GEOHYDROLOGIC DATA FROM SANDSTONE AQUIFERS IN SOUTHWESTERN KANSAS

By

Jack Kume and Joseph M. Spinazola

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GEOHYDROLOGIC DATA FROM SANDSTONE AQUIFERS IN SOUTHWESTERN KANSAS

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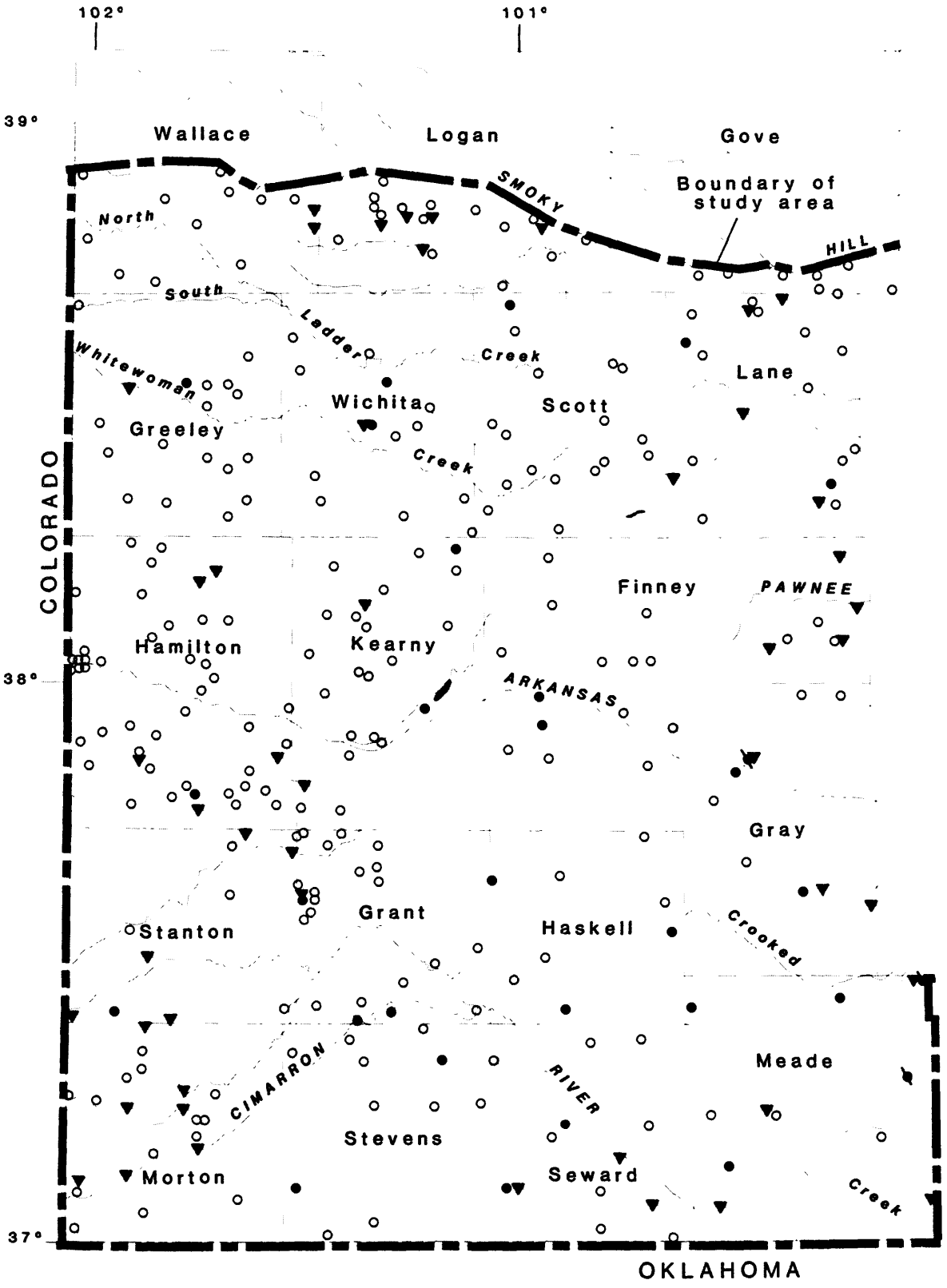
GENERAL DESCRIPTION

This report presents data collected during a reconnaissance investigation of the geology and hydrology of sandstone aquifers in a 17,400 square-mile area in 26 counties of southwestern Kansas (fig. 1). The study was done during 1976-79 by the U.S. Geological Survey in cooperation with the Kansas Geological Survey. Interest and assistance during the study also was provided by the Kansas Department of Health and Environment.

The data report is intended to serve two purposes: (1) To make available geohydrologic data useful in the study of, and planning for, water-resources development and (2) to supplement an interpretive geohydrologic study of the sandstone aquifers in southwestern Kansas. These aquifers consist chiefly of saturated sandstones that occur in Upper Permian, Upper Jurassic, and Lower and Upper Cretaceous rocks.


102°
101°
39°
38°
37°
Wallace
Logan
Gove
Boundary of study area
SMOKY HILL
North
South
Ladder
Creek
Whitewoman
Creek
Wichita
Scott
Lane
Greeley
Creek
COLORADO
Finney
PAWNEE
Hamilton
Kearny
ARKANSAS
Gray
Grant
Stanton
Haskell
Crooked
Meade
CIMARRON
RIVER
Stevens
Morton
Seward
Creek
OKLAHOMA

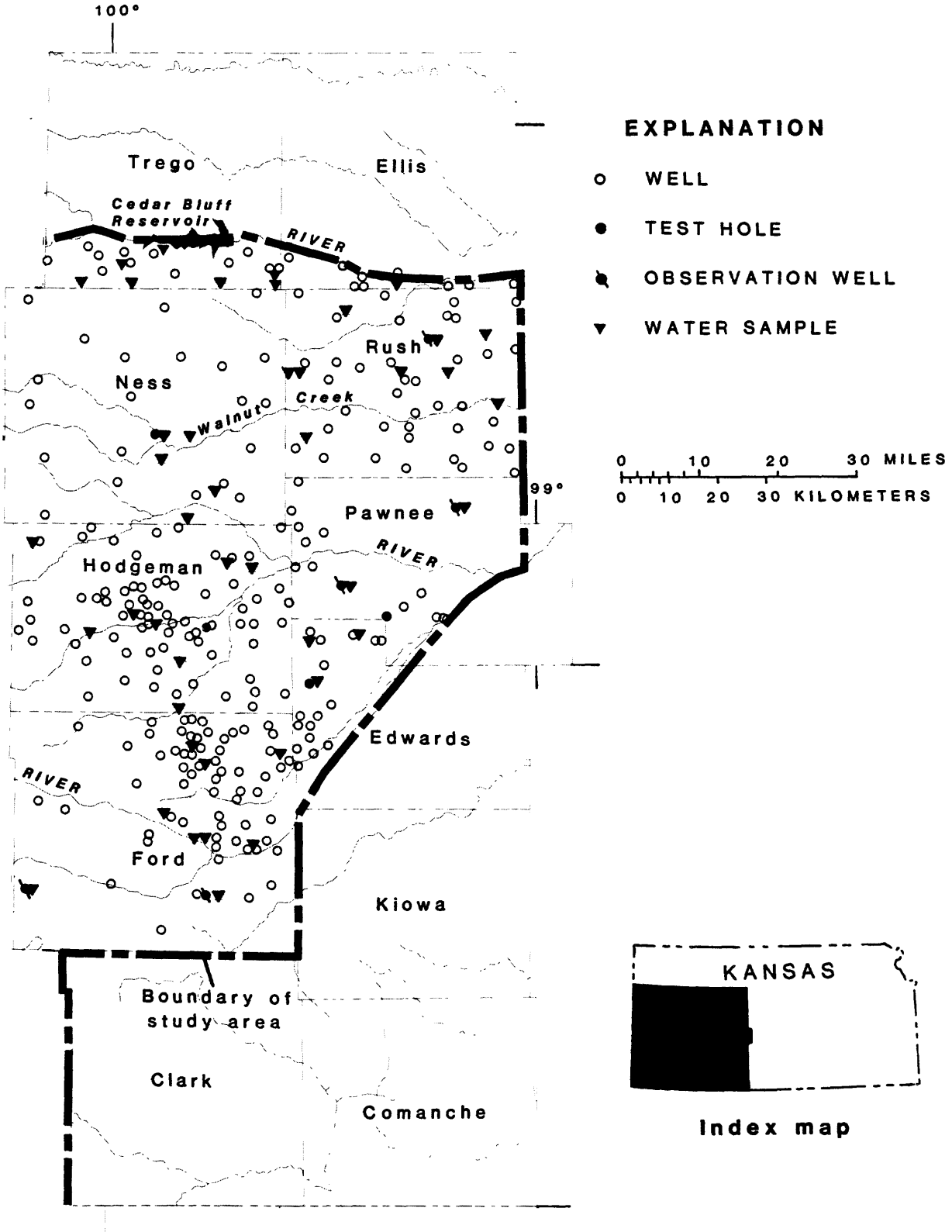


Figure 1.--Location of study area, wells, test holes, and other data sites.

In parts of southwestern Kansas, the sandstone aquifers already serve as the principal or secondary source of ground water for irrigation and other uses. Data indicate that water may be available for development in sandstone aquifers in other parts of the study area. In still other areas, water from wells in sandstone aquifers may not be of a suitable quality for some purposes.

The data in this report include records of selected wells, lithologic logs of test holes and wells, selected formation surfaces and sandstone thicknesses, chemical analyses of water from selected wells, and water levels in observation wells.

The well-numbering system, as shown in figure 2, gives the data-site location for a well or test hole according to the U.S. Bureau of Land Management's system of land subdivision. In this system, the first set of digits of a well number indicates the township; the second set, the range east or west of the Sixth Principal Meridian; and the third set, the section. The first letter after the section number denotes the quarter section or 160-acre tract; the second, the quarter-quarter section or 40-acre tract; and the third, the quarter-quarter-quarter section or 10-acre tract. The 160-acre, 40-acre, and 10-acre tracts are designated A, B, C, and D in a counterclockwise direction beginning in the northeastern quadrant. Where two or more wells are located in a 10-acre tract, consecutive numbers are added, beginning with 2, in the order in which data from the well were collected. Thus in Finney County, the number 23-28W-5DCC indicates that the well is in the SW¼SW¼SE¼ sec. 5, T.23 S., R.28 W.

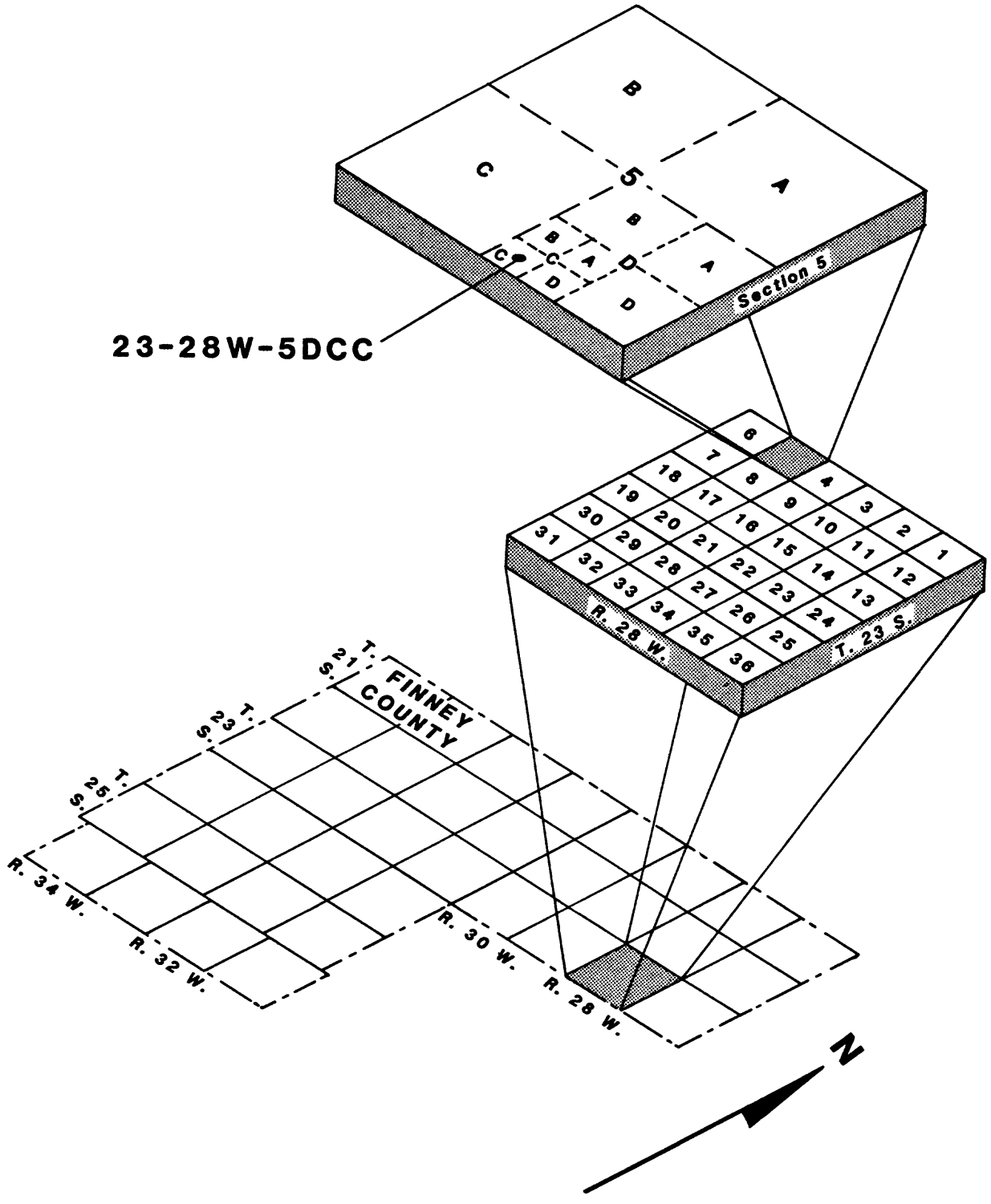


Figure 2.--Well-numbering system.

Inch-pound units of measurement used in this report may be converted to International System (SI) of Metric Units using the factors listed below:

To convert from inch-pound units	To SI units	Multiply by
inch	centimeter	2.54
foot	meter	0.3048
square mile	square kilometer	2.590
gallon	liter	3.785
gallon per minute	liter per second	0.06309
gallon per day	liter per day	0.06309
degree Fahrenheit (°F)	degree Celsius (°C)	5/9 (°F-32)

This data report is intended to be used with the available literature about sandstone aquifers (see "Selected References"). It should be useful in determining the occurrence and extent of various geologic formations, in making an assessment of the availability of water resources, and in planning an orderly development of water supplies. Information, such as the geologic unit (delineated mostly by gamma-ray and laterolog electric logs) and its water-yielding characteristics, may be found in table 1. The range of thicknesses and physical character of the geologic unit also are given. The geologic units commonly were delineated with the aid of gamma-ray and laterolog electric logs. Typical radiation and sensitivity characteristics for the geologic units are shown by the logs in figure 3. Interpretive information is available concerning the geologic history (Merriam, 1963), the stratigraphic succession (Zeller, 1968), and the hydrology, as listed in

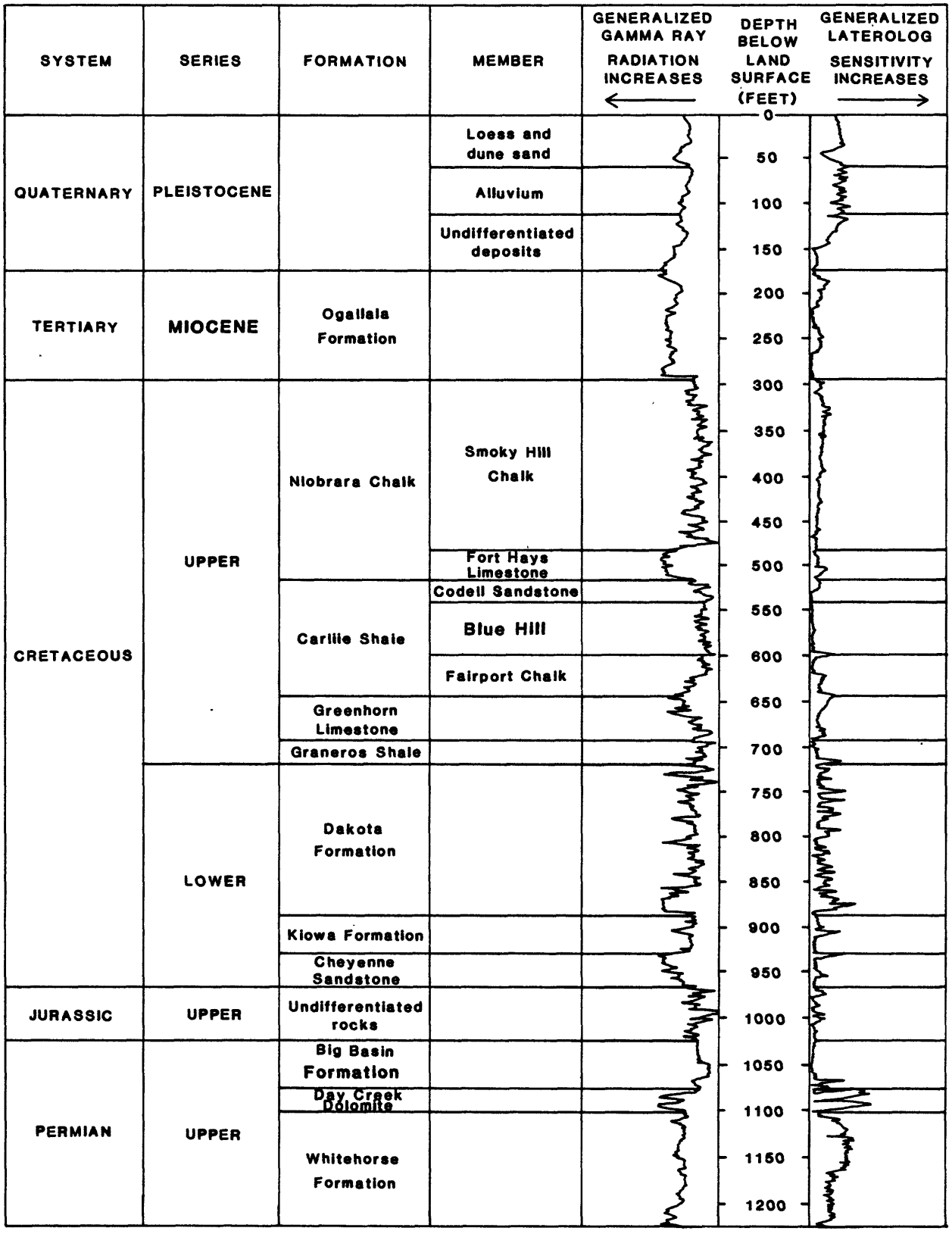


Figure 3.--Generalized gamma-ray and laterolog electric logs showing typical radiation and sensitivity characteristics for geologic units in southwestern Kansas.

the "Selected References." Specific data, such as depth of well, depth to water, yield, etc., are given in table 2 for selected wells. Lithologic logs of test holes drilled by the Kansas Geological Survey, privately drilled test holes, and selected wells are given in table 3.

A proposed drilling site could be located on the map (fig. 1) and then cross-referenced with the geologic section in table 1 and the records and logs of nearby wells and test holes given in tables 2-3. Selected formation surfaces and sandstone thicknesses are listed in table 4.

Information concerning the quality of water in the sandstone aquifers is listed in table 5. Concentrations of the major dissolved constituents in water from wells are shown, and the limits recommended by the Kansas Department of Health and Environment for drinking-water standards are listed below:

Constituent	Recommended limits, in milligrams per liter (mg/L)	Recommended limits, in micrograms per liter (ug/L)
Dissolved solids	500	-
Iron (Fe)	0.3	300
Manganese (Mn)	0.05	50
Sulfate (SO_4)	250	-
Chloride (Cl)	250	-
Fluoride (F)	1.5	-
Nitrate (NO_3)	45	-

Water levels in wells that typify the seasonal fluctuations and long-term trends in some places in the sandstone aquifers are available in table 6 and several published reports. For Hodgeman and northern Ford Counties, water levels in wells in the Dakota Formation are given by Lobmeyer and Weakly (1979). Water-level records during 1966-70 are available from Broeker and McNellis (1973) and during 1971-75 from Broeker, McIntyre, and McNellis (1977).

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TABLE 1.--GENERALIZED SECTION OF GEOLOGIC FORMATIONS

AND THEIR HYDROLOGIC CHARACTERISTICS

SYSTEM	SERIES	FORMATION	MEMBER	RANGE OF THICKNESS (FEET)	PHYSICAL CHARACTER	WATER SUPPLY
QUATERNARY	PLEISTOCENE		Loess and dune sand	0-100	Silt and fine sand, mostly eolian. Mantles most of the uplands and masks much of the valley walls.	Most of the deposits are above the water table. Locally aquifer yields from 5 to 10 gallons per minute to wells.
			Alluvium	0- 80	Stream-laid deposits ranging from sand and gravel to silt and clay. Occurs along principal stream valleys.	Generally above the water table. Locally aquifer yields from 10 to 500 gallons per minute to wells.
			Undifferentiated deposits	0-200	Sand and medium to very coarse gravel, interbedded with clay, silt, fine sand, and caliche.	Principal unconsolidated aquifer in central Scott County. Aquifer yields from 250 to 1,500 gallons per minute to irrigation wells.
TERTIARY	MIOCENE	Ogallala Formation		0-350	Sand, gravel, silt, clay, and caliche, commonly unconsolidated. Locally cemented by calcium carbonate (lime) or silica (opal) into mortar beds. Contains freshwater limestone beds.	Principal unconsolidated aquifer in most of study area. Aquifer yields from 100 to 2,500 gallons per minute to irrigation wells.
CRETACEOUS	UPPER	Niobrara Chalk	Smoky Hill Chalk	0-700	Chalk and chalky shale, gray to yellow, with interbedded shale. Limonitic concretions.	Not known to yield significant amounts of water to wells in most areas. In southwestern Scott County, where rocks have been fractured, the aquifer yields as much as 1,000 gallons per minute to wells. In Finney County, where solution cavities are present, the aquifer yields as much as 800 gallons per minute.
			Fort Hays Limestone	0- 65	Limestone, chalky, white and yellow to gray, with chalky light- to dark-gray shale beds.	
		Carlile Shale	Codell Sandstone	0- 25	Sandstone, fine-grained, silty. Locally shaly.	Aquifer may yield 5 to 10 gallons per minute to wells in a few areas.
			Blue Hill	0-200	Shale, clayey, blocky to fissile, dark-gray.	Not known to yield significant amounts of water to wells. In a few areas, the Greenhorn Limestone may yield 5 to 10 gallons per minute to wells.
			Fairport Chalk	0-150	Shale, chalky, bluish-gray to gray, with chalky limestone and thin bentonite beds throughout member.	
		Greenhorn Limestone		0-135	Limestone, chalky, light- to dark-gray, and yellowish-gray to light-gray shale.	
		Graneros Shale		0- 65	Shale, calcareous, dark-gray; interbedded with noncalcareous black shale, gray limestone, and silty fine-grained sandstone.	

	LOWER	Dakota Formation		0-580	Sandstone, fine- to medium-grained, white, gray, and brown; interbedded with shale and siltstone. Contains lignite.	Principal sandstone aquifer in study area; yields 30 to 2,200 gallons per minute to wells. Water from wells in Cheyenne aquifer may not be potable in some areas. Untested in many places.
		Kiowa Formation		0-190	Shale, light-gray to black, with interbedded thin limestone beds and, locally, sandstones.	
		Cheyenne Sandstone		0-245	Sandstone, very fine to medium-grained, mostly fine-grained, white, brown, and gray, with interbedded dark-gray shale.	
JURASSIC	UPPER	Undifferentiated rocks		0-247	Shale, sandy, calcareous, green, with noncalcareous gray shale, limestone lenses, and fine-grained silty sandstone.	
PERMIAN	UPPER	Big Basin Formation		0- 45	Shale, silty, red, with siltstone, dolomite, and very fine-grained feldspathic sandstone.	Sandstone aquifer, but not known to yield potable water to wells. Untested in many places.
		Day Creek Dolomite		0- 3	Dolomite, light-gray to pink, dense.	Not known to yield water to wells. Untested in many places.
		Whitehorse Formation		0-270	Sandstone, siltstone, and feldspathic red shale. Minor amount of dolomite.	Sandstone aquifer, but not known to yield potable water to wells. Untested to many places.

Table 2.--Records of selected wells

[Data show depth in feet below land surface. Principal aquifer--JU, undifferentiated Jurassic rocks; KCC, Codell Sandstone Member of Carlile Shale; KCH, Cheyenne Sandstone; KD, Dakota Formation; KK, Kiowa Formation; KU, undifferentiated Lower Cretaceous rocks; PB, Big Basin Formation; and PW, Whitehorse Formation. Use of water--H, domestic; I, irrigation; N, industrial; P, public; S, stock; and U, unused]

WELL NUMBER	OWNER	DATE COMPLETED (YEAR)	DEPTH OF WELL (FEET)	CASING DIAMETER (INCHES)	PRINCIPAL AQUIFER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	DEPTH TO WATER (FEET)	DATE WATER LEVEL MEASURED
EDWARDS COUNTY									
23S 19W 09CCC 01	A. F. PLAGER	--	65	4	KD	S	2183	42.00	1945
23S 19W 22CCC 01	E. F. LIPPOLDT	--	68	54	KD	H,S	2238	64.90	1944
23S 20W 16DDD 01	J. F. DEMAIN	--	122	4	KD	U	2294	113.00	1945
23S 20W 34CCC 01	ROBERT SCHMITT	--	172	--	KD	I	2290	85.00	1968
24S 20W 09DCD 01	USGS	1978	136	2	KD	U	2250	52.68	1978
24S 20W 09DCD 02	USGS	1978	556	--	KCH	U	2250	50.44	1978
24S 20W 35ABD 01	HARRY FROETSCHNER	1966	109	16	KD	I	2215	27.50	1966
24S 20W 35ACA 01	HARRY FROETSCHNER	1966	105	16	KD	I	2215	27.50	1966
24S 20W 35ACC 01	HARRY FROETSCHNER	1968	105	--	KD	I	2215	25.00	1968
24S 20W 35DDD 01	HARRY FROETSCHNER	1967	110	--	KD	I	2220	25.00	1967
25S 20W 03CAA 01	JOE HEINZ	1968	135	--	KD	I	2235	27.00	1968
25S 20W 05AAA 01	VERNON OLIPHANT	1967	120	--	KD	I	2265	41.00	1970
25S 20W 05ABA 01	VERNON OLIPHANT	1963	117	--	KD	I	2255	37.00	1964
25S 20W 05ACB 01	E. W. LIPPOLDT	1967	122	--	KD	I	2260	11.00	1967
25S 20W 05BAA 01	VERNON OLIPHANT	1963	115	--	KD	I	2265	--	--
25S 20W 07DBB 01	CITY OF OFFERLE	1968	135	--	KD	P	2270	50.00	--
25S 20W 07DBC 01	CITY OF OFFERLE	--	110	--	KD	P	2270	50.00	--
25S 20W 07DBC 02	CITY OF OFFERLE	--	110	--	KD	P	2270	50.00	--
25S 20W 08DBB 02	DOYLE JONES	1967	117	--	KD	I	2265	39.40	1967
25S 20W 16CAD 01	H. F. BROWN	1967	225	12	KD	I	2255	37.00	1968
ELLIS COUNTY									
11S 17W 03DD 01	HARRY SIMPSON	--	26	36	KCC	H,S	--	25.60	1941
11S 19W 30AAD 01	F. W. MCNEELEY	--	65	36	KCC	H	--	55.40	1941
12S 16W 14BC 01	CITY OF RUSSELL	--	440	--	KD	U	1796.4	136.00	1942
12S 17W 06DA 01	A. F. KOKLIN	--	518	6	KD	U	2152.9	306.00	1941
12S 17W 09DDB 01	V. N. KOHLEDER	--	99	6	KCC	U	2175.9	76.90	1941

12S 17W 11BB 01	P. H. ROHLEDER	--	62	6	KCC	H,S	2119.9	47.10	1941
12S 17W 18CC 01	E. SCHMEIDLER	--	57	6	KCC	H	2129.5	35.50	1941
12S 17W 30BBD 01	RAY SMITH	--	61	6	KCC	H	--	53.90	1941
12S 17W 31CC 01	CITY OF RUSSELL	--	730	--	KD	H	--	--	--
12S 18W 11AA 01	A. V. STARB	--	74	6	KCC	S	2118.4	53.70	1941
12S 18W 14CC 01	H. W. JOY	--	43	48	KCC	S	2113.9	14.10	1941
12S 18W 16DDD 01	A. M. COLE	--	88	6	KCC	H	2153.1	75.30	1941
12S 18W 24BAA 01	H. W. BYERS	--	100	6	KCC	H,S	--	61.70	1941
13S 17W 14AAA 01	A. P. GRAFF	--	30	6	KCC	H	--	25.70	1941
14S 16W 09AA 01	H. HUSER	--	133	6	KD	S	1908	91.80	1949
14S 16W 10AAA 01	POLEIN ET AL	--	154	6	KD	H	--	151.00	1941
14S 18W 27CBB 01	A. A. DECHANT	--	345	7	KD	H	2058.8	159.00	1946
14S 19W 29DDC 01	JACOB M. HAAS	--	350	6	KD	S	2103.6	17.90	1949
14S 19W 34BAB 01	JOE FEITZ	--	218	6	KD	H	2122.1	198.00	1949
15S 16W 09AA 01	H. HUSER	--	133	6	KD	S	1908.4	91.80	1949
15S 16W 14APB 01	--	--	204	6	KD	S	1906.7	112.00	1946
15S 16W 18ADA 01	ED F. SCHULTE	--	177	6	KD	S	1932.0	109.00	1946
15S 16W 18BBB 01	D. VONFELDT	--	188	6	KD	H,S	1930.3	110.00	1946
15S 16W 23CBB 01	--	--	108	5	KD	H	1835.7	53.10	1949
15S 16W 36ABC 01	J. EDWARD BOXBERGER	--	180	6	KD	S	1921.9	138.00	1949
15S 17W 05BAA 01	ALOYS GROSS	--	150	6	KD	S	1931.1	99.80	1946
15S 17W 14DDD 01	CHRISTINA ROTH	--	171	6	KD	S	1947.1	124.00	1946
15S 17W 15DDC 01	J. DEGENHARDT	--	191	6	KD	S	1970.8	17.90	1949
15S 17W 17BBA 01	S. LEIKER	--	182	6	KD	S	1965.3	112.00	1946
15S 17W 17CCB 01	PAUL LEIKER	--	221	6	KD	S	1994.4	139.00	1949
15S 17W 19ABA 01	A. B. LEIKER	--	246	6	KD	H	2000.0	140.00	1949
15S 17W 24DCD 01	GEO. MADER	--	151	6	KD	H,S	1929.4	115.00	1946
15S 17W 28BDA 01	FRANK KAJEWSKI	--	132	6	KD	H	1963.8	110.00	1949
15S 17W 30BBB 01	C. UNREIN	--	195	5	KD	S	1984.4	124.00	1949
15S 18W 02CBB 01	ALEX B. LEIKER	--	233	6	KD	H,S	2014.6	26.90	1946
15S 18W 09BBB 01	MERMIS TRUST	--	270	5	KD	S	2004.3	137.00	1949
15S 18W 23ABB 01	--	--	256	6	KD	S	1960.5	91.80	1946
15S 18W 26BBB 01	E. F. MADDEN	--	243	8	KD	N	1993.7	115.00	1949
15S 18W 33BAA 01	FRANK WERTH	--	154	6	KD	H,S	--	35.30	1949
15S 19W 27DAA 01	MARTIN DREHER	--	156	6	KD	H,S	1996.2	75.30	1949
15S 19W 35AAA 01	J. ZIMMERMAN	--	152	6	KD	S	1982.1	63.70	1949

FINNEY COUNTY

21S 27W 16BB 01	LEO SCHLEGEL	--	640	6	KD	H,S	--	--	--
22S 27W 14BDC 01	L. R. OHMEY	--	485	16	KD	I	--	130.00	1970
22S 28W 25CC 01	D. H. HOLDEN	--	29	48	KD	H	2589.7	20.00	1940
23S 27W 04AB 01	EARL POWELL	--	400	6	KD	H,S	--	--	--
23S 29W 12CCC 01	KS. HWAY COMMISSION	--	450	8	KD	P	2749	325.00	1970
24S 33W 18BDB 01	SUNFLOWER ELEC	1977	520	1.50	KD	H	2878	33.20	1979
24S 33W 32BDB 02	SUNFLOWER ELEC	1977	635	1.50	KD	H	2920	84.60	1979

