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An Appraisal Study of the Geothermal Resources of Arizona and Adjacent Areas in New Mexico and Utah and their Value for Desalination and Other Uses

Technical Report

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DISCLAIMER

AN APPRAISAL STUDY OF THE GEOTHERMAL RESOURCES OF ARIZONA AND ADJACENT AREAS IN NEW MEXICO AND UTAH AND THEIR VALUE FOR DESALINATION AND OTHER USES

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Technical Report

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ABSTRACT

This report is an appraisal investigation of the geothermal resources of a portion of the "Lower Colorado River Region" of the U.S. Bureau of Reclamation. The study area includes most of Arizona, part of western New Mexico west of the continental divide, and a small part of southwestern Utah. Southern California and southern Nevada, which are also part of the Lower Colorado River drainage basin, have not been included.

Almost 300 water samples have been collected from the study area and chemically analyzed. These samples include hot wells and springs in addition to nearby nonthermal waters to help establish background chemistry. Further, almost 10,000 chemical analyses of groundwaters were obtained from the U.S. Geological Survey's "water quality file". Routine geothermal interpretative techniques were then applied to these chemical data to identify geothermal anomalies which might indicate the presence of exploitable geothermal resources. These geochemical anomalies were then evaluated in terms of available geophysical data such as heat flow, gravity, magnetics, basement linears, earthquake epicentral locations, depth of sedimentary basins, quaternary volcanics, recent fault scarps, etc. to further delineate the size and shape of the prospective geothermal sites and help establish their production potential. On the basis of the data contained herein, the following conclusions can be drawn.

1. There are eight prime and numerous potential geothermal anomalies located within the study area which appear to offer excellent opportunities for geothermal desalination. The prime anomalies are located near Phoenix (2), St. Johns (2), Safford, and Bisbee in Arizona, near St. George in Utah, and south of Lordsburg, New Mexico. Several of the anomalies had previously been known and these rediscoveries verify the validity of the present technique. Other anomalies are located near Quaternary volcanics or at the intersection of major basement linears and thus might have been predicted on the basis of their geologic setting. The remaining anomalies represent potential new geothermal discoveries.

2. There are regional variations in geothermal parameters throughout the study area. For example, groundwaters from the Basin and Range province are routinely hotter and yield substantially higher Na-K-Ca and silica geotemperatures than groundwaters from the Colorado Plateau province. This phenomenon is interpreted to represent higher heat flow, deeper circulation of groundwaters, and greater geothermal potential within in the Basin and Range province as opposed to the Colorado plateau. These data also establish background values for the various geothermal parameters and thus make it possible to more readily recognize and evaluate groundwaters showing geothermal potential.

3. About 400 thermal waters ($T>30°C$) have been examined during the present study. Some of these waters also show geothermal potential on the basis of their geochemistry and tectonic setting and are

considered to be prime prospects for geothermal desalination. Other thermal waters show no such promise and their development may be restricted to low temperature uses.

4. The most promising prospects appear to be associated with quaternary volcanics, deep sedimentary basins, and intersecting basement linears, an association which may reflect the origins of the thermal waters.

Introduction

Geothermal energy is basically the natural heat of the earth. This heat escapes from the earth and is radiated into space at a rate of about 10^{28} ergs/year (1 erg = 9.481×10^{-11} BTU). This amount of energy is far in excess of world wide energy consumption, but unfortunately the energy is generally too diffuse to be commercially exploited. Thus, the development of geothermal energy resources requires the location of geothermal "hot spots" or "anomalies". In these areas, large amounts of geothermal energy are concentrated relatively near the surface and can be commercially exploited for a wide variety of purposes. The states of world wide geothermal energy development is summarized by Muffler (1975) and United Nations Energy Section (1975).

The uses of geothermal energy include the generation of electricity, space heating, mineral extraction, desalting of geothermal brines, health spas, and to supply heat for various industrial and agricultural processes. The main thrust of the present study is geothermal desalination, the current status of which is discussed by Fernelius (1975), and Bechtel (1977).

The search for geothermal anomalies that are suitable for geothermal desalination is more involved than the search for geothermal areas in general. In addition to the standard requirements of high temperatures, land availability, user needs, etc., geothermal desalination also requires a large volume of saline water stored in permeable aquifers. The latter statement recognizes that there is no need to desalt fresh waters and that even the hottest geothermal anomaly is of little use for desalination if insufficient volumes of water can be produced to augment present available reserves of high quality water.

The areas in the Arizona, New Mexico and Utah parts of the lower Colorado River drainage basin that may be of use for geothermal energy development in general and for geothermal desalination in particular are delineated in the following sections of the report. We have emphasized water chemistry studies as such studies provide information on 1) the location and distribution of geothermal anomalies, 2) the maximum subsurface temperatures that might be encountered during drilling, 3) environmental problems such as the release to the atmosphere or surface waters of such noxious elements as hydrogen sulphide, boron, mercury, fluoride, etc., 4) the distribution of saline waters which delineate the areas most in need of geothermal desalination, 5) and the distribution of such compounds as calcium carbonate ($CaCO_3$), silicon dioxide (SiO_2), and hydrogen sulphide (H_2S) that may lead to such production problems as the scaling or corrosion of geothermal wells, pipelines, and other production facilities. In support of this general approach, we have also utilized such geophysical data as gravity, magnetics, heat flow and temperature gradients, the distribution of recent volcanics and basement "linears", and other data that might be available in the literature. These data are used to corroborate the existance of geothermal anomalies, to provide more detailed information as to their exact location, and to provide additional insight regarding their tectonic origin and production potential. Particular emphasis is placed on the depth of sedimentary basins, as this knowledge has direct bearing on the total amount of water that may be available for production. We have not examined the crucial problems of land availability and/or user needs. Such factors are beyond the scope of this technical appraisal report. All of the geothermal anomalies located during the course of the investigation are presented but the study is not concerned with the problem of how the anomalies should be developed.

Method of Data Treatment

Literature Search. The initial phase of the investigation consisted of an intensive literature search to find the various geological, geochemical, and geophysical data that pertain to the location and evaluation of geothermal resources. Several publications exist that deal directly with geothermal investigations. These include: Summers (1965a, 1965b, 1976), Jiracek, et. al. (1977), and Swanberg (1976) for New Mexico; Mundorff (1970), Swanberg (1974) for Utah; and Gerlach et. al. (1975) and Haigler (1969) for Arizona. Additional information was found in Anderson and Axtell (1972) and United Nations (1970, 1975). A complete bibliography of geothermal resources is contained in ERDA (1976) and its corresponding updates.

Numerous other publications provide basic data upon which geothermal inferences may be drawn. Several of these sources are as follows: regional gravity (West and Summer, 1973; Woolard and Joesting, 1964), regional magnetics (Sauck and Sumner, 1970), heat flow (Sass et al., 1976, Reiter et al., 1975), regional geology (Dane and Bachman, 1965; Wilson et al., 1969), temperature gradients (Gerlach et al., 1975; American Association of Petroleum Geologists, 1975), the distribution of Tertiary and Quaternary volcanics (Gerlach et. al., 1975; Elston and Northrop, 1976; Forrester, 1962; Eastwood, 1974), basement linears (Eastwood, 1974; Gerlach, et. al., 1975; Lowell, 1974), earthquake epicentral locations (Scott and Moore, 1976; Sanford and Cash, 1969; Microgeophysics Inc., Unpl.), depths of sedimentary basins (Gerlach et. al., 1975), hot spring and well locations (Summers, 1976; Haigler, 1969) and water chemistry data (Summers, 1965a; see also following section).

All of the above data have been summarized on base maps having a scale of 1:1,000,000. The result of this summary is that nearly all existing data that pertains to geothermal appraisal studies can be readily compared and evaluated in terms of geothermal potential. These maps are reproduced in figures 1-8 and are used as a basis for interpreting the water chemistry data.

Hot Spring Study. Concurrently with the compilation of existing geological and geophysical data, a list of reported thermal springs and wells was compiled. Any water in excess of 30°C was considered to be thermal. Over 400 such waters exist for the study area, the hottest being Gillard and Turkey Creek hot springs and the hot wells at the Lightning Dock KGRA, all of which are about 80°C (see Table 1). The locations of the thermal waters are shown in figure 1 and their legal descriptions, temperatures, and geochemical temperatures are given in Table 1. Nearly all hot springs and wells in the study area were visited, temperatures and geology recorded, and samples collected for chemical analyses. The sampling procedures are those described by Presser and Barnes (1974). An untreated sample was collected in a polyethylene bottle for analyses of the stable constituents. A second sample, acidified with HNO_3, was collected in a polyethelene bottle for analyses of the unstable constituents such as silica, iron, arsenic, etc. A third sample was treated with zinc acetate for laboratory determination of hydrogen sulphide. A fourth sample, acidified with HNO_3, was collected in a glass bottle for analyses of trace elements such as mercury which might be absorbed by a polyethelene bottle. The chemical constituents of the thermal waters including major, minor, and trace elements are given in Tables 2-4. The laboratory methods used in these analyses are those of the Environmental Protection Agency (1971).

In addition to the thermal waters several nonthermal waters were collected near each occurrence of thermal water. These waters, representing cold springs, wells, and in some cases, surface waters, were chemically analyzed for major and minor constituents only (Tables 2,3). The purpose of analyzing nonthermal waters is to establish background chemistry, against which the chemistry of the thermal waters can be compared and therefore more meaningfully analyzed.

On the basis of the chemical data, both qualitative and quantative geothermometers were evaluated and the results form the primary method whereby each specific area is appraised for geothermal potential. The quantitative geothermometers are silica (Fournier and Rowe, 1966), sodium-potassium (Ellis, 1970), and sodium-potassium-calcium (Fournier and Truesdell, 1973). Geochemical temperatures calculated using the silica and Na-K-Ca geothermometers are given in Table 1. The Na-K geothermometer is an older version of the Na-K-Ca technique and is not presented. The basic assumptions of these geothermometers are discussed by Fournier et. al. (1974) and can be summarized as follows: 1) temperature dependent reactions in the geothermal reservoir control water chemistry, 2) water-rock equilibrium must exist within the geothermal reservoir, 3) minerals which supply the constituents upon which the geothermometers are based must exist within the geothermal reservoir, 4) re-equilibration must not occur as the water migrates from the reservoir to the sampling point, and 6) there must be negligible mixing with near surface waters of different chemical composition.

The qualitative geothermometers include low concentrations of calcium and bicarbonate in near neutral pH waters (Ellis, 1970), low ratios of magnesium to calcium (White, 1970), high ratios of sodium to calcium (Mahon, 1970), highest ratios of chloride to total carbonate ($C\ell/CHCO_3+CO_3$); Fournier and Truesdell, 1970), and highest ratios of chloride to fluoride (Mahon, 1976). The basic data necessary to apply these geothermometers are given in Tables 2 and 3.

Regional Chemistry Study. In addition to the hot spring study, we have conducted a systematic analysis of the chemical constituents of groundwaters throughout the study area. There are three primary reasons to include cold water geochemistry in a study aimed at regional appraisal of geothermal resources. The first is to establish background chemistry against which the hot spring geochemistry can be compared. For example, typical groundwaters from the Basin and Range province yield silica geotemperatures in 75°-95°C range whereas groundwaters from the Colorado Plateau typically fall in the 40°-60°C range (Swanberg and Morgan, 1977; see also Figures 9-11). This represents a threefold greater concentration of silica in groundwaters of the Basin and Range relative to waters of the Colorado Plateau. Consequently, silica geotemperatures near 110°C are perfectly normal for the Basin and Range but are well above typical values of the Colorado Plateau and may well reflect geothermal activity. A typical example of such an anomaly is the San Francisco Mountain geothermal area near Flagstaff (Figures 2,6), a clear chemical anomaly and potential geothermal field (Moore et. al., 1976) which might have been overlooked had not background chemistry been established.

A second reason to include cold water studies in a geothermal investigation is to locate new geothermal areas. Swanberg (1975) has shown that it is possible to recognize a geothermal water or detect a geothermal component in waters even though the waters may be of normal temperature. The procedure requires the assumption that a geothermal water, migrating from a geothermal reservoir into a shallow aquifer, will cool physically more rapidly than it looses it geothermal chemical signature, an assumption that gains credence because the speed at which reequilibration occurs becomes slow at colder temperatures. The procedure then is to apply the quantitative and qualitative geothermometers to whatever chemical data may exist in the literature and noting regions that yield high geotemperatures. Regions giving high geochemical temperatures by two or more different geothermometers are likely geothermal prospects.

A third reason to study cold waters is simply to determine the distribution of saline water. Areas showing geothermal potential as well as being characterized by saline water are likely spots for geothermal desalination. Such studies also bear directly on some of the environmental problems that may be associated with eventual development.

The main source of groundwater geochemistry data used in this study is the water quality file of the U.S. Geological Survey, Water Resources Division. This file, available on magnetic tape, contains the latitude, longitude, and results of chemical analyses of over 10,000 water samples collected between parallels 31° and 37°, meridians 108° and 115° and between the years 1917-1974. A PL1 computer program capable of reading the tape was also supplied by the USGS and this was modified to interface with the standard geothermal subroutines. At this point, the data were scanned for in situ temperatures, total dissolved solids (TDS) and for concentrations of Na, K, Ca, and SiO_2. Geochemical temperatures were then calculated by application of the quantitative geothermometers to the chemical data and the results were printer-plotted (Figures 1-4) such that they correctly overlayed the geophysical maps noted earlier (Figures 5-8). This approach has allowed us to examine a massive amount of valuable data in a very short period of time, and at a trivial cost. Very few reconnaissance techniques can compare in cost-time efficiency with such a study.

Geochemical Data

Water Temperature Data. The temperatures of wells and springs within the three major tectonic provinces of the Southwest (see Figure 12) are shown in Figure 9. It is apparent from these data that both the mean and the modal temperature of waters located within the Basin and Range province are about 10°C hotter than waters from either of the other two provinces. A large portion of this difference can be attributed to a higher mean annual air temperature within the basin and range province. Gerlach et. al. (1975) report that the mean air temperature for Arizona varies between 15° and 21°C, with the higher values representing the Basin and Range. A similar result is evident from the air temperature data of Druitt (1976), who shows a 6°C difference between the mean annual temperatures of the Basin and Range and Colorado Plateau. Thus it appears unlikely that the entire temperature discrepancy can be wholly explained by variations in mean air temperature, and an additional source of heat is required. One possibility is the higher surface heat flow known to exist within the basin and range (Roy et. al., 1972; see also Figure 10). A second is to assume deep circulation of groundwaters along Basin and Range faults. A third possibility is to envoke the highly exothermic hydration of anhydrite to gypsum. It is likely that all three possibilities operate to some extent.

It is also apparent from the data in Figure 9 that there is a strong concentration of thermal water in the Basin and Range relative to the Colorado Plateau. The precise location of the thermal waters is shown relative to the deep sedimentary basins in Figure 5. Figures 6-8 show the thermal waters giving high geochemical temperatures relative to a range of geological and geophysical criteria that are generally used in geothermal exploration and evaluation. Taken together, Figures 5-8 can be used to determine the tectonic origin of the thermal waters. Many thermal waters are located within deep sedimentary basins (Figure 5). If such waters also yield high geochemical temperatures, their probable origin is deeply circulating groundwaters along existing faults. A typical example is the Phoenix area which is an excellent prospect for geothermal desalination, not only because of the high geochemical temperatures (Figure 3) but also because of the highly saline waters (Figure 4) and the large volume of water in storage. Some areas where thermal waters exist in deep sedimentary do not give high geochemical temperatures. A possible origin for these thermal waters is the exothermic hydration of anhydrite to gypsum. A typical example is the Coolidge area where deep drilling failed to locate waters greater than 82°C, even though irrigation wells in the area are as hot at 65°C (Dellechaie, 1975). Such areas may not be sufficiently hot for economic geothermal desalination, although such areas might be ideal for direct heat application.

Other thermal waters appear to be closely associated with Quaternary volcanics (Figures 5,6). Such waters may derive their heat from volcanic origins as well as from structural sources.

Silica Geochemistry. The silica geothermometer (Fournier and Rowe, 1966) is based on the temperature dependence of quartz solubility and is regarded by many to be the most accurate of the aqueous geothermometers. As a quantitative geothermometer, it is best applied to thermal springs and wells where it generally gives a minimum prediction of subsurface temperatures. As a qualitative geothermometer, it can be applied to nonthermal waters where abnormally high silica geotemperatures may reflect in thermal component in a nonthermal groundwater (Swanberg, 1975). In either case, it is appropriate to determine the normal silica content of waters in a given region prior to the use of the silica geothermometer. Once background values of silica have been determined, the mixing models of Truesdell and Fournier (in press) can be applied to greatly refine subsurface temperature estimates obtained by the silica geothermometer.

The temperatures estimated by applying the silica geothermometer to silica concentrations of waters taken from the three major tectonic provinces of the Southwest are shown in Figure 10. It is clear from this data that estimated temperatures are systematically higher by 30-40°C for waters of the Basin and Range than for waters of the Colorado Plateau. This increase is thought to reflect greater heat flow and deeper circulation of groundwaters in the Basin and Range and is consistent with the in situ temperature data shown in Figure 9.

Silica geotemperatures averaged over a 1°x1° grid are given in Figure 11, and compared to tectonic provinces in Figure 12. The obvious correlation between silica geotemperatures and tectonic provinces has significant implications to the study of the Earth's heat flow. Highest silica geotemperatures are found within the Rio Grande Rift and along the Basin and Range - Colorado Plateau boundary, two very high heat flow regions of substantial geothermal potential (Reiter et al., 1975). High silica geotemperatures are found within the Basin and Range province, also a high heat flow province, whereas the lowest silica geotemperatures are found within the Colorado Plateau and the Mid-continent, two areas of normal heat flow. In fact, the actual distribution of silica geotemperatures so closely corresponds to the areal distribution of heat flow (compare the data of Sass et. al., 1975; Blackwell, 1971) that it is possible to map regional heat flow provinces using silica data.

The silica data presented in Figure 11 establishes base values for the silica geothermometer. For the Basin and Range silica geotemperatures typically fall in the mid-eighties and values near one hundred are common (Figure 10). Even values as high as 110°C should not be considered thermal without supporting evidence. On the other hand, values for the Colorado Plateau are typically in the forties and rarely exceed 75°C. Consequently silica geotemperatures in the 90-110° range are normal for the Basin and Range but are clearly anomalous for the Colorado Plateau. A typical example of such an anomaly is the San Francisco Mountain geothermal area near Flagstaff (Figures 2,6), a clear chemical anomaly and potential geothermal trend (Moore et. al., 1976) which might have been overlooked had not background geochemistry been established.

Na-K-Ca Geochemistry. The Na-K-Ca geothermometer (Fournier and Truesdell, 1973) is based on an empirical relationship between temperature and a function based on the ratios of sodium to potassium and calcium to sodium. As a quantitative geothermometer, it can be applied to thermal and nonthermal waters to estimate possible subsurface temperatures. Unlike the silica geothermometer which is based on absolute concentrations of silica, the Na-K-Ca geothermometer is based on ratios and is thus not appreciably affected by dilution with fresh surface waters. The assumptions governing the use of both quantitative geothermometers are discussed by Fournier et. al. (1974).

The distribution of Na-K-Ca geotemperatures is shown in Figure 3 and regions of high geochemical temperatures are compared with various geological and geophysical criteria in Figures 6-8. The chemically "hot" waters may be associated with deep sedimentary basins (Figure 5), recent volcanics (Figure 6), basement linears (Figure 7), or a combination of the above, an association which probably reflects the origin of the anomalies. Many anomalous regions are located near the boundary between the Basin and Range and Colorado Plateau provinces, and within the Rio Grande Rift of New Mexico (Figure 12). Anomalous areas also are located within both the Basin and Range and the Colorado Plateau.

Geophysics

<u>Gravity</u>. Interpretation of gravity data is of use in geothermal studies both as a direct prospecting tool (i.e., Biehler, 1971) and as an aid in determining regional structural patterns. In the present study, gravity data has been used primarily to determine the depths of sedimentary basins, an important parameter in determining the total volume of groundwater available for desalination. Also of interest are the two small gravity minima located near parallel 34° on either side of the Arizona-New Mexico boundary. Both closures are less than -250 mgals and such closures are not common outside the Colorado-Wyoming Rockies (Woolard and Joesting, 1964). In fact several of these -250 mgal closures are associated with caldera structures underlying some of the nation's major geothermal areas (i.e., Yellowstone, Wyoming; Valles Grande, New Mexico; and Mono, California). This is not to imply similar geothermal fields in Arizona and New Mexico but the correlation is interesting and the -250 mgal closures are included in Figure 7.

<u>Magnetics</u>. As a geothermal tool, magnetic data is primarily used in conjunction with gravity data although magnetic lows, resulting from hydrothermal conversion of magnetic to pyrite, may be used as a direct indication of geothermal activity. In the present study, magnetic data has been used to delineate major basement linears which may act as a

zone of weakness, permitting the rise of geothermal fluids. Linears based on magnetic data are shown in Figure 7.

Heat Flow and Temperature Gradients. Heat flow and temperature gradients provide direct evidence of the presence of geothermal anomalies. Regions of high heat flow (>2.5 HFU) are shown in Figure 8 along with the geochemical anomalies. The regions of high heat flow essentially outline the broad regions of high geothermal potential within which most of the major geothermal areas are likely to be found. The data set is fairly complete for New Mexico but rather scanty for Arizona at present. Additional heat flow data from Arizona (M. Reiter, personal communication) outlines several additional areas in Arizona having high heat flow.

Also shown in Figure 8 are several small areas having a geothermal gradient in excess of 150°C/Km. These areas should be considered prime geothermal prospects.

Earthquake Activity. Earthquake epicentral locations are of use both to delineate active faults which might control the vertical movement of geothermal fluids and as a method to determine the potential earthquake risk associated with geothermal development. Locations of historic earthquakes are plotted in Figure 7. It is interesting to note that the only major earthquake (> magnitude 7) is located in Mexico, only a few miles from the major chemical anomaly east of Bisbee, Arizona.

Geologic Data

The geologic data used in the present study include the distribution of Tertiary and Quaternary volcanics, and the distribution of basement linears. Linears (Figure 7) may demark zone of crustal weakness where magmas and geothermal fluids may find easy access to the surface. In particular, the intersection of major linears is an important geothermal parameter. The distribution of young volcanics (Figure 6) also delineates regions where magmatic heat may still be present.

Discussion

Geothermal prospects within the present study area that have undergone deep drilling are Chandler and Casa Grande, Arizona (Muffler 1975). Known geothermal resource areas (KGRA) include Clifton, Gillard Hot Springs, and Chandler in Arizona, and Lower Frisco Hot Springs, Gila Hot Springs, and Lightning Dock in New Mexico. In addition Moore et. al. (1976) have delineated the San Francisco Mountains geothermal area near Flagstaff, Arizona. All of these geothermal areas were rediscovered during the present study by applying the chemical geothermometers to thermal and nonthermal waters and comparing the results with various geological and geophysical data. These rediscoveries verify the validity of the present technique. In addition, numerous new potential geothermal areas have been delineateed and are discussed below.

The various criteria used to evaluate the geothermal potential of the study area are summarized in Figures 5-8. For geothermal desalination the most important factors are thermal waters (Figure 5), high geochemical temperatures (Figure 6,8), deep sedimentary basins (Figure 5) and a source of saline water to desalt, (Figure 4). The most obvious combination of all these factors is the Phoenix area, which appears to be the best prospect for desalination although not necessarily the best overall geothermal prospect. Other such prospects include the Safford area and several smaller areas in western Arizona. Several areas of hot wells such as near Hyder (Gerlach et al., 1975) and near Coolidge (Dellechaie, 1975) do not give very promising geochemical temperatures and the preliminary indications are that such areas can be developed for desalination only as technology becomes developed for lower temperature utilization. The geothermal areas which are associated with volcanics (i.e., Flagstaff) may well be excellent geothermal prospects but the volume of groundwater in storage may not be sufficient to have an appreciable impact on regional water supplies. The area in the southeast corner of Arizona east of Bisbee is an excellent prospect on the basis of the geochemical data and its proximity to very young volcanics, major linement intersections, and seismic activity (Figure 7), but unfortunately, there is no indication of saline water in the area (Figure 4), although brine may be encountered during drilling. Another prime prospect is along the Little Colorado River near St. Johns, Arizona. This area is also located in the junction of major linements (Figure 7), is associated with very young volcanics (Figure 6), and the waters of the area yield high geochemical temperatures (Figure 3). The area is also characterized by very saline water (Figure 4).

In conclusion, at least eight areas exist within the study area which appear to be excellent prospects for geothermal desalination.

These areas are located near Phoenix (2), Safford (1), St. Johns (2), Bisbee (1), St. George (1), and Lordsburg (1). All of these areas appear promising by a sufficient number of reconnaissance techniques to warrant detailed geophysical studies and eventual deep drilling. The remainder of the anomalies outlined in Figures 5-8 should perhaps be subjected to additional reconnaissance prior to detailed geophysics and deep drilling.

