WATER RESOURCES REPORT NUMBER NINE

ARIZONA STATE LAND DEPARTMENT

OBED M. LASSEN, COMMISSIONER

HYDROLOGIC DATA AND DRILLERS' LOGS, PAPAGO INDIAN RESERVATION, ARIZONA

By

L. A. Heindl and O. J. Cosner

with a section on chemical quality of the water

By

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United States
Department of the Interior
Geological Survey

Prepared in cooperation with the
Bureau of Indian Affairs

Tucson, Arizona
July 1961

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Introduction

The tables in this report summarize the basic well data, drillers' logs, and chemical analyses of well water collected by the Geological Survey on the Papago Indian Reservation during an investigation of the geology and ground-water resources of the reservation. The investigation was made at the request of the Bureau of Indian Affairs as part of the general Papago rehabilitation program.

The tables were compiled to provide a ready reference to information about individual wells and specific locations not included in the general report on the ground-water conditions on the Papago Indian Reservation. These tables contain much of the basic data used in the preparation of the general report which will be issued at a later date as a Geological Survey water-supply paper. Information about other wells and those drilled after the completion of this study is available in the open files of the Geological Survey Ground Water Branch offices in Tucson and Phoenix, Ariz. The tables are issued separately because their bulk would make the general report awkward to handle and needlessly expensive to issue. Basic data from the smaller San Xavier and Gila Bend Indian Reservations (fig. 1), the other two of the three Papago reservations, are few and will be included with the general reports on those areas.

Location and Extent of Area

The Papago Indian Reservation is largely in Pima County, Ariz., with small areas in Maricopa and Pinal Counties (fig. 1). It contains about 4,300 square miles and includes most of the region

between Tucson and Ajo and south of Casa Grande to the international boundary with Mexico.

Sources of Information

Most of the information in these tables was collected and compiled by the Geological Survey between August 1954 and June 1958. Previously collected data were obtained from the files of the Bureau of Indian Affairs and the Geological Survey. Some additional data were obtained also from the U.S. Public Health Service.

Earlier published and unpublished compilations and reports, listed below in chronological order, also provided much pertinent information.

1915. Clotts, H. V., Papago nomadic survey: U.S. Indian Service unpublished folio (blueprinted), 23 maps, scale 1:48,000.

Preliminary topographic survey of the southern and western parts of the Papago Indian Reservation, including location and depths of wells and depths to water. Much of the information regarding the old wells on the reservation was obtained from these maps.

1925. Bryan, Kirk, The Papago country, Arizona, a geographic, geologic, and hydrologic reconnaissance with a guide to desert watering places: U.S. Geol. Survey Water-Supply Paper 499, 436 p.

Includes discussion and description of surface- and ground-water conditions, maps showing locations of wells, and records of wells, chemical analyses, and drillers' logs through 1918.

1934. Tenney, J. B., Economic geological reconnaissance of Casa Grande mining district, Pinal County, Arizona: Casa Grande Chamber of Commerce, 24 p.

Contains miscellaneous information regarding ground water in mining camps in the northern part of the Papago Indian Reservation.

1944. Hadley, J. B., Copper and zinc deposits in the Reward area, Casa Grande mining district, Pinal County, Arizona: U.S. Geol. Survey open-file report, 7 maps and brief text.

describing the significance of the chemical constituents listed in the table of water analyses.

The base map was compiled by Mrs. Ruth S. Allison.

Acknowledgments

The collection of the data was facilitated by the generous cooperation of many people working with the Bureau of Indian Affairs, particularly Messrs. M. B. Nolan and B. J. Loucks, successive chiefs of the Land Operations Branch, Papago Indian Agency, and with the U.S. Public Health Service, particularly Messrs. A. J. Moore, E. L. Dudley, and George Esquivel. The cooperation of well drillers in the collection of well cuttings and drillers' logs was of considerable value and we are grateful for the help given us by Messrs. C. J. Henderson, H. A. Pixler, A. V. Koenik, Carl Pistor, the late L. G. McCray, and the many drillers and drillers' helpers in their employ.

The protractions of unsurveyed township lines on the reservation were made in consultation with Mr. E. H. Kimmel, cadastral engineer with the U.S. Bureau of Land Management at Phoenix, and Mr. A. G. Kaetz, Arizona State Land Department.

Table 1.--Records of Wells

Accuracy of locations on map shown in figure 2

The general absence of maps and land surveys precludes pinpoint location of wells over much of the Papago Indian Reservation. Most of the locations shown on figure 2 (in pocket) are believed to be accurate to the nearest 10 acres. Figure 2 is a preliminary map. The surveyed and protracted township lines are reduced from the original base map with a scale of 1:95, 040 and are accurate to within the limits of the map's scale and the nondimensionally stable materials used in its preparation. The bedrock outlines are generalized from a preliminary geologic reconnaissance and are subject to revision.

Topography and ground water

The Papago Indian Reservation is in the Basin and Range physiographic province and is composed of small mountain ranges and

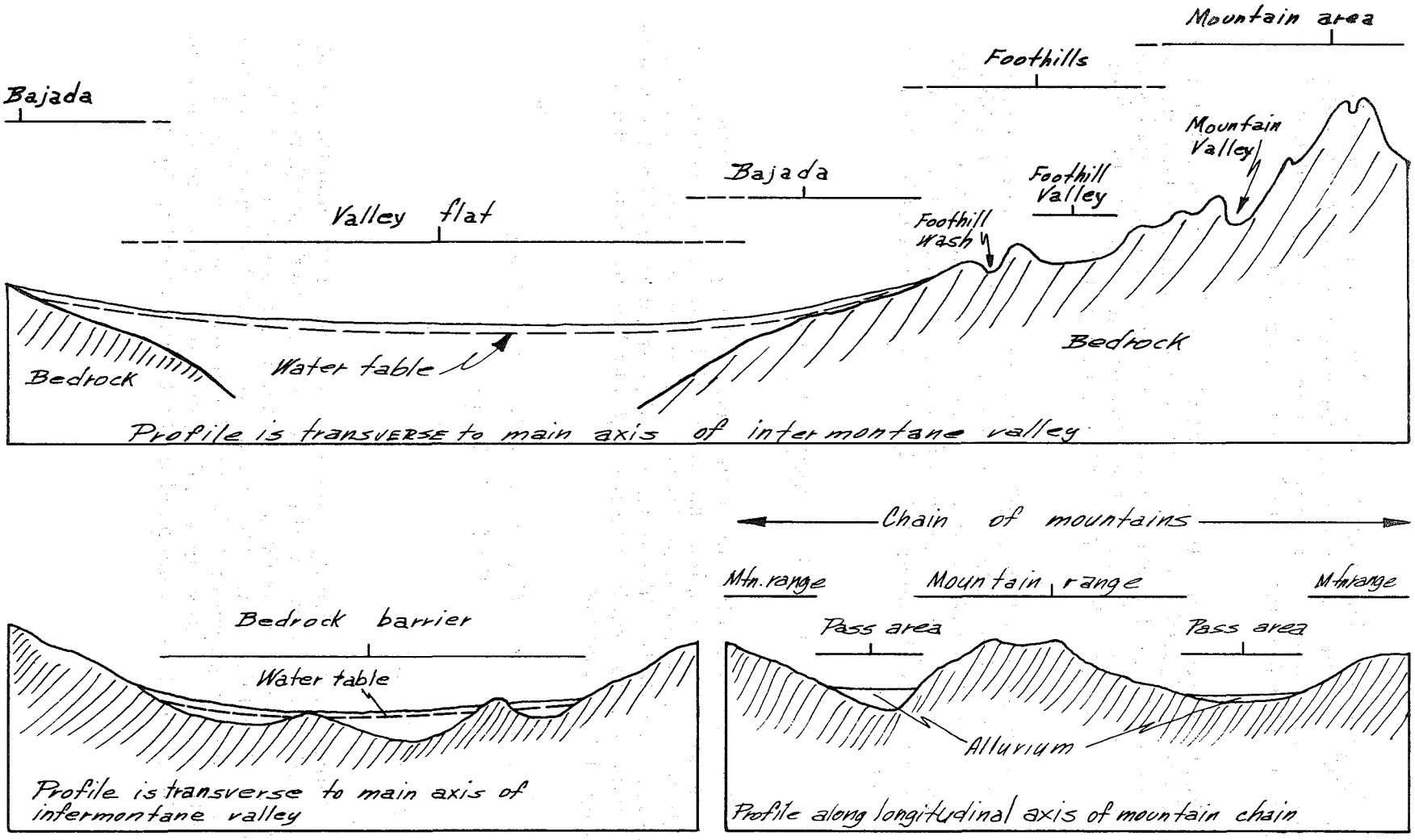

Figure 3.--Sketches showing terms applied to topographic settings of wells in table 1.

Silica (SiO_2). --Silicon is usually found as silica in quartz or as silicates in feldspar and other minerals. Most of the silica in ordinary water is probably colloidal and does not affect the ionic balance in a water analysis. However, at high pH the silica may be present in the ionized state as calcium silicate. Colloidal silica is a good carrier of other material that may precipitate from solution. Waters high in silica form an exceedingly hard scale on porcelain fixtures, boilers, or other surfaces with which they may come in contact.

Iron (Fe). --Iron is available from practically all rocks and ground water may contain several parts per million. Upon exposure to air, the iron in water may settle out as a precipitate of insoluble ferric hydroxide as a result of oxidation. Excessive amounts of iron cause an objectionable taste in water and will stain porcelain fixtures and fabrics washed in the water.

Calcium (Ca) and magnesium (Mg). --Hardness of water is caused chiefly by calcium and magnesium. Calcium is found in all ground and surface waters and is commonly the major cation present. It is present in silicate minerals, nonsilicate minerals, and the cementing material of many sedimentary rocks, and the weathering of these calcium-bearing rocks yield calcium to water. Nonsilicate minerals such as gypsum, calcite, limestone, and dolomite also yield calcium to water.

Magnesium is abundant in the carbonate rocks and is a typical constituent of some of the silicate minerals such as olivine, pyroxenes, and micas. Magnesium usually is present in water in smaller amounts than calcium, but once in solution magnesium does not precipitate as readily as calcium.

The solubility of both calcium and magnesium is increased by the presence of carbon dioxide in the water.

Sodium (Na) and potassium (K). --All natural waters contain sodium and potassium which are derived from the weathering of feldspars and evaporites or from "base-exchange" reactions between basic ions in water and clay materials. If large amounts of both are dissolved in the water, sodium normally will be present in much greater quantities than potassium. Potassium usually is not present in large amounts in ground water. Sodium and potassium go easily into solution, but potassium is soon adsorbed by clays or used in the

evaporites, in clay and common soil minerals. Excessive concentrations of fluoride in drinking water are undesirable. According to the California State Water Pollution Control Board 1/, water containing less than 0.9 to 1.0 ppm of fluoride will seldom cause mottled enamel in children and concentrations of less than 3 or 4 ppm are not likely to cause endemic cumulative fluorosis and skeletal effects in adults.

Nitrate (NO_3).--Part of the nitrogen that is present in ground water and surface water is removed from rocks by weathering and part is of organic origin, the product of decay and oxidation. Nitrate nitrogen is the final oxidation product caused by the reaction of bacteria in the decay of plants and animals. The occurrence of nitrate in abundance in evaporites is rare. However, they may be formed by the action of micro-organisms and collect in separate beds in arid regions. The nitrate deposits of Chile are outstanding examples. The presence of large amounts of nitrate in drinking water may be the cause of methemoglobinemia in infants (blue babies). It is recommended that waters containing more than 10 to 20 ppm of nitrate, expressed as nitrogen, should not be used in infant feeding 2/. The presence of nitrate also may be an indication of pollution by sewage or by organic decomposition products. Ordinarily, waters do not contain more than a few parts per million of nitrate.

Boron (B).--Boron occurs in igneous rocks. It also occurs as borates in marine evaporites, evaporites in closed basins, and in evaporites connected with volcanic activity. Marine evaporites contain chiefly magnesium borate, while boron in evaporites in closed basins occurs as calcium borate. Volcanic sublimates contain boron as boric acid and various borates. Boron is necessary for normal plant growth, but the amount required is usually very small. Citrus shows definite injury when grown with 1 ppm boron in the irrigation water and 3 ppm boron in the irrigation water will kill the plant. On the other hand, alfalfa makes its best growth with 1 to 2 ppm of boron in the water and date palms seem to require about 5 ppm and will tolerate as much as 100 ppm.

Other properties

Dissolved solids.--The results reported as dissolved solids represent the total quantity of dissolved mineral matter in the water.

1/ California State Water Pollution Control Board, 1952, Water-quality criteria: Pub. 3, 512 p.

2/ Comly, H. H., 1945, Cyanosis in infants caused by nitrates in well water: Am. Med. Assoc. Jour., v. 129.

Table 1.--Records of wells and springs, Papago Indian Reservation, Maricopa, Pima, and Pinal Counties, Arizona.

Location: See p. 5 for explanation of accuracy of locations.
Type of well: Dg, dug well; Dr, drilled well; TH, drilled (churn, rotary, air, or diamond drill) test hole; Mn, mine shaft; Sp, spring.
Total depth of well: All depths are reported or estimated.
Casing diameter: Size of dug wells not shown.
Type of finish: OH, open hole; P, perforated, method unknown; Pm, perforated by Mills knife, Ps, preslotted casing; Ts, casing slotted by acetylene torch.
Type of lift: B, bucket; C, cylinder; S, submersible; T, turbine; Bg, bottled gas; Bh, windlass; D, diesel; E, electric; G, gasoline; H, hand pump; N, none; W, windmill.
Surface altitude: In feet above mean sea-level datum, rounded to nearest foot if leveled and nearest 5 feet otherwise. Source of data: A, aneroid altimeter; B, Bureau of Indian Affairs spirit leveling; C, by interpolation from topographic map by H. V. Clotts, 1915; D, by interpolation from Geological Survey topographic maps or benchmarks; L, spirit leveling by Geological Survey or Bureau of Mines.
Water-level depth: Measured unless otherwise indicated; B, Bureau of Indian Affairs records; C, from topographic map by H. V. Clotts, 1915; E, estimated; K, Kirk Bryan (1925); R, reported.
Water-level altitude: To nearest foot above mean sea-level datum, based on surface altitude given in this table.
Yield: Reported or estimated yields; measured yields, indicated by (M), are rounded.
Use: A, abandoned or not completed; D, domestic; I, irrigation; In, mining or milling; N, not used; O, observation well; P, public supply; S, stock.
Log, well cuttings, and chemical analysis of water: X, on file at Arizona Bureau of Mines well-sample-cuttings library, University of Arizona, Tucson, Arizona; Y, driller's log or water analysis in tables 2 and 3.
Remarks: See p. 5 for explanation of topographic descriptions.

LOCATION AND DESIGNATION			CONSTRUCTION DATA										HYDROLOGIC DATA					SUPPLEMENTARY DATA				
						Casing record			Finish					Water level								
Location	Location (distance in miles and general direction from nearest village or town)	BIA number, name, or other designation	Type	Date of completion (year)	Total depth (feet)	Diameter (inches)	Depth (feet) From	Depth (feet) To	Type	Depth (feet) From	Depth (feet) To	Type of lift	Surface altitude	Depth below land surface (feet)	Date measured (mo. yr.)	Water-level altitude	Yield (gpm)	Use	Log	Well cuttings	Chemical analysis of water	Remarks
T. 10 S., R. 1 W.																						
Sec. 36																						
SE¼SW¼NE¼	Kaka		Dr	1938?	276													A				In foothill valley; well abandoned above water table in basalt.
SE¼SE¼NW¼	Kaka	Kaka Well	Dr	1960	692	8						S, E	2,255 D	644 R	4/60	1,611	13	D, S	Y	X	Y	In foothill valley; yield based on preliminary bailing test; volcanic rock reported at 150 feet.
T. 10 S., R. 2 W.																						
Sec. 7																						
SW¼SW¼NW¼	Chiulikam		Dg		18							B	2,020 D	6 C	/15	2,014		S				In foothill wash; alluvium to 8 feet, underlain by Tertiary(?) volcanic rocks; obtains water from alluvium and fractures in volcanic rocks.
														11.9	6/57	2,008						
Sec. 10																						
SW¼SE¼SE¼	Moi Vaya	W-16	Dg	1934	10							B	2,350 D	7.4	6/57	2,343		S			Y	In foothill wash; alluvium to 4 feet, underlain by Tertiary(?) andesite; obtains water from fractured volcanic rocks; reported never dry.
T. 11 S., R. 2 W.																						
Sec. 18																						
SE¼NE¼SE¼	2 SE of Stoa Pitk		Dr	1955	256				10-inch OH	0	256		2,400 C	Dry				A	Y	X		Penetrated basalt at 138 feet; hole abandoned above water table.
T. 12 S., R. 1 W.																						
Sec. 25																						
NW¼SW¼SE¼-1	Vaya Chin	DW-23	Dr		617	7-5/8						C, G	2,130 A	593	4/54	1,537		D, S, P			Y	Valley flat; 20± feet south of DW-23A; not shown on map.
NW¼SW¼SE¼-2	Vaya Chin	DW-23A	Dr	1954	803	8	0	803				C, G	2,130 A	564.8	10/57	1,565		D, S, P	Y	X	Y	Valley flat; water level measurement in this well more reliable than in DW-23; school well; no drawdown after 2-hour bailing test at 24 gpm.

Table 1.--Records of wells and springs, Papago Indian Reservation, Maricopa, Pima, and Pinal Counties, Arizona—Continued.

