TEXAS WATER COMMISSION

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GROUND-WATER RESOURCES OF DE WITT COUNTY, TEXAS

By

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in cooperation with the
Texas Water Commission
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De Witt County
and the Cities of
Cuero, Yoakum, and Yorktown

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GROUND-WATER RESOURCES OF DE WITT COUNTY, TEXAS

ABSTRACT

De Witt County is in the West Gulf Coastal Plain of south-central Texas. It has an area of 910 square miles, and had a population of 20,683 in 1960. The economy depends chiefly on the raising of livestock, farming, and small industry.

The principal water-bearing formations, from oldest to youngest, underlying the county are the Catahoula Tuff, Oakville Sandstone, Lagarto Clay, and Goliad Sand; collectively they comprise the Gulf Coast aquifer. The alluvial deposits associated with the Guadalupe River also comprise an aquifer of local importance.

The thickness of sand that contains fresh to slightly saline water in the Gulf Coast aquifer ranges from about 170 feet in the northwestern part of the county to about 590 feet in the southeastern part. Approximately 65 million acre-feet of fresh to slightly saline water is stored in the sands; however, only a small part is economically recoverable.

If the water levels were lowered to 400 feet below the land surface along an assumed line of discharge across the middle of the county, about 12 million acre-feet of fresh to slightly saline water would be available from storage in the Gulf Coast aquifer. After the water levels were lowered to 400 feet, the aquifer would transmit about 55,000 acre-feet per year (about 50 million gallons per day) without further lowering of water levels, assuming that the recharge was adequate.

All municipal and domestic supplies and nearly all the industrial, irrigation, and stock supplies are obtained from ground-water sources. About 3.1 mgd (million gallons per day) of ground water was pumped in 1962; 1.87 mgd was for municipal supply, 0.86 mgd for irrigation, and 0.4 mgd for domestic and stock use.

The yields of wells in De Witt County range from a few gallons a minute to as much as 1,000 gpm (gallons per minute), but yields as large as 2,000 gpm can be expected from properly constructed wells in some parts of the county.

The ground water in the county is of good chemical quality except that it is hard to very hard; soft water locally occurs in sands that are more than about 600 feet in depth. Contamination of the ground-water supplies by disposal of oil-field brine in unlined earthen pits has been reported in at least one well.

GROUND-WATER RESOURCES OF DE WITT COUNTY, TEXAS

INTRODUCTION

Location and Extent of Area

De Witt County is in the West Gulf Coastal Plain of south-central Texas (Figure 1). It is bounded on the south and southeast by Goliad and Victoria Counties, on the northeast by Lavaca County, on the north by Gonzales County, and on the west by Karnes County. Cuero, the county seat, is about 80 miles southeast of San Antonio at the junction of several U.S. and Texas highways. The county has an area of 910 square miles and had a population of 20,683 in 1960. The U.S. Census of 1850 listed a population of 1,716 for the county; the population increased to a maximum of 27,971 by 1920 and has decreased since then to the present. The populations of the four incorporated towns in De Witt County in 1960 were Cuero, 7,338; Yoakum, 5,761; Yorktown, 2,527; and Nordheim, 407.

Scope and Purpose of Investigation

The ground-water investigation of De Witt County was made by the U.S. Geological Survey in cooperation with the Texas Water Commission, the Guadalupe-Blanco River Authority, De Witt County, and the cities of Cuero, Yoakum, and Yorktown. The work was done under the direct supervision of A. G. Winslow, district geologist in charge of ground-water investigations in Texas.

The purpose of the study was to determine and describe the ground-water resources of De Witt County and to make the results of the study available to the public. The report is based on records of 463 wells, 125 electric logs, 69 drillers' logs of wells, 144 chemical analyses of ground-water samples, climatological data, and the results of 8 pumping tests of wells.

During the course of the investigation, an inventory was made of all municipal, industrial, and irrigation wells, and of enough stock and domestic wells to provide basic ground-water data throughout the county (Table 8). Electric logs of oil tests and drillers' logs of water wells (Table 9), in conjunction with data from other wells, were used to study the subsurface geology and to determine the thickness of sands containing fresh to slightly saline water and the base of fresh to slightly saline water. An inventory was made of the 1962 municipal, industrial, and irrigation pumpage, and estimates were made of the past pumpage.

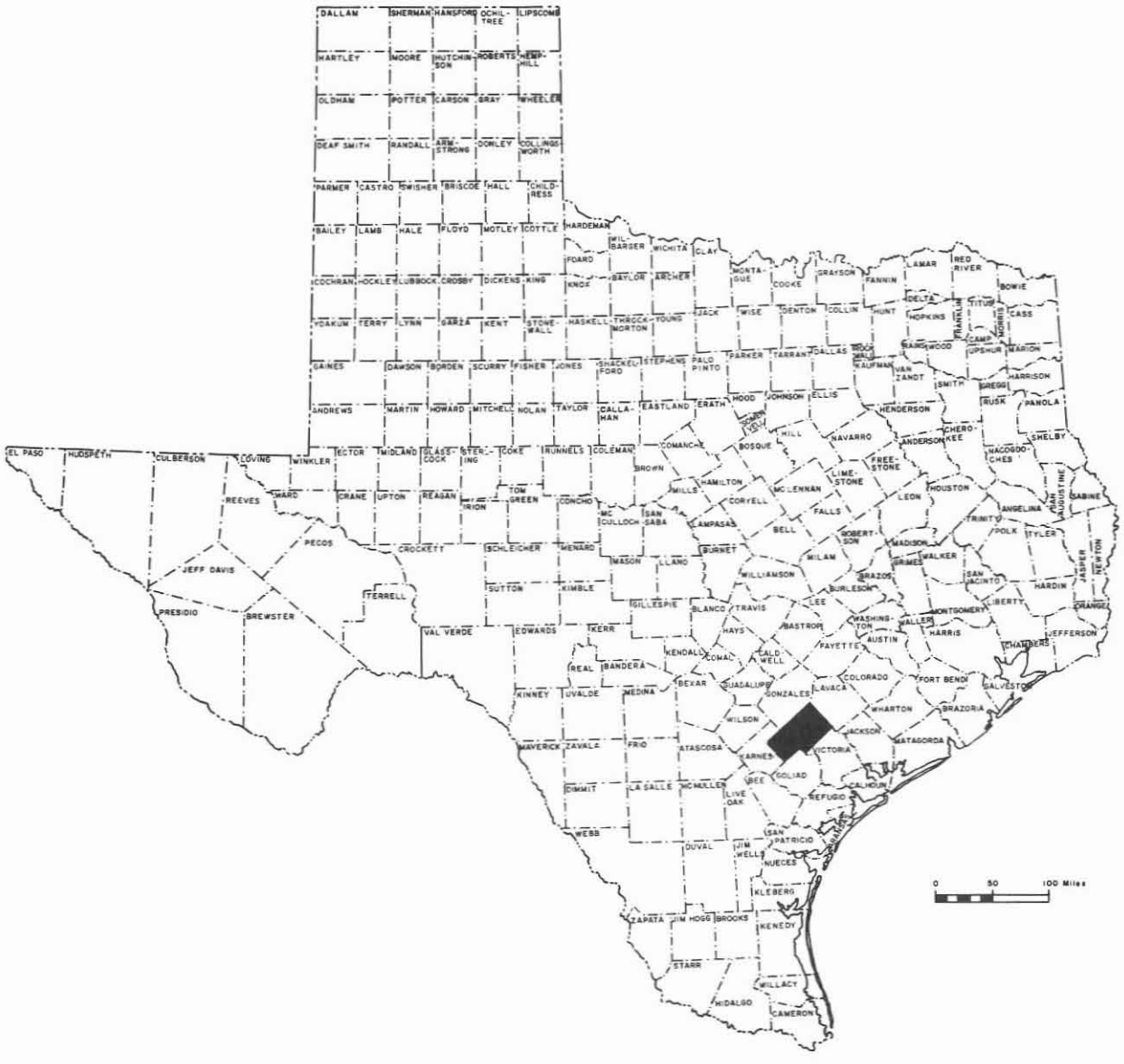

Figure 1

Map of Texas Showing Location of De Witt County

U.S. Geological Survey in cooperation with the Texas Water Commission and Others

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Well-Numbering System

The numbers assigned to wells in this report conform to the statewide system used by the Texas Water Commission. The system is based on the division of Texas into 1-degree quadrangles bounded by lines of latitude and longitude. Each 1-degree quadrangle is divided into 64 smaller quadrangles, $7\frac{1}{2}$ minutes on a side, and each of those is further divided into 9 quadrangles, $2\frac{1}{2}$ minutes on a side. Each of the 1-degree quadrangles in the State has been assigned a 2-digit number for identification. The $7\frac{1}{2}$-minute quadrangles are numbered with 2-digit numbers consecutively from left to right beginning in the upper left-hand corner of the 1-degree quadrangle, and the $2\frac{1}{2}$-minute quadrangles within each $7\frac{1}{2}$-minute are similarly numbered with a 1-digit number. The well number is determined as follows: From left to right, the first 2 numbers identify the 1-degree quadrangle; the next 2 numbers identify the $7\frac{1}{2}$-minute quadrangle; the fifth number indicates the $2\frac{1}{2}$-minute quadrangle, and the last 2 numbers designate the well in the $2\frac{1}{2}$-minute quadrangle. In this report, the 1-degree and $7\frac{1}{2}$-minute quadrangles are shown on the maps; the $2\frac{1}{2}$-minute quadrangles are not shown as they would obscure other details. Figure 2 illustrates the well-numbering system. In addition to the 7-digit well number, a 2-letter prefix is used to identify the county. The prefix for De Witt County is HX.

Previous Investigations

Previous investigations relating to the ground-water resources of De Witt County have consisted of a well-inventory report and several reconnaissance-type investigations covering large areas which included parts of the county. The well-inventory report (Mapp, 1938) contains records of 265 wells, 234 chemical analyses of water samples, drillers' logs of 10 wells, logs of 36 shallow test holes, and a map showing well locations. Some of the data are included in this report. Table 1 shows the well numbers used by Mapp and the corresponding numbers used in this report.

Descriptions of geologic features in the county were included in reports by Deussen (1924), and Sellards, Adkins, and Plummer (1932). The public water supplies of four towns in the county were described briefly by Broadhurst, Sundstrom, and Rowley (1950, p. 42-46), and Sundstrom, Hastings, and Broadhurst (1948, p. 190-191).

The ground-water resources of parts of the county were discussed in reconnaissance reports on the Gulf Coast region by Wood (1956) and Wood, Gabrysch, and Marvin (1963). Most of the county was included in a reconnaissance study of the Guadalupe, San Antonio, and Nueces River Basins by Alexander, Myers, and Dale (1964).

Economic Development

The economy of De Witt County is dependent chiefly on the raising of livestock, farming, and small industry. The raising of beef cattle and dairying are important livestock operations, and the raising of hogs, sheep, and goats are of less importance. The county also is widely known for its turkey raising; other poultry operations include large-scale broiler-fryer and egg production. The principal crops grown in the county are grain sorghum, cotton, and corn; some of the minor crops raised are tomatoes, pecans, beans, beets, sesame, and flax.

Practically none of these crops are irrigated. Some irrigation takes place on crops such as oats and sudan, and some on improved pastures as part of livestock raising and dairying.

Industries in the county include cotton seed oil mills, textile mills, creameries, poultry processing, canning, and the manufacturing of leather goods.

The most important mineral resources are oil and gas. The first oil-producing well in De Witt County was discovered in 1930. The cumulative oil production through 1962 was 29,393,443 barrels; the production in 1962 was 1,499,931 barrels (Railroad Commission of Texas, 1963, p. 59-84). Gas is second in importance; of lesser importance is the production of sand, gravel, brick-clay, and Fuller's earth.

Topography and Drainage

The land surface of De Witt County is gently rolling except for a small part in the eastern corner, which is almost flat. The areas of greatest relief are mostly along the northwest county line. The altitude of the land surface ranges from slightly less than 150 feet in the eastern corner of the county to more than 540 feet about one-half mile east of the junction of the Gonzales, Karnes, and De Witt County lines.

Most of the county lies in the drainage basin of the Guadalupe River, one of the major rivers in Texas. A small area in the northern part of the county is in the Lavaca River Basin, and a small area in the south drains into the San Antonio River. The Guadalupe River, a perennial stream, is fed by large springs at New Braunfels and San Marcos which help to maintain the low flow of the river in De Witt County during periods of drought.

Climate

De Witt County has a subhumid climate coupled with mild winters and the hot summers. The annual precipitation at Cuero during the period 1910-62 averaged 33.65 inches and ranged from 12.83 inches in 1917 to 59.13 inches in 1914. The monthly precipitation is rather evenly distributed throughout the year, the average ranging from 2.08 inches in March to 4.13 inches in May (Figure 3). The monthly precipitation during the period of record ranged from a trace in June 1917 to 18.59 inches in October 1960. The occasions of far-above-average rainfall usually are caused by tropical storms or hurricanes during the summer or fall. During the 53-year period of record, there were 30 years of below-average rainfall and 22 years above average; in 1 year the record was incomplete (Figure 3).

The average annual temperature at Cuero was 70.1°F during the period 1888-1962, the average monthly temperature ranging from 53.3°F in January to 85.2°F in August (Figure 4). The highest and lowest temperatures recorded by the U.S. Weather Bureau at Cuero were 108°F in August 1962 and 11°F in December 1962.

The weather station nearest De Witt County having a long record of evaporation is at Beeville, 55 miles southwest of Cuero, where the average annual evaporation for the period 1915-62 was 60.52 inches (Figure 4). The monthly rate of evaporation ranged from 1.41 inches in December 1923 to 12.37 inches in July 1955, and the annual evaporation ranged from 48.09 inches in 1919 to 85.22

Table 1.--Well numbers used in this report and corresponding numbers used in the report by Mapp (1938)

New number	Old number	New number	Old number	New number	Old number
HX-66-57-101	375	HX-67-53-402	120	HX-67-55-604	357
67-46-302	308	403	117	701	347
405	304	404	116	904	362
407	303	405	115	905	358
502	305	501	114	906	359
602	319	704	105	907	350
604	307	802	130	56-101	356
701	301	54-101	123	401	366
702	122	201	327	502	367
801	317	401	124	701	363
47-102	311	402	127	805	369
401	320	403	126	59-803	21
502	321	501	125	902	18
701	331	805	169	60-102	9
702	324	55-304	355	301	5
801	340	305	354	402	14
902	335	306	353	403	16
903	336	307	352	703	23
908	338	401	348	61-101	136
909	337	402	346	303	132
52-805	2	403	345	402	138
902	102	501	349	601	149
903	103	602	351	602	146

(Continued on next page)

Table 1.--Well numbers used in this report and corresponding numbers used in the report by Mapp (1938)--Continued

New number	Old number	New number	Old number	New number	Old number
HX-67-61-701	140	HX-67-63-804	187	HX-79-05-502	76
702	139	905	190	602	225
801	141	64-304	374	603	77
62-102	152	305	376	705	73
205	163	306	373	707	75
206	162	405	379	06-103	223
207	164	607	377	105	218
208	166	702	381	205	229
209	165	79-03-203	26	302	199
304	180	301	24	406	231
401	157	04-101	32	408	226
402	154	102	33	503	239
403	148	302	47	505	230
602	205	303	46	702	233
702	214	403	56	703	237
902	204	404	55	803	236
903	203	703	58	804	235
63-203	186	805	65	805	234
301	361	901	66	07-202	195
401	185	05-102	72	302	193
402	182	203	71	401	197
403	183	204	70	12-104	59
603	380	403	69	105	61
803	189	405	67		

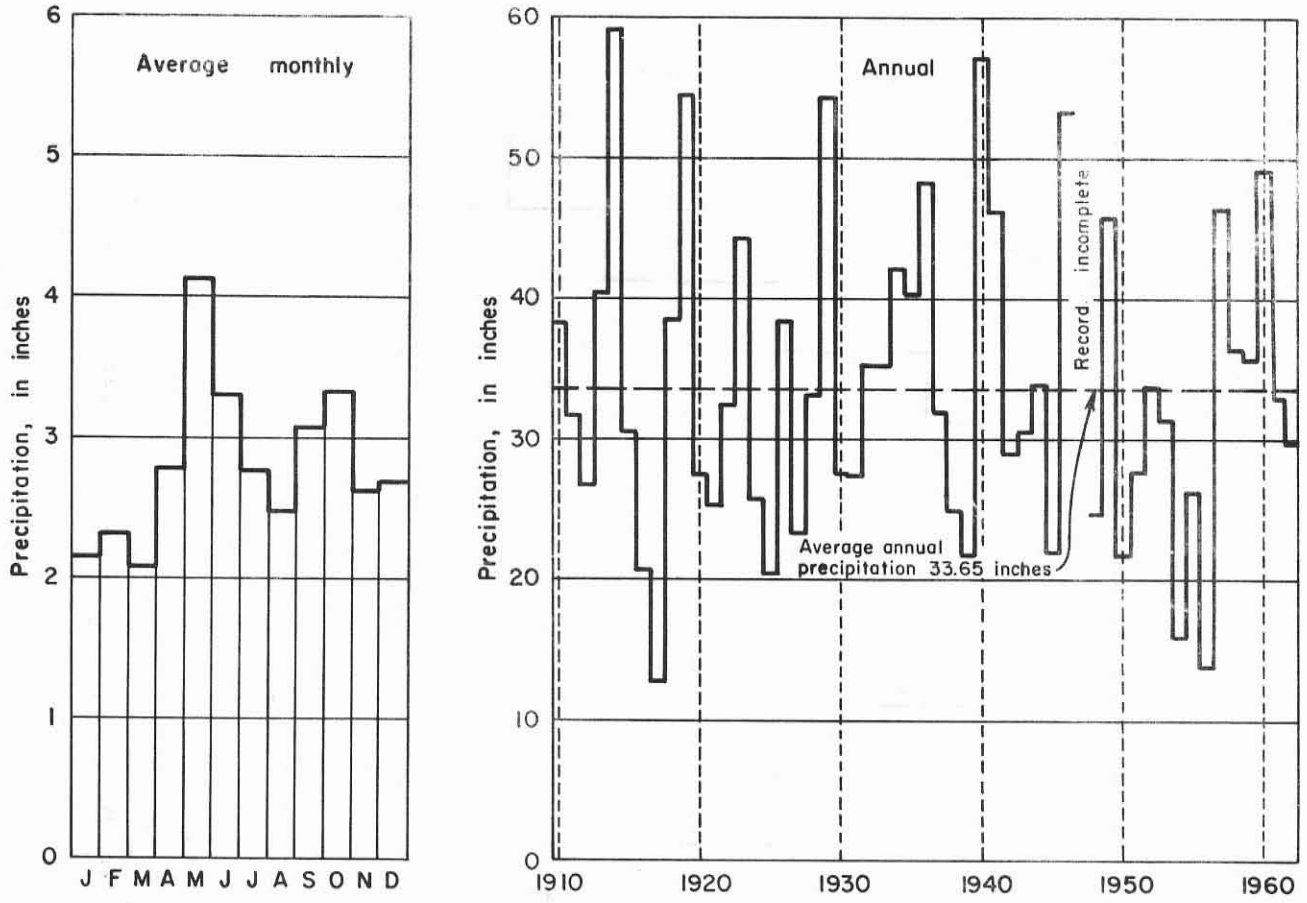

Figure 3

Average Monthly and Annual Precipitation at Cuero, Texas, 1910-62

(Data from U. S. Weather Bureau)

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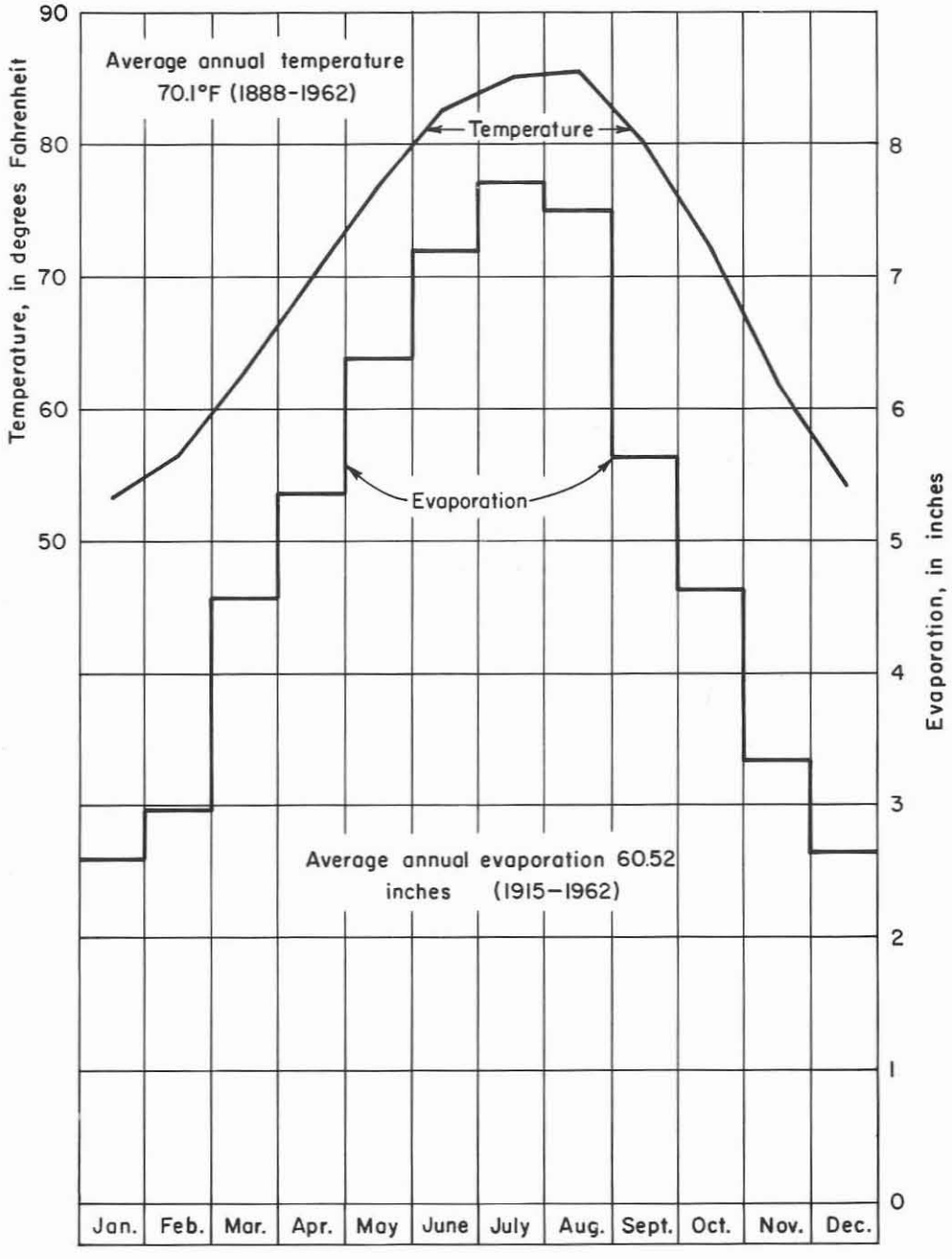

Figure 4

Average Monthly Temperature at Cuero and Average Monthly Evaporation at Beeville, Texas

(From U. S. Weather Bureau and Bloodgood, Patterson, and Smith, 1954)

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inches in 1955. The evaporation rate probably is slightly lower at Cuero than it is at Beeville; however, the record at Beeville is nearly representative of the De Witt County area.

Acknowledgments

The writers express their appreciation for the well information and assistance furnished by town officials, farmers, ranchers, and personnel of the U.S. Bureau of Reclamation, the Texas Highway Department, and the U.S. Department of Agriculture. Geologic data were supplied by personnel of several oil companies and by Gary Bowman, consulting geologist at Seguin. The De Witt County Electric Co-operative, Inc. furnished records of power consumption for some of the irrigation wells. Special acknowledgment is made to the well drillers of the area, particularly Arthur Schumacher and Sons, H. and S. Drilling Co., Layne-Texas Co., and Markus Ploeger.

Definitions of Terms

In the following sections of the report, certain technical terms or terms subject to different interpretations are used. For convenience and clarification, these terms are defined as follows:

Aquifer.--A geologic formation, group of formations, or part of a formation that is water bearing.

Aquiclude.--A geologic formation, group of formations, or part of a formation which, although porous and capable of absorbing water slowly, will not transmit it fast enough to furnish an appreciable supply for a well or spring.

Artesian water.--Ground water that is under sufficient pressure to rise above the level at which it is found in a well; it does not necessarily rise to or above the surface of the ground.

Coefficient of permeability.--The rate of flow of water in gallons per day through a cross sectional area of 1 square foot under a unit hydraulic gradient.

Coefficient of storage.--The volume of water an aquifer releases from or takes into storage per unit of surface area of the aquifer per unit change in the component of head normal to that surface.

Coefficient of transmissibility.--The number of gallons of water which will move in one day through a vertical strip of the aquifer 1 foot wide and having the height of the aquifer when the hydraulic gradient is unity. It is the product of the field coefficient of permeability and the saturated thickness of the aquifer.

Resistivity.--That property of a material that characterizes its opposition to the flow of electricity. The resistivity of a water-saturated material is a function of both the texture of the material and the contained fluid and is recorded in ohms per square meter per meter (ohms m^2/m). This is a term that pertains to electric logs of wells.

Spontaneous potential.--The spontaneous potential curve on electric logs indicates the difference in electrical potential across boundaries of different types of material. Spontaneous potential is recorded in millivolts.

Water table.--The water table is the upper surface of a zone of saturation except where that surface is formed by an impermeable body.

Water level; static level; hydrostatic level.--In an unconfined aquifer, it is the distance from the land surface to the water table. In a confined (artesian) aquifer, it is the level to which the water will rise above or below the land surface.

Piezometric surface.--The imaginary surface to which water will rise in artesian wells and the surface formed by the water table in the outcrop areas. The terms are synonymous in the outcrop area, but the term piezometric surface alone is applicable in artesian areas.

Yield.--The following ratings apply for general discussions of yields of wells in De Witt County.

Description	Yield (gallons per minute)
Small	Less than 50
Moderate	50 to 500
Large	More than 500

Specific capacity.--The discharge of a well expressed as the rate of yield per unit of drawdown, generally in gallons per minute per foot of drawdown.

Specific conductance (conductivity).--Specific conductance, which is expressed in micromhos per centimeter at 25°C, is a measure of the ability of a solution to conduct electricity. It is approximately proportional to the content of dissolved solids. Herein, it is used in connection with the description of the quality of water.

Transmission capacity.--The quantity of water which can be transmitted through a given width of an aquifer at a given hydraulic gradient.

GEOLOGY AS RELATED TO THE OCCURRENCE OF GROUND WATER

Stratigraphic Units and Their Water-Bearing Properties

The geologic formations penetrated by water wells in De Witt County range in age from Miocene to Recent, and are composed chiefly of sand, sandstone, gravel, and clay (Table 2). Ground water is obtained principally from the Goliad Sand, Lagarto Clay, Oakville Sandstone, and Catahoula Tuff, all of Tertiary age; minor amounts of water are obtained from the alluvial deposits of Quaternary age.

The geologic formations that crop out in De Witt County lie as more or less parallel bands that trend roughly northeastward (Plate 1), with the oldest

Table 2.--Stratigraphic units and their water-bearing properties in De Witt County

System	Series	Stratigraphic unit	Approximate maximum thickness (feet)	Character of formation	Water-bearing properties
Quaternary	Recent	Alluvium	48	Clay, silt, sand, and gravel.	Yields small supplies of water to a few domestic and stock wells. Large yields may be obtained locally.
	Pleistocene	Lissie Formation	30±	Beds of sand containing lenses of gravel and layers of clay and silt.	Not known to yield water to wells in De Witt County.
Tertiary	Pliocene	Goliad Sand	500	Predominantly sand and sandstone containing some clay, caliche, and gravel.	Yields small to moderate supplies of water to domestic, stock, and irrigation wells.
	Miocene(?)	Lagarto Clay	1,500	Clay and sandy clay containing interbedded layers of sand, sandstone, gravel, and conglomerate.	Yields small to large supplies of water.
	Miocene	Oakville Sandstone	950±	Cross-bedded sand and sandstone containing interbedded sandy, ashy, or bentonitic clay.	Yields small to large supplies of water to municipal and irrigation wells.
	Miocene(?)	Catahoula Tuff	1,700±	Predominantly tuff, tuffaceous clay, and sandy clay containing sand and sandstone lenses.	Yields small to large supplies of water.
	Oligocene(?)	Frio Clay	200±	Predominantly clay with a little sand and sandy clay.	Not known to yield water to wells in De Witt County.
	Eocene	Jackson Group	1,700±	Sand, clay, silt, and volcanic ash.	Not known to yield water to wells in De Witt County. Electric logs indicate that the unit contains only saline water in De Witt County.

formation, the Catahoula Tuff, cropping out in the northwestern part of the county. The formations dip gently and thicken southeastward, causing each formation to have a slightly steeper dip than the overlying formation. The dips range from about 50 to 200 feet per mile.

