GROUND-WATER RESOURCES OF LANFAIR AND FENNER VALLEYS AND VICINITY, SAN BERNARDINO COUNTY, CALIFORNIA

By David A. Freiwald

U.S. GEOLOGICAL SURVEY

Water-Resources Investigations Report 83-4082

Prepared in cooperation with the

U.S. BUREAU OF LAND MANAGEMENT

7223-04

Sacramento, California
July 1984

UNITED STATES DEPARTMENT OF THE INTERIOR

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CONVERSION FACTORS

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

Multiply	By	To obtain
acres	0.4047	km^2 (square kilometers)
acre-ft (acre-feet)	0.001233	hm^3 (cubic hectometers)
ft (feet)	0.3048	m (meters)
ft/mi (feet per mile)	0.1894	m/km (meters per kilometer)
ft^2/d (feet squared per day)	0.0929	m^2/d (meters squared per day)
ft^3/s (cubic feet per second)	0.02832	m^3/s (cubic meters per second)
(gal/d)/ft (gallons per day per foot)	0.0124	m^2/d (meters squared per day)
gal/min (gallons per minute)	0.003785	m^3/min (cubic meters per minute)
(gal/min)/ft (gallons per minute per foot)	0.2070	m^2/s (meters squared per second)
inches	25.4	mm (millimeters)
mi (miles)	1.609	km (kilometers)
mi^2 (square miles)	2.590	km^2 (square kilometers)
µmho/cm (micromhos per centimeter)	1.000	µS/cm (microsiemens per centimeter)

Abbreviations used:

DD - drawdown
lsd - land-surface datum
mg/d - milligrams per day
mg/L - milligrams per liter
µg/L - micrograms per liter

Degrees Fahrenheit (°F) is converted to degrees Celsius (°C) by using the formula: $°C = (°F-32)/1.8$.

National Geodetic Vertical Datum of 1929 (NGVD of 1929): A geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called mean sea level.

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ABSTRACT

Lanfair and Fenner Valleys and vicinity cover about 1,300 square miles in eastern San Bernardino County, California. Average annual precipitation ranges from 3 to 10 inches over the area.

Ground water is utilized primarily for stock and domestic purposes, and occurs in the unconsolidated deposits as well as in the highly fractured consolidated rocks. Ground-water levels in wells range from 5 to 600 feet below land surface, and well yields range from 3 to 1,200 gallons per minute throughout the study area. Records indicate that water levels are at or near their predevelopment levels. Springs occur along faults and formational contacts and generally discharge less than 5 gallons per minute.

Measured ground-water outflow from Lanfair Valley at Piute Spring ranged from 100 to 630 acre-feet per year. Outflow from Fenner Valley was estimated to be 270 acre-feet per year. Most of the water is of good quality for domestic and stock use. However, water from two wells indicates a concentration of sulfate that exceeds the recommended limit for drinking water.

Water supplies are adequate for present needs. However, large-scale pumping would result in the lowering of the water table and a reduction of the ground water in storage.

INTRODUCTION

The U.S. Bureau of Land Management (BLM) provides water for stock on leased grazing lands owned by the Federal Government and managed by BLM. Recent legislation in the Public Rangelands Improvement Act (Public Law 95-514, October 25, 1978) requires that improvements and rehabilitation of ranges be implemented to correct unsatisfactory conditions. Part of this range-improvement program, as described in the act, will involve construction of water wells in several arid basins in the western United States, including Lanfair and Fenner Valleys.

Purpose and Scope

The purpose of this study is to provide the Bureau of Land Management the geohydrologic information necessary for water-resource planning and development in the study area. This information will be used by BLM hydrologists and geologists to evaluate locations for drilling new wells to provide water for stock and drinking water for recreational areas.

The scope of this study included a literature search for historical geohydrologic data, a field canvass of wells, springs, and mine shafts, and collection and analysis of approximately 30 ground-water samples to determine current ground-water quality conditions. Data on precipitation and surface-water flow were also collected. The basic data were entered into the computer to enable general access by others and to allow computer-generated tabulation. This report tabulates the data collected and summarizes the findings of the study.

Previous Investigations

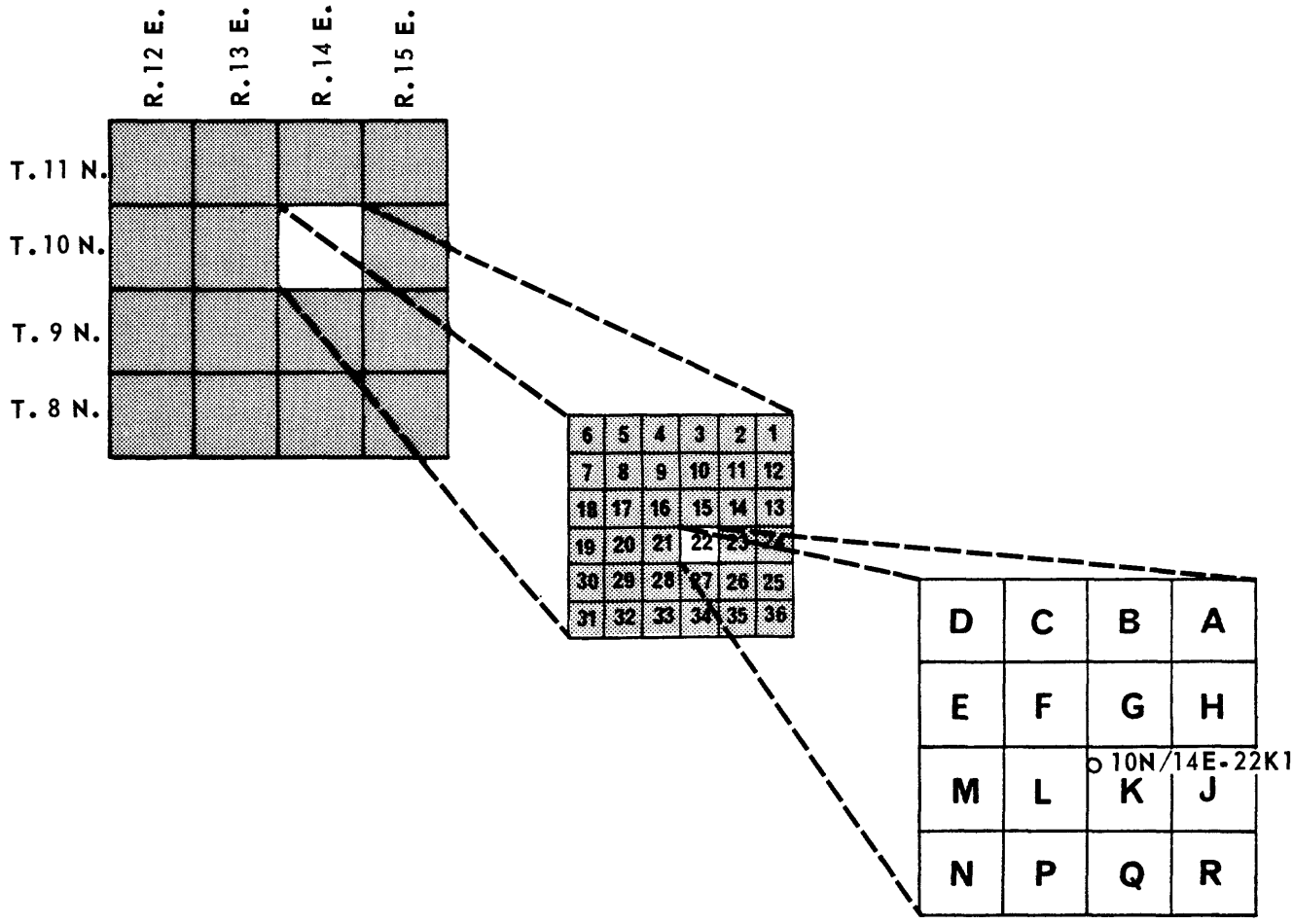
The most extensive report on the geohydrology of the study area, by Thompson (1929), describes the geology, climate, and water resources of the Lanfair-Fenner area. Other published reports and maps (see "References Cited") include data on precipitation, geology, surface water, wells, and springs, which are discussed in later sections of this report. Agencies contributing unpublished data on wells, springs, and geology are the California Department of Water Resources; U.S. Bureau of Land Management; Atchinson, Topeka and Santa Fe Railway Company; and the Southern Pacific Land Company.

Acknowledgments

This study was made by the U.S. Geological Survey in cooperation with the Bureau of Land Management. The assistance given by BLM is gratefully acknowledged, as is the help and cooperation of the individual well and spring owners.

Well- and Spring-Numbering System

Wells and springs are numbered according to their location in the rectangular system for the subdivision of public land. The part of the number preceding the slash (as in 10N/14E-22K1) indicates the township, north or south (T. 10 N.); the number after the slash indicates the range, east or west (R. 14 E.); the number after the dash indicates the section (sec. 22); the letter after the section number indicates the 40-acre subdivision of the section according to the lettered diagram below. The final digit is a serial number for wells in each 40-acre subdivision. Mine shafts are numbered similarly as wells with no distinction made between the two in this report. Springs are numbered similarly except that an S is placed between the 40-acre subdivision letter and the final digit. The area lies entirely in the northeast quadrant of the San Bernardino base line and meridian.



LOCATIONS AND GENERAL FEATURES

The study area, about 1,300 square miles in eastern San Bernardino County, consists mainly of Lanfair and Fenner Valleys, but includes Pinto, Round, Gold, and Clipper Valleys, and a small part of Piute Valley (pl. 1 and 2). This area is about 200 miles northeast of Los Angeles and about 35 miles west of Needles (fig. 1).

The surface-water drainage divide surrounding the study area is shown on plates 1 and 2. Lanfair Valley, for the purposes of this study, includes all the area north of the ground-water drainage divide (pl. 1), and Fenner Valley includes all the area south of the ground-water drainage divide.

Lanfair Valley is a large alluvium-filled basin that slopes generally southeasterly with a nearly uniform gradient of about 100 ft/mi. The altitude of the main part of the valley floor ranges from 3,500 to 5,000 feet. The surface-water drainage divide is bordered on the west by the Mid Hills and New York Mountains, on the north by the Castle Mountains, on the east by the Piute Range, and on the south by several detached mountain masses, namely the Vontrigger Hills and the Hackberry and Woods Mountains. Population is estimated by the author to be about 50 people, mostly ranchers and homesteaders along the western edge of the valley. Principal land use is cattle grazing on open rangeland. Lanfair Valley has an arid climate, and because of the high altitude, average yearly temperatures are about 60°F. Vegetation is characterized by an abundance of cacti, aridland grasses, sagebrush, and pinion pine.

A number of mines in the mountains surrounding Lanfair Valley have been active at one time or another, but mineral production has been small. Presently (1982), only two mines are operating. Ground water is utilized mainly for domestic and stock watering purposes; a small quantity is used for drinking water at recreational areas. There are no perennial streams in Lanfair Valley due to the high rate of evapotranspiration and low annual precipitation. However, Piute Spring (12N/18E-24DS1) flows year round and drains into Piute Valley east of the surface-water drainage divide.

Fenner Valley is a broad, southwesterly sloping alluvial plain south of Lanfair Valley. The altitude of the valley floor ranges from 1,000 to 3,500 feet. The surface-water drainage divide is bordered on the west by the Providence Mountains, on the north by the Woods and Hackberry Mountains and Vontrigger Hills, on the east by the Piute Mountains, and on the south by the Ship and Marble Mountains. The Clipper Mountains, near the center of the valley, rise 2,500 feet above the valley floor. The author estimates the population of Fenner Valley to be about 60 people, with the largest towns being Goffs, Essex, and Danby. Land use is principally cattle grazing on open rangeland. Fenner Valley has an arid climate similar to Lanfair Valley, but average yearly temperatures are a few degrees higher because of its lower altitude. Vegetation is predominantly creosote bush. Major road access is by Interstate 40 and State Highway 66, with the Atchinson, Topeka and Santa Fe railway traversing the length of the valley. Ground water is used mainly for domestic and stock watering purposes; a small quantity is used for the railroad and for drinking water at recreational areas. There are no perennial streams.

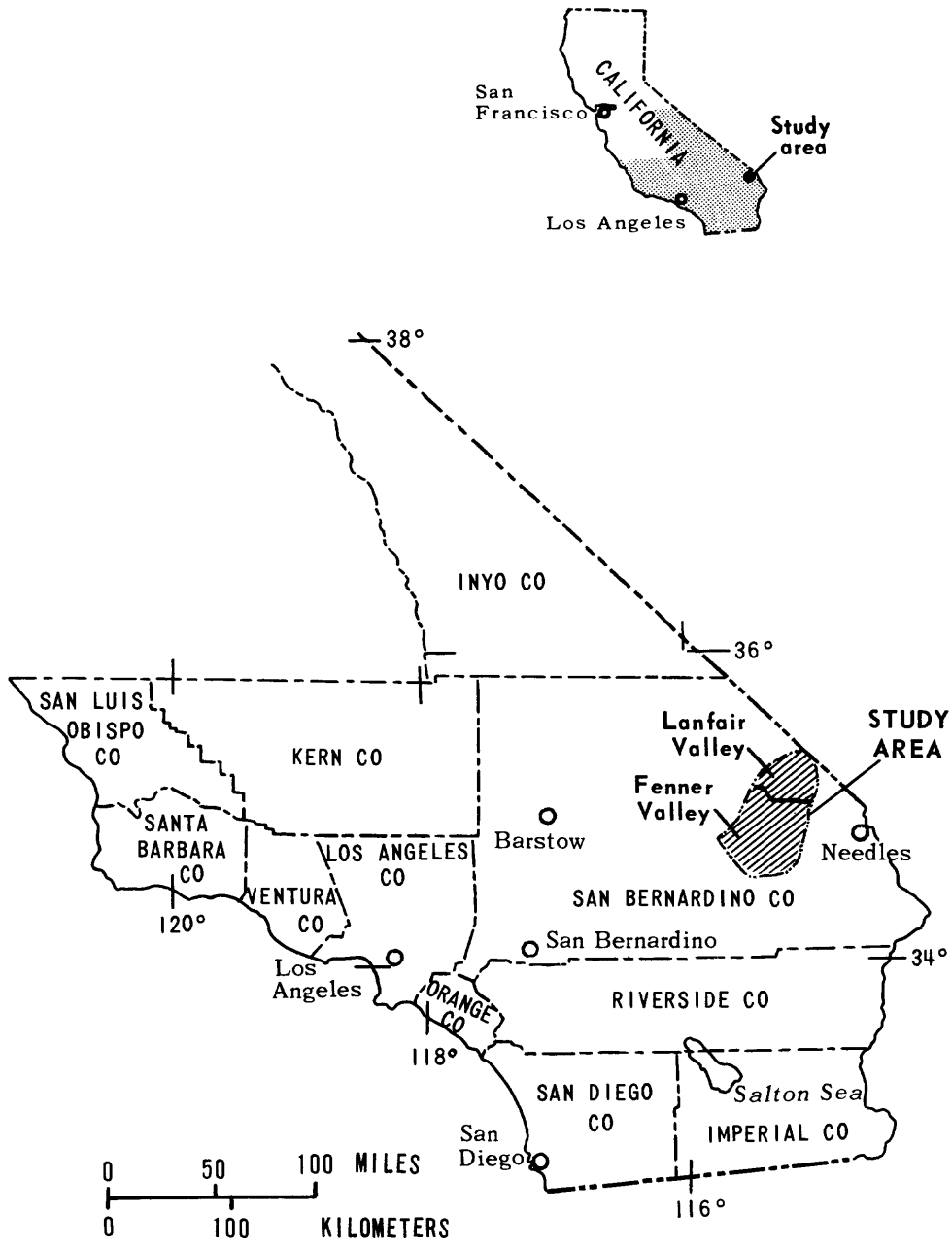


FIGURE 1.—Location of study area.

Precipitation

All water in the study area comes from precipitation that falls within the surface-water drainage divide (fig. 2). The average annual precipitation for the Lanfair-Fenner Valleys area ranged from about 3 to 10 inches for the 71-year period between 1881 and 1952. Figure 2 shows that the greatest amount of precipitation occurs in the New York Mountains and the least near Siam.

Precipitation may occur at any time throughout the year; however, most precipitation occurs in the winter, with some snow in the highest mountains. Some precipitation does occur in late summer thunderstorms, but is lost to evapotranspiration.

Geology

Geologic formations in the study area can be generalized into two categories; unconsolidated deposits and consolidated rock (pl. 1 and 2). The unconsolidated deposits consist of unconsolidated to highly indurated sand, silt, clay, and gravel of Quaternary and Tertiary(?) age. These deposits constitute the valley fill and are the main water-bearing units in the Lanfair-Fenner area. Drillers' logs do not show the total thickness of the unconsolidated deposits everywhere, but locally they are at least 1,100 feet thick (Supplemental Data A). The unconsolidated deposits contain most of the water stored in the study area. These deposits may yield as much as 1,200 gal/min.

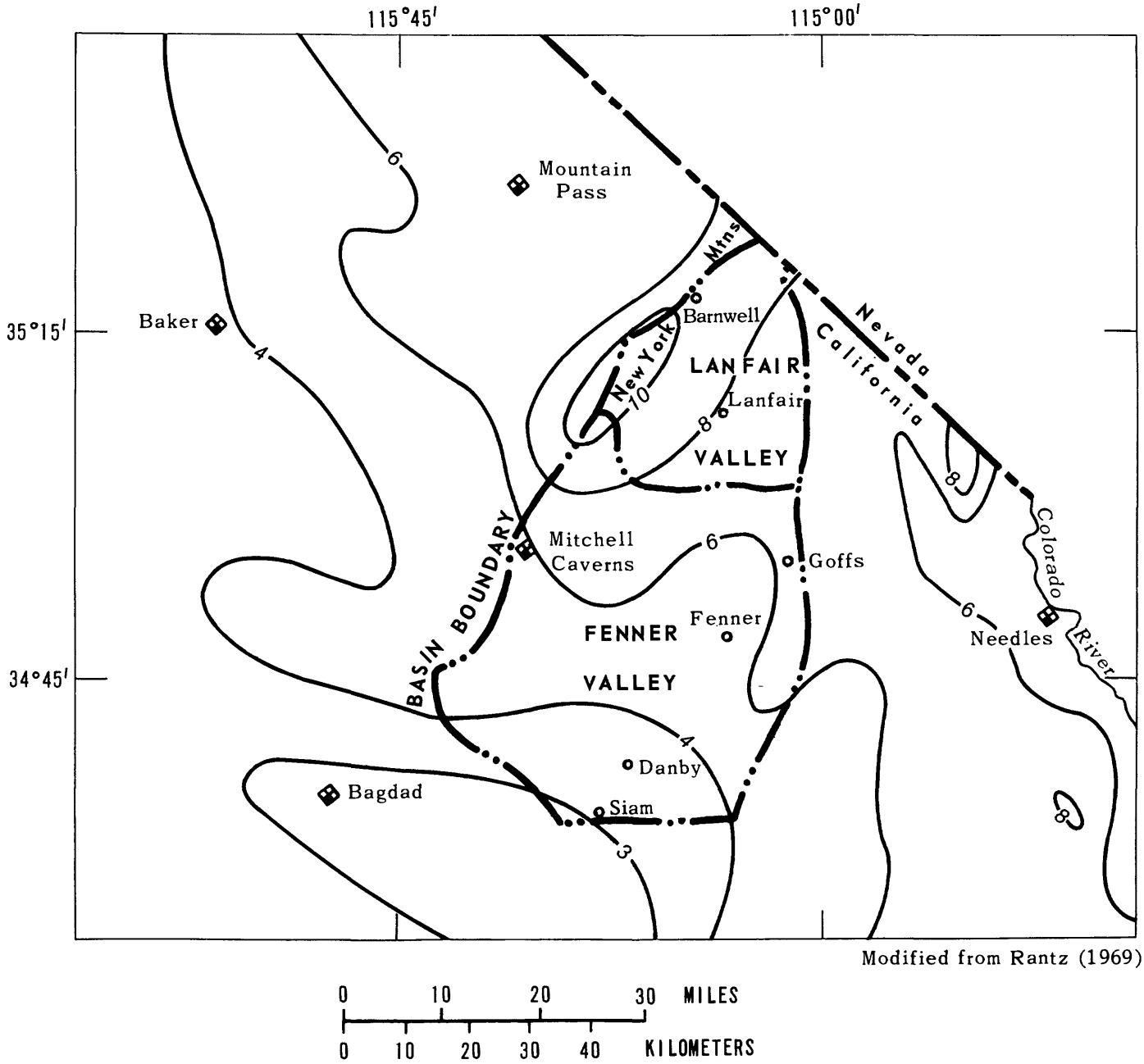
The consolidated rocks form the sides and bottoms of the valleys and are exposed in the mountain ranges which surround the study area. They consist of rhyolite, andesite, basalt, granite, tonalite, diorite, quartz monzonite, limestone, dolomite, gneiss, and schist. These rocks range between Tertiary and Precambrian age. The consolidated rocks yield small quantities of water to wells and springs where the rocks are highly fractured or deeply weathered.

For more detailed information on the geology, see Thompson (1929), California Division of Mines and Geology (1961, 1963), and Southern Pacific Land Company (1959-60).

