TEXAS WATER DEVELOPMENT BOARD

REPORT 80

GROUND-WATER RESOURCES OF SAN JACINTO COUNTY, TEXAS

By

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United States Geological Survey

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ABSTRACT

Large quantities of undeveloped fresh water extending to depths as great as 1,600 feet are present in San Jacinto County. In 1965, an estimated 1.2 mgd (million gallons per day) was withdrawn. More than half of this was discharged from flowing wells.

Three major hydrologic units, the Jasper aquifer, the Burkeville aquiclude, and the Evangeline aquifer, are present. One other hydrologic unit, the Catahoula Sandstone, is present.

It is conservatively estimated that approximately 40,000 acre-feet per year or 35 mgd of fresh water could be pumped continually from the combined Jasper and Evangeline aquifers. An additional, but smaller, amount of water is available from the deeper sands below 400 feet, and from the Catahoula Sandstone.

In general, the chemical quality of the ground water is suitable for most types of use. In fact some of the water contains less than 100 ppm (parts per million) of dissolved solids. Locally, acidic water having a pH as low as 5.0 is present.

Approximately 70 percent of the water used is taken from the Evangeline aquifer. Around 25 percent of the water used is furnished by the Jasper.

It is recommended that a continuing program for measuring water levels in observation wells be established throughout the county. Annual inventories of pumpage and new wells should be undertaken. A program for measuring the base flow of streams as related to rejected recharge should be developed. This is important because one of the important future sources of water is that recharge now being rejected by the outcrop areas.

GROUND-WATER RESOURCES OF SAN JACINTO COUNTY, TEXAS

INTRODUCTION

Location and Extent of the Area

San Jacinto County is in southeastern Texas in the West Gulf Coastal Plain (Fenneman, 1938), about 75 miles north of the Gulf of Mexico (Figure 1). The county seat, Coldspring, is approximately 60 miles north-northeast of Houston.

San Jacinto County is bounded by the Trinity River and Trinity County on the north, by the Trinity River and Polk County on the east, by Liberty County on the south, by Montgomery County on the southwest, and by Walker County on the west. The area of the county is 619 square miles.

Purpose and Scope of the Investigation

The investigation of the ground-water resources of San Jacinto County was a cooperative project of the Texas Water Development Board and the U.S. Geological Survey. The purpose of the investigation was to determine the occurrence, availability, dependability, quality, and quantity of the ground-water resources of the county suitable for public supply, irrigation, and industrial uses. This report presents information and data that can be used in obtaining optimum benefits from the available ground-water supplies. It also includes an analytical discussion of the hydrology as it relates to the occurrence and availability of ground water.

The investigation included: determination of the extent of sands containing fresh water (less than 1,000 parts per million dissolved solids) and the sands containing slightly saline water (from 1,000 to 3,000 parts per million dissolved solids); a study of the chemical quality of the water; estimates of the quantities of water being withdrawn and a study of the effect of these withdrawals on water levels; determination of the hydraulic characteristics of the water-bearing sands; and estimates of the quantities of ground water available for development.

The investigation also included consideration of measures necessary for the protection of fresh ground water from contamination. The establishment of a continuing observation program for collecting ground-water data is suggested.

Methods of Investigation

The following items were included in the investigation of the ground-water resources of San Jacinto County:

1. An inventory was made of 450 water wells and springs including all public supply, irrigation, and industrial wells, and a representative number of domestic and livestock wells (Table 5). The locations of the wells, springs, and test holes are shown in Figure 19.

2. Electric logs of oil tests were used for correlation and evaluation of the water-bearing properties of the aquifers. The locations of the oil tests are shown in Figure 19. Drillers' logs of water wells (Table 6) were used as an aid in determining the total thicknesses of sands containing fresh and slightly saline water.

3. An inventory was made of the withdrawals of ground water for public supply, irrigation, and industrial uses.

4. Pumping tests were run in wells to determine the hydraulic characteristics of the water-bearing sands (Table 3).

5. Altitudes of water wells were determined from topographic maps.

6. Measurements of water levels were made in wells, and available records of past fluctuations of water levels were compiled (Table 5).

7. Climatological records were collected and compiled (Figures 2 and 3), and records of streamflow were analyzed.

8. Analyses of water samples collected from wells and springs during this and previous investigations were used to determine the chemical quality of the water (Table 7).

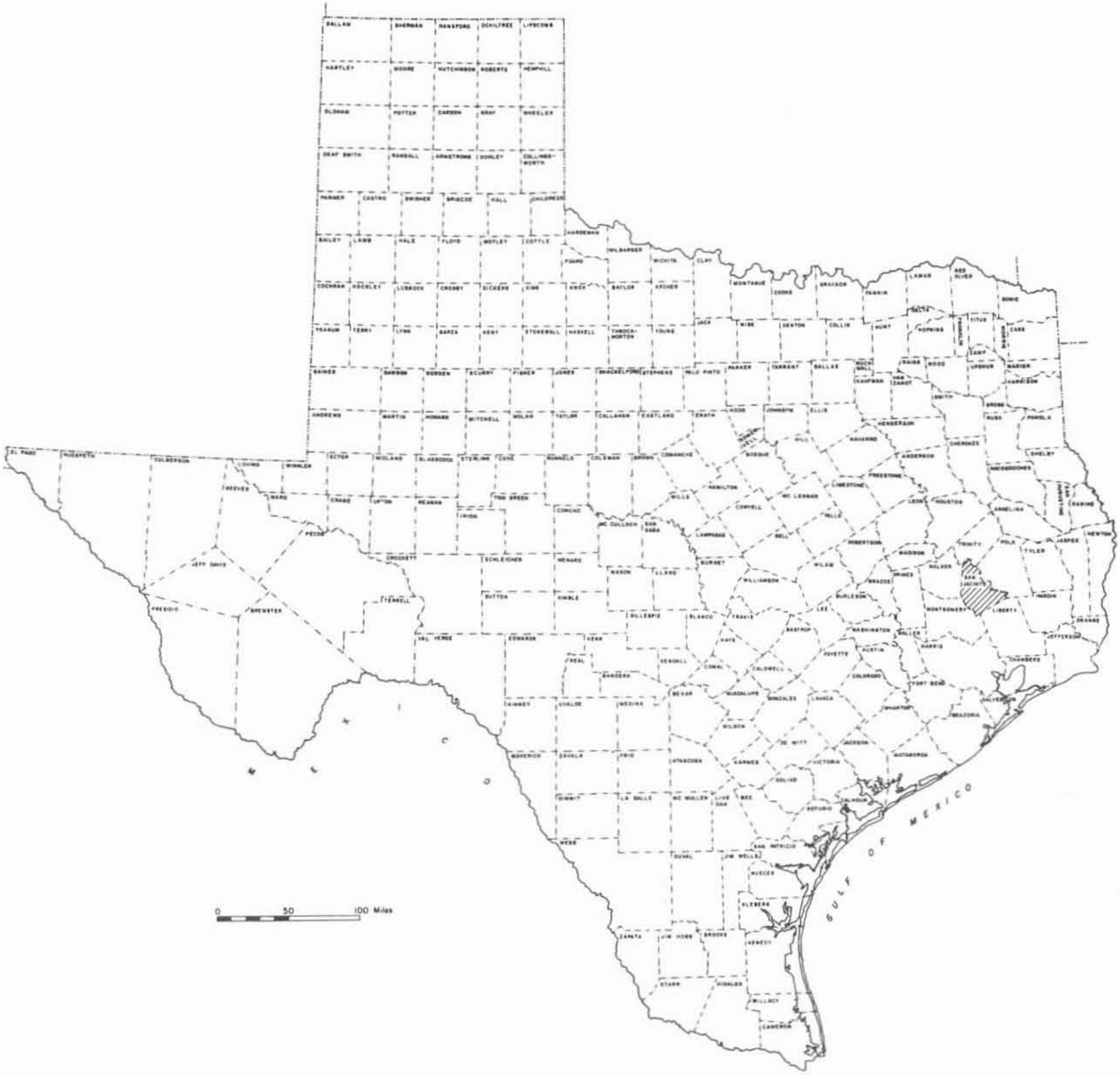


Figure 1
Location of San Jacinto County
U.S. Geological Survey in cooperation with the Texas Water Development Board

9. Maps, cross sections, and graphs were prepared to correlate and illustrate geologic and hydrologic data.

10. The hydrologic data were analyzed to determine the quantity and quality of ground water available for development.

11. Problems related to the protection of the ground-water supplies were studied.

Related Investigations

Stream-gaging stations are maintained by the U.S. Geological Survey at four localities near San Jacinto County: Trinity River at Riverside, in Walker County; Trinity River at Romayor (Figure 19); East Fork San Jacinto River near Cleveland (Figure 19); and Peach Creek at Splendora, in Montgomery County, about 8 miles southwest of Cleveland.

The drainage area, years of record, average annual discharge, and discharge for the water year 1964-65 at the four stations are given in the following table (U.S. Geological Survey, 1965, p. 184, 186, 192, and 194).

Previous Investigations

Taylor (1907, p. 46) included data for one well in San Jacinto County in his report on the underground waters of the Coastal Plain of Texas. Deussen (1914, p. 339-340) included the records of two wells and one spring in San Jacinto County in his reconnaissance report on the geology and underground waters of the southeastern part of the Texas Coastal Plain.

Sundstrom, Hastings, and Broadhurst (1948, p. 254-255) published basic data on the public water supplies at Coldspring and Oakhurst. The report on the ground-water resources of San Jacinto County by Alexander (1947) included data on 123 wells and springs, drillers' logs of 23 wells, and chemical analyses of 90 water samples.

San Jacinto County is in the area included in two reports on the availability of ground water in the Gulf Coast region of Texas—the first report by Wood (1956), the second by Wood, Gabrysch, and Marvin (1963)—and the northeast third of the county is also included in a report on the availability of ground water in the Trinity River basin by Peckham, Souders, Dillard, and Baker (1963).

GAGING STATION	DRAINAGE AREA (SQ MI)	YEARS OF RECORD	AVERAGE ANNUAL DISCHARGE (ACRE-FEET)	DISCHARGE DURING WATER YEAR 1964-65 (ACRE-FEET)
Trinity River at Riverside	15,589	1904-65 1924-65	4,615,000	5,082,000
Trinity River at Romayor	17,186	1925-65	5,166,000	5,308,000
East Fork San Jacinto River near Cleveland	325	1940-65	160,000	43,560
Peach Creek at Splendora	117	1944-65	50,800	12,220

One water-quality station is maintained at the stream-gaging station on the Trinity River at Romayor (Figure 19), and partial water-quality records are obtained at the stations on Big Creek near Shepherd, East Fork San Jacinto River near Coldspring, and East Fork San Jacinto River near Cleveland (U.S. Geological Survey, 1964, p. 59-60, 69, 73).

The good chemical quality of the water of the Trinity River at Romayor is indicated by the analyses of daily samples collected during the water year October 1963 to September 1964 (U.S. Geological Survey, 1964, p. 59-60). The time-weighted averages of some of the constituents, in ppm (parts per million), were as follows: sodium, 109; bicarbonate, 145; sulfate, 73; chloride, 131; dissolved solids, 448; and hardness, 137. Daily measurements of temperature of the water ranged from 40°F in December 1963 to 93°F in July 1964.

Economic Development

The estimated population of San Jacinto County was 6,250 in 1965; the populations of the larger communities were: Shepherd, 1,300; and Coldspring, 655.

The economy is based on lumbering, agriculture, and mineral production. About one-half of the farm income in the county is from dairying and beef cattle production. Almost all of the mineral income is from the production of oil and gas, although minor amounts of sand and gravel are produced commercially at one location. Oil was discovered in 1940, and total production at the end of 1960 was approximately 14,500,000 barrels.

Ground water supplies all of the water for public supply, domestic, and industrial uses, and much of the water for livestock.

The use of water for recreation is in the initial stages of development. Livingston Reservoir on the Trinity River will store 1,750,000 acre-feet of water and will cover an area of 84,800 acres at operating elevation 131.0 feet above mean sea level in San Jacinto, Polk, and Trinity Counties. The lake will extend from south of Camilla to beyond the north corner of San Jacinto County.

Topography and Drainage

The topography of San Jacinto County is gently rolling to hilly except along the Trinity River where there are extensive areas of flood plains and alluvial terraces. Altitudes range from less than 40 feet above sea level along the Trinity River to about 430 feet above sea level at Old Waverly in the western part of the county.

The principal streams of the county follow a south-southeasterly trend. About one-third of the county is drained by the Trinity River and its tributaries; the rest is drained by the East Fork San Jacinto River and its tributaries.

Climate

The climate of San Jacinto County is warm and humid. The average annual temperature is about 68°F, and the average annual precipitation is about 48 inches. Kane (1967, p. 88-89) estimates the average annual gross lake surface evaporation to be about 50 inches for the period 1940-65.

Temperatures below freezing occur on the average of about 22 days per year. The approximate dates of the first and last killing frosts are November 23 and March 7, respectively. The growing season is about 261 days.

Graphs of the average monthly temperature, precipitation, and lake surface evaporation are given in Figure 2. The annual precipitation at Huntsville (nearest station having a long record), 1889-1964, is given in Figure 3.

Well-Numbering System

The well-numbering system used in this report, based on the divisions of latitude and longitude, was developed by the Texas Water Development Board for use throughout the State. Under this system, each 1-degree quadrangle is given a number consisting of two digits. These are the first two digits in the well number. Each 1-degree quadrangle is divided into 7½-minute quadrangles which are given 2-digit numbers from 01 to 64. These are the third and fourth digits of the well number. Each 7½-minute quadrangle is divided into 2½-minute quadrangles which are given a single digit number from 1 to 9. This is the fifth digit of the well number. Finally, each well within a 2½-minute quadrangle is given a 2-digit number in the order in which it was inventoried, starting with 01. These are the last two digits of the well number (Figure 4).

On the well-location map (Figure 19), only the last three digits of the well number are shown at each well location; the second two digits are shown in the northwest corner of each 7½-minute quadrangle; and the first two digits are shown by the large block numerals 60 and 61.

In addition to the 7-digit well number, a 2-letter prefix is used to identify the county. The prefixes for San Jacinto and adjacent counties are as follows: San Jacinto, WU; Liberty, SB; Montgomery, TS; Polk, UT; Trinity, YH; and Walker, YU.

The well numbers used by Alexander (1947) and the corresponding numbers used in this report are given in Table 1.

Acknowledgments

The author gratefully acknowledges the cooperation of the many landowners and city, county, and industrial officials who assisted in the collection of data for this report. Mr. J. E. Carrier, San Jacinto County Water Control and Improvement District No. 1; and Judge J. R. Page, Coldspring, were particularly helpful.

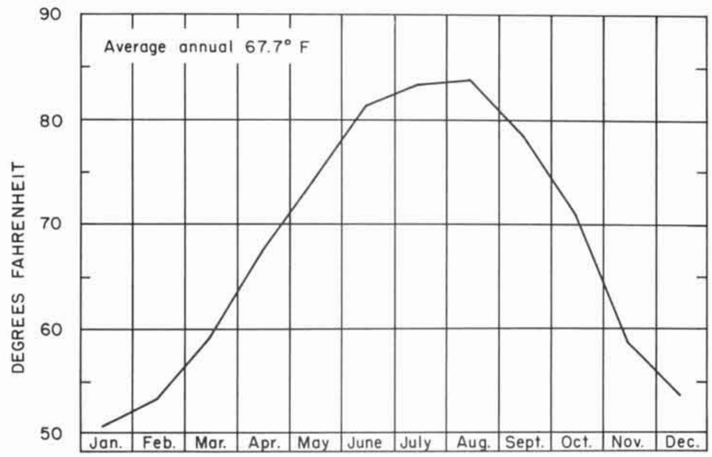
Well drillers in Cleveland, Conroe, and Livingston generously supplied drillers' logs, electrical logs, and well-completion data. Mr. Owen T. Finch, independent oil operator, and Professor Saul Aronow, Lamar State College, contributed many helpful ideas and suggestions. Most of the data shown on the maps and cross sections were obtained from the electrical logs of oil and gas tests.

HYDROLOGIC AND GEOLOGIC UNITS AND THEIR WATER-BEARING PROPERTIES

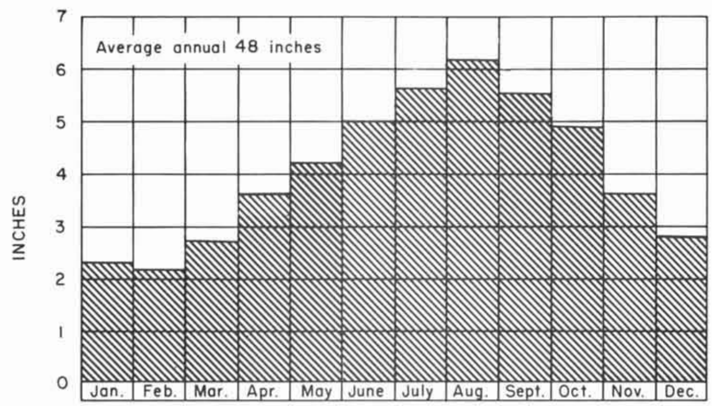
General Stratigraphy and Structure

The geologic units that contain fresh to slightly saline water in San Jacinto County are, from oldest to youngest: the Jackson Group of Eocene age; the Catahoula Sandstone and the Fleming Formation of Miocene age; the Goliad Sand of Pliocene age; the Willis Sand of Pliocene(?) age; the Lissie Formation and Beaumont Clay of Pleistocene age; and the alluvium of Recent age.

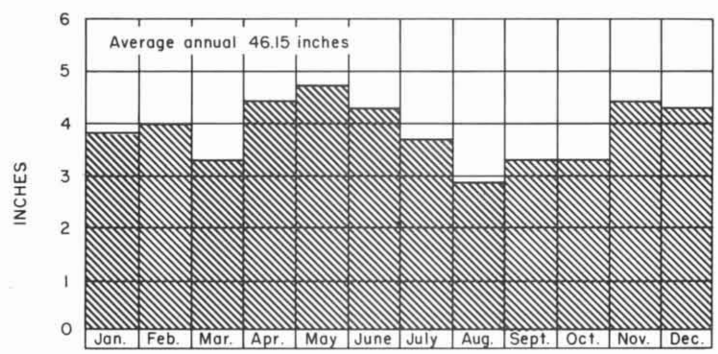
The units crop out in belts that are roughly parallel to the shoreline of the Gulf of Mexico. The younger formations crop out nearer to the Gulf and the older ones farther inland. All of the formations dip



Average monthly temperature at Huntsville, 1931-60



Average monthly gross lake surface evaporation in San Jacinto County, 1940-65 (Kane, 1967)



Average monthly precipitation at Huntsville, 1931-60

Figure 2

Average Monthly Temperature, Precipitation, and Gross Lake Surface Evaporation

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

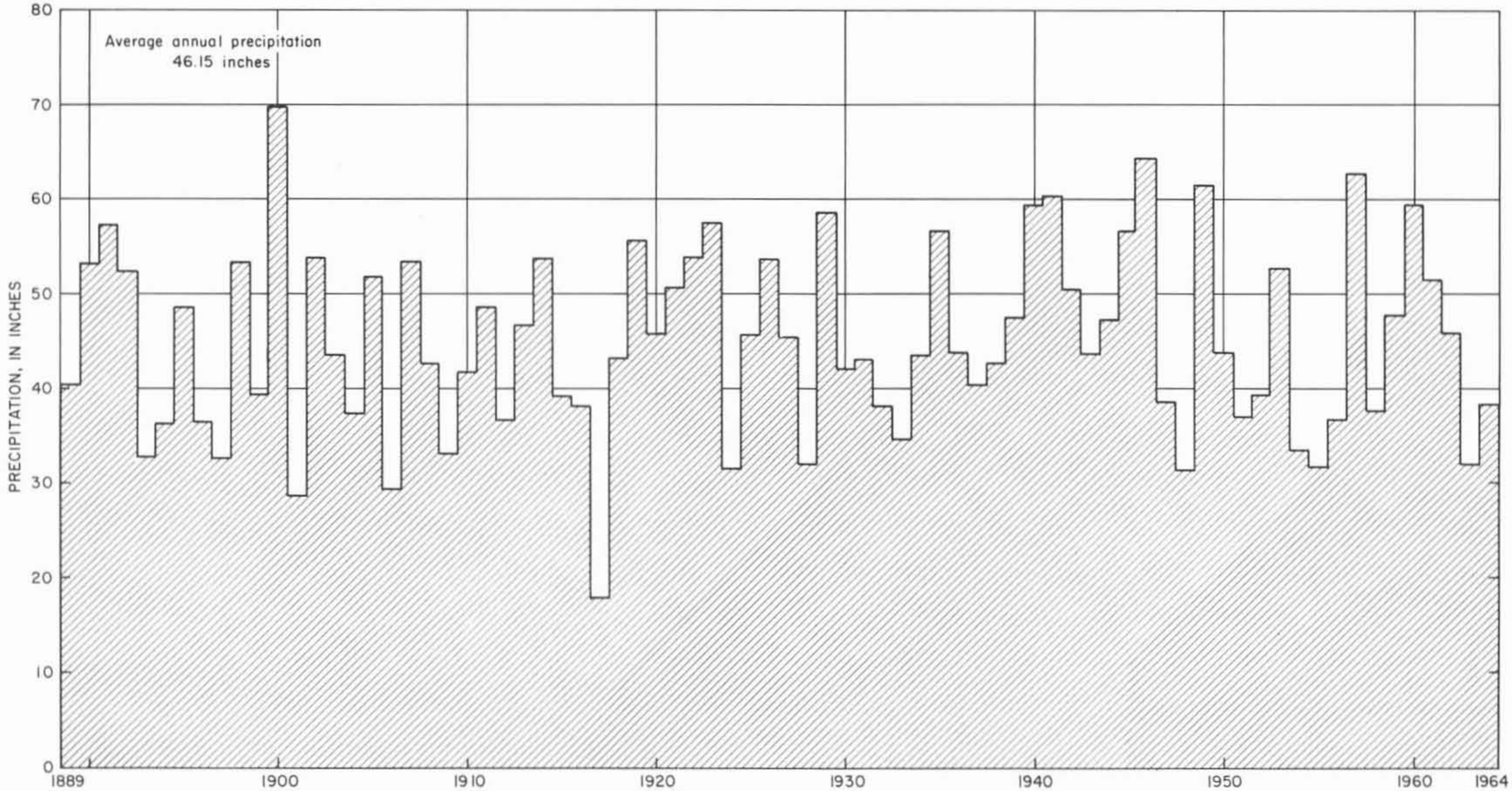


Figure 3

Annual Precipitation at Huntsville, Walker County, 1889-1964

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

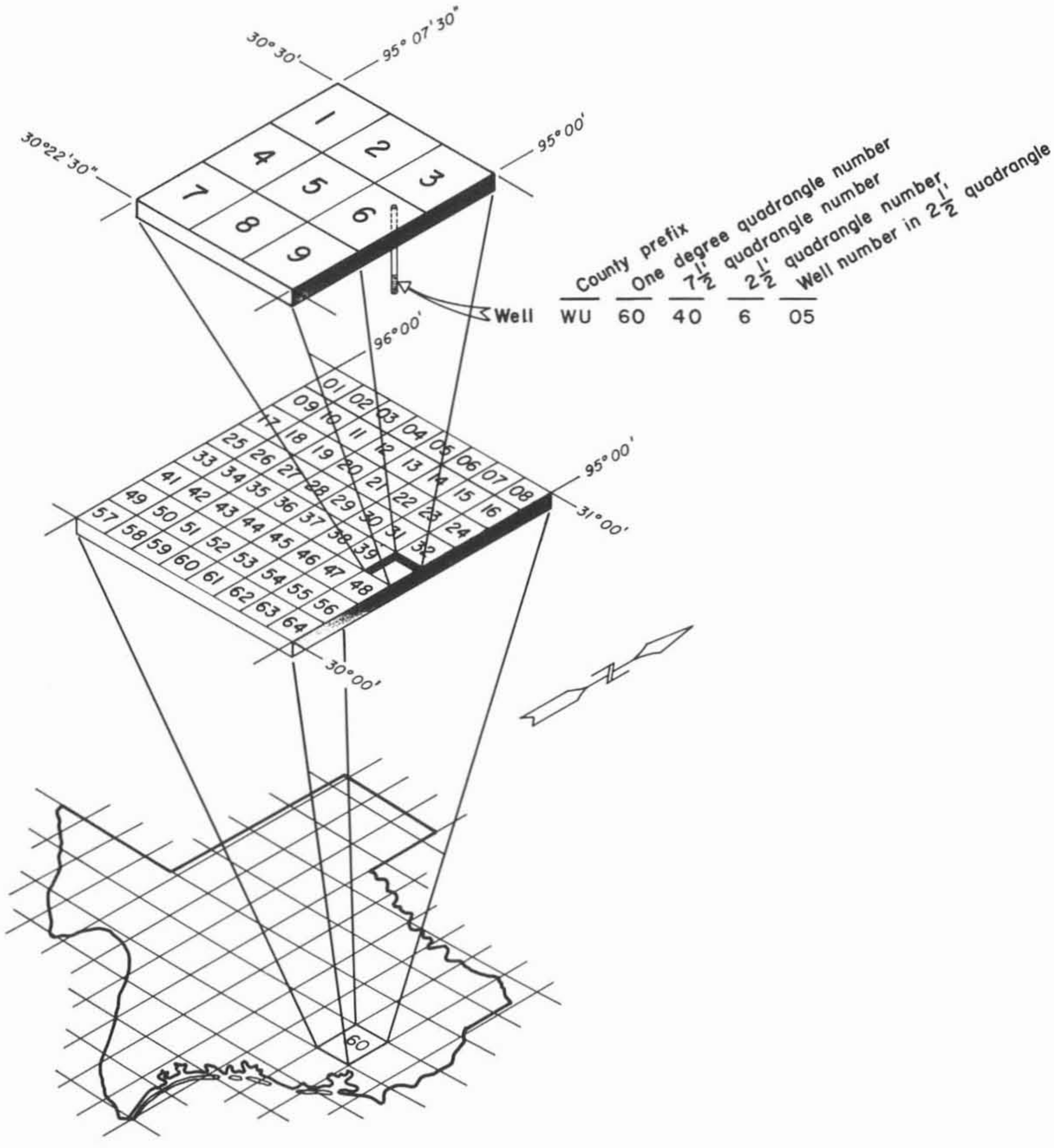


Figure 4

Well-Numbering System

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

Table 1.--Well Numbers Used By Alexander (1947) and Corresponding Numbers Used in This Report

OLD NUMBER	NEW NUMBER	OLD NUMBER	NEW NUMBER	OLD NUMBER	NEW NUMBER	OLD NUMBER	NEW NUMBER
1	WU-60-15-207	34	WU-60-30-610	66	WU-60-23-802	95	WU-60-40-807
2	60-15-208	35	60-30-611	67	60-23-803	98	60-32-804
3	60-15-211	36	60-30-612	68	60-31-209	99	60-32-604
4	60-15-210	37	60-30-812	69	60-31-608	100	60-32-601
5	60-15-212	38	60-30-704	70	60-31-903	101	61-25-706
6	60-15-206	39	60-30-709	71	60-31-904	102	61-25-703
7	60-14-804	40	60-30-202	72	60-31-508	103	61-25-704
8	60-14-503	41	60-30-301	73	60-31-905	104	61-25-401
9	60-14-302	42	60-31-301	74	60-40-712	105	61-25-402
11	60-14-203	43	60-31-312	76	60-40-713	106	61-25-408
12	60-15-102	44	60-31-302	77	60-39-601	107	61-25-507
13	60-15-101	45	60-32-101	78	60-39-910	108	61-25-509
14	60-06-802	46	60-32-102	79	60-39-908	109	61-25-510
15	60-15-401	47	60-32-103	80	60-39-907	110	61-25-508
16	60-23-101	48	60-31-313	81	60-39-808	111	61-25-606
17	60-23-107	49	60-31-314	82	60-39-809	112	61-26-710
18	60-23-108	50	60-31-607	83	60-39-806	113	61-26-701
19	60-15-901	54	60-32-209	84	60-39-810	114	61-26-401
20	60-23-702	55	60-32-210	85	61-33-110	115	61-34-101
25	60-31-408	56	60-32-211	86	61-33-111	116	61-26-703
26	60-31-403	57	60-32-213	87	60-40-313	117	61-25-905
27	60-31-407	58	60-32-212	88	61-25-707	118	61-25-901
28	60-31-109	59	60-24-903	89	60-40-309	119	61-25-902
29	60-31-113	60	60-24-901	90	60-40-310	120	61-33-215
30	60-31-110	61	60-24-902	91	60-40-311	121	61-33-213
31	60-31-111	62	60-24-801	92	60-40-312	122	61-33-112
32	60-31-112	63	60-24-803	93	60-33-402		
33	60-31-415	65	60-24-701	94	60-40-806		

toward the Gulf, and most of them thicken gulfward. The dip increases with depth and ranges from a few feet per mile in the younger units to about 100 feet per mile in the older units.