Table 2.--Records of selected wells--Continued

WELL NUMBER	OWNER	DATE COMPLETED (YEAR)	DEPTH OF WELL (FEET)	CASING DIAMETER (INCHES)	PRINCIPAL AQUIFER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	DEPTH TO WATER (FEET)	DATE WATER LEVEL MEASURED (YEAR)
				FORD COUNTY					
25S 21W 18CCD 01	KERMIT FROETSCHNER	--	--	--	KD	I	2384	--	--
25S 21W 23BCA 01	GAIL HUBBELL	1969	127	16	KD	I	2311	63.00	1973
25S 21W 35AB 01	LEO R. KRUMREY	--	155	6	KD	H,S	2300	50.20	1939
25S 22W 07ACA 01	KERMIT FROETSCHNER	1968	350	16	KD	I	2441	164.00	1973
25S 22W 24AB 01	M. T. KEITH	--	156	4	KD	H,S	2398	77.20	1939
25S 22W 27CCD 01	JAMES NIETLING	--	240	--	KD	H	2432	123.00	1973
25S 22W 30DCC 01	CITY OF SPEARVILLE	--	--	16	KD	P	--	--	--
25S 22W 34DDB 01	NORBERT TASSET	1973	410	14	KD	I	2423	--	--
25S 23W 11CCC 01	KGS & USGS	1968	385	1	KD	U	2424	75.00	1973
25S 23W 12BBB 01	ANTHONY INDIEK	1972	362	1	KD	U	2390	117.00	1973
25S 23W 14ADD 01	T. GLEASON	--	263	5	KD	H,S	2452	171.00	1973
25S 23W 18AAA 01	SCHOOL DISTRICT	--	43	6	KD	P	2423	39.20	1939
25S 23W 24CD 01	ALBERT BURGHART	--	88	6	KD	H,S	2459	70.80	1939
25S 23W 25CCC 01	DONALD STEIN	--	372	16	KD	I	2463	166.00	1973
25S 23W 32DBB 01	TOM FEIST	1968	380	16	KD	I	2463	150.00	1973
25S 23W 34CCB 01	BERNARD KNOEBER	1967	350	16	KD	I	2461	--	--
25S 23W 45ADC 01	WENDELINE STEGMAN	1967	360	16	KD	I	2461	163.00	1973
25S 23W 35DAD 01	MELVIN J. STEIN	--	310	--	KD	H	2456	158.00	1973
25S 23W 35DDB 01	MELVIN J. STEIN	--	300	16	KD	I	2457	157.00	1973
25S 23W 36DDA 01	JOSEPHINE STEIN	--	380	16	KD	I	2466	170.00	1973
25S 25W 10CC 01	SCHOOL DISTRICT 36	--	173	5	KD	P	2545	105.00	1939
26S 21W 01ACA 01	JACK KERSTING	1968	165	16	KD	I	2264	20.00	1973
26S 21W 01BCA 01	JACK KERSTING	--	135	16	KD	I	2263	--	--
26S 21W 11CBD 01	H. W. METZEL	1967	174	16	KD	I	2280	22.00	1973
26S 21W 17DBC 01	LARRY STRONG	1973	--	12	KD	U	2348	49.10	1973
26S 22W 05CBA 01	D. D. IMEL	1973	435	16	KD	I	2435	--	--
26S 22W 06BCD 01	JAMES KNOEBER	--	350	16	KD	I	2431	--	--
26S 22W 06CCA 01	MELVIN HARIGER	1968	--	18	KD	I	2414	98.00	1973
26S 22W 08CAD 01	AMERICAN PRODUCTS	1973	243	16	KD	I	2427	--	--
26S 22W 08DDC 01	D. D. IMEL	--	--	16	KD	I	2434	108.00	1973
26S 22W 11CDC 01	B. L. HORNUNG	--	154	12	KD	I	2356	22.00	1973
26S 22W 18ACA 01	FORD CO. BANK	--	273	16	KD	I	2404	82.00	1973
26S 22W 21DCA 01	N. TASSETT	--	360	--	KD	--	--	34.60	1968
26S 22W 21DCD 01	NORBERT TASSET	1968	360	14	KD	I	2377	35.00	1973
26S 22W 24AAA 01	CLETUS HEEKE	1968	250	12	KD	I	2335	--	--

26S 23W 10DAD 01	J. A. MCGWIN	--	278	16	KD	I	2463	140.00	1973
26S 23W 10DBC 01	J. A. MCGWIN	--	280	--	KD	II	2475	151.00	1973
26S 23W 12BDB 01	MERLE BARNES	--	--	--	KD	I	2439	--	--
26S 23W 15ADA 01	WILLIAM CLAUSSEN	--	288	16	KD	I	2465	178.00	1973
26S 23W 15DCD 01	WILLIAM CLAUSSEN	--	330	16	KD	I	2468	--	--
27S 21W 29DBB 01	ALBERT MILLER	--	126	12	KD	I	2318	--	--
27S 21W 29DBB 02	ALBERT MILLER	--	126	12	KD	I	2318	--	--
27S 21W 30DDD 01	ALBERT MILLER	--	126	12	KD	I	2328	--	--
27S 21W 31CBB 01	LEO KONDA	--	115	12	KD	I	2335	10.00	1973
27S 22W 09DAA 01	HENRY SCHOMAKER	--	390	16	KD	I	2418	--	--
27S 22W 13CDD 01	HENRY SCHOMAKER	1973	246	12	KD	I	2412	23.00	1973
27S 22W 16CCA 01	DUANE RIEGEL	--	240	12	KD	I	2415	--	--
27S 22W 19AAC 01	FORD LAND + CATTLE	--	--	--	KD	I	2418	--	--
27S 22W 19DAB 01	FORD LAND + CATTLE	--	--	--	KD	I	2417	--	--
27S 22W 20BBD 01	FORD LAND + CATTLE	--	--	16	KD	I	2418	--	--
27S 22W 20CAC 01	FORD LAND + CATTLE	--	--	16	KD	I	2420	--	--
27S 22W 20DAB 01	FORD LAND + CATTLE	--	--	--	KD	I	2415	--	--
27S 22W 20DCD 01	FORD LAND + CATTLE	--	--	--	KD	I	2412	--	--
27S 22W 27DA 01	W. H. COOK	--	78	--	KD	II	2416	45.90	1939
27S 22W 29BDD 01	FORD LAND + CATTLE	--	90	16	KD	I	2403	--	--
27S 22W 29CAA 01	FORD LAND + CATTLE	--	110	16	KD	I	2405	--	--
27S 22W 36AAD 01	LEO KONDA	--	115	12	KD	I	2341	--	--
27S 23W 15DCB 01	FRANCIS RICKE	1970	442	12	KD	I	2399	--	--
27S 23W 16BAB 01	STANLEY KLIESEN	1969	470	16	KD	I	2416	--	--
27S 23W 24BCB 01	ELMER RIEGEL	1972	220	16	KD	I	2395	--	1973
28S 22W 04CC 01	L. A. LAMB	--	76	20	KD	I	2385	27.50	1938
28S 22W 30BCC 01	USGS	1978	525	2	PW	II	2490	165.92	1978
28S 22W 30BCC 02	USGS	1978	445	1	KD	II	2490	206.01	1978

GOVE COUNTY

14S 26W 14DC 01	WARD JACKA	--	696	4	KD	H,S	--	276.00	1952
14S 27W 11DC 01	HORACE PUTHOFF	--	717	8	KD	H,S	--	300.00	1956
14S 27W 12CD 01	JOHN SUTCLIFFE	--	340	6	KCC	H,S	--	100.00	1956
15S 26W 36BA 02	NORA BOLLINGER	--	400	6	KCC	H,S	--	300.00	1956

GRANT COUNTY

27S 38W 06CB 01	RAY SHAFFER	--	568	16	KD	I	3219	130.00	1960
27S 38W 15BBB 01	MRS. CHARLES ANDES	--	479	16	PW	I	3148	108.00	1960
28S 38W 07AB 01	DALE H. WILLIAMS	--	610	16	KCH	I	3131	143.00	1963

GRAY COUNTY

25S 29W 21CDA 01	USGS	1977	405	2	KD	II	2707	140.97	1978
25S 29W 21CDA 02	USGS	1978	555	2	KD	II	2707	167.83	1978
28S 27W 24BAA 01	R. C. HOUSER	--	420	4	KD	H	2752.3	204.00	1940

Table 2.--Records of selected wells--Continued

WELL NUMBER	OWNER	DATE COMPLETED (YEAR)	DEPTH OF WELL (FEET)	CASING DIA-METER (INCHES)	PRINCIPAL AQUIFER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	DEPTH TO WATER (FEET)		DATE WATER LEVEL MEASURED (YEAR)
GREELEY COUNTY										
17S 42W 36BBB 01	GREELEY LANDS, INC.	--	1140	8	KD	U	--	--		1948
HAMILTON COUNTY										
21S 40W 28DCC 01	CLARENCE SIMMONDS	--	784	5	KD	H,S	--	539.00		1950
21S 41W 08DDD 01	DAN HUSER	--	850	6	KD	H,S	3661.2	450.00		1940
21S 42W 03CB 01	J. T. WILCOXEN	--	942	8	KD	H	--	--		--
22S 40W 30BBA 01	DARREL DIKEMAN	--	1002	--	KU	S	3516.4	125.00		1962
22S 41W 33DCD 01	URBAN SIMON	--	585	6	KU	H,S	--	360.00		1964
22S 43W 04DC 01	FRED BERNDT	--	512	10	KU	U	3689.2	370.00		1940
22S 43W 04DDD 01	JACOB BERNDT	--	516	--	KU	U	--	355.00		1940
23S 40W 29DDB 01	BELVA DOTTS	--	--	--	KU	S	3397	239.00		1964
23S 40W 32CCC 01	P. C. DONNELL	--	283	6	KU	H,S	3344.8	90.00		1962
23S 41W 06DDA 01	D. WEAVER	--	11	42	KCC	N	3496.9	7.60		1940
23S 41W 24BAB 01	L. H. BURCH	--	375	--	KU	S	--	200.00		1950
23S 42W 20CC 01	JOSH DWINGS	--	300	--	KCH	U	--	--		--
23S 43W 14AD 01	CITY OF COOLIDGE	--	171	6	KD	P	3491.9	163.00		1940
23S 43W 21AD 01	CHESTER R. HUSER	--	140	6	KD	H,S	--	63.00		1940
23S 43W 22CBD 01	LANCE CRITTENDEN	--	300	--	KCH	U	--		D	1940
23S 43W 23BA 01	CITY OF COOLIDGE	--	156	6	KD	H	--	15.00		1940
23S 43W 23CA 01	FEARNO	--	298	3	KCH	--	--	3.50		1941
23S 43W 23DAC 01	OLIVER HINES	--	290	--	KCH	--	--	10.00		1941
23S 43W 24ACC 01	LOU EDDY	--	287	3	KCH	H,S	3340.9	5.00		1940
23S 43W 24CB 02	VAN EDDY	--	280	2	KCH	H,S	3336.3	7.70		1941
23S 43W 24DDA 01	J. H. CONARD	--	285	3	KD	H,S	--	4.00		1940
23S 43W 25DCC 01	WINFIELD SLAVEN	--	240	6	KU	H,S	3333.7	8.60		1960
23S 43W 27AD 01	N. B. LOW	--	290	3	KCH	U	--	5.30		1941
24S 39W 24DCC 01	BELLE HEINLEN	--	98	5	KD	U	3179.5	52.50		1965
24S 40W 07CB 01	CITY OF SYRACUSE	--	--	8	KU	U	--	8.10		--
24S 40W 07CB 02	CITY OF SYRACUSE	--	300	12	KU	U	--	2.60		1940
25S 39W 22DCC 01	J. A. ENGLERT	--	270	6	KD	H,S	--	--		--
25S 39W 30CBB 01	K. A. SCOTT	--	220	6	KD	S	3392.1	17.80		1940
25S 41W 05AA 01	H. W. GREGORY	--	250	6	KD	H,S	--	100.00		--
25S 41W 30CCD 01	R. WILBOURN	--	206	6	KD	H,S	3509.7	182.00		1962

25S 42W 06AB 01	L. H. SMITHSON	--	16	5	KH	H	--	15.90	1939
25S 42W 06BF 01	FRANK HELERICH	--	165	--	KD	H,S	--	161.00	1940
25S 42W 24AC 01	J. A. KNIGHT	--	380	6	KD	H,S	--	310.00	--
25S 43W 14BCC 01	F. C. HATCHER	--	310	6	KD	H,S	--	--	--
26S 39W 09AAA 01	JERROME LAMPE	--	--	6	KD	H	--	--	--
26S 39W 22CD 01	W. S. C. BISHOP	--	254	6	KD	H,S	--	133.00	--
26S 40W 01BB 01	JAKE LAMPE	--	210	--	KD	--	--	175.00	--
26S 40W 10DA 01	E. LEVENS	--	17	6	KH	H	3409.4	12.00	1940
26S 40W 14BBA 01	CLARENCE JANTZ	--	610	7	KD	H,S	--	--	--
26S 40W 14BBB 01	CLARENCE JANTZ	--	305	6	KD	H	--	--	--
26S 41W 02DA 01	J. V. BRITTINGHAM	--	145	5	KD	H,S	--	131.00	--
26S 41W 17CCB 01	VERNA STOREY	--	130	6	KD	H,S	--	60.00	--
26S 41W 24CDC 01	JOHN LEWIS	--	265	6	KD	H	--	--	--

HODGEMAN COUNTY

21S 21W 30CB 01	N. PITTENHOUSE	--	335	4	KD	H	--	204.00	1945
21S 21W 31DDA 01	JIM WRIGHT	1947	360	--	KD	S	--	290.00	1972
21S 22W 27CB 01	CLAUDE SELFRIDGE	1945	287	--	KD	H,S	--	180.00	1972
21S 22W 27CBC 01	R. H. CLEWS	--	285	6	KD	S	2244.5	99.20	1945
21S 22W 28AAC 01	A. J. HALLING	--	361	6	KD	S	2282.9	137.00	1945
21S 23W 03BAA 01	R. B. FRUSHER	--	23	--	KD	S	--	13.90	1945
21S 23W 03C 01	R. G. FRUSHER	--	200	6	KD	H,S	--	--	--
21S 23W 03CDB 01	R. G. FRUSHER	1961	400	--	KD	H	--	200.00	1972
21S 24W 27BCC 01	ROY CROFT	1956	330	--	KD	H,S	--	80.00	1972
21S 25W 02DCC 01	W. L. LOVE	--	219	6	KD	H,S	--	90.80	1945
21S 26W 16BBA 01	MERLE EVANS	--	368	6	KD	S	--	200.00	1969
22S 21W 14AAA 01	R. M. NORRIS	--	67	6	KD	S	2174.3	48.60	1946
22S 21W 25AAA 01	IONA SAVINGS BANK	--	126	5	KD	H,S	2245.2	79.80	1946
22S 22W 19ABB 01	ETHEL OPPY	--	228	--	KD	S	--	208.00	1972
22S 23W 07CCD 01	DAN EWY	--	674	6	KD	S	--	29.00	1945
22S 23W 08DCC 01	JAKE REED	--	279	6	KD	H,S	--	211.00	1945
22S 23W 09BBB 01	A. A. DOER	--	317	6	KD	S	--	200.00	1945
22S 23W 32CCB 01	JOHN COURTNEY	--	177	6	KD	H,S	2311.3	83.50	1945
22S 24W 14BBC 01	CLARE SHRIWISE	--	560	16	KD	T	2460	255.00	1973
22S 24W 15BDA 01	W. F. MCKIBBEN	--	588	16	KD	T	2463	250.00	1973
22S 24W 16ACC 01	WAYNE SHRIWISE	--	365	6	KD	H	2470	262.00	1973
22S 24W 16ADB 01	WAYNE SHRIWISE	--	567	16	KD	T	2460	245.00	1973
22S 24W 16ADB 02	WAYNE SHRIWISE	1972	565	1	KD	U	2465	243.00	1973
22S 24W 24DDC 01	BERNARD SPRINGER	1960	430	--	KD	H,S	--	90.00	1972
22S 24W 24DDD 01	BERNARD SPRINGER	--	410	6	KD	H	2360	--	--
22S 24W 25DDC 01	DARRELL CRAGHEAD	--	330	6	KD	S	2332	--	--
22S 24W 26DDA 01	LEONARD FORD	--	240	6	KD	S	2365	--	--
22S 24W 26DDC 01	BERNARD SPRINGER	1960	430	--	KD	H,S	--	90.00	1972
22S 24W 27ADC 01	JACK W. TORMAN	--	285	6	KD	S	2374	--	--
22S 24W 32AAB 01	MRS. WILBUR WALTER	--	340	6	KD	H,S	2454	226.00	1973

Table 2.--Records of selected wells--Continued

WELL NUMBER	OWNER	DATE COMPLETED (YEAR)	DEPTH OF WELL (FEET)	CASING DIAMETER (INCHES)	PRINCIPAL AQUIFER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	DEPTH TO WATER (FEET)	DATE WATER LEVEL MEASURED (YEAR)
			HODGEMAN COUNTY -- CONTINUED						
22S 24W 34APD 01	JACK W. TORMAN	--	385	6	KD	H,S	2390	--	--
22S 24W 34CDC 01	CECIL J. SHELTON	--	416	6	KD	H,S	2354	--	--
22S 24W 34CDD 04	SHELTON	1966	390	--	KD	H,S	--	80.00	1969
22S 24W 35DAC 01	J. S. OWENS	--	282	6	KD	S	2312	--	--
22S 24W 36CBC 01	RAY ROUSEY	--	220	6	KD	S	2303	--	--
22S 25W 24BBB 01	R. C. KELLOG	--	363	6	KD	S	2472	--	--
22S 25W 27DDD 01	W. WALTER	--	283	6	KD	S	--	252.00	1945
22S 26W 16ADD 01	VIRGIL GLUNT	--	337	4	KD	S	--	180.00	1945
22S 26W 23DCC 01	L. L. GLUNT	--	505	--	KD	S	--	--	--
23S 21W 02BBB 01	HOWARD DIXON	--	207	4	KD	H,S	2312.2	149.00	1946
23S 21W 06AAC 01	R. L. MOONEY	--	94	6	KD	S	2232.0	71.70	1946
23S 21W 18DBB 01	MARY HOGAN	--	154	8	KD	S	2317.0	135.00	1946
23S 22W 01CCA 01	C. T. HOUSMAN	--	145	6	KD	S	2236.8	71.00	1945
23S 22W 07DAA 01	FRED KURF	1972	482	1	KD	U	2239	86.00	1973
23S 22W 08ADD 01	CHARLES HOUSMAN	--	295	6	KD	S	2263.8	118.00	1946
23S 22W 29DDD 01	FRANK SEBES	--	350	--	KD	S	--	40.00	1972
23S 23W 03CBD 01	QUINTON HUBIN	1969	257	16	KD	I	2222	27.00	1973
23S 23W 04AAD 01	N. H. BRISTOW	1968	282	16	KD	I	2235	38.00	1973
23S 23W 04DCA 01	D. G. HOAGLAND	--	264	16	KD	I	2236	27.00	1973
23S 23W 06CAB 01	CITY OF JETMORE	--	385	16	KD	P	2263	--	--
23S 23W 09BBD 01	3 J RANCH	--	290	16	KD	I	2254	--	--
23S 23W 12APD 01	J. J. JARNAGIN, JR.	1968	245	16	KD	I	2256	107.00	1973
23S 23W 12BCC 01	3 J RANCH	1970	265	16	KD	I	2260	125.00	1973
23S 23W 12CAC 01	3 J RANCH	1968	256	12	KD	I	2280	147.00	1973
23S 23W 12DDB 01	3 J RANCH	1970	275	16	KD	I	2302	165.00	1973
23S 23W 13CBB 01	A. DRUMM	--	154	5	KD	S	--	106.00	1946
23S 23W 15CD 01	UNKNOWN	--	128	--	KD	--	--	--	--
23S 23W 15CDB 01	E. J. ANDREWS	--	128	6	KD	S	--	79.90	1946
23S 23W 15DAB 01	STATE OF KANSAS	--	--	--	KD	P	--	--	--
23S 23W 21AAC 01	3 J RANCH	1972	395	16	KD	I	--	--	--
23S 23W 27CDD 01	J. C. LAPPIN	--	66	6	KD	S	--	57.40	1946
23S 23W 28CAA 01	STANLEY LAPPIN	--	159	6	KD	S	--	--	--
23S 24W 01AAC 01	CITY OF JETMORE	--	395	16	KD	P	2315	--	--
23S 24W 01C 01	CITY OF JETMORE	--	--	16	KD	P	--	--	--
23S 24W 11DAA 01	TRACY JONES	--	300	6	KD	S	2335	--	--

23S 24W 25DDD 01	C. A. THRESHER	--	76	--	KD	U	--	70.60	1946
23S 24W 28BCC 01	GEORGE HARMAN	1972	570	1	KD	U	2481	213.00	1973
23S 25W 07B 01	KAY WILSON	1964	505	--	KD	H,S	--	220.00	1972
23S 25W 11ADA 01	ROY CARDER	--	200	6	KD	H,S	--	80.00	1969
23S 25W 22DBB 01	ROY CARDER	--	575	16	KD	I	2522	233.00	1973
23S 26W 07CCC 01	HARRY COHOON	--	500	16	KD	I	2612	306.00	1973
24S 21W 20CBA 01	LEONARD KATZ	--	250	16	KD	I	2348	80.00	1973
24S 21W 20CBB 01	LEONARD KATZ	--	--	16	KD	I	2348	79.20	1977
24S 21W 30ABB 01	VERNON KATZ	--	250	16	KD	I	2341	--	--
24S 21W 30ABC 01	VERNON KATZ	--	250	16	KD	I	2341	--	--
24S 23W 06AAB 01	FRANK WOLF	--	517	16	KD	I	2457	227.00	1973
24S 23W 13DCC 01	FRED STEINBRING	--	187	2	KD	H,S	2263	9.70	1968
24S 23W 22B 01	RAYMOND FAGAN	--	200	--	KD	H	--	--	--
24S 23W 26CCB 01	RUSSELL BELL	--	117	2	KD	S	2299	33.00	1973

KEARNY COUNTY

21S 36W 14DCC 01	A. HORTON	--	450	4	KU	U	3217.6	104.00	1964
21S 38W 26CBB 01	P. F. PLUMMER	--	700	--	KU	--	--	95.00	1960
22S 37W 01DDD 01	E. W. CRAIN	--	800	6	KU	H	--	165.00	1963
24S 36W 23CCC 01	CITY OF LAKIN	1978	563	12	KD	P	3001	--	--
24S 38W 11CCD 01	B. E. MILES	--	440	7	KU	S	3258.0	208.00	1961
25S 37W 08CBB 01	C. H. BROWNE ET AL	--	74	5	KU	U	3116.6	53.40	1939
25S 37W 10DC 01	N. J. FULENWIDER	--	16	16	KU	H	--	9.00	--
25S 37W 18DBB 01	KANS. OIL AND GAS	--	245	3	KU	U	3076.3	27.10	1962
26S 38W 19AB 01	O. F. FANNING	--	601	16	JU	I	3305.9	185.00	1959
26S 38W 24AA 01	ALBERT EVERLEIGH	--	200	6	KU	H,S	--	166.00	1959

LANE COUNTY

16S 27W 03CDC 01	DALE MENDENHALL	--	711	8	KD	H,S	--	300.00	1948
16S 28W 04BCD 01	CARLOS ROBERTS	--	673	8	KD	H,S	2603.2	344.00	1948
16S 29W 11CCC 01	D. P. DOWELL	--	749	8	KD	H,S	2730.2	400.00	1948
16S 29W 13CA 01	J. S. EATON	--	717	8	KD	H,S	--	300.00	1946
18S 29W 13DDA 01	CITY OF DIGHTON	--	859	--	KD	P	--	--	--
18S 29W 15D 01	--	--	86	--	KD	--	--	--	--
19S 27W 01BAA 01	P. SHRAMEK	--	726	8	KD	S	--	--	1948
19S 30W 30ADD 01	ORVILLE KREHBIEL	--	104	8	KD	H,S	--	50.00	1948
20S 27W 07AAB 01	KARL LITZENBERGER	--	742	8	KD	H,S	2710.7	400.00	1948

Table 2.--Records of selected wells--Continued

WELL NUMBER	OWNER	DATE COMPLETED (YEAR)	DEPTH OF WELL (FEET)	CASING DIAMETER (INCHES)	PRINCIPAL AQUIFER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	DEPTH TO WATER (FEET)	DATE WATER LEVEL MEASURED (YEAR)
LOGAN COUNTY									
12S 33W 33BBD 01	OPAL V. LEE	1966	1387	5	KD	H,S	--	800.00	--
12S 34W 34BAA 01	--	--	1200	--	KD	S	--	--	--
12S 34W 34BAB 01	C. L. DUTTLINGER	1967	1200	5	KD	S	--	--	--
12S 34W 35DCC 01	DORNON FARMS	1960	1200	5	KD	H,S	--	600.00	--
13S 33W 06BBA 01	H. M. UNRUH	1965	1230	6	KD	H,S	3055	695.00	1955
13S 33W 16ACA 01	MARTIN WARD	--	1151	5	KD	S	--	--	--
13S 33W 24BCC 01	L. E. STEINMETZ	--	1146	5	KD	H,S	--	--	--
13S 33W 26BPB 01	GEORGE HOLLAND	1967	1100	5	KD	S	--	--	--
14S 33W 22CDD 01	DAVID HOWARD	1964	895	5	KD	H,S	--	--	--
14S 35W 17BCA 01	LEHARD FAIRCHILD	1965	1335	5	KD	H,S	--	--	--
14S 36W 05CBB 01	PAUL FOTOPOULOS	--	1358	5	KD	S	--	--	--
14S 36W 14CAA 01	CHARLES SALMONS	1968	1135	6	KD	S	--	--	--
14S 36W 20CCB 01	HARLEY HERSCHBERGER	--	1223	5	KD	H,S	--	--	--
15S 35W 06BAC 01	W. MOLLENKAMP	1962	1145	5	KD	H,S	--	535.00	--
15S 35W 08BDD 01	W. MOLLENKAMP	1969	1130	5	KD	S	--	--	--
MEADE COUNTY									
30S 26W 01BCD 01	USGS	1978	465	2	PW	U	2545	121.40	1978
30S 26W 01BCD 02	USGS	1978	290	2	KD	U	2545	63.41	1978
32S 26W 04AAB 01	USGS	1977	195	2	PB	U	2460	79.45	1978
32S 29W 27AAB 01	USGS	--	583	1	PW	U	--	--	--
34S 30W 27BPB 01	USGS	--	720	1	PW	U	--	--	--
NESS COUNTY									
19S 23W 01CCB 01	J. P. CLOUSTON	1970	450	16	KD	I	2214	79.50	1975
19S 23W 21DA 01	RALPH STUM	1975	282	4	KD	S	2240	--	--
20S 22W 03DDD 01	FRED STOECKLEIN	1974	315	5	KD	S	2250	135.00	1974
20S 22W 18BCC 01	R. P. WARREN	--	55	6	KD	U	2228.6	36.00	1945

PAWNEE COUNTY

20S 17W 22DCC 01	USGS	1978	481	2	PW	U	2053	35.40+	1978
20S 17W 22DCC 02	USGS	1978	410	2	KCH	U	2053	33.09+	1978
20S 17W 22DCC 03	USGS	1978	110	2	KD	U	2053	23.57	1978
22S 19W 07AAA 01	USGS	1977	165	1.50	KD	U	2100	60.40	1978
22S 19W 07AAA 01	POLSON	--	165	--	KD	U	--	60.18	1977
22S 19W 07AAA 02	USGS	1977	435	2	PW	U	2100	19.23+	1978

RUSH COUNTY

16S 16W 32CCB 01	JEFF ALLEN	--	266	2	KD	H,S	2005	--	--
16S 17W 16DCD 01	MARY BASGALL	--	370	2	KD	H,S	--	--	--
16S 17W 22AAA 01	ST. MARY CHURCH	--	320	--	KD	P	--	--	--
16S 18W 06DAC 01	C. N. BIEKER	--	230	2	KD	H,S	--	--	--
16S 18W 27CDD 01	NOEL MELLICK	--	209	5	KD	H,S	2035	--	--
16S 19W 17BAB 01	MRS M. B. CLOSE	--	400	2	KD	H,S	--	--	--
16S 20W 05BBD 01	FRED BLACK	--	530	2	KD	H,S	--	--	--
17S 16W 20AAA 01	A. OCHS	--	315	2	KD	H,S	2065	--	--
17S 17W 06ABB 01	USGS	1978	510	2	KD	U	2877	35.29	1978
17S 17W 06ABB 02	USGS	1978	220	1	KD	U	2877	183.24	1978
17S 17W 28DCD 01	EMMA SCHWARTZKOPF	--	230	2	KD	H	2015	--	--
17S 18W 20DAA 01	W. WEBER	--	300	--	KD	H,S	2131	--	--
17S 18W 28AAD 01	L. V. MELLICK	--	335	2	KD	H,S	2095	--	--
17S 18W 33ACD 01	CITY OF LACROSSE	--	300	10	KD	P	2065	160.00	1954
17S 18W 33DBC 01	CITY OF LACROSSE	--	300	10	KD	P	2060	157.00	1953
17S 18W 34BBD 01	CITY OF LACROSSE	--	302	--	KD	P	2060	--	--
17S 19W 27DDC 01	RAY WEISER	--	320	2	KD	H,S	2132	--	--
17S 20W 29CDD 01	O. S. BELLPORT	--	285	--	KD	H,S	2175	--	--
17S 20W 36ABB 01	H. L. BAKER	--	325	--	KD	H,S	2130	--	--
18S 16W 28CDC 01	DALE WAGNER	--	168	--	KD	H,S	2043	--	--
18S 17W 18CCC 01	E. O. SERPAN	--	224	2	KD	H,S	2015	--	--
18S 17W 34BCA 01	MARY HORACEK	--	175	--	KD	H,S	2005	--	--
18S 18W 09AAB 01	V. ZETKO	--	265	--	KD	H,S	2092	--	--
18S 18W 26DDA 01	TED BARON	--	187	4	KD	H	2005	--	--
18S 18W 31DDA 01	MRS. F. JILG	--	150	--	KD	H,S	2070	--	--
18S 20W 36ABB 01	KENNETH ALMQUIST	--	214	--	KD	H,S	2125	--	--
19S 17W 27ADD 01	LES BRANNON	--	185	3	KD	H,S	--	--	--
19S 18W 27CCB 01	MARTIN HEMKEN	--	390	--	KD	H,S	--	--	--
19S 19W 24CCB 01	A. FILTS	--	290	6	KD	H,S	2205	--	--
19S 20W 04BBB 01	B. FRANK	--	284	--	KD	S	2145	--	--
19S 20W 17DDC 01	ELSIE LEBSACK	--	360	--	KD	H,S	2295	--	--
19S 20W 26BAA 01	CLAUDE HUDDLESTON	--	410	5	KD	S	2235	--	--

Table 2.--Records of selected wells--Continued

WELL NUMBER	OWNER	DATE COMPLETED (YEAR)	DEPTH OF WELL (FEET)	CASING DIAMETER (INCHES)	PRINCIPAL AQUIFER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	DEPTH TO WATER (FEET)	DATE WATER LEVEL MEASURED (YEAR)
STANTON COUNTY									
27S 39W 13ACB 01	FRANK SNELL	--	508	16	KD	I	3177	87.30	1959
TREGO COUNTY									
11S 23W 26BBC 01	WORDEN R. HOWAT	--	320	6	KCC	S	2409.4	300.00	1959
11S 23W 26BCB 01	WORDEN R. HOWAT	--	320	6	KCC	H,S	2403.6	300.00	1959
11S 23W 26CBB 01	WORDEN R. HOWAT	--	672	6	KD	S	2412.6	400.00	1959
12S 21W 24CDC 01	FRED J. JAMBURG	--	665	6	KD	H,S	2305.8	200.00	1959
12S 22W 36CCB 01	RAY MORTON	--	269	6	KCC	H,S	2293.2	60.00	1958
14S 21W 10DDA 01	SCHOOL DISTRICT	--	82	5	KCC	H	2223.3	22.30	1959
14S 21W 23AAA 01	PIUS GABEL	--	32	6	KCC	S	2180.9	15.30	1960
14S 22W 17CCC 01	J. LOCKER	--	87	6	KCC	H	2242.8	43.50	1959
14S 22W 30ACD 01	M. W. LECUYER	--	66	6	KCC	S	2187.7	38.10	1959
14S 23W 01BCB 01	MARVIN KUEHN	--	82	6	KCC	S	2310.2	24.90	1960
14S 23W 18DCD 01	G. D. DEINES	--	38	6	KCC	S	2271.3	20.80	1960
14S 24W 19DDA 01	C. KLINE	--	500	2	KD	S	2316.2	225.00	1958
15S 21W 16CBC 01	CLEM GASCHLER	--	32	48	KCC	H	2253.5	28.00	1958
15S 21W 25DDD 01	D. K. NORTH	--	555	4	KD	H,S	2320.4	400.00	1958
15S 21W 26BCC 01	JOHN BOURKE	--	650	2	KD	H,S	--	--	--
15S 21W 26BCC 02	JOHN BOURKE	--	137	6	KCC	H	2337.6	29.50	1960
15S 21W 36DDD 01	DEWEY NORTH	--	45	54	KCC	S	2277.0	26.40	1960
15S 22W 35ABA 01	C. + M. BEASON	--	66	6	KD	S	2404.2	--	--
15S 23W 08DDD 01	DAVID KRAFT	--	94	6	KCC	H,S	2286.4	29.50	1960
15S 24W 07AAA 01	G. W. MOLLENKAMP	--	52	6	KCC	S	2330.1	23.70	1959
15S 24W 11CCC 01	J. WERTH	--	71	60	KCC	S	2330.1	23.70	1960
15S 24W 15CCC 01	ANDY MONTGOMERY	--	618	2	KD	H,S	2386.3	200.00	1959
15S 24W 16DDD 01	BILL MONTGOMERY	--	640	7	KD	H,S	2396.5	272.00	1962
15S 24W 20DDD 01	SCHOOL DISTRICT	--	125	--	KCC	H	2418.9	27.50	1960
15S 24W 26AAA 01	SCHOOL DISTRICT	--	99	5	KCC	H	2340.6	34.20	1959
15S 25W 01CDC 01	F. G. NIMZ	--	124	6	KCC	S	2367.3	29.20	1960
WICHITA COUNTY									
18S 37W 24CCC 01	CITY OF LEOTI	1978	1050	--	KK	P	3306	360.00	1978
19S 38W 26DCC 01	E. H. DIERKS	--	1265	--	KD	I	3401	--	--

Table 3.--Logs of test holes and wells

[Logs are for holes drilled by the Kansas Geological Survey except where noted as drilled by a commercial driller. Altitudes are given in feet above sea level. Depth of hole and depth to water are reported in feet below land surface.]

