CHEMICAL, GEOLOGIC, AND HYDROLOGIC DATA FROM THE STUDY OF ACIDIC CONTAMINATION IN THE MIAMI WASH-PINAL CREEK AREA, ARIZONA, WATER YEARS 1984-87

By James H. Eychaner, Michelle R. Rehmann, and James G. Brown

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ILLUSTRATIONS

CONVERSION FACTORS

For readers who prefer to use inch-pound units, conversion factors for the terms in this report are listed below:

Multiply	*By*	*To obtain*
centimeter (cm)	0.3937	inch (in.)
millimeter (mm)	0.03937	inch (in.)
meter (m)	3.281	foot (ft)
kilometer (km)	0.6214	mile (mi)
square centimeter (cm^2)	0.155	square inch ($in.^2$)
square kilometer (km^2)	0.3861	square mile (mi^2)
cubic meter (m^3)	35.31	cubic foot (ft^3)
cubic meter (m^3)	0.0008107	acre-foot (acre-ft)
liter per minute (L/min)	0.2642	gallon per minute (gal/min)
cubic meter per second (m^3/s)	35.31	cubic foot per second (ft^3/s)

National Geodetic Vertical Datum of 1929 (NGVD of 1929): A geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, generally referred to as *Sea Level Datum of 1929*.

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ABSTRACT

Occurrence and movement of acidic contamination in the aquifer and streams of the Pinal Creek basin near Globe, Arizona, is the focus of an ongoing study by the U.S. Geological Survey. Ground-water data from that study for water years 1984 to 1987 include location, construction information, and site plans for six groups of monitoring wells, mineralogic and particle-size analyses of drill cuttings, water-level measurements, and chemical analyses of water samples from 39 wells. Surface-water data for 13 sites in this study include discharge measurements and chemical analyses of water and streambed sediment samples. Monthly discharge data are presented for one site. Monthly precipitation amounts and statistics of long-term precipitation are presented for two sites.

INTRODUCTION

Copper has been mined since 1903 from granite porphyry adjacent to an aquifer in the Pinal Creek drainage basin near Globe, Arizona (fig. 1). Contaminated ground water related to mining has long been recognized in the area, but it was first quantified in 1983. Large differences in dissolved metal concentrations have been measured in the interacting ground and surface waters of the Pinal Creek basin. Pinal Creek flows into the Salt River about 5 km upstream from the high-water line of Roosevelt Lake. The basin is in the Upper Salt River (USR) ground-water area and Hydrologic Unit 15060103 (Upper Salt River). Miami Wash, a tributary to Pinal Creek, drains the area that contains the most intensive mining activity.

Since 1984, the U.S. Geological Survey, in cooperation with the Arizona Department of Health Services and the Salt River Project, has been studying the hydraulics and geochemistry of the Pinal Creek basin. The study objective is to describe and model the movement of water and inorganic contaminants in ground water and surface water in the basin. The principal question is how solutes and solids in the system are transformed by each other in a complex environment.

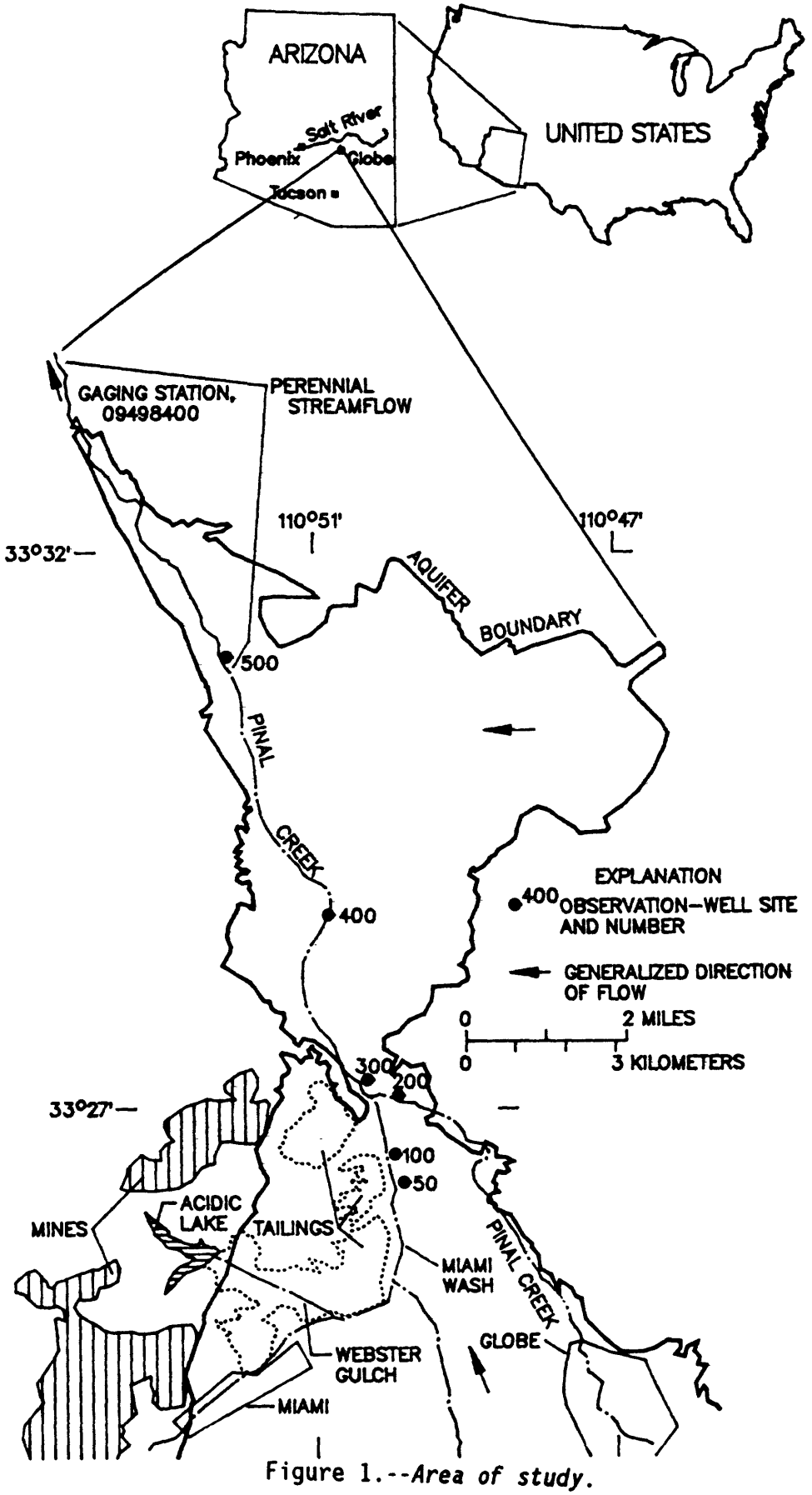


Figure 1.--*Area of study.*

The study area is in Gila County, Arizona, near the communities of Globe, Miami, and Claypool; Globe is the county seat. The area had a population of about 20,000 in 1980. Principal industries are mining, tourism, public administration, and ranching.

Purpose and Scope

The purpose of this report is to present in one place as much data as possible on the occurrence and movement of acidic contamination in the aquifer and streams of the Pinal Creek basin near Globe, Arizona. The data include chemical analyses of ground water and streamflow, geologic and particle-size logs of boreholes, and records of stream discharge and ground-water levels. The data have been and are to be used in several interpretive reports in which an exhaustive data summary would be inappropriate. In the interest of completeness, some data which have been published elsewhere and selected data collected by other agencies are included. This report includes data for the 1984 through 1987 water years, which correspond to the period October 1, 1983 through September 30, 1987.

Relation to Other Reports

The geology of the Globe-Miami mining district has been described by Ransome (1903) and Peterson (1962). Contaminated ground water related to mining was first quantified in a study by the Central Arizona Association of Governments (CAAG), which is responsible for water-quality management planning in Gila County. In 1979 CAAG established a Mineral Extraction Task Force (METF) to study water-quality problems in the Globe-Miami area. The task force included representatives of mining companies, local governments, State and Federal agencies, and the Salt River Project, which manages Roosevelt Lake. Principal funding for the METF study was provided by the U.S. Environmental Protection Agency, three mining companies, and the U.S. Bureau of Mines. The METF study identified areas where contaminated water was present and probable sources for the contamination. Results of the METF study were presented in ten reports, of which three include data from surface and ground waters (Rouse, 1981, 1983; Envirologic Systems, Inc., 1983).

Beginning in the spring of 1984, the U.S. Geological Survey undertook a study of contaminant movement in the area in cooperation with the Arizona Department of Health Services and Salt River Project. Since 1985, principal funding has been provided by the U.S. Geological Survey Toxic Waste—Ground-Water Contamination Program. The objectives of the study are to identify the processes that control the movement and reactions of inorganic ground-water contaminants and to monitor the movement of the contaminants in order to provide information for possible remediation. The study focuses on the destination or fate of contaminants, rather than on sources of ground-water contamination.

An initial set of observation wells were drilled at five sites in October 1984, and initial water-quality samples were collected in November 1984. Eychaner and Stollenwerk (1985) described the distribution of contaminants in the aquifer and the principal geochemical reactions on the basis of the initial data collection. Different aspects of the study were presented at technical meetings of the Toxic Waste Program in 1985 (Eychaner, 1988a; Stollenwerk, 1988) and 1987 (Eychaner and Stollenwerk, 1987; Stollenwerk and Eychaner, 1987). Eychaner (1988b) presented an overview with additional geochemical and geologic data. Five papers addressing work at the site were presented at a program technical meeting in Phoenix, Arizona, in September 1988 (Eychaner, 1989a, 1989b; Haschenburger, 1989; Neaville, 1989; Stollenwerk and Eychaner, 1989).

Acknowledgments

These data could not have been collected without the cooperation and assistance of landowners and local residents who granted permission to collect samples, measure flow rates, install wells on, or cross over their properties. Karl and Wendy Baughman; Stephen Bixby, Sr.; Stephen Bixby, Jr.; Hollis Crim; Pat Kelley; Eva, Martin, and Nellie Setka; Arizona Department of Transportation; Cyprus Miami Mining Corporation; and Magma Copper Corporation generously cooperated with the study. The encouragement and assistance of Greg Arthur and Noel Gillespie significantly eased the work.

The data in this report were collected by the diligent efforts of many people, who at times endured difficult field conditions and long working hours. The efforts of P.M. Barlow, S.E. Buell, J.S. Doughman, B.O. Favor, T.J. Lopes, C.C. Neaville, K.G. Stollenwerk, and H.W. Sanger are particularly appreciated.

EXPLANATION OF DATA

Most data in this report were collected using standard U.S. Geological Survey methods. Wilson and Garrett (1989, p. 4-28) provide details of the methods of collecting, examining, and computing records of discharge and water quality. They define terms related to streamflow, water quality, and other hydrologic data and describe the downstream-order, latitude-longitude, and land-net methods of identifying data-collection sites. Most of the measurements included in this report were made in inch-pound units and have been converted to metric units (International System of Units). This section describes aspects of the data-collection program that differ from those in Wilson and Garrett (1989).

Chemical analyses included in this report generally were carried out by the U.S. Geological Survey National Water-Quality

Laboratory (NWQL), Arvada, Colorado, or by K.G. Stollenwerk, a geochemist in the U.S. Geological Survey National Research Program (NRP), Lakewood, Colorado. Where analyses from both sources appear in the same table, those from NWQL are identified by a C in the laboratory column and those by Stollenwerk are identified by an R. If the laboratory is not indicated, the analysis is from NWQL.

An ionic balance was computed as part of the review of laboratory results (Hem, 1984, p. 164). The balance was computed as:

$$\frac{\Sigma \textit{ cations} - \Sigma \textit{ anions}}{\Sigma \textit{ cations} + \Sigma \textit{ anions}} \cdot 100 \text{ percent},$$

where

Σ *cations* = the sum of the concentrations of all positively charged ions, in milliequivalents per liter, and
Σ *anions* = the sum of the concentrations of all negatively charged ions, in milliequivalents per liter.

All ionic species determined in the analysis were included in the computation. Iron was assumed to be in the +2 oxidation state because field measurements and geochemical modeling showed negligible +3 iron in waters with more than 200 µg/L (micrograms per liter) dissolved iron (Eychaner and Stollenwerk, 1985). The ionic balance and ionic strength (Hem, 1985, p. 16) are reported in data tables for wells drilled in this project if enough constituents were determined to make the values meaningful.

Both NWQL and Stollenwerk analyzed for most metals by ion-coupled plasma-emission spectroscopy (ICP), which simultaneously determines the concentration of as many as 20 elements. An elevated concentration of one element, particularly iron, can interfere with the analytical accuracy and detection limits of other elements that are present in much lower concentration. For example, the dissolved-iron concentration of water from well 103 on July 10, 1986, was 1,100 mg/L (milligrams per liter). NWQL reported dissolved cobalt of less than 9 µg/L, and Stollenwerk reported 4,800 µg/L. Similar differences occurred consistently for cobalt. Stollenwerk demonstrated complete recovery of added cobalt in a spiked sample. Therefore, for samples included in this report, dissolved-cobalt values by ICP from NWQL were deleted from the file if dissolved iron exceeded 400 mg/L or if dissolved iron exceeded 10 mg/L and the NWQL value was less than half of Stollenwerk's value. ICP results from both laboratories are included if dissolved-iron concentrations were lower than these limits. Dissolved-cobalt values measured at NWQL by atomic-absorption spectrometry (AA) also are included.

Occasional analyses of dissolved fluoride by NWQL using the ion-specific electrode method produced anomalous results for some dates

and wells. Dissolved aluminum interferes with the method by complexing with fluoride ions and preventing the electrode from detecting all the fluoride. An ion-specific electrode was used to verify fluoride concentrations in spare sample water by a series of dilutions and standard additions. As a result, for samples included in this report, laboratory reports of fluoride concentrations less than 1 mg/L were discarded if dissolved aluminum was greater than 10 mg/L. Under these criteria, 14 fluoride analyses were deleted from the data base. Two reported values for well 402 that did not meet these criteria were deleted because the values differed significantly from those obtained using the modified method on spare water samples. Values for 17 samples analyzed by the modified method were added to the data base.

During water years 1984-87, the U.S. Geological Survey drilled 24 wells and six exploration holes in the Pinal Creek area to sample the distribution of water quality, hydraulic head, and aquifer mineralogy. The wells are in groups of two to six and are open to the aquifer at different depths. Each well group is identified by a number between 50 and 500; the group numbers increase downgradient from south to north (fig. 1).

For simplicity within the project, each well is identified by a brief number or letter-number combination. Project well numbers add a sequence number to the well group. For example, well 103 is the third well drilled in group 100. The complete well identification number of each well is the concatenation of its latitude, longitude, and a 2-digit sequence number that matches the final digit of the project well number. Well 103 is thus identified as 332629110495803. In the land-net method of identifying sites, well 103 is (A-01-15)09dbc3, which encodes the third site in SW¼NW¼SE¼ sec. 9, T. 1 N., R. 15 E. Project well numbers that include the characters EX represent exploration holes that were abandoned after water samples and cuttings were collected; the EX holes were sealed with concrete to their total depths.

All holes completed as wells were cased with nominal 10-centimeter diameter, schedule 40 polyvinyl chloride (PVC) pipe. Factory-slotted PVC pipe was used for well screens. The borehole annulus from about 0.5 m below to about 0.5 m above the screen was filled with washed pea gravel from uncontaminated local alluvium. A layer of bentonite pellets about 1 m deep was placed above the gravel. The annulus above the bentonite was filled with concrete grout or random cuttings, and the uppermost part of the annulus was filled with concrete grout. A steel-security casing that was 1.7- to 2-meters long protects the well from disturbance. The wells were developed by jetting high-pressure air horizontally toward the well screen to agitate the gravel pack and formation and to airlift water and fine sediments from the well. Development generally lasted 20 to 40 minutes and ended when no further fine material was visible in the pumped water.

Water samples generally were collected by installing a 240-volt electric-submersible pump and rigid PVC riser pipe in the well and pumping until a representative sample could be collected. Discharge rate, water

level, pH, specific conductance, temperature, and dissolved-oxygen concentration generally were monitored during pumping. Water samples were collected only after at least three casing volumes of water had been pumped and the values of each measured characteristic had stabilized. Pumping rate, duration, and drawdown are included in the data tables. Some wells were sampled with a bladder pump, a 12-volt submersible pump, or a PVC bailer. The same criteria for representative samples were applied.

Data are presented for each of the six well groups and include location, construction details, site plan, mineralogic and particle-size information from drill cuttings, water-level measurements, and chemical analyses of water samples. Mineralogic descriptions are based on microscopic examination of the cuttings. Particle sizes were determined by wet sieving. Water levels were measured with a chalked steel tape below a marked measuring point at the top of the PVC casing. Limited data for 12 other wells also are included.

Streamflow data are presented for 13 sites (fig. 2) and include instantaneous discharge and chemical analyses of filtered water samples ("dissolved" concentrations), unfiltered water samples ("total" concentrations), and streambed-sediment samples. Monthly discharge data are presented for one site. Additional observations of no flow, observations of flow, and estimates of discharge at various points in the basin on about 30 days during water years 1984 through 1987 are on file in the project records.

Monthly precipitation amounts and statistics for long-term precipitation are presented for the two active precipitation-measurement sites nearest to Pinal Creek. The data were assembled from published climatological data summaries (National Climatic Data Center, issued annually). Because precipitation data customarily are reported on a calendar-year basis, data for the full calendar years 1983 through 1987 are included to cover water years 1984 through 1987.

REFERENCES CITED

Envirologic Systems, Inc., 1983, Mining activities and water-quality report: Florence, Arizona, Central Arizona Association of Governments, Mineral Extraction Task Force report METF-7, 142 p.

Eychaner, J.H., 1988a, Geohydrologic setting of the Miami Wash-Pinal Creek acidic ground-water study near Globe, Arizona, *in* Ragone, S.E., ed., U.S. Geological Survey's Program on Toxic Waste—Ground-Water Contamination—Fiscal Year 1986 Program Overview and Selected Abstracts from the Second Technical Meeting, Cape Cod, Massachusetts, October 21-25, 1985: U.S. Geological Survey Open-File Report 86-481, p. E-3 to E-5.

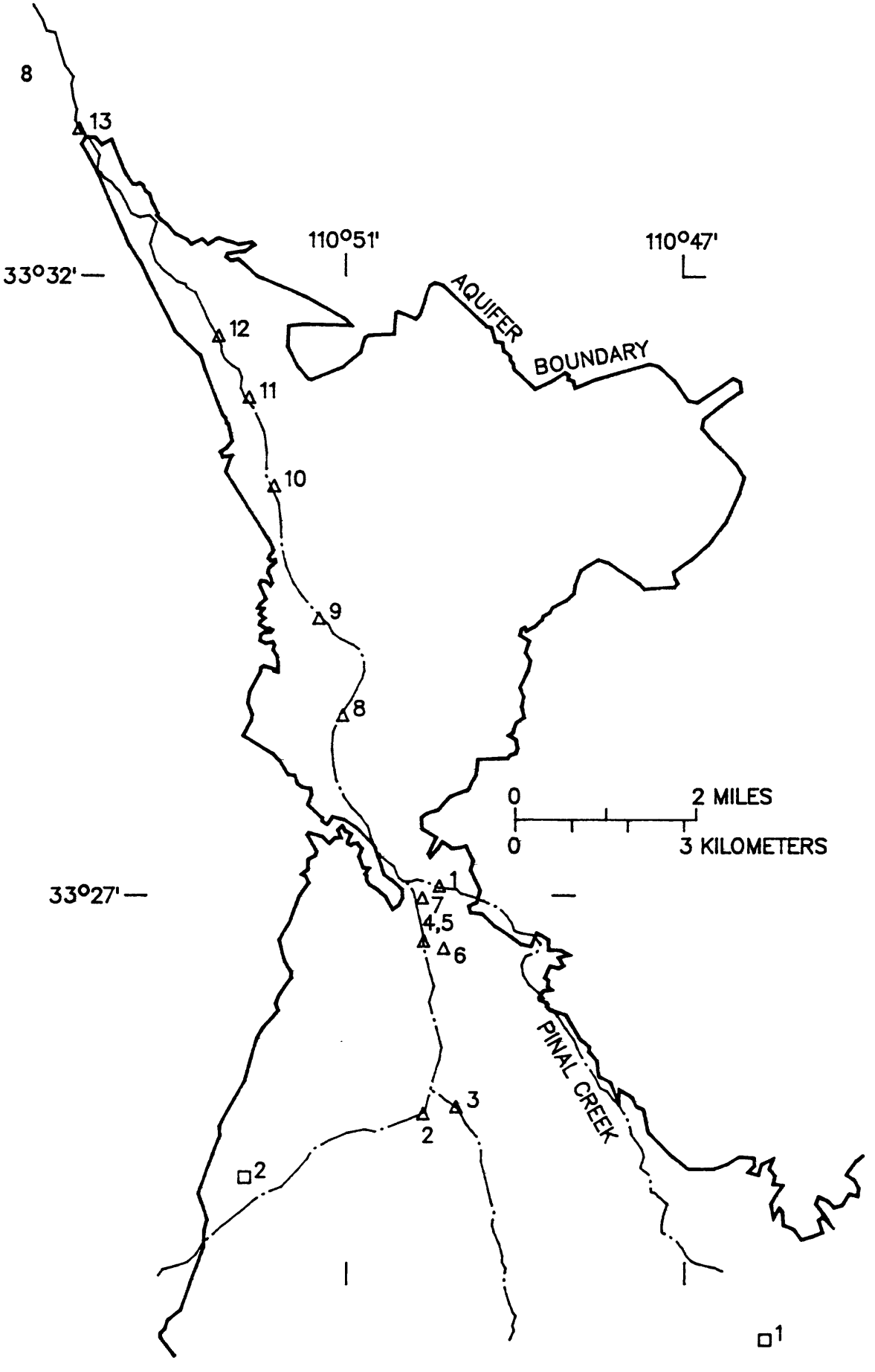


Figure 2.--*Locations of streamflow-and precipitation-data sites.*

EXPLANATION

STREAMFLOW-DATA SITE

△ 1 Pinal Creek at Bixty Road Bridge, near Globe
2 Bloody Tanks Wash at Claypool
3 Russell Gulch at U.S. Highway 60, at Claypool
4 Miami Wash Tributary ar State Highway 88, near Claypool
5 Miami Wash at State Highway 88, near Claypool
6 Bixby Road Seepage Ditch at State Highway 88, near Claypool
7 Bixby Road Seepage Ditch at mouth, near Claypool
8 Pinal Creek at Bixby Road dip crossing, near Globe
9 Pinal Creek at Wilbanks Road, near Globe
10 Pinal Creek at Hicks Crossing, near Globe
11 Pinal Creek at Blumer driveway, near Globe
12 Pinal Creek at Setka Ranch, near Globe
13 Pinal Creek at Inspiration Dam, near Globe

PRECIPITATION-DATA SITE

□ 1 Globe Ranger Station
2 Miami

Figure 2.

_____1988b, Evolution of acidic ground-water contamination in a copper-mining area in Arizona, *in* Ouazar, D., Brebbia, C.A., and Stout, G.E., eds., Computer Methods and Water Resources, First International Conference, Morocco 1988, Proceedings, v. 6 (Water Quality, Planning and Management): Southampton, U.K., Computational Mechanics Publications, p. 291-302.

_____1989a, Movement of inorganic contaminants in acidic water near Globe, Arizona, *in* Mallard, G.E., and Ragone, S.E., eds., U.S. Geological Survey Toxic Substances Hydrology Program—Proceedings of the Technical Meeting, Phoenix, Arizona, September 26-30, 1988: U.S. Geological Survey Water-Resources Investigations Report 88-4220, p. 567-575.

_____1989b, Research activities related to acidic water near Globe, Arizona, *in* Mallard, G.E., and Ragone, S.E., eds., U.S. Geological Survey Toxic Substances Hydrology Program—Proceedings of the Technical Meeting, Phoenix, Arizona, September 26-30, 1988: U.S. Geological Survey Water-Resources Investigations Report 88-4220, p. 599-601.

Eychaner, J.H., and Stollenwerk, K.G., 1985, Neutralization of acidic ground water near Globe, Arizona: American Water Resources Association Proceedings, Symposium on Groundwater Contamination and Reclamation, Tucson, Arizona, August, 1985, p. 141-148.

_____1987, Acidic ground-water contamination from copper mining near Globe, Arizona, *in* I. Overview, *in* Franks, B.J., ed., U.S. Geological Survey Program on Toxic Waste—Ground-Water Contamination—Proceedings of the Third Technical Meeting, Pensacola, Florida, March 23-27, 1987: U.S. Geological Survey Open-File Report 87-109, p. D-13 to D-18.

Haschenburger, J.K., 1989, Manganese in channel sediments of Pinal Creek, Arizona, *in* Mallard, G.E., and Ragone, S.E., eds., U.S. Geological Survey Toxic Substances Hydrology Program—Proceedings of the Technical Meeting, Phoenix, Arizona, September 26-30, 1988: U.S. Geological Survey Water-Resources Investigations Report 88-4220, p. 593-597.

Hem, J.D., 1985, Study and interpretation of the chemical characteristics of natural water, 3d edition: U.S. Geological Water-Supply Paper 2254, 263 p.

National Climatic Data Center, issued annually, Climatological data annual summary, Arizona: U.S. Department of Commerce, National Climatic Data Center, v. [year], no. 13.

Neaville, C.C., 1989, Simulation of ground- and surface-water flow in the Globe area, Arizona, *in* Mallard, G.E., and Ragone, S.E., eds., U.S. Geological Survey Toxic Substances Hydrology Program—Proceedings of the Technical Meeting, Phoenix, Arizona, September 26-30, 1988: U.S. Geological Survey Water-Resources Investigations Report 88-4220, p. 577-579.

Peterson, N.P., 1962, Geology and ore deposits of the Globe-Miami district, Arizona: U.S. Geological Survey Professional Paper 342, 151 p.

Ransome, F.L., 1903, Geology of the Globe copper district, Arizona: U.S. Geological Survey Professional Paper 12, 168 p.

Rouse, J.V., 1981, Geohydrology of the Globe-Miami, Arizona, area: Florence, Arizona, Central Arizona Association of Governments, Mineral Extraction Task Force report METF-5, 103 p.

_____1983, Water-quality report for the Globe-Miami area: Florence, Arizona, Central Arizona Association of Governments, Mineral Extraction Task Force report METF-6, 2 volumes, 448 p.

Stollenwerk, K.G., 1988, Neutralization of acidic ground water in eastern Arizona, *in* Ragone, S.E., ed., U.S. Geological Survey's Program on Toxic Waste—Ground-Water Contamination—Fiscal Year 1986 Program Overview and Selected Abstracts from the Second Technical Meeting, Cape Cod, Mass., October 21-25, 1985: U.S. Geological Survey Open-File Report 86-481, p. E-7 to E-8.

Stollenwerk, K.G., and Eychaner, J.H., 1987, Acidic ground-water contamination from copper mining near Globe, Arizona, *in* II. Neutralization capacity of alluvium, *in* Franks, B.J., ed., U.S. Geological Survey Program on Toxic Waste—Ground-Water Contamination—Proceedings of the Third Technical Meeting, Pensacola, Florida, March 23-27, 1987: U.S. Geological Survey Open-File Report 87-109, p. D-19 to D-24.

_____1989, Solubility of aluminum and iron in ground water near Globe, Arizona, *in* Mallard, G.E., and Ragone, S.E., eds., U.S. Geological Survey Toxic Substances Hydrology Program—Proceedings of the Technical Meeting, Phoenix, Arizona, September 26-30, 1988: U.S. Geological Survey Water-Resources Investigations Report 88-4220, p. 581-591.

Wilson, R.P., and Garrett, W.B., 1989, Water resources data, Arizona, water year 1987: U.S. Geological Survey Water-Data Report AZ-87-1, 385 p.

BASIC DATA

GROUND WATER
WELL GROUP 50

LOCATION.--Lat 33°26'11", long 110°49'51", in SE¼SW¼SE¼ sec. 9, T. 1 N., R. 15 E. (A-01-15)09dcd, 170 m east of Miami Wash, and 6 km northwest of Globe.
Landowner: Pinto Valley Division, Magma Copper Corporation

LAND SURFACE DATUM.--987.55 m above National Geodetic Vertical Datum of 1929 (levels by Water Resources Division, U.S. Geological Survey).

REMARKS.--Wells 51, 52, 53, and 54 were originally identified as MP1W1, MP1W2, MP1W3, and MP1W4, respectively.

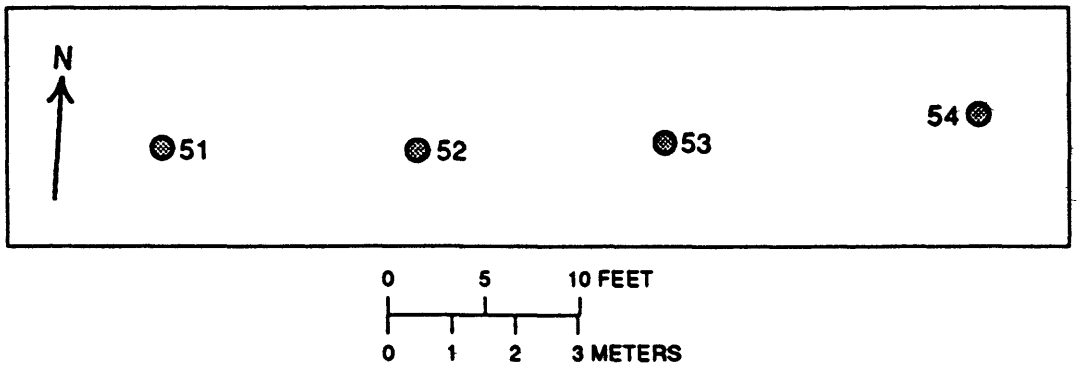
DRILLING AND WELL CONSTRUCTION

All holes listed below were drilled by normal-circulation rotary drilling with bentonite mud. The wells were cased with nominal 10-centimeter diameter, schedule 40, polyvinyl chloride pipe. Each well has a single 0.9-meter length of slotted, 10-centimeter diameter, schedule 80, polyvinyl chloride pipe as the well screen. Each screen has 1470 factory-cut slots 3.6 cm long by 0.64 mm wide for a total open area of 339 cm^2. The borehole annulus around the screen is filled with washed pea gravel from uncontaminated local alluvium. A layer of bentonite pellets was placed in the annulus from approximately 0.5 to 1.5 m above the screen. A concrete seal extends from the land surface to the depth listed. The wells were developed by jetting high-pressure air horizontally through the screen to agitate the formation and air-lift water and sediment until no further visible sediment was removed.

LOGS: C, caliper; E, electric; G, geologist; P, particle size.

WELL	DATE COMPLETED	DRILLING METHOD	HOLE DEPTH (meters)	WELL DEPTH (meters)	SCREENED INTERVAL (meters)	GEOLOGIC UNIT	BOTTOM OF SEAL (meters)	LOGS AVAILABLE
51	10-11-84	ROTARY, BENTONITE	33.5	33.4	32.4-33.3	BASIN FILL	3	CEGP
52	10-12-84	ROTARY, BENTONITE	20.1	19.8	18.8-19.7	ALLUVIUM	3	--
53	10-12-84	ROTARY, BENTONITE	28.0	27.8	26.8-27.7	BASIN FILL	3	--
54	10-12-84	ROTARY, BENTONITE	11.3	11.0	10.0-10.9	ALLUVIUM	3	--

SITE PLAN

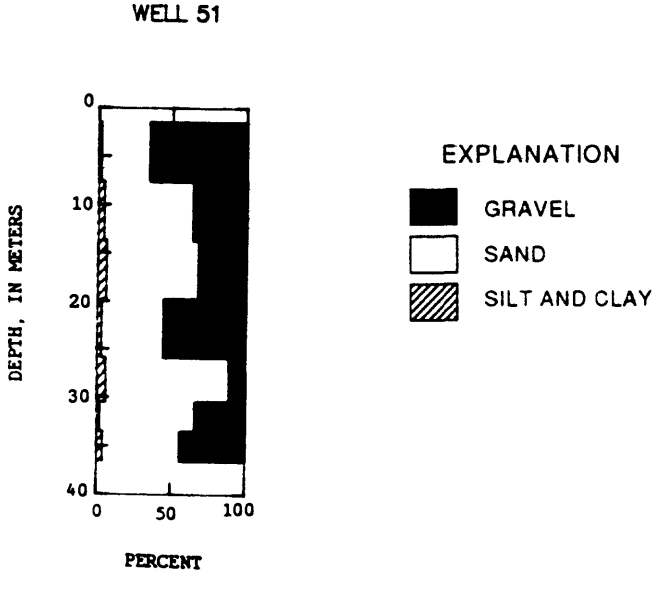


GROUND WATER--Continued
WELL GROUP 50--Continued
LOG INFORMATION

Well: 051

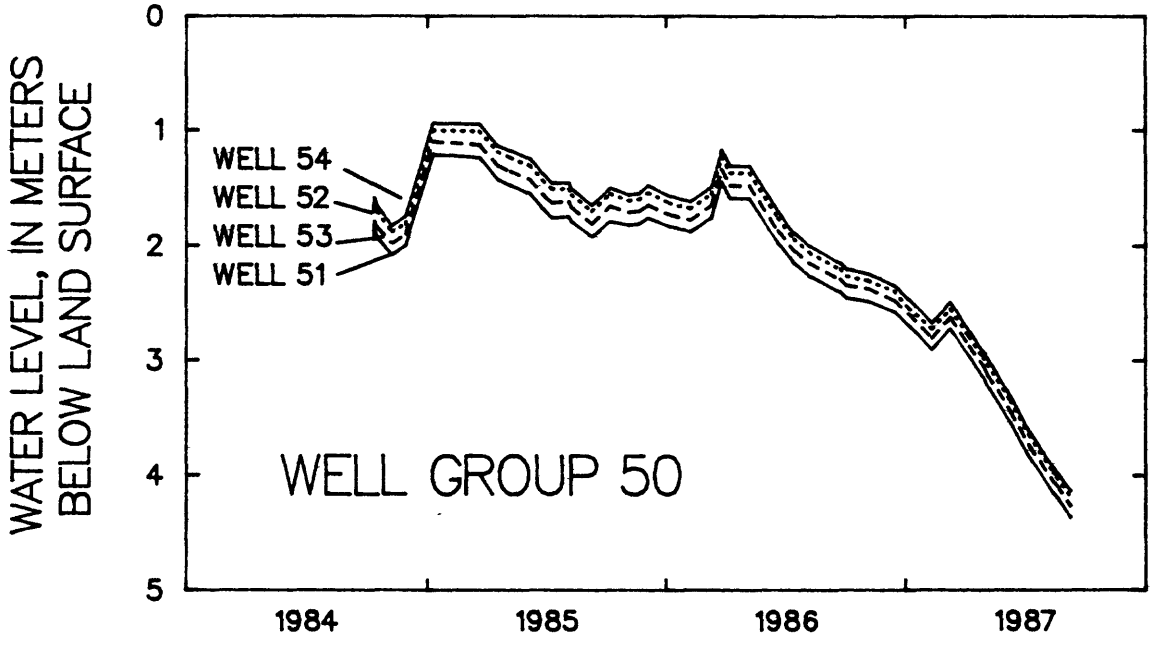
Gravel and sand fractions were separated from drilling mud by shaker prior to sampling. Particle-size analysis may not reflect actual proportions of gravel, sand, and mud present in subsurface.

Summary of geologist log:	Thickness (m)	Bottom of depth interval (m)
Gravel, sandy; light brownish-gray, sand fraction is whitish-gray; maximum grain size, 22 mm; poorly sorted; grains subangular to subrounded; contains from 45- to 50-percent volcanic and granitic, 45- to 50-percent metamorphic-rock fragments; contains less than 5-percent gypsum; iron stains present on about 20 percent of grains	6.1	6.1
Gravel, sandy; light brownish-gray, sand is yellow, whitish-gray; maximum grain size, 19 mm; poorly sorted; grains subrounded; contains slightly larger percentage of metamorphic-rock fragments than overlying interval; slight downward increase in iron staining; about 40 percent of grains iron-stained	12.2	18.3
Gravel, sandy; very pale brown, sand fraction is creamy-gray; maximum grain size, is 17 mm; poorly sorted; grains subrounded to rounded; about 60 percent of rock fragments are metamorphic; iron staining present on 50 to 60 percent of grains	6.1	24.4
Sand, gravelly, muddy; light brownish-gray, sand fraction is creamy-gray; maximum grain size, 5 mm; contains about 60-percent metamorphic, 40-percent igneous-rock fragments; contains about 5-percent gypsum; less iron staining than was present in overlying intervals	6.1	30.5
Gravel, sandy; light brownish-gray, sand fraction is creamy-gray; maximum grain size, 18 mm; between 65 and 70 percent of rock fragments are metamorphic; contains less than 1-percent gypsum; slight iron stains present on less than 10 percent of grains	3.0	33.5
Gravel, muddy, sandy; light brownish-gray, sand is creamy-gray; maximum grain size, 15 mm; 65 to 70 percent of rock fragments are metamorphic; contains slightly more gypsum than overlying interval; iron stains present on some grains	3.0	36.6



GROUND WATER—Continued
WELL GROUP 50--Continued
WATER LEVEL, IN METERS BELOW LAND SURFACE

	WELL NUMBER					WELL NUMBER			
DATE	51	52	53	54	DATE	51	52	53	54
10-12-84	1.95	1.71	1.90	1.67	03-26-86	1.45	1.23	1.34	1.17
10-13-84	1.88	1.65	1.79	1.59	04-08-86	1.59	1.37	1.48	1.31
10-17-84	1.94	1.71	1.84	1.66	05-07-86	1.59	1.37	1.48	1.31
11-08-84	2.08	1.88	1.98	1.83	06-20-86	1.98	1.76	1.87	1.70
11-29-84	2.00	1.81	1.90	1.75	07-08-86	2.10	1.90	2.00	1.85
01-10-85	1.21	1.00	1.10	0.94	07-14-86	2.15	1.94	2.04	1.89
03-21-85	1.24	1.01	1.13	0.95	08-07-86	2.26	2.06	2.15	2.00
04-18-85	1.43	1.19	1.31	1.14	09-23-86	2.40	2.20	2.29	2.15
05-07-85	1.48	1.24	1.36	1.18	10-03-86	2.45	2.26	2.34	2.20
06-06-85	1.55	1.31	1.43	1.25	11-05-86	2.48	2.30	2.37	2.24
06-26-85	1.68	1.44	1.56	1.38	12-15-86	2.57	2.39	2.47	2.34
07-10-85	1.76	1.51	1.63	1.46	01-06-87	2.69	2.54	2.59	2.46
08-05-85	1.75	1.51	1.62	1.46	02-10-87	2.90	2.72	2.80	2.67
08-09-85	1.79	1.56	1.67	1.51	03-10-87	2.72	2.55	2.62	2.49
09-09-85	1.92	1.70	1.81	1.65	04-08-87	2.96	2.79	2.87	2.74
10-07-85	1.79	1.55	1.66	1.50	04-29-87	3.14	2.97	3.04	2.92
11-04-85	1.82	1.61	1.71	1.56	05-06-87	3.22	3.03	3.12	2.98
11-20-85	1.81	1.60	1.70	1.55	06-09-87	3.54	3.35	3.44	3.31
12-04-85	1.76	1.54	1.65	1.48	07-08-87	3.84	3.65	3.74	3.62
01-06-86	1.83	1.63	1.73	1.57	08-13-87	4.15	3.97	4.05	3.93
02-07-86	1.88	1.68	1.78	1.62	08-18-87	4.18	4.01	4.08	3.97
03-11-86	1.76	1.55	1.65	1.49	09-08-87	4.36	4.18	4.26	4.13



GROUND WATER--Continued
WELL GROUP 50--Continued
WATER QUALITY--FIELD MEASUREMENTS

REMARKS: <, Actual value is known to be less than the value shown.

