Ground-Water Data for the Nevada Test Site, 1992, and for Selected Other Areas in South-Central Nevada, 1952-92

U.S. GEOLOGICAL SURVEY

Open-File Report 95-284

Prepared in cooperation with the
NEVADA FIELD OFFICE,
U.S. DEPARTMENT OF ENERGY, under
Interagency Agreement DE-AI08-86NV10583

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By Leanne S. Robie, Steven R. Reiner, *and* Glenn L. Locke

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Carson City, Nevada
1995

U.S. DEPARTMENT OF THE INTERIOR
BRUCE BABBITT, Secretary

U.S. GEOLOGICAL SURVEY
Gordon P. Eaton, Director

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For additional information
write to:

District Chief
U.S. Geological Survey
333 West Nye Lane, Room 203
Carson City, NV 89706-0866

Copies of this report can be
purchased from:

U.S. Geological Survey
Information Services
Box 25286, MS 517
Denver Federal Center
Denver, CO 80225-0046

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CONVERSION FACTORS AND ABBREVIATIONS

Multiply	By	To Obtain
foot (ft)	0.3048	meter
gallon (gal)	3.785	cubic decimeter
mile (mi)	1.609	kilometer
million gallons (Mgal)	3.785	million liters
picocurie (pCi)	0.0370	becquerel
square mile (mi ²)	2.590	square kilometer

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

Water Year: Comprises the 12-month period from October 1 through September 30, and is designated by the year in which the period ends.

Ground-Water Data for the Nevada Test Site, 1992, and for Selected Other Areas in South-Central Nevada, 1952-92

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ABSTRACT

The U.S. Geological Survey, in support of the U.S. Department of Energy Environmental Restoration and Hydrologic Resources Management Programs, collects and compiles hydrogeologic data to aid in characterizing the regional and local ground-water flow systems underlying the Nevada Test Site and vicinity. This report presents selected ground-water data collected from wells and test holes at and in the vicinity of the Nevada Test Site.

Depth-to-water measurements were made at 113 sites, 53 sites at the Nevada Test Site for the 1992 water year and 60 regional sites in the vicinity of the Nevada Test Site for 1952 through September 30, 1992. Depth to water ranged from 288 to 2,213 feet (87.8 to 674.5 meters) below land surface at the Nevada Test Site and from 22 to 1,460 feet (6.7 to 445.0 meters) below land surface at sites in the vicinity of the Nevada Test Site. Available historical data for sites outside boundaries of the Nevada Test Site show long-term depth-to-water fluctuations. Depth-to-water measurements were obtained using wire-line, electric-tape, steel-tape, air-line, and iron-horse devices.

Total measured ground-water withdrawal from the Nevada Test Site during the 1992 calendar year was 595.313 million gallons (2,253.26 million liters). During the 1992 water year, tritium concentrations from five samples ranged from 0 to 166 picocuries per liter (0 to 6.14 becquerels per liter).

INTRODUCTION

The Nevada Test Site (fig. 1) was established in 1950 as a continental proving ground for testing nuclear weapons. Atmospheric nuclear testing began in 1951 and underground nuclear testing began in 1957. Since 1962, all nuclear testing has been done underground in mostly alluvium and volcanic rocks (U.S. Geological Survey, 1976, p. 17). Nuclear-testing and ancillary operations at the Nevada Test Site (NTS) have created the potential for contamination of ground-water supplies by radionuclides and other substances (U.S. Department of Energy, 1990, p. 110).

The U.S. Department of Energy (USDOE) is required to study potential ground-water contamination at NTS and, through its Environmental Restoration Program, has begun to define possible contamination resulting from past activities at NTS. The mission of the USDOE Hydrologic Resources Management Program (formerly Hydrology/Radionuclide Migration Program) is to ensure current activities proceed in an environmentally sound manner and in accordance with applicable Federal and State regulations and USDOE orders. The U.S. Geological Survey (USGS) provides hydrologic expertise and technical guidance to the USDOE in support of these programs. Specific responsibilities of the USGS include providing the necessary hydrologic and hydrogeologic data and interpretation of these data to aid in characterizing ground-water flow at NTS and vicinity. This characterization is needed to assess the potential for contamination of ground-water supplies and to support USDOE operations at NTS.

Figure 1. Location of Nevada Test Site and vicinity, including Faultless Site.

Purpose and Scope

This report presents depth-to-water measurements made at 113 wells and test holes at and in the vicinity of NTS. At NTS, depths to water in 53 wells and test holes were measured from October 1, 1991, to September 30, 1992. Available historical data from 1952 to September 30, 1992, for 60 sites outside NTS boundaries are included. Hydrographs for sites at and in the vicinity of NTS are presented to show long-term depth-to-water fluctuations. Ground-water withdrawal data are compiled for 12 wells at NTS during the 1992 calendar year. Water samples were collected and analyzed for tritium concentrations from five test holes at NTS during the 1992 water year.

Study Area

NTS is subdivided into 27 administrative areas between latitudes 36 and 38 degrees north and longitudes 115 and 117 degrees west within Nye County, Nev. (fig. 1, pl. 1). Regional ground-water sites in the vicinity of NTS are between latitudes 36 and 39 degrees north and longitudes 115 and 117 west within Clark and Nye Counties, Nev. (fig. 1; pl. 1). The Faultless Site in Hot Creek Valley is between latitudes 38 and 39 degrees north and longitudes 116 and 117 degrees west within Nye County, Nev. (figs. 1, 2).

Ground-Water Information Sources

Depth-to-water data at and in the vicinity of NTS have been collected, compiled, verified, and stored in the Ground-Water Site Inventory (GWSI) data base. The GWSI data base is one of four sub-systems that constitute the computerized National Water-Information System (NWIS) of the USGS (U.S. Geological Survey, 1989), managed in Nevada by the District Office in Carson City.

The USDOE, Yucca Mountain Project study area is in and adjacent to Areas 25 and 29 of NTS (pl. 1). Ground-water data collected from these areas are compiled and reported by personnel of the USGS Hydrologic Investigation Program, Yucca Mountain Project (Luckey and others, 1989; O'Brien, 1991). However, ground-water withdrawal data for two wells in Area 25 (J-12 WW and J-13WW) also are included in this report as these wells contribute to the total withdrawal from NTS.

Geohydrologic Setting

The geohydrologic setting of NTS is similar to that of the Basin and Range Province. It is characterized by local aquifers of alluvium of Quaternary and Tertiary age and volcanic rock of Tertiary age. Regional aquifers are mainly complex folded and faulted carbonate rock of Paleozoic age (Winograd and Thordarson, 1975, p. 14-31), but deep, fractured volcanic rock of Tertiary age may be aquifers (Blankennagel and Weir, 1973, p. 6) at some locations. Regional confining units are mainly clastic rock of Paleozoic age and some volcanic rock of Tertiary age. Much of the

Figure 2. Location of test holes at Faultless Site, Nye County, Nevada.

ground-water movement is regional interbasin flow, which is not controlled by the basin-and-range topography that defines surface drainage basins (Winograd and Thordarson, 1975, p. 62).

Ground water at NTS and vicinity is part of the Death Valley ground-water flow system, a regional system encompassing 15,000 mi² (38,800 km²). NTS includes parts of three subbasins of the Death Valley ground-water flow system—Alkali Flat-Furnace Creek Ranch, Ash Meadows, and Oasis Valley (Waddell and others, 1984, p. 36-39; R.J. Laczniak, U.S. Geological Survey, written commun., 1995; pl. 1).

Site Designations

Ground-water sites in this report are either wells or test holes: wells are cased holes drilled specifically to find ground water; test holes are all other drilled holes. Wells and test holes are identified herein by Raytheon Services Nevada (RSN) hole number or local well identifier, by USGS standard identification number, and by the latitude and longitude of the site.

Hole numbers are assigned by RSN to wells and test holes according to the type of hole drilled, site location (NTS administrative area), and sequence code for the consecutive order in which the hole was drilled or redrilled. Emplacement holes drilled for proposed nuclear testing begin with the letter "U," followed by a dash (-), NTS area number, and sequence code (letters "a-z, aa-az, ba-bz, ..., za-zz"). Exploratory holes, drilled to assess material properties within a defined area, follow the same naming convention, but begin with the letters "UE." The suffix letters "PS" indicate a post-shot hole drilled to monitor radionuclides and the effects of nuclear testing events; "S," a substitute hole drilled to replace an emplacement or exploratory hole; and "WW," a water well drilled as a potential water-supply source.

Exceptions to the standard naming convention are ER 12-1, PM-1, PM-2, RNM-2S, TW-1, TW-7, TW-B, TW-D, TW-F, WW-3, WW-4, and WW-5A. The prefix letters "ER" indicate environmental restoration; "PM," Pahute Mesa; "RNM," radionuclide migration; "TW," test well; and "WW," water well. Numbers and letters following the dash in these exceptions represent sequence of site drilling, not NTS area location.

Local hole identifiers for wells and test holes outside NTS are assigned by well owners or the USGS. These local hole identifiers may contain abbreviations

that are the same as or similar to the ones found in RSN hole numbers for NTS wells and test holes. Abbreviations used in these hole identifiers that are not used at the NTS are "DDL" for Desert Dry Lake; "HTH," hydrologic test hole; "TTR," Tonopah Test Range; "TPJ," Tolicha Peak Junction; "UC," underground central Nevada; and "USAF," United States Air Force.

The U.S. Geological Survey system for site-identification is based on the latitude-longitude grid. Each site is identified by a unique 15-digit number: The first six digits denote degrees, minutes, and seconds of latitude, the next seven digits denote degrees, minutes, and seconds of longitude, and the last two digits are the sequence number of the well or test hole within the 1-second grid of latitude and longitude. The assigned number is retained as a permanent identifier even if a more precise latitude and longitude are later determined (U.S. Geological Survey, 1989, p. 2-10). To determine the geographic location of a well or test hole, the latitude and longitude coordinates should be used rather than the site identifier.

Acknowledgments

Raytheon Services Nevada and Atlas Wireline Services, contractors with the Nevada Field Office of the U.S. Department of Energy, made substantial contributions to this study, including field inventory of wells and test holes and other hydrologic work at NTS. Reynolds Electrical Engineering Co., Inc. (REECo) provided data on ground-water withdrawal. The Environmental Monitoring Systems Laboratory of the U.S. Environmental Protection Agency at Las Vegas performed the tritium analyses. Personnel of Nellis and Indian Springs Air Force Bases assisted in providing access and construction data for many off-site wells.

GROUND-WATER DATA

Data presented in this report consist of depth-to-water measurements for accessible wells and test holes, compiled ground-water withdrawals for wells, and tritium concentrations for test holes. For water year 1992, depth-to-water measurements are reported for 53 wells and test holes. Ground-water withdrawals were compiled for 12 wells during the 1992 calendar year. Tritium concentrations were determined for water samples collected for five test holes during the 1992

water year. Additionally, historical depth-to-water measurements for 60 wells and test holes in the vicinity of NTS are included.

Measurements were made in inch-pound units and converted to the International System of Units (SI). However, because of rounding in the conversion, values obtained by converting SI units back to inch-pound units may differ from the originals. Values in a previous data report (Wood, 1992) are reported in inch-pound units only; those in any future reports will be reported in SI units. By reporting both inch-pound and SI units, this report serves as a transition between previous and any future reports.

Significant figures are retained in the conversion of inch-pound units to SI units. However, length measurements are reported to the nearest tenth of a meter to reflect the precision of field measurements.

Depth to Water

The term "depth to water" is used rather than "water level" to avoid confusion with "static water level" as defined by Winograd (1970, p. 19) for NTS. Use of depth to water does not imply static conditions.

Two networks of wells and test holes are measured—an NTS network and a regional network in the vicinity of NTS. Depth to water is measured intermittently in most of the accessible wells and test holes in these areas.

Measurements are made in new wells and test holes until the depth to water stabilizes, the hole is destroyed, or the hole becomes inaccessible due to test-site activities. Depth-to-water measurements in wells and test holes often represent elevated or depressed water levels caused by nearby underground detonations (Winograd, 1970, p. 20-25) or injection or removal of fluids during drilling operations. Because most of the existing wells and test holes available for long-term monitoring were not drilled for the acquisition of hydrologic data, construction may allow several saturated units to contribute water to the wells and test holes. Depth-to-water fluctuations may represent a composite water level for multiple saturated units rather than conditions within a single aquifer unit (alluvium, volcanic-rock, or carbonate-rock aquifers).

