.4	44	28	20	62	-	42	70
57	Mrs.E.McMurrey	425	Oct. 31, 1946	383	-	3.1	28	2.6	119	269	20	70	-	0.2	80
58	C.L.McGowen	318	Oct. 10, 1946	355	-	1.7	28	3.7	110	230	20	70	-	0	85
59	Hale Bros.	535	Nov. 12, 1946	417	-	2.70	30	2.8	135	288	23	85	-	0	86
60	Mrs.E.McMurrey	427	Oct. 31, 1946	394	-	0.03	24	3.1	127	301	17	60	-	0	72
61	do.	459	do.	390	-	0.41	27	4.4	120	293	18	62	-	0.2	86
62	do.	468	do.	390	-	0.04	26	2.2	126	279	17	73	-	0	74
64	Woodruff Heirs	Spring	Dec. 17, 1946	-	-	0.05	--	-	-	12	3	16	-	4.0	21a/
68	David Jackson	142	Nov. 28, 1946	402	-	0.44	86	4.7	47	276	13	66	-	0	234
69	U. S. Forest Service	28	Sept.14, 1945	40	-	-	5.6	0.8	9.9	25	4	10	-	0	17
73	F. R. Dabney	60	do.	42	-	-	6.8	0.8	3.7	15	3	9	-	2	20
76	H. C. Rabe	135	Jan. 3, 1947	96	-	0.45	7.6	1.3	15	30	1	18	-	6.9	24
77	Shell Oil Co.	583	do.	319	-	4.3	52	12	60	320	15	22	-	0.0	180
78	Atlantic Pipe Line Co.	196	Jan. 4, 1947	80	-	4.9	11	1.3	17	52	1	18	-	0.0	33
79	Dr.Allen McMurrey	40	do.	143	-	3.8	34	1.5	15	112	5	14	-	7.8	91
80	do.	115	do.	105	-	0.87	12	1.6	17	44	2	18	-	12	37
81	Lee Stringer	139	do.	130	-	1.6	16	2.6	16	69	1	20	-	0.0	51

a/ Hardness by the soap method.

Partial analyses of water from wells and springs in San Jacinto County -- continued
(Results are in parts per million)