Lithologically, the units are composed primarily of sand, silt, and clay, with smaller amounts of gravel, calcareous material, and volcanic ash. The coarser materials tend to predominate updip. The physical characteristics and water-bearing properties of the geologic units are given in Table 2.

San Jacinto County is in the area of southeastern Texas that is underlain by a thick layer of salt (Murray, 1961), which in local areas has pushed upward through many thousands of feet of sediments to form salt domes. Although no domes have been identified in San Jacinto County, they are known to be present in adjacent counties, as at Conroe oil field (Montgomery County) and Davis Hill (Liberty County).

Faulting is common in the subsurface, and some of the faults may be the result of deep-seated salt masses. However, the fault systems probably have little effect on the general movement of ground water in the county.

Table 2.--Physical Characteristics and Water-Bearing Properties of the Hydrologic and Geologic Units

SYSTEM	SERIES	GEOLOGIC UNIT	HYDROLOGIC UNIT	MAXIMUM THICKNESS (FT)	COMPOSITION	WATER-BEARING PROPERTIES AND DISTRIBUTION OF SUPPLY
Quaternary	Recent	Alluvium		50	Sand, gravel, silt, and clay.	Yields small quantities of water[1]
	Pleistocene	Beaumont Clay	Chicot aquifer	90	Sand, gravel, silt, and clay.	Unimportant as an aquifer. Yields only small quantities of water to wells in southern part of county. Serves chiefly as a recharge facility to the underlying aquifer.
		Lissie Formation				
Tertiary(?)	Pliocene(?)	Willis Sand				
Tertiary	Pliocene	Goliad Sand	Evangeline aquifer	800	Sand, silt, and clay.	Principal aquifer in the county. Capable of yielding large quantities of water in southern half of county.
	Miocene	Fleming Formation	Burkeville aquiclude	350	Predominantly clay; contains thin sands.	Yields only small quantities of water; functions chiefly as confining layer for Jasper aquifer.
			Jasper aquifer	2,000	Sand, silt, and clay.	Only a few wells tap the aquifer. Capable of large yields south of a line between Pointblank and Oakhurst.
		Catahoula Sandstone		1,100	Tuffaceous shale, volcanic ash, bentonite, clay, silt, sand, and gravel.	Contains fresh water in the northern 1/3 of the county. Probably capable of moderate yields to wells.
	Eocene	Jackson Group		1,100	Silty, tuffaceous, and lignitic shale; sand.	Contains fresh water in northern part of county. Not tapped by wells in the county.

[1] Yield of wells: Small, less than 100 gpm (gallons per minute); moderate, 100 to 1,000 gpm; large, more than 1,000 gpm.

Hydrologic and Geologic Units

Hydrologic units are aquifers and aquicludes. An aquifer is a geologic unit or formation, group of formations, or part of a formation that is water bearing. An aquiclude is an impermeable or relatively impermeable rock that may contain water but is incapable of transmitting appreciable quantities.

The hydrologic units in San Jacinto County are the aquifers in the Jackson Group and the Catahoula Sandstone, the Jasper aquifer, the Burkeville aquiclude, the Evangeline aquifer, the Chicot aquifer, and the alluvium.

The approximate thickness, composition, and water-bearing properties of the hydrologic units, and the equivalent geologic units are given in Table 2. This classification is similar to the one used by Wesselman (1967, p. 15) in his report on the ground-water resources of Jasper and Newton Counties. The sections (Figures 20 and 21) show the thickness of the hydrologic units, the lithology as indicated by electrical logs, the approximate base of fresh water, and the approximate base of slightly saline water. Figure 5 is a map showing the outcrops of the geologic and hydrologic units.

Jackson Group

The Jackson Group of Eocene age, which does not crop out in San Jacinto County but is present in the subsurface, is composed of about 1,100 feet of primarily silty, tuffaceous, and lignitic shales, and sands which occur as lenses separated by shales. Some of the lenses contain fresh water while others contain saline water.

The Jackson Group contains fresh water in only the extreme northern part of the county, but presently no water is being withdrawn from this source. The potential for development in the northern part of San Jacinto County is possibly indicated by the production of fresh water from the Jackson (Winslow, 1950, p. 12) in adjacent Walker County, where the deepest well on the Country Campus of Sam Houston State College yielded 168 gpm (gallons per minute) of water from the Jackson at a depth of 735 feet.

Catahoula Sandstone

The Catahoula Sandstone of Miocene age crops out in a belt approximately 5 miles wide in northern San Jacinto County and adjacent parts of Trinity, Polk, and Walker Counties. Much of the outcrop in San Jacinto County is obscured by alluvium in the valley of the Trinity River.

The Catahoula is composed of tuffaceous shale, volcanic ash, bentonite, clay, silt, sand, and gravel. Electrical logs indicate that the thickness ranges from about 800 to 1,100 feet in San Jacinto County.

Few wells produce water from the Catahoula in San Jacinto County, and the available resources are practically undeveloped. The Catahoula contains fresh water in the northern part of the county (Figure 5) and is probably capable of at least moderate yields to wells in that area.

Jasper Aquifer

The Jasper aquifer, which crops out in a large area in the northern part of San Jacinto County (Figure 5), is the thickest and most extensive hydrologic unit in the county.

The equivalent geologic units consist of sand, silt, and clay in the lower part of the Fleming Formation of Miocene age. In the outcrop area, the overlying Willis Sand and Recent alluvium, where present, are included in the Jasper because they are very thin and have good hydraulic continuity with the underlying units.

The thickness of the Jasper increases from about 1,000 feet at Coldspring to about 2,000 feet in the southern part of the county. The log of well SB-61-34-602 in Liberty County shows a thickness of 2,400 feet. Figure 6 is a map showing the approximate altitude of the base of the Jasper in San Jacinto County.

The aquifer is capable of yielding large quantities of fresh water throughout the county south of a line between Oakhurst and Pointblank. Near the Liberty and Montgomery county lines, where the top of the Jasper is about 600 feet below sea level, a few wells have been completed in the aquifer. Public supply wells at Cleveland (Liberty County) and industrial wells near Fostoria (Montgomery County) produce water from the Jasper at depths of more than 1,000 feet.

Burkeville Aquiclude

The Burkeville aquiclude is a predominantly clay zone which overlies the Jasper aquifer and separates it from the Evangeline aquifer. The unit crops out across central San Jacinto County (Figure 5). It ranges in thickness from about 200 to 350 feet.

The Burkeville is probably equivalent to the upper part of the Fleming Formation of Miocene age and is essentially "zone 2" in the Houston area as described by White, Rose, and Guyton (1944, p. 146); Lang, Winslow, and White (1950, p. 2); and Wood and Gabrysch (1965, fig. 3). Although the unit is basically a confining layer of clay, it contains some silt and sand which produce small volumes of water in local areas.

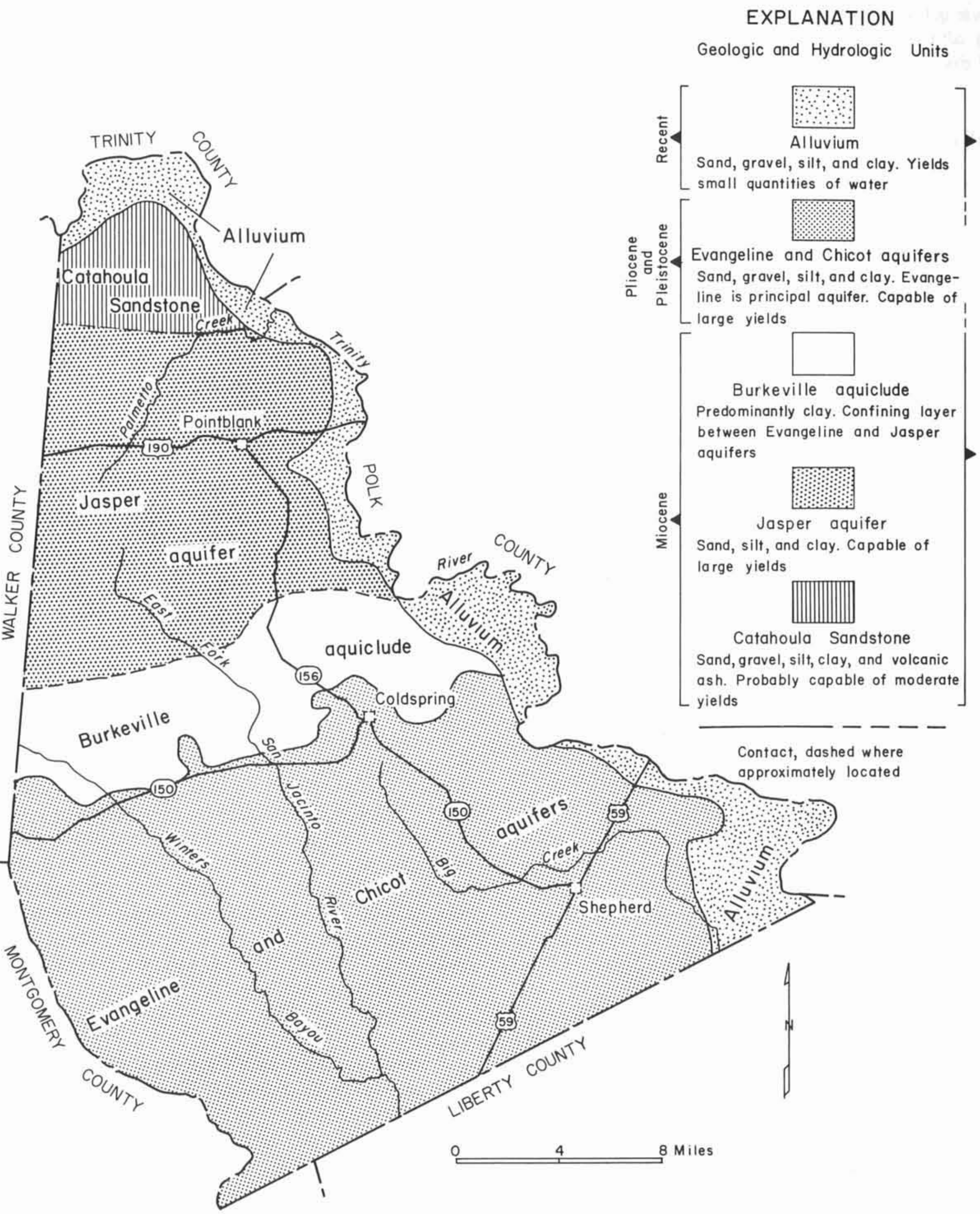


Figure 5

Outcrops of the Geologic and Hydrologic Units

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The efficiency of the Burkeville as an aquiclude in the southern part of San Jacinto County is indicated by the differences in the piezometric surfaces of the Jasper and Evangeline aquifers. In this area, the piezometric surface of the Jasper is as much as 35 feet higher than that of the Evangeline.

Evangeline Aquifer

The Evangeline aquifer, which crops out in most of the southern part of San Jacinto County (Figure 5), is the most highly developed hydrologic unit in the county. It is capable of yielding large quantities of fresh water throughout its extent in the county.

The probable geologic equivalents are the alternating sequences of sand, silt, and clay of the Goliad Sand of Pliocene age. The Evangeline is also equivalent to the "heavily pumped layer" of the Houston district as described by Wood and Gabrysch (1965, p. 10).

The unit has a maximum thickness of about 800 feet in southern San Jacinto County but thickens rapidly toward the Gulf of Mexico. In southern Liberty County, the unit is more than 2,000 feet thick. Figure 7 shows the approximate altitude of the base of the Evangeline.

The Evangeline aquifer in San Jacinto County is in hydrologic continuity with the overlying Chicot aquifer. Separation of the two aquifers in other areas is based on differences in lithology and permeability. Because the Chicot is thin and serves to transmit water to the Evangeline, the two are mapped as a single unit in Figure 5.

Chicot Aquifer

The Chicot aquifer is not an important hydrologic unit in San Jacinto County, but it serves chiefly to transmit water to the underlying Evangeline.

The geologic equivalents are the Willis Sand of Pliocene(?) age, and the Lissie Formation and the Beaumont Clay of Pleistocene age, which occur as terrace deposits attaining a maximum thickness of about 90 feet.

Fresh water, some of which is unusually high in iron content, may be obtained from the Chicot in the southern part of the county, but only shallow, small-capacity wells can be developed.

Alluvium

Recent alluvial deposits of sand, gravel, silt, and clay are present in the valley of the Trinity River. The thickness of the sediments ranges from 0 to about 50 feet.

A few shallow wells in the extreme southeastern part of San Jacinto County yield water from the alluvium, but its chief function is in transmitting water to or from the underlying aquifers. The alluvium is of little significance as a source of water in the county.

GROUND-WATER HYDROLOGY

The general principles of ground-water hydrology as they apply to San Jacinto County are discussed in this section of the report. For additional technical information, the reader is referred to: Meinzer (1923a, 1923b), Meinzer and others (1942), Todd (1959), Tolman (1937), and Wisler and Brater (1959). Nontechnical discussions are included in reports by Leopold and Langbein (1960) and Baldwin and McGuinness (1963).

Source and Occurrence of Ground Water

The chief source of ground water in San Jacinto County is precipitation on the land surface of the county and adjoining areas to the north. Most of the precipitation runs off or is consumed by evapotranspiration. Only a small part migrates downward until it reaches the zone of saturation. The upper surface of the zone of saturation is the water table, below which water fills the pore spaces between the rock particles of the aquifer.

The water-bearing rock units, or aquifers, are of two types—water table, or unconfined aquifers; and artesian, or confined aquifers. Water-table conditions occur where the upper surface of the zone of saturation is under atmospheric pressure only, and the water is free to rise or fall in response to changes in the volume of water in storage. A well penetrating an aquifer under water-table conditions becomes filled with water only to the level of the water table. In San Jacinto County, water-table conditions occur at the outcrops of the aquifers and in the alluvial deposits along the major streams.

Artesian (confined) conditions occur downdip from the outcrop where an aquifer is overlain by less permeable material. The water is confined under a pressure greater than atmospheric. A well penetrating an aquifer under artesian conditions becomes filled with water to a level that is proportionate to the hydrostatic pressure. If the pressure head is high enough, water in the well may rise to an altitude greater than that of the land surface, causing the well to flow.

The level or surface to which water will rise in artesian wells is called the piezometric surface. Although the terms "water table" and "piezometric surface" are synonymous in the outcrop areas, the term "piezometric surface," as used in this report, is applicable only in the artesian areas. The altitudes of these surfaces in the

Jasper and Evangeline aquifers in San Jacinto County, based on water-level measurements in representative wells, are shown in Figures 8 and 9.

Recharge, Movement, and Discharge of Ground Water

Recharge is the addition of water to an aquifer by natural or artificial processes. Natural recharge in San Jacinto County results from the infiltration of precipitation or of streamflow on the outcrops of the aquifers. The rate of recharge in San Jacinto County is not known but it is probably not more than a few inches per year.

Artificial recharge may result from the infiltration of irrigation water, industrial waste water, and sewage. Recharge by improperly treated waste water and sewage is frequently a source of contamination of fresh ground water, especially at shallow depths.

Ground water moves slowly through the aquifers under the force of gravity from areas of recharge to areas of discharge. The initial direction of movement is downward from the surface of the outcrop to the zone of saturation; then the water moves in a more horizontal direction down the hydraulic gradient.

Where water is withdrawn from an aquifer, water moves from all directions toward the center of pumping. The pumping causes a lowering of the water levels as indicated in the southeast corner of the county on the map showing the altitude of water levels in wells tapping the Evangeline aquifer (Figure 9).

The direction of movement of the water is at right angles to the water-level contours in the direction of decreasing altitude. Where other factors are equal, the rate of movement is indicated by the spacing of the contours (or the hydraulic gradient, usually given in feet per mile). The velocity is proportional to the hydraulic gradient—where the contours are 1 mile apart (10 feet per mile), the water will move with twice the velocity as in an area where they are 2 miles apart (5 feet per mile).

Based on a hydraulic gradient of 8 feet per mile, a porosity of 30 percent, and a permeability of 200 gpd (gallons per day) per square foot, water in the Jasper and Evangeline aquifers is estimated to move in a general south-southeasterly direction at a rate of about 50 feet per year. Locally, this regional trend is interrupted by discharge from flowing wells in the valley of the Trinity River. In these areas, the direction of movement is easterly toward the points of discharge.

The deep aquifers, except where heavily pumped, are under greater artesian pressure than the overlying aquifers. In response to this difference in pressure, water is discharged slowly upward through the less permeable confining beds (Winslow, Doyel, and Wood, 1957, p. 388). This slow underground movement results in fresh water from the recharge areas replacing the original or connate water in the aquifers. This method of "flushing" of the aquifers is one of the principal factors involved in the occurrence of fresh water at altitudes of as much as 1,600 feet below sea level in San Jacinto County.

Ground water is discharged artificially by flowing or pumped wells. It is discharged naturally by springs and seeps where the water table intersects the land surface, and by evapotranspiration where the water table is near the land surface.

The natural discharge in the outcrop areas may be considered "rejected recharge." The recharge is "rejected" because the infiltration rate in the outcrop areas exceeds the present transmission capacities of the aquifers. Greater withdrawals from the aquifers will increase the transmission capacities and salvage some of the rejected recharge by lowering water levels in the outcrop.

Hydraulic Characteristics of the Aquifers

Principles and Definitions

When water is discharged from a well, the level of the water table or piezometric surface is lowered at and around the well, and a new hydraulic gradient is established. This depression of the water table or piezometric surface, which assumes the shape of an inverted cone centered at the well, is called the cone of depression. The difference between the discharging level and the static level (water level before pumping or before start of flow) is called the drawdown.

The amount of water and the rate at which water is transmitted by an aquifer depend upon the hydraulic gradient and the properites of the aquifer—the specific yield, porosity, permeability or transmissibility, and storage coefficient.

The specific yield is the ratio (expressed as a percentage) of the volume of water yielded by gravity by a saturated rock to the volume of rock.

Porosity is the ratio, expressed as a percentage, of the aggregate volume of pore space in a rock to the volume of rock.

The permeability of an aquifer is its capacity for transmitting water under pressure and is measured by the coefficient of permeability—the rate of flow in gallons per day through a cross-sectional area of 1 square foot under a hydraulic gradient of 1 foot per foot (100 percent).

The coefficient of transmissibility is the rate of flow in gallons per day through a vertical strip of the aquifer 1 foot wide, extending the full saturated thickness of the aquifer, under a hydraulic gradient of 100 percent.

The coefficient of storage is the volume of water that an aquifer releases from or takes into storage per unit surface area per unit change in the component of head normal to that surface. Under artesian conditions, the coefficient of storage is a measure of the ability of the aquifer to yield water by compression of the aquifer and expansion of the water as the artesian pressure is lowered. The coefficients of storage in artesian aquifers are small compared to those in water-table aquifers; consequently, when an artesian well discharges, a cone of depression is developed over a wide area in a short time.

Under water-table conditions, the coefficient of storage is a measure of the ability of the aquifer to yield water by gravity drainage; consequently, when a water-table well discharges, a cone of depression is developed over a comparatively small area. Under water-table conditions, the volume of water attributable to expansion is such a negligible part of the total volume released that the coefficient of storage is considered the same as the specific yield.

Formulas based on the hydraulic characteristics of an aquifer indicate that within limits the discharge of a well varies directly with the drawdown—that is, doubling the drawdown will nearly double the discharge. The discharge per unit of drawdown (gallons per minute per foot), or specific capacity, is of value in estimating the probable yield of a well and the required pump setting.

The yield of a well is usually measured in gallons per minute or gallons per hour. Yield depends upon the ability of the aquifer to transmit water, the thickness of the water-bearing material, the construction of the well, the size and efficiency of the pump, and the allowable drawdown.

Aquifer Tests

Aquifer tests made in three wells in San Jacinto County and three wells in Liberty County indicate the ability of the aquifers to transmit water. The results of these tests are summarized in Table 3. Data from the aquifer tests were analyzed by the Theis non-equilibrium method as modified by Cooper and Jacob (1946, p. 526-534), and the Theis recovery method (Wenzel, 1942, p. 94-97). The coefficients of transmissibility determined from two wells tapping the Jasper aquifer were 10,000 and 14,800 gpd per foot. The coefficients of transmissibility determined from tests of four wells tapping the Evangeline aquifer ranged from 3,000 to 14,800 gpd per foot.

The coefficients of permeability in Table 3 were computed by dividing the coefficients of transmissibility by the estimated thicknesses of the sands supplying water to the wells. The coefficients of permeability of the Jasper aquifer at two wells were 200 and 247 gpd per square foot. The coefficients of permeability of the Evangeline aquifer at four wells ranged from 73 to 185 gpd per square foot.

The coefficients of storage obtained from tests of two wells tapping the Evangeline were 0.0002 and 0.0004. These coefficients are representative of artesian conditions and are probably applicable for use in predicting drawdown over short periods. For long-term predictions and for the smaller parts of the aquifers, the water-table coefficient of 0.15 is probably more applicable.

The coefficients of transmissibility and storage may be used to predict future drawdown of water levels caused by pumping. Figure 10 shows the theoretical relation between drawdown or decline of water level and the distance from the center of pumping for different coefficients of transmissibility. The calculations of drawdown are based on a withdrawal of 1 mgd (million gallons per day) for 1 year and coefficients of transmissibility and storage as shown. The figure shows that the amount of drawdown will increase with a decrease in the coefficient of transmissibility. For example, if the coefficients of transmissibility and storage are 10,000 gpd per foot and 0.0003, respectively, the drawdown will be about 40 feet at a distance of 5,000 feet from a well or group of wells discharging 1 mgd for 1 year; whereas, if the coefficient of transmissibility were 5,000 gpd per foot the drawdown would be about 68 feet, other conditions being the same.

Figure 11 shows the relationship of drawdown to time and distance for distances up to 100,000 feet from a pumping well. Construction of the graph is based upon a transmissibility of 10,000 gpd per foot, a coefficient of storage of 0.0003, and a pumping rate of 500 gpm. Under these conditions, the drawdown would be about 33 feet at a point 1,000 feet from the pumping well after 30 days of continuous pumping, and the maximum drawdown of approximately 48 feet would be reached after 10.5 years of continuous pumping. The "equilibrium curve" means that the hydraulic conditions around the pumping well will be in "equilibrium" after 10.5 years of continuous pumping—no additional drawdown will occur after that time, provided recharge is sufficient.