WELL	DATE	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE WATER (DEG C) (00010)	ALKALINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00419)	BICARBONATE WATER WH IT FIELD MG/L AS HCO3 (00450)	OXYGEN, DISSOLVED (MG/L) (00300)	OXIDATION REDUCTION POTENTIAL (MV) (00090)	HYDROGEN SULFIDE TOTAL (MG/L AS H2S) (71875)	AVERAGE DISCHARGE (L/MIN)	PUMPING PERIOD (HOURS)	DRAWDOWN (M)
51	11-08-84	9830	3.82	18.0	0	0	<0.3	--	--	98	.6	0.7
51	01-10-85	10000	3.53	17.0	--	--	--	--	--	117	.4	1.0
51	03-21-85	11000	3.58	16.5	0	0	0.1	--	<0.1	102	.9	0.8
51	06-26-85	11000	3.65	17.0	0	0	--	--	--	95	.5	0.7
51	11-20-85	10600	3.50	17.5	0	0	0.3	430	--	95	.8	0.7
51	03-26-86	12500	3.62	18.0	0	0	0.2	--	--	72	.4	0.5
51	07-08-86	9750	3.70	17.0	0	0	0.2	--	--	79	.4	0.5
51	11-05-86	6500	3.61	17.0	0	0	0.3	--	--	61	.9	0.4
51	04-29-87	10000	3.65	18.0	0	0	0.5	--	--	57	.4	0.3
51	08-18-87	9300	3.74	18.0	0	0	0.5	--	--	45	.5	0.2
52	11-08-84	6580	3.71	17.0	0	0	<0.3	--	--	114	.5	0.6
52	01-10-85	6450	3.62	17.0	--	--	0.1	--	--	95	.3	0.7
52	03-21-85	6250	3.64	17.0	0	0	0.2	--	<0.1	98	.4	0.6
52	06-26-85	5900	3.68	18.0	0	0	--	--	--	95	.2	0.5
52	11-20-85	6500	3.40	17.0	0	0	0.3	448	--	91	.4	0.6
52	03-26-86	7300	3.70	17.5	0	0	0.2	--	--	64	.3	0.3
52	07-08-86	6450	3.64	16.5	0	0	0.3	--	--	68	.2	0.3
52	11-05-86	3720	3.68	16.0	0	0	0.2	--	--	45	.6	0.2
52	04-29-87	5700	3.75	17.5	0	0	0.8	--	--	49	.3	0.2
52	08-18-87	6500	3.82	18.5	0	0	0.5	--	--	34	.3	0.1
53	11-08-84	9020	3.65	17.0	0	0	<0.3	--	--	87	.6	0.5
53	01-10-85	9510	3.57	16.5	--	--	0.1	--	--	102	.3	0.6
53	03-21-85	9200	3.56	17.0	0	0	0.2	--	<0.1	106	.4	0.7
53	06-26-85	8400	3.64	17.0	0	0	--	--	--	98	.3	0.7
53	11-20-85	9200	3.30	17.0	0	0	0.3	--	--	95	.4	0.6
53	03-26-86	10800	3.57	18.0	0	0	0.2	--	--	76	.4	0.4
53	07-08-86	8600	3.46	16.0	0	0	0.2	--	--	57	.3	0.3
53	11-05-86	4120	3.60	17.0	0	0	0.1	--	--	38	.5	0.2
53	04-29-87	8700	3.65	17.5	0	0	1.1	--	--	30	.5	0.1
53	08-18-87	8000	3.78	18.0	0	0	0.6	--	--	45	.3	0.2
54	11-08-84	3800	3.97	18.0	0	0	<0.3	--	--	87	.1	1.1
54	01-10-85	3850	3.83	17.0	--	--	0.1	--	--	68	1.0	0.6
54	03-21-85	3920	3.83	17.0	0	0	0.2	--	<0.1	106	.4	1.2
54	06-26-85	3300	3.87	17.0	0	0	--	--	--	76	.3	0.7
54	11-20-85	3430	3.57	17.0	0	0	0.3	--	--	95	.4	1.0
54	03-26-86	3840	4.04	17.5	0	0	0.1	--	--	49	.3	0.4
54	07-08-86	3670	3.73	17.0	0	0	0.1	--	--	42	.3	0.3
54	11-05-86	2240	3.80	18.0	0	0	0.2	--	--	28	.5	0.2
54	04-29-87	3500	3.90	17.5	0	0	0.9	--	--	15	.4	0.1
54	08-18-87	3400	4.14	17.0	0	0	0.5	--	--	23	.3	0.2

GROUND WATER--Continued
WELL GROUP 50--Continued
WATER QUALITY--LABORATORY MEASUREMENTS

LABORATORY: R, USGS research laboratory (KG Stollenwerk), Lakewood, Colorado; C, USGS National Water-Quality Laboratory, Arveda, Coloredo.
REMARKS: <, Actual value is known to be less than the value shown.

WELL	DATE	LABORATORY	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	CARBON, INORGANIC, TOTAL (MG/L AS C) (00685)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)
51	11-08-84	R	490	390	230	9.3	10000	390	--	--	100
51	03-21-85	C	490	410	250	9.6	9800	310	--	--	110
51	03-21-85	R	480	390	230	--	9800	310	--	--	110
51	06-26-85	R	460	380	220	--	10000	370	--	--	--
51	11-20-85	C	--	--	--	--	--	--	--	--	--
51	11-20-85	R	460	390	210	--	10000	340	--	--	110
51	03-26-86	R	460	410	200	--	11000	310	--	--	99
51	07-08-86	C	390	330	110	12	9900	530	--	--	90
51	07-08-86	R	440	380	220	--	9300	370	--	--	--
51	11-05-86	R	470	360	210	--	9000	300	--	--	100
51	04-29-87	C	--	--	--	--	--	--	40	--	48
51	04-29-87	R	460	360	210	--	8700	310	--	--	--
51	08-18-87	C	--	--	--	--	--	--	--	50	--
51	08-18-87	R	440	390	210	--	8800	340	--	--	100
52	11-08-84	R	530	240	140	7.4	5600	240	--	--	99
52	03-21-85	C	--	--	--	--	--	--	--	--	--
52	03-21-85	R	450	220	150	--	4900	210	--	--	100
52	06-26-85	R	410	190	130	--	4500	180	--	--	--
52	11-20-85	C	500	240	150	7.1	5800	190	23	--	110
52	11-20-85	R	480	250	150	--	5600	190	--	--	110
52	03-26-86	R	490	260	140	--	5400	180	--	--	99
52	07-08-86	R	490	260	150	--	5300	220	--	--	--
52	11-05-86	R	390	190	120	--	4000	190	--	--	87
52	04-29-87	C	440	210	160	8.0	4600	210	21	47	110
52	04-29-87	R	450	210	140	--	4700	210	--	--	--
52	08-18-87	C	460	220	77	8.2	4400	190	21	29	100
52	08-18-87	R	440	230	150	--	4200	200	--	--	110
53	11-08-84	C	490	370	230	7.3	8300	320	--	--	100
53	11-08-84	R	520	370	220	8.6	9500	330	--	--	110
53	03-21-85	C	--	--	--	--	--	--	--	--	--
53	03-21-85	R	450	330	210	--	8100	290	--	--	100
53	06-26-85	R	470	320	200	--	8000	280	--	--	--
53	11-20-85	R	490	370	190	--	9300	290	--	--	120
53	03-26-86	C	350	320	190	9.6	8600	--	36	--	120
53	03-26-86	R	460	370	190	--	8800	270	--	--	98
53	07-08-86	R	450	340	200	--	7600	310	--	--	--
53	11-05-86	R	360	240	140	--	5600	250	--	--	85
53	04-29-87	C	460	310	200	9.4	7600	290	32	49	110
53	04-29-87	R	460	310	190	--	7300	280	--	--	--
53	08-18-87	C	--	--	--	--	--	--	--	33	--
53	08-18-87	R	430	330	180	--	7300	290	--	--	96
54	11-08-84	R	650	150	98	7.5	2700	130	--	--	96
54	03-21-85	C	--	--	--	--	--	--	--	--	--
54	03-21-85	R	620	140	110	--	2600	230	--	--	89
54	06-26-85	C	490	120	100	6.9	2100	92	--	--	88
54	06-26-85	R	500	110	100	--	2200	120	--	--	--
54	11-20-85	R	530	140	100	--	2400	89	7.8	--	100
54	03-26-86	R	510	130	94	--	2300	80	--	--	100
54	07-08-86	R	570	140	99	--	2700	120	--	--	--
54	11-05-86	C	540	140	86	8.4	2700	130	9.1	--	87
54	11-05-86	R	540	140	94	--	2300	120	--	--	93
54	04-29-87	C	--	--	--	--	--	--	--	36	--
54	04-29-87	R	500	120	100	--	2200	88	--	--	--
54	08-18-87	C	--	--	--	--	--	--	8.8	36	--
54	08-18-87	R	440	120	93	--	2000	110	--	--	81

GROUND WATER--Continued
WELL GROUP 50--Continued
WATER QUALITY--LABORATORY MEASUREMENTS--Continued

WELL	DATE	LAB-ORA-TORY	IONIC BAL-ANCE (PER-CENT)	IONIC STRE-NGTH (MOL/L)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	DENSITY (GM/ML AT 20 C) (71820)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
51	11-08-84	R	0.9	0.449	--	15000	--	--	--	--	--	--	--
51	03-21-85	C	-2.1	0.418	16900	14800	1.02	1.50	2.3	<0.100	0.050	0.200	4.0
51	03-21-85	R	1.9	0.442	--	15000	--	--	--	--	--	--	--
51	06-26-85	R	-1.7	0.436	--	15000	--	--	--	--	--	--	--
51	11-20-85	C	--	--	--	--	--	--	--	--	--	--	--
51	11-20-85	R	-1.5	0.435	--	15000	--	--	--	--	--	--	--
51	03-26-86	R	-4.1	0.463	--	16000	--	--	--	--	--	--	--
51	07-08-86	C	-10.7	0.406	--	14300	--	--	--	--	--	--	--
51	07-08-86	R	-0.1	0.411	--	14000	--	--	--	--	--	--	--
51	11-05-86	R	-0.9	0.394	--	13000	--	--	--	--	--	--	--
51	04-29-87	C	--	--	--	--	1.012	--	--	--	--	--	6.4
51	04-29-87	R	1.3	0.392	--	13000	--	--	--	--	--	--	--
51	08-18-87	C	--	--	--	--	1.014	--	--	--	--	--	3.8
51	08-18-87	R	1.8	0.397	--	13000	--	--	--	--	--	--	--
52	11-08-84	R	0.6	0.249	--	8100	--	--	--	--	--	--	--
52	03-21-85	C	--	--	7480	--	1.01	--	--	--	--	--	2.2
52	03-21-85	R	1.0	0.218	--	7100	--	--	--	--	--	--	--
52	06-26-85	R	-0.2	0.197	--	6400	--	--	--	--	--	--	--
52	11-20-85	C	-2.7	0.246	--	8680	--	1.10	1.1	<0.100	0.050	0.090	--
52	11-20-85	R	0.3	0.246	--	8100	--	--	--	--	--	--	--
52	03-26-86	R	2.2	0.241	--	7800	--	--	--	--	--	--	--
52	07-08-86	R	1.7	0.237	--	7600	--	--	--	--	--	--	--
52	11-05-86	R	1.0	0.179	--	5800	--	--	--	--	--	--	--
52	04-29-87	C	-2.1	0.198	--	6990	1.006	--	--	--	--	--	2.9
52	04-29-87	R	-1.4	0.204	--	6600	--	--	--	--	--	--	--
52	08-18-87	C	-4.1	0.183	--	6690	--	--	--	--	--	--	2.3
52	08-18-87	R	4.5	0.194	--	6200	--	--	--	--	--	--	--
53	11-08-84	C	0.5	0.369	--	12700	--	--	--	<0.100	--	0.130	--
53	11-08-84	R	-1.6	0.413	--	14000	--	--	--	--	--	--	--
53	03-21-85	C	--	--	4660	--	1.01	--	--	--	--	--	--
53	03-21-85	R	2.7	0.368	--	12000	--	--	--	--	--	--	--
53	06-26-85	R	-0.5	0.351	--	12000	--	--	--	--	--	--	--
53	11-20-85	R	-1.9	0.401	--	13000	--	--	--	--	--	--	--
53	03-26-86	C	--	--	--	--	--	--	--	--	--	--	--
53	03-26-86	R	0.3	0.368	--	13000	--	--	--	--	--	--	--
53	07-08-86	R	1.8	0.342	--	11000	--	--	--	--	--	--	--
53	11-05-86	R	0.7	0.252	--	8200	--	--	--	--	--	--	--
53	04-29-87	C	-2.3	0.329	--	11400	1.010	--	--	--	--	--	3.8
53	04-29-87	R	1.6	0.330	--	11000	--	--	--	--	--	--	--
53	08-18-87	C	--	--	--	--	1.012	--	--	--	--	--	3.3
53	08-18-87	R	-2.3	0.316	--	11000	--	--	--	--	--	--	--
54	11-08-84	R	0.1	0.117	--	3500	--	--	--	--	--	--	--
54	03-21-85	C	--	--	4300	--	1.00	--	--	--	--	--	--
54	03-21-85	R	-1.1	0.116	--	3500	--	--	--	--	--	--	--
54	06-26-85	C	2.6	0.093	--	3240	--	0.430	0.70	<0.100	<0.010	0.020	--
54	06-26-85	R	-0.5	0.095	--	2800	--	--	--	--	--	--	--
54	11-20-85	R	0.9	0.103	--	3100	--	--	--	--	--	--	--
54	03-26-86	R	0.1	0.098	--	3000	--	--	--	--	--	--	--
54	07-08-86	R	-3.4	0.112	--	3400	--	--	--	--	--	--	--
54	11-05-86	C	-4.0	0.113	--	4010	--	--	--	--	--	--	--
54	11-05-86	R	3.5	0.104	--	3100	--	--	--	--	--	--	--
54	04-29-87	C	--	--	--	--	1.001	--	--	--	--	--	1.9
54	04-29-87	R	1.3	0.095	--	2800	--	--	--	--	--	--	--
54	08-18-87	C	--	--	--	--	--	--	--	--	--	--	--
54	08-18-87	R	0.5	0.087	--	2600	--	--	--	--	--	--	--

GROUND WATER--Continued
WELL GROUP 50--Continued
WATER QUALITY--LABORATORY MEASUREMENTS--Continued

WELL	DATE	LABORATORY	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	BERYLLIUM, DISSOLVED (UG/L AS BE) (01010)	BORON, DISSOLVED (UG/L AS B) (01020)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, DISSOLVED (UG/L AS FE) (01046)
51	11-08-84	R	300000	--	--	--	7700	400	--	11000	150000	3200000
51	03-21-85	C	200000	<1	<10	260	670	580	--	--	160000	2900000
51	03-21-85	R	310000	--	--	--	--	400	--	13000	170000	3100000
51	06-26-85	R	280000	--	--	--	--	400	--	15000	160000	3000000
51	11-20-85	C	--	--	--	--	--	--	--	--	--	--
51	11-20-85	R	280000	--	--	--	--	400	--	10000	150000	3000000
51	03-26-86	R	270000	--	--	--	--	400	--	11000	160000	3200000
51	07-08-86	C	300000	--	9	190	760	480	--	--	140000	2370000
51	07-08-86	R	240000	--	--	--	--	400	--	12000	210000	2900000
51	11-05-86	R	260000	--	--	--	--	500	--	11000	140000	2600000
51	04-29-87	C	--	--	--	--	--	--	--	1100	--	--
51	04-29-87	R	280000	--	--	--	--	700	--	11000	160000	2600000
51	08-18-87	C	--	--	--	--	--	--	--	--	--	--
51	08-18-87	R	250000	--	--	--	--	600	--	13000	150000	2800000
52	11-08-84	R	130000	--	--	--	4100	200	--	5500	60000	1500000
52	03-21-85	C	--	--	--	--	--	--	--	--	--	--
52	03-21-85	R	110000	--	--	--	--	<250	--	5600	63000	1300000
52	06-26-85	R	89000	--	--	--	--	<250	--	6000	57000	1200000
52	11-20-85	C	110000	<1	<200	<190	--	<200	<100	700	84000	1400000
52	11-20-85	R	120000	--	--	--	--	<200	--	5200	72000	1500000
52	03-26-86	R	110000	--	--	--	--	<200	--	5500	76000	1500000
52	07-08-86	R	110000	--	--	--	--	<500	--	6100	100000	1400000
52	11-05-86	R	98000	--	--	--	--	<200	--	4300	54000	990000
52	04-29-87	C	100000	--	6	200	420	200	--	920	66000	1000000
52	04-29-87	R	100000	--	--	--	--	300	--	4800	69000	1100000
52	08-18-87	C	11000	--	7	97	400	130	<5	--	66000	1100000
52	08-18-87	R	94000	--	--	--	--	300	--	6100	67000	1100000
53	11-08-84	C	230000	<1	16	190	550	400	--	--	130000	2400000
53	11-08-84	R	270000	--	--	--	7100	400	--	9600	130000	2700000
53	03-21-85	C	--	--	--	--	--	--	--	--	--	--
53	03-21-85	R	240000	--	--	--	--	300	--	10000	140000	2600000
53	06-26-85	R	220000	--	--	--	--	300	--	12000	130000	2300000
53	11-20-85	R	240000	--	--	--	--	400	--	9100	130000	2700000
53	03-26-86	C	--	--	<100	200	590	420	5	1600	130000	2000000
53	03-26-86	R	230000	--	--	--	--	300	--	9300	140000	2700000
53	07-08-86	R	200000	--	--	--	--	<500	--	9600	180000	2300000
53	11-05-86	R	170000	--	--	--	--	300	--	6700	89000	1600000
53	04-29-87	C	210000	--	12	180	700	380	--	1400	120000	2000000
53	04-29-87	R	230000	--	--	--	--	500	--	8600	130000	2100000
53	08-18-87	C	--	--	--	--	--	--	--	--	--	--
53	08-18-87	R	190000	--	--	--	--	500	--	11000	120000	1900000
54	11-08-84	R	17000	--	--	--	490	<100	--	1400	21000	170000
54	03-21-85	C	--	--	--	--	--	--	--	--	--	--
54	03-21-85	R	23000	--	--	--	--	<250	--	1400	19000	190000
54	06-26-85	C	18000	<1	16	19	60	25	--	1800	15000	160000
54	06-26-85	R	17000	--	--	--	--	<250	--	1500	16000	170000
54	11-20-85	R	15000	--	--	--	--	<100	--	1400	17000	190000
54	03-26-86	R	9300	--	--	--	--	<100	--	1400	18000	170000
54	07-08-86	R	11000	--	--	--	--	<100	--	1700	28000	190000
54	11-05-86	C	24000	--	18	65	110	37	--	--	22000	200000
54	11-05-86	R	19000	--	--	--	--	<100	--	1700	21000	200000
54	04-29-87	C	--	--	--	--	--	--	--	870	--	--
54	04-29-87	R	8300	--	--	--	--	<100	--	1500	20000	180000
54	08-18-87	C	--	--	--	--	--	--	--	--	--	--
54	08-18-87	R	12000	--	--	--	--	<100	--	1800	17000	150000

GROUND WATER--Continued
WELL GROUP 50--Continued
WATER QUALITY--LABORATORY MEASUREMENTS--Continued

WELL	DATE	LABORATORY	LEAD, DISSOLVED (UG/L AS PB) (01049)	LITHIUM DISSOLVED (UG/L AS LI) (01130)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MERCURY DISSOLVED (UG/L AS HG) (71890)	MOLYBDENUM, DISSOLVED (UG/L AS MO) (01060)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	VANADIUM, DISSOLVED (UG/L AS V) (01085)	ZINC, DISSOLVED (UG/L AS ZN) (01090)
51	11-08-84	R	--	--	73000	--	--	3800	1500	600	19000
51	03-21-85	C	<100	2100	77000	--	<100	--	--	750	20000
51	03-21-85	R	--	--	77000	--	--	4100	1300	--	22000
51	06-26-85	R	--	--	72000	--	--	3700	1100	--	21000
51	11-20-85	C	--	--	--	0.2	--	--	--	--	--
51	11-20-85	R	--	--	70000	--	--	3500	1500	--	21000
51	03-26-86	R	--	--	79000	--	--	3700	1200	--	23000
51	07-08-86	C	210	630	63000	--	<90	--	1100	510	18000
51	07-08-86	R	--	--	71000	--	--	3400	1200	--	25000
51	11-05-86	R	--	--	70000	--	--	3200	1100	--	19000
51	04-29-87	C	--	--	--	--	--	--	--	--	--
51	04-29-87	R	--	--	77000	--	--	3200	1200	--	22000
51	08-18-87	C	--	--	--	--	--	--	--	--	--
51	08-18-87	R	--	--	75000	--	--	3100	1300	--	22000
52	11-08-84	R	--	--	46000	--	--	2000	1700	300	8100
52	03-21-85	C	--	--	--	--	--	--	--	--	--
52	03-21-85	R	--	--	46000	--	--	1900	1400	--	8700
52	06-26-85	R	--	--	41000	--	--	2000	1100	--	7800
52	11-20-85	C	<2000	<800	54000	<0.1	<2000	3600	1700	<1200	10000
52	11-20-85	R	--	--	50000	--	--	1800	1500	--	10000
52	03-26-86	R	--	--	55000	--	--	2000	1500	--	10000
52	07-08-86	R	--	--	54000	--	--	2000	1600	--	13000
52	11-05-86	R	--	--	43000	--	--	1600	1200	--	7700
52	04-29-87	C	90	750	48000	--	<30	1500	1500	160	9400
52	04-29-87	R	--	--	53000	--	--	2000	1500	--	9800
52	08-18-87	C	<10	340	49000	--	<10	1400	1500	290	7800
52	08-18-87	R	--	--	52000	--	--	2000	1600	--	9400
53	11-08-84	C	320	600	67000	--	<10	--	1400	690	15000
53	11-08-84	R	--	--	70000	--	--	3700	1400	500	17000
53	03-21-85	C	--	--	--	--	--	--	--	--	--
53	03-21-85	R	--	--	68000	--	--	3600	1100	--	19000
53	06-26-85	R	--	--	65000	--	--	3300	1100	--	18000
53	11-20-85	R	--	--	70000	--	--	3000	1200	--	19000
53	03-26-86	C	<250	570	65000	--	<250	3500	970	450	18000
53	03-26-86	R	--	--	74000	--	--	3300	1200	--	19000
53	07-08-86	R	--	--	68000	--	--	3000	1000	--	22000
53	11-05-86	R	--	--	48000	--	--	2300	820	--	13000
53	04-29-87	C	130	840	62000	--	<30	2100	1100	380	17000
53	04-29-87	R	--	--	71000	--	--	2400	1200	--	19000
53	08-18-87	C	--	--	--	--	--	--	--	--	--
53	08-18-87	R	--	--	68000	--	--	2600	1200	--	18000
54	11-08-84	R	--	--	54000	--	--	990	2600	<40	2500
54	03-21-85	C	--	--	--	--	--	--	--	--	--
54	03-21-85	R	--	--	53000	--	--	860	2400	--	2500
54	06-26-85	C	40	220	42000	--	<30	--	2000	<18	1800
54	06-26-85	R	--	--	45000	--	--	1000	2000	--	2100
54	11-20-85	R	--	--	53000	--	--	770	2200	--	2400
54	03-26-86	R	--	--	57000	--	--	870	2100	--	2500
54	07-08-86	R	--	--	63000	--	--	1000	2300	--	3400
54	11-05-86	C	<100	290	61000	--	<100	--	2200	<60	2800
54	11-05-86	R	--	--	62000	--	--	910	2200	--	2900
54	04-29-87	C	--	--	--	--	--	--	--	--	--
54	04-29-87	R	--	--	60000	--	--	750	2100	--	2900
54	08-18-87	C	--	--	--	--	--	--	--	--	--
54	08-18-87	R	--	--	52000	--	--	790	1800	--	2400

GROUND WATER--Continued
WELL GROUP 100

LOCATION.--Lat 33°26'29", long 110°49'58", in SW¼NW¼SE¼ sec. 9, T. 1 N., R. 15 E. (A-01-15)09dbc, in the right-of-way of State Highway 88, 150 m east of Miami Wash, and 7 km northwest of Globe.
Landowner: Arizona Department of Transportation

LAND SURFACE DATUM.--985.40 m above National Geodetic Vertical Datum of 1929 (levels by Water Resources Division, U.S. Geological Survey)

REMARKS.--Wells 101, 102, 103, 104, 105, and 108 were originally identified as X1W1, X1W2, X1W3, X1W4, X1W5, and X1W6, respectively.

DRILLING AND WELL CONSTRUCTION

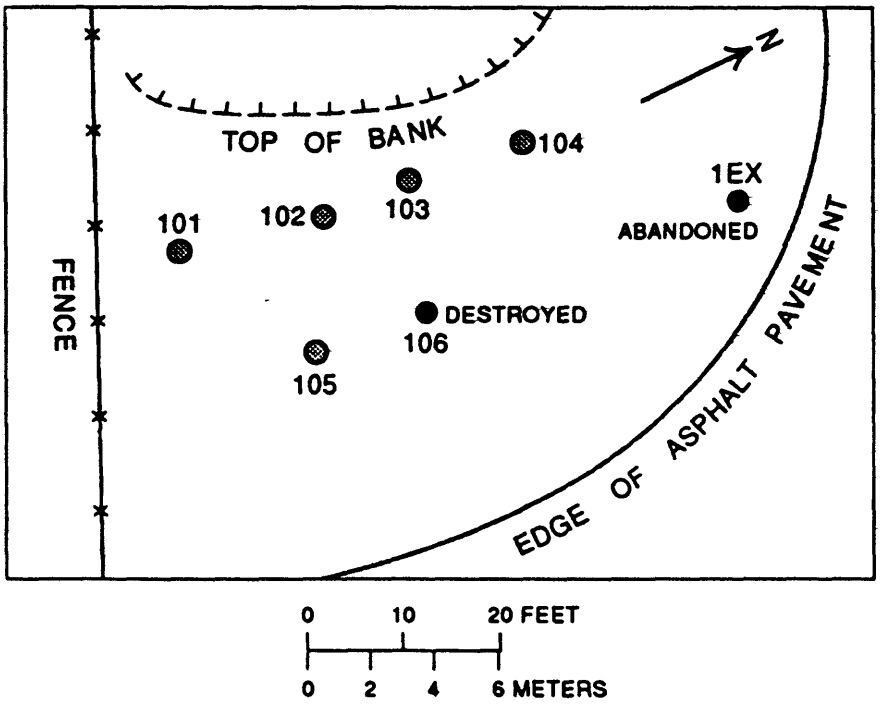
All holes for which well depth is listed below were cased with nominal 10-centimeter diameter, schedule 40, polyvinyl chloride pipe. Each well has a single 0.9-meter length of slotted, 10-centimeter diameter, schedule 80, polyvinyl chloride pipe as the well screen. Each screen has 1470 factory-cut slots 3.6 cm long by 0.64 mm wide for a total open area of 339 cm^2. The borehole annulus around the screen is filled with washed pea gravel from uncontaminated local alluvium. A layer of bentonite pellets was placed in the annulus from approximately 0.5 to 1.5 m above the screen. A concrete seal extends from the land surface to the depth listed.

The casing of well 106 was accidentally crushed at about 46 m depth during pressure grouting. The borehole annulus probably is grouted from 0 to 15 m and from 46 to 55 m. Air jetting during attempted development removed most water from the upper casing. The water level rose from 37 to 29 m below land surface during the next 54 days, which represents an average inflow of 1.2 L/d. The casing then was filled with concrete.

LOGS: C, caliper; D, drillers; E, electric; G, geologist; P, particle size; U, gamma-gamma.

WELL	DATE COMPLE-TED	DRILLING METHOD	HOLE DEPTH meters	WELL DEPTH meters	SCREENED INTERVAL (meters)	GEOLOGIC UNIT	BOTTOM OF SEAL (meters)	LOGS AVAILABLE
101	10-10-84	ROTARY, BENTONITE	36.3	36.1	35.1-36.0	BASIN FILL	3	CEGPU
102	10-11-84	ROTARY, BENTONITE	25.3	25.2	24.2-25.1	ALLUVIUM	3	--
103	10-11-84	ROTARY, BENTONITE	19.2	25.3	18.1-19.0	ALLUVIUM	3	--
104	10-11-84	ROTARY, BENTONITE	11.3	11.2	10.2-11.1	ALLUVIUM	3	--
1EX	12-11-85	DUAL-WALL AIR ROTARY	77.7	--	--	--	--	DGP
105	05-22-86	ROTARY, BENTONITE	49.1	48.8	47.2-48.1	BASIN FILL	38.1	D
106	05-20-86	ROTARY, BENTONITE	62.5	--	--	--	--	--

SITE PLAN

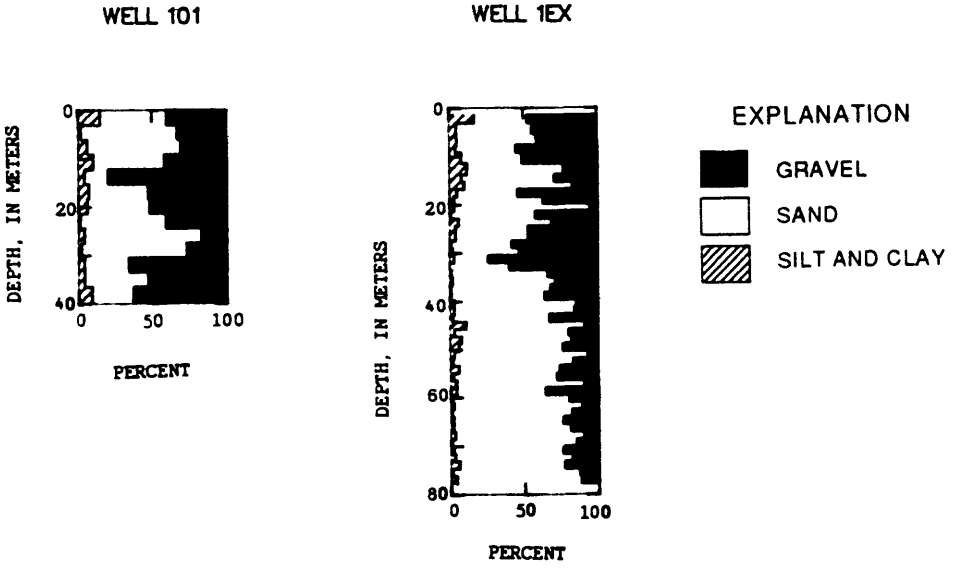


GROUND WATER--Continued
WELL GROUP 100--Continued
LOG INFORMATION

Well: 101

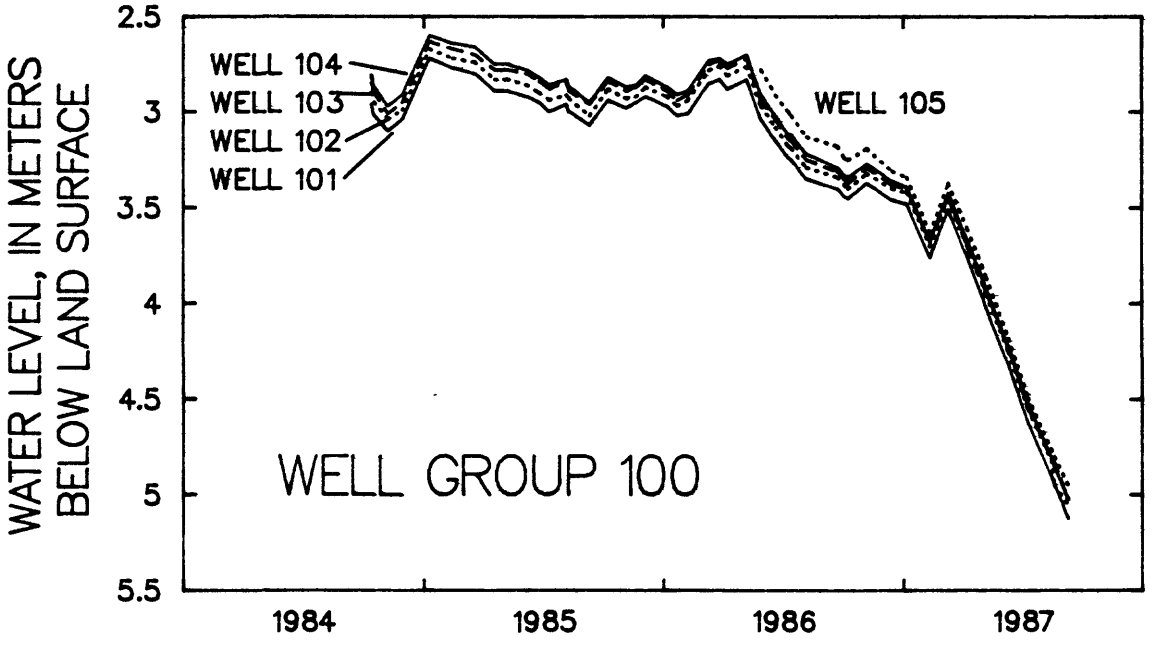
Gravel and sand fractions were separated from drilling mud by shaker prior to sampling. Particle size analysis may not reflect actual proportions of gravel, sand, and mud present in subsurface.

Summary of geologist log:	Thickness (m)	Bottom of depth interval (m)
Gravel, muddy, sandy; dark gray- to light yellow-brown, sand fraction is pinkish-gray; moderately sorted; grains subrounded; maximum particle size 13 mm; contains about 85-percent igneous and 15-percent schistose and phyllitic metamorphic-rock fragments, and minor amounts of tuffaceous material; ferro-magnesium staining present on about 20 percent of grains	12.2	12.2
Gravel, muddy, sandy; light grayish brown, sand fraction is reddish-brown; poorly sorted, grains subrounded; maximum particle size 24 mm; lithology similar to that of overlying interval; ferro-magnesium staining present on between 30 and 40 percent of grains, and increases with depth	9.1	21.3
Sand, gravelly; light grayish brown to brownish-yellow, sand fraction is brick red at 27 m; maximum particle size 15 mm; moderately to well sorted; grains subrounded; 5-percent gypsum at 24 m, decreases to 1 percent at 30 m; ferro-magnesium staining on over 95 percent of grains at 27 m, decreases to 30 percent at 30 m	9.1	30.5
Gravel, muddy, sandy; light grayish-brown; maximum particle size 14 mm; poorly sorted; grains subrounded; lithology similar to that overlying, but metamorphic-rock fragments increase to 35 percent of total; no gypsum; ferro-magnesium staining present on 20 percent of grains	7.6	38.1
Well:1EX		
No samples	1.5	1.5
Gravel, sandy, muddy; light-yellowish brown; maximum grain size, 23 mm; little clay-sized material present; silt content decreases slightly with depth; very poorly sorted; grains angular to subrounded. Sample contains from 25- to 35-percent clear to milky white, mainly sand-sized quartz; 15- to 25-percent granitic quartz, plagioclase feldspar, and biotite; 15-percent schistose metamorphics; contains minor amounts of felsic volcanics, plagioclase feldspar phenocrysts in an aphanitic groundmass, pale-pink potassium feldspar, plagioclase, biotite, muscovite, calcite, possibly gypsum	10.7	12.2
Sand, gravelly, slightly muddy; pale brown to light-yellowish brown; maximum grain size, 20 mm; gravel greater than 15 mm not present below depth of 35 m; very poorly sorted; sand and gravel sorting improves slightly below depth of 37 m; grains angular to rounded; contains 25- to 35-percent quartz; 15- to 25-percent weakly to strongly schistose, pale to dark gray metamorphics; minor amounts of granitic fragments, quartzite, basalt, white plagioclase (?), biotite and muscovite, felsic volcanics; orangish-yellow coating present on grains in intervals 15-20 m, 23-27 m, 43-44 m, 46-47 m, and 58-59 m; dark red coating commonly cements sand-sized fragments in most intervals below 30 m	65.5	77.7



GROUND WATER--Continued
WELL GROUP 100--Continued
WATER LEVEL, IN METERS BELOW LAND SURFACE

	WELL NUMBER					WELL NUMBER				
DATE	101	102	103	104	DATE	101	102	103	104	105
10-13-84	2.96	2.90	2.85	2.81	04-08-86	2.88	2.81	2.77	2.75	--
10-17-84	3.02	2.95	2.90	2.87	05-07-86	2.83	2.76	2.72	2.70	--
11-07-84	3.10	3.04	3.01	2.97	05-29-86	3.04	2.97	2.94	2.91	2.78
11-29-84	3.04	2.99	2.95	2.91	06-20-86	3.15	3.08	3.04	3.02	2.91
01-10-85	2.72	2.67	2.63	2.60	07-10-86	3.24	3.18	3.14	3.12	3.00
02-14-85	2.77	2.72	2.67	2.64	07-14-86	3.25	3.19	3.15	3.12	3.02
03-19-85	2.80	2.74	2.70	2.66	08-07-86	3.35	3.29	3.25	3.22	3.13
04-18-85	2.89	2.83	2.78	2.75	09-23-86	3.40	3.34	3.31	3.29	3.18
05-07-85	2.89	2.83	2.78	2.75	10-03-86	3.44	3.38	3.35	3.33	3.24
06-06-85	2.92	2.86	2.80	2.78	10-09-86	3.45	3.40	3.37	3.34	3.25
06-25-85	2.95	2.90	2.84	2.82	11-06-86	3.37	3.32	3.29	3.27	3.19
07-10-85	3.00	2.94	2.88	2.86	12-15-86	3.46	3.40	3.38	3.36	3.31
08-05-85	2.96	2.91	2.84	2.83	01-06-87	3.48	3.42	3.40	3.39	3.34
08-09-85	3.00	2.93	2.89	2.87	02-10-87	3.76	3.70	3.68	3.67	3.63
09-09-85	3.07	3.02	2.96	2.95	03-10-87	3.51	3.46	3.44	3.42	3.37
10-07-85	2.94	2.88	2.84	2.82	04-08-87	3.76	3.70	3.70	3.67	3.61
11-04-85	2.98	2.93	2.89	2.87	04-30-87	3.96	3.89	3.89	3.86	3.80
11-19-85	2.95	2.92	2.87	2.86	05-06-87	4.02	3.95	3.93	3.92	3.86
12-04-85	2.92	2.87	2.83	2.81	06-09-87	4.32	4.25	4.23	4.22	4.18
01-06-86	2.97	2.92	2.89	2.87	07-08-87	4.62	4.55	4.54	4.52	4.49
01-22-86	3.02	2.97	2.94	2.91	08-13-87	4.90	4.82	4.81	4.80	4.76
02-07-86	3.01	2.94	2.91	2.89	08-18-87	4.94	4.95	4.83	4.85	4.80
03-11-86	2.85	2.78	2.75	2.73	09-08-87	5.12	5.05	5.02	5.02	4.95
03-27-86	2.83	2.78	2.73	2.72						



GROUND WATER--Continued
WELL GROUP 100--Continued
WATER QUALITY--FIELD MEASUREMENTS

REMARKS: <, Actual value is known to be less than the value shown.

WELL	DATE	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE WATER (DEG C) (00010)	ALKALINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00419)	BICARBONATE WATER WH IT FIELD MG/L AS HCO3 (00450)	OXYGEN, DISSOLVED (MG/L) (00300)	OXIDATION REDUCTION POTENTIAL (MV) (00090)	HYDROGEN SULFIDE TOTAL (MG/L AS H2S) (71875)	AVERAGE DISCHARGE (L/MIN)	PUMPING PERIOD (HOURS)	DRAWDOWN (M)
101	11-07-84	8600	3.64	18.0	0	0	<0.3	--	--	125	.3	1.7
101	01-10-85	8600	3.32	17.0	--	--	0.1	--	--	102	.3	1.5
101	03-19-85	9000	3.47	16.0	0	0	0.1	--	<0.1	102	.6	1.2
101	06-25-85	8000	3.81	16.5	0	0	--	--	--	90	--	--
101	11-19-85	7400	3.51	17.0	0	0	0.3	--	--	79	.2	1.2
101	01-22-86	7750	3.78	19.0	0	0	0.6	--	--	53	.4	0.7
101	03-27-86	8300	3.70	17.0	0	0	0.1	--	--	79	1.4	0.8
101	07-10-86	7900	3.65	17.0	0	0	0.2	--	--	87	.2	1.2
101	11-06-86	7800	3.72	17.0	0	0	0.1	--	--	91	.4	1.0
101	04-30-87	7300	3.80	17.5	0	0	1.0	--	--	68	.4	0.6
101	08-18-87	8200	3.89	18.0	0	0	0.5	--	--	68	.3	0.5
102	11-07-84	8450	3.54	19.0	0	0	<0.3	--	--	110	.3	2.2
102	01-10-85	8000	3.26	17.0	--	--	0.1	--	--	95	.4	1.3
102	03-19-85	8300	3.47	16.0	0	0	0.1	--	<0.1	79	.4	0.9
102	06-25-85	7750	3.72	16.0	0	0	--	--	--	87	.3	1.0
102	11-19-85	6600	3.45	17.0	0	0	0.2	460	--	79	.3	0.9
102	03-27-86	7400	3.58	17.0	0	0	0.1	--	--	76	.3	0.7
102	07-10-86	7000	3.64	17.0	0	0	0.1	--	--	68	.4	0.7
102	11-06-86	6820	3.71	17.0	0	0	0.1	--	--	68	.4	0.6
102	04-30-87	6000	3.80	17.0	0	0	0.9	--	--	30	.3	0.3
102	08-18-87	6500	3.89	18.0	0	0	0.5	--	--	42	.3	0.4
103	11-07-84	6580	3.61	19.0	0	0	<0.3	--	--	--	.8	--
103	01-10-85	6750	3.30	17.0	--	--	0.2	--	--	91	.3	0.6
103	03-19-85	6800	3.49	16.0	0	0	0.2	--	<0.1	79	.6	0.5
103	06-25-85	6000	3.77	16.0	0	0	--	--	--	91	.3	0.6
103	11-19-85	5700	3.59	17.0	0	0	0.2	--	--	79	.2	1.2
103	03-27-86	6000	3.62	17.0	0	0	0.1	--	--	76	.5	0.4
103	07-10-86	5900	3.68	16.5	0	0	0.1	--	--	72	.4	0.4
103	11-06-86	3990	3.75	17.5	0	0	0.1	--	--	64	.4	0.4
103	04-30-87	5400	3.85	17.0	0	0	0.9	--	--	38	.3	0.2
103	08-18-87	5400	3.92	17.5	0	0	0.5	--	--	49	.2	0.2
104	11-07-84	3390	3.92	19.0	0	0	<0.3	--	--	65	.3	0.7
104	01-10-85	3570	3.63	18.0	--	--	0.2	--	--	95	.6	0.7
104	03-19-85	3500	3.82	16.0	0	0	0.1	--	<0.1	79	1.0	0.5
104	06-25-85	3410	4.02	16.0	0	0	--	--	--	83	.3	0.5
104	11-19-85	3240	3.83	18.0	0	0	0.2	460	--	83	.4	0.5
104	03-27-86	3500	4.00	17.0	0	0	0.2	--	--	72	.4	0.5
104	07-10-86	3260	4.00	16.0	0	0	0.1	--	--	72	.2	0.8
104	11-06-86	3900	4.00	18.0	0	0	0.3	--	--	30	.5	0.1
104	05-01-87	3600	4.05	17.5	0	0	0.5	--	--	23	.4	0.1
104	08-18-87	3700	4.20	18.5	0	0	0.5	--	--	23	.4	0.1
105	05-27-86	2980	7.90	19.0	497	610	--	--	--	--	.7	--
105	11-06-86	4380	6.50	18.5	573	699	0.6	--	--	15	1.3	12.5
105	04-30-87	4300	6.50	18.5	624	761	1.0	--	--	19	1.2	18.3
105	08-18-87	4000	6.58	19.0	578	705	1.0	--	--	19	1.3	16.0

GROUND WATER--Continued
WELL GROUP 100--Continued
WATER QUALITY--LABORATORY MEASUREMENTS

LABORATORY: R, USGS research laboratory (KG Stollenwerk), Lakewood, Colorado; C, USGS National Water-Quality Laboratory, Arvada, Colorado.
REMARKS: <, Actual value is known to be less than the value shown.