Surface Water

Low annual precipitation and a high rate of evapotranspiration preclude perennial streamflow in Lanfair and Fenner Valleys. Caruthers Creek (sec. 6, T. 13 N., R. 16 E., pl. 1) flows intermittently and Piute Spring (12N/18E-24DS1) discharges ground water from Lanfair Valley to Piute Valley, which is out of the study area.

Surface-water runoff in Lanfair Valley is toward the southeast into Piute Valley, and in Fenner Valley it is toward the southwest.



Modified from Rantz (1969)

FIGURE 2.--Average annual precipitation and precipitation stations in Lanfair and Fenner Valleys and vicinity.

Records from a continuous water-stage recorder on Caruthers Creek (10252550, pl. 1) show that the creek flows at the gage during the winter and late summer after substantial rainfall. Average annual discharge for Caruthers Creek from 1964 to 1980 was 81.6 acre-feet per year (table 1).

TABLE 1. - Annual discharge for Caruthers Creek near Ivanpah (10252550)

[Location: Latitude 35°14'33", longitude 115°17'58", sec. 6, T. 13 N., R. 16 E; drainage area: 1.13 mi^2; altitude of gage: 5,640 ft. Data from U.S. Geological Survey, 1964-74 and 1975-81]

Calendar year	Discharge (acre-ft)	Calendar year	Discharge (acre-ft)
1964	0.4	1973	54
1965	218	1974	23
1966	60	1975	4.4
1967	16	1976	232
1968	1.6	1977	56
1969	144	1978	126
1970	2.8	1979	230
1971	47	1980	162
1972	9.3		
Average yearly total (1964-80) ----------			81.6

GROUND WATER

Areas of Recharge

Ground water in the study area originates from precipitation on the valley floor and runoff from the mountains that infiltrate the soil and move downward to the water table. The largest amount of precipitation falls in the northwestern mountains where there is little soil to absorb it so it rapidly runs off. The alluvial slopes, near the mountains, receive the greatest amount of water available for recharge to the ground-water system. All recharge occurs within the drainage area of Lanfair and Fenner Valleys. There is no ground-water underflow from adjacent areas because these valleys lie at a higher altitude than the surrounding basins.

Occurrence and Movement

A number of places in the mountains, within the study area, contain ground water at shallow depths. During years of normal precipitation, the water in the ground is sufficient to keep the water table near land surface. Some dug or drilled wells near the mountain fronts have water levels as shallow as 5 feet below land surface. However, most wells in these areas yield only a few gallons per minute and do not supply sufficient water to withstand heavy pumping.

In the main parts of Lanfair and Fenner Valleys, the depth to water is much greater than in the mountain areas. This is chiefly because the depth to bedrock and the thickness of the alluvium is much greater in the valleys than in the mountains. Water levels in northern Lanfair Valley are about 340 feet below land surface and more than 500 feet below land surface toward the center of the valley. In northeastern Fenner Valley at Goffs, water levels are about 600 feet below land surface. Farther to the south, the water level in Danby is 259 feet below land surface. Supplemental Data B and C show the depth to water in most of the wells. Records indicate that water levels are at or near their predevelopment levels and have not been regionally affected by pumpage in the valleys.

Springs occur in the mountains along faults and formational contacts. These springs discharge 5 gal/min or less, with the exception of Piute Spring, which discharges as much as 390 gal/min (Supplemental Data D). Some of the spring water is piped long distances across the valleys to supply water for stock.

Ground water in Lanfair Valley moves from the western mountains toward the southeast (pl. 1), and leaves the valley as discharge from Piute Spring (12N/18E-24DS1). This spring is on a fault which acts as a ground-water barrier. In Fenner Valley, ground water generally moves southward into the main part of the valley east of the Clipper Mountains. It then moves southwesterly until it leaves the valley between the Marble and Ship Mountains (pl. 2).

Storage, Well Yields, and Aquifer Characteristics

The total volume of ground water in storage in Lanfair and Fenner Valleys cannot be estimated from the available data. Few drillers' logs show the total thickness of unconsolidated deposits. However, the thickness of the unconsolidated deposits in Lanfair Valley is at least 550 feet, and in parts of Fenner Valley is more than 1,100 feet thick.

The quantity of water available to most of the wells is not great. Near the edges of the valleys, consolidated rock lies close to the surface and is covered by only a thin layer of recent, permeable alluvium. In these areas, wells yield from 3 to 20 gal/min (table 2). Although the actual capacities of these wells are not known, they probably could be pumped dry easily because storage is small. Toward the center of the valleys, the unconsolidated deposits are thicker, older, and more indurated, and have permeabilities that are generally low. However, these wells yield up to 199 gal/min and have specific capacities of approximately 1 (gal/min)/ft of drawdown or less (table 2).

An exception to the generally low yielding wells of the study area is well 8N/17E-4E1 in Fenner Valley. This well yields 1,200 gal/min and has a specific capacity of 48 (gal/min)/ft of drawdown (table 2). Drillers' logs (not published) show that the well was drilled to a depth of about 1,000 feet, mostly in sand and gravel typical of the alluvial fill in the study area. The well is located on the downthrown side of an unnamed fault (pl. 2) which may give rise to its increased yield. Wells drilled near and west of this fault may give similar specific capacities.

TABLE 2.--Pumping-test results

State well number	Date	Length of test (min)	Static water level (ft)	Pumping water level (ft)	Draw-down (ft)	Yield (gal/min)	Specific capacity [(gal/min)/ ft of drawdown]
5N/15E-4F1	6-21-03	1,440	400	--	--	60	--
5N/15E-4G2	1915	1,440	--	--	--	37	--
6N/16E-6K1	11-00-32	--	--	--	--	130	--
6N/16E-6Q1	9-10-01	1,440	260	--	--	50	--
6N/16E-6Q2	4-02-03	1,440	--	--	--	68	--
6N/16E-6Q3	5-28-27	--	--	--	--	199	--
8N/16E-36R1	11-04-30	--	--	--	90	100	1.11
8N/17E-2D1	12-14-25	--	452	--	--	114	--
8N/17E-2D2	3-28-07	1,440	427	460	33	37.9	1.15
8N/17E-4E1	5-28-68	3,420	--	--	25	1,200	48
9N/17E-35N1	6-06-01	1,440	317	--	--	70	--
10N/18E-26R1	9-08-02	1,440	565	--	--	45	--
10N/18E-26R2	1-12-25	--	594	--	--	70.5	--
10N/18E-35B1	9-01-07	1,440	550	--	--	52	--
10N/18E-35B2	9-03-17	--	606	726	120	47.7	.40
10N/18E-35B3	1932	--	--	--	--	18	--
11N/15E-8K1	5-14-71	240	--	--	7	7	1
12N/15E-3L1	11-00-17	--	--	--	--	11	--
12N/15E-17B1	11-00-17	--	7	--	--	11	--
12N/17E-17J1	11-00-17	--	400	--	--	35	--
12N/17E-18A1	11-00-17	--	500	--	--	16	--
12N/18E-30E1	8-31-81	--	212	--	--	3	--
13N/17E-18N1	11-00-17	--	100	--	--	18	--
14N/16E-14M1	3-26-03	--	73	--	--	20	--
14N/17E-14F1	1937	--	--	--	--	3	--

Water Use

Water used in Lanfair and Fenner Valleys is obtained entirely from ground-water sources. The principal uses of ground water are for domestic and livestock supplies. A small quantity is used at recreational areas to supply drinking water for visitors and campers.

Table 3 shows the estimated ground-water use in 1954 and 1981. Water use has declined in Lanfair Valley and remained about the same in Fenner Valley since 1954. Total water use in 1981 for the study area was estimated to be 38 acre-feet.

TABLE 3. - Estimated ground-water use in 1954 and 1981

Valley	Year	Estimated number of residents	Number of livestock	Estimated water use (acre-ft/year)
Lanfair	[1]1954	25	5,000	90
	1981	50	1,700	30
Fenner	[1]1954	30	--	7
	1981	60	300	8

[1]Data from California Division of Water Resources (1954).

Basin Outflow

Basin outflow for the study area can be determined through an analysis of ground-water movement. In Lanfair Valley, virtually no ground water is lost as underflow toward Fenner Valley. All the ground water is discharged at Piute Spring (12N/18E-24DS1) where it can be easily measured as surface-water flow. Three surface-water measurements were made 0.6 mile downstream from the spring at different times of the year (table 4). Measurements indicate that the ground-water basin outflow for Lanfair Valley ranges from about 100 to 630 acre-feet per year.

TABLE 4. - Discharge data from Piute Spring

[Location: 0.6 mi downstream from 12N/18E-24DS1, 50 ft upstream from washed-out dam (see plate 1)]

Date of measurement	Velocity (ft/s)	Flow rate (ft^3/s)	Annual discharge[1] (acre-ft/yr)
4-15-80	--	[2]0.87	630
9-02-81	1.67	.139	100
1-28-82	2.17	.385	279

[1]Calculated annual discharge if flow rate continued throughout the year.

[2]Data from D. A. Winters, U.S. Bureau of Land Management, oral communication, 1982.

Ground-water basin outflow from Fenner Valley was estimated at section A-A', which extends across the alluvial valley between the Marble and Ship Mountains (pl. 2). This section was selected because water-level data indicate all water exits Fenner Valley through this section.

Ground-water basin outflow can be estimated using the following equation:

$$Q = TIW$$

where Q = basin outflow, in gallons per day,
T = transmissivity, in gallons per day per foot,
I = ground-water gradient, in feet per mile, and
W = width of the aquifer at the water table, in miles.

Transmissivity (T) was determined using the equation:

$$T = C_s B$$

where C_s = specific capacity, in gallons per minute per foot of drawdown, and
B = a factor, estimated to be 2,000 for Fenner Valley.

The factor 2,000 used in Fenner Valley is consistent with values used by Dutcher and Moyle (1973) in similar desert basins.

Specific capacity data for wells were reviewed to determine values to be used at the outflow section. Well 8N/17E-2D2 with a specific capacity of 1.15 (gal/min)/ft was used because it is representative of similar wells at Fenner and Siam.

The value for transmissivity is:
Specific capacity x factor = transmissivity

$$1.15 \text{ (gal/min)/ft} \times 2{,}000 = 2{,}300 \text{ (gal/d)/ft} = 307.5 \text{ ft}^2\text{/d}$$

The width of the aquifer at the water table was estimated to be 1.6 miles.

The ground-water gradient measured between wells 6N/16E-6K1 and 5N/15E-4F1 was 65 ft/mi.

Using the equation:

$Q = TIW$
$Q = 2{,}300 \text{ (gal/d)/ft} \times 65 \text{ ft/mi} \times 1.6 \text{ mi}$
$Q = 239{,}200 \text{ gal/d}$ or about 270 acre-ft/yr.

The estimated average annual ground-water outflow from Fenner Valley is 270 acre-feet.

Water Quality

Water-quality samples were collected from 29 wells and springs in 1981 for analysis of major chemical constituents (Supplemental Data E). In addition, several springs were analyzed in the field for water temperature, pH, and specific conductance.

Water-quality types may be distinguished by the predominance of specific chemical constituents. Ground-water samples from the recharge areas of the western mountain ranges are primarily of the calcium-bicarbonate type, and those from near the center of the valleys are primarily a sodium-bicarbonate type.

The dissolved-solids concentration ranged from 173 mg/L to 2,260 mg/L and averaged 515 mg/L. Of the wells and springs sampled in 1981, only two wells had dissolved-solids concentrations exceeding 1,000 mg/L. Well 14N/16E-14M1, located in the consolidated rock of the New York Mountains, had a concentration of 2,000 mg/L. Other wells located in this area have historically had dissolved-solids concentrations exceeding 2,000 mg/L. Well 12N/15E-19H1, located near the ground-water divide in the northwest part of the Fenner study area, had a dissolved-solids concentration of 2,260 mg/L.

Over half of the sampled ground water is classified as hard (hardness, as calcium carbonate, greater than 150 mg/L). Wells 12N/15E-19H1 and 14N/16E-14M1 have a concentration of 1,200 mg/L hardness. Hard water has had no demonstrable harmful effect upon the health of consumers, but may cause excessive soap consumption and formation of scales in hot water heaters and pipes.

A laxative effect is commonly noted by new or casual users of water high in sulfate. Well 12N/15E-19H1 and 14N/16E-14M1 exceed the recommended upper limit for public water supplies of 250 mg/L of sulfate by three times or more (U.S. Environmental Protection Agency, 1977).

The U.S. Environmental Protection Agency (1978) recommends a limit of 250 mg/L of sodium for public water supplies. The person who is required to maintain a restricted sodium intake below 500 mg/d should use a water supply that contains 20 mg/L or less of sodium (U.S. Environmental Protection Agency, 1978). Of the water-quality samples taken, 26 of the 29 exceeded 20 mg/L of sodium. Well 12N/15E-19H1 had a sodium concentration of 240 mg/L.

Water having a pH close to neutral (7.0) is desirable to avoid corrosion of metal pipes. The pH of the sampled ground water ranged from 7.0 to 8.5 and averaged 7.5. This pH range is acceptable for water used for domestic and stock purposes.

With the exception of water from the two wells high in sulfate, and some containing high concentrations of dissolved solids and fluoride, virtually all the ground water sampled in 1981 was suitable for domestic use; all was suitable for livestock. A comparison with chemical constituents in water analyzed before 1981, indicated no significant change in water quality with time.

NEED FOR ADDITIONAL STUDIES

Additional studies are needed to better assess the geohydrologic conditions of Lanfair and Fenner Valleys. A detailed gravity survey would aid in determining the thickness of unconsolidated deposits and the structure and altitude of the consolidated bedrock. Aquifer tests on existing wells would help to make better estimates on aquifer properties. The drilling of observation wells in areas where there are sparse data would aid in determining subsurface geologic conditions, water levels, and water quality. A more complete geologic map showing the exact locations of the faults would help to identify potential areas of higher ground-water yield.

SUMMARY

Average annual precipitation ranges from 3 to 10 inches over the study area. Precipitation is not adequate to support perennial streamflow, but does supply some recharge to the ground-water system.

Ground water occurs in the unconsolidated deposits as well as the highly fractured or deeply weathered consolidated rock. Ground-water levels in wells range from about 5 to 600 feet below land surface, and are at or near their pre-development levels. Many springs are located in the mountains and have discharges up to 5 gal/min within the study area. Ground-water movement is generally to the southeast in Lanfair Valley and to the southwest in Fenner Valley. Well yields range from 3 to 1,200 gal/min, but are generally less than 200 gal/min.

Ground-water outflow was measured for Lanfair Valley at Piute Spring and ranged between 100 and 630 acre-feet per year. Outflow from Fenner Valley was estimated to be 270 acre-feet per year.

The quality of water in the study area is generally good for domestic and stock use. The ground water is generally of the sodium-calcium bicarbonate type. An analysis of water from two wells sampled showed a sulfate concentration above the recommended limit established for drinking water by the U.S. Environmental Protection Agency. No significant change in water quality was noticed with time.

The ground-water resources of Lanfair and Fenner Valleys and vicinity are sufficient to supply the limited domestic and stock-watering needs for the present. Additional studies are needed if large-scale developments are planned for the future. However, large-scale pumping would result in the lowering of the water table and a reduction of the ground water in storage.

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SUPPLEMENTAL DATA A: Drillers' logs

[Altitude of base is in feet, NGVD of 1929]

	Thickness (feet)	Depth (feet)	Altitude of base
5N/15E-4F1 S. Date of completion 1903, LSD 1,040 ft above MSL, 13-inch casing to 296 ft, 10-inch casing to 563 ft, 8-inch casing to 895 ft. Perforated 400-895 ft. Drilled by L.A. Clampitt.			
Cement and gravel	260	260	780
Clay; gravel and boulders	340	600	440
Granite	120	720	320
Malpais	175	895	145
5N/15E-4G2 S. Date of completion 1907, LSD 1,040 ft above MSL, 12 1/2-inch casing to 480 ft, 8-inch casing to 200 ft. Drilled by L.A. Clampitt.			
Cement and gravel	325	325	715
Granite	510	835	205
Clay, black	10	845	195
Malpais and rock	43	888	152
6N/16E-6K1 S. Date of completion 1925, LSD 1,352 ft above MSL, 15 1/2-inch casing to 245 ft, 12 1/2-inch casing to 195 ft, 9 5/8-inch casing to 575 ft. Perforated 75-920 ft. Drilled by Linscott Drilling Co.			
Sand	1	1	1351
Lava; clay and boulders	4	5	1347
Lava and gravel	38	43	1309
Lava; gravel and clay	30	73	1279
Lava and gravel	54	127	1225
Lava; gravel and clay	38	165	1187
Clay and gravel	31	196	1156
Lava; clay and gravel	19	215	1137
Lava and gravel	7	222	1130
Lava	10	232	1120
Lava and gravel	16	248	1104
Lava	17	265	1087
Lava; gravel and clay	23	288	1064
Lava and gravel	20	308	1044
Lava and cement	24	332	1020
Lava and rock	18	350	1002
Lava, cemented and gravel	26	376	976
Lava and clay	16	392	960
Lava; cement and gravel	4	396	956
Lava, cemented	18	414	938
Gravel, cemented	73	487	865
Lava, cemented and gravel	28	515	837
Lava	63	578	774
Lava, hard	9	587	765
Lava	317	904	448
Lava, stocky	7	911	441
Clay and lava	25	936	416
Clay	8	944	408
Lava and clay	6	950	402
Clay	29	979	373
Lava ash, white	4	983	369

SUPPLEMENTAL DATA A: Drillers' logs--Continued

	Thickness (feet)	Depth (feet)	Altitude of base
6N/16E-6Q1 S. Date of completion 1901, LSD 1,350 ft above MSL, 10-inch casing 0-287 ft, 8-inch casing 0-597 ft. Perforated 397-417, 546-566 ft. Drilled by American Well Works Co.			
Sand, cemented and gravel and boulders	637	637	713
6N/16E-6Q2 S. Date of completion 1903, LSD 1,352 ft above MSL, 12-inch casing to 181 ft, 9 5/8-inch casing to 629 ft. Perforated 268-629 ft. Drilled by L.A. Clampitt.			
Gravel, cemented	635	635	717
Lava	160	795	557
Granite	103	898	454
6N/16E-6Q3 S. Date of completion 1927, LSD 1,350 ft above MSL, 16-inch casing. Perforations 411-885 ft. Drilled by Roscoe Moss.			
Sand and boulders	247	247	1103
Gravel, cemented	288	535	815
Malpais	41	576	774
Cemented	354	930	420
Clay, yellow	52	982	368
Rock, white tail	3	985	365
8N/17E-2D2 S. Date of completion 1907, LSD 2,086 ft above MSL, 12 1/2-inch casing. Drilled by L.A. Clampitt.			
Sand and gravel	184	184	1902
Granite, decomposed	22	206	1880
Rock, volcanic	138	344	1742
Granite	716	1060	1026
10N/18E-26R1 S. LSD 2,600 ft above MSL, 14-inch casing. Drilled by L.A. Clampitt.			
Sand and gravel	125	125	2475
Clay and gravel	195	320	2280
Granite	355	675	1925
Malpais	101	776	1824
Sandstone	97	873	1727
Shale	53	926	1674

SUPPLEMENTAL DATA A: Drillers' logs--Continued

	Thickness (feet)	Depth (feet)	Altitude of base
10N/18E-26R2 S. LSD 2,600 ft above MSL, 8-inch to 1,156 ft. Perforated 579-682, 930-1066 ft. Drilled by Roscoe Moss Co.			
Gravel and soil	25	25	2575
Sand, cement	25	50	2550
Shell	9	59	2541
Clay, yellow	31	90	2510
Granite	12	102	2498
Sand, conglomerate and gravel	18	120	2480
Granite, soft	12	132	2468
Granite and clay	2	134	2466
Sand, cement	31	165	2435
Granite	18	183	2417
Clay and sand	24	207	2393
Sand, cement	16	223	2377
Gravel and clay	54	277	2323
Sand, cement	43	320	2280
Clay and cement	50	370	2230
Sand, cement	55	425	2175
Granite	23	448	2152
Sand, cement	68	516	2084
Granite, soft	49	565	2035
Sand, cement	20	585	2015
Gravel and clay	7	592	2008
Sandstone	16	608	1992
Granite	29	637	1963
Talc	3	640	1960
Granite	35	675	1925
Clay, red	10	685	1915
Gravel	5	690	1910
Malpais	173	863	1737
Shale, red	56	919	1681
Shale, gray	11	930	1670
Sand and clay	57	987	1613
Clay, sandy	36	1023	1577
Gravel	3	1026	1574
Gravel and clay	31	1057	1543
Clay, sticky	5	1062	1538
Sand, cement	4	1066	1534
Sand and clay	11	1077	1523
Shale, red and sand	10	1087	1513
Sandstone	16	1103	1497
Granite, soft	7	1110	1490
Shale and gravel	24	1134	1466
Granite	19	1153	1447
Shale, red and sand	3	1156	1444
10N/18E-35B1 S. LSD 2,600 ft above MSL, 12.5-inch casing. Drilled by L.A. Clampitt.			
Sand and gravel	125	125	2475
Granite	735	860	1740
Malpais	65	925	1675
Clay, yellow	35	960	1640

SUPPLEMENTAL DATA A: Drillers' logs--Continued

	Thickness (feet)	Depth (feet)	Altitude of base
10N/18E-35B2 S. LSD 2,600 ft above MSL, 16-inch casing. Perforated 590-772, 812-840 ft. Drilled by Clampitt and Moss.			
Sand and clay	8	8	2592
Sand, cemented	72	80	2520
Granite	10	90	2510
Sand, cemented	15	105	2495
Granite	20	125	2475
Sand, cemented	20	145	2455
Granite	50	195	2405
Sand, cemented	50	245	2355
Granite	25	270	2330
Sand, cemented	15	285	2315
Malpais	5	290	2310
Sand, cemented	120	410	2190
Granite	190	600	2000
Sand, white, rock	100	700	1900
Granite	65	765	1835
Malpais	15	780	1820
Granite	15	795	1805
Malpais	125	920	1680
Sandstone, red	60	980	1620
Sand and clay	15	995	1605
Sand, white, cemented	35	1030	1570
Sand and clay	93	1123	1477
10N/18E-35B3 S. LSD 2,600 ft above MSL, 16-inch casing to 500 ft, 12-inch casing to 950 ft, 10-inch to 1,150 ft. Perforated 590-875, 1,035-1,090 ft. Drilled by Ross Moss Co.			
Clay, sandy	45	45	2555
Gravel, cemented	61	106	2494
Gravel, cemented and boulders	9	115	2485
Sand, cemented and boulders	90	205	2395
Boulders, cemented	10	215	2385
Sand, cemented and boulders	205	420	2180
Sand, cemented	30	450	2150
Sand, cemented and boulders	35	485	2115
Sand, cemented	45	530	2070
Sand, cemented, and boulders	110	640	1960
Sand, cemented	220	860	1740
Sand, cemented and boulders	25	885	1715
Clay, brown	140	1025	1575
Shale, blue	8	1033	1567
Sand, cemented and boulders	49	1082	1518
Clay, yellow	68	1150	1450
12N/17E-18A1 S. LSD 4,040 ft above MSL, 6-inch casing.			
Gravel	52	52	3988
Ash, volcanic	468	520	3520
Gravel	30	550	3490

SUPPLEMENTAL DATA B: Description of wells

Local numbers: The wells are identified according to their location in the rectangular system for the subdivision of public land. The identification consists of the township number, north or south; the range number, east or west; and the section number. The section is further subdivided into sixteen 40-acre tracts lettered consecutively (excepting I and O), beginning with A in the northeast corner section and progressing in a sinusoidal manner to R in the southeast corner. Wells within the 40-acre tract are numbered sequentially. The base line and meridian are indicated by the final letter, as follows: H, Humboldt; M, Mount Diablo; S, San Bernardino.

