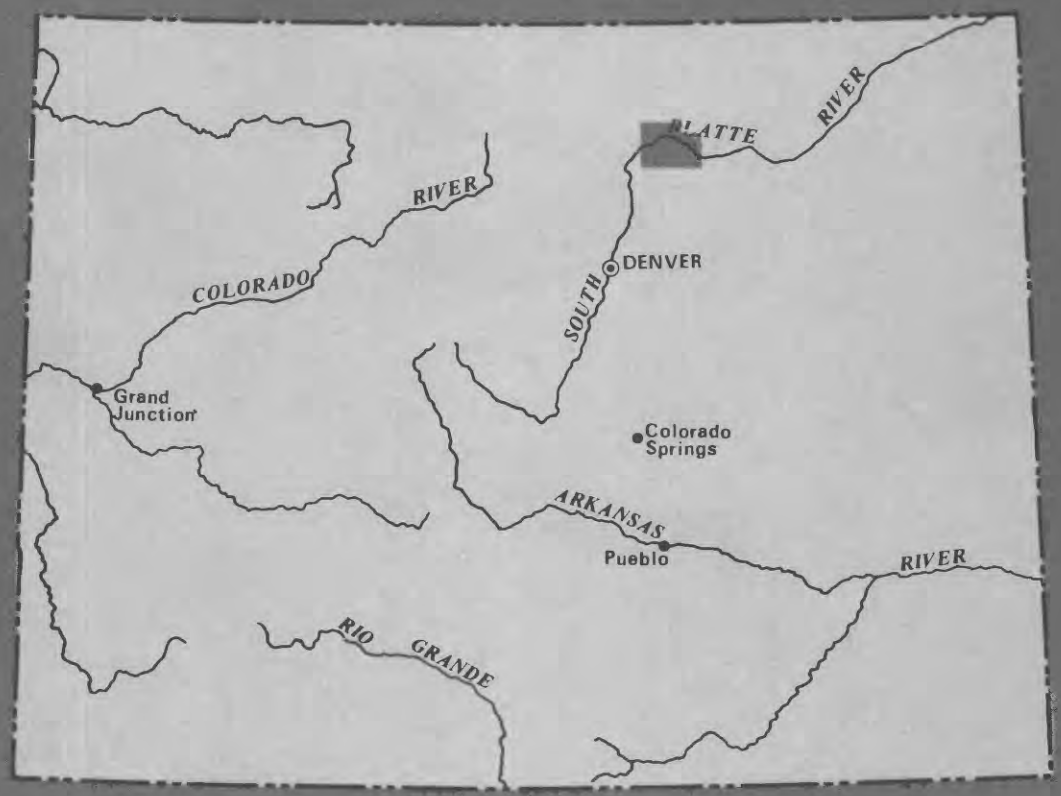
EFFECTS OF A CATTLE FEEDLOT ON GROUND-WATER QUALITY IN THE SOUTH PLATTE RIVER VALLEY NEAR GREELEY, COLORADO

U.S. GEOLOGICAL SURVEY



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Ground-water quality may be changed by leachate from feedlots because large quantities of wastes are generated. The potential for water quality to be affected is especially high in alluvial aquifers with a shallow depth to water. However, monitoring water quality in 19 observation wells in and near a feedlot stocked with 90,000 head of beef cattle from April 1974, before the lot was stocked, to June 1978, has shown little change in ground-water quality that can be attributed to the feedlot. Analyses of water from two lysimeters in the unsaturated zone indicate leachate from the feedlot has percolated to a depth of at least 5 feet but not to a depth of 20 feet. The small changes in ground-water quality caused by the feedlot are likely due to the limited available recharge, a relatively impermeable manure pack and soil clogging under the cattle pens resulting in slow vertical movement of leachate through the unsaturated zone, soil clogging under the unlined runoff-retention ponds, and denitrification in the unsaturated zone.

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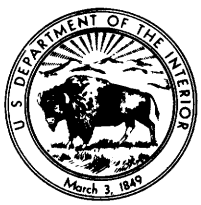

Lakewood, Colorado

1981

UNITED STATES DEPARTMENT OF THE INTERIOR

JAMES G. WATT, Secretary

GEOLOGICAL SURVEY

Doyle G. Frederick, Acting Director

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CONVERSION FACTORS

For the use of those readers who may prefer to use metric units rather than inch-pound units, the conversion factors for the terms used in this report are listed below:

Multiply	*By*	*To obtain*
inch (in.)	25.40	millimeter
foot (ft)	0.3048	meter
mile (mi)	1.609	kilometer
acre	0.4047	hectare
cubic foot (ft^3)	0.02832	cubic meter
pound (lb)	0.04536	kilogram
foot per day (ft/d)	0.3048	meter per day
foot per mile	0.3048	meter per kilometer
foot per year (ft/yr)	0.3048	meter per year
foot squared per day (ft^2/d)	0.0929	meter squared per day

EFFECTS OF A CATTLE FEEDLOT ON GROUND-WATER QUALITY IN THE SOUTH PLATTE RIVER VALLEY NEAR GREELEY, COLORADO

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ABSTRACT

Changes in water quality in an alluvial aquifer resulting from the operation of a feedlot stocked with 90,000 cattle have been minimal. Monitoring water quality in 19 observation wells from April 1974, prior to the operation of the feedlot, to June 1978, after about 4 years of operation, indicates that chloride concentrations have increased slightly in one well downgradient from a runoff-retention pond. Chemical analyses of water from two lysimeters installed in the unsaturated zone indicate that leachate from the feedlot has percolated to a depth of at least 5 feet but has not percolated to a depth of 20 feet. The small changes in ground-water quality caused by the feedlot are likely the result of the limited available recharge, a relatively impermeable manure pack, soil clogging under the cattle pens resulting in slow vertical movement of leachate through the unsaturated zone, soil clogging under the unlined runoff-retention ponds, and denitrification in the unsaturated zone.

INTRODUCTION

Large cattle feedlots may produce organic waste loads comparable to those produced by a medium-sized city. In the western United States, feedlots are often located in valleys where water is available for irrigating crops produced for livestock feed. These valleys frequently contain permeable alluvial deposits and have a shallow depth to ground water. The combination of large quantities of wastes, permeable deposits, and shallow depth to water increases the potential for changes in ground-water quality.

A site near Greeley, Colo. (fig. 1), about 50 mi northeast of Denver, was chosen at which to monitor possible changes in ground-water quality resulting from operation of a feedlot. The climate in the area is semiarid, with an average annual precipitation of 11.47 in. during 1975-77, according to precipitation records collected at the feedlot by the operator. Stocking of the feedlot began April 26, 1974, and by the end of the year 50,000 cattle were fed each day at the site; by 1977, an average of 90,000 cattle were fed in the pens each day.

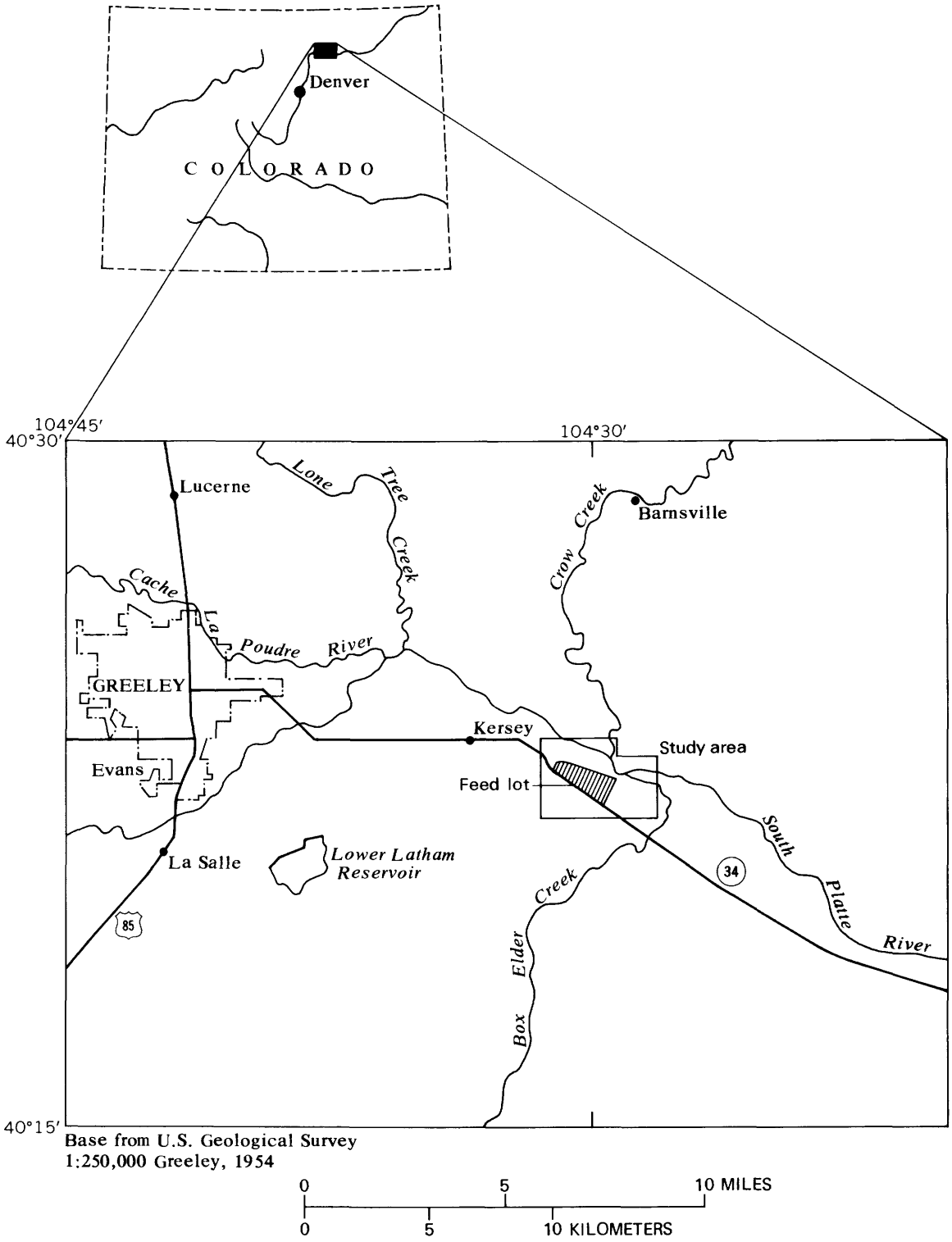

Figure 1--Location of study area.

The feedlot has an area of 500 acres of which 320 acres are fenced into pens. Storm runoff is collected in concrete-lined ditches and stored in two unlined retention ponds (fig. 2). The ponds also store overflow water from drinking troughs which are kept running during cold weather to prevent freezing. The storm water in the ponds is later mixed with water pumped from the aquifer and used for crop irrigation on adjacent land that is part of the feedlot complex. The pens do not have concrete or lined floors and are cleaned three or four times a year. The manure is used as fertilizer by landowners within 15 mi of the feedlot.

Nineteen observation wells and four lysimeters, similar to those described by Wood (1973), were installed in and near the feedlot during construction (fig. 2). Water samples were collected from the wells for chemical analysis prior to stocking of the feedlot. After stocking, samples were collected quarterly from most wells until June 1978. Samples also were collected intermittently from two of the lysimeters, the runoff-retention ponds, and the water supply at the feedlot. Samples could not be successfully obtained from the other two lysimeters.

The purpose of this report is to present the data collected in the immediate vicinity of the feedlot and provide a preliminary interpretation of that data. The data-collection network was not designed to define the regional aspects of the geohydrologic system or the effects of waste removed from the immediate vicinity of the feedlot.

The cooperation of the feedlot owner for allowing the installation and monitoring of the wells and lysimeters and for providing data on precipitation, feedlot operations, and the feedlot supply wells is gratefully acknowledged.

GROUND-WATER HYDROLOGY

The feedlot is located on a terrace in the South Platte River valley about 30 ft above the flood plain (fig. 2). The study area is underlain by alluvial sand and gravel deposits that comprise the aquifer.

The bedrock underlying the alluvial aquifer is the Laramie Formation of Late Cretaceous age. In the study area, the Laramie Formation primarily consists of shale that restricts vertical movement of water. Therefore, only the alluvial aquifer is subject to water-quality changes caused by the operation of the feedlot.

The altitude of the bedrock surface slopes from about 4,540 ft near the southwestern part of the study area to about 4,440 ft in the northeastern part of the study area (figs. 3 and 4). The depth to bedrock ranges from about 40 ft in the southwestern part of the study area to about 130 ft in the north-central part of the study area (fig. 5). The depth to bedrock in the feedlot ranges from about 65 ft near the southeastern runoff-retention pond to about 130 ft in the northern part.

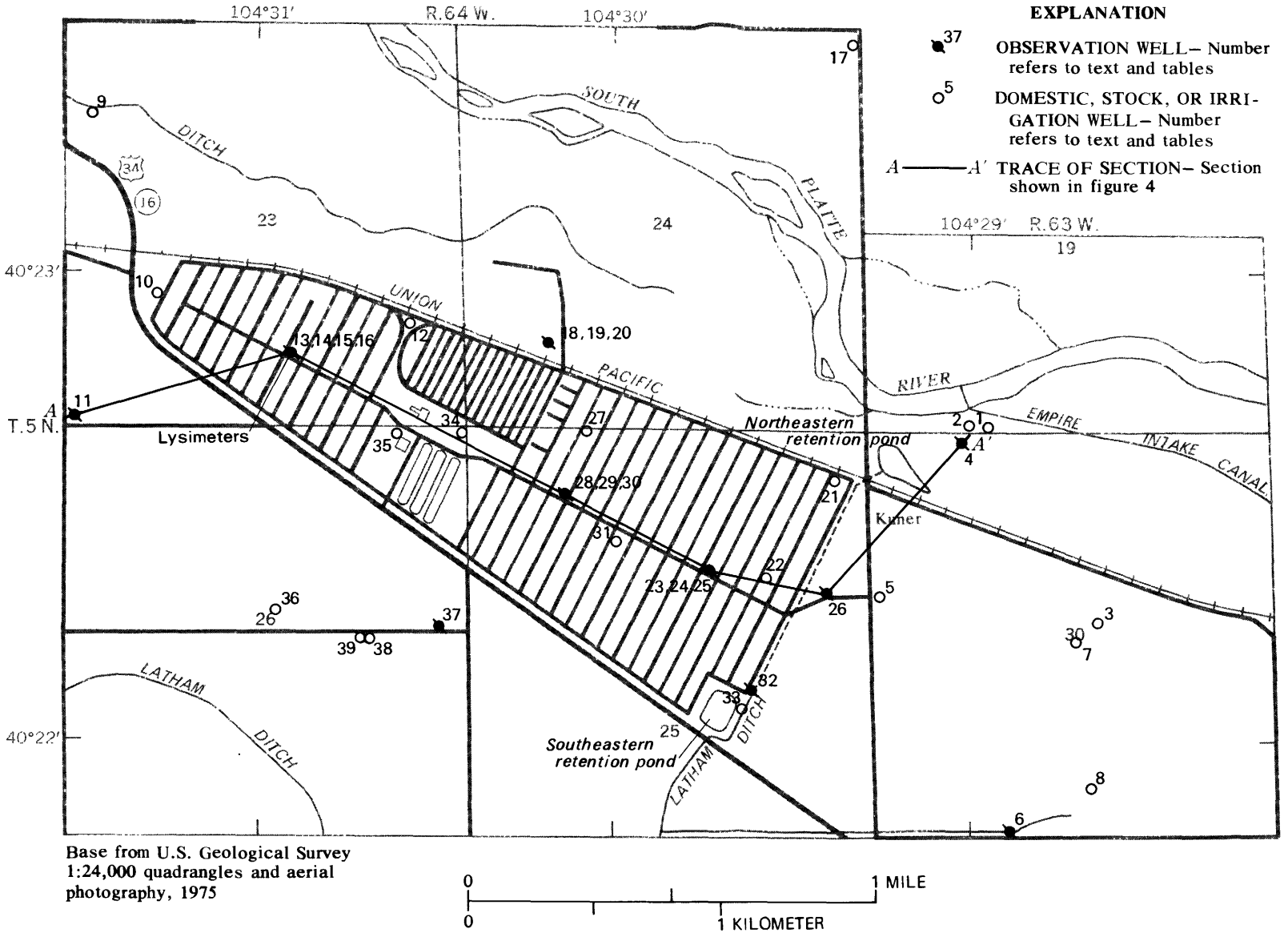

Figure 2--Location of wells, lysimeters, and runoff-retention ponds.

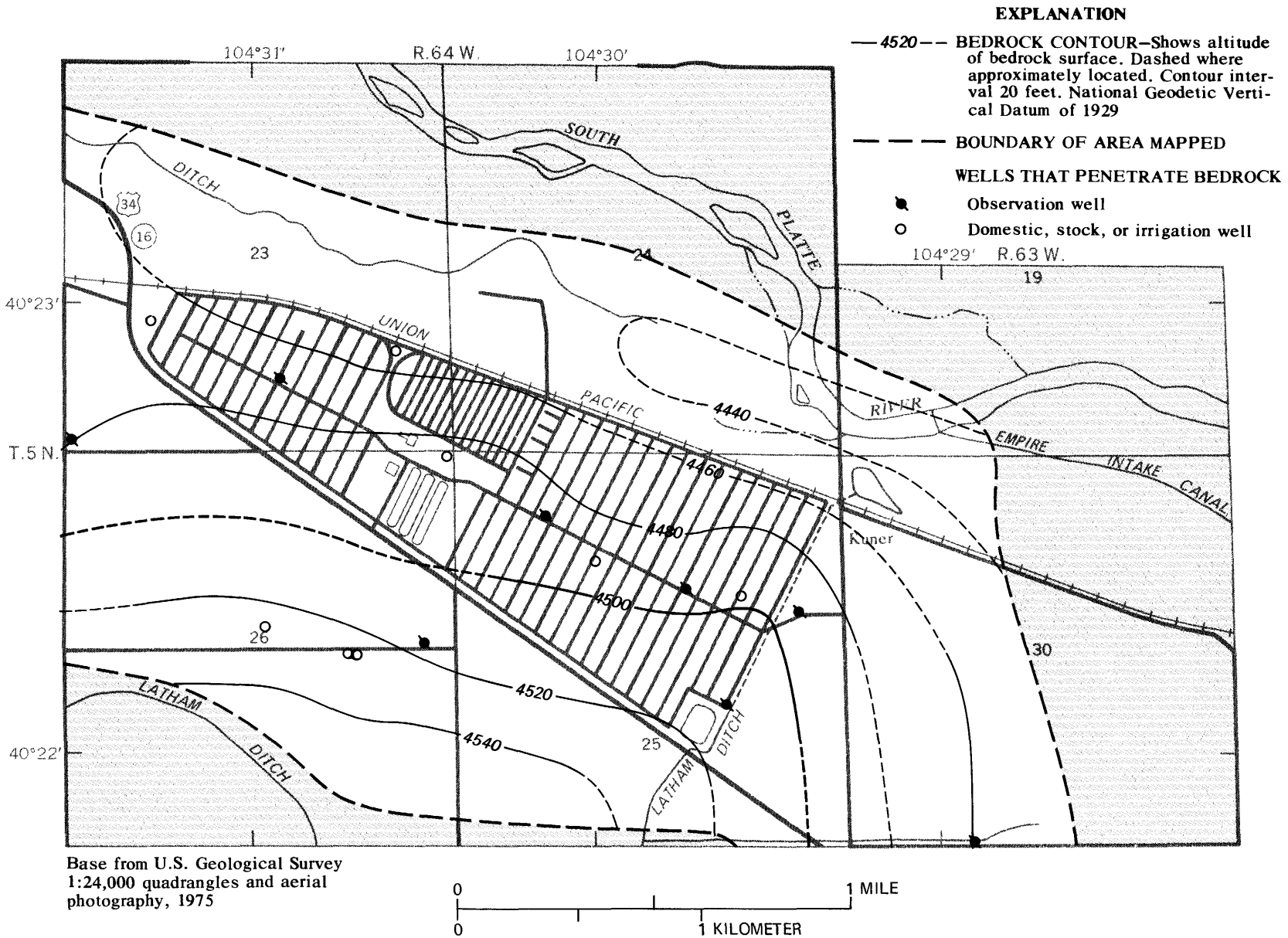

Figure 3. -- Bedrock topography.

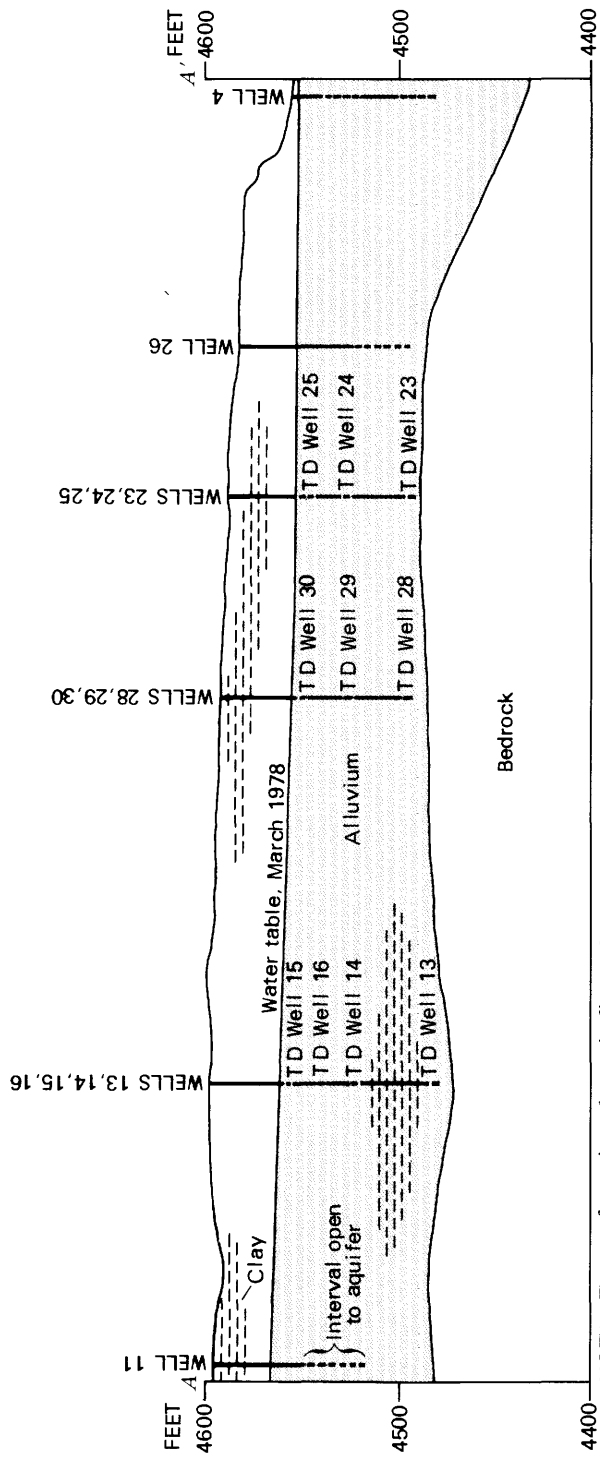

Figure 4.--Geologic section through the feedlot.

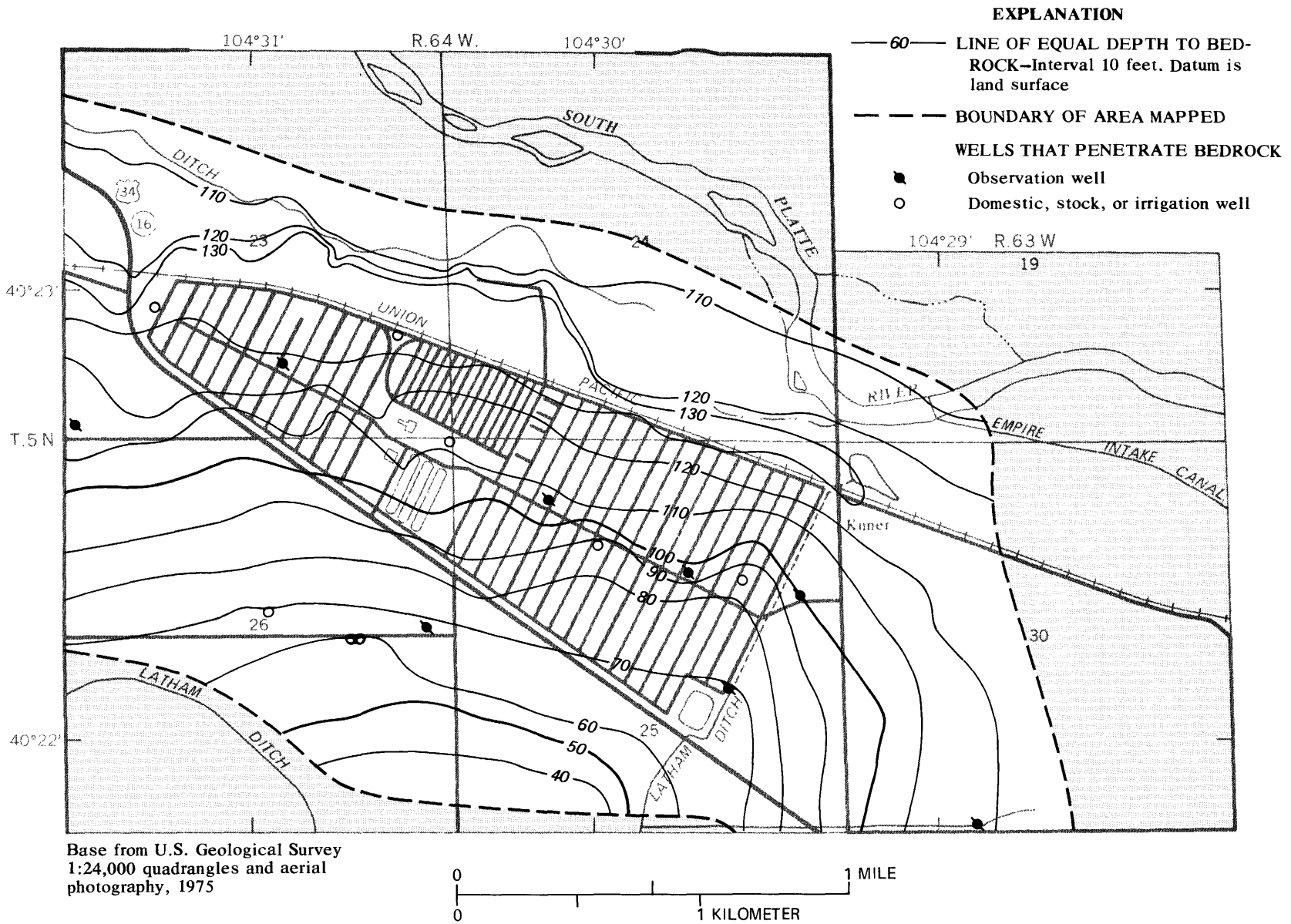

Figure 5. -- Depth to bedrock.

