# RESULTS OF TEST DRILLING AND HYDROLOGIC MONITORING IN THE INDIAN BATHTUB AREA, OWYHEE COUNTY, SOUTHWESTERN IDAHO, JANUARY 1989 THROUGH SEPTEMBER 1990

By H.W. Young, M.L. Jones, D.J. Parliman, and A.M. Tungate

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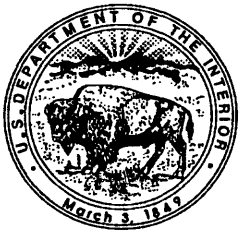


Prepared in cooperation with the
U.S. FISH AND WILDLIFE SERVICE

Boise, Idaho
1990

U.S. DEPARTMENT OF THE INTERIOR

MANUEL LUJAN, JR., Secretary

U.S. GEOLOGICAL SURVEY

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## CONVERSION FACTORS

For the convenience of readers who may prefer to use metric (International System) units rather than the inch-pound units used in this report, values may be converted by using the factors listed below. Chemical data are given in mg/L (milligrams per liter) or µg/L (micrograms per liter), which are, within the range of values presented, numerically equal to parts per million or parts per billion, respectively. Specific conductance is expressed as µS/cm (microsiemens per centimeter) at 25 degrees Celsius.

| Multiply inch-pound unit | By | To obtain metric unit |
|---|---|---|
| acre | 4,047 | square meter |
| foot (ft) | 0.3048 | meter |
| gallon per minute (gal/min) | 0.06308 | liter per second |
| inch (in.) | 25.4 | millimeter |
| mile (mi) | 1.609 | kilometer |
| square mile ($mi^2$) | 2.590 | square kilometer |

Temperatures in °C (degrees Celsius) can be converted to °F (degrees Fahrenheit) as follows:

$$°F = (1.8)(°C) + 32$$

All water temperatures are reported to the nearest 0.5 °C.

Sea level: In this report, "sea level" refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)—a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada and formerly called "Sea Level Datum of 1929."

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## ABSTRACT

This report presents data collected during the period January 1989 through September 1990 from eight test holes and selected thermal-water wells and springs in the Indian Bathtub area, southwestern Idaho. The data include completion, lithologic, and gamma logs for eight test holes, hydrographs of water levels in the test holes and ten other wells, hydrographs of discharges at four springs, and chemical and isotopic analyses of water from six of the test holes. These data were collected as part of a continuing study to determine the cause or causes of decreased discharge at Indian Bathtub Spring and other thermal springs along Hot Creek.

## INTRODUCTION

The Indian Bathtub area is about 60 mi southeast of Boise in southwestern Idaho. The area comprises about 120 $mi^2$ of valleys and uplands in the lower Bruneau River, Sugar Creek, Big Jacks Creek, and Little Valley Creek drainage basins in northern Owyhee County (fig. 1). During the period March 17 through May 16, 1990, eight test holes were drilled and completed at four sites. After completion, six test holes were equipped with continuous water-level recorders. Water samples were collected from the six holes for chemical and isotopic analyses. During the period January 1989 through September 1990, water levels in selected thermal-water wells and discharges at selected springs were measured.

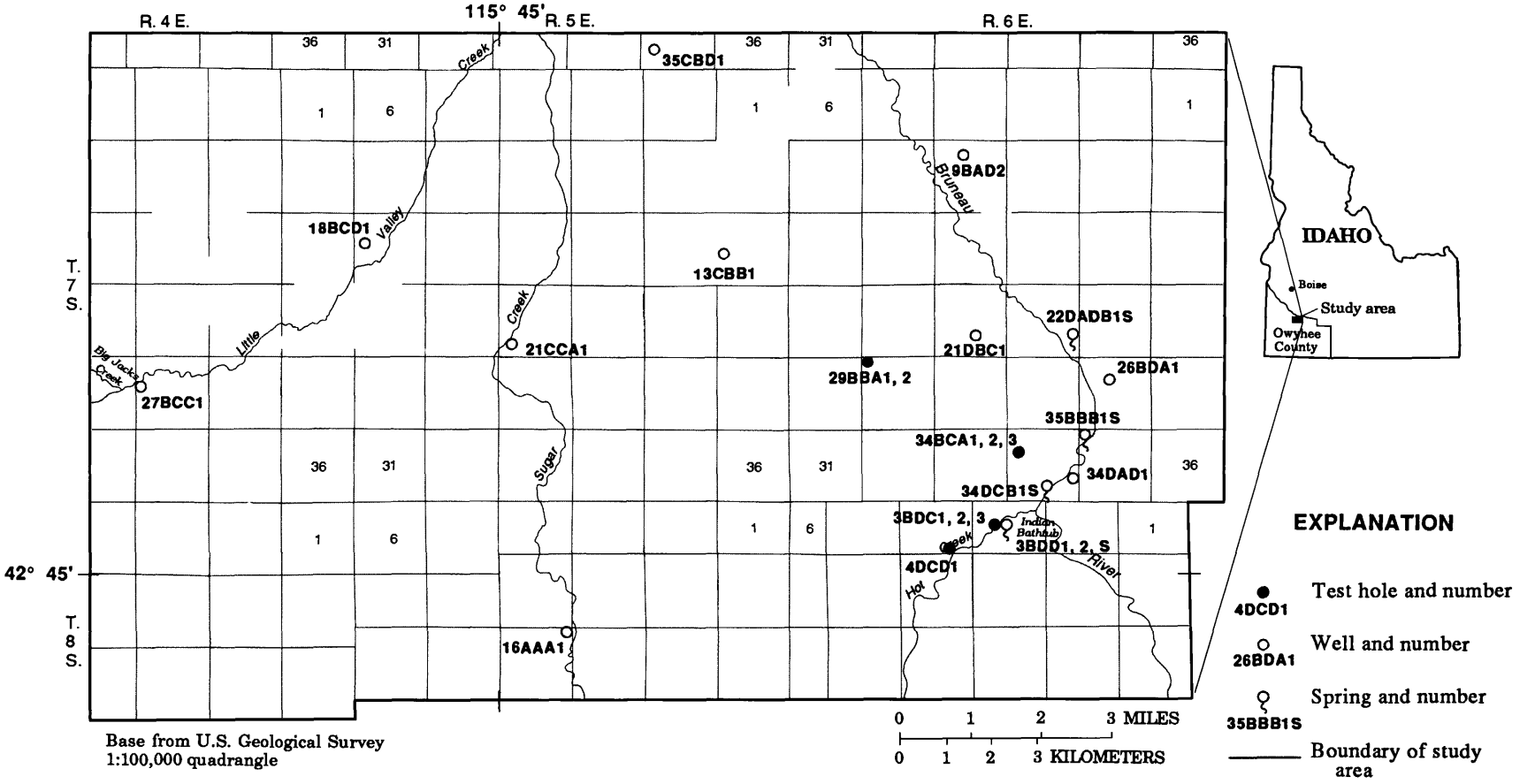



Figure 1.—Location of study area, test holes, and selected thermal-water wells and springs.

These data were collected as part of a 3 1/2-year study, in cooperation with the U.S. Fish and Wildlife Service, to determine the cause or causes of decreased discharge at Indian Bathtub Spring and other thermal springs along Hot Creek. Data collected during the period January through September 1989 are published in a report by Young and Parliman (1989). A final interpretive report will be published upon completion of the study.

Locations of test holes and measured thermal-water wells and springs are shown in figure 1. Diagrams of completion, lithologic, and gamma logs for test holes are shown in figure 2. Hydrographs of water levels in test holes and selected wells are shown in figure 3. Hydrographs of discharges at selected springs are shown in figure 4.

Water-level data for test holes and selected thermal-water wells are shown in table 1. Chemical and isotopic analyses of water from test holes are shown in table 2. Figures 2, 3, and 4, and tables 1 and 2 are at the back of the report.

## Acknowledgments

The authors are grateful to the many landowners in the study area who allowed access to their property, supplied information, and permitted measurements to be made in their wells and springs. Special thanks are given to Robert E. DeTar, U.S. Bureau of Land Management, for his description of test-hole cuttings. The work of the following individuals also is acknowledged: J.A. Singer, R.M. McKran, Jack Hennagan, Rick Ludlum, and Jim Huckaby, U.S. Geological Survey, Western Region Drill Rig Operation, Santa Barbara, Calif.; and L.D. White, M.A. Huebner, and C.A. Maley, U.S. Geological Survey, Isotope Laboratory, Menlo Park, Calif.

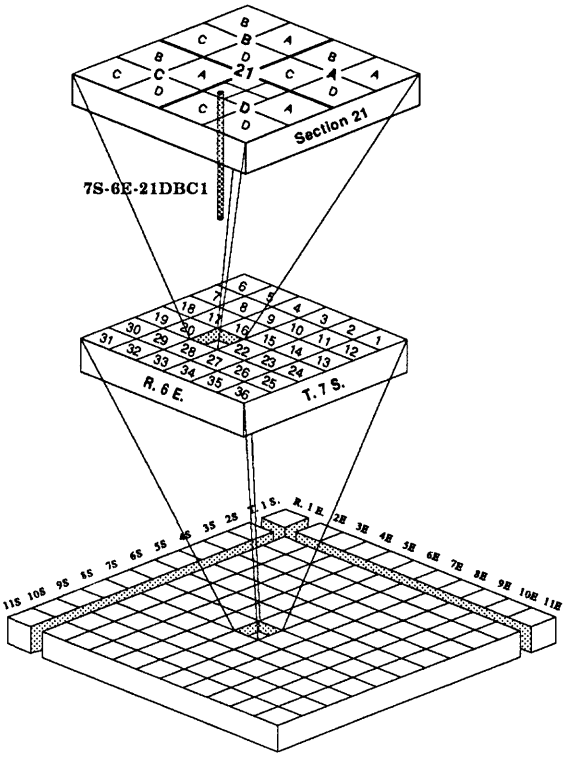
## REFERENCE

Young, H.W., and Parliman, D.J., 1989, Hydrologic and chemical data for selected thermal-water wells and springs in the Indian Bathtub area, Owyhee County, southwestern Idaho: U.S. Geological Survey Open-File Report 89-589, 19 p.

## Well- and Spring-Numbering System

The well- and spring-numbering system (example below) used by the U.S. Geological Survey in Idaho indicates the location of wells within the official rectangular subdivision of public lands, with reference to the Boise base line and Meridian. The first two segments of the number designate the township (north or south) and range (east or west). The third segment gives the section number; four letters, which indicate the $^1/_4$ section (160-acre tract), $^1/_4$-$^1/_4$ section (40-acre tract), $^1/_4$-$^1/_4$-$^1/_4$ section (10-acre tract), and $^1/_4$-$^1/_4$-$^1/_4$-$^1/_4$ section ($2^1/_2$-acre tract); and serial number of the well within the tract.

Quarter sections are designated by the letters A, B, C, and D in counterclockwise order from the northeast quarter of each section. Forty-acre, 10-acre, and $2^1/_2$-acre tracts within each quarter section are lettered in the same manner. Well 7S-6E-21DBC1, for example, is in the SW$^1/_4$NW$^1/_4$SE$^1/_4$ sec. 21, T. 7 S., R. 6 E., and is the first well inventoried in that tract. Springs are designated by the letter "S" following the last numeral; for example, 8S-6E-3BDD1S.



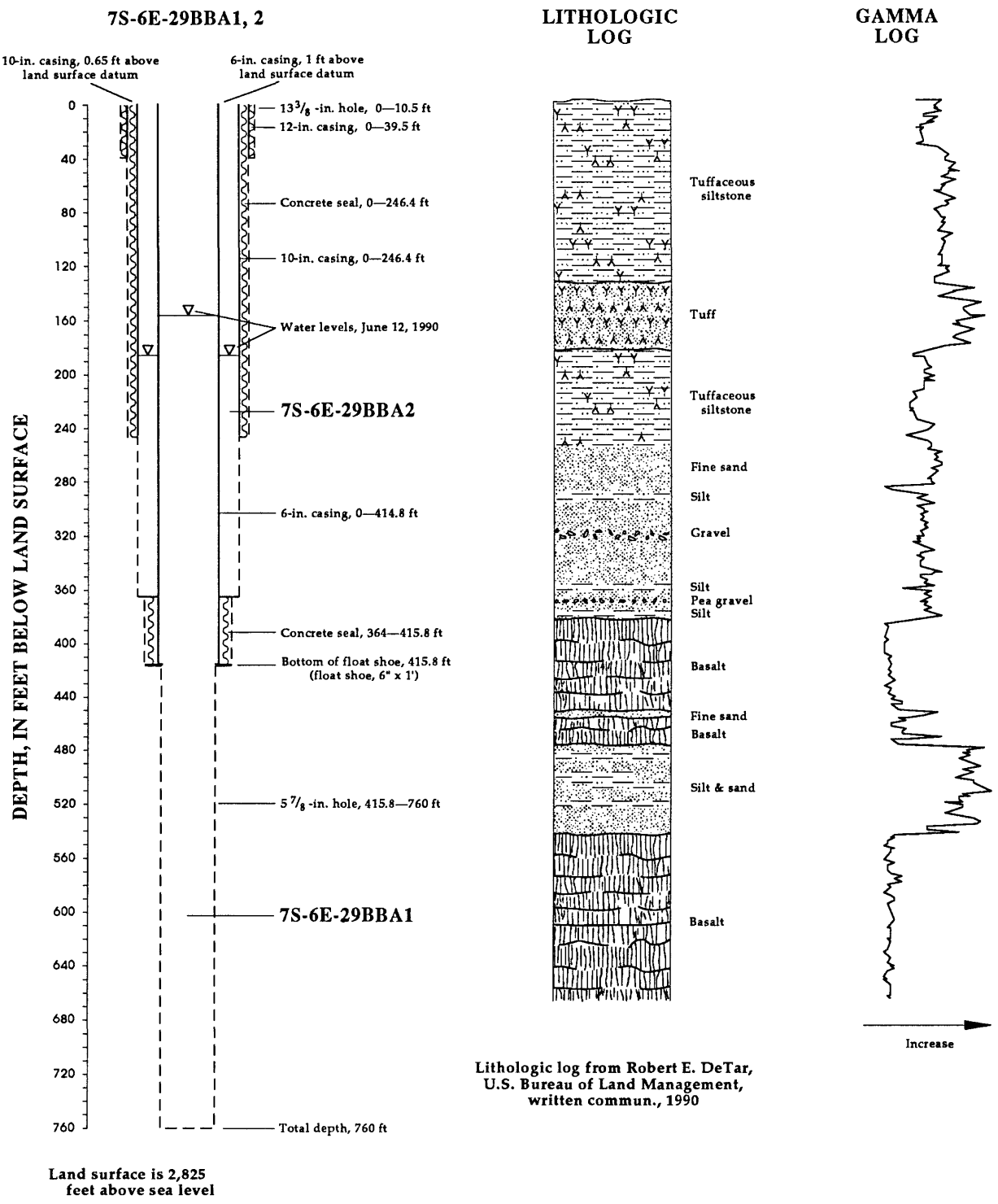



Figure 2.—Completion, lithologic, and gamma logs for test hole 7S-6E-29BBA1, 2.