LOCATION AND DESIGNATION			CONSTRUCTION DATA										HYDROLOGIC DATA					SUPPLEMENTARY DATA				
						Casing record			Finish					Water level								
							Depth (feet)			Depth (feet)												
Location	Location (distance in miles and general direction from nearest village or town)	BIA number, name, or other designation	Type	Date of completion (year)	Total depth (feet)	Diameter (inches)	From	To	Type	From	To	Type of lift	Surface altitude	Depth below land surface (feet)	Date measured (mo. yr.)	Water-level altitude	Yield (gpm)	Use	Log	Well cuttings	Chemical analysis of water	Remarks
T. 14 S., R. 4 W.																						
Sec. 9																						
NW¼NW¼SE¼	Schuchuli	Gunsight (Blair's Ranch) Well	Dg		115							C, G, W	1,950 C	35 C	/15	1,915	20	D, S			Y	Along large wash in pass area near bedrock; in Tertiary porphyritic andesite flows at 40 feet below shallow alluvium; obtains water from volcanic rocks; specific capacity in 1960 reported to be about 3 gpm per foot of drawdown.
														54 K	10/17	1,896						
														54 R	3/60	1,896						
Sec. 16																						
SW¼NW¼SE¼	1 S of Schuchuli	Gunsight Mine	Mn		500							N		Dry	5/58			N				In foothills; abandoned mine shaft in quartz monzonite(?).
Sec. 30																						
NW¼NE¼SE¼	4 SW of Schuchuli		Dg		202								2,015 C	197 C	/15	1,818		N				Along foothill wash.
Sec. 35																						
NE¼SE¼NE¼	5 SE of Schuchuli		Mn		200							N		Dry				N				In foothills; abandoned mine shaft in quartz diorite(?).
T. 15 S., R. 2 W.																						
Sec. 18																						
SW¼NE¼NE¼	5 NE of Gu Vo		Dr	1955	443				10-inch OH	0	436		2,140 C	Dry	4/55			A	Y	X		On valley flat near small hills; encountered granite at 427 feet.
T. 15 S., R. 4 W.																						
Sec. 10																						
SW¼NW¼NE¼	Kuakatch	Miller's Well	Dg		85							C, G, W	2,155 C	35.2	6/58	2,120		D, S				Along large wash near foothills; although fenced off from reservation, this well is within reservation boundaries; not shown on map.
SE¼NW¼NE¼	Kuakatch		Dg		38							N	2,130 D	29.4	6/58	2,101		N				Along large wash near foothills; not shown on map.
SW¼SE¼NE¼	Kuakatch	W-28 (Wall's Well)	Dg		45							C, G, W	2,130 D	4 C	/15	2,126	2	D, S			Y	Along large wash in foothills. Two other unlocated wells reported in this area by Clotts in 1915. This well is about 100 feet northwest of original Wall's Well, marked by 4-inch pipe stuck in a mound.
														30.7	10/56	2,099						
Sec. 27																						
SE¼SW¼NE¼	6 NW of Gu Vo	Barajita Well	Dg		24							B	2,440 C	18 C	/15	2,422		S				Along large wash in foothills.
Sec. 34																						
SW¼SE¼NW¼	6 W of Gu Vo		Dg		24							B	2,590 C	12 C	/15	2,578		S				Along large wash in foothills.
														10 E	6/58	2,580						

Table 1.--Records of wells and springs, Papago Indian Reservation, Maricopa, Pima, and Pinal Counties, Arizona--Continued.

LOCATION AND DESIGNATION			CONSTRUCTION DATA										HYDROLOGIC DATA					SUPPLEMENTARY DATA				
						Casing record			Finish					Water level								
							Depth (feet)			Depth (feet)												
Location	Location (distance in miles and general direction from nearest village or town)	BIA number, name, or other designation	Type	Date of completion (year)	Total depth (feet)	Diameter (inches)	From	To	Type	From	To	Type of lift	Surface altitude	Depth below land surface (feet)	Date measured (mo. yr.)	Water-level altitude	Yield (gpm)	Use	Log	Well cuttings	Chemical analysis of water	Remarks
T. 17 S., R. 3 W.--Continued																						
Sec. 9																						
SW¼NE¼NE¼	Siovi Shuatak	DW-56	Dr	1940	687	6-1/4	0	379	Ts	588	687	C, W	2,085 A	464 B	/54	1,621	7	D, S	Y		Y	In foothills; encounters basalt porphyry at 80 feet; obtains water from reported conglomerate (agglomerate?) below 600 feet.
						5-5/8	379	646														
						6-1/4	646	687														
Sec. 36																						
SE¼NE¼NW¼	2 S of Pia Oik	DW-38	Dr	1936	480	6-1/4	0	420	P	420	480	C, W	1,905 A	382.8	7/54	1,522	10	D, S	Y		Y	On valley flat near volcanic hills; encountered basalt at 302 feet; obtains water in reported vesicular lava.
						5	420	480														
T. 18 S., R. 1 W.																						
Sec. 28																						
SW¼SE¼NE¼	5 NW of Stan Shuatuk	DW-31	Dr	1918	312	5-5/8						C, G, W	1,705 A	165.4	1/58	1,540		S	Y			On valley flat near foothills; well put back in service in February 1958 after being unused for several years.
T. 18 S., R. 3 W.																						
Sec. 5																						
NW¼NE¼NE¼	4 NW of Ali Ak Chin		Dg									N		Dry	5/58							Hole appears to be in the process of being dug.
Sec. 35																						
NE¼NW¼SW¼	Ali Chuk	DW-58	Dr	1941		6-1/4						C, W	1,715 A	296.1	7/54	1,419		D, S			Y	In foothill valley.
T. 19 S., R. 1 W.																						
Sec. 4																						
NE¼NE¼SE¼	4 W of Stan Shuatuk	DW-30	Dr	1918	257	5-5/8						C, G, W	1,710 A	140 R	/18	1,570		D, S	Y		Y	On valley flat.
Sec. 5																						
SE¼SW¼NW¼	6 W of Stan Shuatuk		Dg		12							B	1,685 D	6.5	5/58	1,678		D, S			Y	On valley flat.
Sec. 12																						
NE¼NE¼SE¼	2 SW of Stan Shuatuk (Papago Farms)	PF-2	Dr	1957	952	20	0	950	Pm	300	950	T, D	1,735 A	192 R	12/57	1,543	3,200	I	Y	X		On valley flat.
T. 19 S., R. 2 W.																						
Sec. 2																						
SE¼SW¼NW¼	6 E of Ali Chuk	DW-53 (Salt Well)	Dr	1938	285	6-5/8	0	281	P	240	280	C, G, W	1,720 A	202.2	6/54	1,518	30	S	Y		Y	On valley flat
									OH	281	285											

Table 1.--Records of wells and springs, Papago Indian Reservation, Maricopa, Pima, and Final Counties, Arizona—Continued.

LOCATION AND DESIGNATION			CONSTRUCTION DATA										HYDROLOGIC DATA					SUPPLEMENTARY DATA				
						Casing record			Finish					Water level								
Location	Location (distance in miles and general direction from nearest village or town)	BIA number, name, or other designation	Type	Date of completion (year)	Total depth (feet)	Diameter (inches)	Depth (feet) From	Depth (feet) To	Type	Depth (feet) From	Depth (feet) To	Type of lift	Surface altitude	Depth below land surface (feet)	Date measured (mo. yr.)	Water-level altitude	Yield (gpm)	Use	Log	Well cuttings	Chemical analysis of water	Remarks
T. 8 S., R. 5 E. Sec. 12 (east half)—Continued																						
NE¼NW¼NE¼-1	Chuichu	C-2	Dr	1934	230	20	0	230	Pm	70	210	T, E	1,458 B	139.3	1/58	1,319	1,000	D, S, I	Y		Y	On valley flat near small volcanic hills; specific capacity in 1934 reported to range from about 55 to 160 gpm per foot of drawdown.
NE¼NW¼NE¼-2	Chuichu	Old Chuichu 2	Dr	1921	242	16	0	187	Pm	73	103		1,460 B	57 B	3/21	1,403	150	A	Y			Abandoned in 1934; "hard red rock" reported at 195 feet; not shown on map.
SE¼NW¼NE¼-1	Chuichu	C-1	Dr	1934	240	20	0	236	Pm	70	160	T, E	1,461 B	133.5	1/58	1,327	1,540	I	Y		Y	On valley floor near small volcanic hills; driller's log states "solid rock apparently" but material was interpreted to be boulders by R. J. Leonard, geologist; specific capacity in 1934 reported to range from about 4 to 60 gpm per foot of drawdown.
									Pm	180	222											
									OH	222	240											
SE¼NW¼NE¼-2	Chuichu	Old Chuichu 1	Dr	1915	228	16	0	84	P	70	95	N	1,460 B	57 K	2/15	1,403	1,100	A	Y		Y	Abandoned in 1934; granite reported at 228 feet; located 30 feet west of C-1; not shown on map.
						10	81	220	P	150	220											
									OH	220	228											
Sec. 19																						
NE¼SE¼NE¼	3 E of Vaiva Vo	Chuichu Test (CT) 2	TH	1953	601				8-inch OH	0	601	N	1,402 B	137	2/54	1,265		A	Y	X		On bajada near bedrock foothills; "hard rock" reported at 594 feet.
T. 8 S., R. 6 E.																						Note: All East Chuichu project wells are on a valley flat near foothill exposures.
Sec. 5																						
SE¼SE¼NE¼	East Chuichu irrig. proj.	C-10	Dr	1953	348	20	0	320	Pm	94	306	T, E	1,471 B	148.5	1/58	1,322	1,400	I	Y	X		Granite reported at 330 feet; specific capacity in 1953 reported to be 13 gpm per foot of drawdown.
									OH	320	348											
SE¼SE¼NW¼	East Chuichu irrig. proj.	C-12	Dr	1953	375	20	0	364	Pm	90	352	T, E	1,466 B	135 B	1/58	1,331	1,800	I	Y	X		"Red conglomerate" and "bedrock" reported below 308 feet; specific capacity in 1953 reported to be about 18 gpm per foot of drawdown.
SE¼SE¼SW¼	East Chuichu irrig. proj.	C-11	Dr	1953	400	20	0	398	Pm	92	385	T, E	1,471 B	155 B	1/58	1,316	1,500	I	Y	X		Specific capacity in 1953 reported to be about 12 gpm per foot of drawdown.
									OH	385	400											
SE¼SE¼SE¼	East Chuichu irrig. proj.	C-9	Dr	1953	430	20	0	338	Pm	90?	430	T, E	1,475 B	164.1	1/58	1,311	1,600	I	Y	X		Specific capacity in 1953 reported to be about 12 gpm per foot of drawdown.
						16	338	430														

Table 1.--Records of wells and springs, Papago Indian Reservation, Maricopa, Pima, and Final Counties, Arizona—Continued.

LOCATION AND DESIGNATION			CONSTRUCTION DATA										HYDROLOGIC DATA					SUPPLEMENTARY DATA				
						Casing record			Finish					Water level								
							Depth (feet)			Depth (feet)												
Location	Location (distance in miles and general direction from nearest village or town)	BIA number, name, or other designation	Type	Date of completion (year)	Total depth (feet)	Diameter (inches)	From	To	Type	From	To	Type of lift	Surface altitude	Depth below land surface (feet)	Date measured (mo. yr.)	Water-level altitude	Yield (gpm)	Use	Log	Well cuttings	Chemical analysis of water	Remarks
T. 9 S., R. 3 E.—Continued																						
Sec. 33																						
SE¼SE¼NE¼	3 NW of Kohatk		Dg									N	1,765 D	46.5	6/54	1,718		A				Along large wash in foothills; obtains water from Cretaceous-Tertiary volcanic conglomerate below thin alluvial veneer.
SW¼SW¼NW¼	4 NW of Kohatk		Dg		10							N	1,825 D	Dry	8/55			A				On edge of large wash in foothills; in Cretaceous-Tertiary volcanic conglomerate below thin veneer of alluvium; caved in.
NE¼SE¼SE¼	3 NW of Kohatk	USBM-6	TH	1943	598							N	1,905 D	Dry?	/43			A				In foothills; all in bedrock (Denton and Haury, 1946); no water reported.
SE¼SE¼SE¼	3 NW of Kohatk	USBM-5	TH	1943	600							N	2,075 D	Dry?	/43			A				In foothills; all in bedrock (Denton and Haury, 1946); no water reported.
Sec. 34																						
NW¼NW¼NW¼	3 NW of Kohatk	Christmas Gift Shaft	Mn		200								1,800 D	Dry?				A				In foothills; all in Paleozoic limestone; no report of water in Tenney (1934).
NW¼NE¼SW¼-1	3 NW of Kohatk	George Shaft	Mn		400								1,775 D	335 R	/44	1,440		A				In foothills; all in Paleozoic rocks (Hadley, 1944; Denton and Haury, 1946); not shown on map.
														Dry	7/55							
NW¼NE¼SW¼-2	3 NW of Kohatk		TH		1,400								1,760 D					A				In foothills; in Paleozoic and Precambrian rocks (Denton and Haury, 1946).
NE¼NW¼SW¼-1	3 NW of Kohatk		Dr	1884	840	8						N	1,785	346.6	10/56	1,438		A				In foothills; in Paleozoic and Precambrian rocks (Hadley, 1944; Denton and Haury, 1946); "permanent water was encountered at a depth of 800 feet" (Tenney, 1934).
NE¼NW¼SW¼-2	3 NW of Kohatk	Reward Shaft	Mn		400								1,840	400 R	/34	1,440		A				In foothills; inclined 600-foot shaft; in Paleozoic and older(?) rocks; water levels reported by Tenney (1934) and Hadley (1944); not shown on map.
														390 R	/44	1,450						
T. 9 S., R. 4 E.																						
Sec. 4																						
SW¼NE¼NE¼	3 SW of Vaiva Vo	Chuichu Test (CT) 6	TH	1954	555	10	0	228	Ts	0	228		1,510 D	139.9	10/57	1,370	300 M	A	Y		Y	On bolson; granite at 535 feet; specific capacity in 1955 about 20 gpm per foot of drawdown.
									OH	228	555											
NW¼SW¼SE¼	4 SW of Vaiva Vo	Chuichu Test (CT) 7	TH	1954	210				10-inch OH	0	210		1,523 B	147.9	11/54	1,375		A	Y			On bolson; tools lost in hole.

Table 1.--Records of wells and springs, Papago Indian Reservation, Maricopa, Pima, and Pinal Counties, Arizona—Continued.

LOCATION AND DESIGNATION			CONSTRUCTION DATA										HYDROLOGIC DATA					SUPPLEMENTARY DATA				
						Casing record			Finish					Water level								
Location	Location (distance in miles and general direction from nearest village or town)	BIA number, name, or other designation	Type	Date of completion (year)	Total depth (feet)	Diameter (inches)	Depth (feet) From	Depth (feet) To	Type	Depth (feet) From	Depth (feet) To	Type of lift	Surface altitude	Depth below land surface (feet)	Date measured (mo. yr.)	Water-level altitude	Yield (gpm)	Use	Log	Well cuttings	Chemical analysis of water	Remarks
T. 10 S., R. 2 E.—Continued																						
Sec. 11																						
NW¼NW¼SE¼	3 N of Chiapuk	Copperosity Shaft	Mn		300								2,300 D	300 R	/15	2,000		N				In mountain area; in Paleozoic and Cretaceous-Tertiary(?) rocks; water level reported by Tenney (1934).
Sec. 22																						
SE¼NE¼SE¼	Chiapuk	W-50	Dg		53							A	1,900 D	47.4	6/55	1,853		D,S			Y	Along large wash in foothills; water-level recorder from 7/56 to 11/57.
														15.5	8/55	1,884						
														48.1	5/57	1,852						
														40.8	11/57	1,859						
Sec. 32																						
SE¼NE¼NE¼	3 SW of Chiapuk	Greenback Camp	Dr	1919	600							C,G	2,100 D	289 R	/19	1,811		D,In				In foothills; in intrusive andesite and diorite.
														380 R	/55	1,720	30					
T. 10 S., R. 3 E.																						
Sec. 4																						
NW¼NE¼NE¼	3 NW of Kohatk	Phonodoree Shaft	Mn		325								1,855 D	Dry	7/55							In foothills; in Cretaceous(?) and Paleozoic rocks (Hadley, 1944).
Sec. 12																						
NW¼NE¼NE¼	Kohatk	DW-8	Dr	1915	255	10	0	258	Pm	238	255	C, G,W	1,630 A	209.7K	11/15	1,420		D,S	Y		Y	On valley flat; specific capacity in 1915 reported to be about 5 gpm per foot of drawdown.
														208	10/57	1,422	26					
T. 10 S., R. 4 E.																						
Sec. 16																						
NE¼NW¼SE¼	3 SE of Kohatk	DW-33	Dr	1936	290	6-1/4	0	194	Pm	154	194	C,G	1,575 D	155	10/57	1,420	13	S	Y		Y	On valley flat; well backfilled to 194 feet; pumps down to bottom of tailpipe at 13 gpm.
Sec. 23																						
NW¼NE¼SE¼	3 NE of Gu Komelik		Dg										1,725 D	15.6	11/54	1,709		A				Along wash in foothills.
Sec. 25																						
NW¼SW¼SE¼	3 NE of Gu Komelik	Lakeshore Shaft	Mn										1,816 L	224	/42	1,592						In foothills; in Cretaceous(?) andesite, quartz monzonite, and Precambrian schist (Romslo, 1950).

Table 1.--Records of wells and springs, Papago Indian Reservation, Maricopa, Pima, and Pinal Counties, Arizona—Continued.

