IRRIGATION-CANAL LEAKAGE IN THE FLATHEAD INDIAN RESERVATION, NORTHWESTERN MONTANA

By Steven E. Slagle

U.S. GEOLOGICAL SURVEY

Water-Resources Investigations Report 92-4066

Prepared in cooperation with the

CONFEDERATED SALISH AND KOOTENAI TRIBES

and the

U.S. BUREAU OF INDIAN AFFAIRS

Helena, Montana
October 1992

U.S. DEPARTMENT OF THE INTERIOR

MANUEL LUJAN, JR., Secretary

U.S. Geological Survey

DALLAS L. PECK, Director

For additional information write to:

District Chief
U.S. Geological Survey
428 Federal Building
301 South Park, Drawer 10076
Helena, MT 59626-0076

Copies of this report can be purchased from:

U.S. Geological Survey
Books and Open-File Reports Section
Federal Center
Box 25425
Denver, CO 80225-0425

CONTENTS

ILLUSTRATIONS

TABLES

CONVERSION FACTORS AND ABBREVIATED WATER-QUALITY UNITS

Multiply	By	To obtain
acre	4,047	square meter
acre-foot (acre-ft)	1,233	cubic meter
acre-foot per day (acre-ft/d)	1,233	cubic meter per day
cubic foot per second per mile [(ft^3/s)/mi]	0.0267	cubic meter per second per kilometer
cubic inch	16.39	milliliter (mL)
foot (ft)	0.3048	meter
foot per day (ft/d)	0.3048	meter per day
foot per foot (ft/ft)	1.0	meter per meter
foot squared per day (ft^2/d)	0.0929	meter squared per day
gallon per minute (gal/min)	0.06309	liter per second
inch (in.)	25.4	millimeter
mile (mi)	1.609	kilometer
square foot (ft^2)	0.0929	square meter
square mile (mi^2)	2.59	square kilometer

Temperature in degrees Celsius (°C) can be converted to degrees Fahrenheit (°F) by the equation:

$$°F = 9/5\ (°C) + 32$$

Water-quality units that are abbreviated in this report:

µg/L micrograms per liter
µS/cm microsiemens per centimeter at 25 °C
mg/L milligrams per liter

IRRIGATION-CANAL LEAKAGE IN THE FLATHEAD INDIAN RESERVATION, NORTHWESTERN MONTANA

By

Steven E. Slagle

ABSTRACT

Five study sites were selected in the Jocko River, Mission, and Little Bitterroot River valleys for a study of irrigation-canal leakage. The sites are representative of the three principal geologic terranes that are present in the valleys of the Flathead Indian Reservation--Quaternary alluvium including terrace deposits, Quaternary glacial till, and Quaternary and Tertiary glaciolacustrine deposits. A canal gage and several shallow wells were installed at each site for aquifer testing, monitoring of water levels, and monitoring of water temperatures. A tracer test was conducted at one site and leakage tests using a seepage meter pressed into the canal bed were conducted at four sites.

Two sites were selected to determine leakage rates of alluvium: the Arlee site, in the Jocko River valley about 3 mi (miles) east of Arlee, and the Niarada site, in the Little Bitterroot River valley about 3 mi west-southwest of Niarada. Hydraulic-conductivity values determined from slug tests ranged from 0.01 to 9.0 ft/d (feet per day)--0.01 to 9.0 ft/d from four wells at the Arlee site and 0.06 to 0.15 ft/d from two wells at the Niarada site. A constant-discharge test of one well at the Arlee site indicated hydraulic-conductivity values of 10 and 11 ft/d. Water-level fluctuations in monitoring wells at both sites indicated direct response to flow in the canal. Water temperature in most wells gradually increased throughout the summer, with the change generally being largest near the water surface. Ground-water-flow velocities determined from a tracer test at the Arlee site ranged from 32 to 60 ft/d. Hydraulic-conductivity values computed from tracer-test data at the Arlee site ranged from 12 to 14 ft/d. A leakage rate of 0.0023 ft/d was measured at the Niarada site.

The Charlo site, in the Mission Valley about 2.5 mi northwest of Charlo, was selected to determine leakage rates of glacial till. Hydraulic-conductivity values determined by slug tests ranged from 0.002 to 0.80 ft/d. The response of water levels in monitoring wells to fluctuation of canal stage reflects the variation of hydraulic conductivity. Temperature profiles in wells indicate that ambient air temperature is the primary cause of increase in ground-water temperature. Measured leakage rates ranged from 0.0010 to 0.0013 ft/d.

Two sites were selected to determine leakage rates of glaciolacustrine deposits: the D'Aste site, about 4 mi south of Charlo in the Mission Valley, and the Lonepine site, about 2 mi west of Lonepine in the Little Bitterroot River valley. Hydraulic-conductivity values determined by slug tests ranged from 0.004 to 0.75 ft/d--0.004 to 0.75 ft/d at the D'Aste site and 0.05 to 0.64 ft/d at the Lonepine site. The water levels in most wells responded to changes in canal stage; however, not all rises at the Lonepine site could be correlated with flow in the canal. Water temperature in monitoring wells generally increased from the water surface downward as the summer progressed. Increasing temperatures in the lower parts of wells at the Lonepine site may be evidence of inflowing water, but the source is uncertain. Measured leakage rates ranged from 0.0002 to 0.0025 ft/d.

Leakage from the entire canal system, computed from hydraulic conductivities and measured leakage rates and from digitized coverages of the canal system and geology, totaled about 314 acre-feet per day. Extending this water loss for the 4 to 6 months that the canals have flow each year would account for an estimated total irrigation-season leakage of about 48,000 acre-feet.

INTRODUCTION

The Flathead Indian Reservation (fig. 1) is extensively irrigated, primarily in the Jocko River, Mission, and Little Bitterroot River valleys. Irrigation is accomplished by an elaborate network of distribution canals that forms the Flathead Agency Irrigation Division. Currently (1992), the Division diverts about 250,000 acre-ft of water (R.F. Wells, Flathead Agency Irrigation Division, oral commun., 1992) derived principally from the Mission Range and Salish Mountains for irrigation of about 127,660 acres (Joan Krantz, Flathead Agency Irrigation Division, oral commun., 1992) in the reservation.

Most canals in the Flathead Agency Irrigation Division are unlined and losses by leakage are of concern, especially along reaches underlain by coarse-grained sediments. Present knowledge of the magnitude of canal losses is limited to estimates of the quantity of water delivered in relation to the quantity of water diverted and to qualitative observations of the effects of canal leakage on ground-water levels near some canals.

Knowledge of the magnitude of canal leakage would provide a basis for development of management plans to decrease the leakage and thereby increase the water available for application to presently irrigated land or for expansion of irrigated acreage. However, water lost from the canals recharges underlying aquifers, which supply water for domestic, stock, irrigation, and municipal supplies. Thus, decreased canal loss could affect users of ground water in some areas. To permit the Tribes to assess the feasibility and desirability of various management options, the magnitude and extent of leakage in each geologic terrane and the size and length of canals need to be quantified. Consequently, the U.S. Geological Survey investigated leakage along irrigation canals in the reservation in a study conducted in cooperation with the Confederated Salish and Kootenai Tribes and the U.S. Bureau of Indian Affairs.

Purpose and Scope

This report describes the irrigation-canal leakage at various study sites and the total irrigation-canal leakage in the Flathead Indian Reservation. Five sites (fig. 1) were selected for study. Several shallow wells for aquifer testing, monitoring of water-level changes, and monitoring of water-temperature profiles were installed at each site using a hollow-stem auger. The wells were aligned in two directions--one parallel to the natural ground-water gradient and one perpendicular to the canal. Lithologic logs of the material penetrated during drilling and records of the completed wells were prepared to assist in describing the geology at each site. Aquifer tests to determine aquifer hydraulic characteristics were conducted at selected wells using methods described by Schafer (1980), Cooper and others (1967), Jacob (1950, 1963), and Ferris and Knowles (1963). Water levels were monitored monthly during the winter and about weekly during the irrigation season to define the effect of canal stage on ground-water level. Water levels in two wells and the canal stage were monitored at each site on a continuous basis by use of water-level recorders. Water temperatures in the canal and at 1-ft depth intervals in selected wells at all sites were monitored monthly during the winter and about weekly during the irrigation season to determine thermal effects of canal leakage on ground water. A sodium-bromide tracer solution was used at one site to determine rate of ground-water flow. Leakage tests to determine infiltration rate were conducted at four sites using seepage meters installed in the canal bed.

Study Area

The Flathead Indian Reservation is located in northwestern Montana, approximately midway between the cities of Kalispell and Missoula. The reservation includes an area of about 1,950 mi^2 in parts of Flathead, Lake, Missoula, and Sanders Counties (fig. 1). The northern boundary is a nearly straight east-west line passing through the Hog Heaven Range and the approximate center of Flathead Lake. The remaining boundaries essentially coincide with natural drainage divides. The eastern boundary lies along the crest of the Mission Range, the southern boundary

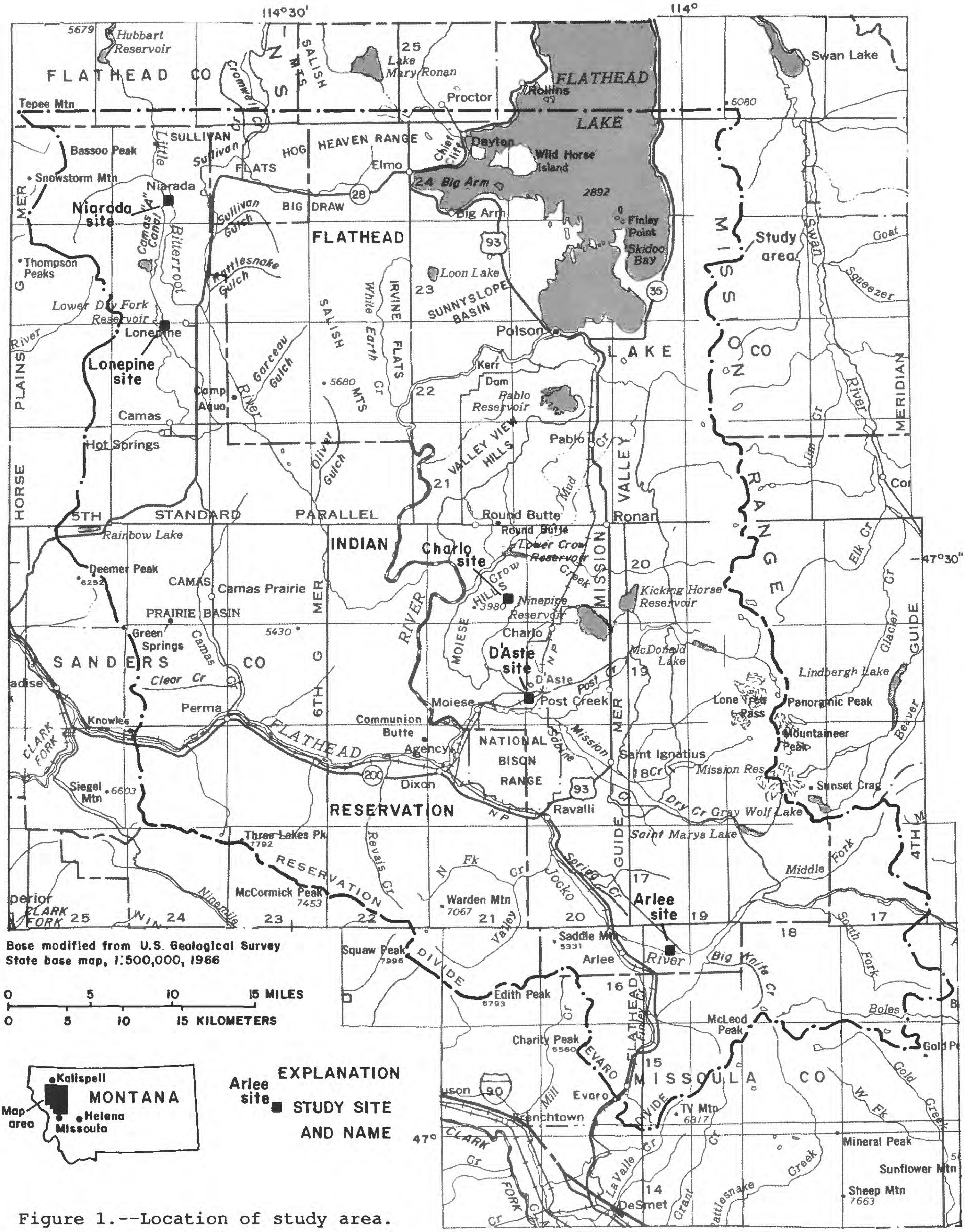


Figure 1.--Location of study area.

is along the Evaro and Reservation Divides, and most of the western boundary is along the drainage divide between the Little Bitterroot River and the Clark Fork.

The physiography consists principally of isolated, alluvial-filled, structurally controlled valleys and basins separated by mountain ridges. The major valleys of the reservation, the Mission and the Little Bitterroot River valleys, are separated by the Salish Mountains. Other principal valleys and basins in the reservation include Big Draw, Irvine Flats, Sunnyslope, Camas Prairie, the Jocko River and Finley Creek drainages, and the Flathead River downstream from Dixon.

The valleys of the reservation are underlain by one or more of three principal types of geologic terrane: (1) Quaternary alluvium, including terrace deposits, consisting primarily of sorted to well-sorted boulders, cobbles, and sand; (2) Quaternary glacial till, primarily as moraines, consisting of poorly sorted to unsorted boulders, cobbles, sand, silt, and clay; and (3) Quaternary and Tertiary glaciolacustrine deposits, consisting of silt and clay with imbedded boulders, cobbles, and gravel, and a few sand lenses. The generalized geology of the Flathead Indian Reservation is shown in figure 2. In general, geology from Boettcher (1982) is shown for most of the reservation. Geology from Ross and others (1955) is shown for areas not mapped by Boettcher (1982), principally the Jocko River valley, Camas Prairie basin, and the lower Flathead River valley downstream from Dixon. Two geologic units present in the reservation are not shown separately in figure 2. Glacial outwash, deposited by flowing water and, therefore, hydrologically similar to alluvium, is contained within the glacial till. Also, eolian sand deposits, which mantle part of the Mission Valley, were not mapped by Boettcher (1982) or Ross and others (1955).

Previous Investigations

The geology of the study area is described in regional reports and maps by Ross and others (1955), Harrison and Campbell (1963), Ross (1963), Obradovich and Peterman (1968), Kleinkopf and others (1972), Harrison and others (1981), and Hobbs (1984). Reports by Nobles (1952), Alden (1953), and Curry and others (1977) emphasized the glacial geology of the area. An engineering evaluation of the irrigation system, including infiltration rates, was published by Morrison-Maierle, Inc. (1974). Hydrology is emphasized in reports by Meinzer (1917), Boettcher (1982), Donovan (1985), and Slagle (1988).

System for Specifying Geographic Locations

In this report, inventoried locations are numbered according to geographic position within the rectangular grid system used in Montana by the U.S. Bureau of Land Management (fig. 3). The location (local) number consists of 14 characters. The first three characters specify the township and its position north (N) of the Montana Base Line. The next three characters specify the range and its position west (W) of the Montana Principal Meridian. The next two characters are the section number. The next four characters designate the quarter section (160-acre tract), quarter-quarter section (40-acre tract), quarter-quarter-quarter section (10-acre tract), and quarter-quarter-quarter-quarter section (2.5-acre tract), respectively. The subdivisions of the section are designated A, B, C, and D in a counterclockwise direction, beginning in the northeast quadrant. The last two characters form a sequence number. For example, as shown in figure 3, well 20N21W25CDBD01 is located in the SE1/4 NW1/4 SE1/4 SW1/4 sec. 25, T. 20 N., R. 21 W.

IRRIGATION-CANAL LEAKAGE AT STUDY SITES

The five sites selected for study--one in the Jocko River valley, two in the Mission Valley, and two in the Little Bitterroot River valley--are representative of the three principal geologic terranes present along valleys in the reservation. Monitoring wells were drilled at each of the sites. The construction records and lithologic logs for the monitoring wells are given in tables 2 and 3, respectively, at the back of the report.

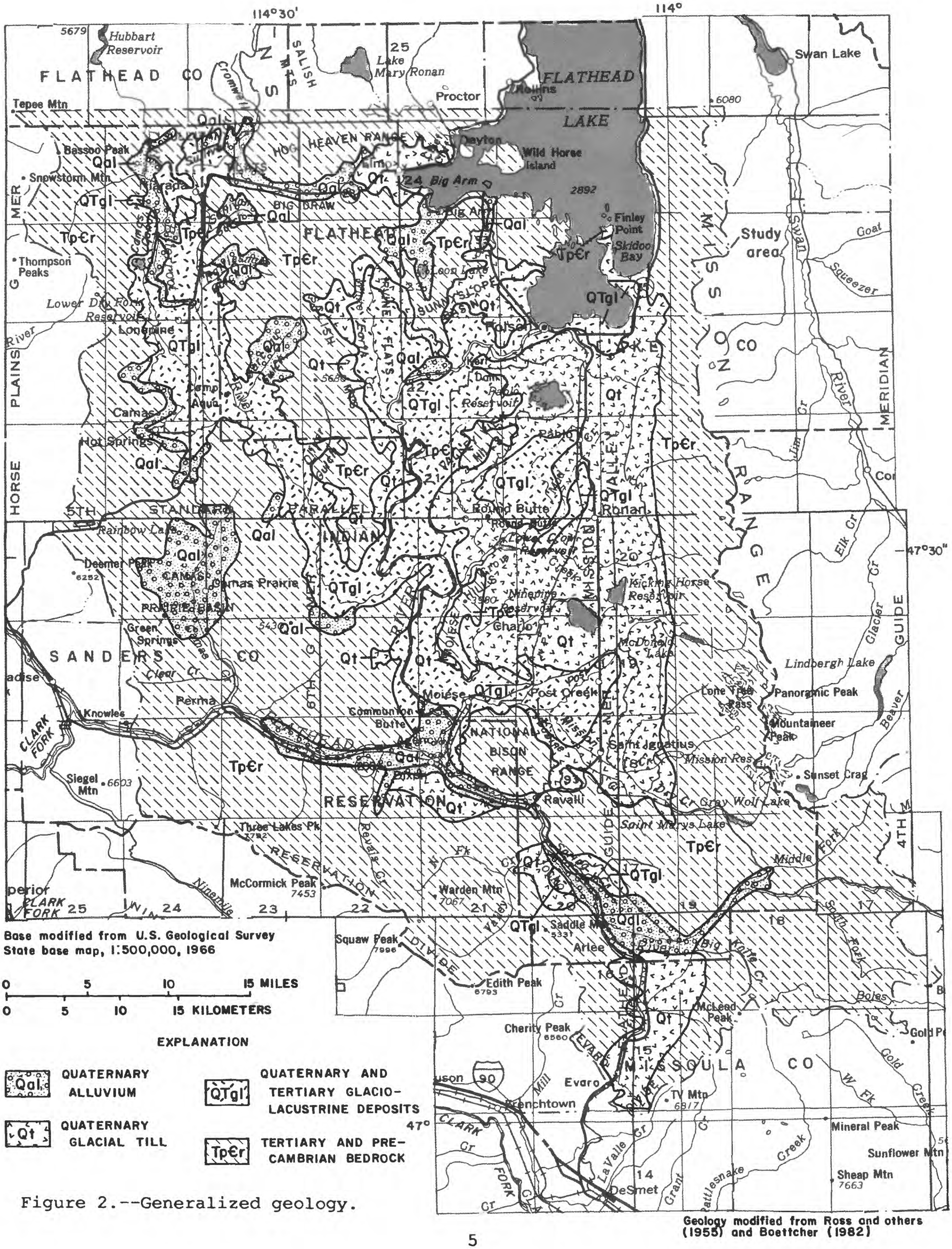


Figure 2.--Generalized geology.

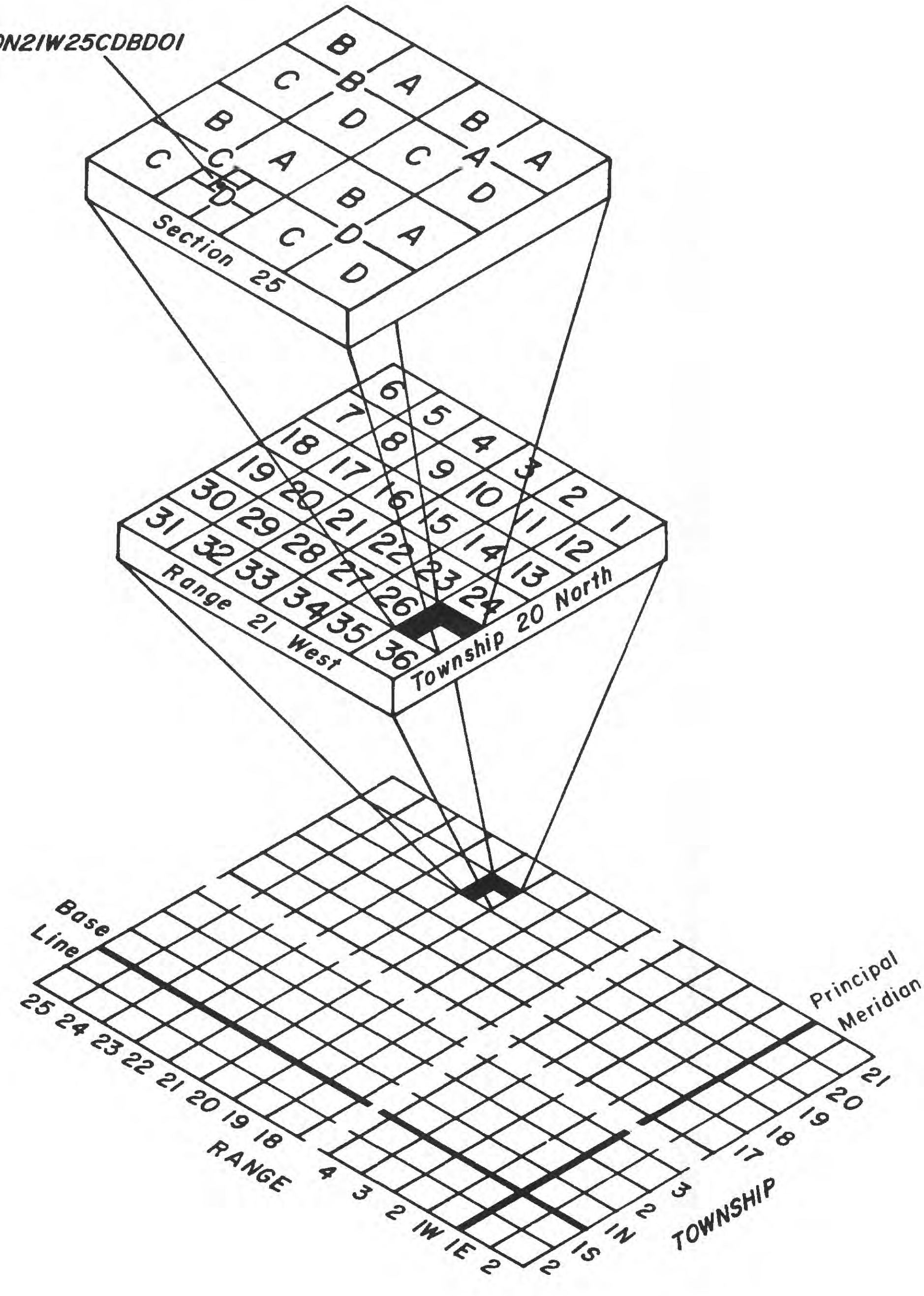


Figure 3.--System of specifying geographic locations.

Several methods were used to evaluate canal leakage. Aquifer hydraulic characteristics, the relations between canal stage and water level in monitoring wells, and temperature fluctuations in monitoring wells were evaluated at each site. A tracer test was used to determine the rate of ground-water flow at one site. Leakage rate was measured directly by use of a seepage meter at four sites. The data corresponding to the methods of evaluation are given in tables 4-8 at the back of the report.

This report contains three variables reported in the same units: hydraulic conductivity, ground-water-flow velocity, and canal leakage. Hydraulic conductivity is defined as the volume of water at the existing kinematic viscosity that will move in a unit time under a unit hydraulic gradient through a unit area measured at right angles to the direction of flow (Lohman and others, 1972). Hydraulic conductivity is reported in the units of feet cubed per day per foot squared, or in simplified form, feet per day. Ground-water-flow velocity is a true vector quantity that indicates a time rate of motion, expressed in the units of feet per day. Canal leakage represents the quantity of water that flows through a unit cross-sectional area of canal bed and banks in a unit time; the complete units of feet cubed per day per foot squared for leakage rates are simplified to feet per day.

Arlee Site

The Arlee site is located in the NE1/4 NE1/4 SW1/4 SE1/4 sec. 8, T. 16 N., R. 19 W., in the Jocko River valley about 3 mi east of the town of Arlee. The site is adjacent to the Jocko "R" canal, located on alluvial terrace deposits consisting of coarse gravel and cobbles with some silt and clay. Topographic relief from the canal to the most distant wells is about 30 ft.

Six monitoring wells, ranging in depth from 9.1 to 33.0 ft, were installed at the site (figs. 4 and 5). Three wells (A-1, A-2, and A-6) were located on the north bank of the canal about 2 ft from the edge of the water. Two wells (A-3 and A-4) were located about 147 ft north and one well (A-5) was located about 142 ft northwest of the wells adjacent to the canal. Canal stage was monitored at a canal gage, which consisted of a stilling well and float installed at the north edge of the canal near well A-6. Two wells (A-3 and A-6) and the canal gage were equipped with digital water-level recorders set to record at 1-hour intervals.

Aquifer characteristics at the site were determined by slug tests using wells A-3, A-4, A-5, and A-6, and by a constant-discharge test using well A-6. Slug tests were analyzed by the methods of Cooper and others (1967) and (or) Schafer (1980). The constant-discharge test was analyzed by methods of Jacob (1950, 1963). Transmissivity values determined from the slug tests ranged from 0.04 to 27 ft^2/d; corresponding hydraulic-conductivity values derived from the slug tests ranged from 0.01 to 9.0 ft/d (table 4). Results of the constant-discharge test using well A-6 indicate transmissivity values of 50 and 55 ft^2/d and hydraulic-conductivity values of 10 and 11 ft/d. The average hydraulic-conductivity values for each well site ranged from 4.0 to 8.5 ft/d (table 4); the average for the Arlee study site was 7.0 ft/d. The hydraulic-conductivity values obtained at the well sites are indicative of an aquifer composed of material ranging from fine sand to mixtures of sand, silt, and clay (U.S. Department of the Interior, 1977, p. 29) and reflect the finer material that fills the voids between the gravel and cobbles.

Water levels in monitoring wells responded rapidly to introduction of water into the canal (table 5). Water began flowing in the canal between 1600 and 1700 hours on April 20, 1987. The water level in well A-6 (monitored by digital recorder), which is adjacent to the canal, began rising between 1800 and 1900 hours on the same date, 1 to 3 hours after introduction of water into the canal (fig. 6). The pre-rise water level in the well was 33.13 ft below land surface. The water level rose about 12 ft between 1900 and 2000 hrs on April 20, 1987; the highest level measured during the irrigation season was 19.01 ft below land surface at 2000 hours on April 24, 1987. The water level in well A-3 (also monitored by digital recorder), which is 150 ft from the canal, began rising between 2300 and 2400 hours on April 22, 1987, about 55 hours after water began flowing in the canal. The pre-rise water level in the well was 23.94 ft below land surface. The water level rose to 10.53 ft below land surface at 2200 hours on April 25, 1987, immediately preceding a malfunction of the float system for the recorder. The highest water level measured in the well, 10.06 ft below land surface, was at 0844 hours on April 28, 1987, when the recorder was serviced and the malfunction was discovered. The water level in wells A-4 and A-5 responded similarly, starting to rise between 0600 hours on April 22, 1987, and 0900 hours on April 23, 1987, respectively; the measured water levels were highest at about 1030 hours on April 28, 1987.

Temperature profiles were monitored in wells A-3, A-4, A-5, and A-6 to assess the effect of canal leakage on ground-water temperature and the possible stratification of flow in the aquifer. Twenty-three profiles were measured in each well, beginning on April 28, 1987, and ending on September 28 (table 6). Temperatures in

A.

B.

Figure 4.--Canal gage and monitoring wells at the Arlee site. A, View is southwest. B, View is southeast.

all wells gradually increased throughout the summer, with the increase generally being greatest near the water surface and becoming less with depth. Temperature increases generally appeared first near the water surface and migrated downward with time. Temperature increases appear to be more a function of the seasonal warming of the ambient air temperature than of the temperature of the infiltrating

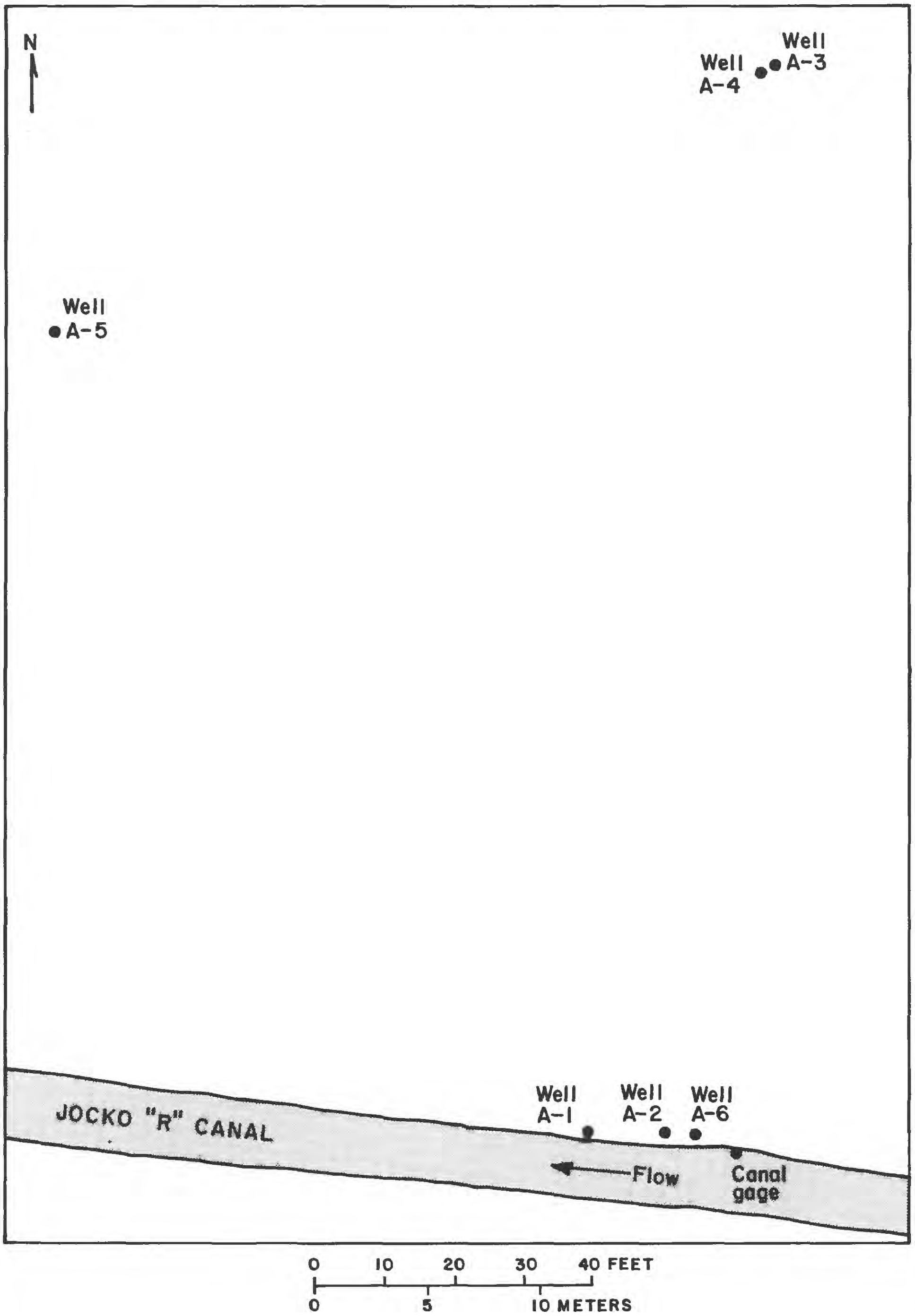


Figure 5.--Location of canal gage and monitoring wells at the Arlee site.

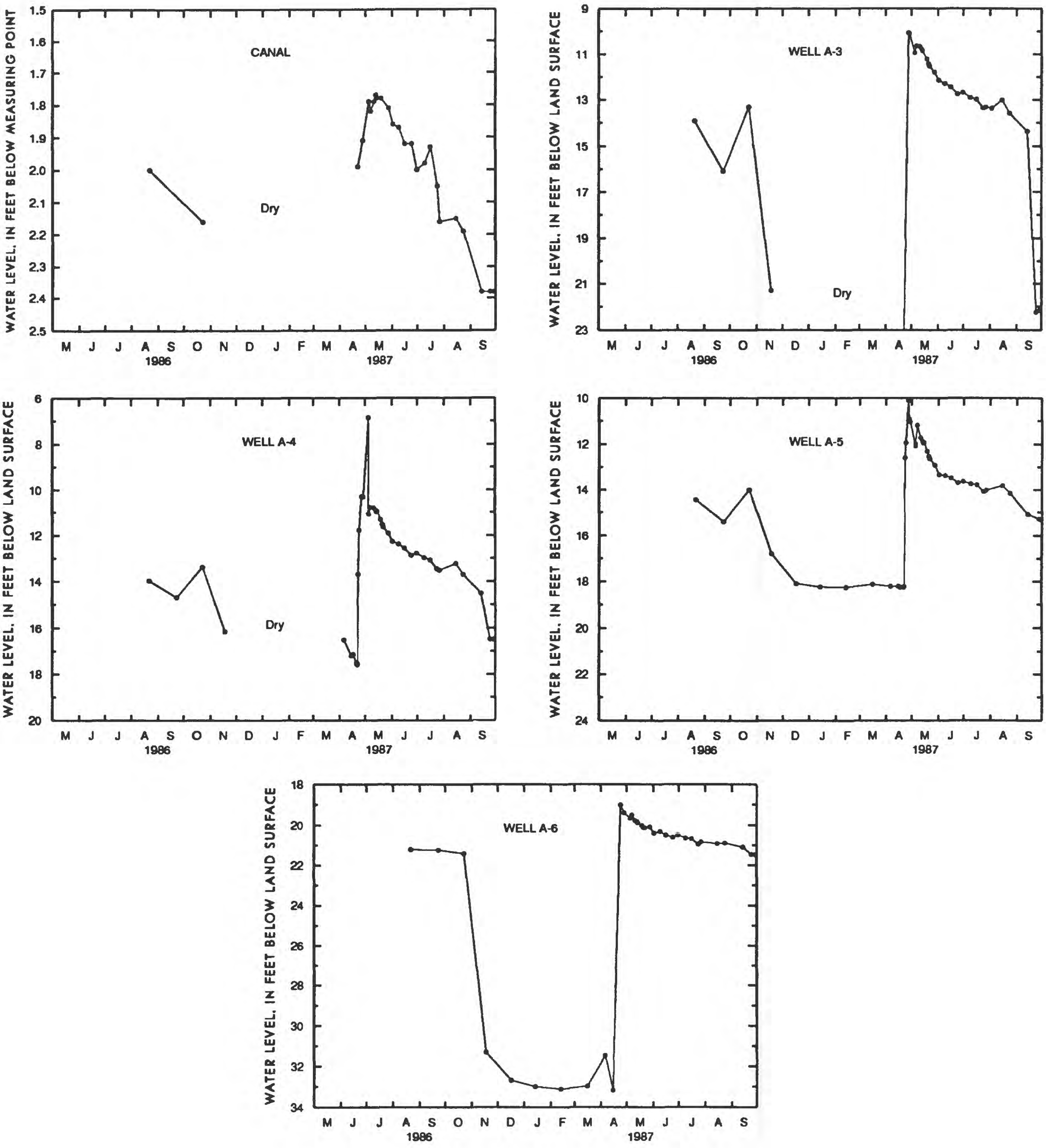


Figure 6.--Water levels in the canal and monitoring wells at the Arlee site.

water. Temperature in well A-6, adjacent to the canal, however, decreased between August 15 and August 24 and continued to decrease through September 28, with a possible slight increase about September 14. This condition may have resulted from changes in temperature of water in the canal; however, no rapid change in ground-water temperature was detected that could be directly attributed to fluctuation in temperature of canal water or to specific intervals of stratified flow. Temperature profiles for selected dates are shown in figure 7. Temperature data for the air and the water in the canal are given in table 7.

A tracer test to determine rate of ground-water flow was conducted between July 28 and August 3, 1987. A sodium-bromide tracer solution having a concentration of about 100,000 mg/L was injected into the canal bed through a tube driven 1.1 ft into the canal bed about 5 ft southeast of well A-6. Injection began at 1100 hours on July 28 and continued at a rate of about 0.045 gal/min until 1245 hours of the same day. Bromide concentration was determined onsite by testing water samples that were withdrawn from the screened section of the monitoring wells with a specific-ion meter. Selected samples were retained for laboratory analysis (results in table 8). The tracer solution was first detected in well A-6 at 1500 hours, which was 4 hours after injection began. Maximum concentrations of tracer solution, as determined from laboratory analyses, were 366 mg/L at 2100 hours on July 28 in well A-6, 1.2 mg/L at 2255 hours on July 31 and 1455 hours on August 1 (average of 0655 hours on August 1) in well A-5, 1.2 mg/L at 1304 and 2100 hours (average of 1700) hours on August 1 in well A-4, and 1.1 mg/L at 2058 hours on August 1 and 1300 hours on August 2 (average of 0500 hours on August 2) in well A-3 (fig. 8). Direct-line distances from the point of injection to the points of sample collection were about 25 feet for well A-6, 147 feet for well A-5, 149 feet for well A-4, and 150 feet for well A-3. Arrival times for maximum concentrations indicate average velocities between the point of injection and the wells of about 60 ft/d for well A-6, 38 ft/d for well A-5, 35 ft/d for well A-4, and 32 ft/d for well A-3. The velocity of 60 ft/d for well A-6 represents a nearly vertical flow from the bottom of the injection tube to the top of the screened interval and is much larger than the values for the other wells because of the extreme hydraulic gradient. Knowledge of the velocity of ground-water flow can be used to determine the rate of migration of contaminants that might enter the aquifer or as an alternate method to determine hydraulic conductivity.

Hydraulic conductivity can be computed using Darcy's law expressed in the form:

$$K = -\frac{\bar{v}\theta}{dh/dl} \qquad (1)$$

where

K = hydraulic conductivity, in feet per day;

$\bar{v}$ = average velocity, in feet per day;
θ = effective porosity, as a decimal fraction; and
dh/dl = hydraulic gradient, in feet per foot.

Effective-porosity values for gravel reported by Johnson (1967, p. D43, D46, D56) generally range from 5 percent for dense mixtures of boulders, gravel, sand, silt, and clay to 25 percent for clean gravel. Common values reported for "dirty" or "tight" gravel ranged from about 10 to 15 percent. Because the material underlying the site consists of cobbles and coarse gravel of dense rock with considerable silt and clay in the voids, the effective porosity is probably about 10 percent. Hydraulic gradients determined from water levels in the wells were 0.28 ft/ft for wells A-5 and A-4 and 0.27 ft/ft for well A-3. Hydraulic-conductivity values were computed from velocities determined from the tracer test, a porosity value of 10 percent, and hydraulic gradients; the hydraulic-conductivity values were 12 ft/d for well A-3, 13 ft/d for well A-4, and 14 ft/d for well A-5. The extreme induced gradient between the canal and the water level in well A-6 precluded the use of this method to determine hydraulic conductivity at that location.