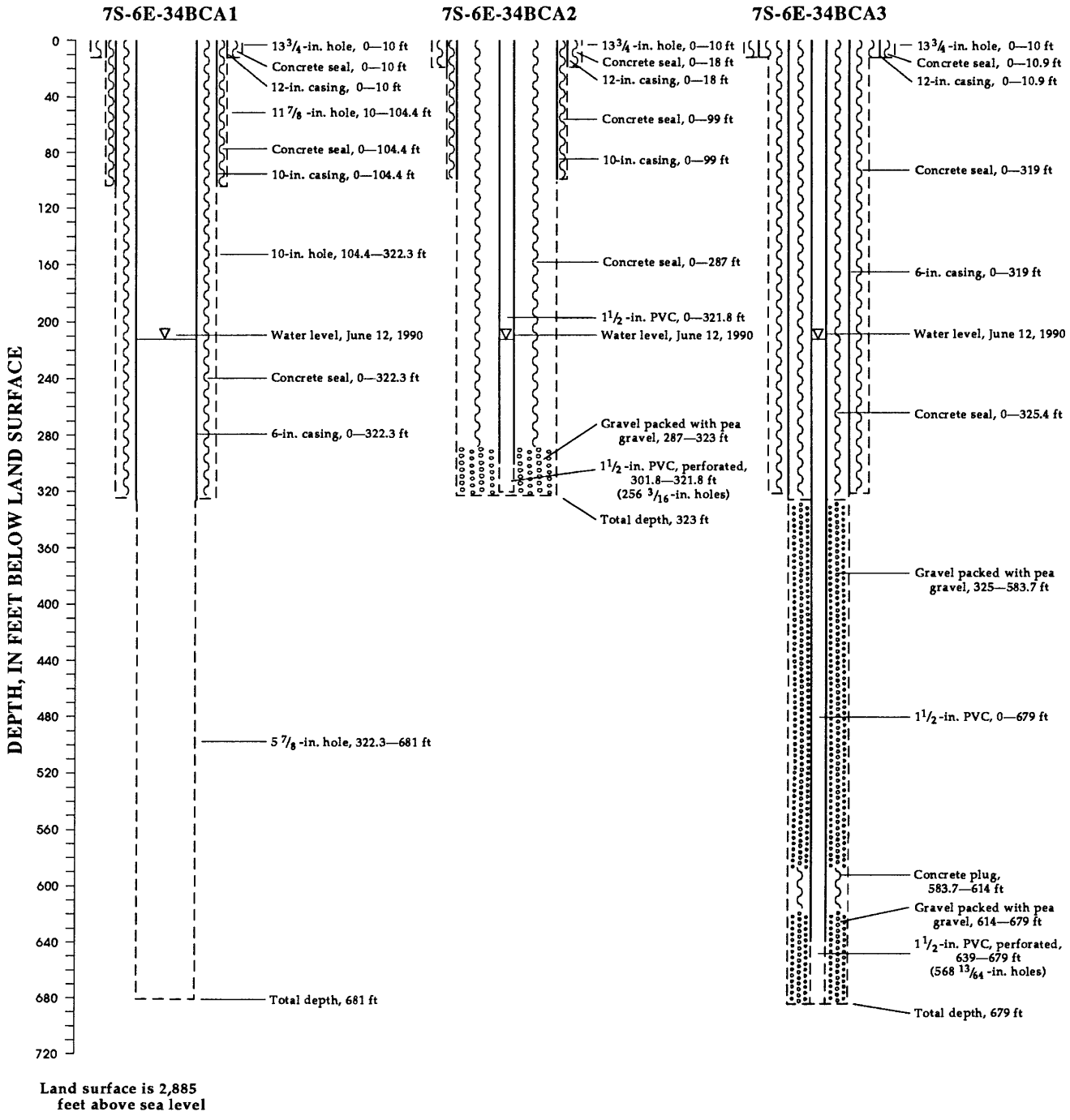
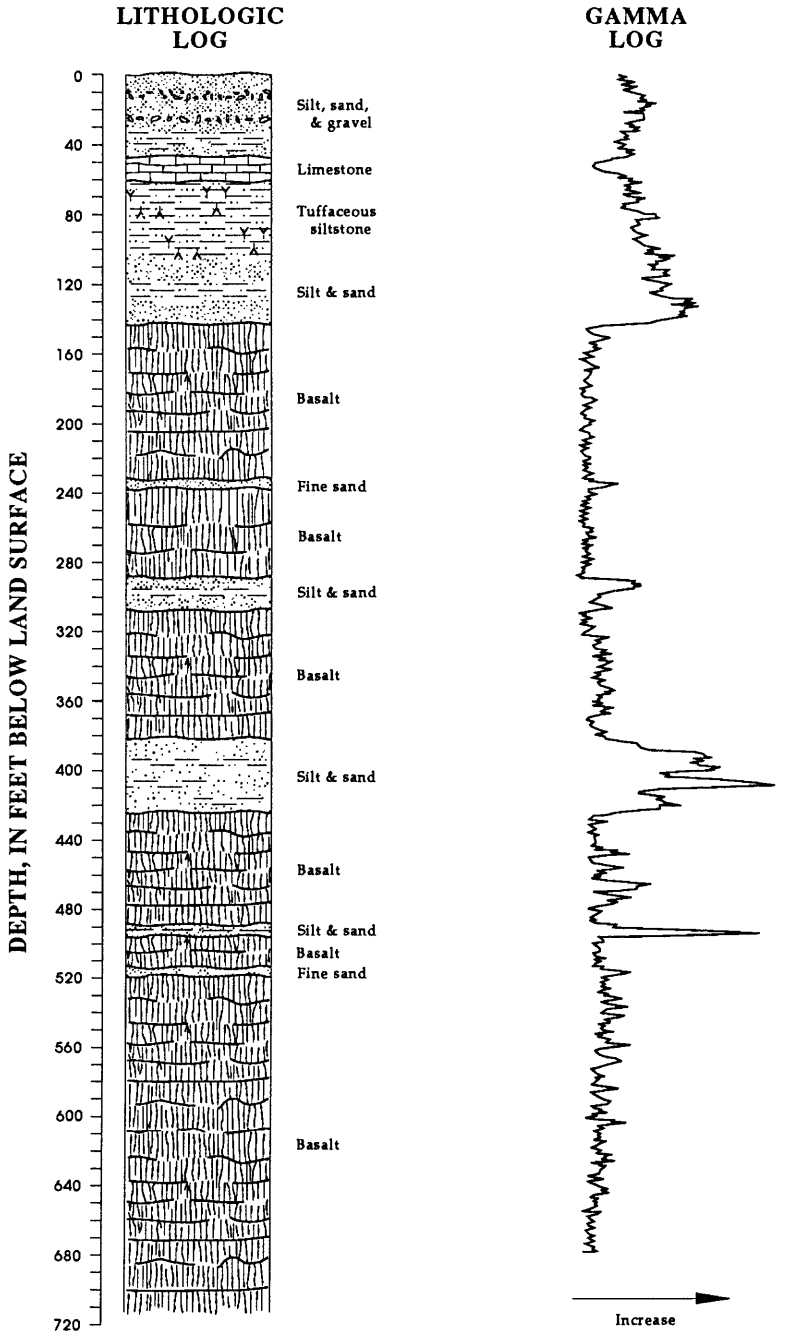



Figure 2.—Completion, lithologic, and gamma




**Lithologic log from Robert E. DeTar, U.S. Bureau of Land Management, written commun., 1990**

logs for test hole 7S-6E-34BCA1, 2, 3—Continued.

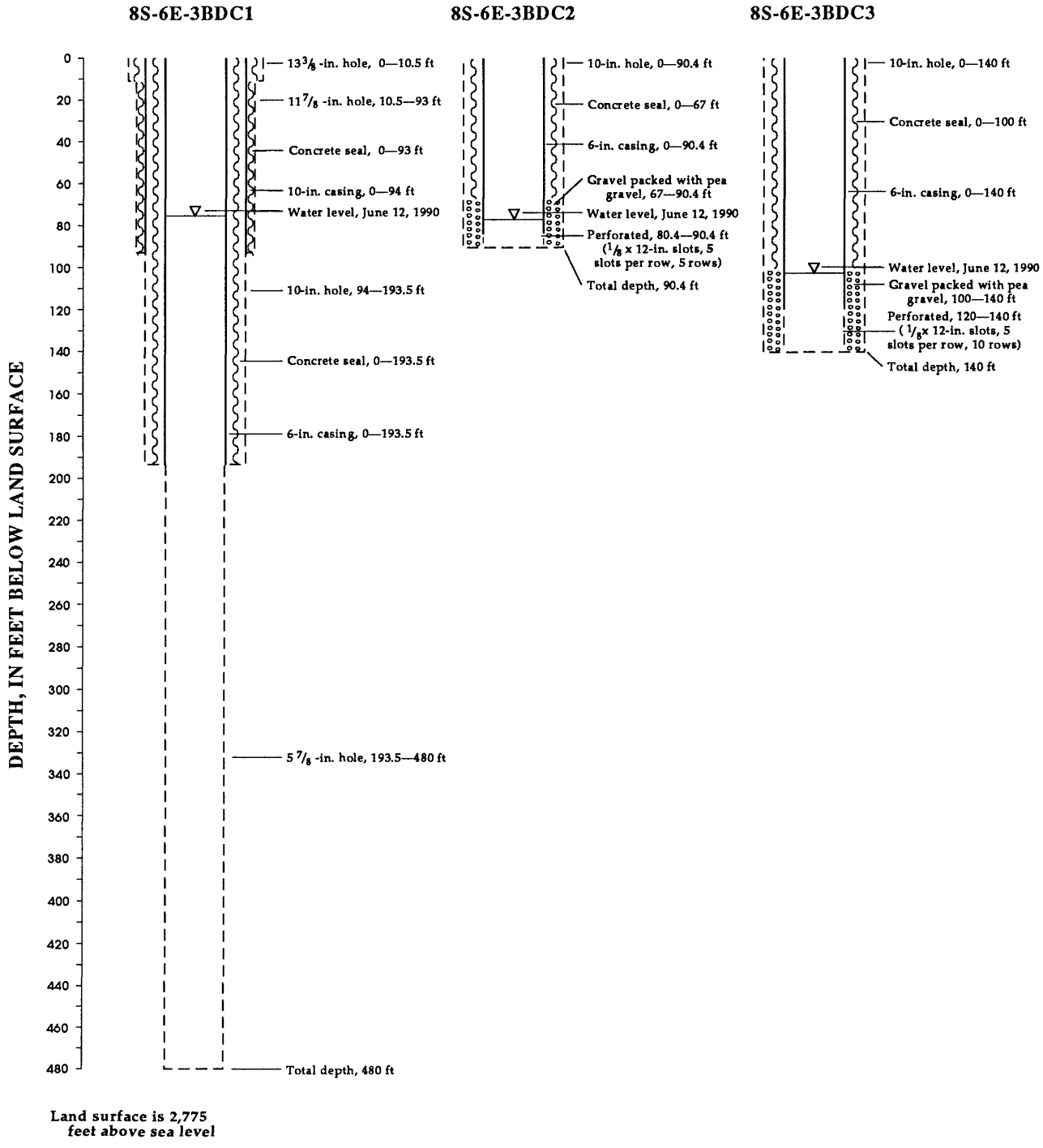
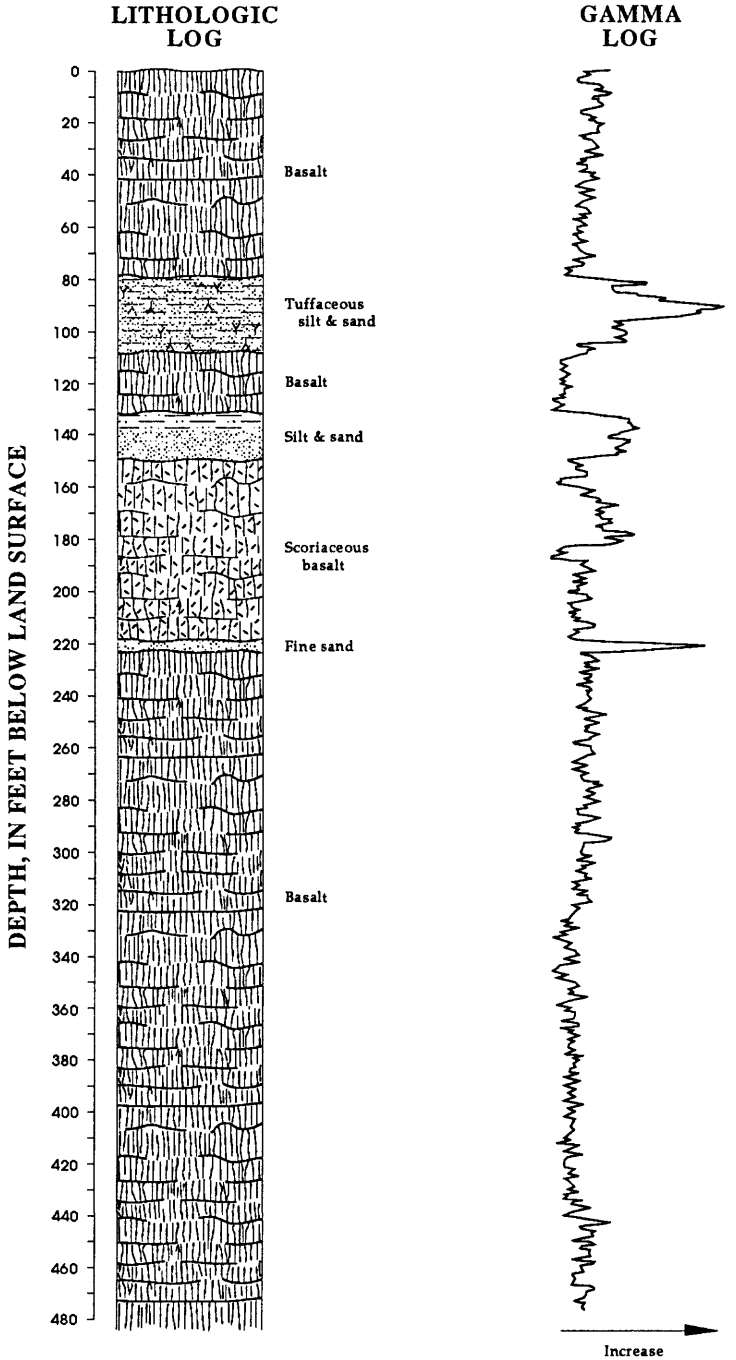



Figure 2.—Completion, lithologic, and gamma




Lithologic log from Robert E. DeTar, U.S. Bureau of Land Management, written commun., 1990

logs for test hole 8S-6E-3BDC1, 2, 3—Continued.