Water-level altitudes, determined by subtracting depth-to-water measurements from the reported land-surface altitude, should be used with caution. The reported altitude of land surface is usually determined when drilling operations are completed. However,

subsequent NTS activities may alter the land-surface datum. Changes in land-surface altitude, measuring point, or both, may affect depth-to-water measurements and the calculated water-level altitude.

Methods

Several techniques are used to measure depth to water at NTS and other areas in south-central Nevada. During 1992, measurements were made by the USGS with wire-line, electric-tape, air-line, and steel-tape devices. Measurements prior to 1992 were made with wire-line, electric-tape, air-line, steel-tape, and iron-horse devices. The accuracy and precision of methods and measurements are documented and maintained by the USGS.

The wire-line, electric-tape, steel-tape, and iron-horse devices were calibrated at least annually against a reference-steel tape. For these devices, a correction factor is determined to account for cable or tape stretch that occurs during measurement. The apparent depth-to-water measurement is adjusted by the correction factor to obtain the depth to water. Each device is calibrated at different depths over the useful range of measurement of the device. The reference-steel tape is standardized by procedures of the National Institute of Standards and Technology (Taylor and Opperman, 1986).

A measuring point is established for each well or test hole. The measuring point is a permanent point on the well or test hole from which depth-to-water measurements are referenced. Measured depth to water is adjusted to land-surface datum by subtracting or adding the distance of the measuring point above or below land surface.

Wire-Line Device

The wire-line device consists of an armored, four-conductor cable mounted on a motorized reel. The cable is centered over the hole with a hydraulic boom. Attached to the cable end is a probe that transmits an electric current to a meter at land surface when water is contacted. A measuring wheel, over which the cable passes, measures the length of cable passed into the hole below the measuring point. The measured depth to water below the measuring point is corrected for cable stretch and adjusted to land-surface datum.

Electric-Tape Device

The electric-tape device consists of a weighted electrical cable with two wire conductors exposed on the leading end. When both conductors contact water, electrical continuity between the two conductors is made and a visual display, sound beeper, or both, is activated. The measured depth to water below the measuring point is corrected for cable stretch and adjusted to land-surface datum.

Air-Line Device

The technique used for making air-line measurements of depth to water has been described by Garber and Koopman (1968, p. 11-14). The top of the air-line tube is connected to a motor-driven air compressor. Air pressure is increased in the air-line tube until all water in the tube has been expelled. Pressure stabilizes as the forced air pressure gradient in the air-line tube decreases with increasing water pressure. Gage readings indicate the length of the column of water expelled from the air line, either directly in feet of water or indirectly through pressure readings. To calculate the depth to water, the length of the column of expelled water is subtracted from the length of the air-line tube. Measured depth to water is adjusted to land-surface datum by subtracting or adding the distance of the air-line reference point above or below land surface.

Steel-Tape Device

The technique used for making steel-tape measurements of depth to water greater than 1,000 ft (305 m) below land surface is described by Garber and Koopman (1968, p. 2-6) and Robison and others (1988, p. 9-11). The steel tape, which is mounted on a motorized reel, is suspended in the hole a known distance below the measuring point so the bottom end is below the water surface. The length of wetted tape is subtracted from the suspended length below the measuring point and adjusted to land-surface datum.

Iron-Horse Device

The technique for using the iron-horse device to measure depth to water has been described by Garber and Koopman (1968, p. 6-11) and Weir and Nelson (1976). The device consists of an armored, single-conductor cable mounted on a portable reel. Attached to the cable end is a probe that transmits an electric cur-

rent to a meter at land surface when water is contacted. A measuring wheel, over which the cable passes, measures the length of cable lowered into the hole below a measuring point. The measured depth to water below this measuring point is corrected for cable stretch and adjusted to land-surface datum.

Measurements

Depth-to-water measurements at 53 wells and test holes at NTS made during water year 1992 are listed in table 1. Depth-to-water measurements for 60 wells in the vicinity of NTS made from 1952 through September 30, 1992, are shown in table 2. Data are organized in table 1 first by NTS administrative area, then by RSN hole-number designation within each area. Data are organized in table 2 by Nevada hydrographic area (Rush, 1968) and then by local well identifier. Tables 1 and 2 also include well location and construction information.

Depth to water ranged from 288 to 2,213 ft (87.8 to 674.5 m) below land surface at NTS and from 22 to 1,460 ft (6.7 to 445.0 m) below land surface at sites in the vicinity of NTS for water year 1992. Depth-to-water measurements made prior to October 1, 1989, for wells at the Faultless Site were reported by Wood (1992). All data have been entered into the GWSI data base.

The information available for some wells and test holes listed in tables 1 and 2 is incomplete. Dates for which the month or day are unknown are listed as "00." To indicate that other information is unknown or not applicable, one or two dashes are shown.

In this report, values for date hole completed and hole depth may differ from values reported by RSN or other agencies. The date of hole completion shown in tables 1 and 2 is the date when drilling activities that may have affected water levels ceased. The date of hole completion is not the reported date that construction activities at the hole ceased. The hole depth is the most recently available measured or reported accessible depth. For some holes, the bottom of open interval listed in tables 1 and 2 may be deeper than the hole depth listed. This is because the bottom of open interval is reported at the time of well or test-hole installation, but the hole depth is the latest accessible depth measured or reported.

The terms active testing area and inactive testing area refer to the approximate extent of areas where nuclear testing occurred. Active testing areas are areas

where nuclear testing occurred during or after 1982. Inactive testing areas are areas where nuclear testing occurred prior to 1982.

Nine hydrographs of wells and test holes at NTS (figs. 3-11) and seven hydrographs of wells in the vicinity of NTS (figs. 12-18) show changes in depth to water with time. These selected hydrographs are from wells in several geographic areas and rock types. All available depth-to-water measurements for these hydrographs are displayed. Some of the pre-1992 depth-to-water measurements at NTS are presented by Wood (1992) or can be retrieved from the GWSI data base.

Depth-to-water measurements in well TW-7, which is in an active testing area in the Yucca Flat hydrographic area (Area 3, pl. 1), are shown in figure 3. The well is open to Tertiary volcanic rock, primarily tuff. Two minimum depth-to-water measurements were recorded, one on June 12, 1962, and one on September 13, 1963. These peaks coincide with two nuclear detonations—the Aardvark event 1,008 ft (307 m) east of TW-7 on May 12, 1962, and the Bilby event 3,850 ft (1,173 m) east-southeast TW-7 on September 13, 1963 (U.S. Department of Energy, 1988).

Depth-to-water measurements in test hole U-3cn 5, which is in an active testing area in the Yucca Flat hydrographic area (Area 3, pl. 1), are shown in figure 4. The test hole is open to Paleozoic carbonate rock.

Depth-to-water measurements in test hole UE-3e4, which is in an active testing area in the Yucca Flat hydrographic area (Area 3, pl. 1), are shown in figure 5. The site is composed of three piezometers open to Tertiary volcanic rock at different depths.

Depth-to-water measurements in test hole UE-5n, which is in an inactive testing area in the Frenchman Flat hydrographic area (Area 5, pl. 1), are shown in figure 6. The well is open to Quaternary alluvium.

Depth-to-water measurements in well TW-B, which is in an area of active testing in the Yucca Flat hydrographic area (Area 6, pl. 1), are shown in figure 7. The well is open to Tertiary volcanic rock, primarily tuff.

Depth-to-water measurements in test hole UE-18r on Buckboard Mesa in the Fortymile Canyon hydrographic area (Area 18, pl. 1) are shown in figure 8. The test hole is open to Tertiary volcanic rock, primarily tuff.

Depth-to-water measurements in test hole PM-1, which is in an active area of testing on Pahute Mesa in the Gold Flat hydrographic area (Area 20, pl. 1), are shown in figure 9. The test hole is open to Tertiary volcanic rock, primarily tuff and rhyolite.

Depth-to-water measurements in test hole PM-2, which is in an active testing area on Pahute Mesa in the Gold Flat hydrographic area (Area 20, pl. 1), are shown in figure 10. The test hole is open to Tertiary volcanic rock, primarily tuff, rhyolite, and dacite.

Depth-to-water measurements in well TW-F in the Frenchman Flat hydrographic area (Area 27, pl. 1) are shown in figure 11. The well is open to Paleozoic carbonate rock, primary dolomite.

Depth-to-water measurements in Test Well 3 in the Frenchman Flat hydrographic area (pl. 1) are shown in figure 12. The well is open to Paleozoic carbonate rock.

Depth-to-water measurements in HTH-1 in the Hot Creek Valley hydrographic area (fig. 2) are shown in figure 13. The test hole is open to Quaternary and Tertiary alluvium and Tertiary volcanic rock, primarily tuff and tuffaceous sediments. The minimum depth-to-water measured was on January 22, 1968, only 3 days after a nuclear test, the Faultless event, on January 19, 1968. The Faultless event occurred 3,002 ft (915 m) northwest of HTH-1 (U.S. Department of Energy, 1988).

Depth-to-water measurements in test hole UC-1-P-2SR in the Hot Creek Valley hydrographic area (fig. 2) are shown in figure 14. The test hole is open to rubble consisting of Quaternary and Tertiary alluvium and Tertiary volcanic rock, primarily tuff, caused by the collapse of the cavity formed by the Faultless event 299 ft (91 m) northeast of UC-1-P-2SR (Garber, 1981, p. 207-209). Decreases in depth to water from September 1974 to present (1992) are attributed to infilling of the cavity (Thordarson, 1987, p. 15-16).

Depth-to-water measurements in well Army 2 in the Indian Springs Valley hydrographic area (pl. 1) are shown in figure 15. The well is open to Quaternary and Tertiary alluvium.

Depth-to-water measurements in well Army 3 in the Indian Springs Valley hydrographic area (pl. 1) are shown in figure 16. The well is open to Quaternary and Tertiary alluvium.

Depth-to-water measurements in well Army 6A in the Mercury Valley hydrographic area (pl. 1) are shown in figure 17 (pl. 2). The well is open to Paleozoic clastic rock.

Depth-to-water measurements in test hole PM-3 on Pahute Mesa in the Oasis Valley hydrographic area (pl. 1) are shown in figure 18. The test hole is open to Tertiary volcanic rock, primarily tuffs. Measurements prior to September 14, 1988, were made when the hole depth was 1,647 ft (502.0 m). Measurements from September 21, 1988, through 1991 were made when the hole depth was 3,019 ft (920.2 m). Measurements during 1992 were made from two piezometers installed in February 1992 at depths of 1,667 and 2,144 ft (508.1 and 653.5 m).

Ground-Water Withdrawals

Ground-water withdrawals at NTS were compiled for calendar year 1992. Withdrawals were measured by REEC Co at 12 pumping wells used for water supply at NTS. The compilation does not include ground water removed from other wells and test holes as a result of drilling, hydrologic testing, or sampling activities.

Withdrawals were determined from flowmeter and ammeter information. Each well is equipped with a totalizing flowmeter that is periodically read by REEC Co personnel. Differences between flowmeter readings provide the volume of ground water withdrawn during the period between readings. Flow rates were assumed to be constant during the period between readings. Daily withdrawal was computed from the total calculated volume of withdrawal. Flowmeter readings are accurate to the last thousand gallons pumped. Ammeter data provided pump on and off times and were used when flowmeter information was not available.

Monthly and yearly ground-water withdrawals from wells at NTS are shown in table 3. The table lists wells by NTS administrative area and then by RSN hole-number designation. Primary water yielding units and location and construction data are listed in table 3.

Annual ground-water withdrawals from individual wells during 1992 ranged from 5.284 Mgal (20.00 million liters) to 139.420 Mgal (527.71 million liters) (table 3). Total measured ground-water withdrawal from NTS was 595.313 Mgal (2,253.26 million liters).

Ground-water at NTS is withdrawn from alluvium, volcanic rock, and carbonate rock (table 3). At NTS in the Alkali Flat-Furnace Creek Ranch subbasin, ground water is withdrawn from volcanic rock and in Ash Meadows subbasin, it is withdrawn from all three

rock units. About 59 percent of withdrawal from the Ash Meadows subbasin was from carbonate rock, 23 percent from volcanic rock, 17 percent from alluvium, and 1 percent from a well open to both alluvium and volcanic rocks. Wells at NTS in the Oasis Valley subbasin had no withdrawals.