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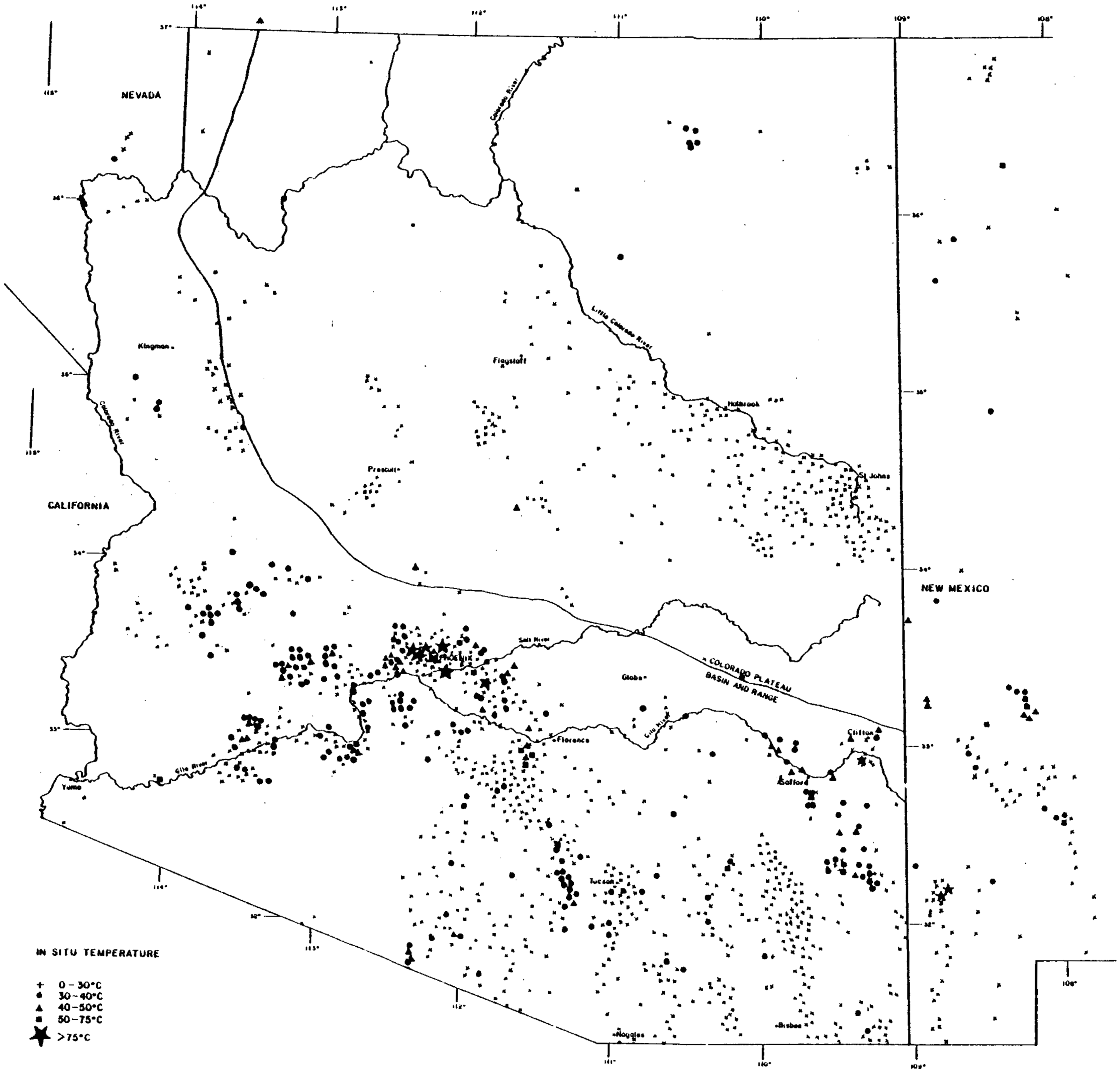
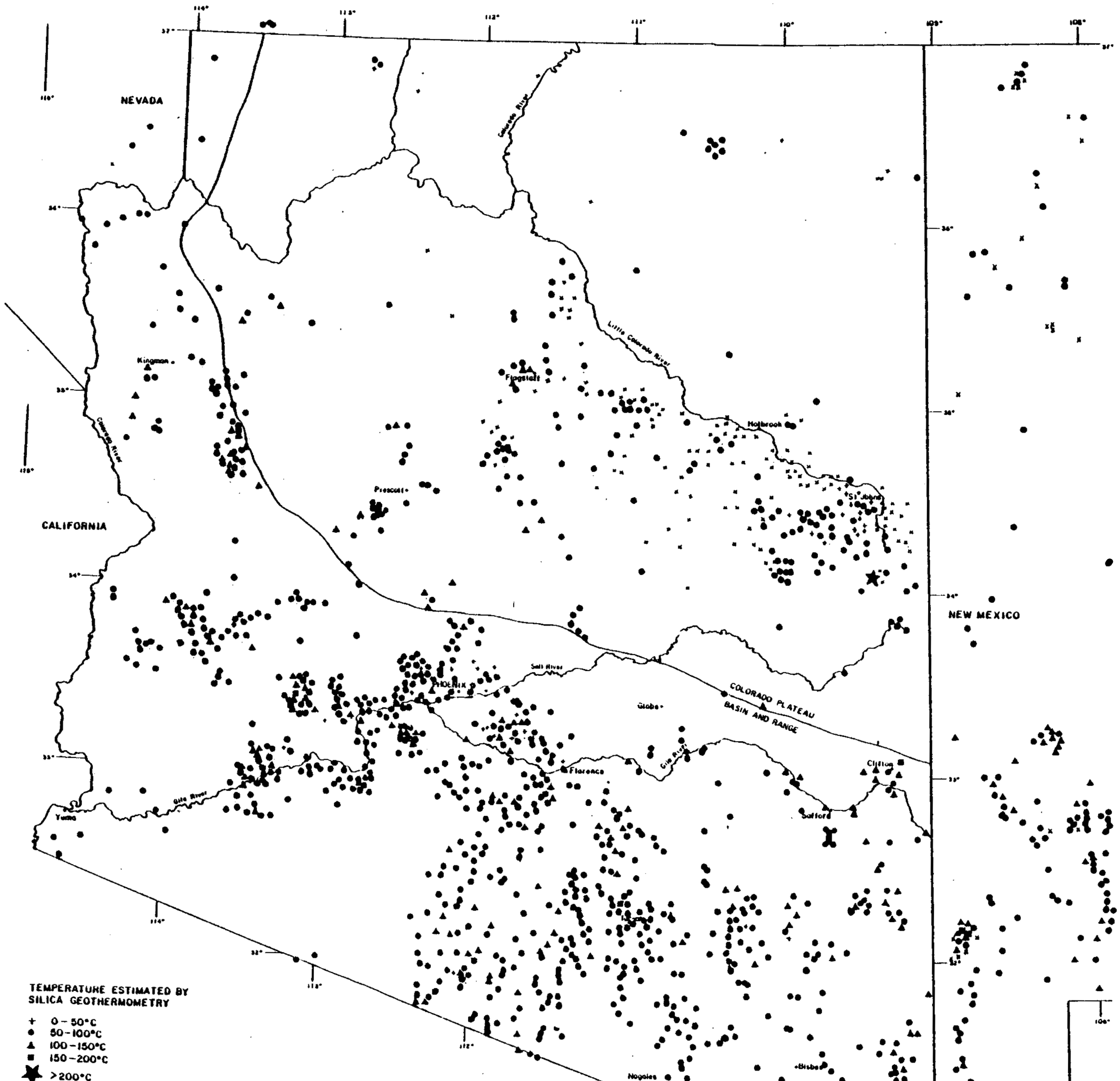
Figure 1. Observed temperatures for springs and wells in Arizona, western New Mexico, and southwestern Utah. Data from Table 1 and the U.S.G.S. water quality file.



NEVADA
CALIFORNIA
NEW MEXICO
Colorado River
Little Colorado River
Salt River
Gila River
Kingman
Flagstaff
Holbrook
St Johns
Prescott
Phoenix
Globe
Florence
Clifton
Safford
Tucson
Nogales
Bisbee
Yuma
COLORADO PLATEAU
BASIN AND RANGE
IN SITU TEMPERATURE
0 - 30°C
30 - 40°C
40 - 50°C
50 - 75°C
>75°C

Figure 2. Silica geotemperatures for waters from Arizona, western New Mexico, and southwestern Utah. Calculations based on data from Table 3 and from the U.S.G.S. water quality file.


NEVADA
CALIFORNIA
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Colorado River
Little Colorado River
Kingman
Flagstaff
Prescott
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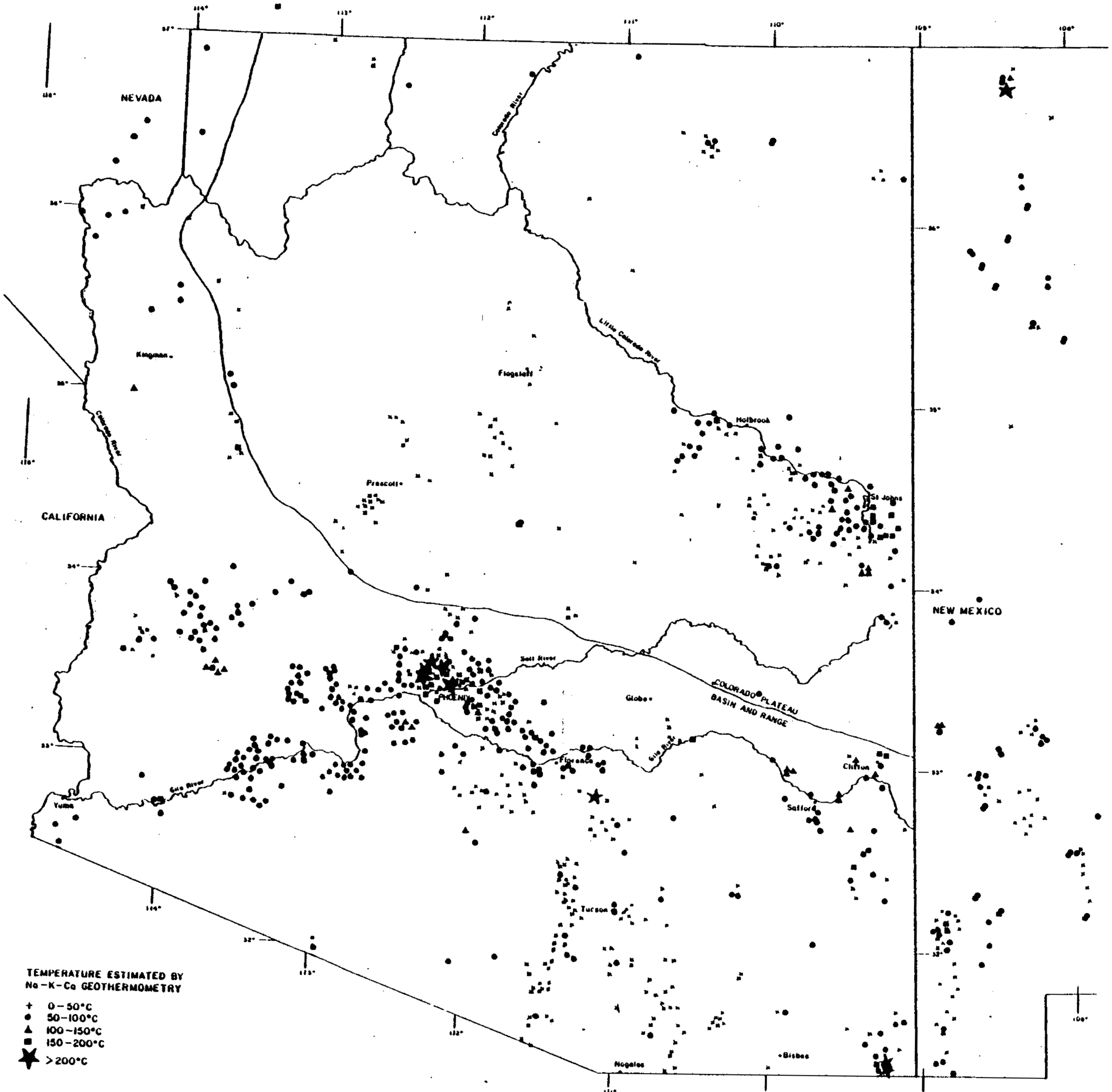
St. Johns
Phoenix
Salt River
Globe
Florence
Gila River
Safford
Clifton
Yuma
Nogales
Bisbee
COLORADO PLATEAU
BASIN AND RANGE
TEMPERATURE ESTIMATED BY SILICA GEOTHERMOMETRY
+ 0-50°C
• 50-100°C
▲ 100-150°C
■ 150-200°C
★ >200°C

Figure 3. Na-K-Ca geotemperatures for waters from Arizona, western New Mexico, and southwestern Utah. Calculations based on data from Table 2 and from the U.S.G.S. water quality file.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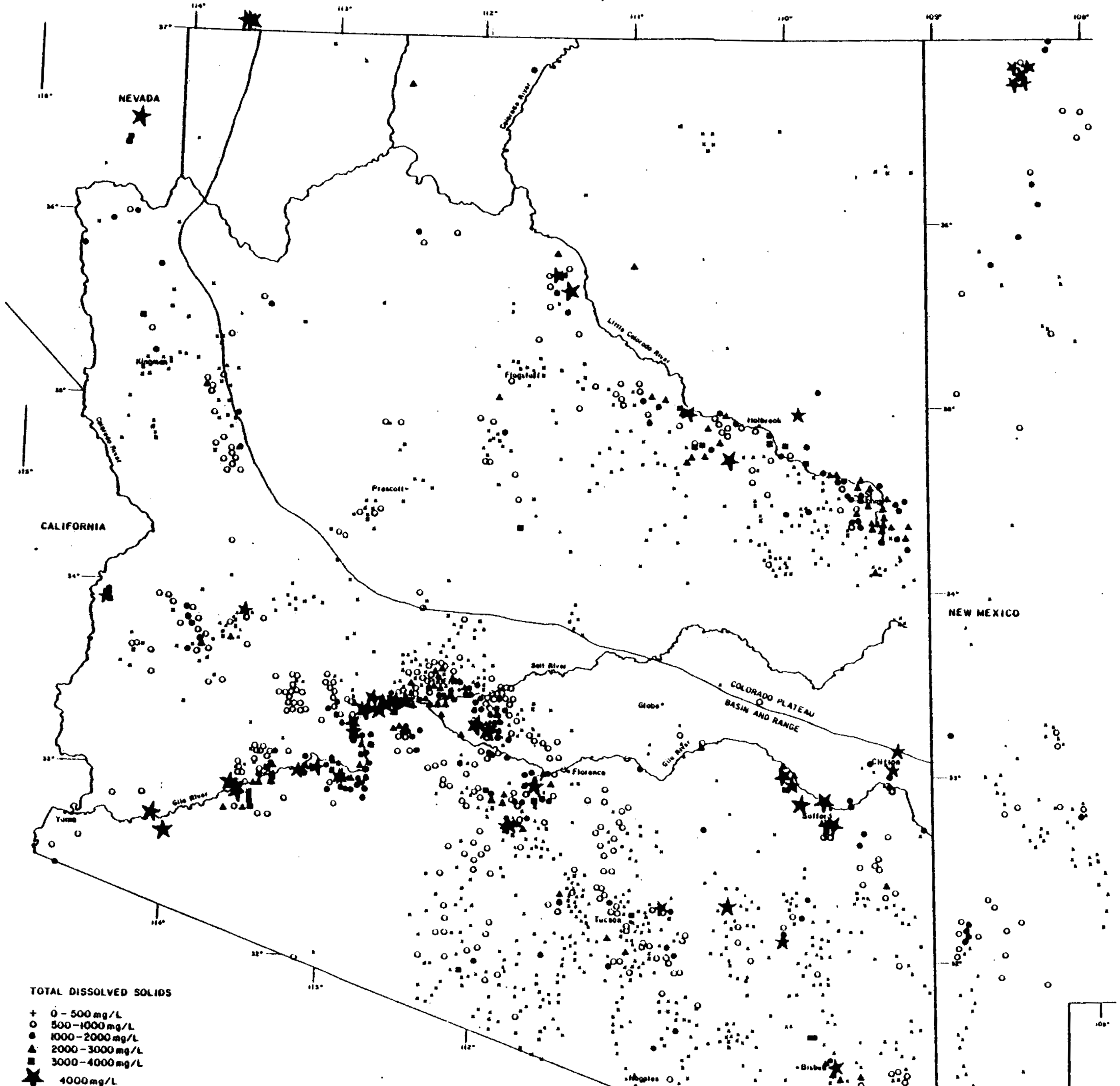
Salt River
PHOENIX
Globe
COLORADO PLATEAU
BASIN AND RANGE
Gila River
Florence
Clifton
Safford
Yuma
Tucson
Nogales
Bisbee
TEMPERATURE ESTIMATED BY
Na-K-Ca GEOTHERMOMETRY
0-50°C
50-100°C
100-150°C
150-200°C
>200°C

Figure 4. Distribution of saline waters in Arizona, western New Mexico and southwestern Utah. Data from Table 2 and the U.S.G.S. water quality file.


NEVADA
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Holbrook
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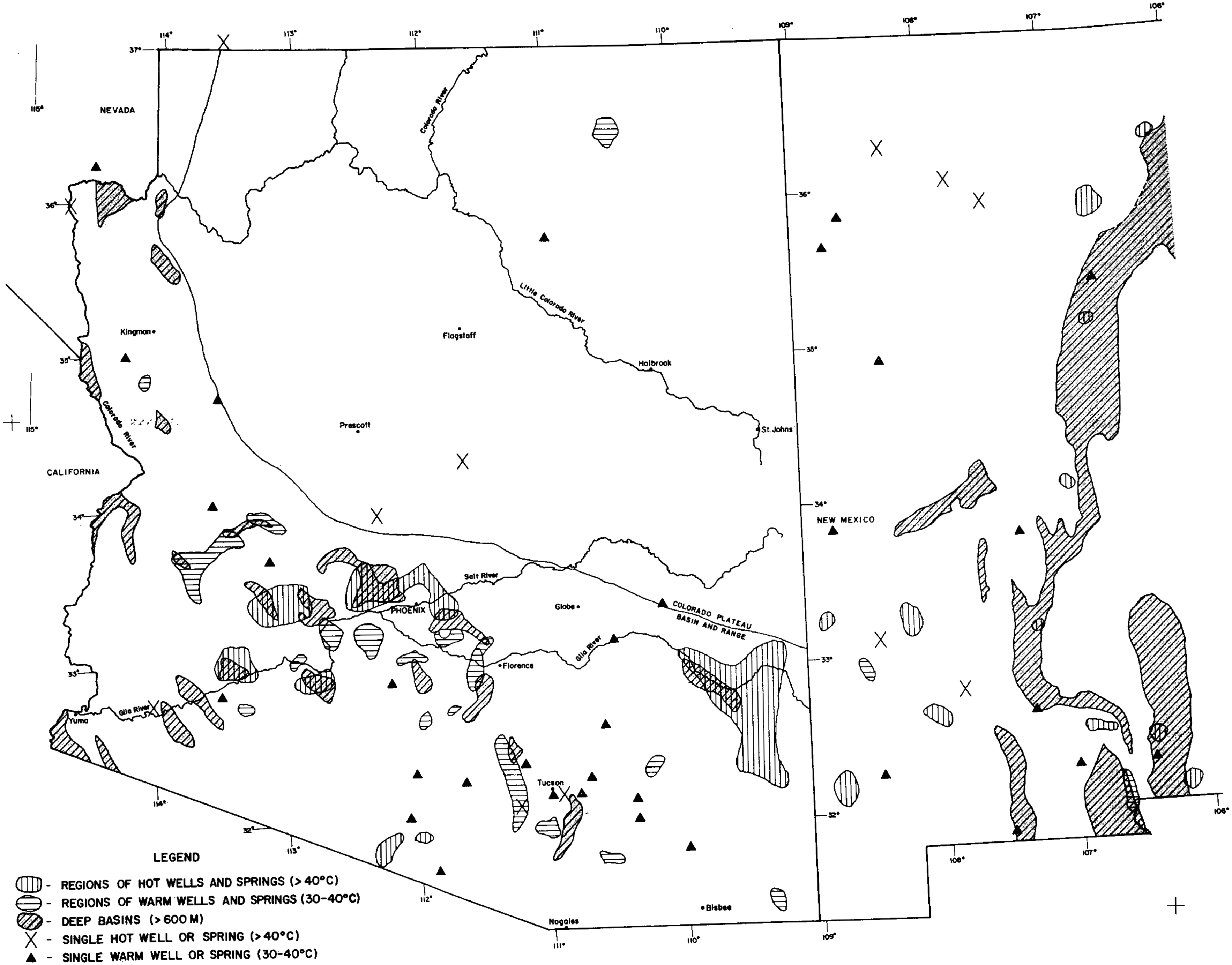
Tucson
Yuma
Nogales
Bisbee
Safford
Clifton
Colorado River
Little Colorado River
Salt River
Gila River
COLORADO PLATEAU
BASIN AND RANGE
TOTAL DISSOLVED SOLIDS
+ 0-500 mg/L
○ 500-1000 mg/L
● 1000-2000 mg/L
▲ 2000-3000 mg/L
■ 3000-4000 mg/L
★ 4000 mg/L

Figure 5. Regions of hot (>40°C) and warm (30-40°C) wells and springs and the deep sedimentary basins of Arizona and New Mexico. Isolated occurrences of thermal water are shown separately. Data from Figure 1 and from Gerlach et al. (1975).