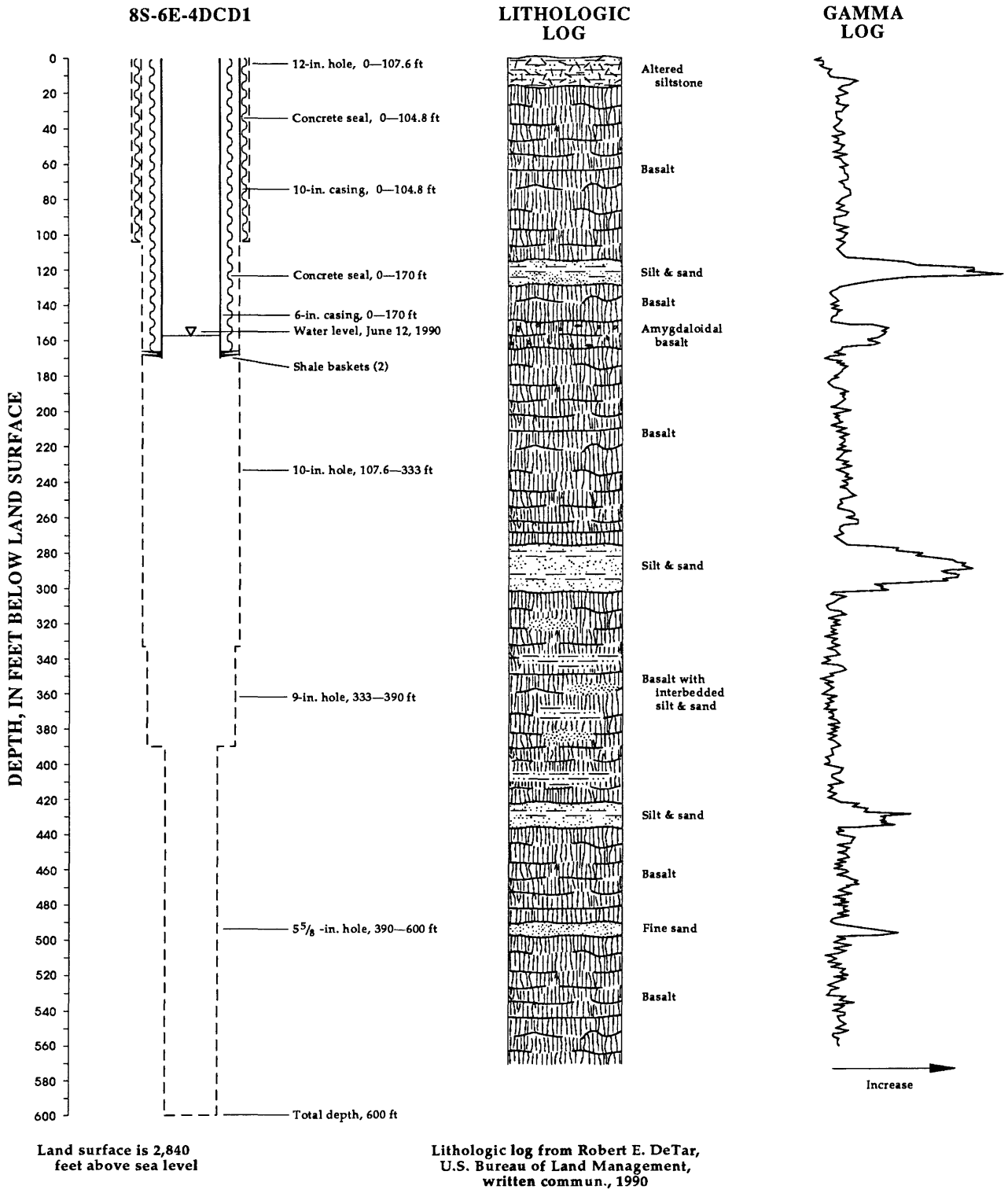



Figure 2.—Completion, lithologic, and gamma logs for test hole 8S-6E-4DCD1—Continued.

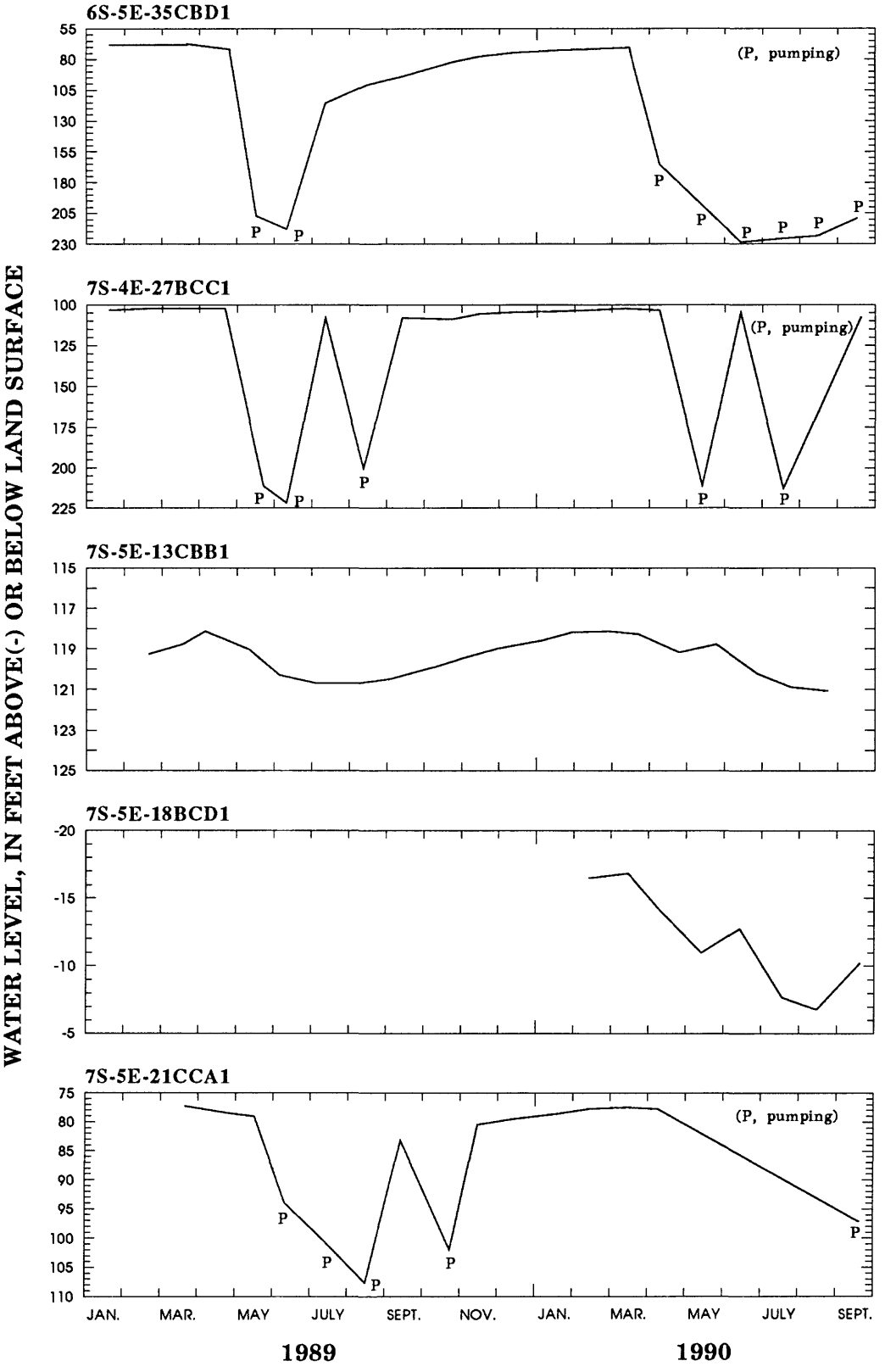



Figure 3.—Water levels in test holes and selected thermal-water wells during the period January 1989 through September 1990.
(Well locations shown in figure 1)

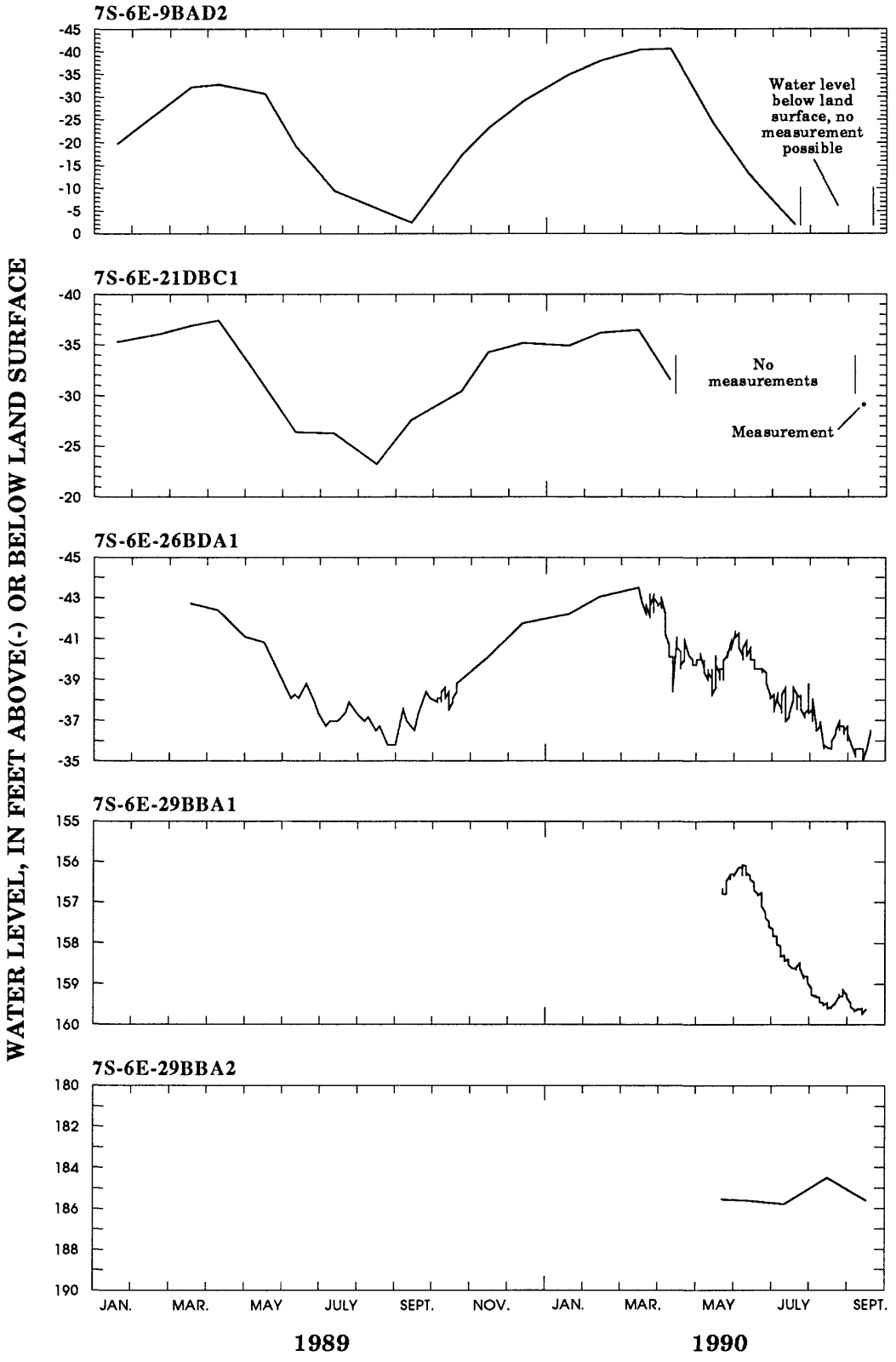



Figure 3.—Water levels in test holes and selected thermal-water wells during the period January 1989 through September 1990—Continued.
(Well locations shown in figure 1)

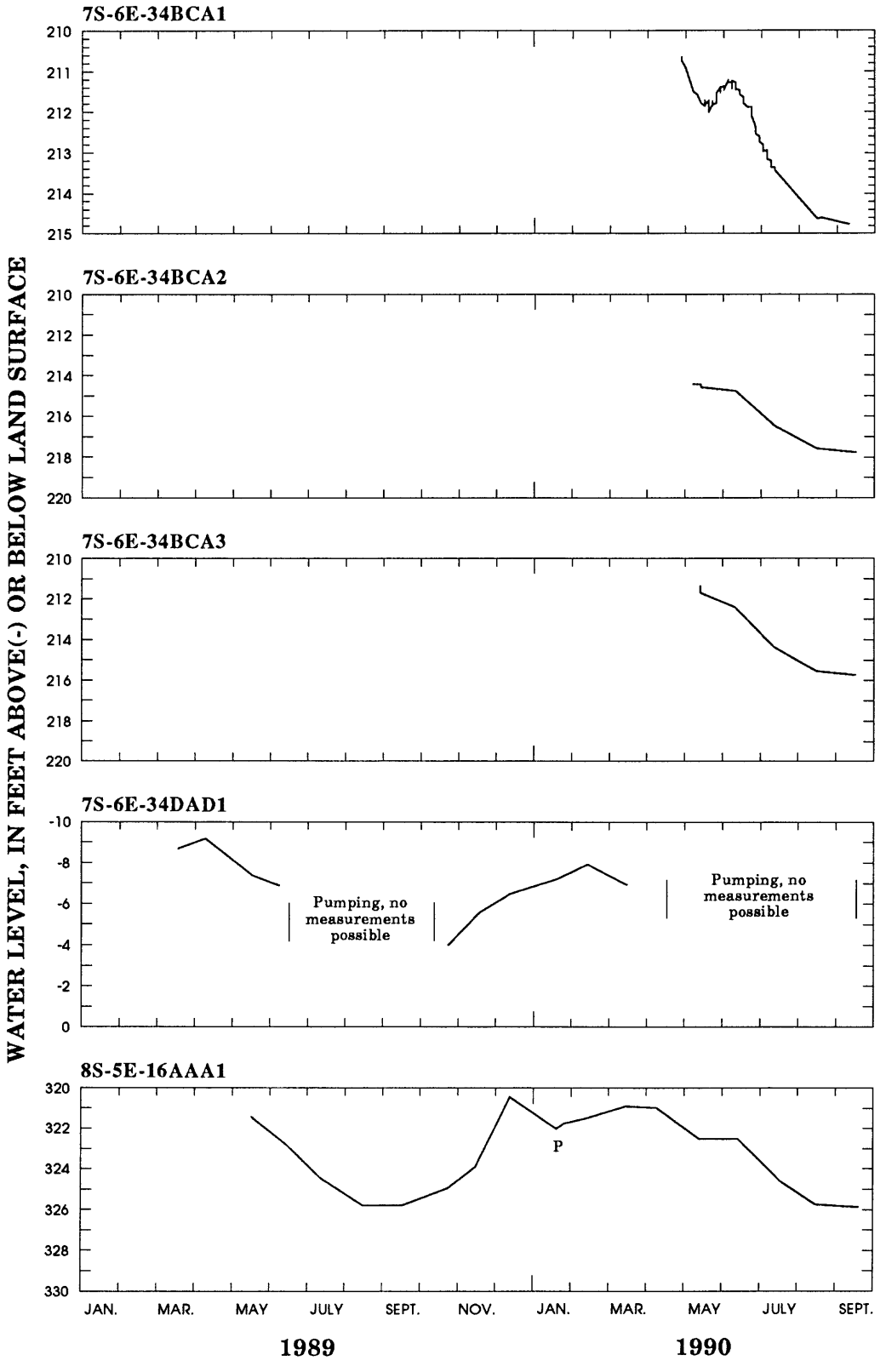



Figure 3.—Water levels in test holes and selected thermal-water wells during the period January 1989 through September 1990—Continued.
(Well locations shown in figure 1)

