GROUND WATER IN THE TWENTY-NINE PALMS INDIAN RESERVATION AND VICINITY, SAN BERNARDINO COUNTY, CALIFORNIA

By John R. Freckleton

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CONVERSION FACTORS

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

Multiply	By	To obtain
acres	0.004047	km^2 (square kilometers)
acre-ft (acre-feet)	0.001233	hm^3 (cubic hectometers)
ft (feet)	0.3048	m (meters)
gal/min (gallons per minute)	0.06309	L/s (liters per second)
(gal/min)/ft (gallons per minute per foot)	0.2070	(L/s)/m (liters per second per meter)
inches	25.4	mm (millimeters)
mi (miles)	1.609	km (kilometers)
mi^2 (square miles)	2.590	km^2 (square kilometers)
µmho (micromhos)	1.000	µS (microsiemens)

Additional abbreviations used:

lsd - land surface datum
mg/L - milligrams per liter
µg/L - micrograms per liter
DD - drawdown
°C - degree Celsius
°F - degree Fahrenheit

ALTITUDE DATUM

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

The Twenty-Nine Palms Indian Reservation is in San Bernardino County, Calif. Movement of ground water in the area is impeded locally by faults which act as ground-water barriers. There are indications that a fault probably crosses the reservation in an east-west direction; such a fault may interfere with ground-water pumping. The water-table altitude near the northern boundary of the reservation is estimated to be 120 to 130 feet below land-surface datum; the aquifer thickness in the area is unknown.

Pumping-test results for wells near the reservation show specific capacities ranging from 9.2 to 70.0 gallons per minute per foot of drawdown. Wells drilled on the reservation would probably fall within this range. Sodium concentrations, which may pose a hazard to those who must restrict its intake, and excessive fluoride are present in water samples from wells near the reservation. High sodium and fluoride concentrations are probably present in water in the saturated material underlying the reservation.

INTRODUCTION

The Twenty-Nine Palms Indian Reservation consists of two separate tracts. The tract and adjacent area that was studied in this report is in San Bernardino County, Calif. The tract consists of 160.21 acres patented to the Twenty-Nine Palms Band of Mission Indians in 1895 (U.S. Bureau of Indian Affairs, 1979, and written commun., 1981). The other tract, not studied, consists of 240 acres in Riverside County, Calif. In this report, reference to the "Twenty-Nine Palms Indian Reservation," or the "reservation," is concerned only with the tract in San Bernardino County. This part of the reservation is unoccupied at the present time, and no wells, springs, perennial streams, or manmade structures were found during this study.

Purpose and Scope

The purpose of this study, done in cooperation with the U.S. Bureau of Indian Affairs, was to provide hydrologic information necessary to aid in evaluating the feasibility of developing a water supply for the Twenty-Nine Palms Indian Reservation.

The scope included field inventory of selected wells near the reservation and sampling of ground water for chemical analysis. A literature search was made and compilations of data such as drillers' logs, pumping-test results, well data, chemical analyses of well water, and ground-water levels were prepared. A map was compiled showing geology and locations of wells and a precipitation station. An estimate of the altitude of the water table in the vicinity of the reservation was made by extrapolation of known water-level altitudes in nearby wells. This report summarizes the data collected and the findings of the study.

Acknowledgments

Agencies contributing unpublished data to this report are the U.S. Bureau of Indian Affairs, California Department of Water Resources, Twentynine Palms Water District, and the U.S. Geological Survey. The help and cooperation of Orville C. Zimmerman of the Twentynine Palms Water District are gratefully acknowledged, as is that of local residents and well owners.

Well-Numbering System

Wells are numbered according to their location in the rectangular system for the subdivision of public land. That part of the number preceding the slash (as in 1N/9E-33J5) indicates the township (T. 1 N.); the number following the slash indicates the range (R. 9 E.); the number following the hyphen indicates the section (sec. 33); the letter following the section number indicates the 40-acre subdivision of the section according to the lettered diagram. The final digit is a serial number for wells canvassed in each 40-acre subdivision. An "S" following the final digit means the location is referenced to the San Bernardino base line and meridian. The area covered by the report lies north and south of the San Bernardino base line and east of the San Bernardino meridian.

D	C	B	A
E	F	G	H
M	L	K	J
N	P	Q	R

LOCATION AND GENERAL FEATURES

The study area is in south-central San Bernardino County, Calif., about 140 mi east of Los Angeles. Road access is by Highway 62 from the east and west and by Utah Trail from the north and south. The area is gently sloping terrain except in the southwest and southeast where rocks of the Little San Bernardino and Pinto Mountains crop out (pl. 1). The Twenty-Nine Palms Indian Reservation[1] is about one mile south of central Twentynine Palms (fig. 1). Plate 1 shows the Indian Reservation and adjacent study area in greater detail.

The reservation occupies the NW¼ sec. 4, T. 1 S., R. 9 E., an area of 160.21 acres or about 0.25 mi^2. It shares its western border with a segment of the border of Joshua Tree National Monument (pl. 1). There are no roads on the reservation; however, its northern border lies along Base Line Street, and a segment of the western border is along Adobe Road (fig. 1). Base Line Street and Adobe Road are paved, but the eastern and most of the southern boundaries border on dirt roads. The reservation is presently unoccupied, and there are no manmade structures within it. The reservation land is gently sloping to the north except where a spur of a hill in the Little San Bernardino Mountains intrudes into its southwest corner. The altitude of the land surface near the center of the reservation is about 2,120 ft. The reservation land is dissected by numerous small gullies and supports sparse native desert vegetation.

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[1]Note difference in spelling between the Indian Reservation and the city.

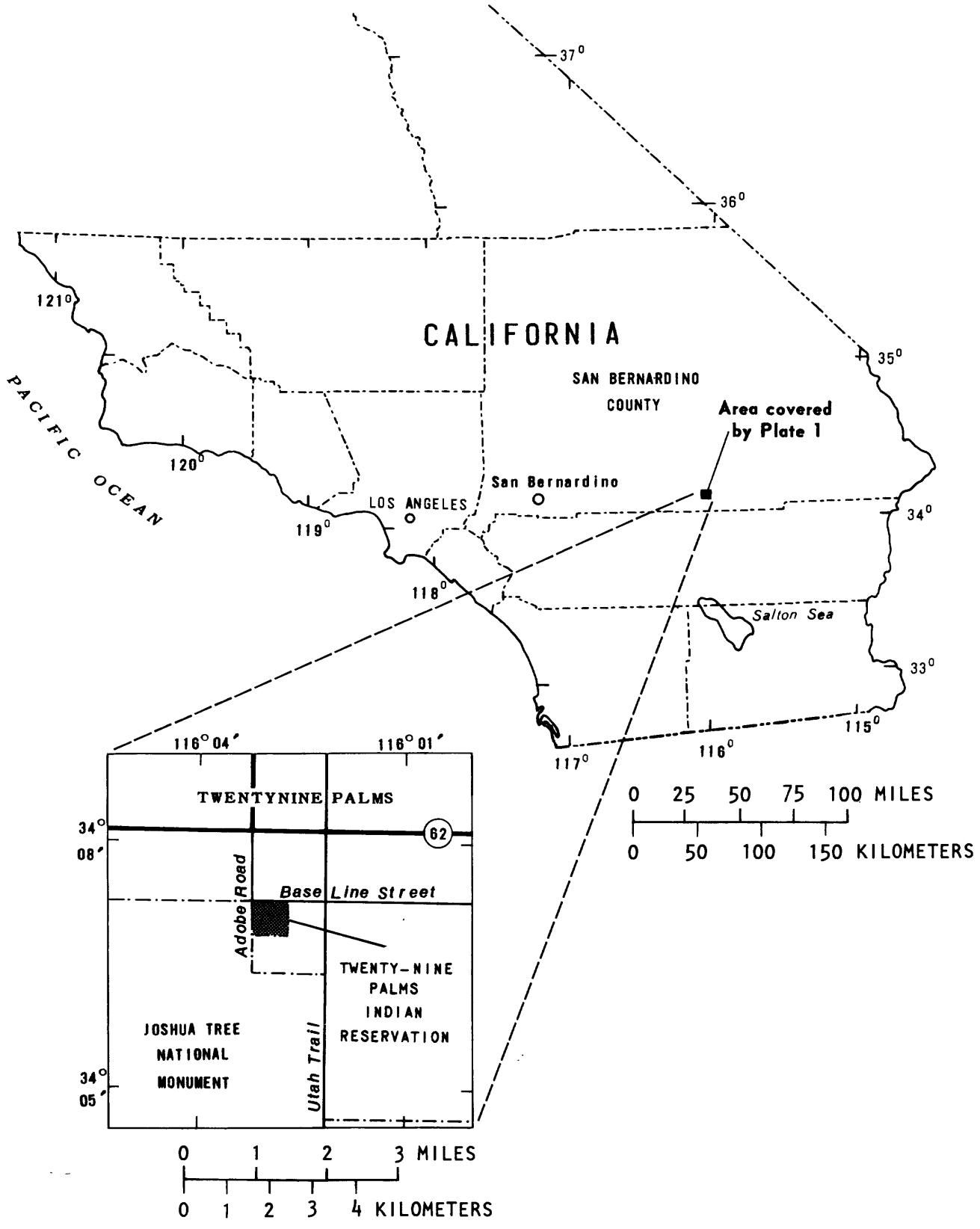

FIGURE 1.--Location of study area.

Climate

Precipitation has been measured since May 1935 at Joshua Tree National Monument headquarters at the Oasis of Mara, about half a mile northwest of the reservation (pl. 1). Average annual rainfall for the period 1936-79 is 4.01 inches (U.S. Weather Bureau, 1958, 1953-69 and the U.S. National Oceanic and Atmospheric Administration, 1970-79), and yearly total rainfall for the same 44-year period ranged from a low of 0.27 inch in 1956 to a high of 11.20 inches in 1943. The average departure from the long-term (1936-79) average annual rainfall is about +2.5 inches per year for 1976-79, a period of greater than average rainfall. Most of the rainfall comes as summer thunderstorms.

Yearly average temperature at the monument headquarters is 67.3°F for the 10-year period 1970-79 (U.S. National Oceanic and Atmospheric Administration, 1970-79).

Geology

Geology of the study area (pl. 1) was compiled from geologic maps by Dibblee (1968), and Riley and Moyle (Bader and Moyle, 1960), both at a scale of 1:62,500. For this report the rocks have been classified into two groups: consolidated rocks (basement complex) and unconsolidated deposits. The consolidated rocks are composed of igneous rocks, such as quartz monzonite, and metamorphic gneissic rocks all of pre-Tertiary age. The reservation is underlain by unconsolidated deposits of gravel, sand, silt, and clay of Quaternary age, except for an outcropping of consolidated rocks in the southwest corner. Faults in the study area include the Mesquite Lake fault and the Pinto Mountain fault, both known ground-water barriers. A probable fault (Dibblee, 1968) crosses the middle of the reservation in a roughly east-west trend (pl. 1).

HYDROLOGY

There are no streams on the reservation although the surface of the land exhibits numerous small gullies caused by rainfall runoff from adjacent areas.

Ground water in the area originates from precipitation runoff from the mountains in the southern part of the study area. The runoff infiltrates the unconsolidated deposits and water that is not intercepted and used by native vegetation or evaporated from the soil finds its way to the water table. Infrequently, a small quantity of recharge originates as deep penetration of rain directly on the study area floor.

Movement of ground water through the area is impeded locally by ground-water barriers which are presumed to be faults (Bader and Moyle, 1960, p. 7). The Pinto Mountain fault acts as a ground-water barrier, as water levels on the south side of the fault are higher than those on the north side.

The major water-bearing units in the area are the alluvial deposits that underlie the alluvial fans and fill local structural depressions to varying depths. The water-bearing deposits consist generally of lenticular beds of gravel, sand, silt, and clay, except near the mountains where they consist principally of coarse-grained angular rock detritus (Bader and Moyle, 1960).

Four of the Twentynine Palms Water District wells (table 1 and pl. 1) lie south of the Pinto Mountain fault as does the reservation. Three of the wells (1N/9E-31A1, 1N/9E-31C1, and 1N/9E-35N1) were supplying water in 1980, and pumped a total of about 269 acre-ft of ground water (Orville C. Zimmerman, Twentynine Palms Water District, written commun., 1981). These wells are the major source of ground-water discharge near the reservation. Other sources of ground-water depletion near the reservation are domestic well pumpage and transpiration by phreatophytes at the Oasis of Mara (pl. 1).

The probable fault crossing the middle of the reservation in a roughly east-west trend (pl. 1) could act as a ground-water barrier and might cause water-level differences north and south of its strike; water levels on the south side probably would be higher than water levels on the north side.

Extrapolation of the altitude of the water table as computed from data at selected wells indicates that the water table near the northern boundary of the reservation might range from 1,950 ft to 1,960 ft in altitude or from 120 to 130 ft below land surface. The probable fault that crosses the reservation might influence the water levels south of its strike, but because there are no wells in that area water-level altitudes could not be determined.

Hydrologic data in this report include well data (table 1), pumping test results (table 2), drillers' logs (table 3), and water levels in wells (table 4). The 1980 pumping-test results from the Southern California Edison Co. show specific capacities ranging from a low of 9.2 (gal/min)/ft of drawdown for well 1N/9E-35N1 to 70.0 (gal/min)/ft of drawdown for well 1N/9E-31A1 (table 2). The lengths of the tests, which are unknown, influence the measured values, as does the physical condition of the wells; however, specific capacities for wells drilled on the reservation would probably fall within this range. The drillers' logs indicate the types of material likely to be penetrated in wells drilled in the reservation area (table 3). Water-level data indicate trends in the area, including record high and low levels. The long-term trends for most wells indicate declining water levels.

WATER QUALITY

Water-quality data are shown in tables 5 and 6. Table 5 shows results of water analyses from a number of wells in the study area as reported by Federal, State, and local agencies. Analyses for many wells cover a period as long as 42 years. Much of the data in table 5 has been taken from Bader and Moyle (1960, table 5). Additional data are results of analyses specifically for this study. Table 6 shows the results of analyses for selected trace constituents in four of the supply wells owned by Twentynine Palms Water District.

Sodium in excess of 31 mg/L is reported in all the complete analyses. Sodium levels above 20 mg/L may pose a hazard to the health of those who must restrict sodium in their diets (U.S. Environmental Protection Agency, 1978, p. 121). The sodium values ranged from a high of 150 mg/L in well 1N/9E-26E1 on March 11, 1981, to a low of 31.9 mg/L in well 1N/9E-33F2 on August 11, 1939.