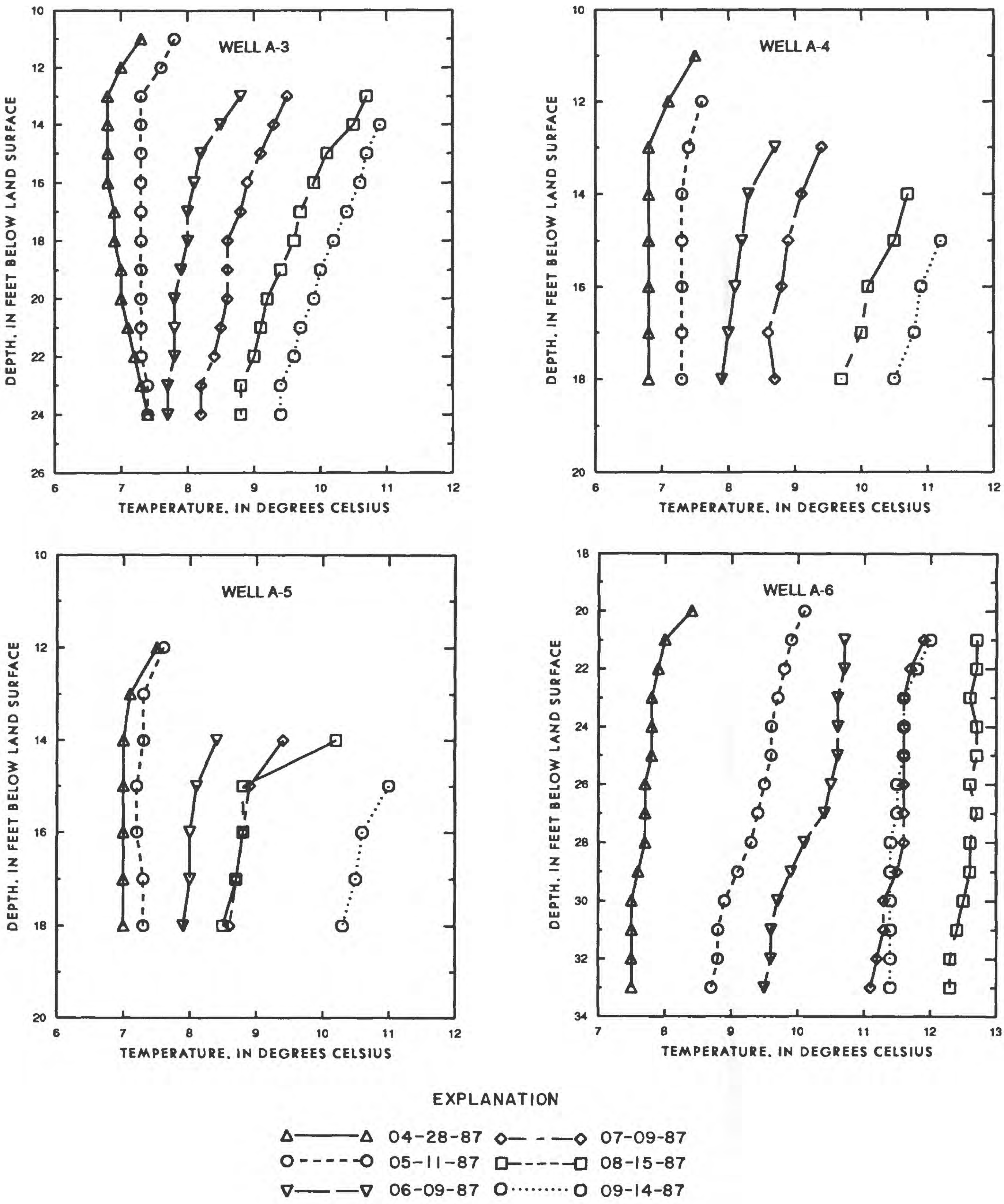


Figure 7.--Selected water-temperature profiles for monitoring wells at the Arlee site.

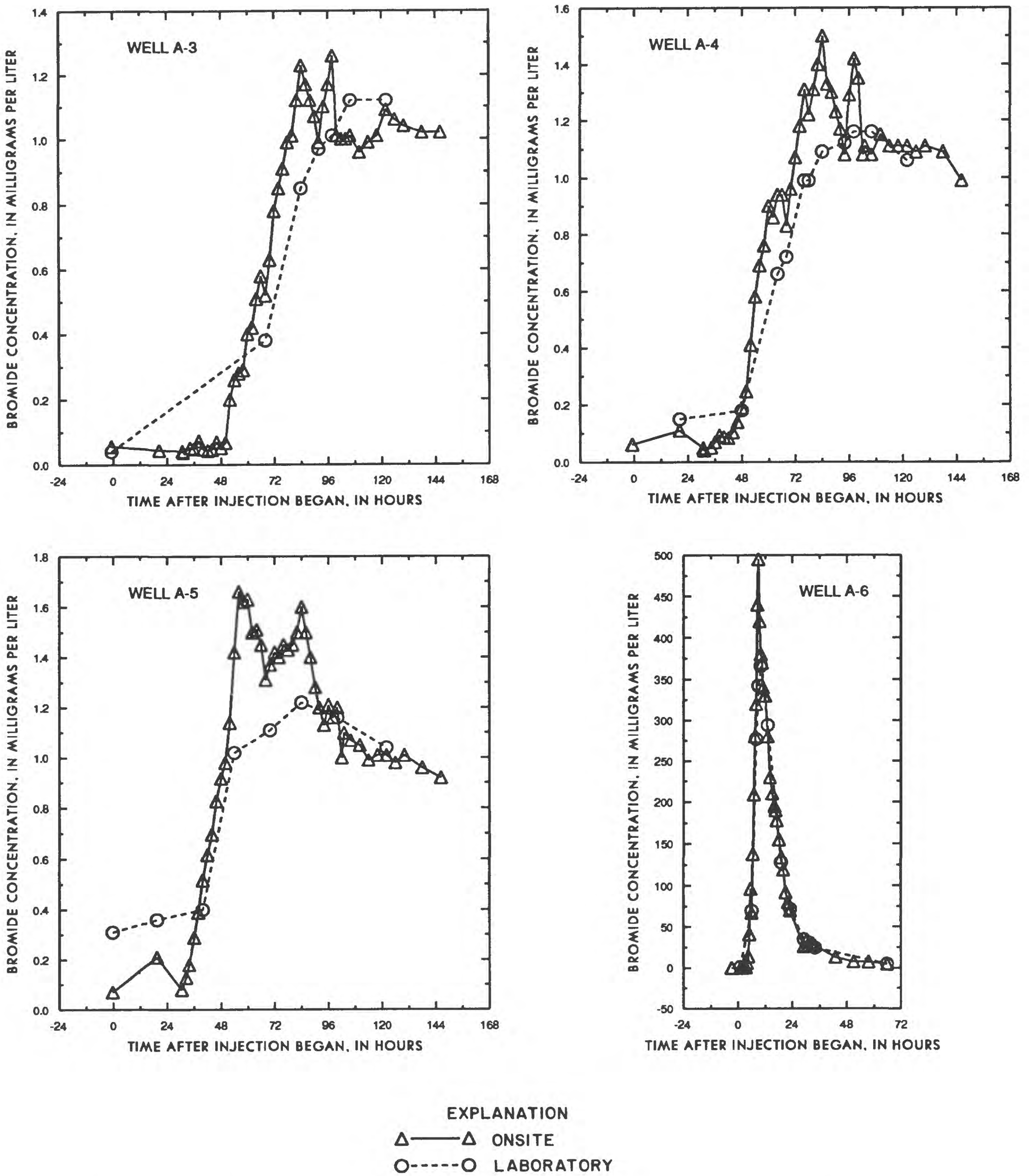


Figure 8.--Bromide concentrations during tracer test at the Arlee site.

Charlo Site

The Charlo site is located in the Mission Valley about 2.5 mi northwest of the town of Charlo, in the SE1/4 NW1/4 SE1/4 SW1/4 sec. 25, T. 20 N., R. 21 W., adjacent to the Post "C" canal. The site, which is located on the Mission moraine, is underlain by glacial till consisting of a heterogeneous mixture of clay, silt, and sand, and a few scattered cobbles and boulders. The land surface in the vicinity of the site is marked by numerous undrained depressions, which are typical of the area of the Mission moraine.

Six wells originally drilled at the site (figs. 9 and 10) ranged in depth from 11.0 to 43.5 ft. An additional well, destroyed during development, was redrilled. Two wells (C-2 and C-7) were installed adjacent to the canal about 4 ft from the south edge of the water. Two wells (C-3 and C-4) were installed about 35 ft south, and two wells (C-5 and C-6) were installed about 50 ft southwest of the wells adjacent to the canal. A stilling well was installed in the canal near wells C-2 and C-7 for monitoring canal stage. Wells C-2 and C-4 and the canal gage were equipped with digital water-level recorders set to record at 1-hour intervals.

Slug tests using wells C-2 through C-7 were conducted to determine aquifer characteristics at the site (table 4). Tests were analyzed by the methods of Cooper and others (1967) and (or) Schafer (1980). Transmissivity values determined from the tests ranged from 0.01 to 3.2 ft^2/d; corresponding hydraulic-conductivity values ranged from 0.002 to 0.80 ft/d. Most values ranged from 0.004 to 0.07 ft/d. The average hydraulic-conductivity values for each well site ranged from 0.003 to 0.45 ft/d (table 4); the average for the Charlo study site was 0.21 ft/d. The hydraulic-conductivity values are indicative of an aquifer composed of silt, clay, and mixtures of sand, silt, and clay (U.S. Department of the Interior, 1977, p. 29); this mixture of lithology is similar to that beneath this site.

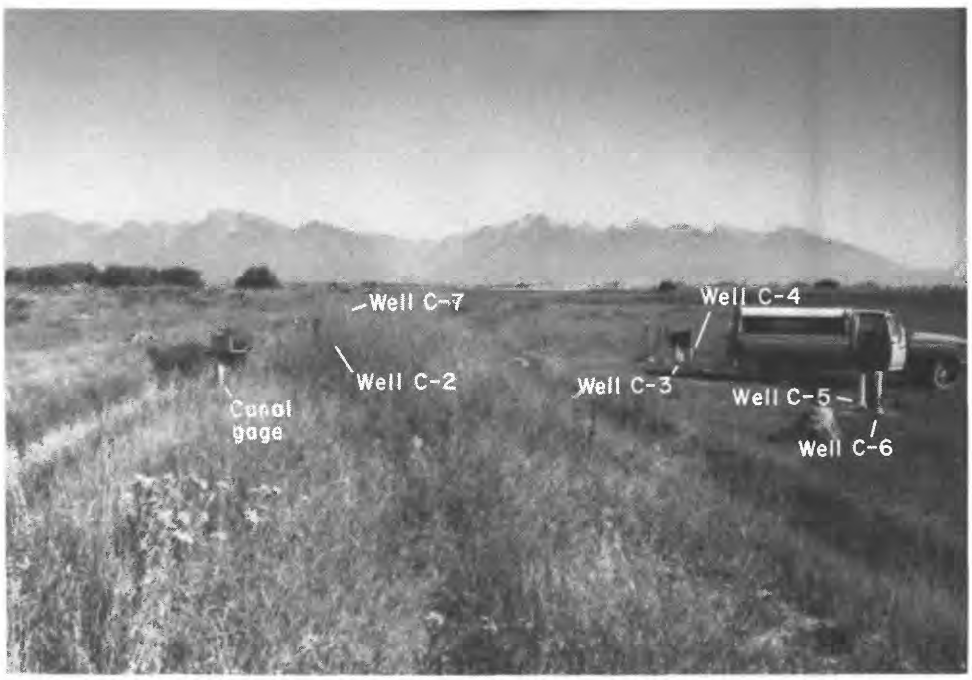


Figure 9.--Canal gage and monitoring wells at the Charlo site. View is east.

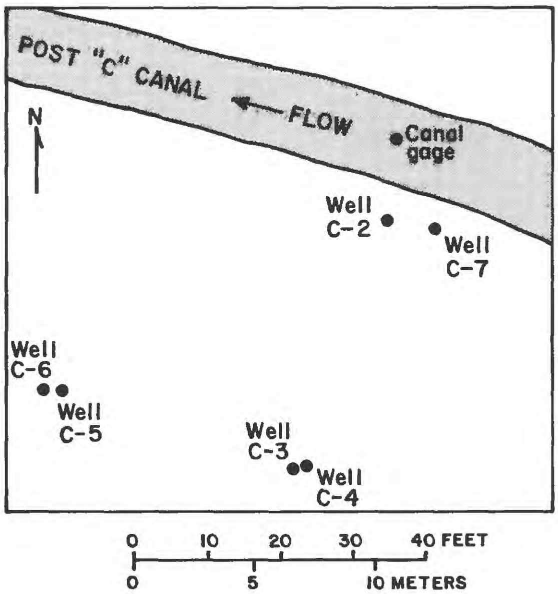


Figure 10.--Location of canal gage and monitoring wells at the Charlo site.

The response of water levels (table 5) in the monitoring wells to fluctuations of canal stage reflects the variation of hydraulic conductivity at the site. Water levels in wells C-2, C-5, and C-6 (fig. 11), in areas of larger hydraulic conductivity, have a direct but delayed response to canal-stage fluctuations, whereas water levels in wells C-3 and C-4, in an area of smaller hydraulic conductivity, have gradual rises and declines that may be more a reflection of regional water-level trends than a direct effect of the canal. Well C-7, although in an area of larger hydraulic conductivity and adjacent to the canal, reacts in a manner similar to wells C-3 and C-4, probably because clay in the section above the screened interval retards the downward movement of water from the canal. The direct response of water levels in wells C-5 and C-6, which are about 40 ft from the canal, implies a continuous zone (between the canal and the wells) that has a larger hydraulic conductivity than that of the surrounding material.

Temperature profiles measured in monitoring wells attest to the fact that leakage of water from the canal has little to no effect on ground-water temperature. Temperature-profile measurements began on April 8, 1987, and were periodically repeated through September 28. Twenty-three profiles were measured in wells C-2, C-3, C-4, and C-6; 24 were measured in well C-5; and 25 were measured in well C-7. Temperature data for the profiles as well as for the air and the water in the canal at the site are given in tables 6 and 7, respectively. Water temperatures in the monitoring wells began to increase near the water surface and progressively migrated downward through the summer, indicating that the change was due primarily to an increase in ambient air temperature. Water temperature in the lower parts of the deeper wells displayed little to no change during the period. Near-surface water temperatures began to decrease during September as daily mean air temperature decreased. Near-surface temperature changes in well C-7, which is adjacent to the canal, were slightly more rapid than in well C-3, about 40 ft from the canal, and may be a reflection of infiltrating water (fig. 12). No deviations in the profiles, which would indicate a zone of flowing water, were noted, however.

Leakage tests to determine direct infiltration rate through the canal bed were conducted using a seepage meter (fig. 13). The seepage meter consisted of a 15-in. diameter (area of 1.23 ft^2) closed-top cylinder having two ports--one for attachment of a water-supply bag that becomes submerged in the canal and one for a vent to prevent entrapment of air in the cylinder. Water was supplied to the meter by the submerged bag so that the hydraulic head in the meter was equal to that in the canal. The meter was pressed 0.6 ft into the canal bed about 11 ft downstream from well C-2 on September 2, 1987. The water-supply bag was attached at 0900 hours and removed at 1500 hours on the same date. A water loss of 11 mL (0.0013 ft/d) was recorded for the intervening 6 hours. A second bag was attached upon removal of the initial bag and removed at 0730 hours on September 4. A water loss of 60 mL (0.0010 ft/d) was noted for the 40.5-hour period. A third bag was attached upon removal of the second bag and left until 1445 hours on September 8. A loss of 200 mL (0.0013 ft/d) was recorded for the intervening 103.25 hours. The average leakage rate for the Charlo study site was 0.0012 ft/d.

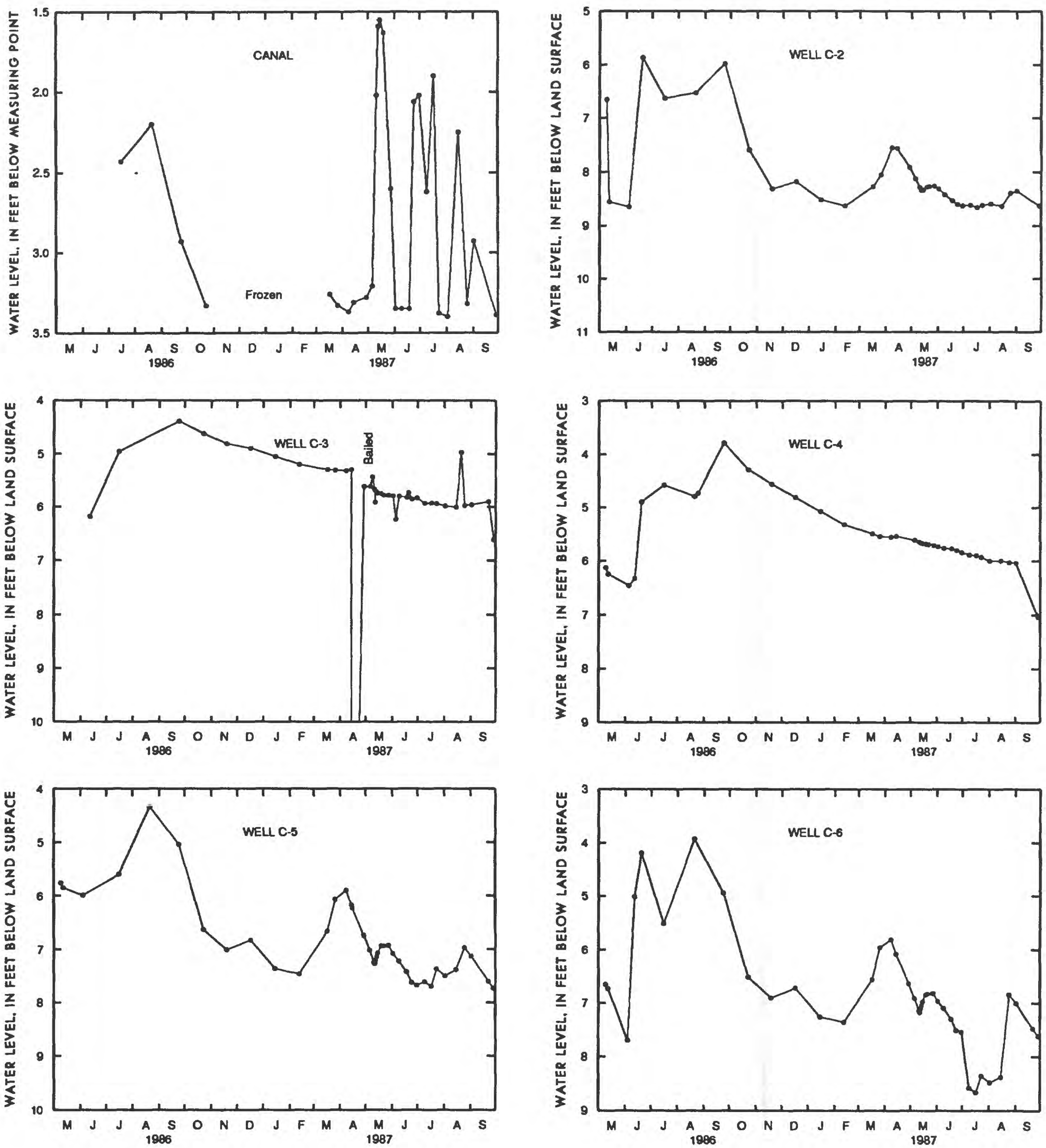


Figure 11.--Water levels in the canal and monitoring wells at the Charlo site.
Illustration is continued in the upper left corner of facing page.

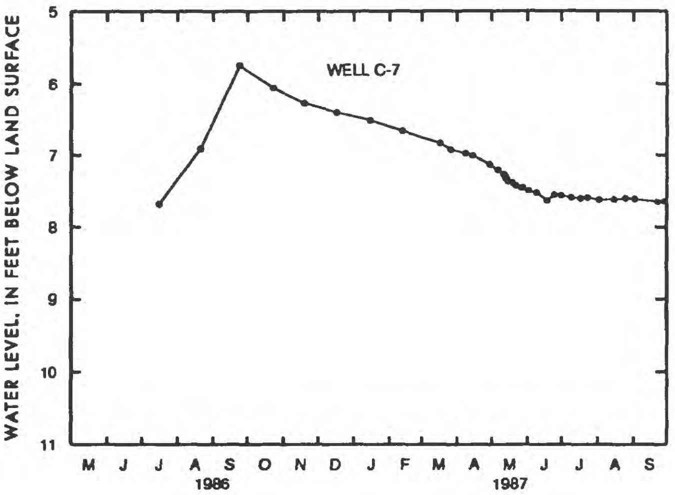
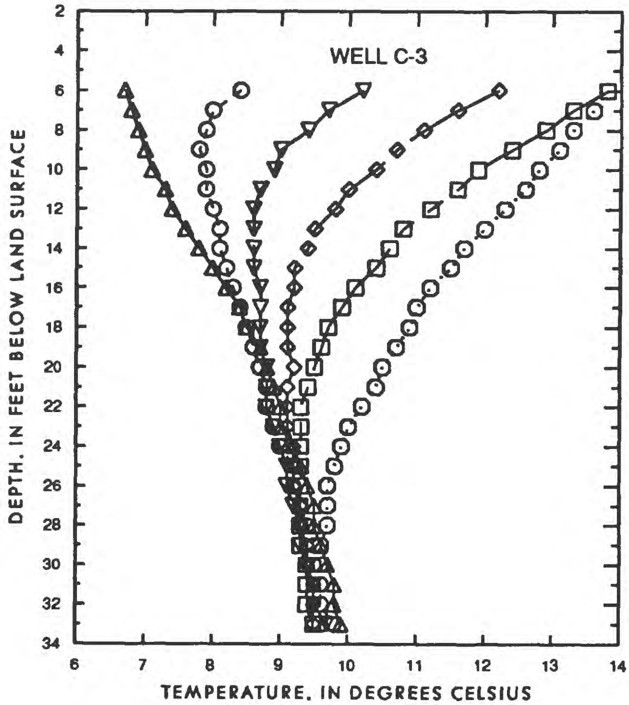


Figure 11.--Continued



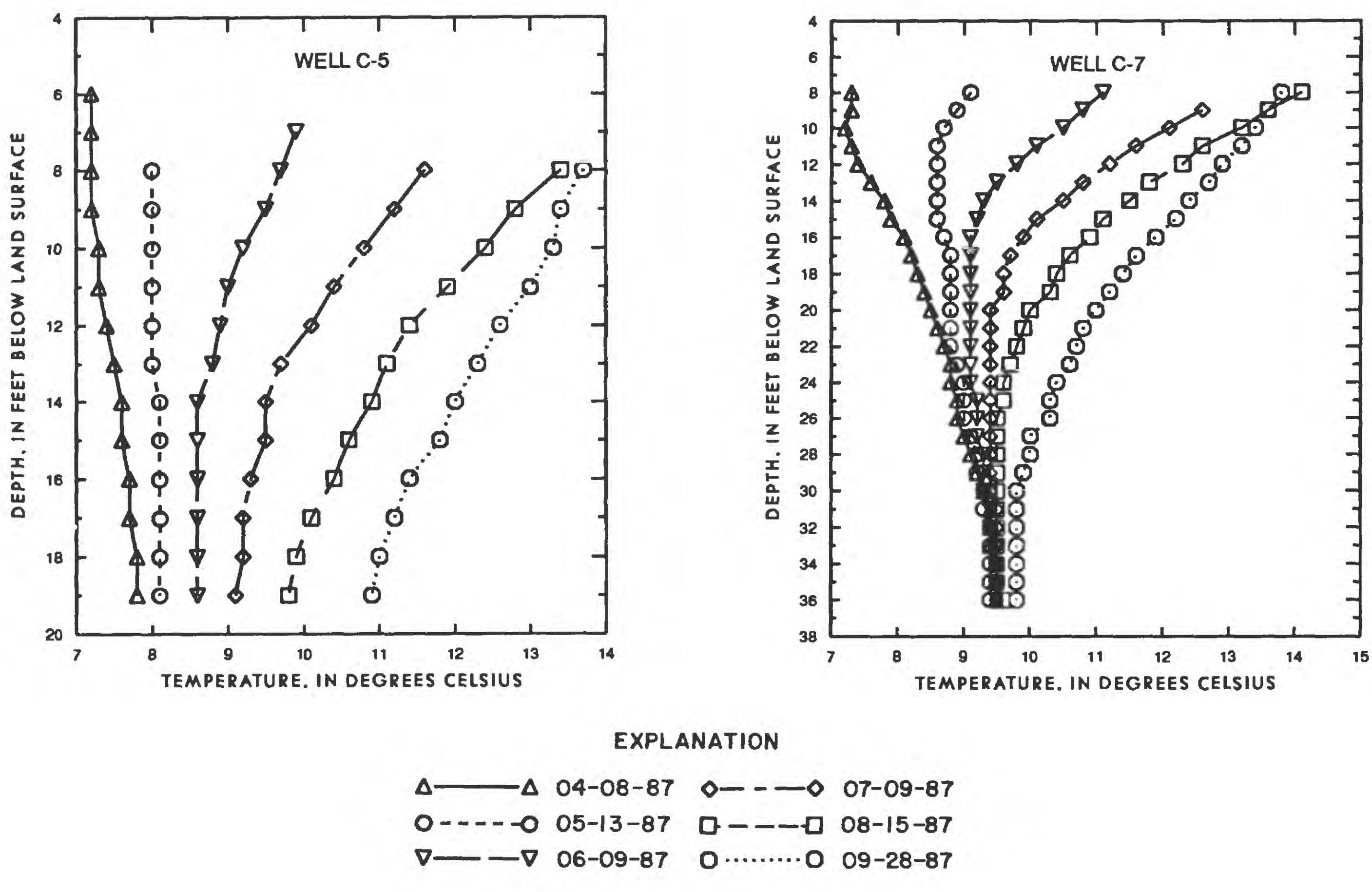


Figure 12.--Selected water-temperature profiles for monitoring wells at the Charlo site.

Figure 13.--Seepage meter used for leakage tests.

D'Aste Site

The D'Aste site is located in the Mission Valley adjacent to the Post "F" canal in the SW1/4 NW1/4 NE1/4 NW1/4 sec. 30, T. 19 N., R. 20 W., about 4 mi south of the town of Charlo near the former settlement of D'Aste. The site is situated on glaciolacustrine deposits that formed in glacial Lake Missoula; the deposits are composed of silt and clay with imbedded sand, gravel, cobbles, and boulders.

Five monitoring wells, ranging in depth from 18.0 to 54.0 ft, were installed at the site (figs. 14 and 15). Two wells (D-1 and D-5) were drilled on the south bank of the canal about 3 ft from the edge of the water. Two wells (D-2 and D-3) were installed about 30 ft southeast, and one well (D-4) was installed about 36 ft south of the wells adjacent to the canal. A stilling well was installed in the canal near wells D-1 and D-5 for monitoring canal stage. Wells D-3 and D-5 and the canal gage were equipped with digital water-level recorders set to record at 1-hour intervals.

Slug tests using wells D-1, D-3, D-4, and D-5 to determine aquifer characteristics at the site produced transmissivity values of 0.02 to 0.30 ft^2/d and hydraulic-conductivity values of 0.004 to 0.75 ft/d (table 4). The average hydraulic-conductivity values for each well site ranged from 0.004 to 0.38 ft/d (table 4); the average for the D'Aste study site was 0.11 ft/d. The hydraulic-conductivity values obtained at the well sites are indicative of an aquifer compos-

Figure 14.--Canal gage and monitoring wells at the D'Aste site. View is east.

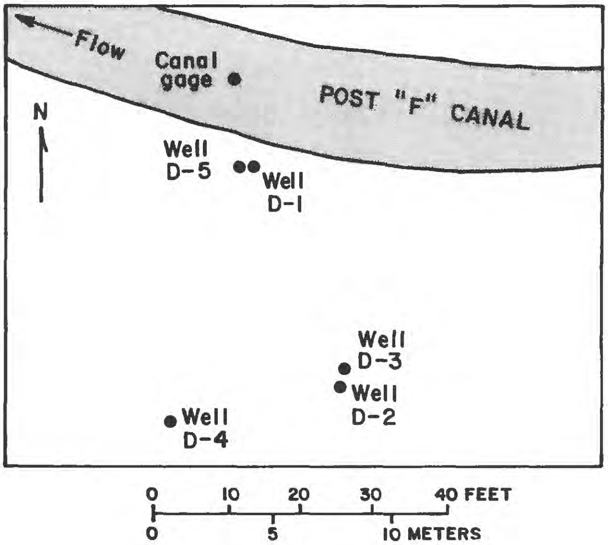


Figure 15.--Location of canal gage and monitoring wells at the D'Aste site.

ed of silt and clay (U.S. Department of the Interior, 1977, p. 29) that underlie the site. Tests were analyzed by the methods of Cooper and others (1967) and (or) Schafer (1980).

Water levels in most monitoring wells (table 5) reflect a direct response to canal stage (fig. 16). Response in most wells is similar; however, the water level in well D-5 shows a somewhat different pattern. Although wells D-5 and D-1 are both adjacent to the canal and only 1 ft apart, comparison of response to flow in the canal demonstrates the vertical heterogeneity of the material underlying the site. For example, the mid-February rise of the water level in most wells, caused by a temporary thawing of ponded water in the canal on February 1 and 2, 1987, is not evident in well D-5.

Twenty-four temperature profiles were measured in wells D-3, D-4, and D-5; 23 were measured in well D-1; and 21 were measured in well D-2 between March 25 and September 28, 1987. Temperature data for the profiles as well as for the air and the water in the canal at the site are given in tables 6 and 7, respectively. Water temperature in monitoring wells generally increased from the water surface downward as the summer progressed (fig. 17), and temperature changes generally were limited to depths less than about 30 ft, indicating that the primary cause was the increase in temperature at land surface. However, a water-temperature decrease was recorded, generally at depths between about 15 and 20 ft below land surface, between March 25 and April 29, which was after ice in the canal had thawed and when water temperature of the canal was about 4 to 6 °C less than the temperature of the ground water. The maximum decrease in temperature was 0.8 °C in well D-4 at a depth of 18 ft. Because water temperature generally increased at depths less than 15 ft during this time, the decrease in temperature is probably due to the presence of cooler water from the canal, flowing along a zone of larger hydraulic conductivity, rather than the direct infiltration of snowmelt. The near-surface decrease in temperature in well D-4 on September 9 (table 6) marks the onset of seasonal cooling at land surface.

Leakage tests were conducted using a seepage meter pressed 0.45 ft into the canal bed about 3 ft upstream from well D-1. The water-supply bag was attached to the seepage meter at 1625 hours on September 8, 1987, and removed at 0725 hours on September 9. A water loss of 50 mL (0.0023 ft/d) was recorded for the intervening 15 hours. A second bag was attached at 0800 hours on September 9 and removed at 0900 hours on September 11. A water loss of 106 mL (0.0015 ft/d) was noted for the 49-hour period. The smaller leakage rate during the second period probably is due to the restriction or blockage of water flow to the meter by leeches lodged in the water-supply tube. A third bag was attached at 0930 hours on September 11 and removed at 1430 hours on September 14. A water loss of 282 mL (0.0025 ft/d) was recorded for the intervening 77 hours. The average leakage rate for the D'Aste study site was 0.0021 ft/d.

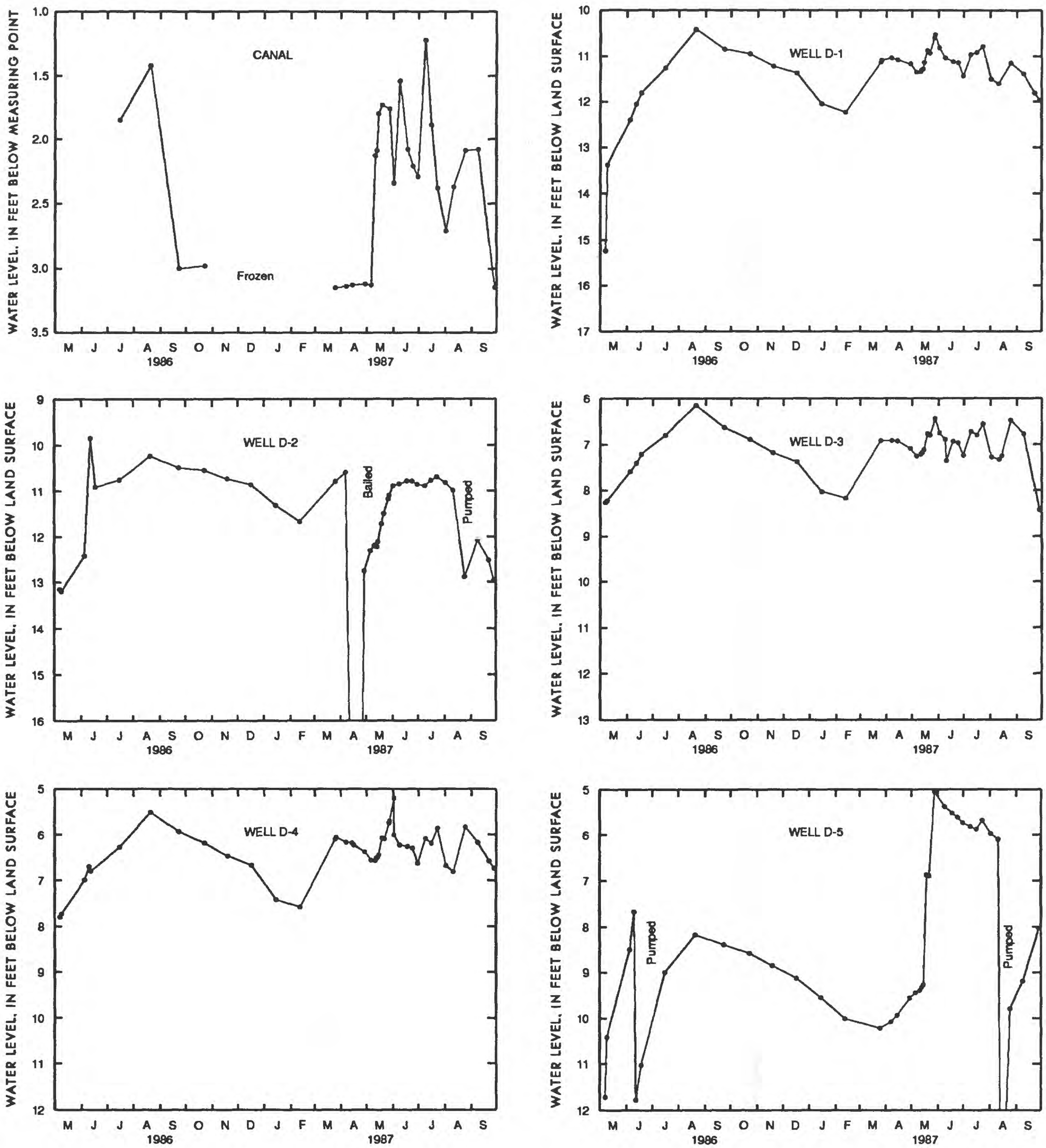


Figure 16.-Water levels in the canal and monitoring wells at the D'Aste site.

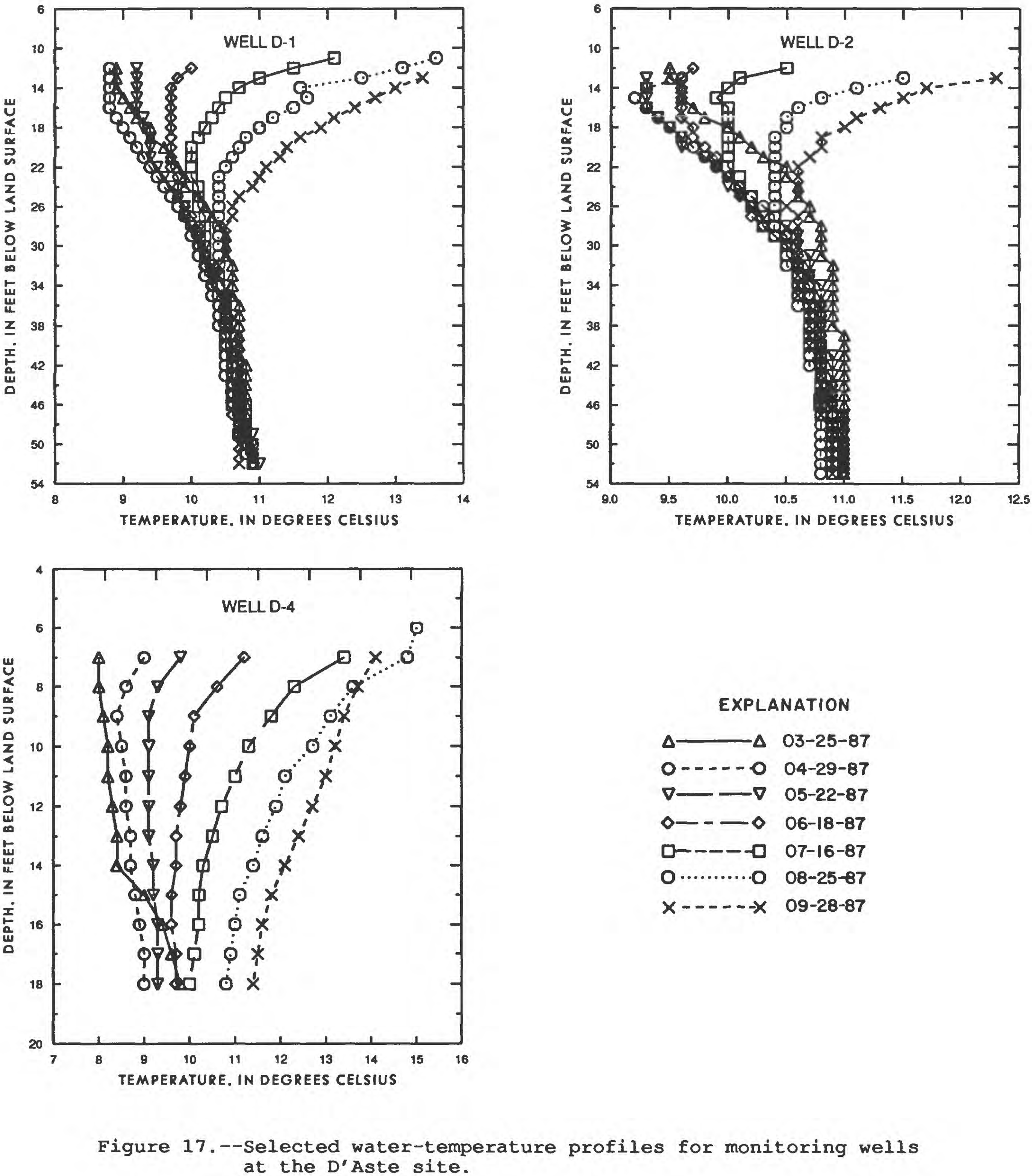


Figure 17.--Selected water-temperature profiles for monitoring wells at the D'Aste site.

Lonepine Site

The Lonepine site is located in the Little Bitterroot River valley adjacent to the Camas "D" canal in the NE1/4 NW1/4 NW1/4 NE1/4 sec. 4, T. 22 N., R. 24 W., about 2 mi west of the town of Lonepine. The site is underlain by glaciolacustrine silt and clay deposited in glacial Lake Missoula.

Five monitoring wells, ranging in depth from 10.0 to 18.5 ft, were drilled at the site (figs. 18 and 19). Two wells (L-1 and L-2) were located on the north bank of the canal about 4 ft from the edge of the water. One well (L-3) was located about 30 ft north, and two wells (L-4 and L-5) were located about 36 ft northeast of the wells adjacent to the canal. A stilling well was installed in the canal to monitor canal stage. Two wells (L-1 and L-3) and the canal gage were equipped with digital water-level recorders set to record at 1-hour intervals.

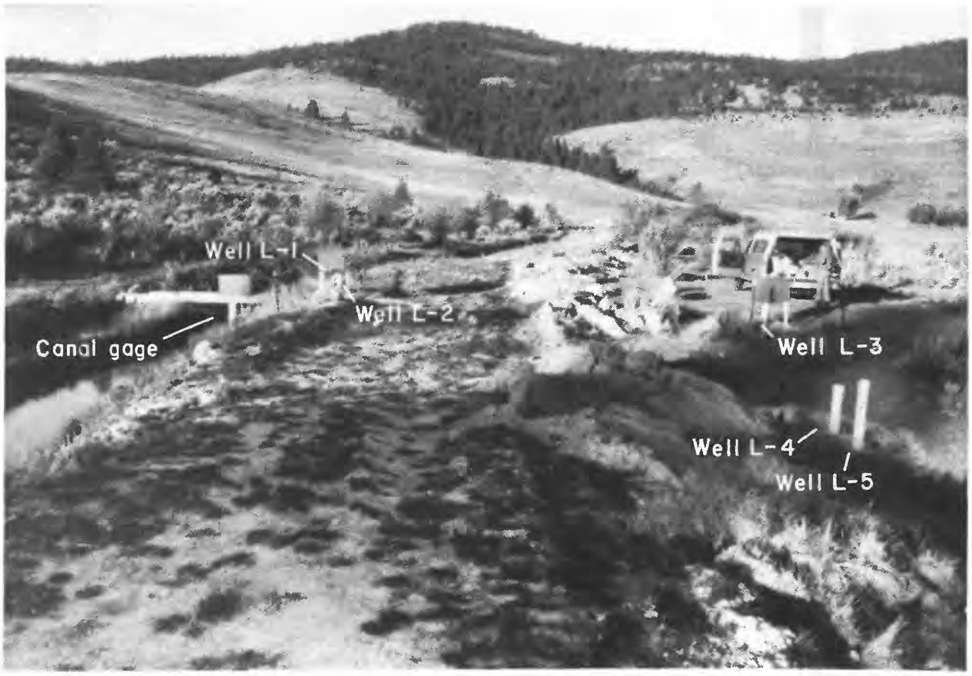


Figure 18.--Canal gage and monitoring wells at the Lonepine site. View is west.