WELL	DATE	LABORATORY	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	CARBON, INORGANIC, TOTAL (MG/L AS C) (00685)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)
101	11-07-84	R	460	300	190	9.7	7100	370	--	--	99
101	03-19-85	C	500	330	230	9.9	7800	290	--	--	110
101	03-19-85	R	480	300	220	--	7300	320	--	--	110
101	06-25-85	R	480	300	210	--	7500	300	--	--	--
101	11-19-85	R	440	280	180	--	6900	230	26	--	110
101	03-27-86	R	500	350	200	--	8500	240	--	--	100
101	07-10-86	R	470	290	190	--	7600	250	--	--	--
101	11-06-86	C	440	260	120	8.6	6900	270	--	--	97
101	11-06-86	R	380	220	140	--	5500	230	--	--	84
101	04-30-87	C	--	--	--	--	--	--	26	53	--
101	04-30-87	R	450	230	170	--	6400	190	--	--	--
101	08-18-87	C	--	--	--	--	--	--	--	37	--
101	08-18-87	R	430	260	160	--	6400	270	--	--	100
102	11-07-84	C	510	310	210	9.0	7800	310	--	--	110
102	11-07-84	R	490	290	200	9.2	7100	350	--	--	120
102	03-19-85	C	--	--	--	--	--	--	--	--	--
102	03-19-85	R	500	300	230	--	7300	310	--	--	120
102	06-25-85	R	480	280	200	--	7100	280	--	--	--
102	11-19-85	C	--	--	--	--	--	--	23	--	--
102	11-19-85	R	450	250	170	--	6000	180	--	--	110
102	03-27-86	C	340	200	160	7.6	6100	--	21	--	60
102	03-27-86	R	480	290	170	--	6300	230	--	--	86
102	07-10-86	R	460	250	170	--	6100	220	--	--	--
102	11-06-86	R	430	200	140	--	5100	190	--	--	98
102	04-30-87	C	470	190	150	6.9	4600	180	36	37	100
102	04-30-87	R	460	170	140	--	4600	210	--	--	--
102	08-18-87	C	--	--	--	--	--	--	--	60	--
102	08-18-87	R	450	200	140	--	4600	200	--	--	110
103	11-07-84	R	510	240	150	7.4	5400	260	--	--	110
103	03-19-85	C	--	--	--	--	--	--	--	--	--
103	03-19-85	R	490	230	160	--	5800	230	--	--	120
103	06-25-85	C	440	200	150	7.0	5400	170	--	--	100
103	06-25-85	R	480	210	160	--	5100	280	--	--	--
103	11-19-85	R	460	210	150	--	5000	150	19	--	110
103	03-27-86	R	480	230	150	--	4800	180	--	--	100
103	07-10-86	C	460	200	100	7.0	5000	200	--	--	110
103	07-10-86	R	480	210	140	--	4800	190	--	--	--
103	11-06-86	R	400	160	110	--	4500	170	--	--	95
103	04-30-87	C	--	--	--	--	--	--	--	43	--
103	04-30-87	R	460	200	130	--	3900	150	--	--	--
103	08-18-87	C	--	--	--	--	--	--	14	52	--
103	08-18-87	R	450	160	120	--	3400	150	--	--	110
104	11-07-84	R	560	130	88	7.6	2300	110	--	--	86
104	03-19-85	C	--	--	--	--	--	--	--	--	--
104	03-19-85	R	550	120	89	--	1900	190	--	--	99
104	06-25-85	R	570	120	92	--	2400	270	--	--	--
104	11-19-85	C	510	110	99	6.8	2200	90	8.4	--	88
104	11-19-85	R	470	120	88	--	1900	81	--	--	92
104	03-27-86	R	520	130	100	--	2300	72	--	--	76
104	07-10-86	R	540	120	100	--	2100	85	--	--	--
104	11-06-86	R	590	140	100	--	2300	110	--	--	91
104	05-01-87	C	560	140	90	6.8	2300	110	7.3	44	78
104	05-01-87	R	530	120	96	--	2100	120	--	--	--
104	08-18-87	C	--	--	--	--	--	--	--	41	--
104	08-18-87	R	460	130	92	--	2000	94	--	--	89

GROUND WATER--Continued
WELL GROUP 100--Continued
WATER QUALITY--LABORATORY MEASUREMENTS--Continued

WELL	DATE	LAB-ORA-TORY	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	CARBON, INOR-GANIC, TOTAL (MG/L AS C) (00685)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
105	11-06-86	C	550	150	330	28	2000	150	0.20	--	53
105	11-06-86	R	560	170	320	--	1900	190	--	--	55
105	11-06-86	R	540	190	330	--	1900	190	--	--	60
105	04-30-87	C	600	160	330	25	2000	170	0.30	230	58
105	04-30-87	R	580	210	300	--	1700	180	--	--	--
105	08-18-87	C	--	--	--	--	--	--	--	210	--
105	08-18-87	R	430	130	320	--	1500	140	--	--	51

WELL	DATE	LAB-ORA-TORY	IONIC BAL-ANCE (PER-CENT)	IONIC STRE-NGTH (MOL/L)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	DENSITY (GM/ML AT 20 C) (71820)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
101	11-07-84	R	2.6	0.329	--	11000	--	--	--	--	--	--	--
101	03-19-85	C	1.5	0.349	11700	12000	1.01	1.50	2.2	<0.100	0.030	0.160	--
101	03-19-85	R	4.1	0.340	--	11000	--	--	--	--	--	--	--
101	06-25-85	R	1.0	0.336	--	11000	--	--	--	--	--	--	--
101	11-19-85	R	0.1	0.303	--	10000	--	--	--	--	--	--	--
101	03-27-86	R	-2.1	0.363	--	12000	--	--	--	--	--	--	--
101	07-10-86	R	-1.2	0.328	--	11000	--	--	--	--	--	--	--
101	11-06-86	C	-5.2	0.292	--	10200	--	--	--	--	--	--	--
101	11-06-86	R	-0.6	0.243	--	8000	--	--	--	--	--	--	--
101	04-30-87	C	--	--	--	--	1.008	--	--	--	--	--	5.6
101	04-30-87	R	-2.0	0.276	--	9000	--	--	--	--	--	--	--
101	08-18-87	C	--	--	--	--	1.010	--	--	--	--	--	2.7
101	08-18-87	R	-2.4	0.277	--	9200	--	--	--	--	--	--	--
102	11-07-84	C	-3.4	0.335	--	11600	--	--	--	<0.100	--	0.100	--
102	11-07-84	R	0.5	0.320	--	10000	--	--	--	--	--	--	--
102	03-19-85	C	--	--	12800	--	1.01	--	--	--	--	--	--
102	03-19-85	R	3.3	0.338	--	11000	--	--	--	--	--	--	--
102	06-25-85	R	0.1	0.315	--	10000	--	--	--	--	--	--	--
102	11-19-85	C	--	--	--	--	--	--	--	--	--	--	--
102	11-19-85	R	-0.2	0.262	--	8600	--	--	--	--	--	--	--
102	03-27-86	C	--	--	--	--	--	--	--	--	--	--	--
102	03-27-86	R	2.8	0.285	--	9300	--	--	--	--	--	--	--
102	07-10-86	R	0.3	0.268	--	8800	--	--	--	--	--	--	--
102	11-06-86	R	-0.5	0.224	--	7300	--	--	--	--	--	--	--
102	04-30-87	C	-3.4	0.190	--	7110	1.006	--	--	--	--	--	2.5
102	04-30-87	R	1.5	0.208	--	6600	--	--	--	--	--	--	--
102	08-18-87	C	--	--	--	--	1.007	--	--	--	--	--	--
102	08-18-87	R	1.5	0.206	--	6700	--	--	--	--	--	--	--
103	11-07-84	R	-0.4	0.239	--	7800	--	--	--	--	--	--	--
103	03-19-85	C	--	--	9420	7800	1.01	--	--	--	--	--	--
103	03-19-85	R	-2.1	0.251	--	8200	--	--	--	--	--	--	--
103	06-25-85	C	-6.5	0.222	--	7820	--	1.50	0.90	<0.100	0.060	0.060	--
103	06-25-85	R	-1.8	0.224	--	7200	--	--	--	--	--	--	--
103	11-19-85	R	-1.1	0.215	--	7000	--	--	--	--	--	--	--
103	03-27-86	R	1.2	0.212	--	6900	--	--	--	--	--	--	--
103	07-10-86	C	-5.5	0.210	--	7330	--	--	--	--	--	--	--
103	07-10-86	R	-1.4	0.207	--	6700	--	--	--	--	--	--	--
103	11-06-86	R	-9.5	0.181	--	6000	--	--	--	--	--	--	--
103	04-30-87	C	--	--	--	--	1.005	--	--	--	--	--	2.2
103	04-30-87	R	1.8	0.174	--	5400	--	--	--	--	--	--	--

GROUND WATER--Continued
WELL GROUP 100--Continued
WATER QUALITY--LABORATORY MEASUREMENTS--Continued

WELL	DATE	LABORATORY	IONIC BALANCE (PERCENT)	IONIC STRENGTH (MOL/L)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	DENSITY (GM/ML AT 20 C) (71820)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS DISSOLVED (MG/L AS P) (00666)	PHOSPHORUS ORTHO, DISSOLVED (MG/L AS P) (00671)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
103	08-18-87	C	--	--	--	--	--	--	--	--	--	--	--
103	08-18-87	R	2.8	0.154	--	4900	--	--	--	--	--	--	--
104	11-07-84	R	-1.3	0.098	--	2900	--	--	--	--	--	--	--
104	03-19-85	C	--	--	3320	--	1.00	--	--	--	--	--	--
104	03-19-85	R	5.1	0.091	--	2600	--	--	--	--	--	--	--
104	06-25-85	R	-5.3	0.104	--	3100	--	--	--	--	--	--	--
104	11-19-85	C	-0.4	0.094	--	3340	--	0.530	0.60	<0.100	<0.010	0.010	--
104	11-19-85	R	3.6	0.084	--	2500	--	--	--	--	--	--	--
104	03-27-86	R	-1.0	0.096	--	2900	--	--	--	--	--	--	--
104	07-10-86	R	2.7	0.092	--	2600	--	--	--	--	--	--	--
104	11-06-86	R	3.4	0.103	--	3000	--	--	--	--	--	--	--
104	05-01-87	C	1.5	0.101	--	3510	1.004	--	--	--	--	--	--
104	05-01-87	R	-1.2	0.092	--	2700	--	--	--	--	--	--	--
104	08-18-87	C	--	--	--	--	--	--	--	--	--	--	--
104	08-18-87	R	2.5	0.088	--	2600	--	--	--	--	--	--	--
105	11-06-86	C	-1.9	0.097	--	3620	--	--	--	--	--	--	--
105	11-06-86	R	0.0	0.097	--	3000	--	--	--	--	--	--	--
105	11-06-86	R	1.0	0.098	--	3000	--	--	--	--	--	--	--
105	04-30-87	C	-0.3	0.101	--	3730	1.003	0.280	0.90	<0.100	0.020	0.010	1.8
105	04-30-87	R	6.0	0.097	--	2600	--	--	--	--	--	--	--
105	08-18-87	C	--	--	--	--	1.003	--	--	--	--	--	--
105	08-18-87	R	-0.4	0.078	--	2500	--	--	--	--	--	--	--

WELL	DATE	LABORATORY	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	BERYLLIUM, DISSOLVED (UG/L AS BE) (01010)	BORON, DISSOLVED (UG/L AS B) (01020)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, DISSOLVED (UG/L AS FE) (01046)
101	11-07-84	R	230000	--	--	--	4900	200	--	8000	110000	2200000
101	03-19-85	C	220000	<1	13	210	520	400	--	--	120000	2300000
101	03-19-85	R	240000	--	--	--	--	<250	--	13000	130000	2300000
101	06-25-85	R	220000	--	--	--	--	300	--	11000	120000	2200000
101	11-19-85	R	180000	--	--	--	--	300	--	6800	110000	2000000
101	03-27-86	R	190000	--	--	--	--	300	--	7600	120000	2400000
101	07-10-86	R	170000	--	--	--	--	<500	--	8500	160000	2200000
101	11-06-86	C	190000	--	15	130	570	370	--	--	110000	1700000
101	11-06-86	R	160000	--	--	--	--	300	--	6400	83000	1500000
101	04-30-87	C	--	--	--	--	--	--	--	1100	--	--
101	04-30-87	R	190000	--	--	--	--	400	--	6700	110000	1600000
101	08-18-87	C	--	--	--	--	--	--	--	--	--	--
101	08-18-87	R	160000	--	--	--	--	400	--	8600	100000	1700000
102	11-07-84	C	230000	<1	9	190	440	260	--	1400	110000	1900000
102	11-07-84	R	220000	--	--	--	5700	250	--	7400	100000	2000000
102	03-19-85	C	--	--	--	--	--	--	--	--	--	--
102	03-19-85	R	270000	--	--	--	--	300	--	8700	120000	2100000
102	08-25-85	R	200000	--	--	--	--	<250	--	10000	110000	2000000
102	11-19-85	C	--	--	--	--	--	--	--	--	--	--
102	11-19-85	R	150000	--	--	--	--	<250	--	5800	91000	1600000
102	03-27-86	C	--	--	<100	140	440	280	--	1100	96000	1360000
102	03-27-86	R	150000	--	--	--	--	200	--	6000	98000	1900000
102	07-10-86	R	140000	--	--	--	--	<500	--	6900	130000	1700000
102	11-06-86	R	140000	--	--	--	--	<250	--	5400	73000	1300000
102	04-30-87	C	12000	--	8	190	450	210	--	780	77000	1240000

GROUND WATER—Continued
WELL GROUP 100--Continued
WATER QUALITY—LABORATORY MEASUREMENTS—Continued

WELL	DATE	LABORATORY	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	BERYLLIUM, DISSOLVED (UG/L AS BE) (01010)	BORON, DISSOLVED (UG/L AS B) (01020)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, DISSOLVED (UG/L AS FE) (01046)
102	04-30-87	R	130000	--	--	--	--	300	--	4700	76000	1200000
102	08-18-87	C	--	--	--	--	--	--	--	--	--	--
102	08-18-87	R	110000	--	--	--	--	300	--	6100	75000	1200000
103	11-07-84	R	140000	--	--	--	3100	100	--	5200	73000	1300000
103	03-19-85	C	--	--	--	--	--	--	--	--	--	--
103	03-19-85	R	150000	--	--	--	--	<250	--	7900	75000	1400000
103	06-25-85	C	130000	<5	13	47	260	170	--	8800	60000	1100000
103	06-25-85	R	130000	--	--	--	--	<250	--	6500	66000	1200000
103	11-19-85	R	110000	--	--	--	--	<150	--	4300	62000	1200000
103	03-27-86	R	98000	--	--	--	--	<200	--	4100	67000	1200000
103	07-10-86	C	130000	--	11	110	360	210	--	--	68000	1000000
103	07-10-86	R	95000	--	--	--	--	<500	--	4800	91000	1100000
103	11-06-86	R	100000	--	--	--	--	<200	--	3800	51000	810000
103	04-30-87	C	--	--	--	--	--	--	--	700	--	--
103	04-30-87	R	91000	--	--	--	--	200	--	3600	55000	830000
103	08-18-87	C	--	--	--	--	--	--	--	--	--	--
103	08-18-87	R	73000	--	--	--	--	<250	--	4200	50000	760000
104	11-07-84	R	9600	--	--	--	250	<50	--	850	16000	110000
104	03-19-85	C	--	--	--	--	--	--	--	--	--	--
104	03-19-85	R	8500	--	--	--	--	<250	--	1100	18000	150000
104	06-25-85	R	13000	--	--	--	--	<250	--	1300	19000	160000
104	11-19-85	C	14000	<1	17	49	100	22	--	--	17000	150000
104	11-19-85	R	7800	--	--	--	--	<100	--	1000	15000	140000
104	03-27-86	R	3600	--	--	--	--	<200	--	1000	16000	150000
104	07-10-86	R	3800	--	--	--	--	<100	--	1200	21000	130000
104	11-06-86	R	12000	--	--	--	--	<200	--	1300	17000	140000
104	05-01-87	C	17000	--	13	35	100	26	--	550	16000	130000
104	05-01-87	R	<160	--	--	--	--	<100	--	1300	17000	140000
104	08-18-87	C	--	--	--	--	--	--	--	--	--	--
104	08-18-87	R	9200	--	--	--	--	<100	--	1700	17000	150000
105	11-06-86	C	140	--	24	<1	130	<3	--	<9	120	1900
105	11-06-86	R	<320	--	--	--	--	<200	--	<80	300	4400
105	11-06-86	R	<80	--	--	--	--	<50	--	<20	250	4400
105	04-30-87	C	100	--	19	3	120	<3	--	<150	50	590
105	04-30-87	R	<160	--	--	--	--	<100	--	<40	<20	300
105	08-18-87	C	--	--	--	--	--	--	--	--	--	--
105	08-18-87	R	<160	--	--	--	--	<100	--	<40	200	3100

WELL	DATE	LABORATORY	LEAD, DISSOLVED (UG/L AS PB) (01049)	LITHIUM DISSOLVED (UG/L AS LI) (01130)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MERCURY DISSOLVED (UG/L AS HG) (71890)	MOLYBDENUM, DISSOLVED (UG/L AS MO) (01060)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	VANADIUM, DISSOLVED (UG/L AS V) (01085)	ZINC, DISSOLVED (UG/L AS ZN) (01090)
101	11-07-84	R	--	--	57000	--	--	3200	1600	400	12000
101	03-19-85	C	<100	590	63000	--	<100	--	1500	600	15000
101	03-19-85	R	--	--	64000	--	--	3500	1400	--	17000
101	06-25-85	R	--	--	58000	--	--	3100	1300	--	15000
101	11-19-85	R	--	--	48000	--	--	2300	1100	--	13000
101	03-27-86	R	--	--	57000	--	--	3700	1200	--	16000
101	07-10-86	R	--	--	55000	--	--	3000	1200	--	19000
101	11-06-86	C	210	540	47000	--	<100	--	1100	440	14000
101	11-06-86	R	--	--	43000	--	--	2100	900	--	12000
101	04-30-87	C	--	--	--	--	--	--	--	--	--

GROUND WATER--Continued
WELL GROUP 100--Continued
WATER QUALITY--LABORATORY MEASUREMENTS--Continued

WELL	DATE	LAB-ORA-TORY	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
101	04-30-87	R	--	--	49000	--	--	1900	1100	--	15000
101	08-18-87	C	--	--	--	--	--	--	--	--	--
101	08-18-87	R	--	--	48000	--	--	2100	1100	--	14000
102	11-07-84	C	220	540	57000	--	<10	--	1600	560	11000
102	11-07-84	R	--	--	57000	--	--	3000	1700	500	12000
102	03-19-85	C	--	--	--	--	--	--	--	--	--
102	03-19-85	R	--	--	62000	--	--	3200	1300	--	15000
102	06-25-85	R	--	--	56000	--	--	2800	1200	--	14000
102	11-19-85	C	--	--	--	<0.1	--	--	--	--	--
102	11-19-85	R	--	--	42000	--	--	2000	1100	--	12000
102	03-27-86	C	<200	450	45000	--	<200	2400	1200	320	12000
102	03-27-86	R	--	--	48000	--	--	2600	1100	--	13000
102	07-10-86	R	--	--	48000	--	--	2000	1000	--	16000
102	11-06-86	R	--	--	39000	--	--	2000	900	--	10000
102	04-30-87	C	90	830	34000	--	<30	1500	1100	220	10000
102	04-30-87	R	--	--	37000	--	--	1000	1000	--	11000
102	08-18-87	C	--	--	--	--	--	--	--	--	--
102	08-18-87	R	--	--	36000	--	--	2000	1000	--	11000
103	11-07-84	R	--	--	51000	--	--	2200	1700	200	7900
103	03-19-85	C	--	--	--	--	--	--	--	--	--
103	03-19-85	R	--	--	51000	--	--	2500	1600	--	11000
103	06-25-85	C	110	360	44000	--	<100	--	1300	200	7400
103	06-25-85	R	--	--	48000	--	--	2100	1400	--	8600
103	11-19-85	R	--	--	42000	--	--	1600	1300	--	8200
103	03-27-86	R	--	--	46000	--	--	1800	1400	--	9000
103	07-10-86	C	120	390	43000	--	<30	--	1500	200	8300
103	07-10-86	R	--	--	46000	--	--	2000	2000	--	11000
103	11-06-86	R	--	--	38000	--	--	1500	1200	--	7200
103	04-30-87	C	--	--	--	--	--	--	--	--	--
103	04-30-87	R	--	--	39000	--	--	1000	1300	--	7700
103	08-18-87	C	--	--	--	--	--	--	--	--	--
103	08-18-87	R	--	--	34000	--	--	1000	1200	--	7000
104	11-07-84	R	--	--	35000	--	--	740	2200	<20	1800
104	03-19-85	C	--	--	--	--	--	--	--	--	--
104	03-19-85	R	--	--	42000	--	--	700	2200	--	2300
104	06-25-85	R	--	--	42000	--	--	1000	2100	--	2100
104	11-19-85	C	<30	220	39000	<0.1	<30	--	2100	25	1900
104	11-19-85	R	--	--	37000	--	--	1000	1900	--	1800
104	03-27-86	R	--	--	42000	--	--	1000	2000	--	2000
104	07-10-86	R	--	--	44000	--	--	700	2100	--	2400
104	11-06-86	R	--	--	60000	--	--	900	2400	--	2100
104	05-01-87	C	10	330	48000	--	<10	700	2100	13	2000
104	05-01-87	R	--	--	55000	--	--	700	2300	--	2300
104	08-18-87	C	--	--	--	--	--	--	--	--	--
104	08-18-87	R	--	--	48000	--	--	770	2000	--	2200
105	11-06-86	C	<30	260	6900	--	<30	--	1500	<18	32
105	11-06-86	R	--	--	8200	--	--	600	1500	--	<60
105	11-06-86	R	--	--	8500	--	--	400	1600	--	61
105	04-30-87	C	30	710	9000	--	<30	<100	1600	<18	1000
105	04-30-87	R	--	--	9400	--	--	200	1500	--	<60
105	08-18-87	C	--	--	--	--	--	--	--	--	--
105	08-18-87	R	--	--	4400	--	--	100	1400	--	100

GROUND WATER--Continued
WELL GROUP 100--Continued
WATER QUALITY--WELL 1EX

The samples listed below were collected by air lift through the dual-wall drill stem while the well was being drilled. After water samples and cuttings were collected, the hole was sealed with concrete to its total depth.
LABORATORY: Laboratory analyses by USGS research laboratory (KG Stollenwerk), Lakewood, Colorado.
REMARKS: <, Actual value is known to be less than the value shown.

DATE	TIME	DEPTH AT SAMPLE LOCATION, TOTAL (METERS)	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE WATER (DEG C) (00010)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)
DEC 1985										
10...	1100	5.5	2370	5.72	13.0	--	--	--	--	--
10...	1135	11.6	4730	4.73	12.5	530	120	90	1800	96
10...	1206	16.8	5830	4.05	13.0	--	--	--	--	--
10...	1240	22.9	6500	4.05	13.0	460	200	140	5600	170
10...	1252	29.0	7800	4.22	14.0	490	270	160	7100	210
10...	1322	35.1	4560	4.87	13.5	320	110	240	3700	110
10...	1339	36.1	6950	4.31	14.0	710	320	220	5800	190
10...	1359	41.1	5840	4.42	14.0	580	260	240	4900	150
10...	1429	44.2	2540	5.52	14.5	120	54	170	1500	62
10...	1504	47.2	3200	4.95	15.0	160	78	150	2000	77
10...	1543	50.3	2980	5.35	15.0	150	67	170	1800	77
10...	1614	53.3	1460	6.19	15.0	51	23	140	630	36
10...	1646	56.4	909	6.52	14.5	24	7.1	140	250	28
10...	1711	59.4	790	7.10	14.5	21	5.2	140	120	26
11...	0745	59.4	654	8.13	12.0	--	--	--	--	--
11...	0820	62.5	940	6.58	13.0	35	8.6	150	250	27
11...	0904	65.5	747	7.59	12.5	19	4.4	140	100	24
11...	1026	71.6	633	7.52	14.0	5.0	1.2	140	52	23
11...	1127	77.7	830	7.38	14.5	--	--	--	180	26

DEPTH AT SAMPLE LOCATION, TOTAL (METERS)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, DISSOLVED (UG/L AS FE) (01046)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	ZINC, DISSOLVED (UG/L AS ZN) (01090)
5.5	--	--	--	--	--	--	--	--	--	--
11.6	54	2100	<100	1100	13000	180000	43000	760	2000	9700
16.8	--	--	--	--	--	--	--	--	--	--
22.9	66	94000	<150	4300	65000	1440000	39000	2000	1000	19000
29.0	67	130000	<150	6100	68000	1490000	51000	2600	1100	15000
35.1	42	6300	<100	2200	15000	700000	32000	930	980	5600
38.1	88	130000	<150	7400	61000	1600000	62000	3100	1500	18000
41.1	80	7900	<100	5900	45000	1640000	50000	2500	1300	14000
44.2	51	590	<50	1400	3700	410000	11000	520	360	2600
47.2	62	4600	50	2300	4600	570000	16000	780	430	4000
50.3	57	1000	<100	1800	4700	510000	14000	640	450	3200
53.3	40	<80	<50	480	50	120000	5000	240	150	680
56.4	37	<80	<50	90	50	22000	1600	80	60	60
59.4	34	<80	<50	<20	20	100	1400	60	70	<15
59.4	--	--	--	--	--	--	--	--	--	--
62.5	40	500	<50	40	40	5100	3700	<50	110	<15
65.5	30	<60	<50	<20	<10	350	1200	60	70	<15
71.6	42	400	<50	<20	10	2300	230	50	30	<15
77.7	--	--	--	--	--	--	--	--	--	--

WELL GROUP 200

LOCATION.--Lat 33°27'07", long 110°49'55", in SW¼SW¼SE¼ sec. 4, T. 1 N., R. 15 E. (A-01-15)04dcc, 7 m northeast of Bixby Road, 50 m north of Pinal Creek, and 8 km northwest of Globe.
Landowner: F.R. Kelly, Claypool, Arizona.
LAND SURFACE DATUM.--978 m above National Geodetic Vertical Datum of 1929, from topographic map.
REMARKS.--Wells 201 and 202 were originally identified as X2W1 and X2W2, respectively.

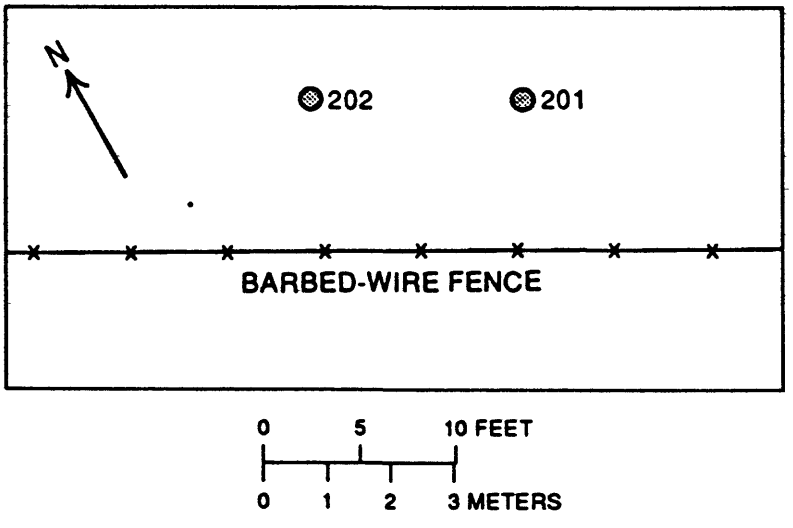
DRILLING AND WELL CONSTRUCTION

All holes listed below were drilled by normal-circulation rotary drilling with bentonite mud. The wells were cased with nominal 10-centimeter diameter, schedule 40, polyvinyl chloride pipe. Each well has a single 0.9-meter length of slotted, 10-centimeter diameter, schedule 80, polyvinyl chloride pipe as the well screen. Each screen has 1470 factory-cut slots 3.6 cm long by 0.64 mm wide for a total open area of 339 cm^2. The borehole annulus around the screen is filled with washed pea gravel from uncontaminated local alluvium. A layer of bentonite pellets was placed in the annulus from approximately 0.5 to 1.5 m above the screen. A concrete seal extends from the land surface to the depth listed. The wells were developed by jetting high-pressure air horizontally through the screen to agitate the formation and air-lift water and sediment until no further visible sediment was removed.

LOGS: C, caliper; E, electric; G, geologist; J, gamma; P, particle size; U, gamma-gamma.

WELL	DATE COMPLE-TED	DRILLING METHOD	HOLE DEPTH (meters)	WELL DEPTH (meters)	SCREENED INTERVAL (meters)	GEOLOGIC UNIT	BOTTOM OF SEAL (meters)	LOGS AVAILABLE
201	10-05-84	ROTARY, BENTONITE	18.6	18.6	17.6-18.5	BASIN FILL	3	CEGJPU
202	10-06-84	ROTARY, BENTONITE	12.5	12.3	11.3-12.2	ALLUVIUM	3	--

SITE PLAN

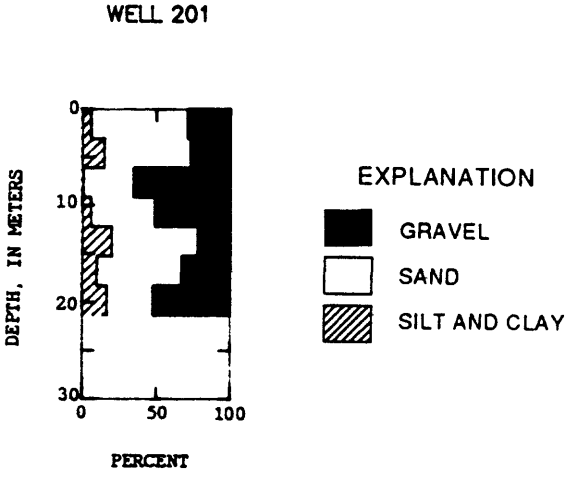


GROUND WATER--Continued
WELL GROUP 200--Continued
LOG INFORMATION

Well: 201

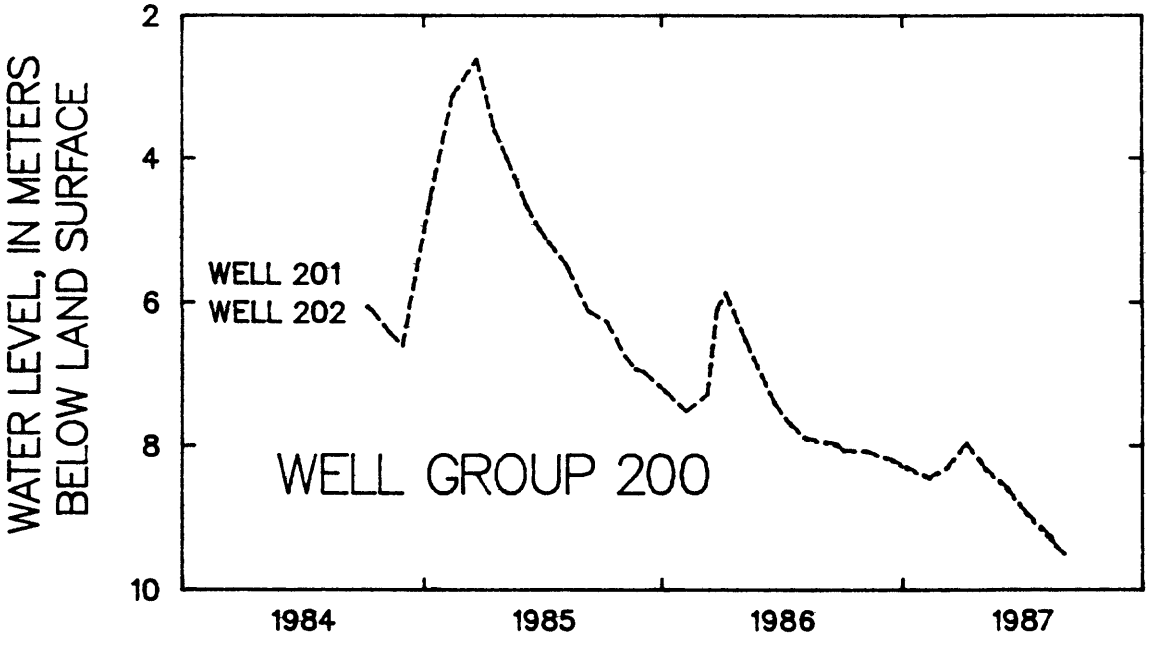
Gravel and sand fractions were separated from drilling mud by shaker prior to sampling. Particle size analysis may not reflect actual proportions of gravel, sand, and mud present in subsurface.

Summary of geologist log:	Thickness (m)	Bottom of depth interval (m)
Sand, gravelly, muddy; light brownish-gray, sand fraction creamy gray; maximum particle size, 21 mm; poor to moderately sorted; grains subangular to subrounded; sample contains mainly light-colored aphanitic volcanic-rock fragments, with minor amounts of darker volcanics, muscovite, biotite, and traces of epidote	3.0	6.1
Gravel, sandy; brown; maximum particle size, 31 mm; moderately sorted; grains subrounded; sample consists mainly of light-colored aphanitic volcanic-rock fragments, with minor amounts of darker volcanics, muscovite, biotite, metamorphic-rock fragments, and traces of epidote	6.1	12.2
Sand, gravelly, muddy; light brownish-gray, sand fraction whitish brown; maximum grain size, 14 mm; poorly sorted; grains subrounded; gravel mineralogy similar to overlying intervals; quartz and feldspar abundant in sand-sized fraction; contains sand-sized aggregates cemented by calcium carbonate; slight increase in quantity of darker-colored volcanics	3.0	15.2
Gravel, sandy, muddy; light brownish-gray; maximum particle size, 9 mm; moderately to well sorted; grains angular; mineralogy similar to that of overlying interval; less sand aggregates than was found in overlying interval	3.0	18.3
Gravel, muddy, sandy; light brownish-gray; maximum particle size 14 mm; moderately sorted, subangular to subrounded; mineralogy similar to that of overlying interval, except for increase in this interval of quantity of sandy aggregates. Calcium carbonate coating present on some volcanic grains	3.0	21.3



GROUND WATER--Continued
WELL GROUP 200--Continued
WATER LEVEL, IN METERS BELOW LAND SURFACE

DATE	---WELL NUMBER--- 201	202	DATE	---WELL NUMBER--- 201	202	DATE	---WELL NUMBER--- 201	202
10-06-84	6.07	--	08-05-85	5.45	5.46	08-07-86	7.89	7.91
10-07-84	6.07	6.07	08-09-85	5.53	5.52	09-23-86	7.97	8.00
10-08-84	6.05	6.07	09-09-85	6.12	6.13	10-03-86	8.06	8.07
10-09-84	6.07	6.07	10-07-85	6.27	6.27	11-07-86	8.07	8.08
10-11-84	6.10	6.10	11-04-85	6.75	6.75	12-15-86	8.19	8.21
10-13-84	6.10	6.11	11-20-85	6.92	6.93	01-06-87	8.29	8.32
11-09-84	6.41	6.42	12-04-85	6.97	6.97	02-10-87	8.44	8.46
11-29-84	6.60	6.60	01-06-86	7.23	7.25	03-10-87	8.29	8.31
01-11-85	4.55	4.57	02-07-86	7.52	7.52	04-08-87	7.96	7.97
02-14-85	3.12	3.14	03-11-86	7.28	7.28	04-29-87	8.20	8.23
03-22-85	2.61	2.62	03-25-86	6.11	6.12	05-06-87	8.31	8.33
04-18-85	3.60	3.62	04-08-86	5.86	5.88	06-09-87	8.59	8.62
05-07-85	3.99	4.01	05-07-86	6.51	6.53	07-08-87	8.94	8.96
06-06-85	4.65	4.67	06-20-86	7.39	7.41	08-13-87	9.25	9.31
06-25-85	4.96	4.98	07-09-86	7.64	7.65	08-21-87	9.39	9.40
07-10-85	5.16	5.17	07-14-86	7.69	7.71	09-08-87	9.54	9.54



GROUND WATER--Continued
WELL GROUP 200--Continued
WATER QUALITY--FIELD MEASUREMENTS

REMARKS: <, Actual value is known to be less than the value shown.

WELL	DATE	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE WATER (DEG C) (00010)	ALKALINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00419)	BICARBONATE WATER WH IT FIELD MG/L AS HCO3 (00450)	OXYGEN, DISSOLVED (MG/L) (00300)	OXIDATION REDUCTION POTENTIAL (MV) (00090)	HYDROGEN SULFIDE TOTAL (MG/L AS H2S) (71875)	AVERAGE DISCHARGE (L/MIN)	PUMPING PERIOD (HOURS)	DRAWDOWN (M)
201	11-09-84	1530	6.80	16.0	205	250	2.5	--	--	19	.9	3.2
201	01-11-85	2030	6.90	16.5	--	--	--	--	--	--	1.5	3.7
201	03-22-85	705	7.05	14.5	128	156	5.6	--	<0.1	23	.2	5.4
201	06-25-85	1030	7.04	15.0	162	200	--	--	--	--	1.0	5.4
201	11-20-85	1050	7.20	14.0	175	210	6.0	--	--	--	.5	9.3
201	03-25-86	1230	6.90	16.0	176	214	5.2	--	--	2	--	1.5
201	07-09-86	1100	7.23	16.0	166	200	6.3	--	--	--	--	--
201	11-07-86	1160	7.50	16.0	181	220	--	--	--	--	--	--
201	04-29-87	1100	7.20	18.5	172	210	6.8	--	--	4	1.1	3.5
201	08-21-87	1900	7.07	18.5	182	220	5.3	--	--	8	.6	0.6
202	11-09-84	950	6.92	16.5	258	320	3.3	--	--	34	.4	0.2
202	01-11-85	1870	6.87	16.0	--	--	1.2	--	--	76	.1	0.5
202	03-22-85	402	7.19	13.5	115	140	7.4	--	<0.1	86	1.1	0.7
202	06-25-85	540	6.76	12.0	125	150	--	--	--	76	.2	0.5
202	11-20-85	560	6.96	14.0	140	171	5.0	--	--	19	.5	0.1
202	03-25-86	1930	6.74	15.5	171	210	1.9	--	--	44	.4	--
202	07-09-86	1900	6.85	16.0	186	230	2.3	--	--	34	.3	0.2
202	11-07-86	3500	7.04	16.0	226	280	--	--	--	--	--	--
202	04-29-87	3600	6.70	19.5	166	200	1.1	--	--	7	.6	--
202	08-21-87	2900	6.88	18.5	166	200	1.8	--	--	15	.3	0.1

GROUND WATER--Continued
WELL GROUP 200--Continued
WATER QUALITY--LABORATORY MEASUREMENTS

LABORATORY: R, USGS research laboratory (KG Stollenwerk), Lakewood, Colorado; C, USGS National Water-Quality Laboratory, Arveda, Coloredo.
REMARKS: <, Actual value is known to be less than the value shown.