The aquifer underlying the feedlot is recharged by precipitation, the South Platte River, irrigation water applied to fields in excess of evapotranspiration, leakage from irrigation ditches and canals upgradient of the feedlot, and to some extent by infiltration of wastes from the livestock pens. Most of the water flowing beneath the feedlot entered the aquifer as recharge upgradient of the feedlot as indicated in figure 6. However, the data used to construct figure 6 was collected at a time when the effects of precipitation, streamflow, evapotranspiration, and pumpage were minimal.

The altitude of the water table in the alluvial aquifer ranges from about 4,568 ft in the western part of the study area to about 4,550 ft in the eastern part of the study area (figs. 4 and 6). Water moves generally at right angles to the water-table contours from higher to lower altitudes and is moving approximately from west to east beneath the feedlot. The hydraulic gradient across the feedlot is about 8 ft/mi. The depth to water in the study area ranges from zero at the South Platte River to about 35 ft in the center of the feedlot (fig. 7).

The saturated thickness of the alluvial aquifer ranges from about 10 ft in the southern part of the study area to about 110 ft northeast of the feedlot (fig. 8). In the feedlot, the saturated thickness ranges from about 35 ft near the southeastern runoff-retention pond to about 100 ft along the northern edge of the feedlot.

Hydraulic conductivity of the aquifer beneath the feedlot is estimated to be 170 ft/d, based on logs from 10 wells in the feedlot, and the porosity is estimated to be 0.4 on the basis of laboratory analyses of core samples from well 13 (depth interval 0 to 30 ft). The average ground-water velocity is estimated to be about 230 ft/yr based on the equation:

$$V = \frac{KI}{\emptyset} \times 365, \qquad (1)$$

where:

V = ground-water velocity, in feet per year,
K = hydraulic conductivity, in feet per day,
I = hydraulic gradient (dimensionless), and
$\emptyset$ = porosity (dimensionless).

This estimate of ground-water velocity is probably lower than the average rate of ground-water movement beneath the feedlot because (1) the laboratory value of porosity is probably about two times greater than the average effective porosity of the aquifer and (2) gradients greater than 8 ft/mi are produced by the pumping wells within the feedlot.

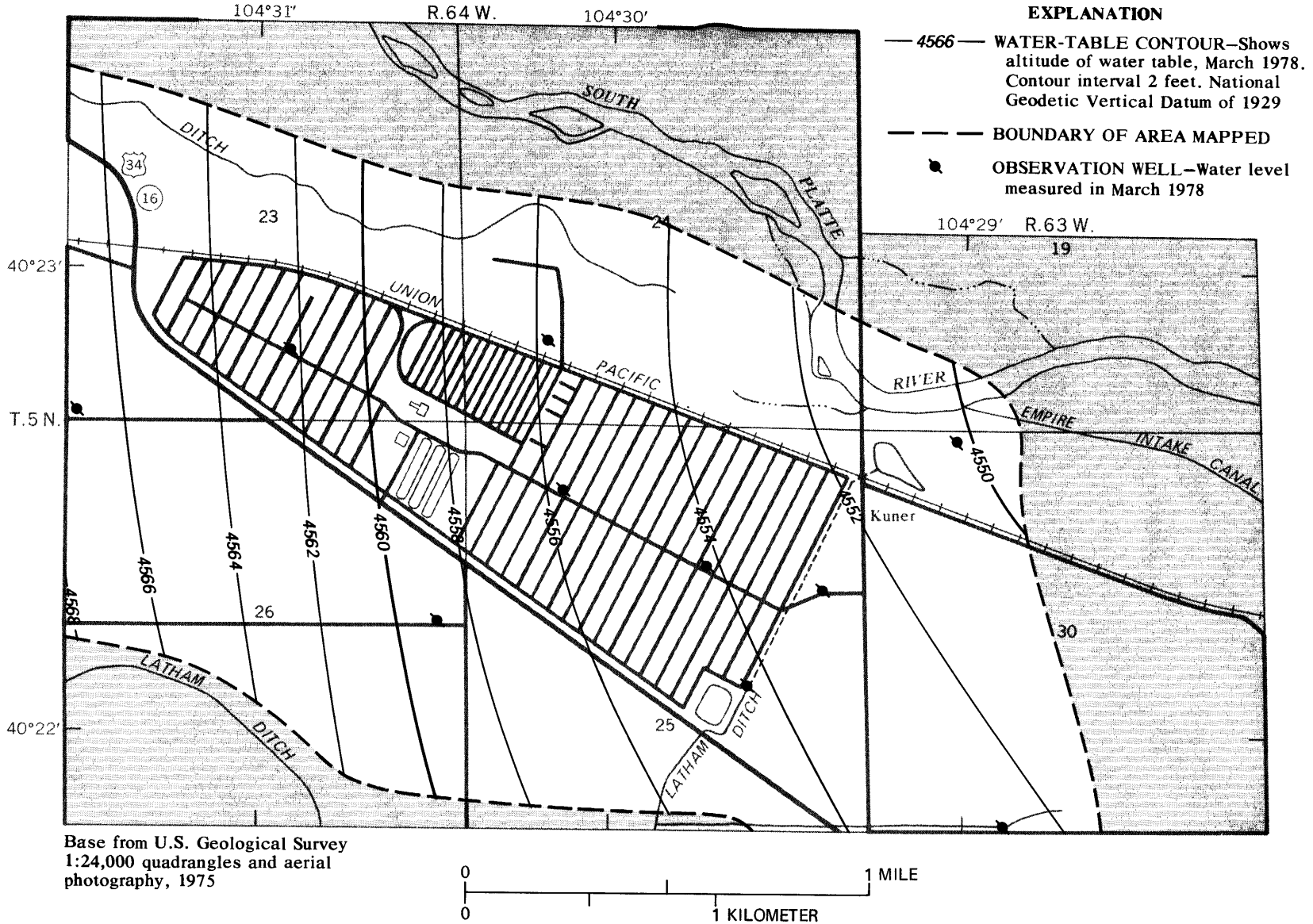

Figure 6.--Water table, March 1978.

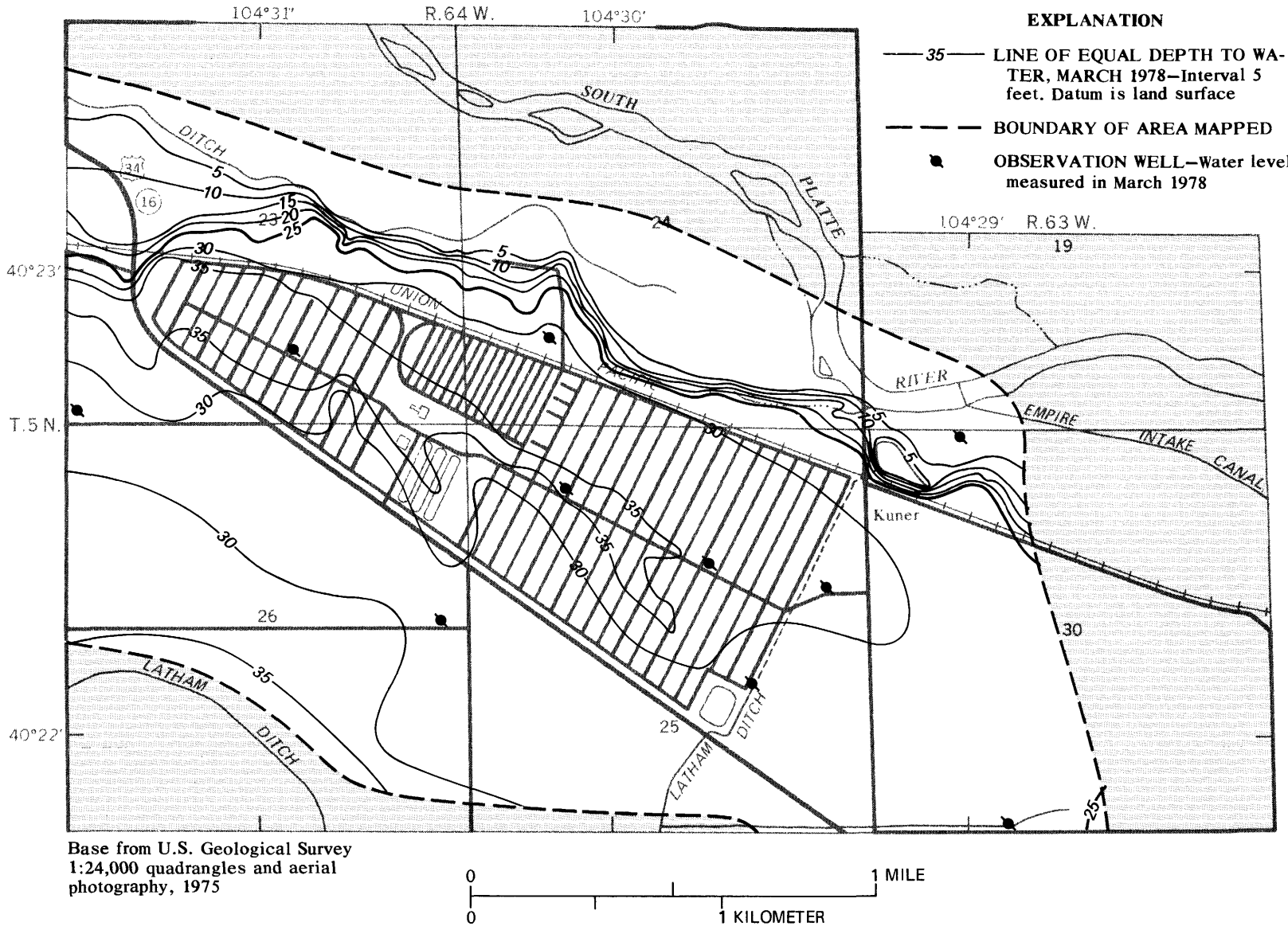

Figure 7. -- Depth to water, March 1978.

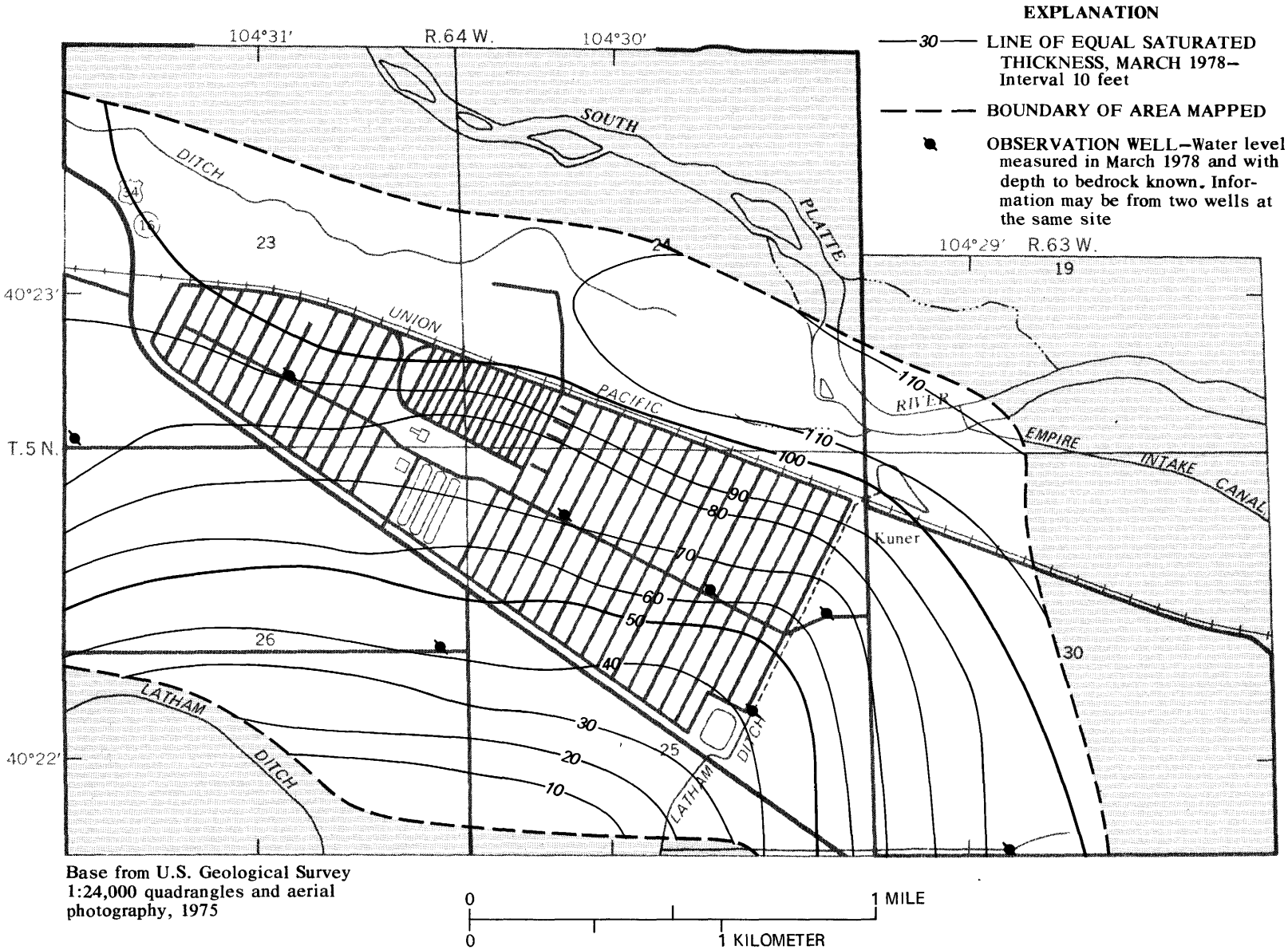

Figure 8. -- Saturated thickness of the alluvial aquifer, March 1978.

WATER QUALITY

Chemical characteristics of water in the alluvial aquifer prior to stocking of the feedlot are summarized in table 1. A comparison between selected dissolved mineral constituents in water in the aquifer prior to stocking of the feedlot and in runoff from the feedlot after stocking is shown in table 2. The sample of runoff was obtained from the southeastern runoff-retention pond following a storm in September 1976 when water quality should most closely represent that in leachate from the manure pack. (The chemical quality of water in the ponds varies as shown in table 7 in the Supplemental Information section at the back of this report, because overflow from drinking troughs as well as storm runoff is stored in the ponds.) Concentrations of all constituents used in the comparison except sulfate, sodium, and nitrate were greater in the runoff from the feedlot than the median content of water from the aquifer. Sodium concentration in the runoff may have been anomalous as McCalla, Ellis, Gilbertson, and Woods (1972) determined that the mean sodium concentration in feedlot wastes generally is about 1,050 mg/L. The smaller concentration of nitrate in the runoff may have resulted because much of the nitrogen was present as ammonia and organic nitrogen and because denitrification was probably occurring.

Nitrate is the chemical constituent most likely to be increased in ground water by leachate from the feedlot because of the large quantities of nitrate in feedlot wastes. A steer produces wastes containing about 0.4 lb of nitrogen daily (Taiganides and Hazen, 1966, p. 375). Therefore, the 90,000 cattle in the feedlot may produce about 36,000 lb of nitrogen daily. As much as 90 percent of the nitrogen in the manure may be lost to the atmosphere (McCalla and others, 1969, p. 5). If the remaining 10 percent of the nitrogen were mixed uniformly with the 106,000 ft^3 of ground water estimated to be moving beneath the feedlot daily, the concentration of nitrate as nitrogen in the water would be about 540 mg/L.

Chloride is mobile in the ground-water environment and commonly is a good indicator of water-quality degradation (Robson, 1977, p. 13). Comparisons of nitrate and chloride concentrations from April 1974 to June 1978 and trends in the concentrations of these constituents were used to determine if the leachate from the feedlot had affected water quality in the aquifer.

There have been some changes in the quality of water from the 19 observation wells from April 1974, before the feedlot was stocked, to June 1978, but most changes appear to be unrelated to the feedlot. The median chloride concentration for samples from the 19 observation wells in June 1978 was 120 mg/L, compared with 100 mg/L in April 1974. The median nitrate as nitrogen concentration was 7.7 mg/L in June 1978, compared to 5.2 mg/L in April 1974. Increases in chloride and nitrate concentrations indicate some degradation of water quality. The variability of both chloride and nitrate concentrations is greater than observed changes and no major increasing trends for these constituents have been observed in water from wells most likely to be affected by leachate from the feedlot.

Table 1.--*Minimum, median, and maximum concentrations of selected properties and dissolved constituents in water from 19 observation wells, April 1974*

	Hardness (mg/L as $CaCO_3$)	Hardness, noncarbonate (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Bicarbonate (mg/L as HCO_3)	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L as F)	Solids, sum of constituents, dissolved (mg/L)	Nitrogen, nitrate, dissolved (mg/L as N)	Nitrogen, ammonia + organic, dissolved (mg/L as N)	Phosphorus, ortho, dissolved (mg/L as P)	Iron, dissolved (µg/L as Fe)	Manganese, dissolved (µg/L as Mn)
Minimum-----	750	490	180	72	160	4.8	302	660	79	1.0	1,360	0.44	0.02	0.02	30	0
Median------	960	640	220	96	220	6.7	404	880	100	1.5	1,810	5.2	.58	.03	100	120
Maximum-----1,500		1,100	340	160	600	10	656	2,000	180	2.1	3,560	28	1.2	.07	3,300	4,900

Table 2.--*Comparison between median concentration of selected chemical constituents in water from the alluvial aquifer and concentrations of selected chemical constituents in runoff from the feedlot*

	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Bicarbonate (mg/L as HCO_3)	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Nitrogen, nitrate, dissolved (mg/L as N)	Nitrogen, ammonia + organic, dissolved (mg/L as N)	Phosphorus, ortho, dissolved (mg/L as P)	Iron, dissolved (µg/L as Fe)	Manganese, dissolved (µg/L as Mn)
Median concentration for the aquifer, April 1974----------	220	96	220	6.7	404	880	100	5.2	0.58	0.03	100	120
Concentration from southeastern retention pond, September 1976--------	540	210	210	690	1,810	480	380	1.6	220	100	9,500	4,000

Chloride (fig. 9) and nitrate (fig. 10) concentrations in water from wells 16, 25, 26, 30, and 32 that are either in the feedlot or downgradient from the feedlot illustrate the lack of consistent trends. Neither chloride nor nitrate has increased in water from wells 16 and 30. An overall but not steady increase in chloride concentrations and an overall but not steady decrease in nitrate concentrations has occurred in water from wells 25 and 26. If water in these wells was affected by leachate from the feedlot, an increase in both chloride and nitrate would be expected. A slightly more regular increase in chloride and a decrease in nitrate has occurred in water from well 32. This well is downgradient from the southeastern runoff-retention pond and water in the vicinity of the well may be slightly affected by runoff leaking from the pond. The decrease in the nitrate concentration in the well water may be due to the relatively small nitrate concentration in water in the runoff-retention ponds, which ranged from 0.04 to 3.7 mg/L as nitrogen in four analyses.

Water from wells 6, 11, and 37, which should not be affected by feedlot operations because they are not downgradient from the feedlot, showed some changes in chloride concentrations from April 1974 to June 1978 (fig. 11). Water from well 6 had a fairly constant chloride concentration with a slight increase in chloride concentration from April 1974 to June 1978. Water from wells 11 and 37 had an irregular trend in chloride concentrations with an overall slight increase in chloride concentrations from April 1974 to June 1978.

Nitrate concentrations in water from wells 6 and 11 have been fairly constant with little overall change during the monitoring period (fig. 12). Water from well 37 had some variations in nitrate concentrations and a slight increase in nitrate from April 1974 to March 1978. There was a large increase in nitrate concentrations from March to June 1978 in water from this well.

The changes in water quality from sample to sample from the same well are due to differences in chemical quality of water moving past the well. These differences in water quality in the aquifer with time are caused largely by differences in concentrations of chemical constituents in recharge water reaching the aquifer, mostly upgradient of the sampling point. In the South Platte River valley, much recharge comes from irrigation water, both applied to fields and leaking from irrigation canals and ditches. The chemical quality of this water changes from year to year and seasonally. The quantity of irrigation water also changes seasonally. Pulses of recharge water with differences in chemical quality reach the aquifer and then move downgradient, causing differences in chemical quality with time at any sampling point.

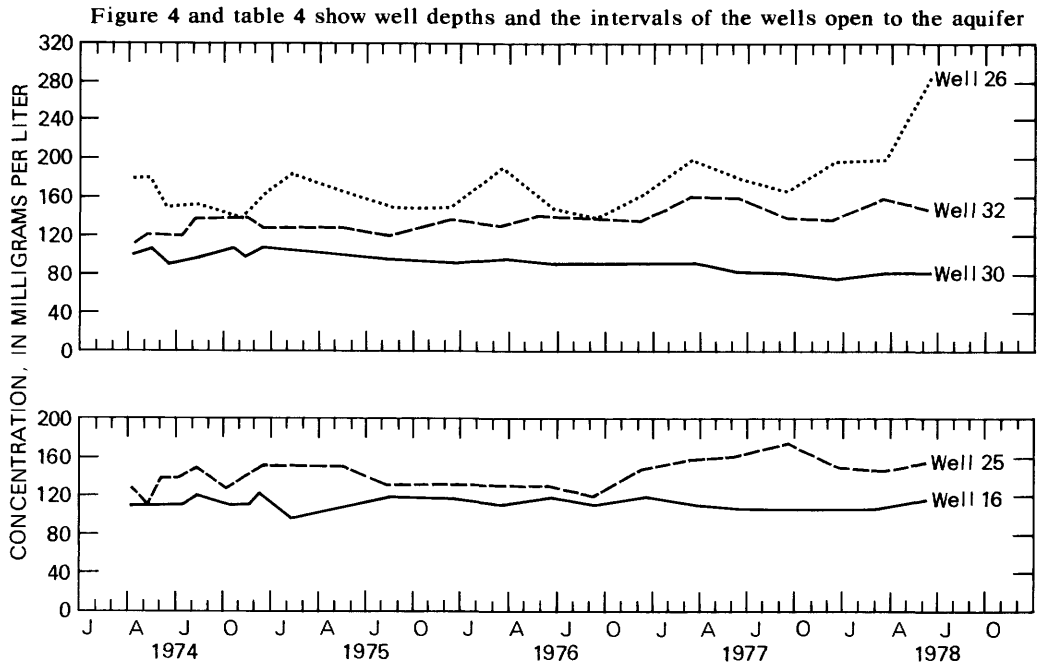

Figure 9. -- Chloride concentrations in water from selected wells in and near the feedlot.

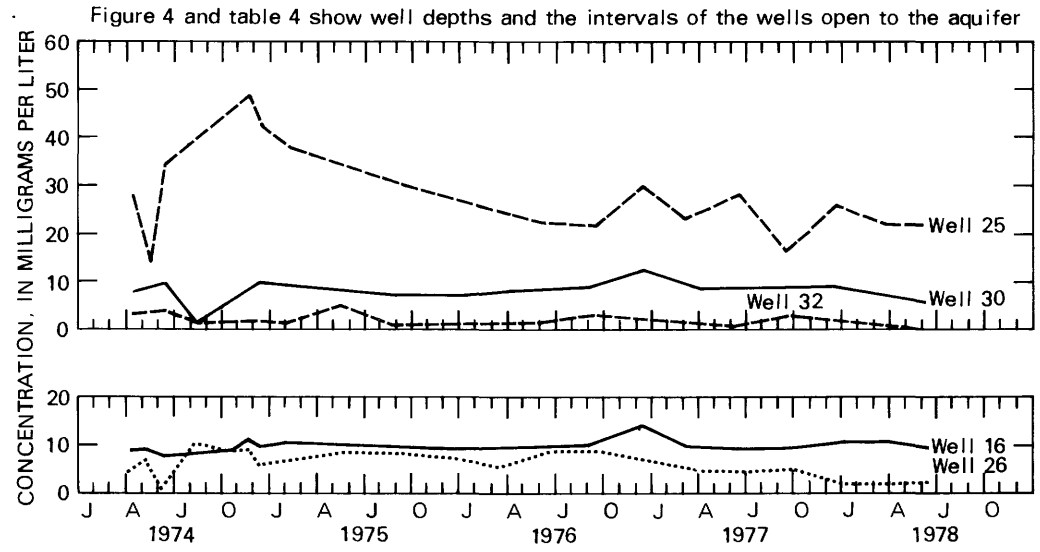

Figure 10. -- Nitrate concentrations in water from selected wells in and near the feedlot.