Table 3.--Logs of test holes and wells

EDWARDS COUNTY

24-20W-9DCD.--Drilled May 11, 1978. Altitude 2,260 feet. Depth to water 53 feet (Dakota Formation, 1978) and 50 feet (Cheyenne Sandstone, 1978).

	Thickness	Depth
QUATERNARY SYSTEM		
Pleistocene Series, undifferentiated		
Clay (topsoil), dark-brown	5	5
Clay, reddish-brown	5	10
Clay, limy, light-brown	1	11
TERTIARY SYSTEM		
Miocene Series		
Ogallala Formation		
Caliche, with light reddish-brown clay	4	15
Clay, limy, light reddish-brown	6	21
Clay, reddish-brown	3	24
Clay, limy, reddish-brown	32	56
Caliche, brittle, reddish-brown	1	57
Clay, very sandy, light reddish-brown	13	70
Caliche and mortar bed	11	81
CRETACEOUS SYSTEM		
Lower Cretaceous Series		
Dakota Formation		
Siltstone, hard, light-gray	1	82
Clay, light-gray, some weathered yellow layers	14	96
Ironstone, black	1	97
Clay, gray, with hard sandstone layer and lignite	4	101
Clay, gray, with dark-gray clay	6	107
Sandstone, fine-grained	1	108
Clay, gray, with thin sandstone layers	11	119
Sandstone, light-gray	1	120
Sandstone, very fine-grained, light-gray	1	121
Clay, gray, with thin sandstone layers	9	130
Sandstone, silty, brown	7	137
Sandstone, fine-grained, silty, brown, and gray clay layers	15	152
Ironstone, with dark-gray clay, brown sandstone, and lignite	6	158
Clay, gray, and very fine-grained light brownish-yellow sandstone	7	165
Clay, gray, with thin black to dark-brown translucent fragments	16	181
Clay, gray, and light-brown, silty very fine-grained sandstone	43	224
Sandstone, medium-grained, brown	2	226
Clay, light-gray to yellowish-brown, with thin sandstone layers	14	240
Clay, light-gray to gray and red, with a few thin hardened layers	47	287

Table 3.--Logs of test holes and wells--Continued

EDWARDS COUNTY--Continued

24-20W-9DCD.--Continued

CRETACEOUS SYSTEM--Continued	Thickness	Depth
Lower Cretaceous Series--Continued		
Kiowa Formation		
Siltstone, with gray layers.....	13	300
Shale, gray, with hard siltstone layers.....	48	348
Shale, black to gray, very hard layer.....	59	407
Shell material, thin layer.....	1	408
Shale, black, with thin hard layers.....	73	481
Cheyenne Sandstone		
Shale, black to dark-gray, with gray sandy shale and very fine white sandstone.....	14	495
Shale, sandy, dark grayish-brown, with hard streaks, lignite.....	14	509
Siltstone, gray, moderately hard, with some soft layers.....	31	540
Siltstone, gray, with brown shale, lignite, and sandstone layers.....	10	550
PERMIAN SYSTEM		
Upper Permian Series		
Whitehorse Formation		
Siltstone, pale green, with some red layers.....	2	552
Shale, red, with some sandy shale.....	4	556

Table 3.--Logs of test holes and wells--Continued

FINNEY COUNTY

24-33W-19DBA.--Drilled February 2, 1977, by a commercial driller. Altitude 2,920 feet. Depth to water (reported) 71 feet (Dakota Formation, 1977). Sunflower Electric Cooperative.

	Thickness	Depth
QUATERNARY SYSTEM		
Pleistocene Series, undifferentiated		
Topsoil, brown	5	5
Sand, fine	10	15
TERTIARY SYSTEM		
Miocene Series		
Ogallala Formation		
Gravel, coarse, with clay streaks	35	50
Clay, tan, with coarse sand streaks	55	105
Clay, gray, with medium sand layers	125	230
Sand, medium to coarse, tan	65	295
Clay, tan, some sand streaks	55	350
Sand, medium to coarse, tan, some clay streaks	60	410
Clay, tan, with hard gray clay streaks	30	440
CRETACEOUS SYSTEM		
Upper Cretaceous Series		
Graneros Shale		
Shale, hard, black, with sand streaks at 530-535 feet, 550-555 feet, and 595-600 feet	175	615
Lower Cretaceous Series		
Dakota Formation		
Sandstone, loose, medium-grained	35	650
Sandstone, medium-cemented, fine-grained, well-sorted	45	695
Shale, gray	25	720
Sand and gray shale	10	730
Shale, gray, sticky, with hard sand streaks	35	765
Shale, gray, sticky, with hard red-bed streaks	72	837

Table 3.--Logs of test holes and wells--Continued

FINNEY COUNTY--Continued

24-33W-32BAC.--Drilled January 25, 1977, by a commercial driller. Altitude 2,920 feet. Depth to water (reported) 74 feet (Ogallala Formation, 1977). Sunflower Electric Cooperative.

	Thickness	Depth
QUATERNARY SYSTEM		
Pleistocene Series, undifferentiated		
Sand, fine	20	20
TERTIARY SYSTEM		
Miocene Series		
Ogallala Formation		
Sand and gravel, with clay streaks	60	80
Clay and some sand, light-brown	50	130
Clay, dark-gray	15	145
Sand, medium to coarse, some clay streaks above 185 feet	60	205
Clay, light-gray	10	215
Sand, medium to coarse, some clay streaks	100	315
Clay, tan	35	350
Sand, fine, some clay	20	370
Clay, tan with coarse sand streaks	25	395
Sand, coarse, some gravel	25	420
Clay, dark-gray	20	440
Clay, light-gray, with few sand streaks between 480 and 500 feet	60	500
Clay, light-gray, with sand streaks	10	510
Clay, light-gray	5	515
CRETACEOUS SYSTEM		
Lower Cretaceous Series		
Dakota Formation		
Sandstone, fine-grained, and clay; lightly cemented	125	640
Sandstone, fine-grained, with clay streaks	25	665
Sandstone, fine-grained, and dark-gray clay with some sand streaks	15	680
Sandstone, medium-grained	160	840
Kiowa Formation		
Clay, gray	15	855
Cheyenne Sandstone		
Sandstone, medium-grained	10	865
Clay, gray	5	870
PERMIAN SYSTEM		
Upper Permian Series, undifferentiated		
Clay, silty, red	30	900

Table 3.--Logs of test holes and wells--Continued

FORD COUNTY

27-22W-13ADA.--Drilled May 25, 1979, by a commercial driller. Altitude 2,400 feet. Depth to water (reported) about 60 feet. [Dakota Formation (?), 1979].

QUATERNARY AND TERTIARY SYSTEMS	Thickness	Depth
Pleistocene and Miocene Series, undifferentiated		
Sand, fine	18	18
Clay, sandy	11	29
Clay, cemented	21	50
CRETACEOUS SYSTEM		
Upper Cretaceous Series		
Greenhorn Limestone		
Clay, white	6	56
Graneros Shale		
Shale, black	103	159
Lower Cretaceous Series		
Dakota Formation		
Sand, fine	13	172
Clay, tan	17	189
Red bed	14	203
Sand, fine, dirty	6	209
Kiowa Formation		
Shale, gray	51	260
Cheyenne Sandstone		
Shale, gray, and yellow clay streaks	40	300
Sandstone	18	318
Shale, gray	26	344
PERMIAN SYSTEM		
Upper Permian Series, undifferentiated		
Red bed	6	350

Table 3.--Logs of test holes and wells--Continued

FORD COUNTY--Continued

28-22W-30BCC.--Drilled September 12, 1978. Altitude 2,490 feet. Depth to water 123 feet (Ogallala Formation, 1978), 147 feet (Cheyenne Sandstone, 1978), and 166 feet (Upper Permian deposits, 1978). Everette Copeland.

	Thickness	Depth
QUATERNARY SYSTEM		
Pleistocene Series, undifferentiated		
Topsoil, clayey and silty, dark-brown.....	2	2
TERTIARY SYSTEM		
Miocene Series		
Ogallala Formation		
Clay, very silty, light reddish-brown, with occasional caliche streaks.....	13	15
Silt, slightly clayey, very light-brown, with some caliche.....	15	30
Silt, very light-brown, with some caliche.....	48	78
Silt, clayey, medium-brown.....	23	101
Silt, with caliche streaks.....	12	113
Sand, very fine to fine silty, medium-brown.....	3	116
Sand and gravel, fine to medium, reddish-brown, with particles of quartz, orthoclase, and basalt.....	3	119
Gravel, fine to medium, reddish-brown.....	26	145
Gravel, coarse, reddish-brown.....	2	147
Gravel, fine to medium.....	1	148
Gravel, medium to coarse.....	3	151
Clay, yellow-brown to pinkish-gray, with fine to medium sand.....	2	153
Clay, grayish-white, and very fine sand.....	18	171
Gravel, medium, reddish-brown.....	2	173
Clay, grayish-white, and medium reddish-brown gravel.....	2	175
Gravel, medium to coarse, and grayish-white clay...	6	181
Clay, grayish-white.....	17	198
CRETACEOUS SYSTEM		
Upper Cretaceous Series		
Greenhorn Limestone (?)		
Shale, soft, olive-gray.....	11	209
Limestone, light-gray, indurated.....	2	211
Shale, firm, olive-gray, with a few indurated thin beds of limestone.....	14	225
Shale, hard, dark-gray, with occasional hard thin streaks of very thin limestone.....	15	240
Graneros Shale (?)		
Shale, hard, dark-gray.....	38	278

Table 3.--Logs of test holes and wells--Continued

FORD COUNTY--Continued

28-22W-30BCC.--Continued

CRETACEOUS SYSTEM--Continued	Thickness	Depth
Lower Cretaceous Series--Continued		
Dakota Formation		
Siltstone, light-gray, and very fine-grained light-gray sandstone	2	280
Shale, hard, dark-gray	1	281
Sandstone, very fine-grained, light-gray	1	282
Shale, hard, dark-gray	3	285
Sandstone, very fine-grained, light-gray	2	287
Shale, hard, dark-gray, and interbedded very fine-grained thin light-gray sandstone	6	293
Shale, hard, dark-gray	7	300
Sandstone, very fine-grained, light-gray, and hard dark-gray shale	4	304
Shale, hard, dark-gray	3	307
Sandstone, very fine-grained, light-to medium-gray	1	308
Shale, dark-gray	3	311
Sandstone and shale, interbedded	2	313
Shale, dark-gray	4	317
Sandstone, very fine-grained, light- to medium-gray	3	320
Shale, dark-gray	5	325
Sandstone, very fine-grained, light- to medium-gray	1	326
Shale, dark-gray	3	329
Sandstone and shale, interbedded	14	343
Sandstone, very fine-grained, light- to medium-gray	2	345
Shale, dark-gray, and dark-gray silty shale	22	367
Sandstone, very fine-grained, light- to medium-gray	1	368
Shale, dark-gray	2	370
Kiowa Formation		
Shale, smooth, very dark-gray	47	417
Limestone, white, and very dark-gray shale	1	418
Shale, very dark-gray	2	420
Cheyenne Sandstone		
Shale, very dark-gray, and very fine-grained, mostly friable to thinly indurated, thin light-gray sandstone	3	423

Table 3.--Logs of test holes and wells--Continued

FORD COUNTY--Continued

28-22W-30BCC.--Continued

CRETACEOUS SYSTEM--Continued	Thickness	Depth
Lower Cretaceous Series--Continued		
Cheyenne Sandstone--Continued		
Sandstone, very fine-grained, light-gray, friable, and black carbonaceous shale.....	10	433
Sandstone, very fine-grained, light-gray, cemented.....	1	434
Sandstone, very fine-grained, light-gray, mostly friable, with thin cemented layers, and black carbonaceous shale splinters.....	13	447
Shale, friable, medium-gray, with very fine-grained sand.....	11	458
Sandstone, very fine-grained, friable, light-gray, few thin cemented streaks.....	8	466
Sandstone, very fine-grained, friable, very light-gray, and yellow-brown streaks, and minor amount of very light-gray soft shale.....	7	473
PERMIAN SYSTEM		
Upper Permian Series		
Whitehorse Formation		
Shale, soft, dark reddish-brown.....	8	481
Shale, soft, dark reddish-brown and black brittle splintery shale, with a few hard streaks.....	2	483
Shale, soft, dark reddish-brown, and dark reddish-brown siltstone, with few hard streaks.....	20	503
Siltstone, dark reddish-brown, indurated.....	2	505
Shale, dark reddish-brown, and dark reddish-brown siltstone.....	5	510
Siltstone, dark reddish-brown, and dark reddish-brown shale.....	15	525

Table 3.--Logs of test holes and wells--Continued

FORD COUNTY--Continued

28-26W-29BAD.--Drilled July 13, 1977. Altitude 2,680 feet. Depth to water 180 feet and 171 feet (Dakota Formation at well depths 593 and 455 feet, respectively, 1978). Austin Bentzer.

	Thickness	Depth
QUATERNARY SYSTEM		
Pleistocene Series, undifferentiated		
Topsoil	1	1
Clay, light reddish-brown, with caliche.....	6	7
TERTIARY SYSTEM		
Miocene Series		
Ogallala Formation		
Clay, light-brown, with caliche.....	8	15
Clay, brown to light-brown.....	30	45
Clay, brown, with caliche.....	13	58
Clay, brown, with caliche and reddish-brown clay layers.....	17	75
Clay, reddish-brown to light reddish-brown, with caliche.....	25	100
Sand, fine to coarse, and fine gravel.....	15	115
Sand, fine to coarse, slightly cemented, and fine gravel.....	11	126
Caliche, hard.....	1	127
Sand, fine to coarse, slightly cemented, and fine gravel.....	8	135
Caliche, hard.....	1	136
Sand, fine to coarse, slightly cemented, and fine gravel with thin clay and caliche layers.....	14	150
Clay, light-brown, and caliche, with a few thin sand layers.....	15	165
Clay, light-gray to light-yellow, with hard caliche and mortar-bed streaks.....	25	190
CRETACEOUS SYSTEM		
Upper Cretaceous Series		
Greenhorn Limestone		
Clay, light-yellow to gray, with thin limestone streaks.....	4	194
Clay, black to light-gray, with thin hard limestone streaks.....	31	225
Shale, black, with light-gray shale and thin hard limestone layers.....	10	235
Graneros Shale		
Shale, black, with a thin green clay layer and white bentonite layers.....	5	240
Shale, dark brownish-gray, with thin hard layers...	50	290

Table 3.--Logs of test holes and wells--Continued

FORD COUNTY--Continued

28-26W-29BAD.--Continued

CRETACEOUS SYSTEM--Continued	Thickness	Depth
Lower Cretaceous Series--Continued		
Dakota Formation--Continued		
Clay, dark-gray, and very fine-grained light-gray sandstone	9	299
Clay, dark-gray, with hard streaks	31	330
Clay, dark-gray to very light-gray	16	346
Clay, very light-gray	17	363
Clay, light-brown to grayish-brown, and lignite	7	370
Clay, very light-gray, with brownish-gray clay and lignite streaks	36	406
Sandstone, very fine-grained, silty, light-gray, some hard layers, and light brownish-gray clay with lignite layers	29	435
Sandstone, silica-cemented (orthoquartzite), very hard, brown	1	436
Sandstone, very fine-grained, very silty, light-gray	9	445
Sandstone, very silty, gray	47	492
Sandstone, hard, brown	1	493
Sandstone, very fine-grained, gray, and red mottled-gray clay	27	520
Sandstone, very fine-grained, hard, gray	7	527
Clay, gray, with hard streaks	8	535
Sandstone, hard, gray	5	540
Clay, gray, with hard streaks	8	548
Sandstone, hard, gray, and gray clay in thin layers	25	573
Clay, gray, with hard streaks	12	585
Clay, light-gray, and very fine-grained silty sandstones with red clay	18	603
Sandstone, very fine-grained, light-gray	16	619
Sandstone, hard	1	620
Kiowa Formation		
Shale, gray to black, with hard streaks	130	750

Table 3.--Logs of test holes and wells--Continued

GRANT COUNTY

28-38W-18BBB.--Drilled November 6, 1978, by a commercial driller. Altitude 3,130 feet. Depth to water (reported) 240 feet.(Ogallala and Dakota Formations, 1978).

QUATERNARY AND TERTIARY SYSTEMS	Thickness	Depth
Pleistocene and Miocene Series, undifferentiated		
Clay, brown	26	26
Clay, brown, and sand streaks	17	43
Sand, fine	14	57
Clay, brown	20	77
Clay, brown with tight sand streaks	35	112
Clay, brown, with loose sand streaks	59	171
Sand, fine to medium, loose	15	186
Clay, brown	28	214
Sand, fine to medium, clean	34	248
Clay, brown	37	285
Sand, fine to medium, clean	25	310
Clay, brown, tight	37	347
Sand, fine to medium, loose	15	362
CRETACEOUS SYSTEM		
Lower Cretaceous Series, undifferentiated		
Shale, black	43	405
Sandstone and clay	25	430
Shale, black	22	452
Sandstone, with clay streaks	22	474
Shale, loose	19	493
Sandstone, clean and loose	49	542
Shale	8	550
Sandstone	11	561
Shale, black and blue	7	568
PERMIAN SYSTEM		
Upper Permian Series, undifferentiated		
Shale, red	12	580

Table 3.--Logs of test holes and wells--Continued

GRANT COUNTY--Continued

30-37W-25AC.--Drilled April 25, 1961, by Saturn Oil and Gas Company. Altitude 3,005 feet. (Log modified from Fader and others, 1964, p. 127-128).

	Thickness	Depth
QUATERNARY SYSTEM		
Pleistocene Series, undifferentiated		
Silt, sandy, tan to brown	13	13
Caliche, hard	4	17
Silt, sandy, brown, with a little clay and fine gravel	27	44
Caliche, very hard	4	48
Silt, brown	7	55
Sand, fine to coarse, silty, with fine to medium gravel	16	71
Caliche, soft	2	73
Silt, sandy, brown	57	130
Sand, fine to coarse, and fine gravel	22	152
Caliche, hard	2	154
Silt, sandy, brown	21	175
Sand, fine to coarse, and fine gravel	6	181
Caliche	2	183
Sand, fine to coarse, silty	15	198
Caliche	4	202
Sand, fine, silty, brown	48	250
Clay, silty, brown	20	270
Sand, fine, silty, brown	13	283
Sand, fine to medium	22	305
Sand, fine to coarse, with little fine gravel	26	331
Clay, sandy, red	5	336
Sand, fine to coarse, with a little fine gravel	14	350
TERTIARY SYSTEM		
Miocene Series		
Ogallala Formation		
Clay, sandy, red	6	356
Clay, tan, interbedded with brown silt and sand to fine gravel	29	385
Sand, fine to coarse, silty, brown	39	424
Clay, silty, brown	6	430
Sand, fine, lime-cemented, tan	13	443
Clay, silty, red	4	447
Sand, fine, limonite-yellow	17	464
Sand, very fine to fine, moderately hard, silty, limonite-yellow; contains thin red beds	50	514
PERMIAN SYSTEM		
Upper Permian Series, undifferentiated		
Sandstone, very fine, hard, silty, red, with streaks of red shale and gypsum beds	286+	800+

Table 3.--Logs of test holes and wells--Continued

GRANT COUNTY--Continued

30-37W-32AA.--Drilled May 6, 1961, by Garvey Drilling Company for Anadarko Production. Altitude 3,071 feet. (Log modified from Fader and others, 1964, p. 129).

	Thickness	Depth
QUATERNARY SYSTEM		
Pleistocene Series (?), undifferentiated		
Silt, clayey, tan to reddish-brown; contains a little caliche and fine sand	50	50
Silt, sandy, tan, and caliche; contains a few fine sand streaks	12	62
Sand, fine to medium, silty, brown	11	73
Sand, coarse, brown	22	95
Sand, medium to coarse, and fine to medium gravel; contains a few caliche and silt streaks	10	105
Sand, medium to coarse, silty, and fine to medium gravel	50	155
Gravel, fine to coarse, and coarse sand	70	225
Clay, brown	8	233
Gravel, coarse to fine, and coarse sand	7	240
Silt, tan, with gravel and sand streaks	45	285
Clay, silty, gray	8	293
Silt, tan, with gravel and sand streaks	9	302
Gravel, fine to medium, and coarse sand, with tan silty clay layers	18	320
Sand, fine to medium, silty, and caliche	25	345
TERTIARY SYSTEM		
Miocene Series		
Ogallala Formation		
Clay, hard, red	4	349
Sand, fine, cemented, tan	4	353
Clay, gray and tan	7	360
Sand, hard, silty, tan	27	387
Clay, hard, red	4	391
Sand, fine to coarse; contains a little fine gravel	7	398
Clay, hard, red	2	400
Silt, hard, tan, and gray sandy clay, with red clay streaks	62	462
JURASSIC SYSTEM		
Upper Jurassic Series, undifferentiated		
Sandstone, fine, moderately hard, yellow, gray, and white, interbedded with yellow, gray, and white sandy siltstone	45	507
Siltstone, hard, sandy, tan to red, with very hard fine sandstone streaks	33	540
PERMIAN SYSTEM		
Upper Permian Series		
Big Basin Formation		
Sandstone, very hard, silty, dark-red, with a few soft streaks	65+	605+

Table 3.--Logs of test holes and wells--Continued

GRAY COUNTY

25-29W-21CDA.--Driller October 31, 1977. Altitude 2,707 feet (Dakota Formation, 1977). Carl Strawn.

	Thickness	Depth
QUATERNARY SYSTEM		
Pleistocene Series, undifferentiated		
Silt, sandy, clayey, dark-brown; contains plant roots and partly decayed organic matter.....	2	2
Silt, sandy, light reddish-brown, with caliche....	3	5
Sand, fine to medium, silty, light reddish-brown..	4	9
TERTIARY SYSTEM		
Miocene Series		
Ogallala Formation		
Sand, fine to coarse, and fine gravel; contains caliche pebbles.....	7	16
Clay, very sandy, light-brown to light grayish-brown.....	14	30
Sand, fine to medium, with light reddish-brown clay streaks and caliche streaks.....	29	59
Clay, light reddish-brown, and caliche with agate.....	16	75
Clay, compact, brittle, light yellowish-brown.....	15	90
Sand, yellowish-brown to brown.....	3	93
Sand, fine to medium, light-brown, with light-brown clay and caliche layers.....	25	118
Sand, fine to medium, light-brown to yellowish brown, with light-brown, grayish-green, and yellowish-brown clay.....	17	135
Sand, fine, silty, light-brown, with caliche and clay layers.....	18	153
Sand, fine to coarse.....	13	166
Sand, fine to coarse, silty, with loose sand layers.....	15	181
Sand, fine to coarse, with a few very loose streaks.....	19	200
CRETACEOUS SYSTEM		
Upper Cretaceous Series		
Greenhorn Limestone		
Limestone, weathered, light-gray to yellow, and gray to yellow shale.....	5	205
Shale, black, and limestone streaks.....	20	225
Limestone, hard, gray to black, and black shale...	52	277
Graneros Shale		
Shale, black; contains bentonite layers.....	64	341
Shale, hard, black.....	12	353

Table 3.--Logs of test holes and wells--Continued

GRAY COUNTY--Continued

25-29W-21CDA.--Continued

CRETACEOUS SYSTEM--Continued	Thickness	Depth
Lower Cretaceous Series--Continued		
Dakota Formation--Continued		
Shale, black to light-gray, with hard streaks; contains lignite layers.....	14	367
Sandstone, very fine-grained, white.....	8	375
Siltstone, light-gray, and very fine-grained sandstone.....	17	392
Sandstone, very fine-grained, white.....	4	396
Clay, gray, red-mottled, and clay with very fine-grained sandstone layers.....	9	405

Table 3.--Logs of test holes and wells--Continued

GRAY COUNTY--Continued

25-29W-21CDA2.--Drilled October 4, 1978. Altitude 2,707 feet. Depth to water 168 feet (Kiowa Shale, 1978). Carl Strawn.

	Thickness	Depth
QUATERNARY SYSTEM		
Pleistocene Series, undifferentiated		
Topsoil, light gray-brown	2	2
Sand, fine to medium, and silt, light-tan	4	6
Sand, fine to coarse, reddish-orange-brown	7	13
TERTIARY SYSTEM		
Miocene Series		
Ogallala Formation		
Sand and silt, some caliche	2	15
Sand and silt layers, clayey, light brownish-orange	13	28
Sand, fine, and medium to coarse gravel, light brownish-orange, with abundant caliche	4	32
Silt, clayey, light-brown	8	40
Silt, light-brown, with hard caliche streaks and cemented fine to medium silty light brownish-orange sand	5	45
Sand, fine to medium with light-brownish-orange caliche streaks	11	56
Sand, fine to medium, light brownish-orange	3	59
Sand, fine to medium, light brownish-orange, with caliche streak	1	60
Clay, silty, very calcareous, very light-brown and light-brown	7	67
Clay, silty, very calcareous, light-brown, with fine gravel and caliche	5	72
Clay, silty, very calcareous, light-brown, with abundant caliche	3	75
Clay and caliche, very light-brown, brittle, and very calcareous clay	15	90
Sand, fine to medium, brown, with minor clay	12	102
Clay, very calcareous, buff, and much caliche	3	105
Sand, medium to coarse, and clay, brown to buff, with some caliche	11	116
Sand, medium to coarse, and clay, with abundant caliche	4	120
Sand, medium to coarse, brown	13	133
Clay and caliche, buff to tan	2	135
Sand, fine to very coarse, mostly medium, brown	13	148
Caliche and clay	1	149
Sand, medium, brown	1	150
Sand, fine to very coarse, mostly medium to coarse, very clean	29	179

Table 3.--Logs of test holes and wells--Continued

GRAY COUNTY--Continued

25-29W-21CDA2.--Continued

TERTIARY SYSTEM--Continued	Thickness	Depth
Miocene Series--Continued		
Ogallala Formation--Continued		
Caliche and clay	1	180
Clay, buff to tan	4	184
Sand, medium to coarse, brown with minor caliche	17	201
CRETACEOUS SYSTEM		
Upper Cretaceous Series		
Greenhorn Limestone		
Limestone and clay, soft to brittle	5	206
Shale, soft, very dark-gray	3	209
Shale, soft, very dark-gray, with cemented layer	1	210
Shale, hard, very dark-gray	3	213
Cemented layer	1	214
Shale, very dark-gray, with scattered hard streaks	9	223
Cemented layer	1	224
Shale, very dark-gray, and medium-gray thin cemented layers of shale	6	230
Shale, very dark-gray, and medium light-gray cemented limy shale	9	239
Shale, medium-brown, calcareous, brittle	1	240
Shale, cemented, limy, medium light-gray, and minor amounts of very dark-gray shale	29	269
Graneros Shale		
Shale, hard streaks, light-gray and medium light-gray bentonite	15	284
Shale, very dark-gray, with minor amount of light-gray bentonite	15	299
Shale, very dark-gray, with a few hard streaks	23	322
Shale, very dark-gray, with minor amount of light-gray bentonite	7	329
Shale, very dark-gray, with many hard streaks	15	344
Lower Cretaceous Series		
Dakota Formation		
Shale, dark-gray, and tan orangish-yellow shale	9	353
Cemented layer, probably sandstone	3	356
Cemented layer, gray and tan shale	3	359
Cemented layer, whitish-gray shale and lignite	15	374
Shale, tan, light-gray, and gray	10	384
Shale, tan, light-gray, and gray, with some lignite beds (thin) and whitish-gray shale	5	389
Sandstone, very fine-grained, dark-gray, and silty gray shale	6	395

Table 3.--Logs of test holes and wells--Continued

GRAY COUNTY--Continued

25-29W-21CDA2.--Continued

CRETACEOUS SYSTEM--Continued	Thickness	Depth
Lower Cretaceous Series--Continued		
Dakota Formation--Continued		
Shale and siltstone, medium to dark-gray, and some tan shale	4	399
Shale, tan, and cemented, quartzitic red sandstone	5	404
Shale, dark-gray, and silty light- to medium-gray and tan shale, with hard streak at 411 feet	17	421
Sandstone, fine-grained, and shale, cemented and hard, reddish-brown-yellow	9	430
Shale, light- to dark-gray and tan, and silty shale	6	436
Shale, dark-gray	3	439
Shale, dark-gray and light tan	7	446
Shale, dark- and light-gray	3	449
Shale, light-gray and tan, with trace of lignite	3	452
Shale, light-gray and tan	9	461
Shale, dark-gray, with trace of lignite at 464 feet	8	469
Shale, dark-gray, with trace of red quartz sand	1	470
Lignite	3	473
Shale, light-gray, and lignite	2	475
Shale, light- to dark-gray	1	476
Shale, silty, dark-gray, with trace of calcite	3	479
Shale, dark-gray and light-tan	2	481
Shale, light- to dark-gray and tan	6	487
Shale, sandy, soft, buff, and dark-gray shale	3	490
Shale, light- to dark-gray and tan, with trace of lignite	12	502
Shale, light- to dark-gray and tan, with trace of red-maroon shale	2	504
Shale, light- to dark-gray and tan	3	507
Shale, light- to dark-gray and tan, with trace of red-mottled and light-gray shale	4	511
Shale, dark-gray, some light-gray, tan, and red-maroon	3	514
Shale, dark-gray, some light-gray, tan, and red-maroon, with trace of medium-grained sand	6	520
Shale and sand, dark-gray, light-gray, tan, and red-maroon, with trace of gray shale with red mottling	2	522
Shale, light- to dark-gray, tan, and red-mottled, with hard layer at 528 feet	9	531
Shale, light- to dark-gray, tan, and maroon	3	534

Table 3.--Logs of test holes and wells--Continued

GRAY COUNTY--Continued

25-29W-21CDA2.--Continued

CRETACEOUS SYSTEM--Continued	Thickness	Depth
Lower Cretaceous Series--Continued		
Dakota Formation--Continued		
Shale, light- to dark-gray, tan, red-mottled, and medium to coarse sand, with hard streak at 538 feet	9	543
Sandstone, hard, reddish-brown, and light- to dark-gray, tan, and red-mottled shale	4	547
Sandstone and shale, reddish-brown, with granules at 547 feet	2	549
Shale, light-gray, with red mottling and hard streaks	1	550
Shale, light-gray, with red mottling and fine-grained cemented red sandstone	6	556
Shale and sandstone, light-gray, with red mottling; contains bright red shale	2	558
Shale and sandstone, light-gray with red mottling, hard	5	563
Shale, light-gray, red-mottled, and trace of yellow shale	4	567
Shale, light-gray with red mottling, and thin cemented very hard red sandstone	4	571
Kiowa Formation		
Shale, dark-gray to black	30	601
Shale, light-gray to black, with traces of red mottling	9	610
Shale, light-gray to black, bright blue-green, and pale blue-gray, silty	6	616
Shale, light-gray, and thin cemented brownish-red sandstone	7	623
Shale, light-gray	5	628
Sandstone, thin, well-cemented, brown	2	630
Ironstone and quartz, red-stained	1	631
Shale, light- to dark-gray, occasional hard streak	25	656

Table 3.--Logs of test holes and wells--Continued

GRAY COUNTY--Continued

25-29W-33DCB.--Drilled by Gear Company. Altitude 2,700 feet.