Annual ground-water withdrawals at NTS from 1983 through 1992 are shown in figure 19. Total ground-water withdrawals decreased from 1,117.466 Mgal (4,229.61 million liters) in 1989 to 595.313 Mgal (2,253.26 million liters) in 1992. About 60 percent of the total decrease in ground-water withdrawal from 1989 through 1992 was caused by decreasing withdrawals from well RNM-2S, which discontinued operation in 1991.

Tritium Concentrations

Raw, unfiltered water samples were collected from five test holes at NTS by using a wire-line point sampler. Prior to sampling, the collection bailer was rinsed with tap and deionized water, air dried, and then used to remove approximately 1/2 gal (2 L) of water from the test hole. Samples were collected in 1-L glass bottles. The Environmental Monitoring Systems Laboratory of the U.S. Environmental Protection Agency in Las Vegas, Nev., analyzed the samples for tritium concentration.

Location and construction information, tritium concentrations, and collection depths for the sampled test holes are presented in table 4. This table lists test holes at NTS by administrative area number. Because some of the test holes may have not been completely developed for water-quality sampling use, tritium concentrations may be from residual drilling fluids or other fluids introduced during drilling, pumping, or water injection instead of representing water solely from the saturated zone.

Tritium concentrations ranged from near 0 to 166 pCi/L (0 to 6.14 Bq/L) from five wells sampled at NTS during water year 1992. An average annual concentration of 20,000 pCi/L (740 Bq/L) of tritium in drinking water is the maximum permissible limit established by the U.S. Environmental Protection Agency in Title 40, Code of Federal Regulations (1988). None of the tritium concentrations exceeded this limit.

SUMMARY

The USGS, in support of the USDOE Environmental Restoration and Hydrologic Resources Management Programs, collects and compiles hydrogeologic data to aid in characterizing the regional and local ground-water flow systems at NTS and vicinity. This report presents data on depth to water, ground-water withdrawals, and tritium concentrations for selected wells and test holes.

Depth-to-water measurements were made at 53 sites at NTS during the 1992 water year and ranged from 288 to 2,213 ft (87.8 to 674.5 m) below land surface. Depth-to-water measurements were made at 60 regional sites in the vicinity of NTS from 1952 through September 30, 1992, and ranged from 22 to 1,460 ft (6.7 to 445.0 m) below land surface. Annual ground-water withdrawals from 12 wells at NTS ranged from 5.284 to 139.420 Mgal (20.00 to 527.71 million liters) per well. Total annual ground-water withdrawal from NTS during the 1992 calendar year was 595.313 Mgal (2,253.26 million liters). Tritium concentrations of five ground-water samples collected at NTS during the 1992 water year ranged from near 0 to 166 pCi/L (0 to 6.14 Bq/L) and did not exceed established drinking water standards.

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BASIC DATA

Figure 3. Depth to water through water year 1992 in well TW-7 in Yucca Flat hydrographic area (Area 3), Nevada Test Site. Names and dates are indicated for nearby nuclear tests.

Figure 4. Depth to water through water year 1992 in test hole U-3cn 5 in Yucca Flat hydrographic area (Area 3), Nevada Test Site.

Figure 5. Depth to water through water year 1992 in test hole UE-3e 4 in Yucca Flat hydrographic area (Area 3), Nevada Test Site.

Figure 6. Depth to water through water year 1992 in test hole UE-5n in Frenchman Flat hydrographic area (Area 5), Nevada Test Site.

Figure 7. Depth to water through water year 1992 in test hole TW-B in Yucca Flat hydrographic area (Area 6), Nevada Test Site.

Figure 8. Depth to water through water year 1992 in test hole UE-18r on Buckboard Mesa (Area 18), Nevada Test Site.

Figure 9. Depth to water through water year 1992 in test hole PM-1 on Pahute Mesa (Area 20), Nevada Test Site.

Figure 10. Depth to water through water year 1992 in test hole PM-2 on Pahute Mesa (Area 20), Nevada Test Site.

Figure 11. Depth to water through water year 1992 in well TW-F in Frenchman Flat hydrographic area (Area 27),

Figure 12. Depth to water through water year 1992 in Test Well 3 in Frenchman Flat hydrographic area in vicinity of Nevada Test Site.

Figure 13. Depth to water through water year 1992 in test hole HTH-1 in Hot Creek Valley hydrographic area in vicinity of Nevada Test Site. Name and date are indicated for nearby nuclear test.

Figure 14. Depth to water through water year 1992 in test hole UC-1-P-2SR in Hot Creek Valley hydrographic area in vicinity of Nevada Test Site. Name and date are indicated for nearby nuclear test.

Figure 15. Depth to water through water year 1992 in well Army 2 in Indian Springs Valley hydrographic area in vicinity of Nevada Test Site.

Figure 16. Depth to water through water year 1992 in well Army 3 in Indian Springs Valley hydrographic area in vicinity of Nevada Test Site.

Figure 17. Depth to water through water year 1992 in well Army 6A in Mercury Valley hydrographic area in vicinity of Nevada Test Site.

Figure 18. Depth to water through water year 1992 in test hole PM-3 in Oasis Valley hydrographic area in vicinity of Nevada Test Site.

Figure 19. Annual ground-water withdrawals from Nevada Test Site, 1983-92.

Table 1. Depth to water in wells and test holes at Nevada Test Site, Nye County, Nevada

RSN hole number--Drill hole number assigned by Raytheon Services Nevada; see section "Site Designations" in text.
 USGS standard identification--U.S. Geological Survey site designation; see section "Site Designations" in text.
 Date hole completed--Date that borehole construction work ceased; see section "Measurements" in text.
 Land-surface altitude--Datum is sea level. Value may not represent current altitude; see section "Depth to Water" in text.
 Hole depth--Datum is land surface. Represents most recent available accessible depth; see section "Measurements" in text.
 Depth of open interval--Datum is land surface. Bottom of open interval may be deeper than present accessible hole depth; see section "Measurements" in text.
 Type--P, perforated or slotted casing; S, screen; X, open (uncased) hole.
 Measurement--Datum is land surface. Value may not represent static water level; see section "Depth to Water" in text; D, site was dry.
 Method--S, steel tape; T, electric tape; V, wire-line device.
 Site Status--D, site was dry; P, site was pumping; Q, water-quality sample was collected; R, site was recently pumped; -, no observation.

RSN hole number	USGS standard identification	Latitude (degrees, minutes, seconds)	Longitude (degrees, minutes, seconds)	Date hole completed (month, day, year)	Land- surface altitude		Hole depth		Top		Bottom		Type	Date (month, day, year)		Depth to water		Site status
					feet	meters	feet	meters	feet	meters	feet	meters		feet	meters			
AREA 1																		
UE-1a	370254116070601	370254	1160706	02-02-64	4,303	1,311.6	562	171.3	78	23.8	957	291.7	X	05-19-92		546	166.4	T
UE-1b	370254116064201	370254	1160642	02-10-64	4,273	1,302.4	701	213.7	76	23.2	1,254	382.2	X	05-19-92		645	196.6	T
UE-1c	370253116055201	370253	1160552	02-11-64	4,206	1,282.0	1,772	540.1	74	22.6	1,880	573.0	X	05-19-92		1,297	395.3	V
UE-1h	370005116040301	370005	1160403	07-03-68	3,995	1,217.7	3,228	983.9	2,134	650.4	3,358	1,023.5	X	05-18-92		1,556	474.3	V
UE-1L	370254116082002	370254	1160820	11-11-77	4,454	1,357.6	2,284	696.2	716	218.2	2,284	696.2	X	05-19-92		519	158.2	T
UE-1q	370337116033002	370337	1160330	05-22-92	4,082	1,244.2	2,600	792.5	2,459	749.5	2,600	792.5	X	08-07-92		1,655	504.4	V
														08-20-92		1,655	504.4	V
AREA 2																		
UE-2ce ^a	370831116080701	370831	1160807	01-23-77	4,764	1,452.1	1,649	502.6	1,384	421.8	1,650	502.9	P, X	10-07-91		1,447	441.0	V
														10-22-91		1,447	441.0	V
														11-05-91		1,447	441.0	V
														11-22-91		1,448	441.4	V
														12-04-91		1,447	441.0	V
														12-23-91		1,447	441.0	V
														01-08-92		1,447	441.0	V
														01-22-92		1,447	441.0	V
														02-05-92		1,447	441.0	V
														02-19-92		1,447	441.0	V
														03-04-92		1,447	441.0	V
														03-17-92		1,447	441.0	V
														04-06-92		1,447	441.0	V
														04-21-92		1,446	440.7	V
														05-06-92		1,447	441.0	V

Table 1. Depth to water in wells and test holes at Nevada Test Site, Nye County, Nevada--Continued

RSN hole number	USGS standard identification	Latitude (degrees, minutes, seconds)	Longitude (degrees, minutes, seconds)	Date hole completed (month, day, year)	Land- surface altitude		Hole depth		Depth of open interval				Measurement				Site status										
					feet		meters		feet		meters		feet		meters			feet		meters							
UE-2ce ^a	370831116080701	370831	1160807	01-23-77	4,764	1,452.1	1,649	502.6	1,384	421.8	1,650	502.9	P, X	06-11-92	1,446	440.7	V	-									
														06-24-92	1,446	440.7	V	-									
														07-08-92	1,446	440.7	V	-									
														07-15-92	1,446	440.7	V	-									
														07-21-92	1,446	440.7	V	-									
														08-04-92	1,446	440.7	S	-									
														08-27-92	1,446	440.7	S	-									
														09-02-92	1,446	440.7	V	-									
														09-22-92	1,447	441.0	V	-									
AREA 3																											
TW-7 ^a	370353116020201	370353	1160202	06-27-54	4,063	1,238.4	2,239	682.4	1,710	521.2	2,251	686.1	P	10-10-91	1,630	496.8	V	-									
														11-19-91	1,630	496.8	V	-									
														12-10-91	1,630	496.8	V	-									
														01-15-92	1,631	497.1	V	-									
														02-10-92	1,631	497.1	V	-									
														03-10-92	1,631	497.1	V	-									
														04-13-92	1,631	497.1	V	-									
														05-14-92	1,630	496.8	V	-									
														06-16-92	1,631	497.1	V	-									
														07-14-92	1,630	496.8	V	-									
														08-17-92	1,631	497.1	V	-									
														09-23-92	1,632	497.4	V	-									
U-3cn 5 ^b	370320116012001	370334	1160121	02-07-66	4,012	1,222.9	2,830	862.6	2,832	863.2	3,030	923.5	X	10-10-91	1,621	494.1	V	-									
														11-19-91	1,620	493.8	V	-									
														12-10-91	1,620	493.8	V	-									
														01-15-92	1,621	494.1	V	-									
														02-10-92	1,620	493.8	V	-									
														03-10-92	1,621	494.1	V	-									
														04-13-92	1,620	493.8	V	-									
														05-14-92	1,620	493.8	V	-									
														06-16-92	1,620	493.8	V	-									
														07-14-92	1,620	493.8	V	-									
														08-12-92	1,621	494.1	V	-									
														09-23-92	1,620	493.8	V	-									
U-3mi	370020115593001	370021	1155930	01-20-86	4,004	1,220.4	1,761	536.8	372	113.4	1,794	546.8	X	01-14-92	1,572	479.1	V	-									
														05-18-92	1,570	478.5	V	-									
														07-30-92	1,569	478.2	V	-									

Table 1. Depth to water in wells and test holes at Nevada Test Site, Nye County, Nevada--Continued