Owner or name: The apparent owner or user. In some cases, the local name of the well is given.

Water-level status:
- D - the site was dry (no water level is recorded).
- E - the site had been flowing recently, but a head measurement was made.
- F - the site was flowing, but the head could not be measured (no water level is recorded).
- G - a nearby site that taps the same aquifer was flowing.
- H - a nearby site that taps the same aquifer had been flowing recently.
- O - an obstruction was encountered in the well above the water surface (no water level is recorded).
- P - the site was being pumped.
- R - the site had been pumped recently.
- S - a nearby site that taps the same aquifer was being pumped.
- T - a nearby site that taps the same aquifer had been pumped recently.
- V - foreign substance present on the surface of the water.
- X - water level affected by stage in nearby surface-water site.
- Z - other conditions that would affect the measured water level.

If no site status is indicated, the reported water-level measurement represents a static level.

Method of construction:

A - air-rotary	D - dug	P - air percussion	V - driven
B - bored or augered	H - hydraulic rotary	R - reverse rotary	W - drive and wash
C - cable-tool	J - jetted	T - trenching	Z - other

Depth drilled: Depth, in feet below land-surface datum, to which the hole was drilled.

Depth of well: Depth, in feet below land-surface datum, is defined as the bottom of the perforated or screened interval or the greatest depth to which the well can be sounded.

Finish:

C - porous concrete	H - horizontal gallery	S - screen	X - open hole
F - gravel pack w/perforations	O - open end	T - sand point	Z - other
G - gravel pack w/screen	P - perforated or slotted	W - walled	

Casing diameter: Inside diameter of the well, in inches; nominal inside diameter, in inches, of the innermost casing at the surface for drilled cased wells.

Type of powers:

D - diesel engine	G - gasoline engine	L - LP gas (propane or butane engine)	W - windmill
E - electric motor	H - hand	N - natural-gas engine	Z - other

Type of lift:

A - air lift	J - jet pump	S - submergible pump	Z - other
B - bucket	P - piston pump	T - turbine pump	
C - centrifugal pump	R - rotary	U - unknown	

Use of water:

A - air conditioning	E - power	M - medicinal	S - stock	Z - other
B - bottling	F - fire	N - industrial	T - institution	
C - commercial	H - domestic	P - public supply	U - unused	
D - dewater	I - irrigation	R - recreation	Y - desalination	

Use of site:

A - anode	H - heat reservoir	R - recharge	W - withdrawal of water
D - drain	M - mine	S - repressurize	X - waste disposal
E - geothermal	O - observation	T - test	Z - destroyed
G - seismic	P - oil or gas well	U - unused	

Altitude of lsd: Altitude of land-surface datum, in feet, above or below (-) mean sea level. Land-surface datum is an arbitary plane closely approximating land surface at the time of the first measurement and used as the plane of reference for all subsequent measurements.

SUPPLEMENTAL DATA B: Description of wells--Continued

[AT & SF RR - Atchinson, Topeka and Santa Fe Railway Company; BLM - U.S. Bureau of Land Management]

LOCAL NUMBER	OWNER		WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED	DATE COMPLETED	METHOD CONSTRUCTED	DEPTH DRILLED (FEET)	DEPTH OF WELL (FEET)	FINISH	CASING DIAMETER (INCHES)	TYPE OF POWER	TYPE OF LIFT	USE OF WATER	USE OF SITE	ALTITUDE OF LAND SURFACE (FEET)
005N015E04F01S	AT & SF RR		400.00		06/21/1903	06/21/1903	--	895.00	--	P	8	--	--	--	Z	1040
005N015E04G01S	AT & SF RR		420.00		09/25/1907	08/25/1907	--	888.00	--	P	8	--	--	--	Z	1040
006N014E35B01S	FLANAGAN, JAMES		300.00		12/30/1954	04/19/1954	H	528.00	--	--	8	--	--	U	U	1280
006N016E06K01S	AT & SF RR		258.83		07/13/1979	08/ /1925	C	983.00	350.80	P	9.63	--	--	U	O	1352
006N016E06Q01S	AT & SF RR		260.00		09/ /1901	09/08/1901	--	637.00	--	--	8	--	--	U	U	1350
006N016E06Q02S	AT & SF RR		120.54		07/12/1979	04/02/1903	C	898.00	629.00	--	9.63	--	--	U	O	1352
006N016E06Q03S	AT & SF RR		268.50	R	07/22/1981	05/28/1927	--	985.00	--	P	12.50	--	--	N	W	1350
006N017E02M01S		--		D	07/21/1981	--	D	--	12.00	--	60	--	--	U	U	2970
006N017E11H01S		--	30.35		07/21/1981	--	D	--	54.00	W	72	--	--	H	W	3160
006N017E26E01S		--	15.17		07/22/1981	--	D	--	23.00	--	60	G	P	S	W	3430
007N015E35R01S	NEILSON, EXA		341.60		05/20/1963	03/ /1954	--	470.00	--	--	6	E	S	H,I	W	1460
007N016E01A01S	CAIRNS, CHUCK		334.50		09/03/1981	1950	--	421.00	--	--	8	E	S	H	U	1750
007N018E08E01S	BLAIR, MILTON		35.00	S	08/05/1981	1920	D	60.00	60.00	--	--	--	--	U	O	3270
007N018E08E02S	BLAIR, MILTON		45.00		08/05/1981	1950	--	125.00	125.00	--	--	W	P	H	W	3270
008N013E10E01S		--	14.00		08/05/1981	--	--	--	44.30	--	6	--	--	U	U	3844
008N013E15N01S		--		D	08/05/1981	--	--	--	1.60	--	6	--	--	U	U	3720
008N013E15P01S	BLM		142.47	R	08/05/1981	--	--	--	--	--	11.75	W	P	S	W	3700
008N013E15P02S		--		D	08/05/1981	--	--	--	12.00	--	6	--	--	U	U	3720
008N013E15P03S		--		D	08/05/1981	--	--	--	3.00	--	6	--	--	U	U	3720
008N013E18F01S		--	30.07		08/04/1981	--	--	--	--	--	--	G	S	S	W	4330
008N014E05N01S	BLM		73.06	R	08/05/1981	--	--	--	--	--	8.75	E	S	S	W	3290
008N014E08D01S		--	--		--	--	--	--	60.00	--	8	--	--	U	U	3280
008N015E12D01S		--		D	08/04/1981	--	--	--	75.00	--	10	--	--	U	U	2200
008N016E13M01S	PACIFIC, SOUTHERN		406.81	V	08/05/1981	1942	--	--	--	--	16	--	--	U	O	1840
008N016E13M02S	PACIFIC, SOUTHERN		--		--	1942	--	--	--	--	16	--	--	U	O	1840
008N016E36R01S	CAL TRANS		343.90	P	09/03/1981	11/04/1930	--	800.00	--	--	12	E	S	H,I	W	1720
008N017E02D01S	AT & SF RR		364.05		08/05/1981	12/14/1925	C	1090.00	--	--	12.50	--	--	U	U	2086
008N017E02D02S	AT & SF RR		427.00		08/ /1932	03/28/1907	--	1060.00	--	--	10	--	--	--	Z	2086
008N017E04E01S	CALIFORNIA, STATE OF		535.70		07/24/1981	05/28/1968	C	1038.00	--	P	14	E	S	H,I	W	2000
008N017E31N01S	CHAMBERS, O.B.		331.70		06/15/1961	02/ /1954	--	421.00	400.00	--	6	--	--	H	W	1750
009N014E03C01S		--	3.12		08/06/1981	--	--	--	44.00	--	10	--	--	U	U	3610
009N014E03F01S		--	37.36		08/06/1981	--	D	--	74.50	X	--	--	--	U	U	3640
009N014E04R01S	BLM		3.60		08/10/1981	--	--	--	--	--	6	--	--	U	U	4070
009N014E29P01S		--	--		--	--	D	--	20.00	X	--	--	--	U	U	3720
009N016E11A01S		--		D	08/06/1981	--	D	150.00	--	--	--	--	--	U	H	2520
009N017E35N01S	AT & SF RR		317.00		06/06/1901	06/06/1901	--	800.00	--	X	13	--	U	U	Z	2086
009N018E36D01S		--	--		--	--	D	25.00	--	--	--	--	--	U	U	2800
009N018E36D02S	PARKER, ART		--		--	--	A	355.00	--	--	6.75	--	--	U	U	2765
009N018E36E01S	PARKER, ART		38.47		07/21/1981	02/19/1973	A	342.00	--	F	6.50	--	--	U	U	2780
010N014E22K01S	CALIFORNIA, STATE PARK		6.70		07/23/1981	--	D	33.00	--	--	60	G	P	H	W	3800

SUPPLEMENTAL DATA B: Description of wells--Continued

LOCAL NUMBER	OWNER		WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED	DATE COMPLETED	METHOD CONSTRUCTED	DEPTH DRILLED (FEET)	DEPTH OF WELL (FEET)	FINISH	CASING DIAMETER (INCHES)	TYPE OF POWER	TYPE OF LIFT	USE OF WATER	USE OF SITE	ALTITUDE OF LAND SURFACE (FEET)
010N014E32G01S	BLM		7.40		08/11/1981	--	--	8.60	--	--	3.50	--	--	U	U	4190
010N015E07B01S	BLAIR, HOWARD		7.83		07/23/1981	1940	--	48.00	--	--	6	--	--	H	W	3800
010N015E29A01S	BLAIR, H.		4.56	Z	09/02/1981	--	D	37.50	37.50	--	42	--	--	U	U	3160
010N015E29A02S	BLAIR, HOWARD		5.94		07/22/1981	--	--	23.00	--	--	6.75	--	--	U	U	3150
010N015E29A03S	BLAIR, HOWARD		2.75		08/12/1981	--	D	--	13.00	X	--	--	--	S	U	3150
010N018E26R01S	AT & SF RR		565.00		09/08/1902	09/08/1902	--	926.00	--	P	14	--	--	U	U	2600
010N018E26R02S	AT & SF RR		594.00		01/12/1925	01/12/1925	--	1156.00	--	P	8	E	S	H	W	2600
010N018E35B01S	AT & SF RR		550.00		09/01/1907	09/01/1907	--	960.00	--	--	12.50	--	--	--	Z	2600
010N018E35B02S	AT & SF RR		606.00		08/03/1917	08/03/1917	--	1123.00	--	P	16	--	--	--	Z	2600
010N018E35B03S	AT & SF RR		600.00		07/28/1928	07/28/1928	--	1150.00	--	P	10	--	--	U	U	2600
011N014E02H01S		--	11.54		08/13/1981	--	H	--	37.90	--	7.50	--	--	U	U	4840
011N014E11C01S		--		D	08/13/1981	--	--	--	5.00	--	48	--	--	--	Z	4770
011N014E27E01S	BLAIR, HOWARD		--		--	--	D	35.00	--	--	--	--	--	--	Z	3920
011N014E33E01S		--		D	08/12/1981	--	--	--	94.50	--	--	--	--	U	U	3990
011N014E33N01S	BLAIR, HOWARD		235.70		07/23/1981	--	D	400.00	--	--	--	--	--	S	W	3700
011N014E35M01S	BLAIR, HOWARD		92.59		07/23/1981	1979	--	150.00	--	--	6.70	--	--	N	W	3630
011N015E06C01S	BLM		41.64		08/18/1981	--	--	175.00	--	--	6	--	P	U	U	4860
011N015E06J01S	BLM		98.98		08/18/1981	--	--	--	142.70	--	8	--	--	U	U	4560
011N015E08K01S	BLM		510.00		05/14/1971	05/14/1971	C	605.00	--	F	8.63	G	P	U	U	4280
011N015E08R01S		--		D	08/18/1981	--	--	--	299.30	--	8	--	--	U	U	4200
011N015E08R02S		--		D	08/18/1981	--	--	--	398.00	--	12	--	--	U	U	4190
011N015E08R03S		--		D	08/18/1981	--	--	--	149.50	--	12	--	--	U	U	4190
011N015E17M01S	BLAIR, HOWARD		368.80	S	08/13/1981	--	--	--	--	--	10	--	S	S	W	4070
011N015E17M02S	BLAIR, HOWARD		--		--	--	--	--	--	--	10	--	P	S	W	4070
011N017E05R01S	CATTLE CO, OX		--		--	1935	--	150.00	--	--	6.50	--	--	U	U	3590
011N017E05R02S	CATTLE CO, OX		67.22		09/01/1981	--	--	--	98.00	--	10	--	--	U	U	3590
011N017E05R03S	CATTLE CO, OX		69.60		09/01/1981	1959	--	175.00	--	--	6.50	W	P	S	W	3590
011N018E09L01S		--	56.93		08/02/1978	--	--	--	62.00	--	6	--	--	U	U	3300
012N014E13N01S	BLM		--		--	--	--	--	--	--	6	W	P	R	W	5517
012N014E24E01S		--	22.79		08/13/1981	--	--	--	124.00	--	12	--	--	U	U	5520
012N014E36J01S		--	--		--	--	--	--	--	--	--	--	--	--	Z	5150
012N014E36R01S		--	8.90	X	08/18/1981	--	D	--	10.00	--	36	--	--	U	U	5125
012N015E02H01S		--		D	08/21/1981	--	D	--	14.00	--	--	--	--	U	U	4880
012N015E03L01S	U.S.GOVT		8.86	R	08/29/1981	1857	D	--	30.00	X	--	W	P	S	W	5040
012N015E03M01S		--	29.37		08/21/1981	--	--	147.00	--	--	6	W	P	U	U	5060
012N015E04Q01S		--	--		--	--	--	--	--	--	6	W	P	S	W	5100
012N015E07A01S	RANCH, ROUND VALLEY		6.82		09/02/1981	--	--	--	--	--	8	W	P	S	W	5270
012N015E08D01S	RANCH, ROUND VALLEY		18.29		09/02/1981	--	--	--	70.00	--	8	W	P	S	W	5250
012N015E08D02S	RANCH, ROUND VALLEY		18.46		09/02/1981	--	--	--	24.00	--	6	--	--	U	U	5250
012N015E09M01S		--	21.71		08/29/1981	--	--	--	32.00	--	6	--	--	U	U	5180

SUPPLEMENTAL DATA B: Description of wells--Continued

LOCAL NUMBER	OWNER	WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED	DATE COMPLETED	METHOD CONSTRUCTED	DEPTH DRILLED (FEET)	DEPTH OF WELL (FEET)	FINISH	CASING DIAMETER (INCHES)	TYPE OF POWER	TYPE OF LIFT	USE OF WATER	USE OF SITE	ALTITUDE OF LAND SURFACE (FEET)
012N015E09M02S		--		--	--	--	--	--	--	8	--	--	U	U	5180
012N015E09Q01S		--	25.05	08/29/1981	--	--	--	46.40	--	6	W	P	S	W	5240
012N015E09Q02S		--		D 08/29/1981	--	D	--	15.00	--	--	W	P	U	U	5240
012N015N09Q03S		--	--	--	--	--	--	--	--	6	W	P	S	W	5240
012N015E11B01S	CATTLE CO, OX		11.58	08/21/1981	--	--	--	40.00	--	6	W	P	U	U	5050
012N015E11G01S	CATTLE CO, OX		6.50	08/21/1981	--	D	--	10.00	--	--	--	--	U	U	5110
012N015E17B01S	RANCH, ROUND VALLEY		4.92	09/02/1981	--	D	13.00	13.00	--	60	--	--	U	U	5270
012N015E17B02S	RANCH, ROUND VALLEY		5.50	09/02/1981	--	--	--	75.30	--	11	G	T	U	U	5270
012N015E17B03S	RANCH, ROUND VALLEY		9.22	09/02/1981	--	D	--	14.00	--	60	--	--	U	U	5270
012N015E17N01S	SOUTHCOTT, FLEET		10.58	08/19/1981	--	D	60.00	--	O	48	W	P	S	W	5285
012N015E17N02S	SOUTHCOTT, FLEET			D 08/19/1981	--	--	--	--	--	5.50	--	--	U	U	5260
012N015E19H01S	SOUTHCOTT, FLEET		--	--	--	--	--	--	--	8	W	P	S	W	5080
012N015E19H02S	SOUTHCOTT, FLEET		10.17	S 09/02/1981	--	--	--	21.00	--	8	--	--	U	U	5080
012N015E20P01S		--	21.73	08/19/1981	--	--	--	45.90	--	8	--	--	U	U	5060
012N015E20P02S	SOUTHCOTT, FLEET		43.14	08/19/1981	1966	--	--	190.00	--	8	W	P	S,H	W	5015
012N015E29C01S	SOUTHCOTT, FLEET		37.16	08/19/1981	--	D	--	41.80	--	60	W	P	U	U	4940
012N015E31L01S	BLM		12.71	08/18/1981	--	--	--	28.70	--	1.50	--	--	U	U	5040
012N015E31M01S		--	12.00	11/22/1917	--	--	22.00	--	--	--	--	--	--	Z	5160
012N015E33D01S	SOUTHCOTT, FLEET		290.39	08/19/1981	08/ /1971	--	540.00	--	--	10.50	--	--	U	U	4730
012N015E33D02S	SOUTHCOTT, FLEET		--	--	08/ /1971	--	--	--	--	10.50	--	--	U	U	4730
012N015E33M01S	SOUTHCOTT, FLEET		--	--	1975	--	720.00	720.00	--	8	W	P	H,S	W	4640
012N015E36N01S		--	--	--	1953	--	600.00	--	--	6	--	--	U	U	4220
012N016E18L01S		--	12.13	08/20/1981	--	D	--	25.50	X	48	W	P	U	U	4590
012N016E19C01S	CATTLE CO, OX			D 08/20/1981	--	--	40.00	30.00	--	--	--	--	U	U	4610
012N016E19C02S	CATTLE CO, OX		43.48	08/20/1981	01/27/1959	--	54.00	47.00	--	6	--	--	U	U	4610
012N016E19D01S	CATTLE CO, OX		--	--	--	--	--	--	--	--	G	P	S	W	4610
012N017E04D01S	CATTLE CO, OX		521.25	P 09/01/1981	1937	--	--	700.00	--	8	--	--	S	W	3980
012N017F04N01S		--	11.00	08/31/1981	--	D	--	17.00	--	72	--	--	U	U	3960
012N017E04P01S		--	474.84	08/31/1981	--	--	--	--	--	8	--	--	U	U	3960
012N017E17J01S	CATTLE CO, OX			O 08/28/1981	1912	--	750.00	--	--	8	W	P	S	W	3910
012N017E18A01S		--	500.00	11/ /1981	--	--	550.00	--	--	6	--	--	U	U	4040
012N018E30C01S	MINE, RATTLE SNAKE			D 08/31/1981	--	--	148.00	--	--	--	--	--	C	W	3700
012N018E30E01S	MINE, RATTLE SNAKE		212.42	08/31/1981	--	--	--	243.70	--	6	--	--	N	W	3760
012N018F30E02S	MINE, RATTLE SNAKE		219.70	08/31/1981	--	--	--	226.80	--	6	--	--	N	W	3760
013N015F02P01S		--	41.70	08/27/1981	--	--	--	217.40	--	7	E	S	H	W	5440
013N015E09G01S		--	10.67	08/14/1981	--	D	--	14.00	X	60	--	--	U	U	5680
013N015E09H01S		--	16.95	08/14/1981	--	--	--	59.25	--	8	--	--	U	U	5620
013N015F11F01S		--	98.44	08/27/1981	--	--	--	153.00	--	7	E	S	H	W	5410
013N015E11G01S		--	58.19	08/27/1981	--	--	--	125.30	--	9.50	--	--	U	U	5440
013N015E13C01S		--		D 08/27/1981	--	--	--	16.20	--	6	--	--	U	U	5400