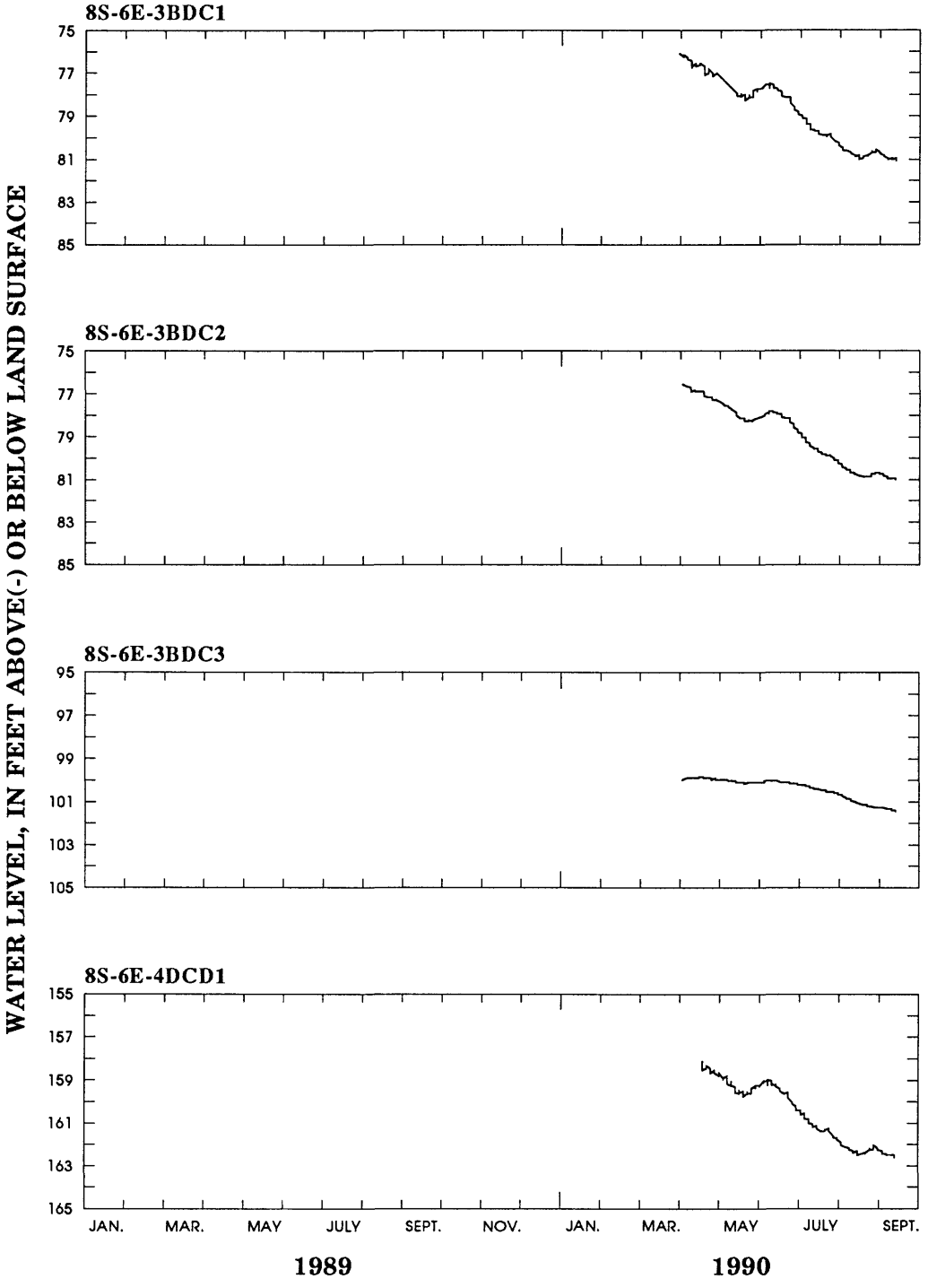



Figure 3.—Water levels in test holes and selected thermal-water wells during the period January 1989 through September 1990—Continued.
(Well locations shown in figure 1)

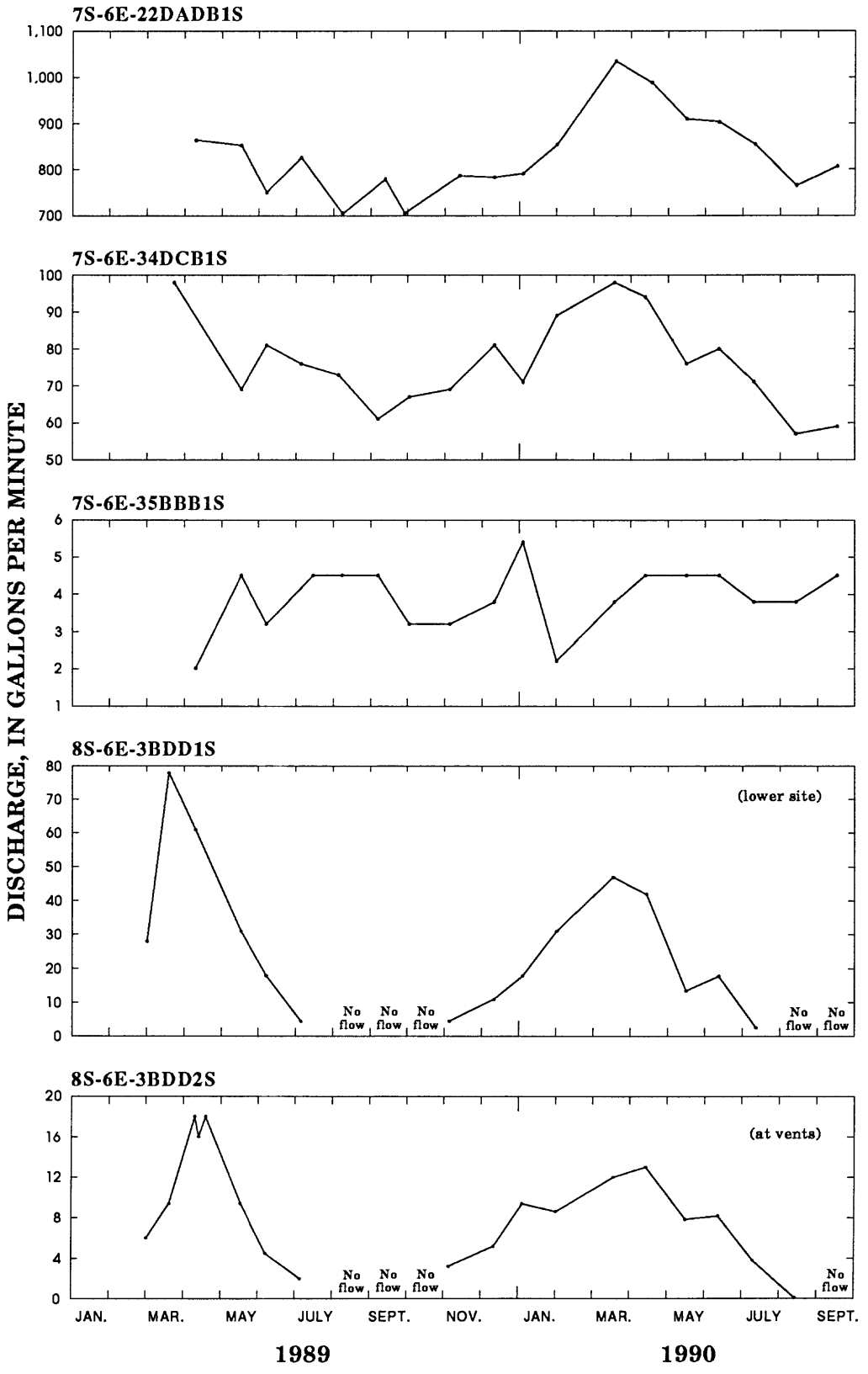



Figure 4.—Discharges at selected springs during the period March 1989 through September 1990.
(Spring locations shown in figure 1)

Table 1.—*Water-level data for test holes and selected thermal-water wells*

[—, no data available; Status: P, pumping; E, recently flowed; R, recently pumped. Water-level measurements accurate to one-tenth of a foot were read from a continuous recorder]

| Test hole or well No. | Date measured | Water level (feet below land surface) | Status |
|---|---|---|---|
| 6S- 5E-35CBD1 | 1-19-89 | 68.55 | — |
| | 2-21-89 | 68.05 | — |
| | 3-21-89 | 67.79 | — |
| | 3-22-89 | 67.36 | — |
| | 4-25-89 | 70.80 | — |
| | 5-17-89 | 206.78 | P |
| | 6-12-89 | 217.71 | P |
| | 7-12-89 | 115.84 | — |
| | 8-15-89 | 100.71 | — |
| | 9-14-89 | 94.34 | — |
| | 10-24-89 | 81.76 | — |
| | 11-14-89 | 77.70 | — |
| | 12-12-89 | 74.71 | — |
| | 1-18-90 | 72.41 | — |
| | 2-13-90 | 71.31 | — |
| | 3-14-90 | 70.55 | — |
| | 4-10-90 | 164.54 | P |
| | 5-15-90 | 198.45 | P |
| | 6-15-90 | 228.12 | P |
| | 7-19-90 | 224.96 | P |
| | 8-16-90 | 222.94 | P |
| | 9-14-90 | 209.08 | P |
| 7S- 4E-27BCC1 | 1-19-89 | 103.23 | — |
| | 2-21-89 | 102.55 | — |
| | 3-21-89 | 101.93 | — |
| | 4-25-89 | 102.26 | — |
| (continued) | 5-23-89 | 210.60 | P |
| | 6-12-89 | 221.05 | P |
| | 7-12-89 | 107.82 | — |
| | 8-15-89 | 200.10 | P |
| | 9-14-89 | 108.02 | — |
| | 10-24-89 | 108.70 | — |
| | 11-14-89 | 105.53 | — |
| | 12-13-89 | 104.55 | — |
| | 1-18-90 | 103.56 | — |
| | 2-13-90 | 102.96 | — |
| | 3-14-90 | 102.33 | — |
| | 4-10-90 | 102.78 | — |
| | 5-15-90 | 210.75 | P |
| | 6-15-90 | 104.41 | — |
| | 7-19-90 | 212.75 | P |
| | 9-17-90 | 108.12 | — |
| 7S- 5E-13CBB1 | 2-21-89 | 119.23 | — |
| | 3-22-89 | 118.80 | — |
| | 4-11-89 | 118.13 | — |
| | 5-16-89 | 119.01 | — |
| | 6-12-89 | 120.24 | — |
| | 7-12-89 | 120.64 | — |
| | 8-15-89 | 120.65 | — |
| | 9-14-89 | 120.45 | — |

Table 1.—*Water-level data for test holes and selected thermal-water wells*—Continued

| Test hole or well No. | Date measured | Water level (feet below land surface) | Status |
|---|---|---|---|
| 7S- 5E-13CBB1 (continued) | 10-24-89 | 119.84 | — |
| | 11-14-89 | 119.40 | — |
| | 12-12-89 | 118.97 | — |
| | 1-18-90 | 118.57 | — |
| | 2-13-90 | 118.21 | — |
| | 3-14-90 | 118.09 | — |
| | 4-10-90 | 118.22 | — |
| | 5-15-90 | 119.16 | — |
| | 6-15-90 | 118.79 | — |
| | 7-19-90 | 120.22 | — |
| | 8-15-90 | 120.84 | — |
| | 9-14-90 | 121.07 | — |
| 18BCD1 | 2-13-90 | -16.51 | — |
| | 3-14-90 | -16.92 | — |
| | 4-10-90 | -14.22 | — |
| | 5-15-90 | -11.02 | — |
| | 6-15-90 | -12.82 | — |
| | 7-19-90 | -7.72 | — |
| | 8-16-90 | -6.82 | — |
| | 9-17-90 | -10.21 | — |
| 21CCA1 | 3-22-89 | 77.25 | — |
| | 4-27-89 | 78.72 | — |
| | 5-16-89 | 79.13 | — |
| | 6-12-89 | 93.90 | P |
| | 7-12-89 | 100.28 | P |
| | 8-15-89 | 107.70 | P |
| | 9-12-89 | 83.06 | — |
| | 10-24-89 | 101.99 | P |
| | 11-14-89 | 80.54 | — |
| | 12-13-89 | 79.46 | — |
| | 1-18-90 | 78.60 | — |
| | 2-13-90 | 77.60 | — |
| | 3-14-90 | 77.49 | — |
| | 4-10-90 | 77.82 | — |
| | 9-17-90 | 97.18 | P |
| 7S- 6E- 9BAD2 | 1-19-89 | -19.70 | E |
| | 3-20-89 | -32.12 | E |
| | 4-11-89 | -32.68 | E |
| | 5-16-89 | -30.71 | E |
| | 6-12-89 | -19.32 | E |
| | 7-12-89 | -9.52 | E |
| | 9-14-89 | -2.52 | E |
| | 10-24-89 | -17.42 | E |
| | 11-13-89 | -23.22 | E |
| | 12-12-89 | -29.32 | E |
| | 1-18-90 | -34.92 | E |
| | 2-13-90 | -37.92 | E |
| | 3-14-90 | -40.22 | E |
| | 4-10-90 | -40.62 | E |
| | 5-15-90 | -24.32 | E |