QUATERNARY, TERTIARY, AND CRETACEOUS SYSTEMS	Thickness	Depth
Pleistocene, Miocene, and Upper Cretaceous Series		
No samples	470	470
CRETACEOUS SYSTEM		
Lower Cretaceous Series		
Dakota Formation		
Siltstone, pyritic, gray, interbedded with fine- to coarse-grained sand and very calcareous shale	355	825
PERMIAN SYSTEM		
Upper Permian Series, undifferentiated		
Shale, sandy, reddish-brown	290	1,115

Table 3.--Logs of test holes and wells--Continued

GRAY COUNTY--Continued

28-28W-9DAC.--Drilled August 1, 1978, by a commercial driller. Altitude 2,780 feet.

	Thickness	Depth
QUATERNARY SYSTEM		
Pleistocene Series, undifferentiated		
Topsoil	4	4
Clay, tan	84	88
TERTIARY SYSTEM		
Miocene Series		
Ogallala Formation		
Caliche, hard	26	114
Sand, fine to medium	36	150
Sand, fine to medium, with clay streaks	18	168
Sand, fine, with clay streaks	22	190
CRETACEOUS SYSTEM		
Upper Cretaceous Series		
Greenhorn Limestone		
Limestone	22	212
Graneros Shale		
Sand, fine, silty, with clay streaks	28	240
Upper and Lower Cretaceous Series, undifferentiated		
Shale, black, hard	192	432
Lower Cretaceous Series		
Cheyenne Sandstone		
Sandstone and streaks of shale, tight	26	458
Shale, black, hard	38	496
PERMIAN SYSTEM		
Upper Permian Series, undifferentiated		
Shale, red	4	500

Table 3.--Logs of test holes and wells--Continued

GREELEY COUNTY

17-40W-30CC.--Drilled by Apache Company. Altitude 3,615 feet.

QUATERNARY AND TERTIARY SYSTEMS	Thickness	Depth
Pleistocene and Miocene Series		
No samples	100	100
TERTIARY SYSTEM		
Miocene Series		
Ogallala Formation		
Sand and gravel	140	240
CRETACEOUS SYSTEM		
Upper Cretaceous Series		
Niobrara Chalk		
Shale, calcareous, fossiliferous, mottled, gray	310	550
Shale, dark-gray to black	35	585
Fort Hays Limestone Member		
Limestone, thin-bedded, shaley, fossiliferous, chalky, white and gray	65	650
Carlile Shale		
Shale, sandy, fossiliferous, calcareous, mottled, gray	130	780
Shale, fossiliferous, calcareous, mottled, medium- to dark-gray	120	900
Greenhorn Limestone		
Limestone, fossiliferous, shaley, thin-bedded, impure, chalky, gray-buff	110	1,010
Graneros Shale		
Shale, fossiliferous, pyritic, slightly calcareous, mottled, dark-gray	75	1,085
Lower Cretaceous Series		
Dakota Formation		
Siltstone and shale, interbedded, friable, pyritic, gray, with fine- to coarse-grained sand	391	1,476
JURASSIC SYSTEM		
Upper Jurassic Series		
Morrison Formation		
Clay and shale, sandy, varicolored, with nodules of pink and colorless chalcedony	74	1,550
Clay and shale, varicolored, and streaks of anhydrite	45	1,595

Table 3.--Logs of test holes and wells--Continued

GREELEY COUNTY--Continued

17-40W-30CC.--Continued

PERMIAN SYSTEM	Thickness	Depth
Upper Permian Series, undifferentiated		
Anhydrite, white, and interbedded reddish-brown shale.....	195	1,790

Table 3.--Logs of test holes and wells--Continued

HAMILTON COUNTY

26-41W-13D.--Drilled September 1, 1973, by a commercial driller. Altitude 3,429 feet.

QUATERNARY AND TERTIARY SYSTEMS	Thickness	Depth
Pleistocene and Miocene Series, undifferentiated		
Clay	70	70
Sand, coarse, and clay	10	80
Clay	50	130
Sand and gravel, with clay streaks	30	160
Sand and gravel, medium, and clay streaks	20	180
CRETACEOUS AND JURASSIC SYSTEMS		
Lower Cretaceous and Upper Jurassic Series, undifferentiated		
Shale, blue	80	260
Shale, blue, and rock	160	420
Sandstone, friable	20	440
Sandstone and shale, friable	20	460
Sandstone, shale, and rocks	170	630
PERMIAN SYSTEM		
Upper Permian Series, undifferentiated		
Siltstone, red	30	660

Table 3.--Logs of test holes and wells--Continued

HASKELL COUNTY

28-34W-6BB.--Drilled in 1942 by a commercial driller. Altitude 3,062 feet.

	Thickness	Depth
QUATERNARY SYSTEM		
Pleistocene Series, undifferentiated		
Soil, sandy, dark-gray	2	2
Silt, soft, yellow-brown, and very fine to fine sand	5	7
Silt, soft, brown with fine to coarse sand and nodules of caliche	8	15
Silt, soft, white, and fine sand	3	18
Sand, very fine to coarse, and gray-brown soft silt	8	26
Silt, soft, tan, with very fine to coarse sand and caliche	28	54
Sand, fine to coarse, with buff soft silt, caliche, and fine gravel	6	60
Sand, fine to coarse, and buff silt	16	76
Sand, fine to medium, with buff compact silt, caliche, and fine to coarse gravel	20	96
Gravel, fine to coarse, with coarse to medium sand and tan and buff compact silt	14	110
Gravel, fine to medium, and coarse to very coarse sand	12	122
Gravel, very coarse to fine, and coarse sand	31	153
Silt, soft, buff to gray, and fine to medium sand	27	180
Sand, fine to coarse, with white to buff soft silt and caliche	22	202
Gravel, fine to medium, with medium to coarse sand and buff soft silt	8	210
Sand, fine to coarse, with fine gravel, caliche, and buff silt	20	230
Sand, medium to coarse, with fine gravel, caliche, and tan soft silt	7	237
Silt, soft, tan, and medium sand	13	250
Sand, fine to medium, and gray and tan soft silt	20	270
Sand, fine to coarse, with tan soft silt, caliche and fine gravel	16	286
Gravel, fine to medium, with fine to coarse sand, caliche, and tan soft silt	14	300
TERTIARY SYSTEM		
Miocene Series		
Ogallala Formation		
Silt, soft, white and tan, with fine to medium sand and caliche	9	309

Table 3.--Logs of test holes and wells--Continued

HASKELL COUNTY--Continued

28-34W-6BB.--Continued

	Thickness	Depth
TERTIARY SYSTEM--Continued		
Miocene Series--Continued		
Ogallala Formation--Continued		
Gravel, fine, with medium to coarse sand and gray soft silt	21	330
Sand, medium to coarse, with fine gravel, caliche and soft white silt	32	362
Silt, soft, light-gray to tan, with caliche and fine to medium sand	48	410
Sand, fine to coarse, with fine to medium gravel and light-gray to tan soft silt	20	430
Silt, compact, blocky, brown to tan, white, and medium sand	68	498
CRETACEOUS SYSTEM		
Lower Cretaceous Series		
Dakota Formation		
Sandstone, yellowish- to reddish-brown	12	510
Clay and silt, varicolored, and very fine sand	10	520

Table 3.--Logs of test holes and wells--Continued

HASKELL COUNTY--Continued

29-31W-2BBD. Drilled May 24, 1979, by a commercial driller. Altitude 2,861 feet. Depth to water 190 feet (Ogallala Formation, 1979, reported).

	Thickness	Depth
QUATERNARY SYSTEM		
Pleistocene Series, undifferentiated		
Clay, brown	42	42
Sand, fine	12	54
Clay, sandy, brown	17	71
Clay, brown	21	92
Sand, fine to coarse, few clay streaks	34	126
Sand and gravel, fine to coarse	104	230
TERTIARY SYSTEM		
Miocene Series		
Ogallala Formation		
Sand, fine to medium, with clay streaks	26	256
Clay, gray	31	287
Sand, fine to medium, with a few clay streaks	21	308
Sand, fine to medium, with caliche streaks	134	442
Sand, fine to medium, with a few clay streaks	20	462
CRETACEOUS SYSTEM		
Lower Cretaceous Series, undifferentiated		
Clay, cemented, tan	28	490
Shale, gray	16	506
PERMIAN SYSTEM		
Upper Permian Series, undifferentiated		
Red bed	4	510

Table 3.--Logs of test holes and wells--Continued

HASKELL COUNTY--Continued

30-33W-27AAA.--Drilled December 6, 1974. Altitude 2,928 feet.

	Thickness	Depth
QUATERNARY SYSTEM		
Pleistocene Series, undifferentiated		
Clay, dark grayish-brown	8	8
Clay, light grayish-brown	9	17
Clay, light-brown	2	19
Clay, sandy, light reddish-brown	6	25
Clay, sandy, light reddish-brown, with caliche	16	41
Sand, fine to medium, silty, reddish-brown	15	56
Clay, brittle, light-brown	12	68
Sand, fine to coarse, silty, light reddish-brown, and fine gravel	12	80
Sand, fine to coarse, and fine gravel	24	104
Caliche, white to pink, and light-brown clay	16	120
Sand, fine to coarse, and light-yellow clay; contains caliche	12	132
Sand, fine to coarse, and gravel	8	140
Caliche, hard, white	1	141
Clay, light-brown, and caliche	24	165
Clay, light-brown, and caliche, with a few sand and gravel streaks	23	188
Clay, brittle, brown	60	248
Sand, fine to coarse	9	257
Clay, brittle, grayish-brown to brown	25	282
Sand, fine to coarse, with a few thin clay streaks	59	341
TERTIARY SYSTEM		
Miocene Series		
Ogallala Formation		
Clay, light reddish-brown to tan	4	345
Sand, fine to coarse	52	397
Clay, light reddish-brown, with thin caliche streaks and diatomaceous marl	23	420
Clay, light reddish-brown, with thin caliche and white opal streaks	15	435
Clay, sandy, light reddish-brown, with caliche streaks	35	470
Clay, grayish-brown, with hard streaks	17	487
CRETACEOUS SYSTEM		
Lower Cretaceous Series		
Kiowa Formation		
Siltstone, hard, gray	1	488
Clay, dark-gray, with hard streaks	34	522
Cheyenne Sandstone		
Sandstone, fine-grained, light-brown	61	583

Table 3.--Logs of test holes and wells--Continued

HASKELL COUNTY--Continued

30-33W-27AAA.--Continued

CRETACEOUS SYSTEM--Continued	Thickness	Depth
Lower Cretaceous Series--Continued		
Cheyenne Sandstone--Continued		
Sandstone, very fine-grained, light-brown to light-red	7	590
Sandstone, moderately hard, yellowish-brown	7	597
JURASSIC SYSTEM		
Upper Jurassic Series, undifferentiated		
Siltstone, hard, gray	3	600
Sandstone, very fine-grained, light-green	14	614
PERMIAN SYSTEM		
Upper Permian Series		
Big Basin Formation		
Clay, dark reddish-brown, and dark reddish-brown silty sandstone	31	645

Table 3.--Logs of test holes and wells--Continued

HODGEMAN COUNTY

23-22W-7DAA.--Drilled October 4, 1972. Altitude 2,239 feet.

	Thickness	Depth
QUATERNARY SYSTEM		
Pleistocene Series		
Topsoil, brown	1	1
TERTIARY SYSTEM		
Miocene Series		
Ogallala Formation		
Clay, sandy, limy, tan, with tan clay layers	14	15
Clay, sandy to gravelly, limy, tan, with tan clay layers	13	28
Clay, brown to grayish-brown	2	30
CRETACEOUS SYSTEM		
Lower Cretaceous Series		
Dakota Formation		
Clay, gray to red	11	41
Clay, red	3	44
Clay, gray, red, and yellow	10	54
Sandstone, fine- to medium-grained, yellow	6	60
Ironstone and gray clay	1	61
Sandstone, yellow to brown	5	66
Clay, gray to red and yellow, with fine-grained sandstone streaks	12	78
Clay, gray to red and brown	12	90
Clay, light-gray	5	95
Clay, dark-gray	5	100
Clay, light-gray	2	102
Clay, gray and red	13	115
Clay, gray	12	127
Clay, very dark-gray	5	132
Clay, gray, with some red clay	3	135
Clay, gray, with lignite layers	5	140
Clay, gray, with some red clay	14	154
Sandstone, gray	2	156
Clay, carbonaceous, gray, with lignite	3	159
Sandstone, fine-grained, yellow to brown	8	167
Clay, gray and yellow	13	180
Clay, gray, with a few hard streaks	12	192
Clay, gray and red	34	226
Clay, light-gray and red	11	237
Kiowa Formation		
Clay and shale, dark-gray, light-gray, and red, with hard sandstone layers	90	327
Shale, black	23	350
Shale, black; contains shells	10	360

Table 3.--Logs of test holes and wells--Continued

HODGEMAN COUNTY--Continued

23-22W-7DAA.--Continued

	Thickness	Depth
CRETACEOUS SYSTEM--Continued		
Lower Cretaceous Series--Continued		
Kiowa Formation--Continued		
Shale, black, with thin hard layers.....	60	420
Cheyenne Sandstone		
Shale, sandy, gray to black, with thin hard layers.....	20	440
Siltstone, white to light grayish-green.....	5	445
PERMIAN SYSTEM		
Upper Permian Series, undifferentiated		
Shale, red, with a few thin hard layers.....	37	482

Table 3.--Logs of test holes and wells--Continued

KEARNY COUNTY

21-35W-9DA.--Drilled August 31, 1979, by Abercrombie Drilling Company. Altitude 3,160 feet.

QUATERNARY, TERTIARY, AND CRETACEOUS SYSTEMS	Thickness	Depth
Pleistocene, Miocene, and Upper Cretaceous Series		
No sample	370	370
CRETACEOUS SYSTEM		
Upper Cretaceous Series		
Graneros Shale		
Siltstone, light- to medium-gray, firm, and in part contains some fine quartz grains and pyrite	210	580
Lower Cretaceous Series		
Dakota Formation		
Siltstone, light-gray, firm and in part contains minor amounts of fine feldspathic sand and pyrite	40	620
Siltstone, light-gray, firm, and contains minor amounts of dark-gray limestone	45	665
Lignite, black, with minor amounts of clear quartz sand and medium-gray siltstone	15	680
Siltstone, light-gray, firm, with minor amounts of light-brown limestone, pyrite, and fine quartz sand	40	720
Kiowa Formation		
Siltstone, light- to medium-gray; contains minor amounts of light-brown limestone, pyrite, and fine quartz sand	60	780
Cheyenne Sandstone		
Siltstone, light- to medium-gray; contains minor amounts of fine quartz sand, dark-gray limestone, and pyrite	40	820

Table 4.--Logs of test holes and wells--Continued

KEARNY COUNTY--Continued

21-35W-9DA.--Continued

	Thickness	Depth
JURASSIC SYSTEM		
Upper Jurassic Series		
Siltstone, medium-gray; contains minor amounts of dark-gray shale and pyrite	90	910
Siltstone, light-gray; contains minor amounts of pyrite	15	925
Shale, dark-gray; contains much light-gray siltstone and minor amounts of pyrite	15	940
Siltstone, light- to medium-gray; contains much medium-gray shale and minor amounts of pyrite	50	990
Sandstone, white, rounded, well-sorted, uncemented, fine- to very fine-grained; contains very minor amounts of medium-gray shale	30	1,020
Sandstone, white, well-sorted, partially cemented, fine- to very fine-grained; contains much medium-gray shale and light-gray siltstone, with minor amounts of pyrite and light-green shale	20	1,040
Siltstone, light-tan; contains much light-green and dark-gray shale and minor amounts of pyrite	4	1,044
PERMIAN SYSTEM		
Upper Permian Series		
Big Basin Formation		
Siltstone, orangish-red and light-tan; contains minor amounts of dark-gray shale and pyrite	15	1,059
Siltstone, orangish-red and light-tan; contains much dark-gray shale	30	1,089
Siltstone, orangish-red, light-tan, and medium-gray	12	1,101
Day Creek Dolomite		
Siltstone, orangish-red, light-tan, and medium-gray, with white anhydrite and olive-gray limestone	33	1,134
Whitehorse Formation		
Siltstone, orangish-red and medium-gray; contains minor amounts of pyrite and very fine, clear quartz sand	15	1,149

Table 3.--Logs of test holes and wells--Continued

KEARNY COUNTY--Continued

24-36W-23CCC.--Drilled May 5, 1978, by a commercial driller. Altitude 3,001 feet. City of Lakin.

	Thickness	Depth
QUATERNARY SYSTEM		
Pleistocene Series, undifferentiated		
Topsoil	4	4
Sand, coarse to fine, and medium gravel	23	27
Clay, tan	20	47
Clay, blue	35	82
Sand, coarse to fine, and medium gravel	14	96
Clay, blue, with sandy blue clay streaks	60	156
Sand, fine to coarse, medium gravel, and tight to loose clay streaks	22	178
Sand, fine to coarse, medium gravel, and loose clay streaks	26	204
TERTIARY SYSTEM		
Miocene Series		
Ogallala Formation		
Clay, sandy, tan, with clay and loose caliche streaks	12	216
Sand, fine to coarse, with clay and loose caliche streaks	74	290
Clay, sandy, tan, and tight caliche streaks	8	298
Sand, fine to coarse, with streaks of sandstone, caliche, and clay	46	344
CRETACEOUS SYSTEM		
Lower Cretaceous Series, undifferentiated		
Shale and streaks of sandstone, hard	71	415
Sandstone, loose	25	440
Shale	6	446
Sandstone and streaks of shale, tight	24	470
Shale, hard	54	524
Sandstone and streaks of shale, tight	11	535
Shale	6	541
Sandstone, loose	15	556
Shale	29	585

Table 3.--Logs of test holes and wells--Continued

LANE COUNTY

17-30W-4DDB.--Drilled by Jones-Gebert. Altitude 2,857 feet.

QUATERNARY, TERTIARY, AND CRETACEOUS SYSTEMS	Thickness	Depth
Pleistocene, Miocene-Pliocene, and Upper Cretaceous Series		
No samples	300	300
CRETACEOUS SYSTEM		
Upper Cretaceous Series		
Niobrara Chalk		
Limestone, mottled, fossiliferous, gray	150	450
Limestone and chalk, white	20	470
Undifferentiated deposits		
Shale, calcareous, fossiliferous, mottled-gray, sandy at top	30	500
No samples	130	630
Shale, calcareous, fossiliferous, mottled dark-gray to black	80	710
Greenhorn Limetone		
Limestone and chalk, thin-bedded, fossiliferous, grayish-buff	45	755
Shale, calcareous, fossiliferous, mottled-gray	90	845
Lower Cretaceous Series		
Dakota Formation		
Shale, sandy, varicolored, with interbedded gray siltstone	661	1,506
PERMIAN SYSTEM		
Upper Permian Series, undifferentiated		
Shale, sandy, reddish-brown	241	1,747

Table 3.--Logs of test holes and wells--Continued

LANE COUNTY--Continued

19-27W-33BDD.--Drilled by Gulf and Pan American Company. Altitude 2,635 feet.

	Thickness	Depth
QUATERNARY AND TERTIARY SYSTEMS		
Undifferentiated deposits		
Sand and gravel	30	30
CRETACEOUS SYSTEM		
Upper Cretaceous Series		
Niobrara Chalk		
Shale, calcareous, mottled-gray	50	80
Limestone, chalky, shaly, thin-bedded, fossiliferous	82	162
Carlile Shale		
Shale, calcareous, fossiliferous, mottled medium- to dark-gray	258	420
Greenhorn Limestone		
Limestone, chalky, grayish-buff, interbedded with calcareous mottled-gray shale	60	480
Graneros Shale		
Shale, calcareous, fossiliferous, mottled medium- to dark-gray	100	580
Lower Cretaceous Series		
Dakota Formation		
Siltstone, pyritic, gray	60	640
Shale, sandy, and shaly siltstone in part	435	1,075
PERMIAN SYSTEM		
Upper Permian Series, undifferentiated		
Shale, silty, reddish-brown	255	1,330

Table 3.--Logs of test holes and wells--Continued

MEADE COUNTY

30-26W-1BCD.--Drilled September 28, 1978. Altitude 2,545 feet. Depth to water 121 feet (Permian undifferentiated deposits, 1978) and 63 feet (Dakota Formation, 1978). Norman Hatfield.

	Thickness	Depth
QUATERNARY SYSTEM		
Pleistocene Series, undifferentiated		
Topsoil	1	1
Silt and very fine to fine sand, with caliche	9	10
TERTIARY SYSTEM		
Miocene Series		
Ogallala Formation		
Caliche and fine to coarse sand, calcium-carbonate cemented, with small gravel	5	15
Clay, dark-tan, with very fine sand, silt, and caliche	15	30
Sand, medium to coarse, with small gravel and light-tan sandy clay	12	42
Clay, stiff, white, slightly calcareous	3	45
Sand, cemented, very fine, light tannish-white and pinkish-tan, and tan sandy clay	7	52
Clay, sandy, light pinkish-tan to salmon-pink	8	60
Sand, fine, carbonate-cemented, and sandy tannish-pinkish-white clay	23	83
Mortar bed	1	84
Sand, carbonate-cemented, fine, light-tan, and cemented pale-yellow sand	6	90
Sand, very fine, cemented, light-yellow to tan	5	95
CRETACEOUS SYSTEM		
Lower Cretaceous Series		
Dakota Formation		
Sandstone, well-cemented, reddish-brown	1	96
Shale, sandy, light- to medium dark-gray, and very fine light-gray sandstone	2	98
Sandstone, light-gray, and whitish-gray to dark-gray shale	7	105
Shale, light- to medium dark-gray	7	112
Sandstone, very fine-grained, well-cemented, pale orangish-yellow	1	113
Shale, dark- to medium-gray, and light-gray shale	2	115
Sandstone, fine-grained, cemented, pinkish-tan	1	116
Shale, sandy, light-gray	1	117
Clay, light-gray to pinkish-tan, and silty light-gray sandstone	2	119
Shale, sandy, soft, with less than 5 percent pea-size gravel and light-gray shale	1	120

Table 3.--Logs of test holes and wells--Continued

MEADE COUNTY--Continued

30-26W-1BCD.--Continued

	Thickness	Depth
CRETACEOUS SYSTEM--Continued		
Lower Cretaceous Series--Continued		
Dakota Formation--Continued		
Shale, light- to dark-gray	10	130
Sandstone, very fine, brownish-yellow, and gray clay	4	134
Shale, medium-gray	4	138
Sandstone, fine-grained, reddish-brown	1	139
Shale, light-gray	6	145
Sandstone, fine-grained, brownish-rust	1	146
Shale, silty, medium- to dark-gray	31	177
Kiowa Formation		
Shale, dark- to light-gray, and less than 1 foot of sandy siltstone	3	180
Shale, silty, light- to medium-gray	34	214
Shale, silty, light- to medium-gray, with white limestone and limy sandstone	1	215
Cheyenne Sandstone		
Shale, gray, with thin siltstones and very fine-grained sandstone (siltstone and sandstone less than 5 percent)	78	293
Sandstone, well-cemented, very fine-grained, gray	1	294
Shale, silty, gray, with thin siltstones and very-fine sandstones (10 percent siltstone and sandstone between 310-315 feet)	21	315
Shale, gray, and thin siltstones	96	411
Shale, gray, with brown mottling	4	415
Shale, light-gray, and silty light greenish-gray shale	3	418
PERMIAN SYSTEM		
Upper Permian Series		
Big Basin Formation		
Shale, silty, reddish-brown	2	420
Siltstone, reddish-brown	37	457
Shale, reddish-brown	8	465

Table 3.--Logs of test holes and wells--Continued

MEADE COUNTY--Continued

30-27W-17DDD.--Drilled November 14, 1974. Altitude 2,558 feet.

	Thickness	Depth
QUATERNARY SYSTEM		
Pleistocene Series, undifferentiated		
Topsoil, drifted, black	3	3
Clay, light-brown, and caliche	7	10
Caliche, with some light-brown clay	5	15
Clay, light grayish-brown to light grayish-green, with caliche and thin yellowish-brown fine sand streaks	18	33
Clay, light-green, with a few hard layers	11	44
Clay, gray	31	75
Clay, dark olive-green	10	85
Sand, fine, gray, with grayish-yellow clay streaks	5	90
Sand, fine to medium, brown	11	101
Clay, sandy, light-brown, and caliche	17	118
Sand, fine to medium, brown	15	133
Sand, fine, silty, cemented, brown	5	138
Sand, fine to coarse, light-brown, with caliche layers and light-brown to light-gray clay layers	42	180
Sand, fine to coarse, light-brown, with cemented layers	22	202
Sand, fine to coarse	29	231
Sand, fine to coarse, and fine gravel, with cemented streaks	11	242
TERTIARY SYSTEM		
Miocene Series		
Ogallala Formation		
Clay, sandy, light-brown, and caliche	14	256
Sand, fine to coarse, light-brown, with thin cemented layers	29	285
Clay, very sandy	7	292
Sand, fine to coarse	8	300
Clay, sandy, light-brown, with caliche and cemented streaks	25	325
Sand, fine to coarse, cemented	16	341
Clay, light-brown, with caliche and thin cemented sand streaks	33	374
CRETACEOUS SYSTEM		
Lower Cretaceous Series, undifferentiated		
Ironstone	1	375
Clay, yellow, light-gray, and light-brown, with some thin hard layers	25	400
Clay, very dark-gray, with very hard streaks	80	480

Table 3.--Logs of test holes and wells--Continued

MEADE COUNTY--Continued

30-27W-17DDD.--Continued

CRETACEOUS SYSTEM--Continued	Thickness	Depth
Lower Cretaceous Series, undifferentiated--Continued		
Clay, light-gray, with hard streaks.....	30	510
Siltstone, hard, gray.....	4	514
Clay, dark-gray, with a few hard streaks.....	61	575
Clay, light-green.....	5	580
PERMIAN SYSTEM		
Upper Permian Series		
Big Basin Formation		
Sand, very fine, silty, reddish-brown.....	5	585
Sandstone, hard, reddish-brown, with a few thin reddish-brown clay layers.....	9	594

Table 3.--Logs of test holes and wells--Continued

MEADE COUNTY--Continued

30-30W-19BAA.--Drilled December 6, 1974. Altitude 2,815 feet.

	Thickness	Depth
QUATERNARY SYSTEM		
Pleistocene Series, undifferentiated		
Clay, silty, sandy, brown	5	5
Clay, light reddish-brown	5	10
Clay, light reddish-brown, with caliche	35	45
Clay, very sandy, gravelly, light reddish-brown, with caliche	21	66
Sand, fine to coarse, and fine gravel	7	73
Clay, sandy, light-brown, and caliche	6	79
Sand, fine to coarse, and fine gravel	7	86
Clay, sandy, light reddish-brown, with sand and caliche streaks	40	126
Clay, sandy, light-brown	27	153
Sand, fine, cemented, brown, with loose streaks	3	156
Sand, fine to coarse, silty, with a few clay streaks and hard-cemented sand streaks	70	226
TERTIARY SYSTEM		
Miocene Series		
Ogallala Formation		
Caliche, hard	1	227
Sand, fine to coarse, and fine gravel	26	253
Clay, limy, varved, brown and white	2	255
Sand, fine	15	270
Sand, fine to coarse, and fine gravel	86	356
Sand, cemented, white, with gray clay	1	357
Sand, fine to coarse, and fine gravel	13	370
Clay, gray, with a little lignite	23	393
Sand, fine to coarse, and fine gravel, with a few thin lime-cemented streaks	7	400
Clay, gray	4	404
Sand, fine to coarse, and fine gravel, with a few thin lime-cemented streaks	26	430
Sand, fine to coarse, and fine gravel, with caliche and light-brown clay layers	65	495
Sand, fine to medium, silty, with clay and caliche streaks	20	515
Sand, fine to coarse, and ironstone	9	524
CRETACEOUS SYSTEM		
Lower Cretaceous Series, undifferentiated		
Clay, sticky, dark-gray	16	540
Clay, firm, silty, gray	9	549
Clay, firm, silty, light greenish-gray	16	565

Table 3.--Logs of test holes and wells--Continued

MEADE COUNTY--Continued

30-30W-19BAA.--Continued

PERMIAN SYSTEM	Thickness	Depth
Upper Permian Series		
Big Basin Formation		
Clay, firm, dark reddish-brown.....	20	585
Clay, firm, dark reddish-brown, and very fine-grained silty sandstone.....	15	600

Table 3.--Logs of test holes and wells--Continued

MEADE COUNTY--Continued

32-26W-4AAB.--Drilled August 3, 1977. Altitude 2,460 feet. Depth to water 88 feet (Ogallala Formation, 1978) and 79 feet (Upper Permian Series, 1978). Clarence Williams.

	Thickness	Depth
QUATERNARY SYSTEM		
Pleistocene Series, undifferentiated		
Topsoil	4	4
Clay, limy, light reddish-brown	1	5
TERTIARY SYSTEM		
Miocene Series		
Ogallala Formation		
Caliche, white	3	8
Clay, light reddish-brown to reddish-brown, and caliche with hard streaks	15	23
Caliche and clay, light-brown, sandy, with gravel	9	32
Sand, fine to coarse, black and light-brown, and fine to coarse gravel	11	43
Caliche, soft and brown to green clay	10	53
Sand, fine to coarse, and fine gravel	3	56
Clay, brown	1	57
Caliche, sandy to very sandy, white to brown ("mortar bed")	15	72
Caliche and clay, light reddish-brown	9	81
Caliche, hard	1	82
Caliche, soft, white, with light-brown clay streaks	35	117
Sand, fine to coarse; contains fine gravel	7	124
Sand, fine to coarse; contains ironstone and ironstone gravel with clay layers	32	156
CRETACEOUS SYSTEM		
Lower Cretaceous Series		
Kiowa Formation		
Clay, gray, with yellow clay streaks	3	159
Clay, dark-gray	2	161
Clay, black	3	164
Clay, very dark reddish-brown	8	172
Clay, gray	3	175
PERMIAN SYSTEM		
Upper Permian Series		
Big Basin Formation		
Clay, reddish-brown, and very sandy reddish-brown clay	12	187
Clay, dark reddish-brown, with hard streaks	8	195

Table 3.--Logs of test holes and wells--Continued

MEADE COUNTY--Continued

33-30W-35CBA.--Drilled June 29, 1979, by a commercial driller. Altitude 2,695 feet. Depth to water (reported) about 190 feet [Ogallala Formation(?), 1979].

	Thickness	Depth
QUATERNARY SYSTEM		
Pleistocene Series, undifferentiated		
Topsoil	4	4
TERTIARY SYSTEM		
Miocene Series		
Ogallala Formation		
Clay, with sand streaks	76	80
Sand, fine to medium, with clay streaks	82	162
Clay, with fine to medium sand streaks	40	202
Clay	20	222
Sand, fine to medium	78	300
CRETACEOUS SYSTEM		
Upper Cretaceous Series		
Graneros Shale (?)		
Shale, blue	58	358
Lower Cretaceous Series		
Dakota Formation		
Sand, fine to medium	76	434
Kiowa Formation and Cheyenne Sandstone, undifferentiated		
Clay	16	450
Sand, fine to medium, with clay streaks (medium-tight)	88	538
Shale, yellow	7	545
PERMIAN SYSTEM		
Upper Permian Series, undifferentiated		
Red bed	15	560

Table 3.--Logs of test holes and wells--Continued

NESS COUNTY

19-23W-5D.--Drilled July 2, 1970, by a commercial driller. Altitude 2,220 feet. City of Ness City.

QUATERNARY AND TERTIARY SYSTEMS	Thickness	Depth
Pleistocene and Miocene Series, undifferentiated		
Topsoil, black, gumbo	7	7
Clay, silty, brown and gray	23	30
Clay, gray	27	57
Sand, medium to coarse	7	64
CRETACEOUS SYSTEM		
Upper Cretaceous Series		
Niobrara Chalk		
Shale, black, and white chalk	51	115
Shale, blue	42	157
Carlile Shale (?)		
Shale, blue, and sandy white clay	7	164
Clay, sandy, white	11	175
Clay, sandy, white, and medium sandstone	22	197
Shale, red, and white sandy clay	13	210
Shale, red	6	216
Greenhorn Limestone (?)		
Shale, white, and silty blue clay	35	251
Shale, white and blue, and silty white clay	11	262
Graneros Shale (?)		
Shale, blue, tough	31	293
Lower Cretaceous Series		
Dakota Formation		
Sandstone, medium- to fine-grained, loose, with clay streaks	18	311
Shale, blue, and sandstone streaks	18	329
Sandstone and blue clay	23	352
Clay, blue, and medium- to fine-grained sandstone streaks	56	408
Shale, black, hard, and sandstone streaks	82	490
Shale, black, very hard	10	500

Table 3.--Logs of test holes and wells--Continued

PAWNEE COUNTY

20-17W-22DCC.--Drilled April 4, 1978. Altitude 2,053 feet. Water levels 24 feet (Dakota Formation, 1978), +33 feet (Cheyenne Sandstone, 1978), and +35 feet (Upper Permian deposits, 1978). Bruce Wiessensee.