RSN hole number	USGS standard identification	Latitude (degrees, minutes, seconds)	Longitude (degrees, minutes, seconds)	Date hole completed (month, day, year)	Land- surface altitude				Hole depth				Depth of open interval				Measurement							
					feet		meters		feet		meters		feet		meters		feet		meters		feet		meters	
UE-3e 4-1	370411116025910	370411	1160259	03-19-90	4,082	1,244.2	2,181	664.8	2,150	655.3	2,171	661.7	S	10-08-91	1,055	321.6	V	Q						
														11-21-91	1,074	327.4	V	-						
														12-02-91	1,079	328.9	V	-						
														12-16-91	1,066	324.9	V	-						
														01-06-92	1,084	330.4	V	-						
														01-21-92	1,069	325.8	V	-						
														02-03-92	1,055	321.6	V	-						
														02-20-92	1,084	330.4	V	-						
														03-03-92	1,091	332.5	V	-						
														03-16-92	1,100	335.3	V	-						
														04-07-92	1,108	337.7	V	-						
														04-20-92	1,106	337.1	V	-						
														05-04-92	1,099	335.0	V	-						
														06-09-92	1,078	328.6	V	-						
														06-22-92	1,072	326.8	V	-						
UE-3e 4-2	370411116025911	370411	1160259	03-22-90	4,082	1,244.2	1,919	584.9	1,887	575.2	1,908	581.6	S	10-08-91	1,291	393.5	V	Q						
														10-23-91	1,288	392.6	V	-						
														11-06-91	1,293	394.1	V	-						
														11-21-91	1,297	395.3	V	-						
														12-02-91	1,296	395.0	V	-						
														12-16-91	1,295	394.7	V	-						
														01-06-92	1,297	395.3	V	-						
														01-21-92	1,300	396.2	V	-						
														02-03-92	1,300	396.2	V	-						
														02-20-92	1,300	396.2	V	-						
														03-03-92	1,300	396.2	V	-						
														03-16-92	1,300	396.2	V	-						
														04-07-92	1,300	396.2	V	-						
														04-20-92	1,301	396.5	V	-						
														05-04-92	1,302	396.8	V	-						
06-09-92	1,304	397.4	V	-																				
06-22-92	1,305	397.8	V	-																				
07-06-92	1,304	397.4	V	-																				
07-20-92	1,304	397.4	V	-																				
08-06-92	1,306	398.1	V	-																				

Table 1. Depth to water in wells and test holes at Nevada Test Site, Nye County, Nevada--Continued

RSN hole number	USGS standard identification	Latitude (degrees, minutes, seconds)	Longitude (degrees, minutes, seconds)	Date hole completed (month, day, year)	Land- surface altitude				Hole depth				Depth of open interval				Measurement				Site status
					feet		meters		feet		meters		feet		meters		Date (month, day, year)	Depth to water		Method	
U-4uPS 2A ^{a, b}	370513116025101	370513	1160251	08-30-90	4,117	1,254.9	2,280	694.9	1,610	490.7	2,280	694.9	X		03-17-92	1,618	493.2	V	-		
															04-07-92	1,616	492.6	V	-		
															04-20-92	1,615	492.2	V	-		
															05-04-92	1,613	491.6	V	-		
															06-10-92	1,609	490.4	V	-		
															06-22-92	1,608	490.1	V	-		
														07-07-92	1,606	489.5	V	-			
														07-20-92	1,605	489.2	V	-			
														09-29-92	1,599	487.4	V	-			
UE-4av ^a	370547116041104	370547	1160411	07-27-90	4,177	1,273.2	1,808	551.1	116	35.4	1,985	605.0	X		10-16-91	D	D	V	D		
UE-4t 1 ^a	370556116025405	370556	1160254	10-24-90	4,144	1,263.1	2,010	612.6	1,906	580.9	2,010	612.6	P, X		10-09-91	300	91.4	T	-		
															10-23-91	300	91.4	T	-		
															11-06-91	298	90.8	T	-		
															11-21-91	298	90.8	T	-		
															12-02-91	295	89.9	T	-		
															12-16-91	294	89.6	T	-		
															01-07-92	294	89.6	T	-		
															01-21-92	293	89.3	T	-		
															02-04-92	296	90.2	T	-		
															02-20-92	294	89.6	T	-		
															03-02-92	294	89.6	T	-		
															03-16-92	292	89.0	T	-		
														04-07-92	292	89.0	T	-			
														04-20-92	291	88.7	T	-			
														05-04-92	289	88.1	T	-			
														07-08-92	302	92.0	T	-			
														07-21-92	296	90.2	T	-			
														08-06-92	290	88.4	T	-			
														08-24-92	288	87.8	T	-			
														09-08-92	289	88.1	T	-			
														09-21-92	290	88.4	T	-			
UE-4t 2 ^a	370556116025406	370556	1160254	10-24-90	4,144	1,263.1	1,754	534.6	1,564	476.7	1,754	534.6	P, X		10-09-91	384	117.0	T	-		
															10-23-91	385	117.3	T	-		
															11-06-91	385	117.3	T	-		
															11-21-91	386	117.6	T	-		
														12-02-91	386	117.7	T	-			

Table 1. Depth to water in wells and test holes at Nevada Test Site, Nye County, Nevada--Continued

RSN hole number	USGS standard identification	Latitude (degrees, minutes, seconds)	Longitude (degrees, minutes, seconds)	Date hole completed (month, day, year)	Land- surface altitude				Hole depth				Depth of open interval				Measurement				Site status																																				
					feet		meters		feet		meters		feet		meters		feet		meters			Depth to water																																			
WW-4 ^a	365418116012601	365418	1160126	11-18-81	3,602	1,097.9	1,479	450.8	942	287.1	1,479	450.8	P, X				10-21-91	852	259.7	T	P																																				
																						AREA 7	11-20-91	853	260.0	T	P																														
																												12-11-91	835	254.5	T	-																									
																																	01-17-92	835	254.5	T	-																				
																																						02-11-92	835	254.5	T	-															
																																											03-12-92	853	260.0	T	P										
																																																04-14-92	852	259.7	T	P					
																																																					05-11-92	852	259.7	T	P
07-13-92	850	259.1	T	P																																																					
08-11-92	850	259.1	T	P																																																					
					09-17-92	852	259.7	T	P																																																
U-7cd	370451116024101	370451	1160241	04-14-92	4,115	1,254.3	1,620	493.8	117	35.7	1,625	495.3	X				06-09-92	1,589	484.3	V	-																																				
																						06-17-92	1,586	483.4	V	-																															
																											06-23-92	1,584	482.8	V	-																										
																																07-07-92	1,578	481.0	V	-																					
																																					07-13-92	1,576	480.4	V	-																
																																										07-20-92	1,574	479.8	V	-											
																																															07-30-92	1,569	478.2	V	-						
																																																				09-10-92	1,554	473.7	V	Q	
																																																									09-28-92
09-29-92	1,548	471.8	V	-																																																					
U-7cd 1	370451116024102	370451	1160241	09-16-92	4,114	1,253.9	1,700	518.2	114	34.7	1,700	518.2	X				09-16-92	1,675	510.5	V	Q																																				
																						09-22-92	1,546	471.2	V	-																															
																											09-28-92	1,480	451.1	V	-																										
																																09-29-92	1,472	448.7	V	-																					
																																					09-30-92	1,466	446.8	V	-																
																																										10-07-91	1,969	600.2	V	-											
																																															10-22-91	1,969	600.2	V	-						
																																																				11-05-91	1,969	600.2	V	-	
																																																									11-22-91
12-03-91	1,970	600.5	V	-																																																					
UE-7nS ^a	370556116000901	370556	1160009	07-14-76	4,370	1,332.0	2,205	672.1	1,995	608.1	2,205	672.1	P, X				10-07-91	1,969	600.2	V	-																																				
																						10-22-91	1,969	600.2	V	-																															
																											11-05-91	1,969	600.2	V	-																										
																																11-22-91	1,970	600.5	V	-																					
																																					12-03-91	1,970	600.5	V	-																
																																										12-23-91	1,970	600.5	V	-											
																																															01-08-92	1,970	600.5	V	-						
																																																				01-22-92	1,970	600.5	V	-	
																																																									02-04-92
02-19-92	1,970	600.5	V	-																																																					

Table 1. Depth to water in wells and test holes at Nevada Test Site, Nye County, Nevada--Continued

RSN hole number	USGS standard identification	Latitude (degrees, minutes, seconds)	Longitude (degrees, minutes, seconds)	Date hole completed (month, day, year)	Land- surface altitude		Hole depth		Depth of open interval				Measurement				Site status																																											
					feet	meters	feet	meters	Top		Bottom		Date (month, day, year)	Depth to water		Method																																												
									feet	meters	feet	meters		feet	meters			feet	meters																																									
UE-7nS ^a	370556116000901	370556	1160009	07-14-76	4,370	1,332.0	2,205	672.1	1,995	608.1	2,205	672.1	P, X	03-06-92	1,970	600.5	V	-																																										
														03-18-92	1,970	600.5	V	-																																										
														04-06-92	1,970	600.5	V	-																																										
														04-21-92	1,970	600.5	V	-																																										
														04-29-92	1,969	600.2	S	-																																										
														05-05-92	1,970	600.5	V	-																																										
														06-11-92	1,969	600.2	V	-																																										
														06-24-92	1,969	600.2	V	-																																										
														07-08-92	1,969	600.2	V	-																																										
														07-21-92	1,969	600.2	V	-																																										
UE-11a	365259115571601	365259	1155716	09-04-82	3,547	1,081.1	1,400	426.7	599	182.6	1,400	426.7	X	10-21-91	1,132	345.0	V	-																																										
														11-20-91	1,133	345.3	V	-																																										
														12-11-91	1,132	345.0	V	-																																										
														01-17-92	1,132	345.0	V	-																																										
														02-11-92	1,132	345.0	V	-																																										
														03-12-92	1,132	345.0	V	-																																										
														04-14-92	1,132	345.0	V	-																																										
														05-11-92	1,132	345.0	V	-																																										
														06-15-92	1,132	345.0	V	-																																										
														07-13-92	1,133	345.3	V	-																																										
ER-12-1 ^a U-12s	371106116110401 371342116125102	371106 371342	1161104 1161251	02-26-92 03-15-66	5,820 6,794	1,773.8 2,070.8	3,434 1,467	1,046.6 447.1	1,693 12	516.0 3.7	3,442 1,480	1049.1 451.1	P X	02-26-92	1,547	471.5	V	-																																										
														05-27-92	940	286.5	V	-																																										
														07-27-92	941	286.8	V	-																																										
														06-05-92	847	258.2	V	-																																										
														07-27-92	847	258.2	V	-																																										
														UE-12t 6 ^a	371332116112802	371332	1161128	09-16-88	6,907	2,105.3	1,461	445.3	23	7.0	1,461	445.3	P, X	06-05-92	847	258.2	V	-																												
																												07-27-92	847	258.2	V	-																												
																												UE-14b	365550116091101	365550	1160911	01-30-84	4,353	1,326.8	3,680	1,121.7	2,051	625.1	3,680	1,121.7	X	05-21-92	1,666	507.8	V	-														
																																										UE-16f	370208116092402	370208	1160924	09-23-77	4,652	1,417.9	1,409	429.5	1,293	394.1	1,479	450.8	X	05-19-92	367	111.9	T	-

Table 1. Depth to water in wells and test holes at Nevada Test Site, Nye County, Nevada--Continued