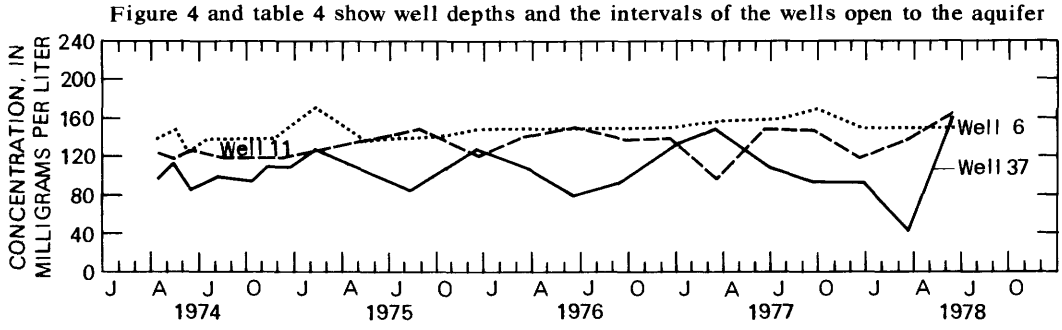

Figure 11. -- Chloride concentrations in water from selected wells outside the feedlot.

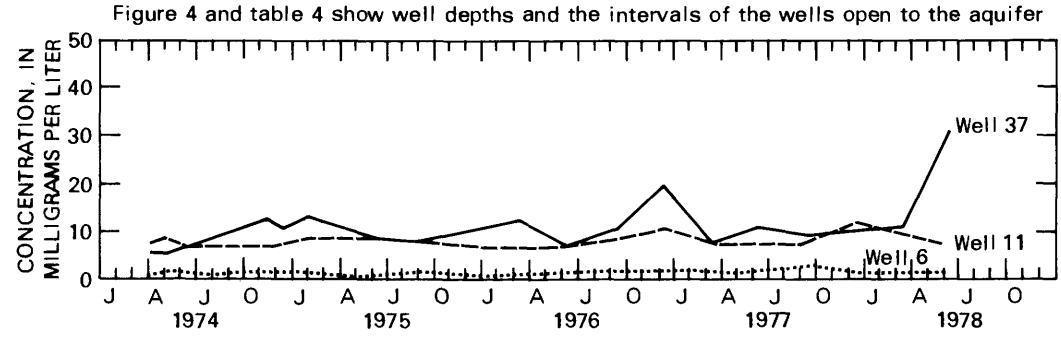

Figure 12. -- Nitrate concentrations in water from selected wells outside the feedlot.

Water samples from lysimeters installed at 5- and 20-ft depths below land surface in the unsaturated zone near wells 13, 14, 15, and 16 in the feedlot indicate that leachate from the feedlot surface has percolated to a depth of at least 5 ft but not to a depth of 20 ft (table 3). Lysimeter samples first obtained in July 1975 indicate leachate from the feedlot was present in the soil moisture at a depth of 5 ft below land surface. The small amount of water obtained from the shallower lysimeter had a nitrite plus nitrate concentration of 230 mg/L as nitrogen and a chloride concentration of 210 mg/L. Water from the deeper lysimeter had a nitrite plus nitrate concentration of 7.2 mg/L as nitrogen and a chloride concentration of 42 mg/L. The concentrations of nitrite plus nitrate and chloride have not changed significantly from July 1975 to June 1978.

Factors that may be responsible for the small changes in water quality in the alluvial aquifer in the study area, despite large quantities of wastes generated in the feedlot, include limited recharge from the feedlot because of a relatively impermeable manure pack and soil clogging under the pens, resulting in slow vertical movement of leachate in the unsaturated zone, soil clogging under the runoff-retention ponds, and denitrification in the unsaturated zone. The relatively small amount of precipitation and large potential evaporation (fig. 13) mean that little water is available for recharge. Cattle wastes and water sprinkled on the pens to control dust are potential sources of recharge. However, the total of all sources of recharge is relatively small in comparison to the quantity of water moving beneath the feedlot.

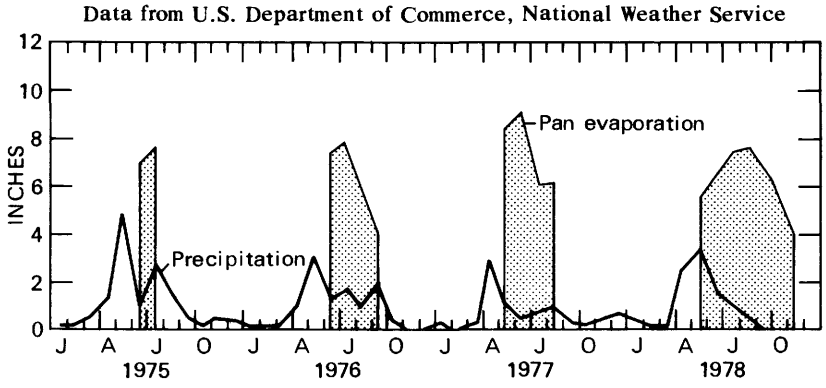

Figure 13.--Monthly precipitation at the feedlot and pan evaporation at Fort Collins.

Infiltration to the unsaturated zone beneath the pens is inhibited by the relatively impermeable manure pack. The infiltration rate of undisturbed complete feedlot soil cores was reported by Mielke and Mazurak (1976, p. 344) to range from 1.2×10^{-4} ft/d to 7.5×10^{-4} ft/d. Clogging of pore spaces by organic material also occurs beneath the pens. Manure packs that are unused, however, dry and crack, thus opening the manure pack and the surrounding area to water and oxygen. Such conditions promote leaching of nitrate down the soil profile to the water table (Mielke and Ellis, 1976, p. 74).

Observation indicates that leakage from the unlined runoff-retention ponds may be restricted because of soil clogging by suspended material in the runoff water. Schuman and McCalla (1975, p. 115) also reported that feedlot lagoon water applied to soil cores caused clogging. When water levels in the ponds decline, the clogged soil dries, cracks, and may allow some leakage as water levels in the ponds rise and before clogging reoccurs.

Table 3.--*Chemical analyses of*

Date of sample (Y-M-D)	Specific conductance (micromhos)	pH (units)	Temperature (°C)	Hardness (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Sodium-adsorption ratio	Potassium, dissolved (mg/L as K)
				5-FT LYSIMETER					
75-07-23	4,500	7.4	27.0	-----	---	---	---	-----	---
76-06-29	5,000	7.2	12.5	-----	---	---	---	-----	---
76-09-22	-----	---	----	-----	---	---	---	-----	---
76-12-08	[1]3,720	---	----	-----	---	---	---	-----	---
77-03-08	[1]3,750	---	----	-----	---	---	320	-----	14
77-06-15	-----	---	----	2,100	600	140	320	3.1	15
77-09-13	[1]4,274	---	----	-----	---	---	---	-----	---
77-12-06	-----	---	----	-----	---	---	---	-----	---
78-03-09	[1]4,059	7.1	----	-----	---	---	---	-----	---
78-06-20	-----	---	----	-----	---	---	---	-----	---
				20-FT LYSIMETER					
75-07-23	1,500	7.5	23.0	-----	---	---	---	-----	---
76-06-29	1,700	6.9	12.0	-----	---	---	---	-----	---
76-09-22	-----	---	----	-----	---	---	---	-----	---
76-12-08	[1]1,650	---	----	-----	---	---	---	-----	---
77-03-08	-----	---	----	-----	---	---	81	-----	18
77-06-15	-----	---	----	990	290	65	92	1.3	18
77-09-13	[1]1,953	---	----	-----	---	---	---	-----	---
77-12-06	-----	---	----	-----	---	---	---	-----	---
78-06-20	-----	---	----	-----	---	---	---	-----	---

[1]Laboratory value.

water from two lysimeters

Chloride, dissolved (mg/L as Cl)	Solids, residue, dissolved (mg/L)	Nitrogen, nitrate, dissolved (mg/L as N)	Nitrogen, nitrite, dissolved (mg/L as N)	Nitrogen, NO_2+ NO_3, dissolved (mg/L as N)	Nitrogen, ammonia, dissolved (mg/L as N)	Iron, dissolved (µg/L as Fe)	Manganese, dissolved (µg/L as Mn)	Zinc, dissolved (µg/L as Zn)	Carbon, organic, dissolved (mg/L as C)
				5-FT LYSIMETER					
210	-----	------	----	230	----	---	---	------	----
300	4,550	170	0.07	170	0.78	---	---	------	----
---	-----	------	----	---	----	---	---	------	36
200	2,950	150	.05	150	.41	---	---	------	----
230	3,750	220	.05	220	.36	---	---	------	----
---	-----	------	----	---	----	130	120	26,000	----
240	3,670	------	.07	---	1.1	---	---	------	----
---	-----	210	.10	210	.95	---	---	------	----
220	3,330	120	.15	120	.12	---	---	------	----
260	4,090	240	.00	240	.00	---	---	------	----
				20-FT LYSIMETER					
42	-----	------	----	7.2	----	---	---	------	----
33	1,090	5.0	.17	5.2	.69	---	---	------	----
---	-----	------	----	-----	----	---	---	------	8.9
32	1,210	3.5	.11	3.6	.50	---	---	------	----
31	1,260	2.7	.05	2.7	.50	---	---	------	----
---	-----	------	----	-----	----	100	170	17,000	----
37	1,370	6.9	.09	7.0	.07	---	---	------	----
---	-----	.00	4.4	3.9	.06	---	---	------	----
34	-----	2.9	.09	3.0	.01	---	---	------	----

A relatively slow rate of vertical movement of leachate may mean that not enough time has elapsed for leachate to reach the saturated zone. The rate of vertical movement of water in the unsaturated zone under fields and animal pens in the middle South Platte Valley of Colorado has been estimated to be always less than 4 ft/yr and generally less than 1.2 ft/yr (Stewart and others, 1967a, p. 46).

Future changes in ground-water quality beneath the feedlot are likely to be minimal even when leachate reaches the saturated zone. The volume of water in the unsaturated zone reaching the water table is small, compared with the volume of ground water moving beneath the feedlot. Consequently, the concentrations of chemical constituents in the leachate will be diluted on reaching the saturated zone. Denitrification occurring in the soil profile also will lessen the impact of leachate on the concentration of nitrates in ground water. Concentrations of nitrite and nitrate nitrogen in water in the unsaturated zone under the feedlot should be larger than the potential of 540 mg/L calculated for ground water because of smaller volumes of water in the unsaturated zone. Water samples from the 5-ft lysimeter, however, averaged 190-mg/L nitrite and nitrate nitrogen for seven analyses, indicating denitrification is occurring in the soil profile under the manure pack.

SUMMARY

Water samples collected from 19 observation wells from April 1974, before the feedlot was stocked, to June 1978, when 90,000 cattle were fed, have indicated that few water-quality changes can be attributed to the feedlot despite the large quantities of generated waste. Water analyses from two lysimeters in the unsaturated zone indicate leachate from the feedlot has percolated to a depth of at least 5 ft but has not percolated to a depth of 20 ft. The small changes in ground-water quality caused by the feedlot are likely due to the limited available recharge, a relatively impermeable manure pack, soil clogging under the cattle pens resulting in slow vertical movement of leachate through the unsaturated zone, soil clogging under the unlined runoff-retention ponds, and denitrification in the unsaturated zone.

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SUPPLEMENTAL INFORMATION

System of Numbering Wells Using Township, Range, and Sections

The system of numbering wells using township, range, and section is illustrated in figure 14. The well numbers used in tables 4 to 10 are based on this numbering system.

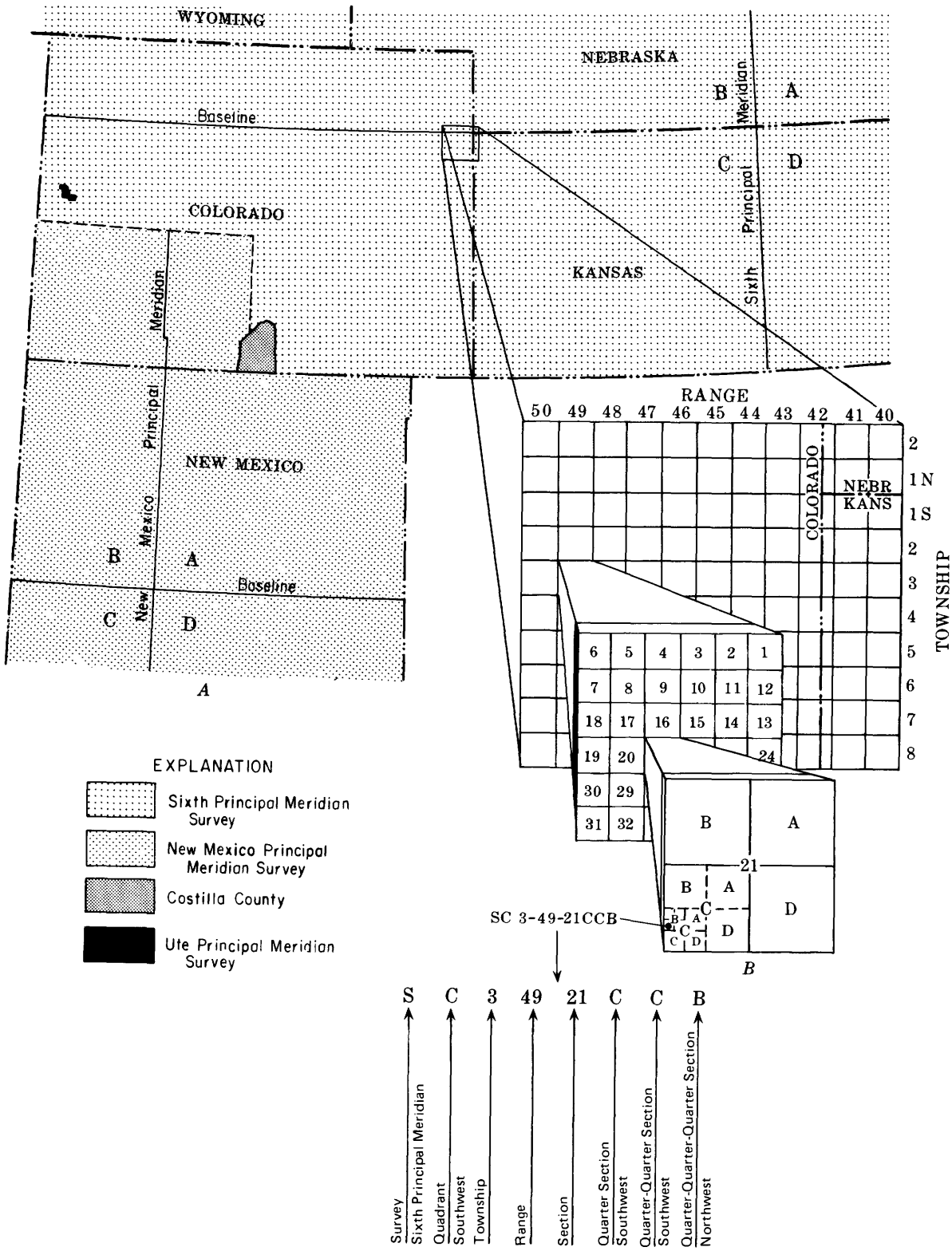

Figure 14. -- System of numbering wells using township, range, and section.

Table 4.--*Records of wells*

[Use of well or water: H, domestic, I, irrigation, O, observation; S, stock, U, unused; Z, destroyed]

Site number on figure 2	Local well number	Owner	Colorado water well permit number	Month and year drilled	Interval open to the aquifer (feet)	Depth of well (feet)	Casing diameter (inches)	Well yield (gallons per minute)	Use of well or water	Altitude of land surface[1]	Depth to bedrock (feet)	Water-level measurements in table 5	Chemical analysis in table 5 or 6
1	SB00506319CDC1	Bijou Irrigation District--------		----------	-------	---	5	-----	U	4,555	---	---	6
2	SB00506319CDC2	Bijou Irrigation District-	0769	July 1964	50- 60	60	5	15	H	4,555	---	---	-
3	SB00506330ACC1	Herman Peterson----------	---------	----------	-------	40	6	-----	H	4,575	---	---	6
4	SB00506333BBA1	U.S. Government----------	---------	Apr. 1974	15- 35, 55- 75	75	4	-----	O	4,555	---	Yes	5
5	SB00506330BCC1	Feedlot--------------------	11539R	May 1954	-------	107	-	-----	I	4,585	---	---	6
6	SB00506330CDC1	U.S. Government----------	---------	Mar. 1974	59- 89	89	4	-----	O	4,579	115	Yes	5
7	SB00506330DBB1	Herman Peterson----------	11866R	1960	-------	100	18	-----	I	4,575	---	---	6
8	SB00506330DCC1	Roy Rothe----------	---------	----------	-------	75	18	-----	I	4,575	---	---	6
9	SB00506423BBC1	Margaret Slockhart---------	8454R	1937	-------	83	18	1,310	I	4,570	---	---	6
10	SB00506423CBD1	Feedlot--------------------	R11030-RF	Mar. 1973	120-135	135	16	726	S	4,599	134	---	-
11	SB00506423CCC1	U.S. Government----------	---------	Mar. 1974	48- 78	78	4	-----	O	4,595	115	Yes	5
12	SB00506423DAC1	Feedlot--------------------	14412-RF	May 1973	127-142	142	16	632	S	4,592	140	---	-
13	SB00506423DCB1	U.S. Government----------	---------	Dec. 1973	118-122	122	4	-----	O	4,599	128	Yes	5
14	SB00506423DCB2	U.S. Government----------	---------	Dec. 1973	73- 77	77	4	-----	O	4,599	---	Yes	5
15	SB00506423DCB3	U.S. Government----------	---------	Dec. 1973	40- 42	42	4	-----	O	4,598	---	Yes	5

16	SB00506423DCB4	U.S. Government----------	---------	Dec.	1973	56- 60	60	4	-----	0	4,598	---	Yes	5
17	SB00506424AAA1	South Platte Farms---------	10480R		1935	-------	37	48	-----	I	4,565	---	---	6
18	SB00506424CCA1	U.S. Government----------	---------	Mar.	1974	109-113	113	4	-----	0	4,589	---	Yes	5
19	SB00506424CCA2	U.S. Government----------	---------	Mar.	1974	69- 73	73	4	-----	0	4,589	---	Yes	5
20	SB00506424CCA3	U.S. Government----------	---------	Mar.	1974	34- 38	38	4	-----	0	4,589	---	Yes	5
21	SB00506425AAA1	Feedlot-------------------	42031	July	1970	-------	93	6	30	Z	4,585	---	---	-
22	SB00506425ACA1	Feedlot-------------------	R10531-RF	Aug.	1973	65- 85	85	16	600	S	4,583	84	---	-
23	SB00506425ACB1	U.S. Government----------	---------	Mar.	1974	94- 98	98	4	-----	0	4,588	99	Yes	5
24	SB00506425ACB2	U.S. Government----------	---------	Mar.	1974	60- 64	64	4	-----	0	4,588	---	Yes	5
25	SB00506425ACB3	U.S. Government----------	---------	Mar.	1974	42- 46	46	4	-----	0	4,588	---	Yes	5
26	SB00506425ADD1	U.S. Government----------	---------	Mar.	1974	60- 90	90	4	-----	0	4,584	100	Yes	5
27	SB00506425BAB1	Feedlot-------------------	15226-RF	Aug.	1973	140-160	160	16	800	S	4,585	---	---	-
28	SB00506425BBD1	U.S. Government----------	---------	Dec.	1973	99-103	103	4	-----	0	4,592	108	Yes	5
29	SB00506425BBD2	U.S. Government----------	---------	Mar.	1974	64- 68	68	4	-----	0	4,592	---	Yes	5
30	SB00506425BBD3	U.S. Government----------	---------	Mar.	1974	40- 44	44	4	-----	0	4,592	---	Yes	5
31	SB00506425BDB1	Feedlot-------------------	3998-RF	Aug.	1973	82- 97	97	16	-----	S	4,588	95	---	-
32	SB00506425DBD1	U.S. Government----------	---------	Mar.	1974	48- 68	68	4	-----	0	4,582	69	Yes	5
33	SB00506425DBD2	Feedlot-------------------	8571R		1953	38- 68	68	18	725	S	4,585	---	---	-
34	SB00506426AAA1	Feedlot-------------------	R11681-RF	Apr.	1973	99-114	114	16	614	S	4,596	113	---	-
35	SB00506426AAB1	Feedlot-------------------	3129F	May	1961	------	85	--	1,000	S	4,597	---	---	-
36	SB00506426ACC1	Wallace Rothe-------------	8571R	June	1954	39- 62	62	18	-----	I	4,593	65	---	6
37	SB00506426ADD1	U.S. Government----------	---------	Mar.	1974	64- 68	68	4	-----	0	4,586	68	Yes	5
38	SB00506426DAB1	Mary Schlagel-------------	10100R	May	1954	59- 70	70	18	895	I	4,595	58	---	-
39	SB00506426DBA1	Mary Schlagel-------------	5172	Feb.	1960	62- 70	70	5	20	S	4,595	70	---	-

[1]Feet above National Geodetic Vertical Datum of 1929.

Table 5.--*Water-level records and chemical*

[Well number 4 on figure 2. Local well number is SB00506333BBA1. Depth

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM, DIS-SOLVED (MG/L AS CA)
74-04-04	4.55	74-04-04	2190	7.2	12.5	860	540	210
74-05-08	5.03	74-05-09	2190	7.4	13.0	830	510	200
74-06-14	4.34	74-06-14	2190	7.5	13.5	800	480	190
74-07-23	4.93	74-07-24	2190	7.5	14.5	820	500	200
74-08-27	4.84	74-08-28	2170	--	13.5	860	540	210
74-10-03	4.74	74-10-04	2160	--	13.5	850	520	210
74-11-11	4.78	74-11-11	2150	7.2	13.0	770	450	200
74-12-05	4.93	74-12-05	2400	6.8	13.0	840	520	210
75-02-06	4.86	75-02-06	2300	7.1	12.5	830	510	200
76-12-08	4.40	76-12-08	2100	7.5	13.5	840	530	200
77-03-08	4.71	77-03-08	2400	7.6	13.5	850	530	210
77-06-15	5.35	77-06-15	2400	7.5	14.5	860	550	210
77-09-13	4.90	77-09-13	2200	7.4	13.5	880	560	210
77-12-06	4.46	77-12-06	2200	7.3	12.5	870	540	210
78-03-09	4.65	78-03-09	2400	7.4	13.0	920	600	220
78-06-20	3.84	78-06-20	2300	7.4	13.5	910	570	220

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)
74-04-04	4.55	74-04-04	1.4	17	1630	5.2	.51	5.7
74-05-08	5.03	74-05-09	1.3	17	1570	6.5	.02	6.5
74-06-14	4.34	74-06-14	1.2	20	1500	4.7	.01	4.7
74-07-23	4.93	74-07-24	1.3	17	1580	--	--	6.0
74-08-27	4.84	74-08-28	1.3	17	1590	--	.01	5.9
74-10-03	4.74	74-10-04	1.3	17	1630	--	.00	5.8
74-11-11	4.78	74-11-11	1.3	17	1490	6.7	.00	6.7
74-12-05	4.93	74-12-05	1.3	16	1570	5.7	.00	5.7
75-02-06	4.86	75-02-06	1.2	17	1630	6.6	.00	6.6
76-12-08	4.40	76-12-08	1.3	16	1650	9.4	.01	9.4
77-03-08	4.71	77-03-08	1.4	18	1610	6.7	.01	6.7
77-06-15	5.35	77-06-15	1.3	16	1650	7.2	.00	7.2
77-09-13	4.90	77-09-13	1.3	17	1660	7.2	.00	7.2
77-12-06	4.46	77-12-06	1.3	17	1650	8.3	.00	8.3
78-03-09	4.65	78-03-09	1.4	16	1680	8.1	.01	8.1
78-06-20	3.84	78-06-20	1.2	14	1650	7.0	.02	7.0

analyses of water from observation wells

is 75 ft. Intervals open to the aquifer is 15 to 35 ft and 55 to 75 ft]

MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE, DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)
81	210	3.1	5.2	393	0	322	810	79
80	200	3.0	5.2	389	0	319	760	89
79	200	3.1	4.9	386	0	317	720	77
77	210	3.2	5.1	389	--	319	770	84
82	200	3.0	6.0	388	--	318	770	87
78	200	3.0	5.1	400	--	328	810	83
66	210	3.3	3.3	387	--	317	700	73
77	200	3.0	4.8	391	--	321	760	85
80	210	3.2	5.0	393	--	322	800	92
83	210	3.2	5.2	385	0	316	820	86
80	210	3.1	5.1	396	0	325	770	90
81	210	3.1	5.1	380	0	312	820	88
87	220	3.2	4.9	390	0	320	810	89
84	200	3.0	5.1	400	0	330	810	85
89	190	2.7	5.2	390	0	320	800	130
88	210	3.0	5.2	420	0	340	780	97

NITROGEN, AMMONIA DISSOLVED (MG/L) AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, DISSOLVED (UG/L AS MN)
.02	.82	.03	30	30
.02	.27	.01	130	50
.01	.35	.02	20	0
--	--	.05	20	0
.01	.42	.07	20	0
.04	.23	.04	40	30
.01	.41	.03	10	0
.04	.24	.05	10	0
.00	.37	.03	10	0
.00	.60	.03	90	60
.00	.38	.05	80	20
.00	.15	.04	170	30
.01	.40	.03	90	20
.02	.22	.03	160	4
.01	.57	.03	110	10
.03	1.2	.03	100	90

Table 5.--*Water-level records and chemical*

[Well number 6 on figure 2. Local well number is SB00506330CDC1.