Recommended levels for fluoride in drinking water are dependent upon the average maximum daily air temperatures where the water is being used for human consumption because it is assumed that in warmer climates people will consume more water. The average maximum daily air temperature near Twentynine Palms is about 83°F (Lewis, 1972). For this air temperature the U.S. Environmental Protection Agency (1978, p. 67) has established the following control limits: lower, 0.6 mg/L; optimum, 0.7 mg/L; upper, 0.8 mg/L, and an approval limit of 1.4 mg/L. The optimum is the concentration at which the greatest resistance to tooth decay will occur with no ill effects (U.S. Environmental Protection Agency, 1978). Fluoride concentrations greater than the optimum 0.7 mg/L may cause dental fluorosis, or mottling of tooth enamel. The approval limit is twice the value of the optimum. Fluoride concentrations in water from all the wells in table 5 have exceeded the approval limit except for water in wells 1N/9E-32R1 and 1S/9E-5A1. Fluoride concentration in these wells in 1937, the year for which data are available, was 1.1 mg/L in both cases, values which are 0.3 mg/L above the recommended upper control limit.

A number of analyses indicate iron in excess of the U.S. Environmental Protection Agency 1976 criterion for drinking water of 300 µg/L (U.S. Environmental Protection Agency, 1976). The 300 µg/L limit is based on esthetic rather than toxicological reasons. High iron concentrations make the water unpalatable and can stain plumbing fixtures and laundered clothes.

Most of the analyses indicate the water in the study area is soft (<0.75 mg/L as calcium carbonate). Water from one well (1N/9E-33H1) is in the hard range (150-300 mg/L as calcium carbonate) with a value of 170 mg/L. A few of the analyses fall into the moderately hard range (75-150 mg/L as calcium carbonate).

No wells had water that exceeded the U.S. Environmental Protection Agency (1978) criterion of 45 mg/L nitrate. In many cases, excessive nitrate in ground water is an indication of contamination by human or animal waste, or by nitrate fertilizers.

The pH of analyzed water in the study area ranged from 9.2 in well 1N/9E-33J2 on March 10, 1981, to 6.6 in well 1N/9E-33K3 on March 10, 1981. The 1976 criterion set by the U.S. Environmental Protection Agency (1976, p. 178) for domestic water supplies is the range 5 to 9. Water having a pH close to neutral (7.0) is desirable to avoid corrosion of metal.

For those analyses in table 5 where the specific conductance is given but not the dissolved-solids concentration, a relation exists that can be used to estimate the dissolved-solids concentration (Hem, 1970, p. 99):

$$KA=S$$

where K is the specific conductance, in micromhos per centimeter at 25 degrees Celsius; A is a conversion factor, and S is the dissolved-solids concentration, in milligrams per liter. For natural water the range of A is nearly always from 0.54 to 0.96. For the study area a value for A of 0.60 when used in the formula will probably estimate the dissolved solids to a reasonable accuracy. As an example, the dissolved-solids concentration of water from well 1N/9E-33F5, which had a specific conductance of 1,320 on March 11, 1981, is probably about 790 mg/L ($1{,}320 \times 0.60 \cong 790$).

All concentrations of selected trace constituents in table 6 are below U.S. Environmental Protection Agency standards except for silver in water from well 1N/9E-31C1. The U.S. Environmental Protection Agency (1978, p. 119) standard is 0.05 mg/L, and the analyzed value for this water was 0.085 mg/L in 1978.

FACTORS AFFECTING GROUND-WATER DEVELOPMENT

Among the factors to consider when planning ground-water development for the reservation are:

1. Depth to ground water.
2. Depth to bedrock and therefore the available aquifer thickness.
3. Possible fault interference problems.
4. Expected well yield versus water requirements.
5. Ground-water quality.

As stated in the "Hydrology" section, the estimated depth to water is 120 to 130 ft near the northern boundary of the reservation. These are not unreasonable depths from which to pump water. If the specific capacities of the well lie within the range of 9.2 to 70.0 (gal/min)/ft of drawdown, then for a hypothetical 20 ft of drawdown in a well on the reservation, the yield would be from about 180 to about 1,400 gal/min.

Because the depth to bedrock underlying the reservation is not known, the aquifer thickness in this area cannot be estimated.

If the probable fault crossing the reservation acts as a ground-water barrier, its influence could cause drawdowns greater than that which would be expected in a fault-free situation.

Water quality is an important consideration when planning domestic water supplies. The major water-quality problems in the study area are excessive sodium and fluoride concentrations.

Twentynine Palms Water District provides water to the city of Twentynine Palms and vicinity. The water district maintains 8-inch, 6-inch, and 4-inch water feed lines from within ½ mi to bordering on the reservation (Orville C. Zimmerman, Twentynine Palms Water District, written commun., 1981). The water district helps to solve the fluoride concentration problem by mixing water from the vicinity of Twentynine Palms with water of lower fluoride concentration from wells several miles east of the city (L. A. Swain, U.S. Geological Survey, written commun., 1981).

SUMMARY

The Twenty-Nine Palms Indian Reservation is unoccupied and has no developed water supply.

The average annual rainfall as measured at the Oasis of Mara, about half a mile northwest of the reservation, is 4.01 inches for the 44-year period 1936-79. The 1976-79 period was wetter than average, with an average +2.5-inches-per-year departure from the 44-year average.

The reservation is underlain by unconsolidated deposits except for an outcropping of consolidated rocks in its southwest corner. A probable fault crosses the reservation in a roughly east-west trend.

Ground water in the study area results from the infiltration of runoff from the mountains in the southern part of the study area, and, rarely, from direct percolation of rain into the unconsolidated deposits. Movement of ground water through the study area is impeded locally by ground-water barriers which are presumed to be faults. The water-table altitude near the northern boundary of the reservation may range from 120 to 130 ft below land surface datum. Pumping-test results for wells near the reservation show specific capacities ranging from 9.2 to 70.0 (gal/min)/ft of drawdown.

The major water-quality problem in the study area are excessive concentrations of sodium and fluoride.

Some factors affecting water-supply development on the reservation are: 1) Depth to ground water, 2) depth to bedrock and therefore the available aquifer thickness, 3) possible fault interference problems, 4) expected well yield versus water requirements, and 5) ground-water quality.

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U.S. Weather Bureau, 1958, Climatography of the United States No. 11-4, Climatic summary of the United States--Supplement for 1931 through 1952 (Supplement to climatic summary of the United States, Bulletin W, 1930): 156 p.

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TABLES

TABLE 1. - Well data

State well No: The official State well number assigned to the well. All numbers based on San Bernardino base line and meridian.

Date of observation: Date of canvass and (or) water-level measurement.

Owner or user: The owner or user of the well. NPS, National Park Service; TPWD Twentynine Palms Water District; USGS,' U.S. Geological Survey.

Year completed: Year the well drilling was completed.

Depth of well: Last known depth, in feet, measured or reported.

Type and diameter: The type of well indicates how the well was bored. C, cable tool; D, drilled; Dug; and R, rotary. Diameter is the outside diameter of the well casing, in inches, at land surface.

Type of pump and power: The type of pump is indicated thus: J, jet; L, lift; N, none; S, submersible; and T, turbine. The type of power is indicated thus: E, electric; N, none; and W, wind.

Yield: Most recent yield in gallons per minute. See table 2 for date.

Use: The use of the well is indicated thus: Des, destroyed; Dom, domestic; Obs, observation; Ps, public supply; and Un, unused.

Measuring point: The point from which the water level is measured. It also shows the distance of the measuring point, in feet, above land-surface datum, or, if negative, below land-surface datum. The measuring points are indicated thus: Hc, hole in casing; Hcc, hole in casing cover; Hpb, hole in pump base; Na, no access; Tap, top of access pipe; Tc, top of casing; Tcb, top of concrete border of pit.

Altitude of lsd: The altitude of land-surface datum is the altitude, in feet, of the ground adjacent to the well, as leveled, or interpolated from topographic base maps having contour intervals of 20 and 40 feet.

Water level below lsd: The water level below land-surface datum is the depth to water, in feet, after the distance between land-surface datum and measuring point has been subtracted from the measurement.

Other data: The other data are indicated by the following symbols: C, analysis of water; L, driller's log; PT, pumping test; T, analysis of water for selected trace constituents; WL, additional water-level data.

State well No.	Date of observation	Owner or user	Year completed	Depth of well (feet)	Type and diameter (inches)	Type of pump and power	Yield (gal/min)	Use	Description	Distance above lsd (feet)	Altitude of lsd (feet)	Water level below lsd (feet)	Other data
1N/9E-26E1	03-11-81	Bridgeman	--	133.7	8	S E	--	Dom	Tcb	0.0	1,897.4	110.78	C[1],WL
26F1	03-11-81	Sanders	--	144	10	N N	--	Un	Tap	1.00	1,920	134	
27C1	03-11-81	Baker-Scamman	--	145	12	N N	--	Un	Tcb	1.00	1,868.0	88.65	C[2],WL
27C2	07-24-58	Wrubel	1934	350	12	T E	--	Dom	Hpb	1.50	1,862.5	87.00	L,WL
27K1	03-11-81	Hopkins	1936	165	C 12	L E	--	Dom	Tc	.68	1,900	127.22	C[2],WL
27M1	03-11-81	Mills	--	300	8	N N	--	Un	Tc	.90	1,900	125.01	WL
30K1	04-29-58	Nicolson	1936	171	C 8	N N	--	Un	Tc	.50	2,120.4	139.04	C[2],L
31A1	03-25-81	TPWD	1953	350	R 12	T E	308.2	Ps	Tap	1.1	2,095	109.92	C[1,2],L,PT,T[2],WL
31A2	04-08-58	Scriven	1950	117	C 8	L E	--	Dom	Na	--	2,070	--	C[2]
31C1	03-25-81	TPWD	1937	306	C 14	T E	132.8	Ps	Tap	1.5	2,102.3	128.14	C[2],L,PT,T[2],WL
32F1	07-23-58	Griffin	1937	--	12	L N	--	Un	Hcc	.0	2,060	70.13	C[2],WL
32H2	01-15-74	Hart	--	125	8	N N	--	Un	Tcb	.3	1,995	123.35	C[2],WL
32H5	04-29-58	Legg	1948	52	Dug 36	J E	--	Dom	Tc	.0	2,020	40.18	--
32R1	03-11-81	Forrester	1935	75	8	L W	--	Un	Tc	.9	2,045.7	Dry	C[2],WL
33F1	01-17-74	Van Lahr	--	175	12	N N	--	Obs	Tap	1.0	1,985	10.58	C[2]
33F2	04-30-58	do.	1939	285	12	T E	--	Ps	Na	--	1,985	--	C,L
33F3	04-30-58	do.	--	65	8	N N	--	Un	Tc	.0	1,980	1.36	C[2]
33F4	03-11-81	USGS	1974	42	D 2	N N	--	Obs	Tc	1.2	1,981	8.04	C[1],L,WL
33F5	03-11-81	do.	1974	22	D 2	N N	--	Obs	Tc	.9	1,981	8.03	C[1],L,WL
33G1	02-10-77	do.	1973	48	D 2	N N	--	Des	--	--	1,961.91	--	C[1],L,WL
33H1	03-10-81	do.	1974	77	D 2	N N	--	Obs	Tc	.34	1,960.75	51.68	C[1],L,WL
33H2	03-10-81	do.	1974	57.4	D 2	N N	--	Obs	Tc	.69	1,960.75	51.46	C[1],L,WL
33J1	03-10-81	NPS	1900	16	Dug 30	N N	--	Des	--	--	1,961.4	--	C[1,2],WL
33J2	03-10-81	USGS	1973	36.2	D 2	N N	--	Obs	Tc	.3	1,973.27	16.17	C[1],L,WL
33J3	03-10-81	do.	1973	35	D 2	N N	--	Obs	Tc	.39	1,972.02	15.95	C[1],L,WL
33J4	03-10-81	do.	1973	26.5	D 2	N N	--	Obs	Tc	.36	1,972.02	16.02	C[1],L,WL
33J5	03-10-81	do.	1974	8.63	D 2	N N	--	Obs	Tc	-0.03	1,960.48	5.25	C[1],L,WL
33K1	03-10-81	do.	1973	29.35	D 2	N N	--	Obs	Tc	.55	1,970.58	20.33	C[1],L,WL
33K2	03-10-81	do.	1973	37	D 2	N N	--	Obs	Tc	-0.37	1,972.09	21.48	C[1],L,WL
33K3	03-10-81	do.	1973	24.8	D 2	N N	--	Obs	Tc	-0.10	1,972.09	22.50	C[1],L,WL
33K4	03-10-81	do.	1973	36.3	D 2	N N	--	Obs	Tc	.11	1,973.13	22.71	C[1],L,WL
33K5	03-10-81	do.	1973	27.6	D 2	N N	--	Obs	Tc	.32	1,973.13	22.48	C[1],L,WL
34A1	01-16-74	Castle	[3]1962	200	C 6	L W	--	Dom	Tc	.70	1,935	150.60	C[2],WL
35F1	01-16-74	--	--	253	12	N N	--	Un	Hc	-0.80	1,971.0	113.40	C[2],L,WL
35N1	03-25-81	TPWD	1935	[4]244.2	C 12	T E	170	Ps	Tap	1.4	2,079.5	111.41	C[2],L,PT,T[2],WL
1S/9E-2B1	04-30-58	Booth	--	108	Dug	L W	--	Dom	--	--	2,060	--	WL
3D1	03-25-81	TPWD	1937	300	C 12	T E	202	Ps	Tap	.5	2,076.7	114.18	C[2],WL
5A1	03-11-81	--	--	[5]120	Dug 60	N N	--	Des	--	--	2,063.4	--	C[2],T[2],WL

[1]U.S. Geological Survey analysis.
[2]Analysis by agency other than U.S. Geological Survey.
[3]Well redrilled in 1962.
[4]Origianl depth 260 ft.
[5]Reported.

TABLE 2. - Pumping-test results

State well No: The official State well number assigned to the well. All numbers based on San Bernardino base line and meridian.

Date: Date the test was performed.

Static water level: Depth to water, in feet below land-surface datum, prior to start of test.

Yield: Yield of the well, in gallons per minute, for drawdown indicated.

Drawdown: Difference, in feet, between the static and pumping water levels. (Pumping water level is the sum of the static water level and drawdown.)