LOCATION AND DESIGNATION			CONSTRUCTION DATA										HYDROLOGIC DATA					SUPPLEMENTARY DATA				
						Casing record			Finish					Water level								
							Depth (feet)			Depth (feet)												
Location	Location (distance in miles and general direction from nearest village or town)	BIA number, name, or other designation	Type	Date of completion (year)	Total depth (feet)	Diameter (inches)	From	To	Type	From	To	Type of lift	Surface altitude	Depth below land surface (feet)	Date measured (mo. yr.)	Water-level altitude	Yield (gpm)	Use	Log	Well cuttings	Chemical analysis of water	Remarks
T. 11 S., R. 2 E. Sec. 9—Continued																						
SE¼SW¼SW¼	4 E of Ventana		Dg		105	16			OH					12.6	5/55			A				In wash in foothills; in Cretaceous(?) schist.
Sec. 17																						
NW¼NE¼SE¼	3 E of Ventana		Mn											12	5/55			A				Along wash in foothills; in quartz monzonite.
Sec. 18																						
SW¼SE¼SW¼	2 E of Ventana	White's Well	Dg		104								2,360 C	96.4	5/55	2,264		A				On bajada near foothills; in Tertiary andesite.
Sec. 21																						
NE¼SW¼NW¼	4 E of Ventana	DW-25 (Isabel Mine Well)	Dr		634	7-5/8			C, W				2,350 A	402.5	4/54	1,947		D, S			Y	In foothills; in Cretaceous(?) schist.
T. 11 S., R. 3 E.																						
Sec. 4																						
SW¼SE¼NE¼	7 W of Gu Komelik	DW-70	Dr	1955	335	8	0	335	P	290	335	C, W	1,775 D	285.7	10/57	1,489	36	S	Y	X	Y	On bajada; 2-hour bailing test at 36 gpm showed no drawdown.
Sec. 30																						
NE¼SW¼SW¼	6 NW of Anegam		Dg		28							B		6.5	3/55			D, S				In large wash in foothills; in Cretaceous-Tertiary conglomerate below thin alluvial veneer.
T. 11 S., R. 4 E.																						
Sec. 20																						
SW¼SW¼SE¼	4 SW of Gu Komelik	DW-26	Dr		170	6-5/8						C, G	1,650 A	138	10/57	1,512		D, S			Y	On valley flat.
Sec. 34																						
NE¼SE¼NW¼	6 NE of Anegam	DW-27	Dr		200	6-5/8						C, G	1,650 A	144.1	10/57	1,506		S				On valley flat.
T. 11 S., R. 5 E.																						
Sec. 2																						
NE¼SE¼SW¼	8 E of Gu Komelik	DW-71	Dr	1955	225	8	0	225	P	181	225	C, W	1,770 D	186.2	10/57	1,584	36	S	Y	X	Y	On valley flat; 2-hour bailing test at 36 gpm showed no drawdown.
Sec. 31 (east half)																						
SE¼NW¼NE¼	6 SE of Gu Komelik		Mn											93	1/58			A				In foothills; in granite.

Table 1.--Records of wells and springs, Papago Indian Reservation, Maricopa, Pima, and Pinal Counties, Arizona---Continued.

LOCATION AND DESIGNATION			CONSTRUCTION DATA										HYDROLOGIC DATA					SUPPLEMENTARY DATA				
						Casing record			Finish					Water level								
							Depth (feet)			Depth (feet)												
Location	Location (distance in miles and general direction from nearest village or town)	BIA number, name, or other designation	Type	Date of completion (year)	Total depth (feet)	Diameter (inches)	From	To	Type	From	To	Type of lift	Surface altitude	Depth below land surface (feet)	Date measured (mo. yr.)	Water-level altitude	Yield (gpm)	Use	Log	Well cuttings	Chemical analysis of water	Remarks
T. 13 S., R. 2 E.																						
Sec. 23																						
SW¼NW¼NW¼	Noipa Kam	W-74	Dg	1938								C, W		38.1	7/55			D, S			Y	Along wash in foothills; in altered Cretaceous-Tertiary sedimentary rocks.
Sec. 35																						
NW¼NW¼SW¼	2 SW of Noipa Kam		Mn									N		34.6	7/55			A				In foothills; in altered Cretaceous-Tertiary sedimentary rocks.
SW¼SW¼SE¼	2 S of Noipa Kam	Brownell Shaft	Mn									N		39.7	7/55			A				In foothills; in altered Cretaceous-Tertiary volcanic rocks; water level reported at 80 feet in 1912 and 25 feet in 1943.
T. 13 S., R. 3 E.																						
Sec. 2																						
NE¼NW¼NW¼	Gu Achi	DW-3	Dr	1915	391	10	0	378				T, E	1,800 A	274	/15	1,526		D, S	Y		Y	On valley flat
														272	1/54	1,528	33					
Sec. 10																						
SE¼NW¼SE¼	1 SE of Gu Achi	Santa Rosa Trading Post	Dr	1949	368	7						C, E	1,850 A	312.8	10/57	1,537		D			Y	On valley flat.
T. 13 S., R. 4 E.																						
Sec. 23																						
SW¼NE¼NW¼	6 SE of Gu Achi	DW-40	Dr	1937	365	6-1/4	0	365	Ts	325	365	C, G, W	1,875 B	323	10/57	1,552	15	D, S	Y		Y	On valley flat.
Sec. 30																						
SW¼SE¼NE¼	4 S of Gu Achi	DW-55	Dr	1939	420	6-1/4	0	420	Ts	372	414	C, G, W	1,885 B	354.8	10/57	1,530	20	D, S	Y		Y	On valley flat.
T. 13 S., R. 6 E.																						
Sec. 5																						
SE¼NW¼NW¼	2 NE of Pipyak	Pipyak Test Hole	TH	1955	305				10-inch OH	0	305		1,890 D	Dry	6/55			A	Y	X		On bajada; encountered basalt at 210 feet; abandoned above water-level table.

Table 1.--Records of wells and springs, Papago Indian Reservation, Maricopa, Pima, and Pinal Counties, Arizona—Continued.

LOCATION AND DESIGNATION			CONSTRUCTION DATA										HYDROLOGIC DATA					SUPPLEMENTARY DATA				
						Casing record			Finish					Water level								
							Depth (feet)			Depth (feet)												
Location	Location (distance in miles and general direction from nearest village or town)	BIA number, name, or other designation	Type	Date of completion (year)	Total depth (feet)	Diameter (inches)	From	To	Type	From	To	Type of lift	Surface altitude	Depth below land surface (feet)	Date measured (mo. yr.)	Water-level altitude	Yield (gpm)	Use	Log	Well cuttings	Chemical analysis of water	Remarks
T. 14 S., R. 2 E.—Continued																						
Sec. 22																						
NE¼NW¼NE¼	3 NW of Quijotoa	Miami Copper Test 1	TH	1957	358				8-inch OH	0	358			260 R	4/57		20	A				Mountain valley; in rhyolite to 358 feet; driller estimates capacity at 20 gpm; tools lost at 358 feet.
Sec. 24																						
NW¼SE¼NE¼	2 NE of Quijotoa		Mn									N		63.4	8/55			A				In mountains; dug in monzonite.
Sec. 27																						
NE¼SW¼SE¼	1 NW of Quihotoa	W-22	Dg		49							C, W		31 K	11/17			D, S			Y	Along wash in foothills; in Tertiary andesite; easternmost of 3 dug wells within 100 feet of each other.
														25.9	5/57							
Sec. 29																						
SE¼NW¼NW¼	4 W of Quijotoa		Mn											37	9/55			A				Along wash in foothills; in diorite(?).
Sec. 30																						
NE¼NW¼NW¼	5 W of Quijotoa		Dg									B		20.1	9/55			A				Along wash in foothills; in altered Cretaceous-Tertiary quartzite.
Sec. 35																						
SW¼NE¼NE¼	Quijotoa	Covered Wells Trading Post	Dg									C, E						D				Along wash in foothills; sealed.
SW¼NW¼NW¼	Quijotoa	Knight Well	Dg		60							C, W		30 R	11/41			D				Along wash in foothills; in intruded Cretaceous(?) volcanic rock.
														33.4	5/57							
Sec. 36																						
NE¼SW¼NW¼	Quijotoa	New Community Well	Dg, Dr	1959	100	8	0	65	Ps	0	65	S, E		56 R	11/59		18	D, P				Along wash in foothills; in monzonite; about 200 feet north of W-36; specific capacity reported in 1959 to be about 20 gpm per foot of drawdown; not shown on map.
									OH	65	100											
SE¼SW¼NW¼	Quijotoa	W-36 (Sacred Heart Mission Well)	Dg	1935	60							C, G		43.1	5/57			D, S			Y	Near wash in foothills; in monzonite; southernmost of 2 wells at Sacred Heart Mission.
T. 14 S., R. 3 E.																						
Sec. 31																						
SE¼SE¼NW¼	2 E of Quijotoa	Cooley Well	Dr	1956	140	8	0	20	OH	20	140	C, G		119.7	2/57		3		Y		Y	Along large wash in foothills; in Cretaceous-Tertiary volcanic rocks; used for small leaching operation; reported bailed at 12 gpm for 1 hour without drawdown.

Table 1.--Records of wells and springs, Papago Indian Reservation, Maricopa, Pima, and Pinal Counties, Arizona—Continued.

LOCATION AND DESIGNATION			CONSTRUCTION DATA										HYDROLOGIC DATA					SUPPLEMENTARY DATA				
						Casing record			Finish					Water level								
							Depth (feet)			Depth (feet)												
Location	Location (distance in miles and general direction from nearest village or town)	BIA number, name, or other designation	Type	Date of completion (year)	Total depth (feet)	Diameter (inches)	From	To	Type	From	To	Type of lift	Surface altitude	Depth below land surface (feet)	Date measured (mo. yr.)	Water-level altitude	Yield (gpm)	Use	Log	Well cuttings	Chemical analysis of water	Remarks
T. 14 S., R. 6 E.—Continued																						
Sec. 21																						
NW¼NW¼NW¼	4 SE of Sil Nakya	W-18	Dg									B	2,295 D	19.7	6/56	2,275		N				Along large wash near foothills; bottomed in Tertiary andesite.
T. 14 S., R. 7 E.																						
Sec. 7																						
NW¼NW¼NW¼	7 N of Schuchk	DW-65	Dr	1954	665	8						C, W	2,160 D	515 R	10/54	1,645	29	S	Y	X	Y	On valley flat; 2-hour bailing test in 1954 at 29 gpm showed no drawdown.
T. 14 S., R. 8 E.																						
Sec. 22																						
NE¼SW¼NE¼	5 NE of San Ignacio	DW-50	Dr	1938	505	6-1/4	0	505	P	470	505	C, W	2,320 D	451 R	4/38	1,869		S	Y			On valley flat; reported in "red porphyry" at 18 feet.
														473 R	11/41	1,847						
														446.4	6/51	1,874						
T. 14 S., R. 9 E.																						
Sec. 15																						
SE¼SE¼SE¼	9 NE of Viopuli		Sp										2,890 D		/41		2	S				In mountains; from fractures in Tertiary rhyolitic rocks; flow of 2 gpm reported in 1941; dry in 1956; spring 1/4 mile north, not shown on map, also dry in 1956.
															10/56		Dry					
T. 14 S., R. 10 E.																						
Sec. 20																						
SW¼SW¼SW¼	14 E of San Ignacio	W-12	Dg		65							C, G, W	2,560 D	60 R	11/41	2,500		S			Y	In foothills; in fault zone between Cretaceous-Tertiary sedimentary and Tertiary volcanic rocks; developed spring; heavy caliche deposits in vicinity.
														19.8	9/56	2,540						
Sec. 23																						
SE¼SE¼SW¼	17 E of San Ignacio		Dr		675	5-5/8	0	600	OH	600	675	N	2,325 D	252 B	12/45	2,073		A	Y	X		On bolson; well drilled to 302 feet in 1945, deepened to 675 feet in 1949; "rock" reported at 240 feet, quartz monzonite reported at 605 feet; seep reported at 290 feet; insufficient for domestic and stock purposes.
														332.1	1/53	1,993						

Table 1.--Records of wells and springs, Papago Indian Reservation, Maricopa, Pima, and Pinal Counties, Arizona—Continued.

LOCATION AND DESIGNATION			CONSTRUCTION DATA										HYDROLOGIC DATA					SUPPLEMENTARY DATA				
						Casing record			Finish					Water level								
							Depth (feet)			Depth (feet)												
Location	Location (distance in miles and general direction from nearest village or town)	BIA number, name, or other designation	Type	Date of completion (year)	Total depth (feet)	Diameter (inches)	From	To	Type	From	To	Type of lift	Surface altitude	Depth below land surface (feet)	Date measured (mo. yr.)	Water-level altitude	Yield (gpm)	Use	Log	Well cuttings	Chemical analysis of water	Remarks
T. 15 S., R. 2 E.—Continued																						
Sec. 22																						
NW¼NW¼SW¼	5 SW of Quijotoa	W-29	Dg	1935										15.9	10/55			A				In mountains; in shear zone in quartz monzonite; dug well 150 feet northeast not separately listed.
Sec. 32																						
NW¼SW¼SW¼	8 NE of Pisinimo		Dg		50								2,305 C	Dry	11/57			N				Along large wash in foothills; caved in to about 50 feet in 1957.
T. 15 S., R. 4 E.																						
Sec. 34																						
NW¼SE¼NW¼	San Luis	W-20	Dg									C, W, B	2,405 D	31.1	10/54	2,374		S				Along large wash in foothills.
Sec. 36																						
SE¼SE¼NW¼	2 W of Ko Vaya	W-57-1	Dg									C, W	2,580 D	47.5	10/54	2,532		D, S			Y	Along large wash in foothills.
NW¼NE¼SE¼	1 W of Ko Vaya	W-57-2	Dg									N	2,600 D	25.6	6/56	2,574		N				Along large wash in foothills; in granite.
T. 15 S., R. 5 E.																						
Sec. 5																						
NE¼SE¼SE¼	Sand Wells	W-10	Dg		25							C, G	2,705 D	6	11/41	2,699		D, S			Y	In foothills; in Cretaceous-Tertiary rhyolite.
														6.9	10/54	2,698						
														16.6	6/56	2,688						
Sec. 13																						
NW¼NE¼SW¼	4 SE of Sand Wells		Dg										3,475 D					S				In mountain valley.
SE¼SW¼SW¼	4 SE of Sand Wells		Dg									B	3,340 D	21.2	6/56	3,319		S				In mountain valley; in quartz monzonite.
Sec. 24																						
SE¼SW¼NE¼	5 SE of Sand Wells		Dg		78								3,380 D	24.3	6/56	3,356		S				In mountain valley; in quartz monzonite.
Sec. 31																						
SW¼NE¼SW¼	Ko Vaya	W-30-2	Dg		57								2,670 D	27 R	11/41	2,643		D, S				In valley in foothills; in granite.
SE¼NW¼SE¼-1	Ko Vaya	W-30-1	Dg		50							C, W	2,695 D	22.6	10/54	2,672		D, S			Y	Along large wash near foothills; in granite.
														32.6	6/56	2,662						
SE¼NW¼SE¼-2	Ko Vaya		Dg									B, H	2,695 D	10.1	10/54	2,685		S				Along large wash in foothills; 200 feet east of W-30-1; not shown on map.
Sec. 32																						
SE¼SE¼NE¼	1 E of Ko Vaya		Dg									N	2,780 D	12 R		2,768		A				Along large wash in foothills; caved in.

Table 1.--Records of wells and springs, Papago Indian Reservation, Maricopa, Pima, and Pinal Counties, Arizona—Continued.

LOCATION AND DESIGNATION			CONSTRUCTION DATA										HYDROLOGIC DATA					SUPPLEMENTARY DATA				
						Casing record			Finish					Water level								
							Depth (feet)			Depth (feet)												
Location	Location (distance in miles and general direction from nearest village or town)	BIA number, name, or other designation	Type	Date of completion (year)	Total depth (feet)	Diameter (inches)	From	To	Type	From	To	Type of lift	Surface altitude	Depth below land surface (feet)	Date measured (mo. yr.)	Water-level altitude	Yield (gpm)	Use	Log	Well cuttings	Chemical analysis of water	Remarks
T. 16 S., R. 1 E.																						
Sec. 18																						
NE¼NW¼NW¼	Pisinimo	DW-16	Dr	1920	466	6-5/8	0	466	Ps	401	466	C, G, W	1,905 A	305 R	/20	1,600		D, S	Y		Y	On bolson.
														335.8	10/57	1,569						
Sec. 34																						
NE¼SW¼SE¼	5 SE of Pisinimo	DW-73	Dr	1955	380	8	0	380	P	300	380	C, W	1,890 A	299.8	10/57	1,590	36	S	Y	X	Y	On bolson.
T. 16 S., R. 2 E.																						
Sec. 6																						
NW¼NE¼NE¼	7 E of Pisinimo		Dg		110							B	2,290 C	50.5	11/57	2,239		N			Y	Along wash in foothills.
Sec. 10																						
NW¼SE¼SE¼	Piato Vaya	W-33	Dg		18							B	2,295 C	5.7	1/58	2,289		D, S				Along wash in foothills; in Cretaceous-Tertiary volcanic rocks.
Sec. 14																						
NW¼NW¼NW¼	Piato Vaya	W-24	Dg		40							B	2,250 C	10.4	1/58	2,240		D, S			Y	Along wash in foothills; in Cretaceous-Tertiary volcanic rocks.
SW¼SW¼NW¼	Piato Vaya	W-23	Dg		54							B	2,235 C	22	1/58	2,213		D, S				Along wash in foothills; in Cretaceous-Tertiary sedimentary rocks.
NE¼NW¼SW¼	Piato Vaya		Dg		61							N	2,230 C	30.3	1/58	2,200		N				Along wash in foothills; not shown on map.
T. 16 S., R. 3 E.																						
Sec. 9																						
NE¼SE¼NE¼	Vainom Kug	Old Iron Pipe Well	Dg	1880's	465								2,030 C					A				In large central wash in valley; water originally piped to mines in vicinity of Ben Nevis; now caved.
Sec. 10																						
NE¼NW¼SW¼	Vainom Kug	DW-42	Dr	1936	502	6-1/4	0	502	P	442	502	C, G, W	2,050 A	447.1	10/57	1,603		D, S	Y		Y	On valley flat.
T. 16 S., R. 4 E.																						
Sec. 5																						
SW¼SE¼NE¼	1 S of San Luis		Dg										2,445 D									Along wash in foothills.

Table 1.--Records of wells and springs, Papago Indian Reservation, Maricopa, Pima, and Pinal Counties, Arizona—Continued.