The three geologic sections (Plates 2, 3, and 4), which were constructed from electric logs of wells, show the base of fresh to slightly saline water in De Witt County and the thickness of the various formations or groups of formations. The locations of the geologic sections are shown on Plate 1.

Jackson Group

The Jackson Group of formations does not crop out in De Witt County but underlies the county at depths that range from about 800 feet in the northwestern part of the county to about 3,800 feet in the southeastern part. The Jackson Group dips southeastward about 200 feet per mile and has a maximum thickness of about 1,700 feet. It contains about 40 percent sand, 40 percent sandy or ashy clay, 10 percent clay, 5 percent bentonite, 4 percent quartzite, and 1 percent lignite (Sellards, Adkins, and Plummer, 1932, p. 690).

No wells are known that tap the Jackson Group in De Witt County, and electric logs indicate that it contains only saline water in the county.

Catahoula Tuff and Frio Clay, Undifferentiated

The contact in the subsurface between the Catahoula Tuff and the Frio Clay is not readily identified in electric logs; hence, the two formations are not differentiated in the geologic sections (Plates 2, 3, and 4).

The Frio Clay unconformably overlies the Jackson Group; it does not crop out in De Witt County. The Frio is composed principally of clay and some sand or sandy clay; the unit has a maximum thickness of about 200 feet. The Frio is probably not a source of ground water in the county.

The Catahoula Tuff crops out in small areas in the vicinity of Hochheim and Westhoff (Plate 1). The Catahoula thickens downdip, reaching a maximum thickness of about 1,700 feet. The Catahoula contains about 60 percent pyroclastic material, largely ash or tuff; 20 to 30 percent sandstone; 10 to 20 percent clay; and minor amounts of conglomerate (Sellards, Adkins, and Plummer, 1932, p. 721). Beds of white to greenish-gray volcanic tuffs are interbedded with tuffaceous sand and clay and discontinuous lenses of sandstone and clay.

The Catahoula supplies small to large quantities of water to wells in its outcrop area and for a few miles downdip. Most of the wells are used for domestic and stock purposes; Well HX-67-54-601, used for irrigation, yields about 600 gpm (gallons per minute) from the Catahoula.

Plates 2, 3, and 4 show the extent of fresh to slightly saline water in the Catahoula Tuff in De Witt County. In and near the outcrop area, the base of the fresh to slightly saline water approximates the base of the Catahoula. Downdip, however, the fresh to slightly saline water-bearing zone thins rapidly and the water becomes moderately saline along a line that extends roughly northeastward from Yorktown to Cuero. East and northeast of Cuero, the fresh to slightly saline water extends somewhat farther downdip.

Oakville Sandstone

The Oakville Sandstone crops out in a belt about 8 miles wide extending northeastward across the county (Plate 1). The Oakville is unconformably overlain by the Lagarto Clay, but the contact is not readily identified in electric logs; hence, the two formations are not differentiated in the geologic sections (Plates 2, 3, and 4).

The Oakville Sandstone has a maximum thickness of about 950 feet and consists of about 40 percent sand or sandstone, 30 percent sandy and ashy or bentonitic clay, 20 percent marl, 5 percent redeposited Cretaceous shells, and 5 percent gravel (Sellards, Adkins, and Plummer, 1932, p. 734). Much of the sand and sandstone is crossbedded and is generally coarser and more massive than the sands in the overlying Lagarto Clay or the underlying Catahoula Tuff.

The Oakville Sandstone, one of the principal aquifers in De Witt County, supplies small to large quantities of water to wells principally for municipal and irrigation supply; yields as great as 1,000 gpm have been reported. Fresh to slightly saline water in the Oakville extends to a depth of about 1,800 feet in the eastern part of the county.

Lagarto Clay

The Lagarto Clay crops out chiefly in an irregular belt extending eastward across the central part of the county (Plate 1); it crops out also along the major streams in the south-central part of the county. The Lagarto Clay has not been differentiated from the adjoining formations in the geologic sections (Plates 2, 3, and 4), but it probably attains a maximum thickness of about 1,500 feet in the southeastern part of the county.

The Lagarto Clay consists of clay and sandy clay and interbedded clay, sandstone, gravel, and conglomerate. The beds of sand commonly are lenticular but are hydraulically connected. The Lagarto is similar in lithologic character to the underlying Oakville Sandstone except that it contains a much larger proportion of clay, the sand is finer grained, and the beds of sand are less massive.

The sand beds of the Lagarto Clay form an important aquifer in the county. Most of the wells in the outcrop area yield small to moderate supplies, but large yields, as much as 800 gpm, have been reported. Larger supplies might be obtained from wells that are properly constructed and screened opposite all the sand beds.

Most of the municipal supplies of Yoakum and a small part of Cuero's are obtained from the Lagarto. In addition, the Lagarto supplies water to eight wells used for irrigation in the county.

Goliad Sand

The Goliad Sand, which unconformably overlies the Lagarto Clay and is not differentiated from it in well logs, crops out in the southern and southeastern parts of the county (Plate 1). The full width of the outcrop is present only in the southeast corner where it is 6 miles wide. The Goliad Sand has been removed by erosion along the Guadalupe River, and along Twelve-Mile Coleto,

Coleto, Manahuilla, and other creeks (Plate 1), leaving areas of Goliad Sand separated by narrow tongues of Lagarto Clay.

The Goliad Sand has a maximum thickness of about 500 feet in the southeastern part of De Witt County. The Goliad is predominantly sand and sandstone interbedded with clay and gravel. Pink clay and caliche are characteristic in the outcrop.

Many wells of small capacity obtain water from the Goliad for domestic and stock supplies. Locally, some wells used for irrigation and pipeline stations obtain water from both the Goliad Sand and the Lagarto Clay. Larger supplies, as much as 500 gpm, probably could be obtained from properly constructed wells in the southeastern and eastern parts of the county where the formation is thickest.

Lissie Formation

The Lissie Formation of Pleistocene age crops out in three areas in De Witt County: a triangular-shaped area centered about 6 miles northeast of Cuero, a narrow strip along the De Witt-Lavaca County line 5 to 10 miles southeast of Yoakum, and along the De Witt-Victoria County line northeast of Thomaston (Plate 1). The Lissie consists of sand containing lenses of gravel and layers of clay and silt, and has a maximum thickness in the county of about 30 feet. The Lissie is not known to yield water to wells, but it may serve as a catchment area for rainfall and, therefore, aid in the recharge to the underlying Goliad Sand.

Alluvium

Alluvial deposits, consisting of clay, silt, sand, and gravel, occur along the Guadalupe River and several of the larger streams in De Witt County. Only those deposits in the Guadalupe River Valley are shown in Plate 1.

Two terraces and the flood plain border the Guadalupe River at Cuero; the high terrace and the flood plain are not important as aquifers in De Witt County. The low terrace, which is equivalent probably to Terrace 1 and 2 of Deussen (1924, p. 117), ranges in width over wide limits, the maximum being about 4 miles, but the average width probably is about 2 miles. Logs of test holes drilled by the Texas Highway Department and the U.S. Bureau of Reclamation indicate that the alluvium in the low terrace has a maximum thickness of 48 feet. The average thickness is about 20 feet, of which less than half is saturated with fresh to slightly saline water.

The alluvial deposits supply small quantities of water to a few wells chiefly for domestic and stock supply. Larger yields may be obtained locally where the alluvium is thick and relatively extensive. For example, Well HX-67-62-206 in the low terrace at Cuero, reportedly yielded 200 gpm.

Occurrence of Ground Water

The occurrence of ground water as it applies to De Witt County is discussed briefly here. The general principles of the occurrence and movement of ground water in all types of rocks have been described by many workers including Meinzer (1923, p. 2-142), Meinzer and others (1942, p. 385-478), and Tolman (1937).

The source of ground water is precipitation on the surface of the earth. A large part of the precipitation runs off or is consumed by evapotranspiration, or is stored in the soil later to be evaporated or transpired. A small part of the water infiltrates through the soil and subsoil and moves downward to the water table and becomes recharge. Factors affecting recharge include the intensity and amount of rainfall, the slope of the land surface, type of soil, the permeability of the aquifer, quantity of water in the aquifer, and the evapotranspiration rate.

In the sandy outcrop areas, ground water is unconfined and is said to be under water-table conditions. Downdip from the recharge area, the aquifer may be overlain by less permeable material and the water becomes confined and is then said to be under artesian conditions.

Water under artesian conditions will, if not disturbed by man's withdrawals, rise in wells to an elevation equal to its elevation in the recharge area less the loss in head due to friction. Where the elevation of the land surface is considerably below the general level of the area of outcrop, the pressure may be sufficient to cause the water to rise a considerable distance in a well or even to flow. Several wells in the valley of the Guadalupe River and some of its larger tributaries flow small to moderate quantities of water.

Ground water moves slowly (tens to hundreds of feet a year) under the influence of gravity from areas of recharge to areas of discharge. Ground water may be discharged naturally through seeps and springs in the outcrop of the aquifer, by transpiration where the water table is close enough to the surface that it may be reached by the roots of the plants, and by seepage through semiconfining beds or along faults into another aquifer having a lower head or to the land surface; it may be discharged artificially through wells.

Ground-Water Development

The early settlers in De Witt County obtained their water supplies from shallow hand-dug wells and from springs and streams. At the present time (1963), all the municipal and domestic supplies and nearly all the industrial, irrigation, and stock supplies are obtained from ground-water sources.

Records of the average daily pumpage of ground water in De Witt County for the period 1949-62 are shown in Table 3. The records for the period 1949-54 are incomplete because they do not include the municipal pumpage at Nordheim and Yorktown for that period, but based on the population, the quantity of ground water pumped by the two towns during that period probably was small. The table shows that the pumpage increased from about 1,700 acre-feet (1.5 mgd) in 1949 to 3,700 acre-feet (3.3 mgd) in 1956, when rainfall was the lowest

Table 3.--Ground-water pumpage in De Witt County, 1949-62

Year	Municipal supply		Irrigation		Domestic and stock		Totals*	
	mgd	ac-ft/yr	mgd	ac-ft/yr	mgd	ac-ft/yr	mgd	ac-ft/yr
1949	1.05	1,177	0.05	60	0.4	450	1.5	1,700
1950	1.27	1,424	.12	140	.4	450	1.8	2,000
1951	1.33	1,491	.16	180	.4	450	1.9	2,100
1952	1.37	1,536	.07	84	.4	450	1.8	2,000
1953	1.40	1,569	.27	300	.4	450	2.1	2,400
1954	1.50	1,681	.38	430	.4	450	2.3	2,600
1955	1.55	1,737	.18	200	.4	450	2.1	2,400
1956	1.88	2,107	1.1	1,200	.4	450	3.3	3,700
1957	1.74	1,950	.51	570	.4	450	2.7	3,000
1958	1.69	1,894	.64	720	.4	450	2.6	2,900
1959	1.66	1,861	.36	400	.4	450	2.4	2,700
1960	1.72	1,928	.51	570	.4	450	2.6	2,900
1961	1.63	1,827	.59	660	.4	450	2.6	2,900
1962	1.87	2,096	.86	960	.4	450	3.1	3,500

* Figures are approximate because some of the pumpage is estimated. Municipal-supply figures are shown to the nearest 0.01 mgd and to the nearest acre-foot. Irrigation figures are shown to no more than two significant figures. Totals are rounded to two significant figures.

since 1917. The pumpage had decreased to 2,700 acre-feet by 1959, but since then, the withdrawals have increased until in 1962, 3,500 acre-feet (3.1 mgd) of ground water was pumped, probably reflecting the below normal rainfall during 1961 and 1962.

Between 1949 and 1962, withdrawals of ground water for municipal supply ranged from about 1,200 acre-feet (1.1 mgd) in 1949 to 2,100 acre-feet (1.9 mgd) in 1956 and 1962 (Table 4). According to Broadhurst and others (1950, p. 42-46) and Sundstrom and others (1948, p. 190-191), pumpage in 1942 and 1943 was about 1,100 acre-feet per year. Table 4 shows that pumpage for municipal supply increased steadily until 1957, but during the next 5 years, pumpage remained practically the same until 1962 when it increased sharply. Cuero was the principal user, pumping about 1,065 acre-feet, or nearly 1 mgd, in 1962.

Ground water is not used extensively for irrigation in De Witt County. In general, precipitation is sufficiently distributed for the growing of crops and pasture grass, but when precipitation is below normal, particularly during the growing season, ground water is used as a supplemental supply. The amount of ground water pumped for irrigation, the areas irrigated, and the number of wells in use since 1949 are shown in Table 5.

Pumpage of ground water for irrigation ranged from about 60 acre-feet in 1949 to 1,200 acre-feet in 1956 when precipitation was the lowest since 1917. Table 5 shows that the development of ground water for irrigation increased slowly during the period 1949-55. The number of wells available for use during this period increased from 2 to 5, but in 1956, 9 wells were drilled and a total of 14 were available for use. Since that time, the number of wells drilled each year has been small, and by 1962, 21 wells were available for use. The number of acres irrigated ranged from 110 to 970, and in 1962, about 960 acre-feet of water was pumped to irrigate about 910 acres.

Prior to about 1950, industries such as the railroads, cotton gins, and cotton oil and textile mills used fairly large quantities of ground water, but since the passing of steam power, only small quantities are used by industry in De Witt County. Because the industrial pumpage is so small, it is not shown in Table 3.

Most of the ground water pumped by industry was used for drilling oil test holes. Some ground water was pumped for pipeline stations, principally for cooling purposes, and a small amount was used for beverage processing.

Aquifer Tests

Aquifer tests were made in wells in De Witt County to determine the ability of the permeable sands to transmit and store water. The test data were analyzed by the Theis nonequilibrium method (Theis, 1935, p. 519-524) and the Theis recovery method (Wenzel, 1942).

Tests were made in six wells, two of which were in the Lagarto Clay, two in the Oakville Sandstone, one in the Catahoula Tuff, and one in the Goliad Sand and Lagarto Clay. The results of the tests are shown in Table 6. The coefficients ranged over wide limits and probably should not be considered as representative of the complete aquifer tested because wells are rarely, if ever, screened opposite all sands in an aquifer. These data, however, were used to compute the average permeability of the sands in the pumped zone; the

Table 4.--Municipal pumpage of ground water in De Witt County, 1949-62

Year	Cuero		Nordheim		Yoakum		Yorktown		Totals*	
	mgd	ac-ft/yr	mgd	ac-ft/yr	mgd	ac-ft/yr	mgd	ac-ft/yr	mgd	ac-ft/yr
1949	0.62	695	--	--	0.44	493	--	--	1.1	1,200
1950	.72	807	--	--	.54	605	--	--	1.3	1,500
1951	.75	841	--	--	.57	639	--	--	1.3	1,500
1952	.74	830	--	--	.63	706	--	--	1.4	1,600
1953	.74	830	--	--	.66	740	--	--	1.4	1,600
1954	.81	908	--	--	.69	773	--	--	1.5	1,700
1955	.60	673	0.06	67	.63	706	0.26	291	1.6	1,800
1956	.89	998	.06	67	.70	785	.23	258	1.9	2,100
1957	.75	841	.06	67	.72	807	.21	235	1.7	1,900
1958	.78	874	.06	67	.70	785	.15	168	1.7	1,900
1959	.79	886	.03	34	.69	773	.15	168	1.7	1,900
1960	.86	964	.03	34	.66	740	.17	191	1.7	1,900
1961	.85	953	.04	45	.61	684	.14	157	1.6	1,800
1962	.95	1,065	.04	45	.73	818	.15	168	1.9	2,100

* Figures are approximate because some of the pumpage is estimated. Figures are shown to the nearest 0.01 mgd and to the nearest acre-foot. Totals are rounded to two significant figures. Totals are incomplete for the period 1949-54 because data for Nordheim and Yorktown are not available.

Table 5.--Acres irrigated, quantity of ground water pumped, and number of irrigation wells in De Witt County, 1949-62

Year	Approximate acres irrigated	Ground water used		Number of wells available for use
		mgd	ac-ft*	
1949	110	0.05	60	2
1950	110	.12	140	2
1951	140	.16	180	2
1952	110	.07	84	2
1953	180	.27	300	2
1954	210	.38	430	3
1955	320	.18	200	5
1956	970	1.1	1,200	14
1957	970	.51	570	15
1958	500	.64	720	15
1959	870	.36	400	16
1960	870	.51	570	18
1961	920	.59	660	19
1962	910	.86	960	21

* Figures are rounded to two significant figures because they are calculated from combinations of kilowatt hours of electricity used and the owner's estimate of hours operated and acres irrigated.

permeability figures then were used to estimate the average transmissibility of all fresh to slightly saline water sands underlying De Witt County. The average transmissibility of the sands, indicated by the tests, ranged from about 50,000 gpd (gallons per day) per foot in the western and northwestern parts of the county, where only the Catahoula Tuff and the Oakville Sandstone are present, to about 100,000 gpd per foot in the southeastern part of the county, where the sands are thickest and include all the fresh-water-bearing formations that crop out in the county except the alluvium. On this basis, the average transmissibility of all the sands containing fresh to slightly saline water is about 75,000 gpd per foot.

The coefficients of storage obtained from the drawdown and recovery tests of Well HX-67-47-909 in the Lagarto Clay ranged between 0.007 and 0.01. However, tests of 5 wells in Karnes County showed that the coefficient of storage was considerably smaller, ranging between 0.000074 and 0.00011, and averaging 0.00012 (Anders, 1960, p. 30). These data indicate that the artesian coefficient of storage for the sands in De Witt County probably is on the order of 0.0001. Actually, the net, or long-term, coefficient of storage, which includes water released from storage as the result of draining, compaction, and depressurizing, is much greater, possibly as much as 0.10.

The coefficients of transmissibility and storage determined from aquifer tests may be used to predict the drawdown in water levels caused by a pumping well or by a general increase of pumping in the county. Figure 5 shows the theoretical relationship between drawdown and distance based on different coefficients of transmissibility. The calculations of drawdown were based on a withdrawal of 1,000 gpm (gallons per minute) continuously for 1 year from an extensive aquifer having a coefficient of storage of 0.0001 and coefficients of transmissibility as shown. As a result of pumping 1,000 gpm continuously for 1 year from the theoretical aquifer, the water level would decline about 47 feet at a distance of 1,000 feet from the pumped well, assuming a coefficient of transmissibility of 25,000 gpd per foot; the decline would be 32 feet at 5,000 feet from the well, and 10 feet at 60,000 feet.

Figure 6 shows the relation between drawdown and time in a well pumping 1,000 gpm from an infinite aquifer having a coefficient of storage of 0.0001 and a coefficient of transmissibility of 25,000 gpd per foot. A large part of the drawdown in the well takes place in the first few days of pumping, but the water level will continue to decline indefinitely until a source of recharge or discharge is intercepted. The drawdowns for rates other than 1,000 gpm can be determined by multiplying the values obtained in Figure 6 by the proper multiple of 1,000 because the drawdown is directly proportional to the pumping rate.

The specific capacity of a well is directly related to the transmissibility of the aquifer tapped. Table 6 shows that the specific capacities of five wells in which the aquifer tests were run ranged from 4.5 to 6.8 gpm per foot. However, the specific capacities of wells tapping the same formation may differ widely owing to the effects imposed by the difference in well construction, the degree of development, the rate of withdrawal, and the element of time. The specific capacities shown in Table 6 were determined from pumping tests of one to several hours duration. One or more of the above factors may account for the low specific capacities in some wells as compared with the relatively high transmissibility.

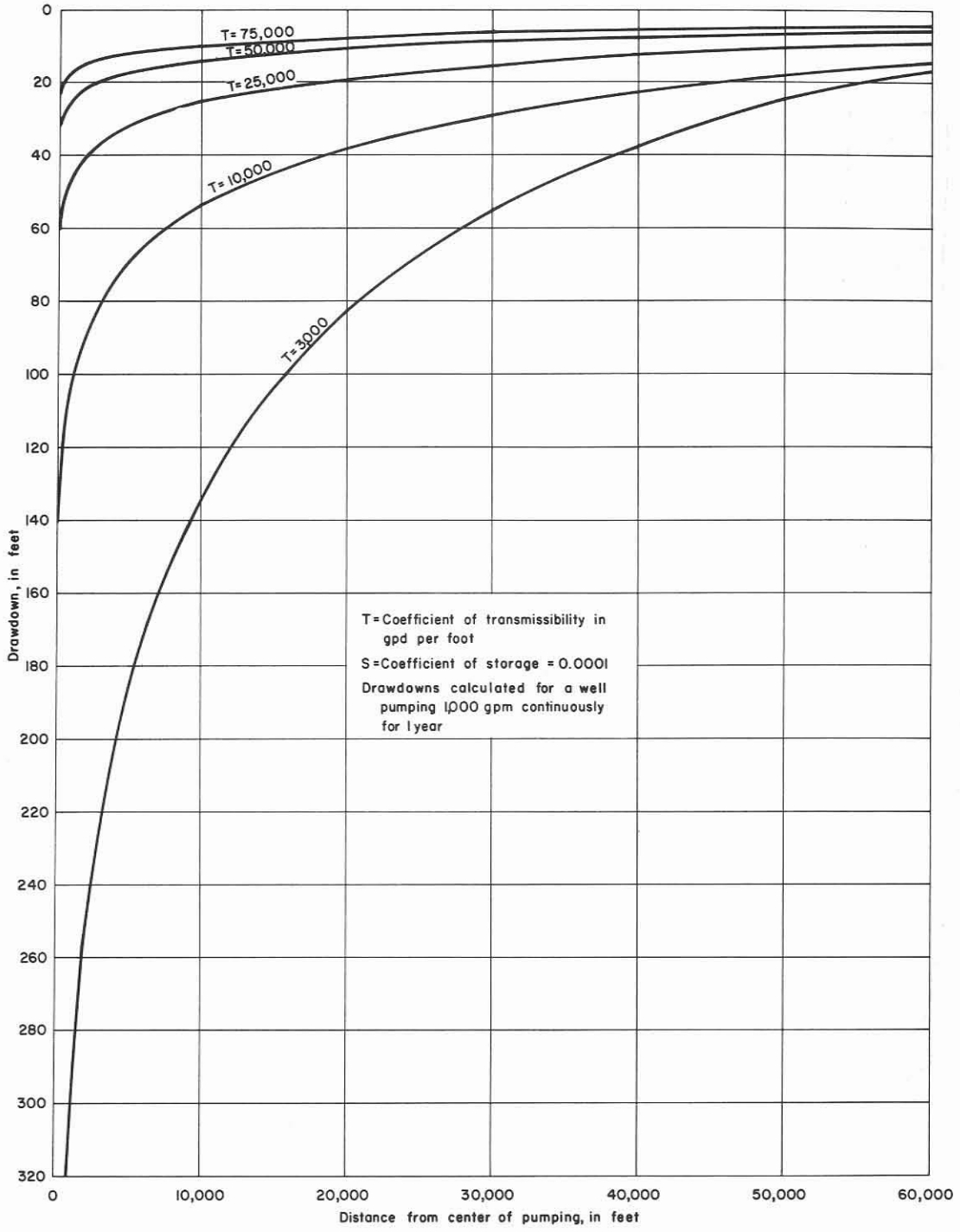

Figure 5

Relation Between Drawdown and Transmissibility in an Infinite Aquifer

U.S. Geological Survey in cooperation with the Texas Water Commission and Others

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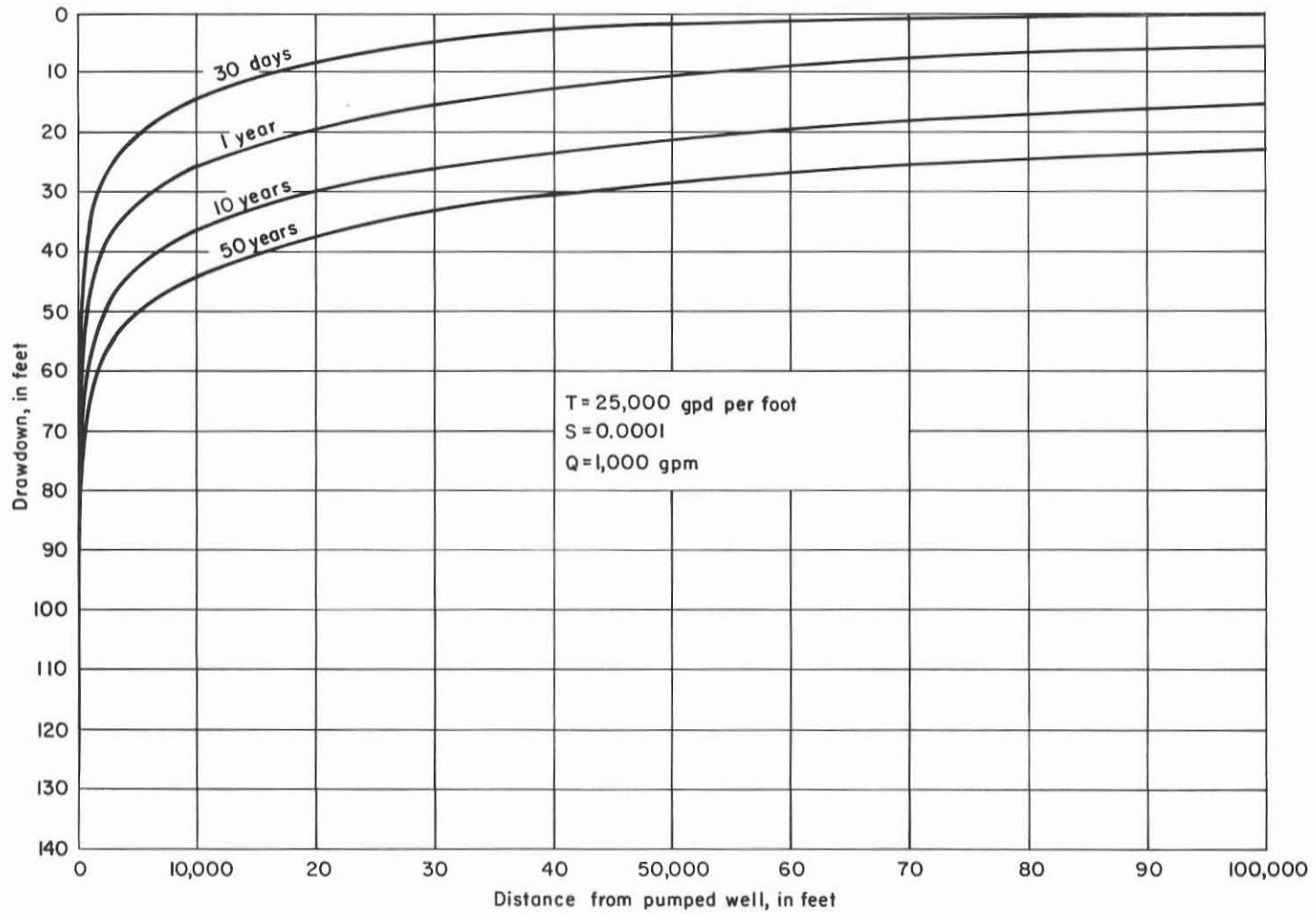

Figure 6

Relation Between Drawdown and Time

U.S. Geological Survey in cooperation with the Texas Water Commission and Others

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Table 6.--Summary of aquifer tests in De Witt County

Well tested	Depth interval screened (feet)	Pumping rate (gpm)	Coefficient of transmissibility (gpd/ft)	Coefficient of storage	Specific capacity (gpm/ft)	Remarks
HX-67-47-903 - City of Yoakum Well 3	Interval screened not known; depth 175 feet.	175	3,920	--	6.6	Drawdown of pumped well.
			3,350	--	6.6	Recovery of pumped well.
HX-67-47-909 - City of Yoakum railroad Well 1	40 - 79	--	35,000	7.0×10^{-3}	--	Drawdown caused by pumping 80 gpm from Well HX-67-47-908.
			27,000	1.0×10^{-2}	--	Recovery after pumping 80 gpm from Well HX-67-47-908.
HX-67-55-601 - Sidney Kaiser	88-94, 148-176, 207-220, 224-234	475	6,150	--	6.6	Recovery of pumped well.
HX-67-56-901 - Clifford Carroll	118-138, 155-188, 209-220, 224-234	220	14,900	--	4.5	Do.
HX-67-60-903 - Otis Skinner	210-227, 275-302, 338-360, 495-570	320	8,300	--	6.8	Do.
HX-79-04-402 - City of Nordheim Well 3	925-997, 1,018-1080	162	31,000	--	5.4	Do.