Specific capacity: Yield, in gallons per minute per foot of drawdown. In a fully efficient and fully penetrating well, specific capacity directly reflects aquifer transmissivity. A declining specific capacity, with time, indicates a deteriorating well condition with respect to hydraulic efficiency, such as plugged well perforations, well sanding, or a declining water level in the aquifer. An increasing specific capacity indicates continuing development of the aquifer near the well. For a given amount of available drawdown, a well with a large specific capacity will have a greater yield than a well with a small specific capacity.

State well No.	Date	Static water level (ft)	Yield (gal/min)	Drawdown (ft)	Specific capacity [(gal/min)/ft of DD]
1N/9E-31A1	02-08-68	119.4	324	4.2	77.1
	06-27-80	113.7	308.2	4.4	70.0
1N/9E-31C1	02-08-68	137.1	254	11.7	21.7
	08-22-80	137.2	132.8	5.0	26.6
1N/9E-35N1	10-18-73	108.8	230	9.8	23.5
	06-27-80	113.6	170	18.5	9.2
1S/9E-3D1	02-08-68	101.7	135	4.1	32.9
	08-22-80	107.5	202	4.1	49.3

TABLE 3. - Drillers' logs

Material	Thickness (ft)	Depth (ft)
1N/9E-27C2. Bored by Taylor Bros. in 1934. 12-inch casing, perforated 238-245, 251-275, and 306-311 ft. Altitude 1,862.5 ft.		
Surface material	12	12
Gravel, dry	23	35
Clay	31	66
Clay streaks and gravel; water	2	68
Sand, packed	12	80
Clay, green hard	34	114
Clay, yellow	29	143
Clay, soft, with gravel	4	147
Clay, yellow, hard	11	158
Clay, "slummy"	24	182
Clay, red, hard	26	208
Gravel, dirty, small	1	209
Clay, yellow, "slummy"	7	216
Gravel, fair	3	219
Clay and rock	5	224
Gravel, "slummy"	10	234
Gravel, packed	4	238
Gravel, good	7	245
Gravel, packed	6	251
Gravel, good	24	275
Clay, hard	25	300
Gravel, packed; clay	6	306
Gravel, fair	5	311
Clay, hard	39	350
1N/9E-30K1. Bored by C. E. Emerson in 1936. 8-inch casing. Altitude 2,120.4 ft.		
Surface material	37	37
Clay	17	54
Clay, no rock	36	90
Not logged	40	130
Clay; seepage water at 140	34	164
Gravel; water	4	168
Gravel, coarse; water	3	171

TABLE 3. - Drillers' logs--Continued

Material	Thickness (ft)	Depth (ft)
1N/9E-31A1. Bored by Mann Bros. in 1953. 12-inch casing, perforated 120-340 ft. Altitude about 2,095 ft.		
Surface material	25	25
Sand, coarse; with rock	65	90
Sand, coarse; with gravel	33	123
Gravel	11	134
Sand, medium	10	144
Sand, coarse	4	148
Sand, coarse; with rock	9	157
Gravel and sand, coarse	16	173
Sand, coarse, with cemented sand streaks	23	196
Sand, coarse	5	201
Sand and gravel, coarse	24	225
Gravel; shale; cemented sand streaks	15	240
Gravel	17	257
Rocks	2	259
Gravel	11	270
Sand, coarse	16	286
Sand, coarse and medium	64	350
1N/9E-31C1. Bored by Taylor Bros. in 1937. 14-inch casing, perforated 242-306 ft. Altitude 2,102.3 ft.		
Gravel; dry	120	120
Gravel, cemented	10	130
Clay	10	140
Gravel, good; water	96	236
Clay and cement	6	242
Gravel, good	64	306

TABLE 3. - Drillers' logs--Continued

Material	Thickness (ft)	Depth (ft)
1N/9E-33F2. Bored by Taylor Bros. in 1939. 12-inch casing, perforated 132-156, 180-188, and 206-285 ft. Altitude about 1,985 ft.		
Surface material	16	16
Clay	37	53
Gravel, dirty, small	7	60
Quicksand	4	64
Clay	14	78
Sand and gravel, packed	4	82
Sand, coarse; some gravel	3	85
Clay, gravelly	9	94
Gravel, dirty, small	4	98
Clay	4	102
Gravel and clay, dirty	4	106
Gravel, fair, small	9	115
Clay	5	120
Gravel and clay, packed	10	130
Clay	2	132
Gravel, fair, small	24	156
Clay	12	168
Sand, coarse, "slummy"	12	180
Gravel, fair, small	8	188
Gravel, dirty, small	9	197
Sand, dirty	9	206
Gravel, fair, small	20	226
Gravel, good, coarse	10	236
Gravel, fair, small	49	285
1N/9E-33F4 and 33F5. U.S. Geological Survey test holes at 29 Palms Inn. Approximately 792 ft inside entrance to Inn. Past office on dirt road and 20 ft north of road on south edge of oasis sump. Bored 1-16-74; perforated interval 40-42 ft for well 1N/9E-33F4 and 20-22 ft for well 1N/9E-33F5. Altitude 1,981 ft.		
Sand, light-brown; medium to fine gravel	5	5
Sand, silty, brown, some moisture	4	9
Peat, black, scattered roots	6	15
Peat, black, minor clay included	3	18
Sand, silty, light-brown; occasional gravel	7	25
Sand, dark-gray; occasional silt	10	35
Sand, gray; occasional silt; water	7	42

TABLE 3. - Drillers' logs--Continued

Material	Thickness (ft)	Depth (ft)
1N/9E-33G1. U.S. Geological Survey test hole at Joshua Tree National Monument headquarters. Approximately 1,700 ft west of Park headquarters along paved path on north side of oasis; approximately 2 ft north of this path. Bored 12-5-73; perforated interval 46-48 ft. Altitude 1,961.91 ft.		
Surface sand and gravel	6	6
Clay, light-brown, some moisture	2	8
Gravel; light-brown silty sand, dry	1	9
Sand, fine, medium-brown; gravel, tight material (hard drilling)	9	18
Caliche, hard, white	14	32
Clay, silty, light-brown, some greenish layers	16	48
1N/9E-33H1 and 33H2. U.S. Geological Survey test holes at Joshua Tree National Monument. Approximately 650 ft west of office, 78 ft north of BM1961 and 30 ft west of large cottonwood tree at observation point. Bored 1-15-74; perforated interval 75-77 ft for well 1N/9E-33H1 and 55.4-57.4 ft for well 1N/9E-33H2. Altitude 1,960.75 ft.		
Sand, light-tan; gravel	6	6
Sand, silty, tan	16	22
Gravel, fine to medium; sand	3	25
Sand; occasional thin layers of hard material	9	34
Material, hard, layered	2	36
Sand, silty, fine, dark-brown; occasional gravel, moisture	5	41
Clay, gray, occasionally included sand; some moisture	22	63
Gravel	2	65
Clay, gray, moisture	7	72
Gravel, wet, gray clay	5	77
1N/9E-33J2. U.S. Geological Survey test hole at Joshua Tree National Monument headquarters. Approximately 500 ft west of maintenance building, 75 ft south of southern paved path at oasis, 63 ft south of wells J3 and J4. Bored 12-5-73; perforated interval 34.2-36.2 ft. Altitude 1,973.27 ft.		
Sand, silty; gravel	12	12
Sand, gravel	2	14
Sand, silty; moisture at 16 ft	7	21
Gravel	6	27
Clay	10	37

TABLE 3. - Drillers' logs--Continued

Material	Thickness (ft)	Depth (ft)
1N/9E-33J3 and 33J4. U.S. Geological Survey test holes at Joshua Tree National Monument headquarters. Approximately 500 ft west of maintenance building, approximately 10 ft south of southern paved path around oasis. Bored 12-5-73; perforated interval 33-35 ft for well 1N/9E-33J3 and 24.5-26.5 ft for well 1N/9E-33J4. Altitude 1,972.02 ft.		
Topsoil	3	3
Gravel	14	17
Sand, silty; clay	4	21
Clay, moisture	6	27
Silt, sandy; occasional gravel	4	31
Sand; streaks of clay	6	37
1N/9E-33J5. U.S. Geological Survey test hole at Joshua Tree National Monument headquarters. Approximately 650 ft west of office, 11 ft northeast of BM1, and approximately 4 ft east of oasis spring well 1N/9E-33J1. Hand bored with 4-inch auger 4-29-74; perforated interval 6.63-8.63 ft. Altitude 1,960.48 ft.		
Topsoil, light-tan	2	2
Sand, silty, dark-tan	2	4
Sand, silty, medium-tan; some clay	.5	4.5
Clay, gray; silty brown sand; water at approximately 7.2 ft--	2.5	7.0
Clay, silty, gray, saturated	.5	7.5
Clay, grayish-black	1.0	8.5
Sand, silty; dark-gray clay with fine gravel	.5	9
1N/9E-33K1. U.S. Geological Survey test hole at Joshua Tree National Monument headquarters. Approximately 1,700 ft west of northwest corner of maintenance building, and approximately 160 ft north of dry wash just south of oasis. Northernmost of three test holes 50 ft apart. Bored 12-4-73; perforated interval 27.35-29.35 ft. Altitude 1,970.58 ft.		
Sand, silty, fine, light-brown	7	7
Gravel; silty-fine sand	10	17
Sand, silty, fine, brown, moisture	8	25
Clay, gray, less moisture	5	30

TABLE 3. - Drillers' logs--Continued

Material	Thickness (ft)	Depth (ft)
1N/9E-33K2 and 33K3. U.S. Geological Survey test holes at Joshua Tree National Monument headquarters. Approximately 1,700 ft west of northwest corner of maintenance building, approximately 110 ft north of dry wash, south of oasis; middle of three wells 50 ft apart. Bored 12-4-73; perforated interval 35-37 ft for well 1N/9E-33K2 and 22.8-24.8 ft for well 1N/9E-33K3. Altitude 1,972.09 ft.		
Sand, silty, fine, light-brown	3	3
Sand, silty, fine, light-brown; gravel	13	16
Sand, silty, fine, light-brown, moisture	10	26
Clay, light-gray almost white, some moisture	6	32
Clay, silty, brown, almost dry	5	37
1N/9E-33K4 and 33K5. U.S. Geological Survey test holes at Joshua Tree National Monument headquarters. Approximately 1,700 ft west of northwest corner of maintenance building, approximately 60 ft north of dry wash, south of oasis. Southernmost of three wells 50 ft apart. Bored 12-4-73; perforated interval 34.3-36.3 ft for well 1N/9E-33K4 and 25.6-27.6 ft for well 1N/9E-33K5. Altitude 1,973.13 ft.		
Sand, silty, light-color	4	4
Sand, silty, brown; gravel	5	9
Silty material	10	19
Sand, silty; occasional brown clay, moisture	13	32
Clay, light-gray; water	4	36
Clayey material, light-cream	1	37
1N/9E-35F1. Bored by Taylor Bros. 12-inch casing, perforated 154-176 and 186-196 ft. Altitude 1,971.0 ft.		
Surface material	12	12
Clay, hard; gravel	64	76
Sandstone	78	154
Gravel, cemented	22	176
Clay	10	186
Gravel, cemented	10	196
Sandstone	12	208
Boulders, cemented	4	212
Sandstone	41	253

TABLE 3. - Drillers logs--Continued

Material	Thickness (ft)	Depth (ft)
1N/9E-35N1. Bored by Taylor Bros. in 1935. 12-inch casing, perforated 147-247 ft. Altitude 2,079.5 ft.		
Gravel and rock	16	16
Gravel, dry	8	24
Gravel and boulders	4	28
Gravel, dry	42	70
Gravel and rock, cemented	3	73
Gravel, dry	28	101
Gravel, good	42	143
Gravel and rock, cemented	4	147
Gravel, good	15	162
Rock and boulders	2	164
Gravel, good	83	247
Gravel and rock, cemented	13	260

TABLE 4. - Water levels at wells

Site number: A 15-digit number assigned to wells by the U.S. Geological Survey. For the wells in the following table the first 6 digits indicate north latitude in degrees (1st and 2d digits), minutes (3rd and 4th digits), and seconds (5th and 6th digits) of the well location. The next 7 digits indicate west longitude in degrees (7th, 8th, and 9th digits), minutes (10th and 11th digits), and seconds (12th and 13th digits). The 14th and 15th digits are a 2-digit sequence number assigned to wells.

Local number: This number is equivalent to the State well number. Preceding zeros have been added to the township and range numbers and in certain cases the section and sequence numbers (see "Well-Numbering System" explanation). S indicates the location is referenced to the San Bernardino base line and meridian. Example: 001N009E26E01S is well 1N/9E-26E1.

Following the local number is a brief description of well location and selected data about the well or well site, and the starting date for the tabulated water levels.

Highest water level: The value and date for the highest water level.

Lowest water level: The value and date for the lowest water level. Pumping water levels are not included.

After each water level, the following may appear: F, indicating flowing; N, indicating the well has been dropped from a water-level measuring network on the date indicated, however, a measurement may have been taken after this date; O, indicating obstruction or destroyed; P, indicating well pumping during measurement; R, indicating measurement by agency other than U.S. Geological Survey; S or blank spaces, indicating a measurement by the U.S. Geological Survey.

SITE NUMBER 340838116010001 LOCAL NUMBER 001N009E26E01S

LOCATED 0.54 MI NORTH AND 0.93 MI WEST OF SOUTHEAST CORNER SEC 26. DIAM 8 IN. DEPTH 133.7 FT. ALTITUDE OF LSD 1897.4 FT. WATER LEVELS FROM 1940.

HIGHEST WATER LEVEL 110.78 FEET BELOW LAND SURFACE DATUM MAR 11, 1981.

LOWEST WATER LEVEL 118.68 FEET BELOW LAND SURFACE DATUM APR 25, 1956.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
FEB 02, 1940	116.46	R	JAN 07, 1941	116.15	R	APR 09, 1947	116.53	R	NOV 24, 1953	116.30	R
17	116.10	R	APR 08	116.16	R	APR 13, 1950	116.17	R	MAY 21, 1954	116.50	R
APR 01	116.09	R	AUG 01	116.20	R	NOV 08	116.17	R	DEC 14	117.60	R
JUN 03	116.14	R	OCT 01	116.18	R	MAR 15, 1951	116.08	R	APR 25, 1956	118.68	R
27	116.52	R	DEC 05	116.15	R	NOV 15	116.28	R	JAN 17, 1957	116.90	R
AUG 01	116.12	R	APR 20, 1942	116.17	R	APR 16, 1952	116.32	R	APR 25	117.15	R
OCT 11	116.12	R	AUG 01	116.75	R	MAY 02	116.56	S	MAR 11, 1981	110.78	S
NOV 04	116.12	R	JAN 29, 1946	116.77	R	NOV 20	116.42	R			
DEC 06	116.15	R	APR 16	116.44	R	MAY 26, 1953	116.50	R			

SITE NUMBER 340855116013601 LOCAL NUMBER 001N009E27C01S

LOCATED 0.87 MI NORTH AND 0.51 MI WEST OF SOUTHEAST CORNER SEC 27. DIAM 12 IN. DEPTH 145 FT. ALTITUDE OF LSD 1868.0 FT. WATER LEVELS FROM 1940.