	Thickness	Depth
QUATERNARY SYSTEM		
Pleistocene Series, undifferentiated		
Soil, caliche at base	6	6
TERTIARY SYSTEM		
Miocene Series		
Ogallala Formation		
Clay, silty, yellowish-brown, with caliche	10	16
Clay, silty, light-brown, and very pale orange limestone	15	31
Clay, silty, light-brown, dark yellowish-orange, and very pale orange	25	56
Clay, pale yellowish-brown	16	72
Clay, dark reddish-brown	4	76
CRETACEOUS SYSTEM		
Lower Cretaceous Series		
Dakota Formation		
Clay, yellowish-brown, light olive-gray, and red mottled with gray	27	103
Clay, dark reddish-brown, light olive-gray, with thin sandstone bed at about 108 feet	20	123
Clay, silty, red, yellow, and mottled-gray	3	126
Clay, dark brownish-gray	10	136
Sandstone, very fine-grained, siliceous-cemented, dark yellowish-orange	1	137
Clay, olive-gray	13	150
Clay, moderate dark-gray	46	196
Clay, red with olive-gray mottles and olive-gray with dusky yellow	15	211
Clay, moderate dark-gray, and lignite(?)	13	224
Sandstone, very fine-grained, brown	2	226
Clay, grayish-blue (possible shale), and fragments of cemented brown sandstone	11	237
Shale, stiff, grayish-blue	6	243
Shale, very stiff, moderate dark-gray	6	249
Shale, moderate dark-gray, with interbedded thin brown sandstone layers	58	307
Sandstone, cemented, micaceous, very fine-grained	2	309
Kiowa Formation		
Shale, medium dark-gray	66	375

Table 3.--Logs of test holes and wells--Continued

PAWNEE COUNTY--Continued

20-17W-22DCC.--Continued

CRETACEOUS SYSTEM--Continued	Thickness	Depth
Lower Cretaceous Series--Continued		
Cheyenne Sandstone		
Shale, olive-gray and moderate dark-gray, and very fine-grained well-cemented sandstone.....	2	377
Shale, moderate dark-gray, some pyrite near 387 feet.....	32	409
Sandstone, silty, very fine- to fine-grained, some pyrite.....	10	419
Shale, pale bluish-green, and some silty shale.....	15	434
PERMIAN SYSTEM		
Upper Permian Series		
Whitehorse Formation		
Sandstone, very fine-grained, silty, medium-brown, with some pyrite.....	2	436
Shale, silty, red to medium-brown.....	47	483

Table 3.--Logs of test holes and wells--Continued

PAWNEE COUNTY--Continued

22-19W-7AAA.--Drilled June 16, 1977. Altitude 2,100 feet. Water levels 64 feet (Dakota Formation, 1978) and +19 feet (Upper Permian rocks, 1978). Raymond Polson.

	Thickness	Depth
QUATERNARY SYSTEM		
Pleistocene Series, undifferentiated		
Silt, sandy, clayey, dark-brown	6	6
Clay, light-brown	1	7
Clay, brown to light reddish-brown, with sandy clay	6	13
TERTIARY SYSTEM		
Miocene Series		
Ogallala Formation		
Clay, silty, light-brown to very light-brown, with thin fine to coarse sand streaks	32	45
Clay, light-brown, with limy layers	40	85
Sand, coarse, and fine to medium gravel; contains ironstone chips	19	104
Clay, light reddish-brown	10	114
CRETACEOUS SYSTEM		
Lower Cretaceous Series		
Dakota Formation		
Clay, red to light-gray	6	120
Clay, red to gray, with yellow clay and silty sandstone	32	152
Sandstone, medium-grained, light- to dark-brown	40	192
Shale, hard, dark-gray, and light-gray hard siltstone	6	198
Clay, light-gray, with red clay; contains hard streaks	12	210
Clay, dark-gray, with lignite streaks	9	219
Kiowa Formation		
Clay, light-gray, dark-gray, and black, with hard siltstone and very fine-grained sandstone layers	31	250
Cheyenne Sandstone		
Clay, light-gray to black, with thin hard layers	150	400
Clay, dark-gray, with light greenish-gray clay	15	415

Table 3.--Logs of test holes and wells--Continued

PAWNEE COUNTY--Continued

22-19W-7AAA.--Continued

PERMIAN SYSTEM	Thickness	Depth
Upper Permian Series		
Whitehorse Formation		
Clay, light reddish-brown.....	5	420
Clay, dark reddish-brown, with sandstone streaks...	14	434
Sandstone, silty, dark reddish-brown.....	4	438
Clay, dark reddish-brown.....	3	441
Sandstone, silty, dark reddish-brown.....	3	444
Clay, dark reddish-brown.....	1	445

Table 3.--Logs of test holes and wells--Continued

RUSH COUNTY

17-17W-6ABB.--Drilled April 25, 1978. Altitude 2,877 feet. Depth to water 183 feet (Dakota Formation, 1978) and 35 feet (Cheyenne Sandstone, 1978). Van Lippert.

	Thickness	Depth
QUATERNARY SYSTEM		
Pleistocene Series, undifferentiated		
Clay, silty, light-brown	3	3
Clay, very light-brown to yellow, some white calcareous limestone chips	3	6
Clay, firm, calcareous, yellowish-brown	6	12
Clay, yellowish-brown, some small white limestone chips	3	15
Shale, firm, chalky, light-yellow, and some orangish-brown limestone chips	5	20
Clay, firm, light-yellow, with white limestone chips and clear "gypsum" crystals(?)	3	23
Sandstone, very fine, orangish-brown, and "ironstone"	2	25
CRETACEOUS SYSTEM		
Upper Cretaceous Series		
Carlile Shale		
Shale, very firm, calcareous, light-gray	3	28
Shale, loose, calcareous, black	7	35
Shale, silty, loose, black, with occasional firm "lignite" fragments	1	36
Shale, silty, firm, black	7	43
Shale, silty, calcareous, black, with medium-firm shale	15	58
Shale, silty, firm, dark-gray	8	66
Shale, silty, dark-gray, with grayish-white non-calcareous chalky "bentonite"(?)	4	70
Shale, silty, grayish-black, firm	1	71
Greenhorn Limestone		
Shale, grayish-black, some chalky yellowish-brown limestone	4	75
Shale, silty, firm calcareous, grayish-black	3	78
Shale, very firm, grayish-black, with grayish-white bentonite	3	81
Shale, calcareous, silty, very firm, grayish-black	9	90
Shale, clayey, medium-firm, calcareous, grayish-black	9	99
Graneros Shale		
Shale, clayey, firm grayish-black, with bentonite	6	105
Shale, silty, very firm, grayish-black, calcareous; 50-percent light-gray bentonite	2	107

Table 3.--Logs of test holes and wells--Continued

RUSH COUNTY--Continued

17-17W-6ABB.--Continued

CRETACEOUS SYSTEM--Continued	Thickness	Depth
Upper Cretaceous Series--Continued		
Graneros Shale--Continued		
Shale, grayish-black, with some bentonite.....	3	110
Shale, silty, very firm, grayish-black and gray, with noncalcareous gray shale and some bentonite.....	1	111
Shale, clayey, loose, grayish-black.....	1	112
Shale, clayey, medium-firm, grayish-black, with bentonite.....	3	115
Shale, clayey, loose, grayish-black.....	8	123
Shale, clayey, firm, grayish-black.....	3	126
Shale, clayey, medium-firm, grayish-black, with bentonite.....	9	135
Shale, clayey, firm to loose, grayish-black, with bentonite.....	15	150
Shale, clayey to silty, firm to loose, grayish-black, with some bentonite.....	15	165
Shale, clayey to silty, firm to loose, grayish-black, and hard (possibly fractured) shale.....	15	180
Shale, clayey to silty, loose, calcareous, grayish-black.....	2	182
Shale, clayey, loose, grayish-black, with bentonite.....	8	190
Shale, grayish-black, no bentonite.....	5	195
Shale, grayish-black, with a few pieces of yellowish-brown loose chalky shale.....	24	219
Lower Cretaceous Series		
Dakota Formation		
Shale, clayey, loose, grayish-black, with light-gray bentonite and firm lignite.....	21	240
Clay, sticky, gray, with small amount of lignite and bentonite.....	12	252
Clay, sticky, gray and reddish-orange, and lignite..	3	255
Clay, loose, gray to yellowish-brown, and lignite...	10	265
Shale, loose to firm, light- to dark-gray, with some loose yellowish-brown clay and reddish-pink clay.....	5	270
Shale, clayey, loose to firm, light- to dark-gray, and yellowish-brown medium-firm noncalcareous clay.....	3	273
Clay, light-gray, with clayey dark-gray shale and some yellowish-brown and reddish-pink clay.....	9	282
Clay, light-gray, with clayey dark-gray shale and reddish-pink loose noncalcareous clay.....	20	302

Table 3.--Logs of test holes and wells--Continued

RUSH COUNTY--Continued

17-17W-6ABB.--Continued

CRETACEOUS SYSTEM--Continued	Thickness	Depth
Lower Cretaceous Series--Continued		
Dakota Formation--Continued		
Clay, light-gray, with dark-gray firm shale, reddish-pink clay, lignite, and a few light-tan noncalcareous sandstone fragments	1	303
Clay, light-gray and pinkish-red, and dark-gray shale	7	310
Clay, light-gray, pinkish-red, and light-tan, and clayey dark-gray loose to firm shale	5	315
Clay, light-gray, pinkish-red, and light-tan, and clayey dark-gray loose shale	15	330
Clay, silty, light-gray, medium-gray, and red	15	345
Clay, silty, light- and medium-gray, with lignite and some hard chips of shale	15	360
Clay, silty, gray and reddish-pink, and medium-gray firm shale	15	375
Clay, gray, silty, and dark-gray firm to very firm shale	15	390
Clay, silty to sandy, gray, and dark-gray friable shale	8	398
Clay, silty to sandy, gray and reddish-orange, and dark-gray friable shale	2	400
Clay, silty to sandy, gray, with off-white bentonite, lignite, and light- to dark-gray medium-firm silty to clayey shale	5	405
Clay, silty and sandy, light-gray, light-tan, and reddish-pink, and clayey dark-gray friable shale	1	406
Kiowa Formation		
Shale, clayey, light- to dark-gray, and firm to loose very light-tan and gray clay	4	410
Shale, light- to dark-gray	5	415
Clay, gray, and friable shale	5	420
Clay, light-gray and light-tan	5	425
Clay, silty, light-gray, with dark-gray very firm to hard shale and some very hard very fine noncalcareous sandstone chips	5	430
Clay, silty, light-gray, red, green, and light-tan	5	435
Clay, silty, gray and very firm gray shale	3	438
Clay, silty, gray, with chalky light-tan clay and silty gray very firm shale	2	440
Clay, light-gray and red, and gray very firm shale	5	445

Table 3.--Logs of test holes and wells--Continued

RUSH COUNTY--Continued

17-17W-6ABB.--Continued

CRETACEOUS SYSTEM--Continued	Thickness	Depth
Lower Cretaceous Series--Continued		
Kiowa Formation--Continued		
Clay, gray, with clayey gray medium-firm shale and occasional hard buff fine-grained sandstone.....	5	450
Clay and shale, silty, firm to medium-firm, slightly sandy; contains light-gray clay and firm noncalcareous shale.....	12	462
Clay, light-gray, and firm noncalcareous shale.....	3	465
Cheyenne Sandstone		
Clay, light-gray, with silty very hard very fine-grained buff sandstone and black firm shale.....	3	468
Shale, clayey, light-gray.....	12	480
Shale, gray, with hard shell streaks.....	15	495
Shale, gray; contains very fine-grained soft-white sandstone and hard dark-gray sandstone.....	15	510
Shale, gray, and lesser amounts of very fine-grained soft-white and dark-gray hard sandstone.....	32	542

Table 3.--Logs of test holes and wells--Continued

SCOTT COUNTY

16-34W-11DDB.--Drilled by Hefner Company. Altitude 3,108 feet.

QUATERNARY, TERTIARY, AND CRETACEOUS SYSTEMS	Thickness	Depth
Pleistocene, Miocene, and Upper Cretaceous Series		
No samples	340	340
CRETACEOUS SYSTEMS		
Upper Cretaceous Series		
Niobrara Chalk		
Shale, calcareous, fossiliferous, gray	200	540
Fort Hays Limestone Member		
Limestone, thin-bedded, fossiliferous, chalky, white	170	710
Carlile Shale		
Shale, calcareous, fossiliferous, sandy at top, medium- to dark-gray	130	840
Greenhorn Limestone		
Limestone, chalky, shaly, fossiliferous, light-gray to gray-buff	50	890
Shale, calcareous, fossiliferous, dark-gray	50	940
Lower Cretaceous Series		
Dakota Formation		
Shale, sandy, gray, and pyritic white to gray siltstone	465	1,405
JURASSIC SYSTEM		
Upper Jurassic Series		
Morrison Formation		
Clay and shale, sandy, varicolored	105	1,510
Clay and shale, varicolored, and traces of pink and gray chalcedony	70	1,580
PERMIAN SYSTEM		
Upper Permian Series, undifferentiated		
Shale, sandy, reddish-brown	130	1,710

Table 3.--Logs of test holes and wells--Continued

SEWARD COUNTY

33-33W-5BDD.--Drilled August 16, 1974. Altitude 2,804 feet.

	Thickness	Depth
QUATERNARY SYSTEM		
Pleistocene Series, undifferentiated		
Sand, fine, silty, light-brown	7	7
Sand, fine, very clayey, light reddish-brown	2	9
Clay, very sandy, light reddish-brown	15	24
Clay, light reddish-brown	11	35
Clay, very sandy, light reddish-brown	10	45
Sand, fine to coarse, light-brown	15	60
Sand, fine to coarse, and fine light-brown gravel	58	118
Caliche and light-brown clay	2	120
Sand, fine to coarse, brown, with fine gravel	76	196
Sand, fine to coarse, brown, and thin clay layers	26	222
Clay, gray	6	228
Sand, fine to coarse	13	241
Clay, light-brown, with sand layers	8	249
Clay, yellow, with yellow sand layers	6	255
Clay, light grayish-yellow, with very limy sand layers	12	267
Sand, fine to coarse, with fine gravel	18	285
Clay	4	289
Sand, fine to coarse, with fine gravel	51	340
Clay	2	342
Sand, fine to coarse, with fine gravel	21	363
Clay, hard to soft, gray to yellow	6	369
Sand, fine to coarse, with thin clay layers	16	385
TERTIARY SYSTEM		
Miocene Series		
Ogallala Formation		
Caliche, firm, light-gray, with clay	5	390
Sand, fine to coarse, some thin clay layers	33	423
Clay, gray	3	426
Sand, fine to coarse, and fine gravel	8	434
Clay, hard, gray	3	437
Sand, fine to coarse, and fine gravel with some thin clay layers	58	495
PERMIAN SYSTEM		
Upper Permian Series		
Big Basin Formation		
Clay, dark reddish-brown, with very thin gypsum layers	30	525

Table 3.--Logs of test holes and wells--Continued

SEWARD COUNTY--Continued

34-34W-17DDD.--Drilled September 3, 1974. Altitude 2,945 feet.

	Thickness	Depth
QUATERNARY SYSTEM		
Pleistocene Series, undifferentiated		
Sand, silty, brown	3	3
Clay, slightly sandy, brown	4	7
Clay, sandy, light reddish-brown	8	15
Sand, very fine to medium, clayey	11	26
Clay, sandy, light-brown, with silty sand and caliche streaks	49	75
Clay, sandy, light-brown, with caliche	48	123
Sand, very fine to medium	12	135
Clay, sandy, light-brown	5	140
Sand, fine to coarse, and fine slightly cemented gravel	13	153
Sand, fine to coarse, cemented to well-cemented	12	165
TERTIARY SYSTEM		
Miocene Series		
Ogallala Formation		
Caliche, white to pink, and light-brown clay streaks	30	195
Clay, light-brown, and white to light-brown very hard caliche	20	215
Sand, fine to coarse, loose, with light-brown silty layers	25	240
Sand, fine to coarse, and fine gravel with light-brown silty layers	25	265
Clay, sandy, light-brown	15	280
Clay, sandy, light reddish-brown, with caliche	90	370
Sand, fine to coarse, and fine gravel; dark reddish-brown shale, and siltstone and sandstone pebbles	20	390
Sand, fine to coarse, and fine gravel; contains dark reddish-brown shale, siltstone, and sandstone pebbles, with light-green and yellow clay	35	425
CRETACEOUS SYSTEM		
Lower Cretaceous Series		
Cheyenne Sandstone		
Clay, light-gray and yellow, with some light reddish-brown clay	52	477
Siltstone, white, with clay streaks	6	483
Clay, green to light reddish-brown, with hard very fine-grained cemented sand streaks	27	510

Table 3.--Logs of test holes and wells--Continued

SEWARD COUNTY--Continued

34-34W-17DDD.--Continued

	Thickness	Depth
JURASSIC SYSTEM		
Upper Jurassic Series, undifferentiated		
Sandstone, fine-grained, friable, light-brown.....	147	657
Clay, light-green and reddish-brown.....	33	690
PERMIAN SYSTEM		
Upper Permian Series		
Big Basin Formation		
Shale, dark reddish-brown, with hard streaks.....	30	720

Table 3.--Logs of test holes and wells--Continued

STANTON COUNTY

30-42W-29AA.--Drilled 1958 by Huber Oil Company. Altitude 3,560 feet. (Log modified from Fader and others, 1964, p. 143).

	Thickness	Depth
QUATERNARY SYSTEM		
Pleistocene and Miocene Series, undifferentiated		
Sand, fine to coarse, and fine gravel.....	30	30
Sand, fine to coarse, and gravel.....	50	80
CRETACEOUS SYSTEM		
Lower Cretaceous Series		
Dakota Formation		
Shale, sandy, gray, and reddish-brown to brown sandstone.....	70	150
Sandstone, fine-grained, dark-brown, and sandy gray shale.....	45	195
Kiowa Formation		
Shale, black.....	60	255
Cheyenne Sandstone		
Sandstone, fine-grained, gray to brown.....	125	380
JURASSIC SYSTEM		
Upper Jurassic Series, undifferentiated		
Sandstone, fine-grained, pink to red.....	160	540
PERMIAN SYSTEM		
Upper Permian Series		
Big Basin Formation		
Siltstone, red to tan.....	60+	600+

Table 3.--Logs of test holes and wells--Continued

STEVENS COUNTY

31-36W-25DCB.--Drilled May 26, 1970, by a commercial driller. Altitude 3,053 feet. Depth to water 200 feet (reported).

QUATERNARY AND TERTIARY SYSTEMS	Thickness	Depth
Pleistocene and Miocene Series, undifferentiated		
Soil	4	4
Clay, tan	56	60
Clay, tan, sandy, and some sand	30	90
Clay, brown	10	100
Sand, medium, and tan gravel	33	133
Clay, sandy, tan	27	160
Clay, brown	50	210
Sand, medium to coarse, with fine gravel and clay lenses	50	260
Clay, brown	40	300
Sand, medium to coarse, with fine gravel and some clay	110	410
Clay, brown	35	445
Sand, medium, with gravel and some clay lenses	35	480
Clay, gray, brown, and yellow, and shale	95	575
PERMIAN SYSTEM		
Upper Permian Series, undifferentiated		
Shale, red	53	628

Table 3.--Logs of test holes and wells--Continued

STEVENS COUNTY--Continued

34-39W-14DDD.--Drilled August 7, 1974. Altitude 3,286 feet.

	Thickness	Depth
QUATERNARY SYSTEM		
Pleistocene Series, undifferentiated		
Sand, silty, tan	8	8
Clay, sandy, white	1	9
Sand, fine, very clayey, reddish-tan	20	29
Sand, fine, slight iron-cemented, black and rust	1	30
Clay, very sandy, reddish-tan, with fine sand, more clayey from 58 to 59 feet	32	62
Clay, very sandy, tan, caliche	6	68
Sand, fine, very clayey, tan to reddish-tan, with some iron stain and caliche	10	78
Sand, fine, very clayey, pinkish-tan, and caliche	10	88
Sand, fine to medium, varicolored	8	96
Sand, fine to medium, varicolored, with fine to medium gravel and medium to coarse gravel from 110 feet	21	117
Clay, very sandy, pinkish-tan, and fine sand	4	121
Clay, sandy, pink, and fine sand	10	131
Clay, slightly sandy, pinkish-white grading to white, with caliche at 130 to 133 feet	7	138
Clay, slightly sandy to very sandy, dark-tan to reddish-tan	7	145
Sand, fine to medium, varicolored, with some pinkish-tan sandy clay streaks	23	168
Sand, fine, very clayey, reddish-tan to tannish-white	15	183
Sand, fine, tan, interbedded with 2- to 3-foot lenses of tannish-white very sandy clay	11	194
Clay, sandy, tan to tannish-white, with stringers of caliche	8	202
Sand, very clayey, reddish-tan	13	215
TERTIARY SYSTEM		
Miocene Series		
Ogallala Formation		
Clay, very sandy, tannish-white and reddish-tan, with some very fine sand stringers and stringers of very clayey fine sand	86	301
Sand, fine, tan	1	302
Sand, medium to coarse, tan, and some reddish-tan sandy clay	6	308
Sand, fine to coarse, varicolored, and some reddish-tan sandy clay	14	322
Sand, medium to coarse, varicolored, with some fine gravel cemented with caliche in streaks and reddish-tan sandy clay	16	338

Table 3.--Logs of test holes and wells--Continued

STEVENS COUNTY--Continued

34-39W-14DDD.--Continued

	Thickness	Depth
TERTIARY SYSTEM--Continued		
Miocene Series--Continued		
Ogallala Formation--Continued		
Sand, fine to coarse, cemented with caliche in streaks, and some brown sandy clay.....	8	346
Sand, medium to coarse, varicolored, and some fine gravel and tan sandy clay.....	27	373
Sand, very fine, tan, interbedded with tan sandy clay and olive-green clay.....	30	403
Sand, medium to coarse, varicolored, and some fine gravel and some tan sandy clay.....	9	412
Clay, slightly sandy, tannish-white to tan, and some gravel.....	16	428
Clay, tan to brown, with some blue-green, olive-green, and ochre-yellow clay.....	33	461
Clay, very sandy, reddish-tan, and fine sand.....	12	473
Clay, hard, brittle, brown.....	12	485
Sand, fine, silty, red, interbedded with white and brown silty sand.....	2	487
PERMIAN SYSTEM		
Upper Permian Series		
Big Basin Formation		
Shale, red.....	43	530

Table 3.--Logs of test holes and wells--Continued

WICHITA COUNTY

17-36W-29AA.--Drilled by Arvel Smith Company. Altitude 3,282 feet.

QUATERNARY, TERTIARY, AND CRETACEOUS SYSTEMS	Thickness	Depth
Pleistocene, Miocene, and Upper and Lower Cretaceous Series		
No samples	1,200	1,200
CRETACEOUS SYSTEM		
Lower Cretaceous Series		
Dakota Formation		
Siltstone, gray, sandy, fine- to coarse-grained, friable, pyritic, and interbedded gray shale	110	1,310
JURASSIC SYSTEM		
Upper Jurassic Series		
Morrison Formation		
Clay and shale, sandy, with varicolored chalcedony chert	70	1,380
Siltstone, friable, white and gray	15	1,395
PERMIAN SYSTEM		
Upper Permian Series, undifferentiated		
Shale, sandy, reddish-brown	275	1,670

Table 3.--Logs of test holes and wells--Continued

WICHITA COUNTY--Continued

18-37W-24CCC.--Drilled April 28, 1978, by a commercial driller. Altitude 3,306 feet. Depth to water (reported) 360 feet (Dakota Formation and Cheyenne Sandstone, 1978). City of Leoti.

	Thickness	Depth
QUATERNARY SYSTEM		
Pleistocene Series, undifferentiated		
Topsoil	4	4
Clay, brown	8	12
Clay, tan	6	18
Clay, fine, sandy	12	30
TERTIARY SYSTEM		
Miocene Series		
Ogallala Formation		
Caliche, hard	18	48
Clay, sandy, tight, brown	54	102
Sand, fine to coarse, and medium gravel with clay streaks	54	156
Clay, sandy, tan	14	170
CRETACEOUS SYSTEM		
Upper Cretaceous Series		
Carlile Shale		
Shale, grayish-black	112	282
Greenhorn Limestone		
Limestone, chalky, and chalky dark-gray shale	118	400
Shale, hard, black	70	470
Shale, sandy	70	540
Shale	122	662
Lower Cretaceous Series		
Dakota Formation		
Shale, sandy	94	756
Shale, sandy, loose	38	794
Shale, sandy, with sandstone streaks	47	841
Sandstone and shale, sandy	18	859
Kiowa Formation		
Shale, sandy, limy to hard	23	882
Cheyenne Sandstone		
Sandstone, and sandy hard shale	88	970
Shale, black	36	1,006
Sandstone, medium, loose	34	1,040
Shale, blue-gray	10	1,050
Shale, black, hard	30	1,080

Table 4.--Selected formation surfaces and sandstone thicknesses

[Data, mostly from geophysical logs, show altitude in feet above sea level; depth in feet below land surface; and thickness of sandstone in feet. Geologic formations--Ku, undifferentiated Lower Cretaceous rocks; Kd, Dakota Formation; Kkc, undifferentiated Kiowa Formation and Cheyenne Sandstone; Kk, Kiowa Formation; Kch, Cheyenne Sandstone; Ju, undifferentiated Jurassic rocks; Pw, Whitehorse Formation; and Pu, undifferentiated Upper Permian rocks.]

Well number	Altitude of land surface	Altitude of formation surface								Depth to surface of formation								Thickness of sandstone unit							
		Ku	Kd	Kkc	Kk	Kch	Ju	Pw	Pu	Ku	Kd	Kkc	Kk	Kch	Ju	Pw	Pu	Ku	Kd	Kkc	Kk	Kch	Ju	Pw	Pu
													EDWARDS COUNTY												
23-19W-13DA	2,150	.....	2,058	.....	1,855	1,750	.....	.....	1,720	.....	92	.....	295	400	.....	.....	430	.....	90	.....	.....	20	.....	.....	.....
23-19W-14DA	2,156	.....	2,076	.....	1,848	1,696	.....	.....	1,669	.....	80	.....	308	460	.....	.....	487	.....	85	.....	.....	25	.....	.....	.....
23-19W-15AB	2,160	.....	2,075	.....	1,842	1,700	.....	.....	1,678	.....	85	.....	318	460	.....	.....	482	.....	80	.....	.....	20	.....	.....	.....
23-20W-09BA	2,256	.....	2,164	.....	1,959	1,757	.....	.....	1,713	.....	92	.....	297	499	.....	.....	543	.....	60	.....	.....	25	.....	.....	.....
23-20W-15DA	2,308	.....	2,240	.....	2,068	1,988	.....	.....	1,900	.....	68	.....	240	320	.....	.....	408	.....	35	.....	.....	60	.....	.....	.....
24-20W-09DCD[1]	2,260	.....	2,179	.....	1,975	1,779	.....	.....	1,710	.....	81	.....	287	481	.....	.....	550	.....	27	.....	.....	24	.....	.....	.....
25-20W-33CD	2,230	.....	2,127	.....	1,915	1,825	.....	.....	1,707	.....	103	.....	315	405	.....	.....	523	.....	30	.....	.....	100	.....	.....	.....
26-20W-07BCDB	2,272	.....	2,169	.....	1,947	1,850	.....	.....	1,775	.....	103	.....	325	422	.....	.....	497	.....	50	.....	.....	180	.....	.....	.....
													ELLIS COUNTY												
15-17W-34DCC	1,905	.....	1,855	.....	1,710	1,627	.....	.....	1,530	.....	50	.....	195	278	.....	.....	375	.....	20	.....	.....	35	.....	.....	.....
15-17W-36CCB	1,880	.....	1,836	.....	1,688	1,608	.....	.....	1,538	.....	52	.....	200	280	.....	.....	350	.....	35	.....	.....	25	.....	.....	.....
15-18W-21BDD	2,028	.....	1,985	.....	1,738	1,640	.....	.....	1,550	.....	43	.....	290	388	.....	.....	478	.....	35	.....	.....	25	.....	.....	.....
15-19W-17DDD	1,967	.....	1,842	.....	1,557	1,457	.....	.....	1,382	.....	125	.....	410	510	.....	.....	585	.....	40	.....	.....	25	.....	.....	.....
15-20W-07CC	2,161	.....	1,821	.....	1,581	1,481	.....	.....	1,391	.....	340	.....	580	680	.....	.....	770	.....	80	.....	.....	25	.....	.....	.....
													FINNEY COUNTY												
21-33W-16CA	2,880	.....	2,278	.....	2,140	1,895	1,818	.....	1,720	.....	602	.....	740	985	1,062	.....	1,160	.....	25	.....	.....	30	15	.....	.....
22-31W-21AAA	2,909	.....	2,150	.....	1,924	1,741	1,647	.....	1,520	.....	759	.....	985	1,168	1,262	.....	1,389	.....	65	.....	.....	40	.....	.....	.....
22-33W-16BBC	2,898	.....	2,368	.....	2,188	1,968	1,906	.....	1,820	.....	530	.....	710	930	992	.....	1,078	.....	60	.....	.....	30	20	.....	.....
23-28W-05DDC	2,742	.....	2,202	.....	2,000	1,782	1,712	.....	1,595	.....	540	.....	742	960	1,030	.....	1,147	.....	50	.....	.....	.....	.....	.....	.....
23-31W-19BC	2,908	.....	2,258	.....	1,998	1,805	1,758	.....	1,645	.....	650	.....	910	1,103	1,150	.....	1,263	.....	100	.....	.....	30	.....	.....	.....
23-31W-21BDC	2,885	.....	2,265	.....	2,035	1,835	1,755	.....	1,635	.....	620	.....	850	1,050	1,130	.....	1,250	.....	50	.....	.....	20	.....	.....	.....
23-32W-21CAA	2,853	.....	2,313	.....	1,995	1,895	1,874	.....	1,800	.....	540	.....	858	958	979	.....	1,053	.....	90	.....	.....	20	10	.....	.....
23-34W-16DDB	2,961	.....	2,508	.....	2,191	2,113	2,061	.....	1,940	.....	453	.....	770	848	900	.....	1,021	.....	100	.....	.....	25	25	.....	.....
24-31W-36BC	2,860	.....	2,332	.....	2,100	1,950	1,860	.....	1,730	.....	528	.....	760	910	1,000	.....	1,130	.....	50	.....	.....	25	10	.....	.....
24-32W-24AC	2,889	.....	2,379	.....	2,117	1,939	1,884	.....	1,720	.....	510	.....	772	950	1,005	.....	1,169	.....	50	.....	.....	25	.....	.....	.....
24-33W-19DBA[1]	2,920	.....	2,305	.....	.....	.....	.....	.....	.....	.....	650	.....	.....	.....	.....	.....	.....	.....	80	.....	.....	.....	.....	.....	.....
24-33W-32BAC[1]	2,920	.....	2,405	.....	.....	.....	.....	.....	2,050	.....	515	.....	.....	.....	.....	.....	900	.....	160	.....	.....	10	.....	.....	.....
24-34W-21CAA	2,957	.....	2,395	2,141	.....	.....	.....	.....	1,954	.....	562	816	.....	.....	.....	.....	1,003	.....	70	40	.....	.....	.....	.....	.....
25-31W-28BDD	2,835	.....	2,445	.....	2,270	2,057	1,975	.....	1,845	.....	390	.....	565	778	860	.....	990	.....	50	.....	.....	30	.....	.....	.....
25-33W-21CDD	2,930	.....	2,538	.....	2,360	2,130	2,037	.....	1,940	.....	392	.....	570	800	893	.....	990	.....	40	.....	20	30	.....	.....	.....
25-34W-15CAA	2,965	.....	2,695	.....	2,535	2,262	2,180	.....	2,075	.....	270	.....	430	703	785	.....	890	.....	80	.....	.....	30	.....	.....	.....

[1] Based on drillers' well log.