Changes in Water Levels

Water levels in selected wells in De Witt County were measured in 1936 or 1937, 1959, and during the period 1962-63 (Table 7). A comparison of water-level measurements made in 1936 or 1937 with measurements made in 1962 or 1963 in the same wells shows that in 30 wells the water-level decline ranged from 0.7 to 12.6 feet, and in 18 wells the level increase ranged from 0.3 to 15.0 feet. Little significance can be attributed to the changes in water levels over the 26-year period as no water-level trend can be inferred. Actually, the changes in some of the wells may reflect the difference in the time of the year in which the level was measured. Owing to variations in seasonal pumpage, measurements made in the winter are the most reliable for showing the net annual changes in water levels. Most of the wells in 1936 or 1937 were measured during the spring and early summer, whereas those in 1962 or 1963 were measured in the fall and early winter months. Furthermore, the depths of the wells range over wide limits; hence, the records of water levels in Table 7, as a whole, are not representative of a particular water-bearing formation.

Table 7 shows that since 1959, the water levels in 17 wells declined 0.6 to 13.5 feet, and in 9 the levels rose 0.1 to 2.9 feet. The largest declines were concentrated in an area about 8 miles northeast of Thomaston. The wells in this area have not been heavily pumped in recent years and the declines probably reflect pumping from nearby wells in Victoria County.

Well Construction

Large-capacity wells completed in the aquifers underlying De Witt County have been drilled to supply the needs of municipalities and some irrigation; whereas, smaller-capacity wells are used throughout the county to supply water for domestic and stock needs.

Recently drilled municipal wells are underreamed, screened and gravel packed. The gravel packing increases the effective diameter of the well, aids in preventing the entrance of sand into the well, and protects the casing from caving of the surrounding formation. A few of the earlier-drilled municipal wells were completed without gravel packing, but none are known that yield excessive quantities of sand.

Irrigation wells in De Witt County generally are designed to pump a large quantity of water at as low a cost as possible. A few of the wells used for irrigation are underreamed and gravel packed. The wells generally are finished with torch-slotted casing and little effort is made to relate the width of the slot to the diameter of the sand particles. If the slots are too large, considerable quantities of sand enter the well, resulting in wear of the pumps and casing. On the other hand, slots that are too small, or an insufficient number of slots, may cause excessive "entrance losses" in head, thereby reducing the specific capacities of the wells.

Stock and domestic wells generally are of small capacity; most are equipped with windmills, pumpjacks, or small jet pumps. Generally, they are cased with galvanized pipe nearly to the bottom of the well and no screen or slotted casing is used; these are usually called "open-end" wells. Although the stock and domestic wells usually are pumped at less than 5 gpm, they still are vulnerable to sand troubles and some must be cleaned periodically. When

Table 7.--Comparison of water levels in selected wells in De Witt County measured in 1936 or 1937, 1959, and 1962 or 1963

Well	Date	Water level, in feet below land surface	Date	Water level, in feet below land surface	Date	Water level, in feet below land surface	Changes in water level, in feet		
							1936-37 to 1959	1936-37 to 1962-63	1959 to 1962-63
HX-67-46-405	Apr. 29, 1937	16.5	--	--	Nov. 1, 1962	14.6	--	+ 1.9	--
407	May 25, 1937	17.9	--	--	do	30.5	--	-12.6	--
602	May 14, 1937	65.6	--	--	Nov. 2, 1962	63.0	--	+ 2.6	--
701	May 25, 1937	46.0	--	--	do	53.8	--	- 7.8	--
702	do	37.6	--	--	Nov. 1, 1962	36.8	--	+ .8	--
801	Apr. 29, 1937	36.9	--	--	Nov. 21, 1962	42.1	--	- 5.2	--
47-701	May 17, 1937	18.2	--	--	Nov. 2, 1962	20.0	--	- 1.8	--
801	May 6, 1937	61.0	--	--	Nov. 8, 1962	58.6	--	+ 2.4	--
903	May 12, 1937	17.8	June 17, 1959	20.4	--	--	- 2.6	--	--
52-805	June 17, 1937	126.1	--	--	Dec. 17, 1962	118.5	--	+ 7.6	--
903	July 6, 1937	47.8	--	--	Nov. 13, 1962	48.5	--	- .7	--
53-402	May 26, 1937	30.5	--	--	Nov. 6, 1962	33.9	--	- 3.4	--
403	Apr. 22, 1937	28.5	--	--	do	33.6	--	- 5.1	--
405	July 6, 1937	109.7	--	--	do	115.4	--	- 5.7	--
501	Apr. 22, 1937	95.6	Mar. 9, 1959	101.5	do	102.5	- 5.9	- 6.9	- 1.0
703	--	--	Feb. 15, 1959	82.2	Nov. 13, 1962	83.2	--	--	- 1.0
801	--	--	Feb. 10, 1959	38.8	Sept. 27, 1962	38.7	--	--	+ .1
802	May 26, 1937	33.6	--	--	Nov. 26, 1962	39.5	--	- 5.9	--
54-501	May 4, 1937	37.6	--	--	Nov. 21, 1962	35.5	--	+ 2.1	--
601	--	--	June 9, 1959	43.6	Nov. 28, 1962	45.3	--	--	- 1.7
803	--	--	Mar. 12, 1959	9.8	Nov. 2, 1962	16.0	--	--	- 6.2
805	Apr. 29, 1937	39.4	--	--	do	24.4	--	+15.0	--

Table 7.--Comparison of water levels in selected wells in De Witt County measured in 1936 or 1937, 1959, and 1962 or 1963--Continued

Well	Date	Water level, in feet below land surface	Date	Water level, in feet below land surface	Date	Water level, in feet below land surface	Changes in water level, in feet		
							1936-37 to 1959	1936-37 to 1962-63	1959 to 1962-63
HX-67-55-302	--	--	Mar. 11, 1959	50.6	Oct. 9, 1962	48.3	--	--	+ 2.3
501	June 18, 1937	79.4	--	--	Nov. 24, 1962	81.5	--	- 2.1	--
601	--	--	June 9, 1959	15.3	Oct. 9, 1962	13.9	--	--	+ 1.4
904	May 18, 1937	66.1	--	--	Sept. 26, 1962	57.8	--	+ 8.3	--
905	--	--	Mar. 12, 1959	60.4	Oct. 11, 1962	58.3	--	--	+ 2.1
907	June 18, 1937	101.5	--	--	Oct. 24, 1962	103.4	--	- 1.9	--
56-901	--	--	Mar. 9, 1959	61.7	Oct. 9, 1962	63.5	--	--	- 1.8
60-301	June 17, 1937	69.2	--	--	Nov. 26, 1962	63.6	--	+ 5.6	--
402	June 2, 1937	112.4	--	--	Dec. 17, 1962	123.2	--	-10.8	--
403	do	27.3	--	--	do	32.0	--	- 4.7	--
703	do	32.5	--	--	Dec. 18, 1962	36.4	--	- 3.9	--
903	--	--	Mar. 10, 1959	30.8	Sept. 27, 1962	29.5	--	--	+ 1.3
61-101	Apr. 23, 1937	32.8	--	--	Nov. 13, 1962	29.0	--	+ 3.8	--
301	--	--	Feb. 11, 1959	41.4	Nov. 6, 1962	47.7	--	--	- 6.3
62-206	Apr. 15, 1936	18.1	Apr. 20, 1959	16.9	--	--	+ 1.2	--	--
702	May 4, 1937	37.3	--	--	Nov. 7, 1962	47.0	--	- 9.7	--
903	May 5, 1937	90.5	--	--	Oct. 10, 1962	86.7	--	+ 3.8	--
63-403	May 3, 1937	29.7	--	--	Oct. 23, 1962	30.9	--	- 1.2	--
502	--	--	Feb. 17, 1959	15.4	Sept. 25, 1962	15.3	--	--	+ .1
64-201	--	--	May 4, 1959	56.7	Sept. 26, 1962	56.4	--	--	+ .3
502	--	--	Feb. 4, 1959	72.6	Sept. 25, 1962	74.0	--	--	- 1.4
504	--	--	Mar. 4, 1959	77.1	do	77.7	--	--	- .6

Table 7.--Comparison of water levels in selected wells in De Witt County measured in 1936 or 1937, 1959, and 1962 or 1963--Continued

Well	Date	Water level, in feet below land surface	Date	Water level, in feet below land surface	Date	Water level, in feet below land surface	Changes in water level, in feet		
							1936-37 to 1959	1936-37 to 1962-63	1959 to 1962-63
HX-67-64-505	--	--	Mar. 4, 1959	80.0	Sept. 25, 1962	83.2	--	--	- 3.2
506	--	--	do	79.8	Sept. 27, 1962	81.5	--	--	- 1.7
508	--	--	do	81.1	Jan. 1, 1963	84.7	--	--	- 3.6
509	--	--	do	70.3	Jan. 15, 1963	83.8	--	--	-13.5
606	--	--	Mar. 3, 1959	85.3	Sept. 25, 1962	91.2	--	--	- 5.9
607	June 16, 1937	44.6	--	--	Sept. 27, 1962	52.3	--	- 7.7	--
79-03-201	--	--	Apr. 7, 1959	12.4	Dec. 19, 1962	12.2	--	--	+ .2
203	June 9, 1937	23.0	--	--	do	30.6	--	- 7.6	--
301	June 8, 1937	63.5	--	--	do	54.5	--	+ 9.0	--
04-101	do	31.5	--	--	Nov. 15, 1962	31.2	--	+ .3	--
102	do	34.0	--	--	do	21.2	--	+12.8	--
402	--	--	Apr. 29, 1959	181.5	Apr. 29, 1963	186.4	--	--	- 4.9
403	May 7, 1937	59.5	--	--	Nov. 15, 1962	62.4	--	- 2.9	--
404	do	43.5	--	--	Jan. 8, 1963	49.2	--	- 5.7	--
601	--	--	June 18, 1959	65.6	Nov. 15, 1962	75.7	--	--	-10.1
603	--	--	do	65.4	do	66.1	--	--	- .7
704	June 1, 1937	96.8	--	--	do	92.7	--	+ 4.1	--
05-102	June 23, 1937	44.2	June 18, 1959	51.4	--	--	- 7.2	--	--
203	Apr. 21, 1937	38.0	--	--	Nov. 7, 1962	41.2	--	- 3.2	--
405	May 27, 1937	48.4	--	--	Nov. 14, 1962	52.2	--	- 3.8	--
502	June 23, 1937	11.6	--	--	Oct. 22, 1962	16.9	--	- 5.3	--
603	do	53.1	--	--	do	55.3	--	- 2.2	--

Table 7.--Comparison of water levels in selected wells in De Witt County measured in 1936 or 1937, 1959, and 1962 or 1963--Continued

Well	Date	Water level, in feet below land surface	Date	Water level, in feet below land surface	Date	Water level, in feet below land surface	Changes in water level, in feet		
							1936-37 to 1959	1936-37 to 1962-63	1959 to 1962-63
HX-79-06-101	--	--	Mar. 12, 1959	89.5	Sept. 27, 1962	90.7	--	--	- 1.2
103	Apr. 24, 1937	48.7	--	--	do	54.5	--	- 5.8	--
105	do	39.0	--	--	Nov. 7, 1962	44.0	--	- 5.0	--
202	--	--	Feb. 5, 1959	77.4	Oct. 10, 1962	74.5	--	--	+ 2.9
406	Apr. 21, 1937	57.1	--	--	Oct. 22, 1962	56.5	--	+ .6	--
408	June 23, 1937	55.1	--	--	do	57.8	--	- 2.7	--
805	June 22, 1937	42.7	--	--	Apr. 9, 1963	42.2	--	+ .5	--
07-302	May 15, 1937	49.2	--	--	Oct. 23, 1962	50.9	--	- 1.7	--
12-104	June 10, 1937	27.1	--	--	Nov. 14, 1962	26.1	--	+ 1.0	--
105	do	32.4	--	--	Jan. 8, 1963	40.0	--	- 7.6	--

larger yields are needed, the wells are completed with torch-slotted or perforated galvanized casing and equipped with submersible pumps or larger jet pumps.

Wells that supply water for oil well drilling rigs usually are finished by placing a joint or two of torch-slotted casing at the bottom of 4-inch black or ungalvanized casing. The wells are jetted with air or natural gas and may yield as much as 50 gpm of water and some sand. The water is discharged into a pit where the sand settles to the bottom. After the oil test is completed, the casing usually is pulled and the well abandoned.

Availability of Ground Water

The geologic formations containing fresh to slightly saline water in De Witt County include the Catahoula Tuff, Oakville Sandstone, Lagarto Clay, and Goliad Sand. Because these stratigraphic units are interconnected hydrologically, they are called collectively the Gulf Coast aquifer.

The wide range in the permeability of the water-bearing materials in De Witt County indicates that the yields of wells also will range over wide limits; it should be remembered, however, that the yields also depend on the thickness of the water-bearing material screened, the efficiency of the wells, and the available drawdown. In De Witt County, very few, if any, wells are screened in all the water-bearing material at any one location; therefore, many of the wells yield much less than the maximum that could be developed.

The yields of wells in De Witt County range from a few gallons per minute to as much as 1,000 gpm. Actually, yields as large as 2,000 gpm might be expected from properly constructed wells in some parts of the county. Figure 7 shows the estimated potential yields that might be obtained from wells in different parts of the county. These estimates are based on the thickness of fresh to slightly saline water-bearing sands (Figure 9), the estimated composite transmissibility of the water-bearing section, and the observed specific capacities and yields of wells in use during the investigation. Furthermore, these estimates assume that the wells would be properly constructed and screened opposite all sands containing fresh to slightly saline water.

Comparison of Figures 7 and 9 shows that the smallest yields would be obtained in the northwestern part of the county where the saturated sands are relatively thin; the largest yields would be obtained in the southern and southeastern parts of the county where the Gulf Coast aquifer is thickest. However, in localized areas, conditions may be such that yields may be considerably smaller than those shown in Figure 7. For example, in a small area about 2 miles west of Thomaston, wells may yield less than 700 gpm. The electric log of Well HX-79-07-201 indicates that the thickness of water-bearing material is somewhat less than 250 feet as compared to more than 400 feet in nearby wells. In this same well, the base of fresh to slightly saline water is at a depth of about 865 feet (705 feet below sea level) as compared to 1,650 feet (1,500 feet below sea level) in nearby wells.

The Gulf Coast aquifer contains fresh to slightly saline water to depths ranging from about 400 feet below sea level in the northwestern part of the county to slightly more than 1,700 feet in the southeastern part (Figure 8), or from about 800 to 1,800 feet below land surface. The saturated thickness of

sand that contains fresh to slightly saline water ranges from about 170 feet in the northwestern part of the county to about 590 feet in the southeastern part (Figure 9).

The volume of fresh to slightly saline water stored in the sands in the Gulf Coast aquifer in De Witt County is estimated to be 65 million acre-feet. However, only a small fraction of the water stored in the sands is economically recoverable by known methods at present costs. The amount of fresh to slightly saline water actually available to wells depends chiefly on the ability of the aquifer to transmit water, the amount of water in storage, and the rate of recharge.

In order to make a reasonable computation of the amount of water that might be made available to wells in De Witt County, several assumptions were made. First, it was assumed that wells were installed along a line extending northeastward through the approximate middle of the county and that the wells were pumped in such a way as to lower the water levels to 400 feet below the land surface along the line. It was assumed that during the pumping period, no water was recharged to the aquifer except along a line approximating the northwestern boundary of the county and that the recharge was adequate to keep the altitude of the water levels everywhere the same along the line of recharge. It was assumed also that the altitude of water levels was the same and remained the same both along the southeastern boundary of the county and at all points along the line of discharging wells. By lowering the water levels to 400 feet, a large segment of the aquifer would be dewatered; therefore, the coefficient of storage was assumed to be 0.10. The coefficient of transmissibility of the aquifer was assumed to be 75,000 gpd per foot. It was assumed that the hydraulic gradient in the aquifer is the slope of a straight line from the water level at the line of recharge to the water level along the line of discharging wells. The average transmission capacity is based on the 1962 hydraulic gradient and on the maximum hydraulic gradient.

Under these assumed conditions, about 12 million acre-feet of water would be available from storage in the Gulf Coast aquifer by lowering the water levels to 400 feet along the line of discharging wells. At the present (1962) hydraulic gradient of 1.9 feet per mile, the aquifer transmits about 6,500 acre-feet of water per year (6 mgd), which is nearly twice the 1962 pumping rate. At the average gradient (16.7 feet per mile) under the assumed conditions, however, the aquifer would transmit about 55,000 acre-feet per year (50 mgd). After the water levels were lowered to 400 feet, the aquifer would transmit about 100,000 acre-feet per year (90 mgd). Actually, the flow of water could be increased by installing the wells closer to the line of recharge, thereby increasing the maximum hydraulic gradient.

At the present (1962) rate of pumpage, about 3,500 acre-feet of water per year, and assuming no recharge to the aquifer, it would take about 3,400 years to pump the 12 million acre-feet of water that would be released from storage while the water level was being lowered to 400 feet along the line of discharge. If withdrawals were increased to as much as 110,000 acre-feet per year (100 mgd) and assuming full recharge and an average hydraulic gradient, it would take about 200 years to lower the water levels to 400 feet along the line of discharge; it would take only about 40 years of pumping 330,000 acre-feet per year (300 mgd) to lower the levels to 400 feet.

The amount of recharge on the estimated 450 square miles of effective recharge area in De Witt County necessary to replace the water moving downdip at the maximum transmission capacity (100,000 acre-feet per year) would be about 4.2 inches per year, or about 12 percent of the annual precipitation. It is doubtful whether recharge is adequate to maintain water levels in the outcrop at that rate; however, recharge probably is adequate to maintain water levels at the transmission capacity of the average gradient, 55,000 acre-feet per year (50 mgd). This would require about 2.3 inches of recharge per year.

Quality of Ground Water

The results of chemical analyses of 144 samples of ground water from 141 wells in De Witt County are shown in Table 10. The wells which have been analyzed chemically are indicated by means of bars over the well numbers on Plate 1.

The chemical analyses show that, in general, the ground water used in the county is of good chemical quality except that it is hard. They indicate also that softer water normally occurs more than 600 feet in depth, except in the deep saline-water-bearing sands.

The chemical constituents in ground water originate principally from the soil and rocks through which the water has passed; consequently, the differences in chemical character of the water reflect in a general way the nature of the geologic formations that have been in contact with the water. Generally, ground water is free from contamination by organic matter, but the chemical content of ground water usually increases with depth.

The suitability of a water supply depends upon the chemical quality of the water and the limitations imposed by the contemplated use of the water. Various criteria of water-quality requirements have been developed covering most categories of water quality, including bacterial content, physical characteristics, chemical constituents, and radioactivity. Usually, water-quality problems of the first two categories can be alleviated economically, but the removal or neutralization of undesirable chemical constituents can be difficult and expensive. For many purposes, the dissolved-solids content constitutes a major limitation on the use of the water. A general classification of water based on dissolved-solids content is as follows (Winslow and Kister, 1956, p. 5).

Description	Dissolved-solids content (parts per million)
Fresh	Less than 1,000
Slightly saline	1,000 to 3,000
Moderately saline	3,000 to 10,000
Very saline	10,000 to 35,000
Brine	More than 35,000

The dissolved-solids content in the 144 samples taken in De Witt County ranged from 190 to 2,240 ppm (parts per million), exceeding 1,000 ppm in only 16 samples.

The United States Public Health Service has established and periodically revises standards of drinking water to be used on common carriers engaged in interstate commerce. The standards are designed to protect the traveling public and may be used to evaluate public water supplies. According to the standards, chemical constituents should not be present in a water supply in excess of the listed concentrations shown in the following table, except where other more suitable supplies are not available. Some of the standards adopted by the U.S. Public Health Service (1962, p. 7-8) are as follows:

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

* When fluoride is present naturally in drinking water in De Witt County, the concentration should not average more than 0.8 ppm, based on an annual average of maximum daily air temperature ranging between 79.3 and 90.5°F.

The optimum fluoride level for a given community depends on climatic conditions because the amount of water (and consequently the amount of fluoride) ingested by children is influenced principally by air temperature. "Presence of fluoride in average concentrations greater than two times the optimum value [0.7 ppm for De Witt County] shall constitute grounds for rejection of the supply" (Public Health Service, 1962, p. 8). Excessive concentrations of fluoride in water may cause teeth to become mottled. Optimum fluoride concentrations may reduce the incidence of tooth decay in children with no ill effects (Dean, Arnold, and Elvove, 1942, p. 1155-1179; Dean and others, 1941, p. 761-792). The fluoride content in 95 samples in De Witt County ranged from 0.1 to 2.9 ppm, and exceeded the recommended upper limit of 0.8 ppm in 8 samples. However, it exceeded 1.4 ppm, which is two times the optimum value, in only 1 sample.

Concentrations of nitrate in excess of 45 ppm in water used for infant feeding have been related to the incidence of infant cyanosis (methemoglobinemia or "blue baby" disease), a reduction of the oxygen content in the blood constituting a form of asphyxia (Maxcy, 1950, p. 271). Nitrate is considered a final oxidation product of nitrogenous matter, and its presence in water of more than several parts per million may indicate previous contamination by sewage or other organic matter (Lohr and Love, 1954, p. 10). The nitrate content in 107 samples in De Witt County ranged from 0 to 407 ppm. The content exceeded 45 ppm in 13 samples; however, it should be noted that the high concentrations were found in relatively shallow wells, ranging in depth from 35 to 157 feet.

Excessive concentrations of iron and manganese in water cause reddish-brown or dark-gray precipitates that stain clothes and plumbing fixtures. Iron does not appear to be a serious problem in De Witt County. In 34 samples, the iron content ranged from 0 to 3.2 ppm and it exceeded 0.3 ppm in only 4 samples.

Water having a chloride content exceeding 250 ppm may have a salty taste. The chloride content in 144 samples ranged from 23 to 1,070 ppm, and exceeded 250 ppm in 24 samples. The high chloride content is not confined to any one part of the county or to any one formation, but is widely scattered throughout the county and occurs in all the formations that comprise the Gulf Coast aquifer.

Water containing sulfate in excess of 250 ppm may produce a laxative effect when first used for drinking. Sulfate is not a problem in De Witt County; the content was less than 190 ppm in all of the samples.

Calcium and magnesium are the principal constituents in water that cause hardness. Excessive hardness causes increased consumption of soap and induces the formation of scale in hot water heaters and water pipes. Commonly accepted standards and classifications of water hardness are shown in the following table.

Hardness range (ppm)	Classification
60 or less	Soft
61 - 120	Moderately hard
121 - 180	Hard
More than 180	Very hard

In general, the water in De Witt County is hard to very hard. The hardness, as determined in the 144 samples, ranged from 11 to 1,030 ppm; however, in only 11 samples was the hardness less than 61 ppm. The wells producing the soft water were deep, ranging in depth from 625 to 1,353 feet. Ground water that contains moderate quantities of dissolved material may change from hard to soft by ion exchange reactions in passage through sediments. In the Gulf Coast aquifer, the water in and near the outcrop may contain appreciable quantities of calcium and magnesium, whereas the water downdip may contain practically no calcium or magnesium. Sodium and bicarbonate are the principal constituents of the deeper fresh water.

The quality of water for industry does not depend necessarily on whether it is acceptable for human consumption. The quality of water needed for miscellaneous industries varies widely with the individual requirements of each type of process.

Ground water used for industry may be classified into three principal use categories--cooling, boiler, and process. Of these uses, the quantity used for cooling water far exceeds all others. Cooling water usually is selected for its temperature and source of supply, although its chemical quality also is significant. Any characteristic that may affect adversely heat-exchange surfaces is undesirable. Calcium, magnesium, aluminum, iron, and silica may cause scale. Corrosiveness is another objectionable feature. Acids, oxygen, carbon

dioxide, calcium and magnesium chloride, and sodium chloride in the presence of magnesium, make water corrosive.

Boiler water for the production of steam must meet rigid chemical-quality requirements. Here the problems of corrosion and encrustation are intensified greatly. Some treatment of boiler water may be needed, and it may be better to evaluate the water source for suitability of the water for treatment rather than for direct use as raw water. The calcium and magnesium content greatly affect the industrial value of the water by contributing to the formation of boiler scale. Silica in boiler water is undesirable because it forms a hard scale, the scale-forming tendency increasing with pressure in the boiler. The following table shows the maximum suggested concentrations of silica for water used in boilers (Moore, 1940, p. 263). The silica content of the water in De Witt County is rather high. In 100 samples, it ranged from 7.6 to 86 ppm, and in only 10 samples was it less than 20 ppm.

Concentration of silica (ppm)	Boiler pressure (pounds per square inch)
40	Less than 150
20	150 - 250
5	251 - 400
1	More than 400

The suitability of water for irrigation depends on the chemical quality of the water and other factors such as soil texture and composition, type of crops, irrigation practices, and climate. Many classifications of irrigation water express the suitability of the water in terms of one or more variables and offer criteria for evaluating the relative overall suitability of irrigation water rather than placing rigid limits on the concentrations of certain chemical constituents. The most important chemical characteristics pertinent to the evaluation of water for irrigation are the proportion of sodium to total cations, an index of the sodium hazard; total concentration of soluble salts, an index of the salinity hazard; residual sodium carbonate; and concentration of boron.

A high percentage of sodium in water tends to break down soil structure by deflocculating the colloidal soil particles. Consequently, the soil can become plastic, movement of water through the soil can be restricted, drainage problems can develop, and cultivation can be rendered difficult. A system of classification commonly used for judging the quality of water for irrigation was proposed by the U.S. Salinity Laboratory Staff (1954, p. 69-82). The classification is based primarily on the salinity hazard as measured by the electrical conductivity of the water and the sodium hazard as measured by the SAR (sodium-adsorption ratio). This classification of irrigation water is shown in Figure 10. The diagram shows that of 13 water samples from irrigation wells in De Witt County, the water from 10 wells was low in sodium hazard and medium to high in salinity hazard; water from the other three wells ranged from medium to very high in sodium hazard and high in salinity hazard.

Wilcox (1955, p. 15) stated that the system of classification used by the U.S. Salinity Laboratory Staff "...is not directly applicable to supplemental waters used in areas of relatively high rainfall." Thus, in De Witt County, the

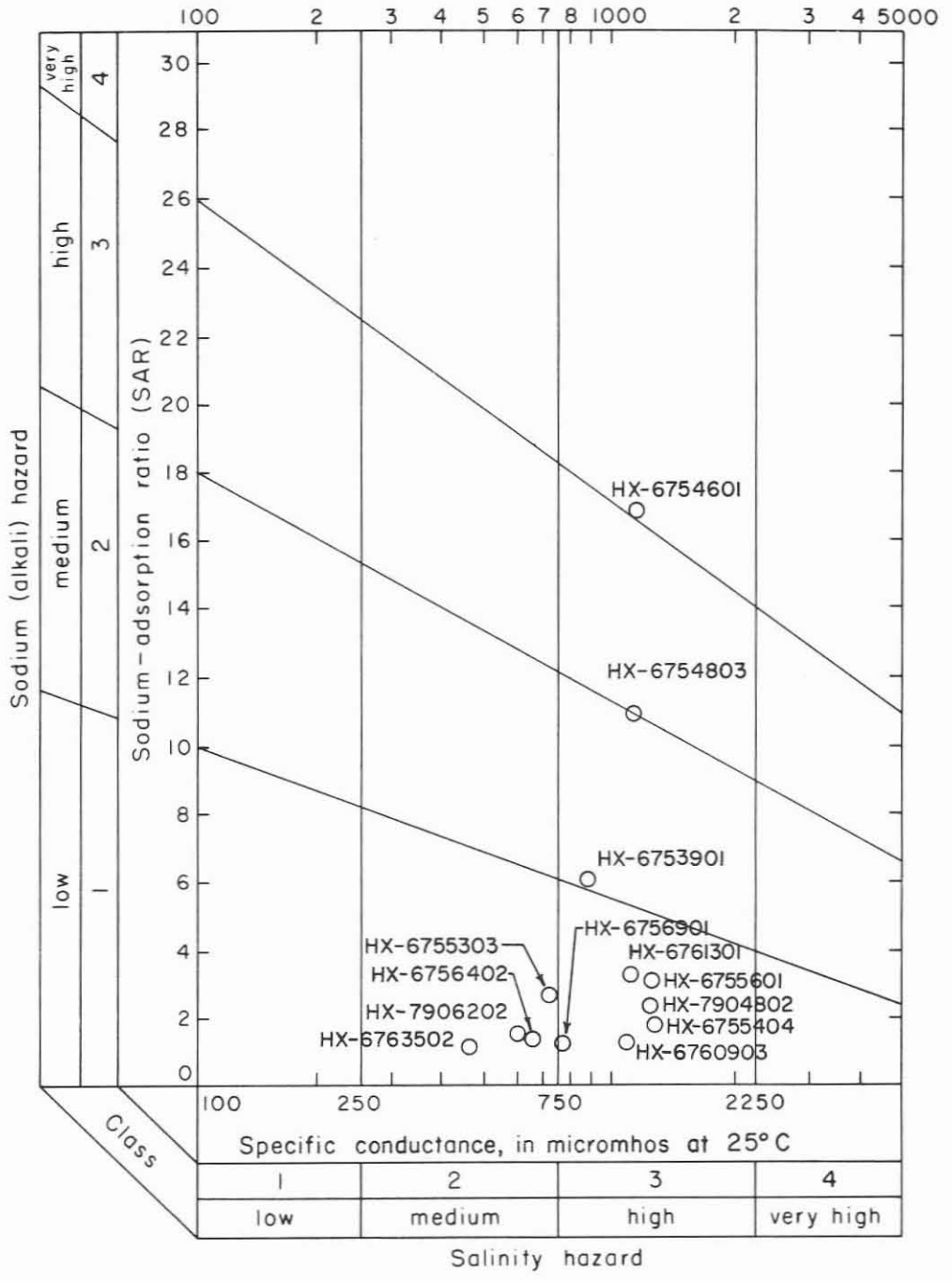

Figure 10

Diagram for the Classification of Irrigation Waters

(After United States Salinity Laboratory Staff, 1954, p. 80)

U.S. Geological Survey in cooperation with the Texas Water Commission and Others

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system may not be directly applicable; however, if the use of doubtful water is contemplated, consideration should be given to the type of soil to be watered, the local conditions of drainage, and the crops to be irrigated.