LOCATION AND DESIGNATION			CONSTRUCTION DATA										HYDROLOGIC DATA					SUPPLEMENTARY DATA				
						Casing record			Finish					Water level								
							Depth (feet)			Depth (feet)												
Location	Location (distance in miles and general direction from nearest village or town)	BIA number, name, or other designation	Type	Date of completion (year)	Total depth (feet)	Diameter (inches)	From	To	Type	From	To	Type of lift	Surface altitude	Depth below land surface (feet)	Date measured (mo. yr.)	Water-level altitude	Yield (gpm)	Use	Log	Well cuttings	Chemical analysis of water	Remarks
T. 16 S., R. 4 E.—Continued																						
Sec. 35																						
SW¼NE¼NE¼-1	3 S of Santa Cruz		Dg										2,760 D	10.6	6/56	2,749		D, S				Along wash in foothills; in granite; not shown on map.
SW¼NE¼NE¼-2	3 S of Santa Cruz		Dr			8							2,765 D	47.5	6/56	2,717		N				Along wash in foothills; 35 feet northeast of well 1; not shown on map.
SW¼NE¼NE¼-3	3 S of Santa Cruz		Dr		35	9							2,765 D	Dry	6/56			N				Along wash in foothills; 40 feet northeast of well 1; not shown on map.
SW¼NE¼NE¼-4	3 S of Santa Cruz		Dr		600	10							2,765 D	38	6/56	2,727		N				Along wash in foothills; 55 feet northeast of well 1; original source of water for Steppe mine, 1 mile north.
T. 16 S., R. 5 E.																						
Sec. 11																						
NW¼SW¼SW¼-1	1 SW of Comobabi	W-58-1	Dg									C, G	3,380 D	13.4	10/54	3,367		S				In mountain valley; in Cretaceous(?) volcanic rocks.
														18.7	6/56	3,361						
NW¼SW¼SW¼-2	1 SW of Comobabi	W-58-2	Dg									B, H	3,385 D	20.8	10/54	3,364		S				In mountain valley; in Cretaceous(?) volcanic rocks; 200 feet upstream of W-58-1; not shown on map.
														23.2	6/56	3,362						
Sec. 12																						
NE¼SW¼SE¼	1 SE of Comobabi	W-63	Dg									B, H	3,050 D	31	11/41	3,019		D			Y	In wash in foothills; in quartz monzonite(?) below 5 feet of alluvium.
														35.1	10/54	3,015						
Sec. 14																						
SW¼SW¼SE¼	2 S of Comobabi		Mn									B	3,525 D	2	10/54	3,523		S				In mountains; along intrusive contact between Cretaceous(?) sedimentary rocks and quartz monzonite porphyry.
Sec. 18																						
SW¼NE¼NW¼	3 SE of Ko Vaya		Mn										3,085 D	48.6	6/56	3,036		N				In mountains; in mineralized Cretaceous(?) basalt.
Sec. 21																						
NW¼NW¼NE¼	3 SW of Comobabi		Sp										3,510 D	1 E	6/56	3,509		N				In mountain wash; developed spring?
Sec. 31																						
NW¼NW¼NE¼	4 SE of Santa Cruz	W-62	Dg									N	3,060 D	38 E	6/56	3,022		N				In mountain valley; in diorite(?) below about 10 feet of alluvium.
Sec. 34																						
SW¼NE¼SE¼	5 S of Comobabi		Dr	1937	100								2,940 D				6	S	Y			On bajada in foothills; in epidotized rock below about 35 feet of alluvium.

Table 1.--Records of wells and springs, Papago Indian Reservation, Maricopa, Pima, and Pinal Counties, Arizona—Continued.

LOCATION AND DESIGNATION			CONSTRUCTION DATA										HYDROLOGIC DATA					SUPPLEMENTARY DATA				
						Casing record			Finish					Water level								
							Depth (feet)			Depth (feet)												
Location	Location (distance in miles and general direction from nearest village or town)	BIA number, name, or other designation	Type	Date of completion (year)	Total depth (feet)	Diameter (inches)	From	To	Type	From	To	Type of lift	Surface altitude	Depth below land surface (feet)	Date measured (mo. yr.)	Water-level altitude	Yield (gpm)	Use	Log	Well cuttings	Chemical analysis of water	Remarks
T. 16 S., R. 8 E.—Continued																						
Sec. 13																						
NE¼NE¼SW¼	Nawt Vaya	W-26 (Alamo Well)	Dg		42							C,H	2,920 D	40 K	12/17	2,880		D,S				On bajada; in "brecciated felsite" at 42 feet.
														50 R	11/41	2,870						
														32.5	10/55	2,888						
Sec. 20																						
SE¼NW¼SE¼	Pantak	W-9	Dg		40							B	3,435 D	30 R	11/41	3,405		D,S				In mountains; along fault zone; developed spring.
														17.8	11/54	3,417						
Sec. 23																						
SW¼NE¼NW¼	1 SW of Nawt Vaya	W-25	Dg									C,H	3,225 D	8 E	10/55	3,217		D,S				In mountain valley; in gneissic rocks near fault zone; 50 feet below site of Agua La Vara Spring (Bryan, 1925); dry in 1955.
Sec. 29																						
NE¼NW¼SE¼	1 SE of Pantak		Dg									B	3,515 D	17.3	11/54	3,498		D,S				In mountains; along fault zone; developed spring.
Sec. 32																						
NE¼SE¼SE¼	Uhs Kug	W-32	Dg										3,950 D	20 R	11/41	3,930		S				In mountains; along fault zone; developed spring.
T. 17 S., R. 2 E.																						
Sec. 32																						
SE¼NE¼SE¼	2 SE of Kupk		Dr	Old	350								1,850 C	Dry	/15			A				On valley flat; destroyed.
Sec. 33																						
NE¼SW¼SE¼	3 SE of Kupk	DW-66	Dr	1954	445	8	0	445	Ts	290	445	C,G	1,890 A	259.8	3/57	1,630	40	D,S	Y	X	Y	On valley flat; 2-hour bailing test at 40 gpm in 1954 showed no drawdown.
T. 17 S., R. 3 E.																						
Sec. 8																						
SE¼NE¼SW¼	4 NW of Gu Oidak	DW-20	Dr	1955	480	8	0	480	Ts	302	480	C, G,W	1,965 A	339 R	2/55	1,626	20	S	Y	X	Y	On valley flat; bailing-test data inconclusive regarding capacity.
Sec. 24																						
NW¼SE¼SE¼	2 NE of Gu Oidak	DW-17	Dr	1920	602	6-5/8	0	596	P	530	596	C,G	2,100 D	452.9	10/57	1,647	8	D,S	Y		Y	On valley flat.

Table 1.--Records of wells and springs, Papago Indian Reservation, Maricopa, Pima, and Pinal Counties, Arizona--Continued.

LOCATION AND DESIGNATION			CONSTRUCTION DATA										HYDROLOGIC DATA					SUPPLEMENTARY DATA				
						Casing record			Finish					Water level								
							Depth (feet)			Depth (feet)												
Location	Location (distance in miles and general direction from nearest village or town)	BIA number, name, or other designation	Type	Date of completion (year)	Total depth (feet)	Diameter (inches)	From	To	Type	From	To	Type of lift	Surface altitude	Depth below land surface (feet)	Date measured (mo. yr.)	Water-level altitude	Yield (gpm)	Use	Log	Well cuttings	Chemical analysis of water	Remarks
T. 17 S., R. 4 E.--Continued																						
Sec. 27																						
SE¼NE¼NW¼	2 NW of Sells	Corral Well	Dr	1956	370	10	0	194				C,G	2,295 B	166.1	6/57	2,129	9	S	Y	X	Y	On bolson; no drawdown data available.
						8	194	363						165.5	10/57	2,129						
Sec. 30																						
SW¼NW¼SW¼	5 W of Sells	Sells Hosp. 1	Dr	1958	700	12	0	620	Pm	530	616		2,175 D	516.2	3/58	1,659	200	P	Y	X	Y	On bajada; specific capacity, 3 gpm per foot of drawdown.
									OH	616	700											
Sec. 31																						
NW¼NW¼NW¼	5 W of Sells	Sells Hosp. 2	Dr	1959	700	16	0	700	P	530	695		2,180	506 R	11/59	1,674	250	P,S	Y	X	Y	On bajada; specific capacity reported to be about 2 gpm per foot of drawdown.
Sec. 34																						
SE¼NW¼NE¼	2 W of Sells	DW-41	Dr	1936	330	7-5/8	0	201	P	141	201	T,E	2,300 B	145.1	6/57	2,155	60	D,S	Y		Y	Along large wash on bajada; reported in bedrock(?) at 219 feet; specific capacity reported to be 6 gpm per foot of drawdown; backfilled to 201 feet.
														148.7	10/57	2,152						
Sec. 36																						
NE¼NW¼NE¼	Sells	W-42	Dg		38							B	2,370 D	36 C	/15	2,334					Y	Along large wash in foothills; in Tertiary volcanic rock below shallow alluvium; not shown on map.
T. 17 S., R. 5 E.																						
Sec. 2																						
SW¼NW¼SW¼			Dg										2,820 D					N				In wash in foothills; not shown on map.
Sec. 3																						
SE¼NE¼NE¼	6 NE of Sells	Jaeger Shaft	Dg									C,G	2,890 D	102.5	1/57	2,788		D,In				In foothills; in diorite intrusive into Cretaceous(?) rocks; old shaft used as well.
NE¼NW¼NW¼	6 NE of Sells	W-72											2,950 D					N				Along large wash in foothills.
SE¼NW¼SW¼	5 NE of Sells	W-55	Dg										2,925 D					N				Along large wash in foothills.
Sec. 6																						
NE¼SW¼SE¼	5 N of Sells	W-43	Dg									C,G	2,725 D	7.4	10/54	2,718		S				Along large wash in foothills; in Cretaceous(?) volcanic rock.
Sec. 19																						
NE¼SE¼NE¼	2 NE of Sells	Deep Test 6	TH	1953	215	8	0	140	OH	192	215	N	2,450 B	86	6/57	2,364	60	N	Y	X	Y	On bajada in pass; reported in "red rock" at 45 feet; reported 60 gpm with "very little drawdown."
						6	104	192														

Table 1.--Records of wells and springs, Papago Indian Reservation, Maricopa, Pima, and Final Counties, Arizona—Continued.

LOCATION AND DESIGNATION			CONSTRUCTION DATA										HYDROLOGIC DATA					SUPPLEMENTARY DATA				
						Casing record			Finish					Water level								
							Depth (feet)			Depth (feet)												
Location	Location (distance in miles and general direction from nearest village or town)	BIA number, name, or other designation	Type	Date of completion (year)	Total depth (feet)	Diameter (inches)	From	To	Type	From	To	Type of lift	Surface altitude	Depth below land surface (feet)	Date measured (mo. yr.)	Water-level altitude	Yield (gpm)	Use	Log	Well cuttings	Chemical analysis of water	Remarks
T. 17 S., R. 6 E.																						
Sec. 8																						
NE¼NE¼SW¼	3 N of Ali Molina	DW-1 (Fresnal Well)	Dr	1880's	700	6-5/8	0	484	P	521	700	C, G	2,680 B	595 R	6/19	2,085		S	Y		Y	On bajada; original well was 780 feet deep, abandoned in 1915, and cleaned out from 484 to 700 feet in 1919.
						6	484	700						600 B	/54	2,080						
Sec. 31																						
NE¼NE¼SE¼	Ali Molina	DW-14	Dr	1920	855	10	0	120	P			C, G	2,680 D	594.3	11/53	2,086	10 M	D, S	Y		Y	On bolson.
						6-1/4	68	673														
						5-5/8	673	855														
Sec. 35																						
NW¼SE¼NW¼	4 E of Ali Molina		Dg										2,995 D	Dry	/54							On bolson.
T. 17 S., R. 7 E.																						
Sec. 5																						
NW¼SE¼NW¼	4 SE of Havana Nakya	W-67	Dg									C, W	3,300 D	43.9	10/54	3,256		S			Y	In mountain valley; in rock below few feet of alluvium.
SW¼SW¼SE¼	3 N of San Juan Spring		Mn									C, H	3,505 D	19.2	10/54	3,486		S				In mountain valley.
Sec. 14																						
SE¼NE¼NW¼	3 W of Uhs Kug		Sp										5,550 D	Dry	11/54							In mountains; in gneissic granite.
Sec. 20																						
NW¼SW¼NW¼	1 NE of San Juan Spring	San Juan Spring	Sp										3,950 D									In mountains.
Sec. 25																						
NE¼NE¼NE¼	3 SW of Uhs Kug	W-75	Dg		22							C, W	3,980 D	18 R	11/41	3,962		S				Along large wash in foothills.
Sec. 32																						
NE¼NW¼NW¼	1 SE of San Juan Spring		Dg		30								3,425 D	Dry	11/54			A				In mountain valley; caved in.
NW¼NW¼NW¼	1 SE of San Juan Spring		Dr			6						C	3,450 D	104.2	9/54	3,346		D, S				Along wash in foothills.
Sec. 34																						
SE¼NE¼SW¼	3 SE of San Juan Spring		Sp										4,500 D									In mountain valley.
T. 17 S., R. 8 E.																						
Sec. 8																						
NE¼NE¼NE¼	Uhs Kug	W-31	Dg									C, H	4,190 D	25 R	11/41	4,165		D, S				In mountains; along fault zone; developed spring.
														24.1	10/54	4,166						

Table 1.--Records of wells and springs, Papago Indian Reservation, Maricopa, Pima, and Pinal Counties, Arizona—Continued.

LOCATION AND DESIGNATION			CONSTRUCTION DATA										HYDROLOGIC DATA					SUPPLEMENTARY DATA				
						Casing record			Finish					Water level								
Location	Location (distance in miles and general direction from nearest village or town)	BIA number, name, or other designation	Type	Date of completion (year)	Total depth (feet)	Diameter (inches)	Depth (feet) From	Depth (feet) To	Type	Depth (feet) From	Depth (feet) To	Type of lift	Surface altitude	Depth below land surface (feet)	Date measured (mo. yr.)	Water-level altitude	Yield (gpm)	Use	Log	Well cuttings	Chemical analysis of water	Remarks
T. 18 S., R. 6 E.																						
Sec. 1																						
NE¼SE¼SE¼	2 S of San Juan Spring	W-45	Dg									C, W	3,450 C	25.5	9/54	3,424		D, S				Along wash in foothills.
Sec. 25																						
NW¼NW¼NW¼	6 S of San Juan Spring	W-60	Dg									C, W	3,045 D	26.3	10/54	3,019		S				Along wash in foothills.
T. 18 S., R. 7 E.																						
Sec. 9																						
SW¼SE¼SW¼	3 N of Chuili Shaik	W-4	Dg										3,720 D	Dry C	/15							In foothills; in tilted conglomerate.
														Dry	10/54							
Sec. 26																						
SW¼SW¼NW¼	3 E of Chuili Shaik	W-37	Dg		13							C, G	3,525 D	8 C	/15	3,517		S			Y	In mountain valley.
														7.2	10/54	3,518						
Sec. 29																						
NW¼NW¼NW¼	1 N of Chuili Shaik	W-15 (Kohi Kug)	Dg									C, G	3,250 D	6	9/54	3,244		D, S			Y	Along wash in foothills.
Sec. 31																						
NW¼NE¼SE¼-1	1 SW of Chuili Shaik		Dg									C, G	3,125 D	41.9	10/54	3,083		D			Y	Along wash in foothills.
NW¼NE¼SE¼-2	1 SW of Chuili Shaik		Dg										3,125 D	42.5	10/54	3,082		N				Along wash in foothills; 20 feet northwest of well 1 in same 10-acre plot; not shown on map.
Sec. 32																						
NE¼NW¼NE¼-1	Chuili Shaik	W-3	Dg									N	3,200 D	9.4	10/54	3,191		N			Y	Along wash in foothills; 20 feet southwest of well 2; not shown on map.
NE¼NW¼NE¼-2	Chuili Shaik		Dr	1937	61							C, W	3,200 D	6.5 R	2/37	3,193	45	D, S	Y			Along wash in foothills; reported in "red porphyry" at 44 feet; specific capacity reported to be about 1 gpm per foot of drawdown.
SW¼NW¼NW¼	Chuili Shaik	W-5	Dg									C, W	3,125 D	28.6	10/54	3,096		D, S				In valley in foothills.
SE¼SE¼SE¼	1 SE of Chuili Shaik	W-65	Dg									C, W	3,300 D	20.6	10/54	3,279		D, S				Along wash in foothills; in Tertiary andesite below thin alluvium.
Sec. 33																						
NW¼NE¼NE¼	2 E of Chuili Shaik		Dr										3,425 D					A				Drilled in fill behind dam; sealed.
NW¼SW¼NE¼	2 E of Chuili Shaik	Allison Camp	Dg									N	3,300 D	6.9	10/54	3,293		N				Along wash in foothills.

Table 1.--Records of wells and springs, Papago Indian Reservation, Maricopa, Pima, and Pinal Counties, Arizona—Continued.

LOCATION AND DESIGNATION			CONSTRUCTION DATA										HYDROLOGIC DATA					SUPPLEMENTARY DATA				
						Casing record			Finish					Water level								
							Depth (feet)			Depth (feet)												
Location	Location (distance in miles and general direction from nearest village or town)	BIA number, name, or other designation	Type	Date of completion (year)	Total depth (feet)	Diameter (inches)	From	To	Type	From	To	Type of lift	Surface altitude	Depth below land surface (feet)	Date measured (mo. yr.)	Water-level altitude	Yield (gpm)	Use	Log	Well cuttings	Chemical analysis of water	Remarks
T. 19 S., R. 3½ E.																						
Sec. 1																						
NE¼NW¼NE¼	Cowlik	DW-12	Dr	1919	722	6-5/8	0	722	P			C, G	2,100 D	392 R	6/19	1,708		D, S	Y		Y	On bajada near small hill.
														395.1	11/53	1,705	12					
T. 19 S., R. 5 E.																						
Sec. 3																						
NW¼NE¼NW¼	2 E of Topawa	San Solano	Dr		484	8						C, E	2,475 D	426.7	11/53	2,048		D			Y	On bajada.
		Mission Well												427.3	6/57	2,048						
SE¼NW¼SE¼	2 E of Topawa	DW-9	Dr	1915	602	10	0	592	OH	592	602	C, G	2,490 D	448.7	11/53	2,041	48	D, S	Y		Y	On bajada.
														450.8B	/54	2,039						
Sec. 5																						
NE¼SW¼NE¼	Topawa		Dr		505	6						C, E	2,395 D	350.9	11/53	2,044		D, S			Y	On bajada near foothills.
T. 19 S., R. 6 E.																						
Sec. 1																						
NE¼SW¼NE¼-1	Pitoikam		Dg									C, G	3,020 D	15.6	10/54	3,004		D, S				Along large wash near foothills; about 500 feet northeast of W-35; not shown on map.
NE¼SW¼NE¼-2	Pitoikam		Dg									C, G	3,020 D	15.5	10/54	3,004		D, S				Along large wash in foothills; about 200 feet northeast of well 1; not shown on map.
SW¼SW¼NE¼	Pitoikam	W-35	Dg									C, W	3,010 D	17.7	10/54	2,992		D, S				Along large wash near foothills.
Sec. 2																						
NW¼SW¼SE¼	1 W of Pitoikam	W-39	Dg									C, W	2,930 D	25.3	10/54	2,905		D, S				Along large wash near foothills.
Sec. 27																						
NW¼NE¼NW¼	4 SW of Pitoikam		TH	1954	980				10-inch OH	0	980		2,840 D					A	Y	X		On bajada; driller reported "hard red rock" at 705; seep at 790 feet; reported as insufficient to make a stock well.
T. 19 S., R. 7 E.																						
Sec. 4																						
SW¼NW¼SW¼	2 E of Pitoikam	W-38	Dg									C, W	3,375 D	17.6	10/54	3,357		D, S				Along large wash in foothills.