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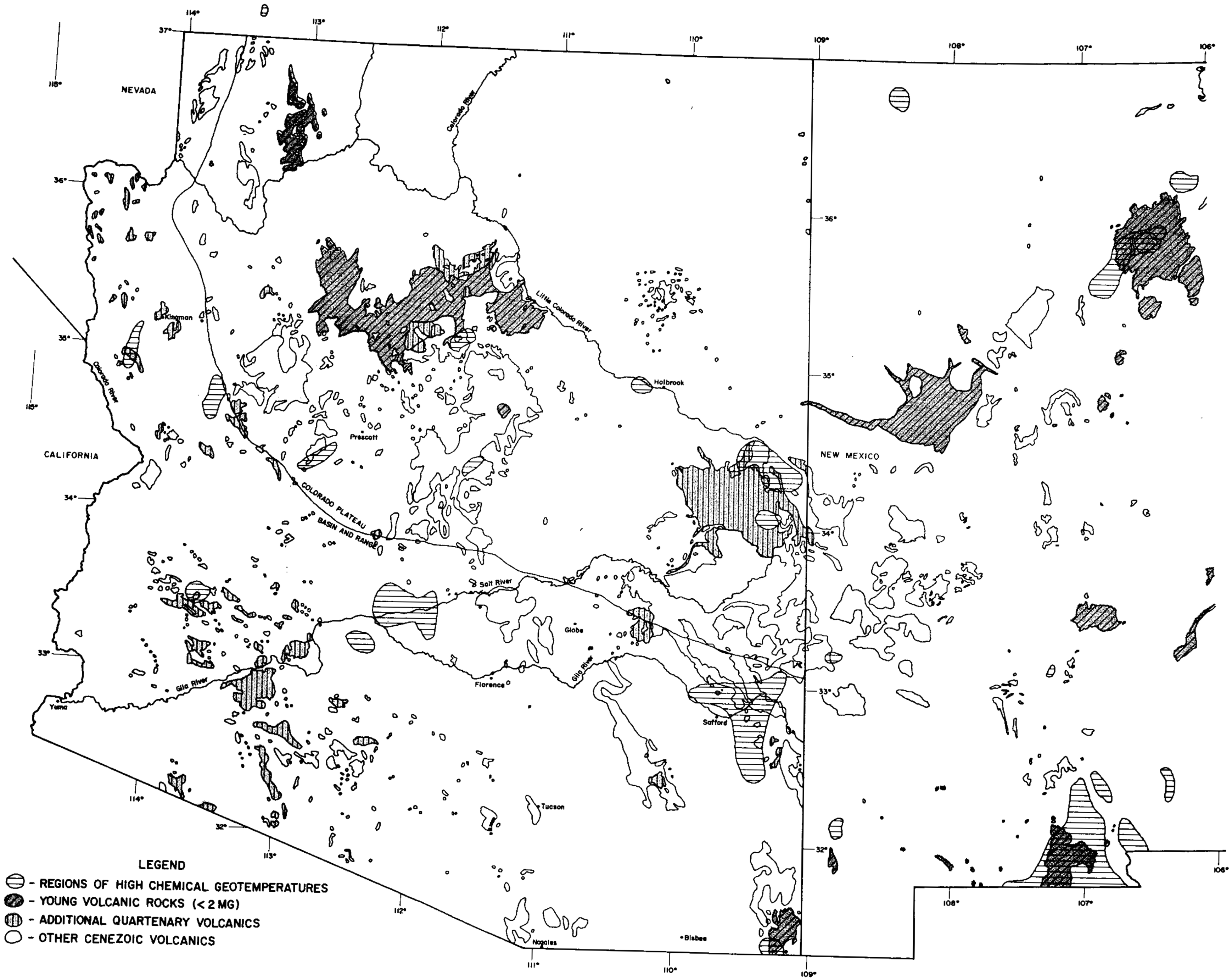
Prescott
Holbrook
St. Johns
PHOENIX
Globe
Florence
Tucson
Yuma
Nogales
Bisbee
Colorado River
Little Colorado River
Salt River
Gila River
COLORADO PLATEAU
BASIN AND RANGE
37°
36°
35°
34°
33°
32°
115°
114°
113°
112°
111°
110°
109°
108°
107°
106°
LEGEND
- REGIONS OF HOT WELLS AND SPRINGS (>40°C)
- REGIONS OF WARM WELLS AND SPRINGS (30-40°C)
- DEEP BASINS (>600 M)
- SINGLE HOT WELL OR SPRING (>40°C)
- SINGLE WARM WELL OR SPRING (30-40°C)

Figure 6. Regions of high geothermal potential as indicated by geochemical data and the distribution of recent volcanics (<2 million years) in Arizona and New Mexico. Data from Figures 2 and 3 and from Gerlach et al. (1975), Forrester (1962), Dane and Bachman (1965), and Wilson et al., (1969).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Florence
Safford
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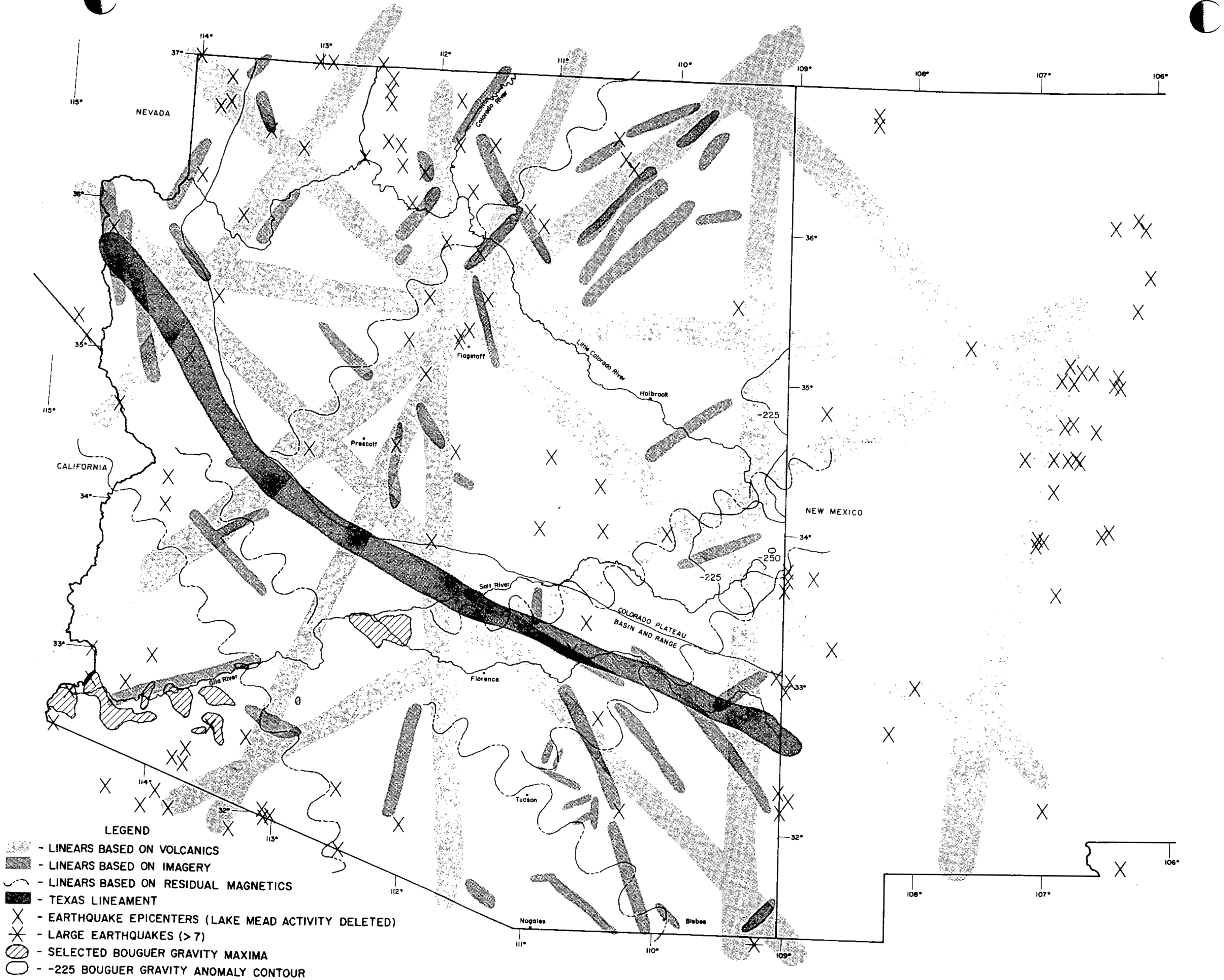
Yuma
Nogales
Bisbee
Colorado River
Little Colorado River
Salt River
Gila River
COLORADO PLATEAU
BASIN AND RANGE
37°
36°
35°
34°
33°
32°
115°
114°
113°
112°
111°
110°
109°
108°
107°
106°
LEGEND
- REGIONS OF HIGH CHEMICAL GEOTEMPERATURES
- YOUNG VOLCANIC ROCKS (<2 MG)
- ADDITIONAL QUARTENARY VOLCANICS
- OTHER CENEZOIC VOLCANICS

Figure 7. Major lineaments and historical seismicity in Arizona, western New Mexico, and southwestern Utah. Linears are taken as follows: volcanic linears from Eastwood (1974), ERTS imagery linears from Gerlach et al. (1975), magnetic linears from the data of Sauck and Sumner (1970), Texas lineament from Lowell (1974). Earthquake epicentral locations are from Scott and Moore (1976), Sanford and Cash (1969), and Microgeophysics Inc. (unpubl.). Selected gravity data are from West and Sumner (1973).


NEVADA
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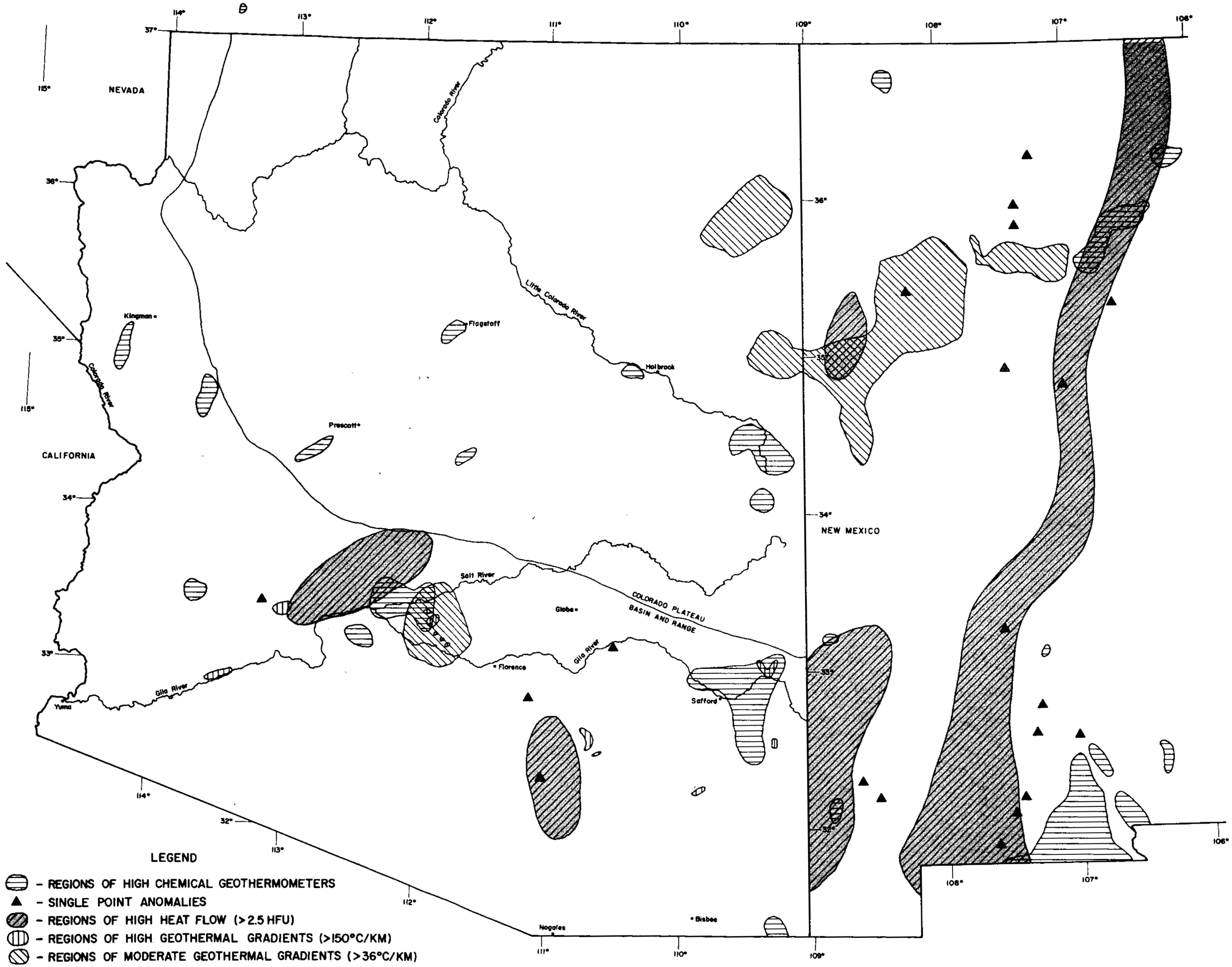
NEW MEXICO
Colorado River
Little Colorado River
Salt River
Gila River
Flagstaff
Prescott
Holbrook
Florence
Tucson
Nogales
Bisbee
COLORADO PLATEAU
BASIN AND RANGE
-225
-250
37°
36°
35°
34°
33°
32°
115°
114°
113°
112°
111°
110°
109°
108°
107°
106°
LEGEND
- LINEARS BASED ON VOLCANICS
- LINEARS BASED ON IMAGERY
- LINEARS BASED ON RESIDUAL MAGNETICS
- TEXAS LINEAMENT
- EARTHQUAKE EPICENTERS (LAKE MEAD ACTIVITY DELETED)
- LARGE EARTHQUAKES (> 7)
- SELECTED BOUGUER GRAVITY MAXIMA
- -225 BOUGUER GRAVITY ANOMALY CONTOUR

Figure 8. Regions of high geothermal potential as indicated by geochemical data and heat flow and temperature gradient data for Arizona and western New Mexico. Chemical data from Figures 2 and 3. Heat flow data from Reiter et al. (1975) and Sass et al. (1976). Temperature gradient data from American Association of Petroleum Geologists (1975), and Gerlach et al. (1975).


NEVADA
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Kingman
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Prescott
Holbrook
Globe
Florence
Safford
Yuma
Nogales
Bisbee
COLORADO PLATEAU
BASIN AND RANGE
LEGEND
- REGIONS OF HIGH CHEMICAL GEOTHERMOMETERS
- SINGLE POINT ANOMALIES
- REGIONS OF HIGH HEAT FLOW (>2.5 HFU)
- REGIONS OF HIGH GEOTHERMAL GRADIENTS (>150°C/KM)
- REGIONS OF MODERATE GEOTHERMAL GRADIENTS (>36°C/KM)

Figure 9. Histogram of observed temperature for wells and springs from the three major tectonic provinces of the southwest. All data are taken from the USGS water quality file. Midcontinent data falls between latitude 102-105 and longitude 29-39 (eastern New Mexico-Colorado); Colorado Plateau between lat. 34.5-37 and long. 108-113 (northeast Arizona-northwest New Mexico) and lat. 37-39 and long. 108-112 (southeast Utah-southwest Colorado); Basin and Range between lat. 31-33.5 and long. 108-115 (southern Arizona). Note that wells near the province boundaries have been omitted from the histograms.

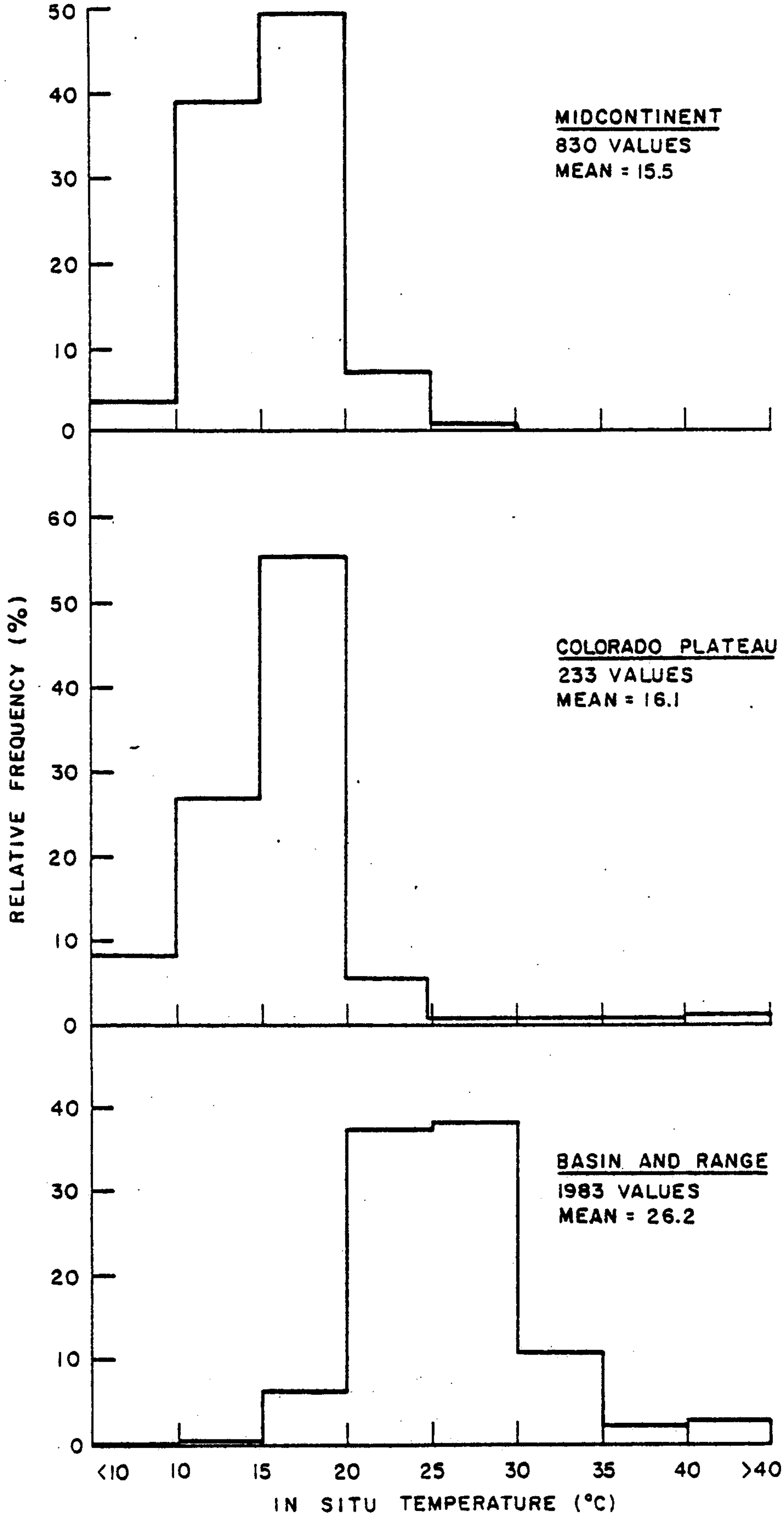
MIDCONTINENT
830 VALUES
MEAN = 15.5
COLORADO PLATEAU
233 VALUES
MEAN = 16.1
BASIN AND RANGE
1983 VALUES
MEAN = 26.2
RELATIVE FREQUENCY (%)
IN SITU TEMPERATURE (°C)
<10
10
15
20
25
30
35
40
>40
0
10
20
30
40
50
60

Figure 10. Histogram of silica geotemperatures for waters from the three major tectonic provinces of the southwest. All data are taken from the USGS water quality file. Latitudes and longitudes are the same as in Figure 9. Heat flow data (q) is in milliwatts per square meter (41.8 mWm^{-2} = 1.0 $\mu cal\ cm^{-2}\ s^{-1}$ = 1.0 HFU).

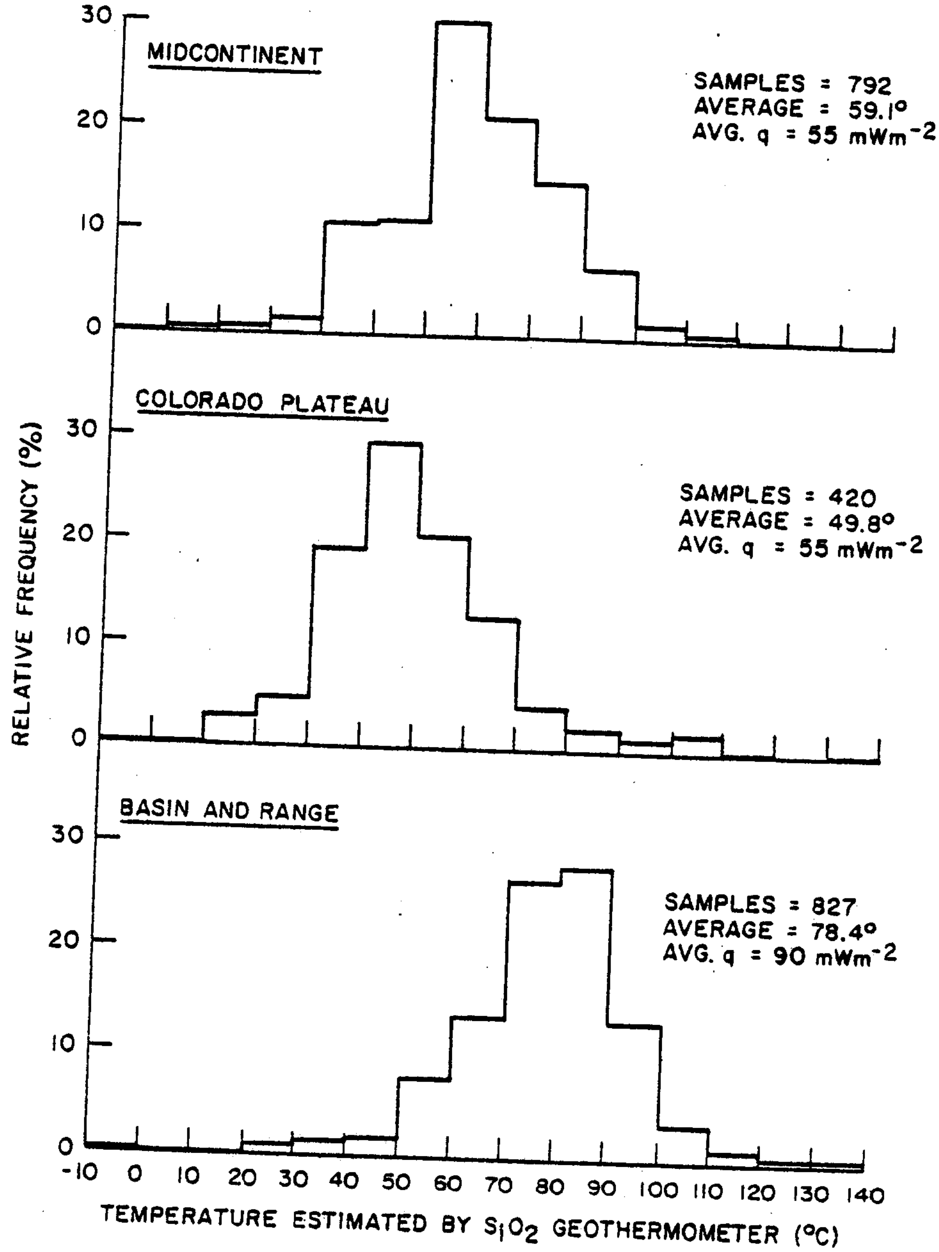
MIDCONTINENT
SAMPLES = 792
AVERAGE = 59.1°
AVG. q = 55 mWm-2
COLORADO PLATEAU
SAMPLES = 420
AVERAGE = 49.8°
AVG. q = 55 mWm-2
BASIN AND RANGE
SAMPLES = 827
AVERAGE = 78.4°
AVG. q = 90 mWm-2
RELATIVE FREQUENCY (%)
0
10
20
30
-10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140
TEMPERATURE ESTIMATED BY SiO2 GEOTHERMOMETER (°C)

Figure 11. Silica geotemperatures averaged over a 1°x1° grid. Silica data is from the USGS Water Quality file. Large numbers represent the average silica geotemperatures and small numbers represent the number of analyses included in each average.

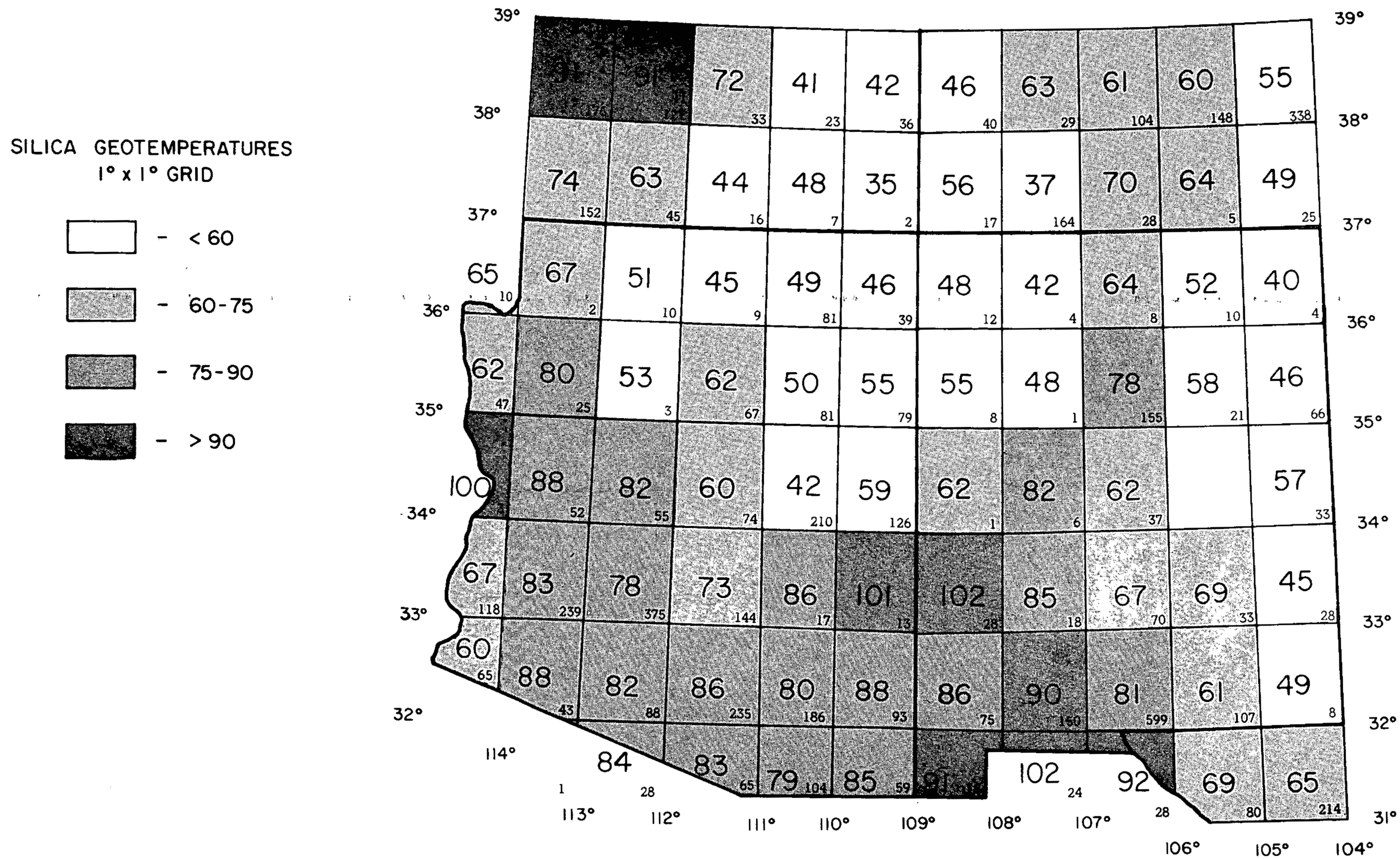
SILICA GEOTEMPERATURES
1° x 1° GRID
- < 60
- 60-75
- 75-90
- > 90

Figure 12. Silica geotemperatures averaged over a 1°x1° grid and the major tectonic provinces of the southwest.