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM, DIS-SOLVED (MG/L AS CA)
74-04-04	26.58	74-04-04	2820	7.3	11.0	1000	640	290
74-04-08	26.90	74-05-09	2810	7.4	11.5	1000	640	290
74-06-14	23.78	74-06-14	2780	7.4	12.0	1000	620	280
74-07-23	25.82	74-07-24	2760	7.5	13.0	970	600	270
74-08-27	25.43	74-08-28	2760	--	12.0	990	620	280
74-10-03	24.82	74-10-04	2770	--	11.5	1100	720	320
74-11-11	25.48	74-11-11	2900	7.3	11.0	920	550	250
74-12-05	26.00	74-12-05	3600	7.1	12.0	1100	680	300
75-02-06	26.51	75-02-06	3100	7.1	11.0	1100	720	310
75-05-14	25.88	75-05-14	3750	7.3	12.5	1100	700	310
75-08-11	25.49	75-08-11	3800	7.5	13.5	1100	740	310
75-12-02	25.08	75-12-02	3800	7.4	12.5	1100	710	310
76-03-29	26.24	76-03-29	3000	7.5	11.5	1100	680	310
76-06-28	25.66	76-06-28	2700	7.2	12.5	1100	650	300
76-09-22	24.71	76-09-22	3000	7.1	12.0	1100	720	320
76-12-08	25.38	76-12-08	2900	7.5	11.5	1200	760	320
77-03-08	26.21	77-03-08	3200	7.6	12.5	1100	730	320
77-06-15	26.07	77-06-15	3250	7.5	12.5	1200	760	330
77-09-13	25.35	77-09-13	3100	7.3	12.0	1100	710	320
77-12-06	25.56	77-12-06	3200	7.4	10.5	1100	730	310
78-04-09	26.56	78-03-09	3400	7.4	11.0	1200	780	330
78-06-20	26.04	78-06-20	3000	7.6	12.0	1200	770	330

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)
74-04-04	26.58	74-04-04	1.1	19	2210	.73	.02	.75
74-04-08	26.90	74-05-09	1.0	19	2070	1.5	.01	1.5
74-06-14	23.78	74-06-14	.9	22	2050	1.7	.01	1.7
74-07-23	25.82	74-07-24	.9	19	2040	--	--	.88
74-08-27	25.43	74-08-28	1.0	19	2050	--	.00	.83
74-10-03	24.82	74-10-04	1.0	19	2190	1.1	.00	1.1
74-11-11	25.48	74-11-11	.8	18	2010	.94	.01	.95
74-12-05	26.00	74-12-05	1.4	22	2200	1.0	.00	1.0
75-02-06	26.51	75-02-06	.9	19	2350	1.0	.00	1.0
75-05-14	25.88	75-05-14	.9	18	2300	.74	.00	.74
75-08-11	25.49	75-08-11	1.0	18	2310	1.4	.01	1.4
75-12-02	25.08	75-12-02	1.1	18	2340	1.1	.01	1.1
76-03-29	26.24	76-03-29	.9	18	2230	1.6	.00	1.6
76-06-28	25.66	76-06-28	.9	18	2130	1.7	.00	1.7
76-09-22	24.71	76-09-22	1.0	18	2350	1.9	.00	1.9
76-12-08	25.38	76-12-08	.9	17	2340	.70	.00	.70
77-03-08	26.21	77-03-08	.9	19	2270	1.8	.01	1.8
77-06-15	26.07	77-06-15	1.0	18	2350	1.7	.00	1.7
77-09-13	25.35	77-09-13	1.0	20	2300	2.6	.00	2.6
77-12-06	25.56	77-12-06	1.0	17	2460	.69	.01	.70
78-04-09	26.56	78-03-09	.9	16	2480	.60	.01	.61
78-06-20	26.04	78-06-20	.9	15	2410	1.8	.03	1.8

analyses of water from observation wells--Continued

Depth is 89 ft. Interval open to the aquifer is 59 to 89 ft]

MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE, DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)
73	340	4.6	7.6	474	0	389	1100	140
73	290	3.9	7.8	474	0	389	1000	150
73	300	4.1	7.3	468	0	384	1000	130
72	300	4.2	6.1	455	--	373	1000	140
71	300	4.1	9.0	454	--	372	1000	140
71	300	4.0	8.5	458	--	376	1100	140
71	300	4.3	5.1	453	--	372	1000	140
74	310	4.2	6.7	456	--	374	1100	150
80	320	4.2	8.4	473	--	388	1200	170
73	320	4.2	6.9	461	0	378	1200	140
85	310	4.0	8.1	472	0	387	1200	140
78	340	4.5	8.5	465	0	381	1200	150
78	310	4.1	8.6	506	0	415	1100	150
78	310	4.1	8.0	515	0	422	1000	150
80	320	4.1	8.4	494	0	405	1200	150
85	320	4.1	8.2	472	0	387	1200	150
80	330	4.3	7.7	492	0	404	1100	160
80	320	4.1	8.0	480	0	394	1200	150
80	340	4.4	7.8	510	0	420	1100	170
88	340	4.4	8.1	490	0	400	1300	150
88	340	4.3	8.3	490	0	400	1300	150
88	360	4.5	8.0	510	0	420	1200	150

NITROGEN, AMMONIA, DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, DISSOLVED (UG/L AS MN)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
.04	.45	.02	120	2000	--
.08	.52	.00	460	1500	--
.08	.61	.02	270	1600	--
--	--	.05	300	1700	--
.04	.49	.07	250	1700	--
.02	.43	.01	250	1600	--
.09	.52	.03	240	1900	--
.04	.58	.05	190	1400	--
.02	.46	.02	280	1500	--
.00	.22	.02	290	1700	--
.03	.63	.04	260	1400	--
.01	.62	.04	210	1400	--
.03	.59	.01	240	1700	--
.00	.37	.05	220	1800	6.8
.00	.48	.03	270	2100	4.6
.00	.60	.01	--	2200	--
.00	.90	.05	370	2100	--
.00	.41	.04	420	1800	--
.01	.60	.02	290	1800	--
.03	.41	.02	370	2000	--
.01	.99	.01	440	2400	--
.01	.62	.03	340	2100	--

Table 5.--*Water-level records and chemical*

[Well number 11 on figure 2. Local well number is SB00506423CCC1.

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM, DISSOLVED (MG/L AS CA)
74-04-03	27.33	74-04-03	2370	7.2	11.5	890	560	200
74-05-08	27.65	74-05-08	2320	7.3	12.5	870	540	190
74-06-13	26.99	74-06-13	2370	7.4	12.5	890	570	200
74-07-23	25.60	74-07-24	2350	7.3	13.5	860	540	190
74-08-27	24.17	74-08-27	2270	--	12.5	850	540	190
74-10-03	25.18	74-10-04	2310	--	12.0	860	550	190
74-11-11	26.03	74-11-11	2300	7.4	12.0	850	530	200
74-12-05	26.45	74-12-05	2500	7.0	12.0	880	560	200
75-02-06	27.32	75-02-06	2450	7.1	11.5	870	550	190
75-05-14	28.20	75-05-14	2900	7.1	12.5	910	600	200
75-08-12	25.04	75-08-12	3100	7.2	13.5	910	590	200
75-12-02	25.89	75-12-02	2700	7.5	13.0	850	520	190
76-03-29	27.39	76-03-29	2200	7.5	12.0	910	590	200
76-06-29	27.89	76-06-29	2500	6.5	13.0	890	560	190
76-09-22	24.97	76-09-22	2200	7.1	12.5	940	590	210
76-12-08	26.54	76-12-08	2300	7.4	12.0	890	550	200
77-03-08	27.18	77-03-08	2600	7.6	13.0	910	570	200
77-06-15	26.89	77-06-15	2600	7.3	13.0	940	590	210
77-09-13	25.47	77-09-13	2600	7.4	13.0	960	600	220
77-12-06	26.23	77-12-06	2400	7.3	12.0	980	590	210
78-03-09	27.43	78-03-09	2600	7.3	13.0	1000	630	220
78-06-20	27.99	78-06-20	2500	7.7	13.5	960	600	220

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NITRATE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)
74-04-03	27.33	74-04-03	1.9	24	1710	7.8	.12	7.9
74-05-08	27.65	74-05-08	1.9	24	1690	8.3	.02	8.3
74-06-13	26.99	74-06-13	3.4	29	1680	7.5	.01	7.5
74-07-23	25.60	74-07-24	1.8	25	1660	--	--	8.1
74-08-27	24.17	74-08-27	1.8	25	1620	--	.01	8.2
74-10-03	25.18	74-10-04	1.7	25	1650	--	.01	8.6
74-11-11	26.03	74-11-11	1.4	25	1670	7.0	.00	7.0
74-12-05	26.45	74-12-05	1.6	24	1640	7.9	.00	7.9
75-02-06	27.32	75-02-06	1.7	25	1640	9.0	.00	9.0
75-05-14	28.20	75-05-14	1.8	23	1690	8.7	.00	8.7
75-08-12	25.04	75-08-12	1.7	23	1760	7.9	.01	7.9
75-12-02	25.89	75-12-02	1.8	23	1640	7.2	.01	7.2
76-03-29	27.39	76-03-29	1.8	23	1690	7.4	.00	7.4
76-06-29	27.89	76-06-29	1.8	22	1750	7.7	.00	7.7
76-09-22	24.97	76-09-22	1.8	23	1840	9.2	.01	9.2
76-12-08	26.54	76-12-08	1.8	23	1780	11	.00	11
77-03-08	27.18	77-03-08	1.8	24	1730	7.6	.00	7.6
77-06-15	26.89	77-06-15	1.8	23	1780	7.5	.00	7.5
77-09-13	25.47	77-09-13	1.8	25	1860	7.9	.01	7.9
77-12-06	26.23	77-12-06	1.8	25	1780	12	.05	12
78-03-09	27.43	78-03-09	1.7	22	1790	9.7	.17	9.9
78-06-20	27.99	78-06-20	1.7	20	1800	7.7	.16	7.9

analyses of water from observation wells--Continued

Depth is 78 ft. Interval open to the aquifer is 48 to 78 ft]

MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE, DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)
96	230	3.3	6.7	404	0	331	790	130
95	230	3.4	6.2	394	0	323	790	120
96	220	3.2	6.4	390	0	320	770	130
94	230	3.4	6.3	394	--	323	750	130
92	220	3.3	7.6	387	--	317	740	120
94	210	3.1	7.0	383	--	314	780	120
84	220	3.3	4.4	379	--	311	800	120
92	210	3.1	6.1	384	--	315	760	120
95	210	3.1	6.7	390	--	320	750	130
99	220	3.2	5.7	377	0	309	780	140
99	220	3.2	7.1	386	0	317	830	150
90	220	3.3	6.9	401	0	329	760	120
100	210	3.0	7.0	395	0	324	780	140
100	240	3.5	6.6	402	0	330	810	150
100	230	3.3	6.7	419	0	344	880	140
96	230	3.3	6.6	421	0	345	830	140
100	230	3.3	6.4	412	0	338	830	96
100	230	3.3	6.5	420	0	344	820	150
100	240	3.4	6.5	440	0	360	860	150
110	220	3.1	6.6	470	0	390	800	120
110	210	2.9	7.4	460	0	380	810	140
100	240	3.4	6.6	440	0	360	790	170

NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, DISSOLVED (UG/L AS MN)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
.10	.66	.03	50	30	--
.07	.51	.04	30	0	--
.03	.69	.02	10	0	--
--	--	.05	40	0	--
.03	.56	.07	30	0	--
.01	.31	.02	80	0	--
.01	.56	.03	20	0	--
.05	.37	.04	10	10	--
.01	.46	.09	30	20	--
.00	.34	.03	30	10	--
.00	.38	.03	20	0	--
.00	.73	.05	20	5	--
.02	.80	.02	10	0	--
.00	.29	.04	30	0	4.3
.00	.40	.03	30	10	4.9
.00	.96	.02	70	0	--
.01	1.1	.09	50	0	--
.00	.39	.04	20	0	--
.01	.56	.03	30	10	--
.00	.39	.02	40	4	--
.00	.84	.02	10	10	--
.01	1.2	.02	80	0	--

Table 5.--*Water-level records and chemical*

[Well number 13 on figure 2. Local well number is SB00506423DCB1.

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM, DIS-SOLVED (MG/L AS CA)
73-12-14	36.80	--------	----	---	----	---	---	---
74-04-03	37.58	74-04-03	2290	7.4	12.5	930	660	220
74-05-08	38.34	74-05-08	2390	7.4	13.5	930	650	220
74-06-13	38.48	74-06-13	2380	7.5	14.0	900	630	210
74-07-23	38.52	74-07-23	2390	7.4	14.5	930	660	220
74-08-27	38.54	74-08-27	2390	--	13.5	920	640	220
74-10-03	38.13	74-10-03	2390	--	13.5	920	630	220
74-11-11	37.78	74-11-11	2400	7.2	13.0	850	580	220
74-12-05	37.86	74-12-05	2400	7.1	13.0	920	640	210
75-02-06	37.49	75-02-06	2500	7.2	13.0	910	630	210
75-05-14	38.15	75-05-14	2900	7.3	13.5	900	630	220
75-08-11	38.77	75-08-11	3000	7.3	14.5	900	640	210
75-12-01	38.54	75-12-01	2650	7.1	13.0	920	650	220
76-03-29	38.23	76-03-29	2250	7.6	12.0	910	640	220
76-06-29	38.85	76-06-29	2300	7.1	13.5	900	630	210
76-09-22	39.41	76-09-22	2200	7.2	13.5	920	660	220
76-12-08	37.64	76-12-08	2200	7.3	12.5	890	630	210
77-03-08	38.07	77-03-08	2300	7.5	13.0	890	620	210
77-06-15	39.09	77-06-15	2370	7.4	13.5	890	620	210
77-09-13	38.40	77-09-12	2000	7.3	13.5	910	640	210
77-12-06	37.71	77-12-06	2200	7.2	12.5	940	670	220
78-03-09	37.85	78-03-09	2300	7.2	13.0	940	660	220
78-06-20	38.90	78-06-20	2300	7.3	13.5	910	630	200

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)
73-12-14	36.80	--------	---	--	----	--	--	---
74-04-03	37.58	74-04-03	1.2	20	1690	4.7	.01	4.7
74-05-08	38.34	74-05-08	1.2	21	1760	5.0	.00	5.0
74-06-13	38.48	74-06-13	1.1	25	1680	4.6	.00	4.6
74-07-23	38.52	74-07-23	1.2	21	1740	--	--	5.0
74-08-27	38.54	74-08-27	1.3	21	1690	--	.01	4.1
74-10-03	38.13	74-10-03	1.2	22	1730	--	.01	5.0
74-11-11	37.78	74-11-11	1.0	21	1660	5.2	.00	5.2
74-12-05	37.86	74-12-05	1.2	21	1700	4.8	.00	4.8
75-02-06	37.49	75-02-06	1.1	21	1760	5.0	.00	5.0
75-05-14	38.15	75-05-14	1.1	20	1690	4.9	.00	4.9
75-08-11	38.77	75-08-11	1.0	20	1750	4.9	.01	4.9
75-12-01	38.54	75-12-01	1.1	20	1740	4.7	.01	4.7
76-03-29	38.23	76-03-29	1.1	20	1670	--	--	5.1
76-06-29	38.85	76-06-29	1.2	19	1770	4.9	.00	4.9
76-09-22	39.41	76-09-22	1.1	20	1750	4.9	.01	4.9
76-12-08	37.64	76-12-08	1.1	20	1700	4.8	.00	4.8
77-03-08	38.07	77-03-08	1.2	21	1700	4.7	.01	4.7
77-06-15	39.09	77-06-15	1.2	20	1690	5.3	.00	5.3
77-09-13	38.40	77-09-12	1.2	22	1710	5.0	.00	5.0
77-12-06	37.71	77-12-06	1.2	21	1740	6.0	.01	6.0
78-03-09	37.85	78-03-09	1.3	19	1720	5.5	.00	5.5
78-06-20	38.90	78-06-20	1.6	18	1710	7.8	.02	7.8

analyses of water from observation wells--Continued

Depth is 122 ft. Interval open to the aquifer is 118 to 122 ft]

MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE, DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)
--	---	---	---	---	--	---	---	---
92	210	3.0	5.2	329	0	270	820	140
92	210	3.0	5.6	334	0	274	870	150
92	210	3.0	5.3	332	0	272	810	140
93	220	3.1	5.4	338	--	277	840	150
91	210	3.0	6.7	344	--	282	810	140
90	210	3.0	6.1	349	--	286	840	150
74	230	3.4	3.5	333	--	273	780	140
95	210	3.0	5.1	340	--	279	830	140
93	210	3.0	5.6	335	--	275	870	160
85	220	3.2	5.1	327	0	268	810	150
92	220	3.2	6.0	327	0	268	870	150
90	230	3.3	5.7	331	0	271	850	140
88	200	2.9	5.7	337	0	276	810	140
90	230	3.3	5.5	328	0	269	880	150
90	220	3.2	5.5	323	0	265	870	140
89	220	3.2	5.5	319	0	262	830	150
88	220	3.2	5.5	324	0	266	820	150
89	220	3.2	5.3	330	0	270	820	140
93	220	3.2	5.1	330	0	270	820	150
94	220	3.1	5.3	330	0	270	840	150
94	210	3.0	5.8	340	0	280	830	150
99	220	3.2	6.0	340	0	280	840	120

NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, DISSOLVED (UG/L AS MN)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
--	--	--	--	--	--
.01	.43	.02	40	0	--
.02	.47	.01	20	20	--
.02	.54	.02	0	10	--
--	--	.07	20	0	--
.03	.45	.06	50	0	--
.04	.45	.03	80	30	--
.04	.61	.01	30	0	--
.08	.40	.03	10	0	--
.01	.43	.01	10	0	--
.00	.25	.04	20	5	--
.00	.47	.03	10	0	--
.00	.73	.04	60	5	--
--	--	.01	10	10	--
.00	.32	.04	80	0	4.5
.00	.26	.05	10	10	4.7
.00	.77	.01	30	0	--
.00	.40	.04	70	20	--
.00	.47	.03	90	0	--
.01	.40	.04	70	0	--
.01	.48	.01	60	0	--
.00	.55	.01	120	0	--
.00	.92	.02	160	10	--

Table 5.--*Water-level records and chemical*

[Well number 14 on figure 2. Local well number is SB00506423DCB2.

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM, DIS-SOLVED (MG/L AS CA)
73-12-15	36.30	--------	----	---	----	----	---	---
74-04-03	36.69	74-04-03	2540	7.4	12.5	960	640	220
74-05-08	36.97	74-05-08	2520	7.4	13.5	1000	680	220
74-06-13	37.11	74-06-13	2520	7.4	13.5	960	640	220
74-07-23	36.82	74-07-23	2540	7.2	14.5	1000	680	220
74-08-27	36.50	74-08-27	2530	--	13.0	980	660	210
74-10-03	36.19	74-10-03	2510	--	14.0	990	670	230
74-11-11	36.26	74-11-11	2400	7.3	12.5	840	530	210
74-12-05	36.41	74-12-05	2500	7.1	13.0	910	590	200
75-02-06	36.86	75-02-06	2600	7.2	12.5	940	610	210
75-05-14	37.32	75-05-14	2900	7.4	13.0	940	620	210
75-08-11	37.01	75-08-11	3100	7.2	14.0	890	570	200
75-12-01	36.14	75-12-01	2650	7.2	12.5	880	560	200
76-03-29	37.12	76-03-29	--	--	--	880	560	200
76-06-29	37.52	76-06-29	2500	7.1	13.0	910	600	200
76-09-22	36.48	76-09-22	2200	7.2	13.0	900	580	200
76-12-08	36.38	76-12-08	2200	7.3	12.5	910	590	200
77-03-08	37.06	77-03-08	2400	7.3	13.0	890	570	200
77-06-15	37.65	77-06-15	2450	7.3	13.0	940	620	210
77-09-13	37.17	77-09-13	2400	7.3	13.0	940	600	210
77-12-06	35.93	77-12-06	2400	7.2	12.0	940	590	210
78-03-09	36.98	78-03-09	2400	7.2	12.5	980	810	210
78-06-20	37.33	78-06-20	2400	7.4	13.0	980	640	210

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)
73-12-15	36.30	--------	--	--	----	--	--	--
74-04-03	36.69	74-04-03	1.7	24	1820	8.8	.00	8.8
74-05-08	36.97	74-05-08	1.4	25	1880	8.8	.00	8.8
74-06-13	37.11	74-06-13	1.5	28	1810	8.8	.01	8.8
74-07-23	36.82	74-07-23	1.6	24	1860	--	--	8.2
74-08-27	36.50	74-08-27	1.5	24	1910	--	.01	8.2
74-10-03	36.19	74-10-03	1.5	25	1840	--	.01	8.6
74-11-11	36.26	74-11-11	1.4	24	1700	10	.00	10
74-12-05	36.41	74-12-05	1.5	23	1770	9.0	.00	9.0
75-02-06	36.86	75-02-06	1.4	24	1830	9.6	.00	9.6
75-05-14	37.32	75-05-14	1.6	23	1780	10	.00	10
75-08-11	37.01	75-08-11	1.4	23	1770	8.9	.01	8.9
75-12-01	36.14	75-12-01	1.5	23	1740	9.8	.01	9.8
76-03-29	37.12	76-03-29	1.4	23	1650	11	.00	11
76-06-29	37.52	76-06-29	1.6	22	1820	9.6	.00	9.6
76-09-22	36.48	76-09-22	1.6	23	1830	10	.01	10
76-12-08	36.38	76-12-08	1.5	22	1800	13	.00	13
77-03-08	37.06	77-03-08	1.6	24	1760	9.5	.01	9.5
77-06-15	37.65	77-06-15	1.6	22	1780	9.1	.00	9.1
77-09-13	37.17	77-09-13	1.6	25	1800	9.9	.00	9.9
77-12-06	35.93	77-12-06	1.6	25	1800	11	.01	11
78-03-09	36.98	78-03-09	1.6	22	1690	10	.02	10
78-06-20	37.33	78-06-20	1.5	19	1820	9.0	.01	9.0

analyses of water from observation wells--Continued

Depth is 77 ft. Interval open to the aquifer is 73 to 77 ft]

MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE, DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)
---	---	--	--	---	--	---	---	---
100	230	3.2	7.0	395	0	324	860	140
110	220	3.0	7.4	391	0	321	910	150
100	230	3.2	6.6	386	0	317	850	140
110	240	3.3	6.5	388	--	318	880	150
110	240	3.3	9.0	383	--	314	940	150
100	230	3.2	7.8	385	--	316	880	140
77	250	3.8	4.7	382	--	313	770	130
100	240	3.5	6.3	387	--	317	830	140
100	230	3.3	6.9	394	--	323	870	150
100	240	3.4	6.7	391	0	321	810	150
95	230	3.4	7.5	385	0	316	840	140
92	240	3.5	7.3	390	0	320	810	130
92	220	3.2	7.6	389	--	319	730	140
100	250	3.6	7.2	383	0	314	860	150
98	240	3.5	7.2	388	0	318	880	140
100	230	3.3	7.1	392	0	322	850	140
96	240	3.5	6.9	395	0	324	800	150
100	230	3.3	6.9	390	0	320	830	150
100	240	3.4	6.6	410	0	340	820	150
100	240	3.4	7.2	420	0	340	820	140
110	230	3.2	7.5	210	0	170	810	150
110	240	3.3	7.1	410	0	340	840	150

NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, DISSOLVED (UG/L AS MN)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
--	--	--	---	--	--
.02	.39	.04	280	20	--
.02	.58	.03	10	20	--
.02	.76	.02	30	0	--
--	--	.08	20	0	--
.03	.62	.08	400	0	--
.04	.41	.05	30	10	--
.02	.62	.04	20	0	--
.03	.43	.05	10	10	--
.01	.47	.03	10	10	--
.00	.04	.06	20	10	--
.00	.47	.04	10	10	--
.01	.78	.06	40	0	--
.02	.65	.03	30	10	--
.00	.55	.06	60	0	4.3
.00	.46	.04	60	10	3.4
.00	.65	.03	50	0	--
.00	.48	.06	100	10	--
.00	.52	.04	150	0	--
.01	.75	.05	110	10	--
.00	.31	.03	150	8	--
.00	.70	.02	110	0	--
.01	1.6	.04	80	10	--

Table 5.--*Water-level records and chemical*

[Well number 15 on figure 2. Local well number is SB00506423DCB3.