Table 1.--Records of wells and springs, Papago Indian Reservation, Maricopa, Pima, and Pinal Counties, Arizona--Continued.

LOCATION AND DESIGNATION			CONSTRUCTION DATA										HYDROLOGIC DATA					SUPPLEMENTARY DATA				
						Casing record			Finish					Water level								
							Depth (feet)			Depth (feet)												
Location	Location (distance in miles and general direction from nearest village or town)	BIA number, name, or other designation	Type	Date of completion (year)	Total depth (feet)	Diameter (inches)	From	To	Type	From	To	Type of lift	Surface altitude	Depth below land surface (feet)	Date measured (mo. yr.)	Water-level altitude	Yield (gpm)	Use	Log	Well cuttings	Chemical analysis of water	Remarks
T. 20 S., R. 3 E.--Continued																						
Sec. 24 (approx.)	2? W of Itak	Toro Well	TH	1938	685									Dry	/38			A	Y			On bolson; reported about 2 miles southwest of Itak; could not locate.
T. 20 S., R. 4 E.																						
Sec. 2																						
NE¼SE¼NW¼	Vamori	DW-10	Dr	1916	608	6-5/8	0	608	Ps	513	608	C, G	2,245 D	500 R	5/16	1,745		D, S	Y		Y	On valley flat; reported in "decomposed granite schist" at 510 feet.
														493.2	11/53	1,752						
														496.5B	/54	1,748						
T. 20 S., R. 5 E.																						
Sec. 12																						
SE¼NW¼NE¼	2 N of Choulic	DW-13	Dr	1919	681	6-5/8	0	681	P			C, W	2,490 D	558.5R	11/19	1,932		D, S	Y		Y	On bajada.
														557.3	11/53	1,933						
														559 B	/54	1,931						
Sec. 15																						
NW¼NW¼SW¼	3 NW of Choulic	DW-64	Dr	1954	730	8	0	700	Ts	560	700	C, G	2,365 D	560 R	6/54	1,805		S	Y	X	Y	On bajada.
Sec. 24																						
SE¼SE¼SE¼	Choulic	DW-47	Dr	1936	674	8-5/8	0	242	P	593	674	C, W	2,475 D	570 B	/54	1,905		S	Y		Y	On bajada.
						6-5/8	242	674						568.8	9/56	1,906	24					
														569.1	6/57	1,906						
Sec. 28																						
NW¼SW¼NW¼	4 W of Choulic	DW-51	Dr	1938	660	6-1/4	0	660	P	642	660	C, G	2,380 D	604 R	5/38	1,776	18	D, S	Y		Y	On valley flat.
														590	11/53	1,790						
T. 20 S., R. 6 E.																						
Sec. 1																						
SE¼SW¼NE¼	2 W of Chutum Vaya		Sp											Dry	4/59			A				In wash in foothills.
NE¼NE¼SE¼	2 W of Chutum Vaya		Dg		35							N	3,240 D	Dry	4/59			A				Along wash in foothills; in granite.
Sec. 12																						
SW¼SW¼NE¼	2 SW of Chutum Vaya		Dg										3,140 D	29.6	4/59	3,110		S				Along wash in foothills; in metasediments.

Table 1.--Records of wells and springs, Papago Indian Reservation, Maricopa, Pima, and Final Counties, Arizona—Continued.

LOCATION AND DESIGNATION			CONSTRUCTION DATA										HYDROLOGIC DATA					SUPPLEMENTARY DATA				
						Casing record			Finish					Water level								
							Depth (feet)			Depth (feet)												
Location	Location (distance in miles and general direction from nearest village or town)	BIA number, name, or other designation	Type	Date of completion (year)	Total depth (feet)	Diameter (inches)	From	To	Type	From	To	Type of lift	Surface altitude	Depth below land surface (feet)	Date measured (mo. yr.)	Water-level altitude	Yield (gpm)	Use	Log	Well cuttings	Chemical analysis of water	Remarks
T. 21 S., R. 4 E.																						
Sec. 12																						
NW¼NW¼SW¼	7 W of San Miguel		Dg									N	3,010 D	27.3	4/59	2,983		S				In foothills; in brecciated rock along probable fault zone; dry hole 30 feet north of this well.
T. 21 S., R. 5 E.																						
Sec. 7																						
SE¼SE¼SW¼	5 W of San Miguel	W-68	Dg		80							C, W, B	2,830 D	9 C	/15	2,821		S				In foothills; in metasediments.
														28.1	4/59	2,802						
T. 21 S., R. 6 E.																						
Sec. 7																						
NW¼NW¼SW¼	San Miguel	DW-11	Dr	1924	712	7-5/8	0	706	Ps	603	706	C, W	2,480 D	567 R	7/24	1,913		D, S	Y		Y	On valley flat; located 20 feet east of abandoned 692-foot well.
									OH	706	712			569.8B	/54	1,910						
Sec. 12																						
SW¼SE¼NW¼	5 E of San Miguel		Dg									C, H	2,865 D	53.1	10/54	2,812		D, S				In foothill valley; in gneissic rock below thin alluvium.
Sec. 33																						
SW¼NE¼NW¼	4 SE of San Miguel	DW-49	Dr	1936	755	5-5/8	0	660	OH	660	755	C, W	2,650 D	700 R	10/36	1,950		S	Y		Y	On bolson; reported in rock at 620 feet.
														712.7	6/54	1,937	22					
T. 21 S., R. 7 E.																						
Sec. 7																						
NE¼NW¼SW¼-1	7 E of San Miguel	W-14	Dg		20								3,240 D	10 E	4/59	3,230		S				In mountains; developed spring in granite.
NE¼NW¼SW¼-2	7 E of San Miguel	W-51	Dg		20								3,250 D	10 E	4/59	3,240		S				In mountains; developed spring in granite; not shown on map.
NE¼SW¼SW¼	7 E of San Miguel	W-13	Dg									C, W	3,190 D	30.4	10/54	3,160		D, S			Y	In mountains; developed spring in granite.
														16.3	4/59	3,174						
Sec. 18																						
NW¼SW¼SE¼	6 N of Buenos Aires	W-6	Dg									C, W	3,300 D	13.3	4/59	3,287						In mountain valley; in granite below shallow alluvium.
NW¼SE¼SE¼	6 N of Buenos Aires		Dg									N	3,360 D	1	4/59	3,359						In mountains; in granite.
Sec. 19																						
NE¼NE¼NW¼	5 N of Buenos Aires		Dg									N	3,240 D	Dry	4/59			N				In mountains; filled in.

Table 2.--Drillers' logs of wells on the Papago Indian Reservation, Arizona

Well location, designation, altitude, and rock description	Thickness (feet)	Depth (feet)
T. 10 S., R. 1 W.		
Sec. 36 SE¼SE¼NW¼ Kaka Well 2,255 feet		
Surface	7	7
Clay	33	40
Boulders	8	48
Clay	7	55
Boulders, malpais	35	90
Red malpais, hard	8	98
Soft, claylike, lost water	8	106
Rock, very hard	4	110
Red, soft	14	124
Sandlike	12	136
Rock, lost water, wind pocket	14	150
Resembling limestone, lost water	55	205
Malpais, hard	5	210
Malpais, hard, fissure, lost water	18	228
Rusty brown, hard	12	240
Black malpais, hard	12	252
Brown rock	14	266
Black malpais, lost water	8	274
Black, very hard, fissure at 297 feet	23	297
Brown and black	17	314
Black rock, fissure, lost water	15	329
Black rock, very hard	7	336
Black with brown, lost water	19	355
Black rock, fissure	3	358
Brown rock	9	367
Hard rock	6	373
Black, soft, fast drilling	10	383
Hard, black	6	389
Black, very hard	19	408
Traces of brown rock, very hard	12	420
Malpais boulders	6	426
Black rock	4	430
Boulders	23	453
Black rock	11	464
Fissure, lessening of water	6	470
Brown rock	8	478
Black, very hard	19	497
Brown, some clay, small seep, rocks and mud were warm	8	505
Black rock, hard	3	508
Black, bluish cast	17	525
Fissure, lessening of water	8	533
Hard, black	2	535

Table 2.--Drillers' logs of wells on the Papago Indian Reservation, Arizona--Continued

Well location, designation, altitude, and rock description	Thickness (feet)	Depth (feet)
Rotten igneous rocks (some water)	18	618
Rotten igneous rocks with thin hard streaks ...	34	652
TOTAL DEPTH		652
T. 12 S., R. 2 W.		
Sec. 29 NE¼SE¼NW¼ 1 SW of Hickiwan Periqua 1 2,230 feet		
Lava boulders and clay	11	11
Yellow clay	7	18
Igneous gravel and clay	127	145
Lava boulders ...	131	276
Igneous and porphyry gravel and clay	124	400
Dark-brown igneous gravel and clay; dribble of water	210	610
Yellow igneous gravel and clay	110	720
Solid lava rock	32	752
Red porphyry, gravel	11	763
Cemented gravel	137	900
TOTAL DEPTH		900
T. 12 S., R. 2 W.		
Sec. 30-1? 2 SW of Hickiwan Periqua 2 2,230 feet?		
Caliche	8	8
Igneous gravel and clay	185	193
Lava rock with crevice	27	220
TOTAL DEPTH		220
T. 12 S., R. 2 W.		
Sec. 30-2? 2 SW of Hickiwan Periqua 3 2,230 feet?		
Caliche	8	8
Igneous gravel and clay	185	193
Lava rock with crevice	40	233
TOTAL DEPTH		233
T. 13 S., R. 2 W.		
Sec. 34 SE¼NE¼NE¼ 7 NW of Wahak Hotrontk DW-68 2,035 feet		
Clay and gravel ..	490	490
Sand with water ..	5	495
Clay and gravel ..	155	650
TOTAL DEPTH		650

Table 2.--Drillers' logs of wells on the Papago Indian Reservation, Arizona--Continued

Well location, designation, altitude, and rock description	Thickness (feet)	Depth (feet)
T. 16 S., R. 3 W.		
Sec. 2		
NE¼?		
Near Gu Vo		
Test Hole		
2,100 feet		
Light-red clay with gravels and boulders (valley fill)	250	250
Boulders with some clay (hard drilling)	50	300
Boulders (big and little ones)	8	308
Malpais rock (9 hours, 3 feet)	13	321
TOTAL DEPTH		321
T. 16 S., R. 3 W.		
Sec. 5		
NW¼NE¼SW¼		
3 W of Gu Vo		
DW-39		
2,220 feet		
Loose sand and gravel	240	240
Cemented gravel	440	680
Gravel; water, 5 gpm	2	682
Cemented gravel	18	700
Gravel; water, 24 gpm	55	755
Cemented gravel	50	805
TOTAL DEPTH		805
T. 17 S., R. 1 W.		
Sec. 11		
NE¼SW¼NW¼		
Kom Vo		
DW-15		
1,770 feet		
Surface sand and soil	20	20
Red clay	210	230
Sand and gravel; water at 240 feet	10	240
Shale clay	56	296
Gravel, sand, and boulders ...	65	361
TOTAL DEPTH		361
T. 17 S., R. 1 W.		
Sec. 33		
SW¼NE¼NW¼		
4 SW of Kom Vo		
DW-32		
1,760 feet		
Gravel, sand, and boulders ...	6	6
White-blue clay ..	44	50
Light-red clay ...	50	100
Sticky red clay...	100	200
Red clay and sand	48	248
Red clay (jointed formation)	42	290
Fine sand, no gravel; water ..	31	321
TOTAL DEPTH		321

Table 2.--Drillers' logs of wells on the Papago Indian Reservation, Arizona--Continued

Well location, designation, altitude, and rock description	Thickness (feet)	Depth (feet)
Hard red lava ...	3	363
Red vesicular lava, fractured	117	480
TOTAL DEPTH		480
T. 18 S., R. 1 W.		
Sec. 28		
SW¼SE¼NE¼		
5 NW of		
Stan Shuatuk		
DW-31		
1,705 feet		
Red clay	25	25
Sandy red clay ..	50	75
Red clay, sticky.....	100	175
Sandy clay (little seep of water)..	25	200
Sandy clay	50	250
Fine sand and clay	62	312
TOTAL DEPTH		312
T. 19 S., R. 1 W.		
Sec. 4		
NE¼NE¼SE¼		
4 W of		
Stan Shuatuk		
DW-30		
1,710 feet		
Clay and sand ...	25	25
Red clay, sticky	25	50
Sandy red clay ..	25	75
Sand; water at 175 feet	100	175
Sandy clay	75	250
Sandy reddish clay	7	257
TOTAL DEPTH		257
T. 19 S., R. 1 W.		
Sec. 12		
NE¼NE¼SE¼		
2 SW of		
Stan Shuatuk		
PF-2		
1,735 feet		
Surface sand	70	70
Sandy clay and sand	26	96
Sand and boulders	99	195
Sand, clay, and boulders	120	315
Sand and clay ...	238	553
Sandy clay	142	695
Cinders, sand, and clay streaks	158	853
Hard sand	42	895
Cemented sand ..	15	910
Conglomerate ...	42	952
TOTAL DEPTH		952
T. 19 S., R. 2 W.		
Sec. 2		
SE¼SW¼NW¼		
6 E of Ali Chuk		
DW-53		
1,720 feet		
Sandy soil.....	20	20
Sticky clay	40	60
Sandy clay	24	84
Malpais	2	86
Sandy clay	68	154
Sticky clay	26	180

Table 2.--Drillers' logs of wells on the Papago Indian Reservation, Arizona--Continued

Well location, designation, altitude, and rock description	Thickness (feet)	Depth (feet)
Sand, gravel, and boulders ...	67	79
Clay, sand, and gravel	36	115
Fill, silt, and sand, caving badly	60	175
Very light clay, coarse gravel; some water	10	185
Heavy clay and gravel, dry ...	25	210
Clay, sand, and gravel	55	265
Tight clay and gravel, cemented, firm ..	35	300
Loose clay and gravel, heavy ..	10	310
Decomposed granite formation, fairly hard	23	333
Heavy clay	5	338
Granite, hard ...	12	350
TOTAL DEPTH		350
T. 8 S., R. 4 E.		
Sec. 23 SE¼SE¼SW¼ Vaiva Vo DW-5 1,432 feet		
Silt and sand	20	20
Clay, indurated .	14	34
Sand and gravel .	6	40
Clay and gravel .	4	44
Cemented gravel and boulders ...	46	90
Yellow clay	12	102
Cemented gravel and boulders ...	38	140
Fine gravel; water at 150 feet	34	174
Cemented gravel	18	192
Granite gravel ...	4	196
Granite		196
TOTAL DEPTH		196
T. 8 S., R. 5 E.		
Sec. 1 (west half) SW¼NE¼SE¼ Chuichu Explor. CE-1 1,445 feet		
Surface soil and sandy loam	24	24
Gravel to 6 inches	36	60
Sandy clay	4	64
Sharp gravel, packed in 10-pound red iron oxide	6	70
Same material, only set hard ...	31	101
Same material, cemented	2	103
TOTAL DEPTH		103
T. 8 S., R. 5 E.		
Sec. 1 (west half) SE¼SE¼SE¼ Chuichu Village Well, CE-2 1,453 feet		
Surface soil	4	4
Gray sand and silt	21	25

Table 2.--Drillers' logs of wells on the Papago Indian Reservation, Arizona--Continued

Well location, designation, altitude, and rock description	Thickness (feet)	Depth (feet)
Sand, gravel, and rock, 1 to 6 inches, water-bearing, some fine sand with it	12	59
Sand, gravel, and coarse rock, water-bearing (first water encountered at 60 feet)	10	69
Coarse rock, sand, and gravel; good water gravel with plenty of water	29	98
Soft caliche and gravel, sand and rock water course ..	6	104
Red sediment, some clay	22	126
Caliche and water crystals	2	128
Red sand and clay, mixed ...	32	160
Fine sand and clay, mixed ...	20	180
Water-bearing cement gravel	23	203
Red clay and rock	12	215
Red clay, filled with boulders, very hard	15	230
TOTAL DEPTH		230

Well location, designation, altitude, and rock description	Thickness (feet)	Depth (feet)
T. 8 S., R. 5 E.		
Sec. 12 (east half)		
NE¼NW¼NE¼-2		
Chuichu		
Old 2		
1,460 feet		
Clay, hard, yellow	12	12
Sand	14	26
Rock (mostly large boulders)	3½	29½
Gravel and small boulders	25	54½
Clay	15½	70
Caliche, water struck at this depth (73 feet), water raised 16 feet, stands at 57 feet	3	73
Gravel	30	103
Clay, red and sticky	37	140
Caliche	4	144
Clay, yellow	26	170
Clay, red and sticky, large boulders	25	195
Rock, hard bedrock	47	242
TOTAL DEPTH		242
T. 8 S., R. 5 E.		
Sec. 12 (east half)		
SE¼NW¼NE¼-1		
Chuichu, C-1		
1,461 feet		
Surface silt	22	22
Sand and gravel ..	3	25

Table 2.--Drillers' logs of wells on the Papago Indian Reservation, Arizona--Continued