HIGHEST WATER LEVEL 80.15 FEET BELOW LAND SURFACE DATUM OCT 15, 1942.

LOWEST WATER LEVEL 88.65 FEET BELOW LAND SURFACE DATUM MAR 11, 1981.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
FEB 02, 1940	81.63	R	JUN 01, 1941	82.01	R	NOV 17, 1948	83.12	R	APR 21, 1954	83.20	R
17	81.64	R	AUG 01	81.71	R	APR 28, 1949	83.15	R	DEC 14	86.50	R
APR 01	81.81	R	OCT 01	81.04	R	AUG 12	83.44	R	APR 20, 1955	83.76	R
MAY 03	81.90	R	DEC 15	80.80	R	NOV 17	83.60	R	APR 25, 1956	84.05	R
JUN 03	82.00	R	FEB 16, 1942	80.97	R	APR 13, 1950	83.67	R	JAN 17, 1957	85.85	R
27	82.02	R	APR 20	81.38	R	NOV 08	83.47	R	APR 24	84.00	R
AUG 01	82.04	R	AUG 01	80.98	R	MAR 15, 1951	83.59	R	DEC 17	83.95	R
OCT 11	81.93	R	OCT 15	80.15	R	NOV 15	83.76	R	APR 25, 1958	83.65	S
NOV 04	81.90	R	APR 10, 1946	82.00	R	APR 16, 1952	83.63	R	JUL 24	85.97	S
JAN 07, 1941	81.96	R	NOV 08	82.35	R	MAY 02	81.66	S	MAR 11, 1981	88.65	S
FEB 09	81.83	R	APR 09, 1947	82.61	R	NOV 24	83.30	R			
MAR 04	81.86	R	NOV 18	82.85	R	APR 26, 1953	83.95	R			
APR 08	81.91	R	APR 08, 1948	84.54	R	NOV 27	83.80	R			

SITE NUMBER 340858116014201 LOCAL NUMBER 001N009E27C02S

LOCATED 0.93 MI NORTH AND 0.60 MI WEST OF SOUTHEAST CORNER SEC 27. DIAM 12 IN. DEPTH 350 FT. PERFORATED 238-245, 251-275, AND 306-311 FT. ALTITUDE OF LSD 1862.5 FT. WATER LEVELS FROM 1940.

HIGHEST WATER LEVEL 76.89 FEET BELOW LAND SURFACE DATUM FEB 02, 1940.

LOWEST WATER LEVEL 87.00 FEET BELOW LAND SURFACE DATUM JUL 24, 1958.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
FEB 02, 1940	76.89	R	APR 09, 1947	77.77	R	NOV 15, 1951	78.38	R	DEC 20, 1955	78.60	R
17	76.92	R	NOV 18	77.88	R	APR 16, 1952	77.48	R	APR 25, 1956	80.67	R
APR 01	76.99	R	APR 08, 1948	77.74	R	NOV 24	78.80	R	JAN 17, 1957	78.53	R
MAY 03	77.02	R	NOV 17	77.90	R	MAY 26, 1953	81.96	R	APR 25	78.56	R
JUN 03	96.10 P	R	APR 13, 1950	78.27	R	NOV 27	78.60	R	DEC 17	78.61	R
AUG 01	77.15	R	NOV 08	78.43	R	DEC 14, 1954	84.00	R	APR 24, 1958	79.06	S
APR 10, 1946	78.25	R	MAR 15, 1951	78.30	R	APR 20, 1955	78.21	R	JUL 24	87.00	S

TABLE 4. - Water levels at wells--Continued

SITE NUMBER 340832116013501 LOCAL NUMBER 001N009E27K01S

LOCATED 0.42 MI NORTH AND 0.49 MI WEST OF SOUTHEAST CORNER SEC 27. DIAM 12 IN. DEPTH 165 FT.
ALTITUDE OF LSD 1900 FT. WATER LEVELS FROM 1942.

HIGHEST WATER LEVEL 109.12 FEET BELOW LAND SURFACE DATUM APR 26, 1953.

LOWEST WATER LEVEL 130.02 FEET BELOW LAND SURFACE DATUM APR 20, 1955.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
MAR 12, 1942	111.92	R	APR 28, 1949	119.29	R	MAY 02, 1952	117.91	S	JAN 17, 1957	112.92	R
APR 10, 1946	112.60	R	AUG 12	114.16	R	NOV 20	109.22	R	DEC 17	113.14	R
NOV 14	112.51	R	APR 13, 1950	113.14	R	APR 26, 1953	109.12	R	JUL 24, 1958	118.52	P S
APR 09, 1947	112.45	R	NOV 08	113.08	R	NOV 28	120.92	R	MAR 11, 1981	127.22	S
NOV 18	112.44	R	MAR 15, 1951	119.39	R	APR 21, 1954	122.32	R			
APR 08, 1948	112.47	R	NOV 15	114.52	R	DEC 15	127.82	R			
NOV 17	112.56	R	APR 16, 1952	114.57	R	APR 20, 1955	130.02	R			

SITE NUMBER 340833116020001 LOCAL NUMBER 001N009E27M01S

LOCATED 0.48 MI NORTH AND 0.86 MI WEST OF SOUTHEAST CORNER SEC 27. DIAM 8 IN. DEPTH 300 FT.
ALTITUDE OF LSD 1900 FT. WATER LEVELS FROM 1950.

HIGHEST WATER LEVEL 113.89 FEET BELOW LAND SURFACE DATUM MAY 07, 1952.

LOWEST WATER LEVEL 125.01 FEET BELOW LAND SURFACE DATUM MAR 11, 1981.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
APR 13, 1950	115.60	R	DEC 14, 1954	117.00	R	NOV 09, 1960	114.91	S	MAR 15, 1967	116.66	S
NOV 08	114.32	R	APR 20, 1955	115.10	R	MAR 17, 1961	114.76	S	OCT 24	116.94	S
MAR 15, 1951	114.24	R	DEC 20	114.15	R	OCT 25	114.78	S	APR 04, 1968	116.63	S
NOV 15	113.95	R	APR 24, 1956	114.50	R	MAR 14, 1962	114.60	S	NOV 06	116.78	S
APR 16, 1952	114.23	R	JAN 17, 1957	115.10	R	OCT 30	114.67	S	APR 22, 1969	117.43	S
MAY 07	113.89	S	APR 25	115.05	R	MAR 12, 1963	114.54	S	OCT 23	117.31	S
28	114.02	S	DEC 17	115.10	R	OCT 30	114.61	S	APR 08, 1970	117.39	S
JUL 09	114.08	S	APR 24, 1958	114.98	S	MAR 18, 1964	115.45	S	OCT 29	117.77	S
AUG 06	114.12	S	JUL 24	117.68	S	NOV 23	115.51	S	APR 01, 1971	117.60	S
NOV 20	114.20	R	NOV 05	115.03	S	MAR 16, 1965	115.72	S	JAN 17, 1974	117.28	S
APR 11, 1953	115.30	R	MAR 11, 1959	114.89	S	NOV 16	115.81	S	MAR 11, 1981	125.01	S
MAY 26	114.40	R	NOV 07	114.16	S	FEB 28, 1966	116.04	S			
APR 21, 1954	115.40	R	MAR 02, 1960	114.92	S	OCT 26	116.69	S			

SITE NUMBER 340755116042501 LOCAL NUMBER 001N009E31A01S

LOCATED 0.76 MI NORTH AND 0.16 MI WEST OF SOUTHEAST CORNER SEC 31. DIAM 12 IN. DEPTH 350 FT.
PERFORATED 120-340 FT. ALTITUDE OF LSD 2095 FT. WATER LEVELS FROM 1953.

HIGHEST WATER LEVEL 97.33 FEET BELOW LAND SURFACE DATUM APR 25, 1957.

LOWEST WATER LEVEL 122.62 FEET BELOW LAND SURFACE DATUM NOV 01, 1969.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
JUL 23, 1953	97.68	R	MAY 15, 1959	101.25	R	NOV 1966	119.02 P	R	NOV 1972	113.42	R
SEP 10	97.45 P	R	JUL 11, 1961	117.02	R	FEB 1967	116.02	R	APR 1973	112.42	R
JAN 25, 1956	103.98	R	NOV 20, 1962	111.02	R	OCT 1968	119.02	R	JAN 15, 1974	113.15	S
FEB 05, 1957	107.48	R	APR 22, 1963	111.02 P	R	NOV 1969	122.62	R	MAR 25, 1981	109.92	S
APR 25	97.33	R	JAN 22, 1964	123.02 P	R	NOV 1970	117.72	R			
APR 24, 1958	98.98	R	JAN 24, 1965	113.22 P	R	MAR 1971	118.02	R			

SITE NUMBER 340757116045601 LOCAL NUMBER 001N009E31C01S

LOCATED 0.80 MI NORTH AND 0.64 MI WEST OF SOUTHEAST CORNER SEC 31. DIAM 14 IN. DEPTH 306 FT.
PERFORATED 256-306 FT. ALTITUDE OF LSD 2102.3 FT. WATER LEVELS FROM 1939.

HIGHEST WATER LEVEL 105.95 FEET BELOW LAND SURFACE DATUM DEC 06, 1939.

LOWEST WATER LEVEL 139.55 FEET BELOW LAND SURFACE DATUM OCT 01, 1968.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
DEC 06, 1939	105.95	R	APR 08, 1941	106.32	R	DEC 16, 1952	108.00	R	NOV 1966	135.75	R
JAN 16, 1940	106.22	R	JUN 01	106.29	R	DEC 20, 1955	119.45	R	FEB 1967	135.75	R
FEB 02	106.24	R	AUG 01	106.28	R	MAR 01, 1956	108.92	R	OCT 1968	139.55	R
APR 01	106.26	R	OCT 01	106.32	R	APR 25	119.90	R	NOV 1969	136.55	R
JUN 03	106.29	R	DEC 15	106.37	R	JAN 17, 1957	114.83	R	APR 08, 1970	138.37	S
27	106.30	R	APR 20, 1942	106.32	R	APR 25	115.30	R	OCT 29	136.30	S
AUG 01	106.30	R	AUG 01	106.45	R	APR 03, 1958	109.50	S	MAR 1971	134.85	R
SEP 06	106.31	R	APR 10, 1946	106.38	R	24	116.94	R	23	134.88	S
OCT 11	106.34	R	NOV 07	106.23	R	MAY 14	135.05 P	R	NOV 1972	131.55	R
NOV 04	106.35	R	APR 08, 1947	106.42	R	JUL 11, 1961	125.55	R	NOV 1973	131.05	R
DEC 06	106.37	R	NOV 18	108.52	R	NOV 20, 1962	121.55	R	JAN 16, 1974	131.45	S
JAN 07, 1941	106.37	R	NOV 17, 1949	108.12	R	APR 22, 1963	128.55 P	R	JUL 05, 1978	128.54	S
FEB 09	106.38	R	APR 12, 1950	112.30	R	JAN 22, 1964	130.95	R	MAR 25, 1981	128.14	S
MAR 04	106.37	R	MAR 14, 1951	109.79	R	JAN 24, 1965	146.85 P	R			

TABLE 4. - Water levels at wells--Continued

SITE NUMBER 340744116034601 LOCAL NUMBER 001N009E32F01S

LOCATED 0.54 MI NORTH AND 0.53 MI WEST OF SOUTHEAST CORNER SEC 32. DIAM 12 IN. ALTITUDE OF LSD 2060 FT. WATER LEVELS FROM 1946.

HIGHEST WATER LEVEL 64.04 FEET BELOW LAND SURFACE DATUM APR 10, 1946.

LOWEST WATER LEVEL 77.70 FEET BELOW LAND SURFACE DATUM DEC 14, 1954.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
APR 10, 1946	64.04	R	NOV 17, 1949	66.00	R	NOV 26, 1952	66.35	S	APR 25, 1956	68.93	R
NOV 07	64.29	R	APR 12, 1950	65.68	R	MAY 26, 1953	67.80	R	JAN 17, 1957	69.22	R
APR 08, 1947	64.25	R	NOV 08	65.72	R	NOV 24	68.70	R	APR 25	69.33	R
NOV 18	64.66	R	MAR 14, 1951	65.87	R	APR 21, 1954	74.00	R	DEC 17	68.63	R
APR 08, 1948	64.68	R	NOV 14	66.00	R	DEC 14	77.70	R	APR 29, 1958	69.71	S
NOV 15	65.17	R	APR 15, 1952	66.03	R	APR 20, 1955	71.20	R	JUL 23	70.13	S
APR 27, 1949	65.13	R	NOV 20	66.60	R	DEC 20	69.95	R			

SITE NUMBER 340753116031601 LOCAL NUMBER 001N009E32H02S

LOCATED 0.67 MI NORTH AND 0.05 MI WEST OF SOUTHEAST CORNER SEC 32. DIAM 8 IN. DEPTH 125 FT. ALTITUDE OF LSD 1995 FT. WATER LEVELS FROM 1946.

HIGHEST WATER LEVEL 94.33 FEET BELOW LAND SURFACE DATUM NOV 07, 1946.

LOWEST WATER LEVEL 123.35 FEET BELOW LAND SURFACE DATUM JAN 15, 1974.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
APR 16, 1946	103.61	R	NOV 17, 1949	102.17	R	MAY 26, 1953	102.61	R	DEC 17, 1957	101.91	R
NOV 07	94.33	R	APR 17, 1950	103.12	R	NOV 24	108.23	R	APR 30, 1958	101.75	S
APR 08, 1947	103.31	R	NOV 07	102.80	R	APR 20, 1955	102.35	R	JUL 23	101.89	S
NOV 18	102.53	R	MAR 14, 1951	102.87	R	DEC 20	102.15	R	JAN 15, 1974	123.35	S
APR 08, 1948	103.23	R	NOV 14	102.85	R	APR 25, 1956	102.15	R			
NOV 16	103.38	R	APR 15, 1952	102.68	R	JAN 17, 1957	101.98	R			
APR 27, 1949	102.96	R	NOV 26	102.70	S	APR 25	101.99	R			

SITE NUMBER 340727116031601 LOCAL NUMBER 001N009E32R01S

LOCATED 0.20 MI NORTH AND 0.04 MI WEST OF SOUTHEAST CORNER SEC 32. DIAM 8 IN. DEPTH 75 FT. ALTITUDE OF LSD 2045.7 FT. WATER LEVELS FROM 1940.