WELL	DATE	LAB-ORA-TORY	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	CARBON, INOR-GANIC, TOTAL (MG/L AS C) (00685)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
201	11-09-84	C	310	55	56	2.8	760	46	0.20	--	26
201	11-09-84	R	280	59	53	2.3	780	53	--	--	27
201	03-22-85	C	--	--	--	--	--	--	--	--	--
201	03-22-85	R	100	17	26	--	210	21	--	--	25
201	06-25-85	R	190	25	26	--	410	31	--	--	--
201	11-20-85	R	180	26	30	--	390	26	--	--	32
201	03-25-86	C	190	29	33	1.9	410	31	0.20	--	25
201	03-25-86	R	200	35	32	--	430	33	--	--	25
201	07-09-86	R	190	32	30	--	330	28	--	--	--
201	11-07-86	R	190	36	31	--	400	33	--	--	27
201	04-29-87	R	180	31	29	--	400	29	--	--	--
201	08-21-87	C	--	--	--	--	--	--	--	52	--
201	08-21-87	R	300	61	43	--	700	47	--	--	--
202	11-09-84	R	150	32	37	1.6	310	35	--	--	27
202	03-22-85	C	--	--	--	--	--	--	--	--	--
202	03-22-85	R	47	9	22	--	67	17	--	--	22
202	06-25-85	R	66	13	24	--	110	17	--	--	--
202	11-20-85	C	69	14	28	1.3	100	18	0.30	--	24
202	11-20-85	R	71	13	27	--	110	20	--	--	30
202	03-25-86	R	280	66	50	--	710	70	--	--	24
202	07-09-86	R	340	72	54	--	850	57	--	--	--
202	11-07-86	C	560	110	74	4.5	1600	99	0.20	--	28
202	11-07-86	R	590	120	73	--	1600	90	--	--	30
202	04-29-87	R	610	150	93	--	1900	60	--	--	--
202	08-21-87	C	--	--	--	--	--	--	--	45	--
202	08-21-87	R	470	100	76	--	1400	68	--	--	--

GROUND WATER--Continued
WELL GROUP 200--Continued
WATER QUALITY--LABORATORY MEASUREMENTS--Continued

WELL	DATE	LABORATORY	IONIC BALANCE (PERCENT)	IONIC STRENGTH (MOL/L)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	DENSITY (GM/ML AT 20 C) (71820)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHOROUS DISSOLVED (MG/L AS P) (00666)	PHOSPHOROUS ORTHO, DISSOLVED (MG/L AS P) (00671)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
201	11-09-84	C	3.0	0.040	--	1390	--	--	--	1.90	--	<0.010	--
201	11-09-84	R	-1.4	0.039	--	1100	--	--	--	--	--	--	--
201	03-22-85	C	--	--	477	--	1.00	--	--	--	--	--	0.7
201	03-22-85	R	0.1	0.013	--	380	--	--	--	--	--	--	--
201	06-25-85	R	0.1	0.023	--	590	--	--	--	--	--	--	--
201	11-20-85	R	0.3	0.022	--	610	--	--	--	--	--	--	--
201	03-25-86	C	1.7	0.023	--	826	--	--	--	--	--	--	--
201	03-25-86	R	3.2	0.025	--	660	--	--	--	--	--	--	--
201	07-09-86	R	10.0	0.022	--	520	--	--	--	--	--	--	--
201	11-07-86	R	3.6	0.024	--	640	--	--	--	--	--	--	--
201	04-29-87	R	0.9	0.023	--	590	--	--	--	--	--	--	--
201	08-21-87	C	--	--	--	--	1.001	--	--	--	--	--	--
201	08-21-87	R	5.7	0.038	--	960	--	--	--	--	--	--	--
202	11-09-84	R	-3.3	0.020	--	600	--	--	--	--	--	--	--
202	03-22-85	C	--	--	237	--	1.00	--	--	--	--	--	0.5
202	03-22-85	R	-1.5	0.006	--	210	--	--	--	--	--	--	--
202	06-25-85	R	1.4	0.009	--	240	--	--	--	--	--	--	--
202	11-20-85	C	4.2	0.009	--	354	--	0.020	0.90	3.40	0.030	0.010	--
202	11-20-85	R	1.2	0.009	--	280	--	--	--	--	--	--	--
202	03-25-86	R	4.5	0.039	--	1000	--	--	--	--	--	--	--
202	07-09-86	R	4.7	0.044	--	1100	--	--	--	--	--	--	--
202	11-07-86	C	-0.3	0.076	--	2610	--	--	--	--	--	--	--
202	11-07-86	R	2.7	0.078	--	2100	--	--	--	--	--	--	--
202	04-29-87	R	2.5	0.087	--	2300	--	--	--	--	--	--	--
202	08-21-87	C	--	--	--	--	--	--	--	--	--	--	0.7
202	08-21-87	R	0.9	0.065	--	1700	--	--	--	--	--	--	--

GROUND WATER--Continued
WELL GROUP 200--Continued
WATER QUALITY--LABORATORY MEASUREMENTS--Continued

WELL	DATE	LAB-ORA-TORY	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	BORON, DIS-SOLVED (UG/L AS B) (01020)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
201	11-09-84	C	<100	<1	100	<0.5	60	2	--	<3	20	230
201	11-09-84	R	<80	--	--	--	88	<50	<25	<20	22	140
201	03-22-85	C	--	--	--	--	--	--	--	--	--	--
201	03-22-85	R	<80	--	--	--	30	<50	--	<20	10	60
201	06-25-85	R	<80	--	--	--	--	<50	--	<20	<10	<20
201	11-20-85	R	<80	--	--	--	--	<50	--	<20	<10	<20
201	03-25-86	C	<10	--	35	<0.5	50	<1	--	<3	10	32
201	03-25-86	R	<80	--	--	--	--	<50	--	<20	<10	<20
201	07-09-86	R	<80	--	--	--	--	<50	--	<20	30	70
201	11-07-86	R	<80	--	--	--	--	<50	--	<20	33	<20
201	04-29-87	R	<160	--	--	--	--	<100	--	<40	<20	<40
201	08-21-87	C	--	--	--	--	--	--	--	--	--	--
201	08-21-87	R	<160	--	--	--	--	<100	--	<40	<20	80
202	11-09-84	R	<80	--	--	--	75	<50	<25	<20	20	210
202	03-22-85	C	--	--	--	--	--	--	--	--	--	--
202	03-22-85	R	<80	--	--	--	40	<50	<25	<20	10	40
202	06-25-85	R	<80	--	--	--	--	<50	--	<20	<10	<20
202	11-20-85	C	<100	<1	43	<0.5	50	<1	--	<3	10	44
202	11-20-85	R	<80	--	--	--	--	<50	--	<20	<10	<20
202	03-25-86	R	<80	--	--	--	--	<50	--	<20	<10	100
202	07-09-86	R	<80	--	--	--	--	<50	--	<20	30	40
202	11-07-86	C	20	--	52	<1	80	<3	--	<9	50	<9
202	11-07-86	R	<320	--	--	--	--	<200	--	<80	<40	<80
202	04-29-87	R	<160	--	--	--	--	<100	--	<40	<20	<40
202	08-21-87	C	--	--	--	--	--	--	--	--	--	--
202	08-21-87	R	<160	--	--	--	--	<100	--	<40	<20	<40

GROUND WATER--Continued
WELL GROUP 200--Continued
WATER QUALITY--LABORATORY MEASUREMENTS--Continued

WELL	DATE	LAB-ORA-TORY	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
201	11-09-84	C	20	31	85	--	<10	--	970	<6	23
201	11-09-84	R	--	--	96	--	--	<50	980	<20	23
201	03-22-85	C	--	--	--	--	--	--	--	--	--
201	03-22-85	R	--	--	<30	--	--	60	310	<20	<15
201	06-25-85	R	--	--	<30	--	--	<50	490	--	<15
201	11-20-85	R	--	--	<30	--	--	<50	490	--	40
201	03-25-86	C	<10	18	3	--	<10	--	560	<6	26
201	03-25-86	R	--	--	<30	--	--	<50	550	--	<15
201	07-09-86	R	--	--	<30	--	--	70	540	--	100
201	11-07-86	R	--	--	<30	--	--	100	530	--	1500
201	04-29-87	R	--	--	<60	--	--	<100	540	--	<30
201	08-21-87	R	--	--	<60	--	--	<100	850	--	<30
201	08-21-87	C	--	--	--	--	--	--	--	--	--
202	11-09-84	R	--	--	<30	--	--	<50	520	<20	<15
202	03-22-85	C	--	--	--	--	--	--	--	--	--
202	03-22-85	R	--	--	<30	--	--	<50	200	<20	<15
202	06-25-85	R	--	--	<30	--	--	<50	220	--	<15
202	11-20-85	C	<10	9	11	<0.1	<10	--	240	<6	14
202	11-20-85	R	--	--	<30	--	--	<50	230	--	<15
202	03-25-86	R	--	--	<30	--	--	<50	960	--	80
202	07-09-86	R	--	--	<30	--	--	100	1000	--	30
202	11-07-86	C	<30	56	5	--	<30	--	1500	<18	1700
202	11-07-86	R	--	--	<120	--	--	<200	1600	--	1900
202	04-29-87	R	--	--	<60	--	--	<100	1800	--	<30
202	08-21-87	R	--	--	<60	--	--	<100	1200	--	<30
202	08-21-87	C	--	--	--	--	--	--	--	--	--

GROUND WATER--Continued
WELL GROUP 300

LOCATION.--Lat 33°27'17", long 110°50'19", in SE¼NW¼SW¼ sec. 4, T. 1 N., R. 15 E. (A-01-15)04cbd, 100 m northeast of Pinal Creek, and 8 km northwest of Globe.
Landowner: H and E Ranch, Inc., Globe, Arizona.
LAND SURFACE DATUM.--872 m above National Geodetic Vertical Datum of 1929, from topographic map.
REMARKS.--Wells 301, 302, 303, and 304 were originally identified as X3W1, X3W2, X3W3, and X3W4, respectively.

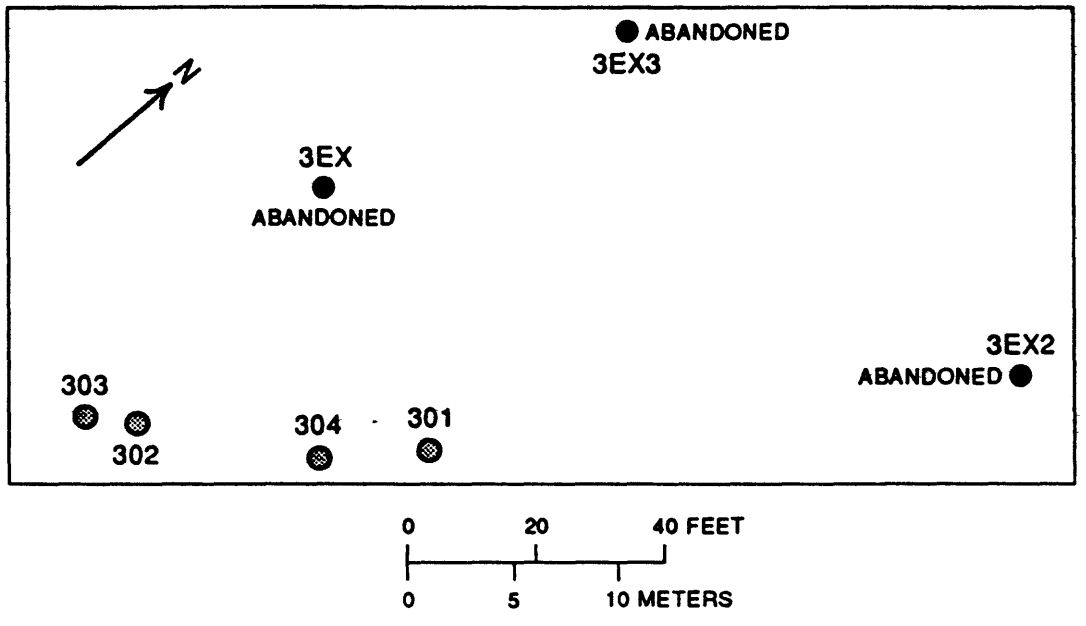
DRILLING AND WELL CONSTRUCTION

All holes for which well depth is listed below were cased with nominal 10-centimeter diameter, schedule 40, polyvinyl chloride pipe. Each well has a single 0.9-meter length of slotted, 10-centimeter diameter, schedule 80, polyvinyl chloride pipe as the well screen. Each screen has 1470 factory-cut slots 3.6 cm long by 0.64 mm wide for a total open area of 339 cm^2. The borehole annulus around the screen is filled with washed pea gravel from uncontaminated local alluvium. A layer of bentonite pellets was placed in the annulus from approximately 0.5 to 1.5 m above the screen. A concrete seal extends from the land surface to the depth listed. Caving of subsurface and surface materials interfered with completing several holes to their planned depths.

LOGS: C, caliper; D, driller's; E, electric; G, geologist; P, particle size; U, gamma-gamma.

	DATE COMPLE-TED	DRILLING METHOD	HOLE DEPTH meters	WELL DEPTH meters	SCREENED INTERVAL (meters)	GEOLOGIC UNIT	BOTTOM OF SEAL (meters)	LOGS AVAILABLE
301	10-07-84	ROTARY, BENTONITE	59.4	59.1	58.1-59.0	BASIN FILL	3	CEGPU
302	10-08-84	ROTARY, BENTONITE	36.0	35.8	34.8-35.7	ALLUVIUM	3	--
303	10-08-84	ROTARY, BENTONITE	14.6	14.4	13.4-14.3	ALLUVIUM	3	D
3EX	12-17-85	DUAL-WALL AIR ROTARY	54.9	--	--	--	--	DGP
3EX2	12-19-85	DUAL-WALL AIR ROTARY	36.6	--	--	--	--	--
3EX3	1-09-86	DUAL-WALL AIR ROTARY	102.1	--	--	--	--	GP
304	5-24-86	ROTARY, BENTONITE	48.6	30.3	28.7-29.6	ALLUVIUM	27.4	D

SITE PLAN



GROUND WATER--Continued
WELL GROUP 300--Continued
LOG INFORMATION

Well: 301

Gravel and sand fractions were separated from drilling mud by shaker prior to sampling. Particle size analysis may not reflact actual proportions of gravel, sand, and mud present in subsurface.

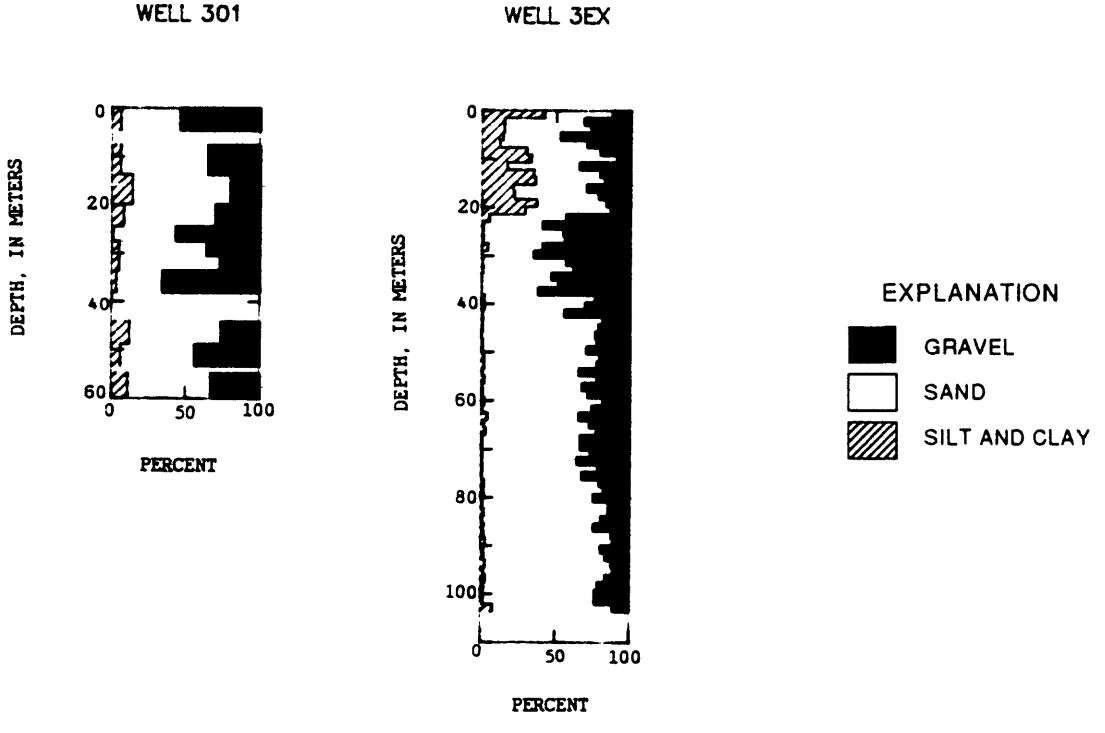
Summary of geologist log:	Thickness (m)	Bottom of depth interval (m)
Gravel, muddy, sandy; grayish-brown, sand fraction grayish-brown; maximum grain size, 15 mm; poorly sorted; grains subangular; contains about 60-percent igneous-rock fragments (granites, granodiorites, and minor amounts of mafic volcanics), 40-percent micaceous-schistose and phyllitic metamorphic rock fragments	3.0	3.0
No samples	3.0	6.1
Gravel, muddy, sandy; grayish to yellowish brown, sand fraction pinkish-brown; maximum particle size, 11 mm; poorly to moderately sorted; grains subrounded; lithology similar to overlying interval; contains less than 5-percent gypsum; ferro-magnesium staining present on about 10 percent of grains	18.3	24.4
Gravel, sandy; yellowish-brown to brown, sand fraction reddish-brown; maximum particle size, 23 mm; moderately to poorly sorted; grains subangular; mineralogy similar to that found in overlying intervals; gypsum absent; contains traces of quartzite; ferro-magnesium steining present on about 60 percent of grains at 27 m below land surface	12.2	36.6
No samples	12.2	48.8
Gravel, muddy, sandy; pale brown; maximum grain size, 7 mm; moderately sorted, grains subangular; mineralogy similar to that in overlying interval; ferro-magnesium staining on less than 10 percent of grains; contains no gypsum	3.0	51.8
Missing sample	7.3	59.1
Gravel, muddy, sandy; brown, sand fraction reddish-brown; maximum grain size, 6 mm; moderately sorted; grains subrounded; lithology similar to that in above interval; contains less than 1-percent gypsum; ferro-magnesium staining present on about 40 perent of grains	.3	59.4
Well: 3EX		
Sand, gravelly, muddy; brown to light yellow brown, sand fraction is yellow gray-brown; maximum grain size, 23 mm; very poorly sorted; grains angular to rounded; contains from 25- to 30-percent milky-white quartz, 15-percent granitic quartz and plagioclase feldspar, 10- to 15-percent schistose metamorphic fragments, 10-percent multicolored quartzite, 10-percent pale gray red felsic volcanics, 10-percent milky white to pink feldspar, 10-percent dark gray basalt containing feldspar phenocrysts, 5-percent muscovite and biotite mica; discontinuous yellow and orange stainings on small percentage of gravel- and sand-sized fragments	21.3	21.3
Sand and gravel; pale brown to light yellowish brown, sand is yellow gray-brown; maximum grain size, 23 mm; very poorly sorted; grains angular to rounded; conteins alternating layers of sandy and gravelly material; petrologically similar to overlying interval; contains a slightly higher percentage of granitic and mafic volcanic grains, more yellow and brown-orange coating than overlying interval	16.8	38.1
Sand, gravelly; yellow to very pale brown, sand color orangish gray-brown; maximum grain size, 14 mm; very poorly sorted; grains angular to rounded; maximum gravel diameter decreases below 38 m; contains more felsic and basic volcanics, less granite than overlying interval; grain coating incresses downward, samples below 46 m have orangish tinge; some sand cemented into clumps	16.8	54.9

GROUND WATER--Continued
WELL GROUP 300--Continued
LOG INFORMATION--Continued

Well: 3EX3

Summary of geologist log:	Thickness (m)	Bottom of depth interval (m)
No samples	47.2	47.2
Sand, gravelly, yellow to very pale brown; maximum grain size, 15 mm; very poorly sorted; grains angular to rounded; contains from 25- to 35-percent clear to milky-white quartz, 10- to 15-percent granitic quartz and feldspar, 10- to 15-percent felsic volcanics, 10- to 15-percent fine- to medium-grained schistose metamorphics; 10-percent quartzite, 10-percent feldspar, 5- to 10-percent basalt that contains feldspar phenocrysts, 3-percent biotite and muscovite mica; contains mudstone fragments from 52-55 m, 58-67 m, and 70-72 m below land surface, and few fragments of greenish-brown chert; calcite present in mudstone to unknown degree; brownish- orange coating common on many grains, but is more prevalent from 46-47 m, 53-56 m, and 91-104 m below land surface; sand has orange tint in intervals of more prevalent brownish-orange coating, brownish-orange material cementing some sand grains together as well; deep red coatings present from 55-64 m below land surface	56.4	103.6

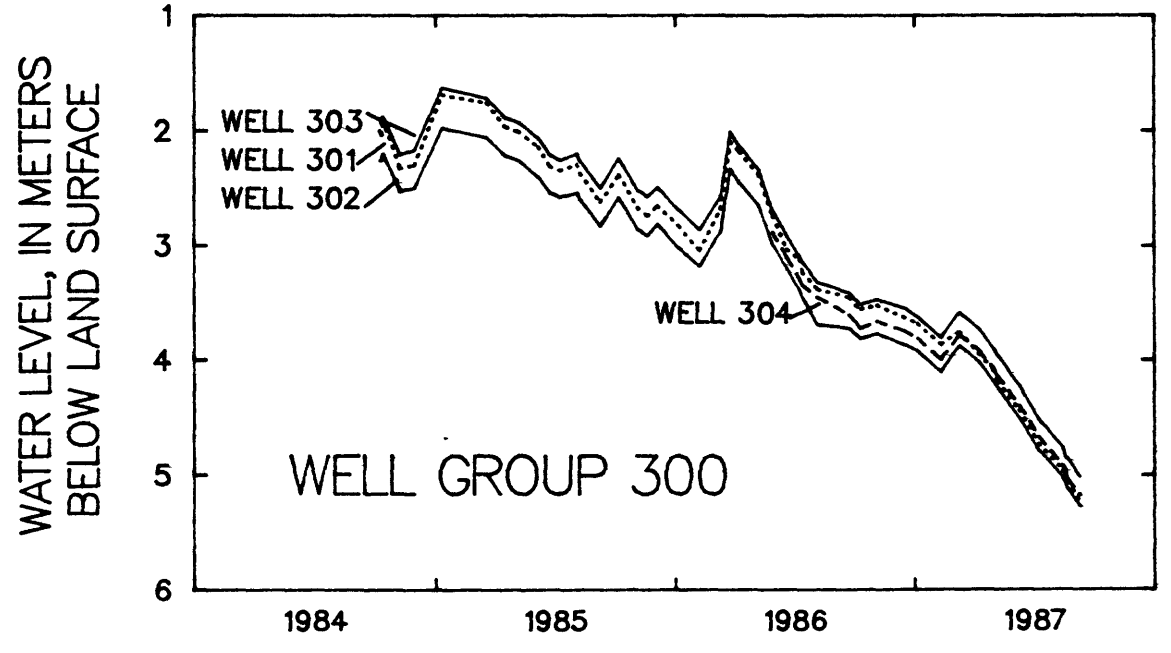
PARTICLE-SIZE GRAPH GOES HERE



GROUND WATER--Continued
WELL GROUP 300--Continued
WATER LEVEL, IN METERS BELOW LAND SURFACE

DATE	WELL NUMBER 301	302	303
10-08-84	2.00		
10-09-84	2.01	2.26	1.90
10-11-84	2.04	2.26	1.94
10-13-84	1.90	2.20	1.88
11-06-84	2.30	2.50	2.19
11-07-84	2.33	2.53	2.21
11-20-84	2.30	2.50	2.17
01-11-85	1.69	1.98	1.63
03-20-85	1.76	2.06	1.72
04-18-85	1.97	2.22	1.89
05-07-85	2.01	2.26	1.93
06-06-85	2.14	2.40	2.06
06-24-85	2.31	2.54	2.21
07-10-85	2.35	2.58	2.26
08-05-85	2.29	2.54	2.20
08-09-85	2.37	2.59	2.26
09-09-85	2.62	2.83	2.50
10-07-85	2.38	2.58	2.24
11-04-85	2.67	2.86	2.52
11-19-85	2.74	2.91	2.57
12-04-85	2.65	2.81	2.49
01-06-86	2.83	3.02	2.69
02-07-86	3.04	3.18	2.86
03-11-86	2.68	2.88	2.58
03-26-86	2.09	2.33	2.01

DATE	WELL NUMBER 301	302	303	304
04-08-86	2.18	2.45	2.13	
05-07-86	2.38	2.64	2.33	
05-29-86	2.74	2.98	2.69	2.88
06-20-86	3.03	3.20	2.91	3.10
07-09-86	3.12	3.38	3.09	3.28
07-14-86	3.23	3.45	3.14	3.34
08-07-86	3.38	3.69	3.32	3.45
09-23-86	3.45	3.72	3.41	3.60
10-03-86	3.52	3.77	3.47	3.66
10-10-86	3.55	3.81	3.51	3.72
11-04-86	3.52	3.77	3.47	3.66
12-15-86	3.62	3.86	3.54	3.74
01-06-87	3.68	3.92	3.62	3.81
02-10-87	3.86	4.10	3.80	3.99
03-10-87	3.75	3.87	3.58	3.78
04-08-87	3.94	4.01	3.72	3.91
04-30-87	4.08	4.18	3.90	4.07
05-06-87	4.18	4.23	3.95	4.13
06-09-87	4.43	4.50	4.22	4.39
07-08-87	4.72	4.78	4.51	4.66
08-13-87	4.95	5.01	4.75	4.91
08-17-87	5.01	5.07	4.84	4.95
08-20-87	5.05	5.11	4.85	5.03
09-08-87	5.23	5.27	5.01	5.17



GROUND WATER--Continued
WELL GROUP 300--Continued
WATER QUALITY--FIELD MEASUREMENTS

REMARKS: <, Actual value is known to be less than the value shown.

WELL	DATE	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE WATER (DEG C) (00010)	ALKALINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00419)	BICARBONATE WATER WH IT FIELD MG/L AS HCO3 (00450)	OXYGEN, DISSOLVED (MG/L) (00300)	OXIDATION REDUCTION POTENTIAL (MV) (00090)	HYDROGEN SULFIDE TOTAL (MG/L AS H2S) (71875)	AVERAGE DISCHARGE (L/MIN)	PUMPING PERIOD (HOURS)	DRAWDOWN (M)
301	11-07-84	3490	6.65	18.0	230	280	0.8	--	--	--	1.2	7.3
301	01-11-85	3450	6.37	17.0	--	--	0.4	--	--	70	--	--
301	03-20-85	3720	6.44	17.0	225	274	0.2	--	<0.1	76	.7	10.3
301	06-24-85	3520	6.60	19.0	224	270	--	--	--	60	.5	7.6
301	11-19-85	3600	6.82	15.5	240	300	0.2	--	--	64	.6	8.2
301	03-26-86	3700	6.39	18.0	250	300	0.2	--	--	72	.4	9.4
301	07-09-86	3500	6.54	18.0	240	290	0.3	--	--	53	.6	7.9
301	11-04-86	3500	6.68	18.0	250	305	0.2	--	--	61	.4	7.9
301	04-30-87	3700	6.60	18.5	240	293	0.7	--	--	53	.9	6.6
301	08-20-87	3600	6.71	18.5	264	322	0.5	--	--	57	.6	6.8
302	11-06-84	7800	3.54	--	0	0	--	--	--	--	--	--
302	01-11-85	7800	3.42	17.5	--	--	0.1	--	--	91	.3	3.1
302	03-20-85	8300	3.68	17.0	0	0	0.1	--	<0.1	83	.6	2.0
302	06-24-85	8000	3.82	18.0	0	0	--	--	--	61	.2	1.0
302	11-19-85	8800	3.51	17.0	0	0	0.1	--	--	68	.4	1.1
302	03-26-86	7800	3.59	17.0	0	0	0.2	--	--	68	.4	1.3
302	07-09-86	7600	3.70	17.0	0	0	0.3	--	--	64	.5	1.3
302	11-04-86	8700	3.70	17.0	0	0	0.2	--	--	45	.7	0.8
302	04-30-87	7700	3.70	18.0	0	0	0.8	--	--	53	.3	0.9
302	08-20-87	7000	3.90	17.5	0	0	0.6	--	--	45	.3	0.7
303	11-07-84	3120	4.60	18.0	0	0	<0.3	--	--	110	.5	2.2
303	01-11-85	2910	4.35	17.0	--	--	0.1	--	--	98	.2	1.6
303	03-20-85	3240	4.36	19.0	0	0	0.1	--	<0.1	79	.5	1.2
303	06-24-85	2220	4.60	19.5	2	2	--	--	--	79	.4	1.1
303	11-19-85	3440	4.30	15.0	0	0	0.2	430	--	68	.5	0.9
303	03-26-86	3800	4.33	18.0	0	0	0.2	--	--	61	.3	0.8
303	07-09-86	3220	4.31	17.5	0	0	0.5	--	--	64	.3	0.9
303	11-04-86	3550	4.52	16.0	--	--	0.3	--	--	68	.7	0.9
303	04-30-87	4000	4.40	19.0	0	0	0.6	--	--	26	.4	0.3
303	08-20-87	3600	4.55	18.0	--	--	0.6	--	--	30	.3	0.3
304	05-26-86	5700	4.14	17.0	0	0	--	--	--	--	--	--
304	07-09-86	6000	3.83	17.0	0	0	0.4	--	--	72	.8	0.4
304	11-04-86	5700	3.88	17.0	0	0	0.2	--	--	68	.5	0.4
304	04-30-87	5700	3.85	17.5	0	0	0.8	--	--	57	.3	0.3
304	08-20-87	5300	4.00	17.0	0	0	0.5	--	--	45	.5	0.2

GROUND WATER--Continued
WELL GROUP 300--Continued
WATER QUALITY--LABORATORY MEASUREMENTS

LABORATORY: R, USGS research laboratory (KG Stollenwerk), Lakewood, Colorado; C, USGS National Water-Quality Laboratory, Arvada, Colorado.
REMARKS: <, Actual value is known to be less than the value shown.

WELL	DATE	LABORATORY	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	CARBON, INORGANIC, TOTAL (MG/L AS C) (00685)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)
301	11-07-84	C	760	140	76	8.1	2000	77	0.10	--	38
301	11-07-84	R	660	140	70	8.2	1900	84	--	--	36
301	03-20-85	C	--	--	--	--	--	--	--	--	--
301	03-20-85	R	690	160	100	--	2000	86	--	--	31
301	06-24-85	R	760	160	75	--	2200	97	--	--	--
301	11-19-85	R	720	160	72	--	2200	85	--	--	38
301	03-26-86	R	750	160	73	--	2500	83	--	--	38
301	07-09-86	R	780	150	75	--	2200	85	--	--	--
301	11-04-86	C	730	140	77	6.1	2200	96	0.10	--	36
301	11-04-86	R	670	160	78	--	1900	95	--	--	41
301	04-30-87	C	780	140	61	5.3	2200	110	0.30	88	36
301	04-30-87	R	680	150	72	--	1900	93	--	--	--
301	08-20-87	C	--	--	--	--	--	--	--	88	--
301	08-20-87	R	700	140	69	--	1900	91	--	--	--
302	11-06-84	R	670	290	160	8.3	6900	310	--	--	110
302	03-20-85	C	500	310	190	8.6	7000	280	--	--	110
302	03-20-85	R	530	290	220	--	6600	310	--	--	90
302	06-24-85	R	490	300	180	--	7200	300	--	--	--
302	11-19-85	R	460	310	180	--	7600	180	27 --	--	110
302	03-26-86	C	380	260	170	8.8	6800	-	22	--	110
302	03-26-86	R	440	300	170	--	6500	210	--	--	110
302	07-09-86	R	510	310	180	--	7600	230	--	--	--
302	11-04-86	R	410	260	150	--	7300	250	--	--	91
302	04-30-87	C	460	280	110	7.4	6900	240	24	59	100
302	04-30-87	R	440	280	170	--	6500	250	--	--	--
302	08-20-87	C	--	--	--	--	--	--	--	61	--
302	08-20-87	R	410	250	150	--	5700	250	--	--	--
303	11-07-84	R	480	120	82	7.1	1900	110	--	--	74
303	03-20-85	C	--	--	--	--	--	--	--	--	--
303	03-20-85	R	500	110	95	--	1700	230	--	--	85
303	06-24-85	R	320	74	71	--	1300	61	--	--	--
303	11-19-85	C	540	130	90	1.3	1700	90	9.7	--	78
303	11-19-85	R	510	130	82	--	2200	110	--	--	78
303	03-26-86	R	610	150	97	--	2400	84	--	--	76
303	07-09-86	R	530	130	92	--	2000	72	--	--	--
303	11-04-86	R	560	140	92	--	2100	90	--	--	85
303	04-30-87	C	600	150	100	7.6	2700	100	9.7	41	84
303	04-30-87	R	590	150	98	--	2500	110	--	--	--
303	08-20-87	C	--	--	--	--	--	--	--	41	--
303	08-20-87	R	500	130	89	--	2300	73	--	--	--
304	07-09-86	C	440	210	110	8.0	4900	170	18	--	99
304	07-09-86	R	450	220	150	--	4800	160	--	--	--
304	11-04-86	R	420	190	120	--	5000	180	--	--	86
304	04-30-87	C	420	200	100	6.5	4500	150	16	--	98
304	04-30-87	R	410	190	130	--	4400	160	--	--	--
304	08-20-87	C	--	--	--	--	--	--	--	57	--
304	08-20-87	R	400	180	120	--	3800	150	--	--	--

GROUND WATER--Continued
WELL GROUP 300--Continued
WATER QUALITY--LABORATORY MEASUREMENTS--Continued

WELL	DATE	LABORATORY	IONIC BALANCE (PERCENT)	IONIC STRENGTH (MOL/L)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	DENSITY (GM/ML AT 20 C) (71820)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS DISSOLVED (MG/L AS P) (00666)	PHOSPHORUS ORTHO, DISSOLVED (MG/L AS P) (00671)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
301	11-07-84	C	4.8	0.097	--	3250	--	--	--	0.160	--	0.020	--
301	11-07-84	R	1.6	0.089	--	2400	--	--	--	--	--	--	--
301	03-20-85	C	--	--	3620	--	1.00	--	--	--	--	--	0.7
301	03-20-85	R	3.9	0.095	--	2500	--	--	--	--	--	--	--
301	06-24-85	R	1.8	0.103	--	2700	--	--	--	--	--	--	--
301	11-19-85	R	-0.3	0.101	--	2700	--	--	--	--	--	--	--
301	03-26-86	R	-4.5	0.108	--	3000	--	--	--	--	--	--	--
301	07-09-86	R	1.9	0.103	--	2700	--	--	--	--	--	--	--
301	11-04-86	C	-1.5	0.100	--	3450	--	--	--	--	--	--	--
301	11-04-86	R	3.4	0.092	--	2400	--	--	--	--	--	--	--
301	04-30-87	C	0.0	0.102	--	3490	1.002	0.300	1.0	<0.100	0.010	<0.010	--
301	04-30-87	R	3.0	0.092	--	2400	--	--	--	--	--	--	--
301	08-20-87	C	--	--	--	--	--	--	--	--	--	--	--
301	08-20-87	R	2.2	0.091	--	2400	--	--	--	--	--	--	--
302	11-06-84	R	0.8	0.309	--	9900	--	--	--	--	--	--	--
302	03-20-85	C	-0.3	0.308	12000	10700	1.01	1.50	1.3	<0.100	0.030	0.120	1.1
302	03-20-85	R	4.6	0.308	--	9900	--	--	--	--	--	--	--
302	06-24-85	R	-0.4	0.318	--	10000	--	--	--	--	--	--	--
302	11-19-85	R	-1.8	0.324	--	11000	--	--	--	--	--	--	--
302	03-26-86	C	--	--	--	--	--	--	--	--	--	--	--
302	03-26-86	R	3.9	0.296	--	9700	--	--	--	--	--	--	--
302	07-09-86	R	1.0	0.335	--	11000	--	--	--	--	--	--	--
302	11-04-86	R	-6.6	0.302	--	10000	--	--	--	--	--	--	--
302	04-30-87	C	-7.2	0.276	--	10300	e1.033	--	--	--	--	--	--
302	04-30-87	R	-0.1	0.287	--	9400	--	--	--	--	--	--	--
302	08-20-87	C	--	--	--	--	1.009	--	--	--	--	--	--
302	08-20-87	R	-1.0	0.251	--	8200	--	--	--	--	--	--	--
303	11-07-84	R	3.3	0.085	--	2500	--	--	--	--	--	--	--
303	03-20-85	C	--	--	3130	--	1.00	--	--	--	--	--	0.4
303	03-20-85	R	5.6	0.084	--	2500	--	--	--	--	--	--	--
303	06-24-85	R	3.4	0.057	--	1700	--	--	--	--	--	--	--
303	11-19-85	C	14.3	0.086	--	2870	--	0.580	0.70	<0.100	<0.010	0.010	--
303	11-19-85	R	-1.5	0.093	--	2800	--	--	--	--	--	--	--
303	03-26-86	R	3.3	0.105	--	3100	--	--	--	--	--	--	--
303	07-09-86	R	5.7	0.090	--	2500	--	--	--	--	--	--	--
303	11-04-86	R	6.8	0.096	--	2800	--	--	--	--	--	--	--
303	04-30-87	C	-0.8	0.114	--	4050	1.003	--	--	--	--	--	--
303	04-30-87	R	1.8	0.109	--	3200	--	--	--	--	--	--	--
303	08-20-87	C	--	--	--	--	--	--	--	--	--	--	--
303	08-20-87	R	-0.7	0.096	--	2900	--	--	--	--	--	--	--
304	07-09-86	C	-3.9	0.206	--	7260	--	--	--	--	--	--	--
304	07-09-86	R	0.7	0.209	--	6900	--	--	--	--	--	--	--
304	11-04-86	R	-8.6	0.201	--	6800	--	--	--	--	--	--	--
304	04-30-87	C	-3.1	0.191	--	6690	--	--	--	--	--	--	--
304	04-30-87	R	1.1	0.194	--	6300	--	--	--	--	--	--	--
304	08-20-87	C	--	--	--	--	--	--	--	--	--	--	--
304	08-20-87	R	1.6	0.169	--	5400	--	--	--	--	--	--	--

e, Estimated.

GROUND WATER—Continued
WELL GROUP 300—Continued
WATER QUALITY—LABORATORY MEASUREMENTS—Continued

WELL	DATE	LABORATORY	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	BERYLLIUM, DISSOLVED (UG/L AS BE) (01010)	BORON, DISSOLVED (UG/L AS B) (01020)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, DISSOLVED (UG/L AS FE) (01046)
301	11-07-84	C	<100	<1	47	<1	50	4	--	<9	30	58
301	11-07-84	R	<80	--	--	--	44	<50	<25	<20	13	<20
301	03-20-85	C	--	--	--	--	--	--	--	--	--	--
301	03-20-85	R	<400	--	--	--	<75	<250	--	<100	<50	<100
301	06-24-85	R	<400	--	--	--	--	<250	--	<100	<50	<100
301	11-19-85	R	<160	--	--	--	--	<100	--	<40	<20	<40
301	03-26-86	R	<160	--	--	--	--	<100	--	<40	<20	90
301	07-09-86	R	<160	--	--	--	--	<100	--	<40	300	1800
301	11-04-86	C	40	--	67	<0.5	50	<1	--	30	100	920
301	11-04-86	R	<320	--	--	--	--	<200	--	<80	<40	300
301	04-30-87	C	90	--	31	6	50	9	--	<9	160	3000
301	04-30-87	R	90	--	--	--	--	<100	--	<40	100	2500
301	08-20-87	C	--	--	--	--	--	--	--	--	--	--
301	08-20-87	R	<160	--	--	--	--	<100	--	<40	<20	200
302	11-06-84	R	180000	--	--	--	5100	230	<100	7000	97000	1800000
302	03-20-85	C	180000	<1	20	190	520	250	--	--	100000	1900000
302	03-20-85	R	200000	--	--	--	--	<250	--	9200	100000	2000000
302	06-24-85	R	200000	--	--	--	--	<250	--	8800	100000	2000000
302	11-19-85	R	180000	--	--	--	--	<200	--	7300	99000	2100000
302	03-26-86	C	--	--	<100	150	480	260	4	1200	98000	--
302	03-26-86	R	160000	--	--	--	--	<250	--	6300	97000	2100000
302	07-09-86	R	170000	--	--	--	--	<500	--	8500	150000	2300000
302	11-04-86	R	190000	--	--	--	--	300	--	7400	88000	1800000
302	04-30-87	C	18000	--	14	150	630	300	--	1200	98000	2000000
302	04-30-87	R	170000	--	--	--	--	400	--	7400	110000	1800000
302	08-20-87	C	--	--	--	--	--	--	--	--	--	--
302	08-20-87	R	150000	--	--	--	--	300	--	8000	87000	1500000
303	11-07-84	R	3600	--	--	--	230	<100	<50	1700	15000	130000
303	03-20-85	C	--	--	--	--	--	--	--	--	--	--
303	03-20-85	R	5900	--	--	--	--	<250	--	1900	16000	140000
303	06-24-85	R	2900	--	--	--	--	<250	--	1200	11000	97000
303	11-19-85	C	8900	<1	21	33	100	32	--	1100	18000	140000
303	11-19-85	R	2600	--	--	--	--	<100	--	1800	16000	130000
303	03-26-86	R	<160	--	--	--	--	<100	--	2000	19000	150000
303	07-09-86	R	<160	--	--	--	--	<100	--	1800	23000	130000
303	11-04-86	R	4300	--	--	--	--	<200	--	1800	19000	160000
303	04-30-87	C	9200	--	18	42	140	46	--	1200	22000	200000
303	04-30-87	R	4000	--	--	--	--	<100	--	1800	23000	210000
303	08-20-87	C	--	--	--	--	--	--	--	--	--	--
303	08-20-87	R	3600	--	--	--	--	<100	--	2100	20000	190000
304	07-09-86	C	100000	--	12	120	460	190	--	--	71000	1100000
304	07-09-86	R	64000	--	--	--	--	100	--	5200	93000	1300000
304	11-04-86	R	94000	--	--	--	--	<250	--	4700	57000	1000000
304	04-30-87	C	99000	--	11	110	420	180	--	--	53000	1000000
304	04-30-87	R	85000	--	--	--	--	200	--	4100	66000	1200000
304	08-20-87	C	--	--	--	--	--	--	--	--	--	--
304	08-20-87	R	79000	--	--	--	--	<250	--	4000	56000	940000

GROUND WATER--Continued
WELL GROUP 300--Continued
WATER QUALITY--LABORATORY MEASUREMENTS--Continued

WELL	DATE	LAB-ORA-TORY	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
301	11-07-84	C	40	180	8000	--	<30	--	1400	<18	71
301	11-07-84	R	--	--	7700	--	--	50	1400	<20	30
301	03-20-85	C	--	--	--	--	--	--	--	--	--
301	03-20-85	R	--	--	13000	--	--	<250	1500	<100	<75
301	06-24-85	R	--	--	15000	--	--	<250	1500	--	<75
301	11-19-85	R	--	--	13000	--	--	<100	1500	--	<30
301	03-26-86	R	--	--	12000	--	--	<100	1400	--	<30
301	07-09-86	R	--	--	9300	--	--	100	1500	--	200
301	11-04-86	C	<30	210	12000	--	<30	--	1500	35	57
301	11-04-86	R	--	--	15000	--	--	<200	1600	--	<60
301	04-30-87	C	130	400	8200	--	<30	<100	1500	<18	46
301	04-30-87	R	--	--	8300	--	--	<100	1400	--	<30
301	08-20-87	R	--	--	<100	--	--	<100	1400	--	<30
301	08-20-87	C	--	--	--	--	--	--	--	--	--
302	11-06-84	R	--	--	60000	--	--	3000	3000	400	9000
302	03-20-85	C	<100	910	63000	--	<100	--	1900	470	9500
302	03-20-85	R	--	--	66000	--	--	3300	1900	--	11000
302	06-24-85	R	--	--	62000	--	--	3200	1900	--	11000
302	11-19-85	R	--	--	56000	--	--	2600	1600	--	12000
302	03-26-86	C	<200	460	52000	--	<200	2600	1500	400	12000
302	03-26-86	R	--	--	55000	--	--	2700	1300	--	12000
302	07-09-86	R	--	--	61000	--	--	3000	1000	--	17000
302	11-04-86	R	--	--	53000	--	--	2400	1200	--	12000
302	04-30-87	C	<30	650	52000	--	<30	2100	1400	110	14000
302	04-30-87	R	--	--	56000	--	--	2400	1200	--	13000
302	08-20-87	C	--	--	--	--	--	--	--	--	--
302	08-20-87	R	--	--	48000	--	--	2000	1200	--	12000
303	11-07-84	R	--	--	62000	--	--	1200	1800	<40	3800
303	03-20-85	C	--	--	--	--	--	--	--	--	--
303	03-20-85	R	--	--	63000	--	--	1000	1700	--	4100
303	06-24-85	R	--	--	39000	--	--	600	1100	--	2400
303	11-19-85	C	40	240	61000	0.1	<30	--	2000	21	3800
303	11-19-85	R	--	--	57000	--	--	1000	1700	--	3800
303	03-26-86	R	--	--	72000	--	--	1300	2000	--	4400
303	07-09-86	R	--	--	60000	--	--	1100	1900	--	4400
303	11-04-86	R	--	--	67000	--	--	1000	2000	--	3600
303	04-30-87	C	70	350	60000	--	<30	1200	2200	<18	4200
303	04-30-87	R	--	--	61000	--	--	1100	2000	--	4000
303	08-20-87	C	--	--	--	--	--	--	--	--	--
303	08-20-87	R	--	--	47000	--	--	980	1900	--	3300
304	07-09-86	C	250	400	45000	--	<30	--	1600	210	7700
304	07-09-86	R	--	--	48000	--	--	2000	1600	--	9900
304	11-04-86	R	--	--	43000	--	--	2000	1300	--	7400
304	04-30-87	C	<30	400	34000	--	<30	1500	1400	150	8500
304	04-30-87	R	--	--	42000	--	--	2000	1200	--	8100
304	08-20-87	C	--	--	--	--	--	--	--	--	--
304	08-20-87	R	--	--	38000	--	--	2000	1200	--	7400

GROUND WATER--Continued
WELL GROUP 300--Continued
WATER QUALITY—WELLS 3EX, 3EX2, and 3EX3

The samples listed below were collected by air lift through the dual-wall drill stem while the wells were being drilled. After water samples and cuttings were collected, each hole was sealed with concrete to its total depth.
LABORATORY: Laboratory analyses by USGS research laboratory (KG Stollenwerk), Lakewood, Colorado.
REMARKS: <, Actual value is known to be less than value shown.