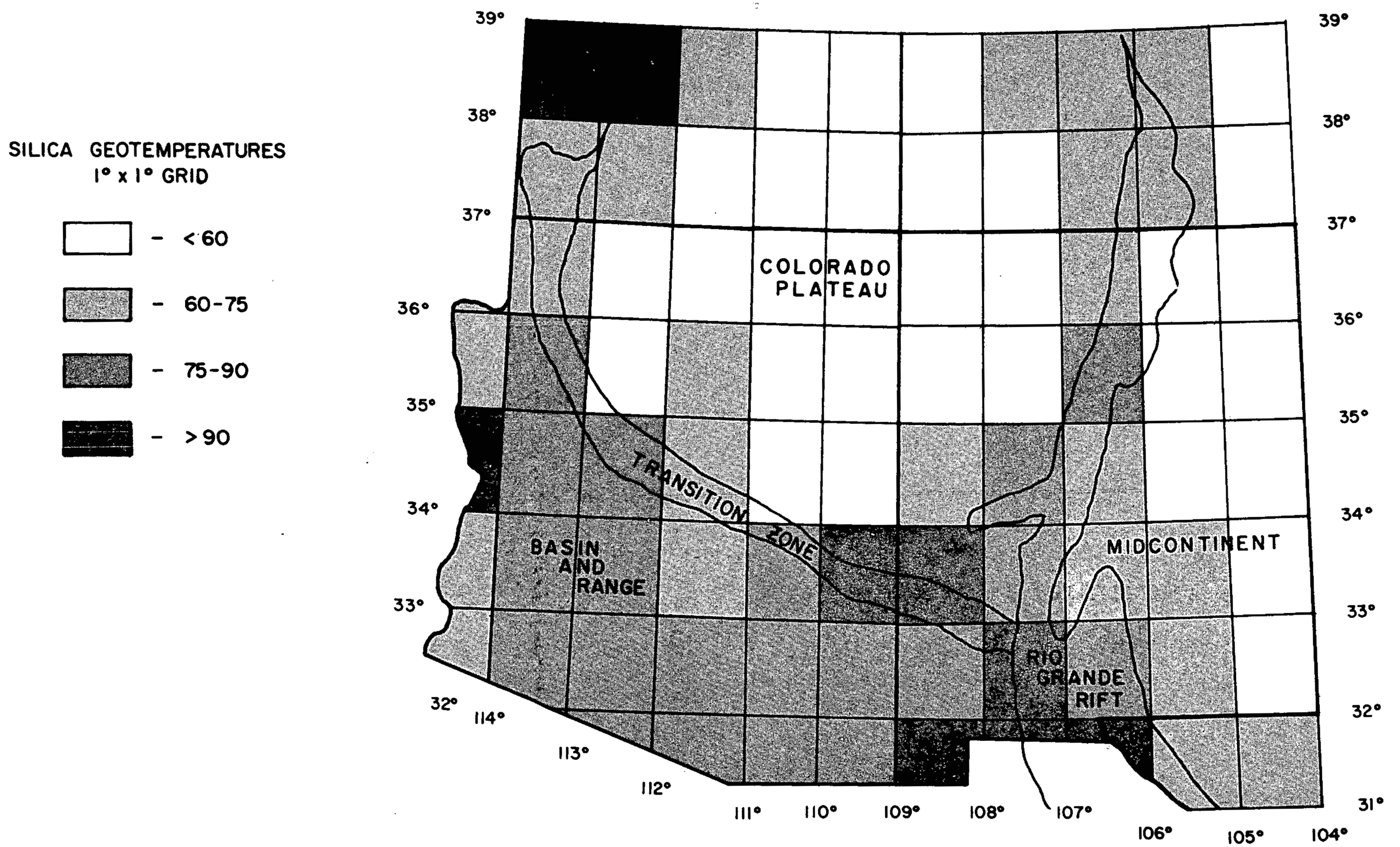
SILICA GEOTEMPERATURES
1° x 1° GRID
- < 60
- 60-75
- 75-90
- > 90
COLORADO PLATEAU
TRANSITION ZONE
BASIN AND RANGE
MIDCONTINENT
RIO GRANDE RIFT
39°
38°
37°
36°
35°
34°
33°
32°
31°
114°
113°
112°
111°
110°
109°
108°
107°
106°
105°
104°

Table 1. Temperature, location, and geothermetric data for springs and wells in Arizona, western New Mexico, and southwestern Utah. T_1 = in situ temperature; T_2 = temperature estimated by Na-K-Ca geothermometer; T_3 = Temperature estimated by SiO_2 geothermometer; L_1 = topographic map quadrangle; L_2 = location in latitude and longitude in degrees, minutes, and tenths of minutes; L_3 = location in township, range, and section division (see section on study area). N/A refers to no data available.

Field #	Lab #	T_1 °C	T_2 °C	T_3 °C	L_1	L_2	L_3	Name
AZ 1	1	16.8	31	129	Clifton	109°27.4'W 33°3.0'N	T4S R28E Sec 27,SE 1/4 SW 1/4	Spring
AZ 2	2	22.5	47	97	Clifton	109°18.2'W 33°5.3'N	T4S R30E Sec 18 NW 1/4 SW 1/4	San Francisco River
AZ 3	3	34.8	175	126	Clifton	109°17.9'W 33°4.2'N	T4S R30E Sec 19 SW 1/4 NE 1/4	Seep
AZ 4	4	42	146	116	Clifton	109°26.4'W 33°2.9'N	T4S R28E Sec 35 NE 1/4 NW 1/4	Spring
AZ 5	5	48	180	153	Clifton	109°17.8'W 33°4.8'N	T4S R30E Sec 18 SW 1/4 SE 1/4	Spring
AZ 6	6	27	82	100	Clifton	109°17.8'W 33°2.4'N	T4S R30E Sec 31 SE 1/4 NW 1/4	San Francisco River
AZ 7	7	82	139	136	Guthrie	109°20.9'W 32°58.4'N	T5S R29E Sec 27 NE 1/4 NE 1/4	Gillard Hot Spring
AZ 8	8	22	61	91	Guthrie	109°20.8'W 32°58.2'N	T5S R29E Sec 27 NE 1/4 SE 1/4	Gila River
AZ 9	9	24	66	102	Guthrie	109°21.2'W 32°58.4'N	T5S R29E Sec 27 NE 1/4 NW 1/4	Gila River

(continued)

Field #	Lab #	T_1 °C	T_2 °C	T_3 °C	L_1	L_2	L_3	Name
AZ 10	10	47	111	95	Ft. Thomas	109°54.0'W 33°0.1'N	T5S R24E Sec 17 NE 1/4	Indian Hot Spring Dug Well
AZ 11	11	46.5	100	95	Ft. Thomas	109°54.0'W 33°0.2'N	T5S R24E Sec 17 NE 1/4	Indian Hot Spring
AZ 12	12	42	85	70	Artesia	109°43.0'W 32°44.7'N	T8S R26E Sec 7 SE 1/4 SE 1/4	Lucats Health Spa (well)
AZ 13	13	41.5	80	64	Safford	109°43.3'W 32°45.4'N	T8S R26E Sec 7 NE 1/4 NW 1/4	Lebanon Mineral Bath (well)
AZ 14	14	43.5	70	115	Safford	109°44.9'W 32°51.8'N	T6S R25E Sec 36 SW 1/4 SW 1/4	Mt. Graham Mineral Bath (well
AZ 15	15	43.5	106	116	Safford	109°33.6'W 32°50.7'N	T7S R27E Sec 11 NW 1/4 NW 1/4 NW 1/4	Pumped Hot Well
AZ 16	16	37.5	101	116	Safford	109°32.9'W 32°51.4'N	T7S R27E Sec 2 NE 1/4 SW 1/4 NE 1/4	Pumped Hot Well
AZ 17	17	44	91	73	Artesia	109°42.5'W 32°43.1'N	T8S R26E Sec 20 SW 1/4 SE 1/4	Artesian Hot Well
AZ 18	18	26.5	33	93	San Simon	109°10.6'W 32°15.4'N	T13S R31E Sec 33 SE 1/4 NE 1/4	Pumped Well
AZ 19	39	22.5	37	128	Clifton	109°28.2'W 33°4.7'N	T4S R28E Sec 28 NW 1/4 NW 1/4	Warm spring
AZ 20	40	31.5	90	104	Ft. Thomas	109°59.0'W 33°4.3'N	T4S R23E Sec 21 NE 1/4 SE 1/4	Warm spring
AZ 21	41	33	106	108	Ft. Thomas	109°54.0'W 33° .00'N	T5S R24E Sec 17 NE 1/4 SE 1/4	Warm spring near Indian Hot Spring

(continued)

Field #	Lab #	T_1 °C	T_2 °C	T_3 °C	L_1	L_2	L_3	Name
AZ 22	42	41.5	79	76	Safford	109°43.2'W 32°45.0'N	T8S R26E Sec 7 SE 1/4 NE 1/4	Collins Health Spa (well)
AZ 23	43	39	76	76	Safford	109°44.0'W 32°45.5'N	T8S R25E Sec 12 NE 1/4 NE 1/4 NE 1/4	Artesian Well
AZ 24	44	37	68	82	Safford	109°43.4'W 32°45.1'N	T8S R26E Sec 7 NE 1/4 SW 1/4	Artesian Well
AZ 25	45	34.5	80	76	Safford	109°43.6'W 32°45.3'N	T8S R26E Sec 7 NW 1/4 NE 1/4	Artesian Well
AZ 26	46	33.5	68	77	Safford	109°43.8'W 32°45.3'N	T8S R26E Sec 7 NW 1/4 NW 1/4	Artesian Well
AZ 27	47	26.5	50	99	Artesia	109°42.5'W 32°41.2'N	T8S R26E Sec 32 SW 1/4 SE 1/4 SE 1/4	Pumped Well
AZ 28	48	33	67	76	Artesia	109°42.5'W 32°41.1'N	T9S R26E Sec 5 NW 1/4 NE 1/4	Pumped hot well
AZ 29	49	33	64	77	Artesia	109°42.3'W 32°41.0'N	T9S R26E Sec 5 NE 1/4 NW 1/4	Windmill well
AZ 30	50	31	42	80	Bowie	109°29.0'W 32°20.7'N	T12S R28E Sec 34 SW 1/4 NW 1/4	Pumped well
AZ 31	51	29	41	86	Bowie	109°28.4'W 32°21.1'N	T12S R28E Sec 34 NE 1/4 NW 1/4	Pumped well
AZ 32	52	36	78	80	Bowie	109°28.2'W 32°21.2'N	T12S R28E Sec 34 NE 1/4 NE 1/4	Pumped well
AZ 33	53	36	48	74	Bowie	109°29.0'W 32°19.1'N	T13S R28E Sec 10 NW 1/4 SW 1/4	Pumped well

(continued)

Field #	Lab #	T_1 °C	T_2 °C	T_3 °C	L_1	L_2	L_3	Name
AZ 34	54	35.5	66	79	Bowie	109°28.9'W 32°24.0'N	T12S R28E Sec 10 SW 1/4 SW 1/4	Pumped well
AZ 35	55	30.5	70	93	Bowie	109°20.8'W 32°26.3'N	T11S R29E Sec 36 NW 1/4 NW 1/4	Howard well
AZ 36	56	23	46	112	Bowie	109°16.4'W 32°19.8'N	T13S R30E Sec 3 NW 1/4 SE 1/4	Windmill well
AZ 37	57	27.5	78	72	Bowie	109°15.7'W 32°18.0'N	T13S R30E Sec 15 SE 1/4 NE 1/4	Windmill well
AZ 38	58	52.5	52	96	Winchester Mtns.	110°14.3'W 32°20.2'N	T13S R21E Sec 6 NE 1/4 NE 1/4	Hooker's Hot Spring
AZ 39	59	32.5	48	90	Winchester Mtns.	110°14.4'W 32°20.9'N	T12S R21E Sec 31 NE 1/4 SW 1/4	Warm Springs
AZ 40	60	23	68	88	Winchester Mtns.	110°13.6'W 32°19.6'N	T13S R21E Sec 5 SW 1/4 SE 1/4	N-O Spring
AZ 41	61	39	63	92	Aqua Caliente	113°19.4'W 32°59.1'N	T5S R10W Sec 19 NE 1/4 NE 1/4	Artesian well
AZ 42	62	45.8	79	74	Aqua Caliente	113°18.3'W 32°59.6'N	T5S R10W Sec 16 SW 1/4 NW 1/4 NW 1/4	Pumped hot well
AZ 43	63	26.8	70	119	Aqua Caliente	113°18.3'W 32°59.4'N	T5S R10W Sec 16 SW 1/4 NW 1/4 SW 1/4	Pumped well
AZ 44	64	24	80	83	Welton Mesa	114°3.3'W 32°44.2'N	T8S R17W Sec 18 NW 1/4 NW 1/4 NW 1/4	Pumped well
AZ 45	65	41.6	77	98	Palomas Mts (no map)	113°30.5'W 33°0.0'N	T5S R12W Sec 9 SW 1/4 SW 1/4 NE 1/4	Pumped hot well

(continued)

Field #	Lab #	T_1 °C	T_2 °C	T_3 °C	L_1	L_2	L_3	Name
AZ 46	66	38.8	92	96	Palomas Mtns (no map)	113°30.5'W 33°0.4'N	T5S R12 W Sec 9 SW 1/4 NW 1/4 NE 1/4	Pumped hot well
AZ 47	67	30.2	86	100	Palomas Mtns (no map)	113°30.6'W 33°1.0'N	T5S R12W Sec 4 SW 1/4 NW 1/4	Pumped hot well
AZ 48	68	32.2	94	99	Baragan Mtn.	113°28.5'W 33°2.1'N	T5S R12W Sec 3 NE 1/4 NE 1/4 NE 1/4	Pumped hot well
AZ 49	69	38.8	82	99	Baragan Mt.	113°24.5'W 33°6.7'N	T4S R11W Sec 5 NW 1/4 NW 1/4 NW 1/4	Pumped hot well
AZ 50	70	39.5	73	97	Hyder Se.	113°22.4'W 33°7.0'N	T4S R11W Sec 2 NW 1/4 NW 1/4 NW 1/4	Pumped hot well
AZ 51	71	27.8	68	97	Hyder Se	113°22.4'W 33°4.5'N	T4S R11W Sec 14 SW 1/4 SW 1/4	Pumped well
AZ 52	72	28.5	76	74	Cotton Center	112°39.0'W 33°8.7'N	T3S R4W Sec 22 SE 1/4 SE 1/4	Pumped well
AZ 53	73	28.2	80	74	Cotton Center	112°39.0'W 33°10.0'N	T3S R4W Sec 15 NE 1/4 SE 1/4	Pumped well
AZ 54	74	35.2	83	68	Cotton Center	112°38.6'W 33°13.6'N	T2S R4W Sec 26 NW 1/4 SE 1/4	Pumped well
AZ 55	75	30	65	72	Cotton Center	112°40.1'W 33°10.7'N	T3S R4W Sec 9 SE 1/4 NE 1/4	Pumped well
AZ 56	76	25	60	79	Cotton Center	112°41.2'W 33°10.7'N	T3S R4W Sec 8 SE 1/4 NE 1/4	Pumped well
AZ 57	77	48.5	88	89	Buckhorn	111°42.2'W 33°25'N	T1N R6E Sec 23 SE 1/4 SE 1/4	Buckhorn Mineral Bath (well)

(continued)

Field #	Lab #	T_1 °C	T_2 °C	T_3 °C	L_1	L_2	L_3	Name
AZ 58	78	38.8	65	79	Buckhorn	111°42.6'W 33°24.1'N	T1N R6# Sec 26 NE 1/4 SW 1/4 SW 1/4	Pumped Hot well
AZ 59	79	39.4	82	66	Artesia	109°42.7'W 32°44.9'N	T8S R26E Sec 8 SW 1/4 NE 1/4	Hot Artesian well
AZ 60	80	29.4	81	80	Safford	109°41.7'W 32°45.2'N	T8S R26E Sec 9 NW 1/4 SW 1/4	Artesian well
AZ 61	81	38.9	85	64	Safford	109°41.6'W 32°45.3'N	T8S R26E Sec 9 NW 1/4 SW 1/4	Pumped well
AZ 62	82	41.1	97	110	Javelina Peak	109°25.6'W 32°31.4'N	T10S R28E Sec 36 NE 1/4 SE 1/4	Hot Artesian well
AZ 63	83	34.1	121	87	Javelina Peak	109°23.7'W 32°33.0'N	T10S R29E Sec 20 NE 1/4 SW 1/4	Pumped well
AZ 64	84	30.8	95	96	Whitlock Mtns NE	109°21.9'W 32°43.3'N	T8S R29E Sec 22 SW 1/4 NE 1/4 NE 1/4	Rock well windmill
AZ 65	85	32.8	114	110	Dry Mountain	109°22.7'W 32°43.8'N	T8S R29E Sec 21 NE 1/4 NW 1/4	Cat tank windmill
AZ 66	86	20	44	73	Hay Mtn.	109°58.5'W 31°40.3'N	T20S R23E Sec 26 NW 1/4 NW 1/4	Windmill well
AZ 67	87	25.5	53	71	Hay Mtn.	109°54.1'W 31°40.4'N	T20S R24E Sec 21 SW 1/4 SE 1/4	Antelope spring
AZ 68	88	19.5	7	88	Swisshelm Mtn.	109°30.5'W 31°35.5'N	T21S R28E Sec 20 NE 1/4 SE 1/4	Lewis spring
AZ 69	89	24.8	2	71	Mt. Wrightson	110°57.8'W 31°41.7'N	T20S R13E Sec 13 NE 1/4 NW 1/4	Windmill at Aqua Caliente

(continued)

Field #	Lab #	T_1 °C	T_2 °C	T_3 °C	L_1	L_2	L_3	Name
AZ 70	90	30.4	76	109	Bellota Ranch	110°43.8'W 32°16.9'N	T13S R16E Sec 20 SW 1/4 SE 1/4	Aqua Caliente spring
AZ 71	91	24.5	33	88	Bellota Ranch	110°42.2'W 32°20.2'N	T13S R16E SE 4 NE 1/4	Mercer spring
AZ 72	92	36.6	157	100	Coolidge Dam	110°31.7'W 33°10.3'N	T3S R18E Sec 17 SW 1/4 SE 1/4	Hot spring
AZ 73	93	N/A	83	76	Coolidge Dam	110°31.7'W 33°10.2'N	T3S R18E Sec 17 SW 1/4	Gila River
AZ 74	94	24.1	8	81	Cutter	110°41.8'W 33°15.4'N	T2S R16E Sec 15 SE 1/4 NW 1/4	Spring
AZ 75	95	18	7	88	Mescal Warm Spring	110°40.8'W 33°14.1'N	T2S R16E Sec 26 N 1/2	Windmill well
AZ 76	96	27.5	10	64	Mescal Warm Spring	110°39.4'W 33°10.1'N	T3S R16E Sec 13 SE 1/4 SE 1/4	Spring
AZ 77	97	29.1	14	66	Mescal Warm Spring	110°38.2'W 33°9.3'N	T3S R17E Sec 20 SW 1/4 NW 1/4	Mescal warm springs
AZ 78	98	22.2	-6	68	Pine	111°27.2'W 34°19.3'N	T11N R9E Sec 5 SE 1/4 SW 1/4	Tonto Natural Bridge
AZ 79	99	22.2	32	110	Strawberry	111°36.2'W 34°24.4'N	T12N R7E Sec 22 SW 1/4	Spring
AZ 80	100	40	153	122	Verde Hot Springs	111°42.5'W 34°21.3'N	T11N R6E Sec 3	Verde Hot Springs
AZ 81	101	cold	42	64	Lake Montezuma	111°45.1'W 34°38.9'N	T15N R6E Sec 31 NE 1/4	Montezuma well

(continued)

Field #	Lab #	T_1 °C	T_2 °C	T_3 °C	L_1	L_2	L_3	Name
AZ 82	102	25.8	49	128	Governor's Peak	112°19.8'W 33°54.9'N	T7N R1W Sec 26 Sec SE 1/4	Mitchell Spring
AZ 83	103	45.5	85	113	Governor's Peak	112°21.7'W 34°59.0'N	T8N R1W Sec 34 SW 1/4 SW 1/4	Castle Hot Springs
AZ 84	104	32	152	110	Wikieup	113°34.5'W 34°41.6'N	T16N R13W Sec 25 SW 1/4 NE 1/4	Coffers Hot Springs
AZ 85	105	42.2	118	90	Hoover Dam	114°44.7'W 36°0.6'N	T22S R65E Sec 29 SW 1/4	Hoover Dam Hot Spring
AZ 86	106	35.1	75	-30	Muddy Peak Nev.	114°32.9'W 36°25.4'N	T17S R67E Sec 30 SW 1/4 NW 1/4	Water Fountain Valley of Fire, Ne
AZ 87	107	26.1	84	64	Littlefield	113°54.9'W 36°53.8'N	T40N R15W Sec 4 SE 1/4 NW 1/4	Spring
AZ 88	108	41.9	192	82	Dixie National Forest	113°16.3'W 37°11.4'N	T41S R13W Sec 25 SW 1/4 SW 1/4	La Verkin Hot Spring, UT
AZ 89	109	20.5	44	51	Dixie National Forest	113°16.1'W 37°11.5'N	T41S R13W Sec 25 SW 1/4 NE 1/4	Virgin River Utah
AZ 90	110	33.5	188	70	Dixie National Forest	113°16.5'W 37°11.5'N	T41S R13W Sec 25 SE 1/4 NE 1/4	Virgin River Utah
AZ 91	111	cold	88	54	Fredonia	112°44.4'W 36°51.8'N	T40N R4W Sec 17 Se 1/4 SE 1/4	Pipe Springs
AZ 92	112	18	192	-30	Lyman Lake SW	109°23.0'W 34°22.1'N	T11N R28E Sec 9 NW 1/4 SE 1/4 SE 1/4	Well
AZ 93	113	25	32	87	St. David	110°12.9'W 31°52.9'N	T18S R21E Sec 8 NE 1/4 SE 1/4	Artesian well
AZ 94	114	25.6	38	82	St. David	110°12.9'W 31°53.0'N	T18S R21E Sec 8 NE 1/4 SE 1/4	Artesian well

(continued)

Field #	Lab #	T_1 °C	T_2 °C	T_3 °C	L_1	L_2	L_3	Name
AZ 95	115	29	72	68	Mobile	112°21.3'W 33°7.4'N	T3S R1W Sec 34 NW 1/4 SW 1/4	Pumped Warm well
AZ 96	116	34.5	139	61	Mobile	112°21.9'W 33°12.2'N	T3S R1W Sec 4 NW 1/4 NE 1/4	Pumped Warm well
AZ 97	117	32.8	98	68	Mobile	112°25.5'W 33°13.1'N	T2S R2W Sec 25 SW 1/4 SW 1/4	Pumped Warm well
AZ 98	118	31.2	123	62	Mobile	112°26.6'W 33°14.0'N	T2S R2W Sec 23 SW 1/4 SW 1/4	Pumped Warm well
AZ 99	119	26.7	4	98	Organ Pipe Cactus National Monument	112°58.5'W 32°0.6'N	T16S R7W Sec 28 NW 1/4 NE 1/4	Bonita Well
AZ 100	120	26.5	77	97	Organ Pipe Cactus National Monument	113°1.4'W 31°57.7'N	T17S R7W Sec 18 SE 1/4	Quitobaquito Spring
AZ 101	121	28	45	79	Coolidge	111°34.0'W 32°54.1'N	T6S R7E Sec 13 NE 1/4 SE 1/4	Pumped well
AZ 102	122	61	86	94	Coolidge	111°34.0'W 32°54.2'N	T6S R7E Sec 13 NE 1/4 SE 1/4	Hot pumped well
AZ 103	123	30	51	90	Coolidge	111°33.5'W 32°53.7'N	T6S R8E Sec 18 SW 1/4 SE 1/4	Hot pumped well
AZ 104	124	49.5	69	93	Coolidge	111°35.0'W 32°50.2'N	T4S R7E Sec 1 SW 1/4	Hot pumped well
AZ 105	125	56.8	63	99	Coolidge	111°32.0'W 32°57.6'N	T5S R8E Sec 28 SW 1/4 SE 1/4	Hot pumped well
AZ 106	126	55.6	79	91	Coolidge	111°35.4'W 32°56.7'N	T5S R7E Sec 36 NE 1/4 SW 1/4	Hot pumped well
AZ 107	127	41.1	73	81	Coolidge	111°34.5'W 32°59.3'N	T5S R7E Sec 13 SE 1/4 NE 1/4	Hot pumped well