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM, DIS-SOLVED (MG/L AS CA)
74-04-03	36.16	74-04-03	2290	7.3	13.0	900	580	220
--------	-----	74-05-08	2290	7.4	13.5	900	570	220
74-06-13	36.43	74-06-13	2320	7.4	13.5	870	540	210
74-07-23	36.32	74-07-23	2330	7.3	14.0	900	570	220
74-08-27	35.89	74-08-27	2370	--	13.0	910	580	220
74-10-03	35.53	74-10-03	2400	--	13.0	940	610	230
74-11-11	35.57	74-11-11	2400	7.4	12.5	890	560	230
74-12-05	35.75	74-12-05	2400	6.9	13.0	940	590	230
75-02-06	36.18	75-02-06	2500	7.1	12.5	920	570	220
75-05-14	36.74	75-05-14	2800	7.2	13.0	900	520	220
75-08-11	36.36	75-08-11	3000	7.1	14.0	910	530	220
75-12-01	35.64	75-12-01	2650	7.0	12.5	920	520	230
76-03-29	36.54	76-03-29	2150	7.5	12.0	900	520	220
76-06-29	37.13	76-06-29	2400	7.1	13.0	880	520	210
76-09-22	36.70	76-09-22	2100	7.1	13.0	920	530	220
76-12-08	35.76	76-12-08	2100	6.8	12.5	910	550	220
77-03-08	36.41	77-03-08	2200	7.2	13.0	900	500	220
77-06-15	37.70	77-06-15	2500	6.9	13.5	920	550	220
77-09-13	36.84	77-09-12	2300	7.1	13.0	970	560	230
77-12-06	36.16	77-12-06	2200	6.9	12.0	930	560	220
78-03-09	36.35	78-03-08	2400	6.8	13.0	960	890	230
78-06-20	36.68	78-06-20	2300	7.0	13.0	890	510	200

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)
74-04-03	36.16	74-04-03	1.8	26	1740	8.0	.00	8.0
--------	-----	74-05-08	2.2	26	1710	8.6	.00	8.6
74-06-13	36.43	74-06-13	2.6	30	1650	8.8	.00	8.8
74-07-23	36.32	74-07-23	2.0	26	1730	--	--	9.8
74-08-27	35.89	74-08-27	2.0	26	1740	8.7	.01	8.7
74-10-03	35.53	74-10-03	1.9	26	1790	--	.01	9.7
74-11-11	35.57	74-11-11	2.0	26	1760	11	.00	11
74-12-05	35.75	74-12-05	2.0	25	1740	9.7	.00	9.7
75-02-06	36.18	75-02-06	1.9	26	1800	10	.01	10
75-05-14	36.74	75-05-14	2.0	25	1700	13	.00	13
75-08-11	36.36	75-08-11	1.7	26	1710	9.8	.01	9.8
75-12-01	35.64	75-12-01	1.5	26	1800	10	.01	10
76-03-29	36.54	76-03-29	1.5	27	1670	10	.00	10
76-06-29	37.13	76-06-29	1.5	26	1760	8.8	.00	8.8
76-09-22	36.70	76-09-22	1.7	26	1800	7.7	.01	7.7
76-12-08	35.76	76-12-08	1.2	29	1750	10	.00	10
77-03-08	36.41	77-03-08	1.4	29	1730	7.5	.01	7.5
77-06-15	37.70	77-06-15	1.5	28	1740	8.5	.00	8.5
77-09-13	36.84	77-09-12	1.5	31	1770	8.6	.00	8.6
77-12-06	36.16	77-12-06	1.7	29	1750	10	.01	10
78-03-09	36.35	78-03-08	1.4	28	1600	11	.00	11
78-06-20	36.68	78-06-20	1.5	24	1700	8.0	.02	8.0

analyses of water from observation wells--Continued

Depth is 42 ft. Interval open to the aquifer is 40 to 42 ft]

MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE, DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)
86	210	3.0	6.3	391	0	321	880	86
84	200	2.9	6.8	397	0	326	840	95
84	210	3.1	6.4	398	0	326	780	88
86	220	3.2	5.6	405	--	332	830	94
87	220	3.2	8.2	404	--	331	840	96
88	210	3.0	7.5	397	--	326	900	90
77	230	3.4	4.7	408	--	335	860	82
88	220	3.1	6.2	419	--	344	830	85
91	220	3.2	6.8	427	--	350	880	97
84	220	3.2	6.4	457	0	375	770	94
87	210	3.0	7.2	457	0	375	800	87
84	230	3.3	6.9	485	0	398	860	80
86	210	3.0	7.6	470	0	386	760	80
87	230	3.4	6.9	446	0	366	850	87
89	220	3.2	7.0	466	0	382	880	90
87	220	3.2	6.9	439	0	360	830	94
85	230	3.3	6.9	491	0	403	790	96
89	230	3.3	6.8	450	0	369	810	94
97	220	3.1	6.5	510	0	420	800	92
93	220	3.1	6.5	450	0	370	820	95
94	210	2.9	7.4	91	0	75	830	110
94	220	3.2	6.8	460	0	380	790	100

NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, DISSOLVED (UG/L AS MN)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
.02	.33	.04	30	0	--
.03	.53	.01	10	0	--
.02	.75	.02	20	0	--
--	--	.08	20	0	--
.04	.51	.07	30	0	--
.03	.37	.03	50	0	--
.01	.54	.03	20	0	--
.03	.37	.05	50	0	--
.01	.49	.03	30	0	--
.00	.32	.06	90	10	--
.00	.30	.04	280	0	--
.01	1.1	.06	70	0	--
.03	.49	.03	80	0	--
.00	.42	.06	130	0	3.9
.00	.68	.04	100	10	3.6
.10	.47	.02	70	0	--
.01	1.5	.06	130	10	--
.00	.64	.04	130	10	--
.00	.40	.04	170	10	--
.02	.21	.02	110	8	--
.00	.74	.01	110	10	--
.01	1.5	.03	180	5	--

Table 5.--*Water-level records and chemical*

[Well number 16 on figure 2. Local well number is SB00506423DCB4.

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM, DISSOLVED (MG/L AS CA)
--------	-----	74-04-03	2480	7.3	12.5	990	650	230
74-05-08	36.50	74-05-08	2440	7.3	13.5	990	650	230
74-06-13	36.68	74-06-13	2460	7.4	13.5	990	650	230
74-07-23	36.60	74-07-23	2470	7.3	14.0	960	620	220
74-08-27	36.08	74-08-27	2460	--	13.0	980	640	210
74-10-03	35.68	74-10-03	2440	--	13.0	960	630	220
74-11-11	35.79	74-11-11	2420	7.3	12.5	950	620	230
74-12-05	35.94	74-12-05	2600	7.0	13.0	990	650	230
75-02-06	36.40	75-02-06	2600	7.1	12.0	1000	650	240
75-05-14	36.94	75-05-14	3100	7.2	13.0	970	630	230
75-08-11	36.56	75-08-11	3100	7.2	14.0	940	600	210
75-12-01	35.68	75-12-01	2650	7.0	13.0	940	610	220
76-03-29	36.66	76-03-29	2200	7.6	12.0	900	560	200
76-06-29	37.05	76-06-29	2400	7.0	13.0	940	620	220
76-09-22	36.01	76-09-22	2200	7.2	13.0	930	600	210
76-12-06	35.40	76-12-08	2200	7.3	12.0	920	590	210
77-03-08	36.56	77-03-08	2300	7.2	13.0	910	580	210
77-06-15	36.20	77-06-15	2280	7.5	13.5	880	560	200
77-09-13	36.79	77-09-12	2200	7.4	13.0	920	580	210
77-12-06	35.40	77-12-06	2200	7.1	12.0	920	580	210
78-03-09	36.45	78-03-09	2200	7.1	13.0	930	890	210
78-06-20	36.88	78-06-20	2300	7.3	13.0	900	570	200

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NITRATE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)
--------	-----	74-04-03	1.8	23	1800	8.6	.01	8.6
74-05-08	36.50	74-05-08	2.0	23	1830	8.6	.00	8.6
74-06-13	36.68	74-06-13	2.3	28	1840	7.5	.00	7.5
74-07-23	36.60	74-07-23	1.9	24	1800	--	--	9.0
74-08-27	36.08	74-08-27	1.9	24	1780	--	.01	9.3
74-10-03	35.68	74-10-03	1.8	24	1810	9.4	.01	9.4
74-11-11	35.79	74-11-11	1.5	24	1800	10	.01	10
74-12-05	35.94	74-12-05	1.8	23	1800	9.2	.00	9.2
75-02-06	36.40	75-02-06	1.7	24	2290	10	.00	10
75-05-14	36.94	75-05-14	1.9	23	1790	10	.00	10
75-08-11	36.56	75-08-11	1.7	23	1830	9.8	.00	9.8
75-12-01	35.68	75-12-01	1.8	22	1840	9.4	.01	9.4
76-03-29	36.66	76-03-29	1.8	22	1740	10	.00	10
76-06-29	37.05	76-06-29	1.9	22	1820	10	.00	10
76-09-22	36.01	76-09-22	1.9	22	1810	10	.01	10
76-12-06	35.40	76-12-08	1.9	22	1800	14	.00	14
77-03-08	36.56	77-03-08	1.9	24	1750	9.8	.00	9.8
77-06-15	36.20	77-06-15	1.9	22	1690	9.7	.00	9.7
77-09-13	36.79	77-09-12	1.9	24	1720	9.8	.00	9.8
77-12-06	35.40	77-12-06	1.9	23	1720	11	.01	11
78-03-09	36.45	78-03-09	1.1	21	1530	11	.00	11
78-06-20	36.88	78-06-20	1.9	19	1670	9.2	.02	9.2

analyses of water from observation wells--Continued

Depth is 60 ft. Interval open to the aquifer is 56 to 60 ft]

MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE, DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)
100	220	3.1	6.9	411	0	337	870	110
100	210	2.9	6.3	411	0	337	910	110
100	220	3.1	5.8	409	0	335	910	110
100	220	3.1	5.3	410	--	336	880	110
110	210	2.9	7.2	408	--	335	850	120
100	220	3.1	6.8	409	--	336	880	110
91	220	3.1	3.3	407	--	334	880	110
100	220	3.1	5.8	409	--	335	860	120
100	350	4.8	6.4	445	--	365	1200	100
95	220	3.1	5.8	409	0	335	860	110
100	220	3.1	6.6	406	0	333	900	120
95	230	3.3	6.5	398	0	326	910	120
97	210	3.0	6.7	402	0	335	850	110
96	230	3.3	6.3	402	0	330	880	120
99	220	3.1	6.2	401	0	329	900	110
96	220	3.2	6.3	399	0	327	860	120
94	220	3.2	6.0	401	0	329	840	110
93	220	3.2	5.9	390	0	320	800	110
96	220	3.2	5.6	410	0	340	810	110
96	220	3.2	6.3	410	0	340	800	110
98	210	3.0	6.3	48	0	39	800	110
98	220	3.2	6.0	410	0	340	760	120

NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, DISSOLVED (UG/L AS MN)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
.02	.58	.04	100	0	--
.03	.59	.01	10	10	--
.03	.63	.01	20	0	--
--	--	.08	20	0	--
.04	.48	.06	20	20	--
.03	.43	.04	20	30	--
.03	.57	.04	10	0	--
.04	.42	.04	20	0	--
.01	.52	.03	40	150	--
.00	.08	.06	20	10	--
.00	.67	.06	10	0	--
.04	.99	.05	40	5	--
.02	.48	.04	10	0	--
.00	.42	.06	20	0	3.7
.00	.52	.05	10	10	5.1
.06	.53	.03	20	0	--
.00	.84	.06	30	0	--
.00	.35	.05	20	0	--
.01	.00	.04	20	0	--
.06	1.4	.02	50	4	--
.00	.72	.42	20	10	--
.01	1.3	.03	0	10	--

Table 5.--*Water-level records and chemical*

[Well number 18 on figure 2. Local well number is SB00506424CCA1.

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM, DISSOLVED (MG/L AS CA)
74-03-25	32.50	--------	----	--	--	---	---	---
74-04-04	32.60	74-04-04	2240	6.9	13.0	830	500	210
74-05-08	32.98	74-05-09	2240	7.3	13.5	790	490	200
74-06-14	33.09	74-06-14	2200	7.4	14.0	820	520	210
74-07-23	33.30	74-07-24	2210	7.5	14.5	820	520	210
74-08-27	33.23	74-08-28	2200	--	14.0	800	500	200
74-10-03	32.90	74-10-03	2200	--	13.5	840	540	220
74-11-11	32.73	74-11-11	2300	7.2	13.5	820	530	220
74-12-05	32.81	74-12-05	2400	7.2	13.0	830	530	210
75-02-06	33.05	75-02-06	2400	7.1	13.0	820	520	210
75-05-14	33.38	75-05-14	2800	7.2	14.0	840	550	210
75-08-12	33.50	75-08-12	2600	7.5	14.0	880	580	230
75-12-02	32.60	75-12-02	2700	7.4	13.5	820	520	210
76-03-29	33.05	76-03-29	2200	7.6	13.0	810	510	210
76-06-29	33.59	76-06-29	2200	6.8	14.0	850	540	220
76-09-22	32.97	76-09-22	2100	7.3	13.5	830	520	210
76-12-08	32.74	76-12-08	2100	7.4	13.5	830	530	210
77-03-08	33.08	77-03-08	2200	7.5	13.5	820	520	210
77-06-15	33.85	77-06-15	2400	7.3	14.0	840	530	210
77-09-13	33.83	77-09-13	2200	7.4	14.0	830	520	210
77-12-06	32.99	77-12-06	2200	7.3	12.5	830	510	210
78-03-09	33.10	78-03-09	2250	7.3	13.0	830	530	210
78-06-20	33.18	78-06-20	2200	7.3	14.0	830	530	210

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NITRATE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)
74-03-25	32.50	--------	--	--	-----	--	--	--
74-04-04	32.60	74-04-04	1.1	18	1590	3.4	.18	3.6
74-05-08	32.98	74-05-09	1.2	17	1610	4.0	.04	4.0
74-06-14	33.09	74-06-14	1.1	17	1640	5.3	.05	5.3
74-07-23	33.30	74-07-24	1.2	18	1610	--	--	5.0
74-08-27	33.23	74-08-28	1.1	17	1580	--	.00	4.6
74-10-03	32.90	74-10-03	1.1	18	1640	--	.02	5.1
74-11-11	32.73	74-11-11	1.0	17	1570	5.6	.01	5.6
74-12-05	32.81	74-12-05	1.2	17	1590	5.1	.01	5.1
75-02-06	33.05	75-02-06	1.1	18	1650	5.7	.01	5.7
75-05-14	33.38	75-05-14	1.1	17	1640	5.5	.01	5.5
75-08-12	33.50	75-08-12	1.1	17	1660	4.9	.01	4.9
75-12-02	32.60	75-12-02	.8	11	1640	3.6	.01	3.6
76-03-29	33.05	76-03-29	1.1	16	1620	6.0	.00	6.0
76-06-29	33.59	76-06-29	1.2	16	1710	5.9	.00	5.9
76-09-22	32.97	76-09-22	1.2	16	1630	6.5	.01	6.5
76-12-08	32.74	76-12-08	1.1	16	1680	8.3	.00	8.3
77-03-08	33.08	77-03-08	1.3	18	1630	6.3	.01	6.3
77-06-15	33.85	77-06-15	1.3	16	1630	6.0	.00	6.0
77-09-13	33.83	77-09-13	1.2	18	1650	6.5	.00	6.5
77-12-06	32.99	77-12-06	1.2	18	1630	7.9	.01	7.9
78-03-09	33.10	78-03-09	1.2	16	1570	7.1	.00	7.1
78-06-20	33.18	78-06-20	1.1	14	1610	6.6	.02	6.6

analyses of water from observation wells--Continued

Depth is 113 ft. Interval open to the aquifer is 109 to 113 ft]

MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE, DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)
--	---	--	--	---	--	---	---	--
74	210	3.2	6.7	400	0	328	770	89
71	210	3.2	5.3	372	0	305	810	97
71	220	3.4	4.9	359	0	294	830	86
72	220	3.3	4.5	361	--	296	790	93
73	220	3.4	6.3	361	--	296	770	93
71	210	3.2	5.5	363	--	298	820	89
66	210	3.2	3.5	361	--	296	760	94
74	210	3.2	4.6	363	--	298	780	87
72	210	3.2	5.1	364	--	299	830	100
77	210	3.2	5.7	352	0	289	830	88
73	210	3.1	5.7	361	0	296	830	94
71	230	3.5	5.4	359	0	294	820	100
70	210	3.2	5.4	370	0	303	810	91
72	230	3.4	5.4	368	0	302	870	86
73	220	3.3	5.5	366	0	300	800	90
75	220	3.3	5.4	364	0	299	850	91
72	220	3.3	5.4	367	0	301	800	90
76	220	3.3	5.3	370	0	303	810	86
75	220	3.3	5.0	380	0	310	820	87
73	220	3.3	5.2	380	0	310	800	82
74	190	2.9	5.4	370	0	300	780	83
75	220	3.3	5.3	370	0	300	780	89

NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, DISSOLVED (UG/L AS MN)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
--	--	--	--	--	--
.06	.53	.02	150	2000	--
.35	.68	.00	1000	950	--
.14	.57	.05	240	1300	--
--	--	.05	40	100	--
.02	.41	.07	50	120	--
.04	.24	.03	40	110	--
.05	.38	.03	30	70	--
.06	.25	.04	20	30	--
.00	.20	.03	10	20	--
.01	.18	.06	30	20	--
.00	.52	.04	60	0	--
.00	.34	.04	40	5	--
.02	.08	.02	10	10	--
.00	.17	.06	20	0	17
.00	.16	.07	30	10	1.6
.06	.21	.03	30	10	--
.00	.29	.05	70	10	--
.00	.32	.05	100	10	--
.00	.28	.03	80	0	--
.01	.82	.11	170	20	--
.00	.54	.02	150	10	--
.00	1.5	.04	100	10	--

Table 5.--*Water-level records and chemical*

[Well number 19 on figure 2. Local well number is SB00506424CCA2.

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM, DISSOLVED (MG/L AS CA)
74-04-04	32.08	74-04-04	2430	7.1	12.5	990	730	240
74-05-08	32.38	74-05-09	2450	7.3	13.5	970	650	230
74-06-14	32.26	74-06-14	2440	7.5	13.5	990	680	240
74-07-23	32.65	74-07-24	2450	7.4	14.5	970	660	230
74-08-27	32.58	74-08-28	2430	--	14.0	990	680	240
74-10-03	32.23	74-10-03	2420	--	13.0	920	600	210
74-11-11	32.08	74-11-11	2400	7.2	13.5	940	630	230
74-12-05	32.13	74-12-05	2600	7.1	13.0	1000	690	240
75-02-06	32.35	75-02-06	2600	7.1	12.5	1000	690	240
75-05-14	32.69	75-05-14	3100	7.2	13.5	990	680	240
75-08-12	32.83	75-08-12	3100	7.7	14.0	1000	700	240
75-12-01	31.92	75-12-02	2900	7.3	13.5	960	650	230
76-03-29	32.38	76-03-29	2400	7.7	13.0	1000	690	250
76-06-29	33.00	76-06-29	2500	6.7	13.5	1000	680	240
76-09-22	32.32	76-09-22	2400	7.3	13.5	1000	710	250
76-12-08	32.07	76-12-08	2400	7.4	13.0	1000	690	240
77-03-08	32.41	77-03-08	2600	7.5	13.5	1000	680	240
77-06-15	33.10	77-06-15	2500	7.4	13.5	1000	710	250
77-09-13	33.18	77-09-13	2600	7.4	13.5	1100	740	250
77-12-06	32.34	77-12-06	2600	7.3	12.5	1100	740	250
78-03-09	32.44	78-03-09	2700	7.3	13.0	1100	1000	250
78-06-20	32.50	78-06-20	2600	7.3	13.5	1000	690	230

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NITRATE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)
74-04-04	32.08	74-04-04	1.3	19	1870	4.4	.10	4.5
74-05-08	32.38	74-05-09	1.3	19	1790	5.7	.05	5.7
74-06-14	32.26	74-06-14	1.3	19	1760	5.9	.02	5.9
74-07-23	32.65	74-07-24	1.3	20	1810	--	--	5.8
74-08-27	32.58	74-08-28	1.3	20	1810	--	.02	4.2
74-10-03	32.23	74-10-03	1.3	20	1750	6.0	.01	6.0
74-11-11	32.08	74-11-11	1.1	19	1710	6.4	.00	6.4
74-12-05	32.13	74-12-05	1.3	19	1780	5.8	.01	5.8
75-02-06	32.35	75-02-06	1.2	20	1850	6.5	.01	6.5
75-05-14	32.69	75-05-14	1.3	19	1810	5.8	.02	5.8
75-08-12	32.83	75-08-12	1.2	19	1870	6.3	.02	6.3
75-12-01	31.92	75-12-02	1.3	19	1850	5.8	.02	5.8
76-03-29	32.38	76-03-29	1.2	19	1820	7.1	.01	7.1
76-06-29	33.00	76-06-29	1.2	18	1940	6.9	.01	6.9
76-09-22	32.32	76-09-22	1.3	19	1950	7.5	.01	7.5
76-12-08	32.07	76-12-08	1.3	21	1930	9.3	.01	9.3
77-03-08	32.41	77-03-08	1.4	20	1920	7.0	.01	7.0
77-06-15	33.10	77-06-15	1.4	19	1980	7.2	.00	7.2
77-09-13	33.18	77-09-13	1.3	20	1920	7.4	.00	7.4
77-12-06	32.34	77-12-06	1.3	21	2000	8.2	.01	8.2
78-03-09	32.44	78-03-09	1.3	18	1820	8.4	.00	8.4
78-06-20	32.50	78-06-20	1.2	16	1970	7.7	.01	7.7

analyses of water from observation wells--Continued

Depth is 73 ft. Interval open to the aquifer is 69 to 73 ft]

MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE, DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)
96	220	3.0	6.1	328	0	269	990	110
95	200	2.8	5.4	386	0	317	900	120
95	210	2.9	5.1	380	0	312	870	110
97	220	3.1	5.1	384	--	315	900	120
96	220	3.0	6.6	383	--	314	900	120
95	220	3.2	5.8	381	--	313	870	110
88	220	3.1	3.4	379	--	311	820	110
99	210	2.9	4.6	383	--	314	880	110
98	210	2.9	5.3	385	--	316	930	130
94	230	3.2	5.7	374	0	307	890	120
100	220	3.0	5.7	382	0	313	940	130
93	230	3.2	5.4	379	0	311	950	110
93	210	2.9	5.6	392	0	322	910	110
99	240	3.3	5.5	394	0	323	990	120
100	230	3.1	5.6	396	0	325	1000	120
100	230	3.1	5.5	395	0	324	970	130
99	230	3.2	5.5	395	0	324	970	130
100	240	3.2	5.5	400	0	328	1000	130
110	220	2.9	5.2	410	0	340	950	130
110	240	3.2	5.2	410	0	340	1000	130
110	220	2.9	5.8	70	0	57	1000	140
110	240	3.3	5.6	410	0	340	1000	130

NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, DISSOLVED (UG/L AS MN)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
.05	.89	.07	60	2200	--
.18	.71	.02	130	1100	--
.11	.61	.06	20	390	--
--	--	.06	30	280	--
.01	.44	.09	20	200	--
.03	.37	.03	30	150	--
.04	.42	.03	40	100	--
.04	.25	.05	10	60	--
.00	.36	.03	10	60	--
.01	.33	.07	30	50	--
.00	.41	.06	40	20	--
.00	.56	.06	30	30	--
.02	.36	.03	40	20	--
.00	.38	.06	20	30	3.9
.00	.34	.05	10	30	2.7
--	.48	.06	30	20	--
.00	.36	.06	50	20	--
.00	.49	.05	90	20	--
.00	.45	.03	60	20	--
.00	.69	.07	70	20	--
.00	.71	.03	40	20	--
.01	1.4	.05	40	20	--

Table 5.--*Water-level records and chemical*

[Well number 20 on figure 2. Local well number is SB00506424CCA3.