WATER QUALITY DATA

DATE	TIME	DEPTH AT SAMPLE LOCATION, TOTAL (METERS)	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE WATER (DEG C) (00010)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)
					---WELL 3EX---					
DEC 1985										
16...	1215	5.2	3550	6.50	18.5	740	150	90	2200	100
16...	1257	11.3	2870	5.57	16.0	560	130	92	1900	110
16...	1400	17.4	4230	4.68	18.0	620	170	110	3000	110
16...	1540	23.8	4960	4.40	15.5	630	190	120	3600	140
16...	1611	29.0	6400	4.40	17.5	550	250	160	5300	170
16...	1644	35.7	8000	4.17	--	--	--	--	7200	240
17...	0904	41.8	5050	5.20	13.5	2200	570	300	3600	150
17...	0945	47.9	4100	6.14	15.0	820	180	95	2600	250
17...	1019	53.9	3650	7.36	16.0	780	140	78	2100	86
					---WELL 3EX2---					
18...	1435	32.6	6500	4.52	19.0	600	260	160	5300	190
18...	1508	35.1	7550	4.17	17.0	190	270	170	--	210
					---WELL 3EX3---					
JAN 1986										
08...	0828	38.1	8000	4.00	--	480	300	180	6900	240
08...	0940	53.3	5700	4.44	13.0	630	260	120	3900	180
08...	1026	59.4	4200	5.89	13.5	710	220	93	2600	120
08...	1118	65.5	4100	5.94	14.5	65	19	13	240	96
08...	1204	71.8	3450	6.75	15.5	660	140	72	2200	95
08...	1250	77.7	3850	6.34	16.0	690	210	88	2400	130
08...	1411	83.8	3900	6.38	15.5	710	210	88	2400	120
08...	1521	89.9	4400	5.37	15.5	680	220	100	3000	120
08...	1653	95.7	2880	6.80	15.0	550	96	58	1500	42
09...	0829	97.5	4500	5.25	14.0	--	--	--	--	--
09...	1159	102.1	3780	6.07	16.0	--	--	--	--	--

GROUND WATER--Continued
WELL GROUP 300--Continued
WATER QUALITY--WELLS 3EX, 3EX2, and 3EX3--Continued

DEPTH AT SAMPLE LOCATION, TOTAL (METERS)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, DISSOLVED (UG/L AS FE) (01046)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	ZINC, DISSOLVED (UG/L AS ZN) (01090)
					---WELL 3EX---					
5.2	79	<160	<100	40	<20	200	60000	160	2300	1000
11.3	98	<160	<100	1800	70	260	120000	1800	2000	9100
17.4	--	1500	<100	1800	12000	310000	54000	1400	2200	18600
23.8	--	18000	<100	2600	24000	580000	54000	1400	2300	3900
29.0	--	41000	<150	5400	9700	1450000	61000	2300	2200	7600
35.7	--	--	--	--	--	--	--	--	--	--
41.8	--	<160	<100	2900	11000	720000	55000	1300	5700	3700
47.9	--	<160	<100	320	290	68000	9500	<100	1900	360
53.9	43	<160	<100	<40	<20	900	300	<100	1600	<30
					---WELL 3EX2---					
32.6	--	40000	<150	5600	7300	1440000	71000	2500	2400	6100
35.1	--	130000	220	6800	36000	1880000	54000	2500	1600	10000
					---WELL 3EX3---					
38.1	--	150000	250	7700	38000	2110000	57000	2700	1600	12000
53.3	--	25000	<150	2900	18000	740000	65000	1300	1800	4600
59.4	--	<160	<100	470	500	72000	54000	380	1800	960
65.5	--	<160	<100	<40	170	8700	4800	<100	200	660
71.6	--	<160	<100	<40	<20	1200	2700	140	1300	<30
77.7	--	<160	<100	310	60	28000	57000	360	1700	680
83.8	--	<160	<100	250	30	15000	58000	320	1800	1800
89.9	--	<160	<100	1200	5700	260000	57000	690	1700	2000
95.7	36	<160	<100	<40	<20	300	710	<100	950	<30
97.5	--	--	--	--	--	--	--	--	--	--
102.1	--	--	--	--	--	--	--	--	--	--

GROUND WATER--Continued
WELL GROUP 400

LOCATION.--Lat 33°29'04", long 110°50'48", in SE¼NW¼SE¼ sec. 29 T. 2 N., R. 15 E. (A-02-15)29dbd, 10 m west of Pinal Creek, and 11 km northwest of Globe.
Landowner: Tonto National Forest
LAND SURFACE DATUM.--943 m above National Geodetic Vertical Datum of 1929, from topographic map.
REMARKS.--Wells 401, 402, 403, and 404 were originally identified as X4W1, X4W2, X4W3, and X4W4, respectively.

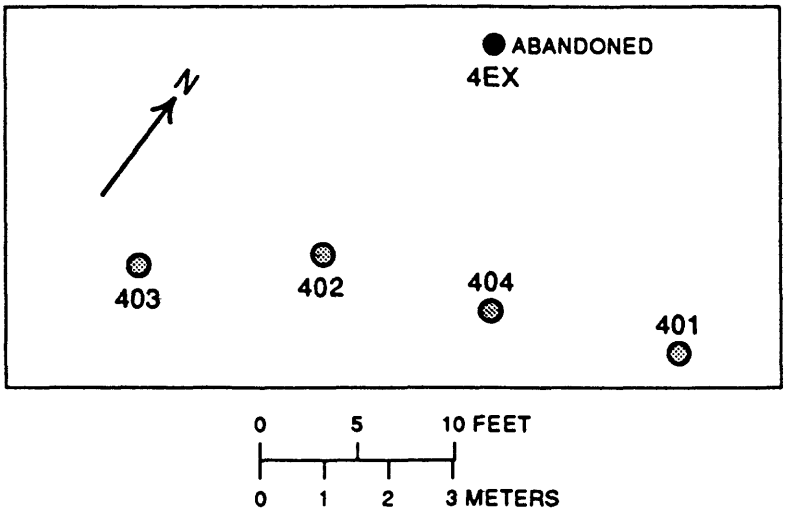
DRILLING AND WELL CONSTRUCTION

All holes for which well depth is listed below were cased with nominal 10-centimeter diameter, schedule 40, polyvinyl chloride pipe. Each well has a single 0.9-meter length of slotted, 10-centimeter diameter, schedule 80, polyvinyl chloride pipe as the well screen. Each screen has 1470 factory-cut slots 3.6 cm long by 0.64 mm wide for a total open area of 339 cm^2. The borehole annulus around the screen is filled with washed pea gravel from uncontaminatsd local alluvium. A layer of bentonite pellets was plsced in the annulus from approximately 0.5 to 1.5 m above the screen. A concrete seal extends from the land surface to the depth listad.

LOGS: C, caliper; D, driller's; E, electric; G, geologist; P, particle size;

WELL	DATE COMPLE-TED	DRILLING METHOD	HOLE DEPTH (meters)	WELL DEPTH (meters)	SCREENED INTERVAL (meters)	GEOLOGIC UNIT	BOTTOM OF SEAL (meters)	LOGS AVAILABLE
401	10-09-84	ROTARY, BENTONITE	34.4	34.2	33.2-34.1	BASIN FILL	3	CEGP
402	10-10-84	ROTARY, BENTONITE	21.0	20.9	19.8-20.7	ALLUVIUM	3	--
403	10-10-84	ROTARY, BENTONITE	13.1	13.0	12.0-12.9	ALLUVIUM	3	--
4EX	01-07-86	DUAL-WALL AIR ROTARY	73.2	--	--	--	--	DGP
404	09-04-86	CABLE TOOL	55.5	55.3	53.7-54.6	BASIN FILL	48.5	D

SITE PLAN



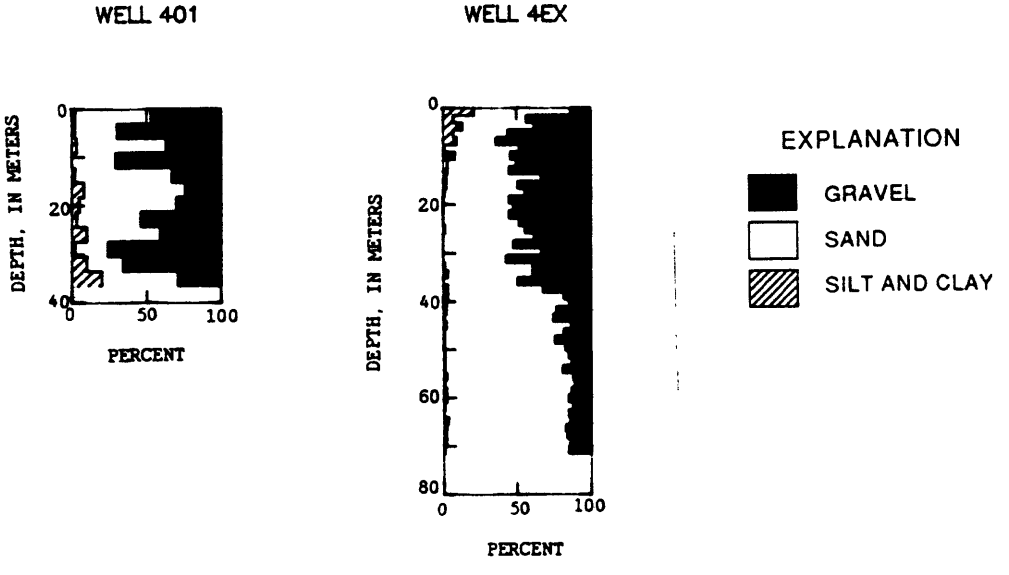
LOG INFORMATION

Well: 401
Gravel and sand fractions were separated from drilling mud by shaker prior to sampling. Particle size analysis may not reflect actual proportions of gravel, sand, and mud present in subsurface.

Summary of geologist log:	Thick-ness (m)	Bottom of depth interval (m)
Gravel, sandy; light olive-brown, sand fraction pinkish-white; maximum grain size, 15 mm; poorly sorted; grains subrounded; contains about 70-percent igneous-rock fragments that include equal amounts of intrusive and extrusive materials; predominant fragments are potassium feldspar- and quartz-rich granite and felsite; fragments include minor amounts of mafic material; sample also includes minor amounts of schistose and phyllitic metamorphic-rock fragments.....	12.2	12.2

GROUND WATER--Continued
WELL GROUP 400--Continued
LOG INFORMATION--Continued

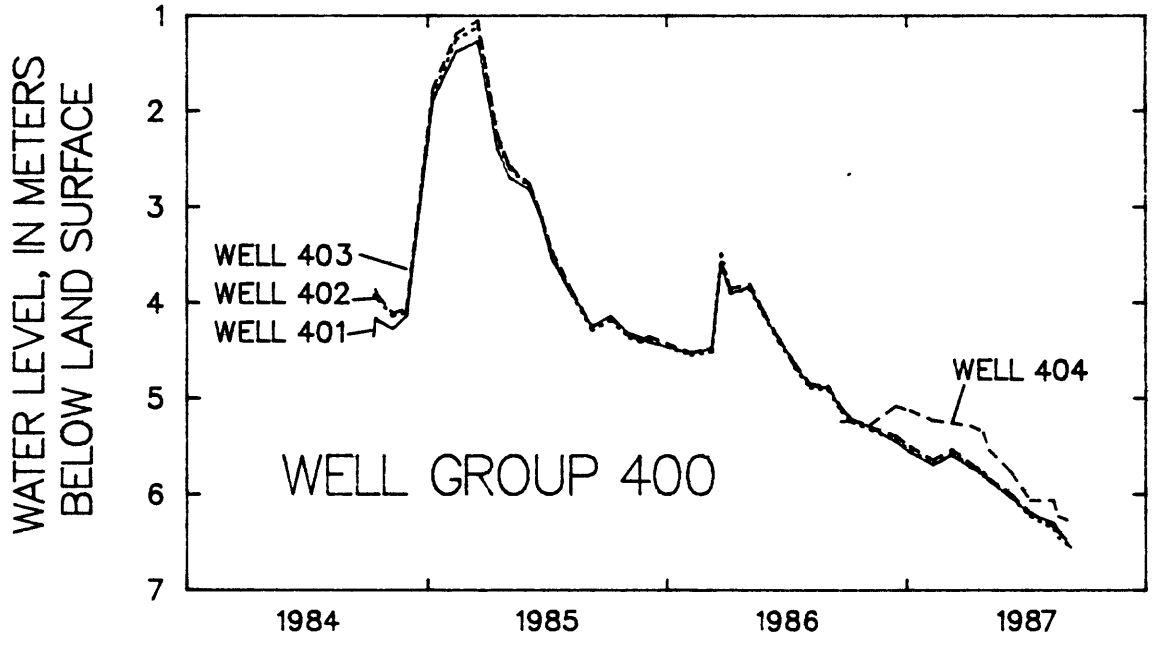
	Thickness (m)	Bottom of depth interval (m)
Sand, gravelly; light-olive to light grayish-brown, sand fraction grayish brown; maximum grain size, 9 mm; moderately sorted; grains subrounded to subangular; lithology similar to overlying interval, but slight increase in percentage of metamorphic- and mafic-rock fragments; sample contains some angular quartzite fragments; ferro-magnesium staining present on less than 10-percent of grains.....	9.1	21.3
Gravel, muddy, sandy; grayish-brown to light olive-brown, sand frsction grayish-brown; poorly sorted; grains subrounded; maximum grain size, 17 mm; lithology similar to that of overlying interval; sample contains minor amount (<2 percent) tuffaceous material; minor ferro-magnesium staining present.....	12.2	33.5
Sand, gravelly, muddy; dark yellowish-brown; maximum grain size, 24 mm; lithology similar to that in overlying interval.....	3.0	36.6
Well: 4EX		
Gravel, sandy, slightly muddy; very pale to pale brown; maximum grain size, 23 mm; very poorly sorted, grains angular to subrounded; sample contains between 30- and 35-percent clear to milky white quartz, between 10- and 15-percent quartzite, and lesser amounts of shistose and gneissic pale to dark metamorphic, granitic, and volcanic rock fragments, feldspar, biotite, muscovite; iron staining present, and is concentrated on felsic volcanic biotite phenocrysts; iron ioxides present on some grains, seem to preferentially coat biotite phenocrysts.....	18.3	18.3
Sand, gravelly; very pale to pale brown maximum grain size, 20 mm; very poorly sorted; grains angular to subrounded; little silt-sized material; petrologically similar to overlying interval; contains slightly more potassium feldspar and metamorphic fragments, slightly less quartzite and quartz fragments; iron stained as in overlying interval; iron oxides deeper than 30 m sometimes tend to cement together sand grains.....	18.3	36.6
Sand, gravelly; very pale brown to light gray; maximum grain size, 22 mm; very poorly sorted, angular to subrounded; petrologically similar to overlying interval; contains less quartzite and more volcanics than overlying interval; iron oxide encrusted and cemented fragments present in sand and gravel fractions, often associated with small pyrite grains.....	35.1	71.6



GROUND WATER--Continued
WELL GROUP 400--Continued
WATER LEVEL, IN METERS BELOW LAND SURFACE

DATE	WELL NUMBER 401	402	403
10-10-84	4.35		
10-11-84		3.92	
10-13-84	4.15	3.91	3.86
10-17-84	4.19	3.97	3.93
11-08-84	4.27	4.14	4.11
11-29-84	4.14	4.10	4.06
01-09-85	1.89	1.84	1.77
02-14-85	1.38	1.25	1.19
03-20-85	1.27	1.12	1.05
04-18-85	2.39	2.27	2.24
05-07-85	2.70	2.60	2.58
06-06-85	2.82	2.79	2.76
06-25-85	3.14	3.13	3.11
07-10-85	3.55	3.50	3.46
08-05-85	3.86	3.85	3.81
08-09-85	3.90	3.91	3.87
09-09-85	4.25	4.29	4.25
10-07-85	4.14	4.18	4.15
11-04-85	4.32	4.37	4.34
11-21-85	4.36	4.41	4.39
12-04-85	4.41	4.39	4.35
02-07-86	4.53	4.55	4.52
03-11-86	4.47	4.51	4.47
03-25-86	3.59	3.48	3.57

DATE	WELL NUMBER 401	402	403	404
04-08-86	3.90	3.90	3.85	
05-07-86	3.83	3.85	3.80	
05-28-86	4.12	4.13	4.09	
06-20-86	4.39	4.41	4.37	
07-09-86	4.57	4.60	4.58	
07-14-86	4.66	4.68	4.63	
08-07-86	4.86	4.89	4.85	
09-04-86	4.89	4.91	4.87	
09-23-86	5.10	5.13	5.09	5.24
10-03-86	5.17	5.21	5.17	5.24
10-10-86	5.22	5.25	5.22	5.24
11-07-86	5.30	5.33	5.30	5.27
12-15-86	5.45	5.43	5.39	5.08
01-06-87	5.56	5.54	5.50	5.13
02-10-87	5.69	5.68	5.64	5.23
03-10-87	5.59	5.57	5.53	5.26
04-08-87	5.72	5.71	5.68	5.29
04-27-87	5.78	5.80	5.77	5.36
05-06-87	5.86	5.84	5.84	5.54
06-09-87	6.03	6.03	6.00	5.77
07-08-87	6.21	6.23	6.19	6.06
08-13-87	6.29	6.36	6.33	6.06
08-20-87	6.37	6.45	6.39	6.23
09-08-87	6.55	6.55	6.51	6.28



GROUND WATER--Continued
WELL GROUP 400--Continued
WATER QUALITY--FIELD MEASUREMENTS

REMARKS: <, Actual value is known to be less than the value shown.

WELL	DATE	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE WATER (DEG C) (00010)	ALKALINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00419)	BICARBONATE WATER WH IT FIELD MG/L AS HCO3 (00450)	OXYGEN, DISSOLVED (MG/L) (00300)	OXIDATION REDUCTION POTENTIAL (MV) (00090)	HYDROGEN SULFIDE TOTAL (MG/L AS H2S) (71875)	AVERAGE DISCHARGE (L/MIN)	PUMPING PERIOD (HOURS)	DRAWDOWN (M)
401	11-08-84	3730	4.78	18.0	13	16	<0.3	--	--	53	.7	6.8
401	01-09-85	3900	4.78	17.0	--	--	0.2	--	--	95	.8	7.4
401	03-20-85	4010	4.72	16.5	5	6	0.2	--	<0.1	76	.6	4.1
401	06-25-85	4200	4.68	17.0	4	5	--	--	--	45	.4	1.8
401	11-21-85	3900	4.45	16.5	0	0	0.3	--	--	49	.4	2.2
401	03-25-86	3850	4.78	17.5	7	9	0.7	--	--	72	.6	2.6
401	07-09-86	3520	4.85	17.0	8	10	0.8	--	--	53	--	--
401	11-07-86	4450	4.76	16.0	2	2	1.0	--	--	64	.7	1.6
401	04-27-87	4300	4.68	18.0	3	4	1.0	--	--	47	--	--
401	08-20-87	4300	4.83	18.0	14	17	1.0	--	--	38	.5	0.9
402	11-08-84	3900	4.19	18.0	0	0	<0.3	--	--	87	.3	0.5
402	01-09-85	3200	4.27	17.0	--	--	0.1	--	--	106	.4	0.7
402	03-20-85	1660	4.26	10.0	0	0	0.2	--	<0.1	98	.4	0.7
402	06-25-85	3500	4.24	14.0	0	0	--	--	--	87	.3	0.6
402	11-21-85	4200	4.05	16.5	0	0	0.3	430	--	42	.2	0.2
402	03-25-86	4470	4.10	17.0	0	0	0.2	--	--	72	.2	0.5
402	07-09-86	4700	4.17	17.0	0	0	0.2	--	--	72	.2	0.4
402	11-07-86	4600	4.21	17.0	0	0	0.3	--	--	38	.5	0.2
402	04-28-87	4800	4.17	18.0	0	0	0.6	--	--	23	.5	0.1
402	08-20-87	5000	4.27	18.0	0	0	0.6	--	--	30	.3	0.1
403	11-08-84	2150	4.83	18.0	7	8	0.3	--	--	45	.6	0.3
403	01-09-85	762	5.21	16.0	--	--	9.3	--	--	95	.6	0.9
403	03-20-85	1860	5.13	10.0	3	4	3.7	--	<0.1	110	.6	1.1
403	06-25-85	2400	4.96	13.5	6	8	--	--	--	87	.3	0.7
403	11-21-85	2150	5.01	17.0	8	9	0.3	--	--	49	.2	0.2
403	03-25-86	2570	5.44	17.0	16	22	0.5	--	--	72	.2	0.5
403	07-09-86	2890	5.56	16.0	29	35	0.4	--	--	34	.3	0.2
403	11-07-86	3600	5.72	17.0	29	29	0.2	--	--	64	.6	0.1
403	04-28-87	3100	5.70	18.0	30	37	0.6	--	--	--	--	--
403	08-20-87	3200	5.63	18.0	26	32	0.6	--	--	15	.3	0.1
404	11-07-86	530	7.62	18.5	179	218	8.3	--	--	15	.8	11.7
404	04-28-87	420	7.50	19.0	187	228	7.2	--	--	19	1.3	18.0
404	08-20-87	420	7.65	19.0	187	228	5.9	--	--	20	--	--

GROUND WATER--Continued
WELL GROUP 400--Continued
WATER QUALITY--LABORATORY MEASUREMENTS

LABORATORY: R, USGS research laboratory (KG Stollenwerk), Lakewood, Colorado; C, USGS National Water-Quality Laboratory, Arveda, Colorado.
REMARKS: <, Actual value is known to be less than the value shown.

WELL	DATE	LABORATORY	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	CARBON, INORGANIC, TOTAL (MG/L AS C) (00685)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)
401	11-08-84	C	520	150	96	8.0	2500	110	9.7	--	72
401	11-08-84	R	510	150	83	8.2	2700	130	--	--	80
401	03-20-85	C	--	--	--	--	--	--	--	--	--
401	03-20-85	R	540	170	91	--	2500	230	--	--	81
401	06-25-85	R	570	170	95	--	3000	170	--	--	--
401	11-21-85	R	530	170	93	--	3000	130	--	--	84
401	03-25-86	C	470	150	93	7.2	2500	130	10	--	69
401	03-25-86	R	470	160	83	--	2600	110	--	--	64
401	07-09-86	R	450	140	85	--	2300	140	--	--	--
401	11-07-86	R	470	180	99	--	2700	130	--	--	77
401	11-07-86	R	480	170	100	--	2700	130	--	--	78
401	04-27-87	C	--	--	--	--	--	--	--	61	--
401	04-27-87	R	440	170	100	--	2800	140	--	--	--
401	08-20-87	C	--	--	--	--	--	--	--	60	--
401	08-20-87	R	400	160	96	--	2800	120	--	--	79
402	11-08-84	R	520	140	80	7.3	2800	140	--	--	87
402	03-20-85	C	--	--	--	--	--	--	--	--	--
402	03-20-85	R	210	57	39	--	750	96	--	--	40
402	06-25-85	C	550	140	90	6.0	2300	110	--	--	65
402	06-25-85	R	550	140	85	--	2100	120	--	--	--
402	11-21-85	C	--	--	--	--	--	--	6.6	--	--
402	11-21-85	R	620	61	93	--	2600	120	--	--	69
402	03-25-86	R	630	180	95	--	3100	210	--	--	73
402	07-09-86	C	640	180	110	7.7	2900	140	--	--	80
402	07-09-86	R	640	180	110	--	3000	160	--	--	--
402	11-07-86	R	510	150	88	--	3100	130	--	--	70
402	04-28-87	C	--	--	--	--	--	--	12	49	--
402	04-28-87	R	560	180	110	--	3200	150	--	--	--
402	08-20-87	C	--	--	--	--	--	--	14	56	--
402	08-20-87	R	540	190	110	--	3300	140	--	--	96
403	11-08-84	R	390	79	53	4.6	1300	76	--	--	26
403	03-20-85	C	330	66	56	3.4	1100	58	0.10	--	18
403	03-20-85	R	320	64	54	--	1100	58	--	--	19
403	06-25-85	R	450	85	68	--	1400	86	--	--	--
403	11-21-85	R	370	74	62	--	1200	63	--	--	30
403	03-25-86	R	470	100	61	--	1400	77	--	--	21
403	07-09-86	R	610	130	66	--	1800	120	--	--	--
403	11-07-86	R	590	130	77	--	1600	89	--	--	30
403	04-28-87	C	580	120	85	5.7	1800	92	0.60	35	38
403	04-28-87	R	540	120	79	--	1600	93	--	--	--
403	08-20-87	C	--	--	--	--	--	--	--	37	--
403	08-20-87	R	500	120	76	--	1700	80	--	--	50
404	11-07-86	C	49	16	41	2.5	72	13	0.50	--	25
404	11-07-86	R	56	17	42	--	89	12	--	--	28
404	04-28-87	C	45	14	28	3.0	30	10	0.60	45	24
404	04-28-87	R	43	14	27	--	34	10	--	--	--
404	08-20-87	C	--	--	--	--	--	--	--	47	--
404	08-20-87	R	40	13	27	--	18	8	--	--	32

GROUND WATER--Continued
WELL GROUP 400--Continued
WATER QUALITY--LABORATORY MEASUREMENTS--Continued

WELL	DATE	LAB-ORA-TORY	IONIC BAL-ANCE (PER-CENT)	IONIC STRE-NGTH (MOL/L)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	DENSITY (GM/ML AT 20 C) (71820)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
401	11-08-84	C	2.9	0.111	--	3900	--	--	--	0.140	--	0.020	--
401	11-08-84	R	-2.5	0.114	--	3600	--	--	--	--	--	--	--
401	03-20-85	C	--	--	4490	--	1.00	--	--	--	--	--	0.5
401	03-20-85	R	5.0	0.119	--	3600	--	--	--	--	--	--	--
401	06-25-85	R	-0.8	0.130	--	4000	--	--	--	--	--	--	--
401	11-21-85	R	-2.7	0.125	--	4000	--	--	--	--	--	--	--
401	03-25-86	C	0.8	0.109	--	3870	--	--	--	--	--	--	--
401	03-25-86	R	0.3	0.112	--	3500	--	--	--	--	--	--	--
401	07-09-86	R	2.2	0.103	--	3100	--	--	--	--	--	--	--
401	11-07-86	R	5.6	0.124	--	3800	--	--	--	--	--	--	--
401	11-07-86	R	4.9	0.123	--	3800	--	--	--	--	--	--	--
401	04-27-87	C	--	--	--	--	e1.004	--	--	--	--	--	--
401	04-27-87	R	0.4	0.121	--	3800	--	--	--	--	--	--	--
401	08-20-87	C	--	--	--	--	--	--	--	--	--	--	--
401	08-20-87	R	-1.0	0.120	--	3900	--	--	--	--	--	--	--
402	11-08-84	R	-0.5	0.112	--	3500	--	--	--	--	--	--	--
402	03-20-85	C	--	--	1310	--	1.00	--	--	--	--	--	--
402	03-20-85	R	5.1	0.037	--	1100	--	--	--	--	--	--	--
402	06-25-85	C	3.3	0.102	--	3570	--	0.480	0.40	<0.100	<0.010	0.010	--
402	06-25-85	R	6.9	0.098	--	2800	--	--	--	--	--	--	--
402	11-21-85	C	--	--	--	--	--	--	--	--	--	--	--
402	11-21-85	R	-5.1	0.106	--	3300	--	--	--	--	--	--	--
402	03-25-86	R	-2.7	0.132	--	4100	--	--	--	--	--	--	--
402	07-09-86	C	5.4	0.132	--	4600	--	--	--	--	--	--	--
402	07-09-86	R	3.3	0.134	--	4000	--	--	--	--	--	--	--
402	11-07-86	R	-7.0	0.124	--	4000	--	--	--	--	--	--	--
402	04-28-87	C	--	--	--	--	1.003	--	--	--	--	--	--
402	04-28-87	R	-0.8	0.136	--	4300	--	--	--	--	--	--	--
402	08-20-87	C	--	--	--	--	--	--	--	--	--	--	--
402	08-20-87	R	-0.8	0.140	--	4500	--	--	--	--	--	--	--
403	11-08-84	R	-1.2	0.056	--	1500	--	--	--	--	--	--	--
403	03-20-85	C	-0.1	0.047	1630	1640	1.00	0.110	<0.20	0.510	<0.010	<0.010	1.3
403	03-20-85	R	-1.9	0.046	--	1300	--	--	--	--	--	--	--
403	06-25-85	R	1.4	0.062	--	1700	--	--	--	--	--	--	--
403	11-21-85	R	0.9	0.052	--	1400	--	--	--	--	--	--	--
403	03-25-86	R	4.3	0.064	--	1700	--	--	--	--	--	--	--
403	07-09-86	R	3.4	0.082	--	2100	--	--	--	--	--	--	--
403	11-07-86	R	9.7	0.077	--	2000	--	--	--	--	--	--	--
403	04-28-87	C	2.4	0.080	--	2750	--	--	--	--	--	--	--
403	04-28-87	R	6.7	0.075	--	2000	--	--	--	--	--	--	--
404	11-07-86	R	2.5	0.009	--	300	--	--	--	--	--	--	--
404	04-28-87	C	0.8	0.007	--	275	1.000	<0.010	0.70	1.60	0.010	<0.010	1.4
404	04-28-87	R	-2.5	0.007	--	230	--	--	--	--	--	--	--
404	08-20-87	C	--	--	--	--	--	--	--	--	--	--	--
404	08-20-87	R	-1.1	0.006	--	210	--	--	--	--	--	--	--

e, Estimated.

GROUND WATER--Continued
WELL GROUP 400--Continued
WATER QUALITY--LABORATORY MEASUREMENTS--Continued

WELL	DATE	LABORATORY	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	BERYLLIUM, DISSOLVED (UG/L AS BE) (01010)	BORON, DISSOLVED (UG/L AS B) (01020)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, DISSOLVED (UG/L AS FE) (01046)
401	11-08-84	C	12000	<1	43	43	130	45	--	1300	24000	300000
401	11-08-84	R	9400	--	--	--	710	<100	<50	2000	24000	300000
401	03-20-85	C	--	--	--	--	--	--	--	--	--	--
401	03-20-85	R	12000	--	--	--	--	<50	--	2500	27000	410000
401	06-25-85	R	11000	--	--	--	--	<250	--	2500	27000	410000
401	11-21-85	R	2100	--	--	--	--	<100	--	1900	26000	400000
401	03-25-86	C	16000	--	71	46	150	52	--	970	23000	340000
401	03-25-86	R	2500	--	--	--	--	<100	--	1700	22000	400000
401	07-09-86	R	3000	--	--	--	--	<100	--	2000	28000	370000
401	11-07-86	R	16000	--	--	--	--	60	--	2700	28000	540000
401	11-07-86	R	16000	--	--	--	--	<200	--	2600	28000	510000
401	04-27-87	C	--	--	--	--	--	--	--	870	--	--
401	04-27-87	R	5700	--	--	--	--	<400	--	2400	31000	510000
401	08-20-87	C	--	--	--	--	--	--	--	--	--	--
401	08-20-87	R	14000	--	--	--	--	<100	--	3400	28000	520000
402	11-08-84	R	11000	--	--	--	840	<50	<25	1800	19000	350000
402	03-20-85	C	--	--	--	--	--	--	--	--	--	--
402	03-20-85	R	1700	--	--	--	--	<50	--	480	5200	65000
402	06-25-85	C	10000	<5	19	16	90	30	--	2100	15000	220000
402	06-25-85	R	5100	--	--	--	--	<250	--	1500	16000	230000
402	11-21-85	C	--	--	--	--	--	--	--	--	--	--
402	11-21-85	R	5300	--	--	--	--	<50	--	1400	16000	240000
402	03-25-86	R	1200	--	--	--	--	<100	--	1700	20000	370000
402	07-09-86	C	11000	--	15	50	240	57	--	--	25000	430000
402	07-09-86	R	3600	--	--	--	--	<100	--	2300	35000	440000
402	11-07-86	R	12000	--	--	--	--	<50	--	2100	21000	370000
402	04-28-87	C	--	--	--	--	--	--	--	820	--	--
402	04-28-87	R	910	--	--	--	--	<250	--	2300	30000	520000
402	08-20-87	C	--	--	--	--	--	--	--	--	--	--
402	08-20-87	R	10000	--	--	--	--	<250	--	3500	30000	540000
403	11-08-84	R	<80	--	--	--	75	<50	<25	22	170	130
403	03-20-85	C	200	<1	20	<0.5	50	2	--	6	70	64
403	03-20-85	R	<80	--	--	--	--	<50	--	<20	70	40
403	06-25-85	R	<400	--	--	--	--	<250	--	<100	400	400
403	11-21-85	R	<80	--	--	--	--	<50	--	<20	130	490
403	03-25-86	R	<160	--	--	--	--	<100	--	<40	70	200
403	07-09-86	R	<160	--	--	--	--	<100	--	<40	290	800
403	11-07-86	R	<320	--	--	--	--	<200	--	<80	200	2400
403	04-28-87	C	210	--	50	<0.5	70	9	--	150	160	710
403	04-28-87	R	<160	--	--	--	--	<100	--	260	610	7300
403	08-20-87	C	--	--	--	--	--	--	--	--	--	--
403	08-20-87	R	<160	--	--	--	--	<100	--	440	580	3500
404	11-07-86	C	20	--	17	3	30	<1	--	4	10	5
404	11-07-86	R	<80	--	--	--	--	<50	--	<20	<10	<20
404	04-28-87	C	<10	--	16	<0.5	20	<1	--	<3	20	13
404	04-28-87	R	<80	--	--	--	--	<50	--	<20	<10	<20
404	08-20-87	C	--	--	--	--	--	--	--	--	--	--
404	08-20-87	R	<80	--	--	--	--	<50	--	<20	<10	<20

GROUND WATER--Continued
WELL GROUP 400--Continued
WATER QUALITY--LABORATORY MEASUREMENTS--Continued

WELL	DATE	LAB-ORA-TORY	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
401	11-08-84	C	70	310	82000	--	<30	--	2100	53	3000
401	11-08-84	R	--	--	76000	--	--	1300	2100	<40	3400
401	03-20-85	C	--	--	--	--	--	--	--	--	--
401	03-20-85	R	--	--	74000	--	--	1500	2200	--	3800
401	06-25-85	R	--	--	73000	--	--	1000	2200	--	3900
401	11-21-85	R	--	--	70000	--	--	1300	2100	--	3600
401	03-25-86	C	100	270	51000	--	<30	--	1900	57	2900
401	03-25-86	R	--	--	55000	--	--	1100	1600	--	3100
401	07-09-86	R	--	--	54000	--	--	1200	1800	--	3500
401	11-07-86	R	--	--	61000	--	--	1000	2100	--	3700
401	11-07-86	R	--	--	72000	--	--	1700	2000	--	3600
401	04-27-87	C	--	--	--	--	--	--	--	--	--
401	04-27-87	R	--	--	65000	--	--	1300	1800	--	4000
401	08-20-87	C	--	--	--	--	--	--	--	--	--
401	08-20-87	R	--	--	57000	--	--	1200	1900	--	3800
402	11-08-84	R	--	--	50000	--	--	1100	1800	<20	3000
402	03-20-85	C	--	--	--	--	--	--	--	--	--
402	03-20-85	R	--	--	19000	--	--	380	770	--	880
402	06-25-85	C	40	160	50000	--	<30	--	1900	22	2200
402	06-25-85	R	--	--	53000	--	--	1000	1900	--	2500
402	11-21-85	C	--	--	--	0.1	--	--	--	--	--
402	11-21-85	R	--	--	55000	--	--	1000	2100	--	2600
402	03-25-86	R	--	--	59000	--	--	1200	2200	--	3300
402	07-09-86	C	130	260	64000	--	<30	--	2300	67	3800
402	07-09-86	R	--	--	67000	--	--	1500	2400	--	4700
402	11-07-86	R	--	--	59000	--	--	1500	1800	--	3300
402	04-28-87	C	--	--	--	--	--	--	--	--	--
402	04-28-87	R	--	--	61000	--	--	1400	2000	--	4200
402	08-20-87	C	--	--	--	--	--	--	--	--	--
402	08-20-87	R	--	--	66000	--	--	1500	2300	--	4400
403	11-08-84	R	--	--	5800	--	--	100	1200	<20	110
403	03-20-85	C	<10	31	2000	--	<10	--	1100	<6	42
403	03-20-85	R	--	--	2100	--	--	<50	1100	--	50
403	06-25-85	R	--	--	4200	--	--	<250	1500	--	200
403	11-21-85	R	--	--	2900	--	--	<50	1200	--	80
403	03-25-86	R	--	--	3800	--	--	<100	1400	--	80
403	07-09-86	R	--	--	7400	--	--	100	2000	--	100
403	11-07-86	R	--	--	16000	--	--	400	1900	--	200
403	04-28-87	C	500	100	25000	--	<10	300	1600	<6	500
403	04-28-87	R	--	--	32000	--	--	300	1700	--	500
403	08-20-87	C	--	--	--	--	--	--	--	--	--
403	08-20-87	R	--	--	34000	--	--	400	1900	--	690
404	11-07-86	C	<10	24	680	--	10	--	320	<6	<3
404	11-07-86	R	--	--	760	--	--	90	340	--	<15
404	04-28-87	C	<10	21	450	--	<10	<100	260	<6	48
404	04-28-87	R	--	--	480	--	--	<50	230	--	50
404	08-20-87	C	--	--	--	--	--	--	--	--	--
404	08-20-87	R	--	--	100	--	--	<50	250	--	<15

GROUND WATER--Continued
WELL GROUP 400--Continued
WATER QUALITY--WELL 4EX

The samples listed below were collected by air lift through the dual-wall drill stem while the well was being drilled. After water samples and cuttings were collected, the hole was sealed with concrete to its total depth.
LABORATORY: Laboratory analyses by USGS research laboratory (KG Stollenwerk), Lakewood, Colorado.
REMARKS: <, Actual value is known to be less than the value shown.