An excessive concentration of boron renders water unsuitable for irrigation. Scofield (1936, p. 286) indicated that boron concentrations of as much as 1 ppm are permissible for irrigating most boron-sensitive crops, and concentrations as much as 3.0 ppm are permissible for the more boron-tolerant crops. Table 10 shows that boron probably is not a serious problem in De Witt County. In 20 samples, boron ranged from 0.0 to 1.2 ppm; in 3 samples only, the boron content exceeded 0.5 ppm.

Another factor used in assessing the quality of water for irrigation is the RSC (residual sodium carbonate) in the water. Excessive RSC will cause the water to be alkaline, and the organic content of the soil will tend to dissolve. The soil may become a grayish black and the land areas affected are referred to as "black alkali." Wilcox (1955, p. 11) states that laboratory and field studies have resulted in the conclusion that water containing more than 2.5 epm (equivalents per million) RSC is not suitable for irrigation. Water containing from 1.25 to 2.5 epm is marginal, and water containing less than 1.25 epm RSC probably is safe. However, it is believed that good irrigation practices and proper use of amendments might make it possible to use the marginal water successfully for irrigation. Furthermore, the degree of leaching will modify the permissible limit to some extent (Wilcox, Blair, and Bower, 1954, p. 265). The RSC as determined in 102 samples in De Witt County ranged from 0 to 10.60 epm. Only 20 samples contained more than 2.5 epm and 77 contained less than 1.25 epm.

Although the ground water in De Witt County generally is of good chemical quality, it is possible that the fresh ground-water supplies may be contaminated either by the lateral or upward movement of salt water through the aquifers or by oil-field operations.

The possibility of serious salt-water contamination by lateral or upward movement through the sediments underlying or adjoining the fresh to slightly saline water is remote in De Witt County at the present (1962) stages of development. Of more immediate concern, however, is the possibility of contamination resulting from the disposal of oil-field brine. According to the Texas Railroad Commission, the amount of brine produced with the oil and gas in the county during 1961 was 4,702,541 barrels, of which about 49 percent or 2,308,303 barrels was disposed into unlined surface pits (Texas Water Commission and Texas Water Pollution Control Board, 1963, v. 1, p. 83). Contamination has been reported in at least one well in De Witt County. The well, 81 feet deep, was abandoned in 1955 and was replaced by Well HX-79-06-407, which was drilled to a depth of 315 feet. Whether contamination has occurred in a larger area could not be determined definitely because no other wells are known that tap the same sands. Furthermore, the brine that is added to the aquifer at one point may not affect the quality of water over a large area for many years because of the low velocity of movement of ground water in De Witt County. Where contamination has occurred, immediate rectification by merely removing the source of the contaminant may not be possible because dilution of the brine already present probably will require a long period of time.

CONCLUSIONS

De Witt County contains a large quantity of fresh or slightly saline ground water in storage in the Gulf Coast aquifer, which includes the Catahoula Tuff, Oakville Sandstone, Lagarto Clay, and Goliad Sand. About 65 million acre-feet of water is in storage, but only a small fraction of this is recoverable by known methods at present costs. A perennial supply of ground water from the Gulf Coast aquifer of about 50 mgd probably could be developed if the water level was lowered to 400 feet along a line of discharge trending northeastward across the center of the county.

The aquifers underlying De Witt County are practically untapped. In 1962, only 3,500 acre-feet, or 3.1 mgd, of ground water was pumped for public supply, irrigation, and domestic and stock purposes. The yields of wells in the county ranged from a few gallons a minute to as much as 1,000 gpm. Actually, yields as large as 2,000 gpm might be obtained from properly constructed wells in some parts of the county.

Most of the water pumped in De Witt County is of good chemical quality except that it is hard. The softer but more mineralized water locally occurs at about 600 or more feet in depth. At the present stage of development, contamination of the fresh to slightly saline water by the lateral or vertical movement of salt water is remote. However, the improper disposal of oil-field brine is a threat to the quality of the water in the aquifers underlying the county.

A program of water sampling is recommended to observe possible changes in the chemical quality of the ground water. A program of observation of water levels in key wells throughout the county also is suggested to be carried on concurrently with an annual inventory of pumpage.

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Table 8.--Records of wells in De Witt County

All wells are drilled unless otherwise noted in remarks column.
Water level : Reported water levels given in feet; measured water levels given in feet and tenths.
Method of lift and type of power : A, airlift; B, bucket; C, cylinder; Cf, centrifugal; E, electric; G, gasoline, butane or diesel engine; H, hand; J, jet; N, none; Ng, natural gas; T, turbine; W, windmill. Number indicates horsepower.
Use of water : D, domestic; Ind, industrial; Irr, irrigation; N, none; P, public supply; S, stock.

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			
66-57-101	L. P. Nickel	--	1917	62	4	Goliad Sand	--	30 31.9	1937 Sept.26, 1962	N	N	Cased to 60 ft.
* 102	do	H & S Water Well Service	1952	323	4	do	--	35	1952	J,E	D,S	Cased to bottom. Casing slotted from 283 ft to bottom.1/
67-46-302	Richard Chumchal	A. Schumacher	1929	124	4	Oakville Sandstone	350	84 91.1	May 1937 Jan. 7, 1963	J,E	D,S	
* 303	Gilbert Adamek	Sun Oil Co.	1961	800	9	Catahoula Tuff	265	6.3 5.6 7.2	June 22, 1963 July 8, 1963 Aug. 4, 1963	--	--	Oil test being converted to irrigation well. Cased and plugged at 1,400 ft; gun-perforated at 307-327, 400, and 750-800 ft, on Aug. 4, 1963. Reported discharge 100 gpm while being jetted with air.2/
* 404	W. Davis	--	--	--	--	Oakville Sandstone	210	+	Jan. 7, 1963	Flows	N	Seismograph test hole. Estimated flow 25 gpm. Temp. 73°F.
* 405	Wm. Meining	--	1900	50	5	do	212	16.5 14.6	Apr. 29, 1937 Nov. 1, 1962	C,W	D,S	Bored well.
* 406	E. J. Baros	--	--	37	24	do	222	25.2	do	C,W	D,S	Dug well curbed with brick. Old well.
407	Bill Edgar	Will Riggs	1937	98	4	Catahoula Tuff	260	17.9 30.5	May 25, 1937 Nov. 1, 1962	C,W	D,S	Cased to 90 ft.
502	A. E. Steen	-- Wilson	1916	132	4	Oakville Sandstone	215	+	do	Flows, J,E	S	Estimated flow 1/10 gpm into reservoir.
503	Earl Granberry	--	--	118	3	do	350	78.1	Apr. 9, 1959	C,W	D,S	Cased to bottom. Drilled well in old dug well which failed during 1948-56 drought.
* 504	A. B. Steen	Albert Roth	1954	218	4, 3	Catahoula Tuff	225	10	1954	J,E	D,S	Casing: 4-in. to 60 ft; 3-in. from 60 ft to bottom.
* 505	A. E. Steen	do	1952	110	4	Oakville Sandstone	215	+	1963	Flows, C,E	D,S	Cased to bottom. Reported flows at times.
506	-- Steen	--	--	25	42	Alluvium	225	21.5	Jan. 7, 1963	N	N	Dug well curbed with rock. Old well.
* 507	J. F. Olsen	--	1955	300	3	Catahoula Tuff	205	+21.5 +20.0	Apr. 30, 1963 July 16, 1963	Flows	S	Temp. 72°F.
* 508	A. C. Steubing	--	1852	93	48, 4	Oakville Sandstone	350	65	1962	J,E	D,S	Dug well to 85 ft; drilled and cased from 85 to 93 ft. Temp. 72°F.

See footnotes at end of table.

Table 8.--Records of wells in De Witt County--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
67-46-601	E. F. Hoch well 1	O. W. Killam	1954	8,016	--	--	335	--	--	N	N	Oil test.2/
602	C. Schmidt	--	1887	95	30	Oakville Sandstone	380	65.6 63.0	May 14, 1937 Nov. 2, 1962	N	N	Dug well curbed with rock.
* 603	Joe Cunningham	Autry Drilling Co.	1953	90	4	do	365	59.0	Nov. 21, 1962	J,E	D,S	Cased to 80 ft. Drilled test hole to 160 ft plugged back to 90 ft.
604	do	--	1900	80	30	do	363	55.5	May 17, 1937	N	N	Dug well. Caved and replaced with well 67-46-603 located 30 ft west.
* 701	Arthur Widd	--	1937	138	5	do	295	46.0 53.8	May 25, 1937 Nov. 2, 1962	J,E	D,S	
702	J. F. Elder	--	1888	43	42	do	253	37.6 36.8	May 25, 1937 Nov. 1, 1962	N	N	Dug well curbed with rock. Did not supply needed water near end of drought ending in 1956.
703	do	Albert Roth	1956	48	6	do	252	36.4	do	J,E	D,S	Cased to bottom. Drilled to replace well 67-46-702.
* 704	Robert Cone	Schumacher & Sons	1962	146	4	do	255	25.0 27.4	do July 16, 1963	T,E	D,S	Cased to bottom; slotted from 126 ft to bottom.1/
801	Bonnett Estate	--	--	56	36	do	330	36.9 42.1	Apr. 29, 1937 Nov. 21, 1962	C,W	D,S	Dug well curbed with rock.
* 802	Carter Thomas	--	1948	60	3	do	220	+	Nov. 28, 1962	Flows	S	Cased. Measured flow 16 gpm on Nov. 28, 1962. Temp. 73°F.
* 803	T. R. Taylor	--	--	60	3	do	220	+	do	Flows	S	Cased. Seismograph test hole. Estimated flow 10 gpm. Temp. 73°F.
* 804	do	Albert Roth	1931	160	4	do	210	11.2	do	C,W	S	Cased to bottom. Temp. 73°F.
805	C. H. Moore	--	1959	80	4	do	250	31.6	Jan. 14, 1963	C,H	D,S	Cased to bottom.
806	G. A. Musselman	--	1960	64	4	do	204	13.5	do	J,E	S	Do.
901	J. W. Booth well 1	H. F. Hines	1938	3,014	--	--	341	--	--	--	--	Oil test.2/
47-101	Mrs. H. Mienke	--	--	87	3	Oakville Sandstone	--	35.1	Jan. 7, 1963	C,H	D,S	Cased to bottom.
102	Ernest Boenig	--	1925	128	4	do	--	39.2	May 17, 1937	C,W	D,S	Do.
* 401	August Eilers	--	1900	65	4	do	--	7.7 13.9	do July 8, 1963	J,E	D,S	Do.

See footnotes at end of table.

Table 8.--Records of wells in De Witt County--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			
67-47-501	Robert Freye well 1	Mrs. James R. Dougherty	1956	8,710	--	--	323	--	--	--	--	Oil test.2/
502	Mrs. J. H. Dagg	-- Gipner	1925	135	4	Oakville Sandstone	--	70	May 1937	C,W	D,S	Cased to bottom.
701	J. Jargac	--	1925	30	8	do	--	18.2 20.0	May 17, 1937 Nov. 2, 1962	C,W	D,S	Do.
702	J. W. Boothe	--	1900	94	4	do	--	74 68.7	May 1937 Nov. 2, 1937	C,W	D,S	Cased to 80 ft.
801	F. A. Staehr	--	1920	98	4	Lagarto Clay	--	61.0 58.6	May 6, 1937 Nov. 8, 1962	N	N	Cased to bottom.
* 902	City of Yoakum well 2	--	1927	175	10	do	300	25 28	Feb. 1957 Sept. 1962	T,E	P	Cased to bottom, partly screened. Reported discharge 165 gpm, Sept. 11, 1962.
* 903	City of Yoakum well 3	--	1927	175	10	do	300	17.8 20.4	May 12, 1937 June 17, 1959	T,E, 15	P	Cased to bottom, partly screened. Measured drawdown 26.5 ft while pumping 175 gpm on May 12, 1937. Temp. 75°F.
* 904	City of Yoakum well 4	Layne-Texas Co.	1940	201	10	do	300	21 27	Sept. 1940 Sept. 1962	T,E, 20	P	Cased to 109 ft, slotted from 18 to 106 ft. Under-reamed and gravel-packed. Reported drawdown 38 ft while pumping 375 gpm on Sept. 28, 1940, and 68 ft drawdown while pumping 340 gpm in Sept. 1962. Temp. 75°F.1/
* 905	City of Yoakum well 5	do	1947	110	8	do	300	32	Feb. 1954	T,E, 15	P	Cased to 103 ft, screened from 39 to 101 ft. Under-reamed and gravel-packed. Reported discharge 122 gpm in Feb. 1954 and 130 gpm on Feb. 7, 1957.1/
* 906	City of Yoakum well 6	do	1948	112	20, 8	do	300	--	--	T,E, 10	P	Cased to bottom. Screened from 40 to 110 ft. Reported discharge 220 gpm on Feb. 7, 1957.1/
* 907	City of Yoakum well 7	do	1954	599	18, 10	Oakville Sandstone	300	64 56.6	1954 June 17, 1959	T,E, 40	P	Casing: 18-in. to 216 ft; 10-in. from 216 to 599 ft; screens opposite sands below 263 ft. Reported pumping level 122 ft after pumping 650 gpm for 7 hours. Temp. 79°F.1/ 2/
* 52-902	Mrs. A. B. Mueller	--	1908	100	4	Catahoula Tuff	315	59.1	July 6, 1937	C,E, 1/2	D,S	Cased to bottom.
903	B. W. Meyer	Ed Tietze	1907	84	4	Oakville Sandstone	315	47.8 48.5	do Nov. 13, 1962	C,W	D,S	Do.
* 53-202	Giles L. Birchum	A. E. Urban	1960	190	4	Catahoula Tuff	235	--	--	C,W	S	Cased to 166 ft. Temp. 75°F.1/

See footnotes at end of table.

Table 8.--Records of wells in De Witt County--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
67-53-203	E. S. Mangham	--	--	141	4	Catahoula Tuff	305	84.9	Nov. 6, 1962	C,W	S	Old well.
* 401	J. A. Katzer	--	1907	62	--	do	260	43.3 47.7 45.8	May 2, 1962 Nov. 6, 1962 July 8, 1963	C,W,E	D	Temp. 74°F.
* 402	W. E. Seiffert	--	1912	50	4	do	233	30.5 33.9	May 26, 1937 Nov. 6, 1962	C,W,E	D,S	
403	P. L. Gary	-- Clampit	1927	87	4	do	260	28.5 33.6	Apr. 22, 1937 Nov. 6, 1962	C,W	D,S	
* 404	Henry Baros	--	1910	275	4	do	375	120 129.6	1937 Nov. 6, 1962	C,W,E	D,S	Cased to bottom.
405	Albert Veit	--	1900	220	4	do	345	109.7 115.4	July 6, 1937 Nov. 6, 1962	C,W	S	
* 501	Mrs. Elsie Wehman	--	1906	--	--	do	315	95.6 101.5 102.5	Apr. 22, 1937 Mar. 9, 1959 Nov. 6, 1962	C,W	D,S	
701	Fred Winkler well 1	Wise Drilling Co.	1958	5,610	--	--	351	--	--	--	--	Oil test.2/
702	Annie Stolleis well 1	Big "6" Drilling Co.	1955	7,238	--	--	313	--	--	--	--	Do.
703	J. C. Wallis well 1	Rowan & Hope, and Ranger & Burson	1945	460	10	Catahoula Tuff	307	82.2 83.2	Feb. 15, 1959 Nov. 13, 1962	N	N	Drilled as oil test to 6,495 ft and plugged back to 460 ft, converted to water well. Casing from 350 to 460 ft, pumped sand so not used.
704	P. Warzecha	--	1908	177	4	Oakville Sandstone	355	93.7	Apr. 23, 1937	C,W	D,S	Bored well.
705	Paul Borchardt	A. E. Urban	1962	132	4	do	340	76	1962	C,W	S	Cased to 126 ft.1/
801	Edwin Wegner	Schumacher & Sons	1956	230	8	Oakville Sandstone and Catahoula Tuff	260	38.8 38.7	Feb. 10, 1959 Sept.27, 1962	T,E, 15	Irr	Cased to bottom. Casing slotted from 110 to 120 and 150 to 230 ft. Reported discharge about 300 gpm; irrigates about 25 acres.1/
802	Joe Card	--	1910	75	4	Oakville Sandstone	238	33.6 39.5	May 26, 1937 Nov. 26, 1962	C,W	S	Bored well.
* 901	W. A. Afflerbach	Schumacher & Sons	1956	340	8	do	182	+	1962	Flows, T,G	Irr	Cased to bottom. Casing slotted from 100 to 140 and 235 to 340 ft. Test pumped 900 gpm for 36 hours. Flow estimated 25 gpm 5 ft above ground. Irrigates about 25 acres. Temp. 78°F.1/

See footnotes at end of table.

Table 8.--Records of wells in De Witt County--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
*67-54-101	Peebles Estate	--	1937	207	4	Oakville Sandstone	349	124.4	May 25, 1937	T,E	D,S	Cased to 200 ft.
201	W. W. McCormick	--	1912	55	--	do	256	32.6	Apr. 29, 1937	N	N	Dug well.
202	Finley Blackwell	--	1860	42	36	do	256	39.3	Nov. 28, 1962	N	N	Dug well, curbed with rock to 7 ft.
203	W. H. Lewis Estate	--	1925	105	4	do	200	15.0	Jan. 14, 1963	C,W	S	
301	Otto Rath Camp well 1	Lamar Hunt	1947	8,015	--	--	286	--	--	--	--	Oil test.2/
401	E. P. Buckhorn	--	1933	200	5	Oakville Sandstone	257	75.6	Nov. 1, 1962	C,W	S	
402	Mrs. Belle Laster	--	1910	147	5, 4	do	320	139	Apr. 1937	C,E	D,S	Drilled to 180 ft; plugged back to 147 ft; sand from 136 to 147 ft.
* 403	H. F. Boehne	--	1911	200	4	do	300	57.9	May 26, 1937	C,E	S	Cased to 140 ft.
404	A. Middlebrook	--	--	--	4	do	289	83.5	Nov. 26, 1962	C,W	S	
501	Mrs. W. D. Finney	Albert Roth	1933	43	6	do	210	37.6 35.5	May 4, 1937 Nov. 21, 1962	C,W,E	S	
502	Graham Hamilton	--	1956	127	4	do	199	42.0	Jan. 14, 1963	C,W	S	Well drilled in bottom of old 40 ft dug well.
503	do	--	--	46	42	Alluvium	199	22.3	do	N	N	Dug well. Failed in 1956 during drought. Old well.
* 601	Lewis A. Kaye	Markus Ploeger	1955	625	8, 6	Catahoula Tuff	240	43.6 45.3 47.6	June 9, 1959 Nov. 28, 1962 July 8, 1963	T,E,	Irr	Casing: 8-in. from 0 to 225, and 6-in. from 225 ft to bottom. Slotted from 547 to 622 ft. Reported discharge about 600 gpm. Irrigates about 100 acres of pasture. Temp. 81°F.1/
* 602	T. R. Taylor	Schumacher & Sons	1957	177	4	Oakville Sandstone	275	68.2 79.0	Nov. 21, 1962 July 11, 1963	C,W	S	Cased to 172 ft. Temp. 74°F.1/
603	Findley D. Blackwell	do	1959	142	4	do	240	56.0	do	C,W	S	Cased to bottom.1/
604	do	--	--	30	36	do	240	26.4	do	N	N	Dug well. Old well.
605	do	Schumacher & Sons	1957	174	4	do	270	--	--	C,W,G	S	Cased to bottom.1/
606	Schumacher & Sons	do	--	325	5	do	265	80	1963	T,E	D,S	Cased to bottom; screens from 180 to 200 and 290 to 320 ft. Reported discharge 30 gpm.1/

See footnotes at end of table.

Table 8.--Records of wells in De Witt County--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			
67-54-801	Rexall Drug Co.	--	1941	200	8	Oakville Sandstone	190	--	--	T,E, 7-1/2	N	This well and well 67-54-802 formerly supplied water for Brayton Flying Service, an army auxiliary air field.
* 802	do	Layne-Texas Co.	1942	950	8, 6	Oakville Sandstone and Catahoula Tuff	190	+	1962	Flows, T,E, 15	S	Casing: 8-in. from 0 to 654 ft, and 6-in. from 588 to bottom. Screens at 627-637, 647-657, 674-680, 697-712, 890-906, and 916-946 ft. Estimated flow 50 gpm on Nov. 2, 1962. Temp. 83°F.1/
* 803	Jack Wayne	H & S Water Well Service	1956	930	12	Oakville Sandstone	202	14 9.8 16.0 19.2	June 1956 Mar. 12, 1959 Nov. 2, 1962 July 16, 1963	T,E, 75	Irr	Cased to bottom; casing slotted from 200-257, 570-610, and 760-780 ft. On test, reported drawdown 100 ft pumping 1,000 gpm. Irrigates 150 acres of feedstuff. Temp. 79°F.1/
804	H. A. Wisian	--	1940	180	5	do	205	--	--	T,E	D,S	
805	do	--	--	33	30	Alluvium	205	39.4 24.4	Apr. 29, 1937 Nov. 2, 1962	N	N	Dug well curbed with rock.
* 806	John Braden, Sr.	A. E. Urban	1960	188	4	Oakville Sandstone	173	3	1960	C,W	S	Cased to 177 ft. Temp. 70°F.1/
807	Central Power & Light Co.	Albert Roth	--	188	4	do	180	23	1957	C,E	P,S	Supplies water for 4 families at power plant.
* 808	Alfred Friar	--	1956	44	4	Alluvium (?)	192	28.3	Jan. 14, 1963	C,W	S	Temp. 71°F.
809	C. H. Kuester	--	1960	134	4	Oakville Sandstone	199	32.4	do	C,W	S	
810	do	--	--	32	24	Alluvium	199	30.6	do	N	N	Dug well, curbed with rock. Old well.
901	Memory Gardens of Cuero, Inc.	A.A.C. Vacuum Trucks, Inc.	1954	250	6	Oakville Sandstone	210	70	1958	T,E, 7-1/2	Irr	Cased to bottom. Screen from 205 to 250 ft. Irrigates grass and shrubs at cemetery.1/
902	Charles Frels	Continental Oil Co.	--	160	3	do	205	38.5	Apr. 29, 1963	C,W	S	Cased to 160 ft, converted to water well.
55-101	L. T. Burns well 1	Stanolind Oil & Gas Co.	1947	9,018	--	--	324	--	--	--	--	Oil test.2/
201	J. W. Boothe	--	--	54	7	Lagarto Clay	--	35.5	Oct. 24, 1962	C,W	S	Cased with tile.
301	Ernest Steinman well 1	Sterling Oil & Refining Co.	1946	9,019	--	--	271	--	--	--	--	Oil test.2/
302	Steinman Estate	--	1946	230	4	Lagarto Clay	--	50.6 48.3	Mar. 11, 1959 Oct. 9, 1962	C,W	S	Drilled to supply water for oil test.

See footnotes at end of table.

Table 8.--Records of wells in De Witt County--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			
*67-55-303	L. W. Frank	Markus Ploeger	1956	221	4	Lagarto Clay	--	70	Mar. 1956	T,E, 5	D,S, Irr	Cased to bottom. Screen from 200 to 221 ft. Reported discharge 60 gpm. Irrigates about 5 acres.
* 304	W. C. Steinman	-- Priest	1917	80	4	do	--	60 62.1	Apr. 1936 Oct. 9, 1962	C,W	D,S	Cased to bottom.
305	O. H. Leist	--	1923	59	4	do	--	34 41.4	Apr. 1923 Nov. 8, 1962	C,W,E	D,S	Do.
306	E. E. Plaacke	Albert Roth	1934	72	4	do	--	42	June 1937	C,E	D,S	Cased to 70 ft.
* 307	Mrs. A. Wysata	--	--	87	3	do	--	80 76.5	Apr. 1936 Nov. 8, 1962	C,W	S	Cased to bottom.
401	R. W. Blackwell	--	1887	165	4	Oakville Sandstone (?)	--	88.7	May 18, 1937	C,W	S	Bored well. Cased to 100 ft.
* 402	Vincent Arroyo	--	--	115	4	do	--	90 84	Mar. 1936 Aug. 1962	C,E	D,S	Cased to bottom.
* 403	D. C. Stovall	--	1922	126	4	do	--	119.1	May 18, 1937	N	N	Caved. Replacement drilled nearby.
* 404	Clyde Christian	Schumacher & Sons	1962	420	7	Oakville Sandstone	310	160	1962	T,E, 7-1/2	D,S, Irr	Cased to 410 ft, slotted at 205-225, 300-320, and 360-410 ft. Reported discharge 95 gpm. Temp. 76°F.1/
* 501	R. A. Sanders	--	1919	87	4	Lagarto Clay	--	79.4 81.5	June 18, 1937 Nov. 24, 1962	C,W	D,S	Cased to 80 ft.
* 601	Sidney Kaiser	Autrey Drilling Co.	1956	240	8	do	250	15.3 13.9 13.8	June 9, 1959 Oct. 9, 1962 July 11, 1963	T,E, 20	Irr	Cased to bottom. Casing slotted at 88-94, 148-176, 207-220, and 224-234 ft. Measured discharge 475 gpm on June 9, 1959. Temp. 76°F.1/
602	do	--	1911	118	4	do	--	43.0	June 18, 1937	C,E	D,S	Cased to bottom. Measured drawdown 9.0 ft pumping 3-1/2 gpm.
603	Gus Lassig	Schumacher & Sons	1959	80	4	do	--	--	--	J,E	S	Cased to bottom.1/
* 604	Ridgeway Estate	John Ridgeway	--	49	8	do	--	45	Apr. 1936	N	N	Abandoned.
701	John Braden	--	--	100	4	do	--	86.7	May 18, 1937	T,E	D,S	Formerly supplied water for De Witt County poor farm; now supplies large turkey farm.
801	S. A. Butler, Jr.	--	--	58	2	do	--	16.4	Oct. 11, 1962	C,E	S	
802	George Eckert	--	--	105	4	do	--	91.3	Nov. 8, 1962	C,W	S	Old well.
901	H. A. Williams well 1	W. Earl Rowe	1956	7,900	--	--	296	--	--	--	--	Oil test.2/

See footnotes at end of table.

Table 8.--Records of wells in De Witt County--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			
67-55-902	Mrs. Jack Benbow well 1	Murchison & Co. and Arkansas Fuel Oil Co.	1951	8,016	--	--	259	--	--	--	--	Oil test.2/
903	John Macha well 1	Humble Oil & Refining Co.	1952	8,495	--	--	229	--	--	--	--	Do.
904	John Macha	Sid Woods	1919	81	4	Lagarto Clay	235	66.1 57.8	May 18, 1937 Sept.26, 1962	C,W	S	Cased to 80 ft.
* 905	J. B. Myers	--	--	117	4	do	250	67 60.4 58.3	Apr. 1936 Mar. 12, 1959 Oct. 11, 1962	C,E	D,S	Cased to bottom. Formerly supplied water for steam-driven cotton gin.
906	Charles Myers	--	--	106	4	do	--	20 73.2	Apr. 1936 Oct. 11, 1962	C,W	N	Cased to bottom.
907	S. Adams	E. Prietz	1911	126	4	do	--	101.5 103.4	June 18, 1937 Oct. 24, 1962	C,E	D,S	Cased to 124 ft.
56-101	W. H. Kuester	--	1896	90	4	do	--	55 57.2	Apr. 1936 Oct. 24, 1962	N	N	Cased to bottom.
* 401	Mrs. S. L. Edwards	J. Moffatt	1900	70	3	do	250	34.9	Nov. 8, 1962	N	N	Do.
* 402	-- Benbow	Schumacher & Sons	1960	380	8	do	200	45	1960	T,E, 30	Irr	Temp. 75°F.
403	do	do	1960	320	8, 6	do	--	45	1960	T,E	S	Cased to bottom.
501	William Castell	--	--	90	5	do	--	76	1962	C,W	D,S	Old well.
* 502	T. C. Rice	Albert Roth	1936	112	4, 3	do	225	59 63.3	1936 Nov. 8, 1962	C,W	D,S	Casing: 4-in. to 78 ft; 3-in. from 78 ft to bottom.
701	F. J. Chalupka, Jr.	L. G. Wade	1900	90	4	do	--	71.7	May 18, 1937	C,W	D,S	
702	C. J. Kunetka well 1	Humble Oil & Refining Co.	1962	--	--	--	261	--	--	--	--	Oil test.3/
703	C. T. Mathews	--	1962	320	4	Lagarto Clay	--	94.9 95.6	Oct. 11, 1962 July 11, 1963	N	N	Supplied water for oil test.
801	Minnie Dowlearn well 1	Harkins & Co. and George Musselman	1957	8,215	--	--	221	--	--	--	--	Oil test.2/
802	Mrs. M. A. Plaacke well 1	Harkins & Co.	1957	5,516	--	--	199	--	--	--	--	Do.
803	Anna Steinmann well 1	do	1957	8,016	--	--	217	--	--	--	--	Do.