SUPPLEMENTAL DATA B: Description of wells--Continued

LOCAL NUMBER	OWNER		WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED	DATE COMPLETED	METHOD CONST-RUCTED	DEPTH DRILLED (FEET)	DEPTH OF WELL (FEET)	FINISH	CASING DIAM-ETER (INCHES)	TYPE OF POWER	TYPE OF LIFT	USE OF WATER	USE OF SITE	ALTITUDE OF LAND SURFACE (FEET)
013N015E22D01S		--	9.00		08/14/1981	--	D	--	15.10	--	42	--	--	U	U	5440
013N015E22G01S		--		D	08/14/1981	--	--	--	33.70	--	6	--	--	U	U	5330
013N015E22J01S		--	153.34		08/14/1981	--	--	--	154.20	--	8	--	--	U	U	5250
013N015E34K01S		--	10.61		08/29/1981	--	--	--	93.00	--	8	E	S	H	W	5000
013N015E34M01S	SMITH, MELVIN		65.00		08/29/1981	1978	--	--	200.00	--	8	W	P	H	W	5080
013N015E34N01S	SMITH, MELVIN		16.08		08/29/1981	1978	--	--	115.00	--	--	E	S	H	W	5060
013N015E36A01S	CATTLE CO, HALSELL		40.60		08/20/1981	--	--	--	72.20	--	10	--	--	S	W	4890
013N015E36A02S	CATTLE CO, HALSELL		39.05	S	08/20/1981	--	--	--	72.20	--	10	--	--	U	U	4890
013N015E36N01S		--	149.89		08/20/1981	--	--	--	217.00	--	10	--	--	U	U	4780
013N016E06P01S		--		O	08/20/1981	--	--	--	--	--	10	--	--	U	U	5570
013N016E07H01S	CATTLE CO, OX		212.10		08/20/1981	--	--	--	271.30	--	10	--	--	S	W	5510
013N017E18N01S	CATTLE CO, OX		344.29		01/15/1981	1912	--	--	879.00	--	12	G	P	S,H	W	4349
013N017E31H01S		--	--		--	--	C	146.00	--	--	--	--	--	H	W	4190
013N017E31J01S	RANCHO, AVILA			D	--	--	C	30.00	--	--	10	--	--	U	U	4160
013N018E18H01S		--		D	08/28/1981	--	--	--	249.00	--	10	--	--	U	U	3840
014N016E14K01S	CATTLE CO, OX		--		--	1905	--	140.00	--	--	8	G	P	S	W	4750
014N016E14K02S	CATTLE CO, OX		30.82	S	08/26/1981	--	--	--	121.30	--	10	W	P	S	W	4740
014N016E14K03S	CATTLE CO, OX			D	08/26/1981	--	D	--	32.00	--	72	--	--	U	U	4750
014N016E14M01S	WHETSTONE, MORRIS		91.93		08/26/1981	01/14/1903	--	457.00	126.20	--	9.63	E	S	H	W	4810
014N016E14P01S	CATTLE CO, OX		72.80		08/26/1981	--	--	--	97.50	--	10	W	P	S	W	4760
014N016E14Q01S	CATTLE CO, OX		118.86		08/26/1981	--	--	--	132.50	--	10	G	P	S	W	4760
014N016E15J01S		--		D	08/25/1981	--	D	--	5.50	--	60	--	--	U	U	4840
014N016E15Q01S	AT & SF RR			D	08/25/1981	1930	--	60.00	26.00	--	30	--	--	U	U	4875
014N016E22G01S		--		D	08/25/1981	--	--	--	11.00	--	10	--	--	U	U	4880
014N016E22M01S	CATTLE CO, OX		11.68		08/25/1981	1900	D	25.00	14.50	--	36	W	P	S	W	4920
014N016E22M02S	CATTLE CO, OX		16.10	R	08/25/1981	1954	--	--	84.00	--	6	W	P	S	W	4920
014N016E28J01S		--	25.81		08/25/1981	--	D	--	26.50	--	48	--	--	U	U	5060
014N017E14F01S	CATTLE CO, OX		266.02		08/28/1981	1937	--	725.00	--	--	10	W	P	S	W	4420
014N017E23L01S		--		D	08/28/1981	1900	--	400.00	58.00	--	10	--	P	U	U	4280
014N017F27A01S	CATTLE CO, OX		338.29		08/28/1981	--	--	--	358.80	--	5.50	--	--	U	U	4280
015N017F23F02S		--	--		--	--	--	--	--	--	6	G	P	S	W	4590
015N017E26Q01S	WEIKEL, K.F.		110.00		07/31/1958	07/31/1958	--	190.00	190.00	P	5	W	P	S	W	4460

SUPPLEMENTAL DATA C: Records of water level

RECORDS OF WATER LEVELS IN WELLS

EXPLANATION OF SYMBOLS APPEARING WITH WATER-LEVEL MEASUREMENTS

N = MEASUREMENTS DISCONTINUED

O = OBSTRUCTION

P = PUMPING

R = RECENTLY PUMPED

S = NEARBY PUMPING

V = FOREIGN SUBSTANCE

Z = OTHER

WELL 006N016E06K01S SITE NUMBER 343803115203901

IN DANBY. DRILLED UNUSED WATER-TABLE WELL. DIAM 15.5 IN 0-245 FT, 12.5 IN 224-419 FT, 9.63 IN 409-983 FT, DEPTH 983 FT IN 1925, 350.3 FT IN 1979, PERFORATED 75-920 FT. MEASUREMENTS FURNISHED BY DEPARTMENT OF WATER RESOURCES FROM 1925 TO 1964 AND BY U.S. GEOLOGICAL SURVEY FROM 1979 TO CURRENT YEAR. ALTITUDE OF LSD 1352 FT. RECORDS AVAILABLE 1925, 1953-61, 1964, 1979 TO CURRENT YEAR.

HIGHEST WATER LEVEL 258.10 FEET BELOW LAND SURFACE DATUM MAY 16, 1960.

LOWEST WATER LEVEL 268.60 FEET BELOW LAND SURFACE DATUM SEP 13, 1953.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
AUG 1925	267.00	OCT 11, 1956	258.50	MAY 16, 1960	258.10
SEP 13, 1953	268.60	MAY 14, 1957	260.10	MAY 13, 1961	259.50
MAY 10, 1954	259.50	MAY 23, 1958	259.90	MAY 13, 1964	259.20
SEP 15	258.20	SEP 04	258.50	JUL 13, 1979	258.83
MAY 22, 1955	258.50	MAY 16, 1959	258.20	JUL 31, 1980	258.99
				JAN 31, 1981	258.90
				JUL 22	259.00

WELL 006N016E06Q02S SITE NUMBER 343807115203701

IN DANBY. DRILLED UNUSED WATER-TABLE WELL. DIAM 12 IN 0-181 FT, 9.63 IN 0-629 FT, DRILLED DEPTH 898 FT, PERFORATED 268-629 FT. ALTITUDE OF LSD 1352 FT. RECORDS AVAILABLE 1903, 1979-80.

HIGHEST WATER LEVEL 120.28 FEET BELOW LAND SURFACE DATUM JUL 31, 1980.

LOWEST WATER LEVEL 268. FEET BELOW LAND SURFACE DATUM APR 02, 1903.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
APR 02, 1903	268.	JUL 31, 1980	120.28	JAN 21, 1981	0
JUL 12, 1979	120.54			SEP 03	0

WELL 006N016E06Q03S SITE NUMBER 343806115204001

AT DANBY. DRILLED INDUSTRIAL WATER-TABLE WELL. DIAM 16-12.5 IN, DEPTH DRILLED 985 FT, PERFORATED 260-395, 411-885 FT. ALTITUDE OF LSD 1350 FT. RECORDS AVAILABLE 1927, 1956-57, 1981.

HIGHEST WATER LEVEL 258.50 FEET BELOW LAND SURFACE DATUM OCT 17, 1956.

LOWEST WATER LEVEL 262.00 FEET BELOW LAND SURFACE DATUM MAY 28, 1927.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
MAY 28, 1927	262.00	OCT 17, 1956	258.50	MAY 14, 1957	260.10 P
				JUL 22, 1981	268.50 R

WELL 007N015E35R01S SITE NUMBER 343806115223601

SOUTHWEST OF INTERSECTION OF DANBY RD AND OLD HWY 66. DRILLED DOMESTIC WATER-TABLE WELL. DIAM 6 IN. DEPTH DRILLED 470 FT. ALTITUDE OF LSD 1460 FT. RECORDS FURNISHED BY DWR. RECORDS AVAILABLE 1954, 1956-61, 1963.

HIGHEST WATER LEVEL 336.10 FEET BELOW LAND SURFACE DATUM MAY 23, 1958.

LOWEST WATER LEVEL 351.20 FEET BELOW LAND SURFACE DATUM MAY 16, 1959.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
MAR 1954	340.00	MAY 23, 1958	336.10	MAY 16, 1959	351.20
OCT 17, 1956	336.50	SEP 04	337.90	MAY 16, 1960	337.00
MAY 14, 1957	336.50			MAY 13, 1961	336.60
				MAY 20, 1963	341.60

WELL 008N016E13M01S SITE NUMBER 344655115155601

IN FENNER VALLEY. DRILLED UNUSED WELL. DIAM 16 IN, DEPTH GREATER THAN 1000 FT. ALTITUDE OF LSD 1840 FT. RECORDS AVAILABLE 1956, 1981.

HIGHEST WATER LEVEL 400.00 FEET BELOW LAND SURFACE DATUM JAN 01, 1956.

LOWEST WATER LEVEL 400.00 FEET BELOW LAND SURFACE DATUM JAN 01, 1956.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL	DATE	WATER LEVEL
1956	400.00	AUG 05, 1981	406.81 V

WELL 008N016E36R01S SITE NUMBER 344352115145601

ABOUT 11 MI NORTHEAST OF DANBY. DRILLED DOMESTIC WATER-TABLE WELL. DIAM 12 IN, DEPTH DRILLED 800 FT. PERFORATED 335-400 FT. ALTITUDE OF LSD 1720 FT. RECORDS AVAILABLE 1930, 1979 TO CURRENT YEAR.

HIGHEST WATER LEVEL 335.00 FEET BELOW LAND SURFACE DATUM NOV 04, 1930.

LOWEST WATER LEVEL 339.80 FEET BELOW LAND SURFACE DATUM JUL 24, 1981.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04, 1930	335.00	JUL 31, 1980	336.25 P	JUL 24, 1981	339.80
JUL 21, 1979	336.38 R	JAN 21, 1981	336.50 R	SEP 03	343.90 P

WELL 008N017E02D01S SITE NUMBER 344931115103601

IN FENNER. DRILLED UNUSED WATER-TABLE WELL. DIAM 15.5 TO 12.5 IN, DEPTH 1090 FT, 15.5-IN CSG 0-121 FT, 12.5-IN CSG 0-582 FT. ALTITUDE OF LSD 2086 FT. RECORDS IN 1955-57 FURNISHED BY DEPT OF WATER RESOURCES. RECORDS AVAILABLE 1925, 1955-57, 1979 TO CURRENT YEAR.

HIGHEST WATER LEVEL 362.58 FEET BELOW LAND SURFACE DATUM JUL 31, 1980.

LOWEST WATER LEVEL 452. FEET BELOW LAND SURFACE DATUM DEC 14, 1925.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 14, 1925	452.	MAY 14, 1957	387.00	JUL 31, 1980	362.58
SEP 30, 1955	389.70	JUL 12, 1979	368.8	JAN 21, 1981	0
MAY 25, 1956	388.00			SEP 03	0
				JAN 07, 1982	N

WELL 008N017E04E01S SITE NUMBER 344843115123501

ABOUT 200 FT NORTH OF INTERSTATE 40 AND 0.33 MI EAST OF REST AREA TURN OFF. DRILLED DOMESTIC WATER-TABLE WELL. DIAM 14 IN, DEPTH 1038 FT, PERFORATED 620-986 FT. ALTITUDE OF LSD 2000 FT. RECORDS AVAILABLE 1968, 1981.

HIGHEST WATER LEVEL 534.00 FEET BELOW LAND SURFACE DATUM MAY 28, 1968.

LOWEST WATER LEVEL 535.70 FEET BELOW LAND SURFACE DATUM JUL 24, 1981.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL	DATE	WATER LEVEL
MAY 28, 1968	534.00	JUL 24, 1981	535.70

WELL 008N017E31N01S SITE NUMBER 344402115144001

AT ESSEX. DRILLED DOMESTIC WATER-TABLE WELL. DIAM 6 IN, DEPTH 421 FT IN 1954, 400 FT IN 1958. ALTITUDE OF LSD 1750 FT. RECORDS AVAILABLE 1954-58, 1960-61, 1981. PREVIOUSLY PUBLISHED AS 7N/16E-1X1 AND 1A1.

HIGHEST WATER LEVEL 329.50 FEET BELOW LAND SURFACE DATUM MAY 16, 1960.

LOWEST WATER LEVEL 340.00 FEET BELOW LAND SURFACE DATUM JUL 21, 1981.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
FEB 1954	344.00 Z	MAY 22, 1955	331.50	MAY 23, 1958	331.60
MAY 10	331.10	MAY 25, 1956	331.70	SEP 04	335.50
SEP 15	331.10	MAY 14, 1957	330.70	MAY 16, 1960	329.50
				MAY 13, 1961	331.70
				JUL 21, 1981	340.00

SUPPLEMENTAL DATA C: Records of water level--Continued

WELL 010N015E29A01S SITE NUMBER 345606115252601

COLTON WELL. DIAM 42 IN, DEPTH 37.5 FT. ALTITUDE OF LSD 3160 FT. RECORDS AVAILABLE 1917, 1981.

HIGHEST WATER LEVEL 4.56 FEET BELOW LAND SURFACE DATUM SEP 02, 1981.

LOWEST WATER LEVEL 14.00 FEET BELOW LAND SURFACE DATUM NOV 23, 1917.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 23, 1917	14.00	SEP 02, 1981	4.56

WELL 010N018E26R02S SITE NUMBER 345508115034701

ABOUT .05 MI SOUTHWEST OF NATIONAL OLD TRAILS HWY. DRILLED DOMESTIC WELL. DIAM 8 IN, DEPTH 1156 FT, PERFORATED 579-682, 930-1066 FT. ALTITUDE OF LSD 2600 FT. RECORDS AVAILABLE 1925, 1954.

HIGHEST WATER LEVEL 594.00 FEET BELOW LAND SURFACE DATUM JAN 12, 1925.

LOWEST WATER LEVEL 650.00 FEET BELOW LAND SURFACE DATUM SEP 15, 1954.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL	DATE	WATER LEVEL
JAN 12, 1925	594.00	SEP 15, 1954	650.00

WELL 011N017E05R01S SITE NUMBER 350328115094901

ABOUT 10 MI NORTH OF GOFFS. UNUSED WELL. DEPTH DRILLED 150 FT. ALTITUDE OF LSD 3590 FT. RECORDS AVAILABLE 1953, 1958

HIGHEST WATER LEVEL 98.50 FEET BELOW LAND SURFACE DATUM JAN 21, 1953.

LOWEST WATER LEVEL 98.50 FEET BELOW LAND SURFACE DATUM JAN 21, 1953.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL	DATE	WATER LEVEL
JAN 21, 1953	98.50	MAY 22, 1958	86.90 P

WELL 011N017E05R02S SITE NUMBER 350328115094902

ABOUT 10 MI NORTH OF GOFFS. UNUSED WELL. DIAM 10 IN, DEPTH 98 FT. ALTITUDE OF LSD 3590 FT. RECORDS AVAILABLE 1953-62, 1981.

HIGHEST WATER LEVEL 63.7 FEET BELOW LAND SURFACE DATUM JUN 07, 1962.

LOWEST WATER LEVEL 93.1 FEET BELOW LAND SURFACE DATUM MAY 14, 1957.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
SEP 13, 1953	80.4	S	SEP 30, 1955	73.1		MAY 16, 1959	87.7	
MAY 07, 1954	78.8	S	MAY 25, 1956	91.0		MAY 16, 1960	78.2	
SEP 15	87.7	S	MAY 14, 1957	93.1		MAY 12, 1961	78.8	S
MAY 22, 1955	89.6		MAY 22, 1958	86.1		JUN 07, 1962	63.7	
						SEP 01, 1981	67.22	

WELL 011N017E05R03S SITE NUMBER 350328115095301

ABOUT 10 MI NORTH OF GOFFS. STOCK WELL. DIAM 6.5 IN, DEPTH 175 FT. ALTITUDE OF LSD 3590 FT. RECORDS AVAILABLE 1959-60, 1963, 1981.

HIGHEST WATER LEVEL 69.60 FEET BELOW LAND SURFACE DATUM SEP 01, 1981.

LOWEST WATER LEVEL 70.4 FEET BELOW LAND SURFACE DATUM MAY 21, 1963.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
MAY 16, 1959	88.5	P	MAY 16, 1960	79.0	P	MAY 21, 1963	70.4	
						SEP 01, 1981	69.60	

WELL 012N015E03L01S SITE NUMBER 350849115213001

IN ROUND VALLEY. DUG STOCK WELL. PROBABLY DUG AROUND 1857. DIAM 5 FT, DEPTH 30 FT. ALTITUDE OF LSD 5040 FT. RECORDS AVAILABLE 1917, 1953-60, 1981.

HIGHEST WATER LEVEL 8.86 FEET BELOW LAND SURFACE DATUM AUG 29, 1981.

LOWEST WATER LEVEL 30.7 FEET BELOW LAND SURFACE DATUM MAY 24, 1956.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
NOV 1917	15.		MAY 22, 1955	21.9	P	MAY 13, 1957	27.9	
SEP 13, 1953	26.0	P	SEP 29	30.3	P	MAY 22, 1958	25.8	P
MAY 09, 1954	21.0	P	MAY 24, 1956	30.7		MAY 15, 1959	29.3	P
SEP 15	30.1	P	NOV 17	30.7		MAY 18, 1960	25.8	
						AUG 29, 1981	8.86	

SUPPLEMENTAL DATA C: Records of water level--Continued

WELL 012N015E17B01S SITE NUMBER 350732115232501

IN ROUND VALLEY. DUG UNUSED WELL. DIAM 5 FT, DEPTH 13 FT. ALTITUDE OF LSD 5270 FT. RECORDS AVAILABLE 1917, 1981.

HIGHEST WATER LEVEL 4.92 FEET BELOW LAND SURFACE DATUM SEP 02, 1981.

LOWEST WATER LEVEL 7. FEET BELOW LAND SURFACE DATUM NOV 01, 1917.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 1917	7.	SEP 02, 1981	4.92

WELL 012N017E04D01S SITE NUMBER 350923115093501

NORTHWEST OF LANFAIR BUTTES. STOCK WATER-TABLE WELL. DIAM 8 IN, DEPTH 700 FT. ALTITUDE OF LSD 3980 FT. RECORDS AVAILABLE 1937, 1980 TO CURRENT YEAR.

HIGHEST WATER LEVEL 510.40 FEET BELOW LAND SURFACE DATUM JAN 15, 1981.

LOWEST WATER LEVEL 570.00 FEET BELOW LAND SURFACE DATUM JAN 01, 1937.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
1937	570.00	JUL 31, 1980	518.10	JAN 15, 1981	510.40
				SEP 01	521.25 P

WELL 012N017E17J01S SITE NUMBER 350705115094801

IN LANFAIR VALLEY. DRILLED STOCK WELL. DIAM 8 IN, DEPTH DRILLED 750 FT. ALTITUDE OF LSD 3910 FT. RECORDS AVAILABLE 1912, 1955-62, 1964, 1978.

HIGHEST WATER LEVEL 400. FEET BELOW LAND SURFACE DATUM JAN 01, 1912.

LOWEST WATER LEVEL 431.2 FEET BELOW LAND SURFACE DATUM MAY 07, 1964.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
1912	400.	NOV 17, 1956	420.9	MAY 16, 1960	428.6
MAY 22, 1955	418.	MAY 13, 1957	415.2	MAY 11, 1961	430.5
SEP 29	418.	MAY 22, 1958	403.2	JUN 07, 1962	424.4
MAY 24, 1956	403.2	MAY 16, 1959	412.1	MAY 07, 1964	431.2
				JUL 27, 1978	0

WELL 013N016E07B01S SITE NUMBER 351332115180201

IN CARUTHERS CANYON. STOCK WELL. DIAM 10 IN, DEPTH 271.3 FT. ALTITUDE OF LSD 5510 FT. RECORDS AVAILABLE 1959, 1961-62, 1964, 1981.