Transmissivity values, determined by slug tests using the five monitoring wells, ranged from 0.08 to 1.6 ft^2/d (table 4). Hydraulic-conductivity values at the well sites ranged from 0.05 to 0.64 ft/d. Tests were analyzed by the methods of Cooper and others (1967), Ferris and Knowles (1963), and (or) Schafer (1980). The average hydraulic-conductivity values for each well site ranged from 0.05 to 0.58 ft/d (table 4); the average for the Lonepine study site was 0.28 ft/d. All wells except well L-5 probably were drilled and cased to bedrock, which is composed of quartzitic rocks of the Precambrian Belt Supergroup at this location. Aquifer characteristics for these wells may be affected by fractures in the bedrock rather than being representative of only the silt and clay that directly underlie the site.

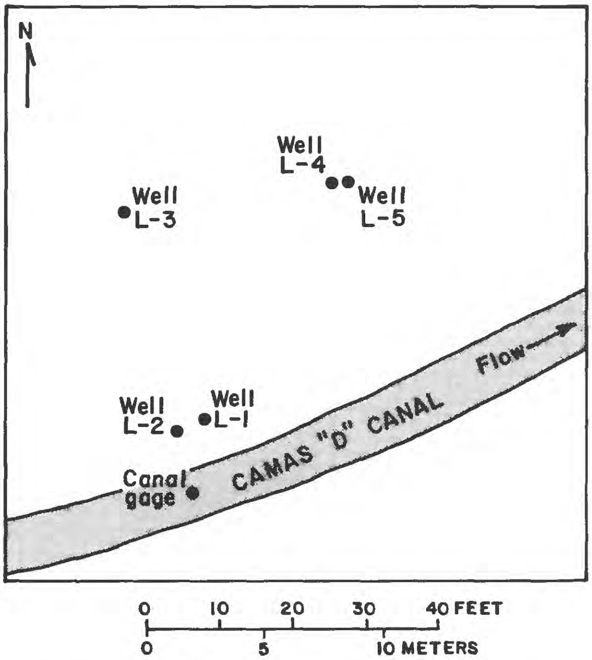


Figure 19.--Location of canal gage and monitoring wells at the Lonepine site.

The water levels in monitoring wells (table 5) appear to respond to canal flow (fig. 20); however, not all rises in water level in the monitoring wells can be correlated with flow in the canal. The water-level rise in late November-early December corresponds with snowmelt caused by daily maximum temperatures in the general range of 5-15 °C between November 16 and December 1. Although the canal is shown in figure 20 as being dry for the period late October-early March, a small quantity of water from surface runoff was in the canal from November 19 through December 1. The water-level rise from February to mid-March, however, resulted from a source other than leakage from the canal. The water level in wells L-1, L-2, L-3, and L-4 (completed to the bedrock surface) rose above land surface and above the elevation of the water in the canal. The water levels in wells L-1 and L-2, which are adjacent to the canal, rose to about 3 ft above canal level. The water levels rose to about 1 ft above canal level in well L-3 and 2 ft in well L-4. In contrast, the water level in well L-5 (not completed to bedrock), which is 2 ft from well L-4, rose to about 4 ft below canal level. Water from snowmelt and rainfall possibly infiltrated fractures in the bedrock, which forms the mountains adjacent to the site, and entered the wells that are completed to bedrock, thus producing the high hydraulic head.

Twenty-three profiles were measured in each monitoring well, beginning on March 18, 1987, and ending on September 29 (table 6). The temperature profiles show a general warming from the water surface downward as the summer progressed (fig. 21). The increasing temperatures in the lower parts of the wells may be evidence of inflowing water, but the source is uncertain. The increased temperature in the lower part of well L-3 in March may be a reflection of geothermal water that is known to be present in parts of the Little Bitterroot River valley and is especially evident near the town of Hot Springs and Camp Aqua about 6 mi south and southeast of the site. The increased temperature also may result from subsurface flow from the adjacent mountains. Temperature data for the profiles as well as for the air and the water in the canal at the site are given in tables 6 and 7, respectively.

Leakage tests were conducted using a seepage meter pressed 0.8 ft into the canal bed about 6.5 ft upstream from the canal gage (fig. 22). A water-supply bag was attached to the seepage meter at 0830 hours on September 15, 1987, and removed at 1445 hours on September 16. A water loss of 30 mL (0.0007 ft/d) was recorded for the intervening 30.25 hours. A second bag was attached at 1510 hours on September 16 and removed at 1000 hours on September 18. A water loss of 29 mL (0.0005 ft/d) was noted for the 42.83-hour period. A third bag was attached at 1015 hours on September 18 and removed at 0730 hours on September 22. Water loss was 30 mL (0.0002 ft/d) for the intervening 93.25 hours. The continual decrease in leakage rate and the loss of about-equal volumes of water are unexplained. Because the canal bed was saturated prior to installation of the meter, swelling of clays probably was not a factor. The meter was prefilled and the bag was carefully attached to prevent water loss. Also, the hydraulic head in the wells was about 8 to 10 ft below the canal bed at the time of the tests. The average leakage rate for the Lonepine study site was 0.0005 ft/d.

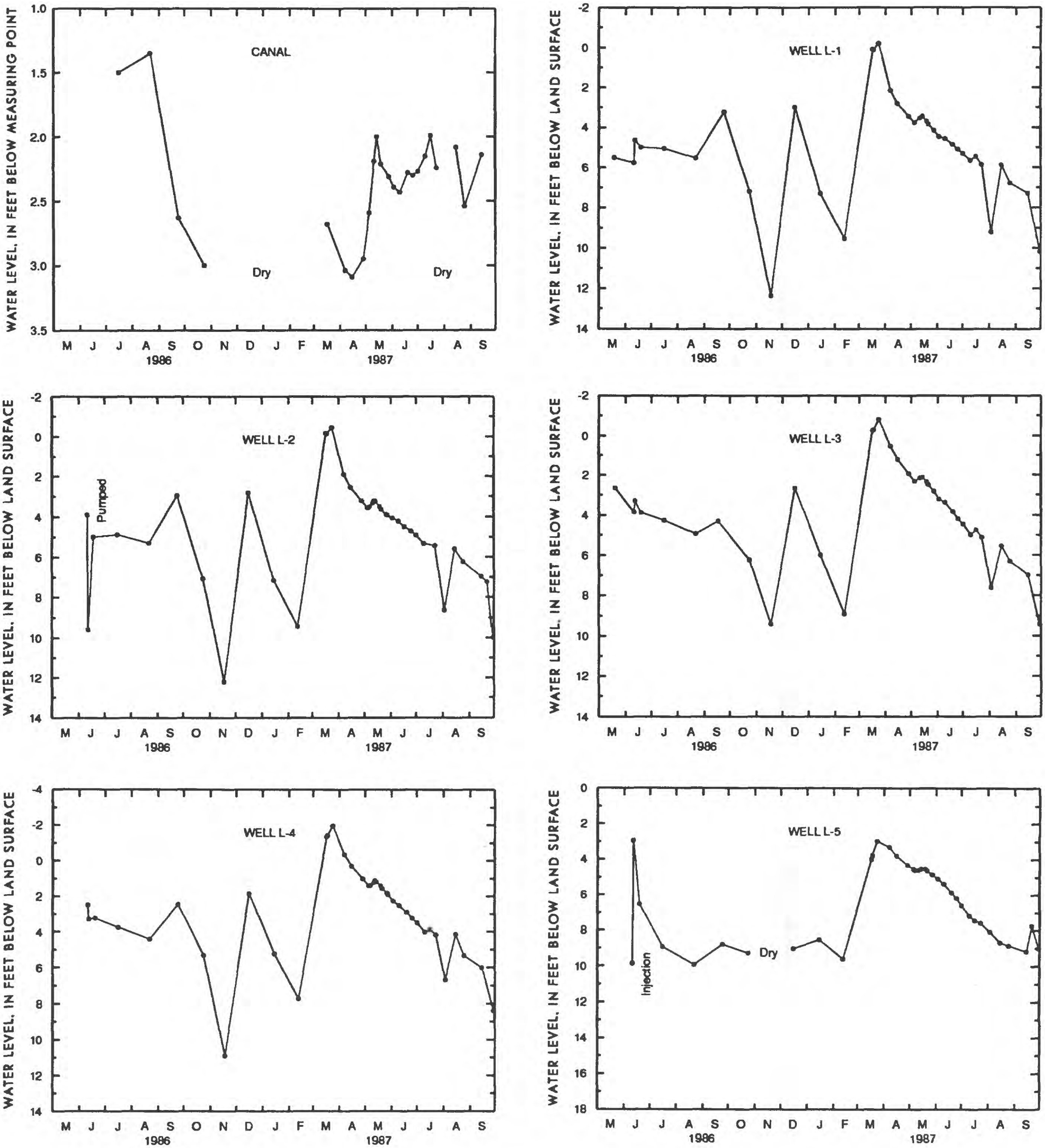


Figure 20.--Water levels in the canal and monitoring wells at the Lonepine site.

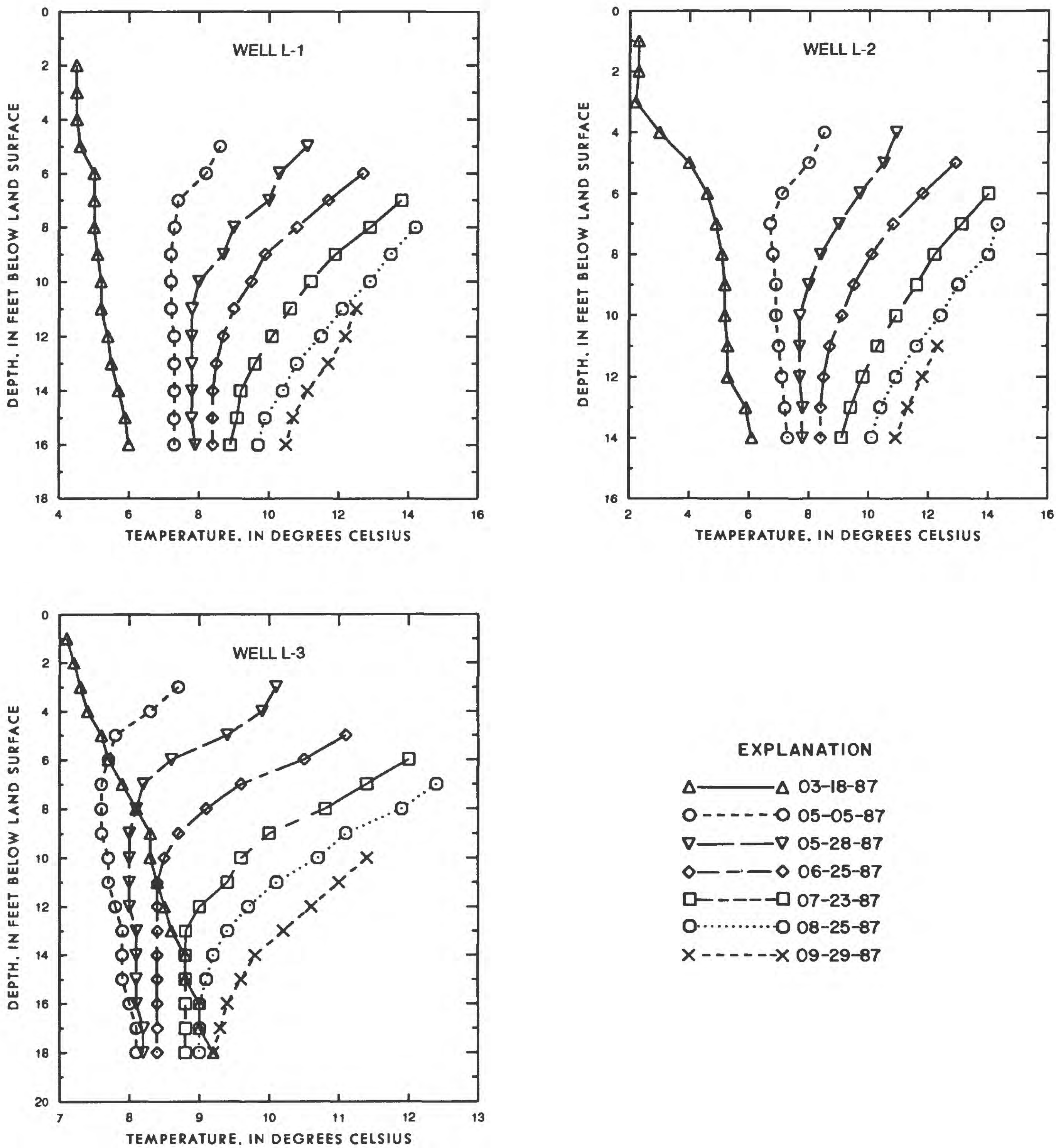


Figure 21.--Selected water-temperature profiles for monitoring wells at the Lonepine site.

Figure 22.--Seepage meter installed at the Lonepine site.

Niarada Site

The Niarada site is located adjacent to the Camas "A" canal in the NE1/4 SW1/4 SE1/4 SW1/4 sec. 27, T. 24 N., R. 24 W., in the Little Bitterroot River valley about 3 mi west-southwest of Niarada. The site is located on what has been described by Alden (1953, p. 158) as alluvial terrace deposits of the Little Bitterroot River that were inundated by glacial Lake Missoula. However, the dark color, absence of clay, and presence of sand and gravel lenses in the subsurface are not typical of Lake Missoula glaciolacustrine deposits.

Four monitoring wells, ranging in depth from 12.0 to 49.0 ft, were drilled at the site (figs. 23 and 24). Two wells (N-1 and N-2) were constructed on the southeast bank of the canal about 4 ft from the edge of the water. One well (N-3) was drilled about 45 ft east-southeast, and one well (N-4) was drilled about 33 ft south-southeast of the wells adjacent to the canal. A stilling well was installed in the canal to monitor canal stage. Two wells (N-1 and N-4) and the canal gage were equipped with digital water-level recorders set to record at 1-hour intervals.

Aquifer characteristics at wells N-3 and N-4 were determined by slug tests (table 4). Wells N-1 and N-2 did not contain sufficient water for pumping and were screened above the water level, which prevented testing by slug injection. Transmissivity values determined were 0.59 ft^2/d for well N-3 and 0.29 ft^2/d for well N-4; corresponding hydraulic-conductivity values were 0.15 and 0.06 ft/d. Tests were analyzed by the methods of Cooper and others (1967) or Schafer (1980). The average hydraulic-conductivity values for each well site ranged from 0.06 to 0.15 ft/d (table 4); the average for the Niarada study site was 0.10 ft/d. Values obtained at the well sites are indicative of an aquifer composed of material ranging from fine sand to mixtures of sand, silt, and clay (U.S. Department of the Interior, 1977, p. 29).

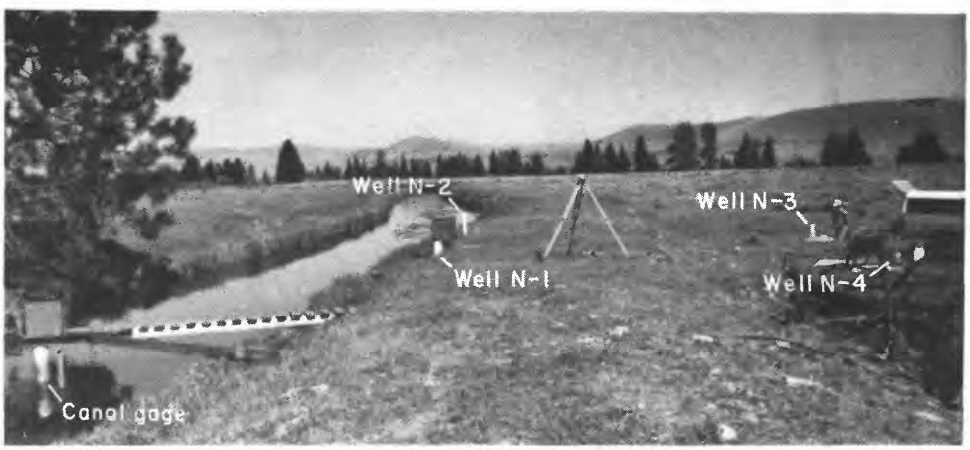


Figure 23.--Canal gage and monitoring wells at the Niarada site. View is northeast.

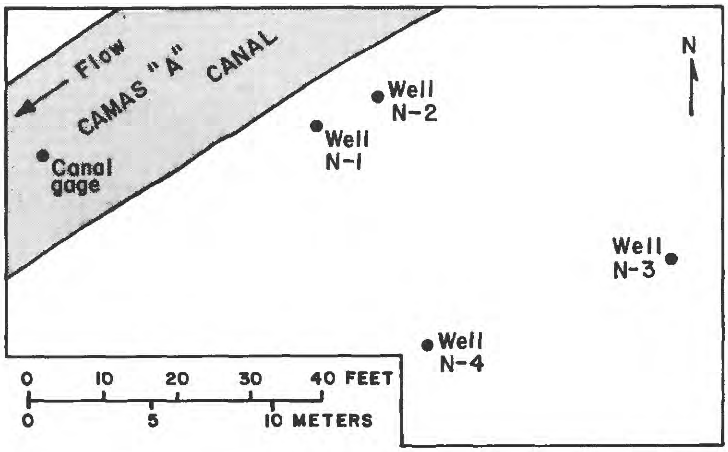


Figure 24.--Location of canal gage and monitoring wells at the Niarada site.

The water levels in wells (table 5) respond directly to flow in the canal (fig. 25). Water levels in most wells show a seasonal rise beginning in mid-February. Although the canal is shown in figure 25 as being dry for the period late October-early March, the canal had small intermittent flows, probably from local runoff, on February 2-4 and 22-28, 1987. Water conveyance for the irrigation season began on March 2. Although all wells responded to canal flow, the response is greatest in well N-3. The slow recovery from bailing of well N-4 implies that the screen in this well may have been partly plugged, although individual changes in canal stage are reflected in the water level in the well, which indicates an open screen.

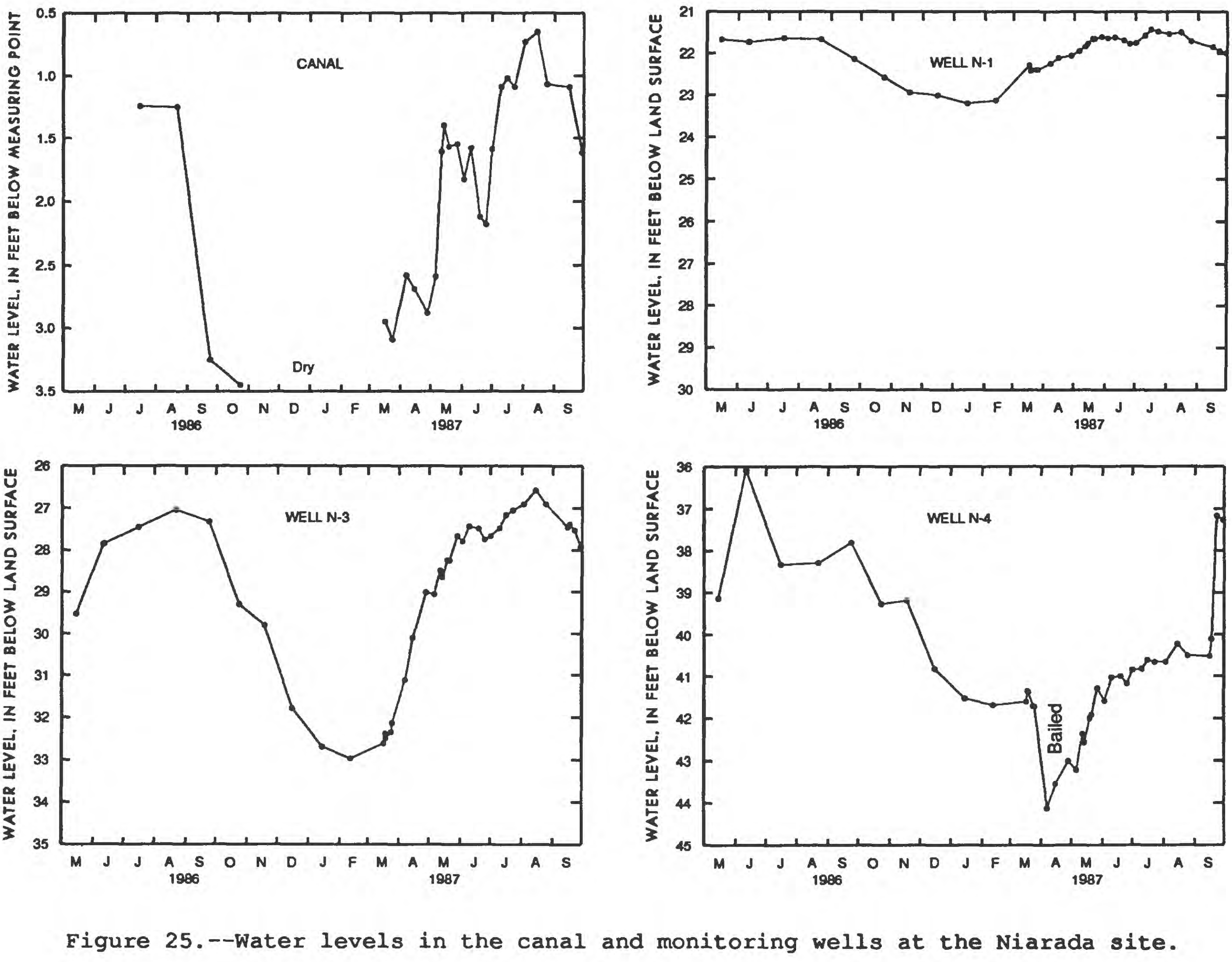


Figure 25.--Water levels in the canal and monitoring wells at the Niarada site.

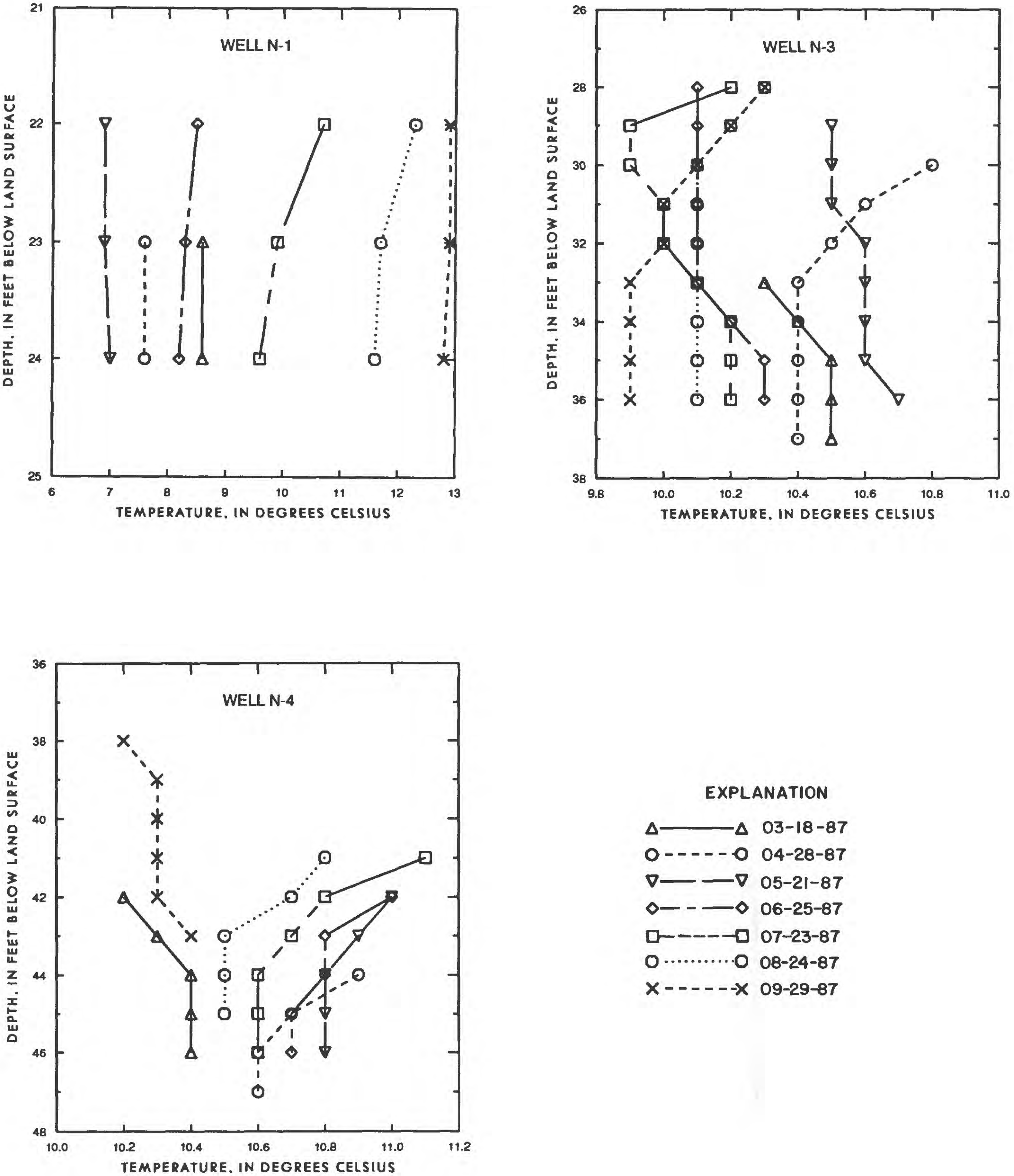


Figure 26.--Selected water-temperature profiles for monitoring wells at the Niarada site.

Twenty-four temperature profiles were measured in wells N-1 and N-4, 23 were measured in well N-3, and 13 single-point temperatures were measured in well N-2 between March 18 and September 29, 1987 (table 6). Temperatures in wells generally show a gradual increase near the water surface as the summer progressed (fig. 26). Temperature near the water surface in well N-4 indicated a cooling trend between July and September. The trend in the lower parts of the wells was less systematic. Water temperature in well N-1 generally cooled between March 18 and May 21, then increased until September 29. Temperature in well N-3 generally decreased between March 18 and May 12, increased between May 12 and May 14, and decreased through the rest of the season. Temperature in well N-4 generally increased between March 18 and May 27, then decreased through September 29. Water temperature in well N-1 tended to correspond to the trend in canal-water temperature (table 7), whereas temperature in wells N-3 and N-4 tended to have an opposite trend.

A leakage test was conducted using a seepage meter installed in the canal bed on September 22, 1987, about 2 ft downstream from the canal gage (fig. 27). Cobbles in the canal bed precluded finding a good location for meter installation. Consequently, the meter could be pressed only 0.2 ft into the canal bed. The first water-supply bag was attached at 1120 hours on September 22, 1987, and removed at 0730 hours on September 23. A water loss of 67 mL (0.0023 ft/d) was recorded for the intervening 20.17 hours. Problems encountered during the planned second and third periods prevented the collection of additional data. During the second period, a tubing clamp used to seal the bag opening during removal slipped, allowing water to enter the bag. Debris dislodged the meter during the third period, breaking the seal between the meter and the canal bed. Thus, on the basis of the results of the single test, the leakage rate for the Niarada study site was 0.0023 ft/d.

Figure 27.--Seepage meter installed at the Niarada site.

TOTAL IRRIGATION-CANAL LEAKAGE

To approximate total irrigation-canal leakage in the reservation, a map of the canal system was needed. Because such a map did not exist, the staff of the Water Management Office, Department of Natural Resources, Confederated Salish and Kootenai Tribes, agreed to map, field check, and digitize the entire canal system. Thus, a geographic information system coverage containing canal location, name, length, width, and depth was created. This coverage, in conjunction with a digitized coverage of the geology shown in figure 2, was used to determine the total area of canals overlying each geologic unit by summing computed areas for 2,479 individual canal segments.

Hydraulic-conductivity and leakage values for the five sites investigated during this study were used to determine an average leakage rate for canals overlying each geologic unit (table 1). No leakage rates were determined for canals overlying bedrock. Because the bedrock generally is less permeable than other geologic units in the area, a leakage value of 0.001 ft/d was assigned.

Leakage rates vary throughout the irrigation season. During initial use of a canal, leakage is greatest as the materials underlying the canal are first wetted. Freeze and Cherry (1979) indicate that initial infiltration rate is numerically equivalent to the saturated hydraulic conductivity of the materials. Swelling clays during saturation of subsurface materials and plugging of voids and dessication cracks, as well as siltation of the canal bed, result in a decline in leakage rates as the irrigation season progresses. Because seepage-meter measurements for this study were made late in the irrigation season, they probably are indicative of minimum leakage rates.

Table 1.--*Summary of total leakage*

[Abbreviations: acre-ft, acre-feet; acre-ft/d, acre-feet per day; ft, feet; ft/d, feet per day; ft^2, square feet. Symbol: --, not applicable or no data]

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
									Average total leakage	
Geologic unit (fig. 2)	Study site	Average hydraulic conductivity[1] at study site (ft/d)	Average hydraulic conductivity[2] of geologic unit (ft/d)	Average leakage rate at study site (ft/d)	Average leakage rate[3] of geologic unit (ft/d)	Average of hydraulic conductivity and leakage[4] (ft/d)	Canal length (ft)	Canal area (ft^2)	Daily[5] (acre-ft/d)	Irrigation season (acre-ft)
Alluvium (Qal)	Arlee	7.0	3.6	--	0.0023	1.8	442,300	4,586,000	190	29,000
	Niarada	.10		0.0023						
Glacial till (Qt)	Charlo	.21	.21	.0012	.0012	.11	2,657,000	33,480,000	85	13,000
Glaciolacustrine deposits (QTgl)	D'Aste	.11	.20	.0021	.0013	.10	1,885,000	16,970,000	39	6,000
	Lonepine	.28		.0005						
Bedrock (TpЄr)	--	--	--	--	[6].001	.001	93,950	1,223,000	.03	5
Total (rounded)	--	--	--	--	--	--	5,078,000	56,260,000	314	48,000

[1]Determined by averaging data in table 4 for each well site.
[2]Determined by averaging data in column 3 for each study site.
[3]Determined by averaging data in column 5 for each study site.
[4]Determined by averaging data in columns 4 and 6.
[5]Determined by multiplying data in columns 7 and 9, then dividing by 43,560 cubic feet per acre-foot.
[6]Estimated.

Using hydraulic-conductivity values determined from aquifer tests to represent maximum (early season) leakage rates and seepage-meter measurements to represent minimum (late season) leakage rates, average hydraulic-conductivity and leakage values identified in table 1 were used to approximate the total irrigation-canal leakage. Most primary canals in the reservation flow from 4 to 6 months per year. Application of the daily leakage rates for 5 months (153 days) would account for an estimated irrigation-season leakage of about 48,000 acre-feet. These values, however, reflect the assumptions that all canals are used continuously, that canal stage does not fluctuate, and that leakage rates decrease uniformly throughout the irrigation season. Additionally, these leakage rates are based on the average from five sites applied to 962 mi of mapped canals. Leakage rates on any given geologic unit are not areally uniform, as demonstrated by the approximately 4-fold difference between leakage rates at the D'Aste and Lonepine sites, both of which are located on glaciolacustrine deposits. Additional data sites to determine areal distribution and rate of decline of leakage rates, stage-width relations for the entire canal system, and records of stage throughout the irrigation season for all canals are needed for refinement of total-leakage values.

WATER QUALITY

Water samples were collected from selected monitoring wells prior to the 1987 irrigation season and from selected wells and the canals near the end of that irrigation season. The purpose of the collection was to detect any change in the quality of ground water as a result of leakage of water from the canal (table 9 at the back of the report). In general, only minor changes in ground-water quality were detected during the irrigation season. In many instances, the ground-water-quality change was opposite that which might be expected when comparing the surface-water and pre-irrigation season ground-water quality. Specifically, the value of a variable for the ground water would increase even though the value for the canal water was less than the initial concentration for the ground water, or the value of a variable for the ground water would decrease even though the value for the canal water was greater than the initial value for the ground water. This seemingly reverse trend most commonly occurred with the physical properties and major constituents of pH, hardness, calcium, magnesium, bicarbonate, sulfate, chloride, silica, and dissolved solids. Changes in concentration of trace elements in ground water generally followed the trend expected when compared to canal water quality. A reverse trend was most common for boron, strontium, and titanium.

SUMMARY AND CONCLUSIONS

The Flathead Indian Reservation is extensively irrigated, primarily in the Mission, Jocko River, and Little Bitterroot River valleys. Most irrigation canals are unlined, and water losses by leakage are of concern.

The Flathead Indian Reservation, an area of about 1,950 mi^2 located approximately midway between Kalispell and Missoula, is characterized by isolated, alluvial-filled, structurally controlled valleys and basins separated by mountain ridges. The valleys of the reservation are underlain by one or more of three principal geologic terranes: Quaternary alluvium including terrace deposits, Quaternary glacial till, and Quaternary and Tertiary glaciolacustrine deposits.

The five sites selected for study--one in the Jocko River valley, two in the Mission Valley, and two in the Little Bitterroot River valley--are representative of the three principal geologic terranes. A canal gage and shallow wells for aquifer testing, monitoring of water-level changes, and monitoring water-temperature profiles were installed in lines parallel to the natural ground-water gradient and perpendicular to the canal at each site.

Two sites were selected to determine leakage rates of alluvium: the Arlee site, located on alluvial terrace deposits in the Jocko River valley about 3 mi east of Arlee, and the Niarada site, located on alluvial terrace deposits in the Little Bitterroot River valley about 3 mi west-southwest of Niarada. Six monitoring wells drilled at the Arlee site ranged in depth from 9.1 to 33.0 ft and four wells at the Niarada site ranged in depth from 12.0 to 49.0 ft. Hydraulic-conductivity values determined from slug tests ranged from 0.01 to 9.0 ft/d--0.01 to 9.0 ft/d from four wells at the Arlee site, and 0.06 to 0.15 ft/d from two wells at the Niarada site. A constant-discharge test of one well at the Arlee site indicated hydraulic-conductivity values of 10 and 11 ft/d. Water-level fluctuations in monitoring wells at both sites indicated direct response to flow in the canal. Reaction of the water level in wells to introduction of water into the canal at the Arlee site was rapid--1 to 3 hours in a well about 2 ft from the edge of water in the canal; the pre-rise water level was 33.13 ft below land surface. Temperature in most wells gradually increased throughout the summer, with the change generally being largest near the water surface. Temperature in the lower parts of some wells at the Niarada site decreased during the summer, a trend opposite that of the canal water temperature. A sodium-bromide tracer solution injected into the canal bed at the Arlee site was detected in the nearest well, which was about 5 ft distant and screened from 28 to 33 ft below land surface, 4 hours after injection began. Ground-water-flow velocities determined from the tracer test ranged from 32 to 60 ft/d and averaged 35 ft/d, not including the maximum value of 60 ft/d, which is a nearly vertical velocity and not representative of normal ground-water flow. Hydraulic-conductivity values computed from tracer-test data ranged from 12 to 14 ft/d. A leakage rate of 0.0023 ft/d was measured at the Niarada site.

The Charlo site, which was located on a glacial moraine in the Mission Valley about 2.5 mi northwest of Charlo, was selected to determine leakage rates of glacial till. Seven monitoring wells ranging in depth from 11.0 to 43.5 ft were drilled at the site. Hydraulic-conductivity values determined by slug tests ranged from 0.002 to 0.80 ft/d. The response of water levels in monitoring wells to fluctuation of canal stage reflects the variation of hydraulic conductivity. In areas of larger hydraulic conductivity, water levels in wells generally exhibited a direct response to canal-stage fluctuation, whereas in an area of smaller hydraulic conductivity, the water levels changed more gradually. Temperature profiles in wells indicate that ambient air temperature is the primary cause of increased ground-water temperature. Direct measurements by use of a seepage meter pressed into the canal bed indicated leakage rates ranging from 0.0010 to 0.0013 ft/d.

Two sites were selected to determine leakage rates of glaciolacustrine deposits that formed in glacial Lake Missoula: the D'Aste site, in the Mission Valley about 4 mi south of Charlo near the former settlement of D'Aste, and the Lonepine site in the Little Bitterroot River valley about 2 mi west of Lonepine. Five monitoring wells installed at the D'Aste site ranged in depth from 18.0 to 54.0 feet, and five wells drilled at the Lonepine site ranged in depth from 10.0 to 18.5 ft. Hydraulic-conductivity values determined by slug tests ranged from 0.004 to 0.75 ft/d--0.004 to 0.75 ft/d at the D'Aste site and 0.05 to 0.64 ft/d at the Lonepine site. Most wells at the Lonepine site are completed to hard, fractured material, probably bedrock; the larger hydraulic-conductivity values for these wells may be affected by hydraulic characteristics of the fractures and may not represent the silt and clay that directly underlie the site. The water levels in most wells respond to changes in canal stage; however, not all rises at the Lonepine site can be correlated with flow in the canal. Water temperature in monitoring wells generally increased from the water surface downward as the summer progressed, indicating that the primary cause was the increase in temperature at land surface. Increasing temperatures in the lower parts of wells at the Lonepine site may be evidence of inflowing water, but the source is uncertain. Tests at both sites using a seepage meter indicated leakage rates of 0.0002 to 0.0025 ft/d.

Leakage from the entire canal system in the reservation was computed using digitized coverages of the canal system and geology. Most primary canals in the reservation flow from 4 to 6 months per year. Thus, application of the daily leakage rates for each geologic unit throughout the reservation would account for an estimated total irrigation-season leakage of about 48,000 acre-ft. Values determined for each geologic unit and total leakage computation are as follows:

Geologic unit (fig. 2)	Canal area (ft^2)	Average of hydraulic conductivity and leakage (ft/d)	Average total leakage: Daily (acre-ft/d)	Average total leakage: Irrigation season (acre-ft)
Alluvium (Qal)	4,586,000	1.8	190	29,000
Glacial till (Qt)	33,480,000	.11	85	13,000
Glaciolacustrine deposits (QTgl)	16,970,000	.10	39	6,000
Bedrock (Tp€r)	1,223,000	.001	.03	5
Total (rounded)	56,260,000	--	314	48,000

Water samples were collected from wells at the beginning of the irrigation season and from the canal and wells at the end of the season. Only minor changes in ground-water quality were detected during the irrigation season.

SELECTED REFERENCES

Alden, W.C., 1953, Physiography and glacial geology of western Montana and adjacent areas: U.S. Geological Survey Professional Paper 231, 200 p.

Boettcher, A.J., 1982, Ground-water resources in the central part of the Flathead Indian Reservation, Montana: Montana Bureau of Mines and Geology Memoir 48, 28 p.

Bouwer, Herman, and Rice, R.C., 1976, A slug test for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells: Water Resources Research, v. 12, no. 3, p. 423-428.

Bredehoeft, J.D., and Papadopulos, I.S., 1965, Rates of vertical groundwater movement estimated from the Earth's thermal profile: Water Resources Research, v. 1, no. 2, p. 325-328.

Carr, M.R., and Winter, T.C., 1980, An annotated bibliography of devices developed for direct measurement of seepage: U.S. Geological Survey Open-File Report 80-344, 38 p.

Cooper, H.H., Bredehoeft, J.D., and Papadopulos, I.S., 1967, Response of a finite-diameter well to an instantaneous charge of water: Water Resources Research, v. 3, no. 1, p. 263-269.

Curry, R.R., Lister, J.C., and Stoffel, Keith, 1977, Glacial history of Flathead Valley and Lake Missoula floods, *in* Glacial geology of Flathead Valley and catastrophic drainage of glacial Lake Missoula: Rocky Mountain Section, Geological Society of America 30th Annual Meeting Field Guide No. 4, p. 14-38.

Davis, S.N., Campbell, D.J., Bentley, H.W., and Flynn, T.J., 1985, Ground-water tracers: Worthington, Ohio, National Water Well Association, 200 p.

Donovan, J.J., 1985, Hydrogeology and geothermal resources of the Little Bitterroot valley, northwestern Montana: Montana Bureau of Mines and Geology Memoir 58, 60 p.

Federal Water Pollution Control Administration, 1968, Water quality criteria: Washington, D.C., Report of the National Technical Advisory Committee to the Secretary of the Interior, 234 p.

Ferris, J.G., and Knowles, D.B., 1963, The slug injection test for estimating the coefficient of transmissibility of an aquifer, *in* Bentall, Ray, compiler, Methods of determining permeability, transmissibility, and drawdown: U.S. Geological Survey Water-Supply Paper 1536-I, p. 299-304.

Ferris, J.G., Knowles, D.B., Brown, R.H., and Stallman, R.W., 1962, Theory of aquifer tests: U.S. Geological Survey Water-Supply Paper 1536-E, p. 69-174.

Freeze, R.A., and Cherry, J.A., 1979, Groundwater: Englewood Cliffs, N.J., Prentice-Hall, Inc., 604 p.