DATE	TIME	DEPTH AT SAMPLE LOCATION, TOTAL (METERS)	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE WATER (DEG C) (00010)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)
JAN 1986										
06...	1118	11.6	2100	5.51	15.0	--	--	--	--	--
06...	1156	15.2	2950	5.80	16.0	520	120	72	1900	100
06...	1236	19.8	4500	4.60	16.0	710	180	94	3600	150
06...	1309	24.4	5200	4.80	17.5	660	190	100	3600	180
06...	1345	29.0	5200	4.40	16.5	--	--	--	--	--
06...	1432	33.5	4850	4.70	17.5	480	190	94	3400	160
06...	1538	39.6	3160	5.50	17.0	390	120	68	2000	97
06...	1625	42.7	2960	5.60	17.0	--	--	--	1800	88
06...	1658	48.2	1480	6.15	16.5	180	58	39	660	42
07...	0820	53.3	1210	6.26	13.5	--	--	--	--	--
07...	0901	59.4	847	6.32	14.0	100	35	28	270	22
07...	0920	65.5	920	6.30	15.5	110	37	31	360	26
07...	1047	71.6	2000	5.70	15.5	--	--	--	--	--
07...	1056	72.8	1110	6.35	14.5	65	37	18	210	18

DEPTH AT SAMPLE LOCATION, TOTAL (METERS)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, DISSOLVED (UG/L AS FE) (01046)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	ZINC, DISSOLVED (UG/L AS ZN) (01090)
11.6	--	--	--	--	--	--	--	--	--	--
15.2	29	<160	<100	230	70	5900	20000	200	1700	330
19.8	52	<160	<100	1500	14000	330000	64000	1200	2400	3400
24.4	51	<160	<100	2700	5600	660000	67000	1700	2300	5100
29.0	--	--	--	--	--	--	--	--	--	--
33.5	51	<160	<100	2400	12000	590000	59000	1500	1900	4200
39.6	59	<160	<100	1500	3800	320000	42000	860	1600	2300
42.7	--	--	--	--	--	--	--	--	--	--
48.2	36	<80	<50	440	61	81000	14000	300	830	510
53.3	--	--	--	--	--	--	--	--	--	--
59.4	29	<80	<50	100	10	12000	4700	100	550	71
65.5	29	<80	<50	100	10	18000	6600	100	560	130
71.6	--	--	--	--	--	--	--	--	--	--
72.8	11	<80	<50	100	10	18000	4700	80	270	600

GROUND WATER--Continued
WELL GROUP 500

LOCATION.--Lat 33°31'51", long 110°52'05", in SE¼SE¼NW¼ sec. 7, T. 2 N., R. 15 E. (A-02-15)07bddz 60 m east of Pinal Creek, and 16 km northwest of Globe.
Landowner: Tonto National Forest
LAND SURFACE DATUM.--896.57 m above National Geodetic Vertical Datum of 1929 (levels by Cyprus Miami Mining Corporation).
REMARKS.--Wells 501, 502, 503, and 504 were originally identified as XSW1, XSW2, XSW3, and XSW4, respectively.

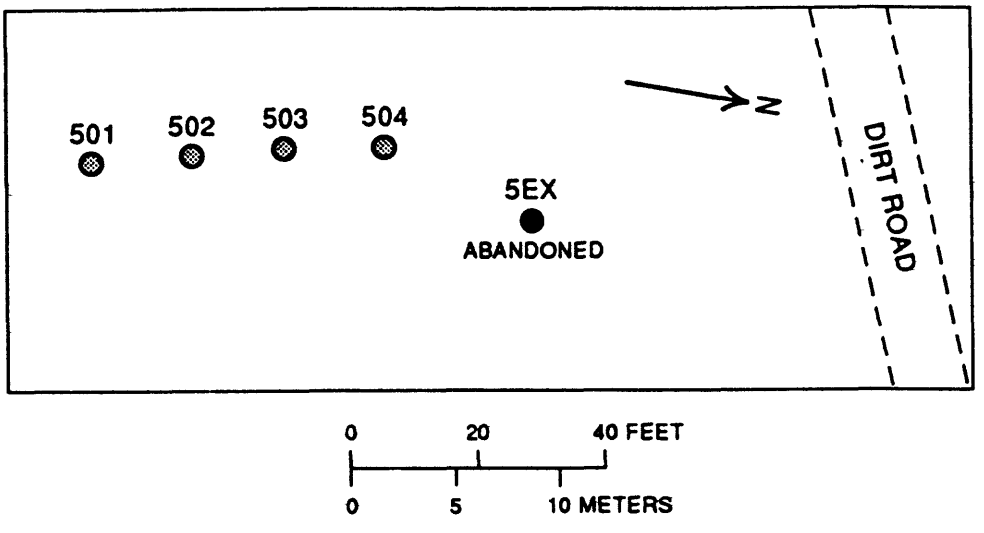
DRILLING AND WELL CONSTRUCTION

All holes for which well depth is listed below were cased with nominal 10-centimeter diameter, schedule 40, polyvinyl chloride pipe. Each well has a single 0.9-meter length of slotted, 10-centimeter diameter, schedule 80, polyvinyl chloride pipe as the well screen. Each screen has 1470 factory-cut slots 3.6 cm long by 0.64 mm wide for a total open area of 339 cm^2. The borehole annulus around the screen is filled with washed pea gravel from uncontaminated local alluvium. A layer of bentonite pellets was placed in the annulus from approximately 0.5 to 1.5 m above the screen. A concrete seal extends from the land surface to the depth listed. Hole 503 caved during installation of casing.

LOGS: D, driller's; G, geologist; P, particle size.

WELL	DATE COMPLE-TED	DRILLING METHOD	HOLE DEPTH (meters)	WELL DEPTH (meters)	SCREENED INTERVAL (meters)	GEOLOGIC UNIT	BOTTOM OF SEAL (meters)	LOGS AVAILABLE
5EX	12-13-85	DUAL-WALL AIR ROTARY	89.9	--	--	--	--	DGP
501	05-22-86	ROTARY, BENTONITE	17.1	17.0	15.4-16.3	ALLUVIUM	15.2	D
502	05-22-86	ROTARY, BENTONITE	38.1	38.0	36.5-37.4	BASIN FILL	32.6	D
503	05-22-86	ROTARY, BENTONITE	73.2	25.3	23.4-24.1	ALLUVIUM	19.8	D
504	07-24-86	CABLE TOOL	69.5	69.2	67.6-68.6	BASIN FILL	64.0	D

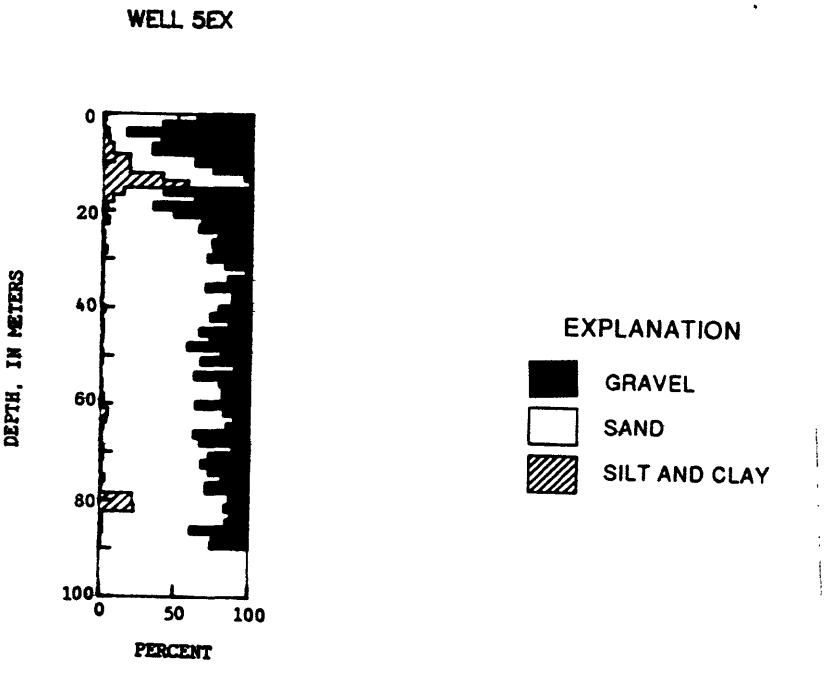
SITE PLAN



GROUND WATER--Continued
WELL GROUP 500--Continued
LOG INFORMATION

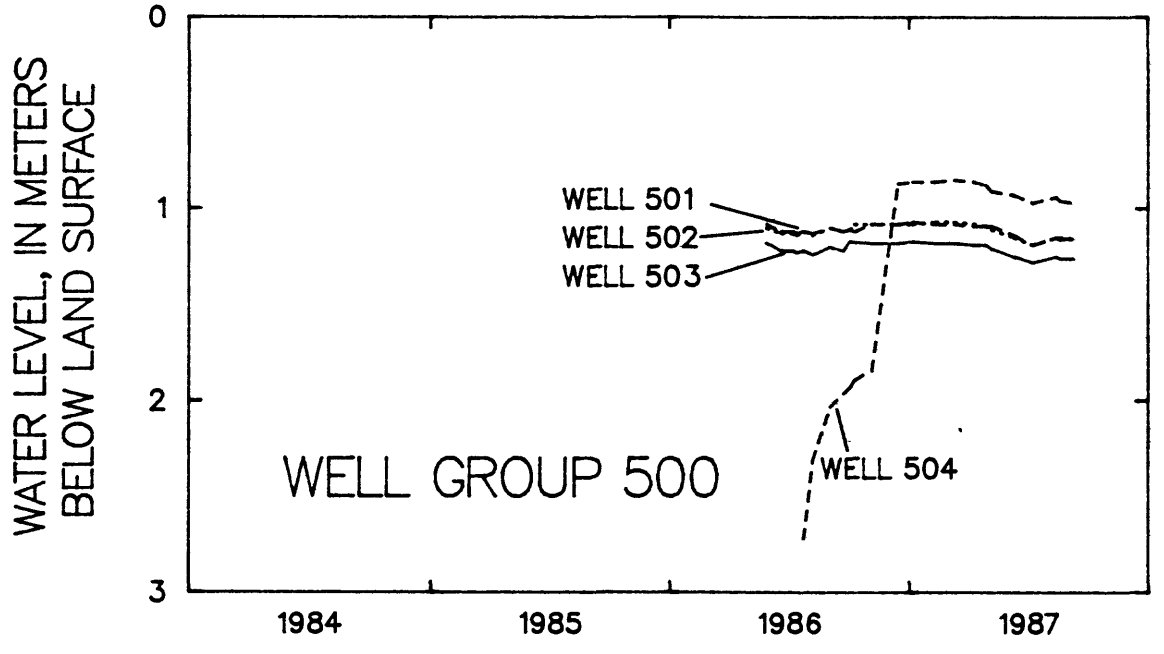
Well: 5EX

Summary of geologist log:	Thickness (m)	Bottom of depth interval (m)
Gravel, sandy; raddish-yellow to very pale brown, sand fraction pale-gray brown; maximum grain size, 23 mm; very poorly sortad; grains engular to subroundad; samples contain 25- to 30-percent clear to milky-white quartz, 15-percent feldsper, and minor amounts of grenite, felsic volcanic rocks, quartzite, schistose metamorphics, biotite, muscovite, and fine-grained well cementad sandstone.....	7.6	7.6
Sand, muddy, gravelly; very pale brown, sand fraction pale brown; maximum grain size, 16 mm; very poorly sortad, grains angular to subroundad, contains dark green-grey clay; similar mineralogically but finer-grainad than overlying interval.....	9.1	16.8
Sand, gravelly; pale brown to pink, sand fraction pale brown; maximum grain size, 23 mm; very poorly sorted, grains angular to subrounded; petrologically similar to overlying interval, but contains more quartzite, less metamorphic material; contains about 10-percent clasts of friable, calcite cemented sandstone below 27 m; sand grains cemented by dark orange-red iron-oxide material.....	61.0	77.7
Sand, muddy, gravelly; pink to very pale brown; maximum grain size, 13 mm; very pale brown to pink; very poorly sorted; grains angular to subrounded; petrologically similar to overlying interval; contains from 3- to 5-percent pale brown mudstone; contains grains cemented by iron oxides.....	4.6	82.3
Sand, gravelly; very pale brown; maximum grain size, 17 mm; very poorly sorted, grains angular to subrounded; similar petrologically to overlying interval.....	7.6	89.9



GROUND WATER--Continued
WELL GROUP 500--Continued
WATER LEVEL, IN METERS BELOW LAND SURFACE

	WELL NUMBER					WELL NUMBER			
DATE	501	502	503	504	DATE	501	502	503	504
05-28-86	1.08	1.10	1.18		01-06-87	1.07	1.08	1.17	0.86
06-20-86	1.12	1.13	1.22		02-10-87	1.08	1.07	1.18	0.86
07-07-86	1.12	1.13	1.22		03-10-87	1.08	1.07	1.18	0.85
07-14-86	1.13	1.14	1.23		04-08-87	1.09	1.08	1.19	0.86
07-24-86	1.12	1.12	1.22	2.72	04-28-87	1.09	1.09	1.19	0.88
08-07-86	1.13	1.14	1.24	2.31	05-06-87	1.09	1.11	1.21	0.91
09-03-86	1.10	1.10	1.20	2.03	06-09-87	1.14	1.15	1.25	0.93
09-23-86	1.12	1.12	1.22	1.96	07-08-87	1.19	1.19	1.28	0.97
10-03-86	1.11	1.11	1.17	1.93	08-13-87	1.15	1.15	1.25	0.94
10-10-86	1.12	1.08		1.89	08-19-87	1.16	1.15	1.26	0.96
11-05-86	1.08	1.08	1.18	1.84	09-08-87	1.15	1.16	1.26	0.97
12-15-86	1.08	1.08	1.18	0.87					



GROUND WATER--Continued
WELL GROUP 500--Continued
WATER QUALITY--FIELD MEASUREMENTS

WELL	DATE	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE WATER (DEG C) (00010)	ALKALINITY WAT WH TOT FET FIELD MG/L AS CACO3 (00419)	BICARBONATE WATER WH IT FIELD MG/L AS HCO3 (00450)	OXYGEN, DISSOLVED (MG/L) (00300)	OXIDATION REDUCTION POTENTIAL (MV) (00090)	HYDROGEN SULFIDE TOTAL (MG/L AS H2S) (71875)	AVERAGE DISCHARGE (L/MIN)	PUMPING PERIOD (HOURS)	DRAWDOWN (M)
501	07-07-86	3230	6.16	--	120	146	0.2	--	--	68	.4	0.9
501	11-06-86	3500	6.14	18.0	116	140	0.4	--	--	26	.4	0.2
501	03-10-87	3370	6.30	18.0	--	--	--	--	--	15	.7	--
501	04-28-87	3400	6.20	16.0	--	--	0.5	--	--	15	.7	0.2
501	08-19-87	3750	6.13	18.0	117	140	0.8	--	--	30	.5	0.2
502	07-07-86	1160	7.31	19.0	150	184	3.8	--	--	23	.8	3.8
502	11-06-86	1160	7.40	19.0	147	180	4.4	--	--	45	--	--
502	04-28-87	1450	7.05	19.0	154	188	5.1	--	--	34	.8	2.4
502	08-19-87	1250	7.39	19.5	153	190	3.8	--	--	57	.5	4.1
503	07-07-86	3230	6.15	17.5	103	125	0.2	--	--	68	.3	0.6
503	11-05-86	3500	6.10	17.5	85	100	0.3	--	--	53	.5	0.4
503	03-10-87	3390	6.16	16.0	--	--	--	--	--	--	--	--
503	04-28-87	3750	6.05	18.0	92	112	0.6	--	--	26	.7	0.2
503	08-19-87	3900	6.07	18.5	102	120	0.6	--	--	45	.3	0.3
504	11-06-86	430	7.69	20.5	174	210	6.0	--	--	34	.6	8.2
504	04-28-87	410	7.58	21.0	200	222	7.2	--	--	36	--	--
504	08-19-87	420	7.65	21.0	193	240	5.9	--	--	64	.7	12.3

WATER QUALITY--LABORATORY MEASUREMENTS

LABORATORY: R, USGS research laboratory (KG Stollenwerk), Lakewood, Colorado; C, USGS National Water-Quality Laboratory, Arvada, Colorado.
REMARKS: <, Actual value is known to be less than the value shown.

WELL	DATE	LABORATORY	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	CARBON, INORGANIC, TOTAL (MG/L AS C) (00685)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)
501	07-07-86	C	620	140	80	4.1	2000	85	0.10	--	57
501	07-07-86	R	650	150	74	--	2000	85	--	--	--
501	11-06-86	R	650	150	76	--	2100	98	--	--	63
501	04-28-87	C	640	150	80	4.0	2100	100	0.20	--	59
501	04-28-87	R	660	150	110	--	2000	110	--	--	--
501	08-19-87	C	--	--	--	--	--	--	--	69	--
501	08-19-87	R	610	150	75	--	2000	110	--	--	70
502	07-07-86	C	190	34	31	2.7	450	21	0.30	--	29
502	07-07-86	R	190	36	30	--	450	22	--	--	--
502	11-06-86	R	180	40	28	--	490	25	--	--	30
502	04-28-87	C	180	36	31	2.5	490	20	0.20	--	29
502	04-28-87	R	190	38	43	--	480	22	--	--	--
502	08-19-87	C	--	--	--	--	--	--	--	36	--
502	08-19-87	R	200	36	30	--	570	26	--	--	37
503	07-07-86	C	630	140	78	4.2	1900	87	0.40	--	61
503	07-07-86	R	610	140	71	--	2000	130	--	--	--
503	11-05-86	C	620	140	79	3.9	2000	95	0.20	--	61
503	11-05-86	R	660	160	80	--	2200	98	--	--	70

GROUND WATER--Continued
WELL GROUP 500--Continued
WATER QUALITY--LABORATORY MEASUREMENTS--Continued

WELL	DATE	LABORATORY	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	CARBON, INORGANIC, TOTAL (MG/L AS C) (00685)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)
503	04-28-87	C	--	--	--	--	--	--	--	--	--
503	04-28-87	R	650	140	110	--	2100	120	--	--	--
503	08-19-87	C	--	--	--	--	--	--	--	61	--
503	08-19-87	R	620	150	77	--	2000	120	--	--	78
504	11-06-86	C	43	15	27	1.4	24	11	0.20	--	28
504	11-06-86	R	47	16	26	--	27	11	--	--	29
504	04-28-87	C	47	16	20	2.1	21	9.9	0.30	--	28
504	04-28-87	R	44	19	23	--	27	11	--	--	--
504	08-19-87	C	--	--	--	--	--	--	--	47	--
504	08-19-87	R	44	15	18	--	19	9	--	--	35

WELL	DATE	LABORATORY	IONIC BALANCE (PERCENT)	IONIC STRENGTH (MOL/L)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	DENSITY (GM/ML AT 20 C) (71820)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS DISSOLVED (MG/L AS P) (00666)	PHOSPHORUS ORTHO, DISSOLVED (MG/L AS P) (00671)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
501	07-07-86	C	1.1	0.090	--	3100	--	--	--	--	--	--	--
501	07-07-86	R	3.1	0.092	--	2400	--	--	--	--	--	--	--
501	11-06-86	R	1.1	0.094	--	2600	--	--	--	--	--	--	--
501	04-28-87	C	3.1	0.093	--	3180	1.001	0.380	0.90	<0.100	0.070	0.060	--
501	04-28-87	R	7.3	0.093	--	2400	--	--	--	--	--	--	--
501	08-19-87	C	--	--	--	--	--	--	--	--	--	--	--
501	08-19-87	R	0.7	0.090	--	2500	--	--	--	--	--	--	--
502	07-07-86	C	2.8	0.024	--	849	--	--	--	--	--	--	--
502	07-07-86	R	2.9	0.024	--	630	--	--	--	--	--	--	--
502	11-06-86	R	-1.2	0.025	--	700	--	--	--	--	--	--	--
502	04-28-87	C	-1.7	0.025	--	893	1.000	0.080	<0.20	2.50	0.020	<0.010	0.6
502	04-28-87	R	2.8	0.025	--	680	--	--	--	--	--	--	--
502	08-19-87	C	--	--	--	--	0.999	--	--	--	--	--	0.1
502	08-19-87	R	-4.6	0.027	--	790	--	--	--	--	--	--	--
503	07-07-86	C	4.4	0.088	--	3010	--	--	--	--	--	--	--
503	07-07-86	R	-0.6	0.090	--	2500	--	--	--	--	--	--	--
503	11-05-86	C	1.9	0.090	--	3100	--	--	--	--	--	--	--
503	11-05-86	R	1.6	0.098	--	2700	--	--	--	--	--	--	--
503	04-28-87	C	--	--	--	--	1.003	0.370	1.5	<0.100	0.080	0.060	1.7
503	04-28-87	R	2.0	0.095	--	2600	--	--	--	--	--	--	--
503	08-19-87	C	--	--	--	--	--	--	--	--	--	--	--
503	08-19-87	R	1.8	0.091	--	2500	--	--	--	--	--	--	--
504	11-06-86	C	3.6	0.006	--	254	--	--	--	--	--	--	--
504	11-06-86	R	5.0	0.007	--	210	--	--	--	--	--	--	--
504	04-28-87	C	2.8	0.007	--	260	--	<0.010	0.30	1.40	0.020	<0.010	0.5
504	04-28-87	R	2.8	0.007	--	190	--	--	--	--	--	--	--
504	08-19-87	C	--	--	--	--	--	--	--	--	--	--	--
504	08-19-87	R	-3.2	0.006	--	210	--	--	--	--	--	--	--

GROUND WATER--Continued
WELL GROUP 500--Continued
WATER QUALITY--LABORATORY MEASUREMENTS--Continued

WELL	DATE	LAB-ORA-TORY	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	BORON, DIS-SOLVED (UG/L AS B) (01020)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
501	07-07-86	C	60	--	29	1	60	4	--	<9	<10	250
501	07-07-86	R	<160	--	--	--	--	<100	--	<40	100	<40
501	11-06-86	R	<320	--	--	--	--	<200	--	<80	<40	<80
501	04-28-87	C	<10	--	29	<1	70	5	--	10	80	24
501	04-28-87	R	<160	--	--	--	--	<100	--	<40	<20	<40
501	08-19-87	C	--	--	--	--	--	--	--	--	--	--
501	08-19-87	R	<160	--	--	--	--	<100	--	<40	<20	<40
502	07-07-86	C	20	--	21	<0.5	20	<1	--	<3	<10	170
502	07-07-86	R	<160	--	--	--	--	<100	--	<40	200	<40
502	11-06-86	R	<80	--	--	--	--	<50	--	<20	<10	<20
502	04-28-87	C	30	--	18	<0.5	30	1	--	<3	<10	10
502	04-28-87	R	<160	--	--	--	--	<100	--	<40	<20	<40
502	08-19-87	C	--	--	--	--	--	--	--	--	--	--
502	08-19-87	R	<160	--	--	--	--	<100	--	<40	<20	<40
503	07-07-86	C	20	--	28	<1	60	4	--	<9	<30	180
503	07-07-86	R	<160	--	--	--	--	<100	--	<40	200	<40
503	11-05-86	C	20	--	27	<1	70	<3	--	<9	30	140
503	11-05-86	R	<320	--	--	--	--	<200	--	<80	<40	<80
503	04-28-87	C	--	--	--	--	--	--	--	--	--	--
503	04-28-87	R	--	--	--	--	--	<100	--	<40	<20	<40
503	08-19-87	C	--	--	--	--	--	--	--	--	--	--
503	08-19-87	R	<160	--	--	--	--	<100	--	<40	<20	<40
504	11-06-86	C	<10	--	10	<0.5	20	<1	--	<3	<10	<3
504	11-06-86	R	<80	--	--	--	--	<50	--	<20	<10	<20
504	04-28-87	C	40	--	12	<0.5	20	1	--	<3	<10	7
504	04-28-87	R	<80	--	--	--	--	<50	--	<20	<10	<20
504	08-19-87	C	--	--	--	--	--	--	--	--	--	--
504	08-19-87	R	<80	--	--	--	--	<50	--	<20	<10	<20

GROUND WATER--Continued
WELL GROUP 500--Continued
WATER QUALITY--LABORATORY MEASUREMENTS--Continued

WELL	DATE	LAB-ORA-TORY	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
501	07-07-86	C	<30	170	36000	--	<30	--	2200	<18	53
501	07-07-86	R	--	--	38000	--	--	200	2200	--	60
501	11-06-86	R	--	--	47000	--	--	300	2300	--	<60
501	04-28-87	C	70	220	44000	--	30	300	2300	<18	38
501	04-28-87	R	--	--	46000	--	--	<100	1900	--	<30
501	08-19-87	C	--	--	--	--	--	--	--	--	--
501	08-19-87	R	--	--	45000	--	--	200	2300	--	<30
502	07-07-86	C	10	23	44	--	<10	--	810	<6	26
502	07-07-86	R	--	--	<60	--	--	<100	840	--	<30
502	11-06-86	R	--	--	260	--	--	<50	790	--	<15
502	04-28-87	C	<10	24	19	--	<10	<100	840	<6	9
502	04-28-87	R	--	--	50	--	--	<100	700	--	<30
502	08-19-87	R	--	--	180	--	--	<100	880	--	<30
502	08-19-87	C	--	--	--	--	--	--	--	--	--
503	07-07-86	C	<30	190	45000	--	<30	--	2100	<18	190
503	07-07-86	R	--	--	46000	--	--	400	2100	--	50
503	11-05-86	C	<30	200	48000	--	<30	--	2200	<18	24
503	11-05-86	R	--	--	61000	--	--	400	2300	--	<60
503	04-28-87	C	--	--	--	--	--	--	--	--	--
503	04-28-87	R	--	--	58000	--	--	<100	1900	--	<30
503	08-19-87	C	--	--	--	--	--	--	--	--	--
503	08-19-87	R	--	--	57000	--	--	400	2300	--	<30
504	11-06-86	C	<10	22	100	--	<10	--	320	6	<3
504	11-06-86	R	--	--	100	--	--	<50	330	--	<15
504	04-28-87	C	<10	19	16	--	<10	<100	320	8	6
504	04-28-87	R	--	--	100	--	--	<50	260	--	<15
504	08-19-87	C	--	--	--	--	--	--	--	--	--
504	08-19-87	R	--	--	80	--	--	<50	310	--	<15

GROUND WATER--Continued
WELL GROUP 500--Continued
WATER QUALITY--WELL SEX

The samples listed below were collected by air lift through the dual-wall drill stem while the well was being drilled. After water samples and cuttings were collected, the hole was sealed with concrete to its total depth.
LABORATORY: Laboratory analyses by USGS research laboratory (KG Stollenwerk), Lakewood, Colorado.
REMARKS: <, Actual value is known to be less than the value shown.

DATE	TIME	DEPTH AT SAMPLE LOCATION, TOTAL (METERS)	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE WATER (DEG C) (00010)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)
DEC 1985										
12...	0830	5.2	3300	6.77	11.5	610	140	76	1900	80
12...	0908	11.3	3200	6.85	10.0	640	140	88	1900	80
12...	0950	17.4	3200	7.54	11.5	600	140	70	1900	75
12...	1001	20.7	3200	7.00	13.0	590	140	71	1900	78
12...	1044	25.9	3290	7.56	13.5	610	130	67	1900	72
12...	1124	32.0	1990	7.59	15.5	390	64	40	940	26
12...	1143	35.1	1630	7.53	15.5	290	48	34	760	21
12...	1209	38.1	1650	7.56	15.5	310	52	35	800	25
12...	1240	44.2	410	7.80	15.0	49	13	19	21	12
12...	1314	47.2	1840	7.43	16.0	320	63	38	850	28
12...	1348	50.3	434	7.73	16.0	53	14	19	25	10
12...	1406	53.3	1860	7.40	16.0	350	72	44	1300	35
12...	1435	56.4	1670	7.32	16.0	290	57	36	750	29
12...	1504	59.4	1480	7.42	16.5	230	45	32	580	21
12...	1527	62.5	1610	7.20	16.0	260	52	34	680	26
12...	1618	68.6	747	7.53	16.0	110	26	23	170	15
12...	1646	71.6	1660	7.11	15.5	260	56	37	740	33
13...	0937	77.7	415	7.39	16.0	48	15	20	18	9.0
13...	1017	83.8	410	7.80	15.0	45	16	18	13	7.6
13...	1053	89.9	458	7.38	18.5	56	18	20	41	9.6

DEPTH AT SAMPLE LOCATION, TOTAL (METERS)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, DISSOLVED (UG/L AS FE) (01046)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	ZINC, DISSOLVED (UG/L AS ZN) (01090)
5.2	42	<160	<100	<40	<20	160	5500	100	2100	260
11.3	63	<160	<100	50	60	4300	3900	60	2300	300
17.4	38	<160	<100	<40	<20	290	20000	90	2000	20
20.7	54	<160	<100	<40	<20	580	33000	200	1900	20
25.9	49	<160	<100	<40	<20	40	29000	180	2200	<15
32.0	29	<80	<50	<20	<10	250	390	<50	1500	<15
35.1	27	<80	<50	<20	<10	300	40	<50	1100	<15
38.1	28	<80	<50	<20	<10	330	470	<50	1200	<15
44.2	22	<80	<50	<20	<10	<20	130	60	250	<15
47.2	32	<80	<50	<20	<10	60	7200	100	1200	<15
50.3	27	<80	<50	<20	<10	350	100	<50	280	<15
53.3	37	<80	<50	<20	<10	330	9900	100	1300	<15
56.4	32	<80	<50	<20	<10	500	5700	100	1100	<15
59.4	28	<80	<50	<20	<10	1900	2900	<50	920	<15
62.5	29	<80	<50	<20	<10	240	4600	100	1000	<15
68.6	26	<80	<50	<20	<10	20	580	<50	490	<15
71.6	28	<80	<50	<20	<10	100	7600	100	1000	<15
77.7	25	<80	<50	<20	<10	<20	260	<50	300	<15
83.8	22	<80	<50	<20	<10	<20	200	60	270	<15
89.9	27	<80	<50	<20	<10	840	890	60	290	<15

GROUND WATER—Continued
OTHER WELLS
WELL CHARACTERICSTICS

METHOD: A, air rotary; B, auger; C, cable tool; H, hydraulic rotary.
USE OF WATER: H, domestic; P, public supply; S, stock; U, unused.

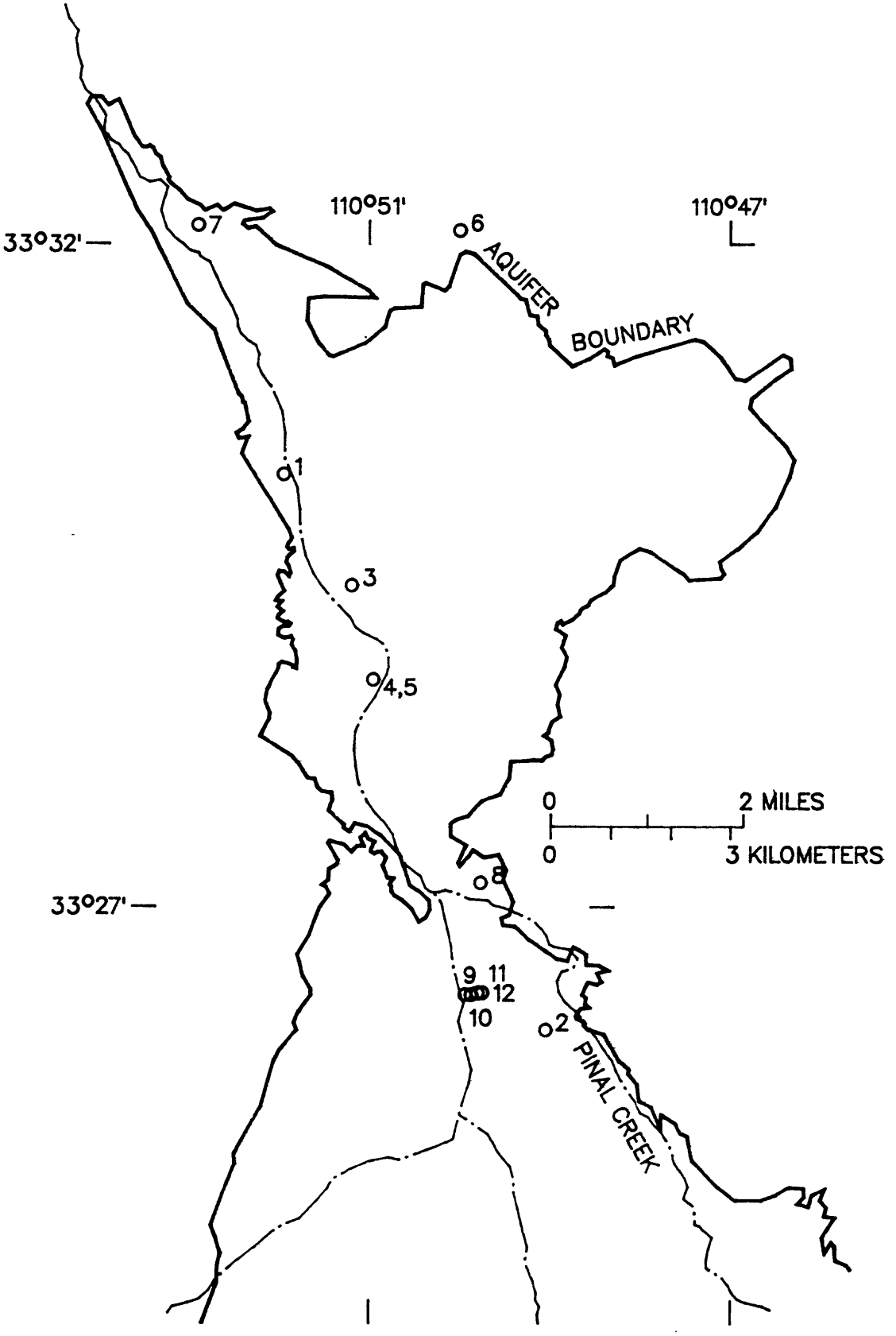
CASING MATERIAL: P, plastic; S, steel.

REMARKS: <, Actual value is known to ba less than the value shown.

MAP NUMBER[1]	WELL	LATITUDE (DEG-M-S)	LONGITUDE (DEG-M-S)	SITE-ID	LOCAL NUMBER	METHOD CONST-RUCTED	PRIMARY USE OF WATER	OWNER
1	ADOT HICKS	33 30 53	110 51 54	333053110515401	(A-02-15)18dba	-	U	ARIZONA DEPARTMENT OF TRANSPORTATION
2	BAACK	33 25 52	110 49 05	332552110490500	(A-01-15)15bda	H	H	BAACK, T R
3	BARCON	33 29 53	110 51 10	332953110511000	(A-02-15)20cad	C	H	BARCON, FRED & WINONA
4	B&B NEW	33 29 02	110 50 56	332902110505601	(A-02-15)29dbc2	A	P	BAUGHMAN, KARL & WENDY
5	B&B OLD	33 29 02	110 50 56	332902110505600	(A-02-15)29dbc	-	U	BAUGHMAN, KARL & WENDY
6	FS LOWER	33 33 05	110 50 00	333305110500001	(A-02-15)04aab	-	S	US FOREST SERVICE
7	FS PINAL	33 33 08	110 52 49	333308110524901	(A-02-14)01aab	-	S	US FOREST SERVICE
8	GILMORE	33 27 12	110 49 47	332712110494700	(A-01-15)04dca	C	H	GILMORE, EDWARD
9	P1H1	33 26 11	110 49 57	332611110495701	(A-01-15)09dcc1	B	U	--
10	P1H2	33 26 11	110 49 53	332611110495301	(A-01-15)09dcc2	B	U	--
11	P1H3	33 26 12	110 49 49	332612110494901	(A-01-15)09dcd5	B	U	--
12	SEEP NEST	33 26 12	110 49 46	332612110494601	(A-01-15)09dcd6	H	U	--

[1]Map number is identifier shown on location map for other wells on p. 70.

WELL	ALTITUDE OF LAND SURFACE (METERS)	DEPTH OF WELL (METERS)	DIAMETER OF CASING (CM)	CASING MATERIAL	OPEN INTERVAL (METERS)	GEOLOGIC UNIT	REMARK
ADOT HICKS	920	28.7	21	S	-- - --	--	--
BAACK	1138	248	20	S	218 - 248	--	--
BARCON	937	46	15	S	21 - 46	BASIN FILL	--
B&B NEW	946	94	13	P	49 - 94	BASIN FILL	6 M WEST OF OLD WELL
B&B OLD	946	39	20	S	-- - --	ALLUVIUM	--
FS LOWER	1097	--	--	S	-- - --	--	--
FS PINAL	887	--	--	S	-- - --	--	--
GILMORE	997	329	51	S	265 - 329	--	--
P1H1	987.4	12	5	P	9 - 12	ALLUVIUM	--
P1H2	986.9	24	5	P	21 - 24	ALLUVIUM	--
P1H3	987.0	17	5	P	14 - 17	ALLUVIUM	DESTROYED BEFORE NOVEMBER 1986
SEEP NEST	987.4	48	10	P	42 - 48	BASIN FILL	--



Locations of other wells.

EXPLANATION

○ WELL

1	ADOT HICKS	(A-02-15)18dba
2	BAACK	(A-01-15)15bda
3	BARCON	(A-02-15)20ced
4	B&B NEW	(A-02-15)29dbc2
5	B&B OLD	(A-02-15)29dbc
6	FS LOWER	(A-02-15)04abb
7	FS FINAL	(A-02-14)01aab
8	GILMORE	(A-01-15)04dca
9	P1H1	(A-01-15)09dcc1
10	P1H2	(A-01-15)09dcc2
11	P1H3	(A-01-15)09dcd5
12	SEEP NEST	(A-01-15)09dcd6

GROUND WATER--Continued
OTHER WELLS--Continued
WATER QUALITY DATA

LABORATORY: R, USGS research laboratory (KG Stollenwerk), Lakewood, Colorado; C, USGS National Water-Quality Laboratory, Arvada, Colorado.
REMARKS: <, Actual value is known to be less than the value shown; e, Estimated.