Well location, designation, altitude, and rock description	Thickness (feet)	Depth (feet)
T. 8 S., R. 5 E.		
Sec. 19		
NE¼SE¼NE¼		
3 E of Vaiva Vo		
CT-2		
1,402 feet		
Top soil, silt ...	25	25
Clay, sand, and gravel	30	55
Rock and gravel, filled with clay.	29	84
Hard blue rock ..	12	96
Broken red and blue rock, drilled easy ...	7	103
Gravel, raveling	5	108
Hard blue rock ..	32	140
Sand and gravel, raveling; some water	5	145
Hard blue rock ..	11	156
Blue rock, gravel, and clay ...	52	208
Heavy clay	2	210
Broken rock, gravel, and clay	35	245
Heavy clay	3	248
Broken rock, gravel, and clay	12	260
Broken rock, sharp gravel, and clay.....	60	320
Caliche and gravel	15	335
Gravel and sand, caving	15	350
Clay and gravel	22	372
Fine sand and gravel, caving .	10	382
Broken rock, clay, and gravel	24	406
Sand and gravel ..	10	416
Red and blue heavy clay	4	420
Fine sand and gravel, caving ..	8	428
Clay, gravel, and sand	7	435
Gravel and sand, caving	5	440
Clay, sand, and heavy gravel ...	6	446
Clay, gravel, and boulders ...	24	470
Dark-red clay and gravel	22	492
Sandy shale, broken rock	30	522
Heavy red and blue clay	3	525
Sand and gravel ..	5	530
Clay	4	534
Sand and gravel ..	9	543
Sandy shale.....	19	562
Clay	2	564
Sandy shale, sharp	28	592
Sand	2	594
Hard rock (bedrock) (red oxide)	7	601
TOTAL DEPTH		601
T. 8 S., R. 6 E.		
Sec. 5		
SE¼SE¼NE¼		
East Chuichu irrig. proj., C-10		
1,471 feet		
Top soil	5	5
Clay	15	20

Table 2.--Drillers' logs of wells on the Papago Indian Reservation, Arizona--Continued

Well location, designation, altitude, and rock description	Thickness (feet)	Depth (feet)
Cemented sand ..	16	244
Clay	32	276
Coarse sand	6	282
Clay	53	335
Clay and gravel, 1/2 to 1 inch...	5	340
Cemented sand ..	6	346
Sandy clay	8	354
Cemented sand ..	4	358
Conglomerate ...	72	430
TOTAL DEPTH		430
T. 8 S., R. 6 E.		
Sec. 8		
SE¼SE¼NE¼		
East Chuichu irrig. proj.		
C-8		
1,480 feet		
Silt	8	8
Caliche	12	20
Cemented sand ..	12	32
Sand	10	42
Sandstone	14	56
Clay	8	64
Boulders	8	72
Clay	23	95
Boulders	5	100
Sand	10	110
Sand and gravel	30	140
Clay	95	235
Sandstone	10	245
Sand	5	250
Clay	80	330
Cemented sand ..	5	335
Clay	15	350
Sand	10	360
Sandy clay	90	450
TOTAL DEPTH		450
T. 8 S., R. 6 E.		
Sec. 8		
SE¼SE¼SE¼		
East Chuichu irrig. proj.		
C-7		
1,484 feet		
Brown clay	15	15
Brown sandy clay	20	35
Sand	27	62
Brown sandy clay	56	118
Sand	3	121
Sand and gravel, 1/2 inch	4	125
Brown sandy clay	77	202
Sand and gravel, 3/4 inch	5	207
Brown sticky clay	21	228
Brown clay with gravel embedded	9	237
Conglomerate	15	252
Brown sticky clay with gravel embedded	218	470
Conglomerate	30	500
TOTAL DEPTH		500
T. 8 S., R. 6 E.		
Sec. 17		
SE¼SE¼NE¼		
East Chuichu irrig. proj.		
C-5		
1,490 feet		
Sandy loam	4	4

Table 2.--Drillers' logs of wells on the Papago Indian Reservation, Arizona--Continued

Well location, designation, altitude, and rock description	Thickness (feet)	Depth (feet)
Fine sand	5	93
Coarse sand	32	125
Brown sandy clay	75	200
Brown clay with 1/2-inch gravel, streaks embedded	190	390
Brown clay	3	393
Tight gravel up to 4 inches	17	410
Conglomerate ...	65	475
Red clay with 1/4-inch gravel embedded ...	29	504
TOTAL DEPTH		504
T. 8 S., R. 6 E.		
Sec. 17		
SE¼SE¼SE¼		
East Chuichu irrig. proj.		
C-4		
1,494 feet		
Gravel and clay .	60	60
Gravel (up to 2 inches); no water	15	75
Clay and gravel	10	85
Not reported	5	90
Sand and gravel, size 5 inches ..	25	115
Gravel and clay .	60	175
Clay, gravel, and sandy clay .	35	210
Clay, gravel, hard	90	300
Clay, gravel, and caliche	100	400
Decomposed granite	15	415
Sand boulders, size 9 inches ...	20	435
Cemented boulders	17	452
Gravel, loose ...	8	460
Cemented gravel .	40	500
Sand, clay, gravel	15	515
Cemented gravel .	50	565
Clay, gravel.....	10	575
Cemented sand, gravel	35	610
TOTAL DEPTH		610
T. 9 S., R. 3 E.		
Sec. 3		
NW¼NW¼SE¼		
7 SW of Vaiva Vo		
RT-11		
1,785 feet		
Decomposed granite and bentonite	45	45
Clay and gravel ..	165	210
Rock; dry	142	352
TOTAL DEPTH		352
T. 9 S., R. 3 E.		
Sec. 14		
NE¼NW¼NW¼		
8 SW of Vaiva Vo		
DW-72		
1,730 feet		
Sand	24	24
Clay and gravel	406	430
TOTAL DEPTH		430

Table 2.--Drillers' logs of wells on the Papago Indian Reservation, Arizona—Continued

Well location, designation, altitude, and rock description	Thickness (feet)	Depth (feet)
Red clay	26	206
Rock and gravel .	4	210
Red clay.....	6	216
Rock and gravel .	134	350
TOTAL DEPTH		350
T. 9 S., R. 4 E.		
Sec. 15		
NE¼SW¼SW¼-1		
5 S of Vaiva Vo		
CT-8		
1,514 feet		
Hardpan	10	10
Sandy clay	108	118
Sandy	4	122
Sandy clay	84	206
Sand	8	214
Sandy clay	20	234
Gravel and sand .	12	246
Sandy clay	16	262
Sand gravel	88	350
TOTAL DEPTH		350
T. 9 S., R. 4 E.		
Sec. 15		
NE¼SW¼SW¼-2		
5 S of Vaiva Vo		
CT-9		
1,511 feet		
Top soil	5	5
Sandy clay	20	25
Gup shell	5	30
Sandy clay	25	55
Gravel	20	75
Sandy clay	30	105
Broken rock	10	115
Sandy clay	5	120
Sand and gravel; water	10	130
Red sandy clay ..	95	225
Not reported.....	100	325
Cemented sand, gravel, and rock	10	335
Red clay and rocks.....	30	365
Loose sand and gravel	13	378
Red sandy clay ..	13	391
Hard sand	3	394
Sandy clay, red ..	3	397
Hard sand	3	400
Sandy clay	25	425
Rocks	5	430
Sandy clay.....	15	445
Sandy clay with rocks.....	15	460
Cemented rocks ..	12	472
Clay and rocks ...	8	480
Cemented rocks ..	10	490
Red clay and rocks.....	194	684
TOTAL DEPTH		684
T. 9 S., R. 4 E.		
Sec. 15		
NW¼SE¼SW¼		
5 S of Vaiva Vo		
CT-10		
1,505 feet		
Top soil	5	5
Red sandy clay...	115	120
Sand and gravel; first water	8	128
Sandy clay, red ..	90	218
Sand and gravel ..	13	231
Sandy clay and gravel	12	243
Sandy clay and boulders	21	264
Coarse gravel and rocks	6	270

Table 2.--Drillers' logs of wells on the Papago Indian Reservation, Arizona—Continued

Well location, designation, altitude, and rock description	Thickness (feet)	Depth (feet)
Harder white caliche, more gravel	9	83
Clay and gravel, color changed to light yellow..	56	139
Light-red clay, very little gravel	56	195
Changed to bluish gray (gravel) and broken lime, marly.....	7	202
Light-yellow sandy clay.....	88	290
TOTAL DEPTH		290
T. 10 S., R. 4 E. Sec. 25 SW¼SW¼SE¼-1 3 NE of Gu Komelik USBM-C-1 1,795 feet		
Sand and gravel..	20	20
Granite, weathered	173	193
Schist	142	335
Quartzite and schist.....	25	360
Schist and granite contact.....	5	365
Schist and granite	20	385
Granite.....	165	550
Shear zone, clay	5	555
Granite.....	35	590
TOTAL DEPTH		590
T. 10 S., R. 4 E. Sec. 27 SE¼SW¼SW¼ 1 N of Gu Komelik Lakeshore Well 1,610 feet		
Alluvial debris...	100	100
Coarse sand	151	251
Hard bedrock, possibly quartzite; made 2 inches in 2 hours.....		251
TOTAL DEPTH		251
T. 10 S., R. 4 E. Sec. 33 SE¼SW¼SE¼ Gu Komelik DW-7 1,600 feet		
Top soil.....	12	12
Clay and gravel ..	8	20
Clay	125	145
Cemented gravel; water.....	14	159
Clay and gravel ..	8	167
Coarse gravel, very little sand; water.....	51	218
TOTAL DEPTH		218
T. 10 S., R. 4 E. Sec. 36 NW¼NW¼NE¼ 3 E of Gu Komelik USBM-C-3 1,788 feet		
Sand and gravel ..	10	10

Table 2.--Drillers' logs of wells on the Papago Indian Reservation, Arizona—Continued

Well location, designation, altitude, and rock description	Thickness (feet)	Depth (feet)
Sand and gravel; hit first water, 2 gpm	15	270
Clay and gravel	155	425
Sand and gravel (hard)	10	435
Sand and gravel (water)	25	460
Packed sand and gravel	93	553
TOTAL DEPTH		553
T. 12 S., R. 3 E. Sec. 23 NE¼SE¼NE¼ Anegam DW-6 1,760 feet		
Light sandy soil	8	8
Sand and gravel	12	20
Clay and gravel	18	38
Sand and gravel	2	40
Clay	70	110
Caliche	2	112
Clay and gravel	126	238
Coarse sand and gravel; water	27	265
TOTAL DEPTH		265
T. 12 S., R. 3 E. Sec. 23 SE¼SE¼NW¼ Anegam 1,760 feet		
Top soil	5	5
Sand and boulders	10	15
Sandy clay	20	35
Cemented sand and boulders	50	85
Sandy clay	80	165
Clay and boulders	55	220
Sand, red clay; struck water at 250 feet	45	265
Clay and boulders	85	350
TOTAL DEPTH		350
T. 13 S., R. 1 E. Sec. 27 NW¼NW¼SE¼ 7 SE of Vaya Chin DW-57 2,350 feet		
Dry gravel	25	25
Hard limestone	10	35
Water gravel; little water; water level, 25 feet	5	40
Black basalt	17	57
Brown basalt and water; water level, 24 feet	12	69
Green and blue conglomerate and quartz	9	78
Blue quartz	17	95
Brown basalt; water, 2 gpm; water level, 24 feet	18	113
Black basalt	47	160
Gray basalt	13	173
Black basalt	60	233
Brown basalt	35	268
TOTAL DEPTH		268

Table 2.--Drillers' logs of wells on the Papago Indian Reservation, Arizona—Continued

Well location, designation, altitude, and rock description	Thickness (feet)	Depth (feet)
Crevice in rock, lost mud		240
Rock	65	305
TOTAL DEPTH		305
T. 14 S., R. 2 E.		
Sec. 1		
NE¼SW¼NW¼		
3 S of Noipa Kam		
W-73		
Sandy caliche, top soil	6	6
Stratified igneous seam resembling phonolite .	94	100
TOTAL DEPTH		100
T. 14 S., R. 3 E.		
Sec. 31		
SE¼SE¼NW¼		
2 E of Quijotoa		
Cooley Well		
Overburden	16	16
Andesite flows ..	80	96
Rhyolite, hard ..	8	104
Andesite	6	110
Rhyolite, hard ..	4	114
Fractured andesite	3	117
Andesite	7	124
Coarse red sand and small gravel with rounded quartz granules; produced 200 gallons per hour on bailing test; no rise in water level reported	12	136
Rhyolite, blue, very hard	2	138
Quicksand, red-brown, with magnetite grains; water rose 26 feet above top of water sand; pumped sand and silt for about 8 hours, then cleared; bailed at 750 gallons per hour, about 12 gpm	2	140
TOTAL DEPTH		140
T. 14 S., R. 3 E.		
Sec. 35		
SW¼SE¼SW¼		
3 N of Sikul Himatk		
DW-36		
2,105 feet		
Yellow clay, top soil, and gravel	10	10
Rocks and yellow clay	148	158
Boulders and yellow clay	182	340
Rocks, gravel, clay; water at 524 feet	184	524
Water-bearing rocks, gravel, and coarse sand (water level on drill line 510 feet)	44	568
TOTAL DEPTH		568

Table 2.--Drillers' logs of wells on the Papago Indian Reservation, Arizona--Continued

Well location, designation, altitude, and rock description	Thickness (feet)	Depth (feet)
Hard red rock ...	2	280
Red talc	4	284
Gravel	5	289
Hard red rock or malpais	13	302
Not reported	10	312
Red rock	58	370
Hard gray rock ..	30	400
Brown rock	55	455
Hard brown rock.	15	470
Crevice, shot hole to straighten drill hole ...	5	475
Brown rock	45	520
Red rock	35	555
Clay and gravel, caved	20	575
Red rock; cased to 600 to shut off caving material at 575 feet	45	620
Brown rock	20	640
Red rock	20	660
Clay and gravel, caved	15	675
TOTAL DEPTH		675
T. 15 S., R. 1 E.		
Sec. 18		
SE¼SE¼NW¼		
6 N of Pisinimo		
DW-45		
2,005 feet		
Yellow sandy top soil	4	4
Gravel and caliche	238	242
Dark basaltic lava	22	264
Red vesicular lava	21	285
Same as above, with soft spots; found inclined crevice, crooked hole	75	360
Red porphyrytic lava, hard and full of crevices; water in crevice at 447 feet; water soft and warm, temperature about 90° ...	128	488
TOTAL DEPTH		488
T. 15 S., R. 9 E.		
Sec. 8		
NE¼NE¼NW¼		
8 E of San Ignacio		
W-4		
2,575 feet		
Top soil and conglomerate gravel	12	12
Broken red porphyry seams	48	60
Water in seams of porphyry (water level, 63 feet)	27	87
Hard green igneous rock, probably basalt	41	128
Broken igneous rock formation (brown)	58	186
TOTAL DEPTH		186

Table 2.--Drillers' logs of wells on the Papago Indian Reservation, Arizona—Continued

Well location, designation, altitude, and rock description	Thickness (feet)	Depth (feet)
T. 16 S., R. 6 E.		
Sec. 27		
NW¼NE¼NW¼		
1 W of		
Havana Nakya		
DW-44		
2,795 feet		
Brown cemented porphyry gravel	480	480
Red cemented porphyry gravel	83	563
Brown cemented gravel	61	624
Red cemented porphyry gravel (water at 715 feet)	161	785
TOTAL DEPTH		785
T. 16 S., R. 7 E.		
Sec. 8		
NW¼SE¼NE¼		
3 N of		
San Vicente		
DW-62		
2,870 feet		
Gray cemented porphyry	724	724
Gravel and sand (water at 724 feet)	31	755
Red clay	10	765
Gravel and sand (water)	35	800
TOTAL DEPTH		800
T. 16 S., R. 7 E.		
Sec. 22		
SW¼NE¼SE¼		
1 NE of		
San Vicente		
3,205 feet		
Soil and gravel	42	42
Yellow clay or gumbo	44	86
White lime	64	150
Blue lime	30	180
White lime	40	220
Blue lime	20	240
White lime	20	260
Blue lime	20	280
Broken granite	16	296
TOTAL DEPTH		296
T. 16 S., R. 8 E.		
Sec. 11		
NE¼NW¼SW¼		
3 SW of Viopuli		
Roadside 5		
(Condensed)		
2,890 feet		
Weathered coarse andesite breccia	62	62
Andesite breccia	224	286
Andesite porphyry breccia with copper	4	290
Gray fine-grained andesite, locally breccia	76	366
Gray andesite breccia, locally porphyritic	132	498
Gray andesite	48	546
Same as 290-366	90	636

Table 2.--Drillers' logs of wells on the Papago Indian Reservation, Arizona--Continued

Well location, designation, altitude, and rock description	Thickness (feet)	Depth (feet)
Gray clay	11	34
Yellow clay	108	142
Packed sand	9	151
Hard-packed brown clay, sticky	207	358
First water; rose to 339 feet in less than 1 hour		358
Sandy yellow clay (water zone) ...	12	370
Hard-packed brown clay	55	425
Brown sandy clay, possibly some water	8	433
Hard-packed brown clay	36	469
Sand; some water; caved, as of 2/23/55, up to 457 feet	6	475
Not reported	5	480
TOTAL DEPTH		480
T. 17 S., R. 3 E.		
Sec. 24		
NW¼SE¼SE¼		
2 NE of Gu Oidak		
DW-17		
2,100 feet		
Top soil, sand, and gravel	25	25
Red clay	75	100
Red clay and gravel	250	350
Boulders, gravel, and sand; water at 475 feet, rose to 457 feet	150	500
Streaks of red clay	10	510
Boulders, gravel, and sand ...	20	530
Red clay, gravel, and boulders	45	575
Caliche and boulders	27	602
TOTAL DEPTH		602
T. 17 S., R. 4 E.		
Sec. 24		
NW¼NE¼NE¼		
2 N of Sells		
Water-Table Test 3		
2,445 feet		
Top soil	8	8
Cemented gravel .	21	29
Conglomerate ...	26	55
Hard black rock .	47	102
TOTAL DEPTH		102
T. 17 S., R. 4 E.		
Sec. 24		
SW¼SE¼NE¼		
1 N of Sells		
2,420 feet		
Top soil, reddish color, mixed with sand	10	10
Hard caliche, white	25	35
Hard rock resembling porphyry, reddish slush	115	150
Streak of red clay	10	160

Table 2.--Drillers' logs of wells on the Papago Indian Reservation, Arizona--Continued