Well	Owner	Depth of well (ft.)	Date of collection	Total dissolved solids	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K) (calc.)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Total hardness as $CaCO_3$ (calc.)
82	Shell Oil Co.	552	Jan. 15, 1947	324[illegible]	-	0.89	39	14	36	221	20	22	-	1.0	155
86	Shepherd Public School	465	Oct. 23, 1941	354	20	0.2	20	6.1	109	296	17	35	0.4	0	74
87	Shepherd Ice Plant	40	Nov. 8, 1946	169	-	0.08	16	5.9	18	3	11	40	-	42	64
88	B. Finger	100	Sept. 14, 1945	153	-	0.2	21	2.3	15	65	1	28	-	0	62
89	C. O. Ford	469	do.	368	-	-	27	5.5	112	312	22	38	-	0	90
90	John R. Elmore	685	Nov. 8, 1946	366	-	1.3	17	3.3	123	253	19[illegible]	68	-	0	56
91	A. R. Cronin	72	Sept. 14, 1945	215	-	0.42	12	4.4	32	41	1	27	-	57	48
92	J. R. Elmore	710	do.	371	-	-	13	2.0	125	264	13	38	-	0	40
94	Joe E. Gay7	80	Nov. 8, 1946	206	-	0.04	18	6.1	18	28	2	28	-	56	70
95	W. R. Setphens	30	do.	438	-	0.15	46	18	46	24	12	42	-	246	189
98	R. I. Smith	150	Nov. 20, 1946	-	-	3.5	-	-	-	137	2	20	-	0.0	102
99	San Jacinto County	70	Nov. 15, 1946	-	-	0.0	-	-	-	246	8.0	52	-	0.0	147
100	J. P. Shirley	520	do.	296	-	0.19	26	4.6	91	288	10	25	-	0	84
102	W. H. Worsham	36	Nov. 18, 1946	-	-	0.15	-	-	-	13	24	32	-	4.4	54
103	Texas Long Leaf Lumber Co.	164	Nov. 8, 1946	344	-	0.51	39	8.1	85	246	15	70	-	0	131
104	Miss E. Langham	273	Nov. 25, 1946	305	-	0.06	16	2.5	103	274	12	27	-	0	50
105	do.	300	Jan. 6, 1947	358	-	.49	21	3.4	118	288	19	48	-	0.0	66
106	do.	265	Nov. 25, 1946	350	-	0.06	18	3.1	121	290	17	46	-	0	58
107	J. E. Blair	121	Nov. 8, 1946	248	-	0.31	38	7.9	46	229	5	24	-	0	127
108	Mrs.D.M.Filler	29	Jan. 13, 1947	175	-	0.39	50	1.6	12	154	18	8.0	-	1.0	131
109	Urbana Sand and Gravel Co.	120	Jan. 6, 1947	270	-	0.17	30	4.7	71	262	12	16	-	0.0	94
110	do.	120	do.	285	-	0.29	31	5.7	61	182	15	30	-	0.2	101
111	Ty Parker	15	Nov. 26, 1946	-	-	3.5	-	-	-	44	4.0	37	-	2.2	78
112	Obie Sels	27	do.	-	-	5.5	-	-	-	129	15	49	-	34	144
113	West Lumber Co.	150	do.	257	-	0.17	61	6.2	23	222	6	28	-	0	178
114	Lucy B.Modesett	400	Nov. 21, 1946	-	-	0.0	-	-	-	239	5.0	33	-	-	138
115	J.G.Greathouse	457	Nov. 25, 1946	253	-	0.23	10	2.3	92	240	11	18	-	0	34
116	do.	330	do.	398	-	0.03	11	1.7	148	306	17	62	-	0	34

a/ Hardness by the soap method.

Partial analyses of water from wells and springs in San Jacinto County -- continued
(Results are in parts per million)

Well	Owner	Depth of well (ft.)	Date of collection	Total dis- solved solids	Silica (SiO_2)	Iron (Fe)	Cal- cium (Ca)	Magne- sium (Mg)	Sodium and Potas- sium (Na+K) (calc.)	Bicar- bonate (HCO_3)	Sul- fate (SO_4)	Chlo- ride (Cl)	Fluor- ide (F)	Ni- trate (NO_3)	Total hardness as $CaCO_3$ (calc.)
117	J. R. Elmore	240	Nov. 26, 1946	266	-	0.11	20	3.0	79	246	10	16	-	0.2	62
118	Cochran and James	200	Nov. 21, 1946	-	-	0.0	-	-	-	228	6.0	29	-	-	105
119	do.	600	do.	-	-	0.05	-	-	-	235	11	36	-	-	51
120	J. Schrader	334	Nov. 18, 1946	303	-	-	39	6.8	74	230	18	56	-	0.0	126
121	San Jacinto County	80	do.	-	-	0.05	-	-	-	120	2	33	-	0.2	96
122	G. W. Parker	21	do.	-	-	0.30	-	-	-	9.0	12	43	-	-	171
123	Cochran and Falvey	185	Nov. 13, 1946	-	-	0.25	-	-	-	136	2	20	-	0.0	96

a/ Hardness by the soap method.