HIGHEST WATER LEVEL 212.10 FEET BELOW LAND SURFACE DATUM AUG 20, 1981.

LOWEST WATER LEVEL 270.00 FEET BELOW LAND SURFACE DATUM JUN 08, 1962.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
MAY 16, 1959	268.40	JUN 08, 1962	270.00	MAY 07, 1964	269.60
MAY 12, 1961	267.70			AUG 20, 1981	212.10

WELL 013N017E18N01S SITE NUMBER 351208115120301

ABOUT 15.5 MI SOUTH-SOUTHEAST OF IVANPAH. STOCK AND DOMESTIC WATER-TABLE WELL. DIAM 12 IN, DEPTH 879 FT. ALTITUDE OF LSD 4349 FT. RECORDS AVAILABLE 1912, 1978-79, 1981 TO CURRENT YEAR.

HIGHEST WATER LEVEL 341.60 FEET BELOW LAND SURFACE DATUM APR 17, 1979.

LOWEST WATER LEVEL 344.26 FEET BELOW LAND SURFACE DATUM JUL 27, 1978.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
1912	100.00 Z	JUL 27, 1978	344.26	APR 17, 1979	341.60
				JAN 15, 1981	343.89

WELL 014N016E14K01S SITE NUMBER 351730115133801

UPPER LANFAIR VALLEY IN NEW YORK MTS. DRILLED STOCK WELL. DIAM 8 IN, DEPTH DRILLED 140 FT. ALTITUDE OF LSD 4750 FT. RECORDS AVAILABLE 1953-63.

HIGHEST WATER LEVEL 28.6 FEET BELOW LAND SURFACE DATUM NOV 17, 1956.

LOWEST WATER LEVEL 88.8 FEET BELOW LAND SURFACE DATUM MAY 09, 1954.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
SEP 13, 1953	89.2	P	MAY 22, 1955	80.8	P	MAY 13, 1957	34.5	
MAY 09, 1954	88.8		SEP 20	73.0		MAY 16, 1960	24.8	P
SEP 15	65.1		NOV 17, 1956	28.6		MAY 12, 1961	24.8	P
						JUN 08, 1962	25.4	P
						MAY 21, 1963	28.2	P

WELL 014N016E14K03S SITE NUMBER 351730115133803

UPPER LANFAIR VALLEY IN NEW YORK MTS. DUG UNUSED WELL. DIAM 5 FT, DEPTH 32 FT IN 1981. ALTITUDE OF LSD 4750 FT. RECORDS AVAILABLE 1952, 1981.

HIGHEST WATER LEVEL 30. FEET BELOW LAND SURFACE DATUM JUN 27, 1952.

LOWEST WATER LEVEL WELL DRY AUG 26, 1981.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL	DATE	WATER LEVEL
JUN 27, 1952	30.	AUG 26, 1981	DRY

WELL 014N016E14M01S SITE NUMBER 351732115141401

UPPER LANFAIR VALLEY IN NEW YORK MTS. DRILLED DOMESTIC WELL. DIAM 6 IN, DEPTH DRILLED 457 FT, DEPTH 126.2 FT IN 1981. ALTITUDE OF LSD 4810 FT. RECORDS AVAILABLE 1903, 1981.

HIGHEST WATER LEVEL 73. FEET BELOW LAND SURFACE DATUM JAN 14, 1903.

LOWEST WATER LEVEL 91.93 FEET BELOW LAND SURFACE DATUM AUG 26, 1981.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL	DATE	WATER LEVEL
JAN 14, 1903	73.	AUG 26, 1981	91.93

WELL 014N016E15Q01S SITE NUMBER 351724115143601

UPPER LANFAIR VALLEY IN NEW YORK MTS. UNUSED WELL. DIAM 30 IN, DEPTH DRILLED 60 FT, DEPTH 26 FT IN 1981. ALTITUDE OF LSD 4875 FT. RECORDS AVAILABLE 1958-62, 1964, 1981.

HIGHEST WATER LEVEL 24.3 FEET BELOW LAND SURFACE DATUM MAY 22, 1958.

LOWEST WATER LEVEL WELL DRY AUG 25, 1981.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
MAY 22, 1958	24.3	MAY 16, 1960	26.2	JUN 07, 1962	29.1
MAY 16, 1959	25.0	MAY 12, 1961	29.7	MAY 07, 1964	27.6
				AUG 25, 1981	DRY

WELL 014N016E22M01S SITE NUMBER 351644115150201

SOUTHEAST OF IVANPAH. DUG STOCK WELL. DIAM 3 FT, DEPTH 14.5 FT IN 1981. ALTITUDE OF LSD 4920 FT. RECORDS AVAILABLE 1953-60, 1962, 1964, 1981.

HIGHEST WATER LEVEL 11.68 FEET BELOW LAND SURFACE DATUM AUG 25, 1981.

LOWEST WATER LEVEL 19.6 FEET BELOW LAND SURFACE DATUM JUN 08, 1962.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
SEP 13, 1953	14.		SEP 29, 1955	14.5	P	MAY 22, 1958	16.0	
MAY 09, 1954	13.		MAY 24, 1956	23.7	P	MAY 16, 1959	24.0	P
SEP 15	14.2		NOV 17	14.3		MAY 16, 1960	15.3	P
MAY 22, 1955	14.0		MAY 13, 1957	18.6		JUN 08, 1962	19.6	
						MAY 07, 1964	19.6	
						AUG 25, 1981	11.68	

WELL 014N017E14F01S SITE NUMBER 351751115071601

UPPER LANFAIR VALLEY. DRILLED STOCK WELL. DIAM 10 IN, DEPTH DRILLED 725 FT. ALTITUDE OF LSD 4420 FT. RECORDS AVAILABLE 1954-56, 1981.

HIGHEST WATER LEVEL 266.02 FEET BELOW LAND SURFACE DATUM AUG 28, 1981.

LOWEST WATER LEVEL 293.5 FEET BELOW LAND SURFACE DATUM SEP 29, 1955.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL	DATE	WATER LEVEL
MAY 09, 1954	284.5		SEP 29, 1955	293.5	NOV 17, 1956	274.0
SEP 15	300.9	P			AUG 28, 1981	266.02

WELL 014N017E23L01S SITE NUMBER 351638115070701

ABOUT 20 FT EAST OF MINE ROAD. DIAM 10 IN, DEPTH 400 FT. ALTITUDE OF LSD 4280 FT. RECORDS AVAILABLE 1955-60, 1964, 1981.

HIGHEST WATER LEVEL 173.9 FEET BELOW LAND SURFACE DATUM MAY 07, 1964.

LOWEST WATER LEVEL WELL DRY AUG 28, 1981.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
MAY 22, 1955	177.9	NOV 17, 1956	176.6	MAY 16, 1959	177.5
SEP 29	177.5	MAY 13, 1957	176.3	MAY 16, 1960	176.0
MAY 24, 1956	176.9	MAY 22, 1958	175.8	MAY 07, 1964	173.9
				AUG 28, 1981	DRY

SUPPLEMENTAL DATA D: Spring data

Owner or name: The apparent owner or user on the date indicated or the local name of the spring.

Date measured: The date the spring discharge was measured.

Discharge: Discharge of spring in gallons per minute or dry.

Method measured: E, Estimated; V, Volumetric; Z, Other.

Improvements: B, Boxed basin; C, Concrete basin; N, None; P, Pond; R, Pipe; T, Trough; W, Steel tank.

Water use: H, Domestic; I, Irrigation; S, stock U, Unused.

Altitude of lsd: Altitude of land surface datum, in feet.

Local number	Owner or name	Date measured	Discharge (gal/min)	Method measured	Improve-ments	Water use	Altitude of lsd (ft)
6N/17E-13DS1	Honeymoon Spring	7-22-81	0.02	E	T	S	3,360
6N/17E-27LS1	Willow Spring	7-22-81	Dry	--	N	--	3,640
7N/15E-22DS1	Bonanza Spring	7-23-81	3.50	V	R	H,I	2,100
7N/17E-13DS1	Barrel Spring	8- 6-81	.02	E	T	S	2,640
8N/13E-8QS1	Cove Spring	8- 5-81	Dry	--	N	--	3,920
8N/13E-8QS2	Bureau of Land Management	8- 5-81	Dry	--	R,C	--	4,000
8N/13E-8RS1	Bureau of Land Management	8- 5-81	.02	E	N	S	4,050
8N/13E-17BS1	--	8- 4-81	.02	E	R,C	S	4,200
8N/13E-17GS1	--	8- 4-81	--	E	R	H	4,200
8N/13E-17MS1	Dripping Spring	8- 4-81	.02	E	R,C	S	4,400
8N/13E-18FS2	Granite Cove Spring	8- 4-81	--	--	--	U	4,350
8N/13E-23DS1	Van Winkle Spring	10- 1-71	.05	V	C	S	3,600
	do.	1- 1-72	.50	V	--	--	--
	do.	7- 1-73	.02	V	--	--	--
	do.	4- 1-74	.12	V	--	--	--
	do.	8- 5-81	.02	E	--	--	--
8N/15E-23GS1	Chuckwalla Spring	8- 4-81	Dry	--	--	--	3,080
8N/16E-30KS1	Hummingbird Spring	8- 4-81	Dry	--	C	U	2,560

SUPPLEMENTAL DATA D: Spring data--Continued

Local number	Owner or name	Date measured	Discharge (gal/min)	Method measured	Improvements	Water use	Altitude of lsd (ft)
8N/18E-28FS1	Fenner Spring	8- 4-81	.10	E	R,T,W	S	3,080
9N/14E-3CS2	--	8- 6-81	.58	V	R,T	S	3,610
9N/14E-3FS2	--	8- 6-81	.13	V	N	U	3,610
9N/14E-29ES1	Bighorn Spring	8- 6-81	--	--	C	H	3,760
10N/14E-28PS1	Blind Spring	8-11-81	Dry	--	N	--	4,200
10N/14E-32GS2	Foshay Spring	2- 1-71	.66	V	C	S	4,190
	do.	5- 1-71	.32	V	--	--	--
	do.	1-14-76	.09	V	--	--	--
	do.	6-22-78	.83	V	--	--	--
	do.	8-11-81	.01	E	--	--	--
10N/16E-18GS1	Desert Spring	8-18-81	Dry	--	C	S	3,230
11N/14E-11FS1	Roth Spring	8-13-81	--	--	P	S	4,810
11N/14E-26RS1	Whiskey Spring	7-23-81	.13	V	T	S	3,960
11N/15E-32DS1	Cave Spring	8-17-81	--	--	R,T	S	3,720
11N/16E-1PS1	Hackberry Spring	11- 1-17	3.5	V	R	S	4,440
	do.	1- 1-60	.25	V	--	--	--
	do.	10- 1-71	.38	V	--	--	--
	do.	10- 1-72	.02	E	--	--	--
	do.	8- 1-73	.17	V	--	--	--
	do.	3- 9-78	1.66	V	--	--	--
	do.	8-28-81	--	--	--	--	--
11N/17E-4RS1	Vontrigger Spring	1- 1-18	5.00	E	C,R	H	3,550
	do.	9- 1-81	3.18 ft to water	Z	--	--	--
12N/15E-1ES1	Rock Spring	1- 1-09	1.00	E	C	S	4,800
	do.	8-21-81	2.00	E	--	--	--
12N/15E-27BS1	Boulder Spring	3-23-78	.08	V	R,T	S	4,820
	do.	8-19-81	.23	--	--	--	--
12N/15E-34AS1	Woods Spring	3-23-78	Dry	--	N	--	4,560
	do.	8-19-81	Dry	--	--	--	--
12N/18E-24DS1	Piute Spring	1- 1-09	1.00	E	R	H,S	3,000
	do.	6- 1-60	50.00	E	--	--	--
	do.	4-15-80	390.00	Z	--	--	--
	do.	9- 2-81	62.30	Z	--	--	--
	do.	1-28-82	172.80	Z	--	--	--
13N/15E-9NS1	Bathtub Spring	8-14-81	.04	V	T	S	5,830

SUPPLEMENTAL DATA D: Spring data--Continued

Local number	Owner or name	Date measured	Discharge (gal/min)	Method measured	Improve-ments	Water use	Altitude of lsd (ft)
14N/16E-28JS2	Mail Spring	1- 1-60	.08	V	R,T,W	U	5,030
	do.	5- 1-70	1.00	V	--	--	--
	do.	1-31-78	.58	V	--	--	--
	do.	8-25-81	Dry	--	--	--	--
14N/16E-29MS1	Keystone Spring	8-25-81	.02	E	R,T	S	5,830
14N/16E-30LS1	Keystone Mine Spring	8-25-81	2.00	E	B	U	6,240
15N/17E-16RS1	Indian Spring	1- 1-60	.05	U	R,T	S	5,010
	do.	1- 1-68	.01	E	--	--	--
	do.	5- 1-70	3.00	V	--	--	--
		5- 1-71	Dry	--	--	--	--
	do.	8- 1-71	Dry	--	--	--	--
	do.	12- 1-73	.02	E	--	--	--
	do.	2- 1-78	Dry	--	--	--	--
	do.	6-20-78	Dry	--	--	--	--
	do.	8-26-81	1.00	E	--	--	--
15N/17E-22AS1	Malpais Spring No. 2	7- 1-72	.50	V	B,R	S	4,680
	do.	1- 1-73	.50	V	--	--	--
	do.	12- 1-73	.50	V	--	--	--
	do.	2- 1-78	1.00	V	--	--	--
	do.	8-26-81	.33	V	--	--	--
15N/17E-23FS1	Malpais Spring No. 1	8-26-81	--	--	--	S	4,590
15N/17E-25DS1	Stagecoach Spring	12- 1-73	1.50	V	Z	S	4,400
	do.	8-26-81	Dry	--	--	--	--
15N/17E-27HS1	Coates Spring	2- 1-71	1.00	E	B,R,T,W	S	4,640
	do.	8- 1-71	.01	E	--	--	--
	do.	3- 1-72	.03	E	--	--	--
	do.	7- 1-73	.01	E	--	--	--
	do.	12- 1-73	.01	E	--	--	--
	do.	8-26-81	1.00	E	--	--	--

SUPPLEMENTAL DATA E: Chemical analyses of water

CODE

For agencies collecting and analyzing data

1028 U.S. Geological Survey
80020 U.S. Geological Survey, Denver Lab.
9816 California Dept. of Water Resources
9801-9999 Private Laboratory

Analyses for each sample are shown as one line
on three consecutive pages

SUPPLEMENTAL DATA E: Chemical analyses of water--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (MG/L AS CACO3)	HARDNESS NONCARBONATE (MG/L AS CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	PERCENT SODIUM
005N015E04F01S	03-09-26	--	--	--	--	70	--	19	5.4	--	--
	26-03-09	--	--	--	--	--	.00	--	--	--	--
006N014E35B01S	54-12-30	--	--	7.5	--	191	55	68	5.0	70	44
006N016E06Q03S	53-09-13	--	469	7.9	--	107	.00	31	7.0	50	49
	54-09-15	--	463	7.4	--	113	5.0	33	7.0	52	49
	55-05-22	1820	408	8.2	--	--	--	--	--	--	--
	56-05-25	--	455	7.8	--	101	.00	--	--	--	--
	56-10-17	--	428	8.1	--	105	.00	--	--	--	--
	57-05-14	--	448	7.7	--	107	.00	30	8.0	43	45
	58-05-23	--	449	7.5	--	104	.00	--	--	--	--
	59-05-16	--	455	7.6	--	88	.00	26	5.0	56	57
	81-07-22	1600	420	7.5	30.8	98	.00	29	6.1	49	51
006N017E26E01S	81-07-22	1100	1130	7.1	23.0	310	110	98	15	150	51
007N015E22DS1S	81-09-03	1200	593	8.2	24.8	33	.00	12	.8	120	88
007N015E35R01S	54-05-10	0900	592	8.0	31.0	113	.00	22	14	82	59
	54-09-15	--	615	8.0	--	127	.00	26	15	78	55
	55-06-13	--	556	8.2	--	--	--	--	--	--	--
	56-05-25	--	615	7.7	--	129	.00	--	--	--	--
	56-10-17	--	624	8.1	--	131	1.0	--	--	--	--
	57-05-14	--	636	7.8	--	132	1.0	25	17	75	54
	58-05-23	--	845	7.9	--	127	.00	22	18	78	55
	58-09-04	--	606	8.1	--	130	2.0	--	--	--	--
	59-05-16	--	626	7.8	--	75	.00	--	--	--	--
	60-06-28	--	571	7.5	26.7	101	.00	--	--	--	--
	61-05-13	--	600	8.0	31.1	116	.00	24	13	75	56
	62-05-24	--	612	8.2	--	129	.00	23	17	83	57
	63-05-20	--	611	8.4	28.9	125	.00	--	--	--	--
	64-05-13	--	--	8.2	27.2	130	.00	26	16	80	56
007N016E01A01S	64-05-13	--	410	7.9	--	114	15	39	4.0	43	44
007N018E08E02S	81-08-06	1200	960	7.2	25.0	100	4.0	35	3.5	35	41
008N013E08Q02S	81-08-05	--	400	8.7	26.3	--	--	--	--	--	--
008N013E08R01S	81-08-05	--	180	7.2	25.7	--	--	--	--	--	--
008N013E15P01S	81-08-05	1200	880	7.2	30.3	330	160	99	20	66	30
008N013E17G01S	81-08-04	--	110	7.5	19.0	--	--	--	--	--	--
008N013E18F02S	81-08-04	1200	298	6.9	18.0	130	8.0	42	5.7	28	32
008N013E23D01S	81-08-05	--	140	7.5	17.3	--	--	--	--	--	--
008N016E36R01S	52-07-02	--	402	7.6	--	110	3.0	39	2.8	36	--
	53-09-13	--	386	8.1	--	104	.00	35	4.0	36	39
	54-05-09	1900	381	8.0	--	109	.00	36	4.3	33	38
	54-09-15	--	384	8.1	--	111	1.0	40	3.0	37	41

SUPPLEMENTAL DATA E: Chemical analyses of water--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE FET-FLD (MG/L AS HCO3)	CARBONATE FET-FLD (MG/L AS CO3)	ALKALINITY LAB (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)
005N015E04F01S	03-09-26	--	--	148	--	--	51	38	--	27	334
	26-03-09	--	--	--	--	121	--	--	--	--	--
006N014E35B01S	54-12-30	2.2	4.4	166	0	136	52	105	3.5	--	--
006N016E06Q03S	53-09-13	2.1	5.3	139	0	114	37	46	1.6	--	302
	54-09-15	2.1	5.6	131	--	107	34	46	1.0	--	293
	55-05-22	--	--	120	7	110	--	49	--	--	--
	56-05-25	--	--	127	0	104	--	48	--	--	--
	56-10-17	--	--	133	0	109	--	48	--	--	--
	57-05-14	1.8	5.1	131	0	107	27	48	1.2	45	291
	58-05-23	--	--	129	0	106	--	48	--	--	--
	59-05-16	2.6	5.1	140	0	115	36	39	1.0	50	317
	81-07-22	2.3	5.5	--	--	98	31	44	1.2	47	292
006N017E26E01S	81-07-22	3.9	3.2	--	--	200	200	130	2.2	33	734
007N015E22DS1S	81-09-03	9.2	1.7	--	--	170	68	40	1.0	33	372
007N015E35R01S	54-05-10	3.4	7.4	151	0	124	72	67	.9	--	398
	54-09-15	3.0	7.5	156	--	128	71	60	.9	--	376
	55-06-13	--	--	144	7	130	--	62	--	--	--
	56-05-25	--	--	161	0	132	--	62	--	--	--
	56-10-17	--	--	159	0	130	--	62	--	--	--
	57-05-14	2.8	6.8	160	0	131	69	62	.9	40	372
	58-05-23	3.0	5.7	162	0	133	66	67	1.0	34	514
	58-09-04	--	--	156	0	128	--	64	--	--	--
	59-05-16	--	--	149	0	122	--	67	--	--	--
	60-06-28	--	--	163	0	134	--	63	--	--	--
	61-05-13	3.1	7.3	156	0	128	59	62	1.0	28	352
	62-05-24	3.2	6.0	164	0	135	74	60	.9	36	396
	63-05-20	--	--	115	19	126	--	62	--	--	--
	64-05-13	3.0	6.6	159	0	130	68	68	.8	32	372
007N016E01A01S	64-05-13	1.8	5.0	121	0	99	24	60	.2	29	292
007N018E08E02S	81-08-06	1.6	4.8	--	--	98	28	33	.3	39	237
008N013E08QS2S	81-08-05	--	--	--	--	--	--	--	--	--	--
008N013E08RS1S	81-08-05	--	--	--	--	--	--	--	--	--	--
008N013E15P01S	81-08-05	1.7	5.6	--	--	170	99	150	.9	53	620
008N013E17GS1S	81-08-04	--	--	--	--	--	--	--	--	--	--
008N013E18FS2S	81-08-04	1.1	2.1	--	--	120	32	20	.9	33	246
008N013E23DS1S	81-08-05	--	--	--	--	--	--	--	--	--	--
008N016E36R01S	52-07-02	1.5	--	131	0	107	25	37	1.9	--	--
	53-09-13	1.5	4.2	134	0	110	22	31	.5	--	215
	54-05-09	1.4	4.7	134	0	110	17	33	.4	--	300
	54-09-15	1.5	4.7	134	--	110	24	32	.5	--	248