Garklavs, George, and Toler, L.G., 1985, Measurement of ground-water velocity using Rhodamine WT dye near Sheffield, Illinois: U.S. Geological Survey Open-File Report 84-856, 14 p.

Harrison, J.E., and Campbell, A.B., 1963, Correlations and problems in Belt Series stratigraphy, northern Idaho and western Montana: Geological Society of America Bulletin, v. 74, p. 1413-1428.

Harrison, J.E., Griggs, A.B., and Wells, J.D., 1981, Generalized geologic map of the Wallace 1° x 2° quadrangle, Montana and Idaho: U.S. Geological Survey Miscellaneous Field Studies Map MF-1354A, scale 1:250,000, 1 sheet.

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

Hobbs, S.W., ed., 1984, The Belt--Abstracts with summaries, Belt symposium II, 1983: Montana Bureau of Mines and Geology Special Publication 90, 117 p.

Jacob, C.E., 1950, Flow of ground water, chapter 5, *in* Rouse, Hunter, Engineering hydraulics: New York, John Wiley and Sons, p. 321-386.

______1963, The recovery method for determining the coefficient of transmissibility, *in* Bentall, Ray, compiler, Methods of determining permeability, transmissibility, and drawdown: U.S. Geological Survey Water-Supply Paper 1536-I, p. 283-292.

Johnson, A.I., 1967, Specific yield--Compilation of specific yields for various materials: U.S. Geological Survey Water-Supply Paper 1662-D, 74 p.

Keys, W.S., and Brown, R.F., 1978, The use of temperature logs to trace the movement of injected water: Ground Water, v. 16, no. 1, p. 32-48.

Kleinkopf, M.D., Harrison, J.E., and Zartman, R.E., 1972, Aeromagnetic and geologic map of part of northwestern Montana and northern Idaho: U.S. Geological Survey Geophysical Investigations Map GP-830, scale 1:250,000, 1 sheet, accompanied by 5-page text.

Levings, G.W., and White, M.K., 1983, Selected annotated bibliography of ground-water resources, records of wells and springs, and availability of streamflow data on Indian reservations in Montana: U.S. Geological Survey Open-File Report 83-129, 137 p.

Lohman, S.W., 1972, Ground-water hydraulics: U.S. Geological Survey Professional Paper 708, 70 p.

Lohman, S.W., and others, 1972, Definitions of selected ground-water terms--Revisions and conceptual refinements: U.S. Geological Survey Water-Supply Paper 1988, 21 p.

McKee, J.E., and Wolf, H.W., 1971, Water quality criteria (2d ed): California State Water Quality Control Board Publication 3-A, 548 p.

Meinzer, O.E., 1917, Artesian water for irrigation in the Little Bitterroot valley, Montana: U.S. Geological Survey Water-Supply Paper 400-B, p. 9-37.

Morrison-Maierle, Inc., 1974, An engineering evaluation, Flathead Irrigation Project: Helena, Mont., 2 volumes, various pagination.

Nobles, L.H., 1952, Glacial geology of the Mission Valley, western Montana: Cambridge, Mass., Harvard University, Ph.D. dissertation, 123 p.

Obradovich, J.D., and Peterman, Z.E., 1968, Geochronology of the Belt Series, Montana: Canadian Journal of Earth Sciences, v. 5, p. 737-747.

Rainwater, K.A., Wise, W.R., and Charbeneau, R.J., 1987, Parameter estimation through groundwater tracer tests: Water Resources Research, v. 23, no. 10, p. 1901-1910.

Ross, C.P., 1963, The Belt Series in Montana: U.S. Geological Survey Professional Paper 346, 122 p.

Ross, C.P., Andrews, D.A., and Witkind, I.J., 1955, Geologic map of Montana: U.S. Geological Survey, scale 1:500,000, 2 sheets.

Schafer, D.C., 1980, Pumping test analyses for low yield formations: Johnson Drillers Journal, v. 52, no. 6, p. 2-4.

Sholes, B.C., 1984, Bibliography of geologic mapping in Montana, Wallace 1° x 2° quadrangle: Montana Bureau of Mines and Geology Open-File Report MBMG 121, 3 p.

Slagle, S.E., 1988, Geohydrology of the Flathead Indian Reservation, northwestern Montana: U.S. Geological Survey Water-Resources Investigations Report 88-4142, 152 p.

U.S. Department of Agriculture, 1974, Irrigation guide for Montana: Bozeman, Mont., Soil Conservation Service, 176 p.

U.S. Department of the Interior, 1977, Ground water manual: Washington, D.C., Bureau of Reclamation, 480 p.

U.S Environmental Protection Agency, 1991a, Maximum contaminant levels (subpart B of part 141, National primary drinking-water regulations): U.S. Code of Federal Regulations, Title 40, Parts 100 to 149, revised as of July 1, 1991, p. 585-588.

_____1991b, Secondary maximum contaminant levels (section 143.3 of part 143, National secondary drinking-water regulations): U.S. Code of Federal Regulations, Title 40, Parts 100 to 149, revised as of July 1, 1991, p. 759.

Wright, H.E., Jr., and Frey, D.G., eds., 1965, The Quaternary of the United States: Princeton, N.J., Princeton University Press, 922 p.

Wunder, Laura, 1974, Water use, surface water, and water rights on the Flathead Indian Reservation, Montana, a review: Missoula, University of Montana, M.S. thesis, 250 p.

SUPPLEMENTAL DATA

Table 2.--*Records of monitoring wells*

[Local number--geographic location system described in text]

		Datum is land surface				
Well number	Local number	Depth drilled (feet)	Depth *of* well (feet)	Top *of* screened interval (feet)	Bottom of screened interval (feet)	Diameter of casing (inches)
<u>ARLEE SITE</u>						
A-1	16N19W08DCAA01	15.0	15.0	13.0	15.0	2
A-2	16N19W08DCAA02	12.5	9.1	7.1	9.1	2
A-3	16N19W08DCAA03	30.0	24.0	21.0	24.0	2
A-4	16N19W08DCAA04	18.0	17.6	15.6	17.6	2
A-5	16N19W08DCAA05	18.0	18.0	15.0	18.0	2
A-6	16N19W08DCAA06	33.0	33.0	28.0	33.0	2
<u>CHARLO SITE</u>						
C-1	20N21W25CDBD01	40.0	40.0	35.0	40.0	2
C-2	20N21W25CDBD02	28.0	28.0	22.0	26.0	4
C-3	20N21W25CDBD03	43.5	43.5	34.5	38.5	2
C-4	20N21W25CDBD04	18.5	18.5	11.0	16.0	4
C-5	20N21W25CDBD05	19.0	19.0	13.0	16.0	4
C-6	20N21W25CDBD06	11.0	11.0	7.0	11.0	4
C-7	20N21W25CDBD07	43.0	43.0	36.0	43.0	4
<u>D'ASTE SITE</u>						
D-1	19N20W30BABC01	53.5	53.5	49.5	53.5	4
D-2	19N20W30BABC02	54.0	54.0	46.0	50.0	2
D-3	19N20W30BABC03	29.0	29.0	23.0	27.0	4
D-4	19N20W30BABC04	18.5	18.0	13.5	17.5	2
D-5	19N20W30BABC05	24.0	24.0	15.0	20.0	4
<u>LONEPINE SITE</u>						
L-1	22N24W04ABBA01	17.0	17.0	14.0	17.0	4
L-2	22N24W04ABBA02	14.2	14.0	11.4	14.0	2
L-3	22N24W04ABBA03	18.5	18.5	15.5	18.5	4
L-4	22N24W04ABBA04	18.0	18.0	15.5	18.0	4
L-5	22N24W04ABBA05	10.0	10.0	8.4	10.0	4
<u>NIARADA SITE</u>						
N-1	24N24W27CDCA01	29.0	29.0	20.0	24.0	2
N-2	24N24W27CDCA02	12.0	12.0	7.0	12.0	2
N-3	24N24W27CDCA03	39.0	39.0	35.0	39.0	2
N-4	24N24W27CDCA04	49.0	49.0	42.0	47.0	2

Table 3.--*Lithologic logs of monitoring wells*

[Abbreviations: ft, feet; in., inches]

Lithology	Thick-ness (ft)	Depth below land sur-face (ft)
ARLEE SITE		
Well A-1		
Cobbles and boulders; contains gravel and silt	15	15
Well A-2		
Cobbles, gravel, and silt, dark-brown	8.5	8.5
Siltstone and clay, grayish-red	4	12.5
Well A-3		
Silt, dark-brown	2	2
Gravel, cobbles, silt, and clay, dark-brown	16	18
Siltstone, grayish-red; drills hard	12	30
Well A-4		
Silt, dark-brown	1	1
Gravel, cobbles, silt, and clay, dark-brown	17	18
Well A-5		
Silt, dark-brown	1	1
Cobbles, gravel, and silt, brown	16	17
Siltstone, grayish-red	1	18
Well A-6		
Cobbles, gravel, and silt, reddish-brown; contains some clay	33	33
CHARLO SITE		
Well C-1		
Silt, very dark brown	3	3
Clay, reddish-brown; drills hard	4.5	7.5
Sand, very fine, silty, dark-tan; contains gravel to 0.5 in. diameter	1.5	9
Clay, sticky, tan; contains gravel at 14 to 15 ft, 16 to 17 ft, and 21 to 23 ft; drills hard	28	37
Gravel and coarse sand, contains clay	3	40
Well C-2		
Silt, very dark brown	3	3
Clay, reddish-brown; drills hard	4.5	7.5
Sand, very fine, silty, dark-tan; contains small gravel	1.5	9
Clay, sticky, tan; contains gravel and coarse sand at 12 to 13 ft, 15 to 18 ft, and 20 to 28 ft; drills hard	19	28
Well C-3		
Silt, dark-brown	2	2
Clay, silty, reddish-brown	4	6
Sand, very fine, clayey, grayish-brown	1	7
Clay, tan; contains gravel	1	8
Clay, tan; drills hard	2	10
Clay, tan; contains gravel	2	12
Clay, tan; drills hard	1	13
Clay, tan; contains gravel	2	15
Clay, tan; drills hard	2	17
Clay, tan; contains gravel	.5	17.5
Clay, tan; drills hard	4.5	22
Clay, tan; contains gravel	1	23
Clay, tan; contains 3 in. gravel stringers at 36, 38, and 42 ft; drills hard	20.5	43.5
Well C-4		
Silt, dark-brown	2	2

Lithology	Thickness (ft)	Depth below land surface (ft)
<u>CHARLO SITE</u>--Continued		
<u>Well C-4</u>--Continued		
Clay, silty, reddish-brown	4	6
Sand, very fine, clayey, grayish-brown	1	7
Clay, tan; contains gravel	1	8
Clay, tan; drills hard	1.5	9.5
Clay, tan; contains gravel	.5	10
Clay, tan; drills hard	3	13
Clay, tan; contains gravel	2	15
Clay, tan; drills hard	2	17
Clay, tan; contains gravel	.5	17.5
Clay, tan; drills hard	1	18.5
<u>Well C-5</u>		
Silt, dark-brown	2	2
Clay, silty, reddish-brown	4	6
Sand, very fine, brown; contains some gravel	2	8
Clay, tan; contains coarse sand and gravel	4	12
Clay, tan; drills hard	1	13
Gravel and coarse sand; contains clay.	2	15
Clay, tan; drills hard	2	17
Clay, tan; contains gravel	2	19
<u>Well C-6</u>		
Silt, dark-brown	2	2
Clay, silty, reddish-brown	4	6
Sand, fine, silty, grayish-brown; contains some gravel	2	8
Sand, coarse, and gravel, tan; contains some clay.	3	11
<u>Well C-7</u>		
Silt, dark-brown; contains some cobbles.	3	3
Clay, reddish-brown; drills hard	5	8
Sand, very fine, silty, tan; contains gravel	1.5	9.5
Clay, sticky, tan; drills hard; contains gravel stringers between 12 and 13 ft, 16 and 17 ft, 18 and 19 ft, 21 and 22 ft, 23 and 24 ft, and 37 and 38 ft.	33.5	43
<u>D'ASTE SITE</u>		
<u>Well D-1</u>		
Clay, dark-brown; contains imbedded angular argellite gravel and cobbles	6	6
Clay, silty, dark-tan; contains imbedded 0.25 in. argillite gravel	9	15
Silt, very clayey, dark-tan; contains imbedded argillite gravel as much as 0.5 in. diameter	20	35
Clay, silty, medium-tan; contains some coarse sand and gravel as much as 0.25 in. diameter	8	43
Clay, silty, medium-tan; contains much gravel as much as 0.4 in. diameter.	10.5	53.5
<u>Well D-2</u>		
Silt, reddish-brown.	2	2
Silt, clayey, medium-brown; contains some imbedded small gravel.	1	3
Clay, reddish-brown; contains some imbedded gravel as much as 0.25 in. diameter and a few cobbles.	12	15
Clay, very silty, medium-tan; contains imbedded gravel as much as 0.4 in. diameter	7	22
Silt, very clayey, tan; contains imbedded gravel as much as 0.4 in. diameter; drills hard	4	26
Silt, soft, tan; contains some clay and imbedded coarse sand	6	32
Clay, very plastic, tan; contains several stringers of imbedded gravel; drills hard.	22	54
<u>Well D-3</u>		
Silt, reddish-brown.	2	2
Silt, clayey, medium-brown; contains some imbedded small gravel.	2	4
Clay, reddish-brown; contains some imbedded gravel as much as 0.25 in. diameter and a few cobbles.	9	13
Clay, very silty, medium-tan; contains imbedded gravel as much as 0.4 in. diameter	8	21
Silt, very clayey, tan; contains imbedded gravel as much as 0.4 in diameter.	2	23

Table 3.--*Lithologic logs of monitoring wells*--Continued

Lithology	Thickness (ft)	Depth below land surface (ft)
D'ASTE SITE--Continued		
Well D-3--Continued		
Silt, soft, tan; contains some clay and imbedded coarse sand	6	29
Well D-4		
Clay, reddish-brown	9	9
Clay, silty, medium-tan; contains gravel from 15 to 17 ft	8	17
Clay, tan; drills hard	1.5	18.5
Well D-5		
Clay, dark-brown	7	7
Clay, dark-tan	9	16
Clay, tan; contains gravel	3	19
Clay, reddish-brown; contains a little imbedded gravel	5	24
LONEPINE SITE		
Well L-1		
Silt, very dark brown	2	2
Silt, clayey, medium-brown	1	3
Silt, clayey, tan	2	5
Clay, tan	8.5	13.5
Clay; contains rounded cobbles as large as 2 in. diameter	1.5	15
Bedrock(?), very hard; no returns	2	17
Well L-2		
Silt, very dark brown	2	2
Silt, clayey, brown	1	3
Silt, clayey, tan	2	5
Clay, tan	9	14
Bedrock(?), very hard; no returns	.2	14.2
Well L-3		
Silt, very dark brown	2	2
Silt, slightly clayey, medium-tan	2	4
Clay, slightly silty, tan	13.5	17.5
Clay and silt; contains gravel and cobbles; drills hard	1	18.5
Bedrock(?), very hard; no returns	0	18.5
Well L-4		
Silt, brown	2	2
Silt, medium-tan	1.5	3.5
Silt, clayey, tan	1.5	5
Clay, tan; drills hard	12	17
Weathered bedrock(?); drills hard; no returns	1	18
Bedrock(?), very hard; no returns	0	18
Well L-5		
Silt, brown	2	2
Silt, medium-tan	1.5	3.5
Silt, clayey, tan	1.5	5
Clay, tan	5	10
NIARADA SITE		
Well N-1		
Silt, brown; contains many rounded cobbles as much as 2 in. diameter	2	2
Silt, soft, dark-brown	3	5
Silt, dark-brown; contains numerous rounded cobbles as much as 2 in. diameter	2	7
Silt, very sandy, tan	5	12
Cobbles and silt(?); drills rough; no returns	5.5	17.5

Lithology	Thick-ness (ft)	Depth below land sur-face (ft)
NIARADA SITE--Continued		
Well N-1--Continued		
Sand(?), some cobbles; drills smooth; no returns	2.5	20
Cobbles and silt(?); drills rough; no returns	4	24
Clay(?); drills smooth; no returns	5	29
Well N-2		
Silt, dark-brown; contains many cobbles	7	7
Silt, very sandy, tan	3	10
Cobbles and fine to medium sand	2	12
Well N-3		
Silt, very dark brown	1	1
Silt, reddish-brown	2	3
Silt, dark-tan	2	5
Sand, fine, very silty, grayish-brown; contains gravel and cobbles	14.5	19.5
Silt, slightly clayey, tan; contains a little sand	10.5	30
Sand, fine, silty, tan	9	39
Well N-4		
Silt, very dark brown	2	2
Silt, reddish-brown	2	4
Silt, slightly clayey, dark-tan	1	5
Silt, brown; contains gravel and cobbles	1.5	6.5
Sand, fine, very silty, medium-brown	1	7.5
Sand, very silty, grayish-brown; contains gravel and cobbles	8.5	16
Sand, fine to medium, silty, clayey, grayish-brown	1	17
Sand, fine to coarse, silty, clayey, grayish-brown; contains gravel	11	28
Silt, tan; contains some sand; drills slow	2	30
Sand, fine to medium-fine, silty, tan; contains gravel as much as 0.5 in. diameter	19	49

Table 4.--*Summary of aquifer tests and tracer test*

[Type of test: A, aquifer; T, tracer. Abbreviations: ft, feet; ft/d, feet per day; ft^2/d, feet squared per day. --, not applicable]

Well number	Date of test	Type of test	Method of analysis	Transmissivity (ft^2/d)	Length of screened interval (ft)	Approximate hydraulic conductivity (ft/d)	Average hydraulic conductivity at each well site (ft/d)
ARLEE SITE							
A-3	07-28-87	T	--	--	3.0	12	4.0
	09-17-87	A	Cooper and others (1967)	0.04	3.0	.01	
	09-24-87	A	Schafer (1980)	.04	3.0	.01	
A-4	07-28-87	T	--	--	2.0	13	7.2
	09-17-87	A	Cooper and others (1967)	16	2.0	8.0	
	09-17-87	A	Schafer (1980)	1.4	2.0	.70	
A-5	07-28-87	T	--	--	3.0	14	8.5
	09-16-87	A	Cooper and others (1967)	27	3.0	9.0	
	09-16-87	A	Schafer (1980)	7.8	3.0	2.6	
A-6	09-17-87	A	Cooper and others (1967)	19	5.0	3.8	8.3
	09-24-87	A	Jacob (1950)	50	5.0	10	
	09-24-87	A	Jacob (1963)	55	5.0	11	
CHARLO SITE							
C-2	09-03-87	A	Cooper and others (1967)	1.8	4.0	.45	.45
C-3	09-03-87	A	Cooper and others (1967)	.02	4.0	.005	.005
	09-03-87	A	Schafer (1980)	.02	4.0	.005	
C-4	09-03-87	A	Cooper and others (1967)	.02	5.0	.004	.003
	09-03-87	A	Schafer (1980)	.01	5.0	.002	
C-5	09-03-87	A	Cooper and others (1967)	1.1	3.0	.36	.22
	09-03-87	A	Schafer (1980)	.20	3.0	.07	
C-6	09-03-87	A	Cooper and others (1967)	3.2	4.0	.80	.42
	09-03-87	A	Schafer (1980)	.19	4.0	.05	
C-7	09-03-87	A	Cooper and others (1967)	2.1	7.0	.30	.18
	09-03-87	A	Schafer (1980)	.44	7.0	.06	
D'ASTE SITE							
D-1	09-10-87	A	Cooper and others (1967)	.19	4.0	.05	.05
D-3	09-09-87	A	Cooper and others (1967)	.30	4.0	.75	.38
	09-09-87	A	Schafer (1980)	.07	4.0	.02	
D-4	09-09-87	A	Cooper and others (1967)	.03	4.0	.008	.008
D-5	09-10-87	A	Schafer (1980)	.02	5.0	.004	.004
LONEPINE SITE							
L-1	09-16-87	A	Cooper and others (1967)	1.5	3.0	.50	.32
	09-16-87	A	Ferris and Knowles (1963)	.45	3.0	.15	
L-2	09-15-87	A	Cooper and others (1967)	.71	2.6	.27	.22
	09-15-87	A	Schafer (1980)	.43	2.6	.17	
L-3	09-16-87	A	Schafer (1980)	.63	3.0	.21	.21
L-4	09-15-87	A	Ferris and Knowles (1963)	1.3	2.5	.52	.58
	09-15-87	A	Schafer (1980)	1.6	2.5	.64	
L-5	09-15-87	A	Schafer (1980)	.08	1.6	.05	.05
NIARADA SITE							
N-3	09-23-87	A	Schafer (1980)	.59	4.0	.15	.15
N-4	09-23-87	A	Cooper and others (1967)	.29	5.0	.06	.06

Table 5.--*Water levels in canals and monitoring wells*

[Water level--in feet below measuring point or in feet below or above (+) land surface. MS, conditions of measurement. First column (M) is method of measurement--R, digital recorder; S, steel tape; Z, other. Second column (S) is site status--D, dry; O, obstruction; R, recently pumped; X, surface water effects; Z, other. Symbol: --, no data or not applicable]

ARLEE SITE

Canal

WATER LEVEL, IN FEET BELOW MEASURING POINT

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
AUG 22, 1986	2.00	S	APR 15, 1987	--	D	MAY 19, 1987	1.78	S	JUL 16, 1987	1.93	S
OCT 23	2.16	S	22	1.99	S	28	1.81	S	24	2.05	S
NOV 18	--	D	28	1.91	S	JUN 02	1.86	S	27	2.16	S
DEC 17	--	D	MAY 05	1.79	S	09	1.87	S	AUG 15	2.15	S
JAN 14, 1987	--	D	07	1.82	Z	16	1.92	S	24	2.19	S
FEB 13	--	D	11	1.79	Z	24	1.92	S	SEP 14	2.37	S
MAR 16	--	D	13	1.77	S	30	2.00	S	24	2.38	S
APR 06	--	D	14	1.78	S	JUL 09	1.98	S	28	2.38	S

HIGHEST 1.77 MAY 13, 1987
LOWEST 2.38 SEP 24, 1987 SEP 28, 1987

Well A-1

WATER LEVEL, IN FEET BELOW LAND SURFACE

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUL 30, 1986	--	SD	APR 22, 1987	--	SD	MAY 21, 1987	10.72	SX	JUL 24, 1987	10.72	SX
AUG 22	--	SD	28	--	SD	28	10.70	SX	27	10.71	SX
SEP 23	--	SD	29	--	SD	JUN 02	10.72	SX	AUG 15	10.68	SX
OCT 23	--	SD	MAY 05	--	SD	09	10.69	SX	24	11.64	SX
OCT 23	--	SD	07	--	SD	16	10.70	SX	SEP 14	11.64	SX
FEB 13, 1987	--	SD	11	--	SD	24	10.71	SX	28	11.63	SX
MAR 16	--	SD	13	--	SD	30	10.74	SX			
APR 06	--	SD	14	--	SD	JUL 09	10.72	SX			
15	--	SD	19	--	SD	16	10.77	SX			

HIGHEST 10.68 AUG 15, 1987
LOWEST 11.64 AUG 24, 1987 SEP 14, 1987

Well A-2

WATER LEVEL, IN FEET BELOW LAND SURFACE

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUL 30, 1986	--	SD	APR 17, 1987	--	SD	MAY 07, 1987	--	SD	JUN 30, 1987	--	SD
AUG 22	--	SD	21	--	SD	11	--	SD	JUL 09	--	SD
SEP 23	--	SD	22	--	SD	12	--	SD	16	--	SD
OCT 23	--	SD	22	--	SD	14	--	SD	24	--	SD
NOV 18	--	SD	23	--	SD	19	--	SD	27	--	SD
DEC 17	--	SD	24	--	SD	21	--	SD	AUG 15	--	SD
JAN 14, 1987	--	SD	28	--	SD	28	--	SD	24	--	SD
FEB 13	--	SD	29	--	SD	JUN 02	--	SD	SEP 14	--	SD
MAR 16	--	SD	MAY 05	--	SD	09	--	SD	28	--	SD
APR 15	--	SD	05	--	SD	16	--	SD			
15	--	SD	06	--	SD	24	--	SD			

Well A-3

WATER LEVEL, IN FEET BELOW LAND SURFACE

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
AUG 21, 1986	13.91	SX	APR 15, 1987	--	SD	MAY 21, 1987	11.43	SX	JUL 16, 1987	12.98	SX
SEP 23	16.09	SX	22	23.94	RX	22	11.54	SX	24	13.36	SX
OCT 23	13.31	SX	28	10.06	SX	28	11.80	SX	27	13.32	SX
NOV 18	21.29	SX	29	10.10	SX	JUN 02	12.15	SX	AUG 03	13.37	SX
DEC 17	--	SD	MAY 05	10.94	SX	09	12.29	SX	15	13.01	SX
JAN 14, 1987	--	SD	07	10.63	SX	16	12.45	SX	24	13.59	SX
FEB 13	--	SD	11	10.66	SX	24	12.75	SX	SEP 14	14.36	SX
MAR 16	--	SD	13	10.78	SX	30	12.68	SX	24	22.24	SX
APR 06	--	SD	14	10.86	SX	JUL 09	12.90	SX	28	22.16	SX
			19	11.22	SX						

HIGHEST 10.06 APR 28, 1987
LOWEST 22.24 SEP 24, 1987

Well A-4

WATER LEVEL, IN FEET BELOW LAND SURFACE

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
AUG 22, 1986	13.97	SX	APR 21, 1987	17.50	SX	MAY 13, 1987	10.89	SX	JUL 09, 1987	12.98	SX
SEP 23	14.68	SX	22	17.54	SX	14	10.97	SX	16	13.08	SX
OCT 23	13.38	SX	22	17.58	SX	15	10.96	SX	24	13.46	SX
NOV 18	16.16	SX	23	13.69	SX	19	11.32	SX	27	13.52	SX
DEC 17	--	SD	24	11.78	SX	21	11.53	SX	AUG 15	13.23	SX
JAN 14, 1987	--	SD	27	10.30	SX	22	11.64	SX	24	13.70	SX
FEB 13	--	SD	28	10.28	SX	28	11.91	SX	SEP 14	14.51	SX
MAR 16	--	SD	29	10.32	SX	JUN 02	12.27	SX	24	16.48	SX
APR 06	16.51	SX	MAY 05	6.85	SX	09	12.38	SX	28	16.49	SX
15	17.20	SX	05	11.07	SX	16	12.56	SX			
15	17.20	SX	07	10.78	SX	24	12.87	SX			
17	17.13	SX	11	10.79	SX	30	12.78	SX			

HIGHEST 6.85 MAY 05, 1987
LOWEST 17.58 APR 22, 1987

Well A-5

WATER LEVEL, IN FEET BELOW LAND SURFACE

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
AUG 22, 1986	14.43	SX	APR 17, 1987	18.23	SX	MAY 11, 1987	11.72	SX	JUN 24, 1987	13.68	SX
SEP 23	15.40	SX	21	18.23	SX	13	11.86	SX	30	13.62	SX
OCT 23	13.99	SX	22	18.22	SX	14	11.95	SX	JUL 09	13.73	SX
NOV 18	16.80	SX	23	12.59	SX	15	11.93	SX	16	13.77	SX
DEC 17	18.09	SX	24	11.94	SX	19	12.31	SX	24	14.07	SX
JAN 14, 1987	18.23	SX	27	10.11	SX	21	12.54	SX	27	14.01	SX
FEB 13	18.25	SX	28	10.91	SX	22	12.64	SX	AUG 15	13.81	SX
MAR 16	18.12	SX	29	11.03	SX	28	12.92	SX	24	14.14	SX
APR 06	18.20	SX	MAY 05	12.08	SX	JUN 02	13.33	SX	SEP 14	15.08	SX
15	18.20	SX	05	11.99	SX	09	13.36	SX	27	15.28	SX
			07	11.18	SX	16	13.47	SX	29	15.30	SX

HIGHEST 10.11 APR 27, 1987
LOWEST 18.25 FEB 13, 1987

Well A-6

WATER LEVEL, IN FEET BELOW LAND SURFACE

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
AUG 22, 1986	21.22	SX	APR 20, 1987	33.13	RX	MAY 22, 1987	20.14	SX	JUL 24, 1987	20.95	SX
SEP 23	21.25	SX	24	19.01	RX	28	20.10	SX	27	20.84	SX
OCT 23	21.42	SX	28	19.40	SX	JUN 02	20.41	SX	AUG 15	20.92	SX
NOV 18	31.30	SX	MAY 05	19.66	SX	09	20.33	SX	24	20.90	SX
DEC 17	32.68	SX	07	19.51	SX	16	20.51	SX	SEP 14	21.10	SX
JAN 14, 1987	32.99	SX	11	19.78	SX	24	20.61	SX	24	21.46	SX
FEB 13	33.12	SX	13	19.83	SX	30	20.58	SX	28	21.46	SX
MAR 16	32.97	SX	14	19.80	SX	JUL 09	20.65	SX			
APR 06	31.46	SX	19	20.03	SX	16	20.68	SX			
15	33.17	SX	21	20.14	SX						

HIGHEST 19.01 APR 24, 1987
LOWEST 33.17 APR 15, 1987

CHARLO SITE

Canal

WATER LEVEL, IN FEET BELOW MEASURING POINT

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUL 16, 1986	2.43	S	MAR 17, 1987	3.26	S	MAY 15, 1987	1.55	S	JUL 09, 1987	2.62	S
AUG 21	2.20	S	26	3.33	S	19	1.63	S	17	1.90	S
SEP 24	2.93	S	APR 08	3.37	S	28	2.60	S	23	--	D
OCT 23	3.33	S	14	3.31	S	JUN 02	--	D	AUG 02	--	D
NOV 19	--	O	29	3.28	S	09	--	D	15	2.25	S
DEC 17	--	O	MAY 06	3.21	S	18	--	D	25	--	D
JAN 15, 1987	--	O	11	2.02	S	24	2.06	S	SEP 28	3.39	S
FEB 12	--	O	13	1.59	S	30	2.02	S			

HIGHEST 1.55 MAY 15, 1987
LOWEST 3.39 SEP 28, 1987

Table 5.--*Water levels in canals and monitoring wells*--Continued

CHARLO SITE--Continued

Well C-2

WATER LEVEL, IN FEET BELOW LAND SURFACE

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAY 09, 1986	6.66	SX	JAN 15, 1987	8.52	SX	MAY 15, 1987	8.33	SX	JUL 17, 1987	8.66	SX
12	8.56	SX	FEB 12	8.63	SX	19	8.28	SX	23	8.62	SX
JUN 04	8.65	SX	MAR 17	8.27	SX	22	8.27	SX	AUG 02	8.59	SX
20	5.87	SX	26	8.05	SX	28	8.26	SX	15	8.64	SX
JUL 16	6.63	SX	APR 08	7.55	SX	JUN 02	8.31	SX	25	8.39	SX
AUG 21	6.53	SX	14	7.56	SX	09	8.42	SX	SEP 02	8.35	SX
SEP 24	5.98	SX	29	7.91	SX	18	8.53	SX	28	8.63	SX
OCT 23	7.59	SX	MAY 06	8.12	SX	24	8.60	SX			
NOV 19	8.31	SX	11	8.28	SX	30	8.63	SX			
DEC 17	8.18	SX	13	8.34	SX	JUL 09	8.62	SX			

HIGHEST 5.87 JUN 20, 1986
LOWEST 8.66 JUL 17, 1987

Well C-2

WATER LEVEL, IN FEET BELOW LAND SURFACE

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUN 12, 1986	6.18	SX	APR 14, 1987	5.30	SX	MAY 19, 1987	5.75	SX	JUL 09, 1987	5.93	SX
JUL 16	4.96	SX	15	17.15	SR	22	5.78	SX	17	5.93	SX
SEP 24	4.39	SX	29	5.62	SX	27	5.78	SX	23	5.94	SX
OCT 23	4.62	SX	MAY 06	5.62	SX	28	5.78	SX	AUG 02	5.98	SX
NOV 19	4.81	SX	09	5.44	SX	JUN 02	5.79	SX	15	6.00	SX
DEC 17	4.90	SX	11	5.67	SX	05	6.23	SX	21	4.97	SX
JAN 15, 1987	5.05	SX	12	5.91	SX	09	5.80	SX	25	5.97	SX
FEB 12	5.20	SX	12	5.70	SX	18	5.82	SX	SEP 02	5.96	SX
MAR 17	5.30	SX	13	5.71	SX	20	5.73	SX	22	5.90	SX
26	5.31	SX	14	5.73	SX	24	5.85	SX	28	6.61	SX
APR 08	5.32	SX	15	5.74	SX	30	5.83	SX			

HIGHEST 4.39 SEP 24, 1986
LOWEST 17.15 APR 15, 1987

Well C-4

WATER LEVEL, IN FEET BELOW LAND SURFACE

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAY 09, 1986	6.13	SX	NOV 19, 1986	4.56	SX	MAY 13, 1987	5.66	SX	JUL 09, 1987	5.89	SX
12	6.25	SX	DEC 17	4.81	SX	15	5.67	SX	17	5.90	SX
JUN 05	6.46	SX	JAN 15, 1987	5.07	SX	19	5.68	SX	23	5.93	SX
12	6.33	SX	FEB 12	5.32	SX	22	5.69	SX	AUG 02	6.00	SX
20	4.89	SX	MAR 17	5.49	SX	28	5.71	SX	15	6.00	SX
JUL 16	4.58	SX	26	5.54	SX	JUN 02	5.73	SX	25	6.03	SX
AUG 21	4.79	SX	APR 08	5.55	SX	09	5.76	SX	SEP 02	6.04	SX
25	4.73	SX	14	5.54	SX	18	5.77	SX	28	7.04	SX
SEP 24	3.79	SX	MAY 06	5.61	SX	24	5.80	SX			
OCT 23	4.29	SX	11	5.64	SX	30	5.84	SX			

HIGHEST 3.79 SEP 24, 1986
LOWEST 7.04 SEP 28, 1987

Well C-5

WATER LEVEL, IN FEET BELOW LAND SURFACE

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAY 09, 1986	5.76	SX	MAR 17, 1987	6.66	SX	MAY 15, 1987	7.07	SX	JUL 17, 1987	7.69	SX
12	5.85	SX	26	6.07	SX	19	6.94	SX	23	7.37	SX
JUN 04	5.99	SX	APR 08	5.90	SX	22	6.94	SX	AUG 02	7.50	SX
JUL 16	5.60	SX	14	6.17	SX	27	6.93	SX	15	7.38	SX
AUG 21	4.34	SX	15	6.23	SX	28	6.93	SX	25	6.97	SX
SEP 24	5.04	SX	29	6.74	SX	JUN 02	7.08	SX	SEP 02	7.13	SX
OCT 23	6.63	SX	MAY 06	7.02	SX	09	7.22	SX	22	7.60	SX
NOV 19	7.01	SX	11	7.25	SX	18	7.42	SX	28	7.73	SX
DEC 17	6.83	SX	12	7.27	SX	24	7.62	SX			
JAN 15, 1987	7.36	SX	13	7.20	SX	30	7.67	SX			
FEB 12	7.46	SX	14	7.14	SX	JUL 09	7.61	SX			

HIGHEST 4.34 AUG 21, 1986
LOWEST 7.73 SEP 28, 1987

CHARLO SITE--Continued

Well C-6

WATER LEVEL, IN FEET BELOW LAND SURFACE

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAY 09, 1986	6.65	SX	JAN 15, 1987	7.26	SX	MAY 14, 1987	7.05	SX	JUL 09, 1987	8.58	SX
12	6.73	SX	FEB 12	7.36	SX	15	6.98	SX	17	8.67	SX
JUN 04	7.70	SX	MAR 17	6.56	SX	19	6.85	SX	23	8.36	SX
12	5.01	SX	26	5.96	SX	21	6.83	SX	AUG 02	8.48	SX
20	4.19	SX	APR 08	5.81	SX	27	6.82	SX	15	8.38	SX
JUL 16	5.51	SX	14	6.08	SX	28	6.82	SX	25	6.85	SX
AUG 21	3.93	SX	29	6.64	SX	JUN 02	6.97	SX	SEP 02	7.01	SX
SEP 24	4.94	SX	MAY 06	6.92	SX	09	7.10	SX	22	7.48	SX
OCT 23	6.51	SX	11	7.15	SX	18	7.30	SX	28	7.62	SX
NOV 19	6.91	SX	12	7.18	SX	24	7.51	SX			
DEC 17	6.72	SX	13	7.11	SX	30	7.54	SX			

HIGHEST 3.93 AUG 21, 1986
LOWEST 8.67 JUL 17, 1987

Well C-7

WATER LEVEL, IN FEET BELOW LAND SURFACE

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUL 16, 1986	7.68	SX	APR 08, 1987	6.97	SX	MAY 22, 1987	7.42	SX	JUL 23, 1987	7.59	SX
AUG 21	6.91	SX	14	7.00	SX	27	7.45	SX	AUG 02	7.62	SX
SEP 24	5.75	SX	29	7.13	SX	28	7.45	SX	15	7.62	SX
OCT 23	6.06	SX	MAY 06	7.20	SX	JUN 02	7.49	SX	25	7.60	SX
NOV 19	6.27	SX	11	7.26	SX	09	7.52	SX	SEP 02	7.61	SX
DEC 17	6.40	SX	12	7.28	SX	18	7.63	SX	22	7.65	SX
JAN 15, 1987	6.51	SX	13	7.32	SX	24	7.55	SX	28	7.64	SX
FEB 12	6.66	SX	14	7.33	SX	30	7.56	SX			
MAR 17	6.83	SX	15	7.36	SX	JUL 09	7.59	SX			
26	6.92	SX	19	7.38	SX	17	7.60	SX			

HIGHEST 5.75 SEP 24, 1986
LOWEST 7.68 JUL 16, 1986

D'ASTE SITE

Canal

WATER LEVEL, IN FEET BELOW MEASURING POINT

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUL 16, 1986	1.85	S	MAR 25, 1987	3.15	S	MAY 19, 1987	1.73	S	JUL 16, 1987	1.89	S
AUG 21	1.42	S	APR 07	3.14	S	28	1.76	S	23	2.38	S
SEP 23	3.00	S	14	3.13	S	JUN 02	2.34	S	AUG 02	2.71	S
OCT 23	2.98	S	29	3.12	S	09	1.54	S	11	2.37	S
NOV 19	--	O	MAY 06	3.13	S	18	2.08	S	25	2.09	S
DEC 17	--	O	11	2.13	S	24	2.21	S	SEP 09	2.08	S
JAN 15, 1987	--	O	13	2.09	S	30	2.29	S	28	3.15	S
FEB 12	--	O	15	1.80	S	JUL 09	1.22	S			

HIGHEST 1.22 JUL 09, 1987
LOWEST 3.15 MAR 25, 1987 SEP 28, 1987

Well D-1

WATER LEVEL, IN FEET BELOW LAND SURFACE

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAY 01, 1986	50.91	SZ	NOV 19, 1986	11.22	SX	MAY 12, 1987	11.30	SX	JUN 24, 1987	11.14	SX
02	36.61	SZ	DEC 17	11.37	SX	13	11.29	SX	30	11.43	SX
07	15.24	SX	JAN 15, 1987	12.05	SX	14	11.28	SX	JUL 09	10.97	SX
09	13.38	SX	FEB 12	12.23	SX	15	11.14	SX	16	10.92	SX
JUN 05	12.40	SX	MAR 25	11.13	SX	19	10.88	SX	23	10.79	SX
12	12.05	SX	26	11.09	SX	22	10.93	SX	AUG 02	11.50	SX
18	11.81	SX	APR 07	11.04	SX	27	10.60	SX	11	11.60	SX
JUL 16	11.26	SX	14	11.08	SX	28	10.53	SX	25	11.15	SX
AUG 21	10.42	SX	29	11.17	SX	JUN 02	10.82	SX	SEP 09	11.38	SX
SEP 23	10.85	SX	MAY 06	11.35	SX	09	11.04	SX	22	11.81	SX
OCT 23	10.95	SX	11	11.34	SX	18	11.12	SX	28	11.97	SX

HIGHEST 10.42 AUG 21, 1986
LOWEST 50.91 MAY 01, 1986

D'ASTE SITE--Continued

Well D-2

WATER LEVEL, IN FEET BELOW LAND SURFACE

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAY 07, 1986	13.15	SX	JAN 15, 1987	11.32	SX	MAY 14, 1987	12.23	SX	JUL 09, 1987	10.89	SX
09	13.20	SX	FEB 12	11.67	SX	15	12.12	SX	16	10.77	SX
JUN 05	12.42	SX	MAR 26	10.79	SX	19	11.72	SX	23	10.70	SX
12	9.85	SX	APR 07	10.60	SX	22	11.50	SX	AUG 02	10.82	SX
18	10.91	SX	14	19.58	SR	27	11.18	SX	11	10.99	SX
JUL 16	10.76	SX	16	31.99	SR	28	11.10	SX	25	12.89	SX
AUG 21	10.24	SX	29	12.75	SX	JUN 02	10.89	SX	SEP 09	12.08	SX
SEP 23	10.49	SX	MAY 06	12.31	SX	09	10.85	SX	22	12.52	SX
OCT 23	10.55	SX	11	12.19	SX	18	10.79	SX	28	12.97	SX
NOV 19	10.74	SX	12	12.21	SX	24	10.79	SX			
DEC 17	10.86	SX	13	12.22	SX	30	10.86	SX			