See footnotes at end of table.

Table 8.--Records of wells in De Witt County--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			
67-56-804	J. W. Boothe well A-1	Kirkwood & Co. and -- Weaver	1953	8,150	--	--	246	--	--	--	--	Oil test.2/
805	R. F. Werland	Will Darst	1917	60	4	Lagarto Clay	--	38	June 1937	C,W	D,S	Cased to bottom.
* 901	Clifford Carroll	Autrey Drilling Co.	1956	240	8	Goliad Sand and Lagarto Clay	200	61.7 63.5 64.7	Mar. 9, 1959 Oct. 9, 1962 July 11, 1963	T,E, 15	Irr	Cased to bottom; casing perforated from 118-138, 155-188, and 209-240 ft. Measured discharge 220 gpm on Mar. 9, 1959. Irrigates about 15 acres. Temp. 75°F.1/
902	Lue Goode	--	--	227	4	Lagarto Clay	--	45.5	Oct. 9, 1962	N	N	Drilled to supply water for oil test.
903	B. F. and G. W. New well 1	Harkins & Co. and George Musselman	1962	7,871	--	--	189	--	--	--	--	Oil test.3/
904	Eva Hollan well 1	Harkins & Co. and Musselman & Alkek	1960	7,825	--	--	207	--	--	--	--	Do.
* 59-601	Leick Grocery	Tom Moy	1948	157	4	Oakville Sandstone	--	80	1948	C,E	D,S	
602	V. W. Lackey	--	--	145	4	do	--	79.9	Dec. 18, 1962	C,W	S	Old well.
603	L. V. Lackey	--	--	248	--	Catahoula Tuff	--	139.8	do	C,W	S	Do.
701	R. M. Korth	Arthur Erdman	1944	200	5	do	--	160.5	Apr. 9, 1963	C,W	S	Cased to bottom; perforated from 160 ft to bottom.
801	Anton F. Tam, Jr. well 1	Geochemical Surveys	1954	9,012	--	--	481	--	--	--	--	Oil test.2/
* 802	Mrs. Emily House	--	--	212	4	Catahoula Tuff	--	198.1	Dec. 18, 1962	C,E	S	Old well.
803	Emil Chroede	--	1930	162	4	Oakville Sandstone	--	147.8	June 9, 1937	C,W	D,S	Cased to 150 ft.
901	John Buelter	--	1870	120	3	do	--	91.0	Apr. 7, 1959	C,W	D,S	
902	Burg Morisse	--	1900	104	4	do	--	96.7	June 8, 1937	C,W	D,S	
* 60-101	Joe Wischkaemper	Borth Garage & Welding Service	1961	131	4	Catahoula Tuff	523	95.2	Nov. 26, 1962	C,W	S	Cased to bottom.1/
102	R. H. Jacger	--	1925	395	4	do	530	240	June 1937	N	N	
103	Weldon Stacey	--	--	158	4	Oakville Sandstone (?)	502	134.0	Nov. 26, 1962	C,W	S	
202	Willie Metting	Borth Garage & Welding Service	1962	544	3	Catahoula Tuff	460	185.9	Dec. 17, 1962	C,E	D,S	Drilled to supply water for oil test.

See footnotes at end of table.

Table 8.--Records of wells in De Witt County--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			
67-60-301	F. Haase	Ed Tietze	1907	120	4	Oakville Sandstone	360	69.2 63.6	June 17, 1937 Nov. 26, 1962	C,W	D,S	Cased to 116 ft.
401	Mrs. Anna Seifert well 1	Glen A. Martin	1957	9,218	--	--	419	--	--	--	--	Oil test.2/
* 402	H. Metting	--	1914	150	4	Oakville Sandstone	488	112.4 123.2	June 2, 1937 Dec. 17, 1962	C,W	D,S	Cased to 120 ft. Temp. 71°F.
403	Blake Estate	--	1887	100	--	do	380	27.3 32.0	June 2, 1937 Dec. 17, 1962	C,E	D,S	Cased to bottom.
601	F. G. Hahn well 1	Magnolia Petroleum Co.	1953	--	--	--	371	--	--	--	--	Oil test.3/
* 701	William Gebhardt	--	1912	92	4	Oakville Sandstone	350	33.7	Dec. 18, 1962	C,W	S	Temp. 72°F.
702	do	-- Lundschkin	1922	117	4	do	333	--	--	C,W	D,S	Cased to bottom; casing slotted from 100 ft to bottom.
* 703	Eric W. Mueller	--	1900	91	4	do	455	32.5 36.4 38.8	June 2, 1937 Dec. 18, 1962 July 15, 1963	C,W	D,S	
704	J. John	--	--	395	5	Catahoula Tuff (?)	395	73.0	Dec. 18, 1962	C,W	D,S	
901	Edwin Baumann well 1	Rock Hill Oil Co.	1950	6,851	--	--	368	--	--	--	--	Oil test.2/
* 902	Hahn Ranch	Magnolia Petroleum Co.	1953	1,000	10	Oakville Sandstone and Catahoula Tuff	370	140	1959	T,E, l	D,S	Oil test drilled to 10,330 ft, plugged back to 1,000 ft; converted to water well. Casing gun-perforated with 100 holes of sand from 700 to 1,000 ft. Used for irrigation; discharge was 300 gpm. No longer used for irrigation.
* 903	Otis Skinner	H & S Water Well Service	1955	570	10	Oakville Sandstone	320	30.8 29.5	Mar. 10, 1959 Sept.27, 1962	T,G	Irr	Cased to bottom, slotted at 210-227, 275-302, 338-360, and 495-570 ft. Measured discharge 400 gpm, Apr. 24, 1959. Temp. 79°F.1/
* 61-101	Mrs. F. Gaida, Sr.	--	1885	150	4	do	335	32.8 29.0	Apr. 23, 1937 Nov. 13, 1962	C,W	D	
* 301	Norman Kahlich	Schumacher & Sons	1956	275	8	do	215	41.4 47.7	Feb. 11, 1959 Nov. 6, 1962	T,E, 15	Irr	Cased to bottom; casing slotted from 170-225 and 250-275 ft. Reported discharge 250 gpm. Irrigates about 25 acres grazing pasture. Temp. 76°F.1/

See footnotes at end of table.

Table 8.--Records of wells in De Witt County--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			
67-61-302	E. Leubert well 1	George S. Hammonds	1953	7,615	--	--	207	--	--	--	--	Oil test.2/
* 303	F. W. Schlinke	--	1925	140	4	Oakville Sandstone	280	94.4	Apr. 30, 1937	C,E	D,S	
401	James Kubala	H. H. Eckart, Jr.	1927	45	5	do	335	25	1962	C,W,E	D	Cased to bottom.
402	F. A. Brown	--	1937	142	4	do	488	113.6 105.4	May 20, 1937 July 15, 1963	G,W	D,S	
* 601	Blackwell Estate	--	--	120	4	Oakville Sandstone (?)	290	98 107.9	Mar. 1936 Nov. 7, 1962	C,W	S	Cased to 100 ft.
* 602	Clifton Weber	--	--	100	4	Lagarto Clay	310	60	Mar. 1936	C,E	S	Cased to bottom.
701	Mrs. T. Metting	--	1887	50	4	Oakville Sandstone	360	48	1937	C,W	D,S	Cased to 40 ft. Drilled well in old dug well.
702	B. F. Able	--	1930	90	4	do	345	70 65.9	1937 Nov. 13, 1962	C,E	D,S	Cased to 80 ft.
801	F. A. Broll Estate	Wood Bros.	1913	75	3	Lagarto Clay	340	37.7	Apr. 17, 1937	N	N	Caved and abandoned. Replacement well 67-61-802 located 15 ft west.
802	do	--	1957	156	4	Lagarto Clay (?)	340	85.3 85.7	Nov. 13, 1962 July 15, 1963	C,W	D,S	
803	Otto Roehml well 1	Kirkwood Drilling Co. & Petroleum, Inc.	1960	--	--	--	317	--	--	--	--	Oil test.3/
901	N. A. Brown well 1	-- Barbe et al	1951	8,657	--	--	293	--	--	--	--	Do.
* 62-101	H. Buckhorn	L. W. Capps	1936	887	10	Catahoula Tuff	180	+	1962	Flows	S	Oil test drilled to 4,017 ft, plugged back to 887 ft; converted to water well. Cased to 887 ft. Measured flow, 432 gpm on Aug. 11, 1939. Temp. 86°F.
* 102	Emil Buckhorn	-- Klempit	1928	585	4	Oakville Sandstone	262	45 66.4 67.7	Apr. 1936 Nov. 7, 1962 July 16, 1963	C,W	D,S	Supplies water for stock.
103	-- Hamilton well 1	Sterling Oil & Gas Co.	1951	--	--	--	207	--	--	--	--	Oil test.2/
* 104	Mrs. Ann H. Cusack	Albert Roth	1960	86	4	Oakville Sandstone	230	43.4	Jan. 8, 1963	C,W	S	Cased to 73 ft. Temp. 74°F.1/
201	Production Credit Assn.	A. R. Thierry	1949	530	8, 6	do	187	8	1949	T,E, 15	Irr	Cased to bottom; casing slotted from 225-275 and 475-530 ft.

See footnotes at end of table.

Table 8.--Records of wells in De Witt County--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			
67-62-202	Production Credit Assn.	A. R. Thierry	1956	630	10, 8	Oakville Sandstone	190	--	--	T,E, 20	Irr	Cased to bottom; 10-in. to 120 ft, 8-in. from 180 ft to bottom; slotted at 250-275 and 575-630 ft.
* 203	City of Cuero well 8	Layne-Texas Co.	1948	874	14, 8	Lagarto Clay and Oakville Sandstone	180	+	1959	Flows, T,E, 60	P	Casing: 14-in. to 235 ft; 8-in. from 212 to 801 ft; screened at 235-290, 330-401, 485-501, 620-650, and 720-800 ft. When drilled flow was 68 gpm and drawdown 68 ft after pumping 1,000 gpm for 12 hours.1/ 2/
* 204	Guadalupe Cotton Oil Mill Co.	A. R. Thierry	1948	296	14, 6	do	180	+	Apr. 20, 1959	Flows, T,E, 15	N	Cased to bottom; screened from 216 to bottom. Formerly used for cooling. Estimated flow 10 gpm in 1959. Temp. 81°F.
* 205	Cuero Ice Co.	Albert Roth	1935	62	5	Lagarto Clay	180	22 16.9	1936 Apr. 20, 1959	J,E, 5	N	Cased to bottom. Formerly supplied cooling water for ice plant.
* 206	do	--	--	26	48	Alluvium	180	18.1 16.9	Apr. 15, 1936 Apr. 20, 1959	T,E, 3	N	Dug well curbed with brick. Estimated discharge 200 gpm in 1936. Formerly supplied water for cooling ice plant. Old well.
* 207	City of Cuero well 5	Layne-Texas Co.	1934	1,173	12, 8, 6	Oakville Sandstone	185	+	1934	Flows	P	Drilled to 1,526 ft; plugged back to 1,173 ft. Casing: 12-in. to 156 ft; 8-in. from 156 to 1,065 ft; 6-in. from 1,065 to bottom. Screens at 1,072-1,134, and 1,149-1,170. Reported flow 456 gpm in 1934 and 325 gpm in 1963. Temp. 90°F.
* 208	City of Cuero well 3	J. H. Brown	1912	1,165	6	do	180	+	1959	N	N	Reported flow 90 gpm in 1944 and 15 gpm in 1959. Temp. 89°F.1/
* 209	City of Cuero well 4	G. C. Witte	1918	1,160	8	do	180	--	--	N	N	Cased to bottom; screened from 1,100 to 1,160 ft. Reported flow 350 gpm in 1918; 200 gpm in 1944. Ceased to flow prior to 1963. Temp. 90°F.1/
* 210	City of Cuero well 9	McKinley Drilling Co.	1957	912	12	do	180	+ +	1957 1963	Flows, T,E, 60	P	Cased to bottom; screens at 270-330, 360-435, 655-700, and 785-850 ft. Temp. 84°F.1/ 2/
211	--	--	--	20	36	Alluvium	175	17.2	Jan. 9, 1963	N	N	Dug well curbed with brick. City water now used. Old well.
212	--	--	--	29	30	do	180	21.2	do	C,W	D,S	Dug well curbed with brick. Old well.
213	--	--	--	77	4	Lagarto Clay	187	40.7	do	C,H	S	Old well.

See footnotes at end of tabl

Table 8.--Records of wells in De Witt County--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			
67-62-214	S. B. Stock	--	--	25	24	Alluvium	172	19.2	Jan. 9, 1963	N	N	Dug well curbed with brick. Old well.
* 215	do	--	--	39	4	do	172	20.3	do	C,W	D,S	Drilled well in bottom of dug well above. Cased to seal off dug well. Well pumping when water level measured.
* 216	R. E. Regner	--	--	30	36	do	183	26.4	do	C,E	D,S	Dug well curbed with brick.
* 301	City of Cuero well 6	Layne-Texas Co.	1944	1,207	12, 8 6	Oakville Sandstone and Catahoula Tuff	180	+17.5 +	Jan. 22, 1944 1963	Flows, T,E, 15	P	Casing: 12-in. to 255 ft; 8-in. from 255 to 1,086 ft, and 6-in. from 1,086 to bottom. Screened from 1,059 to 1,203 ft. On test drawdown was 56.5 ft after pumping 800 gpm for 24 hours.1/
* 302	Coca Cola Bottling Co.	--	1937	780	8	Oakville Sandstone	180	+ +	1937 Feb. 13, 1959	Flows, T,E, 5	Ind	Cased to bottom. Water used in product only.
303	Cuero Independent School District	Schumacher & Sons	1959	435	8	do	220	35	May 1959	T,E, 5	Irr	Cased to 420 ft with screen from 210 to 220 ft, and casing slotted from 360 to 412 ft. Reported discharge on test 390 gpm, and 60 gpm with permanent pump. Supplies water for football field and school lawn.1/
* 304	City of Cuero Park well 1	Layne-Texas Co.	1936	1,353	13, 8 6	Oakville Sandstone and Catahoula Tuff	210	--	--	T,E, 10	Irr	Well drilled to 1,496 ft, plugged back to 1,353 ft. Casing: 13-in. to 106 ft, 8-in. 79 to 1,306 ft, 6-in. 1,244 to bottom. Screens at 881-901, 921-933, 1,133-1,145, 1,221-1,242, and 1,306-1,349 ft. Test on Jan. 24, 1936, flowed 60 gpm and drawdown to 193 ft while pumping 345 gpm. Ceased to flow about 1956. Supplies water to keep lake full and water 60-acre golf course; and occasionally to fill swimming pool.1/
* 305	Mrs. Eliza Dowe	Schumacher & Sons	1959	78	4	Lagarto Clay	250	54.5 55.0	Nov. 2, 1962 July 9, 1963	C,W	D,S	Cased to bottom.1/
306	do	--	--	72	30	do	250	54.1 54.3	Oct. 11, 1962 Nov. 2, 1962	N	N	Dug well curbed with brick. Old well.
* 401	E. P. Demmer	Ed Tatz	1924	171	4	do	282	111 81.2	Mar. 1936 Nov. 7, 1962	C,W	S	
* 402	Gus Goehring	-- Clampard	1915	171	5	do	265	70 71.4	Mar. 1936 Nov. 14, 1962	C,W	D,S	Cased to bottom.
403	F. Hoehne	F. Hoehne	1890	85	4	do	280	77 47.6	Mar. 1936 Nov. 7, 1962	C,W	S	Do.

See footnotes at end of table.

Table 8.--Records of wells in De Witt County--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
67-62-501	T. Williams well 1	J. S. Abercrombie	1958	10,680	--	--	166	--	--	--	--	Oil test.2/
* 502	--	--	--	38	42	Alluvium	175	32.4	Apr. 10, 1963	C,E	D,S	Dug well curbed with brick. Old well.
503	M. De Bose Estate	--	1850	25	36	do	190	22.3	June 7, 1963	H	D,S	Dug well, curbed with rock.
504	Palmer Construction Co.	Schumacher & Sons	1960	50	6	do	168	19.6 18.2	do July 9, 1963	J,E	Irr	Cased to bottom, part is slotted. Reported discharge 100 gpm on test.
601	Mamie Heard well 1	La Gloria Corp.	1952	8,011	--	--	194	--	--	--	--	Oil test.2/
602	Mamie Heard	--	1930	59	4	Lagarto Clay	180	56.0 29.7	May 5, 1936 Oct. 10, 1962	C,W	S	Bored well.
603	Otto Wolf	--	1961	187	4	do	200	55.3	do	N	N	Supplied water for drilling oil test.
701	Jake Cohn well 1	Kirkwood & Co.	1955	7,719	--	--	292	--	--	--	--	Oil test.2/
702	Boldt Estate	--	--	60	4	Lagarto Clay	262	37.3 47.0	May 4, 1937 Nov. 7, 1962	C,E	S	Old well.
703	Carrol E. Cook well 1	--	1960	--	--	--	330	--	--	--	--	Oil test.3/
801	Meta Schley well 1	Pontiac Refining Co.	1955	7,803	--	--	261	--	--	--	--	Oil test.2/
901	H. C. Sager well 1	Stanolind Oil & Gas Co.	1950	9,519	--	--	250	--	--	--	--	Do.
902	Mrs. Wm. Allbright	--	--	117	4	Lagarto Clay	225	107	Apr. 1937	C,W	S	Cased to 60 ft. Old well.
* 903	Louis Mueller	--	1930	106	4	do	248	90.5 86.7	May 5, 1937 Oct. 10, 1962	C,W	D,S	Drilled well in old dug well. Water in dug well cased off. Dug well supplied water for about 50 years.
904	Berthold Koenig well 1	Lone Star Production Co.	1959	10,180	--	--	203	--	--	--	--	Oil test.3/
63-201	Alfred Friar well 1	Hunt Oil Co.	1947	8,256	--	--	282	--	--	--	--	Oil test.2/
202	M. Friar	do	1952	9,016	--	--	210	--	--	--	--	Do.
203	Alfred Friar	--	--	60	4	Goliad Sand	--	44.6	May 5, 1937	C,W	D,S	
301	Oscar Friar	--	1900	90	4	do	--	85	1937	C,E	D,S	Well was originally dug, curbed with brick. Later bored a few feet deeper, cased to surface, and pit filled up.

See footnotes at end of table.

Table 8.--Records of wells in De Witt County--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
*67-63-401	C. J. Weber	--	1950	55	4	Lagarto Clay	--	45	1937	C,E	D,S	Deepened from 45 to 55 ft in 1956. Cased to 45 ft.
402	Alfred Koenig	--	1910	56	4	do	--	29.9	May 5, 1937	C,E	D,S	
403	L. W. Hanson	--	--	70	4	do	--	29.7 30.9	May 3, 1937 Oct. 23, 1962	C,W	S	Old well.
404	H. J. Adams well 1, unit 1	Tidewater Oil Co.	1962	10,551	--	--	158	--	--	--	--	Oil test.3/
501	T. Cheatham well 1	Holmes Drilling Co.	1954	8,015	--	--	162	--	--	--	--	Oil test.2/
* 502	R. J. Lee	Schumacher & Sons	1956	307	8	Lagarto Clay	--	15 15.4 15.3 16.0	1956 Feb. 17, 1959 Sept.25, 1962 July 9, 1963	T,E, 30	Irr	Cased to 275 ft, slotted at 152-170 and 240-275 ft. Reported discharge 400 gpm. Temp. 76°F.1/
503	E. Frisbie well 2	H. B. Zachery Co. & George Musselman	1962	8,115	--	--	250	--	--	--	--	Oil test.3/
601	Mrs. Avis C. Reiffert well 1	Tom J. Weigel	1955	8,370	--	--	205	--	--	--	--	Oil test.2/
602	Robert Cottingham well 1	Harkins & Co., and Arkansas Fuel Oil Corp.	1958	8,509	--	--	228	--	--	--	--	Do.
* 603	C. H. Kuester	--	--	108	4	Lagarto Clay	--	85 94.1	May 1937 Sept.26, 1962	C,W	S	Old well.
604	Alfred Friar	--	--	128	4	do	--	100.8	Jan. 15, 1962	C,W	D,S	
701	Albert Roth well 1	H. B. Zachery Co.	1943	8,027	--	--	208	--	--	--	--	Oil test.2/
702	Erna Raak	--	--	38	4	Lagarto Clay	--	21.4	Oct. 23, 1962	C,W	S	
801	G. A. Musselman well 1	Harkins & Co.	1957	7,080	--	--	154	--	--	--	--	Oil test.2/
802	C. G. Breeden well 1	Western Natural Gas Co.	1949	8,205	--	--	143	--	--	--	--	Do.
803	W. I. Anderson	--	1893	56	30	Goliad Sand	--	50.1	May 15, 1937	C,W,E	D,S	Dug well curbed with rock.
804	F. E. Neel	--	--	65	4	Lagarto Clay	--	--	--	C,E	S	Dug well. Old well.

See footnotes at end of table.

Table 8.--Records of wells in De Witt County--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			
67-63-805	Ralph Pridgen well 1	Kirkwood Drilling Co., and Musselman & Grace	1960	8,435	--	--	143	--	--	--	--	Oil test.3/
806	F. C. Hartman well 2	Holmes Drilling Co.	1959	7,905	--	--	179	--	--	--	--	Do.
901	C. H. Kuester well 2	do	1953	7,984	--	--	211	--	--	--	--	Oil test.2/
902	Anna M. Vaughn well 1	Atlantic Refining Co.	1952	8,101	--	--	208	--	--	--	--	Do.
903	Texas Eastern Transmission Corp.	Slim Thompson	1956	380	6, 4	Goliad Sand	--	75	1959	T,E, 5	P	Cased to 303 ft, screened from 187 to 227 ft. Supplies water for camp compressor station.1/
* 904	do	Layne-Texas Co.	1953	302	6, 4	do	--	75	1959	T,E, 5	P	Casing: 6-in. to 187 ft; 4-in. from 187 to 250 ft; screened from 187 to 225 ft. Supplies water for camp at compressor station.1/
905	W. B. Callihan	--	1930	62	4	do	--	30	1937	C,W	D,S	
64-101	L. T. Burns well 1	Humble Oil & Refining Co.	1943	8,153	--	--	237	--	--	--	--	Oil test.2/
201	Heaton Estate	Markus Ploeger	1951	248	4	Goliad Sand	--	56.7 56.4	Mar. 4, 1959 Sept.26, 1962	N	N	Cased to bottom. Casing slotted from 222 ft to bottom. Supplied water for drilling oil test.
202	do	do	1952	262	4	do	--	45.6	do	N	N	Cased to bottom; casing slotted from 249 ft to bottom. Supplied water for drilling oil test.1/
203	D. H. Heaton well A-1	Imperial Production Co.	1953	7,850	--	--	197	--	--	N	N	Oil test.2/
204	D. H. Heaton well C-1	Harkins & Co.	1961	8,015	--	--	186	--	--	--	--	Oil test.3/
301	Mrs. Hilda Schmidt Dagg well 1	Humble Oil & Refining Co.	1949	7,851	--	--	210	--	--	--	--	Oil test.2/
302	W. H. Thompson well 1	Argo Oil Corp.	1955	8,621	--	--	186	--	--	--	--	Do.
303	Jack Garrett	--	--	300	4	Goliad Sand	--	43.1	Mar. 4, 1959	N	N	Supplied water for drilling oil test; never used.

See footnotes at end of table.

Table 8.--Records of wells in De Witt County--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			
67-64-304	S. G. Stevens	--	1920	77	4	Goliad Sand	--	39.4	June 24, 1937	C,E	D,S	Bored well.
* 305	E. Garrett	Branch & Fudge	1915	77	4	do	--	37.5	do	C,W	D,S	Do.
306	Ward Stevens	--	1900	74	--	do	--	36.0	do	C,E	D,S	Bored well. Cased to 60 ft.
401	Muggie Estate well 1	Bateman Drilling Co.	1954	8,214	--	--	228	--	--	--	--	Oil test.2/
402	Alma Blackwell well 1	Earl G. Bateman	1955	8,215	--	--	--	--	--	--	--	Do.
403	do	Shell Oil Co.	1944	10,051	--	--	217	--	--	--	--	Do.
* 404	Lem C. Duderstadt, Jr.	Schumacher & Sons	1958	84	4	Goliad Sand	--	--	--	C,W	S	Cased to bottom.1/
405	Wm. Buehrig well 1	Sunray Oil Co.	1935	4,015	--	--	206	--	--	--	--	Oil test.1/
501	Helen Gohlke well 1	Shell Oil Co.	1950	8,216	--	--	191	--	--	--	--	Oil test.2/
502	Gohlke Estate	Markus Ploeger	1950	280	4	Goliad Sand	205	72.6 74.0	Feb. 4, 1959 Sept.25, 1962	N	N	Cased to bottom. Supplied water for drilling oil test.
503	Mathew & Kuester well 1	Shell Oil Co.	1952	8,254	--	--	193	--	--	--	--	Oil test.2/
504	A. J. House	Markus Ploeger	1951	285	4	Goliad Sand	208	77.1 77.7	Mar. 4, 1959 Sept.25, 1962	N	N	Cased to bottom; slotted below 255 ft. Supplied water for drilling oil test.1/
505	Mathew & Kuester	H & S Water Well Service	--	300	4	do	204	80.0 83.2	Mar. 4, 1959 Sept.25, 1962	N	N	Supplied water for drilling oil test.
506	A. C. Rohre	Markus Ploeger	1952	452	4	do	211	79.8 81.5 83.7	Mar. 4, 1959 Sept.27, 1962 Aug. 4, 1963	N	N	Cased to bottom, part slotted. Supplied water for drilling oil test.1/
507	W. H. Kuester	Kirkwood & Co., Seeger, Weaver, & Sharp	1952	8,515	--	--	210	--	--	--	--	Oil test.2/
508	Gohlke Estate	Markus Ploeger	1952	414	4	Goliad Sand	212	81.1 84.7	Mar. 4, 1959 Jan. 1, 1963	N	N	Cased to bottom. Supplied water for drilling oil test.1/
509	do	do	1952	446	4	do	--	70.3 83.8	Mar. 4, 1959 Jan. 15, 1963	N	N	Do.
510	Gohlke Estate well 1	Shell Oil Co.	1950	--	--	--	180	--	--	--	--	Oil test.3/

See footnotes at end of table.

Table 8.--Records of wells in De Witt County--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			
*67-64-601	Elise Rosenfelder	H & S Water Well Service	1952	317	4	Goliad Sand	--	--	--	C,W	S	Cased to bottom, part slotted. Supplied water for drilling oil test. Temp. 76°F. 1/
602	W. L. Carpenter Estate well 1	Kirby Petroleum Co.	1951	8,269	--	--	178	--	--	--	--	Oil test.2/
603	Elise Rosenfelder well 9	Humble Oil & Refining Co.	1952	8,180	--	--	193	--	--	--	--	Do.
* 604	Shell Oil Co.	Markus Ploeger	1951	430	7, 4	Goliad Sand	--	95.0	Mar. 3, 1959	J,E, 5	P	Casing: 7-in. to 310 ft, 4-in. from 255 to bottom. Slotted from 405 to bottom. Supplies water for camp. Temp. 80°F.1/
605	do	do	1951	343	4	do	--	--	--	J,E, 2	P	Cased to bottom, part slotted. Supplies water for camp.1/
606	Elise Rosenfelder	H & S Water Well Service	1951	320	4	do	--	85.3 91.2	Mar. 3, 1959 Sept.25, 1962	N	N	Cased to bottom, part slotted. Supplied water for drilling oil test.1/
607	C. Rosenfelder	--	1900	65	4	do	--	44.6 52.3	June 16, 1937 Sept.27, 1962	C,W	N	Cased to 60 ft.
608	Elise Rosenfelder	H & S Water Well Service	1952	316	4	do	--	70.8	Feb. 4, 1959	N	N	Cased to bottom, part slotted. Supplied water for drilling oil test.1/
609	do	do	1951	310	4	do	--	74.5	do	N	N	Do.
701	C. H. Kuester well 1	Holmes Drilling Co.	1953	7,946	--	--	170	--	--	--	--	Oil test.2/
702	R. C. Sager	L. Afflerbach	1907	80	4	Goliad Sand	--	58.6 28.8	June 16, 1937 Sept.25, 1962	C,W	S	Cased to 60 ft.
703	Mary E. Atkinson well C-1	Kirkwood & Co.	1954	9,015	--	--	173	--	--	--	--	Oil test.3/
704	R. C. Sager	--	--	197	4	Goliad Sand	--	68.3	Nov. 27, 1962	N	N	Supplied water for drilling oil test.
*79-03-101	W. T. Brown	-- Borth	1961	92	4	Oakville Sandstone	--	63.3	Dec. 18, 1962	C,W	D,S	
102	Chris Mueller	--	--	196	4	do	--	164.3	do	C,W	S	Old well.
201	W. F. Heinze	--	1915	57	4	do	--	12.4 12.2	Apr. 7, 1959 Dec. 19, 1962	C,W	S	
* 202	Mrs. W. C. Brown	--	--	72	5	do	--	58.3	do	C,W	S	Temp. 73°F.
203	S. A. Butler	--	1900	45	--	do	--	23.0 20.6	June 9, 1937 Dec. 19, 1962	N	N	Dug well. Reported failed during 1948-56 drought.