RSN hole number	USGS standard identification	Latitude (degrees, minutes, seconds)	Longitude (degrees, minutes, seconds)	Date hole completed (month, day, year)	Land- surface altitude		Hole depth		Depth of open interval				Measurement				Site status	
					feet		meters		Top		Bottom		Date (month, day, year)	Depth to water		Method		
					feet	meters	feet	meters	feet	meters	feet	meters		feet	meters			
AREA 17																		
TW-1 ^a	370929116132311	370929	1161323	00-00-80	6,156	1,876.3	3,694	1,125.9	1,910	582.2	2,430	740.7	P	01-29-92	1,465	446.5	V	-
														05-27-92	1,465	446.5	V	-
														07-27-92	1,465	446.5	V	-
UE-17 ^a	370425116095801	370425	1160958	09-23-76	4,696	1,431.3	1,207	367.9	745	227.1	1,214	370.0	P; X	05-21-92	636	193.9	T	-
AREA 18																		
UE-18r	370806116264001	370805	1162641	01-24-68	5,538	1,688.0	4,930	1,502.7	1,629	496.5	5,004	1,525.2	X	05-21-92	1,365	416.0	V	-
UE-18t	370741116194501	370741	1161945	10-05-78	5,201	1,585.3	2,600	792.5	1,896	577.9	2,600	792.5	X	05-21-92	916	279.2	V	-
AREA 19																		
U-19bg 1	371620116213501	371620	1162135	07-15-91	6,694	2,040.3	2,250	685.8	74	22.6	2,250	685.8	X	10-16-91	2,118	645.6	V	-
														11-18-91	2,118	645.6	V	-
U-19bh	371349116222001	371349	1162220	06-14-91	6,768	2,062.9	2,148	654.7	70	21.3	2,148	654.7	X	10-16-91	2,104	641.3	V	-
														11-18-91	2,103	641.0	V	-
														12-10-91	2,102	640.7	V	-
														01-30-92	2,101	640.4	V	-
														02-27-92	2,101	640.4	V	-
														03-24-92	2,101	640.4	V	-
														04-23-92	2,100	640.1	V	-
														06-29-92	2,099	639.8	V	-
														07-22-92	2,100	640.1	V	-
														08-19-92	2,098	639.5	V	-
U-19bj	371736116184701	371736	1161847	05-28-92	7,035	2,144.3	2,153	656.2	57	17.4	2,153	656.2	X	09-24-92	2,127	648.3	V	-
														09-29-92	2,128	648.6	V	Q
U-19bk	371714116230301	371714	1162303	12-03-91	6,670	2,033.0	2,198	670.0	57	17.4	2,198	670.0	X	09-24-92	1,985	605.0	V	Q
UE-19h	372034116222504	372034	1162225	01-17-92	6,780	2,066.5	2,283	695.9	2,050	624.8	2,283	695.9	P	01-29-92	2,112	643.7	V	-
														04-02-92	2,112	643.7	V	-
														05-28-92	2,111	643.4	V	-
														06-29-92	2,111	643.4	V	-
														07-22-92	2,110	643.1	V	-
														08-20-92	2,111	643.4	V	-
AREA 20																		
PM-1	371649116242102	371649	1162421	05-03-64	6,558	1,998.9	7,731	2,356.4	7,543	2,299.1	7,731	2,356.4	X	10-15-91	2,097	639.2	V	-
														11-12-91	2,097	639.2	V	-
														12-09-91	2,097	639.2	V	-
														02-26-92	2,096	638.9	V	-
														03-30-92	2,097	639.2	V	-

Table 1. Depth to water in wells and test holes at Nevada Test Site, Nye County, Nevada--Continued

RSN hole number	USGS standard identification	Latitude (degrees, minutes, seconds)	Longitude (degrees, minutes, seconds)	Date hole completed (month, day, year)	Land- surface altitude		Hole depth		Top		Bottom		Type	Date (month, day, year)		Depth to water		Method	Site status		
					feet		meters		feet		meters			feet		meters				feet	meters
					feet	meters	feet	meters	feet	meters	feet	meters		feet	meters						
PM-1	371649116242102	371649	1162421	05-03-64	6,558	1,998.9	7,731	2,356.4	7,543	2,299.1	7,731	2,356.4	X		04-23-92	2,096	638.9	V	-		
															05-26-92	2,095	638.6	V	-		
															06-18-92	2,096	638.9	V	-		
															07-17-92	2,096	638.9	V	-		
															08-19-92	2,095	638.6	V	-		
PM-2	372042116340501	372042	1163405	05-01-66	5,586	1,702.6	8,782	2,676.8	2,500	762.0	8,782	2,676.8	P, X		09-30-92	2,096	638.9	V	-		
															05-20-92	852	259.7	V	-		
															10-15-91	2,056	626.7	V	-		
															11-12-91	2,056	626.7	V	-		
															12-05-91	2,056	626.7	V	-		
U-20 WW ^a	371505116254501	371505	1162545	07-22-85	6,468	1,971.4	3,268	996.1	2,271	692.2	3,268	996.1	P, X		01-13-92	2,056	626.7	V	-		
															02-28-92	2,056	626.7	V	-		
															10-29-91	2,172	662.0	V	-		
															11-13-91	2,172	662.0	V	-		
															12-09-91	2,172	662.0	V	-		
U-20ax	371350116264701	371350	1162647	08-21-87	6,536	1,992.2	2,200	670.6	62	18.9	2,200	670.6	X		02-28-92	2,172	662.0	V	-		
															03-31-92	2,173	662.3	V	-		
															10-15-91	2,132	649.8	V	-		
															11-12-91	2,133	650.1	V	-		
															12-09-91	2,133	650.1	V	-		
U-20bg	371414116242901	371414	1162429	12-19-90	6,567	2,001.6	2,200	670.6	57	17.4	2,200	670.6	X		01-28-92	2,133	650.1	V	-		
															02-27-92	2,133	650.1	V	-		
															03-30-92	2,134	650.4	V	-		
															04-22-92	2,134	650.4	V	-		
															05-26-92	2,133	650.1	V	-		
U-20n PS 1DD-H ^b	371425116252401	371425	1162524	05-15-85	6,468	1,971.4	3,025	922.0	2,665	812.3	2,995	912.9	P		06-18-92	2,133	650.1	V	-		
															07-17-92	2,133	650.1	V	-		
															08-18-92	2,133	650.1	V	-		
															09-28-92	2,134	650.4	V	-		
															01-16-92	2,046	623.6	V	-		
UE-20bh 1	371442116243301	371442	1162433	09-29-91	6,637	2,023.0	2,810	856.5	1,936	590.1	2,810	856.5	X		05-22-92	2,049	624.5	V	-		
															07-29-92	2,050	624.8	V	-		
															10-29-91	2,210	673.6	V	-		
															11-13-91	2,210	673.6	V	-		
															01-28-92	2,210	673.6	V	-		
															02-27-92	2,210	673.6	V	-		
															03-30-92	2,211	673.9	V	-		

Table 1. Depth to water in wells and test holes at Nevada Test Site, Nye County, Nevada--Continued

RSN hole number	USGS standard identification	Latitude (degrees, minutes, seconds)	Longitude (degrees, minutes, seconds)	Date hole completed (month, day, year)	Land-surface altitude		Hole depth		Depth of open interval				Measurement				Site status	
					feet	meters	feet	meters	Top		Bottom		Date (month, day, year)	Depth to water		Method		
									feet	meters	feet	meters		feet	meters			feet
UE-20bh 1	371442116243301	371442	1162433	09-29-91	6,637	2,023.0	2,810	856.5	1,936	590.1	2,810	856.5	X	04-22-92	2,211	673.9	V	-
														05-26-92	2,211	673.9	V	-
														06-18-92	2,211	673.9	V	-
														07-17-92	2,212	674.2	V	-
														08-18-92	2,212	674.2	V	-
											09-28-92	2,213	674.5	V	Q			
UE-20n 1	371425116251902	371425	1162519	06-10-87	6,461	1,969.3	2,834	863.8	2,282	695.6	2,834	863.8	X	01-13-92	2,040	621.8	V	-
														05-22-92	2,040	621.8	V	-
														07-29-92	2,040	621.8	V	-
AREA 27																		
TW-F	364534116065902	364534	1160659	06-12-62	4,143	1,262.8	3,400	1,036.3	3,150	960.1	3,400	1,036.3	X	05-11-92	1,736	529.1	V	-

^a Open interval is not continuous between top and bottom depth.

^b Water-level measurements corrected for borehole deviation from vertical.

Table 2. Depth to water in wells and test holes in vicinity of Nevada Test Site, Nye and Clark Counties, Nevada

Local hole identifier--Identifier assigned by owner or by the U.S. Geological Survey; see section "Site Designations" in text.
USGS standard identification--U.S. Geological Survey site designation; see section "Site Designations" in text.
Date hole completed--Date that borehole construction work ceased; see section "Measurements" in text; --, unknown date.
Land-surface altitude--Datum is sea level. Value may not represent current altitude; see section "Depth to water" in text.
Hole depth--Datum is land surface. Represents most recent available accessible depth; see section "Measurements" in text; --, depth unknown; --, depth estimated.
Depth to open interval--Datum is land surface. Bottom of open interval may be deeper than present accessible hole depth; see section "Measurements" in text; --, interval unknown.
Type--P, perforated or slotted casing; S, screen; X, open (uncased) hole; --, unknown type.
Measurement--Datum is land surface. Value may not represent static water level; see section "Depth to Water" in text; D, site was dry.
Method--A, air line; I, iron horse; R, depth to water reported (measurement method not known); S, steel tape; T, electric tape; V, wire line device; --, unknown method
Site status--D, site was dry; O, obstruction was encountered in hole above water surface; P, site was pumping; R, site was recently pumped; --, no observation

Local hole Identifier	USGS standard Identification	Latitude (degrees, minutes, seconds)	Longitude (degrees, minutes, seconds)	Date hole completed (month, day, year)	Land-surface altitude		Hole depth		Depth to open interval				Measurement								
					feet		meters		feet		meters		feet		meters		Date (month, day, year)	Depth to water		Method	Site status
					feet	meters	feet	meters	feet	meters	feet	meters	feet	meters	feet	meters					
LIDA VALLEY																					
Ralston Well	373320117090601	373320	1170906	--	4,756	1,449.6	409	124.7	--	--	--	--	--	--	04-20-90	305	93.0	T	-		
															12-17-90	307	93.6	T	-		
															04-24-91	307	93.6	T	-		
															09-30-91	307	93.6	T	-		
															05-11-92	307	93.6	T	-		
STONEWALL FLAT																					
Civet Cat Cave Well	373242116511301	373242	1165113	--	5,116	1,559.4	~30	~9.1	8	2.4	30	9.1	X	X	04-21-90	D	D	T	D		
Civet Cat Mine	373231116494401	373231	1164944	--	5,282	1,610.0	225	68.6	--	--	--	--	X	X	04-21-90	D	D	T	D		
Hammel Mine	373228116472001	373228	1164720	--	5,540	1,688.6	123	37.5	--	--	--	--	X	X	04-21-90	119	36.3	T	-		
															12-17-90	119	36.3	T	-		
															04-24-91	119	36.3	T	-		
Stonewall Well	373618116580001	373618	1165800	--	4,675	1,425.0	114	34.8	--	--	--	--	X	X	04-21-90	D	D	T	D		
SARCOBATUS FLAT																					
Tolicha Peak, Hand Dug Well	370937116514001	370937	1165140	--	4,009	1,221.9	~50	~15.2	--	--	--	--	X	X	04-26-90	D	D	T	D		
TPJ-1	370840116510101	370840	1165101	00-00-52	3,991	1,216.5	107	32.6	--	--	--	--	--	--	00-00-52	45	13.7	S	-		
															01-18-54	44	13.4	S	-		
															05-24-54	45	13.7	S	-		
															10-23-54	45	13.7	S	-		
															07-18-55	45	13.7	S	-		
															12-06-55	42	12.8	S	-		
															03-25-56	45	13.7	S	-		
															05-23-56	43	13.1	S	-		
															08-28-56	45	13.7	S	-		
															10-26-61	43	13.1	S	-		

Table 2. Depth to water in wells and test holes in vicinity of Nevada Test Site, Nye and Clark Counties, Nevada--Continued

Local hole identifier	USGS standard identification	Latitude (degrees, minutes, seconds)	Longitude (degrees, minutes, seconds)	Date hole completed (month, day, year)	Land-surface altitude		Hole depth		Depth to open interval				Measurement			
					feet	meters	feet	meters	Top	Bottom	Type	Date (month, day, year)	feet	meters	Method	Site status
TPJ-1	370840116510101	370840	1165101	00-00-52	3,991	1,216.5	107	32.6	--	--	--	03-11-85	43	13.1	S	-
												11-21-89	43	13.1	T	-
												04-20-90	43	13.1	T	-
												12-17-90	43	13.1	T	-
												04-24-91	43	13.1	T	-
												09-30-91	43	13.1	T	-
												05-11-92	43	13.1	T	-
TPJ-2	370753116502701	370753	1165027	--	4,005	1,220.7	--	--	--	--	--	03-11-85	58	17.7	S	-
												04-20-90	58	17.7	S	-
												12-17-90	58	17.7	T	-
												04-24-91	58	17.7	T	-
												09-30-91	58	17.7	T	-
												05-11-92	58	17.7	T	-
GOLD FLAT																
Gold Flat 2	372543116363501	372543	1163635	00-00-47	5,230	1,594.1	290 ^a	88.4 ^a	225	68.6	290	02-24-63	233	71.0	R	-
												11-26-89	232	70.7	T	-
												04-21-90	233	71.0	T	-
												12-17-90	234	71.3	T	-
												04-24-91	233	71.0	T	-
												09-30-91	234	71.3	T	-
TTR Cedar Pass R-1 WW	374241116264601	374241	1162646	06-29-89	5,696	1,736.1	775	236.2	476 ^b	145.1 ^b	775 ^b	06-29-89	420	128.0	R	-
TTR Cedar Pass WW ^c	374448116285801	374448	1162358	07-13-78	5,730	1,746.5	854	260.3	654 ^d	199.3 ^d	844 ^d	07-13-78	585	178.3	R	-
												04-19-90	586	178.6	T	-
TTR Sulphide Mine	373446116433301	373446	1164333	--	6,130	1,868.4	--	--	--	--	X	04-18-90	57	17.4	T	-
												11-27-90	57	17.4	T	-
												10-01-91	56	17.1	T	-
												05-12-92	56	17.1	T	-
CACTUS FLAT																
Mellan Well	374300116353001	374300	1163530	--	5,480	1,670.3	64	19.5	--	--	X	04-25-89	D	D	T	D
TTR Antelope Mine 1	373622116434601	373622	1164346	--	6,350	1,935.5	--	--	--	--	X	04-18-90	23	7.0	T	-
												11-27-90	22	6.7	T	-
												04-30-91	22	6.7	T	-
												10-01-91	23	7.0	T	-
												05-12-92	22	6.7	T	-
TTR Antelope Mine 2	373622116434701	373622	1164347	--	6,356	1,937.3	--	--	--	--	X	11-27-90	23	7.0	T	-
												04-30-91	23	7.0	T	-
												10-01-91	28	8.5	T	-
												05-12-92	27	8.2	T	-