HIGHEST 9.85 JUN 12, 1986
LOWEST 31.99 APR 16, 1987

Well D-3

WATER LEVEL, IN FEET BELOW LAND SURFACE

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAY 07, 1986	8.26	SX	DEC 17, 1986	7.38	SX	MAY 15, 1987	7.12	SX	JUL 09, 1987	6.72	SX
09	8.22	SX	JAN 15, 1987	8.03	SX	19	6.77	SX	16	6.80	SX
JUN 05	7.59	SX	FEB 12	8.17	SX	22	6.80	SX	23	6.56	SX
12	7.41	SX	MAR 25	6.92	SX	28	6.44	SX	AUG 02	7.28	SX
18	7.21	SX	APR 07	6.92	SX	JUN 02	6.75	SX	11	7.33	SX
JUL 16	6.80	SX	14	6.93	SX	09	6.90	SX	14	7.25	SX
AUG 21	6.15	SX	29	7.09	SX	10	7.36	SX	25	6.48	SX
SEP 23	6.63	SX	MAY 06	7.26	SX	18	6.94	SX	SEP 09	6.77	SX
OCT 23	6.89	SX	11	7.22	SX	24	6.97	SX	28	8.43	SX
NOV 19	7.18	SX	13	7.18	SX	30	7.24	SX			

HIGHEST 6.15 AUG 21, 1986
LOWEST 8.43 SEP 28, 1987

Well D-4

WATER LEVEL, IN FEET BELOW LAND SURFACE

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAY 07, 1986	7.80	SX	JAN 15, 1987	7.42	SX	MAY 13, 1987	6.50	SX	JUN 24, 1987	6.30	SX
09	7.73	SX	FEB 12	7.58	SX	14	6.50	SX	30	6.63	SX
JUN 05	6.99	SX	MAR 25	6.10	SX	15	6.45	SX	JUL 09	6.09	SX
10	6.70	SX	26	6.06	SX	19	6.08	SX	16	6.19	SX
12	6.80	SX	APR 07	6.17	SX	22	6.10	SX	23	5.87	SX
JUL 16	6.28	SX	14	6.19	SX	27	5.76	SX	AUG 02	6.68	SX
AUG 21	5.52	SX	16	6.23	SX	28	5.71	SX	11	6.81	SX
SEP 23	5.94	SX	29	6.38	SX	JUN 02	5.20	SX	25	5.84	SX
OCT 23	6.19	SX	MAY 06	6.56	SX	02	6.01	SX	SEP 09	6.18	SX
NOV 19	6.47	SX	11	6.57	SX	09	6.23	SX	22	6.58	SX
DEC 17	6.67	SX	12	6.51	SX	18	6.26	SX	28	6.74	SX

HIGHEST 5.20 JUN 02, 1987
LOWEST 7.80 MAY 07, 1986

Well D-5

WATER LEVEL, IN FEET BELOW LAND SURFACE

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAY 07, 1986	11.72	SX	NOV 19, 1986	8.85	SX	MAY 13, 1987	9.33	SX	JUL 16, 1987	5.88	SX
09	10.42	SX	DEC 17	9.12	SX	15	9.27	SX	23	5.69	SX
JUN 05	8.50	SX	JAN 15, 1987	9.55	SX	19	6.88	SX	AUG 02	5.98	SX
10	7.68	SX	FEB 12	10.01	SX	22	6.90	SX	11	6.10	SX
12	11.78	SX	MAR 25	10.22	SX	28	5.05	SX	14	15.11	SR
18	11.03	SX	APR 07	10.08	SX	JUN 09	5.38	SX	25	9.79	SX
JUL 16	9.00	SX	14	9.94	SX	18	5.53	SX	SEP 09	9.19	SX
AUG 21	8.18	SX	29	9.56	SX	24	5.62	SX	28	8.03	SX
SEP 23	8.39	SX	MAY 06	9.44	SX	30	5.74	SX			
OCT 23	8.58	SX	11	9.39	SX	JUL 09	5.82	SX			

HIGHEST 5.05 MAY 28, 1987
LOWEST 15.11 AUG 14, 1987

LONEPINE SITE

Canal

WATER LEVEL, IN FEET BELOW MEASURING POINT

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUL 16, 1986	1.50	S	MAR 17, 1987	2.68	S	MAY 28, 1987	2.31	S	JUL 23, 1987	2.24	S
AUG 22	1.35	S	APR 07	3.04	S	JUN 03	2.39	S	AUG 03	--	D
SEP 24	2.63	S	15	3.09	S	10	2.43	S	15	2.08	S
OCT 24	3.00	S	28	2.95	S	19	2.28	S	25	2.54	S
NOV 18	--	D	MAY 05	2.59	S	25	2.30	S	SEP 14	2.14	S
DEC 16	--	D	11	2.19	S	JUL 01	2.27	S	29	--	D
JAN 15, 1987	--	D	14	2.00	S	10	2.15	S			
FEB 12	--	D	19	2.21	S	16	1.99	S			

HIGHEST 1.35 AUG 22, 1986
LOWEST 3.09 APR 15, 1987

Well L-1

WATER LEVEL, IN FEET BELOW OR ABOVE (+) LAND SURFACE

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAY 19, 1986	5.51	SX	JAN 15, 1987	7.30	SX	MAY 14, 1987	3.44	SX	JUL 16, 1987	5.46	SX
JUN 11	5.77	SX	FEB 12	9.53	SX	19	3.70	SX	23	5.86	SX
12	4.64	SX	MAR 17	.09	SX	21	3.83	SX	AUG 03	9.21	SX
19	5.00	SX	18	.11	SX	28	4.15	SX	15	5.88	SX
JUL 16	5.06	SX	24	+.20	SX	JUN 03	4.46	SX	25	6.77	SX
AUG 22	5.53	SX	APR 07	2.15	SX	10	4.56	SX	SEP 15	7.27	SX
SEP 24	3.23	SX	15	2.80	SX	19	4.85	SX	29	10.18	SX
OCT 24	7.19	SX	28	3.44	SX	25	5.09	SX			
NOV 18	12.35	SX	MAY 05	3.77	SX	JUL 01	5.30	SX			
DEC 16	2.99	SX	11	3.54	SX	10	5.64	SX			

HIGHEST +0.20 MAR 24, 1987
LOWEST 12.35 NOV 18, 1986

Well L-2

WATER LEVEL, IN FEET BELOW OR ABOVE (+) LAND SURFACE

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUN 11, 1986	3.90	SX	FEB 12, 1987	9.43	SX	MAY 11, 1987	3.33	SX	JUN 25, 1987	4.72	SX
12	9.59	SR	MAR 17	+.16	SX	12	3.23	SX	JUL 01	4.92	SX
18	4.99	SX	18	+.14	SX	14	3.23	SX	10	5.34	SX
JUL 16	4.88	SX	24	+.45	SX	19	3.50	SX	23	5.44	SX
AUG 22	5.30	SX	APR 07	1.91	SX	21	3.64	SX	AUG 03	8.64	SX
SEP 24	2.96	SX	15	2.57	SX	27	3.90	SX	15	5.60	SX
OCT 24	7.07	SX	28	3.22	SX	28	3.93	SX	25	6.25	SX
NOV 18	12.20	SX	MAY 05	3.57	SX	JUN 03	4.07	SX	SEP 15	6.96	SX
DEC 16	2.82	SX	06	3.56	SX	10	4.22	SX	22	7.23	SX
JAN 15, 1987	7.15	SX	07	3.52	SX	17	4.51	SX	29	9.99	SX

HIGHEST +0.45 MAR 24, 1987
LOWEST 12.20 NOV 18, 1986

Well L-3

WATER LEVEL, IN FEET BELOW OR ABOVE (+) LAND SURFACE

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAY 20, 1986	2.65	SX	JAN 15, 1987	6.00	SX	MAY 14, 1987	2.13	SX	JUL 16, 1987	4.76	SX
JUN 11	3.86	SX	FEB 12	8.91	SX	19	2.35	SX	23	5.12	SX
12	3.30	SX	MAR 17	+.26	SX	21	2.49	SX	AUG 03	7.61	SX
19	3.88	SX	18	+.28	SX	28	2.83	SX	15	5.55	SX
JUL 16	4.26	SX	24	+.81	SX	JUN 03	3.22	SX	25	6.30	SX
AUG 22	4.93	SX	APR 07	.54	SX	10	3.38	SX	SEP 15	6.97	SX
SEP 17	4.30	SX	15	1.22	SX	19	3.84	SX	29	9.44	SX
OCT 24	6.24	SX	28	1.94	SX	25	4.19	SX			
NOV 18	9.42	SX	MAY 05	2.32	SX	JUL 01	4.45	SX			
DEC 16	2.67	SX	11	2.16	SX	10	4.98	SX			

HIGHEST +0.81 MAR 24, 1987
LOWEST 9.44 SEP 29, 1987

Table 5.--*Water levels in canals and monitoring wells*--Continued

LONEPINE SITE--Continued

Well L-4

WATER LEVEL, IN FEET BELOW OR ABOVE (+) LAND SURFACE

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUN 11, 1986	2.50	SX	FEB 12, 1987	7.74	SX	MAY 11, 1987	1.22	SX	JUN 25, 1987	3.24	SX
12	3.30	SX	MAR 17	+1.35	SX	12	1.11	SX	JUL 01	3.51	SX
19	3.24	SX	18	+1.42	SX	14	1.18	SX	10	4.02	SX
JUL 16	3.76	SX	24	+1.96	SX	19	1.40	SX	16	3.87	SX
AUG 22	4.42	SX	APR 07	+.34	SX	21	1.55	SX	23	4.18	SX
SEP 24	2.46	SX	15	.31	SX	27	1.81	SX	AUG 03	6.67	SX
OCT 24	5.33	SX	28	1.01	SX	28	1.89	SX	15	4.14	SX
NOV 18	10.91	SX	MAY 05	1.39	SX	JUN 03	2.26	SX	25	5.34	SX
DEC 16	1.85	SX	06	1.41	SX	10	2.52	SX	SEP 15	6.01	SX
JAN 15, 1987	5.24	SX	07	1.38	SX	19	2.91	SX	29	8.40	SX

HIGHEST +1.96 MAR 24, 1987
LOWEST 10.91 NOV 18, 1986

Well L-5

WATER LEVEL, IN FEET BELOW LAND SURFACE

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUN 11, 1986	9.85	SX	MAR 17, 1987	3.99	SX	MAY 14, 1987	4.53	SX	JUL 16, 1987	7.42	SX
12	2.95	SX	18	3.78	SX	19	4.53	SX	23	7.57	SX
19	6.53	SX	24	2.97	SX	21	4.62	SX	AUG 03	8.07	SX
JUL 16	8.94	SX	APR 07	3.30	SX	27	4.83	SX	15	8.68	SX
AUG 22	9.92	SX	15	3.79	SX	28	4.85	SX	25	8.85	SX
SEP 24	8.80	SX	28	4.31	SX	JUN 03	5.08	SX	SEP 15	9.17	SX
OCT 24	9.28	SX	MAY 05	4.52	SX	10	5.36	SX	21	7.73	SX
NOV 18	--	SD	06	4.57	SX	19	5.85	SX	29	9.00	SX
DEC 16	9.02	SX	07	4.58	SX	25	6.16	SX			
JAN 15, 1987	8.53	SX	11	4.58	SX	JUL 01	6.58	SX			
FEB 12	9.60	SX	12	4.56	SX	10	7.17	SX			

HIGHEST 2.95 JUN 12, 1986
LOWEST 9.92 AUG 22, 1986

NIARADA SITE

Canal

WATER LEVEL, IN FEET BELOW MEASURING POINT

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUL 16, 1986	1.24	S	MAR 17, 1987	2.95	S	MAY 19, 1987	1.57	S	JUL 16, 1987	1.02	S
AUG 22	1.25	S	24	3.09	S	27	1.55	S	23	1.09	S
SEP 24	3.25	S	APR 07	2.58	S	JUN 03	1.83	S	AUG 03	.73	S
OCT 24	3.45	S	15	2.69	S	10	1.58	S	15	.65	S
NOV 18	--	D	28	2.88	S	19	2.12	S	25	1.07	S
DEC 16	--	D	MAY 06	2.59	S	25	2.18	S	SEP 16	1.09	S
JAN 15, 1987	--	D	12	1.61	S	JUL 01	1.59	S	29	1.62	S
FEB 12	--	D	14	1.40	S	10	1.09	S			

HIGHEST 0.65 AUG 15, 1987
LOWEST 3.45 OCT 24, 1986

Well N-1

WATER LEVEL, IN FEET BELOW LAND SURFACE

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAY 15, 1986	21.66	SX	FEB 12, 1987	23.12	SX	MAY 12, 1987	21.83	SX	JUL 10, 1987	21.57	SX
JUN 11	21.72	SX	MAR 17	22.28	SX	14	21.77	SX	16	21.42	SX
12	21.73	SX	18	22.41	SX	19	21.65	SX	23	21.47	SX
JUL 16	21.63	SX	19	22.40	SX	21	21.64	SX	AUG 03	21.53	SX
AUG 22	21.66	SX	24	22.39	SX	28	21.60	SX	15	21.49	SX
SEP 24	22.13	SX	25	22.39	SX	JUN 03	21.63	SX	25	21.70	SX
OCT 24	22.57	SX	APR 07	22.24	SX	10	21.61	SX	SEP 16	21.84	SX
NOV 18	22.93	SX	15	22.10	SX	19	21.68	SX	23	21.94	SX
DEC 16	23.00	SX	28	22.05	SX	25	21.76	SX	29	21.99	SX
JAN 15, 1987	23.19	SX	MAY 06	21.94	SX	JUL 01	21.74	SX			

HIGHEST 21.42 JUL 16, 1987
LOWEST 23.19 JAN 15, 1987

NIARADA SITE--Continued

Well N-2

WATER LEVEL, IN FEET BELOW LAND SURFACE

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUL 16, 1986	6.48	SX	MAR 24, 1987	--	SD	MAY 27, 1987	6.35	SX	AUG 03, 1987	7.34	SX
AUG 22	--	SD	APR 07	6.13	SX	JUN 03	6.74	SX	15	7.35	SX
SEP 24	--	SD	28	7.15	SX	10	6.62	SX	25	--	SD
OCT 24	--	SD	MAY 06	7.09	SX	19	--	SD	SEP 16	--	SD
JAN 15, 1987	--	SD	12	6.27	SX	25	--	SD	29	--	SD
FEB 12	--	SD	14	5.89	SX	JUL 01	7.24	SX			
MAR 17	--	SD	19	6.29	SX	10	6.70	SX			
19	--	SD	21	6.36	SX	16	7.11	SX			

HIGHEST 5.89 MAY 14, 1987
LOWEST 7.35 AUG 15, 1987

Well N-3

WATER LEVEL, IN FEET BELOW LAND SURFACE

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAY 15, 1986	29.52	SX	FEB 12, 1987	32.97	SX	MAY 12, 1987	28.49	SX	JUL 10, 1987	27.47	SX
JUN 11	27.85	SX	MAR 17	32.62	SX	14	28.65	SX	16	27.16	SX
12	27.84	SX	18	32.39	SX	19	28.24	SX	23	27.05	SX
JUL 16	27.45	SX	19	32.50	SX	21	28.25	SX	AUG 03	26.90	SX
AUG 22	27.04	SX	24	32.35	SX	29	27.66	SX	15	26.57	SX
SEP 24	27.32	SX	25	32.14	SX	JUN 03	27.79	SX	25	26.90	SX
OCT 24	29.29	SX	APR 07	31.12	SX	10	27.43	SX	SEP 16	27.45	SX
NOV 18	29.79	SX	15	30.10	SX	19	27.48	SX	18	27.38	SX
DEC 16	31.79	SX	28	29.01	SX	25	27.74	SX	23	27.52	SX
JAN 15, 1987	32.70	SX	MAY 06	29.06	SX	JUL 01	27.66	SX	29	27.92	SX

HIGHEST 26.57 AUG 15, 1987
LOWEST 32.97 FEB 12, 1987

Well N-4

WATER LEVEL, IN FEET BELOW LAND SURFACE

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAY 15, 1986	39.13	SX	FEB 12, 1987	41.69	SX	MAY 12, 1987	42.38	SX	JUL 10, 1987	40.82	SX
JUN 11	36.09	SX	MAR 17	41.61	SX	14	42.58	SX	16	40.60	SX
12	36.11	SX	18	41.35	SX	19	42.01	SX	23	40.65	SX
JUL 16	38.32	SX	19	41.38	SX	21	41.92	SX	AUG 03	40.65	SX
AUG 22	38.28	SX	24	41.72	SX	27	41.29	SX	15	40.22	SX
SEP 24	37.80	SX	25	41.72	SX	JUN 03	41.59	SX	25	40.50	SX
OCT 24	39.26	SX	APR 07	44.13	SX	10	41.03	SX	SEP 16	40.51	SX
NOV 18	39.18	SX	15	43.55	SX	19	41.00	SX	18	40.10	SX
DEC 16	40.82	SX	28	43.01	SX	25	41.17	SX	23	37.16	SX
JAN 15, 1987	41.53	SX	MAY 06	43.22	SX	JUL 01	40.84	SX	29	37.26	SX

HIGHEST 36.09 JUN 11, 1986
LOWEST 44.13 APR 07, 1987

Table 6.--*Water temperatures in monitoring wells*

[Depth--in feet below land surface. Abbreviations: ft, feet; °C, degrees Celsius. Symbol: --, no data or not applicable]

ARLEE SITE

Well A-3

04-28-87 Depth (ft)	Temperature (°C)	05-05-87 Depth (ft)	Temperature (°C)	05-07-87 Depth (ft)	Temperature (°C)	05-11-87 Depth (ft)	Temperature (°C)	05-13-87 Depth (ft)	Temperature (°C)	05-14-87 Depth (ft)	Temperature (°C)	05-19-87 Depth (ft)	Temperature (°C)	05-21-87 Depth (ft)	Temperature (°C)
11	7.3	11	6.9	11	7.7	11	7.8	11	7.9	11	8.1	11	--	11	--
12	7.0	12	6.9	12	7.4	12	7.6	12	7.6	12	7.8	12	7.6	12	8.0
13	6.8	13	6.9	13	7.2	13	7.3	13	7.4	13	7.5	13	7.5	13	7.6
14	6.8	14	6.9	14	7.2	14	7.3	14	7.4	14	7.4	14	7.5	14	7.6
15	6.8	15	6.9	15	7.2	15	7.3	15	7.4	15	7.4	15	7.4	15	7.5
16	6.8	16	6.9	16	7.2	16	7.3	16	7.3	16	7.4	16	7.4	16	7.5
17	6.9	17	6.9	17	7.2	17	7.3	17	7.3	17	7.4	17	7.4	17	7.5
18	6.9	18	6.9	18	7.2	18	7.3	18	7.3	18	7.4	18	7.4	18	7.5
19	7.0	19	6.9	19	7.2	19	7.3	19	7.3	19	7.4	19	7.4	19	7.4
20	7.0	20	7.0	20	7.2	20	7.3	20	7.3	20	7.4	20	7.4	20	7.4
21	7.1	21	7.0	21	7.3	21	7.3	21	7.3	21	7.4	21	7.4	21	7.4
22	7.2	22	7.0	22	7.3	22	7.3	22	7.3	22	7.4	22	7.4	22	7.4
23	7.3	23	7.1	23	7.4	23	7.4	23	7.4	23	7.4	23	7.4	23	7.5
24	7.4	24	7.1	24	7.4	24	7.4	24	7.4	24	7.4	24	7.4	24	7.5

05-22-87 Depth (ft)	Temperature (°C)	05-28-87 Depth (ft)	Temperature (°C)	06-02-87 Depth (ft)	Temperature (°C)	06-09-87 Depth (ft)	Temperature (°C)	06-16-87 Depth (ft)	Temperature (°C)	06-24-87 Depth (ft)	Temperature (°C)	06-30-87 Depth (ft)	Temperature (°C)	07-09-87 Depth (ft)	Temperature (°C)
12	8.1	12	8.4	12	--	12	--	12	--	12	--	12	--	12	--
13	7.6	13	8.0	13	8.6	13	8.8	13	8.8	13	8.7	13	10.0	13	9.5
14	7.7	14	7.8	14	8.3	14	8.5	14	8.5	14	8.7	14	9.1	14	9.3
15	7.6	15	7.8	15	8.0	15	8.2	15	8.3	15	8.5	15	8.8	15	9.1
16	7.6	16	7.8	16	8.0	16	8.1	16	8.2	16	8.5	16	8.8	16	8.9
17	7.5	17	7.7	17	7.9	17	8.0	17	8.1	17	8.4	17	8.5	17	8.8
18	7.5	18	7.6	18	7.8	18	8.0	18	8.1	18	8.3	18	8.5	18	8.6
19	7.5	19	7.6	19	7.8	19	7.9	19	8.0	19	8.2	19	8.3	19	8.6
20	7.5	20	7.6	20	7.8	20	7.8	20	8.0	20	8.1	20	8.3	20	8.6
21	7.5	21	7.6	21	7.7	21	7.8	21	7.9	21	8.0	21	8.2	21	8.5
22	7.5	22	7.6	22	7.7	22	7.8	22	7.8	22	8.0	22	8.1	22	8.4
23	7.5	23	7.6	23	7.7	23	7.7	23	7.8	23	7.9	23	8.1	23	8.2
24	7.5	24	7.6	24	7.7	24	7.7	24	7.8	24	7.9	24	8.0	24	8.2

07-16-87 Depth (ft)	Temperature (°C)	07-24-87 Depth (ft)	Temperature (°C)	07-27-87 Depth (ft)	Temperature (°C)	08-15-87 Depth (ft)	Temperature (°C)	08-24-87 Depth (ft)	Temperature (°C)	09-14-87 Depth (ft)	Temperature (°C)	09-28-87 Depth (ft)	Temperature (°C)
13	10.4	13	10.3	13	--	13	10.7	13	10.9	13	--	13	--
14	9.8	14	9.8	14	10.0	14	10.5	14	10.8	14	10.9	14	--
15	9.4	15	9.5	15	9.6	15	10.1	15	10.5	15	10.7	15	--
16	9.2	16	9.4	16	9.2	16	9.9	16	10.3	16	10.6	16	--
17	9.1	17	9.3	17	9.0	17	9.7	17	10.1	17	10.4	17	--
18	8.9	18	9.0	18	8.9	18	9.6	18	9.9	18	10.2	18	--
19	8.8	19	8.9	19	8.7	19	9.4	19	9.7	19	10.0	19	--
20	8.7	20	8.8	20	8.6	20	9.2	20	9.5	20	9.9	20	--
21	8.6	21	8.6	21	8.4	21	9.1	21	9.4	21	9.7	21	--
22	8.4	22	8.6	22	8.3	22	9.0	22	9.2	22	9.6	22	10.2
23	8.4	23	8.5	23	8.2	23	8.8	23	9.1	23	9.4	23	10.0
24	8.3	24	8.4	24	8.1	24	8.8	24	9.1	24	9.4	24	9.9

Well A-4

04-28-87 Depth (ft)	Temperature (°C)	05-05-87 Depth (ft)	Temperature (°C)	05-07-87 Depth (ft)	Temperature (°C)	05-11-87 Depth (ft)	Temperature (°C)	05-13-87 Depth (ft)	Temperature (°C)	05-14-87 Depth (ft)	Temperature (°C)	05-19-87 Depth (ft)	Temperature (°C)	05-21-87 Depth (ft)	Temperature (°C)
11	7.5	11	--	11	--	11	--	11	7.8	11	--	11	--	11	--
12	7.1	12	7.0	12	7.3	12	7.6	12	7.7	12	7.4	12	7.6	12	7.8
13	6.8	13	6.9	13	7.1	13	7.4	13	7.4	13	7.4	13	7.5	13	7.7
14	6.8	14	6.8	14	7.1	14	7.3	14	7.3	14	7.3	14	7.5	14	7.6
15	6.8	15	6.8	15	7.1	15	7.3	15	7.3	15	7.3	15	7.4	15	7.5
16	6.8	16	6.8	16	7.1	16	7.3	16	7.3	16	7.3	16	7.4	16	7.5
17	6.8	17	6.9	17	7.2	17	7.3	17	7.3	17	7.3	17	7.4	17	7.5
18	6.8	18	6.9	18	7.2	18	7.3	18	7.3	18	7.3	18	7.4	18	7.5

05-22-87 Depth (ft)	Temperature (°C)	05-28-87 Depth (ft)	Temperature (°C)	06-02-87 Depth (ft)	Temperature (°C)	06-09-87 Depth (ft)	Temperature (°C)	06-16-87 Depth (ft)	Temperature (°C)	06-24-87 Depth (ft)	Temperature (°C)	06-30-87 Depth (ft)	Temperature (°C)	07-09-87 Depth (ft)	Temperature (°C)
12	8.1	12	--	12	--	12	--	12	--	12	--	12	--	12	--
13	7.8	13	8.0	13	8.4	13	8.7	13	8.6	13	9.3	13	9.6	13	9.4
14	7.6	14	7.8	14	8.1	14	8.3	14	8.4	14	8.8	14	9.0	14	9.1
15	7.6	15	7.8	15	8.0	15	8.2	15	8.3	15	8.6	15	8.8	15	8.9
16	7.6	16	7.7	16	8.0	16	8.1	16	8.2	16	8.5	16	8.7	16	8.8
17	7.5	17	7.7	17	7.9	17	8.0	17	8.2	17	8.4	17	8.6	17	8.6
18	7.5	18	7.7	18	7.9	18	7.9	18	8.1	18	8.3	18	8.5	18	8.7

Table 6.--*Water temperatures in monitoring wells*--Continued

ARLEE SITE--Continued

Well A-4--Continued

07-16-87		07-24-87		07-27-87		08-15-87		08-24-87		09-14-87		09-28-87	
Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
13	--	13	9.7	13	--	13	--	13	--	13	--	13	--
14	9.9	14	9.4	14	10.0	14	10.7	14	--	14	--	14	--
15	9.4	15	9.2	15	9.5	15	10.5	15	10.6	15	11.2	15	--
16	9.2	16	9.1	16	9.3	16	10.1	16	10.5	16	10.9	16	--
17	9.1	17	9.0	17	9.2	17	10.0	17	10.3	17	10.8	17	11.1
18	8.9	18	8.9	18	9.0	18	9.7	18	10.0	18	10.5	18	10.9

Well A-5

04-28-87		05-05-87		05-07-87		05-11-87		05-13-87		05-14-87		05-19-87		05-21-87	
Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
12	7.5	12	--	12	7.5	12	7.6	12	7.6	12	--	12	--	12	--
13	7.1	13	7.6	13	7.2	13	7.3	13	7.4	13	7.9	13	7.5	13	7.7
14	7.0	14	7.0	14	7.1	14	7.3	14	7.3	14	7.6	14	7.4	14	7.5
15	7.0	15	6.9	15	7.1	15	7.2	15	7.3	15	7.4	15	7.4	15	7.5
16	7.0	16	6.9	16	7.1	16	7.2	16	7.3	16	7.4	16	7.4	16	7.5
17	7.0	17	6.9	17	7.1	17	7.3	17	7.3	17	7.4	17	7.4	17	7.5
18	7.0	18	6.9	18	7.2	18	7.3	18	7.3	18	7.4	18	7.4	18	7.5

05-22-87		05-28-87		06-02-87		06-09-87		06-16-87		06-24-87		06-30-87		07-09-87	
Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
13	8.1	13	8.1	13	--	13	--	13	--	13	--	13	--	13	--
14	7.6	14	7.8	14	8.3	14	8.4	14	8.5	14	9.2	14	9.2	14	9.4
15	7.5	15	7.7	15	8.0	15	8.1	15	8.3	15	8.6	15	8.8	15	8.9
16	7.5	16	7.7	16	7.9	16	8.0	16	8.1	16	8.4	16	8.5	16	8.8
17	7.5	17	7.7	17	7.9	17	8.0	17	8.1	17	8.3	17	8.5	17	8.7
18	7.5	18	7.7	18	7.9	18	7.9	18	8.0	18	8.2	18	8.4	18	8.6

07-16-87		07-24-87		07-27-87		08-15-87		08-24-87		09-14-87		09-28-87	
Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
14	9.5	14	9.3	14	10.0	14	10.2	14	--	14	--	14	--
15	9.0	15	9.1	15	9.6	15	8.8	15	10.5	15	11.0	15	--
16	9.0	16	9.0	16	9.2	16	8.8	16	10.3	16	10.6	16	10.7
17	8.8	17	8.8	17	9.1	17	8.7	17	10.1	17	10.5	17	10.6
18	8.7	18	8.8	18	8.9	18	8.5	18	9.9	18	10.3	18	10.5

Well A-6

04-28-87		05-05-87		05-07-87		05-11-87		05-13-87		05-14-87		05-19-87		05-21-87	
Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
20	8.4	20	7.2	20	8.3	20	10.1	20	9.9	20	9.9	20	9.2	20	9.2
21	8.0	21	7.1	21	8.2	21	9.9	21	9.8	21	9.6	21	9.2	21	9.0
22	7.9	22	6.7	22	8.1	22	9.8	22	9.6	22	9.3	22	9.0	22	8.6
23	7.8	23	6.5	23	8.1	23	9.7	23	9.6	23	9.2	23	9.0	23	8.6
24	7.8	24	6.5	24	8.0	24	9.6	24	9.6	24	9.2	24	9.0	24	8.6
25	7.8	25	6.6	25	7.9	25	9.6	25	9.6	25	9.2	25	9.0	25	8.6
26	7.7	26	6.6	26	7.9	26	9.5	26	9.5	26	9.2	26	9.0	26	8.6
27	7.7	27	6.6	27	7.8	27	9.4	27	9.4	27	9.2	27	9.0	27	8.6
28	7.7	28	6.7	28	7.7	28	9.3	28	9.3	28	9.1	28	8.9	28	8.6
29	7.6	29	6.7	29	7.7	29	9.1	29	9.2	29	9.0	29	8.9	29	8.5
30	7.5	30	6.7	30	7.7	30	8.9	30	9.0	30	8.8	30	8.8	30	8.5
31	7.5	31	6.7	31	7.6	31	8.8	31	8.9	31	8.8	31	8.7	31	8.5
32	7.5	32	6.7	32	7.6	32	8.8	32	8.9	32	8.8	32	8.7	32	8.5
33	7.5	33	6.8	33	7.6	33	8.7	33	8.7	33	8.7	33	8.7	33	8.3

05-22-87		05-28-87		06-02-87		06-09-87		06-16-87		06-24-87		06-30-87		07-09-87	
Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
20	8.2	20	--	20	--	20	--	20	--	20	--	20	--	20	--
21	8.2	21	8.6	21	8.8	21	10.7	21	11.8	21	11.2	21	12.0	21	11.9
22	8.1	22	8.5	22	8.8	22	10.7	22	11.5	22	11.2	22	12.0	22	11.7
23	8.1	23	8.4	23	8.7	23	10.6	23	11.4	23	11.1	23	11.9	23	11.6
24	8.1	24	8.3	24	8.7	24	10.6	24	11.3	24	11.1	24	11.9	24	11.6
25	8.2	25	8.3	25	8.7	25	10.6	25	11.3	25	11.1	25	11.8	25	11.6
26	8.2	26	8.3	26	8.7	26	10.5	26	11.2	26	11.1	26	11.7	26	11.6
27	8.2	27	8.2	27	8.6	27	10.4	27	11.1	27	11.0	27	11.5	27	11.6
28	8.3	28	8.2	28	8.6	28	10.1	28	10.9	28	11.0	28	11.4	28	11.6
29	8.3	29	8.2	29	8.6	29	9.9	29	10.7	29	10.9	29	11.2	29	11.5
30	8.3	30	8.2	30	8.5	30	9.7	30	10.5	30	10.7	30	11.0	30	11.3
31	8.3	31	8.2	31	8.5	31	9.6	31	10.3	31	10.7	31	10.9	31	11.3
32	8.3	32	8.2	32	8.5	32	9.6	32	10.2	32	10.7	32	10.9	32	11.2
33	8.2	33	8.2	33	8.5	33	9.5	33	10.0	33	10.6	33	10.6	33	11.1

ARLEE SITE--Continued

Well A-6--Continued

Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
07-16-87		07-24-87		07-27-87		08-15-87		08-24-87		09-14-87		09-28-87	
21	11.5	21	11.7	21	12.1	21	12.7	21	11.6	21	12.0	21	--
22	11.5	22	11.7	22	11.9	22	12.7	22	11.4	22	11.8	22	--
23	11.5	23	11.6	23	11.7	23	12.6	23	11.4	23	11.6	23	10.8
24	11.4	24	11.6	24	11.7	24	12.7	24	11.3	24	11.6	24	10.7
25	11.3	25	11.6	25	11.6	25	12.7	25	11.3	25	11.6	25	10.7
26	11.3	26	11.6	26	11.6	26	12.6	26	11.3	26	11.5	26	10.7
27	11.2	27	11.6	27	11.6	27	12.7	27	11.3	27	11.5	27	10.7
28	11.2	28	11.5	28	11.5	28	12.6	28	11.4	28	11.4	28	10.8
29	11.1	29	11.5	29	11.5	29	12.6	29	11.4	29	11.4	29	10.8
30	11.1	30	11.4	30	11.3	30	12.5	30	11.4	30	11.4	30	10.8
31	11.0	31	11.4	31	11.3	31	12.4	31	11.4	31	11.4	31	10.8
32	11.0	32	11.4	32	11.3	32	12.3	32	11.4	32	11.4	32	10.8
33	10.8	33	11.3	33	11.2	33	12.3	33	11.3	33	11.4	33	10.8

CHARLO SITE

Well-C-2

Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
04-08-87		04-14-87		04-29-87		05-06-87		05-11-87		05-13-87		05-15-87		05-19-87	
8	7.5	8	7.5	8	8.0	8	8.3	8	--	8	--	8	--	8	--
9	7.4	9	7.5	9	8.0	9	8.3	9	8.9	9	9.1	9	9.2	9	9.7
10	7.4	10	7.5	10	7.9	10	8.2	10	8.7	10	8.7	10	9.0	10	9.3
11	7.4	11	7.5	11	7.9	11	8.2	11	8.5	11	8.5	11	8.8	11	9.0
12	7.5	12	7.5	12	7.9	12	8.2	12	8.4	12	8.5	12	8.5	12	8.7
13	7.5	13	7.6	13	8.0	13	8.2	13	8.4	13	8.4	13	8.5	13	8.5
14	7.6	14	7.6	14	8.0	14	8.2	14	8.4	14	8.5	14	8.5	14	8.5
15	7.7	15	7.7	15	8.0	15	8.2	15	8.4	15	8.5	15	8.5	15	8.5
16	7.8	16	7.8	16	8.0	16	8.2	16	8.4	16	8.5	16	8.5	16	8.5
17	7.9	17	7.8	17	8.0	17	8.2	17	8.5	17	8.5	17	8.5	17	8.5
18	7.9	18	7.9	18	8.1	18	8.3	18	8.5	18	8.5	18	8.5	18	8.5
19	8.0	19	7.9	19	8.1	19	8.3	19	8.5	19	8.5	19	8.5	19	8.5
20	8.0	20	8.0	20	8.2	20	8.3	20	8.5	20	8.5	20	8.5	20	8.5
21	8.1	21	8.0	21	8.2	21	8.4	21	8.5	21	8.5	21	8.5	21	8.6
22	8.1	22	8.0	22	8.2	22	8.4	22	8.5	22	8.5	22	8.5	22	8.6
23	8.4	23	8.1	23	8.3	23	8.4	23	8.5	23	8.6	23	8.5	23	8.6

Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
05-22-87		05-28-87		06-02-87		06-09-87		06-18-87		06-24-87		06-30-87		07-09-87	
9	9.9	9	10.5	9	10.7	9	10.8	9	11.2	9	11.5	9	11.8	9	12.6
10	9.6	10	10.0	10	10.4	10	10.5	10	10.8	10	11.0	10	11.5	10	11.9
11	9.1	11	9.6	11	9.8	11	10.0	11	10.2	11	10.6	11	10.9	11	11.5
12	8.8	12	9.3	12	9.5	12	9.8	12	10.0	12	10.4	12	10.7	12	11.0
13	8.7	13	9.0	13	9.3	13	9.3	13	9.7	13	10.1	13	10.2	13	10.7
14	8.6	14	8.9	14	9.1	14	9.2	14	9.5	14	9.9	14	10.0	14	10.4
15	8.6	15	8.8	15	8.9	15	9.1	15	9.4	15	9.7	15	9.8	15	10.1
16	8.6	16	8.7	16	8.9	16	9.0	16	9.3	16	9.5	16	9.6	16	9.9
17	8.6	17	8.7	17	8.8	17	8.9	17	9.2	17	9.4	17	9.5	17	9.8
18	8.6	18	8.7	18	8.8	18	8.9	18	9.1	18	9.3	18	9.4	18	9.6
19	8.6	19	8.7	19	8.8	19	8.9	19	9.0	19	9.3	19	9.3	19	9.5
20	8.6	20	8.7	20	8.8	20	8.9	20	9.0	20	9.2	20	9.3	20	9.4
21	8.6	21	8.7	21	8.8	21	8.9	21	9.0	21	9.2	21	9.2	21	9.4
22	8.6	22	8.7	22	8.8	22	8.9	22	9.0	22	9.2	22	9.2	22	9.3
23	8.6	23	8.7	23	8.8	23	--	23	--	23	9.2	23	9.2	23	9.3

Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
07-17-87		07-23-87		08-02-87		08-15-87		08-25-87		09-03-87		09-28-87	
9	12.7	9	13.0	9	13.0	9	13.5	9	13.9	9	13.7	9	13.5
10	12.3	10	12.4	10	12.7	10	13.1	10	13.5	10	13.4	10	13.3
11	11.8	11	11.9	11	12.2	11	12.6	11	13.0	11	12.9	11	13.2
12	11.4	12	11.6	12	11.8	12	12.1	12	12.6	12	12.6	12	12.8
13	10.8	13	11.2	13	11.4	13	11.7	13	12.2	13	12.1	13	12.6
14	10.4	14	10.8	14	11.1	14	11.4	14	11.8	14	11.9	14	12.3
15	10.1	15	10.5	15	10.8	15	11.1	15	11.4	15	11.5	15	12.1
16	10.0	16	10.4	16	10.6	16	10.8	16	11.2	16	11.3	16	11.9
17	9.9	17	10.1	17	10.4	17	10.6	17	10.9	17	11.0	17	11.7
18	9.8	18	9.9	18	10.1	18	10.4	18	10.7	18	10.8	18	11.5
19	9.7	19	9.7	19	10.0	19	10.3	19	10.5	19	10.6	19	11.4
20	9.6	20	9.6	20	9.9	20	10.0	20	10.4	20	10.5	20	11.2
21	9.5	21	9.5	21	9.7	21	9.9	21	10.2	21	10.1	21	11.0
22	9.4	22	9.4	22	9.6	22	9.8	22	10.0	22	10.1	22	10.8
23	9.4	23	9.4	23	9.6	23	9.7	23	9.9	23	10.0	23	10.6