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)
74-04-04	32.33	74-04-04	2450	7.0	13.0	1000	620	250
74-05-08	32.55	74-05-09	2540	7.5	14.0	1000	690	250
74-06-14	32.57	74-06-14	2600	7.5	13.5	1100	730	260
74-07-23	32.90	74-07-24	2630	7.5	14.0	1100	750	270
74-08-27	32.80	74-08-28	2670	--	13.5	1100	790	270
74-10-03	32.45	74-10-03	2600	--	13.5	1100	700	260
74-11-11	32.27	74-11-11	2550	7.3	13.0	920	580	210
74-12-05	32.43	74-12-05	2800	7.1	13.0	1100	780	270
75-02-06	32.58	75-02-06	2700	7.2	13.0	1000	690	250
75-05-14	32.89	75-05-14	3100	7.3	13.5	1000	670	240
75-08-12	33.28	75-08-12	3300	7.5	14.0	1000	670	230
75-12-02	32.15	75-12-02	3300	7.2	13.0	1100	720	270
76-03-29	33.14	76-03-29	2450	7.7	13.0	1000	640	240
76-06-29	33.01	76-06-29	2400	6.8	13.5	1100	680	240
76-09-22	32.57	76-09-22	2500	7.4	13.5	1100	710	250
76-12-08	32.29	76-12-08	2500	7.5	12.5	1100	730	250
77-03-08	32.57	77-03-08	2500	7.6	13.5	1100	690	250
77-06-15	33.20	77-06-15	2600	7.6	13.5	1100	770	260
77-09-13	33.48	77-09-13	2600	7.5	13.0	1100	700	250
77-12-06	32.55	77-12-06	2600	7.4	12.5	1100	730	250
78-03-09	33.34	78-03-09	2650	7.4	13.5	1100	1000	240
78-06-20	32.62	78-06-20	2600	7.4	13.0	1100	720	240

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NITRATE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)
74-04-04	32.33	74-04-04	1.8	21	1920	4.5	.17	4.7
74-05-08	32.55	74-05-09	2.2	20	1920	11	.06	11
74-06-14	32.57	74-06-14	2.7	20	1890	12	.02	12
74-07-23	32.90	74-07-24	2.0	21	1980	--	--	13
74-08-27	32.80	74-08-28	2.0	21	2020	--	.01	13
74-10-03	32.45	74-10-03	1.9	21	1950	11	.00	11
74-11-11	32.27	74-11-11	1.6	21	1840	13	.00	13
74-12-05	32.43	74-12-05	1.8	20	2000	12	.00	12
75-02-06	32.58	75-02-06	1.8	21	1990	11	.00	11
75-05-14	32.89	75-05-14	1.7	21	1840	8.6	.00	8.6
75-08-12	33.28	75-08-12	1.7	20	1900	9.6	.01	9.6
75-12-02	32.15	75-12-02	2.0	19	2120	9.3	.01	9.3
76-03-29	33.14	76-03-29	1.8	19	1910	10	.00	10
76-06-29	33.01	76-06-29	1.7	19	2000	11	.00	11
76-09-22	32.57	76-09-22	1.7	20	1990	11	.00	11
76-12-08	32.29	76-12-08	1.7	20	2030	15	.00	15
77-03-08	32.57	77-03-08	1.8	21	2000	12	.01	12
77-06-15	33.20	77-06-15	1.8	19	2000	12	.00	12
77-09-13	33.48	77-09-13	1.9	21	1940	14	.00	14
77-12-06	32.55	77-12-06	1.9	21	2060	19	.01	19
78-03-09	33.34	78-03-09	1.9	19	1780	15	.00	15
78-06-20	32.62	78-06-20	1.9	17	1950	18	.02	18

analyses of water from observation wells--Continued

Depth is 38 ft. Interval open to the aquifer is 34 to 38 ft]

MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE, DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)
96	220	3.0	7.6	484	0	397	960	95
98	210	2.9	6.8	413	0	339	970	110
100	220	2.9	6.4	400	0	328	930	100
100	230	3.0	7.5	406	--	333	980	110
110	230	3.0	8.1	410	--	336	1000	120
100	230	3.1	7.3	446	--	366	950	110
96	240	3.4	4.3	414	--	340	910	100
110	230	3.0	5.9	419	--	344	990	110
100	230	3.1	6.8	428	--	351	990	130
100	230	3.1	6.8	412	0	338	880	120
110	230	3.1	7.2	430	0	353	940	110
100	260	3.4	7.2	448	0	367	1100	100
100	230	3.1	7.5	450	0	369	950	98
110	250	3.4	7.5	454	0	372	1000	98
110	230	3.1	7.5	450	0	369	1000	96
120	230	3.0	7.6	471	0	386	1000	100
110	230	3.1	7.6	470	0	385	980	110
120	230	3.0	7.8	460	0	377	980	100
110	210	2.8	7.2	460	0	380	950	100
120	240	3.1	6.8	470	0	390	1000	100
120	210	2.8	8.0	120	0	98	960	100
120	230	3.0	7.7	450	0	370	920	110

NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, DISSOLVED (UG/L AS MN)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
.09	1.1	.04	50	4900	--
.12	.56	.01	50	210	--
.05	.75	.06	20	40	--
--	--	.07	20	10	--
.03	.46	.12	40	30	--
1.9	.30	.05	50	30	--
.01	.48	.04	30	0	--
.04	.37	.05	10	10	--
.01	.46	.04	0	20	--
.01	.40	.07	30	10	--
.00	.64	.07	20	0	--
.00	.91	.08	30	5	--
.02	.47	.06	10	0	--
.00	.26	.08	20	0	4.0
.00	.52	.06	10	10	3.7
.08	.82	.05	20	0	--
.00	.72	.07	40	10	--
.00	.33	.05	30	10	--
.00	.54	.04	30	10	--
.01	2.0	.06	150	4	--
.00	.95	.04	20	0	--
.01	1.8	.04	10	5	--

Table 5.--*Water-level records and chemical*

[Well number 23 on figure 2. Local well number is SB00506425ACB1.

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM, DIS-SOLVED (MG/L AS CA)
74-04-03	34.14	74-04-03	2730	6.5	11.5	1100	600	290
74-05-08	34.18	74-05-08	2470	6.9	13.5	920	520	230
74-06-13	34.44	74-06-13	2340	7.1	13.5	830	500	210
74-07-23	34.69	74-07-23	2470	7.3	15.0	830	520	210
74-08-27	34.55	74-08-27	2700	7.2	14.5	920	600	220
74-10-03	33.58	74-10-03	2920	--	13.5	960	600	230
74-11-11	33.50	74-11-11	3000	7.1	12.5	1000	660	250
74-12-05	33.66	74-12-05	3200	6.9	12.0	1100	740	260
75-02-06	33.98	75-02-06	3100	7.0	12.0	970	640	230
75-05-14	34.52	75-05-14	3400	7.2	13.5	940	600	230
75-08-11	34.16	75-08-11	2900	7.2	13.5	800	520	200
75-12-01	33.69	75-12-01	3400	7.4	12.5	1000	670	250
76-03-29	34.12	76-03-29	2600	7.7	12.0	920	580	220
76-06-29	34.76	76-06-29	2400	6.7	14.0	760	470	190
76-09-22	34.35	76-09-22	2200	7.2	13.5	790	510	200
76-12-08	33.83	76-12-08	2800	7.3	13.0	1100	710	260
77-03-08	34.27	77-03-08	2700	7.6	13.0	940	620	230
77-06-15	34.88	77-06-15	2400	7.3	14.0	840	540	210
77-09-13	34.94	77-09-13	2300	7.5	13.0	850	540	210
77-12-06	34.09	77-12-06	2200	7.3	11.5	840	540	210
78-03-09	34.32	78-03-09	3500	7.2	12.5	1300	900	300
78-06-20	34.37	78-06-20	2400	7.0	13.5	860	560	210

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)
74-04-03	34.14	74-04-03	1.0	22	2010	.44	.66	1.1
74-05-08	34.18	74-05-08	1.2	21	1820	1.7	.03	1.7
74-06-13	34.44	74-06-13	1.1	19	1700	2.2	.02	2.2
74-07-23	34.69	74-07-23	1.3	19	1790	--	--	3.8
74-08-27	34.55	74-08-27	2.2	24	1920	2.9	.00	2.9
74-10-03	33.58	74-10-03	1.4	20	2220	4.8	.30	5.1
74-11-11	33.50	74-11-11	1.2	20	2260	5.9	.25	6.1
74-12-05	33.66	74-12-05	1.4	19	2280	6.1	.35	6.4
75-02-06	33.98	75-02-06	1.4	20	1860	3.4	.03	3.4
75-05-14	34.52	75-05-14	1.4	16	2050	.48	.00	.48
75-08-11	34.16	75-08-11	1.1	17	1740	3.7	.08	3.8
75-12-01	33.69	75-12-01	1.3	16	2320	4.2	.01	4.2
76-03-29	34.12	76-03-29	1.2	15	1920	1.9	.01	1.9
76-06-29	34.76	76-06-29	1.3	16	1720	4.0	.05	4.0
76-09-22	34.35	76-09-22	1.3	16	1750	4.2	.02	4.2
76-12-08	33.83	76-12-08	1.3	19	2280	11	.01	11
77-03-08	34.27	77-03-08	1.3	18	2050	5.3	.00	5.3
77-06-15	34.88	77-06-15	1.3	16	1740	3.7	.01	3.7
77-09-13	34.94	77-09-13	1.2	17	1860	3.7	.01	3.7
77-12-06	34.09	77-12-06	1.3	16	1770	2.1	.01	2.1
78-03-09	34.32	78-03-09	1.5	19	2760	8.6	.00	8.6
78-06-20	34.37	78-06-20	1.1	13	1760	1.9	.03	1.9

analyses of water from observation wells--Continued

Depth is 99 ft. Interval open to the aquifer is 94 to 98 ft]

MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE, DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)
100	250	3.2	6.8	656	0	538	910	94
83	250	3.6	5.0	481	0	395	900	77
73	240	3.6	4.8	393	0	322	880	66
75	260	3.9	4.3	380	--	312	940	77
90	290	4.2	7.1	388	--	318	1000	82
93	340	4.8	6.8	435	--	357	1200	91
94	350	4.8	4.0	434	--	356	1200	95
110	340	4.5	5.4	441	--	362	1200	95
97	230	3.2	6.7	410	--	336	940	120
88	320	4.6	5.1	412	0	338	1100	81
74	260	4.0	5.9	351	0	288	920	69
94	340	4.7	6.8	416	0	341	1300	85
91	300	4.3	6.6	414	0	340	1000	77
70	270	4.3	5.5	353	0	290	910	70
71	250	3.9	5.6	347	0	285	950	67
99	340	4.6	6.5	428	0	351	1200	97
88	300	4.3	6.0	390	0	320	1100	92
76	260	3.9	5.3	360	0	300	910	68
79	270	4.0	5.2	380	0	310	1000	77
77	250	3.8	5.7	370	0	300	950	71
130	410	5.0	8.0	470	0	390	1500	120
82	260	3.9	6.0	370	0	300	920	78

NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, DISSOLVED (UG/L AS MN)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
.17	.64	.02	3300	4900	--
.17	.71	.00	5300	2700	--
.34	.81	.04	1500	1500	--
--	--	.04	230	950	--
.15	.44	.05	310	810	--
.14	.57	.02	60	490	--
.08	.71	.01	40	300	--
.08	.49	.02	30	150	--
.01	.59	.01	10	10	--
.02	.21	.04	60	160	--
.00	.21	.02	20	110	--
.08	.94	.02	130	50	--
.04	.30	.00	230	50	--
.00	.25	.04	100	70	2.2
.00	.23	.01	90	50	1.2
.00	.84	.01	60	30	--
.02	.71	.01	110	40	--
.05	.33	.03	100	40	--
.01	.39	.03	90	40	--
.00	2.0	.01	160	30	--
.00	.64	.01	180	10	--
.01	.35	.02	110	30	--

Table 5.--*Water-level records and chemical*

[Well number 24 on figure 2. Local well number is SB00506425ACB2.

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM, DISSOLVED (MG/L AS CA)
74-04-03	33.42	74-04-03	2530	7.2	11.5	1100	700	260
74-05-08	33.49	74-05-08	2770	7.3	12.5	1000	650	250
74-06-13	33.82	74-06-13	2560	7.4	13.0	940	590	230
74-07-23	33.95	74-07-23	2560	7.3	13.5	900	540	220
74-08-27	33.70	74-08-27	2500	7.1	12.5	850	500	200
74-10-03	33.08	74-10-03	2460	--	12.5	860	510	210
74-11-11	33.08	74-11-11	2500	7.2	12.0	840	490	210
74-12-05	33.16	74-12-05	2700	7.1	12.0	860	510	210
75-02-06	33.52	75-02-06	2700	7.1	11.5	870	520	210
75-05-14	34.18	75-05-14	3100	7.2	12.5	870	530	230
75-08-11	34.43	75-08-11	3000	7.3	12.5	900	550	210
75-12-01	33.30	75-12-01	3000	7.4	11.5	910	560	220
76-03-29	33.70	76-03-29	2675	7.4	12.0	1000	660	250
76-06-29	34.42	76-06-29	2900	6.6	13.0	1000	680	250
76-09-22	34.08	76-09-22	2800	7.1	13.5	1100	730	270
76-12-08	33.39	76-12-08	2900	7.3	12.0	1200	780	280
77-03-08	33.90	77-03-08	3000	7.4	12.5	1000	660	250
77-06-15	34.67	77-06-15	3000	7.4	13.0	980	610	240
77-09-13	34.52	77-09-13	3000	7.5	13.0	1100	680	260
77-12-06	33.84	77-12-06	3000	7.2	12.0	1100	660	240
78-03-09	33.84	78-03-09	3000	7.2	12.5	1100	710	260
78-06-20	34.11	78-06-20	3000	7.3	13.0	1100	680	250

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NITRATE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)
74-04-03	33.42	74-04-03	1.5	22	2250	7.3	.04	7.3
74-05-08	33.49	74-05-08	1.5	23	2100	7.7	.02	7.7
74-06-13	33.82	74-06-13	1.4	23	1960	7.1	.02	7.1
74-07-23	33.95	74-07-23	1.6	24	1890	--	--	7.1
74-08-27	33.70	74-08-27	1.3	19	1780	4.2	.01	4.2
74-10-03	33.08	74-10-03	1.5	24	1830	--	.01	6.7
74-11-11	33.08	74-11-11	1.5	23	1820	6.5	.02	6.5
74-12-05	33.16	74-12-05	1.6	23	1820	6.7	.00	6.7
75-02-06	33.52	75-02-06	1.5	23	1890	7.3	.00	7.3
75-05-14	34.18	75-05-14	1.5	23	1870	9.9	.00	9.9
75-08-11	34.43	75-08-11	1.4	22	1830	6.8	.01	6.8
75-12-01	33.30	75-12-01	1.6	22	1950	7.0	.01	7.0
76-03-29	33.70	76-03-29	1.6	22	2130	8.5	.00	8.5
76-06-29	34.42	76-06-29	1.6	21	2250	8.8	.00	8.8
76-09-22	34.08	76-09-22	1.6	22	2390	9.4	.01	9.4
76-12-08	33.39	76-12-08	1.6	21	2540	12	.00	12
77-03-08	33.90	77-03-08	1.7	23	2320	10	.00	10
77-06-15	34.67	77-06-15	1.7	21	2290	8.6	.00	8.6
77-09-13	34.52	77-09-13	1.8	23	2340	10	.00	10
77-12-06	33.84	77-12-06	1.8	22	2350	11	.01	11
78-03-09	33.84	78-03-09	1.8	21	2350	9.7	.00	9.7
78-06-20	34.11	78-06-20	1.6	19	2370	9.5	.02	9.5

analyses of water from observation wells--Continued

Depth is 64 ft. Interval open to the aquifer is 60 to 64 ft]

MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE, DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)
100	320	4.3	5.9	439	0	360	1200	96
94	280	3.8	6.0	436	0	358	1100	100
89	280	4.0	5.5	429	0	352	1000	92
84	280	4.1	4.2	428	--	351	940	95
85	260	3.9	6.9	429	--	352	890	91
81	260	3.9	6.3	426	--	349	920	89
76	270	4.1	4.4	426	--	349	910	83
82	270	4.0	5.4	430	--	353	900	90
85	290	4.3	6.1	432	--	354	930	98
72	270	4.0	5.2	421	0	345	920	94
92	270	3.9	6.2	426	0	349	900	90
87	290	4.2	6.5	425	0	349	1000	85
96	300	4.1	7.1	435	0	357	1100	97
100	320	4.3	7.0	434	0	356	1200	97
100	330	4.4	7.3	435	0	357	1300	98
110	340	4.4	7.5	453	0	372	1400	100
98	360	4.9	6.6	454	0	372	1200	110
93	350	4.9	6.7	460	0	380	1200	110
100	360	4.8	6.5	470	0	390	1200	110
110	360	4.8	6.9	480	0	390	1200	120
110	350	4.6	7.4	480	0	390	1200	120
110	380	5.0	8.2	480	0	390	1200	120

NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, DISSOLVED (UG/L AS MN)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
.08	.71	.03	160	150	--
.12	.62	.02	70	30	--
.05	.72	.05	20	0	--
--	--	.06	50	0	--
.04	.66	.03	20	0	--
.02	.35	.03	60	0	--
.01	.60	.04	20	0	--
.01	.33	.04	40	10	--
.01	.48	.03	10	20	--
.02	.10	.04	40	5	--
.00	.30	.04	10	0	--
.09	.97	.05	30	10	--
.02	.49	.03	10	0	--
.00	.23	.07	10	0	3.9
.00	.40	.04	30	10	5.3
.00	1.1	.02	80	10	--
.01	.75	.04	50	10	--
.04	.30	.05	90	10	--
.01	.54	.02	180	10	--
.01	.22	.02	200	20	--
.00	.62	.02	100	20	--
.01	1.7	.07	230	5	--

Table 5.--*Water-level records and chemical*

[Well number 25 on figure 2. Local well number is SB00506425ACB3.

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM, DISSOLVED (MG/L AS CA)
74-04-03	33.61	74-04-03	3090	7.1	11.5	1300	910	320
74-05-08	33.65	74-05-08	3000	7.3	13.0	1200	870	300
74-06-13	34.05	74-06-13	3150	7.4	12.5	1300	1000	330
74-07-23	34.17	74-07-23	3140	7.3	13.0	1300	1000	330
74-08-27	33.91	74-08-27	3190	--	12.0	1500	1100	360
74-10-03	33.26	74-10-03	3210	--	12.0	1300	1000	370
74-11-11	33.24	74-11-11	3400	7.2	11.5	1500	1100	390
74-12-05	33.33	74-12-05	3200	7.0	12.0	1600	1200	400
75-02-06	33.69	75-02-06	3600	7.0	11.5	1500	1100	380
75-05-14	34.36	75-05-14	4200	6.8	12.5	1400	1000	360
75-08-11	32.55	75-08-11	4000	7.0	13.5	1400	990	360
76-06-29	34.56	76-06-29	2900	6.1	12.5	1100	730	300
76-09-22	34.26	76-09-22	2700	6.9	13.5	1100	770	310
76-12-08	33.56	76-12-08	2800	6.7	12.0	1100	730	310
77-03-08	34.05	77-03-08	2900	7.2	12.5	1100	740	290
77-06-15	34.80	77-06-15	3000	6.9	12.5	1100	750	280
77-09-13	34.70	77-09-13	2900	7.2	13.0	1200	820	300
77-12-06	33.74	77-12-06	3000	6.9	12.0	1100	760	280
78-03-09	34.01	78-03-09	3000	7.0	12.5	1100	1000	270
78-06-20	34.25	78-06-20	3000	7.1	13.0	1200	810	300

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NITRATE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)
74-04-03	33.61	74-04-03	1.6	22	2410	28	.22	28
74-05-08	33.65	74-05-08	.9	23	2290	13	.08	13
74-06-13	34.05	74-06-13	2.6	23	2550	35	.05	35
74-07-23	34.17	74-07-23	1.6	23	2430	--	--	35
74-08-27	33.91	74-08-27	1.5	23	2570	--	.02	25
74-10-03	33.26	74-10-03	1.6	23	2560	--	.01	37
74-11-11	33.24	74-11-11	1.5	22	2680	50	.01	50
74-12-05	33.33	74-12-05	.9	18	2690	.42	.00	.42
75-02-06	33.69	75-02-06	1.1	26	2660	38	.00	38
75-05-14	34.36	75-05-14	1.1	25	2530	35	.00	35
75-08-11	32.55	75-08-11	.9	27	2470	31	.01	31
76-06-29	34.56	76-06-29	.9	29	2260	22	.00	22
76-09-22	34.26	76-09-22	1.0	27	2250	22	.01	22
76-12-08	33.56	76-12-08	.7	31	2250	30	.01	30
77-03-08	34.05	77-03-08	.8	31	2120	23	.00	23
77-06-15	34.80	77-06-15	1.0	27	2180	28	.01	28
77-09-13	34.70	77-09-13	.9	30	2150	16	.00	16
77-12-06	33.74	77-12-06	1.2	26	2310	26	.01	26
78-03-09	34.01	78-03-09	1.3	24	2080	22	.00	22
78-06-20	34.25	78-06-20	1.2	22	2330	22	.02	22

analyses of water from observation wells--Continued

Depth is 46 ft. Interval open to the aquifer is 42 to 46 ft]

MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE, DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)
110	290	3.6	5.9	421	0	345	1200	130
110	290	3.6	5.5	401	0	329	1200	110
120	290	3.5	5.6	381	0	313	1300	140
120	270	3.2	3.6	385	--	316	1200	140
140	270	3.1	7.1	417	--	342	1300	150
100	270	3.2	6.0	404	--	331	1300	130
130	250	2.8	3.6	459	--	376	1300	140
150	240	2.6	5.1	478	--	392	1300	150
140	260	2.9	6.0	465	--	381	1300	150
130	260	3.0	6.3	483	0	396	1200	150
120	250	2.9	6.2	491	0	403	1200	130
89	270	3.5	5.9	475	0	390	1100	130
89	280	3.6	5.7	448	0	367	1100	120
91	280	3.6	5.9	508	0	417	1000	150
84	280	3.7	5.7	403	0	331	970	160
91	290	3.9	5.8	400	0	328	1000	160
98	270	3.5	5.6	400	0	330	1000	180
100	320	4.2	5.9	430	0	350	1100	150
100	300	4.0	6.2	70	0	57	1100	150
100	330	4.2	6.0	430	0	350	1100	160

NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, DISSOLVED (UG/L AS MN)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
.06	.75	.03	120	260	--
.20	.62	.04	40	40	--
.07	.83	.06	20	0	--
--	--	.07	50	0	--
.04	.01	.11	20	20	--
.05	.26	.05	50	30	--
.02	.37	.04	20	0	--
.03	.38	.03	10	10	--
.01	.66	.03	10	10	--
.00	.33	.06	30	10	--
.01	.32	.03	10	10	--
.00	.42	.07	0	0	9.0
.00	.59	.06	10	10	23
.11	.53	.02	30	10	--
.01	1.6	.05	30	10	--
.00	.03	.04	20	10	--
.01	.67	.01	30	0	--
.01	.70	.01	40	20	--
.01	1.0	.01	10	0	--
.01	1.8	.03	0	10	--

Table 5.--*Water-level records and chemical*

[Well number 26 on figure 2. Local well number is SB00506425ADD1.