Table 2. Depth to water in wells and test holes in vicinity of Nevada Test Site, Nye and Clark Counties, Nevada--Continued

Local hole identifier	USGS standard identification	Latitude (degrees, minutes, seconds)	Longitude (degrees, minutes, seconds)	Date hole completed (month, day, year)	Land-surface altitude		Hole depth		Top		Bottom		Date (month, day, year)	Depth to water		Method	Site status	
					feet	meters	feet	meters	feet	meters	feet	meters		feet	meters			
TTR Antelope Mine 3	373623116434701	373623	1164347	--	6,362	1,939.1	--	--	--	--	--	X	04-18-90	35	10.7	T	-	
														31	9.4	T	-	
														32	9.8	T	-	
														36	11.0	T	-	
														34	10.4	T	-	
TTR Dead Horse Well	374910116373001	374910	1163730	--	5,540	1,688.6	390 ^e	118.9 ^e	--	--	--	--	04-18-90	360	109.7	T	-	
														360	109.7	T	-	
														360	109.7	T	-	
														360	109.7	T	-	
														360	109.7	T	-	
TTR EH-1 ^f	374700116455101	374700	1164551	10-22-83	5,540	1,688.6	765	233.2	300	91.4	640	195.1	P	10-22-83	385	117.4	R	-
TTR EH-1 WW ^c	374700116455102	374700	1164551	03-05-84	5,540	1,688.6	750	228.6	500 ^g	152.4 ^g	730 ^g	222.5 ^g	S	03-05-84	584	178.0	R	-
TTR EH-2 ^h	374658116464101	374658	1164641	10-26-83	5,595	1,705.4	860	262.1	405	123.4	765	233.2	P	10-26-83	449	136.9	R	-
TTR EH-2 WW	374658116464102	374658	1164641	--	5,595	1,705.4	580	176.8	--	--	--	--	--	04-23-87	478	145.7	A	-
															454	138.4	A	-
															449	136.9	A	-
															449	136.9	A	-
TTR EH-4	374619116435401	374619	1164354	11-03-83	5,458	1,663.6	490 ^j	149.4 ⁱ	150	45.7	490	149.4	P	11-03-83	318	96.9	R	-
															314	95.7	T	-
															315	96.0	S	-
															317	96.6	T	-
														04-30-91	316	96.3	T	-
														10-01-91	316	96.3	T	-
														05-12-92	316	96.3	T	-
TTR Roller Coaster WW ^j	374315116441401	374315	1164414	--	5,609	1,709.6	793	241.7	368	112.2	773	235.6	P	05-12-92	--	--	--	O ^k
TTR Sandia 1	374713116451801	374713	1164518	00-00-56	5,517	1,681.6	600	182.9	0	0	600	182.9	X	00-00-56	D	D	R	D
TTR Sandia 2	374725116452701	374725	1164527	09-00-56	5,478	1,669.7	525	160.0	325	99.1	485	147.8	P	09-00-56	349	106.4	R	-
															345	105.2	T	-
															346	105.5	T	-
															347	105.8	T	-
															346	105.5	T	-
													05-12-92	346	105.5	T	-	
TTR Sandia 4	374739116453401	374739	1164534	07-02-59	5,468	1,666.6	580	176.8	351	107.0	466	142.0	P	07-02-59	353	107.6	R	-
															335	102.1	T	-
															338	103.0	T	-
															328	100.0	T	-
															338	103.0	T	-
															338	103.0	T	-

Table 2. Depth to water in wells and test holes in vicinity of Nevada Test Site, Nye and Clark Counties, Nevada--Continued

Local hole identifier	USGS standard identification	Latitude (degrees, minutes, seconds)	Longitude (degrees, minutes, seconds)	Date hole completed (month, day, year)	Land-surface altitude				Hole depth				Top				Bottom				Date (month, day, year)	Depth to water				Site status
					feet		meters		feet		meters		feet		meters		feet		meters			feet		meters		
					feet		meters		feet		meters		feet		meters		feet		meters			feet		meters		
					feet		meters		feet		meters		feet		meters		feet		meters			feet		meters		
STONE CABIN VALLEY																										
TTR Sandia Main WW ¹	374703116445701	374703	1164457	02-19-63	5,485	1,671.8	743	226.5	298	90.8	724	220.7	P	02-19-63	351	107.0	R	-								
TTR 1A WW	375303116463101	375303	1164631	02-29-80	5,353	1,631.6	405	123.4	355	108.2	405	123.4	X ^m	11-27-90	--	--	T	O ⁿ								
TTR 3A WW	375045116460201	375045	1164603	03-04-80	5,362	1,634.3	805	245.4	537	163.7	805	245.4	X ^o	04-23-87	220	67.1	R	-								
														11-27-90	207	63.1	T	-								
														04-30-91	208	63.4	T	-								
														10-01-91	207	63.1	T	-								
														05-12-92	206	62.8	T	-								
TTR 3B WW	375054116460201	375054	1164603	01-11-85	5,360	1,633.7	300	91.4	145	44.2	284	86.6	S	01-11-85	111	33.8	R	-								
														04-23-87	124	37.8	A	-								
														04-30-91	114	34.8	A	-								
														05-12-92	133	40.5	A	R								
TTR 3BB	375055116460201	375055	1164603	--	5,358	1,633.1	--	--	--	--	--	--	--	04-20-90	111	33.8	T	-								
														04-30-91	112	34.1	T	-								
														10-01-91	111	33.8	T	-								
														05-12-92	116	35.4	T	-								
TTR EH-5	374915116460401	374915	1164604	11-15-83	5,419	1,651.7	860	262.1	440	134.1	860	262.1	P	11-15-83	268	81.7	R	-								
TTR EH-6	375139116460001	375139	1164605	11-17-83	5,355	1,632.2	535	163.1	0	0	310	94.5	P	11-17-83	101	30.8	R	-								
														04-20-90	98	29.9	T	-								
														11-27-90	99	30.2	T	-								
														04-30-91	99	30.2	T	-								
														10-01-91	99	30.2	T	-								
														05-12-92	99	30.2	T	-								
TTR EH-7 ^c , P	375310116472301	375310	1164723	11-20-83	5,343	1,628.6	715	217.9	0	0	715	217.9	P, X	11-20-83	90	27.4	R	-								
TTR EH-7 WW	375310116472302	375310	1164723	09-01-89	5,343	1,628.5	660	201.2	304 ^q	92.7 ^q	650 ^q	198.1 ^q	S	09-01-89	97	29.6	R	-								
														04-20-90	95	29.0	S	-								
														11-27-90	96	29.3	T	-								
														10-01-91	96	29.3	T	-								
														05-12-92	96	29.3	T	-								
TTR Reeds Ranch Well	375453116450501	375453	1164505	--	5,384	1,641.0	127 ^r	38.7 ^r	--	--	--	--	--	11-27-90	101	30.8	T	-								
														04-30-91	101	30.8	T	-								
														10-01-91	101	30.8	T	-								
														05-12-92	101	30.8	T	-								
TTR Sandia #3	375429116463201	375430	1164631	06-10-59	5,366	1,635.6	250	76.2	145	44.2	250	76.2	P	06-10-59	109	33.2	R	-								
														04-30-91	146	44.5	A	-								
														05-12-92	148	45.1	A	P								

Table 2. Depth to water in wells and test holes in vicinity of Nevada Test Site, Nye and Clark Counties, Nevada--Continued

Local hole Identifier	USGS standard Identification	Latitude (degrees, minutes, seconds)	Longitude (degrees, minutes, seconds)	Date hole completed (month, day, year)	Land-surface altitude		Hole depth		Top		Bottom		Date (month, day, year)	Depth to water		Site status		
					feet	meters	feet	meters	feet	meters	feet	meters						
HOT CREEK VALLEY																		
HTH-1 ^{c, s}	383734116124501	383735	1161245	07-23-67	6,011	1,832.2	3,695	1,126.2	150	45.7	3,665	1,117.1	P	05-11-92	532	162.2	T	-
HTH-2 ^s	383734116124502	383740	1161247	08-12-67	6,025	1,836.4	1,000	304.8	504	153.6	1,000	304.8	P	10-21-91	556	169.5	T	-
														12-02-91	556	169.5	T	-
														03-27-92	556	169.5	T	-
														05-11-92	553	168.6	T	-
													06-25-92	553	168.6	T	-	
													09-18-92	553	168.6	T	-	
UC-1 P-2SR ^{c, s}	383806116125951	383806	1161254	04-06-68	6,084	1,854.4	2,734	833.3	1,148	349.9	2,790	850.4	P	10-21-91	773	235.6	T	-
														12-02-91	769	234.4	T	-
														03-27-92	761	232.0	T	-
														05-11-92	758	231.0	T	-
													06-25-92	786	239.6	T	-	
KAWICH VALLEY																		
Floyd Lamb Well	372438116123601	372538	1161236	--	5,365	1,635.2	503	153.3	--	--	--	--	--	05-01-58	660	201.2	R	-
														06-14-60	D	D	--	D
														11-24-89	D	D		
FRENCHMAN FLAT																		
Test Well 3	364830115512601	364830	1155126	05-09-62	3,494 ^t	1,065.0 ^t	1,356	413.3	1,192	363.3	1,516	462.1	P	05-09-62	1,103	336.2	--	-
														05-10-62	1,102	335.9	--	-
														01-25-63	1,103	336.2	--	-
														12-12-63	1,103	336.2	--	-
														03-20-71	1,103	336.2	I	-
													10-27-71	1,103	336.2	I	-	
													07-27-72	1,104	336.5	--	-	
													01-27-73	1,105	336.8	I	-	
													08-22-78	1,105	336.8	I	-	
													01-11-80	1,104	336.5	I	-	
													06-09-90	1,102	335.9	V	-	
													11-16-90	1,103	336.2	V	-	
													04-26-91	1,103	336.2	V	-	
													09-27-91	1,103	336.2	V	-	
													05-11-92	1,104	336.5	V	-	

Table 2. Depth to water in wells and test holes in vicinity of Nevada Test Site, Nye and Clark Counties, Nevada--Continued

Local hole identifier	USGS standard identification	Latitude (degrees, minutes, seconds)	Longitude (degrees, minutes, seconds)	Date hole completed (month, day, year)	Land-surface altitude				Hole depth				Depth to open interval				Measurement							
					feet		meters		feet		meters		feet		meters		feet		meters					
					1,162.2		3,813		627		191.1		92		28.0		658		200.6					
Army 2	363255115515801	363255	1155158	09-03-58																				
																				X	501	152.7	--	-
Army 3	363238115464601	363238	1154646	11-20-58																				
																				P; X	287	87.5	--	-
																				826	287	87.5	--	-
																				826	287	87.5	--	-
																				826	287	87.5	--	-
826	287	87.5	--	-																				
826	287	87.5	--	-																				
826	287	87.5	--	-																				
826	287	87.5	--	-																				
826	287	87.5	--	-																				
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826	287	87.5	--	-																				
826	287	87.5	--	-																				
826	287	87.5	--	-																				
826	287	87.5																						