SUPPLEMENTAL DATA E: Chemical analyses of water--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NITRATE TOTAL (MG/L AS NO3)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	ARSENIC DISSOLVED (UG/L AS AS)	BORON, DISSOLVED (UG/L AS B)	IRON, DISSOLVED (UG/L AS FE)	AGENCY COLLECTING SAMPLE (CODE NUMBER)	AGENCY ANALYZING SAMPLE (CODE NUMBER)
005N015E04F01S	03-09-26	--	--	--	--	--	--	9801	9801
	26-03-09	--	--	--	--	--	--	--	--
006N014E35B01S	54-12-30	442	16	--	--	320	--	9999	9801
006N016E06Q03S	53-09-13	--	11	--	--	140	--	9816	9816
	54-09-15	--	15	--	--	200	--	9816	9816
	55-05-22	--	--	--	--	--	--	9816	9816
	56-05-25	--	--	--	--	--	--	9816	9816
	56-10-17	--	--	--	--	--	--	9816	9816
	57-05-14	272	9.5	--	--	100	--	9816	9816
	58-05-23	--	--	--	--	--	--	9816	9816
	59-05-16	287	4.8	--	--	330	--	9816	9816
	81-07-22	288	--	3.6	5	160	19	1028	80020
006N017E26E01S	81-07-22	753	--	.22	1	230	64	1028	80020
007N015E22DS1S	81-09-03	382	--	.72	15	370	12	1028	80020
007N015E35R01S	54-05-10	--	9.3	--	--	380	--	9816	9816
	54-09-15	--	19	--	--	530	--	9816	9816
	55-06-13	--	--	--	--	--	--	9816	9816
	56-05-25	--	--	--	--	--	--	9816	9816
	56-10-17	--	--	--	--	--	--	9816	9816
	57-05-14	375	12	--	--	340	--	9816	9816
	58-05-23	372	9.5	--	--	710	--	9816	9816
	58-09-04	--	--	--	--	--	--	9816	9816
	59-05-16	--	--	--	--	--	--	9816	9816
	60-06-28	--	--	--	--	--	--	9816	9816
	61-05-13	347	9.3	--	--	460	--	9816	9816
	62-05-24	381	13	--	--	500	--	9816	9816
	63-05-20	--	--	--	--	--	--	9816	9816
	64-05-13	376	10	--	--	490	--	9816	9816
007N016E01A01S	64-05-13	264	5.3	--	--	110	--	9816	9816
007N018E08E02S	81-08-06	247	--	2.0	2	120	<10	1028	80020
008N013E08QS2S	81-08-05	--	--	--	--	--	--	1028	1028
008N013E08RS1S	81-08-05	--	--	--	--	--	--	1028	1028
008N013E15P01S	81-08-05	608	--	2.7	0	240	13	1028	80020
008N013E17GS1S	81-08-04	--	--	--	--	--	--	1028	1028
008N013E18FS2S	81-08-04	238	--	.46	1	60	24	1028	80020
008N013E23DS1S	81-08-05	--	--	--	--	--	--	1028	1028
008N016E36R01S	52-07-02	284	6.8	--	--	0	--	9816	9816
	53-09-13	--	10	--	--	100	--	9816	9816
	54-05-09	--	10	--	--	100	--	9816	9816
	54-09-15	--	12	--	--	220	--	9816	9816

SUPPLEMENTAL DATA E: Chemical analyses of water--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (MG/L AS CACO3)	HARDNESS NONCARBONATE (MG/L AS CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	PERCENT SODIUM
008N016E36R01S	55-05-22	1740	353	8.1	--	--	--	--	--	--	--
	55-09-30	--	362	7.9	--	112	8.0	--	--	--	--
	56-05-25	0750	333	7.6	--	109	.00	--	--	--	--
	56-10-17	--	367	8.1	--	109	.00	--	--	--	--
	57-05-14	--	400	7.7	--	111	1.0	35	6.0	35	39
	58-05-23	--	382	7.2	--	105	.00	--	--	--	--
	58-09-04	--	402	7.8	--	108	.00	--	--	--	--
	59-05-16	--	386	7.6	--	110	5.0	--	--	--	--
	59-09-10	--	396	8.0	--	105	5.0	39	2.0	37	42
	60-06-28	--	372	7.7	--	104	.00	--	--	--	--
	61-05-13	--	395	7.8	--	103	.00	--	--	--	--
	62-05-24	--	380	8.1	--	109	.00	36	4.6	35	40
	63-05-20	--	385	8.4	--	108	2.0	--	--	--	--
	64-05-13	--	380	7.7	--	110	.00	39	3.2	37	41
	77-09-07	--	414	8.3	--	109	3.0	37	4.0	35	40
	81-08-06	1315	365	7.6	39.6	270	53	73	22	99	43
008N017E02D01S	53-09-13	--	730	7.9	--	95	.00	25	8.0	125	72
	54-05-09	--	761	8.0	--	110	.00	27	9.8	119	69
	54-09-15	--	772	7.7	--	100	.00	30	7.0	121	70
	55-05-22	--	743	8.2	--	--	--	--	--	--	--
	55-09-30	--	781	8.0	--	--	--	--	--	--	--
	56-05-25	--	714	7.7	--	--	--	--	--	--	--
	56-10-17	--	796	7.8	--	--	--	--	--	--	--
	57-05-14	--	778	7.8	--	110	.00	26	10	122	70
	58-05-22	--	783	7.5	33.0	--	--	--	--	--	--
	58-09-04	--	785	7.9	33.3	--	--	--	--	--	--
	60-03-16	--	784	7.3	32.2	--	--	--	--	--	--
	61-05-13	--	778	7.8	32.2	120	.00	30	10	123	68
	62-06-07	--	800	8.4	--	91	.00	25	7.0	125	74
	64-05-13	--	750	8.1	--	110	.00	28	8.5	134	72
008N017E04E01S	81-07-23	1000	406	7.7	33.8	71	.00	19	5.8	51	58
008N017E31N01S	54-05-10	0730	478	8.2	--	121	13	42	4.9	48	44
	54-09-15	--	445	7.2	--	115	17	43	2.0	42	43
	55-05-22	1745	400	7.9	30.0	--	--	--	--	--	--
	56-05-25	--	417	7.9	--	117	12	--	--	--	--
	56-10-17	--	445	7.9	--	119	20	--	--	--	--
	57-05-14	--	458	7.7	--	117	17	41	3.5	41	42
	58-05-23	--	435	7.6	--	117	21	--	--	--	--
	58-09-04	--	450	7.6	--	115	15	--	--	--	--
	60-05-16	--	428	7.4	--	112	16	--	--	--	--

SUPPLEMENTAL DATA E: Chemical analyses of water--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE FET-FLD (MG/L AS HCO3)	CARBONATE FET-FLD (MG/L AS CO3)	ALKALINITY LAB (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)
008N016E36R01S	55-05-22	--	--	122	5	--	--	33	--	--	--
	55-09-30	--	--	127	0	104	--	34	--	--	--
	56-05-25	--	--	137	--	112	--	32	--	--	--
	56-10-17	--	--	133	0	109	--	33	--	--	--
	57-05-14	1.4	4.7	134	0	110	24	34	.4	35	267
	58-05-23	--	--	131	0	107	--	35	--	--	--
	58-09-04	--	--	134	0	110	--	42	--	--	--
	59-05-16	--	--	128	0	105	--	34	--	--	--
	59-09-10	1.6	4.3	122	0	100	30	39	.2	34	279
	60-06-28	--	--	134	0	110	--	37	--	--	--
	61-05-13	--	--	132	0	108	--	35	--	--	--
	62-05-24	1.5	4.2	132	0	108	27	32	.2	37	238
	63-05-20	--	--	105	12	106	--	33	--	--	--
	64-05-13	1.5	4.5	137	0	--	23	35	.2	33	228
	77-09-07	1.5	5.0	129	0	106	25	33	.9	--	276
	81-08-06	2.8	5.8	--	--	220	73	140	.7	44	598
008N017E02D01S	53-09-13	5.6	6.2	176	0	144	128	57	1.6	--	--
	54-05-09	5.0	6.6	171	0	140	135	61	1.4	--	--
	54-09-15	5.2	7.3	159	0	130	130	60	1.2	--	--
	55-05-22	--	--	149	7	134	--	59	--	--	--
	55-09-30	--	--	166	0	136	--	62	1.5	--	--
	56-05-25	--	--	173	--	142	--	60	--	--	--
	56-10-17	--	--	167	0	137	--	61	--	--	--
	57-05-14	5.2	6.4	169	0	139	132	61	1.2	35	--
	58-05-22	--	--	167	0	137	--	64	--	--	--
	58-09-04	--	--	195	0	160	--	64	--	--	--
	60-03-16	--	--	168	0	138	--	60	--	--	--
	61-05-13	5.0	6.2	170	0	139	134	60	1.0	31	--
	62-06-07	5.7	3.8	149	1	125	144	63	1.5	30	--
	64-05-13	5.7	7.7	167	0	137	152	66	1.2	31	--
008N017E04E01S	81-07-23	2.8	6.0	--	--	100	28	27	1.3	61	252
008N017E31N01S	54-05-10	1.9	5.1	131	0	107	32	62	.4	--	356
	54-09-15	1.7	5.2	119	--	98	30	51	.3	--	271
	55-05-22	--	--	120	0	98	--	54	--	--	--
	56-05-25	--	--	128	--	105	--	52	--	--	--
	56-10-17	--	--	121	0	99	--	54	--	--	--
	57-05-14	1.7	5.2	122	0	100	25	54	.3	30	281
	58-05-23	--	--	117	0	96	--	53	--	--	--
	58-09-04	--	--	122	0	--	--	58	--	--	--
	60-05-16	--	--	117	0	96	--	53	--	--	--

SUPPLEMENTAL DATA E: Chemical analyses of water--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NITRATE TOTAL (MG/L AS NO3)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	ARSENIC DISSOLVED (UG/L AS AS)	BORON, DISSOLVED (UG/L AS B)	IRON, DISSOLVED (UG/L AS FE)	AGENCY COLLECTING SAMPLE (CODE NUMBER)	AGENCY ANALYZING SAMPLE (CODE NUMBER)
008N016E36R01S	55-05-22	--	--	--	--	--	--	9816	9816
	55-09-30	--	--	--	--	--	--	9816	9816
	56-05-25	--	--	--	--	--	--	9816	9816
	56-10-17	--	--	--	--	--	--	9816	9816
	57-05-14	240	6.3	--	--	130	--	9816	9816
	58-05-23	--	--	--	--	--	--	9816	9816
	58-09-04	--	--	--	--	--	--	9816	9816
	59-05-16	--	--	--	--	--	--	9816	9816
	59-09-10	246	7.0	--	--	240	--	9816	9816
	60-06-28	--	--	--	--	--	--	9816	9816
	61-05-13	--	--	--	--	--	--	9816	9816
	62-05-24	241	7.1	--	--	140	--	9816	9816
	63-05-20	--	--	--	--	--	--	9816	9816
	64-05-13	243	6.3	--	--	190	--	9816	9816
	77-09-07	--	10	--	--	510	--	9816	9816
	81-08-06	616	--	5.9	0	320	58	1028	80020
008N017E02D01S	53-09-13	--	16	--	--	480	--	9816	9816
	54-05-09	--	1.7	--	--	450	--	9816	9816
	54-09-15	--	18	--	--	650	--	9816	9816
	55-05-22	--	--	--	--	--	--	9816	9816
	55-09-30	--	--	--	--	--	--	9816	9816
	56-05-25	--	--	--	--	--	--	9816	9816
	56-10-17	--	--	--	--	--	--	9816	9816
	57-05-14	477	13	--	--	420	--	9816	9816
	58-05-22	--	--	--	--	--	--	9816	9816
	58-09-04	--	--	--	--	--	--	9816	9816
	60-03-16	--	--	--	--	--	--	9816	9816
	61-05-13	480	14	--	--	590	--	9816	9816
	62-06-07	475	15	--	--	600	--	9816	9816
	64-05-13	511	12	--	--	540	--	9816	9816
008N017E04E01S	81-07-23	271	--	2.7	16	180	31	1028	80020
008N017E31N01S	54-05-10	--	13	--	--	150	--	9816	9816
	54-09-15	--	13	--	--	250	--	9816	9816
	55-05-22	--	--	--	--	--	--	9816	9816
	56-05-25	--	--	--	--	--	--	9816	9816
	56-10-17	--	--	--	--	--	--	9816	9816
	57-05-14	260	6.7	--	--	--	--	9816	9816
	58-05-23	--	--	--	--	--	--	9816	9816
	58-09-04	--	--	--	--	--	--	9816	9816
	60-05-16	--	--	--	--	--	--	9816	9816

SUPPLEMENTAL DATA E: Chemical analyses of water--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (MG/L AS CACO3)	HARDNESS NONCARBONATE (MG/L AS CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO
008N017E31N01S	61-05-13	--	410	8.1	--	117	17	43	2.0	44	1.8
	62-05-24	--	460	8.2	--	110	17	38	3.6	42	1.7
	63-05-20	--	413	8.1	--	104	20	--	--	--	--
	64-05-13	--	410	7.9	--	115	16	39	3.9	43	1.8
009N014E03C01S	81-08-06	1200	840	7.1	21.2	370	110	110	22	45	1.1
009N014E03CS2S	81-08-06	--	860	--	29.0	--	--	--	--	--	--
009N014E03FS2S	81-08-06	--	1085	7.4	27.0	--	--	--	--	--	--
009N014E29ES1S	81-08-06	--	640	8.0	23.0	--	--	--	--	--	--
009N017W35N01S	01-07-17	--	--	--	--	271	190	97	6.9	--	--
010N014E22K01S	58-05-21	1000	845	7.2	20.0	330	120	74	35	46	1.1
	58-05-21	1100	845	7.0	20.0	320	110	74	33	46	1.1
	81-07-23	1100	370	7.2	26.0	310	120	72	31	53	1.4
010N014E32GS2S	81-08-11	--	908	8.3	28.6	--	--	--	--	--	--
010N015E29A01S	17-11-23	--	--	--	--	400	120	111	30	--	--
010N015E29A03S	81-08-18	--	866	7.2	27.1	310	25	86	22	74	2.0
010N018E26R01S	03-06-08	--	--	--	--	--	--	7.5	--	--	--
010N018E26R02S	53-09-13	--	424	8.4	--	18	.00	4.0	2.0	95	9.7
	54-09-15	--	436	7.9	--	22	.00	7.0	1.0	92	8.6
	55-05-22	--	400	8.7	--	--	--	--	--	--	--
	55-09-30	--	435	8.6	--	22	.00	--	--	--	--
	56-05-25	--	389	8.3	--	22	.00	--	--	--	--
	56-10-17	--	439	8.2	31.1	18	.00	--	--	--	--
	57-05-14	--	457	8.1	30.0	27	.00	7.4	2.0	87	7.3
	58-05-22	--	450	7.5	--	24	.00	--	--	--	--
	58-09-04	--	476	7.7	--	25	.00	--	--	--	--
	59-05-16	--	464	8.6	25.0	25	.00	--	--	--	--
	60-05-16	--	458	8.0	28.3	29	.00	--	--	--	--
	61-05-31	--	455	7.9	--	28	.00	10	1.0	94	7.6
	62-06-07	--	500	8.1	--	29	.00	--	--	--	--
	63-05-20	--	460	8.4	--	25	.00	8.4	.9	84	7.3
	64-05-08	--	450	7.9	--	32	.00	9.4	2.2	93	7.1
	81-09-01	1200	560	8.4	16.3	34	.00	11	1.6	110	8.5
010N018E35B02S	17-09-13	--	--	--	--	--	--	--	--	--	--
011N014E26RS1S	81-07-23	1100	324	7.7	49.0	80	.00	27	3.1	41	2.1
011N015E17M02S	81-08-18	--	747	7.1	25.4	260	140	78	16	65	1.8
011N016E01PS1S	55-05-22	--	335	8.0	22.0	131	11	39	8.0	23	.9
	55-09-29	--	227	7.9	--	68	8.0	20	4.0	16	.9
	56-05-24	--	212	8.2	--	65	1.0	--	--	--	--
	56-11-17	--	190	7.7	--	65	7.0	--	--	--	--
	59-05-16	--	232	7.1	--	70	5.0	--	--	--	--

SUPPLEMENTAL DATA E: Chemical analyses of water--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	PERCENT SODIUM	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE FET-FLD (MG/L AS HCO3)	CARBONATE FET-FLD (MG/L AS CO3)	ALKALINITY LAB (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)
008N017E31N01S	61-05-13	44	5.0	122	0	100	30	58	.3	30	392
	62-05-24	44	4.5	114	0	94	28	53	.3	34	258
	63-05-20	--	--	102	0	84	--	52	--	--	--
	64-05-13	44	4.8	121	0	99	24	60	.2	29	292
009N014E03C01S	81-08-06	21	.9	--	--	260	61	90	.6	44	568
009N014E03CS2S	81-08-06	--	--	--	--	--	--	--	--	--	--
009N014E03FS2S	81-08-06	--	--	--	--	--	--	--	--	--	--
009N014E29ES1S	81-08-06	--	--	--	--	--	--	--	--	--	--
009N017W35N01S	01-07-17	--	--	102	--	84	184	62	--	32	537
010N014E22K01S	58-05-21	23	2.4	256	0	210	49	113	--	31	--
	58-05-21	24	2.8	259	0	212	38	113	--	31	--
	81-07-23	27	2.2	--	--	190	55	100	.5	41	531
010N014E32GS2S	81-08-11	--	--	--	--	--	--	--	--	--	--
010N015E29A01S	17-11-23	--	--	342	0	281	135	205	--	60	--
010N015E29A03S	81-08-18	34	6.4	--	--	280	42	100	1.1	33	561
010N018E26R01S	03-06-08	--	--	116	--	95	46	42	--	--	--
010N018E26R02S	53-09-13	91	2.1	137	7	124	32	33	1.6	--	223
	54-09-15	89	2.0	137	0	112	41	35	1.7	--	274
	55-05-22	--	--	110	14	114	--	36	--	--	--
	55-09-30	--	--	117	12	116	--	36	1.5	--	--
	56-05-25	--	--	137	7	124	--	35	--	--	--
	56-10-17	--	--	142	0	116	--	34	--	--	--
	57-05-14	87	2.0	147	0	121	39	35	1.2	20	--
	58-05-22	--	--	141	0	116	--	35	--	--	--
	58-09-04	--	--	140	0	115	41	--	--	--	--
	59-05-16	--	--	128	6	115	--	37	--	--	--
	60-05-16	--	--	144	0	118	--	41	--	--	--
	61-05-31	87	1.8	139	0	114	46	41	1.1	18	--
	62-06-07	--	--	137	0	112	--	41	--	--	--
	63-05-20	87	1.8	136	2	115	40	35	1.0	--	--
	64-05-08	85	1.6	140	0	115	40	47	1.6	19	--
	81-09-01	87	2.2	--	--	110	59	74	1.4	25	324
010N018E35B02S	17-09-13	--	--	114	--	94	57	39	--	--	--
011N014E26RS1S	81-07-23	49	8.7	--	--	100	26	28	.3	95	300
011N015E17M02S	81-08-18	34	8.4	--	--	120	150	100	.4	60	538
011N016E01PS1S	55-05-22	27	6.1	146	0	120	30	23	.6	--	--
	55-09-29	33	4.6	73	0	60	15	19	.4	--	--
	56-05-24	--	--	78	0	64	--	18	--	--	--
	56-11-17	--	--	71	0	58	--	23	--	--	--
	59-05-16	--	--	79	0	65	--	20	--	--	--