Table 1.—*Water-level data for test holes and selected thermal-water wells*—Continued

| Test hole or well No. | Date measured | Water level (feet below land surface) | Status |
|---|---|---|---|
| 7S- 6E- 9BAD2 (continued) | 6-12-90 | -13.42 | E |
| | 7-19-90 | -2.22 | E |
| 21DBC1 | 1-19-89 | -35.32 | E |
| | 2-21-89 | -36.12 | — |
| | 3-20-89 | -36.94 | E |
| | 4-11-89 | -37.40 | E |
| | 5-16-89 | -31.02 | E |
| | 6-12-89 | -26.44 | E |
| | 7-12-89 | -26.34 | E |
| | 8-15-89 | -23.34 | E |
| | 9-14-89 | -27.64 | E |
| | 10-24-89 | -30.54 | — |
| | 11-14-89 | -34.34 | — |
| | 12-12-89 | -35.24 | — |
| | 1-18-90 | -34.94 | — |
| | 2-13-90 | -36.24 | — |
| | 3-14-90 | -36.54 | — |
| | 4-10-90 | -31.64 | E |
| | 9-12-90 | -29.13 | — |
| 26BDA1 | 3-20-89 | -42.72 | — |
| | 4-11-89 | -42.38 | — |
| | 5- 1-89 | -41.09 | — |
| | 5-16-89 | -40.82 | — |
| | 6- 7-89 | -38.10 | — |
| | 6-10-89 | -38.3 | — |

| Test hole or well No. | Date measured | Water level (feet below land surface) | Status |
|---|---|---|---|
| 7S- 6E-26BDA1 (continued) | 6-15-89 | -38.1 | — |
| | 6-20-89 | -38.8 | — |
| | 6-25-89 | -37.9 | — |
| | 6-30-89 | -37.4 | — |
| | 7- 5-89 | -36.7 | — |
| | 7-10-89 | -37.0 | — |
| | 7-15-89 | -37.0 | — |
| | 7-20-89 | -37.4 | — |
| | 7-25-89 | -37.9 | — |
| | 7-31-89 | -37.4 | — |
| | 8- 5-89 | -37.0 | — |
| | 8-10-89 | -37.2 | — |
| | 8-15-89 | -36.5 | — |
| | 8-20-89 | -36.7 | — |
| | 8-25-89 | -35.8 | — |
| | 8-31-89 | -35.8 | — |
| | 9- 5-89 | -37.6 | — |
| | 9-10-89 | -37.0 | — |
| | 9-15-89 | -36.5 | — |
| | 9-20-89 | -37.4 | — |
| | 9-25-89 | -38.4 | — |
| | 9-29-89 | -38.1 | — |
| | 10- 4-89 | -37.9 | — |
| | 10- 5-89 | -38.1 | — |
| | 10- 6-89 | -38.1 | — |

Table 1.—*Water-level data for test holes and selected thermal-water wells*—Continued

| Test hole or well No. | Date measured | Water level (feet below land surface) | Status |
|---|---|---|---|
| 7S- 6E-26BDA1 (continued) | 10- 7-89 | -37.9 | — |
| | 10- 8-89 | -38.4 | — |
| | 10- 9-89 | -38.4 | — |
| | 10-10-89 | -38.6 | — |
| | 10-11-89 | -38.1 | — |
| | 10-12-89 | -38.4 | — |
| | 10-13-89 | -37.9 | — |
| | 10-14-89 | -38.1 | — |
| | 10-15-89 | -37.6 | — |
| | 10-16-89 | -37.9 | — |
| | 10-17-89 | -37.9 | — |
| | 10-18-89 | -38.1 | — |
| | 10-19-89 | -38.4 | — |
| | 10-20-89 | -38.8 | — |
| | 11-13-89 | -40.1 | — |
| | 12-12-89 | -41.72 | E |
| | 1-18-90 | -42.22 | E |
| | 2-13-90 | -43.02 | E |
| | 3-14-90 | -43.52 | E |
| | 3-19-90 | -42.7 | — |
| | 3-21-90 | -42.2 | — |
| | 3-22-90 | -42.6 | — |
| | 3-23-90 | -42.1 | — |
| | 3-24-90 | -43.2 | — |
| | 3-25-90 | -42.2 | — |
| 7S- 6E-26BDA1 (continued) | 3-26-90 | -42.6 | — |
| | 3-27-90 | -43.1 | — |
| | 3-28-90 | -42.3 | — |
| | 3-29-90 | -43.0 | — |
| | 3-30-90 | -42.7 | — |
| | 4- 1-90 | -42.6 | — |
| | 4- 2-90 | -42.8 | — |
| | 4- 3-90 | -42.5 | — |
| | 4- 4-90 | -42.9 | — |
| | 4- 5-90 | -42.2 | — |
| | 4- 6-90 | -42.3 | — |
| | 4- 7-90 | -41.2 | — |
| | 4- 8-90 | -40.7 | — |
| | 4- 9-90 | -40.4 | — |
| | 4-10-90 | -40.1 | — |
| | 4-11-90 | -40.1 | — |
| | 4-12-90 | -38.4 | — |
| | 4-13-90 | -38.7 | — |
| | 4-14-90 | -41.1 | — |
| | 4-15-90 | -40.9 | — |
| | 4-16-90 | -40.6 | — |
| | 4-17-90 | -40.4 | — |
| | 4-18-90 | -40.0 | — |
| | 4-19-90 | -39.5 | — |
| | 4-20-90 | -39.7 | — |

Table 1.—*Water-level data for test holes and selected thermal-water wells*—Continued

| Test hole or well No. | Date measured | Water level (feet below land surface) | Status |
|---|---|---|---|
| 7S- 6E-26BDA1 (continued) | 4-21-90 | -40.0 | — |
| | 4-22-90 | -40.0 | — |
| | 4-23-90 | -40.9 | — |
| | 4-25-90 | -40.2 | — |
| | 4-26-90 | -40.2 | — |
| | 4-27-90 | -40.0 | — |
| | 4-29-90 | -39.7 | — |
| | 4-30-90 | -39.7 | — |
| | 5- 1-90 | -40.0 | — |
| | 5- 4-90 | -40.0 | — |
| | 5- 5-90 | -40.2 | — |
| | 5- 6-90 | -39.5 | — |
| | 5- 7-90 | -40.0 | — |
| | 5- 8-90 | -39.3 | — |
| | 5- 9-90 | -39.0 | — |
| | 5-10-90 | -39.5 | — |
| | 5-11-90 | -39.3 | — |
| | 5-13-90 | -39.1 | — |
| | 5-14-90 | -39.5 | — |
| | 5-15-90 | -38.3 | — |
| | 5-16-90 | -38.6 | — |
| | 5-17-90 | -40.2 | — |
| | 5-18-90 | -39.7 | — |
| | 5-19-90 | -39.3 | — |
| | 5-20-90 | -39.0 | — |
| 7S- 6E-26BDA1 (continued) | 5-21-90 | -39.5 | — |
| | 5-22-90 | -39.5 | — |
| | 5-23-90 | -39.0 | — |
| | 5-24-90 | -40.0 | — |
| | 5-25-90 | -40.2 | — |
| | 5-26-90 | -40.4 | — |
| | 5-27-90 | -40.2 | — |
| | 5-28-90 | -40.9 | — |
| | 5-29-90 | -40.9 | — |
| | 5-30-90 | -40.6 | — |
| | 5-31-90 | -41.3 | — |
| | 6- 1-90 | -41.3 | — |
| | 6- 2-90 | -41.1 | — |
| | 6- 3-90 | -41.3 | — |
| | 6- 4-90 | -40.9 | — |
| | 6- 5-90 | -40.6 | — |
| | 6- 6-90 | -40.2 | — |
| | 6- 7-90 | -40.0 | — |
| | 6- 8-90 | -40.2 | — |
| | 6- 9-90 | -40.6 | — |
| | 6-10-90 | -40.9 | — |
| | 6-11-90 | -40.6 | — |
| | 6-12-90 | -40.2 | — |
| | 6-13-90 | -40.6 | — |
| | 6-14-90 | -40.0 | — |

Table 1.—*Water-level data for test holes and selected thermal-water wells*—Continued

| Test hole or well No. | Date measured | Water level (feet below land surface) | Status |
|---|---|---|---|
| 7S- 6E-26BDA1 (continued) | 6-15-90 | -40.0 | — |
| | 6-16-90 | -40.0 | — |
| | 6-17-90 | -39.5 | — |
| | 6-18-90 | -39.5 | — |
| | 6-19-90 | -39.5 | — |
| | 6-20-90 | -39.5 | — |
| | 6-21-90 | -39.5 | — |
| | 6-22-90 | -39.5 | — |
| | 6-23-90 | -39.3 | — |
| | 6-24-90 | -39.5 | — |
| | 6-25-90 | -39.3 | — |
| | 6-26-90 | -39.0 | — |
| | 6-27-90 | -38.8 | — |
| | 6-28-90 | -38.3 | — |
| | 6-30-90 | -38.1 | — |
| | 7- 1-90 | -38.3 | — |
| | 7- 2-90 | -38.3 | — |
| | 7- 3-90 | -37.6 | — |
| | 7- 4-90 | -38.3 | — |
| | 7- 5-90 | -37.9 | — |
| | 7- 6-90 | -38.1 | — |
| | 7- 7-90 | -37.9 | — |
| | 7- 8-90 | -37.6 | — |
| | 7- 9-90 | -37.4 | — |
| | 7-10-90 | -38.3 | — |
| 7S- 6E-26BDA1 (continued) | 7-11-90 | -38.6 | — |
| | 7-12-90 | -38.1 | — |
| | 7-13-90 | -37.0 | — |
| | 7-14-90 | -37.2 | — |
| | 7-15-90 | -37.2 | — |
| | 7-16-90 | -37.4 | — |
| | 7-17-90 | -38.0 | — |
| | 7-18-90 | -38.6 | — |
| | 7-19-90 | -38.6 | — |
| | 7-20-90 | -38.3 | — |
| | 7-21-90 | -37.6 | — |
| | 7-22-90 | -38.3 | — |
| | 7-23-90 | -38.1 | — |
| | 7-24-90 | -38.3 | — |
| | 7-25-90 | -37.6 | — |
| | 7-26-90 | -37.2 | — |
| | 7-27-90 | -37.2 | — |
| | 7-28-90 | -37.4 | — |
| | 7-29-90 | -37.6 | — |
| | 7-30-90 | -38.8 | — |
| | 7-31-90 | -37.9 | — |
| | 8- 1-90 | -37.4 | — |
| | 8- 2-90 | -37.6 | — |
| | 8- 3-90 | -37.0 | — |
| | 8- 4-90 | -38.1 | — |

Table 1.—*Water-level data for test holes and selected thermal-water wells*—Continued

| Test hole or well No. | Date measured | Water level (feet below land surface) | Status |
|---|---|---|---|
| 7S- 6E-26BDA1 (continued) | 8- 5-90 | -36.7 | — |
| | 8- 7-90 | -36.5 | — |
| | 8- 8-90 | -36.7 | — |
| | 8- 9-90 | -37.0 | — |
| | 8-11-90 | -35.6 | — |
| | 8-12-90 | -35.8 | — |
| | 8-14-90 | -35.7 | — |
| | 8-18-90 | -35.6 | — |
| | 8-19-90 | -36.0 | — |
| | 8-20-90 | -36.3 | — |
| | 8-21-90 | -36.5 | — |
| | 8-22-90 | -36.5 | — |
| | 8-23-90 | -37.0 | — |
| | 8-24-90 | -36.7 | — |
| | 8-25-90 | -36.5 | — |
| | 8-26-90 | -36.7 | — |
| | 8-27-90 | -36.7 | — |
| | 8-28-90 | -36.3 | — |
| | 8-29-90 | -36.5 | — |
| | 8-30-90 | -36.7 | — |
| | 8-31-90 | -36.0 | — |
| | 9- 1-90 | -36.3 | — |
| | 9- 2-90 | -35.8 | — |
| | 9- 3-90 | -35.8 | — |
| | 9- 6-90 | -35.3 | — |
| 7S- 6E-26BDA1 (continued) | 9- 7-90 | -35.6 | — |
| | 9- 8-90 | -35.6 | — |
| | 9- 9-90 | -35.6 | — |
| | 9-10-90 | -35.6 | — |
| | 9-11-90 | -35.6 | — |
| | 9-12-90 | -35.3 | — |
| | 9-13-90 | -35.1 | — |
| | 9-14-90 | -35.6 | — |
| | 9-17-90 | -36.5 | — |
| 29BBA1 | 5-23-90 | 156.67 | — |
| | 5-24-90 | 156.78 | — |
| | 5-25-90 | 156.78 | — |
| | 5-26-90 | 156.64 | — |
| | 5-27-90 | 156.46 | — |
| | 5-28-90 | 156.32 | — |
| | 5-29-90 | 156.44 | — |
| | 5-30-90 | 156.30 | — |
| | 5-31-90 | 156.29 | — |
| | 6- 1-90 | 156.31 | — |
| | 6- 2-90 | 156.32 | — |
| | 6- 3-90 | 156.13 | — |
| | 6- 4-90 | 156.15 | — |
| | 6- 5-90 | 156.13 | — |
| | 6- 6-90 | 156.13 | — |
| | 6- 7-90 | 156.32 | — |

Table 1.—*Water-level data for test holes and selected thermal-water wells*—Continued

| Test hole or well No. | Date measured | Water level (feet below land surface) | Status |
|---|---|---|---|
| 7S- 6E-29BBA1 (continued) | 6- 8-90 | 156.27 | — |
| | 6- 9-90 | 156.07 | — |
| | 6-10-90 | 156.12 | — |
| | 6-11-90 | 156.33 | — |
| | 6-12-90 | 156.28 | — |
| | 6-13-90 | 156.32 | — |
| | 6-14-90 | 156.36 | — |
| | 6-15-90 | 156.44 | — |
| | 6-16-90 | 156.51 | — |
| | 6-17-90 | 156.57 | — |
| | 6-18-90 | 156.68 | — |
| | 6-19-90 | 156.78 | — |
| | 6-20-90 | 156.76 | — |
| | 6-21-90 | 156.81 | — |
| | 6-22-90 | 156.76 | — |
| | 6-23-90 | 156.98 | — |
| | 6-24-90 | 157.08 | — |
| | 6-25-90 | 157.25 | — |
| | 6-26-90 | 157.31 | — |
| | 6-27-90 | 157.39 | — |
| | 6-28-90 | 157.46 | — |
| | 6-29-90 | 157.48 | — |
| | 6-30-90 | 157.61 | — |
| | 7- 1-90 | 157.65 | — |
| | 7- 2-90 | 157.67 | — |
| 7S- 6E-29BBA1 (continued) | 7- 3-90 | 157.82 | — |
| | 7- 4-90 | 157.82 | — |
| | 7- 5-90 | 157.86 | — |
| | 7- 6-90 | 157.99 | — |
| | 7- 7-90 | 158.04 | — |
| | 7- 8-90 | 158.07 | — |
| | 7- 9-90 | 158.17 | — |
| | 7-10-90 | 158.31 | — |
| | 7-11-90 | 158.29 | — |
| | 7-12-90 | 158.35 | — |
| | 7-13-90 | 158.42 | — |
| | 7-14-90 | 158.40 | — |
| | 7-15-90 | 158.41 | — |
| | 7-16-90 | 158.53 | — |
| | 7-17-90 | 158.63 | — |
| | 7-18-90 | 158.62 | — |
| | 7-19-90 | 158.62 | — |
| | 7-20-90 | 158.60 | — |
| | 7-21-90 | 158.65 | — |
| | 7-22-90 | 158.58 | — |
| | 7-23-90 | 158.50 | — |
| | 7-24-90 | 158.47 | — |
| | 7-25-90 | 158.63 | — |
| | 7-26-90 | 158.85 | — |
| | 7-27-90 | 158.78 | — |