Table 4.--Selected formation surfaces and sandstone thicknesses--Continued

Well number	Altitude of land surface	Altitude of formation surface								Depth to surface of formation								Thickness of sandstone unit							
		Ku	Kd	Kkc	Kk	Kch	Ju	Pw	Pu	Ku	Kd	Kkc	Kk	Kch	Ju	Pw	Pu	Ku	Kd	Kkc	Kk	Kch	Ju	Pw	Pu
													FORD COUNTY												
25-21W-15BB	2,306	.....	2,154	.....	1,987	1,856	.....	.....	1,803	.....	152	.....	319	450	.....	.....	503	.....	15	.....	.....	15	.....	.....	.....
25-22W-17DB	2,437	.....	2,219	.....	2,102	1,767	.....	.....	1,655	.....	218	.....	335	670	.....	.....	782	.....	60	.....	.....	85	.....	.....	.....
25-23W-07AAA	2,358	.....	.....	.....	2,027	1,857	.....	.....	1,647	.....	.....	.....	331	501	.....	.....	711	.....	20	.....	.....	140	.....	.....	.....
25-24W-27DA	2,493	.....	2,193	.....	1,903	1,745	.....	.....	1,653	.....	300	.....	590	748	.....	.....	840	.....	85	.....	.....	90	.....	.....	.....
26-21W-03CCB	2,322	.....	2,302	.....	1,982	1,692	.....	.....	1,627	.....	20	.....	340	630	.....	.....	695	.....	75	.....	.....	60	.....	.....	.....
26-22W-35BD	2,349	.....	2,235	.....	1,979	1,677	.....	.....	1,588	.....	114	.....	370	672	.....	.....	769	.....	80	.....	.....	50	.....	.....	.....
26-23W-14AB	2,427	.....	2,242	.....	1,923	1,695	.....	.....	1,582	.....	185	.....	504	732	.....	.....	865	.....	60	.....	.....	80	.....	.....	.....
26-24W-22AC	2,553	.....	2,423	.....	2,143	1,908	.....	.....	1,663	.....	130	.....	410	645	.....	.....	890	.....	50	.....	.....	40	.....	.....	.....
26-26W-34DAB	2,559	.....	2,300	.....	2,059	1,859	.....	.....	1,777	.....	259	.....	500	700	.....	.....	782	.....	50	.....	.....	20	.....	.....	.....
27-21W-09CC	2,357	.....	2,077	.....	1,756	1,700	.....	.....	1,624	.....	280	.....	601	657	.....	.....	733	.....	45	.....	.....	35	.....	.....	.....
27-21W-34CD	2,333	.....	2,253	.....	2,111	1,983	.....	.....	1,926	.....	80	.....	222	350	.....	.....	407	.....	.....	.....	.....	20	.....	.....	.....
27-24W-24ACB	2,465	.....	2,170	.....	1,925	1,757	.....	.....	1,637	.....	295	.....	540	708	.....	.....	828	.....	25	.....	.....	60	.....	.....	.....
27-24W-25CB	2,525	.....	2,168	.....	1,900	1,707	.....	.....	1,620	.....	357	.....	625	818	.....	.....	905	.....	30	.....	.....	20	.....	.....	.....
27-25W-06DB	2,550	.....	2,285	.....	2,040	1,877	.....	.....	1,800	.....	265	.....	510	673	.....	.....	750	.....	30	.....	.....	15	.....	.....	.....
28-21W-22AAC	2,371	.....	2,286	.....	2,152	2,040	.....	.....	1,986	.....	85	.....	219	331	.....	.....	385	.....	25	.....	.....	25	.....	.....	.....
28-22W-30BCCA[1]	2,490	.....	2,212	.....	2,120	2,070	.....	.....	2,017	.....	278	.....	370	420	.....	.....	473	.....	31	.....	.....	42	.....	.....	.....
28-22W-36DB	2,445	.....	2,348	.....	2,156	2,015	.....	.....	1,953	.....	97	.....	289	430	.....	.....	492	.....	75	.....	.....	45	.....	.....	.....
28-23W-25BBB	2,481	.....	2,421	.....	2,298	2,081	.....	.....	2,021	.....	60	.....	183	400	.....	.....	460	.....	60	.....	.....	30	.....	.....	.....
28-24W-19BDD	2,526	.....	2,316	.....	2,006	1,886	.....	.....	1,786	.....	210	.....	520	640	.....	.....	740	.....	50	.....	.....	20	.....	.....	.....
28-26W-29BAD[1]	2,680	.....	2,390	.....	2,060	.....	.....	.....	.....	.....	290	.....	620	.....	.....	.....	.....	.....	176	.....	.....	.....	.....	.....	.....
29-23W-19CB	2,530	.....	.....	.....	2,372	2,225	.....	.....	2,161	.....	.....	.....	158	305	.....	.....	369	.....	.....	.....	.....	10	.....	.....	.....
													GOVE COUNTY												
15-26W-18BC	2,442	.....	1,822	.....	1,622	1,502	.....	.....	1,422	.....	620	.....	820	940	.....	.....	1,020	.....	35	.....	.....	25	.....	.....	.....
15-27W-21CA	2,665	.....	2,035	.....	1,645	1,445	.....	.....	1,310	.....	630	.....	1,020	1,220	.....	.....	1,355	.....	40	.....	10	35	.....	.....	.....
15-27W-33ACC	2,048	.....	1,434	.....	1,228	1,008	.....	.....	916	.....	714	.....	820	1,040	.....	.....	1,132	.....	100	.....	20	45	.....	.....	.....
15-28W-22BD	2,466	.....	1,854	.....	1,560	1,406	.....	.....	1,226	.....	612	.....	830	970	.....	.....	1,050	.....	30	.....	.....	30	.....	.....	.....
15-29W-22AC	2,467	.....	1,877	.....	1,605	1,417	.....	.....	1,307	.....	590	.....	861	938	.....	.....	1,050	.....	25	.....	10	40	.....	.....	.....
15-30W-24CCC	2,596	.....	1,896	.....	1,681	1,470	.....	.....	1,338	.....	700	.....	915	1,058	.....	.....	1,220	.....	60	.....	.....	60	.....	.....	.....
													GRANT COUNTY												
27-38W-05DBB	3,178	2,978	.....	.....	.....	.....	2,746	.....	2,593	200	.....	.....	.....	.....	432	.....	585	50	.....	.....	.....	.....	30	.....	.....
28-38W-09ACC	3,106	2,891	.....	.....	.....	.....	2,631	.....	2,505	215	.....	.....	.....	.....	475	.....	601	.....	.....	.....	.....	.....	.....	.....	.....
29-35W-14BDD	2,974	.....	.....	.....	.....	.....	2,434	.....	2,324	.....	.....	.....	.....	.....	540	.....	650	.....	.....	.....	.....	.....	20	.....	.....
29-36W-25DBB	2,987	.....	.....	.....	.....	.....	2,529	.....	2,434	.....	.....	.....	.....	.....	458	.....	553	.....	.....	.....	.....	.....	45	.....	.....
30-35W-26ABB	2,845	.....	.....	.....	.....	.....	2,597	.....	2,435	.....	.....	.....	.....	.....	248	.....	410	50	.....	.....	.....	.....	.....	.....	.....
30-37W-25AC[1]	3,005	.....	.....	.....	.....	.....	.....	.....	2,205	.....	.....	.....	.....	.....	.....	.....	800	.....	.....	.....	.....	.....	.....	286	.....
30-37W-32AA[1]	3,071	.....	.....	.....	.....	.....	2,609	.....	2,531	.....	.....	.....	.....	.....	462	.....	540	.....	.....	.....	.....	.....	45	.....	.....
30-38W-21CAA	3,124	.....	.....	.....	.....	.....	2,719	.....	2,595	.....	.....	.....	.....	.....	405	.....	529	.....	.....	.....	.....	.....	.....	.....	.....

[1] Based on drillers' well log.

Table 4.--Selected formation surfaces and sandstone thicknesses--Continued

Well number	Altitude of land surface	Altitude of formation surface								Depth to surface of formation								Thickness of sandstone unit							
		Ku	Kd	Kkc	Kk	Kch	Ju	Pw	Pu	Ku	Kd	Kkc	Kk	Kch	Ju	Pw	Pu	Ku	Kd	Kkc	Kk	Kch	Ju	Pw	Pu
													GRAY COUNTY												
24-27W-09BBB	2,690	2,275	.....	.....	.....	.....	.....	.....	1,950	415	.....	.....	.....	.....	.....	.....	740	70	.....	.....	.....	.....	.....	.....	.....
24-28W-10CA	2,747	.....	2,360	2,235	.....	.....	.....	.....	2,089	.....	387	512	.....	.....	.....	.....	658	.....	35	20	.....	.....	.....	.....	.....
25-29W-21CDC2[1]	2,707	.....	2,362	.....	2,137	.....	.....	.....	.....	.....	345	.....	570	.....	.....	.....	.....	.....	83	.....	.....	.....	.....	.....	.....
25-29W-33DCB[1]	2,700	.....	.....	.....	.....	.....	.....	.....	1,875	.....	.....	.....	.....	.....	.....	.....	825	.....	.....	.....	.....	.....	.....	.....	.....
26-30W-15C	2,785	.....	2,250	.....	2,105	1,968	.....	.....	1,880	.....	535	.....	680	817	.....	.....	905	.....	40	.....	.....	20	.....	.....	.....
27-29W-20BD	2,766	.....	2,396	.....	2,263	2,026	.....	.....	1,941	.....	370	.....	503	740	.....	.....	825	.....	50	.....	20	35	.....	.....	.....
28-28W-09AC[1]	2,780	.....	.....	.....	.....	2,348	.....	.....	2,284	.....	.....	.....	.....	432	.....	.....	496	.....	.....	.....	.....	26	.....	.....	.....
													GREELEY COUNTY												
16-43W-11RAA	3,913	.....	2,443	.....	2,310	2,188	2,063	.....	1,893	.....	1,470	.....	1,603	1,725	1,850	.....	2,020	.....	60	.....	.....	45	30	.....	.....
16-43W-11DAA	3,913	2,503	.....	.....	.....	.....	2,123	.....	1,893	1,410	.....	.....	.....	.....	1,790	.....	2,020	.....	.....	.....	.....	.....	.....	.....	.....
17-39W-08DD	3,545	.....	2,474	.....	2,185	2,080	2,020	.....	1,945	.....	1,071	.....	1,360	1,465	1,525	.....	1,600	.....	70	.....	.....	25	20	.....	.....
17-40W-30CC[1]	3,615	.....	2,530	.....	.....	.....	2,139	.....	2,020	.....	1,085	.....	.....	.....	1,476	.....	1,595	.....	.....	.....	.....	.....	.....	.....	.....
17-40W-33CC	3,626	2,541	.....	.....	.....	.....	2,150	.....	2,031	1,085	.....	.....	.....	.....	1,476	.....	1,595	.....	.....	.....	.....	.....	.....	.....	.....
17-40W-36CA	3,583	.....	2,495	.....	2,288	2,183	2,111	.....	1,983	.....	1,088	.....	1,295	1,400	1,472	.....	1,600	.....	50	.....	.....	30	20	.....	.....
18-39W-06CB	3,555	.....	2,467	.....	2,275	2,180	2,090	.....	1,975	.....	1,088	.....	1,280	1,375	1,465	.....	1,580	.....	70	.....	.....	10	15	.....	.....
18-40W-09CAA	3,612	.....	2,544	.....	2,264	2,170	2,037	.....	1,915	.....	1,068	.....	1,348	1,442	1,575	.....	1,697	.....	50	.....	.....	20	15	.....	.....
18-42W-20DC	3,857	2,727	.....	.....	.....	.....	2,367	.....	2,231	1,130	.....	.....	.....	.....	1,490	.....	1,626	.....	.....	.....	.....	.....	.....	.....	.....
19-39W-17AC	3,528	.....	2,583	.....	2,348	2,268	2,183	.....	2,097	.....	945	.....	1,180	1,260	1,345	.....	1,431	.....	75	.....	.....	20	35	.....	.....
19-40W-09CC	3,614	2,629	.....	.....	.....	.....	2,284	.....	2,204	985	.....	.....	.....	.....	1,330	.....	1,410	.....	.....	.....	.....	.....	.....	.....	.....
19-40W-25AC	3,560	.....	2,622	.....	2,400	2,309	2,215	.....	2,110	.....	938	.....	1,160	1,251	1,345	.....	1,450	.....	60	.....	.....	25	5	.....	.....
19-41W-03DD	3,670	.....	2,698	.....	2,462	2,373	2,282	.....	2,180	.....	972	.....	1,208	1,297	1,388	.....	1,490	.....	60	.....	.....	15	20	.....	.....
19-42W-09AC	3,821	.....	2,749	.....	2,561	2,459	2,376	.....	2,271	.....	1,072	.....	1,260	1,362	1,445	.....	1,550	.....	70	.....	.....	25	25	.....	.....
20-39W-08DD	3,518	.....	2,618	.....	2,451	2,329	2,253	.....	2,179	.....	900	.....	1,067	1,189	1,265	.....	1,339	.....	40	.....	.....	.....	.....	.....	.....
20-40W-24CAA	3,555	.....	2,715	.....	2,510	2,387	2,275	.....	2,195	.....	840	.....	1,045	1,168	1,280	.....	1,360	.....	25	.....	.....	15	15	.....	.....
20-41W-10ACC	3,653	.....	2,768	.....	2,573	2,413	.....	.....	2,311	.....	885	.....	1,080	1,240	.....	.....	1,342	.....	50	.....	.....	10	.....	.....	.....
													HAMILTON COUNTY												
21-41W-19DB	3,684	.....	2,944	.....	2,764	2,674	2,564	.....	2,484	.....	740	.....	920	1,010	1,120	.....	1,200	.....	90	.....	.....	20	20	.....	.....
22-40W-27BD	3,530	.....	2,949	.....	2,720	2,650	2,595	.....	2,450	.....	581	.....	810	880	935	.....	1,080	.....	45	.....	.....	25	30	.....	.....
22-42W-12AC	3,651	.....	2,981	.....	2,806	2,722	2,624	.....	2,451	.....	670	.....	845	929	1,027	.....	1,200	.....	35	.....	.....	50	30	.....	.....
24-39W-31CA	3,199	.....	.....	.....	2,919	2,816	2,729	.....	2,681	.....	.....	.....	280	383	470	.....	518	.....	.....	.....	.....	25	30	.....	.....
24-41W-23CAA	3,263	.....	3,111	.....	2,921	2,873	2,793	.....	2,722	.....	152	.....	342	390	470	.....	541	.....	55	.....	.....	30	15	.....	.....
24-42W-34CAAC	3,462	.....	3,278	.....	3,102	3,010	2,932	.....	2,762	.....	184	.....	360	452	530	.....	700	.....	50	.....	.....	35	50	.....	.....
25-39W-12D	3,179	.....	3,079	.....	2,927	2,818	2,759	.....	2,700	.....	100	.....	252	361	420	.....	479	.....	60	.....	.....	25	.....	.....	.....
25-43W-25AA	3,457	.....	3,377	.....	3,137	3,025	2,922	.....	2,818	.....	80	.....	320	432	535	.....	639	.....	80	.....	10	20	35	.....	.....
26-41W-13D[1]	3,429	3,249	.....	.....	.....	.....	.....	.....	2,799	180	.....	.....	.....	.....	.....	.....	630	.....	.....	.....	.....	.....	.....	.....	.....
26-42W-15B	3,419	.....	3,240	.....	3,024	2,927	2,830	.....	2,680	.....	179	.....	395	492	589	.....	739	.....	60	.....	20	35	30	.....	.....

[1] Based on drillers' well log.

Table 4.--Selected formation surfaces and sandstone thicknesses--Continued

Well number	Altitude of land surface	Altitude of formation surface								Depth to surface of formation								Thickness of sandstone unit							
		Ku	Kd	Kkc	Kk	Kch	Ju	Pw	Pu	Ku	Kd	Kkc	Kk	Kch	Ju	Pw	Pu	Ku	Kd	Kkc	Kk	Kch	Ju	Pw	Pu
HASKELL COUNTY																									
25-31W-05C	2,830	.....	2,247	2,110	.....	.....	1,920	.....	1,818	.....	583	720	.....	.....	910	.....	1,012	.....	60	20	.....	.....	40	.....	.....
27-33W-33CAA	2,977	.....	2,445	.....	2,307	2,222	2,167	.....	2,115	.....	532	.....	670	755	800	.....	862	.....	80	.....	.....	.....	45	.....	.....
28-31W-15D	2,914	.....	2,344	2,117	.....	.....	2,014	.....	1,914	.....	570	797	.....	.....	900	.....	1,000	.....	70	30	.....	.....	30	.....	.....
28-32W-27CAA	2,913	.....	.....	.....	.....	.....	2,938	.....	2,183	.....	.....	.....	.....	.....	25	.....	730	.....	.....	.....	.....	.....	30	.....	.....
28-34W-6BB[1]	3,062	.....	2,564	.....	.....	.....	.....	.....	.....	.....	498	.....	.....	.....	.....	.....	.....	.....	+12	.....	.....	.....	.....	.....	.....
29-33W-19CAA	2,970	.....	.....	.....	.....	.....	2,415	.....	2,310	.....	.....	.....	.....	.....	555	.....	660	.....	.....	.....	.....	.....	20	.....	.....
30-33W-27AAA[1]	2,928	.....	.....	.....	2,441	2,406	.....	.....	.....	.....	.....	.....	487	522	.....	.....	.....	.....	.....	.....	.....	75	14	.....	.....
30-34W-04BD	2,979	.....	.....	.....	.....	.....	2,469	.....	2,369	.....	.....	.....	.....	.....	520	.....	610	.....	.....	.....	.....	.....	20	.....	.....
HODGEMAN COUNTY																									
21-21W-02DA	2,194	.....	2,129	.....	1,842	1,694	.....	.....	1,644	.....	65	.....	352	500	.....	.....	550	.....	50	.....	.....	15	.....	.....	.....
21-22W-26CB	2,278	.....	2,188	.....	2,088	1,899	.....	.....	1,728	.....	90	.....	190	379	.....	.....	550	.....	10	.....	20	40	.....	.....	.....
21-23W-07BB	2,295	.....	2,165	.....	1,958	1,755	.....	.....	1,645	.....	130	.....	337	540	.....	.....	650	.....	35	.....	.....	15	.....	.....	.....
21-24W-18AD	2,312	.....	2,172	.....	1,903	1,785	.....	.....	1,627	.....	140	.....	409	527	.....	.....	685	.....	20	.....	.....	35	.....	.....	.....
21-25W-09CC	2,352	.....	2,180	.....	1,937	1,762	.....	.....	1,647	.....	172	.....	415	590	.....	.....	705	.....	25	.....	.....	30	.....	.....	.....
21-26W-16CCC	2,527	.....	2,227	.....	1,957	1,771	.....	.....	1,697	.....	300	.....	570	756	.....	.....	830	.....	80	.....	.....	35	.....	.....	.....
22-21W-20AD	2,168	.....	2,093	.....	1,948	1,808	.....	.....	1,743	.....	75	.....	220	360	.....	.....	425	.....	90	.....	.....	25	.....	.....	.....
22-22W-25DB	2,330	.....	2,248	.....	1,975	1,850	.....	.....	1,791	.....	82	.....	355	480	.....	.....	539	.....	50	.....	.....	20	.....	.....	.....
22-23W-30DC	2,373	.....	2,373	.....	2,185	2,068	.....	.....	1,913	.....	0	.....	188	305	.....	.....	460	.....	40	.....	.....	130	.....	.....	.....
22-24W-16DD	2,481	.....	2,174	.....	1,949	1,796	.....	.....	1,649	.....	307	.....	532	685	.....	.....	832	.....	70	.....	.....	40	.....	.....	.....
22-25W-21BBB	2,524	.....	2,244	.....	2,080	1,820	.....	.....	1,688	.....	280	.....	444	704	.....	.....	836	.....	20	.....	.....	50	.....	.....	.....
22-26W-20CAA	2,499	.....	2,169	.....	2,049	1,879	.....	.....	1,754	.....	330	.....	450	620	.....	.....	745	.....	50	.....	.....	30	.....	.....	.....
23-22W-07AA[1]	2,239	.....	2,209	.....	2,002	1,819	.....	.....	1,794	.....	30	.....	237	420	.....	.....	445	.....	21	.....	.....	.....	.....	.....	.....
23-22W-08CC	2,229	.....	2,204	.....	2,049	1,894	.....	.....	1,789	.....	25	.....	180	335	.....	.....	440	.....	50	.....	.....	20	.....	.....	.....
23-23W-33CA	2,398	.....	2,280	.....	1,998	1,808	.....	.....	1,738	.....	118	.....	400	590	.....	.....	660	.....	70	.....	.....	50	.....	.....	.....
23-24W-18BC	2,472	.....	2,260	.....	2,032	1,820	.....	.....	1,677	.....	212	.....	440	652	.....	.....	795	.....	40	.....	.....	55	.....	.....	.....
23-25W-33AB	2,531	.....	2,346	.....	1,991	1,841	.....	.....	1,616	.....	185	.....	520	690	.....	.....	915	.....	135	.....	.....	190	.....	.....	.....
25-26W-21AB	2,600	.....	.....	.....	1,970	1,829	.....	.....	1,755	.....	.....	.....	630	771	.....	.....	845	.....	150	.....	.....	50	.....	.....	.....
24-21W-24CA	2,283	.....	2,183	.....	1,998	1,790	.....	.....	1,753	.....	100	.....	285	473	.....	.....	530	.....	40	.....	.....	20	.....	.....	.....
24-22W-23CC	2,346	.....	2,296	.....	2,156	1,861	.....	.....	1,741	.....	50	.....	190	485	.....	.....	605	.....	55	.....	.....	60	.....	.....	.....
24-23W-18BB	2,458	.....	2,323	.....	1,986	1,858	.....	.....	1,686	.....	135	.....	472	600	.....	.....	772	.....	80	.....	.....	60	.....	.....	.....
24-24W-09BCA	2,495	.....	2,336	.....	2,065	1,895	.....	.....	1,675	.....	159	.....	430	600	.....	.....	820	.....	100	.....	.....	80	.....	.....	.....
24-25W-27BB	2,543	.....	2,323	.....	2,138	1,883	.....	.....	1,650	.....	220	.....	305	660	.....	.....	893	.....	50	.....	.....	140	.....	.....	.....

[1] Based on drillers' well log.

Table 4.--Selected formation surfaces and sandstone thicknesses--Continued

Well number	Altitude of land surface	Altitude of formation surface								Depth to surface of formation								Thickness of sandstone unit							
		Ku	Kd	Kkc	Kk	Kch	Ju	Pw	Pu	Ku	Kd	Kkc	Kk	Kch	Ju	Pw	Pu	Ku	Kd	Kkc	Kk	Kch	Ju	Pw	Pu
												KEARNY COUNTY													
21-35W-09DA	3,160	.....	2,660	.....	.....	.....	2,121	.....	.....	.....	500	.....	.....	.....	1,039	.....	.....	.....	.....	.....	.....	.....	31	.....	.....
21-35W-28DBB	3,118	2,615	.....	.....	.....	.....	2,360	.....	2,188	503	.....	.....	.....	.....	758	.....	930	60	.....	.....	.....	.....	25	.....	.....
22-35W-32D	3,087	.....	2,702	.....	2,437	2,337	2,279	.....	2,097	.....	385	.....	650	750	808	.....	990	.....	50	.....	.....	20	40	.....	.....
22-38W-23AA	3,327	.....	2,845	.....	2,557	2,464	2,357	.....	2,217	.....	480	.....	770	863	970	.....	1,110	.....	100	.....	.....	20	.....	.....	.....
23-36W-19ACCC	3,230	2,850	.....	.....	.....	.....	2,615	.....	2,487	880	.....	.....	.....	.....	615	.....	743	35	.....	.....	.....	.....	30	.....	.....
23-38W-16CAA	3,357	.....	2,889	.....	2,627	2,536	2,447	.....	2,280	.....	468	.....	730	821	910	.....	1,077	.....	50	.....	.....	15	.....	.....	.....
24-36W-23CCC	3,001	2,657	.....	.....	.....	.....	.....	.....	.....	344	.....	.....	.....	.....	.....	.....	.....	+75	.....	.....	.....	.....	.....	.....	.....
25-37W-12BAC	3,067	.....	2,892	.....	2,729	.....	2,635	.....	2,499	.....	175	.....	338	.....	432	.....	568	.....	80	.....	10	.....	50	.....	.....
												LANE COUNTY													
16-28W-25AC	2,742	.....	1,944	.....	1,610	1,447	.....	.....	1,382	.....	798	.....	1,132	1,295	.....	.....	1,360	.....	90	.....	10	15	.....	.....	.....
16-30W-16BBB	2,688	.....	1,988	.....	1,798	1,700	.....	.....	1,478	.....	700	.....	890	990	.....	.....	1,210	.....	65	.....	.....	60	.....	.....	.....
17-17W-03BB	2,681	.....	1,981	.....	1,641	1,550	.....	.....	1,453	.....	700	.....	885	955	.....	.....	1,040	.....	90	.....	10	20	.....	.....	.....
17-2BW-36BA	2,708	.....	2,028	.....	1,708	1,493	.....	.....	1,393	.....	680	.....	1,000	1,215	.....	.....	1,315	.....	60	.....	20	20	.....	.....	.....
17-30W-04DDB[1]	2,857	2,012	.....	.....	.....	.....	.....	.....	1,357	845	.....	.....	.....	.....	.....	.....	1,506	.....	.....	.....	.....	.....	.....	.....	.....
17-30W-11BC	2,852	.....	2,027	.....	1,750	1,666	.....	.....	1,607	.....	825	.....	950	1,049	.....	.....	1,102	.....	75	.....	.....	20	.....	.....	.....
19-27W-15DA	2,652	.....	2,082	.....	1,817	1,599	.....	.....	1,512	.....	570	.....	835	1,053	.....	.....	1,140	.....	35	.....	15	35	.....	.....	.....
19-27W-33BDD[1]	2,635	2,055	.....	.....	.....	.....	.....	.....	1,560	580	.....	.....	.....	.....	.....	.....	1,075	.....	.....	.....	.....	.....	.....	.....	.....
19-30W-15AB	2,874	.....	2,154	.....	1,794	1,716	.....	.....	1,646	.....	720	.....	865	950	.....	.....	1,080	.....	110	.....	.....	35	.....	.....	.....
20-27W-09CB	2,700	.....	2,101	.....	1,830	1,648	.....	.....	1,578	.....	599	.....	870	1,052	.....	.....	1,122	.....	25	.....	.....	35	.....	.....	.....
20-30W-23DD	2,899	.....	2,213	.....	1,873	1,765	.....	.....	1,678	.....	686	.....	1,026	1,134	.....	.....	1,221	.....	90	.....	10	35	.....	.....	.....
												LOGAN COUNTY													
13-36W-28DDD	3,115	.....	2,015	.....	1,775	1,670	1,555	.....	1,406	.....	1,100	.....	1,340	1,445	1,560	.....	1,709	.....	50	.....	.....	45	15	.....	.....
14-32W-34CCC	2,657	.....	1,867	.....	1,599	1,514	1,417	1,376	.....	.....	790	.....	1,058	1,143	1,240	1,281	.....	.....	90	.....	.....	30	5	20	.....
14-34W-07BBA	3,011	.....	1,906	.....	1,636	1,553	1,453	.....	1,386	.....	1,105	.....	1,375	1,458	1,558	.....	1,625	.....	80	.....	.....	25	10	.....	.....
14-34W-23CCCC	2,984	.....	2,004	.....	1,674	1,596	1,524	1,424	.....	.....	980	.....	1,310	1,388	1,460	1,560	.....	.....	85	.....	.....	40	.....	20	.....
14-35W-08DAA	3,218	.....	1,965	.....	1,698	1,618	1,515	1,458	.....	.....	1,253	.....	1,520	1,600	1,703	1,760	.....	.....	100	.....	.....	40	15	10	.....
14-36W-07BBC	3,376	.....	2,056	.....	1,826	1,714	1,581	1,526	.....	.....	1,320	.....	1,550	1,662	1,795	1,850	.....	.....	40	.....	.....	70	.....	10	.....
14-37W-33CC	3,406	.....	2,126	.....	1,896	1,763	1,654	.....	1,556	.....	1,280	.....	1,510	1,643	1,752	.....	1,850	.....	80	.....	.....	40	25	.....	.....
15-33W-13CCC	2,790	.....	1,975	.....	1,727	1,648	1,560	.....	1,500	.....	815	.....	1,063	1,142	1,230	.....	1,290	.....	80	.....	.....	20	.....	.....	.....
15-34W-36BAC	2,911	.....	2,031	.....	1,803	1,651	1,571	.....	1,516	.....	880	.....	1,108	1,260	1,340	.....	1,395	.....	30	.....	.....	50	10	.....	.....

[1] Based on drillers' well log.

Table 4.--Selected formation surfaces and sandstone thicknesses--Continued

Well number	Altitude of land surface	Altitude of formation surface								Depth to surface of formation								Thickness of sandstone unit							
		Ku	Kd	Kkc	Kk	Kch	Ju	Pw	Pu	Ku	Kd	Kkc	Kk	Kch	Ju	Pw	Pu	Ku	Kd	Kkc	Kk	Kch	Ju	Pw	Pu
MEADE COUNTY																									
30-26W-01BCD[1]	2,545	.....	2,450	.....	2,428	2,330	.....	.....	2,127	.....	95	.....	117	215	.....	.....	418	.....	20	.....	.....	4	.....	.....	.....
30-27W-17DDD[1]	2,558	2,184	.....	.....	.....	.....	.....	.....	1,978	374	.....	.....	.....	.....	.....	.....	580	.....	.....	.....	.....	.....	.....	.....	.....
30-30W-19BAA[1]	2,815	2,291	.....	.....	.....	.....	.....	.....	2,250	524	.....	.....	.....	.....	.....	.....	565	.....	.....	.....	.....	.....	.....	.....	.....
32-26W-04AAB[1]	2,460	.....	.....	.....	2,301	.....	.....	.....	2,285	.....	.....	.....	159	.....	.....	.....	175	.....	.....	.....	.....	.....	.....	.....	.....
32-29W-35CB	2,649	.....	.....	.....	.....	.....	.....	.....	2,160	.....	.....	.....	.....	.....	.....	.....	489	.....	.....	.....	.....	.....	.....	.....	.....
32-30W-33BB	2,746	.....	.....	.....	.....	.....	.....	.....	2,245	.....	.....	.....	.....	.....	.....	.....	501	.....	.....	.....	.....	.....	.....	.....	.....
33-27W-13D	2,371	.....	.....	.....	.....	.....	1,925	.....	1,860	.....	.....	.....	.....	.....	446	.....	511	.....	.....	.....	.....	.....	20	.....	.....
MORTON COUNTY																									
31-42W-22DCC	3,484	.....	.....	.....	.....	3,274	3,159	.....	2,999	.....	.....	.....	.....	210	325	.....	485	.....	.....	.....	.....	50	.....	.....	.....
31-43W-34C	3,592	.....	.....	.....	.....	3,442	3,342	.....	3,117	.....	.....	.....	.....	150	250	.....	475	.....	.....	.....	.....	35	55	.....	.....
32-40W-18DBB	3,338	.....	.....	.....	3,150	3,088	2,990	.....	2,898	.....	.....	.....	188	250	348	.....	440	.....	.....	.....	.....	20	.....	.....	.....
32-41W-35ABD	3,415	3,207	.....	.....	.....	.....	3,060	.....	2,980	208	.....	.....	.....	.....	355	.....	435	.....	.....	.....	.....	.....	.....	.....	.....
32-41W-36B	3,399	3,139	.....	.....	.....	.....	3,034	.....	2,984	260	.....	.....	.....	.....	365	.....	415	.....	.....	.....	.....	.....	.....	.....	.....
32-42W-05BCD	3,345	.....	.....	.....	.....	3,197	3,105	.....	2,900	.....	.....	.....	.....	148	240	.....	445	.....	.....	.....	.....	50	50	.....	.....
32-43W-18DB	3,573	.....	.....	.....	.....	.....	3,503	.....	3,365	.....	.....	.....	.....	.....	70	.....	208	.....	.....	.....	.....	.....	30	.....	.....
32-43W-22BDD	3,619	3,397	.....	.....	.....	.....	3,229	.....	3,169	222	.....	.....	.....	.....	390	.....	450	40	.....	.....	.....	.....	20	.....	.....
33-41W-11B	3,430	3,105	.....	.....	.....	.....	3,050	.....	2,870	325	.....	.....	.....	.....	380	.....	560	35	.....	.....	.....	.....	35	.....	.....
33-42W-25CCAA	3,369	3,134	.....	.....	.....	.....	3,089	.....	3,057	235	.....	.....	.....	.....	280	.....	312	20	.....	.....	.....	.....	15	.....	.....
34-40W-22BD	3,357	.....	.....	.....	.....	.....	.....	.....	2,884	.....	.....	.....	.....	.....	.....	.....	473	.....	.....	.....	.....	.....	.....	.....	.....
34-42W-34C	3,534	.....	.....	.....	.....	.....	3,386	.....	3,284	.....	.....	.....	.....	.....	148	.....	250	.....	.....	.....	.....	.....	20	.....	.....
34-43W-17DB	3,573	.....	.....	.....	.....	.....	3,503	.....	3,365	.....	.....	.....	.....	.....	70	.....	208	.....	.....	.....	.....	.....	30	.....	.....
35-43W-08A	3,624	3,474	.....	.....	.....	.....	3,419	.....	3,374	150	.....	.....	.....	.....	205	.....	250	20	.....	.....	.....	.....	15	.....	.....
NESS COUNTY																									
16-21W-04AB	2,380	.....	1,830	.....	1,600	1,440	.....	.....	1,370	.....	550	.....	780	940	.....	.....	1,010	.....	100	.....	10	30	.....	.....	.....
16-23W-16CD	2,456	.....	1,832	.....	1,648	1,546	.....	.....	1,466	.....	624	.....	808	910	.....	.....	990	.....	70	.....	10	25	.....	.....	.....
16-26W-10CA	2,615	.....	2,035	.....	1,575	1,495	.....	.....	1,400	.....	579	.....	1,039	1,119	.....	.....	1,214	.....	95	.....	.....	35	.....	.....	.....
17-21W-15BB	2,206	.....	1,885	.....	1,669	1,526	.....	.....	1,436	.....	321	.....	537	680	.....	.....	770	.....	110	.....	10	30	.....	.....	.....
17-22W-22AC	2,266	.....	1,908	.....	1,666	1,546	.....	.....	1,456	.....	358	.....	412	525	.....	.....	600	.....	75	.....	20	50	.....	.....	.....
17-23W-14DA	2,331	.....	1,921	.....	1,669	1,543	.....	.....	1,456	.....	410	.....	480	575	.....	.....	662	.....	60	.....	15	35	.....	.....	.....
17-24W-15DB	2,501	.....	1,971	.....	1,814	1,601	.....	.....	1,501	.....	530	.....	687	900	.....	.....	1,000	.....	30	.....	.....	50	.....	.....	.....
17-25W-02AA	2,461	.....	1,946	.....	1,613	1,459	.....	.....	1,351	.....	515	.....	650	740	.....	.....	848	.....	40	.....	20	35	.....	.....	.....
17-26W-35AC	2,478	.....	2,170	.....	1,728	1,545	.....	.....	1,458	.....	308	.....	886	1,069	.....	.....	1,156	.....	55	.....	.....	25	.....	.....	
18-21W-15CAA	2,165	.....	1,926	.....	1,733	1,585	.....	.....	1,476	.....	239	.....	432	580	.....	.....	689	.....	120	.....	10	35	.....	.....	.....