SUPPLEMENTAL DATA E: Chemical analyses of water--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NITRATE TOTAL (MG/L AS NO3)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	ARSENIC DISSOLVED (UG/L AS AS)	BORON, DISSOLVED (UG/L AS B)	IRON, DISSOLVED (UG/L AS FE)	AGENCY COLLECTING SAMPLE (CODE NUMBER)	AGENCY ANALYZING SAMPLE (CODE NUMBER)
008N017E31N01S	61-05-13	273	7.0	--	--	280	--	9816	9816
	62-05-24	260	7.6	--	--	190	--	9816	9816
	63-05-20	--	--	--	--	--	--	9816	9816
	64-05-13	264	5.3	--	--	110	--	9816	9816
009N014E03C01S	81-08-06	544	--	3.2	1	190	18	1028	80020
009N014E03CS2S	81-08-06	--	--	--	--	--	--	1028	1028
009N014E03FS2S	81-08-06	--	--	--	--	--	--	1028	1028
009N014E29ES1S	81-08-06	--	--	--	--	--	--	1028	1028
009N017W35N01S	01-07-17	--	--	--	--	--	--	9816	9816
010N014E22K01S	58-05-21	477	7.4	--	--	300	400	9816	9816
	58-05-21	466	6.5	--	--	250	400	9816	9816
	81-07-23	490	--	4.8	3	160	13	1028	80020
010N014E32GS2S	81-08-11	--	--	--	--	--	--	1028	1028
010N015E29A01S	17-11-23	872	1.6	--	--	--	150	1028	1028
010N015E29A03S	81-08-18	534	--	.10	2	260	60	1028	80020
010N018E26R01S	03-06-08	305	--	--	--	--	--	1028	1028
010N018E26R02S	53-09-13	--	13	--	--	240	--	9816	9816
	54-09-15	--	12	--	--	600	--	9816	9816
	55-05-22	--	--	--	--	--	--	9816	9816
	55-09-30	--	--	--	--	--	--	9816	9816
	56-05-25	--	--	--	--	--	--	9816	9816
	56-10-17	--	--	--	--	--	--	9816	9816
	57-05-14	284	7.7	--	--	230	--	9816	9816
	58-05-22	--	--	--	--	--	--	9816	9816
	58-09-04	--	--	--	--	--	--	9816	9816
	59-05-16	--	--	--	--	--	--	9816	9816
	60-05-16	--	--	--	--	--	--	9816	9816
	61-05-31	186	9.5	--	--	320	--	9816	9816
	62-06-07	--	--	--	--	--	--	9816	9816
	63-05-20	284	11	--	--	16	--	9816	9816
	64-05-08	288	90	--	--	200	--	9816	9816
	81-09-01	362	--	2.6	25	330	45	1028	80020
010N018E35B02S	17-09-13	281	--	--	--	--	--	1028	1028
011N014E26RS1S	81-07-23	292	--	.49	7	130	10	1028	80020
011N015E17M02S	81-08-18	557	--	1.6	2	140	100	1028	80020
011N016E01PS1S	55-05-22	255	10	--	--	260	--	9816	9816
	55-09-29	179	8.9	--	--	220	--	9816	9816
	56-05-24	--	--	--	--	--	--	9816	9816
	56-11-17	--	--	--	--	--	--	9816	9816
	59-05-16	--	--	--	--	--	--	9816	9816

SUPPLEMENTAL DATA E: Chemical analyses of water--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (MG/L AS CACO3)	HARDNESS NONCARBONATE (MG/L AS CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	PERCENT SODIUM
011N016E01PS1S	60-05-16	--	198	7.0	--	57	8.0	17	3.5	14	33
	61-05-12	--	200	7.4	--	69	20	--	--	--	--
	62-06-07	--	200	7.5	--	33	5.0	--	3.0	15	1
	63-05-21	--	204	7.1	--	60	11	--	--	--	--
	64-05-07	--	195	7.4	20.0	58	8.0	20	1.8	16	36
	67-05-19	--	197	7.6	--	57	9.0	16	--	14	1
	81-08-28	1200	--	--	--	67	10	22	3.0	15	31
011N017E04RS1S	52-06-30	--	394	7.4	--	111	31	37	4.4	32	39
	58-05-22	--	366	7.3	20.0	97	19	29	6.0	28	37
	67-05-19	--	353	7.9	--	99	21	28	7.0	30	38
	81-09-01	1200	390	7.1	26.1	110	24	35	5.6	33	38
011N017E05R01S	53-09-13	--	791	7.9	20.0	251	95	79	13	58	33
	54-05-09	--	660	7.7	21.0	242	88	72	14	55	33
	54-09-15	--	660	7.6	--	216	68	69	11	61	37
	55-05-22	--	631	7.9	22.0	0	.00	--	--	--	--
	55-09-30	--	662	7.7	--	187	63	--	--	--	--
	56-05-25	--	667	7.6	19.0	192	30	--	--	--	--
	56-11-17	--	625	7.9	--	200	50	--	--	--	--
	57-05-14	--	--	--	--	250	88	77	13	65	36
	58-05-22	--	842	7.3	--	257	102	--	--	--	--
	61-05-12	--	763	7.8	20.0	246	76	83	10	58	33
	64-05-07	--	650	8.0	--	191	70	32	27	73	44
011N017E05R03S	59-05-16	--	537	7.2	23.8	190	32	61	9.0	28	--
	60-05-16	--	812	7.2	22.2	270	100	87	13	58	--
	62-06-07	--	800	7.9	21.6	240	89	78	12	65	--
	63-07-09	--	792	8.6	21.6	258	98	--	--	--	--
	67-05-19	--	597	7.9	--	190	24	63	8.0	46	34
012N015E01ES1S	81-08-21	--	508	7.6	21.6	--	--	--	--	--	--
012N015E03L01S	52-06-28	--	897	7.5	18.3	310	.00	81	26	85	--
	53-09-13	--	983	7.8	17.0	340	.00	83	31	95	38
	54-05-09	--	745	7.6	14.0	280	.00	74	21	74	37
	54-09-15	--	724	7.8	18.0	280	.00	75	22	62	33
	55-05-22	--	826	7.6	13.0	270	.00	69	24	76	38
	55-05-24	--	--	--	--	--	.00	--	--	--	--
	55-09-29	--	786	7.9	20.0	282	.00	--	--	--	--
	56-05-24	--	819	8.0	16.0	285	--	--	--	--	--
	56-11-17	--	1100	7.2	--	331	.00	75	35	145	45
	57-05-13	--	952	7.8	12.0	320	.00	74	33	97	40
	58-05-22	--	1040	7.8	16.0	340	.00	86	31	106	40
	59-05-15	--	988	8.0	13.8	285	.00	68	28	109	45

SUPPLEMENTAL DATA E: Chemical analyses of water--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE FET-FLD (MG/L AS HCO3)	CARBONATE FET-FLD (MG/L AS CO3)	ALKALINITY LAB (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)
011N016E01PS1S	60-05-16	.8	3.7	60	0	49	12	15	.7	61	--
	61-05-12	--	--	59	0	48	--	21	--	--	--
	62-06-07	--	3.5	54	0	44	10	20	.1	--	122
	63-05-21	--	--	60	0	49	--	18	--	--	--
	64-05-07	.9	4.0	61	0	50	16	20	.2	42	--
	67-05-19	--	4.0	59	0	48	11	16	.3	--	--
	81-08-28	.8	3.9	--	--	57	14	16	.3	57	173
011N017E04RS1S	52-06-30	1.3	--	97	0	80	22	42	--	--	300
	58-05-22	1.2	5.7	95	0	78	24	39	.5	48	218
	67-05-19	1.3	6.0	95	0	78	21	37	.7	--	293
	81-09-01	1.4	6.9	--	--	86	32	47	.5	77	303
011N017E05R01S	53-09-13	1.6	4.2	190	0	156	51	114	.6	--	508
	54-05-09	1.5	3.9	188	0	154	48	100	.5	--	330
	54-09-15	1.8	4.2	180	--	148	46	92	.5	--	444
	55-05-22	--	--	181	0	148	--	94	--	--	--
	55-09-30	--	--	151	0	124	--	107	--	--	--
	56-05-25	--	--	198	--	162	--	86	--	--	--
	56-11-17	--	--	183	0	150	--	78	--	--	--
	57-05-14	1.8	4.0	193	0	158	54	114	.5	50	--
	58-05-22	--	--	189	0	155	--	133	--	--	--
	61-05-12	1.6	6.8	207	0	170	51	100	.6	50	490
	64-05-07	2.3	7.6	147	0	121	54	120	.4	40	484
011N017E05R03S	59-05-16	.9	--	192	0	157	18	46	1.1	56	323
	60-05-16	1.5	--	207	0	170	56	111	.6	57	560
	62-06-07	1.8	--	189	0	155	59	119	.4	41	--
	63-07-09	--	--	146	24	160	--	111	--	--	--
	67-05-19	1.5	6.0	203	0	167	32	57	.6	--	415
012N015E01ES1S	81-08-21	--	--	--	--	--	--	--	--	--	--
012N015E03L01S	52-06-28	2.1	--	433	0	355	64	57	2.6	--	584
	53-09-13	2.3	2.1	471	0	386	76	60	1.6	--	612
	54-05-09	1.9	2.0	442	0	363	14	45	1.2	--	550
	54-09-15	1.6	.8	372	--	305	37	41	1.4	--	--
	55-05-22	2.0	1.3	427	0	350	32	44	1.6	--	497
	55-05-24	--	--	--	--	326	--	--	--	--	--
	55-09-29	--	--	373	0	306	--	46	1.5	--	--
	56-05-24	--	--	398	0	--	--	45	--	--	--
	56-11-17	3.5	39	554	0	454	90	74	.4	78	768
	57-05-13	2.4	1.4	479	0	393	47	58	1.2	50	--
	58-05-22	2.5	1.0	464	0	381	75	75	1.2	34	689
	59-05-15	2.8	2.0	464	--	381	49	66	1.8	29	617

SUPPLEMENTAL DATA E: Chemical analyses of water--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NITRATE TOTAL (MG/L AS NO3)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	ARSENIC DISSOLVED (UG/L AS AS)	BORON, DISSOLVED (UG/L AS B)	IRON, DISSOLVED (UG/L AS FE)	AGENCY COLLECTING SAMPLE (CODE NUMBER)	AGENCY ANALYZING SAMPLE (CODE NUMBER)
011N016E01PS1S	60-05-16	171	8.0	--	--	50	--	9816	9816
	61-05-12	--	--	--	--	--	--	9816	9816
	62-06-07	--	7.0	--	--	30	--	9816	9816
	63-05-21	--	--	--	--	--	--	9816	9816
	64-05-07	160	4.2	--	--	190	--	9816	9816
	67-05-19	176	9.0	--	--	60	--	9816	9816
	81-08-28	172	--	1.5	3	60	10	1028	80020
011N017E04RS1S	52-06-30	--	27	--	--	100	--	9816	9816
	58-05-22	228	12	--	--	520	--	9816	9816
	67-05-19	--	22	--	--	120	--	9816	9816
	81-09-01	307	--	4.1	9	140	<10	1028	80020
011N017E05R01S	53-09-13	--	12	--	--	180	--	9816	9816
	54-05-09	--	17	--	--	180	--	9816	9816
	54-09-15	--	17	--	--	210	--	9816	9816
	55-05-22	--	--	--	--	--	--	9816	9816
	55-09-30	--	--	--	--	--	--	9816	9816
	56-05-25	--	--	--	--	--	--	9816	9816
	56-11-17	--	--	--	--	--	--	9816	9816
	57-05-14	473	10	--	--	170	--	9816	9816
	58-05-22	--	--	--	--	--	--	9816	9816
	61-05-12	461	14	--	--	120	--	9816	9816
	64-05-07	427	4.5	--	--	160	--	9816	9816
011N017E05R03S	59-05-16	314	4.0	--	--	200	--	9816	--
	60-05-16	485	9.4	--	--	110	--	9816	--
	62-06-07	468	10	--	--	250	--	9816	9816
	63-07-09	--	--	--	--	--	--	9816	9816
	67-05-19	--	17	--	--	140	--	9816	9816
012N015E01ES1S	81-08-21	--	--	--	--	--	--	1028	1028
012N015E03L01S	52-06-28	--	5.6	--	--	200	--	9816	9816
	53-09-13	--	.00	--	--	0	--	9816	9816
	54-05-09	--	4.9	--	--	300	--	9816	9816
	54-09-15	--	7.4	--	--	500	--	9816	9816
	55-05-22	--	.00	--	--	460	--	9816	9816
	55-05-24	--	--	--	--	--	--	--	--
	55-09-29	--	--	--	--	--	--	9816	9816
	56-05-24	--	--	--	--	--	--	9816	9816
	56-11-17	810	.70	--	--	380	--	9816	9816
	57-05-13	598	1.0	--	--	430	--	9816	9816
	58-05-22	639	.00	--	--	800	--	9816	9816
	59-05-15	582	3.0	--	--	400	--	9816	9816

SUPPLEMENTAL DATA E: Chemical analyses of water--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (MG/L AS CACO3)	HARDNESS NONCARBONATE (MG/L AS CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	PERCENT SODIUM
012N015E03L01S	60-05-15	--	942	8.1	14.4	310	.00	--	--	--	--
	61-05-11	--	1016	8.1	13.8	340	.00	87	31	108	40
	81-08-29	1200	880	7.3	21.1	370	.00	95	32	100	37
012N015E17B01S	17-11-22	--	--	--	--	350	4.0	86	33	126	--
012N015E19H01S	81-09-02	1200	--	7.2	20.3	1200	930	290	110	240	31
012N015E27BS1S	81-08-19	--	320	7.1	35.0	100	.00	28	7.8	31	39
012N015E31M01S	17-11-22	--	--	--	--	350	.00	83	34	--	--
012N015E33M01S	81-08-19	--	1060	7.9	24.4	--	--	--	--	--	--
012N016E19C01S	60-05-16	--	415	8.5	--	130	.00	37	9.0	43	41
	61-05-11	--	375	8.4	--	110	.00	30	9.2	36	41
	62-06-07	--	640	8.2	19.4	170	.00	38	17	85	52
	63-05-21	--	658	7.9	--	--	--	--	--	--	--
	64-05-26	--	420	8.4	20.0	130	.00	36	9.0	47	44
012N016E19C02S	59-05-16	--	673	7.9	--	140	--	43	9.0	97	59
012N016E19D01S	81-08-20	--	520	7.6	27.6	170	.00	43	14	73	49
012N017E04D01S	53-01-21	--	383	7.6	--	150	3.0	48	8.0	28	28
	53-09-13	--	355	7.8	20.0	176	28	24	16	32	35
	54-05-09	--	414	8.0	22.0	187	34	32	14	32	33
	54-09-15	--	393	7.5	22.0	185	35	34	12	37	37
	55-05-22	--	376	8.2	24.0	--	--	--	--	--	--
	55-09-29	--	414	7.8	20.0	145	.00	--	--	--	--
	56-05-24	--	400	8.3	21.0	137	.00	--	--	--	--
	56-11-17	--	365	8.0	--	--	--	--	--	--	--
	57-05-13	--	416	7.5	20.0	138	.00	35	12	33	34
	58-05-22	--	424	7.4	21.0	135	.00	--	--	--	--
	59-05-16	--	410	7.7	22.8	135	.00	--	--	--	--
	60-05-16	--	403	7.7	25.6	--	--	--	--	--	--
	61-05-11	--	408	8.2	--	131	.00	30	14	39	38
	62-06-07	--	415	8.4	20.0	131	.00	--	--	--	--
	63-05-21	--	450	7.8	--	148	.00	47	7.6	42	38
	64-05-07	--	400	8.1	--	140	.00	36	12	36	35
	67-05-20	--	403	8.5	--	134	.00	27	16	34	35
	81-09-02	1200	420	7.5	25.8	150	.00	35	15	35	33
012N017E17J01S	55-05-22	--	335	8.0	22.0	131	11	39	8.0	23	27
	61-05-11	--	202	9.4	--	57	.00	18	3.0	18	38
	67-05-20	--	236	8.4	--	66	.00	18	5.0	20	39
	78-07-27	--	--	--	--	--	--	--	--	--	--
	78-07-27	1630	340	--	30.0	120	--	33	9.3	25	30
012N018E24DS1S	81-09-02	1100	460	8.2	25.7	160	.00	37	16	35	31
013N015E02P01S	81-08-27	1200	581	8.4	26.0	220	110	66	13	30	23

SUPPLEMENTAL DATA E: Chemical analyses of water--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE FET-FLD (MG/L AS HCO3)	CARBONATE FET-FLD (MG/L AS CO3)	ALKALINITY LAB (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)
012N015E03L01S	60-05-15	--	--	487	0	399	--	54	--	--	--
	61-05-11	2.5	2.0	517	0	424	62	63	2.5	45	660
	81-08-29	2.4	1.9	--	--	480	27	62	1.7	54	599
012N015E17B01S	17-11-22	2.9	--	422	0	346	152	84	--	--	--
012N015E19H01S	81-09-02	3.0	6.9	--	--	250	960	260	1.4	18	2260
012N015E27BS1S	81-08-19	1.4	1.5	--	--	140	9.0	16	.6	47	238
012N015E31M01S	17-11-22	--	--	483	0	396	78	74	--	55	--
012N015E33M01S	81-08-19	--	--	--	--	--	--	--	--	--	--
012N016E19C01S	60-05-16	1.6	2.3	183	6	160	28	21	.5	35	--
	61-05-11	1.5	1.4	143	12	137	24	20	--	40	--
	62-06-07	2.9	2.9	303	0	249	38	35	1.8	34	--
	63-05-21	--	--	315	--	258	--	32	--	--	--
	64-05-26	1.8	3.1	183	8	164	25	25	.8	--	--
012N016E19C02S	59-05-16	3.5	2.3	326	0	--	39	32	8.6	--	--
012N016E19D01S	81-08-20	2.7	2.6	--	--	230	42	30	1.5	40	381
012N017E04D01S	53-01-21	1.0	2.0	183	0	150	23	22	.2	--	22
	53-09-13	1.2	3.3	181	0	148	19	18	.6	--	242
	54-05-09	1.2	3.6	186	0	153	12	24	.6	--	313
	54-09-15	1.4	3.7	183	--	150	14	21	.5	--	243
	55-05-22	--	--	168	10	150	--	22	--	--	--
	55-09-29	--	--	178	0	146	--	23	--	--	--
	56-05-24	--	--	166	7	148	--	22	--	--	--
	56-11-17	--	--	183	0	150	--	27	--	--	--
	57-05-13	1.2	3.6	184	0	151	16	23	.5	40	263
	58-05-22	--	--	185	0	152	--	25	--	--	--
	59-05-16	--	--	183	0	150	--	23	--	--	--
	60-05-16	--	--	185	0	152	--	24	--	--	--
	61-05-11	1.5	3.2	189	0	155	16	23	.9	46	304
	62-06-07	--	--	173	2	146	--	24	--	--	--
	63-05-21	1.5	2.3	203	0	167	23	22	.4	28	284
	64-05-07	1.3	3.5	190	0	156	15	25	.4	38	268
	67-05-20	1.3	4.0	166	10	153	17	23	.5	--	290
	81-09-02	1.4	3.8	--	--	150	23	31	.2	45	262
012N017E17J01S	55-05-22	.9	6.1	146	0	120	80	23	.6	--	255
	61-05-11	1.0	4.4	17	29	62	10	19	.3	50	170
	67-05-20	1.1	3.0	73	5	68	17	16	.4	--	188
	78-07-27	--	--	--	--	120	--	--	--	--	--
	78-07-27	1.0	6.5	--	--	--	28	19	.6	48	--
012N018E24DS1S	81-09-02	1.3	6.4	--	--	190	26	21	.2	67	336
013N015E02P01S	81-08-27	.9	1.4	--	--	110	140	26	1.4	24	382

SUPPLEMENTAL DATA E: Chemical analyses of water--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NITRATE TOTAL (MG/L AS NO3)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	ARSENIC DISSOLVED (UG/L AS AS)	BORON, DISSOLVED (UG/L AS B)	IRON, DISSOLVED (UG/L AS FE)	AGENCY COLLECTING SAMPLE (CODE NUMBER)	AGENCY ANALYZING SAMPLE (CODE NUMBER)
012N015E03L01S	60-05-15	--	--	--	--	--	--	9816	9816
	61-05-11	656	1.0	--	--	400	--	9816	9816
	81-08-29	663	--	.14	1	370	28	1028	80020
012N015E17B01S	17-11-22	731	.31	--	--	--	--	1028	1028
012N015E19H01S	81-09-02	2060	--	4.6	1	740	30	1028	80020
012N015E27BS1S	81-08-19	228	--	.62	0	80	17	1028	80020
012N015E31M01S	17-11-22	672	1.1	--	--	--	160	1028	1028
012N015E33M01S	81-08-19	--	--	--	--	--	--	1028	1028
012N016E19C01S	60-05-16	272	4.2	--	--	130	--	9816	9816
	61-05-11	243	2.0	--	--	--	--	9816	9816
	62-06-07	401	.00	--	--	320	--	9816	9816
	63-05-21	--	--	--	--	--	--	9816	9816
	64-05-26	--	1.2	--	--	160	--	9816	9816
012N016E19C02S	59-05-16	--	1.5	--	--	240	--	9816	9816
012N016E19D01S	81-08-20	389	--	.93	1	260	13	1028	80020
012N017E04D01S	53-01-21	--	11	--	--	80	--	9816	9816
	53-09-13	--	9.4	--	--	160	--	9816	9816
	54-05-09	--	14	--	--	150	--	9816	9816
	54-09-15	--	14	--	--	120	--	9816	9816
	55-05-22	--	--	--	--	--	--	9816	9816
	55-09-29	--	--	--	--	--	--	9816	9816
	56-05-24	--	--	--	--	--	--	9816	9816
	56-11-17	--	--	--	--	--	--	9816	9816
	57-05-13	254	8.3	--	--	160	--	9816	9816
	58-05-22	--	--	--	--	--	--	9816	9816
	59-05-16	--	--	--	--	--	--	9816	9816
	60-05-16	--	--	--	--	--	--	9816	9816
	61-05-11	265	11	--	--	80	--	9816	9816
	62-06-07	--	--	--	--	--	--	9816	9816
	63-05-21	272	12	--	--	170	--	9816	--
	64-05-07	260	9.5	--	--	160	--	9816	9816
	67-05-20	--	12	--	--	120	--	9816	9816
	81-09-02	293	--	3.4	4	150	33	1028	80020
012N017E17J01S	55-05-22	--	10	--	--	260	--	9816	9816
	61-05-11	160	3.0	--	--	60	--	9816	9816
	67-05-20	--	5.0	--	--	80	--	9816	9816
	78-07-27	--	--	--	--	--	--	--	--
	78-07-27	--	--	1.0	--	100	190	1028	80020
012N018E24DS1S	81-09-02	325	--	.39	8	170	<10	1028	80020
013N015E02P01S	81-08-27	369	--	.16	2	60	<10	1028	80020