WELL	DATE	DEPTH TO WATER LEVEL BELOW LSD (M) (30210)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH (STAND-ARD UNITS) (00400)	OXYGEN, DIS-SOLVED (MG/L) (00300)	TEMPER-ATURE WATER (DEG C) (00010)	ALKA-LINITY WAT WH TOT IT FIELD MG/L AS CACO3 (00419)	CAR-BONATE WATER WH IT FIELD MG/L AS CO3 (00447)	BICAR-BONATE WATER WH IT FIELD MG/L AS HCO3 (00450)	LAB-ORA-TORY	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)
ADOT HICKS	08-19-87	7.54	3500	6.84	0.2	18.5	212	--	259	C	520	110
BAACK	12-17-85	e166.7	395	7.25	--	18.5	124	0	151	C	37	11
										R	39	10
BARCON	11-21-85	11.46	610	7.25	6.6	19.0	178	0	218	C	84	23
										R	77	22
										R	580	120
B&B NEW	11-07-86	--	1360	7.40	--	18.5	181	0	221	R	210	65
B&B OLD	01-07-86	18.29	3350	6.60	--	16.0	221	0	270	C	700	89
										R	750	110
FS LOWER	07-14-86	7.99	1770	7.20	--	--	364	--	443	C	150	80
										R	150	89
FS PINAL	07-15-86	--	742	7.08	--	--	219	--	267	C	96	18
										R	94	18
GILMORE	11-21-85	28.58	386	7.25	--	23.0	152	0	185	C	42	13
										R	51	12
P1H1	07-08-86	1.78	1750	3.98	--	20.5	0	0	0	R	290	40
P1H2	07-08-86	1.14	7250	3.57	--	16.0	0	0	0	R	500	280
P1H3	03-21-85	0.44	5700	3.75	--	17.0	0	0	0	R	500	200
	03-26-86	0.72	5750	3.85	--	20.0	0	0	0	R	480	180
	07-08-86	1.38	5150	3.62	--	18.5	0	0	0	C	480	180
										R	490	170
SEEP NEST	03-21-85	1.20	4420	5.60	--	18.0	66	0	81	R	330	81
	06-26-85	1.61	4100	5.99	--	18.0	109	0	133	R	290	65
	11-20-85	1.76	3750	5.87	2.5	18.0	130	0	159	R	270	16
	03-26-86	1.42	4650	6.02	2.1	18.0	116	0	142	R	280	68
	07-08-86	2.10	4300	6.04	0.8	18.0	83	0	101	C	310	68
										R	320	64
	11-05-86	2.54	1980	6.32	0.7	19.0	215	0	262	R	300	74
	04-29-87	--	4600	5.80	--	--	174	0	212	R	320	49

GROUND WATER--Continued
OTHER WELLS--Continued
WATER QUALITY DATA--Continued

WELL	DATE	LABORATORY	SODIUM, DISSOLVED (MG/L AS NA) (00930)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS DISSOLVED (MG/L AS P) (00666)
ADOT HICKS	08-19-87	C	70	4.5	1800	100	0.30	44	0.300	0.90	<0.100	0.030
		R	68	--	1700	99	--	57	--	--	--	--
BAACK	12-17-85	C	12	6.6	6.0	17	0.20	30	--	--	0.980	--
		R	12	--	22	--	--	29	--	--	--	--
BARCON	11-21-85	C	21	2.3	130	13	0.30	28	--	--	1.10	--
		R	20	--	160	10	--	28	--	--	--	--
B&B NEW	11-07-86	R	29	--	570	29	--	28	--	--	--	--
B&B OLD	01-07-86	C	54	5.1	1900	51	0.10	27	--	--	0.180	--
		R	49	--	--	57	--	30	--	--	--	--
FS LOWER	07-14-86	C	91	2.9	160	270	0.70	56	--	--	7.40	--
		R	97	--	--	--	--	--	--	--	--	--
FS PINAL	07-15-86	C	48	5.2	150	28	0.50	32	--	--	1.70	--
		R	46	--	--	--	--	--	--	--	--	--
GILMORE	11-21-85	C	24	3.5	8.6	14	0.30	22	--	--	0.570	--
		R	23	--	6.0	18	--	22	--	--	--	--
P1H1	07-08-86	R	39	--	750	73	--	--	--	--	--	--
P1H2	07-08-86	R	150	--	8100	200	--	--	--	--	--	--
P1H3	03-21-85	R	160	--	3900	340	--	110	--	--	--	--
	03-26-86	R	130	--	4000	160	--	67	--	--	--	--
	07-08-86	C	140	6.4	3900	160	--	110	--	--	--	--
		R	130	--	3500	160	--	--	--	--	--	--
SEEP NEST	03-21-85	R	590	--	2100	300	1.4	33	--	--	--	--
	06-26-85	R	670	--	2300	280	--	--	--	--	--	--
	11-20-85	R	590	--	1700	63	--	35	--	--	--	--
	03-26-86	R	650	--	2300	68	--	24	--	--	--	--
	07-08-86	C	690	31	2400	160	1.0	37	--	--	--	--
		R	640	--	2200	88	--	--	--	--	--	--
	11-05-86	R	670	--	2400	76	--	33	--	--	--	--
	04-29-87	R	680	--	2100	90	0.9-	--	--	--	--	--

GROUND WATER--Continued
OTHER WELLS--Continued
WATER QUALITY DATA--Continued

WELL	DATE	LABORATORY	PHOSPHOROUS ORTHO, DISSOLVED (MG/L AS P) (00671)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	BERYLLIUM, DISSOLVED (UG/L AS BE) (01010)	BORON, DISSOLVED (UG/L AS B) (01020)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COPPER, DISSOLVED (UG/L AS CU) (01040)
ADOT HICKS	08-19-87	C	<0.010	<10	30	0.8	70	<1	<5	40	<10
		R	--	<160	--	--	--	<100	--	<40	<20
BAACK	12-17-85	C	0.010	--	--	--	20	--	--	--	--
		R	--	<80	--	--	--	<50	--	<20	<10
BARCON	11-21-85	C	0.020	--	--	--	20	--	--	--	--
		R	--	<80	--	--	--	<50	--	<20	<10
B&B NEW	11-07-86	R	--	<80	--	--	--	<50	--	<20	<10
B&B OLD	01-07-86	C	0.010	--	--	--	40	--	--	--	--
		R	--	<80	--	--	--	<50	--	<20	<10
FS LOWER	07-14-86	C	<0.010	--	--	--	120	--	--	--	--
		R	--	<80	--	--	--	<50	--	<20	<30
FS PINAL	07-15-86	C	<0.010	--	--	--	60	--	--	--	--
		R	--	<80	--	--	--	<50	--	<20	10
GILMORE	11-21-85	C	0.010	--	--	--	50	--	--	--	--
		R	--	<80	--	--	--	<50	--	<20	<10
P1H1	07-08-86	R	--	16000	--	--	--	<500	--	<200	1800
P1H2	07-08-86	R	--	120000	--	--	--	<500	--	6100	110000
P1H3	03-21-85	R	--	120000	--	--	--	<50	--	4000	64000
	03-26-86	R	--	68000	--	--	--	<100	--	2800	50000
	07-08-86	C	--	96000	14	91	370	150	--	--	55000
		R	--	76000	--	--	--	<500	--	3300	72000
SEEP NEST	03-21-85	R	--	1700	--	--	--	<250	--	660	4000
	06-26-85	R	--	<400	--	--	--	<250	--	400	2100
	11-20-85	R	--	<320	--	--	--	<200	--	410	<40
	03-26-86	R	--	<160	--	--	--	<100	--	300	1300
	07-08-86	C	--	460	16	5	110	12	--	--	2000
		R	--	9900	--	--	--	<500	--	300	3300
	11-05-86	R	--	<160	--	--	--	<100	--	200	860
	04-29-87	R	--	<160	--	--	--	<100	--	200	610

GROUND WATER--Continued
OTHER WELLS--Continued
WATER QUALITY DATA--Continued

WELL	DATE	LABORATORY	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, DISSOLVED (UG/L AS PB) (01049)	LITHIUM DISSOLVED (UG/L AS LI) (01130)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MOLYBDENUM, DISSOLVED (UG/L AS MO) (01060)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	VANADIUM, DISSOLVED (UG/L AS V) (01085)	ZINC, DISSOLVED (UG/L AS ZN) (01090)
ADOT HICKS	08-19-87	C	3600	<10	160	25000	10	<40	2000	<6	11
		R	3900	--	--	26000	--	<100	2100	--	<30
BAACK	12-17-85	C	20	--	--	34	--	--	--	--	--
		R	20	--	--	30	--	<50	100	--	220
BARCON	11-21-85	C	14	--	--	5	--	--	--	--	--
		R	20	--	--	<30	--	<50	410	--	<15
B&B NEW	11-07-86	R	20	--	--	<30	--	50	1300	--	650
B&B OLD	01-07-86	C	1000	--	--	500	--	--	--	--	--
		R	1100	--	--	620	--	70	2800	--	30
FS LOWER	07-14-86	C	28	--	--	27	--	--	--	--	--
		R	40	--	--	32	--	60	94	--	630
FS PINAL	07-15-86	R	6	--	--	5	--	--	--	--	--
		C	<20	--	--	<30	--	<50	780	--	680
GILMORE	11-21-85	C	8	--	--	<1	--	--	--	--	--
		R	60	--	--	<30	--	<50	180	--	320
P1H1	07-08-86	R	1200	--	--	2100	--	<500	1100	--	300
P1H2	07-08-86	R	1570000	--	--	55000	--	2100	1600	--	13000
P1H3	03-21-85	R	1060000	--	--	47000	--	1800	1700	--	7700
	03-28-86	R	870000	--	--	37000	--	1400	1500	--	7400
	07-08-86	C	660000	100	380	37000	<30	--	1600	170	6900
		R	800000	--	--	38000	--	1600	1600	--	8700
SEEP NEST	03-21-85	R	160000	--	--	16000	--	400	1500	--	1100
	06-26-85	R	73000	--	--	9600	--	<250	1400	--	500
	11-20-85	R	<80	--	--	10000	--	<200	1300	--	880
	03-26-86	R	73000	--	--	7700	--	200	1300	--	550
	07-08-86	C	76000	<30	560	8700	<30	--	1600	<18	980
		R	75000	--	--	8800	--	<500	1500	--	1300
	11-05-86	R	35000	--	--	6800	--	210	1500	--	370
	04-29-87	R	26000	--	--	8000	--	<100	1600	--	450

SURFACE WATER

332704110495400 PINAL CREEK AT BIXBY ROAD BRIDGE NEAR GLOBE, ARIZ.

LOCATION.--Lat 33°27'04", long 110°49'54", in SW¼SW¼SE¼ sec. 4, T. 1 N., R. 15 E., at bridge on Bixby Road 0.6 km upstream from Miami Wash, 17.0 km upstream from Inspiration Dam, 23.2 km upstream from mouth, and 7 km northwest of Globe.

DRAINAGE AREA.--115.1 km^2.

CHANNEL ELEVATION.--977 m above National Geodetic Vertical Datum of 1929, from topographic map.

PREVIOUS DATA COLLECTION AT SITE.--Two discharge measurements and water-quality analyses in February 1982 were reported by the Central Arizona Association of Governments, Mineral Extraction Task Force, as site GM24.

WATER QUALITY DATA

LABORATORY: R, USGS research laboratory (KG Stollenwerk), Lakewood, Colorado; C, USGS National Water-Quality Laboratory, Arvada, Colorado.
REMARKS: <, Actual value is known to be less than the value shown.

DATE	TIME	LABORATORY	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE WATER (DEG C) (00010)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)
MAR 1985												
01...	1315	R	4.9	345	8.60	21.0	678	7.8	99	37	9.5	25

DATE	ALKALINITY, WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, DISSOLVED (UG/L AS FE) (01046)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	ZINC, DISSOLVED (UG/L AS ZN) (01090)
MAR 1985											
01...	110	33	14	186	<80	20	60	<30	<50	190	20

ANALYSES OF STREAM-BOTTOM MATERIAL (FRACTION FINER THAN 2 MILLIMETERS)

DATE	TIME	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	NUMBER OF SAMPLING POINTS (COUNT) (00063)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	ARSENIC TOTAL IN BOTTOM MATERIAL (UG/G AS AS) (01003)	CADMIUM RECOV. FM BOTTOM MATERIAL (UG/G AS CD) (01028)	COBALT, RECOV. FM BOTTOM MATERIAL (UG/G AS CO) (01038)	COPPER, RECOV. FM BOTTOM MATERIAL (UG/G AS CU) (01043)	IRON, RECOV. FM BOTTOM MATERIAL (UG/G AS FE) (01170)	LEAD, RECOV. FM BOTTOM MATERIAL (UG/G AS PB) (01052)	MANGANESE, RECOV. FM BOTTOM MATERIAL (UG/G) (01053)	NICKEL, RECOV. FM BOTTOM MATERIAL (UG/G AS NI) (01068)	ZINC, RECOV. FM BOTTOM MATERIAL (UG/G AS ZN) (01093)
AUG 1985													
29...	1130	0.0	7	85	15	<1	10	440	15000	60	530	30	140

SURFACE WATER--Continued
332452110500600 BLOODY TANKS WASH AT CLAYPOOL, ARIZ.

LOCATION.--Lat 33°24'52", long 110°50'06", in SE¼SE¼NW¼ sec. 21, T. 1 N., R. 15 E., at bridge on private road 0.5 km upstream from confluence with Russell Gulch, 16.9 km upstream from Inspiration Dam, and 1.0 km northeast of Claypool.

DRAINAGE AREA.--93.2 km^2, of which 39.8 km^2 in Webster Gulch is dammed by tailings piles and does not contribute to surface runoff. Other mine pits and dumps totalling about 14 km^2 are partly or entirely noncontributing.

CHANNEL ELEVATION.--1,006 m above National Geodetic Vertical Datum of 1929, from topographic map.

PREVIOUS DATA COLLECTION AT SITE.--Three discharge measurements and water-quality analyses in January and February 1982 were reported by the Central Arizona Association of Governments, Mineral Extraction Task Force, as site GM16.

REMARKS.--When the stage of Webster Lake exceeded approximately 1,125 m, overflow spilled through a diversion ditch into the adjacent basin to the north, which is known locally as New Webster Gulch and which enters Miami Wash in NE¼SW¼ sec. 16, T. 1 N., R. 15 E., approximately 1.4 km downstream from the confluence of Bloody Tanks Wash and Russell Gulch. Since 1966, such spill is known to have occurred only between 1978 and February 1980.

WATER QUALITY DATA

LABORATORY: R, USGS research laboratory (KG Stollenwerk), Lakewood, Colorado; C, USGS National Water-Quality Laboratory, Arvada, Colorado.
REMARKS: <, Actual value is known to be less than the value shown; >, Actual value is known to be greater than the value shown; K, Based on nonideal colony count.

DATE	TIME	LABORATORY	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE WATER (DEG C) (00010)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)
MAR 1985												
01...	0930	R	7.9	384	8.18	8.0	678	10.4	99	45	10	20

DATE	ALKALINITY, WAT DIS TOT FET FIELD MG/L AS CACO3 (00418)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, DISSOLVED (UG/L AS FE) (01046)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	ZINC, DISSOLVED (UG/L AS ZN) (01090)
MAR 1985											
01...	46	310	10	427	<80	160	20	350	<50	390	34

ANALYSES OF STREAM-BOTTOM MATERIAL (FRACTION FINER THAN 2 MILLIMETERS)

DATE	TIME	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	NUMBER OF SAMPLING POINTS (COUNT) (00063)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	ARSENIC TOTAL IN BOTTOM MATERIAL (UG/G AS AS) (01003)	CADMIUM RECOV. FM BOTTOM MATERIAL (UG/G AS CD) (01028)	COBALT, RECOV. FM BOTTOM MATERIAL (UG/G AS CO) (01038)	COPPER, RECOV. FM BOTTOM MATERIAL (UG/G AS CU) (01043)	IRON, RECOV. FM BOTTOM MATERIAL (UG/G AS FE) (01170)	LEAD, RECOV. FM BOTTOM MATERIAL (UG/G AS PB) (01052)	MANGANESE, RECOV. FM BOTTOM MATERIAL (UG/G) (01053)	NICKEL, RECOV. FM BOTTOM MATERIAL (UG/G AS NI) (01068)	ZINC, RECOV. FM BOTTOM MATERIAL (UG/G AS ZN) (01093)
AUG 1985													
29...	0820	0.0	6	46	7	<1	<10	840	2100	20	94	10	30

SURFACE WATER--Continued

332456110494300 RUSSELL GULCH AT U.S. HIGHWAY 60 AT CLAYPOOL, ARIZ.

LOCATION.--Lat 33°24'56", long 110°49'43", in SE¼SW¼NE¼ sec. 21, T. 1 N., R. 15 E., at a double concrete-box culvert on U.S. Highway 60, 0.5 km upstream from confluence with Bloody Tanks Wash, 20.8 km upstream from Inspiration Dam, and 1.5 km northeast of Claypool.

DRAINAGE AREA.--55.7 km^2, including 20.9 km^2 tributary to Solitude Tailings Pond, which does not contribute to surface runoff.

CHANNEL ELEVATION.--1,008 m above National Geodetic Vertical Datum of 1929, from topographic map.

PREVIOUS DATA COLLECTION AT SITE.--One discharge measurement and water-quality analysis in February 1982 for a site approximately 250 m downstream were reported by the Central Arizona Association of Governments, Mineral Extraction Task Force, as site GM19.

WATER QUALITY DATA

LABORATORY: R, USGS research laboratory (KG Stollenwerk), Lakewood, Colorado; C, USGS National Water-Quality Laboratory, Arvada, Colorado.
REMARKS: <, Actual value is known to be less than the value shown.

DATE	TIME	LABORATORY	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE WATER (DEG C) (00010)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)
MAR 1985												
01...	1100	R	9.1	405	8.18	9.5	675	8.8	87	38	13	19

DATE	ALKALINITY, WAT DIS TOT FET FIELD MG/L AS CACO3 (00418)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, DISSOLVED (UG/L AS FE) (01046)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	ZINC, DISSOLVED (UG/L AS ZN) (01090)
MAR 1985											
01...	120	37	6.8	186	<80	<10	50	<30	<50	200	30

ANALYSES OF STREAM-BOTTOM MATERIAL (FRACTION FINER THAN 2 MILLIMETERS)

DATE	TIME	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	NUMBER OF SAMPLING POINTS (COUNT) (00063)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	ARSENIC TOTAL IN BOTTOM MATERIAL (UG/G AS AS) (01003)	CADMIUM RECOV. FM BOTTOM MATERIAL (UG/G AS CD) (01028)	COBALT, RECOV. FM BOTTOM MATERIAL (UG/G AS CO) (01038)	COPPER, RECOV. FM BOTTOM MATERIAL (UG/G AS CU) (01043)	IRON, RECOV. FM BOTTOM MATERIAL (UG/G AS FE) (01170)	LEAD, RECOV. FM BOTTOM MATERIAL (UG/G AS PB) (01052)	MANGANESE, RECOV. FM BOTTOM MATERIAL (UG/G) (01053)	NICKEL, RECOV. FM BOTTOM MATERIAL (UG/G AS NI) (01068)	ZINC, RECOV. FM BOTTOM MATERIAL (UG/G AS ZN) (01093)
AUG 1985													
29...	0800	0.0	5	42	4	<1	<10	250	6900	40	250	20	70

SURFACE WATER--Continued

09498349 MIAMI WASH TRIBUTARY AT STATE HIGHWAY 88 NEAR CLAYPOOL, ARIZ.

LOCATION.--Lat 33°26'32", long 110°50'05", in SW¼NW¼SE¼ sec. 9, T. 1 N., R. 15 E., at bridge on State Highway 88, and 3.7 km northeast of Claypool.

CHANNEL ELEVATION.--982 m above National Geodetic Vertical Datum of 1929 (levels by Water Resources Division, U.S. Geological Survey).

PREVIOUS DATA COLLECTION AT SITE.--Five discharge measurements and water-quality analyses in March and April 1983.

REMARKS.--This site is an intermittent seep in the left (west) bank of Miami Wash at the base of a tailings pile.

WATER QUALITY DATA

REMARKS: <, Actual value is known to be less than the value shown; K, Based on nonideal colony count.

DATE	TIME	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	TURBIDITY (NTU) (00076)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DISSOLVED (MG/L) (00300)
JAN 1984									
26...	1545	0.05	2680	6.20	16.5	16.0	0.60	675	5.7
FEB									
28...	1445	0.11	2480	5.00	--	15.5	2.8	676	6.7
MAR									
20...	1350	0.01	2950	6.60	19.5	24.5	11	675	5.5
APR									
26...	1130	0.01	3140	6.40	12.0	14.0	27	671	4.5
SEP									
27...	0945	0.01	2830	6.70	20.0	23.0	8.5	680	3.1

DATE	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	ALKALINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	RESIDUE TOTAL AT 105 DEG. C, SUSPENDED (MG/L) (00530)	ARSENIC DISSOLVED (UG/L AS AS) (01000)
JAN 1984									
26...	66	K39	510	50	108	1500	2590	6	<1
FEB									
28...	76	--	450	68	19	1300	2240	8	<1
MAR									
20...	76	<1	570	69	86	1500	2730	16	<1
APR									
26...	50	<1	550	78	130	1600	2850	69	<1
SEP									
27...	42	210	550	67	118	1600	2600	11	<1

DATE	CADMIUM TOTAL RECOVERABLE (UG/L AS CD) (01027)	COPPER, TOTAL RECOVERABLE (UG/L AS CU) (01042)	COPPER, DISSOLVED (UG/L AS CU) (01040)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ZINC, DISSOLVED (UG/L AS ZN) (01090)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)
JAN 1984								
26...	3	360	190	<1	100	80	17	0.00
FEB								
28...	5	760	580	5	190	190	11	0.00
MAR								
20...	4	840	69	6	140	140	15	0.00
APR								
26...	1	890	500	2	130	120	49	0.00
SEP								
27...	2	900	700	<1	90	90	5	0.00

SURFACE WATER--Continued

09498350 MIAMI WASH AT STATE HIGHWAY 88 NEAR CLAYPOOL, ARIZ.

LOCATION.--Lat 33°26'32", long 110°50'02", in SW¼NW¼SE¼ sec. 9, T. 1 N., R. 15 E., at bridge on State Highway 88, 0.9 km upstream from Bixby Road Seepage Ditch, 1.1 km upstream from mouth, 1.7 km downstream from confluence of Bloody Tanks Wash and Russell Gulch, 17.5 km upstream from Inspiration Dam, and 3.7 km northeast of Claypool.

DRAINAGE AREA.--158.9 km^2, including approximately 80 km^2 that is partly or entirely noncontributing due to mine pits and dumps.

CHANNEL ELEVATION.--982 m above National Geodetic Vertical Datum of 1929 (levels by Water Resources Division, U.S. Geological Survey).

PREVIOUS DATA COLLECTION AT SITE.--Eight discharge measurements and water-quality analyses from February to June 1983.

WATER QUALITY DATA

LABORATORY: R, USGS research laboratory (KG Stollenwerk), Lakewood, Colorado; C, USGS National Water-Quality Laboratory, Arvada, Colorado.

REMARKS: <, Actual value is known to be less than the value shown; >, Actual value is known to be greater than the value shown. K, Based on nonideal colony count.

DATE	TIME	LABORATORY	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	TURBIDITY (NTU) (00076)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)
JAN 1984												
26...	1555	C	0.03	963	5.10	16.5	16.0	0.40	675	5.2	60	K34
FEB												
28...	1445	C	0.01	1420	5.40	--	14.5	2.1	676	8.9	99	--
MAR												
20...	1325	C	0.08	2450	6.70	22.5	21.5	9.1	675	4.9	63	<1
APR												
26...	1130	C	0.90	2650	7.00	12.0	11.0	1.8	671	6.4	67	<1
JUL												
24...	1515	C	0.25	2250	6.80	31.0	29.0	13	678	3.7	55	--
SEP												
27...	0950	C	0.06	1560	6.70	20.0	24.0	1.5	680	3.8	51	370
MAR 1985												
01...	1015	C	13	580	7.70	18.0	10.0	--	680	9.8	98	--
01...	1020	R	--	--	--	--	--	--	--	--	--	--
AUG												
29...	1045	C	0.10	2400	6.72	--	26.0	--	678	5.7	80	--

DATE	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 160 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	RESIDUE TOTAL AT 105 DEG. C, SUSPENDED (MG/L) (00530)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)
JAN 1984												
26...	130	27	--	--	11	460	--	--	796	--	6	--
FEB												
28...	240	36	--	--	53	730	--	--	1150	--	6	--
MAR												
20...	400	59	--	--	51	1300	--	--	2220	--	26	--
APR												
26...	460	60	--	--	87	1300	--	--	2360	--	10	--
JUL												
24...	400	53	93	9.5	115	1200	110	32	2060	1970	18	--
SEP												
27...	250	36	--	--	52	750	--	--	1330	--	6	--
MAR 1985												
01...	--	--	--	--	79	190	--	--	392	--	--	0.100
01...	77	17	24	--	79	240	15	--	--	422	--	--
AUG												
29...	420	48	84	--	62	1200	110	41	--	1950	--	--

SURFACE WATER--Continued
09498350 MIAMI WASH AT STATE HIGHWAY 88 NEAR CLAYPOOL, ARIZ.--Continued
WATER QUALITY DATA--Continued

DATE	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL) (01105)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD) (01027)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOVERABLE (UG/L AS CU) (01042)	COPPER, DISSOLVED (UG/L AS CU) (01040)
JAN 1984												
26...	--	--	--	--	--	<1	--	14	--	--	3400	3000
FEB												
28...	--	--	--	--	--	<1	--	9	--	--	1700	1300
MAR												
20...	--	--	--	--	--	<1	--	5	--	--	610	310
APR												
26...	--	--	--	--	--	<1	--	3	--	--	300	200
JUL												
24...	--	--	--	--	--	1	--	4	--	--	400	240
SEP												
27...	--	--	--	--	--	<1	--	3	--	--	550	560
MAR 1985												
01...	0.180	0.70	0.130	5000	100	--	--	--	--	--	1200	110
01...	--	--	--	--	<80	--	--	--	--	--	--	140
AUG												
29...	--	--	--	--	--	--	31	--	5	20	--	340

DATE	IRON, TOTAL RECOVERABLE (UG/L AS FE) (01045)	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)	LEAD, DISSOLVED (UG/L AS PB) (01049)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ZINC, DISSOLVED (UG/L AS ZN) (01090)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)
JAN 1984												
26...	--	--	3	--	--	--	--	--	640	620	13	0.00
FEB												
28...	--	--	1	--	--	--	--	--	430	420	7	0.00
MAR												
20...	--	--	4	--	--	--	--	--	150	160	33	0.01
APR												
26...	--	--	<1	--	--	--	--	--	150	110	67	0.16
JUL												
24...	--	--	4	--	--	3800	--	--	150	150	6	0.00
SEP												
27...	--	--	3	--	--	--	--	--	130	130	4	0.00
MAR 1985												
01...	3000	17	7	<1	620	570	--	--	60	30	249	8.5
01...	--	<20	--	--	--	630	<50	410	--	70	--	--
AUG												
29...	--	<9	--	<30	--	7100	--	1700	--	84	--	--

ANALYSES OF STREAM-BOTTOM MATERIAL (FRACTION FINER THAN 2 MILLIMETERS)

DATE	TIME	NUMBER OF SAMPLING POINTS (COUNT) (00063)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	ARSENIC TOTAL IN BOTTOM MATERIAL (UG/G AS AS) (01003)	CADMIUM RECOV. FM BOTTOM MATERIAL (UG/G AS CD) (01028)	COBALT, RECOV. FM BOTTOM MATERIAL (UG/G AS CO) (01038)	COPPER, RECOV. FM BOTTOM MATERIAL (UG/G AS CU) (01043)	IRON, RECOV. FM BOTTOM MATERIAL (UG/G AS FE) (01170)	LEAD, RECOV. FM BOTTOM MATERIAL (UG/G AS PB) (01052)	MANGANESE, RECOV. FM BOTTOM MATERIAL (UG/G) (01053)	NICKEL, RECOV. FM BOTTOM MATERIAL (UG/G AS NI) (01068)	ZINC, RECOV. FM BOTTOM MATERIAL (UG/G AS ZN) (01093)
AUG 1985												
29...	1045	>3	59	8	<1	<10	540	3400	20	150	10	40

SURFACE WATER--Continued

332628110495100 BIXBY ROAD SEEPAGE DITCH AT STATE HIGHWAY 88 NEAR CLAYPOOL, ARIZ.

LOCATION.--Lat 33°26'28", long 110°49'51", in SE¼NW¼SE¼ sec. 9, T. 1 N., R. 15 E., at a double concrete-box culvert on State Highway 88, 1.1 km upstream from mouth, 17.7 km upstream from Inspiration Dam, and 3.7 km northeast of Claypool.
DRAINAGE AREA.--0.26 km^2.
CHANNEL ELEVATION.--983 m above National Geodetic Vertical Datum of 1929 (levels by Water Resources Division, U.S. Geological Survey).

WATER QUALITY DATA

LABORATORY: R, USGS research laboratory (KG Stollenwerk), Lakewood, Colorado; C, USGS National Water-Quality Laboratory, Arvada, Colorado.
REMARKS: <, Actual value is known to be less than the value shown.

DATE	TIME	LABORATORY	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)
MAR 1985										
01...	1330	R	1.8	3590	6.04	--	17.0	675	4.4	53
AUG										
29...	0930	C	0.31	3550	5.50	35.0	23.0	678	4.0	53

DATE	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	ALKALINITY WAT DIS TOT FET FIELD MG/L AS CACO3 (00418)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)
MAR 1985									
01...	640	130	100	60	2000	96	--	3070	<80
AUG									
29...	500	120	100	23	2300	91	57	3320	--

DATE	BARIUM, DISSOLVED (UG/L AS BA) (01005)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, DISSOLVED (UG/L AS PB) (01049)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	ZINC, DISSOLVED (UG/L AS ZN) (01090)
MAR 1985									
01...	--	--	3300	44000	--	26000	430	2400	1000
AUG									
29...	17	18	8400	92000	<30	32000	--	2000	1300

ANALYSES OF STREAM-BOTTOM MATERIAL (SELECTED ORANGE MATERIAL LINING THE LOW-FLOW CHANNEL)

DATE	TIME	NUMBER OF SAMPLING POINTS (COUNT) (00063)	ALUMINUM, RECOV. FM BOTTOM MATERIAL (UG/G) (01108)	ARSENIC TOTAL IN BOTTOM MATERIAL (UG/G AS AS) (01003)	CADMIUM RECOV. FM BOTTOM MATERIAL (UG/G AS CD) (01028)	COBALT, RECOV. FM BOTTOM MATERIAL (UG/G AS CO) (01038)	COPPER, RECOV. FM BOTTOM MATERIAL (UG/G AS CU) (01043)
AUG 1985							
29...	0930	1	14000	10	2	30	6600

SURFACE WATER—Continued

332628110495100 RIXBY ROAD SEEPAGE DITCH AT STATE HIGHWAY 88 NEAR CLAYPOOL, ARIZ.--Continued

ANALYSES OF STREAM-BOTTOM MATERIAL (SELECTED ORANGE MATERIAL LINING THE LOW-FLOW CHANNEL)--Continued

DATE	IRON, RECOV. FM BOTTOM MATERIAL (UG/G AS FE) (01170)	LEAD, RECOV. FM BOTTOM MATERIAL (UG/G AS PB) (01052)	MANGANESE, RECOV. FM BOTTOM MATERIAL (UG/G) (01053)	MERCURY RECOV. FM BOTTOM MATERIAL (UG/G AS HG) (71921)	NICKEL, RECOV. FM BOTTOM MATERIAL (UG/G AS NI) (01068)	ZINC, RECOV. FM BOTTOM MATERIAL (UG/G AS ZN) (01093)
AUG 1985						
29...	230000	10	580	0.20	50	140

09498360 RIXBY ROAD SEEPAGE DITCH AT MOUTH NEAR CLAYPOOL, ARIZ.

LOCATION.--Lat 33°26'57", long 110°50'06", in NE¼NE¼NW¼ sec. 9, T. 1 N., R. 15 E., at mouth, 0.2 km upstream from mouth of Miami Wash, 1.1 km downstream from State Highway 88, 16.6 km upstream from Inspiration Dam, and 4.5 km northeast of Claypool.

DRAINAGE AREA.--0.70 km^2.

CHANNEL ELEVATION.--975 m above National Geodetic Vertical Datum of 1929, from topographic map.

PREVIOUS DATA COLLECTION AT SITE.--Six discharge measurements and water-quality analyses from April to July 1983 were published as Miami Wash Tributary No. 2 (East Side) near Claypool, Ariz.

WATER QUALITY DATA

LABORATORY: R, USGS research laboratory (KG Stollenwerk), Lakewood, Colorado; C, USGS National Water-Quality Laboratory, Arvada, Colorado.

REMARKS: <, Actual value is known to be less than the value shown.

DATE	TIME	LABORATORY	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)
MAR 1985										
01...	1105	R	3.6	3750	5.15	--	19.5	680	7.7	95
AUG										
29...	1215	C	0.62	4090	3.15	35.0	34.5	678	5.5	90

DATE	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	ALKALINITY WAT DIS TOT FET FIELD MG/L AS CACO3 (00418)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)
MAR 1985									
01...	590	140	110	4	2300	150	--	3440	660
AUG									
29...	580	160	120	0	2500	110	70	3770	--

SURFACE WATER—Continued
09498360 BIXBY ROAD SEEPAGE DITCH AT MOUTH NEAR CLAYPOOL, ARIZ.
WATER QUALITY DATA—Continued

DATE	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
MAR 1985									
01...	--	--	9700	120000	--	35000	760	2300	1600
AUG									
29...	17	30	15000	160000	<30	47000	--	2400	2200

ANALYSES OF STREAM-BOTTOM MATERIAL (SELECTED ORANGE MATERIAL LINING THE LOW-FLOW CHANNEL)

DATE	TIME	NUMBER OF SAM-PLING POINTS (COUNT) (00063)	ALUM-INUM, RECOV. FM BOT-TOM MA-TERIAL (UG/G) (01108)	ARSENIC TOTAL IN BOT-TOM MA-TERIAL (UG/G AS AS) (01003)	CADMIUM RECOV. FM BOT-TOM MA-TERIAL (UG/G AS CD) (01028)	COBALT, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS CO) (01038)	COPPER, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS CU) (01043)
AUG 1985							
29...	1215	1	9000	2	1	10	510

DATE	IRON, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS FE) (01170)	LEAD, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS PB) (01052)	MANGA-NESE, RECOV. FM BOT-TOM MA-TERIAL (UG/G) (01053)	MERCURY RECOV. FM BOT-TOM MA-TERIAL (UG/G AS HG) (71921)	NICKEL, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS NI) (01068)	ZINC, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS ZN) (01093)
AUG 1985						
29...	200000	<10	190	0.10	20	30

SURFACE WATER--Continued

332843110510100 PINAL CREEK AT BIXBY ROAD DIP CROSSING NEAR GLOBE, ARIZ.

LOCATION.--Lat 33°28'43", long 110°51'01", in NW¼NW¼NE¼ sec. 32, T. 2 N., R. 15 E., at an unpaved ford 2.3 km upstream from Wilbanks Road, 3.4 km downstream from Miami Wash, 13.0 km upstream from Inspiration Dam, 19.2 km upstream from mouth, and 11 km northwest of Globe.

DRAINAGE AREA.--332 km^2, including approximately 85 km^2 that is partly or entirely noncontributing due to mine pits and dumps.

CHANNEL ELEVATION.--947 m above National Geodetic Vertical Datum of 1929, from topographic map.

WATER QUALITY DATA

LABORATORY: R, USGS research laboratory (KG Stollenwerk), Lakewood, Colorado; C, USGS National Water-Quality Laboratory, Arvada, Colorado.
REMARKS: <, Actual value is known to be less than the value shown.

DATE	TIME	LABORATORY	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE WATER (DEG C) (00010)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	CALCIUM DISSOLVED (MG/L AS CA) (00915)
MAR 1985										
01...	1230	C	22	1960	7.45	20.0	680	7.7	96	--
01...	1300	R	--	--	--	--	--	--	--	190

DATE	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	ALKALINITY WAT DIS TOT FET FIELD MG/L AS CACO3 (00418)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00810)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)
MAR 1985										
01...	--	--	14	750	--	1200	--	0.500	0.480	1.8
01...	40	38	14	760	50	--	1090	--	--	--

DATE	PHOSPHORUS TOTAL (MG/L AS P) (00665)	PHOSPHORUS ORTHO, DISSOLVED (MG/L AS P) (00671)	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL) (01105)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	COPPER, TOTAL RECOVERABLE (UG/L AS CU) (01042)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOVERABLE (UG/L AS FE) (01045)	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)
MAR 1985									
01...	0.280	<0.010	8100	<100	3300	80	31000	16	11
01...	--	--	--	<80	--	80	--	40	--

SURFACE WATER--Continued

332843110510100 PINAL CREEK AT BIXBY ROAD DIP CROSSING NEAR GLOBE, ARIZ.--Continued

DATE	LEAD, DISSOLVED (UG/L AS PB) (01049)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ZINC, DISSOLVED (UG/L AS ZN) (01090)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)
MAR 1985									
01...	<1	8600	8400	--	--	350	230	3160	188
01...	--	--	7300	100	740	--	210	--	--

ANALYSES OF STREAM-BOTTOM MATERIAL (FRACTION FINER THAN 2 MILLIMETERS)

DATE	TIME	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	NUMBER OF SAMPLING POINTS (COUNT) (00063)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	ARSENIC TOTAL IN BOTTOM MATERIAL (UG/G AS AS) (01003)	CADMIUM RECOV. FM BOTTOM MATERIAL (UG/G AS CD) (01028)	COBALT, RECOV. FM BOTTOM MATERIAL (UG/G AS CO) (01038)	COPPER, RECOV. FM BOTTOM MATERIAL (UG/G AS CU) (01043)	IRON, RECOV. FM BOTTOM MATERIAL (UG/G AS FE) (01170)	LEAD, RECOV. FM BOTTOM MATERIAL (UG/G AS PB) (01052)	MANGANESE, RECOV. FM BOTTOM MATERIAL (UG/G) (01053)	NICKEL, RECOV. FM BOTTOM MATERIAL (UG/G AS NI) (01068)	ZINC, RECOV. FM BOTTOM MATERIAL (UG/G AS ZN) (01093)
AUG 1985													
29...	1345	0.0	15	70	9	<1	<10	390	8700	20	210	20	70

332939110511700 PINAL CREEK AT WILBANKS ROAD NEAR GLOBE, ARIZ.

LOCATION.--Lat 33°29'39", long 110°51'17", in NW¼NE¼NW¼ sec. 29, T. 2 N., R. 15 E., at bridge on Wilbanks Road, 10.7 km upstream from Inspiration Dam, 16.9 km upstream from mouth, and 13 km northwest of Globe.

DRAINAGE AREA.--371 km^2, including approximately 85 km^2 that is partly or entirely noncontributing due to mine pits and dumps.

CHANNEL ELEVATION.--931 m above National Geodetic Vertical Datum of 1929, from topographic map.

WATER QUALITY DATA

LABORATORY: R, USGS research laboratory (KG Stollenwerk), Lakewood, Colorado; C, USGS National Water-Quality Laboratory, Arvada, Colorado.

REMARKS: <, Actual value is known to be less than the value shown.

DATE	TIME	LABORATORY	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE WATER (DEG C) (00010)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	CALCIUM DISSOLVED (MG/L AS CA) (00915)
MAR 1985										
01...	1545	R	22	2100	6.89	18.0	675	7.8	94	370
AUG										
29...	1350	C	0.32	1770	5.83	29.5	678	5.0	74	330

SURFACE WATER--Continued
332939110511700 PINAL CREEK AT WILBANKS ROAD NEAR GLOBE, ARIZ.--Continued
WATER QUALITY DATA--Continued

DATE	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	ALKALINITY WAT DIS TOT FET FIELD MG/L AS CACO3 (00418)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	BARIUM, DISSOLVED (UG/L AS BA) (01005)
MAR 1985									
01...	72	56	63	950	61	--	1560	<80	--
AUG									
29...	70	54	16	1100	66	48	1720	--	23

DATE	CADMIUM DISSOLVED (UG/L AS CD) (01025)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, DISSOLVED (UG/L AS PB) (01049)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	ZINC, DISSOLVED (UG/L AS ZN) (01090)
MAR 1985									
01...	--	--	80	20	--	14000	130	1200	260
AUG									
29...	11	520	1300	8500	<10	30000	--	1100	970

ANALYSES OF STREAM-BOTTOM MATERIAL

DATE	TIME	NUMBER OF SAMPLING POINTS (COUNT) (00063)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	ALUMINUM, RECOV. FM BOTTOM MATERIAL (UG/G) (01108)	ARSENIC TOTAL IN BOTTOM MATERIAL (UG/G AS AS) (01003)	CADMIUM RECOV. FM BOTTOM MATERIAL (UG/G AS CD) (01028)	COBALT, RECOV. FM BOTTOM MATERIAL (UG/G AS CO) (01038)	COPPER, RECOV. FM BOTTOM MATERIAL (UG/G AS CU) (01043)	IRON, RECOV. FM BOTTOM MATERIAL (UG/G AS FE) (01170)	LEAD, RECOV. FM BOTTOM MATERIAL (UG/G AS PB) (01052)
AUG 1985										
29...	1350	11	61	--	11	<1	10	510	12000	30
29...	1400	1	--	810	13	2	30	6400	85000	20

DATE	MANGANESE, RECOV. FM BOTTOM MATERIAL (UG/G) (01053)	MERCURY RECOV. FM BOTTOM MATERIAL (UG/G AS HG) (71921)	NICKEL, RECOV. FM BOTTOM MATERIAL (UG/G AS NI) (01068)	ZINC, RECOV. FM BOTTOM MATERIAL (UG/G AS ZN) (01093)	REMARK
AUG 1985					
29...	430	--	40	90	FRACTION FINER THAN 2 MILLIMETERS
29...	720	0.20	40	210	SELECTED ORANGE MATERIAL LINING THE LOW-FLOW CHANNEL

SURFACE WATER--Continued

333056110514800 PINAL CREEK AT HICKS CROSSING NEAR GLOBE, ARIZ.

LOCATION.--Lat 33°30'56", long 110°51'48", in NE¼NW¼SE¼ sec. 18, T. 2 N., R. 15 E., at a concrete-paved ford 8.0 km upstream from Inspiration Dam, 14.2 km upstream from mouth, and 15 km northwest of Globe.
DRAINAGE AREA.--403 km^2, including approximately 85 km^2 that is partly or entirely noncontributing due to mine pits and dumps.
CHANNEL ELEVATION.--911 m above National Geodetic Vertical Datum of 1929, from topographic map.

WATER QUALITY DATA

LABORATORY: R, USGS research laboratory (KG Stollenwerk), Lakewood, Colorado; C, USGS National Water-Quality Laboratory, Arvada, Colorado.
REMARKS: <, Actual value is known to be less than the value shown.