HIGHEST WATER LEVEL 56.36 FEET BELOW LAND SURFACE DATUM FEB 17, 1940; APR 01, 1940.

LOWEST WATER LEVEL WELL DRY MAR 01, 1966; MAR 11, 1981.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
JAN 16, 1940	56.40	R	APR 11, 1950	58.51	R	DEC 20, 1955	62.52	R	MAR 16, 1961	64.73	S
FEB 02	56.38	R	NOV 08	58.71	R	APR 25, 1956	61.45	R	OCT 25	65.39	S
17	56.36	R	APR 14, 1951	59.04	R	JAN 17, 1957	61.89	R	MAR 14, 1962	65.53	S
APR 01	56.36	R	NOV 14	58.98	R	APR 25	61.96	R	OCT 30	69.02	S
APR 10, 1946	57.18	R	APR 15, 1952	59.10	R	DEC 17	62.00	R	MAR 12, 1963	66.29	S
NOV 07	57.31	R	MAY 09	59.24	P S	APR 29, 1958	62.14	P S	OCT 30	67.41	S
APR 08, 1947	57.35	R	NOV 20	59.35	R	JUL 23	62.70	S	MAR 18, 1964	67.54	S
NOV 18	57.62	R	MAY 26, 1953	59.50	R	NOV 05	62.78	S	NOV 23	67.71	S
APR 08, 1948	57.72	R	NOV 24	62.50	R	MAR 11, 1959	63.04	S	MAR 16, 1965	67.82	S
NOV 15	58.07	R	APR 21, 1954	62.70	R	NOV 06	64.04	S	NOV 16	67.02	S
APR 27, 1949	58.13	R	DEC 14	62.20	R	MAR 02, 1960	65.25	S	MAR 01, 1966	DRY	
NOV 17	58.43	R	APR 20, 1955	61.00	R	NOV 09	65.65	S	MAR 11, 1981	DRY	

SITE NUMBER 340743116025501 LOCAL NUMBER 001N009E33F04S

ABOUT 0.3 MI SOUTHEAST OF TWENTY-NINE PALMS. DRILLED UNUSED WATER-TABLE WELL IN ALLUVIUM. DIAM 2 IN, DEPTH 42 FT, SAND POINT 40-42 FT. ALTITUDE OF LSD 1981 FT. RECORDS AVAILABLE 1974 TO CURRENT YEAR.

HIGHEST WATER LEVEL 8.04 FEET BELOW LAND SURFACE DATUM MAR 11, 1981.

LOWEST WATER LEVEL 9.10 FEET BELOW LAND SURFACE DATUM JAN 17, 1974.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL	DATE	WATER LEVEL		DATE	WATER LEVEL	
JAN 17, 1974	9.10	S	MAR 26, 1976	8.64	JUL 13, 1978	8.52		OCT 17, 1980	8.21	S
MAR 20	8.75		NOV 05	8.59	OCT 12	8.47		MAR 11, 1981	8.04	S
SEP 27	8.82		APR 20, 1977	8.53	APR 10, 1979	8.27	S	APR 09	8.12	S
APR 08, 1975	8.75		OCT 06	8.48	OCT 05	8.33	S			
NOV 13	8.76		MAY 14, 1978	8.44	APR 24, 1980	8.10	S			

TABLE 4. - Water levels at wells--Continued

SITE NUMBER 340743116025502 LOCAL NUMBER 001N009E33F05S

ABOUT 0.15 MI SOUTHEAST OF 29 PALMS INN. DRILLED UNUSED WATER-TABLE WELL IN ALLUVIUM. DIAM 2 IN, DEPTH 22 FT, SAND POINT 20-22 FT. ALTITUDE OF LSD 1981 FT. RECORDS AVAILABLE 1974 TO CURRENT YEAR.

HIGHEST WATER LEVEL 8.03 FEET BELOW LAND SURFACE DATUM MAR 11, 1981.

LOWEST WATER LEVEL 9.28 FEET BELOW LAND SURFACE DATUM SEP 27, 1974.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL		DATE	WATER LEVEL	
JAN 17, 1974	9.08	MAR 26, 1976	8.89	JUL 13, 1978	8.90		OCT 17, 1980	8.21	S
MAR 20	9.01	NOV 05	8.82	OCT 12	8.69		MAR 11, 1981	8.03	S
SEP 27	9.28	APR 20, 1977	8.76	APR 10, 1979	8.25	S	APR 09	8.09	S
APR 08, 1975	9.06	OCT 06	8.85	OCT 05	8.29	S			
NOV 13	9.06	MAY 14, 1978	8.81	APR 24, 1980	8.15	S			

SITE NUMBER 340742116023001 LOCAL NUMBER 001N009E33G01S

LOCATED AT JOSHUA TREE NATIONAL MONUMENT HEADQUARTERS. APPROXIMATELY 1700 FT. WEST OF PARK HEADQUARTERS ALONG PAVED PATH ON NORTH SIDE OF OASIS, APPROXIMATELY 2 FT. NORTH OF THIS PATH. AUGERED 12-5-73; PERFORATED INTERVAL 46-48 FT. ALTITUDE OF LSD 1961.91 FT.

HIGHEST WATER LEVEL 31.29 FEET BELOW LAND SURFACE DATUM NOV 13, 1975.

LOWEST WATER LEVEL 38.53 FEET BELOW LAND SURFACE DATUM SEP 27, 1974.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	
JAN 15, 1974	32.80	APR 30, 1974	32.35	APR 08, 1975	32.09	MAR 26, 1976		0
MAR 20	32.25	SEP 27	38.53	NOV 13	31.29			

SITE NUMBER 340741116022001 LOCAL NUMBER 001N009E33H01S

ABOUT 1 MI SOUTHEAST OF FOUR CORNERS. DRILLED UNUSED WATER-TABLE WELL IN ALLUVIUM. DIAM 2 IN, DEPTH 77 FT, SAND POINT 75-77 FT. ALTITUDE OF LSD 1960.75 FT. RECORDS AVAILABLE 1974 TO CURRENT YEAR.

HIGHEST WATER LEVEL 51.68 FEET BELOW LAND SURFACE DATUM MAR 10, 1981.

LOWEST WATER LEVEL 52.97 FEET BELOW LAND SURFACE DATUM OCT 12, 1978.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
JAN 17, 1974	52.15		NOV 13, 1975	52.52		MAY 13, 1978	52.71		APR 24, 1980	52.52	S
MAR 20	52.14		MAR 26, 1976	52.63		JUL 13	52.79		OCT 17	52.78	S
APR 30	52.19		NOV 05	52.75		OCT 12	52.97		MAR 10, 1981	51.68	S
SEP 27	52.23		APR 20, 1977	52.83		APR 10, 1979	52.49	S	APR 09	52.68	S
APR 08, 1975	52.33		OCT 06	52.96		OCT 05	52.56	S			

SITE NUMBER 340741116022002 LOCAL NUMBER 001N009E33H02S

ABOUT 0.1 MI WEST OF JOSHUA TREE NATIONAL MONUMENT HDQTRS. DRILLED UNUSED WATER-TABLE WELL IN ALLUVIUM. DIAM 2 IN, DEPTH 57.4 FT, SAND POINT 55.4-57.4 FT. ALTITUDE OF LSD 1960.75 FT. RECORDS AVAILABLE 1974 TO CURRENT YEAR.

HIGHEST WATER LEVEL 50.97 FEET BELOW LAND SURFACE DATUM APR 24, 1980.

LOWEST WATER LEVEL 51.86 FEET BELOW LAND SURFACE DATUM OCT 06, 1977.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
MAR 20, 1974	51.01		MAR 26, 1976	51.49		JUL 13, 1978	51.61		OCT 17, 1980	51.66	S
APR 30	51.51		NOV 05	51.64		OCT 12	51.85		MAR 10, 1981	51.46	S
SEP 27	51.14		APR 20, 1977	51.59		APR 10, 1979	51.14	S	APR 09	51.39	S
APR 08, 1975	51.10		OCT 06	51.86		OCT 05	51.41	S			
NOV 13	51.33		MAY 13, 1978	51.25		APR 24, 1980	50.97	S			

TABLE 4. - Water levels at wells--Continued

SITE NUMBER 340742116021901 LOCAL NUMBER 001N009E33J01S

LOCATED 0.50 MI NORTH AND 0.17 MI WEST OF SOUTHEAST CORNER SEC 33. DIAM 30 IN. DEPTH 16 FT. ALTITUDE OF LSD 1961.4 FT. WATER LEVELS FROM 1917.

HIGHEST WATER LEVEL 0.50 FEET ABOVE LAND SURFACE DATUM FEB 09, 1941.

LOWEST WATER LEVEL 4.11 FEET BELOW LAND SURFACE DATUM JUL 23, 1958.

WATER LEVELS IN FEET ABOVE OR BELOW(-) LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
1917		F	MAR 04, 1941	0.23	R	NOV 17, 1947	-0.38	R	NOV 24, 1953	-1.29	R
FEB 02, 1940	0.34	R	APR 08	0.30	R	APR 06, 1948	0.01	R	APR 21, 1954	-0.70	R
17	0.36	R	JUN 01	-0.09	R	NOV 15	-0.54	R	DEC 14	-1.00	R
APR 01	0.36	R	AUG 01	0.42	R	JAN 03, 1949	-0.16	R	APR 20, 1955	-0.75	R
MAY 03	0.26	R	OCT 01	-0.90	R	APR 27	-0.20	R	DEC 20	-1.36	R
JUN 03	0.26	R	DEC 15	0.21	R	NOV 16	-0.62	R	1956	-1.39	R
27	0.01	R	FEB 16, 1942	0.23	R	APR 11, 1950	-0.24	R	JAN 17, 1957	-2.21	R
AUG 01	-0.55	R	APR 20	0.19	R	NOV 07	-0.91	R	APR 24	-2.19	R
SEP 06	-0.69	R	AUG 01	-0.62	R	MAR 14, 1951	-0.15	R	DEC 17	-2.54	R
OCT 11	-0.42	R	OCT 15	-0.63	R	NOV 14	-0.90	R	APR 29, 1958	-2.52	S
NOV 04	-0.20	R	JAN 29, 1946	0.20	R	APR 15, 1952	-0.42	R	JUL 23	-4.11	S
DEC 06	0.44	R	APR 10	0.11	R	MAY 09	-0.84	S	JAN 17, 1974		O
JAN 07, 1941	0.10	R	NOV 07	-0.37	R	NOV 20	-1.18	R			
FEB 09	0.50	R	APR 08, 1947	0.07	R	MAY 25, 1953	-0.92	R			

SITE NUMBER 340738116021701 LOCAL NUMBER 001N009E33J02S

ABOUT 0.1 MI WEST OF JOSHUA TREE NATIONAL MONUMENT HDQTRS. DRILLED UNUSED WATER-TABLE WELL IN ALLUVIUM. DIAM 2 IN, DEPTH 36.2 FT, SAND POINT 34.2-36.2 FT. ALTITUDE OF LSD 1973.27 FT. RECORDS AVAILABLE 1974 TO CURRENT YEAR.

HIGHEST WATER LEVEL 15.64 FEET BELOW LAND SURFACE DATUM MAR 20, 1974, APR 08, 1975.

LOWEST WATER LEVEL 17.05 FEET BELOW LAND SURFACE DATUM OCT 06, 1977.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL		DATE	WATER LEVEL	
JAN 15, 1974	15.94	NOV 13, 1975	16.57	JUL 13, 1978	16.78		OCT 17, 1980	16.71	S
MAR 20	15.64	MAR 26, 1976	16.01	OCT 12	16.79		FEB 19, 1981		N
APR 30	15.70	NOV 05	16.82	APR 10, 1979	16.16	S	MAR 10	16.17	
SEP 27	16.17	APR 20, 1977	16.31	OCT 05	16.77	S			
APR 08, 1975	15.64	OCT 06	17.05	APR 24, 1980	15.90	S			

SITE NUMBER 340739116021701 LOCAL NUMBER 001N009E33J03S

ABOUT 0.1 MI WEST OF JOSHUA TREE NATIONAL MONUMENT HDQTRS. DRILLED UNUSED WATER-TABLE WELL IN ALLUVIUM. DIAM 2 IN, DEPTH 35 FT, SAND POINT 33-35 FT. ALTITUDE OF LSD 1972.02 FT. RECORDS AVAILABLE 1974 TO CURRENT YEAR.

HIGHEST WATER LEVEL 15.59 FEET BELOW LAND SURFACE DATUM APR 08, 1975.

LOWEST WATER LEVEL 17.43 FEET BELOW LAND SURFACE DATUM OCT 06, 1977.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
JAN 15, 1974	16.03		NOV 13, 1975	16.91		JUL 13, 1978	17.21		OCT 17, 1980	16.75	S
MAR 20	15.63		MAR 26, 1976	15.98		OCT 12	17.18		MAR 10, 1981	15.95	S
APR 30	15.70		NOV 05	17.12		APR 10, 1979	16.08		APR 09	16.06	S
SEP 27	16.72		APR 20, 1977	16.35		OCT 05	17.25	S			
APR 08, 1975	15.59		OCT 06	17.43		APR 24, 1980	15.76	S			

SITE NUMBER 340739116021702 LOCAL NUMBER 001N009E33J04S

ABOUT 0.01 MI WEST OF OASIS OF MARA. DRILLED UNUSED WATER-TABLE WELL IN ALLUVIUM. DIAM 2 IN, DEPTH 26.5 FT, SAND POINT 24.5-26.5 FT. ALTITUDE OF LSD 1972.02 FT. RECORDS AVAILABLE 1974 TO CURRENT YEAR.

HIGHEST WATER LEVEL 15.36 FEET BELOW LAND SURFACE DATUM APR 08, 1975.