(continued)

Field #	Lab #	T_1 °C	T_2 °C	T_3 °C	L_1	L_2	L_3	Name
AZ 108	128	26.7	51	93	Coolidge	111°35.5'W 32°59.4'N	T5S R7E Sec 13 NW 1/4 SE 1/4	Pumped well
AZ 109	129	22.8	22	87	Cassadore Springs	110°24.0'W 33°30.7'N	T2N R19E Sec 17 NW 1/4	Cassadore spring
AZ 110	130	30.0	71	106	Bronco Gulch	110°12.7'W 33°26.4'W	T1N R20E Sec 12	Warm springs
AZ 111	131	16.7	82	52	Hunt	109°34.6'W 34°37.4'N	T14N R26E Sec 10 SW 1/4 SE 1/4	Stinking spring
AZ 112	179	17.2	71	71	Salado	109°23.9'W 34°26.3'N	T12N R28E Sec 17 NW 1/4 SE 1/4	Salado spring
AZ 113	180	cold	76	62	Salado	109°23.9'W 34°26.2'N	T12N R28E Sec 17 SE 1/4 NW 1/4	Little Colorado River
AZ 114	181	cold	79	63	Salado	109°24.0'W 34°26.1'N	T12N R28E Sec 17 SE 1/4 NW 1/4	Little Colorado River
AZ 115	182	21.7	85	63	Salado	109°23.8'W 34°26.1'N	T12N R28E Sec 17 SE 1/4 SW 1/4 NE 1/4	Salado Spring
AZ 116	183	16.1	77	56	Salado	109°24.2'W 34°24.8'N	T12N R28E Sec 29 NW 1/4 SE 1/4	Salt Spring
AZ 117	184	cold	29	80	Springerville	109°17.4'W 34°11.2'N	T9N R29E Sec 8 SE 1/4	Hooper Ranch Domestic Spring
AZ 118	185	cold	28	86	Springerville	109°15.5'W 34°10.5N	T9N R29E Sec 15	Hooper Ranch Windmill
AZ 119	186	39.4	64	77	Artesia	109°42.4W 32°43.2'N	T8S R26E Sec 20 SE 1/4 SW 1/4	Hot Artesian well

(continued)

Field #	Lab #	T_1 °C	T_2 °C	T_3 °C	L_1	L_2	L_3	Name
AZ 120	187	cold	25	84	Redrock	111°22.0'W 32°37.1'N	T9S R9W Sec 24 SE 1/4 SW 1/4	Pumped well
AZ 121	188	27.2	63	118	Warm Springs	114°18.4'W 34°53.8'N	T18N R19W Sec 33 SW 1/4 SE 1/4	Warm springs
AZ 122	189	28.3	68	94	Warm Springs SE	114°20.5'W 34°45.8'N	T16N R19W Sec 3 NW 1/4 NE 1/4	Pumped well
AZ 123	190	29.4	52	96	Yucca	114°8.9'W 34°48.8'N	T17N R18W Sec 36 SE 1/4 NW 1/4	Pumped well
AZ 124	191	32.2	38	83	Yucca	114°8.6'W 34°52.9'N	T17N R18W Sec 1 SE 1/4 SE 1/4	Pumped well
AZ 125	192	19.4	41	105	Peach Springs	113°22.5'W 35°31.7'N	T25N R10W Sec 29 NW 1/4	Shipley well
AZ 126	193	19.4	10	62	Peach Springs	113°25.8'W 35°34.7'N	T25N R11W Sec 3 SE 1/4	Peach Springs
AZ 127	194	15.0	40	82	Truxton	113°33.3'W 35°29.8'N	T24N R12W Sec 3 NW 1/4	Mud Flats well
AZ 128	195	28.3	130	78	Tom Brown Canyon	113°36.6'W 34°55.0'N	T18N R13W Sec 25 NW 1/4 SE 1/4	Warm Spring
AZ 129A	196	23.9	33	84	Pilgrim Wash	113°38.8'W 34°53.5'N	T18N R13W Sec 34 SW 1/4	Windmill well
AZ 129B	197	17.8	53	79	Ives Peak	113°35.3'W 34°14.4'N	T10N R13W Sec 2 NW 1/4 SW 1/4	Pumped well
AZ 130	198	31.1	65	70	Salome	113°34.2'W 33°48.3'N	T5N R13 W Sec 1 SW 1/4	Pumped well

(continued)

Field #	Lab #	T_1 °C	T_2 °C	T_3 °C	L_1	L_2	L_3	Name
AZ 131	199	26.1	56	83	Hope	113°33.4'W 33°44.4'N	T5N R12W Sec 31 NE 1/4 NE 1/4 NE 1/4	Pumped well
AZ 132	200	40.0	87	109	Cortez Peak	113°10.2'W 33°28.3'N	T2N R9W Sec 34 SE 1/4 NW 1/4 NW 1/4	Pumped well
AZ 133	201	49.4	66	70	Arlington	112°57.4'W 33°29.4'N	T2N R7W Sec 26 NE 1/4 SE 1/4 NW 1/4	Pumped well
AZ 134	202	28.3	-18	58	Elgin	110°42.2'W 31°38.1'N	T21S R16E Sec 3 SW 1/4	Monkey Spring
AZ 135	203	warm	108	106	Empire Mtns.	110°31.3'W 31°45.6'N	T19S R18E Sec 29 NE 1/4 NE 1/4	Oil test
AZ 136	334	25.8	51	126	Cochise	109°42.1'W 32°0.5'N	T16S R25E Sec 28 SE 1/4 SE 1/4 SE 1/4	Pumped well
AZ 137		---------------------------sample broken---------------------------						
AZ 138	335	24	99	85	College Peaks	109°16.0'W 31°22.7'N	T24S R30E Sec 11 NW 1/4 NW 1/4	Astin Spring
AZ 139	336	cold	94	89	College Peaks	109°16.7'W 31°20.2'N	T24S R30E Sec 15 SW 1/4 SE 1/4	San Bernardino Ranch
AZ 140	337	29.5	62	90	College Peaks	109°15.7'W 31°20.6'N	T24S R30E Sec 14 NW 1/4	Warm Artesian well
AZ 141	338	25.5	229	129	Guadalupe Canyon	109°10.9'W 31°21.1'N	T24S R31E Sec 10 SW 1/4 SW 1/4	Windmill well
AZ 142	339	28.8	195	89	Guadalupe Canyon	109°14.7'W 31°23.4'N	T23S R30E Sec 36 NW 1/4	Windmill well

(continued)

Field #	Lab #	T_1 °C	T_2 °C	T_3 °C	L_1	L_2	L_3	Name
AZ 143	340	27.5	78	86	Guadalupe Canyon	109°13.4'W 31°25.5'N	T23S R31E Sec 18 SE 1/4 SW 1/4	Windmill well
AZ 144	------sample broken------							
AZ 145	341	29	84	119	Pedregosa Mtns (no map)	109°15.1'W 31°30.9'N	T22S R30E Sec 14 SE 1/4 NE 1/4	Pumped well
AZ 146	342	>50	123	61	Wellton Mesa	114°4.2'W 32°44.4'N	T8S R18W Sec 12 SW 1/4 SW 1/4	Radium Springs well
AZ 147	343	36	80.7	102	Gila Bend	112°44.2'W 32°56.2'N	T6S R5W Sec 2 NE 1/4 SE 1/4	Pumped warm well
AZ 148	344	25.9	53	95	Theba	112°48.2'W 32°55.7'N	T6S R5W Sec 6 SE 1/4 NE 1/4 SE 1/4	Pumped well
AZ 149	345	37.5	84	75	Theba	112°45.1'W 32°55.9'N	T6S R5W Sec 3 SE 1/4 SE 1/4	Pumped warm well
AZ 150	346	21.5	53	110	Kirkland	112°41.5'W 34°26.8'N	T13N R4W Sec 29 NE 1/4 NE 1/4	Seep
AZ 151	347	cold	24	81	Date Ariz.	112°54.1'W 34°16.2'N	T11N R6W Sec 29 SE 1/4 NE 1/4	Pumped well
AZ 152	348	28	9.1	70	Pakoon Springs	113°57.4'W 36°24.9'N	T35N R16W Sec 24 SE 1/4 NW 1/4	Pakoon Springs
AZ 153	349	26	55	68	Klondyke	110°22.5'W 32°59.0'N	T5S R19E Sec 23 SE 1/4	Warm spring
AZ 154	350	20.5	33	93	Klondyke	110°18.5'W 32°48.8'N	T7S R20E Sec 21 NW 1/4 SE 1/4	Cold pumped well

(continued)

Field #	Lab #	T_1 °C	T_2 °C	T_3 °C	L_1	L_2	L_3	Name
AZ 155	351	29.5	72	76	Thatcher	109°50.1'W 32°49.9'N	T7S R25E Sec 7 SW 1/4 SW 1/4 SW 1/4	Warm Artesian well
AZ 156	352	25.5	71	75	Thatcher	109°51.2'W 32°49.1'N	T7S R24E Sec 14 SE 1/4 SE 1/4	Artesian well
AZ 157	353	23	28	91	El Capitan Mtn.	110°49.8'W 33°8.4'N	T3S R15E Sec 29 SE 1/4 NE 1/4	Pumped well
AZ 158	354	23.5	36	83	El Capitan Mtn.	110°50.3'W 33°8.7'N	T3S R15E NW 1/4 SE 1/4 NW 1/4	Pumped well
AZ 159	355	23.5	134	55	Eagar	109°17.9'W 34°5.1'N	T8N R29E Sec 16 SW 1/4 SW 1/4	Pumped well
AZ 160	356	cold	59	74	Voigt Ranch	109°11.1'W 34°17.0'N	T10N R30E Sec 8 NE 1/4 NE 1/4	Cold Dug well
AZ 161	357	cold	84	48	Lyman Lakes W	109°22.7'W 34°20.6'N	T11N R28E Sec 21 NE 1/4 NW 1/4	Windmill well
AZ 162	358	cold	96	44	St. Johns South	109°15.3'W 34°27.5'N	T12N R29E Sec 10 NE 1/4 NW 1/4	Windmill well
AZ 163	359	cold	34	77	Ebert Mountain	111°46.0'W 35°32.7'N	T25N R6E Sec 17 SE 1/4 NE 1/4	Cold Spring
AZ 164	360	cold	24	90	Ebert Mountain	111°46.5'W 35°32.2'N	T25N R6E Sec 20 NW 1/4 SE 1/4	Cold pumped well
AZ 165	361	30	55	68	Glendale	112°13.2'W 33°32.3'N	T2N R1E Sec 2 SE 1/4 SE 1/4 SE 1/4	Pumped well
AZ 166	362	23	74	89	Fowler	112°9.1'W 33°25.8'N	T1N R2E Sec 15 NW 1/4 SW 1/4 SW 1/4	Pumped well

(continued)

Field #	Lab #	T_1 °C	T_2 °C	T_3 °C	L_1	L_2	L_3	Name
AZ 167	363	23	57	77	Fowler	112°9.0'W 33°26.4'N	T1N R2E Sec 10 SW 1/4 SW 1/4 NW 1/4	Pumped well
AZ 168	364	44	61	75	Perryville	112°28.7'W 33°26.4'N	T1N R2W Sec 8 SE 1/4 NE 1/4 SE 1/4	Hot pumped well
AZ 169	365	33	71	70	Perryville	112°24.3'W 33°28.7'N	T2N R1W Sec 31 NW 1/4 NW 1/4 NW 1/4	Hot pumped well
AZ 170	366	N/A	137	93	Hope	113°41.6'W 33°31.4'N	T2N R14W Sec 10 SW 1/4 SE 1/4	Pumped well
AZ 171	367	26.5	66	86	Utting	113°53.2'W 33°50.3'N	T6N R16W Sec 26 NE 1/4 NE 1/4 SE 1/4	Pumped well
AZ 172	368	33.0	N/A	N/A	Cortez Peak	113°6.6'W 33°27.9'N	T1N R8W Sec 6 NE 1/4 NE 1/4 NE 1/4	Hot pumped well
AZ 173	369	35.0	73	81	Cortez Peak	113°6.3'W 33°28.8'N	T2N R2W Sec 32 NW 1/4 NW 1/4 NW 1/4	Hot pumped well
AZ 174	370	39.0	60	79	Paradise Valley	111°54.8'W 33°32.7'N	T2N R4E Sec 2 SE 1/4 NW 1/4	Hot pumped well
AZ 175	371	23.0	36	114	Chandler	111°48.4'W 33°18.4'N	T1S R5E Sec 26 SE 1/4 SE 1/4 SE 1/4	Pumped well
AZ 176	372	19.1	13	70	Cibola National Forest-North half	107°6.9'W 34°6.4'N	T2S R3W Sec 25 NW 1/4 SW 1/4	Windmill well
AZ 177	373	14.9	13.5	88	Cibola National Forest-North half	107°30.5'W 34°5.0'N	T3S R7W Sec 1 NW 1/4 NW 1/4	Buck well
AZ 178	374	35.2	52.1	108	Cibola National Forest-North half	107°32.6'W 34°6.0'N	T2S R7W Sec 27 SE 1/4 SE 1/4 SE 1/4	Warm well

(continued)

Field #	Lab #	T_1 °C	T_2 °C	T_3 °C	L_1	L_2	L_3	Name
AZ 179	375	17.2	22	77	Cibola National Forest-North half	107°32.6'W 34°5.2'N	T2S R7W Sec 34 SE 1/4 SE 1/4 SE 1/4	East well
AZ 180	376	N/A	16	107	Williams 1:250,000	113°39.0'W 35°26.3'N	T24N R3W Sec 22 SE 1/4 SE 1/4	Windmill well
AZ 181	377	31.0	82	79	Overton Beach Nev.	114°22.3'W 36°27.7'N	T18S T67E Sec 13 NW 1/4 SW 1/4	Spring
AZ 182	378	31.2	76	58	Overton Beach Nev.	114°26.7'W 36°22.6'N	T18S T67E Sec 12 SE 1/4 SE 1/4	Rogers Spring
AZ 183	379	31.0	81	58	Overton Beach Nev.	114°26.1'W 36°23.4'N	T18S R68E Sec 7 NE 1/4 NW 1/4 NW 1/4	Blue Pt. Spring
AZ 184	380	N/A	73	61	Kingman 1:250,000	114°14.7'W 35°24.4'N	T23N R18W Sec 6 SW 1/4 NE 1/4 NE 1/4	Well
J1	N/A	25.6	2.8	51.8	Reading Mountain	108°21.5'W 32°53.4'N	T16S R15W Sec 26 SE 1/4 NW 1/4	Allen Spring
J2	N/A	36.7	51.8	97.4	Dillon Mountain	108°47.9'W 33°49.8'N	T5S R19W Sec 35 NW 1/4 NW 1/4 NW 1/4	Upper Frisco Hot Springs
J3	N/A	43.3	148.6	121.9	Wilson Mountain	108°52.7'W 33°14.6'N	T12S R20W Sec 23 SW 1/4 NE 1/4 NW 1/4	Lower Frisco Hot Springs
J4	N/A	40.0	97.0	114.3	Wilson Mountain	108°52.6'W 33°14.9'N	T12S R20W Sec 23 NW 1/4 SW 1/4	Lower Frisco Hot Springs
J5	N/A	48.9	147.9	131.9	Wilson Mountain	108°52.8'W 33°14.5'N	T12S R20W Sec 23 SW 1/4 NE 1/4 SW 1/4	Lower Frisco Hot Springs
J6	N/A	21.1	38.9	74.1	Buckhorn (no map)	108°41.5'W 33°1.6'N	T15S R18W Sec 3 SW 1/4 NW 1/4 NW 1/4	Well

Field	Lab #	T_1 °C	T_2 °C	T_3 °C	L_1	L_2	L_3	Name
J7	N/A	25.0	53.0	78.4	Cliff	108°37.9'W 32°58.5N	T15S R17W Sec 30 NE 1/4 NE 1/4 NE 1/4	Warm Spring
P1	N/A	23.0	38.1	81.2	Swallow Fork Peak	108°47.6'W 32°8.7'N	T25S R19W Sec 10 NW 1/4 SW 1/4 SW 1/4	Road Well
P2	N/A	85.0	172.9	160.1	Swallow Fork Peak	108°49.9'W 32°8.7'N	T25S R19W Sec 7 NE 1/4 SW 1/4 SE 1/4	Hot Well
P3	N/A	81.0	168.5	158.2	Swallow Fork Peak	108°49.9'W 32°8.9'N	T25S R19W Sec 7 NE 1/4 NW 1/4 SE 1/4	McCants Well
P4	N/A	71.0	158.8	145.5	Swallow Fork Peak	108°50.4'W 32°8.7'N	T25S R19W Sec 7 NW 1/4 SE 1/4 SW 1/4	Well
P5	N/A	22.0	60.0	94.2	Swallow Fork Peak	108°50.9'W 32°8.1'N	T25S R20W Sec 13 NE 1/4 NW 1/4 SE 1/4	Well
P10	N/A	23.0	71.1	111.1	Swallow Fork Peak	108°49.7'W 32°13.6'N	T24S R19W Sec 7 SE 1/4 SE 1/4 NE 1/4	Hill Well
P13	N/A	19.0	49.3	121.1	Swallow Fork Peak	108°52.4'W 32°13.7'N	T24S R20W Sec 11 SW 1/4 NE 1/4 SW 1/4	Well
P14	N/A	20.0	38.2	100.3	Swallow Fork Peak	108°52.8'W 32°10.1'N	T24S R20W Sec 34 SE 1/4 SE 1/4 SE 1/4	Well
P15	N/A	24.0	57.4	85.0	Table Top Mountain	108°50.7'W 32°6.1'N	T25S R20W Sec 25 SE 1/4 NE 1/4 NE 1/4	Well
P20	N/A	22.0	38.6	102.2	Cotton City	108°54.0'W 32°4.8'N	T26S R20W Sec 5 SE 1/4 SE 1/4 SE 1/4	Well
P22	N/A	22.0	41.6	95.2	Table Top Mountain	108°52.9'W 32°4.1'N	T26S R20W Sec 3 SW 1/4 SW 1/4 SW 1/4	Well
P23	N/A	24.0	45.6	78.4	Swallow Fork Peak	108°48.8'W 32°12.2'N	T24S R19W Sec 2 SE 1/4 NE 1/4 NW 1/4	National Well

Field	Lab #	T_1 °C	T_2 °C	T_3 °C	L_1	L_2	L_3	Name
P24	N/A	N/A	156.0	161.0	Swallow Fork Peak	108°50.7'W 32°10.9'N	T24S R20W Sec 25 SE 1/4 SE 1/4 SE 1/4	Well
P25	N/A	23.0	50.1	85.0	Swallow Fork Peak	108°52.8'W 32°9.1'N	T25S R20W Sec 10 NE 1/4 NE 1/4 NE 1/4	Well
Gila 1	SW28	17.7	36.1	94.0	Las Cruces 1:250,000	107°57.5'W 32"28.7'N	T21S R11W Sec 15, SE 1/4	Well
Gila 2	SW29	58.8	78.4	97.2	Dwyer	107°59.7'W 32°33.3'N	T20S R11W Sec 20 NW 1/4 SE 1/4	Faywood Hot Spring
Gila 3	SW30	21.3	47.0	92.8	Las Cruces 1:250,000	107°58.1'W 32°33.5'N	T20S R11W Sec 22 NW 1/4	Well
Gila 4	SW31	58.2	74.5	106.8	Dwyer	107°50.1'W 32°44.9'N	T18S R10W Sec 13 NW 1/4 NW 1/4 NW 1/4	Mimbres Hot Spring
Gila 5	SW32	62.8	76.3	119.8	Gila National Forest	108°12.5'W 33°12.0'N	T13S R13W Sec 5 NE 1/4 NW 1/4	Gila Hot Spring
Gila 6	SW33	66.3	77.3	120.5	Gila National Forest	108°12.6'W 33°12.0'N	T13S R13W Sec 5 NE 1/4 NW 1/4	Gila Hot Spring
Gila 7	SW34	64.8	74.4	128.9	Gila National Forest	108°14.2'W 33°14.0'N	T12S R14W Sec 24 SE 1/4 SE 1/4	Hot Spring
Gila 8	SW35	43.6	62.2	128.9	Gila National Forest	108°12.7'W 33°9.8'N	T13S R13W Sec 17 SW 1/4 NE 1/4	Hot Spring
Gila 9	SW36	N/A	44.4	110.3	Gila National Forest	108°00.5'W 32°34.6'N	T20S R11W Sec 8 SW 1/4 SW 1/4 SW 1/4	Well
Gila 10	SW37	N/A	48.4	111.2	Gila National Forest	108°00.0'W 32°35.1'N	T20S R11W Sec 8 NW 1/4 SE 1/4 SE 1/4	Well

Field #	Lab #	T_1 °C	T_2 °C	T_3 °C	L_1	L_2	L_3	Name
Gila 11	SW38	N/A	55.0	105.9	Gila National Forest	108°2.5'W 32°33.8'N	T20S R11W Sec 18 SW 1/4 SW 1/4 NE 1/4	Well
LD1	SW132	25.3	141.6	84.0	Lordsburg	108°38.8'W 32°18.9'N	T23S R18W Sec 12 SE 1/4 SW 1/4 NW 1/4	Well
LD2	SW133	33.0	150.6	91.2	Muir Ranch	108°30.7'W 32°13.7'N	T24S R16W Sec 8 SE 1/4 NW 1/4 SW 1/4	Well
LD3	SW134	N/A	61.3	95.3	Muir Ranch	108°33.6'W 32°10.6'N	T24S R17W Sec 35 NE 1/4 SW1/4	Well
LD4	SW135	N/A	57.6	82.5	Coyote Peak	108°34.5'W 32°3.7'N	T26S R17W Sec 10 NW 1/4 NW 1/4 NW 1/4	Lone Hill Well
LD5	SW136	N/A	94.3	99.1	Playas	108°36.9'W 31°55.8'N	T27S R17W Sec 30 SW 1/4 NE 1/4	Well
LD6	SW137	N/A	35.8	89.5	Pratt (no map)	108°48.5'W 31°57.0'N	T27S R19W Sec 12 SE 1/4 SW 1/4 NE 1/4	Well
LD7	SW138	24.4	21.3	99.5	Pratt (no map)	108°46.5'W 31°48.6'N	T29S R19W Sec 4 SE 1/4 SW 1/4 NE 1/4	Well
LD8	SW139	21.2	18.9	97.2	Pratt (no map)	108°52.5'W 31°50.0'N	T28S R20W Sec 34 NE 1/4 NW 1/4 NW 1/4	Well
LD9	SW140	18.7	44.7	99.5	Animas Peak (no map)	108°49.9'W 31°40.2'N	T30S R20W Sec 25 NE 1/4 SE 1/4 NE 1/4	Well
LD10	SW141	N/A	57.6	90.9	Animas Peak (no map)	108°52.2'W 31°35.8'N	T31S R20W Sec 22 NE 1/4 SW 1/4 NE 1/4	Well
LD11	SW142	18.3	69.9	104.0	Cinenega Springs	108°51.8'W 31°24.2'N	T33S R20W Sec 27 SW 1/4 NW 1/4 SE 1/4	Well
LD12	SW143	18.0	53.3	86.7	Cinenega Springs	108°54.9'W 31°23.2'N	T33S R20W Sec 31 SW 1/4 SE 1/4 SE 1/4	Well

Field #	Lab #	T_1 °C	T_2 °C	T_3 °C	L_1	L_2	L_3	Name
LD13	SW144	17.0	56.2	90.9	Cinenega Springs	108°47.9'W 31°20.4'N	T34S R19W Sec 18 SE 1/4	Cienega Springs
LD14	SW145	24.9	38.2	51.0	Cinenega Springs	108°50.4'W 31°28.0'N	T33S R20W Sec 2 NW 1/4	Well
LD15	SW146	20.6	38.6	99.5	Animas Peak	108°52.4'W 31°34.2'N	T31S R20W Sec 33 NW 1/4 SE 1/4 NE 1/4	Well
LD16	SW147	19.1	27.3	93.5	Animas Peak	108°54.3'W 31°37.3'N	T31S R20W Sec 7 SE 1/4 NW 1/4 NW 1/4	Well
LD17	SW148	21.6	23.3	95.9	Animas Peak	108°48.6'W 31°44.8'N	T29S R19W Sec 30 SE 1/4 SW 1/4 SE 1/4	Well
LD18	SW149	N/A	35.1	94.8	Animas Peak	108°48.0'W 31°52.9'N	T28S R19W Sec 8 SE 1/4 SW 1/4 NW 1/4	Well
Gila 20	SW150	74.6	56.2	116.5	Canyon Hill	108°29.0'W 33°6.5'N	T14S R16W Sec 3 SW 1/4 SE 1/4 (unsurveyed)	Spring on Turkey Creek
Gila 21	SW151	28.0	53.8	101.8	Canyon Hill	108°29.0'W 33°6.5'N	T14S R16W Sec 3 SW 1/4 SE 1/4 (unsurveyed)	Turkey Creek
Gila 22	SW152	69.8	68.3	117.4	Canyon Hill	108°29.0'W 33°6.5'N	T14S R16W Sec 3 SW 1/4 SE 1/4 (unsurveyed)	Spring on Turkey Creek
Gila 23	SW153	29.0	50.5	66.0	Canteen Canyon	108°35.8'W 33°1.1'N	T15S R17W Sec 9 NE 1/4 NE 1/4 SW 1/4	Well
Gila 24	SW154	31.0	41.8	85.3	Cliff	108°35.0'W 32°52.6'N	T16S R17W Sec 34 NE 1/4 NW 1/4	Spring
Gila 25	SW155	N/A	67.5	99.5	Cliff	108°36.7'W 32°56.1'N	T16S R17W Sec 9 NE 1/4 NE 1/4 SE 1/4	Well