[1] Based on drillers' well log.

Table 4.--Selected formation surfaces and sandstone thicknesses--Continued

Well number	Altitude of land surface	Altitude of formation surface								Depth to surface of formation								Thickness of sandstone unit							
		Ku	Kd	Kkc	Kk	Kch	Ju	Pw	Pu	Ku	Kd	Kkc	Kk	Kch	Ju	Pw	Pu	Ku	Kd	Kkc	Kk	Kch	Ju	Pw	Pu
													NESS COUNTY--Continued													
18-21W-18BB	2,238	.....	1,958	.....	1,738	1,583	.....	.....	1,483	.....	280	.....	500	655	.....	.....	755	.....	50	.....	.....	35	.....	.....	.....
18-24W-11BB	2,322	.....	2,020	.....	1,752	1,647	.....	.....	1,501	.....	302	.....	570	675	.....	.....	821	.....	100	.....	25	70	.....	.....	.....
18-26W-15DB	2,604	.....	2,194	.....	1,766	1,694	.....	.....	1,554	.....	410	.....	848	920	.....	.....	1,060	.....	30	.....	.....	45	.....	.....	.....
19-21W-17AAB	2,197	.....	2,064	.....	1,804	1,652	.....	.....	1,559	.....	133	.....	393	545	.....	.....	638	.....	100	.....	10	35	.....	.....	.....
19-23W-05D[1]	2,220	1,927	.....	.....	.....	.....	.....	.....	.....	293	.....	.....	.....	.....	.....	.....	.....	+41	.....	.....	.....	.....	.....	.....	.....
19-24W-16CB	2,318	.....	2,098	.....	1,853	1,653	.....	.....	1,563	.....	220	.....	465	665	.....	.....	755	.....	100	.....	15	65	.....	.....	.....
19-26W-24DC	2,614	.....	2,129	.....	1,849	1,684	.....	.....	1,600	.....	485	.....	765	930	.....	.....	1,014	.....	80	.....	.....	45	.....	.....	.....
20-21W-18ACC	2,238	.....	2,062	.....	1,835	1,638	.....	.....	1,563	.....	176	.....	403	600	.....	.....	675	.....	70	.....	10	35	.....	.....	.....
20-24W-04AA	2,338	.....	2,078	.....	1,868	1,676	.....	.....	1,588	.....	260	.....	470	662	.....	.....	750	.....	55	.....	20	60	.....	.....	.....
20-26W-25AD	2,431	.....	2,169	.....	1,921	1,741	.....	.....	1,641	.....	262	.....	510	690	.....	.....	790	.....	50	.....	.....	50	.....	.....	.....
													PAWNEE COUNTY												
20-17W-22DCC[1]	2,053	.....	1,930	.....	1,746	1,680	.....	1,621	.....	.....	123	.....	307	373	.....	432	.....	.....	5	.....	.....	10	.....	2	.....
20-20W-05CC	2,211	.....	2,069	.....	1,829	1,614	.....	.....	1,560	.....	142	.....	382	597	.....	.....	651	.....	30	.....	.....	20	.....	.....	.....
20-20W-30BB	2,210	.....	2,090	.....	1,815	1,660	.....	.....	1,635	.....	120	.....	395	550	.....	.....	575	.....	50	.....	.....	10	.....	.....	.....
21-18W-17AA	2,054	.....	2,049	.....	1,865	1,776	.....	.....	1,723	.....	5	.....	189	278	.....	.....	331	.....	20	.....	.....	20	.....	.....	.....
21-20W-06DB	2,209	.....	2,069	.....	1,857	1,744	.....	.....	1,669	.....	140	.....	334	455	.....	.....	540	.....	25	.....	.....	20	.....	.....	.....
21-20W-10DDD	2,102	.....	2,040	.....	1,912	1,742	.....	.....	1,662	.....	62	.....	190	360	.....	.....	440	.....	30	.....	.....	20	.....	.....	.....
21-20W-17BD	2,111	.....	1,991	.....	1,856	1,746	.....	.....	1,681	.....	120	.....	255	365	.....	.....	430	.....	110	.....	.....	20	.....	.....	.....
21-20W-31AAA	2,120	.....	1,995	.....	1,820	1,720	.....	.....	1,695	.....	125	.....	300	400	.....	.....	425	.....	50	.....	.....	10	.....	.....	.....
21-20W-33DD	2,139	.....	2,050	.....	1,834	1,708	.....	.....	1,677	.....	89	.....	305	431	.....	.....	462	.....	90	.....	.....	10	.....	.....	.....
22-17W-31DAA	2,060	.....	1,990	.....	1,905	1,740	.....	.....	1,700	.....	70	.....	155	320	.....	.....	360	.....	15	.....	.....	15	.....	.....	.....
22-17W-32CBCD	2,064	.....	2,030	.....	1,864	1,744	.....	.....	1,722	.....	34	.....	200	320	.....	.....	342	.....	25	.....	.....	10	.....	.....	.....
22-17W-33DDD	2,050	.....	2,000	.....	1,855	1,765	.....	.....	1,740	.....	50	.....	195	285	.....	.....	310	.....	30	.....	.....	10	.....	.....	.....
22-18W-14BDD	1,970	.....	1,889	.....	1,748	1,673	.....	.....	1,650	.....	81	.....	222	297	.....	.....	320	.....	30	.....	.....	10	.....	.....	.....
22-18W-28BDD	2,099	.....	.....	.....	1,833	1,744	.....	.....	1,719	.....	.....	.....	266	355	.....	.....	380	.....	30	.....	.....	10	.....	.....	.....
22-19W-07AAA[1]	2,100	.....	1,986	.....	1,891	1,860	.....	1,695	.....	.....	114	.....	209	240	.....	405	.....	.....	40	.....	5	.....	.....	7	.....
													RUSH COUNTY												
16-16W-12ABD	1,914	.....	1,894	.....	1,699	1,619	.....	.....	1,529	.....	20	.....	215	295	.....	.....	385	.....	45	.....	.....	25	.....	.....	.....
16-17W-22DAC	2,004	.....	1,874	.....	1,744	1,659	.....	.....	1,559	.....	130	.....	260	345	.....	.....	445	.....	35	.....	20	60	.....	.....	.....
16-19W-19CBB	2,171	.....	1,801	.....	1,641	1,419	.....	.....	1,276	.....	370	.....	530	752	.....	.....	895	.....	25	.....	.....	120	.....	.....	.....
17-16W-12ACC	2,023	.....	1,838	.....	1,758	1,678	.....	.....	1,625	.....	185	.....	265	345	.....	.....	398	.....	20	.....	.....	35	.....	.....	.....
17-17W-06ABB[1]	2,877	.....	2,682	.....	2,471	2,412	.....	.....	.....	.....	195	.....	406	465	.....	.....	.....	.....	.....	.....	.....	+15	.....	.....	.....
17-17W-15ABD	2,046	.....	1,901	.....	1,725	1,666	.....	.....	1,576	.....	145	.....	321	380	.....	.....	470	.....	60	.....	.....	40	.....	.....	.....
17-18W-20BAC	2,113	.....	1,868	.....	1,653	1,585	.....	.....	1,518	.....	245	.....	460	528	.....	.....	595	.....	45	.....	10	25	.....	.....	.....
17-19W-19DDD	2,138	.....	1,778	.....	1,698	1,650	.....	.....	1,538	.....	360	.....	440	488	.....	.....	600	.....	65	.....	.....	15	.....	.....	.....
17-20W-21DC	2,165	.....	1,857	.....	1,795	1,740	.....	.....	1,665	.....	308	.....	370	425	.....	.....	500	.....	50	.....	.....	25	.....	.....	.....
18-17W-14AA	1,963	.....	1,810	.....	1,743	1,624	.....	.....	1,584	.....	153	.....	220	339	.....	.....	379	.....	80	.....	.....	15	.....	.....	.....

[1] Based on drillers' well log.

Table 4.--Selected formation surfaces and sandstone thicknesses--Continued

Well number	Altitude of land surface	Altitude of formation surface								Depth to surface of formation								Thickness of sandstone unit							
		Ku	Kd	Kkc	Kk	Kch	Ju	Pw	Pu	Ku	Kd	Kkc	Kk	Kch	Ju	Pw	Pu	Ku	Kd	Kkc	Kk	Kch	Ju	Pw	Pu
RUSH COUNTY--Continued																									
18-19W-20CCC	2,044	.....	1,844	.....	1,664	1,534	.....	.....	1,442	.....	200	.....	380	510	.....	.....	602	.....	65	.....	.....	30	.....	.....	.....
19-16W-08BCB	2,093	.....	1,828	.....	1,683	1,551	.....	.....	1,383	.....	265	.....	410	542	.....	.....	710	.....	30	.....	15	165	.....	.....	.....
19-17W-22AAA	2,141	.....	1,879	.....	1,731	1,651	.....	.....	1,575	.....	262	.....	410	490	.....	.....	566	.....	45	.....	.....	30	.....	.....	.....
19-17W-26DDD	2,057	.....	1,865	.....	1,747	1,667	.....	.....	1,585	.....	192	.....	310	390	.....	.....	472	.....	45	.....	.....	25	.....	.....	.....
SCOTT COUNTY																									
16-34W-11DDB[1]	3,108	2,168	.....	.....	.....	.....	1,703	.....	1,528	940	.....	.....	.....	.....	1,405	.....	1,580	.....	.....	.....	.....	.....	.....	.....	.....
16-34W-25CB	3,103	.....	2,161	.....	1,913	1,800	1,703	.....	.....	.....	942	.....	1,190	1,303	1,400	.....	.....	.....	40	.....	.....	20	.....	.....	.....
16-34W-25CB2	3,107	2,162	.....	.....	.....	.....	1,717	.....	1,470	945	.....	.....	.....	.....	1,390	.....	1,637	.....	.....	.....	.....	.....	.....	.....	.....
17-31W-19CBB	2,960	.....	1,970	.....	1,660	1,557	1,460	.....	1,280	.....	990	.....	1,300	1,403	1,500	.....	1,680	.....	30	.....	.....	40	.....	.....	.....
17-32W-13DB	2,962	.....	1,882	.....	1,642	1,567	1,432	.....	1,337	.....	1,080	.....	1,320	1,395	1,530	.....	1,625	.....	60	.....	.....	50	.....	.....	.....
17-33W-21AC	2,963	.....	2,135	.....	1,885	1,763	1,685	.....	1,533	.....	828	.....	1,078	1,200	1,278	.....	1,430	.....	50	.....	.....	25	30	.....	+20
18-31W-33DD	2,942	.....	1,997	.....	1,732	1,582	1,492	.....	1,349	.....	945	.....	1,210	1,360	1,450	.....	1,593	.....	50	.....	.....	35	.....	.....	.....
18-32W-23CAA	2,971	.....	1,976	.....	1,713	1,586	.....	.....	1,491	.....	995	.....	1,258	1,385	.....	.....	1,480	.....	80	.....	.....	55	.....	.....	.....
18-34W-21BDD	3,136	2,306	.....	.....	.....	.....	.....	.....	1,806	830	.....	.....	.....	.....	.....	.....	1,330	.....	.....	.....	.....	.....	.....	.....	.....
18-34W-35BA	3,105	.....	2,300	.....	2,070	1,965	1,837	.....	1,745	.....	805	.....	1,035	1,140	1,268	.....	1,360	.....	100	.....	.....	30	.....	.....	.....
18-34W-35BA2	3,107	2,302	.....	.....	.....	.....	.....	.....	.....	805	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
19-31W-10CAA	2,944	.....	1,999	.....	1,754	1,576	1,504	.....	1,369	.....	945	.....	1,190	1,368	1,440	.....	1,575	.....	70	.....	.....	60	.....	.....	.....
19-32W-14DB	2,985	2,295	.....	.....	.....	.....	.....	.....	.....	690	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
19-32W-14DDD	2,979	1,809	.....	.....	.....	.....	.....	.....	1,489	1,170	.....	.....	.....	.....	.....	.....	1,490	.....	.....	.....	.....	.....	.....	.....	.....
19-32W-22DB	3,010	.....	1,955	.....	1,698	1,578	1,491	.....	1,410	.....	1,055	.....	1,312	1,432	1,519	.....	1,600	.....	70	.....	.....	25	15	.....	.....
19-33W-20DB	2,985	2,295	.....	.....	.....	.....	.....	.....	1,765	690	.....	.....	.....	.....	.....	.....	1,220	.....	.....	.....	.....	.....	.....	.....	.....
19-33W-26CD	2,968	.....	2,228	.....	1,953	1,850	1,758	.....	1,668	.....	740	.....	1,015	1,118	1,210	.....	1,300	.....	60	.....	.....	35	.....	.....	.....
19-34W-35CC	3,023	.....	2,336	.....	2,088	1,984	1,898	.....	1,857	.....	678	.....	935	1,039	1,125	.....	1,166	.....	45	.....	.....	30	.....	.....	.....
20-33W-26DC	2,931	.....	2,249	.....	2,021	1,879	1,798	.....	1,731	.....	682	.....	910	1,052	1,133	.....	1,200	.....	60	.....	.....	25	5	.....	.....
20-34W-17AC	3,106	.....	2,405	.....	2,161	2,046	1,941	.....	1,876	.....	701	.....	945	1,060	1,165	.....	1,230	.....	75	.....	.....	35	5	.....	.....
SEWARD COUNTY																									
31-32W-12CAA	2,832	.....	.....	.....	.....	.....	.....	.....	2,310	.....	.....	.....	.....	.....	.....	.....	522	30	.....	.....	.....	.....	.....	.....	.....
31-33W-13C	2,873	.....	.....	.....	.....	.....	.....	.....	2,345	.....	.....	.....	.....	.....	.....	.....	528	.....	.....	.....	.....	.....	.....	.....	.....
33-31W-06DB	2,771	.....	.....	.....	.....	.....	.....	.....	2,305	.....	.....	.....	.....	.....	.....	.....	466	.....	.....	.....	.....	.....	.....	.....	.....
33-32W-07CA	2,619	.....	.....	.....	.....	.....	.....	.....	2,269	.....	.....	.....	.....	.....	.....	.....	350	.....	.....	.....	.....	.....	.....	.....	.....
33-33W-05BDD[1]	2,840	.....	.....	.....	.....	.....	.....	.....	2,345	.....	.....	.....	.....	.....	.....	.....	495	.....	.....	.....	.....	.....	.....	.....	.....
33-33W-07AA	2,820	.....	.....	.....	.....	.....	.....	.....	2,300	.....	.....	.....	.....	.....	.....	.....	520	.....	.....	.....	.....	.....	.....	.....	.....
34-32W-18BC	2,810	.....	.....	.....	.....	.....	.....	.....	2,305	.....	.....	.....	.....	.....	.....	.....	505	.....	.....	.....	.....	.....	.....	.....	.....
34-34W-17DDD[1]	2,945	.....	.....	.....	.....	2,520	2,435	.....	2,255	.....	.....	.....	.....	425	510	.....	690	.....	.....	.....	.....	.....	147	.....	.....
35-31W-15BA	2,689	.....	.....	.....	.....	.....	.....	.....	2,179	.....	.....	.....	.....	.....	.....	.....	510	.....	.....	.....	.....	.....	.....	.....	.....
35-32W-07AC	2,760	.....	.....	.....	.....	.....	.....	.....	2,275	.....	.....	.....	.....	.....	.....	.....	485	.....	.....	.....	.....	.....	.....	.....	.....

[1] Based on drillers' well log.

Table 4.--Selected formation surfaces and sandstone thicknesses--Continued

Well number	Altitude of land surface	Altitude of formation surface								Depth to surface of formation								Thickness of sandstone unit							
		Ku	Kd	Kkc	Kk	Kch	Ju	Pw	Pu	Ku	Kd	Kkc	Kk	Kch	Ju	Pw	Pu	Ku	Kd	Kkc	Kk	Kch	Ju	Pw	Pu
STANTON COUNTY																									
27-40W-10ACC	3,221	.....	3,170	.....	2,875	2,751	2,666	.....	2,531	.....	51	.....	346	470	555	.....	690	.....	35	.....	15	45	120	.....	.....
28-40W-10CAAA	3,250	.....	3,105	.....	2,940	2,838	2,740	.....	2,650	.....	145	.....	310	412	510	.....	600	.....	30	.....	.....	30	30	.....	.....
29-42W-03CD	3,448	.....	.....	.....	3,230	3,150	3,063	.....	2,828	.....	.....	.....	218	298	385	.....	620	.....	60	.....	.....	20	50	.....	.....
30-39W-26ACC	3,138	.....	.....	.....	2,938	2,883	2,763	.....	2,598	.....	.....	.....	200	255	375	.....	540	.....	.....	.....	.....	25	50	.....	.....
30-42W-29AA[1]	3,560	.....	3,480	.....	.....	.....	3,180	.....	3,020	.....	80	.....	.....	.....	380	.....	540	.....	45	.....	.....	125	160	.....	.....
STEVENS COUNTY																									
31-35W-25A	2,920	.....	.....	.....	.....	.....	.....	.....	2,408	.....	.....	.....	.....	.....	.....	.....	512	.....	.....	.....	.....	.....	.....	.....	.....
31-36W-04AC	3,028	.....	.....	.....	.....	.....	2,688	.....	2,500	.....	.....	.....	.....	.....	340	.....	528	.....	.....	.....	.....	.....	.....	.....	.....
31-36W-25DCB[1]	3,053	.....	.....	.....	.....	.....	.....	.....	2,478	.....	.....	.....	.....	.....	.....	.....	575	.....	.....	.....	.....	.....	.....	.....	.....
31-37W-29BB	3,128	.....	.....	.....	.....	.....	2,640	.....	2,450	.....	.....	.....	.....	.....	488	.....	678	.....	.....	.....	.....	.....	.....	.....	.....
31-38W-12DBA	3,128	.....	.....	.....	.....	.....	2,670	.....	2,598	.....	.....	.....	.....	.....	458	.....	530	.....	.....	.....	.....	.....	20	.....	.....
31-39W-23D	3,179	.....	.....	.....	.....	.....	2,739	.....	2,616	.....	.....	.....	.....	.....	440	.....	563	.....	.....	.....	.....	.....	15	.....	.....
32-35W-22BDDD	2,992	.....	.....	.....	.....	.....	.....	.....	2,454	.....	.....	.....	.....	.....	.....	.....	538	.....	.....	.....	.....	.....	.....	.....	.....
32-36W-22CDD	3,056	.....	.....	.....	.....	.....	.....	.....	2,686	.....	.....	.....	.....	.....	.....	.....	370	.....	.....	.....	.....	.....	.....	.....	.....
32-37W-21B	3,149	.....	.....	.....	.....	.....	.....	.....	2,539	.....	.....	.....	.....	.....	.....	.....	610	.....	.....	.....	.....	.....	.....	.....	.....
34-39W-14DDD[1]	3,286	.....	.....	.....	.....	.....	.....	.....	2,789	.....	.....	.....	.....	.....	.....	.....	497	.....	.....	.....	.....	.....	.....	.....	.....
35-37W-04A	3,139	.....	.....	.....	.....	.....	.....	.....	2,481	.....	.....	.....	.....	.....	.....	.....	658	.....	.....	.....	.....	.....	.....	.....	.....
35-38W-09C	3,221	.....	.....	.....	.....	.....	.....	.....	2,741	.....	.....	.....	.....	.....	.....	.....	480	.....	.....	.....	.....	.....	.....	.....	.....
TREGO COUNTY																									
15-21W-08DAA	2,248	.....	1,795	.....	1,593	1,428	.....	.....	1,328	.....	453	.....	708	782	.....	.....	853	.....	40	.....	.....	40	.....	.....	.....
15-22W-13BC	2,278	.....	1,796	.....	1,543	1,438	.....	.....	1,326	.....	482	.....	735	800	.....	.....	872	.....	45	.....	.....	55	.....	.....	.....
15-23W-26AC	2,330	.....	1,830	.....	1,650	1,505	.....	.....	1,402	.....	500	.....	680	825	.....	.....	928	.....	70	.....	20	60	.....	.....	.....
15-25W-18DC	2,437	.....	1,987	.....	1,642	1,487	.....	.....	1,397	.....	450	.....	795	950	.....	.....	1,040	.....	45	.....	5	45	.....	.....	.....
WALLACE COUNTY																									
13-39W-31AA	3,382	.....	2,036	.....	1,797	1,697	1,570	1,496	.....	.....	1,346	.....	1,585	1,685	1,812	1,886	.....	.....	50	.....	.....	20	.....	.....	.....
13-40W-13DA	3,410	.....	1,942	.....	1,700	1,583	1,465	.....	1,402	.....	1,468	.....	1,710	1,827	1,945	.....	2,008	.....	35	.....	.....	20	5	.....	.....
13-42W-19CAB	3,846	.....	2,216	.....	2,036	1,926	1,826	1,781	.....	.....	1,630	.....	1,810	1,920	2,020	2,065	.....	.....	30	.....	.....	10	.....	.....	.....
14-38W-04CCB	3,349	.....	2,124	.....	1,824	1,747	1,640	1,564	.....	.....	1,225	.....	1,525	1,602	1,709	1,785	.....	.....	140	.....	.....	.....	.....	.....	.....
14-39W-02AAC	3,369	.....	2,131	.....	1,849	1,767	1,674	1,576	.....	.....	1,238	.....	1,520	1,602	1,695	1,793	.....	.....	130	.....	.....	30	25	.....	.....

[1] Based on drillers' well log.

Table 4.--Selected formation surfaces and sandstone thicknesses--Continued

Well number	Altitude of land surface	Altitude of formation surface								Depth to surface of formation								Thickness of sandstone unit							
		Ku	Kd	Kkc	Kk	Kch	Ju	Pw	Pu	Ku	Kd	Kkc	Kk	Kch	Ju	Pw	Pu	Ku	Kd	Kkc	Kk	Kch	Ju	Pw	Pu
												WALLACE COUNTY--Continued													
14-40W-21BC	3,714	.....	2,210	.....	2,014	1,884	1,802	.....	1,734	.....	1,504	.....	1,700	1,830	1,912	.....	1,980	.....	45	.....	.....	35	10	.....	.....
14-41W-02DAC	3,625	.....	1,970	.....	1,780	1,665	1,570	1,485	.....	.....	1,655	.....	1,845	1,960	2,055	2,140	.....	.....	40	.....	.....	25	.....	.....	.....
14-42W-32AA	3,842	.....	2,247	.....	2,102	1,982	1,882	.....	1,815	.....	1,595	.....	1,740	1,860	1,960	.....	2,027	.....	40	.....	.....	40	15	.....	.....
15-39W-16CBB	3,617	.....	2,307	.....	2,087	1,992	1,922	.....	1,837	.....	1,310	.....	1,530	1,625	1,695	.....	1,780	.....	40	.....	.....	20	5	.....	.....
15-41W-27AA	3,738	.....	2,330	.....	2,128	2,018	1,928	.....	1,828	.....	1,408	.....	1,610	1,720	1,810	.....	1,910	.....	60	.....	.....	60	10	.....	.....
15-42W-24CDC	3,839	.....	2,389	.....	2,152	2,039	1,939	.....	1,839	.....	1,450	.....	1,687	1,800	1,900	.....	2,000	.....	70	.....	.....	50	20	.....	.....
												WICHITA COUNTY													
16-38W-32DB	3,460	.....	2,338	.....	2,110	1,990	1,905	.....	1,798	.....	1,122	.....	1,350	1,470	1,555	.....	1,662	.....	25	.....	.....	55	15	.....	.....
17-36W-29AA[1]	3,282	.....	.....	.....	.....	.....	1,972	.....	1,887	.....	.....	.....	.....	.....	1,310	.....	1,395	.....	.....	.....	.....	.....	.....	.....	.....
17-37W-12CCC	3,271	.....	2,295	.....	2,108	1,973	1,813	.....	1,691	.....	976	.....	1,163	1,298	1,458	.....	1,580	.....	80	.....	.....	50	20	.....	.....
17-38W-21BB	3,440	.....	2,380	.....	2,100	2,010	1,965	.....	1,845	.....	1,060	.....	1,340	1,430	1,475	.....	1,595	.....	70	.....	.....	25	15	.....	.....
18-39W-18ABB	3,218	.....	2,320	.....	2,098	1,983	1,898	.....	1,818	.....	898	.....	1,120	1,235	1,320	.....	1,400	.....	40	.....	.....	30	10	.....	.....
18-36W-25DD	3,225	2,390	.....	.....	.....	.....	1,955	.....	1,850	835	.....	.....	.....	.....	1,270	.....	1,375	.....	.....	.....	.....	.....	.....	.....	.....
18-36W-33DC	3,266	2,526	.....	.....	.....	.....	2,116	.....	2,015	740	.....	.....	.....	.....	1,150	.....	1,251	.....	.....	.....	.....	.....	.....	.....	.....
18-37W-24CCC[1]	3,306	.....	2,644	.....	2,447	2,424	.....	.....	.....	.....	662	.....	859	882	.....	.....	.....	.....	18	.....	.....	88	.....	.....	.....
19-38W-26BB	3,406	.....	2,616	.....	2,381	2,271	2,216	.....	2,158	.....	790	.....	1,025	1,135	1,190	.....	1,248	.....	70	.....	.....	25	25	.....	.....
19-38W-26BB2	3,406	2,621	.....	.....	.....	.....	.....	.....	.....	785	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
20-35W-11DC	3,108	.....	2,463	.....	2,218	2,103	2,008	.....	1,946	.....	645	.....	890	1,005	1,100	.....	1,162	.....	100	.....	.....	30	20	.....	.....
20-35W-36BA	3,142	.....	2,507	.....	2,262	2,142	2,049	.....	1,974	.....	635	.....	880	1,000	1,092	.....	1,168	.....	50	.....	.....	45	10	.....	.....
20-36W-22ABB	3,231	.....	2,643	.....	2,433	2,269	2,201	.....	2,110	.....	588	.....	798	962	1,030	.....	1,121	.....	75	.....	.....	25	5	.....	.....
20-38W-12CC	3,381	.....	2,681	.....	2,431	2,316	2,261	.....	2,161	.....	700	.....	950	1,065	1,120	.....	1,220	.....	60	.....	.....	20	10	.....	.....

[1] Based on drillers' well log.

Table 5.--Chemical analyses of water from selected wells

[Analyses by Kansas Department of Health and Environment, except as indicated. Dissolved constituents and hardness given in milligrams per liter (mg/L) or micrograms per liter (ug/L). Depth of well given in feet below land surface. Geologic source--KCC, Codell Sandstone Member of Carlile Shale; KGH, Greenhorn Limestone; KU, undifferentiated Lower Cretaceous rocks; KD, Dakota Formation; KCH, Cheyenne Sandstone; JU, undifferentiated Jurassic rocks; PU, undifferentiated Permian rocks; and PB, Big Basin Formation. SAR, sodium adsorption ratio.]

Well number	Depth (feet)	Geologic source	Date of collection	Temperature (°C)	Dissolved solids (evaporated at 180°C)	Silica (SiO2) mg/L	Iron (Fe) ug/L	Manganese (Mn) ug/L	Calcium (Ca) mg/L	Magnesium (Mg) mg/L	Sodium (Na) mg/L	Potassium (K) mg/L	Carbonate (CO3) mg/L	Bicarbonate (HCO3) mg/L	Sulfate (SO4) mg/L	Chloride (CL) mg/L	Fluoride (F) mg/L	Nitrate (NO3) mg/L	Hardness as CACO3 mg/L		SAR	Specific conductance (micromhos at 25°C	pH
																			Total (Ca, Mg)	Noncarbonate			
EDWARDS COUNTY																							
23-19W-09CCC	67	KD	8-18-45	14.5	666	8.3	....	...	72	40	98	....	0	262	294	21	1.8	1.8	344	129	2.3	....	...
23-20W-16DDD	124	KD	8-18-45	15	415	9	220	...	42	24	79	....	0	298	88	22	2.4	1.5	415	0	2.4	....	...
24-20W-09DCD2	556	KCH	9-27-79	16	734	16	....	...	8	2.9	240	27	0	450	29	190	...	....	32	0	18	1,350	8
ELLIS COUNTY																							
15-18W-33BAA	154	KD	7-13-78	21	...	9.2	60	40	30	120	740	13	0	310	270	850	4.4	2.7	120	0	14	3,200	7.7
FINNEY COUNTY																							
21-27W-16BB	640	KU	4-19-62	....	594	8	130	...	18	7	190	9	0	254	126	106	2.6	2.2	74	0	9.6	990	...
22-27W-14BD	485	KD	7-15-70	18	508	6.1	60	20	11	1.1	176	5.4	0	244	106	77	2.3	1.8	32	0	14	820	7.8
23-27W-04AB	400	KU	5-05-64	19	765	8	240	0	6.4	2	271	8.7	0	346	209	81	6.5	2.4	24	0	24	1,270	7.9
23-29W-12CCC	450	KD	5-07-70	16.5	406	7.2	450	0	8	2	140	5.4	0	249	80	29	2.4	0.9	28	0	11	670	8.1
24-33W-19DBD[1]	700	KD	2-02-77	....	252	14	150	50	43	12	43	2.8	..	...	81	8.8	...	0.02	...	...	....	.....	8.5
FORD COUNTY																							
25-21W-35AB	155	KD	7-18-39	18.5	289	....	190	...	44	24	35	....	0	283	22	15	0.2	4.9	209	0	1.1	.....	...
25-23W-25CCC	...	KD	7-31-73	....	356	43	30	0	35	19	59	5.2	0	266	43	17	2	2	166	0	2	540	7.3
26-21W-11CCB	...	KD	7-18-73	....	580	30	400	0	123	25	35	3.2	0	327	54	95	0.5	32	410	1,420	0.8	940	7.3
26-22W-06CCA	...	KD	8-23-72	16.5	360	37	50	0	30	15	72	5.2	0	261	53	17	2	2.7	136	0	2.7	550	7.8
26-22W-24AAA	...	KD	8-14-73	....	410	26	60	0	32	11	100	3.8	0	259	70	42	1.1	0.5	125	0	3.9	660	7.3
26-23W-15ADA	...	KD	7-31-73	....	350	37	20	0	30	17	67	4.5	0	256	55	15	2	1.6	145	0	2.4	540	7.4
27-21W-30DDD	...	KD	7-12-73	....	974	31	40	0	144	30	132	4	0	334	348	68	0.8	41	483	209	2.6	1,380	7.4
27-22W-19CCC	...	KD	7-18-73	....	320	45	930	140	75	8	16	3	0	249	11	16	.4	24	220	16	0.5	480	7.5
27-23W-05CCC	88	KGH	7-18-39	15.5	358	....	470	...	87	20	15	....	0	287	9.1	30	.3	53	300	65	0.4	.....	...
27-23W-24BCB	220	KD	7-18-73	....	324	27	9,300	190	50	15	40	4.2	0	239	43	25	.4	6.8	186	0	1.3	520	7.3
GRANT COUNTY																							
28-38W-07AB	610	KCH	7-14-62	20	578	30	30	0	45	20	112	5.6	0	186	250	15	.9	4.7	195	43	3.5	830	7.5

[1] Analyses by Burns and McDonnell, Kansas City, Mo.