MAP OF SAN JACINTO COUNTY, TEXAS
SHOWING LOCATIONS OF WATER WELLS AND SPRINGS

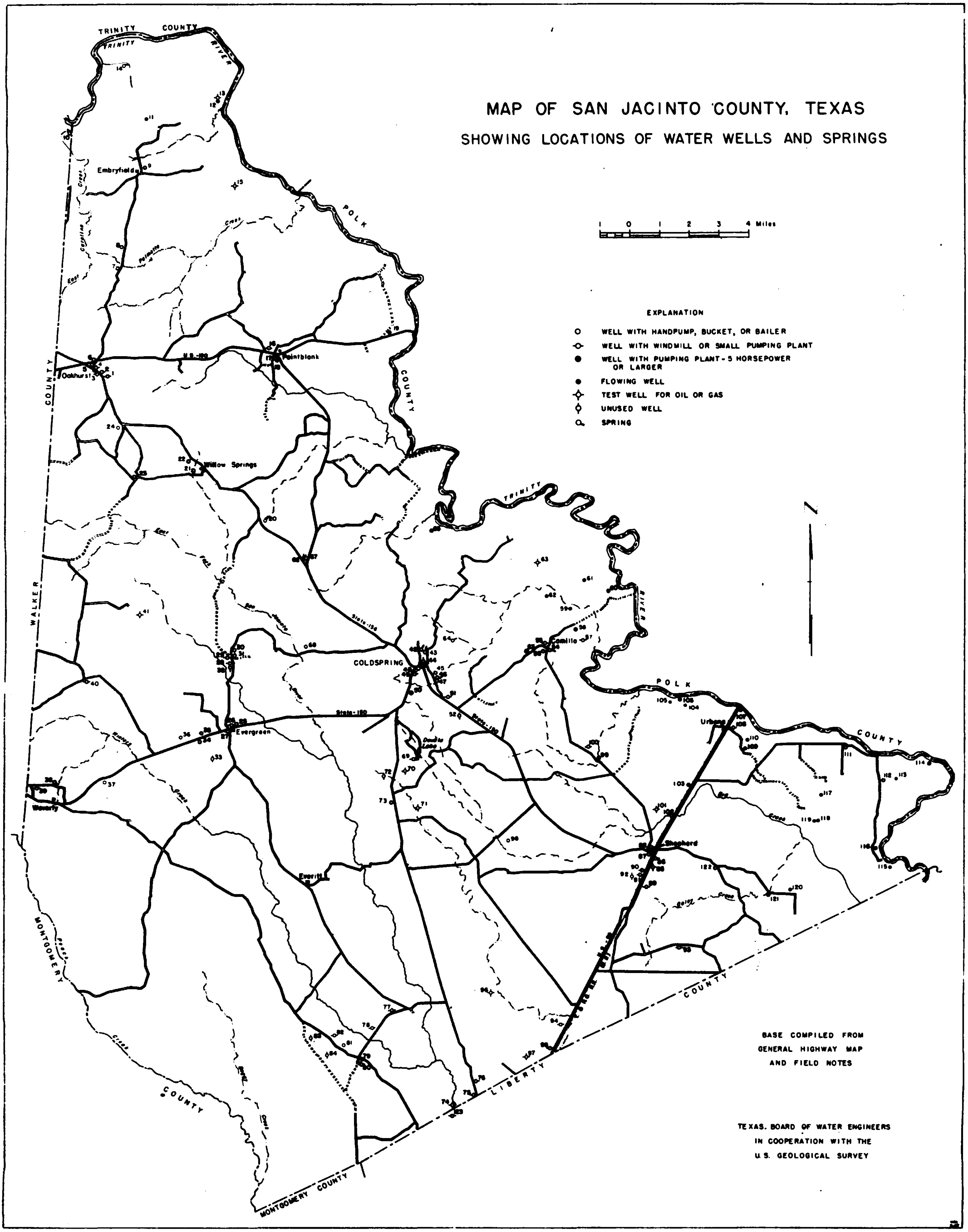