SUPPLEMENTAL DATA E: Chemical analyses of water--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (MG/L AS CACO3)	HARDNESS NONCARBONATE (MG/L AS CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	PERCENT SODIUM
013N015E09NS1S	81-08-14	--	624	7.0	23.3	--	--	--	--	--	--
013N015E36A01S	81-08-20	--	735	7.5	21.3	290	2.0	79	23	52	28
013N016E07B01S	59-05-16	--	386	7.4	15.6	170	40	52	10	15	16
	60-05-16	--	376	7.4	17.8	159	48	49	11	14	15
	61-05-12	--	350	7.6	--	142	33	45	7.0	15	19
	81-08-20	--	396	7.3	16.6	170	26	52	8.8	14	15
013N017E18N01S	17-11-05	--	--	--	--	116	.00	35	7.0	--	39
	52-06-27	--	377	7.8	--	128	.00	41	5.9	30	34
	53-09-13	--	373	7.9	24.0	125	.00	37	8.0	30	34
	54-05-09	1400	--	--	--	123	.00	40	5.0	30	34
	54-09-15	--	364	7.4	22.0	123	1.0	41	5.0	30	35
	55-05-22	--	--	--	--	--	--	--	--	--	--
	55-05-22	1130	336	8.0	22.0	--	--	--	--	--	--
	55-09-27	--	332	7.6	23.0	123	.00	--	--	--	--
	56-05-24	1800	--	8.2	21.0	--	--	--	--	--	--
	56-11-17	--	450	7.7	--	132	.00	--	--	--	--
	57-05-13	--	371	7.4	22.0	125	.00	34	9.8	30	34
	58-05-22	--	389	7.8	23.0	125	.00	--	--	--	--
	59-05-16	--	375	7.6	24.0	130	.00	--	--	--	--
	60-05-16	--	360	7.5	--	--	--	--	--	--	--
	61-05-11	--	371	7.5	21.7	124	.00	38	7.1	31	35
	62-06-07	1500	375	8.1	21.7	122	.00	--	--	--	--
	63-05-21	--	368	8.5	--	125	.00	--	--	--	--
	64-05-07	--	380	8.1	--	124	.00	30	12	31	35
	67-05-20	--	372	8.0	--	122	.00	37	7.0	30	35
	78-07-27	1400	350	--	30.0	130	--	40	6.3	27	31
	81-09-01	1200	370	7.7	24.5	130	.00	41	6.8	30	33
014N016E14K01S	53-09-13	--	1006	7.6	22.0	406	200	90	44	46	20
	54-05-09	--	914	7.7	21.0	397	200	95	38	49	21
	54-09-15	--	938	7.5	22.0	418	220	97	42	52	21
	55-05-22	--	943	7.7	22.0	--	--	--	--	--	--
	55-09-29	--	875	7.7	--	396	210	--	--	--	--
	56-05-24	--	971	7.8	16.0	412	200	--	--	--	--
	57-05-13	--	1000	7.5	15.0	417	210	92	45	50	21
	58-05-22	--	1015	7.5	22.0	484	280	--	--	--	--
	59-05-16	--	1016	7.6	22.2	410	200	--	--	--	--
	60-05-16	--	988	7.4	20.0	414	210	--	--	--	--
	61-05-12	--	995	7.9	17.7	412	204	96	42	53	22
	62-06-08	--	990	7.8	18.3	401	202	--	--	--	--
	63-05-21	--	990	7.8	20.5	408	200	98	40	54	22

SUPPLEMENTAL DATA E: Chemical analyses of water--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE FET-FLD (MG/L AS HCO3)	CARBONATE FET-FLD (MG/L AS CO3)	ALKALINITY LAB (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)
013N015E09NS1S	81-08-14	--	--	--	--	--	--	--	--	--	--
013N015E36A01S	81-08-20	1.4	3.4	--	--	290	53	28	.7	29	481
013N016E07B01S	59-05-16	.5	1.0	159	0	130	48	21	.8	25	--
	60-05-16	.5	1.1	135	0	111	44	7.0	1.0	22	--
	61-05-12	.5	.9	133	0	109	49	11	.9	19	--
	81-08-20	.5	1.4	--	--	140	46	10	.8	24	249
013N017E18N01S	17-11-05	--	--	173	0	142	23	19	--	--	--
	52-06-27	1.2	--	168	0	138	22	19	.1	--	274
	53-09-13	1.2	2.1	168	0	138	26	13	.4	--	242
	54-05-09	1.2	2.0	163	0	134	18	19	.2	--	197
	54-09-15	1.2	2.1	149	--	122	31	14	.1	--	236
	55-05-22	--	--	--	--	130	--	--	--	--	--
	55-05-22	--	--	159	0	--	--	18	--	--	--
	55-09-27	--	--	161	0	132	--	17	--	--	--
	56-05-24	--	--	166	5	144	--	19	--	--	--
	56-11-17	--	--	171	0	140	--	20	--	--	--
	57-05-13	1.2	1.9	162	0	133	24	20	.1	45	258
	58-05-22	--	--	171	0	140	--	21	--	--	--
	59-05-16	--	--	165	0	135	--	20	--	--	--
	60-05-16	--	--	168	0	138	--	19	--	--	--
	61-05-11	1.2	1.5	170	0	139	23	18	.3	40	268
	62-06-07	--	--	160	0	131	--	20	--	--	--
	63-05-21	--	--	151	7	136	--	18	--	--	--
	64-05-07	1.2	2.0	165	0	135	25	17	.2	33	236
	67-05-20	1.2	2.0	163	0	134	24	18	.3	--	272
	78-07-27	1.0	2.2	--	--	130	22	15	.2	38	--
	81-09-01	1.2	2.3	--	--	140	27	22	.2	39	227
014N016E14K01S	53-09-13	1.0	3.0	246	0	202	130	106	.8	--	677
	54-05-09	1.1	2.9	245	0	201	134	112	.8	--	664
	54-09-15	1.1	3.1	247	--	203	142	113	.8	--	684
	55-05-22	--	--	246	0	202	--	109	--	--	--
	55-09-29	--	--	227	0	186	--	107	--	--	--
	56-05-24	--	--	259	--	212	--	110	--	--	--
	57-05-13	1.1	4.3	253	0	208	140	111	.7	60	832
	58-05-22	--	--	255	0	209	--	116	--	--	--
	59-05-16	--	--	256	0	210	--	112	--	--	--
	60-05-16	--	--	253	0	208	--	109	--	--	--
	61-05-12	1.1	3.4	254	0	208	138	113	1.0	52	--
	62-06-08	--	--	243	0	199	--	112	--	--	--
	63-05-21	1.2	3.0	254	0	208	137	112	.6	38	796

SUPPLEMENTAL DATA E: Chemical analyses of water--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NITRATE TOTAL (MG/L AS NO3)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	ARSENIC DISSOLVED (UG/L AS AS)	BORON, DISSOLVED (UG/L AS B)	IRON, DISSOLVED (UG/L AS FE)	AGENCY COLLECTING SAMPLE (CODE NUMBER)	AGENCY ANALYZING SAMPLE (CODE NUMBER)
013N015E09NS1S	81-08-14	--	--	--	--	--	--	1028	1028
013N015E36A01S	81-08-20	482	--	8.9	0	230	36	1028	80020
013N016E07B01S	59-05-16	207	2.7	--	--	40	--	9816	9816
	60-05-16	242	1.5	--	--	0	--	9816	9816
	61-05-12	196	.00	--	--	90	--	9816	9816
	81-08-20	244	--	.60	1	40	31	1028	80020
013N017E18N01S	17-11-05	229	.08	--	--	--	--	1028	1028
	52-06-27	--	8.7	--	--	0	--	9816	9816
	53-09-13	--	5.5	--	--	80	--	9816	9816
	54-05-09	--	12	--	--	150	--	9816	9816
	54-09-15	--	4.7	--	--	--	--	9816	9816
	55-05-22	--	--	--	--	--	--	--	--
	55-05-22	--	--	--	--	--	--	9816	9816
	55-09-27	--	--	--	--	--	--	9816	9816
	56-05-24	--	--	--	--	--	--	9816	9816
	56-11-17	--	--	--	--	--	--	9816	9816
	57-05-13	245	3.9	--	--	120	--	9816	9816
	58-05-22	--	--	--	--	--	--	9816	9816
	59-05-16	--	--	--	--	--	--	9816	9816
	60-05-16	--	--	--	--	--	--	9816	9816
	61-05-11	243	4.7	--	--	60	--	9816	9816
	62-06-07	--	--	--	--	--	--	9816	9816
	63-05-21	--	--	--	--	--	--	9816	9816
	64-05-07	232	3.7	--	--	100	--	9816	9816
	67-05-20	--	6.5	--	--	100	--	9816	9816
	78-07-27	--	--	1.6	--	110	80	1028	80020
	81-09-01	257	--	1.1	5	90	39	1028	80020
014N016E14K01S	53-09-13	--	16	--	--	160	--	9816	9816
	54-05-09	--	21	--	--	300	--	9816	9816
	54-09-15	--	19	--	--	250	--	9816	9816
	55-05-22	--	--	--	--	--	--	9816	9816
	55-09-29	--	--	--	--	--	--	9816	9816
	56-05-24	--	--	--	--	--	--	9816	9816
	57-05-13	628	16	--	--	170	--	9816	9816
	58-05-22	--	--	--	--	--	--	9816	9816
	59-05-16	--	--	--	--	--	--	9816	9816
	60-05-16	--	--	--	--	--	--	9816	9816
	61-05-12	624	16	--	--	140	--	9816	9816
	62-06-08	--	--	--	--	--	--	9816	9816
	63-05-21	608	14	--	--	200	--	9816	9816

SUPPLEMENTAL DATA E: Chemical analyses of water--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (MG/L AS CACO3)	HARDNESS NONCARBONATE (MG/L AS CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	PERCENT SODIUM
014N016E14K01S	81-08-26	--	860	7.6	22.1	--	--	--	--	--	--
014N016E14K03S	52-06-27	--	1450	7.7	--	550	360	119	61	123	--
014N016E14M01S	03-03-23	--	--	--	--	540	220	134	50	--	22
	75-10-15	--	3300	8.7	--	1696	1533	382	180	130	14
	81-08-26	1200	2990	7.3	23.4	1200	1100	270	130	150	21
014N016E15Q01S	58-05-22	--	4806	7.3	16.0	2600	2500	648	242	253	17
	59-05-16	--	4450	7.3	18.8	2500	2300	645	216	237	17
014N016E22M01S	17-11-05	--	--	--	--	1073	920	308	74	172	--
	53-09-13	--	2105	7.3	15.0	1088	930	273	55	150	26
	54-05-09	--	2460	7.4	16.0	1397	1200	355	67	214	28
	54-09-15	--	1750	6.9	15.0	1150	1000	281	57	148	25
	55-05-22	--	2532	7.4	15.0	1473	1300	377	70	225	28
	55-09-29	--	2898	7.5	14.0	1316	1100	405	74	220	27
	56-05-24	--	2000	7.7	12.0	996	810	--	--	--	--
	56-11-17	--	2360	7.6	14.0	1170	990	--	--	--	--
	57-05-13	--	2695	7.5	15.0	1181	990	352	73	193	26
	58-05-22	--	3045	7.5	16.0	1378	1200	417	82	228	26
	59-05-16	--	2730	7.5	17.7	1378	1200	367	67	184	25
	60-05-16	--	2919	7.5	--	1347	1200	--	--	--	--
	61-05-11	--	2480	7.6	--	1134	988	341	70	205	28
	62-06-08	--	2445	8.2	--	1031	911	308	64	207	30
	63-05-21	--	2520	8.0	21.1	1118	945	--	--	--	--
	64-05-07	--	2400	7.7	--	1057	977	295	78	227	32
014N016E22M02S	81-08-25	--	1640	7.6	25.0	--	--	--	--	--	--
014N016E29MS1S	81-08-25	1300	467	7.7	18.8	300	4.0	84	23	7.2	5
014N017E14F01S	53-09-13	--	877	7.9	19.0	164	.00	49	10	115	60
	54-05-09	--	834	8.0	22.0	156	.00	43	12	122	62
	54-09-15	--	787	7.8	22.0	152	.00	47	8.0	130	65
	55-05-22	--	873	8.0	22.0	--	--	--	--	--	--
	55-09-25	--	875	7.9	--	172	.00	--	--	--	--
	56-05-24	--	824	7.5	19.0	127	.00	36	9.0	126	68
	56-11-17	--	825	7.9	--	136	.00	--	--	--	--
	57-05-13	--	846	7.4	18.0	152	.00	42	11	122	63
	58-05-22	--	842	7.9	25.0	147	.00	--	--	--	--
	59-05-16	--	837	7.9	24.4	118	.00	35	7.0	126	70
	60-05-16	--	854	7.6	--	171	.00	--	--	--	--
	61-05-12	--	800	7.7	19.4	133	.00	40	7.0	129	68
	62-06-08	--	925	9.2	--	103	.00	20	13	164	77
014N017E23L01S	53-01-21	--	833	8.3	--	45	.00	13	3.0	130	--
015N017E16RS1S	81-08-26	--	1030	7.5	28.7	--	--	--	--	--	--
015N017E22AS1S	81-08-26	--	598	7.4	24.0	--	--	--	--	--	--
015N017E26Q01S	81-08-26	--	430	7.6	21.6	--	--	--	--	--	--
015N017E27HS1S	81-08-26	1200	728	7.5	24.7	330	56	86	27	47	24

SUPPLEMENTAL DATA E: Chemical analyses of water--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE FET-FLD (MG/L AS HCO3)	CARBONATE FET-FLD (MG/L AS CO3)	ALKALINITY LAB (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)
014N016E14K01S	81-08-26	--	--	--	--	--	--	--	--	--	--
014N016E14K03S	52-06-27	2.3	--	232	--	190	256	188	--	--	1212
014N016E14M01S	03-03-23	--	--	382	5	322	208	117	--	14	--
	75-10-15	1.4	6.8	154	2	130	1015	520	.7	--	2668
	81-08-26	1.9	7.6	--	--	140	780	460	.8	28	2000
014N016E15Q01S	58-05-22	2.2	20	183	0	150	1969	672	1.0	19	4182
	59-05-16	2.1	18	207	0	170	1940	542	.8	22	3981
014N016E22M01S	17-11-05	2.3	--	186	0	153	1006	175	--	--	--
	53-09-13	2.2	5.3	188	0	154	846	133	1.4	--	1680
	54-05-09	2.7	5.1	245	0	201	1140	180	.9	--	2130
	54-09-15	2.1	7.7	183	--	150	856	118	1.0	--	1686
	55-05-22	2.8	5.5	242	0	198	1200	192	1.2	--	2330
	55-09-29	2.6	5.5	227	0	186	1263	210	1.6	--	2531
	56-05-24	--	--	222	--	182	--	152	--	--	--
	56-11-17	--	--	224	0	184	--	190	--	--	--
	57-05-13	2.4	4.5	228	0	187	1060	190	.9	30	2286
	58-05-22	2.7	5.3	244	0	200	1345	205	.8	28	2104
	59-05-16	2.3	7.4	226	0	185	1181	172	.8	28	2148
	60-05-16	--	--	221	0	181	--	180	--	--	--
	61-05-11	2.6	6.0	178	0	146	1135	172	1.1	29	2165
	62-06-08	2.8	6.0	146	0	120	1110	168	.8	26	--
	63-05-21	--	--	211	0	173	--	158	--	--	--
	64-05-07	3.0	5.5	98	0	80	1191	188	1.0	19	2146
014N016E22M02S	81-08-25	--	--	--	--	--	--	--	--	--	--
014N016E29MS1S	81-08-25	.2	.7	--	--	300	<5.0	18	.2	18	343
014N017E14F01S	53-09-13	3.9	2.5	234	0	192	127	75	.8	--	522
	54-05-09	4.2	2.9	213	0	175	125	79	.7	--	457
	54-09-15	4.6	1.3	226	0	185	131	74	.7	--	507
	55-05-22	--	--	239	0	196	--	80	--	--	--
	55-09-25	--	--	217	0	178	--	78	--	--	--
	56-05-24	4.9	2.0	231	0	189	116	70	.7	25	528
	56-11-17	--	--	230	0	189	--	82	--	--	--
	57-05-13	4.3	2.0	241	0	198	125	72	.5	25	529
	58-05-22	--	--	244	0	200	--	78	--	--	--
	59-05-16	5.1	2.7	232	0	190	119	66	.6	23	518
	60-05-16	--	--	245	0	201	--	82	--	--	--
	61-05-12	4.9	2.1	235	0	193	119	76	.4	19	478
	62-06-08	7.0	4.4	162	15	158	149	99	.6	23	--
014N017E23L01S	53-01-21	8.5	--	220	14	204	65	55	.8	--	373
015N017E16RS1S	81-08-26	--	--	--	--	--	--	--	--	--	--
015N017E22AS1S	81-08-26	--	--	--	--	--	--	--	--	--	--
015N017E26Q01S	81-08-26	--	--	--	--	--	--	--	--	--	--
015N017E27HS1S	81-08-26	1.2	3.7	--	--	270	60	83	.2	46	522

SUPPLEMENTAL DATA E: Chemical analyses of water--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NITRATE TOTAL (MG/L AS NO3)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	ARSENIC DISSOLVED (UG/L AS AS)	BORON, DISSOLVED (UG/L AS B)	IRON, DISSOLVED (UG/L AS FE)	AGENCY COLLECTING SAMPLE (CODE NUMBER)	AGENCY ANALYZING SAMPLE (CODE NUMBER)
014N016E14K01S	81-08-26	--	--	--	--	--	--	1028	1028
014N016E14K03S	52-06-27	--	80	--	--	180	--	9816	9816
014N016E14M01S	03-03-23	782	--	--	--	--	--	1028	1028
	75-10-15	--	12	--	--	250	--	9816	9816
	81-08-26	1920	--	2.5	0	260	120	1028	80020
014N016E15Q01S	58-05-22	3920	.00	--	--	290	--	9816	9816
	59-05-16	3720	4.8	--	--	200	--	9816	9816
014N016E22M01S	17-11-05	1992	.08	--	--	--	--	1028	1028
	53-09-13	--	2.0	--	--	300	--	9816	9816
	54-05-09	--	4.3	--	--	550	--	9816	9816
	54-09-15	--	5.1	--	--	500	--	9816	9816
	55-05-22	--	9.4	--	--	940	--	9816	9816
	55-09-29	--	6.0	--	--	580	--	9816	9816
	56-05-24	--	--	--	--	--	--	9816	9816
	56-11-17	--	--	--	--	--	--	9816	9816
	57-05-13	2020	2.2	--	--	440	--	9816	9816
	58-05-22	2430	.00	--	--	190	--	9816	9816
	59-05-16	2120	3.7	--	--	230	--	9816	9816
	60-05-16	--	--	--	--	--	--	9816	9816
	61-05-11	2050	1.0	--	--	400	--	9816	9816
	62-06-08	2120	.00	--	--	480	--	9816	9816
	63-05-21	--	--	--	--	--	--	9816	9816
	64-05-07	2050	.00	--	--	480	--	9816	9816
014N016E22M02S	81-08-25	--	--	--	--	--	--	1028	1028
014N016E29MS1S	81-08-25	336	--	.06	3	50	93	1028	80020
014N017E14F01S	53-09-13	--	.00	--	--	340	--	9816	9816
	54-05-09	--	3.7	--	--	350	--	9816	9816
	54-09-15	--	2.0	--	--	550	--	9816	9816
	55-05-22	--	--	--	--	--	--	9816	9816
	55-09-25	--	--	--	--	--	--	9816	9816
	56-05-24	499	.62	--	--	310	--	9816	9816
	56-11-17	--	--	--	--	--	--	9816	9816
	57-05-13	519	.80	--	--	370	--	9816	9816
	58-05-22	--	--	--	--	--	--	9816	9816
	59-05-16	494	1.7	--	--	310	--	9816	9816
	60-05-16	--	--	--	--	--	--	9816	9816
	61-05-12	511	.90	--	--	3200	--	9816	9816
	62-06-08	614	.00	--	--	570	--	9816	9816
014N017E23L01S	53-01-21	--	3.0	--	--	360	--	9816	9816
015N017E16RS1S	81-08-26	--	--	--	--	--	--	1028	1028
015N017E22AS1S	81-08-26	--	--	--	--	--	--	1028	1028
015N017E26Q01S	81-08-26	--	--	--	--	--	--	1028	1028
015N017E27HS1S	81-08-26	516	--	.04	1	150	120	1028	80020