Table 6.--*Water temperatures in monitoring wells*--Continued

<u>CHARLO SITE</u>--Continued

<u>Well C-3</u>

Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
04-08-87		04-14-87		04-29-87		05-06-87		05-11-87		05-13-87		05-15-87		05-19-87	
6	6.7	6	6.9	6	8.2	6	7.8	6	8.3	6	8.4	6	8.5	6	8.7
7	6.8	7	6.9	7	7.6	7	7.6	7	7.9	7	8.0	7	8.1	7	8.3
8	6.9	8	7.0	8	7.5	8	7.6	8	7.9	8	7.9	8	7.9	8	8.2
9	7.0	9	7.1	9	7.5	9	7.6	9	7.9	9	7.8	9	7.9	9	8.0
10	7.1	10	7.2	10	7.5	10	7.7	10	7.9	10	7.9	10	7.9	10	8.0
11	7.3	11	7.3	11	7.6	11	7.7	11	7.9	11	7.9	11	8.0	11	8.1
12	7.4	12	7.4	12	7.7	12	7.8	12	8.0	12	8.0	12	8.0	12	8.1
13	7.6	13	7.7	13	7.9	13	7.9	13	8.0	13	8.1	13	8.0	13	8.2
14	7.8	14	7.8	14	7.9	14	7.9	14	8.1	14	8.1	14	8.1	14	8.2
15	8.0	15	8.0	15	8.1	15	8.0	15	8.2	15	8.2	15	8.2	15	8.2
16	8.2	16	8.2	16	8.2	16	8.1	16	8.2	16	8.3	16	8.3	16	8.3
17	8.4	17	8.4	17	8.4	17	8.3	17	8.4	17	8.4	17	8.4	17	8.4
18	8.5	18	8.5	18	8.5	18	8.4	18	8.5	18	8.5	18	8.5	18	8.5
19	8.7	19	8.6	19	8.6	19	8.6	19	8.6	19	8.6	19	8.6	19	8.6
20	8.8	20	8.7	20	8.7	20	8.7	20	8.7	20	8.7	20	8.7	20	8.7
21	8.9	21	8.8	21	8.7	21	8.7	21	8.7	21	8.8	21	8.7	21	8.7
22	9.0	22	8.9	22	8.8	22	8.8	22	8.8	22	8.8	22	8.8	22	8.8
23	9.0	23	9.0	23	9.0	23	8.9	23	8.9	23	8.9	23	8.9	23	8.9
24	9.2	24	9.1	24	9.1	24	9.0	24	9.0	24	9.0	24	9.0	24	9.0
25	9.3	25	9.3	25	9.2	25	9.1	25	9.1	25	9.2	25	9.1	25	9.1
26	9.4	26	9.4	26	9.2	26	9.2	26	9.2	26	9.2	26	9.2	26	9.2
27	9.5	27	9.5	27	9.4	27	9.3	27	9.3	27	9.3	27	9.3	27	9.3
28	9.5	28	9.5	28	9.4	28	9.4	28	9.4	28	9.4	28	9.4	28	9.3
29	9.6	29	9.6	29	9.5	29	9.5	29	9.5	29	9.5	29	9.4	29	9.4
30	9.7	30	9.6	30	9.6	30	9.5	30	9.6	30	9.5	30	9.5	30	9.4
31	9.8	31	9.7	31	9.6	31	9.6	31	9.6	31	9.6	31	9.6	31	9.6
32	9.8	32	9.8	32	9.7	32	9.7	32	9.7	32	9.6	32	9.6	32	9.6
33	9.9	33	9.8	33	9.9	33	9.9	33	9.8	33	9.8	33	9.8	33	9.8
05-22-87		05-28-87		06-02-87		06-09-87		06-18-87		06-24-87		06-30-87		07-09-87	
6	8.7	6	9.4	6	9.6	6	10.2	6	10.6	6	10.9	6	11.2	6	12.2
7	8.3	7	9.0	7	9.3	7	9.7	7	10.0	7	10.5	7	10.9	7	11.6
8	8.2	8	8.7	8	9.0	8	9.4	8	9.8	8	10.1	8	10.5	8	11.1
9	8.0	9	8.5	9	8.8	9	9.0	9	9.4	9	9.8	9	10.2	9	10.7
10	8.0	10	8.4	10	8.6	10	8.9	10	9.3	10	9.6	10	9.8	10	10.4
11	8.1	11	8.3	11	8.5	11	8.7	11	9.0	11	9.3	11	9.6	11	10.0
12	8.1	12	8.4	12	8.5	12	8.6	12	8.9	12	9.1	12	9.4	12	9.8
13	8.2	13	8.4	13	8.5	13	8.6	13	8.8	13	9.0	13	9.2	13	9.5
14	8.2	14	8.4	14	8.5	14	8.6	14	8.7	14	8.9	14	9.1	14	9.4
15	8.2	15	8.4	15	8.5	15	8.6	15	8.7	15	8.9	15	9.0	15	9.2
16	8.3	16	8.5	16	8.6	16	8.7	16	8.7	16	8.9	16	8.9	16	9.2
17	8.4	17	8.5	17	8.6	17	8.7	17	8.8	17	8.9	17	8.9	17	9.1
18	8.5	18	8.6	18	8.7	18	8.7	18	8.8	18	8.9	18	8.9	18	9.1
19	8.6	19	8.6	19	8.7	19	8.7	19	8.8	19	8.9	19	8.9	19	9.1
20	8.7	20	8.7	20	8.8	20	8.8	20	8.8	20	9.0	20	9.0	20	9.2
21	8.7	21	8.8	21	8.8	21	8.8	21	8.9	21	9.0	21	9.0	21	9.1
22	8.8	22	8.8	22	8.9	22	8.8	22	8.9	22	9.0	22	9.0	22	9.1
23	8.9	23	8.9	23	8.9	23	8.9	23	8.9	23	9.0	23	9.1	23	9.1
24	9.0	24	9.0	24	9.0	24	9.0	24	9.0	24	9.1	24	9.1	24	9.2
25	9.1	25	9.1	25	9.1	25	9.1	25	9.1	25	9.1	25	9.2	25	9.2
26	9.2	26	9.2	26	9.2	26	9.1	26	9.2	26	9.2	26	9.2	26	9.2
27	9.3	27	9.2	27	9.3	27	9.2	27	9.3	27	9.2	27	9.3	27	9.3
28	9.3	28	9.3	28	9.3	28	9.3	28	9.3	28	9.2	28	9.3	28	9.3
29	9.4	29	9.4	29	9.4	29	9.3	29	9.3	29	9.3	29	9.4	29	9.4
30	9.4	30	9.4	30	9.5	30	9.4	30	9.4	30	9.4	30	9.4	30	9.4
31	9.6	31	9.5	31	9.5	31	9.5	31	9.5	31	9.4	31	9.5	31	9.5
32	9.6	32	9.5	32	9.6	32	9.5	32	9.5	32	9.5	32	9.5	32	9.5
33	9.8	33	9.7	33	9.8	33	9.7	33	9.7	33	9.6	33	9.5	33	9.5

CHARLO SITE--Continued

Well C-3--Continued

Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
07-17-87		07-23-87		08-02-87		08-15-87		08-25-87		09-03-87		09-28-87	
6	12.4	6	12.8	6	--	6	13.8	6	13.8	6	13.8	6	--
7	11.9	7	12.3	7	13.4	7	13.3	7	13.6	7	13.6	7	13.6
8	11.6	8	11.9	8	12.5	8	12.9	8	13.1	8	13.2	8	13.3
9	11.1	9	11.4	9	12.0	9	12.4	9	12.7	9	12.8	9	13.1
10	10.8	10	11.0	10	11.6	10	11.9	10	12.3	10	12.5	10	12.8
11	10.6	11	10.6	11	11.2	11	11.6	11	11.9	11	12.1	11	12.6
12	10.0	12	10.4	12	10.8	12	11.2	12	11.6	12	11.8	12	12.3
13	9.8	13	10.0	13	10.5	13	10.8	13	11.2	13	11.5	13	12.0
14	9.6	14	9.8	14	10.2	14	10.6	14	10.9	14	11.2	14	11.7
15	9.4	15	9.6	15	10.0	15	10.4	15	10.7	15	10.9	15	11.5
16	9.3	16	9.3	16	9.8	16	10.1	16	10.5	16	10.6	16	11.2
17	9.2	17	9.2	17	9.7	17	9.9	17	10.3	17	10.5	17	11.0
18	9.2	18	9.2	18	9.5	18	9.7	18	10.1	18	10.3	18	10.9
19	9.1	19	9.1	19	9.4	19	9.6	19	9.9	19	10.0	19	10.7
20	9.1	20	9.1	20	9.3	20	9.5	20	9.8	20	9.9	20	10.5
21	9.1	21	9.1	21	9.3	21	9.4	21	9.6	21	9.7	21	10.4
22	9.1	22	9.1	22	9.3	22	9.3	22	9.5	22	9.6	22	10.2
23	9.1	23	9.1	23	9.3	23	9.3	23	9.5	23	9.6	23	10.0
24	9.2	24	9.2	24	9.3	24	9.3	24	9.4	24	9.5	24	9.9
25	9.2	25	9.2	25	9.3	25	9.3	25	9.4	25	9.4	25	9.8
26	9.2	26	9.2	26	9.3	26	9.3	26	9.4	26	9.4	26	9.7
27	9.3	27	9.3	27	9.3	27	9.3	27	9.4	27	9.4	27	9.7
28	9.3	28	9.3	28	9.4	28	9.3	28	9.4	28	9.4	28	9.7
29	9.4	29	9.4	29	9.4	29	9.3	29	9.5	29	9.4	29	9.6
30	9.4	30	9.4	30	9.5	30	9.4	30	9.5	30	9.4	30	9.6
31	9.5	31	9.5	31	9.5	31	9.4	31	9.5	31	9.5	31	9.6
32	9.5	32	9.5	32	9.5	32	9.4	32	9.5	32	9.5	32	9.6
33	9.5	33	9.5	33	9.5	33	9.5	33	9.5	32	9.5	33	9.6

Well C-4

Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
04-08-87		04-14-87		04-29-87		05-06-87		05-11-87		05-13-87		05-15-87		05-19-87	
6	6.5	6	6.7	6	7.1	6	7.8	6	8.2	6	8.3	6	8.6	6	8.8
7	6.5	7	6.7	7	7.1	7	7.5	7	7.8	7	7.9	7	8.0	7	8.4
8	6.5	8	6.7	8	7.1	8	7.4	8	7.7	8	7.8	8	7.9	8	8.2
9	6.5	9	6.7	9	7.1	9	7.4	9	7.6	9	7.7	9	7.8	9	8.0
10	6.5	10	6.7	10	7.1	10	7.4	10	7.6	10	7.7	10	7.7	10	7.9
11	6.6	11	6.7	11	7.1	11	7.4	11	7.6	11	7.7	11	7.7	11	7.9
05-22-87		05-28-87		06-02-87		06-09-87		06-18-87		06-24-87		06-30-87		07-09-87	
6	8.9	6	9.3	6	9.8	6	9.7	6	10.5	6	10.9	6	11.5	6	12.0
7	8.5	7	8.8	7	9.2	7	9.4	7	9.9	7	10.6	7	10.9	7	11.5
8	8.3	8	8.7	8	9.0	8	9.2	8	9.8	8	10.1	8	10.6	8	11.0
9	8.1	9	8.5	9	8.8	9	8.9	9	9.4	9	9.8	9	10.2	9	10.6
10	8.0	10	8.4	10	8.8	10	8.8	10	9.2	10	9.6	10	9.9	10	9.9
11	8.0	11	8.3	11	8.7	11	8.8	11	9.1	11	9.4	11	9.7	11	9.8
07-17-87		07-23-87		08-02-87		08-15-87		08-25-87		09-03-87		09-28-87			
6	12.3	6	12.5	6	--	6	13.8	6	14.0	6	13.7	6	--		
7	11.8	7	12.0	7	12.8	7	13.2	7	13.4	7	13.4	7	13.6		
8	11.5	8	11.7	8	12.2	8	12.7	8	13.0	8	13.1	8	13.4		
9	11.2	9	11.2	9	11.7	9	12.2	9	12.6	9	12.7	9	13.1		
10	10.8	10	10.9	10	11.5	10	11.9	10	12.2	10	12.4	10	12.8		
11	10.7	11	10.7	11	11.2	11	11.7	11	11.6	11	12.2	11	12.5		

CHARLO SITE--Continued

Well C-5

Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
04-08-87		04-14-87		04-29-87		05-06-87		05-11-87		05-13-87		05-14-87		05-15-87	
6	7.2	6	--	6	--	6	--	6	--	6	--	6	--	6	--
7	7.2	7	7.4	7	7.6	7	7.9	7	--	7	--	7	--	7	--
8	7.2	8	7.4	8	7.6	8	7.9	8	8.1	8	8.0	8	8.1	8	8.1
9	7.2	9	7.4	9	7.6	9	7.8	9	8.0	9	8.0	9	8.0	9	8.1
10	7.3	10	7.4	10	7.6	10	7.8	10	8.0	10	8.0	10	8.0	10	8.1
11	7.3	11	7.4	11	7.6	11	7.8	11	8.0	11	8.0	11	8.0	11	8.1
12	7.4	12	7.5	12	7.7	12	7.9	12	8.0	12	8.0	12	8.0	12	8.1
13	7.5	13	7.6	13	7.7	13	7.9	13	8.0	13	8.0	13	8.0	13	8.1
14	7.6	14	7.6	14	7.7	14	7.9	14	8.1	14	8.1	14	8.0	14	8.1
15	7.6	15	7.7	15	7.8	15	7.9	15	8.1	15	8.1	15	8.0	15	8.1
16	7.7	16	7.8	16	7.8	16	7.9	16	8.1	16	8.1	16	8.0	16	8.1
17	7.7	17	7.8	17	7.9	17	8.0	17	8.1	17	8.1	17	8.1	17	8.1
18	7.8	18	7.8	18	7.9	18	8.0	18	8.1	18	8.1	18	8.1	18	8.1
19	7.8	19	7.8	19	7.9	19	8.0	19	8.1	19	8.1	19	8.1	19	8.1
05-19-87		05-22-87		05-28-87		06-02-87		06-09-87		06-18-87		06-24-87		06-30-87	
7	--	7	--	7	--	7	9.5	7	9.9	7	--	7	--	7	--
8	8.4	8	8.5	8	9.1	8	9.3	8	9.7	8	10.3	8	10.6	8	11.0
9	8.2	9	8.3	9	8.9	9	9.1	9	9.5	9	9.9	9	10.1	9	10.6
10	8.2	10	8.2	10	8.6	10	8.8	10	9.2	10	9.6	10	9.9	10	10.1
11	8.1	11	8.2	11	8.5	11	8.7	11	9.0	11	9.3	11	9.6	11	9.9
12	8.1	12	8.2	12	8.4	12	8.6	12	8.9	12	9.2	12	9.4	12	9.6
13	8.2	13	8.2	13	8.4	13	8.5	13	8.8	13	9.0	13	9.2	13	9.5
14	8.2	14	8.2	14	8.4	14	8.5	14	8.6	14	8.9	14	9.1	14	9.3
15	8.2	15	8.2	15	8.4	15	8.5	15	8.6	15	8.8	15	9.0	15	9.1
16	8.2	16	8.2	16	8.4	16	8.5	16	8.6	16	8.8	16	8.9	16	9.1
17	8.2	17	8.2	17	8.4	17	8.5	17	8.6	17	8.8	17	8.9	17	9.0
18	8.2	18	8.2	18	8.5	18	8.5	18	8.6	18	8.8	18	8.9	18	9.0
19	8.2	19	8.2	19	8.4	19	8.5	19	9.6	19	8.8	19	8.9	19	9.0
07-09-87		07-17-87		07-23-87		08-02-87		08-15-87		08-25-87		09-02-87		09-28-87	
8	11.6	8	12.0	8	12.3	8	12.6	8	13.4	8	13.7	8	13.8	8	13.7
9	11.2	9	11.6	9	11.7	9	12.2	9	12.8	9	13.2	9	13.2	9	13.4
10	10.8	10	11.2	10	11.2	10	11.7	10	12.4	10	12.8	10	12.9	10	13.3
11	10.4	11	10.9	11	11.0	11	11.4	11	11.9	11	12.4	11	12.4	11	13.0
12	10.1	12	10.6	12	10.6	12	11.0	12	11.4	12	12.0	12	12.1	12	12.6
13	9.7	13	10.1	13	10.3	13	10.7	13	11.1	13	11.6	13	11.8	13	12.3
14	9.5	14	9.8	14	9.8	14	10.5	14	10.9	14	11.2	14	11.4	14	12.0
15	9.5	15	9.7	15	9.6	15	10.1	15	10.6	15	11.0	15	11.1	15	11.8
16	9.3	16	9.5	16	9.5	16	9.9	16	10.4	16	10.7	16	10.8	16	11.4
17	9.2	17	9.4	17	9.4	17	9.8	17	10.1	17	10.5	17	10.6	17	11.2
18	9.2	18	9.3	18	9.3	18	9.6	18	9.9	18	10.3	18	10.5	18	11.0
19	9.1	19	9.3	19	9.3	19	9.6	19	9.8	19	10.1	19	10.3	19	10.9

Well C-6

Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
04-08-87		04-14-87		04-29-87		05-06-87		05-11-87		05-13-87		05-15-87		05-19-87	
6	6.5	6	7.0	6	--	6	--	6	--	6	--	6	--	6	--
7	6.5	7	6.9	7	7.3	7	7.6	7	--	7	8.3	7	8.4	7	8.6
8	6.5	8	6.8	8	7.3	8	7.5	8	7.9	8	7.9	8	8.1	8	8.5
9	6.6	9	6.9	9	7.3	9	7.5	9	7.8	9	7.9	9	7.9	9	8.2
05-22-87		05-28-87		06-02-87		06-09-87		06-18-87		06-24-87		06-30-87		07-09-87	
7	8.7	7	9.4	7	9.6	7	10.2	7	--	7	--	7	--	7	--
8	8.5	8	9.1	8	9.4	8	9.8	8	10.3	8	10.7	8	11.1	8	11.5
9	8.3	9	8.9	9	9.1	9	9.4	9	9.8	9	10.1	9	10.7	9	11.0
07-17-87		07-23-87		08-02-87		08-15-87		08-25-87		09-02-87		09-28-87			
8	--	8	11.9	8	12.7	8	13.2	8	13.6	8	13.5	8	13.7		
9	11.5	9	11.6	9	12.2	9	12.7	9	13.1	9	13.2	9	13.4		

Table 6.--*Water temperatures in monitoring wells*--Continued

CHARLO SITE--Continued

Well C-7

Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
04-08-87		04-14-87		04-29-87		05-06-87		05-11-87		05-12-87		05-13-87		05-14-87	
8	7.3	8	7.4	8	8.0	8	8.4	8	8.9	8	8.9	8	9.1	8	9.2
9	7.3	9	7.4	9	8.0	9	8.3	9	8.8	9	8.8	9	8.9	9	9.0
10	7.2	10	7.4	10	7.9	10	8.3	10	8.7	10	8.7	10	8.7	10	8.8
11	7.3	11	7.4	11	7.9	11	8.3	11	8.6	11	8.6	11	8.6	11	8.6
12	7.4	12	7.5	12	8.0	12	8.3	12	8.6	12	8.5	12	8.6	12	8.6
13	7.6	13	7.5	13	8.0	13	8.3	13	8.6	13	8.5	13	8.6	13	8.6
14	7.8	14	7.7	14	8.1	14	8.3	14	8.6	14	8.5	14	8.6	14	8.6
15	7.9	15	7.8	15	8.2	15	8.4	15	8.6	15	8.6	15	8.6	15	8.6
16	8.1	16	7.9	16	8.3	16	8.4	16	8.6	16	8.6	16	8.7	16	8.7
17	8.2	17	8.0	17	8.4	17	8.5	17	8.7	17	8.7	17	8.8	17	8.7
18	8.3	18	8.2	18	8.5	18	8.6	18	8.7	18	8.7	18	8.8	18	8.7
19	8.4	19	8.3	19	8.5	19	8.6	19	8.8	19	8.8	19	8.8	19	8.8
20	8.5	20	8.4	20	8.6	20	8.7	20	8.8	20	8.8	20	8.8	20	8.8
21	8.6	21	8.5	21	8.7	21	8.8	21	8.9	21	8.8	21	8.8	21	8.9
22	8.7	22	8.6	22	8.7	22	8.8	22	8.9	22	8.8	22	8.8	22	8.9
23	8.8	23	8.7	23	8.7	23	8.8	23	9.0	23	8.9	23	8.9	23	8.9
24	8.8	24	8.8	24	8.8	24	8.9	24	9.0	24	8.9	24	9.0	24	8.9
25	8.9	25	8.8	25	8.8	25	8.9	25	9.0	25	9.0	25	9.0	25	9.0
26	8.9	26	8.9	26	8.9	26	8.9	26	9.1	26	9.0	26	9.0	26	9.0
27	9.0	27	9.0	27	9.0	27	9.0	27	9.1	27	9.1	27	9.1	27	9.1
28	9.1	28	9.1	28	9.1	28	9.1	28	9.2	28	9.1	28	9.2	28	9.1
29	9.2	29	9.2	29	9.2	29	9.2	29	9.3	29	9.2	29	9.2	29	9.2
30	9.3	30	9.3	30	9.2	30	9.2	30	9.3	30	9.3	30	9.3	30	9.2
31	9.4	31	9.3	31	9.3	31	9.3	31	9.4	31	9.3	31	9.3	31	9.3
32	9.4	32	9.4	32	9.4	32	9.4	32	9.4	32	9.4	32	9.4	32	9.3
33	9.4	33	9.4	33	9.4	33	9.4	33	9.4	33	9.4	33	9.4	33	9.4
34	9.5	34	9.4	34	9.4	34	9.4	34	9.5	34	9.4	34	9.4	34	9.4
35	9.5	35	9.4	35	9.4	35	9.4	35	9.5	35	9.4	35	9.4	35	9.4
36	9.5	36	9.4	36	9.4	36	9.4	36	9.5	36	9.4	36	9.4	36	9.4

Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
05-15-87		05-19-87		05-22-87		05-28-87		06-02-87		06-09-87		06-18-87		06-24-87	
8	9.4	8	9.9	8	10.2	8	10.9	8	11.1	8	11.1	8	11.6	8	12.0
9	9.1	9	9.7	9	9.9	9	10.5	9	10.8	9	10.8	9	11.1	9	11.6
10	9.0	10	9.4	10	9.5	10	10.1	10	10.5	10	10.5	10	10.8	10	11.2
11	8.7	11	9.0	11	9.1	11	9.7	11	9.9	11	10.1	11	10.5	11	10.7
12	8.6	12	8.8	12	8.9	12	9.3	12	9.6	12	9.8	12	10.1	12	10.3
13	8.6	13	8.7	13	8.8	13	9.1	13	9.3	13	9.5	13	9.8	13	10.1
14	8.6	14	8.7	14	8.8	14	9.0	14	9.2	14	9.3	14	9.6	14	9.8
15	8.7	15	8.7	15	8.8	15	8.9	15	9.0	15	9.2	15	9.4	15	9.6
16	8.7	16	8.8	16	8.8	16	8.9	16	9.0	16	9.1	16	9.3	16	9.5
17	8.7	17	8.8	17	8.8	17	8.9	17	9.0	17	9.1	17	9.2	17	9.3
18	8.7	18	8.8	18	8.8	18	9.0	18	9.1	18	9.1	18	9.2	18	9.3
19	8.8	19	8.8	19	8.8	19	9.0	19	9.1	19	9.1	19	9.2	19	9.3
20	8.8	20	8.8	20	8.8	20	9.0	20	9.1	20	9.1	20	9.2	20	9.3
21	8.8	21	8.8	21	8.9	21	9.0	21	9.1	21	9.1	21	9.2	21	9.3
22	8.9	22	8.9	22	8.9	22	9.0	22	9.1	22	9.1	22	9.2	22	9.3
23	8.9	23	8.9	23	8.9	23	9.1	23	9.1	23	9.1	23	9.2	23	9.3
24	8.9	24	8.9	24	8.9	24	9.0	24	9.1	24	9.1	24	9.2	24	9.3
25	9.0	25	9.0	25	9.0	25	9.0	25	9.1	25	9.2	25	9.2	25	9.3
26	9.0	26	9.0	26	9.0	26	9.1	26	9.2	26	9.2	26	9.3	26	9.3
27	9.1	27	9.1	27	9.1	27	9.2	27	9.2	27	9.2	27	9.3	27	9.3
28	9.1	28	9.2	28	9.1	28	9.2	28	9.3	28	9.3	28	9.4	28	9.4
29	9.2	29	9.2	29	9.2	29	9.3	29	9.3	29	9.3	29	9.4	29	9.4
30	9.2	30	9.3	30	9.2	30	9.3	30	9.3	30	9.3	30	9.4	30	9.4
31	9.3	31	9.3	31	9.3	31	9.3	31	9.4	31	9.4	31	9.4	31	9.4
32	9.3	32	9.3	32	9.3	32	9.4	32	9.4	32	9.4	32	9.4	32	9.5
33	9.3	33	9.4	33	9.4	33	9.4	33	9.5	33	9.5	33	9.5	33	9.5
34	9.4	34	9.4	34	9.4	34	9.5	34	9.5	34	9.5	34	9.5	34	9.5
35	9.4	35	9.4	35	9.4	35	9.5	35	9.5	35	9.5	35	9.5	35	9.5
36	9.4	36	9.4	36	9.4	36	9.5	36	9.5	36	9.5	36	9.5	36	9.5

CHARLO SITE--Continued

Well C-7--Continued

Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
06-30-87		07-09-87		07-16-87		07-23-87		08-02-87		08-15-87		08-25-87		09-03-87	
8	--	8	--	8	13.4	8	13.3	8	13.6	8	14.1	8	14.4	8	14.2
9	11.8	9	12.6	9	13.0	9	13.0	9	13.1	9	13.6	9	14.2	9	13.8
10	11.5	10	12.1	10	12.5	10	12.6	10	12.7	10	13.2	10	13.8	10	13.6
11	10.9	11	11.6	11	12.1	11	12.0	11	12.1	11	12.6	11	13.3	11	13.1
12	10.6	12	11.2	12	11.6	12	11.6	12	11.8	12	12.3	12	12.7	12	12.7
13	10.2	13	10.8	13	11.1	13	11.1	13	11.3	13	11.8	13	12.3	13	12.2
14	10.0	14	10.5	14	10.7	14	10.7	14	11.2	14	11.5	14	11.9	14	11.9
15	9.8	15	10.1	15	10.5	15	10.3	15	10.8	15	11.1	15	11.6	15	11.6
16	9.6	16	9.9	16	10.2	16	10.0	16	10.6	16	10.9	16	11.2	16	11.4
17	9.5	17	9.7	17	9.9	17	9.8	17	10.4	17	10.6	17	11.0	17	11.0
18	9.4	18	9.6	18	9.8	18	9.7	18	10.1	18	10.4	18	10.7	18	10.9
19	9.3	19	9.6	19	9.7	19	9.6	19	9.9	19	10.3	19	10.5	19	10.6
20	9.3	20	9.4	20	9.6	20	9.5	20	9.8	20	10.0	20	10.3	20	10.5
21	9.3	21	9.4	21	9.5	21	9.5	21	9.7	21	9.9	21	10.1	21	10.2
22	9.3	22	9.4	22	9.5	22	9.4	22	9.6	22	9.8	22	10.0	22	10.1
23	9.3	23	9.4	23	9.4	23	9.4	23	9.6	23	9.7	23	9.9	23	10.0
24	9.3	24	9.4	24	9.4	24	9.4	24	9.5	24	9.6	24	9.8	24	9.9
25	9.3	25	9.4	25	9.5	25	9.4	25	9.5	25	9.6	25	9.7	25	9.8
26	9.3	26	9.4	26	9.5	26	9.4	26	9.5	26	9.5	26	9.7	26	9.7
27	9.4	27	9.4	27	9.5	27	9.4	27	9.5	27	9.5	27	9.6	27	9.6
28	9.4	28	9.4	28	9.5	28	9.4	28	9.5	28	9.5	28	9.6	28	9.6
29	9.4	29	9.4	29	9.5	29	9.4	29	9.5	29	9.5	29	9.6	29	9.6
30	9.4	30	9.4	30	9.5	30	9.4	30	9.5	30	9.5	30	9.6	30	9.6
31	9.5	31	9.5	31	9.5	31	9.4	31	9.5	31	9.5	31	9.6	31	9.6
32	9.5	32	9.5	32	9.5	32	9.4	32	9.5	32	9.5	32	9.6	32	9.6
33	9.5	33	9.5	33	9.5	33	9.4	33	9.6	33	9.5	33	9.6	33	9.6
34	9.5	34	9.5	34	9.5	34	9.5	34	9.6	34	9.5	34	9.6	34	9.6
35	9.5	35	9.5	35	9.6	35	9.5	35	9.6	35	9.5	35	9.6	35	9.6
36	9.6	36	9.5	36	9.6	36	9.5	36	9.6	36	9.6	36	9.6	36	9.6

Depth (ft)	Temperature (°C)
09-28-87	
8	13.8
9	13.6
10	13.4
11	13.2
12	12.9
13	12.7
14	12.4
15	12.2
16	11.9
17	11.6
18	11.4
19	11.2
20	11.0
21	10.8
22	10.7
23	10.6
24	10.4
25	10.3
26	10.3
27	10.0
28	10.0
29	9.9
30	9.8
31	9.8
32	9.8
33	9.8
34	9.8
35	9.8
36	9.8

Table 6.--*Water temperatures in monitoring wells*--Continued

D'ASTE SITE

Well D-1

03-25-87		04-07-87		04-14-87		04-29-87		05-06-87		05-11-87		05-12-87		05-13-87	
Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
12	8.9	12	8.9	12	8.9	12	8.8	12	9.1	12	9.2	12	9.1	12	9.1
13	8.9	13	8.9	13	8.9	13	8.8	13	9.0	13	9.2	13	9.1	13	9.1
14	8.9	14	8.9	14	8.9	14	8.8	14	9.0	14	9.2	14	9.1	14	9.2
15	9.0	15	9.0	15	9.0	15	8.8	15	9.0	15	9.2	15	9.1	15	9.2
16	9.1	16	9.1	16	9.0	16	8.8	16	9.1	16	9.2	16	9.1	16	9.2
17	9.2	17	9.2	17	9.2	17	8.9	17	9.2	17	9.2	17	9.2	17	9.2
18	9.4	18	9.3	18	9.3	18	9.0	18	9.2	18	9.4	18	9.2	18	9.3
19	9.4	19	9.3	19	9.4	19	9.1	19	9.2	19	9.4	19	9.3	19	9.3
20	9.6	20	9.5	20	9.5	20	9.2	20	9.3	20	9.4	20	9.4	20	9.4
21	9.7	21	9.6	21	9.6	21	9.3	21	9.5	21	9.5	21	9.5	21	9.5
22	9.8	22	9.7	22	9.6	22	9.4	22	9.5	22	9.6	22	9.6	22	9.6
23	9.9	23	9.8	23	9.8	23	9.5	23	9.6	23	9.7	23	9.7	23	9.7
24	9.9	24	9.9	24	9.8	24	9.6	24	9.7	24	9.8	24	9.8	24	9.8
25	10.1	25	10.0	25	9.9	25	9.7	25	9.8	25	9.8	25	9.8	25	9.8
26	10.2	26	10.1	26	10.0	26	9.8	26	9.9	26	9.9	26	9.9	26	9.9
27	10.3	27	10.1	27	10.1	27	9.9	27	10.0	27	10.0	27	9.9	27	10.0
28	10.4	28	10.3	28	10.2	28	10.0	28	10.1	28	10.1	28	10.1	28	10.1
29	10.5	29	10.4	29	10.3	29	10.0	29	10.2	29	10.2	29	10.2	29	10.1
30	10.5	30	10.5	30	10.4	30	10.1	30	10.3	30	10.3	30	10.3	30	10.3
31	10.5	31	10.5	31	10.4	31	10.1	31	10.3	31	10.4	31	10.4	31	10.4
32	10.6	32	10.5	32	10.5	32	10.2	32	10.4	32	10.4	32	10.5	32	10.4
33	10.6	33	10.6	33	10.5	33	10.2	33	10.4	33	10.5	33	10.5	34	10.5
34	10.6	34	10.6	34	10.6	34	10.3	34	10.5	34	10.5	34	10.5	34	10.5
35	10.6	35	10.6	35	10.6	35	10.3	35	10.5	35	10.5	35	10.5	35	10.5
36	10.7	36	10.6	36	10.6	36	10.4	36	10.6	36	10.6	36	10.5	36	10.5
37	10.7	37	10.7	37	10.6	37	10.4	37	10.6	37	10.6	37	10.6	37	10.6
38	10.7	38	10.7	38	10.7	38	10.4	38	10.6	38	10.6	38	10.6	38	10.6
39	10.7	39	10.7	39	10.7	39	10.5	39	10.6	39	10.6	39	10.6	39	10.7
40	10.7	40	10.7	40	10.7	40	10.5	40	10.6	40	10.7	40	10.6	40	10.7
41	10.7	41	10.8	41	10.7	41	10.5	41	10.6	41	10.7	41	10.7	41	10.7
42	10.8	42	10.8	42	10.7	42	10.6	42	10.7	42	10.7	42	10.7	42	10.7
43	10.8	43	10.8	43	10.7	43	10.6	43	10.7	43	10.7	43	10.7	43	10.7
44	10.8	44	10.8	44	10.7	44	10.7	44	10.7	44	10.7	44	10.7	44	10.7
45	10.8	45	10.8	45	10.8	45	10.7	45	10.7	45	10.7	45	10.7	45	10.7
46	10.8	46	10.8	46	10.8	46	10.7	46	10.7	46	10.8	46	10.7	46	10.7
47	10.8	47	10.8	47	10.8	47	10.7	47	10.7	47	10.8	47	10.7	47	10.7
48	10.8	48	10.8	48	10.8	48	10.7	48	10.7	48	10.8	48	10.8	48	10.8
49	10.8	49	10.8	49	10.9	49	10.8	49	10.8	49	10.8	49	10.9	49	10.9
50	10.8	50	10.9	50	10.9	50	10.9	50	10.9	50	10.9	50	10.9	50	10.9
51	10.9	51	10.9	51	10.9	51	10.9	51	10.9	51	10.9	51	10.9	51	10.9
52	10.9	52	10.9	52	10.9	52	10.9	52	10.9	52	11.0	52	10.9	52	11.0

Table 6.--*Water temperatures in monitoring wells*--Continued

D'ASTE SITE--Continued

Well D-1--Continued

Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
05-14-87		05-15-87		05-19-87		05-22-87		05-28-87		06-02-87		06-09-87		06-18-87	
11	9.1	11	--	11	--	11	--	11	9.4	11	9.7	11	--	11	--
12	9.1	12	9.2	12	9.2	12	9.2	12	9.4	12	9.6	12	9.7	12	10.0
13	9.2	13	9.2	13	9.2	13	9.2	13	9.4	13	9.5	13	9.7	13	9.8
14	9.1	14	9.1	14	9.2	14	9.2	14	9.3	14	9.5	14	9.6	14	9.7
15	9.2	15	9.1	15	9.2	15	9.2	15	9.3	15	9.5	15	9.6	15	9.7
16	9.2	16	9.2	16	9.2	16	9.2	16	9.4	16	9.5	16	9.6	16	9.7
17	9.3	17	9.3	17	9.2	17	9.3	17	9.4	17	9.5	17	9.6	17	9.7
18	9.4	18	9.3	18	9.3	18	9.3	18	9.5	18	9.6	18	9.6	18	9.7
19	9.5	19	9.4	19	9.4	19	9.4	19	9.5	19	9.6	19	9.6	19	9.7
20	9.6	20	9.4	20	9.4	20	9.4	20	9.5	20	9.6	20	9.7	20	9.7
21	9.6	21	9.5	21	9.5	21	9.4	21	9.6	21	9.7	21	9.7	21	9.7
22	9.7	22	9.6	22	9.5	22	9.5	22	9.6	22	9.7	22	9.8	22	9.7
23	9.8	23	9.6	23	9.6	23	9.6	23	9.7	23	9.7	23	9.8	23	9.8
24	9.9	24	9.6	24	9.7	24	9.7	24	9.8	24	9.8	24	9.8	24	9.8
25	9.9	25	9.8	25	9.8	25	9.8	25	9.8	25	9.9	25	9.9	25	9.8
26	10.1	26	9.9	26	9.9	26	9.9	26	9.9	26	9.9	26	9.9	26	9.9
27	10.2	27	9.9	27	10.1	27	9.9	27	9.9	27	10.0	27	10.0	27	10.0
28	10.3	28	10.0	28	10.2	28	10.0	28	10.1	28	10.1	28	10.1	28	10.1
29	10.3	29	10.0	29	10.3	19	10.1	29	10.1	29	10.1	29	10.1	29	10.1
30	10.4	30	10.1	30	10.3	30	10.2	30	10.2	30	10.2	30	10.2	30	10.1
31	10.4	31	10.3	31	10.3	31	10.2	31	10.3	31	10.2	31	10.3	31	10.2
32	10.5	32	10.3	32	10.4	32	10.3	32	10.4	32	10.3	32	10.4	32	10.2
33	10.5	33	10.3	35	10.4	33	10.3	33	10.4	33	10.5	33	10.4	33	10.3
34	10.6	34	10.3	34	10.5	34	10.5	34	10.5	34	10.5	34	10.4	34	10.3
35	10.6	35	10.4	35	10.5	35	10.5	35	10.5	35	10.5	35	10.4	35	10.5
36	10.6	36	10.5	36	10.5	36	10.5	36	10.5	36	10.5	36	10.5	36	10.5
37	10.6	37	10.5	37	10.5	37	10.6	37	10.5	37	10.5	37	10.5	37	10.5
38	10.6	38	10.6	38	10.6	38	10.6	38	10.6	38	10.6	38	10.5	38	10.5
39	10.6	39	10.6	39	10.6	39	10.6	39	10.6	39	10.6	39	10.5	39	10.5
40	10.7	40	10.6	40	10.6	40	10.6	40	10.6	40	10.6	40	10.6	40	10.5
41	10.7	41	10.6	41	10.6	41	10.6	41	10.6	41	10.6	41	10.6	41	10.6
42	10.7	42	10.7	42	10.7	42	10.7	42	10.6	42	10.7	42	10.6	42	10.6
43	10.7	43	10.7	43	10.7	43	10.7	43	10.7	43	10.7	43	10.6	43	10.6
44	10.7	44	10.7	44	10.7	44	10.7	44	10.7	44	10.7	44	10.7	44	10.6
45	10.7	45	10.7	45	10.7	45	10.7	45	10.7	45	10.7	45	10.7	45	10.6
46	10.8	46	10.7	46	10.7	46	10.7	46	10.7	46	10.7	46	10.7	46	10.6
47	10.9	47	10.7	47	10.7	47	10.7	47	10.7	47	10.7	47	10.7	47	10.6
48	10.9	48	10.8	48	10.9	48	10.8	48	10.8	48	10.8	48	10.7	48	10.7
49	10.9	49	10.8	49	10.9	49	10.9	49	10.9	49	10.9	49	10.7	49	10.7
50	11.0	50	10.9	50	10.9	50	10.9	50	10.9	50	10.9	50	10.8	50	10.8
51	11.0	51	10.9	51	10.9	51	10.9	51	10.9	51	10.9	51	10.9	51	10.9
52	11.0	52	10.9	52	11.0	52	11.0	52	10.9	52	11.0	52	10.9	52	10.9

Table 6.--*Water temperatures in monitoring wells*--Continued

D'ASTE SITE--Continued

Well D-1--Continued

Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
06-24-87		06-30-87		07-09-87		07-16-87		08-25-87		09-09-87		09-28-87			
11	--	11	10.7	11	11.6	11	12.1	11	13.6	11	13.7	11	--		
12	10.3	12	10.5	12	11.2	12	11.5	12	13.1	12	13.1	12	--		
13	10.1	13	10.3	13	10.7	13	11.0	13	12.5	13	12.7	13	13.4		
14	9.9	14	10.0	14	10.5	14	10.7	14	11.6	14	12.3	14	13.0		
15	9.9	15	9.9	15	10.3	15	10.5	15	11.7	15	12.0	15	12.7		
16	9.8	16	9.9	16	10.1	16	10.4	16	11.5	16	11.7	16	12.4		
17	9.9	17	9.9	17	10.1	17	10.3	17	11.2	17	11.5	17	12.1		
18	9.9	18	9.9	18	10.0	18	10.2	18	11.0	18	11.2	18	11.9		
19	9.9	19	9.9	19	10.0	19	10.1	19	10.8	19	11.1	19	11.6		
20	9.9	20	9.9	20	10.0	20	10.0	20	10.7	20	10.9	20	11.4		
21	9.9	21	10.0	21	10.0	21	10.0	21	10.6	21	10.9	21	11.3		
22	9.9	22	10.0	22	10.0	22	10.0	22	10.5	22	10.9	22	11.1		
23	9.9	23	10.0	23	10.0	23	10.0	23	10.4	23	10.6	23	11.0		
24	10.0	24	10.0	24	10.0	24	10.1	24	10.4	24	10.5	24	10.9		
25	10.0	25	10.0	25	10.0	25	10.1	25	10.4	25	10.4	25	10.7		
26	10.0	26	10.1	26	10.1	26	10.1	26	10.4	26	10.4	26	10.6		
27	10.1	27	10.1	27	10.2	27	10.2	27	10.4	27	10.4	27	10.6		
28	10.1	28	10.1	28	10.2	28	10.2	28	10.4	28	10.4	28	10.5		
29	10.2	29	10.3	29	10.2	29	10.2	29	10.4	29	10.4	29	10.5		
30	10.2	30	10.4	30	10.2	30	10.2	30	10.4	30	10.4	30	10.5		
31	10.3	31	10.4	31	10.2	31	10.2	31	10.4	31	10.4	31	10.5		
32	10.3	32	10.4	32	10.2	32	10.3	32	10.4	32	10.4	32	10.4		
33	10.3	33	10.4	33	10.4	33	10.4	33	10.4	33	10.4	33	10.4		
34	10.3	34	10.5	34	10.4	34	10.4	34	10.4	34	10.4	34	10.5		
35	10.5	35	10.5	35	10.4	35	10.4	35	10.5	35	10.5	35	10.5		
36	10.5	36	10.5	36	10.5	36	10.5	36	10.5	36	10.5	36	10.5		
37	10.5	37	10.5	37	10.5	37	10.5	37	10.5	37	10.5	37	10.5		
38	10.5	38	10.5	38	10.5	38	10.5	38	10.5	38	10.5	38	10.5		
39	10.6	39	10.5	39	10.5	39	10.5	39	10.5	39	10.5	39	10.7		
40	10.6	40	10.6	40	10.6	40	10.5	40	10.5	40	10.5	40	10.7		
41	10.6	41	10.6	41	10.6	41	10.6	41	10.5	41	10.5	41	10.7		
42	10.6	42	10.6	42	10.6	42	10.6	42	10.5	42	10.5	42	10.7		
43	10.6	43	10.6	43	10.6	43	10.6	43	10.5	43	10.5	43	10.7		
44	10.7	44	10.7	44	10.6	44	10.6	44	10.6	44	10.6	44	10.7		
45	10.7	45	10.7	45	10.6	45	10.6	45	10.7	45	10.7	45	10.7		
46	10.7	46	10.7	46	10.7	46	10.6	46	10.8	46	10.7	46	10.7		
47	10.7	47	10.7	47	10.7	47	10.7	47	10.8	47	10.8	47	10.7		
48	10.7	48	10.7	48	10.7	48	10.8	48	10.8	48	10.8	48	10.7		
49	10.8	49	10.9	49	10.7	49	10.7	49	10.8	49	10.8	49	10.7		
50	10.9	50	10.9	50	10.8	50	10.8	50	10.8	50	10.8	50	10.7		
51	10.9	51	10.9	51	10.9	51	10.8	51	10.8	51	10.8	51	10.7		
52	10.9	52	10.9	52	10.9	52	10.9	52	10.9	52	10.8	52	10.7		