Table 1.—*Water-level data for test holes and selected thermal-water wells*—Continued

| Test hole or well No. | Date measured | Water level (feet below land surface) | Status |
|---|---|---|---|
| 7S- 6E-29BBA1 (continued) | 7-28-90 | 158.80 | — |
| | 7-29-90 | 158.83 | — |
| | 7-30-90 | 158.83 | — |
| | 7-31-90 | 158.91 | — |
| | 8- 1-90 | 158.99 | — |
| | 8- 2-90 | 159.11 | — |
| | 8- 3-90 | 159.20 | — |
| | 8- 4-90 | 159.28 | — |
| | 8- 5-90 | 159.30 | — |
| | 8- 6-90 | 159.28 | — |
| | 8- 7-90 | 159.30 | — |
| | 8- 8-90 | 159.33 | — |
| | 8- 9-90 | 159.36 | — |
| | 8-10-90 | 159.43 | — |
| | 8-11-90 | 159.47 | — |
| | 8-12-90 | 159.52 | — |
| | 8-13-90 | 159.51 | — |
| | 8-14-90 | 159.45 | — |
| | 8-15-90 | 159.43 | — |
| | 8-16-90 | 159.61 | — |
| | 8-17-90 | 159.58 | — |
| | 8-18-90 | 159.60 | — |
| | 8-19-90 | 159.55 | — |
| | 8-20-90 | 159.46 | — |
| | 8-21-90 | 159.49 | — |
| 7S- 6E-29BBA1 (continued) | 8-22-90 | 159.45 | — |
| | 8-23-90 | 159.29 | — |
| | 8-24-90 | 159.23 | — |
| | 8-25-90 | 159.25 | — |
| | 8-26-90 | 159.29 | — |
| | 8-27-90 | 159.31 | — |
| | 8-28-90 | 159.27 | — |
| | 8-29-90 | 159.14 | — |
| | 8-30-90 | 159.26 | — |
| | 8-31-90 | 159.32 | — |
| | 9- 1-90 | 159.35 | — |
| | 9- 2-90 | 159.45 | — |
| | 9- 3-90 | 159.49 | — |
| | 9- 4-90 | 159.57 | — |
| | 9- 5-90 | 159.62 | — |
| | 9- 6-90 | 159.68 | — |
| | 9- 7-90 | 159.66 | — |
| | 9- 8-90 | 159.60 | — |
| | 9- 9-90 | 159.63 | — |
| | 9-10-90 | 159.64 | — |
| | 9-11-90 | 159.60 | — |
| | 9-12-90 | 159.65 | — |
| | 9-13-90 | 159.72 | — |
| | 9-14-90 | 159.63 | — |
| 29BBA2 | 5-23-90 | 185.55 | — |

Table 1.—*Water-level data for test holes and selected thermal-water wells*—Continued

| Test hole or well No. | Date measured | Water level (feet below land surface) | Status |
|---|---|---|---|
| 7S- 6E-29BBA2 (continued) | 6-12-90 | 185.63 | — |
| | 7-11-90 | 185.81 | — |
| | 8-15-90 | 184.49 | — |
| | 9-14-90 | 185.62 | — |
| 34BCA1 | 4-27-90 | 210.65 | — |
| | 4-28-90 | 210.75 | — |
| | 5- 1-90 | 210.92 | — |
| | 5- 8-90 | 211.50 | — |
| | 5-11-90 | 211.55 | — |
| | 5-15-90 | 211.80 | — |
| | 5-16-90 | 211.85 | — |
| | 5-17-90 | 211.70 | — |
| | 5-18-90 | 211.81 | — |
| | 5-19-90 | 211.71 | — |
| | 5-20-90 | 211.91 | — |
| | 5-21-90 | 211.99 | — |
| | 5-22-90 | 211.81 | — |
| | 5-23-90 | 211.71 | — |
| | 5-24-90 | 211.81 | — |
| | 5-25-90 | 211.80 | — |
| | 5-26-90 | 211.67 | — |
| | 5-27-90 | 211.54 | — |
| | 5-28-90 | 211.39 | — |
| | 5-29-90 | 211.52 | — |
| | 5-30-90 | 211.40 | — |
| 7S- 6E-34BCA1 (continued) | 5-31-90 | 211.37 | — |
| | 6- 1-90 | 211.40 | — |
| | 6- 2-90 | 211.42 | — |
| | 6- 3-90 | 211.23 | — |
| | 6- 4-90 | 211.28 | — |
| | 6- 5-90 | 211.25 | — |
| | 6- 6-90 | 211.28 | — |
| | 6- 7-90 | 211.44 | — |
| | 6- 8-90 | 211.40 | — |
| | 6- 9-90 | 211.23 | — |
| | 6-10-90 | 211.28 | — |
| | 6-11-90 | 211.48 | — |
| | 6-12-90 | 211.42 | — |
| | 6-13-90 | 211.45 | — |
| | 6-14-90 | 211.50 | — |
| | 6-15-90 | 211.55 | — |
| | 6-16-90 | 211.64 | — |
| | 6-17-90 | 211.68 | — |
| | 6-18-90 | 211.80 | — |
| | 6-19-90 | 211.90 | — |
| | 6-20-90 | 211.85 | — |
| | 6-21-90 | 211.90 | — |
| | 6-22-90 | 211.88 | — |
| | 6-23-90 | 212.10 | — |
| | 6-24-90 | 212.12 | — |

Table 1.—*Water-level data for test holes and selected thermal-water wells*—Continued

| Test hole or well No. | Date measured | Water level (feet below land surface) | Status |
|---|---|---|---|
| 7S- 6E-34BCA1 (continued) | 6-25-90 | 212.38 | — |
| | 6-26-90 | 212.44 | — |
| | 6-27-90 | 212.53 | — |
| | 6-28-90 | 212.59 | — |
| | 6-29-90 | 212.61 | — |
| | 6-30-90 | 212.73 | — |
| | 7- 1-90 | 212.79 | — |
| | 7- 2-90 | 212.80 | — |
| | 7- 3-90 | 212.95 | — |
| | 7- 4-90 | 212.94 | — |
| | 7- 5-90 | 212.98 | — |
| | 7- 6-90 | 213.10 | — |
| | 7- 7-90 | 213.16 | — |
| | 7- 8-90 | 213.20 | — |
| | 7- 9-90 | 213.30 | — |
| | 7-10-90 | 213.36 | — |
| | 7-11-90 | 213.35 | — |
| | 7-12-90 | 213.41 | — |
| | 8-15-90 | 214.62 | — |
| | 8-19-90 | 214.60 | — |
| | 9-10-90 | 214.77 | — |
| 34BCA2 | 5- 8-90 | 214.42 | — |
| | 5-14-90 | 214.41 | — |
| | 5-15-90 | 214.54 | — |
| | 6-12-90 | 214.78 | — |
| 7S- 6E-34BCA2 (continued) | 7-11-90 | 216.42 | — |
| | 8-15-90 | 217.55 | — |
| | 9-14-90 | 217.78 | — |
| 34BCA3 | 5-14-90 | 211.39 | — |
| | 5-15-90 | 211.68 | — |
| | 6-12-90 | 212.38 | — |
| | 7-11-90 | 214.34 | — |
| | 8-15-90 | 215.53 | — |
| | 9-14-90 | 215.72 | — |
| 34DAD1 | 3-20-89 | -8.72 | — |
| | 4-11-89 | -9.18 | — |
| | 5-16-89 | -7.40 | — |
| | 6- 7-89 | -6.90 | — |
| | 10-24-89 | -4.02 | — |
| | 11-17-89 | -5.60 | — |
| | 12-12-89 | -6.52 | — |
| | 1-18-90 | -7.22 | — |
| | 2-13-90 | -7.92 | — |
| | 3-14-90 | -6.92 | — |
| 8S- 5E-16AAA1 | 5-16-89 | 321.40 | — |
| | 6-13-89 | 322.80 | — |
| | 7-12-89 | 324.40 | — |
| | 8-15-89 | 325.78 | — |
| | 9-15-89 | 325.78 | — |
| | 10-24-89 | 324.92 | — |

Table 1.—*Water-level data for test holes and selected thermal-water wells*—Continued

| Test hole or well No. | Date measured | Water level (feet below land surface) | Status |
|---|---|---|---|
| 8S- 5E-16AAA1 (continued) | 11-14-89 | 323.88 | — |
| | 12-12-89 | 320.44 | — |
| | 1-18-90 | 322.03 | R |
| | 1-24-90 | 321.76 | P |
| | 2-13-90 | 321.48 | — |
| | 3-14-90 | 320.90 | — |
| | 4-10-90 | 321.00 | — |
| | 5-15-90 | 322.50 | — |
| | 6-15-90 | 322.52 | — |
| | 7-19-90 | 324.64 | — |
| | 8-16-90 | 325.72 | — |
| | 9-17-90 | 325.84 | — |
| 8S- 6E- 3BDC1 | 4- 1-90 | 76.08 | — |
| | 4- 2-90 | 76.21 | — |
| | 4- 3-90 | 76.24 | — |
| | 4- 4-90 | 76.15 | — |
| | 4- 5-90 | 76.28 | — |
| | 4- 6-90 | 76.37 | — |
| | 4- 7-90 | 76.34 | — |
| | 4- 8-90 | 76.43 | — |
| | 4- 9-90 | 76.72 | — |
| | 4-10-90 | 76.67 | — |
| | 4-11-90 | 76.55 | — |
| | 4-12-90 | 76.64 | — |
| | 4-13-90 | 76.67 | — |
| 8S- 6E- 3BDC1 (continued) | 4-14-90 | 76.65 | — |
| | 4-15-90 | 76.63 | — |
| | 4-16-90 | 76.55 | — |
| | 4-17-90 | 76.70 | — |
| | 4-18-90 | 76.90 | — |
| | 4-19-90 | 76.93 | — |
| | 4-20-90 | 77.06 | — |
| | 4-21-90 | 77.03 | — |
| | 4-22-90 | 76.88 | — |
| | 4-23-90 | 76.82 | — |
| | 4-24-90 | 76.99 | — |
| | 4-25-90 | 77.09 | — |
| | 4-26-90 | 77.17 | — |
| | 4-27-90 | 77.01 | — |
| | 5-12-90 | 77.92 | — |
| | 5-13-90 | 78.01 | — |
| | 5-14-90 | 77.91 | — |
| | 5-15-90 | 78.06 | — |
| | 5-16-90 | 78.08 | — |
| | 5-17-90 | 77.89 | — |
| | 5-18-90 | 78.06 | — |
| | 5-19-90 | 77.97 | — |
| | 5-20-90 | 78.16 | — |
| | 5-21-90 | 78.23 | — |
| | 5-22-90 | 78.09 | — |

Table 1.—*Water-level data for test holes and selected thermal-water wells*—Continued

| Test hole or well No. | Date measured | Water level (feet below land surface) | Status |
|---|---|---|---|
| 8S- 6E- 3BDC1 (continued) | 5-23-90 | 77.98 | — |
| | 5-24-90 | 78.12 | — |
| | 5-25-90 | 78.10 | — |
| | 5-26-90 | 77.99 | — |
| | 5-27-90 | 77.82 | — |
| | 5-28-90 | 77.71 | — |
| | 5-29-90 | 77.86 | — |
| | 5-30-90 | 77.76 | — |
| | 5-31-90 | 77.71 | — |
| | 6- 1-90 | 77.74 | — |
| | 6- 2-90 | 77.74 | — |
| | 6- 3-90 | 77.53 | — |
| | 6- 4-90 | 77.56 | — |
| | 6- 5-90 | 77.51 | — |
| | 6- 6-90 | 77.52 | — |
| | 6- 7-90 | 77.70 | — |
| | 6- 8-90 | 77.64 | — |
| | 6- 9-90 | 77.45 | — |
| | 6-10-90 | 77.53 | — |
| | 6-11-90 | 77.71 | — |
| | 6-12-90 | 77.67 | — |
| | 6-13-90 | 77.70 | — |
| | 6-14-90 | 77.72 | — |
| | 6-15-90 | 77.79 | — |
| | 6-16-90 | 77.87 | — |
| 8S- 6E- 3BDC1 (continued) | 6-17-90 | 77.93 | — |
| | 6-18-90 | 78.03 | — |
| | 6-19-90 | 78.13 | — |
| | 6-20-90 | 78.09 | — |
| | 6-21-90 | 78.13 | — |
| | 6-22-90 | 78.09 | — |
| | 6-23-90 | 78.30 | — |
| | 6-24-90 | 78.39 | — |
| | 6-25-90 | 78.56 | — |
| | 6-26-90 | 78.61 | — |
| | 6-27-90 | 78.69 | — |
| | 6-28-90 | 78.77 | — |
| | 6-29-90 | 78.78 | — |
| | 6-30-90 | 78.94 | — |
| | 7- 1-90 | 78.99 | — |
| | 7- 2-90 | 79.00 | — |
| | 7- 3-90 | 79.12 | — |
| | 7- 4-90 | 79.12 | — |
| | 7- 5-90 | 79.18 | — |
| | 7- 6-90 | 79.27 | — |
| | 7- 7-90 | 79.37 | — |
| | 7- 8-90 | 79.39 | — |
| | 7- 9-90 | 79.51 | — |
| | 7-10-90 | 79.60 | — |
| | 7-11-90 | 79.59 | — |

Table 1.—*Water-level data for test holes and selected thermal-water wells*—Continued

| Test hole or well No. | Date measured | Water level (feet below land surface) | Status |
|---|---|---|---|
| 8S- 6E- 3BDC1 (continued) | 7-12-90 | 79.63 | — |
| | 7-13-90 | 79.70 | — |
| | 7-14-90 | 79.67 | — |
| | 7-15-90 | 79.69 | — |
| | 7-16-90 | 79.79 | — |
| | 7-17-90 | 79.91 | — |
| | 7-18-90 | 79.91 | — |
| | 7-19-90 | 79.89 | — |
| | 7-20-90 | 79.88 | — |
| | 7-21-90 | 79.92 | — |
| | 7-22-90 | 79.85 | — |
| | 7-23-90 | 79.80 | — |
| | 7-24-90 | 79.79 | — |
| | 7-25-90 | 79.92 | — |
| | 7-26-90 | 80.14 | — |
| | 7-27-90 | 80.12 | — |
| | 7-28-90 | 80.13 | — |
| | 7-29-90 | 80.18 | — |
| | 7-30-90 | 80.18 | — |
| | 7-31-90 | 80.27 | — |
| | 8- 1-90 | 80.32 | — |
| | 8- 2-90 | 80.44 | — |
| | 8- 3-90 | 80.53 | — |
| | 8- 4-90 | 80.58 | — |
| | 8- 5-90 | 80.61 | — |
| 8S- 6E- 3BDC1 (continued) | 8- 6-90 | 80.60 | — |
| | 8- 7-90 | 80.63 | — |
| | 8- 8-90 | 80.65 | — |
| | 8- 9-90 | 80.71 | — |
| | 8-10-90 | 80.76 | — |
| | 8-11-90 | 80.81 | — |
| | 8-12-90 | 80.84 | — |
| | 8-13-90 | 80.84 | — |
| | 8-14-90 | 80.80 | — |
| | 8-15-90 | 80.79 | — |
| | 8-16-90 | 80.97 | — |
| | 8-17-90 | 80.93 | — |
| | 8-18-90 | 80.94 | — |
| | 8-19-90 | 80.88 | — |
| | 8-20-90 | 80.81 | — |
| | 8-21-90 | 80.85 | — |
| | 8-22-90 | 80.82 | — |
| | 8-23-90 | 80.67 | — |
| | 8-24-90 | 80.60 | — |
| | 8-25-90 | 80.62 | — |
| | 8-26-90 | 80.67 | — |
| | 8-27-90 | 80.67 | — |
| | 8-28-90 | 80.65 | — |
| | 8-29-90 | 80.51 | — |
| | 8-30-90 | 80.64 | — |