Table 5.--Chemical analyses of water from selected wells--Continued

Well number	Depth (feet)	Geologic source	Date of collection	Temperature (°C)	Dissolved solids (evaporated at 180°C)	Silica (SiO2) mg/L	Iron (Fe) ug/L	Manganese (Mn) ug/L	Calcium (Ca) mg/L	Magnesium (Mg) mg/L	Sodium (Na) mg/L	Potassium (K) mg/L	Carbonate (CO3) mg/L	Bicarbonate (HCO3) mg/L	Sulfate (SO4) mg/L	Chloride (CL) mg/L	Fluoride (F) mg/L	Nitrate (NO3) mg/L	Hardness as CACO3 mg/L Total (Ca, Mg)	Hardness as CACO3 mg/L Noncarbonate	SAR	Specific conductance (micromhos at 25°C	pH
GRAY COUNTY																								
28-27W-24BAA	420	KD	12-07-40	15	433	....	3,900	...	8	4.7	150	....	0	266	119	9.5	4.2	0.9	40	0	10	.....	...
28-28W-12A	320	KD	10-19-24	16.5	380	14	600	...	26	13	92	....	0	212	123	11	...	0.2	118	....	3.7	.....	...
GREELEY COUNTY																								
17-42W-36BBB	1,140	KD	12-17-48	....	1,070	8.4	1,800	...	18	8.8	377	....	0	466	212	217	3	1.1	81	0	18	.....	...
HAMILTON COUNTY																								
21-40W-28DCC	784	KD	6-16-64	21.5	755	9	240	0	9.6	7.8	255	7.7	0	395	222	46	2.8	0.9	56	0	15	1,200	8.2
21-40W-31CCC	902	KD	8-31-78	20	428	3.3	....	...	6.4	2	150	5	7	270	110	13	2.1	0.4	24	0	13	710	8.4
22-43W-04DDD	516	KD	11-26-40	17	531	....	440	...	20	9.7	161	....	0	243	186	29	1.3	1.6	91	0	7.4	.....	...
23-40W-32CCC	260	KD	11-26-40	15.5	844	....	140	...	52	37	187	....	0	238	382	63	1.8	2.2	282	87	4.9	.....	...
23-43W-23BA	156	KD	11-26-40	14	396	....	900	...	52	18	64	....	0	206	137	19	0.9	1.3	205	36	2	.....	...
24-39W-25DB	65	KD	11-25-40	14	332	....	2,100	...	60	15	34	....	0	161	124	15	0.7	0.4	215	83	1	.....	...
24-42W-34DD	225	KD	11-25-40	16	357	....	4,600	...	42	19	58	....	0	203	122	9	1.1	0.2	192	26	1.9	.....	...
25-39W-22DCC	270	KD	5-01-64	16.5	373	9.5	700	80	44	29	49	6.9	0	307	67	10	2.6	4	229	0	1.4	610	7.5
25-42W-24AC	380	KD	5-01-64	16	424	7.5	4,500	80	54	22	56	8.3	0	217	154	13	1.2	1	225	47	1.6	660	7.6
26-41W-24CDC	265	KD	5-04-64	16	741	17	50	0	93	47	90	7.7	0	376	272	24	1.4	4	425	117	1.9	1,080	7.4
HODGEMAN COUNTY																								
21-21W-31DDA	....	KD	6-16-72	15.5	1,420	8.4	3,100	140	27	14	480	19	0	271	190	540	3	5.3	125	0	19	2,440	8.0
21-22W-27CBC	285	KD	8-12-46	16	622	8	320	...	50	16	156	....	0	309	107	67	2	1.5	191	0	4.9	.....	...
21-24W-27BCC	....	KD	5-21-72	18	502	7.6	130	0	6.4	4.9	175	6.8	0	237	112	75	2.6	0.2	36	0	13	850	8.1
21-26W-16BBA	368	KD	5-15-69	15.5	648	6.8	620	0	6.4	2	232	7	0	278	152	96	4	1.7	24	0	21	1,060	7.9
22-24W-34CDC	416	KD	8-25-78	20	509	2.3	40	10	19	8.9	160	8	0	280	120	55	2.8	0.4	84	0	7.6	890	7.9
22-26W-23DCC	....	KD	5-21-72	16.5	1,220	7.9	280	0	4.8	2.9	447	11	0	393	244	291	5.6	0.7	24	0	40	2,020	8.2
23-21W-02BBB	207	KD	6-11-47	15	337	6.4	5,200	...	47	27	44	....	0	303	44	17	1.4	1.2	228	0	1.3	.....	...
23-22W-29DDD	....	KD	5-22-72	16.5	1,400	7	740	0	35	19	460	18	0	332	107	560	3	1.1	166	0	16	2,450	7.8
23-23W-06CAB	385	KD	6-19-72	18.5	974	11	1,200	200	17	13	326	14	0	268	115	340	2.6	0	96	0	14	1,730	7.9
23-25W-11ADA	200	KD	5-15-69	16.5	447	5.8	420	0	18	9.5	132	8.2	0	254	114	33	2.8	0.7	84	0	6.3	720	7.8
23-26W-07CCC	490	KD	5-27-68	....	322	25	150	0	38	19	35	5.5	10	149	57	39	0.8	4.2	173	35	1.2	500	8.4
24-22W-07ACA	....	KD	7-18-73	....	560	42	50	0	118	15	38	4.2	0	288	120	50	0.3	18	356	120	.9	830	7.3
24-23W-34AAD	120	KD	10-28-77	16	423	32	70	140	57	32	43	7	0	320	67	30	2.6	0.9	270	20	1.1	780	7.2
KEARNY COUNTY																								
22-37W-10DD	800	KU	4-26-63	18	783	9	170	0	40	15	198	13	0	202	365	36	2.4	6.3	162	0	6.8	1,210	...
26-38W-06BCC	300	KU	4-26-63	18	298	18	120	0	29	26	27	5.5	22	200	35	15	2.4	5.3	180	0	1.3	480	...

Table 5.--Chemical analyses of water from selected wells--Continued

Well number	Depth (feet)	Geologic source	Date of collection	Temperature (°C)	Dissolved solids (evaporated at 180°C)	Silica (SiO2) mg/L	Iron (Fe) ug/L	Manganese (Mn) ug/L	Calcium (Ca) mg/L	Magnesium (Mg) mg/L	Sodium (Na) mg/L	Potassium (K) mg/L	Carbonate (CO3) mg/L	Bicarbonate (HCO3) mg/L	Sulfate (SO4) mg/L	Chloride (CL) mg/L	Fluoride (F) mg/L	Nitrate (NO3) mg/L	Hardness as CACO3 mg/L Total (Ca, Mg)	Hardness as CACO3 mg/L Noncarbonate	SAR	Specific conductance (micromhos at 25°C	pH
LANE COUNTY																								
16-28W-04BCD	673	KD	9-14-48	18.5	772	7.2	1,700	...	4.8	2.8	303	....	12	483	77	120	6	1.1	24	0	27	.....	...
16-29W-11CCC	749	KD	9-15-48	18	932	9.2	480	...	5.2	3	378	....	0	734	39	114	8	0.7	26	0	33	.....	...
18-29W-15D	859	KD	2-11-61	....	642	25	150	0	19	11	200	....	0	324	160	56	4.5	6.6	92	0	9.1	1,050	...
19-30W-30ADD	1,038	KD	9-16-48	20.5	669	8	4,200	...	11	5.2	238	....	14	331	154	67	5	3.5	49	0	15	.....	...
20-27W-07AAB	748	KD	9-16-48	19.5	1,170	8.6	3,400	...	4.8	2.6	447	....	16	470	207	248	6	2.6	22	0	41	.....	...
LOGAN COUNTY																								
14-33W-22CDD	895	KD	3-06-70	....	930	9.6	140	0	4	1	350	4.8	29	446	234	70	4.4	2.2	14	0	41	1,380	8.4
14-35W-17BCA	1,335	KD	10-19-70	....	826	....	....	...	4.8	1	324	8.8	24	595	88	69	6	0.2	16	0	35	1,340	8.3
14-36W-14CAA	1,135	KD	5-15-68	....	1,270	9.2	2,100	140	5.6	2	510	8.3	43	791	2.5	289	7.5	0.4	22	0	47	2,180	8.4
14-36W-20CCB	1,223	KD	3-06-70	7	982	12	70	20	4.8	1	391	48	31	703	28	137	4.8	2	16	0	42	1,530	8.3
15-35W-06BAC	1,145	KD	4-02-68	16.5	771	9.2	230	0	4	1	305	4.6	29	559	63	73	4.4	2.2	14	0	35	1,250	8.4
MEADE COUNTY																								
30-26W-01BCD	465	PU	9-28-79	16.5	89	14	....	...	9.6	1	14	4	0	61	9	7	...	0.1	28	0	1.1	115	7.1
30-26W-01BCD2	290	KD	9-28-79	15.5	265	30	....	...	24	2	47	11	0	51	58	55	...	2.9	68	26	2.5	510	10.2
32-29W-27AAB	583	PB	12-17-74	....	1,960	8.3	860	220	320	120	87	4.8	0	66	1,400	16	0.9	1.4	1,300	54	1.1	2,300	7.4
34-26W-24CB	109	PU	8-19-40	16	300	....	310	...	51	32	15	....	0	244	51	22	1.8	4.4	259	59	0.4	.....	...
34-30W-27BBB	720	PU	11-21-74	....	33,800	10	880	0	1,500	470	10,800	38	0	78	2,800	18,200	1	0.3	5,800	5,600	62	57,300	7.6
MORTON COUNTY																								
31-41W-08DD	145	KD	10-12-39	15	201	....	100	...	45	16	9.2	....	0	207	14	4.5	0.6	8	179	9	0.3	.....	...
31-42W-03DAA	216	KD	9-25-39	16.7	601	....	2,700	...	37	34	113	....	0	298	196	17	2.3	....	237	0	3.2	.....	...
31-43W-22BC	51	KD	9-25-39	15	296	....	100	...	42	25	33	....	0	232	63	9	2.2	6.2	208	18	1	.....	...
32-41W-07BCC	94	KD	10-13-39	15	439	....	710	...	59	34	48	....	0	246	146	12	3.5	13	288	86	1.2	.....	...
32-41W-16CBC	590	PU	9-18-39	18.9	2,630	....	100	...	596	109	36	....	0	149	1,800	8.5	2.6	4.4	1,940	1,810	0.4	.....	...
32-41W-28DB	600	PU	4-09-62	18.9	2,670	25	30	0	597	97	58	5	0	163	1,780	10	2.3	8	1,890	1,750	0.6	2,920	...
32-41W-35AB	136	KD	10-13-39	15.6	472	....	1,300	...	44	48	51	....	0	217	176	28	3.4	12	310	132	1.3	.....	...
32-42W-29BA	96	KD	10-12-59	15.6	352	....	410	...	32	34	49	....	0	251	85	9	2.5	15	220	14	1.5	.....	...
33-41W-23ADB	64	JU	10-12-39	15	517	....	840	...	64	40	63	....	0	301	177	12	2.4	7.5	326	79	1.5	.....	...
34-42W-05BD	75	PU	4-04-62	....	2,230	25	20	0	450	95	83	5.2	..	159	1,480	11	2.2	8	1,510	1,380	0.9	2,520	...
34-43W-08CD	153	JU	9-18-39	16.7	296	....	790	...	29	31	38	....	0	246	46	10	2.8	15	202	0	1.2	.....	...
NESS COUNTY																								
16-26W-23C	800	KD	6-23-36	....	969	10	150	...	7.2	4.4	364	....	0	363	160	252	2.8	3.5	36	.....	26	.....	...
19-23W-01CCB	450	KD	7-17-75	19	684	8.6	30	0	9.6	3.9	240	5.8	0	244	132	161	2.4	0.9	40	0	17	1,220	7.7
			9-08-78	19	677	3.8	....	...	8	2	240	6	0	250	130	160	3.4	.4	28	0	20	1,280	8.0
19-23W-05D[2]	380	KD	1-13-71	....	538	0	130	...	....	3.4	200	....	..	237	124	140	...	.8	....	0	....	1,000	...
19-23W-21DA	282	KD	8-25-75	....	1,420	8.1	110	200	16	5.8	510	9.8	0	390	240	30	5.2	.1	64	.....	28	2,470	8.0

[2] Analysis by Layne-Western, Garden City, Kans.

Table 5.--Chemical analyses of water from selected wells--Continued

Well number	Depth (feet)	Geologic source	Date of collection	Temperature (°C)	Dissolved solids (evaporated at 180°C)	Silica (SiO2) mg/L	Iron (Fe) ug/L	Manganese (Mn) ug/L	Calcium (Ca) mg/L	Magnesium (Mg) mg/L	Sodium (Na) mg/L	Potassium (K) mg/L	Carbonate (CO3) mg/L	Bicarbonate (HCO3) mg/L	Sulfate (SO4) mg/L	Chloride (CL) mg/L	Fluoride (F) mg/L	Nitrate (NO3) mg/L	Hardness as CACO3 mg/L Total (Ca, Mg)	Hardness as CACO3 mg/L Noncarbonate	SAR	Specific conductance (micromhos at 25°C	pH
					NESS COUNTY--Continued																		
20-22W-09DDC	27	KGH	6-10-47	14.5	396	18	80	...	109	8.6	12	....	0	279	15	16	0.6	80	308	79	0.3	.....	...
20-23W-36BBB	42	KGH	6-10-47	15	341	16	50	...	92	8.8	17	....	0	287	26	13	0.4	27	266	30	0.5	.....	...
					PAWNEE COUNTY																		
20-17W-22DCC	480	PU	8-17-79	18.5	47,400	11	....	...	776	838	16,200	64	0	327	3,360	26,200	3.2	0.1	4,560	268	104	60,000	7.4
20-17W-22DCC2	410	KCH	8-17-79	14	51,000	9	....	...	796	709	17,400	60	0	349	3,700	28,200	3.2	.1	4,900	286	108	60,000	7.4
20-17W-22DCC3	110	KD	9-26-79	14.5	685	7	....	...	61	23	150	7	0	290	145	145	...	.1	250	11	4.2	1,850	7.7
22-19W-07AAA2	435	PU	9-27-79	15.5	417	26	....	...	85	15	44	6	0	370	21	40	...	.1	270	0	1.2	725	7.9
					RUSH COUNTY																		
16-16W-32CCB	266	KD	5-12-60	16	1,440	9.5	210	0	19	13	510	....	..	332	210	510	3.3	3.4	100	0	22	2,650	...
16-18W-27CDD	209	KD	5-12-60	14	1,870	8	420	0	19	11	680	....	..	356	270	700	4.4	3.8	92	0	31	3,430	...
16-19W-17BAB	400	KD	5-13-60	18.5	1,030	8	390	0	8.3	16	360	....	..	398	180	240	5.6	2.9	86	0	16	1,800	...
16-20W-05BBD	530	KD	5-13-60	18	1,300	8.5	70	0	8.3	9.6	480	....	..	431	220	360	5.2	3.8	60	0	28	2,320	...
17-17W-06ABBA	510	KCH	9-27-79	14.5	192	8	....	...	42	1.8	16	9	0	120	17	28	...	2.2	110	12	0.7	325	7.5
17-17W-28DCD	230	KD	5-12-60	15.5	1,790	7	160	0	18	22	640	....	..	321	240	700	3.6	4.9	140	0	24	3,320	...
17-18W-28AAD	335	KD	5-12-60	16.5	3,660	8	300	0	38	29	1,300	....	..	249	290	1,800	3.2	7.1	210	110	38	6,740	...
17-20W-29CDD	285	KD	5-13-60	17	1,200	10	100	0	49	36	340	....	..	298	360	260	2.8	3.8	270	26	9	1,900	...
17-20W-30CCB	325	KD	7-06-78	22	.....	.....	....	...	66	52	430	14	0	270	650	.....	...	....	380	160	9.6	2,340	6.8
18-16W-16BBB	168	KD	5-17-60	14.5	773	8	360	0	9.1	15	270	....	..	554	140	46	4.5	1.3	84	0	13	1,310	...
18-20W-36ABB	214	KD	10-11-60	14	1,220	8	550	0	13	4.8	450	....	..	361	220	340	5.6	1	52	0	27	2,220	...
19-17W-27ADD	185	KD	5-17-60	15.5	309	11	60	0	37	17	59	....	..	292	19	20	0.6	1.9	160	0	2	570	...
19-18W-03ACA	390	KD	5-16-60	16	448	8	710	0	20	13	140	....	..	299	28	90	0.9	1.7	100	0	6	800	...
19-19W-24CCB	290	KD	5-16-60	16	591	11	710	0	19	8.9	190	....	..	278	120	93	3	2.7	84	0	9	1,050	...
19-20W-04BBB	284	KD	10-11-60	13.5	861	7	150	0	10	5.1	310	....	..	327	200	160	5.4	0.8	46	0	20	1,550	...
19-20W-26BAA	410	KD	5-13-60	19	745	9.5	3,000	0	6.6	7.7	260	....	..	317	170	120	4.9	3.6	48	0	16	1,190	...
					SEWARD COUNTY																		
33-32W-28CDD	465	PB	10-10-74	18	33,800	14	1,800	0	3,600	1,800	6,100	680	0	156	1,260	20,300	0.1	0.2	128	16,252	21	.....	7.9
34-31W-30BBB	705	PB	10-18-74	17.2	19,500	33	1,000	0	1,270	640	5,000	320	0	144	1,060	11,100	.4	1	118	5,682	2.8	.....	7.7
34-34W-17DDD	546	JU	10-16-74	16.7	423	29	1,300	0	70	23	32	3.2	0	188	143	15	.5	15	154	115	0.9	660	8.4
					STANTON COUNTY																		
27-39W-13ACB	508	KD	8-10-78	20	577	13	10	0	94	34	48	5	0	260	230	21	1.2	6.6	370	160	1.1	870	7.4
27-40W-01CDA	150	KD	10-21-39	15	232	....	40	...	54	13	16	....	0	215	26	6	1.1	8.8	188	12	0.5	.....	...
28-43W-27DCC	213	KD	10-20-39	16.5	297	....	....	...	35	19	42	....	0	183	74	12	2	8	189	39	1.4	.....	...
29-42W-24CCC	515	KD	9-14-78	17	355	9.2	10	0	53	22	37	5	0	200	93	18	1.6	7.5	220	41	1.1	570	7.5
29-43W-14CCB	108	KD	10-24-39	14.5	439	....	240	...	74	21	50	....	0	220	158	18	1.2	6.6	272	92	1.3	.....	...

Table 5.--Chemical analyses of water from selected wells--Continued

Well number	Depth (feet)	Geologic source	Date of collection	Temperature (°C)	Dissolved solids (evaporated at 180°C)	Silica (SiO2) mg/L	Iron (Fe) ug/L	Manganese (Mn) ug/L	Calcium (Ca) mg/L	Magnesium (Mg) mg/L	Sodium (Na) mg/L	Potassium (K) mg/L	Carbonate (CO3) mg/L	Bicarbonate (HCO3) mg/L	Sulfate (SO4) mg/L	Chloride (CL) mg/L	Fluoride (F) mg/L	Nitrate (NO3) mg/L	Hardness as CaCO3 mg/L Total (Ca, Mg)	Hardness as CaCO3 mg/L Noncarbonate	SAR	Specific conductance (micromhos at 25°C	pH
STANTON COUNTY--Continued																							
30-41W-33DBB	189	KD	10-24-39	15.5	281	.....	900	...	32	23	39	....	0	204	60	9	2.8	12	176	9	1.3	.....	...
30-42W-04CCD	178	KD	10-21-39	16	279	.....	680	...	46	21	26	....	0	207	66	7	1.8	6.6	203	33	0.8	.....	...
30-43W-28DD	131	KD	5-23-60	15.5	658	19	20	0	83	47	69	....	0	234	252	57	1.4	15	400	208	1.5	1,070	...
TREGO COUNTY																							
15-21W-25DDD	555	KD	6-14-60	....	1,310	9.5	490	0	8.3	12	476	....	0	415	220	368	5.2	3.6	70	0	25	2,280	...
15-21W-36DDD	45	KCC	6-14-60	....	434	21	110	0	110	16	19	....	0	300	33	50	0.3	37	340	94	0.5	790	...
15-22W-35ABA	660	KD	9-29-50	15	275	35	1,300	0	68	9.4	13	....	0	246	13	12	.5	2.9	208	6	.4	470	...
15-23W-04BCB	18	KCC	10-12-59	15.5	564	16	70	...	121	24	28	....	0	215	239	19	.5	10	400	224	.6	860	...
15-24W-15CCC	618	KD	9-09-59	19.5	1,090	8	620	...	9.1	7.7	398	....	0	312	174	336	3.2	.4	54	0	23	1,930	...
15-24W-35CCC	60	KCC	9-29-59	12	488	25	890	...	102	25	23	....	0	246	47	64	0.7	80	358	156	0.5	915	...
15-25W-35CDC	93	KCC	10-13-59	14	264	25	30	...	62	14	9.2	....	0	231	12	11	0.4	17	212	22	0.3	465	...
WALLACE COUNTY																							
14-38W-12CDC		KD	6-22-72	....	1,290	12	360	0	4.8	1	525	6.8	14	930	0.8	265	7	.2	16.6	0	57	2,140	8.4
14-38W-24DAD		KD	6-22-72	....	1,020	8.4	180	0	1.6	0.5	415	4.6	29	744	22	159	5.2	1.5	6	0	73	1,670	8.7
WICHITA COUNTY																							
18-37W-24CCCA[3]	820 1,050	KD KCH	5-12-78	....	.....	13	170	100	5.3	2.6	365	5.8	14	350	500	63	3	....	24	....	184	1,790	8.4

[3] Analysis by Wilson Laboratories, Salina, Kans.

Table 6.--Water levels in observation wells

[Measurements made in wells constructed by the U.S. Geological Survey and drilled by the Kansas Geological Survey. Altitudes are given in feet above sea level. Depths of wells are given in feet; water levels to the nearest 0.1 foot above (+) or below (-) land surface; specific conductance in micromhos per centimeter at 25°C (micromhos); and flow in gallons per day (gal/d)]

EDWARDS COUNTY

24-20W-9DCD.--Mrs. L. J. Lanfenberg, artesian observation well in a sandstone in the Dakota Formation, diameter 2 inches, screened interval 128-132 feet, casing depth 136 feet. Measuring point--top of casing at land-surface altitude of 2,250 feet.

Date	Water level (ft)	Temperature (°C)	pH	Specific conductance (micromhos)	Flow (gal/d)
Aug. 17, 1978	- 52.7	....	....	....	....
Dec. 14	- 52.8	....	....	....	....
May 22, 1979	- 52.2	....	....	....	....
Sept. 12	- 52.1	....	....	....	....
Sept. 27	- 52.3	....	....	....	....

24-20W-9DCD2.--Mrs. L. J. Lanfenberg, artesian observation well in a sandstone in the Cheyenne Sandstone, diameter 2 inches, screened interval 535-539 feet, casing depth 556 feet. Measuring point--top of casing at land-surface altitude of 2,250 feet.

Date	Water level (ft)	Temperature (°C)	pH	Specific conductance (micromhos)	Flow (gal/d)
May 24, 1978	- 50.4	....	....	....	....
Dec. 14	- 50.4	....	....	....	....
May 22, 1979	- 49.9	....	....	....	....
Sept. 27	- 49.9	....	....	....	....

Table 6.--Water levels in observation wells--Continued

FORD COUNTY

28-22W-30BCCA.--Everette Copeland, artesian observation well in a siltstone in Permian rocks, diameter 2 inches, screened interval 517-520 feet, casing depth 525 feet. Measuring point--top of casing 0.5 foot above land-surface altitude of 2,490 feet.

Date	Water level (ft)	Temperature (°C)	pH	Specific conductance (micromhos)	Flow (gal/d)
Dec. 14, 1978	- 165.9	....	....	....	....
May 23, 1979	- 153.9	....	....	....	....
Sept. 10	- 151.2	....	....	....	....
Sept. 27	- 150.9	....	....	....	....

28-22W-30BCCA2.--Everette Copeland, artesian observation well in a sandstone in Cheyenne Sandstone, diameter 1 inch, screened interval 425-445 feet, casing depth 445 feet. Measuring point--top of casing 1.1 feet above land-surface altitude of 2,490 feet.

Date	Water level (ft)	Temperature (°C)	pH	Specific conductance (micromhos)	Flow (gal/d)
Dec. 14, 1978	- 147.4	....	....	....	....
May 23, 1979	- 151.9	....	....	....	....

Table 6.--Water levels in observation wells--Continued

FORD COUNTY--Continued

28-26W-29BAD.--Austin Bentzer, artesian observation well in a sandstone in the Dakota Formation, diameter 2 inches, screened interval 569-573 feet, casing depth 593 feet. Measuring point--top of casing at land-surface altitude of 2,680 feet.

Date	Water level (ft)	Temperature (°C)	pH	Specific conductance (micromhos)	Flow (gal/d)
Aug. 17, 1978	- 180.4	....	....	....	....
Dec. 15	- 181.1	....	....	....	....
May 23, 1979	- 181.6	....	....	....	....
Sept. 11	- 181.8	....	....	....	....
Oct. 3	- 182.0	....	....	....	....

28-26W-29BAD2.--Austin Bentzer, artesian observation well in a sandstone in the Dakota Formation, diameter 2 inches, screened interval 451-455 feet, casing depth 455 feet. Measuring point--top of casing at land-surface altitude of 2,680 feet.

Date	Water level (ft)	Temperature (°C)	pH	Specific conductance (micromhos)	Flow (gal/d)
Aug. 17, 1978	- 170.5	....	....	....	....
Dec. 15	- 171.2	....	....	....	....
May 23, 1979	- 171.9	....	....	....	....
Sept. 11	- 172.2	....	....	....	....
Oct. 3	- 172.4	....	....	....	....

Table 6.--Water levels in observation wells--Continued

GRAY COUNTY

25-29W-21CDA.--C. L. and A. Strawn, artesian observation well in a sandstone in the Dakota Formation, diameter 2 inches, screened interval 370-371 feet, casing depth 405 feet. Measuring point--top of pipe at land-surface altitude of 2,707 feet.

Date	Water level (ft)	Temperature (°C)	pH	Specific conductance (micromhos)	Flow (gal/d)
Oct. 4, 1978	- 141.0	....	....	....	....
Dec. 14	- 142.5	....	....	....	....
May 27, 1979	- 145.0	....	....	....	....
Sept. 11	- 146.3	....	....	....	....
Oct. 2	- 146.4	....	....	....	....

25-29W-21CDA2.--C. L. and A. Strawn, artesian observation well in a sandstone in the Kiowa Formation, diameter 2 inches, screened interval 551-555 feet, casing depth 655 feet. Measuring point--top of casing 0.4 foot above land-surface altitude of 2,707 feet.

Date	Water level (ft)	Temperature (°C)	pH	Specific conductance (micromhos)	Flow (gal/d)
Dec. 14, 1978	- 167.8	....	....	....	....
May 23, 1979	- 168.0	....	....	....	....
Sept. 11	- 167.5	....	....	....	....
Oct. 2	- 167.5	....	....	....	....

Table 6.--Water levels in observation wells--Continued

MEADE COUNTY

30-26W-1BCD.--Norman Hatfield, artesian observation well in a siltstone in the Permian rocks, diameter 2 inches, screened interval 455-457 feet, casing depth 465 feet. Measuring point--top of casing 0.3 foot above land-surface altitude of 2,545 feet.

Date	Water level (ft)	Temperature (°C)	pH	Specific conductance (micromhos)	Flow (gal/d)
Dec. 15, 1978	- 121.4	....	....	....	....
May 23, 1979	- 118.3	....	....	....	....
Sept. 18	- 125.4	....	....	....	....
Sept. 28	- 125.5	....	....	....	....

30-26W-1BCD2.--Norman Hatfield, artesian observation well in a sandstone in the Dakota Formation, diameter 1 inch, screened interval 275-290 feet, casing depth 290 feet. Measuring point--top of casing 0.2 foot above land-surface altitude of 2,545 feet.

Date	Water level (ft)	Temperature (°C)	pH	Specific conductance (micromhos)	Flow (gal/d)
Dec. 15, 1978	- 63.4	....	....	....	....
May 23, 1979	- 63.3	....	....	....	....
Sept. 18	- 64.2	....	....	....	....
Sept. 27	- 64.2	....	....	....	....

Table 6.--Water levels in observation wells--Continued

MEADE COUNTY--Continued

32-26W-4AAB.--Clarence Williams, artesian observation well in a shale in the Permian rocks, diameter 2 inches, screened interval 191-195 feet, casing depth 195 feet. Measuring point--top of casing 0.6 foot above land-surface altitude of 2,460 feet.

Date	Water level (ft)	Temperature (°C)	pH	Specific conductance (micromhos)	Flow (gal/d)
Dec. 15, 1978	- 79.4	....	....	....	....
May 23, 1979	- 78.3	....	....	....	....
Sept. 18	- 78.0	....	....	....	....
Oct. 3	- 78.9	....	....	....	....

PAWNEE COUNTY

20-17W-22DCC.--Bruce Wiessensee, artesian observation well in a siltstone in Permian rocks, diameter 2 inches, screened interval 464-465 feet, casing depth 480 feet. Measuring point--top of pipe at land-surface altitude of 2,053 feet.

Date	Water level (ft)	Temperature (°C)	pH	Specific conductance (micromhos)	Flow (gal/d)
Apr. 4, 1978	flow	....	....	....	....
Dec. 13	+35.4	12.5	....	41,000	420
May 22, 1979	+37.5	15.0	7.5	51,000	550
Aug. 17	+35.4	18.5	7.4	60,000	520
Sept. 26	+35.5	21.5	7.5	50,000	....

Table 6.--Water levels in observation wells--Continued

PAWNEE COUNTY--Continued

20-17W-22DCC2.--Bruce Wiessensee, artesian observation well in a sandstone in the Cheyenne Sandstone, diameter 2 inches, screened interval 409-410 feet, casing depth 410 feet. Measuring point--top of casing at land-surface altitude of 2,053 feet.

Date	Water level (ft)	Temperature (°C)	pH	Specific conductance (micromhos)	Flow (gal/d)
Apr. 13, 1978	flow	....	....	....	....
Dec. 13	+33.1	13.0	....	53,000	820
May 22, 1979	+32.9	13.0	7.15	55,000	1,070
Aug. 17	+35.4	14.0	7.10	60,000	950
Sept. 26	+32.3	21.0	7.10	53,000	....

20-17W-22DCC3.--Bruce Wiessensee, artesian observation well in a sandstone in the Dakota Formation, diameter 2 inches, casing depth 110 feet. Measuring point--top of casing at land-surface altitude of 2,053 feet.

Date	Water level (ft)	Temperature (°C)	pH	Specific conductance (micromhos)	Flow (gal/d)
Aug. 17, 1978	- 23.6	....	....	....	....
Dec. 13	- 24.4	....	....	....	....
May 22, 1979	- 24.3	....	....	....	....
Aug. 17	- 24.5	....	....	....	....
Sept. 26	- 24.5	....	....	....	....

Table 6.--Water levels in observation wells--Continued

PAWNEE COUNTY--Continued

22-19W-7AAA.--Raymond Polson, artesian observation well in a sandstone in the Dakota Formation, diameter 1.5 inches, screened interval 159-165 feet, casing depth 165 feet. Measuring point--top of casing at land-surface altitude of 2,100 feet.

Date	Water level (ft)	Temperature (°C)	pH	Specific conductance (micromhos)	Flow (gal/d)
June 14, 1977	- 60.4	....	....	....	....
Dec. 13, 1978	- 64.5	....	....	....	....
May 22, 1979	- 67.4	....	....	....	....
Aug. 17	-100.1	....	....	....	....
Sept. 27	- 92.0	....	....	....	....

22-19W-7AAA2.--Raymond Polson, artesian observation well in a siltstone in Permian rocks, diameter 2 inches, screened interval 421-425 feet, casing depth 435 feet. Measuring point--top of casing at land-surface altitude of 2,100 feet.

Date	Water level (ft)	Temperature (°C)	pH	Specific conductance (micromhos)	Flow (gal/d)
June 16, 1977	flow	....	....	....	trace
Dec. 14, 1978	+19.2	9.0	....	835	trace
May 22, 1979	+27.3	28.0	7.15	640	9
Aug. 17	+19.2	30.0	7.60	2,250	trace
Sept. 27	+16.6	....	....	....	....

Table 6.--Water levels in observation wells--Continued

RUSH COUNTY

17-17W-6ABBA.--Van Lippert, artesian observation well in a sandstone in the Cheyenne Sandstone, diameter 2 inches, screened interval 509-510 feet, casing depth 510 feet. Measuring point--top of casing at land-surface altitude of 2,089 feet.

Date	Water level (ft)	Temperature (°C)	pH	Specific conductance (micromhos)	Flow (gal/d)
Aug. 17, 1978	- 35.3	....	....	....	....
Dec. 14	- 35.5	9.0	....	1,130	....
May 22, 1979	- 35.6	....	....	....	....
Aug. 17	- 32.6	....	....	....	....
Sept. 27	- 35.9	....	....	....	....

17-17W-6ABBA2.--Van Lippert, artesian observation well in a sandstone in the Dakota Formation, diameter 1 inch, casing depth 220 feet. Measuring point--top of casing at land-surface altitude of 2,089 feet.

Date	Water level (ft)	Temperature (°C)	pH	Specific conductance (micromhos)	Flow (gal/d)
Aug. 17, 1978	- 183.2	....	....	....	....
Dec. 14	- 183.8	....	....	....	....
May 22, 1979	- 183.4	....	....	....	....
Aug. 17	- 183.5	....	....	....	....
Sept. 27	- 183.5	....	....	....	....