D'ASTE SITE--Continued

Well D-2

Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
03-25-87		04-07-87		04-14-87		04-29-87		05-06-87		05-11-87		05-15-87		05-15-87	
11	--	11	9.1	11	--	11	--	11	--	11	--	11	--	12	--
12	9.5	12	9.2	12	--	12	--	12	--	12	--	12	--	12	--
13	9.5	13	9.3	13	--	13	9.6	13	9.5	13	9.5	13	9.4	13	9.3
14	9.6	14	9.4	14	--	14	9.3	14	9.4	14	9.5	14	9.3	14	9.3
15	9.6	15	9.5	15	--	15	9.2	15	9.4	15	9.4	15	9.3	15	9.3
16	9.7	16	9.6	16	--	16	9.3	16	9.5	16	9.5	16	9.4	16	9.4
17	9.8	17	9.7	17	--	17	9.4	17	9.6	17	9.6	17	9.5	17	9.5
18	10.0	18	9.9	18	--	18	9.5	18	9.6	18	9.7	18	9.7	18	9.6
19	10.1	19	9.9	19	--	19	9.6	19	9.7	19	9.8	19	9.7	19	9.7
20	10.2	20	10.0	20	--	20	9.7	20	9.8	20	9.9	20	9.9	20	9.8
21	10.3	21	10.1	21	10.5	21	9.8	21	9.9	21	10.0	21	9.9	21	9.9
22	10.5	22	10.3	22	10.5	22	9.9	22	10.1	22	10.1	22	10.1	22	9.9
23	10.5	23	10.5	23	10.5	23	10.0	23	10.2	23	10.2	23	10.2	23	10.0
24	10.6	24	10.5	24	10.6	24	10.1	24	10.4	24	10.3	24	10.3	24	10.0
25	10.6	25	10.6	25	10.6	25	10.2	25	10.4	25	10.4	25	10.4	25	10.4
26	10.7	26	10.6	26	10.6	26	10.3	26	10.5	26	10.5	26	10.5	26	10.5
27	10.7	27	10.7	27	10.7	27	10.4	27	10.5	27	10.6	27	10.5	27	10.5
28	10.8	28	10.7	28	10.7	28	10.4	28	10.6	28	10.7	28	10.6	28	10.6
29	10.8	29	10.8	29	10.7	29	10.4	29	10.6	29	10.7	29	10.6	29	10.6
30	10.8	30	10.8	30	10.7	30	10.5	30	10.7	30	10.7	30	10.7	30	10.7
31	10.8	31	10.8	31	10.8	31	10.5	31	10.7	31	10.8	31	10.7	31	10.7
32	10.9	32	10.8	32	10.8	32	10.5	32	10.8	32	10.8	32	10.8	32	10.7
33	10.9	33	10.8	33	10.8	33	10.6	33	10.8	33	10.8	33	10.8	33	10.8
34	10.9	34	10.9	34	10.8	34	10.6	34	10.8	34	10.9	34	10.8	34	10.8
35	10.9	35	10.9	35	10.8	35	10.6	35	10.8	35	10.9	35	10.8	35	10.8
36	10.9	36	10.9	36	10.8	36	10.7	36	10.8	36	10.9	36	10.9	36	10.8
37	10.9	37	10.9	37	10.8	37	10.7	37	10.9	37	10.9	37	10.9	37	10.8
38	10.9	38	10.9	38	10.8	38	10.7	38	10.9	38	10.9	38	10.9	38	10.8
39	11.0	39	10.9	39	10.9	39	10.7	39	10.9	39	10.9	39	10.9	39	10.9
40	11.0	40	10.9	40	10.9	40	10.7	40	10.9	40	10.9	40	10.9	40	10.9
41	11.0	41	10.9	41	10.9	41	10.7	41	10.9	41	11.0	41	10.9	41	10.9
42	11.0	42	10.9	42	10.9	42	10.7	42	10.9	42	11.0	42	10.9	42	10.9
43	11.0	43	10.9	43	10.9	43	10.8	43	11.0	43	11.0	43	10.9	43	10.9
44	11.0	44	10.9	44	10.9	44	10.8	44	11.0	44	11.0	44	11.0	44	10.9
45	11.0	45	11.0	45	10.9	45	10.8	45	11.0	45	11.0	45	11.0	45	11.0
46	11.0	46	11.0	46	10.9	46	10.8	46	11.0	46	11.0	46	11.1	46	11.0
47	11.0	47	11.0	47	10.9	47	10.8	47	11.0	47	11.1	47	11.0	47	11.0
48	11.0	48	11.0	48	10.9	48	10.8	48	11.0	48	11.1	48	11.0	48	11.0
49	11.0	49	11.0	49	10.9	49	10.8	49	11.0	49	11.1	49	11.0	49	11.0
50	11.0	50	11.0	50	10.9	50	10.8	50	11.0	50	11.1	50	11.0	50	11.0
51	11.0	51	11.0	51	10.9	51	10.8	51	11.0	51	11.1	51	11.0	51	11.0
52	11.0	52	11.0	52	10.9	52	10.8	52	11.0	52	11.1	52	11.0	52	11.0
53	11.0	53	11.0	53	--	53	10.8	53	11.0	53	11.1	53	--	53	11.0

D'ASTE SITE--Continued

Well D-2--Continued

Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
05-19-87		05-22-87		05-28-87		06-02-87		06-09-87		06-18-87		06-24-87		06-30-87	
12	9.5	12	--	12	9.4	12	9.6	12	9.7	12	9.7	12	--	12	10.3
13	9.4	13	9.3	13	9.4	13	9.5	13	9.6	13	9.6	13	10.0	13	9.9
14	9.3	14	9.3	14	9.4	14	9.5	14	9.6	14	9.6	14	9.8	14	9.8
15	9.3	15	9.3	15	9.4	15	9.5	15	9.6	15	9.6	15	9.7	15	9.8
16	9.5	16	9.3	16	9.5	16	9.6	16	9.6	16	9.6	16	9.7	16	9.8
17	9.6	17	9.4	17	9.5	17	9.7	17	9.6	17	9.6	17	9.7	17	9.8
18	9.7	18	9.5	18	9.6	18	9.7	18	9.7	18	9.7	18	9.7	18	9.9
19	9.7	19	9.6	19	9.7	19	9.8	19	9.7	19	9.7	19	9.8	19	9.9
20	9.8	20	9.6	20	9.8	20	9.8	20	9.8	20	9.8	20	9.8	20	9.9
21	9.9	21	9.8	21	9.9	21	9.9	21	9.9	21	9.9	21	9.8	21	10.0
22	10.0	22	9.9	22	10.0	22	10.0	22	10.0	22	9.9	22	9.9	22	10.1
23	10.1	23	10.0	23	10.1	23	10.1	23	10.0	23	10.0	23	9.9	23	10.1
24	10.3	24	10.0	24	10.1	24	10.2	24	10.1	24	10.1	24	10.0	24	10.1
25	10.4	25	10.1	25	10.2	25	10.2	25	10.2	25	10.1	25	10.1	25	10.2
26	10.5	26	10.2	26	10.3	26	10.3	26	10.3	26	10.2	26	10.2	26	10.3
27	10.5	27	10.3	27	10.4	27	10.5	27	10.4	27	10.2	27	10.2	27	10.4
28	10.6	28	10.5	28	10.5	28	10.5	28	10.4	28	10.3	28	10.3	28	10.4
29	10.6	29	10.6	29	10.5	29	10.6	29	10.5	29	10.5	29	10.3	29	10.5
30	10.7	30	10.6	30	10.6	30	10.6	30	10.6	30	10.5	30	10.3	30	10.5
31	10.7	31	10.7	31	10.6	31	10.7	31	10.6	31	10.6	31	10.5	31	10.6
32	10.8	32	10.7	32	10.7	32	10.7	32	10.6	32	10.6	32	10.5	32	10.6
33	10.8	33	10.7	33	10.7	33	10.7	33	10.7	33	10.7	33	10.6	33	10.6
34	10.8	34	10.8	34	10.8	34	10.8	34	10.7	34	10.7	34	10.6	34	10.7
35	10.8	35	10.8	35	10.8	35	10.8	35	10.8	35	10.7	35	10.6	35	10.7
36	10.9	36	10.8	36	10.8	36	10.8	36	10.8	36	10.8	36	10.7	36	10.8
37	10.9	37	10.8	37	10.8	37	10.9	37	10.8	37	10.8	37	10.7	37	10.8
38	10.9	38	10.8	38	10.8	38	10.9	38	10.8	38	10.8	38	10.7	38	10.8
39	10.9	39	10.8	39	10.8	39	10.9	39	10.8	39	10.8	39	10.8	39	10.8
40	10.9	40	10.8	40	10.9	40	10.9	40	10.8	40	10.8	40	10.8	40	10.8
41	10.9	41	10.9	41	10.9	41	10.9	41	10.8	41	10.8	41	10.8	41	10.8
42	10.9	42	10.9	42	10.9	42	10.9	42	10.9	42	10.8	42	10.8	42	10.8
43	10.9	43	10.9	43	10.9	43	10.9	43	10.9	43	10.8	43	10.8	43	10.9
44	11.0	44	10.9	44	10.9	44	10.9	44	10.9	44	10.9	44	10.8	44	10.9
45	11.0	45	10.9	45	10.9	45	11.0	45	10.9	45	10.9	45	10.8	45	10.9
46	11.0	46	10.9	46	10.9	46	11.0	46	10.9	46	10.9	46	10.9	46	10.9
47	11.0	47	11.0	47	11.0	47	11.0	47	10.9	47	10.9	47	10.9	47	10.9
48	11.0	48	11.0	48	11.0	48	11.0	48	11.0	48	10.9	48	10.9	48	10.9
49	11.0	49	11.0	49	11.0	49	11.0	49	11.0	49	10.9	49	10.9	49	11.0
50	11.0	50	11.0	50	11.0	50	11.0	50	11.1	50	11.0	50	10.9	50	11.0
51	11.0	51	11.0	51	11.0	51	11.0	51	11.1	51	11.0	51	11.0	51	11.0
52	11.1	52	11.0	52	11.0	52	11.1	52	11.1	52	11.0	52	11.0	52	11.0
53	11.1	53	11.0	53	11.0	53	11.1	53	11.1	53	11.0	53	11.0	53	11.0

D'ASTE SITE--Continued

Well D-2--Continued

Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
07-09-87		07-16-87		08-25-87		09-09-87		09-28-87	
12	10.2	12	10.5	12	--	12	11.5	12	--
13	9.9	13	10.1	13	11.5	13	11.0	13	12.3
14	9.9	14	10.0	14	11.1	14	10.7	14	11.7
15	9.9	15	9.9	15	10.8	15	10.6	15	11.5
16	9.9	16	10.0	16	10.6	16	10.4	16	11.3
17	9.9	17	10.0	17	10.5	17	10.3	17	11.1
18	9.9	18	10.0	18	10.5	18	10.4	18	11.0
19	9.9	19	10.0	19	10.4	19	10.3	19	10.8
20	10.0	20	10.0	20	10.4	20	10.5	20	10.8
21	10.0	21	10.0	21	10.4	21	10.5	21	10.7
22	10.0	22	10.0	22	10.4	22	10.4	22	10.6
23	10.1	23	10.1	23	10.4	23	10.4	23	10.6
24	10.2	24	10.1	24	10.4	24	10.4	24	10.6
25	10.2	25	10.2	25	10.4	25	10.4	25	10.6
26	10.3	26	10.2	26	10.4	26	10.4	26	10.5
27	10.4	27	10.3	27	10.4	27	10.5	27	10.6
28	10.4	28	10.3	28	10.4	28	10.5	28	10.6
29	10.5	29	10.4	29	10.5	29	10.5	29	10.6
30	10.5	30	10.5	30	10.5	30	10.5	30	10.6
31	10.6	31	10.5	31	10.5	31	10.5	31	10.6
32	10.6	32	10.6	32	10.5	32	10.5	32	10.6
33	10.6	33	10.6	33	10.6	33	10.5	33	10.6
34	10.6	34	10.7	34	10.6	34	10.6	34	10.6
35	10.7	35	10.7	35	10.6	35	10.6	35	10.6
36	10.7	36	10.7	36	10.6	36	10.6	36	10.7
37	10.8	37	10.7	37	10.7	37	10.7	37	10.7
38	10.8	38	10.7	38	10.7	38	10.7	38	10.7
39	10.8	39	10.7	39	10.7	39	10.7	39	10.7
40	10.8	40	10.8	40	10.7	40	10.7	40	10.7
41	10.8	41	10.8	41	10.7	41	10.7	41	10.8
42	10.8	42	10.8	42	10.8	42	10.8	42	10.8
43	10.8	43	10.8	43	10.8	43	10.8	43	10.8
44	10.9	44	10.8	44	10.8	44	10.8	44	10.8
45	10.9	45	10.8	45	10.8	45	10.8	45	10.8
46	10.9	46	10.8	46	10.8	46	10.8	46	10.8
47	10.9	47	10.8	47	10.9	47	10.8	47	10.8
48	10.9	48	10.9	48	10.9	48	10.9	48	10.9
49	10.9	49	10.9	49	10.9	49	10.9	49	10.9
50	11.0	50	10.9	50	10.9	50	10.9	50	10.9
51	11.0	51	10.9	51	10.9	51	10.9	51	10.9
52	11.0	52	10.9	52	10.9	52	10.9	52	10.9
53	11.0	53	10.9	53	10.9	53	10.9	53	10.9

Well D-3

Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
03-25-87		04-07-87		04-14-87		04-29-87		05-06-87		05-11-87		05-13-87		05-15-87	
7	9.0	7	8.7	7	8.7	7	--	7	--	7	--	7	--	7	--
8	9.0	8	8.8	8	8.8	8	8.9	8	9.2	8	9.3	8	9.2	8	9.2
9	9.0	9	8.8	9	8.8	9	8.9	9	9.1	9	9.2	9	9.2	9	9.2
10	9.0	10	8.9	10	8.9	10	8.9	10	9.1	10	9.2	10	9.2	10	9.2
11	9.0	11	9.0	11	9.0	11	8.9	11	9.1	11	9.2	11	9.2	11	9.1
12	9.0	12	9.0	12	9.0	12	9.0	12	9.1	12	9.2	12	9.2	12	9.2
13	9.1	13	9.2	13	9.2	13	9.1	13	9.2	13	9.3	13	9.2	13	9.2
14	9.2	14	9.3	14	9.3	14	9.1	14	9.3	14	9.3	14	9.3	14	9.3
15	9.3	15	9.4	15	9.4	15	9.1	15	9.3	15	9.4	15	9.4	15	9.4
16	9.5	16	9.4	16	9.4	16	9.2	16	9.4	16	9.4	16	9.4	16	9.4
17	9.5	17	9.6	17	9.6	17	9.3	17	9.5	17	9.5	17	9.5	17	9.5
18	9.6	18	9.7	18	9.7	18	9.5	18	9.5	18	9.6	18	9.6	18	9.5
19	9.7	19	9.8	19	9.8	19	9.5	19	9.6	19	9.7	19	9.7	19	9.6
20	9.8	20	9.9	20	9.9	20	9.6	20	9.7	20	9.8	20	9.7	20	9.7
21	9.8	21	9.9	21	9.9	21	9.7	21	9.8	21	9.8	21	9.8	21	9.7
22	9.8	22	10.0	22	10.0	22	9.7	22	9.9	22	9.9	22	9.8	22	9.8
23	10.3	23	10.1	23	10.1	23	9.8	23	9.9	23	10.0	23	9.9	23	9.8
24	10.4	24	10.1	24	10.1	24	9.8	24	10.0	24	10.0	24	10.0	24	9.9
25	10.5	25	10.2	25	10.2	25	9.9	25	10.0	25	10.1	25	10.0	25	9.9
26	10.6	26	10.2	26	10.2	26	9.9	26	10.0	26	10.1	26	10.0	26	9.9
27	10.6	27	10.2	27	10.2	27	9.9	27	10.0	27	10.1	27	10.0	27	9.9

Table 6.--*Water temperatures in monitoring wells*--Continued

D'ASTE SITE--Continued

Well D-3--Continued

05-19-87		05-22-87		05-28-87		06-02-87		06-09-87		06-18-87		06-24-87		06-30-87	
Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
7	--	7	--	7	10.0	7	10.1	7	--	7	--	7	--	7	--
8	9.2	8	9.3	8	9.6	8	9.7	8	10.1	8	10.3	8	10.6	8	11.1
9	9.2	9	9.2	9	9.4	9	9.5	9	9.6	9	10.1	9	10.2	9	10.5
10	9.2	10	9.2	10	9.3	10	9.4	10	9.5	10	9.8	10	9.8	10	10.0
11	9.2	11	9.2	11	9.4	11	9.4	11	9.5	11	9.6	11	9.7	11	9.8
12	9.3	12	9.2	12	9.4	12	9.4	12	9.5	12	9.6	12	9.7	12	9.8
13	9.3	13	9.2	13	9.4	13	9.5	13	9.5	13	9.6	13	9.7	13	9.8
14	9.3	14	9.3	14	9.4	14	9.5	14	9.5	14	9.6	14	9.7	14	9.8
15	9.4	15	9.3	15	9.4	15	9.5	15	9.6	15	9.6	15	9.7	15	9.8
16	9.4	16	9.4	16	9.5	16	9.5	16	9.6	16	9.6	16	9.7	16	9.8
17	9.5	17	9.4	17	9.5	17	9.6	17	9.6	17	9.6	17	9.7	17	9.8
18	9.6	18	9.5	18	9.6	18	9.6	18	9.7	18	9.7	18	9.8	18	9.8
19	9.6	19	9.6	19	9.6	19	9.7	19	9.7	19	9.7	19	9.8	19	9.9
20	9.7	20	9.7	20	9.7	20	9.8	20	9.7	20	9.7	20	9.8	20	9.9
21	9.8	21	9.7	21	9.8	21	9.8	21	9.8	21	9.8	21	9.1	21	9.9
22	9.8	22	9.8	22	9.8	22	9.9	22	9.8	22	9.8	22	9.9	22	9.9
23	9.9	23	9.8	23	9.8	23	9.9	23	9.9	23	9.8	23	9.9	23	9.9
24	9.9	24	9.8	24	9.9	24	9.9	24	9.9	24	9.9	24	9.9	24	10.0
25	10.0	25	9.8	25	9.9	25	10.0	25	9.9	25	9.9	25	10.0	25	10.0
26	10.0	26	9.9	26	9.9	26	10.0	26	10.0	26	9.9	26	10.0	26	10.0
27	10.0	27	9.9	27	9.9	27	10.0	27	10.0	27	9.9	27	10.0	27	10.0

07-09-87		07-16-87		07-23-87		08-02-87		08-11-87		08-25-87		09-09-87		09-28-87	
Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
7	--	7	--	7	13.1	7	--	7	--	7	--	7	--	7	--
8	11.8	8	12.4	8	11.9	8	12.4	8	12.8	8	14.0	8	13.4	8	--
9	10.9	9	11.4	9	11.2	9	11.7	9	12.0	9	13.5	9	12.8	9	13.2
10	10.6	10	10.9	10	10.9	10	11.2	10	11.5	10	12.8	10	12.3	10	12.8
11	10.1	11	10.6	11	10.6	11	10.9	11	11.2	11	12.1	11	12.0	11	12.4
12	10.0	12	10.3	12	10.4	12	10.6	12	10.9	12	11.4	12	11.8	12	12.1
13	9.9	13	10.2	13	10.3	13	10.5	13	10.8	13	11.2	13	11.6	13	11.9
14	9.9	14	10.0	14	10.1	14	10.3	14	10.6	14	11.0	14	11.3	14	11.7
15	9.9	15	10.0	15	10.0	15	10.3	15	10.5	15	10.8	15	11.1	15	11.5
16	9.9	16	10.0	16	9.9	16	10.1	16	10.4	16	10.7	16	10.9	16	11.3
17	9.9	17	10.0	17	9.9	17	10.0	17	10.3	17	10.6	17	10.8	17	11.2
18	9.9	18	10.0	18	9.9	18	10.0	18	10.1	18	10.5	18	10.7	18	11.0
19	9.9	19	10.0	19	9.9	19	10.0	19	10.1	19	10.4	19	10.8	19	10.9
20	9.9	20	10.0	20	9.9	20	10.0	20	10.1	20	10.4	20	10.5	20	10.8
21	9.9	21	10.0	21	9.9	21	10.0	21	10.1	21	10.3	21	10.5	21	10.7
22	10.0	22	10.0	22	10.0	22	10.0	22	10.1	22	10.3	22	10.4	22	10.6
23	10.0	23	10.0	23	10.0	23	10.0	23	10.1	23	10.3	23	10.4	23	10.6
24	10.0	24	10.0	24	10.0	24	10.0	24	10.1	24	10.3	24	10.4	24	10.5
25	10.0	25	10.1	25	10.0	25	10.0	25	10.1	25	10.3	25	10.4	25	10.5
26	10.0	26	10.1	26	10.0	26	10.1	26	10.1	26	10.3	26	10.4	26	10.5
27	10.0	27	10.1	27	10.0	27	10.1	27	10.1	27	10.3	27	10.4	27	10.5

Well D-4

03-25-87		04-07-87		04-14-87		04-29-87		05-06-87		05-11-87		05-13-87		05-15-87	
Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
7	8.0	7	8.0	7	8.3	7	9.0	7	9.6	7	9.4	7	9.3	7	9.5
8	8.0	8	8.0	8	8.3	8	8.6	8	9.2	8	9.1	8	9.0	8	9.2
9	8.1	9	8.1	9	8.3	9	8.4	9	8.9	9	8.9	9	8.9	9	9.0
10	8.2	10	8.2	10	8.3	10	8.5	10	8.8	10	8.9	10	8.9	10	9.0
11	8.2	11	8.3	11	8.5	11	8.6	11	8.9	11	9.0	11	8.9	11	9.0
12	8.3	12	8.3	12	8.6	12	8.6	12	8.9	12	9.0	12	9.0	12	9.0
13	8.4	13	8.4	13	8.6	13	8.7	13	8.9	13	9.0	13	9.0	13	9.0
14	8.4	14	8.5	14	8.8	14	8.7	14	9.0	14	9.1	14	9.1	14	9.1
15	9.0	15	9.3	15	8.9	15	8.8	15	9.1	15	9.1	15	9.2	15	9.1
16	9.4	16	9.5	16	9.0	16	8.9	16	9.2	16	9.2	16	9.2	16	9.2
17	9.6	17	9.5	17	9.1	17	9.0	17	9.2	17	9.3	17	9.3	17	9.2
18	9.8	18	9.6	18	9.2	18	9.0	18	9.3	18	9.3	18	9.3	18	9.3

D'ASTE SITE--Continued

Well D-4--Continued

Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
05-19-87		05-22-87		05-28-87		06-02-87		06-09-87		06-18-87		06-24-87		06-30-87	
6	--	6	--	6	10.9	6	10.9	6	--	6	--	6	--	6	--
7	10.0	7	9.8	7	10.2	7	10.5	7	10.9	7	11.2	7	11.9	7	12.0
8	9.4	8	9.3	8	9.7	8	10.0	8	10.2	8	10.6	8	11.2	8	11.2
9	9.2	9	9.1	9	9.5	9	9.8	9	10.0	9	10.1	9	10.7	9	10.8
10	9.1	10	9.1	10	9.3	10	9.6	10	9.8	10	10.0	10	10.4	10	10.6
11	9.1	11	9.1	11	9.3	11	9.5	11	9.7	11	9.9	11	10.2	11	10.4
12	9.2	12	9.1	12	9.3	12	9.4	12	9.6	12	9.8	12	10.0	12	10.2
13	9.2	13	9.1	13	9.3	13	9.4	13	9.5	13	9.7	13	9.9	13	10.0
14	9.2	14	9.2	14	9.3	14	9.4	14	9.5	14	9.7	14	9.8	14	9.9
15	9.3	15	9.2	15	9.4	15	9.5	15	9.5	15	9.6	15	9.8	15	9.9
16	9.3	16	9.3	16	9.4	16	9.5	16	9.6	16	9.6	16	9.8	16	9.9
17	9.4	17	9.3	17	9.4	17	9.5	17	9.6	17	9.7	17	9.8	17	9.9
18	9.4	18	9.3	18	9.4	18	9.6	18	9.6	18	9.7	18	9.8	18	9.9
07-09-87		07-16-87		07-23-87		08-02-87		08-11-87		08-25-87		09-09-87		09-28-87	
6	--	6	--	6	--	6	--	6	--	6	15.0	6	--	6	--
7	13.0	7	13.4	7	13.3	7	13.4	7	13.3	7	14.8	7	14.3	7	14.1
8	11.8	8	12.3	8	12.4	8	12.7	8	12.9	8	13.6	8	13.7	8	13.7
9	11.4	9	11.8	9	11.9	9	12.3	9	12.4	9	13.1	9	13.2	9	13.4
10	11.0	10	11.3	10	11.5	10	11.9	10	12.0	10	12.7	10	12.9	10	13.2
11	10.7	11	11.0	11	11.1	11	11.5	11	11.6	11	12.1	11	12.6	11	13.0
12	10.5	12	10.7	12	10.8	12	11.2	12	11.4	12	11.9	12	12.3	12	12.7
13	10.4	13	10.5	13	10.6	13	11.0	13	11.2	13	11.6	13	11.9	13	12.4
14	10.1	14	10.3	14	10.4	14	10.8	14	10.9	14	11.4	14	11.7	14	12.1
15	10.0	15	10.2	15	10.3	15	10.6	15	10.8	15	11.1	15	11.5	15	11.8
16	10.0	16	10.2	16	10.3	16	10.5	16	10.6	16	11.0	16	11.3	16	11.6
17	9.9	17	10.1	17	10.0	17	10.4	17	10.5	17	10.9	17	11.2	17	11.5
18	9.9	18	10.0	18	10.0	18	10.4	18	10.5	18	10.8	18	11.0	18	11.4

Well D-5

Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
03-25-87		04-07-87		04-14-87		04-29-87		05-06-87		05-11-87		05-13-87		05-15-87	
10	--	10	--	10	--	10	--	10	--	10	8.8	10	8.8	10	8.7
11	7.9	11	7.8	11	8.0	11	8.2	11	8.2	11	8.6	11	8.6	11	8.6
12	7.9	12	7.8	12	7.9	12	8.0	12	8.0	12	8.5	12	8.5	12	8.5
13	7.9	13	7.8	13	7.9	13	8.0	13	8.0	13	8.5	13	8.5	13	8.5
14	8.0	14	7.9	14	7.9	14	8.0	14	8.0	14	8.5	14	8.6	14	8.5
15	8.0	15	7.9	15	7.9	15	8.0	15	8.0	15	8.5	15	8.6	15	8.6
05-19-87		05-22-87		05-28-87		06-02-87		06-09-87		06-18-87		06-24-87		06-30-87	
6	--	6	--	6	12.3	6	12.3	6	12.4	6	13.5	6	14.2	6	14.5
7	--	7	--	7	11.6	7	11.7	7	11.8	7	13.1	7	13.6	7	14.1
8	9.6	8	10.1	8	10.9	8	11.1	8	11.4	8	12.2	8	12.7	8	13.3
9	9.2	9	9.5	9	10.6	9	10.6	9	10.9	9	11.6	9	12.0	9	12.6
10	8.8	10	9.1	10	9.8	10	10.0	10	10.5	10	10.9	10	11.4	10	11.8
11	8.7	11	8.9	11	9.4	11	9.7	11	10.0	11	10.5	11	10.9	11	11.4
12	8.7	12	8.8	12	9.2	12	9.5	12	9.7	12	10.0	12	10.3	12	10.7
13	8.7	13	8.8	13	9.1	13	9.3	13	9.5	13	9.8	13	10.1	13	10.4
14	8.7	14	8.8	14	9.1	14	9.3	14	9.4	14	9.6	14	9.9	14	10.2
15	8.7	15	8.8	15	9.1	15	9.3	15	9.4	15	9.6	15	9.9	15	10.1
07-09-87		07-16-87		07-23-87		08-02-87		08-11-87		08-25-87		09-09-87		09-28-87	
6	15.5	6	--	6	--	6	--	6	--	6	--	6	--	6	--
7	15.2	7	15.5	7	15.7	7	15.5	7	16.1	7	--	7	--	7	--
8	14.4	8	14.9	8	15.2	8	15.1	8	15.3	8	--	8	--	8	--
9	13.4	9	14.1	9	14.4	9	14.4	9	14.8	9	--	9	--	9	14.9
10	12.5	10	13.2	10	13.6	10	13.6	10	14.1	10	14.2	10	14.5	10	14.5
11	11.8	11	12.5	11	12.8	11	13.0	11	13.3	11	13.8	11	14.0	11	14.2
12	11.4	12	11.6	12	12.1	12	12.3	12	12.7	12	13.0	12	13.4	12	13.7
13	10.9	13	11.2	13	11.5	13	11.8	13	12.3	13	12.7	13	12.9	13	13.2
14	10.5	14	10.7	14	11.1	14	11.4	14	12.1	14	12.4	14	12.4	14	12.9
15	10.4	15	10.6	15	10.9	15	11.2	15	11.5	15	12.0	15	12.3	15	12.5

Table 6.--*Water temperatures in monitoring wells*--Continued

LONEPINE SITE

Well L-1

Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
03-18-87		04-07-87		04-28-87		05-05-87		05-07-87		05-11-87		05-14-87		05-19-87	
2	4.5	2	--	2	--	2	--	2	--	2	--	2	--	2	--
3	4.5	3	5.9	3	--	3	--	3	--	3	--	3	--	3	--
4	4.5	4	5.7	4	7.5	4	--	4	--	4	--	4	11.1	4	11.0
5	4.6	5	5.7	5	7.1	5	8.6	5	8.6	5	10.3	5	10.1	5	10.7
6	5.0	6	5.7	6	6.8	6	8.2	6	7.8	6	9.5	6	9.0	6	9.8
7	5.0	7	5.7	7	6.8	7	7.4	7	7.4	7	8.8	7	8.2	7	8.9
8	5.0	8	5.8	8	6.8	8	7.3	8	7.2	8	7.9	8	7.6	8	8.3
9	5.1	9	6.0	9	6.8	9	7.2	9	7.1	9	7.4	9	7.4	9	7.6
10	5.2	10	6.1	10	6.8	10	7.2	10	7.1	10	7.3	10	7.3	10	7.5
11	5.2	11	6.2	11	6.8	11	7.2	11	7.1	11	7.3	11	7.3	11	7.5
12	5.4	12	6.2	12	6.9	12	7.3	12	7.1	12	7.3	12	7.3	12	7.5
13	5.5	13	6.3	13	6.9	13	7.3	13	7.1	13	7.3	13	7.3	13	7.5
14	5.7	14	6.5	14	7.0	14	7.3	14	7.2	14	7.4	14	7.4	14	7.5
15	5.9	15	6.5	15	7.0	15	7.3	15	7.2	15	7.5	15	7.5	15	7.6
16	6.0	16	6.5	16	7.0	16	7.3	16	8.1	16	8.1	16	8.0	16	8.0

Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
05-21-87		05-28-87		06-02-87		06-10-87		06-19-87		06-25-87		07-01-87		07-10-87	
5	10.8	5	11.1	5	11.0	5	11.3	5	12.2	5	--	5	--	5	--
6	9.9	6	10.3	6	10.7	6	10.5	6	10.6	6	12.7	6	12.9	6	--
7	8.9	7	10.0	7	9.9	7	10.0	7	10.4	7	11.7	7	12.2	7	13.4
8	8.3	8	9.0	8	9.3	8	9.4	8	9.6	8	10.8	8	11.6	8	12.2
9	7.8	9	8.7	9	9.2	9	9.0	9	9.1	9	9.9	9	10.3	9	11.5
10	7.5	10	8.0	10	8.3	10	8.5	10	8.7	10	9.5	10	10.0	10	10.7
11	7.5	11	7.8	11	8.0	11	8.3	11	8.4	11	9.0	11	9.3	11	10.1
12	7.6	12	7.8	12	8.0	12	8.1	12	8.3	12	8.7	12	9.0	12	9.5
13	7.6	13	7.8	13	8.0	13	8.1	13	8.2	13	8.5	13	8.7	13	9.2
14	7.6	14	7.8	14	8.0	14	8.1	14	8.3	14	8.4	14	8.6	14	8.8
15	7.8	15	7.8	15	8.0	15	8.2	15	8.3	15	8.4	15	8.6	15	8.8
16	8.0	16	7.9	16	8.0	16	8.2	16	8.3	16	8.4	16	8.5	16	8.7

Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
07-16-87		07-23-87		08-03-87		08-15-87		08-25-87		09-15-87		09-29-87	
7	13.7	7	13.8	7	--	7	14.5	7	--	7	--	7	--
8	12.7	8	12.9	8	--	8	13.6	8	14.2	8	14.1	8	--
9	11.8	9	11.9	9	--	9	12.6	9	13.5	9	13.6	9	--
10	11.0	10	11.2	10	11.7	10	11.9	10	12.9	10	13.0	10	--
11	10.5	11	10.6	11	11.0	11	11.2	11	12.1	11	12.5	11	12.5
12	9.9	12	10.1	12	10.4	12	10.6	12	11.5	12	11.7	12	12.2
13	9.4	13	9.6	13	9.9	13	10.0	13	10.8	13	11.1	13	11.7
14	9.2	14	9.2	14	9.5	14	9.6	14	10.4	14	10.7	14	11.1
15	8.9	15	9.1	15	9.3	15	9.4	15	9.9	15	10.4	15	10.7
16	8.8	16	8.9	16	9.1	16	9.3	16	9.7	16	10.1	16	10.5

Well L-2

Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
03-18-87		04-07-87		04-28-87		05-05-87		05-07-87		05-11-87		05-14-87		05-19-87	
1	2.3	1	--	1	--	1	--	1	--	1	--	1	--	1	--
2	2.3	2	--	2	--	2	--	2	--	2	--	2	--	2	--
3	2.2	3	5.3	3	--	3	--	3	--	3	--	3	--	3	--
4	3.0	4	5.2	4	7.1	4	8.5	4	8.6	4	9.5	4	10.2	4	10.6
5	4.0	5	5.2	5	6.5	5	8.0	5	7.7	5	8.7	5	9.1	5	9.8
6	4.6	6	5.3	6	6.3	6	7.1	6	7.2	6	7.8	6	8.3	6	8.9
7	4.9	7	5.4	7	6.3	7	6.7	7	6.8	7	7.3	7	7.7	7	8.1
8	5.1	8	5.4	8	6.4	8	6.8	8	6.8	8	7.0	8	7.2	8	7.7
9	5.2	9	5.5	9	6.5	9	6.9	9	6.8	9	7.1	9	7.2	9	7.4
10	5.2	10	5.5	10	6.6	10	6.9	10	6.9	10	7.2	10	7.2	10	7.4
11	5.3	11	5.6	11	6.6	11	7.0	11	7.0	11	7.2	11	7.2	11	7.4
12	5.3	12	6.2	12	6.7	12	7.1	12	7.1	12	7.2	12	7.3	12	7.5
13	5.9	13	6.5	13	6.8	13	7.2	13	7.2	13	7.3	13	7.3	13	7.5
14	6.1	14	6.7	14	7.0	14	7.3	14	7.3	14	7.4	14	7.5	14	7.6

LONEPINE SITE--Continued

Well L-2--Continued

Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
05-21-87		05-28-87		06-03-87		06-10-87		06-19-87		06-25-87		07-01-87		07-10-87	
4	10.9	4	10.9	4	--	4	--	4	--	4	--	4	--	4	--
5	9.9	5	10.5	5	11.0	5	11.2	5	12.4	5	12.9	5	13.0	5	--
6	9.0	6	9.7	6	10.6	6	10.5	6	11.5	6	11.8	6	12.4	6	13.4
7	8.4	7	9.0	7	9.2	7	9.6	7	10.4	7	10.8	7	11.5	7	12.5
8	7.7	8	8.4	8	8.7	8	9.0	8	9.6	8	10.1	8	10.9	8	11.7
9	7.5	9	8.0	9	8.3	9	8.6	9	9.0	9	9.5	9	9.9	9	10.8
10	7.5	10	7.7	10	8.0	10	8.3	10	8.7	10	9.1	10	9.6	10	10.2
11	7.5	11	7.7	11	7.9	11	8.1	11	8.5	11	8.7	11	9.0	11	9.6
12	7.5	12	7.7	12	7.9	12	8.1	12	8.3	12	8.5	12	8.8	12	9.2
13	7.6	13	7.8	13	7.9	13	8.1	13	8.2	13	8.4	13	8.6	13	8.9
14	7.6	14	7.8	14	7.9	14	8.1	14	8.2	14	8.4	14	8.5	14	8.7

Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
07-16-87		07-23-87		08-03-87		08-15-87		08-25-87		09-15-87		09-28-87	
6	13.8	6	14.0	6	--	6	14.6	6	--	6	--	6	--
7	12.8	7	13.1	7	--	7	14.1	7	14.3	7	--	7	--
8	12.2	8	12.2	8	--	8	13.1	8	14.0	8	13.7	8	--
9	11.1	9	11.6	9	12.1	9	12.3	9	13.0	9	13.3	9	--
10	10.5	10	10.9	10	11.4	10	11.8	10	12.4	10	12.7	10	--
11	9.9	11	10.3	11	10.7	11	11.0	11	11.6	11	12.1	11	12.3
12	9.4	12	9.8	12	10.1	12	12.4	12	10.9	12	11.6	12	11.8
13	9.1	13	9.4	13	9.6	13	9.9	13	10.4	13	11.0	13	11.3
14	8.9	14	9.1	14	9.4	14	9.8	14	10.1	14	10.7	14	10.9

Well L-3

Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
03-18-87		04-07-87		04-28-87		05-05-87		05-07-87		05-11-87		05-14-87		05-19-87	
1	7.1	1	8.0	1	--	1	--	1	--	1	--	1	--	1	--
2	7.2	2	7.6	2	8.1	2	--	2	--	2	--	2	--	2	--
3	7.3	3	7.5	3	7.7	3	8.7	3	8.5	3	9.3	3	9.8	3	10.0
4	7.4	4	7.4	4	7.5	4	8.3	4	8.0	4	8.7	4	8.9	4	9.7
5	7.6	5	7.4	5	7.4	5	7.8	5	7.6	5	8.0	5	8.0	5	8.7
6	7.7	6	7.4	6	7.3	6	7.7	6	7.5	6	7.8	6	7.9	6	8.2
7	7.9	7	7.5	7	7.3	7	7.6	7	7.5	7	7.7	7	7.7	7	7.9
8	8.1	8	7.6	8	7.3	8	7.6	8	7.5	8	7.7	8	7.7	8	7.8
9	8.3	9	7.7	9	7.4	9	7.6	9	7.5	9	7.7	9	7.7	9	7.8
10	8.3	10	7.8	10	7.4	10	7.7	10	7.5	10	7.8	10	7.7	10	7.8
11	8.4	11	8.0	11	7.5	11	7.7	11	7.6	11	7.8	11	7.8	11	7.8
12	8.5	12	8.1	12	7.7	12	7.8	12	7.7	12	7.8	12	7.8	12	7.9
13	8.6	13	8.2	13	7.7	13	7.9	13	7.8	13	7.9	13	7.9	13	7.9
14	8.8	14	8.3	14	7.8	14	7.9	14	7.9	14	7.9	14	8.0	14	8.0
15	8.8	15	8.3	15	7.8	15	7.9	15	7.9	15	8.0	15	8.0	15	8.0
16	9.0	16	8.3	16	7.9	16	8.0	16	7.9	16	8.0	16	8.0	16	8.0
17	9.0	17	8.4	17	7.9	17	8.1	17	7.9	17	8.1	17	8.0	17	8.0
18	9.2	18	8.4	18	7.9	18	8.1	18	8.1	18	8.1	18	8.0	18	8.1

Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
05-21-87		05-28-87		06-03-87		06-10-87		06-19-87		06-25-87		07-01-87		07-10-87	
3	10.3	3	10.1	3	--	3	--	3	--	3	--	3	--	3	--
4	9.9	4	9.9	4	10.0	4	10.5	4	--	4	--	4	--	4	--
5	8.9	5	9.4	5	9.5	5	9.9	5	10.9	5	11.1	5	11.4	5	11.7
6	8.2	6	8.6	6	8.9	6	9.1	6	9.9	6	10.5	6	10.8	6	11.3
7	7.9	7	8.2	7	8.4	7	8.9	7	9.2	7	9.6	7	10.0	7	10.6
8	7.9	8	8.1	8	8.2	8	8.4	8	8.8	8	9.1	8	9.4	8	10.1
9	7.9	9	8.0	9	8.1	9	8.3	9	8.4	9	8.7	9	9.0	9	9.5
10	7.9	10	8.0	10	8.1	10	8.2	10	8.3	10	8.5	10	8.6	10	9.1
11	7.9	11	8.0	11	8.1	11	8.2	11	8.3	11	8.4	11	8.5	11	8.8
12	7.9	12	8.0	12	8.1	12	8.2	12	8.3	12	8.4	12	8.5	12	8.7
13	8.0	13	8.1	13	8.1	13	8.2	13	8.3	13	8.4	13	8.5	13	8.6
14	8.0	14	8.1	14	8.1	14	8.2	14	8.3	14	8.4	14	8.5	14	8.6
15	8.0	15	8.1	15	8.1	15	8.2	15	8.3	15	8.4	15	8.5	15	8.6
16	8.1	16	8.1	16	8.1	16	8.2	16	8.3	16	8.4	16	8.5	16	8.6
17	8.1	17	8.2	17	8.2	17	8.3	17	8.4	17	8.4	17	8.5	17	8.6
18	8.1	18	8.2	18	8.2	18	8.3	18	8.4	18	8.4	18	8.5	18	8.6

Table 6.--*Water temperatures in monitoring wells*--Continued

LONEPINE SITE--Continued

Well L-3--Continued

Depth (ft)	07-16-87 Temperature (°C)	07-23-87 Temperature (°C)	08-03-87 Temperature (°C)	08-15-87 Temperature (°C)	08-25-87 Temperature (°C)	09-15-87 Temperature (°C)	09-28-87 Temperature (°C)
5	12.2	--	--	--	--	--	--
6	11.8	12.0	--	12.7	--	--	--
7	10.8	11.4	--	12.1	12.4	--	--
8	10.2	10.8	10.7	11.3	11.9	12.0	--
9	9.6	10.0	10.4	10.7	11.1	11.6	--
10	9.4	9.6	9.8	10.2	10.7	11.1	11.4
11	9.0	9.4	9.4	9.6	10.1	10.6	11.0
12	8.8	9.0	9.1	9.4	9.7	10.2	10.6
13	8.7	8.8	8.9	9.1	9.4	9.8	10.2
14	8.7	8.8	8.8	8.9	9.2	9.5	9.8
15	8.7	8.8	8.8	8.8	9.1	9.3	9.6
16	8.7	8.8	8.8	8.8	9.0	9.2	9.4
17	8.7	8.8	8.8	8.8	9.0	9.1	9.3
18	8.7	8.8	8.8	8.8	9.0	9.0	9.2

Well L-4

Depth (ft)	03-18-87 Temperature (°C)	04-07-87 Temperature (°C)	04-28-87 Temperature (°C)	05-05-87 Temperature (°C)	05-07-87 Temperature (°C)	05-11-87 Temperature (°C)	05-14-87 Temperature (°C)	05-19-87 Temperature (°C)
0	5.7	12.9	--	--	--	--	--	--
1	5.4	6.8	--	--	--	--	--	--
2	5.3	6.4	8.2	9.8	9.8	11.5	12.0	12.5
3	5.2	6.3	7.4	8.9	8.9	9.9	10.4	11.2
4	5.4	6.2	7.1	7.8	7.9	8.8	9.1	9.9
5	5.5	6.3	7.0	7.4	7.4	7.8	8.3	8.7
6	5.7	6.3	6.9	7.3	7.3	7.6	7.7	8.1
7	5.7	6.4	6.9	7.3	7.3	7.5	7.6	7.8
8	6.0	6.5	6.9	7.3	7.3	7.5	7.5	7.7
9	6.2	6.5	6.9	7.3	7.3	7.5	7.5	7.7
10	6.5	6.8	7.0	7.3	7.3	7.5	7.5	7.7
11	6.8	6.8	7.0	7.4	7.4	7.6	7.5	7.7
12	6.8	6.9	7.1	7.4	7.4	7.6	7.5	7.7
13	7.0	6.9	7.1	7.4	7.4	7.6	7.6	7.7
14	7.1	7.0	7.2	7.4	7.4	7.6	7.6	7.7
15	7.2	7.1	7.2	7.5	7.5	7.7	7.6	7.7
16	7.2	7.1	7.3	7.5	7.5	7.7	7.7	7.7
17	7.4	7.1	7.3	7.6	7.6	7.7	7.7	7.7

Depth (ft)	05-21-87 Temperature (°C)	05-28-87 Temperature (°C)	06-03-87 Temperature (°C)	06-10-87 Temperature (°C)	06-19-87 Temperature (°C)	06-25-87 Temperature (°C)	07-01-87 Temperature (°C)	07-10-87 Temperature (°C)
2	12.0	11.8	--	--	--	--	--	--
3	11.1	11.1	11.0	12.4	--	--	--	--
4	10.2	10.5	10.6	11.1	12.6	12.6	13.2	--
5	9.0	9.4	9.8	9.8	11.4	11.5	12.1	13.0
6	8.1	8.7	9.1	9.3	10.0	10.6	11.0	11.3
7	7.8	8.1	8.2	8.5	9.3	9.6	10.2	10.5
8	7.8	7.9	8.1	8.2	8.6	8.9	9.3	9.7
9	7.8	7.9	8.0	8.1	8.3	8.6	8.8	9.2
10	7.7	7.9	8.0	8.1	8.2	8.3	8.5	8.9
11	7.7	7.9	7.9	8.1	8.2	8.3	8.4	8.6
12	7.7	7.9	7.9	8.1	8.2	8.3	8.4	8.4
13	7.7	7.9	7.9	8.0	8.2	8.3	8.4	8.4
14	7.7	7.9	7.9	8.0	8.2	8.3	8.4	8.4
15	7.7	7.9	8.0	8.0	8.2	8.3	8.4	8.4
16	7.8	7.9	8.0	8.1	8.2	8.3	8.4	8.5
17	7.8	7.9	8.0	8.1	8.2	8.3	8.4	8.5

Depth (ft)	07-16-87 Temperature (°C)	07-23-87 Temperature (°C)	08-03-87 Temperature (°C)	08-15-87 Temperature (°C)	08-25-87 Temperature (°C)	09-15-87 Temperature (°C)	09-29-87 Temperature (°C)
4	14.1	--	--	--	--	--	--
5	13.0	13.3	--	14.2	--	--	--
6	11.9	12.2	--	13.4	13.6	--	--
7	11.0	11.3	11.7	12.4	12.8	12.7	--
8	10.1	10.5	10.9	11.2	11.9	12.2	11.8
9	9.6	9.8	10.3	10.6	11.1	11.4	11.4
10	9.1	9.3	9.7	10.0	10.6	11.0	10.9
11	8.8	8.9	9.2	9.5	9.9	10.4	10.4
12	8.6	8.7	9.0	9.0	9.5	10.0	10.0
13	8.6	8.7	8.8	8.9	9.3	9.6	9.8
14	8.6	8.6	8.7	8.8	9.1	9.4	9.6
15	8.6	8.6	8.7	8.7	9.1	9.2	9.4
16	8.6	8.6	8.7	8.7	8.9	9.1	9.3
17	8.6	8.6	8.7	8.7	8.9	9.1	9.2

Table 6.--*Water temperatures in monitoring wells*--Continued

Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
LONEPINE SITE--Continued															
Well L-5															
03-18-87		04-07-87		04-28-87		05-05-87		05-07-87		05-11-87		05-14-87		05-19-87	
4	4.9	4	5.1	4	--	4	--	4	--	4	--	4	--	4	--
5	4.9	5	5.1	5	6.4	5	7.2	5	7.2	5	7.8	5	8.4	5	8.9
6	4.9	6	5.1	6	6.2	6	6.9	6	6.8	6	7.2	6	7.5	6	8.1
7	4.9	7	5.1	7	6.1	7	6.6	7	6.5	7	6.8	7	7.1	7	7.4
8	4.9	8	5.1	8	6.0	8	6.4	8	6.4	8	6.7	8	6.8	8	7.0
9	5.0	9	5.1	9	6.0	9	6.4	9	6.4	9	6.7	9	6.8	9	7.0
05-21-87		05-28-87		06-03-87		06-10-87		06-19-87		06-25-87		07-01-87		07-10-87	
5	9.0	5	9.4	5	9.5	5	--	5	--	5	--	5	--	5	--
6	8.3	6	8.8	6	8.9	6	9.4	6	--	6	--	6	--	6	--
7	7.7	7	8.0	7	8.5	7	8.7	7	9.6	7	--	7	10.3	7	--
8	7.2	8	7.6	8	7.9	8	8.2	8	8.6	8	9.7	8	9.3	8	9.9
9	7.0	9	7.4	9	7.6	9	8.0	9	8.2	9	8.8	9	8.9	9	9.5
9.5	--	9.5	--	9.5	--	9.5	--	9.5	--	9.5	8.4	9.5	8.6	9.5	9.1
07-16-87		07-23-87		08-03-87		08-15-87		08-25-87		09-15-87		09-29-87			
8	10.0	8	10.5	8	--	8	--	8	--	8	--	8	--		
9	9.7	9	9.8	9	--	9	--	9	--	9	--	9	--		
9.5	9.3	9.5	9.6	9.5	10.2	9.5	10.4	9.5	10.8	9.5	11.3	9.5	11.6		
NIARADA SITE															
Well N-1															
03-18-87		03-25-87		04-07-87		04-15-87		04-28-87		05-06-87		05-12-87		05-14-87	
22	--	22	--	22	--	22	--	22	--	22	7.0	22	6.8	22	6.8
23	8.8	23	8.6	23	8.0	23	8.5	23	7.6	23	7.0	23	6.8	23	6.8
24	8.8	24	8.6	24	8.0	24	8.5	24	7.6	24	6.9	24	6.7	24	6.8
05-19-87		05-21-87		05-27-87		06-03-87		06-10-87		06-19-87		06-25-87		07-01-87	
22	6.8	22	6.9	22	7.4	22	7.4	22	7.9	22	8.2	22	8.5	22	9.1
23	6.9	23	6.9	23	7.4	23	7.4	23	7.7	23	8.1	23	8.3	23	8.7
24	6.9	24	7.0	24	7.4	24	7.4	24	7.7	24	8.0	24	8.2	24	8.6
07-10-87		07-16-87		07-23-87		08-03-87		08-15-87		08-24-87		09-16-87		09-29-87	
22	9.5	22	10.3	22	10.7	22	10.9	22	11.6	22	12.3	22	12.9	22	12.9
23	9.3	23	9.6	23	9.9	23	10.3	23	11.0	23	11.7	23	12.7	23	12.9
24	9.1	24	9.5	24	9.6	24	10.1	24	10.8	24	11.6	24	12.4	24	12.8
Well N-2															
04-07-87		04-15-87		04-28-87		05-06-87		05-12-87		05-14-87		05-19-87		05-21 87	
7	4.0	7	4.4	7	13.0	7	10.3	7	8.7	7	9.2	7	9.8	7	9.9
05-27-87		06-03-87		06-10-87		07-10-87		07-16-87							
7	9.5	7	9.5	7	10.5	7	14.8	7	15.0						
Well N-3															
03-18-87		04-07-87		04-15-87		04-28-87		05-06-87		05-12-87		05-14-87		05-19-87	
29	--	29	--	29	--	29	--	29	--	29	--	29	11.0	29	10.6
30	--	30	--	30	10.5	30	10.8	30	10.7	30	10.3	30	10.8	30	10.6
31	--	31	10.5	31	10.5	31	10.6	31	10.4	31	10.3	31	10.7	31	10.6
32	--	32	10.5	32	10.4	32	10.5	32	10.4	32	10.3	32	10.7	32	10.5
33	10.3	33	10.5	33	10.4	33	10.4	33	10.4	33	10.3	33	10.7	33	10.6
34	10.4	34	10.5	34	10.4	34	10.4	34	10.4	34	10.3	34	10.7	34	10.6
35	10.5	35	10.5	35	10.4	35	10.4	35	10.4	35	10.3	35	10.7	35	10.6
36	10.5	36	10.5	36	10.4	36	10.4	36	10.4	36	10.3	36	10.7	36	10.7
37	10.5	37	10.5	37	10.4	37	10.4	37	10.4	37	10.3	37	10.8	37	--

Table 6.--*Water temperatures in monitoring wells*--Continued

Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)	Depth (ft)	Temperature (°C)
NIARADA SITE--Continued															
Well N-3--Continued															
05-21-87		05-27-87		06-03-87		06-10-87		06-19-87		06-25-87		07-01-87		07-10-87	
28	--	28	--	28	--	28	10.5	28	10.2	28	10.1	28	10.3	28	10.3
29	10.5	29	10.5	29	10.3	29	10.2	29	10.1	29	10.1	29	10.1	29	10.0
30	10.5	30	10.5	30	10.4	30	10.2	30	10.1	30	10.1	30	10.1	30	10.0
31	10.5	31	10.5	31	10.4	31	10.2	31	10.1	31	10.1	31	10.1	31	10.0
32	10.6	32	10.5	32	10.4	32	10.2	32	10.2	32	10.1	32	10.2	32	10.1
33	10.6	33	10.5	33	10.4	33	10.3	33	10.3	33	10.1	33	10.2	33	10.1
34	10.6	34	10.6	34	10.5	34	10.3	34	10.3	34	10.2	34	10.2	34	10.2
35	10.6	35	10.6	35	10.5	35	10.3	35	10.3	35	10.3	35	10.2	35	10.2
36	10.7	36	10.6	36	10.5	36	10.3	36	10.3	36	10.3	36	10.2	36	10.2
07-16-87		07-23-87		08-02-87		08-15-87		08-24-87		09-16-87		09-29-87			
28	10.3	28	10.2	28	10.2	28	10.2	28	10.3	28	9.5	28	10.3		
29	10.1	29	9.9	29	9.9	29	9.9	29	10.2	29	9.5	29	10.2		
30	10.0	30	9.9	30	9.9	30	9.9	30	10.1	30	9.5	30	10.1		
31	10.0	31	10.0	31	9.9	31	9.9	31	10.1	31	9.5	31	10.0		
32	10.0	32	10.0	32	10.0	32	9.9	32	10.1	32	9.5	32	10.0		
33	10.0	33	10.1	33	10.0	33	9.9	33	10.1	33	9.5	33	9.9		
34	10.1	34	10.2	34	10.1	34	10.0	34	10.1	34	9.6	34	9.9		
35	10.1	35	10.2	35	10.1	35	10.0	35	10.1	35	9.6	35	9.9		
36	10.2	36	10.2	36	10.2	36	10.0	36	10.1	36	9.6	36	9.9		
Well N-4															
03-18-87		03-25-87		04-07-87		04-15-87		04-28-87		05-06-87		05-12-87		05-14-87	
42	10.2	42	10.3	42	10.7	42	--	42	--	42	--	42	--	42	--
43	10.3	43	10.6	43	10.7	43	--	43	--	43	--	43	10.9	43	11.1
44	10.4	44	10.5	44	10.7	44	10.5	44	10.9	44	10.6	44	10.7	44	10.9
45	10.4	45	10.5	45	10.5	45	10.5	45	10.7	45	10.5	45	10.5	45	10.9
46	10.4	46	10.5	46	10.5	46	10.4	46	10.6	46	10.5	46	10.5	46	10.9
47	--	47	--	47	--	47	10.4	47	10.6	47	10.5	47	10.5	47	10.9
05-19-87		05-21-87		05-07-87		06-03-87		06-10-87		06-19-87		06-25-87		07-01-87	
41	--	41	--	41	--	41	--	41	11.0	41	--	41	--	41	--
42	--	42	11.0	42	11.2	42	10.8	42	10.8	42	11.0	42	11.0	42	10.8
43	11.0	43	10.9	43	11.0	43	10.8	43	10.8	43	10.8	43	10.8	43	10.8
44	10.9	44	10.8	44	10.9	44	10.8	44	10.8	44	10.8	44	10.8	44	10.7
45	10.9	45	10.8	45	10.9	45	10.8	45	10.8	45	10.8	45	10.7	45	10.7
46	10.9	46	10.8	46	10.9	46	10.8	46	10.8	46	10.8	46	10.7	46	10.7
47	10.9	47	--	47	--	47	--	47	--	47	--	47	--	47	--
07-10-87		07-16-87		07-23-87		08-03-87		08-15-87		08-24-87		09-16-87		09-29-87	
38	--	38	--	38	--	38	--	38	--	38	--	38	--	38	10.2
39	--	39	--	39	--	39	--	39	--	39	--	39	--	39	10.3
40	--	40	--	40	--	40	--	40	--	40	--	40	--	40	10.3
41	--	41	--	41	11.1	41	11.0	41	10.5	41	10.8	41	10.5	41	10.3
42	11.0	42	11.1	42	10.8	42	10.7	42	10.4	42	10.7	42	10.4	42	10.3
43	10.8	43	10.8	43	10.7	43	10.6	43	10.4	43	10.5	43	10.4	43	10.4
44	10.7	44	10.7	44	10.6	44	10.6	44	10.4	44	10.5	44	10.4	44	--
45	10.7	45	10.7	45	10.6	45	10.6	45	10.5	45	10.5	45	10.4	45	--
46	10.7	46	10.7	46	10.6	46	10.6	46	--	46	--	46	--	46	--

Table 7.--*Air and canal-water temperatures*

[Abbreviation: °C, degrees Celsius]

Air			Canal water		
Date	Time (hours)	Temperature (°C)	Date	Time (hours)	Temperature (°C)
ARLEE SITE					
04-28-87	0900	10.7	04-28-87	0937	6.8
05-05-87	1055	20.6	05-05-87	1130	8.5
05-07-87	1120	21.8	05-07-87	1056	8.4
05-11-87	0855	20.2	05-11-87	0922	7.7
05-13-87	0832	15.4	05-13-87	0913	7.6
05-19-87	0910	11.4	05-14-87	1433	11.8
05-21-87	1240	10.6	05-19-87	0929	6.6
05-22-87	1049	17.3	05-21-87	1219	6.0
05-28-87	1118	14.1	05-22-87	1105	7.1
06-02-87	1124	15.2	05-28-87	1045	8.6
06-09-87	1139	19.2	06-03-87	1038	8.5
06-16-87	1251	18.5	06-09-87	1157	11.4
06-24-87	1110	18.2	06-16-87	1320	10.8
06-30-87	1105	29.4	06-24-87	1125	10.5
07-09-87	1133	15.5	06-30-87	1234	13.1
07-16-87	0821	16.8	07-09-87	1240	11.1
07-24-87	0835	14.8	07-16-87	0915	10.4
07-27-87	1503	31.5	07-24-87	0857	9.7
08-15-87	1358	21.5	07-27-87	1438	16.8
08-24-87	1314	15.1	08-15-87	1326	11.1
09-14-87	1249	25.4	08-24-87	1613	11.7
09-28-87	1206	14.1	09-14-87	1237	15.4
			09-28-87	1154	11.7
CHARLO SITE					
04-29-87	0852	21.3	04-08-87	0840	6.2
05-06-87	0836	15.4	04-14-87	1438	15.1
05-11-87	1547	27.9	04-29-87	0819	18.4
05-13-87	1322	18.5	05-06-87	0835	15.8
05-15-87	0646	15.5	05-11-87	1545	23.0
05-19-87	1312	15.5	05-13-87	1315	20.5
05-22-87	0743	7.0	05-15-87	0713	18.4
05-28-87	1509	17.2	05-19-87	1249	19.6
06-02-87	1541	18.3	05-22-87	0723	14.7
06-09-87	1508	23.0	05-28-87	1517	17.8
06-18-87	0955	18.0	06-02-87	1539	20.1
06-24-87	1421	23.9	06-09-87	1507	25.4
06-30-87	1436	29.5	06-18-87	1007	20.3
07-09-87	1649	19.8	06-24-87	1413	22.4
07-17-87	0917	12.9	06-30-87	1433	25.2
07-23-87	1414	21.8	07-09-87	1634	22.5
08-02-87	1021	19.9	07-17-87	0844	14.5
08-15-87	1244	22.4	08-15-87	1212	20.1
08-25-87	1204	21.1	09-03-87	0705	16.4
09-03-87	0706	15.1	09-28-87	1311	17.6
09-28-87	1314	17.6			
D'ASTE SITE					
03-25-87	0910	6.3	03-25-87	0914	4.9
04-07-87	0845	8.6	03-25-87	1140	6.5
04-14-87	1040	15.0	04-07-87	0837	10.0
04-14-87	1158	19.0	04-14-87	1139	11.1
04-29-87	1107	25.4	04-29-87	1012	17.2
05-06-87	1002	17.1	05-06-87	1049	16.0
05-11-87	1454	27.5	05-11-87	1410	21.3
05-12-87	1342	20.1	05-12-87	1328	17.8
05-13-87	1146	18.5	05-13-87	1114	16.1
05-15-87	0835	20.5	05-14-87	0710	15.0
05-19-87	1148	17.3	05-15-87	0831	17.4
05-22-87	0940	12.3	05-19-87	1141	14.8
05-28-87	1312	16.8	05-22-87	0921	10.3
06-02-87	1318	18.4	05-28-87	1311	16.0
06-09-87	1408	22.1	06-02-87	1327	16.6
06-18-87	0805	14.4	06-09-87	1355	21.6
06-24-87	1330	23.4	06-18-87	0820	16.0
06-30-87	1345	30.2	06-24-87	1315	20.2
07-09-87	1535	27.5	06-30-87	1306	24.9
07-16-87	1121	21.9	07-09-87	1443	19.9
07-23-87	1616	22.5	07-16-87	1121	19.2
08-02-87	0933	19.9	07-23-87	1616	24.1
08-11-87	1758	20.1	08-02-87	0919	17.0
08-25-87	1305	19.9	08-11-87	1712	21.4
09-09-87	0721	9.7	08-25-87	1443	20.2
09-28-87	1304	17.4	09-09-87	0821	14.5
			09-28-87	1257	13.6

Table 7.--*Air and canal-water temperatures*--Continued

Air			Canal water		
Date	Time (hours)	Temperature (°C)	Date	Time (hours)	Temperature (°C)
LONEPINE SITE					
03-18-87	1130	3.0	03-18-87	1120	5.3
04-07-87	1425	11.8	04-07-87	1423	15.2
04-28-87	1338	21.3	05-05-87	1457	21.3
05-05-87	1512	24.8	05-07-87	0804	12.9
05-11-87	1110	24.0	05-11-87	1129	15.6
05-19-87	1724	16.5	05-14-87	1150	15.2
05-21-87	1449	14.4	05-19-87	1658	17.2
05-28-87	0849	14.8	05-21-87	1427	11.4
06-03-87	1029	13.8	05-28-87	0845	11.9
06-10-87	0947	18.0	06-03-87	0943	11.7
06-19-87	0934	19.6	06-10-87	0935	17.1
06-25-87	0852	16.5	06-19-87	0922	16.7
07-01-87	0936	22.6	06-25-87	0847	16.0
07-10-87	1113	16.4	07-01-87	0923	19.0
07-16-87	1355	23.8	07-10-87	1142	15.0
07-23-87	1014	19.3	07-16-87	1348	20.2
08-03-87	0856	15.4	07-23-87	1019	18.6
08-15-87	0811	13.0	08-15-87	0811	14.9
08-25-87	0746	13.3	08-25-87	0755	15.2
09-29-87	0943	10.1	09-15-87	0813	14.9
NIARADA SITE					
03-18-87	1432	5.0	03-18-87	1430	0.1
04-07-87	1212	9.5	04-07-87	1210	4.5
04-15-87	1325	17.0	04-15-87	1320	6.7
04-28-87	1517	27.2	04-28-87	1508	11.6
05-06-87	1329	25.2	05-06-87	1311	12.0
05-12-87	0835	21.9	05-12-87	0829	8.5
05-19-87	1547	13.2	05-14-87	1010	8.2
05-21-87	1547	11.0	05-19-87	1532	7.6
05-27-87	1454	18.1	05-21-87	1546	7.3
06-03-87	0812	9.9	05-27-87	1425	10.1
06-10-87	0802	15.1	06-03-87	0812	9.9
06-19-87	0749	14.8	06-10-87	0758	10.1
06-25-87	0726	15.2	06-19-87	0746	13.1
07-01-87	0817	21.9	06-25-87	0733	12.3
07-10-87	0944	14.7	07-01-87	0819	14.3
07-16-87	1541	22.9	07-10-87	0944	13.3
07-23-87	1128	21.3	07-16-87	1527	16.1
08-03-87	1130	14.9	07-23-87	1136	15.8
08-15-87	0937	15.5	08-03-87	1032	15.2
08-24-87	0928	16.3	08-15-87	0937	15.4
09-16-87	0811	12.2	08-24-87	0932	14.6
09-29-87	0743	5.3	09-16-87	0750	11.9
			09-29-87	0743	8.6

Table 8.--*Bromide concentrations in water from monitoring wells during tracer test at Arlee site*

[Analyses by Montana Bureau of Mines and Geology. Symbol: --, no data]

Date sampled	Time sampled (hours)	Bromide concentration, in milligrams per liter		Date sampled	Time sampled (hours)	Bromide concentration, in milligrams per liter	
		Onsite	Laboratory			Onsite	Laboratory
				Well A-3			
07-28-87	1005	0.056	0.04	08-01-87	0103	1.2	--
					0305	1.1	--
07-29-87	0725	.044	--		0510	1.1	--
	1740	.041	--		0702	.99	0.97
	1805	.037	--		0903	1.1	--
	2110	.051	--		1100	1.2	--
	2255	.048	--		1300	1.3	1.0
					1503	1.0	--
07-30-87	0107	.072	--		1700	1.0	--
	0302	.047	--		1900	1.0	--
	0507	.043	--		2058	1.0	1.1
	0701	.046	--				
	0903	.069	--	08-02-87	0112	.96	--
	1100	.051	--		0504	.99	--
	1303	.067	--		0857	1.0	--
	1503	.20	--		1300	1.1	1.1
	1700	.26	--		1658	1.1	--
	1902	.28	--		2100	1.0	--
	2101	.29	--				
	2303	.40	--	08-03-87	0504	1.0	--
					1316	1.0	--
07-31-87	0103	.42	--				
	0304	.51	--	08-24-87	1627	.40	--
	0504	.58	--				
	0702	.52	.38				
	0901	.63	--				
	1103	.78	--				
	1302	.85	--				
	1458	.91	--				
	1701	.99	--				
	1900	1.1	--				
	2100	1.1	--				
	2300	1.2	.85				
				Well A-4			
07-28-87	1010	.062	--	08-01-87	0059	1.3	--
					0301	1.3	--
07-29-87	0716	.11	.15		0506	1.2	--
	1745	.049	--		0658	1.2	--
	1810	.040	--		0900	1.1	1.1
	2115	.051	--		1056	1.3	--
	2300	.069	--		1304	1.4	1.2
					1500	1.4	--
07-30-87	0102	.093	--		1703	1.1	--
	0258	.088	--		1857	1.1	--
	0503	.084	--		2100	1.1	1.2
	0658	.10	--				
	0859	.14	--	08-02-87	0108	1.2	--
	1103	.19	.18		0500	1.1	--
	1300	.25	--		0900	1.1	--
	1500	.41	--		1257	1.1	1.1
	1657	.58	--		1701	1.1	--
	1859	.69	--		2057	1.1	--
	2058	.76	--				
	2300	.90	--	08-03-87	0500	1.1	--
					1319	.99	--
07-31-87	0059	.86	--				
	0259	.94	.66	08-24-87	1650	.35	--
	0500	.94	--				
	0658	.83	--				
	0857	.96	--				
	1059	1.1	--				
	1300	1.2	--				
	1500	1.3	.99				
	1658	1.2	.99				
	1903	1.3	--				
	2104	1.4	--				
	2258	1.5	1.1				

Table 8.--*Bromide concentrations in water from monitoring wells during tracer test at Arlee site*--Continued

Date sampled	Time sampled (hours)	Bromide concentration, in milligrams per liter		Date sampled	Time sampled (hours)	Bromide concentration, in milligrams per liter	
		Onsite	Laboratory			Onsite	Laboratory
				Well A-5			
07-28-87	1018	.069	.31	08-01-87	0055	1.5	--
					0255	1.4	--
					0501	1.3	--
07-29-87	0630	.21	.36		0654	1.2	--
	1730	.079	--		0858	1.1	--
	1930	.13	--		1052	1.2	--
	2058	.18	--		1255	1.2	--
	2305	.29	--		1455	1.2	1.2
					1656	1.2	--
07-30-87	0055	.39	--		1854	1.1	--
	0253	.52	.40		2053	1.1	--
	0457	.62	--				
	0653	.70	--	08-02-87	0100	1.0	--
	0853	.83	--		0453	.99	--
	1057	.92	--		0858	1.0	--
	1255	.98	--		1256	1.0	1.0
	1455	1.1	--		1655	.98	--
	1654	1.4	1.0		2053	1.0	--
	1854	1.7	--				
	2054	1.6	--	08-03-87	0453	.96	--
	2255	1.6	--		1315	.92	--
07-31-87	0055	1.5	--	08-24-87	1755	.33	--
	0254	1.5	--				
	0456	1.4	--				
	0654	1.3	--				
	0853	1.4	1.1				
	1053	1.4	--				
	1255	1.4	--				
	1455	1.4	--				
	1655	1.4	--				
	1855	1.4	--				
	2055	1.5	--				
	2255	1.6	1.2				
				Well A-6			
07-28-87	0815	.002	--	07-29-87	0100	230	--
	1200	.092	1.2		0200	210	--
	1230	.054	--		0300	195	--
	1300	.14	--		0330	190	--
	1330	.12	--		0400	178	--
	1400	.13	--		0500	155	--
	1430	.30	--		0600	134	128
	1500	5.8	--		0700	119	--
	1530	14	--		0800	92	--
	1600	41	--		0900	80	--
	1630	96	--		1000	70	72
	1700	67	70		1600	26	35
	1730	138	--		1700	32	--
	1800	209	--		1800	28	--
	1830	280	--		1900	31	--
	1900	320	277		2000	30	--
	1930	440	--		2100	27	25
	2000	495	342				
	2030	420	--	07-30-87	0600	13	--
	2100	380	366		1400	7.4	--
	2130	370	--		2038	7.3	--
	2200	340	--				
	2230	330	--	07-31-87	0547	4.4	4.8
	2300	330	--				
	2359	280	294	08-24-87	1730	1.1	--

Table 9.--*Physical properties and constituent concentrations of water samples*

[Analyses by Montana Bureau of Mines and Geology. Local number--geographic location system described in text. Depth of well, total: in feet below land surface. Bicarbonate was determined by fixed endpoint titration (fet), in the laboratory (lab). Abbreviations: °C, degrees Celsius; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter at 25 °C; mg/L, milligrams per liter. Symbols: --, no data; <, less than]

Well number	Local number	Date	Depth of well, total (feet)	Onsite specific conductance (µS/cm)	Onsite pH (standard units)	Temperature, water (°C)	Hardness, total (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)
ARLEE SITE										
Canal	16N19W08DCAA00	09-24-87	--	196	8.3	8.5	100	29	6.9	1.3
Well A-6	16N19W08DCAA06	09-24-87	33	202	7.8	10.5	100	31	6.8	1.3
CHARLO SITE										
Canal	20N21W25CDBD00	09-22-87	--	374	9.6	22.0	130	21	19	36
Well C-3	20N21W25CDBD03	04-15-87	43	770	7.5	10.0	280	53	36	57
		09-22-87	43	780	7.5	15.5	290	56	37	56
Well C-5	20N21W25CDBD05	04-15-87	19	695	7.9	8.5	240	45	30	60
		09-22-87	19	921	7.6	16.0	300	57	39	74
D'ASTE SITE										
Canal	19N20W30BABC00	09-22-87	--	299	8.9	21.0	120	29	12	17
Well D-2	19N20W30BABC02	04-16-87	54	--	7.9	10.5	240	44	31	55
		09-22-87	54	732	7.6	14.5	240	44	31	58
Well D-4	19N20W30BABC04	04-16-87	18	1,030	7.8	9.0	340	71	38	100
		09-22-87	18	1,020	7.6	17.5	310	66	35	97
LONEPINE SITE										
Canal	22N24W04ABBA00	09-22-87	--	147	7.3	12.0	56	16	3.8	7.0
Well L-2	22N24W04ABBA02	09-22-87	14	269	7.0	14.5	120	29	11	8.9
Well L-5	22N24W04ABBA05	09-22-87	10	138	7.8	13.0	52	15	3.6	6.6
NIARADA SITE										
Canal	24N24W27CDCA00	09-13-87	--	131	8.0	10.5	54	15	3.7	6.6
Well N-3	24N24W27CDCA03	03-25-87	39	280	7.8	10.5	120	40	5.9	5.7
		09-18-87	39	250	7.6	10.0	120	38	6.5	5.8
Well N-4	24N24W27CDCA04	09-18-87	49	261	8.0	10.5	120	40	5.4	6.1

Well number	Local number	Sodium adsorption ratio	Potassium, dissolved (mg/L as K)	Bicarbonate, fet-lab (mg/L as HCO_3)	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Flouride, dissolved (mg/L as F)	Bromide, dissolved (mg/L as Br)	Silica, dissolved (mg/L as SiO_2)	Solids, sum of constituents, dissolved (mg/L)
ARLEE SITE										
Canal	16N19W08DCAA00	0.1	0.60	120	2.3	0.20	<0.10	<0.10	7.8	109
Well A-6	16N19W08DCAA06	.1	.50	130	2.2	.20	<.10	<.10	8.4	115
CHARLO SITE										
Canal	20N21W25CDBD00	1	2.6	140	27	9.1	.10	<.10	.30	222
Well C-3	20N21W25CDBD03	2	4.5	440	30	10	.20	<.10	18	429
		1	4.0	460	28	9.4	.20	<.10	18	438
Well C-5	20N21W25CDBD05	2	3.8	360	42	14	.20	<.10	13	390
		2	4.8	470	61	17	.20	<.10	16	502
D'ASTE SITE										
Canal	19N20W30BABC00	.7	2.3	170	17	5.3	<.10	<.10	3.0	167
Well D-2	19N20W30BABC02	2	3.4	270	110	6.6	.50	<.10	14	407
		2	3.6	280	110	8.2	.40	<.10	14	414
Well D-4	19N20W30BABC04	2	4.2	340	210	42	.30	.30	14	653
		2	3.6	320	180	47	.20	<.10	14	608
LONEPINE SITE										
Canal	22N24W04ABBA00	.4	1.9	79	5.2	1.1	.10	<.10	7.9	84
Well L-2	22N24W04ABBA02	.4	1.5	160	3.5	.90	.20	<.10	24	158
Well L-5	22N24W04ABBA05	.4	1.9	72	5.4	1.1	.10	.10	6.3	77
NIARADA SITE										
Canal	24N24W27CDCA00	.4	2.1	78	5.3	1.1	.10	<.10	7.7	81
Well N-3	24N24W27CDCA03	.2	3.7	160	5.6	1.0	.20	<.10	28	169
		.2	3.5	160	4.8	1.2	.20	.10	28	169
Well N-4	24N24W27CDCA04	.3	3.2	160	6.6	1.0	.20	<.10	27	174

Well number	Local number	Nitrogen, nitrate, dissolved (mg/L as N)	Phosphorus, dissolved (mg/L as P)	Aluminum, dissolved (µg/L as Al)	Boron, dissolved (µg/L as B)	Cadmium, dissolved (µg/L as Cd)	Chromium, dissolved (µg/L as Cr)	Copper, dissolved (µg/L as Cu)	Iron, dissolved (µg/L as Fe)	Lithium, dissolved (µg/L as Li)
ARLEE SITE										
Canal	16N19W08DCAA00	0.030	<0.10	<30	80	2	<2	<2	<2	<2
Well A-6	16N19W08DCAA06	.10	<.10	<30	120	<2	<2	<2	<2	<2
CHARLO SITE										
Canal	20N21W25CDBD00	.010	<.10	<30	50	5	<2	<2	2	<2
Well C-3	20N21W25CDBD03	.10	.30	<30	90	<2	<2	<2	<2	4
		.020	<.10	<30	120	2	<2	<2	91	4
Well C-5	20N21W25CDBD05	.47	<.10	<30	30	<2	<2	<2	5	5
		.39	<.10	<30	40	4	<2	<2	<2	6
D'ASTE SITE										
Canal	19N20W30BABC00	.040	<.10	<30	<20	6	<2	<2	<2	<2
Well D-2	19N20W30BABC02	1.6	<.10	<30	130	<2	<2	<2	18	5
		.28	<.10	<30	<20	2	<2	<2	<2	2
Well D-4	19N20W30BABC04	.030	<.10	<30	20	<2	<2	<2	<2	5
		.030	<.10	<30	40	<2	<2	<2	54	4
LONEPINE SITE										
Canal	22N24W04ABBA00	.41	<.10	<30	30	<2	<2	<2	56	2
Well L-2	22N24W04ABBA02	.010	<.10	<30	<20	<2	<2	<2	4	11
Well L-5	22N24W04ABBA05	.12	.10	50	30	<2	<2	6	86	<2
NIARADA SITE										
Canal	24N24W27CDCA00	.070	<.10	<30	60	<2	<2	11	110	2
Well N-3	24N24W27CDCA03	.23	<.10	<30	<20	<2	<2	5	2	30
		.41	<.10	<30	40	5	<2	7	5	5
Well N-4	24N24W27CDCA04	.92	<.10	60	40	5	<2	4	85	6

Well number	Local number	Manganese, dissolved (µg/L as Mn)	Molybdenum, dissolved (µg/L as Mo)	Nickel, dissolved (µg/L as Ni)	Silver, dissolved (µg/L as Ag)	Strontium, dissolved (µg/L as Sr)	Titanium, dissolved (µg/L as Ti)	Vanadium, dissolved (µg/L as V)	Zinc, dissolved (µg/L as Zn)	Zirconium, dissolved (µg/L as Zr)
ARLEE SITE										
Canal	16N19W08DCAA00	<1	<20	<10	<2	22	<1	<1	<3	<4
Well A-6	16N19W08DCAA06	1	<20	<10	<2	22	<1	<1	<3	<4
CHARLO SITE										
Canal	20N21W25CDBD00	2	<20	<10	<2	72	1	<1	<3	<4
Well C-3	20N21W25CDBD03	1,300	<20	<10	<2	250	<1	<1	<3	<4
		1,300	<20	<10	<2	240	<1	<1	<3	<4
Well C-5	20N21W25CDBD05	540	<20	<10	<2	190	<1	<1	<3	<4
		28	<20	<10	<2	250	20	<1	8	<4
D'ASTE SITE										
Canal	19N20W30BABC00	20	<20	<10	<2	60	1	<1	<3	<4
Well D-2	19N20W30BABC02	420	<20	<10	<2	150	<1	<1	<3	<4
		500	<20	<10	<2	150	2	<1	20	<4
Well D-4	19N20W30BABC04	190	<20	<10	<2	230	<1	<1	<3	<4
		720	<20	<10	<2	220	3	<1	<3	<4
LONEPINE SITE										
Canal	22N24W04ABBA00	8	<20	<10	<2	69	<1	<1	<3	<4
Well L-2	22N24W04ABBA02	220	<20	<10	<2	97	<1	<1	19	<4
Well L-5	22N24W04ABBA05	4	<20	<10	<2	62	<1	<1	19	<4
NIARADA SITE										
Canal	24N24W27CDCA00	14	<20	<10	<2	66	<1	<1	5	<4
Well N-3	24N24W27CDCA03	59	--	<10	<2	61	<1	18	<3	<4
		34	<20	<10	<2	51	1	<1	3	<4
Well N-4	24N24W27CDCA04	2	<20	<10	<2	51	5	<1	3	<4

*U.S. GOVERNMENT PRINTING OFFICE: 1992-774-207/60010