Field #	Lab #	T_1 °C	T_2 °C	T_3 °C	L_1	L_2	L_3	Name
Gila 26	SW156	19.0	24.0	101.2	Cliff	108°35.9'W 32°55.4'N	T16S R17W Sec 10 SE 1/4 SW 1/4	Well
Gila 27	SW157	20.0	66.7	113.5	Cliff	108°36.4'W 32°57.9'N	T15S R17W Sec 28 SW 1/4 SE 1/4	Well
Gila 28	SW158	21.5	58.4	104.5	Cliff	108°36.8'W 32°57.9'N	T15S R17W Sec 29 SE 1/4 SE 1/4	Artesian Well
Gila 29	SW159	27.0	49.5	108.7	Cliff	108°30.6'W 32°50.5'N	T17S R16W Sec 8 NE 1/4 SE 1/4 SE 1/4	Mangas Springs
Gila 30	SW160	24.0	77.8	100.1	Cliff	108°35.5'W 32°48.8'N	T17S R17W Sec 32 NW 1/4 SW1/4 SW1/4	Spring
MFG1	SW161	31.0	34.6	102.7	Alum Mountain	108°15.8'W 33°17.0'N	T11S R14W Sec 35 SW 1/4 SE 1/4(un-surveyed)	Spring
MFG2	SW162	37.0	19.4	107.2	Alum Mountain	108°16.9'W 33°17.4'N	T11S R14W Sec 35 SW 1/4 NE 1/4 (un-surveyed)	Spring
MFG3	SW163	36.0	31.4	107.5	Alum Mountain	108°16.9'W 33°17.4'N	T11S R14W Sec 34 NE 1/4 SE 1/4 (un-surveyed)	Spring
MFG4	SW164	26.0	22.6	105.4	Alum Mountain	108°15.0'W 33°16.4'N	T12S R14W Sec 1 SW 1/4 SW 1/4 SW1/4 (unsurveyed)	Spring
AN1	SW283	18.0	38.5	109.3	Swallow Fork Peak	108°52.2'W 32°11.7'N	T24S R20W Sec 26 NW 1/4 NE 1/4 NE 1/4	
AN2	SW284	19.0	58.1	54.1	Swallow Fork Peak	108°48.8'W 32°12.2'N	T24S R19W Sec 2 SE 1/4 NE 1/4 NW 1/4	
AN3	SW285	16.0	41.0	117.1	Swallow Fork Peak	108°52.8'W 32°10.1'N	T24S R20W Sec 34 SE 1/4 SE 1/4	
AN4	SW286	24.0	94.0	135.8	Swallow Fork Peak	108°50.7'W 32°9.7'N	T25S R20W Sec 1 NE 1/4 SE 1/4 NE 1/4	

Field #	Lab #	T_1 °C	T_2 °C	T_3 °C	L_1	L_2	L_3	Name
AN5	SW287	19.0	60.0	102.3	Swallow Fork Peak	108°50.9'W 32°8.1'N	T25S R20W Sec 13 NE 1/4 NW 1/4 SE 1/4	
AN6	SW288	19.0	52.3	79.4	Table Top Mountain	108°51.2'W 32°7.3'N	T25S R20W Sec 13 SW 1/4 SE 1/4 SE 1/4	
AN7	SW289	20.0	52.2	78.7	Table Top Mountain	108°50.8'W 32°6.3'N	T25S R20W Sec 25 NE 1/4 NE 1/4 SE 1/4	
AN8	SW290	N/A	40.7	84.0	Swallow Fork Peak	108°53.2'W 32°7.7'N	T25S R20W Sec 15 SE 1/4 NW 1/4	
AN9	SW291	18.0	61.2	-20.9	Table Top Mountain	108°52.8'W 32°4.8'N	T25S R20W Sec 34 SE 1/4 SE 1/4	
AN10	SW292	18.0	58.0	89.0	Cotton City	108°53.5W 32° 4.5N	T26S R20W Sec 4 NW 1/4 SE 1/4	
AN11	SW293	19.0	44.9	96.5	Cotton City	108°54.6W 32°3.1N	T20S R20W Sec 5 SW 1/4 SE 1/4	
AN12	SW294	21.0	44.8	97.1	Cotton City	108°54.0'W 32°4.7'N	T26S R20W Sec 5 NE 1/4 NE 1/4 NE 1/4	
AN13	SW295	26.0	63.9	82.3	Table Top Mountain	108°52.7W 32°3.1'N	T26S R20W Sec 14 NW 1/4 NE 1/4 NW 1/4	
AN14	SW296	20.0	44.6	96.0	Cotton City	108°55.0'W 32°2.7'N	T26S R20W Sec 17 NW 1/4 SW 1/4 SW 1/4	
AN15	SW297	24.0	44.1	79.6	Table Top Mountain	108°51.2'W 32°4.3'N	T26S R20W Sec 14 SW 1/4 SW 1/4 SE 1/4	
AN16	SW298	20.0	48.1	88.4	Cotton City	108°53.3W 32°3.6'N	T26S R20W Sec 9 NE 1/4 SW 1/4 SE 1/4	
AN17	SW299	22.0	80.3	79.6	Table Top Mountain	108°52.7'W 32°4.8'N	T25S R20W Sec 35 SE 1/4 SE 1/4 SE 1/4	

Field #	Lab #	T_1 °C	T_2 °C	T_3 °C	L_1	L_2	L_3	Name
AN18	SW300	21.0	45.3	89.0	Table Top Mountain	108°52.2W 32°5.6'N	T25S R20W Sec 26 SE 1/4 SW 1/4 SW 1/4	
AN19	SW301	N/A	29.9	91.8	Swallow Fork Peak	108°46.4'W 32°9.1'N	T25S R19W Sec 11 NW 1/4 NW 1/4	
AN20	SW302	20.0	39.2	101.5	Cotton City	108°53.6'W 32°5.2'N	T25S R20W Sec 34 NW 1/4 SW 1/4 SE 1/4	
AN21	SW303	19.0	48.7	89.0	Cotton City	108°55.3'W 32°7.2'N	T25S R20W Sec 20 NW 1/4 NE 1/4 SW 1/4	
AN22	SW304	19.0	47.6	82.9	Table Top Mountain	108°51.7'W 32°6.3'N	T25S R20W Sec 25 NW 1/4 NW 1/4 SW 1/4	
AN23	SW305	18.0	41.4	88.4	Steins	108°52.7'W 32°9.1'N	T25S R20W Sec 2 SW 1/4 SW 1/4 SW 1/4	
SWAN 306	SW306	34.0	22.7	101.4	Alum Mountain	108°15.0'W 33°16.4'N	T12S R14W Sec 1 SW 1/4 SW 1/4 SW 1/4 (unsurveyed)	Spring
SWAN 307	SW307	32.0	22.7	101.9	Alum Mountain	108°15.0'W 33°16.4'N	T12S R14W Sec 1 SW 1/4 SW 1/4 SW1/4 (unsurveyed)	Spring
SWAN 308	SW308	7.0	29.5	76.8	Alum Mountain	108°15.0'W 33°16.4'N	T12S R14W Sec 1 SW 1/4 SW 1/4 SW1/4 (unsurveyed)	Middle Fork Gila River
SWAN 309	SW309	N/A	29.7	91.3	Alum Mountain	108°12.1'W 33°10.6'N	T13S R13W Sec 8 SE 1/4 NW 1/4 (unsurveyed)	East Fork Gila River
SWAN 310	SW310	N/A	21.8	72.3	Alum Mountain	108°12.3'W 33°10.8'N	T13S R13W Sec 8 NE 1/4 SW 1/4 (unsurveyed)	West Fork Gila River

Table 2. Major Cations and Anions for Springs and Wells in Arizona, Western New Mexico, and Southwestern Utah.

Field #	Lab #	TDS	pH	Ca	Mg	Na	K	CO_3	HCO_3	Cl	SO_4
				mg/l							
AZ1	1	420	8.23	50.2	26.8	22.5	3.1	0	305.0	8.8	26.9
AZ2	2	380	8.12	41.6	10.1	49.7	3.9	0	183.2	57.8	48.4
AZ3	3	12576	7.74	1064.4	52.2	3207.3	209.8	0	91.5	6459.9	0
AZ4	4	676	8.13	14.4	2.2	197.8	9.0	0	287.9	120.7	76.8
AZ5	5	14548	7.86	925.8	22.9	3585.9	243.4	0	150.0	7484.5	0
AZ6	6	808	8.22	73.6	11.4	187.0	11.7	0	190.3	307.4	46.1
AZ7	7	1244	8.04	20.0	0.7	410.8	13.2	0	219.6	463.6	174.7
AZ8	8	424	8.59	34.4	7.8	87.4	4.7	13.2	178.1	38.3	90.3
AZ9	9	432	8.51	31.8	7.3	96.8	5.1	0	198.8	50.0	90.3
AZ10	10	2672	7.87	79.6	9.0	837.0	13.6	0	107.3	1196.3	322.6
AZ11	11	3004	7.88	92.8	10.3	1022.6	12.9	0	101.2	1382.0	361.0
AZ12	12	1152	8.50	21.0	0.4	523.7	3.9	0	82.9	203.7	282.3
AZ13	13	2256	8.07	69.0	2.6	1053.6	6.6	0	47.6	447.3	604.8
AZ14	14	8292	7.85	135.4	7.9	3027.3	10.9	0	80.5	4517.3	787.2
AZ15	15	1076	8.54	7.4	1.3	330.7	4.3	13.2	233.0	203.0	295.8
AZ16	16	1012	8.43	6.2	1.0	357.6	3.9	8.4	250.1	167.5	226.6
AZ17	17	1248	8.38	16.0	0.7	497.9	4.3	0	99.2	197.4	266.9
AZ18	18	280	7.89	39.2	2.9	39.6	2.3	0	148.8	6.0	67.2
AZ19	39	352	7.69	29.5	22.8	10.8	3.5	0	233.1	1.1	12.0
AZ20	40	2556	7.47	94.2	10.2	749.4	10.9	0	114.7	1153.3	305.5
AZ21	41	3048	7.45	80.6	8.0	920.7	12.9	0	108.6	1411.7	338.1
AZ22	42	1992	8.50	22.0	0.5	677.7	3.9	2.4	40.3	817.5	368.8
AZ23	43	2660	8.51	64.9	1.1	782.6	5.5	3.6	30.5	1023.5	496.6
AZ24	44	1160	8.82	18.0	0.2	384.1	2.3	13.2	40.3	418.0	294.4
AZ25	45	1116	9.00	7.2	0.2	379.1	2.3	16.8	64.7	399.2	246.8
AZ26	46	900	8.92	9.2	0.1	306.0	1.6	10.8	48.8	293.5	195.0
AZ27	47	540	7.95	21.6	1.8	141.6	2.0	0	161.1	86.1	114.3
AZ28	48	504	8.50	4.6	0.1	161.9	1.2	9.6	136.7	109.1	105.7
AZ29	49	740	8.18	17.2	1.0	248.9	2.3	0	218.4	151.0	172.4
AZ30	50	268	8.03	22.2	1.9	55.1	2.0	0	98.8	31.5	61.0
AZ31	51	424	7.69	41.9	6.4	77.4	2.7	0	170.8	66.3	78.8
AZ32	52	392	8.65	7.6	0.2	112.6	2.7	6.0	83.0	62.7	112.9
AZ33	53	256	8.08	23.2	2.1	49.4	2.7	0	117.1	26.9	56.7
AZ34	54	704	8.06	26.2	0.4	204.3	3.5	0	117.1	173.3	120.6
AZ35	55	2016	7.91	81.1	12.0	517.9	6.2	0	184.3	175.1	1025.9
AZ36	56	584	7.89	27.4	8.4	145.0	2.0	0	324.6	20.5	134.0
AZ37	57	372	9.30	1.2	0.1	136.3	0.8	58.5	153.8	1.8	56.7
AZ38	58	252	8.98	1.2	0.1	62.7	0.4	27.6	109.8	0.4	8.1
AZ39	59	180	8.99	1.4	.006	55.4	0.4	24.0	107.4	0.4	5.8
AZ40	60	280	7.91	17.8	14.2	36.3	5.1	0	208.7	1.8	16.3
AZ41	61	676	7.67	13.6	0.7	213.6	2.0	0	74.4	201.7	135.4
AZ42	62	696	8.47	8.0	0.4	223.7	2.3	9.6	76.9	206.0	159.0
AZ43	63	3920	7.68	113.2	13.7	1292.0	5.9	0	379.5	959.0	1249.3
AZ44	64	8356	7.51	160.7	208.3	2320.1	12.9	0	538.1	3075.5	1583.6
AZ45	65	624	8.02	21.6	1.7	151.3	4.7	0	125.7	165.9	86.4
AZ46	66	496	8.03	15.4	1.8	150.3	5.9	0	133.0	128.0	90.8
AZ47	67	752	7.91	43.7	7.4	200.2	9.0	0	148.9	193.2	153.2
AZ48	68	568	7.97	20.2	2.4	153.1	7.4	0	137.9	129.7	92.2

				mg/l							
Field #	Lab #	TDS	pH	Ca	Mg	Na	K	CO_3	HCO_3	Cl	SO_4
AZ49	69	532	7.99	23.4	1.9	140.5	5.9	0	114.7	119.1	88.0
AZ50	70	880	8.18	34.8	1.7	283.5	4.7	0	90.3	305.6	132.0
AZ51	71	640	8.52	16.0	1.8	197.0	2.7	10.8	100.0	185.0	115.7
AZ52	72	3276	7.54	272.7	16.8	607.4	15.6	0	131.8	1149.0	498.1
AZ53	73	1848	7.67	117.8	6.0	480.7	10.9	0	128.1	714.0	333.3
AZ54	74	2008	7.85	113.2	3.5	533.3	11.3	0	150.1	889.1	168.1
AZ55	75	2008	7.73	167.3	26.1	406.9	9.0	0	163.5	711.5	344.9
AZ56	76	2008	7.48	180.1	66.1	394.5	8.2	0	220.9	828.2	233.4
AZ57	77	740	8.07	22.8	1.1	244.8	5.9	0	93.9	306.7	70.1
AZ58	78	384	8.53	14.2	0.6	108.3	2.7	8.4	93.9	126.2	35.5
AZ59	79	3000	7.86	42.1	5.7	1024.6	6.2	0	117.1	1124.9	584.5
AZ60	80	9048	7.60	67.9	20.7	3283.4	14.1	0	164.7	4096.9	1687.8
AZ61	81	1464	7.90	37.7	11.4	442.8	6.2	0	172.0	365.1	410.2
AZ62	82	960	8.32	6.6	0.4	350.6	3.5	0	191.6	200.0	283.8
AZ63	83	720	9.02	2.2	0.2	253.3	4.3	22.8	129.3	111.0	206.5
AZ64	84	860	8.28	35.8	9.5	236.8	9.8	0	117.1	183.6	273.8
AZ65	85	1000	8.53	5.4	0.5	332.0	5.1	13.2	194.0	190.0	269.0
AZ66	86	432	8.16	46.9	16.0	31.5	4.3	0	263.6	1.8	32.7
AZ67	87	120	7.26	15.0	3.3	3.4	5.9	0	57.3	0	10.6
AZ68	88	416	7.84	81.0	9.5	19.1	1.5	0	203.8	0	92.2
AZ69	89	408	7.85	75.7	14.8	17.0	1.2	0	220.9	1.1	90.8
AZ70	90	632	7.79	26.4	2.4	132.6	5.5	0	195.2	25.9	188.3
AZ71	91	256	7.41	17.2	4.2	27.6	1.5	0	35.4	2.1	86.0
AZ72	92	2096	7.37	124.4	29.0	519.8	30.9	0	331.9	948.4	50.4
AZ73	93	852	7.71	35.9	22.1	193.3	7.4	0	200.1	258.4	105.7
AZ74	94	492	7.80	69.1	33.2	17.0	1.5	0	291.6	8.5	65.3
AZ75	95	548	7.52	65.5	31.1	26.2	1.2	0	396.6	17.0	9.6
AZ76	96	404	7.73	60.7	24.5	17.0	1.5	0	311.2	5.3	9.1
AZ77	97	332	7.85	42.2	19.2	14.7	1.5	0	245.2	15.6	8.1
AZ78	98	368	8.00	48.3	28.7	6.7	0.8	0	290.4	0.7	8.1
AZ79	99	404	8.31	46.3	29.9	10.1	3.9	0	327.0	1.1	2.9
AZ80	100	3236	6.99	103.6	39.5	933.8	40.3	0	1388.1	528.9	550.4
AZ81	101	756	7.21	111.8	37.2	50.6	6.2	0	616.3	42.2	8.1
AZ82	102	680	7.55	73.1	28.3	80.2	5.1	0	283.1	86.1	104.7
AZ83	103	760	7.86	29.0	2.3	202.1	6.6	0	135.4	143.9	195.0
AZ84	104	1176	8.55	22.4	20.5	345.5	16.0	25.2	327.0	186.1	252.1
AZ85	105	1040	8.12	62.7	2.7	271.0	7.4	0	113.5	143.6	431.3
AZ86	106	160	9.57	5.0	0.7	35.6	2.7	0	36.6	8.1	63.9
AZ87	107	2740	7.15	415.6	119.8	231.5	36.4	0	449.1	385.7	1108.1
AZ88	108	9740	6.52	759.5	146.7	2290.7	216.2	0	991.5	3362.7	1687.8
AZ89	109	540	8.04	65.7	26.4	52.2	4.7	0	192.8	52.8	134.0
AZ90	110	5060	7.11	416.8	79.2	1032.7	107.1	0	598.0	1700.0	936.6
AZ91	111	352	7.79	6.0	5.1	76.5	3.5	0	224.5	23.4	5.8
AZ92	112	300	8.92	6.0	5.1	79.3	10.2	0	107.4	81.2	5.8
AZ93	113	200	7.58	24.6	1.3	23.2	2.0	0	142.8	0	3.8
AZ94	114	200	7.83	13.4	0.7	32.4	1.5	0	117.1	0	5.8
AZ95	115	632	7.64	32.9	8.1	172.9	5.1	0	159.9	174.8	86.4
AZ96	116	868	7.77	25.4	3.2	263.0	10.2	0	86.6	323.3	112.4
AZ97	117	996	7.84	29.0	5.5	295.9	8.6	0	114.7	352.4	168.1
AZ98	118	736	8.13	14.8	1.6	245.5	6.2	0	90.3	256.3	104.2

Field #	Lab #	TDS	pH	Ca	Mg	Na	K	CO_3	HCO_3	Cl	SO_4
				mg/l							
AZ99	119	408	7.64	56.1	10.9	39.1	0.8	0	323.4	0.7	7.2
AZ100	120	768	7.66	33.9	9.8	177.2	6.2	0	317.3	141.4	90.8
AZ101	121	616	7.63	67.5	3.0	103.7	3.9	0	142.8	156.3	92.2
AZ102	122	924	8.67	11.0	0.8	412.2	3.1	0	75.7	358.8	301.6
AZ103	123	2952	7.41	359.3	50.9	498.6	8.6	0	252.6	799.8	877.5
AZ104	124	572	8.93	8.8	0.4	164.4	2.0	8.4	89.1	121.2	110.0
AZ105	125	744	8.81	14.2	0.8	236.8	2.0	0	67.1	206.0	183.0
AZ106	126	1172	8.59	23.6	1.8	388.3	3.9	0	62.2	425.8	229.6
AZ107	127	552	8.57	9.2	0.1	163.4	2.3	0	94.0	127.6	107.1
AZ108	128	1020	7.68	144.5	21.7	106.7	7.8	0	218.4	23.4	444.7
AZ109	129	400	7.70	48.5	19.7	16.1	2.3	0	278.2	4.9	5.8
AZ110	130	748	7.67	43.3	20.5	157.5	6.2	0	245.3	244.2	7.2
AZ111	131	2572	7.02	255.9	88.7	432.9	20.3	0	537.0	641.3	587.4
AZ112	179	2272	7.46	269.3	58.1	352.2	16.0	0	49.3	408.6	404.4
AZ113	180	1704	7.80	195.8	52.3	288.5	16.4	0	603.5	282.6	452.0
AZ114	181	1760	7.70	226.5	53.0	313.4	19.2	0	677.3	318.7	476.9
AZ115	182	2312	7.34	321.0	55.7	387.6	26.6	0	910.4	406.3	582.6
AZ116	183	2380	6.91	329.0	68.8	213.1	25.8	0	485.7	400.6	609.0
AZ117	184	244	7.71	34.5	16.6	19.1	2.3	0	202.6	7.1	15.8
AZ118	185	188	7.88	28.0	13.5	17.0	2.0	0	151.3	5.7	17.8
AZ119	186	816	8.80	7.2	0.1	303.5	1.2	9.0	86.0	259.5	203.2
AZ120	187	1152	7.67	189.4	28.3	73.1	3.9	0	296.5	197.5	232.9
AZ121	188	372	7.81	34.1	18.4	50.8	5.9	0	239.2	31.2	24.5
AZ122	189	392	7.88	36.3	12.9	71.0	6.6	0	228.2	74.1	29.8
AZ123	190	412	7.84	43.5	21.6	41.2	5.1	0	181.8	60.6	70.6
AZ124	191	284	7.87	39.9	12.1	32.2	3.1	0	62.8	41.5	107.6
AZ125	192	1016	8.79	27.4	35.0	30.6	2.7	22.2	52.5	51	28.3
AZ126	193	624	8.08	64.9	44.6	19.8	1.5	0	362.4	37.9	17.8
AZ127	194	284	8.12	26.2	29.8	17.9	3.1	0	170.2	29.4	24.5
AZ128	195	1580	7.93	32.9	9.6	522.5	13.7	0	413.7	492.1	217.1
AZ129a	196	372	7.92	63.3	14.1	45.1	3.1	0	282.5	25.9	54.7
AZ129b	197	652	7.85	76.2	23.0	139.1	5.1	0	404.5	114.5	125.4
AZ130	198	328	8.44	6.8	1.7	118.6	1.6	0	201.4	41.1	8.7
AZ131	199	444	7.66	32.5	9.6	111.3	3.5	0	311.2	48.0	58.1
AZ132	200	544	8.03	17.4	10.0	153.6	5.5	0	209.3	57.1	160.9
AZ133	201	612	8.00	15.0	0.7	229.9	2.3	0	102.5	243.9	79.2
AZ134	202	1000	7.42	180.4	53.7	3.9	1.2	0	322.2	0	407.8
AZ135	203	744	11.17	1.8	.1	319.3	3.5	170.1	37.7	107.1	122.0
AZ136	334	292	8.27	21.6	.4	59.5	2.7	0	139.1	8.1	50.9
AZ138	335	404	7.81	39.3	32.0	54.0	19.2	0	360.0	21.3	43.2
AZ139	336	292	8.02	18.6	24.9	41.8	10.9	0	270.9	8.5	14.4
AZ140	337	280	8.75	20.8	16.0	59.8	3.9	19.2	235.5	8.1	6.7
AZ141	338	784	9.06	9.8	45.9	200.0	37.9	70.8	588.2	20.9	64.4
AZ142	339	1088	7.38	71.3	36.1	251.7	35.2	0	1108.0	19.8	13.4
AZ143	340	268	8.77	15.4	13.0	47.3	5.9	18.0	175.7	6.7	9.6
AZ145	341	244	7.82	15.6	13.8	34.5	7.8	0	203.8	5.0	6.7
AZ146	342	2240	8.64	46.1	11.7	864.9	17.2	24.0	297.8	1056.1	158.5
AZ147	343	1428	8.49	69.1	9.8	423.2	8.2	0	76.9	628.6	147.9
AZ148	344	5836	7.63	628.8	75.7	1169.7	10.2	0	172.1	2504.4	845.3
AZ149	345	1184	7.71	41.3	.5	389.2	6.2	0	65.9	539.2	147.9