Pumping from wells drilled close together may create cones of depression that intersect, thereby causing additional lowering of the piezometric surface or water table. The intersection of cones of depression, or interference between wells, will result in lower pumping levels, increased pumping costs, and may cause serious declines in the yields of wells. If the pumping level is lowered below the top of the aquifer, that part of the

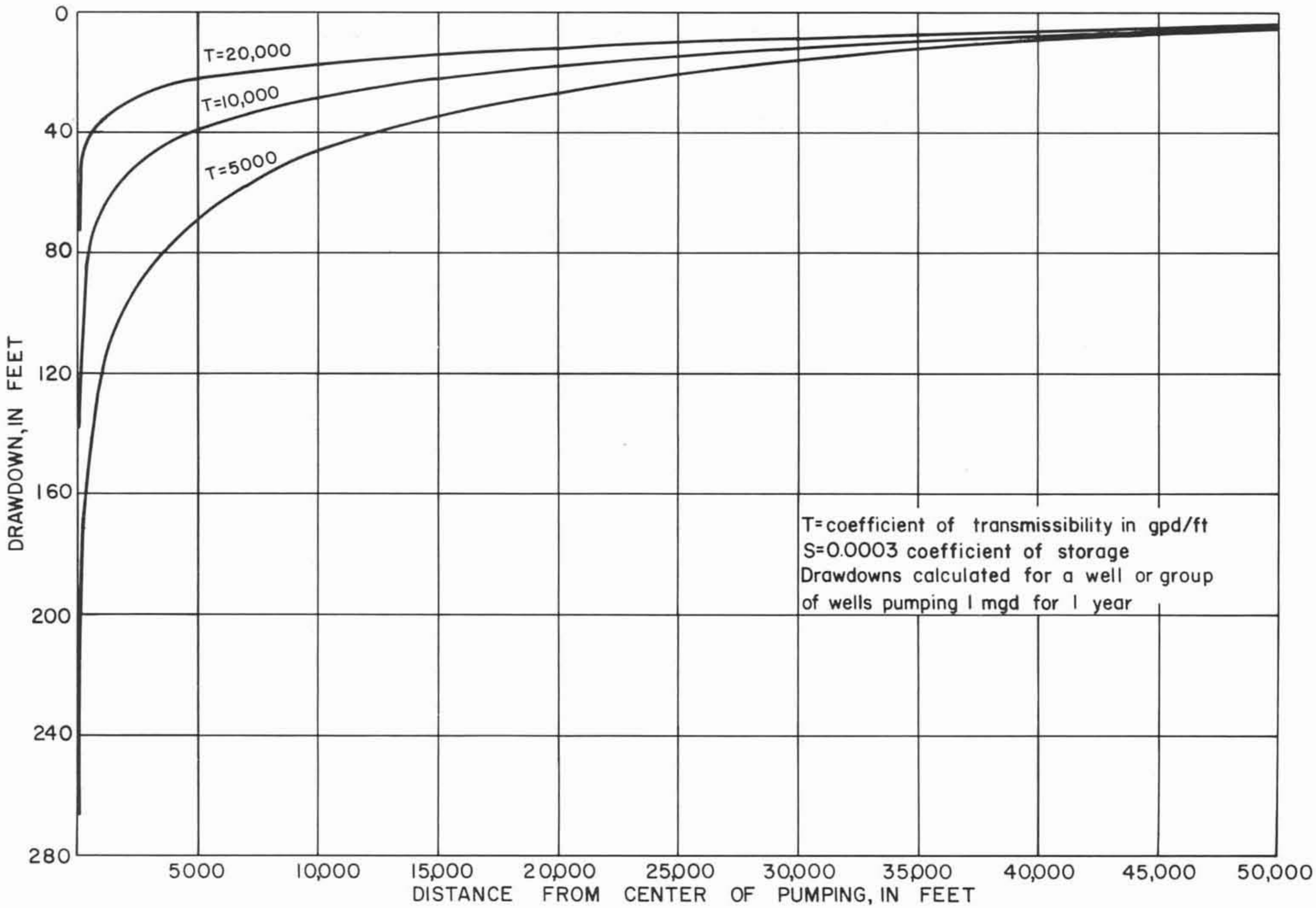

Figure 10

Relationship of Drawdown to Transmissibility

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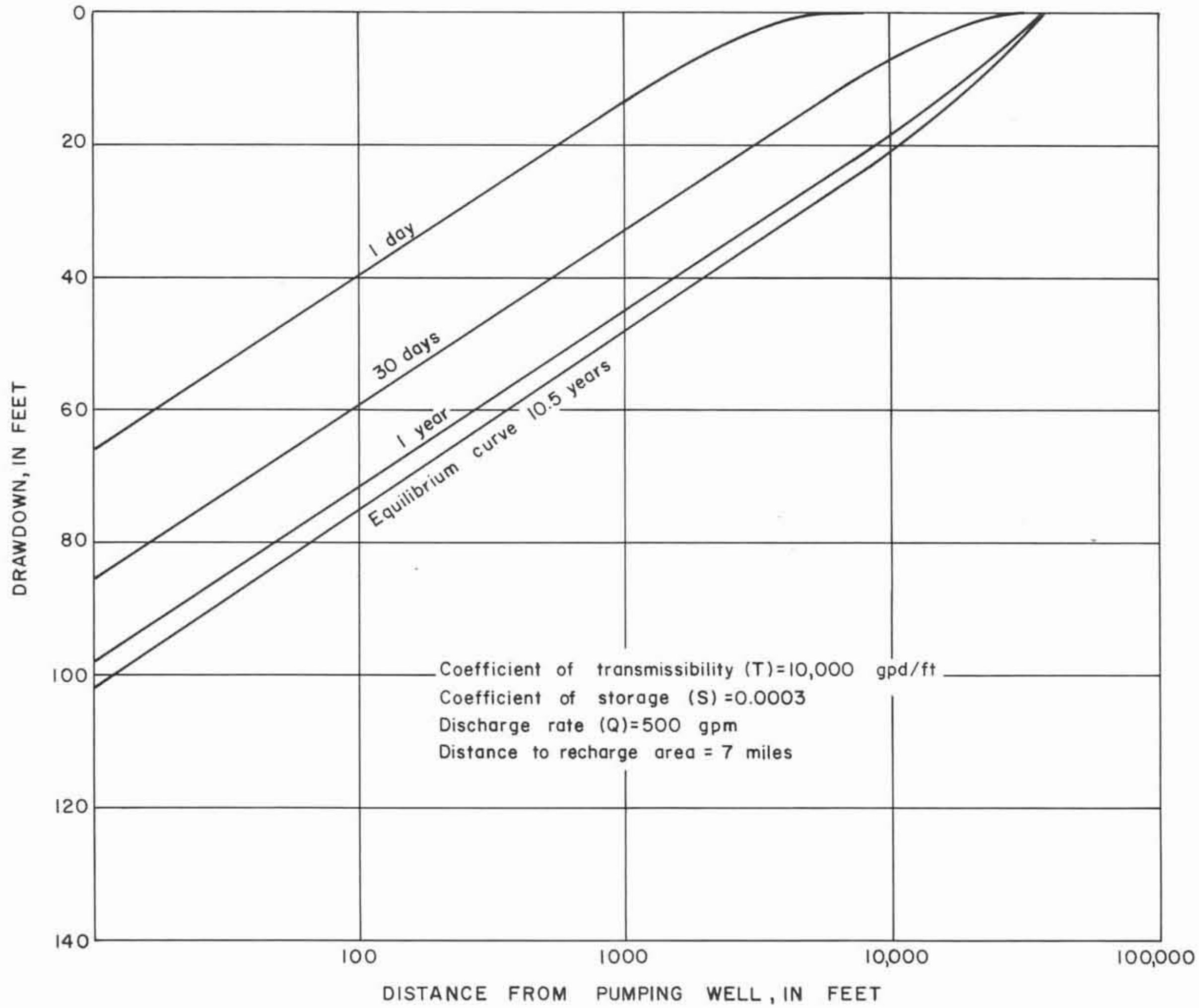

Figure 11

Relationship of Drawdown to Time and Distance

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Table 3.--Summary of Aquifer Tests in San Jacinto and Liberty Counties

WELL	ESTIMATED EFFECTIVE SAND THICKNESS (FEET)	AQUIFER	DATE OF TEST	YIELD (GPM)	COEFFICIENTS TRANSMISSIBILITY (GPD PER FT)	COEFFICIENTS PERMEABILITY (GPD PER SQ FT)	REMARKS
			San Jacinto County				
WU-61-25-801	60	Jasper	Oct. 7, 1965	105	14,800	247	Recovery test.
33-101	80	Evangeline	Dec. 6, 1955	184	13,600	170	Do.
101	80	do	Mar. 15, 1966	--	14,800	185	Interference test with WU-61-33-102 pumping. Coefficient of storage: 0.0004.
102	30	do	do	220	3,000	100	100
			Liberty County				
SB-60-48-102	85	Evangeline	Dec. 7, 1955	--	7,800	92	Interference test with SB-60-48-103 pumping. Coefficient of storage: 0.0002.
103	85	do	do	350	6,200	73	Recovery test.
202	50	Jasper	Jan. 14, 1966	60	10,000	200	Do.

aquifer will become dewatered, and the yield of the well will decrease in proportion to the reduction in thickness of the saturated part of the aquifer. The proper spacing of wells to minimize interference can be determined from the aquifer-test data.

Use of Ground Water

The use of ground water for all purposes in San Jacinto County in 1965 was approximately 1,222,000 gpd. About 680,000 gpd was discharged from flowing wells and used chiefly for recreation.

Except for the recreational use of water from the flowing wells, the greatest use of ground water is for livestock and rural domestic supply. In 1965 the use for livestock was approximately 332,000 gpd; the use for rural domestic supply was approximately 80,000 gpd. Of the total of 412,000 gpd, about 5,000 gpd was discharged from flowing wells.

In 1965 there were four public supplies in San Jacinto County, producing a total of about 56,000 gpd. Two wells, operated by the San Jacinto County Water Control and Improvement District No. 1, provided about 39,000 gpd for the Shepherd area. Coldspring obtained about 15,000 gpd from two springs. One of these has been in use since the early 1900's; the other was developed in 1963. One well at Oakhurst supplied about 2,200 gpd to 10 families. Lake Texas had one well supplying probably less than 1,000 gpd to five households. Early in 1966 other wells were being developed at Wagon Wheel Estates, southeast of Shepherd, and at Point Lookout Estates, near Pointblank. The annual water consumption from public supply sources (1955-65) for Coldspring, Oakhurst, and Shepherd is given in Table 4.

Two irrigation wells were in use in San Jacinto County in 1965. One well, producing about 50,000 gpd from a depth of 126 feet in the Evangeline aquifer, was used for the irrigation of pasture land. The other well produced insignificant quantities of water to irrigate a nursery.

The industrial use of water in San Jacinto County averaged about 24,000 gpd in 1965. This water was used to supply oil-well drilling rigs and other small commercial requirements.

Decline of Water Levels

Water levels in most wells in San Jacinto County have not changed greatly because only small quantities of water have been pumped. The greatest declines in water levels have occurred in the vicinity of flowing wells. The discharge of flowing wells near the Trinity River has lowered the piezometric surfaces in both the Jasper and Evangeline aquifers (Figures 8 and 9). The pressure head in well WU-61-25-401, a flowing well near the Trinity River, was such that the water rose 20 feet above the land surface in 1946. By 1966, the head had declined to 6 feet above the land surface. The water level in well WU-60-24-901, north of Camilla, declined 15 feet between 1947 and 1965. The water level in well WU-60-15-901, 4 miles east of Pointblank, decline 29 feet between 1946 and 1965. The decline in water level in well WU-61-33-101 (Figure 12) is possibly due to the discharge of the flowing wells near the Trinity River.

Table 4.--Annual Water Consumption From Public-Supply Sources, 1955-65

(Million Gallons Per Year)

	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
Coldspring	3.8	3.8	3.8	--	3.6	4.7	4.2	6.0	5.3	4.7	5.5 (15,000 gpd)
Oakhurst	.1	.8	.7	--	.8	.7	.9	.7	.7	.8	.8 (2,200 gpd)
Shepherd	--	--	--	--	--	--	--	15.5	16.5	13.8	14.4 (39,000 gpd)
Total	--	--	--	--	--	--	--	22.2	22.5	19.3	20.7 (56,000 gpd)

Records of water levels since 1955 are available for a rice irrigation well in Liberty County, 1½ miles south of the San Jacinto County line. The hydrograph of this well (Figure 12) shows the seasonal effect of pumping for rice irrigation. Data are insufficient to determine the effects of large withdrawals in Liberty County on water levels in San Jacinto County; however, they are probably small and confined to the southern part of the county.

Construction of Wells

Three types of wells are used in San Jacinto County: dug wells, bored wells, and drilled wells. Approximately one-half of all wells currently (1966) in use were dug or bored.

Most dug wells are less than 30 feet deep. In general, they are large in diameter, 36 inches or more, and are walled with brick or concrete. Many dug wells are subject to contamination by surface water; contamination by organic matter should be suspected if chemical analysis of the water shows more than 45 ppm nitrate.

Bored wells are commonly 80 feet deep or more and range from 6 to 8 inches in diameter. These wells are usually cased with tile or concrete pipe. Because bored wells are open enough to allow air to enter the well, they have the advantage of neutralizing acid-type waters. Consequently, some well owners have abandoned drilled wells in favor of bored wells where iron problems exist which can be partly controlled by aeration of the water.

Most drilled wells currently in use are completed with galvanized steel casing and stainless steel screens. Because water levels in most wells are near the surface, jet pumps are used extensively. Four-inch drilled wells equipped with submersible pumps are adequate for most rural domestic and livestock needs. Several wells in San Jacinto County are underreamed and gravel packed; however, this is not a common practice in the county.

QUALITY OF GROUND WATER

General and technical discussions of the chemical quality of ground water are included in "A Primer on Water Quality" by Swenson and Baldwin (1965) and "Study and Interpretation of the Chemical Characteristics of Natural Water" by Hem (1959).

The chemical constituents of the ground water in San Jacinto County originate principally from the rocks which contain the water or through which the water has moved. The quantities of some of the constituents, especially sodium and chloride, indicate the extent to which connate water has been flushed from the formation. The temperature of ground water, which near the surface is about the same as the mean air temperature, increases with depth. The temperature of the water from some of the wells in the county is given in Table 5. The chemical analyses of water from wells and springs in San Jacinto and adjacent counties are given in Table 7.

Relationship of Quality of Water to Use

The major factors that determine the suitability of a water supply are the limitations imposed by the intended use of the water. Among the various criteria established for water quality are: bacterial content; physical characteristics, such as temperature, odor, color, and turbidity; and chemical constituents. Usually, the bacterial content and the undesirable physical properties can be alleviated economically, but the removal of undesirable chemical constituents can be difficult and expensive.

The dissolved-solids content is an indication of the chemical quality of the water. A general classification of water based on dissolved-solids content, in ppm, is as follows (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

The U.S. Public Health Service (1962, p. 7-8) has established and periodically revises the standards for drinking water used on common carriers engaged in

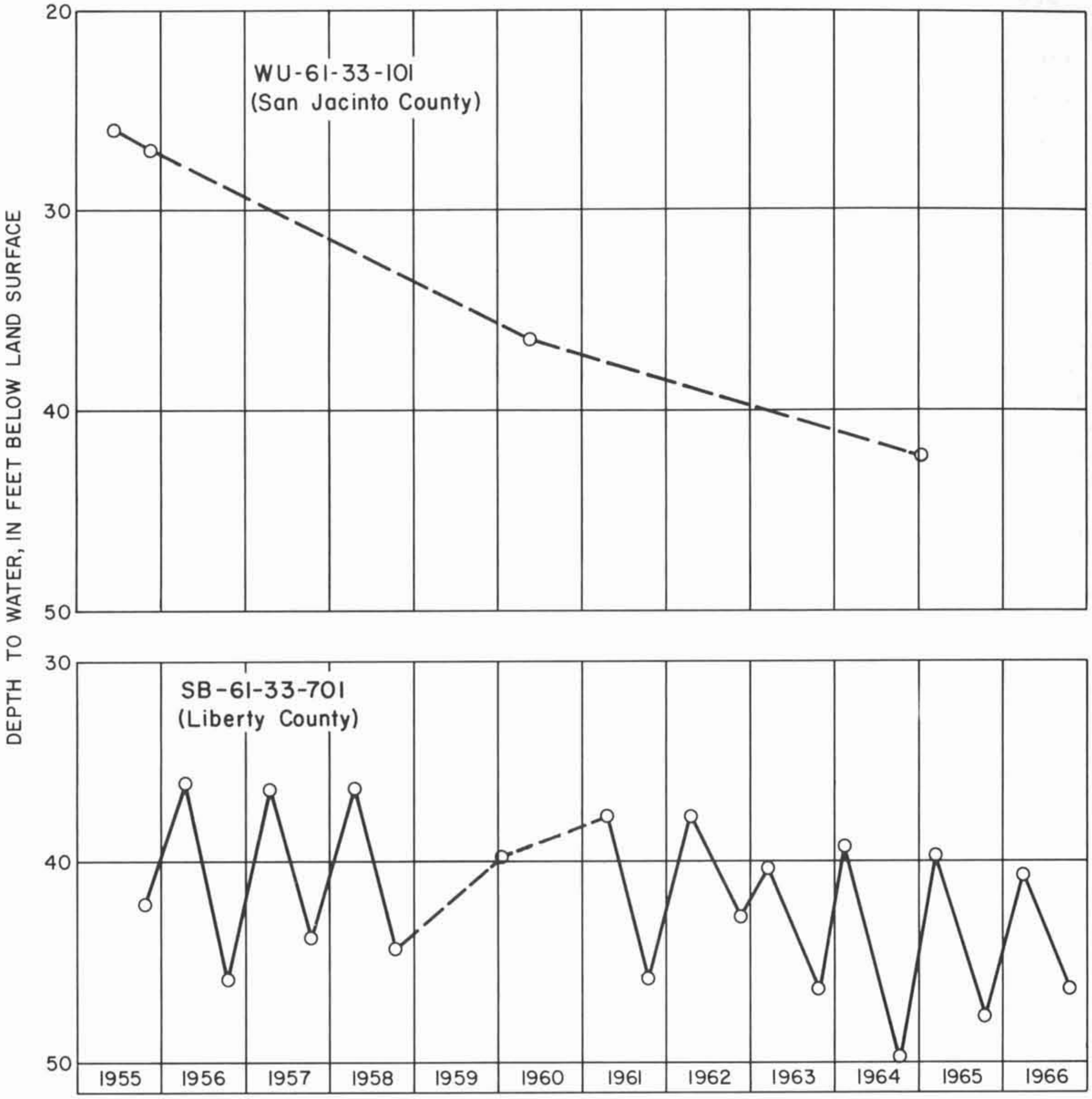

Figure 12

Water-Level Changes in Wells Tapping the Evangeline Aquifer, San Jacinto and Liberty Counties

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interstate commerce. The standards, which are designed to protect the traveling public, may be used to evaluate domestic and public water supplies. According to these standards, chemical constituents in a public water supply should not exceed the concentrations shown in the following table, except where more suitable supplies are not available.

SUBSTANCE	CONCENTRATION (PPM)
Chloride (Cl)	250
Fluoride (F)	*
Iron (Fe)	0.3
Nitrate (NO_3)	45
Sulfate (SO_4)	250
Dissolved solids	500

*According to the U.S. Public Health Service (1962), the optimum concentration of fluoride is determined by climate. The amount of water, and consequently the amount of fluoride, ingested is influenced primarily by air temperature. Based on an annual average of maximum daily air temperature of 77.7°F at Huntsville in adjacent Walker County, the optimum value of fluoride concentration in water in San Jacinto County is 0.8 ppm. Concentrations greater than twice this value (1.6 ppm) would constitute grounds for rejection of the supply.

Water containing optimum fluoride content reduces tooth decay, especially when the water is consumed by children during the period of enamel calcification. In excessive concentrations, fluoride may cause mottling of the teeth, depending upon the age of the child, the amount of water consumed, and the susceptibility of the individual (Maier, 1950, p. 1120-1132).

Water having a chloride content of more than 250 ppm may have a salty taste, and water containing sulfate in excess of 250 ppm may have a laxative effect. Water containing iron in excess of 0.3 ppm may cause reddish-brown stains on laundry, utensils, and plumbing fixtures. Large amounts of iron give water an objectionable taste.

The drinking water standards of the U.S. Public Health Service (1962, p. 7-8) limit nitrate to 45 ppm. Waters of high nitrate content have been reported to be the cause of methemoglobinemia (an often fatal disease in infants), and therefore should not be used (Maxcy, 1950, p. 271).

Calcium and magnesium are the principal constituents in water that cause hardness. Hard water forms scale in boilers, water heaters, and pipes, and increases the consumption of soap. The commonly accepted classification of water hardness, expressed in ppm calcium carbonate, is as follows: less than 60 ppm, soft; 61 to 120 ppm, moderately hard; 121 to 180 ppm, hard; and more than 180 ppm, very hard.

The quality of water requirements for industrial uses range widely, as almost every industrial requirement has different standards. In general, water used for industry may be classified as process water, cooling water, and boiler water. Process water is water incorporated into or used in contact with the manufactured product. The quality requirements for this use may include physical and biological factors as well as chemical factors.

Water for cooling and boiler uses should be noncorrosive and relatively free of scale-forming constituents. In boiler water, the presence of silica is undesirable because it forms a hard scale, and the scale-forming tendency increases with pressure in the boiler (Moore, 1940, p. 263). Suggested water-quality tolerances for a number of industrial uses have been summarized by Hem (1959, p. 253) and Moore (1940, p. 263).

Several factors other than the chemical quality are involved in determining the suitability of water for irrigation. The type of soil, adequacy of drainage, crops grown, climatic conditions, and quantity of water used—all have an important bearing on the continued productivity of irrigated land. The commonly used classification of water quality for irrigation is that of the U.S. Salinity Laboratory Staff (1954, p. 69-82).

Chemical Quality of Ground Water in the Geologic and Hydrologic Units

The chemical quality of ground water in San Jacinto County is good. In general, the concentrations of chemical constituents are within the limits established by the U.S. Public Health Service. Less than 2 percent of all samples analyzed contained dissolved solids in excess of 1,000 ppm (Table 7).

The two most objectionable characteristics of the water are high iron content and low pH. This is particularly true in the southern part of the county where many well owners have experienced "iron problems."

Water having a very low pH, which is acidic, contributes to the iron problems by corrosion of the iron plumbing or well and pump installations; however, some of the shallow sands contain water with a high natural concentration of iron. This is evident from water samples from many of the springs flowing into the Trinity River.

Eighteen (33 percent) of the 57 water samples on which pH determinations were made were acid (pH less than 7), six samples were neutral (pH 7), and 33 samples were alkaline (pH more than 7). In general, the samples with the lowest pH came from shallow sources of 200 feet or less. Figure 13 shows the relationship of pH to depth. The boldfaced vertical line in the center of the graph designates a pH of 7, the neutral point. Widening separation to the left, corresponding with a decrease in pH, shows an increase in acidity. Widening separation to the right, corresponding with an increase in pH, shows an increase in alkalinity.

Jackson Group

No wells have been developed in the Jackson Group in San Jacinto County, but electrical logs indicate that some of the sands in the Jackson contain fresh water in the extreme northern part of the county. The three deep wells completed in the Jackson at the Country Campus of Sam Houston State College (Walker County) yield water with a dissolved-solids content of about 370 ppm and a chloride content of about 85 ppm. The water is soft and low in sulfate content (Winslow, 1950, p. 18).

Catahoula Sandstone

Several wells near Pointblank are completed in the Catahoula Sandstone. One of these wells, over 900 feet deep, yields slightly saline water with a dissolved-solids content of about 1,200 ppm. Water from the Catahoula is generally inferior to water from the Jasper and Evangeline aquifers, but it varies widely, ranging from a soft, sodium bicarbonate type to a moderately hard sodium chloride type.

Jasper Aquifer

Water produced from the Jasper aquifer in San Jacinto County is generally of good quality. Well WU-61-25-801, the deepest well completed in the Jasper, yields water from a depth of over 900 feet which contains about 870 ppm dissolved solids.

The quality of the water from shallow depths varies locally, but it is generally low in pH. Dissolved solids range from about 50 to 300 ppm.

Evangeline Aquifer

Water produced from the Evangeline aquifer in San Jacinto County is of good chemical quality and is generally similar to water produced from the Jasper aquifer. At depths of 300 to 500 feet, the water contains dissolved solids averaging about 400 ppm, mostly sodium and bicarbonate.

Shallow wells in the Evangeline produce water that is characteristically low in pH. The quality is generally good, but the water from the shallowest part of the Evangeline may contain objectionable amounts of iron.

Chicot Aquifer

Water in the Chicot aquifer is of the same chemical quality as the water in the underlying aquifers. In the southernmost part of the county, however, a few wells have been developed in the Chicot that produce water which is inferior in quality to that of the deeper aquifers and generally contains undesirable amounts of iron.

Protection of Ground Water

A potential source of contamination of ground water in San Jacinto County exists in the possible movement of brines from the underlying salt water-bearing formations through improperly cased oil wells or improperly plugged oil tests although no instances of such contamination have been reported. The Texas Water Development Board has made recommendations to the oil operators of the depths to which water-bearing formations are to be protected. The Oil and Gas Division of the Railroad Commission of Texas is responsible for protection of the ground water.

Figure 14 shows the approximate depth of the fresh to slightly saline water sands in some of the oil fields in San Jacinto County and the amount of cemented casing or alternative protection devices required according to published rules of the Railroad Commission. The figure indicates that in all of the fields the fresh to slightly saline water sands are not adequately protected by the field rules.

Another potential source of contamination is the infiltration of oil-field brine from disposal pits on the outcrops of the aquifers. In 1961, brine production in San Jacinto County was 7,048 barrels (296,016 gallons) per day. Of a total of 2,572,570 barrels of brine produced in 1961, 99.4 percent was disposed of through injection wells and 0.6 percent was disposed of through open surface pits (Texas Water Commission and Texas Water Pollution Control Board, 1963). There are no reported cases of contamination of this type in San Jacinto County; however, because of the slow rate of ground-water movement, any contamination resulting from brine disposal in pits may not be detected for many years.