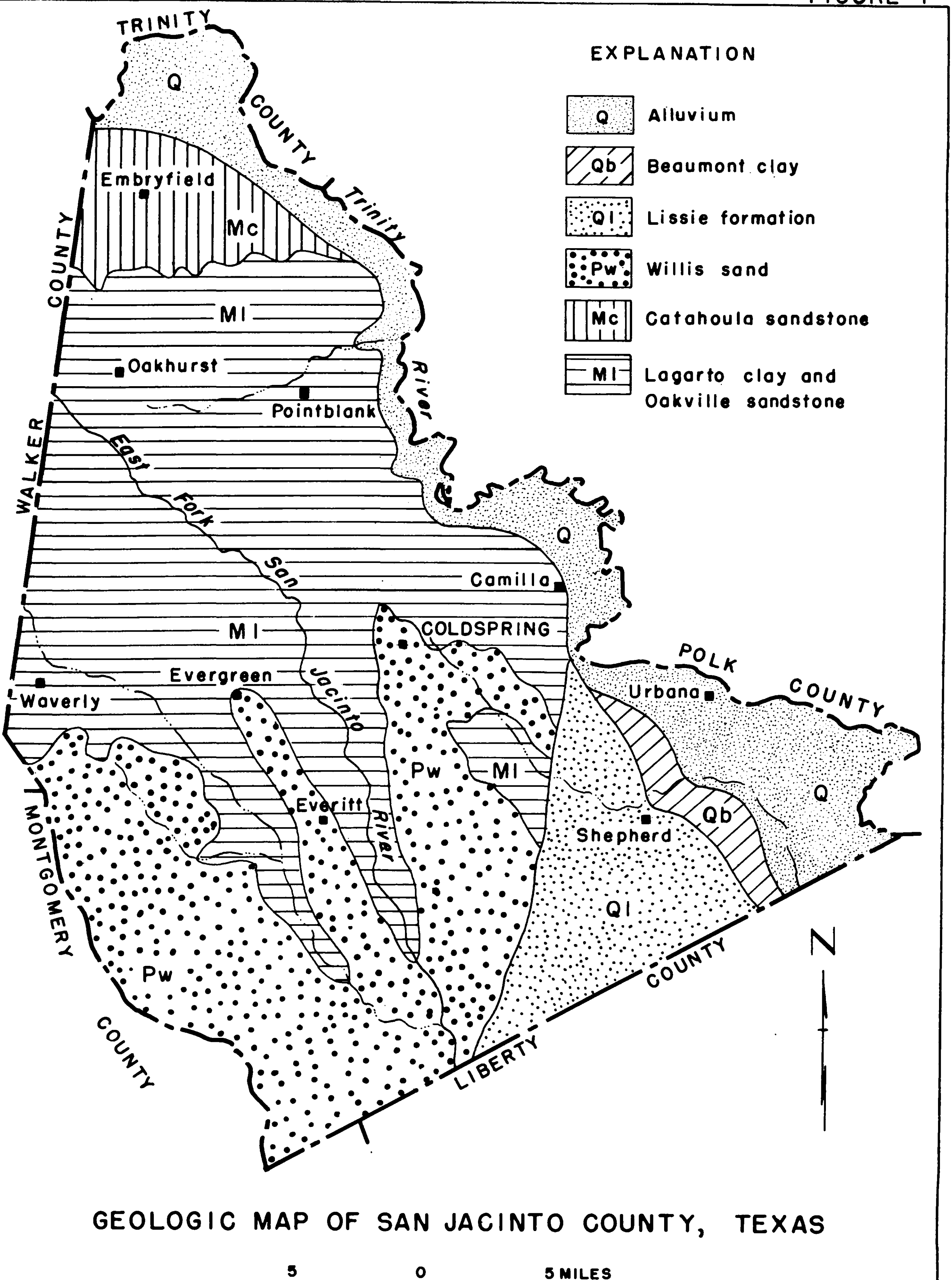
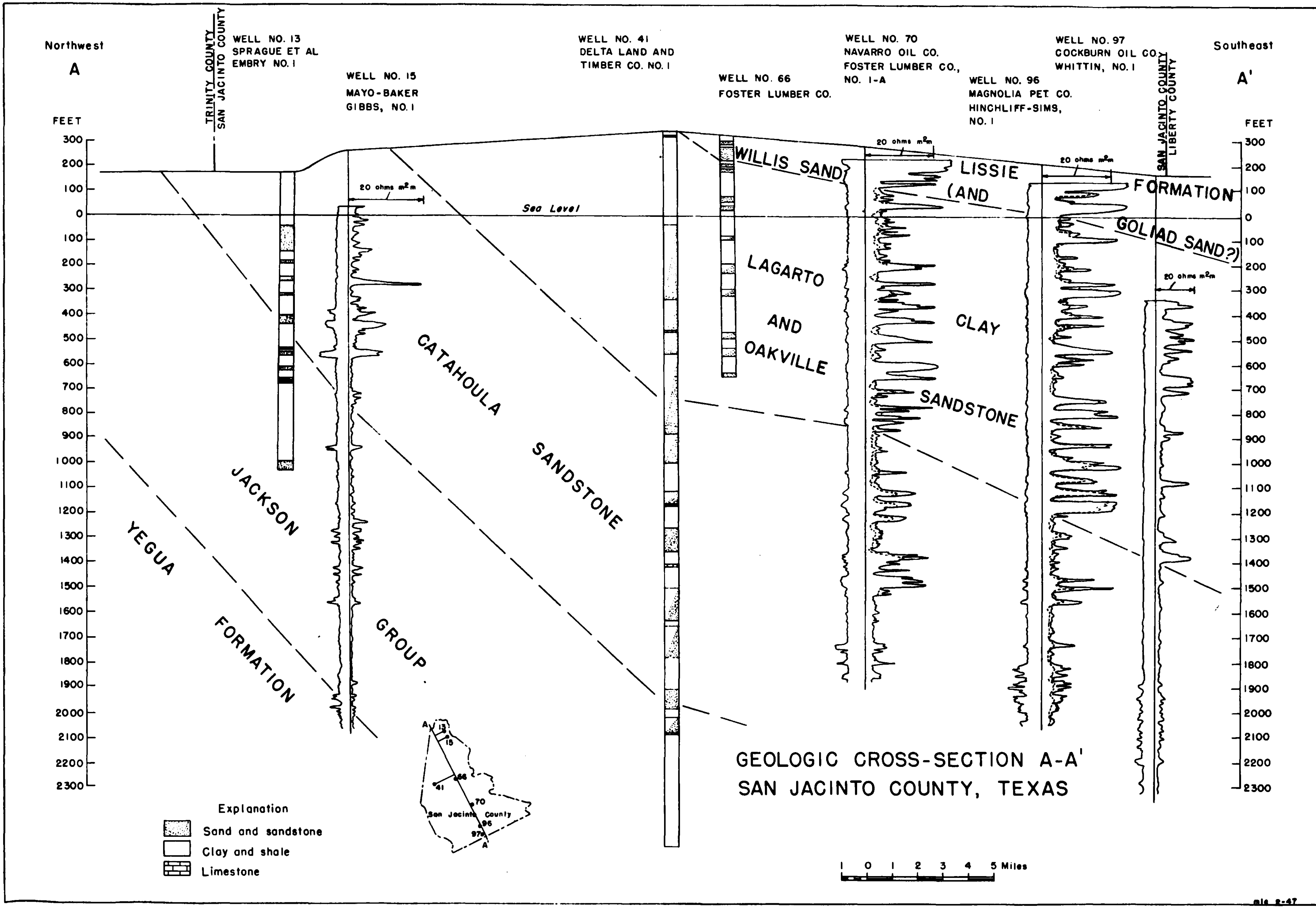


FIGURE 1



GEOLOGIC MAP OF SAN JACINTO COUNTY, TEXAS

From geologic map of Texas, U.S. Geological Survey, 1937



GEOLOGIC CROSS-SECTION A-A'
SAN JACINTO COUNTY, TEXAS