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM, DIS-SOLVED (MG/L AS CA)
74-04-04	31.04	74-04-04	4330	7.2	12.5	1500	1100	340
74-05-08	31.20	74-05-09	4330	7.3	13.0	1600	1200	340
74-06-14	31.50	74-06-14	4310	7.3	13.5	1500	1100	340
74-07-23	32.40	74-07-23	4510	7.4	14.0	1600	1200	340
74-08-27	32.20	74-08-27	4550	--	13.5	1600	1200	350
74-10-03	30.60	74-10-03	4490	--	13.5	1500	1100	330
74-11-11	30.69	74-11-11	4500	7.2	12.5	1500	1100	320
74-12-05	30.90	74-12-05	5700	7.1	13.0	1500	1100	330
75-02-06	31.09	75-02-06	5000	7.0	13.0	1500	1100	320
75-05-14	31.75	75-05-14	6500	7.3	13.5	1500	1100	330
75-08-11	32.32	75-08-11	3700	7.6	14.0	1500	1100	310
75-12-01	30.74	75-12-01	5500	7.4	12.5	1400	1100	310
76-03-29	31.15	76-03-29	4200	7.4	12.0	1400	1100	330
76-06-29	32.75	76-06-29	4400	6.6	13.5	1400	1000	310
76-09-22	31.24	76-09-22	4000	7.1	13.0	1400	1000	320
76-12-08	30.70	76-12-08	4000	7.3	12.5	1400	1100	310
77-03-08	31.20	77-03-08	4500	7.6	12.5	1400	1100	310
77-06-29	32.58	77-06-15	5000	7.5	13.5	1500	1100	320
77-09-13	31.57	77-09-13	5000	7.3	13.0	1400	1000	320
77-12-06	30.33	77-12-06	4000	7.2	12.0	1400	950	300
78-03-09	31.06	78-03-09	4000	7.2	13.0	1300	1300	290
78-06-20	31.85	78-06-20	4000	7.1	13.5	1500	1100	300

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)
74-04-04	31.04	74-04-04	1.8	20	3560	5.1	.06	5.2
74-05-08	31.20	74-05-09	2.0	20	3510	7.3	.04	7.3
74-06-14	31.50	74-06-14	2.5	20	3460	.07	.01	.08
74-07-23	32.40	74-07-23	1.6	21	3660	--	--	8.3
74-08-27	32.20	74-08-27	1.7	20	3790	10	.02	10
74-10-03	30.60	74-10-03	1.8	20	3520	8.6	.01	8.6
74-11-11	30.69	74-11-11	1.5	20	3390	8.5	.00	8.5
74-12-05	30.90	74-12-05	1.7	19	3520	5.9	.00	5.9
75-02-06	31.09	75-02-06	1.6	20	3530	7.4	.00	7.4
75-05-14	31.75	75-05-14	1.8	19	3520	8.1	.00	8.1
75-08-11	32.32	75-08-11	1.7	20	3640	8.4	.00	8.4
75-12-01	30.74	75-12-01	1.8	19	3610	7.5	.01	7.5
76-03-29	31.15	76-03-29	1.8	19	3420	5.0	.00	5.0
76-06-29	32.75	76-06-29	1.8	18	3490	7.6	.00	7.6
76-09-22	31.24	76-09-22	1.9	19	3500	8.2	.01	8.2
76-12-08	30.70	76-12-08	1.8	18	3380	--	--	6.5
77-03-08	31.20	77-03-08	1.7	21	3400	4.9	.00	4.9
77-06-29	32.58	77-06-15	1.8	18	3380	4.6	.00	4.6
77-09-13	31.57	77-09-13	1.8	20	3370	5.6	.00	5.6
77-12-06	30.33	77-12-06	1.7	19	3170	2.5	.01	2.5
78-03-09	31.06	78-03-09	1.8	17	2880	2.3	.01	2.3
78-06-20	31.85	78-06-20	1.7	16	3130	3.6	.03	3.6

analyses of water from observation wells--Continued

Depth is 90 ft. Interval open to the aquifer is 60 to 90 ft]

MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE, DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)
160	600	6.7	10	454	0	372	2000	180
170	540	6.0	9.3	445	0	365	2000	180
160	550	6.2	9.5	466	0	382	2000	150
170	600	6.6	7.2	481	--	395	2100	150
170	600	6.6	11	493	--	404	2200	150
160	580	6.6	9.8	484	--	397	2000	140
160	580	6.6	5.2	465	--	381	1900	140
160	590	6.7	7.7	462	--	379	2000	160
160	580	6.6	9.5	464	--	381	2000	180
160	580	6.6	7.9	466	0	382	2000	160
170	600	6.8	10	480	0	394	2100	150
160	600	6.9	9.9	463	0	380	2100	150
150	560	6.4	10	473	0	388	1900	190
160	580	6.7	9.4	469	0	385	2000	150
150	590	6.8	9.6	467	0	383	2000	140
160	570	6.6	8.8	458	0	376	1900	160
160	550	6.3	8.5	453	0	372	1900	200
170	540	6.1	8.6	450	0	369	1900	180
150	540	6.2	8.6	470	0	390	1900	170
150	530	6.2	8.5	510	0	420	1700	200
150	480	5.7	9.3	43	0	35	1700	200
170	500	5.7	8.9	470	0	390	1600	290

NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	PHOSPHORUS ORTHO, DISSOLVED (MG/L AS P)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, DISSOLVED (UG/L AS MN)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
.05	.71	.03	280	130	--
.08	.64	.04	30	10	--
.06	.86	.06	10	0	--
--	--	.07	20	0	--
.05	.67	.11	20	0	--
.05	.66	.05	40	10	--
.03	.75	.04	40	0	--
.05	.68	.05	20	10	--
.01	.70	.03	30	0	--
.00	.37	.03	50	10	--
.00	.67	.06	10	0	--
.02	.96	.05	50	10	--
.02	.88	.02	20	0	--
.00	.46	.06	20	0	26
.00	.55	.03	20	10	4.5
--	--	.04	70	10	--
.00	1.6	.05	90	20	--
.00	.47	.04	260	20	--
.00	.70	.02	60	20	--
.01	.36	.02	70	10	--
.00	.73	.03	50	20	--
.01	.78	.03	50	10	--

Table 5.--*Water-level records and chemical*

[Well number 28 on figure 2. Local well number is SB00506425BBD1.

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NITRATE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)
74-04-03	35.86	74-04-03	1.3	18	1360	3.7	.01	3.7
74-05-08	35.99	74-05-08	1.4	19	1420	4.4	.00	4.4
74-06-13	35.86	74-06-13	1.2	22	1350	5.0	.00	5.0
74-07-23	36.39	74-07-23	1.5	19	1380	--	--	4.5
74-08-27	36.32	74-08-27	1.5	20	1450	--	.01	5.0
74-10-03	35.82	74-10-03	1.3	20	1440	--	.01	5.0
74-11-11	35.66	74-11-11	1.2	19	1380	4.5	.00	4.5
74-12-05	35.73	74-12-05	1.4	18	1390	4.4	.00	4.4
75-02-06	36.09	75-02-06	1.3	20	1440	4.8	.00	4.8
75-05-14	36.38	75-05-14	1.7	23	1600	7.8	.00	7.8
75-08-11	36.68	75-08-11	1.3	18	1430	3.9	.01	3.9
75-12-01	35.75	75-12-01	1.3	15	1430	3.5	.01	3.5
76-03-29	36.26	76-03-29	1.3	18	1400	4.2	.00	4.2
76-06-29	37.20	76-06-29	1.4	17	1420	4.2	.00	4.2
76-09-22	36.38	76-09-22	1.4	17	1510	4.6	.01	4.6
76-12-08	36.03	76-12-08	1.3	17	1500	4.2	.01	4.2
77-03-08	36.36	77-03-08	1.5	19	1500	3.8	.01	3.8
77-06-15	37.00	77-06-15	1.7	22	1490	2.8	.01	2.8
77-09-13	37.18	77-09-13	1.4	19	1520	3.7	.00	3.7
77-12-06	36.11	77-12-06	1.4	18	1530	4.2	.00	4.2
78-03-09	36.49	78-03-09	1.4	17	1530	2.9	.01	2.9
78-06-20	36.71	78-06-20	1.2	15	1520	3.8	.02	3.8

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM, DISSOLVED (MG/L AS CA)
74-04-03	35.86	74-04-03	1950	7.4	12.5	750	500	180
74-05-08	35.99	74-05-08	1960	7.4	14.0	750	490	180
74-06-13	35.86	74-06-13	1920	7.5	14.0	750	500	180
74-07-23	36.97	74-07-23	1980	7.3	14.5	750	500	180
74-08-27	36.32	74-08-27	2020	--	14.0	800	520	190
74-10-03	35.82	74-10-03	2000	--	13.5	750	490	180
74-11-11	35.66	74-11-11	1950	7.3	13.0	740	480	190
74-12-05	35.73	74-12-05	2100	7.2	13.0	770	510	190
75-02-06	36.09	75-02-06	2100	7.0	13.0	750	480	180
75-05-14	36.38	75-05-14	2700	7.0	13.5	810	480	210
75-08-11	36.68	75-08-11	2400	7.3	14.0	750	500	180
75-12-01	35.75	75-12-01	2300	7.3	13.0	780	500	190
76-03-29	36.26	76-03-29	2000	7.5	13.0	750	490	180
76-06-29	37.20	76-06-29	2000	6.7	14.0	750	490	180
76-09-22	36.38	76-09-22	2000	7.2	13.5	780	540	190
76-12-08	36.03	76-12-08	1950	7.4	13.0	790	510	190
77-03-08	36.36	77-03-08	2100	7.5	13.5	820	530	200
77-06-15	37.00	77-06-15	2200	7.2	14.0	810	270	190
77-09-13	37.18	77-09-13	2000	7.5	13.5	830	500	200
77-12-06	36.11	77-12-06	2100	7.3	12.5	820	530	200
78-03-09	36.49	78-03-09	2200	7.3	13.5	880	540	210
78-06-20	36.71	78-06-20	2100	7.2	14.5	820	540	200

analyses of water from observation wells--Continued

Depth is 103 ft. Interval open to the aquifer is 99 to 103 ft]

MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE, DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)
72	160	2.6	4.8	302	0	248	660	97
73	160	2.5	5.4	319	0	262	700	100
72	160	2.6	4.9	304	0	249	640	93
74	170	2.7	3.3	311	--	255	660	98
79	180	2.8	6.3	336	--	276	690	100
74	170	2.7	5.9	323	--	265	710	96
65	180	2.9	3.6	314	--	258	650	93
72	170	2.7	4.9	317	--	260	660	97
72	180	2.9	5.6	329	--	270	700	100
70	210	3.2	6.0	406	0	333	750	90
72	170	2.7	5.5	297	0	244	710	110
73	180	2.8	5.8	341	0	280	680	100
72	170	2.7	5.4	317	0	260	670	110
73	180	2.9	5.2	319	0	262	690	100
73	180	2.8	5.2	281	0	230	760	120
76	180	2.8	5.3	336	0	276	730	120
77	190	2.9	5.3	347	0	285	700	120
81	200	3.1	5.7	650	0	533	560	98
80	190	2.9	5.1	400	0	330	690	120
79	190	2.9	5.3	360	0	300	720	120
87	190	2.8	5.2	420	0	340	680	120
79	190	2.9	5.3	350	0	290	710	130

NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, DISSOLVED (UG/L AS MN)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
.03	.24	.02	40	20	--
.02	.42	.00	0	20	--
.03	.49	.01	20	20	--
--	--	.06	30	0	--
.02	.43	.04	20	20	--
.03	.55	.02	30	10	--
.04	.41	.01	30	0	--
.04	.29	.03	20	10	--
.00	.35	.04	20	20	--
.00	.19	.06	20	5	--
.00	.25	.02	30	0	--
.02	.65	.03	150	0	--
.02	.38	.01	10	0	--
.00	.16	.03	40	0	35
.00	.30	.03	30	10	14
.00	.38	.01	20	0	--
.01	.25	.04	60	10	--
.00	.33	.04	100	20	--
.00	.42	.01	120	10	--
.01	.16	.01	100	20	--
.00	.62	.01	180	10	--
.01	.49	.02	80	10	--

Table 5.--*Water-level records and chemical*

[Well number 29 on figure 2. Local well number is SB00506425BBD2.

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM, DISSOLVED (MG/L AS CA)
74-04-03	35.46	74-04-03	2130	7.2	12.5	850	520	200
74-05-08	35.56	74-05-08	2150	7.4	14.0	850	520	200
74-06-13	35.83	74-06-13	2200	7.4	14.0	860	530	200
74-07-23	36.07	74-07-23	2150	7.3	14.5	850	520	200
74-08-27	35.81	74-08-27	2130	--	13.5	780	450	190
74-10-03	35.30	74-10-03	2110	--	13.5	820	480	190
74-11-11	35.26	74-11-11	2150	7.2	12.5	810	470	200
74-12-05	35.31	74-12-05	2300	7.1	13.0	850	500	200
75-05-14	38.55	75-05-14	2400	7.1	14.0	760	510	180
75-08-11	36.56	75-08-11	2700	7.3	14.5	820	500	190
75-12-01	35.52	75-12-01	2300	7.1	13.0	750	370	180
76-03-29	36.04	76-03-29	2000	7.5	13.0	750	430	180
76-06-29	36.60	76-06-29	2100	6.6	13.0	780	340	180
76-09-22	36.26	76-09-22	2000	7.0	13.5	800	230	190
76-12-08	35.78	76-12-08	1900	7.3	13.0	770	350	180
77-03-08	36.21	77-03-08	2100	7.5	13.5	770	410	180
77-06-15	36.85	77-06-15	2200	6.7	13.5	850	270	200
77-09-13	37.04	77-09-13	2200	7.3	13.0	900	220	210
77-12-06	35.79	77-12-06	2200	7.2	12.5	900	180	210
78-03-09	36.35	78-03-09	2250	7.2	13.0	920	390	220
78-06-20	36.40	78-06-20	2400	7.2	14.0	1100	360	260

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NITRATE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)
74-04-03	35.46	74-04-03	1.7	23	1500	7.2	.02	7.2
74-05-08	35.56	74-05-08	2.0	23	1590	7.6	.01	7.6
74-06-13	35.83	74-06-13	2.1	28	1550	7.0	.01	7.0
74-07-23	36.07	74-07-23	1.7	24	1600	--	--	15
74-08-27	35.81	74-08-27	1.7	23	1510	--	.01	7.6
74-10-03	35.30	74-10-03	1.6	24	1550	--	.01	7.9
74-11-11	35.26	74-11-11	1.4	23	1500	8.5	.00	8.5
74-12-05	35.31	74-12-05	1.6	23	1540	7.8	.00	7.8
75-05-14	38.55	75-05-14	1.3	18	1400	4.1	.00	4.1
75-08-11	36.56	75-08-11	1.7	23	1540	7.2	.01	7.2
75-12-01	35.52	75-12-01	1.2	13	1470	3.8	.00	3.8
76-03-29	36.04	76-03-29	1.9	22	1460	7.7	.00	7.7
76-06-29	36.60	76-06-29	1.7	22	1530	5.2	.01	5.2
76-09-22	36.26	76-09-22	1.9	23	1470	3.4	.02	3.4
76-12-08	35.78	76-12-08	1.8	21	1480	9.0	.00	9.0
77-03-08	36.21	77-03-08	1.9	23	1460	6.3	.01	6.3
77-06-15	36.85	77-06-15	1.7	23	1480	2.2	.00	2.2
77-09-13	37.04	77-09-13	1.9	25	1550	.05	.00	.05
77-12-06	35.79	77-12-06	1.9	25	1530	.22	.00	.22
78-03-09	36.35	78-03-09	2.0	21	1500	.75	.01	.76
78-06-20	36.40	78-06-20	2.0	20	1640	.18	.02	.20

analyses of water from observation wells--Continued

Depth is 68 ft. Interval open to the aquifer is 64 to 68 ft]

MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE, DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)
85	180	2.7	5.9	405	0	332	690	86
85	180	2.7	6.3	398	0	326	770	95
87	180	2.7	6.0	395	0	324	730	89
86	190	2.8	6.0	401	--	329	730	94
75	190	3.0	7.6	406	--	333	690	96
83	190	2.9	7.0	410	--	336	730	89
76	200	3.1	4.1	414	--	340	670	81
84	190	2.8	5.9	421	--	345	710	86
75	170	2.7	4.7	303	0	249	670	110
83	190	2.9	6.4	387	0	317	740	86
73	200	3.2	6.2	468	0	384	660	85
74	190	3.0	5.9	392	0	322	670	86
81	200	3.1	6.0	538	0	441	660	89
80	200	3.1	6.0	701	0	575	520	91
77	190	3.0	5.9	509	0	417	620	92
78	190	3.0	5.9	439	0	360	640	100
85	200	3.0	5.9	710	0	580	510	93
92	210	3.0	5.8	830	0	680	500	100
92	200	2.9	6.2	880	0	720	470	94
89	190	2.7	5.6	640	0	530	560	96
100	230	3.1	6.5	850	0	700	490	110

NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, DISSOLVED (UG/L AS MN)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
.07	.35	.03	80	10	--
.08	.52	.02	20	10	--
.01	.58	.02	10	20	--
--	--	1.9	20	0	--
.02	.42	.05	20	20	--
.04	.38	.04	30	10	--
.04	.58	.03	10	0	--
.07	.30	.04	10	10	--
.00	.16	.02	30	10	--
.00	.34	.04	10	0	--
.05	.67	.03	90	0	--
.02	.46	.02	10	0	--
.00	.21	.06	70	0	3.0
.00	.32	.06	60	10	3.2
.00	.85	.03	70	10	--
.00	.46	.05	50	0	--
.00	.87	.07	90	10	--
.00	.31	.03	200	10	--
.01	.14	.03	170	10	--
.00	.34	.03	70	10	--
.01	.42	.03	620	20	--

Table 5.--*Water-level records and chemical*

[Well number 30 on figure 2. Local well number is SB00506425BBD3.

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM, DISSOLVED (MG/L AS CA)
74-04-03	35.47	74-04-03	2540	7.4	12.0	950	690	200
74-05-08	35.50	74-05-08	2570	7.5	13.0	930	650	190
74-06-13	35.83	74-06-13	2530	7.5	13.0	890	610	190
74-07-23	36.04	74-07-23	2470	7.4	13.5	830	560	180
74-08-27	35.77	74-08-27	2550	7.2	12.5	800	540	190
74-10-03	35.25	74-10-03	2570	--	12.5	910	610	220
74-11-11	36.34	74-11-11	2500	7.3	12.0	900	620	220
74-12-05	35.28	74-12-05	2900	7.0	12.5	940	670	220
75-05-14	37.54	75-05-14	3500	7.1	13.0	940	570	220
75-08-11	37.39	75-08-11	3200	7.1	13.0	920	600	210
75-12-01	35.47	75-12-01	3000	7.1	13.0	910	630	210
76-03-29	35.98	76-03-29	2425	7.3	13.0	930	630	210
76-06-29	36.58	76-06-29	2600	6.6	13.5	900	590	180
76-09-22	36.22	76-09-22	2400	6.9	13.5	890	580	190
76-12-08	36.38	76-12-08	2400	7.2	12.5	910	600	200
77-03-08	36.15	77-03-08	2500	7.4	13.5	920	590	210
77-06-15	37.28	77-06-15	2450	7.3	13.5	900	570	210
77-09-13	37.40	77-09-13	2400	7.3	13.0	980	600	240
77-12-06	35.95	77-12-06	2400	7.4	12.0	940	530	230
78-03-09	36.28	78-03-09	2400	7.1	13.0	990	500	240
78-06-20	36.40	78-06-20	2400	6.9	14.0	920	350	220

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NITRATE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)
74-04-03	35.47	74-04-03	2.1	24	1810	7.5	.04	7.5
74-05-08	35.50	74-05-08	2.3	25	1900	8.2	.01	8.2
74-06-13	35.83	74-06-13	2.6	29	1830	10	.00	10
74-07-23	36.04	74-07-23	2.1	25	1810	--	--	6.6
74-08-27	35.77	74-08-27	.3	7.2	1720	.17	.01	.18
74-10-03	35.25	74-10-03	2.0	25	1930	--	.01	8.3
74-11-11	36.34	74-11-11	1.9	25	1790	8.6	.00	8.6
74-12-05	35.28	74-12-05	2.0	24	1940	9.0	.00	9.0
75-05-14	37.54	75-05-14	2.0	26	2030	8.4	.00	8.4
75-08-11	37.39	75-08-11	1.6	29	1950	7.5	.02	7.5
75-12-01	35.47	75-12-01	2.4	27	1920	7.7	.01	7.7
76-03-29	35.98	76-03-29	2.5	27	1940	8.4	.00	8.4
76-06-29	36.58	76-06-29	2.5	27	1870	8.9	.00	8.9
76-09-22	36.22	76-09-22	2.3	30	1860	9.3	.01	9.3
76-12-08	36.38	76-12-08	2.6	27	1880	12	.00	12
77-03-08	36.15	77-03-08	2.8	27	1820	8.3	.01	8.3
77-06-15	37.28	77-06-15	2.8	27	1780	9.3	.00	9.3
77-09-13	37.40	77-09-13	2.4	30	1850	9.2	.00	9.2
77-12-06	35.95	77-12-06	2.7	29	1800	9.3	.00	9.3
78-03-09	36.28	78-03-09	2.5	27	1800	7.5	.01	7.5
78-06-20	36.40	78-06-20	2.0	25	1720	5.7	.05	5.7

analyses of water from observation wells--Continued

Depth is 44 ft. Interval open to the aquifer is 40 to 44 ft]

MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE, DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)
110	210	3.0	7.2	318	0	261	970	100
110	250	3.6	7.8	333	0	273	1000	110
100	260	3.8	7.2	337	0	276	940	93
93	270	4.1	7.3	331	--	272	940	95
80	260	4.0	8.7	319	--	262	920	98
87	260	3.8	8.2	369	--	303	1000	110
85	250	3.6	4.9	341	--	280	900	100
96	280	4.0	6.8	330	--	271	1000	110
96	320	4.5	6.9	457	0	375	1000	100
97	280	4.0	8.1	399	0	327	1000	97
94	280	4.0	7.9	342	0	281	1000	95
99	270	3.8	7.8	372	0	305	1000	100
110	290	4.2	7.5	383	0	314	930	94
100	250	3.7	7.9	373	0	306	960	93
100	240	3.5	7.7	385	0	316	970	94
96	250	3.6	7.2	396	0	325	900	95
90	230	3.3	6.8	400	0	328	890	86
92	230	3.2	6.3	460	0	380	890	88
88	230	3.3	6.3	490	0	400	850	80
94	220	3.0	5.6	590	0	480	800	87
90	230	3.3	5.8	690	0	570	700	86

NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, DISSOLVED (UG/L AS MN)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
.08	.37	.03	140	40	--
.06	.43	.02	50	10	--
.01	.63	.02	50	0	--
--	--	.08	30	0	--
.03	.44	.00	20	20	--
.02	.33	.03	50	0	--
.04	.56	.03	20	0	--
.04	.28	.04	20	10	--
.00	.28	.04	20	10	--
.00	.32	.04	50	0	--
.02	.64	.05	60	5	--
.02	.44	.02	0	10	--
.00	.25	.06	30	0	6.0
.00	.54	.05	40	10	2.7
.00	.93	.03	70	10	--
.00	.50	.06	70	0	--
.00	.28	.05	50	10	--
.00	.36	.02	60	0	--
.02	.33	.02	80	4	--
.00	.51	.02	50	10	--
.01	.73	.04	60	10	--

Table 5.--*Water-level records and chemical*

[Well number 32 on figure 2. Local well number is SB00506425DBD1.

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM, DISSOLVED (MG/L AS CA)
74-04-04	28.09	74-04-04	2560	7.3	13.0	990	670	230
74-05-08	28.17	74-05-09	2700	7.3	13.5	1100	730	240
74-06-14	28.48	74-06-14	2740	7.4	14.0	1000	710	250
74-07-23	28.08	74-07-12	2690	7.4	14.5	990	670	230
74-08-27	27.43	74-08-27	2620	--	14.0	940	630	210
74-10-03	27.20	74-10-03	2590	--	14.0	940	630	210
74-11-11	27.37	74-11-11	2550	7.2	13.5	940	650	220
74-12-05	27.41	74-12-05	2800	7.0	13.0	950	650	220
75-02-06	27.85	75-02-06	2650	6.9	13.0	890	570	200
75-05-14	28.59	75-05-14	2700	7.0	13.5	840	220	200
75-08-11	28.57	75-08-11	3100	7.2	14.5	950	530	220
75-12-01	27.54	75-12-01	3000	7.2	12.0	960	600	230
76-03-29	28.18	76-03-29	2450	7.4	11.0	900	470	210
76-06-29	28.97	76-06-29	2700	6.4	12.0	990	360	240
76-09-22	28.18	76-09-22	2800	6.9	11.5	1100	510	270
76-12-08	27.28	76-12-08	2600	7.2	11.0	1000	540	240
77-03-08	28.23	77-03-08	3000	7.5	11.5	1100	480	260
77-06-15	28.60	77-06-15	3100	7.1	12.0	1100	230	260
77-09-13	28.49	77-09-13	2800	7.1	12.0	990	450	240
77-12-06	27.73	77-12-06	2600	7.0	11.0	960	390	220
78-03-09	27.80	78-03-09	3000	7.0	11.5	1100	490	250
78-06-20	28.89	78-06-20	2600	7.0	12.0	960	110	220

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NITRATE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)
74-04-04	28.09	74-04-04	1.5	17	2040	2.4	.01	2.4
74-05-08	28.17	74-05-09	1.5	18	2060	3.2	.01	3.2
74-06-14	28.48	74-06-14	1.4	18	2090	3.6	.01	3.6
74-07-23	28.08	74-07-12	1.5	18	1950	--	--	2.4
74-08-27	27.43	74-08-27	1.5	18	1890	--	.01	2.2
74-10-03	27.20	74-10-03	1.5	18	1870	1.8	.00	1.8
74-11-11	27.37	74-11-11	1.3	17	1850	1.7	.00	1.7
74-12-05	27.41	74-12-05	1.4	17	1850	1.3	.00	1.3
75-02-06	27.85	75-02-06	1.3	17	1790	4.6	.00	4.6
75-05-14	28.59	75-05-14	1.3	19	1450	.14	.01	.15
75-08-11	28.57	75-08-11	1.2	19	1730	.26	.01	.27
75-12-01	27.54	75-12-01	1.3	16	1950	1.1	.04	1.1
76-03-29	28.18	76-03-29	1.1	16	1800	1.3	.01	1.3
76-06-29	28.97	76-06-29	1.2	17	1930	1.2	.02	1.2
76-09-22	28.18	76-09-22	1.3	18	2210	3.0	.03	3.0
76-12-08	27.28	76-12-08	1.4	18	2070	1.7	.01	1.7
77-03-08	28.23	77-03-08	1.5	20	2080	.89	.02	.91
77-06-15	28.60	77-06-15	1.4	21	2080	.80	.03	.83
77-09-13	28.49	77-09-13	1.4	21	2070	2.3	.00	2.3
77-12-06	27.73	77-12-06	1.5	21	1900	1.0	.00	1.0
78-03-09	27.80	78-03-09	1.4	21	1900	.49	.01	.50
78-06-20	28.89	78-06-20	1.2	20	1740	.05	.11	.16

analyses of water from observation wells--Continued

Depth is 68 ft. Interval open to the aquifer is 48 to 68 ft]

MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE, DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)
100	270	3.7	8.2	381	0	313	1100	110
110	250	3.4	8.3	394	0	323	1100	120
100	280	3.8	7.6	400	0	328	1100	120
100	270	3.7	5.5	387	--	317	1000	120
100	270	3.8	9.8	368	--	302	950	140
100	250	3.6	8.8	369	--	303	950	140
96	270	3.8	5.4	365	--	299	910	140
98	250	3.5	7.4	372	--	305	940	130
95	250	3.6	8.3	394	--	323	870	130
82	190	2.9	7.4	747	0	613	450	130
98	210	3.0	8.5	518	0	425	800	120
94	260	3.7	8.3	444	0	364	980	140
91	250	3.6	8.5	529	0	434	830	130
95	280	3.9	8.4	771	0	632	750	150
99	310	4.1	8.9	703	0	577	1000	140
100	300	4.1	7.9	577	0	473	970	140
100	310	4.1	7.9	714	0	586	860	160
110	300	3.9	8.1	1060	0	869	690	160
96	340	4.7	7.4	660	0	540	890	140
100	300	4.2	7.5	700	0	570	760	140
120	280	3.6	7.4	770	0	630	670	160
100	270	3.8	7.9	1040	0	850	460	150

NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, DISSOLVED (UG/L AS MN)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
.09	.46	.02	590	120	--
.05	.51	.01	80	20	--
.03	.73	.04	20	0	--
--	--	.05	30	0	--
.04	.47	.06	20	30	--
.03	.40	.02	50	30	--
.03	.42	.01	30	0	--
.04	.21	.03	10	10	--
.00	.49	.01	40	0	--
.01	1.0	.03	100	50	--
.00	.62	.01	70	170	--
.01	.77	.03	90	170	--
.03	.69	.01	140	420	--
.00	.95	.06	170	1500	13
.01	1.1	.03	180	2100	21
.00	.83	.01	270	1800	--
.02	.63	.05	230	2400	--
.00	1.1	.03	240	3300	--
.01	.61	.02	320	2900	--
.02	.59	.02	290	2500	--
.00	.86	.01	740	3300	--
.01	1.5	.02	400	1800	--

Table 5.--*Water-level records and chemical*

[Well number 37 on figure 2. Local well number is SB00506426ADD1.