Table 2. Depth to water in wells and test holes in vicinity of Nevada Test Site, Nye and Clark Counties, Nevada--Continued

Local hole identifier	USGS standard identification	Latitude (degrees, minutes, seconds)	Longitude (degrees, minutes, seconds)	Date hole completed (month, day, year)	Land-surface altitude		Hole depth		Top		Bottom		Date (month, day, year)	Depth to water		Site		
					feet	meters	feet	meters	feet	meters	feet	meters		feet	meters			
Army 3	363238115464601	363238	1154646	11-20-58	3,617	1,102.5	826	251.8	310	94.5	826	251.8	P, X	07-02-64	288	87.8	--	-
Cactus Spring 3	363422115433701	363422	1154337	--	3,265	995.2	100	30.5	83	25.3	100	30.5	P	00-00-85	25	7.6	R	-
USAF MW-20	363529115392101	363529	1153921	04-07-88	3,093	942.7	65	19.8	35	10.7	65	19.8	S	06-16-88	42	12.8	R	-
USAF MW-21	363529115391301	363529	1153913	04-07-88	3,094	943.1	75	22.9	45	13.7	75	22.9	S	06-16-88	44	13.4	R	-
USAF MW-22	363508115391701	363508	1153917	04-06-88	3,100	944.9	65	19.8	35	10.7	65	19.8	S	06-16-88	42	12.8	R	-
USAF Well 3	363452115405101	363449	1154053	01-11-85	3,130	954.0	600	182.9	210	64.0	600	182.9	S	01-11-85	71	21.6	R	-
USAF Well 62-1	363452115404401	363452	1154044	00-00-42	3,118	950.4	604	184.1	245	74.7	562	171.3	P, X	03-08-63	34	10.4	-	-

Table 2. Depth to water in wells and test holes in vicinity of Nevada Test Site, Nye and Clark Counties, Nevada--Continued

Local hole identifier	USGS standard identification	Latitude (degrees, minutes, seconds)	Longitude (degrees, minutes, seconds)	Date hole completed (month, day, year)	Land-surface altitude		Hole depth		Top		Bottom		Date (month, day, year)	Depth to water		Method	Site status		
					feet		meters		feet		meters			feet				meters	
TIKAPOO VALLEY (SOUTHERN PART)																			
DDL-1	365711115115201	365711	1151152	10-01-86	3,208	977.8	420	128.0	--	--	--	--	10-01-86	160	48.8	S	-		
													05-06-87	161	49.1	S	-		
													09-13-87	158	48.2	S	-		
													05-17-88	158	48.2	S	-		
													04-26-90	158	48.2	T	-		
													11-28-90	159	48.5	T	-		
													04-08-91	161	49.1	S	-		
													04-25-91	158	48.2	T	-		
													06-12-91	166	50.6	S	-		
													09-13-91	168	51.2	S	-		
													09-30-91	158	48.2	T	-		
													12-13-91	167	50.9	S	-		
													03-31-92	159	48.5	S	-		
													05-13-92	158	48.2	T	-		
													06-30-92	158	48.2	S	-		
													09-18-92	158	48.2	S	-		
DDL-2	365502115134101	365502	1151341	01-21-89	3,300	1,005.8	460	140.2	13	4.0	460	140.2	X	01-21-89	216	65.8	R	-	
													02-05-89	216	65.8	T	-		
													04-26-90	214	65.2	T	-		
													11-28-90	214	65.2	T	-		
													04-25-91	214	65.2	T	-		
													09-30-91	214	65.2	T	-		
													05-13-92	214	65.2	T	-		
THREE LAKES VALLEY (SOUTHERN PART)																			
USAF Alpha 2	363045115280201	363045	1152802	07-25-87	3,066	934.5	200	61.0	165 ^u	50.3 ^u	195 ^u	59.4 ^u	S	07-26-87	131	39.9	R	-	
													01-30-91	132	40.2	T	-		
													04-29-91	132	40.2	T	-		
													09-26-91	133	40.5	T	-		
													05-10-92	132	40.2	T	-		
USAF Alpha 3	363135115281401	363135	1152814	07-27-87	3,057	931.8	210	64.0	155 ^v	47.2 ^v	205 ^v	62.5 ^v	S	07-27-87	126	38.4	R	-	
													01-30-91	135	41.1	T	-		
													04-29-91	136	41.4	T	-		
													05-10-92	136	41.4	T	-		
LAS VEGAS VALLEY																			
DR-1	363332115244001	363328	1152438	10-15-88	3,579	1,090.9	957	291.7	--	--	--	--	--	02-02-89	815	248.4	R	-	
													02-03-89	816	248.7	T	-		
													11-29-89	816	248.7	R	-		
													04-26-90	816	248.7	T	-		
													11-28-90	816	248.7	T	-		
													09-30-91	815	248.4	T	-		
													05-13-92	815	248.4	T	-		

Table 2. Depth to water in wells and test holes in vicinity of Nevada Test Site, Nye and Clark Counties, Nevada--Continued

Local hole identifier	USGS standard identification	Latitude (degrees, minutes, seconds)	Longitude (degrees, minutes, seconds)	Date hole completed (month, day, year)	Land-surface altitude		Hole depth		Top		Bottom		Date (month, day, year)	Depth to water		Site status		
					feet		meters		feet		meters			feet			meters	
South Black Hills-1	363212115240301	363212	1152403	02-24-87	3,475	1,059.2	720	219.5	665	202.7	695	211.8	S	02-25-87	582	177.4	S	
														05-05-87	580	176.8	T	
														08-04-87	581	177.1	T	
														05-17-88	581	177.1	T	
														11-29-88	581	177.1	V	
														12-14-88	581	177.1	S	
														01-31-89	581	177.1	T	
														03-28-89	581	177.1	T	
														05-30-89	581	177.1	T	
														07-26-89	581	177.1	T	
														09-12-89	581	177.1	T	
														03-29-90	581	177.1	T	
														04-26-90	581	177.1	T	
														06-08-90	581	177.1	T	
														08-14-90	581	177.1	T	
														09-19-90	580	176.8	T	
														10-23-90	581	177.1	T	
														11-28-90	580	176.8	T	
														02-06-91	580	176.8	T	
														03-26-91	580	176.8	T	
														04-08-91	581	177.1	T	
														05-13-91	581	177.1	T	
														06-13-91	580	176.8	T	
														06-24-91	581	177.1	T	
														07-29-91	581	177.1	T	
														09-05-91	581	177.1	T	
														10-07-91	581	177.1	T	
														11-15-91	580	176.8	T	
														01-10-92	580	176.8	T	
														02-21-92	581	177.1	T	
														03-31-92	580	176.8	T	
														04-04-92	581	177.1	T	
														05-13-92	581	177.1	T	
														06-17-92	581	177.1	T	
														07-28-92	581	177.1	T	
														09-17-92	581	177.1	T	
														05-12-90	212	64.6	T	
														11-21-90	212	64.6	T	
														04-29-91	212	64.6	T	
														09-26-91	212	64.6	T	
														03-29-92	212	64.6	S	
														05-10-92	212	64.6	T	
														06-26-92	213	64.9	S	
														09-11-92	214	65.2	S	
														USAF Well 2372-1	362830115270501	362830	1152657	--
11-21-90	212	64.6	T															
04-29-91	212	64.6	T															
09-26-91	212	64.6	T															
03-29-92	212	64.6	S															
05-10-92	212	64.6	T															
06-26-92	213	64.9	S															
09-11-92	214	65.2	S															

Table 2. Depth to water in wells and test holes in vicinity of Nevada Test Site, Nye and Clark Counties, Nevada--Continued

Local hole identifier	USGS standard identification	Latitude (degrees, minutes, seconds)	Longitude (degrees, minutes, seconds)	Date hole completed (month, day, year)	Land-surface altitude		Hole depth		Top		Bottom		Date (month, day, year)	Depth to water		Site status	
					feet	meters	feet	meters	feet	meters	feet	meters		feet	meters		
MERCURY VALLEY																	
Army 6A	363437116010801	363437	1160108	00-00-55	3,445	1,050.0	1,253	381.9	1,157	352.7	1,228	374.3	P	04-07-58	1,028	313.3	--
														08-06-58	1,030	313.9	--
														12-12-58	1,029	313.6	--
														05-21-59	1,029	313.6	--
														08-14-59	1,029	313.6	--
													01-27-60	1,029	313.6	--	
														02-11-64	1,030	313.9	--
														01-28-65	1,029	313.6	--
														10-26-71	1,031	314.2	V
														07-28-72	1,030	313.9	V
														01-16-80	1,032	314.6	V
														05-04-90	1,032	314.6	V
														11-01-90	1,032	314.6	S
														06-06-91	1,032	314.6	V
														09-26-91	1,032	314.6	V
														05-14-92	1,032	314.6	V
OASIS VALLEY																	
PM 3-1 ^s	371421116333703	371421	1163337	02-06-92	5,823	1,774.8	2,144	653.5	1,919	584.9	2,144	653.5	P	04-10-92	1,460	445.0	V
														05-20-92	1,460	445.0	V
														07-23-92	1,460	445.0	V
PM 3-2 ^s	371421116333704	371421	1163337	02-04-92	5,823	1,774.8	1,667	508.1	1,442	439.5	1,667	508.1	P	04-10-92	1,458	444.4	V
														05-20-92	1,458	444.4	V
														07-23-92	1,458	444.4	V

^l Well also named TTR Sandia 6.
^m Open interval filled with gravel, however well reported to be filled with sand.
ⁿ Obstruction in well at 86 feet (26.2 meters) below land surface, unable to measure water level.
^o Open interval filled with gravel.
^p Well destroyed by construction of TTR EH-7 WW.
^q Gravel packed from 340 to 660 feet (103.6 to 201.2 meters).
^r Well depth sounded to 127 feet (38.7 meters) on May 12, 1993.
^s Earlier water level measurements in Wood (1992).
^t Surveyed by REECO in June 1993. Reported previously as 3,484 feet (1,061.9 meters).
^u Sand packed from 137 to 200 feet (41.8 to 61.0 meters).
^v Sand packed from 145 to 210 feet (44.2 to 64.0 meters).
^a Well depth sounded to 280 feet (85.3 meters) on November 26, 1989.
^b Gravel packed from 50 to 775 feet (15.2 to 236.2 meters).
^c Open interval is not continuous between top and bottom depth.
^d Gravel packed from 50 to 854 feet (15.2 to 260.3 meters).
^e Well depth sounded to 390 feet (118.9 meters) on April 18, 1990.
^f Well destroyed by construction of TTR EH-1 WW.
^g Gravel packed from 50 to 750 feet (15.2 to 228.6 meters).
^h Well destroyed by construction of TTR EH-2 WW.
ⁱ Well depth sounded to 446 feet (135.9 meters) on November 25, 1989.
^j Well also named TTR Sandia 8.
^k Obstruction in well at 125 feet (38.1 meters) below land surface, unable to measure water level.

Table 3. Monthly and annual ground-water withdrawals in 1992 from wells at Nevada Test Site, Nye County, Nevada

RSN hole number--Drill hole number assigned by Raytheon Services of Nevada; see section "Site Designations" in text.

USGS standard identification--U.S. Geological Survey site designation; see section "Site Designations" in text.

Date hole completed--Date that borehole construction work ceased; see section "Measurements" in text.

Land-surface altitude--Datum is sea level. Value may not represent current altitude; see section "Depth to water" in text.

Hole depth--Datum is land surface. Represents most recent available accessible depth; see section "Measurements" in text.

Depth to open interval--Datum is land surface. Bottom most open interval may be deeper than present accessible hole depth.

Type--P, perforated or slotted casing; X, open (uncased) hole.

Primary water-yielding unit--A, alluvium; C, carbonate rock; V, volcanic rock.

Ground-water withdrawals--Source: A, estimated from pump run times recorded on ammeter charts supplied by Reynolds Electrical Engineering Co., Inc. (REECo); M, taken from REECo water production reports.