Table 1.—*Water-level data for test holes and selected thermal-water wells*—Continued

| Test hole or well No. | Date measured | Water level (feet below land surface) | Status |
|---|---|---|---|
| 8S- 6E- 3BDC1 (continued) | 8-31-90 | 80.67 | — |
| | 9- 1-90 | 80.71 | — |
| | 9- 2-90 | 80.80 | — |
| | 9- 3-90 | 80.82 | — |
| | 9- 4-90 | 80.89 | — |
| | 9- 5-90 | 80.93 | — |
| | 9- 6-90 | 81.00 | — |
| | 9- 7-90 | 81.00 | — |
| | 9- 8-90 | 80.95 | — |
| | 9- 9-90 | 80.98 | — |
| | 9-10-90 | 81.00 | — |
| | 9-11-90 | 80.95 | — |
| | 9-12-90 | 81.02 | — |
| | 9-13-90 | 81.09 | — |
| 3BDC2 | 4- 4-90 | 76.59 | — |
| | 4- 5-90 | 76.63 | — |
| | 4- 6-90 | 76.65 | — |
| | 4- 7-90 | 76.65 | — |
| | 4- 8-90 | 76.68 | — |
| | 4- 9-90 | 76.80 | — |
| | 4-10-90 | 76.85 | — |
| | 4-11-90 | 76.83 | — |
| | 4-12-90 | 76.82 | — |
| | 4-13-90 | 76.89 | — |
| | 4-14-90 | 76.89 | — |

| Test hole or well No. | Date measured | Water level (feet below land surface) | Status |
|---|---|---|---|
| 8S- 6E- 3BDC2 (continued) | 4-15-90 | 76.89 | — |
| | 4-16-90 | 76.86 | — |
| | 4-17-90 | 76.89 | — |
| | 4-18-90 | 76.99 | — |
| | 4-19-90 | 77.05 | — |
| | 4-20-90 | 77.09 | — |
| | 4-21-90 | 77.13 | — |
| | 4-22-90 | 77.12 | — |
| | 4-23-90 | 77.11 | — |
| | 4-24-90 | 77.15 | — |
| | 4-25-90 | 77.23 | — |
| | 4-26-90 | 77.27 | — |
| | 4-27-90 | 77.25 | — |
| | 4-28-90 | 77.24 | — |
| | 4-29-90 | 77.30 | — |
| | 4-30-90 | 77.36 | — |
| | 5- 1-90 | 77.37 | — |
| | 5- 2-90 | 77.36 | — |
| | 5- 3-90 | 77.44 | — |
| | 5- 4-90 | 77.49 | — |
| | 5- 5-90 | 77.52 | — |
| | 5- 6-90 | 77.50 | — |
| | 5- 7-90 | 77.58 | — |
| | 5- 8-90 | 77.63 | — |
| | 5- 9-90 | 77.74 | — |

Table 1.—*Water-level data for test holes and selected thermal-water wells*—Continued

| Test hole or well No. | Date measured | Water level (feet below land surface) | Status |
|---|---|---|---|
| 8S- 6E- 3BDC2 (continued) | 5-10-90 | 77.71 | — |
| | 5-11-90 | 77.74 | — |
| | 5-12-90 | 77.84 | — |
| | 5-13-90 | 77.93 | — |
| | 5-14-90 | 77.94 | — |
| | 5-15-90 | 78.02 | — |
| | 5-16-90 | 78.10 | — |
| | 5-17-90 | 78.09 | — |
| | 5-18-90 | 78.10 | — |
| | 5-19-90 | 78.11 | — |
| | 5-20-90 | 78.15 | — |
| | 5-21-90 | 78.23 | — |
| | 5-22-90 | 78.24 | — |
| | 5-23-90 | 78.20 | — |
| | 5-24-90 | 78.20 | — |
| | 5-25-90 | 78.25 | — |
| | 5-26-90 | 78.21 | — |
| | 5-27-90 | 78.16 | — |
| | 5-28-90 | 78.10 | — |
| | 5-29-90 | 78.12 | — |
| | 5-30-90 | 78.09 | — |
| | 5-31-90 | 78.06 | — |
| | 6- 1-90 | 78.06 | — |
| | 6- 2-90 | 78.04 | — |
| | 6- 3-90 | 77.99 | — |
| 8S- 6E- 3BDC2 (continued) | 6- 4-90 | 77.94 | — |
| | 6- 5-90 | 77.89 | — |
| | 6- 6-90 | 77.86 | — |
| | 6- 7-90 | 77.89 | — |
| | 6- 8-90 | 77.89 | — |
| | 6- 9-90 | 77.81 | — |
| | 6-10-90 | 77.78 | — |
| | 6-11-90 | 77.86 | — |
| | 6-12-90 | 77.83 | — |
| | 6-13-90 | 77.85 | — |
| | 6-14-90 | 77.86 | — |
| | 6-15-90 | 77.90 | — |
| | 6-16-90 | 77.93 | — |
| | 6-17-90 | 77.98 | — |
| | 6-18-90 | 78.04 | — |
| | 6-19-90 | 78.09 | — |
| | 6-20-90 | 78.13 | — |
| | 6-21-90 | 78.14 | — |
| | 6-22-90 | 78.15 | — |
| | 6-23-90 | 78.21 | — |
| | 6-24-90 | 78.29 | — |
| | 6-25-90 | 78.39 | — |
| | 6-26-90 | 78.48 | — |
| | 6-27-90 | 78.55 | — |
| | 6-28-90 | 78.62 | — |

Table 1.—*Water-level data for test holes and selected thermal-water wells*—Continued

| Test hole or well No. | Date measured | Water level (feet below land surface) | Status |
|---|---|---|---|
| 8S- 6E- 3BDC2 (continued) | 6-29-90 | 78.69 | — |
| | 6-30-90 | 78.78 | — |
| | 7- 1-90 | 78.86 | — |
| | 7- 2-90 | 78.89 | — |
| | 7- 3-90 | 79.01 | — |
| | 7- 4-90 | 79.04 | — |
| | 7- 5-90 | 79.09 | — |
| | 7- 6-90 | 79.16 | — |
| | 7- 7-90 | 79.23 | — |
| | 7- 8-90 | 79.29 | — |
| | 7- 9-90 | 79.37 | — |
| | 7-10-90 | 79.43 | — |
| | 7-11-90 | 79.46 | — |
| | 7-12-90 | 79.51 | — |
| | 7-13-90 | 79.56 | — |
| | 7-14-90 | 79.58 | — |
| | 7-15-90 | 79.60 | — |
| | 7-16-90 | 79.66 | — |
| | 7-17-90 | 79.75 | — |
| | 7-18-90 | 79.78 | — |
| | 7-19-90 | 79.81 | — |
| | 7-20-90 | 79.83 | — |
| | 7-21-90 | 79.87 | — |
| | 7-22-90 | 79.87 | — |
| | 7-23-90 | 79.85 | — |
| 8S- 6E- 3BDC2 (continued) | 7-24-90 | 79.84 | — |
| | 7-25-90 | 79.90 | — |
| | 7-26-90 | 80.00 | — |
| | 7-27-90 | 80.05 | — |
| | 7-28-90 | 80.07 | — |
| | 7-29-90 | 80.11 | — |
| | 7-30-90 | 80.14 | — |
| | 7-31-90 | 80.17 | — |
| | 8- 1-90 | 80.22 | — |
| | 8- 2-90 | 80.28 | — |
| | 8- 3-90 | 80.35 | — |
| | 8- 4-90 | 80.41 | — |
| | 8- 5-90 | 80.46 | — |
| | 8- 6-90 | 80.49 | — |
| | 8- 7-90 | 80.51 | — |
| | 8- 8-90 | 80.55 | — |
| | 8- 9-90 | 80.59 | — |
| | 8-10-90 | 80.64 | — |
| | 8-11-90 | 80.69 | — |
| | 8-12-90 | 80.73 | — |
| | 8-13-90 | 80.76 | — |
| | 8-14-90 | 80.77 | — |
| | 8-15-90 | 80.77 | — |
| | 8-16-90 | 80.80 | — |
| | 8-17-90 | 80.83 | — |

Table 1.—*Water-level data for test holes and selected thermal-water wells*—Continued

| Test hole or well No. | Date measured | Water level (feet below land surface) | Status |
|---|---|---|---|
| 8S- 6E- 3BDC2 (continued) | 8-18-90 | 80.85 | — |
| | 8-19-90 | 80.86 | — |
| | 8-20-90 | 80.86 | — |
| | 8-21-90 | 80.87 | — |
| | 8-22-90 | 80.87 | — |
| | 8-23-90 | 80.84 | — |
| | 8-24-90 | 80.78 | — |
| | 8-25-90 | 80.75 | — |
| | 8-26-90 | 80.76 | — |
| | 8-27-90 | 80.76 | — |
| | 8-28-90 | 80.74 | — |
| | 8-29-90 | 80.70 | — |
| | 8-30-90 | 80.68 | — |
| | 8-31-90 | 80.70 | — |
| | 9- 1-90 | 80.71 | — |
| | 9- 2-90 | 80.73 | — |
| | 9- 3-90 | 80.77 | — |
| | 9- 4-90 | 80.81 | — |
| | 9- 5-90 | 80.85 | — |
| | 9- 6-90 | 80.90 | — |
| | 9- 7-90 | 80.93 | — |
| | 9- 8-90 | 80.92 | — |
| | 9- 9-90 | 80.95 | — |
| | 9-10-90 | 80.96 | — |
| | 9-11-90 | 80.95 | — |
| 8S- 6E- 3BDC2 (continued) | 9-12-90 | 80.95 | — |
| | 9-13-90 | 80.99 | — |
| 3BDC3 | 4- 4-90 | 99.94 | — |
| | 4- 5-90 | 99.91 | — |
| | 4- 6-90 | 99.89 | — |
| | 4- 7-90 | 99.85 | — |
| | 4- 8-90 | 99.85 | — |
| | 4- 9-90 | 99.88 | — |
| | 4-10-90 | 99.88 | — |
| | 4-11-90 | 99.85 | — |
| | 4-12-90 | 99.86 | — |
| | 4-13-90 | 99.87 | — |
| | 4-14-90 | 99.86 | — |
| | 4-15-90 | 99.84 | — |
| | 4-16-90 | 99.83 | — |
| | 4-17-90 | 99.84 | — |
| | 4-18-90 | 99.86 | — |
| | 4-19-90 | 99.87 | — |
| | 4-20-90 | 99.89 | — |
| | 4-21-90 | 99.89 | — |
| | 4-22-90 | 99.87 | — |
| | 4-23-90 | 99.86 | — |
| | 4-24-90 | 99.89 | — |
| | 4-25-90 | 99.91 | — |
| | 4-26-90 | 99.93 | — |

Table 1.—*Water-level data for test holes and selected thermal-water wells*—Continued

| Test hole or well No. | Date measured | Water level (feet below land surface) | Status |
|---|---|---|---|
| 8S- 6E- 3BDC3 (continued) | 4-27-90 | 99.90 | — |
| | 4-28-90 | 99.91 | — |
| | 4-29-90 | 99.93 | — |
| | 4-30-90 | 99.96 | — |
| | 5- 1-90 | 99.95 | — |
| | 5- 2-90 | 99.94 | — |
| | 5- 3-90 | 99.97 | — |
| | 5- 4-90 | 99.98 | — |
| | 5- 5-90 | 99.97 | — |
| | 5- 6-90 | 99.95 | — |
| | 5- 7-90 | 99.98 | — |
| | 5- 8-90 | 100.01 | — |
| | 5- 9-90 | 100.02 | — |
| | 5-10-90 | 99.98 | — |
| | 5-11-90 | 100.01 | — |
| | 5-12-90 | 100.03 | — |
| | 5-13-90 | 100.06 | — |
| | 5-14-90 | 100.05 | — |
| | 5-15-90 | 100.08 | — |
| | 5-16-90 | 100.10 | — |
| | 5-17-90 | 100.07 | — |
| | 5-18-90 | 100.09 | — |
| | 5-19-90 | 100.08 | — |
| | 5-20-90 | 100.12 | — |
| | 5-21-90 | 100.12 | — |
| 8S- 6E- 3BDC3 (continued) | 5-22-90 | 100.11 | — |
| | 5-23-90 | 100.08 | — |
| | 5-24-90 | 100.09 | — |
| | 5-25-90 | 100.09 | — |
| | 5-26-90 | 100.10 | — |
| | 5-27-90 | 100.08 | — |
| | 5-28-90 | 100.06 | — |
| | 5-29-90 | 100.09 | — |
| | 5-30-90 | 100.06 | — |
| | 5-31-90 | 100.07 | — |
| | 6- 1-90 | 100.07 | — |
| | 6- 2-90 | 100.08 | — |
| | 6- 3-90 | 100.05 | — |
| | 6- 4-90 | 100.06 | — |
| | 6- 5-90 | 100.04 | — |
| | 6- 6-90 | 100.01 | — |
| | 6- 7-90 | 100.03 | — |
| | 6- 8-90 | 100.02 | — |
| | 6- 9-90 | 99.99 | — |
| | 6-10-90 | 99.99 | — |
| | 6-11-90 | 100.01 | — |
| | 6-12-90 | 100.01 | — |
| | 6-13-90 | 100.02 | — |
| | 6-14-90 | 100.02 | — |
| | 6-15-90 | 100.04 | — |