Field #	Lab #	TDS	pH	Ca (mg/l)	Mg	Na	K	CO_3	HCO_3	Cl	SO_4
AZ150	346	316	8.73	40.7	20.4	26.7	5.9	18.0	202.6	25.9	10.6
AZ151	347	512	8.01	67.3	15.9	65.1	1.9	0	249.0	69.5	65.3
AZ152	348	296	8.16	55.1	19.1	21.1	8.2	0	245.3	3.2	64.4
AZ153	349	348	7.50	93.8	10.1	16.3	1.9	0	286.8	7.8	57.6
AZ154	350	232	7.47	38.1	7.8	23.0	2.7	0	201.3	1.1	21.1
AZ155	351	9288	8.11	132.9	28.1	3071.7	14.5	0	46.4	3956.2	1455.3
AZ156	352	1804	8.26	9.2	.7	709.2	2.7	0	107.4	687.8	451.5
AZ157	353	252	8.53	25.2	29.0	29.6	1.6	12.0	202.6	11.0	39.4
AZ158	354	296	8.70	20.6	31.2	26.2	1.9	15.6	220.9	11.3	5.8
AZ159	355	512	9.12	2.0	.7	205.3	5.1	50.4	406.4	8.9	26.9
AZ160	356	352	8.85	32.5	34.5	61.6	3.9	37.2	206.2	44.3	53.8
AZ161	357	540	8.23	50.1	33.3	102.1	11.7	0	183.0	118.7	152.7
AZ162	358	1920	7.43	173.9	81.5	337.5	25.8	0	545.5	369.8	568.7
AZ163	359	188	7.74	17.6	6.8	28.7	1.9	0	153.8	3.2	4.8
AZ164	360	496	7.96	76.5	26.7	21.6	3.1	0	241.6	31.5	93.2
AZ165	361	464	8.38	31.3	21.0	62.3	3.9	0	126.9	95.4	40.3
AZ166	362	1084	8.15	55.7	37.0	275.2	6.6	0	261.1	361.3	124.9
AZ167	363	1368	7.38	108.0	44.8	287.8	5.9	0	389.3	398.5	174.8
AZ168	364	1040	8.27	52.3	9.0	335.4	3.9	0	102.5	446.3	174.8
AZ169	365	2864	8.30	97.8	15.9	939.1	5.9	0	101.3	1246.9	398.6
AZ170	366	432	8.57	9.2	1.4	158.8	5.9	0	163.5	80.8	113.3
AZ171	367	1592	8.32	115.6	22.7	398.2	7.4	0	269.7	339.6	497.6
AZ173	369	536	8.26	27.2	4.5	177.5	4.7	0	101.3	199.2	94.1
AZ174	370	204	8.11	16.0	19.3	54.0	3.1	0	250.2	20.5	10.6
AZ175	371	1972	7.55	234.8	61.8	157.9	5.5	0	314.8	495.3	188.3
AZ176	372	176	7.91	33.9	6.4	17.5	1.2	0	139.1	9.9	27.8
AZ177	373	132	7.81	33.5	5.1	18.2	1.2	0	137.9	14.5	6.7
AZ178	374	232	8.48	6.4	.7	74.2	1.2	0	140.3	17.0	40.3
AZ179	375	168	8.41	28.0	12.0	38.2	1.2	0	139.1	22.0	49.0
AZ180	376	340	8.08	57.1	28.1	15.9	1.9	0	281.9	34.0	7.7
AZ181	377	4788	7.73	521.2	191.3	415.9	33.2	0	230.6	451.3	1878.0
AZ182	378	3368	7.49	371.9	141.2	300.5	24.2	0	174.5	329.7	1588.1
AZ183	379	3816	7.59	374.3	150.7	342.8	27.4	0	175.7	373.7	1532.2
AZ184	380	3308	7.84	272.9	135.3	171.3	22.3	0	236.7	763.3	342.0
JW-1	N/A	492	8.12	77.8	38.2	8.3	1.6	0	389.3	2.5	48.0
JW-2	N/A	156	9.60	1.2	<.1	62.8	.4	49.2	72.0	.4	19.2
JW-3	N/A	992	7.89	49.7	6.8	207.2	15.6	0	129.4	445.3	57.6
JW-4	N/A	768	7.95	39.3	7.4	215.6	11.3	0	136.7	294.6	44.2
JW-5	N/A	1280	7.79	54.3	6.9	406.0	18.8	0	107.4	574.3	90.3
JW-6	N/A	160	8.00	16.8	7.3	23.2	2.0	0	131.8	1.1	19.2
JW-7	N/A	164	7.89	13.0	6.9	27.4	2.7	0	140.3	1.4	15.4
P1	N/A	484	8.20	28.0	7.3	68.7	1.9	0	183.1	20.5	79.3
P2	N/A	1116	7.71	22.0	0.5	333.6	23.5	0	106.8	88.3	497.1
P3	N/A	1024	8.16	23.2	0.8	318.6	21.1	0	103.7	87.6	480.0
P4	N/A	1608	7.84	67.3	5.3	493.1	27.8	0	118.9	111.3	893.4
P5	N/A	1660	8.08	159.3	34.9	231.7	9.0	0	209.3	181.9	956.3
P10	N/A	1708	8.18	67.9	17.1	366.2	6.3	0	255.0	133.6	939.0
P13	N/A	756	7.90	38.3	2.7	105.5	3.1	0	237.9	16.7	298.7
P14	N/A	668	8.00	47.9	4.4	71.0	2.7	0	209.3	23.0	289.6
P15	N/A	868	8.07	78.7	12.6	152.2	5.9	0	201.4	80.5	483.7
P20	N/A	632	8.02	43.2	4.1	97.0	2.3	0	192.2	21.3	305.0

Field #	Lab #	TDS	pH	Ca	Mg	Na	K	CO3	HCO3	Cl	SO4
				mg/l							
P22	N/A	600	7.90	49.3	4.4	111.3	2.7	0	192.2	38.6	311.7
P23	N/A	640	8.08	18.6	2.4	120.2	1.6	0	250.2	29.1	308.3
P24	N/A	1348	7.92	38.5	1.8	321.4	18.0	0	275.8	79.1	768.5
P25	N/A	604	8.35	38.1	5.7	78.8	3.5	0	183.1	8.9	285.8
Gila 1	28	364	8.10	46.8	7.9	17.4	3.9	0	207.4	1.1	21.6
Gila 2	29	492	7.74	35.6	7.6	90.8	8.2	0	283.0	14.2	72.0
Gila 3	30	456	7.63	25.8	9.6	90.8	2.3	0	256.2	20.8	64.2
Gila 4	31	320	8.97	2.4	<.006	91.7	1.2	20.4	67.1	14.5	84.0
Gila 5	32	408	8.19	10.6	0.1	123.0	3.1	0	108.6	99.4	69.6
Gila 6	33	416	8.15	10.4	0.2	129.7	3.1	0	115.9	100.1	67.2
Gila 7	34	548	7.92	15.4	0.1	151.5	3.5	0	131.1	104.3	118.0
Gila 8	35	516	8.08	18.4	0.8	141.9	2.7	0	125.0	115.7	93.6
Gila 9	36	320	8.15	31.6	13.0	28.9	3.5	0	227.5	1.4	24.0
Gila 10	37	344	7.84	32.0	18.1	24.8	4.3	0	213.5	17.0	16.2
Gila 11	38	428	7.82	39.8	13.2	47.1	5.1	0	236.6	8.5	50.4
LD1	132	564	8.09	7.6	1.4	143.2	5.9	0	234.3	27.6	93.7
LD2	133	816	7.86	28.0	2.7	216.1	11.7	0	314.8	47.5	223.8
LD3	134	740	7.48	117.4	18.7	98.6	10.2	0	218.4	116.6	181.5
LD4	135	592	7.94	10.2	1.8	159.3	1.5	0	301.4	33.0	104.2
LD5	136	796	7.82	15.6	1.3	234.5	5.5	0	400.3	50.7	154.6
LD6	137	208	7.92	22.0	7.3	27.6	2.0	0	147.7	3.5	19.2
LD7	138	208	7.82	40.3	4.9	15.2	2.0	0	156.2	2.5	4.3
LD8	139	184	7.57	26.0	2.2	21.1	1.2	0	109.8	2.8	4.3
LD9	140	176	7.39	21.0	3.2	6.2	4.5	0	65.9	0.7	33.6
LD10	141	156	7.31	17.8	3.3	6.9	6.2	0	57.3	1.4	40.3
LD11	142	200	7.74	16.6	4.8	36.8	5.1	0	173.3	1.4	3.8
LD12	143	136	6.88	15.8	2.9	13.8	3.5	0	37.8	0.7	52.8
LD13	144	132	7.00	8.2	1.7	15.2	2.7	0	22.0	1.4	40.3
LD14	145	160	8.80	2.4	0.5	54.7	0.4	0	137.9	4.2	16.3
LD15	146	212	8.11	27.6	3.2	16.3	3.1	0	124.4	1.0	13.4
LD16	147	164	7.94	29.4	1.7	11.5	2.3	0	117.1	0.1	5.7
LD17	148	168	8.06	21.2	0.7	12.9	1.5	0	98.8	0.1	9.1
LD18	149	320	8.15	16.4	0.6	65.3	1.2	0	173.3	4.2	32.7
Gila 20	150	236	8.66	6.8	1.6	61.1	1.5	0	94.0	4.2	64.8
Gila 21	151	200	8.33	10.6	3.5	48.7	2.0	0	103.7	3.9	43.7
Gila 22	152	260	9.10	2.8	<0.1	69.2	1.2	20.4	40.3	5.0	75.9
Gila 23	153	292	8.53	10.4	0.6	77.9	1.5	0	75.7	25.9	99.4
Gila 24	154	332	8.13	18.4	1.3	92.4	1.5	0	234.3	6.4	49.0
Gila 25	155	400	8.04	8.2	0.8	118.4	2.0	0	244.1	13.1	55.2
Gila 26	156	444	7.64	36.1	6.9	79.3	1.2	0	290.4	10.6	45.1
Gila 27	157	472	8.79	2.4	0.1	146.7	0.8	13.2	175.7	33.0	107.1
Gila 28	158	272	9.36	1.0	<0.1	87.6	0.4	46.8	125.7	2.8	13.4
Gila 29	159	544	8.00	87.0	16.5	34.9	7.8	0	390.5	18.8	35.0
Gila 30	160	672	7.98	10.0	1.3	190.6	2.7	0	336.8	18.8	142.6
MFG1	161	196	8.08	20.4	2.6	40.0	1.6	0	145.8	3.2	29.8
MFG2	162	188	8.07								
MFG3	163	192	8.09	16.8	1.6	43.7	1.2	0	139.7	3.9	28.3
MFG4	164	168	8.15	14.8	1.5	37.5	.8	0	131.2	3.2	19.2
AN1	283	300	7.88	26.2	2.2	54.0	2.0	0	151.3	7.1	42.
AN2	284	360	8.00	13.0	1.6	115.4	2.0	0	241.0	23.7	44.0

Field #	Lab #	TDS	pH	Ca	Mg	Na	K	CO_3	HCO_3	Cl	SO_4
				Mg/1							
AN3	285	380	8.29	39.7	3.8	66.9	2.7	0	207.4	15.6	64.8
AN4	286	1372	7.59	79.7	8.3	353.3	14.1	0	228.8	122.7	492.8
AN5	287	1184	7.82	22.0	25.3	178.6	8.2	0	172.1	144.3	351.9
AN6	288	1020	8.00	25.2	14.6	161.4	6.6	0	83.6	117.0	369.
AN7	289	624	7.52	60.5	9.7	134.3	4.3	0	195.2	68.1	167.
AN8	290	272	7.83	28.8	2.7	55.6	2.3	0	170.8	3.5	51.6
AN9	291	384	7.85	19.8	4.7	98.2	3.1	0	81.1	59.2	107.3
AN10	292	524	7.92	29.8	8.5	112.2	3.5	0	156.8	53.9	111.7
AN11	293	688	7.68	81.8	9.1	110.6	4.3	0	202.0	38.3	198.6
AN12	294	384	7.73	34.5	3.0	77.9	2.7	0	185.5	8.5	74.8
AN13	295	420	8.26	25.0	1.8	103.4	3.9	0	167.8	27.3	84.
AN14	296	340	7.75	26.0	1.8	70.3	2.3	0	176.3	1.8	58.8
AN15	297	240	7.93	18.2	2.5	49.6	2.0	0	139.1	6.4	38.4
AN16	298	384	8.39	30.7	3.0	89.9	2.7	0	178.8	19.8	86.9
AN17	299	524	8.17	30.7	5.7	129.2	7.0	0	237.4	29.4	113.3
AN18	300	352	8.43	31.3	3.2	67.8	2.7	0	157.4	27.3	58.8
AN19	301	675	8.33	81.0	23.5	74.5	2.7	0	181.8	41.5	197.0
AN20	302	628	7.41	76.1	7.2	91.7	3.5	0	187.9	64.2	124.9
AN21	303	404	8.27	39.9	6.3	74.5	3.5	0	186.7	9.6	88.5
AN22	304	396	8.41	25.4	2.5	93.8	2.3	0	172.1	20.9	76.
AN23	305	284	8.44	22.0	2.1	53.4	2.0	0	148.	2.1	51.8
N/A	306	192	8.12	14.2	1.3	35.2	0.8	0	82.0	1.4	44.0
N/A	307	224	8.44	14.0	1.3	34.0	0.8	0	97.6	1.1	23.
N/A	308	116	7.89	9.0	2.3	9.9	1.2	0	54.3	0.4	11.6
N/A	309	240	8.45	24.4	4.2	31.5	1.6	0	109.8	18.8	26.4
N/A	310	76	8.02	12.4	2.4	7.1	1.2	0	51.2	0.4	8.8

Table 3. Analyses of Iron, Fluoride, Boron, Phosphorous, and silica for selected Thermal Waters in Arizona, Western New Mexico, and Southwestern Utah

Field #	Lab #	ppm Fe	F	B	P	SiO_2
AZ1	1	<.10	.33	.01	.03	86.26
AZ2	2	.28	.65	.02	.06	44.56
AZ3	3	.34	1.80	1.48	.01	81.70
AZ4	4	<.10	10.20	.15	0	66.96
AZ5	5	.72	3.50	1.51	.01	131.35
AZ6	6	.28	.83	.08	.07	47.90
AZ7	7	<.10	10.60	.40	0	97.72
AZ8	8	<.10	2.13	.09	.02	40.11
AZ9	9	.20	2.32	.08	.02	50.12
AZ10	10	<.10	3.40	.58	0	43.45
AZ11	11	<.10	3.80	.70	0	43.45
AZ12	12	<.10	13.60	.90	0	23.58
AZ13	13	<.10	9.00	1.29	0	20.43
AZ14	14	.24	7.20	1.65	0	65.83
AZ15	15	<.10	10.60	.43	0	66.96
AZ16	16	<.10	10.20	.46	0	66.96
AZ17	17	<.10	14.20	.55	0	25.78
AZ18	18	<.10	1.25	0	0	41.22
AZ19	39	<.11	.23	.04	.03	83.80
AZ20	40	.14	3.60	.60	.01	52.43
AZ21	41	.73	3.90	.84	.10	56.61
AZ22	42	<.11	9.60	1.04	0	27.58
AZ23	43	<.11	8.40	1.18	0	27.58
AZ24	44	.18	11.70	.80	0	31.70
AZ25	45	<.11	13.95	.94	.03	27.58
AZ26	46	<.11	14.55	.60	.01	28.60
AZ27	47	4.36	4.50	.14	.06	47.26
AZ28	48	.20	10.35	.28	0	27.58
AZ29	49	.22	14.55	.30	0	28.60
AZ30	50	<.11	.30	.02	0	30.68
AZ31	51	.14	.82	.10	0	34.81
AZ32	52	<.11	1.02	.04	0	30.68
AZ33	53	<.11	.11	.02	0	26.08
AZ34	54	.14	2.17	.14	0	29.57
AZ35	55	.16	4.65	1.18	0	41.05
AZ36	56	.16	5.10	.22	0	61.27
AZ37	57	<.11	16.80	.18	.02	24.90
AZ38	58	.16	1.98	0	0	44.48
AZ39	59	.16	1.27	0	0	38.79
AZ40	60	<.11	.93	0	0	36.48
AZ41	61	.26	6.30	1.66	0	39.92
AZ42	62	.57	3.90	1.58	0	26.08
AZ43	63	<.11	8.70	8.00	.10	71.13
AZ44	64	.61	4.65	4.20	0	33.03

Field #	Lab #	Fe	F	B	P	SiO_2
		ppm				
AZ45	65	<.11	3.60	.54	.03	45.61
AZ46	66	<.11	4.35	.38	.03	44.48
AZ47	67	<.11	3.18	.52	.01	47.86
AZ48	68	<.11	3.48	.36	.01	46.74
AZ49	69	<.11	3.66	.34	.01	46.74
AZ50	70	<.11	5.67	.88	.01	44.48
AZ51	71	<.11	5.31	.88	.01	44.48
AZ52	72	.13	2.91	1.76	0	26.08
AZ53	73	.17	4.44	1.40	0	26.08
AZ54	74	<.11	4.95	1.02	0	22.57
AZ55	75	.13	3.48	1.38	0	24.90
AZ56	76	<.11	.69	.44	0	29.57
AZ57	77	<.11	5.67	.44	0	37.63
AZ58	78	<.11	1.65	.12	0	29.57
AZ59	79	.23	9.45	1.78	.11	21.39
AZ60	80	17.35	1.17	8.40	.07	30.06
AZ61	81	.14	5.40	2.06	.01	20.32
AZ62	82	<.15	9.90	.50	.01	59.19
AZ63	83	.71	4.95	.30	0	35.56
AZ64	84	1.53	1.14	.24	0	44.45
AZ65	85	<.15	8.25	.44	.02	59.19
AZ66	86	2.87	.46	.22	.01	25.71
AZ67	87	1.42	.14	.56	.51	24.62
AZ68	88	<.15	.27	.06	.02	36.67
AZ69	89	.68	.23	.12	.01	24.62
AZ70	90	.27	7.11	.12	.02	58.06
AZ71	91	<.15	.44	.04	.02	36.67
AZ72	92	<.15	3.36	1.26	.02	47.81
AZ73	93	<.15	.93	.26	.01	27.88
AZ74	94	.17	.29	.06	.01	31.15
AZ75	95	.52	.44	.06	.01	36.67
AZ76	96	.17	.25	.06	0	20.32
AZ77	97	<.15	.25	.04	0	21.39
AZ78	98	.33	.12	.06	.01	22.48
AZ79	99	.30	.10	3.80	.01	59.15
AZ80	100	.78	1.52	.44	.50	75.24
AZ81	101	<.15	.31	.12	.04	20.54
AZ82	102	<.15	1.45	.46	.01	84.57
AZ83	103	<.15	8.25	.88	.01	62.57
AZ84	104	.61	5.40	.31	.05	59.15
AZ85	105	<.15	4.05	.58	.01	38.94
AZ86	106	<.15	.10	.57	0	.64
AZ87	107	<.15	1.16	.58	.01	20.54
AZ88	108	.16	2.85	2.30	.08	32.30
AZ89	109	.43	.17	.11	.05	14.33
AZ90	110	.52	1.45	1.28	.02	23.55
AZ91	111	<.15	.20	.11	.01	15.40
AZ92	112	.30	2.46	.10	.01	.64
AZ93	113	<.15	2.67	.08	.02	36.22
AZ94	114	<.15	2.16	.07	.01	31.55

Field #	Lab #	Fe (ppm)	F (ppm)	B (ppm)	P (ppm)	SiO_2 (ppm)
AZ95	115	<.15	.93	.21	.01	22.33
AZ96	116	<.15	.72	.18	.02	18.93
AZ97	117	<.15	2.58	.27	0	22.33
AZ98	118	.18	3.39	.23	0	19.38
AZ99	119	<.15	.37	.15	.01	45.89
AZ100	120	<.15	4.77	.92	.01	44.63
AZ101	121	<.15	.42	.20	0	29.91
AZ102	122	<.15	5.40	.76	0	42.12
AZ103	123	.43	.53	1.36	.01	38.40
AZ104	124	<.15	3.18	.54	.01	40.88
AZ105	125	<.15	7.35	.66	.02	47.15
AZ106	126	<.15	4.35	.78	.01	39.64
AZ107	127	<.15	5.40	.52	0	31.11
AZ108	128	<.15	.90	.70	0	40.88
AZ109	129	<.15	.44	.06	0	35.94
AZ110	130	<.15	.24	.14	.01	54.34
AZ112	179	<.10	2.27	.70	.11	24.5
AZ113	180	.46	1.92	.40	.04	19.5
AZ114	181	.49	2.09	.60	.13	20.0
AZ115	182	.61	2.57	.75	.11	20.0
AZ116	183	.42	2.46	.60	.11	16.5
AZ117	184	<.10	.61	.03	.03	30.5
AZ118	185	<.10	.47	.09	.07	35.5
AZ119	186	<.10	14.54	.84	.02	28.0
AZ120	187	<.10	.45	.10	.05	34.0
AZ121	188	.16	.56	.12	.15	70.0
AZ122	189	3.70	.89	.23	.08	42.5
AZ123	190	<.10	.82	.09	.07	44.0
AZ124	191	<.10	1.06	.14	.05	32.5
AZ125	192	7.14	.07	.16	.01	53.5
AZ126	193	<.10	.16	.03	.04	19.0
AZ127	194	.42	.43	.17	.11	32.0
AZ128	195	.19	8.72	4.00	.16	29.0
AZ129a	196	.49	.69	.16	.11	33.5
AZ129b	197	1.99	1.69	.35	.08	30.0
AZ130	198	<.10	2.27	.23	.04	24.0
AZ131	199	<.10	1.15	.30	.06	33.0
AZ132	200	<.10	1.06	.44	.11	58.0
AZ133	201	8.74	5.07	.73	.04	23.5
AZ134	202	<.10	.26	.07	.11	17.5
AZ135	203	.46	2.35	.72	.15	54.5
AZ136	334	<.10	4.71	.05	.14	81.5
AZ138	335	1.10	.51	.23	.02	34.0
AZ139	336	<.10	.34	.07	.01	38.0
AZ140	337	.16	.40	.20	.01	38.5
AZ141	338	4.53	2.46	.11	.01	86.5
AZ142	339	<.10	2.94	.31	.01	37.5
AZ143	340	.18	.38	0	.01	35.5

Field #	Lab #	Fe	F	B	P	SiO_2
		ppm				
AZ145	341	.42	.48	0	.01	71.5
AZ146	342	4.72	4.14	3.18	.10	18.5
AZ147	343	<.10	5.13	.85	.04	50.0
AZ148	344	.13	2.41	3.18	<.01	43.5
AZ149	345	<.10	5.79	1.01	<.01	27.0
AZ150	346	.25	.73	.07	.01	59.0
AZ151	347	<.10	.94	0	.02	31.5
AZ152	348	<.10	<.20	.07	.01	22.5
AZ153	349	<.10	1.03	.08	.01	24.0
AZ154	350	<.10	.35	0	.02	41.0
AZ155	351	.13	6.27	2.33	.01	27.5
AZ156	352	.16	7.80	1.62	.01	27.0
AZ157	353	<.10	<.20	.44	.01	39.0
AZ158	354	<.10	<.20	.19	.01	32.5
AZ159	355	<.10	2.55	.58	.04	16.0
AZ160	356	.10	1.44	.57	.06	26.5
AZ161	357	.92	2.40	.40	.01	13.0
AZ162	358	18.46	2.49	.75	.01	11.5
AZ163	359	1.01	<.20	.22	.04	28.0
AZ164	360	<.10	<.20	.11	.04	38.5
AZ165	361	<.10	<.20	.35	.01	22.5
AZ166	362	<.10	<.20	1.23	.01	38.0
AZ167	363	<.10	<.20	.47	.01	28.0
AZ168	364	<.10	2.91	1.07	.28	27.0
AZ169	365	1.19	2.02	.87	.01	24.0
AZ170	366	1.60	9.45	.89	.01	41.0
AZ171	367	1.40	4.14	1.81	.01	35.0
AZ172	368	(.33)		missing		(31.0)
AZ173	369	4.78	2.91	.71	.01	31.0
AZ174	370	<.10	.46	.43	<.01	30.0
AZ175	371	<.10	<.20	.81	<.01	64.5
AZ176	372	1.96	<.20	.16	.01	23.5
AZ177	373	2.01	<.20	.35	.01	36.5
AZ178	374	.64	3.24	.28	.01	57.5
AZ179	375	.24	.75	.27	<.01	28.5
AZ180	376	.57	.36	.13	.01	56.0
AZ181	377	.29	1.75	1.53	.01	29.5
AZ182	378	<.10	1.33	1.16	.01	17.5
AZ183	379	<.10	1.43	1.20	.01	17.5
AZ184	380	1.28	.62	.28	<.01	18.5
JW-1		<.10	1.05	.04	.02	14.50
JW-2		<.10	.72	.03	.02	45.35
JW-3		<.10	1.43	.28	.02	75.18
JW-4		<.10	1.49	.22	.01	64.80
JW-5		<.10	1.80	.38	.01	90.94
JW-6		<.10	.51	.02	.02	26.33
JW-7		<.10	.62	.04	.01	29.31
1P		1.10	.35	.08	.01	31.3
2P		.20	12.6	.48	.02	147.5
3P		.40	12.0	.50	.02	143.0