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM, DISSOLVED (MG/L AS CA)
74-04-04	26.67	74-04-04	2270	7.1	12.5	860	490	200
74-05-08	27.05	74-05-08	2490	7.3	13.0	1000	630	240
74-06-14	27.19	74-06-14	2220	7.4	13.5	860	500	200
74-07-23	27.09	74-07-24	2230	7.3	14.0	850	480	190
74-08-27	25.74	74-08-28	2330	--	13.0	940	570	220
74-10-03	25.43	74-10-04	2270	--	12.5	860	490	200
74-11-11	25.73	74-11-11	2450	7.1	12.0	930	560	220
74-12-05	25.91	74-12-05	2650	7.0	13.0	950	570	220
75-02-06	26.59	75-02-06	2700	6.8	12.5	1000	610	220
75-05-14	27.66	75-05-14	2800	7.0	13.5	850	490	190
75-08-12	28.03	75-08-12	2600	7.3	13.5	770	410	170
75-12-02	25.99	75-12-02	3200	7.3	13.0	970	600	230
76-03-29	27.01	76-03-29	2400	7.3	12.0	920	530	220
76-06-28	27.87	76-06-28	2100	7.1	13.5	720	380	160
76-09-22	25.93	76-09-22	2200	7.1	13.0	830	480	190
76-12-08	26.18	76-12-08	2600	7.3	12.5	1100	700	250
77-03-08	27.08	77-03-08	3100	7.4	13.0	1100	700	260
77-06-15	27.89	77-06-15	2600	7.5	13.5	880	520	200
77-09-13	26.92	77-09-12	2300	7.3	13.0	850	480	190
77-12-06	26.62	77-12-06	2400	7.3	12.0	900	530	200
78-03-09	27.16	78-03-09	2400	7.2	13.0	900	530	200
78-06-20	27.68	78-06-20	2700	7.6	14.0	1100	750	260

DATE OF WATER-LEVEL MEASUREMENT	WATER LEVEL (FEET BELOW LAND SURFACE)	DATE OF SAMPLE	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NITRATE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)
74-04-04	26.67	74-04-04	2.0	25	1620	5.7	.31	6.0
74-05-08	27.05	74-05-08	2.4	26	1870	5.7	.02	5.7
74-06-14	27.19	74-06-14	2.5	25	1640	7.4	.01	7.4
74-07-23	27.09	74-07-24	1.9	26	1610	--	--	7.3
74-08-27	25.74	74-08-28	2.0	26	1710	--	.01	11
74-10-03	25.43	74-10-04	1.9	26	1680	--	.01	9.0
74-11-11	25.73	74-11-11	1.6	25	1740	12	.00	12
74-12-05	25.91	74-12-05	1.7	24	1750	10	.00	10
75-02-06	26.59	75-02-06	1.7	26	1880	13	.00	13
75-05-14	27.66	75-05-14	1.9	24	1620	8.7	.00	8.7
75-08-12	28.03	75-08-12	1.8	24	1530	6.9	.01	6.9
75-12-02	25.99	75-12-02	1.4	18	1980	11	.01	11
76-03-29	27.01	76-03-29	1.8	23	1740	12	.00	12
76-06-28	27.87	76-06-28	1.9	23	1450	7.6	.00	7.6
76-09-22	25.93	76-09-22	1.9	24	1630	9.8	.01	9.8
76-12-08	26.18	76-12-08	1.9	23	2210	20	.00	20
77-03-08	27.08	77-03-08	1.9	25	2060	7.7	.01	7.7
77-06-15	27.89	77-06-15	1.8	24	1740	11	.00	11
77-09-13	26.92	77-09-12	1.8	26	1650	9.0	.00	9.0
77-12-06	26.62	77-12-06	1.9	25	1710	11	.01	11
78-03-09	27.16	78-03-09	1.8	23	1630	11	.00	11
78-06-20	27.68	78-06-20	1.7	21	1980	30	.03	30

analyses of water from observation wells--Continued

Depth is 68 ft. Interval open to the aquifer is 64 to 68 ft]

MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE, DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)
88	220	3.3	6.6	459	0	376	730	93
100	220	3.0	6.8	460	0	377	910	110
88	210	3.1	6.1	438	0	359	770	90
91	210	3.1	5.3	446	--	366	740	94
94	210	3.0	7.8	450	--	369	780	100
87	210	3.1	6.6	447	--	367	790	96
93	230	3.3	4.5	458	--	376	780	110
98	220	3.1	6.0	465	--	381	800	110
110	240	3.3	6.6	478	--	392	850	130
92	220	3.3	5.4	446	0	366	730	100
84	200	3.1	6.4	438	0	359	710	85
97	260	3.6	7.4	460	0	377	960	130
90	220	3.2	6.9	472	0	387	780	110
79	200	3.2	5.8	419	0	344	650	86
87	210	3.2	6.2	436	0	358	760	91
110	270	3.6	7.2	455	0	373	1100	130
110	270	3.5	7.1	487	0	399	960	150
93	240	3.5	6.3	440	0	361	800	110
90	220	3.3	5.8	440	0	360	760	96
97	220	3.2	6.1	450	0	370	790	99
98	200	2.9	6.4	450	0	370	790	43
110	240	3.1	6.9	430	0	350	830	170

NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, DISSOLVED (UG/L AS MN)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
.05	1.2	.03	40	210	--
.08	.62	.01	20	110	--
.03	.72	.05	0	0	--
--	--	.06	50	0	--
.03	.63	.07	60	0	--
.03	.44	.02	50	0	--
.03	.49	.03	40	0	--
.03	.34	.05	10	10	--
.01	.45	.03	10	0	--
.00	.21	.04	20	5	--
.00	.16	.03	60	0	--
.01	.81	.03	10	5	--
.02	.29	.01	20	10	--
.00	.33	.05	40	0	2.8
.00	.41	.04	30	10	3.0
.00	.75	.02	30	10	--
.00	.66	.05	70	10	--
.00	.65	.04	30	10	--
.01	.55	.02	30	10	--
.00	.05	.03	50	8	--
.00	.62	.04	10	0	--
.01	1.9	.02	0	10	--

Table 6.--*Chemical analyses of water from domestic, stock, and irrigation wells*

Site number in figure 2	Local well number	Date of sample (Y-M-D)	Depth of well (feet)	Specific conductance (micromhos)	pH (units)	Temperature (°C)	Hardness (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Nitrogen, NO_2+NO_3, dissolved (mg/L as N)
1	SB00506319CDC1--	74-07-09	---	1,600	7.3	17.5	540	130	53	460	70	7.9
3	SB00506330ACC1--	74-07-09	40	2,350	6.9	14.5	890	220	82	830	110	9.0
5	SB00506330BCC1--	74-07-12	107	3,550	7.3	15.0	1,300	300	130	1,500	150	7.3
7	SB00506330DBB1--	74-07-09	100	3,100	7.1	14.0	800	160	97	1,200	140	5.4
8	SB00506330DCC1--	74-07-09	75	2,300	7.3	13.5	820	230	60	840	120	1.3
9	SB00506423BBC1--	74-07-08	83	2,050	7.3	13.0	770	190	72	780	80	6.4
17	SB00506424AAA1--	74-07-08	37	2,180	7.3	13.0	830	190	87	800	48	7.0
36	SB00506426ACC1--	74-07-09	62	2,500	7.2	14.5	840	190	89	810	100	7.7

Table 7.--*Chemical analyses of water from two runoff-retention ponds and from the feedlot water system supplied by eight wells*

Site name	Date of sample (Y-M-D)	Specific conductance (micromhos)	pH (units)	Temperature (°C)	Hardness (mg/L as $CaCO_3$)	Hardness, noncarbonate (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Sodium, adsorption ratio	Potassium, dissolved (mg/L as K)	Bicarbonate (mg/L as HCO_3)	Carbonate (mg/L as CO_3)	Alkalinity (mg/L as $CaCO_3$)
Feedlot water system---------	75-03-18	2,600	6.9	12.5	970	630	230	97	220	3.1	5.9	420	0	344
Northeast retention pond------	75-03-18	360	7.7	7.0	85	0	25	5.5	34	1.6	12	130	0	107
Southeast retention pond------	75-03-18	2,500	7.9	10.0	890	610	200	96	230	3.3	7.8	351	0	288
	76-09-22	5,500	4.8	18.0	2,200	730	540	210	210	1.9	690	1,810	0	1,480
	77-03-08	-----	---	----	930	---	220	92	230	3.3	29	534	-	-----
	77-06-15	3,100	6.7	23.5	-----	---	250	100	290	---	52	910	0	750

Table 7.--*Chemical analyses of water from two runoff-retention ponds and from the feedlot water system supplied by eight wells*--Continued

Site name	Date of sample (Y-M-D)	Sulfate, dissolved (mg/L as SO)	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L as F)	Silica, dissolved (mg/L as SiO_2)	Solids, sum of constituents, dissolved (mg/L)	Nitrogen, nitrate, dissolved (mg/L as N)	Nitrogen, nitrite, dissolved (mg/L as N)	Nitrogen, NO_2+NO_3, dissolved (mg/L as N)	Nitrogen, ammonia, dissolved (mg/L as N)	Nitrogen, ammonia + organic, dissolved (mg/L as N)	Phosphorus, ortho, dissolved (mg/L as P)	Iron, dissolved (µg/L as Fe)	Manganese, dissolved (µg/L as Mn)
Feedlot water system--------	75-03-18	910	100	1.6	23	1,830	8.6	0.00	8.6	0.01	0.29	0.06	10	10
Northeast retention pond------	75-03-18	43	22	.7	11	240	.06	.00	.06	1.8	5.4	7.3	360	90
Southeast retention pond------	75-03-18	840	170	1.3	8.6	1,740	3.5	.23	3.7	.40	1.1	.19	20	70
	76-09-22	480	380	3.3	54	-----	1.6	.09	1.7	38	220	100	9,500	4,000
	77-03-08	820	120	1.5	25	-----	.03	.01	.04	5.7	15	2.1	340	150
	77-06-15	790	130	1.6	31	-----	.91	.09	1.0	25	69	5.7	360	350

Table 8.--*Logs of wells drilled by the U.S. Geological Survey*

	Thickness (feet)	Depth (feet)
Well 6. Altitude: 4,579 feet		
Topsoil, fine-grained	5	5
Sand, fine-grained; clay	5	10
Sand, coarse-grained; clay	5	15
Sand, coarse-grained; fine- to coarse-grained gravel	5	20
Sand, coarse-grained; some clay; some fine- to coarse-grained gravel	5	25
Gravel, fine- to coarse-grained; some coarse-grained sand; some clay	15	40
Clay, sandy	5	45
Clay, sandy; some coarse-grained sand; some fine- to coarse-grained gravel	5	50
Gravel, fine- to coarse-grained; sandy clay	5	55
Clay, sandy; fine- to coarse-grained gravel	5	60
Sand, coarse-grained; some fine- to medium-grained gravel; some clay; hard drilling	5	65
Gravel, fine- to coarse-grained, hard drilling	5	70
Sand, coarse-grained; some fine- to coarse-grained gravel	5	75
Gravel, fine- to medium-grained	5	80
Clay, green	1	81
Sand, coarse-grained; fine- to medium-grained gravel; some clay	4	85
Clay, beige, sandy; some gravel	5	90
Clay, beige, sandy; some coarse-grained sand; some fine- to medium-grained gravel; hard drilling	10	100
Clay, beige, sandy; some fine-grained gravel	5	105
Clay, beige, sandy; some dense dark-clay; some fine-grained gravel	5	110
Clay, dense, dark	5	115
Shale, dark gray	4	119

Table 8.--*Logs of wells drilled by the U.S. Geological Survey*--Continued

	Thickness (feet)	Depth (feet)
Well 11. Altitude: 4,595 feet		
Clay, dark; medium-grained gravel; some sand	5	5
Clay, yellow; medium-grained sand; coarse-grained gravel	5	10
Clay, yellow	5	15
Sand, medium-grained; fine-grained gravel	5	20
Sand, medium-grained; medium-grained gravel	10	30
Sand, coarse-grained; coarse-grained gravel	10	40
Sand, fine; some clay; some fine-grained gravel	5	45
Clay, sandy	5	50
Gravel, medium-grained; some clayey sand; some coarse-grained gravel	5	55
Gravel, medium- to coarse-grained	10	65
Gravel, coarse; boulders	5	70
Clay, sandy	9	79
Sand; gravel	1	80
Clay, sandy; some sand; some fine-grained gravel	5	85
Clay, light brown, sandy	7	92
Clay, gray, tight	18	110
Clay, dark gray, tight	5	115
Shale, blue-black	2	117
Well 13. Altitude: 4,599 feet		
Sand, fine-grained, clayey	15	15
Sand, fine- to medium-grained	5	20
Sand, clayey	3	23
Gravel, medium-grained	1	24
Sand, medium-grained; some fine-grained gravel	4	28
Sand, fine- to coarse-grained; fine- to medium-grained gravel; poorly sorted	7	35
Sand, medium- to coarse-grained; fine- to medium-grained gravel	11	46
Clay; some sand and gravel	3	49
Gravel, medium- to coarse-grained	31	80
Clay	28	108
Sand, coarse-grained, fine- to medium-grained gravel	20	128
Shale	3	131

Table 8.--*Logs of wells drilled by the U.S. Geological Survey*--Continued

	Thick-ness (feet)	Depth (feet)
Well 18. Altitude: 4,589 feet		
Sand; gravel	40	40
Sand, medium- to coarse-grained; fine- to coarse-grained gravel	17	57
Clay, sandy; brown mica-bearing clay; some fine-grained sand	4	61
Sand, medium- to coarse-grained; fine- to coarse-grained gravel	7	68
Gravel; boulders	7	75
Clay, white-beige, very tight; some boulder chips	5	80
Clay, light-brown, tight	5	85
Clay; sand; gravel, poorly sorted; coarse-grained gravel at 85 feet; boulders at 94 feet	9	94
Gravel, medium- to coarse-grained; some broken up boulders; some sand; some sandy-clay	14	108
Boulders	2	110
Gravel, medium- to coarse-grained; some medium- to coarse-grained sand; some boulders; some yellow-brown clay at 120 feet	10	120
Boulders, unable to drill	14	134
Well 23. Altitude: 4,588 feet		
Sand, fine- to medium-grained	4	4
Clay, tight	5	9
Sand, fine- to medium-grained; some clay	6	15
Sand, medium- to coarse-grained; fine-grained gravel	5	20
Sand, coarse-grained; fine-grained gravel	5	25
Sand, coarse-grained; fine-grained gravel	5	30
Sand, medium- to coarse-grained; fine-grained gravel	5	35
Sand, coarse-grained; fine- to medium-grained gravel	5	40
Sand, coarse-grained; fine-grained gravel	5	45
Sand, fine-grained; clay; some fine- to medium-grained gravel	4	49
Clay, tight; gravel	2	51
Gravel, fine- to medium-grained; some clay	3	54
Clay	2	56
Gravel, fine- to medium-grained; some sand	4	60
Sand, coarse-grained, fine-grained gravel	4	64

Table 8.--*Logs of wells drilled by the U.S. Geological Survey*--Continued

	Thickness (feet)	Depth (feet)
Well 23. Altitude: 4,588 feet--Continued		
Sand, coarse-grained; fine-grained gravel, broken chips----	2	66
Gravel, fine- to coarse-grained, broken chips----------	4	70
Gravel, fine- to medium-grained, well-sorted----------	5	75
Gravel, medium- to coarse-grained, chips, well-sorted------	5	80
Sand, coarse-grained; medium-grained gravel; some clay-----	4	84
Clay; some medium- to coarse-grained gravel----------	6	90
Clay, yellow-brown, tight----------	5	95
Clay, yellow-brown to light gray, tight----------	3	98
Shale, gray----------	3	101
Well 26. Altitude: 4,584 feet		
Sand, clayey; some gravel----------	5	5
Sand, fine-grained gravel----------	5	10
Sand, medium- to coarse-grained; some gravel----------	5	15
Gravel, fine- to medium-grained; some sand----------	5	20
Gravel, fine- to medium-grained----------	10	30
Gravel, coarse-grained----------	20	50
Sand, coarse-grained; fine-grained gravel; some clay-------	50	100
Shale, gray----------	3	103
Well 28. Altitude: 4,592 feet		
Sand----------	8	8
Clay----------	8	16
Sand; fine-grained gravel----------	17	33
Gravel----------	19	52
Clay----------	2	54
Gravel----------	18	72
Clay----------	6	78
Gravel----------	5	83
Clay----------	12	95
Gravel----------	8	103
Clay----------	2	105
Gravel----------	3	108
Shale----------	--	108

Table 8.--*Logs of wells drilled by the U.S. Geological Survey*--Continued

	Thickness (feet)	Depth (feet)
Well 32. Altitude: 4,582 feet		
Sand, fine-grained, clayey	5	5
Sand, fine- to medium-grained	10	15
Sand, silty	5	20
Sand, coarse-grained; some fine-grained gravel	5	25
Sand, coarse-grained; some fine- to medium-grained gravel	5	30
Gravel, fine- to medium-grained	5	35
Gravel, coarse-grained	5	40
Silt, clayey; some gravel; some sand	5	45
Sand, fine-grained; fine-grained gravel	5	50
Gravel, medium- to coarse-grained	10	60
Gravel, fine- to coarse-grained	9	69
Clay, dark gray	--	69
Well 37. Altitude: 4,586 feet		
Topsoil	5	5
Sand; some gravel	5	10
Sand, clayey; sand, fine- to medium-grained; some gray clay	10	20
Sand, clayey; some fine- to medium-grained gravel	5	25
Sand, coarse-grained; medium-grained gravel	5	30
Sand; gravel; some clayey sand	10	40
Sand, clayey; fine-grained sand; some gravel	5	45
Sand, clayey; some medium-grained gravel	5	50
Gravel, medium- to coarse-grained; some sand; some clayey sand	5	55
Gravel, coarse-grained; some medium-grained sand	7	62
Boulder, hard drilling	2	64
Sand; coarse-grained gravel	4	68
Shale, black	1	69

Table 9.--*Particle-size analyses, statistical total porosity and vertical hydraulic conduc-*

Depth of sample (feet)	Percentage of sample by particle size by weight Diameter, in millimeters											
	Clay <0.004	Silt 0.004 to 0.0625	Very fine sand 0.0625 to 0.125	Fine sand 0.125 to 0.25	Medium sand 0.25 to 0.5	Coarse sand 0.5 to 1	Very coarse sand 1 to 2	Very fine gravel 2 to 4	Fine gravel 4 to 8	Medium gravel 8 to 16	Coarse gravel 16 to 32	Very coarse gravel 32 to 64
					Well 13							
2.0- 2.5	5.4	13.4	10.7	19.9	14.0	20.3	13.2	3.1	0	0	0	0
3.0- 3.5	5.9	14.0	12.2	20.8	18.8	14.1	9.2	2.8	1.1	1.0	0	0
4.0- 4.5	5.2	11.0	15.3	33.6	19.3	14.2	1.5	0	0	0	0	0
5.0- 5.5	5.2	10.5	14.1	33.1	18.7	14.3	4.1	0	0	0	0	0
7.0- 7.5	2.7	6.1	13.1	32.5	22.4	22.0	1.1	0	0	0	0	0
9.0- 9.5	4.5		10.4	27.2	24.6	30.9	2.5	0	0	0	0	0
11.0-11.5	3.4		12.4	45.9	33.9	4.3	0	0	0	0	0	0
13.0-13.5	5.2		14.3	34.1	21.2	14.5	10.7	0	0	0	0	0
16.0-16.5	4.7	7.1	19.1	42.7	22.5	3.7	.2	0	0	0	0	0
18.5-19.0	11.4	28.9	25.6	23.1	7.8	3.1	.2	0	0	0	0	0
21.5-22.0	4.6	11.3	13.8	22.2	16.2	11.0	14.5	6.2	.3	0	0	0
24.5-25.0	4.6	4.8	19.6	30.6	23.9	12.8	3.7	0	0	0	0	0
26.0-26.5	4.2	9.2	8.9	16.4	9.8	14.6	13.6	15.6	6.0	1.8	0	0
28.5-29.0	1.5	7.2	4.0	11.0	15.4	14.7	15.8	15.7	11.9	2.7	0	0
29.0-29.5	1.6	6.4	3.6	7.9	12.7	14.7	16.7	21.6	11.1	3.8	0	0
					Well 28							
9.5-10.0	10.7	12.8	10.0	21.3	18.6	13.1	10.8	2.7	0	0	0	0

characteristics, specific gravity, moisture content, tivity for samples from observation wells 13 and 28

Median particle size, diameter in millimeters	Sorting coefficient	Skewness	Kurtosis	Uniformity coefficient	Specific gravity of solids	Moisture content, percent by weight	Moisture content, percent by volume	Total porosity	Vertical hydraulic conductivity at 15.6°C, meter per day
				Well 13					
0.26	2.8	1.0	0.24	32	2.67	4.76	8.38	34.23	2.2
.23	2.7	.95	.19	21	2.68	6.94	11.38	38.65	----
.18	2.0	.99	.21	7.7	2.69	5.68	8.52	44.11	----
.19	2.0	1.1	.20	8.5	2.69	5.36	9.38	34.90	.86
.23	1.9	1.2	.25	4.5	2.69	4.40	6.38	46.93	----
.31	1.9	1.0	.29	4.6	----	3.80	5.7	44.03	----
.21	1.5	1.1	.26	2.7	----	5.06	----	-----	5.2
.23	1.9	1.3	.19	3.9	----	3.95	5.85	44.98	----
.17	1.6	.91	.22	4.2	2.70	3.22	4.44	48.04	----
.081	2.3	.76	.25	37	2.70	10.52	14.73	47.76	----
.24	2.8	1.4	.20	12	2.71	2.47	-----	-----	.93
.20	1.9	1.0	.22	4.0	2.69	4.34	6.55	43.90	----
.54	3.6	.89	.24	25	2.69	2.35	-----	-----	----
.83	3.1	.96	.22	17	2.69	2.71	4.63	36.42	----
1.1	2.9	.75	.24	19	2.69	1.36	-----	-----	.04
				Well 28					
.21	2.8	.83	.19	216	2.67	9.66	15.55	39.70	3.4

Table 10.--*Monthly precipitation, in inches, from January 1975 to September 1978 at weather stations operated by the feedlot owner at the feedlot and by the U.S. Department of Commerce, National Weather Service at Greeley, Colo.*

Month	1975		1976		1977		1978	
	Feedlot	Greeley	Feedlot	Greeley	Feedlot	Greeley	Feedlot	Greeley
Jan.	0.12	0.02	0.02	0.10	0.38	0.13	0.40	0.50
Feb.	.12	.14	.14	.50	.00	trace	.10	.13
Mar.	.58	.75	.28	.49	.30	.44	.15	.09
Apr.	1.26	1.86	1.13	1.76	2.87	2.21	2.48	1.83
May	4.88	5.34	3.13	3.69	1.20	1.91	3.40	5.22
June	.80	2.02	1.42	.74	.38	.70	1.70	1.37
July	3.00	2.72	1.90	1.36	.70	2.16	.93	.70
Aug.	1.84	.63	.85	.90	1.02	1.48	.64	.53
Sept.	.64	.41	2.21	1.92	.20	.14	.00	trace
Oct.	.25	.32	.40	.35	.07	.10	---	---
Nov.	.65	1.00	.04	.08	.45	.42	---	---
Dec.	.42	.87	.05	.12	.72	.29	---	---
Total	14.56	16.08	11.57	12.01	8.29	9.98	9.80	10.37