AVAILABILITY OF GROUND WATER

Fresh ground water is available throughout San Jacinto County although in varying amounts and at varying depths. Figure 15 shows the approximate altitude of the base of fresh water (less than 1,000 ppm dissolved solids) below sea level, as determined from an examination of electrical logs of oil and gas tests and a

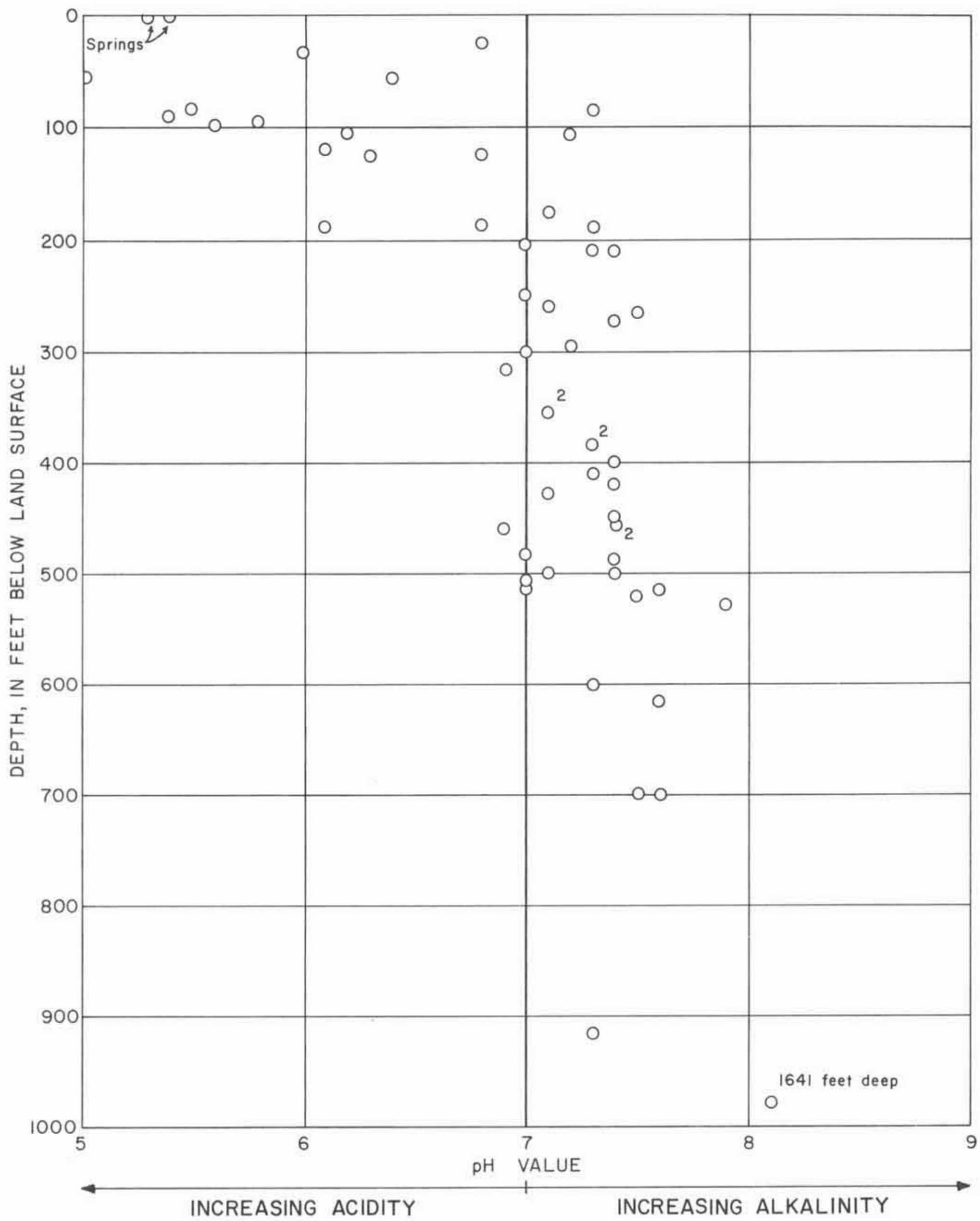

Figure 13

Relationship of pH to Depth

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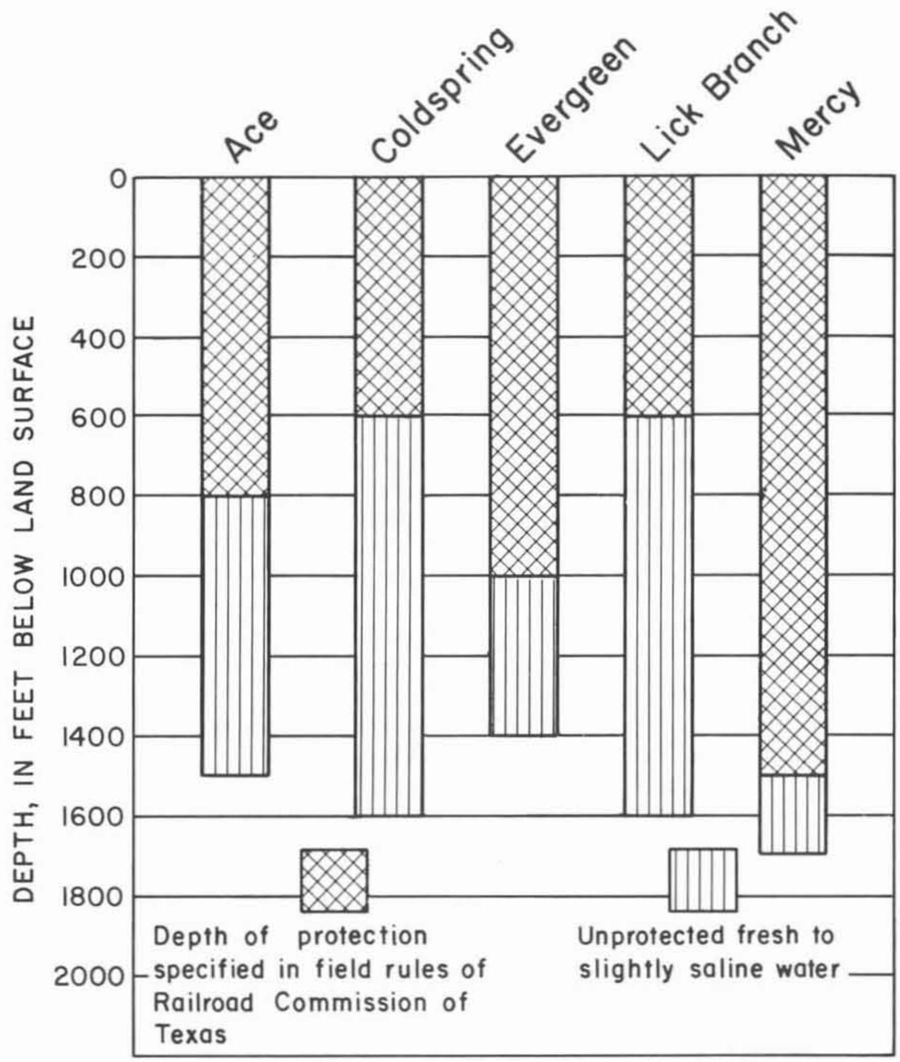

Figure 14

Oil and Gas Field Surface-Casing Requirements Compared With Base of Slightly Saline Water

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

study of chemical analyses of water samples. The base of fresh water ranges from about sea level in the northern part of the county to a maximum of about 1,600 feet below sea level in the south-central part. The map shows the extent of fresh water in the Catahoula Sandstone. Immediately south of the southern boundary of the fresh water in the Catahoula, the base of the fresh water occurs at a considerably higher altitude in the Jasper aquifer.

The approximate total thickness of sand containing fresh water in the county is illustrated on Figure 16. The thickness ranges from less than 100 feet in the extreme northern part of the county to more than 400 feet in a belt across the north-central part and in an area in the southwestern part. The potential for development of fresh water in the county is greatest where the thickness of sand is greatest.

Based on the average sand thicknesses shown in Figure 16 and assuming a porosity of 30 percent, about 18 million acre-feet of fresh water is estimated to be in storage in San Jacinto County. However, only a small part of this water can be economically produced because of the great depth at which much of it occurs and because the sands cannot be completely drained. If it is assumed that the water above a depth of 400 feet could be produced economically, and assuming a specific yield of 15 percent, about 4 million acre-feet of fresh water in storage is available for development.

Slightly saline water (1,000 to 3,000 ppm dissolved solids) underlies the fresh water throughout San Jacinto County. Much of this water is suitable for many purposes, especially if it is mixed with the overlying fresh water. Figure 17 shows the approximate altitude below sea level of the base of the slightly saline water zone. The altitude of the base of slightly saline water ranges from about 300 feet below sea level in the northern part of the county to about 2,300 feet below sea level in the southwestern part. The configuration of the base of slightly saline water is similar to that of the base of fresh water.

The total thickness of sands containing fresh and slightly saline water in the county is shown in Figure 18. The thickness is greatest in a belt across the north-central part of the county and in an area in the southwestern part.

About 6 million acre-feet of slightly saline water is in storage in San Jacinto County; however, this figure is not significant as far as availability is concerned because of the great depth at which the water occurs.

Although many millions of acre-feet of fresh water are in storage in San Jacinto County, as stated above, only a very small part of this is available for development. This large quantity of water is in transient storage—that is, it is moving through the aquifers in a general southeasterly or easterly direction. The water moving out of the county or being discharged is replaced by recharge from rainfall. The most important factor pertaining to the perennial availability of water is the rate of recharge. It is impossible to determine the rate of recharge in the county with the data available. However, estimates can be made.

One method of estimating the amount of water that can be pumped perennially is to assume a set of conditions of discharge that might reasonably be attained. For example, it may be assumed that wells completely penetrating the fresh water-bearing section are installed in a line nearly paralleling the south county line and extending through Shepherd. It is assumed that the wells are pumped so that the water levels along the line are lowered to a level of 400 feet below land surface and maintained at that level. It is further assumed that the recharge to the aquifers occurs along a line about 8.5 miles northwest of and parallel to the line of wells. It is further assumed that the water level at the line of recharge remains constant—in other words, that the rate of recharge is sufficient to provide the water pumped. It is further assumed that the hydraulic gradient between the line of recharge and the line of discharge is a straight line. On the basis of these assumptions, about 40,000 acre-feet per year (35 million gallons per day) of water would be transmitted to the line of wells. The calculations given above are very crude; they are included merely to give an indication of the ability of the aquifer to transmit water. The total quantity of water pumped under the assumed conditions (40,000 acre-feet per year) is equivalent to about 1 inch of recharge on the outcrop of the aquifers. This amount of recharge is probably low considering estimates made for natural recharge to the aquifers in other parts of southeast Texas.

The above computations were made for the Evangeline and Jasper aquifers in the southern part of the county. Additional but much smaller quantities of water could be pumped on a perennial basis from the aquifers in the northern part of the county. It seems reasonable then that quantities in excess of 40,000 acre-feet could be pumped annually in the county. This set of computations does not take into account the possibility of salvaging the rejected recharge which presently occurs in the form of base flow of the streams in the county. As the water levels decline, at least some of this base flow to the streams would be captured. Nor does it take into account the large quantity of water released from storage as the water levels are being lowered. On the other hand, any development in the county is dependent on development in nearby areas. This is especially evident in the southern part where the water levels in wells probably have been affected by pumpage from rice irrigation wells in Liberty County.

RECOMMENDATIONS FOR FURTHER STUDIES

The large quantities of fresh water in the aquifers in San Jacinto County are practically untapped, and because of the scarcity of large-capacity wells, much of the data needed for an accurate and detailed appraisal of the ground-water resources is not available. On the other hand, this investigation has provided data concerning the virgin state of the aquifers. These data will be invaluable in evaluating the aquifers as development continues.

A program of basic ground-water data collection should be established in the county so as to keep abreast of the development of the aquifers. A program of measuring water levels in observation wells should be established throughout the county and an inventory should be made of the quantity of water pumped. The water levels should be observed at least once a year and the pumpage inventory should be made at least on an annual basis. As part of the inventory of pumpage, an inventory of new wells should be made each year. It is especially important to obtain records of the large-capacity wells—those used for public supply, industry, and irrigation. As new large-capacity wells are drilled, aquifer tests should be made to determine the hydraulic properties of the aquifers.

One of the unknown but important sources of water in the future is the recharge which is being rejected in the outcrop areas of the aquifers and which presently forms the base flow of the streams. A program of measuring this flow of the streams should be established to obtain quantitative data on this important source of water. The gaging stations should be maintained over a long period of time so as to measure the effects of cyclic variations of climate.

Salt-water encroachment is not a problem in San Jacinto County nor does it appear to be one in the foreseeable future; however, because sands containing slightly saline water are interbedded with fresh-water-bearing sands in some places, a program of periodic sampling of key wells should be established, especially in heavily pumped areas.

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Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties

All wells are drilled unless otherwise noted in remarks column.
Method of lift and type of power: A, airlift; B, bucket and rope; C, centrifugal; E, electric; G, gasoline or liquified petroleum gas; J, jet; N, none; P, piston or cylinders; T, turbine or submergible; W, windmill. Number indicates horsepower.
Use of water : C, commercial; H, domestic; I, irrigation; N, industrial; P, public supply; S, stock; U, unused.
Water-bearing unit : Ev, Evangeline aquifer; J, Jasper aquifer; Tcs, Catahoula Sandstone.

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
						San Jacinto County						
WU-60-06-802	Gibbs Bros.	--	--	Spring	--	Tcs	120	--	--	N	N	Known as Skinner Spring.
14-201	A. C. Williams	A. C. Williams	1958	21	24	Tcs	270	17.9	Jan. 18, 1966	J,E	H	Dug well. Reported good supply of water all year.
203	Gibbs Bros.	--	1944	90	4	Tcs	--	+	Dec. 1945	Flows	U	Drilled as test well; completed as water well.
204	J. Chambers well 1	Gibbs Bros.	1931	1,770	--	--	--	--	--	--	--	Oil test.
205	-- Johnson well 1	do	1931	1,400	--	--	--	--	--	--	--	Do.
301	Mrs. -- Gross	Anders Well Service	1962	120	2	Tcs	220	--	--	J,E, ½	H,S	
* 302	T. F. Toole	--	1920	20	36	Tcs	270	13.0	Aug. 31, 1945	B	U	Dug well.
501	C. Love	--	1964	25	8	Tcs	196	19.3	Jan. 19, 1966	B	H	Bored well. Reported dry during summer.
502	S. L. Cowart	Baggett Drilling Co.	1963	118	3	Tcs	256	--	--	J,E	H,S	Drilled to 338 ft; plugged back to 118 ft.
* 503	C. D. Cowart	--	1942	47	8	Tcs	260	40.6	Aug. 31, 1945	B	U	
601	V. I. Phillips	--	--	Spring	--	Tcs	255	+	Oct. 31, 1965	Flows, J,E, 1/3	H	Estimated flow 10 gpm, Oct. 31, 1965.
602	Gibbs Bros. well 1	-- Oliphant	1938	6,002	--	--	247	--	--	--	--	Oil test.[2/]
802	R. F. Prather	-- Burton	1959	21	36	J	345	10.0	Oct. 31, 1965	J,E, ¼	H	Dug well.

See footnotes at end of table.

Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
WU-60-14-803	Ira L. Pool	Gay & Son	1964	199	2	J	315	125	Feb. 1964	J,E, 1½	H	Screen from 189 to 199 ft.
804	A. Knight	Henry Doling	1918	60	--	J	--	22.6	Aug. 31, 1945	B	U	Bored well.
901	Mattie Dozier	L. Bell	1963	42	36	J	305	36.5	Dec. 31, 1965	B	H	Dug well.
902	Roosevelt Phipps	do	1962	33	36	J	252	16.5	Feb. 2, 1966	B	H	Do.
15-401	Gibbs Bros. well 1	Coastal Drilling Co.	1940	5,510	--	--	--	--	--	--	--	Oil test.[2/]
* 402	Johnny Mitchell	Porter Hines	1953	53	8	J	172	17.0	Feb. 16, 1966	B	H	Bored well. Concrete casing.
501	-- Manning well 1	Thomas Bros.	1945	--	--	--	175	--	--	--	--	Oil test.
502	-- Manning	do	1945	436	--	Tcs	175	+	Oct. 21, 1965	Flows	S	Screen from 406 to 436 ft.
503	Carey & Maley well 1	Sparta & Thomas	1952	9,139	--	--	183	--	--	--	--	Oil test.[2/]
701	T. J. Jones	I. J. Jones	1950	25	48	J	282	--	--	B	H,S	Dug well.
702	Rim Rock Estates	M. J. Smith	1952	46	8	J	267	--	--	N	U	Bored well. Glazed tile casing. Reported dry Feb. 17, 1966.
703	-- Olgetree well 1	Humble Oil & Refining Co.	1963	14,478	--	--	250	--	--	--	--	Oil test.[2/]
704	W. H. Henry	Stokes & Cole	1957	50	8	J	258	37.0	Feb. 17, 1966	J,E, ½	H	Bored well. Glazed tile casing.
705	-- Hause well 1	-- Johnson	1954	5,026	--	--	--	--	--	--	--	Oil test.
706	Jack Counts	Baggett Drilling Co.	1961	299	2	J	264	55	1961	J,E, ½	H,S	Screen from 289 to 299 ft.
* 801	John A. Trichel, Jr.	E. Miller	1954	205	2	Tcs	115	+9.0	Oct. 29, 1965	Flows	S	Measured flow 2 gpm Oct. 29, 1965. Screen from 195 to 205 ft.
* 802	Point Lookout Estates	Gay & Son	1963	700	2½	Tcs	127	+78	May 1963	Flows	U	Reported flow 42 gpm. Screen from 679 to 700 ft. Specific conductance 3,000. Temp. 81°F.

See footnotes at end of table.

Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
WU-60-15-803	Point Lookout Estates	Gay & Son	1962	360	4	Tcs?	170	55.8	Oct. 27, 1965	T,E, 2½	P	Screen from 339 to 360 ft.
804	Mrs. R. L. White	-- McClain	1965	245	2	J	125	+18.4	Feb. 17, 1966	Flows,	H	Measured flow 6 gpm, Feb. 17, 1966. Screen from 240 to 245 ft.1/
805	Carey, Maley, & Manning well 1	-- Thomas	1948	7,523	--	--	176	--	--	--	--	Oil test.2/
* 901	John Trichel, Jr.	Baggett Drilling Co.	1946	410	4	Tcs	105	+50.0 +20.7	Nov. 4, 1946 Oct. 29, 1965	Flows	S	Measured flow 17 gpm, Nov. 29, 1965. Screen from 396 to 411 ft. Temp. 73°F.
902	William Walker	--	--	--	2½	--	110	+	Oct. 21, 1965	Flows	H,S	Measured flow 3½ gpm, Nov. 21, 1965. Temp. 69°F.
904	John Trichel, Jr.	E. Miller	--	125	4	J	114	22.7	Oct. 29, 1965	C,E, 1	H	
905	do	do	--	208	2½	Tcs?	116	6.0	do	N	U	
22-201	-- Hopkins	Otis Knight	1931	486	4	J	--	175	1931	T,E, 1½	H	
202	R. L. McAdams	Lumix & Denmon	1953	33	36	J	354	28.8	Oct. 20, 1965	J,E, ½	H	Dug well.
* 203	Oakhurst School	E. Miller	1964	260	4	J	385	--	--	J,E, 1½	P	Screen from 240 to 260 ft.
* 204	A. T. Scott	Anders Well Service	1964	98	4	J	372	35	June 1964	T,E, ½	C	Screen from 88 to 98 ft. Supplies water for laundry.
* 205	W. Ainsworth	Anders Well Service	1962	317	4	J	378	145.6	Oct. 28, 1965	T,E, ¾	P	Reported supplies 2,000 gpd of water to community. Screen from 297 to 317 ft.
* 206	R. E. Hoot	-- Evans	1939	23	36	J	--	--	--	J,E, ½	H	Dug well.
207	Texas Long Leaf Lumber Co.	Layne-Texas Co.	1906	300	6	J	354	114	1940	N	U	Reported formerly supplied water for 30 customers.1/

See footnotes at end of table.

Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COM-PLET-ED	DEPTH OF WELL (FT)	DIAM-ETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
*WU-60-22-208	Oakhurst School	--	1932	250	6	J	385	175	1940	N	U	Drilled to 600 ft; plugged back to 250 ft. Screen from 225 to 250 ft.
209	Mrs. -- Studer	E. Miller	1965	326	2	J	--	--	--	J,E	S	
* 210	Alton Aden	Otis Knight	1931	500	4	J	392	175	1931	--	H,S	
* 211	D. D. Dolive	E. T. Evans & Son	1934	40	36	J	388	29.5	Jan. 10, 1947	--	H	Dug well.
* 212	E. J. Neiderhoffer	do	1937	25	36	J	380	4.5	do	B	H,S	Do.
301	Carey Land & Development Co. well 1	Stanolind Oil & Gas Co.	1953	9,969	--	--	344	--	--	--	--	Oil test.2/
302	H. W. Hamm	Porter Hines	1946	52	8	J	295	48.9	Feb. 16, 1966	J,E, ½	H	Bored well.
303	J. A. Bennett	-- McClain	1965	273	2	J	314	110	Aug. 1965	J,E, ¾	H	Screen from 259 to 273 ft.
304	Mrs. L. Andrews	-- McClain	1965	207	2	J	325	26	Aug. 1965	J,E,	H	Screen from 197 to 207 ft.
* 305	Rosure Harrison	Anders Well Service	1964	104	4	J	308	76.6	Feb. 17, 1966	J,E, ½	H,S	Screen from 96 to 104 ft.
306	Bill Cook	Gay & Son	1965	283	2½	J	300	101	Aug. 1965	J,E, 2	H,S	Screen from 263 to 283 ft.1/
501	Robert Hoot	Anders Well Service	1950	52	2	J	293	20	May 1965	J,E, ¾	S	Reported discharge 10 gpm.
502	E. H. Hoot	E. H. Hoot	1950	42	8	J	302	--	--	J,E, ½	H,S	Bored well.
503	Mattie Jenkins	-- Jenkins	1956	24	36	J	322	17.3	Oct. 28, 1965	B	H,S	Dug well.
505	Mary Hall	-- Evans	1942	38	36	J	--	--	--	B	H	Do.
506	Henry Lee Hall	Lee Wyatt	1959	28	36	J	319	14.6	Oct. 28, 1965	B	H	Do.
507	-- Bennett well 1	-- Darby	1935	6,899	--	--	--	--	--	--	--	Oil test.2/

See footnotes at end of table.

Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
WU-60-22-601	Henry Curry	-- Elmore	1964	135	2	J	343	--	--	J,E, 1	H	Screen from 125 to 135 ft.
602	Zack Curry	Zack Curry	1955	28	36	J	312	23.5	Oct. 28, 1965	J,E, ½	H,S	Dug well.
603	John Henry Perry	Louis Bell	1962	45	10	J	322	43	Oct. 1965	B	H,S	Bored well.
604	J. E. Street	Baggett Drilling Co.	1959	500	3	J	338	142 150	Aug. 1965 July 1966	J,E, 1½	H,S	Screen from 490 to 500 ft.
* 605	E. L. Hillhouse	Anders Well Service	1954	165	3	J	330	95.2	Feb. 13, 1966	A,E, ½	H	Screen from 155 to 165 ft.
* 606	J. E. Street	--	--	Spring	--	J	--	+	Sept. 5, 1945	Flows	H	Known as Willow Springs.
* 607	J. W. Johnson	-- Ellis	1939	36	8	J	--	19.4	do	B	H	Bored well.
* 23-101	W. W. Butler	--	1934	645	4	Tcs	208	50	1934	A,E, 3	H	Screen from 625 to 645 ft. Formerly supplied water for cotton gin and several families. Gin now abandoned.
102	C. T. Aden	E. Miller	1962	330	--	J	215	3	1962	J,E	H	Screen from 320 to 330 ft.
* 103	R. C. Hansen	Baggett Drilling Co.	1961	699	2	Tcs	182	15	1961	J,E	H,S	Screen from 689 to 699 ft.
104	W. F. Smith	Anders Well Service	--	250	4	J	216	--	--	J,E, ½	H,S	
105	J. L. Hopkins	Baggett Drilling Co.	1956	369	3	J	240	50	Oct. 1956	J,E, 1½	H,S	Screen from 359 to 369 ft.
106	Clayton Burleson	E. Miller	1965	367	2	J	193	--	--	J,E, ¾	H	Screen from 347 to 367 ft.
* 107	I. J. Owen	Porter Hines	1945	35	6	J	210	33.0	Jan. 10, 1947	B	H	Bored well.
* 108	J. L. Capers	do	1945	34	6	J	190	30.4	do	B	H	Dug well.
* 201	W. W. Butler	E. Miller	1955	212	2	J	118	+21.3	Mar. 8, 1966	Flows	S	Measured flow 30 gpm, Feb. 16, 1966. Temp. 70°F.

See footnotes at end of table.

Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
*WU-60-23-202	R. C. Hanson	Baggett Drilling Co.	1952	190	2	J	110	+8.2	Mar. 8, 1966	Flows	S	Measured flow 30 gpm, Mar. 8, 1966. Screen from 170 to 190 ft.
301	Ernest Bailes	do	1955	285	2	J	106	+	Mar. 9, 1966	Flows	S	Reported flow 10 gpm, March 1966.
401	Carey well 1	Stanolind Oil & Gas Co.	1952	10,050	--	--	312	--	--	--	--	Oil test.2/
402	Phillip Carter	Baggett Drilling Co.	1950	300	2	J	--	--	--	J,E	H,S	
* 501	Daniel D. Dowden	do	1948	515	4	J	121	+5.6	Feb. 16, 1966	Flows J,E	H,S	Estimated flow 12 gpm, in 1966. Screen from 494 to 515 ft.
502	Susie L. Stewart	Gay & Son	1962	--	2	J	--	--	--	J,E	H	Reported flowed in 1962.
503	Mrs. H. M. Aden	do	1960	335	4	J	250	95.0	Feb. 18, 1966	T,E, 1	H,S	
504	Mrs. W. T. Harrell	do	1961	305	2	J	298	64	Dec. 1961	T,E, 1	H	Screen from 294 to 305 ft.
505	Lloyd Bryant	do	1959	380	2½	J	248	180	June 1959	J,E	H,S	Screen from 360 to 380 ft.
603	J. D. Gladden	E. Miller	--	202	2½	J	104	+.9	Feb. 17, 1966	Flows, J,E,½	S	Casing slotted from 192 to 202 ft.
604	Harvey McGathom	do	1950	140	--	J	182	--	--	J,E, 1	H	
605	Morris McMurray	--	--	--	2	J	105	+19.9	Feb. 17, 1966	Flows	S	Measured flow 5 gpm, Feb. 17, 1966. Temp. 70°F.
701	H. D. Williamson	Gay & Son	1957	268	2½	J	292	60	Oct. 1957	J,E, 1	H	Replaced old 160 ft well that produced rusty water.
* 702	G. A. Williamson	--	--	Spring	--	J	320	+	--	Flows	H,S	Estimated flow 1 gpm. Known as Williamson Spring.
703	Tom Winfrey	Gay & Son	1962	283	2½	J	293	73	Oct. 1962	J,E	H,S	Drilled to 303 ft; plugged back to 283 ft. Screen from 105 to 110 ft.
* 704	J. W. Winfrey	do	1962	483	4	J	302	113.5	Apr. 15, 1966	J,E, 1½	H,S	Screen from 473 to 483 ft.

See footnotes at end of table.

Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COM-PLET-ED	DEPTH OF WELL (FT)	DIAM-ETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
WU-60-23-801	Foster Lumber Co. well 1	Humble Oil & Refining Co.	1944	8,184	--	--	306	--	--	--	--	Oil test.[2]
802	Foster Lumber Co. well 2	-- Patterson	1944	977	4	J	306	75	June 1944	N	U	Screen from 957 to 977 ft. Destroyed.
803	Foster Lumber Co. well 1	Pitre Water Well Drilling Co.	1944	302	4	J	306	75	do	N	U	Drilled to 628 ft; plugged back to 302 ft. Screen from 279 to 302 ft. Reported discharge 20 gpm. Destroyed.[1]
901	Sam McMurray	Baggett Drilling Co.	1957	331	2	J	127	--	--	J,E, ½	H,S	
902	do	--	--	22	8	J	127	19.3	Feb. 17, 1966	N	U	Bored well.
903	Bob Bennett	Baggett Drilling Co.	1962	182	2	J	187	70	Mar. 1962	J,E, ½	H	Screen from 172 to 182 ft.
24-701	E. McMurray	do	1946	430	4	J	102	+36.0	Feb. 17, 1947	Flows	S	Measured flow 30 gpm, Feb. 17, 1947. Screen from 415 to 430 ft. Temp. 74°F.
702	H. W. Childress	do	1958	412	2½	J	101	+32	1958	Flows	S	Screen from 400 to 412 ft.
* 801	Charlie McMurray	do	1946	468	4	J	96	+18.0	Jan. 13, 1947	N	U	Measured flow 5 gpm, Jan. 13, 1947. Reported flow 2 gpm, 1960. Not flowing in 1965.
* 802	-- McGowen	do	1956	455	--	J	100	+11.2	Oct. 11, 1965	Flows	S	Measured flow 12 gpm, Oct. 11, 1965. Screen from 435 to 455 ft.
803	Mrs. Ella McMurray well 1	Arkansas Fuel Oil Co.	1931	4,050	--	--	94	--	--	--	--	Oil test.[1]
* 901	Elizabeth McMurray	Baggett Drilling Co.	1946	427	4	J	95	+24.0 9.1	Jan. 14, 1947 Oct. 13, 1965	Flows	S	Measured flow 5 gpm, Oct. 13, 1965. Screen from 412 to 426 ft. Temp. 79°F.
* 902	Jimmy McMurray	do	1946	459	4	J	97	+27.0	Jan. 14, 1947	N	S	Measured flow 10 gpm, Jan. 14, 1947. Produces some gas. Screen from 449 to 459 ft. Temp. 75°F.

See footnotes at end of table.

Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
*WU-60-24-903	Hale Bros.	Baggett Drilling Co.	1946	535	4	J	96	+10.0	Nov. 12, 1946	N	U	Measured flow 1 gpm, Nov. 12, 1946. Screen from 510 to 535 ft. Not flowing in 1965.
30-201	Pine Valley Baptist Church	--	1957	125	3	J	302	--	--	J,E	H	
* 202	W. W. Cook	-- Lowere	1944	163	4	J	318	46.9	Nov. 7, 1946	P,G, 2	H,S	Screen from 148 to 163 ft.
301	Delta Land & Timber Co. well 1.	George Pace	1932	4,042	--	--	--	--	--	--	--	Oil test.
* 501	C. W. Ellisor	--	1959	58	3	J	230	+5.7	Oct. 7, 1965	Flows	S	Measured flow 13 gpm, Oct. 10, 1965. Drilled as test hole; completed as water well. Temp. 68°F.
502	K. R. Ellisor	-- Angel	--	57	8	J	--	--	--	J,E, ½	H	
503	George Ellisor, Jr.	George Ellisor, Jr.	1940	27	8	J	--	--	--	P,E, ¼	H	Dug well.
504	Jim Scott	Con-Tex Water Wells Service	1964	175	2	J	235	55	Sept. 1964	J,E, ¾	H	Screen from 162 to 175 ft.[1]
601	Vera Mae Thompson	Donald McKay	1959	33	8	J	257	26.2	Sept. 29, 1965	B	H	
602	Chester Ellisor	--	--	Spring	48	J	227	+	Sept. 1965	J,E,¾, Flows	H	Supplies water for 10 families. Dug out to increase flow. On Chinquapin Creek. Temp. 72°F.
603	J. A. Risner	--	1940	33	8	J	254	--	--	B	H	Bored well.
604	Irving Risner	Yerrt Turner	1962	58	8	J	245	17.9	Sept. 29, 1965	P,E, ¼	H	
605	R. E. Harper	Donald McKay	1962	43	8	J	285	23	May 1962	J,E, ¾	H	Bored well.
606	W. H. McCants	Con-Tex Water Wells Service	1965	119	2	J	301	63	Oct. 1965	J,E, ¾	H	Screen from 107 to 119 ft.

See footnotes at end of table.

Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
WU-60-30-607	Elmer E. Ellisor	Elmer Ellisor	1948	22	8	J	225	16.2	Mar. 7, 1966	B	H	Bored well.
608	James. M. Lilley	Gay & Son	1964	200	4	J	265	34.3	do	T,E, 1	H,S	
* 609	J. D. Whitmore	do	1950	187	2	J	312	--	--	J,E	H,S	
* 610	Claud A. Caldwell	Baggett Drilling Co.	1945	106	2	J	280	36	1945	P	S	
611	do	do	1946	241	2	J	250	43.5	Nov. 7, 1946	P	S	Screen from 231 to 241 ft.
* 612	do	-- Adams	1941	201	4	J	270	40	Sept. 1941	P	S	Screen from 181 to 199 ft.
701	Hardy Browder	Donald McKay	1960	65	6	Ev	432	43.3	Sept. 28, 1965	J,E, ½	H	Screen from 48 to 56 ft.
* 702	J. L. Browder	do	1963	56	4	Ev	412	34.3	Sept. 29, 1965	J,E, ½	H,S	Screen from 48 to 56 ft.
703	F. S. Browder	Gay & Son	1953	844	--	J	428	--	--	N	U	Screen from 814 to 844 ft.
* 704	H. E. Lewis	--	--	Spring	--	Ev	325	+	--	N	U	Estimated flow 50 gpm, Jan. 11, 1947. Formerly sppplied water for cotton gin and sawmill boilers on hillside 120 ft below hill.
705	F. C. Hill	A. E. Kern	1955	441	3	J	415	168	May 1955	P,E	U	Screen from 439 to 441 ft. Temp. 68°F.
706	do	M & M Well Service	1964	62	4	Ev	415	34	Sept. 1964	J,E, 1	H	Plastic casing.
* 707	Johnny Mimms	Con-Tex Drilling Co.	1964	57	2	Ev	420	--	--	J,E,	H,S	Drilled to 300 ft; plugged back to 57 ft. Field conductance 42.
* 708	J. R. Tilley	-- Elmore	1963	65	3	Ev	409	--	--	J,E, ½	H,S	
* 709	F. S. Browder	W. Cotton	1937	50	48	Ev	428	31.0	Jan. 11, 1947	J,E, ½	U	Dug well.
710	Johnny Mimms	--	--	60	8	Ev	420	48.8	Mar. 31, 1966	N	U	

See footnotes at end of table.

Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
WU-60-30-801	Hardy Browder	--	1957	31	36	J	300	12.7	Sept. 29, 1965	J,E	S	Dug well.
802	J. L. Hammond	--	1949	36	36	J	306	--	--	J,E, ½	H	Do.
803	A. W. Ellisor	--	1953	230	4	J	300	70	Oct. 1953	J,E	H	Screen from 215 to 230 ft.
807	-- Elmore well 1	Providence Oil Co.	1949	4,540	--	--	--	--	--	--	--	Oil test.[2]
808	Elkin Williams	--	1951	44	36	Ev	395	36.2	Mar. 7, 1966	J,E	H	Dug well.
* 809	C. D. Ellisor	-- Patterson	1950	210	4	J	302	77.5	do	J,E	H	Screen from 200 to 210 ft.
* 810	F. H. Elmore	Donald McKay	1965	429	4	J	388	171.3	Mar. 31, 1966	T,E, 1	H,S	Screen from 423 to 429 ft.
811	W. D. Neiderhoffer	Walding Well Service	1965	258	--	J	270	44	June 1965	J,E, ¾	H	Casing slotted from 232 to 258 ft.
* 812	A. W. Ellisor	W. Kike & J. Scott	1936	21	24	Ev	--	77.0	Nov. 7, 1946	B	H	Dug well. Tile casing. Gravel-packed from 13 to 21 ft.
901	-- Hill well 1	Faye & Harris	1948	4,474	--	--	283	--	--	--	--	Oil test.[2]
903	J. E. Custer	--	1963	55	8	Ev	232	3.4	Apr. 5, 1966	B	H	Bored well.
904	C. L. Harmon	Con-Tex Water Well Service	1964	331	2½	J	350	232	July 1964	T,E, 5	H	Screen from 290 to 319 ft.
31-101	Sue Cox	-- Novak	1950	170	2	J	293	--	--	J,E	H,S	Screen from 158 to 170 ft.
102	Ethel Mae Magor	-- Angel	1963	30	8	J	239	5.0	Mar. 3, 1966	J,E, ½	H	Bored well.
103	W. R. Hutsen	--	--	60	10	J	265	37.4	Mar. 10, 1966	B	H,S	Do.
104	O. L. Craner	--	1940	48	36	J	--	--	--	J,E, ½	H	Dug well.
105	W. E. Hogue	-- Taylor	1957	190	3	J	--	--	--	J,E	H,S	Screen from 180 to 190 ft. Specific conductance 1,100, field measurement.
106	C. A. Caldwell	Gay & Son	1942	199	4	J	298	67.7	Mar. 30, 1966	T,E, 1	H,S	

See footnotes at end of table.

Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
WU-60-31-107	R. B. Cheatham	-- Roark	1960	175	4	J	193	--	--	-,E	H,S	Plastic casing. Specific conductance 445, field measurement.
108	Henry Eldridge	--	1946	35	8	J	--	--	--	B	H	Bored well with tile curbing.
* 109	C. T. Caldwell	T. C. Murphy	1945	97	2	J	298	36	Nov. 1945	J,E, ½	U	Screen from 81 to 97 ft.
* 110	H. R. McAdams	A. Cooper	1943	60	30	J	298	46.5	Nov. 18, 1946	B	U	Dug well. Abandoned 1966.
* 113	C. A. Caldwell	G. Crroke	1937	197	4	J	--	36	Nov. 1937	P,E, ¾	H,S	Screen from 175 to 197 ft.
* 201	David Jackson	Gay & Son	1960	126	2	J	277	80	July 1960	J,E	H	Screen from 116 to 126 ft.
202	do	--	--	105	8	J	277	--	--	N	U	Bored well.
203	Lewis Smith	Gay & Son	1964	178	3	J	270	94	Jan. 1964	J,E	H	Screen from 168 to 178 ft.
205	Hallie J. Ross	do	1955	355	2	J	--	--	--	J,E, ½	H,S	Screen from 327 to 355 ft.
206	R. W. Guthrie	do	1964	190	2½	J	250	--	--	J,E, 1	H,S	Screen from 182 to 190 ft.
207	V. Jackson	do	1958	300	2	J	--	--	--	J	H,S	
208	Arnett Perry	-- Lewis	1950	32	1	J	--	--	--	B	H	Driven well.
* 209	David Jackson	Gay & Son	1946	135	2	J	265	45	Nov. 1946	P,-	H,S	Screen from 125 to 135 ft.
* 301	G. H. Sewell	--	--	Spring	--	Ev	--	+	--	C,G	P	Three springs each flowing about 10 gpm and providing auxiliary water for Coldspring. Temp. 68°F.
302	San Jacinto County	Jeff Kennedy	--	900	6, 4	J	--	--	--	N	U	Reported to be insufficient for municipal supply. Destroyed.
304	Alla B. Patrick	Baggett Drilling Co.	1951	480	4	J	--	--	--	C,E, 1½	U	Screen from 470 to 480 ft.
* 305	C. G. Milligan	-- Elmore	1963	509	3	J	302	180	July -- 1965	J,E, 2	H,S	Screen from 498 to 515 ft. Temp. 72°F.

See footnotes at end of table.

Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COM-PLET-ED	DEPTH OF WELL (FT)	DIAM-ETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
WU-60-31-306	Mrs. D. M. Hale	Gay & Son	1940	92	8	Ev	392	72.6	Dec. 7, 1965	B	U	Bored well. Cased with tile.
307	do	do	1930	95	--	Ev	392	--	--	N	U	Screen from 85 to 95 ft.
308	-- Lake	Baggett Drilling Co.	1954	65	2	J	--	--	--	N	U	Drilled to 740 ft; plugged back to 65 ft.
309	J. C. Love	do	1956	501	2	J	298	175	Oct. 1965	J,E	H,S	
310	Nancy Reese	Spence Ivory	1951	42	36	Ev	370	11.9	Mar. 10, 1966	B	H	Dug well.
311	A. P. Bartusch	Baggett Drilling Co.	1948	290	4	J	380	--	--	P,E, 1	H	Screen from 275 to 290 ft.
* 312	Baptist Church	--	--	Spring	--	Ev	300	--	--	N	H	Estimated flow 3 gpm, Dec. 17, 1946. Temp. 71°F.
* 313	Sam McMurray	Joe Parker	1934	76	48	Ev	382	70	Nov. 1946	P,E, 1/3	H	Dug well.
* 314	Guy Lilley	J. B. Hayman	1929	65	8	Ev	388	50	Nov. 1946	J,E, ½	H,S	Bored well; cased with tile.
401	E. D. Dabney	Gay & Son	1950	179	4	J	--	--	--	T,E	H	Screen from 167 to 179 ft.
402	Ernest Ellisor	Baggett Drilling Co.	1959	260	4	J	305	--	--	J,E	H,S	Screen from 248 to 260 ft. Supplies water for dairy.
* 403	J. L. Hoot	do	1946	585	2	J	--	85	Apr. 1946	N	U	Screen from 573 to 583 ft.
404	do	Gay & Son	1959	175	4	J	--	75	July 1959	J,E, 1/3	H,S	Screen from 163 to 175 ft.
* 405	A. M. Ellisor	-- Novak	1962	175	4	J	312	72.2	Dec. 1, 1965	J,E, 1	H	Do.
406	Ernest Ellisor	Baggett Drilling Co.	1947	593	2	J	305	85.4	do	N	U	Screen from 581 to 593 ft.
* 407	Mrs. W. T. Carter	do	1946	586	2	J	321	85	Mar. 1946	N	U	Destroyed.
* 408	J. L. Hoot	Ed Turner	1932	15	8	J	322	1.0	Jan. 11, 1947	H	U	Reported unfit for domestic use.
409	J. W. Warren	Marvin Gilbert	1963	103	4	Ev	302	60.2	Mar. 7, 1966	T,E, ½	H,S	Screen from 91 to 103 ft.

See footnotes at end of table.

Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
WU-60-31-410	R. E. Leisner	Gay & Son	1966	177	4	J	323	41.5	Mar. 30, 1966	T,E, 1	H	Screen from 157 to 177 ft.
411	G. L. Risner	do	1952	78	2	Ev	278	--	--	J,E, 1	H	Screen from 66 to 78 ft.
412	Milton Hoot	do	1949	60	8	Ev	--	--	--	J,E, 1	H,S	Bored well, cased with concrete pipe. Field measured specific conductance 1,800.
413	John Baines	Turner Well Service	1962	73	8	Ev	364	61.4	Apr. 5, 1966	B	H,S	Bored well, cased with tile.
414	D. Martin	-- Kern	1958	265	2	Ev	362	130	Feb. 1966	A,E	H,S	Screen from 245 to 265 ft.
415	Nannie Randolph	Frazier & Deering	1936	523	4	J	362	25	1936	N	U	
501	-- Denson well 1	Butcher-Arthur, Inc.	--	4,357	--	--	--	--	--	--	--	Oil test.2/
502	Will H. Brown	Gay & Son	1951	276	2	Ev	283	75	Mar. 1951	A,E, 1	H	Drilled to 320 ft; plugged back 276 ft.
* 503	J. R. Browder	Patterson Well Service	1949	354	4	Ev	272	83	Mar. 1949	T,E, 1	H,S	Screen from 344 to 354 ft.
504	do	Gay & Son	1964	289	4	Ev	265	54.1	Apr. 4, 1966	T,E, 1	S	Screen from 269 to 289 ft.
505	G. L. Hightower	Baggett Drilling Co.	1957	198	2	Ev	222	16	Aug. 1965	J,E, 1	H,S	Screen from 188 to 198 ft. Measured specific conductance in field 580, Apr. 4, 1966.
506	Virgil Cooper	Gay & Son	1957	262	3	Ev	240	17	1957	J,E, 1	H	Screen from 252 to 262 ft. Measured specific conductance in field 560, Apr. 4, 1966.
* 507	S. A. Street	--	1958	32	12	Ev	270	15	1958	J,E, ½	H,S	Bored well, curbed with concrete casing.
508	Foster Lumber Co.	Brewster Bartle	--	500	4	J	208	75	1946	N	U	

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Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
WU-60-31-603	U.S. Forest Service	Jack Wampler	1956	221	3	Ev	291	81	May 1956	T,E, 1	P	Drilled to 547 ft; plugged back to 221 ft. Supplies water for recreational area.
604	do	do	1956	196	3	Ev	282	33	July 1956	T,E, 1	P	Supplies water for recreational area.
605	Oil Lease Operating Co.	Gay & Son	1961	278	4	Ev	282	107.6	Dec. 21, 1965	T,E, 1½	N	Screen from 268 to 278 ft. Supplies water for compressor station.
606	-- Forrester	Butcher-Arthur Inc.	1946	5,754	--	--	--	--	--	--	--	Oil test.
* 607	H. W. Childress	Baggett Drilling Co.	1946	85	4	Ev	373	42	Apr. 1946	A,G, 3	H,S	Screen from 70 to 85 ft.
* 608	U.S. Forest Service	Wilbern Cotton Co.	1938	28	36	Ev	292	20	June 1938	P,G, 1	P	Dug well. Supplies water for recreational area.
701	Kirby Lumber Co.	Comm. Petroleum Co.	1951	4,626	--	--	--	--	--	--	--	Oil test.[2]
702	-- Hansen	Butcher-Arthur, Inc.	1949	4,362	--	--	--	--	--	--	--	Oil test.
703	M. E. Anderson	Gay & Son	1955	102	3	Ev	283	--	--	J,E, 1	H,S	Drilled to 300 ft; plugged back to 102 ft.
704	John Eldridge	Angel Well Service	1950	39	12	Ev	--	--	--	B	H	Bored well; curbed with tile.
705	Jim Dabney	Gay & Son	1958	136	4	Ev	298	--	--	J,E	H	Screen from 128 to 136 ft.
801	Colleen Oil Corp. well 3	Butcher-Arthur, Inc.	1949	4,600	--	--	240	--	--	--	--	Oil test.[2]
802	Lelan Polk	Mac Drilling Co.	1948	4,559	--	--	310	--	--	--	--	Do.
901	Leroy Dabney	Leroy Dabney	1959	67	30	Ev	287	56.5	Dec. 20, 1965	J,E, 1	H,S	Dug well; concrete casing.
902	Oil Lease Operating Co.	--	--	476	4	J	315	152.6	Dec. 21, 1965	N	U	

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Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
WU-60-31-903	Foster Lumber Co.	Navarro Oil Co.	1945	9,738	--	--	--	--	--	--	--	Oil test.[2/]
904	Foster Lumber Co. well 1	Piedmont Oil Co.	1933	4,474	--	--	307	--	--	--	--	Oil test.
* 905	E. R. Dabney	-- Angel	1938	60	8	Ev	290	51.2	Sept. 14, 1945	B	H,S	Bored well.
* 32-101	J. C. Hogue, Jr.	-- Guthrie	1918	85	8	Ev	363	61.6	Jan. 13, 1947	B	U	Bored well; curbed with tile.
* 102	do	--	--	Spring	--	Ev	--	--	--	N	S	Estimated flow 100 gpm, Dec. 17, 1946. Harris Springs. Temp. 69°F.
* 103	do	Alvin Hayman	1944	60	8	Ev	330	44.7	Dec. 17, 1946	B	H	Bored well.
104	Jessie Johnson	--	1860	35	36	Ev	202	11.2	Mar. 3, 1966	B	H	Dug well. One of the oldest wells in the county.
* 105	James Sewell	--	1966	Spring	--	Ev	--	+	--	Flows, T,E,3	P	Supplies Coldspring. Cypress lined pit 8 x 15 ft and 30 ft deep.
106	James McGowen	Gay & Son	1965	284	2	Ev	294	--	--	J,E, 1/3	H	
* 107	-- Woodruff Estate	--	--	Spring	--	Ev	--	--	--	N	H,S	Estimated flow 5 gpm, Dec. 17, 1945. Woodruff Spring. Temp. 70°F.
202	C. L. McGowen	Gay & Son	1948	265	4	Ev	262	100	Aug. 1948	N	H,S	Screen from 255 to 265 ft.
* 203	Charles Mitchell	do	1963	300	4	J	182	19.6	Oct. 11, 1965	T,E, 1	H	Screen from 282 to 300 ft. Supplies water for two houses.
206	-- Hale well 1	-- Davis	1965	5,520	--	--	289	--	--	--	--	Oil test.[2/]
207	N. O. Ellis	Gay & Son	1961	223	2	Ev	250	132	Oct. 1961	J,E, 1	H	Screen from 210 to 223 ft.
208	City of Houston test well 64	Brown & Root	1961	110	--	Ev	154	54	July 1961	N	U	Test well, Lake Livingston Dam site.
* 209	Hale Bros.	--	--	Spring	--	Ev	--	--	--	N	H	Measured flow 12 gpm, Jan. 11, 1947. Temp. 68°F.

See footnotes at end of table.

Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
*WU-60-32-210	J. A. Jordan	Alvin Hayman	1946	29	8	Ev	292	--	--	J,E, ¼	H	Bored well.
* 211	O. L. Jordan	--	--	42	24	Ev	285	25.7	Jan. 11, 1947	B	H	Dug well.
* 212	C. L. McGowan	Baggett Drilling Co.	1946	318	4	Ev	133	17	June 1946	P,G	S	Screen from 303 to 318 ft.
* 213	Mrs. Ella McMurrey	do	1946	425	4	J	--	30	May 1946	P,W	S	Screen from 415 to 425 ft.
* 303	B. Browder	Gay & Son	1951	385	4	J	97	+8.0	Oct. 13, 1965	Flows	S	Measured flow 5 gpm, Oct. 10, 1965. Screen from 365 to 385 ft. Temp. 73°F.
* 304	Elizabeth McMurray	Baggett Drilling Co.	1953	400	4	J	88	+	Oct. 6, 1965	Flows	S	Measured flow 16 gpm, Oct. 13, 1965. Blue Lake well. Field pH 7.9. Temp. 73°F.
305	City of Houston test well 82	Brown & Root	1962	180	--	Ev	92	3	June 1963	N	U	Core test, Lake Livingston Dam site.
306	City of Houston test well 87	do	1962	200	--	J	92	--	--	N	U	Do.
401	Texas Long Leaf Lumber Co. well 1	Belden & Garth	1952	5,519	--	--	342	--	--	--	--	Oil test.2/
402	Laura Hamm	Baggett Drilling Co.	1956	90	8	Ev	320	26.1	Apr. 7, 1966	N	U	Abandoned because of iron.
403	R. E. Hamm	--	1947	300	--	Ev	--	--	--	N	U	Abandoned in 1949.
404	Ola Mae Hamm	-- Angel	1953	90	8	Ev	342	--	--	N	U	Bored well. Abandoned in 1955.
405	J. B. Clark	Austin Adkin	1937	63	36	Ev	329	50.5	Apr. 7, 1966	N	U	Dug well.
406	do	Baggett Drilling Co.	1954	140	--	Ev	329	--	--	N	U	Screen from 130 to 140 ft.
501	Southland Paper Co. Inc. well C-1	Justiss Mears	1966	4,390	--	--	208	--	--	--	--	Oil test.2/

See footnotes at end of table.

Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
*WU-60-32-601	Mrs. John Shirley	Baggett Drilling Co.	1946	520	2	J	187	56	Sept. 1946	J,E, ½	H,S	Screen from 499 to 520 ft.
602	A. R. McGowan	Gay & Son	1961	281	2	Ev	183	80	Oct. 1961	J,E	H	Screen from 270 to 281 ft.
603	Robert Hutchenson	do	1956	241	4	Ev	132	118	1956	P,E	H,S	Screen from 229 to 241 ft.
* 604	San Jacinto County	Seismograph Crew	1940	70	--	Ev	107	+	Nov. 11, 1946	--	U	No casing. Estimated flow 3 gpm, Nov. 15, 1946.
701	Foster Lumber Co. well 1-A	Irwin & Buck	1950	4,752	--	--	--	--	--	--	--	Oil test.2/
801	Southland Paper Co.	Seismograph Crew	1953	60	3	Ev	160	+2.9	Apr. 7, 1966	Flows	U	Test well. Measured flow ¾ gpm, Apr. 7, 1966.
* 802	Ernest Bailes	Keene Drilling Co.	1965	385	4	Ev	246	--	--	T,E, 2	H,S	Screen from 363 to 385 ft.
803	do	Gay & Son	1962	451	2	Ev	246	110	Jan. 1962	N	U	Screen from 420 to 451 ft.
* 804	R. I. Smith	do	1946	60	4	Ev	246	50	Nov. 1946	P	H,S	Screen from 50 to 60 ft.
901	Henry Caldwell	Baggett Drilling Co.	1954	168	2	Ev	177	110	June 1954	J,E, ¾	H,S	Screen from 158 to 168 ft.
902	Antoine Stenberger	do	1958	375	2	Ev	176	60	Aug. 1958	J,E, ¾	H	Screen from 365 to 375 ft.
903	Frank Troha	Frank Troha	1917	32	8	Ev	--	--	--	B	H	Bored well.
904	Nick Troha	Angel Well Service	1954	24	8	Ev	164	17.7	Mar. 8, 1966	J,E	H,S	Bored well; curbed with concrete.
38-101	Thomason well 1	-- Starr	1949	6,013	--	--	--	--	--	--	--	Oil test.2/
201	Lou Gale	-- Cotton	1945	24	36	Ev	302	7.2	Dec. 21, 1965	P,E, ¾	H	Dug well; curbed with brick.
501	Bernice Chandler	-- Angel	1951	58	8	Ev	290	47.8	Oct. 15, 1965	J,E, ½	H	
502	J. E. Murphy	-- Elmore	1965	83	8	Ev	302	51.5	do	J,E, ½	H	

See footnotes at end of table.

Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
WU-60-38-503	Harmon Murphy	Con-Tex Water Well Service	1964	60	2	Ev	284	--	--	J,E, ½	H,S	Drilled to 100 ft; plugged back to 60 ft.
504	C. Ed Presswood	Noack Drilling Co.	1960	60	4	Ev	248	38.2	Oct. 15, 1965	J,E, ½	H	Screen from 50 to 60 ft.
505	Walker Estate well 1	-- Finch	1964	--	--	--	240	--	--	--	--	Oil test.
601	Fannie Ferguson	--	1965	42	24	Ev	--	--	--	P	H	Dug well.
602	-- Settegast well 1	Albert Plummer	1944	8,328	--	--	--	--	--	--	--	Oil test.[2]
802	-- Siebman well 1	Owen C. Finch	1965	--	--	--	--	--	--	--	--	Do.
803	J. H. Hale	J. H. Hale	1950	24	24	Ev	220	19.2	Mar. 31, 1966	J,E, ½	H	Dug well.
* 901	O. L. Hale	Walden Well Service	1966	83	4	Ev	268	62.8	do	J,E, 1/3	H,S	Screen from 77 to 83 ft. Plastic casing.
39-102	W. N. Turner	Gay & Son	1955	273	3	Ev	--	--	--	J,E, 1	H,S	Screen from 262 to 273 ft.
103	W. H. Meekins	do	1962	262	4	Ev	224	35.1	Dec. 21, 1965	J,E, 1	H,S	Screen from 242 to 262 ft.
201	-- Hogue well 1	J. H. Frankel	1949	8,287	--	--	--	--	--	--	--	Oil test.[2]
301	H. W. Dill	Gay & Son	1965	373	2	Ev	233	90	July 1965	T,E, 1	H	Screen from 353 to 373 ft.
302	U.S. Forest Service	-- English	1961	230	--	Ev	285	37.8	Dec. 21, 1965	T,E, 1	U	Drilled to 475 ft; plugged back to 230 ft.
* 401	L. W. Purkerson	Novak Drilling Co.	1963	126	7, 6	Ev	252	39.3	Dec. 23, 1965	T,G, 25	I	Measured discharge 160 gpm, Dec. 23, 1965. Screen from 86 to 126 ft.
402	Udell Murray	do	1963	70	4	Ev	233	27.5	do	J,E, ½	H,S	Screen from 59 to 70 ft.
* 403	J. P. Hill	Gay & Son	1959	530	6, 4	J	233	64.3	do	T,E, 5	I	Screen from 520 to 530 ft. Supplies water for nursery.

See footnotes at end of table.

Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
WU-60-39-501	Foster Lumber Co.	Amerada Petroleum Corp.	--	--	--	--	--	--	--	--	--	Oil test.[2]
* 601	Shell Oil Co.	L. M. Patterson	1944	583	4	J	195	50	July 1944	J,E,I	H	Supplies water for Mercy Camp. Screen from 560 to 582 ft.[1]
* 602	E. F. Albright	Noack Drilling	1963	90	4	Ev	170	22.7	Dec. 14, 1965	J,E	H	Screen from 80 to 90 ft. Acid water. Plastic screen and pipe.
603	J. H. Shelton	-- Turner	1962	46	8	Ev	215	--	--	B	H,S	Bored well; curbed with concrete.
604	W. G. Mizell	--	--	Spring	--	Ev	185	+	--	Flows	H,S	Estimated flow 6 gpm, Apr. 1, 1966.
* 701	Henry Jingles	Ted Younger	1964	147	2	Ev	--	--	--	J,E	H,S	Screen from 137 to 147 ft.
801	Foster Lumber Co.	C & S Drilling Co.	1965	125	4	Ev	207	41.9	Oct. 30, 1965	N	U	Screen from 98 to 120 ft.
* 802	H. A. Hallonquist	H. A. Hallonquist	1965	26	8	Ev	212	--	--	P	H	Field pH 6.1. Reported to produce less than 10 gallons at one time.
803	Foster Lumber Co.	Superior Oil Co.	1964	12,546	--	--	196	--	--	--	--	Oil test.[2]
805	N. C. Nunn	Gay & Son	1953	565	4	J	223	57.1	Dec. 23, 1965	J,E	S	Screen from 555 to 565 ft.
806	Central Coal & Coke Co.	L. Patterson	1943	517	4	J	--	50	Oct. 1943	N	U	Screen from 436 to 517 ft.
807	A. E. Bloodworth	A. E. Bloodworth	1958	120	8	Ev	223	--	--	J,E	H	Bored well; tile casing.
* 808	Lee Stringer	Gay & Son	1946	139	4	Ev	--	32	Dec. 1946	N	U	
* 809	W. M. Meeking	L. Patterson	1944	552	4	J	227	50	July 1944	P,E	H	Screen from 530 to 552 ft.[1]
810	Wright Drilling Co.	Gay & Son	1946	154	4	Ev	--	22	Oct. 1946	N	U	
901	Central Coal & Coke Co.	Shell Oil Co.	1945	2,376	--	--	152	--	--	--	U	Salt water disposal well.
902	Central Coal & Coke Co. well 1	Amerada & Mid-States	1955	10,013	--	--	150	--	--	--	--	Oil test.[2]

See footnotes at end of table.

Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
WU-60-39-903	Central Coal & Coke Co. well 1	Shell Oil Co.	1942	8,521	--	--	168	--	--	--	--	Oil test.[2]
* 904	L. A. Carnes	Gay & Son	1960	140	3	Ev	--	--	--	A,E, 1/2	H,S	Screen from 135 to 140 ft. Specific conductance 220.
905	Norman Ray Shaw	do	1960	85	4	Ev	170	21.6	Mar. 31, 1966	J,E, 1/2	H	Specific conductance 575.
906	A. L. McMurray	-- Turner	1962	32	8	Ev	202	26.9	Oct. 30, 1965	J,E, 1/2	H,S	Bored well with porous concrete casing.
* 907	do	Gay & Son	1946	115	2	Ev	203	53.9	do	N	U	Abandoned due to high iron.
* 908	do	--	1932	40	24	Ev	203	24	Dec. 1946	P,W	H,S	Dug well.
909	-- Bush	Jim Hardin	1959	19	10	Ev	167	13.7	Jan. 26, 1965	J,E	H	
* 910	-- Adams	L. Patterson	1943	196	4	Ev	--	20	June 1943	P,E, 2	H	Screen from 176 to 196 ft.
40-101	J. T. Lilley	-- Liles	1918	40	8	Ev	--	--	--	J,E, 1/3	H	Dug well; curbed with tile.
102	do	--	1949	111	3	Ev	256	45.1	Mar. 2, 1966	N	U	Test well.
103	-- Beverly	Baggett Drilling Co.	1965	100	2	Ev	--	--	--	J,E, 3/4	H	
201	Earl Lilley	do	1965	482	4, 2	J	--	--	--	J,E, 3/4	H	
202	Charles Dodd	Gay & Son	1961	418	3	Ev	192	50	Sept. 1965	J,E, 1	H,S	Screen from 412 to 418 ft.
203	E. Neiderhoffer	Baggett Drilling Co.	1963	137	4	Ev	180	0.7	Mar. 3, 1966	T,E	H	Screen from 127 to 137 ft. Reported to have small flow when unused.
302	Don Coleman	Elmore Drilling Co.	1965	304	4	Ev	175	49	Sept. 1965	J,E, 1 1/2	H	Screen from 270 to 304 ft.
303	Evilee Diamond	Gay & Son	1961	402	--	Ev	160	30	Oct. 1961	J,E	H	Screen from 382 to 402 ft.

See footnotes at end of table.

Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
*WU-60-40-304	Derlie Dudlow	Gay & Son	1964	96	2	Ev	182	--	--	J,E, 1	H	Screen from 86 to 96 ft.
305	M. L. Mills	do	1963	409	2	Ev	164	43	July 1965	J,E, 2	H,S	Screen from 398 to 409 ft.
306	E. E. Morrow	do	1965	325	2	Ev	175	--	--	J,E, 1½	H	
307	Jack Allen	E. Miller	1965	319	2	Ev	175	30	Jan. 1965	J,E, 1½	H	
308	Arnett Lilley	--	1963	30	1	Ev	176	--	--	-,E, ½	H	Driven well.
* 309	C. O. Ford	O. D. Adams	1941	438	4	Ev	187	49	Jan. 1941	J,E, ½	H	Screen from 430 to 438 ft.
* 310	John R. Elmore	Baggett Drilling Co.	1946	685	2	J	170	40	Oct. 1946	J,E, ¾	H	Screen from 670 to 685 ft.
* 311	A. R. Cronin	-- Angel	1937	72	8	Ev	178	41	June 1943	J,E, 1/3	H	Screen from 69 to 72 ft.
* 312	J. R. Elmore	A. E. Fawcett	1945	710	4	J	185	40	Aug. 1945	N	U	Screen from 680 to 710 ft.
* 313	Shepherd Ice Plant	Joe Parker	1934	40	2	Ev	--	15	1934	N	U	Formerly used for the manufacture of ice.
314	-- Ogletree well 1	San Jacinto	1955	8,241	--	--	192	--	--	--	--	Oil test.2/
401	Pearless Ellisor	-- Angel	1953	38	8	Ev	194	26.3	Oct. 1, 1965	B	H,S	Bored well; curbed with tile.
402	Hinchliff-Sims well 1	-- Magnolia Petroleum Co.	1945	9,617	--	--	187	--	--	--	--	Oil test.2/
501	Harry Sims	Gay & Son	1960	530	4	Ev	168	47.0	Mar. 2, 1966	T,E, 1	H	Screen from 520 to 530 ft.
601	-- Locke well 1	Shell Oil Co.	1956	9,020	--	--	175	--	--	--	--	Oil test.2/
602	John Kinney	Gay & Son	1965	570	2	Ev	181	80	Aug. 1965	J,E, ½	H,S	Screen from 562 to 570 ft.

See footnotes at end of table.

Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COM-PLET-ED	DEPTH OF WELL (FT)	DIAM-ETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
WU-60-40-603	W. F. McNeese	Gay & Son	1960	470	3	Ev	175	--	--	J,E, 1½	H,S	
* 604	C. H. Rutherford	do	1966	266	4	Ev	180	45.8	Mar. 3, 1966	J,E, 1	H	Screen from 256 to 266 ft.
605	J. H. Taylor	do	1955	250	2	Ev	--	--	--	J,E, 1	H	Drilled to 450 ft; plugged back to 250 ft. Screen from 242 to 250 ft.
701	J. S. Squire	T. Younger	1963	150	2	Ev	--	--	--	J,E, ½	H	Screen from 140 to 150 ft.
702	George Caylor	--	1960	185	--	Ev	--	--	--	J,E, ½	H	
703	George Adams	Ryan & Adams	--	65	4	Ev	176	23.3	Oct. 1, 1965	J,E, ½	H	
704	Raymond Faulkner	Gay & Son	1964	225	4	Ev	179	20.0	do	T,E, 1	H	
705	A. D. Corley	--	--	20	10	Ev	173	13.7	do	J,E, ½	H	Dug well.
706	do	W. E. Taylor	1963	60	2	Ev	177	32	May 1963	N	U	
707	-- Ellisor	--	--	Spring	--	Ev	--	--	--	Flows	S	Estimated flow 2 gpm, Oct. 1, 1965.
708	Vernon Boyd	-- Noack	1964	100	4	Ev	201	60.9	Oct. 1, 1965	J,E, ½	H	
709	Leslie Wells	W. E. Taylor	1959	597	2	Ev	181	50	Mar. 1959	J,E, ½	H	Screen from 573 to 597 ft.
710	L. W. Rogerson	--	1965	120	4	Ev	187	25.4	Dec. 14, 1965	J,E, 1	H	Screen from 108 to 120 ft.
711	E. T. Rogerson	Gay & Son	1959	285	4	Ev	--	--	--	J,E, ½	H	Screen from 275 to 285 ft.
712	-- Vick well 1	Proletarian-Diamond Oil Co.	1925	4,209	--	--	--	--	--	--	--	Oil test.

See footnotes at end of table.

Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
*WU-60-40-713	H. C. Rabe	-- Brown	1934	135	3	Ev	--	12	Sept. 1934	A,E, ½	H,S	
801	V. R. Stephens well 1	Claude B. Hamill	1957	5,461	--	--	161	--	--	--	--	Oil test.[2/]
803	J. H. Campbell	Gay & Son	1960	590	2	Ev	--	--	--	P,E, 1/3	H,S	Screen from 578 to 590 ft.
* 804	O. W. Hall	-- Angel	1951	45	8	Ev	162	25.0	Dec. 14, 1965	J,E, 1/3	H,S	Bored well; curbed with concrete.
* 806	Joe E. Gay	Gay & Son	1946	76	4	Ev	--	21	Apr. 1946	J,E, 1/3	H	
* 807	W. R. Stephens	-- Angel	1942	30	8	Ev	--	25	Aug. 1942	J,E, ¼	H,S	Bored well; curbed with concrete.
808	Anderson & Coke	Christie, Mitchell & Mitchell	1958	9,339	--	--	192	--	--	--	--	Oil test.[2/]
47-201	E. A. Smith	-- Angel	1955	26	12	Ev	--	--	--	J,E, ½	H,S	Dug well. Water level reported to rise to 6 ft in wet weather, and drop to 20 ft in dry weather.
202	Foster Lumber Co. well 1-A	Gulf Oil Co.	1966	10,501	--	--	--	--	--	--	--	Oil test.[2/]
* 301	W. W. Few	Turner Well Service	1962	23	8	Ev	--	--	--	P,E, 1/3	H	Bored well; curbed with tile.
* 302	Ray M. Arnold	Ted Younger	1962	190	2	Ev	--	--	--	J,E, ½	H	Screen from 180 to 190 ft.
303	R. Meekins	--	1959	195	2	Ev	172	40	June 1947	A,E	H	Screen from 190 to 195 ft.
304	-- White well 1	Atlantic Refining Co.	1947	10,506	--	--	--	--	--	--	--	Oil test.[2/]
305	Lawrence Enloe	Gay & Son	1954	161	2	Ev	152	26.1	Jan. 26, 1966	N	U	Screen from 151 to 161 ft.
306	do	-- Angel	1951	25	8	Ev	152	7.9	do	J,E, 1	H,S	Bored well; curbed with concrete.

See footnotes at end of table.

Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
WU-60-47-307	James R. Brown	Terry Turner	1965	36	8	Ev	150	20.9	Jan. 26, 1966	J,E, ½	H	Bored well; curbed with concrete.
401	W. T. Herrin	Turner Well Service	1964	36	8	Ev	171	24.8	Oct. 14, 1963	J,E, ½	H	Do.
402	Mrs. L. E. McWhorters	Gay & Son	1950	102	3	Ev	171	31.4	Oct. 14, 1965	J,E, --	H	Screen from 87 to 102 ft.
* 403	R. A. Boyd	-- Beshears	--	120	3	Ev	171	--	--	J,E, 1	H	
* 61-25-401	Emily Langham	Baggett Drilling Co.	1946	273	4	Ev	93	+20.0 +6.6	Nov. 25, 1946 Apr. 15, 1966	Flows	S	Measured flow 8 gpm, Apr. 25, 1946; 4¾ gpm, Apr. 15, 1966. Screen from 258 to 273 ft. Temp. 71°F.
* 402	Woodall, Langham, & Langham	--	1937	300	2	Ev	86	+15.0	Jan. 6, 1947	Flows	S	Measured flow 10 gpm, Jan. 16, 1947; 6 gpm, Sept. 23, 1965. Temp. 69°F.
* 403	Emily Langham	--	1953	450	4	Ev	87	+11.5	Apr. 15, 1966	Flows	S	Measured flow 66 gpm, Apr. 14, 1966. Slotted from 425 to 450 ft. Temp. 70°F.
* 404	do	Baggett Drilling Co.	1958	616	--	Ev	92	+	Sept. 23, 1965	Flows	H	Measured flow 8 gpm, Sept. 23, 1965. Screen from 601 to 606 ft.
405	Langham well 1	Stanolind Oil & Gas Corp.	1951	10,510	--	--	85	--	--	--	--	Oil test.[2/]
406	William Crowson	Baggett Drilling Co.	1955	290	2	Ev	100	--	--	C,E, ½	H,S	Drilled to 306 ft; plugged back to 290 ft. Screen from 280 to 290 ft. Measured specific conductance 310, Apr. 15, 1966.
407	Emily Langham	--	1957	290	2	Ev	101	+0.1	Apr. 15, 1966	N	S	Slotted from 210 to 290 ft.
* 408	do	O. D. Adams	1941	265	2	Ev	92	+9.0	Nov. 11, 1946	N	U	Measured flow 5 gpm, Nov. 25, 1946. Screen from 255 to 265 ft. Well destroyed by flood. Temp. 71°F.
409	-- Langham	--	1954	334	4	Ev	112	--	--	N	U	

See footnotes at end of table.

Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
*WU-61-25-501	Mrs. C. R. Cummings	--	--	600	--	Ev	94	+	Sept. 25, 1965	Flows, J,E, 1/3	H,S	Measured flow ½ gpm, Sept. 25, 1965.
502	do	Woodley Petroleum Co.	1948	--	1	--	88	+	Sept. 23, 1965	Flows	S	Measured flow 5½ gpm, Sept. 23, 1965. Temp. 72°F.
* 503	C. R. Cummings	E. Miller	1961	90	2	Ev	90	--	--	J,E, ½	H	Screen from 85 to 90 ft. Temp. 72°F.
504	H. R. LeMay	Baggett Drilling Co.	1950	205	2	Ev	95	+4.3	Nov. 17, 1965	Flows J,E,¼	H,S	Measured flow ¾ gpm, Oct. 17, 1965. Screen from 195 to 205 ft. Temp. 70°F.
* 505	do	Gay & Son	1963	500	2	Ev	98	+10.2	do	Flows	S	Measured flow 5 gpm, Oct. 17, 1965. Screen from 480 to 500 ft. Temp. 73°F.
506	Mrs. R. L. White	G. C. McClain	1964	145	2	Ev	86	+	Feb. 1966	P,E, 1/3	H	Screen from 135 to 145 ft.
* 507	J. E. Blair	J. E. Blair	1929	121	3	Ev	92	+8.0	Nov. 8, 1946	N	U	Measured flow 1 gpm, Nov. 8, 1946. Screen from 101 to 121 ft. Temp. 69°F.
* 508	Urbana Sand & Gravel Co.	--	1915	120	3	Ev	92	+10.0	Jan. 6, 1946	Flows	H	Measured flow 3 gpm. Temp. 70°F.
* 509	Mrs. D. M. Filler	--	1929	29	2	Ev	92	15	1929	P,E, 1/3	H	
* 510	Urbana Sand & Gravel Co.	--	1907	120	2	Ev	91	--	--	--	--	Measured flow 3 gpm, Jan. 6, 1947. Temp. 70°F.
* 601	Wade Parker	James Elmore	1963	251	2	Ev	88	+11.6	Nov. 19, 1965	Flows	S	Measured flow 12 gpm, Oct. 11, 1965. Temp. 70°F.
602	do	Gay & Son	1955	254	--	Ev	86	+	Oct. 12, 1965	Flows	S	Measured flow 13 gpm, Oct. 12, 1965. Temp. 70°F.
603	do	James Elmore	1963	252	4	Ev	86	+10.2	Nov. 19, 1965	Flows	S	Measured flow 40 gpm. Screen from 242 to 252 ft, Oct. 12, 1965. Temp. 71°F.

See footnotes at end of table.

Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COM-PLET-ED	DEPTH OF WELL (FT)	DIAM-ETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
WU-61-25-604	James. B. Choate, Jr.	Baggett Drilling Co.	1958	325	--	Ev	95	+	Nov. 1965	Flows, C,E,¼	H,S	Measured flow 3 gpm, Nov. 18, 1965.
605	do	do	1960	325	3	Ev	84	+	Nov. 18, 1965	Flows	H,S	Estimated flow 10 gpm, Nov. 18, 1965. Temp. 69°F.
* 606	Ty Parker	--	1934	15	1	Ev	--	10	1934	N	U	
701	Jim Brown	Keene Drilling Co.	1963	410	4	Ev	145	39.1	Feb. 16, 1966	T,E, 1	C	Supplies water for automatic laundry.
702	Marvin Cutler	Baggett Drilling Co.	1952	372	--	Ev	--	--	--	C,E	S	Screen from 363 to 372 ft.
* 703	W. H. Worsham	--	1941	36	4	Ev	--	23	Apr. 1941	P,E, ½	H	Screen from 30 to 36 ft.
* 704	Texas Long Leaf Lumber Co.	J. E. Blair	1930	164	3	Ev	105	--	--	N	U	Screen from 144 to 164 ft.
705	Carry Hansboro	Gay & Son	1947	350	4	Ev	--	--	--	P,E, 3	U	
706	Tribe well 1	Tarbett Oil Co.	1928	1,447	--	--	--	--	--	--	--	Oil test.
* 707	B. Finger	O. D. Adams	1940	100	4, 2	Ev	--	45	Dec. 1940	J,E, ½	H	Screen from 90 to 100 ft.
* 801	Roy E. Floyd	Gay & Son	1965	918	4	J	96	+43.6	Oct. 7, 1965	Flows	H,S	Screen from 898 to 918 ft. Measured flow 105 gpm, Oct. 7, 1965. Temp. 82°F.[1]
802	John K. Morrison	Baggett Drilling Co.	1956	186	--	Ev	83	+	Sept. 24, 1965	Flows, J,E,	H,S	Measured flow 1 gpm. Reported originally flowed 40 gpm. Screen from 174 to 186 ft. Temp. 76°F.
803	H. R. LeMay	--	1958	205	4	Ev	95	+4.6	Nov. 17, 1965	Flows	S	Screen from 195 to 205 ft. Measured flow 1½ gpm. Temp. 70°F.
804	Mae LeMay well 1	Sunray Oil Co.	1953	7,850	--	--	--	--	--	--	--	Oil test.[2]
* 901	Cochran & James	Rurnball & Irwin	--	200	6	Ev	78	+	Nov. 21, 1946	Flows	S	Estimated flow 75 gpm, Nov. 21, 1946, and 1960. Temp. 71°F.

See footnotes at end of table.

Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
*WU-61-25-902	Cochran & James well 1	Rurnball & Irwin	--	600	10	Ev	78	+	Nov. 21, 1946	Flows	S	Drilled to 4,651 ft; plugged back to 600 ft. Temp. 75°F.
903	International Paper Co.	--	--	138	4	Ev	77	+10.3	Nov. 19, 1965	Flows	S	Temp. 72°F.
904	Frost well 2	Christie, Mitchell & Mitchell	--	8,097	--	--	--	--	--	--	--	Oil test.[2]
* 905	John R. Elmore	Baggett Drilling Co.	1946	240	4	Ev	90	+18.0	Nov. 26, 1946	Flows	U	Measured flow 25 gpm, Nov. 26, 1946. Screen from 225 to 240 ft.
* 26-401	Lucy B. Modesett	--	1903	400	6	Ev	80	+	Nov. 21, 1946	N	S	Measured flow 100 gpm, Nov. 21, 1946. Temp. 72°F.
402	Modesett well 1	Brewster & Bartle	1943	8,263	--	--	--	--	--	--	--	Oil test.
* 701	Lucy B. Modesett	--	--	150	4	Ev	82	+	Nov. 18, 1965	Flows	S	Measured flow 8 gpm, Nov. 18, 1965. Temp. 70°F.
* 703	-- Watson	--	1943	830	4	J	82	+44.0	Nov. 25, 1946	N	H,S	Temp. 78°F.
704	Earl Morris	-- Elmore	--	389	4	Ev	79	+6.0	Nov. 19, 1965	Flows	S	Measured flow 3 gpm, Nov. 19, 1965. Temp. 72°F.
705	do	do	--	--	--	--	75	+10.1	Nov. 18, 1965	Flows	S	Measured flow 7 gpm, Nov. 18, 1965. Temp. 73°F.
706	do	do	--	--	--	--	80	+	do	Flows	S	Measured flow 24 gpm, Nov. 18, 1965. Temp. 71°F.
707	do	--	--	298	--	Ev	80	+	Nov. 19, 1965	Flows	S	Estimated flow 7 gpm, Nov. 19, 1965. Temp. 71°F.
708	do	--	--	--	--	--	--	+	do	Flows	S	Measured flow 24 gpm, Nov. 19, 1965. Temp. 71°F.
* 710	Obie Sels	J. B. Hayman	1939	27	8	Ev	79	9.5	Nov. 26, 1946	B	U	
711	Emma Bell well 1	Sunray Oil Co.	1952	11,453	--	--	80	--	--	--	--	Oil test.[2]
712	Modesett well 1	Shell Oil Co.	1951	8,623	--	--	87	--	--	--	--	Do.

See footnotes at end of table.

Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
*WU-61-33-101	San Jacinto County Water Control & Improvement District No. 1, well 1	Layne-Texas Co.	1955	452	8, 4	Ev	152	26 27.2 36.4 42.2	June 1955 Nov. 16, 1955 May 10, 1960 Jan. 14, 1966	T,E, 20	P	Casing: 8-in. to 264 ft, 4-in. to bottom. Screen from 350 to 440 ft. Gravel-packed. Measured discharge 184 gpm, Dec. 6, 1955.1/
* 102	San Jacinto County Water Control & Improvement District No. 1, well 2	do	1964	420	12, 7	Ev	144	32.2	Feb. 16, 1966	T,E, 20	P	Measured discharge 220 gpm, Mar. 15, 1966. Gravel-packed.1/
104	J. K. Morrison	Baggett Drilling Co.	1960	728	2	J	102	+9.2	Sept. 6, 1966	Flows, J,E,¾	S	Drilled to 1,100 ft; plugged back to 728 ft. Screen from 713 to 728 ft. Measured flow 5 gpm, Sept. 6, 1966.
* 105	J. A. Hill	--	1958	608	2	J	98	+13.0	Oct. 20, 1965	Flows, J,E,¾	H,S	Measured flow 4 gpm, Oct. 20, 1965. Screen from 591 to 608 ft. Temp. 75°F.
106	Robert Dixon	E. Miller	1959	105	2	Ev	--	8	Dec. 1959	J,E, ¾	H	Screen from 98 to 105 ft.
107	-- Ross well 1	Adams & Means	1948	5,015	--	--	--	--	--	--	--	Oil test.2/
108	Dixon Falvey well 1	Cockburn Oil Co.	--	--	--	--	--	--	--	--	--	Do.
109	Claude Chapman	Baggett Drilling Co.	1952	94	--	Ev	135	--	--	J,E	H,S	Drilled to 103 ft; plugged back to 94 ft. Screen from 84 to 94 ft.
110	Bledsoe well 1	Jones & Tarbett	1924	2,900	--		--	--	--	--	--	Oil test.
111	Shepherd School	--	1938	465	3	Ev	140	11	1938	N	U	Screen from 453 to 465 ft.
* 112	G. W. Parker	G. W. Parker	1942	21	1	Ev	100	13	June 1942	N	U	Screen from 18 to 21 ft.
201	Wagon Wheel Estates	Snowden Bros.	1963	455	3	Ev	102	+	Oct. 26, 1965	Flows	S	Drilled to 745 ft; plugged back to 455 ft. Screen from 355 to 455 ft. Reported flow 9 gpm, June 1963.

See footnotes at end of table.

Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
WU-61-33-202	Wagon Wheel Estates	Snowden Bros.	1963	436	2	Ev	92	+	Oct. 26, 1965	Flows	H	Screen from 376 to 436 ft. Reported flow 22 gpm, May 1963.
203	do	do	1963	434	2	Ev	88	+	do	Flows	S	Screen from 374 to 434 ft. Reported flow 22 gpm, May 1963.
* 204	Lee Hartzell	Gay & Son	1956	356	3	Ev	85	+11.8	Oct. 20, 1965	Flows, J,E,½	H	Screen from 336 to 356 ft. Measured flow 8½ gpm, Oct. 20, 1965. Temp. 71°F.
207	do	--	1954	100	--	Ev	82	+5	1954	J,E	H	Screen from 90 to 100 ft. No flow in 1965.
208	F. D. Jennings	E. Miller	1961	380	--	Ev	95	--	--	C,E, ¾	H,S	Screen from 360 to 380 ft.
209	Jess Schraeder	Gay & Son	1952	210	--	Ev	76	+9	1953	J,E	H,S	Screen from 190 to 210 ft.
* 210	Dave Davenport	do	1958	520	3	Ev	77	+2.2	Oct. 26, 1965	Flows, N	H,S	Screen from 510 to 520 ft. Measured flow 2 gpm, Oct. 26, 1965. Temp. 81°F.
211	do	E. Miller	1960	415	4	Ev	75	+23 +3.8	1960 Oct. 26, 1965	Flows, N	S	Slotted from 399 to 415 ft. Measured flow 5 gpm, Oct. 26, 1965. Temp. 73°F.
212	E. W. Olin	Gay & Son	1956	365	--	Ev	99	1	Oct. 1965	--	H,S	Reported flowed until 1963.
* 213	San Jacinto County	Seismograph Crew	1939	80	--	Ev	68	+	Nov. 18, 1946	N	U	Estimated flow 1 gpm, Nov. 18, 1946.
214	Frost Lumber Co. well 2	Christie, Mitchell & Mitchell	1957	8,175	--	--	--	--	--	--	--	Oil test.[2/]
* 215	J. Shraeder	Gay & Son	1946	230	2	Ev	76	+10 +	Nov. 1946 1966	N	U	Drilled to 334 ft; plugged back to 230 ft. Screen from 210 to 230 ft. Temp. 70°F.[1/]
* 301	Wagon Wheel Estates	Snowden Bros.	1963	448	2	Ev	90	+	Oct. 26, 1965	Flows	S	Measured flow 26 gpm, Oct. 26, 1965. Screen from 378 to 448 ft.

See footnotes at end of table.

Table 5.--Records of Wells, Springs, and Test Holes in Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
WU-61-33-302	Wagon Wheel Estates	--	1956	408	7	Ev	100	+28 +	Aug. 1960 Oct. 26, 1965	Flows	P	Measured flow 11 gpm, Dec. 8, 1965. Original flow reported 200 gpm. Field measured specific conductance 460, Dec. 8, 1965. Gamma ray log, Dec. 8, 1965. Temp. 72°F.
303	do	Snowden Bros.	--	446	2	Ev	90	+	Oct. 26, 1965	N	H	Screen from 386 to 446 ft. Original flow reported 28 gpm.
304	Frost Lumber Co.	E. Miller	1958	417	4	Ev	62	+	do	N	U	Casing slotted from 396 to 417 ft. Well shut in for past several years.
305	Frost Lumber Co. well 1	Continental & Speed	1952	13,078	--	--	62	--	--	--	--	Oil test.[2/]
306	Olin Oil & Gas Co.	Hamill & Humble	1955	6,404	--	--	84	--	--	--	--	Do.
401	Jack Tullious	Baggett Drilling Co.	1952	128	2	Ev	160	18	June 1952	P,E, 1	H,S	Screen from 118 to 128 ft.
402	J. S. Abercrombie & Co.	House & Thompson Drilling Co.	1940	180	4	Ev	160	55.0	Dec. 15, 1946	J,E, 1	H	Casing perforated from 160 to 180 ft.
* 501	Southern States Life Ins. Co. ''Lake Texas''	Ed Jaska	1952	500	4	Ev	135	--	--	T,E, 5	P	Screen from 450 to 500 ft.
* 34-101	-- Watson	--	1946	457	2	Ev	15	+27.0	Nov. 25, 1946	N	N	Measured flow 9 gpm, Nov. 25, 1946. Cased to 300 ft. No screen. Temp. 72°F.

Liberty County

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
SB-60-40-901	Roy Morton & Sons	--	--	215	13	Ev	161	38.0	Apr. 5, 1952	N	U	Unused irrigation well.
903	do	-- Peveto	1947	220	13	Ev	159	36.1	Mar. 15, 1949	N	U	Do.

See footnotes at end of table.

Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COM-PLET-ED	DEPTH OF WELL (FT)	DIAM-ETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
*SB-60-48-101	City of Cleveland well 3	Layne-Texas Co.	1951	1,337	14, 12, 6	J	160	22	June 1951	T,E, 20	P	Casing: 14-in. to 218 ft, 12-in. from 218 to 787 ft, 6-in. from 787 ft to bottom. Screen from 1,119 to 1,139 ft, 1,170 to 1,185 ft, 1,205 to 1,210 ft, 1,280 to 1,300 ft, and 1,310 to 1,330 ft. 30-in. gravel-wall from 1,106 to 1,337 ft. Reported drawdown 82 ft after pumping 448 gpm, June 20, 1951.
* 102	City of Cleveland well 1	do	1938	845	13, 7	Ev	157	14.7	Jan. 26, 1945	T,E, 15	P	Screen from 619 to 640 ft, 753 to 774 ft, and 795 to 833 ft. Reported pumping level 112 ft while pumping 400 gpm in 1938.
* 103	City of Cleveland well 2	do	1938	833	13, 7	Ev	157	16.9	Jan. 26, 1945	T,E, 20	P	Screen from 614 to 637 ft, 753 to 771 ft, and 793 to 833 ft. Reported flowed in 1938. Reported drawdown 78 ft while pumping 353 gpm, 1938. Drilled to 929 ft; plugged back to 833 ft.
* 108	G. C. & S. F. RR. Co.	R. C. Davant	1916	1,298	8, 4	J	157	+44	1916	Flows	N	Screen from 690 to 710 ft, 763 to 785 ft, 912 to 952 ft in the Evangeline and from 1,180 to 1,299 ft in the Jasper. Reported to have flowed 300 gpm, 1916. Still flowing from 1-in. line in 1945. Drilled to 1,360 ft; plugged back to 1,298 ft.
* 202	City of Cleveland well 4	Stamm-Scheele	1965	1,641	12, 6	J	157	+17	Jan. 1966	Flows, J,E,40	P	Screen from 1,560 to 1,610 ft. Reported flowed 195 gpm, 1965. Measured flow 60 gpm, Jan. 14, 1966. Temp. 89°F. 1/ 2/
301	Vernon Elledge	Katy Drilling Co.	1957	980	20, 12	Ev	153	37.1 40.4	Jan. 4, 1960 Mar. 26, 1965	T	I	Casing: 20-in. to 250 ft, and 12-in. from 250 ft to bottom.
* 302	do	Texas Water Wells	1954	452	14	Ev	153	39.0 41.2	Jan. 4, 1960 Mar. 26, 1965	T	I	Gravel-packed. Temp. 70°F.
* 61-33-602	S. J. Keith	--	1940	86	2	Ev	82	7.0	Apr. 4, 1945	C,H	H,S	

See footnotes at end of table.

Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COM-PLET-ED	DEPTH OF WELL (FT)	DIAM-ETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
SB-61-33-605	C. M. Lusk	Noack Drilling Co.	1963	162	4	Ev	70	14	Mar. 1963	T,E, 5	I	Casing slotted from 143 to 155 ft. Irrigates Coastal Bermuda grass.
* 701	Roy Elledge	Texas Water Wells	1955	835	20, 12	Ev	157	36.1 37.6 39.7	Apr. 3, 1956 Apr. 4, 1962 Mar. 26, 1965	T,G, --	I	Casing: 20-in. to 250 ft, and 12-in. from 250 ft to bottom. Observation well. Temp. 74°F.
* 706	Roy Morton	Layne-Texas Co.	1943	226	18, 12	Ev	161	32 31.0 30.9	June 1943 Apr. 10, 1957 Mar. 26, 1965	T,G	I	Casing slotted from 57 to 70 ft, 87 to 123 ft, and 172 to 226 ft. Reported drawdown 69 ft while pumping 900 gpm.
708	do	do	1947	693	18, 10	Ev	161	26 35.5 39	Mar. 1965 Apr. 3, 1956 Mar. 1965	T,G	I	Casing slotted from 500 to 600 ft and 635 to 700 ft.
709	B. B. Quinn well 1	Quintana Petroleum Co.	1950	4,220	--	--	156	--	--	--	--	Oil test.2/
* 34-106	Bob La Salle	--	1948	800	--	Ev	87	+14	1948	N	P	Measured flow 2½ gpm, Aug. 31, 1965. Supplies water for several houses.
* 107	C & S Farms	--	--	Spring	--	Ev	65	+	Aug. 1965	Flows	--	Estimated flow 60 gpm, Aug. 1965.
108	do	--	--	Spring	--	Ev	65	+	Aug. 1965	Flows	--	Estimated flow 200 gpm, Aug. 1965.
602	A. Gardner well 1	Texam Oil Co.	1954	7,216	--	--	76	--	--	--	--	Oil test.2/
						Montgomery County						
*TS-60-38-801	Jacobsen Estate	Gay & Son	1964	1,000	6	J	224	21.0	Dec. 9, 1965	N	U	Screen from 990 to 1,000 ft.2/
47-404	Foster Lumber Co.	-- Gray	1943	6,024	--	--	--	--	--	--	--	Oil test.2/
503	W. E. Gray	-- Beshears	1965	186	4	Ev	150	129.0	May 25, 1965	--	--	
601	Tennessee Gas Transmission well 2	McMaster & Pomeroy	1947	1,435	6	J	163	+2.8	Jan. 26, 1966	T,E, 5	N	Reported produces water from about 1,200 ft.

See footnotes at end of table.

Table 5.--Records of Wells, Springs, and Test Holes in San Jacinto and Adjacent Counties--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN.)	WATER-BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
TS-60-47-611	Foster Lumber Co.	Sam Halbert	1918	1,222	6	J	174	11.2	Jan. 26, 1966	N	U	Screen from 1,134 to 1,154, and 1,164 to 1,201 ft. Formerly supplied water for sawmill.
612	Foster Lumber Co. well 2	--	1917	809	8	Ev	165	+10.0 +14.9 -7.0	Mar. 1914 June 5, 1942 Jan. 26, 1966	N	U	Formerly supplied water for sawmill. Well 69, 1943 Montgomery County report.

* For chemical analyses of water from wells and springs in San Jacinto and adjacent counties, see Table 7.

1/ For drillers' logs of wells in San Jacinto and adjacent counties, see Table 6.

2/ For electric log or gamma ray log, files of Texas Water Development Board or U.S. Geological Survey, Austin, Texas.

Table 6.--Drillers' Logs of Wells in San Jacinto County

	THICKNESS (FEET)	DEPTH (FEET)
Well WU-60-15-804		
Owner: Mrs. R. L. White Driller: -- McClain		
Clay, red	4	4
Clay, sandy	6	10
Clay, gray, and shale	7	17
Shale, brownish-gray	28	45
Shale, gray and sandy	190	235
Sand	10	245
Well WU-60-22-207		
Owner: Columbia Lumber Co. Driller: Layne-Texas Co.		
Soil	15	15
Sand	105	120
Clay	150	270
Sand	20	290
Clay	10	300
Well WU-60-22-306		
Owner: Bill Cook Driller: Gay & Son		
Surface, clay, sand, fine	20	20
Clay	23	43
Sand, fairly coarse	51	94
Clay, and limerock	15	109
Sand, fine	11	120
Clay, shale, and limerock	21	141
Sand, medium-fine	121	262
No record	21	283
Well WU-60-23-803		
Owner: Foster Lumber Co. Driller: Pitre Water Well Service		
Clay, sandy	42	42
Clay	18	60
Sand	16	76
Clay	7	83
Sand, fine	15	98
Clay	17	115
Rock	2	117
Sand, hard	4	121
Rock	4	125
Sand, tight	17	142
Clay	18	150
Rock	5	165
Clay	90	255
Sand, fine	16	271
Clay	8	279
Sand, fine	25	304
Clay	116	420
Sand	3	423
Clay	101	524
Sand, fine	11	535
Clay	93	628
Well WU-60-24-803		
Owner: Ella McMurray (well 1) Driller: Arkansas Fuel Oil Co.		
Sand, surface	30	30
Sand and clay	280	310
Sand	10	320
Sand and clay	38	358
Clay, hard and gummy	5	363
Sand and clay, streaks	167	530
Sand and gumbo	254	784
Gumbo and shale, gummy	166	950
Shale, gummy and boulders	65	1,015
Shale, sticky	240	1,255
Shale	40	1,295
Lime, broken and shale	20	1,315
Shale and boulders	100	1,415
Shale, soft and sandy	20	1,435
Shale, gummy	51	1,486
Sand, green	16	1,502
Well WU-60-30-504		
Owner: Jim Scott Driller: Con-Tex Water Well Service		
Clay and gravel	20	20
Clay and iron ore	26	46
Clay with gravel streaks, hard	10	56

Table 6.--Drillers' Logs of Wells in San Jacinto County--Continued

	THICKNESS (FEET)	DEPTH (FEET)
Well WU-60-30-504--(Cont'd.)		
Sand and gravel, hard	8	64
Shale, brown	39	103
Shale and lime, white	23	126
Shale, gray	31	157
Sand	18	175
Rock	--	175
Well WU-60-39-601		
Owner: Shell Oil Co. Driller: L. M. Patterson		
Surface	24	24
Sand	156	180
Shale	176	356
Sand and shale	44	400
Shale	143	543
Sand	40	583
Well WU-60-39-809		
Owner: W. M. Meeking Driller: L. M. Patterson		
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 WU-61-25-801		
Owner: Roy Floyd Driller: Gay & Son		
Surface	12	12
Sand and gravel, large	23	35
Clay	78	113
Sand	21	134
Clay	99	233
Sand, fine	16	249
Limerock, hard, with sand streaks	41	290
Sand, medium, fine and coarse	11	301
Sand, streaks; rock, loose, clay and shale	569	870
Clay, white and hard	20	890
Sand, coarse	28	918
Well WU-61-33-101		
Owner: San Jacinto County Water Control & Improvement District No. 1 (well 1) Driller: Layne-Texas Co.		
Topsoil	2	2
Clay	20	22
Sand and gravel	23	45
Clay	51	96
Clay and sandy clay	103	199
Shale and rock layers	90	289
Shale and rock layers	89	378
Sand	12	390
Shale, streaks of sand, salt and pepper	50	440
Shale	120	560
Well WU-61-33-102		
Owner: San Jacinto County Water Control & Improvement District No. 1 (well 2) Driller: Layne-Texas Co.		
Topsoil and sand	3	3
Clay	5	8
Sand and clay, sandy	72	80
Shale	20	100
Sand	20	120
Clay and streaks of sand	230	350
Sand, salt and pepper	50	400
Shale	102	502

Table 6.--Drillers' Logs of Wells in San Jacinto County--Continued

Well WU-61-33-215

Owner: Jess Schraeder
Driller: Gay & Son

	THICKNESS (FEET)	DEPTH (FEET)		THICKNESS (FEET)	DEPTH (FEET)
Sand	8	8	Clay	27	185
Clay	10	18	Sand, hard	10	195
Sand	15	33	Packsand	15	210
Clay	52	85	Rock and sand	5	215
Sand, fine	15	100	Sand and boulders	10	225
Clay and boulders	15	115	Sand	3	228
Clay	40	155	Shale, sandy	22	250
Sand, hard	3	158	Clay	84	334

Table 7.--Chemical Analyses of Water From Wells and Springs in San Jacinto and Adjacent Counties

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

Water-bearing unit: Ev, Evangeline aquifer; J, Jasper aquifer; Tcs, Catahoula Sandstone.

WELL	DEPTH OF WELL (FT)	DATE OF COLLECTION	WATER-BEARING UNIT	SILICA (SIO_2)	IRON (FE)	CAL-CIUM (CA)	MAGNE-SIUM (MG)	SODIUM (NA)	POTAS-SIUM (K)	BICAR-BONATE (HCO_3)	SUL-FATE (SO_4)	CHLO-RIDE (CL)	FLUO-RIDE (F)	NI-TRATE (NO_3)	BORON (B)	DIS-SOLVED SOLIDS	HARD-NESS AS $CACO_3$	PER-CENT SO-DIUM	SODIUM ADSORP-TION RATIO (SAR)	RESI-DUAL SODIUM CAR-BONATE (RSC)	SPECIFIC CONDUCT-ANCE (MICROMHOS AT 25°C)	PH
										San Jacinto County												
WU-60-14-302	20	Aug. 31, 1945	Tcs	--	--	18	0.9	* 54	--	8.0	24	90	--	9.6	--	321	49	71	3.4	--	--	--
503	47	do	Tcs	--	--	145	11	*166	--	536	43	193	--	7.5	--	944	407	47	3.6	--	--	--
804	60	do	J	--	--	498	63	*386	--	392	125	1,340	--	1.5	--	2,610	1,500	36	4.3	--	--	--
15-402	53	Feb. 7, 1966	J	42	--	60	21	--	--	20	24	76	0.2	--	--	449	--	--	--	--	748	6.0
801	205	Oct. 29, 1965	Tcs	--	--	--	--	--	--	612	.4	350	--	--	--	1,210	88	--	--	8.27	2,020	7.0
802	700	July 26, 1962	Tcs	44	0.1	60	2.3	--	--	542	0	785	--	--	--	1,990	160	--	--	--	3,320	7.5
901	410	Oct. 30, 1965	Tcs	44	--	32	1.2	*333	--	604	7.0	215	.8	1.5	--	932	85	89	16	8.20	1,580	7.3
901	411	Oct. 8, 1946	Tcs	--	.11	31	1.9	*317	--	585	--	208	.0	.0	--	918	86	89	15	--	--	--
22-203	260	Oct. 20, 1965	J	--	.14	54	3.3	* 61	--	288	14	22	--	.0	--	321	148	47	2.2	1.76	536	7.1
204	98	do	J	--	.02	12	2.2	* 28	--	36	8.8	41	--	3.5	--	139	39	61	1.9	.00	232	5.6
205	317	Oct. 28, 1965	J	65	--	52	2.6	* 64	--	280	14	24	.2	.0	--	360	140	50	2.3	1.79	539	6.9
206	23	Aug. 31, 1945	J	--	17	4.4	2.2	* 15	--	27	--	18	--	0	--	102	20	61	1.5	--	--	--
210	500	Sept. 5, 1945	J	--	--	6.8	6.3	* 37	--	261	--	36	--	.2	--	341	196	--	--	--	--	--
211	40	Jan. 10, 1947	J	--	.39	25	4.8	* 38	--	96	24	30	--	24	--	210	82	50	1.8	--	341	--
212	25	do	J	--	.11	22	7.1	* 37	--	66	30	44	--	22	--	270	84	49	1.8	--	371	--
305	104	Feb. 17, 1966	J	36	--	14	.8	12	1.7	56	3.6	11	.1	.0	--	107	38	39	.8	.15	158	6.2
605	165	Feb. 18, 1966	J	32	--	76	5.6	47	3	110	10	152	.1	0	--	380	212	32	1.4	0	706	7.2
606	Spring	Sept. 5, 1945	J	--	--	1.4	.4	* 20	--	15	7	20	--	.4	--	159	5	--	--	--	--	--
607	36	do	J	--	--	2.3	1.3	* 15	--	18	7	12	--	6.6	--	141	11	--	--	--	--	--
23-101	645	Oct. 8, 1946	Tcs	--	.04	24	.8	*141	--	342	16	52	--	.2	--	458	64	83	7.7	--	--	--
103	699	Feb. 16, 1966	Tcs	48	--	30	1.3	*387	--	680	2.0	255	.8	10	--	1,060	80	91	1.9	9.90	1,780	7.6
107	35	Jan. 10, 1947	J	--	.20	82	3.5	* 98	--	87	18	242	--	.5	--	607	219	49	2.9	--	944	--
108	34	do	J	--	.06	26	3.5	* 48	--	64	10	74	--	14	--	312	74	58	2.4	--	403	--
201	212	Feb. 16, 1966	J	48	--	32	1.2	150	2.2	384	9.2	66	.6	0	--	498	85	--	7.1	4.59	814	7.4
202	190	Mar. 8, 1966	J	55	--	70	3.1	185	8.3	532	1.8	123	--	0	--	708	188	67	5.9	4.97	1,160	7.3
501	515	Feb. 16, 1966	J	45	--	30	1.4	*201	--	492	1.2	80	.6	--	--	601	81	84	9.7	6.44	980	7.6

See footnotes at end of table.