Field #	Lab #	Fe	F	B	P	SiO_2
		ppm				
4P		.83	7.25	.42	.01	115.6
5P		<.10	3.55	.25	.01	42.3
10P2		.53	7.25	.51	.01	60.7
13P		1.31	3.90	.10	.01	74.1
14P		.16	.85	.06	.01	48.4
15P		<.10	2.35	.18	.01	34.3
20P		<.10	2.65	.10	.01	50.4
22P		<.10	1.20	.06	.01	43.3
23P		7.66	1.15	.12	.01	29.3
24P		21.18	9.35	.50	.01	149.7
25P		.36	3.55	.12	.01	34.3
Gila 1	28	<.10	.53	0	0	42.06
Gila 2	29	.12	6.10	.01	.01	45.16
Gila 3	30	.25	3.10	.02	0	41.03
Gila 4	31	<.10	16.00	0	0	55.56
Gila 5	32	<.10	8.70	.03	0	72.27
Gila 6	33	<.10	8.70	.02	0	73.31
Gila 7	34	.22	9.50	.07	0	85.89
Gila 8	35	1.25	8.70	.11	.01	85.89
Gila 9	36	.29	.61	.01	0	59.73
Gila 10	37	3.11	.66	.01	0	60.78
Gila 11	38	<.11	3.00	.01	0	54.53
LD1	132	<.15	3.66	.46	0	33.52
LD2	133	<.15	6.90	.46	.01	39.64
LD3	134	<.15	.44	.32	.01	43.36
LD4	135	.37	2.67	.50	.01	32.30
LD5	136	<.15	7.11	.64	.01	47.15
LD6	137	.62	.30	.12	.01	38.08
LD7	138	4.70	.16	.12	.02	47.62
LD8	139	6.39	1.34	.06	.01	45.23
LD9	140	<.15	.12	.04	.14	47.62
LD10	141	.56	.11	.04	.01	39.28
LD11	142	5.77	1.12	.12	.01	52.37
LD12	143	<.15	.18	.06	.01	35.68
LD13	144	<.15	.14	.06	.01	39.28
LD14	145	.56	.31	.10	.01	14.23
LD15	146	1.49	.42	.08	.01	47.62
LD16	147	.22	.22	.08	.01	41.65
LD17	148	1.91	.16	.08	0	44.03
LD18	149	.78	2.26	.12	0	42.85
Gila 20	150	.31	9.45	.12	.01	67.65
Gila 21	151	<.15	7.65	.08	.01	50.00
Gila 22	152	<.15	11.85	.12	0	68.91
Gila 23	153	.25	10.50	.92	0	21.39
Gila 24	154	<.15	5.85	.16	0	34.51
Gila 25	155	<.15	7.35	.44	0	47.62
Gila 26	156	<.15	3.00	.14	.01	49.40
Gila 27	157	<.15	19.05	2.56	.01	63.73
Gila 28	158	<.15	1.00	.12	.01	52.95

Field #	Lab #	Fe	F	B	P	SiO_2
		ppm				
Gila 29	159	<.15	.49	.14	.23	57.75
Gila 30	160	.49	18.45	.42	.06	48.22
MFG1	161	.37	4.86	.05	.20	51.0
MFG2	162	.42	5.28	.02	.16	56.0
MFG3	163	<.10	5.28	.07	.09	56.5
MFG4	164	<.10	5.07	0	.09	54.0
AN1	283	<.10	1.60	.12	.05	58.5
AN2	284	14.3	.95	.17	.01	15.5
AN3	285	14.92	.66	.02	.04	68.5
AN4	286	<.10	2.85	.59	.01	97.5
AN5	287	<.10	3.48	.18	.01	50.5
AN6	288	74.58	1.98	.78	0	30.0
AN7	289	1.73	2.28	.17	0	29.5
AN8	290	3.01	1.14	.05	0	33.5
AN9	291	47.69	.84	.01	0	.95
AN10	292	8.54	.63	.02	0	37.5
AN11	293	<.10	2.85	.19	0	44.5
AN12	294	10.31	2.28	0	.01	45.0
AN13	295	21.85	3.03	.12	.02	32.0
AN14	296	<.10	3.45	.04	.01	44.0
AN15	297	17.98	.63	0	0	30.0
AN16	298	.29	1.32	0	.01	37.0
AN17	299	<.10	4.02	.13	.01	30.0
AN18	300	<.10	1.71	.18	.01	37.5
AN19	301	3.63	Not enough	.04	.01	40.0
AN20	302	.68	.69	.05	0	49.5
AN21	303	<.10	3.81	.04	.01	37.5
AN22	304	.83	2.16	.05	.01	32.5
AN23	305	.65	.93	0	.01	37.0
	306	<.10	5.01	0	.01	49.5
	307	<.10	5.01	0	.01	50.0
	308	<.10	.75	0	0	28.0
	309	<.10	2.07	.02	.04	39.5
	310	<.10	.46	0	.03	25.0

Table 4. Analyses of nitrogen species, nickel, lead, antimony, selenium, strontium, and zinc for selected thermal waters in Arizona, western New Mexico, and southwestern Utah.

Field #	Lab #	ppm						
		NO_3+NO_2	Ni	Pb	Sb	Se	Sr	Zn
AZ1	1							
AZ2	2							
AZ3	3							
AZ4	4	.10				.006	.07	.09
AZ5	5	0				.256	24.20	.10
AZ6	6							
AZ7	7	1.34				.014	.09	.13
AZ8	8							
AZ9	9							
AZ10	10	.70				.021	1.02	.12
AZ11	11							
AZ12	12							
AZ13	13							
AZ14	14	.06				.053	1.88	.09
AZ15	15	0				.008	.03	.09
AZ16	16							
AZ17	17	.15				.018	.19	.09
AZ18	18							
AZ19	39							
AZ20	40							
AZ21	41							
AZ22	42							
AZ23	43	0				.028	1.07	.05
AZ24	44							
AZ25	45							
AZ26	46							
AZ27	47							
AZ28	48							
AZ29	49							
AZ30	50							
AZ31	51							
AZ32	52	2.04				.005	.03	.04
AZ33	53							
AZ34	54							
AZ35	55							
AZ36	56							
AZ37	57							
AZ38	58	.51				.002	<.02	
AZ39	59							
AZ40	60							
AZ41	61	5.90				.008	.07	
AZ42	62	5.61				.007	.05	
AZ43	63							
AZ44	64							
AZ45	65	18.76				.005	.04	.08
AZ46	66							
AZ47	67							
AZ48	68							
AZ49	69							

Field #	Lab #	ppm						
		NO_3+NO_2	Ni	Pb	Sb	Se	Sr	Zn
AZ50	70	20.10				.006	.44	.06
AZ51	71							
AZ52	72	100.50				.063	4.06	.07
AZ53	73							
AZ54	74	28.70				.018	2.07	<.03
AZ55	75							
AZ56	76							
AZ57	77	5.21				.008	.17	.06
AZ58	78							
AZ59	79	2.23				.020	1.70	<.02
AZ60	80	6.15				.156	4.11	.09
AZ61	81	3.45				.019	1.72	<.02
AZ62	82	.09				.013	.03	<.02
AZ70	90	1.69				.007	.05	<.02
AZ72	92	2.04				.018	1.54	<.02
AZ73	93	.06				.024	.23	<.02
AZ77	97	5.21				<.002	.05	<.02
AZ80	100	.31				.024	3.19	<.02
AZ83	103	.09				.007	.10	<.02
AZ85	105	2.04				.014	.77	<.02
AZ87	107	.60				.022	3.31	.06
AZ88	108	0				.187	6.89	<.02
AZ100	120	11.35				.010		<.02
AZ102	122	8.19				.016		<.02
AZ104	124	6.14				.005		.04
AZ112	179	0				.012	1.94	.02
AZ115	182	0				.012	1.93	.02
AZ117	184	1.58				.003	.05	.44
AZ121	188	21.38				.002	.03	.02
AZ122	189	15.03				.002	.04	.17
AZ126	193	82.40				.004	.03	.05
AZ133	201	.29				.005	.02	.24
AZ134	202	1.41				.003	1.66	<.02
AZ141	338	.74				.004	1.08	.28
AZ145	341	8.65				.001	<.01	.06
AZ149	345	9.25				.001	.57	<.02
AZ152	348	.20				.005	.24	.05
AZ153	349	4.46				.002	.03	.43
AZ154	350	4.90				.001	<.01	.10
AZ155	351	.20				.155	9.84	.12
AZ158	354	14.25				.001	.06	.23
AZ159	355	.89				.003	.02	.13
AZ162	358	.46				.006	1.85	1.50
AZ164	364	10.38				.006	.96	.14
Gila 1	28							
Gila 2	29	0	<.13	.014	<.6	.004	.10	<.028
Gila 3	30							
Gila 4	31	0	<.13	.051	<.6	.004	<.02	<.028
Gila 5	32	.29	<.13	.024	<.6	.005	.02	.06
Gila 6	33	.19	<.13	.021	<.6	.005	.02	.06
Gila 7	34	.19	<.13	.021	<.6	.006	.03	<.028

Field #	Lab #	ppm						
		NO_3+NO_2	Ni	Pb	Sb	Se	Sr	Zn
Gila 8	35	0	<.13	.021	<.6	.006	.02	.05
Gila 9	36							
Gila 10	37							
Gila 11	38							
LD1	132	4.48	<.16	.005	<.5	.005	.03	<.02
LD2	133	.19	<.16	.009	<.5	.009	.15	<.02
LD3	134	42.65	<.16	.006	<.5	.016	.46	.21
LD4	135	15.30	<.16	.006	<.5	.008	.07	.33
LD5	136	15.02	<.16	.008	<.5	.010	.04	.05
LD6	137	4.93	<.16	.001	<.5	<.002	.06	.13
LD7	138	7.12	<.16	.039	<.5	<.002	.03	2.68
LD8	139	22.75	<.16	.006	<.5	<.002	.02	1.22
LD9	140	9.77	<.16	.001	<.5	.002	.02	<.02
LD10	141	1.47	<.16	.001	<.5	.002	.03	.20
LD11	142	2.15	<.16	.004	<.5	<.002	<.02	.44
LD12	143	0	<.16	.001	<.5	<.002	.03	.04
LD13	144	3.70	<.16	.001	<.5	<.002	<.02	.03
LD14	145	3.59	<.16	.002	<.5	.003	<.02	.17
LD15	146	4.88	<.16	.002	<.5	<.002	.03	.73
LD16	147	7.97	<.16	.001	<.5	<.002	.02	.21
LD17	148	1.28	<.16	867.5	3.19	<.002	.03	.63
LD18	149	7.53	<.16	.025	<.5	.002	.03	.17
Gila 20	150	.72				<.002		<.02
Gila 21	151	.15				.003		.03
Gila 22	152	.06				.003		<.02
Gila 23	153	6.72				.003		.14
Gila 24	154	.17				.003		<.02
Gila 25	155	2.00				.004		.03
Gila 26	156	.59				.003		.22
Gila 27	157	0				.006		.04
Gila 29	159	.89				.003		<.02
Gila 30	160	1.47	<.16	.008	<.5	.006	.03	.07
JW-1		5.23	<.03	.027	<.5	.003	.12	.17
JW-2		.60	<.03	.006	<.5	<.002	<.04	.14
JW-3		.96	<.03	.021	<.5	.006	.33	.14
JW-4		1.05	<.03	.018	<.5	.005	.28	.15
JW-5		.96	<.03	.042	<.5	.007	.43	.12
JW-6		2.12	<.03	.004	<.5	<.002	.03	.14
JW-7		1.88	<.03	.005	<.5	.020	.04	.12
3P		.66	<.03	.242	<.5	.006	.47	.10
26P		40.0	<.03	.031	<.5	.003	.54	.48

Table 5. Analyses of cadmium, cobalt, chromium, copper, mercury, hydrogen sulfide, lithium, manganese, molybdenum, ammonium, silver, aluminum, arsenic, barium and bromine for selected waters in Arizona, western New Mexico, and southwestern Utah.

Field #	Lab #	ppm Cd	Co	Cr	Cu	Hg	H_2S	Li	Mn	Mo	NH_4	Ag	Al	As	Ba
AZ1	1														
AZ2	2														
AZ3	3														
AZ4	4				<.12	<.0002	<.1	.45			.10	<.07	<1.10	.030	<.20
AZ5	5				<.12	.0035	<.1	6.96			.40	<.07	<1.10	.017	3.55
AZ6	6														
AZ7	7				<.12	.0007		1.01			.05	<.07	<1.10	.061	<.20
AZ8	8														
AZ9	9														
AZ10	10				<.12	.0006		1.30			.05	<.07	<1.10	.036	.30
AZ11	11														
AZ12	12														
AZ13	13														
AZ14	14				<.12	.0007		2.77			.25	<.07	<1.10	.070	.37
AZ15	15				<.12	.006		.36			.05	<.07	<1.10	.095	<.20
AZ16	16														
AZ17	17				<.12	.006		1.38			.10	<.07	<1.10	.011	<.20
AZ18	18														
AZ19	39														
AZ20	40														
AZ21	41														
AZ22	42														
AZ23	43				<.12	.0008		2.40			.25	<.07	<1.0	.023	.20
AZ24	44														
AZ25	45														
AZ26	46														
AZ27	47														
AZ28	48														
AZ29	49														
AZ30	50														
AZ31	51														
AZ32	52				<.12	.0006		.17			<.05	<.07	<1.10	.007	<.20
AZ33	53														
AZ34	54														
AZ35	55														
AZ36	56														
AZ37	57														
AZ38	58				<.12	.0007		.12			.10	<.07	<1.10	.019	<.20

Field #	Lab #	Cd	Co	Cr	Cu	Hg	H_2S	Li	Mn	Mo	NH_4	Ag	Al	As	Ba	Br
		ppm														
AZ39	59															
AZ40	60															
AZ41	61				<.12	.0009		.30			.05	<.07	<1.10	.040	<.20	
AZ42	62				<.12	.0014		.25			<.05	<.07	<1.10	.051	<.20	
AZ43	63															
AZ44	64															
AZ45	65				<.12	.0009		.19			<.05	<.07	<1.10	.110	<.20	
AZ46	66															
AZ47	67															
AZ48	68															
AZ49	69															
AZ50	70				<.12	.0008		.26			<.05	<.07	<1.10	.054	<.20	
AZ51	71															
AZ52	72				<.12	.0011		.51			<.05	<.07	<1.10	.034	.65	
AZ53	73															
AZ54	74				<.12	.0009		.42			<.05	<.07	<1.10	.021	.37	
AZ55	75															
AZ56	76															
AZ57	77				<.12	.0008		.36			<.05	<.07	<1.10	.019	<.20	
AZ58	78															
AZ59	79				<.10	.0027		2.32			<.05	<.06	<1.0	.042	<.20	
AZ60	80				<.10	.0002		5.16			<.05	<.06	4.88	.015	.37	
AZ61	81				<.10	<.0002		.93			<.05	<.06	<1.0	.014	<.20	
AZ62	82				<.10	<.0002		.48			<.05	<.06	<1.0	.044	<.20	
AZ70	90				<.10			.35			<.05	<.06	<1.0	.010	<.20	
AZ72	92				<.10	<.0002		1.85			<.05	<.06	4.0	.051	.40	
AZ73	93				<.10			.14			<.05	<.06	<1.0	.008	<.20	
AZ77	97				<.10	<.0002		<.014			<.05	<.06	<1.0	.003	<.20	
AZ80	100				<.10	.0003		1.33			<.05	<.06	<1.0	.051	.29	
AZ83	103				<.10	.0003		.35			<.05	<.06	<1.0	.024	<.20	
AZ85	105				<.10	<.0002		.26			<.05	<.06	<1.0	.023	<.20	
AZ87	107				<.10	<.0002		.69			1.15	<.06	<1.0	.056	.90	
AZ88	108				<.10	<.0002		.31			<.05	<.06	<1.0	.150	1.73	
AZ100	120				<.10	<.0002		.12			<.05	<.06	<1.0	.017	<.20	
AZ102	122				<.10	.0004	<.1	.48				<.06	<1.0	.037	<.20	
AZ104	124				<.10	<.0002	.17	.25			<.05	<.06	<1.0	.034	<.20	
AZ112	179				<.10	.0006	<.1	.57			0.3	<.06	<1.0	.038	<.4	
AZ115	182				<.10	.0003	<.1	.55			0.5	<.06	<1.0	.063	<.4	

Field #	Lab #	ppm Cd	Co	Cr	Cu	Hg	H_2S	Li	Mn	Mo	NH_4	Ag	Al	As	Ba	Br
AZ116	183				<.10	.0007	<.1	<.02			0.3	<.06	<1.0	.011	<.4	
AZ117	184				<.10	.0007	<.1	.03			0.3	<.06	<1.0	.078	<.4	
AZ121	188				<.10	.0007	<.1	.03			0.2	<.06	<1.0	.008	<.4	
AZ126	193				<.10	.0003	<.1	<.02			0.1	<.06	<1.0	.010	<.4	
AZ133	201				<.10	.0005	<.1	.29			0.2	<.06	<1.0	.074	<.4	
AZ134	202				<.10	.0004	<.1	.02			0.2	<.06	<1.0	.010	<.4	
AZ141	338				.11		<.3	.52				<.05	<1	.030	.6	
AZ145	341				<.10		<.3	.01				<.05	<1	.015	<.4	
AZ149	345				<.10		<.3	.28				<.05	<1	.037	<.4	
AZ152	348				<.10		1.9	.05				<.05	<1	.047	<.4	
AZ153	349				.20		<.3	.04				<.05	<1	.017	1.0	
AZ154	350				.18		<.3	.02				<.05	<1	.011	<.4	
AZ155	351				.22		<.3	4.05				<.05	<1	.170	1.1	
AZ158	354				.22		<.3	.03				<.05	<1	.020	<.4	
AZ159	355				.20		<.3	.20				<.05	<1	.020	<.4	
AZ162	358				.24		<.3	.46				<.05	<1	.035	1.0	
AZ164	364				.20		<.3	.21				<.05	<1	.040	<.4	
JW-1		<.01	<.15	<.1	<.10	.0012	<.1	.02	<.07	<.5	.30	<.03	<2.5	.001	<.7	.54
JW-2		<.01	<.15	<.1	<.10	.0011	<.1	.01	<.07	<.5	.90	<.03	<2.5	.007	<.7	.31
JW-3		<.01	<.15	<.1	<.10	.0012	<.1	.48	<.07	<.5	.13	<.03	<2.5	.018	<.7	.56
JW-4		<.01	<.15	<.1	<.10	.0012	<.1	.34	<.07	<.5	1.24	<.03	<2.5	.014	<.7	.43
JW-5		<.01	<.15	<.1	<.10	.008	<.1	.65	<.07	<.5	1.35	<.03	<2.5	.021	<.7	.56
JW-6		<.01	<.15	<.1	<.10	.0011	<.1	.04	<.07	<.5	1.16	<.03	<2.5	.002	<.7	.22
JW-7		<.01	<.15	<.1	<.10	.0006	<.1	.03	<.07	<.5	.69	<.03	<2.5	.002	<.7	.27
3P		<.01	<.15	<.10	<.10	.0006	<.1	.64	.08	<.50	.30	<.03	<2.5	.019	<.70	.56
26P		<.01	<.15	<.10	<.10	.0003	<.1	.05	<.07	<.50	.90	<.03	<2.5	.008	<.70	.47
Gila 1	28															
Gila 2	29	<.02	<.18	<.10	<.12	.0006		.16	<.063	<.45	<.05	<.07	<1.10	.009	<.20	<.0
Gila 3	30															
Gila 4	31	<.02	<.18	<.10	<.12	.0006		.11	<.063	<.45	<.05	<.07	<1.10	.006	<.20	<.0
Gila 5	32	<.02	<.18	<.10	<.12	.0033		.26	<.063	<.45	<.05	<.07	<1.10	.007	<.20	<.0
Gila 6	33	<.02	<.18	<.10	<.12	.0007		.26	<.063	<.45	<.05	<.07	<1.10	.008	<.20	<.0
Gila 7	34	<.02	<.18	<.10	<.12	.0005		.43	<.063	<.45	<.05	<.07	<1.10	.006	<.20	<.0
Gila 8	35	<.02	<.18	<.10	<.12	.0006		.31	<.063	<.45	<.05	<.07	3.10	.009	<.20	<.0
Gila 9	36															
Gila 10	37															
Gila 11	38															

Field #	Lab #	Cd	Co	Cr	Cu	Hg	H_2S	Li	Mn	Mo	NH_4	Ag	Al	As	Ba	Br
		ppm														
LD1	132	<.02	<.14	<.1		<.0002	<.1	.14	<.05	<.5	<.05	<.06	<1.0	.012	<.20	.53
LD2	133	<.02	<.14	<.1	<.10	<.0002	<.1	.31	<.05	<.5	<.05	<.06	<1.0	.017	<.20	.67
LD3	134	<.02	<.14	<.1	<.10	.0002	<.1	.09	<.05	<.5	<.05	<.06	<1.0	.008	<.20	1.52
LD4	135	<.02	<.14	<.1	<.10	<.0002	<.1	.13	<.05	<.5	<.05	<.06	<1.0	.018	<.20	.56
LD5	136	<.02	<.14	<.1	<.10	<.0002	<.1	.23	<.05	<.5	<.05	<.06	<1.0	.017	<.20	.99
LD6	137	<.02	<.14	<.1	<.10	.0002	<.1	.03	<.05	<.5	<.05	<.06	<1.0	.003	<.20	0
LD7	138	<.02	<.14	<.1	.69	<.0002	<.1	<.02	<.05	<.5	<.05	<.06	<1.0	.003	<.20	.28
LD8	139	<.02	<.14	<.1	<.10	<.0002	<.1	.02	<.05	<.5	<.05	<.06	<1.0	.005	<.20	.32
LD9	140	<.02	<.14	<.1	<.10	<.0002	<.1	<.02	<.05	<.5	<.05	<.06	<1.0	.003	<.20	0
LD10	141	<.02	<.14	<.1	.11	<.0002	<.1	<.02	<.05	<.5	<.05	<.06	<1.0	.002	<.20	0
LD11	142	<.02	<.14	<.1	<.10	<.0002	<.1	.02	<.05	<.5	<.05	<.06	<1.0	.006	<.20	.35
LD12	143	<.02	<.14	<.1	<.10	<.0002	<.1	<.02	<.05	<.5	<.05	<.06	<1.0	.003	<.20	.12
LD13	144	<.02	<.14	<.1	<.10	<.0002	.10	<.02	<.05	<.5	<.05	<.06	<1.0	.017	<.20	.16
LD14	145	<.02	<.14	<.1	<.10	.0004	<.1	<.02	<.05	<.5	<.05	<.06	<1.0	.004	<.20	.41
LD15	146	<.02	<.14	<.1	<.10	.0006	.13	<.02	<.05	<.5	<.05	<.06	<1.0	.003	<.20	.23
LD16	147	<.02	<.14	<.1	<.10	.0004	<.1	<.02	<.05	<.5	<.05	<.06	<1.0	.003	<.20	.25
LD17	148	<.02	<.14	<.1	<.10	.0009	<.1	.02	<.05	<.5	<.05	<.06	<1.0	.031	<.20	.23
LD18	149	<.02	<.14	<.1	<.10	.0004	<.1	.11	<.05	<.5	<.05	<.06	<1.0	.007	<.20	.41
Gila 20	150				<.10	.0004	<.1	.06			<.05	<.06	<1.0	.007	<.20	
Gila 21	151				<.10	.0003	<.1	.03			<.05	<.06	<1.0	.004	<.20	
Gila 22	152				<.10	.0004	<.1	.11			<.05	<.06	<1.0	.006	<.20	
Gila 23	153				<.10	.0006	<.1	.13			<.05	<.06	<1.0	.002	<.20	
Gila 24	154				<.10	.0006	<.1	.08			<.05	<.06	<1.0	.006	<.20	
Gila 25	155				<.10	.0006	<.1	.14			<.05	<.06	<1.0	.011	<.20	
Gila 26	156				<.10	.0006	<.1	.15			<.05	<.06	<1.0	.006	<.20	
Gila 27	127				<.10	.0006	<.1	.20			<.05	<.06	<1.0	.015	<.20	
Gila 29	159				<.10	.0006	<.1	.02			<.05	<.06	<1.0	.004	<.20	
Gila 30	160	<.02	<.14	<.1	<.10	.0006	<.1	.22	.40	<.5	<.05	<.06	<1.0	.014	<.20	.15