Table 1.—*Water-level data for test holes and selected thermal-water wells*—Continued

| Test hole or well No. | Date measured | Water level (feet below land surface) | Status |
|---|---|---|---|
| 8S- 6E- 3BDC3 (continued) | 6-16-90 | 100.05 | — |
| | 6-17-90 | 100.06 | — |
| | 6-18-90 | 100.07 | — |
| | 6-19-90 | 100.09 | — |
| | 6-20-90 | 100.10 | — |
| | 6-21-90 | 100.11 | — |
| | 6-22-90 | 100.08 | — |
| | 6-23-90 | 100.12 | — |
| | 6-24-90 | 100.12 | — |
| | 6-25-90 | 100.14 | — |
| | 6-26-90 | 100.14 | — |
| | 6-27-90 | 100.15 | — |
| | 6-28-90 | 100.16 | — |
| | 6-29-90 | 100.16 | — |
| | 6-30-90 | 100.19 | — |
| | 7- 1-90 | 100.21 | — |
| | 7- 2-90 | 100.22 | — |
| | 7- 3-90 | 100.23 | — |
| | 7- 4-90 | 100.23 | — |
| | 7- 5-90 | 100.24 | — |
| | 7- 6-90 | 100.26 | — |
| | 7- 7-90 | 100.29 | — |
| | 7- 8-90 | 100.30 | — |
| | 7- 9-90 | 100.32 | — |
| | 7-10-90 | 100.35 | — |
| 8S- 6E- 3BDC3 (continued) | 7-11-90 | 100.36 | — |
| | 7-12-90 | 100.37 | — |
| | 7-13-90 | 100.38 | — |
| | 7-14-90 | 100.38 | — |
| | 7-15-90 | 100.39 | — |
| | 7-16-90 | 100.41 | — |
| | 7-17-90 | 100.44 | — |
| | 7-18-90 | 100.47 | — |
| | 7-19-90 | 100.49 | — |
| | 7-20-90 | 100.48 | — |
| | 7-21-90 | 100.51 | — |
| | 7-22-90 | 100.51 | — |
| | 7-23-90 | 100.51 | — |
| | 7-24-90 | 100.51 | — |
| | 7-25-90 | 100.53 | — |
| | 7-26-90 | 100.56 | — |
| | 7-27-90 | 100.57 | — |
| | 7-28-90 | 100.59 | — |
| | 7-29-90 | 100.60 | — |
| | 7-30-90 | 100.62 | — |
| | 7-31-90 | 100.65 | — |
| | 8- 1-90 | 100.66 | — |
| | 8- 2-90 | 100.69 | — |
| | 8- 3-90 | 100.73 | — |
| | 8- 4-90 | 100.76 | — |

Table 1.—*Water-level data for test holes and selected thermal-water wells*—Continued

| Test hole or well No. | Date measured | Water level (feet below land surface) | Status |
|---|---|---|---|
| 8S- 6E- 3BDC3 (continued) | 8- 5-90 | 100.80 | — |
| | 8- 6-90 | 100.82 | — |
| | 8- 7-90 | 100.84 | — |
| | 8- 8-90 | 100.87 | — |
| | 8- 9-90 | 100.90 | — |
| | 8-10-90 | 100.93 | — |
| | 8-11-90 | 100.97 | — |
| | 8-12-90 | 101.00 | — |
| | 8-13-90 | 101.01 | — |
| | 8-14-90 | 101.03 | — |
| | 8-15-90 | 101.04 | — |
| | 8-16-90 | 101.08 | — |
| | 8-17-90 | 101.10 | — |
| | 8-18-90 | 101.12 | — |
| | 8-19-90 | 101.14 | — |
| | 8-20-90 | 101.15 | — |
| | 8-21-90 | 101.17 | — |
| | 8-22-90 | 101.18 | — |
| | 8-23-90 | 101.17 | — |
| | 8-24-90 | 101.17 | — |
| | 8-25-90 | 101.18 | — |
| | 8-26-90 | 101.20 | — |
| | 8-27-90 | 101.22 | — |
| | 8-28-90 | 101.23 | — |
| | 8-29-90 | 101.22 | — |
| 8S- 6E- 3BDC3 (continued) | 8-30-90 | 101.23 | — |
| | 8-31-90 | 101.24 | — |
| | 9- 1-90 | 101.24 | — |
| | 9- 2-90 | 101.25 | — |
| | 9- 3-90 | 101.25 | — |
| | 9- 4-90 | 101.27 | — |
| | 9- 5-90 | 101.29 | — |
| | 9- 6-90 | 101.32 | — |
| | 9- 7-90 | 101.33 | — |
| | 9- 8-90 | 101.34 | — |
| | 9- 9-90 | 101.36 | — |
| | 9-10-90 | 101.38 | — |
| | 9-11-90 | 101.39 | — |
| | 9-12-90 | 101.40 | — |
| | 9-13-90 | 101.42 | — |
| 4DCD1 | 4-17-90 | 158.12 | — |
| | 4-18-90 | 158.31 | — |
| | 4-19-90 | 158.38 | — |
| | 4-20-90 | 158.50 | — |
| | 4-21-90 | 158.47 | — |
| | 4-22-90 | 158.36 | — |
| | 4-23-90 | 158.31 | — |
| | 4-24-90 | 158.47 | — |
| | 4-25-90 | 158.58 | — |
| | 4-26-90 | 158.66 | — |

Table 1.—*Water-level data for test holes and selected thermal-water wells*—Continued

| Test hole or well No. | Date measured | Water level (feet below land surface) | Status |
|---|---|---|---|
| 8S- 6E- 4DCD1 (continued) | 4-27-90 | 158.48 | — |
| | 4-28-90 | 158.57 | — |
| | 4-29-90 | 158.63 | — |
| | 4-30-90 | 158.75 | — |
| | 5- 1-90 | 158.66 | — |
| | 5- 2-90 | 158.65 | — |
| | 5- 3-90 | 158.87 | — |
| | 5- 4-90 | 158.95 | — |
| | 5- 5-90 | 158.89 | — |
| | 5- 6-90 | 158.79 | — |
| | 5- 7-90 | 159.04 | — |
| | 5- 8-90 | 159.16 | — |
| | 5- 9-90 | 159.21 | — |
| | 5-10-90 | 159.05 | — |
| | 5-11-90 | 159.21 | — |
| | 5-12-90 | 159.31 | — |
| | 5-13-90 | 159.50 | — |
| | 5-14-90 | 159.39 | — |
| | 5-15-90 | 159.55 | — |
| | 5-16-90 | 159.60 | — |
| | 5-17-90 | 159.45 | — |
| | 5-18-90 | 159.55 | — |
| | 5-19-90 | 159.48 | — |
| | 5-20-90 | 159.66 | — |
| | 5-21-90 | 159.75 | — |
| 8S- 6E- 4DCD1 (continued) | 5-22-90 | 159.62 | — |
| | 5-23-90 | 159.51 | — |
| | 5-24-90 | 159.63 | — |
| | 5-25-90 | 159.63 | — |
| | 5-26-90 | 159.48 | — |
| | 5-27-90 | 159.34 | — |
| | 5-28-90 | 159.24 | — |
| | 5-29-90 | 159.39 | — |
| | 5-30-90 | 159.26 | — |
| | 5-31-90 | 159.24 | — |
| | 6- 1-90 | 159.27 | — |
| | 6- 2-90 | 159.25 | — |
| | 6- 3-90 | 159.05 | — |
| | 6- 4-90 | 159.07 | — |
| | 6- 5-90 | 159.01 | — |
| | 6- 6-90 | 159.02 | — |
| | 6- 7-90 | 159.20 | — |
| | 6- 8-90 | 159.14 | — |
| | 6- 9-90 | 158.95 | — |
| | 6-10-90 | 159.03 | — |
| | 6-11-90 | 159.20 | — |
| | 6-12-90 | 159.17 | — |
| | 6-13-90 | 159.20 | — |
| | 6-14-90 | 159.19 | — |
| | 6-15-90 | 159.28 | — |

Table 1.—*Water-level data for test holes and selected thermal-water wells*—Continued

| Test hole or well No. | Date measured | Water level (feet below land surface) | Status |
|---|---|---|---|
| 8S- 6E- 4DCD1 (continued) | 6-16-90 | 159.34 | — |
| | 6-17-90 | 159.40 | — |
| | 6-18-90 | 159.50 | — |
| | 6-19-90 | 159.61 | — |
| | 6-20-90 | 159.56 | — |
| | 6-21-90 | 159.60 | — |
| | 6-22-90 | 159.56 | — |
| | 6-23-90 | 159.74 | — |
| | 6-24-90 | 159.84 | — |
| | 6-25-90 | 160.00 | — |
| | 6-26-90 | 160.05 | — |
| | 6-27-90 | 160.09 | — |
| | 6-28-90 | 160.23 | — |
| | 6-29-90 | 160.25 | — |
| | 6-30-90 | 160.39 | — |
| | 7- 1-90 | 160.43 | — |
| | 7- 2-90 | 160.42 | — |
| | 7- 3-90 | 160.58 | — |
| | 7- 4-90 | 160.56 | — |
| | 7- 5-90 | 160.58 | — |
| | 7- 6-90 | 160.74 | — |
| | 7- 7-90 | 160.78 | — |
| | 7- 8-90 | 160.80 | — |
| | 7- 9-90 | 160.92 | — |
| | 7-10-90 | 161.00 | — |
| 8S- 6E- 4DCD1 (continued) | 7-11-90 | 161.06 | — |
| | 7-12-90 | 161.10 | — |
| | 7-13-90 | 161.17 | — |
| | 7-14-90 | 161.15 | — |
| | 7-15-90 | 161.17 | — |
| | 7-16-90 | 161.27 | — |
| | 7-17-90 | 161.39 | — |
| | 7-18-90 | 161.38 | — |
| | 7-19-90 | 161.36 | — |
| | 7-20-90 | 161.36 | — |
| | 7-21-90 | 161.41 | — |
| | 7-22-90 | 161.35 | — |
| | 7-23-90 | 161.28 | — |
| | 7-24-90 | 161.27 | — |
| | 7-25-90 | 161.40 | — |
| | 7-26-90 | 161.61 | — |
| | 7-27-90 | 161.60 | — |
| | 7-28-90 | 161.65 | — |
| | 7-29-90 | 161.69 | — |
| | 7-30-90 | 161.68 | — |
| | 7-31-90 | 161.76 | — |
| | 8- 1-90 | 161.80 | — |
| | 8- 2-90 | 161.92 | — |
| | 8- 3-90 | 162.00 | — |
| | 8- 4-90 | 162.05 | — |

Table 1.—*Water-level data for test holes and selected thermal-water wells*—Continued

| Test hole or well No. | Date measured | Water level (feet below land surface) | Status |
|---|---|---|---|
| 8S- 6E- 4DCD1 (continued) | 8- 5-90 | 162.10 | — |
| | 8- 6-90 | 162.10 | — |
| | 8- 7-90 | 162.11 | — |
| | 8- 8-90 | 162.14 | — |
| | 8- 9-90 | 162.20 | — |
| | 8-10-90 | 162.25 | — |
| | 8-11-90 | 162.31 | — |
| | 8-12-90 | 162.34 | — |
| | 8-13-90 | 162.34 | — |
| | 8-14-90 | 162.32 | — |
| | 8-15-90 | 162.29 | — |
| | 8-16-90 | 162.47 | — |
| | 8-17-90 | 162.45 | — |
| | 8-18-90 | 162.45 | — |
| | 8-19-90 | 162.40 | — |
| | 8-20-90 | 162.34 | — |
| | 8-21-90 | 162.40 | — |
| | 8-22-90 | 162.37 | — |
| | 8-23-90 | 162.22 | — |
| | 8-24-90 | 162.15 | — |
| 8S- 6E- 4DCD1 (continued) | 8-25-90 | 162.17 | — |
| | 8-26-90 | 162.22 | — |
| | 8-27-90 | 162.23 | — |
| | 8-28-90 | 162.20 | — |
| | 8-29-90 | 162.07 | — |
| | 8-30-90 | 162.18 | — |
| | 8-31-90 | 162.20 | — |
| | 9- 1-90 | 162.22 | — |
| | 9- 2-90 | 162.30 | — |
| | 9- 3-90 | 162.33 | — |
| | 9- 4-90 | 162.40 | — |
| | 9- 5-90 | 162.44 | — |
| | 9- 6-90 | 162.52 | — |
| | 9- 7-90 | 162.51 | — |
| | 9- 8-90 | 162.48 | — |
| | 9- 9-90 | 162.51 | — |
| | 9-10-90 | 162.52 | — |
| | 9-11-90 | 162.48 | — |
| | 9-12-90 | 162.53 | — |
| | 9-13-90 | 162.61 | — |

Table 2.—*Chemical and isotopic analyses of water from test holes*

[$^{13}C/^{12}C$, carbon-13/carbon-12; $^{2}H/H$, deuterium; $^{18}O/^{16}O$, oxygen-18/oxygen-16]

| Test hole No. | Sample date (1990) | Water temperature (°C) | Specific conductance (µS/cm) | pH (standard units) | Alkalinity (mg/L as $CaCO_3$) | Nitrogen, $NO_2 + NO_3$, dissolved (mg/L as N) | Phosphorus, total (mg/L as P) |
|---|---|---|---|---|---|---|---|
| 7S- 6E-29BBA1 | 7-11 | 39.0 | 279 | 9.3 | 79 | 0.10 | 0.01 |
| 34BCA1 | 7-12 | 39.0 | 299 | 9.1 | 104 | .10 | .01 |
| 8S- 6E- 3BDC1 | 7- 9 | 36.0 | 287 | 8.7 | 101 | .70 | .01 |
| 3BDC2 | 7- 9 | 34.0 | 293 | 8.4 | 106 | .40 | .01 |
| 3BDC3 | 7-10 | 34.5 | 294 | 8.6 | 98 | .60 | .01 |
| 4DCD1 | 7-10 | 30.5 | 298 | 8.8 | 101 | .70 | .01 |

| Test hole No. | Calcium, dissolved (mg/L as Ca) | Magnesium, dissolved (mg/L as Mg) | Sodium, dissolved (mg/L as Na) | Potassium, dissolved (mg/L as K) | Chloride, dissolved (mg/L as Cl) | Sulfate, dissolved (mg/L as $SO_4$) | Fluoride, dissolved (mg/L as F) |
|---|---|---|---|---|---|---|---|
| 7S- 6E-29BBA1 | 4.4 | 0.21 | 55 | 5.0 | 8.9 | 19 | 12 |
| 34BCA1 | 7.2 | .17 | 56 | 7.9 | 8.6 | 21 | 7.5 |
| 8S- 6E- 3BDC1 | 6.3 | .34 | 53 | 6.6 | 9.0 | 18 | 4.9 |
| 3BDC2 | 6.1 | .69 | 55 | 6.2 | 8.5 | 17 | 5.4 |
| 3BDC3 | 5.7 | .34 | 55 | 6.0 | 9.0 | 19 | 6.8 |
| 4DCD1 | 5.7 | .24 | 57 | 5.4 | 8.7 | 18 | 9.2 |

| Test hole No. | Silica, dissolved (mg/L as $SiO_2$) | Arsenic, dissolved (µg/L as As) | Boron, dissolved (µg/L as B) | Lithium, dissolved (µg/L as Li) | $^{13}C/^{12}C$ Stable-isotope ratio (permil) | $^{2}H/H$ Stable-isotope ratio (permil) | $^{18}O/^{16}O$ Stable-isotope ratio (permil) |
|---|---|---|---|---|---|---|---|
| 7S- 6E-29BBA1 | 80 | 1 | 60 | 4 | -10.8 | -134 | -17.2 |
| 34BCA1 | 59 | 14 | 100 | 6 | -10.3 | -135 | -17.0 |
| 8S- 6E- 3BDC1 | 65 | 13 | 80 | 6 | -9.6 | -134 | -16.8 |
| 3BDC2 | 63 | 13 | 100 | 6 | -10.3 | -130 | -16.9 |
| 3BDC3 | 76 | 16 | 100 | 5 | -10.0 | -136 | -16.9 |
| 4DCD1 | 69 | 21 | 100 | 4 | -9.8 | -135 | -16.8 |