Well location, designation, altitude, and rock description	Thickness (feet)	Depth (feet)
Sand and gravel carrying water	6	92
Sandy clay	6	98
Fine sand	5	103
Malpais, red	7	110
TOTAL DEPTH		110
T. 17 S., R. 4 E. Sec. 25 SW¼SE¼NE¼-2 1 N of Sells DW-52A 2,380 feet		
Soil	4	4
Clay and gravel	16	20
Boulders	4	24
Clay and gravel	16	40
Dry gravel	3	43
Caliche	7	50
Clay	12	62
Clay and gravel	29	91
Water gravel, coarse	6	97
Clay	6	103
Water sand, fine	4	107
Malpais, red	10	117
TOTAL DEPTH		117
T. 17 S., R. 4 E. Sec. 25 NW¼SE¼NW¼ 1 NW of Sells State Highway 3 2,360 feet		
Soil	7	7
Clay	13	20
Clay and boulders	16	36
Gravel and boulders	4	40
Clay	42	82
Clay and boulders	13	95
Water gravel	12	107
Red clay	4	111
TOTAL DEPTH		111
T. 17 S., R. 4 E. Sec. 25 SW¼SE¼NW¼-1 1 NW of Sells State Highway 1 2,360 feet		
Soil	2	2
Hardpan	22	24
Dry gravel	4	28
Cemented gravel	24	52
Malpais	8	60
TOTAL DEPTH		60
T. 17 S., R. 4 E. Sec. 25 SW¼SE¼NW¼-2 1 NW of Sells State Highway 2 2,360 feet		
Soil	3	3
Black adobe	17	20
Cemented boulders and gravel	25	45
Red clay	15	60
Red clay and gravel	27	87
Broken rock	9	96
Hard malpais	4	100
TOTAL DEPTH		100

Table 2.--Drillers' logs of wells on the Papago Indian Reservation, Arizona--Continued

Well location, designation, altitude, and rock description	Thickness (feet)	Depth (feet)
T. 17 S., R. 4 E.		
Sec. 27		
SE¼NE¼NW¼		
2 NW of Sells		
Corral Well		
2,295 feet		
Not reported	5	5
Clay and boulders	5	10
Sandy gray clay .	15	25
Red sand	3	28
Sand and gravel .	17	45
Gray clay and boulders	35	80
Sandy clay, red .	15	95
Clay and boulders	15	110
Sandy red clay ..	10	120
Clay and boulders	35	155
Cemented boulders and sand (hit water at 165-170 feet) ..	43	198
Red sandstone ...	82	280
Gray and red clay, sticky ...	90	370
TOTAL DEPTH		370
T. 17 S., R. 4 E.		
Sec. 30		
SW¼NW¼SW¼		
5 W of Sells		
Sells Hosp. 1		
2,175 feet		
Sandy clays and clays with some gravel; drilled to 190 feet without pipe	175	175
Mountain wash in clay; sometimes a little sand; washes out badly requiring casing..	395	570
Hole drilling to size, not washing or caving; getting tough to spud pipe at 575 feet; pipe stopped at 617 feet; just jumps up and down and won't go without reaming ...	130	700
TOTAL DEPTH		700
T. 17 S., R. 4 E.		
Sec. 31		
NW¼NW¼NW¼		
5 W of Sells		
Sells Hosp. 2		
2,180 feet		
Desert conglomerate	40	40
Gravel and clay	31	71
Gummy adobe and clay	21	92
Gravel and sandy clay	13	105
Clay with 30 percent gravel	64	169
Clay with 45 percent gravel, some sand and boulders	107	276

Table 2.--Drillers' logs of wells on the Papago Indian Reservation, Arizona—Continued

Well location, designation, altitude, and rock description	Thickness (feet)	Depth (feet)
Broken green and slate rock, hard and firm ..	10	215
TOTAL DEPTH		215
T. 17 S., R. 5 E.		
Sec. 19		
NE¼NE¼SW¼		
2 N of Sells		
Water-Table		
Test 2		
2,425 feet		
Top soil	4	4
Cemented gravel	36	40
Gray granitelike rock	15	55
Diorite, very hard	50	105
TOTAL DEPTH		105
T. 17 S., R. 5 E.		
Sec. 20		
SE¼SW¼NW¼		
3 NE of Sells		
Deep Test 7		
2,453 feet		
Top soil and boulders	15	15
Cemented conglomerate	32	47
Red and brown basalt, very hard	59	106
Fine sand, gray; water, ran to 81 feet	6	112
Very hard brown and blue basalt	25	137
Cracked red rock, seamy ...	8	145
Fairly hard, heavy red clay and volcanic rock, much red oxide, weathered(?) ..	89	234
Clay, gravel, boulders; still look of clay but drilled easy ...	8	242
Sand bed; dry(?).	10	252
Hard rock	4	256
TOTAL DEPTH		256
T. 17 S., R. 5 E.		
Sec. 20		
SE¼SE¼NW¼		
3 NE of Sells		
Deep Test 8		
2,462 feet		
Soil, sand, gravel	46	46
Pink rock, drilled hard ...	16	62
Black lava formation, drilled easy	8	70
Gray lava, hard .	35	105
Cracks and seams, red rock, hard; small water seep	4	109
Broken rock, gravel fill; more water	1	110
Hard lava rock ..	3	113
Tight clay, broken rock, and gravel	5	118

Table 2.--Drillers' logs of wells on the Papago Indian Reservation, Arizona--Continued

Well location, designation, altitude, and rock description	Thickness (feet)	Depth (feet)
T. 17 S., R. 5 E.		
Sec. 20		
SE¼NW¼SE¼		
3 NE of Sells		
Deep Test 3		
2,464 feet		
Silt	15	15
Clay	10	25
Caliche	17	42
Sand, fine	6	48
Clay	2	50
Cemented gravel	8	58
White sand	3	61
Cemented gravel; some water at 70 feet	9	70
Sand	5	75
Red oxide, very hard	27	102
TOTAL DEPTH		102
T. 17 S., R. 5 E.		
Sec. 24		
SW¼SE¼SW¼		
6 E of Sells		
DW-34		
2,600 feet		
Boulders and surface soil	60	60
Clay, gravel, and sand (does not cave; light brown or yellow)	338	398
Red clay and igneous gravel	54	452
Brown clay and igneous gravel	26	478
Brown clay, igneous gravel, and quartz gravel	37	515
Brown clay, igneous gravel, and quartz gravel (water)	70	585
Brown clay, igneous gravel, sand	69	654
TOTAL DEPTH		654
T. 17 S., R. 5 E.		
Sec. 30		
NE¼NW¼NE¼		
1 NE of Sells		
Water-Table Test 1		
2,410 feet		
Silt	8	8
Clay	32	40
Conglomerate	19	59
Red clay	16	75
Sand and gravel	15	90
Red clay	10	100
Sand and gravel	25	125
Red clay	17	142
TOTAL DEPTH		142
T. 17 S., R. 5 E.		
Sec. 30		
SE¼SW¼SW¼		
Sells		
2,385 feet		
Soil	6	6
Hard compact rock	24	30

Table 2.--Drillers' logs of wells on the Papago Indian Reservation, Arizona--Continued

Well location, designation, altitude, and rock description	Thickness (feet)	Depth (feet)
T. 18 S., R. 1 E.		
Sec. 7		
NE¼SW¼NE¼		
5 N of Stan Shuatuk		
DW-46		
1,780 feet		
Clay and gravel, valley fill	184	184
Conglomerate ...	80	264
Sand (water, small quantity).	2	266
Sandstone	5	271
Sand and gravel (water).....	4	275
Conglomerate ...	35	310
Granite	7	317
TOTAL DEPTH		317
T. 18 S., R. 3 E.		
Sec. 16		
NW¼NE¼NE¼		
2 E of Chuwut Murk		
DW-74		
2,000 feet		
Clay	345	345
Sand and gravel .	55	400
Clay and gravel, hard	10	410
TOTAL DEPTH		410
T. 18 S., R. 5 E.		
Sec. 24		
NW¼NW¼NW¼		
4 S of Ali Molina		
DW-63		
2,570 feet		
Conglomerate, clay, and boulders	180	180
Coarse gravel and boulders with less clay	18	198
Clay and boulders	72	270
Valley fill, conglomerate, clay, and boulders	240	510
Coarse red gravel and fine rocks with clay; first water at 510 feet.....	40	550
Coarse red gravel and broken rock with some clay	40	590
Coarse gravel and clay.....	10	600
Fine sand.....	15	615
Gravel and sand ..	35	650
TOTAL DEPTH		650
T. 18 S., R. 7 E.		
Sec. 32		
NE¼NW¼NE¼-2		
Chuili Shaik		
3,200 feet		
Sand, gravel, and boulders; water	12	12
Clay, gravel, and rocks	9	21
Clay, gravel, and rocks; plenty of water	23	44
Broken and rotten red porphyry; water	16	60

Table 2.--Drillers' logs of wells on the Papago Indian Reservation, Arizona--Continued

Well location, designation, altitude, and rock description	Thickness (feet)	Depth (feet)
Clay, gravel, and sand	195	550
Mountain top	10	560
TOTAL DEPTH		560
T. 19 S., R. 1 E.		
Sec. 18		
NE¼SE¼NE¼		
2 S of		
Stan Shuatuk		
PF-4		
1,740 feet		
Sand and gravel .	130	130
Sand	118	248
Sand, clay, boulders (small boulders, 248-295)	152	400
Sand and clay ...	300	700
Cemented conglomerate	252	952
TOTAL DEPTH		952
T. 19 S., R. 1 E.		
Sec. 19		
NE¼NE¼NE¼		
3 S of		
Stan Shuatuk		
PF-5		
1,745 feet		
Sand	50	50
Sand and boulders	150	200
Clay and sand ...	50	250
Clay and shells ..	425	675
Clay and sand ...	163	838
Conglomerate and sand	112	950
TOTAL DEPTH		950
T. 19 S., R. 3 E.		
Sec. 35		
SE¼SE¼SE¼		
5 SE of		
Chukut Kuk		
DW-21		
2,225 feet		
Sand and gravel ..	18	18
Sandy clay	12	30
Sand and gravel ..	13	43
Clay	61	104
Clay and gravel ..	66	170
Sand and gravel ..	10	180
Clay and gravel ..	80	260
Cemented gravel; drilled easier below 425 feet (260-425, drilled 165 feet in 111 hours; 425-578, drilled 153 feet in 54 hours); hit water at 578 feet	336	596
Clay	18	614
TOTAL DEPTH		614
T. 19 S., R. 3½ E.		
Sec. 1		
NE¼NW¼NE¼		
Cowlic		
DW-12		
2,100 feet		
Sandy clay and gravel	25	25
Yellowish clay and gravel	25	50
Red clay	50	100
Gravel, clay, small boulders ..	50	150

Table 2.--Drillers' logs of wells on the Papago Indian Reservation, Arizona—Continued

Well location, designation, altitude, and rock description	Thickness (feet)	Depth (feet)
T. 20 S., R. 2 E.		
Sec. 2		
SW¼NW¼NE¼		
3 SE of		
Sivili Chuchg		
DW-29		
2,115 feet		
Sand and gravel..	37	37
Clay	9	46
Sand and gravel .	3	49
Clay	85	134
Clay and gravel..	236	370
Cemented gravel (conglomerate, very hard); first water at 370 feet	120	490
TOTAL DEPTH		490
T. 20 S., R. 3 E.		
Sec. 13		
SE¼NW¼NE¼		
1 E of Itak		
Toro Well		
Red clay and gravels	30	30
Light-red clay and gravels....	20	50
Red clay and gravel	60	110
Red clay, gravel, and boulders	100	210
Clay, gravel, boulders	465	675
Water in sand and gravel.....	25	700
Water, sand, and gravel.....	20	720
TOTAL DEPTH		720
T. 20 S., R. 3 E.		
Sec. 22		
NE¼SE¼SW¼		
4 SW of Itak		
Toro Deep Well		
2,310 feet		
Conglomerate and fill	500	500
Rock; water in rock	315	815
TOTAL DEPTH		815
T. 20 S., R. 3 E.		
Sec. 24 (approx.)		
2? W of Itak		
Toro Well		
Sandy clay	5	5
Hard clay and gravel	9	14
Clay and small boulders	60	74
Red clay	24	98
Sand with little clay	6	104
Clay and boulders	33	137
Gravel and boulders	9	146
Clay and boulders	85	231
Sandy clay	17	248
Clay and boulders	60	308
Cemented boulders	24	332
Clay and boulders	53	385
Sandy clay	45	430
Sandy clay and some boulders .	18	448

Table 2.--Drillers' logs of wells on the Papago Indian Reservation, Arizona—Continued

Well location, designation, altitude, and rock description	Thickness (feet)	Depth (feet)
Sand, gravel, and clay (water)	25	675
Light-red clay ..	6	681
TOTAL DEPTH		681
T. 20 S., R. 5 E.		
Sec. 15		
NW¼NW¼SW¼		
3 NW of Choulic		
DW-64		
2,365 feet		
Valley fill	560	560
Very loose gravel and sand with water	4	564
Gravel, sand, and clay	126	690
Loose gravel and sand	15	705
Not reported	25	730
TOTAL DEPTH		730
T. 20 S., R. 5 E.		
Sec. 24		
SE¼SE¼SE¼		
Choulic		
DW-47		
2,475 feet		
Surface soil	15	15
Coarse gravel ..	38	53
Yellow clay.....	226	279
Gravel and boulders	124	403
Yellow clay.....	115	518
Cemented gravel.	75	593
Gravel (water) ..	20	613
Cemented gravel.	61	674
TOTAL DEPTH		674
T. 20 S., R. 5 E.		
Sec. 28		
NW¼SW¼NW¼		
4 W of Choulic		
DW-51		
2,380 feet		
Top soil.....	8	8
Yellow hardpan .	22	30
Caliche	100	130
Clay and gravel .	50	180
Granite boulders	12	192
Cemented gravel	48	240
Blue limestone ..	2	242
Sand and gravel (dry)	9	251
Cemented gravel	147	398
Gravel (dry)	7	405
Sandstone with crevices	218	623
Clay	2	625
Fine sand (water)	5	630
Coarse gravel (water)	20	650
Fine sand, some clay	10	660
TOTAL DEPTH		660
T. 21 S., R. 6 E.		
Sec. 7		
NW¼NW¼SW¼		
San Miguel		
DW-11		
2,480 feet		
Red clay soil ...	40	40
Gravel and clay .	5	45
Whitish clay	130	175
Caliche	10	185

Table 3.--Analyses of ground water, Papago Indian Reservation, Arizona

[Analyses in parts per million, except as indicated. Date of collection: K, analyses from Bryan, 1925; P, sampled during pumping test, figures show rate of pumping at elapsed time after start of test. Depth: B, bailer sample, depth of well at time of sampling; F, point sample with Foerst sampler at depth shown.]

Location	Well number	Date of collection	Depth (feet)	Temperature (°F)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Parts per million	Dissolved solids: Tons per acre-foot	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium-adsorption ratio (SAR)	Specific conductance (micromhos at 25°C)	pH
T. 10 S., R. 1 W.																									
Sec. 36																									
SE¼SE¼NW¼	Kaka Well	5/10/60	678B	90	52		49	18	72		202	0	88	54	0.8	23		456	0.62	196	30	45	2.3	710	7.5
T. 10 S., R. 2 W.																									
Sec. 10																									
SW¼SE¼SE¼	W-16	6/9/57	10	72	52		82	26	82		344	0	47	108	.6	6.2		573	.78	312	30	36	2.0	844	7.3
T. 12 S., R. 1 W.																									
Sec. 25																									
NW¼SW¼SE¼-1	DW-23	4/20/54	617		35		15	12	98		188	0	42	57	.8	26		378	.51	87	0	71	4.6	612	
NW¼SW¼SE¼-2	DW-23A	4/9/56	803	85	35	0.15			87		188	0	42	55	.4	25				107	0	64	3.7	608	7.2
T. 12 S., R. 2 W.																									
Sec. 21																									
SE¼NE¼SE¼	DW-43	7/19/55	673	92	42		91	72	259		262	0	302	290	1.2	180		1,370	1.86	523	308	52	4.9	2,080	6.9
T. 13 S., R. 2 W.																									
Sec. 34																									
SE¼NE¼NE¼	DW-68	4/12/56	650		12	.02	25	22	157		178	0	86	159	.4	42		621	.84	153	7	69	5.5	1,030	7.2
T. 13 S., R. 4 W.																									
Sec. 10																									
NW¼NE¼NW¼	W-44	10/11/56	76	74	81		58	24	24		338	0	6.4	4.0	.2	8.0		372	.51	243	0	18	.7	545	7.6
T. 14 S., R. 1 W.																									
Sec. 3																									
SW¼NE¼NE¼	DW-67	1/12/55	590	84	19		15	6.6	134		218	0	56	66	.6	29		433	.59	64	0	82	7.2	708	7.3
Sec. 27																									
NW¼NW¼NW¼	DW-19	7/19/55	470	92	38		7.9	6.2	155		147	0	71	108	.8	42		501	.68	45	0	88	10	806	7.8
T. 14 S., R. 4 W.																									
Sec. 9																									
NW¼NW¼SE¼	Gunsight Well	10/15/17K	115		52	1.7	73	15	16		237	17	14	22		14				244					
		5/9/58		77	46		62	12	33		212	0	23	42	.5	22		344	.47	204	30	26	1.0	555	7.1

Table 3.--Analyses of ground water, Papago Indian Reservation, Arizona —Continued