RSN hole number	USGS standard identification	Latitude\ Longitude (degrees, minutes, seconds)	Date hole completed (month, day, year)	Land-surface altitude		Hole depth		Depth to open interval				Primary water yielding unit	Ground-water withdrawals				
								Top		Bottom			Month	Millions of gallons	Millions of liters	Source	
				feet	meters	feet	meters	feet	meters	feet	meters						
				ASH MEADOWS SUBBASIN-AREA 5													
UE-5c WW	365011115584702	365011\1155847	00-00-66	3,216	980.2	2,682	817.5	1,100	335.3	2,682	817.5	P, X	A, V	January	0.155	0.59	M
														February	0.389	1.47	M
														March	0.159	0.60	M
														April	0.245	0.93	M
														May	0.478	1.81	M
														June	0.455	1.72	M
														July	0.684	2.59	M
														August	0.909	3.44	M
														September	0.773	2.93	M
														October	0.186	0.70	M
														November	0.569	2.15	M
														December	0.282	1.07	M
														Total	5,284	20.00	
WW-5c	364708115574401	364720\1155749	03-24-54	3,081	939.1	1,200	365.8	887	270.4	1,200	365.8	P, X	A	January	5.700	21.57	M
														February	4.480	16.96	M
														March	5.343	20.22	M
														April	6.603	24.99	M
														May	3.643	13.79	M
														June	3.601	13.63	M
														July	6.954	26.32	M
														August	6.873	26.01	M
														September	6.853	25.94	M
														October	4.906	18.57	M
														November	2.386	9.03	M
														December	3.802	14.39	M
														Total	61,144	231.43	

Table 3. Monthly and annual ground-water withdrawals in 1992 from wells at Nevada Test Site, Nye County, Nevada--Continued

RSN hole number	USGS standard identification	Latitude\ Longitude (degrees, minutes, seconds)	Date hole completed (month, day, year)	Land-surface altitude				Hole depth				Depth to open interval				Primary water yielding unit	Ground-water withdrawals			
				feet		meters		feet		meters		feet		meters			Month	Millions of gallons	Millions of liters	Source
				feet	meters	feet	meters	feet	meters	Top	Bottom									
WW-4	365418116012601	365418\1160126	11-18-81	3,602	1,097.9	1,479	450.8	942	287.1	1,479	450.8	P, X	V	January	3,886	14.71	M			
														February	5,501	20.82	M			
														March	5,895	22.31	M			
														April	7,177	27.16	M			
														May	8,013	30.33	M			
														June	7,675	29.05	M			
														July	7,338	27.77	M			
														August	9,001	34.07	M			
														September	11,188	42.35	M			
														October	8,934	33.82	M			
														November	4,943	18.71	M			
														December	4,956	18.76	M			
														Total						
WW-C	365508116003502	365508\1160035	04-30-67	3,921	1,195.1	1,701	518.5	1,560	475.5	1,701	518.5	P, X	C	January	1,023	3.87	M			
														February	1,904	7.21	M			
														March	3,670	13.89	M			
														April	4,978	18.84	M			
														May	2,374	8.99	M			
														June	0,896	3.39	M			
														July	0	0.00	M			
														August	0	0.00	M			
														September	0	0.00	M			
														October	0	0.00	M			
														November	0	0.00	M			
														December	0	0.00	M			
														Total						
WW-C-1	365500116003901	365500\1160039	06-09-62	3,921	1,195.1	1,707	520.3	1,536	468.2	1,707	520.3	P, X	C	January	2,455	9.29	M			
														February	1,912	7.24	M			
														March	1,933	7.32	M			
														April	1,872	7.09	M			
														May	1,587	6.01	M			
														June	1,841	6.97	M			
														July	2,547	9.64	M			
														August	3,149	11.92	M			
														September	3,222	12.20	M			
														October	3,705	14.02	M			
														November	3,673	13.90	M			
														December	2,406	9.11	M			
														Total						

Table 3. Monthly and annual ground-water withdrawals in 1992 from wells at Nevada Test Site, Nye County, Nevada--Continued

RSN hole number	USGS standard identification	Latitude\ Longitude (degrees, minutes, seconds)	Date hole completed (month, day, year)	Land-surface altitude		Hole depth		Depth to open interval				Primary water yielding unit	Ground-water withdrawals							
				feet		meters		feet		meters			feet		meters		Month	Millions of gallons	Millions of liters	Source
				feet		meters		feet		meters			feet		meters					
				feet		meters		feet		meters			feet		meters					
UE-16d Eleana Sidetrack (Water-well)	370412116095101	370412\1160951	03-03-81	4,684	1,427.7	3,000	914.4	1,145	349.0	3,000	914.4	P, X	C	January	2,669	10.10	M			
														February	2,025	7.66	M			
														March	1,089	4.12	M			
														April	1,350	5.11	M			
														May	1,464	5.54	M			
														June	1,475	5.58	M			
														July	3,590	13.59	M			
														August	3,823	14.47	M			
														September	4,536	17.17	M			
														October	5,395	20.42	M			
														November	3,366	12.74	M			
														December	2,095	7.93	M			
Total														32,877	124.44					
Army 1 WW	363530116021401	363530\1160214	07-15-62	3,154	961.3	1,946	593.1	800	243.8	1,953	595.3	P, X	C	January	11,210	42.43	M			
														February	11,261	42.62	M			
														March	10,652	40.32	M			
														April	13,861	52.46	A			
														May	13,521	51.18	A			
														June	13,004	49.22	M			
														July	11,405	43.17	M			
														August	11,175	42.30	M			
														September	10,320	39.06	A			
														October	9,844	37.26	A			
														November	11,529	43.64	M			
														December	11,638	44.05	M			
Total														139,420	527.71					
WW-8	370956116172101	370956\1161721	01-07-63	5,695	1,735.8	1,862 ^a	567.5 ^a	1,250	381.0	5,490	1,673.4	P, X	V	January	3,779	14.30	M			
														February	3,479	13.17	M			
														March	3,152	11.93	M			
														April	4,072	15.41	M			
														May	5,402	20.45	M			
														June	7,329	27.74	M			
														July	7,705	29.16	M			
														August	6,230	23.58	M			
														September	5,902	22.34	M			
														October	5,256	19.89	M			
														November	2,780	10.52	M			
														December	1,497	5.67	M			
Total														56,583	214.17					

Table 3. Monthly and annual ground-water withdrawals in 1992 from wells at Nevada Test Site, Nye County, Nevada--Continued

RSN hole number	USGS standard identification	Latitude\ Longitude (degrees, minutes, seconds)	Date hole completed (month, day, year)	Land-surface altitude		Hole depth		Depth to open interval				Primary water yielding unit	Ground-water withdrawals							
				feet		meters		feet		meters			Top		Bottom		Month	Millions of gallons	Millions of liters	Source
				feet	meters	feet	meters	feet	meters	feet	meters									
ALKALI FLAT-FURNACE CREEK RANCH SUBBASIN-AREA 19																				
UE-19c WW	371608116191002	371608\ 1161910	06-30-75	7,033	2,143.7	8,489	2,587.4	2,421	737.9	8,489	2,587.4	X	V	January	2,751	10,41	M	M		
														February	5,373	20,34	M	M		
														March	6,586	24,93	M	M		
														April	1,097	4,15	M	M		
														May	0,005	0,02	M	M		
														June	0,779	2,95	A	A		
														July	7,002	26,50	A	A		
														August	10,817	40,94	A	A		
														September	5,860	22,18	A	A		
														October	8,367	31,67	A	A		
														November	0	0,00	M	M		
														December	0	0,00	M	M		
														Total	48,637	184,09				
ALKALI FLAT-FURNACE CREEK SUBBASIN-AREA 20																				
U-20 WW	371505116254501	371505\ 1162545	07-22-85	6,468	1,971.4	3,268	996.1	2,271	692.2	3,268	996.1	P, X	V	January	0	0,00	M	M		
														February	0,151	0,57	M	M		
														March	3,544	13,41	M	M		
														April	14,420	54,58	M	M		
														May	10,080	38,15	M	M		
														June	7,902	29,91	M	M		
														July	12,629	47,80	M	M		
														August	11,813	44,71	M	M		
														September	9,760	36,94	M	M		
														October	10,239	38,75	M	M		
														November	2,241	8,48	M	M		
														December	0	0,00	M	M		
														Total	82,779	313,30				
ALKALI FLAT-FURNACE CREEK RANCH SUBBASIN-AREA 25																				
J-12 WW	364554116232401	364554\ 1162324	08-00-68	3,128	953.4	1,139	347.2	793	241.7	1,019	310.6	P, X	V	January	0	0,00	M	M		
														February	0	0,00	M	M		
														March	0	0,00	M	M		
														April	0,004	0,02	M	M		
														May	0,168	0,64	M	M		
														June	1,134	4,29	M	M		
														July	3,605	13,64	M	M		
														August	2,295	8,69	M	M		
														September	1,250	4,73	M	M		
														October	1,220	4,62	M	M		
														November	1,412	5,34	M	M		
														December	1,444	5,47	M	M		
														Total	12,532	47,43				

Table 3. Monthly and annual ground-water withdrawals in 1992 from wells at Nevada Test Site, Nye County, Nevada--Continued

RSN hole number	USGS standard identification	Latitude\ Longitude (degrees, minutes, seconds)	Date hole completed (month, day, year)	Land-surface altitude				Hole depth				Depth to open interval				Ground-water withdrawals				
				feet		meters		feet		meters		feet		meters		Primary water yielding unit	Month	Millions of gallons	Millions of liters	Source
				feet	meters	feet	meters	feet	meters	feet	meters	feet	meters	Type						
J-13 WW	364828116234001	364828\1162340	01-00-63	3,318	1,011.3	3,488	1,063.1	996	303.6	3,312	1,009.5	P	V	January	2,836	10.73	M			
														February	3,085	11.68	M			
														March	3,656	13.84	M			
														April	3,229	12.22	M			
														May	3,667	13.88	M			
														June	2,904	10.99	M			
														July	1,421	5.38	M			
														August	1,405	5.32	M			
														September	1,192	4.51	M			
														October	1,088	4.12	M			
														November	0.891	3.37	M			
														December	1,029	3.89	M			
														Total	26,403	99.94				

^a Cement plug set at 1,862 feet (567.5 meters) on January 7, 1983.

Table 4. Tritium concentrations in water samples collected from test holes at Nevada Test Site, Nye County, Nevada

RSN hole number--Drill-hole number assigned by Raytheon Services of Nevada; see section "Site Designations" in text.

USGS standard identification--U.S. Geological Survey site designation; see section "Site Designations" in text.

Date hole completed--Date that borehole construction work ceased; see section "Measurements" in text.

Land-surface altitude--Datum is sea level. Value may not represent current altitude; see section "Depth to Water" in text.

Hole Depth--Datum is land surface. Represents most recent available accessible depth; see section "Measurements" in text.

Depth of open interval--Datum is land surface. Bottom of open interval may be deeper than present accessible hole depth.

Type--X, open (uncased) hole.

Water sample--Water samples are analyzed by Environmental Systems Monitoring Laboratory of U.S. Environmental Protection Agency.

Tritium concentration--Negative value of tritium concentration indicates that activity of sample was less than blank used in the calibration procedure; $\pm$ is measurement error.

RSN hole number	USGS standard identification	Land-surface										Depth of open interval								Water sample	
		Latitude (degrees, minutes, seconds)	Longitude (degrees, minutes, seconds)	Date hole completed (month, day, year)	altitude		Hole depth		Top		Bottom		Date (month day, year)	Tritium concentration							
					feet	meters	feet	meters	feet	meters	feet	meters				feet	meters	Type			
U-7cd	370451116024101	370451	1160241	04-14-92	4,115	1,254.3	1,620	493.8	117	35.7	1,625	495.3	X	09-10-92	-1.48±10.43	-40±282					
U-7cd 1	370451116024102	370451	1160241	09-16-92	4,114	1,253.9	1,700	518.2	114	34.7	1,700	518.2	X	09-16-92	1.74±10.43	47±282					
AREA 19																					
U-19bj	371736116184701	371736	1161847	05-28-92	7,035	2,144.3	2,153	656.2	57	17.4	2,153	656.2	X	09-29-92	-2.40±10.32	-65±279					
U-19bk	371714116230301	371714	1162303	12-03-91	6,670	2,033.0	2,198	670.0	57	17.4	2,198	670.0	X	09-24-92	1.18±10.36	32±280					
AREA 20																					
UE-20bh 1	371442116243301	371442	1162433	09-29-91	6,637	2,023.0	2,810	856.5	1,936	590.1	2,810	856.5	X	09-28-92	6.14±10.40	166±281					