See footnotes at end of table.

Table 8.--Records of wells in De Witt County--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			
*79-03-301	A. R. Dworaczyk	--	1907	180	4	Oakville Sandstone	--	63.5 54.5	June 8, 1937 Dec. 19, 1962	C,W	D,S	
501	Wayne Hartman	--	--	100	4	do	--	39.0	do	C,W	S	Old well.
601	Henry Harms, Sr.	-- Tietz	1906	80	3	do	--	72.6	Apr. 17, 1959	C,W	D,S	Cased to bottom.
602	Harry Sommer	--	1962	300	3	do	--	129.4 129.8	Dec. 19, 1962 July 15, 1963	N	N	Supplied water for drilling oil test.
* 901	Gilbert Mueller	H & S Water Well Service	1961	347	7	do	--	95	1961	T,E, 1	S	Cased to bottom, slotted from 272 ft to bottom. Temp. 75°F.1/
902	Carl Bolting	--	1910	110	4	Lagarto Clay	--	66.4	Nov. 15, 1962	C,W	S	
903	Herbert Stoever	--	--	81	4	do	--	60.9	do	C,W	D,S	Old well.
04-101	E. Wiede	--	1900	95	4	Oakville Sandstone	--	31.5 31.2	June 8, 1937 Nov. 15, 1962	C,W	N	
102	F. C. Adix	--	1895	50	4	do	--	34.0 21.2	June 8, 1937 Nov. 15, 1962	C,W	D,S	Cased to 40 ft.
201	H. Von Roeder	--	--	65	4	Lagarto Clay	--	50	1962	C,E	D,S	
301	City of Yorktown well 4	Layne-Texas Co.	1954	972	14, 8	Oakville Sandstone	270	45	Feb. 1954	T,E, 40	P	Casing: 14-in. to 880 ft, 8-in. from 880 ft to bottom; screen at 875-925 and 935-960 ft. Test pumped Feb. 2, 1954, 66 ft drawdown after pumping 660 gpm for 8 hours.1/ 2/
* 302	City of Yorktown well 2	do	1929	960	16, 8	do	270	26 33	1929 1944	T,E, 10	P	Drilled to 2,000 ft, plugged back to 960 ft. Originally cased to 960 ft with 16 and 8-in. screen on bottom. Well reworked and 14 and 6-in. liner placed inside 16 and 8-in. respectively. Reported drawdown 83 ft while pumping 508 gpm when drilled. Temp. 80°F.1/
* 303	Yorktown Cotton Oil Co.	--	--	300	4	Oakville Sandstone (?)	270	+ 6	1930	Flows, N	N	Drilled to 900 ft, plugged back to 300 ft. Reported flow about 10 gpm.
304	E. A. Gohlke well 1	Columbia Drilling Co.	1951	4,780	--	--	335	--	--	--	--	Oil test.2/
* 305	Alice H. Witte	Maresch & Sons	1957	110	4	Oakville Sandstone	--	15.7	Dec. 18, 1962	C,W	S	Cased to bottom. Temp. 74°F.1/
* 306	H. H. Korth	Hunt Oil Co.	1951	400	5	do	--	51.7	do	C,W	S	Supplied water for drilling oil test. Temp. 75°F.

See footnotes at end of table.

Table 8.--Records of wells in De Witt County--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
*79-04-401	City of Nordheim well 2	H & S Water Well Service	1957	595	8, 6	Oakville Sandstone	--	151.5	Apr. 24, 1959	T,E, 15	P	Cased to bottom, screened at 380-410 and 556-595 ft. Reported discharge 200 gpm. Temp. 81°F.1/
* 402	City of Nordheim well 3	do	1958	1,082	8, 4	do	--	181.5 186.4	Apr. 29, 1959 Apr. 29, 1963	T,E, 15	P	Cased to bottom, screened at 925-997 and 1,018-1,080 ft. Temp. 90°F.1/
403	W. Schneider	Frank Herr	1916	86	4	Lagarto Clay	--	59.5 62.4	May 7, 1937 Nov. 15, 1962	C,W	D,S	
404	J. L. Wolfe	--	1922	90	4	do	--	43.5 49.2	May 7, 1937 Jan. 8, 1963	N	N	Replacement well is 15 ft east.
405	do	--	--	200	4	Oakville Sandstone	--	69.4	Apr. 29, 1963	C,W	D,S	
* 406	City of Nordheim well 1	--	1923	815	8, 6	do	--	180	1939	N	N	Drilled to 1,320 ft, plugged back to 815 ft. Cased to 815 ft; perforated at 520-530 and 800-815 ft. Supplied city until 1957. Temp. 85°F. Abandoned.
501	R. J. Roeder well 1	Jake L. Hamon et al.	1955	10,015	--	--	326	--	--	--	--	Oil test.2/
502	H. L. Hilgartner well 1	G. H. Vaughn Production Co.	1952	8,440	--	--	300	--	--	--	--	Do.
503	Elize Gansow well 1	Billy Bridewell	1958	7,300	--	--	352	--	--	--	--	Do.
504	H. L. Hilgartner	H & S Water Well Service	1961	547	12	Oakville Sandstone	--	36.6 28.4	Sept.27, 1962 Apr. 9, 1963	T,G	Irr	Cased to bottom; slotted from 270-290, 340-368, 385-435, 475-490, and 525-545 ft. Discharge on test 1,207 gpm from a pumping level of 258 ft.1/
505	R. G. Fourguran	--	--	165	4	Lagarto Clay	--	130.1	Jan. 8, 1963	C,W	S	
506	Mobil Oil Co.	--	1956	650	4	Oakville Sandstone	--	57.3	Apr. 29, 1963	N	N	Supplied water for drilling oil test.
* 601	First National Bank of Yorktown	--	1943	770	4	do	325	65.6 75.7 72.8	June 18, 1959 Nov. 15, 1962 July 15, 1963	N	N	Cased to bottom; part slotted. Supplied water for drilling oil test. Temp. 78°F.
602	First National Bank of Yorktown well 1	Sohio Producing Co.	1943	8,504	--	--	325	--	--	--	--	Oil test.2/
* 603	W. M. L. Wright	H & S Water Well Service	1956	250	7	Lagarto Clay	--	65.4 66.1	June 18, 1959 Nov. 15, 1962	T,E, 1-1/2	D,S	Cased to bottom; slotted from 212 to bottom. Reported drawdown 21 ft pumping 45 gpm. Temp. 80°F.1/

See footnotes at end of table.

Table 8.--Records of wells in De Witt County--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			
79-04-701	Wm. Baumana well 1	Hawn Bros.	1952	8,521	--	--	349	--	--	--	--	Oil test.2/
702	Katherine Leister well 1	Wescol Oil & Gas Co.	1948	8,450	--	--	373	--	--	--	--	Do.
703	W. Buesing, Jr.	--	1922	180	4	Lagarto Clay	--	96.8 92.7	June 1, 1937 Nov. 15, 1962	C,W	D,S	Cased to 150 ft.
704	John H. Decker well 1	Exeter Oil Co.	1956	4,024	--	--	365	--	--	--	--	Oil test.3/
801	Berthold Oehlke well 1	Louis Harling et al	1956	4,093	--	--	335	--	--	--	--	Oil test.2/
* 802	Edwin Wisian	Schumacher & Sons	1962	615	8	Lagarto Clay	--	115	1962	T,G	Irr	Cased to bottom, part slotted. Reported discharge 350 gpm. Temp. 77°F.
803	Henry W. Skow	--	--	--	4	do	--	141.2	Nov. 15, 1962	N	N	Supplied water for drilling oil test.
804	C. F. Kallina well 1	J. Don Hynes	1961	--	--	--	419	--	--	--	--	Oil test.3/
805	F. Kelch	--	1900	200	4	Lagarto Clay	--	80	1937	C,W	D,S	Cased to 180 ft.
* 901	Mrs. H. C. England	--	1925	172	4	do	--	109.4 147.9	June 1, 1937 Mar. 10, 1959	C,W	D,S	
902	do	--	--	240	4	do	--	136.3	Nov. 15, 1962	N	N	Cased to bottom, slotted from 202 ft to bottom. Supplied water for drilling oil test.
903	Garland Baache well 1	J. H. Holland & Commonwealth Oil Co.	1960	7,804	--	--	331	--	--	--	--	Oil test.3/
* 05-101	City of Yorktown well 3	Layne-Texas Co.	1953	948	14, 8	Oakville Sandstone	--	75 72.9	1955 Feb. 12, 1959	T,E, 50	P	Reported discharge 500 gpm. Temp. 87°F.
* 102	Mrs. Louise Zorn	Wm. Winch	1908	80	4	Lagarto Clay	--	44.2 51.4	June 23, 1937 Mar. 10, 1959	J,E	D,S	Cased to bottom.
103	Edward Danysh well 1	Adams Oil & Gas Co.	1943	--	--	--	350	--	--	--	--	Oil test.3/
201	Frank J. Tham well 1	Yarborough, Zoch, & Flato Drilling Co.	1952	7,238	--	--	335	--	--	--	--	Oil test.2/
202	Paul Wollney well 1	F. W. Carr	1952	7,520	--	--	286	--	--	--	--	Do.

See footnotes at end of table.

Table 8.--Records of wells in De Witt County--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			
79-05-203	Afflerbach Estate	Ed Tietze	1910	50	4	Lagarto Clay	--	38.0 41.2	Apr. 21, 1937 Nov. 7, 1962	C,W	D,S	
204	Mrs. W. M. Rothe	A. Lemke	1917	77	4	do	--	51.7	May 20, 1937	C,W,E	D,S	Cased to 60 ft.
205	Elsie Berck well 1	Socony-Mobil Oil Co., Inc.	1961	10,600	--	--	320	--	--	--	--	Oil test.3/
301	D. H. Murray	--	--	--	4	Lagarto Clay	--	62.4	Oct. 22, 1962	C,W	S	Old well.
302	E. T. Rabke	--	--	91	4	do	--	47.2	Nov. 7, 1963	C,W	S	
401	Fred Menn well 1	Rowan & Hope	1951	7,643	--	--	240	--	--	--	--	Oil test.2/
402	Ernest Lemke	Albert Rothe	1960	64	4	Lagarto Clay	--	10	1960	C,W	S	
403	G. C. Meyer	--	1907	60	4	do	--	48.8	May 27, 1937	C,E	D,S	
* 404	do	--	--	60	4	do	--	28.4	Nov. 14, 1962	C,W	S	
405	Albert Grun	--	1898	80	4	do	--	48.4 52.2	May 27, 1937 Nov. 14, 1962	C,W	D,S	
501	O. C. Caruthers well 2	George W. Graham	1954	4,911	--	--	225	--	--	--	--	Oil test.2/
* 502	Hugo Gohlke	--	1900	200	4	Lagarto Clay	--	11.6 16.9	June 23, 1937 Oct. 22, 1962	C,W	D,S	Temp. 74°F.
503	Walter Ludwig well 1	Delange, Neatherly, & Schimmel	1961	7,300	--	--	241	--	--	--	--	Oil test.3/
504	-- Dlugosch well 1	George W. Graham	1959	4,513	--	--	230	--	--	--	--	Do.
601	Amelia Boldt well A-1	Coloma Oil & Gas Co.	1959	5,006	--	--	224	--	--	--	--	Oil test.2/
602	Milton Sievers	--	1890	81	4	Lagarto Clay	--	61.4	June 23, 1937	C,W	D,S	
603	Mrs. R. Ledwig	Woods Bros.	1916	80	4	do	--	53.1 55.3	do Oct. 22, 1962	C,W	D,S	Cased to bottom.
604	E. D. Boldt	--	--	113	4	do	--	25.2	do	C,W	S	
605	Amelia Boldt well A-1	Pittman & Morrison	1962	4,512	--	--	225	--	--	--	--	Oil test.3/
606	A. F. Spies well 1	Harkins & Co. and George A. Musselman	1959	7,829	--	--	293	--	--	--	--	Do.

See footnotes at end of table.

Table 8.--Records of wells in De Witt County--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			
	79-05-701	A. W. Grun well 1	Rowan & Hope, and E. W. Gill	1952	7,389	--	--	318	--	--	--	--	Oil test.2/
	702	Fred Menn well 1	Rowan & Hope	1951	8,825	--	--	272	--	--	--	--	Do.
	703	Herman Riedel well 1	Hill Bros. & Kuntz	1936	6,208	--	--	270	--	--	--	--	Do.
	704	R. Rabke et al. well 1	James R. Buck	1953	8,015	--	--	338	--	--	--	--	Do.
	705	Alfred Henze	--	1910	120	4	Lagarto Clay	--	57.1	May 27, 1937	N	N	Cased to 110 ft. Abandoned.
*	706	do	Borth Garage & Welding Service	1961	220	4	do	--	121.2	Nov. 14, 1962	C,W	D,S	Cased to 210 ft.
*	707	H. A. Range	--	1917	100	4	Goliad Sand	--	19.1 37.6	May 27, 1937 Nov. 14, 1962	C,W	D,S	Cased to 60 ft.
*	06-101	Heine Bade	H & S Water Well Drilling Co.	1956	510	10	Lagarto Clay	--	80 89.5 90.7	1956 Mar. 12, 1959 Sept.27, 1962	T,G	Irr	Cased to bottom, slotted opposite sands below 230 ft. Reported discharge 800 gpm as used. When needed irrigates 60 to 80 acres of green graze.1/
*	102	do	Schumacher & Sons	1950	73	6	do	--	--	--	J,E	D,S	Cased to bottom.
	103	Earl W. Buenger	--	--	65	40	Goliad Sand	--	48.7 54.5	Apr. 24, 1937 Sept.27, 1962	N	N	Dug well curbed with brick. Did not supply sufficient water for dairy.
	104	do	Albert Roth	1954	87	4	Lagarto Clay	--	--	--	T,E	D,S	Cased to 84 ft.
	105	Steve Zilonka	--	1922	65	4	do	--	39.0 44.0	Apr. 24, 1937 Nov. 7, 1962	C,W,E	D,S	Cased to 60 ft.
	201	F. W. Rabke well 1	Weaver & Sharp	1955	8,215	--	--	207	--	--	--	--	Oil test.2/
*	202	Albert H. Sager	Schumacher & Sons	1957	283	8	Goliad Sand and Lagarto Clay	240	80 77.4 74.5 75.7	Mar. 1957 Feb. 5, 1959 Oct. 10, 1962 July 15, 1963	T,E, 10	Irr	Cased to bottom, slotted at 139-160, and 201-280 ft. Reported discharge 135 gpm when needed. Irrigates 20 acres. Temp. 75°F.1/
	203	F. C. Koehler well 1	A. O. Phillips	1954	6,429	--	--	238	--	--	--	--	Oil test.2/
	204	B. F. Schrade	--	--	332	4	Lagarto Clay	--	99.8	Nov. 27, 1962	N	N	Supplied water for drilling oil test.
*	205	Otto Sager	--	--	110	4	Goliad Sand (?)	--	88.9	Apr. 25, 1937	C,W	D,S	
	301	W. A. Thieme well 1	Kirkwood & Co. and Midstates Oil Corp.	1955	8,850	--	--	199	--	--	--	--	Oil test.2/

See footnotes at end of table.

Table 8.--Records of wells in De Witt County--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			
79-06-302	O. T. McAlister	--	--	126	4	Goliad Sand	--	106	1937	N	N	Old well.
303	O. A. Zengerle	--	--	55	42	do	--	50.1	Oct. 23, 1962	N	N	Dug well curbed with rock. Old well.
304	do	--	--	97	4	do	--	82.7	do	C,W	S	Drilled in bottom of dug well.
305	Otto H. Sager well 1	Whittin Estate, Inc.	1961	7,650	--	--	235	--	--	--	--	Oil test.3/
401	Richard Gerbert well 1	Hillcrest Oil Co.	1958	7,668	--	--	220	--	--	--	--	Oil test.2/
402	E. C. Shaefer well 2	The Texas Co.	1951	7,695	--	--	237	--	--	--	--	Do.
403	Leroy Angerstein well 1	Hamon & Cox	1953	7,671	--	--	264	--	--	--	--	Do.
404	Wm. Schellpepper well 3	Midstates Oil Co.	1952	7,641	--	--	233	--	--	--	--	Do.
405	N. M. Crain	--	--	98	4	Lagarto Clay	--	71.7	Oct. 22, 1962	C,W	S	Old well.
406	do	--	--	80	4	do	--	57.1 56.5	Apr. 21, 1937 Oct. 22, 1962	C,W	S	Do.
* 407	L. G. Nagel	Scout Edds	1955	315	4	do	--	89.7	Nov. 20, 1962	C,E	D,S	Cased to bottom.
408	R. T. Brown	Ed Tietze	1924	75	4	do	--	55.1 57.8	June 23, 1937 Oct. 22, 1962	C,W	D,S	Cased to 74 ft.
409	-- Duderstadt well 1	--	--	318	3	do	--	107.3	Nov. 20, 1962	A	Ind	Cased to bottom, part slotted. Supplied water for drilling oil test; now rarely used.
410	George Musselman et al. well 2	Kirkwood Drilling Co.	1961	7,660	--	--	216	--	--	--	--	Oil test.3/
501	C. A. Geary unit 1	Midstates Oil Corp.	1954	7,662	--	--	249	--	--	--	--	Oil test.2/
502	W. R. Egg well 3	do	1952	7,659	--	--	266	--	--	--	--	Do.
503	R. L. Wendel	--	--	79	3	Goliad Sand	--	55.5	Apr. 25, 1937	C,E	D,S	Old well.
504	E. F. Hartman	--	--	320	4	Lagarto Clay	--	94.9	Oct. 10, 1962	N	N	Supplied water for drilling oil test.
505	A. A. Buehrig	-- McGlothian	1924	92	4	Goliad Sand	--	69.5	Apr. 21, 1937	C,E	D,S	
601	A. Diebel well 1	Deep Rock Oil Corp.	1952	8,400	--	--	205	--	--	--	--	Oil test.2/

See footnotes at end of table.

Table 8.--Records of wells in De Witt County--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			
79-06-602	E. J. Rangnow well A-1	Francis J. Hynes	1954	8,159	--	--	195	--	--	--	--	Oil test.2/
603	W. J. Lau well 1	do	1954	8,123	--	--	221	--	--	--	--	Do.
* 604	W. J. Lau	--	1954	270	4	Lagarto Clay	--	90.4 92.1	Oct. 10, 1962 July 15, 1963	N	N	Cased to bottom, part slotted. Supplied water for drilling oil test. Estimated discharge 40 gpm when jetted with gas.
* 605	do	Francis J. Hynes	1954	1,302	14	Oakville Sandstone	205	+ - 9.2	Feb. 18, 1959 July 15, 1963	--	S	Converted oil test plugged at 1,302 ft, and gun-perforated opposite sands between 842 and 1,250 ft. Reported test-pumped 200 gpm with over 300 ft drawdown. Temp. 79°F.
606	W. R. Egg well 1	do	1953	8,309	--	--	169	--	--	--	--	Oil test.2/
607	-- Bitterly	--	--	110	4	Goliad Sand	--	96.0	Oct. 23, 1962	C,W	S	
702	Alois Duderstadt	--	--	105	4	Lagarto Clay	--	37	1937	C,E	D,S	Cased to 80 ft.
703	Otto Adickes	--	1917	73	3	Goliad Sand	--	53 55.4	1937 Oct. 22, 1962	C,W	D,S	
704	Bluntzer Estate well 1	Kirkwood & Co. et al.	1953	8,050	--	--	230	--	--	--	--	Oil test.2/
801	Otto Adickes well 1	Kirkwood & Co.	1956	8,415	--	--	240	--	--	--	--	Do.
802	F. C. Drier well 1	Amerada Petroleum Corp. et al.	1945	9,123	--	--	189	--	--	--	--	Do.
803	Fred Wendel	J. Pietzik	1914	75	4	Goliad Sand	--	58.5	June 22, 1937	C,E	D,S	Cased to 74 ft.
804	A. Doehrman	--	1905	70	4	do	--	41.6	do	C,E	D,S	
* 805	Berthold Wendel	--	1916	68	4	do	--	42.7 42.2	do Apr. 9, 1963	C,W,E	D,S	Cased to bottom. Temp. 76°F.
806	Schellpepper & Hartman	Tenneco Oil Co.	1962	184	3	Lagarto Clay	--	67.0	Oct. 22, 1962	N	N	Supplied water for drilling oil test.
901	W. H. Ruschaupt, Jr. well A-1	Continental Oil Co.	1954	8,901	--	--	177	--	--	--	--	Oil test.2/
07-101	-- Zingerle well 1	Western Natural Gas Co.	1948	8,712	--	--	199	--	--	--	--	Do.
102	E. F. Hartman well 1	Kirkwood & Co. and Tom J. Weigel	1954	8,318	--	--	179	--	--	--	--	Do.

See footnotes at end of table.

Table 8.--Records of wells in De Witt County--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
79-07-103	Hart Atkinson well B-1	Holland American Petroleum Co.	1957	10,215	--	--	195	--	--	--	--	Oil test.2/
104	-- Hartman unit 1	Producing Properties, Inc.	1962	9,312	--	--	200	--	--	--	--	Do.
201	Bunjes-McCrabb unit 1	Gasoline Production Corp. et al	1958	8,707	--	--	147	--	--	--	--	Do.
202	O. T. McAlister	--	1900	120	4	Lagarto Clay	--	92.1	May 3, 1937	N	N	
* 203	do	Schumacher & Sons	1961	168	4	do	--	--	--	J,E	D,S	Cased to bottom. Temp. 75°F.
* 204	R. L. Murphree	do	1959	84	4	do	--	37.6	Nov. 26, 1962	T,E	S	Cased to bottom. Temp. 74°F.1/
205	R. M. Adcock	--	--	51	4	Goliad Sand	--	42.8	Jan. 15, 1963	C,W	S	Old well.
* 206	Henry Holtz	--	1913	64	36, 4	do	--	46.7	do	C,W	S	Dug well to 55 ft, curbed with brick; drilled from 55 to 64 ft with casing from 42 ft to bottom.
301	Mary Atkinson well 1	Harkins & Co. and George Musselman	1958	9,015	--	--	165	--	--	--	--	Oil test.2/
* 302	-- Klemm	J. A. McDonald	1910	62	4	Goliad Sand	--	49.2 50.9 51.7	May 15, 1937 Oct. 23, 1962 July 9, 1963	J,E	D,S	
303	Mary Atkinson	--	1958	204	4	do	165	63.7	Nov. 27, 1962	N	N	Supplied water for drilling oil test.
304	Mary Atkinson well 3	Harkins & Co.	1959	8,220	--	--	149	--	--	--	--	Oil test.2/
401	E. L. Zingerle	--	1922	110	--	Goliad Sand	--	86.8 87.0	May 3, 1937 Oct. 23, 1962	C,W	D,S	
501	A. C. Hartman well 1	Kirkwood & Co.	1955	8,615	--	--	205	--	--	--	--	Oil test.3/
701	H. Weaver well 1	Continental Oil Co.	1961	--	--	--	149	--	--	--	--	Do.
12-101	-- Fuhrken well 1	L. K. Howeth	1940	4,433	--	--	292	--	--	--	--	Oil test.2/
102	M. Pargmann well 1	Coastal Trend Oil & Gas Corp.	1954	4,077	--	--	270	--	--	--	--	Do.
103	A. D. Fuhrken	--	--	115	4	Goliad Sand	--	82.1	Nov. 14, 1962	C,W	D,S	Old well.
* 104	A. W. Gips	Franz Herr	1917	72	4	Lagarto Clay	--	27.1 26.1	June 10, 1937 Nov. 14, 1962	C,W	D,S	Cased to 70 ft. Temp. 77°F.

See footnotes at end of table.

Table 8.--Records of wells in De Witt County--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
79-12-105	Fritz Onken	--	1906	90	4	Goliad Sand	--	32.4 40.0	June 10, 1937 Jan. 8, 1963	C,W	S	Cased to bottom.
* 106	Tidewater Oil Co.	--	1947	504	16, 6	Lagarto Clay	--	--	--	T,E, 1	D	Casing: 16-in. to 400 ft, 6-in. from 397 to bottom; slotted from 400-409, 421-441, and 456-502 ft. From 1947 to 1955 supplied about 250,000 gpd for refinery. Now supplies water for one house.
107	A. W. Gips	Borth Garage & Welding Service	1962	108	4	do	--	37.6	Jan. 14, 1963	C,W	S	Cased to bottom.
108	Tidewater Oil Co.	--	1942	573	4	do	--	100	1942	N	N	Cased to 549 ft; slotted from 504-549 ft. Supplied water for drilling oil test.
201	E. A. Kolodzey well 1	The Texas Co.	1947	8,501	--	--	306	--	--	--	--	Oil test.2/
202	Mrs. Myra Skinner well 1	George W. Graham et al.	1953	7,600	--	--	319	--	--	--	--	Do.
203	W. W. Kiedel well 1	Transwestern Oil Co. & Continental Oil Co.	1944	7,710	--	--	288	--	--	--	--	Do.
204	Federal Land Bank of Houston	Continental Oil Co.	1944	7,668	--	--	346	--	--	--	--	Do.
205	W. A. Riedel	--	1942	500	4	Lagarto Clay	--	132.9	Nov. 14, 1962	N	N	Supplied water for drilling oil test.
* 206	do	--	--	128	6	Goliad Sand (?)	--	63.4	do	C,W	S	Old well.
* 207	Minna Schueneman	--	--	110	5	Lagarto Clay	--	67.1	Jan. 8, 1962	C,W	S	
* 208	Continental Oil Co.	--	1943	450	5	do	--	90	Sept. 1954	J,E, 2	P	Cased to bottom, part slotted. Supplied water for oil field camp.
301	Louis Gohmert	--	--	128	4	Goliad Sand	--	85.4	Nov. 14, 1962	C,G	S	
302	Louis Gohmert well 1	J. H. Helland & W. W. Buchanan	1961	7,651	--	--	317	--	--	--	--	Oil test.3/
303	M. H. Gohkle well 2	De Lange, Neatherly, & Schimmel	1960	7,649	--	--	300	--	--	--	--	Do.
* 304	Rollin Reynolds	Tom Moy	1957	239	5	Lagarto Clay	--	102.4	Dec. 19, 1962	C,W	S	Cased to bottom, perforated 209 ft to bottom.1/

See footnotes at end of table.

Table 8.--Records of wells in De Witt County--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			
*79-12-501	Ysidro Ochoa	--	1928	164	4	Goliad Sand	--	111.0	Jan. 8, 1963	C,W,E	D,S	Temp. 76°F.
* 502	O. P. Talk	--	--	150	4	do	--	120.7	Jan. 11, 1956	C,W	D,S	

1/ For drillers' logs of wells in De Witt County see Table 9.
2/ Electric logs of wells in De Witt County in files of Texas Water Commission.
3/ Electric logs in files of Gary Bowman, consulting geologist at Seguin, Texas.
* For analyses of water from wells in De Witt County see Table 10.

Table 9.--Drillers' logs of wells in De Witt County

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)

Well 66-57-102

Owner: L. P. Nickel. Driller: H. & S. Water Well Service.

Gravel----------	6	6	Sand and gravel----------	107	200
Clay, brown----------	44	50	Clay, red----------	55	255
Sand and rock----------	12	62	Sand and rock----------	38	293
Clay, white----------	18	80	Sand, red----------	30	323
Sand, white----------	13	93			

Well 67-46-603

Owner: Joe Cunningham. Driller: Autrey Drilling Co.

Surface soil----------	2	2	Sandstone, broken----------	2	82
Caliche----------	14	16	Clay, yellow----------	8	90
Clay, yellow----------	64	80	Clay----------	70	160

Well 67-46-704

Owner: Robert Cone. Driller: Schumacher and Sons.