LOWEST WATER LEVEL 17.48 FEET BELOW LAND SURFACE DATUM OCT 06, 1977.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
JAN 15, 1974	16.24		NOV 13, 1975	17.08		JUL 13, 1978	17.09		OCT 17, 1980	16.87	S
MAR 20	15.86		MAR 26, 1976	16.08		OCT 12	17.31		MAR 10, 1981	16.02	S
APR 30	15.84		NOV 05	17.29		APR 10, 1979	16.13	S	APR 09	16.21	S
SEP 27	16.86		APR 20, 1977	16.31		OCT 05	17.23	S			
APR 08, 1975	15.36		OCT 06	17.48		APR 24, 1980	15.81	S			

TABLE 4. - Water levels at wells--Continued

SITE NUMBER 340741116022003 LOCAL NUMBER 001N009E33J05S

IN OASIS OF MARA. DRILLED UNUSED WATER-TABLE WELL IN ALLUVIUM. DIAM 2 IN, DEPTH 8.63 FT, SAND POINT 6.63-8.63 FT. ALTITUDE OF LSD 1960.48 FT. RECORDS AVAILABLE 1974 TO CURRENT YEAR.

HIGHEST WATER LEVEL 5.05 FEET BELOW LAND SURFACE DATUM APR 08, 1975.

LOWEST WATER LEVEL WELL DRY SEP 27, 1974; NOV 05, 1976; OCT 06, 1977; JUL 13, 1978; OCT 12, 1978; OCT 05, 1979.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
APR 30, 1974	6.19		NOV 05, 1976	DRY		OCT 12, 1978	DRY		OCT 17, 1980	6.78	S
SEP 27	DRY		APR 20, 1977	6.36		APR 10, 1979	5.57	S	FEB 19, 1981		N
APR 08, 1975	5.05		OCT 06	DRY		OCT 05	DRY		MAR 10	5.25	S
MAR 26, 1976	5.57		JUL 13, 1978	DRY		APR 24, 1980	5.55	S			

SITE NUMBER 340740116023001 LOCAL NUMBER 001N009E33K01S

ABOUT .01 MI SOUTH OF OASIS OF MARA. DRILLED UNUSED WATER-TABLE WELL IN ALLUVIUM. DIAM 2 IN, DEPTH 29.35 FT, SAND POINT 27.35-29.35 FT. ALTITUDE OF LSD 1970.58 FT. RECORDS AVAILABLE 1973 TO CURRENT YEAR.

HIGHEST WATER LEVEL 20.33 FEET BELOW LAND SURFACE DATUM APR 24, 1980, MAR 10, 1981.

LOWEST WATER LEVEL 23.99 FEET BELOW LAND SURFACE DATUM OCT 12, 1978.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
JAN 15, 1974	21.37		NOV 13, 1975	22.49		MAY 13, 1978	21.12		APR 24, 1980	20.33	S
MAR 20	20.63		MAR 26, 1976	20.63		JUL 13	22.71		OCT 17	22.28	S
APR 30	20.44		NOV 05	22.66		OCT 12	23.99		FEB 19, 1981		N
SEP 27	23.20		APR 20, 1977	20.77		APR 10, 1979	20.72	S	MAR 10	20.33	S
APR 08, 1975	20.38		OCT 06	23.73		OCT 05	23.03	S			

SITE NUMBER 340739116023001 LOCAL NUMBER 001N009E33K02S

ABOUT .01 MI SOUTH OF OASIS OF MARA. DRILLED UNUSED WATER-TABLE WELL. DIAM 2 IN, DEPTH 37 FT, SAND POINT 35-37 FT. ALTITUDE OF LSD 1972.09 FT. RECORDS AVAILABLE 1973 TO CURRENT YEAR.

HIGHEST WATER LEVEL 20.60 FEET BELOW LAND SURFACE DATUM APR 20, 1977.

LOWEST WATER LEVEL 24.45 FEET BELOW LAND SURFACE DATUM OCT 06, 1977.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
JAN 15, 1974	22.40		JUL 24, 1975	22.99		APR 20, 1977	20.60		APR 24, 1980	21.45	S
APR 30	22.41		NOV 13	21.73		OCT 06	24.45		OCT 17	23.27	S
SEP 27	24.07		MAR 26, 1976	21.95		APR 10, 1979	21.81	S	FEB 19, 1981		N
APR 08, 1975	21.55		NOV 05	23.84		OCT 05	23.82	S	MAR 10	21.48	S

SITE NUMBER 340739116023002 LOCAL NUMBER 001N009E33K03S

ABOUT 0.3 MI WEST OF JOSHUA TREE NATIONAL MONUMENT HDQTRS. DRILLED UNUSED WATER-TABLE WELL IN ALLUVIUM. DIAM 2 IN, DEPTH 24.8 FT, SAND POINT 22.8-24.8 FT. ALTITUDE OF LSD 1972.09 FT. RECORDS AVAILABLE 1973 TO CURRENT YEAR.

HIGHEST WATER LEVEL 21.02 FEET BELOW LAND SURFACE DATUM DEC 04, 1973.

LOWEST WATER LEVEL 24.46 FEET BELOW LAND SURFACE DATUM OCT 06, 1977.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
DEC 04, 1973	21.02		SEP 27, 1974	24.18		OCT 06, 1977	24.46		FEB 19, 1981		N
JAN 15, 1974	22.40		APR 08, 1975	21.53		APR 10, 1979	22.92	S	MAR 10	22.50	S
17	22.41		NOV 13	21.43		OCT 05	23.08	S			
MAR 20	21.67		MAR 26, 1976	21.98		APR 24, 1980	22.35	S			
APR 30	21.61		APR 20, 1977	21.87		OCT 17	22.90	S			

TABLE 4. - Water levels at wells--Continued

SITE NUMBER 340808116012101 LOCAL NUMBER 001N009E34A01S

LOCATED 0.96 MI NORTH AND 0.24 MI WEST OF SOUTHEAST CORNER SEC 34. DIAM 6 IN. ALTITUDE OF LSD 1935 FT. WATER LEVELS FROM 1940.

HIGHEST WATER LEVEL 150.60 FEET BELOW LAND SURFACE DATUM JAN 16, 1974.

LOWEST WATER LEVEL 167.27 FEET BELOW LAND SURFACE DATUM APR 30, 1958.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
JUN 03, 1940	151.17	R	NOV 18, 1947	152.12	R	NOV 14, 1951	155.60	R	DEC 20, 1955	153.65	R
27	151.14	R	APR 07, 1948	150.98	R	APR 15, 1952	153.87	R	APR 25, 1956	151.50	R
AUG 01	151.16	R	NOV 15	151.15	R	MAY 07	152.54	S	JAN 17, 1957	151.78	R
OCT 11	151.16	R	APR 27, 1949	152.51	R	NOV 20	152.18	R	APR 24	154.24	R
NOV 04	151.14	R	AUG 12	151.69	R	MAY 25, 1953	153.68	R	APR 30, 1958	167.27	S
DEC 06	150.90	R	NOV 16	151.81	R	NOV 24	158.38	R	JAN 16, 1974	150.60	S
APR 10, 1946	151.32	R	APR 11, 1950	153.28	R	APR 21, 1954	156.70	R			
NOV 07	150.88	R	NOV 07	154.32	R	DEC 14	160.00	R			
APR 08, 1947	151.05	R	MAR 14, 1951	154.21	R	APR 20, 1955	156.90	R			

SITE NUMBER 340756116004601 LOCAL NUMBER 001N009E35F01S

LOCATED 0.76 MI NORTH AND 0.68 MI WEST OF SOUTHEAST CORNER SEC 35. DIAM 12 IN. DEPTH 253 FT. PERFORATED 154-176, AND 186-196 FT. ALTITUDE OF LSD 1971.0 FT. WATER LEVELS FROM 1939.

HIGHEST WATER LEVEL 113.40 FEET BELOW LAND SURFACE DATUM JAN 15, 1974.

LOWEST WATER LEVEL 127.93 FEET BELOW LAND SURFACE DATUM APR 08, 1947.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
DEC 06, 1939	115.31	R	NOV 18, 1947	124.31	R	MAY 25, 1953	136.80 P	R	JAN 17, 1957	116.98	R
JAN 16, 1940	121.80	R	NOV 15, 1948	123.17	R	NOV 24	122.90	R	APR 24	116.74	R
FEB 02	150.85 P	R	NOV 16, 1949	122.79	R	APR 21, 1954	131.40 P	R	APR 30, 1958	115.30	S
17	119.86	R	APR 11, 1950	120.83	R	DEC 14	118.50	R	JUL 24	114.75	S
APR 10, 1946	175.17 P	R	NOV 07	127.89 P	R	APR 20, 1955	117.85	R	JAN 15, 1974	113.40	S
NOV 06	120.60	R	APR 15, 1952	129.50 P	R	DEC 20	117.35	R			
APR 08, 1947	127.93	R	MAY 09	130.54 P	S	APR 04, 1956	117.00	R			

SITE NUMBER 340739116023003 LOCAL NUMBER 001N009E33K04S

ABOUT 0.3 MI WEST OF JOSHUA TREE NATIONAL MONUMENT HDQTRS. DRILLED UNUSED WATER-TABLE WELL IN ALLUVIUM. DIAM 2 IN, DEPTH 36.3 FT, SAND POINT 34.3-36.3 FT. ALTITUDE OF LSD 1973.13 FT. RECORDS AVAILABLE 1974 TO CURRENT YEAR.

HIGHEST WATER LEVEL 22.46 FEET BELOW LAND SURFACE DATUM APR 24, 1980.

LOWEST WATER LEVEL 25.59 FEET BELOW LAND SURFACE DATUM OCT 12, 1978.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
JAN 15, 1974	23.48		NOV 13, 1975	24.49		JUL 13, 1978	24.41		OCT 17, 1980	24.26	S
MAR 20	22.77		MAR 26, 1976	22.76		OCT 12	25.59		FEB 19, 1981		N
APR 30	22.59		NOV 05	24.62		APR 10, 1979	22.83	S	MAR 10	22.71	S
SEP 27	24.99		APR 20, 1977	22.88		OCT 05	24.78	S			
APR 08, 1975	22.50		OCT 06	23.61		APR 24, 1980	22.46	S			

SITE NUMBER 340739116023004 LOCAL NUMBER 001N009E33K05S

IN OASIS OF MARA. DRILLED UNUSED WATER-TABLE WELL IN ALLUVIUM. DIAM 2 IN, DEPTH 27.6 FT, SAND POINT 25.6-27.6 FT. ALTITUDE OF LSD 1973.13 FT. RECORDS AVAILABLE 1973 TO CURRENT YEAR.

HIGHEST WATER LEVEL 22.41 FEET BELOW LAND SURFACE DATUM APR 24, 1980.

LOWEST WATER LEVEL 25.58 FEET BELOW LAND SURFACE DATUM OCT 12, 1978.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
DEC 04, 1973	22.53		APR 08, 1975	22.48		OCT 06, 1977	25.43		APR 24, 1980	22.41	S
JAN 15, 1974	23.47		NOV 13	24.48		JUL 13, 1978	24.40		OCT 17	24.24	S
MAR 20	22.74		MAR 26, 1976	22.76		OCT 12	25.58		FEB 19, 1981		N
APR 30	22.55		NOV 05	24.63		APR 10, 1979	22.78	S	MAR 10	22.48	S
SEP 27	24.99		APR 20, 1977	22.87		OCT 05	24.78	S			

TABLE 4. - Water levels at wells--Continued

SITE NUMBER 340718116010301 LOCAL NUMBER 001N009E35N01S

LOCATED 0.01 MI NORTH AND 0.97 MI WEST OF SOUTHEAST CORNER SEC 35. DIAM 12 IN. DEPTH 244.2 FT. PERFORATED 147-247 FT. ALTITUDE OF LSD 2079.5 FT. WATER LEVELS FROM 1940.

HIGHEST WATER LEVEL 99.28 FEET BELOW LAND SURFACE DATUM FEB 02, 1940.

LOWEST WATER LEVEL 111.41 FEET BELOW LAND SURFACE DATUM MAR 25, 1981.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
JAN 16, 1940	99.59	R	JUN 01, 1941	99.65	R	NOV 17, 1949	102.97	R	APR 22, 1963	105.5	R
FEB 02	99.28	R	AUG 01	99.67	R	APR 11, 1950	102.25	R	JAN 21, 1964	106.2	R
17	99.58	R	OCT 01	99.70	R	NOV 07	102.24	R	JAN 24, 1965	106.6	R
APR 01	99.58	R	DEC 05	99.67	R	MAR 14, 1951	102.30	R	NOV 1966	107.5	R
MAY 03	99.58	R	FEB 16, 1942	99.68	R	NOV 14	102.47	R	FEB 1967	107.5	R
JUN 03	99.59	R	APR 20	99.67	R	APR 15, 1952	102.50	R	OCT 1968	108.1	R
27	99.60	R	AUG 01	99.70	R	MAY 09	102.44	S	NOV 1969	108.3	R
AUG 01	99.60	R	OCT 15	99.74	R	NOV 20	102.59	R	NOV 1970	108.7	R
SEP 06	99.64	R	JAN 29, 1946	99.98	R	APR 20, 1955	103.40	S	MAR 1971	109.3	R
OCT 11	99.65	R	APR 10	99.95	R	JAN 25, 1956	102.00	R	NOV 1972	109.5	R
NOV 04	99.66	R	NOV 07	100.09	R	FEB 05, 1957	108.00	R	APR 1973	109.8	R
DEC 06	99.67	R	APR 08, 1947	100.10	R	APR 20	103.9	R	JAN 15, 1974	110.70	S
JAN 07, 1941	99.65	R	NOV 17	101.99	R	APR 24, 1958	106.42	R	MAR 25, 1981	111.41	S
FEB 09	99.66	R	NOV 15, 1948	102.05	R	MAY 14, 1959	109.64 P	R			
MAR 04	99.66	R	JAN 03, 1949	102.95	R	MAY 14, 1961	106.5	R			
APR 08	99.65	R	APR 27	102.07	R	NOV 20, 1962	103.5	R			

SITE NUMBER 340715116003401 LOCAL NUMBER 001S009E02B01S

LOCATED 0.95 MI NORTH AND 0.51 MI WEST OF SOUTHEAST CORNER SEC 2. DEPTH 108 FT. ALTITUDE OF LSD 2060 FT. WATER LEVELS FROM 1946.

HIGHEST WATER LEVEL 92.95 FEET BELOW LAND SURFACE DATUM APR 16, 1946.

LOWEST WATER LEVEL 102.11 FEET BELOW LAND SURFACE DATUM APR 21, 1954.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
APR 16, 1946	92.95	R	NOV 17, 1947	92.95	R	APR 27, 1949	93.18	R	NOV 20, 1952	93.09	R
NOV 07	92.95	R	APR 08, 1948	94.42	R	NOV 17	93.21	R	APR 21, 1954	102.11	R
APR 08, 1947	92.98	R	NOV 15	93.14	R	APR 11, 1950	93.81	R			

SITE NUMBER 340714116020701 LOCAL NUMBER 001S009E03D01S

LOCATED 0.95 MI NORTH AND 0.98 MI WEST OF SOUTHEAST CORNER SEC 3. DIAM 12 IN. DEPTH 300 FT.
ALTITUDE OF LSD 2076.7 FT. WATER LEVELS FROM 1939.