DATE	TIME	LABORATORY	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE WATER (DEG C) (00010)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	CALCIUM DISSOLVED (MG/L AS CA) (00915)
MAR 1985										
01...	1545	C	24	2260	7.81	21.5	680	7.8	100	--
01...	1550	R	--	--	--	--	--	--	--	410

DATE	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	ALKALINITY WAT DIS TOT FET FIELD MG/L AS CACO3 (00418)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)
MAR 1985										
01...	--	--	69	1200	--	1970	--	0.300	0.430	1.3
01...	81	60	69	1000	63	--	1670	--	--	--

DATE	PHOSPHOROUS TOTAL (MG/L AS P) (00665)	PHOSPHOROUS ORTHO, DISSOLVED (MG/L AS P) (00671)	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL) (01105)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	COPPER, TOTAL RECOVERABLE (UG/L AS CU) (01042)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOVERABLE (UG/L AS FE) (01045)	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)
MAR 1985									
01...	0.280	<0.010	11000	<100	3800	25	33000	30	16
01...	--	--	--	<80	--	40	--	<20	--

DATE	LEAD, DISSOLVED (UG/L AS PB) (01049)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ZINC, DISSOLVED (UG/L AS ZN) (01090)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)
MAR 1985									
01...	1	19000	17000	--	--	420	70	550	36
01...	--	--	17000	170	1400	--	70	--	--

SURFACE WATER--Continued
333056110514800 PINAL CREEK AT HICKS CROSSING NEAR GLOBE, ARIZ.--Continued
WATER QUALITY DATA--Continued

ANALYSES OF STREAM-BOTTOM MATERIAL (FRACTION FINER THAN 2 MILLIMETERS)

DATE	TIME	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	NUMBER OF SAMPLING POINTS (COUNT) (00063)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	ARSENIC TOTAL IN BOTTOM MATERIAL (UG/G AS AS) (01003)	CADMIUM RECOV. FM BOTTOM MATERIAL (UG/G AS CD) (01028)	COBALT, RECOV. FM BOTTOM MATERIAL (UG/G AS CO) (01038)	COPPER, RECOV. FM BOTTOM MATERIAL (UG/G AS CU) (01043)	IRON, RECOV. FM BOTTOM MATERIAL (UG/G AS FE) (01170)	LEAD, RECOV. FM BOTTOM MATERIAL (UG/G AS PB) (01052)	MANGANESE, RECOV. FM BOTTOM MATERIAL (UG/G) (01053)	NICKEL, RECOV. FM BOTTOM MATERIAL (UG/G AS NI) (01068)	ZINC, RECOV. FM BOTTOM MATERIAL (UG/G AS ZN) (01093)
AUG 1985													
29...	1530	0.0	24	62	9	<1	20	380	8800	20	460	20	80

333147110520500 PINAL CREEK AT BLUMER DRIVEWAY NEAR GLOBE, ARIZ.

LOCATION.--Lat 33°31'51", long 110°52'08", in SE¼SE¼NW¼ sec. 7, T. 2 N., R. 15 E., at an unpaved ford 1.7 km downstream from Hicks Crossing, 6.3 km upstream from Inspiration Dam, 12.5 km upstream from mouth, and 17 km northwest of Globe.
DRAINAGE AREA.--455 km^2, including spproximately 85 km^2 that is partly or entirely noncontributing due to mine pits and dumps.
CHANNEL ELEVATION.--895 m above National Geodetic Vertical Datum of 1929, from topographic map.

WATER QUALITY DATA

LABORATORY: R, USGS research laboratory (KG Stollenwerk), Lakewood, Colorado; C, USGS National Water-Quality Laboratory, Arvada, Colorado.
REMARKS: <, Actual value is known to be less than the value shown; >, Actual value is known to be greater than the value shown.

DATE	TIME	LABORATORY	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)
MAR 1985												
01...	1800	R	24	2150	7.00	--	17.0	675	7.5	88	420	84
AUG												
28...	1000	C	0.47	2880	6.90	--	23.5	689	6.6	87	550	120
MAY 1986												
07...	0930	R	0.62	3000	5.91	14.0	10.0	679	--	--	570	120
JUL 1987												
30...	0830	C	0.32	3500	6.43	28.0	21.0	685	5.6	72	660	140
30...	0835	R	--	--	--	--	--	--	--	--	580	140
SEP												
23...	0915	C	0.37	3580	6.40	29.0	22.0	690	6.8	87	640	140
23...	0920	R	--	--	--	--	--	--	--	--	730	180

SURFACE WATER—Continued

333147110520500 PINAL CREEK AT ELMER DRIVEWAY NEAR GLOBE, ARIZ.

WATER QUALITY DATA—Continued

DATE	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY, WAT DIS TOT FET FIELD MG/L AS CAC03 (00418)	ALKA-LINITY, WAT DIS TOT IT FIELD MG/L AS CAC03 (39086)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01108)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)
MAR 1985												
01...	58	--	77	77	1100	63	--	--	--	1820	<80	--
AUG												
28...	69	--	101	--	1800	84	--	36	--	2740	--	31
MAY 1986												
07...	65	--	--	94	1800	86	--	--	--	2710	<80	--
JUL 1987												
30...	81	--	89	85	2000	110	0.40	46	3540	3130	--	22
30...	72	--	89	--	2100	110	--	57	--	3140	<160	--
SEP												
23...	83	5.2	91	93	2200	93	0.40	43	3590	3300	--	26
23...	210	--	91	--	2100	96	--	--	--	3410	--	--

DATE	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
MAR 1985											
01...	--	--	--	60	20	--	17000	170	--	1600	170
AUG											
28...	8	--	<9	50	<9	<10	15000	--	--	1800	58
MAY 1986											
07...	<50	--	<20	50	30	--	15000	80	--	1800	80
JUL 1987											
30...	<3	10	10	30	<3	50	36000	200	3.0	2100	71
30...	<100	--	<40	<20	<40	--	33000	<100	--	2000	30
SEP											
23...	5	<10	10	60	73	<30	35000	180	10	2100	46
23...	--	--	--	--	--	--	38000	--	--	2200	--

ANALYSES OF STREAM-BOTTOM MATERIAL (FRACTION FINER THAN 2 MILLIMETERS)

DATE	TIME	NUMBER OF SAM-PLING POINTS (COUNT) (00063)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	ARSENIC TOTAL IN BOT-TOM MA-TERIAL (UG/G AS AS) (01003)	CADMIUM RECOV. FM BOT-TOM MA-TERIAL (UG/G AS CD) (01028)	COBALT, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS CO) (01038)	COPPER, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS CU) (01043)	IRON, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS FE) (01170)	LEAD, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS PB) (01052)	MANGA-NESE, RECOV. FM BOT-TOM MA-TERIAL (UG/G) (01053)	NICKEL, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS NI) (01068)	ZINC, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS ZN) (01093)
AUG 1985												
28...	1000	>3	74	7	<1	<10	330	8700	30	350	20	70

SURFACE WATER--Continued

333223110522600 PINAL CREEK AT SETKA RANCH NEAR GLOBE, ARIZ.

LOCATION.--Lat 33°32'23", long 110°52'26", in SE¼SW¼SW¼ sec. 6, T. 2 N., R. 15 E., at an unpaved ford 2.9 km downstream from Hicks Crossing, 5.1 km upstream from Inspiration Dam, 11.3 km upstream from mouth, and 18 km northwest of Globe.
DRAINAGE AREA.--458 km^2, including approximately 85 km^2 that is noncontributing due to mine pits and dumps.
CHANNEL ELEVATION.--884 m above National Geodetic Vertical Datum of 1929, from topographic map.

WATER QUALITY DATA

LABORATORY: R, USGS research laboratory (KG Stollenwerk), Lakewood, Colorado; C, USGS National Water-Quality Laboratory, Arvada, Colorado.
REMARKS: <, Actual value is known to be less than the value shown.

DATE	TIME	LABORATORY	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)
JUL 1987												
30...	1130	C	4.8	3500	7.00	32.0	22.5	686	7.0	91	650	130
30...	1135	R	--	--	--	--	--	--	--	--	560	130
SEP												
23...	1320	C	5.3	3650	6.66	30.0	22.0	689	10.2	131	650	140
23...	1325	R	--	--	--	--	--	--	--	--	760	180

DATE	SODIUM, DISSOLVED (MG/L AS NA) (00930)	ALKALINITY, WAT DIS TOT FET FIELD MG/L AS CACO3 (00418)	ALKALINITY, WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	BARIUM, DISSOLVED (UG/L AS BA) (01005)
JUL 1987											
30...	78	86	85	2100	110	0.20	58	3590	3230	--	23
30...	72	86	--	2000	110	--	60	--	3040	<160	--
SEP											
23...	84	97	98	2300	92	0.20	59	3600	3440	--	26
23...	210	97	--	2200	96	--	--	--	3530	--	--

DATE	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, DISSOLVED (UG/L AS PB) (01049)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	SILVER, DISSOLVED (UG/L AS AG) (01075)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	ZINC, DISSOLVED (UG/L AS ZN) (01090)
JUL 1987											
30...	3	10	6	<30	<3	40	52000	280	3.0	2200	26
30...	<100	--	<40	<20	100	--	47000	240	--	2100	<30
SEP											
23...	<3	20	20	<30	41	<30	55000	270	13	2300	32
23...	--	--	--	--	--	--	61000	--	--	2500	--

SURFACE WATER--Continued

09498400 PINAL CREEK AT INSPIRATION DAM NEAR GLOBE, ARIZ.

LOCATION.--Lat 33°34'23", long 110°54'02", in NE¼NW¼SE¼ sec. 26, T. 3 N., R. 14 E., in Tonto National Forest, on right bank 6 m upstream from Inspiration Dam, 6.2 km upstream from mouth, and 22 km northwest of Globe.
DRAINAGE AREA.--504 km^2, including approximately 85 km^2 that is noncontributing due to mine pits and dumps.
REMARKS.--Inspiration Dam is a masonry structure approximately 2 m tall and 10 m long. It was built about 1940 as a diversion dam, but it soon filled with sediment and was replaced by a well field 2 km upstream. Since at least 1979 it has been filled to the crest with sediment.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1980 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 835 m above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair.

Monthly and yearly mean discharge, in cubic meters per second

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	THE YEAR
1984	1.11	0.27	0.32	0.31	0.30	0.27	0.25	0.27	0.20	0.36	0.26	0.24	0.35
1985	.75	.26	1.65	1.21	1.19	.81	.50	.29	.25	.21	.20	.43	.64
1986	.27	.27	.20	.20	.29	.45	.36	.25	.20	.32	.33	.28	.29
1987	.33	.27	.30	.29	.29	.25	.26	.20	.20	.17	.22	.10	.24

Monthly and yearly discharge, in thousands of cubic meters

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	THE YEAR
1984	2970	712	867	838	746	721	647	718	525	961	702	611	11020
1985	2010	675	4420	3250	2880	2160	1290	781	652	571	529	1120	20340
1986	723	708	537	530	702	1200	943	681	530	870	889	736	9050
1987	878	710	812	772	693	675	669	539	514	448	591	258	7560

WATER-QUALITY RECORDS

PERIOD OF RECORD.--November 1979 to current year.

WATER QUALITY DATA

LABORATORY: Analyses preceded by ** are by K.G. Stollenwerk, USGS research laboratory, Lakewood, Colorado.
REMARKS: <, Actual value is known to be less than the value shown; K, Based on nonideal colony count.

DATE	TIME	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	TURBIDITY (NTU) (00076)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	OXYGEN DEMAND, CHEMICAL (HIGH LEVEL) (MG/L) (00340)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
OCT 1983												
31...	1655	8.2	2980	6.80	19.0	20.0	6.7	692	7.7	94	--	--
NOV												
22...	1230	11	3000	7.50	6.0	10.0	50	691	11.2	111	--	--
DEC												
22...	1030	10	3000	7.80	15.0	14.0	6.0	692	11.1	120	--	--
JAN 1984												
27...	1640	11	2520	6.40	19.5	17.0	0.20	690	8.4	97	--	--
FEB												
23...	1400	5.9	3040	7.60	16.5	18.5	5.0	689	8.4	101	--	--

SURFACE WATER--Continued
09498400 FINAL CREEK AT INSPIRATION DAM NEAR GLOBE, ARIZ.--Continued
WATER QUALITY DATA--Continued

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
MAR												
22...	1320	10	2710	8.00	23.0	22.0	3.5	683	7.7	99	--	--
APR												
25...	1230	9.4	3150	7.30	27.0	21.0	0.70	681	8.5	108	--	--
MAY												
24...	1130	12	3210	7.50	31.0	23.0	0.60	687	7.5	98	--	--
JUN												
28...	1430	10	3050	8.20	37.0	33.0	25	687	--	--	--	--
JUL												
26...	1700	5.0	2750	6.80	29.5	28.5	50	688	6.8	98	--	--
AUG												
30...	1415	8.3	3010	7.90	31.5	34.0	45	687	5.8	92	--	--
SEP												
28...	1255	8.6	3020	7.80	26.0	29.0	45	690	6.7	98	--	--
OCT												
24...	1015	9.3	3210	7.50	21.5	20.5	1.7	687	7.2	90	--	--
NOV												
27...	1355	11	2950	7.90	13.0	17.0	27	697	8.1	93	--	--
DEC												
18...	1440	9.3	2960	7.10	15.0	18.0	20	689	8.0	95	--	--
JAN 1985												
29...	1600	50	1800	--	13.0	12.5	81	687	--	--	--	--
MAR												
01...	1700	31	2850	7.95	18.5	18.0	140	688	8.2	97	--	--
**01...	1705	--	--	--	--	--	--	--	--	--	--	--
26...	1300	18	2900	7.98	22.0	21.5	33	688	7.5	95	--	--
APR												
24...	1300	13	--	7.99	23.0	23.0	20	688	6.8	88	--	--
MAY												
21...	1540	8.2	2800	7.95	35.0	25.0	8.3	686	7.3	100	--	--
JUN												
27...	1230	8.9	3000	7.80	37.0	22.5	10	690	8.2	106	--	--
JUL												
26...	1325	8.6	2900	8.10	43.0	27.0	1.4	687	7.3	103	--	--
AUG												
28...	1400	7.6	2990	8.15	37.5	26.0	1.5	693	7.0	96	--	--
SEP												
24...	1445	9.6	2920	7.80	30.5	25.0	3.0	692	7.1	97	--	--

SURFACE WATER--Continued
09498400 PINAL CREEK AT INSPIRATION DAM NEAR GLOBE, ARIZ.--Continued
WATER QUALITY DATA--Continued

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
NOV 1985												
25...	1400	9.7	2910	8.00	12.5	15.0	1.0	686	8.7	98	--	--
FEB 1986												
28...	1350	9.8	2900	8.10	23.5	20.0	1.0	693	7.9	97	--	--
MAY												
**07...	1230	11	3420	7.24	16.0	21.0	--	684	7.3	91	--	--
23...	1115	8.7	3030	8.00	28.0	24.5	1.0	688	8.0	107	--	--
AUG												
19...	1100	8.5	2900	7.90	36.0	26.0	1.6	695	7.2	99	--	--
NOV												
04...	1200	11	3150	7.82	18.5	19.5	30	693	8.1	98	62	500
28...	1200	9.9	3350	7.60	12.0	14.0	1.0	705	8.9	95	43	K12
DEC												
31...	1205	11	3300	8.07	11.0	14.5	0.50	691	9.0	98	43	K21
JAN 1987												
28...	1200	10	2420	7.70	17.0	14.0	0.40	690	9.4	102	44	130
MAR												
02...	1410	9.5	2840	8.05	13.5	12.0	84	691	9.7	100	48	K30
25...	1055	12	3010	8.00	11.5	15.0	0.50	685	14.0	157	50	K1
APR												
24...	1200	9.1	3180	8.00	29.0	22.0	2.0	692	7.9	101	46	31
MAY												
20...	1045	7.2	3120	8.05	25.0	21.0	1.4	685	8.1	103	43	K13
JUN												
25...	1200	7.1	3320	7.51	31.0	23.0	0.70	689	7.5	98	56	K16
JUL												
30...	1430	4.9	3240	7.96	29.0	25.0	0.70	688	7.7	105	50	77
**30...	1435	--	--	--	--	--	--	--	--	--	--	--
**31...	0900	5.2	3260	7.85	24.0	22.5	--	--	--	--	--	--
AUG												
19...	1235	4.9	3220	7.99	33.5	30.0	1.2	689	6.3	94	44	K10
SEP												
23...	1735	4.6	3310	8.00	26.0	25.0	0.60	690	9.6	130	98	K8
**23...	1740	--	--	--	--	--	--	--	--	--	--	--

SURFACE WATER--Continued
09498400 PINAL CREEK AT INSPIRATION DAM NEAR GLOBE, ARIZ.--Continued
WATER QUALITY DATA--Continued

DATE	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY WAT DIS TOT FET FIELD MG/L AS CACO3 (39036)	ALKALINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)
OCT 1983												
31...	--	480	110	66	4.7	140	--	1800	77	0.30	43	3000
NOV												
22...	--	510	120	64	4.7	153	--	1800	75	0.30	44	2940
DEC												
22...	--	580	110	64	4.1	141	--	1700	76	0.30	44	3000
JAN 1984												
27...	--	640	130	60	4.4	141	--	1800	79	0.90	46	3020
FEB												
23...	--	580	130	67	4.3	116	115	1600	83	0.30	47	3030
MAR												
22...	--	570	120	65	4.5	121	--	1900	85	0.20	46	3070
APR												
25...	--	600	140	72	4.6	134	--	1800	83	0.30	48	3110
MAY												
24...	--	590	130	69	4.5	191	--	1800	88	0.20	48	3140
JUN												
28...	--	570	120	71	4.7	152	--	1800	86	0.40	45	3130
JUL												
26...	--	560	130	72	5.3	207	--	1900	81	0.30	45	3170
AUG												
30...	--	540	120	70	5.1	144	--	1800	79	0.30	47	3090
SEP												
28...	--	580	130	72	4.9	126	--	1900	81	0.40	46	3030
OCT												
24...	--	560	120	64	4.4	132	--	1900	78	0.30	45	2920
NOV												
27...	--	600	120	67	4.5	128	130	1800	81	0.30	49	2980
DEC												
18...	--	570	100	65	4.7	133	--	1800	77	0.30	43	2830
JAN 1985												
29...	--	250	49	38	3.2	--	--	870	42	0.60	26	1440
MAR												
01...	--	450	92	64	5.0	100	100	1400	69	0.80	41	2410
**01...	--	460	95	60	--	--	--	1400	69	--	--	--
26...	--	550	110	64	4.8	106	--	1500	78	0.70	46	2720
APR												
24...	--	360	110	70	4.6	99	--	1800	77	0.70	47	2840
MAY												
21...	--	550	130	71	4.2	112	--	1800	79	0.60	45	2870

SURFACE WATER--Continued
09498400 PINAL CREEK AT INSPIRATION DAM NEAR GLOBE, ARIZ.--Continued
WATER QUALITY DATA--Continued

DATE	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY WAT DIS TOT FET FIELD MG/L AS CACO3 (39036)	ALKALINITY WAT DIS TOT IT FIELD MG/L AS CAC03 (39086)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)
JUN												
27...	--	470	120	65	4.2	104	106	1500	80	0.40	47	2920
JUL												
26...	--	480	110	58	4.3	188	--	1600	78	0.20	45	2840
AUG												
28...	--	590	120	62	4.3	121	--	1800	82	0.20	45	2900
SEP												
24...	--	600	120	>5.0	4.3	129	--	1800	81	0.20	--	2850
NOV												
25...	--	--	--	--	4.0	119	121	1500	51	--	--	2850
FEB 1986												
28...	--	--	--	--	4.4	124	119	1900	90	--	--	2950
MAY												
**07...	--	570	120	71	--	122	122	1700	86	--	--	--
23...	--	--	--	--	4.1	116	116	1800	93	--	--	3090
AUG												
19...	--	--	--	--	4.3	122	122	1900	100	--	--	3080
NOV												
04...	--	570	120	76	4.3	130	--	1900	88	0.20	--	3000
28...	22	570	130	79	4.2	120	117	1800	95	0.20	--	3040
DEC												
31...	K3	520	120	80	4.3	132	133	1800	75	0.20	--	3100
JAN 1987												
28...	K11	530	110	74	4.8	110	--	1800	90	0.20	--	3090
MAR												
02...	140	440	110	70	3.9	110	109	1600	82	0.20	--	2670
25...	K13	490	120	80	3.9	123	124	1900	100	0.20	--	3050
APR												
24...	K17	500	120	81	4.2	116	116	1900	100	0.20	--	3190
MAY												
20...	32	550	120	74	4.2	115	113	1900	100	0.20	--	3220
JUN												
25...	39	560	130	71	4.4	91	90	1600	100	0.20	--	3280
JUL												
30...	--	580	130	78	4.7	163	163	2000	100	0.20	54	3320
**30...	--	520	120	68	--	--	--	1900	97	--	60	--
**31...	--	500	120	66	--	--	--	1800	94	--	58	--
AUG												
19...	110	530	120	77	5.0	124	125	1800	100	0.20	--	3330
SEP												
23...	88	570	130	75	6.0	117	116	2100	110	0.20	54	3370
**23...	--	650	150	110	--	--	--	2000	90	--	--	--

SURFACE WATER--Continued

09498400 PINAL CREEK AT INSPIRATION DAM NEAR GLOBE, ARIZ.--Continued

WATER QUALITY DATA--Continued

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BORON, DIS-SOLVED (UG/L AS B) (01020)
OCT 1983											
31...	2670	42	0.200	--	0.60	0.110	0.040	--	--	--	60
NOV											
22...	2720	148	0.200	--	0.70	0.210	0.010	--	--	--	50
DEC											
22...	2670	40	0.100	--	0.30	0.070	0.010	--	--	--	60
JAN 1984											
27...	2860	13	<0.100	--	0.30	0.090	0.010	--	--	--	30
FEB											
23...	2790	31	<0.100	--	0.20	0.050	0.030	--	--	--	60
MAR											
22...	2880	7	<0.100	--	0.40	0.040	0.020	--	--	--	60
APR											
25...	2840	12	<0.100	--	0.50	0.040	0.020	--	--	--	60
MAY											
24...	2860	13	<0.100	--	0.20	0.020	0.030	--	--	--	60
JUN											
28...	2800	112	<0.100	--	0.40	0.120	0.040	--	--	--	60
JUL											
26...	2930	288	0.200	--	1.0	0.260	0.060	--	--	--	60
AUG											
30...	2760	278	<0.100	--	0.40	0.310	0.030	--	--	--	70
SEP											
28...	2900	256	0.100	--	0.50	0.280	0.040	--	--	--	70
OCT											
24...	2860	69	<0.100	0.260	0.50	0.100	--	--	--	--	--
NOV											
27...	2820	113	0.100	0.240	0.40	0.150	--	--	--	--	--
DEC											
18...	2750	66	0.200	0.210	0.20	0.160	0.030	--	--	--	--
JAN 1985											
29...	1290	256	0.300	0.360	0.70	0.470	<0.010	--	--	--	--
MAR											
01...	2200	206	0.300	0.130	0.90	0.280	0.030	--	--	--	--
**01...	2090	--	--	--	--	--	--	--	--	--	--
26...	2420	109	0.200	0.270	0.30	0.170	0.020	--	--	--	--
APR											
24...	2550	56	<0.100	0.260	0.60	0.080	0.020	--	--	--	--
MAY											
21...	2770	32	<0.100	0.280	0.30	<0.010	<0.010	--	--	--	--
JUN											
27...	2380	16	<0.100	0.380	0.30	0.030	0.020	--	--	--	--
JUL											
26...	2510	12	<0.100	0.280	0.40	0.020	--	--	--	--	--
AUG											
28...	2780	5	<0.100	0.150	0.40	0.060	<0.010	--	--	--	--
SEP											
24...	--	10	0.100	0.210	0.40	0.070	0.030	--	--	--	--

SURFACE WATER--Continued
09498400 PINAL CREEK AT INSPIRATION DAM NEAR GLOBE, ARIZ.--Continued
WATER QUALITY DATA--Continued

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHOROUS TOTAL (MG/L AS P) (00665)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BORON, DIS-SOLVED (UG/L AS B) (01020)
NOV											
25...	--	9	--	--	--	--	--	--	--	--	--
FEB 1986											
28...	--	3	--	--	--	--	--	--	--	--	--
MAY											
**07...	2570	--	--	--	--	--	--	--	--	--	--
23...	--	9	--	--	--	--	--	--	--	--	--
AUG											
19...	--	11	--	--	--	--	--	--	--	--	--
NOV											
04...	2860	158	<0.100	0.330	0.60	0.060	--	3	<1	<100	70
28...	2770	8	<0.100	0.170	0.50	0.050	--	1	1	100	70
DEC											
31...	2700	2	<0.100	0.350	0.60	0.030	--	1	<1	100	60
JAN 1987											
28...	2700	2	<0.100	0.250	0.80	0.020	--	<1	<1	100	70
MAR											
02...	2390	216	<0.100	0.240	0.70	0.020	--	3	<1	<100	50
25...	2790	6	<0.100	0.240	0.20	0.020	--	<1	<1	<100	60
APR											
24...	2800	6	<0.100	0.380	0.60	0.040	--	<1	<1	<100	70
MAY											
20...	2840	9	<0.100	0.260	0.60	0.040	--	<1	<1	<100	70
JUN											
25...	2540	8	<0.100	0.200	0.50	0.010	--	<1	<1	12	70
JUL											
30...	3070	11	<0.100	0.160	1.0	0.020	--	<1	<1	<100	60
**30...	2840	--	--	--	--	--	--	--	--	--	--
**31...	2680	--	--	--	--	--	--	--	--	--	--
AUG											
19...	2740	5	<0.100	0.150	0.50	0.030	--	<1	<1	<100	80
SEP											
23...	3150	2	<0.100	0.180	1.0	0.030	--	<1	<1	<100	70
**23...	3030	--	--	--	--	--	--	--	--	--	--

SURFACE WATER--Continued

09498400 PINAL CREEK AT INSPIRATION DAM NEAR GLOBE, ARIZ.--Continued

WATER QUALITY DATA--Continued

DATE	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)
OCT 1983											
31...	1	--	8	<1	--	--	85	3	--	50	4
NOV											
22...	2	--	9	<1	--	--	370	8	--	60	10
DEC											
22...	4	--	3	<1	--	--	80	7	--	20	3
JAN 1984											
27...	1	--	2	<1	--	--	50	10	--	40	<1
FEB											
23...	1	--	4	<1	--	--	50	7	--	30	3
MAR											
22...	2	--	2	<1	--	--	110	12	--	90	2
APR											
25...	<1	--	1	1	--	--	70	6	--	70	1
MAY											
24...	<1	--	4	<1	--	--	30	5	--	40	2
JUN											
28...	3	--	6	<1	--	--	240	9	--	50	7
JUL											
26...	1	--	14	<1	--	--	540	31	--	40	18
AUG											
30...	1	--	10	<1	--	--	380	12	--	30	16
SEP											
26...	<1	--	8	<1	--	--	500	12	--	60	10
OCT											
24...	2	--	--	--	4	1	300	11	1500	50	3
NOV											
27...	1	--	--	--	4	2	230	8	2700	30	7
DEC											
18...	1	--	--	--	10	2	160	22	3100	40	5
JAN 1985											
29...	<1	--	--	--	30	8	1500	37	45000	4	48
MAR											
01...	<1	--	--	--	30	20	2000	16	25000	20	19
**01...	--	--	--	--	--	--	--	40	--	<20	--
26...	5	--	--	--	60	50	850	21	9800	30	7
APR											
24...	5	--	--	--	70	60	780	31	560	30	6
MAY											
21...	2	--	--	--	50	50	530	23	2900	40	14
JUN											
27...	2	--	--	--	20	20	270	22	1700	30	<1
JUL											
26...	2	--	--	--	7	6	24	11	190	40	<1
AUG											
28...	2	--	--	--	7	5	20	14	220	40	5
SEP											
24...	1	--	--	--	5	5	46	11	940	40	2

SURFACE WATER--Continued
09498400 PINAL CREEK AT INSPIRATION DAM NEAR GLOBE, ARIZ.--Continued
WATER QUALITY DATA--Continued

DATE	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)
NOV											
25...	1	--	--	--	4	--	29	--	100	--	<1
FEB 1986											
26...	2	--	--	--	8	--	15	--	130	--	3
MAY											
**07...	--	<50	--	--	--	<20	--	20	--	30	--
23...	1	--	--	--	4	--	17	--	100	--	2
AUG											
19...	2	--	--	--	2	--	12	--	200	--	<5
NOV											
04...	2	2	<1	<1	--	--	520	16	4500	30	37
28...	2	2	1	1	--	--	29	10	390	20	<5
DEC											
31...	<1	2	3	<1	--	--	14	9	70	30	<5
JAN 1987											
28...	1	1	2	<1	--	--	14	6	40	30	<5
MAR											
02...	2	1	<1	<1	--	--	730	23	4700	20	29
25...	2	2	<1	<1	--	--	18	10	80	20	<5
APR											
24...	3	2	<1	<1	--	--	31	11	220	20	<5
MAY											
20...	4	1	--	3	--	--	17	7	100	30	<5
JUN											
25...	<1	1	9	1	--	--	10	4	100	4	<5
JUL											
30...	<1	2	4	<1	--	--	9	4	40	30	<5
**30...	--	<100	--	--	--	<40	--	<20	--	<40	--
**31...	--	<100	--	--	--	<40	--	<20	--	200	--
AUG											
19...	1	<1	2	3	--	--	21	9	100	20	<5
SEP											
23...	1	1	8	<1	--	--	15	7	100	30	<5
**23...	--	--	--	--	--	--	--	--	--	--	--

SURFACE WATER--Continued

09498400 PINAL CREEK AT INSPIRATION DAM NEAR GLOBE, ARIZ.--Continued

WATER QUALITY DATA--Continued

DATE	LEAD, DISSOLVED (UG/L AS PB) (01049)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOVERABLE (UG/L AS HG) (71900)	SELENIUM, TOTAL (UG/L AS SE) (01147)	SELENIUM, DISSOLVED (UG/L AS SE) (01145)	SILVER, DISSOLVED (UG/L AS AG) (01075)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ZINC, DISSOLVED (UG/L AS ZN) (01090)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)
OCT 1983											
31...	--	--	6300	<0.10	--	--	--	80	50	275	6.1
NOV											
22...	--	--	8500	0.10	--	--	--	70	20	236	7.0
DEC											
22...	--	--	10000	<0.10	--	--	--	50	50	116	3.1
JAN 1984											
27...	--	--	13000	<0.10	--	--	--	40	40	43	1.3
FEB											
23...	--	--	13000	<0.10	--	--	--	50	20	28	0.45
MAR											
22...	--	--	15000	0.30	--	--	--	20	20	21	0.57
APR											
25...	--	--	15000	<0.10	--	--	--	90	40	9	0.23
MAY											
24...	--	--	15000	<0.10	--	--	--	40	30	21	0.68
JUN											
28...	--	--	14000	0.20	--	--	--	60	60	145	3.9
JUL											
26...	--	--	12000	0.10	--	--	--	100	20	327	4.4
AUG											
30...	--	--	10000	0.20	--	--	--	80	20	338	7.6
SEP											
28...	--	--	12000	<0.10	--	--	--	80	10	494	11
OCT											
24...	--	14000	13000	--	--	--	--	30	20	173	4.3
NOV											
27...	--	17000	15000	<0.10	--	--	--	50	20	156	4.6
DEC											
18...	--	12000	12000	<0.10	--	--	--	60	30	204	5.1
JAN 1985											
29...	--	2600	6800	<0.10	--	--	--	290	29	529	71
MAR											
01...	--	20000	16000	<0.10	--	--	--	260	30	471	39
**01...	--	--	16000	--	--	--	--	--	80	--	--
26...	--	22000	--	0.30	--	--	--	240	70	137	6.7
APR											
24...	--	23000	26000	<0.10	--	--	--	230	90	86	3.0
MAY											
21...	--	21000	26000	<0.10	--	--	--	130	60	74	1.6
JUN											
27...	--	21000	25000	0.10	--	--	--	90	50	5	0.12
JUL											
26...	--	20000	24000	0.10	--	--	--	40	20	3	0.05
AUG											
28...	--	21000	--	0.10	--	--	--	50	30	--	--
SEP											
24...	--	19000	15000	<0.10	--	--	--	100	20	33	0.86
NOV											
25...	--	17000	--	--	--	--	--	<10	--	28	0.73
FEB 1986											
28...	--	20000	--	--	--	--	--	30	--	5	0.13

SURFACE WATER--Continued
09498400 PINAL CREEK AT INSPIRATION DAM NEAR GLOBE, ARIZ.--Continued
WATER QUALITY DATA--Continued

DATE	LEAD, DISSOLVED (UG/L AS PB) (01049)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOVERABLE (UG/L AS HG) (71900)	SELENIUM, TOTAL (UG/L AS SE) (01147)	SELENIUM, DISSOLVED (UG/L AS SE) (01145)	SILVER, DISSOLVED (UG/L AS AG) (01075)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ZINC, DISSOLVED (UG/L AS ZN) (01090)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)
MAY											
**07...	--	--	18000	--	--	--	--	--	40	--	--
23...	--	20000	--	--	--	--	--	20	--	6	0.14
AUG											
18...	--	25000	--	--	--	--	--	30	--	11	0.25
NOV											
04...	<5	20000	19000	0.10	1	<1	<1.0	80	40	221	6.7
28...	5	24000	23000	<0.10	<1	<1	<1.0	80	30	4	0.11
DEC											
31...	<5	23000	23000	<0.10	<1	<1	<1.0	30	20	2	0.06
JAN 1987											
28...	<5	25000	24000	<0.10	<1	<1	<1.0	20	20	4	0.11
MAR											
02...	<5	23000	23000	<0.10	1	<1	<1.0	60	20	192	4.8
25...	<5	25000	26000	<0.10	<1	<1	1.0	30	30	3	0.09
APR											
24...	<5	28000	26000	0.20	<1	<1	<1.0	30	20	9	0.22
MAY											
20...	<5	25000	24000	<0.10	<1	<1	<1.0	20	20	19	0.37
JUN											
25...	<5	24000	22000	<0.10	<1	<1	<1.0	20	23	12	0.23
JUL											
30...	<5	23000	22000	<0.10	<1	<1	<1.0	20	20	4	0.05
**30...	--	--	22000	--	--	--	--	--	<30	--	--
**31...	--	--	22000	--	--	--	--	--	<30	--	--
AUG											
19...	<5	32000	30000	<0.10	<1	<1	1.0	20	20	10	0.13
SEP											
23...	<5	33000	35000	<0.10	<1	<1	<1.0	10	20	13	0.16
**23...	--	--	28000	--	--	--	--	--	--	--	--

ANALYSES OF STREAM-BOTTOM MATERIAL

DATE	TIME	NUMBER OF SAMPLING POINTS (COUNT) (00063)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	ARSENIC TOTAL IN BOTTOM MATERIAL (UG/G AS AS) (01003)	CADMIUM RECOV. FM BOTTOM MATERIAL (UG/G AS CD) (01028)	CHROMIUM, RECOV. FM BOTTOM MATERIAL (UG/G) (01029)	COBALT, RECOV. FM BOTTOM MATERIAL (UG/G AS CO) (01038)	COPPER, RECOV. FM BOTTOM MATERIAL (UG/G AS CU) (01043)	IRON, RECOV. FM BOTTOM MATERIAL (UG/G AS FE) (01170)
AUG 1985									
28...	1400	5	65	9	<1	--	20	230	7000
28...	1430	1	--	--	4	90	--	620	9300

DATE	LEAD, RECOV. FM BOTTOM MATERIAL (UG/G AS PB) (01052)	MANGANESE, RECOV. FM BOTTOM MATERIAL (UG/G) (01053)	NICKEL, RECOV. FM BOTTOM MATERIAL (UG/G AS NI) (01068)	ZINC, RECOV. FM BOTTOM MATERIAL (UG/G AS ZN) (01093)	REMARKS
AUG 1985					
28...	30	1300	20	80	FRACTION FINER THAN 2 MILLIMETERS
28...	20	40000	--	190	SELECTED STREAM BANK SEDIMENT CEMENTED WITH BLACK MATERIAL

SURFACE WATER--Continued

333706110545800 PINAL CREEK AT MOUTH NEAR GLOBE, ARIZ.

LOCATION.--Lat 33°37'06", long 110°54'58", in SW¼NW¼ sec. 10, T. 3 N., R. 14 E. (unsurveyed), 100 m upstream from mouth, and 27 km northwest of Globe.

DRAINAGE AREA.--516 km^2, including approximately 85 km^2 that is noncontributing due to mine pits and dumps.

CHANNEL ELEVATION.--672 m above National Geodetic Vertical Datum of 1929, from topographic map.

WATER QUALITY DATA

LABORATORY: R, USGS research laboratory (KG Stollenwerk), Lakewood, Coloredo; C, USGS National Water-Quality Laboratory, Arvada, Colorado.
REMARKS: <, Actual value is known to be less than the value shown.

DATE	TIME	LABORATORY	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE AIR (DEG C) (00020)	TEMPERATURE WATER (DEG C) (00010)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)
AUG 1985										
28...	1700	C	6.6	2920	8.40	29.0	28.0	703	6.8	95
MAY 1986										
07...	1700	R	10	2850	7.56	--	10.0	682	--	--
JUL 1987										
31...	1215	C	5.0	3180	8.33	32.0	29.5	705	7.1	102
SEP										
24...	1225	C	5.5	3270	8.20	31.0	25.5	705	13.4	179
24...	1230	R	--	--	--	--	--	--	--	--

DATE	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY, WAT DIS TOT FET FIELD MG/L AS CACO3 (00418)	ALKALINITY, WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)
AUG 1985									
28...	530	120	68	--	104	--	1800	83	--
MAY 1986									
07...	570	120	70	--	145	--	1700	90	--
JUL 1987									
31...	600	120	73	--	113	111	1800	99	0.30
SEP									
24...	600	130	80	3.9	102	102	2000	79	0.30
24...	640	150	110	--	102	--	1900	96	--

DATE	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COPPER, DISSOLVED (UG/L AS CU) (01040)
AUG 1985									
28...	50	--	2730	--	24	<3	--	<9	<30
MAY 1986									
07...	--	--	2630	<80	--	<50	--	<20	<10
JUL 1987									
31...	49	3190	2830	--	11	<3	9	5	<30
SEP									
24...	50	3260	3030	--	12	<3	<10	<9	<30
24...	--	--	3000	--	--	--	--	--	--

SURFACE WATER—Continued
333706110545800 FINAL CREEK AT MOUTH NEAR GLOBE, ARIZ.
WATER QUALITY DATA—Continued

DATE	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
AUG 1985									
28...	<9	<30	17000	--	--	1900	23	--	--
MAY 1986									
07...	<20	--	12000	<50	--	2000	30	--	--
JUL 1987									
31...	15	40	20000	110	<3.0	1900	<9	18	0.24
SEP									
24...	<9	<30	22000	100	8.0	2200	9	--	--
24...	--	--	22000	--	--	2100	--	--	--

ANALYSES OF STREAM-BOTTOM MATERIAL

DATE	TIME	NUMBER OF SAM-PLING POINTS (COUNT) (00063)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	ARSENIC TOTAL IN BOT-TOM MA-TERIAL (UG/G AS AS) (01003)	CADMIUM RECOV. FM BOT-TOM MA-TERIAL (UG/G AS CD) (01028)	CHRO-MIUM, RECOV. FM BOT-TOM MA-TERIAL (UG/G) (01029)	COBALT, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS CO) (01038)	COPPER, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS CU) (01043)	IRON, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS FE) (01170)
AUG 1985									
28...	1700	3	49	9	1	--	20	380	8100
28...	1730	1	--	--	3	100	--	410	9800

DATE	LEAD, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS PB) (01052)	MANGA-NESE, RECOV. FM BOT-TOM MA-TERIAL (UG/G) (01053)	NICKEL, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS NI) (01068)	ZINC, RECOV. FM BOT-TOM MA-TERIAL (UG/G AS ZN) (01093)	REMARK
AUG 1985					
28...	30	5100	40	100	FRACTION FINER THAN 2 MILLIMETERS
28...	30	21000	--	130	SELECTED STREAM BANK SEDIMENT CEMENTED WITH BLACK MATERIAL

PRECIPITATION DATA
GLOBE RANGER STATION

LOCATION.--Lat 33°22'40", long 110°46'11", in NE¼NW¼NW¼ sec. 1, T. 1 S., R. 15 E. (D-01-15 01BBA), at U.S.Forest Service ranger station, 2.4 km southeast of Globe post office.
ELEVATION.--1,097 m above National Geodetic Vertical Datum of 1929, from topographic map.
PERIOD OF RECORD.--March 1981 to current year. Between January 1907 and February 1981, precipitation near Globe was recorded at 10 locations ranging from 0.8 km north to 3.9 km northwest of the present site at elevations between 1049 and 1131 m. The longest periods at a single site were from January 1907 to September 1925 at elevation 1090 and from May 1953 to June 1975 at elevation 1080 m.

Precipitation, in millimeters

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	THE YEAR
1983	54	54	121	14	0	0	78	69	136	99	39	49	712
1984	25	0	0	13	0	32	94	90	44	90	40	133	561
1985	56	46	28	36	1	0	67	40	68	20	53	10	423
1986	3	32	89	11	2	11	28	92	21	41	51	56	439
1987	35	59	36	1	30	15	49	79	21	11	41	56	436

Precipitation statistics for 1907-87 (all gage sites), in millimeters

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	THE YEAR
NUMBER OF OBSERVATIONS	81	81	81	81	81	80	80	81	80	81	81	80	78
MEAN	40	36	36	14	9	9	66	70	35	30	27	46	421
MAXIMUM	165	155	121	72	65	49	172	206	136	156	121	218	712
MINIMUM	0	0	0	0	0	0	7	8	0	0	0	0	203

MIAMI

LOCATION.--Lat 33°24'15", long 110°52'09", in SE¼NE¼NW¼ sec. 30, T. 1 N., R. 15 E. (A-01-15 30BAD), at Miami East plant site of Magma Copper Corporation, 0.5 km northwest of Miami post office.
ELEVATION.--1,084 m above National Geodetic Vertical Datum of 1929, from topographic map.
PERIOD OF RECORD.--February 1914 to current year.

Precipitation, in millimeters

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	THE YEAR
1983	60	49	127	16	1	0	44	92	133	87	56	64	730
1984	29	0	0	22	1	21	219	136	101	88	45	154	817
1985	63	37	28	24	1	0	78	26	117	26	65	16	483
1988	2	63	87	14	2	2	37	82	35	48	56	59	487
1987	35	74	25	T	33	0	30	78	12	16	53	56	413

Precipitation statistics for 1914-87, in millimeters

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	THE YEAR
NUMBER OF OBSERVATIONS	73	74	74	74	74	74	74	74	74	74	74	74	73
MEAN	53	45	46	19	10	9	65	78	41	33	36	60	489
MAXIMUM	245	206	173	100	64	91	219	213	179	193	181	293	578
MINIMUM	0	0	0	0	0	0	9	8	0	0	0	0	167

T, Trace