Table 7.--Chemical Analyses of Water From Wells and Springs in San Jacinto and Adjacent Counties--Continued

WELL	DEPTH OF WELL (FT)	DATE OF COLLECTION	WATER-BEARING UNIT	SILICA (SIO_2)	IRON (FE)	CALCIUM (CA)	MAGNESIUM (MG)	SODIUM (NA)	POTASSIUM (K)	BICARBONATE (HCO_3)	SULFATE (SO_4)	CHLORIDE (CL)	FLUORIDE (F)	NITRATE (NO_3)	BORON (B)	DISSOLVED SOLIDS	HARDNESS AS $CACO_3$	PERCENT SODIUM	SODIUM ADSORPTION RATIO (SAR)	RESIDUAL SODIUM CARBONATE (RSC)	SPECIFIC CONDUCTANCE (MICROMHOS AT 25°C)	PH
WU-60-23-702	Spring	Sept. 5, 1945	J	--	--	0.7	0.9	* 8.7	--	12	3	6.0	--	3.8	--	116	5	89	1.7	--	--	--
704	483	Mar. 15, 1966	J	11	0.34	100	9.8	40	4.8	300	15	83	--	.0	--	412	290	23	1.0	0.00	744	7.1
24-801	468	Oct. 31, 1946	J	--	.04	26	2.2	*126	--	279	17	73	--	.0	--	390	74	79	6.4	--	--	--
802	455	Mar. 7, 1966	J	27	--	22	1.7	177	3.5	358	.6	111	--	.5	--	520	62	85	9.8	4.63	885	7.4
901	427	Oct. 31, 1946	J	--	.03	24	3.1	*127	--	301	17	60	--	.0	--	394	72	79	6.5	--	--	--
901	427	Oct. 13, 1965	J	--	.01	19	2.1	*134	--	307	14	56	.7	.2	--	402	56	84	7.8	3.91	670	7.3
902	459	Oct. 31, 1946	J	--	.41	27	4.4	*120	--	293	18	62	--	.2	--	390	86	75	5.6	--	--	--
902	459	Oct. 13, 1965	J	--	--	54	6.2	*355	--	392	1.6	430	.9	1.0	--	1,180	160	83	12	3.22	1,970	6.9
903	535	Nov. 12, 1946	J	--	2.70	30	2.8	*135	--	288	23	85	--	.0	--	417	86	77	6.3	--	--	--
30-202	163	Nov. 11, 1946	J	--	5.0	22	2.6	* 49	--	135	2.0	42	--	0	--	211	66	62	2.6	--	--	--
501	58	Sept.29, 1965	J	--	.50	--	--	--	--	176	10	41	--	--	--	256	150	--	--	.00	426	6.4
609	187	Mar. 30, 1966	J	25	5.9	113	4.7	38	1.9	348	7.0	66	--	.2	--	427	302	21	1.0	.00	755	6.8
610	106	Nov. 7, 1946	J	--	1.5	99	7.0	* 77	--	345	2.0	113	--	.2	--	486	276	38	2.0	--	--	--
612	201	Oct. 10, 1946	J	--	.04	97	3.3	* 17	--	280	6	40	--	.0	--	350	256	12	.5	--	--	--
702	56	Mar. 30, 1966	Ev	15	.07	1.8	.9	4.4	.6	6	.4	6.6	--	2.8	--	36	--	52	.7	.0	44	5.0
704	Spring	Jan. 11, 1947	Ev	--	.09	3.5	1.8	* 7.4	--	1.2	2	12	--	4.3	--	50	16	50	.8	--	61	--
707	57	Mar. 31, 1966	Ev	--	.46	--	--	--	--	--	--	--	--	--	--	82	--	--	--	--	138	--
708	65	do	Ev	--	.78	--	--	--	--	--	--	--	--	--	--	55	--	--	--	--	92	--
709	50	Jan. 11, 1947	Ev	--	.03	18	2.5	* 7.5	--	56	2	14	--	4.7	--	98	55	23	.4	--	146	--
809	210	Mar. 7, 1966	J	--	4.2	97	15	53	4.2	330	18	97	.3	.2	--	475	304	27	1.3	.00	824	7.3
810	429	Mar. 31, 1966	J	19	.00	77	16	60	4.6	284	21	103	.3	.0	--	441	258	33	1.6	.00	783	7.1
812	21	Nov. 7, 1946	Ev	--	.05	118	4.8	* 58	--	468	18	20	--	11	--	494	314	28	1.4	--	--	--
31-109	97	Oct. 10, 1946	J	--	.17	110	3.1	* 12	--	332	4	24	--	3.0	--	361	287	8	.3	--	--	--
110	60	Nov. 28, 1946	J	--	.08	--	--	--	--	176	10	685	--	9.0	--	--	698	--	--	--	--	--
113	197	Oct. 10, 1946	J	--	.03	100	5.5	* 19	--	292	10	45	--	.0	--	373	272	13	.5	--	--	--
201	126	Mar. 8, 1966	J	41	3.3	126	3.6	50	2.3	300	12	134	--	.0	--	517	330	25	1.2	.00	903	6.8
209	135	Nov. 28, 1946	J	--	.44	86	4.7	* 47	--	276	16	66	--	.0	--	402	234	30	1.3	--	--	--

See footnotes at end of table.

Table 7.--Chemical Analyses of Water From Wells and Springs in San Jacinto and Adjacent Counties--Continued

WELL	DEPTH OF WELL (FT)	DATE OF COLLECTION	WATER-BEARING UNIT	SILICA (SiO_2)	IRON (FE)	CALCIUM (CA)	MAGNESIUM (MG)	SODIUM (NA)	POTASSIUM (K)	BICARBONATE (HCO_3)	SULFATE (SO_4)	CHLORIDE (CL)	FLUORIDE (F)	NITRATE (NO_3)	BORON (B)	DISSOLVED SOLIDS	HARDNESS AS $CACO_3$	PERCENT SODIUM	SODIUM ADSORPTION RATIO (SAR)	RESIDUAL SODIUM CARBONATE (RSC)	SPECIFIC CONDUCTANCE (MICROMHOS AT 25°C)	PH
WU-60-31-301	Spring	Apr. 7, 1966	Ev	17	0.19	3.0	1.3	6.6	1.2	8	0.4	9.0	0.1	9.6	0.02	52	13	50	0.8	0.00	74	5.4
305	509	Dec. 7, 1965	J	29	--	52	5.5	* 71	--	290	16	36	.3	.2	.11	353	152	50	2.5	1.71	582	7.0
312	Spring	Dec. 17, 1946	Ev	--	.35	3.8	1.4	* 6.9	--	12	4	10	--	2.8	--	42	15	50	.8	--	93	--
313	76	Nov. 20, 1946	Ev	--	2.3	9.0	2.0	* 7.3	--	17	6.6	16	--	4.0	--	52	31	34	.6	--	--	--
314	65	Nov. 28, 1946	Ev	--	.43	4.0	2.0	* 23	--	48	2	14	--	7.8	--	82	18	73	2.4	--	--	--
403	585	Oct. 10, 1946	J	--	.14	73	7.9	* 64	--	284	14	75	--	.0	--	370	214	39	1.9	--	--	--
405	175	Dec. 1, 1965	J	--	--	--	--	--	--	378	8.4	113	--	--	--	550	372	--	--	.00	925	7.1
407	586	Oct. 10, 1946	J	--	.3	79	7.4	* 52	--	270	10	77	--	.0	--	386	228	33	1.5	--	--	--
408	15	Jan. 11, 1947	J	--	5.2	4.4	2.8	* 17	--	14	30	10	--	2.0	--	73	22	62	1.6	--	109	--
503	354	Apr. 4, 1966	Ev	29	--	68	6.7	24	3.4	232	8.4	42	.2	.2	--	296	197	21	.7	.00	509	7.1
507	32	do	Ev	--	.23	--	--	--	--	--	--	--	--	--	--	109	--	--	--	--	182	--
607	85	Dec. 17, 1946	Ev	--	.25	19	2.5	* 13	--	69	5	16	--	2.0	--	109	58	33	.7	--	219	--
608	28	Sept.14, 1946	Ev	--	--	5.6	.8	* 9.9	--	25	4	10	--	0	--	40	17	55	1.0	--	--	--
905	60	Sept.14, 1945	Ev	--	--	6.8	.8	* 3.7	--	15	3	9.0	--	2.0	--	42	20	28	.4	--	--	--
32-101	85	Jan. 13, 1947	Ev	--	.06	7.6	2.7	* 20	--	32	7	20	--	15	--	108	30	59	1.6	--	140	--
102	Spring	Dec. 17, 1946	Ev	--	.08	--	--	--	--	11	1	10	--	1.8	--	25	6	--	--	--	41	--
103	60	do	Ev	--	1.8	--	--	--	--	18	2	14	--	.4	--	39	--	--	--	--	59	--
105	Spring	Apr. 17, 1966	Ev	15	.0	2.3	1.2	6.2	.5	6	.0	8.6	.0	7.1	.02	44	11	54	.8	.00	64	5.3
107	Spring	Jan. 18, 1947	Ev	--	.05	--	--	--	--	12	3	16	--	4.0	--	43	21	--	--	--	71	--
203	300	Oct. 13, 1965	J	--	.80	40	5.8	* 69	--	277	15	22	.3	.0	--	311	124	55	2.7	2.06	517	7.0
209	Spring	Jan. 11, 1947	Ev	--	.03	5.0	2.6	* 13	--	8.0	2	18	--	22	--	107	23	55	1.2	--	113	--
210	29	do	Ev	--	1.6	39	5.1	* 61	--	102	14	96	--	23	--	374	118	53	2.4	--	544	--
211	42	do	Ev	--	.06	16	7.4	* 44	--	28	20	62	--	42	--	234	70	57	2.3	--	372	--
212	318	Oct. 10, 1946	Ev	--	1.7	28	3.7	*110	--	230	20	70	--	.0	--	355	85	74	5.2	--	--	--
213	425	Oct. 31, 1946	J	--	3.1	28	2.6	*119	--	269	20	70	--	.2	--	383	80	76	5.8	--	--	--
303	385	Oct. 13, 1965	J	--	.06	19	2.1	*132	--	296	16	58	.7	.2	--	403	56	84	7.7	3.73	671	7.3
304	400	Oct. 6, 1965	J	--	--	--	--	--	--	290	17	62	--	--	--	468	64	--	--	3.47	669	7.4

See footnotes at end of table.

Table 7.--Chemical Analyses of Water From Wells and Springs in San Jacinto and Adjacent Counties--Continued

WELL	DEPTH OF WELL (FT)	DATE OF COLLECTION	WATER-BEARING UNIT	SILICA (SiO_2)	IRON (FE)	CALCIUM (CA)	MAGNESIUM (MG)	SODIUM (NA)	POTASSIUM (K)	BICARBONATE (HCO_3)	SULFATE (SO_4)	CHLORIDE (CL)	FLUORIDE (F)	NITRATE (NO_3)	BORON (B)	DISSOLVED SOLIDS	HARDNESS AS $CaCO_3$	PERCENT SODIUM	SODIUM ADSORPTION RATIO (SAR)	RESIDUAL SODIUM CARBONATE (RSC)	SPECIFIC CONDUCTANCE (MICROMHOS AT 25°C)	PH
WU-60-32-601	520	Nov. 15, 1946	J	--	0.19	26	4.6	* 91	--	288	10	25	--	0.0	--	296	84	70	4.3	--	--	--
604	70	do	Ev	--	.0	--	--	--	--	246	8.0	52	--	.0	--	--	147	--	--	--	--	--
802	385	Mar. 11, 1966	Ev	18	--	49	9.7	48	3.6	492	15	19	0.3	.0	--	310	162	38	1.6	1.67	534	7.3
804	60	Nov. 20, 1946	Ev	--	3.5	--	--	--	--	137	2	20	--	.0	--	--	102	--	--	--	--	--
38-901	83	Mar. 31, 1966	Ev	13	.86	2.1	1.2	11	.6	14	.4	15	.2	.2	--	51	10	69	1.5	.02	76	5.5
39-401	126	Dec. 23, 1965	Ev	14	.20	2.2	1.1	8.2	.5	11	.4	13	.1	.2	0.01	45	10	63	1.1	.00	67	6.3
403	530	do	J	--	--	--	--	--	--	294	13	53	--	--	--	374	224	--	--	--	624	7.9
601	583	Jan. 3, 1946	J	--	4.3	52	12	* 60	--	320	15	22	--	--	--	319	180	42	1.9	--	539	--
602	90	Dec. 14, 1965	Ev	20	--	4.5	1.2	* 12	--	19	.6	18	.1	.2	--	66	16	62	1.3	.00	101	5.4
701	147	Dec. 23, 1965	Ev	--	--	--	--	--	--	--	--	--	--	--	--	36	--	--	--	--	60	--
802	26	Oct. 30, 1965	Ev	--	--	--	--	--	--	58	.6	26	--	--	--	115	38	--	--	.19	191	6.8
808	139	Jan. 4, 1947	Ev	--	1.6	16	2.6	* 16	--	69	1	20	--	.0	--	130	51	41	1.0	--	249	--
809	552	Jan. 15, 1947	J	--	.89	39	14	* 36	--	221	--	22	--	1.0	--	324	155	34	1.3	--	555	--
904	140	Apr. 11, 1966	Ev	--	.60	--	--	--	--	--	--	--	--	--	--	146	--	--	--	--	209	--
907	115	Jan. 4, 1947	Ev	--	.87	12	1.6	* 17	--	44	2	18	--	12	--	105	37	50	1.2	--	147	--
908	40	do	Ev	--	3.8	34	1.5	* 15	--	112	5	14	--	7.8	--	143	91	26	.7	--	235	--
910	196	do	Ev	--	4.9	11	1.3	* 17	--	52	1	18	--	.0	--	80	33	52	1.3	--	136	--
40-304	96	Mar. 3, 1966	Ev	19	.52	4	1.1	9.8	1.3	23	.0	9.6	.1	5.0	--	61	14	57	1.1	.09	91	5.8
309	438	Sept.14, 1945	Ev	--	--	27	5.5	*112	--	312	22	38	--	0	--	368	90	73	5.1	--	--	--
310	685	Nov. 8, 1946	J	--	1.3	17	3.3	*123	--	253	19	68	--	.0	--	366	56	83	7.1	--	--	--
311	72	Sept.14, 1945	Ev	--	.42	12	4.4	* 32	--	41	1	27	--	5.7	--	215	48	60	2.0	--	--	--
312	710	do	J	--	--	13	2.0	*125	--	298	13	38	--	0	--	371	40	87	8.6	--	--	--
313	40	Nov. 8, 1946	Ev	--	.08	16	5.9	* 18	--	3	11	40	--	42	--	189	64	38	1.0	--	--	--
604	266	Mar. 3, 1966	Ev	21	--	38	3.9	20	2.9	164	2.9	19	.1	.5	--	180	111	27	.8	.47	321	7.5
713	135	Jan. 3, 1947	Ev	--	.45	7.6	1.3	* 15	--	30	1	18	--	6.9	--	96	24	57	1.3	--	127	--
804	45	Dec. 9, 1946	Ev	--	3.5	--	--	--	--	137	2	20	--	.0	--	--	102	--	--	--	--	--
806	76	Nov. 8, 1946	Ev	--	.04	18	6.1	* 18	--	28	2	28	--	56	--	206	70	36	.9	--	--	--

See footnotes at end of table.

Table 7.--Chemical Analyses of Water From Wells and Springs in San Jacinto and Adjacent Counties--Continued

WELL	DEPTH OF WELL (FT)	DATE OF COLLECTION	WATER-BEARING UNIT	SILICA (SiO_2)	IRON (FE)	CALCIUM (CA)	MAGNESIUM (MG)	SODIUM (NA)	POTASSIUM (K)	BICARBONATE (HCO_3)	SULFATE (SO_4)	CHLORIDE (CL)	FLUORIDE (F)	NITRATE (NO_3)	BORON (B)	DISSOLVED SOLIDS	HARDNESS AS $CaCO_3$	PERCENT SODIUM	SODIUM ADSORPTION RATIO (SAR)	RESIDUAL SODIUM CARBONATE (RSC)	SPECIFIC CONDUCTANCE (MICROMHOS AT 25°C)	PH
WU-60-40-807	30	Nov. 8, 1946	Ev	--	0.15	46	18	* 46	--	24	12	42	--	246	--	438	189	35	1.5	--	--	--
47-301	23	Oct. 5, 1965	Ev	--	1.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
302	190	do	Ev	15	42	16	1.7	* 16	--	72	.4	16	0.1	.2	--	100	47	43	1.0	.24	170	6.1
403	120	Oct. 14, 1965	Ev	--	12	12	1.7	* 12	--	57	1.4	9.8	--	--	--	78	37	40	.9	.20	130	6.1
61-25-401	273	Nov. 25, 1946	Ev	--	.06	16	2.5	*103	--	274	12	27	--	.0	--	305	50	82	6.3	--	--	--
401	273	Sept.23, 1965	Ev	19	--	16	1.7	*109	--	268	15	33	.9	.2	--	327	47	83	6.9	3.45	546	7.4
402	300	Jan. 6, 1947	Ev	--	.49	21	3.4	*118	--	288	19	48	--	.0	--	358	66	79	6.3	--	597	--
402	300	Sept.23, 1965	Ev	--	--	19	3.0	*117	--	280	18	45	.8	--	--	359	60	81	6.6	3.39	608	7.5
403	450	do	Ev	--	--	--	--	--	--	280	16	38	--	--	--	349	44	--	--	3.71	582	7.4
404	616	do	Ev	32	--	11	1.1	*143	--	292	18	58	.7	.2	--	408	32	91	11	4.15	668	7.6
408	265	Nov. 25, 1946	Ev	--	.06	18	3.1	*121	--	290	17	46	--	.0	--	350	58	82	6.9	--	--	--
501	600	Sept.23, 1965	Ev	--	--	--	--	--	--	230	--	11	--	--	--	289	64	--	--	2.49	413	7.3
503	90	do	Ev	--	.01	--	--	--	--	224	--	15	--	--	--	284	78	--	--	2.11	412	7.3
505	500	Nov. 11, 1965	Ev	--	--	--	--	--	--	224	9.2	18	--	--	--	289	86	--	--	1.95	413	7.1
507	121	Nov. 8, 1946	Ev	--	.31	38	7.9	* 46	--	229	5	24	--	.0	--	248	127	44	1.8	--	--	--
508	120	Jan. 6, 1946	Ev	--	.29	31	5.7	* 61	--	182	15	30	--	.2	--	285	101	57	2.6	--	499	--
509	29	Jan. 13, 1947	Ev	--	.39	50	1.6	* 12	--	154	18	8.0	--	1.0	--	175	131	16	.5	--	307	--
510	120	Jan. 6, 1946	Ev	--	.17	30	4.7	* 71	--	262	12	16	--	.0	--	270	94	62	3.2	--	441	--
601	251	Oct. 11, 1965	Ev	--	--	--	--	--	--	214	8	23	--	--	--	250	--	--	--	--	418	7.0
606	15	Nov. 26, 1946	Ev	--	3.5	--	--	--	--	44	4	37	--	2.2	--	--	78	--	--	--	--	--
703	36	Nov. 18, 1946	Ev	--	.15	--	--	--	--	13	24	32	--	4.4	--	--	54	--	--	--	--	--
704	164	Nov. 8, 1946	Ev	--	.51	39	8.1	* 85	--	246	15	70	--	.0	--	344	131	58	3.2	--	--	--
707	100	Sept.14, 1945	Ev	--	.20	21	2.3	* 15	--	65	1	28	--	.0	--	153	62	34	.8	--	--	--
801	918	Oct. 7, 1965	J	25	.02	28	2.4	*304	--	168	7.6	420	.8	.2	--	871	80	89	15	1.15	1,650	7.3
901	200	Nov. 21, 1946	Ev	--	.0	--	--	--	--	228	6.0	29	--	--	--	--	105	--	--	--	--	--
902	600	do	Ev	--	.05	--	--	--	--	235	11	36	--	--	--	--	51	--	--	--	--	--
905	240	Nov. 26, 1946	Ev	--	.11	20	3.0	* 79	--	246	10	16	--	.2	--	266	62	73	4.4	--	--	--

See footnotes at end of table.

Table 7.--Chemical Analyses of Water From Wells and Springs in San Jacinto and Adjacent Counties--Continued

WELL	DEPTH OF WELL (FT)	DATE OF COLLECTION	WATER-BEARING UNIT	SILICA (SiO_2)	IRON (FE)	CAL-CIUM (CA)	MAGNE-SIUM (MG)	SODIUM (NA)	POTAS-SIUM (K)	BICAR-BONATE (HCO_3)	SUL-FATE (SO_4)	CHLO-RIDE (CL)	FLUO-RIDE (F)	NI-TRATE (NO_3)	BORON (B)	DIS-SOLVED SOLIDS	HARD-NESS AS $CaCO_3$	PER-CENT SO-DIUM	SODIUM ADSORP-TION RATIO (SAR)	RESI-DUAL SODIUM CAR-BONATE (RSC)	SPECIFIC CONDUCT-ANCE (MICROMHOS AT 25°C)	PH
WU-61-26-401	400	Nov. 21, 1946	Ev	--	--	--	--	--	--	239	5.0	33	--	--	--	--	138	--	--	--	--	--
701	150	Nov. 26, 1946	Ev	--	0.17	61	6.2	* 23	--	222	6.0	28	--	--	--	258	178	--	--	--	--	--
703	830	Nov. 25, 1946	J	--	.03	11	1.7	*148	--	306	17	62	--	0.0	--	398	34	90	11	--	--	--
710	27	Nov. 26, 1946	Ev	--	5.5	--	--	--	--	129	15	49	--	34	--	--	144	--	--	--	--	--
33-101	452	Dec. 6, 1955	Ev	20	.11	21	4.3	111	3	296	15	36	0.5	.0	0.12	357	69	77	5.8	--	579	8.0
101	452	Feb. 6, 1966	Ev	17	--	19	4.7	110	2.2	304	12	35	.6	.0	--	350	67	77	5.8	3.69	595	7.4
102	420	Feb. 16, 1965	Ev	16	--	19	4.4	109	2.3	296	14	36	.5	.0	--	355	66	78	5.8	3.61	595	7.8
105	608	Oct. 20, 1965	J	--	--	--	--	--	--	276	16	64	--	--	--	400	37	--	--	3.78	666	7.4
112	21	Nov. 18, 1946	Ev	--	.30	--	--	--	--	9	12	43	--	--	--	--	171	--	--	--	--	--
204	356	Oct. 20, 1965	Ev	--	--	--	--	--	--	286	17	47	--	--	--	371	77	--	--	3.15	619	7.1
210	520	Oct. 26, 1965	Ev	--	--	--	--	--	--	302	11	65	--	--	--	312	33	--	--	4.29	520	7.5
213	80	Nov. 18, 1946	Ev	--	.05	--	--	--	--	120	2	33	--	--	--	--	96	--	--	--	--	--
215	230	do	Ev	--	.03	39	6.8	* 74	--	230	18	56	--	--	--	303	126	56	2.9	--	--	--
301	448	July 27, 1965	Ev	--	--	--	--	--	--	266	--	10	--	--	--	364	27	--	--	3.82	454	7.4
501	500	Sept.18, 1965	Ev	17	.08	15	3.5	88	1.9	268	9.8	11	.7	.2	.11	279	52	78	5.3	3.36	459	7.4
34-101	457	Nov. 25, 1946	Ev	--	.23	10	2.3	* 92	--	240	11	18	--	.0	--	253	34	85	6.9	--	--	--
										Liberty County												
SB-60-48-101	1,337	Dec. 7, 1955	J	19	0.06	7.8	0.6	131	1.5	263	15	52	0.8	0.2	0.22	--	22	22	12	--	584	8.0
102	845	Aug. 4, 1965	Ev	--	--	--	--	--	--	314	--	20	--	--	--	--	104	--	--	3.07	566	7.7
103	929	Apr. 11, 1944	Ev	17	.12	34	7.2	90	6.7	321	15	27	.6	.5	--	377	114	--	--	--	590	7.7
108	1,360	Jan. 8, 1937	J	--	--	4	--	*183	--	270	16	47	--	.0	--	323	16	--	--	--	--	--
202	1,641	Jan. 10, 1966	J	21	.12	3.0	.6	*169.3	--	352	6.4	60	1.4	.0	.39	435	10	97	23	5.51	734	8.2
302	452	July 15, 1965	Ev	34	--	53	.9	* 31	--	178	14	30	.1	--	.04	251	136	33	1.2	.20	370	7.0
61-33-602	86	Apr. 4, 1945	Ev	--	--	31	2.7	* 11	--	94	3	23	--	--	--	157	88	--	--	--	--	--
701	835	Aug. 2, 1955	Ev	32	--	34	2.5	36	2.2	173	4.5	24	--	--	.15	224	95	--	1.1	--	359	7.7
701	835	July 28, 1965	Ev	--	--	--	--	--	--	149	--	22	--	--	--	--	113	--	--	.18	319	6.6
706	226	June 8, 1945	Ev	--	.10	17	1.7	* 18	--	66	2	22	--	.5	--	143	49	--	--	--	--	--

See footnotes at end of table.

Table 7.--Chemical Analyses of Water From Wells and Springs in San Jacinto and Adjacent Counties--Continued

WELL	DEPTH OF WELL (FT)	DATE OF COLLECTION	WATER-BEARING UNIT	SILICA (SIO_2)	IRON (FE)	CALCIUM (CA)	MAGNESIUM (MG)	SODIUM (NA)	POTASSIUM (K)	BICARBONATE (HCO_3)	SULFATE (SO_4)	CHLORIDE (CL)	FLUORIDE (F)	NITRATE (NO_3)	BORON (B)	DISSOLVED SOLIDS	HARDNESS AS $CACO_3$	PERCENT SODIUM	SODIUM ADSORPTION RATIO (SAR)	RESIDUAL SODIUM CARBONATE (RSC)	SPECIFIC CONDUCTANCE (MICROMHOS AT 25°C)	PH
SB-61-34-106	800	Sept. 1, 1965	Ev	--	--	--	--	--	--	292	--	46	--	--	--	--	26	--	--	4.27	639	7.7
107	Spring	do	Ev	--	--	--	--	--	--	316	--	84	--	--	--	--	302	--	--	.00	787	7.0
Montgomery County																						
TS-60-38-801	1,000	Nov. 1964	J	2.0	0.1	45	14	* 42	--	260	14	23	--	--	--	420	170	--	--	--	--	--

a/ Includes the equivalent of any carbonate (CO_3) present.
* Sodium and potassium calculated as sodium (Na).