HIGHEST WATER LEVEL 86.48 FEET BELOW LAND SURFACE DATUM DEC 06, 1939.

LOWEST WATER LEVEL 114.18 FEET BELOW LAND SURFACE DATUM MAR 25, 1981.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
DEC 06, 1939	86.48	R	APR 08, 1941	86.61	R	APR 11, 1950	92.86	R	MAY 14, 1959	96.75	R
JAN 16, 1940	86.52	R	JUN 01	86.63	R	NOV 07	94.46	R	JUL 11, 1961	103.25	R
FEB 02	86.53	R	AUG 01	86.67	R	MAR 14, 1951	89.30	R	NOV 20, 1962	97.25	R
17	86.52	R	OCT 01	86.69	R	21	93.0	R	APR 22, 1963	101.25	R
APR 01	86.55	R	DEC 15	86.65	R	NOV 14	93.07	R	JAN 22, 1964	98.65	R
MAY 03	86.54	R	FEB 16, 1942	86.68	R	NOV 20, 1952	90.00	R	JAN 24, 1965	99.35	R
JUN 03	86.57	R	AUG 01	86.73	R	MAY 26, 1953	91.70	R	NOV 1966	101.25	R
27	86.61	R	OCT 15	86.77	R	NOV 24	93.50 P	R	FEB 1967	102.25	R
AUG 01	86.59	R	APR 16, 1946	88.70	R	APR 21, 1954	98.80	R	OCT 1968	102.25	R
SEP 06	86.64	R	NOV 07	87.78	R	DEC 14	94.70	R	NOV 1969	103.95	R
OCT 11	86.63	R	APR 11, 1947	87.81	R	DEC 20, 1955	92.85	R	NOV 1970	104.35	R
NOV 04	86.63	R	NOV 17	88.45	R	JAN 25, 1956	99.0	R	MAR 1971	104.35	R
DEC 06	86.65	R	APR 06, 1948	88.98	R	FEB 05, 1957	102.00 P	R	NOV 1972	104.45	R
JAN 07, 1941	86.62	R	NOV 15	88.67	R	APR 24	92.45	R	JAN 17, 1974	103.70	S
FEB 09	86.61	R	APR 27, 1949	88.76	R	DEC 17	92.65	R	MAR 25, 1981	114.18	S
MAR 04	86.61	R	NOV 17	89.12	R	APR 24, 1958	98.19 P	R			

SITE NUMBER 340714116031601 LOCAL NUMBER 001S009E05A01S

LOCATED 0.93 MI NORTH AND 0.04 MI WEST OF SOUTHEAST CORNER SEC 5. DIAM 60 IN TO 10 IN.
REPORTED DEPTH 120 FT. ALTITUDE OF LSD 2063.4 FT. WATER LEVELS FROM 1940.

HIGHEST WATER LEVEL 74.06 FEET BELOW LAND SURFACE DATUM FEB 02, 1940.

LOWEST WATER LEVEL 81.70 FEET BELOW LAND SURFACE DATUM NOV 24, 1953.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
FEB 02, 1940	74.06	R	APR 08, 1948	75.53	R	NOV 08, 1950	75.27	R	MAY 26, 1953	77.10	R
APR 10, 1946	75.04	R	NOV 15	75.95	R	MAR 14, 1951	79.55	R	NOV 24	81.70	R
NOV 07	75.90	R	APR 27, 1949	76.00	R	APR 15, 1952	77.32	R	JAN 17, 1974	0	
APR 08, 1947	75.42	R	NOV 17	76.40	R	MAY 09	78.93	S	MAR 25, 1981	0	
NOV 18	75.52	R	APR 12, 1950	74.80	R	NOV 20	77.20	R			

[Results are shown in milligrams per liter except for iron and boron which are shown in
conductance in micromhos per centimeter at

Reporting agency: DPH, California Department of Public Health; DWR, California Department of Water Resources; SBC, San Bernardino County Flood Control District; TPC, Twentynine Palms Corporation; TPWD, Twentynine Palms Water District; USGS, U.S. Geological Survey; USN, U.S. Navy.
Temperature: Values in parentheses are the rounded equivalents in degrees Celsius or Fahrenheit of the reported values.

State well No.	Date of sample	Reporting agency	Specific conductance	pH	Temperature, water (°F/°C)	Hardness (as $CaCO_3$)	Calcium, dissolved (Ca)	Magnesium dissolved (Mg)	Sodium, dissolved (Na)	Percent sodium
1N/9E-26E1	03-11-81	USGS	765	7.3	(66.2)/19.0	36	9.9	2.8	150	89
1N/9E-27C1	12-14-54	SBC	401	8.2	--	51	13	5	75	75.1
1N/9E-27K1	07- -37	DPH	--	8.0	--	95	18	12	--	42.4
1N/9E-30K1	06- -37	DPH	--	8.4	--	60	8	6	--	(71)
1N/9E-31A1	09-10-53	USGS	248	8.0	(84.2)/29.0	41	13	2.1	37	65
	02-26-54	DWR	240	8.1	72/(22.2)	36	11	2	38	69
	02-25-55	DWR	236	7.7	--	38	12	2	38	68
	05-07-56	DWR	237	8.0	--	35	12	1	38	70
	12-26-56	DWR	225	7.9	79/(26.1)	37	--	--	--	--
	06-19-57	DWR	241	7.2	--	40	11	3.2	36	65
	12-30-57	DWR	243	7.9	80/(26.7)	38	--	--	--	--
	07-10-58	DWR	234	7.9	84/(28.9)	45	--	--	--	--
	12-03-58	DWR	239	8.1	--	37	11	2.3	38	68
	05-28-59	DWR	252	8.1	84/(28.9)	39	--	--	--	--
	12-24-59	DWR	258	7.9	--	45	--	--	--	--
	06-02-60	DWR	239	8.1	82/(27.8)	38	--	--	--	--
	12-29-60	DWR	250	7.9	--	45	--	--	--	--
	04-22-61	DWR	230	7.9	--	36	12	1	37	68
	11-10-64	DWR	220	7.7	77/(25.0)	36	12	2	38	68
	05-14-69	DWR	225	8.2	83/(28.3)	43	12	3	35	--
	05-08-75	TPWD	245	8.2	70/(21.1)	38	12	2	37	67
	03- -78	TPWD	290	8.54	--	25	7	1.4	39	77
1N/9E-31A2	02-26-54	DWR	281	8.1	--	42	10	4	44	69
	02-25-55	DWR	295	8.0	--	43	14	2	45	69
	12-26-56	DWR	285	8.1	--	43	13	3	45	69
	06-19-57	DWR	272	7.7	--	38	--	--	--	--
	07-10-58	DWR	238	7.6	--	45	14	2	41	66
	12-03-58	DWR	289	7.9	--	36	--	--	--	--
	05-28-59	DWR	233	8.05	--	31	--	--	--	--
	12-24-59	DWR	303	--	--	49	--	--	--	--
	06-08-60	DWR	248	8.05	--	45	11	4.0	35	62
	12-28-60	DWR	312	8.1	--	53	19	1	48	66
	08-15-61	DWR	321	8.1	--	58	20	2	50	65
	05-30-62	DWR	375	8.1	--	76	24	3.9	50	59
	05-28-63	DWR	388	8.2	--	78	--	--	--	--
	05-16-67	DWR	254	8.1	--	43	12	3	37	65
	05-14-69	DWR	228	8.2	--	46	15	2	32	--
	06-11-71	DWR	242	8.1	--	20	5.9	1.3	48	83
	02-24-72	DWR	268	8.0	--	38	8.8	5.6	38	64
	06-28-72	DWR	237	8.0	--	27	7.1	2.4	39	74

micrograms per liter; water temperature in degrees Fahrenheit and degrees Celsius; specific
25 degrees Celsius; percent sodium; and pH units]

Constituent, percent sodium, and hardness: Values in parentheses are calculated.
U.S.G.S. analyses were analysed by the U.S.G.S. Central Laboratory and the reported values reflect the current U.S.G.S. accuracy standards.
Values in analyses reported by other agencies are as they appear on laboratory reporting sheets except that values originally reported in parts per million are reported in milligrams per liter except for iron and boron which are reported in micrograms per liter.

Sodium plus potassium, dissolved (as Na)	Potassium, dissolved (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Alkalinity (as $CaCO_3$)	Sulfate, dissolved (SO_4)	Chloride, dissolved (Cl)	Fluoride, dissolved (Fl)	Silica, dissolved (SiO_2)	Solids, sum of constituents, dissolved	Nitrogen, nitrate, total (as NO_3)	Boron, dissolved (B)	Iron, dissolved (Fe)
--	3.9	--	--	180	120	27	12	22	464	--	600	20
--	2.4	183	2	154	31	11	7.0	--	249	0	140	--
32	--	156	0	--	15	15	6.0	--	--	--	--	0
51	--	44	14	--	65	30	12	--	--	--	--	200
--	1.6	112	--	--	13	10	1.6	--	133	--	--	--
--	1.2	115	0	--	10	9	2.0	--	154	8.4	140	--
--	1.1	110	0	--	10	9	2.0	--	120	8.9	180	--
--	1.3	107	0	--	8	11	1.6	--	150	7.8	50	--
--	--	109	0	--	--	11	--	--	--	--	--	--
--	1.0	102	0	--	12	13	1.6	30	175	6.4	90	--
--	--	105	0	--	--	13	--	--	--	--	--	--
--	--	104	0	--	--	11	--	--	--	--	--	--
--	1.1	107	0	--	8	10	1.4	25	165	6.4	0	--
--	--	104	0	--	--	13	--	--	--	--	--	--
--	--	112	0	--	--	10	--	--	--	--	--	--
--	--	104	0	--	--	11	--	--	--	--	--	--
--	--	110	0	--	--	11	--	--	--	--	--	--
--	1.4	95	0	--	12	13	1.5	19	--	8.5	140	--
--	1	116	0	--	6	11	1.2	--	178	5	70	--
--	1	103	0	84	8	10	1.6	--	136	8.3	70	--
--	2	104	0	--	10	11	1.5	--	145	7	700	180
--	.6	98	NIL	80	10.5	13	.42	--	135	3	--	730
--	1.4	107	0	--	19	13	2.8	--	178	11	40	--
--	1.1	105	0	--	21	15	3.0	--	195	12	80	--
--	1.6	110	0	--	27	14	2.5	20	200	9	100	--
--	--	96	0	--	--	18	--	--	--	--	--	--
--	1.0	104	0	--	20	11	2.1	24	170	13	410	--
--	--	108	0	--	--	15	4	--	--	--	--	--
--	--	97	0	--	--	12	--	--	--	--	--	--
--	--	115	0	--	--	14	--	--	--	--	--	--
--	.8	108	0	--	17	11	1.5	17	371	1.2	0	--
--	1.6	110	0	--	26	16	2.4	19	198	17	50	--
--	1.2	110	0	--	25	21	2.1	27	185	24	40	--
--	1.2	110	0	--	46	20	2.4	25	270	19	80	--
--	--	104	--	--	--	21	--	--	--	--	--	--
--	1	107	0	88	7	11	1.8	--	185	10	100	--
--	1	105	0	86	9	10	1.4	--	145	7.5	70	--
--	1.3	113	0	93	8.4	11	1.42	--	101	.8	90	--
--	1.5	115	0	95	10	12	1.60	--	189	9.2	60	--
--	1.5	108	0	89	12	7.0	1.95	--	104	4.2	90	--

TABLE 5.- Analyses of water

State well No.	Date of sample	Reporting agency	Specific conductance	pH	Temperature, water (°F/°C)	Hardness (as $CaCO_3$)	Calcium, dissolved (Ca)	Magnesium dissolved (Mg)	Sodium, dissolved (Na)	Percent sodium
lN/9E-31A2	11-09-72	DWR	242	8.1	--	22	6.8	1.3	40	78
	04-18-73	DWR	342	7.8	--	42	12	3.1	40	66
lN/9E-31C1	02-26-54	DWR	262	7.9	73/(22.8)	43	14	2	38	65
	02-25-55	DWR	239	7.7	--	46	15	2	38	64
	05-07-56	DWR	263	7.9	--	44	14	2	38	65
	12-26-56	DWR	245	7.4	72/(22.2)	45	--	--	--	--
	06-19-57	DWR	245	8.05	--	40	11	3	37	66
	12-17-57	DWR	257	7.4	80/(26.7)	40	16	0	39	67
	07-10-58	DWR	212	7.7	76/(24.4)	55	16	4	35	58
	12-03-58	DWR	264	7.9	--	--	--	--	--	--
	05-28-59	DWR	262	8.3	--	48	--	--	--	--
	12-24-59	DWR	254	--	--	45	--	--	--	--
	06-02-60	DWR	262	8.3	--	50	18	1	37	61
	12-29-60	DWR	250	8.0	--	48	--	--	--	--
	08-15-61	DWR	253	8.0	--	50	--	--	--	--
	11-10-64	DWR	255	7.6	77/(25.0)	44	14	2	42	67
	05-16-67	DWR	252	8.3	--	44	16	1	38	64
	05-08-75	TPWD	265	8.0	70/(21.1)	48	16	2	38	62
	03- -78	TPWD	290	8.55	--	30	7	2.4	38	74
lN/9E-32F1	02- -37	DPH	--	7.5	--	53	18	2	--	63.3
lN/9E-32H2	06- -37	DPH	--	7.9	--	58	13	6	--	66.5
lN/9E-32R1	05- -37	DPH	--	7.5	--	78	26	3	--	39.2
lN/9E-33F1	06- -37	DPH	--	8.0	--	68	22	3	--	48.3
lN/9E-33F2	08-11-39	TPC	--	--	--	--	1.4	1.5	31.9	--
	04-15-52	DWR	180	8.3	--	(19)	6	1	36	(79)
lN/9E-33F3	06- -37	DPH	--	--	--	44	14	2.4	--	62
lN/9E-33F4	01-16-74	USGS	300	--	(73.4)/23.0	--	--	--	--	--
	03-11-81	USGS	225	6.8	(72.5)/22.5	29	9	1.6	33	70
lN/9E-33F5	01-16-74	USGS	410	--	(73.4)/23.0	--	--	--	--	--
	03-11-81	USGS	1,320	7.1	(71.6)/22.0	--	--	--	--	--
lN/9E-33G1	04-30-74	USGS	784	--	--	--	--	--	--	--
lN/9E-33H1	01-15-74	USGS	520		(72.5)/22.5	--	--	--	--	--
	04-30-74	USGS	594	--	--	--	--	--	--	--
	03-10-81	USGS	700	7.5	(69.8)/21.0	170	50	12	50	37
lN/9E-33H2	04-30-74	USGS	673	--	(76.1)/24.5	--	--	--	--	--
	03-10-81	USGS	480	7.3	(71.6)/22.0	--	--	--	--	--
lN/9E-33J1	12-16-17	USGS	--	--	--	65	20	3.6	--	58
	06- -37	DPH	--	7.3	--	93	26	6	--	43
lN/9E-33J2	04-30-74	USGS	459	--	--	--	--	--	--	--
	03-10-81	USGS	275	9.2	(73.4)/23.0	21	3.4	3.0	60	83
lN/9E-33J3	04-30-74	USGS	367	--	--	--	--	--	--	--
	03-10-81	USGS	485	6.9	(73.4)/23.0	--	--	--	--	--
lN/9E-33J4	04-30-74	USGS	403	--	--	--	--	--	--	--
	03-10-81	USGS	725	7.2	(73.4)/23.0	--	--	--	--	--
lN/9E-33J5	04-30-74	USGS	1,354	--	(67.1)/19.5	--	--	--	--	--