Surface soil----------	5	5	Sand and rock, some water--	9	79
Clay----------	28	33	Clay, sandy----------	11	90
Rock----------	1	34	Rock----------	10	100
Sandrock----------	3	37	Sand and rock----------	30	130
Clay----------	33	70	Sand, water----------	16	146

Well 67-47-904

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

Soil----------	3	3	Sand, white----------	15	26
Clay, white----------	8	11	Sand, yellow----------	36	62

(Continued on next page)

Table 9.--Drillers' logs of wells in De Witt County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well 67-47-904--Continued					
Sand, packed	10	72	Clay, hard and packed sand	7	186
Sand, packed, and chalk	17	89	Sand (cored hard)	2	188
Clay, hard, sand, and chalk	22	111	Clay (cored hard)	2	190
Clay, yellow	30	141	Clay, hard	11	201
Clay, hard, and chalk	38	179			
Well 67-47-905					
Owner: City of Yoakum. Driller: Layne-Texas Co.					
Surface soil	7	7	Sand, medium fine	24	55
Clay, sandy, yellow	7	14	Sand, tight	7	62
Sand, brown	4	18	Sandrock, hard	6	68
Clay, yellow, and brown with sand streaks	13	31	Sand, hard	32	100
			Clay, sandy	10	110
Well 67-47-906					
Owner: City of Yoakum. Driller: Layne-Texas Co.					
Surface sand	5	5	Rock	1	56
Sand breaks	28	33	Sand breaks	45	101
Sand	22	55	Clay, yellow	11	112
Well 67-47-907					
Owner: City of Yoakum. Driller: Layne-Texas Co.					
Surface soil	2	2	Clay, sandy	18	38
Clay	13	15	Sand, sandy clay, and hard layers	34	72
Sand	5	20			

(Continued on next page)

Table 9.--Drillers' logs of wells in De Witt County--Continued

	Thickness (feet)	Depth (feet)
Well 67-47-907--Continued		
Clay, sandy, and hard layers	14	86
Sand and sandy clay	24	110
Clay, sandy	20	130
Clay	34	164
Caliche, sandy, and hard layers	22	186
Caliche	12	198
Caliche, sandy, and hard layers	86	284
Caliche, hard, broken	28	312
Caliche	5	317
Shale, sandy, and caliche	16	333
Shale and caliche	12	345
Shale, sandy, and caliche	24	369
Sand and hard layers	9	378
Sand, hard	9	387
Sand, cut good	11	398
Shale, sandy	6	404
Sand, cut good	26	430
Shale, sandy, and sand	28	458
Shale, hard, sandy	34	492
Shale	21	513
Shale, sandy	15	528
Shale	29	557
Shale, hard, sandy	15	572
Shale, sandy	12	584
Shale	101	685
Shale, sandy	18	703
Shale, and sandy shale	35	738
Sand with hard layers	19	757
Shale, sandy and hard layers	13	770
Shale and sticky shale	40	810
Shale, sandy	15	825
Shale and sandy shale	38	863
Shale, hard	10	873
Shale and sandy shale	58	931
Shale	33	964
Sand	7	971
Shale	70	1,041
Shale, sandy	12	1,053
Shale, broken	93	1,146
Shale, hard	4	1,150
Shale, sandy, and hard sandy shale	46	1,196
Shale, hard, sandy	8	1,204
Sand with shale layers	14	1,218
Shale, sandy	8	1,226
Shale, hard	12	1,238
Shale with hard layers	30	1,268

Table 9.--Drillers' logs of wells in De Witt County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)

Well 67-47-908

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

Soil and clay	12	12	Sand	51	63

Well 67-47-910

Owner: E. W. Pietsch. Driller: Schumacher and Sons.

Clay, sandy	23	23	Sand, fine	15	55
Sandrock	17	40	Sand, water	7	62

Well 67-52-802

Owner: Thomas W. Hahn. Driller: A. E. Urban.

Surface soil	1	1	Sand	4	76
Clay	19	20	Shale, hard, blue	21	97
Sand, red	15	35	Sand, fine, gray	17	114
Shale, sandy	5	40	Sand, hard	18	132
Sand and sandrock	31	71	Sand and rock, soft	21	153
Rock, hard	1	72	Sand, good, breaks	9	162

Well 67-52-804

Owner: C. J. McCollum. Driller: Albert Roth.

Surface soil	1	1	Shale, blue	14	114
Clay	79	80	Rock	2	116
Rock and sand	10	90	Shale	17	133
Rock layers	8	98	Rock layers and sand (water)	9	142
Rock and sand (water)	2	100	Clay	11	153

Table 9.--Drillers' logs of wells in De Witt County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)

Well 67-53-202

Owner: Giles L. Birchum. Driller: A. E. Urban.

Surface soil----------	2	2	Sand----------	12	80
Clay----------	10	12	Sand, hard----------	1	81
Caliche----------	10	22	Sand----------	4	85
Shale----------	22	44	Shale----------	64	149
Shale, hard, blue----------	3	47	Sand, hard----------	2	151
Sand, fine, gray----------	2	49	Shale, hard----------	12	163
Shale----------	15	64	Sand, hard, broken---------	23	186
Shale, hard, and line------	4	68	Shale----------	4	190

Well 67-53-705

Owner: Paul Borchardt. Driller: A. E. Urban.

Surface soil----------	1	1	Sand, hard----------	1	99
Caliche----------	1	2	Sand, fine----------	2	101
Sand, hard, and shale------	39	41	Shale----------	18	119
Sand breaks----------	2	43	Sand (undesirable)---------	2	121
Shale, hard----------	18	61	Sand, coarse (good)--------	5	126
Shale----------	19	80	Sand, hard----------	1	127
Sand, hard----------	2	82	Shale----------	5	132
Shale, sandy----------	16	98			

Well 67-53-801

Owner: Edward Wegner. Driller: Schumacher and Sons.

Surface soil----------	20	20	Rock----------	4	44
Sand, water----------	20	40	No record----------	16	60

(Continued on next page)

Table 9.--Drillers' logs of wells in De Witt County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well 67-53-801--Continued					
Sandrock, soft----------	15	75	Rock and sand, water-------	10	120
Sand, water----------	7	82	Rock----------	15	135
Rock----------	6	88	No record----------	15	150
Clay----------	22	110	Sand, water----------	80	230
Well 67-53-901					
Owner: W. A. Afflerbach. Driller: Schumacher and Sons.					
Surface soil----------	20	20	Rock----------	12	152
Rock and sand, fine--------	38	58	Clay----------	38	190
Sand, good, water----------	4	62	Rock----------	15	205
Rock----------	6	68	No record----------	5	210
Clay----------	7	75	Clay----------	25	235
Rock----------	25	100	Sand, water----------	105	340
Sand----------	40				
Well 67-54-601					
Owner: Lewis A. Kaye. Driller: Markus Ploeger.					
No record----------	86	86	Sand, dirty----------	16	502
Sand, layers, and rock-----	34	120	No record----------	45	547
No record----------	291	411	Sand, quartz, coarse------	75	622
Sand, hard, and rock-------	29	440	No record----------	3	625
No record----------	46	486			

Table 9.--Drillers' logs of wells in De Witt County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)

Well 67-54-602

Owner: T. R. Taylor. Driller: Schumacher and Sons.

Sandrock	23	23	Clay	21	131
Clay	27	50	Sandrock	26	157
Sandrock	60	110	Sand (water)	20	177

Well 67-54-603

Owner: F. D. Blackwell. Driller: Schumacher and Sons.

Sandrock	60	60	Clay	27	119
Clay	20	80	Sandrock	12	131
Sandrock	12	92	Sand, water	11	142

Well 67-54-605

Owner: F. D. Blackwell. Driller: Schumacher and Sons.

Clay	20	20	Clay	50	140
Sandrock	55	75	Sandrock	20	160
Clay	10	85	Sand, water	14	174
Sandrock and sand	5	90			

Well 67-54-606

Owner: Schumacher and Sons. Driller: Schumacher and Sons.

Sand and clay	70	70	Rock	5	205
Rock	5	75	Clay	65	270
Sand and rock	35	110	Sand	20	290
Sand, water	20	130	Rock	2	292
Clay	40	170	Sand, water	28	320
Rock	5	175	Clay	5	325
Sand, water	25	200			

Table 9.--Drillers' logs of wells in De Witt County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)

Well 67-54-802

Owner: Rexall Drug Co. Driller: Layne-Texas Co.

Clay	8	8	Sand	13	637
Sand and gravel	20	28	Shale	8	645
Clay, sandy	124	152	Sand	12	657
Rock	1	153	Shale	17	674
Shale, sandy	82	235	Sand	6	680
Sand	30	265	Shale	9	689
Shale	64	329	Sand	23	712
Shale, sandy	49	378	Shale, tough	178	890
Sand	20	398	Sand	16	906
Shale	69	467	Shale	10	916
Sand	43	510	Sand	30	946
Sand, hard, and shale	114	624	Shale	4	950

Well 67-54-803

Owner: Jack Wayne. Driller: H. & S. Water Well Service.

Clay	22	22	Shale	280	570
Sand and gravel	83	105	Sand	40	610
Shale	95	200	Shale	150	760
Sand	57	257	Sand	20	780
Shale	18	275	No record	150	930
Sand	15	290			

Table 9.--Drillers' logs of wells in De Witt County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)

Well 67-54-806

Owner: John Braden, Sr. Driller: A. E. Urban.

Surface soil	2	2	Sand, tight	9	138
Fill	2	4	Sand, fine	3	141
Clay	22	26	Sandrock	2	143
Sand	6	32	Sand, good breaks	21	164
Gravel, rough	4	36	Shale, hard	11	175
Shale	76	112	Sandrock, hard	1	176
Sandrock, hard	1	113	Sand, coarse, good	12	188
Sand, broken	16	129			

Well 67-54-901

Owner: Memory Gardens of Cuero, Inc. Driller: AAC Vacuum Trucks, Inc.

Clay	63	63	Sand	16	120
Sand	12	75	Clay, sticky	85	205
Clay	29	104	Sand	45	250

Well 67-55-404

Owner: Clyde Christian. Driller: Schumacher and Sons.

Sand	20	20	Rock	1	225
Sand and clay, red	90	110	Clay	1	226
Clay	10	120	Rock	69	295
Rock	30	150	Sand, water	25	320
Sand	38	188	Rock	1	321
Rock	17	205	Clay	9	330
Sand, water	19	224	Rock, hard	20	350

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Table 9.--Drillers' logs of wells in De Witt County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well 67-55-404--Continued					
Rock	10	360	Clay	10	420
Sand, water	50	410			
Well 67-55-601					
Owner: Sidney Kaiser. Driller: Autrey Drilling Co.					
Sand	3	3	Rock	1	148
Clay	7	10	Sand	28	176
Sand	13	23	Rock	1	177
Clay	22	45	Clay, red	4	181
Sandstone	3	48	Sandstone	13	194
Clay	10	58	Clay	13	207
Sand	30	88	Sandstone	13	220
Rock	1	89	Clay	4	224
Sand	5	94	Sandstone	10	234
Clay, red	53	147	Clay	6	240
Well 67-55-603					
Owner: G. Lassig. Driller: Schumacher and Sons.					
Clay and gravel	9	9	Rock	7	56
Sandrock	22	31	Sandrock	17	73
Sand	18	49	Sand, water	7	80
Well 67-56-901					
Owner: Clifford Carroll. Driller: Autrey Drilling Co.					
Surface soil	1	1	Sand	4	42
Clay	37	38	Rock	13	55

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Table 9.--Drillers' logs of wells in De Witt County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well 67-56-901--Continued					
Sand	9	64	Sand	33	188
Clay	44	108	Rock	2	190
Sand	20	128	Clay, sandy	19	209
Gravel	10	138	Sand	31	240
Clay	17	155			
Well 67-60-101					
Surface sand	20	20	Clay	58	129
Caliche	28	48	Sand, water	2	131
Sand (first water)	23	71			
Well 67-60-903					
No record	210	210	No record	36	338
Sand	17	227	Sand	22	360
No record	48	275	No record	135	495
Sand	27	302	Sand	75	570
Well 67-61-301					
Soil and clay	70	70	Rock	10	150
Rock, soft	19	89	Clay	15	165
Sandrock, soft, and rock	25	114	Rock	5	170
Sand (water)	26	140	Sand	55	225

Owner: Joe Wischkaemper. Driller: Borth Garage and Welding Service.

Owner: Otis Skinner. Driller: H. and S. Water Well Service.

Owner: Norman Kahlich. Driller: Schumacher and Sons.

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Table 9.--Drillers' logs of wells in De Witt County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well 67-61-301--Continued					
Rock	8	233	Rock	9	250
Clay	2	235	Sand (water)	25	275
Clay and rock	6	241			
Well 67-62-104					
Owner: Mrs. Ann H. Cusack. Driller: Albert Roth.					
Surface soil	2	2	Rock	3	54
Clay	14	16	Sand, fine	4	58
Sand	4	20	Rock	2	60
Rock	1	21	Sand	1	61
Sand, red	8	29	Rock, hard	2	63
Rock, soft	4	33	Sand and rock	5	68
Sand, yellow	3	36	Rock, hard	2	70
Rock, soft	4	40	Sand and rock	5	75
Sand and rock	11	51	Clay	11	86
Well 67-62-203					
Owner: City of Cuero. Driller: Layne-Texas Co.					
Soil and clay	8	8	Clay, sandy	13	142
Sand and gravel	43	51	Clay and hard layers	72	214
Sand and boulders	13	64	Clay, broken	30	244
Clay and gravel	16	80	Sand, broken	53	297
Clay	24	104	Shale and sand	22	319
Clay, sandy	22	126	Shale	10	329
Caliche	3	129	Sand	18	347

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Table 9.--Drillers' logs of wells in De Witt County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well 67-62-203--Continued					
Shale, sandy	18	365	Shale, sandy	14	614
Sand, broken	35	400	Sand	67	681
Shale, sandy, and sand	10	410	Sand and shale	32	713
Shale, sandy	110	520	Shale	12	725
Shale, tough	60	580	Sand	76	801
Shale, sandy	10	590	Shale	73	874
Shale, tough	10	600			
Well 67-62-207					
Owner: City of Cuero. Driller: Layne-Texas Co.					
Surface sand	20	20	Shale, hard	17	515
Gravel and boulders	43	63	Sand, packed	20	535
Sand, hard layers	34	97	Gumbo	63	598
Sand and clay	20	117	Shale, hard	59	657
Sand, hard layers	28	145	Sand, loose	15	672
Clay	31	176	Sand, hard	5	677
Clay, sandy	40	216	Sand, loose	6	683
Shale and rock	43	259	Sand, hard	16	699
Rock and shale	10	269	Shale	14	713
Sand, hard layers	30	299	Sand	37	750
Shale, hard, sandy	124	423	Shale, soft	25	775
Shale, tough	12	435	Sand, loose	25	800
Sand, hard	10	445	Shale	6	806
Shale, sandy	53	498	Sand, loose	22	828

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Table 9.--Drillers' logs of wells in De Witt County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well 67-62-207--Continued					
Shale	17	845	Sand and gravel	27	1,173
Gumbo	55	900	Shale, sandy	79	1,252
Shale, tough	55	955	Gumbo	5	1,257
Gumbo	47	1,002	Shale	82	1,339
Sand, loose	21	1,023	Sand, hard layers	21	1,360
Gumbo	23	1,046	Shale	14	1,374
Sand and sandy shale	6	1,052	Sand	6	1,380
Gumbo	19	1,071	Shale	35	1,415
Sand, hard	8	1,079	Gumbo	69	1,484
Sand, loose	43	1,122	Shale	13	1,497
Sand	13	1,135	Sand	10	1,507
Sand, hard	5	1,140	Shale	19	1,526
Shale, soft	6	1,146			
Well 67-62-208					
Owner: City of Cuero. Driller: J. H. Brown.					
Surface soil	32	32	Shell rock and sand	8	248
Gravel	8	40	Sandrock and white lime	152	400
Clay	2	42	Clay and sand	40	440
Clay and sand	68	110	Rock and clay	99	539
Rock and sand	90	200	Clay	11	550
Sand	26	226	Clay and rock	15	565
Clay	10	236	Gumbo and thin rock	19	584
Sand	4	240	Gumbo	87	671

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Table 9.--Drillers' logs of wells in De Witt County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well 67-62-208--Continued					
Sand and rock	15	686	Sand, water	40	1,055
Sand, blue, water	44	730	Clay, red	6	1,061
Gumbo	60	790	Sand, water	6	1,067
Clay, red, blue	46	836	Clay, red, white, blue	33	1,100
Sand, water, and rock	35	871	Sand, water, and thin rock	65	1,165
Clay, white, blue	144	1,015			
Well 67-62-209					
Owner: City of Cuero. Driller: G. C. Witte.					
Surface soil and lime	32	32	Gumbo	75	550
Gravel, sand, and water	8	40	Sand	15	565
Clay, red	2	42	Gumbo	19	584
Sand	8	50	Rock	6	590
Clay	60	110	Gumbo	81	671
Sand and sandrock	110	220	Sandrock	15	686
Sand	6	226	Sand, water	44	730
Clay	10	236	Gumbo	106	836
Sandrock	4	240	Sand, water	35	871
Shale, blue	8	248	Gumbo	180	1,051
Sandrock	52	300	Sand, water	4	1,055
Gumbo	60	360	Gumbo	19	1,074
Sand and lime	40	400	Sand, dark-colored	6	1,080
Gumbo	40	440	Gumbo	22	1,102
Sandrock	35	475	Sand, water	58	1,160

Table 9.--Drillers' logs of wells in De Witt County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)

Well 67-62-210

Owner: City of Cuero. Driller: McKinney Drilling Co.

Soil, sand, and clay-------	25	25	Sand, fine, water----------	80	435
Gravel, hard, loose--------	5	30	Clay, yellow, sandy--------	220	655
Gravel, fine, and sand-----	70	100	Sand, fine, water----------	45	700
Clay, yellow, and shale----	165	265	Shale----------	85	785
Sand, fine, water----------	70	335	Sand, water----------	65	850
Shale----------	20	355	Shale----------	62	912

Well 67-62-301

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

Soil and clay----------	8	8	Shale, tough----------	27	352
Sand and gravel----------	17	25	Sand, fine, and gravel-----	24	376
Sand and boulders----------	25	50	Shale, sandy----------	93	469
Clay, sandy, and boulders--	22	72	Shale----------	56	525
Boulders----------	7	79	Shale, sandy----------	14	539
Sand----------	8	87	Clay and sand----------	50	589
Sand, lime, and gravel-----	45	132	Shale, sandy----------	83	672
Rock----------	3	135	Shale, soft----------	43	715
Caliche, hard----------	14	149	Shale----------	31	746
Clay----------	67	216	Shale, soft----------	11	757
Shale and hard lime--------	39	255	Shale----------	27	784
Rock and shale----------	25	280	Shale, sandy----------	10	794
Sand and sandy shale-------	29	309	Sand, broken----------	52	846
Sand----------	16	325	Shale----------	24	870

(Continued on next page)

Table 9.--Drillers' logs of wells in De Witt County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well 67-62-301--Continued					
Shale, sticky----------	104	974	Sand----------	52	1,136
Shale, tough----------	42	1,016	Shale----------	6	1,142
Sand----------	3	1,019	Sand----------	12	1,154
Sand, gravel, and clay breaks----------	11	1,030	Shale, sandy----------	13	1,167
Shale----------	12	1,042	Sand and gravel----------	17	1,184
Clay, sandy, and gravel---	8	1,050	Shale, sandy, cut----------	20	1,204
Shale, tough----------	34	1,084	Shale----------	3	1,207
Well 67-62-303					
Owner: Cuero Independent School Dist. Driller: Schumacher and Sons.					
Clay, hard, and gravel-----	10	10	Rock, hard----------	18	238
Sandrock, soft----------	72	82	Clay----------	62	300
Sand, fine----------	38	120	Rock----------	2	302
Sand----------	20	140	Clay----------	36	338
Rock----------	9	149	Rock and sand----------	22	360
Clay----------	11	160	Sand----------	52	412
Sand, fine, dirty----------	50	210	Rock, hard----------	8	420
Sand----------	10	220	Clay----------	15	435
Well 67-62-304					
Owner: City of Cuero. Driller: Layne-Texas Co.					
Surface soil----------	5	5	Sand, hard layers---------	52	177
Clay, red, and sand--------	36	41	Clay, red----------	23	200
Sand, loose----------	39	80	Clay and hard sand layers-	37	237
Clay, red, soft----------	45	125	Clay, red, soft----------	59	296

(Continued on next page)

Table 9.--Drillers' logs of wells in De Witt County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well 67-62-304--Continued					
Clay, blue, soft	53	349	Sand, loose	10	931
Shale, sticky	10	359	Shale, hard, sticky	48	979
Sand, hard	23	382	Shale	47	1,026
Rock	1	383	Shale, hard, sticky	20	1,046
Rock and shale	21	404	Shale	19	1,065
Shale and sand layers, hard	40	444	Shale, white, sticky, hard	39	1,104
Shale, hard	10	454	Shale, soft	15	1,119
Sand and shale	15	469	Shale, hard, sticky	14	1,133
Shale, hard, sticky	52	521	Sand	10	1,143
Shale and boulders	55	576	Shale, hard, sticky	33	1,176
Shale	26	602	Shale, soft, sandy	18	1,194
Shale, hard, sticky	88	690	Shale	10	1,204
Shale, hard	19	709	Shale, soft, sandy, and sand layers	26	1,230
Sand, hard	20	729	Shale, hard	18	1,248
Shale	77	806	Shale, sandy, and sand	12	1,260
Shale, hard	21	827	Shale, hard	8	1,268
Shale, sandy, and sand	20	847	Shale, hard, sticky	38	1,306
Shale and thin sand layers	5	852	Sand, gray, loose	37	1,343
Shale, hard	17	869	Shale, hard	27	1,370
Shale, soft	12	881	Shale, blue, soft, and thin sand layers	18	1,388
Sand, white, coarse	17	898	Shale, tough	51	1,439
Shale, soft	10	908	Shale, hard	10	1,449
Shale, hard, sticky	5	913	Shale and thin sand layers	19	1,468
Shale, soft	8	921			

(Continued on next page)

Table 9.--Drillers' logs of wells in De Witt County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well 67-62-304--Continued					
Lime rock and sand	5	1,473	Shale, soft	13	1,496
Shale, hard, sticky	10	1,483			
Well 67-62-305					
Owner: Mrs. Eliza Dowe. Driller: Schumacher and Sons.					
Sand and gravel	24	24	Clay	17	50
Clay	5	29	Sand, water	28	78
Sand and rock	4	33			
Well 67-63-502					
Owner: J. R. Lee. Driller: Schumacher and Sons.					
Surface soil	10	10	Sand	18	170
Gravel	10	20	Rock	10	180
Sand	40	60	Clay	20	200
Rock, soft	20	80	Rock	7	207
Clay	58	138	Clay	33	240
Rock	1	139	Sand, water	63	303
Sand, fine	8	147	Clay	4	307
Rock	5	152			
Well 67-63-903					
Owner: Texas Eastern Transmission Co. Driller: Slim Thompson.					
Soil and gravel	20	20	Shale	11	71
Clay	33	53	Caliche with hard sand streaks	67	138
Caliche with streaks of sand sand	7	60	Shale	39	177

(Continued on next page)

Table 9.--Drillers' logs of wells in De Witt County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well 67-63-903--Continued					
Sand with hard streaks-----	59	236	Sand with hard streaks-----	90	360
Shale with hard streaks----	34	270	Shale----------	20	380

Well 67-63-904

Owner: Texas Eastern Transmission Co. Driller: Layne-Texas Co.

Clay----------	4	4	Clay and sand streaks------	59	194
Sand and gravel----------	11	15	Sand----------	16	210
Clay----------	19	34	Clay and sand streaks------	54	264
Clay, caliche, and sand----	41	75	Sand----------	36	300
Gravel, caliche, and sand--	25	100	Sand and clay----------	2	302
Gravel and sand----------	35	135			

Well 67-64-202

Owner: Heaton Estate. Driller: Markus Ploeger.

No record----------	126	126	No record----------	23	210
Sand----------	28	154	Sand, tight, and rock------	39	249
No record----------	24	178	Sand, coarse, loose--------	13	262
Sand----------	9	187			

Well 67-64-404

Owner: Lem C. Duderstadt, Jr. Driller: Schumacher and Sons.

Clay and gravel----------	20	20	Rock----------	15	75
Sandrock----------	20	40	Sand, water----------	9	84
Clay----------	20	60			

Table 9.--Drillers' logs of wells in De Witt County--Continued

Well 67-64-405

Owner: Wm. Buehrig. Driller: Sunray Oil Co.

	Thickness (feet)	Depth (feet)
Sand	10	10
Clay and gravel	40	50
Shale and boulders	55	105
Sand and gravel	95	200
Clay	40	240
Sand and gravel	20	260
Shale, sticky	65	325
Clay, red	35	360
Sandrock	2	362
Sand	18	380
Shale and boulders	337	717
Sand and gravel	13	730
Shale, sticky, and boulders	75	805
Sand and gravel	110	915
Shale, sticky	95	1,010
Sand and boulders	30	1,040
Shale, sticky	165	1,205
Sand and boulders	40	1,245
Shale, sticky	333	1,578
Shale, sandy	11	1,589
Sand	3	1,592
Sand, water	4	1,596
Shale, sticky	40	1,636
Sand, water	10	1,646
Sand and shale	24	1,670
Shale, sticky	80	1,750
Sand	15	1,765
Shale, sticky	15	1,780
Shale	22	1,802
Shale, sticky	38	1,840
Sand, water	15	1,855
Shale, sticky	49	1,904
Sand, water	8	1,912
Sand and sandy shale	49	1,961
Shale, sticky	60	2,021
Sand	4	2,025
Sand, shale, and lime streaks	11	2,036
Shale, sandy	19	2,055
Shale, sticky	91	2,146
Shale and lime cored	2	2,148
Shale, sticky, and lime	75	2,223
Sand	20	2,243
Shale, sticky	19	2,262
Sand	33	2,295
Shale, sticky	75	2,370
Shale and lime	35	2,405

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Table 9.--Drillers' logs of wells in De Witt County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well 67-64-405--Continued					
Shale, sticky	135	2,540	Shale, sticky, and lime	90	2,770
Shale, sandy, with streaks of sticky shale	140	2,680			
Well 67-64-504					
Owner: A. J. House. Driller: Markus Ploeger.					
No record	143	143	No record	18	239
Sand	78	221	Sand	46	285
Well 67-64-506					
Owner: A. H. Rohre. Driller: Markus Ploeger.					
No record	20	20	No record	21	272
Sand and rock	91	111	Sand	53	325
No record	67	178	No record	45	370
Sand	29	207	Sand	17	387
No record	13	220	No record	44	431
Sand	31	251	Sand	21	452
Well 67-64-508					
Owner: Gohlke Estate. Driller: Markus Ploeger.					
No record	54	54	Sand	10	255
Sand	24	78	No record	16	271
No record	65	143	Sand, red	53	324
Sand and pea gravel	18	161	No record	48	372
No record	84	245	Sand	42	414

Table 9.--Drillers' logs of wells in De Witt County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)

Well 67-64-509

Owner: Tohlke Estates. Driller: Markus Ploeger.