Location	Well number	Date of collection	Depth (feet)	Temperature (°F)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Parts per million	Dissolved solids: Tons per acre-foot	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium-adsorption ratio (SAR)	Specific conductance (micromhos at 25°C)	pH
T. 19 S., R. 1 W.																									
Sec. 4																									
NE¼NE¼SE¼	DW-30	6/10/54	257	79	69		4.4	0.3	137		271	0	23	23	11	3.7		404	0.55	12	0	96	17	576	
Sec. 5																									
SE¼SW¼NW¼		5/1/58	12	61	82		44	11	2,360		1,060	0	1,460	2,040	6.9			6,520	8.87	155	0	97	82	9,610	7.8
T. 19 S., R. 2 W.																									
Sec. 2																									
SE¼SW¼NW¼	DW-53	6/18/57	285	82	42	0.05	181	106	1,450		102	0	935	2,110	1.4	6.7		4,880	6.64	888	804	78	2.1	8,000	7.4
T. 8 S., R. 4 E.																									
Sec. 23																									
SE¼SE¼SW¼	DW-5	9/27/56	196	88	28	.57	14	6.4	222		263	0	109	140	4.0	9.7		663	.90	62	0	89	12	1,110	7.7
T. 8 S., R. 5 E.																									
Sec. 12 (east half)																									
NE¼NW¼NE¼-1	C-2	7/30/54	230	81							170	0		36										509	
SE¼NW¼NE¼-1	C-1	8/3/48	240	80							192	0		33										543	
		9/15/48		80	36		33	7.4	77		193		67	33	1.0	5.5		355	.48	113				546	
		8/22/50		80							190	0		33										546	
		7/30/54		81							183	0		40										549	
SE¼NW¼NE¼-2	Old Chuichu 1	11/6/41	228	80			26	9.8	72		174	0	65	36				294		105				501	
T. 8 S., R. 6 E.																									
Sec. 17																									
NW¼SW¼SE¼	CT-1	12/13/50	104B								193	0		31										580	
		12/15/50	147B								194	0		29										565	
		1/24/51	240B		40		40	8.3	67		192	0	74	28	1.0	4.7		358	.49	134		52		543	
T. 9 S., R. 2 E.																									
Sec. 25																									
SW¼SE¼NW¼	W-61	10/6/55	60	77	53		92	17	169		399	0	98	144	.6	41		811	1.10	300	0	55	4.2	1,290	7.6
T. 9 S., R. 3 E.																									
Sec. 14																									
NE¼NW¼NW¼	DW-72	4/4/56	430	80	23	.26	22	12	88		208	0	52	38	1.2	19		357	.49	104	0	65	3.8	577	7.6

Table 3.--Analyses of ground water, Papago Indian Reservation, Arizona —Continued

Location	Well number	Date of collection	Depth (feet)	Temperature (°F)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Parts per million	Dissolved solids: Tons per acre-foot	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium-adsorption ratio (SAR)	Specific conductance (micromhos at 25°C)	pH
T. 9 S., R. 4 E.																									
Sec. 15—Continued																									
NE¼SW¼SW¼-2 Continued	CT-9 Con.	3/21/56	675B	80	7.4	0.02	9.1	4.5	238	8.0	298	0	106	138	3.2	0.4	0.8	662	0.90	41	0	91	16	1,110	8.3
		4/23/56P (500 gpm 1 hr)	684	86							332	0		136						67	0			1,160	7.6
		4/24/56P (500 gpm 24 hrs)	684	86							334	0		134						67	0			1,150	7.7
		4/25/56P (500 gpm 48 hrs)	684	86	33	.09	13	7.8	239	4.0	335	0	100	135	2.8	8.9	.95	709	.96	64	0	88	13	1,150	7.8
		5/15/56	350F	86		.27					374	0		130						51	0			1,170	8.2
		5/15/56	440F	87	19	.11	9.5	6.2	250		373	0	88	133	2.4	.6	1.2	693	.94	49	0	92	16	1,180	8.3
NW¼SE¼SW¼	CT-10	1/27/56	255B	76	43	.02	37	33	505	6.6	493	0	240	425	6.0	48	.07	1,590	2.16	228	0	82	14	2,590	7.8
		2/1/56	300B		27	.02	29	25	250	6.0	294	0	147	224	3.0	14	.11	870	1.18	176	0	75	8.2	1,500	7.7
		2/14/56	350B	80							365	0		272						158	0			1,820	7.4
		2/18/56	552B	80							249	0		223						122	0			1,470	7.4
		2/23/56	590B	80							258	0		207						176	0			1,390	7.2
		2/24/56	650B	80							248	0		199						132	0			1,350	7.2
		2/25/56	700B	80	19	.04	32	20	235	9.1	251	0	160	201	2.8	9.1	.90	812	1.10	162	0	75	8.0	1,370	7.1
		5/16/56	135F	85	5.7	.20	19	5.7	237		281	0	128	148	4.8	1.0	1.2	689	.94	71	0	88	12	1,160	7.3
T. 9 S., R. 5 E.																									
Sec. 29																									
SW¼SE¼SW¼	DW-4	11/5/41					72	31	234		246	0	119	348				925		307				1,690	
		10/7/55	123		31		35	30	259		278	0	130	279	2.2	15		918	1.25	211	0	73	7.8	1,560	7.7
T. 10 S., R. 2 E.																									
Sec. 22																									
SE¼NE¼SE¼	W-50	6/27/56	53	74	42	0	78	17		3.9	287	0	12	5	.4	22		321	.44	264	30	3	.1	501	7.3
T. 10 S., R. 3 E.																									
Sec. 12																									
NW¼NE¼NE¼	DW-8	12/1/53	255		29		43	23	118		198	0	77	135	1.0	29		552	.75	202	40	56		981	
		1/7/54	255		27		44	22	125		200	0	86	137	1.0	29		569	.77	200	36	58		989	
T. 10 S., R. 4 E.																									
Sec. 16																									
NE¼NW¼SE¼	DW-33	10/9/57	194	78	18	.15	16	11	204		295	0	58	152	1.4	11		617	.84	85	0	84	9.6	1,080	7.6

Table 3.--Analyses of ground water, Papago Indian Reservation, Arizona —Continued

Location	Well number	Date of collection	Depth (feet)	Temperature (°F)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Parts per million	Dissolved solids: Tons per acre-foot	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium-adsorption ratio (SAR)	Specific conductance (micromhos at 25°C)	pH
T. 12 S., R. 6 E.																									
Sec. 25																									
NW¼SE¼NE¼	DW-54	5/27/54	550		23		18	3.5	107		195	0	35	58	1.2	14		356	0.48	60	0	80	6.1	589	
T. 13 S., R. 1 E.																									
Sec. 27																									
NW¼NW¼SE¼	DW-57	7/28/54	268	76	23		62	12	16		268	0	6.0	8	.4	2.0		261	.35	204	0	15	.5	436	
T. 13 S., R. 2 E.																									
Sec. 23																									
SW¼NW¼NW¼	W-74	7/27/55		81	39		52	35	86		364	0	35	81	1.0	12		520	.71	274	0	41	2.3	872	7.7
T. 13 S., R. 3 E.																									
Sec. 2																									
NE¼NW¼NW¼	DW-3	11/6/41					19	7.2	93		218	0	42	41				310		78				536	
		9/26/56	391	87	31		17	5.2	99		220	0	30	40	2.0	6.3		338	.46	64	0	77	5.4	541	7.7
Sec. 10																									
SE¼NW¼SE¼	Santa Rosa Trading Post	10/10/57	368		33	0.14	25	9.0	96		233	0	46	44	1.2	4.4		374	.51	100	0	68	4.2	601	7.4
T. 13 S., R. 4 E.																									
Sec. 23																									
SW¼NE¼NW¼	DW-40	1/6/54	365		49		31	28	70		288	0	24	47	1.2	17		409	.56	192	0	44		651	
		5/15/54	365	84							269	0		40										602	
Sec. 30																									
SW¼SE¼NE¼	DW-55	5/14/54	420		28		17	14	110		191	0	26	97	1.0	21		408	.55	100	0	71	4.8	699	
T. 13 S., R. 7 E.																									
Sec. 21																									
NE¼SW¼SE¼	DW-35	4/7/54	585	90	19		9.9	2.0	132		123	0	65	86	1.0	33		408	.55	32	0	90	10	689	
T. 13 S., R. 8 E.																									
Sec. 11																									
SW¼SE¼NW¼	DW-61	4/7/54	100	96	26		69	73	507		624	0	645	270	2.3	5.7		1,900	2.58	472	0	70	10	2,830	

Table 3.--Analyses of ground water, Papago Indian Reservation, Arizona —Continued

Location	Well number	Date of collection	Depth (feet)	Temperature (°F)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Parts per million	Dissolved solids: Tons per acre-foot	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium-adsorption ratio (SAR)	Specific conductance (micromhos at 25°C)	pH
T. 14 S., R. 11 E.																									
Sec. 9																									
SE¼NW¼SE¼	DW-59	4/16/54	325		34		37	1.5	36		181	0	7.2	9	0.8	8.5		223	0.30	98	0	45	1.6	338	
T. 15 S., R. 1 E.																									
Sec. 18																									
SE¼SE¼NW¼	DW-45	5/19/54	488	80	25		15	10	121		220	0	56	65	1.1	9.3		410	.56	78	0	77	5.9	679	
T. 15 S., R. 4 E.																									
Sec. 36																									
SE¼SE¼NW¼	W-57-1	10/26/54		76	35		49	66	35		411	0	16	68	.4	24		495	.67	394	57	16	.8	852	
T. 15 S., R. 5 E.																									
Sec. 5																									
NE¼SE¼SE¼	W-10	12/1/41	25				72	350	93		376	0	118	99	1.5	17		636		385				1,050	
		10/28/54	25	75	47		92	48	65		396	0	78	71	1.2	75		672	.91	427	102	25	1.4	1,080	
Sec. 31																									
SE¼NW¼SE¼-1	W-30-1	6/12/56	50	75	52	0.01	96	48	46		400	0	27	96	.6	55		618	.84	437	109	19	1.0	1,050	7.2
T. 15 S., R. 6 E.																									
Sec. 13																									
SE¼SE¼NE¼	DW-22	12/1/41	614				40	7.9	35		189	0	15	24	.1	6.0		221		132				394	
		5/17/57			35		36	7.1	47		204	0	14	24	.4	5.1		269	.37	119	0	46	1.9	397	7.4
T. 15 S., R. 7 E.																									
Sec. 1																									
SE¼SE¼NE¼	DW-28	5/13/54	565	86	27		27	3.8	80		196	0	32	42	.2	4.0		312	.42	83	0	68	3.8	528	
T. 15 S., R. 8 E.																									
Sec. 25																									
SE¼SW¼SW¼	W-23	9/7/56		74	75	.02	59	26	51		358	0	13	18	2.2	33		453	.62	254	0	30	1.4	689	7.4
T. 16 S., R. 1 E.																									
Sec. 18																									
NE¼NW¼NW¼	DW-16	7/19/55	466	80	25		14	7.6	198		195	0	121	129	2.0	30		623	.85	66	0	87	11	1,030	7.4
Sec. 34																									
NE¼SW¼SE¼	DW-73	4/12/56	380	86	32		6.4	1.0	107		232	0	24	25		3.7		306	.43	20	0	92	10	471	7.7

Table 3.--Analyses of ground water, Papago Indian Reservation, Arizona —Continued

Location	Well number	Date of collection	Depth (feet)	Temperature (°F)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Parts per million	Dissolved solids: Tons per acre-foot	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium-adsorption ratio (SAR)	Specific conductance (micromhos at 25°C)	pH
T. 16 S., R. 8 E. Continued																									
Sec. 11																									
NW¼NW¼SW¼	Roadside Shaft	6/12/56[a]	800	70	31	0.15	179	133	195		1,050	0	405	93	1.3	0.2		1,550	2.11	994	133	30	2.7	2,300	6.8
		9/20/56[b]	800	70	25		66	67	157		661	0	116	82	1.6	.1		840	1.14	440	0	44	3.3	1,410	7.2
T. 17 S., R. 2 E.																									
Sec. 33																									
NE¼SW¼SE¼	DW-66	7/15/55	445	88	30		2.8	.2	108		210	0	30	20	2.4	5.7		302	.41	8	0	97	17	443	8.1
T. 17 S., R. 3 E.																									
Sec. 8																									
SE¼NE¼SW¼	DW-20	4/2/56	480	85	20		4.0	.7	92		180	0	36	17		3.6		264	.36	13	0	94	11	423	8.0
Sec. 24																									
NW¼SE¼SE¼	DW-17	6/8/54	602	82	33		33	12	55		149	0	13	78	.6	4.6		302	.41	132	10	47	2.1	522	
T. 17 S., R. 4 E.																									
Sec. 11																									
NE¼SW¼SE¼	W-56	10/25/54		73	52		294	324	476		338	0	820	1,380	.8	28		3,540	4.81	2,070	1,790	33	4.6	5,560	
Sec. 25																									
NW¼SE¼NE¼	DW-52C	7/13/54	114	76							310	0		25	.6					250				583	
SW¼SE¼NE¼-2	DW-52A	7/13/54	117	107							326	0		34	.6					255				659	
NW¼SE¼NW¼	State Highway 3	7/13/54	111		11		91	26	51		235	0	91	108	.2	5.5		500	.68	334	142	25	1.2	873	
NE¼NE¼SE¼	DW-52D	7/13/54	250	93							378	0		30	.4					259				676	
Sec. 26																									
NW¼SW¼NE¼	Sells Hosp. Test 1	2/28/57	124B	77	40		65	36	47		322	0	34	67	.6	19		467	.64	310	46	25	1.2	763	7.3
		3/7/57	160B	78	36		68	34	52		323	0	35	71	.6	24		480	.65	310	45	27	1.3	786	7.3
		4/17/57	340B	78	30		58	39	61		347	0	34	71	.4	21		485	.66	305	20	30	1.5	803	7.4
		5/7/57	458B	78	37		62	37	46		317	0	35	67	.4	18		458	.62	306	46	25	1.1	763	7.2
Sec. 27																									
SE¼NE¼NW¼	Corral Well	8/3/56	370	80	7.5	.02	9.5	5.7	65		154	0	19	27	1.4	.5		212	.29	47	0	75	4.1	369	7.4

Table 3.--Analyses of ground water, Papago Indian Reservation, Arizona — Continued

Location	Well number	Date of collection	Depth (feet)	Temperature (°F)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Parts per million	Dissolved solids: Tons per acre-foot	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium-adsorption ratio (SAR)	Specific conductance (micromhos at 25°C)	pH
T. 17 S., R. 6 E.																									
Sec. 8																									
NE¼NE¼SW¼	DW-1	7/15/54	700	78	31		24	7.6	57		237	0	5.4	5	0.2	8.6		256	0.35	91	0	57	2.6	397	
Sec. 31																									
NE¼NE¼SE¼	DW-14	11/10/53	855	81							194	0		23										398	
		7/15/54	855	78	32						176	0		25	.2					68				393	
T. 17 S., R. 7 E.																									
Sec. 5																									
NW¼SE¼NW¼	W-67	10/12/54		70	40		66	17	38		322	0	3.5	30	.6	6.0		359	.49	234	0	26	1.1	598	
T. 18 S., R. 1 E.																									
Sec. 7																									
NE¼SW¼NE¼	DW-46	9/18/57	317	86	37	0.12	18	6.6	105		232	0	41	41	2.0	4.8		370	.50	72	0	76	5.4	595	7.4
		10/24/57	317	86	38	.13	17	6.4	111		237	0	45	43	2.0	4.9		384	.52	69	0	78	5.8	603	7.3
T. 18 S., R. 2 E.																									
Sec. 29																									
SE¼SW¼NW¼	Toro 1	11/25/57	300	85	35		18	2.6	77		200	0	17	25	1.4	4.6		279	.38	56	0	75	4.5	432	7.2
Sec. 31																									
SE¼NE¼NW¼	Toro 3	11/25/57	300	78	17		10	1.2	78		170	0	16	26	1.6	.7		236	.32	30	0	85	6.2	377	6.8
T. 18 S., R. 3 E.																									
Sec. 16																									
NW¼NE¼NE¼	DW-74	4/2/56	410	84	36	0	31	8.6					16	17	.4	28		238	.38	113	0	49	2.0	382	7.5
T. 18 S., R. 5 E.																									
Sec. 7																									
NE¼NW¼NW¼	W-40	10/25/54		75	53		47	59	90		477	0	14	105	.8	.8		605	.82	360	0	35	2.1	1,020	
Sec. 24																									
NW¼NW¼NW¼	DW-63	7/15/55	650	86	33		23	4.8	52		188	0	9.3	16	.5	2.1		233	.32	77	0	59	2.6	347	7.2
T. 18 S., R. 7 E.																									
Sec. 26																									
SW¼SW¼NW¼	W-37	9/20/54	13	76	33		79	24	29		378	0	21	18	.2	1.2		391	.53	296	0	18	.7	651	

Table 3.--Analyses of ground water, Papago Indian Reservation, Arizona — Continued

Location	Well number	Date of collection	Depth (feet)	Temperature (°F)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Parts per million	Dissolved solids: Tons per acre-foot	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium-adsorption ratio (SAR)	Specific conductance (micromhos at 25°C)	pH
T. 19 S., R. 3 E.																									
Sec. 29																									
NW¼SW¼SW¼	DW-37	7/28/54	540	82							215	0	29											461	
		7/14/55	540	88	42		15	5.5	84		209	0	22	28	1.8	5.2		306	0.42	60	0	75	4.7	458	7.3
Sec. 35																									
SE¼SE¼SE¼	DW-21	3/28/55	614	85	33		26	7.6	100		235	0	37	48	4.0	5.8		377	.51	96	0	69	4.4	611	7.6
T. 19 S., R. 3½ E.																									
Sec. 1																									
NE¼NW¼NE¼	DW-12	11/12/53	722	82	31		18	4.8	69		213	0	10	17	1.2	3.9		260	.35	64	0	70		402	
		6/1/54	722								218	0		16										422	
T. 19 S., R. 5 E.																									
Sec. 3																									
NW¼NE¼NW¼	San Solano Mission Well	6/3/54	484		37		34	4.5	42		196	0	6.4	15	.6	5.7		241	.33	104	0	47	1.8	367	
SE¼NW¼SE¼	DW-9	5/12/54	602	84							201	0		11										364	
Sec. 5																									
NE¼SW¼NE¼		6/3/54	505		35		48	16	58		328	0	5.6	12	.6	24		360	.49	186	0	41	1.9	567	
T. 19 S., R. 7 E.																									
Sec. 21																									
NW¼SE¼SE¼	W-46	10/14/54		71	27		82	33	31		388	0	60	18	.4	.1		442	.60	340	22	16	.7	724	
T. 20 S., R. 2 E.																									
Sec. 2																									
SW¼NW¼NE¼	DW-29	3/29/55	490	79	21		50	21	99		368	0	57	42	1.0	5.2		477	.65	212	0	50	3.0	792	7.2
T. 20 S., R. 4 E.																									
Sec. 2																									
NE¼SE¼NW¼	DW-10	5/13/54	608	82	29		19	5.2	69		216	0	13	16	1.4	2.3		261	.35	69	0	68	3.6	414	
T. 20 S., R. 5 E.																									
Sec. 12																									
SE¼NW¼NE¼	DW-13	6/3/54	681								173	0		20										352	