from wells--Continued

Sodium plus potassium, dissolved (as Na)	Potassium, dissolved (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Alkalinity (as $CaCO_3$)	Sulfate, dissolved (SO_4)	Chloride, dissolved (Cl)	Fluoride, dissolved (Fl)	Silica, dissolved (SiO_2)	Solids, sum of constituents, dissolved	Nitrogen, nitrate, total (as NO_3)	Boron, dissolved (B)	Iron, dissolved (Fe)
--	1.4	97	0	--	10	13	1.1	--	161	0.7	110	--
--	1.5	117	0	--	9.4	11	1.2	--	165	11	140	--
--	1.2	117	0	--	11	7	2.0	--	162	11.9	40	--
--	1.1	115	0	--	12	10	2.0	--	150	8.9	40	--
--	1.2	113	0	--	9	11	1.8	--	146	8.9	60	--
--	--	119	0	--	--	11	--	--	--	--	--	--
--	1.2	107	0	--	9	12	2.00	22	170	8.4	50	--
--	1.6	107	0	--	12	11	1.3	26	175	3.7	360	--
--	1.0	116	0	--	12	11	1.3	23	161	15	120	--
--	--	111	0	--	--	12	2.5	--	--	--	--	--
--	--	95	8.7	--	--	13	--	--	--	--	--	--
--	--	132	0	--	--	9	--	--	--	--	--	--
--	1	114	1	--	0	13	1.92	17	190	10	120	--
--	--	113	0	--	--	12	--	--	--	--	--	--
--	--	113	0	--	--	11	--	--	--	--	--	--
--	1	117	0	--	9	14	1.2	--	164	8	70	--
--	1	102	5	92	9	10	1.8	--	195	10	80	--
--	2	110	0	--	10	12	1.8	--	150	12	20	160
--	.6	98	NIL	80	11	11	1.6	--	135	8	--	2,790
42	--	142	0	--	13	10	1.5	--	--	--	--	200
52	--	117	--	--	31	33	3.0	--	--	--	--	0
23	--	107	0	--	15	17	1.1	--	--	--	--	200
29	--	112	0	--	10	18	1.5	--	--	--	--	100
--	--	--	--	--	2.9	14.0	.01	2.0	149	--	--	--
--	1	98	2	--	6	12	1.6	--	148	7.2	60	--
33	--	98	0	--	15	15	1.5	--	--	--	--	0
--	--	--	--	--	--	--	--	--	--	--	--	--
--	1.5	--	--	78	6.7	8.9	1.5	2.7	112	--	60	20
--	--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--	--
--	6.7	--	--	280	12	12	5.0	37	354	--	210	160
--	--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--	--
42	--	156	--	128	14	8.4	--	29	197	1.7	--	70
31	--	146	0	--	8	20	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--	--
--	4.5	--	--	130	1.4	3.9	2.3	3.9	163		130	120
--	--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--	--

State well No.	Date of sample	Reporting agency	Specific conductance	pH	Temperature, water (°F/°C)	Hardness (as $CaCO_3$)	Calcium, dissolved (Ca)	Magnesium dissolved (Mg)	Sodium, dissolved (Na)	Percent sodium
1N/9E-33J5	03-10-81	USGS	1,220	7.1	(64.4)/18.0	--	--	--	--	--
1N/9E-33K1	04-30-74	USGS	236	--	--	--	--	--	--	--
	03-10-81	USGS	235	8.2	(73.4)/23.0	--	--	--	--	--
1N/9E-33K2	12-04-73	USGS	407	--	(72.5)/22.5	--	--	--	--	--
	03-10-81	USGS	280	7.2	(73.4)/23.0	--	--	--	--	--
1N/9E-33K3	12-04-73	USGS	1,093	--	(70.7)/21.5	--	--	--	--	--
	03-10-81	USGS	305	6.6	(72.5)/22.5	--	--	--	--	--
1N/9E-33K4	04-30-74	USGS	283	--	--	--	--	--	--	--
	03-10-81	USGS	318	6.9	(73.4)/23.0	56	17	3.3	37	56
1N/9E-33K5	12-04-73	USGS	608		(68.0)/20.0	--	--	--	--	--
	03-10-81	USGS	495	7.3	(72.5)/22.5	--	--	--	--	--
1N/9E-34A1	02-26-54	DWR	347	8.0	--	(62)	15	6	50	(63)
	02-25-55	DWR	321	8.2	--	--	17	5	51	--
	12-26-56	DWR	310	7.8	--	(56)	16	4	55	(66)
	06-19-57	DWR	340	8.05	--	61	--	--	--	--
	12-30-57	DWR	341	7.8	56/(13.3)	88	--	--	--	--
	07-10-58	DWR	339	7.7	78/(25.6)	70	18	6	48	59
	12-03-58	DWR	350	7.7	--	62	--	--	--	--
	05-28-59	DWR	341	8.1	--	63	--	--	--	--
	12-24-59	DWR	334	8.1	--	65	--	--	--	--
	07-20-60	DWR	330	8.3	--	62	--	--	--	--
	12-28-60	DWR	340	8.1	--	63	--	--	--	--
1N/9E-35F1	06- -37	DPH	--	8.6	--	103	13	17	--	(80)
1N/9E-35N1	05-07-56	DWR	432	7.7	--	55	19	2	65	70
	12-26-56	DWR	400	8.0	76/(24.4)	50	15	3	71	74
	06-19-57	DWR	390	8.15	--	46	--	--	--	--
	12-30-57	DWR	398	8.3	77/(25.0)	51	--	--	--	--
	07-10-58	DWR	570	8.0	79/(26.1)	65	18	5	61	66
	12-03-58	DWR	425	7.5	78/(25.6)	47	14	2	70	74
	05-28-59	DWR	399	7.65	78/(25.6)	51	--	--	--	--
	12-24-59	DWR	400	8.1	--	53	--	--	--	--
	06-02-60	DWR	412	8.0	--	55.2	--	--	--	--
	12-28-60	DWR	388	7.8	--	35	--	--	--	--
	08-15-61	DWR	462	8.1	--	65	20	4	75	70
	11-10-64	DWR	400	7.5	77/(25.0)	58	18	4	68	70
1N/9E-35N1	05-16-67	DWR	541	8.2	--	72	22	4	85	71
	05-15-69	DWR	406	8.1	--	43	14	2	71	--
	05-08-75	TPWD	430	8.3	68/(20.0)	46	14	2	69	75
	03- -78	TPWD	380	8.19	--	35	10	2.4	60	76
1S/9E-3D1	05- -37	DPH	--	7.5	--	61	16	5	--	56
	04- -41	SBC	--	8.2	78.5/(25.8)	(45)	14	2.5	--	(67)
	02- -52	USN	--	8.1	--	42	13	2	--	(69)
	04-15-52	DWR	246	8.0	60/(15.6)	(34)	12	1	48	(76)
	11-24-53	SBC	286	8.2	--	43	9.5	4.6	48	(70)
	05-07-56	DWR	277	7.9	--	(36)	13	1	45	(71)

Sodium plus potassium, dissolved (as Na)	Potassium, dissolved (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Alkalinity (as $CaCO_3$)	Sulfate, dissolved (SO_4)	Chloride, dissolved (Cl)	Fluoride, dissolved (Fl)	Silica, dissolved (SiO_2)	Solids, sum of constituents, dissolved	Nitrogen, nitrate, total (as NO_3)	Boron, dissolved (B)	Iron, dissolved (Fe)
--	--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--	--
--	6.6	--	--	110	4.2	11	3.4	14	164	--	100	90
--	--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--	--
--	2.2	159	0	--	19	7	7.0	--	176	4.5	140	--
--	2.5	139	7	--	18	9	6.4	--	155	5.0	140	--
--	2.7	156	0	--	21	18	.7	25	232	3	150	--
--	--	150	0	--	--	17	--	--	--	--	--	--
--	--	148	0	--	--	13	--	--	--	--	--	--
--	2.0	153	0	--	19	11	5.1	27	226	5.9	120	--
--	--	154	0	--	--	13	6.0	--	--	--	--	--
--	--	147	0	--	--	13	--	--	--	--	--	--
--	--	153	0	--	--	11	--	--	--	--	--	--
--	--	149	2.4	--	--	10	--	--	--	--	--	--
--	--	153	0	--	--	11	--	--	--	--	--	--
194	--	398	19	--	115	34	20	--	--	--	--	200
--	3.2	122	0	--	53	18	5.3	--	259	1.5	240	--
--	2.7	122	0	--	72	22	2.0	17	264	6.5	250	--
--	--	114	0	--	--	22	--	--	--	--	--	--
--	--	98	10	--	--	19	--	--	--	--	--	--
--	2.8	113	0	--	59	18	5.7	18	238	12	230	--
--	2.8	117	0	--	49	15	5.0	16	288	7	200	--
--	--	111	0	--	--	18	--	--	--	--	--	--
--	--	113	0	--	--	18	--	--	--	--	--	--
--	--	113	0	--	--	20	--	--	--	--	--	--
--	--	101	0	--	--	21	--	--	--	--	--	--
--	3.1	113	0	--	79	27	3.2	21	269	23	140	--
--	3	117	0	--	72	21	1.4	--	284	9	270	--
--	3	115	0	94	90	30	5.0	--	360	22	350	--
--	4	105	0	86	68	22	5.6	--	232	.7	310	--
--	4	110	0	--	80	20	5.2	--	260	7	400	0.00
--	1.4	98	NIL	80	48	20	3.3	--	198	1	--	600
36	--	127	--	--	12	15	3.0	--	--	--	--	100
42	--	129	--	--	13	11	3.2	--	--	4	--	--
42	--	122	0	--	14	8	2.5	18	145	--	30	100
--	2	122	0	--	6	16	2.8	--	179	10	60	--
--	2	125	0	--	19	11	3.2	--	155	8.3	90	--
--	2.2	125	0	--	15	11	3.0	--	162	7.4	60	--

TABLE 5.- Analyses of water

State well No.	Date of sample	Reporting agency	Specific conductance	pH	Temperature, water (°F/°C)	Hardness (as $CaCO_3$)	Calcium, dissolved (Ca)	Magnesium dissolved (Mg)	Sodium, dissolved (Na)	Percent sodium
1S/9E-3D1	12-26-56	DWR	285	8.0	75/(23.9)	--	13	2	45	--
	06-19-57	DWR	410	8.2	--	--	14	4	65	(72)
	12-30-57	DWR	274	8.3	69/(20.6)	43	--	--	--	--
	07-10-58	DWR	291	8.0	80/(26.7)	58	19	2	65	70
	12-03-58	DWR	406	7.8	--	48	16	2	69	74
	05-28-59	DWR	235	8.1	--	46	15	2	41	64
	12-24-59	DWR	377	7.8	--	47	--	--	--	--
	06-28-60	DWR	239	7.9	81/(27.2)	41	--	--	--	--
	05-30-62	DWR	246	8.2	--	49	15	2.9	37	62
	05-08-75	TPWD	310	8.2	70/(21.1)	40	14	1	47	71
	03- -78	TPWD	360	8.54	--	30	7	2.6	52	77
1S/9E-5A1	07- -37	DPH	--	7.3	--	78	26	3	--	32

from wells--Continued

Sodium plus potassium, dissolved (as Na)	Potassium, dissolved (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Alkalinity (as $CaCO_3$)	Sulfate, dissolved (SO_4)	Chloride, dissolved (Cl)	Fluoride, dissolved (Fl)	Silica, dissolved (SiO_2)	Solids, sum of constituents, dissolved	Nitrogen, nitrate, total (as NO_3)	Boron, dissolved (B)	Iron, dissolved (Fe)
--	2.3	122	0	--	15	14	2.5	17	160	6.3	50	--
--	3.1	115	0	--	5.4	25	3.0	20	230	7	100	--
--	--	88	10	--	--	15	--	--	--	--	--	--
--	1.3	119	0	--	18	53	2.3	17	163	11	80	--
--	2.8	117	0	--	47	18	6.0	16	281	7	200	--
--	2.3	118	0	--	10	15	3.05	19	188	7	340	--
--	--	124	0	--	--	17	--	--	--	--	--	--
--	--	115	0	--	--	10	--	--	--	--	--	--
--	1.3	112	0	--	13	10	1.6	22	194	8.8	50	--
--	2	116	0	--	26	12	2.4	--	190	9	400	120
--	1.4	117	NIL	96	34	13	3.4	--	180	<1	--	30
17	--	98	0	--	13	14	1.1	--	--	--	--	600

TABLE 6. - Selected trace constituent analyses[1] of water from wells

[Results are shown in milligrams per liter. <, less than]

State well No.	Date[2]	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
1N/9E-31A1	3-14-78	<0.003	<0.03	<0.005	<0.003	<0.005	<0.001	<0.01	<0.005
1N/9E-31C1	3-14-78	<.003	<.03	<.005	<.003	<.005	<.001	<.01	.085
1N/9E-35N1	3-14-78	<.003	<.03	<.005	<.003	<.005	<.001	<.01	<.005
1S/9E-3D1	3-14-78	<.003	<.03	<.005	<.003	<.005	<.001	<.001	<.005

[1]Analyzed by Clinical Laboratory of San Bernardino, Inc.
[2]Date analysis was started.