No record	45	45	No record	37	365
Gravel	10	55	Sand	34	399
No record	160	215	No record	10	409
Sand	36	251	Sand	34	443
No record	16	267	Clay	3	446
Sand	61	328			

Well 67-64-601

Owner: Elise Rosenfelder. Driller: H. & S. Water Well Service

Clay and streaks of caliche	30	30	Shale	37	202
Rock and gravel	38	68	Sand, gravel, and shale streaks	40	242
Clay, red	7	75	Shale	43	205
Caliche	20	95	Sand	12	297
Sand	10	105	Shale	5	302
Rock with streaks of sand	37	142	Sand, hard streaks	15	317
Shale, sandy	23	165			

Well 67-64-604

Owner: Shell Oil Co. Driller: Markus Ploeger

No record	18	18	Sand and rock layers	52	164
Gravel	20	38	No record	65	229
No record	12	50	Sand	3	232
Sand	30	80	No record	8	240
No record	32	112	Sand	13	253

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Table 9.--Drillers' logs of wells in De Witt County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well 67-64-604--Continued					
No record	40	293	Sand	11	324
Sand and gravel	13	306	No record	62	386
No record	7	313	Sand, blue	44	430
Well 67-64-605					
Owner: Shell Oil Co. Driller: Markus Ploeger.					
No record	98	98	No record	10	210
Sand	8	106	Sand	27	237
No record	81	187	No record	39	276
Sand	13	200	Sand and gravel	67	343
Well 67-64-606					
Owner: Elise Rosenfelder. Driller: H. & S. Water Well Service					
Clay and gravel	60	60	Sand, hard	260	320
Well 67-64-608					
Owner: Elise Rosenfelder. Driller: H. & S. Water Well Service.					
Clay and gravel	80	80	Sand	27	215
Sand	13	93	Shale	63	278
Shale	95	188	Sand	38	316
Well 67-64-609					
Owner: Elise Rosenfelder. Driller: H. & S. Water Well Service.					
Clay and gravel	135	135	Sand	175	310

Table 9.--Drillers' logs of wells in De Witt County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)

Well 79-03-901

Owner: Gilbert Mueller. Driller: H. & S. Water Well Service

Clay	10	10	Sand and streaks of shale	10	170
Sand	15	25	No record	9	179
Clay and streaks of sand	11	36	Shale	93	272
Sand	5	41	Sand	28	300
Shale, sandy	75	116	Shale	10	310
No record	2	118	Sand and streaks of shale	14	324
Shale, sandy	26	144	No record	1	325
Sand	13	157	Sand and gravel	22	347
Shale	3	160			

Well 79-04-301

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

Surface soil	5	5	Sand with shale layers	14	300
Caliche and clay	20	25	Shale, sticky and sandy	40	340
Sand, broken	10	35	Sand and shale	15	355
Clay	24	59	Shale, sticky	12	367
Sand and clay streaks	40	99	Shale, hard	10	377
Sand with hard layers	21	120	Shale and sandy shale	26	403
Clay, sandy	30	150	Shale, hard, and sand	112	515
Clay	11	161	Shale, sandy, and shale breaks	74	589
Shale and sandy shale	90	251	Sand and sandy shale	126	715
Sand with shale layers	15	266	Shale, hard	15	730
Sand	20	286	Shale, sandy	7	737

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Table 9.--Drillers' logs of wells in De Witt County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well 79-04-301--Continued					
Shale, hard	13	750	Shale, sticky	15	845
Shale, hard, sandy	15	765	Shale, sandy	28	873
Sand, hard, and shale	19	784	Sand	90	963
Shale, hard, sandy	46	830	Shale, sandy	9	972
Well 79-04-302					
Owner: City of Yorktown. Driller: Layne-Texas Co.					
Clay, hard	59	59	Shale, hard	50	836
Sand	45	104	Shale	60	896
Packsand	1	105	Sand	27	923
Sand, hard, and boulders	24	129	Packsand	13	936
Clay	67	196	Shale	623	1,559
Clay, hard, sandy	78	274	Sandrock	1	1,560
Packsand	2	276	Shale, hard	48	1,608
Sand	20	296	Shale, hard, and packsand	66	1,674
Gumbo	180	476	Sandrock	1	1,675
Shale, hard	119	595	Shale, hard	21	1,696
Sand	20	615	Packsand	5	1,701
Clay	11	626	Shale, hard	68	1,769
Sand and layers of shale	23	649	Shale, hard, and sandrock	37	1,806
Sand	42	691	Rock	3	1,809
Gumbo	12	703	Shale, hard, and lime rock	67	1,876
Shale, soft, blue	83	786	Shale, hard	124	2,000

Table 9.--Drillers' logs of wells in De Witt County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)

Well 79-04-305

Owner: Alice H. Witte. Driller: Maresch and Sons.

Sand	23	23	Sand, floating water	27	93
Clay	41	64	Rock	2	95
Rock	2	66	Sand, water	15	110

Well 79-04-401

Owner: City of Nordheim. Driller: H. & S. Water Well Service.

Clay	25	25	Sand, fine	25	375
Caliche and sand streaks	25	50	Shale	5	380
Sand	10	60	Sand, coarse	30	410
Shale	32	92	Shale	120	530
Sand	23	115	Sand, fine	24	554
Shale	20	135	Shale	2	556
Sand	15	150	Sand, coarse	39	595
Shale	200	350			

Well 79-04-402

Owner: City of Nordheim. Driller: H. & S. Water Well Service.

Clay	20	20	Shale	190	365
Sand with streaks of caliche	40	60	Sand with hard streaks	25	390
Shale	35	95	Sand	15	405
Sand with streaks of shale	25	120	Shale	133	538
Shale	18	138	Sand with hard streaks	62	600
Sand and shale	37	175	Shale	325	925
			Sand	72	997

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Table 9.--Drillers' logs of wells in De Witt County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well 79-04-402--Continued					
Shale	21	1,018	Shale	2	1,082
Sand	62	1,080			
Well 79-04-504					
Owner: H. L. Hilgartner. Driller: H. & S. Water Well Service					
Sand	35	35	Sand	28	368
Clay	20	55	Shale, streaks of sand	17	385
Sand	17	72	Sand	8	393
Shale	11	83	Shale, hard streaks	11	404
Sand	12	95	Sand, top part hard	31	435
Shale	20	115	Shale	40	475
Sand	39	154	Sand	15	490
Shale	111	265	Shale	35	525
Sand, hard	5	270	Sand	20	545
Sand, hard streaks	20	290	Shale	2	547
Shale	50	340			
Well 79-04-603					
Owner: W. M. L. Wright. Driller: H. & S. Water Well Service					
Clay	92	92	Clay	57	165
Sand	16	108	Sand	85	250
Well 79-06-101					
Owner: Heine Bade. Driller: H. & S. Water Well Service					
Surface soil	4	4	Sand	10	40
Sand, hard	26	30	Clay	90	130

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Table 9.--Drillers' logs of wells in De Witt County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well 79-06-101--Continued					
Sand	20	150	Shale	97	426
Clay and boulders	80	230	Sand, hard	29	455
Sand	15	245	Sand and clay	20	475
Clay	65	310	Sand	6	481
Sand	19	329	Shale	29	510
Well 79-06-202					
Clay	50	50	Sand, water	28	160
Rock, hard	20	70	Rock, hard	8	168
Sand, water	12	82	Clay	33	201
Clay and gravel	13	95	Sand and rock	79	280
Sandrock, soft	37	132	Rock	3	283
Well 79-07-204					
Soil, black, soft	10	10	Clay	29	60
Gravel	9	19	Sand and sandrock	19	79
Sandrock	12	31	Sand, water	5	84
Well 79-12-304					
Sand and sandrock	30	30	Shale, sandy, red	40	186
Rock, sandy, white	33	63	Sand and shale, water	20	206
Gumbo, red	77	140	Sandrock	14	220
Sand (some water)	6	146	Sand, water	19	239

Well 79-06-202

Owner: Albert H. Sager. Driller: Schumacher and Sons.

Well 79-07-204

Owner: Robert L. Murphree. Driller: Schumacher and Sons.

Well 79-12-304

Owner: Rollin Reynolds. Driller: Tom May.

Table 10.--Chemical analyses of water from wells in De Witt County

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

Water-bearing unit: Qa, alluvium; Tct, Catahoula Tuff; Tg, Goliad Sand; Tl, Lagarto Clay; To, Oakville Sandstone.

Well	Depth of well (ft)	Date of collection	Water-bearing unit	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + 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
66-57-102	323	Sept.26, 1962	Tg	32	--	86	7.8	40	273	16	65	0.3	1.0	--	391	246	26	1.1	0.00	655	6.8
67-46-303	800	Aug. 4, 1963	Tct	48	--	107	8.5	120	328	91	140	.4	.0	0.22	676	302	46	3.0	.00	1,100	7.2
404	--	Jan. 7, 1963	To	44	--	86	4.8	45	304	33	34	.4	.0	--	408	234	30	1.3	.30	620	7.0
† 405	50	Apr. 29, 1937	To	--	--	57	11	52	73	38	128	--	23	--	345	187	--	--	--	--	--
406	37	Nov. 1, 1962	To	36	--	345	30	125	398	96	355	.4	407	--	1,590	984	22	1.7	.00	2,520	6.6
504	218	Jan. 7, 1963	Tct	58	--	20	3.2	206	462	42	62	.3	.0	--	629	63	88	11	6.31	960	7.4
505	110	do	To	39	--	42	7.5	160	390	45	83	.3	.0	--	570	136	72	6.0	3.67	914	7.2
507	300	Apr. 10, 1963	Tct	81	--	31	3.2	286	550	40	156	.4	.0	--	884	90	87	13	7.20	1,400	7.3
508	93	May 2, 1962	To	26	0.21	204	4.0	21	266	10	132	.4	193	--	721	526	8	.4	.00	1,200	7.1
603	90	Nov. 28, 1962	To	27	--	111	4.9	67	330	32	66	.4	55	--	531	297	33	1.7	.00	855	6.5
701	138	Nov. 1, 1962	To	43	.01	96	4.3	32	324	22	26	.6	.0	--	400	257	21	.9	.17	610	6.6
704	146	do	To	42	.01	76	4.0	35	271	26	23	.5	.0	--	358	206	27	1.1	.32	534	6.7
802	60	Nov. 28, 1962	To	32	--	82	7.6	39	325	18	24	.5	.0	--	363	236	26	1.1	.61	595	6.5
803	60	do	To	35	--	85	8.1	40	330	18	31	.4	.0	--	380	246	26	1.1	.50	618	6.6
804	160	do	To	28	--	151	12	167	318	102	295	.4	6.2	--	918	426	46	3.5	.00	1,580	6.8
† 47-401	65	May 17, 1937	To	--	--	18	9	52	110	12	64	--	b/	--	209	80	--	--	--	--	--
† 902	175	May 9, 1936	Tl	--	--	82	7	83	354	a/	88	--	--	--	501	234	--	--	--	--	--
† 903	175	May 12, 1937	Tl	--	--	25	14	106	232	10	108	--	--	--	379	122	--	--	--	--	--
904	201	Feb. 22, 1944	Tl	39	.05	66	10	71	272	24	75	.2	6.9	--	436	206	43	2.0	.00	765	8.4
† 905	110	Sept. 1959	Tl	--	.02	90	12	31	259	10	41	.3	10	--	387	275	--	--	--	645	7.4
† 906	112	Sept. 1959	Tl	--	.02	96	10	65	275	25	72	.4	13	--	486	280	--	---	--	810	7.2
907	599	June 17, 1959	To	23	.38	74	12	126	348	33	128	.4	.8	.28	571	234	53	3.5	4.48	980	7.1
908	63	June 10, 1959	Tl	28	.27	86	7.9	83	331	24	87	.4	2.8	.18	496	247	41	2.2	.59	814	7.2
† 909	79	Mar. 9, 1936	Tl	--	--	32	9	65	214	18	44	--	--	--	273	115	--	--	--	--	--
52-802	162	Nov. 26, 1962	Tct	48	--	65	2.7	38	222	35	26	.3	.0	--	324	173	32	1.3	.18	488	6.9
804	153	Dec. 17, 1962	Tct	47	--	64	2.4	47	254	27	24	.4	.0	--	349	170	37	1.6	.75	515	6.8

See footnotes at end of table.

Table 10.--Chemical analyses of water from wells in De Witt County--Continued

Well	Depth of well (ft)	Date of collection	Water-bearing unit	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + 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
67-52-805	142	Dec. 17, 1962	Tct	39	--	81	2.7	48	310	24	27	0.3	0.0	--	389	213	33	1.4	0.82	590	7.1
902	100	Nov. 13, 1962	Tct	34	.01	81	3.7	71	338	17	53	.3	.0	--	447	217	41	2.1	1.20	700	6.5
53-202	190	Dec. 19, 1962	Tct	86	--	42	5.0	492	652	12	458	.3	.2	--	1,460	126	89	19	8.18	2,370	7.2
401	62	May 2, 1962	Tct	36	2.0	104	5.8	72	286	42	115	.4	.0	0.16	522	284	34	1.8	.00	878	6.7
402	50	Nov. 6, 1962	Tct	53	.04	108	6.9	107	342	49	118	.4	39	--	687	298	44	2.7	.00	1,030	6.6
404	275	do	Tct	41	.02	90	4.5	63	302	46	59	.4	.0	--	477	243	36	1.8	.09	721	6.7
† 501	--	Apr. 27, 1937	Tct	--	--	76	13	122	202	72	190	--	b/	--	572	243	--	--	--	--	--
901	340	June 11, 1959	To	23	--	36	8.1	155	362	42	85	.2	.0	--	527	124	73	6.1	3.46	885	7.0
† 54-101	207	May 25, 1937	To	--	--	32	6	86	146	50	58	--	46	--	350	104	--	--	--	--	--
† 403	200	May 26, 1937	To	--	--	33	3	56	207	21	54	--	b/	--	269	147	--	--	--	--	--
601	625	Apr. 30, 1963	Tct	17	--	11	3.7	261	456	.0	161	1.2	.0	1.2	720	42	92	17	6.62	1,160	7.3
602	177	Nov. 21, 1962	To	34	3.2	117	6.7	73	360	21	112	.7	1.5	--	568	320	33	1.8	.00	941	6.7
802	950	Nov. 3, 1962	To	18	--	12	2.8	399	698	.0	236	.8	1.2	--	1,010	42	95	27	10.60	1,710	7.5
803	930	June 6, 1963	To	19	.01	21	5.7	226	368	49	154	.8	.0	.85	659	76	86	11	4.51	1,120	7.5
806	188	Nov. 28, 1962	To	18	--	28	8.7	191	356	52	123	.7	.0	--	596	106	80	8.1	3.71	1,020	7.0
808	44	Jan. 14, 1963	Qa	29	--	79	5.5	21	246	12	25	.2	19	--	314	220	17	.6	.00	502	7.0
55-303	221	Oct. 9, 1962	Tl	40	--	70	8.0	80	294	19	83	.5	1.8	.05	461	208	46	2.4	.67	733	6.9
† 304	80	Apr. 22, 1936	Tl	--	--	78	4	30	305	a/	19	--	--	--	281	212	--	--	--	--	--
† 307	87	Mar. 22, 1936	Tl	--	--	16	10	49	122	a/	62	--	--	--	197	81	--	--	--	--	--
† 402	115	Apr. 17, 1936	To	--	--	--	--	--	98	48	350	--	--	--	695	--	--	--	--	--	--
† 403	126	May 18, 1937	To	--	--	98	13	98	250	37	225	--	b/	--	594	348	--	--	--	--	--
404	420	Apr. 30, 1963	To	34	--	140	17	98	270	30	262	.4	5.0	--	721	420	33	2.0	.00	1,280	6.9
† 501	87	June 18, 1937	Tl	--	--	26	16	60	159	12	150	--	b/	--	342	130	--	--	--	--	--
601	240	June 9, 1959	Tl	39	--	106	15	135	294	42	230	--	2.8	.01	722	326	47	3.2	.00	1,240	6.8
† 604	49	Apr. 22, 1936	Tl	--	--	95	11	14	220	a/	94	--	--	--	322	282	--	--	--	--	--
† 905	117	do	Tl	--	--	58	20	41	293	11	47	--	--	--	321	227	--	--	--	--	--
† 56-401	70	June 24, 1937	Tl	--	--	94	9	53	342	16	66	--	b/	--	406	275	--	--	--	--	--

See footnotes at end of table.

Table 10.--Chemical analyses of water from wells in De Witt County--Continued

Well	Depth of well (ft)	Date of collection	Water-bearing unit	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + 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
67-56-402	380	June 7, 1963	Tl	35	0.00	85	6.8	46	306	13	55	0.4	3.4	0.08	396	240	29	1.3	0.22	640	6.9
† 502	112	Apr. 22, 1936	Tl	--	--	56	11	106	293	32	102	--	--	--	451	187	--	--	--	--	--
901	240	June 9, 1959	Tg,Tl	40	--	103	8.7	45	304	11	86	.2	.2	.05	444	293	24	1.1	.00	762	6.5
59-601	157	Dec. 18, 1962	To	34	--	180	7.5	108	424	47	180	.6	79	--	844	480	33	2.1	.00	1,420	6.4
802	212	Apr. 9, 1963	Tct	48	--	116	6.9	81	325	79	102	.5	.0	--	631	318	36	2.0	.00	1,020	6.4
60-101	131	Nov. 26, 1962	Tct	39	--	129	8.0	74	338	29	122	.8	42	--	652	355	31	1.7	.00	1,020	6.6
202	544	Dec. 17, 1962	Tct	86	--	102	3.2	180	344	124	175	.3	.0	--	892	268	59	4.8	.29	1,300	6.7
402	150	do	To	43	--	94	7.5	94	374	31	91	.6	2.0	--	572	266	44	2.5	.82	912	6.8
701	92	Dec. 18, 1962	To	33	--	97	8.8	63	360	17	71	.7	1.0	--	479	278	33	1.6	.34	791	6.7
703	91	do	To	35	--	95	9.4	128	292	46	102	1.0	149	--	773	276	50	3.4	.00	1,150	7.2
902	1,000	Nov. 1954	To	32	--	92	13	116	288	52	173	.4	.0	--	620	283	47	3.0	.00	1,090	7.3
903	570	Apr. 24, 1959	To	34	--	128	12	66	288	36	167	.5	.2	.12	588	369	27	1.4	.00	1,090	6.7
† 61-101	150	Apr. 23, 1937	To	--	--	16	13	86	195	13	40	--	61	--	325	93	--	--	--	--	--
301	275	June 11, 1959	To	27	--	92	15	124	323	45	168	--	2.8	.25	636	291	47	3.1	.00	1,110	6.7
† 303	140	Apr. 30, 1937	To	--	--	35	18	108	122	47	176	--	b/	--	444	161	--	--	--	--	--
† 601	120	Mar. 23, 1936	To	--	--	106	16	88	266	36	188	--	--	--	565	330	--	--	--	--	--
† 602	100	do	Tl	--	--	93	6	24	305	a/	44	--	--	--	317	259	--	--	--	--	--
802	156	Jan. 8, 1963	Tl	19	--	63	9.2	119	354	24	97	.4	1.8	--	508	195	57	3.7	1.90	874	7.0
62-101	887	Aug. 12, 1939	Tct	--	--	--	--	237	424	106	52	--	--	--	586	16	--	--	6.58	586	--
† 102	585	Apr. 22, 1937	To	--	--	18	13	197	305	42	205	--	b/	--	625	104	--	--	2.62	--	--
104	86	Jan. 8, 1963	To	35	--	211	31	173	290	37	522	.7	20	--	1,170	654	37	2.9	.00	2,130	6.8
‡ 203	874	Sept.16, 1948	Tl,To	17	.18	18	2.2	234	390	59	128	.9	.4	--	633	53	--	--	--	--	8.1
204	296	June 11, 1959	Tl,To	20	--	30	8.5	169	379	50	81	.5	.0	--	545	110	77	7.0	4.01	915	7.6
† 205	62	Mar. 15, 1936	Tl	--	--	190	25	151	427	64	345	--	--	--	985	575	--	--	--	--	--
† 206	26	Apr. 15, 1936	Qa	--	--	228	25	280	464	119	550	--	--	--	1,430	670	--	--	--	--	--
† 207	1,173	Sept.14, 1937	To	--	--	50	15	290	500	58	245	--	--	--	904	184	--	--	--	--	--
† 208	1,165	do	To	--	--	2	1	346	500	26	232	--	--	--	853	11	--	--	--	--	--

See footnotes at end of table.

Table 10.--Chemical analyses of water from wells in De Witt County--Continued

Well	Depth of well (ft)	Date of collection	Water-bearing unit	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + 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
†67-62-209	1,160	Mar. 28, 1936	To	--	--	6	1	398	567	a/	300	--	--	--	984	21	--	--	--	--	--
210	912	June 11, 1959	To	15	0.14	12	3.5	251	412	41	148	1.3	0.0	1.2	677	44	92	16	5.86	1,160	7.7
215	39	Jan. 9, 1963	Qa	28	--	184	14	163	304	46	368	.2	68	--	1,020	516	41	3.1	.00	1,800	7.0
216	30	do	Qa	46	--	328	51	439	328	188	1,070	--	12	--	2,300	1,030	48	5.9	.00	3,930	6.9
301	1,207	Dec. 22, 1944	To,Tct	25	.26	8.8	1.4	418	565	1.1	334	.4	.2	--	1,070	28	95	34	8.70	1,890	7.8
§ 302	780	Oct. 1, 1958	To	--	.1	10	1.2	246	346	32	132	--	--	--	566	30	--	--	--	--	7.8
† 304	1,353	Mar. 28, 1936	To,Tct	--	--	6	1	586	684	a/	520	--	--	--	1,449	20	--	--	--	--	--
305	78	Oct. 11, 1962	Tl	38	--	154	14	160	335	46	318	.5	21	--	916	442	44	3.3	.00	1,580	6.5
† 401	171	Mar. 23, 1936	Tl	--	--	63	15	40	293	a/	48	--	--	--	310	219	--	--	--	--	--
† 402	171	do	Tl	--	--	75	15	77	183	56	148	--	--	--	461	250	--	--	--	--	--
502	38	Apr. 10, 1963	Qa	34	--	120	3.9	29	238	30	56	.2	90	--	480	316	17	.7	.00	777	7.2
† 903	106	May 5, 1937	Tl	--	--	76	10	47	146	26	60	--	120	--	411	225	--	--	--	--	--
63-401	55	Oct. 23, 1962	Tl	54	--	136	11	59	358	33	100	.4	54	--	678	384	25	1.3	.00	1,000	6.9
502	307	do	Tl	25	.01	56	5.3	35	218	11	33	.4	1.0	.1	274	162	31	1.2	.34	457	7.2
603	108	Sept.26, 1962	Tl	30	--	82	4.4	24	198	7.0	66	--	14	--	324	222	19	.7	.00	566	7.0
904	302	June 15, 1959	Tg	22	.04	66	11	64	298	21	58	.2	.0	--	389	210	40	1.9	.69	652	7.7
64-305	77	Sept.27, 1962	Tg	49	--	197	30	184	369	101	385	.5	79	--	1,210	615	39	3.2	.00	2,040	6.5
404	84	Nov. 27, 1962	Tg	54	--	98	7.8	37	296	18	68	.2	.2	--	437	276	23	1.0	.00	691	7.0
601	317	Feb. 4, 1959	Tg	28	--	86	12	84	304	33	114	.4	3.0	--	522	264	41	2.3	.00	893	7.4
604	430	June 15, 1959	Tg	21	.05	74	8.5	75	298	25	80	.2	.0	--	431	220	43	2.2	.49	735	7.1
79-03-101	92	Dec. 18, 1962	To	55	--	360	41	359	404	160	810	.5	256	--	2,240	1,070	42	4.8	.00	3,780	6.5
202	72	Dec. 19, 1962	To	46	--	136	21	244	442	107	302	1.3	67	--	1,140	426	55	5.1	.00	1,900	6.8
301	180	do	To	21	--	225	36	147	262	67	525	.9	1.5	--	1,150	710	31	2.4	.00	2,140	6.9
901	347	May 2, 1962	To	28	.21	121	22	88	312	35	205	.6	2.2	--	655	392	33	1.9	.00	1,210	6.9
04-302	960	Dec. 21, 1944	To	26	.14	47	6.6	165	341	76	102	.1	.5	--	603	144	71	6.0	2.24	998	7.7
† 303	300	Apr. 17, 1936	To	--	--	64	21	95	244	40	152	--	--	--	492	248	--	--	--	--	--
305	110	Dec. 19, 1962	To	33	--	174	22	206	360	94	408	.7	3.2	--	1,120	524	46	3.9	.00	1,860	6.8

See footnotes at end of table.

Table 10.--Chemical analyses of water from wells in De Witt County--Continued

Well	Depth of well (ft)	Date of collection	Water-bearing unit	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + 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
79-04-306	400	Dec. 19, 1962	To	7.6	--	18	10	111	216	3.6	103	0.2	0.0	--	363	86	74	5.2	1.82	659	7.2
401	595	Apr. 29, 1959	To	30	0.06	87	20	95	307	30	153	.8	4.0	0.25	574	299	39	2.3	.00	1,020	7.0
402	1,082	do	To	44	.11	29	3.8	187	379	63	83	.4	.0	.47	603	88	78	8.3	8.12	943	7.5
406	815	Dec. 21, 1944	To	24	.12	39	7.9	143	341	51	76	.2	.0	--	518	130	70	5.4	2.99	851	7.1
601	770	June 18, 1959	To	18	1.4	52	17	126	337	30	117	.3	.0	--	526	200	58	3.9	1.53	916	7.4
603	250	do	T1	34	.04	92	13	87	338	28	115	.4	2.2	.32	542	283	39	2.2	.00	913	7.4
802	615	Nov. 14, 1962	T1	38	.08	110	22	117	354	52	196	.5	2.2	.00	713	365	40	2.6	.00	1,230	6.7
† 901	172	June 1, 1937	T1	--	--	74	30	208	98	106	405	--	b/	--	871	309	--	--	--	--	--
05-101	948	June 11, 1959	To	23	.80	38	5.3	185	342	75	111	.2	.0	.43	608	117	75	7.1	3.27	1,010	7.3
† 102	80	June 23, 1937	T1	--	--	28	16	33	98	14	80	--	b/	--	218	135	--	--	--	--	--
404	60	Nov. 14, 1962	T1	41	.01	90	11	65	333	14	84	.5	3.2	--	502	270	34	1.7	.07	798	6.7
502	200	Apr. 9, 1963	T1	32	--	103	14	66	336	19	113	.5	2.0	--	560	314	31	1.6	.00	1,000	6.5
706	220	Nov. 14, 1962	T1	44	.01	175	29	114	282	54	362	.5	5.3	--	923	556	31	2.1	.00	1,650	6.5
707	100	Apr. 9, 1963	Tg	72	--	123	18	137	412	30	208	.7	19	--	860	381	44	3.1	.00	1,320	7.1
# 06-101	220-510	Jan. 1956	T1	--	--	--	--	17	220	10	26	--	--	--	350	192	16	--	--	--	8.0
	290-310	Jan. 1956	T1	--	--	--	--	68	290	15	45	--	--	--	486	170	47	--	--	--	8.0
	400-440	Jan. 1956	T1	--	--	--	--	86	329	11	48	--	--	--	538	160	54	--	--	--	7.9
	500-585	Jan. 1956	T1	--	--	--	--	95	278	7	73	--	--	--	506	132	61	--	--	--	8.0
102	73	Sept.27, 1962	T1	26	--	115	6.8	28	276	9.6	71	--	50	--	442	315	16	.7	.00	766	6.7
202	283	June 11, 1959	Tg,T1	33	--	58	9.8	50	221	18	66	.3	1.5	.06	349	184	37	1.6	.00	594	7.1
† 205	110	Apr. 25, 1937	Tg	--	--	11	16	115	183	30	110	--	b/	--	383	95	--	--	--	--	--
407	315	Nov. 20, 1962	T1	29	1.3	80	16	80	332	26	98	.6	1.8	--	494	266	40	2.1	.13	855	6.9
604	270	Feb. 18, 1959	T1	34	--	83	11	74	324	27	87	.6	.0	--	489	252	39	2.0	.27	818	7.4
605	1,302	do	To	18	--	4.0	1.1	275	475	.0	153	2.9	.0	--	702	14	98	31	7.23	1,190	8.4
805	68	Apr. 9, 1963	Tg	40	--	97	9.3	61	342	18	75	.7	6.6	--	508	280	32	1.6	.00	920	6.5
07-203	168	Oct. 23, 1962	T1	36	--	8.3	9.5	52	322	17	54	.4	1.0	--	411	246	32	1.4	.36	681	7.4
204	84	Nov. 27, 1962	T1	25	--	101	16	83	390	43	94	.2	.0	--	554	318	36	2.0	.03	941	6.6
206	64	Jan. 15, 1963	Tg	29	--	127	8.7	49	302	27	122	.3	14	--	526	353	23	1.1	.00	866	7.2
302	62	Apr. 10, 1963	Tg	33	--	145	9.6	75	366	38	154	.2	9.4	--	644	402	29	1.6	.00	1,090	6.9

See footnotes at end of table.

Table 10.--Chemical analyses of water from wells in De Witt County--Continued

Well	Depth of well (ft)	Date of collection	Water-bearing unit	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + 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
79-12-104	72	Apr. 9, 1963	T1	49	--	215	40	280	342	89	660	.6	4.5	--	1,510	701	46	4.6	.00	2,760	6.5
106	504	do	T1	22	--	64	19	113	327	26	132	.7	.2	--	555	238	51	3.2	.61	1,040	6.7
206	128	do	Tg	68	--	125	23	130	388	37	220	.8	24	--	923	406	41	2.8	.00	1,440	7.3
207	110	do	T1	59	--	69	12	112	404	34	68	.9	1.0	--	590	222	52	3.3	2.19	977	7.2
208	450	do	T1	21	--	40	17	129	370	35	78	.5	.0	--	518	170	62	4.2	2.66	965	7.0
304	239	Jan. 8, 1963	T1	50	--	126	18	91	320	53	188	.6	2.8	--	686	388	34	2.0	.00	1,180	6.9
501	164	do	Tg	48	--	165	32	146	310	64	380	.7	2.0	--	990	543	37	2.7	.00	1,740	6.9
502	150	Apr. 5, 1937	Tg	--	--	197	29	220	337	58	535	--	--	--	1,200	613	--	--	.00	--	--

* Sodium and potassium calculated as sodium (Na).
† The analyses by the W.P.A. were done by methods that were not sufficiently accurate for the results to be closely comparable to those of later analyses, but they may be used to estimate the general quality of the water.
‡ Analyses by Texas Department of Health.
§ Analyses by Western Filter Co.
# Sample from indicated interval.
a/ Sulfate less than 10 ppm.
b/ Nitrate less than 20 ppm.